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UNITED STATES PATENT OFFICE

VOL 47 & 48

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THE OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

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Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., April 26, 1889.

SIR: The Secretary of the Interior has ordered that Daniel O'Driscoll, of Washington, D. C., be not recognized after this date as attorney or agent in the prosecution of any claim or other matter before this Department or any bureau thereof.

Very respectfully,

E. M. DAWSON,
Acting Chief Clerk.

The Commissioner of Patents.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Indexes to Patents on Electricity.

Appendix No. 2 to the index to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1883, has been issued, and is now for sale. These indexes, arranged alphabetically, numerically, and by classes, are completed to June 30, 1883, and comprise the following volumes:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages. In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Issue of May 7, 1889.

Patents	380	No. 402,532 to No. 403,081, inclusive.
Designs	12	No. 19,076 to No. 19,087, inclusive.
Trade-Marks	14	No. 16,547 to No. 16,560, inclusive.
Labels	6	No. 5,899 to No. 5,904, inclusive.
Reissues	1	No. 11,002.
Total issue	563	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	....	....	Nebraska	3	2
Arizona Territory	1	....	Nevada	1	....
Arkansas	6	....	New Hampshire	4	....
California	6	....	New Jersey	22	2
Colorado	2	....	New Mexico Terri'y	....	....
Connecticut	25	....	New York	120	7
Dakota Territory	2	....	North Carolina	3	1
Delaware	1	....	Ohio	36	....
District of Columbia	5	....	Oregon	....	....
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Georgia	7	....	Rhode Island	6	....
Idaho Territory	1	....	South Carolina	2	....
Illinois	50	1	Tennessee	1	....
Indiana	17	....	Texas	2	....
Iowa	16	....	Utah Territory	....	....
Kansas	6	....	Vermont	2	....
Kentucky	6	....	Virginia	....	....
Louisiana	2	....	Washington Terri'y	1	....
Maine	2	....	West Virginia	2	....
Maryland	12	1	Wisconsin	7	1
Massachusetts	38	2	Wyoming Terri'y	....	....
Michigan	16	....	U. S. Army	....	....
Minnesota	7	....	U. S. Navy	....	....
Mississippi	....	....			
Missouri	9	1	Total to citizens of the United States	495	18
Montana Territory	....	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Australia	....	....	Germany	10	....
Austria-Hungary	....	....	Hawaii	....	....
Barbadoes	....	....	Italy	1	1
Belgium	....	....	Mexico	....	....
Brazil	....	....	Netherlands	....	....
Canada	10	....	Russia	1	....
Canary Islands	....	....	Scotland	....	....
Colombia, U. S. of	....	....	Sweden	....	....
Cuba	....	....	Switzerland	1	....
Denmark	....	....	Victoria	1	....
Ecuador	....	....			
England	20	1	Total to citizens of foreign countries	47	2
France	3	....			

DESIGNS.

19,076.—ORNAMENTATION OF GLASSWARE.—*William C. Anderson*, Toledo, Ohio, assignor to *The W. L. Libbey & Son Company*, same place. Application filed January 21, 1889. Serial No. 297,101. Term of patent 7 years.

19,077.—ORNAMENTATION OF BUILDERS' HARDWARE.—*George S. Barkentin*, New Britain, Conn., assignor to *P. & F. Corbin*, same place. Application filed April 12, 1889. Serial No. 307,066. Term of patent 7 years.

19,078.—KNITTED GARMENT.—*Swits Condé*, Oswego, N. Y. Application filed February 18, 1889. Serial No. 300,366. Term of patent 7 years.

19,079.—KNITTED GARMENT.—*Swits Condé*, Oswego, N. Y. Application filed March 18, 1889. Serial No. 303,779. Term of patent 7 years.

19,080.—BANJO.—*Edwin J. Cubley*, Ravenswood, Ill. Application filed June 8, 1888. Serial No. 276,534. Term of patent 7 years.

19,081.—TYPE.—*Rudolph Gnichwitz*, Ashbourne, Pa. Application filed February 27, 1889. Serial No. 301,425. Term of patent 7 years.

19,082.—INITIAL LETTER FOR HANDKERCHIEFS.—*Catharine Schiess*, New York, N. Y. Application filed February 7, 1889. Serial No. 299,210. Term of patent 7 years.

19,083 and 19,084.—FABRIC FOR CLOAKING, &c.—*Henry Topham*, Philadelphia, Pa., assignor to *Scheppers Brothers*, same place. Applications filed March 28, 1889. Serial Nos. 305,492 and 305,493. Term of patents 3½ years.

19,085.—WATCH-CHAIN BAR.—*Darius Whitford*, Providence, R. I. Application filed March 21, 1889. Serial No. 304,363. Term of patent 3½ years.

19,086.—SPOOL-THREAD CABINET.—*William Wilson*, Brooklyn, assignor to *George A. Clark & Bro.*, New York, N. Y. Application filed December 28, 1888. Serial No. 294,872. Term of patent 14 years.

19,087.—TEXTILE FABRIC.—*Joseph W. Woods*, Boston, Mass. Application filed April 4, 1889. Serial No. 306,018. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,547.—VELVETEENS.—*Louis Behrens & Sons*, New York, N. Y. Application filed January 14, 1889. Used since 1884.

"The words 'ROYAL FAMILY.'"

16,548.—SKINS DRESSED WITH THE FUR OR WOOL ON.—*Bevington & Morris*, London and Bermondsey, county of Surrey, England. Application filed February 26, 1889. Used since 1888.

"The words 'ROUEL DRESS' and the representation of an anchor."

16,549.—COTTON-SEED LARD.—*The Cotton Oil Product Company*, New York, N. Y. Application filed March 11, 1889. Used since June 1, 1888.

"The representation of a pig, a man cook, and the letters 'C. O. P.'"

16,550.—GAME IN WHICH MARBLES ARE EMPLOYED.—*James Fenton*, Buffalo, N. Y. Application filed April 3, 1889. Used since March 20, 1889.

"The legend 'THE THREE BLIND MICE.'"

16,551.—VELVET AND PLUSH.—*Goldschmidt, Buchrach & Co.*, New York, N. Y. Application filed March 8, 1889. Used since January 1, 1889.

"The words 'THE STAR BRAND' and the representation of a star."

16,552.—PLUG, TWIST, AND FANCY TOBACCO.—*P. H. Hanes & Co.*, Winston, N. C. Application filed December 6, 1888. Used since July, 1888.

"The words 'CROWNED HEADS.'"

16,553.—MEDICATED ARTICLES FOR TOILET AND VETERINARY PURPOSES.—*Ichthyol-Gesellschaft Cordes, Hermanni & Company*, Hamburg, Germany. Application filed February 13, 1889. Used since January 24, 1889.

"The word 'THIOL.'"

16,554.—[Withdrawn.]

16,555.—CERTAIN GAMING SET AND BOARD.—*George H. Monks*, Boston, Mass. Application filed February 1, 1889. Used since October 26, 1885.

"The word 'HALMA.'"

16,556.—SALT.—*Nash, Whiton & Co.*, New York, N. Y. Application filed March 8, 1889. Used since February 15, 1889.

"The representation of a banner."

16,557.—BOOTS, SHOES, AND SLIPPERS.—*Packard & Field*, Brockton, Mass. Application filed March 2, 1889. Used since February 11, 1889.

"The representation of a human foot visible through the upper of a boot or shoe, within which it is inclosed, and in connection therewith the words 'KORRECT SHAPE' inscribed on the remaining upper portion of the boot or shoe."

16,558.—WHEAT-FLOUR.—*St. Jacob Mill Company*, St. Jacob, Ill. Application filed April 10, 1889. Used since March, 1883.

"The word 'ENTERPRISE.'"

16,559.—PLUG AND FINE-CUT CHEWING-TOBACCO, CIGARS, CIGARETTES, AND SNUFF.—*Frank H. Woodbury*, Kansas City, Mo. Application filed March 28, 1889. Used since January 1, 1882.

"The words 'BED ROCK.'"

16,560.—LEATHER.—*L. Ziegel & Co.*, Newark, N. J. Application filed March 20, 1889. Used since February 1, 1889.

"The words 'RUDOLPH' and 'MANHATTAN LEATHER WORKS.'"

LABELS.

5,899.—Title: "CENTER'S PERMANENT CURE FOR MALARIA AND FEVER AND AGUE."—*Granville Center*, New York, N. Y. Application filed April 8, 1889.

5,900.—Title: "GERMAN MILLS—SINGAPORE PEPPER."—*The Consolidated Coffee Company*, Omaha, Nebr. Application filed March 30, 1889.

5,901.—Title: "GERMAN DRY HOP YEAST."—*The Consolidated Coffee Company*, Omaha, Nebr. Application filed March 30, 1889.

5,902.—Title: "PROFESSOR ZIMMERMAN'S REMARKABLE OIL," (FOR A MEDICINAL PREPARATION.)—*Lauer & Roulson*, Baltimore, Md. Application filed April 2, 1889.

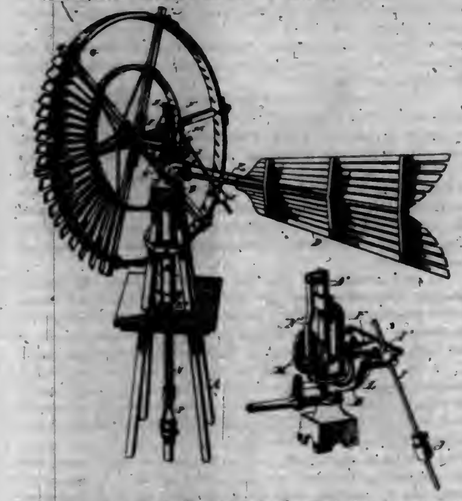
5,903.—Title: "MEADOW MINT BALSAM."—*The Morgan Medicine Co.*, Bridgeton, N. J. Application filed January 25, 1889.

5,904.—Title: "PRUSSIAN SPAVIN CURE."—*George Phippe*, Green Bay, Wis. Application filed February 6, 1889.

PATENTS

GRANTED MAY 7, 1889.

402,552. WINDMILL. JONAS H. ALDRICH, Butler, Ind. Filed Mar. 24, 1888. Serial No. 268,449. (No model.)



Claim.—In a windmill, a spring-brake attached to the vane-casting and projecting in the path of travel of the pitman-wheel and governor-rod, as and for the purpose set forth.

402,553. DRINKING-FOUNTAIN. STEPHEN R. BABCOCK, Little Falls, N. Y. Filed Aug. 15, 1888. Serial No. 282,767. (No model.)

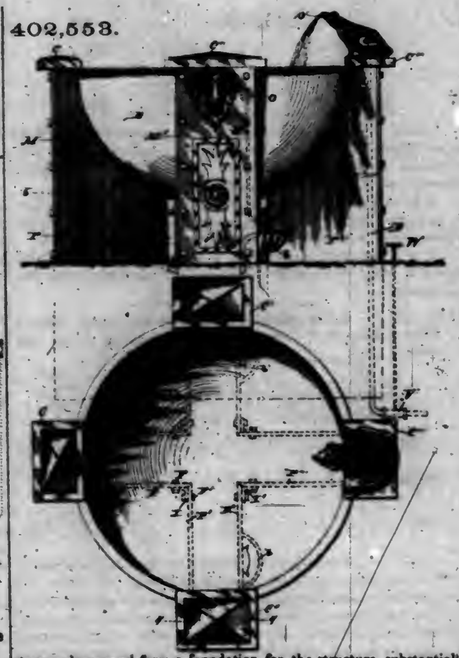
Claim.—1. In a drinking-fountain, the combination of the supporting-frame made in the form of a cross and cut away at its upper end, the bowl which fits into said cut-away portion, and the caps which are removably attached to the frame and which overlap the edges of the bowl, substantially as described.

2. In a drinking-fountain, the combination of the upright plates, each of which has a circular portion cut away from its upper inner corner, the angle-irons and end plates to which the first-mentioned plates are fastened in the form of a cross with all of their cut-away corners at the center, the bowl which fits into the cut-away space thus formed, and the caps which are bolted to the frame and which overlap the edges of the bowl, substantially as described.

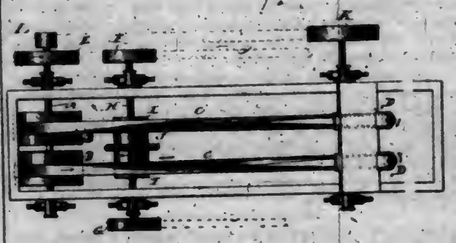
3. In a drinking-fountain, the combination, with the bowl, of a number of upright plates which have a considerable portion of their upper ends cut away and which are set in the ground and bolted together in any suitable form, so that those portions of the plates above ground form a support for the bowl of the fountain, while those portions underground form a foundation for the structure, substantially as described.



402,553.



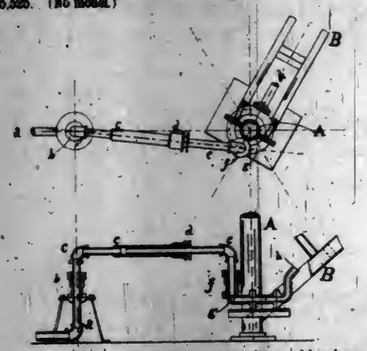
402,554. BELT-GUIDE WHEEL. EDWIN BENJAMIN, South Evanston, Ill., assignor to the Benjamin Machine Company, of Illinois. Filed Jan. 7, 1889. Serial No. 295,670. (No model.)



Claim.—1. The combination, with two belts whose adjacent edges run in the same direction and in close proximity with each other, of a guide-wheel projecting between said edges and presenting its sides to said belt-edges, substantially as shown and described.

2. The combination, with two belts whose adjacent edges run in the same direction and in close proximity with each other, of a guide-wheel projecting between said edges, presenting its sides to said belt-edges, and driven independently of its contact with the edges of the belts, as shown and described.

402,555. STEAM-PIPE JOINT FOR EXCAVATING-MACHINES. Lenox Birchhead, Toledo, Ohio. Filed Nov. 18, 1887. Serial No. 255,525. (No model.)

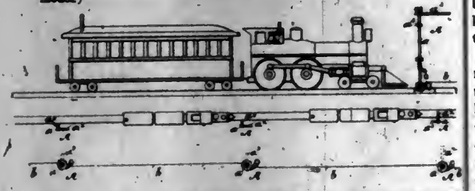


Claim.—1. In an excavating-machine, in combination with an engine mounted upon the crane thereof, pipes *c e*, provided with "telescope-joint" *d*, permitting longitudinal motion of pipe *e*, substantially as shown and described, for the purpose specified.

2. In an excavating-machine, in combination with the crane having an engine mounted thereon, pipes *c* and *e*, having joints *b*, *d*, and *f*, substantially as shown and described, for the purpose specified.

3. In combination with crane A B, pipes *a*, *c*, *e*, *g*, and *h*, having joints *b*, *d*, and *f*, substantially as shown and described, for the purpose specified.

402,556. BLOCK-SIGNAL SYSTEM FOR RAILWAYS. Edmund Blunt, Brooklyn, N. Y. Filed May 23, 1888. Serial No. 274,736. (No model.)

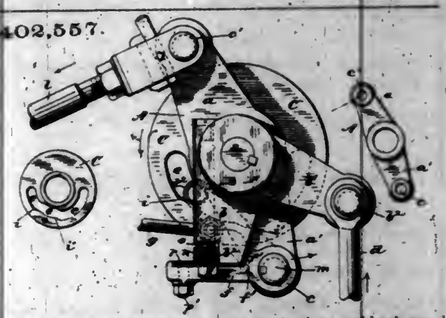


Claim.—1. A railway-signal comprising the rods extending upwardly at one side of the track, signal-arms thereon, one above the other and at substantially right angles to each other and adapted to contact with obstructions on a passing train, a ratchet on each vertical rod, a pivotal spring-controlled dog engaging a ratchet on each vertical rod, a wire having one end coiled around a vertical rod and engaging at the other end with the dog of the adjacent rod, and weights having flexible connection with the rods, said connections leading over a pulley, substantially as specified.

2. A railway-signal system having, in combination, the rods extending upwardly at one side of the track, the signal devices thereon, comprising arms, one above the other, adapted to contact, respectively, with obstructions on a passing train, pivotal dogs on said rods, the wires each connecting a rod and a dog on an adjacent rod, the ratchets on said rods, and devices for returning the signals to their normal positions, substantially as specified.

3. A railway-signal system comprising the vertical rods placed at the side of the track, the projecting signal devices thereon adapted to contact with projections or obstructions on a passing train, whereby the signal devices will be set in different positions and whereby an audible signal will be sounded on the locomotive, the wires connecting with a rod and a pivoted dog normally engaging a ratchet on a rod, and a weight having a flexible connection over a bearing with a rod, substantially as specified.

402,557. CUT-OFF-VALVE GEAR. Walter F. Brown, Providence, R. I. Filed Oct. 26, 1888. Serial No. 289,308. (No model.)



Claim.—1. The governor-actuated double-acting cam-grooved disk and the pivotally-mounted hook and tripping-lever connected with said cam, and a steam-arm having a latch-block adapted to engage said hook, substantially as hereinbefore described, and for the purpose set forth.

2. In a cut-off valve, the combination, with the governor-actuated double-acting cam-grooved disk, of a pivotally mounted tripping-lever and hook taking its axial movement from said cam, substantially as shown and hereinbefore described.

3. In a cut-off-valve gear, the combination, with the steam-arm and hook-lever, of a loosely-mounted tripping-lever and hook traveling in unison with said hook-lever, and a loosely-mounted double-acting cam-grooved disk actuated by the governor and having an arm of the said tripping-lever connected with and worked by said groove of the cam, substantially as hereinbefore described, and for the purpose specified.

4. In a releasing or cut-off-valve gear, the combination, with a steam-arm having a drop-rod and a loosely-mounted latch-block, as *n*, carried by said arm, of a pivotally-mounted hook arranged to engage said latch-block, a working or hook lever, as A, carrying the tripping-lever and hook and oscillated by the engine, and a positive-acting or cam-grooved disk, as C, actuated by the governor and having the tripping-lever engaging said cam, whereby the movements of the lever A and cam, individually or conjointly, act to oscillate the tripping-lever, substantially as hereinbefore described, and for the purpose specified.

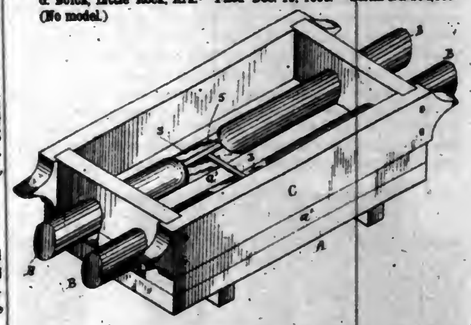
5. In a cut-off-valve gear, the combination, with the loosely-mounted governor-actuated double-acting cam-grooved disk hereinbefore described, of a suitably-mounted hook, as *f*, axially vibrated by means of said cam and arranged to engage the steam-arm, &c., of the valve-gear, substantially as set forth, and for the purpose stated.

6. In a cut-off-valve gear, the combination, with the loosely-mounted governor-actuated cam-grooved disk, as C, of the pivotally-mounted tripping-lever *t*, vibrated by said cam, a loosely-mounted hook-lever, A, carrying the tripping-lever, a fixed steam-arm, B, provided with a drop-rod and latch-block, as *n*, mounted to move up and down in the arm, and a hook, *f*, secured to and moving in unison with the said tripping-lever and provided with a lug, as *f'*, to engage the steam-arm to positively close the steam-valve, the whole combined, arranged, and operating substantially as shown and described.

7. In a cut-off-valve gear, the arrangement of the axis of the tripping-lever and hook below the line of pressure of the contact-surface of the hook-plates, substantially as shown, whereby the resistance of work required to trip the valve is nearly balanced, thereby also relieving the governor and rendering it more sensitive in working, substantially as hereinbefore described.

8. In a cut-off-valve gear, the combination of a governor-actuated cam-grooved disk, C, and a pivotally-mounted tripping-lever and hook positively vibrated in each direction by being connected to the cam-groove, substantially as shown and set forth.

402,558. MOLD FOR CASTING WINDOW-WEIGHTS. Luther G. Buick, Little Rock, Ark. Filed Dec. 19, 1888. Serial No. 294,069. (No model.)



Claim.—1. The combination of the follow-board A, having recesses *a*, flasks C D, adjustable guides 3, having the concave ends 4, patterns B, stops 1, having the concave inner ends and cone-shaped points, cone-shaped chills 2, gate-pattern 5, and gate-pin 6, all substantially as shown and described, and for the purposes set forth.

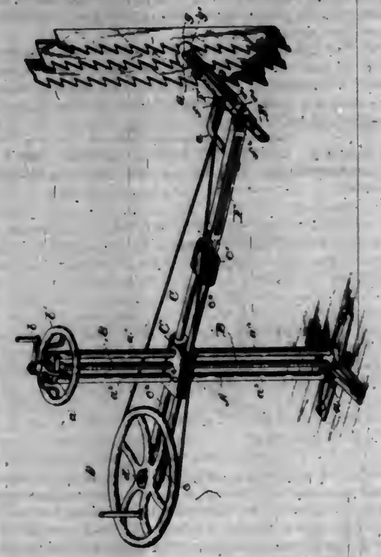
2. The combination of the flask, a groove follow-board, patterns, and the guides 3, having concave ends 4, as set forth.

3. The combination of the follow-board A, having recesses *a*, flask C D, adjustable guides 3, having the concave ends 4, patterns B, stops 1, having the cone-shaped inner ends and points, cone-shaped chills 2, and suitable gate-patterns and pin, substantially as shown and described.

402,559. ROOFING MATERIAL. Philip Carey, Cincinnati, Ohio. Filed Dec. 22, 1888. Serial No. 294,573. (No specimens.)

Claim.—A roofing or paving material consisting of the above-described compound of distilled petroleum, lamp-black, and asphaltum, or its equivalent, combined substantially in the proportions and for the purpose described.

402,560. SAW-SHARPENING MACHINE. Gustav Carlson, Uleaborg, Finland, assignor to Holst & Fleischer, Christiania, Norway. Filed July 18, 1888. Serial No. 280,296. (No model.) Patented in Finland Sept. 23, 1887, No. 297, and June 8, 1888, No. 310; in Sweden Sept. 28, 1887, No. 1,209; in Norway May 26, 1888, No. 960, and in England June 20, 1888, No. 9,096.



Claim.—1. In a saw-sharpening machine, the combination, with the frame C and its cross-head C', of the stand A and its screw-shaft B, substantially as and for the purposes specified.

2. In a saw-sharpening machine, the combination, with a vertically-adjustable frame, C, a tool-stock, and a revoluble tool mounted in one end of said stock, of a connecting-arm hinged to the tool-stock and frame C, and a tool-rest, *c*, secured to said connecting-arm and projecting under the tool-stock to support the same, substantially as and for the purpose specified.

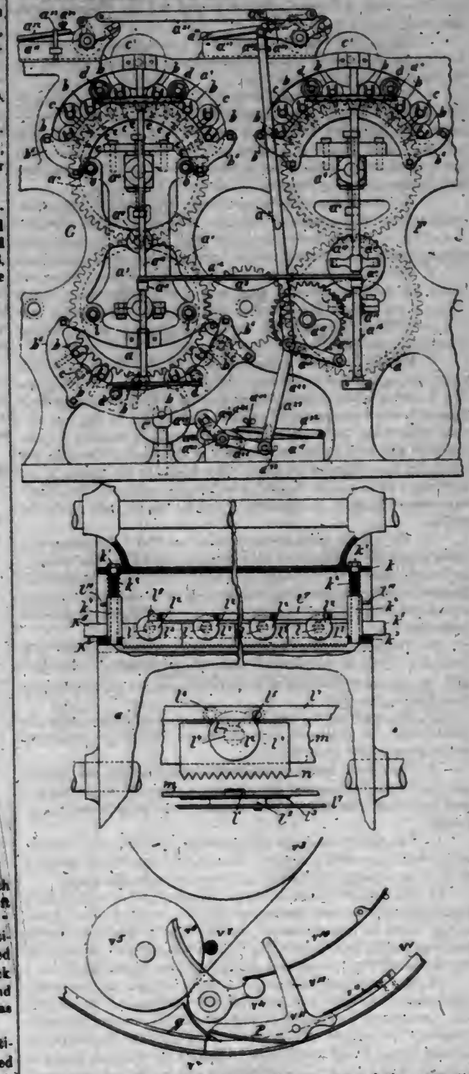
3. In a saw-sharpening machine, the combination, with a vertically-adjustable frame, C, a tool-stock, and a revoluble tool mounted in one end of said stock, of a connecting-arm hinged to the tool-stock and frame C, and a flexible or elastic tool-rest, *c*, secured to said connecting-arm and projecting under the tool-stock to support the same, substantially as and for the purpose specified.

4. The combination, with a stand, A, its screw-shaft B, the frame C, having cross-head C' and head *c'*, and the arm E, hinged to said head *c'*, of a tool-stock and a universal joint between said stock and arm, substantially as and for the purposes specified.

5. The combination, with the stand A, its screw-shaft B, the frame C, having cross-head C', and a driving-pulley mounted on said frame C, of a tool-stock, a revoluble tool mounted thereon, an intermediate arm hinged to said frame and tool-stock, and transmitting-pulleys connected with the driving-pulley and revoluble tool, substantially as and for the purposes specified.

6. The combination, with the stand A, its screw-shaft B, the frame C, having cross-head C' and heads *c c'*, the band-pulley, pulley D, mounted on head *c*, and the arm E, hinged to head *c'*, of the slotted tool-stock F, the emery-wheel G, the band-pulley *g'*, and the band and transmitting pulleys F' *f'*, said parts being arranged and co-operating substantially as described.

402,561. COMBINED PRINTING AND ADDRESSING MACHINERY. Stephen D. Carpenter, Carthage, Mo. Filed Apr. 26, 1886. Serial No. 272,142. (No model.)



Claim.—1. In a combined job and newspaper printing-press, the sets of printing-cylinders, (shown in Figs. 1 and 2,) as B D F, in combination with the alternate sets of reversible printing-cylinders C E G, connected with the intermediate gears, a^{s}, as and for the purposes herein described.

2. In a combined job and newspaper printing-press for plain or colored work on one or both sides of the web, a series of ink-fountains, as shown, placed above the printing-cylinders for each set and below each alternate set, provided with means, substantially as herein described, for quick and ready removal and substitution of other fountains containing different colors of ink, in combination with the sets of printing-cylinders, as and for the purposes herein described.

3. In a combined job and newspaper press, for use of different colors on one or both sides of the sheet, the ratchet-arm a^{35}, pivoted to the short connecting-rod a^{33}, which is hinged at a^{32}, in connection with the long connecting-rod a^{34}, that operates the ratchet-arms of the upper ink-fountains, giving reciprocal motion to the connecting-rod a^{31}, which operates the ratchet-arm of the ink-fountain over the reversible set of cylinders G, and also operates the transfer-rollers a^{39} for each of the three ink-fountains as and when the same may be

used, two at a time, all in combination, as and for the purposes herein described.

4. The removable roller-plates b^4, in combination with the outside frame and reversible cylinders, as and for the purposes herein described.

5. The inside reversible frames, a^7, in combination with the type and impression cylinders mounted thereon and the main frame, as and for the purposes herein described.

6. In a combined job and newspaper printing-press, the reversible inside frame, with its printing-cylinders and trunnions, in combination with the main frame, said frames being provided with bolts and corresponding screw-threaded and free holes made as to exact size and relative position to the center of motion both at top and bottom for interchanging purposes, as set forth.

7. In combination with the set of reversible type and impression cylinders, the ink-fountains for the same, one above and the other below, with the means for conveying ink from either to the type-cylinder, according to its position, as and for the purposes herein described.

8. The rock-shaft a^{16}, Fig. 5, provided with cross-arms above and below the reversible cylinder for actuating the reciprocating rollers either at top or bottom, as occasion may require, in combination with the reversible cylinders and the reciprocating rollers, as and for the purposes herein described.

9. The set of cut-off cylinders a and a^4, Fig. 5, provided with cutter-bars graduated in distance, as illustrated in Fig. 2 and diagram Fig. 3, having lancet-pointed knives divided in various cross-sections, graded to the minimum width of sheet intended to be slit, and also with other described means to secure cross-cuts in variable lengths, provided also with means, substantially as described, for locking and unlocking the cutter-blades, one or more blades in any section to act upon the web, as may be desired, or one or all save one of the cutting-bars suspended, all in combination, as and for the purposes herein described.

10. The outside shell of the cylinder a^4, Fig. 7, consisting of a series of cylindrical segments, k^3, projecting beyond the line of cross-cut knives, having slots or openings therein sufficient in number and length to admit the knives, in combination with a series of supporting-arms between each series of knives, as and for the purpose herein described.

11. The cylinder provided with projecting shell and annular projections k, Fig. 8, in combination with the guide-rods k', cutter-bar, with its removable section-knives, and roller-bar, as and for the purposes herein described.

12. The cutter of the cut-off cylinder, in combination with the spiral springs, the guide-rods, stop-off fork, and stop-off pin, as and for the purposes herein described.

13. The cut-off knives provided with spiral springs, the stop-off pins, the stop-off forks, and the supporting-arms, all in combination with the cut-off cylinders a and a^4, as and for the purposes herein described.

14. The guide-rods k', the spiral springs k^9, tilting rod j^7, cutter-bar, with its removable section-knives, and roller-bar k^3, and riser-cam k^7, all in combination, as and for the purposes herein described.

15. The series of cut-off knives provided with round holes in their longitudinal centers, with openings to the backs of the same, as shown in Figs. 9 and 10, in combination with the large headed bolts having cut-away shanks, as shown in Fig. 18, the cutter-bar m, and the slitting-shears a^{20}, Fig. 1, as and for the purposes herein described.

16. In a combined job and newspaper printing-press using cylindrical plates, a cylinder provided with disk and flange at its working end, containing a scroll-spool, v^3, Figs. 14 and 16, a perforated gum-cylinder, v^2, in contact with roller v^4, acting upon the scroll-web, the serrated knives P, and with means to operate the whole, as shown in views 14, 15, and 16, all in combination, as and for the purposes herein described.

17. In a combined job, newspaper, and addressing printing-machine, the perforated gum-cylinder v^2, provided with cloth covering and with means of communicating with the reservoir v^{13}, and also provided with means (as the valve v^{15}) to regulate the supply of liquid gumming material, in combination with the gum-fountain v^{13}, the contact-roller v^4, arm v^5, and the trip-pin v^6, as and for the purposes herein described.

18. The revolving shear-cutters, Figs. 11, 12, 13, (a^{20} in Fig. 1), provided with semicircular shear-blades, Fig 13, removable at pleasure, and also provided with flanges or cheeks each side of the cutting-blade for friction-tension with the web on the line of cut, all in combination and in combination with the cut-off knives in the cut-off cylinder, as and for the purposes herein described.

19. The trip-pin v^6, Figs. 14 and 15, in combination with the frame f, the trip shear-arm v^{12} to cutting-blade p, and arm v^5, and roller v^4, operated thereby, as and for the purposes herein described.

20. The form and impression cylinders and the ink-fountains provided with adjustable means for printing one or both sides of the web in one or more colors at one operation, and jobs of various widths and lengths at one operation, substantially as herein described, in combination with the revolving shears and the cut-off knives, as and for the purposes herein described.

21. A series of stationary printing-cylinders in a web-feeding printing-press, in combination with a series of alternate sets of reversible form and impression cylinders, and in combination with changeable ink-fountains for change and proper distribution of colors, so constructed and fitted to the frame that any one of any color may be displaced and another of another color substituted therefor, as and for the purposes herein described.

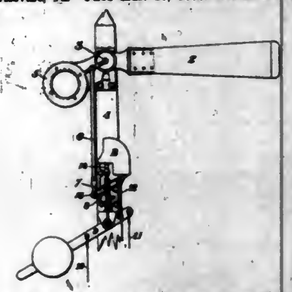
22. The type-cylinders provided with the longitudinal markings and numberings, in combination with the cut-off knives, as and for the purposes herein described.

23. The type-cylinders provided with the circumferential markings and numberings, in combination with the slitting-shears and the cut-off cutter-bars and series of cut-off knives, as and for the purposes herein described.

24. The cut-off cylinder a^4, Fig. 1, provided with a slotted shell bolted to a series of arms, k^3, corresponding in number to the series of cut-off knives projecting beyond the line of web and knives, in combination with the guide-rods and cross-cutting knives, as and for the purposes herein described.

25. The cylinder a^4 in series A, provided with gum-fountain cylinder v^2, gum-reservoir v^{13}, Fig. 14, and connecting mechanism, substantially as described, for addressing subscribers' names on the margin of newspapers, in combination with cylinder a in series A, as and for the purposes herein described.

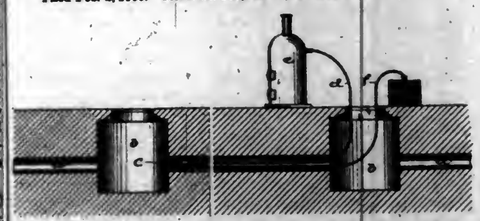
402,562. ELECTRIC SIGNALING APPARATUS. JOHN P. COLEMAN, Swissvale, Pa. Filed Mar. 10, 1888. Serial No. 266,806. (No model.)



Claim.—1. In an electric signaling apparatus, the combination, with the electro-magnet, its armature, and a rod, 18, which connects the armature with the mechanism of the apparatus, said rod being arranged to have a loose or yielding motion and provided with a spring for the purpose of seating the armature with safety, substantially as and for the purposes described.

2. In an electric signaling apparatus, the combination, with the signal, its operating-rod 6, and a lever whereby the rod is moved vertically, of a spring placed to receive the impact of dropping of the rod, substantially as and for the purposes described.

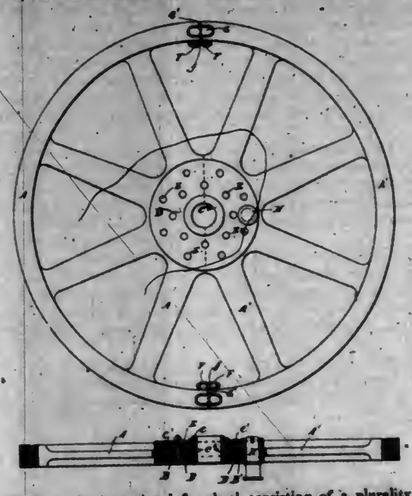
402,563. METHOD OF TREATING UNDERGROUND ELECTRICAL CONDUITS WITH CHEMICAL SUBSTANCES. ARTHUR E. COLLATZ, New York, N. Y., assignor to the Western Electric Company, Chicago, Ill. Filed Feb. 2, 1889. Serial No. 298,446. (No model.)



Claim.—1. The process of treating the electric conduits with a chemical substance, which consists in throwing the same against the interior of the conduit in the form of a spray, substantially as described.

2. The method of treating a conduit which consists in forcing the liquid through an atomizer and at the same time drawing the atomizer through the conduit and throwing the liquid substance against the interior walls of the conduit, substantially as and for the purpose specified.

402,564. SECTIONAL FLY-WHEEL. ROBERT B. COLLINS, Columbus, Ohio. Filed June 21, 1888. Serial No. 277,769. (No model.)



Claim.—1. A sectional fly-wheel consisting of a plurality of cast sections, A A', each comprising a portion of the rim and a corresponding portion of a sectional central web, B B', the abutting edges of said sections being carefully faced off to fit against each other, and the sides of the sectional central web being carefully and truly faced, a slotted hub, C, made of a single flanging or casting, and having an annular flange, C', faced off to fit truly on one side of the sectional central web, B B', and having a sleeve, C^3, turned to fit the central hole in web B B', and an annular plate, D, made of a single piece of metal, turned and faced to fit on the sleeve C^3 and against the sectional central web, B B', and a number of bolts, E E, arranged to fit in carefully-reamed perforations symmetrically arranged about the hub C and passing through the flange C', the sectional central web, B B', and the plate D.

2. A sectional fly-wheel consisting of a plurality of cast sections, A A', having a sectional central web, B B', the abutting edges of said sections being carefully faced off to fit against each other, and the sides of the sectional central web being carefully and truly faced, a hub, C, having an annular flange, C', faced off to fit truly on one side of the sectional central web, B B', and having a sleeve, C^3, turned to fit the central hole in B B', an annular plate, D, turned and faced to fit on the sleeve C^3 and against the sectional central web, B B', a number of bolts, E E, arranged to fit in carefully-reamed perforations symmetrically arranged about the hub C and passing through the flange C', the sectional central web, B B', and the plate D, and a crank-pin, H, inserted in a reamed perforation passing through the flange C, section B, and plate D, all substantially as described.

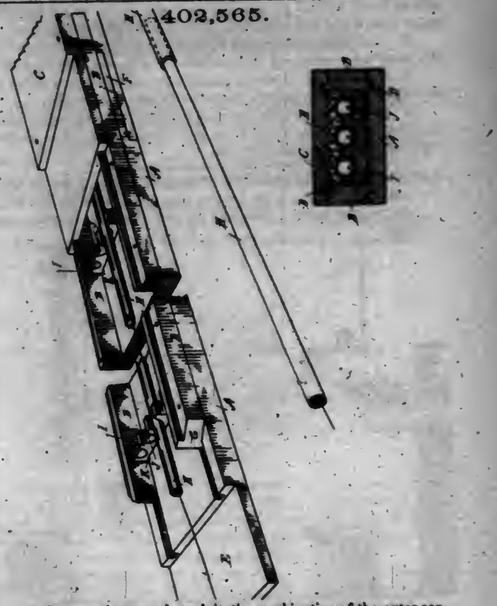
402,565. CONDUIT FOR ELECTRIC WIRES. GEORGE W. COOK, Detroit, Mich., assignor of one-third to Charles C. Canny, same place. Filed Sept. 5, 1888. Serial No. 284,592. (No model.)

Claim.—1. In an underground conduit, the combination of the following elements: an outer casing or box, insulating-bridges placed therein at intervals, and an inner conduit or conduits formed of tapering paper tubes supported upon said cross-bridges, substantially as described.

2. In an underground conduit, the combination of the following elements: an outer casing or box of substantially rectangular shape, insulating cross-bridges placed therein at intervals, an inner conduit or conduits consisting of paraffined taper-jointed paper tubes supported upon said cross-bridges, and an insulating water-proof compound filled into the outer conduit, substantially as described.

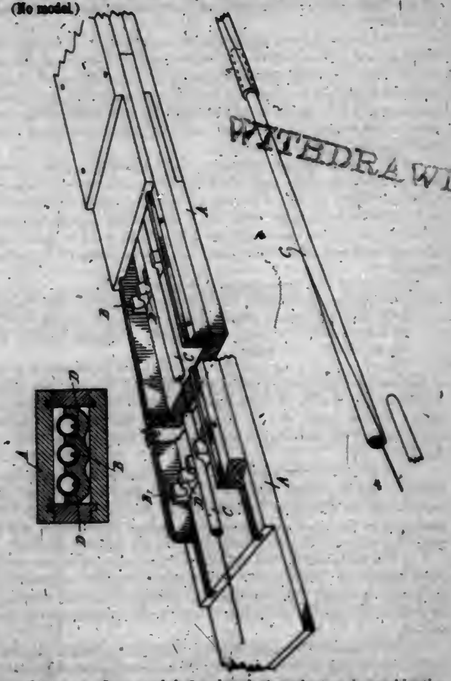
3. The outer conduit-sections, each consisting of bottom A and sides C, halved upon their ends and provided with longitudinal mortises upon their inner faces, and of the sides D, provided with beveled ends and with longitudinal tenons upon their inner edges engaging with the corresponding mortises in the bottom and top, said bottom, top, and sides being connected together to break the joint in connecting the sections, substantially as described.

4. The combination, with the outer conduit or box, substantially of rectangular shape, of the insulating cross-bridges provided with legs or similarly-reduced contact-faces upon their lower faces, and with circular bearings upon their upper faces, and of the paper tubes supported in said bearings, substantially as described.



5. In an underground conduit, the combination of the outer conduit consisting of bottom A, sides B, and top C, connected together by a mortise-and-tenon joint, having the tenon upon the inner corners of the sides, the insulating cross-bridges I, provided with legs K and bearings J, the inner conduit of taper-jointed paper tubes supported upon the cross-bridges, and the water-proof insulating compound filled into the outer conduit, substantially as described.

402,566. UNDERGROUND CONDUIT FOR ELECTRICAL CONDUCTORS. GEORGE W. COOK, Detroit, Mich., assignor of one-third to Charles C. Canny, same place. Filed Dec. 8, 1888. Serial No. 292,973. (No model.)



Claim.—1. In a conduit for electrical conductors, in combination

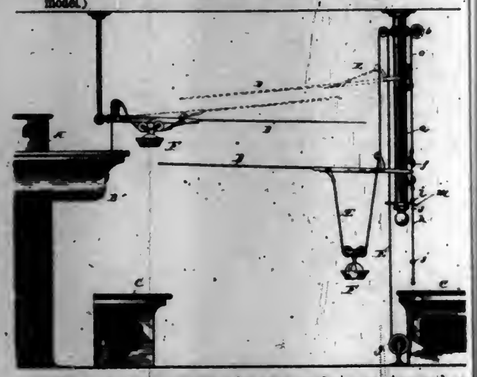
with an outer conduit, an inner conduit consisting of a series of like paper tubes fitted one within the other, substantially as described.

2. A conduit for electrical conductors, consisting of a series of like paper tubes saturated with paraffine and taper-jointed together.

3. A conduit for electrical conductors, consisting of a series of like tapering asbestus paper tubes, substantially as described.

4. An inner conduit for electrical conductors, consisting of tubes tapering from one end to the other and adapted to be taper-jointed together, substantially as described.

402,567. STORE-SERVICE APPARATUS. JAMES T. COWLEY, New York, N. Y., assignor to the Lamson Consolidated Store Service Company, of New Jersey. Filed Aug. 25, 1885. Serial No. 175,306. (No model.)



Claim.—1. In an apparatus for store-service, a receiver and restorer, one end of said restorer having a spring take-up mechanism for raising the car to the track, in combination with a spring elevating device for raising the sliding end of the track, as set forth.

2. The combination, with the track of a store-service apparatus, of a yoke or bracket provided with anti-friction rollers, a pivoted arm, *m*, and a graduated rope or cord for raising and lowering said yoke and contacting with said arm, as set forth.

3. The combination, with a store-service apparatus provided with a receiver and restorer and a cord for raising and lowering the same, of the forked arm *m* and a pulley with the spring-roller mechanism, as set forth.

4. In a store-service apparatus, the combination of the car, the track, a cord upon which the car is received and lowered at the end of the track, a spring mechanism which takes up the slack of said cord when the car is placed on the track, another cord and spring mechanism which automatically elevates the end of the track, and buttons for holding the last said cord and spring mechanism from moving, substantially as described.

5. In a store-service apparatus, the combination, with the car and the track, of a rope upon which the car is received and lowered, a cord by which one end of the track is raised, a button on said cord, and a pivoted forked arm, with which said button engages, adapted to be tripped by the rope on which the car is received to permit the last said cord and spring mechanism to operate, substantially as described.

402,568. STORE-SERVICE APPARATUS. JAMES T. COWLEY, New York, N. Y., assignor, by mesne assignments, to the Lamson Consolidated Store Service Company, of New Jersey. Filed Oct. 30, 1886. Serial No. 217,613. (No model.)

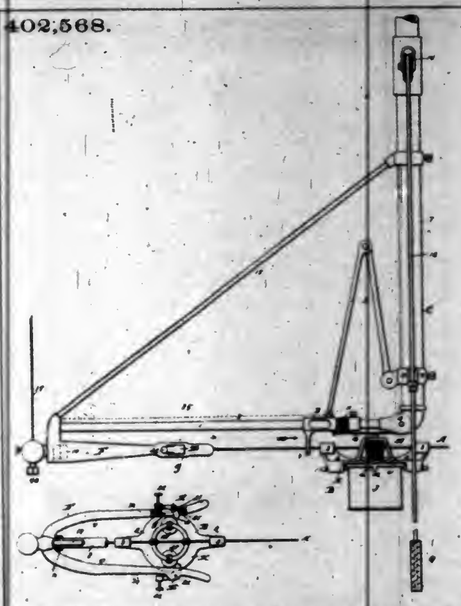
Claim.—1. In a cash-carrier apparatus, the combination, with a pendant having a guide parallel with the way, of a carriage push-block adapted to slide on said guide, a spring-operated retractor connected to said block, and an operating-cord and a spring applied thereto for giving the forward impulse to said block, substantially as described.

2. In a cash-carrier apparatus, the combination, with a pendant having a guide parallel with the way and a push-block thereon, of jointed rods, an automatic retractor for the rods, an operating-cord connected to the block and supported by pulleys, as described, and a propelling-spring in the line of said cord, for the purpose specified.

3. The combination, in a cash-carrier apparatus, of a car push-block applied to reciprocate on a horizontal guide and operated by the means described with the adjustable cushioned stop and the elastic cushion 10, applied at the end of said guide, substantially as described.

4. In a cash-carrier apparatus, the combination, with a supporting-bracket having a hollow pendant, of a reciprocating car push-block, an actuating or pull cord therefor, and a car-propelling spring applied

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to this cord and arranged within the hollow pendant, to operate substantially as described.

5. The combination, with the way of a store-service apparatus, of a push-block supported by a guide to move parallel with the way, said guide extending parallel with and along the terminal part of the way traversed by the car, and connections between the block and the station of the attendant, whereby the block may be moved by the latter to propel the carrier upon the way, substantially as set forth.

6. The combination of the way, a push-block guided over the end of the way traversed by the car and moving parallel thereto and having a projection extending in close proximity to the way, and a carrier provided with a bearing for contacting with said projection, whereby the contact between the push-block and the carrier is in immediate proximity to the way, substantially as and for the purpose set forth.

7. The combination of the way, a car, a guide projecting over the end of the way traversed by the car, a push-block upon the guide, a flexible connection extending to the operator's station, whereby the push-block may be moved in one direction, and a spring for moving the push-block in the opposite direction, substantially as set forth.

8. The combination of the way, a guide, a push-block, and a connection extending from the latter to the station, a jointed connecting-rod, I, connecting the push-block and its support, and a spring acting to extend the said rod and retract the push-block, substantially as set forth.

9. The combination of the way, a sliding push-block, a guide therefor extending parallel with and along a portion of the way traversed by the carrier, a flexible connection between the push-block and the operator's station, and a spring in the line of the said connection and constituting a part thereof, substantially as set forth.

10. The combination of the way, a guide supported by a tubular rod, a push-block upon the guide, and a flexible connection extending from the push-block to the operator's station and through the tubular rod, substantially as set forth.

11. The combination, with the guide and its support, of the push-block, a connection extending from the latter to the operator's station, and a spring in the line of said connection inclosed by a concealing-casing, substantially as set forth.

12. The combination of the way and a bracket or hanger consisting of a vertical rod terminating above the way and having a horizontal guide, a push-block sliding upon the guide, and a flexible connection extending from the push-block around guide-pulleys upon the hanger to the operator's station, substantially as set forth.

13. The combination of the way, a horizontal guide carrying a push-block, a vertical tubular rod supporting the guide and provided with guide-pulleys, and a flexible connection between the push-block and operator's station, extending from the push-block around said pulleys and through the tubular rod, substantially as set forth.

14. The combination, with the bracket provided with a horizontal guide and sliding push-block, of elastic buffers, one of which is adjustably arranged to limit the movements of the push-block to regulate the force acting on the car, substantially as set forth.

15. The combination, with the way and a device for propelling the car upon the way, of yielding catches provided with shoulders or bearings, and contact-pieces, one supported adjacent to the way, but inside of the fixed end thereof, to permit the car to pass beyond the same toward said end, and the other upon the car and arranged to permit the unobstructed inward movement of the car and to offer a frictional resistance to the outward movement thereof, substantially as set forth.

16. The combination, with a way and a propelling device, of a car provided with contact-pieces and yielding catches supported adjacent to and on opposite sides of the way in position to be struck by said contact-pieces to yield to the inward movement of the car, and with shoulders affording a frictional resistance to the outward movement of the car, substantially as set forth.

17. The combination, with the way and a car provided with yielding contact-pieces, of pivoted catches upon opposite sides of the way hung to swing freely upon the inward movement of the car and provided with springs for throwing them outward to offer a frictional obstruction to the outward movement of the car, substantially as set forth.

18. The combination of the way, a car, and yielding contact-pieces and pivoted catches on opposite sides of the way, actuating-springs, bearings, and set-screws 22, substantially as and for the purpose set forth.

19. The combination of the yielding shouldered catches E E and a car provided with two contact-pieces consisting of vertical yielding rollers, substantially as set forth.

20. The combination of the way, a car, catches, and a yoke provided with arms having converging faces or sides *v v*, substantially as and for the purpose described.

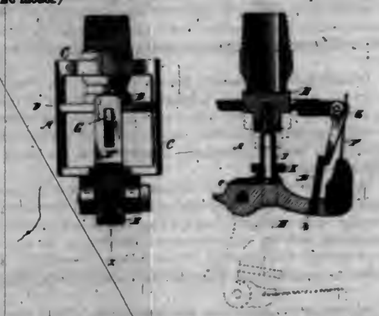
21. The combination with the way, a guide, a propelling device, and a car, of a yoke supporting catches for retaining the car and supported by the guide, substantially as set forth.

22. The combination of a car having bevel-ended catch-bolts upon the frame and a detachable receptacle provided with a continuous end flange, 41, having a beveled upper edge, and lugs forming part of and below said flange, and having inclined faces at the sides thereof, substantially as and for the purpose set forth.

23. A store-service car provided with vertical elastic rollers 29 on opposite sides of the center of the car, substantially as and for the purpose set forth.

24. The combination of a way and a hanger consisting of a vertical rod and a horizontal rod having its lower end above the way, constituting a guide for the push-bar, and extending from the vertical rod over the way and toward the station, substantially as set forth.

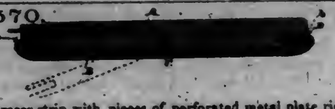
402,569. AUTOMATIC SPRINKLER. DYER H. DAVIS and REUBEN WESTERVELT, Elmira, N. Y. Filed Sept. 4, 1888. Serial No. 284,569. (No model.)



Claim.—1. The combination, with a sprinkler-valve, of a drop holding the valve to its seat, a detent for the drop, and a piece of hard rubber serving as a stop for the detent, whereby, when the hard rubber softens, the drop and valve will be released, as and for the purpose set forth.

2. In a sprinkler, a connecting-pipe and a frame supported thereby, the said frame in its turn supporting an apron and a pivot-drop, in combination with a detent for the drop supported by the apron and a piece of hard rubber held frictionally within the drop, serving as a stop for the detent, whereby, when the hard rubber softens, the drop and valve will be released, as and for the purpose set forth.

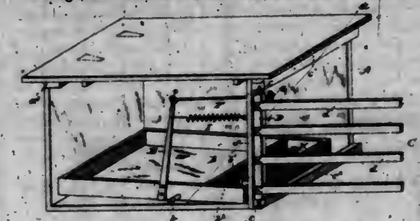
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justable eraser-strip with pieces of perforated metal plate rigidly attached to the ends, all substantially as set forth.

2. In a blackboard-eraser, the combination of a hand block or frame with an adjustable eraser-strip having attached to each end thereof strips of metal plate perforated in the manner shown, as and for the purpose specified.

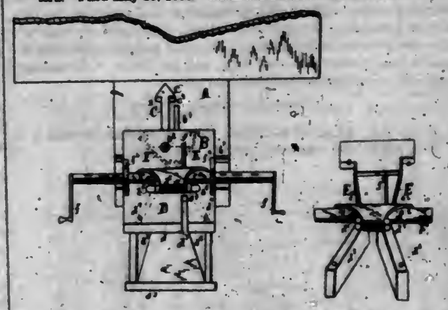
402,571. NEST-BOX FOR FOWLS. ALEXANDER K. DRESSER, Millsborough, Pa. Filed Jan. 28, 1889. Serial No. 297,906. (No model.)



Claim.—1. The combination, with the box A, of the tray B, pivoted in the sides of said box, the gate C, hinged to the latter, as described, the upright post E, attached to one side of the tray B, and the rod F, attached at one end to said post and at its other end to the gate, in the manner and for the purpose specified.

2. The combination, with the box A, of the tray B, pivoted in the sides of said box, the gate C, hinged to the latter, as described, the upright post E, attached to one side of the tray B, the rod F, attached at one end to said post and at the other end to the gate, and the spring I, attached at one end to the post and at the other end to the box A, in the manner and for the purpose specified.

402,572. CAR-COUPLING. ALBERT G. DENNARD, Cypress Ridge, Ark. Filed May 25, 1888. Serial No. 275,066. (No model.)



Claim.—In a car-coupler, the combination, with the draw-head B, having a transverse slot in its upper face, of the cam d^3, working in said slot, the arm f^7, secured rigidly to the cam-supporting bar and working in a longitudinal opening in the draw-head, the jaws d^2, located in the draw-head, and springs F^2, for forcing the jaws in, substantially as described.

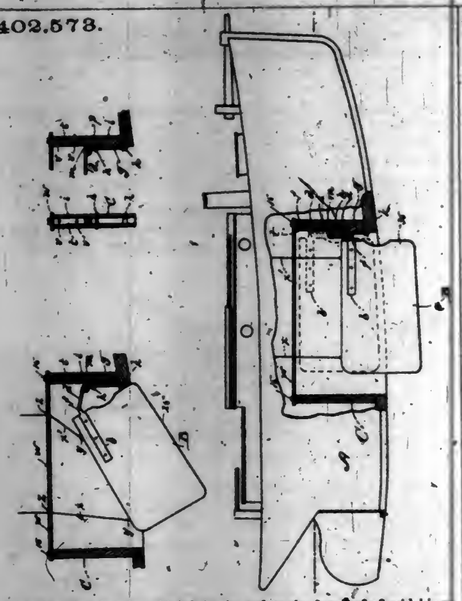
402,573. CENTER-BOARD. CHARLES A. DURFEE, Boston, Mass., and RICHARD M. SMITH, Providence, R. I. Filed Jan. 11, 1889. Serial No. 296,962. (No model.)

Claim.—1. The combination of a center-board box, a center-board adapted to slide vertically therein, a hinge movable vertically in said box, a support for one leaf of said hinge, the other leaf thereof being pivotally connected to one of the upper corners of said center-board, and two suspension-lines connected to said center-board near opposite ends thereof.

2. In a boat, the combination of a center-board box, a hinge having one leaf loosely disposed between a guard-pin and one of the box-stanchions, a lip on the knuckle of said hinge resting on a shoulder in said stanchion, a stop-plate engaging said lip, and a center-board pivoted by one end to the free leaf of said hinge, substantially as described.

3. In a boat, the combination of a center-board box provided with a detachable cap, a board fitted to slide vertically in said box, a hinge detachably secured by one leaf to a box-stanchion, straps on said

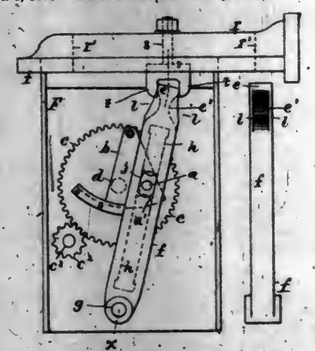
402,573.



board having lugs by which it is pivoted to the free leaf of said hinge, a lip on the hinge resting on a shoulder in said stanchion, a detachable stop-plate on the stanchion engaging said lip, and ropes secured to said board and working in openings in said cap, substantially as described.

4. In a boat, the combination of the box C, the board B, fitted to slide therein, a hinge having the leaf *g*, resting on a hook, *k*, and disposed between a pin, *h*, and a stanchion, *i*, of said box, the free leaf *d* of said hinge being pivoted to said board, the lip *m* on the hinge-knuckle and resting on a shoulder, *p*, of said stanchion, the detachable plate *t*, engaging said hinge, and the lines *x x'* for manipulating said board, substantially as described.

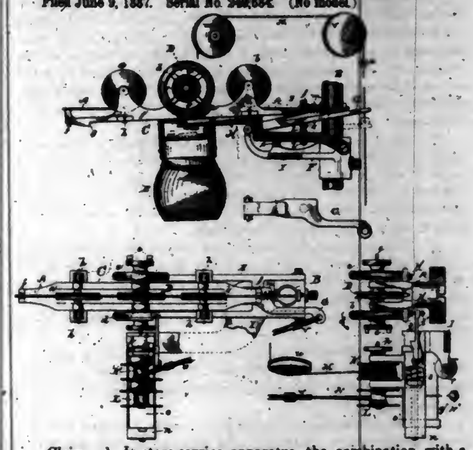
402,574. SHAPING-MACHINE. ULRICH EBERHARDT, Newark, N. J. Filed Dec. 8, 1888. Serial No. 292,901. (No model.)



Claim.—1. In a crank-planer, the combination, with the ram *r*, the crank-pin *a*, and the crank for driving the pin, of the crank-lever *f*, formed with the slot *h* in one side adjacent to the crank, the crank-pin box fitted movably thereto, the web *i*, connecting the bars upon the opposite sides of the slot, and the aperture *j* through such web, the whole arranged and operated as and for the purpose set forth.

2. In a crank-planer, the combination, with the ram *r*, the crank-pin *a*, and the crank for driving the pin, of the crank-lever *f*, formed with the slot *h* in one side adjacent to the crank and having the crank-pin box fitted movably thereto, the web *i*, connecting the bars upon the opposite sides of the slot, the rounded head *e*, connected with the lever by the neck *e'*, the flanges *l*, projected at opposite sides of the neck, and the lugs *t*, connected with the ram and fitted to the opposite sides of the head, as and for the purpose set forth.

402,575. STORE-SERVICE APPARATUS. HENRY RICHRATH, Mount Vernon, N. Y., assignor to William S. Lamson, Lowell, Mass. Filed June 9, 1887. Serial No. 240,654. (No model.)



Claim.—1. In store-service apparatus, the combination, with a way, of a receptacle-carrier traveling upon the way, and a weighted wheel on the carrier adapted to be spun and having sufficient weight to propel the carrier from one end of the way to the other by its momentum, substantially as set forth.

2. In store-service apparatus, the combination, with a way, of a receptacle-carrier traveling upon the way, a weighted wheel on the carrier adapted to be spun and having sufficient weight to propel the carrier from one end of the way to the other by its momentum, and a catch for holding the carrier at the end of its movement, substantially as set forth.

3. In store-service apparatus, the combination, with a way, of a receptacle-carrier traveling upon the way, a weighted wheel on the carrier adapted to be spun and to propel the carrier along the way by its momentum, and a rotating spinning device for spinning said wheel at the end of the way, substantially as set forth.

4. In store-service apparatus, the combination, with a way, of a receptacle-carrier traveling upon the way, a spinning traction-wheel on the carrier for propelling it along the way, and a platform for raising the traction-wheel out of contact with the way, substantially as set forth.

5. In store-service apparatus, the combination, with a way, of a receptacle-carrier traveling upon the way, a spinning traction-wheel on the carrier for propelling it along the way, a platform for raising the traction-wheel from the way, and a spinning device for spinning the said traction-wheel when raised by the platform, substantially as set forth.

6. In store-service apparatus, the combination, with a way, of a carrier traveling upon the way, a spinning traction-wheel on the carrier for propelling it along the way, a spinning device and operating-cord for spinning the traction-wheel, and a catch for holding the carrier, said carrier being automatically released from the catch, substantially as set forth.

7. In store-service apparatus, the combination, with a way, of a receptacle-carrier traveling upon the way, a spinning traction-wheel on the carrier for propelling it along the way, a spinning device brought into connection with the traction-wheel at the end of the way, and an operating-cord, said spinning device being automatically withdrawn from its connection with the traction-wheel, substantially as set forth.

8. In store-service apparatus, the combination, with a way, of a receptacle-carrier traveling upon the way, a spinning traction-wheel on the carrier for propelling it along the way, a platform for raising the traction-wheel from the way, and a spinning device, the spinning device being automatically withdrawn by the depression of the platform before the traction-wheel touches the way, substantially as set forth.

9. In store-service apparatus, the combination, with a way, of a receptacle-carrier traveling upon the way, a spinning traction-wheel on the carrier for propelling it along the way, a platform raising the traction-wheel from the way, a catch-bar for holding the carrier on the platform, an operating-cord, and a button thereon for simultaneously releasing the carrier from the catch and lowering the traction-wheel to the way, substantially as set forth.

10. In store-service apparatus, the combination, with a way, of a receptacle-carrier traveling upon the way, a spinning traction-wheel on the carrier for propelling it along the way, a platform and catch for raising the traction-wheel from the way and locking the carrier, a spinning device brought into connection with the traction-wheel, the operating-cord for working the spinning device, and a button thereon engaging the catch, and thereby releasing the carrier from the catch, depressing the platform, and withdrawing the spinning device, substantially as set forth.

11. In store-service apparatus, the combination, with a way, of a receptacle-carrier traveling upon the way, a spinning traction-wheel on the carrier for propelling it along the way, a spinning device, an operating-cord, and a weight for winding up the operating-cord, substantially as set forth.

12. In store-service apparatus, the combination, with a way, of a carrier traveling upon the way, a spinning traction-wheel on the carrier for propelling it along the way, a spinning device mounted on a spring-retracted slide, and a latch for locking the slide forward, said latch being automatically released, substantially as set forth.

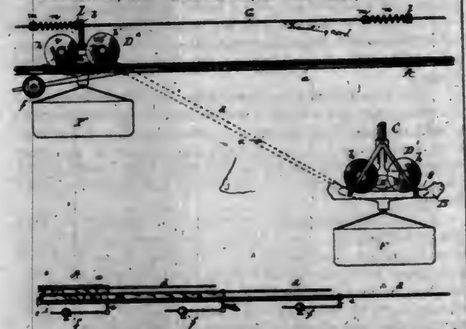
13. In store-service apparatus, the combination, with a way, of a receptacle-carrier traveling upon the way, a spinning traction-wheel on the carrier for propelling it along the way, a vertically-movable platform upon which the carrier runs to raise the traction-wheel from the way, and the side rollers on the carrier for riding on such platform, substantially as set forth.

14. In store-service apparatus, the combination, with a way, of a receptacle-carrier traveling upon the way, a spinning traction-wheel on the carrier for propelling it along the way, the pivoted inclined platform, the catch-bar, a spring for throwing the platform up, a spring for raising the catch-bar from the platform, and a button on the operating-cord engaging the catch-bar, so that the catch-bar will be depressed, and will in turn depress the platform, substantially as set forth.

15. In store-service apparatus, the combination, with a way, of a receptacle-carrier traveling upon the way, a spinning traction-wheel on the carrier for propelling it along the way, the inclined platform and catch, and the two end wheels on the carrier for permitting the traction-wheel to be raised from the way while one end wheel rests thereon, substantially as set forth.

16. In store-service apparatus, the combination, with a way, of a receptacle-carrier traveling upon the way, a spinning traction-wheel on the carrier for propelling it along the way, the inclined pivoted platform, the catch-bar, the springs for supporting the platform and catch-bar, the spinning-spindle mounted on a spring-retracted slide, the latch for holding the slide forward, released by the downward movement of the platform, and the operating-cord wound on a drum on the spinning-spindle and connected with the tail of the catch-bar, substantially as set forth.

402,576. STORE-SERVICE APPARATUS. HENRY RICHRATH, Mount Vernon, N. Y., assignor to William S. Lamson, Lowell, Mass. Filed June 20, 1887. Serial No. 242,022. (No model.)



Claim.—1. In store-service apparatus, two or more tracks extending parallel throughout their length and supported close together as a single structure, such tracks being in succession from one side of the structure to the other, each of greater length than the immediately preceding track, in combination with wheeled carriers riding on the separate tracks, and having frames or bails depending on that side of the track structure on which the tracks terminate, substantially as set forth.

2. In store-service apparatus, two or more tracks extending parallel throughout their length and supported close together as a single structure, such tracks being in succession from one side of the structure to the other, each of greater length than the immediately preceding track, in combination with wheeled carriers riding on the separate tracks, and having frames or bails depending on that side of the track structure on which the tracks terminate, the depending frames or bails having for the carriers of the longer tracks a greater lateral extension both above and below the track structure than for the carriers of the shorter tracks, substantially as set forth.

3. In store-service apparatus, two or more tracks extending parallel throughout their length and supported close together as a single structure, such tracks being in succession from one side of the structure to the other, each of greater length than the immediately preceding track, in combination with wheeled carriers riding on the separate tracks, and having frames or bails depending on that side of the track structure on which the tracks terminate, and a pivoted end section at the end of each track for transferring the carrier riding on that track to a station at that point, substantially as set forth.

4. In store-service apparatus, two or more tracks extending parallel throughout their length and supported close together as a single structure, such tracks being in succession from one side of the structure to the other, each of greater length than the immediately preceding track, in combination with wheeled carriers riding on the separate tracks, and having frames or bails depending on that side of the track structure on which the tracks terminate, and a counterbalanced pivoted end section at the end of each track which is depressed by the carrier and transfers the carrier riding on that track to a station at that point, and then returns to position to permit the passage of carriers for more distant stations, substantially as set forth.

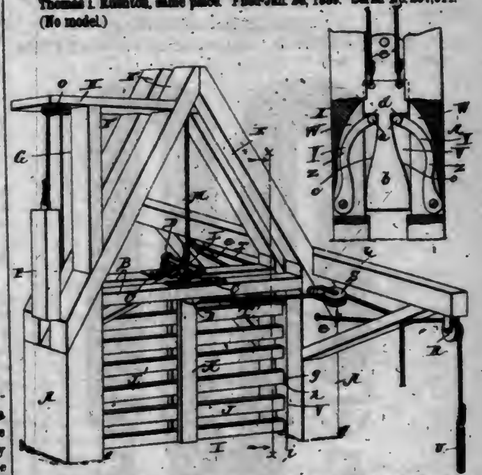
402,577. CAPODASTRO. LARSEN FILSTRUP, Chicago, Ill. Filed Aug. 20, 1888. Serial No. 284,099. (No model.)



Claim.—1. Upon a capodastro, the combination of cushion D, constructed with clasping-lips *d d*, with spring C, as specified and shown.

2. On a capodastro constructed substantially as above described, an elastic spring hinged to the under side, substantially in form as indicated by C, forming of itself a latch and fitting into a corresponding slot.

402,578. GATE. GIDEON PLANK, Centre Valley, Ind., assignor to Thomas I. Rushton, same place. Filed Jan. 26, 1889. Serial No. 297,611. (No model.)



Claim.—1. The combination, with the gate-post and the gate having notches in the opposite sides of its end bar, of the inwardly-swinging detents pivoted within the posts and having locking-pins at their upper ends engaging the notches in the end bar of the gate, as set forth.

2. The combination, with the gate-post, of the detents pivoted therein and having locking-pins at their inner ends, and the gate having the lower end of its end bar tapered, and having notches in the opposite sides of the end bar, as and for the purposes set forth.

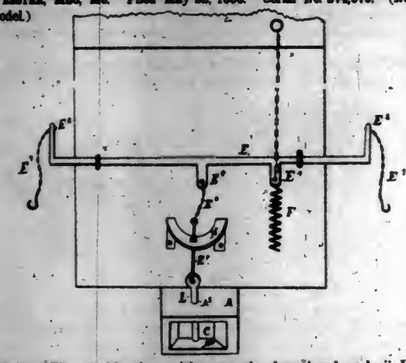
3. The combination, with the post and the gate, of the detent piv-

oted in the post and adapted to engage the gate, the disengaging-plate having inclined surfaces bearing against the detent, and mechanism for raising said disengaging-plate, as set forth.

4. The combination, with the post, of the gate moving vertically between the posts and having notches in the opposite sides of its end bar, a lifting-weight connected to the gate to raise the same, mechanism for lowering the gate, and the latches arranged within the posts and engaging the notches in the end bar of the gate to hold it lowered, as set forth.

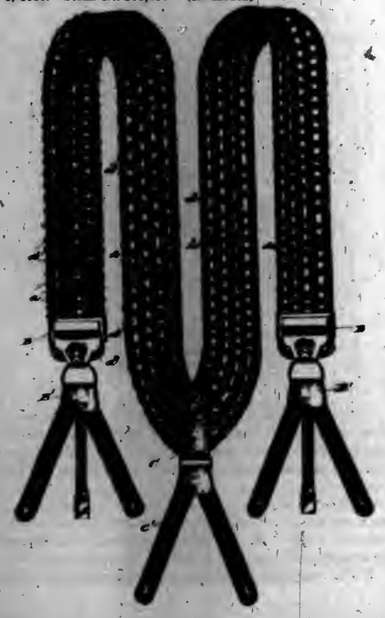
5. The combination, with the gate-post, the latch arranged within one of the posts and adapted to hold the gate lowered, the converging standards E, secured thereon, the frame F, erected on said standards, the pulleys in said frame, the gate moving between the posts, the T-casting at the upper end of the gate, the cable secured to said casting and extending over the pulleys in the frame F, and provided with a weight, the bar Q, the pulleys K at the ends of the same, the pulleys S at the upper ends of the gate-posts, and the cable passing over said pulleys and secured to the ends of the T-casting, as specified.

402,579. CAR-COUPLING. HORACE P. FOSTER and ERNEST L. WEBSTER, Milo, Me. Filed May 22, 1888. Serial No. 274,679. (No model.)



Claim.—The combination, with a car, the draw-head, and pin L, of the cross-rod E, extending across the end of the car and having outwardly-extending arms, as E^4 and E^5, a spring, as F, attached to the under side of one of said arms, and a chain, E^3, having a rod, E^7, on its end attached to the other arm, and the guide H, secured to the car, said rod E^7 being connected with the pin L, substantially as described.

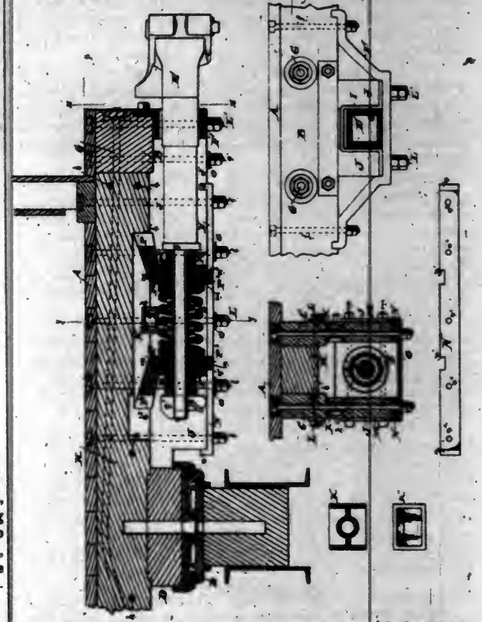
402,580. SUSPENDERS. BURKARD GOODMAN, New York, N.Y. Filed Jan. 3, 1889. Serial No. 295,763. (No model.)



Claim.—1. As an improved article of manufacture, a suspender consisting of shoulder-straps formed of warp cords or threads interlaced or interwoven with braids or threads to form ventilating interstices or reticulations having adjustable buckles carrying tabs, and a rear tab centrally secured thereto, substantially as described.

2. As an improved article of manufacture, a suspender consisting of shoulder-straps formed of elastic warp-cords interlaced with braids to form ventilating interstices or reticulations having adjustable buckles carrying tabs, and a rear tab centrally secured thereto, substantially as described.

402,581. DRAFT-RIGGING FOR RAILWAY-CARS. JAMES A. GRAHAM, Fort Wayne, Ind. Filed Sept. 8, 1888. Serial No. 284,572. (No model.)



Claim.—1. In a draft-rigging, the combination, with the center stringers, of a railway-car with a block, H, framed between and bolted securely to said stringers, draft-timbers J J, cross-straps O, and draft-irons N N, bolted firmly together and to the center stringers, and buffer-blocks secured between the draft-timbers and bolted thereto.

2. In a draft-rigging, the combination, with the center stringers, of a railway-car with a block, H, framed between and bolted securely to said stringers, draft-timbers J J, cross-straps O, and draft-irons N N, having slots n' n' bolted firmly together and to the center stringers, and buffer-blocks having their lower edges formed to enter slots n of the draft-irons secured between the draft-timbers and bolted thereto.

3. In a draft-rigging, the combination, with the center stringers, of a railway-car with a block, H, framed between and bolted securely to said stringers, draft-timbers J J, cross-straps O, and draft-irons N N, bolted firmly together and to the center stringers, and buffer-blocks P, having upwardly-extending shoulders P', formed to extend above and rest against shoulders h' h^3, formed in block H, said blocks being secured between the draft-timbers and bolted thereto.

4. In a draft-rigging, the combination, with the center stringers of a railway-car with a block, H, framed between and bolted securely to said stringers, draft-timbers J J, cross-straps O, and draft-irons N N, having slots n' n' bolted firmly together and to the center stringers, and buffer-blocks P, having their lower edges, P^2, formed to enter the slots n' of the draft-irons, shoulders P', formed to extend above and rest against shoulders h' h^3, formed in block H, said blocks being secured between the draft-timbers and bolted thereto.

402,582. STOVE-PIPE FORMER. HIAL S. GRAVES, Southington, Conn., assignor to the Peck, Stow & Wilcox Company, same place. Filed Feb. 6, 1889. Serial No. 298,895. (No model.)

Claim.—1. The combination of the non-adjustable upper roller, C, hinged box 11, for holding and releasing one end of said roller, mechanism for tilting said roller, and two under rollers provided with adjusting-screws 8, for adjusting said under rollers relatively to the upper tilting roller, substantially as described, and for the purpose specified.

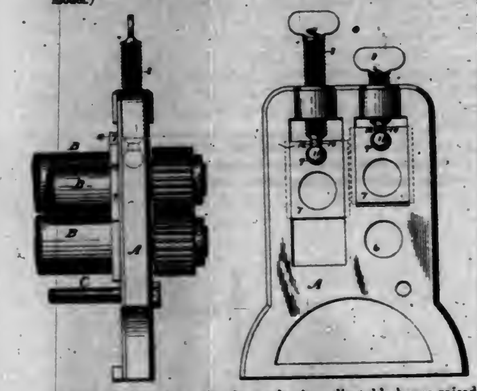


2. The combination, in a former, of the hinged box 11, the upper roller, C, provided with a shaft-like projection having a peripheral groove, 17, the rigid horn 18 upon the frame, provided with a fulcrum-bead for said shaft-like projection, the box 20, and lifting-screw 23, for lifting said roller and swinging it on its fulcrum at the end of the rigid horn 18, substantially as described, and for the purpose specified.

3. In a former having an upper tilting roller, the combination of the frame B, provided with the lug 15, the hinged box 11, for holding one end of said upper roller, the link 13, hinged to the outer end of said box, and the cam-lever 14, substantially as described, and for the purpose specified.

4. In a former having an upper tilting roller provided with a shaft-like projection having the peripheral groove 17, the frame B, having the horn 18 and fulcrum-bead 19, fitted to said groove 17, the projecting ledges 22, also formed on said frame, and the box 20 and lifting-screw connected thereto, said box 20 being provided with side ledges, the faces of which, together with the faces of the ledges 22, are on the arc of a circle of which the fulcrum-bead 19 is the center, substantially as described, and for the purpose specified.

402,583. ADJUSTABLE BOX FOR STOVE-PIPE FORMERS. HIAL S. GRAVES, Southington, Conn., assignor to the Peck, Stow & Wilcox Company, same place. Filed Feb. 6, 1889. Serial No. 298,896. (No model.)



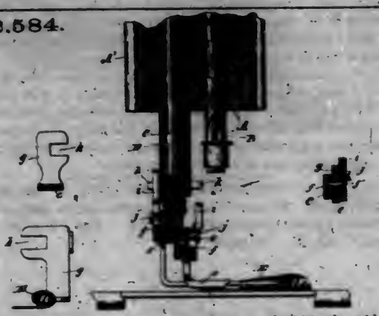
Claim.—1. In a stove-pipe former having adjustable boxes raised and lowered by screws, the combination of lifting-screws 8, provided with a narrow neck and knob, the shoulder or upper part of which is rounded off, substantially as described, and the boxes 7, provided with a transverse recess and narrow slot, the overhanging walls of which are fitted to the upper rounded shoulder of the knobs of said screws, substantially as described, and for the purpose specified.

2. In a stove-pipe former having adjustable boxes raised and lowered by screws, the combination of the lifting-screws 8, provided with a narrow neck and spherical knob, 11, and the boxes 7, provided with transverse recesses of a cylindrical form and a narrow slot opening into said recesses, substantially as described, and for the purpose specified.

402,584. ATTACHMENT-HOLDER FOR SEWING-MACHINES. JOHN M. GRIMM, Chicago, Ill., assignor to The Singer Manufacturing Company of New Jersey. Filed Dec. 27, 1887. Serial No. 259,069. (No model.)

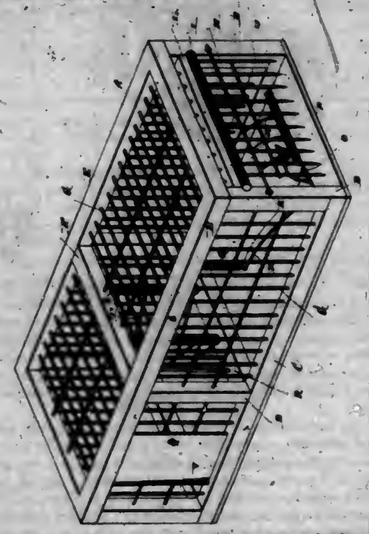
Claim.—1. The combination, with a sewing-machine head carrying the usual needle and presser bars, of an attachment-holding bar independent of the said needle and presser bars, rigid with the said head, depending from the latter rearward of the said needle-bar, and provided at its lower end with a screw clamping device, by which attachments may be removably secured thereto in operative position.

2. The combination, with a depending sewing-machine head, of a tubular attachment-holding bar rigidly secured within the said head and surrounding the presser-bar, said attachment-holding bar being separate from the said head and the said presser-bar, and being provided at its lower end with a clamp, by which attachments may be removably secured thereto in operative position.



3. The combination, with a vertical bar having a horizontal lug or tenon on its face near its lower end, of a presser-foot or attachment having a slotted shank, a screw tapped in the said bar through said tenon and having its head provided with a series of scalloped notches, a hand-lever to turn said screw, and a notched shanked screw tapped in said hand-lever and connecting the latter with the former screw.

402,585. TRAP. THEOPHILUS GRIFFIN, Sheridan, Ark., assignor of two-thirds to J. M. Hall and W. W. Wilkeson, same place. Filed Jan. 30, 1889. Serial No. 298,093. (No model.)



Claim.—1. The combination, with the frame having an open front end, of the vertically-swinging door mounted in said open end, the cam arranged within the trap in rear of the door and bearing on the same, and a spring acting on said cam to hold the door normally closed, as set forth.

2. The combination of the frame having an open front end, the inwardly and upwardly swinging door mounted therein, the rock-shaft arranged in rear of the said door, the cam secured on said shaft and bearing on the door and provided with a rearwardly-projecting arm, and the spring extending between said arm and the top of the frame, as set forth.

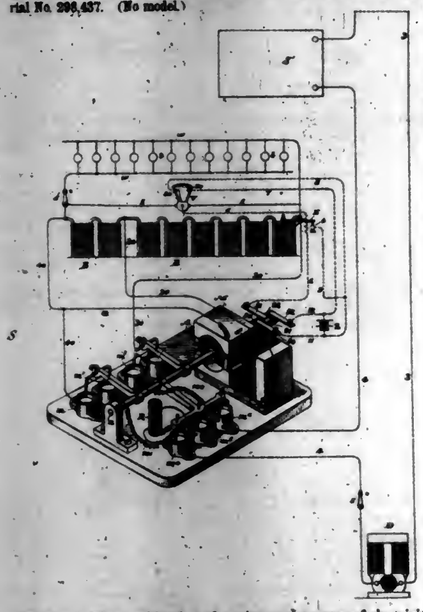
3. The combination of the frame having an open front end, the door mounted therein and consisting of a cross-bar and a series of depending wires or fingers secured thereto, the rock-shaft mounted in the frame in rear of the said door, the fingers projecting from said shaft, the cam secured on said shaft and bearing against the door and provided with a rearwardly-extending arm, and the spring extending between the said arm and the top of the frame, as set forth.

4. The combination, with the frame having an open front end, of the inwardly and upwardly swinging door mounted in said end, mechanism for holding said door normally closed, the transverse par-

tition within the frame, the rearwardly-extending doors projecting from said partition, and the spring secured to and extending between the said doors, as set forth.

5. The combination of the frame having an open front end, the inwardly and upwardly swinging doors mounted in said end, the transverse partition in the frame, the doors comprising the vertical posts journaled in the top and bottom of the frame, the fingers projecting rearwardly from said posts, and the coiled spring secured to and extending between said fingers, as set forth.

402,586. DISTRIBUTION OF ELECTRICITY BY SECONDARY BATTERIES. WILLIAM W. GIBBON, Haverford College, assignor to the Electro Dynamic Company, Philadelphia, Pa. Filed Feb. 2, 1889. Serial No. 298,437. (No model.)



Claim.—1. The combination of a primary generator of electricity located in a charging-circuit, a secondary battery to be charged from said circuit, a switching device for changing the position of said battery with respect to the charging-circuit, and means for automatically controlling said switching device, consisting of an indicating-instrument in circuit with the battery, a local circuit operated thereby, and a polarized electro-magnet having a double winding, substantially as described.

2. The combination of a charging-circuit containing a suitable source of electricity, a secondary battery, and means for automatically changing the position of said battery with respect to said circuit, consisting of a suitable switching device, an electro-magnet having two coils or windings, a local battery normally in circuit with both windings, and means for rendering either coil effective, consisting of an indicating-instrument in circuit with the battery and operating a local-circuit switch, substantially as described.

3. The combination of a charging-circuit containing a suitable source of electricity, a secondary battery, and means for automatically changing the position of said battery with respect to said circuit, consisting of a suitable switching device, an electro-magnet for operating said device, a local circuit therefor, an indicating-instrument in circuit with the battery controlling said local circuit, and a circuit-closer in said local circuit operated by the accumulation of gas due to the current of charge, substantially as described

4. The combination of a charging-circuit containing a suitable source of electricity, a secondary battery, a suitable switching device for inserting and withdrawing said battery with respect to said circuit, means for automatically operating said switch in either direction, and means for operating said switch to withdraw said battery, consisting of a circuit-closer controlled by the accumulation of gas in a cell due to the operation of the charging-current, substantially as described.

5. The combination of a charging-circuit containing a suitable source of electricity, a secondary battery, a switching device for inserting and withdrawing said battery with respect to said circuit, means for automatically operating said device, consisting of a permanently-magnetic field, a magnetic core in said field having two parallel windings, a local battery in circuit with both windings, and a circuit-closer for practically neutralizing one winding to render the other effective, substantially as described.

6. The combination of a charging-circuit containing a suitable source of electricity, a secondary battery, a switching device for inserting and withdrawing said battery with respect to said circuit, and means for automatically operating said device to withdraw said battery when subjected to a current of abnormal intensity or duration in the charging-circuit, consisting of an electro-magnet, a local circuit therefor, a circuit-closer in said local circuit, and a cell of battery having an inverted dish or bell to catch the evolved gases, a pipe or outlet, and a cock or valve controlling the passage through said pipe, substantially as described.

7. The combination of a charging-circuit containing a suitable source of electricity, a secondary battery, an artificial resistance in amount equal to the effect produced by the counter electro-motive force and resistance of said battery, and a switching device for inserting and withdrawing said battery and said resistance with respect to the charging-circuit, successively, substantially as described.

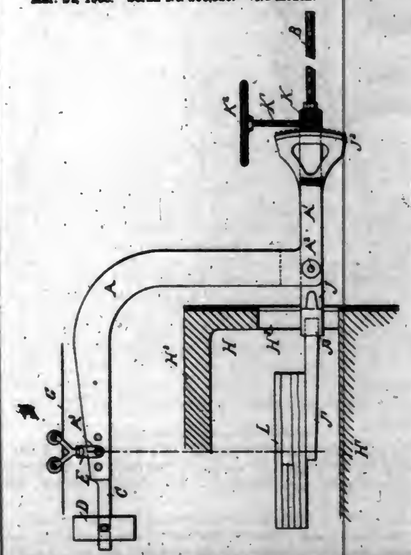
402,587. MEANS FOR CONNECTING SPINDLES TO THE WALLS OR DOORS OF SAFES. HENRY GRAM, Chicago, Ill., assignor to the Chicago Safe and Lock Company, same place. Filed June 28, 1888. Serial No. 278,404. (No model.)



Claim.—1. The combination, with the door or wall of a safe or vault, of a spindle provided with a shoulder or offset and a recessed nut or plug formed with a slot or cut-away space, whereby said nut or plug is rendered expansible, substantially as described.

2. The combination, with the door or wall of a safe or vault, of a spindle provided with a conical shoulder and a nut or plug provided with a conical recess, said nut or plug being split to permit it to expand by the action of forcing inward the spindle, substantially as described.

402,588. PEEL FOR HEATING-FURNACES. SAMUEL M. GOSS, Pottstown, assignor of one-half to Jacob S. Ammon, Reading, Pa. Filed Mar. 24, 1888. Serial No. 268,329. (No model.)



Claim.—1. An apparatus for charging furnaces, consisting of a peel secured to a bent arm movably suspended at a point vertically above a weight on the peel-blade J', substantially as and for the purpose set forth.

2. An apparatus for charging furnaces, consisting of a peel secured to a bent arm movably suspended at a point vertically above a weight on the peel-blade J', and a counter-balance, D, substantially as and for the purpose set forth.

3. The combination, with the movably-suspended bent arm A, having a guide-handle, of a blade, J', pivoted to said arm and adapted to be raised or lowered without moving said arm, substantially as and for the purpose set forth.

4. The combination of the bent arm, the operating-handle, the pivot-blade, with a quadrant, J^3, and the worm K, all arranged substantially as and for the purpose set forth.

5. In a peel for charging furnaces, the blade J', removably secured to an operating-handle, substantially as and for the purpose set forth.

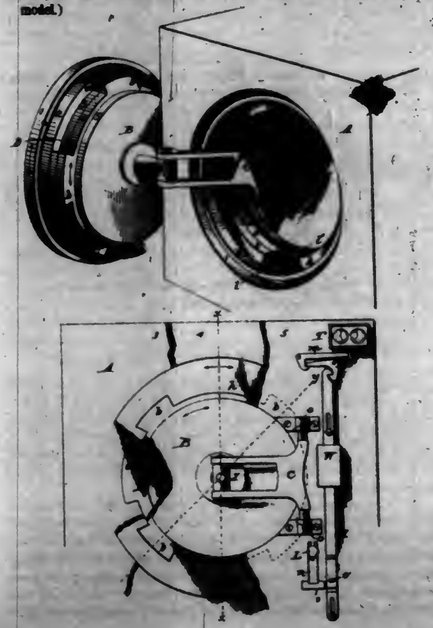
402,589. ICE-ELEVATOR. JOHN HALL, Creston, Iowa. Filed Dec. 4, 1888. Serial No. 292,642. (No model.)



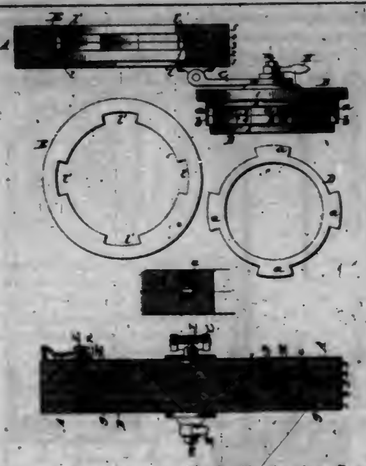
Claim.—1. An ice-elevating apparatus comprising, essentially, a rigid inclined frame, a platform at the lower end thereof adapted to be let into a lake and adjustably connected with said rigid frame, the platform being supported on uprights which carry threaded rods for raising and lowering said platform, substantially as specified.

2. The combination, with the main frame, of the platform, the uprights having threaded apertures at their upper ends, the threaded adjusting-rods secured at their lower ends to the platform and bearing in the threaded apertures of the uprights, and the link connecting the platform with the main inclined frame, substantially as specified.

402,590. SAFE. JOSEPH L. HALL, Cincinnati, Ohio; Sarah J. Hall, Edward C. Hall, and Richard T. Pullen executors and trustees of said Joseph L. Hall, deceased. Filed Jan. 5, 1889. Serial No. 295,792. (No model.)



402,590.



Claim.—1. In combination with the circular door B, provided with lateral projections *b*, the loose ring E, provided with correspondingly-shaped recesses located in the wall of the safe in line with the projections *b* of the door when the latter is closed, substantially as and for the purpose set forth.

2. In combination with the circular door B, the loose ring D, provided with lateral projections *a*, said ring being so located in the door that when the latter is closed the projections *a* of said ring shall occupy the recesses *l* in the locking-plate of the wall, substantially as shown and described.

3. In combination with a safe and its door, one or more loose rings, constructed as described, located in each of said parts, respectively, and arranged to operate as set forth, whereby the lateral recesses in the door and its jamb are filled with solid metal when the door is closed.

4. In combination with the circular door, provided with lateral projections arranged to fit in the recesses *l* of the loose ring E and turn therewith, one or more locking-bolts, L, arranged to operate as described, whereby the ring E is prevented from turning, and thereby locking the door.

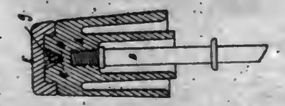
5. The combination, in a safe, of a movable ring, substantially such as shown, and a friction device arranged to hold the ring in position, substantially as described.

402,591. BUCKLE. RICHARD HASKEL, Burlington, Iowa. Filed Aug. 24, 1888. Serial No. 283,067. (No model.)



Claim.—In a harness-buckle, the combination, with the straight side bars having upturned ends provided with cross-bars forming loops, of a downwardly-projecting ear at the central point of each side bar, said ears being connected by a cross-bar, *d*, and two cross-bars, *e* and *f*, connecting the side bars at points intermediate the cross-bar *d* (or central loop) and the end loops, one of said cross-bars being provided with a post and the other with a pivot-hole, substantially as described.

402,592. ELECTRIC-WIRE INSULATOR. ARTHUR W. HEAVISIDE, Newcastle-upon-Tyne, England. Filed Nov. 14, 1888. Serial No. 290,770. (No model.) Patented in England Apr. 20, 1888, No. 5,913.

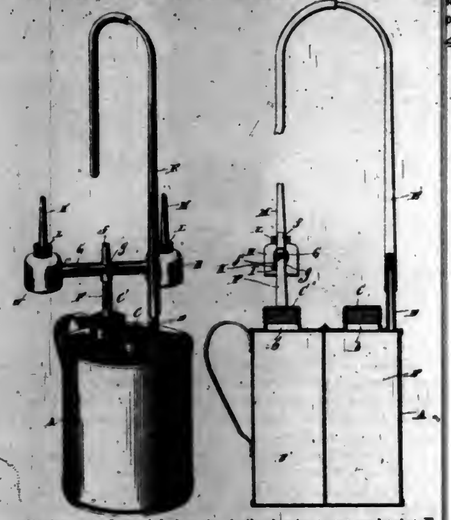


Claim.—1. A screw-cap for insulators, having a central projection, combined with an insulator having a central cavity to receive such projection and provided with a vertical slot to receive the wire, both the cap and insulator being screw-threaded, and the cap being adapted, when screwed home, to exert a pressure upon the wire, substantially as set forth.

2. A screw-cap for insulators, made with a central projection having an exterior thread, in combination with an insulator having a cor-

responding interior thread and a vertical slot to receive the wire, and adapted, when screwed home, to exert a pressure upon the wire inclosed in an elastic envelope or bed, substantially as set forth.

402,593. INHALER. DAVID R. HERSEY, Amsterdam, N. Y. Filed Sept. 8, 1888. Serial No. 284,916. (No model.)



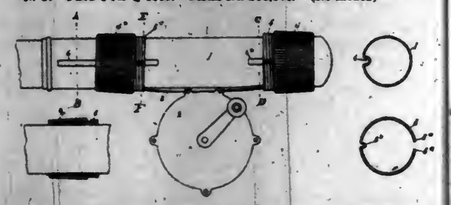
Claim.—1. In an inhaler, the boiler having a tapered tube, F, communicating with its upper end and provided with an opening, *f'*, the pipe G, provided with a transverse opening fitting over the upper end of the tube F, so that the bore of the pipe registers with the opening *f'*, and the cups on the ends of the pipe provided with outlet-tubes, substantially as specified.

2. In an inhaler, the boiler provided with a vertical tapered tube, F, an opening, *f'*, near its upper end, the tip *f*, fitting on the upper end of the said tube, the horizontal pipe G, provided with a transverse opening, *g*, fitting over the upper end of the tapered tube and held in place by the tip *f*, the detent or stud on the pipe G, to engage a socket or keeper on the side of the tapered tube, and the cups on the ends of the pipe G and provided with outlet-tubes, substantially as specified.

3. In an inhaler, the boiler B', having a screw-cap covering an opening in its top, the tube F, affixed to the said cap and provided with an opening, *f'*, the revolnble pipe G, fitting on the tube F and adapted to have one of its arms aligned with the opening *f'*, the cups on the ends of the pipe G, and the screw-caps on the said cups provided with tubes M M, substantially as specified.

4. In an inhaler, the boiler provided with the compartments B B', provided with openings in their upper ends, which are covered by the screw-caps C C', the short tube D, communicating with the compartment B, the conductor-tube E, the short tube F, affixed to the screw-cap C', the horizontal pipe swiveled on the pipe F and communicating therewith, and the cups on the ends of the said pipe and provided with short outlet-tubes, substantially as and for the purpose specified.

402,594. FERRULE FOR REEL-PLATES. JAMES P. H. HOOK, Rome, N. Y. Filed Feb. 4, 1889. Serial No. 298,673. (No model.)

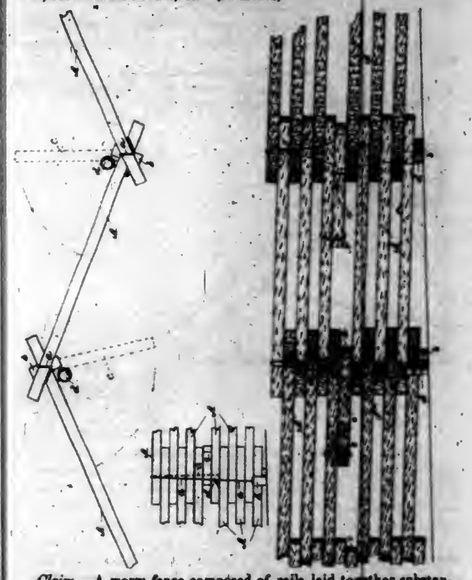


Claim.—1. The combination, with a fishing-rod, of a split ferrule directly embracing the rod and tapered upon its outer surface, and a thimble embracing the ferrule and oppositely tapered upon its inner surface, substantially as and for the purpose described.

2. The combination, with a fishing-rod, of a pair of split ferrules directly embracing the rod and tapered upon their outer surfaces, and a pair of thimbles oppositely tapered upon their inner surfaces and each embracing one of the split thimbles, substantially as and for the purpose set forth.

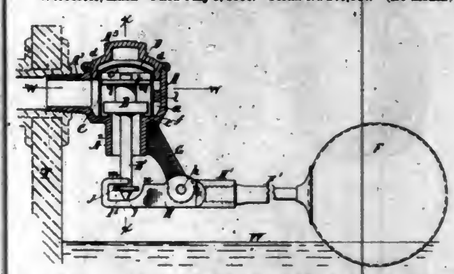
3. The combination, with the rod longitudinally recessed at its butt, of the split ferrules having inwardly-extending projections to enter said recesses, and externally threaded and tapered oppositely to said ferrules and embracing the same, substantially as and for the purpose specified.

402,595. FENCE. GEORGE A. HOBB, Newark, N. Y. Filed Feb. 27, 1888. Serial No. 301,319. (No model.)



Claim.—A worm fence composed of rails laid together substantially in the usual manner, in combination with a wire or cable binder for the rails at the angle of the fence and a tightener for said binder, the binder being formed in a loop to encircle the upper rails of the fence, and said tightener for the wire binder being shorter than the rails of the fence and placed between the rails midway of the height of the fence, said tightener being passed through the loop and turned to a position parallel with the superincumbent rail and contiguous to the under surface thereof, and a fastener or holder for said tightener and superincumbent rail, substantially as shown and described.

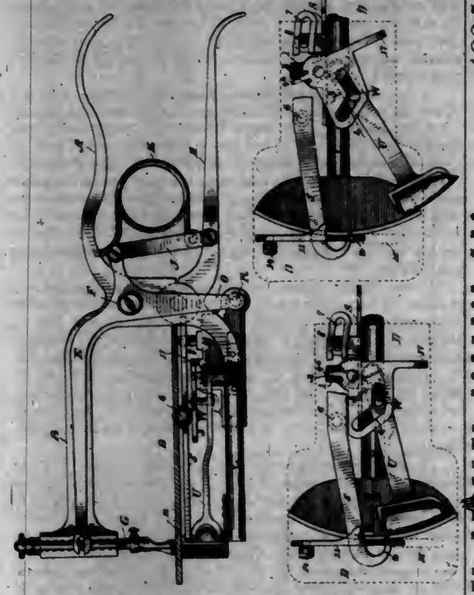
402,596. AUTOMATIC FLOAT TANK-COCK. ALBERT P. HOWES, Worcester, Mass. Filed July 5, 1888. Serial No. 279,007. (No model.)



Claim.—1. The combination, substantially as described, of the shell A, provided with the arm (or arms) G and valve-seat *c*, the valve B, arranged to close onto said seat and having its depending stem provided with the flange J and rounded point I, the operating-lever H, provided with the stop surface I', overhanging ends *m*, and shoulder *n*, and the fulcrum-pin *h*, connecting said lever to the arm G, for the purposes set forth.

2. In combination, substantially as described, the body-shell A, having the internal chamber, *a*, with inlet and outlet passages, valve-seats *c* and *f*, and screw-cap A^1, the puppet-valve B, having the disk *b* and dependent stem B', provided with flange J and point I, the lifting-lever H, fulcrumed at *h* to the body-arm G, and engaging the point and flange of said valve-spindle, and the buoyant float F, all constructed and arranged for operating as and for the purpose set forth.

402,597. HAND SEWING-MACHINE. GEORGE I. HUSSELL, Bridgeport, Conn. Filed May 10, 1888. Serial No. 273,512. (No model.)



Claim.—1. The combination, with the stitch-forming and cloth-feeding devices of a hand sewing-machine, of a slide-bar arranged to reciprocate longitudinally beneath the bed-plate, a driving-plate pivoted upon the top of the slide-bar and provided with a curved slot, whereby movement is imparted to the carrier-bar, a detent for normally retaining said plate in its driving position, and means, as a handle, for turning said plate upon its pivotal point, whereby the carrier-bar and shuttle are projected beyond their normal limit of traverse and the latter carried to a point outside the edge of the bed-plate, substantially as specified.

2. The combination, with the stitch-forming and cloth-feeding device of a hand sewing-machine, of the driving-plate having a deflected slot thereon for the actuation of the shuttle and a tooth and handle thereon, as shown, a projection or bracket upon which said plate is pivoted, said bracket having a detent for the tooth, and means, as described, whereby movement is imparted to the said plate, substantially as described.

3. In combination with the needle and shuttle and means for driving the same, the feed-bar-operating lever having the curved slot near its heel end and the hook 9 at its other extremity, the reciprocating pin engaging said slot and actuating said lever, the forked feed-bar pivoted as to one end and spring-actuated away from the plate, and the incline and projection upon the feed-bar arranged within the field of the hooked end of the lever, and whereby said feed-bar is actuated in both directions, substantially as specified.

4. The combination, with the stitch-forming and cloth-feeding devices of a hand sewing-machine, of the stationary handle, the movable handle, the needle-bar-actuating lever and the link between the latter and the movable handle, and the spring whose coils are arranged in a vertical plane and the ends whereof are connected, respectively, to the stationary handle and a stud on the link, substantially as shown and described.

5. The combination, with the needle-bar and means for driving the same, of the swinging shuttle-carrier and its shuttle, the pivoted driving-plate having a deflected slot and a detent engaging the base on which it is pivoted, the curved and slotted feed-lever hooked as to its outer end, and the forked, pivoted, and spring-actuated feed-bar having the incline and projection thereon, whereby, through the hooked end of the feed-lever, the goods are fed beneath the needle, as set forth.

402,598. CURTAIN-FIXTURE. PLEASANT B. HOFFMAN, Chandlerville, Ill., assignor of one-half to George W. Looper and Henry S. Looper, same place. Filed Jan. 18, 1889. Serial No. 296,701. (No model.)

Claim.—1. The combination, with a window-frame, of screw-eyes located at the middle of the top and bottom of said frame and at its four corners, an endless cord threaded through the said screw-



eyes, as described, crossing itself between the middle screw-eyes, and a shade-roller attached to the parts of the said cord between the upper and lower corner screw-eyes, substantially as described.

2. The combination, with a window-frame, of screw-eyes located at the middle of the top and bottom of said frame and at its four corners, an endless cord threaded through the said screw-eyes, as described, crossing itself between the middle screw-eyes, and a shade-roller having annular grooves near its ends, attached to the parts of said cord between the upper and lower screw-eyes by winding said cord once around each end of the roller in the grooves in the latter, substantially as set forth.

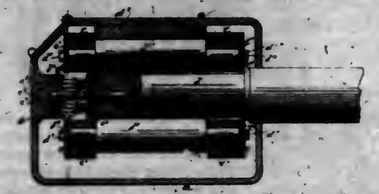
3. The combination, with a window-frame, of screw-eyes at the middle of the top and bottom and at the four corners thereof, an endless cord threaded through said screw-eyes, as described, a shade-roller attached to said cord by winding the parts of the latter between the corner screw-eyes once around each end of the roller, and friction-links having eyes, whereby they are adjusted upon the endless cord at each end of the roller, so as to bear against the latter, substantially as set forth.

4. The combination, with a window-frame, of screw-eyes at the middle of the top and bottom and at the four corners thereof, an endless cord threaded through the said screw-eyes, as described, a shade-roller attached to said cord by winding the latter once around each end of the roller, a stiffening-slat at the lower end of the shade, and loops attached to the ends of said slat and encircling the endless cord, substantially as set forth.

5. The combination, with a window-frame, of screw-eyes at the middle of the top and bottom and at the four corners thereof, an endless cord threaded through said screw-eyes, as described, a shade-roller attached to said cord by winding the latter once around each end of the roller, axial pins extending from the ends of the roller, and brackets secured near the uppr corners of the window-frame to form bearings for the said pins, substantially as set forth.

6. As an improvement in curtain-fixtures, the combination, with a window-frame, of screw-eyes at the middle of the top and bottom and at the four corners thereof, an endless cord threaded through said screw-eyes, as described, a shade-roller attached to said cord by winding the latter once around each end of the roller, friction-links adjusted upon the endless cord over and bearing against each end of the roller, axial pins extending from the ends of the latter, brackets secured near the upper corners of the window-frame to form bearings for the said pins, and loops at the lower corners of the shade encircling the endless cord, all arranged and operating substantially as set forth.

402,599. ANTI-FRICTION JOURNAL-BEARING. HARLEY M. JOHNSON, Chicago, Ill. Filed Mar. 21, 1888. Serial No. 267,947. (No model.)



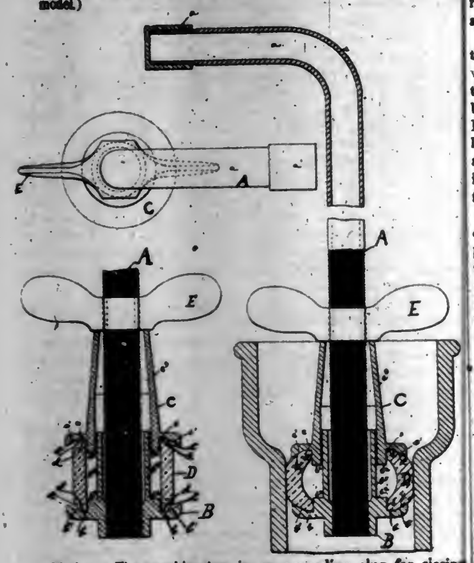
Claim.—1. In a roller-bearing, the combination, with a series of large rollers for engaging the shaft, journaled in suitable revolving circular boxes, of a series of small rollers placed in these boxes around each of large roller-journals, substantially as and for the purpose set forth.

2. The combination, with a journal box or casing provided with a socketed projection on its inner side and a shaft in line therewith, and also formed with a longitudinal socket, the ends of both the shaft and projections being provided with concentric grooves, of a spindle with projecting bearings socketed loosely in said parts, and a series of anti-friction wheels on said spindle running in said grooves, substantially as and for the purpose set forth.

3. The combination, with a shaft having its ends formed with a concentric groove, and a projection on the journal box or casing with a circular groove aligned with the shaft, of a series of small friction-wheels placed between the shaft and projection and running in said grooves, substantially as and for the purpose set forth.

4. In a journal-bearing, the combination, with a casing having a socketed projection formed with a circular groove in its face, and a shaft also formed with a socket and groove, of a series of rollers arranged around the shaft, each of which is also provided with a roller-journal at each end in a revolving circular boxing, and a loose spindle with projecting bearings socketed in the shaft and the box projection and provided with a series of small wheels to take the end thrust, substantially as shown, and for the purpose set forth.

402,600. EXPANDING PLUG FOR CLOSING PIPES, &c. CLARENCE M. KEMP, Baltimore, Md. Filed Jan. 16, 1889. Serial No. 296,566. (No model.)



Claim.—The combination, in an expanding plug for closing pipes, of washer C, with its projecting shoulder c^2, flat part c, and flaring part c', and washer B, with projecting shoulder b^2, flat part b, and flaring part b', with rubber cylinder D, with flat part of end d and flaring part of end d', as and for the purpose described.

402,601. DIFFERENTIAL GEARING FOR HOISTING-MACHINES. RICHARD LAVERY, Boston, Mass. Filed Dec. 27, 1887. Serial No. 259,176. (No model.)



Claim.—1. In a differential-gear apparatus for hoisting, a frame, a central rod, as B, the central gear, C, provided with a bearing, I, and lifting-sheave C', mounted loosely on said rod, the central gear, D, provided with bearing I', flange D^2, and shank D', combined with an operating-wheel rotating upon the said bearings, and a series of differential gears, as K K', free to revolve upon shafts, as J J', engaging, respectively, the central gears, C D, to operate substantially as described.

2. The frame A A', the rod B, the central gear, D, provided with a bearing, I', a flange, D^2, a shank, D', and a screw, F, and a nut, F', to secure the shank to the said frame, combined with the central rotating gear, C, bearing I, lifting sheave C', permanently connected integral with the said gear and bearing and free to rotate upon the said rod, the operating-wheel H, mounted upon the said bearings, a series of shafts, as J, therein, and a series of differential gears, as K K', on the said shafts J, the opposite ends of each gear engaging the said central gears, C D, to operate substantially as described.

3. In a differential-gear hoisting apparatus, the frame or housing A', provided with a hole, as E, through it centrally, in combination with the gear D, provided with a bearing, I', a flange, D^2, and a shank, D', to fit the said hole E, a screw, F, and nut F', whereby the said gear is made a fixture with the frame or housing A', and a rod, B, enlarged and provided with screws and nuts G G', as and for the purpose specified.

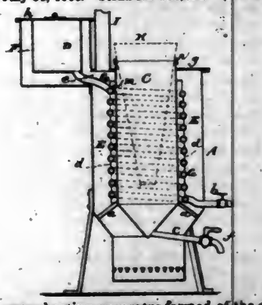
4. In a differential-gear hoisting apparatus, the frame A A', rod B, and the central externally-toothed gear, C, provided with bearing I and lifting-sheave C', both integral mounted and free to revolve upon the said rod B, the frame A', and central externally-toothed gear, D, provided with bearing I', flange D^2, shank D', and screw F, together with the nut F', whereby the said frame and gear are held together and the gear made non-revolving, in combination with the hollow annular operating-wheel H, provided with differential pinions K K', and shafts J J', the said operating-wheel being mounted and free to revolve upon the aforesaid bearings I I', as and for the purpose shown and specified.

5. The frame or housing A A', in combination with the fixed central gear, D, having the bearing I', flange D^2, and shank D', provided with screw F, the nut F', hollow annular operating-wheel H, differential pinions K K', shafts J J', revolving central gear, C, and bearing I, both integral with lifting-sheave C', frame or housing A, center rod, B, provided with nuts G G', seating and unseating device W W', lifting-chain N, bolt and link L M, sheave-wheel R, tackle-block and swivel-hook S T, cross-head and swivel-hook U V, hand operating-chain Q, and guide O O', as and for the purpose shown and specified.

6. In a differential-gear hoisting apparatus, the frame A A' and central rod, B, and a series of pairs of differential external toothed pinions made integral, one gear of each pair having a less number of teeth than the other, in combination with two central gears, one of which is integral with the lifting-sheave and is adapted to revolve upon the said central rod, the other being fixed, and a hollow annular operating-wheel mounted and free to revolve upon bearings integral with the aforesaid central gears, the series of differential pinions being mounted and free to revolve upon shafts passing through and supported by the sides or arms of the hollow annular operating-wheel and gearing simultaneously into the revolving and fixed central gears aforesaid, as and for the purpose specified.

7. In differential-gearing apparatus for hoisting, the side frames and operating-wheel, combined with a guide for the endless chain, the said guide being composed of two members, O O', one of which is integral with one side of the frame or housing of the machine, while the other member is secured to the first member, and also to the frame or housing aforesaid, the guide being in the form of two segments of a circular flange joined together at their extremities and standing apart sufficiently to admit between them the said operating-wheel, having pockets upon its periphery, into which fits an endless chain, the guide inclosing the rim of one-half of the said operating-wheel, substantially as shown and described.

402,602. WATER-HEATING APPARATUS. GEORGE LIGHT, Narka, Kans. Filed July 30, 1888. Serial No. 281,434. (No model.)

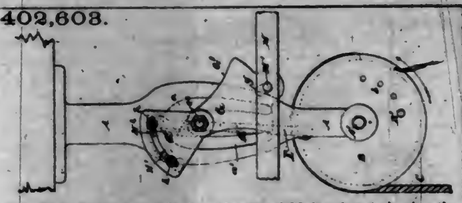


Claim.—A water-heating apparatus formed of the casing A, provided with the fire-box B, the inner and outer tanks, C D, having a pipe-connection and surrounded by connected heating-chambers, the funnel H, supported in tank C, and the coiled pipe G, connected with each tank, surrounding the tank C and having its discharge end extending through the casing, whereby said apparatus may be used, as set forth.

402,603. BELT-SHIPPER AND LOCK. FRANCIS W. MALLETT, New York, N. Y., assignor to Dennis Fristie, same place. Filed Jan. 9, 1889. Serial No. 295,848. (No model.)

Claim.—1. In a belt shifting and locking device, the turning part G, having the wings G' G^2 and the top blocks H' H^2, with their notches

402,603.



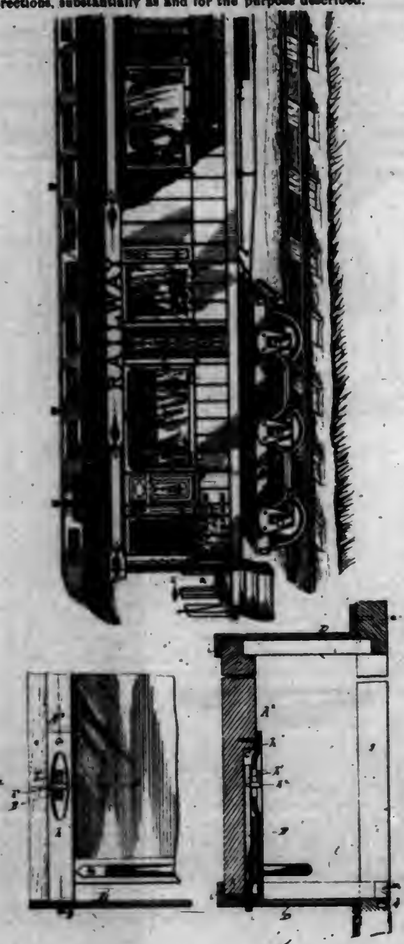
A' A^2, in combination with the shipper-rod M, bracket A, having the aperture a a' a^2 and the notch a^3, and with the pin E' and mechanical connections, substantially as specified, for moving the latter up and down, all arranged for joint operation, substantially as herein specified.

2. In a belt shifting and locking device, the notched blocks H' H^2 and their adjusting means A' A^2, in combination with the turning-piece G G' G^2 and shipper-rod M, and with the pin E' and its operating means, and the bracket A, having the aperture a a' a^2 and the notch a^3, all substantially as herein specified.

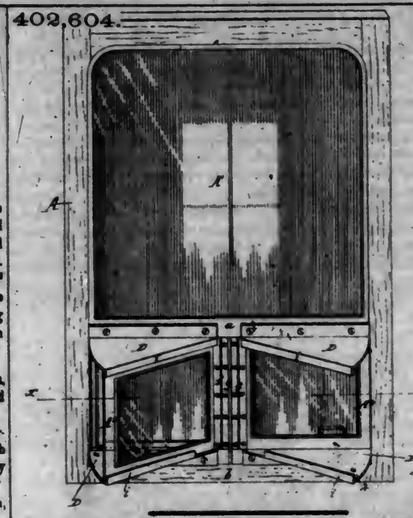
402,604. CAR-VENTILATOR. FRANK B. MALLORY, Flemington, N. J., assignor of one-fourth to Charles C. Dunham, same place. Filed Dec. 26, 1888. Serial No. 294,637. (No model.)

Claim.—1. A single sliding sash having a stationary glazed portion and two hinged ventilating portions provided, respectively, with a fastening device and swinging in opposite directions, substantially as described.

2. The single sliding sash A, having a stationary upper portion, A', and two lower hinged ventilator portions, A^2 A^3, provided, respectively, with a guard and a fastening device and swinging in opposite directions, substantially as and for the purpose described.



402,604.



402,605. CARTRIDGE FEED-PACK FOR MAGAZINE-GUNS. PAUL MAUSER, Oberndorf-on-the-Neckar, Würtemberg, Germany, assignor to Waffenfabrik Mauser, same place. Filed Oct. 31, 1888. Serial No. 289,657. (No model.)



Claim.—A cartridge-holder consisting of a frame formed with longitudinal side flanges and a top flange, said flanges adapted to confine between them the base of a cartridge, and said frame constructed to engage the cartridge with a yielding pressure.

402,606. PLATE-LIFTER. SAMUEL T. MICKEY, Salem, N. C. Filed Apr. 7, 1888. Serial No. 269,979. (No model.)



Claim.—1. In a plate-lifter, the metal plate I, provided with a central longitudinal sleeve, J, and the rolls i i on its under side, and the inner jaw provided with the inwardly-convex wire H, and having its extensions G' G' secured in the rolls i, in combination with the outer jaw provided with the outwardly-convex wire F, facing the wire H, and the shank C, formed by two adjoining portions or extensions of the wire of which the outer jaw consists and sliding in the sleeve J, substantially as specified.

2. The improved plate-lifter comprising the plate I, the inner jaw affixed to the plate I and consisting of the diverging parts G G, the vertical parts g g, depending from the ends of the parts G G, the converging parts k k, extending outward from the lower ends of the parts g g, and the curved portion H, extending between the parts k k and having its convexity inward, and the outer jaw provided with a shank sliding on the plate I and composed of the diverging parts E E, the vertical portions e e, depending from the ends of the parts E E, the converging parts f f, extending inward from the ends of the parts e e, and the outwardly-convex portion F, connecting the parts f f, as specified.

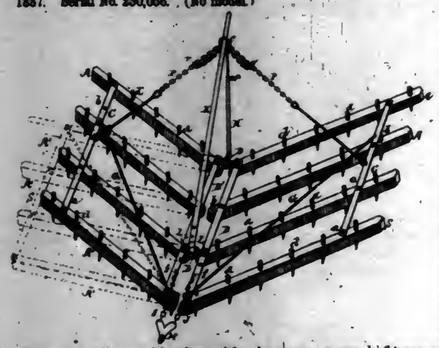
3. The combination, with the plate-lifter having the rigid jaw A and the movable jaw B, of the removable toaster attached to the jaw A, and having fingers arranged thereon, substantially as specified.

4. The combination, with the plate-lifter having the jaw A, provided with the vertical portions e e, of the toaster N, comprising the plate O, having the inclined flanges P P, engaging the said vertical portions e, and the hook-shaped fingers Q, consisting of loops secured

at their ends to the said plate, substantially as and for the purpose specified.

5. The herein-described plate-lifter, comprising the plate I, provided at its rear end with an offset or projection, K, and having a sleeve, J, on its under side, the inner jaw, B, at the front end of the plate, having the depending parts *g g*, and rearwardly-convexed wire H, connecting the lower ends of the said parts, the shank C, extending through the sleeve J and provided at its rear end with the ratchet *m*, the outer jaw on the opposite end of the said shank having the depending parts *e e*, and the forwardly-convexed wire F, connecting the lower ends of the said depending parts, and the pawl L, pivoted at its upper end to the offset or projection K and provided with an opening, M, fitting around and sliding on the shank C, the upper side of the said opening engaging the teeth of the ratchet *m* to lock the jaws A B in the desired relative position, substantially as specified.

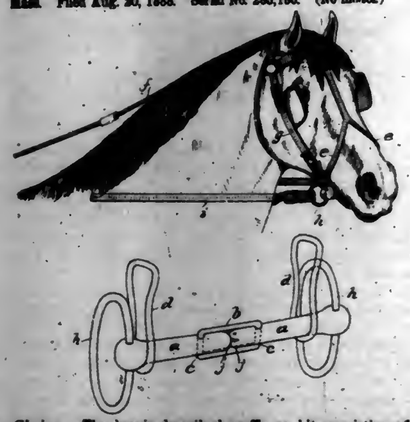
402,607. HARROW. ELI MILLER, Canton, Ohio. Filed Mar. 7, 1887. Serial No. 230,056. (No model.)



Claim.—1. The combination, with a harrow composed of two sections, of a hand-lever, the front end of which is supported by the pivotal pin of the front hinge, the rear end supported by an upright support that is adjustable vertically, and chains connecting said hand-lever to the outer edge of the harrow, substantially as described, and for the purpose set forth.

2. The combination, with a harrow composed of two sections hinged together, of a vertically-adjustable handle-support, the lower end of said support having a pivotal connection with the harrow-hinge, substantially as described, and for the purpose set forth.

402,608. BRIDLE-BIT. JOEL MCKENNEY, Boston, Mass., assignor of one-half to W. O. Robson, same place, and John M. French, Chelsea, Mass. Filed Aug. 20, 1888. Serial No. 283,186. (No model.)



Claim.—The herein-described snaffle or bit, consisting of two bars or pieces, the inner ends of which meet or nearly meet, said bars or pieces being jointed together by means of a link connected therewith at an appreciable distance beyond the meeting ends, all substantially as and for the purposes described.

402,609. PLOW-CLEVIS. HENRY G. NILES and PETER VAN HUFFEL, Mishawaka, Ind. Filed Jan. 21, 1889. Serial No. 296,178. (No model.)

Claim.—1. A plow-beam, A, provided with a series of notches, *b*, in its end, combined with a clevis, C, connected to said beam by a pivot-bolt, D, a removable adjusting-pin, F, adapted to rest in one or another of said notches and so large in its horizontal diameter that it will project out of said notch, and a coupling-link, G, provided with a lip, *k*, to engage under said pin, substantially for the purpose set forth.

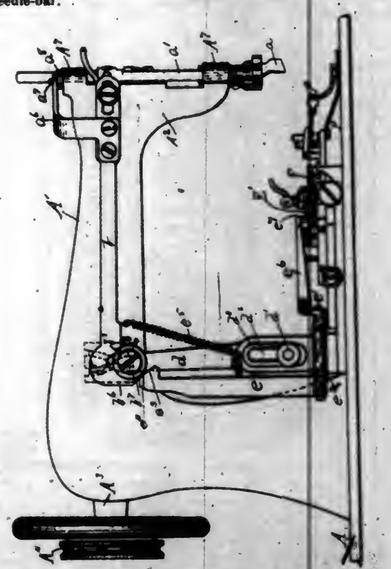
2. A plow-beam, A, provided with a series of notches, *b*, in its front end, a clevis, C, connected to said beam by a pivot-bolt, D, and provided with a rib or shoulder, *i*, on the inner surface of its front end, an adjusting-pin, F, adapted to rest in one or another of said notches and project part way out of the same, and a coupling-link provided with a lip, *k*, to engage under said pin and ledge, substantially for the purpose set forth.

3. The clevis C, a removable adjusting-pin, F, provided with a notch, *k*, and a coupling-link, G, provided with the notch *l* on its upper part, all in combination to retain said pin F in place except when said link is in a position which it cannot assume without assistance, substantially as set forth.



402,610. CUTTING DEVICE FOR BUTTON-HOLE SEWING-MACHINES. JAMES A. OSTERHOUT, Troy, and JOSEPH P. HALLENBECK, New York, assignors to the National Machine Company, Troy, N. Y. Filed July 3, 1888. Serial No. 278,964. (No model.)

Brief.—The device cuts the button-hole at one stroke, and is then thrown out of action, so that it can strike once only. The cutting device is tripped by a pin upon the rotating cam-disk which operates the clamp. The cutter is actuated directly through connection with the needle-bar.

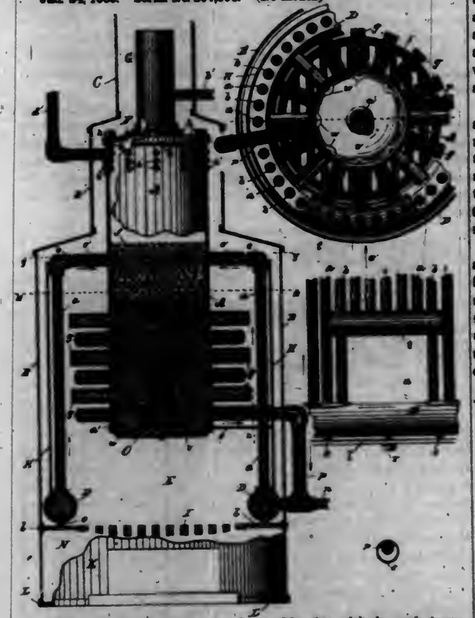


Claim.—1. The combination, with a button-hole sewing-machine, of a button-hole cutter, a rotary and vertically-reciprocatory cutter-bar, means for communicating to such bar rocking and vertically-reciprocating movements consisting of the slide-bar *b*, connected at one end with the arm a^3, which arm is spliced to the cutter-bar, and detachably connected at the other end with the sewing-machine driving mechanism, the vertically-reciprocating needle-bar, and means for engaging and disengaging the cutter-bar therewith, substantially as described.

2. The combination, with a button-hole sewing-machine, of a button-hole cutter, a rotary and vertically-reciprocatory cutter-bar, means for communicating to such bar rocking and vertically-reciprocating movements, consisting of the slide-bar *b*, connected at one end with the arm a^3, which arm is spliced to the cutter-bar, and at the other end with the sewing-machine driving mechanism, the vertically-reciprocating needle-bar, and means for engaging and disengaging the cutter-bar therewith, a spring-controlled slide-bar-detaching post, *e*, provided at its upper end with a beveled head adapted to engage said slide-bar and fixed at its lower end upon a rock-shaft, said rock-shaft, trip-lever e^3, fixed upon said rock-shaft, and a trip, E, fixed upon the feed-wheel of the clamp-moving mechanism, substantially as described.

3. The combination, with a button-hole sewing-machine, of a button-hole cutter, a rotary and vertically-reciprocatory cutter-bar, means for communicating to such bar rocking and vertically-reciprocating movements, consisting of the slide-bar *b*, connected at one end with the arm a^3, which arm is spliced to the cutter-bar, and at the other end with the sewing-machine driving mechanism, the vertically-reciprocating needle-bar and means for engaging and disengaging the cutter-bar therewith, a spring-controlled slide-bar-detaching post, *e*, provided at its upper end with a beveled head adapted to engage said slide-bar and fixed at its lower end upon a rock-shaft, said rock-shaft, trip-lever e^3, fixed upon said rock-shaft, a trip E, fixed upon the feed-wheel of the clamp-moving mechanism, auxiliary detaching-post e^5, provided at its upper end with a beveled head adapted to engage said slide-bar and pivoted at the lower end upon post *e*, auxiliary post-actuating spring e^{10}, and stop e^{12}, secured to one post and adapted to engage with the other, substantially as described.

402,611. STEAM-BOILER. MARVIN R. OTIS, Rochester, N. Y. Filed Jan. 24, 1888. Serial No. 297,300. (No model.)

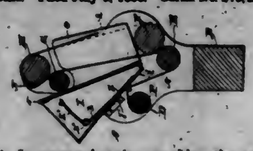


Claim.—1. In a steam-boiler, in combination with the main body, a hollow ring below the body, a series of tubes joining the ring and body, said tubes being equidistant from the body, the latter being extended below the upper ends of said tubes and having its convex surface provided with radial horizontal tubes closed at their outer ends, and circulating or return pipes outside of said series of tubes joining the ring and body, substantially as shown and described.

2. In combination with the body of a steam-boiler, a hollow ring below the body, a series of tubes, *a b*, extended upward from the ring and joined to the body, the latter being extended downward below the upper ends of said tubes, circulating-pipes *p*, joining said rings and body, and protectors for said pipes, substantially as described.

3. In a steam-boiler, in combination with a central body, a hollow ring below the body, a series of tubes joining the ring and body, an inner cylindrical deflecting-jacket, H, surrounding said tubes, an annular deflecting-plate above said tubes, and an outer jacket, E, said deflecting-jacket and plate forming an annular space between their adjacent edges, substantially as shown.

402,612. PAPER-HANGING MACHINE. LIBERTY B. POLK, Wilmington, Ohio. Filed July 9, 1888. Serial No. 279,436. (No model.)



Claim.—1. In a paper-hanging machine, the combination, with a frame, a paper-carrying roller, and an applying-roller mounted in the frame, and intermediate guide-rollers mounted in the lower part of said frame, of a paste-box secured to said frame between the paper-carrying roller and applying-roller and above the guide-rollers and having a discharge-aperture in its lower portion, all constructed, arranged, and operating substantially as shown and described.

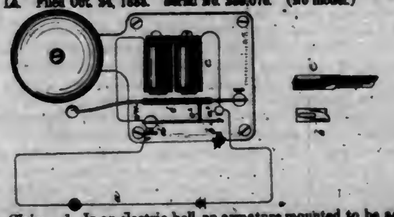
2. In a paper-hanging machine, the combination, with a frame, a paper-carrying roller, D, and applying-roller H, mounted in the frame, and intermediate lower guide-rollers, E and F, and upper guide-roller, G, mounted in said frame, of a paste-box, I, secured to the frame between the roller D and rollers G and H and above the lower rollers, E and F, and having a discharge-aperture in its lower portion, all constructed, arranged, and operating substantially as shown and described.

3. In a paper-hanging machine, the combination, with a frame, a paper-carrying roller, D, and applying-roller H, mounted in the frame, and intermediate guide-rollers, E and F, mounted in the lower part of said frame, of a paste-box, I, secured to the frame between the rollers D and H and above the guide-rollers E and F, and having a discharge-aperture covered by a perforated material, *i*, a spring-actuated valve, K, a rod, k^2, having arms *k*, engaging with said valve, and a crank, k^3, and means for operating said crank, whereby the valve may be moved to regulate the discharge of paste, all constructed, arranged, and operating substantially as shown and described.

4. In a paper-hanging machine, the combination, with a frame, a paper-carrying roller mounted in the frame, and an applying-roller mounted in said frame, over which the paper passes, of a knife hinged to the frame parallel with and in close proximity to the applying-roller and having its edge normally resting against said applying-roller, between the same and paper, and means for raising said knife to sever the paper, all constructed, arranged, and operating substantially as shown and described.

5. In a paper-hanging machine, the combination, with a frame, a paper-carrying roller, D, and an applying-roller, H, mounted in the frame, and intermediate lower guide-rollers, E and F, and upper guide-roller, G, mounted in said frame, of a laterally-adjustable guide, O, secured to the frame between the lower guide-rollers, E and F, and upper guide-roller, G, and adapted to engage the edge of the paper and hold it to one side of the machine, all constructed, arranged, and operating substantially as shown and described.

402,613. ELECTRIC BELL. WILLIAM K. RAINEY, New Orleans, La. Filed Oct. 24, 1888. Serial No. 289,076. (No model.)



Claim.—1. In an electric bell, an armature mounted to be adjustable longitudinally and adapted to swing laterally, in combination with a switch-arm, also adjustable longitudinally, and a connection between said armature and switch-arm, whereby a movement of the armature will operate the switch-arm, for the purpose set forth.

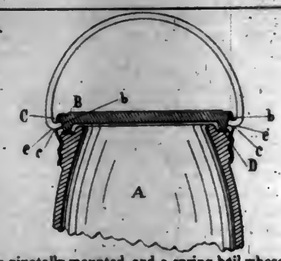
2. The combination, with post *c'* and arm *b*, of the post c^2, the armature *c*, the arm c^3, having a toe of insulating material, and the main and local circuits, arranged substantially as described.

3. In an electric bell, the combination, with the magnets and armature, said armature being provided with a slot for purposes of adjustment, and also carrying a laterally-projecting finger having a tip of insulated material, of a spring-strip, as *b*, also provided with a slot for adjustment, substantially as described.

402,614. COVER FOR CANS OR JARS. PHINEAS K. MEEVER, Irvington, N. J. Filed Aug. 8, 1888. Serial No. 282,267. (No model.)

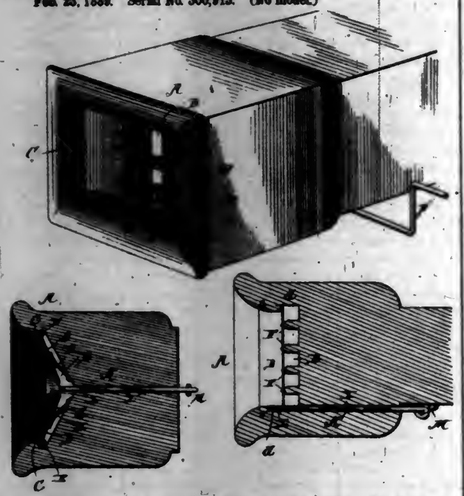
Claim.—The combination, with a jar or can having a screw-thread on its neck, of a screw ring or clamp which fits said threaded jar, a lid having an edge which is entirely inclined, on which the screw

402,614.



ring or clamp is pivotally mounted, and a spring-bail whose ends pass inwardly through apertures in the screw ring or clamp and press elastically against the inclined edge of the lid to secure the screw-ring thereto, substantially as set forth.

402,615. CAR-COUPLING. SIMON L. REEVES, Atlanta, Ga. Filed Feb. 23, 1889. Serial No. 300,913. (No model.)



Claim.—1. In a car-coupling, the combination, with the draw-head provided with a recess in its front end, of the spring-actuated swinging leaves pivoted therein and inclined rearwardly toward their adjacent edges, and the draw-bar provided with a beveled or wedge-shaped head, which is arranged between the leaves to enable the latter to be separated, substantially as specified.

2. In a car-coupling, the combination, with the draw-head provided with a recess in its front end, of the swinging spring-actuated leaves pivoted therein and inclined rearwardly toward their adjacent edges, the draw-bar provided with a wedge-shaped head which is arranged between the leaves, and the crank-shaft mounted on the draw-head and connected to the draw-bar, whereby the latter may be drawn rearwardly to separate the leaves, substantially as specified.

3. In a car-coupling, the combination, with the draw-head provided with a flared or V-shaped recess having shoulders C C at its sides and shoulders *d d* at its top and bottom, of the swinging spring-actuated leaves pivoted in rear of the shoulders C C and normally bearing at their upper and lower edges against the shoulders *d d*, and the draw-bar provided with a wedge-shaped head arranged between the leaves, substantially as and for the purpose specified.

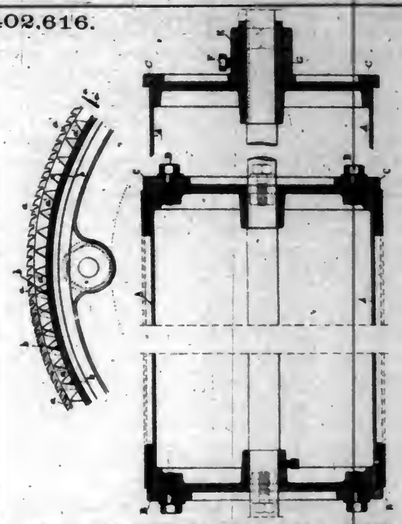
4. The combination of the draw-head, the leaves pivoted therein, and the draw-bar mounted in the draw-head and adapted to separate the leaves, as set forth.

5. The combination of the draw-head having the tapered supporting-blocks F, the leaves pivotally mounted in the draw-head, and the draw-bar sliding in the draw-head and adapted to separate the leaves, as set forth.

402,616. CYLINDER FOR CARDING-MACHINES, &c. JEAN J. RIBIER, Lure, France. Filed Oct. 3, 1888. Serial No. 287,464. (No model.) Patented in France July 4, 1888, No. 191,607; in Belgium July 30, 1888, No. 86,794; in England Aug. 3, 1888, No. 11,172; in Germany Aug. 6, 1888, No. 45,421, and in Italy Sept. 21, 1888, No. 24,068.

Brief.—The object of the invention is to improve the construction of cylinders for carding and other machines.

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Claim.—1. The combination, with the cylinder A, of the rigid washer B, projecting beyond the periphery of the cylinder, an adjustable washer, C, adapted to fit upon the opposite end of the cylinder, a spirally-wound blade wrapped about the cylinder, and screws D, adapted to draw the washer C onto the cylinder and compress the blade.

2. The combination, with the hollow cylinder A, provided with heads or spiders, of the flanged washer B, secured rigidly to one head, a similar washer, C, applied to the spider or head at the opposite end of the cylinder and flanged circumferentially to embrace the cylinder, screws D, passing through the washer C and into the head of the cylinder, and the continuous spirally-wound blade applied to the cylinder between the washers B C.

402,617. LIGHTING DEVICE. ISRAEL M. ROSE, Philadelphia, Pa. Filed Sept. 8, 1888. Serial No. 284,904. (No model.)



Claim.—1. The combination of a case, an igniting-tape strip guided therein, said tape strip having pellets or projections of combustible material or explosive material capable of being ignited by friction, a lamp-vessel, also held in the case, said lamp-vessel being provided with an oil and wick reservoir, the wick projecting from the top of said reservoir in close proximity to the igniting-tape, a feed-worm for feeding the tape strip through the case, the thread of said feed-worm separating the upper pellets from each other, and a striker to press or scratch upon the combustible or explosive material on the tape strip to ignite or explode it.

2. The combination of a case, a tape strip having pellets or projections of combustible or explosive material capable of being ignited by friction, a lamp-cylinder being provided with an oil and wick reservoir, the wick projecting from the top of said reservoir in close proximity to the igniting-tape, and said lamp-cylinder having a worm to work in connection with said pellets on the tape strip to feed them through the case.

3. The combination of a case, a tape strip having pellets or projections of combustible or explosive material capable of ignition by friction, a lamp-cylinder having a worm to work in connection with said pellets or projections to feed them through the case, a striker on the cylinder, and a flexible backing or support for the tape strip, said lamp-cylinder being provided with an oil and wick reservoir, the wick projecting from the top of said reservoir in close proximity to the igniting-tape.

4. The combination of a case, a tape strip having pellets or projections of combustible or explosive material capable of ignition by friction, a lamp-cylinder provided with an oil and wick reservoir, the wick projecting from the top of said reservoir in close proximity to the igniting-tape, and said reservoir having a worm to work in connection with said pellets or projections on the tape strip to feed them through the case, a striker, and a spring secured to the case and pressing upon the cylinder to prevent its accidental rotation.

5. The combination of a case, an igniting-tape strip supported by the case, means, substantially as described, to feed said tape strip through the case, a lamp-cylinder within said case, said lamp-cylinder being provided with an oil and wick reservoir, the wick projecting from the top of said reservoir in close proximity to the igniting-tape, and a striker carried by the cylinder, and a plug for the bottom of said cylinder for holding it in the case and providing means to seal it as well as rotate it.

6. The combination of a case, an igniting-tape strip supported by the case, a lamp-cylinder journaled within said case and provided with an oil and wick reservoir, the wick projecting from the top of said reservoir in close proximity to the igniting-tape, said cylinder having a screw or worm on its upper end to feed said strip through the case and an aperture on its lower end or bottom for filling said cylinder, and a plug at the bottom of said cylinder for holding it in the case and providing means to seal it as well as to rotate it.

7. The combination of a case, D, having grooves G, tape strip I, having igniting pellets or projections i, the lamp-cylinder A, said lamp-cylinder being provided with an oil and wick reservoir, the wick projecting from its top in close proximity to the igniting-tape, said cylinder being provided with a worm, C, and striker J, plug E, and spring-arm H.

8. The combination of a guide for a tape strip having pellets or projections of combustible material, with a screw to feed the igniting-tape strip and its pellets in proper position to be acted upon by the ignitor, the thread of the screw separating the top pellets from those beneath, whereby the top pellet may be ignited and burned without destroying the remaining pellets.

402,618. FEED-MILL. GUILFORD D. ROWELL, Appleton, Wis. Filed Oct. 15, 1888. Serial No. 288,130. (No model.)



Claim.—1. In a feed-mill, the combination of the driving-shaft G, the thereon-supported grinding-burr B, adjusting-screw H, friction bearing-block J, and block-retaining screw L, all substantially as and for the purpose specified.

2. In a feed-mill, the combination of the feed-chamber F, provided with gate-retaining guideways D D, feed-gate T, provided at its lower end with a central recess, 1, for the reception of the driving-shaft, vertical partition 2, located below said shaft and adapted to close the lower end of said recess 1 beneath the shaft, and means, substantially as described, for adjusting said feed-gate, substantially as and for the purpose specified.

3. In a feed-mill, the combination of the feed-chamber F, provided with gate-retaining guideways *d d*, feed-gate T, provided at its lower end with a central recess, 1, for the reception of the driving-shaft, vertical partition 2, located below said driving-shaft and adapted to close the lower end of said recess 1 beneath the shaft, upward-projecting arm 3, provided with series of cog-teeth 4, shaft 6, supported in journal-bearings at its respective ends from the burr-inclosing case, pinion 5, affixed to said shaft 6 and meshing in the cogs of said arm 3, hand-wheel 7, affixed to one of the protruding ends of said shaft 6, and spiral spring 9, interposed between said hand-wheel and one of said shaft-supporting bearings, all substantially as and for the purpose specified.

402,619. HEAD-BAND FOR SURGICAL MIRRORS. JOHN L. SARDY, New York, N. Y. Filed Aug. 20, 1888. Serial No. 283,201. (No model.)



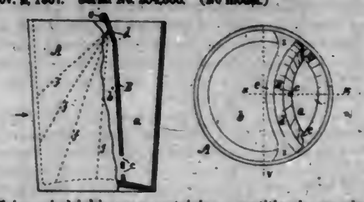
Claim.—1. The combination of a mirror and a head-band of rigid material adapted to be folded over and to protect the same.

2. The duplex or centrally-divided head-band, preferably concave on its inner face, the two parts being pivoted together, in combination with a mirror swiveled to said head-band, whereby the latter can be folded over to protect the mirror, as set forth.

3. The combination of a mirror and a head-band connected by a double ball-and-socket joint.

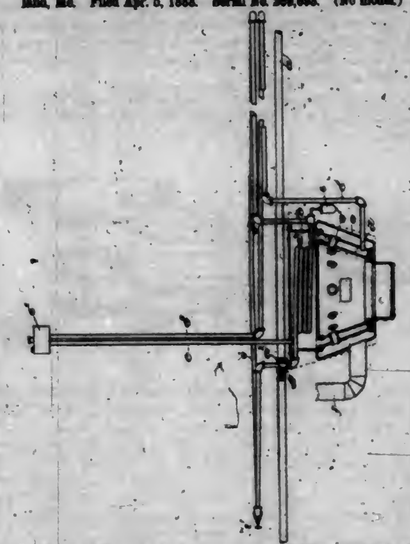
4. The combination of the centrally-divided head-band and the mirror by double ball-and-socket joint, all the parts being arranged substantially as and for the purposes set forth, and provided with a latch for locking the parts together when in the collapsed position.

402,620. DRINKING-CUP. JOHN SCHUH, Rochester, N. Y. Filed Nov. 4, 1887. Serial No. 254,300. (No model.)



Claim.—A drinking-cup containing a partition in one piece with the cup and joined to the bottom surface thereof, and extending beyond the upper edge of the cup and terminating in a plane parallel with the plane of the upper edge of the cup, said partition being composed of two conical parts of different inclination and notched at its respective edges next to the inner surface of the cup, substantially as shown.

402,621. CAR-HEATING APPARATUS. JAMES H. SEWALL, Portland, Me. Filed Apr. 5, 1888. Serial No. 269,693. (No model.)



Claim.—1. In a car-heating apparatus, the hot-water-circulation pipes arranged within the car, a water-reservoir beneath the car and with which said pipes communicate, and means to heat said reservoir to cause free circulation of the water, combined with steam-circulation pipes arranged within the car, and a coil placed within said reservoir communicating with said steam-circulating pipes, and means for supplying said coil and pipes with steam, substantially as described.

2. In a car-heating apparatus, the hot-water-circulation pipes within the car, the main steam-pipe and water-reservoir, and the auxiliary heater surrounding said reservoir, combined with the steam-circulation pipe *i*, also within the car, connected to the said main steam-pipe, and also to a branch pipe passing through said reservoir, substantially as described.

3. In a car-heating apparatus, the combination of the main steam-pipe *a* outside the car, branch pipe *a'*, valve a^2 therein, the independent steam and hot-water circulation pipes within the car, said steam-circulating pipes being connected with the branch pipe *a'* and the water-reservoir *b* beneath the car, and with which the water-circulation pipes directly communicate, the heating-coil a^3 within said reservoir and connected to the main and steam-circulation pipes, and the auxiliary heater *c*, surrounding said reservoir, whereby the car may be heated by the circulation therethrough of both steam and water, or by water alone, the water in the water-circulating pipes being heated by steam passed through the coil a^3 from the main steam-pipe, or by the surrounding auxiliary heater *c*, or by both, substantially as described.

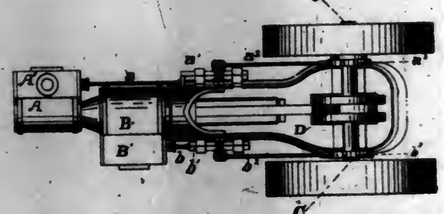
4. In a car-heating system, the main steam-pipe, coil a^2, and boiler *b*, placed in contact with a fire-pot, combined with the hot-water-circulation pipes communicating with the boiler, and the steam-circulation pipes located within the car communicating with the coil, substantially as described.

5. The combination, with a car having a system of water-circulating pipes within said car and two heaters, both in operative contact with said circulating system, or with branches thereof, and adapted to be operated simultaneously or separately for imparting heat thereto, of an independent system of steam-circulating pipes in said car, the said system including therein as a part of its continuous circuit one of the said heaters, substantially as described.

6. In a car-heating system, the combination, with a system of water-circulating pipes within the car and a suitable radiator in contact with said circulating system or a branch thereof, mechanism for supplying said radiator with steam as a primary means of heating said circulating system, and a secondary heater also in operative contact with said circulating system and adapted to heat the same, of an independent system of steam-circulating pipes within said car, the said system including within it as a part of its continuous circuit the steam-supply mechanism for the said radiator, substantially as described.

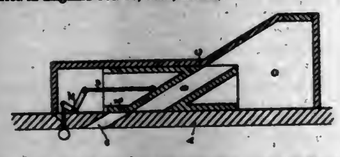
7. In a car-heating system, the combination, with a system of water-circulating pipes within the car, a main steam-pipe attached to the car and means for connecting it with a suitable generator, a steam-radiator in operative contact with said circulating system or a branch thereof, and a branch pipe connecting said main steam-pipe with said radiator and adapted to supply the same with steam, of an independent system of steam-circulation pipes within said car deriving its supply from said main steam-pipe, the said steam-radiator being included in said independent system as a part of its continuous circuit, substantially as described.

402,622. STEAM-ENGINE. JAMES A. SEYMOUR and JOHN E. MCINTOSH, Auburn, N. Y. Filed July 23, 1888. Serial No. 280,759. (No model.)



Claim.—In a compound engine, the cylinders A' and B, arranged in line axially and having their respective steam-chests A' and B' upon opposite sides thereof, in combination with the double-crank shaft O D C, which is provided with two eccentrics, a^3 and b^3, upon either side of the crank, respectively, said crank-shaft being in the plane of and at right angles to the axes of the cylinders A and B, and the valve-rods *a* and *b*, connected, respectively, to the eccentrics a^3 and b^3, through the eccentric-rods a^2 and b^2, substantially as described.

402,623. LETTER-BOX. EDWARD A. SHARP, Epworth, County of Lincoln, England. Filed Feb. 20, 1888. Serial No. 265,756. (No model.) Patented in England Oct. 20, 1886, No. 13,374.

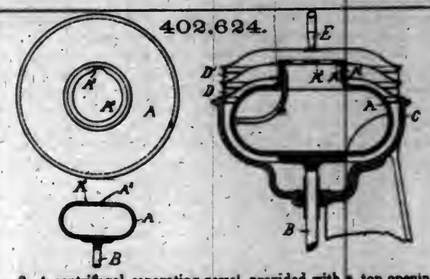


Claim.—In a letter-box, the combination, with the diagonally-arranged hollow receptacle B, having separate openings at its upper and lower ends, of the bell-crank and cord for raising the said receptacle, the plane surface A, having an opening, *a*, for the introduction of letters into the receptacle, and the plane surface C and receptacle D, communicating with the receptacle B after its descent, whereby the letters are automatically discharged therefrom into the said receptacle D, substantially as set forth.

402,624. CENTRIFUGAL LIQUID-SEPARATOR. PHILIP M. SHARPLES, West Chester, Pa. Filed Feb. 20, 1888. Serial No. 265,671. (No model.)

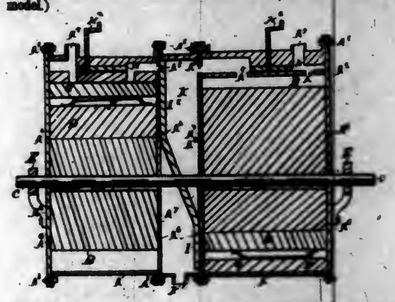
Claim.—1. A centrifugal separating-vessel provided with a top opening or mouth eccentric with the axis of said vessel, substantially as and for the purpose set forth.

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2. A centrifugal separating-vessel provided with a top opening or mouth mainly concentric with the axis of said vessel, but having a depression or notch, A^2, substantially as and for the purpose set forth.

402,625. ROTARY ENGINE. JOHN W. SHALLWOOD and DAVID R. AUSTIN, Nevada, Mo. Filed Aug. 20, 1888. Serial No. 283,216. (No model.)



Claim.—In a rotary engine, a reversing-valve, H, having a winch, H^3, ports A^4 A^5, a steam-box, L, cylinder-casings having grooves A^6 and abutments A^3, pistons B, having wing D, having spring-packing steam-chest K, revolving valve composed of portions I and I^3, arranged as shown, and shaft C, all substantially as and for the purpose set forth.

402,626. ELECTRICAL ANNUNCIATOR. BENJAMIN SHEAD, Chicago, Ill. Filed Feb. 12, 1889. Serial No. 299,634. (No model.)

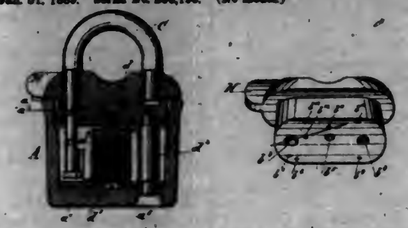


Claim.—1. In an annunciator, the combination, with magnets electrically connected to a battery and to a push located at a distance, of a stem connected to the pivot of the armature of the magnets and having its free end movably connected with a pivoted segment, a marking-finger secured to turn with the pivot of the segment, a pivoted pin adapted to be rocked on its pivot by the movement of the segment, insulated spring-contact points adapted to be closed by the movement of the pin in one direction, and a push joined in circuit with the spring-contacts and one of the magnets, whereby when the push is operated the finger is returned to its normal position and the circuit through the spring-contacts opened, substantially as described.

2. A movable contact device forming one terminal of a circuit including the armature-magnet, and engaging first the other terminal of the circuit, and on its further movement breaking said circuit and engaging the other terminal of a circuit including a bell-magnet, substantially as described.

3. In combination, a spring-seated contact device forming one terminal of a circuit including the armature-magnet, and adapted by its initial movement to engage the other terminal of said circuit, and by its further movement to engage the terminal of a second circuit including a bell, and by its return movement under the influence of the spring to break said circuits in reverse order, substantially as described.

402,627. ART OF MAKING LOCKS. ROBERT C. SMITH, New York, N. Y., assignor to the Universal Lock Company, of New York. Filed Jan. 31, 1889. Serial No. 298,199. (No model.)



Claim.—1. The hereinbefore-described art of manufacturing locks of the kind shown, to wit: forming the sides and bottom of the lock-case in one integral body, forming the top of the lock in a piece separate from said body and with a circumferential depression in its edge, assembling the said body and the said top pieces together, and then uniting said body to said top by exerting great pressure upon the said body, whereby its metal is forced into the aforesaid depression in the said top, as hereinbefore described.

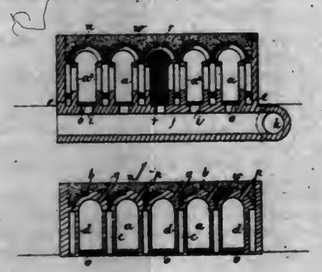
2. The hereinbefore-described art of manufacturing locks of the kind shown, to wit: forming the bottom and sides of the lock-case in one integral body, forming the top of the lock-case in a piece separate from the said body and with a downwardly-projecting part of a size to fit loosely the said body, said downwardly-projecting part having a circumferential depression around its edge and a circumferential shoulder around its upper part, assembling the said body and the said top pieces together, and then uniting the aforesaid body to the aforesaid top by exerting great pressure upon said body, whereby its metal is forced into the aforesaid depression in the aforesaid downwardly-projecting part of the aforesaid top, as herein described.

3. The hereinbefore-described art of manufacturing locks of the kind shown, to wit: forming the sides and bottom of the lock-case in one integral body and with an external outwardly-projecting ridge around its upper part, forming the top of the lock in a piece separate from the said body and with a downwardly-projecting part of a size to fit loosely the aforesaid body, said downwardly-projecting part having a circumferential depression around its edge and a circumferential shoulder around its upper part, assembling the said body and the said top pieces together, and then uniting the aforesaid body and the aforesaid top by exerting great pressure upon the aforesaid ridge of the aforesaid body, whereby its metal is forced into the depression in the aforesaid downwardly-projecting part of the said top, as herein described.

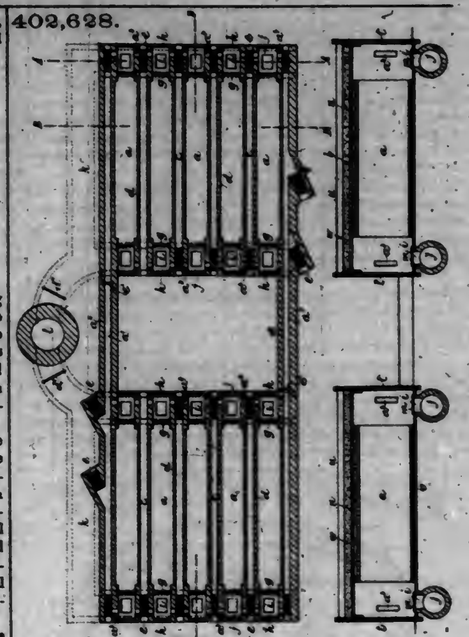
4. The hereinbefore-described art of manufacturing padlocks of the kind shown, to wit: forming the sides and bottom of the lock-case in one integral body, forming the shackle-guide openings and the orifices for the axis of the locking mechanism in the same base separate from the said body, building up and adjusting the locking mechanism on the said base before insertion in the said body, assembling the said body-piece and the said base and mechanism together, and then uniting the said body and the said base into one lock-case by exerting great pressure upon the said body, whereby its metal is forced into a depression on the edge of said base, as herein fully described.

402,628. BRICK-KILN. REGINALD STANLEY, Nuneaton, County of Warwick, England. Filed Nov. 14, 1888. Serial No. 290,773. (No model.)

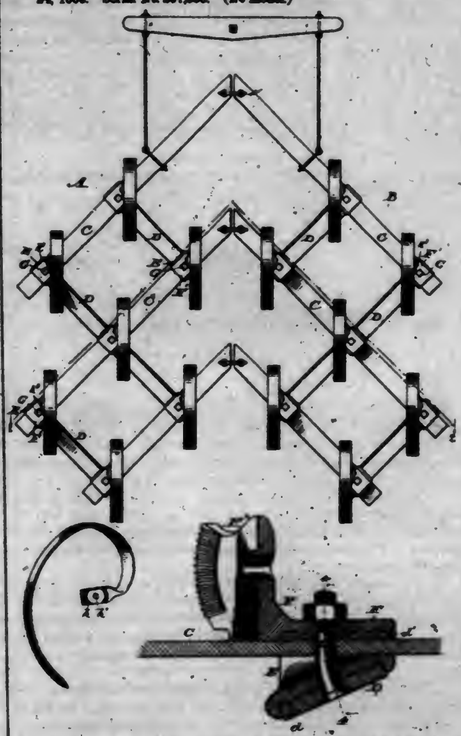
Claim.—An oven or kiln for burning bricks in which the chambers are muffled or closed, provided with the flues *a'*, lateral flues *e e*, underneath flues, *j*, and the flues *k*, leading to the chimney and having front and back doors or wickets, *g h*, with holes *r r* therein for expelling the steam in the process of drying, all substantially as set forth.



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402,629. HARROW. GEORGE SWEET, Dansville, N. Y. Filed Jan 24, 1888. Serial No. 297,253. (No model.)



Claim.—1. In a harrow-frame, the combination, substantially as hereinbefore set forth, of the flat horizontal tooth-bearing bars ar-

ranged at an angle to the line of draft and flexibly connected together at their inner ends, and the cross-bars secured to the under sides of the tooth-bearing bars and inclined from their front edges rearwardly.

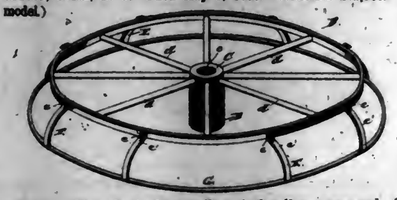
2. The combination, substantially as hereinbefore set forth, of a series of flat horizontal tooth-bearing bars parallel with each other and extending at an angle to the line of draft from their front ends rearwardly and flexibly connected at their inner ends, and the cross-bars secured to the under sides of the tooth-bearing bars, arranged at right angles therewith, inclined from their front edges rearwardly and downwardly and facing inwardly.

3. The combination, substantially as hereinbefore set forth, of a horizontal tooth-bearing bar, a cross-bar inclined from its front edge rearwardly, a chair having an inclined seat in its under side for the cross-bar and a horizontal seat in its upper end for the tooth-bearing bar, and a bolt for connecting the bars with the chair.

4. The combination, substantially as hereinbefore set forth, of the tooth-bearing bar, the cross-bar, the chair having seats in its upper and lower sides for the bars, the tooth-supporting bracket having a horizontal arm resting in a seat of the chair above the tooth-bearing bar, and an upwardly-extending arm to which the tooth is secured.

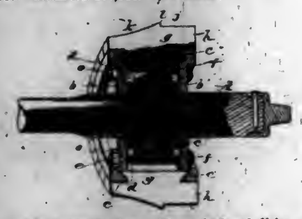
5. The combination, substantially as hereinbefore set forth, of the tooth-bearing bar, the cross-bar, the chair to which said bars are secured, the harrow-tooth, the tooth-supporting bracket having a horizontally-extending arm secured to the chair, and an upwardly-extending serrated arm to which the harrow-tooth is secured and extending at an angle of about forty-five degrees to the tooth-bearing bar.

402,630. SUPPORT FOR ENDLESS CLOTHES-LINES. MARTIN V. TEETOR, Sodus, N. Y. Filed May 5, 1888. Serial No. 272,968. (No model.)



Claim.—The wheel of an endless clothes-line, composed of the central hub, the rim connected with the hub by radial spokes, the wire ring a suitable distance below and of larger diameter than the rim, and the arms connecting the rim and wire ring, having their upper ends extended somewhat above the rim, and bearings for the traveling line formed on their upper portions, which bearings are concave outwardly and aligned with the rim, so that the line will travel on the rim between the bearings and avoid making bends at the latter, substantially as specified.

402,631. SAND-REEL. CALEB M. THOMPSON, Greenville, Pa. Filed Jan. 25, 1889. Serial No. 297,511. (No model.)



Claim.—1. The combination, with a shaft, of disks, a key or feather secured to the shaft, bolts passing through the disks, devices for locking both disks to the key or feather, and a series of segments secured to and between the disks, substantially as set forth.

2. The combination, with a shaft and disks thereon, one of the latter being provided on its inner face with projections, of a key or feather secured to the shaft and engaging the projections on said disk, bolts, and a series of segments secured to and between the disks, substantially as set forth.

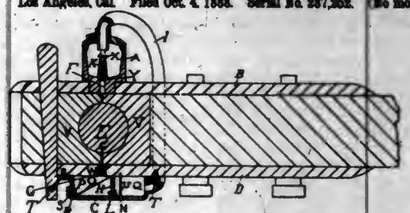
3. The combination, with a shaft and disks thereon, one of the latter having projections on its inner face, of a key or feather secured to the shaft and engaging the projections on said disk, bolts passing through the disks and end of the key or feather, and a series of segments secured to and between the disks, substantially as set forth.

4. The combination, with a shaft, disks mounted thereon, a feather passing through the shaft, and bolts passing through the disks and the end of the feather, whereby the disks are held together and prevented from turning on the shaft, of a series of segments secured to and between the disks, substantially as set forth.

5. The combination, with a shaft, disks having lugs thereon, feather, and bolts arranged substantially as described, of segments held between the disks, and nuts on the bolts adapted to be turned, whereby the disks are forced nearer together and the segments are forced nearer the shaft, substantially as set forth.

6. The combination, with a shaft and disks, the latter having annular V-shaped grooves therein, of segments having a straight and a slanting exterior face to form a combined friction and lock brake with beveled sides and notched ends, and bolts for holding the disks firmly against the notched ends of the segments, and nuts whereby these disks may be drawn closer together, thereby forcing the segments nearer together and nearer to the shaft, substantially as set forth.

402,632. OILER. WEBSTER F. TRAVIS and CHARLES K. TRAVIS, Los Angeles, Cal. Filed Oct. 4, 1888. Serial No. 287,262. (No model.)



Claim.—1. An oiler comprising a feed oil-cup located above the crank-pin, a collecting oil-cup located below the crank-pin, there being a feed oil-passage between the feed oil-cup and the crank-pin and an escape oil-passage between the bearing and the collecting-cup, a cross-partition in the collecting-cup between the escape oil-passage and one end of the collecting-cup, there being a passage through such partition, a momentum-actuated valve for such passage to allow the oil to flow into the discharge-chamber from the receiving-chamber and prevent its return, and a tube connecting the exterior end of the collecting-cup with the top of the feed oil-cup.

2. An oiler comprising a feed oil-cup located above the crank-pin, a collecting oil-cup located below the crank-pin, there being a feed oil-passage between the feed oil-cup and the crank-pin and an escape oil-passage between the bearing and the collecting-cup, a cross-partition in the collecting-cup between the escape oil-passage and one end of the collecting-cup, there being a passage through such partition, the valve-pin provided at one end with a head and having longitudinal grooves in the body of the pin, and a tube connecting the exterior end of the collecting-cup with the top of the feed oil-cup.

3. In an oiler provided with a feed oil-cup and a collecting oil-cup connected by a tube, the combination of the collecting oil-cup set forth, comprising the receiving-chamber, the discharging-chamber, the partition therebetween, the top of which is not flush with the top of the walls of the collecting-cup, the bottom strap provided with an oil-passage therethrough, the filter seated below such oil-passage and having its upper end clamped between the partition and the strap, and fastenings to secure the collecting-cup to the strap.

4. In an oiler, the combination of the apex split cone of spring metal seated in the oil-passage of the feed-cup, having its outer face threaded and being provided with an axial passage forming an outlet through the base of the cone, and the nut screwed upon the upper end of the cone.

5. In an oiler such as set forth, the means for collecting the oil and conducting it from the bearing to the collecting-cup, comprising the brasses having a space between them extending from side to side beneath the bearing to allow the oil to pass from the pin to the bottom strap, a gutter extending almost from side to side of the top of the strap beneath such space and sloping downward from each end toward the middle of the gutter, and the central passage opening approximately at the middle of the gutter and extending downward through the bottom strap to the collecting-cup.

402,633. TANK-HEATER. ANDREW J. UPHAM, Sycamore, Ill. Filed Jan. 12, 1889. Serial No. 296,152. (No model.)

Claim.—1. In combination with the heater A, designed for submersion within a tank of water and provided with the heating coil or tube G, a discharge-tube, L, attached at one end of the exit of said tube G and supported at its outer and discharge end adjustably at or near the water-line of the water within said tank, and means for adjustably supporting the discharge end of the tube G, substantially as shown, and for the purpose described.

2. The combination of the tank B, the tank-heater A, the tube G, having communication at each end with the water in said tank, the adjustable tube L, attached at one end to the exit of said tube G and projected in an upward direction, and the float M, suitably supported upon the water within said tank and in turn supporting the discharge end of tube L, substantially as shown, and for the purpose described.

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3. In combination with a tank-heater provided with the water-circulation within its fire-box, of a float, M, and a tube, L, flexibly or removably connected at one end with the exit-port of said water-circulation and supported at its other end by said float suitably buoyed upon the water in said tank, substantially as shown, and for the purpose described.

4. In a tank-heater, the combination of the heater A, heating tube or coil G, seated within said heater, the adjustable tube L, attached to the exit K of tube G, and a suitable float, M, attached to and adjustably supporting the discharge end of said tube L, substantially as shown, and for the purpose described.

402,634. SOLDERING-TOOL. CHARLES L. WAGANDT, Baltimore, Md., assignor of one-half to Keen & Hagarty, same place. Filed Dec. 22, 1888. Serial No. 294,363. (No model.)



Claim.—1. In a soldering-tool, the combination of a central burner-tube having lateral jet-orifices at its lower end, a soldering tip or iron mounted and adapted to slide longitudinally on said tube, and a stop on said tube whereby said motion is arrested when the jet-orifices are opposite to the end of the soldering-tip, said stop being adjustable to compensate for the consumption of the tip, substantially as set forth.

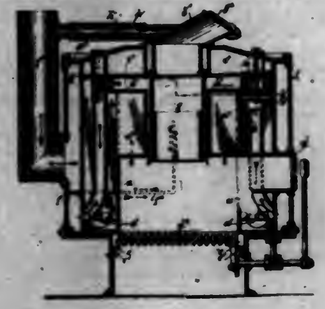
2. In a soldering-tool, the combination of a central burner-tube having lateral jet-orifices at its lower end, a soldering tip or iron consisting of a hollow cylinder mounted and adapted to slide longitudinally on said tube, and a stop on said tube whereby said motion is arrested when the jet-orifices are opposite to the inner surface of the lower end of the cylinder, said stop being adjustable to compensate for the consumption of the tip, substantially as set forth.

402,635. STEAM-HEATER. EDWARD P. WAGGONER, Syracuse, N. Y. Filed Aug. 10, 1888. Serial No. 282,402. (No model.)

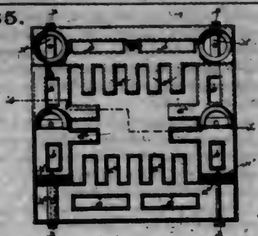
Claim.—1. The herein-described heater, having each side thereof formed of a separate section connected together and formed on their inner faces with integral heating-chambers projecting over the fire, substantially as and for the purpose specified.

2. In an angular steam-heater, a hollow section forming one side of said heater, flues running through said section, openings adapted to be connected to the other sections, and projecting hollow chambers formed integral with the heater-section and extending over the fire, substantially as and for the purpose set forth.

3. In a steam-heater, the section composed of the lower box, *a*, and a series of projections above the box on the inner face of said



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heater-section and extending over the fire, and a bearing-face on said heater provided with a water-passage, substantially as and for the purpose set forth.

4. In a steam-heater, the section composed of the lower box, *a*, a series of hollow projections above the box *a* and extending over the fire, and the raised chamber a^4 on the top face of the heater, substantially as and for the purpose set forth.

5. In a steam-heater, the heater-section composed of the lower box, *a*, a series of integral projecting hollow chambers above the box, the raised projecting chamber on the top face of the heater-section, and the flues running through the heater and opening through the same on the inside of the said projecting chamber, substantially as and for the purpose set forth.

6. In a steam-heater, the heater-section composed of the lower box, *a*, a series of integral projecting chambers above the box, the raised projecting chamber on the top face of the heater-section, and the flues *b*, running through the heater and opening on the inside of the projection a^4 and on the outside wall of the heater, substantially as and for the purpose set forth.

7. In a steam-heater, a main body formed of flat hollow water-sections cast independently, each section being formed on the surface adjacent to the fire with a series of parallel hollow projections above the fire-box, and also with the vertical smoke-flue opening through the top of the section and also through its lower side wall, substantially as and for the purpose set forth.

8. A steam-heater having each wall composed of a separate section or water-chamber connected to the adjacent section, and its top composed of a horizontal section connected to the sections forming the heater-walls, substantially as and for the purpose set forth.

9. In a steam-heater the sides of which meet each other at an angle, the combination of separate heater-sections composing the main body and provided with integral projecting heating-chambers, water passages between the said sections, and flues extending downwardly from the top of the main body, with a top section imposed above the main body, and a space inclosed by the top section, and the sections forming the walls of the heater, and water-passages between said top section and main body, substantially as and for the purpose set forth.

10. In a steam-heater, the combination of the separate sections or water-chambers having integral projecting heating-chambers and the raised projections on the top face thereof, connections between the heater-sections, with the top section abutting against the said raised projection, connections between the heater-sections and top section, a space inclosed by said top section and heater-sections, and flues leading therefrom, substantially as and for the purpose set forth.

402,636. BALE-COMPRESS. SAMUEL J. WEBB, Minden, La. Filed June 19, 1888. Serial No. 277,575. (No model.)



Claim.—1. In a bale compress, the combination, with the cross-head, base, and risers thereof, of a steam-cylinder mounted on the base and having a second cylinder sliding within the same and a piston-rod provided with heads adapted to operate in each of the cylinders, and means for connecting the piston-rod with the pressing devices, substantially as specified.

2. In a bale-compress, the combination, with the frame-work thereof, of a steam-cylinder provided with a smaller sliding cylinder, a piston-rod mounted in the steam-cylinder and carrying a piston-head for reciprocation therein and a second piston-head for reciprocation in the smaller cylinder, and means for connecting the piston-

rod with the pressing devices, and flanges on the smaller cylinder for limiting its movement in the larger cylinder, substantially as specified.

3. The combination, with the base of a bale-compress provided with an exhaust-opening, of a steam-cylinder mounted on the base and provided with a piston-rod terminating as a valve for controlling said exhaust, substantially as specified.

4. In a bale-compress, a steam-cylinder carrying a smaller sliding cylinder and a piston-rod provided with heads for operating in said cylinders, in combination with a hydraulic plate mounted above the cylinders and a system of toggle-levers connecting the upper piston-head and the plate, substantially as specified.

5. In a bale-compress, a steam-cylinder carrying a smaller sliding cylinder and a piston-rod having piston-heads for operating in the cylinders, in combination with a hydraulic plate mounted above the cylinders, a system of toggle-levers connecting the piston-rod and plate, and a follower or platen mounted above said plate, substantially as specified.

6. In a bale-compress, a steam-cylinder having a smaller sliding cylinder, a piston-rod carrying heads adapted to operate in the cylinders, and a hydraulic plate mounted above the same, in combination with a system of toggle-levers connecting the piston-rod and plate and a hydraulic plunger on said rod and operating in the plate, substantially as specified.

7. In a bale-compress, the combination of a steam-actuated movable hydraulic plate having a central bore provided with a cylinder and a headed piston-rod for operating in said cylinder, and having an annular hydraulic chamber surrounding the cylinder, in combination with a superimposed platen having an annular depending flange adapted to take into the annular hydraulic chamber of the plate, substantially as specified.

8. The cylinder 4, having the ring 6, in combination with the sliding cylinder 7, having the flanges 8 and 9, the base 3, having the exhaust-opening 13, the piston-rod 10, terminating in a valve, and the head 11, substantially as specified.

9. The cylinder 4, the rod 10, having heads 11, 12, and 27, and sliding cylinder 7, in combination with the hydraulic plate 14 and the toggle-levers consisting of the sections 15 and 16, the section 15 pivoted to the plate, as at 19, to the section 16, as at 18, and the section 16 to the piston-rod, as at 19×, and the levers 20, pivoted to the sections 15 and 16 and to pins 21, journaled in the risers 2 of the framework, substantially as specified.

10. The combination, with the piston-rod 10, having heads 11, 12, and 27, and cylinders in which said heads slide, of the hydraulic plate 14, having the hydraulic bore 25 and cylinder 26 mounted therein, substantially as specified.

11. The combination, with the piston-head 12 and piston-rod 10, having heads 27 and 11, of the plate 14, having the cylinder 26 and chamber 24, and the platen 28, having the depending flange 30 and head 31, substantially as specified.

12. In a bale-compress, a steam-cylinder, risers, a cross-head, a hydraulic cylinder-plate, yokes 23, and a sliding cylinder, in combination with a piston-rod having heads working in said hydraulic plate and in said cylinders, and pairs of three-linked toggle-joints pivoted to said piston-rod, said hydraulic plate, and said risers, substantially as specified.

402,637. PROCESS OF MAKING CHAIN-LINKS. WILLIAM H. WHITELEY, Springfield, Ohio, assignor to the William H. Whiteley Company, same place. Filed June 7, 1888. Serial No. 276,317. (No model.)



Claim.—Casting chain-links of high-carbon iron with a chill in their fork shaped to correspond therewith, for the purpose of making the casting solid where the sides join the cross-bars, and afterward removing the carbon from the iron by an annealing process.

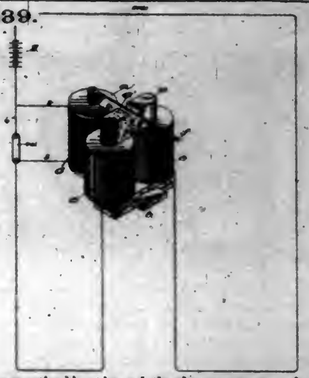
402,638. WHIFFLETREE. JOHN H. WILLEY, Manchester, N. H. Filed Feb. 27, 1888. Serial No. 301,266. (No model.)



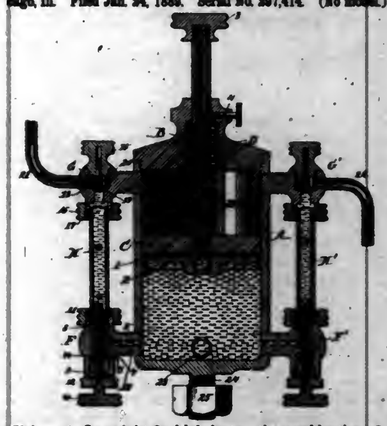
Claim.—A whiffletree consisting of the combination of a bar, a flat spring on the front side thereof, which has longitudinally-slotted flanged portions at its ends extending backward over the ends of said bar and encircling pins therein, and trace-hooks attached to the spring, substantially as described.

402,639. POLARIZED RELAY. JOHN C. WILSON, Boston, Mass. Filed Nov. 9, 1886. Serial No. 218,304. (No model.)

Claim.—The polarized relay herein described, comprising the permanently-magnetized bent bar *a b*, the electro-magnet *c*, placed in magnetic contact with the said permanently-magnetized bar and having its coils in the line-wire *m*, the armature *f*, pivoted to the arm *a* of said permanently-magnetized bar and vibrating between the pole-pieces *c' c'* of said electro-magnet *c*, combined with the auxiliary inductive coil C, placed or wound upon the arm *a* of said permanently-magnetized bar, and connected with the line-wire *m* and the switch *n*, for shunting out the said coil C, all substantially as and for the purpose specified.



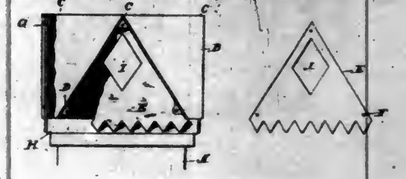
402,640. SIGHT-FEED LUBRICATOR. WILLIAM WOODWARD, Chicago, Ill. Filed Jan. 24, 1888. Serial No. 297,414. (No model.)



Claim.—1. In a sight-feed lubricator, the combination of an oil-cup provided in the lower part with an oil-inlet and an oil-outlet, a water-filled glass tube, a needle-valve for controlling the passage of oil from the oil-cup outlet to said glass tube, a tube, as 21, communicating with the glass tube and leading to the place to be lubricated, and a spring-actuated piston located in the oil-cup, substantially as described.

2. In a sight-feed lubricator, the combination of an oil-cup provided in its lower part with an oil-inlet and an oil-outlet, a glass tube, a valve for controlling the passage of oil from the oil-cup outlet to said glass tube, a tube, as 21, communicating with the glass tube and leading to the place to be lubricated, a spring-seated valve intermediate said tubes, a piston located in the oil-cup and having a hollow piston-rod provided with a cap at its upper end, and a spring acting on the piston-head to force it down, substantially as described.

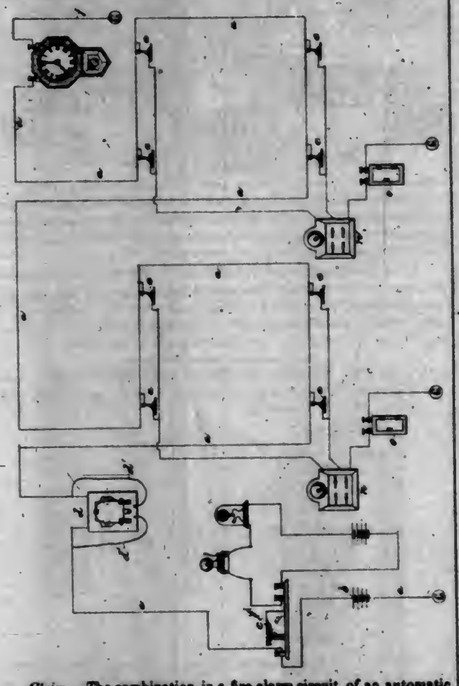
402,641. CHIMNEY-PROTECTOR. WILLIAM WRIGHT, Willink, N. Y. Filed June 25, 1886. Serial No. 206,191. (No model.)



Claim.—1. A chimney-protector comprising the roofing-piece cast in a single piece, and the wall-pieces attachable thereto by means substantially as shown, whereby they are adjustable, so as to fit against and firmly embrace the chimney and secure the protector in position, substantially as set forth.

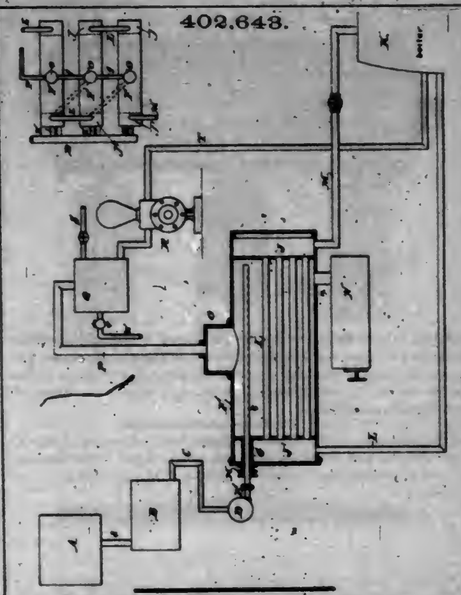
2. The combination, with the roof-piece B, having the right-angled gables C formed integrally therewith in a single piece of cast-iron, of the wall-pieces E, provided with the openings I and removably secured in the gables by means, substantially as shown, whereby said wall-pieces are adjustable, so as to fit against and firmly embrace the chimney, as and for the purposes set forth.

402,642. TESTING APPARATUS FOR FIRE-ALARMS. JOHN YOUNG, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Nov. 21, 1884. Serial No. 148,540. (No model.)

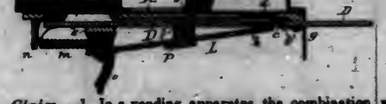


Claim.—The combination, in a fire-alarm circuit, of an automatic circuit-closing mechanism operating at stated intervals, a high-resistance annunciator in the circuit at the patrol-station, and a shunt around said annunciator-coils closed by the falling of the shutter, substantially as and for the purpose specified.

402,643.



402,644. VENDING APPARATUS. HENRY BAILEY, New York, N. Y., assignor, by mesne assignments, to The Automatic Selling Machine Company, same place. Filed Jan. 7, 1889. Serial No. 295,989. (Model.)



Claim.—1. In a vending apparatus, the combination, with an external coin-chute casing, of a pair of removable plates loosely held side by side within such casing and locked together, one of such plates having a continuous recess forming a chuteway, substantially as set forth.

2. In a vending apparatus, the combination, with the hinged coin-chute casing, of a pair of removable plates loosely fitted within the same, one of such plates being recessed to form the chuteway, substantially as set forth.

3. In a vending apparatus, the combination, with a box or case containing the locking and delivery mechanism, of a hinged or pivoted coin-chute outside of said box, substantially as described.

4. In a vending apparatus, the combination, with a box or case containing the locking and delivery mechanism, of an external hinged coin-chute and a locking-pin for locking said chute to said case, substantially as set forth.

5. The combination, with the plate A, having the slot *d'*, of a sliding delivery-bar, as D, and a support for articles of sale connected to said bar by a pin which passes through said slot and sliding with said bar, substantially as described.

6. The combination of the sliding bar D, the locking-lever, and the double stop l^2 l^3, substantially as set forth.

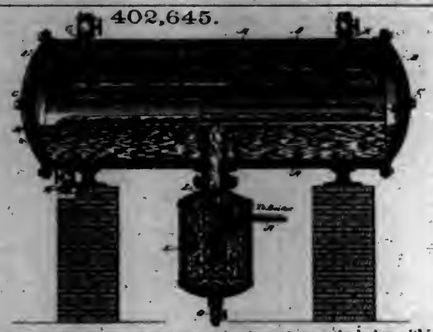
7. The combination of the sliding bar D, the locking-lever, and stops l^2 l^3, each having a lip, as l^4 l^5, substantially as described.

402,645. FEED-WATER HEATER AND PURIFIER. HENRY D. BARASWANATH, Chicago, Ill. Filed Aug. 28, 1888. Serial No. 283,994. (No model.)

Claim.—1. The combination, with the feed-water heater, of a settling-chamber, a vertical pipe therein opening at both ends above and below the surface of the water, respectively, a hollow cone protecting the upper end thereof, and a feed-pipe leading to the boiler and connecting with said pipe below the upper protected end thereof, substantially as described.

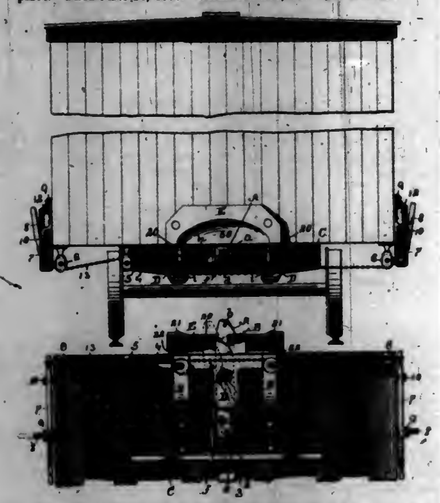
2. The combination, with a feed-water heater, of a series of reversely-inclined shelves located in the heating-chamber thereof, a settling-chamber and pipe connecting said chamber and heater and

402,645.



opening in the latter above the bottom thereof, a vertical pipe within said chamber open at both ends, the lower end only being submerged, a cone protecting the upper open end thereof, and a feed-pipe to the boiler connecting with said pipe below the upper protected end thereof, substantially as described.

402,646. CAR-COUPLING. JAMES BARRY, Kansas City, Mo., assignor of part to William H. H. Tainter and Daniel W. Tainter, same place. Filed June 12, 1888. Serial No. 276,736. (No model.)



Claim.—1. In a car-coupler, the combination, with a car and a draw-head pivoted thereto, of brackets secured to the car at each side, levers mounted in said brackets, pawls to engage said levers, a chain connecting one of said levers with the draw-head, and another chain connecting the other lever with the first-mentioned lever, substantially as set forth.

2. In a car-coupler, the combination, with the pivoted draw-head, of a spring bearing on one side of the draw-head and a frame composed of spring-plates and a connecting-bar bearing on the under face of the draw-head, substantially as set forth.

3. In a car-coupler, the combination, with the draft-timber, of a pivoted draw-head yieldingly connected thereto, a spring bearing on one side of the draw-head, and a spring-frame having a tongue bearing on the under face of the draw-head, substantially as set forth.

4. In a car-coupler, the combination, with the draft-timber having a slot, of the rounded shank of a draw-head passing through said slot, springs encircling the shank at opposite sides of the draft-timber, a draw-head connected with the shank, a spring bearing on one side of the draw-head, and a spring-frame having a rearward projection bearing on the under face of the draw-head, substantially as set forth.

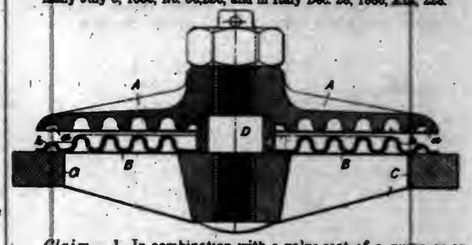
5. In a car-coupler, the combination, with a pivoted draw-head, of a spring-frame having a tongue to bear on the under face of the draw-head, substantially as set forth.

6. The combination, with a draw-head adapted to move laterally and vertically, and springs for holding the draw-head elevated, of a bumper located on the car immediately above the draw-head and provided with an inclined face adapted to engage the draw-head of the next adjacent car and force it downwardly, substantially as set forth.

7. The combination, with a draw-head adapted to move laterally and vertically, and springs for holding the draw-head elevated, of a spring-bumper secured to the car above the draw-head and provided with an inclined face adapted to engage the draw-head of the next adjacent car, substantially as set forth.

8. In a car-coupler, the combination of the operating-lever 7, the slotted bracket 9, and pawl or catch 8, for the purpose substantially as set forth.

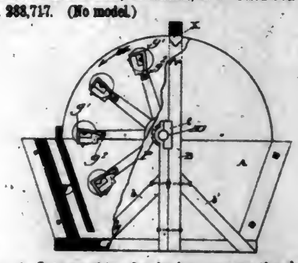
402,647. PUMP-VALVE. ASPLAN BELDAM, London, County of Middlesex, England. Filed Sept. 22, 1886. Serial No. 214,219. (No model.) Patented in England Sept. 10, 1885, No. 10,730; in France June 18, 1886, No. 176,837; in Belgium July 1, 1886, No. 73,630; in Germany July 3, 1886, No. 38,226, and in Italy Dec. 28, 1886, XLI, 228.



Claim.—1. In combination with a valve-seat of a pump or an analogous structure, a valve having a peripherical channel or channels or corrugations, whereby the gentle settling of the valve upon its seat is effected, substantially as described.

2. In combination with a valve-seat of a pump or an analogous structure, a valve having corrugations, and a guard having corrugations adapted to receive and correspond with the corrugations of the valve, whereby a cushioning effect is obtained between said valve and guard upon the left of the valve, substantially as described.

402,648. MACHINE FOR DYEING YARN ON THE SKEIN. JOHN R. BRAY and OTIS S. PIERCE, Pawtucket, R. I. Filed Oct. 20, 1888. Serial No. 288,717. (No model.)



Claim.—1. In a machine for dyeing yarn on the skein, the combination, substantially as hereinbefore described, of a tank containing dye or liquor, a frame secured thereto supporting a journal-box, a rotary central shaft alternately rotating in either direction, flanged hubs mounted upon the said shaft, longitudinally-slotted spokes secured to said hubs, a frame for holding the skeins of yarn fitting into the slotted groove of said spokes, and means for locking said frame into said spokes.

2. In a machine for dyeing yarn on the skein, the combination, substantially as hereinbefore described, of a tank, a frame secured thereto, a rotary shaft, flanged hubs, longitudinally-slotted spokes, means for holding said shaft and spokes while in the process of loading and unloading, a frame for holding the skeins, adjustable for any length of skein, fitting into the slotted groove of the spokes, means for locking said frame into said spokes, and a friction-disk, N, mounted upon the extended shaft J of the upper reel-stick of the frame colliding with a buster extending downward from the cross-bar of the supporting-frame.

3. The combination, in a dye or liquor tank, of a tank, a rotary shaft, flanged hubs secured thereto, longitudinally-slotted spokes secured to said hubs, and a frame for holding the skeins of yarn, having side arms formed of corresponding strips of metal slotted and adjustable to each other for any length of skein, fitting into the groove of said spokes and securely locked in said spokes by the swinging arm *g*, which fits by means of the hole in its bent end upon the pin *i*.

402,649. RIVET. MELLEN BRAY, Newton, Mass. Filed Jan. 3, 1889. Serial No. 295,373. (No model.)

Claim.—1. A rivet made from solid wire provided with a head and two prongs, each having a rounded outer surface and a flat inner surface, said inner surfaces of said prongs being parallel, or nearly so, longitudinally to each other and to the rounded outer surfaces of said prongs for a considerable portion of their lengths, said prongs being provided with central cutting-edges and made tapering widthwise from their junction to their cutting ends, and having a distance from the outside of one prong to the outside of the other greater at the point where said prongs are parallel to each other than at their junction with each other and with the head.



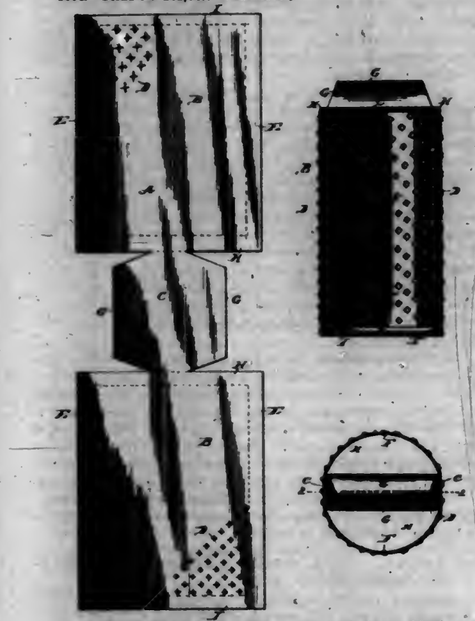
2. A rivet made from solid wire provided with a head and two prongs, each having a rounded outer surface and a flat inner surface, said flat inner surfaces being parallel, or nearly so, longitudinally with each other and with the outer rounded surfaces of said prongs for a considerable portion of their lengths, each of said prongs being provided with a central cutting-edge, and the distance from the outside of one prong to the outside of the other being greater at the point where said prongs are parallel to each other than at their junction with each other and with the head.

402,650. PROCESS OF MANUFACTURING PRONGED RIVETS. MELLEN BRAY, Newton, Mass. Filed Jan. 3, 1889. Serial No. 295,374. (No model.)



Claim.—The process of forming pronged rivets from sections of solid wire, which consists in first forming a head upon a short section of said wire, then subjecting the shank of the solid rivet thus formed to pressure to flatten two opposing sides thereof, and then punching out the central portion of the stock of said flattened shank by subjecting it to the action of male and female dies.

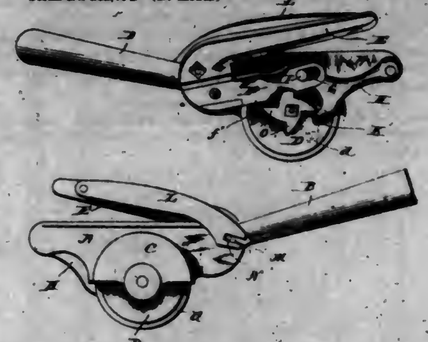
402,651. CULINARY GRATER. HYMAN I. BLOCK, Chicago, assignor of one-third to Hyman Lobowich, Cook County, Ill. Filed Apr. 26, 1888. Serial No. 272,145. (No model.)



Claim.—1. The herein-described grater made from a blank composed of two perforated rectangular portions connected by an intermediate strip of metal, the rectangular portions being bent to the desired form and united at the edges to form the body of the grater and the intermediate strip being bent to form the handle of the grater, substantially as described.

2. The herein-described grater made from a blank composed of two perforated portions connected by an intermediate strip of metal, the rectangular portions being bent to the desired form and united at the edges to form the body of the grater, the intermediate strip being bent to the desired form to form the handle of the grater, said handle joining the walls of the grater at a point between its uniting-seams, substantially as described.

402,652. CLOTH-CUTTING APPARATUS. CHARLES W. BOETTNER and HOWARD H. GILBERT, Little River, Kans. Filed Aug. 14, 1888. Serial No. 282,704. (No model.)

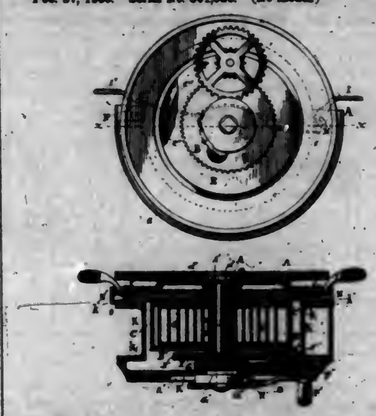


Claim.—1. In shears, the combination, with the main blade, of the upper blade pivoted thereto and provided with an operating-arm, F, the swinging link H, connecting the outer end of the operating-arm to the outer end of the main blade and provided with the projection or tooth K, and the friction-roller mounted on the main blade and provided with radial arms or spurs adapted to alternately engage the operating-arm and the projection or tooth K, substantially as specified.

2. In shears, the combination, with the main blade, the friction-roller mounted thereon, the upper blade mounted on the main blade and provided with an operating-arm connected to the friction-roller, the pin on the side of the main blade, and the pressure-spring attached to the end of the upper blade and provided with a slot operating on the said pin, substantially as specified.

3. In shears, the combination, with the main blade provided with a suitable casing or housing, of the friction-roller mounted in the casing or housing, provided with a rubber periphery, and having arms or spurs on its side, the upper blade pivoted to the main blade and provided with the operating-arm F, having a slot, G, and a shoulder, *f'*, adapted to be engaged by the arms or spurs, and the swinging link H, mounted on the outer end of the main blade and provided with a stud, I, operating in the slot G, the said swinging link being further provided with a projection or tooth, K, adapted to be engaged by the arms or spurs on the roller, substantially as specified.

402,653. FISHING-REEL. FRANK CAREY, Penn Yan, N. Y. Filed Feb. 27, 1889. Serial No. 301,328. (No model.)



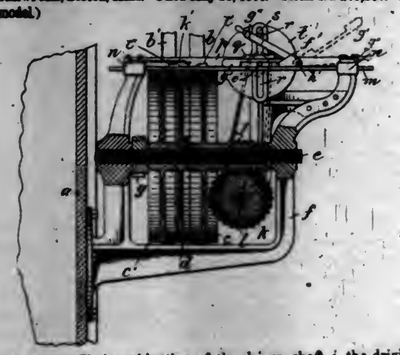
Claim.—1. In a fishing-reel, a case having corrugations on the inner side of the barrel, a spiral spring within said case having its inner end detachably secured to a sleeve upon which said barrel is journaled and having its opposite end curved or hooked to engage with the corrugations in the barrel, substantially as set forth.

2. In a fishing-reel, the double brake consisting of levers I I', pivoted at its opposite extremities to operate the same either above or below the reel, in combination with the lever *m* and pawl *d'* and ratchet-wheel *d*, whereby a backward or forward motion is given to the central shaft, D.

3. The rod-plate having a fixed hollow spindle and attached to it two levers supplied with cams, in combination with the exterior surface of the case K, whereby the case may be prevented from rotating when required, substantially as described.

4. In a line-reel, a rod-plate having a bar extending across and parallel thereto, and having at its opposite extremities suitably-pivoted levers for actuating said bar and by it the pawl-and-ratchet mechanism on the reel-shaft, substantially as described.

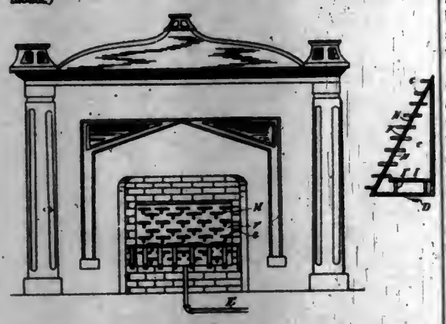
402,654. AUTOMATIC REVERSING MECHANISM. JAMES G. CRAWFORD, Boston, Mass. Filed May 26, 1888. Serial No. 275,287. (No model.)



Claim.—1. The combination of the driven shaft *i*, the driving-shaft *c*, geared to the driven shaft, the fast pulley *d* and loose pulleys *c c'* on the driving-shaft, the worm *j* on the hub of the loose pulley *c*, the shaft *l*, having the worm-wheel *k*, meshing with said worm, the sprocket-wheel *a'* on the shaft *l*, the shaft *u*, having the sprocket-wheel *v* and the eccentric-pin *s*, the sprocket-chain *w*, connecting the wheels *a' v*, the shipper-bar *m*, and means, as described, between the shipper-bar and the eccentric-pin *s*, whereby said bar is reciprocated by the revolutions of said pin, as set forth.

2. The combination of the driven shaft *i*, the driving-shaft *c*, geared to the driven shaft, the fast pulley *d* and loose pulleys *c c'* on the driving-shaft, the worm *j* on the hub of the loose pulley *c*, the shaft *l*, having the worm-wheel *k*, meshing with said worm, the sprocket-wheel *a'* on the shaft *l*, the shaft *u*, having the sprocket-wheel *v* and the eccentric-pin *s*, the sprocket-chain *w*, connecting the wheels *a' v*, the slide *q*, adapted to move on a fixed guide and provided with a slot, *r*, receiving the pin *s*, and with a stud or pin, *c'*, and the shipper-bar *m*, engaged, as described, with the stud or pin *c'*, as set forth.

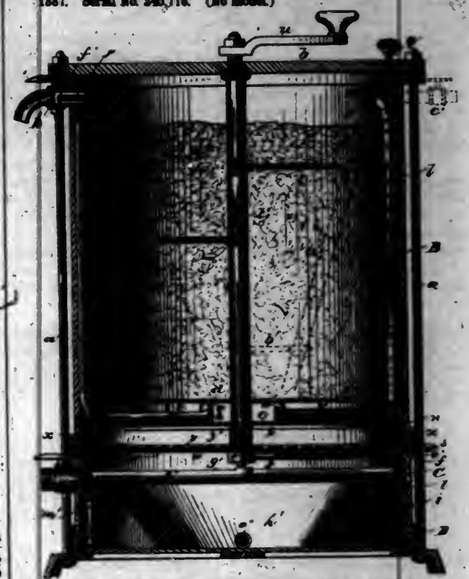
402,655. GAS-BURNER FOR GRATES AND STOVES. JOSEPH A. DAILEY, Toledo, Ohio. Filed May 26, 1888. Serial No. 275,283. (No model.)



Claim.—1. An improved gas-burner for stoves, &c., consisting of a shell having one or more of its walls formed with perforations disposed in rows, substantially as described, and provided with heat-conducting ribs located one above each opening and projecting from both the inner and outer sides of the wall, as and for the purpose set forth.

2. In a burner for gas-stoves, &c., a shell having an inlet in its base and having one or more of its walls formed with perforations disposed in rows, substantially as specified, and provided also with heat-conducting ribs located one above each opening and projecting from both the inner and outer sides of the wall, in combination with a solid deflecting-plate located within the shell above said inlet-opening, as and for the purpose set forth.

402,656. FILTER. JOHN DAVIS, Allegheny, Pa. Filed July 30, 1887. Serial No. 245,716. (No model.)



Claim.—1. In a filter, the combination of a supply-pipe, a receiving and precipitating chamber, a filter-chamber, an interposed straining-diaphragm, a chamber between the diaphragm and the bottom of the filter-bed, pipes communicating with the chamber above the diaphragm, the filter-chamber above and below the filter-bed, and an agitator, substantially as described.

2. In a filter, the combination of a supply-pipe, a receiving and precipitating chamber, a filter-chamber, an interposed straining-diaphragm, a chamber between the filter-bed and the bottom of the filter-chamber, pipes communicating with the intermediate chamber and discharging above and below the filter-bed, a pipe for drawing off liquid above and below said bed, valves for controlling each of said pipes, and an agitator, substantially as described.

3. In a filter, the combination of a supply-pipe having a valve and provided with distributing-branches, a receiving and precipitating chamber, a chamber for containing chemicals, a circulating-pipe of smaller area than the supply-pipe and communicating with the chemical-chamber and one of said branches, a filter-chamber, a chamber between the receiving-chamber and the filter-bed, pipes for supplying and drawing liquid from the filter-chamber, and an agitator, substantially as described.

4. A filter composed of an upper and a lower detachable section, the lower section being provided with a receiving and a precipitating chamber, a chemical-chamber, and a circulating-pipe communicating with the chemical-chamber, the upper section having a filter-chamber provided with a foraminous diaphragm supporting the filter-bed, a supply-pipe extending above the filter-bed, an inlet and a discharge pipe under said diaphragm, and a waste-water discharge above the filter-bed, in combination with an agitator, substantially as described.

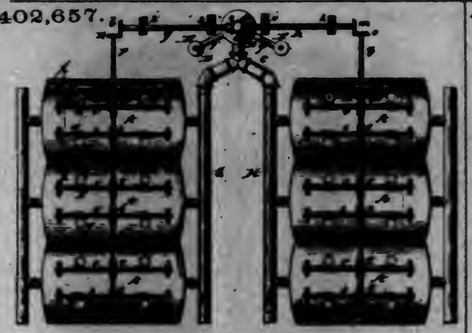
5. In a filter, the combination of a filter-chamber, a water-supply pipe, an agitator, and a flexible transfer-pipe connected to an arm on the agitator, substantially as described.

402,657. FILTER. JOHN DAVIS, Allegheny, Pa. Filed Mar. 10, 1888. Serial No. 266,845. (No model.)

Claim.—1. A filter having an elongated body and provided with a combined receiving and precipitating chamber, a separate filter-chamber above the receiving-chamber, and a filter-liquid chamber between the filter and receiving chambers, in combination with a supply-pipe provided with a flattened and laterally-distended nozzle, a pipe for conducting liquid from the receiving-chamber into the filter-chamber at one end thereof, and a pipe for drawing filtered liquid from the liquid-chamber at the opposite end of the filter, substantially as described.

2. A filter having a receiving and precipitating chamber, in combination with a supply-pipe provided with a flattened and laterally-distended nozzle arranged to discharge liquid in a thin horizontal sheet at the top of said chamber, whereby sediment is precipitated, a filter-chamber, and suitable pipes for conducting liquid to and from the filter-chamber, substantially as described.

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3. A filter provided with a receiving and precipitating chamber, in combination with a horizontal supply-pipe and a similar discharge-pipe, each having a flat nozzle, a transverse vertical bar between the nozzles, and a filter-chamber, substantially as described.

4. A filter having a horizontally-elongated body and provided with a receiving and precipitating chamber, a chemical-chamber crossing one end of the receiving-chamber, a horizontal supply-pipe passing through and communicating with the chemical-chamber, a laterally-distended discharge-nozzle in the receiving-chamber, and means of communication between the receiving and chemical chambers, in combination with a filter-chamber, substantially as described.

5. A filter having a horizontally-elongated body and provided with a bottom composed of separate sections of angle-iron crossing the filter transversely and having water-passages between them, supporting beams and columns, in combination with a filter-chamber above said bottom and a liquid-chamber below the same, substantially as described.

6. A filter-vessel consisting of a horizontally-elongated body having its ends curved transversely, its sides curved vertically, and its top curved transversely from side to side, whereby each wall braces the walls adjacent thereto without the intervention of stay-rods, substantially as described.

7. In a filter, an agitator consisting of a shaft and a series of blades projecting therefrom in the same vertical plane and at an oblique angle to the horizon, whereby the filter-bed is raised in columns and forms passages for the liquid supplied from beneath the bed to cleanse it, substantially as described.

8. The combination of a motor operated by water from a supply-conduit, an air-compressor, and suitable pipes for conducting air from the compressor into the water flowing into the motor, in combination with a supply-main communicating with the motor and a filter or filters, substantially as described.

9. The combination of a water-motor, an air-compressor operated by said motor and discharging compressed air into the water, a supply-main, and one or more filters, substantially as described.

10. The combination of a motor, a series or system of filters provided with agitators, suitable operating mechanism connecting the motor and the agitators of all the filters, and shipping devices whereby all of the filter-beds may be agitated simultaneously, or one or more beds agitated, substantially as described.

402,658. FILTER. JOHN DAVIS, Allegheny, Pa. Filed Nov. 20, 1886. Serial No. 220,215. (No model.)

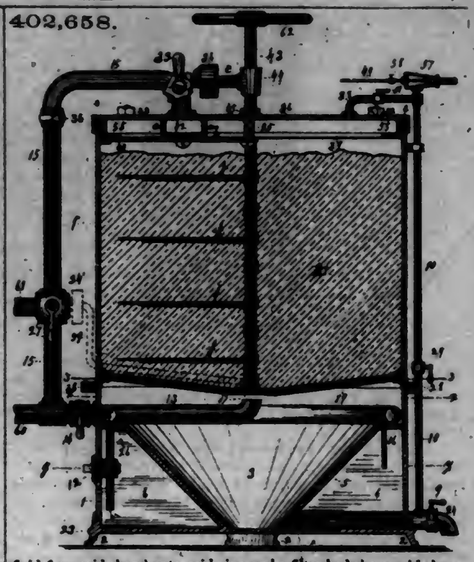
Claim.—1. In a filter, the combination of a supply-pipe, a receiving and precipitating chamber, a chamber for containing chemicals, a circulating-pipe supported above the latter chamber and communicating therewith, and a filter-chamber above said chemical-chamber and within the same vessel, substantially as described.

2. In a filter, the combination of a supply and a circulating pipe, a combined receiving and precipitating chamber, a chamber for containing chemicals, a pipe communicating with both of said chambers, a sediment-discharge pipe communicating with the precipitating-chamber, and a filter-bed above said chamber and within the same vessel, substantially as described.

3. In a filter, the combination of a supply and a circulating pipe, a combined receiving and precipitating chamber, a chamber for containing chemicals, a pipe connecting said chambers, a separate pipe for conducting fluid from the chemical-chamber to the circulating-pipe, and a filter-bed above said chambers and circulating-pipe and within the same vessel, substantially as described.

4. In a filter, the combination of a supply and a circulating pipe, a receiving and precipitating chamber, a chamber for containing chemicals, means of communication between said chambers, a separate pipe for conducting liquid from the chamber containing the chemicals to the circulating-pipe, suitable means for regulating the quantity of

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fluid from said chamber to said pipe, and a filter-bed above said chambers and pipes and within the same vessel, substantially as described.

5. In a filter, the combination of a supply-pipe, a receiving and precipitating chamber, a filter-chamber, an interposed straining-diaphragm, a chamber for containing chemicals, and a circulating-pipe communicating with the chemical-chamber and the receiving-chamber and within the same vessel, substantially as described.

6. In a filter, the combination of a supply and a circulating pipe, a concentric conical precipitating-chamber, an annular chamber for containing chemicals, pipes for conducting liquid to the latter chamber, and pipes for conducting liquid impregnated with chemicals into the circulating-pipe, substantially as described.

7. A filter provided with a chamber having a conical compartment to receive precipitated sediment, a discharge-pipe communicating with the small end thereof, and an annular supply-pipe supported above said sediment-chamber and discharging at or near the center of the receiving-chamber, in combination with a filter-bed above said parts, and a discharge-pipe for filtered liquids, substantially as described.

8. In a filter, a receiving and precipitating chamber, an annular chamber divided into separate compartments for containing different kinds of chemicals, a supply and a circulating pipe communicating with each of the several compartments and discharging into the receiving-chamber, in combination with a filter-bed above said chambers, and a suitable discharge-outlet, substantially as described.

9. In a filter, the combination of a supply-pipe, a sediment-chamber, a chamber for containing chemicals, pipes for conducting liquids to and from the latter chamber, a filter-bed, a separate chamber for the filtered liquid provided with a breakwater, and a discharge-pipe communicating with said separate chamber, substantially as described.

10. In a filter, the combination of a supply-pipe, a filter-bed, a sediment-chamber below and a purified-water chamber above said filter-bed, and an ejector connected to both of said chambers for raising sediment from one or discharging purified water from the other, substantially as described.

11. In a filter, the combination of a filter-bed, an agitator provided with a hollow shaft extending through said bed and provided with a series of vanes arranged in different horizontal planes and at an angle to a horizontal plane, and having a groove or grooves on their lower surfaces for conducting liquid to the outer extremities of said vanes, substantially as described.

402,659. FILTER. JOHN DAVIS, Allegheny, Pa. Filed Nov. 20, 1886. Serial No. 201,276. (No model.)

Claim.—1. An article of manufacture, a filter bottom or support for a filter-bed, consisting of two foraminous heads, a vertical wall to which said heads are permanently secured, and hollow perforated supports interposed between the heads, substantially as described.

2. An article of manufacture, a filter bottom or support for a filter-bed, consisting of two foraminous heads, a vertical imperforate wall to which said heads are permanently secured at their extremities, and hollow supports having their sides perforated and the lower end open, substantially as shown and described.

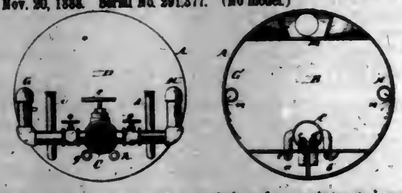
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3. An article of manufacture, a filter bottom or support for a filter-bed, consisting of two foraminous heads permanently secured to a vertical wall, interposed supports for the upper head, and a filling of granulated filtering material surrounding the supports, substantially as described.

4. An article of manufacture, a filter bottom or support for a filter-bed, consisting of an upper head of wire, a lower head or perforated sheet metal, an imperforate metallic wall to which said heads are secured at their extremities, hollow perforated supports for the upper head, having a closed and an open end and perforated sides interposed between the heads, and a filling of granulated filtering material surrounding the supports, substantially as described.

402,660. **WATER-PURIFIER.** JOHN DAVIS, Allegheny, Pa. Filed Nov. 20, 1888. Serial No. 291,377. (No model.)



Claim.—1. A water-purifier consisting of an unobstructed coagulating and precipitating chamber, a chemical-chamber contained within the former chamber, and a supply-pipe communicating with both of said chambers, in combination with a pipe communicating with the upper part of the precipitating-chamber for discharging purified water, substantially as described.

2. A water-purifier consisting of an unobstructed coagulating and precipitating chamber, a chemical-chamber within and at one end thereof, a supply-pipe connected with the chemical-chamber by supply and discharge pipes, and a valve for controlling the supply of chemicals, in combination with a pipe communicating with the upper part of the precipitating-chamber for discharging purified water, and a sediment-discharge pipe, substantially as described.

3. A water-purifier consisting of a coagulating and precipitating chamber, a chemical-chamber, a main supply-pipe communicating with the chemical-chamber by means of a pipe within the main supply, and the receiving end of which is bent forward in the direction of the incoming water, and a pipe for conducting the water impregnated with chemicals into the main supply-pipe, in combination with a pipe communicating with the upper part of the precipitating-chamber for discharging purified water, substantially as described.

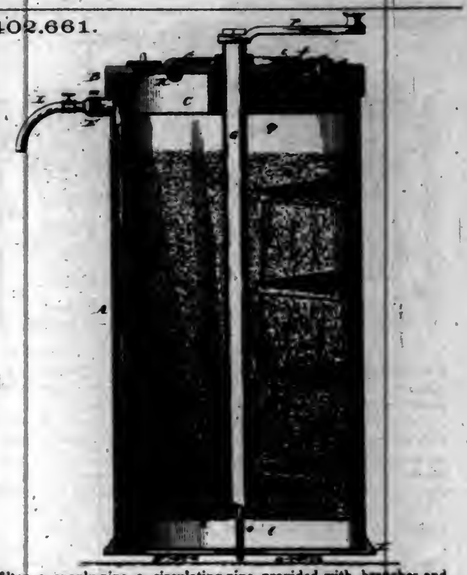
4. A water-purifier having a coagulating and precipitating chamber, and a main supply-pipe provided with a valve, in combination with pipes passing through one end of the vessel, communicating with the main between its source of supply and the valve, extending along the inner sides of the vessel, having elongated openings adjacent to the sides of the vessel for discharging water in thin sheets, and provided with valves for controlling the supply of water from the main, substantially as described.

402,661. **FILTER.** JOHN DAVIS, Allegheny, Pa. Filed Nov. 20, 1888. Serial No. 291,378. (No model.)

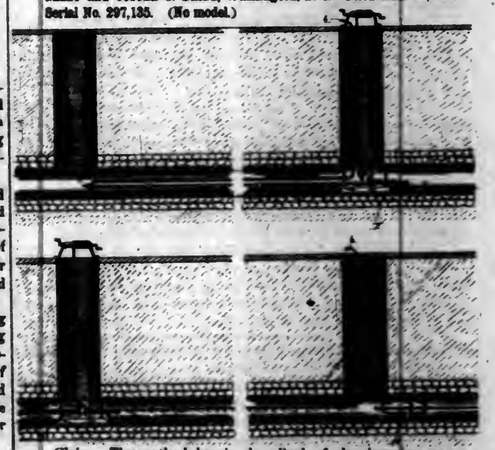
Claim.—1. In a filter, the combination of a chemical-chamber at the upper end thereof, a supply-pipe, a circulating-pipe communicating with said chamber and discharging into the filter, a filter-bed below the chemical-chamber, and a coagulating-chamber between the cover of the filter and the filter-bed, and all of said parts being within the filter-vessel, substantially as described.

2. In a filter, a chemical-chamber supported by the cover of the filter, a supply-pipe, a circulating-pipe provided with branches and communicating with said chamber, and a valve for controlling the supply of chemicals to the water, in combination with a filter-bed below the chemical-chamber, and a coagulating-chamber between the chemical-chamber and the filter-bed, and all of said parts being within the filter-vessel, substantially as described.

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402,662. **METHOD OF CLEANING PIPE SEWERS.** OWEN DOHERTY and COTTER T. BRIDE, Washington, D. C. Filed Jan. 22, 1889. Serial No. 297,135. (No model.)



Claim.—The method herein described of cleaning pipe sewers, which consists, first, in mechanically projecting a starting implement into the sewer by means of power apparatus located above, and simultaneously trailing along with said starter a draft cable or rope, then successively attaching additional lengths to the starter and repeating the forcing of them into the sewer mechanically, as before, and finally attaching to the rear end of said draft cable or rope a suitable cleaning device and drawing the same through the sewer, substantially in the manner and for the purpose set forth.

402,663. **PADLOCK.** WILLARD D. DORRELL, Washington, D. C., assignor to the Corbin Cabinet Lock Company, New Britain, Conn. Filed Jan. 18, 1888. Renewed Jan. 29, 1889. Serial No. 297,982. (No model.)

Claim.—1. In a padlock, the combination, with the tumblers and the dog, of a detent-piece, C, pivoted in the casing, and formed with a lug to engage the end of the dog and prevent it from engaging the notches of the tumblers, and an arm terminating in an inclined piece to set across the key-hole of the lock, substantially as and for the purpose stated.

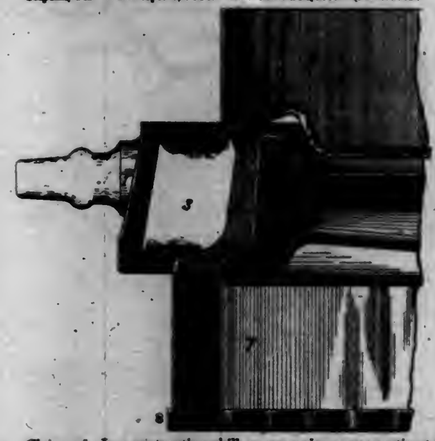
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2. The combination, with the casing, of the key-guard and tumbler-rest 15, arranged at an incline over the key-hole, the tumblers pivoted to rest on the guard and rest 15 in their downward movement, and the detent-piece pivoted on the lock and formed with an arm adapted to set across the key-hole, substantially as and for the purpose specified.

3. The combination, with the casing having the shackle, of the spring-actuated dog having a lug to engage the notches of the tumblers, the tumblers, a detent-piece pivoted in the casing and formed with a lug to engage the said lug of the dog and an arm terminating in an angular piece to set across the key-hole, and a key formed with an angle in its shank, whereby the tumblers may be lifted and the detent moved out of engagement with the dog, substantially as described.

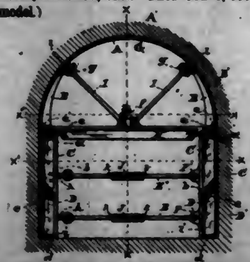
402,664. **CHILL FOR CAR-WHEELS.** LUTHER B. FAUSSET, Philadelphia, Pa. Filed Apr. 7, 1887. Serial No. 234,085. (No model.)



Claim.—1. In a contracting-chill, an expansion or connecting bar of reduced depth relatively to the inner section of the chill and having at its junction therewith its top face depressed below the top of said inner section and its bottom face elevated above the bottom thereof, substantially as set forth.

2. The combination, in a chill, of a continuous rim or outer section, an inner section composed of a divided circular series of chilling blocks or segments, and a series of expansion-bars connecting the outer to the inner section and suited to the latter wholly within and clear of its parting-faces, substantially as set forth.

402,665. **ADJUSTABLE FRAME FOR BUILDING SEWERS, &c.** GEORGE M. GRAHAM, Cleveland, Ohio. Filed Oct. 8, 1888. Serial No. 287,580. (No model.)

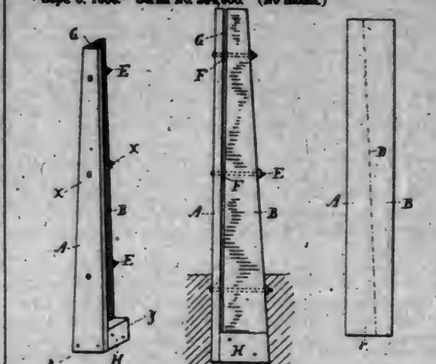


Claim.—1. A metallic frame-work for building sewers, conduits, &c., consisting of a series of plates bearing one upon another by inwardly turned and inclined flanges of the lower and middle plates, hinged and hooked cross-rods for spreading said plates, and cross-bars supported by the middle plates for suspending the upper and crown plates by means of rods hooked in lugs of said bars, substantially as and for the purpose set forth.

2. As a means for building sewers of concrete material, the combination of the plates D D, C C, B B, and A, set successively one upon the others, having non-parallel joints for the side or middle plates, and cross-bars for supporting the upper plates, all united by means of rods, substantially as and for the purpose set forth.

3. The cross-bars H and sockets *d* at the base of the plates B B, in which to attach the terminals of the cross-bars, in combination with rods E E, having threaded coupling J, arranged in connection with the plates C C and D D, constructed substantially as set forth.

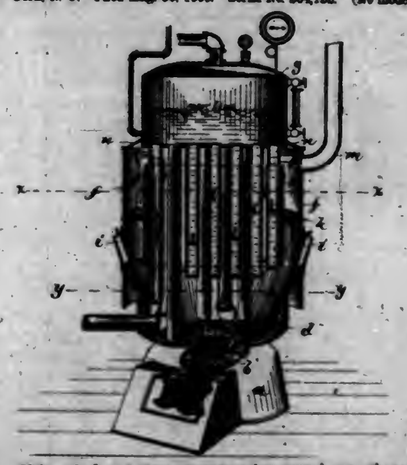
402,666. **FENCE-POST.** HIRAM B. GRANT, Cleveland, Ohio. Filed Sept. 5, 1888. Serial No. 284,600. (No model.)



Claim.—1. In a wooden fence-post, the combination of the tapering posts A and B, forming the complementary parts of a plank, the cross-bolts E, securing them together in the form of a T, and the washers F upon the cross-bolts to form an air-space between the parts, substantially as described.

2. In a wooden fence-post, the combination of the tapering posts A B, forming the complementary parts of a rectangular plank, the cross-bolts E, securing them together in the form of a T, the washers F between the posts and forming the air-space G, and the cleats H, secured at the base of the posts in the angles thereof, substantially as described.

402,667. **SECTIONAL STEAM-BOILER.** CHARLES GORTON, New York, N. Y. Filed Aug. 30, 1888. Serial No. 284,122. (No model.)



Claim.—1. In a steam-generator or hot-water heater, the combination of a base, a supporting-annulus angular or L-shaped in cross-section and resting on the base, a grate deeper in the middle, a downwardly or inwardly converging fire-pot resting on the annulus, a fuel-reservoir around the side of the fire-pot, and a series of coal-pockets around the outer shell, substantially as described.

2. In a steam-generator, the combination, with a downwardly or

inwardly converging fire-pot, a coal-reservoir around and above the same, coal-pockets, a nest of water-tubes above the fire-pot, and sets of water-tubes extending down through the fire-pot on each side of the coal-pockets, substantially as described.

3. In a steam-generator, the combination, with the fire-pot having an annular side feed, of a boiler located above the same and comprising a steam-drum, and a nest of drop-tubes arranged in circles and depending from the drum and ending above the fire-pot, every alternate suitable number of tubes in the outer circle being extended down through the fire-pot to the base, and serving as water-legs and supporting the boiler, substantially as described.

4. In a steam-generator, the combination, with a base and a supporting-annulus angular in cross-section and resting upon the base, of a ring forming the sides of the fire-pot and having its lower edge resting upon said annulus, a boiler provided with drop-tubes, a suitable number of which are extended downwardly to rest upon the annulus and support the boiler, and a casing inclosing the boiler and resting on the ring.

5. In a steam-generator, the combination of the converging fire-pot, an annular side feed, and coal-pockets, and a nest of water-tubes arranged in circles above the fire-pot, the tubes in the outer circle being arranged in sets, every alternate set extending down through the fire-pot on each side of the coal-pockets to allow the coal to freely feed downwardly and spread laterally, substantially as described.

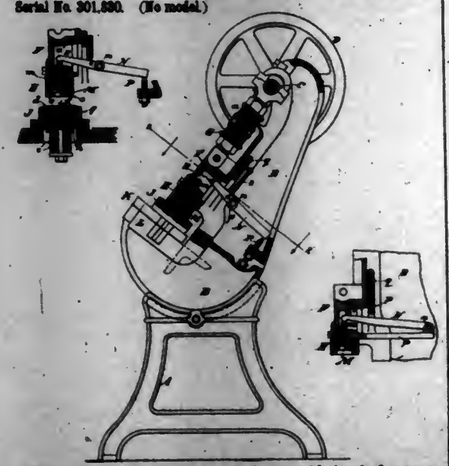
6. The combination of the fire-pot, a fuel-reservoir, fuel-pockets for the same, an outer casing, a nest of depending water-tubes formed in circles, the tubes in the outer circle being formed in sets of long and short tubes, the tubes in each set of long tubes being arranged in a straight line, an asbestos covering around the outer circle of tubes, and a cylindrical shell inclosing the asbestos covering, substantially as described.

7. In a steam-generator, a fire-pot, in combination with an outer casing, a nest of water-tubes inclosed by a cylindrical shell forming an annular smoke-chamber between its upper portion and the outer casing, with communication between the upper portion of the space between said water-tubes and the smoke-chamber, a ring cutting off outside communication of the smoke-chamber and fire-pot, and one or more exits for the smoke-chamber, substantially as described.

8. In a steam-generator, the combination, with the annular smoke-chamber, the water-tubes, a cylindrical shell inclosing the water-tubes, but leaving a communicating space between the upper portion of the smoke-chamber and upper portion of space around the tubes, and a removable ring formed in sections closing the top of the smoke-chamber, for the purpose described.

9. In a steam-generator or hot-water heater, the combination of a base, a supporting-annulus L-shaped in cross-section and resting upon the base, an inwardly and downwardly converging ring having its lower edge resting upon the horizontal part of the annulus to form an inwardly-converging fire-pot, the annulus forming a dead-air space around the fire-pot, a casing resting upon the upper edge of the ring and provided with coal-pockets above the upper edge of the ring, and a boiler in the casing and above the fire-pot, substantially as described.

402,668. STAMPING-PRESS. CHARLES L. HART, Brooklyn, N. Y., assignor to the E. W. Bliss Company, same place. Filed Mar. 5, 1888. Serial No. 301,830. (No model.)



Claim.—1. The combination, with the movable head of a stamping-press and its die and knockout-plunger, of a knockout-lever arranged to project into the path of said plunger and a stop against which said lever abuts, whereby during the upstroke of the head the lever stops the plunger and the continued upward movement of the head expels the work from the die.

2. The combination, with the movable head of a stamping-press and its die and knockout-plunger, of a knockout-lever arranged to project into the path of said plunger and an adjustable stop-screw against which said lever abuts.

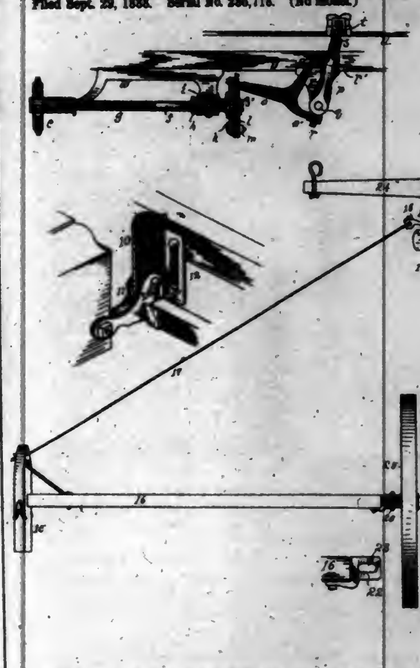
3. The combination, with the movable head of a stamping-press and its die and knockout-plunger, of a knockout-lever arranged to project into the path of said plunger, mounted to turn on a fixed fulcrum, and formed with a tail projecting to the opposite side of said fulcrum, and a stop against which said lever abuts.

4. The combination, with the movable head of a stamping-press and its die and knockout-plunger, of a knockout-lever arranged to project into the path of said plunger, a stop against which said lever abuts, and a spring arranged to exert a tension against said lever to prevent rattling.

5. The combination, with the movable head of a stamping-press and its die and knockout-plunger, the said head formed with a cavity in its rear, of a knockout-lever with its end projecting within said cavity into the path of said plunger and a stop against which said lever abuts.

6. The combination, with the frame of a stamping-press and with its movable head, die, and knockout-plunger, of a knockout-lever arranged behind the head and within the frame, with its end projecting forwardly and standing in the path of said plunger, and a stop against which said lever abuts in order to arrest the plunger.

402,669. SEED-PLANTER. GEORGE D. HAWORTH, Decatur, Ill. Filed Sept. 29, 1888. Serial No. 286,718. (No model.)



Claim.—1. In drill mechanism for seed-planters, in combination, a rotating head and an L-lever having one arm pivoted on the the other and connected the one arm with the head and the other arm with the seed-slide of the planter, as and for the purpose set forth.

2. In drill mechanism for seed-planters, in combination, a rotating head having a bearing for a lever adjustable with relation to the center of rotation, and an L-lever pitman connected at one end with the bearing of the head and at the other end with the seed-slide of the planter, as and for the purpose set forth.

3. In drill mechanism for seed-planters, in combination, a shaft, a head on the shaft, an L-lever having one arm pivoted on the other and connected the one arm with the head and the other arm with the seed-slide of the planter, and sprocket-gearing connecting the shaft with a wheel of the planter, as and for the purpose set forth.

4. In combination, the shaft having the laterally-projecting pins, the head adapted to move longitudinally on the shaft and having slots to engage the pins, a lever to move the head with relation to the pins, and an L-lever pitman connecting the head with the seed-slide of the planter, as and for the purpose set forth.

5. In combination, the shaft having the pins, the head movable on the shaft and having slots to engage the pins, the slide engaging the head and having the tooth, the lever having the projections adapted to strike the tooth of the slide, and the L-lever pitman connecting the head with the seed-slide of the planter, as and for the purpose set forth.

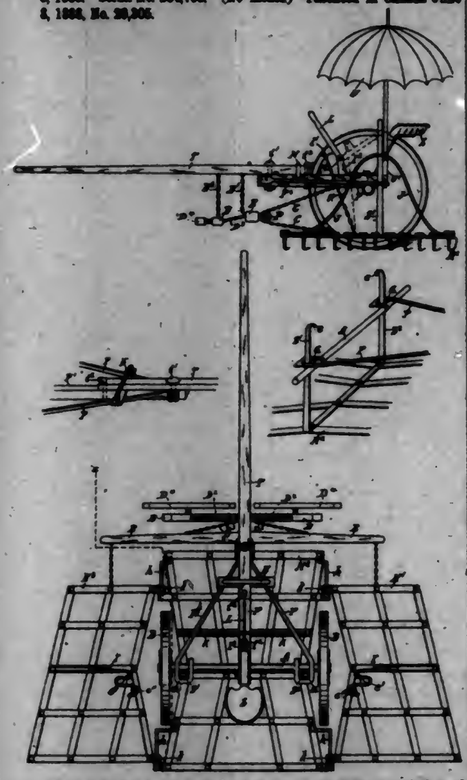
6. In combination with slotted bracket 10, secured to the wheel-frame of the planter, slotted bracket 11, secured to the planting mechanism, and bolt 26, extended through the slots of the brackets, adjustable bracket 12, having projection 13 extended under bolt 26, as and for the purpose set forth.

7. In combination, lever 1, fulcrumed on the frame, supported by the wheels, and connected with the planting mechanism, bar 2, having catch projection 3, and lock-bar 4, adapted to pass ordinarily with its back to the catch, and having teeth on its face to engage the catch, as and for the purpose set forth.

8. In combination, washer 20 on the wheel-hub, having knob 21, marker-bar 16, having the oblong slot adapted to the knob, the marker, the hook 18, the line 17, connecting the marker with the eye of the hook, and line 19, connected with the bow of the hook, as and for the purpose set forth.

9. In combination with a marker for planters, a hook having an ordinary eye to connect with a brace-line, and also having a connection in a bow for a detaching-line, as and for the purpose set forth.

402,670. SULKY-HARROW. WILLIAM HEWITT, London, Ontario, Canada, assignee of one-half to Frank B. Pollard, same place. Filed Sept. 6, 1888. Serial No. 284,709. (No model.) Patented in Canada June 8, 1888, No. 26,305.



Claim.—1. The combination of the harrow-frame, consisting of the central section, H^3, having brackets A, the outer sections, H' and H^2, having knuckles A, by which they are hinged to the brackets, the axle A, the wheels B between the central section and side sections, the beam F, the oblique bars F, the tongue T, the bracket P on the beam, the lever L, having an arm, l, and the chain K, by which the arm and central section are connected, substantially as described.

2. The combination of the central section, H^3, the axle A, the wheels B, the beam F, the oblique bars F, the tongue T, the evener E, supported on the tongue, the pulley P, secured to the rear side of the evener, and the chain C, passed between the evener and the pulley and having its ends connected to the central section and to the beam, respectively, substantially as described.

3. The combination of the central section, H^3, the axle A, the wheels B, the beam F, the oblique bars F, the tongue T, the evener E, supported on the tongue, the doubletree D, supported on the tongue and connected to the evener, the pulley P, secured to the rear side of the evener, and the chain C, passed between the evener and the pulley and having its ends connected to the beam and to the central section, respectively, substantially as described.

4. The combination of the central section, H^3, the sulky-frame, the tongue T, the evener E, the pulley P, secured to the evener, and the chain C, passed between the evener and the pulley and having its ends connected to the central section and to the sulky-frame, respectively, substantially as described.

5. The combination of the central section, H^3, the outer sections, H' and H^2, hinged thereto, the axle A, the bars F, having bent ends forming apertures G, the standards S' and S^2, secured to the central section and passed through the apertures, having hooks *e*, and the handles I, secured to the outer sections and provided with loops *d'*, for engaging the hooks, substantially as described.

6. The combination of the central section, H^3, the outer sections, H' and H^2, hinged thereto, the axle A, the bars F, having bent ends forming apertures G, the standards S' and S^2, secured to the central section and passed through the apertures, having hooks *e*, the arched braces J, secured to the central section and to the standards, and the handle I, secured to the outer sections and provided with loops *d'*, for engaging the hooks, substantially as described.

7. The combination of the central section, H^3, the outer sections, H' and H^2, hinged thereto, the standards S' and S^2, secured to the central section, having hooks *e*, the handles I, secured to the outer sections, having loops *d'* and hand-pieces *d''*, and the sulky-frame, substantially as described.

8. The combination of the central section, H^3, the axle A, the wheels B, the beam F', the bracket P^3, the lever L, having arm *l'*, the chains K, the oblique bars F, having bent ends forming apertures G, the standards S' S^2, the tongue T, the chain D', the evener E, the pulley P, and the chain C, substantially as described.

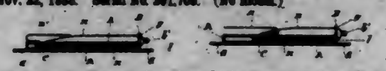
10. The combination of the central section, H^3, the axle A, the wheels B, the rigid beam F', the bracket P^3, the lever L, having arm *l'*, the chains K, the bracket N, having a socket and rigidly secured to the beam, the pivoted tongue T, and the pivot-bolt *t'*, substantially described.

402,671. SYSTEM OF ELECTRICAL DISTRIBUTION AND CONVERSION. THOMAS H. HINES, Detroit, Mich., assignor to the Hines Induction-Light and Motor Company, of Michigan. Filed July 5, 1888. Serial No. 278,120. (No model.)



Claim.—In a system of electrical distribution and conversion, the combination of a source of high-tension intermittent electrical impulses of one direction, a main circuit connected thereto, a derived local circuit containing translating devices, and a reaction-coil having all or a portion of its helices in the main circuit and a portion in the local circuit, both portions being in the same magnetic field.

402,672. BROOCH-PIN. MERRILL HOWARD, New York, N. Y. Filed Nov. 22, 1888. Serial No. 291,709. (No model.)



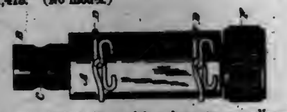
Claim.—1. The combination, with the mounting-plate of a brooch, a guide in and upon said mounting-plate, and an ear upon said mounting-plate at the end of said guide, of a pronged needle of the form specified, one prong of which, passing through said ear, slides in said guide, and the other prong of which, also passing through said ear into a garment, partly holds said brooch in position, and an auxiliary stationary needle attached to said mounting-plate and arranged to assist said sliding needle in securing said brooch to a garment, all substantially as and for the purpose set forth.

2. The combination, with the mounting-plate of a brooch, a guide in and upon said mounting-plate, and an ear upon said mounting-plate at the end of said guide, of a pronged needle of the form described, one prong of which, passing through said ear, slides in said guide, and an enlargement upon the end of said prong adapted to said guide and moving therein, the other prong of said needle also passing

through said ear, a part of the garment to which said brooch is to be fastened, and into a supporting-piece upon said mounting-plate, and said supporting-piece, formed and attached as specified, all substantially as and for the purpose set forth.

3. The combination, with the mounting-plate of a brooch, tubes upon said mounting-plate extending across and parallel thereto and parallel to each other, and ears formed upon said mounting-plate at either end of said tubes, of two pronged needles, substantially as specified, one prong of each of said needles passing through one of said ears and sliding in one of said tubes, and the other prong of each of said needles passing through one of said ears and extending without said tubes to and beyond the middle thereof nearly parallel thereto, so as to overlap each other in the garment to which said brooch is to be attached, all substantially as and for the purpose set forth.

402,673. APPLIANCE FOR UNITING AND REPAIRING RUBBER HOSE. CHARLES E. HUDSON, Leominster, Mass. Filed Apr. 21, 1888. Serial No. 271,413. (No model.)



Claim.—1. A metal ring for uniting hose to couplings, formed from a band having its ends bent outwardly and backwardly into the form of the open hooks, with their bow parts lapping past each other, substantially as specified.

2. A metal ring for uniting hose and couplings, formed by a band having ends lapping past each other and bent outward and backward in the form of open hooks, with the free ends of the said hooks pointing toward each other and separated by a space for the purpose of allowing the shorter arms of the tool-levers E E to be inserted between them and the said ends to be entered into the transverse holes of said levers, substantially as described.

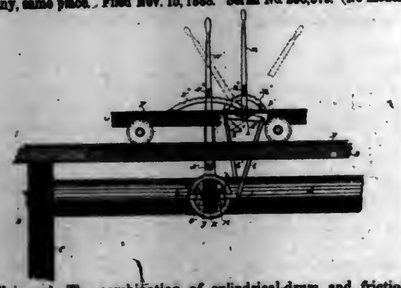
3. The combination, with a hose and coupling, of a wire ring formed by a band having its ends lapping past and bent around each other and provided with outwardly-recurved open hooks, with their free ends pointing toward each other, substantially as described.

4. The combination, with a hose and coupling, of a wire ring formed by a band having its ends lapping past and bent around each other, and provided with outwardly-recurved open hooks with their free ends pointing toward each other and separated by a space for the purpose of allowing the closing up and withdrawal of the shorter arms of the tool-levers E E from and between the same, whereby the hose is secured to its coupling by the band, substantially as described.

5. A metal ring for uniting hose to couplings, formed by a band having its ends lapping past each other and bent outward and backward in the form of open hooks, said hooks being situated in substantially the same plane with relation to each other, with their free ends pointing toward each other and separated by a space for the purpose of allowing the shorter arms of the tool-levers E E to be inserted between them and the said ends to be entered into the transverse holes of said levers, substantially as described.

6. The combination, with a hose and coupling, of a ring formed by a wire band having its ends lapping past and bent around each other, and provided with outwardly-recurved open hooks situated in substantially the same plane with relation to each other, their free ends pointing toward each other and separated by a space for the purpose of allowing the closing up and withdrawal of the shorter arms of the tool-levers E E from and between the same, whereby the hose is secured to its coupling by the band, substantially as described.

402,674. MECHANICAL MOVEMENT. WESTCOTT L. JUDSON, Minneapolis, Minn., assignor to the Judson Pneumatic Railway Company, same place. Filed Nov. 15, 1888. Serial No. 290,879. (No model.)



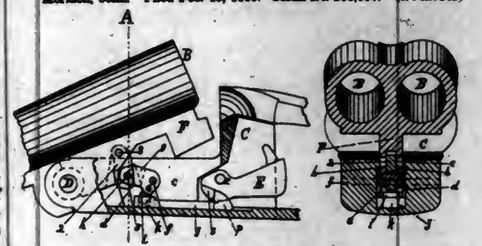
Claim.—1. The combination of cylindrical-drum and friction-wheel devices capable of angular engagement with each other, there being one device of one kind and two of the other, and the angles of engagement variable at will, whereby the rotation of the device or devices of one kind gives a rectilinear movement, the speed of which is proportionate to the angle of engagement to such of the other as are engaged thereby, substantially as described.

2. The combination of cylindrical-drum and friction-wheel devices capable of angular engagement with each other, there being one device of one kind and two of the other, such as are employed of one kind being mounted in fixed, and such as are employed of the other in movable, supports, substantially as described.

3. The combination, with a cylindrical driving-drum, of two friction-wheels capable of angular engagement therewith, the said wheels being mounted in movable bearings, whereby their angles of engagement with said drum may be varied, substantially as described.

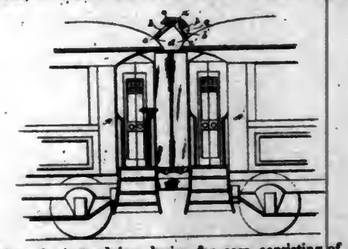
4. The combination, with a cylindrical driving-drum mounted in fixed supports, of two friction-wheels capable of angular engagement therewith on opposite sides, said wheels being mounted in a movable support and in movable bearings in said support, substantially as described.

402,675. BREECH-LOADING FIRE-ARM. CHARLES A. KING, Meriden, Conn. Filed Feb. 15, 1889. Serial No. 299,997. (No model.)



Claim.—In a breech-loading self-cocking gun, the combination, with a tilting barrel, of a hammer pivoted within the frame in the rear of the barrel, a longitudinal slide arranged in the frame below the pivot of the hammer, a projection on the said slide, adapted to engage a corresponding point upon the hammer below the pivot upon which the hammer is hung, the said slide extending forward beneath the barrel, with a bell-crank lever hung in the frame in the rear of the pivot upon which the barrel is hung, one arm of said lever in connection with said slide, the other arm being provided near its extreme end with projecting ears or lugs extending into recesses formed in the side walls of the central slot of the frame in which said lever is hung and adapted to contact with the upper walls of said recesses in its upward movement, and a link or hook connecting said lever and the barrel, all arranged to operate substantially as described, and for the purpose set forth.

402,676. DEVICE FOR STEADYING CARS. SIDNEY D. KING, Pittston, Pa. Filed Feb. 5, 1889. Serial No. 298,701. (No model.)



Claim.—1. A steadying device for cars, consisting of a pair of arms having a swivel-connection constructed to permit them to be separated when longitudinal strain is exerted thereon and prevent lateral vibration.

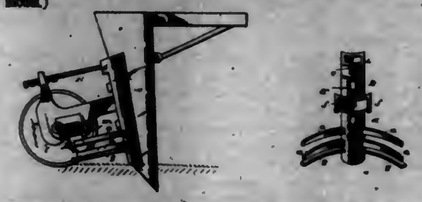
2. The combination, with a pair of arms and a swivel device supported in one arm, of a latch adapted to lock the other arm to the swivel device, substantially as set forth.

3. The combination, with a pair of pivoted arms and a swivel-sleeve in one of the arms, of a tongue projecting from the other arm adapted to enter the sleeve, and a latch for locking the parts together against lateral separation, substantially as set forth.

4. The combination, with a pair of pivoted arms, a slotted plate pivotally supported in one arm, and a sleeve pivoted in this plate, of a tongue projecting from the other arm adapted to enter the sleeve, and a pivoted spring-latch having a nose thereon adapted to reach over the sleeve and end of the tongue, whereby the parts are held together against lateral separation, substantially as set forth.

5. The combination, with a pair of arms removably pivoted to the ends of cars, one of said arms terminating in a pair of jaws, a slotted plate pivoted between said jaws, a sleeve pivoted within the slotted plate, and a circular disk secured to the edge of the slotted plate, of a tongue projecting from one arm adapted to enter the sleeve, and a pivoted spring-latch having a depending nose thereon adapted to reach over the sleeve and end of the tongue, whereby the parts are held together against lateral separation, substantially as set forth.

402,677. GRAIN-DRILL ATTACHMENT. WILLIAM C. LATHROP, Milton Centre, Ohio. Filed Apr. 9, 1888. Serial No. 270,145. (No model.)

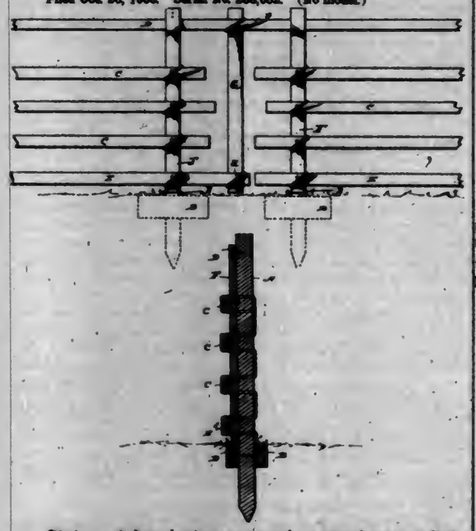


Claim.—1. The combination, with a drill-tooth, of the attaching-plate having a slot or loop in its upper end, the roller-frame hinged to said attaching-plate and having an upwardly-directed slotted branch, and the arm or bar connecting the upper end of the attaching-plate with the upper branch of the roller-frame, substantially as specified.

2. The attaching-plate having the rearwardly-curved fenders *a* and the lower similarly-formed bearing-plate, *g*, in combination with the roller-frame adapted to be hinged to said attaching-plate, substantially as specified.

3. The combination, with a drill-tube, of a plate slotted for the attachment to the drill, carrying lug-journals, fenders, and bearing-plates at one end, and a rearward loop at its opposite end, of a roller-supporting frame provided with means for receiving said roller, an eye at its forward end, whereby it may be hinged to the attaching-plate, and a slot at its rear upper end, and connecting-rod having a cross-head at its forward end to enter the upper loop of the attaching-plate, and grooves and serrations at its opposite end, so as to be adjustably connected with the slot of the said frame, substantially as specified.

402,678. FENCE. WILLIAM C. LATHROP, Milton Centre, Ohio. Filed Oct. 20, 1888. Serial No. 288,632. (No model.)



Claim.—A fence having permanently-arranged posts as distinguishable from removable ones, in combination with top and bottom longitudinal rails and intermediate rails, all of which are secured to the permanent posts, the top and bottom rails being carried beyond the ends of the intermediate rails, which latter may be barely long enough to meet the posts, and a guard-rail, G, arranged between the adjacent ends of the fence-sections and secured at opposite ends to the top and bottom rails, so as to partly fill the interspace caused by the failure of the intermediate rails to meet, substantially as shown and described.

402,679. COVER FOR PAINT-CANS. CLINTON H. LIBBEY, New York, N. Y. Filed Nov. 14, 1888. Serial No. 290,771. (No model.)



Claim.—1. The combination, with a paint-can having a closed and soldered top adapted to be cut out to open the can, of a separate cover applied to the can and adapted to fit over its top when the latter has been cut open, said cover formed with an opening in its top of such size as to admit the handle of a paint-brush and provided with a slide for closing said opening, whereby the brush may be left in the paint and the cover applied to the can to inclose the paint and protect it from the air, the brush-handle passing out through said opening.

2. A separate cover for a paint-can, formed with an opening in its top and provided with a rotatively-mounted disk-shaped slide for closing said opening, fastened to the cover by a pivotal rivet, and formed with two or more openings of different sizes registering with said opening in the cover.

3. A separate sheet-metal cover for a paint-can, formed with an annular concentric corrugation in its top and with an eccentric opening within said corrugation, combined with a disk-shaped slide for closing said opening cut from sheet metal arranged concentrically within said corrugation, with its cut peripheral edge directly within and protected by the projecting corrugation and fastened rotatively to the cover by a central pivotal rivet.

4. A separate cover for a paint-can, formed with an opening in its top and provided with a rotatively-mounted disk-shaped slide for closing said opening, a lifting-handle consisting of a ring and a plate to which said ring is pivoted, and a central rivet passing through the cover, the slide, and said plate, whereby a single rivet both fastens said plate and slide together and pivotally connects the slide to the can-cover.

402,680. FILM-SUPPORTING FRAME FOR PHOTO-CAMERAS. WILLIAM H. LEWIS, Brooklyn, assignor to E. & H. T. Anthony & Company, New York, N. Y. Filed Dec. 13, 1888. Serial No. 293,492. (No model.)



Claim.—As a new article of manufacture, a frame for a sensitized photographic film or sheet comprising a supporting-plate having flanges at opposite sides thereof, the ends of which fall short of the edges of the supporting-plate by a distance sufficient to clear the plate-supporting ledges of the plate-holder, substantially as set forth.

402,681. SMOKING DEVICE. LOUIS C. LINDEMAN, Brooklyn, N. Y. Filed Sept. 15, 1888. Serial No. 285,492. (No model.)



Claim.—1. The combination, in a smoking device, of a cylinder carrying at one end inlet and discharge pipes and corresponding valves, and a piston working through the other end, substantially as and for the purpose specified.

2. The combination of the cylinder A, having piston B working therein, a spring, C, working said piston in one direction, inlet-valve D and outlet-valve E at the upper end of the cylinder, inlet-pipe F and outlet-pipe G, communicating with said valves, and the finger-rings H on the outside of the cylinder, all constructed substantially as shown and described.

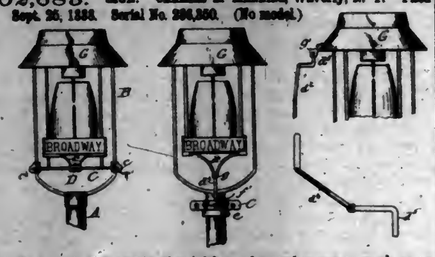
402,682. GRINDING-WHEEL. HIRAM S. LUCAS, Chester, Mass. Filed Mar. 26, 1888. Serial No. 268,572. (No model.)



Claim.—1. A grinding-wheel, substantially as described, consisting of a porous vitrified body and a cohesive substance, as described, applied thereto and filling the pores thereof, substantially as set forth.

2. A grinding-wheel, substantially as described, consisting of a porous vitrified body and a cohesive substance consisting of a composition of glue and bichromate of potash applied thereto and filling the pores thereof, substantially as set forth.

402,683. SIGN. CHARLES E. MANNING, Waverly, N. Y. Filed Sept. 26, 1888. Serial No. 286,260. (No model.)



Claim.—1. In combination with an elevated support—such as an electric lamp—a sign-holder adjustable vertically to various angles relatively to the surface of the street, substantially as set forth.

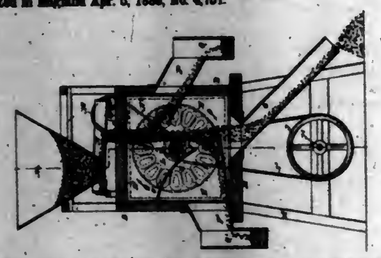
2. In combination with an elevated support—such as an electric lamp—a ring or collar, and a sign-holder supported by said collar and adjustable vertically relatively to the surface of the street, substantially as set forth.

3. In combination with an elevated support—such as an electric lamp—a ring or collar, and a sign-holder supported thereby and hinged so as to adjust the sign vertically with relation to the surface of the street, substantially as set forth.

4. In combination with the vertical side rods of an electric lamp, a ring or collar supported by said rods, and a vertically-adjustable sign-holder mounted upon said ring, substantially as set forth.

5. In combination with the support for an electric lamp, a ring or collar having a socket, and a sign-holder mounted in such socket and hinged so as to be vertically adjustable, substantially as set forth.

402,684. MAGNETIC SEPARATOR. HIRAM S. MAXIM, London, England. Filed Feb. 24, 1887. Serial No. 228,735. (No model.) Patented in England Apr. 5, 1886, No. 4,751.



Claim.—1. In an apparatus for separating metals and non-metallic substances, the combination, with approximating magnets or magnetic poles adapted to maintain intermediate fields of force, of a hopper or receptacle from which the material under treatment passes freely through said fields of force and means for producing rapid reversals or alternations of the polarity of the fields or lines of force through which the material is passing, as set forth.

2. In an apparatus for separating metallic and non-metallic substances, the combination, with the magnets E E, mounted so as to leave an open space between their poles capable of receiving the material to be exposed to the action of said magnets, of means for continuously and rapidly reversing or alternating the polarity of the magnetic fields or lines of force acting upon the material, as set forth.

3. In an apparatus for separating metallic from non-metallic substances by magnetic induction, the combination, with a series or group of magnets, of a second series or group of magnets arranged opposite to the first group and at such distance as to leave an open space between the two series, the poles of each series being alternately opposite and arranged so that unlike poles on the two series face each other, and means for introducing into the space between the two series the materials to be separated or acted upon, as set forth.

4. In an apparatus for separating metallic from non-metallic substances, the combination, with two series of magnets arranged opposite each other with an open space between them in such manner that the poles of each series of magnets face unlike poles of the other series, of means—such as a hopper—for introducing into the space between the two series of magnets the material to be acted upon, and a source of power for moving or driving the said series of magnets simultaneously in the same direction, as set forth.

5. In an apparatus for separating metallic from non-metallic substances by magnetic induction, the combination, with circular groups or series of magnets arranged opposite each other with an open space between their poles and in such order that the magnetic fields thus produced are alternately of opposite polarity, of a hopper or a means for introducing the material to be acted upon into the space between the magnets, and a source of power for simultaneously rotating the two groups or series of magnets, as set forth.

6. In a magnetic separator, the combination of series or groups of magnets arranged opposite each other so that magnetic fields of alternate polarity exist in a space between them, means, substantially such as above described, for simultaneously moving the said series or groups of magnets in the same direction, and chutes for receiving and conducting away the separated materials, substantially as and for the purposes set forth.

7. In a magnetic separator, the combination of circular series or groups of magnets arranged opposite each other so that magnetic fields of alternate polarity exist in a space between them, means, substantially such as above described, for simultaneously rotating the said series or groups of magnets in the same direction, and diaphragms arranged between the said series or groups of magnets and having a space between them wherein the air will be unaffected by the movement of the magnets, as and for the purposes above specified.

8. In a magnetic separator, the combination of series or groups of magnets having pole-pieces inclined toward each other, the said series or groups of magnets being arranged opposite each other so that unlike poles face each other and a space is left between the said series or groups, substantially as and for the purposes set forth.

9. In a magnetic separator, the combination of the circular series or groups of magnets E, the rotating shaft D, on which the said series or groups are mounted opposite each other, the casing B, inclosing the said magnets, the diaphragms L, arranged between the said series or groups of magnets, the hopper M, and the chutes P P' O, all substantially as and for the purposes set forth.

402,685. LADY'S CUFF-FASTENER. CHARLES L. MOORE, Worcester, Mass. Filed Aug. 13, 1888. Serial No. 282,569. (No model.)



Claim.—1. A cuff-fastener consisting of a body, a spring-arm standing over the body and provided with an orifice near its free end, a spring-clasp formed longitudinally opposite to the spring-arm, said spring-arm and spring-clasp both lying and operating in parallel planes, and a hooked pin secured to the body opposite the orifice in the spring-arm and adapted to wholly enter said orifice when the spring-arm is compressed toward the body, substantially as described.

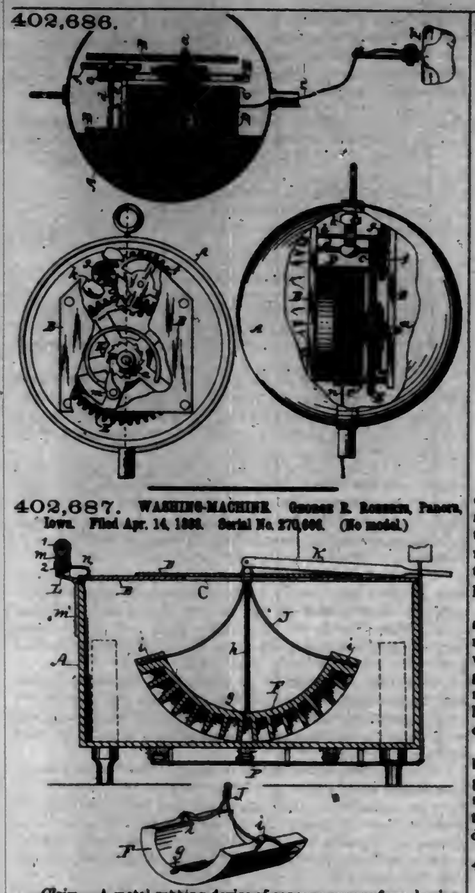
2. A cuff-fastener consisting of a body, a spring-arm bent over the body and provided with a slot near the end, and a spring-clasp, all integral with each other, and a retaining-hook secured in the body opposite to the slot in the spring-arm, substantially as described.

3. In a cuff-fastener, an extended body, a curved pointed hook secured thereto adjacent to an end, a spring-arm diverging from a face of the body and standing over the same substantially parallel, and provided with an aperture adapted to wholly and without contact receive said hook, and a spring-clasp diverging from the opposite face of the body and lying parallel thereto, substantially as described.

402,686. CHALK-HOLDER. PHILIP R. NEWTON, Brooklyn, assignor of two-thirds to Ben L. Fairchild, New York, and Peter B. Reeves, Brooklyn, N. Y. Filed Dec. 2, 1887. Renewed Aug. 31, 1888. Serial No. 284,285. (No model.)

Claim.—In the mechanism of a chalk-holder, a reel mounted on a shaft, *a*, provided with a ratchet-wheel, in combination with a governor mounted on a shaft which is connected by gearing with a wheel, E, on shaft *a*, and a pawl attached to wheel E and in position to engage with the ratchet-wheel, substantially as and for the purposes described.

402,686.



402,687. WASHING-MACHINE. GEORGE R. ROBBINS, Panora, Iowa. Filed Apr. 14, 1888. Serial No. 270,666. (No model.)

Claim.—A metal rubbing device of concavo-convex form, having open chambers or cells on its convex surface, integral perforated lugs on its ends, a forked handle attached to said lugs, and integral journals on its edges, in combination with a tub having grooves in the inside faces of its parallel sides, for the purposes stated.

402,688. HOSE-WINDING DRUM. RICHARD SCHULZ, Tegel, near Berlin, Germany. Filed June 23, 1888. Serial No. 278,068. (No model.) Patented in Germany Feb. 18, 1888, No. 44,306; in France Feb. 18, 1888, No. 188,830; in England May 22, 1888, No. 7,830; in Italy June 30, 1888, XLVI, 308, XXII, 23,888, and in Austria-Hungary Oct. 6, 1888, No. 21,608 and No. 39,060.

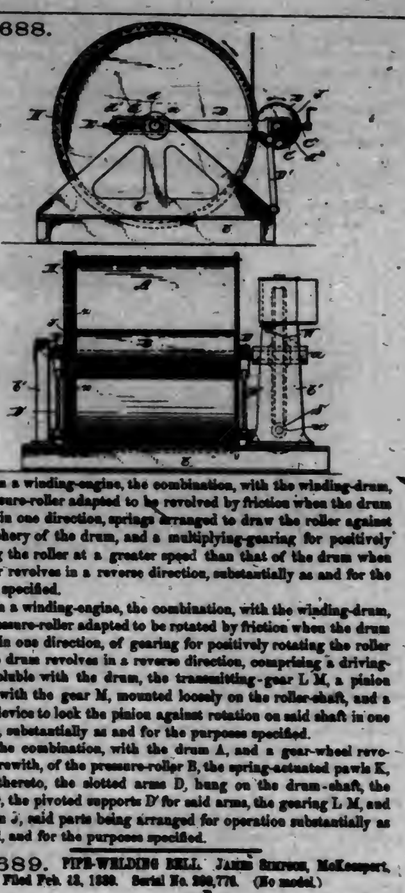
Claim.—1. In a winding-engine, the combination, with the winding-drum, of a pressure-roller, supporting-arms for said roller hung on the drum-shaft, springs operating to draw the roller toward the periphery of the drum, and gearing to revolve said roller, substantially as and for the purposes specified.

2. In a winding-engine, the combination, with the winding-drum, of a pressure-roller adapted to be rotated by friction when the drum rotates in one direction, and gearing for positively rotating the roller when the drum rotates in a reverse direction, substantially as and for the purposes specified.

3. In a winding-engine, the combination, with the winding-drum, of a pressure-roller adapted to be rotated by friction when the drum rotates in one direction, springs arranged to draw the roller against the periphery of the drum, and gearing for positively rotating the roller when the drum rotates in a reverse direction, substantially as and for the purposes specified.

4. In a winding-engine, the combination, with the winding-drum, of a pressure-roller adapted to be revolved by friction when the drum revolves in one direction, and a multiplying-gearing for positively revolving the roller at a greater speed than that of the drum when the latter revolves in a reverse direction, substantially as and for the purposes specified.

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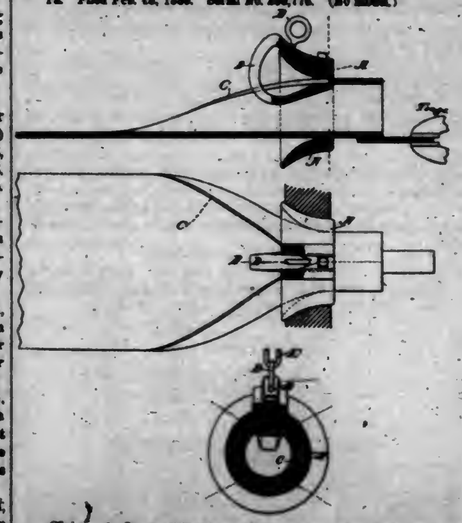


5. In a winding-engine, the combination, with the winding-drum, of a pressure-roller adapted to be revolved by friction when the drum revolves in one direction, springs arranged to draw the roller against the periphery of the drum, and a multiplying-gearing for positively revolving the roller at a greater speed than that of the drum when the latter revolves in a reverse direction, substantially as and for the purposes specified.

6. In a winding-engine, the combination, with the winding-drum, and a pressure-roller adapted to be rotated by friction when the drum revolves in one direction, of gearing for positively rotating the roller when the drum revolves in a reverse direction, comprising a driving-gear revoluble with the drum, the transmitting-gear L M, a pinion meshing with the gear M, mounted loosely on the roller-shaft, and a locking device to lock the pinion against rotation on said shaft in one direction, substantially as and for the purposes specified.

7. The combination, with the drum A, and a gear-wheel revoluble therewith, of the pressure-roller B, the spring-actuated pawls K, pivoted thereto, the slotted arms D, hung on the drum-shaft, the springs O, the pivoted supports D' for said arms, the gearing L M, and the pinion J, said parts being arranged for operation substantially as described, and for the purposes specified.

402,689. PIPE-WELDING BELL. JAMES SIMPSON, McKeesport, Pa. Filed Feb. 13, 1889. Serial No. 299,776. (No model.)

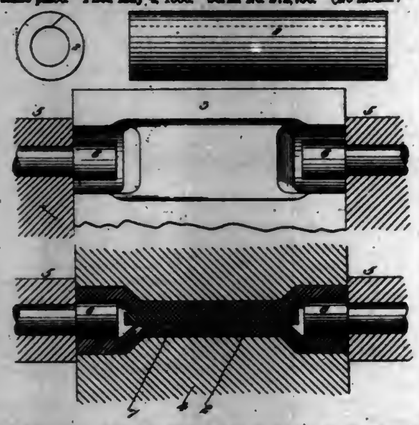


Claim.—1. In combination with a pipe-welding bell, a tongue arranged within the bell at a short distance from the interior wall thereof, directly beneath the position of the seam in the bell, for the purpose of supporting the seam, substantially as and for the purposes described.

2. In combination with a pipe-welding bell, a tongue fixed to the exterior of the bell and projecting therein in position to fit on the inner side of and to support the seam, substantially as and for the purposes described.

3. In combination with a pipe-welding bell, a tongue removably fixed to the exterior of the bell and projecting therein in position to fit on the inner side of and to support the seam, substantially as and for the purposes described.

402,690. MANUFACTURE OF TURN-BUCKLES. JAMES H. SIMPSON, Pittsburg, Pa., assignor to Carnegie, Phipps & Company, (Limited,) same place. Filed May 4, 1888. Serial No. 272,756. (No model.)



Claim.—1. An improvement in the art of making turn-buckles, which consists in dividing a tubular or hollow blank longitudinally between its ends and then shaping the blank by forging, substantially as and for the purposes described.

2. An improvement in the art of making turn-buckles, which consists in flattening a tubular or hollow blank between its ends and forming the straps by cutting out the flattened part longitudinally, substantially as and for the purposes described.

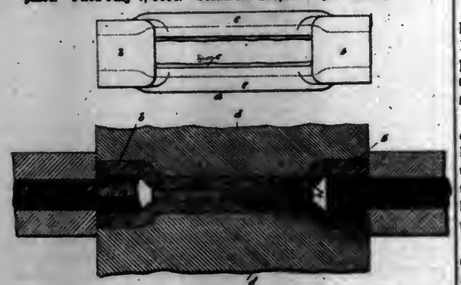
3. An improvement in the art of making turn-buckles, which consists in forming the straps by dividing a tubular or hollow blank longitudinally between its ends and compressing and shaping the ends to form the nuts, substantially as and for the purposes described.

4. An improvement in the art of making turn-buckles, which consists in forming the straps by dividing a tubular or hollow blank longitudinally between its ends, forging the strap portions, and compressing and shaping the ends to form the nuts, substantially as and for the purposes described.

5. An improvement in the art of making turn-buckles, which consists in flattening a tubular or hollow blank between its ends upon an inserted filling and forming the straps by cutting out the longitudinal middle part of the flattened portion and filling, and then shaping and welding the blank by forging, substantially as and for the purposes described.

6. An improvement in the art of making turn-buckles, which consists in forming a blank with straps, and hollow or tubular nut portions, and compressing endwise and shaping the nut portions upon mandrels and within dies, substantially as and for the purposes described.

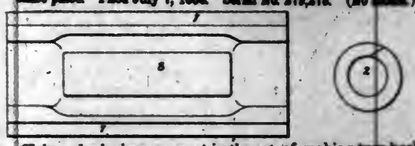
402,691. BLANK FOR TURN-BUCKLES. JAMES H. SIMPSON, Pittsburg, Pa., assignor to Carnegie, Phipps & Company, (Limited,) same place. Filed July 7, 1888. Serial No. 279,277. (No model.)



Claim.—1. A blank for turn-buckles, consisting of a hollow or tubular piece of metal divided longitudinally in its middle portion between the ends, substantially as and for the purposes described.

2. A blank for turn-buckles, consisting of a hollow or tubular piece of metal having a flattened middle portion which is divided longitudinally, substantially as and for the purposes described.

402,692. ART OF MAKING TURN-BUCKLES. JAMES H. SIMPSON, Pittsburg, Pa., assignor to Carnegie, Phipps & Company, (Limited,) same place. Filed July 7, 1888. Serial No. 279,278. (No model.)



Claim.—1. An improvement in the art of making turn-buckles, which consists in splitting a tubular or hollow blank longitudinally between its ends and turning in upon themselves the cut portions, substantially as described.

2. An improvement in the art of making turn-buckles from tubular or hollow blanks, which consists in forming the straps by splitting the blank longitudinally between its ends and turning in upon themselves and forging the cut portions without excising any of the substance, substantially as described.

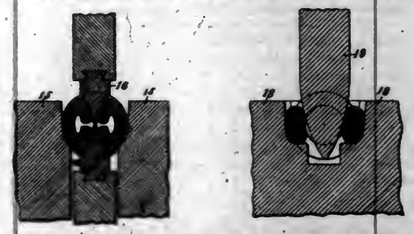
3. An improvement in the art of making turn-buckles from tubular or hollow blanks, which consists in splitting the blank longitudinally from opposite sides between its ends without excision, folding in upon themselves and forging the cut portions to form the straps, and forging the end portions to form the nuts, substantially as described.

4. An improvement in the art of making turn-buckles from tubular or hollow blanks, which consists in splitting the blank longitudinally from opposite sides between its ends without excision, folding in upon themselves the cut edges of the blank to form the straps, spreading and compressing the straps, and forging the end portions to form the nuts, substantially as described.

5. An improvement in the art of making turn-buckles from tubular blanks, which consists in splitting the blank longitudinally between its ends and turning in upon themselves the cut portions and compressing the ends lengthwise upon mandrels to form the nuts, substantially as described.

6. An improvement in the art of making turn-buckles from tubular blanks, which consists in splitting the blank longitudinally between its ends to form embryotic straps and hollow nut portions, turning in upon themselves the cut edges to form the straps, compressing and spreading such strap portions, and compressing endwise and shaping the nut portions upon mandrels and within dies, substantially as described.

402,693. DIE FOR MAKING TURN-BUCKLES. JAMES H. SIMPSON, Pittsburg, Pa., assignor to Carnegie, Phipps & Company, (Limited,) same place. Filed Oct. 8, 1888. Serial No. 287,506. (No model.)



Claim.—1. An improvement in apparatus for making turn-buckles, which consists in the combination of the two opposite knives 16, having beveled or tapering sides, whereby a hollow blank interposed between the knives is slit longitudinally and the edges of the slit portion turned inward, substantially as and for the purposes described.

2. An improvement in apparatus for making turn-buckles, which consists in the combination of the two opposite knives 16, having beveled or tapering sides, whereby a hollow blank interposed between the knives is slit longitudinally and the edges of the slit portion turned inward, and a supporting-block, 15, which supports the blank laterally during the slitting operation, substantially as and for the purposes described.

3. The knife 16, having a cutting or slitting edge and tapering sides which are inwardly concaved or curved, whereby the knife is adapted to slit a hollow turn-buckle blank and to fold in the edges of the slit portion, substantially as and for the purposes described.

4. An improvement in apparatus for making turn-buckles, which consists in a mandrel, 19, for spreading or expanding the divided straps of a blank, said mandrel having a wedge-shaped working-edge, in combination with a supporting block or die, 18, having a cavity for receiving the turn-buckle, the width of the sides of the cavity being equal to the external width of the spread blank, whereby the mandrel shall expand the blank and shall compress the straps thereof against the sides of the cavity, substantially as and for the purposes described.

5. An improvement in apparatus for making turn-buckles, which consists in the combination of the shaping and forging dies 8 and 9, having working-faces provided with longitudinal cavities for the straps and end cavities for the heads or nuts of the buckles, substantially as and for the purposes described.

6. An improvement in apparatus for making turn-buckles, which consists in the combination of the dies 8 and 9, having working-faces provided with longitudinal cavities for the straps and end cavities for the heads or nuts of the buckle, and a compressing die or dies which enter between the dies 8 and 9 and engage the ends of the buckle, substantially as and for the purposes described.

7. An improvement in dies for making turn-buckles, which consists in the combination of the dies 8 and 9, having working-faces provided with longitudinal cavities for the straps, end cavities for the heads or nuts of the buckle, and a mandrel or mandrels at the end or ends of the dies which are adapted to enter the nuts of the buckle and which are provided with compressing portions 13, which engage and compress the ends of the blank, substantially as and for the purposes described.

402,694. ART OF MAKING TURN-BUCKLES. JAMES H. SIMPSON, Pittsburg, Pa., assignor to Carnegie, Phipps & Company, (Limited,) same place. Filed Oct. 22, 1888. Serial No. 288,762. (No model.)



Claim.—1. An improvement in the art of making turn-buckles, which consists in cutting a solid blank longitudinally to form the straps, forging and compressing the straps, and forging and shaping the nuts, substantially as and for the purposes described.

2. An improvement in the art of making turn-buckles, which consists in forming a flattened blank, cutting the same longitudinally to form the straps, and forging and shaping the straps and the ends or nuts, substantially as and for the purposes described.

3. An improvement in the art of making turn-buckles, which consists in forming a blank with straps and with solid ends and punching and compressing said ends longitudinally, displacing the metal thereof laterally, the said ends being confined within die-cavities suitably recessed, into which recesses the displaced metal flows, substantially as and for the purposes described.

4. An improvement in the art of making turn-buckles, which consists in forming the straps of a blank having solid ends, punching and compressing said ends longitudinally and displacing the metal thereof laterally, the said ends being confined within die-cavities suitably recessed, into which recesses the displaced metal flows, and simultaneously compressing and forging the straps, substantially as and for the purposes described.

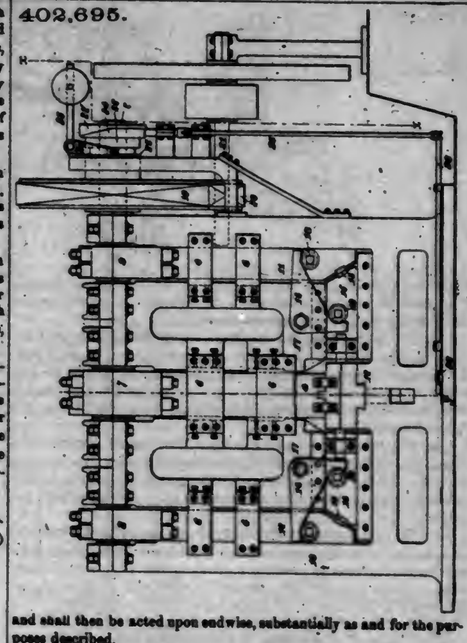
5. An improvement in the art of making turn-buckles, which consists in forming a flattened blank with solid ends, cutting the same longitudinally, spreading the cut side portions of the blank, and then compressing and forging the said side portions, and punching the end portions to form the nuts, substantially as and for the purposes described.

402,695. MACHINE FOR MAKING TURN-BUCKLES. JAMES H. SIMPSON, Pittsburg, Pa., assignor to Carnegie, Phipps & Company, (Limited,) same place. Filed Nov. 7, 1888. Serial No. 290,183. (No model.)

Claim.—1. In machines for die-forging, the combination of reciprocating plungers 4, 10, and 11, dies operated by motion of the plunger 4, other dies moving transversely to the path of motion of the plunger 4, and die-stocks carrying said dies and operated by the plungers 10 and 11, and retracting-levers 16, connecting the die-stocks with said plungers 10 and 11, substantially as and for the purposes described.

2. In machines for die-forging, the combination of the reciprocating plungers 4, 10, and 11, dies operated by motion of the plunger 4 to compress the blank, other dies moving transversely to the path of motion of the plunger 4 and acting on the blank with end compression, die-stocks carrying said dies and operated by said plungers, and mechanism—such as cams—which actuate the plungers, said cams being so timed that the blank shall first be compressed laterally

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and shall then be acted upon endwise, substantially as and for the purposes described.

402,696. METHOD OF MAKING CAR-WHEELS. GEORGE S. SYRACUSE, New York, N. Y. Filed Aug. 2, 1888. Serial No. 281,746. (No model.)



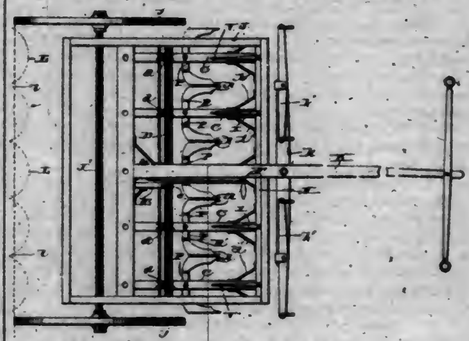
Claim.—1. The mode herein described of forming car-wheels, said mode consisting in fitting over a hub-piece a web-plate having a central opening, securing the web-plate to the hub-piece by means of a ring fitted over a part of the hub-piece, and applying to the periphery of the web a grooved bar to form the tire, and welding these parts together.

2. The mode herein described of forming car-wheels, said mode consisting in securing a web-plate to a hub-piece, applying to the periphery of the web-plate a grooved bar overlapping the ends of the latter, and welding all the parts together, all substantially as set forth.

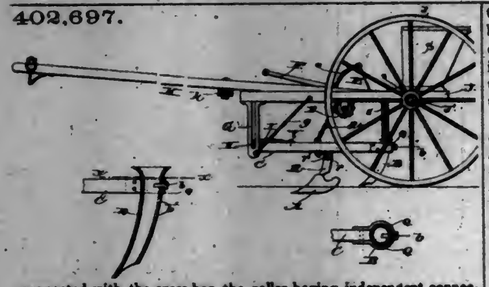
402,697. GRAIN-DRILL. ROLLAND G. STROTHER, Findlay, Ohio. Filed Aug. 21, 1888. Serial No. 283,286. (No model.)

Claim.—1. In a grain-drill, the combination, with the gang-bars and the short cross-bars secured to the gang-bars and having their ends bent down, of the interchangeable shovels secured thereto, substantially as and for the purpose described.

2. The combination, with the frame having slotted brackets, and the cross-bar fitted in the slots of the said brackets, of the gang-bars



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connected with the cross-bar, the roller having independent connections with the gang-bars, and means for rotating the roller, substantially as described, for the purpose specified.

3. The combination, with the frame, the slotted brackets, and the cross-bar adjustable in the brackets, of the gang-bars connected with the cross-bar by hinge-connections, and the springs secured at one end to the cross-bar and having their opposite ends adapted to exert a pressure on the said gang-bars, substantially as described, for the purpose set forth.

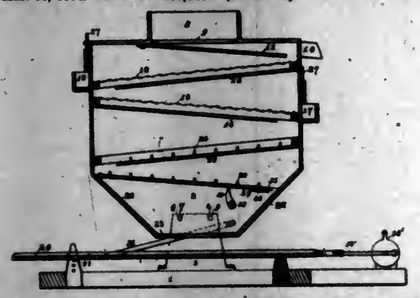
4. The combination, with the frame, the slotted brackets, the cross-bar, and the gang-bars hinged to the cross-bar, of the springs, the roller having independent connections with the gang-bars, and means for rotating the roller, substantially as and for the purpose described.

5. The combination, with the frame, of the vertically-movable cross-bar, and the gang-bars connected to the latter, each of said gang-bars having a cross-bar carrying a pair of plows adapted to form a ridge, and each gang-bar being further provided with a drill arranged for sowing in the crest of the ridge, substantially as set forth.

6. The combination, with the adjustable gang-bar provided with a pair of plows to form a ridge, of the drill-shoe connected with the gang-bar in rear of and intermediately between said plows and having an independent vertical adjustment, substantially as described.

7. The combination, with the gang-bar having a curved recess or semicircular groove framed vertically in its rear end, of the drill-shoe fitted in said recess so as to be vertically movable therein, a clip embracing said shoe and secured to the gang-bar by transverse bolts, and a pin passing longitudinally through the rear side of the clip and through one of a series of perforations in the shoe, which is thereby secured vertically adjustable to the bar, substantially as set forth.

402,698. ORE-WASHER. JAMES TALLEY, Denver, Colo. Filed Mar. 10, 1888. Serial No. 266,811. (No model.)



Claim.—1. A combined concentrator and amalgamator consisting of an inclosing-casing, a hopper seated thereon, a series of alternately-inclined screens each extending entirely across the space within the casing, imperforate conducting-plates, one below, substantially parallel to, and extending nearly to the lower end thereof, a discharge-passage being thereby left at the foot of each plate, and alternately-inclined riffle-plates, the inclination through the series of screens and of riffle-plates being alternately in opposite directions, substantially as set forth.

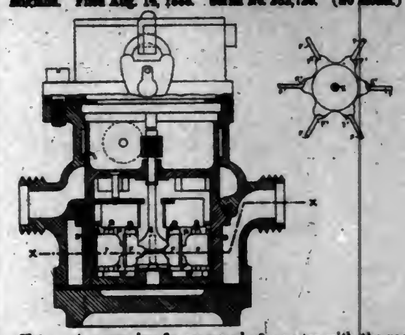
2. The combination of the inclosing-casing, a series of screens, a series of imperforate plates, a plate below and substantially parallel to each screen and conducting the material passing therethrough to the head of the next lower screen or the head of a riffle-plate, the screens and plates being inclined alternately in opposite directions, the standards 3, each with bearings 4 5, the pins 6 7, taking therein and attached to the casing, and a handle, 21, for rocking the casing in such bearings, substantially as set forth.

3. A rocker for saving fine metals, comprising a hopper, a grizzly in the bottom thereof, and an adjustable discharge-gate at the tail thereof, a series of inclined screens each having an imperforate plate beneath and parallel to it, a discharge-spout for each screen, a series of riffle-plates, the screens and riffle-plates being alternately inclined in opposite directions, an inclosing-case, and a pan, 20, located below the inclosing-casing and receiving the discharge therefrom, substantially as set forth.

4. The combination of the inclosing-case, series of screens, and of riffle-plates alternately inclined in opposite directions, the screens extending entirely across the space within the casing, imperforate deflecting boards or plates, one for each screen, and extending substantially parallel thereto nearly to its lower end, the discharge-pan 20 beneath the lower riffle-plate, arms 25, detachably connecting it to the casing, and means, substantially as described, for simultaneously rocking the casing and reciprocating the pan, substantially as set forth.

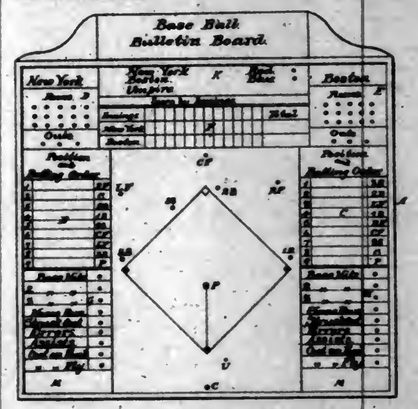
5. The combination, with the lower riffle-plate, of a rubber or leather valve-strip secured at one edge to the lower part of the plate, a rod passing through the casing beneath such riffle-plate and carrying cams for controlling the position and operation of the valve-strip, and a pawl and ratchet for locking the rod and cams in position, substantially as set forth.

402,699. ROTARY WATER-METER. JOSEPH J. TYLOR, London, England. Filed Aug. 14, 1888. Serial No. 282,736. (No model.)



Claim.—A measuring fan or wheel of a meter with the roots or parts of the blades near the axis sloping alternately in opposite directions, as and for the purpose specified.

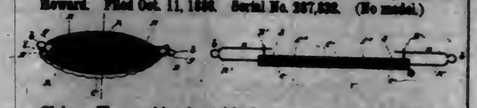
402,700. BULLETIN-BOARD AND BASE-BALL INDICATOR. EDWARD S. VAN ZILE, New York, N. Y., assignor to Edwin A. Grosier and Frederick A. Dunaka, same place. Filed Dec. 14, 1888. Serial No. 293,605. (No model.)



Claim.—1. A base-ball indicator consisting of a bulletin-board having a diagram of a base-ball field with the positions of the players marked thereon, and a series of indicating-markers, each bearing a color, number, or other distinguishing mark to denote a player, whereby the progress of a game may be set out as dispatches are received from the field, substantially as described.

2. The combination, with a bulletin-board having names and position of players and diagram of ball-field marked thereon and separate pins denoting players, of an adhesive marker to indicate the course of the ball, substantially as described.

402,701. BROOCH-PIN. RUDOLF VON BULTZINGSLOWEN and MORTON HOWARD, New York, N. Y.; said von Bultzingslowen assignor to said Howard. Filed Oct. 11, 1888. Serial No. 287,892. (No model.)



Claim.—The combination with the mounting-plate of a brooch, a tube upon and extending across said mounting-plate parallel thereto, and ears upon said mounting-plate at either end of said tube, of needles having two arms, substantially as specified, two of said arms passing through said ears and into said tube, one on either side of said brooch, the other arms of said needles passing through said ears, one on either side of said brooch, outside of said tube, extending toward the middle thereof and nearly parallel thereto, and a spring within said tube so connected with said needles that it draws said needles inward toward the middle of said tube, all substantially as and for the purpose set forth.

402,702. SAFETY-VALVE. MARSH WARREN, Rochester, N. Y. Filed July 26, 1888. Serial No. 281,041. (No model.)



Claim.—1. The combination of a valve, a tension device to vary the resistance to the opening of the valve, and a movable scale, substantially as set forth, whereby the scale can be adjusted to correctly indicate the desired pressure to open the valve.

2. The combination of a valve, a spring tending to close the valve, a movable part to vary the tension of the spring, and a movable scale, substantially as set forth.

3. The combination of the valve, the spring, the milled wheel or plate, the screw-threaded cylinder, the longitudinally-movable nut, and the movable scale seated in a recess in the milled head, substantially as set forth.

4. The combination of the casing, the valve, the spring, the milled plate, the screw-threaded cylinder, the movable nut on said cylinder, and the clamp, substantially as set forth, whereby the milled plate is held in fixed position after adjustment of tension.

5. The combination of the valve, the spring, the milled plate, the screw-threaded cylinder, the longitudinally-movable nut on the cylinder, the movable scale, and the jam-nut for holding the scale against the plate, substantially as set forth.

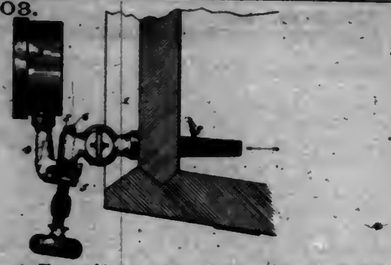
6. The combination of the valve, the spring, the milled plate, the screw-threaded cylinder, the longitudinally-movable nut thereon, the movable scale, the nut for holding the scale against the plate, and the clamp to hold the wheel or plate in fixed position, substantially as set forth.

7. In a fluid-pressure-regulating apparatus, a valve, a tension device, and a scale mechanically connected to the tension device, all combined substantially as set forth, whereby the scale is moved by the manipulation of said tension device.

8. In combination, in a fluid-pressure-regulating apparatus having a casing, a scale or indicator connected to a tension device, a valve adapted to close and disclose a passage for a fluid, and a branch pipe communicating with the interior of the casing to receive a pressure-gage, substantially as set forth.

402,703. DETACHABLE PRESSURE-GAGE. HARRIS WARREN, Rochester, N. Y. Filed Oct. 12, 1888. Serial No. 287,915. (No model.)

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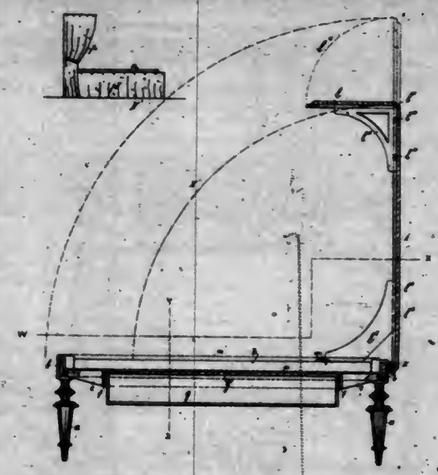


Claim.—1. The combination of a cask, a faucet for drawing off its liquid contents, a pressure-gage provided with an extension which connects immediately with the gage and supports the same, and which is also applied immediately to the mouth of the faucet, and a clamping device which clamps said extension directly to the faucet, substantially as specified.

2. The combination of a pressure-gage having an extension and a packed seat in said extension, the link provided with the screw, and the faucet having a projection to engage the link, the projection and the screw being in the axis of the link, substantially as set forth, whereby the link may be readily applied to a faucet without removing its cock, and whereby the seat of the extension may be forced in a straight line against the mouth of the faucet.

3. A pressure-gage provided with a bent extension having a seat provided with a packing on its outer limb, a faucet with downwardly-directed mouth, and the clamp and screw, whereby the seat and the mouth of the faucet may be clamped together and the gage held directly upon the faucet and above it, substantially as set forth.

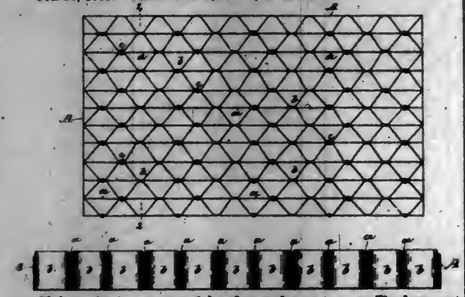
402,704. BEDSTEAD. MARY WRIGHTMAN, Newcastle-upon-Tyne, County of Northumberland, England. Filed Oct. 1, 1888. Serial No. 286,902. (No model.) Patented in England Jan. 21, 1888, No. 945.



Claim.—1. In a table-bedstead, the combination, with the outer frames, *b*, of the pieces *c*, lower than the said outer frames and secured against their inside surfaces, the crossed frames *e* and *f*, for supporting the mattress, provided with tapering ends and secured with their tops level with the tops of said pieces *c* at some distance within the outer frame and parallel with the respective sides of it to which they are opposite, and the head-frame hinged to the outer frame and adapted to fold down upon and inclose the mattress and form the top of the table, substantially as set forth.

2. In a table-bedstead, the combination, with the outer frames, *b*, of the pieces *c*, lower than said outer frames and secured against their inside surfaces, the crossed frames *e* and *f*, for supporting the mattress, provided with tapering ends and secured with their tops level with the tops of said pieces *c* at some distance within the said outer frame and parallel with the respective sides of it to which they are opposite, the deep central box, *g*, secured between said frames *e* and *f* and provided with a removable cover level with the top of said frames, and the head-frame hinged to the outer frame and adapted to fold down upon and inclose the mattress and form the top of the table, substantially as set forth.

402,705. DOOR-MAT. OTTO WESTERHOLM, Chicago, Ill. Filed Oct. 26, 1885. Serial No. 180,890. (No model.)



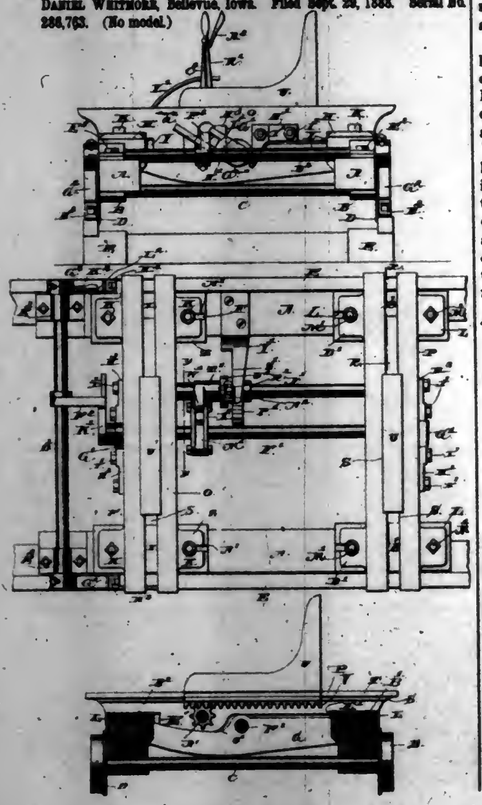
Claim.—1. As a new article of manufacture, a metallic door-mat comprising the parallel strips *a*, standing on edge, zigzag intermediate strips, *b*, arranged between the strips *a*, and suitable connections uniting the said strips *a* and *b*, the whole being combined to form spaces through which dirt may pass, substantially as set forth.

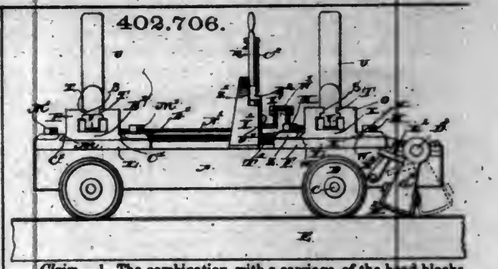
2. A metal door-mat consisting of the outer frame, A, and longitudinal strips *a*, connected to the ends of the frame, and intermediate strips, *b*, extending transversely between the adjacent strips *a*, to which they are secured at different points, substantially as described.

3. A metal door-mat consisting of the outer frame having longitudinal strips *a* and the intermediate transverse strips, *b*, lying between the adjacent strips *a*, the strips *b* being connected to the strips *a* at alternate contacting points, substantially as and for the purpose set forth.

4. A metal door-mat consisting of the outer frame, A, having longitudinal strips *a* and the intermediate strips, *b*, extending transversely between the strips *a*, to which they are secured, the upper edges of the strips *a* and *b* lying in different planes, substantially as described.

402,706. OFFSET MECHANISM FOR SAW-MILL CARRIAGES. DANIEL WHITMORE, Bellevue, Iowa. Filed Sept. 29, 1888. Serial No. 286,763. (No model.)





Claim.—1. The combination, with a carriage, of the head-blocks movable laterally thereon, the shaft F', journaled in rigid supports and having the cams engaging the head-blocks, the rock-shaft journaled on the carriage and having the friction-arms adapted to engage the track-rails, and devices, substantially as set forth, connecting the said rock-shaft to the shaft F', substantially as described.

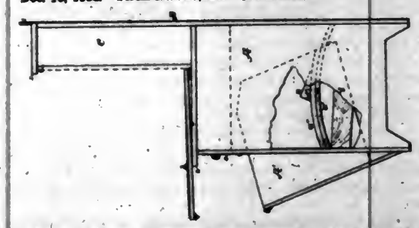
2. The combination, with a saw-mill carriage, of the laterally-movable head-blocks, knees or standards guided in said blocks and having the racks, the shaft N', journaled in and connecting the head-blocks and having the pinions engaging the racks, the ratchet-wheel secured to the said shaft, the sleeve loose on said shaft and having arm W', the head-lever loosely mounted on the shaft and having the dog to engage the ratchet-wheel and the locking device to engage the sleeve, the shaft F', having the cams engaging the head-blocks, the arm M', secured to said shaft F', and the links connecting said arms with the arm W', substantially as described.

3. The combination of the carriage having the plates or castings the laterally-movable head-blocks dovetailed in said plates or castings, the knees or standards guided in the head-blocks, the shaft N', journaled in the head-blocks and movable therewith, said shaft being geared to the knees or standards, the ratchet-wheel secured to said shaft, the shaft F', journaled in fixed supports and connected to and adapted to operate the head-blocks, the sleeve loose on shaft N', connections between the said sleeve and the shaft F', whereby the same may be partly rotated simultaneously, and the hand-lever loosely mounted on shaft N' and having the dog to engage the ratchet-wheel and the locking device to engage the sleeve, substantially as described.

4. The combination, with the carriage, of the laterally-movable head-blocks, the shaft F', journaled in fixed supports and having the cams engaging the head-blocks, and provided, further, with the arm K', the rock-shaft journaled on the carriage and having the arm F', engaging arm K', and the friction-arms secured to the rock-shaft and adapted to engage the track-rails, substantially as described.

5. The combination, with the carriage, of the laterally-movable head-blocks thereon, the shaft F', journaled in fixed supports and having the cams or devices engaging the head-blocks, the arm K', secured to the shaft F' and having the open slot L', the rock-shaft journaled on the carriage and having the arm F³, to engage slot L', the friction-arm secured to the rock-shaft and adapted to engage the track-rails, one of said friction-arms having the arm K³, and the detent L², secured to the carriage and adapted to engage said arm, for the purpose set forth, substantially as described.

402,707. KITCHEN-CABINET. HORACE S. WOLFE, Battle Creek, Mich., assignor of one-half to Nelson R. Hubbard, same place. Filed Dec. 10, 1888. Serial No. 293,217. (No model.)

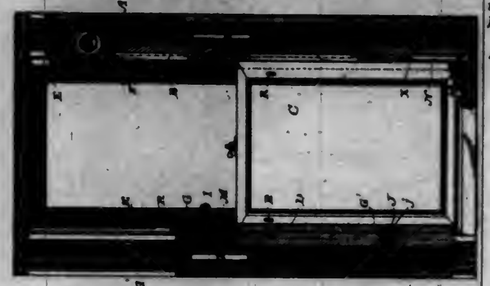


Claim.—1. In a kitchen-cabinet, the casing provided with arc-shaped cleats or ways, in combination with a flour-receptacle, also having arc-shaped cleats which extend from one end of said receptacle toward but not in contact with the opposite end thereof, stop-blocks secured to the case immediately above the cleats of the flour-receptacle, and corner-strips secured to the case and so disposed with relation thereto as to serve as stops for the flour-receptacle.

2. In a kitchen-cabinet, the case provided on its inner ends with arc-shaped cleats or ways and on its outer corners with strips, in combination with a flour-receptacle having arc-shaped cleats secured thereto, which extend from the rear end of said receptacle toward but not in contact with the front end thereof and are adapted to engage with the cleats of said case, and stop-blocks disposed on the interior of the case immediately above the cleats on the flour-receptacle, all substantially as and for the purposes herein specified.

3. In a kitchen-cabinet, the case provided with inclined blocks or strips, and also with arc-shaped cleats or ways, the extremities of which rest on said inclined blocks, and strips secured to the corners of said case, for the purpose set forth, and so disposed with relation thereto as to adapt them to serve as stops for a flour-receptacle, in combination with said flour-receptacle having arc-shaped cleats at its sides, which cleats extend from the rear end of said receptacle toward but not in contact with the front end thereof, as shown, and blocks secured to the case immediately above the cleats of the flour-receptacle and adapted, as set forth, to prevent accidental displacement of said receptacle.

402,708. WINDOW CASING AND SASH. JAN SALIESOWSKI, Chicago, Ill., assignor of three-fourths to August J. Kowalski, Theodore Lewandowski, and Andrew Schultz, same place. Filed Aug. 3, 1888. Serial No. 281,910. (No model.)



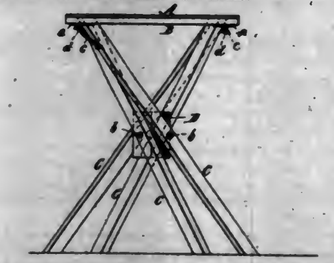
Claim.—1. A spring thumb-bolt, I, consisting of the screw-threaded bolt *i*, having button *i'*, spring i^2, nut i^3, and hollow knob i^4, in combination with the removable strip D, the plate J, having lug *j*, and the casing having socket-plates G G', substantially as and for the purpose described.

2. The rope-socket piece P, provided with the spring Q, in combination with the journal *o'* and its cam o^3, said spring pressing against the cam, substantially as and for the purpose described.

3. The outer sash, B, and inner sash, C, each pivoted to rope-socket pieces P at its lower edge, the socket-pieces of the outer sash having a longer section below the pivotal point than the socket-pieces of the inner sash, substantially as described.

4. The removable strips D and F, having their upper ends inclined, as described, in combination with the window-casing, and springs H, for holding the strips F, and spring-bolts I, for holding the strips D within the casing, substantially as and for the purpose described.

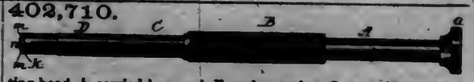
402,709. CAMP-STOOL. ALONZO M. ABBOTT, Lockland, Ohio. Filed Dec. 3, 1888. Serial No. 292,476. (No model.)



Claim.—A camp-stool comprising a central rectangular block, a series of legs having their ends beveled, as described, pivoted to the respective sides of said block, a rigid rectangular seat-frame provided on its under side at its corners with metal plates which project over the inner line of the frame, two of said plates located at diagonally-opposite corners, being provided with eyes, a seat secured to said frame, and hooks pivoted to two of the legs in such position as to permit them to engage with the eyes on the metal plates, all combined substantially as described, and for the purposes set forth.

402,710. INK-ERASER. HIRAM BALDWIN and JOSEPH J. SMITH, Toledo, Iowa. Filed Mar. 22, 1888. Serial No. 304,362. (No model.)

Claim.—1. In an eraser, the combination of a case, a rotary cutting-head, *k*, carried by a rod, F, and a spring, G, to hold the head against the paper, substantially as specified.

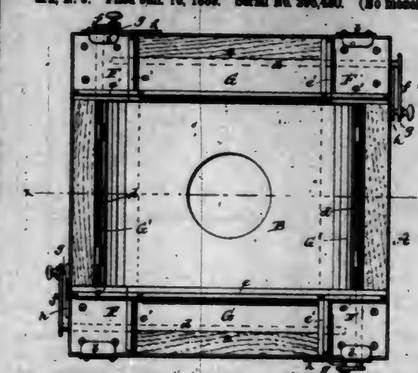


2. In an eraser, the combination of a case, a rotating head, *k*, carried by a rod, F, a spring to hold the face of the head *k* against the paper, a spirally-grooved rod, E, and a movable tube, A, having an extension, *b*, provided with a pin or stud, *y*, to enter the groove *f*, substantially as and for the purpose described.

3. In an eraser, the rod F, having at one end an erasing-head, *k*, and at the other end a socket, *j*, and a spring, G, in combination with a rod, E, having its lower end, *i*, formed to fit in the socket *j* and having its upper portion spirally grooved, and tube A, having an extension, *b*, provided with a pin or stud, *y*, substantially as and for the purpose specified.

4. In an eraser, a rod, F, provided with an erasing-head, *k*, and a spring, G, in combination with a case provided with a plate, A, and rotatable rod E, provided with a shoulder that rests against the plate *k*, substantially as and for the purpose specified.

402,711. PHOTOGRAPHIC CAMERA. BRANTUS B. BARKER, Newark, N. J. Filed Jan. 16, 1888. Serial No. 296,480. (No model.)



Claim.—1. In a photographic camera, the construction of the back with adjustable shutters, substantially as described, whereby the back and the back-opening may be quickly adjusted to the reception of the plate-holder for the taking of either vertical or horizontal pictures, as set forth.

2. In a photographic camera, the combination, with a back frame, of adjustable shutters adapted to enlarge or contract the opening in the back in horizontal and vertical directions, as and for the purposes herein shown and described.

3. In a photographic camera, the back frame provided with upper and lower and side or end movable wings or shutters adapted to provide for insertion of the plate-holder in directions transverse to each other, essentially as specified.

4. In a photographic camera, the back frame provided with upper and lower and side or end movable wings or shutters having guide-ribs on their faces for the plate-holder, and adapted to provide for the insertion of the plate-holder in directions transverse to each other, substantially as described.

5. The combination, with the back frame, A, of the hinged wings G G G' G', having their axis of motion in direction of their length, essentially as and for the purpose herein set forth.

6. The combination, with the camera-back A, of the corner-plates F, arranged to project within the opening in said back and having guide-ribs *e'*, and the hinged shutters G G', having corresponding guide-ribs, *e*, for operation in relation with said plates, essentially as shown and described, and for the purpose specified.

7. The combination, with the camera-back A, of the hinged wings or shutters G G G' G', their attached hinged pins *d*, arranged to extend in direction of the length of said shutters and outside of the back A, and an adjusting and locking handle applied to the outer end extension of said rods for holding the shutters open or closed, as desired, substantially as specified.

402,712. GROUND-GLASS ATTACHMENT FOR CAMERAS. MAX BAUER, Brooklyn, N. Y. Filed Sept. 10, 1888. Serial No. 284,976. (No model.)

Claim.—1. A ground-glass attachment for cameras, comprising a back frame, springs secured to the said back frame, and a ground-glass frame, on which the free ends of the said springs are secured

402,712.

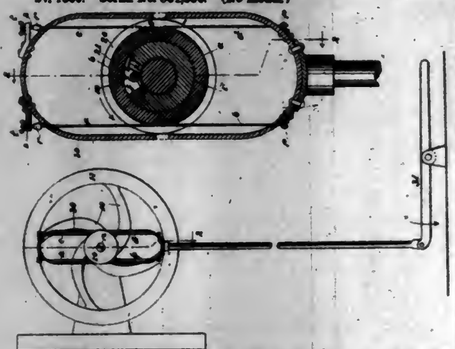


so that the said springs support the ground-glass frame on the said back frame, substantially as shown and described.

2. The combination, with a back frame provided with cleats each having a recess, of a spring secured in its middle in the recess of each of the said cleats, and a ground-glass frame secured to the free ends of the said springs at two opposite sides, substantially as shown and described.

3. The combination, with a back frame provided with two parallel cleats each having a recess, of a spring secured in its middle in the recess of each of the said cleats, each of the said springs being provided at its ends with slots, a frame containing the ground glass and supported on the said springs, and screws passing through the slots in the said springs into the said frame, so as to hold the latter on the said springs, at the same time permitting a free movement of the springs, substantially as shown and described.

402,713. MOTOR. WILLIAM R. BELL, New York, N. Y. Filed Feb. 27, 1889. Serial No. 301,230. (No model.)



Claim.—1. In a motor, the combination, with a driven member provided with pawls, of rings formed with internal ratchets that are engaged by the pawls, bands passed about the rings in opposite directions, and a frame to which the bands are connected, as and for the purpose stated.

2. In a motor, the combination, with a driven member provided with pawls, of rings formed with internal ratchets that are engaged by the pawls, bands passed about the rings in opposite directions, a frame to which the bands are connected, a treadle, and a connection between the treadle and the frame, substantially as described.

3. In a motor, the combination, with a driven member provided with pawls, of a ring, 19, formed with an internal ratchet that is engaged by one of the pawls, bands connected to the ring and passing in opposite direction about said ring, a frame to which the bands are connected, a ring, 21, also formed with an internal ratchet that is engaged by the other pawl, bands which pass in opposite directions about and are connected to the ring 21, the point of connection being opposite that of the ring 19, connections between the bands and the frame, and means for reciprocating the frame, as and for the purpose stated.

402,714. AIR-PURIFIER. BENJAMIN S. BENSON, Baltimore, Md. Filed Aug. 29, 1888. Serial No. 284,105. (No model.)

Claim.—1. In an air-purifying apparatus, the combination of a filtering-case provided with a fresh-air inlet at one end and outlets at its opposite end, a series of detachable filtering-webs disposed within the casing, forming compartments therein between the air inlet and outlet openings, and a heating case or drum having a hot-air chamber, said chamber communicating with the outlet-openings, and a discharge-pipe connected with said chamber, substantially as and for the purpose specified.

2. In an air-purifying apparatus, the combination, with the filtering-case provided with a fresh-air inlet at its lower end, a series of movable filtering-webs arranged therein, and outlet-openings in its top, of a heating-case disposed above said case, provided with air-inlet openings in its bottom arranged to align with the openings in the top of the filtering-case, said heating-case provided with a hot-air chamber having an extension or drum, I', a combustion-pipe arranged within said drum and connected to the heating-chamber, said drum provided with a pure-air outlet-pipe, all arranged substantially as described.

3. In an air-purifying apparatus, the combination, with the hot-

402,714.



air case provided with air-passages for the filtered air, said case consisting of a heating-chamber provided with a combustion-outlet pipe and a hot-air space surrounding said heating-chamber, provided with a drum and a pure-air outlet, of a detachable lamp-support, said support consisting of a horizontal hollow chamber provided with the oil-chamber at its forward end, an extended portion or gate at its outer end adapted to fit the opening of the heating-chamber, and a horizontal air-tube extending from said gate portion and extending to the oil-chamber, substantially as and for the purposes set forth.

4. An air-purifying apparatus consisting of a filtering-case adapted to receive the fresh air at its lower end, provided with a series of movable filtering-webs arranged in the interior of said case, and air-outlets in its top, a heating-chamber arranged above said top and having air-passages aligning with the air-openings in the filter-top, said heater provided with an outlet for the pure air and an outlet for the products of combustion, and a cooling-box arranged to surround a portion of the pure-air pipe, substantially as and for the purposes described.

5. An air-purifying apparatus consisting of an air-filtering case having an air-inlet pipe connected with the outside of the building, a heating-case arranged above said filter-case, air-passages provided in said case and heating-box, said heating-case having a combustion-pipe connected to the heating-chamber and extending outside the building, a hot-air drum surrounding said heating-chamber, and a pure-air pipe connected with said drum, substantially as and for the purpose described.

6. The combination, with the air-filtering case A, the heating-case connected therewith, said heating-case provided with a hot-air drum, of the pure-air pipe connected therewith, said pipe provided with branch pipes at its outer end, said branch pipes provided with stop-cocks, and tubes connected with said branch pipes, substantially as and for the purpose specified.

7. In an air-purifying apparatus, substantially as described, the filtering-webs D, said webs consisting of a foraminous base-plate, D', a series of fingers, D^2, projecting upward from said base-plate, and a web-body of muslin or tape connected to said fingers, substantially as shown and described.

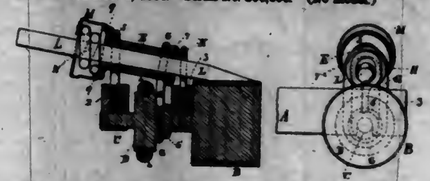
8. The filtering-webs D, said webs consisting each of a foraminous base-plate, D', upwardly-projecting finger D^2, a web-body of muslin or tape connected to said fingers, a perforated brace-board disposed between said web portion and base-plate, and a retaining metallic casing surrounding said web portion, substantially as shown and described.

9. An air-filtering apparatus consisting of the heating-case F, provided with an air-inlet, said inlet entering a heating-drum formed in said case, a combustion-pipe arranged in connection with the combustion-chamber and extending within said drum and passing through said drum to the outside of the building, and a fresh-air pipe connected with the drum and adapted to be secured to the head-board of a bed, substantially as and for the purpose described.

10. In an air-filtering apparatus, the combination, with the filtering-case and heating-case, substantially as shown and described, said

filtering-case provided with an air-inlet pipe extended through the window B, said heating-case provided with a combustion-pipe extending through said window, of detachable window-strips arranged at the top and bottom of said windows, said strips formed with apertures through which the pipes C and H extend, substantially as and for the purpose described.

402,715. PENCIL-SHARPENER. BENJAMIN H. BLACK, Paterson, N. J. Filed Nov. 6, 1888. Serial No. 290,096. (No model.)



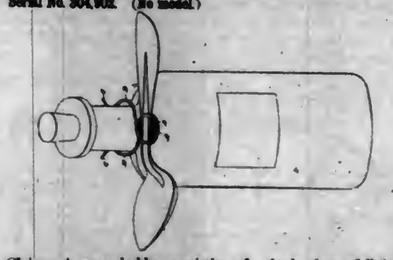
Claim.—1. The combination, with the rotary file and its shaft, of a wheel, D, adapted to be rubbed back and forth on the desk or floor, a handle with bearings for the shaft, and a tubular holder for the pencil, substantially as specified.

2. The wheel D, having an elastic rim, 4, the shaft C, and rotary file B, in combination with the tubular pencil-holder and a belt for giving motion to the same from the axis of the rotary file, substantially as set forth.

3. The tubular pencil-holder E, in combination with the clamping-shell M and clamp N, in the form of a strip, the ends of which are connected, respectively, to the clamping-shell and the flange of the tubular pencil-holder, substantially as set forth.

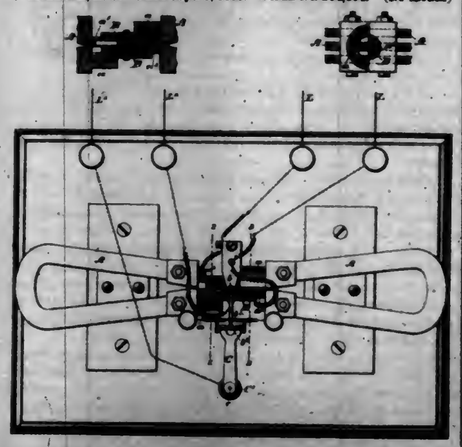
4. The combination, with the tubular pencil-holder, of a clamping-strip adapted to be wound around the pencil for holding the same, substantially as specified.

402,716. SPOON-HOLDER. DANIEL A. A. BUCK, Cheshire, Conn., assignor to the D. A. A. Buck Company, same place. Filed Mar. 26, 1888. Serial No. 304,902. (No model.)



Claim.—A spoon-holder consisting of a single piece of light wire bent to form coils adapted to be sprung apart to receive a spoon-handle edgewise between them, and two curved arms shaped to clasp the neck of an ordinary bottle, substantially as and for the purpose set forth.

402,717. TELEGRAPH-INSTRUMENT. CHARLES G. DURKEE, Richmond Hill, N. Y. Filed Sept. 5, 1883. Serial No. 294,891. (No model.)



Claim.—1. The combination, with a spring-actuated rod, bearings for the same located beneath the car, a coupling-pipe secured to said rod, and a valve contained in said pipe, of a head secured to the coupling-pipe, gripping-fingers pivoted in said head, connecting-rods pivoted beneath the car and to said fingers, and a link-connection between one of said rods and the valve-stem, substantially as shown and described.

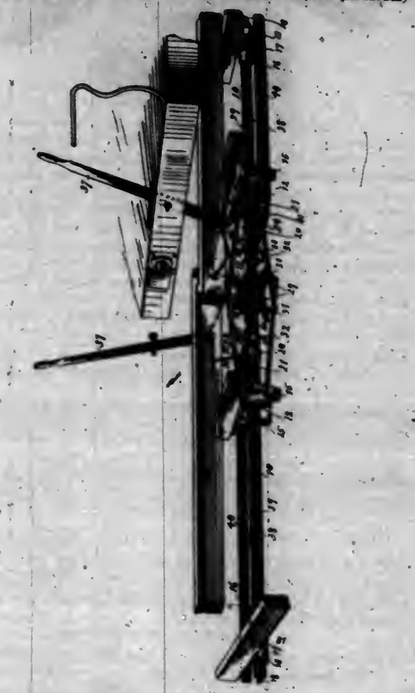
2. The combination, with a spring-actuated rod located beneath the car, a coupling-pipe secured to said rod, a valve contained in the pipe, and a head attached to the same having outwardly and oppositely flaring slotted arms, of gripping-fingers pivoted in the slots of said arms, connecting-rods secured to the car-frame and pivoted to said fingers, a link connecting one connecting-rod and the valve, and a cushion inserted in the head at the extremity of the coupling-pipe, substantially as shown and described.

3. The combination, with a spring-actuated rod located beneath the car, a coupling-pipe secured to the said rod, a coupling-head attached to said pipe at an angle approaching forty-five degrees provided with outwardly and oppositely flaring slotted arms, of gripping-fingers pivoted in said arms, a valve located in the coupling-pipe to the rear of the head, connecting-rods secured to the block and pivoted to said fingers, and a link-connection between one connecting-rod and the valve, substantially as shown and described.

4. The combination, with a spring-actuated rod located beneath the car, a coupling-pipe secured to said rod provided with an essentially-conical head at the point of juncture, a coupling-head attached to the outer end of the pipe at an angle approximately of forty-five degrees having outwardly-flaring and slotted arms, of gripping-fingers pivoted in said arms, a valve located in the coupling-pipe to the rear of the head, connecting-rods secured beneath the car-frame and pivoted to said fingers, a link-connection between one rod and the valve, a spring-latch projecting over the flange of the coupling-pipe, and means, substantially as shown and described, for manipulating said latch, as set forth.

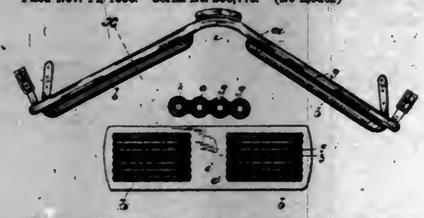
5. The combination, with the rod 18 and coupling-head 25, of

402,718. HOSE-COUPLING FOR RAILWAY-CARS. CHARLES H. BURNETT, Clay Centre, Kans., assignor of one-half to Harry G. Higinbotham, same place. Filed Sept. 5, 1888. Serial No. 284,594. (No model.)



the sleeve 10, bearing-block 13, spring 14, and bearing-block 12, carried by said spring, substantially as shown and described.

402,719. HARNESS-PAD. NELLIE M. CANOONE, Newark, N. J.
Filed Nov. 14, 1888. Serial No. 290,772. (No model.)



Claim.—1. The improved harness-saddle pad or other harness-pad, combining with a backing, *b'*, a series of parallel ribs of loose or unwoven fiber having arches therein to form said ribs, substantially as described, and a series of rows of stitching extending at right angles to said fiber and between said ribs and holding said fiber to the backing, substantially as and for the purposes set forth.

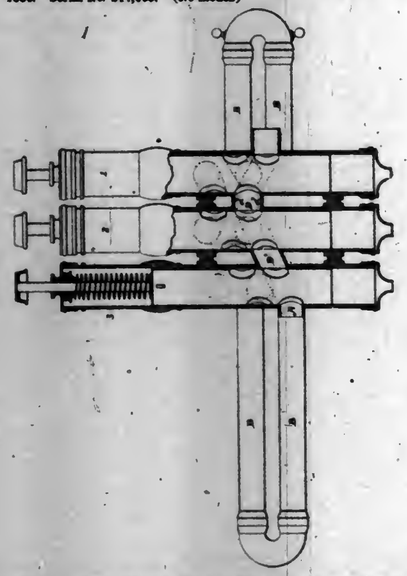
2. The improved harness-pad herein described, combining with the saddle part *a* a backing, *c'*, having wefts of fiber sewed to the face thereof at each side of a center portion, forming a recess, *i*, at which the said backing is uncovered, the said wefts between the rows of stiching forming arches or uncut ribs, substantially as herein shown and described.

402,720. PRODUCING MATRICES. FRANCIS M. F. CAHEN, West Fairlee, Vt. Filed Dec. 1, 1886. Serial No. 220,358. (No model.)



Claim.—The process for making a matrix, consisting in first taking a sheet of plastic material, next placing thin tissue upon opposite sides of said sheet of plastic material, and, lastly, subjecting the composite sheet so formed to the action of dies, in order to form impressions therein, substantially as specified.

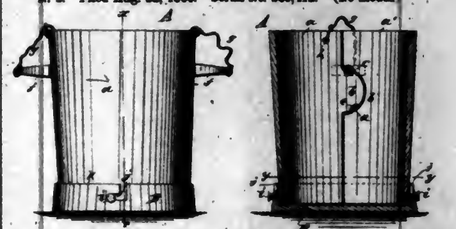
402,721. CORNET. CHARLES G. CONN, Elkhart, Ind. Filed Oct. 30, 1886. Serial No. 217,605. (No model.)



Claim.—1. In a cornet or other piston-valve musical instrument, the combination, with the valve-cylinders, of a straight connection, D, between an outside valve-cylinder and the middle valve-cylinder, and a diagonal connection, D', between the other outside valve-cylinder and the middle valve-cylinder, substantially as shown and described.

2. The combination, with the valve-cylinders 1 2 3, of a straight pipe-connection, D, between the first valve-cylinder, 1, and the second valve-cylinder, 2, and a diagonal pipe-connection, D', between the second valve-cylinder, 2, and the third valve-cylinder, 3, substantially as described.

402,722. TRANSPLANTING-POT. JONAS COOK, Mount Pleasant, N. C. Filed Aug. 22, 1888. Serial No. 283,412. (No model.)



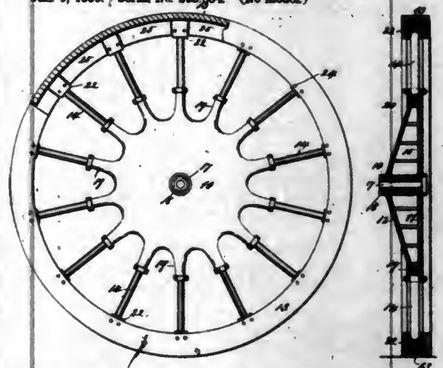
Claim.—1. The combination of the two-part bottomless body having locking projections and recesses on its meeting edges, a separate bottom closing the lower end of the body and forming a support for the earth contained therein, and an interlocking groove and projection connecting said bottom and lower end of the body, substantially as set forth.

2. The combination, in a transplanting-pot, with the sectional longitudinally-divisible bottomless body, of the detachable bottom closing the lower end of the pot, having an annular flange receiving the lower ends of the body-sections, and interlocking grooves and projections between said sections and the flange, substantially as set forth.

3. In a transplanting-pot, the combination of the part *a*, provided with ears *b*, the part *a'*, having recesses *b'* and furnished with lugs *d*, the keys *f*, and the removable bottom B, substantially as described.

4. In a transplanting-pot, the combination of the part *a*, provided with the ears *b*, the part *a'*, having the recesses *b'* and furnished with the lugs *d*, the keys *f*, and the removable bottom B, provided with a bayonet-joint connection, substantially as described.

402,723. WHEEL. GEORGE E. CRUTCHFIELD, English, Ark. Filed Jan. 9, 1889. Serial No. 295,534. (No model.)



Claim.—1. A wheel comprising a hub, spokes radiating therefrom, a hollow tire open on its inner side, retaining-blocks 22 therein and with which the outer ends of the spokes are engaged, and the spacing and filling blocks 25 between the blocks 22, substantially as set forth.

2. The hollow hub 10, approximately in the form of a frustum of a cone and formed with integral screw-threaded spoke-sockets 19 and a central bore, 16, having longitudinal grooves, substantially as set forth.

3. The combination, with an essentially-tubular interiorly-braced metal hub and sockets projected from the periphery of said hub, of a hollow tire approximately rectangular in cross-section and open upon its inner face, blocks held within the channel of the tire, and spokes introduced into the said sockets and extending within the said blocks, substantially as shown and described.

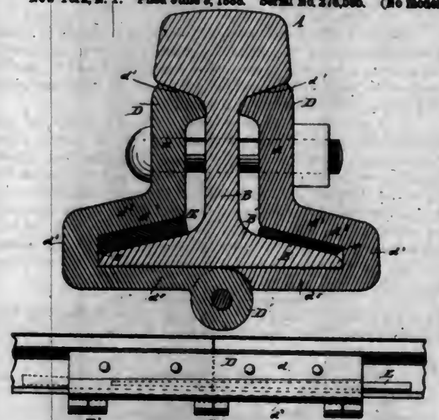
4. The combination, with a metal hub and sockets projected from the periphery of the same, of a hollow tire approximately rectangular in cross-section and open upon its inner face, blocks held within the channel of the tire and provided with a cavity in the inner end, and spokes having one end introduced into the cavity of the block and the other end secured in the sockets of the hub, substantially as and for the purpose specified.

5. The combination, with a metal hub and a series of sockets projecting from the periphery of the same, of a hollow tire approximately rectangular in cross-section and open upon its inner face, blocks secured within the channel of the tire having a cavity in the inner end, spokes introduced into the cavity of the said blocks and into the sockets of the hub, and false segmental fally-blocks intervening each of the spoke-blocks, all combined for operation substantially as shown and described.

6. In a wheel, the combination, with a hollow metal hub representing in diametrical section the frustum of a flattened cone and provided with a series of radially-projecting screw-threaded spoke-sockets, and a central bore with a series of longitudinal grooves produced in the walls of the said bore, of a box provided with longitudinal ribs or lugs adapted to be shrunk in the bore of the hub, substantially as and for the purpose specified.

7. In a wheel, the combination, with an essentially-tubular iron hub representing in diametrical section the frustum of a flattened cone and provided with a series of internal integral braces and a central bore having longitudinal grooves produced in the walls thereof, of a steel box provided with longitudinal lugs or ribs upon its outer face, which box is adapted to be secured in the bore of the hub, substantially as and for the purpose specified.

402,724. RAILWAY-RAIL FISH-PLATE. THOMAS A. DAVIES, New York, N. Y. Filed June 9, 1888. Serial No. 276,585. (No model.)



Claim.—1. The combination, with a rail and two fish-plates having their lower ends hinged beneath the base of said rail, and the under face of the inclined section tapered longitudinally, of a wedge-shaped key intervening the upper flange-surface of the rail, and the under tapering face of the plates, substantially as shown and described.

2. The combination, with a rail and two fish-plates having their lower ends hinged beneath the base of said rail and the under face of the inclined section above the flange tapered longitudinally from end to end, whereby wedge-shaped spaces are produced, of a key having a flat under surface and a tapering upper face adapted to enter the said wedge-shaped spaces, substantially as shown and described.

3. A railway-rail fish-plate, substantially as shown and described, the same consisting of a vertical web-section, an inclined flange-section having a longitudinal tapering under face, a side section, and a horizontal base-section terminating in a series of apertured knuckles, all formed of one piece of metal bent in the direction specified.

402,725. RAILROAD FISH-PLATE. THOMAS A. DAVIES, New York, N. Y. Filed June 26, 1888. Serial No. 278,402. (No model.)

Claim.—1. A fish-plate consisting of a vertical body having a straight horizontally-parallel top and bottom surface, and provided with a longitudinal web-bearing upon the inner face at top and bottom, and a downwardly-extending lip integral with the outer face at the base, substantially as shown and described.

2. A fish-plate, substantially as shown and described, consisting of a vertical body of less height than the space intervening between a rail head and flange, having integral head and web bearings, and provided with a lip extending downward from the outer face at the base, substantially as set forth.

3. A fish-plate consisting of a vertical body of less height than the web of a rail, having an essentially straight horizontal parallel top and bottom, substantially as set forth.

4. A fish-plate consisting of a vertical body of less height than the web of the rail, having a web-bearing, a straight horizontal head-bearing, and a base parallel with said head-bearing, substantially as shown and described.

5. The combination, with a fish-plate consisting of a body of less height than the space intervening between a rail head and flange, having integral head and web bearings, and a lip extending downwardly from the outer face at the base, of a table provided with a lower face adapted to the incline of the rail-flange and a longitudinally-tapered upper face, and a key having a straight upper face and a longitudinally-tapered under face, substantially as shown and described.

6. The combination, with a rail having the under surface of the head essentially parallel with the base of the flange, a fish-plate of less height than the web, provided with an upper and lower surface essentially parallel with the base of the plate, and a lip extending downward from the outer face of the plate at the base, of a table resting upon the rail-flange and having a tapering upper face, and a key provided with a straight upper face and a tapering lower face, substantially as shown and described.

7. The combination, with a rail having the under surface of the head essentially parallel with the base of the flange, and a fish-plate of less height than the web, provided with an upper and a lower surface essentially parallel with the base of the rail, of a table resting upon the rail-flange having a tapering upper face, and a key provided with a straight upper face and a tapering lower face, substantially as shown and described.

402,726. APPARATUS FOR TESTING THE ACCURACY OF THE ADJUSTMENT OF A ROTATING SHAFT. BENJAMIN A. DOBSON, Bolton, County of Lancaster, England. Filed Dec. 4, 1888. Serial No. 292,686. (No model.) Patented in England Mar. 10, 1888, No. 3,699.



Claim.—1. The combination, with shaft-support having the fixed flange 1 concentric with the shaft-opening therein, and the eccentric adjustable sleeves C D, of the collar having a central shaft-opening and concentric flanges 2 on its face, which are adapted to embrace the flange 1 on said support, as and for the purpose specified.

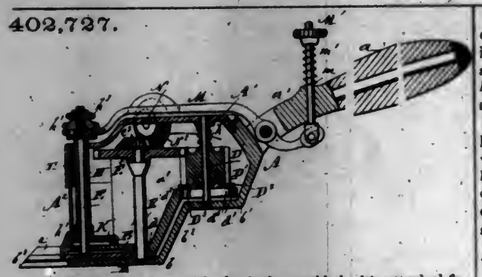
2. The combination, with the shaft-support having a flange, 1, concentric with the opening therein, of the collar F, which is cut away on one side, as shown, and has face flanges 2, adapted to embrace the said flange on the shaft-support, as specified.

3. The collar F, having the flanges 2 and a central circular opening adapted to receive the shaft and cut away on one side, as and for the purpose specified.

402,727. HAIR-CUTTER. JOHN W. EISENHUTH, San Francisco, Cal. Filed Sept. 12, 1888. Serial No. 285,260. (No model.)

Claim.—1. The combination, with a body provided with a series of fingers at its lower outer end, a cutting-plate held laterally secure above the fingers, and a second upper rotary reciprocating cutting-plate, of a post passing through the upper plate and secured to the lower plate, a sleeve surrounding the post, bearing upon the upper plate, an adjusting-nut in contact with said sleeve, and a lever fulcrumed upon the body and attached to the post, substantially as shown and described.

402,727.

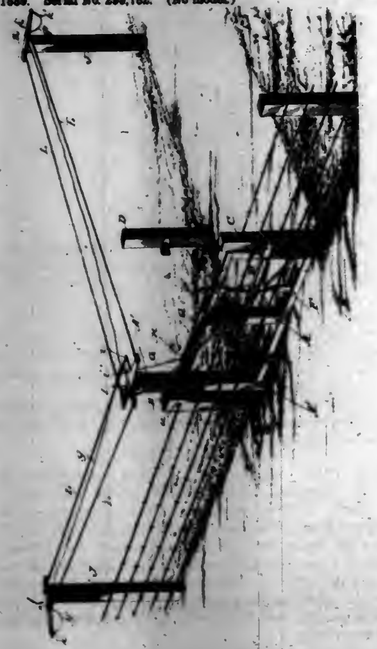


2. The combination, with the body provided with attached fingers, a cutting-plate held laterally secure above the frame, a second cutting-plate held to rotary reciprocation upon the first plate, and provided with an essentially diamond-shaped opening removed from the cutting-edge, of a spindle attached to the body, a pinion loosely mounted upon the spindle, provided with a pin eccentric upon its under face engaging the walls of the plate-opening, a shaft journaled horizontally in the body, and gearing, substantially as shown and described, connecting the pinion and shaft, substantially as specified.

3. The combination, with a body provided with a series of fingers at its lower outer end, a cutting-plate held laterally secure above the fingers, a second upper cutting-plate held to rotary reciprocation upon the first plate, and a cap resting upon the movable plate, of a vertical post passing through the cap and upper plate and attached to the lower plate, and of a sleeve encircling the post, an adjusting-nut bearing upon the sleeve, a vertical shield supported upon the cap, and a lever attached to the post fulcrumed in the body, substantially as shown and described.

4. The combination, with a body provided with a series of fingers, a cutting-plate held laterally secure above the fingers, a second upper cutting-plate held to rotary reciprocation upon the first plate and having an essentially diamond-shaped opening removed from the cutting-edge, a cap resting upon the upper plate, a vertical post passing through the cap and upper plate and attached to the lower plate, and a shield supported upon said cap, of a sleeve encircling the post, an adjusting-nut bearing upon said sleeve, a lever fulcrumed in the body and engaging the post, a pinion provided with a pin eccentric upon the under surface, engaging the walls of the plate-opening, a shaft journaled transversely in the body, and gearing, substantially as shown and described, uniting the said shaft and pinion, as and for the purpose specified.

402,728. GATE. CORNELIUS C. ERP, Bradshaw, Nebr. Filed Feb 13, 1889. Serial No. 299,762. (No model.)



Claim.—1. In a gate, substantially as described, the combination of the gate proper provided with a latch, the hand-levers having openings *k*, the main lever, connections between said hand and main levers and the latch-operating cord, and branches *g*, passed through openings *k* in and secured at *k'* to the hand-levers, forming hand holds or loops, substantially as set forth.

2. In a gate, the combination of the gate proper, the latch, the latch-lever, the main or cross-shaped lever having its arm *i* provided with the opening *i'*, the latch-cord G, connected at one end to the latch-lever and carried through the guide-opening *i'*, the hand-levers, connections between said hand-levers and the main lever, and branch cords connecting the hand-levers with the cord G, all substantially as and for the purpose specified.

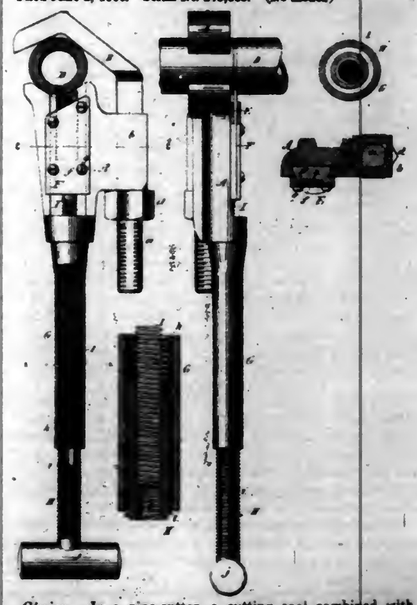
402,729. FENCE. JOHN M. FELLOWS, Burlington, Ind. Filed Sept. 12, 1887. Renewed Apr. 4, 1889. Serial No. 306,087. (No model.)



Claim.—1. The combination, in a fence, with the sill B, having a vertical mortise, of the post having a tenon at its lower end entering the mortise, and a rounded shoulder, *a'*, bearing on the sill at opposite sides of the mortise, the transverse pin C, and the brace connecting said post and sill, substantially as set forth.

2. In a fence, a base, B, rounded or beveled at one end and formed with a vertical longitudinal mortise between its ends, a post having a tenon at its lower end entering said mortise, and rounded shoulders resting on the base at opposite sides of the mortise, the upper end of the post being beveled or inclined on the side next to the correspondingly-shaped end of the base, and the brace D, secured at its lower end to the beveled or rounded end of the base and having a series of apertures at its upper end, and the fastening E, passing through one of said apertures into the beveled or rounded end of the post, substantially as set forth.

402,730. PIPE-CUTTER. EMANUEL FORESTER, New York, N. Y. Filed June 2, 1888. Serial No. 275,585. (No model.)

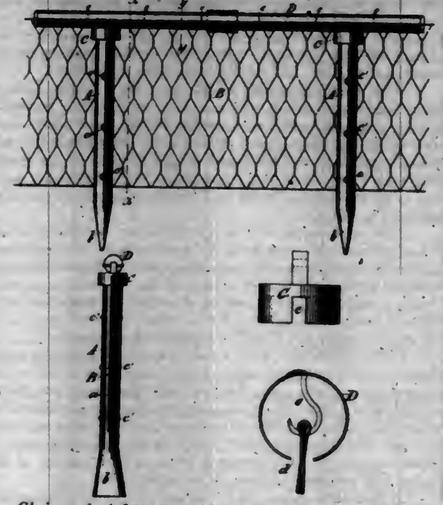


Claim.—In a pipe-cutter, a cutting-tool combined with the screw-rod I, connected therewith, internally and externally threaded tube H on said rod I and engaging with the thread thereof, and internally-threaded tube G around the tube H, the threads on the tubes G and H engaging, whereby the rod I will be moved but a slight degree with relation to the movement of the tube H, substantially as described.

402,731. COMPOUND FOR RESTORING THE COLOR OF BROWN LEATHER. EDWARD FRID, New Hamburg, assignor to himself, and HARRY JONES, New York, N. Y. Filed Nov. 26, 1888. Serial No. 291,891. (No specimens.)

Claim.—The herein-described composition of matter to be used for cleaning and restoring brown leather, consisting of oxalic acid and saffron dissolved in boiling water, in the proportions specified.

402,732. FENCE. EDWIN GILBERT, Georgetown, Conn., assignor to the Gilbert & Bennett Manufacturing Company, same place. Filed Feb. 25, 1889. Serial No. 301,045. (No model.)



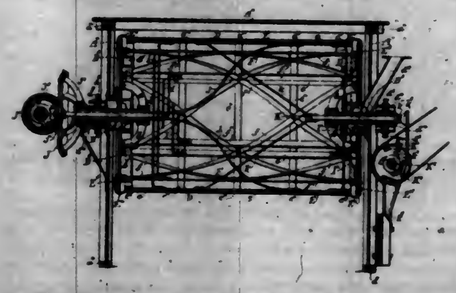
Claim.—1. A fence comprising tubular posts slotted longitudinally, a wire-fence web arranged in said slots, and a top rail secured to said posts and slotted longitudinally to receive the web, substantially as specified.

2. A fence comprising tubular posts slotted longitudinally, a wire-fence web arranged in said slots, a top rail slotted longitudinally to receive said web, and caps for said posts, provided with slots to receive the web and secured to said top rail, substantially as specified.

3. A fence comprising tubular posts slotted longitudinally, a wire-fence web arranged in said slots, a top rail slotted longitudinally to receive said web, and caps for said posts, provided with projections extending into the slots in the top rail, substantially as specified.

4. A fence comprising tubular posts slotted longitudinally, a wire-fence web arranged in said slots, a top rail slotted longitudinally to receive said web, securing devices for securing the web in the slot in the top rail, and caps for said posts to which said top rail is secured, substantially as specified.

402,733. BOLTING-REEL. WILLIAM R. GORTON, Moline, Ill. Filed Nov. 15, 1887. Serial No. 255,199. (No model.)



Claim.—1. A bolting-reel comprising a cloth-supporting frame and spring-arms sustaining said cloth-supporting frame from the reel supports or trunnions, substantially as described.

2. The combination, with a reel embracing a cloth-supporting frame sustained from the reel-supports by elastic or spring connections, of a jarring device acting upon said cloth-supporting frame, substantially as described.

3. The combination, with a reel embracing a cloth-supporting frame and spring-arms sustaining said cloth-supporting frame from the reel-trunnions, of a knocking or jarring device acting upon said cloth supporting frame, substantially as described.

4. The combination, with a reel embracing a cloth-supporting frame sustained from the reel-frame by connections embracing springs or spring-arms, of a jarring device embracing a rod or bar passing through one of the trunnions and connected at its inner end with the frame, and a vibrating knocker acting upon the outer end of said bar, substantially as described.

5. The combination, with a reel embracing a cloth-supporting frame having elastic connection with the reel-trunnions, of a jarring device embracing a rod or bar passing through one of the trunnions, elastic arms connecting said bar with the cloth-supporting frame, and a vibrating knocker acting upon the outer end of said bar, substantially as described.

6. The combination, with a reel embracing a cloth-supporting frame movably sustained from the reel-supports by connections embracing elastic or spring arms, of a jarring device acting upon the cloth-supporting frame, and a shaking device connected with and giving reciprocatory motion to the said cloth-supporting frame, substantially as described.

7. The combination, with a reel embracing a cloth-supporting frame and transversely arranged spring arms or strips sustaining said cloth-supporting frame from the reel-trunnions, of a shaking device connected with the said frame and giving reciprocatory motion to the latter, substantially as described.

8. The combination, with a reel embracing a cloth-supporting frame movably connected with the reel-trunnions, of a cloth-shaking device embracing a rod passing through one of the reel-trunnions and connected at its inner end with the said cloth-supporting frame, and a crank connected with and giving reciprocatory motion to said rod or bar, substantially as described.

9. In a bolting-reel, the combination of the reel-trunnions, elastic arms connected therewith, ribs made of thin elastic material supported by said arms, and the cloth supported immediately upon said ribs, substantially as described.

10. The combination, with a reel-frame having exterior cloth-supporting ribs and spirally or obliquely directed truss-ribs crossing each other and secured together at their points of intersection, and attached to and supporting the exterior ribs, said ribs being made of thin elastic material, of elastic or spring arms sustaining said frame from the reel-trunnions, and a jarring device acting upon said frame, substantially as described.

11. The combination, with the reel-heads, a vibrating or shaking cloth-supporting frame and bolting-cloth thereon, of connecting strips or bands of flexible material attached to the heads and to the said vibrating or shaking frame, substantially as described.

12. The combination, with a reel embracing heads, a cloth-supporting frame which is movable with relation to the heads, the bolting-cloth and flexible strips uniting the ends of the cloth-supporting frame with the heads, of a shaking device connected with said cloth-supporting frame and giving reciprocatory motion to the latter, substantially as described.

13. The combination, with a cloth-supporting frame made of thin elastic material and provided with a thin metal circumferential rib at the end of said frame, a bolting-cloth covering the frame, of means for attaching the bolting-cloth to the said circumferential rib, comprising a leather strip attached to the flat outer surface of the rib, to which strip the bolting-cloth is tacked or otherwise secured.

14. The combination, with a reel-head and a cloth-supporting frame embracing longitudinal ribs and a circumferential rib, *c'*, at the end of said frame, of a strip of flexible material attached to the cloth-supporting frame and to the head, and a leather strip attached to the said rib *c'*, the said flexible strip being tacked or otherwise secured to the said leather strip and to the head, substantially as described.

15. A reel embracing reel-heads, a trussed frame attached to and rigidly connecting the heads, and an exterior cloth-supporting frame sustained from the main part of the reel-frame by elastic or spring connections, substantially as described.

16. The combination, with a revolving cylindric bolting-reel provided with external circumferentially-arranged studs or projections, c^4 c^4, of a cloth-cleaning device comprising hinged arms H H, resting against the reel and engaging the said projections c^4 c^4, a cord, h^3 h^3, attached to and stretched between said hinged arms H H, and a sheet or strip of flexible material attached to said cord throughout its full length and resting in contact with the bolting-cloth.

17. The combination, with the reel-housing and a reel provided with external studs or projections, c^4 c^4, of a cloth-cleaning device con-

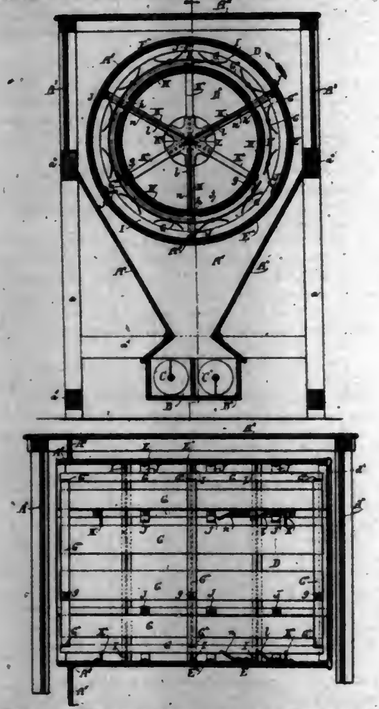
sisting of arms H H, hinged to the housing and arranged to engage the said projections c^4 c^4 at their free ends, a cord, H^3, attached to the said arms H H and connected at its ends with the housing, a spring applied to said cord to keep the latter taut, and a sheet or strip of flexible material attached to the cord and resting against the bolting-cloth of the reel, substantially as described.

18. The combination, with a revolving reel, of a cloth-cleaning device embracing two or more sets of circumferentially-arranged studs or projections, c^4 c^4, disposed upon the exterior of the reel at intermediate angular positions, pivoted arms H H, engaging said studs or projections, a cord, H^3, attached to said arms, and a strip or sheet of flexible material attached to said cord and resting in contact with the bolting-cloth of the reel, substantially as described.

19. A cut-off valve provided with grooves in its side edges and having a packing of granular material within the groove, substantially as described.

20. The combination, with the conveyer-boxes and machine-housing provided with vertical partitions B^2 B^2, of cut-off valves provided with grooves in their side edges and having a packing of granular material within the grooves, a horizontal slat, B^3, located centrally between the boxes beneath said valves and sustaining the latter, stops upon the housing constructed to engage the lower margins of the valves to limit the lateral movement of the bottom ends of said valves, and other stops upon the housing engaging the upper ends of said valves to limit the lateral movement thereof, substantially as described.

402,734. BOLTING-REEL. WILLIAM R. GORTON, Moline, Ill. Filed Aug. 13, 1888. Serial No. 282,568. (No model.)



Claim.—1. The combination, with a reel, of an exterior cloth-supporting frame, spring-arms sustaining said cloth-supporting frame from the reel-trunnions, and a series of longitudinal troughs or buckets sustained upon the reel inside of said exterior cloth-supporting frame, substantially as described.

2. The combination, with a reel comprising an external cloth-supporting frame, of spring-arms sustaining said cloth-supporting frame from the reel-trunnions, a shaking or jarring device acting upon said cloth-supporting frame, and a series of longitudinal troughs or buckets sustained upon the reel inside of said cloth-supporting frame, substantially as described.

3. The combination, with a reel comprising an external cloth-supporting frame, of spring-arms sustaining said cloth-supporting frame from the reel-trunnions, a series of annular inwardly-extending partitions or rings attached to said cloth-supporting frame, and deflectors located upon said frame between said partitions or rings, substantially as described.

4. The combination, with a reel embracing a cloth-supporting frame, and spring-arms sustaining said cloth-supporting frame from the reel-trunnions, of a combined shaking and jarring apparatus comprising a shaking device connected with and giving a reciprocatory motion to said cloth-supporting frame, a rod or bar connected with and partaking of the motion of the cloth-supporting frame, and a resisting part or surface located in position for contact with said rod or bar as the frame is reciprocated, substantially as described.

5. The combination, with a reel embracing a cloth-supporting frame, and spring-arms sustaining said cloth-supporting frame from the reel-trunnions, of a combined shaking or jarring apparatus comprising a shaking device connected with and giving reciprocatory motion to the said cloth-supporting frame, a rod or bar connected with and partaking of the motion of said cloth-supporting frame, and a resisting part or surface located upon the machine-frame in position for contact with said rod or bar, said part or surface being adjustable toward and from said rod or bar, substantially as described.

6. The combination, with a reel embracing a cloth-supporting frame movably connected with the reel-trunnions, of a combined shaking or jarring apparatus comprising a shaking device connected with and giving reciprocatory motion to the said cloth-supporting frame, a part or bar connected with and partaking of the movement of the said frame, and a yieldingly-supported weight located in position to be encountered by the said reciprocating part or bar, substantially as described.

7. The combination, with a reel embracing a cloth-supporting frame movably connected with the reel-trunnions, of a combined shaking or jarring apparatus comprising a shaking device connected with and giving reciprocatory motion to the said cloth-supporting frame, a longitudinally-arranged bar connected by elastic arms with the said frame, and a resisting part or surface located in position to be encountered by said rod or bar, substantially as described.

8. The combination, with a reel embracing a cloth-supporting frame movably connected with the reel-trunnions, of a rod or bar connected by elastic arms with the cloth-supporting frame, means connected with said rod or bar giving reciprocatory motion to the same, and a second bar also connected by means of elastic arms with the said cloth-supporting frame, and a resisting part or surface located in position to be encountered by the said rod or bar as the frame is reciprocated, substantially as described.

9. The combination, with a reel embracing a cloth-supporting frame connected with the reel-trunnions, of a shaking device connected with and giving reciprocatory motion to the said cloth-supporting frame, a longitudinally-arranged bar connected with and partaking of the motion of the frame, and a sliding weight supported in one of the reel-trunnions in position for contact with said bar, substantially as described.

10. The combination, with a reel embracing a cloth-supporting frame movably connected with the reel-trunnions and provided with a tubular trunnion, of a shaking device connected with and giving reciprocatory motion to said cloth-supporting frame, a longitudinally-arranged bar sliding in the said tubular trunnion and connected with the said frame, a weight mounted to slide in the said tubular trunnion, and adjusting devices for shifting the position of the weight, substantially as described.

11. The combination, with a reel embracing a cloth-supporting frame movably connected with the reel-trunnions, of a shaking device connected with and giving reciprocatory motion to the said cloth-supporting frame, a longitudinally-arranged bar connected with and partaking of the motion of the said frame, a sliding weight located in position to engage said bar, a spring applied behind said weight, and an adjustable abutment behind the spring affording adjustment of the tension of the same, substantially as described.

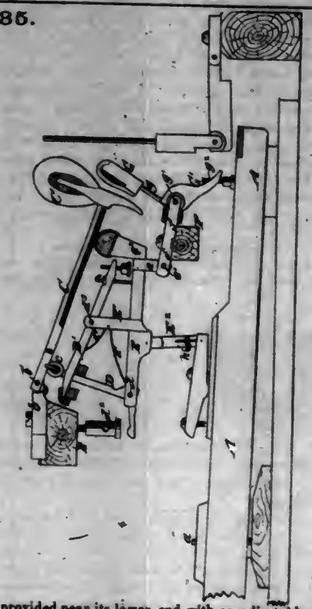
12. The combination, with a reel comprising an outer cloth-supporting frame and an inner trussed frame connecting the reel-heads, of means for movably connecting the cloth-supporting frame with the trussed frame, comprising flexible radial arms attached at their outer ends to the said cloth-supporting frame and trussed frame, and connected with each other at their inner ends, substantially as described.

402,735. PIANO-FORTE ACTION. SIEGFRIED HARMUS, New York, N. Y., assignor to Wessell, Nickel & Gross, same place. Filed Oct. 10, 1887. Serial No. 251,903. (No model.)

Claim.—1. The combination, with the hammer, repetition-lever, and jack of a piano-action, of a rest-support for the lever and jack having a downwardly-extending arm or lug which receives the pivot-pin on which the rest-support is fulcrumed, substantially as and for the purpose herein described.

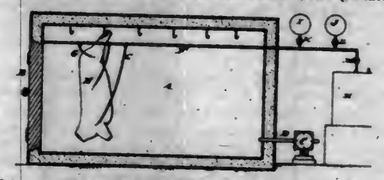
2. The combination, in a horizontal piano-action, with a hammer and key-lever, of a back check or stop consisting of a bell-crank lever having two rigid arms, one of which constitutes a check and the other

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of which is provided near its lower end with an adjustable stop, substantially as specified.

402,736. CURING AND PRESERVING MEATS. GEORGE HOLGATE, Philadelphia, Pa. Filed Apr. 17, 1888. Serial No. 270,898. (No model.)



Claim.—1. The method of chilling or cooling meats, consisting in taking the meat immediately after slaughtering, putting it in a tank or chamber capable of being made air-tight, creating a partial vacuum in and around the meat, and then by means of tubes placed into the meat letting into the interior or below the surface of the meat air that has first had the heat extracted from it either by natural or artificial means.

2. The method of chilling or cooling of meats, consisting in taking the meat immediately after slaughtering, putting the meat into a tank or chamber capable of being made air-tight, creating a partial vacuum in and around the meat, then by means of tubes inserted into the meat letting into the interior or below the surface of the meat air from which the heat has been extracted by natural or artificial means, and removing the heated air from the tank or chamber so soon as it escapes from the meat into the tank or chamber.

3. The method of chilling or cooling and preserving meats, consisting in taking the meat immediately after slaughtering, putting it into a tank or chamber capable of being made air-tight, creating a partial vacuum in and around the meat, then by means of tubes letting into the interior or below the surface of the meat air from which the heat has previously been extracted by natural or artificial means, removing the heated air from around the meat as soon as it escapes into the tank or chamber, and then letting into the meats preservative gas or gases, thereby chilling and curing or preserving at one and the same time.

4. The method of cooling or chilling and preserving meats, which consists in taking the meat after it has been chilled and putting it into a tank or chamber capable of being made air-tight, then admitting into the interior of the meat anhydrous preservative gas or gases, allowing said gas or gases to expand, (thereby expelling such heat from the interior of the meat as has not been extracted by the previous chilling process,) and simultaneously therewith exhausting the gases with their contained heat from the tank or chamber as soon as liberated from the meat, whereby the meat is chilled and preserved at one and the same operation.

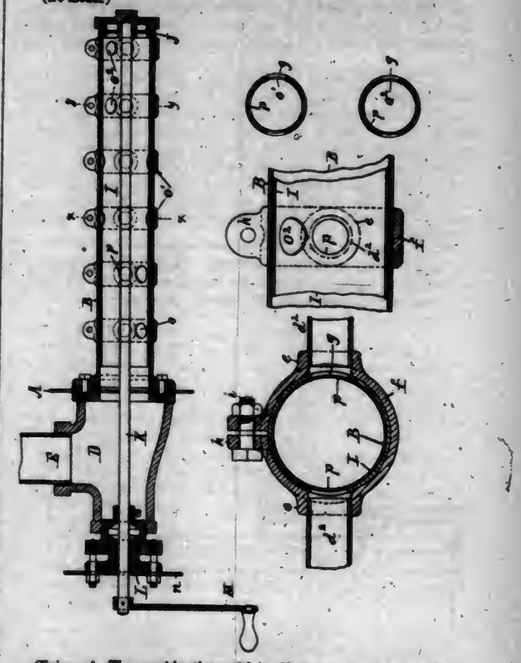
402,737. HEAD-BLOCK FOR VEHICLES. EDWARD HUTCHINSON, New York, N. Y. Filed Sept. 25, 1888. Serial No. 286,207. (No model.)



Claim.—1. A head-block for vehicles, consisting of a body portion, arms extending from the ends of the same, curved downwardly and outwardly, and integral perch-plates downwardly curved at their intersection with the body of the block, substantially as shown and described.

2. A head-block for vehicles, consisting of a body portion, arms extending from the ends of the same, curved, respectively, downward from the said body and upward and outward, provided with an essentially horizontal surface intervening the two curves, and perch-plates extending from the side of the body, downwardly curved at their intersection with the same, and provided with horizontally-aligning side ears, substantially as shown and described.

402,738. VALVE MECHANISM FOR WASHING FILTER-BEDS. JOHN W. HYATT, Newark, N. J. Filed June 15, 1888. Serial No. 277,343. (No model.)

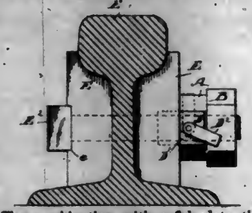


Claim.—1. The combination, with a filter casing or receptacle containing several outlet-strainers, of a trunk or header having a series of apertures connected, respectively, with the several strainers inside the filter-casing, and a movable sleeve fitted within the trunk and provided with a series of openings adapted to connect such strainers in turn with the interior of the trunk, as and for the purpose set forth.

2. The combination, with a filter-receptacle containing several outlet-strainers arranged and operated to wash the filter-bed by a reversed current, of a trunk or header having a series of apertures connected, respectively, with the several strainers inside the filter-casing, and a movable sleeve fitted within the trunk and provided with one series of openings to connect all the strainers at once with the interior of the trunk, and with another series of openings adapted to connect such strainers or groups of strainers in turn with the interior of the trunk during the washing operation, as and for the purpose set forth.

3. The combination, with a filter casing or receptacle containing several outlet-strainers, of a trunk or header having a series of apertures connected, respectively, with the several strainers inside the filter-casing, a movable sleeve fitted within the trunk and provided with a series of openings adapted to connect such strainers in turn with the interior of the trunk, a rod extended outside the trunk to move the sleeve, and an index to show the adjustment of the rod, as and for the purpose set forth.

402,739. NUT-LOCK. GEORGE C. ILLINGWORTH, Raritan, N. J. Filed Nov. 23, 1888. Serial No. 292,064. (No model.)

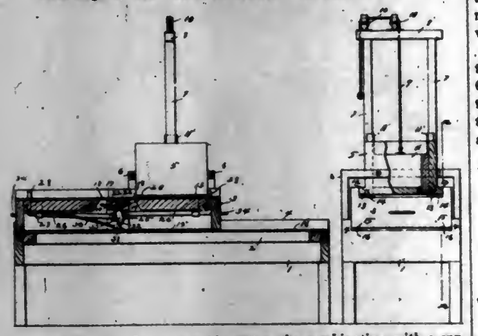


Claim.—1. The combination, with a fish-plate, the tie-bolts, a main lock, and an auxiliary nut, of a key inserted in the fish-plate, projected to one side of the main nut, and an arm pivoted upon the key and projected to one side of the auxiliary nut, substantially as shown and described.

2. The combination, with a fish-plate, the bolts, and the main lock-nut, of a key inserted into the fish-plate and projected to one side of the main nut, and an auxiliary nut secured against the main nut, said auxiliary nut being of greater diameter than the main nut, forming a projecting flange, said flange projecting over and against the outer edge of said key, substantially as and for the purpose specified.

3. The combination, with a fish-plate, the bolts, a main lock-nut screwed upon the same, provided with an exteriorly-threaded projection, of a key inserted in the fish-plate and projected to one side of and in contact with the main nut, said key provided with a downwardly-inclined shoulder on its outer face, an auxiliary nut screwed on the projecting end of the main nut and against the outer edge of the key, and a button pivoted to the said key and adapted to be swung to one side of the auxiliary nut, and limited in its downward movement by the inclined shoulder, substantially as and for the purpose described.

402,740. VEGETABLE-CUTTER. JOHANN A. W. IOTTI, Charleston, S. C., assignor to himself and Charles Kerrison, Jr., same place. Filed Aug. 16, 1888. Serial No. 282,850. (No model.)



Claim.—1. In a vegetable-cutter, the combination, with a supporting-frame and a receptacle carried thereby, of a reciprocating frame below the receptacle, cutters carried by said reciprocating frame, and bars connected to the cutters and projecting through the reciprocating frame, to be struck by the receptacle as the said frame is reciprocated, substantially as described.

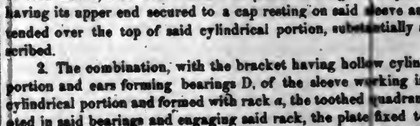
2. In a vegetable-cutter, the combination, with a supporting-frame and a receptacle carried thereby, of an apertured and slotted reciprocating frame, a rock-shaft journaled in the reciprocating frame, cutters carried by the rock-shaft, and bars secured to the rock-shaft and having apertured ends projecting through the slots of the said reciprocating frame and adapted to be struck by the receptacle as the frame is reciprocated to rock the shaft, and thereby move one of the cutters in position and the other out of position, substantially as described.

3. In a vegetable-cutter, the combination, with a supporting-frame and a receptacle carried thereby, of a slotted reciprocating frame below the receptacle, a rock-shaft journaled in the reciprocating frame, cutters adjustably secured to the rock-shaft and adapted to be alternately projected through the slots of the frame, and a spring for engaging the rock-shaft for holding the cutters in the position for cutting, substantially as herein shown and described.

4. The combination, with a vegetable-receptacle, of a reciprocating sliding frame located below the receptacle and having openings for the cutters and the passage of the cut material, a rock-shaft with cutters located beneath said openings, and reciprocating rods pivoted to the rock-shaft and having upturned ends projecting through slots in the ends of the reciprocating frame, substantially as described.

5. The combination, with frame 1, having rails 2 with friction-plates 16, and frames 6, with receptacle 5, having friction-plates 13, and vertically-movable weight-box 11, with operating-cord 9, of the reciprocating sliding frame 3, having friction-plates 15, slots 29 in the ends thereof, openings 18, rock-shaft 20 adjacent thereto, with projection 33, having angular end 32, plates 22, cutters 19, having slots 24 and connected to plates 22 by screws 23, reciprocating rods 26, pivoted to projection 25 and having upturned ends 28 projecting through slots 29, and spring 30, with angular projection 31, bearing against angular end 32 of projection 33, substantially as shown and described.

402,741. CONDUIT-YOKE FOR CABLE-WAYS. JOHN B. JOHNSON, St. Louis, Mo. Filed May 26, 1888. Serial No. 275,142. (No model.)



Claim.—1. In a conduit-yoke for cable railways, the combination, with the inner and outer flanges, of a solid continuous web connecting said flanges together and cast integral therewith, substantially as set forth.

2. In a conduit-yoke for cable railways, the combination, with the inner and outer flanges, 1 2, respectively, of the bottom downwardly-curved flange, 3, and a solid continuous web connecting said flanges and formed integral therewith, substantially as set forth.

3. In a conduit-yoke for cable railways, the combination, with the inner and outer flanges, 1 2, respectively, the bed-rests for the slot and track rails supported by said flanges, respectively, and the flange 6, connecting said bed-rests, of a solid continuous web connecting all of said flanges and bed-rests and formed integral therewith, substantially as set forth.

4. In a conduit-yoke for cable railways, the combination, with the inner flange, 1, and outer flange, 2, of the bottom flange, 3, connecting said flanges and having a thickened medium and a web cast with said flanges, as set forth.

5. In a conduit-yoke for cable railways, the combination, with the bed-rests 4 5 for the slot and track rails, respectively, the flanges 6, connecting said bed-rests, and the inner and outer flanges, 1 2, of the flange 3, connecting the outer flanges, 2, downwardly curved and thickened at its mid-length, and a solid web connecting said flanges and bed-rests and cast integral therewith, substantially as set forth.

402,742. CORK-EXTRACTOR. THOMAS KELLY, Elmvale, Ontario, Canada. Filed May 21, 1888. Serial No. 274,525. (No model.)

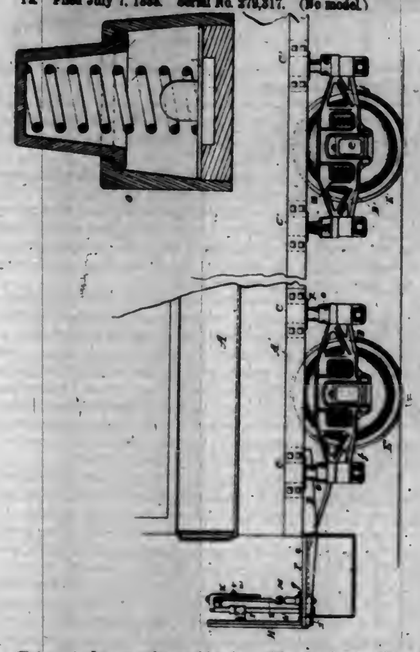


Claim.—1. The combination, with the bracket having hollow cylindrical portion and ears forming bearings D, of the sleeve working in said cylindrical portion and formed with rack *a*, the toothed quadrant pivoted in said bearings and engaging said rack, the plate fixed to said sleeve, and the twisted wire passed through said plate and having its upper end secured to a cap resting on said sleeve and extended over the top of said cylindrical portion, substantially as described.

2. The combination, with the bracket having hollow cylindrical portion and ears forming bearings D, of the sleeve working in said cylindrical portion and formed with rack *a*, the toothed quadrant pivoted in said bearings and engaging said rack, the plate fixed to said sleeve, and the twisted wire passed through said plate and having its upper end secured to a cap resting on said sleeve, the cap J, extended over the top of said cylindrical portion, and the plate K, suspended from said cap within the sleeve and upon each side of the wire, substantially as described.

3. A cylinder, C, sleeve G, a cap, J, resting thereon and extended over the top of said cylinder, the twisted wire or wires I, the cork-screw L, connected to and forming part of the twisted wire or wires I, the upper end of which is pivotally connected to the cap J, and a plate, H, fixed to the sleeve G and having a hole, *b*, made to fit the twisted wire I, in combination with the toothed quadrant E, provided with a handle, F, and arranged to engage with a rack formed on the sleeve G, a plate, M, fitted into a horizontal slot made in the cap J and designed to be held below the heads of the bolts N by the spring O and to be pushed out of contact with the said bolts by the passing of the handle F, substantially as and for the purpose specified.

402,743. STREET-RAILWAY CAR. SIDNEY D. KING, Pittston, Pa. Filed July 7, 1888. Serial No. 279,317. (No model.)



Claim.—1. In a car, the combination, with a car-frame, of a swiveled truck, buffer-frame located between the top of the truck and the bottom of the car-frame and adapted to limit the lateral vibrations of the car-body, and a device for adjusting the truck, substantially as set forth.

2. In a car having two two-wheeled trucks, the combination, with a car-frame, of a two-wheel swiveling truck, buffer-springs adapted to cushion oscillations of the frame on the truck, and mechanism to limit and arrest the swiveling motion of the car-truck, substantially as set forth.

3. A car-body provided with two two-wheeled trucks, each adapted to swivel or be locked from side movement on their centers, devices to control swiveling movement of the trucks, and buffer-cushions secured to the truck-frame and forming bearings or rests for the car-body, substantially as set forth.

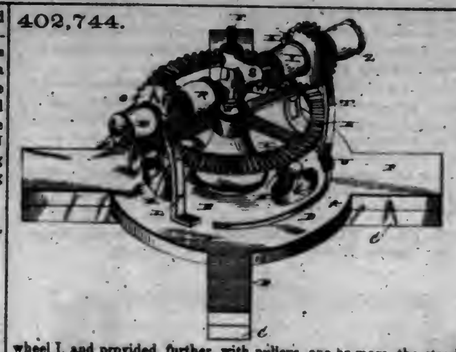
4. In a car having two two-wheeled trucks, each pivoted to swing on a center-pin, a device located on each end platform of the car for controlling the swiveling movement of the trucks independently, and buffer-cushions interposed between the truck-frames and car-body and adapted to absorb end and side vibrations of the car-body, substantially as set forth.

5. In a four-wheeled car, the combination, with two truck-frames, each supported on an axle and pair of wheels and connected to the car-body by a center pin for each truck, of duplicate devices adapted to control the swinging movement of the trucks, and spring buffer-cushions located on the corners of the car-trucks, which absorb vibrations of the car-body, substantially as set forth.

402,744. MACHINE FOR TRANSMITTING MOTION. SAFFORD D. KINNEY, Byron, Mich. Filed Nov. 30, 1888. Serial No. 292,289. (No model.)

Claim.—1. The combination of the platform, the shaft F thereon, the wheel I, loose on the shaft, the rigid standard L, the shaft M, journaled in said standard and having the gear-wheel O engaging the

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wheel I, and provided, further, with pulleys, one or more, the standard T, secured to and adjustable concentrically on the platform, whereby it may be arranged at any desired angle with relation to the shaft M, and the shaft W, journaled in the standard T, having the gear-wheel X engaging wheel I, the bearings loose on the shaft F, and in which the inner ends of the shafts M W are journaled, and the pulleys, one or more, substantially as described.

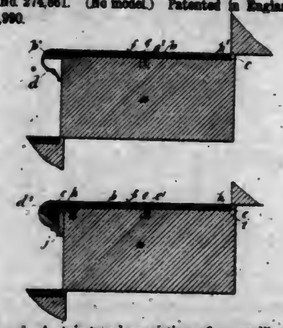
2. The combination of the platform having the concentric slot D, the standard L, the movable standard T, having the clamping-bolts working in the slot D, the central shaft, F, the wheel I, loose thereon, the bearings N S, loose on the shaft F, and the shafts M W, journaled in the standards L T and having their inner ends journaled in the bearings N S, said shafts being provided with the gears engaging wheel I and also provided with the pulleys, substantially as described.

3. The platform having the curved slot D the central shaft, F, wheel I, loose thereon, the rollers supporting the rim of the wheel, the rigid standard L, the bearing N, loose on shaft F, the shaft M, journaled in standard L and bearing N and having the gear engaging wheel I and the pulleys, the standard T, the clamping-bolts working in the slot D to secure said standard to the platform at any desired adjustment, the bearing S, loose on shaft F, the shaft W, journaled in standard T and in bearing S and having the wheel X engaging wheel I, and the pulleys, substantially as described.

4. In combination with the toothed wheel I, the rollers H, for supporting the same by bearing on the under side thereof, the shaft F, on which the wheel I is loosely mounted, the shaft W, the gear-wheel X, mounted on the shaft W and engaging the toothed wheel I, and the standard T for the shaft W, adjustable in a curved line around the wheel I, substantially as described.

5. In combination with the toothed wheel I, the shaft F, on which the wheel I is loosely mounted, the shaft W, the gear-wheel X, mounted on the shaft W and engaging the toothed wheel I, and the standard T for the shaft W, adjustable in a curved line around the wheel I, substantially as described.

402,745. METALLIC REVERSIBLE COVERING FOR THE TREADS OF STAIRS, &c. JOHN KNIGHT, London, England. Filed May 23, 1888. Serial No. 274,861. (No model.) Patented in England Nov. 3, 1887, No. 14,990.



Claim.—1. A stair-tread consisting of a metallic frame *a*, a nose at its front, a reversible slab, *b*, having recesses in its treading-surface, the plates *f*, fitted in said recesses flush with the slab, and the screws *e*, detachably securing the slab, so that it can be reversed, substantially as described.

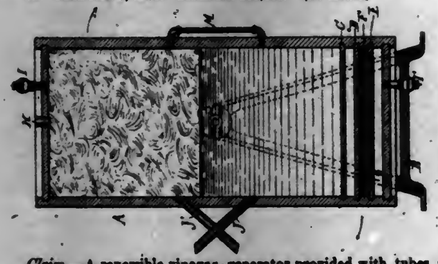
2. A stair-tread consisting of a metallic, supporting-frame and a nose at its front edge and a reversible slab of hardened lead or similar material removably located in the frame and extending over the nose of the metallic frame to prevent slipping, substantially as described.

3. A stair-tread consisting of a metallic supporting-frame and a reversible slab of hardened lead or similar material removably secured in the metallic frame and extending over the front edge portion thereof to prevent slipping, substantially as described.

4. The combination, in a stair-tread, of a metallic supporting-frame, *e*, and a nose at its front with a reversible cast-metal slab, *b*, removably secured in the metallic frame and extending over the nose to prevent slipping, substantially as described.

5. The combination, with the metallic supporting-frame *e* and the reversible cast-metal slab *b*, of the separate metallic frame *f*, containing a lead or similar filling to form the nose d^3, substantially as described.

402,746. VINEGAR-GENERATOR. PETER H. KOHLSAAT, Chicago Ill. Filed Jan. 3, 1888. Serial No. 295,808. (No model.)



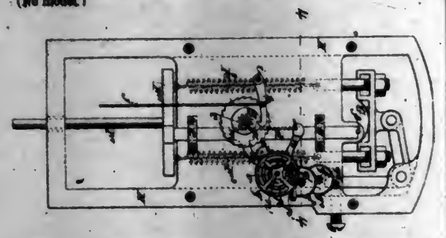
Claim.—A reversible vinegar-generator provided with tubes at its middle at a sufficient angular position for their inlets and outlets to be respectively above and below the line of the mash and crosswise to pass each other, so that one at a time will act as an air-circulating vent, substantially as set forth.

402,747. DIE-STOCK. WILLIAM H. LAGUIRE, Amber, Mich. Filed June 5, 1888. Serial No. 276,065. (No model.)



Claim.—In a combined tool and tool-holder, the combination of the lever D, pivoted in the direct line of the longitudinal axis of the cylinder A, central stem, C, cylinder A, square B, adapted to receive dies and clamps, pawl G, and ratchet-belt a, all constructed and arranged to operate as and for the purpose shown and described.

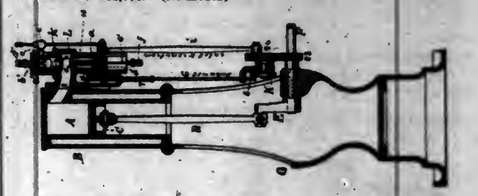
402,748. COIN-CONTROLLED WEIGHING-MACHINE. FREDERICK J. LANCASTER, New York, N. Y., assignor to the National Weighing Machine Company, same place. Filed May 23, 1888. Serial No. 275,300. (No model.)



Claim.—1. The combination, with the index-spindle *a* and the pinion *c* and ratchet-wheel *m* on the said spindle, of the pawl *n*, for engaging with said ratchet-wheel, the rack *d*, disconnected from the platform or part of the machine which receives the load and gearing with said pinion *a*, and the pawl-support *d'*, attached to said rack *d*, all substantially as herein described.

2. The combination, with the index-spindle and the ratchet-wheel *m* thereon, the pawl *n*, for engaging with said ratchet-wheel, and the arbor *n'*, on which said pawl works, of the ratchet-wheels *o* and *p* and wheel *q* on said arbor, the pawls *o'* and *p'*, engaging with said ratchet-wheels, and the train of gearing actuated by said wheel *q*, all substantially as herein described, whereby the descent of the said pawl *n* is retarded, but its ascent is left free from retardation, substantially as and for the purpose herein described.

402,749. GAS-ENGINE. SAMUEL LAWSON, New York, N. Y., assignor to himself and Alonzo T. Welch, same place. Filed Aug. 4, 1888. Serial No. 281,996. (No model.)



Claim.—1. The combination, in a gas-engine, of a tubular valve closed at both ends and having ports for the gas and air, an igniter, and a hollow piston having ports for admitting gas, for admitting the flame for igniting said gas, and for passing the flame to the cylinder, and mechanism, substantially as specified, for operating said valve and piston, substantially as set forth.

2. The combination, in a gas-engine, with a valve-case and pipes for supplying gas and air and a burner having an igniting-flame, of a tubular valve having ports for admitting gas and air, a hollow piston having a port for admitting gas and ports for igniting said gas and allowing the ignited gas to escape, and a valve and stem and mechanism, substantially as herein described and shown, for operating the valve and piston, substantially as set forth.

3. In a gas-engine, the combination, with the cylinder and piston, the driving-shaft, and connecting mechanism, of the valve-case composed of the parts *c c'* and having beveled seats, the tubular valve *b*, having ports 2 3 4 for gas and air, a hollow piston, *d*, having ports 14 15 16, for admitting gas and an igniting-flame and for passing the flame to the cylinder, a pipe, *l*, for admitting gas into said hollow piston, the valve *e*, having a valve-stem, and mechanism, substantially as herein shown and described, for imparting a downward movement to the valve *b*, an upward movement to the piston *d* and valve *e*, and for moving said valves to their seats, substantially as set forth.

4. In a gas-engine, the combination, with the two-part valve-case *c c'*, having beveled seats and pipes for supplying gas and air, of the tubular valve *b*, having ports 3 4 5, the stem *b'* and arm, and tubular hub *c c'*, connected to the valve *b*, the hollow piston *d*, having ports 14 15 16, the valve *e*, and a valve-stem, *d'*, connected therewith and passing through the piston *d*, pivoted levers *f f'*, connected at one of their ends to the stems *b'* and *d'*, and a helical spring, *h*, connected to the other ends of said levers and acting to keep said valves upon their seats, a rod, *i*, connected to the piston *d*, and mechanism, substantially as specified, for operating the same, and an arm, *k*, connected to the pivot of the rod *i* and to the hub or arm *c c'* of the valve *b*, whereby, when the piston is drawn down, the valve is operated, substantially as set forth.

5. The combination, in a gas-engine, of a valve-case, the hollow sliding valve and piston having ports for air, gas, and the flame, and conical valves at the ends of the hollow valve and piston for closing the passage-way leading to the engine-cylinder, substantially as specified.

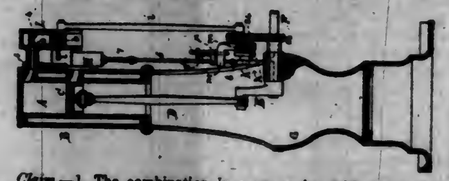
402,750. GAS-ENGINE. SAMUEL LAWSON, New York, N. Y., assignor to himself and Alonzo T. Welch, same place. Filed Aug. 4, 1888. Serial No. 281,999. (No model.)



Claim.—1. The combination, in a gas-engine, with a valve-case having a port to connect with the cylinder and air and gas supply pipes, of a vertically-sliding tubular valve having upper and lower chambers, *c c'*, and ports 3 4 14 15, a second gas-supply pipe and an igniter adjacent to an opening in the valve-case, and a valve moving with the tubular valve at the top of the lower chamber, and whereby the air and gas for the cylinder are admitted through the upper chamber and ports of the valve and the gas admitted to the lower chamber is ignited and passes the central valve to the cylinder, substantially as specified.

2. The combination, with the valve-case L, having a port, *s*, and pipes 12 13 for supplying gas and air, of the valve *b*, having ports and a lower chamber, *c*, and an upper chamber, *c'*, the ports to the upper chamber, *c'*, passing gas and air to the cylinder by the port *s*, a pipe, *l*, for gas, the ports in the chamber *c* admitting the gas and the igniting-flame, and a valve, *e*, pivoted in a central opening in the valve *b*, a spring, *g*, for closing said valve, a screw or equivalent device, *f*, for tripping and opening said valve, and a rod, *i*, by which the valve *b* is moved, substantially as set forth.

402,751. GAS-ENGINE. SAMUEL LAWSON, New York, N. Y., assignor to himself and Alonzo T. Welch, same place. Filed Aug. 4, 1888. Serial No. 282,000. (No model.)



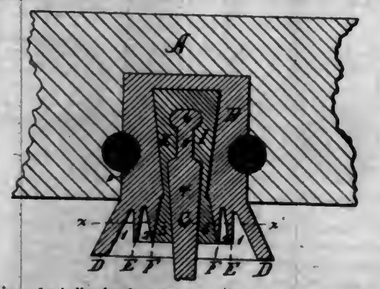
Claim.—1. The combination, in a gas-engine, with the vertical valve-case L, closed at the upper end, and pipes for supplying gas and air, of the tubular valve *b*, the rod *i*, and mechanism, substantially as specified, for imparting an up-and-down movement to the valve, a pipe, 1, for admitting gas, a burner, 30, there being an opening, *r*, in the valve-case, and ports 2 3 5 in the tubular valve by which gas is received within the tubular valve and ignited and the flame passed into the cylinder of the engine, there being a port, *s*, to the cylinder, by which when the tubular valve is depressed air and gas pass through the case over the valve into the cylinder, substantially as set forth.

2. The combination, in a gas-engine, with the cylinder, valve-case, valve, and an exhaust-valve and case, and the cams K K', of the valve-stem 6 and its roller 8, an arm connected to said stem, and a movable rod passing through said arm and adapted to be held against or away from the cam K', whereby the exhaust-valve can be opened every revolution or every second revolution of the engine, substantially as specified.

3. The combination, in a gas-engine, with the cylinder and piston, valve-case and valve, and mechanism, substantially as herein shown and described, for operating the same, of an exhaust-valve and case, the stem 6, the arm *n*, the slotted rod *o*, the cam K', the pin 18 in the arm *n* and engaging the slot of the rod *o*, and a spring, *o'*, substantially as set forth.

4. The combination, in a gas-engine, with the valve-case L, closed at the upper end, and pipes for supplying gas and air, of the tubular valve *b*, the rod *i*, and mechanism, substantially as specified, for imparting an up-and-down movement to the valve, a pipe, 1, for admitting gas, a burner, 30, there being an opening, *r*, in the valve-case and ports 2 3 5 in the tubular valve, by which gas is received within the tubular valve and ignited and the flame passed into the cylinder of the engine, there being a port, *s*, to the cylinder, by which when the tubular valve is depressed air and gas pass through the case over the valve into the cylinder, and a port, 4, in the tubular valve and a port, 9, in the valve-case, whereby when gas and air are drawn into the cylinder foul gas is exhausted from within the valve *b*, substantially as set forth.

402,752. INSULATOR. FREDERICK M. LOCKE, Victor, and JOHN LAPP, Honeoye Falls, N. Y. Filed Oct. 5, 1888. Serial No. 287,532. (No model.)

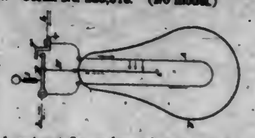


Claim.—1. A line-hook consisting of a body having a line-support at one end, a cylindrical body, a flattened neck, and spherical head upon the opposite end, substantially as described.

2. The combination, with an insulator recessed to receive a line-hook, of a line-hook consisting of a body having a line-support at one end, a cylindrical body, a flattened neck and a spherical head upon the opposite end, and an insulating-packing within the recess and around the line-hook, head, neck, and a part of the cylindrical body, substantially as described.

3. The combination, with an insulator recessed to receive the line-hook and provided with concentric petticoats upon its lower end outside of the recess, of a line-hook consisting of a body having a line-support at one end, a cylindrical body, a flattened neck, and a spherical head upon the opposite end, and a non-conducting packing in said recess inclosing the head, neck, and part of the cylindrical body, substantially as described.

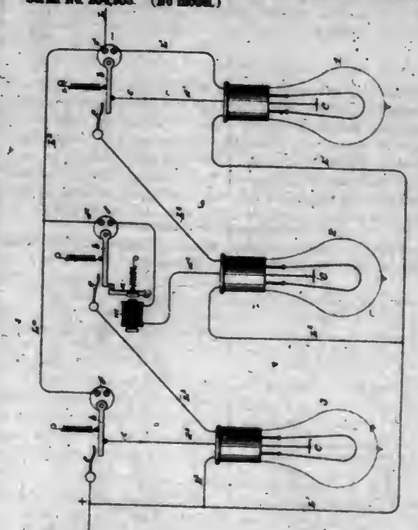
402,753. CUT-OUT. OSBORN P. LOCKE, Somerville, Mass., assignor to the Locke Electric Manufacturing Company, New York, N. Y. Filed Jan. 24, 1887. Serial No. 225,318. (No model.)



Claim.—1. A cut-out for an incandescent electric lamp, embodying, essentially, a normally-idle conductor arranged in proximity to the lamp-circuit in the path of the arc forming on the rupture of the filament, and connected by way of a fusible wire to one side of the circuit, and a cut-out controlled by said fusible wire for cutting out the lamp upon fusion of said wire.

2. In an incandescent electric lamp, the combination, with a normally-idle conductor, C, sealed within the lamp between the branches of the lamp-filament in the path of the arc forming on the rupture of the filament and connected to line by way of the fusible wire H, of a cut-out held from operation by said fusible wire and acting to cut out the lamp upon fusion of said wire, substantially as and for the purpose set forth.

402,754. AUTOMATIC CIRCUIT-CONTROLLER FOR ELECTRIC LIGHTS. OSBORN P. LOCKE, Somerville, Mass., assignor to the Locke Electric Manufacturing Company, New York, N. Y. Filed Apr. 15, 1887. Serial No. 234,953. (No model.)

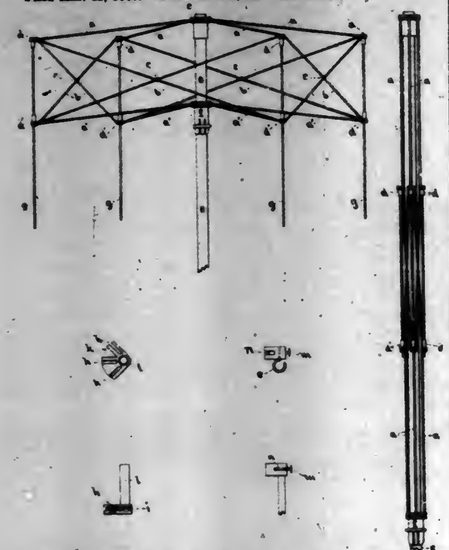


Claim.—1. The combination, with a group of two or more incandescent electric lamps, having conductors sealed between the branches of the filament in the path of the arc forming on rupture of the filament, as set forth, one of which lamps is placed in circuit first, circuits connected with said conductors and in electrical communication with normally-open circuit-closers and the line, fusible wires in the path of said circuits, cut-out devices also located in said circuits normally held from operation by said fusible wires, and electrical connections, whereby when the filament of the first lamp fails the second will be brought in circuit, and when the second fails the third will be brought in circuit, and so on, substantially in the manner specified.

2. The combination of two or more incandescent lamps, as 1 2 3, the former of which is in the main line L L', a T-shaped conductor, C, sealed in the globe of each lamp between the branches of the filament in the path of the arc forming on rupture of the filament idle-

circuits d^2 d^3 d^4, &c., connected with the same, a fusible wire in the path of each of said idle-circuits, automatic cut-out devices in said circuits normally held from operation by said fusible wires, and normally-open conductors L^3, L^4, and L^5, &c., connected to the lamps and to the line, arranged to be successively placed in circuit by said fusible cut-out devices, all operating and combined for the purpose set forth.

402,755.. EXPANSIBLE FRAME. George H. Lyon, Bradford, Pa. Filed Mar. 12, 1885. Serial No. 158,650. (No model.)



Claim.—A combination of pairs of cross-bars hinged together at their points of crossing each other, and said pairs severally situated in intersecting planes forming the sides of a polyhedron, combined at the edges of intersection by hinging the meeting arms upon a body constituting chords or projections for axes, and operated to work together expansibly by hinging one or more of said arms in combination with a rod or beam, and the reciprocating arm or arms, in combination with a sleeve or runner sliding upon said rod or beam.

402,756. SIGN. Charles H. Manning, Waverly, N. Y. Filed Feb. 14, 1889. Serial No. 299,837. (No model.)



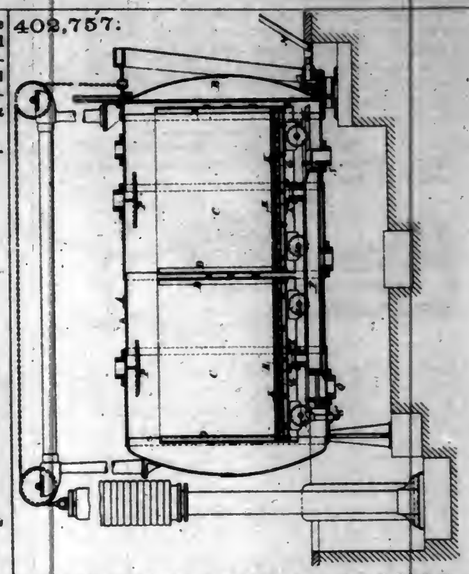
Claim.—1. The combination, with the vertical rods of an electric light, of a vertical support, a sign suspended therefrom, and clamps connecting and securing together the said rods and support, substantially as described.

2. The combination, with the vertical rods of an electric light, of a clamp having a hinge-joint and secured to one of said rods, and also having a sleeve, and a ring or collar secured within said sleeve and supporting a sign, substantially as described.

402,757. APPARATUS FOR TREATING TEXTILE FABRICS. William Mather, Salford Iron Works, Manchester, County of Lancaster, England. Filed Jan. 31, 1889. Serial No. 298,228. (No model.) Patented in England Nov. 24, 1888, No. 15,943.

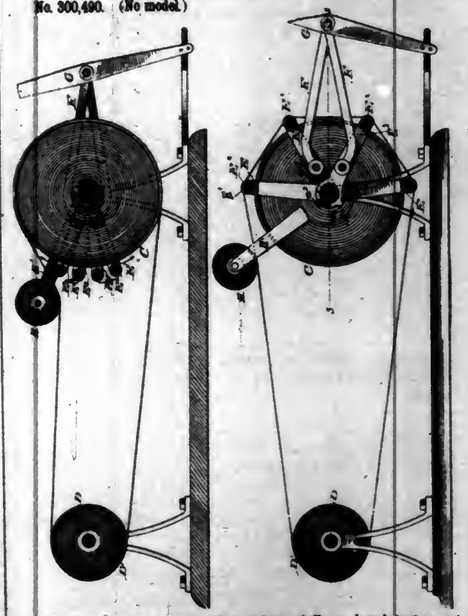
Claim.—In apparatus for treating textile materials with liquids, gases, or vapors, consisting of a keir containing trucks charged with the materials, a truck made as a shell of metal plate with open top,

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vertical ends, imperforate curved sides, and a perforated distributing bottom plate with a compartment below it having a spring junction-pipe, substantially as described.

402,758. BELT-SHIFTER. Philip Medart, St. Louis, Mo., assignor of one-half to William Medart, same place. Filed Feb. 19, 1889. Serial No. 300,490. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of a shaft, a pulley thereon, a belt encircling the pulley, positively-actuated shifting-arms movable independently in opposite directions to opposite sides of the pulley, and lifting-bars carried by the shifting-arms, interposed between the belt and pulley.

2. The combination, substantially as hereinbefore set forth, of a shaft, a pulley thereon, separate sets of radial shifting-arms, each set independently pivoted on the shaft and each set separable from each other set, lifting-bars carried by the arms, and devices which positively and simultaneously traverse the lifting-bars over the surface of the pulley and spread them apart.

3. The combination, substantially as hereinbefore set forth, of a shaft, a pulley thereon, separate sets of radial shifting-arms independently pivoted on the shaft, lifting-bars carried by the arms, devices causing at least two sets of arms positively and simultaneously to traverse the surface of the pulley in opposite directions, and corresponding sets of separate independently-pivoted shifting-arms interposed between and moved by the corresponding positively-actuated ones and in the same direction.

4. The combination, substantially as hereinbefore set forth, of a shaft, a pulley thereon, separate radial shifting-arms independently pivoted on the shaft on opposite sides of the pulley, a lifting-bar connecting each pair of arms close to and substantially parallel with the face of the pulley, an actuating-lever, and interposed pivoted links respectively connecting the actuating-lever and corresponding arms on opposite sides of the shaft, to cause the lifting-bars to be moved positively and simultaneously in opposite directions around the driving-pulley.

5. The combination, substantially as hereinbefore set forth, of a shaft, a pulley thereon, separate radial shifting-arms independently pivoted on the shaft on opposite sides of the pulley, a lifting-bar connecting each pair of arms substantially parallel with the face of the pulley, an actuating-lever interposed, pivoted links respectively connecting the actuating-lever, and corresponding arms on opposite sides of the shaft, and interposed arms carrying additional lifting bars or rollers crossing the face of the pulley and movable loosely around the driving-pulley.

6. The combination, substantially as hereinbefore set forth, of a driving-shaft, a driving-pulley thereon, a driven pulley and its shaft, a belt traversing the pulleys, separate sets of radial shifting-arms independently pivoted on the driving-shaft and carrying lifting-bars simultaneously and independently traversing the driving-pulley in opposite directions to lift the belt therefrom.

7. The combination, substantially as hereinbefore set forth, of a driving-pulley, a driven pulley, a belt traversing them, lifting-bars simultaneously traversing the face of the driving-pulley in opposite directions to lift the belt therefrom, and a tightening-pulley mounted in radial arms on the driving-shaft.

8. The belt-shifting apparatus hereinbefore described, consisting of the combination of a driving-shaft, a driving-pulley, a driven pulley, a belt traversing the pulley, separate radial shifting-arms independently pivoted upon the driving-shaft on opposite sides of the driving-pulley, lifting-bars crossing the face of the driving-pulley and connecting said arms in pairs, actuating-links respectively pivoted to their corresponding arms on opposite sides of the driving-shaft to traverse them simultaneously and positively in opposite directions, interposed lifting-bars carried by concentrically-pivoted arms interposed between the pivotally-actuated ones, and a tightening-pulley movable concentrically with the lifting-bars.

9. The combination, substantially as hereinbefore set forth, of the driving-shaft, the pulley thereon, the belt-shifting arms, their enlarged bearing-surfaces split or opened, as described, at their inner ends, and the sleeve on which the arms are mounted inclosing the shaft.

10. The combination, substantially as hereinbefore set forth, of the shaft, the pulley, the sectional sleeve thereon, the sectional collars secured to the driving-shaft on each side of the sleeve, and the belt-shifting arms mounted on the sleeve between the collars.

11. The combination, substantially as hereinbefore set forth, of the belt-shifting arms E^2, having lugs or nibs e^2, the belt-shifting arms E, with which the lugs or nibs e^2 engage, the driving-shaft, the driving-pulley, the operating-lever, and connections between the operating-lever and the arms E^2.

402,759. SCREW-THREADING MACHINE. Frederick C. Miller, Newport, Ky. Filed June 30, 1887. Serial No. 243,012. (No model.)

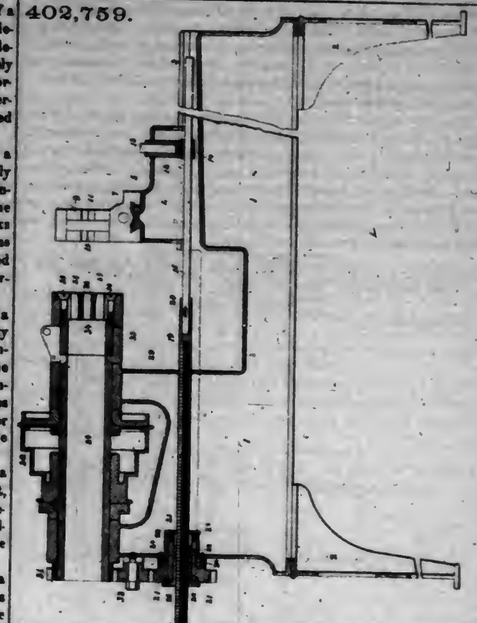
Claim.—1. A screw-cutting machine consisting, essentially, of the die-holder, screw-cutting die contained therein, the clamp by which the rod to be threaded is held by one end, the carriage permitting relative longitudinal movement between the rod and die, the feed-screw and nut corresponding in pitch with the screw to be produced and imparting positive feed movement, the means for connecting the feed-screw and nut to the carriage and die-holder, respectively, and gearing communicating corresponding rotation from the screw-cutting to the feeding devices, substantially as herein described.

2. The combination, with the carriage 4, the rod 5, and feed-screw and nut and connecting-gear for moving said rod longitudinally, of the block 14, perforated for the passage of the rod 15, and having the spring-jaws 16 17, and the screw 18, for closing said jaws, substantially as set forth.

3. The combination, with the carriage 4, having the hollow stud 12, and the longitudinally-movable rod 15, of the stem 13, fitting said hollow stud, and means at the lower extremity of said stem for engaging the rod, substantially as set forth.

4. The combination of the carriage, rod-holding clamp, die-holder,

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feed-screw and nut, means for connecting the feed-screw and carriage, and connecting-gearing for imparting equal rotation to the screw-cutting and feeding mechanism and relative longitudinal motion to the parts, as described and shown.

5. The combination of the carriage, the feed-screw having the socket in the extremity thereof, nut and gearing for imparting longitudinal motion to said screw, and the feed-rod having one extremity inserted in said socket and adjustably secured to the carriage, substantially as set forth.

6. The combination of the carriage, the feed-screw adjustably secured thereto, the feed-pinion having a removable internally-screw-threaded bushing, and gearing for rotating said feed-pinion, substantially as set forth.

7. The combination, with the carriage, the feed-screw, and the internally-screw-threaded feed-pinion having the hub 22, of the annular bearing-plate secured to the end of said hub for holding it in place, substantially as set forth.

8. The combination, with the carriage, the feed-screw, and the internally-screw-threaded feed-pinion having the hub 22, of the bearing-sleeve, and the annular bearing-ring secured to the end of the hub and projecting over the end of the bearing-sleeve, substantially as set forth.

9. The combination, with the carriage, the feed-screw, and the internally-screw-threaded feed-pinion having the hub 22, of the bearing-sleeve 23, having the flange 24, secured to the frame of the machine, and the annular bearing-plate secured to the extremity of the hub 22 and projecting over the bearing-sleeve, substantially as set forth.

402,760. CIGAR-CUTTER. Joseph B. Moon, Chicago, Ill., assignor of one-half to Eugene Vallens, same place. Filed Jan. 12, 1889. Serial No. 296,142. (No model.)

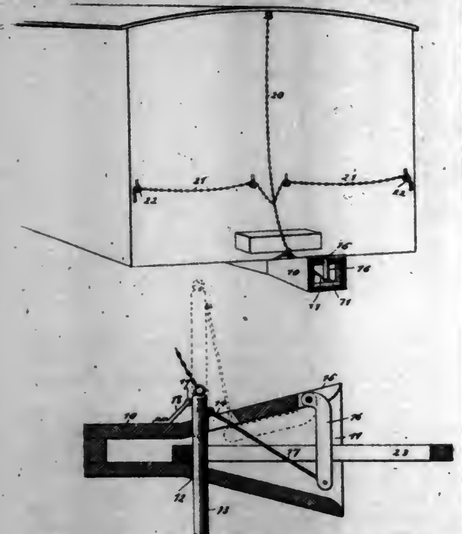


Claim.—1. In a cigar-cutter, the combination of a box provided with holes in its top, a knife or blade movable forward and backward across the holes, guides or ways in which the knife or blade moves,

and by which it is held close to the under side of the holes, and levers for advancing and a spring for retracting the knife or blade, the body of the box being hinged to the base at one end and secured by a clasp at the other, whereby, by pressing the clasp, the body or base may be swung on its hinge to open the box for the removal of cigar ends, substantially as described.

2. In a cigar-cutter, the combination of a box provided with holes in its top, a knife or blade movable forward and backward across the holes, guides or ways in which it is held close to the under side of the holes, levers for advancing and a spring for retracting the knife or blade, and a handle connecting with the levers in position to be depressed by the hand or wrist of the hand holding the cigar in one of the holes, whereby the levers are operated and the knife or blade advanced, substantially as described.

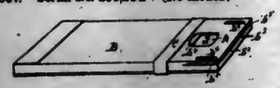
402,761. CAR-COUPLING. JAMES A. MOSER, Fort Bowie, Ariz. Filed Jan. 21, 1889. Serial No. 297,029. (No model.)



Claim.—1. The combination, with a draw-head provided with a pin aperture, a coupling-pin held in said aperture, and a standard attached to the draw-head, provided with a friction-roller engaging with the pin, of a lever-arm pivoted at one end in the upper front surface of the draw-head, and a link-connection between the upper end of the said pin and the lower extremity of the said arm, all combined for operation substantially as shown and described.

2. The combination, with a draw-head provided with a flaring or bell-shaped mouth and a pin-aperture at the base of the flaring portion, of a coupling-pin held in the said aperture, a lever-arm pivoted in the upper front surface of the said draw-head to extend vertically downward, a rod connecting the lower extremity of the lever-arm and the upper contiguous face of the coupling-pin, and a standard secured to the upper face of the draw-head and provided with a friction-roller engaging with the pin, all arranged for operation substantially as shown and described.

402,762. RAILWAY-TICKET HOLDER. PETER E. MCDONALD, Detroit, Mich., assignor of one-half to S. O. Brooks, same place. Filed Nov. 26, 1887. Serial No. 256,204. (No model.)



Claim.—1. A ticket-holder having a continuous coupon-ticket in combination therewith, said holder provided with an orifice through which said ticket may be projected, and constructed to permit a bearing of the thumb upon said ticket to operate said ticket, substantially as described.

2. A ticket-holder having a continuous coupon-ticket in combination therewith, said holder provided with an orifice through which said ticket may be projected, and a margin, b^3, abutting against the ticket, said holder constructed to permit a bearing of the thumb upon the ticket to operate the ticket, substantially as set forth.

3. A ticket-holder having a continuous coupon-ticket in combination therewith, said holder constructed with covers embracing the ticket, one of said covers provided with an orifice through which the ticket may be projected, substantially as set forth.

4. A ticket-holder having in combination therewith a continuous coupon-ticket, said holder consisting of covers embracing said ticket, one of said covers provided with an orifice through which the ticket may be projected from the end of the holder in line with the under face of said cover, substantially as described.

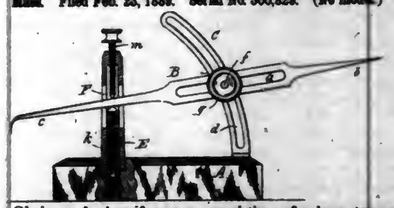
5. A ticket-holder having in combination therewith a coupon-ticket, said holder constructed of covers embracing said ticket, one of said covers provided with an end margin, b^3, and with an orifice between said margin and the under face of the cover through which the ticket may be projected, substantially as set forth.

6. A ticket-holder having in combination therewith a coupon-ticket, said holder constructed of covers to embrace the ticket, one of said covers provided with an end margin, b^3, an orifice between the said margin and its cover, and an orifice in the face of the cover through which the thumb may bear upon the ticket to operate the same, substantially as set forth.

7. The combination, with the holder, of the continuous coupon-ticket, said holder constructed of covers embracing said ticket, one of said covers provided with a loop through which the ticket may be projected, substantially as set forth.

8. The combination, with a casing, of the covers B' B^2, one of which is provided with longitudinal raised margins b b' and with the end margin, b^3, and the other with an aperture, b^4, of a continuous flexible coupon-ticket secured at one end to one of the said covers and adapted to be projected with its opposite end through a slot, as b^5, formed at the end of said cover, the said ticket being entirely inclosed within said casing, substantially as set forth.

402,763. SURFACE-GAGE. WILLIAM H. H. NORTHEND, Boston, Mass. Filed Feb. 23, 1889. Serial No. 300,829. (No model.)



Claim.—1. A surface-gage consisting of a base, two supports thereon, and a needle slotted in part and upheld at two points by said supports, pivoting upon one for quick adjustment, upon the other for slow adjustment, substantially as herein described.

2. A surface-gage composed of a base and two supports—a slotted standard and post—and a bar or needle upheld at two points and adapted to swing upon either support as an axis in a vertical plane, substantially as and for purposes herein set forth.

3. In combination with a suitable base, a curved slotted standard, and the needle apertured in part pivoted thereto at one end, the hollow post with a transverse slot, in which the needle is upheld and capable of adjustment in a vertical plane, swinging upon the opposite end as a pivot, substantially as stated.

4. The reversible needle slotted in part, adjustable in a vertical plane, and having endwise movement, two pivots, one at each end, combined with a slotted standard and a clamping-bolt, a hollow post, with its adjusting screw and spring, and the base, all operating as herein specified.

5. A suitable base, a hollow post transversely apertured, with the co-operating spring and screw therein, a reversible needle-bar having endwise movement through said post and oscillating upon it for one adjustment, combined with a standard, its longitudinal slot, and the clamping-bolt engaging said needle, which swings upon said bolt for the other adjustment, substantially as herein stated.

402,764. CHIN AND LIP ADJUSTER FOR CORSETS. JOHN I. NUHN, Cleveland, Ohio. Filed Mar. 6, 1889. Serial No. 302,063. (No model.)



Claim.—The combination, with a chin-adjuster, of a lip-adjuster, the latter being adjustably connected with and supported by the former, substantially as set forth.

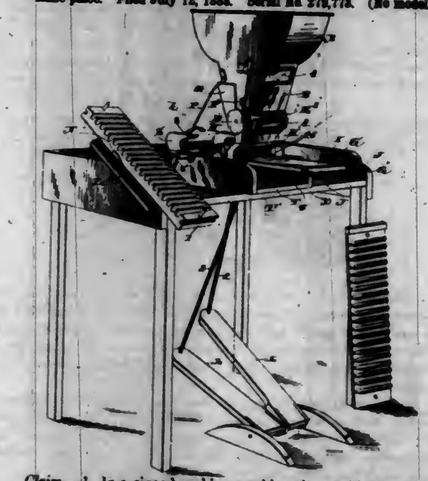
402,765. WINDOW-VENTILATOR. JAY F. OSDEN, Buckhannon, W. Va. Filed Feb. 4, 1889. Serial No. 298,643. (No model.)

Claim.—1. A ventilator for windows, composed of a box-like shield, substantially as described, attached to the upper part of a window-frame, and a plate or partition, B, secured to the window-sash, so as to extend into the shield, substantially as shown and described.

2. A ventilator for windows, composed of a box-like shield, substantially as described, attached to the upper part of a window-frame, and a plate or partition secured to the window-sash, so as to extend across the open space between said shield and the window to form a practically complete partition in any position to which it may be adjusted in the shield by the movement of the window, as described.



402,766. CIGAR-BUNCHING MACHINE. GOTLIEB F. PALM and MARO SMITH, Coshocton, Ohio, assignors of one-third to Samuel Irvine, same place. Filed July 12, 1888. Serial No. 279,773. (No model.)



Claim.—1. In a cigar-bunching machine, the combination of the hopper, the vertically-rotating pocket-wheel arranged below the hopper and having a ratchet-wheel secured on the end of its horizontal shaft, the sliding bunching-table below the pocket-wheel, and the spring-rod carried by the bunching-table and adapted to engage the ratchet-wheel, as set forth.

2. In a cigar-bunching machine, the combination of the hopper, the rotatable agitator-wheel therein, the rotatable pocket-wheel arranged beneath the hopper, gearing between the agitator and the pocket-wheel, the ratchet-wheels on the shaft of the pocket-wheel, the sliding bunching-table arranged below the pocket-wheel, and the spring-rods carried by the bunching-table and engaging the ratchet-wheels, as set forth.

3. In a cigar-bunching machine, the combination, with the hopper and the pocket-wheel, of the adjustable gage 22, substantially as described.

4. In a cigar-bunching machine, the combination, with the hopper and the pocket-wheel, of the adjustable gage having a lip projecting from its lower end, substantially as specified.

5. In a cigar-bunching machine, the combination, with the hopper and the pocket-wheel, of the brackets 23, secured to the side of the hopper, the gage 22, having the nuts 24 secured thereto, and the set-screws 22, for adjusting the gage.

6. In a cigar-bunching machine, the herein-described pocket-wheel composed of a shaft having heads at each end, the partitions 12, V-shaped in cross-section, secured between the heads, the nuts 11, secured between the heads and disks contiguous thereto, the bottoms C of the pockets, and the set-screws 10, for adjusting the bottoms of the pockets, substantially as specified.

7. In a cigar-bunching machine, the pocket-wheel consisting of the heads, the partitions 12, the nuts 11 on rings D^2, the concave bottoms C, having notches in each end, and the set-screws having grooves in their heads and having their lower ends secured in the said nuts, substantially as described.

8. The combination, with the heads D^2 and the transverse partitions 12, bent in substantially the form shown, of the trough-shaped bottoms C, and the set-screws 10, for adjusting the bottoms, substantially as and for the purpose described.

9. The herein-described agitator for a cigar-bunching machine, composed of the shaft E' and the radial arms e at the ends of the shaft, having their ends bent inward to form agitator-fingers, substantially as specified.

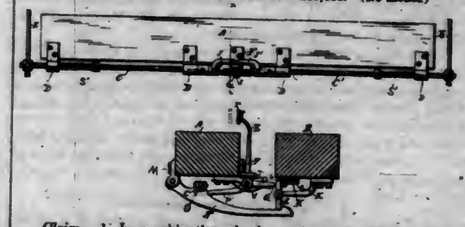
10. In a cigar-bunching machine, the combination, with the base and the reciprocating bunching-table, of the castings R, having slots, the bunching-roller mounted in the slots, and the arms s' on the bunching-table, for effecting a vertical movement of the bunching-roller in the said castings, substantially as described.

11. The combination of the base, the slotted castings thereon, the bunching-roller having its shaft mounted in said castings and extended beyond the same, the springs secured to the base and bearing on the shaft of the bunching-roller, and the bunching-table reciprocating under the bunching-roller and having arms adapted to come in contact with the roller and raise the same, as set forth.

12. In a cigar-bunching machine, the combination of a base, a pocket-wheel arranged above the base, the bunching-roller mounted loosely in slotted bearings on the base, the reciprocating bunching-table, and the brackets S, secured to the bunching-table, and having upper arms adapted to actuate the pocket-wheel and lower arms adapted to raise the bunching-roller, as set forth.

13. The combination, with the base and plates 28, forming troughs near each side of the base, of the reciprocating bunching-table having cleaner-blades which are adapted to travel in the said troughs, substantially as set forth.

402,767. STOP-MOTION FOR LOOMS. ANDREW J. PIROTTE, Manton, R. I. Filed Feb. 6, 1888. Serial No. 263,185. (No model.)



Claim.—1. In combination, the breast-beam, the shipper-disengaging lever, and the tripping-lever, the lay-beam, the spring-operated dagger, the hook-lever provided with the transversely-arranged pivoted bar, the shuttle-binders, and the duplicate protector-rods, each provided with a pressure-finger resting upon a shuttle-binder, a finger resting upon the spring-operated dagger, a finger which operates upon the pivoted bar of the hook-lever, and a spring which holds the pressure-finger against the shuttle-binder, whereby the loom will be stopped either for the presence of a shuttle in the box at the wrong time or for the improper absence of the shuttle, substantially as described.

2. In combination, the breast-beam, the shipper-disengaging lever, and the tripping-lever, the lay-beam, the hook-lever provided with the transversely-arranged pivoted bar and pivoted to the lay-beam, the shuttle-binders, the duplicate protector-rods, each provided with a pressure-finger resting upon the shuttle-binder, a finger which operates upon the pivoted bar of the hook-lever, and a spring which holds the pressure-finger against the shuttle-binder, whereby either of the pressure-fingers can be separately moved outward without imparting an engaging movement to the hook-lever, but the conjoint outward movement of both of the pressure-fingers will cause the engagement of the hook-lever with the tripping-lever and the consequent stopping of the loom, substantially as described.

402,768. BAG-LOCK. CHARLES REINISCH, Newark, N. J. Filed Nov. 25, 1887. Serial No. 256,062. (No model.)



Claim.—1. In a bag-fastening, the combination, with catching bolts or pins and catching-loops, of a bolt-operating device consisting of a bolt-plate arranged and secured to a finger-piece and sliding longitudinally within a casing provided with hasp-loop-receiving openings therein, said bolt-plate being provided with projecting flanges at right angles thereto and catching bolts or pins attached to and projecting at right angles from said projecting flanges and moving longitudinally with said bolt-plate within said casing and across the loop-openings therein, and a spring whereby said bolts or pins are held normally across said openings, said finger-piece moving reciprocally

on the casing and operating to cause the sliding longitudinal movement of the bolt-plate, for the purposes set forth.

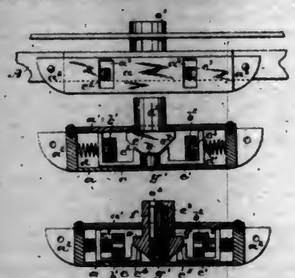
2. In a bag-fastening, the combination, with catching bolts or pins and catching-loops, of a casing provided with loop-receiving openings therein, said bolts or pins being concealed and moving longitudinally within said casing and across the loop-openings, a spring whereby said bolts or pins are normally held across said openings, and a finger-piece connected with said bolts or pins, substantially as described, the catching-loops being beveled on one side and engaging with the beveled ends of the catching bolts or pins to receive the same in the perforations or eyes in said loops, substantially as and for the purposes set forth.

3. A bag-lock consisting of a casing, B, a sliding finger-piece, D, moving reciprocally on said casing, a sliding plate, *c*, arranged within said casing B and secured to and sliding with said finger-piece, said plate being provided with bolts having beveled ends and concealed and moving longitudinally within the casing B, and a catching-loop plate provided with catching-loops projecting therefrom and adapted to enter loop-openings in the casing B, said catching-loops having beveled portions which engage with the beveled surfaces on and receive the longitudinally-sliding bolts in the perforations in said loops, for the purposes set forth.

4. A bag-fastening consisting of a casing provided with catching-loop-receiving openings therein, catching-loops adapted to enter the openings in said casing and to engage with bolts arranged therein, a sliding plate to which said bolts are attached, said plate being secured to a finger-piece moving reciprocally on said casing, a plate, *a*, provided with a post, *a'*, and a lug, a^3, thereon, a spring engaging with said lug a^3, and a lug, c^3, on one of the bolts, all arranged substantially as and for the purposes set forth.

5. A bag-fastening consisting of a casing provided with catching-loop-receiving openings therein, catching-loops adapted to enter the openings in said casing and to engage with bolts arranged therein, a sliding plate to which said bolts are attached, said plate being secured to a finger-piece moving reciprocally on said casing, a plate, *a*, provided with a post, *a'*, and a lug, a^3, thereon, a spring engaging with said lug a^3 and a lug, c^3, on one of the bolts, and means for locking said finger-piece to prevent any movement of the bolts, for the purposes set forth.

402,769. BAG-LOCK. CHARLES REHBOCK, Newark, N. J. Filed Apr. 20, 1888. Serial No. 271,317. (No model.)



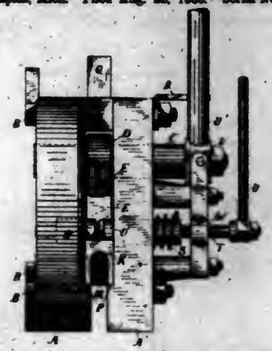
Claim.—1. A bag-fastening consisting of a casing provided with catching-loop-receiving openings therein, catching-loops adapted to enter the openings in said casing and to engage with bolts arranged therein, independently-arranged sliding bolts moving reciprocally within the casing across the loop-openings therein and attached to sliding plates having inclined surfaces thereon, a finger-piece provided with a beveled surface or surfaces thereon which engage with the inclined surfaces on the bolt-plates when said finger-piece is operated, to cause the disengagement of the bolts and catching-loops, and springs arranged to cause the return of the bolts to their normal position across the loop-openings in the casing, for the purposes set forth.

2. A bag-fastening consisting of a casing having openings a^3 therein, catching-loops b' and b^3, which enter said openings and engage with sliding bolts in the casing, bolts c^3 and c^3, moving reciprocally in said casing across the openings and secured to bolt-plates *c* and *c'*, and having inclined surfaces c^4 c^4 thereon, a finger-piece projecting up through the casing and provided with beveled surfaces on the lower end thereof, which engage with the inclined surfaces on the bolt-plates, and springs *d* and *d'*, arranged to cause the return of said bolts to their normal position, substantially as and for the purposes set forth.

3. In a bag-fastening, a locking device consisting of a hollow cylinder provided with a slot, f, and slots f' and f^3 on the inside thereof and formed substantially as herein set forth, a collar, g', provided with pins or points g^3 and g^3, and a pin, g, about which said collar turns for the purposes set forth.

4. A combined bag fastening and lock, consisting of a casing having openings a^3 therein, catching-loops b' b^3, which enter said openings and engage with sliding bolts arranged in said casing, bolts c^3 and c^3, moving in said casing across said openings and secured to bolt-plates *c* and *c'*, having inclined surfaces c^4 and c^4 thereon, a finger-piece, c^5, projecting up through the casing and provided with beveled surfaces on the lower end thereof, which engage with the inclined surfaces on the sliding bolts, springs *d* and *d'*, arranged to cause the return of said bolts to their normal position, said finger-piece being hollow and provided with a key-hole on the top thereof and slots f' and f^3, a collar provided with points or projections g^3 and g^3 thereon, and a pin, g, about which said collar turns, all of said parts being arranged substantially as and for the purposes set forth.

402,770. SAW-TOOTH-SWAGING DEVICE. JAMES R. RHODES, Grand Rapids, Mich. Filed Aug. 22, 1888. Serial No. 283,495. (No model.)

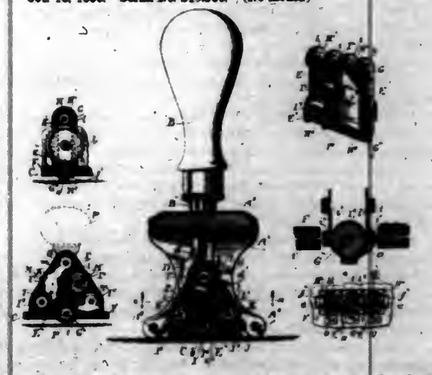


Claim.—1. In a saw-tooth swage, the combination, with the stationary anvil and the movable upper die, of a spring fastened to the anvil and located between the said anvil and upper die, said spring adapted to stop the saw-tooth and to return the upper die to its normal position when pressure is removed therefrom, substantially as described.

2. In a saw-tooth swage, the combination, with the bed-plate and cap, each provided with a longitudinal shoulder, P, and the upper die secured between said bed-plate and cap, of the anvil adapted to rest on said shoulders between the bed-plate and cap and secured therein by bolts, substantially as described.

3. In a saw-tooth swage, the combination, with the bed-plate and cap, of an anvil secured between the two, said anvil having a flat top face for receiving the saw-tooth, and an inclined groove beneath the flat surface, the upper die, and a spring between the anvil and the upper die adapted to stop the saw-tooth and to raise the upper die to its normal position when pressure is removed therefrom, substantially as described.

402,771. HAND-STAMP. LOUIS K. SCOTFORD, Chicago, Ill. Filed Oct. 18, 1886. Serial No. 216,500. (No model.)



Claim.—1. The combination, with the type band or bands of a dating device, rollers for the said band or bands, and a frame supporting said rollers, of a supporting-plate, F, for the dating device, said plate being provided with a central opening, and a casing or cover placed over the bands and rollers, said frame being engaged at its lower end with the opening of the plate F, and the casing being constructed to engage the frame, and attached to the said plate F, whereby the frame is held in position upon the latter, substantially as described.

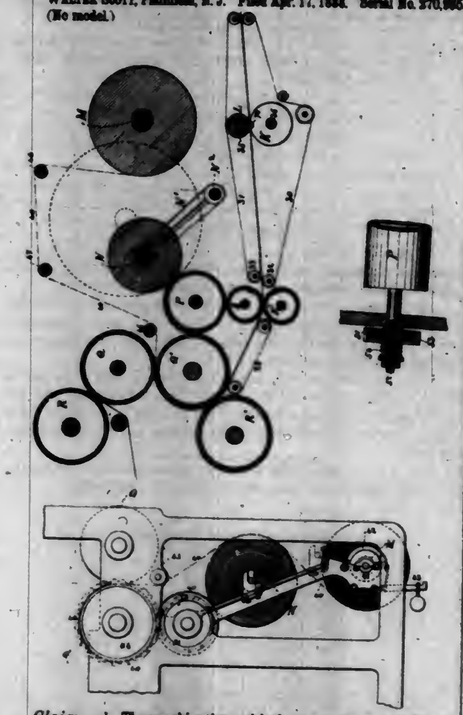
2. The combination, with the frame and flexible type-band of a dating device and two supporting-rollers over which said band is trained, each of said rollers being provided with cogs at one end, of a band-wheel mounted loosely upon the frame and provided with cogs engaging the cogs of both of said rollers, substantially as described.

3. The combination, with a type-band and a supporting-frame and rollers, as I' I^2 I^3 I^3 I^4 I^4, mounted in said frame, two of said rollers, as I' and I^3, being provided with cogs, of a cog-wheel mounted upon the pivot of one of the other rollers and engaged with the cogged rollers, substantially as described.

4. The combination, with type-bands and a supporting-frame and rollers, as I' I^2 I^3 I^3 I^4 I^4, mounted in the said frame, one of said rollers, as I', being provided with cogs at each end, and two of said rollers, as I^3 I^3, having cogs at one end, of two cog-wheels mounted upon opposite sides of the frame, and both engaged with the roller having cogs at both ends, and each engaged with the roller having cogs at one end, whereby, when either of said cog-wheels is turned, three of the rollers will be moved, substantially as described.

5. The combination, with a type-band and a supporting-frame, of a spring arm or stop mounted upon the frame and resting in contact with the band, whereby the type may be conveniently placed in position for printing, substantially as described.

402,772. OFFSET MECHANISM FOR PRINTING-MACHINES. WALTER SCOTT, Plainfield, N. J. Filed Apr. 17, 1888. Serial No. 270,995. (No model.)



Claim.—1. The combination, with the type-cylinders R R' and impression-cylinders Q Q', of the winding-cylinder P, a tympan or offset sheet, two rollers for the same, fixed bearings for one of the rollers, arms N' and shaft N^2 for the other roller, and a frictional mechanism upon the shaft N^2 for insuring the proper pressure between the winding-cylinder and the roll as the tympan-sheet is wound up, substantially as set forth.

2. The combination, with the offset-web and the rolls M N, of the brackets 41, having inclines upon which the journals of the roll (M or N) are received and boxes into which the journals are received, and the arms N' or equivalents for moving the full roll to the inclines, substantially as specified.

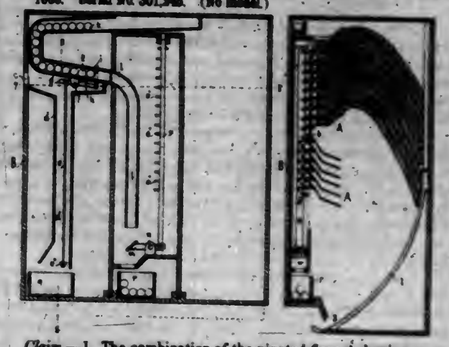
3. The combination, with the printing and impression cylinders, of an offset-web passing around the impression-cylinder, one roll for the offset-web and stationary bearings for the same, a second roll on which the offset-web is wound, and moving bearings for the same that are moved laterally by the accumulation of the offset-web as wound up, so that the roll and its bearings are carried bodily toward the stationary bearings, to be subsequently transferred thereto, as set forth.

4. The combination, with the offset-web and the rolls on which the same is wound, of a roller or cylinder for drawing off the said web and a wind-up cylinder and a frictional connection to the motive power, whereby the wind-up cylinder causes a constant strain to keep the offset-web sufficiently tight, substantially as set forth.

5. The combination, with the printing and impression cylinders, of an offset-web passing in above the impression-cylinder and wind-up mechanism for drawing the web up from below the impression-cylinder, and mechanism for receiving and cutting the web of paper as it falls away from the offset-web, substantially as specified.

6. The combination, with the rolls for the offset-web, and the printing and the impression cylinders, of a winding-cylinder against which the web as it is wound up into a roll rests, and mechanism for rotating the winding-cylinder so that its surface is moved slightly faster than the web for keeping the latter under tension as rolled up, substantially as specified.

402,773. APPARATUS FOR THE AUTOMATIC SALE OF FLEXIBLE ARTICLES. PAUL SIMON, Darmstadt, Germany. Filed Feb. 26, 1889. Serial No. 301,345. (No model.)

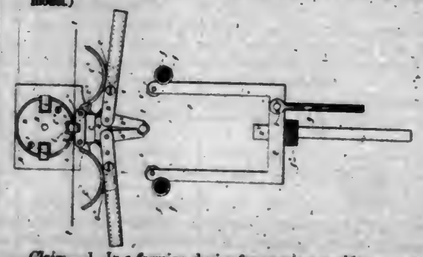


Claim.—1. The combination of the pivoted flaps A, having arms *a*, with cross-pieces *a'* and pins *p*, and arms *b*, forming hooks, the bar *o*, having pins *o'*, and means for imparting vertical motion to the bar *o*, substantially as described.

2. The combination of the pivoted flaps A, having arms *a*, with cross-pieces *a'* and pins *p*, and arms *b*, forming hooks, the bar *o*, having pins *o'*, the lever *m*, the tube *l*, adapted to contain balls, the lever *g*, with fingers *h* and *i*, and means for moving the said lever through the medium of a coin, substantially as specified.

3. The combination of the pivoted flaps A, having arms *a*, with cross-pieces *a'* and pins *p*, and arms *b*, forming hooks, the bar *o*, having pins *o'*, the lever *m*, the tube *l*, adapted to contain balls, the lever *g*, with fingers *h* and *i*, rod *c*, with hook *c'*, and channel *d*, with slit *c*, substantially as set forth.

402,774. DEVICE FOR FORMING TIN CANS. CHARLES W. SLEEPER, Island Pond, Vt. Filed Jan. 4, 1889. Serial No. 295,454. (No model.)



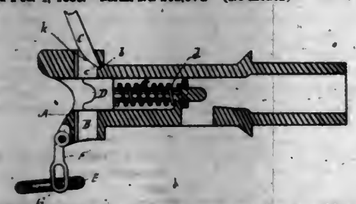
Claim.—1. In a forming device for seaming-machines, a cylinder slightly flattened at its lower side and provided with a false piece, *b*, so arranged in the flattened portion of the cylinder that thin pieces of metal may be inserted between the false piece and the cylinder to increase the size of the said cylinder, and provided with two recesses, *b' b'*, into which the fingers or any convenient instrument may be inserted to remove the can-body from the cylinder after it has been soldered, substantially as described, and for the purpose set forth.

2. In a forming device for seaming-machines, the cylinder B and false piece *b*, combined with the bracket *c*, to which are hinged the clamps *c' c'*, and the false piece *c'*, so arranged in the bracket *c* as to

coincide with the false piece *b*, and a spring, c^2, to press the false piece c^2 against the false piece b^2, or against the can-bodies as they are inserted between the said pieces, substantially as described, and for the purpose set forth.

3. In a forming device for seaming-machines, the cylinder B, the bracket *c*, and clamps c' c^2, combined with the locking-arms a' a^2 and the toggle-joint a^3, and with means for supporting the locking-arms and operating the clamps and toggle-joint, substantially as described, and for the purpose set forth.

402,775. CAR-COUPLING. GEORGE W. SHILLER, Newark, N. J. Filed Feb. 1, 1888. Serial No. 262,674. (No model.)

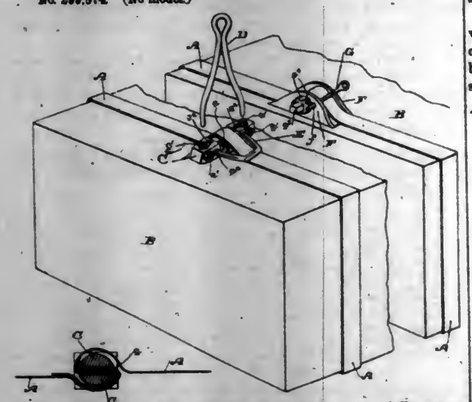


Claim.—1. The combination, in a car-coupling provided with a draw-head, link, coupling-pin, and a horizontally-arranged lever to which said coupling-pin is connected, provided with arms at each end thereof, of one or more bars or rods pivotally secured to the frame of the car, adapted to be supported by a catch when in a raised position to support said arms, substantially as described.

2. The combination, in a car-coupling provided with a draw-head having a thickened upper face, link, coupling-pin, and a projecting horizontally-arranged lever provided with a fixed arm or projection extending therefrom for connection with said coupling-pin, of an upright arm adapted to be secured to the face of the car, provided with a longitudinal opening through which the fixed arm of said horizontal lever projects, and an adjusting-screw arranged in said upright arm, substantially as described, and for the purpose set forth.

3. In a car-coupling, the combination, with a draw-head provided with a vertical opening or pin-receptacle having a rest or support in one side thereof, a link, coupling-pin, and a horizontally-arranged lever having a fixed arm extending therefrom, of a vertically-arranged arm provided with an opening in which said fixed arm operates, an adjusting-screw, and a spring-catch, substantially as described, and for the purpose set forth.

402,776. STRAP FASTENER AND TIGHTENER FOR TRUNKS, &c. CHARLES SPARKS, Sacramento, Cal. Filed Feb. 14, 1889. Serial No. 299,574. (No model.)



Claim.—1. In a strap fastener and tightener, an axially rotary bar with which the adjacent ends of the strap engage, whereby as said bar is rotated the ends of the strap are wound upon it, in combination with a removable key engaging the bar and holding it in the position to which it is moved, substantially as described.

2. In a strap fastener and tightener, the combination of an axially rotary bar having a longitudinal slot, through which the adjacent ends of the strap pass from opposite directions, whereby as said bar is rotated the ends of the strap are wound upon it, and a key engaging the bar for holding it in the position to which it is moved, substantially as described.

3. In a strap fastener and tightener, the combination of an axially rotary bar with which the adjacent ends of the strap engage, whereby as said bar is rotated the ends of the strap are wound thereon, and a bail-shaped key, the ends of which are adapted to enter keyways in the ends of the bar and the body of which passes over the strap, thereby holding the bar in the position to which it is mounted, substantially as described.

4. In a strap fastener and tightener, the combination of an axially rotary bar having a slot or aperture in its body and keyways in its ends, said slot or aperture receiving the adjacent ends of the strap from opposite directions, whereby as said bar is rotated the strap is wound thereon, and the bail-shaped key, the ends of which fit the keyways in the ends of the bar and the body of which passes across the strap, whereby the bar is held in the position to which it is moved, substantially as described.

5. In a strap fastener and tightener, the combination of an axially rotary bar having its ends perforated and adapted to receive a wrench or spanner by which it may be rotated, keyways in its ends and a slot or aperture in its body for receiving the ends of the strap from opposite directions, whereby as said bar is rotated the strap is wound thereon, and a key for fitting the keyways and holding the bar in the position to which it is moved, substantially as described.

6. In a strap fastener and tightener, the combination of the bracket having keyways, the axially rotary bar mounted in the bracket, and having keyways in its ends and a slot or aperture in its body for receiving the ends of the strap, and a key fitting the keyways of the bracket and bar, whereby the bar is held in the position to which it is adjusted, substantially as described.

7. The axially rotary bar of a strap fastener and tightener, having a slot in its body, grooves in its ends, forming keyways, and holes thereon, also forming keyways, substantially as described.

402,777. RAILWAY-JOINT. JOHN SPRINGER, Jersey City, assignor to Frederick T. Feary, Newark, N. J. Filed Oct. 3, 1888. Serial No. 287,061. (No model.)



Claim.—1. In combination with the rail, plates *b c*, having disconnected overlapping seats *m m*, and bearings *d e*, and suitable bolts, substantially as and for the purposes set forth.

2. In combination, rails *a*, plates *b c*, having seats *m m*, bearings *d e*, and one of said plates having an extension, *g*, bolts *c'*, and packing, *o*, interposed between the rails and said plates, substantially as and for the purposes set forth.

3. In combination, rails *a*, plates *b c*, having seats *m m*, one of which extends over the other, bearings *d e*, and shoulders *f*, and one of said plates having an extension, *g*, and suitable bolts, all said parts being arranged and operating substantially as and for the purposes set forth.

402,778. STOVE-PIPE THIMBLE. ALEXANDER STAUB, Fort Wayne, Ind. Filed July 16, 1888. Serial No. 280,031. (No model.)



Claim.—In a stove-pipe thimble, the combination, with the apertured head 2, provided with the cylinders 9 and 10, of the head 1, consisting of the strip 11, provided with the rib 13, having the horizontal lugs 14, and the annular piece 19, secured to the lugs 14 of the strip 11, and having the apertures 3 and flange 20, the cylinder 22, secured to the rib 13, the cylinder 23, secured to the flange 20, and the wires 24, secured to the inner face of the said heads, substantially as described.

402,779. ELECTRICALLY-CONTROLLED APPARATUS FOR TREATING EMPHYSEMA. ALEXANDER STEINHOFF, Briesnitz, near Dresden, Saxony, Germany. Filed Nov. 21, 1888. Serial No. 291,426. (No model.)

Claim.—1. An apparatus for the treatment of emphysema by compressed air, in which apparatus an intermediate air-vessel "breathing-belt," C, is inserted between the air-accumulator or air-holding

402,779.

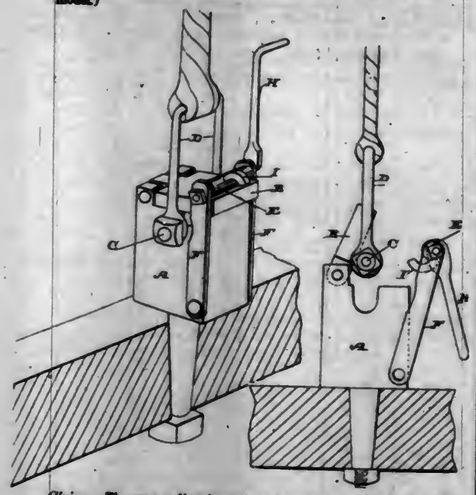


device and the inhalation mouth-piece, the walls of such breathing-belt being different in their expansibility, the most expansible wall being adapted to contact with the thorax of the patient, and an automatic supply of compressed air to expand the belt during the exhalation period of the patient, to act against the thorax of the patient, substantially as specified.

2. The combination, in the apparatus specified, of a mouth-piece, an air-accumulator, the connecting-tubes, and a breathing-belt, and a flap-valve, B, between the accumulator or air-compressing device and the breathing-belt, and a similar flap-valve, D, between the breathing-belt and the mouth-piece, electro-magnets, and circuit-connections acted upon automatically by the inhalation and exhalation of the patient for moving the valves, substantially as specified.

3. The combination, with a mouth-piece and breathing-belt, of a holder for air under pressure, pipes leading from the same to the belt and from the belt to the mouth-piece, valves for opening and closing the respective pipes, electro-magnets for acting on those valves, and a circuit-closing device, and wires to the magnets for closing first one valve and then the other, substantially as set forth.

402,780. SAFETY DEVICE FOR ELEVATORS. PHILIP B. SULLIVAN, Tuscarora, Nev. Filed Oct. 20, 1888. Serial No. 288,696. (No model.)

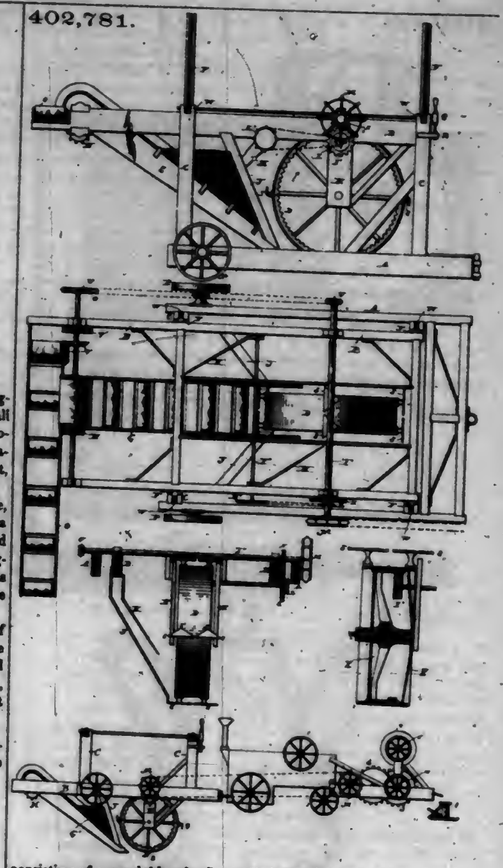


Claim.—The suspending-bar of an elevator-cage, having its upper end channeled to receive the bolt of the cable-clevis, a hinged plate which shuts down over the bolt to retain it in place, in combination with an eccentric locking-bar journaled in swinging arms, so as to engage the edge of the hinged plate to hold it in place, a lever projecting from the end of the eccentric-shaft, and a spur or stud, which, when the eccentric is rotated, will force the eccentric outward and release the hinged plate, substantially as herein described.

402,781. GRADING AND DITCHING MACHINE. MARTIN SWANSON, Crookston, Minn. Filed June 4, 1888. Serial No. 275,910. (No model.)

Claim.—1. A digger or cutter for ditching and grading machines,

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consisting of a revoluble wheel or cylinder having hoes on its periphery and closed ends, as set forth.

2. A digger or cutter for ditching and grading machines, consisting of a revoluble wheel or cylinder having hoes on its outer periphery and a cogged rim on its inner periphery, and guards, as described, for its ends, in combination with a driving-gear meshing into the cogged rim, as set forth.

3. The combination, with the digger, of the rotating angular knives K, whereby the sides of the ditch are cut into a sloping shape, substantially as specified.

4. The combination, with the digger and the rotating angular knives, of the stationary knives, which serve in conjunction with the rotating knives to slope the walls of the ditch and also to support the lower portion of the elevator, substantially as specified.

5. The combination, with the digger D, of the side-shaping knives K and the inclined stationary finishing-knives J, substantially as set forth.

6. The combination, with rotatable knives, as K, set at an inclination, as described, of the inclined stationary finishing-knives J, as set forth.

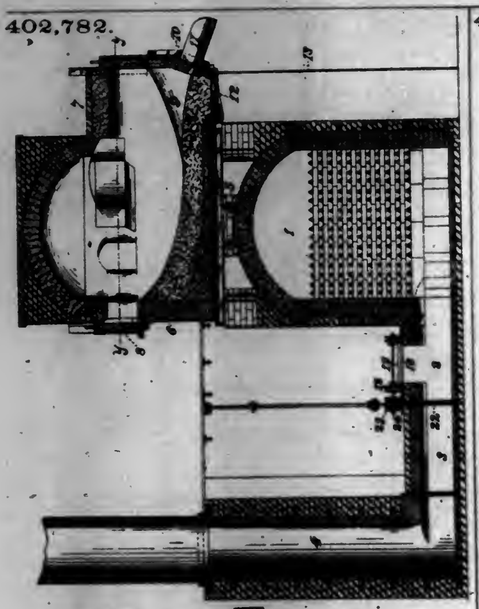
7. The combination of a digger, as D, rotatable knives, as K, elevator G, and finishing-knives J, fastened to the lower end of the elevator and serving both as knives and as supports or braces, as set forth.

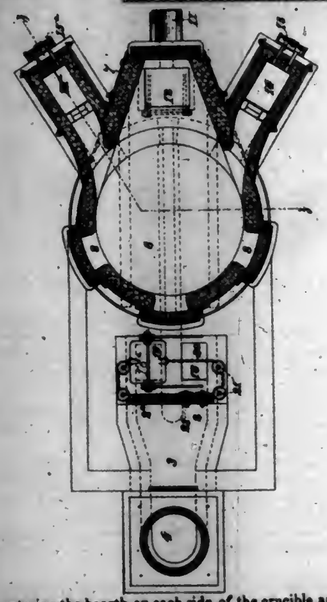
402,782. OPEN-HEARTH MELTING-FURNACE. WILLIAM SWINDELL, Allegheny, Pa. Filed July 7, 1887. Serial No. 243,906. (No model.)

Claim.—1. An air-furnace for melting metal having, in combination therewith, a crucible for the reception of molten metal located out of the line of flow of the fusing-flame, and combined gas and air flues entering said furnace in each side of the crucible, substantially as set forth.

2. The combination, in an air-furnace for melting metal, of a circular melting-hearth, a crucible for the reception of molten metal located at one side of the center of the hearth, and combined gas and

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air flues entering the hearth on each side of the crucible and in a line approximately tangential to the wall of the hearth, substantially as set forth.

3. The combination, in an air-furnace for melting metal, of a circular melting-hearth provided with a lateral extension containing the crucible for the reception of molten metal, and combined gas and air flues entering the hearth on each side of said extension and in a line approximately tangential to the wall of the hearth, substantially as set forth.

4. The combination, in an air-furnace for melting metal, of a circular melting-hearth, a lateral extension from said hearth containing the crucible for the reception of molten metal, and a door located in the bottom of said extension under the crucible, substantially as set forth

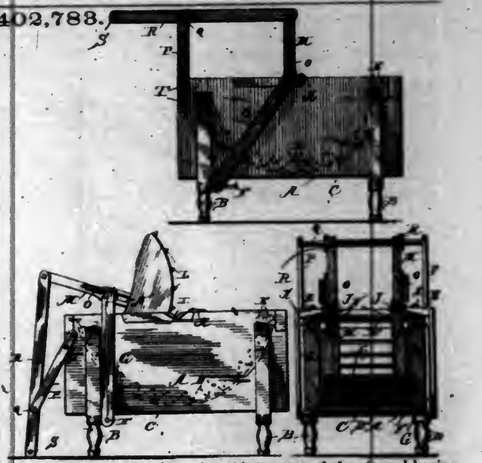
402,783. WASHING-MACHINE. WILLIAM W. TERRIFF, Moore-field, Ontario, Canada. Filed Dec. 7, 1888. Serial No. 292,866. (No model.)

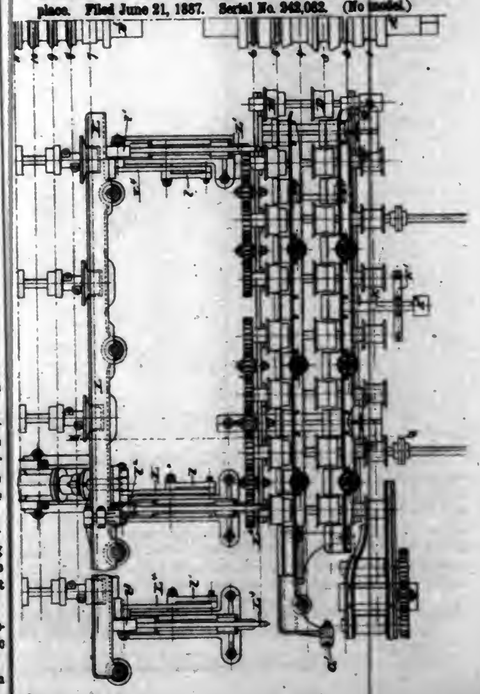
Claim.—1. The combination of the tub having notches I in the upper edges of its sides, the rubber arranged therein and having the standards M projecting upward from its sides and provided with longitudinal slots N, the supporting-arms having their lower ends pivoted to the bottom part of the tub and provided at their upper ends with lateral projections which rest in the notches I and enter the slots N, the swinging standards P, pivoted on the tub, and the levers supported by said swinging standards and having their inner ends pivoted to the upper ends of the standards M, as set forth.

2. The combination of the tub having the notches I, the rubber arranged therein and provided with the standards M, having the slots N, the transverse rod F, secured to the bottom of the tub, the supporting-arms G, pivotally mounted at their lower ends on the said rod F, and provided at their upper ends with projections H, resting in the notches I and entering the slots N, the springs O, secured to the standards M and the projections H, the buttons K, pivoted on the tub and adapted to be turned over the projections H, the swinging standards P on the tub, and the levers supported thereby and having their inner ends pivoted to the upper ends of the standards M, as set forth.

402,784. ROLLING-MILL. FRANCIS H. TREAT, Joliet, Ill., assignor of two-thirds to Horace S. Smith and Charles Pettigrew, both of same place. Filed June 21, 1887. Serial No. 242,062. (No model.)

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Claim.—1. The combination, substantially as before set forth, of the rear roughing-table and a movable fence across the line of feed-rollers in front of the first roughing-pass.

2. The combination, substantially as before set forth, of the rear roughing-table, a movable fence across the line of feed-rollers in front of the first roughing-pass, and the dumping-trough on the front roughing-table for moving the fence out of the way of the bloom.

3. The combination, substantially as before set forth, with the first hinged dumping-trough on the front roughing-table and the rock-shaft, arms, and connecting-rods for operating said trough, of a second dumping-trough hinged at its outer end to a sway-bar and pivoted to said connecting-rods.

4. The combination, substantially as before set forth, of the transfer-trough and a movable gate across the inguide of the last roughing-pass.

5. The combination, substantially as before set forth, of the gate across the inguide of the last roughing-pass, the rock-shaft which carries said gate, a weighted arm on said rock-shaft, and the transfer-trough.

6. The combination, substantially as before set forth, of the transfer-trough supported on tracks and the arms and links which effect its parallel motion and quarter-turning in being moved from one end of its track to the other.

7. The combination, substantially as before set forth, of the transfer-trough supported on tracks, a trunnioned hydraulic jack for moving it, and the arms and links which effect its parallel motion and quarter-turning in being moved from one end of its track to the other.

8. The combination, substantially as before set forth, of the main shaft, the rear finishing-table, the counter-shaft supported on said table near the stand to which the table is connected by a universal joint, and the tumbling-rod for transmitting motion from said main shaft to said counter-shaft.

9. The combination, substantially as before set forth, with the first line of feed-rollers of the rear finishing-table, of the piece-turning socket and link-connections suspending said socket and giving it a quarter-turn in shifting the table from the lower to the upper finishing-passes, or vice versa.

10. The combination, substantially as before set forth, of the piece-turning socket on the rear finishing-table, the elongated rock-shaft for turning the socket, the suspension-bar from which the socket is suspended, and which is supported at one end by a rocker on the rear finishing-table and connected at its other end to one arm of a cross-bar on said rock-shaft, the link for connecting the other arm of the said cross-bar with the socket, and the coupling-rod pivoted at one end to an arm on the said rock-shaft and at the other end to a stand on the foundation.

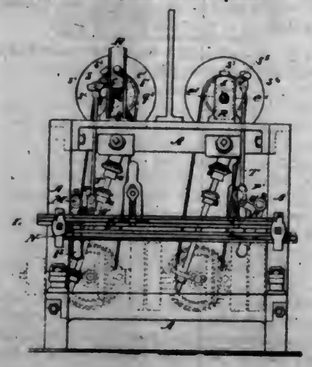
11. The piece-turning socket suspended between buttresses, which sustain it against the chafing action of the piece, substantially as before set forth.

12. The combination, substantially as before set forth, of the piece-turning socket and the diverging guard-plates for guiding the end of the piece into the socket.

13. The combination, with three-high finishing-rolls, of a rising and falling feed-table at one side of the same, said feed-table being hinged and swiveled at its outer end, a device for shifting the inner end of the feed-table, and a device for turning the rail simultaneously with the rising of the feed-table, substantially as described.

402,785. MACHINE FOR SPINNING HEMP, &c. CHARLES H. TRIPP, Boston, Mass. Filed Feb. 20, 1888. Serial No. 300,501. (No model.)

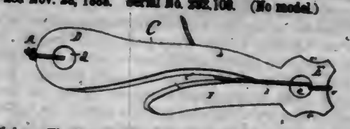
Brief.—The object of the invention is to prevent the running of the machine unless the spindle is in proper position, and to guard against any negligent arrangement of the spindle.



Claim.—1. In a safety-guard mechanism for spindles for hemp-spinning machines, in combination, the box Q, provided with grooves, the latch-plate R, sliding in said grooves, the lock-plate S, pivoted to said box Q, and having a curved arm, s^2, and an arm, s^3, connecting-rod T, pivoted to the said arm s^3, the screw-plate P, pivoted to lever N and adapted to receive the threaded end of said rod T, the lever N, at one end fastened to shipper-bar M, at the other end arranged as described, with the shipper L, shipper-bar M, and shipper L, connected by said lever, as described, all substantially as described, and for the purpose set forth.

2. In a safety-guard mechanism for spindles for hemp-spinning machines, in combination with the frame, a spindle having its outer end bearing in a box on said frame, which box is provided with grooves, a latch-plate sliding in said grooves of said box over the end of said spindle, a lock-plate pivoted to said box and having an arm adapted to rest against the edge of the latch-plate when out of the groove, and an arm pivoted to a rod, said rod being connected by a pivot to a shipper-lever, a shipper-lever fastened at one end to a shipper-bar and at the other end slotted to receive the pin of a shipper, and a shipper-bar and shipper connected by said shipper-lever, as aforesaid, all substantially as described, and for the purpose set forth.

402,786. CORD-FASTENER. THOMAS J. TYLER, Yonkers, N. Y. Filed Nov. 28, 1888. Serial No. 292,109. (No model.)

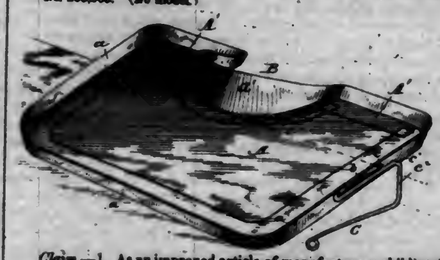


Claim.—The fastener C, consisting of the body portion having the rectangular head E, with grooved sides e' and e^2 and an opening in its center, the arm F, extending out from the head, having a biting-edge, e, on the fastener opposite said arm, substantially as described.

402,787. PROCESS OF PURIFYING GAS. WILLIAM A. M. VALON, Ramsgate, assignor of one-half to the Continental Oxygen Company, (Limited,) Westminster, England. Filed Sept. 10, 1888. Serial No. 285,069. (No model.) Patented in England May 9, 1868, No. 6,980.

Claim.—The process of purifying carbureted-hydrogen or coal gas containing carbonic anhydrides, sulphureted hydrogen, or other sulphur compounds, after removal of the ammonia and tarry matters, by mixing oxygen with such gas, and then passing the mixture through a caustic alkali, whereby the carbonic anhydrides and sulphur compounds are removed, substantially as described.

402,788. CHILD'S TRAY. CHARLES L. WAGANDT, Baltimore, Md., assignor to Koon & Hagerty, same place. Filed Dec. 12, 1888. Serial No. 293,385. (No model.)



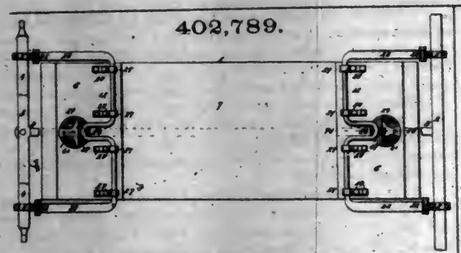
Claim.—1. As an improved article of manufacture, a child's table-tray recessed upon its front side, as described, and having upon each side of such recess the forward projections, A', the inner sides of which extend at substantially right angles to the table and are adapted to fit the sides of the child and hold its body from sidewise movement, substantially as set forth.

2. As an improved article of manufacture, a child's table-tray recessed upon its front side, as described, and having upon each side of such recess the forward projections, A', the inner sides of which are situated at and are adapted to fit the sides of the child's body and hold it from lateral movement, the tray being provided around said recess with the protector or apron a', extending upward above the rim of the tray, as shown, and adapted to protect the clothing of the child and deflect into the tray spilled articles of food, substantially as set forth.

402,789. TORSION-SPRING FOR VEHICLES. CHARLES H. WATERHOUSE, St. Louis, Mo. Filed Feb. 28, 1888. Serial No. 301,264. (No model.)

Claim.—1. In a vehicle-spring, the combination of a torsion-spring, the central inwardly-turned crank-head, 26, and the differential eccentric rotary cam 29, that exercises a varied tension on said crank-

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bend, and by its leverage on said torsion-spring adjusts the tension and stiffness of the spring, substantially as described, and for the purpose set forth.

2. In a vehicle-spring, the combination of the spring-bar having two longitudinal flat strap sections or parts integral with the connecting transverse torsion section or part, the central inwardly-turned crank-bend, 26, and the differential eccentric rotary cam 29, that exercises a varied tension on said crank-bend and by its leverage of said part adjusts the tension and stiffness of the spring, substantially as described, and for the purpose set forth.

3. In a vehicle-spring, the combination, of the combined strap and torsion spring, constituted of the integral sections or parts 25, 26, and 23, and provided with looped attachment-terminals 24, the hanging swinging sectional shackles 11, that are pivotally secured in the loops 24, the clips 8 on the running-gears of the vehicle, and the perforate lugs 22, that project from said clips and that provide the upper bearings for said shackles, substantially as described, and for the purpose set forth.

4. In a vehicle-spring, the combination of the combined strap and torsion spring constituted of the integral sections of parts 25, 26, and 23, and provided with looped attachment-terminals 24, the swinging sectional shackles 11, that form self-adjusting attachments of the springs to the attachment-clips that are secured to the running-gears of the vehicle, and the eccentric rotary cams 29, that work between the cross-sills and the crank-bend 26 in the middle of the torsion-section of said spring, the said cam being provided with differential seats to adjust the stiffness of the springs, substantially as described, and for the purpose set forth.

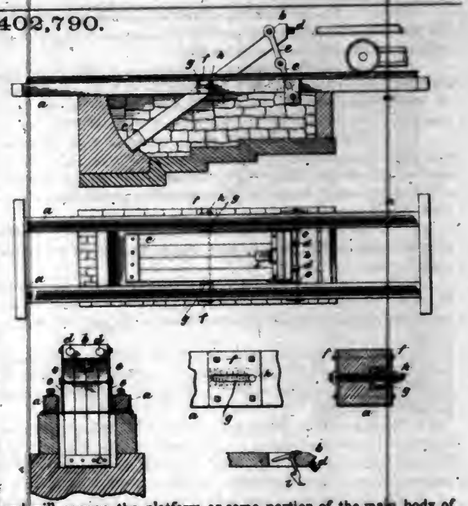
5. In a vehicle-spring, the combination of the combined strap and torsion spring, the section 13 of a swinging shackle, which shackle is self-adjusting to the varying position of the springs, the upper end of said section being provided with an open slot, 14, the spindle 15, that projects at a right angle from near the lower end of said section, the journal 16 on said spindle, the key-button 17, the section 18 of said swinging shackle, the lower part of which section is provided with an elongated slotted bearing, 19, through which the button 17 is passed and in which the journal 16 engages when the sections of the shackle are coupled, and the spindle 20, that projects at a right angle from near the upper end of the section 18, the said spindle being provided with a notch, 21, which notched portion of said spindle engages in the open slot 14 near the upper end of section 13 of said swinging shackle when the sections of said shackle are brought into complete operative combination, substantially as described, and for the purpose set forth.

6. In a vehicle-spriag, the combination of the combined strap and torsion spriag, the said spring constituted of the integral sections or parts 25, 26, and 23, and provided with looped attachment-terminals 24, the sectional swinging shackles 11, having bearings in said hooks and that secure and self-adjustingly hold the springs to the running-gears of the vehicle that they support, the eccentric rotary cam 29, the said cam having a differential face with seats of varied thickness that are rotated between the cross-sill of the vehicle and the crank-bend 26 of the spring to adjust the tension and consequent stiffness of said spring, the said eccentric rotary cam having a surmounting stem, 30, with perforate bearings in the cross-sill 6, a square extension, 32, that forms a wrench-seat and that surmounts said stem, and is seated in a key-boxing in said sill and in the floor of the vehicle, the collar-washer 34, that fits around said square extension and on top of the shoulder 35 of the stem 30, and the key 37, that holds said washer to its seat, the said eccentric rotary cam and the square wrench-stem that turns it being arranged as the differential face of said cam is turned to exert a varied tension on the crank-bend 26 of the spring, and thus adjust the stiffness of the same, substantially as described, and for the purpose set forth.

402,790. RAILWAY-BUMPER. JOHN WATERHOUSE, New York, N. Y. Filed Nov. 21, 1888. Serial No. 291,513. (No model.)

Claim.—1. A stopping device for railroad cars and engines, consisting of a bumper pivoted in such relation to the rails of a railroad track that it can be made to occupy a horizontal position beneath the level of the tracks, or tilted to an inclined position so that the upper

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end will engage the platform or some portion of the main body of the car or engine, substantially as described.

2. A stopping device for railroad cars or engines, consisting of a bumper pivoted intermediate its ends between the rails of a railroad-track, and an abutment below the track to engage the lower end of the bumper when tilted into operative position to sustain the shock or blow upon the bumper, substantially as described.

3. A stopping device for railroad cars or engines, consisting of a bumper having a pivotal sliding support between the rails of a railroad-track, and an abutment below the track to engage the lower end of the bumper when tilted into operative position to sustain the shock or blow upon the bumper, substantially as described.

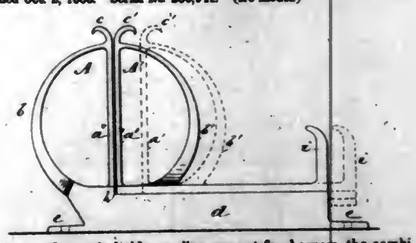
4. A stopping device for railroad cars or engines, consisting of a bumper located between the rails of a railroad-track, pivotally mounted in elongated or slotted bearings, a spring bearing upon the rear of the pivot, and an abutment below the track to engage the lower end of the bumper when tilted into operative position to sustain the shock of blow upon the bumper, substantially as described.

5. A stopping device for railroad cars or engines, consisting of a bumper pivoted intermediate its ends between the rails of a railroad-track, a stop for the upwardly-moving end of the bumper, and an abutment below the track to engage the lower end of the bumper when tilted into operative position to sustain the shock or blow upon the bumper, substantially as described.

6. A stopping device for railroad cars or engines, consisting of a bumper pivoted intermediate its ends between the rails of a railroad-track, eye-bars limiting the movement of said bumper, an abutment below the track to engage the lower end of the bumper when tilted into operative position to sustain the shock or blow upon the bumper, and a foot-latch to hold the bumper in a horizontal position, substantially as described.

7. A stopping device for railroad cars or engines, consisting of a bumper pivoted intermediate its ends between the rails of a railroad-track, and provided with an elastic cushion, a pair of eye-bars limiting the movement of said bumper, a transverse bar connecting the eye-bars, and an abutment below the track to engage the lower end of the bumper when tilted into operative position to sustain the shock or blow upon the bumper, substantially as described.

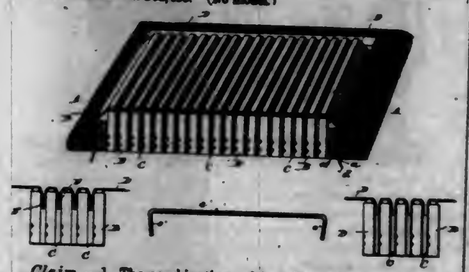
402,791. REIN-HOLDER. WILLIAM B. ADAMS, Greenfield, Ohio. Filed Oct. 2, 1888. Serial No. 286,941. (No model.)



Claim.—In a rein-holder or line-support for harness, the combination of the stationary section A, having a clamping upright or bar, a, and slotted base box part *d*, the movable section A', fitted to slide

on and along or over the slotted base box part *d*, and having a clamping upright or bar, *a'*, and projection *l*, arranged to enter said box part, and the rod *f* and spring *k*, also under cover of the box part, substantially as shown and described.

402,792. APPARATUS FOR PRINTING IN IMITATION OF TYPE-WRITING. CHARLES H. ADAMSON, Muncie, Ind. Filed Jan. 30, 1888. Serial No. 262,415. (No model.)



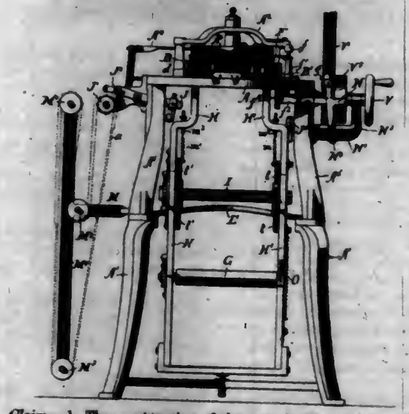
Claim.—1. The combination, with a form of type, of a sheet, layer, or film of silk or equivalent material placed over the face of the type and secured between the lines of said type, substantially as shown and described, for the purposes set forth.

2. The combination, with a form of type, of an inked ribbon or layer of silk placed over the face of the type and secured between the lines of said type, substantially as shown and described, for the purpose set forth.

3. The combination, with a form of type, of a layer of silk or equivalent material placed over the form and secured between the lines of type by passing the said layer of silk or equivalent material under the lead between each line of type, substantially as described.

4. The combination, with a form of type, of a sheet, layer, or film of silk or equivalent material, rigidly secured over the face of the type and adapted to receive the ink from an inking-roller when the form is placed in a printing-press, substantially as shown and described, as and for the purpose set forth.

402,793. CIRCULAR RIB-KNITTING MACHINE. HIRAM P. BALLOU, Bristol, Pa., assignor to Lewis Jones, same place. Filed Mar. 5, 1888. Serial No. 266,121. (No model.)



Claim.—1. The combination of the cam-ring having the operating-cams mounted in removable segments with the intermediate segments at the level of the needle-heels, and the guard-pieces mounted above said intermediate segments, substantially as described.

2. The combination of the belt-shifter having a spring which normally tends to throw it toward the loose pulley, the pivoted link and the detent devices for holding the belt-shifter upon the driving-pulley, the drop-stem mounted above said pivoted link, and the pivoted lever engaging said drop-stem to retain it in its upper position maintained in close proximity to the travel of the loops upon the needles, whereby any abnormal prominence of a loop will actuate said lever to release the drop-stem, and thereby disengage the pivoted link and permit the shifting of the belt, substantially as set forth.

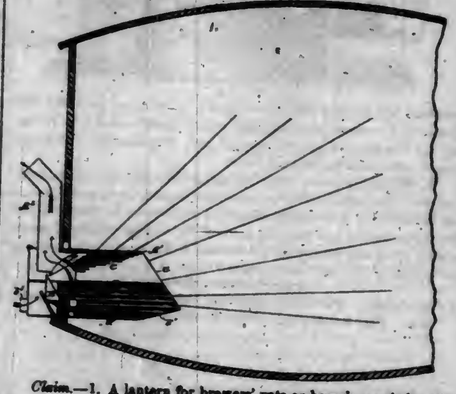
3. The combination of the belt-shifter normally held toward the loose pulley by its spring, a pivoted link and the detent devices by which said link is adapted to hold the belt-shifter upon the driving-pulley, and the handle of said belt-shifter provided with an endwise-movable rod for disengaging the link and permitting the belt to be shifted, substantially as set forth.

4. The combination, with the tension-rolls I I', geared together at one end and having a pawl-and-ratchet device at the other end, said pawl being provided with an actuating device, substantially as set forth, of the pair of supports *t t'*, the frames H H', having slots in which said supports are mounted, and the compensating-springs *m m'* and O O', attached to said supports.

5. The combination, with the tension-rolls I I', mounted in vertically-movable supports *t t'*, and having a pawl and ratchet, of an actuating-lever for said pawl, a cam adapted to operate said lever, and a pivoted link arranged above one of said supports and connected with the pawl-actuating lever, whereby the rise of the support beyond a definite point will lift the lever clear of the cam, substantially as set forth.

6. The combination, with the tension-rolls, the actuating-lever therefor, and the fabric-roller having a pawl-and-ratchet device for actuating it, of the intermediate link connecting said first-mentioned lever with the pawl of the fabric-roller, whereby said fabric-roller is revolved in conformity with the movements of the tension-rolls, substantially as set forth.

402,794. LANTERN. FERNANDO BARNS, New York, N. Y. Filed Feb. 20, 1888. Serial No. 264,614. (No model.)



Claim.—1. A lantern for brewers' vats or barrels, consisting of a frame-work having glass front and rear upper portion, a suitable air-inlet in its rear and an air-outlet from its rear upper portion, whereby the main portion of the said reflector may be inserted through an opening in said vat or barrel, substantially as described.

2. A lantern for brewers' vats or barrels, consisting of a frame-work having glass front and upper portion, suitable air inlet and outlet, and corrugated glass lining in its bottom, substantially as described.

3. A lantern for brewers' vats, consisting of a frame-work having glass front and upper portion, suitable air inlet and outlet, corrugated reflectors in its bottom, the forward portion of which is upwardly inclined, a light-holder, and reflectors behind said light-holder, substantially as described.

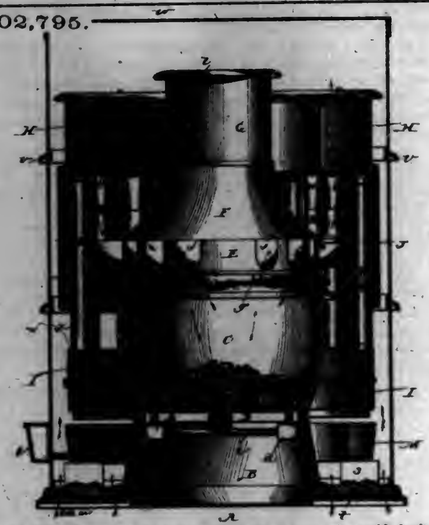
402,795. AIR-HEATING FURNACE. JOHN R. BARKER, Chicago, Ill. Filed Nov. 27, 1888. Serial No. 292,099. (No model.)

Claim.—1. In an air-heating furnace, the combination, with fire-pot C and combustion-chamber composed of the parts E and F, the former being provided with elbow-pipes *j* and nozzles *k*, extending upward, of the ring-chamber placed on a higher level than the combustion-chamber and having downwardly-extending nozzles *m*, connecting with nozzles *k* to form communicating flues, and the ring-chamber I, surrounding the fire-pot, and the pipes J, connecting the chambers H and I, as set forth.

2. In an air-heating furnace, the combination, with fire-pot C and combustion-chamber E F, the former being provided with elbow-pipes *j* and nozzles *k*, of ring-chamber H, located above the combustion-



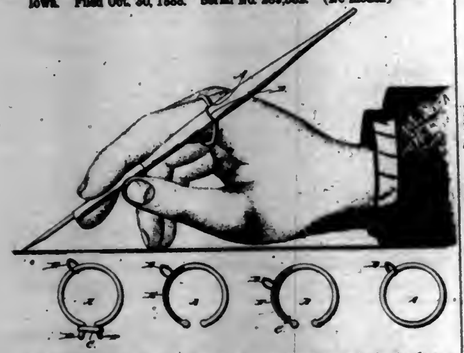
402,795.



chambers and pierced with air-circulating tubes *r*, and provided with nozzles *m*, to connect with nozzles *k*, and of ring-chamber I, surrounding the fire-pot and communicating with ring-chamber H through pipes J, all substantially as set forth.

3. The combination, with an ash-pit, a fire-box, combustion-chamber, and ring-chambers surrounding said fire-box and combustion-chamber, of a horseshoe-shaped water-receptacle placed below the ring-chambers and partially surrounding the ash-pit, and a spout-casting, Q, on the outside of the furnace-shell, and a pipe connecting the trough M and said casting, as set forth.

402,796. PEN GUIDE OR REST. ISAAS BERGMANN, Fort Madison, Iowa. Filed Oct. 30, 1888. Serial No. 289,532. (No model.)



Claim.—1. In a pen-guide, the ring or band to encircle the finger, and the elastic holder on the ring or band to receive the pen-holder, substantially as set forth.

2. In a pen-guide, the combination of the open-sided ring or band having eyes or knobs on its free ends, and the ring-shaped holder on the ring or band to receive the pen-holder, substantially as specified.

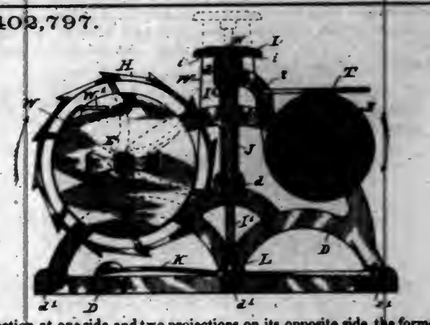
3. In a pen-guide, the combination, with a ring or band to encircle the finger, of an elastic holder loosely connected to and sliding on the ring or band and adapted to receive the pen-holder, substantially as specified.

4. In a pen-guide, the combination of a split ring or band, the elastic loop or ring C, engaging the free ends of the ring or band to draw them together, and the elastic ring-shaped holder connected to the ring or band to receive the pen-holder, substantially as specified.

402,797. RECORDER FOR CASH-DRAWERS. WILLIAM I. BLOOD, Franklin Falls, N. H. Filed Jan. 3, 1889. Serial No. 295,909. (No model.)

Claim.—1. The combination, with the case, detachable mechanism carrying a roll of paper, and a ratchet-wheel for moving the same, of a sliding frame having a vertical and horizontal slots and a pawl for engaging the teeth of said ratchet-wheel, a bell-crank located between said case and cash-drawer and provided with a single projection at one side and two projections on its opposite side, the former engaging with the vertical slot of said sliding frame and the latter with a suitable cam upon the cash-drawer, the said cash-drawer, and its cam, all substantially for the purpose set forth.

402,797.



2. In an attachment to money-drawers, the combination, with the counter having a slot provided with a spring-cover, of a vertically-movable frame for elevating the paper upon which to record cash transactions, and mechanism whereby said spring-cover will fly open and expose to view the said paper each time the money-drawer is opened.

3. The combination, with the counter provided with an opening, as shown, of a frame in which is mounted a roll of paper, its winding-drum, means for moving said winding-drum in connection with a cash-drawer, and a vertically-adjustable frame adapted to carry the paper (upon which to make a record) upward within said opening in said counter.

4. The combination of the case and a horizontally-movable frame thereon, the counter having an opening and a latch pivoted therein and operated by said movable frame or a projection thereof, and a suitable spring-cover for said opening in said counter, having on the under part of its free end a slotted lug for engaging said latch when said cover is closed.

402,798. COVERING FOR BOILERS. GEORGE R. BOARDMAN, Chicago, Ill. Filed Jan. 15, 1889. Serial No. 296,443. (No model.)



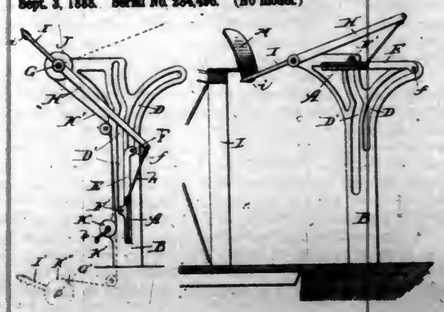
Claim.—1. A covering for steam boilers, pipes, and the like, comprising a sheet, A, formed of a woven-wire back having non-conducting material secured upon it by strands of the sheet of woven wire, substantially as described.

2. A covering for steam boilers, pipes, and the like, comprising a sheet, A, formed of a woven-wire back having non-conducting material secured upon it by strands of the sheet of woven wire, and the ends of strands extending at opposite extremities of the sheet beyond the superimposed non-conductive material and affording fastening means, substantially as described.

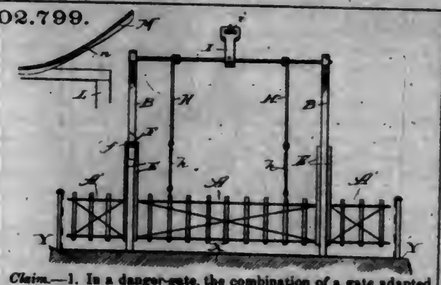
3. A covering for steam boilers, pipes, and the like, comprising a sheet, A, formed of a woven-wire back, B, having mineral wool, C, secured upon it by strands of the woven wire forming the back, substantially as described.

4. A covering for steam boilers, pipes, and the like, comprising a sheet, A, formed of a woven-wire back, B, having sections *r* of mineral wool, C, secured upon it by strands of the woven wire forming the back, substantially as described.

402,799. DANGER-GATE. HENRY BODDIKER, Chicago, Ill. Filed Sept. 3, 1888. Serial No. 284,496. (No model.)



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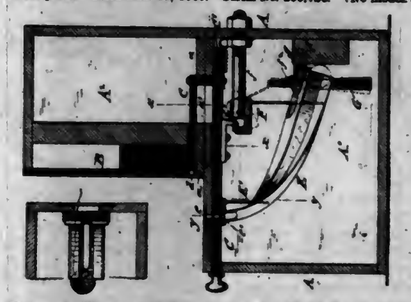


Claim.—1. In a danger-gate, the combination of a gate adapted to be raised and lowered, posts having guides therein, projections on said gate entering said guides and controlled thereby, and a rotatory rod having a lever thereon secured at one end to said rod and connected at the other end thereof to the gate, whereby the rotation of said rod will raise said gate in a path determined by the said guides and projections entering therein, all substantially as described.

2. In a danger-gate, the combination of a gate adapted to be raised and lowered, posts having guides therein projections on said gate controlled by said guides, a rotatory rod having a lever rigidly secured at one end thereof to said rotatory rod and at the other end secured to said gate, and a lever secured to said rotatory rod and adapted to engage with a cam placed on a draw-bridge in the operating of said draw-bridge, whereby, when the said bridge is opened and closed, the said gate is raised and lowered in a path determined by said guides and projections controlled thereby, all substantially as described.

3. In a danger-gate, the combination of a gate, A A', posts B B, having guides D D' therein, projections *f f* on said gate, a rod, G, having lever I thereon adapted to be operated by a cam, M, secured on a draw-bridge, and levers H H, secured at one end to said rod G and at the other end to said gate A A', whereby the opening and closing of the draw-bridge will remove said danger-gate from said roadway or replace the same, all substantially as described.

402,800. AUTOMATIC VENDING APPARATUS. PERCY R. BOSWORTH, Brooklyn, N. Y., assignor of one-half to Christian Baechtold, same place. Filed Feb. 13, 1889. Serial No. 299,736. (No model.)



Claim.—1. The combination of a merchandise-delivery chute, a guided and spring-actuated delivery-slide having a recessed rear part vertically in line with the delivery-chute, a coin-chute attached to the delivery-slide vertically below a coin-slot in the casing, a locking-lever below the delivery-slide, the shank of which is guided in the lower end of the coin-chute, and a fixed lug at the under side of the delivery-slide that is engaged or released by the latch of the locking-lever, substantially as set forth.

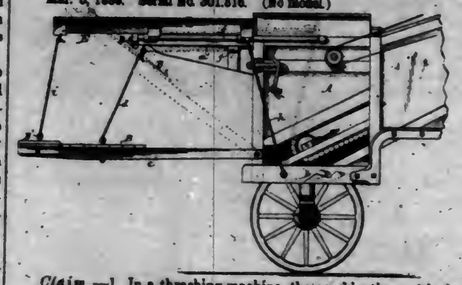
2. The combination of a guided and spring-actuated delivery-slide having a slot registering with a coin-slot in the casing of the apparatus, a coin-chute attached to the delivery-slide below the slot of the same, said chute being twisted so that its lower end assumes a vertical position, a fulcrumed locking-lever having a latch, a shank extending into the recessed lower end of the coin-chute, and a lug at the under side of the delivery-slide, substantially as set forth.

3. The combination, in an automatic vending apparatus, of a guided and spring-actuated delivery-slide having a slot registering with the coin-slot of the casing of the apparatus, a coin-chute attached to the delivery-slide below the slot of the same, said coin-chute being twisted so that its lower end assumes a vertical position, and a pendent gate hinged to the delivery-slide back of the upper transverse part of the coin-chute, so that its lower end forms contact with the same and serves to arrest any coin, wire, or other device introduced for tampering with the releasing mechanism, substantially as set forth.

4. The combination of a casing, a delivery-slide guided in said casing, a twisted coin-chute attached at its upper end to the delivery-slide and having a lower vertical end, a fulcrumed locking-latch engaging a fixed lug of the delivery-slide and having a wire shank extending into the lower vertical end of the coin-chute, and a pivoted guard-arm that prevents the shank of the locking-lever from passing to the outside of the coin-chute, substantially as set forth.

5. The combination of a casing having a merchandise-delivery chute in its upper part and a coin-slot, a guided and spring-actuated delivery-slide having a U-shaped and recessed rear part and a corresponding coin-slot, a twisted coin-chute attached to the delivery-slide, a locking-lever having a latch at its upper end and a wire shank at its lower end, said wire shank engaging the recessed lower end of the coin-chute, and a lug at the under side of the delivery-slide for locking or releasing the slide, substantially as set forth.

402,801. THRASHING-MACHINE. LEVI BROWNSON, Buffalo, N. Y., assignor of one-half to the Pitts Agricultural Works, same place. Filed Mar. 5, 1888. Serial No. 301,316. (No model.)



Claim.—1. In a thrashing-machine, the combination, with the frame and the thrashing-cylinder, of a feed-table arranged adjacent to the thrashing-cylinder and made movable lengthwise of said frame, substantially as set forth.

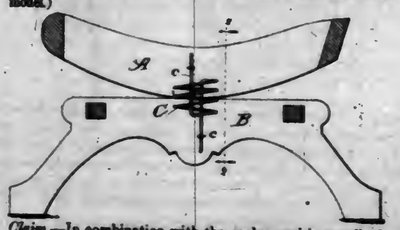
2. In a thrashing-machine, the combination, with the main frame and a platform pivoted thereto and capable of swinging upwardly, of a feed-table arranged above said platform and made lengthwise movable on the frame, whereby the table may be shifted out of the way to permit the platform to be raised, substantially as set forth.

3. In a thrashing-machine, the combination, with the main frame and a platform pivoted thereto and capable of swinging upwardly, of a feed-table arranged above said platform and capable of sliding lengthwise of the machine, horizontal rods attached to the frame of the machine upon which said table slides, and a support whereby the table is held in a horizontal position, substantially as set forth.

4. In a thrashing-machine, the combination, with the main frame and a platform pivoted thereto and capable of swinging upwardly, of a feed-table composed of hinged sections and capable of sliding lengthwise of the machine, horizontal rods attached to the platform of the machine upon which said table slides, and a support whereby the table is held in a horizontal position, substantially as set forth.

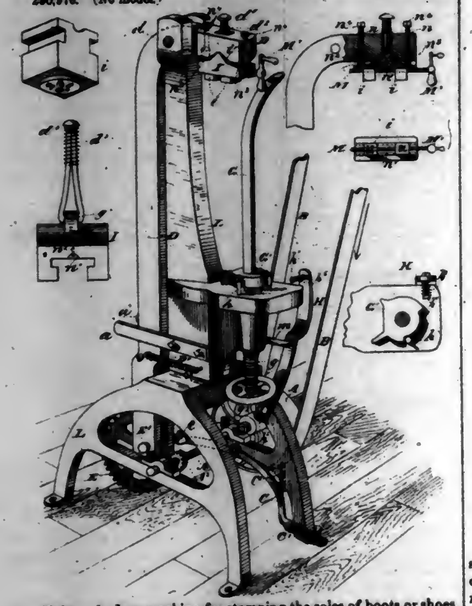
5. In a thrashing-machine, the combination, with the main frame and a platform pivoted thereto, of a feed-table, E, arranged above said platform and capable of sliding lengthwise of the machine, and an inclined supporting-rod, *k*, attached at its upper end to the feed-table and pivoted at its lower end to the frame of the machine, substantially as set forth.

402,802. ROCKING-CHAIR ATTACHMENT. WILLIAM I. BUNKER, Chicago, Ill. Original application filed June 28, 1887, Serial No. 242,797. Divided and this application filed Oct. 2, 1888. Serial No. 287,087. (No model.)



Claim.—In combination with the rocker and base-rail of a platform rocking-chair, a compressible connecting spiral spring having the end portion of its wire at the bottom extending upwardly and the end portion of its wire at the top extending downwardly, and the extending end portions bent at right angles to and inserted in the rocker and base-rail and held by staples or similar fasteners, substantially as described.

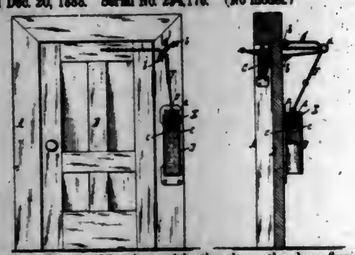
402,803. MACHINE FOR STAMPING SOLES OF BOOTS OR SHOES. MICHELLE E. BYRON, Pepperell, Mass., assignor of one-half to Alcide Provencher, Manchester, N. H. Filed Nov. 15, 1888. Serial No. 290,976. (No model.)



Claim.—1. In a machine for stamping the soles of boots or shoes, the main block I, oscillating in the slot *i'* and provided with the adjustable equalizing-springs n^3 n^3, the die-blocks *i i*, moved by means of the screw M, which is provided with a right and left thread upon each half of the screw, respectively, in combination with the arm D, and the standard G, constructed and arranged substantially as described and shown, and for the purposes set forth.

2. In a machine for stamping the soles of boots or shoes, in combination, the arm D and eccentric gear E, both attached to the shaft E', the shifter C, provided with the spring C', the gear A^3, attached to the shaft A', the spring D', the rod H, equipped with the arm *h'* and connected with the arm D by the adjustable rod *m*, the cam G', made fast to the standard G, said standard being provided with the adjustable screw *g* and with the cushioning-spring *g'*, the whole constructed and arranged substantially as described and shown, and for the purposes set forth.

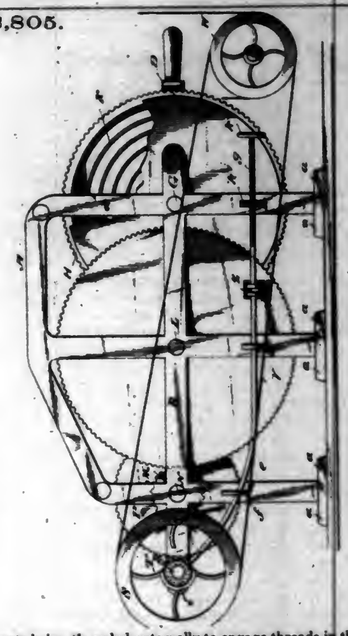
402,804. DOOR-CHECK. ROBERT H. CHERRY, Jersey City, N. J. Filed Dec. 20, 1888. Serial No. 294,176. (No model.)



Claim.—The combination, with the door, the door-frame, the fluid-containing cylinder on the door-frame, and the plunger in the cylinder, of the laterally-swinging bracket pivoted to the door-frame and having an eye at its outer extremity, and the guide-chain secured about centrally between its two extremities to the eye of the bracket and having its said extremities connected, respectively, with the door and the plunger, substantially as described.

402,805. SEWING-MACHINE MOTOR. WILLIAM H. CLAYTON and CHARLES A. LOUDD, Atlanta, Ga. Filed June 20, 1888. Serial No. 277,616. (No model.)

Claim.—In a sewing-machine motor, substantially as described, the combination, with the main frame for supporting the driving-gear, having an internally-threaded bearing, of the band-pulley shaft and the brake-rod composed of two parts united by a swivel, one of the said parts being threaded externally to engage threads in the bearing on the main frame and the other part provided with a friction-eye to receive the said band-pulley shaft, substantially as specified.



402,806. SHUTTER FOR PHOTOGRAPHIC CAMERAS. RALPH D. CLEVELAND and CHARLES A. HOFFMAN, Minneapolis, Minn. Filed May 23, 1888. Serial No. 274,771. (No model.)



Claim.—1. In a photographic-camera shutter, the combination of the two shutters arranged one over the other and provided with openings adapted to register with each other, pivots arranged at unequal distances from said openings and supporting said shutters, and a pin engaging both of said shutters at a point between said pivots, whereby as the pin is moved in either direction the said shutters are moved upon their pivots in opposite directions, substantially as described.

2. In a photographic-camera shutter, the combination, with the pivoted shutters, of the cylinder 3, the follower 19, arranged within said cylinder and provided with a pin, 15, engaging both of said shutters at a point between their pivots, a spring, 31, connected with said follower, and the adjustable brace 37, adapted to be engaged with said spring, for the purpose specified.

3. The combination, in a photographic-camera shutter, of a pneumatic cylinder controlling the operating mechanism of said shutter, a bulb connected with said cylinder, and a cut-off valve between said cylinder and said bulb, whereby communication between said bulb and said cylinder may be cut off and the air confined in said cylinder, for the purpose set forth.

4. The combination, in a photographic-camera shutter, with the movable shutters, of the cylinder 3, the follower 19, arranged therein and connected with said shutters, the dog 27, arranged to engage said follower, and the piston 22, arranged within said follower and provided with the finger 32, adapted to release the dog 27 as the piston is moved within the follower, substantially as described.

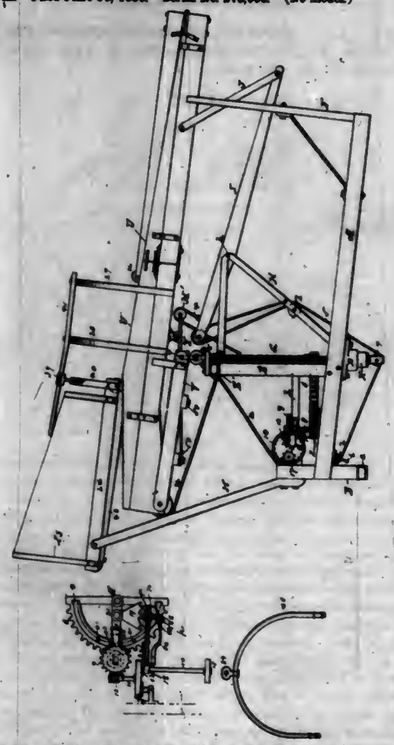
5. The combination, in a photographic-camera shutter, with the pivoted shutters, of the cylinder 3, the air-bulb connected therewith, the follower arranged within said cylinder and connected with said shutters, and the pivoted stop 34, adapted to be arranged in line with said follower, substantially as described.

6. The combination, in a photographic-camera shutter, with the movable shutters, of the cylinder 3, the air-bulb connected therewith, a follower in said cylinder and connected with said shutters, and a lock holding said follower when it is drawn back or forced out in said cylinder.

7. The combination, in a photographic-camera shutter, with the pivoted shutters, of the cylinder 3, the air-bulb connected therewith, the follower 19, arranged within said cylinder and connected with both of said shutters, and the pivoted dog 27, adapted to engage said follower and lock it either when it is forced outward in said cylinder or retracted therein, substantially as described.

8. The combination, in a photographic-camera shutter, with the movable shutters, of the cylinder 3, the follower 19, arranged therein and connected with said shutters, the spring 31, connected with said follower, a locking device engaging said follower and holding it in its retracted position against the tension of the spring, the piston 22, arranged within said follower and adapted to move therein, and provided with a releasing device engaging the lock which holds said follower, substantially as described.

402,807. STRAW-STACKER. HENRY M. COFFER, Bunker Hill, Ill. Filed June 30, 1888. Serial No. 278,008. (No model.)



Claim.—1. In a straw-stacker, the combination, with a frame, of a stacking-elevator, a straw-transferring attachment, the forward end of which is supported on the stacking-elevator, and levers and flexible connections whereby these parts are operated simultaneously, substantially as set forth.

2. In a straw-stacker, the combination, with a frame, of a stacking-elevator, a transferring attachment having a sliding pivotal connection therewith, and levers and cables connecting these parts, whereby they are operated simultaneously, substantially as set forth.

3. In a straw-stacker, the combination, with a frame, of a stacking-elevator and a transferring attachment, both being pivoted to the frame and having a sliding pivotal connection with each other, and arms, levers, and cables whereby the elevator and transferring attachment are operated simultaneously, substantially as set forth.

4. In a straw-stacker, the combination, with a frame and a rocking shaft supported therein, of a stacking-elevator supported on said rocking shaft, and levers, arms, and cables connected with this elevator, whereby its inclination is regulated, said levers and arms also being supported by the rocking shaft, substantially as set forth.

5. In a straw-stacker, the combination, with a frame and a stacking-elevator having pivotal connection therewith, of a transferring attachment consisting, essentially, of sides, wind-sheet, and elevating-belt, substantially as set forth.

6. In a straw-stacker, the combination, with a frame and a stacking-elevator having pivotal connection therewith, of a transferring attachment having a swivel-block therein, bows secured to the elevator, and a rod secured to these bows, said rod having a sliding connection with the swivel-block, substantially as set forth.

7. In a straw-stacker, the combination, with a frame, of a stacking-elevator having a swinging axial connection with the frame and a pivoted connection with its axis, and a transferring attachment having a sliding pivotal connection with the stacking-elevator, substantially as set forth.

8. In a straw-stacker, the combination, with a frame, a rocking shaft supported therein, and a cross-piece secured to this shaft, of a stacking-elevator pivotally supported upon the cross-piece, and levers connected with the elevator and with the rocking shaft, whereby the inclination of the former is regulated, substantially as set forth.

9. In a straw-stacker, the combination, with a frame and a rocking shaft supported therein, said shaft having a brace secured thereto and also a cross-piece secured to its upper end, of a stacking-elevator, arms pivotally connecting the elevator at one end to the cross-piece, a lever pivoted in the brace, a cable loosely connecting the arms with the lever, and a cable whereby the lever is operated, substantially as set forth.

10. In a straw-stacker, the combination, with a frame, a rocking shaft, the latter having a cross-piece on its upper end and a brace projecting from the rocking shaft, of a stacking-elevator, arms pivotally connecting the forward end of this elevator with the cross-piece on the rocking shaft, an arm projecting from these pivotal arms and provided with a pulley, a lever pivoted in the brace, this lever having a pulley in one end and a pivotal connection at the opposite end with the elevator, a cable secured to the rocking shaft and the lever and passed over the pulley in the end of the projecting arm, also a cable secured at one end to the brace, passed over the pulley in the lever, then over a pulley in the brace, a swivel-pulley in the lower end of the frame, and finally to a drum, where it is wound or unwound to regulate the inclination of the elevator, substantially as set forth.

11. In a straw-stacker, the combination, with a frame, a rocking shaft supported therein, and a stacking-elevator pivotally supported on said shaft, of automatically-swinging gear for periodically turning the elevator in opposite directions, substantially as set forth.

12. In a straw-stacker, the combination, with a frame and a rock-shaft supported therein, the latter having a segment or half-wheel thereon, of a gear-wheel meshed therewith and a shifting-lever arranged to receive motion from the segment, whereby the motion of the gear-wheel is changed, substantially as set forth.

13. In a straw-stacker, the combination, with a frame, a rocking shaft supported therein, said shaft having a segment thereon, of a transverse shaft having a worm-gear connection with the rocking shaft, said transverse shaft having an internal toothed gear-wheel on one end and a gear-wheel, 17, meshed with the teeth of this wheel, and a second transverse shaft having a gear-wheel on one end and an arm operated by the segment adapted to automatically slide this gear-wheel back and forth in engagement with the gear-wheel 17 or the teeth of the internal gear-wheel, substantially as set forth.

14. In a straw-stacker, the combination, with a frame, a rocking shaft supported therein, said shaft having a segment keyed thereon, and a transverse shaft having a worm through which motion is communicated to the rocking shaft, of an arm operated by the segment and connected gearing for periodically changing the motion of the rocking shaft, substantially as set forth.

15. The combination, with a shaft having an internal toothed gear-wheel thereon and a gear-wheel, 17, the teeth of which are meshed with the teeth of the internal toothed gear-wheel, of a sliding gear-wheel, an arm for moving said wheel into engagement with the teeth of the internal toothed gear-wheel or the gear-wheel 17, and means for oscillating this arm at predetermined intervals, substantially as set forth.

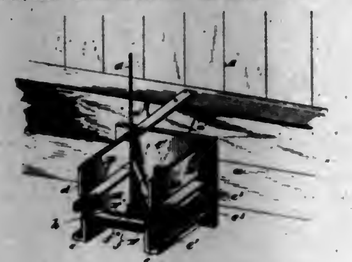
16. The combination, with a shaft having an internal toothed gear-wheel thereon and a gear-wheel, 17, the teeth of which are meshed with these teeth, of a sliding gear-wheel, an integral segment and arm adapted to operate the sliding gear-wheel, and means for oscillating this segment and arm, substantially as set forth.

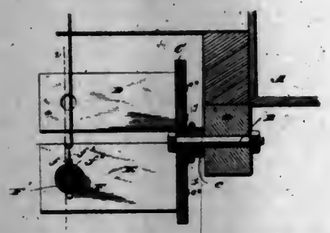
17. In a straw-stacker, the combination, with a frame, a rocking shaft supported therein, this shaft having a toothed segment keyed thereon, a spindle having a gear-wheel keyed thereon, the teeth of which are meshed with the teeth of the segment, and a worm-wheel also keyed to this spindle, of a transverse shaft having an internal toothed gear-wheel keyed to one end and a worm at the other end meshed with the spindle worm-wheel, a gear-wheel, 17, the teeth of which are meshed with the teeth of the internal toothed

gear-wheel, a sliding gear-wheel, a crank-wheel connected therewith, a spindle journaled in close proximity to the toothed segment, a combined segment and arm thereon at right angles to each other, and bolts adjustably secured in the toothed segment adapted by their abutment against the arm to change the motion of the stacking apparatus, substantially as set forth.

18. In a straw-stacker, the combination, with a frame, a rocking shaft supported therein, this shaft having a segment keyed thereon, a spindle having a gear-wheel keyed thereon, the teeth of which are meshed with the teeth of the segment, and a worm-wheel also keyed to this spindle, of a transverse shaft having an internal toothed gear-wheel keyed to one end and a worm at the other end meshed with the spindle worm-wheel, a gear-wheel, 17, the teeth of which are meshed with the teeth of the internal toothed gear-wheel, a sliding gear-wheel, a crank-wheel having notches in its periphery at diametrically-opposite points, a pawl for engaging said notches, a link connecting the crank-wheel with the sliding gear-wheel, a pinion keyed on the shaft with the crank-wheel, and a combined toothed segment and arm, the former having teeth meshed with the teeth of the pinion and the latter having laterally-projecting springs and bolts adjustably secured in the toothed segment on the main rocking shaft, substantially as set forth.

402,808. CAR-COUPLING. ELLERY F. COFFIN, Muirkirk, Md. Filed Mar. 14, 1888. Serial No. 303,243. (No model.)





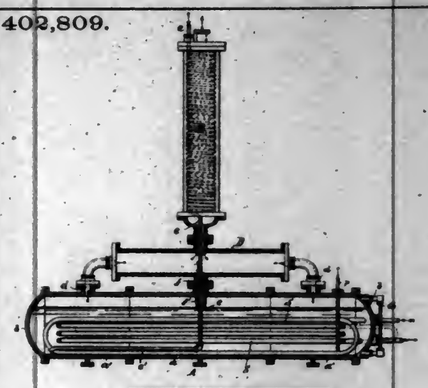
Claim.—1. The combination, substantially as described, of a car, a draft bar or bolt secured thereto, a cross-head adapted to rotate on said bolt and provided at its ends with link-plates and grooved arms, spring-pressed coupling-pins adapted to protrude through said arms, and spring-pressed followers arranged to hold the pins normally in their retracted position.

2. The combination, with a car and its draft-bolt, of a cross-head mounted to rotate on said bolt, means to lock the cross-head against rotation, link-plates and grooved arms projecting forward from the outer ends of the cross-head, a slotted cylinder secured between the outer ends of the grooved arms, spring-pressed coupling-pins seated within said cylinder and connected at their inner ends to a pull-rod, and spring-pressed followers adapted to close the outer ends of the cylinder or to be moved therefrom.

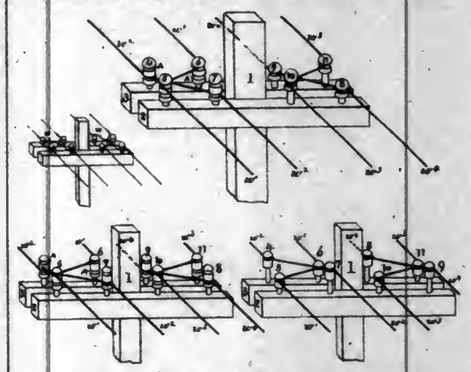
3. The combination, with a car, of a coupling-head provided with grooved parallel arms, a slotted cylinder having its ends seated in openings in said arms, spring-pressed coupling-pins seated in the outer ends of said cylinder, a pull-rod, chains connecting the inner ends of the pins with the pull-rod, and latches secured to the cylinder and adapted to engage shoulders on the pins to hold them against the outward pressure of their springs, substantially as described.

402,809. REFRIGERATING APPARATUS. NATHAN W. CONDICT, Jr., Jersey City, N. J. Filed July 23, 1888. Serial No. 280,848. (No model.)

Claim.—In an apparatus for refrigerating, the combination of a still composed of a single horizontal cylinder with a gas-reservoir having a hollow leg supporting the reservoir and resting on the top of the said cylinder and communicating therewith, and passages forming communications between the ends of the cylinder and the ends of the reservoir, substantially as described.



402,810. SUPPORTING AND CROSS-CONNECTING ELECTRIC WIRES. WILLIAM J. DENVER, Boston, Mass. Filed Nov. 24, 1888. Serial No. 291,739. (No model.)



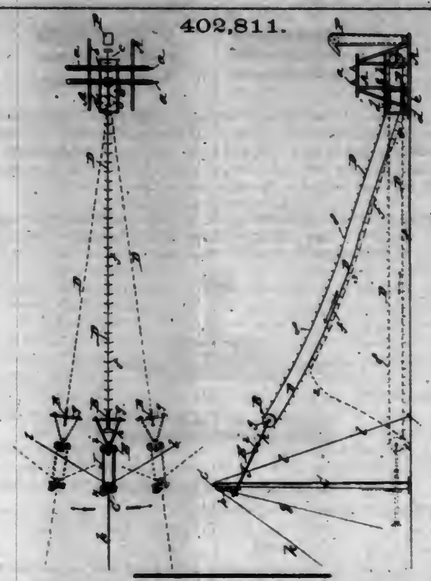
Claim.—1. In a system of electric pole lines, the combination of two line-wires stretched parallel to each other, and crossed so as to exchange places at suitable intervals, with means at the said crossing-places for effecting the said crossing without breaking the continuity of the wire, said means comprising a double cross-arm, insulating-supports for each wire and to which each wire is fastened on both cross-arms, the said supports being constructed, as shown, so that those in the same line of continuity are at different levels, while those diagonal to one another are at the same level, the said line-wires being each respectively attached to the two supports, which are diagonal to each other, substantially as and for the purposes described.

2. The combination, substantially as hereinbefore described, in a system of electric line-wires mounted on poles, of the two wires of a metallic circuit, w' and w^2, the cross-arms 2 and 3 opposite one another to a pole, 1, a support consisting of a pin and insulator on each of the said cross-arms for each of the said wires, two of the said supports having long and the remaining two having short pins, and being so disposed that one of the long pins and one of the short pins shall be fixed to each cross-arm and that in each case a long pin on one arm shall be opposite a short pin on the other, but diagonal to the pin of like length with itself, and the two wires being attached one to the two short-pin supports and the other to the two long-pin supports, and being thereby crossed on different horizontal planes and caused to exchange places without impairing their continuity and without danger of contact, for the purposes specified.

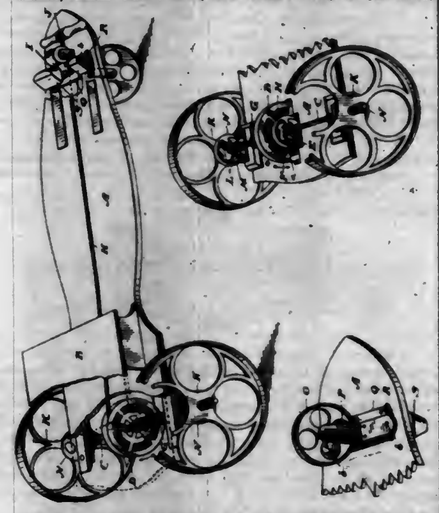
402,811. REVERSIBLE LOADING AND UNLOADING CONVEYER. JAMES M. DODGE, Philadelphia, Pa., assignor to the Dodge Coal Storage Company, Naugatuck, Conn. Filed Oct. 15, 1887. Renewed Mar. 20, 1889. Serial No. 304,053. (No model.)

Claim.—In an apparatus or contrivance for conveying coal and other material from a given source of supply and forming the same into an extensive heap or pile, and for also reconveying such matter from the pile or heap back to a given point or locality for transportation, the reversible chain conveyer, in combination with means whereby said conveyer may be bodily reversed, substantially in the manner and for the purpose hereinbefore set forth.

402,811.



402,812. HAND-PROPELLED VEHICLE. JOHN DRAPER, Whitby, Ontario, Canada. Filed Feb. 27, 1888. Serial No. 265,392. (No model.)



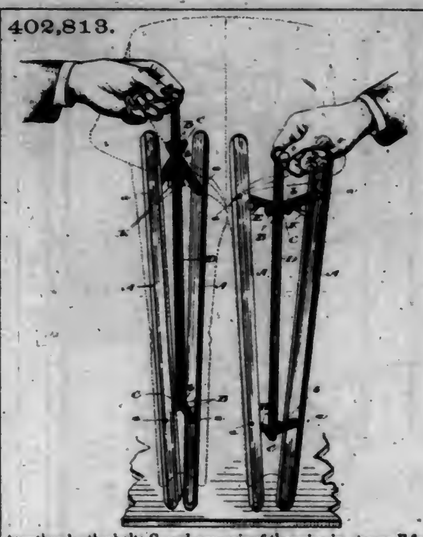
Claim.—1. A body, A, having a seat, B, fixed to it on one end, and a bracket, P, carrying the guide-wheel O, pivoted on the bottom side of its other end, the foot-blocks S, fixed to the bracket P, in combination with the rubbing-block Q, attached to the bottom of the body, a cord, H, carried around the pulley I and wound around the pulley D, loosely journaled on the axle C, and connected to the said axle by a pawl and ratchet, and operated by a spring, G, connected at one end to the pulley D and at its other end to the body A, substantially as and for the purpose specified.

2. The combination, with the body and the rubbing-block Q, attached to the bottom thereof, of the bracket P, pivoted on the bottom of the body and carrying the guide-wheel and having its head in contact with the rubbing-block, the pins *b*, fastened to the bracket and passed through slots in said body, and the foot-blocks S, attached to said pins, substantially as shown and described.

402,813. TROUSERS-STRETCHER. JOHN DRAPER, Whitby, Ontario, Canada. Filed Sept. 27, 1888. Serial No. 286,564. (No model.)

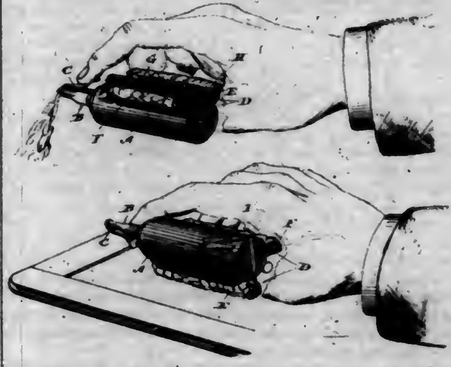
Claim.—A pair of bars, A, connected together by toggle-jointed links formed by two pairs of plates, B, pivoted at *a* and connected

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together by the bolts C, and one pair of them having horns E formed on them, as described, in combination with the rod D, pivoted on the bolt C, arranged to operate the bars A, substantially as and for the purpose specified.

402,814. CHILD'S SLATE-CLEANER AND PENCIL HOLDER AND SHARPENER. JOHN DRAPER, Whitby, Ontario, Canada. Filed Feb. 23, 1889. Serial No. 300,891. (No model.)



Claim.—1. A slate-cleaner consisting of a bottle, A, provided with a plug, B, having a small opening in it protected by the spring-cap C, and one or more wings, D, designed to hold a sponge, substantially as and for the purpose specified.

2. A slate-cleaner and pencil-sharpener consisting of a bottle, A, provided with a plug, B, having a small opening in it protected by the spring-cap C, one or more wings, D, designed to hold sponges, the pencil-holder G, and sharpening-plate I, attached to the bottle, substantially as and for the purpose specified.

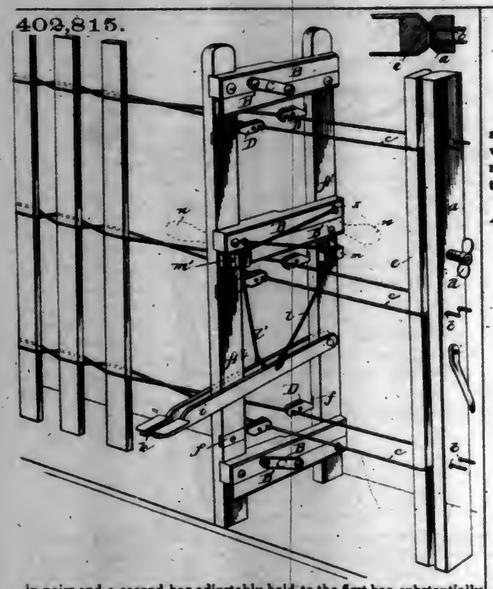
402,815. APPARATUS FOR MAKING WOOD-AND-WIRE FENCE. MILLARD F. PINE, Middletown, Md. Filed Mar. 23, 1888. Serial No. 304,442. (No model.)

Claim.—1. In combination, parallel bars moving toward and from each other, shuttle-arms projecting inwardly from each bar, coupling-connections for securing the bars together, and operating-treadles connected to the said bars for giving them movement, substantially as described.

2. In combination, parallel bars A A', shuttle-arms extending from said bars inwardly, laterally-extending arms B, connected to said bars A, couplings connecting said arms, and means for operating the bars A to move them from and toward each other, substantially as described.

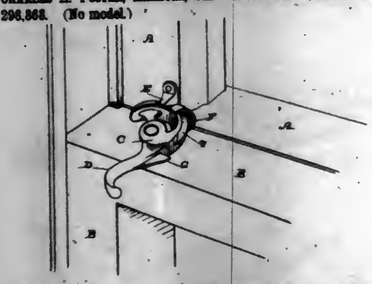
3. In combination with the described weaving device, a tension device for the wires, consisting of a bar having perforations arranged

402,815.



in pairs and a second bar adjustably held to the first bar, substantially as described.

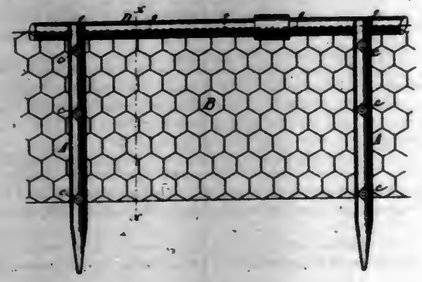
402,816. FASTENER FOR THE MEETING-RAILS OF SASHES. CHARLES H. FOSTER, Alameda, Cal. Filed Feb. 6, 1889. Serial No. 298,868. (No model.)



Claim.—1. The cam or eccentric pivoted horizontally upon the top and at one side of the lower sash and having the double-inclined V-shaped periphery, in combination with the plates secured to the upper sash and having the wide V-shaped notches which are engaged by the cam, substantially as described.

2. The cam pivoted horizontally upon the top of the lower sash and having the inclined V-shaped periphery, the correspondingly grooved or notched locking-plates secured to the upper sash, the inclosing guard or plate F, and the lug or projection from the handle of the cam, adapted to arrest the cam by contact with the guard-plate, substantially as herein described.

402,817. FENCE. EDWIN GILBERT, Georgetown, Conn., assignor to the Gilbert & Bennett Manufacturing Company, same place. Filed Feb. 25, 1889. Serial No. 301,044. (No model.)

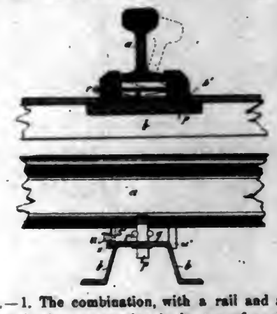


402,817.



Claim.—A fence comprising tubular posts slotted longitudinally and having hollowed-out portions at their upper ends, a wire-fence web arranged in said slots, and a top rail slotted longitudinally to receive the wire web and arranged in said hollowed-out portions of the posts and secured to the posts, substantially as specified.

402,818. SECURING RAILS TO IRON SLEEPERS WITH IRON CRAMPS. KARL L. GOEHT, Chemnitz, Saxony, Germany. Filed Sept. 29, 1888. Serial No. 286,750. (No model.)



Claim.—1. The combination, with a rail and an inverted-U-shaped sleeper, having an opening in its top, of a chair projecting through the said opening beneath, a frame beneath the rail, and means for locking the frame to the chair, substantially as described.

2. The combination, with the rail *a* and the sleeper *b*, having the opening *b'*, of the chair *p*, fitted in said opening and adapted to embrace the base of the rail, the frame *q*, intervening the chair and the base of the rail, and having the projections *u u'*, the latter engaging one side of the sleeper, the split pin *s*, entering the projection *u* and preventing displacement of the frame, and the pin *r*, for securing the frame in the chair, substantially as shown and described.

402,819. AXLE BOX AND SPINDLE. FRANK P. GORDON, Robinsonville, Pa. Filed Jan. 17, 1889. Serial No. 296,621. (No model.)



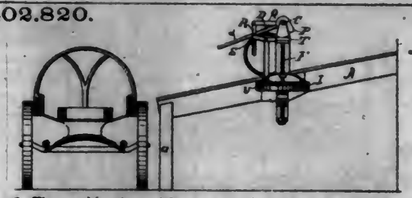
Claim.—1. The combination, substantially as described, of the outwardly-tapered axle-box provided at its inner end with a shouldered recess and on its outer end with a thread and nut, the spindle tapered to fit the box and provided on its inner end with an adjustable shouldered collar and on its outer end with an adjustable collar tapered to correspond with the taper of the spindle and with a threaded stud, and a nut fitting the threaded stud of the spindle and provided on its inner face with a circular inturned flange bearing against the nut of the axle-box, but of greater internal diameter than the external diameter of the outer threaded end of said box.

2. In combination with a hub, A, an axle-box, B, having shoulders *b* and *b'*, said box being externally screw-threaded at its outer end, and a nut for securing said box within the hub, the spindle made up with a tapered portion, D, the outer end thereof being reduced for the reception of a conical collar, E, and threaded so that the securing-nut can be attached thereto, a collar, H, having shoulders G' and *h*, formed thereon and secured to the spindle by internal screw-threads, the parts being organized substantially as shown, and for the purpose set forth.

402,820. APPARATUS FOR COUNTING PACKAGES. MATHEW GOTTFRIED, Chicago, Ill. Original application filed Jan. 24, 1885, Serial No. 153,818. Divided and this application filed Mar. 19, 1888. Serial No. 267,610. (No model.)

Claim.—1. The combination, with a way or chute for vessels or packages, of a rock-shaft adapted to be operated by the size or weight of the passing vessel, cam devices adapted to be operated from said rock-shaft, markers adapted to be operated by said cam devices, a rotating stand or table, and means for rotating the same, substantially as described.

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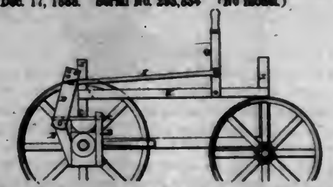


2. The combination, with a way or chute for vessels or packages, of a rock-shaft adapted to be operated by the size or weight of the passing vessel, cam devices adapted to be operated from said rock-shaft, markers adapted to be operated by said cam devices, a rotating stand or table and means for rotating the same, and a card adapted to receive the imprint from said markers, substantially as described.

3. The combination, with a way or chute for vessels or packages, of a rock-shaft adapted to be rocked by the passage of the vessel, and a recording device comprising an oscillating arm, markers carried thereby, a rotating stand or table and means for rotating the same, and a movable card to receive the imprint of the markers, substantially as described, and for the purpose set forth.

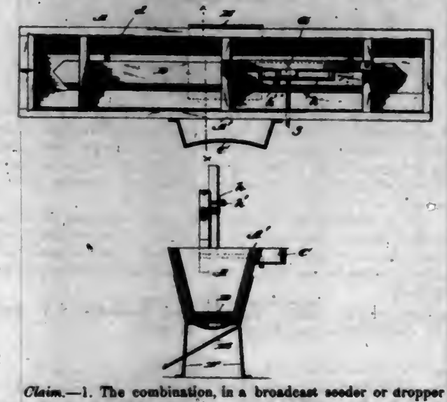
4. In an apparatus for counting vessels or packages, a recording device comprising markers, a cam for operating the markers, a card to receive the imprint, a rotating stand or table, and mechanism for rotating the stand or table, substantially as described.

402,821. WAGON-BRAKE. WILLIAM S. GRIFFIN, Atlanta, Tex. Filed Dec. 17, 1888. Serial No. 293,534. (No model.)



Claim.—The combination of the rear axle, the support B, secured thereto, the brake D, pivoted upon the support, the rod F, lever G, the standards, and the supporting-rod H, upon which the lever G is pivoted, substantially as shown.

402,822. BROADCAST SEED-SOWER. WILLIAM D. GOSEHAN, Morgantown, W. Va. Filed Feb. 23, 1889. Serial No. 301,469. (No model.)



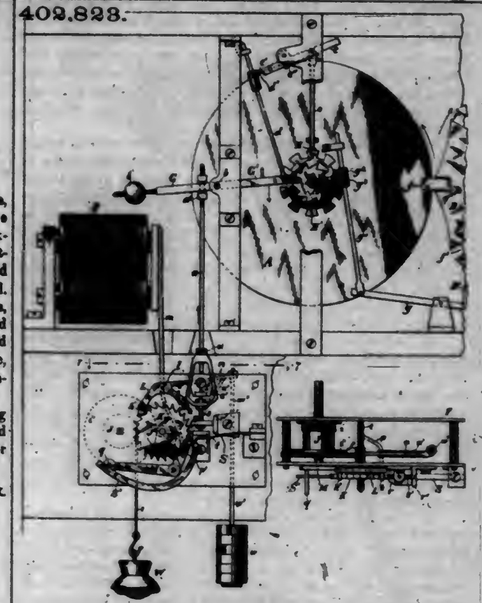
Claim.—1. The combination, in a broadcast seeder or dropper adapted to be carried by the operator, a plate, E, secured to the seed-box, said plate being bent to project the forward end thereof in front of the hopper, substantially as shown, and for the purpose set forth.

2. The combination, in a seed-dropper, of a seed box or hopper and means for operating the seed-slide, a bail, C, attached near the upper end of the seed-box, an inclined plate, E, attached to the seed-box beneath the bail C, said plate E being bent to project the forward end thereof in front of the seed-box, and legs F F, attached near the ends of the seed-box, said legs having outwardly-turned feet, the parts being organized substantially as shown, and for the purpose set forth.

402,828. ELECTRIC CLOCK. EMIL G. HAMMER, Brooklyn, N. Y. Filed Sept. 11, 1883. Serial No. 285,116. (No model.)

Brief.—Operated by an ordinary motor and the escapement controlled by an electro-magnet.

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Claim.—1. In a clock-work mechanism, the combination, with an escape-wheel, its motor, and a vibrating anchor for controlling its movement, of an impulse-tooth (distinct from said anchor) mounted to move tangentially, or approximately so, to said escape-wheel and to be displaced and released by the successive teeth thereof in their passage, whereby successive impulses are communicated to said impulse-tooth from said escape-wheel.

2. In a clock-work mechanism, the combination, with an escape-wheel, a motor imparting to said wheel a tendency to revolve, a vibrating anchor having pallets alternately engaging with the escape-teeth and serving as a stop to check the rotation of the escape-wheel, and an electro-magnet or equivalent controlling device for vibrating said anchor and thereby determining the movements of the escape-wheel, of an impulse-tooth mounted to move tangentially, or approximately so, to said escape-wheel, and to be displaced and released by the successive teeth thereof in their passage, whereby successive impulses are communicated to said impulse-tooth from said escape-wheel.

3. In a clock-work mechanism, the combination, with an escape-wheel, its motor, and a vibrating anchor for controlling its movement, of a sliding staff and an impulse-tooth carried thereby and arranged to be successively engaged and lifted by the teeth of said escape-wheel.

4. In a clock-work mechanism, the combination, with an escape-wheel, its motor, and a vibrating anchor for controlling its movement, of a sliding staff, an impulse-tooth carried thereby and arranged to be successively engaged and lifted by the teeth of said escape-wheel, and a push-rod arranged to receive the motion of said staff.

5. In a clock-work mechanism, the combination, with an escape-wheel, its motor, and a vibrating anchor for controlling its movement, of a sliding staff, an impulse-tooth carried thereby, and consisting of a plate having a flat side and a parallel guiding-face engaging said flat side for preventing the rotative displacement of the impulse-tooth.

6. In a clock-work mechanism, the combination, with an escape-wheel, its motor, and a vibrating anchor for controlling its movement, of an impulse-tooth arranged to be displaced successively by the teeth of said escape-wheel, and a spring arranged to exert a tension against said impulse-tooth in the direction of the impulse or displacement effected by the escape-wheel.

7. In a clock-work mechanism, the combination, with an escape-wheel, its motor, its restraining-anchor, and a controlling device for vibrating said anchor, of an impulse-tooth acted on by the escape-teeth, a spring arranged to exert a tension against said impulse-tooth in the direction of the impulse imparted to it by the escape-wheel, and a movable pin or shoulder connected to and moving coincidently with said anchor and arranged to press against said spring and thereby reduce its effective tension when the escape-wheel is inactive and to release the spring at the instant when the escape-wheel imparts its impulse to said impulse-tooth.

8. In a clock-work mechanism, the combination, with an escape-wheel, its motor, its restraining-anchor, and a controlling device for

vibrating the anchor, of an impulse-tooth acted on by the escape-teeth, a spring arranged to exert a tension against said impulse-tooth in the direction of the impulse, an arm forming an extension of said spring, and a movable pin or shoulder connected to and moving coincidently with said anchor and arranged to press against said arm and reduce the tension of the spring when the escape-wheel is inactive and to release the spring at the instant when the escape-wheel imparts its impulse.

9. In a clock-work mechanism, the combination, with an escape-wheel, its motor, its restraining-anchor, and a controlling device for vibrating said anchor, of an impulse-tooth acted on by the escape-teeth, a spring arranged to exert a tension against the impulse-tooth in the direction of the impulse, and a movable pin or shoulder connected to and moving coincidently with said anchor, and arranged to press against said spring and reduce its effective tension when the escape-wheel is inactive, and to release said spring upon the releasing vibration of the anchor and to partially release the spring before the release of the escape-wheel, whereby the spring commences to exert its effective tension before the impulse is given.

10. In a clock-work mechanism, the combination, with an escape-wheel, its motor, its restraining-anchor, and an impulse-tooth acted on by the escape-wheel, of a spring arranged to exert a tension against the impulse-tooth in the direction of the impulse, a retractile weight connected to said spring and acting to reduce its effective tension, and an electro-magnet or equivalent controlling device connected to said anchor and adapted when operated to vibrate the latter, and thereby release the escape-wheel, and to relieve the tension of said weight upon said spring, and thereby enable the spring to exert its tension upon the impulse-tooth at the time of the impulse.

11. The combination, with an escape-wheel, its motor, its restraining-anchor, an impulse-tooth acted on by the escape-wheel, and a spring arranged to exert a tension against the impulse-tooth in the direction of the impulse, of an electro-magnet, a retracting-weight acting against said magnet upon said anchor, a movable pin or shoulder arranged to act upon said spring and connected to said retractile weight, whereby it communicates the tension of said weight to said spring in opposition to the tension of the latter, and a connection between the magnet and said spring, whereby upon the action of the magnet the pin is retracted from said spring.

12. The combination, with an escape-wheel, its motor, its restraining-anchor, and an impulse-tooth acted on by the escape-wheel, of a spring, S, and its arm S', a pin or shoulder, q, a retractile weight arranged to press down said pin or shoulder against the tension of said spring, and an electro-magnet with its armature connected to said anchor, pin, and weight.

13. The combination, with a dial, of a ratchet-wheel connected thereto, an actuating-pawl mounted to reciprocate against the teeth of said wheel, and a lock entering notches and adapted to hold said dial stationary, with a mechanism for withdrawing said lock during the actuating-stroke of said pawl, consisting of a coacting tooth and pawl, the one connected to said actuating-pawl and the other to said lock and arranged so that the tooth shall displace and pass and release said pawl during the actuating-stroke.

14. The combination, with a dial, of a ratchet-wheel, A', a lever, G, a pawl, G', for acting on said ratchet-wheel, a locking-bolt, H, entering notches connected with said dial, a rock-lever, *e*, connected to said bolt, and a tooth, *d'*, connected to said lever G and adapted during the actuating movement to displace said lever *e* and thereby withdraw said bolt, and subsequently to release said lever *e* and thereby leave the bolt free to enter the succeeding notch.

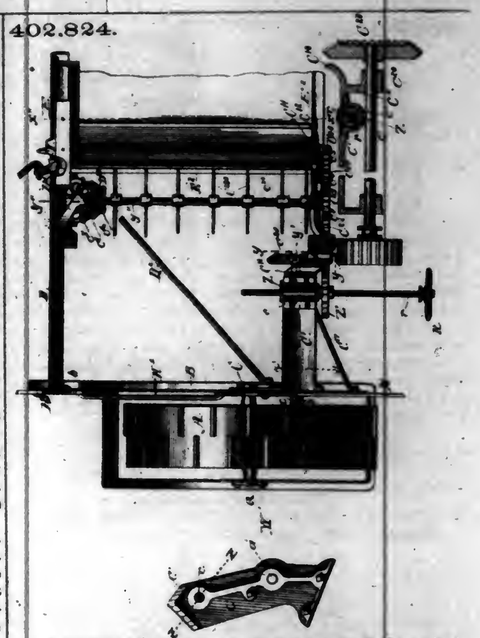
15. The combination of a unit-dial, a clock-work mechanism for imparting a step-by-step rotation thereto, a second dial for indicating higher numbers, a tooth carried by the first dial and adapted to enter notches in and thereby to turn the second dial, and a lock adapted to hold said second dial stationary with a tooth carried by the first dial and a tooth connected to said lock and adapted to be displaced by said dial-tooth to release said lock.

402,824. HARVESTING-MACHINE. PAUL HAMSON, St. Paul, Minn. Filed Sept. 5, 1887. Serial No. 248,903. (No model.)

Claim.—1. In combination with the drive-wheel, the wheel-frame, the finger-bar secured to said frame below the level of the drive-wheel axle and extended rigidly grainward, the bracket C, secured to the wheel-frame and extended first upward and then grainward, the platform-frame having the front sill on the finger-bar and the rear sill secured to the elevated and horizontally-extended part of the bracket C considerably higher than the axle, substantially as set forth.

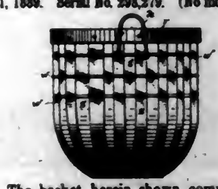
2. In combination with the wheel-frame, the finger-bar and the bracket C, both secured to the wheel-frame, and the latter having a horizontal extension grainward, the braces C' and D' extending from the inner side of the wheel-frame, the former upward and grainward to the horizontal extension of the bracket, and the latter forward and grainward to the finger-bar to constitute said parts a unitary rigid structure, substantially as set forth.

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3. In combination with the frame which encircles the drive-wheel, a bracket secured to such frame and extended upward and grainward therefrom, having a bearing for the drive-wheel axle and for the main driving-pinion shaft, and the conveyer-platform frame having its rear sill secured to the grainward end of said bracket, substantially as set forth.

402,825. BASKET. GEORGE B. HIGGINS, North Indianapolis, Ind. Filed Jan. 31, 1889. Serial No. 298,279. (No model.)



Claim.—1. The basket herein shown, composed of a series of vertical splints, *s*, interwoven with wires *w* passing under one splint and over the next about the body of the basket, the ends of the splints turned inward at the bottom and secured between the outer and inner bottom pieces, *b b'*, by nails or rivets, substantially as shown and described.

2. A basket composed of vertical splints *s*, forming the body thereof, wires *w*, interwoven with such splints, the tops secured to an outer rim, *r*, and the lower ends of the splints curved together and secured to one or more bottom pieces, substantially as shown and described.

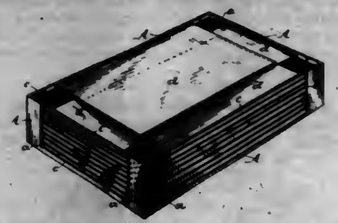
402,826. CRATE. MARBLE B. HOAG, Mecklenburg, N. Y. Filed Jan. 25, 1889. Serial No. 297,581. (No model.)



Claim.—1. A packing-crate composed of two end frames, each comprising one horizontal and two vertical cleats beveled on their inner faces and having their adjacent ends mitered together, in combination with the side, end, and bottom slats nailed to the outer faces of said cleats and thereby connected to form the body of the crate, substantially as set forth.

2. A nest of three packing-crates of equal size and constructed of longitudinal side and bottom and transverse end slats secured to substantially V-shaped end frames, one of said crates being placed between or within the two others, with the ends of the inner crate bearing against the bottoms of the outer crates and the bottom and top edge of the inner crate bearing against the sides of the outer crates, which are thereby braced and strengthened, substantially as set forth.

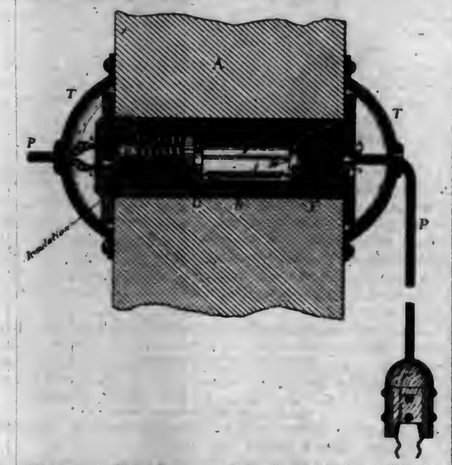
402,827. PACKAGE FOR PHOTOGRAPHIC PLATES. DE WITT C. HOOVER, Buffalo, N. Y., assignor of one-half to Reubin J. Getz, same place. Filed Sept. 26, 1888. Serial No. 286,302. (No model.)



Claim.—1. The combination, with a box having slits or openings, of a piece of twine or other flexible material passing through said slits or openings alternately inside and outside of the box, forming a series of layers within the box, one above the other, on opposite sides of which the photographic plates are arranged, substantially as set forth.

2. The combination, with a packing-box having slits or openings at or near its corners, of a piece of twine or other flexible material passing through said slits or openings alternately around the outside of the packing-box between the corner portions thereof and inside of the box at or near its corners, forming a series of layers within the box, one above the other, on opposite sides of which the photographic plates are arranged, substantially as set forth.

402,828. CIRCUIT-CLOSER FOR RAILWAY-CAR TELEGRAPHS. GEORGE I. HOPKINS, Manchester, N. H. Filed Jan. 11, 1887. Renewed Oct. 19, 1888. Serial No. 288,614. (No model.)



Claim.—1. In a railway-car-telegraph system, the combination, with a pair of insulated electrical conductors united in a single cord, of contact-springs joined to the said conductors, and a fixed conductor located in the path of the said springs, the latter being adapted, when the conductors are moved longitudinally, to be brought into contact with the said fixed conductor, as and for the purpose set forth.

2. The combination, with the plug E, rods *i i*, springs *e e*, and cap C, of the coiled wires *j j* and the spring *k*, as and for the purpose set forth.

3. The combination, with the tube B, of the movable insulating-block E and the fixed insulating-block F, the rods *i i*, the springs *e e*, the cap C, and the coiled wires *j j*, as and for the purpose set forth.

4. The combination, with the cord P and its contained conductors, the tube B, caps C and D, and insulating-plugs E and F, connected by the coiled wires *j j*, the said plugs supporting the rods *i i* and the springs *e e*, of the caps T T, for protecting the parts from dust.

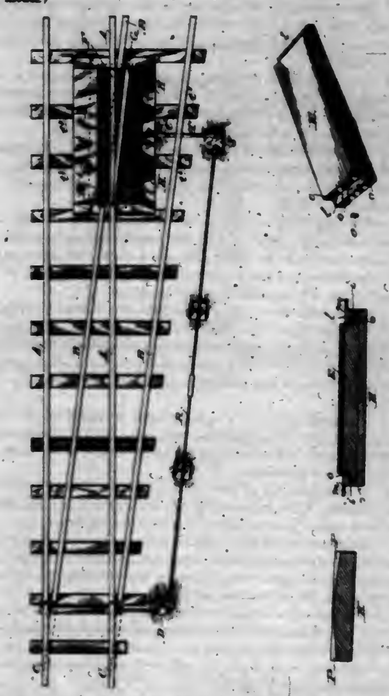
402,829. COUPLER FOR ELECTRIC CONDUCTORS. GEORGE I. HOPKINS, Manchester, N. H. Filed Jan. 11, 1887. Renewed Oct. 31, 1887. Again renewed Oct. 19, 1888. Serial No. 288,613. (No model.)



Claim.—1. In a coupler for electrical conductors, the combination, with the halves A A', of the springs H H', rectangular pieces G, with which the springs H are normally connected, and the conductors *o o'*, the former being joined to the rectangular pieces G and the latter to both the springs H and H', together with means operated by the joining of the halves for breaking the connection between springs H and rectangular pieces G, substantially as set forth.

2. The combination, with the coupling-halves A A', springs H H', and rectangular pieces G, of insulating-blocks I, adapted to be moved by the springs H H' when the halves are coupled, the said blocks being secured to extensions of the springs H, as and for the purpose set forth.

402,830. SLIDING RAILROAD-FROG. FRED J. HOTZ, Chicago, Ill., assignor, by mesne assignments, to the Hoyt Frog and Crossing Company, same place. Filed July 31, 1888. Serial No. 281,528. (No model.)



Claim.—1. In combination with the rails of a main and side track, a sliding frog consisting of a tongued plate provided with a main and a side rail section, the ends of said sections beveled to form an oblique joint with the rails, a case to hold said plate having grooves and flanges, friction-rollers between said plate and case, and a switch mechanism, substantially as described.

2. The tongued plate provided with the main and side rail sections and friction-rollers, in combination with the case to hold the said plate, and provided with the flanges and grooves, substantially as and for the purpose described.

3. The tongued plate provided with the rail-sections and friction-rollers, in combination with the grooved case provided with corrugations, substantially as and for the purpose described.

402,831. ATOMIZER-NOZZLE. WILLIAM HOSENBOOT, Brooklyn, N. Y. Filed Dec. 8, 1888. Serial No. 292,961. (No model.)

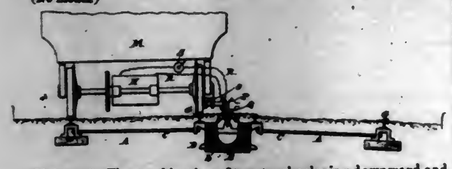
Claim.—A nozzle for atomizers provided with a central longi-

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tudinal channel, and one or more inclined air-channels communicating with said longitudinal channel, substantially as set forth.

402,832. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa. Original application filed Dec. 15, 1888, Serial No. 293,665. Divided and this application filed Mar. 21, 1889. Serial No. 304,167. (No model.)



Claim.—1. The combination of two tracks sloping downward and away from each other, with a slotted conduit arranged between them at the highest part, and one or more electrical conductors arranged within the conduit.

2. The combination of a slotted conduit, having iron yokes and slot-irons, with two tracks in which the adjacent rails of each track are secured to the conduit-yokes, and ties between the slot-irons and yokes or rails.

3. The combination of a slotted conduit, having iron yokes, with two tracks in which the adjacent rails of each track are secured to the conduit-yokes, and ties connecting the outer rails of the respective tracks with the yokes or inner rails supported thereby.

4. The combination of two railway-tracks with a conduit arranged between them, having two slots and a single drainage-compartment at the lower parts, and an insulated electrical conductor corresponding to each slot.

5. The combination of two railway-tracks with a conduit arranged between the adjacent rails, said conduit having two slots and two compartments in its upper part and a single drainage-compartment in its lower part, and a bared electric conductor in each of said compartments and insulated from the conduit.

6. The combination of two railway-tracks, a slotted conduit arranged between them, an electric conductor within said conduit, a traveling vehicle, and a current-collecting device carried by the vehicle upon the axles or their boxes independent of the car-body and outside of its wheel-base and making contact with the conductor within the conduit.

7. The combination of a railway-track arranged on an incline, so as to bring one rail higher than the other, with a slotted conduit having an electric conductor arranged to the outside of the track and adjacent to the highest rail.

8. The combination of two railway-tracks, a slotted conduit arranged between them and mechanically connected to the said tracks, and one or more electric conductors within the conduit.

9. In an electric-railway conduit, the combination of two upper compartments having slots, and a single lower drainage-compartment common to both upper compartments, and an electric conductor within each of said upper compartments.

10. An electric-railway conduit formed of a series of yokes united by side slot-irons, E, and a central slot-iron, F, and having the lower part formed of concrete or its equivalent, and an electric conductor within the conduit and located within the space bounded by each of the slot-irons E and F.

11. An electric-railway conduit formed of a series of yokes united by side slot-irons, E, and a central slot-iron, F, and having the lower part formed of concrete or its equivalent, an electric conductor within the conduit and located within the space bounded by each of the slot-irons E and F, in which the central slot-iron, F, forms an electric conductor.

12. An electric-railway conduit formed of the yokes having united side slot-irons, E, and central slot-iron, F, which also forms an electric conductor, and two separate insulated conductors connected to the side slot-irons.

13. An electric-railway conduit formed of the yokes combined with uniting side slot-irons, E, and central slot-iron, F, which also forms an electric conductor.

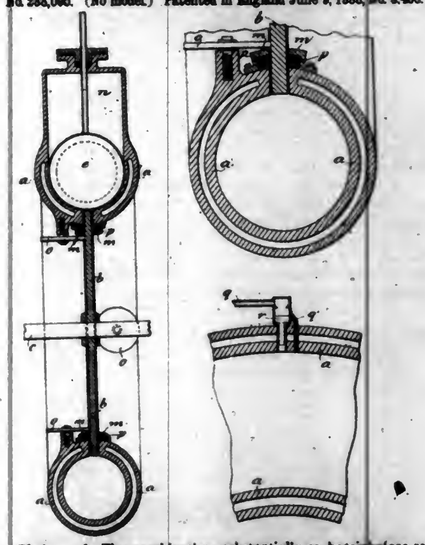
402,833. VEHICLE-SPRING. EDWARD HUTCHINSON, New York, N. Y. Filed Sept. 26, 1888. Serial No. 286,306. (No model.)



Claim.—1. A spring consisting of two leaves, the lower leaf shorter than the upper leaf, the lower leaf provided with upwardly and inwardly curved recessed ends, and the upper leaf provided with a concaved central portion and horizontal ends, and a guide secured at one end beneath the extremities of the upper leaf, the free end of the guide-plates sliding in the recess of the lower leaf, substantially as shown and described.

2. In a vehicle-spring, the combination, with the lower leaf having upwardly and inwardly curved approaching recessed ends, of an upper leaf of greater length provided with a central concaved portion and horizontal end portions, and a guide-plate secured at one end to the under face of the upper leaf at the extremities, the free end of said guide-plates sliding in the recesses of the lower leaf, substantially as shown and described.

402,834. ROTARY ENGINE. WILLIAM H. HUTCHINSON, Silverdale, Eastbourne, County of Sussex, England. Filed Oct. 15, 1888. Serial No. 288,095. (No model.) Patented in England June 9, 1888, No. 8,466.

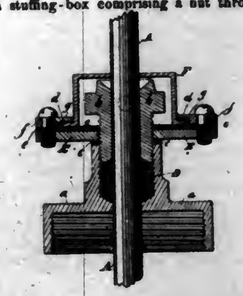


Claim.—1. The combination, substantially as hereinbefore set forth, of the annular chamber *a*, the thin disk *b*, projecting through a slot in the annular chamber *a*, the piston *d*, secured to the disk and located within the annular chamber, the valve-chamber *n*, the slide-valve *e*, steam entrance and exit ports on each side of the valve *e*, the packing around the slot in the annular chamber, through which the disk *b* extends, and the steadying-wheels *o*, arranged on opposite sides of the disk outside of the annular chamber and near the edge or periphery of the disk.

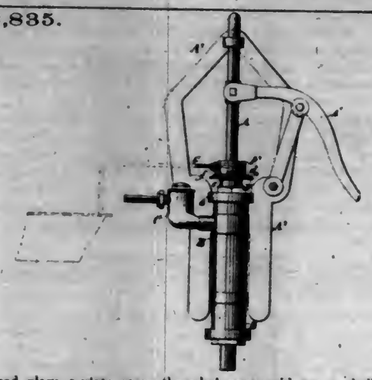
2. The combination, substantially as hereinbefore set forth, of the annular chamber *a*, the disk *b*, the piston *d*, secured thereon, the oil-supply pipes *q q'*, and the piston *r*, adapted to close the pipe *q'* to stop the flow of oil to the annular chamber when it is filled with steam, but to allow the flow of oil thereto when the steam is exhausted.

402,835. PUMP. THOMAS J. IVANS, New York, N. Y. Filed Feb. 11, 1889. Serial No. 299,374. (No model.)

Claim.—1. In a pump, the combination, with a chamber and a piston-rod, of a stuffing-box comprising a nut through which said



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piston-rod plays, a plate screw-threaded upon said nut, a shell detachably secured to said plate, said shell constituting a chamber into which the upper portion of said nut extends, and a waste-pipe leading from said chamber, substantially as specified.

2. In a pump, the combination, with a chamber and a piston-rod, of a stuffing-box comprising a nut through which said piston-rod plays, the plate E, screw-threaded upon said nut, the shell F, the washer *e* between said shell and the plate, the securing device *f*, and the waste-pipe G, substantially as specified.

402,836. INSULATOR AND HOLDER FOR ELECTRIC RAILWAYS. BYRON JENNINGS, San José, Cal. Filed Feb. 1, 1889. Serial No. 298,357. (No model.)



Claim.—1. The hood formed to fit against the yokes or supports to which it is attached, having a channel or opening longitudinally through it, with inwardly-turned flanges at the bottom, in combination with the channeled two-part insulators having the lugs or stops G at one end, substantially as described.

2. The hood channeled longitudinally and having the inwardly-turned flanges, the two-part insulators fitting within said channel and having the grooves adapted to clasp the flange of the rail, which is held by them, and lugs I, formed transversely upon the top of the insulators, in combination with the bolt passing through the side of the hood and the plate which lies between the lugs upon the insulators, substantially as described.

3. The hood having one side adapted to fit against the yokes or supports to which it is bolted, a longitudinal channel through the hood having inwardly-turned flanges at the bottom, the two-part insulators fitting said channels and having grooves in their adjacent faces, into which the flange of the rail fits, and the intermediate elastic lining fitted into the channels between the rail and the insulator, the transverse lugs I upon the top of the insulator, and the bolt, with an extension or plate which lies between these lugs when the bolt is in place to secure the hood to the yoke, substantially as described.

402,837. INKSTAND. GEORGE R. G. JONES, Louisville, Ky. Filed July 31, 1886. Renewed Sept. 6, 1888. Serial No. 284,770. (No model.)

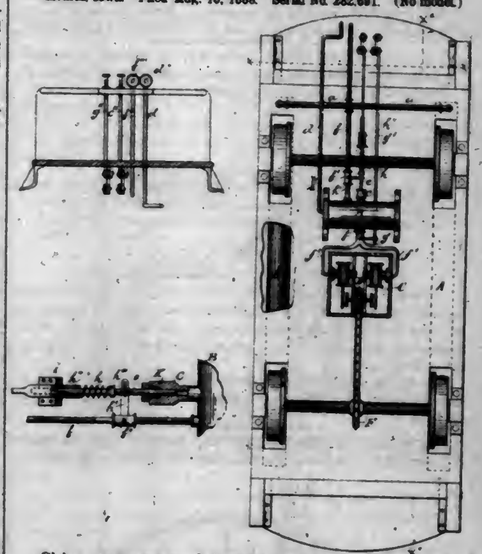


Claim.—1. As a new article of manufacture, an inkstand consisting, essentially, of a cylindrical inclosing-shell having a series of angular integral beads on its inner face, formed by indenting or creasing said shell at suitable intervals, and the observation-slots formed between each pair of beads, a series of endless belts, each of which is fitted between two adjoining beads and adapted to be independently turned therein to expose the inscription on its face through one of the observation-slots, and one or more ink-wells suspended within the shell from the cover thereof, substantially as described.

2. As a new article of manufacture, an inkstand consisting of a cylindrical inclosing-shell having a series of annular beads on its inner face, and the observation-slots formed at points between the beads, a series of endless belts, each having its edges fitted between two adjoining beads to be capable of turning therein independently of the other belts of the series, the bottom plate united to the lower open end of the shell, a top plate secured to the upper end of the shell and having an integral perforated flange, b^3, and a series of ink-wells suspended within the shell from the top plate thereof, substantially as described.

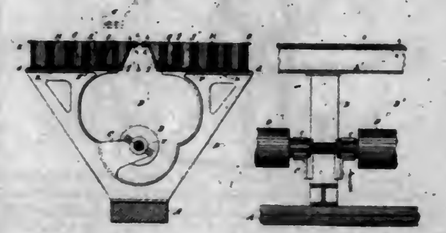
3. As a new article of manufacture, an inkstand having a top plate provided with three openings, arranged as described, the ink-wells inserted in said openings, and a cover having three integral sections or members arranged at the angles of an equilateral triangle and each conforming substantially in external contour to the ink-wells, whereby the cover is adapted to be removed bodily from the ink-wells or to be adjusted over all or any two of the ink-wells, substantially as described.

402,838. COMPRESSED-AIR MOTOR. AXEL JORGENSEN, Des Moines, Iowa. Filed Aug. 13, 1888. Serial No. 282,691. (No model.)



Claim.—In a compressed-air motor, reservoir A, auxiliary reservoir B, engine C, governor K, provided with the spring, collar p^3, sleeve p^4, and piston-rod *e*, sprocket-wheels D and F, chain connecting the sprocket-wheel on the engine with the sprocket-wheel on the axle of the car, gage d', gage b^{rr}, valve b', valve *g*, lever g', with ratchet and spring-pawl operating said lever, and lever e^r, with ratchet and spring-pawl for operating the same, and the air-pipes connected with said main and auxiliary reservoirs, gages, and the platform for the purpose of operating a street-car and the propelling machinery, all substantially as herein described.

402,839. CONDUIT FOR DRIVING MECHANISM OF STREET-RAILWAYS. WHITCOMB L. JUDSON, Minneapolis, Minn., assignor to the Judson Pneumatic Railway Company, same place. Filed Nov. 17, 1888. Serial No. 291,174. (No model.)



Claim.—1. In underground power-conduits for surface street-railways, the combination, with supporting-yokes provided with slot-spaces, of girders secured to said yokes on the opposite sides of said slot-spaces and a combined slot-rail and paving-block support detachably connected to said girders, substantially as described.

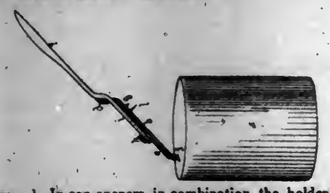
2. In underground power-conduits for surface street-railways, the combination, with supporting-yokes provided with slot-spaces, of girders secured to the top plates of the yokes on the opposite sides and slightly removed from said slot-spaces, provided with vertical flanges, and removable combined slot-rails and paving-block troughs resting upon said yokes on the opposite sides of said slot-space and provided with hook-shaped flanges engaging with the vertical flanges of said girders, substantially as described.

3. The combination, with the supporting conduit-yokes B, having slot-spaces, of the L-shaped girders F, secured to said yokes on the opposite sides of said slot-spaces, and the combined slot-rail and paving-block supports G, provided with the hook-like flange g^6, engaging with the vertical flanges of the girders F.

4. In power-conduits for street-railways, provided with a longitudinal slot, a protecting-brush mounted in the walls of said slot and spanning the same for the exclusion of snow, dirt, and dust, substantially as described.

5. In power-conduits for street-railways, provided with longitudinal slots, the combination, with slot-rails provided with brush-seats on their inner opposing faces, of brushes mounted in said seats, having their filaments interlacing across said slot, substantially as described.

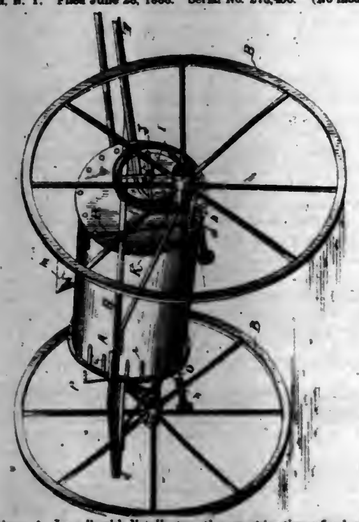
402,840. CAN-OPENER. JOHN KAYLOR, Decatur, Ill., assignor to Geo. W. Lehman and Arthur O. Bolen, same place. Filed Sept. 29, 1888. Serial No. 286,731. (No model.)



Claim.—1. In can-openers, in combination, the holder comprising the circular bearing *b*, having handle *d* and penetrating-points on its under surface, and the arm *i*, pivoted to the bearing at the center thereof and having the cutter *l*, adapted to swing inside the bearing, as set forth.

2. In combination with the holder having the pivot-pin with an elongated head, the cutter-arm having slots adapted to the head, as set forth.

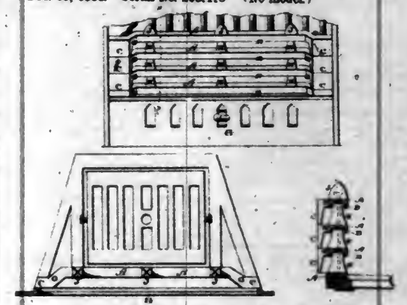
402,841. LIQUID-DISTRIBUTER. FESTUS W. KENDALL, Swartwood, N. Y. Filed June 28, 1888. Serial No. 278,456. (No model.)



Claim.—1. In a liquid-distributer, the combination of a horizontal tank carried by suitable supporting-wheels and provided with one or more discharge-pipes, a horizontal agitator-shaft extending through the interior of the tank, gearing to drive the shaft, and a series of paddles secured to and extending radially from said shaft, the outer ends of said paddles being beveled laterally on both sides and in opposite directions, and every alternate paddle in the line of rotation being beveled in the same direction and the intervening paddles beveled in the opposite direction, for the purpose set forth.

2. In a liquid-distributer, the combination, with supporting-wheels, of a cylindrical tank horizontally located between said wheels and composed of a metallic cylindrical shell, and wooden heads secured to the cylinder by bolts passed through the head and riveted to the face of the cylinder, a discharge-pipe, a horizontal shaft extending through the tank and provided with paddles, and gearing whereby the same is driven from one of the supporting-wheels, substantially as described.

402,842. GRATE. HENRY C. KERSTING, Cleveland, Ohio. Filed Dec. 13, 1888. Serial No. 293,418. (No model.)

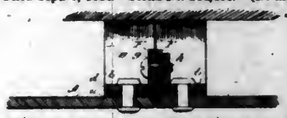


Claim.—1. The grate or basket front composed of the bars A, provided with the flanges B upon their lower edges, in combination with the headed rods and the blocks which separate the bars, substantially as set forth.

2. A grate or basket front composed of the bars A, provided with the flanges B upon their lower edges, and having their ends turned outward, as shown at O, and provided with the lips C at their turned-out ends, substantially as described.

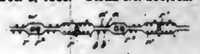
3. A grate or basket front composed of the bars A, provided with the flanges B upon their lower edges, in combination with the rods which connect the bars together, and which bars are provided with the turned-out ends O and lips C, substantially as specified.

402,843. DOOR-HANGER TRACK. JOHN G. LANE, Poughkeepsie, N. Y. Filed Sept. 3, 1888. Serial No. 284,461. (No model.)



Claim.—Combined with the rail and bracket, both having non-circular holes, the soft-iron round rivet, fitted, after its insertion in the holes, by the upsetting action to the same, substantially as described.

402,844. CORDED OR ELASTIC FABRIC. WILLIAM LAPWORTH, Hopedale, Mass., assignor to the Hopedale Elastic Fabric Company, same place. Filed Dec. 8, 1888. Serial No. 293,002. (Specimens.)

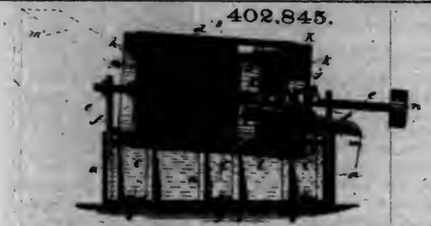


Claim.—A fabric composed of double and of single fabric extended parallel to the length thereof, the double portions of the fabric containing between its two woven plies a cord or rubber warp to aid in constituting a rib, the longitudinal single portion of the fabric between adjacent double portions containing also a cord or rubber warp, as described, which is covered at bottom and top by only the weft employed to unite the threads constituting both the double and the single portions of the fabric, substantially as described.

402,845. GRAVEL-SCREEN. JOHN D. LOUGHRAN, Neosho Falls, Kans. Filed Oct. 12, 1888. Serial No. 287,901. (No model.)

Claim.—1. In a sand and gravel screen, the combination, with a tank, of a revolving screen mounted within the same upon the slanting shaft *e*, the strengthening-ring *k'* near the lower end of the screen, the flanged ring K at the lower end of the screen, divided to form the buckets *k*, the longitudinal ribs *i i*, uniting the rings *k'* and K, and screen receptacle or chute *m*, secured to the slanting shaft *e* within the revolving screen, and a chute for feeding the material to the screen, substantially as shown and described.

402,845.



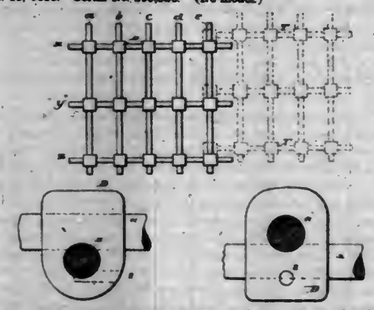
2. In a sand and gravel screen, the combination, with a tank, of a revolving screen mounted within the same upon the slanting shaft *e*, the strengthening-ring *k'* near the lower end of the screen, flanged ring K at the lower end of the screen and divided to form the buckets *k*, the longitudinal ribs *i i*, uniting the rings *k'* and K, the screen receptacle or chute *m*, secured to the slanting driving-shaft *e*, the worm conveyer *l*, secured to the lower end of shaft *e*, directly over the screen-chute *m*, and a chute for supplying the material to the screen, substantially as shown and described.

402,846. BURIAL-CASKET LID. GEORGE W. MOORMAN, Edinburg, assignor of one-half to Milton F. Maddox, Indianapolis, Ind. Filed Aug. 4, 1888. Serial No. 281,937. (No model.)



Claim.—The combination, with the body of a casket, of a casket-lid consisting of two sections, one of which is connected to the body of the casket by folding supports which are arranged to support the lid above the body of the casket and the other of which is arranged to slide longitudinally beneath the first section when raised, substantially as and for the purpose specified.

402,847. GRATING. DONALD MCDONALD, Louisville, Ky. Filed Dec. 13, 1888. Serial No. 293,528. (No model.)



Claim.—1. A grating composed of round bars of metal gained and intersecting each other, and couplings D covering the joint, substantially as shown and described.

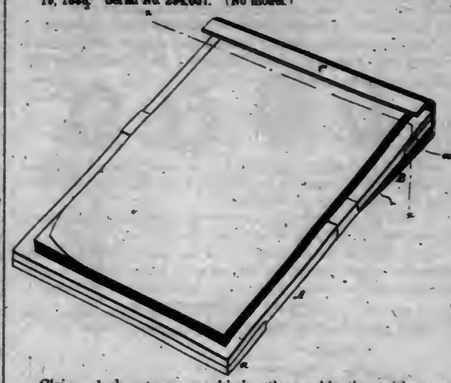
2. A grating composed of round bars of metal, one of which is cut or gained and intersected by the other, a coupling, D, covering the joint, and a key, S, locking the uncut bar, substantially as shown and described.

3. A grating composed of the vertical bars *a c e*, horizontal bars *x* and *z*, the vertical bars *b* and *d* alternating with *a c e*, and the horizontal bar *y* alternating with *x* and *z*, and couplings D, the said bars being gained and put together in the order of their mention, substantially as described.

402,848. PROCESS OF PRECIPITATING NITROGENOUS COMPOUNDS FROM IMPURE WATERS. MARTIN MARMIER, Schoenebeck-on-the-Elbe, Prussia, Germany. Filed Mar. 18, 1886. Renewed Mar. 1, 1889. Serial No. 301,723. (No specimens.) Patented in Germany May 24, 1884, No. 31,864; in England Oct. 14, 1884, No. 13,588; in Belgium Mar. 2, 1885, No. 68,046; in France Aug. 3, 1885, No. 167,840, and in Austria-Hungary Aug. 8, 1885, No. 13,826 and No. 41,572.

Claim.—The process of precipitating nitrogenous compounds in solution from the drainage-waters of towns, waste waters of manufactures, and deleterious potable water, by mixing with the said impure water lime, soluble salts of aluminium, and hydrate of silicic acid, substantially as described.

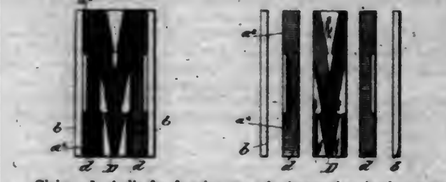
402,849. BINDER. ASA K. OWEN, Lake Geneva, Wis. Filed Dec. 19, 1888. Serial No. 294,037. (No model.)



Claim.—1. In a temporary binder, the combination, with a support, of a spring-clasp extending from the back of the support over the edge thereof and parallel with the face of the support, substantially as specified.

2. In a binder, the combination, with the board A, of the clasp B, formed of a plate bent at right angles, returned parallel with itself, and hinged to the back of the board A, and the spring D, secured to the back of the board A and arranged to press the clasp B rearwardly, thereby drawing the lip C toward the face of the board A, substantially as specified.

402,850. DIE FOR FORMING WOOD TYPE. WILLIAM H. PAGE and GEORGE C. SETCHELL, Norwich, Conn., assignors to the William H. Page Wood Type Company, same place. Filed Dec. 5, 1888. Serial No. 292,719. (No model.)



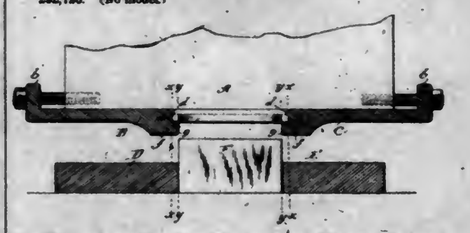
Claim.—1. A die for forming type by impression, having parts of its sides raised and parts depressed and open, substantially as described.

2. A die for forming type by impression, having parts of its sides raised and parts depressed and open, in combination with the strip *b*, adapted to close the open side.

3. Combined with the die having parts of its sides raised and parts depressed, the strip *b*, for closing the open side, of a width greater than the required distance between the type, substantially as described.

4. A die for forming type by impression, formed in sections and with portions of the depressed surface of the outer sections extending to the sides, combined with the strip *b*, for closing the open side, substantially as described.

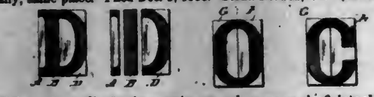
402,851. DIE FOR FORMING WOOD TYPE. WILLIAM H. PAGE and GEORGE C. SETCHELL, Norwich, Conn., assignors to the William H. Page Wood Type Company, same place. Filed Dec. 5, 1888. Serial No. 292,720. (No model.)



Claim.—In combination with means for holding the block to be operated upon in position, a plunger, a removable die having its end portions grooved, adjustable holding-jaws for the die, having inclined

lips *d*, corresponding to the grooved ends of the die, and lips *f f*, projecting under the face of the die, substantially as described.

402,852. DIE FOR FORMING WOODEN TYPE. WILLIAM H PAGE, Norwich, Conn., assignor to the William H. Page Wood Type Company, same place. Filed Dec. 5, 1888. Serial No. 292,734. (No model.)

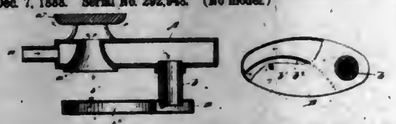


Claim.—1. A die for impressing wood, composed of detachably-connected sections, each section forming a part of the working-face of the die, substantially as described.

2. A group or set of dies for forming characters by impression with interchangeable parts, substantially as described.

3. A group of dies for letters of the alphabet, formed in sections and having one part special to each letter of the group and another part common to all letters of the group, substantially as described.

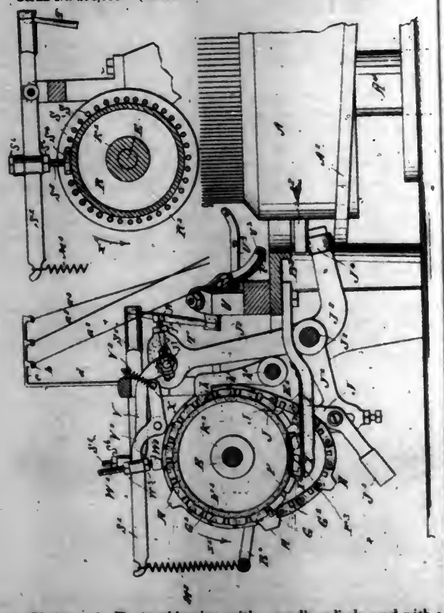
402,853. OIL-BURNER. WILLIAM R. PARKS, Palmer, Mass. Filed Dec. 7, 1888. Serial No. 292,948. (No model.)



Claim.—1. The oil-burner herein described, consisting of retort A, having flue *a'*, passing therethrough and feed-pipe *a* entering the same at one end thereof, receiver B, having vent *b'*, and provided with the diaphragm b^2, arranged therein substantially as described, and pipe *b*, connecting said receiver with said retort, combined and operating substantially as set forth.

2. In an oil-burner of the kind herein described, the combination, with the retort having a combustion-flue passing therethrough, of a receiver located beneath said retort and connected therewith by a pipe, said receiver having a vent located beneath said combustion-flue, having an interior diaphragm located between said vent and the mouth of the connecting-pipe, said diaphragm being so arranged that the oil or vapor in its passage from said pipe to said vent will be compelled to traverse the greater portion of the length of said receiver, substantially as and for the purpose described.

402,854. STRIPING ATTACHMENT FOR CIRCULAR-KNITTING MACHINES. JAMES A. PARR, Amsterdam, N. Y. Filed Mar. 21, 1887. Serial No. 231,683. (Model.)



Claim.—1. The combination, with a needle-cylinder and with a loop or stitch wheel, of thread-guides movable on a support, a cutting device composed of a fixed jaw, a pivoted jaw, and a lever pivoted on the fixed jaw and having a tongue or prong, the pivoted jaw having a spring-strip, O^2, and the tongue or prong having a spring, O^4, the levers N N', connected to the pivoted jaw, and the lever having the prong, said levers having the screws M', provided with beveled lugs M, a thread-cutter-operating wheel having a circumferential rib with apertures to receive pins on which the beveled lugs M rest, a thread-guide-operating wheel having a ratchet and mounted on the same shaft with the cutter-operating wheel, spring-actuated levers connected at one end to the thread-guides and having screws provided with beveled lugs resting on pins carried by circumferential flanges on the thread-guide-operating wheel, and a pawl-carrying lever operated by a cam-track on the cylinder, its pawl engaging the ratchet of the thread-guide-operating wheel, substantially as described.

2. The combination, with a needle-cylinder and a loop or stitch wheel, of a cam-track on the needle-cylinder, an elbow-lever operated by the cam-track, a pawl on said elbow-lever, a ratchet-wheel operated by the pawl, a pattern-wheel connected with the ratchet-wheel, a chain passed over the pattern-wheel and having lugs, a pivoted lever acted upon by said lugs, a dog resting on said lever and connected with the elbow-lever, a ratchet-wheel operated by the dog, a thread-guide-operating wheel, and a cutter-operating wheel connected with the said ratchet-wheel at opposite sides thereof and carrying pins, levers provided with beveled pieces acted upon by the pins, springs acting upon the levers, and pivoted thread-guides and thread-cutting devices connected with the said levers, substantially as herein shown and described.

3. The combination, with a needle-cylinder, a loop or stitch wheel, and a cam-track on the needle-cylinder, of an elbow-lever operated by the cam and provided with a pawl, the ratchet-wheel F revolved by said pawl, the pattern-wheel F', connected with said ratchet-wheel, the chain G, passed over the pattern-wheel and provided with the lugs H and the laterally-projecting lugs *g*, the pivoted lever V', having a beveled head on which the lugs H can act, the pin X at the other end of the said lever, the dog V, pivoted on the upper end of said elbow-lever and resting on the pin X, the ratchet-wheel W, with which the dog V engages, the wheels R and K at opposite sides of the ratchet-wheel W and connected to revolve with the same, pins in ribs on said wheels R and K, pivoted levers, beveled heads connected with said levers and pressed on the pins on said wheels R and K, thread-guides and thread-cutting devices connected with the said levers, the rocking shaft A^3, provided with arm A', having a head, *h*, on which the lugs *g* can act, the pawl *i* on the arm *w* of the shaft A^3, the auxiliary pattern-wheel *j*, on which the pawl *i* acts, the pins *l* in said ratchet-wheel, the pawl *m*, the rocking shaft *o*, on the end of which said pawl is mounted, and the pin *r* on the crank at the opposite end of said shaft, which pin *r* is below the dog V and can keep the same raised, substantially as herein shown and described.

4. The combination, with a needle-cylinder, of a lever operated by a cam on said cylinder, a series of thread-guides movable on a suitable support, a thread-guide-operating wheel having a ratchet, a pawl carried by the cam-actuated lever and engaging said ratchet, levers connected at one end to the thread-guides and having screws provided with beveled lugs resting on pins inserted in circumferential flanges on the thread-guide-operating wheel, a cutter-operating wheel connected to the thread-guide-operating wheel, levers having screws provided with beveled lugs resting on pins mounted in a flange on the cutter-operating wheel, cutting devices consisting of a fixed blade, P', a blade, O, pivoted thereon, and a lever having an intermediate prong, O^4, pivoted on the fixed blade, said lever and blade O connected to the levers supported by the pins of the thread-guide-operating wheel, and a loop or stitch wheel upon one side of which the cutting devices are arranged, substantially as described.

5. A thread-cutter for knitting-machines, consisting of the fixed blade P', the blade O, pivoted on the same, and the lever O', pivoted on the blade P' and having its front end terminating in a prong which is located above the edge of the fixed blade and at the side of the pivoted blade O, all combined substantially as herein shown and described.

6. A thread-cutter for knitting-machines, consisting of the fixed blade P', the blade O, pivoted to the same and having the spring O^2 secured to its side, the lever O', pivoted to the blade P' and having its front end terminating in the prong O^3, and the spring O^4, secured to the bottom edge of said prong, all combined substantially as herein shown and described.

7. The combination, with a needle-cylinder, a loop or stitch wheel, and a cam-track on the needle-cylinder, of an elbow-lever operated by said cam-track, a series of pivoted thread-guides at one side of the loop or stitch wheel, a thread-guide-operating wheel, mechanism, substantially as described, operating said wheel from said lever, levers connected with said thread-guide and actuated by said wheel, a fixed blade at the other side of the loop or stitch wheel, a cutting-blade pivoted on the fixed blade, an additional lever also pivoted on the fixed blade, levers connected with the pivoted blade and the additional lever, and a cutter-operating wheel connected with the thread-guide-operating wheel, substantially as described.

8. The combination, with a needle-cylinder, a loop or stitch wheel, and a cam-track on the needle-cylinder, of the elbow-lever J^3, operated by said cam-track, the pawl J^3 on said rocking lever, the ratchet-wheel F, the grooved pattern-wheel F', connected with the same, the arm I, projecting from the frame of the machine, the spring I' on the same, the lug I^3 on the spring passing into a groove, F^2, in the pattern-wheel F', the chain G, passed over the sprocket-wheel and provided with lugs, the lever V', carrying the screw W', having beveled head W^3, the dog V on the upper end of the rocking lever J^3, the ratchet-wheel W, the wheels R and K, connected with the same and carrying pins, the levers N N' and S' S^2 S^3, operated by the pins on said wheels, and of thread-cutting devices and thread-guides connected with the said levers N N' S' S^2 S^3, substantially as herein shown and described.

9. The combination, in a striping attachment for knitting-machines, of a pattern-wheel, F', having a circumferential groove, F^2, a pattern-chain, G, provided with lugs H and laterally-projecting lugs *g*, an auxiliary pattern-wheel, *j*, having pins *l* and provided with a ratchet, a lever having a prong, *k*, lying in the path of the laterally-projecting lugs *g*, the shaft of said lever having an arm carrying a pawl, *i*, taking into the ratchet on the auxiliary pattern-wheel, a rock-shaft, *o*, having an arm, *m*, provided with a hook and beveled head, *m'*, engaging the pins *l* on wheel *j*, an elbow-lever actuated by a cam-track on the needle-cylinder, a pawl, V, carried by said lever, a ratchet on the thread-guide-operating wheel with which said pawl engages, a pivoted dog having a pin in its spring-supported end, which underlies and supports the pawl V, a screw in the other end of said dog, said screw having a beveled head lying in the path of the lugs H on the pattern-chain, a crank, *p*, on the rock-shaft *o*, said crank having a pin, *r*, lying under the pawl V, and a pawl, J, having a weighted tail and actuated by an arm mounted on the rock-shaft which carries the elbow-lever, said pawl J taking into a ratchet, F, on the pattern-wheel F', substantially as described.

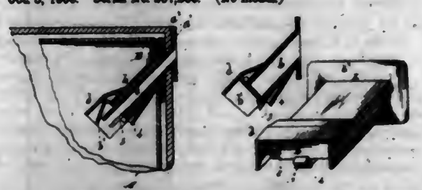
10. The combination, with the rotary pattern-wheel, its chain, a lever operated thereby, means for operating the pattern-wheel, the connected thread guide and cutter operating wheels having a common ratchet and a dog for rotating the same, and mechanism for operating said dog, of an auxiliary pattern-wheel, a pawl-and-ratchet mechanism therefor acted upon by said main pattern-chain, and a rock-shaft acted upon by said auxiliary pattern-wheel and having a connected part extending under the operating-dog of the thread-guide and thread-cutter operating wheels, substantially as set forth.

11. The combination, with the rotary needle-cylinder, the thread cutter, the thread-guides, the loop or stitch wheel, and the presser wheel D, of the plate Q^2 between the said wheel D and the thread cutter, substantially as set forth.

12. The combination, with the rotary needle-cylinder, the thread-guides, the thread-cutter, the loop or stitch wheel, and the presser-wheel D, of the plate Q^2 between the cutter and the wheel D and provided with a tongue, Q^3, curved downward at its front end to a point in front of the said thread-cutter, substantially as set forth.

13. The combination, with the pattern-wheel having a circumferential groove, the chain on said wheel, an operating ratchet-wheel, and means for operating the ratchet-wheel, of the arm I, curved under the pattern-wheel between its lower side and the chain, and provided with a spring, I', having a lug, I^3, entering the groove and the pattern-wheel and in frictional contact with the periphery of the wheel, substantially as set forth.

402,855. LETTER-BOX. WILLIAM A. PAULSEN, Chicago, Ill. Filed Oct. 5, 1888. Serial No. 287,280. (No model.)



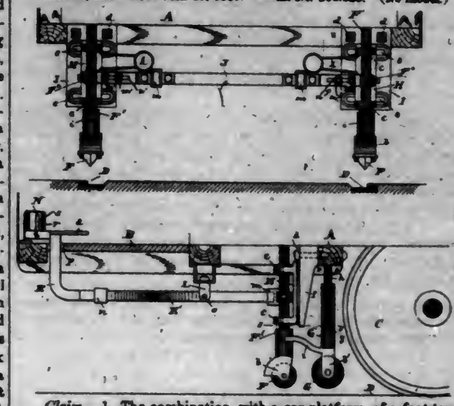
Claim.—1. In combination with a portable receptacle, B, a hollow neck, *b*, secured to and leading into the receptacle, a spring-lid, *b'*, and an automatic lock for the lid, substantially as described.

2. In combination with a portable receptacle, B, a hollow neck, *b*, secured to and leading into the receptacle, a lid, *b'*, connected with the neck by a spring-hinge, and a spring-catch on the neck in position to engage the lid when closed, substantially as described.

3. In combination with a portable receptacle, B, a hollow neck, *b*, secured to and leading into the receptacle, a lid, *b'*, connected with the neck by a spring-hinge, a spring-catch on the neck in position to engage the lid when closed, and a pivotal stop, 2, substantially as described.

4. In combination, a stationary or public mail or other receptacle, A, having an internally-flanged inlet-opening or chute, *a*, and a receptacle, B, having a hollow neck, *b*, to fit the chute *a*, and provided with an automatic lock for closing it, and accessible when in locked condition only from the interior of the receptacle B, substantially as described.

402,856. TRACK-SWITCH SHIFTER. LOUIS W. QUEITSCH, Baltimore, Md. Filed Jan. 19, 1889. Serial No. 296,825. (No model.)



Claim.—1. The combination, with a car-platform, of a foot-lever pivoted to have an up-and-down and also a lateral movement, a vertical shaft, F', carrying at its lower end a roller and movable both up and down and laterally, a second vertical shaft, G', carrying on its lower end a roller and movable up and down and also oscillating, and a lateral arm rigidly attached to the second or oscillating shaft and pivoted to the first shaft.

2. The combination, with a car-platform, of two sets of switch-shifting rollers, one set above each of the two track-rails, a horizontal bar, J, connecting the two sets of rollers, and a pivoted foot-lever connected with the said horizontal bar.

3. The combination, with a car-platform, of two sets of switch-shifting rollers, one set above each of the two track-rails, a horizontal bar, J, connecting the two sets of rollers, a pivoted foot-lever connected with the said horizontal bar, and a holder plate or frame, N, to retain the foot-lever wherever placed.

4. The combination, with a car-platform having a cross-slot, *p*, of a swiveled hanger, L, a foot-lever pivoted to said hanger and projecting up through said cross-slot, a laterally-movable holder, H, a vertical shaft, F', movable up and down on the holder, a second vertical shaft pivoted to partly turn or oscillate, and also movable up and down, and a lateral arm, *i*, connecting the two vertical shafts.

5. The combination, with a car-platform, of an up-and-down and laterally-movable switch-shifting roller, F, an oscillating and up-and-down movable roller, G, a foot-lever for moving said two rollers, and connections between the rollers and foot-lever.

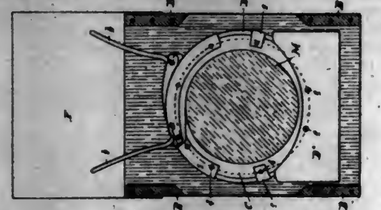
402,857. WALL-PROTECTOR. ROLDIN S. ROBBINS and ALPHONSO H. BROAD, Berkeley, Cal. Filed July 26, 1888. Serial No. 281,100. (No model.)



Claim.—1. As an improved article of manufacture, a wall-protector consisting of the globe-shaped roller D, provided with the journals *d*, and a bracket formed of a brace-plate, B, provided with apertures *b* in its ends, and the approximately-semicircular arms C, projecting from and integral with the base and provided with apertures *c'* in their extreme outer ends, *c*, for the reception of the journals of the roller, as set forth.

2. The blank for forming wall-protector brackets, consisting, essentially, of a metal plate formed with opposite U-shaped slots dividing the blank into inner and outer members united at the center of the blank, the said inner and outer members being apertured, substantially as shown and described.

402,858. DUST-GUARD FOR CAR-AXLE BOXES. FABIAN J. ROBERTS, Detroit, Mich., assignor to the F. J. Roberts R. R. Dust Guard Manufacturing Company, same place. Filed Mar. 10, 1887. Serial No. 230,329. (No model.)



Claim.—1. In a dust-guard for car-axle boxes, the combination of the following elements: an open-ended ring of a single thickness of leather, a wire spring surrounding the periphery of said ring and secured thereto by metallic clips and rivets, and a sheet-metal cap embracing the lower portion of such spring and ring, secured to the latter by rivets, substantially as and for the purposes described.

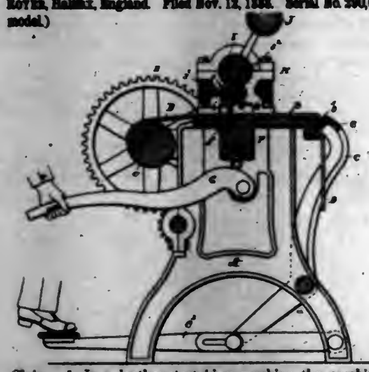
2. The combination, in a dust-guard constructed substantially as described, of the leather ring, surrounding spring, metallic cap secured to the lower portion of the ring, and the inclosing-case, substantially as and for the purposes specified.

402,859. SAMPLE OF PAINTS, &c. FRANK H. ROSE, Syracuse, assignor to Valentine & Company, New York, N. Y. Filed Feb. 18, 1889. Serial No. 300,239. (No specimens.)



Claim.—Color samples consisting of concavo-convex glass plates A, having colors applied to the concave surfaces thereof, and the textile backings B, covering the colors and conforming to the adjacent surfaces of the plates, the colors being visible through the convex faces of the plates, said samples being uniformly constructed as to size and curvature of surfaces, thus permitting the convex surface of each plate, when the samples are placed in a stack, to fit snugly within the concave surface of the packing of the plate next above it, substantially as and for the purpose described.

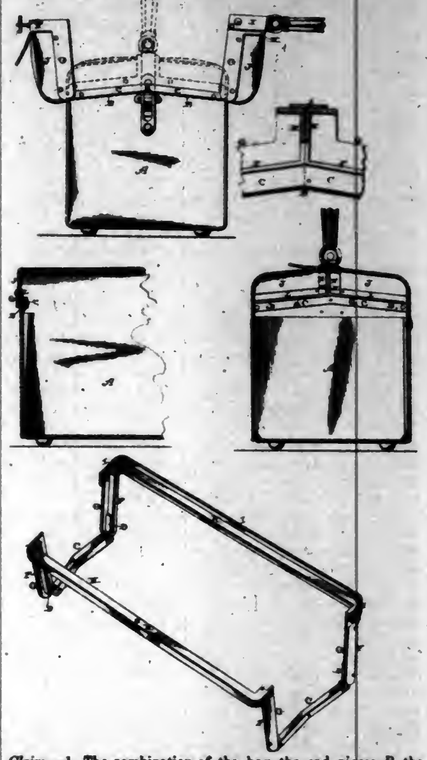
402,860. MACHINE FOR STRETCHING LEATHER. CHARLES L. ROTER, Halifax, England. Filed Nov. 12, 1888. Serial No. 290,654. (No model.)



Claim.—1. In a leather-stretching machine, the combination of the drawing mechanism with the table B, convex from the operator upon its outer edge, with the knife-edge *c*, concave toward the operator upon its edge and adapted to engage with the leather, D, below the surface of the table B and put the same in tension, substantially as and for the purpose described.

2. The combination of the adjustable beam F, provided with the groove *f*, and the round-edged knives *i k*, placed above said beam, one of which, *i*, is adjusted to press the leather into the groove *f*, and the other of which, *k*, is adjusted to press the leather upon the upper surface of the beam F, substantially as and for the purpose described.

402,861. TRAVELING-BAG. MORRIS SCHWERIN, Newark, N. J. Filed Feb. 6, 1888. Serial No. 263,810. (No model.)



Claim.—1. The combination of the bag, the end pieces, B, the T-shaped pieces in cross-section at the ends and pivoted to the end pieces, and the L-shaped pieces in cross-section at their centers, substantially as shown.

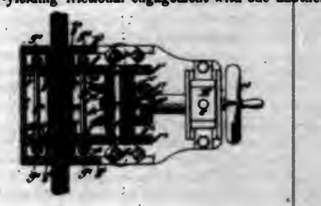
2. The combination of the body of the bag, the bag-frame attached thereto, the cover of the bag which is attached to the frame, and the end pieces, J, which are inserted between the ends of the cover and the ends of the frame, substantially as set forth.

3. The combination of the two parts of the bag-frame made T-shaped at their ends and L-shaped in cross-section at their centers, the body of the bag, the inlays, and the end pieces at the ends of the cover, substantially as specified.

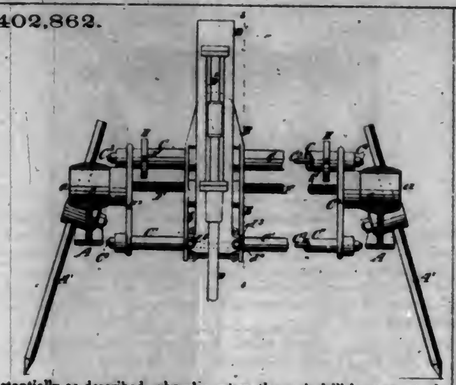
4. The combination of the L-shaped portion in cross-section of the frame, having vertical openings made through the horizontal portion, with the plate to which the catches are secured, and which plate is provided with prongs to pass down through the openings, substantially as shown.

402,862. CHANNELING-MACHINE. HENRY C. SERGEANT, New York, N. Y., assignor to the Ingersoll-Sergeant Rock Drill Company, of New York. Filed July 5, 1888. Serial No. 279,025. (No model.)

Claim.—1. The combination, with a horizontal way or track, of a carriage fitted to travel thereon, a rock-drill, a motor for operating the rock-drill supported by said carriage, another motor mounted upon the carriage, and gearing operated by the last-named motor, for moving the carriage along said way, and comprising surfaces held in automatically-yielding frictional engagement with one another, substantially as described, whereby, when the rock-drill becomes stuck, said surfaces will yield, and thus automatically stop the said movement of the carriage, substantially as specified.



402,862.



2. The combination, with a stationary frame having a horizontal way or track, of a screw fixed in the frame and parallel with the said way or track, a carriage fitted to slide on the way or track and provided with a nut engaging said screw, a drill, a drill-motor on said carriage, another motor for rotating the nut to move said carriage along, and gearing intermediate of the second-named motor, and said nut comprising frictional surfaces having an automatically-yielding frictional engagement with said nut, substantially as specified.

3. The combination, with a stationary frame comprising a horizontal way or track, and a screw also parallel with the way, of a drill-carriage fitted to slide on the way, a motor on the drill-carriage, a nut fitting the screw and held against end movement on the carriage, a gear-wheel held in frictional engagement with the end of the nut by spring-pressure, and other gear-wheels through which said wheel on the nut is driven from the motor, substantially as herein described.

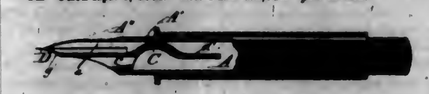
4. The combination, with a stationary frame and its track or way, of a drill-carriage mounted thereon, a screw in the frame parallel with said track or way, and a nut fitting the screw and held against endwise movement independently of the carriage, the wheels *f* in frictional engagement with the ends of the nut, and the bolts and springs for binding them against the nut, the shaft f^2 and the wheels f' f'' fast thereon, and the reversely-set bevel-wheels f^3 f^4, loose thereon, the clutch f^5 and its shifting-lever f^6, and the motor having upon its shaft the bevel-pinion f^7, engaging the wheels f' f^4, substantially as herein described.

402,863. DIE FOR FORMING WOOD TYPE. GEORGE C. SETCHELL, Norwich, Conn., assignor to the William H. Page Wood Type Company, same place. Filed Dec. 5, 1888. Serial No. 292,735. (No model.)



Claim.—A die for forming wood type by impression, having the thinnest portions of its raised parts reduced in height below the level of the other raised portions, substantially as described.

402,864. FOUNTAIN-PEN. LAFORREST A. SHATTUCK, Bloomsburg, Pa. Filed Apr. 6, 1888. Serial No. 269,949. (No model.)



Claim.—1. In a fountain-pen, the combination, with the tubular ink-reservoir A, of the nozzle F, the combination-lock B, fitted therein and having the two parallel ink-conductors *d d*, the shoulders *l l*, the central ink-flowing medium or perforation *e*, the capillary ink-slot *p*, the integral superior transmitter or long upper lip, g^4, in contact at its converging sides and point with the back of the pen, the slot *q*, carrying a pen, D, which divides the central longitudinal perforation, *e*, into an upper space, *a*, for the superior ink-channel over the pen, and a lower space, *b*, beneath the pen for an air-vent communicating with the reservoir, substantially as and for the purpose described.

2. In a fountain-pen, the combination, with an ink-reservoir, of a nozzle, F', having its under lip diagonally incised, so as to form the long finger-shielding upper lip, the combination-lock B', fitted in the nozzle, having the slot *q*, in which is fitted the pen D, and *e* groove, *l*, into which the shank of the separable transmitter E' is fitted and locked between it and the upper wall of the nozzle, with its free end, at sides and point, in contact with the pen and a space beneath the pen, with the adjustable key C, having a central body or movable ink-stopper fitted therein, and serving for purposes of adjustment, and filling the reservoir without removing the nozzle, said key also having a central longitudinal perforation or air-vent, lateral ink-channels, a curved ink-conducting spring, and lever-acting and adaptable under-feed bar *g*, which can be adjusted to different grades of ink or so as to transform a double-feed to a single upper-feed pen, substantially as and for the purpose described.

3. In a fountain-pen, the combination, with the ink-reservoir, of the nozzle F, the combination-lock B'', fitted therein, having the slot *q* across the axis of the central perforation, *e*, a pen, D, fitted therein, a groove, *l*, in the upper surface of the lock for the shank *w* of the separable transmitter E' to be locked therein, the said transmitter having a free point in contact with the pen, and an ink-conductor extending into the reservoir, substantially as and for the purpose described.

4. In a fountain-pen, the combination, with the reservoir, of a nozzle having a long upper lip containing a longitudinal perforation or mortise and having the shank *w* of the transmitter E'' fitted therein, while said transmitter is in contact at its free point with the pen D, which is held by friction in the nozzle and supported by the adjustable key C beneath, substantially as and for the purpose described.

5. In a fountain-pen, the combination, with the ink-reservoir, of a nozzle having its under lip slightly shortened and holding by friction a pen, D, supported by the adjustable key beneath, substantially as and for the purpose described.

6. In a fountain-pen, the combination, with the ink-reservoir, of a separable nozzle, F, the combination-lock B'', fitted therein, having the slot *g* across the end of its central perforation, into which a pen, D, is fitted, a groove, *l*, in the upper surface, in which is locked the shank of the separable transmitter E, which has its free point in contact with the pen, and an inner ink-conductor, substantially as described.

7. In a fountain-pen, the combination of a separable nozzle, F', carrying a pen, D, which is supported by the adjustable key C, the upper side of the nozzle being longer than the under side and narrowed to a point, A''', forming the finger-shield and superior transmitter, which is slit or divided at its point to form nibs like a pen for quill-writing and has its under surface describing the same degree of concavity as the inner surface of the nozzle, so as to form the upper wall of the crescentic-channel extension of the ink-channel over the pen and in contact at its edges and free point with the pen, substantially as described.

8. In a fountain-pen, the combination, with the ink-supply reservoir, of the separable nozzle F, the combination-lock B'', fitted therein and having the slot *q*, holding a pen, D, and the space *b* below the pen for an air-vent, and provided on its upper surface with the longitudinal groove *l*, into which is locked the superior transmitter E, which has its free point in contact with the pen and is provided with an ink-conductor, d''', and an intermediary transmitter, g''', substantially as described.

9. In a fountain-pen, the combination, with an ink-reservoir, of the separable nozzle F, the combination-lock B'', fitted therein, its outer end having the slot *q*, the pen D, with the long narrow shank-extension inserted therein, a curved ink-conductor, the groove *l*, holding the shank *w* of the superior transmitter E', while said transmitter is in contact at its free point with the pen, substantially as and for the purpose described.

10. In a fountain-pen, the combination, with the ink-reservoir, of a nozzle, the combination-lock B, fitted therein, having the transverse slot *q*, holding a pen, D, supported by an adjustable key, C, beneath, and having the superior transmitter g'' integral with the upper lip of the lock and its edges and free point in contact with the pen, substantially as and for the purpose described.

11. In a fountain-pen, the combination, with the ink-reservoir, of a nozzle, the combination-lock fitted therein and having the slot *q*, holding the pen D, beneath which is a space for the air-vent and above the pen the upper ink-channel, the superior transmitter E'', with its shank locked in the longitudinal groove *l* and its free point in contact with the pen, and the separable ink-conductor, substantially as and the purpose described.

12. In a fountain-pen, the combination, with the ink-reservoir, of a separable nozzle, F, the combination-lock B', fitted therein and having the parallel ink-conductors *d d*, the upper ink-slot, *p*, the lower surface-groove, *b'*, for an air-vent, the transverse slot *q*, in which the pen D binds and lies across the upper side of the longitudinal central perforation, and under-feed bar g', in contact with its converging sides and point with the under surface of the pen, substantially as and for the purpose described.

13. In a fountain-pen, the combination, with the ink-reservoir, of a separable nozzle, the combination-lock B', inserted therein and having

the parallel ink-conductors *d d*, the capillary slot *p*, the transverse slot *q* across the central axis of the longitudinal perforation, and in which a pen, D, binds, the groove or air-vent *b'* on its under surface, the under-feed bar *g'*, in contact with the pen at its sides and point, and the superior transmitter E", inserted into and locked in the groove *l*, with its free outer end in contact with the pen, substantially as and for the purpose described.

14. In a fountain-pen, the combination, with the ink-reservoir, of a separable nozzle, the combination-lock B", inserted therein and having its under portion cut away to form an air-vent, *b"*, the slot *q*, in which a pen is held on the lower side of the central perforation, a groove, *l*, in its upper surface, and the superior separable transmitter fitted therein and having its free end in contact at its point with the pen, substantially as and for the purpose described.

15. In a fountain-pen, the combination, with the ink-reservoir, of a separable nozzle, the combination-lock fitted therein and having the slot *q*, carrying pen *d*, which divides the forward end of the lock through the axis of the central perforation into an upper and lower lip, the upper lip longer than the lower one and narrowed to a point, and forming the superior transmitter, which is flat on its under surface and convex or flat on its upper surface and in contact at its point with the pen, the pen being connected with the ink-supply by the ink-conductor, and an air-vent being beneath the pen, substantially as described.

16. A fountain-pen comprising, in combination, but three main separable parts, to wit: an ink-reservoir, A, having a nozzle and superior ink-transmitter, an adjustable key having an adaptable under-feed bar, ink-stopper, ink-conductor, and an air-vent, and a pen, substantially as and for the purpose described.

17. In a fountain-pen, the combination, with the ink-reservoir A, of a nozzle, F, the combination-lock B', fitted therein and having a long feeding portion, *g'*, arranged above and in contact at its sides and point with the back of a pen, the two parallel ink-conductors *d d*, the capillary ink-slot *p*, the shoulders *t t*, the central perforation or ink-flowing medium, *o*, the slot *q*, holding the pen D, and the surface air-vent groove *b'*, arranged above the ink-flowing medium and pen, substantially as described.

18. In a fountain-pen, the combination, with an ink-reservoir, of a separable nozzle, the combination-lock B', fitted in the reservoir end of the nozzle and locking in the groove *l*, the superior separable ink-transmitter E", in contact at its point with a pen, D, which is held in the nozzle by friction, and an adjustable key having an adjustable under-feed bar and a movable ink-stopper section with a central perforation, substantially as described.

19. A fountain-pen having an ink-conductor in the form of two parallel bars arranged laterally, as *d d*, and extending from shoulders *t t*, substantially as and for the purpose described.

20. The fountain-pen having the ink-conducting medium in the form of two parallel bars arranged horizontally, as *d d*, and constructed integrally with the body of the combination-lock, substantially as and for the purpose described.

21. A fountain-pen having the parallel bars *d d*, arranged horizontally, and the ink-slot *p*, extending from the pen-slot to and through a portion of one of the ink-conducting bars, substantially as and for the purpose described.

22. A fountain-pen having a tabular feeder, constructed with a locking-groove along a portion of its length and across its ink-channel and an air-vent groove in its periphery, substantially as described.

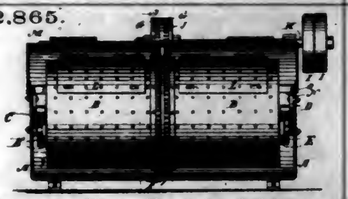
23. A fountain-pen having a longitudinally-sliding combined key and feed-bar, as C, the same being adjustable inwardly and outwardly for different kinds of writing and for use alone or with an upper-feed bar, substantially as described.

24. In a fountain-pen, the combination, with the ink-reservoir A, formed with an integral nozzle, A' A", of a pen, D, fitted and held in position by friction and supported beneath by an adjustable key, C, and borne upon at top by the tapered pointed wall portion A^3 of the integral nozzle A' in such manner that said wall portion, while forming a finger-shield above the pen and serving as an ink-transmitter by coming in contact at its converging sides and point with the pen, also serves for forming the walled extension of the ink-channel over the back of the pen, substantially as and for the purpose described.

25. In a fountain-pen, the combination, with the reservoir, of the nozzle, the combination-lock fitted therein and provided with the peripheral air-vent groove *b'*, arranged laterally, the parallel ink-conductors *d d*, arranged horizontally, and the superior ink-transmitter in contact at its sides and point with a pen, D, substantially as described.

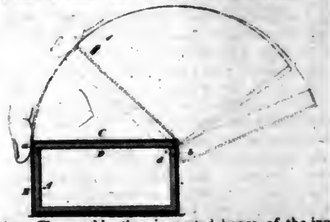
26. In a fountain-pen, the pen D, formed with a reduced integral extension from its heel for conducting ink from the ink-supply to the pen-point, substantially as described.

402,865. WASHING-MACHINE. Hamilton E. Smith, New York, N. Y. Filed Sept. 29, 1887. Renewed Feb. 13, 1889. Serial No. 300,200. (No model.)



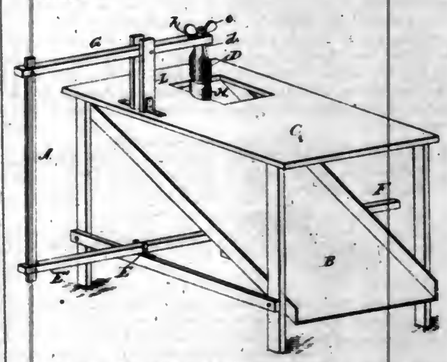
Claim.—A washing-machine composed of the case A, having a cover, M, and cap J, the bearings D, located within the said case at each end thereof, and having anti-friction rollers E E, the cylinder B, having gudgeons C C, engaging said anti-friction rollers, the spur-gear F, surrounding the central portion of the cylinder, and the driving-gear G, meshing therewith and located beneath the cap J, substantially as described.

402,866. NESTED BOXES. Reinhold Steinbock, New York, N.Y. Filed Mar. 13, 1889. Serial No. 303,149. (No model.)



Claim.—The combination, in nested boxes, of the inner box, A, and its hinged lid D with the outer box, B, and its hinged lid C, said hinged lid C having the dependent flange *a*, the hinge *b* of the lid C being lower than the hinge *d* of the lid D, substantially as herein shown and described.

402,867. OYSTER-OPENER. William F. Steuart, Blackbanks, St. Simon's Island, Ga. Filed Jan. 24, 1887. Serial No. 225,401. (No model.)



Claim.—1. The combination, with the table having an opening in the top and a chute below, of the stationary curved knife secured to the table, the oscillating lever carrying a curved knife directly over the stationary knife, the connecting-rod, and the pedal connected to the lever by means of said rod, substantially as specified.

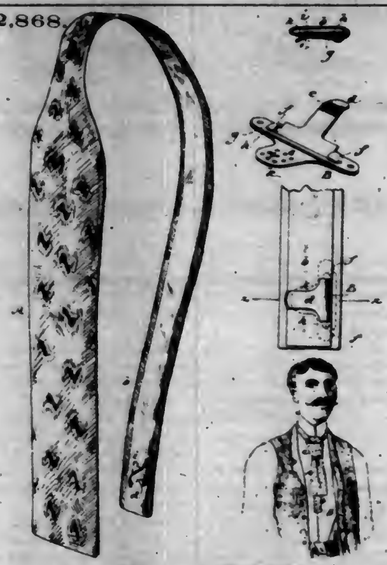
2. The combination, with the lower stationary knife, of the upper knife adjustably secured to an oscillating lever, whereby said upper knife may be adjusted with respect to the lower knife, substantially as and for the purpose set forth.

3. The combination, with the oscillating lever having a slot at its forward end, of the curved knife having a screw-threaded shank passing through the slot, and a thumb-nut whereby the knife may be adjusted with respect to the lower knife, substantially as shown and described.

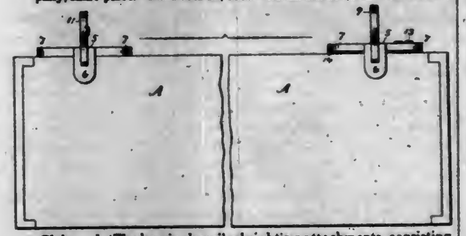
402,868. SCARF-FASTENER. Carl Strauss, New York, N. Y. Filed Jan. 7, 1889. Serial No. 295,867. (No model.)

Claim.—The spring-clamp B, consisting of the pivoted tongue *d*, slotted spring-plate *g*, and the base-plate *h*, having a spread flat portion, *k*, provided with stitching-perforations *s*, in combination with the scarf to which it is attached, substantially as herein shown and described, and for the purpose specified.

402,868.



402,869. SIGHTING ATTACHMENT FOR LEVELS. Justus A. Traut, New Britain, Conn., assignor to the Stanley Rule and Level Company, same place. Filed Jan. 22, 1889. Serial No. 297,204. (No model.)

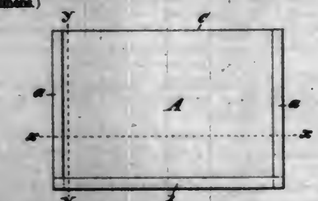


Claim.—1. The herein-described sighting attachments, consisting of the uprights 9 and 11, having, respectively, the near and farther sights, and each provided with a cross-base, from the middle portion of which said uprights project, and downwardly-projecting lugs at opposite ends of said base adapted to embrace the sides of the stock, and provided with a fastening device, whereby the upper edge of a level-stock may be clamped between said lugs, substantially as described, and for the purpose specified.

2. A sighting attachment made attachable and detachable to and from the level-stock, consisting of an upright containing a sight, a cross-base, 5, clamping-lugs 6 6, and lateral lugs 7 7, for forming an extended bearing-surface longitudinally with the level-stock, substantially as described, and for the purpose specified.

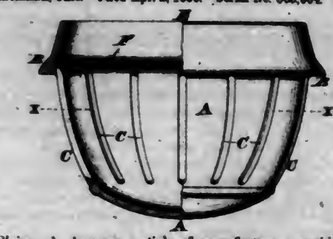
3. A sighting attachment consisting of an upright containing a sight, a cross-base, 5, clamping-lugs 6 6, lateral lugs 7 7, and an adjusting-screw in one of said lateral lugs, substantially as described, and for the purpose specified.

402,870. METHOD OF PREPARING FLY-PAPER. Alfred R. Trenner, Cincinnati, Ohio. Filed Nov. 30, 1888. Serial No. 292,267. (Specimens.)



Claim.—The herein-described method of preparing sticky fly-paper so as to prevent the oozing out or escaping of the adhesive substance with which the paper is covered during transportation or storage, which consists in coating the field of the sheet or backing with adhesive material, so as to leave a margin surrounding said field which shall be free of the adhesive compound, folding the sheet once through the center thereof, and then turning over the free margin so as to form a seal.

402,871. MOLDER'S LADLE OR CRUCIBLE. Charles Truesdale, Cincinnati, Ohio. Filed Apr. 2, 1888. Serial No. 305,064. (No model.)

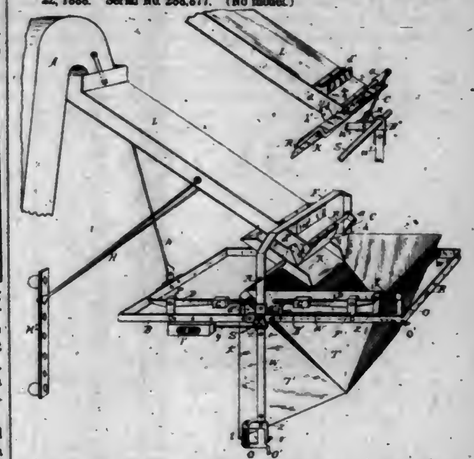


Claim.—1. As a new article of manufacture, a molder's ladle or crucible having its sides pierced with a series of slots, for the purpose specified.

2. A molder's ladle or crucible consisting of an upper portion having an inwardly-converging top and a lower portion having slotted sides, substantially as herein described.

3. A molder's ladle or crucible having an internal annular groove, an inwardly-converging top, and slotted sides, substantially as herein described.

402,872. GRAIN-WEIGHING MACHINE. Le Roy C. Tryon, Marseilles, assignor of one-half to Clarence E. Tryon, Ottawa, Ill. Filed Oct. 22, 1888. Serial No. 288,877. (No model.)



Claim.—1. In the grain-weighing machine shown and described, the combination of the oscillating chute K and connected aprons J J, arranged to oscillate in the same direction as said chute, substantially as and for the purpose set forth.

2. In the grain-weighing machine shown and described, the combination of the oscillating buckets T T, oscillating chute K, and oscillating aprons J J, substantially as and for the purpose set forth.

3. In the grain-weighing machine shown and described, in combination with the oscillating chute K, the oscillating aprons J J, and the mechanism, substantially as shown, for operating said aprons, as and for the purpose set forth.

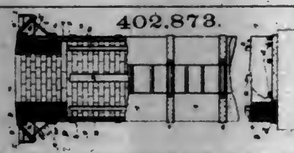
4. In the grain-weighing machine shown and described, the grooved rest *d*, in combination with the bail F and the grain-weighing mechanism, and the spout L, having the stop *h*, for closing its outer end, substantially as and for the purpose set forth.

402,873. SMOKE-STACK. Baptiste Vitalis, Pittsburg, Pa. Filed Oct. 6, 1888. Serial No. 287,490. (No model.)

Claim.—1. In a smoke-stack, the combination, with sheet-metal casing consisting of cylindrical sections adapted to abut each other endwise, substantially as indicated, of embracing-bands at the joints for securing contiguous sections, a lining located within the casing, and the longitudinal metal strips located between the casing and lining and bracing both, substantially as set forth.

2. The combination, with smoke-stack consisting of a casing and

402,873.

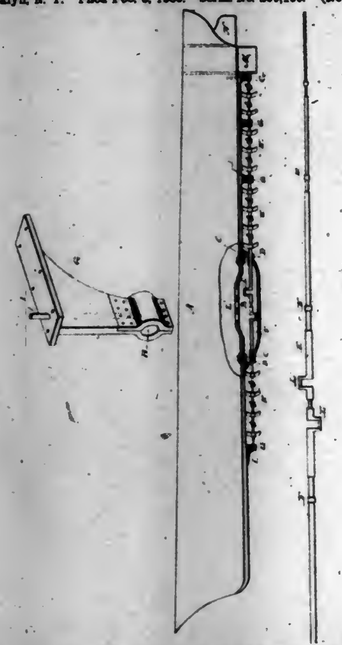


lining, of a series of metal bars secured against the outer face of the lining and blocks interposed between the bars and casing, substantially as set forth.

3. In a smoke-stack, the combination, with a metal casing, of a lining composed of bricks having concave inner faces and a central projection on its outer face and bricks having concave inner faces and end projections on its outer face, the said bricks being arranged in alternate layers to break joints, substantially as set forth.

4. The combination, with metal casing and longitudinal bars secured to the casing, substantially as indicated, of lining-bricks having angular projections, substantially as indicated, such projections abutting the longitudinal bars for forming air-ducts between the lining and casing, substantially as set forth.

402,874. SCREW-PROPELLER FOR VESSELS. CLIFTON VOSE, Brooklyn, N. Y. Filed Feb. 8, 1889. Serial No. 299,109. (No model.)



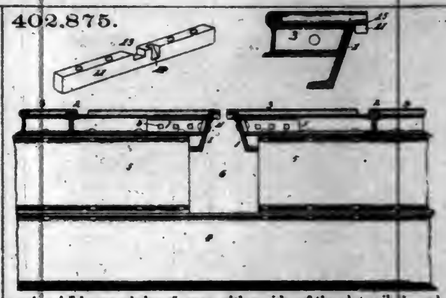
Claim.—1. The combination, with the propeller-shaft centrally located beneath the vessel, of the hangers in which said shaft has bearings, the said hangers being provided with passages extending from the interior of the vessel, whereby lubricant can be applied to said bearings, as set forth.

2. The combination, with a vessel, a propeller-shaft centrally located and extending longitudinally beneath the same, a water-tight chamber attached to the bottom of the vessel and surrounding the crank-arms of said shaft, and openings from the interior of the vessel into said chamber, of two or more screw-propellers on each side of said chamber, and hangers attached to the bottom of the vessel outside of said chamber and provided with bearings for the shaft and with passages extending from the interior of the vessel through said hangers to the shaft-bearings, whereby lubricant can be applied to said bearings, substantially as described.

402,875. CABLE AND RAILWAY CROSSING. FREDERIC C. WEIR and NATHANIEL O. GOLDSMITH, Cincinnati, Ohio, assignors to The Weir Frog Company, same place. Original application filed May 24, 1888, Serial No. 274,912. Divided and this application filed Oct. 18, 1888. Serial No. 288,477. (No model.)

Claim.—1. A railway-cable crossing composed of the steam rails cut in sections and fitting the slot and tram rails and supported by the

402,875.



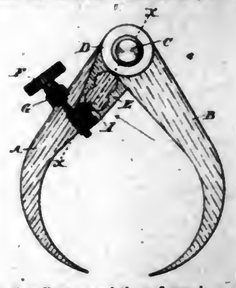
sectional I-beam girders 3 upon either side of the slot-rails 1, and a continuous girder, 4, having the cable-grip space 6, substantially as herein specified.

2. A cable-railway crossing composed of the steam rails cut in sections and fitting the slot and tram rails and supported by sectional I-beam girders 5, and a continuous girder, 4, rigidly connected to the sectional girders 5, substantially as herein specified.

3. A cable-railway crossing composed of the crossing-rail cut in sections abutting and fitting the edges of the slot-rails and lying between the girder-rails which abut the same upon either side, said sections being firmly connected to the girder-rails at the crossing angles and supported by a continuous girder forming a substructure under the crossing, substantially as specified.

4. A cable-railway crossing composed of the crossing-rails cut in sections abutting and fitting the slot and tram rails, to which they are firmly connected at the crossing angles by knee-braces, the said crossings being supported by sectional girders divided under the slot-rails to form a grip-space and supported by a continuous under girder, substantially as herein specified.

402,876. CALIPERS OR DIVIDERS. FRED A. WELLS, Milwaukee, Wis. Filed Jan. 11, 1889. Serial No. 296,071. (No model.)



Claim.—1. A calipers consisting of two legs, A and B, formed of single flat plates pivoted together by a rivet, C, in combination with a friction-arm, E, formed of a single flat plate of metal interposed between the legs A and B, which arm is pivoted on the rivet C and extends from the rivet in the same direction as the legs of the calipers, and a thumb-screw, F, having its shank journaled in a bracket, G, formed integral with one leg of the calipers, in which bracket the thumb-screw has rotary motion, but no endwise motion, the thumb-screw turning into a screw-threaded enlarged nut end of the friction-arm E, substantially as described.

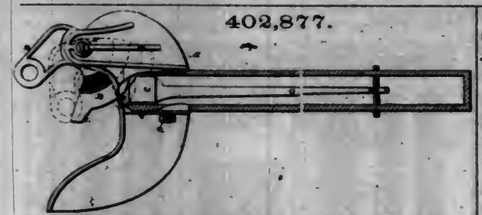
2. A calipers consisting of two legs, A and B, pivoted together, in combination with a single flat-plate friction-arm interposed between the two legs, a thumb-screw, F, journaled in one leg of the calipers and turning into the friction-arm, and a pin, I, inserted in the inner side of one leg of the calipers, which pin projects into a slot or aperture therefor in the friction-arm, whereby the relative movements of the friction-arm and the leg of the calipers, in which the thumb-screw is journaled, are limited, substantially as described.

402,877. CAR-COUPLING. FRANK A. WESTBROOK, Port Jervis, and WINFIELD S. COOK, Middletown, N. Y. Filed July 18, 1888. Serial No. 280,276. (No model.)

Claim.—1. The combination of the draw-head, the coupling-head placed therein and provided with the point or extension L, and the shoulder N, with a locking-lever pivoted at its rear end in the draw-head, and which has its front end to rest upon the shoulder N when the coupling-head is opened, substantially as described.

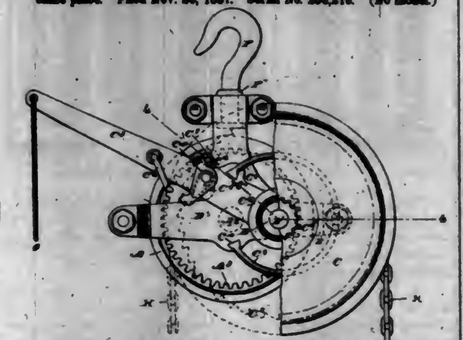
2. The combination of the draw-head provided with an opening, I, shaped as shown, through its front end, the coupling-head, the pin

402,877.



F, having flattened sides, and the spring which is applied to the end of the pin, substantially as set forth.

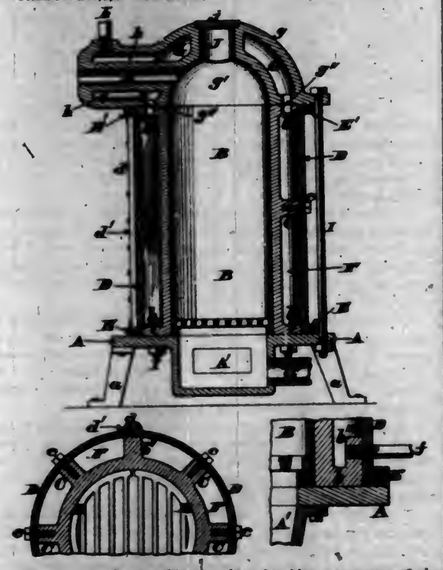
402,878. HOISTING MECHANISM. THOMAS A. WESTON, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Nov. 26, 1887. Serial No. 256,216. (No model.)



Claim.—1. The combination of a toothed differential chain-pulley with a ratcheted sprocket driving-wheel and a self-releasing ratchet-lever, as and for the purposes set forth.

2. The combination of the double-grooved toothed differential chain-sheave A, provided with deep side recesses, A^4 A^4, and secured to or made integral with its shaft A^3, the divided frame D E, provided with the guide-arms D^2 E^2, and with internal bearings, D^2 E', occupying the recesses A^4 A^4 of the sheave A, the hook F, the endless chain A^5, and the lower block, G, as and for the purposes set forth.

402,879. BARREL-HEATER. MAX WOLF, Cincinnati, Ohio, assignor of one-half to Joseph Huber, same place. Filed June 21, 1888. Serial No. 277,909. (No model.)



Claim.—1. The combination, in a hot-blast apparatus of the class specified, of a furnace having a hollow hood mounted thereon, which hood is provided with a discharge-nozzle for the heated air, said furnace, hood, and nozzle being surrounded by communicating jackets through which water circulates freely, as herein described, and for the purpose stated.

2. The combination, in a hot-blast apparatus of the class specified, of the flanged furnace B b b', vertical rib b'', outer shell, D, having its edges attached to said rib, and hoops E E', which hoops clamp said shell against the edges of said flanges b b', for the purpose described.

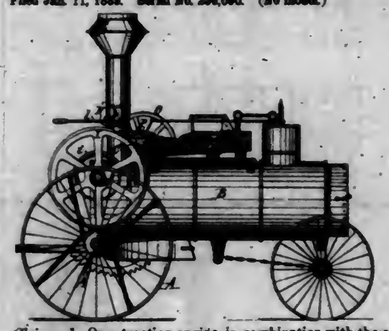
3. The combination, in a hot-blast apparatus of the class specified, of the furnace B, having outwardly-projecting lugs C, to which the outer shell, D, is secured by the fasteners c, as herein described.

402,880. CORSET-CLASP. MAX ADLER, New Haven, Conn., assignor to Mayer, Strouse & Co., same place. Filed Feb. 18, 1889. Serial No. 300,232. (No model.)



Claim.—A corset-clasp consisting of the two plates A B, secured to the busk upon opposite sides and projecting from the engaging edge of the busk, so as to leave a space between the projecting ends of the said two plates, combined with the jaws c d, hung upon pivots between the projecting ends of said plates, and so as to swing in the plane of the busk, the adjacent faces of the said jaws outside the plates constructed with a recess corresponding to the body of the stud with which the clasp is to engage, the noses of the said jaws outside the recess diverging to form a flaring mouth, the jaws extended from the pivots and turned outward to form handles h h, and a spring, as l, between the tails of the jaws, which operates to yieldingly hold the jaws in their closed position, substantially as and for the purpose described.

402,881. GEARING FOR TRACTION-ENGINES. LEONARD AMES, Jr., and JAMES H. ABERNETHIE, Oswego, N. Y., assignors to said Leonard Ames, Jr., Leonard Ames, and Arthur L. Merriam, same place. Filed Jan. 11, 1889. Serial No. 296,090. (No model.)

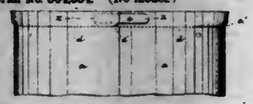


Claim.—1. On a traction-engine, in combination with the engine-shaft and propelling-axle, the counter-shaft between said engine-shaft and axle and sustained parallel therewith, meshing propelling-gears on said counter-shaft and axle, a gear-wheel fixed to said counter-shaft, and a pinion sliding longitudinally on the engine-shaft and confined circumferentially thereon, and a lever pivoted to a fixed support on the engine and connected with the sliding pinion to throw the same into and out of mesh with the gear-wheel of the counter-shaft, all combined to allow the engine to be operated to either transmit power to other engines or propel the engine on its traction-wheels, substantially as set forth and shown.

2. In combination with the engine-shaft C and the pinion P, sliding longitudinally on said shaft and confined circumferentially thereon and provided with the circumferential rabbet a in the end of its hub, the ring b, seated in the aforesaid rabbet, the cap c, attached to the end of the aforesaid hub and abutting against the end of the ring b, and the lever l, pivoted to a support on the engine and coupled to the aforesaid ring, substantially as described and shown.

3. On a traction-engine, in combination with the engine-shaft C, counter-shaft D, and gear-wheel I, fixed to the latter shaft, the box L, secured to the boiler and supporting the shaft C, the arm N, extending from the cap of said box, the pinion P, sliding longitudinally on the engine-shaft and confined circumferentially thereon, and the lever l, pivoted to the arm N, and connected with the sliding pinion P, substantially as and for the purpose set forth.

402,882. **METAL CAN.** MAX ARB, New York, N. Y. Filed Mar. 22, 1889. Serial No. 304,354. (No model.)



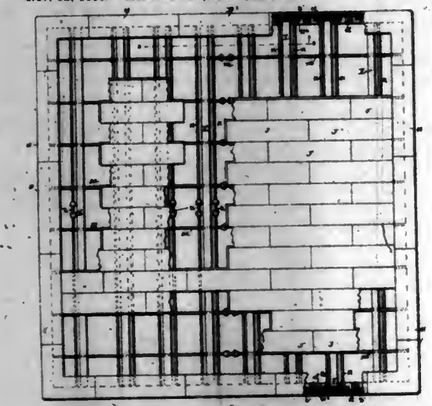
Claim.—1. The combination of a can-body having overlapping upright ends, with a strip placed between such ends and projecting outwardly from the same, the ends being soldered to each other and to the strip, substantially as specified.

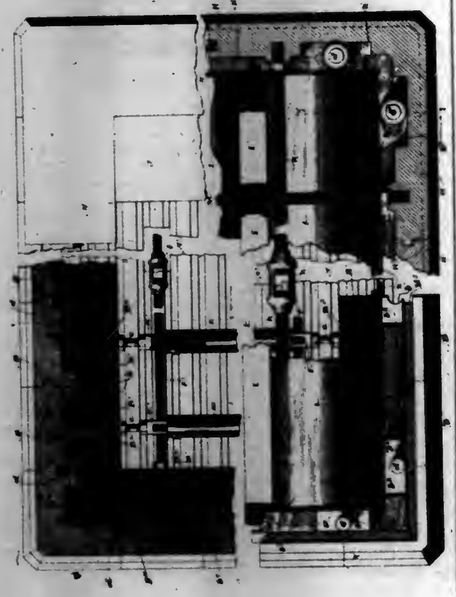
2. The combination of a can-body having overlapping upright ends, with a strip, *c*, placed between such ends and projecting partly outwardly and partly inwardly from the same, the ends being soldered to each other and to the strip, substantially as specified.

3. The combination of a can-body having overlapping ends, with cover *b*, having flange *b'*, that is received by the can-body, and with a strip, *c*, placed between the overlapping ends, the strip *c* being soldered to flange *b'* and to the overlapping ends of the can-body, substantially as specified.

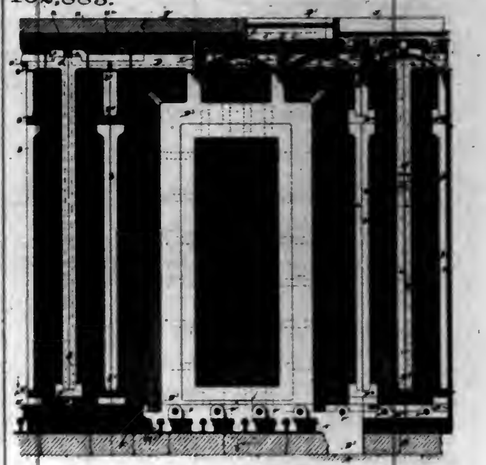
4. The combination of can-body *a*, having offset *a'*, and indented line *d*, with the cover *b*, having flange *b'*, and with the strip *c*, secured partly to the can-body and partly to flange *b'*, substantially as specified.

402,883. **BANK-VAULT.** NOAH S. ARMUTZ, Cleveland, Ohio. Filed Nov. 12, 1888. Serial No. 290,595. (No model.)





402,883.



Claim.—1. In bank-vaults, the combination, with upright slabs tongued and grooved together at their edges and constituting the outer walls of the vault, of a flooring of railroad-rails and tie-bars, substantially as indicated, for drawing and holding the wall slabs against such flooring, substantially as set forth.

2. The combination, with a foundation of mason-work and a flooring of railroad-rails laid thereon, of upright slabs tongued and grooved together, and constituting the outside walls of the vault, said slabs resting on the mason-work and having inwardly-projecting toes that overlap and rest on the flooring-rails, substantially as set forth.

3. The combination, with upright slabs and cornice-blocks resting on such slabs, these members being tongued and grooved together, substantially as indicated, of upwardly-projecting lugs integral with such upright slabs, such lugs being arranged in pairs at the edges of the slabs, with corresponding recesses in the cornice-blocks for receiving such lugs, whereby the slabs are held together edgewise, substantially as set forth.

4. The combination, with upright slabs having inwardly-projecting ribs abutting each other, of tie-blocks D^2, the latter having shoulders for embracing the ends of such pairs of abutting ribs for holding the upright slabs together edgewise, substantially as set forth.

5. The combination, with upright slabs and cornice-blocks resting thereon, substantially as indicated, of I-beams for supporting the roof, recesses in the upright slabs for receiving the ends of these I-beams, and tie-rods connected with the cornice-slabs for drawing and holding the latter against the ends of the I-beams, substantially as set forth.

6. In a bank-vault, slabs constituting the sides of the vault, provided with pockets in their contiguous edges and projecting portions extending into said pockets, in combination with tie-blocks inserted in such pockets and engaging the projecting portions of the slabs, said tie-blocks being provided with holes for the passage of tie-rods, substantially as set forth.

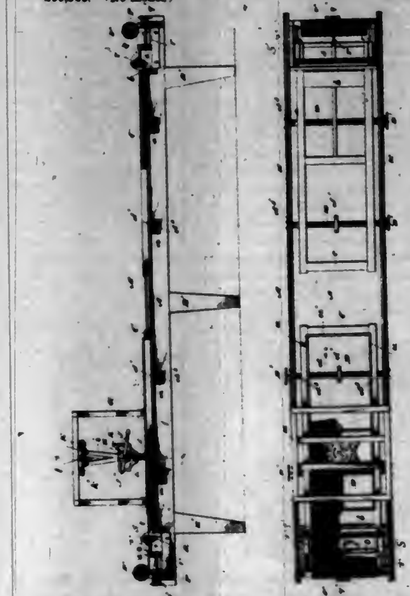
7. The combination, with flanged beams and slabs secured to said beams, of projecting lugs of the slabs for embracing the beams, with grooved abutting faces in said lugs, pairs of grooves forming holes, and plugs inserted in such holes, the ends of the plugs engaging the beam flanges for holding the slabs against said beams, substantially as set forth.

8. The combination, with upright slabs tongued and grooved together and constituting the outer wall of the vault, such slabs having grooves at the upper ends thereof, of cornice-blocks resting on such upright slabs, such cornice-blocks having tongues adapted to fit the grooves of the slabs, and tie-rods lying in grooves formed in contiguous faces of the slabs, substantially as set forth.

9. The combination, with upright slabs and cornice-blocks resting thereon, substantially as indicated, of vertical tie-rods for securing the cornice-blocks, such tie-rods extending through and being concealed in grooves formed in the meeting-faces of the upright slabs, substantially as set forth.

10. The combination, with cornice-blocks, substantially as indicated, of I-beams, a series of roofing-slabs, the same being tongued and grooved together and tongued and grooved with the cornice-slabs, and tie-rods at right angles to the I-beams engaging the cornice-slabs for holding the latter against the ends of the roofing-slabs, substantially as set forth.

402,884. **DOOR OR WINDOW SCREEN WIRING MACHINE.** JOHN H. AUTHOUSE, Ottumwa, Iowa. Filed Feb. 12, 1889. Serial No. 299,589. (No model.)



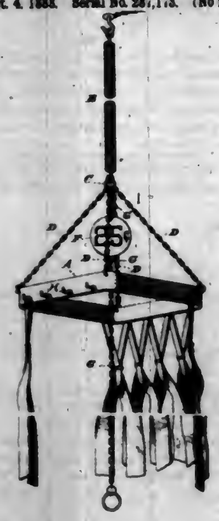
Claim.—1. In a machine for the purpose described, a table, combined with a carriage movable lengthwise of the table, and a driver carried by said carriage and movable on guides transversely thereof, substantially as described.

2. In a machine for the purpose described, a table and a carriage movable thereon, combined with a vertically-adjustable driver on said carriage and movable transversely thereof in guides, substantially as and for the purpose specified.

3. In a machine for the purpose described, the combination, with the table, of the block O, the sliding plate Q, the sliding frame S', and the screw P, the bars R and S of the clamp, and the cam-levers T, substantially as shown and described.

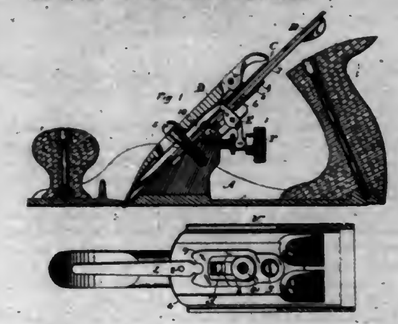
4. The combination, with the driver, of the finger-plate M, provided with pins extended through the lower portion of the driver, the staple-guide, and the spring N, attached to the driver, with its ends bearing on said pins, substantially as shown and described.

402,885. **DISPLAY-RACK.** EDWARD G. BABCOCK, New Britain, Conn. Filed Oct. 4, 1888. Serial No. 287,173. (No model.)



Claim.—The display-rack described, composed of the frame A, to which the goods to be displayed are attached, the chains connecting said frame to a ring, C, the elongated spring B, connected to said ring and extending upward for attachment to the ceiling, and the steady-chain E G, bearing the price-disk F and extending down from said ring, as specified.

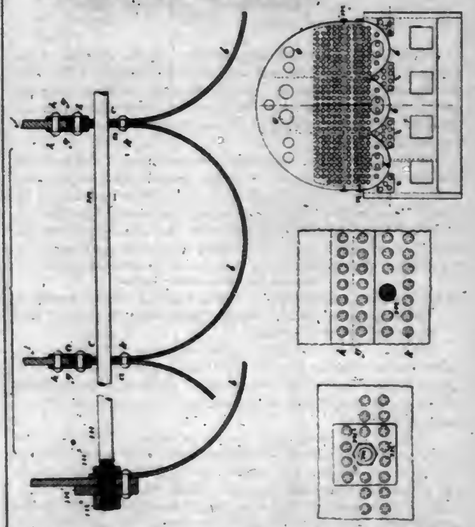
402,886. **BENCH-PLANE.** FRANK M. BAILEY, New Britain, Conn., assignor to the Stanley Rule and Level Company, same place. Filed Dec. 11, 1888. Serial No. 293,248. (No model.)



Claim.—1. The combination of the plane-stock provided with the frog 4, the cutting-bit, and the laterally-adjusting compound lever consisting of the lower and upper members pivoted on axes perpendicular to the face of said frog, substantially as described, and for the purpose specified.

2. The combination of the plane-stock provided with the frog 4, the compound lever consisting of the lower member, 6, having the opening 9 and upper member, 7, both pivoted to said frog, the cutting-bit B, cap-iron C, and the cap-screw 10, the head of which screw rests within the opening 9 of said lower member of the compound lever, substantially as described, and for the purpose specified.

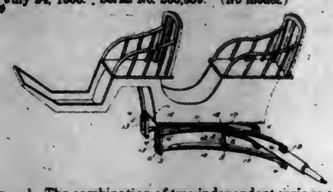
402,887. **STEAM-BOILER.** JOHN BAIRD, New York, N. Y. Filed Apr. 26, 1888. Serial No. 271,783. (No model.)



Claim.—1. Two or more inverted arches formed in that part of a boiler which overlies the furnace, said arches being constructed of sheets of metal with their adjoining edges secured by rivets, as described, and having such adjoining edges braced to the upper part of the shell by sheets of boiler-iron or steel secured to the adjoining edges of the arches and to the shell, substantially as specified.

2. One or more inverted arches formed in that part of a boiler which overlies the furnace, and constructed substantially as described, in combination with horizontal bracing extending from outside to outside of the shell and secured by nuts, as described.

402,888. VEHICLE-SPRING. GEORGE E. BARTHOLOMEW, New Haven, Conn., assignor of one-third to E. R. Edwards, Cincinnati, Ohio. Filed July 24, 1888. Serial No. 280,859. (No model.)



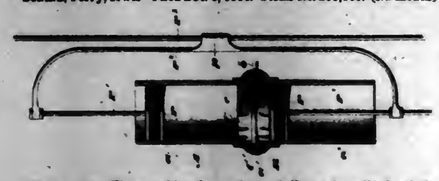
Claim.—1. The combination of two independent springs arranged one above the other and an equalizing-link arranged between and pivoted to the said springs, substantially as described.

2. The combination, with a spring cross-bar adapted for connection with a vehicle-body, of springs 11, connected to said bar, links 12, springs 10, held by said links, shackles to which the forward ends of the springs 10 and 11 are connected, and clips to which the rear ends of the springs are connected, substantially as described.

3. The combination, with springs 10 and 11, of a link, 12, centrally placed between said springs, shackles to which the forward ends of the springs are connected, said shackles being adapted for connection with the vehicle-body, and clips to which the rear ends of the springs are connected, said clips being adapted for connection with the rear axle of the vehicle, substantially as described.

4. The combination, with a vehicle-body, of shackles 13, connected thereto, springs connected to said shackles, a cross-piece arranged to the rear of the shackles and to which the springs are connected, links 12, arranged between the springs, and clips 19, to which the rear ends of the springs are connected, said clips being connected to the hind axle, substantially as described.

402,889. STEAM-ENGINE. VOLNEY W. BEMIS and WALTER R. BOEHM, Perry, Iowa. Filed Dec. 8, 1888. Serial No. 293,003. (No model.)



Claim.—1. The combination, substantially as described, of the two-part cylinder provided with exit-ports and centrally with a constantly-open ingress-port, two pistons connected to move together, and the centrally-flanged valve loosely seated between the pistons and provided with extended ends which project into the path of the advancing piston.

2. The combination, substantially as described, of the sectional cylinder having exit-ports and connected centrally by a bulged union having a constantly-open ingress-port, a loose disk-valve having an annular flange seated loosely between the inner ends of the cylinder-sections, and provided with extended ends adapted to project into the path of an advancing piston, the pistons mounted in each section of the cylinder, the piston-rods, and the yoke to connect the pistons.

402,890. ELECTRIC OR CABLE RAILWAY CAR. BUSHROD A. BEMIS, Springfield, and LOUIS PFINGST, Boston, Mass. Filed Feb. 15, 1889. Serial No. 300,043. (No model.)

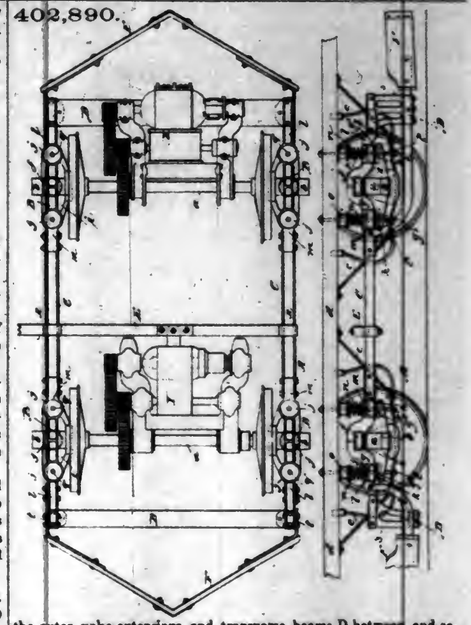
Claim.—1. In a car-truck, the combination, with the journal-boxes and the cushions *g* on the tops thereof, of the yoke-frame consisting of the arched yokes resting on said cushions *g*, the longitudinal yoke-connecting beams, and transverse connecting-beams, substantially as described.

2. The truck comprising the journal-boxes, yielding cushions thereon, and the yoke-frame consisting of the arched yokes to rest on the top of each journal-box cushion, the longitudinal yoke-connecting beams, and transverse connecting-beams, combined with a car-body spring supported from said yoke-frame, substantially as described.

3. In a car-truck, the combination, with the journal-boxes and their extension-frames *i* and the cushions *g g' g'* for each journal supported thereon, of the yoke-frame consisting of two pairs of yokes, B, each having a central arched portion and inner and outer extensions resting on said cushions, a pair of longitudinal beams, C, uniting the side pairs of yokes, and cross-beams uniting the compound yokes at each side of the truck, substantially as described.

4. A yoke-frame consisting of two pairs of yokes having arched intermediate portions and inner and outer extensions, longitudinal beams C, uniting said inner yoke-extensions, hangers *s*, supported on

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the outer yoke-extensions, and transverse beams D between and secured to said hangers, substantially as and for the purpose described.

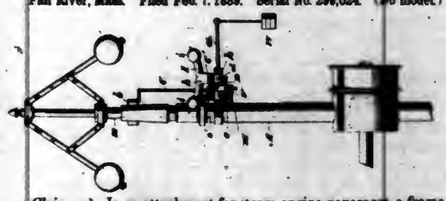
5. A yoke-frame consisting of two pairs of yokes having arched intermediate portions and inner and outer extensions, longitudinal beams C, uniting said inner yoke-extensions, hangers *s*, supported on the outer yoke-extensions, transverse beams D between and secured to said hangers, and the braces *t*, substantially as described.

402,891. END-GATE. HOLLAND C. BENNETT, Raymond, Ill. Filed Nov. 27, 1888. Serial No. 291,947. (No model.)



Claim.—The combination, with a wagon having the retaining-screws F in its sides, of the described end-gate cut away on each side at G to rest upon some supporting portion of the wagon—such as the axle or a transverse bar—and provided in its sides with suitably-curved slots E, each slot having both ends enlarged, as at *e*, substantially as and for the purposes described.

402,892. GOVERNOR FOR STEAM-ENGINES. WILLIAM BERWICK, Fall River, Mass. Filed Feb. 7, 1889. Serial No. 299,024. (No model.)

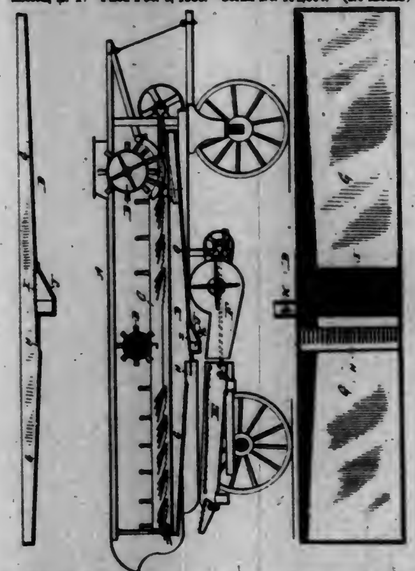


Claim.—1. In an attachment for steam-engine governors, a frame adapted to be connected to the standard thereof, said frame having an opening through which passes a rack-bar which engages with the segment attached to a horizontal shaft, said shaft carrying an arc-shaped chamber containing a shifting weight, said toothed rack also being connected to a rod having a spring, and an arm carrying a roller which engages with a pivoted lever, substantially as shown.

2. In combination with a governor for steam-engines, a rod connected to a vertically-moving part of the governor, the lower end of said bar having a rack-bar, an upwardly-extending rod embraced by a spring, and an arm carrying a roller connected to the depending rod C, a toothed segment mounted on a horizontal shaft to engage with the rack-bar, said shaft also carrying a weight which extends beyond each side of the center of the shaft *d*, and a pivoted lever, the short end of which is adapted to engage with a roller on the arm F, a suitable stop for said pivoted arm, and a weight attached to the long end thereof, substantially as shown, and for the purpose set forth.

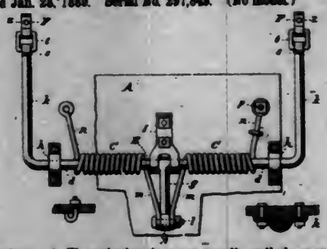
3. In a steam-engine governor, the combination of the rod C, connected to and actuated by a governor, a suitable supporting-frame carrying a horizontal shaft, a toothed segment secured upon said shaft, so that the horizontal shaft will move in unison with the governor, a single weight or mercury-chamber secured to the horizontal shaft above its center, an arm, F, provided with a roller and a bar, said arm and bar being connected to the rack-shaft, a lever or pivoted arm, G, mounted on the horizontal shaft, the short arm thereof extending beneath the roller, the upward movement of said lever being limited by the frame, the long end of said lever being provided with a weight, the parts being constructed and arranged substantially as shown, whereby the governor in its fluctuations up and down is counteracted.

402,893. BEAN-THRASHING MACHINE. CHARLES H. BIDWELL, Albion, N. Y. Filed Feb. 6, 1886. Serial No. 191,067. (No model.)



Claim.—The combination, with the conveyer-pan having a transverse opening, H, in its bottom, the portions of the bottom on each side of this opening converging toward the same, of a screen stretched over an opening in the bottom of the pan, in front of the said opening H, and a receptacle attached to the conveyer-pan beneath the said screen, substantially as described.

402,894. VEHICLE-SPRING. REMEMBER H. BOOTH, Kirkwood, N. Y. Filed Jan. 28, 1889. Serial No. 297,849. (No model.)

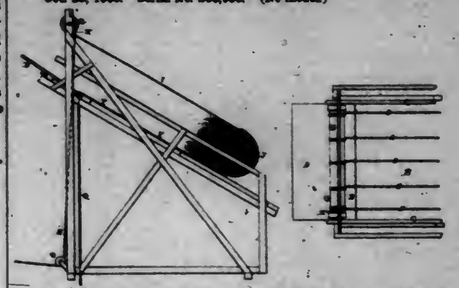


Claim.—1. The spiral springs outwardly coiled around an equalizing-lever and having the inner arms connected to a middle projection of said lever and the outer arms secured to the vehicle-body, substantially as specified.

2. The equalizing-lever having the lateral pivoted branches, the side arms at right angles thereto, and the middle projecting arm provided with an eye or bearing at its end, whereby it is connected to the inner arms of the spiral springs around said lateral branches, substantially as specified.

3. The combination of the equalizing-lever having its lateral branches pivoted to the vehicle-body, its side arms provided with end links or shackles, and its middle projecting arm, the double-prong bearing connecting said lever to the vehicle-body, and the spiral springs around said branches, their inner arms connected to the projecting arm of the equalizing-lever and the outer arms secured to the vehicle-body, substantially as shown and described.

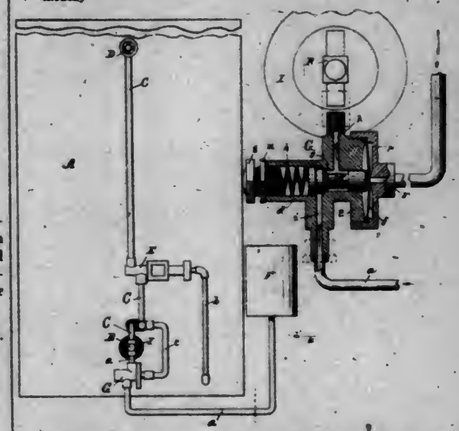
402,895. HAY-STACKER. DAVID W. BOYER, Tama, Iowa. Filed Oct. 23, 1888. Serial No. 288,986. (No model.)



Claim.—1. In a hay-stacker, a tilting platform connected to the upper end of the frame, elevating-ropes connected thereto at its lower edge, a drum, and elevating-ropes connected to the drum, substantially as shown.

2. In a hay-stacker, the combination of a suitable frame-work having an inclined top, a pivoted platform connected to its upper end, ropes connected to the lower end of the platform, ropes which are placed under the hay, a drum, and ropes connected to the drum both for operating the drum and raising the hay, substantially as set forth.

402,896. MEANS FOR CONTROLLING THE FLOW OF OIL TO INJECTOR-BURNERS FOR STEAM-BOILER FURNACES. SETH BRAGGIN, Rochester, N. Y. Filed June 4, 1888. Serial No. 275,987. (No model.)



Claim.—1. In combination with a device for atomizing oil, an oil-reservoir, an oil-pipe connecting said atomizing device and reservoir, a valve in said oil-pipe, a spring within the valve-chamber to close the valve, and a diaphragm adapted to be pressed against a part of the valve to open the same, a steam-conduit to admit steam to the side of the diaphragm opposite the valve, and the steam-boiler, substantially as shown and described.

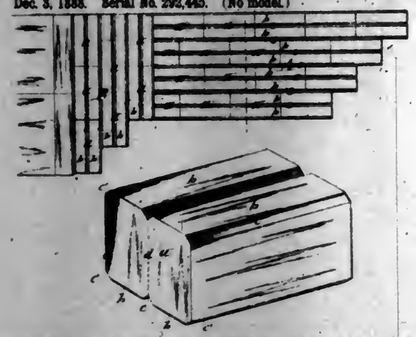
2. In combination with a device for atomizing oil, an oil-reservoir, a pipe connecting said atomizing device and the reservoir, a valve in said pipe, a spring within the valve-chamber to close the valve, and a diaphragm adapted to be pressed against the valve to open the same, a steam-conduit to convey steam to the side of the diaphragm opposite the valve, and the steam-generator, the axes of

the valve, the spring, and the diaphragm being in a straight line, substantially as shown.

3. In combination with a device for atomizing oil, a valve to control the flow of liquid fuel to the device for atomizing oil, connected with the steam-generator by a steam-pipe and diaphragm, and a valve in said steam-pipe to control the flow of steam therein, said latter valve being adapted to be closed by a diaphragm located in a diaphragm-chamber in a steam-inlet pipe, and said fuel-regulating valve being acted upon by a spring tending to close the same, substantially as described.

4. In combination with a steam-generator and an oil-reservoir, an atomizing device for the oil, a conduit for the oil connecting said reservoir and device for atomizing the oil, and a valve in said conduit to control the flow of oil therein, said valve being acted upon by a steam-pressed diaphragm in a direction tending to raise it off its seat, and pressed by a spring in the opposite direction to close it, substantially as set forth.

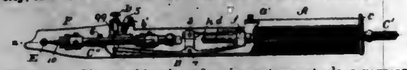
402,897. PAVING-BLOCK. JAMES L. BREED, Syracuse, N.Y. Filed Dec. 3, 1888. Serial No. 292,445. (No model.)



Claim.—1. The improved paving-block composed of vitrified clay and formed rectangular, and with grooves and beveled edges all formed in the top and bottom faces of the block and extending lengthwise thereof, and the end faces of said block being each in a uniform plane throughout at right angles to the top and bottom faces of the block, substantially as described and shown.

2. A street-pavement composed of rectangular blocks of vitrified clay, each of said blocks being formed with grooves and beveled edges all in the top and bottom faces of the block and lengthwise thereof, and having plain end faces in uniform planes throughout at right angles to the top and bottom faces, the blocks in the main or central portion of the street being laid with the grooves of the blocks transversely of the line of the street, and the blocks in the gutters laid with the grooves of the blocks lengthwise of the street, substantially as described and shown.

402,898. PAINT-DISTRIBUTER. CHARLES L. BURDICK, Kansas City, Mo. Filed Mar. 13, 1888. Serial No. 267,096. (No model.)



Claim.—1. The combination of a pigment-receptacle, a pigment-conducting point, and an air-blast nozzle adjustable in relation to said point, substantially as described.

2. In a paint-distributer, a bifurcated pigment-conducting point, in combination with an adjustable blast-nozzle arranged to discharge between the blades of the point, whereby the pigment is blown from between them, in the manner and for the purpose substantially as described.

3. In a paint-distributer, a bifurcated pigment-conducting point provided with mechanism for adjusting the blades thereof, in combination with an oscillating air-blast nozzle arranged to discharge between said blades, in the manner and for the purpose described.

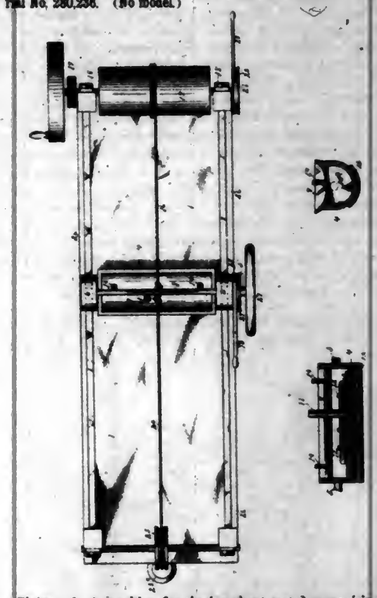
4. In a paint-distributer, a pigment-conducting point, in combination with an oscillating blast-nozzle, and mechanism, substantially as described, for adjusting said nozzle toward and from said point, in the manner and for the purpose set forth.

5. In a paint-distributer, a bifurcated pigment-conducting point having adjustable blades provided with a set-screw, in combination with an adjustable air-blast nozzle, substantially as described.

6. In a paint-distributer, a pigment-receptacle having a conducting-point removably secured therein and provided with a set-screw, in combination with an air-blast nozzle, substantially as described.

7. The combination of an air-supply tube, an adjustable air-blast nozzle, a valve to control the air-supply to said tube, and a finger-piece connected with the valve and nozzle, whereby both are simultaneously operated, in the manner and substantially as described.

402,899. MACHINE FOR TINNING METALS. DAVID CAIRD, Ansonia, and GEORGE LARKINS, Seymour, Conn. Filed July 17, 1888. Serial No. 280,236. (No model.)



Claim.—1. A machine for tinning sheet metal, comprising a rigid bed, a tilting carrier and spreader for laying and spreading the melted tin upon the surface of the sheets, a heater for said carrier and spreader, and means, substantially as described, for moving the carrying and spreading device over the surface of the sheets.

2. A machine for tinning sheet metal, comprising a rigid bed, and a tilting carrier and spreader for holding the melted tin and for spreading it upon the surface of the sheets, said carrier and spreader being vertically adjustable relatively to the bed, so as to regulate the thickness of the coating of tin, substantially as described.

3. A machine for tinning sheet metal, comprising a rigid bed lying at an incline, a tilting carrier and spreader for the melted tin, a heater for keeping the melted tin in that condition and for heating the spreading device, and a rope, windlog-drum, and weight for moving the carrying and spreading device, substantially as described.

4. The combination, with the bed, side rails, and hangers sliding thereon, of a carrying and spreading device journaled in said hangers, means, substantially as described, for locking said device in position, and means for moving said device backward and forward upon the bed.

5. The combination, with the bed, the hangers, and the carrier and spreader journaled in said hangers, of a winding-drum, a brake for controlling its movement, and a weight for moving the carrier and spreader forward in use.

6. The combination, with the bed, side rails, and hangers, of the carrier for the molten tin having a shoe, 15, secured to the bottom thereof, as and for the purpose set forth.

7. The combination, with the bed, side rails, and hangers, of a spreader journaled in said hangers and having a receptacle for the molten tin, and a heating-chamber, substantially as described.

8. The combination, with the bed, side rails, and hangers, of a spreader journaled in said hangers and having a receptacle for the melted tin, a heating-chamber, gas-connections, and a thermometer for indicating the temperature of the chamber.

402,900. HOSE-CARRYING STRAP. HIRAM M. CAMPBELL, Bridgeport, Conn. Filed Sept. 14, 1888. Serial No. 285,405. (No model.)

Claim.—1. In a hose carrying or supporting device, the combination, with the strap having the upper shoulder-loop and the lower and smaller loop, of the grapple-tongs, whose handles are secured about and are adapted to be operated by said loop, substantially as set forth.

2. In a hose carrying or supporting device, the combination, with the double-looped strap and the grapple-tongs secured thereon and operated thereby, of the hook secured about and vertically adjustable upon the shoulder-loop, substantially as specified.

402,900.



3. In a fireman's hose-carrying strap, the combination, with the grapple, of the shoulder-loop and the adjustably-securable hook arranged about the strap comprising said shoulder-loop, as described.

4. The combination, with the grapple, the loop for operating it, and the shoulder-loop, of the casing arranged about the strap comprising said shoulder-loop and movable thereon, and the hook pivoted to the casing and provided with a clamping-extension for the binding of the strap against the casing, substantially as set forth.

5. A fireman's hose-carrying strap comprising the following: the grapple-tongs and the loop whereby they are held and operated, the shoulder-loop, the adjustable clamping-hook arranged upon the shoulder-loop, and the snap secured at or near the lower end of said shoulder-loop, all arranged as described, and for the purpose specified.

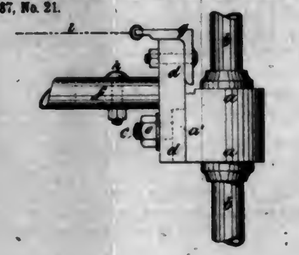
402,901. WITHDRAWN.

402,902. CATHETER. CHARLES A. CHAPMAN, No. 8 Stock Orchard Street, Caledonian Road, London, County of Middlesex, England, assignor to Sardy, Coles & Co., New York, N. Y. Filed Apr. 7, 1888. Serial No. 269,971. (No model.) Patented in England Sept. 16, 1887, No. 12,577.



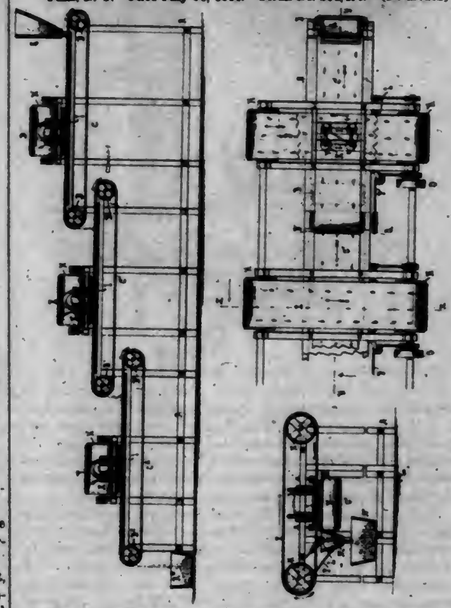
Claim.—In combination with a flexible catheter, substantially as hereinbefore described, a rigid former located in the end of the catheter and contiguous to the eye or opening of the same, for the purposes set forth.

402,903. BED-FRAME AND BEDSTEAD. ISAAC CHORLTON and GEORGE L. SCOTT, Manchester, County of Lancaster, England. Filed Oct. 24, 1888. Serial No. 288,995. (No model.) Patented in England Jan. 1, 1887, No. 21.



Claim.—In iron bedsteads, the brackets *d*, carrying the tubular side members, *f*, and angle-iron ends *g*, said brackets *d* being formed with a recess, in combination with the corner-brackets *a*, formed with a projection, *a'*, which fits the recess in the brackets *d*, and a screwed stud, *c*, passing through the bracket *d*, and secured by a nut, *e*, substantially as described and shown.

402,904. MAGNETIC SEPARATOR. GORDON CONKLING, Glens Falls, N. Y. Filed July 31, 1888. Serial No. 281,496. (No model.)



Claim.—1. The combination, with a series of conveying-aprons running in the same direction, one above the next, as shown, of a series of transverse aprons, magnets secured in proximity to each of the transverse aprons, and suitable driving mechanism for actuating the aprons, substantially as described.

2. The combination, with a series of conveying-aprons running in the same direction, one above the next, as shown, of a like series of transverse aprons, a magnet secured in proximity to each of the transverse aprons, the magnets of the different transverse aprons being of different intensities, and suitable driving mechanism for actuating the aprons, substantially as described.

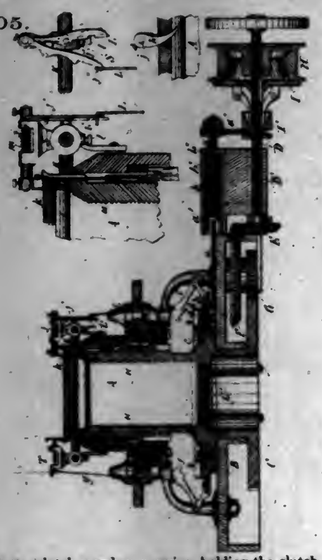
402,905. STOPPING MECHANISM FOR KNITTING-MACHINES. HENRY CURTIS, Little Falls, N. Y. Filed Jan. 21, 1889. Serial No. 296,959. (No model.)

Claim.—1. In combination with the needle-cylinder, an automatic stop-motion comprising a shifter adapted to throw the driving mechanism of the machine out of gear, a spring actuating said shifter, a tripper connected to the machine and adapted to actuate the shifter in opposition to the force of the spring, an auxiliary tripper arranged to rotate with the needle-cylinder, and a latch connected to said auxiliary tripper and adapted to lock the two trippers to each other and supported out of its locking position by the yarn passing to the machine.

2. The combination, with the needle-cylinder and its driving-shaft, of the driving-pulley mounted loosely on said shaft, a clutch member adapted to lock said pulley to the shaft, a spring holding the clutch member out of engagement, an annular ratchet surrounding the base of the needle-cylinder and rigidly attached thereto, a plate surrounding said part of the needle-cylinder and movable independently thereof, a clutch-shifting arm or rod actuated by said plate in opposition to the force of the aforesaid spring, latches connected to said plate and adapted to lock the same to the aforesaid ratchet, and links hung on the yarns passing to the machine and holding the aforesaid latches out of engagement with the ratchet, as set forth.

3. In combination with the needle-cylinder, thread-guides, driving-shaft, and loosely-mounted driving-pulley, a clutch member adapted to lock said pulley to its shaft, an annular ratchet surrounding the base of the needle-cylinder and rigidly attached thereto, an annular plate surrounding said part of the needle-cylinder, movable independently thereof, and provided with notches, a push-bar con-

402,905.



nected with the clutch member, a spring holding the clutch member out of engagement with the driving-pulley, a cam on the aforesaid annular plate adapted to actuate the push-bar in opposition to the aforesaid spring, latches adapted to enter the notches of the annular plate and ratchet, and links connected to the latches and suspended from the yarns passing to the machine, as set forth.

4. In combination with the rotary needle-cylinder, its driving-shaft, and pulley mounted loosely thereon, a clutch member adapted to lock said pulley to its shaft, the push-bar *a*, connected with said clutch, the spring *b*, arranged to press the push-bar toward the needle-cylinder, the ratchet *c*, rigidly secured to the base of said cylinder, the annular plate *d*, loosely surrounding said cylinder and ratchet and provided with notches *d'* and with the cam *e*, the latches *f f*, hinged to the plate *d*, the links *g*, connected to said latches and hung on the yarns passing to the machine, and the ring *h*, loosely surrounding the plate *d* and formed with cams *h'* under the aforesaid latches, substantially as described and shown, for the purpose set forth.

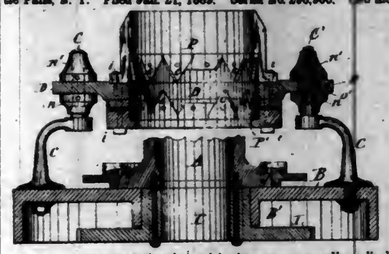
5. The combination of the needle-cylinder provided with a circumferential recess over which the knitted fabric passes, a feeler sustained yieldingly in position to bear on the fabric over the aforesaid recess, a shifter adapted to throw the driving mechanism of the machine out of gear, a spring actuating the shifter in one direction, a tripper connected to the machine and adapted to actuate the aforesaid shifter in opposition to the force of the spring, an auxiliary tripper arranged to rotate with the needle-cylinder, and a latch connected to said auxiliary tripper and adapted to lock the two trippers to each other, and supported by the feeler bearing on the fabric, as aforesaid.

6. The combination of the needle-cylinder provided with the circumferential recess *i*, the pivoted spindle *j*, feeler *k*, attached to said spindle and having its free end normally in the aforesaid recess, the arm *j'*, extending laterally from the spindle and provided with a shoulder, *j''*, a shifter adapted to throw the driving mechanism of the machine out of gear, a spring actuating the shifter in one direction, a tripper connected to the machine and adapted to actuate the aforesaid shifter in opposition to the force of the spring, an auxiliary tripper arranged to rotate with the needle-cylinder, a latch connected to said auxiliary tripper and adapted to lock the two trippers to each other, and a link connected to the said latch and removably hung on the shoulder *j''* of the arm *j'*, substantially as and for the purpose set forth.

7. In combination with a shifter adapted to throw the driving mechanism of the machine out of gear and a spring actuating said shifter in one direction, a tripper connected to the machine and adapted to actuate the aforesaid shifter in opposition to the force of the spring, an auxiliary tripper arranged to rotate with the needle-cylinder, and a latch adapted to lock said trippers to each other, the needle-cylinder A, provided with the circumferential recess *i*, the spindle *j*, pivoted to a stationary support outside of the needle-cylinder, the feeler K, attached to the inner end of said spindle, the arm *j'*, extending laterally from the outer end of the spindle, the link L, connected to the aforesaid latch and hung removably on the arm *j'*, and the knock-off L' on the support of the spindle *j*, arranged in position to throw the link L from the arm *j'*, substantially as described and shown.

8. In combination with the needle-cylinder provided with the circumferential recess *i*, the rod R of circular form in cross-section, sustained horizontally stationary at the outside of the needle-cylinder, the bracket S, mounted adjustably on said rod, the set-screw *l*, connected to the bracket and engaging the aforesaid rod, the spindle *j*, pivoted to the bracket, and the feeler *k*, attached to the inner end of said spindle, substantially as described and shown.

402,906. CIRCULAR-KNITTING MACHINE. HENRY CURTIS, Little Falls, N. Y. Filed Jan. 21, 1889. Serial No. 296,960. (No model.)



Claim.—1. In combination with the rotary needle-cylinder, a plate arranged stationary around the exterior of said needle-cylinder, and the lower cam-ring, P', hung on said plate.

2. In combination with the rotary needle-cylinder, a plate arranged stationary around the exterior of said needle-cylinder, and the lower cam-ring, P', divided transversely and hung on the aforesaid plate, as and for the purpose set forth.

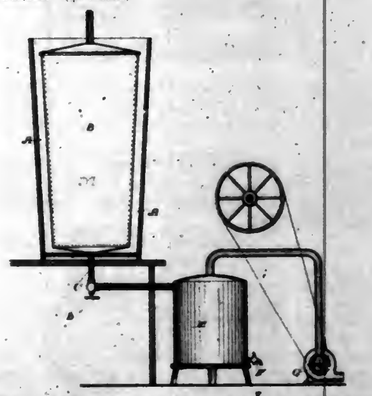
3. In combination with the bed-plate and needle-cylinder, standards rising from the bed-plate, a plate surrounding the needle-cylinder and supported on the standards, and the cam-rings P P', secured, respectively, to the top and bottom of the aforesaid plate, as and for the purpose set forth.

4. In combination with the bed-plate and needle-cylinder, the standards C C, rising from the bed-plate, the screw-threaded posts C' C', attached to the standards, nuts *n n'* on said posts, the plate D, supported between said nuts, and the cam-rings P P', secured, respectively, to the top and bottom of the plate D, substantially as described and shown.

5. In combination with the bed-plate and needle-cylinder, the standards C C, rising from the bed-plate, the screw-threaded posts C' C', attached to said standards, the nuts *n*, provided with the cylindrical necks *o* and shoulders *o'*, the plate D, provided with eyes *e*, closely embracing the necks *o* and seated upon the aforesaid shoulders, the nuts *n'*, applied to the posts C' C' above the plate D, and the cam-rings P P', secured, respectively, to the top and bottom of said plate, substantially as described and shown.

6. In combination with the bed-plate and needle-cylinder, standards rising from the bed-plate, the plate D, surrounding the needle-cylinder and supported on the aforesaid standards, and the cam-rings P P', composed of segmental sections secured to the top and bottom of the plate D, substantially as described and shown.

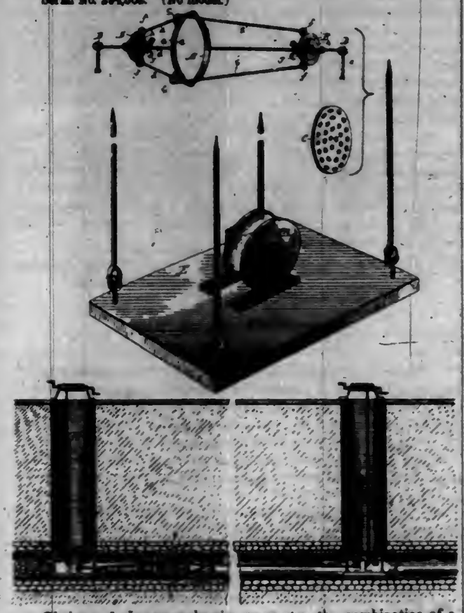
402,907. APPARATUS FOR MAKING MENTHOL CRYSTALS. HENRY D. CUSHMAN, Three Rivers, Mich. Filed June 13, 1887. Serial No. 241,216. (No model.)



Claim.—1. The combination of the vessel B, having openings in the top and bottom for the ingress and egress of air, the removable basket M, adapted to closely fit within the vessel B, and the vessel A that incloses the vessel B and contains the cooling agent, substantially as set forth.

2. The combination of the vessel B, having openings in the top and bottom for the ingress and egress of air, the removable basket M, adapted to closely fit within the vessel B, the vessel A, that incloses the vessel B and contains the cooling agent, and an exhaust fan or pump connected by a pipe with the bottom of vessel B, substantially as set forth.

402,908. APPARATUS FOR CLEANING SEWERS. OWEN DONNELLY and COTTER T. BRIDE, Washington, D. C. Filed Dec. 21, 1888. Serial No. 294,202. (No model.)



Claim.—1. In sewer-cleaning apparatus, the combination of a circular knife and a series of spring rods or arms extending therefrom in opposite directions, the same being compressible or collapsible and designed to move against the walls of the sewer, substantially as and for the purpose described.

2. In sewer-cleaning apparatus, the combination of a circular knife having opposite cutting-edges, compressible or collapsible spring-rods extending from the same in opposite directions, and a removable gate fitting within the said knife, substantially as described.

3. In sewer-cleaning apparatus, the combination of a circular or ring-shaped knife having opposite cutting-edges and formed with openings, and a series of arms projecting from said ring in opposite directions, the same having their inner ends turned to enter said openings and their outer ends brought together and secured, and a draw-chain or rope, substantially as described.

4. In sewer-cleaning apparatus, the circular or ring-shaped knife, in combination with the spring rods or arms and the plates B B, the said rods or arms having their outer ends passing through the plates and secured by nuts and washers, and the plate having its edge bent over outwardly to protect the ends of the rods, substantially as described.

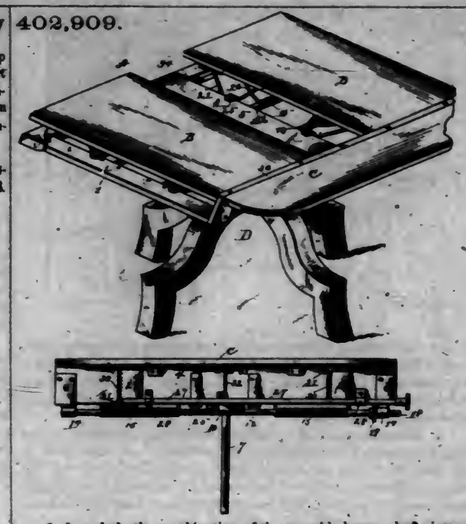
5. In sewer-cleaning apparatus, the circular or ring-shaped knife provided with openings and having opposite cutting-edges, in combination with spring-arms fitting in said openings from opposite directions, substantially as described.

6. In sewer-cleaning apparatus, the platform E, having mounted thereon the grooved wheel or pulley and provided with the hinged arms *e*, substantially as described.

402,909. DESK. JOHN W. DUNCAN, Butler, Mo., assignor of one fourth to Robert G. West, same place. Filed Nov. 17, 1888. Serial No. 291,151. (No model.)

Claim.—1. In a desk, the combination of the frame, the vertically-movable leaves, shafts journaled beneath the leaves, coiled springs secured to the shafts having arms bearing against the under side of the leaves, ratchet-wheels on the shafts, a pawl engaging the ratchet-wheels, and means for turning the shafts to regulate the tension of the spring, substantially as described.

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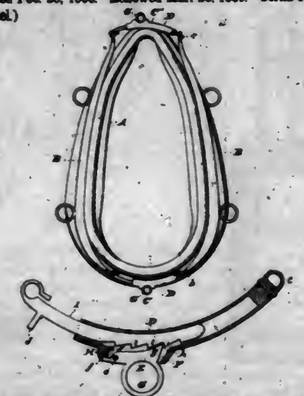


2. In a desk, the combination of the movable leaves, shafts journaled beneath the same, coiled springs secured to the shafts, having arms, and rollers on the arms bearing against the under side of the leaves, substantially as described.

3. In a desk, the combination of the movable leaves, shafts journaled beneath the same, coiled springs secured to the shafts, having arms, rollers on the arms bearing against the under side of the leaves, guides on the leaves, and arms journaled in the supporting-frame and moving in the guides, substantially as and for the purpose specified.

4. The combination, with the desk, of a slide-rod, vertical rack-plates secured thereto, movable leaves, and pins secured to the leaves and designed to engage the rack-plates, substantially as and for the purpose specified.

402,910. HAME-CONNECTION. ROBERT C. ELLIOTT, Prairie Creek, Ind. Filed Feb. 25, 1888. Renewed Mar. 20, 1889. Serial No. 304,050. (No model.)

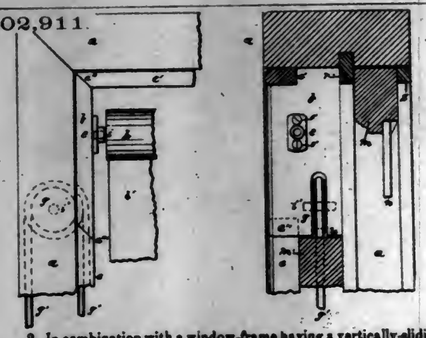


Claim.—The hame-fastening device composed of the curved tubular section D, rectangular in cross-section and having the closed end, the loop *c*, pivoted to the closed end of the section D, the detent E, pivoted through its lug *e* in a recess, F, in a projection, *f*, on the side of the section D, the said detent having the pawl-point *g*, the projection *f*, the coiled spring H in the recess F and bearing against the lug *e*, the curved section I, having the loop on its outer end and a handle, J, and provided with the teeth *i* for engaging the detent, substantially as specified.

402,911. WINDOW-FIXTURE. WILLIAM H. ELLIOT, Brooklyn, N. Y. Filed Nov. 28, 1888. Serial No. 291,944. (No model.)

Claim.—1. In combination with a window-frame having a vertically-sliding sash, a balancing-cord and pulley pivoted thereto and constructed in the usual way, and a fixture-block, *b*, for supporting the shade-roller bracket, provided with slot or recess *d* to make room for said cord and pulley, substantially as specified.

402,911.

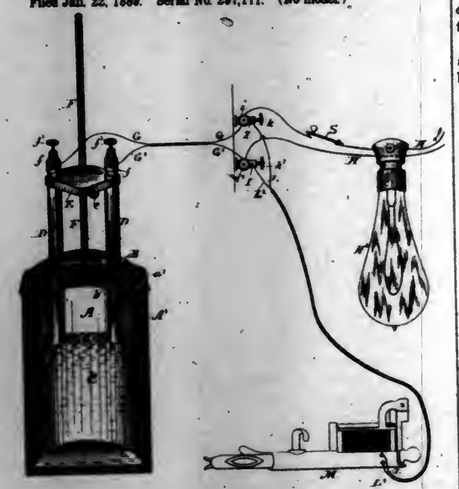


2. In combination with a window-frame having a vertically-sliding sash, a balancing-cord and pulley pivoted thereto and constructed in the usual way, a fixture-block, *b*, provided with a stop, *u*, on its lower end to limit the upward movement of the same, and a bracket, *c*, all substantially as specified.

3. In combination with a window-frame having a vertically-sliding sash, a balancing-cord and pulley pivoted thereto and constructed in the usual way, a fixture-block, *b*, provided with a slot or recess, *d*, a stop, *u*, for the sash, and a bracket, *c*, fixed by suitable means upon said block, which is in turn supported by said frame, substantially as specified.

4. As an article of manufacture, the fixture-block *b*, shaped and constructed substantially as described, to be placed in the inner upper corner of a window-frame in line with the guide-sash stop independently thereof, and forming a continuous finish therewith, and to have its lower edges across the sashway to serve as a stop, and provided with a window-shade bracket fixed to its face.

402,912. RHEOSTAT. JOSEPH B. RETTRIKIN, Des Moines, Iowa. Filed Jan. 22, 1889. Serial No. 297,171. (No model.)



Claim.—1. The electric-current regulator consisting of a vessel containing an acid solution, its lid having two vertical perforations, a central post secured to said lid, an insulating-platform adjustably secured to said post, two parallel carbons suspended from said platform and passing through the perforations in the lid, and binding-posts upon said carbons, substantially as described.

2. The combination of an electric-current regulator consisting of a vessel containing a chemical solution, its lid having two vertical perforations, a central post secured to said lid, an insulating-platform adjustably secured to said post, two parallel carbons suspended from said platform and passing through the perforations in the lid, and binding-posts upon said carbons, with electric wires connected to said carbons, binding-posts I upon said wires, a mechanical electric tool, and wires connecting it with said posts I, substantially as described.

402,913. THILL-COUPLING. BURRIS A. FARR, Galesburg, Ill. Filed Jan. 17, 1889. Serial No. 296,662. (No model.)

Claim.—1. In an anti-rattler thill-coupling, the combination, with

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a coupling-box and a thill-iron provided with adjustable journal stub ends, of an elastic block, a clip, a presser-shoe, and a set-bolt, substantially as set forth.

2. In an anti-rattler thill-coupling, the combination, with a coupling-box provided with a slotted end and socket-boxes that are adapted to receive the journal stub ends of a thill-iron, a thill-iron supporting opposite journal stub ends, and two endwise-adjustable journaled stub ends, of a presser-shoe that has half-boxes formed on its depending parallel flanged walls, which are adapted to engage the journal stub ends, a removable axle-clip, an elastic block, and a set-bolt, substantially as set forth.

3. In an anti-rattler thill-coupling, the combination, with a coupling-box, a journaled thill-iron, and adjustable stub ends that are rounded to afford journals for the thill-iron and are oppositely inserted in a threaded hole in this thill-iron, of an elastic block which is located between the flanged walls of a presser-shoe, a flanged presser-shoe, an axle-clip having an inclined rib on its face, and a threaded set-bolt, substantially as set forth.

402,914. PENCIL-SHARPENER. JONAS R. FOSTER, Stoneham, Mass. Filed Jan. 18, 1888. Serial No. 261,105. (No model.)



Claim.—1. A pencil-sharpener composed of the block provided with a handle and with a recess in its under side, and a blade attached to the block above the recess and with its cutting-edge adjacent and parallel to one wall of the recess and beyond the under surface of the block, substantially as and for the purposes set forth.

2. A pencil-sharpener composed of the recessed block *a*, the blade *c*, having the hooked end c^3, and the handle *d*, all substantially as and for the purposes set forth.

3. A pencil-sharpener composed of the block *a*, blade *c*, adjustably attached thereto, and the handle *d*, secured to one end of the said block, all substantially as and for the purposes set forth.

402,915. PORTABLE GALVANIC BATTERY. ALBERT FRIEDLANDER, Berlin, Germany. Filed Apr. 30, 1888. Serial No. 272,361. (No model.) Patented in England Mar. 21, 1887, No. 4,213; in France Oct. 25, 1887, No. 186,500; in Belgium Oct. 31, 1887, No. 79,575, and in Austria-Hungary Mar. 12, 1888, No. 40,817 and No. 6,157.



Claim.—1. An improved compendious galvanic battery for strong currents and especially for producing electric light in portable lamps in which the electrodes are attached by means of clamping-rings to a hollow rotary shaft, said shaft being rotated by operating a thumb-piece outside of the battery and connected to the rotary shaft in such manner that the electrodes can be immersed into or raised out of the exciting-fluid, substantially as and for the purpose described and shown.

2. In a portable galvanic battery for strong currents, the combination of the receptacle A and cover B with the hollow shaft *e*, clamps *d*, electrodes *c c'*, and thumb-piece *l*, substantially as and for the purpose described and shown.

3. In a portable galvanic battery, the combination of the receptacle A and partitions *a* with the frame *b*, electrodes *c c'*, clamps *d*, shaft *e*, caps or boxes *h*, segment *i*, worm *k*, and thumb-piece *l*, substantially as and for the purpose described and shown.

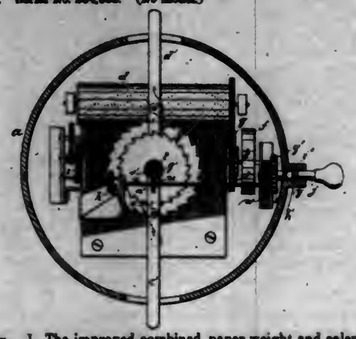
4. In a portable galvanic battery, the combination of the receptacle A, partitions *a*, frame *b*, electrodes *c c'*, clamps *d*, and shaft *e* with the caps or boxes *h*, segment *i*, worm *k*, thumb-piece *l*, and the split pins *f* and contacts *g*, substantially as and for the purpose described and shown.

5. In a portable galvanic battery, the combination of the receptacle A, partitions *a*, cover B, frame *b*, electrodes *c c'*, clamps *d*, shaft *e*, thumb-piece *l*, with the tooth or spur on said thumb-piece *b*, and the indicator I, for showing the depth of immersion of the elements

in the exciting-fluid, substantially as and for the purpose described and shown.

6. In a portable galvanic battery for strong currents, the combination of the receptacle A, cover B, electrodes *c c'*, clamps *d*, shaft *e*, thumb-piece *l*, indicator I, and frame *b* with the screws *m*, for receiving the electric lamp and connecting the same with the frame *b* and thus with the battery, substantially as and for the purpose described and shown.

402,916. COMBINED PAPER-WEIGHT, CALENDAR, AND MUSICAL WATCH. ELIA H. GAILLARD, New York, N. Y. Filed Sept. 8, 1883. Serial No. 284,902. (No model.)

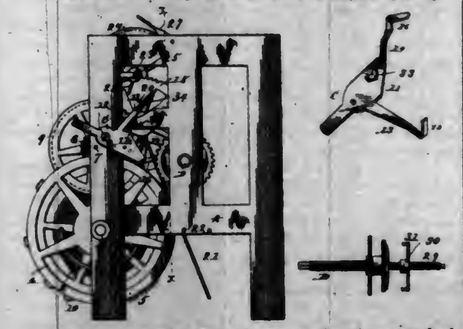


Claim.—1. The improved combined paper-weight and calendar, comprising, in combination, the stem-winder-watch case, the dial, the calendar-indices, the index-indicators, winding-stem geared with one of the index-indicators, and ratchet mechanism geared with one or more other index-indicators, substantially as described.

2. The improved combined paper-weight and calendar, comprising, in combination, the stem-winder-watch case, inclosed music-works geared with the winding-stem, the calendar-indices, the index-indicator geared with the winding-stem, and one or more index-indicators having ratchet-shifting mechanism, substantially as described.

3. The combined stem-winding calendar and paper-weight, winding-stem, and gripping-stem-knob pen-extractor, substantially as described.

402,917. CLOCK STRIKING MECHANISM. DANIEL J. GALE, Forestville, Conn. Filed Sept. 10, 1888. Serial No. 285,051. (Model.)

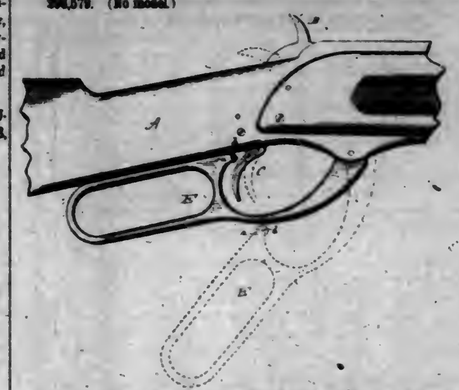


Claim.—1. In a striking-train, the combination of a count-wheel, a locking-plate operated thereby to release the train to strike the hours, a collar on the minute-arbor engaging the locking-plate to release the train to strike the half-hours, and a pin on the frame to keep the collar in contact with the said locking-plate, substantially as described.

2. In a striking-train, the combination of the minute-arbor threaded for a portion of its length, an armed collar engaging the said threaded portion, a locking-plate having a finger engaging the said arms to cause the collar to be drawn out of contact with the said locking-plate when the hands are turned in the direction opposite their rotation, and a pin on the frame engaging the said arms to cause the collar to resume its normal position when the hands move in their proper direction, substantially as described.

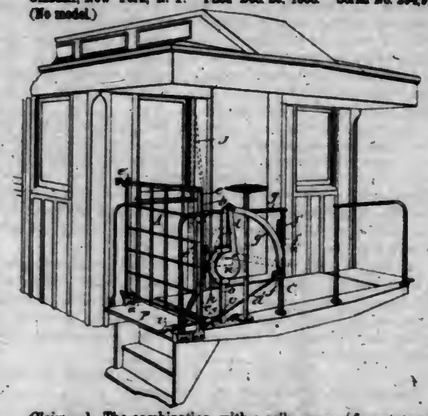
3. In a striking-train, the combination, with the minute-arbor, of an armed collar moving thereon, a locking-plate having a finger engaging the arms to throw the said collar out of contact with the locking-plate, and a pin on the frame for throwing the collar in contact with the locking-plate, substantially as described.

402,918. TRIGGER-SETTING MECHANISM FOR FIRE-ARMS. LODOWICK W. GAY, Wardner, Idaho. Filed Jan. 17, 1889. Serial No. 296,579. (No model.)



Claim.—In a fire-arm, the combination, with a gun provided with a hammer and trigger, of a pivoted lever, E, provided with an integral forwardly-projecting arm, *a*, and a roller journaled upon the forward end of the said arm and resting immediately behind the curved back of the trigger, whereby, when the said pivoted lever is thrown down, the said roller will impinge against the curved back of the trigger and press the same forward, as and for the purpose set forth.

402,919. PLATFORM-GATE FOR RAILWAY-CARS. FRANK M. GILBERT, New York, N. Y. Filed Dec. 29, 1888. Serial No. 294,978. (No model.)



Claim.—1. The combination, with a railway-car, of a gate made of vertical and horizontal bars and hinged to a supporting-bar at the end of the car-platform, substantially as described, and arranged to be raised close up to the supporting-bar, and mechanism whereby it can be operated by a person standing at the opening in the guard-railing at the end of the car-platform, substantially as and for the purpose set forth.

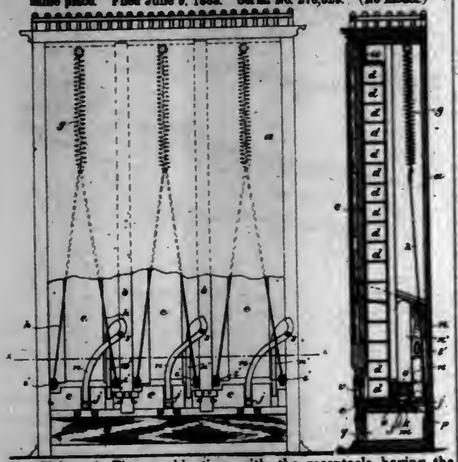
2. The combination, with a railway-car and a platform-gate made with vertical and horizontal bars and hinged to a supporting-bar at the end of the car-platform, substantially as described, said gate being jointed and arranged to be raised up close to the supporting-bar, of the sliding clasp A, cam *u*, clasp *t*, lever-arm *l*, and connecting-rod *c'*, substantially as described, and for the purpose set forth.

3. The combination, with a car-platform gate arranged to be raised up to one side, substantially as described, of a bridge to cover the car-steps, connected to the said gate, so that it will be raised with it in the same direction, substantially as and for the purpose set forth.

4. The combination, with a car-platform gate jointed and arranged to rise up to one side, substantially as described, of a bridge hinged to the car-platform to cover the car-steps, and devices whereby the bridge may be connected to the said gate, so as to be raised with it when necessary, substantially as and for the purpose specified.

5. The combination, with a car-platform gate, of the bridge *p*, rod *b'*, hook *a'*, arm *s'*, pulleys *f f'*, and chain *d'*, substantially as specified, and for the purpose set forth.

402,920. COIN-OPERATED MERCHANDISE-HOLDER. WILLARD H. GILMAN, Boston, Mass., assignor to the Gilman Confectionery Company, same place. Filed June 9, 1888. Serial No. 276,629. (No model.)



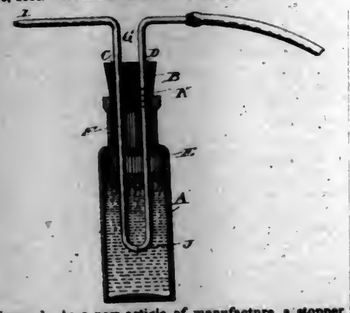
Claim.—1. The combination, with the receptacle having the series of front columns, of the sliding drawers having each a front hollow portion and a rear rest or support, the springs secured in rear of said columns, the cords connected to said drawers and to said springs, and the rollers around which said cords are passed, substantially as described.

2. In a coin-operated package-holder, the combination, with the receptacle having a series of front columns and recesses in its lower portion, of the spring-held drawers having cavities in their lower rear ends, the short horizontally-disposed levers fulcrumed in said cavities and having their rear ends projecting beyond said drawers, each lever being provided with a dog to engage in one of said recesses, and the chutes, substantially as described.

3. As an improvement in coin-operated package-holders, the combination, with the receptacle having recesses in its lower portion, of the series of spring-held drawers having cavities in their lower portion, the levers fulcrumed in said cavities and having their rear ends projecting beyond said drawers, and the narrow chutes opening over the ends of said levers, substantially as described, whereby a coin placed in either of said chutes will hold one of said levers tilted until the drawer is opened, as set forth.

4. The combination, with the receptacle having a money-receiving drawer provided with an aperture therein, of the series of spring-held drawers having cavities in their rear ends, the levers pivoted therein and engaging recesses in said receptacle, and the chutes opening over said levers above the aperture of the money-drawer, substantially as described.

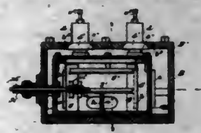
402,921. ATOMIZER. NOEL R. GORDON, Springfield, Ill. Filed Dec. 10, 1888. Serial No. 293,154. (No model.)



Claim.—1. As a new article of manufacture, a stopper for an atomizer provided with a packing and a bent tube through the same, one of the legs of which is provided with a series of holes or apertures below the stopper and adjacent thereto, substantially as set forth.

2. In an atomizer, the combination of a vessel the stopper of which is provided with two vertical holes, a bent tube, the legs of which pass through the holes, one of which legs is provided with a series of holes below the stopper and adjacent thereto, a bulb, and a nozzle, substantially as set forth.

402,922. VALVE FOR ENGINES. JAMES T. HALSEY, Paterson, N. J. Filed May 15, 1888. Serial No. 273,957. (No model.)



Claim.—1. The combination of a wedge-shaped valve-chamber open to the exhaust at its bottom and at both ends, and forming a part of the way or passage for the same, and a box-like wedge-shaped valve arranged to play in said valve-chamber, said valve being constantly open to the live steam through a port in the wall of the valve-chamber, and being provided with the usual steam-ports for admitting steam alternately to the ends of the engine-cylinder, as set forth.

2. The combination of a wedge-shaped valve-chamber open to the exhaust at its bottom and at both ends, and forming a part of the way or passage for the same, and a box-like wedge-shaped valve arranged to play in said valve-chamber, said valve being constantly open to the live steam through a port in its lateral face opposite to the engine-cylinder only, said port coinciding with a port in the outer wall of the valve-chamber, and said valve being provided with the usual steam-ports in its opposite lateral face only for admitting steam alternately to the ends of the engine-cylinder, as set forth.

3. The combination of a wedge-shaped valve-chamber open to the exhaust at its bottom and at both ends, a box-like wedge-shaped ported valve arranged to play in said valve-chamber and always open to the live steam, and means, substantially as described, for applying a proportionate or differential pressure upon said valve to hold it down to its seat.

4. The combination, with the wedge-shaped valve-chamber open to the exhaust and having ports leading direct into the ends of the cylinder, of the wedge-shaped main valve constructed to fit and play in said chamber, said valve having a port always open to the live-steam inlet, and ports for the admission of steam to the cylinder from said valve, and a cut-off valve mounted in the wedge-shaped main valve and controlling the passage of steam from the latter valve to the cylinder, substantially as set forth.

5. The combination, with the valve-chamber and its box-like wedge-shaped valve, of a pressure-regulator arranged over said valve and comprising a foot resting on the crown of the valve, and a steam-chamber behind said foot open to the live steam, whereby the pressure of the foot on the valve is regulated by and proportioned to the pressure of the live steam within the valve at all times, as set forth.

6. The combination, with the valve-chamber open to the exhaust at its bottom and at both ends, of the wedge-shaped valve therein, open at one side only to the live steam, and having ports in its opposite face only for communication with the cylinder, said chamber having recesses b^3 in the inner face of its outer wall connected by steam-passages with the respective steam-ports in the cylinder, whereby the pressure on the one face of the valve is balanced by the pressure on the opposite face thereof.

7. The combination, with the valve-chamber, of the wedge-shaped valve therein always open to the live steam, said valve having steam-ports in its wall adjacent to the cylinder, and having also recesses in the outer face of its opposite wall, said ports and recesses being connected, respectively, by steam-passages, whereby the pressure is approximately balanced on the opposite faces of valve.

8. The combination, with the wedge-shaped valve-chamber, constantly open to the exhaust and provided with ports opening into the cylinder, of the wedge-shaped main valve, always open to the live-steam inlet and provided with ports *b b* to admit steam to the cylinder in one of its faces, recesses $b^\times$ $b^\times$, substantially equal in area to said ports in the outer face of its opposite wall, and steam-passages *b'*, connecting said ports *b* and recesses $b^\times$, substantially as set forth.

9. The combination of the valve-chamber B, open to the exhaust and provided with a steam-inlet, *a'*, ports *c c*, opening into the cylinder, and recesses b^3 b^3 in the inner face of its outer wall opposite to and substantially equal in area to the ports *c c*, and connected with said ports, respectively, by closed steam-passages, and the wedge-shaped main valve C, having openings *a* $a^\times$ in its opposite walls of substantially equal area, ports *b b* in its inner wall, recesses $b^\times$ $b^\times$ in the outer face of its outer wall equal in area to said ports, and closed steam-passages connecting recesses $b^\times$ with ports *b*, substantially as set forth.

10. The combination, with the valve-chamber and the wedge-shaped main valve therein, of the cylinder *d*, mounted in said chamber over said valve, and the piston *e* in said cylinder seated on said valve, said piston *e* having a recess, *e'*, always open to the interior of the valve, and a longitudinal passage, e^3, connecting the recess *e'* with cylinder *d* above said piston, substantially as set forth.

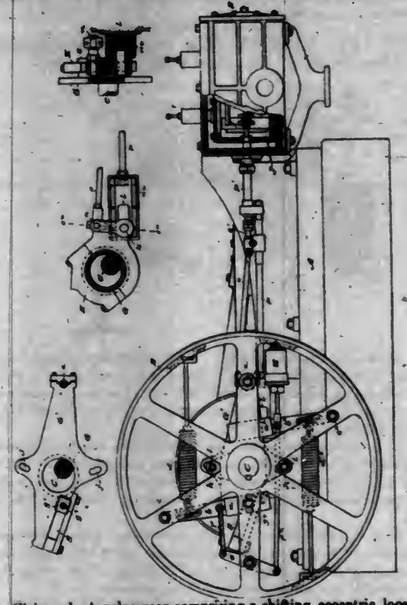
11. The combination, with the valve-chamber and the wedge-shaped main valve therein, of a cylinder, as *d*, mounted on said valve-chamber and always open at its upper part to the boiler-steam, and the piston, as *e*, in said cylinder, its lower end seated on said main valve, said piston having a recess, as *e'*, in its lower face, always open to the live steam, the area of the recess *e'* being less than the area of the upper end of the piston, substantially as and for the purpose set forth.

12. The combination, with the valve-chamber and the wedge-shaped main valve therein, of the cylinder *d*, provided with a part-spherical base, $d^\times$, seated in a recess in the top plate of said chamber, and the piston *e* in said cylinder and seated on said valve, said piston having a recess, *e'*, always open to the steam in the valve, and a passage, e^3, connecting said recess with the cylinder *d* above said piston, substantially as set forth.

13. The combination, with the valve-chamber and the wedge-shaped main valve therein, of the cylinder *d* on said chamber, the piston *e* therein, provided with a recess, *e'*, and passage e^3, and seated on said valve over aperture e^3, the spring e^4 in said cylinder behind the piston, and the screw for varying the tension of the spring, substantially as set forth.

14. The combination, with the cylinder *d* and the hollow or tubular piston *e* therein, said piston being coned at the top, as described, of the packing-ring e^5, mounted on the coned part of said piston and bearing outwardly against the cylinder-wall, as set forth.

402,923. VALVE-GEAR. JAMES T. HALSEY, Paterson, N. J. Filed June 15, 1888. Serial No. 277,281. (No model.)



Claim.—1. A valve-gear comprising a shifting eccentric loosely embracing and carried by the engine-shaft, a governor connected with and controlling the shifting movements of said eccentric, the yoke of said eccentric, and the rods of the main valve and cut-off valve of the engine, both coupled to and actuated by said yoke, whereby the movements of both of said valves are controlled simultaneously by the governor.

2. The combination, with a shaft driven by an engine and a wheel thereon, of an eccentric loosely embracing said shaft, a carrier-plate which bears said eccentric, said carrier-plate being pivotally mounted on said wheel and provided with a slot, the governor-weight carried around by said shaft and provided with a stud which engages said slot, and the spring attached to said governor-weight, said slot having its axis arranged obliquely to the path in which the governor weight moves.

3. The combination, with a shaft driven by an engine and a wheel thereon, of a ring-like eccentric loosely embracing said shaft, a plate carrying said eccentric, said plate being pivoted to the said wheel, as described, a governor-weight pivotally mounted on said wheel and provided with a stud engaging a slot in said plate, the spring attached to said weight, the yoke of the eccentric, and the valve-rods coupled to said yoke, substantially as set forth.

4. In a valve-gear wherein the main and cut-off valves are both actuated by one eccentric and its yoke, the combination, with said eccentric and yoke and the valve-rods and valves, of a rock-lever arranged intermediate between one of said valves and the yoke of the eccentric which actuates said valve.

5. In a valve-gear, the combination, with an eccentric carried by the engine-shaft and its yoke, of a carrier to which said yoke is coupled, the main-valve rod coupled to said carrier, and the cut-off-valve rod coupled to said yoke, the axis of the path in which said coupling plays being arranged to pass, if prolonged, to one side of the axis of the shaft carrying the eccentric, substantially as and for the purposes set forth.

6. In a valve-gear, the combination, with an eccentric carried by the engine-shaft and its yoke, of the main-valve rod operated by said eccentric, the stem and rod of the cut-off valve, and intermediate levers between the said yoke and the stem of the cut-off valve, substantially as set forth.

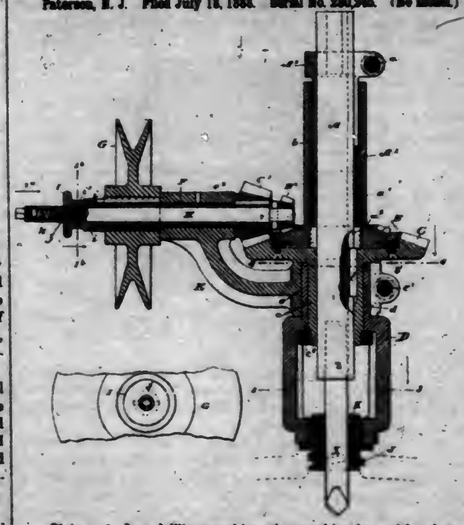
7. In a valve-gear, the combination, with an eccentric carried by the engine-shaft and its yoke, of a carrier coupled to the yoke, the main-valve rod coupled to said carrier, a rock-lever fulcrumed on and carried by the main-valve rod, the cut-off-valve stem coupled to one end of said rock-lever, and the cut-off-valve rod coupling the other end of said rock-lever with the yoke of the eccentric, substantially as set forth.

8. In a valve-gear, the combination, with an eccentric carried by the engine-shaft and its yoke, of a carrier to which said yoke is coupled, the main-valve rod coupled to said carrier, the vibrating elbow-lever, the link coupling one arm of said elbow-lever to the yoke, and the cut-off-valve rod coupled to the other arm of said elbow-lever, substantially as set forth.

9. In a valve-gear, the combination, with an eccentric carried by the engine-shaft and its yoke, of a carrier to which said yoke is coupled, the main-valve rod coupled to said carrier, the rock-lever, as *u*, fulcrumed on and carried by said valve-rod, the cut-off-valve stem, as *v'*, coupled to one end of said rock-lever, an elbow-lever, as *v*, a link coupling one arm of said lever to the eccentric-yoke, and the rod *e*, coupling the other arm of said elbow-lever with the other arm of the rock-lever *u*, substantially as set forth.

10. In a valve-gear wherein the main and cut-off valves are both driven from the same eccentric and its yoke, the combination, with said eccentric and yoke, of a rock-arm to which the said yoke is coupled, the main-valve rod coupled to said rock-arm, a rock-lever pivotally mounted on the yoke and coupled at its upper end to the upper end of said rock-arm, and the cut-off-valve stem coupled to the other end of said rock-lever, substantially as set forth.

402,924. PORTABLE DRILLING-MACHINE. JAMES T. HALSEY, Paterson, N. J. Filed July 18, 1888. Serial No. 280,245. (No model.)



Claim.—1. In a drilling-machine, the combination, with a base-piece, as D, and a driver for the drill-holder mounted rotatively therein, of the said holder, as A, mounted in the driver, as described, and provided with a feed-screw, a feed-nut embracing said screw, and gears, substantially as described, driven from a common source for rotating said driver and nut simultaneously in the same direction but at different rates of speed.

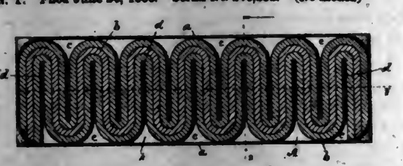
2. In a portable drilling-machine, the combination, with the base-piece, as D, having a cylindrical neck, as *d*, of the bearing-bracket, as E, for the driving-shaft, provided with a band, as *e*, which embraces the said neck on the base-piece, and with a securing-screw, as *d'*, substantially as set forth.

3. In a drilling-machine, the combination, with a base-piece, as D, and a driver for the drill-holder rotatively mounted therein, of the said holder, as A, provided with a feed-screw, the feed-nut embracing said screw, the toothed wheel B, forming a part of said nut, the toothed wheel C, forming a part of said driver, the driving-pinions, as B' and C', in mesh with said wheels, respectively, and the shafts, as H and F, of said pinions arranged one within the other, the driving-sheave, as G, on the exterior shaft, and the clutch connecting said shafts, whereby they may be driven in unison or independently, all arranged to operate substantially as set forth.

4. A portable drilling-machine having its base-piece, as D, provided with an aperture for the passage of the drill, and provided also with a tubular male screw, as J, for securing the drill in the proper position for drilling, said tubular attaching-screw being adapted to embrace the drill, as set forth.

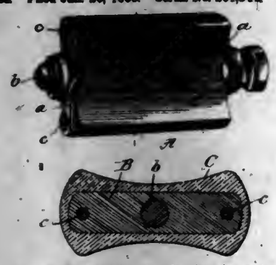
5. The combination, with a portable drilling-machine having its base-piece or stock provided with a tubular male screw, J, for securing the drill to a templet, of a templet provided with a female screw to receive the said male screw on the drilling-machine, which latter screw embraces the drill and centers it, as set forth.

402,925. BLACKBOARD-ERASER. FRANK HANNER, Seneca Falls, N. Y. Filed June 26, 1888. Serial No. 278,232. (No model.)



Claim.—A blackboard-eraser consisting of a block having strips of erasing material placed side by side and in contact, secured in continuous folds extending across its face, forming alternate curves or bends at the sides of the block, and a band secured to the periphery of the block tangent to the bends of the strips, forming therewith a series of triangular pockets, and transverse channels between the folds of the strips opening in alternate directions into said pockets, the strips adjacent to the channels bending at their free edges over the channels, substantially as shown.

402,926. TREADLE FOR BICYCLES. GIDEON HAYNES, Jr., Hingham, assignor to The Springfield Bicycle Manufacturing Company, Boston, Mass. Filed Jan. 20, 1888. Serial No. 261,344. (No model.)



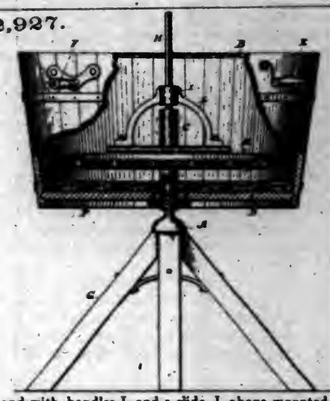
Claim.—1. A treadle for bicycles, having its exterior bearing-surfaces curved to conform to the ball of the foot, substantially as described.

2. A treadle for bicycles, consisting of a core of wood or equivalent light material inclosed in an envelope of rubber dished or hollowed out on its tread-surfaces to conform to the shape of the ball of the foot, substantially as described.

3. A treadle for bicycles, consisting of a core of wood or equivalent light material inclosed by an envelope of rubber dished or hollowed out on its tread-surfaces, the said core being formed with a central opening for the passage of the crank-spindle, and having at each end a like opening for the reception of the bolts *c*, substantially as described.

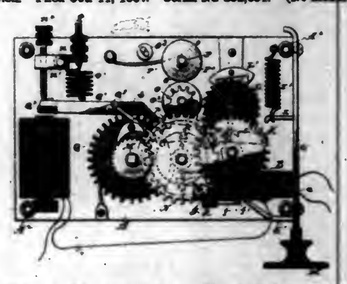
402,927. WASHING-MACHINE. JOHN G. HENDERSON, Keokuk, Iowa. Filed Dec. 10, 1888. Serial No. 293,152. (No model.)

Claim.—1. The tub B, provided with a projecting handle, F, a series of ribs on its bottom, and a central tube, C, in combination with a support, A, having a shaft, H, squared along its upper part to prevent a slide turning thereon, and a rubber head, K, provided with ribs below and with handles L and a slide, I, above mounted on shaft H, so as to slide without turning.



2. The tub B, provided with a central vertical tube, C, and having handle F, in combination with a support and shaft, H, to fit in said tube, and with a floating rubber, K, held by said shaft and adapted to hold it while the tub is rotated to wash clothing under said rubber, substantially as set forth.

402,928. TELEPHONE SYSTEM. FRED A. HOLCOMB, Grand Rapids, Mich. Filed Oct. 11, 1887. Serial No. 252,051. (No model.)



Claim.—1. The combination, with a telephone system, of a recorder for recording a signal at a distant station and a device at the sender's station adapted to be operated by the sender for automatically recording at the distant station the number of the call of the sender, substantially as set forth.

2. In a telephone system, the combination, with a recording mechanism, of make-and-break mechanism and a device for throwing the make-and-break mechanism into electrical circuit and simultaneously releasing the recording mechanism, substantially as set forth.

3. In a telephone system, the combination, with a recording mechanism, of a make-and-break mechanism and a device for throwing the same into electrical circuit and at the same time setting free the recording mechanism, substantially as set forth.

4. In a telephone system, the combination, with a device for recording signals, of a make-and-break mechanism, means for throwing the same into electrical circuit, and a spring-motor for automatically throwing the make-and-break mechanism out of circuit after the signal has been recorded, substantially as set forth.

5. In a telephone system, the combination, with a device for recording signals, of a make-and-break mechanism, means for throwing the same into electrical circuit, an electro-magnet in the main circuit, recording mechanism controlled by said electro-magnet, and spring-actuating mechanism to operate said device, substantially as set forth.

6. In a telephone system, the combination, with a device for recording signals, of a make-and-break mechanism, an electro-magnet in the main circuit, a pivoted lever secured to the armature of the electro-magnet and provided with a pin at its free end, paper-feeding drums, and suitable mechanism for operating the latter and the make-and-break mechanism, substantially as set forth.

7. In a telephone system, the combination, with a device for recording signals, of a block of non-conducting material, a spring secured at one end thereto, a notched wheel upon which this spring is adapted to rest, and mechanism for throwing said spring into electrical circuit and for releasing the actuating mechanism of the notched wheel, substantially as set forth.

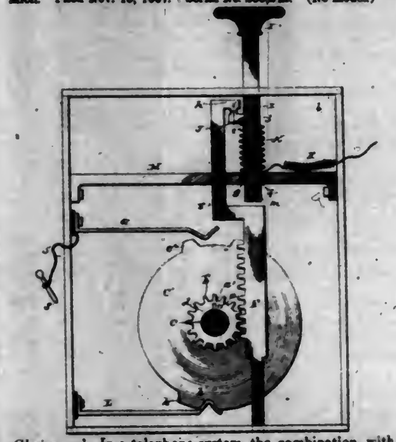
8. In a telephone system, the combination, with a device for recording signals, of an insulated block, spring-plates attached thereto and adapted to normally complete a ground-connection, an angle-plate pivoted to the block, a pin projecting from the angle-plate at each side, one adapted to raise a plate to break the ground-connection and the other to make contact with a make-and-break spring, which is also attached to the block, a notched wheel with which said spring makes and breaks contact, and actuating mechanism to operate the apparatus, substantially as set forth.

9. In a telephone system, the combination, with a device to record signals, of a make-and-break mechanism and means for throwing the same into electrical circuit, a disk journaled in the device and provided with non-electrical pins at opposite sides, which are adapted to strike an angle-plate at each half-revolution of the disk to automatically throw the make-and-break mechanism out of the electric circuit, a device for rotating said parts, and an electrically-acuated recording mechanism, substantially as set forth.

10. In a telephone system, the combination, with a device for recording signals, of a make-and-break mechanism, means for throwing the same into and out of electrical circuit, a lever pivoted in the device provided at each side of its pivot with a pin, one adapted to ride upon the periphery of a disk journaled in the device and drop into a recess of the disk and the other pin adapted to engage a detent-arm secured to an arbor pivoted in the device to retain the mechanism at a standstill, and spring-actuating mechanism to operate the apparatus, substantially as set forth.

11. In a telephone system, the combination, with a device for recording signals, of a make-and-break mechanism, means for throwing the same into and out of circuit, a lever having a pin adapted to engage a detent-arm on an arbor of the device to retain the parts at rest, an electro-magnet, a lever pivoted in the device and secured to the armature of said magnet to record a signal when the magnet is energized by the completion of the circuit through the make-and-break mechanism, and an arm secured to this lever and adapted to make contact with a weighted lever and thus free the actuating mechanism when the magnet is energized, and spring-actuating mechanism to operate the device, substantially as set forth.

402,929. TELEPHONE SYSTEM. FRED A. HOLCOMB, Grand Rapids, Mich. Filed Nov. 15, 1887. Serial No. 255,242. (No model.)



Claim.—1. In a telephone system, the combination, with a recording-instrument at a subscriber's station, of a device at the central office for causing any desired number to be intelligibly recorded in or at the instrument at the subscriber's station, substantially as set forth.

2. In a telephone system, the combination, with a device for recording intelligible signals at a subscriber's station, of an instrument at the central office for operating said recording device to produce any desired number therein, and a battery introduced into the circuit of said instrument, substantially as set forth.

3. In a telephone system, the combination, with a device for intelligibly recording signals at a subscriber's station, of an instrument at the central office provided with a shaft, a series of disks having toes mounted on said shaft, make-and-break springs with which the toes of the disk engage to make and break the current, and mechanism for operating said disks, substantially as set forth.

4. In a telephone system, the combination, with an instrument for intelligibly recording signals at a subscriber's station, of an instrument at the central office provided with a shaft, a series of disks having toes mounted upon this shaft, springs with which said toes engage, a pinion secured to each disk, rack-bars to engage said pinions, and mechanism to operate said rack-bars, substantially as set forth.

5. In a telephone system, the combination, with an instrument at a subscriber's station for recording intelligible signals, of a device at the central office having a shaft journaled therein, a series of disks loosely mounted on said shaft, each disk having a different number of toes on its periphery to represent designating-numerals from one to ten, inclusive, a disk having a wide abutment to represent the number "10" or a cipher, spring-fingers to engage said toes, and mechanism to operate the disks, substantially as and for the purpose set forth.

6. In a telephone system, the combination, with an instrument at a subscriber's station to intelligibly record a signal, of a device at the central office having a shaft journaled therein, a series of disks having toes on their periphery loosely mounted upon this shaft, a pinion upon each disk, a pin upon each disk, a series of pins on the shaft to engage the pins on the disks, a series of rack-bars to mesh with the pinions to rotate the disks, and mechanism for operating said rack-bars, substantially as set forth.

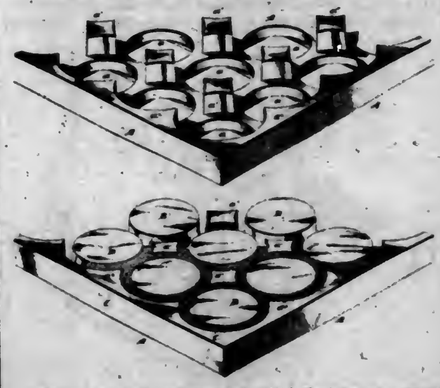
7. In a telephone system, the combination, with an instrument at a subscriber's station for intelligibly recording a signal, of a device at the central office having a shaft journaled therein, a series of disks having toes on their peripheries mounted on said shaft, a pinion on each disk, a series of spring-arms with which the toes of the disks engage, a series of rack-bars to mesh with the pinions, upwardly-extending arms integral with said rack-bars and carrying contact-points, spring-sustained rods adapted to have a sliding movement and furnished with arms to make contact with an arm of the rack-bars, and a button upon the end of each sliding rod, substantially as set forth.

8. In a telephone system, the combination, with an instrument for intelligibly recording a signal at a subscriber's station, of a device at the central office having a shaft journaled therein, a series of disks furnished with toes mounted on this shaft, a series of springs to engage said toes, mechanism for rotating the disks, a spring secured to the shaft and to the frame-work of the device to cause the shaft and disks to rotate, and a ratchet mechanism mounted on the shaft to regulate the action of the spring, substantially as set forth.

9. In a telephone system, the combination, with an instrument at a subscriber's station for recording intelligible signals, of a device at the central office having a shaft journaled therein, a series of disks having toes on its periphery loosely mounted on said shaft, a series of spring-arms to engage said toes to make and break the current, a pinion on each disk, a series of rack-bars to operate the disks, a series of rods to operate the rack-bars in one direction, a spring on the shaft to rotate the same and the disks in the opposite direction and cause the rack-bars to rise, and an escapement mechanism to regulate the action of the spring, substantially as set forth.

10. In a telephone system, the combination, with a device for intelligibly recording a signal at a subscriber's station, of a device at the central office having a shaft journaled therein, a series of disks furnished with toes on their periphery mounted on said shaft, mechanism, substantially such as described, for operating said disks to rotate them, a series of spring-arms with which the toes of the disks engage, a pin on each disk, a series of pins on the shaft to engage the pins on the disks, and spring-arms secured to the frame-work and bearing against a projection on the disks to prevent the same from turning when not positively operated, substantially as set forth.

402,930. ILLUMINATING-TILE. JACOB JACOBS, New York, N. Y. Filed Mar. 9, 1889. Serial No. 302,691. (No model.)



Claim.—1. An illuminating-tile in which the lenses are separated and located solely by means of lugs that are formed upon and project

upward from the body of the tile at points midway between the contiguous light-openings, substantially as and for the purpose specified.

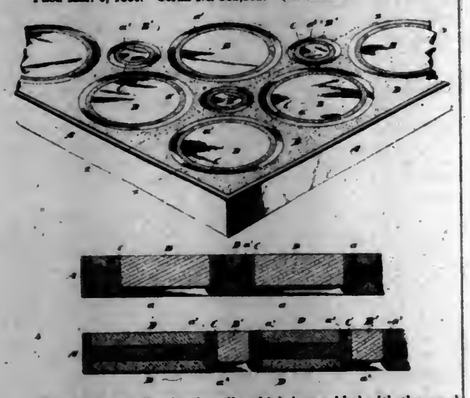
2. An illuminating-tile in which is combined a metal body that is provided with light-openings which have no surrounding curbs and between such light-openings is provided with upwardly-projecting lugs, glass lenses which are placed over the light-openings, and cement or other like material that is placed within and caused to fill the spaces between the lenses, substantially as and for the purpose shown.

3. An illuminating-tile in which is combined a metal body that is provided with light-openings and upwardly-projecting lugs between the same, glass lenses which are placed over the light-openings, a cement that is placed within and caused to fill the spaces between said lenses, and encaustic tiles which are embedded within the cement over each of the lugs, substantially as and for the purpose set forth.

4. An illuminating-tile in which the metal body is provided upon its lower face with a series of straight intersecting ribs that are located in each space between the contiguous light-openings, substantially as and for the purpose shown and described.

5. An illuminating-tile in which the metal body is provided with light-openings that are without curbs, and upon its upper face has upwardly-projecting lugs between such openings, and upon its lower face is provided with straight intersecting ribs that are located between said openings, substantially as and for the purpose specified.

402,931. ILLUMINATING-TILE. JACOB JACOBS, New York, N. Y. Filed Mar. 9, 1889. Serial No. 302,592. (No model.)

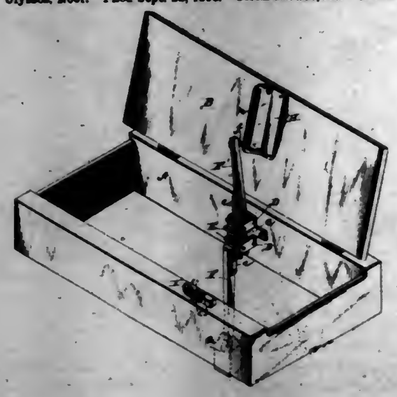


Claim.—1. An illuminating-tile which is provided with the usual glazed light-openings and between the same has other and smaller glazed light-openings, substantially as and for the purpose shown.

2. An illuminating-tile which is provided with glazed lights that are arranged in parallel lines, and at points midway between each group of adjacent light-openings is provided with other and smaller glazed light-openings, substantially as and for the purpose set forth.

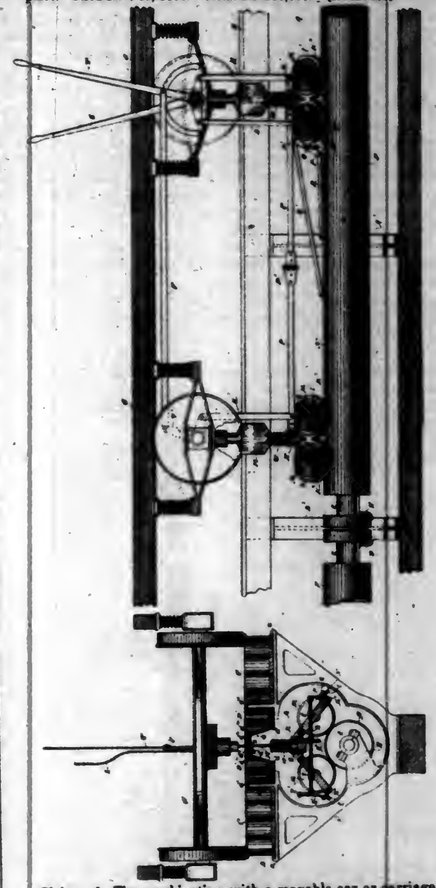
3. An illuminating-tile which is provided with the usual glazed light-openings, and between the same has other and smaller glazed light-openings, and between such openings has a filling of concrete, substantially as and for the purpose shown and described.

402,932. DEVICE FOR OPENING TRAP-DOORS. THOMAS J. JOLLY, Ulysses, Nebr. Filed Sept. 22, 1888. Serial No. 286,073. (No model.)



Claim.—The combination, with the hinged door B, the L-shaped flange H, secured to said door and provided with the slot *h* and the pivoted retaining-cleat I, of the standard C, provided with the two pairs of arms D, the intermeshing gear-wheels E, respectively journaled between said pairs of arms and provided with the arms *e*, the depending arm F, secured to the arm *e* of the lower gear-wheel, the weight G, hung to the arm F, the arm F', secured to the arm *e* of the upper gear-wheel, and the projection *f* in the outer end of the arm F' and entering the slot *h*, substantially as specified.

402,933. STREET-RAILWAY. WHITCOMB L. JUDSON, Minneapolis, Minn., assignor to the Judson Pneumatic Railway Company, same place. Filed Nov. 15, 1888. Serial No. 290,880. (No model.)



Claim.—1. The combination, with a movable car or carriage, of one or more revoluble driving drums or shafts extending along the line of travel and one or more friction-wheels adjustable to different angles with respect to the axis of said drum and adapted to engage therewith, substantially as described.

2. The combination, with a movable car or carriage, of one or more revoluble driving drums or shafts extending along the line of travel and one or more friction-wheels connected with said car mounted in bearings both vertically and angularly adjustable in respect to said drum or drums and adapted to engage therewith, substantially as described.

3. The combination, with a movable car or carriage, of one or more revoluble driving drums or shafts extending along the line of travel and one or more friction-wheels connected with the car mounted in bearings revoluble in the planes of their axes, substantially as described.

4. The combination, with a movable car, of one or more revoluble driving drums or shafts extending along the line of travel, a friction-wheel-supporting frame connected to said car, and one or more friction-wheels on said frame, mounted in bearings revoluble in the planes of their axes, substantially as described.

5. The combination, with a movable car, of friction-wheels connected therewith and driving-drums extending along the line of travel, there being of said drums and friction-wheels one device of one kind opposed to and engaging two of the other kind, whereby a wedging or crowding action is secured between them, substantially as described.

6. The combination, with a movable car, of a revoluble driving drum or shaft extending along the line of travel, one or more friction-wheels adjustable in the planes of their axes adapted to engage with said drum at different angles to its axis and connections extending from said wheel or wheels to the car for changing the angle of the friction-wheels to the driving-drum, substantially as described.

7. The combination, with a movable car, of a revoluble driving drum or shaft extending along the line of travel, a vertically-movable friction-wheel-supporting frame connected with said car, one or more friction-wheels mounted on said frame and adapted to engage said driving-drum at different angles, a connection from the car to said frame for raising and lowering the same, and a connection from the car to the friction-wheels for varying their angle to the driving-drum, substantially as described.

8. The combination, with a movable car or carriage, of a revoluble sectional drum or shaft extending along the line of travel and two or more friction-wheels connected with the car at different points of the same longitudinally, each adapted to engage said drum at an angle to its axis, whereby there will be engagement of one or more wheels with the drum while one of the wheels is at the point of connection of the sections, substantially as described.

9. The combination, with a movable car, of a revoluble drum or shaft extending along the line of travel, a truck-frame or spider having friction-wheels therein engaging, the said shaft or drum at an angle to its axis, and a bar or standard connecting the car with said truck-frame, having a sliding and a swiveled engagement therewith, substantially as described.

10. The combination, with a movable car, of a revoluble drum or shaft extending along the line of travel, a truck or spider having friction-wheels therein engaging the said shaft or drum at an angle to its axis, and a bar connecting the car with said truck, the said bar having a sliding and swiveled engagement with said truck, and a spring interposed between the truck and bar, substantially as described.

11. The combination, with a movable car, of a revoluble drum or shaft extending along the line of travel, two or more friction-wheels connected to different parts of the car longitudinally, adapted to engage said drum at an angle to its axis, and a laterally-yielding connection between said wheels, substantially as described.

12. The combination, with a movable car, of a slotted conduit along the line of travel, a revoluble drum mounted in said conduit, and one or more friction-wheels connected to the car through the slot in the conduit adapted to engage said drum at an angle to its axis, substantially as described.

13. The combination, with a movable car, of a slotted conduit extending along the line of travel, a revoluble drum or shaft within said conduit, a truck within said conduit provided with friction-wheels adapted to engage said drum at an angle to its axis, and a bar or standard extending from the car to the truck through the slot in the conduit and having swiveled connections with both, substantially as described.

14. The combination, with a movable car, of a revoluble drum or shaft extending along the line of travel, and one or more sets of friction-wheels, in couples, connected to the car, adapted to engage opposite sides of the drum at like angles to its axis, substantially as described.

15. The combination, with a movable car, of a revoluble drum or shaft extending along the line of travel, and one or more sets of friction-wheels, in couples, connected to the car, mounted in bearings, revoluble in the planes of their axes, adapted to engage opposite sides of said drums at any desired like angles to its axis, substantially as described.

16. The combination, with a movable car, of a revoluble drum or shaft extending along the line of travel, one or more sets of friction-wheels, in couples, connected to the car, mounted in bearings revoluble in the planes of their axes, adapted to engage the opposite sides of said drum at any desired like angles to its axis, and a connection from said wheels to within reach of the operator adapted to turn the wheels of each couple in opposite directions for effecting their adjustment to different like angles to the drum, substantially as described.

17. The combination, with a movable car, of a revoluble drum or shaft extending along the line of travel, two or more sets of friction-wheels, in couples, connected to the car, mounted in bearings, revoluble in the planes of their axes, adapted to engage opposite sides of the drum at any desired like angles, and a common connection from all of said wheels to within reach of the car-operator for effecting like angular adjustment thereof, substantially as described.

18. The combination, with a movable car, of a revoluble drum extending along the line of travel, two or more friction-wheel-supporting frames or spiders connected to different parts of the car longitudinally, friction-wheels mounted on said frames adapted to engage the drum at right angles to its axis, and pivotal connections coupling together said frames, substantially as described.

19. The combination, with a movable car, of a slotted conduit extending along the line of travel, a revoluble drum mounted in said conduit, sets of friction-wheel-supporting spiders or frames, bars or standards connecting said frames with the car through the slot in the conduit, having a swiveled connection with each, friction-wheels mounted on said frames in couples, adapted to engage opposite sides of said drum at like angles to its axis, and pivotal connections coupling together said frames, substantially as described.

20. The combination, with a movable car or carriage, of a driving drum or shaft extending along the line of travel and variable-speed gearing between the drum or shaft and the car, substantially as described.

402,934. STREET-RAILWAY. WHITCOMB L. JUDSON, Minneapolis, Minn., assignor to the Judson Pneumatic Railway Company, same place. Filed Jan. 7, 1889. Serial No. 296,021. (No model.)

Claim.—1. The combination, with a slotted underground conduit, of a car-body above the street-surface, a car-supporting truck within the conduit movable lengthwise thereof, and a swiveled supporting-connection from the truck to the car through the conduit-slot, substantially as described.

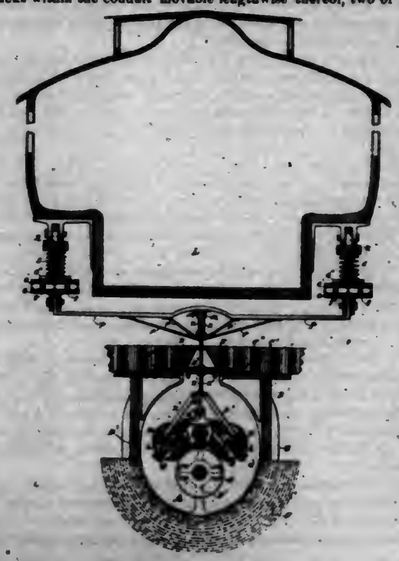
2. The combination, with a slotted underground conduit, of one or more longitudinal truck-guides within said conduit, a car-body above the street-surface, a car-supporting truck within the conduit movable lengthwise of said guides, and a swiveled supporting-connection from the truck to the car, substantially as described.

3. The combination, with a slotted underground conduit, of a car-body above the street-surface, a truck within the conduit movable lengthwise thereof, a car-supporting bolster having a rigid connection with the truck through the conduit-slot, and ball-bearings uniting the bolster and car-body, substantially as described, for the better traversing of curves.

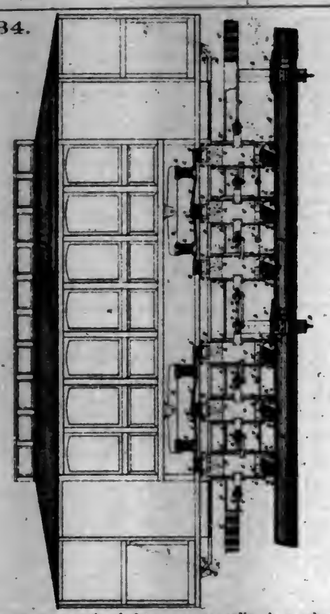
4. The combination, with a slotted underground conduit, of one or more longitudinal truck-guides within the conduit, a car-body above the street-surface, a car-supporting truck within the conduit movable lengthwise of said guides, a car-supporting bolster having a rigid connection with said truck through the conduit-slot, and ball-bearings uniting the bolster and car-body, substantially as described.

5. The combination, with a slotted underground conduit, of a car-body above the street-surface, two or more independent trucks within the conduit movable lengthwise thereof, corresponding independent supporting-bolsters, each having a rigid connection through the conduit-slot with its respective truck, and ball-bearings uniting the bolsters and the car-body, substantially as described.

6. The combination, with a slotted underground conduit, of a car-body above the street-surface, two or more independent car-trucks within the conduit movable lengthwise thereof, two or more



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independent car-supporting bolsters corresponding in number to the number of trucks, each having a rigid connection through the conduit-slot with its respective truck, ball-bearings uniting the bolsters and the car-body, and pivoted couplings connecting the trucks, substantially as described.

7. The combination, with a movable car, of a combined supporting and propelling drum extending the entire line of the car's travel, adapted of itself to sustain the car and propel the same, substantially as described.

8. The combination, with a movable car, of a combined car supporting and propelling drum and one or more lateral-pressure rails or guides for limiting the oscillation of the car, substantially as described.

9. The combination, with a revoluble car supporting and driving drum, of a movable car provided with friction-wheels mounted on said drum and engageable therewith at an angle to its axis, and one or more lateral-pressure rails or guides for limiting the oscillation of the car, substantially as described.

10. The combination, with a revoluble car supporting and driving drum, of a movable car having friction-wheels adjustable to different angles mounted on said drum and engageable therewith by frictional contact, substantially as described.

11. The combination, with a revoluble car supporting and driving drum, of a movable car provided with friction-wheels adjustable to different angles mounted on said drum, engageable therewith by frictional contact at variable angles, and one or more lateral-pressure guides or rails for limiting the oscillation of the car, substantially as described.

12. The combination, with a revoluble car-supporting and car-driving drum, of a movable car provided with friction-wheels mounted on said drum, engageable therewith at an angle to its axis, one or more lateral-pressure rails or guides for limiting the oscillation, and one or more lateral-pressure rollers adapted to engage said guides, substantially as described.

13. The combination, with a revoluble car-driving drum made up of sections coupled together, of a movable car provided with friction-wheels engageable with said drum at an angle to its axis and coupling-space bridges for carrying the friction-wheels over the coupling-spaces, substantially as described.

14. The combination, with a revoluble car-driving drum made up of sections coupled together, of a movable car provided with a friction-wheel truck having friction-wheels engageable with said drums at an angle to its axis, coupling-space bridges, and carrying or bridging rollers on the friction-wheel truck for engaging said bridges and carrying the friction-wheel truck over the coupling-spaces, substantially as described.

15. The combination, with a slotted underground conduit, of a revoluble car supporting and propelling drum within said conduit, a car-body above the street-surface, a friction-wheel truck provided with friction-wheels mounted on said drum and engageable therewith at an angle to its axis, and a supporting-connection from the truck to the car through the conduit-slot, substantially as described.

16. The combination, with a slotted underground conduit, of a revoluble car supporting and propelling drum within the conduit, a car-body above the street-surface, a friction-wheel truck having friction-wheels mounted on said drum engageable therewith at an angle to its axis, a supporting-connection from the truck to the car through the conduit-slot, one or more lateral-pressure rails or guides within the conduit, and one or more lateral-pressure rollers on the trucks or supporting-connection for engaging with said rails or guides, substantially as described.

17. The combination, with a slotted underground conduit, of a revoluble car supporting and driving drum within the conduit, a car-body above the street-surface, a friction-wheel truck having friction-wheels mounted on said drum engageable therewith at an angle to its axis, a car-supporting bolster having a rigid connection through the conduit-slot with the truck, and ball-bearings uniting the bolster and car-body, substantially as described.

18. The combination, with a slotted conduit, of a car supporting and driving drum therein, a car-body, independent trucks having angularly-adjustable friction-wheels mounted on said drum, independent bolsters rigidly connected to the trucks, extending through the slot in the conduit, and provided with laterally-extending arms, spanning-bars coupling the bolsters into sets of two or more, and ball-bearings between the spanning-bars and bolster-arms, substantially as described.

19. The combination, with a slotted underground conduit, of a revoluble car supporting and driving drum within the conduit, a car-body above the street-surface, a friction-wheel truck having swiveled friction-wheels mounted on said drum engageable therewith at variable angles to its axis, a car-supporting bolster having a rigid connection with said truck through the conduit-slot, ball-bearings uniting said bolster and car-body, one or more lateral-pressure rails within the conduit, and one or more lateral-pressure rollers on said trucks or rigid car-connections, substantially as described.

20. The combination, with the slotted conduit, of the car supporting and driving drum, the car-body, the independent trucks with angularly-adjustable friction-wheels, the rigid bolsters extending from the trucks and having lateral arms, the pivotally-connected sectional spanning-bars coupling the bolster into sets of two or more, the ball-bearings between the spanning-bars and bolster-arms, the equalizers and springs between the spanning-bars and the car-body, the lateral-pressure rails within the conduit, and the lateral-pressure rollers on the truck-frame, substantially as described.

21. The combination, with a car-driving drum, of a car-body, a truck having friction-wheels engageable with said drum at an angle to its axis, a bolster provided with laterally-extended arms connecting the truck and the car-body, and ball-bearings between the car-body and the bolster-arms, substantially as described.

22. The combination, with a car-driving drum, of a car-body, two or more independent trucks having friction-wheels engageable with said drum at an angle to its axis, corresponding independent bolsters provided with laterally-extended arms connecting the respective trucks with the car-body, and ball-bearings interposed between the bolster-arms and the car-body, substantially as described.

23. The combination, with a car-body, of a car-driving drum, two or more independent trucks having friction-wheels engageable with said drum at an angle to its axis, corresponding independent bolsters provided with laterally-extended arms, each bolster connecting its respective truck with the car-body, ball-bearings interposed between the bolster-arms and the car-body, and pivotal connections coupling together said independent trucks, substantially as described.

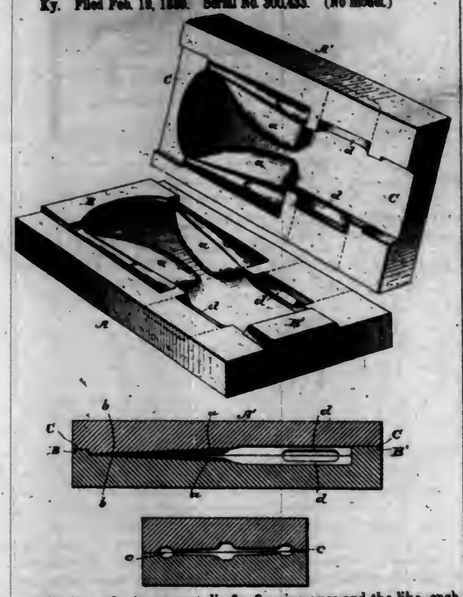
24. The combination, with a car-body, of a car-driving drum, two or more independent trucks, each having friction-wheels engageable with said drum at an angle to its axis, corresponding independent bolsters provided with laterally-extended arms, each bolster adapted to support the car-body therefrom, spanning-bars interposed between the bolster-arms and the car-body and connecting the same together in sets of two or more, and ball-bearings interposed between the bolster-arms and spanning-bars, substantially as described.

25. The combination, with a car-body, of a car-driving drum, two or more independent trucks, each having friction-wheels engageable with said car at an angle to its axis, corresponding independent bolsters provided with laterally-extending arms, each bolster being connected with its respective truck and adapted to support the car-body therefrom, spanning-bars composed of sections pivotally connected interposed between the bolster-arms and the car-body, and ball-bearings between the bolster-arms and the spanning-bars, substantially as described.

26. The combination, with a car-body, of a car-driving drum, two or more independent trucks having friction-wheels engageable with said drum at an angle to its axis, corresponding independent bolsters provided with laterally-extended arms, each bolster being connected to its respective truck and adapted to support the car-body therefrom, spanning-bars connecting the bolster-arms into sets of two or more, ball-bearings between the spanning-bars and bolster-arms, and equalizers between the spanning-bars and the car-body, substantially as described.

27. The combination, with a car-body, of a car-driving drum, two or more independent trucks having friction-wheels engageable with said drum at an angle to its axis, corresponding independent bolsters having laterally-extended arms, each bolster connected to its respective truck and adapted to support the car-body therefrom, spanning-bars connecting the bolster-arms into sets of two or more, ball-bearings between the bolster-arms and spanning-bars, equalizers pivotally connected to the car-body, and springs between the spanning-bars and the equalizers, substantially as described.

402,935. DIE FOR MAKING AXES. JAMES P. KELLY, Louisville, Ky. Filed Feb. 19, 1889. Serial No. 300,433. (No model.)



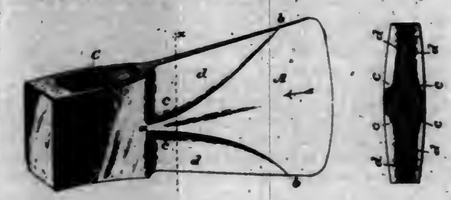
Claim.—1. A two-part die for forming axes and the like, each part provided with a cavity corresponding with the general design of the tool to be made, and one part provided with the anvils B B' and the other with cavities C C', substantially as and for the purposes set forth.

2. A two-part die for forming axes and the like, each part provided with a cavity corresponding with the general design of the tool to be made, and provided also with recesses *c* to receive the excess of metal, substantially as hereinbefore set forth.

3. A two-part die for forming axes and the like, each part provided with a cavity corresponding with the general design of the tool to be made, and with recesses *c* to receive the excess of metal, and cavities *d* for the eye-pin, one part being also formed with anvils B B', and the other part with corresponding cavities, C C', substantially as and for the purposes set forth.

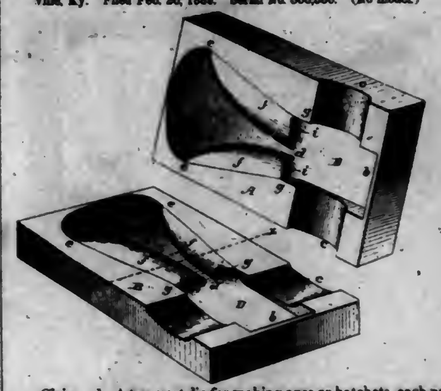
4. A two-part die for forming axes and the like, provided with a cavity corresponding with the general design of the tool to be made, and with recesses *c*, said cavity and recesses being entirely surrounded by the stock of the die, substantially as shown, whereby a closed die is formed, as hereinbefore described.

402,936. AX. WILLIAM C. KELLY, Louisville, Ky. Filed Feb. 19, 1889. Serial No. 300,440. (No model.)



Claim.—As a new article of manufacture, an ax having the blade tapering from the eye to the cutting-edge, and having its body compressed or cut away each side of the center comparatively abruptly, as shown at *c*, to form a well-defined step terminating in or joining the inclined depressed surface *d*, substantially as and for the purpose set forth.

402,937. DIE FOR MAKING AXES. WILLIAM C. KELLY, Louisville, Ky. Filed Feb. 20, 1889. Serial No. 300,530. (No model.)



Claim.—1. A two-part die for making axes or hatchets, each part having in its working-face a cavity corresponding with the general shape of the implement to be formed, and provided with raised portions *f*, such as shown and described.

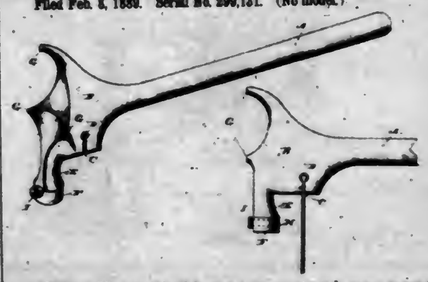
2. A two-part die for making axes or hatchets, each part having in its working-face a cavity corresponding with the general shape of the implement to be formed, and provided with the raised portions *f* and eye-pin recess *e*, such as shown and described.

402,938. SPRING-VEHICLE. JOHN H. KENNEDY, Oneida, N. Y., assignor to J. L. Spencer & Co., same place. Filed Nov. 8, 1886. Serial No. 218,276. (No model.)



Claim.—In combination with the front and rear running-gears, the body of the vehicle extending over the front running-gear, the cross-spring C, mounted on the said running-gear and arranged completely under the body, the spring-support *b*, rising from the rear axle and formed with trunnions on its ends, and the short side springs, D D, terminating with their front ends at the under side of the central portion of the body and attached directly thereto and having their rear ends extending under the ends of the spring-support *b* and rearward therefrom, and thence curved upward and forward and terminating with eyes by which they are connected directly to the trunnions of the spring-support, substantially as described and shown.

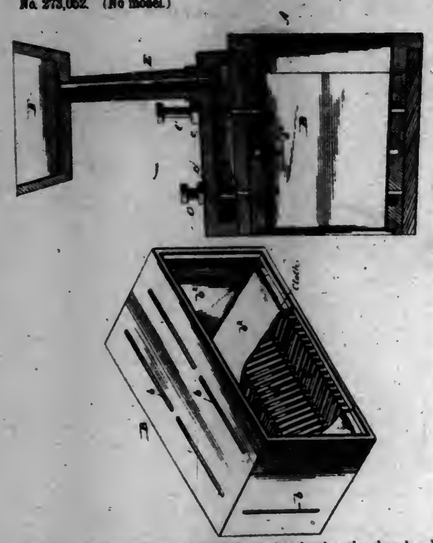
402,939. COMBINATION-TOOL. HENRY L. KINCAID, Stella, Wash. Filed Feb. 8, 1889. Serial No. 299,131. (No model.)



Claim.—The combined hammer, saw set and gage, comprising the handle, the head B, having the slot C, the legs G, formed on the

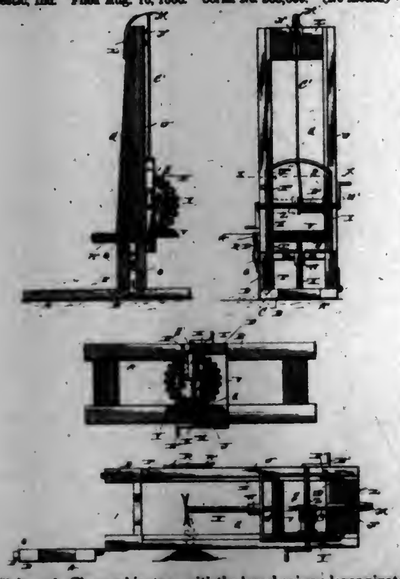
outer end of the head, and the hammer-head projecting from the head B, said hammer-head having the gage stud or screw I engaging a threaded opening therein, substantially as described.

402,940. DIE FOR BRICK OR TILE MACHINES. ANDREW P. KNUDSEN, Sycamore, Ill., assignor of one-half to Mattie Hoyt, Oscar Russell, and Henry H. Hoyt, same place. Filed May 7, 1888. Serial No. 273,052. (No model.)



Claim.—The combination, with the casing having the chamber D, provided with the openings *d* in its floor and the openings *e*, vertically above the corresponding openings *d*, in its roof, the plug-valves C, the stand-pipe E, rising from the chamber D, and the tank on top of the stand-pipe, of the die provided with the longitudinal slots *b* in its sides and the series of oblique grooves *b'*, connecting said slots, and the cloth lining of the die converting said grooves into channels, substantially as specified.

402,941. POST-HOLE-BORING MACHINE. JOHN F. LACEY, Domestic, Ind. Filed Aug. 18, 1888. Serial No. 283,069. (No model.)



Claim.—1. The combination, with the base having a lever pivoted thereto, of a vertical frame hinged to said base with one of its standards and provided upon the side of its opposite standard with a metallic strip formed with a seat, and a lever pivoted to said strip, substantially as set forth.

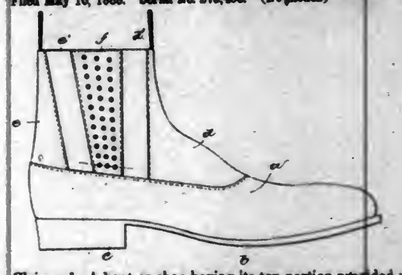
2. The combination, with the hinged vertical frame provided with guideways, and provided, further, with a curved standard and a hook at its upper end, of an open frame provided with boot ears upon its sides which slide in the said guideways, a transverse shaft journaled in said open frame and formed with a square portion, a winding-drum and a beveled cog-wheel mounted on said shaft, a vertical shaft also journaled in said open frame, and a similar cog-wheel mounted on one end and an auger-holder secured to the other, and a chain or rope wound with one end around the said drum and the other end secured to said curved standard and operating-cranks, substantially as and for the purpose set forth.

402,942. CONFECTION-BOX. JOHN B. LANGAN, Chicago, Ill. Filed June 18, 1888. Serial No. 277,476. (No model.)



Claim.—In a box designed as a vehicle for confection and for similar purposes, a supplementary chamber on the interior of the box, a drawer, D, adapted to enter said chamber, an opening in the side of said box, and a flap, C, for closing said opening, substantially as and for the purpose set forth.

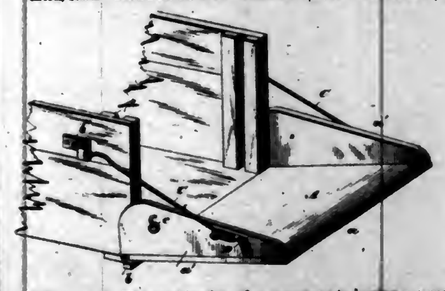
402,943. BOOT OR SHOE. WILLIAM LAPWORTH, Hopedale, Mass. Filed May 10, 1888. Serial No. 273,408. (No model.)



Claim.—1. A boot or shoe having its top portion provided with an inelastic eyeleted piece or ply, *f*, stitched to an elastic gore-piece, substantially as described.

2. A boot or shoe provided at its top portion with an inelastic eyeleted piece or ply, *f*, connected at its side edges to separate gore-pieces, substantially as described.

402,944. END-GATE FOR WAGONS. HENRY A. LARSEN, Hawthorn, Iowa. Filed Feb. 14, 1889. Serial No. 299,832. (No model.)



Claim.—1. The combination of a wagon-body having a cross-rail, *b*, projecting to rear of its rear end, a hingeless scoop-board resting on said cross-rail, angle-plates *b'*, secured to the sides of the body near the rear upper edge, loops D, secured to the sides of the scoop near their outer ends, catches C, secured near the inner ends of the sides of the scoop, and lever-bars removably connected at one end to the angle-plates *b'* and engaging the loop D, or the loop and catch *c*, according to the position of the scoop, substantially as described.

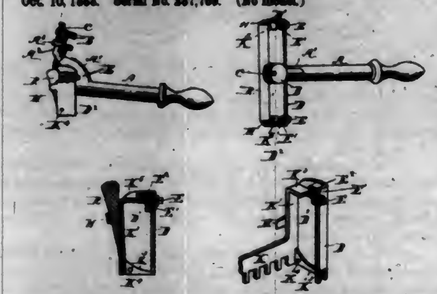
2. The combination, with a wagon-body having a cross-rail, *b*, with extended ends, an angle-plate, *b'*, permanently attached near the upper edge of the sides of the wagon-body, a scoop having side pieces, *a'*, which extend beyond the bottom board of the scoop, as shown, a catch, *c*, attached to said side pieces, a loop, D, and rods C C, said rods having one end bent to engage with a perforation in the angle-plate *b'*, the opposite end being hooked to engage with the loop D, the parts being combined and organized substantially as shown, and for the purpose set forth.

402,945. LAMP-WICK LIFTER. LYMAN T. LAWTON, Meriden, Conn., assignor to the Meriden Malleable Iron Company, same place. Filed Nov. 21, 1888. Serial No. 291,515. (No model.)



Claim.—A lamp having a headed stud and a catch on the wick-tube, in combination with a lifting-stem, on the inner upturned end of which is a horizontally-disposed slotted spring-yoke, substantially as herein set forth.

402,946. SAFETY-RAZOR. HENRY B. LEACH, Boston, Mass. Filed Oct. 10, 1888. Serial No. 287,769. (No model.)



Claim.—1. In a safety-razor, the combination of the frame D D' D^2, the holding-clips H H, located as shown, the razor-blade, a clamping device operating upon the top of the blade, the swinging front plate, K, and adjusting-screws E E, substantially as described.

2. In a safety-razor, the combination of the razor-frame D, having end pieces, D' D^2, and clips H H, the guard K, having arms K' K^3, and the rearwardly-projecting arms K^4, by means of which the guard-plate is pivoted at K^4 K^4 within the frame, and the adjusting-screws in the frame bearing upon the back of the guard-plate, so as to move the same against the razor-blade held between the clips and the guard-plate, substantially as described.

3. In a safety-razor, the combination of the frame, having back B and end pieces, D' D^2, the guard K, having the two arms K' K^3 bent at K^2 to form seats for the ends of the adjusting-screws, and having also rearwardly-projecting arms K^4 pivoted at K^4 K^4 within the frame, the razor-blade located between the clips and swinging guard-plate, and the adjusting-screw E E, arranged to bear upon the guard-plate, substantially as described.

402,947. ART OF WELDING. WILLIAM W. LEE, Northampton, Mass. Filed Oct. 20, 1888. Serial No. 288,004. (No specimens.)

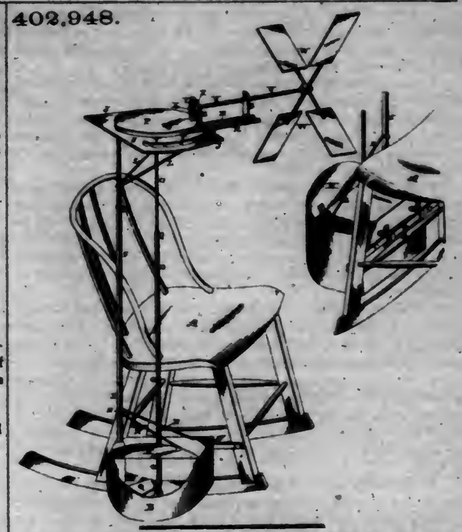
Claim.—The herein-described improvement in the art of welding, which consists in applying borax in solution to metal to be welded.

402,948. FAN FOR ROCKING-CHAIRS. GEORGE R. LEIBENSPERGER and GEORGE W. BAILEY, Saegerstown, Pa. Filed Sept. 24, 1888. Serial No. 286,228. (Model.)

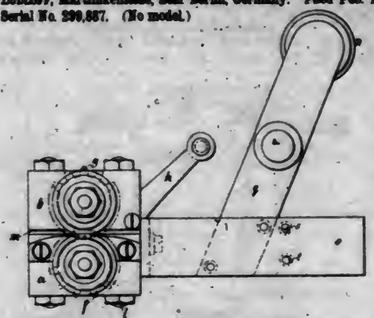
Claim.—1. The combination, with a rocking-chair, of a supporting-rod having a table or platform secured to its upper end, a shaft having a weight secured to one side and having a friction-disk secured to its upper end, suitable supports, a shaft journaled in the supports, a fan secured to the outer end of the shaft, and a wheel secured to the inner end of the shaft and operating in connection with the disk, substantially as shown.

2. The combination, with a rocking-chair, of a vertical shaft connected thereto, a weight secured to one side of the rod, a fan, and an intermediate mechanism, substantially as described, between the shaft and the fan, whereby as the chair is rocked the shaft is automatically made to revolve for the purpose of operating the fan, substantially as set forth.

402,948.



402,949. TOOL FOR CUTTING SHEET METAL, &c. FRIEDRICH LUDLOFF, Martinikenfelde, near Berlin, Germany. Filed Feb. 14, 1889. Serial No. 299,857. (No model.)

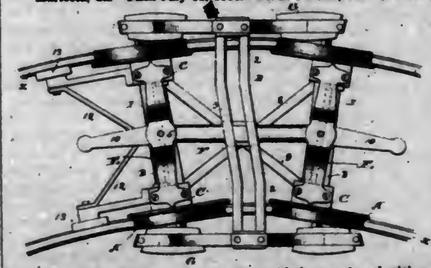


Claim.—1. The cutting-disks mounted in bearings, one of which is adjustable with respect to the other, in combination with an adjustable guide, *o*, and handle *p*, substantially as described.

2. The cutting-disks mounted in bearings, one of which is adjustable with respect to the other, in combination with an adjustable guide, *o*, handle *p*, and leg *w*, substantially as described.

3. The cutting-disks mounted in bearings, one of which is adjustable with respect to the other, in combination with an adjustable guide, *o*, handle *p*, and studs *s t*, substantially as described.

402,950. TRUCK FOR RAILWAY-CARS. JAMES W. MALOY, Marietta, Ga. Filed July 12, 1888. Serial No. 279,756. (No model.)



Claim.—1. A railway-car truck provided at each end with a pair of wheels secured to a pair of axles arranged in proximity, the inner end of each axle turning in a box at the inner side of the adjacent wheel, and a cross-bar or girder, D, connecting the side girders, G G, of the frame extending diagonally with each end midway between the adjacent wheels, substantially as set forth.

2. The combination, in a railway-car truck, of supporting-wheels,

an axle for each wheel, a box for the inner end of each axle arranged adjacent to the inner face of the adjacent wheel, and an external journal for each wheel, having its bearing in a box supported by the frame of the truck, substantially as set forth.

3. The combination, with a railway-car truck, of pairs of wheels, each having a separate axle, the axles of each pair of wheels arranged parallel to and overlapping each other and supported by a frame pivoted centrally to the truck, the opposite ends of the opposite frames being connected by diagonally-pivoted cross connecting-rods 8 9, substantially as set forth.

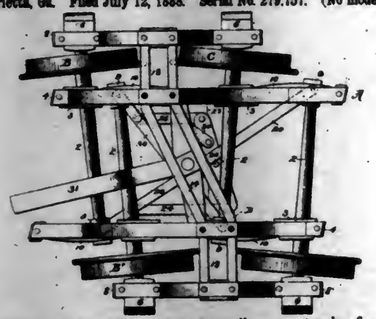
4. The combination, with the frame of a railway-car truck, of a pair of wheels at each end, each secured to a separate axle and each axle bearing with its inner end in a box adjacent to the inner face of one of the wheels, a frame, I, supported upon each pair of axles and pivoted to the truck-frame, and cross connecting-rods 8 9, extending between the opposite ends of the opposite frames I, substantially as set forth.

5. The combination, with the frame of a railway-car truck, of frames I I, pivoted thereto and supported each upon one of the pairs of wheels of the truck, and pilot-wheels 13, supported by the extensions of the frames, substantially as and for the purpose set forth.

6. The combination, in a car-truck, of frames I I, each supported at one end of the truck upon wheels having independent overlapping axles, as described, boxes C, each receiving the external journal of one of the axles, and sliding between curved guides upon the frame, and cross-rods 8 9, connecting the opposite frames, substantially as set forth.

7. The combination, in a car-truck, of a frame, a pair of wheels at each end, each supported by an independent axle, a box supporting the inner end of each axle adjacent to the inner face of one of the wheels, a box sliding between curved guides upon the frame receiving the external journal of each wheel, and cross connecting-rods 8 9, substantially as set forth.

402,951. TRUCK FOR RAILWAY-CARS. JAMES W. MALOY, Marietta, Ga. Filed July 12, 1888. Serial No. 279,757. (No model.)



Claim.—1. The combination, with a railway-car truck, of separate wheels secured to separate overlapping axles extending from side to side of the truck and mounted in independent movable bearings, said axles being adapted to be moved to and from each other, substantially as described.

2. The combination, with a railway-car truck, of supporting-wheels secured to separate overlapping axles, the outer ends of the axles being mounted in swiveling boxes at one side of the truck, and their inner ends mounted in sliding boxes at the opposite side thereof, substantially as described.

3. The combination, with a railway-car truck, of a pair of supporting-wheels secured to separate parallel overlapping axles, the outer ends of the axles being mounted in swiveling boxes and their inner ends in horizontal sliding boxes, and a connecting-rod connecting the latter boxes together, whereby the axles are swung in unison, substantially as described.

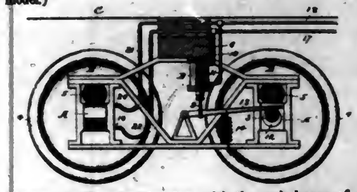
4. The combination, with a railway-car truck, of two pairs of supporting-wheels, each wheel carried by a separate axle, the outer ends of the axles being mounted in swiveling boxes and their inner ends mounted in sliding boxes, and connecting-rods 20 30, connecting the boxes at the outer ends of each pair of axles together, whereby the axles of each pair are swung in unison, substantially as described.

5. The combination, with a railway-car truck, of two pairs of supporting-wheels, each wheel carried by a separate axle, the outer ends of the axles being mounted in swiveling boxes and their inner ends free to swing horizontally, connecting-rods connecting the outer ends of the axle of each pair together, and a lever and links connecting the said rods together, whereby they are moved in unison, substantially as described.

6. The combination, with a railway-car truck, of supporting-wheels secured to separate axles, the outer ends of the axles being mounted in swiveling boxes and their inner ends mounted in sliding boxes, connecting-rods connecting the inner ends of two axles together, a lever and links connecting the connecting-rods together to move in unison, an arm, 31, and connections between the latter and said lever for simultaneously adjusting the position of the axles, substantially as described

7. The combination, with a railway-car truck having outer side bars, 8, and inner side bars, 4, of supporting-wheels secured to separate axles, the outer ends of the axles supported in swiveling boxes carried by the outer side bars, the inner portion of the axles extending through bearings in one of the inner side bars, and the extreme inner end of the axles mounted in sliding boxes in the other side bar, substantially as set forth.

402,952. LUBRICATING DEVICE FOR RAILWAY-CARS. JAMES W. MALOY, Marietta, Ga. Filed July 18, 1888. Serial No. 280,293. (No model.)

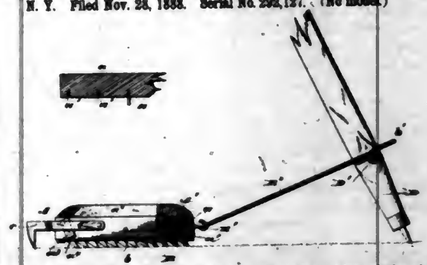


Claim.—1. The combination, with the axle-boxes of a railway-car, of a single pump communicating with each box of the car at its upper and lower parts to maintain a circulation of oil through the pump and through each box, the pump being connected with one of the axles to be operated positively by the rotation thereof, substantially as set forth.

2. The combination, in a railway-car, of a pump communicating with pipes 17 and 18, carried by the car, and a communication between the pipe 17 and the lower end of each axle-box of the car and between the pipe 18 and the upper end of each axle-box of the car, substantially as set forth.

3. The combination of a car-body, one or more swinging trucks supporting the same, and pipes 17 and 18, carried by the body, a pump communicating through flexible pipes with the pipes 17 and 18, and a flexible pipe connecting the lower portion of each car-axle box and the pipe 17, and another flexible pipe connecting the upper portion of each car-axle box and the pipe 18, substantially as set forth.

402,953. CARPET-STRETCHER. CHARLES M. MALLORY, Albion, N. Y. Filed Nov. 26, 1888. Serial No. 292,127. (No model.)



Claim.—1. In a carpet-stretcher, the combination of the drag having transverse slots in the bottom thereof and a cushion on the top side, metallic strips mounted in said slots having blunt-pointed serrations, metallic strips secured to the sides of the drag bent over the ends of said serrated strip to secure the same, the rear yoke pivotally attached to the drag, having a central spike-hook, and the bail removably attached to the rear side of the drag and of itself secured to a handspike, substantially as described.

2. In a carpet-stretcher, the combination of the drag, the handspike, and the bail attached to said spike removably connected to said drag, and having a loop, *b'*, beyond its pivotal point to limit the movement of the handspike, substantially as described.

402,954. RUNNER FOR BOB-SLEDS. TABER G. MANDT, Stoughton, Wis. Filed Jan. 19, 1889. Serial No. 296,890. (No model.)

Claim.—1. A runner for sleds having a knee formed integral therewith, provided with a curved bearing for the cross-beam, and standards rising from said knee provided with supporting-ears for the rave, substantially as described.

2. A runner for sleds having a knee provided with a curved bearing for the cross-beam, and supporting-ears for the rave, the knee, and end of the runner, substantially as described.



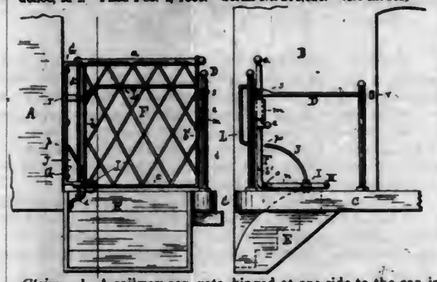
3. The combination, with the knee having the curved projection or ridge, of the cross-beam having a depression in which said projection or ridge fits, substantially as and for the purpose described.

402,955. PISTON FOR HYDRAULIC PRESSES. LEWIS MILLER, Philadelphia, Pa. Filed Jan. 17, 1889. Serial No. 296,577. (No model.)



Claim.—The combination of a piston, A, provided with an annular abutment, *a*, independent packing-rings B, surrounding the said piston, expanding-rings inserted between the said packing-rings, a removable ring, D, secured on the end of the piston, a series of set-screws, C, tapped in the ring D near its outer edge, a hard-metal ring, E, inserted between the ends of the set-screws and the packing-rings, and binding-nuts C' upon the said set-screws, substantially as and for the purpose set sorth.

402,956. RAILWAY-CAR GATE. NATHAN F. MATHEWSON, Providence, R. I. Filed Feb. 4, 1889. Serial No. 298,630. (No model.)



Claim.—1. A railway-car gate hinged at one side to the car, in combination with a folding platform hinged to the gate at its bottom, adapted to lie horizontally when the gate is closed and to fold up against said gate when the gate is open, substantially as specified.

2. The railway-car gate hinged at one side to the car, in combination with the folding platform hinged to the gate at its bottom, and having the wheel and the inclined track for the travel of said wheel, substantially as described.

3. In a railway-car having a platform and steps, the combination of the hinged gate F, the latch *e*, the platform H, hinged at the bottom of said gate, the wheel I, the inclined track J, and the catch *r*, substantially as specified.

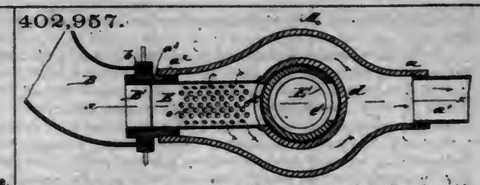
4. In a railway-car having a platform and steps, the combination of the hinged gate F, the latch *e*, the platform H, hinged at the bottom of said gate, the wheel I, the inclined track J, the guard D, and the catch *r*, substantially as specified.

5. In a railway-car having a platform and steps, the combination of the hinged gate F, the latch *e*, the catches *r s*, the platform H, hinged at the bottom of the gate, the wheel I, the inclined track J, and the guard D, substantially as specified.

6. In a railway-car having a platform and steps, the combination of the hinged gate F, the latch *e*, the catches *r s*, the platform H, hinged at the bottom of said gate, the wheel I, the inclined track J, the guard D, and the hand-rail L, substantially as specified.

402,957. FEED-WATER COCK. HENRY D. MEDRICK, Port Jervis, N. Y. Filed July 25, 1888. Serial No. 281,133. (No model.)

Claim.—1. The combination, with a shell having a longitudinally-extending strainer-tube at its inlet end, of a transverse valve-seat in the shell having a side or lateral opening into which the inner end of the strainer leads, and a cock having an open bottom or end and a side opening to register with that of the seat, whereby when the said openings register the water will flow longitudinally through the strainer and out through the cock, and when the cock closes the seat-opening the water will flow laterally through the strainer and through the shell, substantially as set forth.

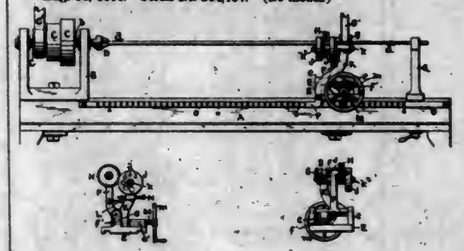


2. The combination, with the shell having its sides outwardly bowed near the center and a vertical plug-seat secured in said shell between the curved sides, provided with an inlet-opening, of a horizontal perforated straining-tube connected with the inlet of the shell and the inlet of the plug-seat, and a hollow plug provided with an inlet in the side and an exit-opening in the bottom, substantially as shown and described.

3. The combination, with an essentially elliptical shell and a tapering plug-seat extending vertically through the shell from top to bottom and provided with an inlet-aperture, of a tubular perforated strainer attached to the plug-seat around the aperture therein and to the inlet extremity of the shell, and a hollow plug provided with an inlet in the side and an outlet in the bottom, substantially as shown and described.

4. The combination, with an essentially elliptical shell, a tapering plug-seat extending vertically through the shell from top to bottom, provided with an inlet-aperture in the side, of a tubular perforated strainer attached to the plug-seat around the aperture therein, a hollow plug provided with a side inlet and a bottom outlet, and a thimble abutting with the outer end of the strainer, substantially as shown and described.

402,958. LATHE. GEORGE E. MERRY, Port Chester, N. Y. Filed Aug. 30, 1888. Serial No. 284,157. (No model.)



Claim.—1. The combination, with the lathe-bed, a stationary head mounted thereon and having a spindle provided with a chuck or device for holding a stick to be turned, of a movable head having an arm pivoted thereon to swing transversely of the lathe, a rotary tool or cutter mounted on said arm, a lever for bringing the tool or cutter up to its work, and a support for the stick, substantially as set forth.

2. The combination, with the lathe-bed, a stationary head mounted thereon and having a spindle provided with a chuck or device for holding a stick to be turned, of a movable head having an arm pivoted thereon to swing transversely of the lathe, a rotary tool or cutter mounted on said arm, a lever for bringing the cutter up to its work, means, substantially as described, for returning the cutter to normal position, and a support for the stick, substantially as set forth.

3. The combination, with the lathe-bed, a stationary head mounted thereon and having a spindle provided with a chuck or device for holding a stick to be turned, of a movable head having an arm pivoted thereon to swing transversely of the lathe, a rotary tool or cutter mounted on said arm and composed of two or more disks having notched or serrated peripheries, a lever for bringing the tool or cutter up to its work, means for returning the cutter to normal position, and a support for the stick, substantially as set forth.

4. The combination, with the lathe-bed, a stationary head mounted thereon and having a spindle provided with a chuck or device for holding a stick to be turned, of a movable head having an arm pivoted thereon to swing transversely of the lathe, a rotary tool or cutter mounted on said arm, a lever for bringing the tool or cutter up to its work, means for returning the cutter to normal position, a support for the stick, and a scale upon the lathe-bed for determining or gaging the positions of the movable head on the bed from time to time

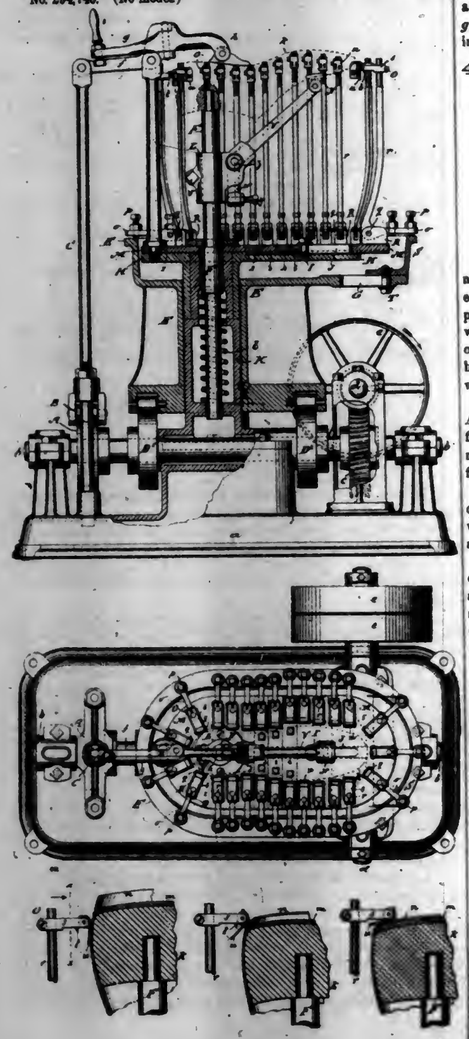
for the proper spacing of the pattern being turned, substantially as set forth.

5. The combination, with the lathe-bed, a stationary head mounted thereon and having a spindle provided with a chuck or device for holding a stick to be turned, of a movable head having an arm pivoted thereon to swing transversely of the lathe, a rotary tool or cutter mounted on said arm, a lever for bringing the tool or cutter up to its work, means for returning the cutter to normal position, a support for the stick, a scale upon the lathe-bed, and a spring catch or latch upon the movable head for engaging the scale and gaging the proper position of the movable head on the bed, substantially as set forth.

6. The combination, with the movable head, of an arm, F, pivoted thereon to swing transversely of the head, a rotary cutter mounted on said arm, an arm, K, fixed to the head and having a plate or plates for supporting the stick to be turned, and a lever for bringing the cutter up to its work, substantially as set forth.

7. The combination, with the movable head, of an arm, F, pivoted thereon, a rotary cutter mounted on said arm, an arm, K, fixed to the head and having an adjustable plate or plates provided with holes of different diameters for supporting sticks of different sizes, and a lever for bringing the cutter up to its work, substantially as set forth.

402,959. LASTING-MACHINE. JOHN W. MILLET, Dolgeville, assignor to Alfred Doige, New York, N. Y. Filed Dec. 27, 1888. Serial No. 294,746. (No model.)



Claim.—1. In a lasting-machine, the combination of a support carrying a last, a series of swinging levers having friction-shoes to press the upper inward upon the insole, arms *o*, for swinging the levers, and a reciprocating flange, E, for actuating said arms, substantially as described.

2. In a lasting-machine, the combination, with a last-support, of a series of swinging levers, *r*, carrying friction-shoes, arms *o*, for swinging the levers, a movable flange, E, for actuating the arms, and a rotary cam for operating the flange, substantially as described.

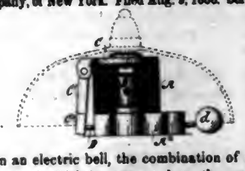
3. In a lasting-machine, the combination, with a last and mechanism for lasting the upper, of a yielding last-supporting spindle, F, and a sleeve, L, secured directly to the spindle and adjustable along the same, and having a last toe-support pivoted to said sleeve, substantially as described.

4. In a lasting-machine, the combination, with a last and mechanism for lasting the upper, of a yielding last-supporting spindle, F, and a sleeve, L, secured directly to the spindle and adjustable along the same, and having a pivoted arm, V, provided with a last toe-support, N, substantially as described.

5. In a lasting-machine, the combination, with a last and levers having friction-pieces, of an under plate, H, and a supporting-plate, M, for the levers, arranged on the under plate and composed of an adjustable section and a removable and replaceable section or sections, substantially as described.

6. In a lasting-machine, the combination, with a vertically-movable last, of a reciprocating arm, *f*, provided with an adjustable lever, *g h*, for holding down said last, and a connecting-rod, C, and actuating-cam A, connected to said arm *f*, substantially as described.

402,960. ELECTRIC BELL. RICHARD R. MOFFATT, New York, N.Y., assignor, by direct and mesne assignments, to the Moffatt Electric Construction Company, of New York. Filed Aug. 9, 1888. Serial No. 282,368. (No model.)



Claim.—1. In an electric bell, the combination of a single magnet-core, A', one end of which is connected to the gong, the other end being connected with the chambered base A^2, which serves as one pole of the magnet A, the armature C^2 having magnetic connection with the other end of the core A', arranged to act as the other pole of the magnet A, the hammer-rod D, supported within the chambered base A^2, the actuating-spring *e*, and a circuit opening and closing device, arranged substantially as herein specified.

2. In an electric-bell, the combination of a single magnet-core, A', one end of which supports the gong, the chambered base A^2, the flange C, oscillating armature C^2, rod D, spring *e*, and means for automatically opening and closing the circuit, substantially as herein specified.

3. In an electric bell, a single magnet-core, one end of which is connected with a gong, the other end with a chambered base, in which chamber is located the actuating-springs, combined with the armature C^2 and the striker *d*, substantially as herein specified.

4. In an electric bell, the combination of a single magnet-core, one end of which supports the gong, the other end being attached to a chambered base of magnetic metal which serves as one pole of the magnet, the automatic circuit-breaking device located within said chambered base, the armature C^2 and the striker *d*, arranged substantially as herein specified.

5. In an electric bell, the combination of a single magnet-core, one end of which supports the gong, the other end being attached to a chambered base of magnetic metal which serves as one pole of the magnet, the automatic circuit-breaking device, and the actuating-spring located within said chambered base, the armature C^2, and the striker *d*, arranged substantially as herein specified.

402,961. PHOTOGRAPHIC-PLATE HANDLE OR HOLDER. WILLIAM K. MOODY, Boston, Mass. Filed Nov. 30, 1888. Serial No. 292,228. (No model.)

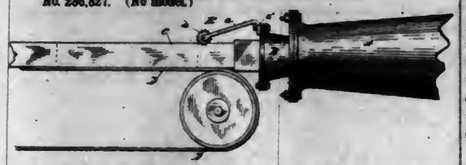


Claim.—1. A photographic-plate holder consisting of spring-arms provided on their ends with broad hooks or jaws formed to embrace the edge of a plate, the lower portion of each hook or jaw being constructed with a substantially rounded or sharp edge, as described, whereby it is adapted to readily pass under the edge of the plate, substantially as set forth.

2. A photographic-plate holder consisting of the spring-arms *c*, provided on their ends with the hooks or jaws *d*, formed to embrace the edge of a plate, the lower lip or portion of each hook or jaw being constructed with a substantially rounded or sharp edge, *g*, whereby it is adapted to readily pass under the edge of the plate, and the loop or bow *b*, substantially as set forth.

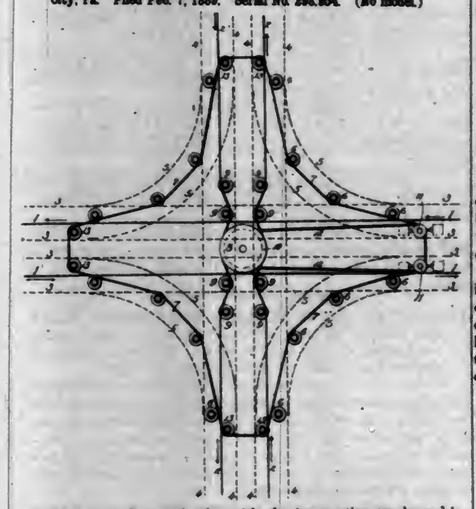
3. A photographic-plate holder or handle consisting of arms or supports provided with broad hooks, jaws, or clasps, the lower lip of each of which is constructed with a substantially rounded or sharp edge, as described, whereby it is adapted to pass under the plate, and the upper lips of which jaws are inclined with respect to the surface of the plate or film, as set forth.

402,962. DEVICE FOR MARKING BRICKS. ALVAH O. MORGAN and ROBERT H. BAIRD, Burlingame, Kans. Filed Oct. 1, 1888. Serial No. 286,827. (No model.)



Claim.—The combination of a former of a brick-machine, a conveyer arranged beneath the said former, a pair of arms, *a a*, bolted to the face of the former, these arms being provided with vertically-slotted ears for the passage of the securing-bolts, and an impression-roller journaled in the forward ends of the said rigid arms, as and for the purpose herein set forth.

402,963. CABLE RAILWAY. ALLEN R. PARKHOM, Monongahela City, Pa. Filed Feb. 7, 1889. Serial No. 299,264. (No model.)



Claim.—1. In combination with the intersecting tracks and intersecting propelling-cables of a cable railway, a central driving-pulley arranged between the intersecting cables and engaged and driven by one or more of said cables, and a transferring-cable carried around curves between said intersecting tracks and formed into a loop carried around said central pulley, substantially as described.

2. In combination with the crossing or intersecting tracks and intersecting propelling-cables of a cable railway, a pulley arranged between the said intersecting propelling-cables and driven by one or more of the latter, and a single transferring-cable carried around the said central pulley and from thence by a series of pulleys in curves between and across the angles or corners corresponding with said intersecting tracks, and deriving its motion from said central pulley, whereby the latter and a single transferring-cable co-operate to transfer a car from one track to another at such intersection.

3. In combination with the crossing or intersecting tracks and propelling-cables of a cable railway and curved tracks crossing the angles between said tracks and connected to them by switches, a driving-pulley driven by one or more of said main cables, guide-rolls arranged around the curves corresponding with said curved tracks, and a transferring-cable carried over said guide-rolls so as to terminate in the line of each propelling-cable, and deriving its motion from said driving-pulley, substantially as described.

4. In a cable railway, the combination, with the crossing or intersecting tracks 3 3 and 4 4, the propelling intersecting cables 1 1 and 2 2, and the curved tracks 5, of the pulley 8 and smaller pulley, 10, deriving motion from one or more of said propelling-cables, the guide-rolls 6, 11, and 13, and the transferring-cable 7, carried over said guide-rolls and around said pulley 10, substantially as described.

5. In a cable railway, the combination, with the crossing or intersecting tracks 3 3 and 4 4, the propelling intersecting cables 1 1 and 2 2, and the curved tracks 5, of the pulley 8, deriving motion from one or more of said propelling-cables, and the smaller pulley, 10, the guide-rolls 6 and 13, the adjustable tightening guide-rolls 11, and the transferring-cable carried in a loop around said pulley 10 and tightening guide-rolls 11 and over the guide-rolls 13 and 6, substantially as described.

6. In a cable railway, the combination of the intersecting tracks and propelling-cables, the pulley 8, journaled in the center of said intersecting propelling-cables, the curved tracks, the guide-rolls 9, arranged in a line tangential to the pulley 8 and in a line with one of the propelling-cables and guiding said cable into frictional driving contact with a portion of the periphery of said pulley 8, and the transferring-cable passed around guide-rolls and deriving motion from said driven pulley 8, substantially as described.

7. In a cable railway, the combination of the intersecting double tracks 3 3 and 4 4, propelling intersecting cables 1 1 and 2 2, curved tracks 5, pulley 8, guide-rolls 9 in a tangential line to the periphery of said pulley and guiding one or more of the main cables into frictional driving contact with said pulley 8, the smaller pulley, 10, secured to said pulley 8, the guide-rolls 6 and 13, the adjustable tightening-rolls 11, and the transferring-cable 7, carried in a loop, 12, around said pulley 10 and tightening guide-rolls 11 and carried over the guide-rolls 6 and 13, substantially as described.

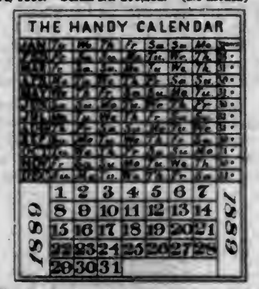
402,964. DEVICE FOR CASE-HARDENING AXLE-BOXES. JOHN W. FARMELEE, Wilkes-Barré, Pa. Filed Mar. 5, 1888. Serial No. 266,573. (No model.)



Claim.—1. In combination with an axle-box or the like, the recessed caps adapted to fit over and close the ends thereof, the caps having their recesses tapered so as not to come directly in contact with the ends of the box, for the purpose set forth, substantially as described.

2. In combination with an axle-box or the like, the cap E, having the tapered recess in its inner side adapted to fit over the enlarged end of the axle-box, and thereby prevented from coming directly in contact with the extreme inner end of the axle-box, and the cap F, having the recess G on its inner side adapted to fit snugly on the tapered outer end of the axle-box, said cap being provided with the openings H, substantially as described.

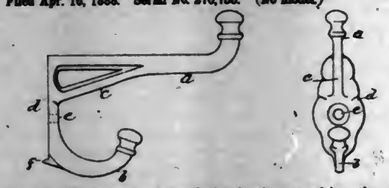
402,965. CALENDAR. EDWARD A. PARSONS, New Haven, Conn. Filed Jan. 14, 1889. Serial No. 296,232. (No model.)



Claim.—The herein-described calendar, consisting of a series of names representing the months, a line of names or abbreviations extending from each month, each line representing seven successive days of a week, the first day represented being the day of the week on which the first day of the month occurs, combined with a single series

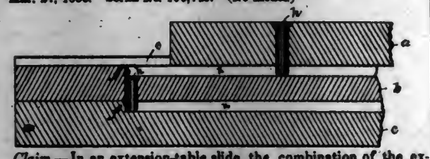
of figures, from 1 to 31, arranged in lines corresponding to the said days of the week, the figure 1 being in line with the representation of the day of the week on which the month begins, and the successive figures arranged accordingly, substantially as described.

402,966. WARDROBE-HOOK. CHARLES W. PIERCE, Oak Hill, N.Y. Filed Apr. 16, 1888. Serial No. 270,753. (No model.)



Claim.—The improved wardrobe-hook, comprising the upper arm or hook, *a*, brace *c*, lower hook, *b*, and base-plate *d*, and having the attaching screw-hole *e* of the base-plate between the brace and the lower hook, but above or out of interfering range of the point of said hook with the driving of the screw.

402,967. TABLE-SLIDE. SMITH PRATT, Granville, Ohio. Filed Mar. 27, 1886. Serial No. 196,749. (No model.)



Claim.—In an extension-table slide, the combination of the extension-bars having on one side thereof the longitudinal dovetailed projections adapted to slide within the corresponding grooves, *c*, of the adjoining bars, with vertical projecting stop-pins adapted to slide in the smaller grooves, *k*, substantially as and for the purpose specified.

402,968. MACHINE FOR MAKING ICE. LAFAYETTE D. RAILSBACK, Indianapolis, Ind., assignor of three-fourths to Augustus M. De Souchet, same place, and W. Irving Williamson and George W. Mitchell, Bowling Green, Mo. Filed Apr. 6, 1889. Serial No. 306,175. (No model.)

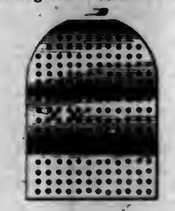


Claim.—1. The combination of the freezing-cylinder, the feeding-apron at one side of the cylinder, and the breaking roll or knife and scraper at the other side, whereby material fed upon one side of the cylinder is frozen and delivered at the other side.

2. The combination, in a machine for making ice, ice-cream, &c., of the revolving freezing-cylinder, a tank or supply-vessel to contain the liquid to be frozen, an apron-like conduit leading from said supply-vessel to said cylinder, a crushing roll or knife for dividing the film of ice as it is frozen, and a scraper for removing said ice.

402,969. COFFEE OR TEA POT. GEORGE R. RAYMOND, Chicago, Ill. Filed June 28, 1888. Serial No. 278,406. (No model.)

Claim.—As an improvement in tea-pots, the approximately V-shaped division-plate having its vertex resting on the bottom of the pot, its rear portion extending to the upper end of said pot, and the



402,969.



front portion to the inner end of the spout, substantially as shown and described.

402,970. FIRE-EXTINGUISHER. THOMAS C. RICE, Worcester Mass. Filed Jan. 23, 1889. Serial No. 297,228. (No model.)



Claim.—1. A portable fire-extinguishing pail or vessel provided with a frangible cover and with a pocket in said cover.

2. As an improved article of manufacture, a portable fire-extinguishing pail or vessel provided with an internal protecting-coating and a frangible cover provided with a pocket.

3. In a fire-extinguisher, the combination, with a pail or vessel coated on its interior, of a paper cover coated on its under side for protection against the contents of the vessel, and a pocket formed in said cover.

4. In combination with a portable pail or vessel, a frangible cover for the same provided with a pocket and with an opening, and a valve adapted to close the opening.

5. In combination with a pail or vessel having a bituminous internal coating, a paper cover for said pail or vessel, also coated on its under face, and a pocket formed in said cover, all substantially as shown.

402,971. SYSTEM OF LINEAR TRANSFORMERS. ELIAS E. RIES, Baltimore, Md., assignor to Ries & Henderson. Original application filed Aug. 31, 1887, Serial No. 248,405. Divided and this application filed Feb. 11, 1889. Serial No. 299,474. (No model.)

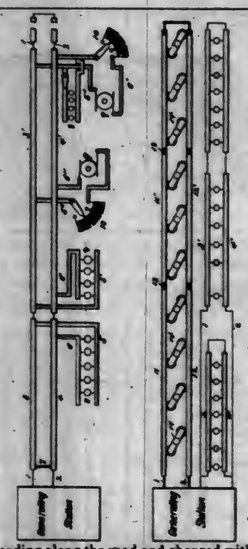
Claim.—1. A system of electrical distribution and conversion, consisting of line-conductors extending from the generating station to the farthest point of consumption, charged by intermittent or alternating currents of high tension, one or more sections of conductors parallel and in inductive proximity to the line-conductors, and one or more working-circuits bridging said conductors at any desired point or points, substantially as described.

2. In a system of electrical distribution and conversion, the combination of a round metallic primary circuit extending from a generating-station to the farthest point of consumption, charged by intermittent or alternating currents of high tension, with a secondary circuit or circuits composed of conductors extending along each branch of the primary circuit, insulated therefrom and covering and protecting the same, and one or more working-circuits bridging the secondary conductors, and translating devices therein, substantially as described.

3. In a system of electrical distribution and conversion, a primary circuit charged with high-tension currents and extending from the generating-station to the farthest point of consumption, with one or more sections of secondary conductors in inductive relation with the primary circuit and proportionate in length to the potential required in the secondary circuit, and one or more working-circuits bridging each section of secondary conductors, and translating devices therein, substantially as described.

4. In a system of electric railways, a round metallic line of paral-

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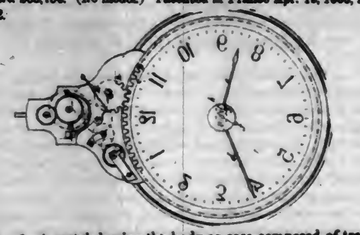


lel conductors extending along the road and charged with intermittent or alternating currents of high tension, with conducting-rails insulated from and covering the line-conductors, and contact wheels or trucks for bridging the rails and conveying current to the traveling electric motor, substantially as described.

5. A system of electrical distribution and conversion, comprising a generator of alternating or intermittent currents, primary line-conductors extending from said generator to one or more distant points of consumption, one or more secondary line-conductors parallel with and in inductive proximity to the primary line-conductor and arranged to be inductively charged therefrom with currents of a different tension, and translating devices fed by the current or currents so induced in the secondary conductors, substantially as described.

6. A system of electrical distribution and conversion, comprising a primary line of conductors extending from a generating-station to distant points of consumption and charged with intermittent or alternating currents of a given tension, secondary line-conductors parallel with and in inductive proximity to the primary line-conductors, and consumption-circuits tapping the secondary conductors at any point or points on the line, substantially as described.

402,972. TIME-PIECE. HUGUES RIBE, Paris, France, assignor to the Société Armand Schwab et Frère, same place. Filed Aug. 25, 1888. Serial No. 283,758. (No model.) Patented in France Apr. 19, 1888, No. 190,092.



Claim.—1. A watch having the body or case composed of transparent materials, the hands of said watch and the operating movement thereof exterior to the watch body or case, in combination with a transparent wheel communicating motion from said operating movement to said hands, substantially as set forth.

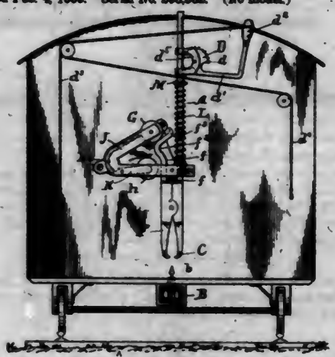
2. A watch having its body or case composed of transparent materials, the hands of said watch and the operating movement thereof exterior to the watch body or case, in combination with a transparent wheel concentric with said hands and communicating motion from said operating movement to said hands, substantially as set forth.

3. A watch having its body or case composed of transparent materials, the hour and minute hands of said watch and the operating movement thereof exterior to the watch body or case, in combination with a transparent wheel concentric with the hands of said watch, said wheel being rotated by said operating movement and said minute-hand rotating with said transparent wheel, and a train of gear concealed behind the central portions of the hour and minute hands, which transmits motion from said minute-hand to said hour-hand, substantially as set forth.

4. A watch having its body or case composed of transparent materials, the hour and minute hands of said watch and an operating movement concealed in the pendant of the watch, in combination with a transparent wheel communicating motion from said operating movement to said hands, substantially as set forth.

5. A watch having its body or case composed of transparent materials, the hands of said watch and the operating movement thereof exterior to the watch, in combination with a transparent wheel concentric with said hands and operating the same, and a toothed ring on the periphery of said wheel, which is concealed by the rim of the watch and which meshes with said operating movement, substantially as set forth.

402,973. CAR-COUPLING. WILLIAM W. ROGERS, Clarksville, Ark. Filed Feb. 4, 1889. Serial No. 298,582. (No model.)



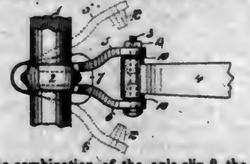
Claim.—1. The combination of the bar A, provided at its upper end with cogs *a*, cog-wheel D, properly secured and provided with cogs *d*, arm *d'*, handle d^3, cords d^3 d^4, to operate the same, coil-spring L, adapted to raise said bar, bar F, constructed as described, to form, in conjunction with said bar A, nippers C, coil-spring *f'*, adapted to close said nippers, the upper end of said bar being curved, as described, wheel G, pivoted in slotted frame J, wheel H, pivoted in bar K, and bar K, pivoted in said frame J, substantially as shown and described, and for the purposes set forth.

2. The combination of the draw-head having, in addition to the usual mouth, the slot s' and depression s^3, spring N, its flat end secured to the upper face of said draw-head, its bent end passing down through said slot s' and provided with the table s and the shoe s^2, link E, adapted to work in said draw-head and operate said spring, and pin *b*, adapted to operate in said draw-head and to be extracted by said nippers C, all substantially as shown and described, and for the purposes set forth.

3. The combination of the nippers C, provided with the cogs and operating-wheel D, large coil-spring L, small coil-spring *f'*, and curves on the bar F, and wheels G H in suitable bearings, all as described, with a draw-head provided with the slot s', recess s^3, spring N, provided with the table s and shoe s^2, and the double-headed pin *b*, substantially as shown and described, and for the purposes set forth.

4. In a car-coupler, substantially as above described, the combination of the draw-head having, in addition to its mouth, the slot s' and recess s^3, spring N, having one end secured to the upper face of said draw-head, the other passing down through the slot s' and into the mouth of the said draw-head and being provided with a table, s, and shoe s^2, and the double-headed coupling-pin *b*, which may be drawn up by means of a cord and branches, all substantially as shown and described, and for the purposes set forth.

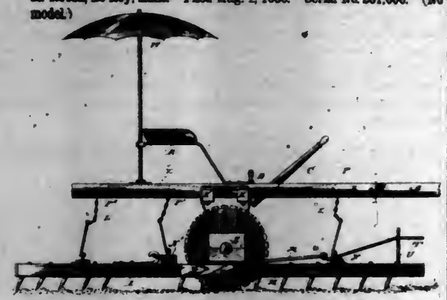
402,974. THILL-COUPLING. WALTER T. ROSS, Quebec, Quebec, Canada. Filed Aug. 30, 1888. Serial No. 284,205. (No model.)



Claim.—The combination of the axle-clip 2, the movable jaws 5 6, having inwardly-facing coniform projections 10 at the forward end and hinged together at the rear by one leg of the clip, the other leg intervening the jaws, the plate 7, supporting said jaws and bear-

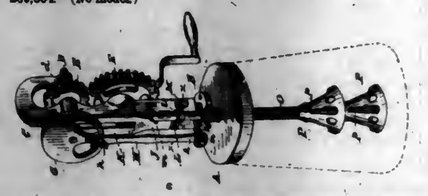
ing on the clip-nuts, the thill-iron 4, having a bore conically enlarged at both ends, and the coupling-bolt 3, passing through the bore of the coniform projections and thill-iron and provided with a nut, 13, at the end, as set forth.

402,975. COMBINED RIDING HARROW AND ROLLER. CASPER M. ROUSE, Le Roy, Kans. Filed Aug. 1, 1888. Serial No. 281,666. (No model.)



Claim.—In a combined riding harrow and roller, the combination of the roller E, having bearings in wooden boxes S S' in the wrought-iron side frames, F F', with the arms M M' hinged to the cross-bar N, the harrows H and I, the harrow 1 having its horseshoe attachment with two hooks forming a hinge, the lever C, the chains L, the hook and ratchet D, and the forked guide-pin U, all substantially as and for the purposes set forth.

402,976. CHURN. ELI A. RUDASILL, Shelby, N. C., assignor of one-half to John C. Beam, same place. Filed Nov. 2, 1888. Serial No. 289,804. (No model.)



Claim.—1. The combination, with the adjustable standard having its upper end turned to one side to form bearings for each end of the upper journal, and provided with a dovetailed projection on its opposite side, of a vertically-sliding guide-bar slotted in its upper end and secured to the standard by holding-clips on the inclined surfaces, the upper or forked ends of the guide-bar being held in position by the upper journal and the driving-gear, as set forth.

2. The combination, with an adjustable standard having a dovetailed projection on one side, of a vertically-sliding guide-bar slotted in its upper part and confined to the inclined surfaces of the standard by clips, the arms of the slotted part of the bar being held upon each side of the upper journal and between the collar of the standard and hub of the fly-wheel on said journal, as set forth.

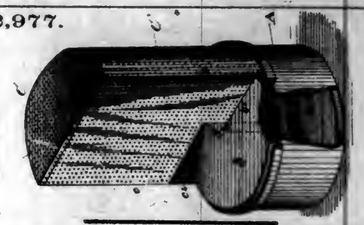
3. The combination, with a standard having a dovetailed projection thereon, and a vertically-sliding guide-bar secured thereto, said bar being slotted in its upper part and its arms passing on each side of the upper journal, of a two-part tubular dasher secured to the guide-bar and having conical beaters on its lower end, one above the other, as set forth.

4. The combination, with an adjustable standard having a dovetailed projection on one side, a vertically-sliding slotted guide-bar having its forked ends extending on each side of a journal above, and between the collar of the standard and hub of the fly-wheel on said journal, said fly-wheel having a pitman connected thereto and to the lower end of the guide-bar, of a coupling-arm secured to the guide-bar, having a socket therein holding a two-part tubular dasher-rod having conical slotted beaters one above the other on its lower portion, said upper dasher-rod being adjustable within the lower and having an air-valve on its inclosed end, as and for the purpose set forth

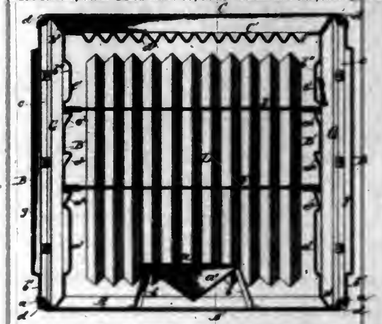
402,977. FLY-TRAP. GEORGE W. RUSSELL, Mobeetie, Tex. Filed Dec. 22, 1888. Serial No. 294,361. (No model.)

Claim.—In a fly-trap, the combination, with the base portion provided with clock-work mechanism for operating the horizontally-rotating bait-plate *b*, of the semi-cylindrical perforated or foraminated cage C, detachably connected to said base and having the recess at c^2 for the admission of insects to the trap, substantially as described.

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402,978. KNOCKDOWN OVEN. MARCUS S. SAGER, Washington Court-House, Ohio. Filed Nov. 13, 1884. Serial No. 147,856. (No model.)



Claim.—1. In an oven of the class described, having the outer walls thereof secured to each other at their abutting points by removable fastening devices, the detachable inner walls, held in position by frictional contact with the outer walls and with each other, the outer wall of the bottom having a central opening and a doorway formed in one of the outer walls, the parts being combined substantially as shown, and for the purpose set forth.

2. In combination with an oven of the class described, irrespective of specific construction, and provided with a bottom having a central opening, a hollow conical deflector having a flat top or covering plate, so as to form a dead-air space within the deflector, substantially as shown, and for the purpose set forth.

3. In an oven, an outer casing formed with separable or detachable walls, a doorway formed in one of the outer walls, heat induction and eduction orifices, the removable plates forming the inner walls having bent edges which engage with the inner portion of the outer casing, so as to support the inner walls within the outer casing, the parts being combined substantially as shown.

4. In combination with the outer casing of a portable oven, the inner vertical side plates, B' B', provided centrally with transverse corrugations for the reception of trays and vertical corrugations for stiffening the plates, said plates being adapted to be maintained in position by frictional contact with the outer casing, substantially as shown.

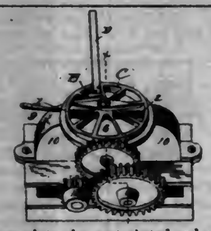
5. In a knockdown oven, the vertical walls having their edges bent to overlap the vertical edges of the walls adjacent thereto, top and bottom plates provided with downwardly and upwardly bent edges which overlap the longitudinal edges of the front, back, and side walls, the edges of the overlapping plates having perforations which register, and bolts and nuts for securing the walls to each other, the perforations being so located that one or more sides of the nuts will engage with the bent portion of the plate to prevent rotation of the nuts when the bolts are turned, the parts being adapted to be combined substantially as shown, and for the purpose set forth.

6. The combination, in a knockdown oven, of the outer walls, the edges of which are bent to overlap each other and are provided with corresponding perforations, bolts and nuts for securing the edges of the outer walls to each other, the inner walls having their edges bent to be supported by contact with the outer walls at their edges and provide air-spaces between the inner and outer walls, substantially as shown.

402,979. FEED-REGULATOR. NEWELL SANDERS and JUDSON BUCHANAN, Chattanooga, Tenn. Filed Aug. 4, 1888. Serial No. 281,946. (No model.)

Claim.—1. In combination, the hopper, the feed-wheel located at the bottom thereof and having spokes to form a series of pockets for the reception of the grain, said pockets being in free communication with the hopper, a plate having a stud for supporting the wheel, said plate also having openings 1 2 for the egress of the grain, a stationary cut-off plate secured to the central stud and extending over the openings 1 2, and a stirrer secured to the feed-wheel at such a point as will permit its passing by the cut-off plate, substantially as described.

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2. In combination, the hopper, a feed-wheel at the bottom thereof having pockets, a plate for supporting the feed-wheel, having discharge-openings, a stationary cut-off plate extending over said openings, and a stirrer secured to the feed-wheel at a point out of line with the cut-off, substantially as described.

402,980. AZO DYE. JAKOB SCHMID, Basle, Switzerland, assignor to the Society of Chemical Industry, same place. Filed Sept. 24, 1888. Serial No. 286,239. (No specimens.)

Claim.—The production of azo bodies by the combination of alphadiazonaphthaline with metaamidophenol or its dialkylized derivatives, substantially as described.

402,981. BRIDLE. JOHN SCHNEIDER, Pontoon, Ill. Filed Nov. 24, 1888. Serial No. 291,806. (No model.)



Claim.—As an improved article of manufacture, the buckle C, provided with a recess, C^3, to receive the end of the throat-latch, and a rivet, c^3, to secure the same therein, and having cross-bar *c* and pivoted tongue C' to receive the crown-piece extension, transverse loop C^3, arranged at right angles to the body of the buckle, to receive the end of the crown-piece extension, apertured lug *d* at its lower end, and the metallic loop D, swiveled in said apertured lug and adapted to receive and support the bearing-rein, substantially as and for the purposes specified.

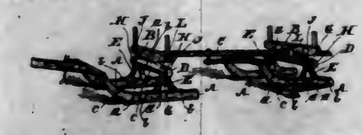
402,982. HAND-WARMER. FRANK SCHOFF, New York, N.Y. Filed Feb. 23, 1889. Serial No. 301,521. (No model.)



Claim.—1. A hand-warmer consisting of a perforated sheet-metal box, an outer covering, a cover to close the open end of the box, and a tubular grate, of substantially the length of the box, fixed in the box with one end left open and arranged in the box with a space between its exterior surface and the interior of the sides of the box, substantially as described.

2. A hand-warmer consisting of a perforated sheet-metal box, a cover, and a tubular grate consisting of a spiral coil fixed in the casing, substantially as described.

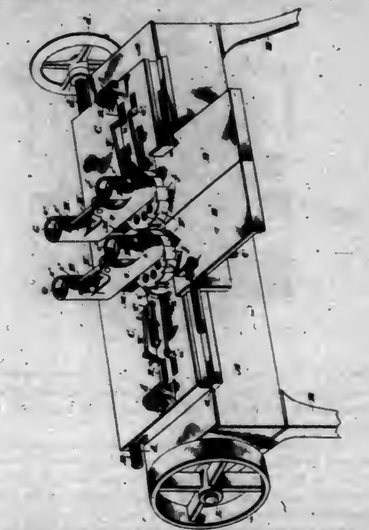
402,983. BOB-SLEIGH. DAVID W. SCOBIE, Cambridge, Wis. Filed Feb. 26, 1889. Serial No. 301,221. (No model.)



Claim.—1. In a bob-sleigh, the combination, with the runners of the respective bobs, of the knees E E, provided with concave bearings or seats G, for the reception of the ends of the cross-beams, and bolt-retaining slots I, for the reception of the beam-retaining bolts J, cross-beams D D, having rounded or cylindrical bearing-surfaces H at their respective ends conforming in shape to the concave surface of said knees, and beam-retaining bolts J J, rigidly affixed at their upper ends to the ends of said cross-beams and at their lower ends within the retaining-slots I of said knees, substantially as and for the purpose specified.

2. In a bob-sleigh, the combination of the knees E E, provided at their upper ends with concave bearing-surfaces for the reception of the ends of the cross-beams and at their lower ends with diverging arms *a a*, secured to the runners by retaining bolts or rivets, cross-beams D D, having cylindrical bearing-surfaces conforming in shape to the bearing-surfaces of said knees, and beam-retaining bolts J, rigidly secured at their upper ends in the ends of said cross-beams and operating at their lower ends within the slots I of the beam-supporting knees, all substantially as and for the purpose specified.

402,984. BOOK-STAPLING MACHINE. JOHN W. SCULL, Philadelphia, Pa., assignor of one-half to Andrew Scull, same place; Andrew Scull administrator of said John W. Scull, deceased. Filed July 30, 1887. Serial No. 245,719. (No model.)



Claim.—1. In a book-stapling machine, the combination, with two or more wire-feeders, two or more wire-cutters, and two or more staple-formers, of two or more staple holders and carriers and two or more staple-drivers, constructed and arranged to operate successively in the order named for simultaneously forming and setting two or more staples, substantially as and for the purpose shown.

2. In a book-stapling machine, the combination, with an intermittingly-rotating disk provided with a series of equidistant openings for the reception of staples, of a former for forcing a series of blanks into said openings in the shape of staples, and a driver for successively forcing said staples out of said openings and into a book, substantially as and for the purpose set forth.

3. As an improvement in mechanism for stapling books, the combination of a support for books which is adapted to hold a book upward with a yielding pressure and a staple-holding plate that is adapted to furnish a bearing for the upper side of the book, substantially as and for the purpose shown and described.

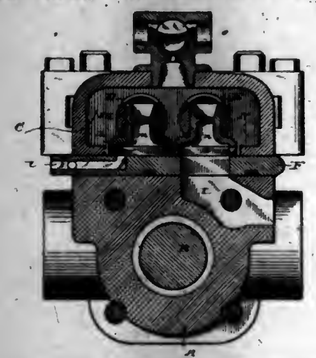
4. As a means for feeding wire to the blank-cutting devices, the combination of a block which is adapted to slide back and forth within or upon a track beneath the wire, an L-shaped dog that is pivoted within or upon said block, and a bar which has one of its ends pivoted to the vertical arm of said dog and its opposite end pivoted upon a reciprocating part of the machine, whereby whep said parts are moved forward the horizontal arm of said dog is pressed downward upon and caused to engage with and move said wire forward, substantially as and for the purpose specified.

5. In combination with mechanism, substantially as shown, whereby wire is intermittingly fed from a reel, a stationary block which is provided with an opening for the passage of the wire and an intersecting opening that has a right angle thereto, and a cutter-bar that is adapted to slide longitudinally within the last-named opening and is provided with a wire-opening which by the motions of said cutter-bar is alternately moved into and out of coincidence with the wire-opening of said block, substantially as and for the purpose described.

6. The combination, with an intermittingly-rotating disk which is provided with a series of staple forming and holding openings, of a feeder for presenting blanks to said openings as they successively reach a predetermined position and a former which is adapted to be moved upward into the openings of said disk to form staples within the same for the interposed blanks, substantially as and for the purpose described.

7. In combination with a disk which is provided with equidistant staple-holding openings and by a step-by-step rotation is adapted to bring such openings successively over a book-supporting mechanism, a plunger that is adapted to be moved downward through each staple-containing opening as it reaches a predetermined point and to force the staple contained therein into a book placed beneath, substantially as and for the purpose shown.

402,985. VALVE FOR ENGINES. HENRY C. SERGEANT, New York, N. Y., assignor to the Ingersoll-Sergeant Rock Drill Company, same place. Filed Aug. 10, 1888. Serial No. 282,418. (No model.)



Claim.—1. In a reciprocating engine, means for opening and closing the supply-ports thereof, comprising a pair of valve-actuating pistons driven by the motive fluid independent of the movement of the main piston, substantially as described.

2. In a reciprocating engine, the combination, with the main supply-ports and cylinder, of two valves arranged to move in alternation and to control the necessary supply ports and passages to produce said alternating motion independent of the movement of the main piston, substantially as described.

3. In a reciprocating engine, valve-operating mechanism therefor, consisting of a pair of reciprocating pistons, one of which is connected to and moves the main valve of the engine, the other operating a similar valve controlling the movements of the valve-controlling pistons independent of the movement of the main piston, substantially as described.

4. In a reciprocating engine, the combination, with the main supply-valve thereof, of a steam or air actuated piston for reciprocating the same, a second similar valve, and ports and passages in the steam-chest for imparting alternating reciprocating movement to the valve-controlling pistons independently of the movement of the main piston, substantially as described.

5. A reciprocating engine having a steam or air actuated piston arranged to open and close the main supply and exhaust ports independently of the movement of the main piston, an auxiliary piston and valve-controlling ports and passages for actuating the main-valve piston, and a contractible passage or passages for regulating the speed of the main-valve piston, substantially as described.

6. In a reciprocating engine, the combination of pistons M N, main valve *m*, attached to piston M, and an auxiliary valve attached to piston N, main supply-ports, and an auxiliary set of ports controlled by the piston N, valve-passages leading from said ports to actuate the piston M, and passages leading from the main ports to give motion to the piston, substantially as described.

7. In a reciprocating engine, the combination of pistons M N, main valve *m*, attached to piston M, and an auxiliary valve attached to piston N, main supply-ports, and an auxiliary set of ports controlled by the piston N, valve-passages leading from said ports to actuate the piston M, passages leading from the main ports to give motion to the piston N, and a contractible exhaust-passage, Q, substantially as described.

8. The valve-actuating pistons M N, in combination with the steam-chest J, having oppositely-located cylinders to receive the pistons, and an enlarged central portion to permit the free passage of steam or air to the ports, substantially as described.

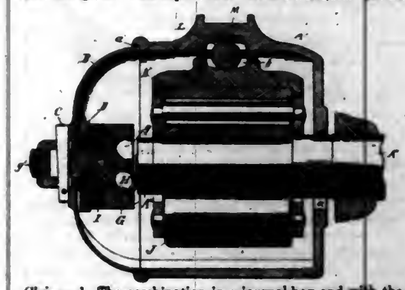
402,986. ELECTRIC SYSTEM OF COMMUNICATION. FREDERICK B. SHAFER, New York, N. Y. Filed Jan. 10, 1889. Serial No. 296,022. (No model.)



Claim.—1. A system of electrical communication comprising the combination of an electrical call or notifying instrument having the contact-points of its brake-wheel specifically adapted for denoting the call, and a second instrument of like character, but having contact-points of its brake-wheel producing distinguishably-different signals for the message and geared with a variably-setting motor to produce one or more signals at a setting, both of said instruments being in electrical connection with a register or bell or other receiving-instrument in the station, substantially as described.

2. A system of electrical communication comprising the combination of an electrical call or notifying instrument having the contact-points of its brake-wheel specifically adapted for denoting the call, a second instrument of like character, but having contact-points of its brake-wheel producing distinguishably-different signals for the message and geared with a variably-setting motor to produce one or more signals at a setting, and a third instrument of like character, but having a brake-wheel for communicating signals or characters which are distinguishable from those of both the first and second instruments, all of said instruments being in electrical connection with a register or bell in the station, substantially as described.

402,987. ANTI-FRICTION JOURNAL-BOX. WILLIAM S. SHARPNECK, Chicago, Ill. Filed Sept. 3, 1888. Serial No. 284,471. (No model.)



Claim.—1. The combination, in a journal-box and with the shell A thereof, of the bar D, cap B, and key C, substantially as described.

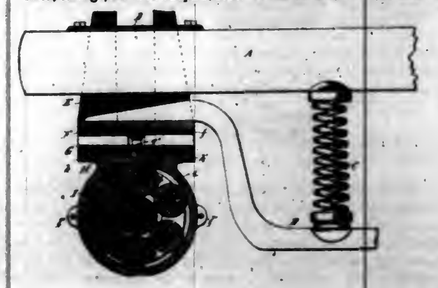
2. The combination, in a journal-box and with the shell thereof, of an axle working therein and a bearing-block, and a spring for holding said block against the end of the axle, substantially as described.

3. The combination, in a journal-box and with the shell thereof, of an axle working therein, a holder, as the cross-bar D, and a bearing-block constructed to move endwise therein under the pressure of the axle, substantially as described.

4. The combination, in a journal-box and with the shell thereof, of an axle working therein, a cross-bar, D, attached to the shell, a movable bearing-block, and a cushion, as the spring I, between said cross-bar and bearing-block, substantially as described.

5. The combination, in a journal-box and with the shell thereof, of an axle working therein, a system of anti-friction rollers supporting a roller, as L, and a removable hardened plate to receive the wear of said roller, substantially as described.

402,988. ANTI-FRICTION JOURNAL-BOX. WILLIAM S. SHARPNECK, Chicago, Ill. Filed Sept. 3, 1888. Serial No. 284,472. (No model.)



Claim.—1. The combination, with a timber, A, of a car-truck, an equalizing-bar, B, a spring, C, between the two, and the journal-box thereof, of a reversed pedestal, E, supported by the journal and receiving the timber A and the equalizing-bar B, substantially as described.

2. The combination, with the timber A of a car-truck, an equalizing-bar, B, a spring, C, between the two, and the journal-box thereof, of a reversed pedestal, E, supported by the journal and receiving the timber A and the equalizing-bar B, and a saddle, D, embracing said timber and forming a guide for said pedestal, substantially as described.

3. The combination, with a timber of a car-truck, and the journal-box thereof, and a saddle fastened to the timber, of a yoke receiving the saddle, and supported on a roller resting on said journal-box, and constructed to allow the timber to rise and fall therein under the pressure of the car, substantially as described.

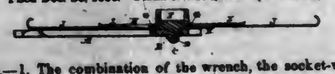
4. The combination, with a journal-box having a recessed support, as the bracket H, having an upwardly-projecting rib, of a roller resting in said support, and having a groove receiving said rib, and supporting a pedestal having a downwardly-projecting rib fitting into the groove in said roller, substantially as described.

5. The combination, with the shell I, of the spider M, the bearing-block secured in the hub *m'* thereof, the cap P, and a fastening device, as the wedge Q, substantially as described.

6. The combination, with the saddle I and spider M, having a threaded aperture in its center, of the bearing-block N, having a threaded and slotted shank, a cap, P, and the wedge Q, substantially as described.

7. The combination, in a journal-box and with the axle and shell thereof, of a bearing-block having a wearing-block set therein and provided with a groove partly formed in said wearing-block and a ball running in said groove, substantially as described.

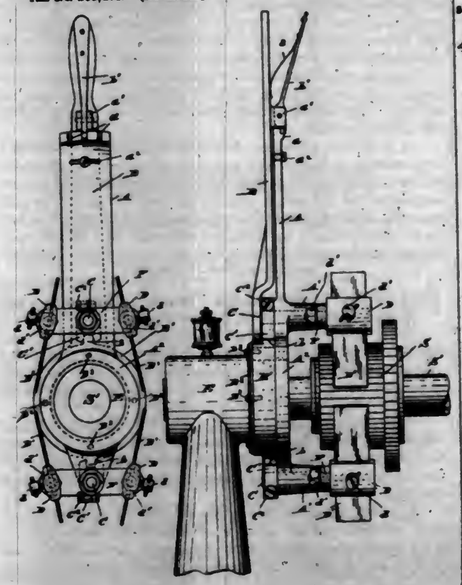
402,989. WHEEL-WRENCH. OLIVER SHEPHERD and JOHN F. HOLMES, Ballston, N. Y.; said Shepherd assignor to Wm. S. Story, same place. Filed Dec. 20, 1888. Serial No. 294,232. (No model.)



Claim.—1. The combination of the wrench, the socket-wrench attached thereto, the plate, and hooked rods attached to the plate for fastening the parts to the spokes of the wheel, substantially as shown.

2. The combination of the socket-wrench, the wrench A, secured thereto, the plate H, loosely attached to the socket-wrench, the springs connected to opposite sides of the plate, and the hooked rods attached to the springs, substantially as described.

402,990. COMMUTATOR-BRUSH CONTROLLER FOR ELECTRIC MOTORS. WILLIAM L. SILVEY, Lima, Ohio. Filed Aug. 22, 1888. Serial No. 283,478. (No model.)



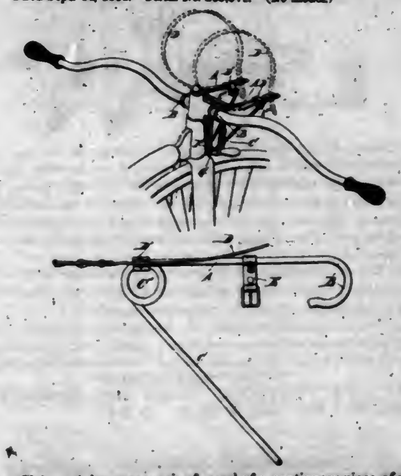
Claim.—1. In a commutator-brush controller for electric motors, the combination of the ring B', teeth *b b*, lever B, latch *b'*, notched lever *a*, and spindles c^3 c^3, operated by the teeth attached to the ring B', as set forth.

2. The combination, in a commutator-brush controller for electric motors, of the split brushes D' D' D' D', bars F F, rods *c c*, and split clamps *c' c'*, attached to the spindles, whereby the position of the brushes is changed, as set forth.

3. The combination, in a commutator-brush controller for electric motors, of the main ring a^3, mounted on hub or journal-bearing E, ring B' and ring *a'* attached thereto, lever B, for operating holders D D D D, and insulating-bars F' F', spindles *c c*, split clamps *c' c'*, and teeth *b b*, attached to ring B', for operating the brushes D' D' D' D', as set forth.

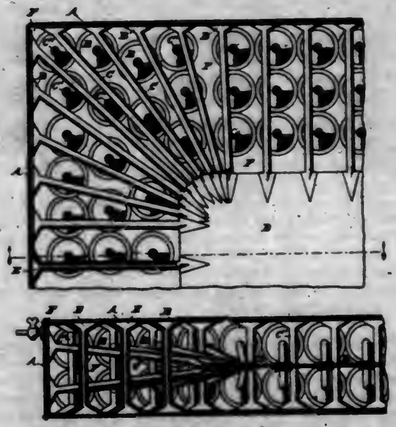
4. In a commutator-brush controller for electric motors, the combination, with the ring *a*, of projecting stems *a' a'*, diametrically opposite each other, rotative spindles *c c*, and clamps *c' c'*, adjustably secured to said spindles by set-screws c^3, as set forth.

402,991. LUGGAGE-CARRIER. CLARENCE H. SMITH, Detroit, Mich. Filed Sept. 14, 1888. Serial No. 285,371. (No model.)



Claim.—A luggage-carrier formed of a continuous piece of metal bent so as to form the bracket-arms C, horizontal arms A, and hooks B, and in connection therewith straps for securing the bundle in place upon the carrier, and a strap adapted to engage the brake so as to secure the carrier firmly upon the bicycle, substantially as described.

402,992. WATER-PROOF AIR-MATTRESS. BENJAMIN F. SHAVELY, Harrisburg, Pa. Filed Aug. 26, 1888. Serial No. 283,731. (No model.)



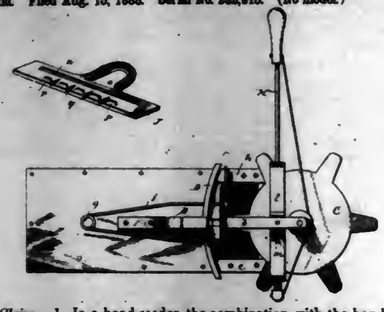
Claim.—1. The water-proof air-mattress having its inner walls provided with water-proof air-tight chambered disks B, to which the interior tubular stays, C, are secured, substantially as specified.

2. A water-proof air-mattress, consisting of the main wall A, the

water-proof air-tight disks B, secured to the inside thereof, the center piece, D, and the tubular stays, substantially as specified.

3. A rubber-coated air-mattress composed of the main wall or casing, the rubber water-proof air-tight disks secured to the inner surface thereof, the center attachment-piece, the radial stays extending from the disks of the sides and ends to said attachment-piece, and the vertical stays connecting the disks of the top and bottom walls, substantially as specified.

402,993. BROADCAST SEEDER. FRANKLIN P. SPANGLER, Goshen, Ind. Filed Aug. 15, 1888. Serial No. 282,813. (No model.)

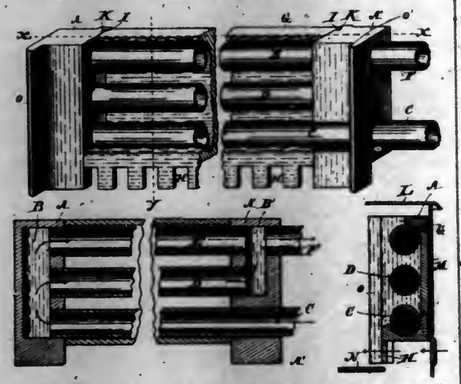


Claim.—1. In a hand-seeder, the combination, with the box having transverse feed-slot and the guides secured to the under side of said box, of the adjustable throat-plate working in said guides, the wire attached to said throat-plate, and the transverse bar connecting the arms of said wire and provided with a right-angled portion engaging the side of one of said guides, substantially as and for the purpose specified.

2. The combination, with the box having transverse feed-slot, of the front throat-plate beneath said slot and formed with a transverse ridge, *n*, substantially as and for the purpose specified.

3. The combination, with the box having feed-slot, of the front throat-plate formed with transverse ridge *n*, ridges *p*, and corrugations *q* between said ridges, substantially as and for the purpose specified.

402,994. WATER-BACK. JAMES H. SPENCE, Milwaukee, Wis. Filed Nov. 7, 1888. Serial No. 290,195. (No model.)

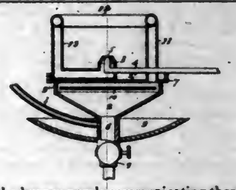


Claim.—1. A water-back constructed and adapted to be inserted horizontally in the fire-box of a stove or range, consisting of two cast-iron end pieces—one at each end—each end piece having one or more water-chambers, in combination with a wrought-iron pipe or pipes connecting said end pieces, each connecting-pipe leading into a chamber of an end piece, and an induction and an eduction water-pipe, substantially as described.

2. A water-back consisting of cast-iron head-pieces A and A', provided with chambers B and B', and a rear wall, G, in combination with a wrought-iron induction-pipe, C, wrought-iron intermediate pipes, D and E, and an eduction-pipe, F, substantially as described.

3. In a water-back, cast-iron heads A and A' and connecting wrought-iron pipes, in combination with a cast-iron wall, G, provided with draft-apertures H H, substantially as described.

402,995. WATER-GAS BURNER. WILBUR F. STEELE, Steele, Dak. Filed Apr. 8, 1889. Serial No. 306,401. (No model.)



Claim.—1. In a water-gas burner, the combination, with a vaporizing-chamber and a burner-nozzle communicating therewith, of a supply-pipe projecting into and extending upwardly within said burner-nozzle and leaving a contracted space beneath the same, a valved blow-off pipe connected to said vaporizing-chamber, and a suitably-secured cup or receiver arranged beneath said burner, substantially as and for the purpose described.

2. In a water-gas burner, the combination, with a vaporizing-chamber and a superheating-chamber arranged above the same and communicating therewith, of a burner-nozzle arranged below said superheating-chamber and above said vaporizing-chamber, a supply-pipe connecting said superheating-chamber and burner-nozzle, and another supply-pipe communicating with said burner-nozzle, substantially as and for the purpose described.

3. In a water-gas burner, the combination, with a vaporizing-chamber and a superheating-chamber arranged above the same and communicating therewith, of a burner-nozzle arranged below said superheating-chamber and above said vaporizing-chamber, a supply-pipe connecting said superheating-chamber and burner-nozzle, and another supply-pipe projecting into the side of and extending upwardly within said burner-nozzle and leaving a contracted space between the same, substantially as and for the purpose described.

4. In a water-gas burner, the combination, with a vaporizing-chamber, of a loosely-mounted annular plate or disk arranged close beneath the top of said chamber, substantially as and for the purpose described.

5. In a water-gas burner, the combination, with a vaporizing-chamber and a superheating-chamber arranged above the same and communicating therewith, of a loosely-mounted annular plate or disk arranged close beneath the top of said vaporizing-chamber, substantially as and for the purpose described.

6. In a water-gas burner, the combination, with a vaporizing-chamber and a superheating-chamber arranged above the same and communicating therewith, of a burner-nozzle arranged below said superheating-chamber and above said vaporizing-chamber, a loosely-mounted annular plate or disk arranged close beneath the top of said vaporizing-chamber, a supply-pipe connecting the latter and said burner-nozzle, and another supply-pipe communicating with said nozzle, substantially as and for the purpose described.

7. In a water-gas burner, the combination, with the water-vaporizing chamber 2, the water-supply pipe 1, communicating therewith, and the superheating-chamber 12, arranged above said water-vaporizing chamber, of the upright pipe 11, which connects said chamber, the burner-nozzle 3, arranged intermediate of said chambers, the downwardly and inwardly extending steam-pipe 13 14, connecting said superheating-chamber and burner-nozzle, and the oil-pipe 4, projecting into and extending upwardly within said burner-nozzle and leaving a contracted space between the same, substantially as and for the purpose described.

8. In a water-gas burner, the combination, with the water-vaporizing chamber 2, the feed-pipe 6, having the valved blow-off pipe 8, the water-supply pipe 1, and the cup or receiver 9, of the superheating-chamber 12, the upright pipe 11, the downwardly and inwardly extending steam-pipe 13, the burner-nozzle 3, and the oil-pipe 4, having the exit-opening 5, and forming a contracted space between itself and said burner-nozzle, substantially as and for the purpose described.

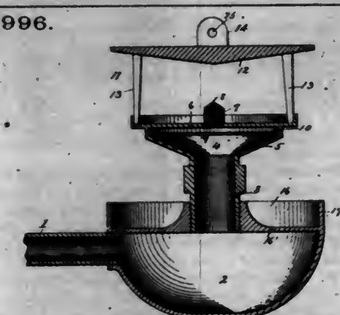
402,996. VAPOR-BURNER. WILBUR F. STEELE, Steele, Dak. Filed Apr. 8, 1889. Serial No. 306,402. (No model.)

Claim.—1. In a vapor-burner, the combination, with a vaporizing-chamber, of a retarding and deflecting disk located therein, and a superheating-chamber formed between and by said disk and the top of said vaporizing-chamber, substantially as and for the purpose described.

2. In a vapor-burner, the combination, with a vaporizing-chamber provided with a top or cover having a burner-nipple, of a retarding and deflecting disk located within said chamber and at a short distance below said top or cover, substantially as and for the purpose described.

3. In a vapor-burner, the combination, with the vaporizing-chamber 4, provided with the top or cover 6, having the burner-nipple 7, of the retarding and deflecting disk 9, arranged just beneath said top or cover and forming therewith the superheating-chamber 10, and

402,996.



the deflector-plate 12, for deflecting the heat down upon said superheating-chamber, substantially as and for the purpose described.

4. In a vapor-burner, the combination of the receiving-chamber 2, the feed-pipe 3, the vaporizing-chamber 4, the retarding and deflecting disk 9, located therein, and the burner-nipple 7, substantially as and for the purpose described.

5. In a vapor-burner, the combination of the supply-pipe 1, the receiving-chamber 2, having a concaved bottom, the feed-pipe 3, the vaporizing-chamber 4, the disk 9, the burner-nipple 7, and the deflector-plate 12, substantially as and for the purpose described.

6. In a vapor-burner, the combination, with the receiving-chamber 2, the feed-pipe 3, and the vaporizing-chamber 4, having an outwardly-flaring wall or bottom, 5, a flat top, 6, and a central burner-nipple, 7, and the retarding and deflecting disk 9, substantially as and for the purpose described.

7. In a vapor-burner, the combination of the receiving-chamber 2, the oil-cup 16, the feed-pipe 3, the vaporizing-chamber 4, the retarding and deflecting disk 9 located therein, the burner-nipple 7, and the deflector-plate 12, substantially as and for the purpose described.

8. In a vapor-burner, the combination, with the vaporizing-chamber 4, the retarding and deflecting disk 9 located therein, and the burner-nipple 7 in the top of said chamber, of the deflector 11, consisting of the annular plate 12 and the legs 13, substantially as described.

9. In a vapor-burner, the combination of the receiving-chamber 2, having a concaved bottom, the supply-pipe 1, fitted in the side of said chamber, the feed-pipe 3, the oil-cup 16, the vaporizing-chamber 4, having an outwardly-flaring wall or bottom, 5, a flat top, 6, and a central burner-nipple, 7, the retarding and deflecting disk 9, and the deflector 11, substantially as described.

10. In a vapor-burner, the combination of the receiving-chamber 2, having a concaved bottom, the supply-pipe 1, fitted in the side of said chamber, the feed-pipe 3, the oil-cup 16, the vaporizing-chamber 4, having an outwardly-flaring wall or bottom, 5, a flat top, 6, and a central burner-nipple, 7, the retarding and deflecting disk 9, and the deflector 11, consisting of the plate 12, having the shape of an inverted cone, and the legs 13, substantially as described.

402,997. CASE FOR CARRYING PHONOGRAMS AND GRAPHOGRAMS, &c. ROSWELL H. ST. JOHN, Cleveland, Ohio. Filed Dec. 26, 1888. Serial No. 294,655. (Model.)



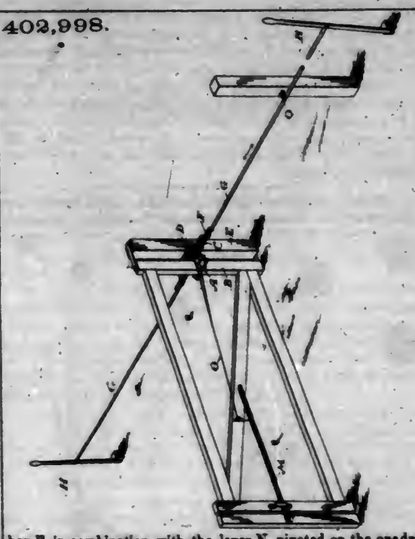
Claim.—1. A new article of manufacture for carrying phonograms and like articles, consisting of a circumferentially-ribbed tube and a cap fitting closely upon each end of the tube and provided with an inwardly-extending conically-tapered portion, forming supports for the ends of a phonogram or like article, whereby said article is adapted to slide up over said conical portions and to be held out of contact with the sides of the tube and against longitudinal movement, substantially as set forth.

2. A new article of manufacture, consisting of a tube having caps at its ends provided with inwardly-projecting conical portions and elastic packing about the base of said conical portions to protect the article conveyed against injury by endwise movement, substantially as set forth.

402,998. MECHANISM FOR OPENING GATES. JOHN H. STONE, Woodbridge, Ontario, Canada. Filed Feb. 13, 1889. Serial No. 299,764. (No model.)

Claim.—1. A rod, G, fixed to or forming part of the bar F, adjustably connected to the rack C, and a pin, K, projecting from the

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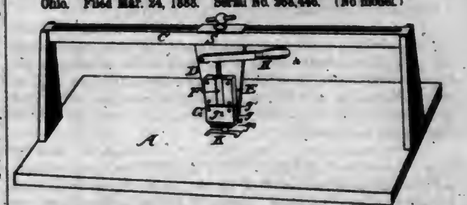


bar F, in combination with the lever N, pivoted on the quadrant A, and connected to the latch M by the cord or chain O, substantially as and for the purpose specified.

2. A rod, G, fixed to or forming part of the bar F, and a pin, L, projecting from the bar F, in combination with the lever P, pivoted on the quadrant A, and connected to the latch M by the cord or chain O, substantially as and for the purpose specified.

3. A rod, G, fixed to or forming part of the bar F, and pins K and L, projecting from the bar F, in combination with levers N and P, pivoted on the quadrant A, and connected to the latch M by the cord or chain O, substantially as and for the purpose specified.

402,999. STAMPING-PRESS. HENRY R. STRAHAHAN, Cleveland, Ohio. Filed Mar. 24, 1888. Serial No. 268,446. (No model.)



Claim.—1. In combination with the hanger D, the ways E, attached thereto, the stem F, sliding in said ways, the spring J and lever H, for moving said stem in reverse directions, and the holder G, attached to said stem, and a movable foot-plate, K, and its retracting-spring, this plate and spring also being attached to said hanger and arranged for co-operating with the type carried by said holder, substantially as set forth.

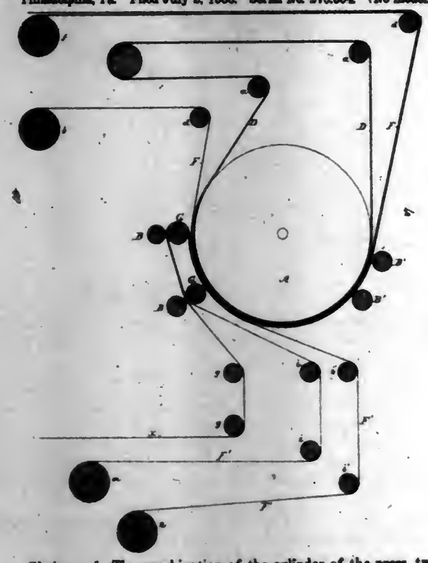
2. In combination with the hanger D, the foot-plate K, having a stem, *k*, the block I, attached to back of said hanger, and the retracting-spring *l*, constructed and operating substantially as specified.

403,000. GEARING FOR ROAD-ENGINES. JOHN W. STRINGER, Marion, Ohio. Filed Jan. 19, 1889. Serial No. 296,848. (No model.)



Claim.—The combination, with the shaft A, the wheel C, having the wrist-pin *c*, the bearings B B', the latter having the depending portion B^3, and the shaft F', standing outward from said depending portion at a proper point, of the gear-wheels D D', the former of which is rigid on the shaft A, while the latter can either turn loosely thereon or be fixed by the set-screw *e*, the gear-wheel E, fixed on the shaft F' and meshing with the wheel D, the gear-wheel E', turning loosely on the shaft F' and meshing with the wheel D', and the bolt d^3, to connect the gear-wheels E E' and cause them to turn in unison, substantially as specified.

408,001. CALICO-PRINTING MACHINE. JAMES SUTHERLAND, Philadelphia, Pa. Filed July 2, 1888. Serial No. 278,834. (No model.)



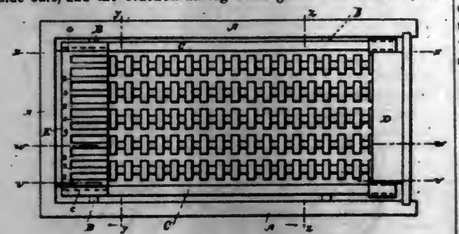
Claim.—1. The combination of the cylinder of the press, two sets of impression-rolls on opposite sides of the latter, and bearing-rolls interposed between one set of impression-rolls and the cylinder, whereby the sheet to be printed can, after passing between said set of impression-rolls and the bearing-rolls, be reversed and carried around the cylinder to receive the impression from the other rolls, all substantially as specified.

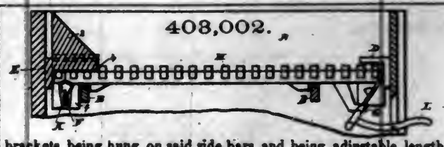
2. The combination of the cylinder, the blanket, the backing-sheet F, two sets of impression-rolls on opposite sides of the cylinder, and bearing-rolls interposed between one set of impression-rolls and the cylinder, and serving as a means of reversing the direction of movement of the fabric to be printed, so as to direct it around the cylinder to the other set of rolls with its printed face in contact with the backing-sheet, all substantially as specified.

3. The combination of the cylinder, the blanket, the two sets of impression-rolls B B' on opposite sides of the cylinder, the bearing-rolls interposed between the cylinder and the rolls B, a backing-sheet, F, passing around the cylinder outside of the blanket, and a second backing-sheet, F', passing between the rolls B and G, and then down between the latter rolls and the cylinder, all substantially as specified.

408,002. GRATE. HIRAM P. TALLMADGE, Boston, Mass. Filed May 8, 1888. Serial No. 273,234. (No model.)

Claim.—1. The combination, with the grate-bars, of the rock-bars connected therewith so as to impart a reciprocating motion thereto, the side bars, and the brackets having bearings for said rock-bars, said





brackets being hung on said side bars and being adjustable lengthwise thereof, substantially as described.

2. The combination, with the movable grate-bars, the side bars, and the mechanism for supporting and operating said grate-bars, of the header extending entirely across said grate from side to side and having an inclined face, and composed of solid triangular webs alternating with ribs, as specified, with open spaces between said webs and ribs, substantially as and for the purpose set forth.

3. The combination, with the grate-bars and means for supporting and operating the same, of the header approximately triangular in cross-section, composed of alternate webs and ribs with intermediate air-spaces and having on its under side flanges forming guides for said grate-bars, substantially as described.

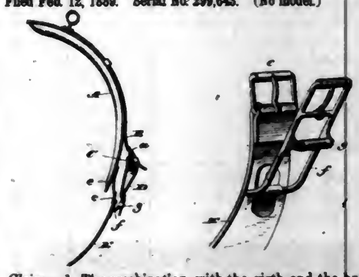
4. The combination, with the side bars, the bearing-bar supported thereby, and the series of movable grate-bars, of the tilting supports, one for each grate-bar, said supports having curved upper edges upon which the grate-bars loosely rest, and notches on their under sides for engagement with said bearing-bar, so that adjacent grate-bars are free to reciprocate in opposite directions, substantially as described.

5. The combination, with the side bars, bearing-bar, and movable grate-bars, of the tilting supports having curved upper edges provided with grooves in which the grate-bars rest, and notches on their under sides for engaging and rocking on the edge of said bearing-bar, substantially as described.

408,003. DEVICE FOR TRIMMING AND FILING FINGER-NAILS. COMMODORE P. TEMER, Hillsborough, Ohio. Filed Feb. 8, 1889. Serial No. 299,188. (No model.)

Claim.—A device for cleaning, trimming, filing, and scraping finger-nails, having a point at its outer end, the turned-up sides sharpened at both their ends, and a roughened surface in between the sides, substantially as shown and described.

408,004. HARNESS-GIRTH. WILLIAM S. TRAVER, Owego, N. Y. Filed Feb. 12, 1889. Serial No. 299,643. (No model.)



Claim.—1. The combination, with the girth and the buckle c, attached to one end thereof, of the long-heel buckle *f*, having its lower end bent inward and pivotally attached to said girth below the point of attachment of the buckle c and extended to the outer end of said buckle, substantially as shown and described.

2. The combination, with the girth and the buckle c, attached to one end thereof, of the long-heel buckle *f*, having its lower end bent inwardly and pivotally attached to said girth below the point of attachment of the buckle c and extending to the outer end of the said buckle, and provided between its tongue and the lower end with a cross-bar and roller-guard, substantially as shown and described.

408,005. PROCESS OF ELECTRIC SOLDERING, BRAZING, AND WELDING. ELIHU THOMSON, Lynn, assignor to the Thomson Electric Welding Company, Boston, Mass. Filed Aug. 22, 1887. Serial No. 247,509. (No model.)

Claim.—1. The herein-described method of electric welding, brazing, or soldering, consisting in passing through one or both of the parts or pieces to be operated upon a heavy electric current in the general direction of the line or plane of the joint and of a volume sufficient to bring the piece or pieces to the requisite temperature.

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2. The herein-described improvement in electric welding and brazing, which consists in making either or both of the parts or pieces to be joined a portion of a continuous electric circuit formed through each, or either independently of the other, and carrying a heavy electric current of a volume sufficient, as described, to effect the desired welding or brazing operation.

3. The herein-described process of forming longitudinal seams or joints in or between elongated metal pieces, consisting in passing a heavy electric current through the piece or pieces longitudinally and of a volume sufficient to heat the same to the desired welding or brazing temperature, as and for the purpose described.

4. The herein-described improvement in affixing light metal pieces to a heavier or base piece, consisting in passing an electric current through the latter of a volume sufficient to heat the same to the requisite welding, soldering, or brazing temperature.

5. The herein-described improvement in forming elongated longitudinal seams or joints, which consists in heating portions of the material in successive lengths by the agency of an electric current passing longitudinally and producing the seam or joint of each section while such section is included in the electric circuit, as and for the purpose described.

6. The herein-described improvement in electric welding, brazing, forging, or soldering, which consists in surrounding the parts acted upon by the electric current with a supporting and heat-retaining jacket or envelope, as and for the purpose described.

7. The combination, with the clamps or connectors, of the intermediate bed-plate, arranged as described, to support the body through which the heating electric current passes, as and for the purpose described.

408,006. METHOD OF ELECTRIC WELDING AND BRAZING. ELIHU THOMSON, Lynn, Mass. Original application filed Feb. 21, 1887, Serial No. 228,277. Divided and this application filed Oct. 19, 1888. Serial No. 288,504. (No model.)



Claim.—1. The herein-described method of forming a welded or brazed joint, consisting in passing an electric current through the material from one side to the other of the joint and then applying lateral pressure directly to the material at the part where the joint or weld is to be formed.

2. The herein-described process of forming a butt-welded joint, consisting in forming or providing the metal with an enlargement at the point of abutment, passing a heating electric current through the material, and then applying lateral pressure to the material directly at the joint, as and for the purpose described.

3. The herein-described improved method of forming an elongated metal joint, consisting in passing a heating electric current across the joint and applying transverse or lateral pressure to successive portions of the object directly at the joint and for the purpose described.

4. The herein-described process of electric welding, consisting in passing an electric current of large heating effect across the joint and then compressing or compacting the joint by pressure applied laterally in a direction transverse to the general line or plane, including the joint and the pieces or portions of object adjacent to the joint.

408,007. ATTACHMENT FOR MINING-MACHINES. HIRAM B. TROUT, Terre Haute, Ind. Filed Dec. 28, 1888. Serial No. 294,856. (No model.)





Claim.—1. In a mining-machine, the combination of a rotary cutter-bar shaft, a sleeve embracing the same and provided with a mortise extending through the same tangentially to the shaft and open on its inner side, a cutter having a cutting-head extending from the sleeve, and a shank located in said mortise and bearing against the cutter-bar shaft, and means for clamping the sleeve to the shaft and the cutter-shank tightly against the shaft, substantially as described.

2. In a mining-machine, the combination of a rotary cutter-bar shaft, a sleeve embracing the shaft provided with an enlarged portion, through which a bore or mortise extends, a cutter consisting of a single piece of steel having its cutting-head enlarged and sharpened, and a straight shank tightly clamped in said mortise, and a set-screw extending through the sleeve and engaging the shaft diametrically opposite the mortise, substantially as described.

3. In a mining-machine, the combination of a cutter-bar shaft, a sleeve embracing the same and provided with an enlarged portion having a mortise extending therethrough and opening into the bore of the sleeve, said shaft having a flattened portion beneath said opening, a cutter consisting of a single piece of steel having a shank extending through the mortise and resting in said flattened portion of the shaft, and a screw extending through the sleeve and entering a recess in the shaft to clamp the parts together, as set forth.

408,008. AXLE-LUBRICATOR. WILLIAM E. TURNER and JAMES F. HUDSON, Benkelman, Nebr. Filed Apr. 16, 1888. Renewed Mar. 18, 1889. Serial No. 303,530. (No model.)



Claim.—The combination of the skein having an oil-well, C, formed in its top, the well being provided with an opening through its top and a filling-opening at its inner end, with the roller which is journaled in the well and which projects through the opening in its top, so as to bear positively against the inner side of the thimble, and thus caused to revolve when the wheel turns, substantially as shown and described.

408,009. SLOTTED CONDUIT FOR ELECTRIC CONDUCTORS. CHARLES J. VAN DEPOELE, Chicago, Ill. Filed June 6, 1888. Serial No. 276,259. (No model.)

Claim.—1. A conduit for electric conductors, formed of continuously-united tubes or troughs of imperishable insulating material, as earthenware, terra-cotta, or other similar substance, rigid supports encircling the body of the conduit, and a soft or flexible packing between the conduit and its supports, substantially as described.

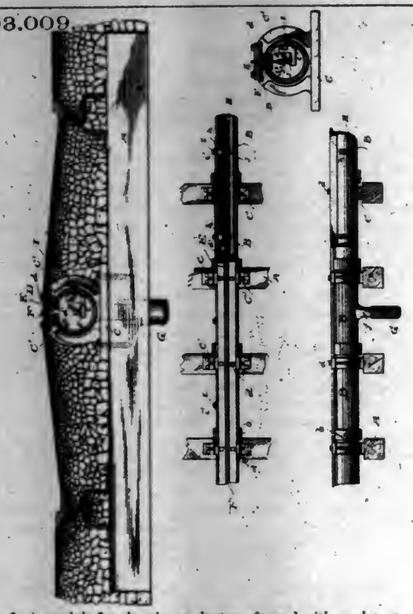
2. The combination of a conduit for containing electric conductors, formed of continuously-united tubes or troughs of earthenware, terra-cotta, or other similar substance, rigid supports encircling the body of the conduit, soft or flexible packing between the conduit and its supports, and surface-pieces or capping-plates resting upon said supports, substantially as described.

3. A conduit for electric conductors, comprising joined sections of solid vitrified pipe, forming a tube or trough within which the conductors are suitably supported, rigid supports encircling the body of the conduit, and soft or flexible packing between the conduit and its supports, and surface-pieces or capping-plates resting wholly upon said supports, substantially as described.

4. A conduit for electric conductors, comprising a tube or trough of fragile material, supports secured to the side walls of the tube or trough and separated therefrom by a layer of elastic insulating material, and one or more electric conductors carried upon the supports within the conduit, substantially as described.

5. A conduit for electric conductors, comprising a tubular body formed of slotted sections united by slotted joints and an elastic composition closing said joints, supports therefor encircling the body of the conduit, and surface-pieces or capping-plates resting upon the said supports and extending downwardly into the slot in the body of the conduit, substantially as described.

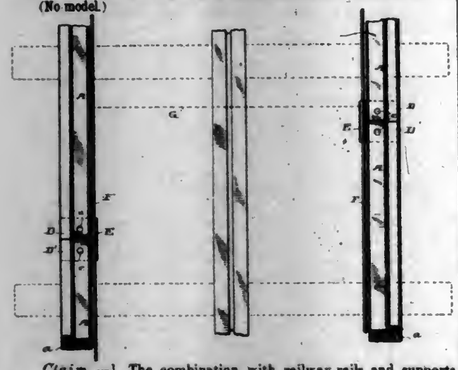
408,009.



6. A conduit for electric conductors, formed with a slot at or near the surface of the roadway, a conductor or conductors suitably supported within the conduit, a rope or cable normally resting in the slot and closing the same, and a traveling contact extending into the conduit and establishing a traveling connection with the conductor or conductors and having a supporting-surface for raising and lowering the slot-closing cable in front and rear of the contact devices, substantially as described.

7. The combination of a conduit having a continuous slot at or near the surface of the roadway, a rope or cable normally resting in and closing said slot, and a concave conductor suitably supported within the conduit, the conductor being located vertically below the slot, substantially as described.

408,010. ELECTRIC CONNECTION FOR RAILWAY-RAILS. CHAS. J. VAN DEPOELE, Chicago, Ill. Filed June 21, 1888. Serial No. 277,772. (No model.)

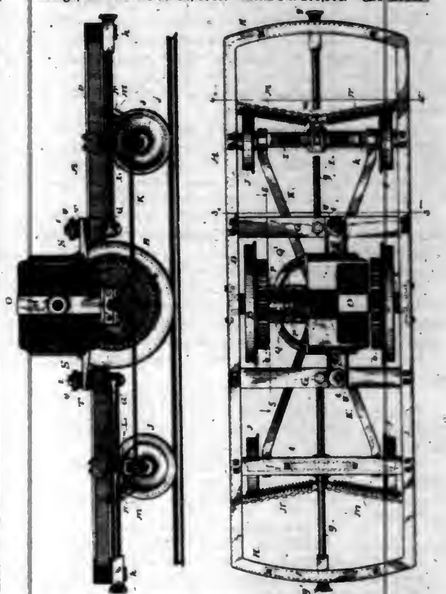


Claim.—1. The combination, with railway-rails and supports therefor below the surface of the roadway, of means for electrically connecting said rails, comprising plates of zinc or its electrical equivalent arranged under and in electrical connection with said rails, and conductors continuously connecting the plates in contact with the rails, substantially as described.

2. The combination, with railway-rails and supports therefor below the surface of the roadway, of metallic connections for continuously uniting said rails, comprising a plate of zinc or its electrical equivalent arranged under and in electrical connection with each rail, and conductors continuously connecting the plates in contact with the rails, substantially as described.

3. The combination, with railway-rails and supports therefor below the surface of the roadway, of metallic connections for continuously uniting said rails, comprising a plate of zinc or its electrical equivalent arranged under and in electrical connection with each rail, and conductors continuously connecting the plates in contact with the rails, and additional conductors extending between the conductors connecting the separate sets of rails, substantially as described.

408,011. ELECTRIC LOCOMOTIVE. CHARLES J. VAN DEPOELE, Chicago, Ill. Filed Feb. 12, 1889. Serial No. 299,591. (No model.)



Claim.—1. An electric locomotive comprising a platform or vehicle, a single pair of driving-wheels centrally located thereunder, and an electric motor, the armature-shaft of which is mechanically connected with the said driving-wheels by suitable gearing, and which is supported upon the axle thereof in positive relation thereto, substantially as described.

2. An electric locomotive comprising a platform or vehicle, a pair of centrally-located driving-wheels, an electric motor supported in a normally-vertical position upon the axle of said driving-wheels, and positive mechanical connections between the armature-shaft of the motor and the axle of the driving-wheels, substantially as described.

3. An electric locomotive comprising a car or platform, a single pair of centrally-located driving-wheels, the motor located above the driving-wheels, an elongated box or bearing upon the driving-axle, and supports extending between the said box and the frame of the motor, substantially as described.

4. An electric locomotive comprising a car or platform, a single pair of centrally-located driving-wheels, spring-bearings between the platform and the extremities of the driving-axle, a motor supported upon the axle of the driving-wheels, and spring-connections between the frame of the motor and the platform of the car, substantially as described.

5. An electric locomotive comprising a car or platform and a centrally-located pair of driving-wheels, a pair of auxiliary supporting-wheels under the front and rear portions thereof, and pivotal connections between the auxiliary supporting-wheels and the axis of the driving-wheels, whereby free lateral movement is permitted to the ends of the platform, substantially as described.

6. In an electric locomotive, the combination of the car or platform A, centrally-located driving-wheels, metallic frames K, connected to the axles thereof and pivotally attached at the center of the vehicle, auxiliary supporting-wheels secured to the extremities of the frame K, and upwardly-acting springs carried by the axles of the auxiliary wheels between the axles of the auxiliary wheels and the ends of the platform, substantially as described.

7. The combination of a platform, A, centrally-located driving-wheels, supporting-wheels J J, pivoted connecting-frames K, and the lateral springs M, substantially as described.

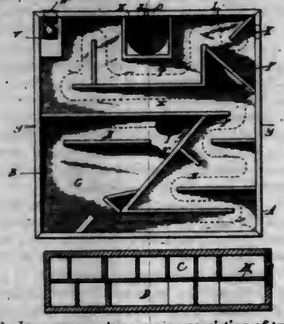
8. The combination of the platform A, the central driving-wheels, the auxiliary supporting-wheels J J, and pivoted connecting-frames K K, and the lateral springs M, and guard-chains N, substantially as described.

9. The combination of the platform A, centrally-located driving-wheels B B, supporting-wheels J J, rotatably mounted upon axles *j j*, and frames K, rigidly secured to said axles and pivotally connected at the central point of the platform A, substantially as described.

10. The combination of the platform of a car and centrally-located driving-wheels thereunder, supporting-wheels sustaining the end portions thereof and pivotally connected to the center of said platform and attached to axles *j*, tracks located above the auxiliary supporting-wheels and devices extending upward from the axles thereof and resting against said tracks, and laterally-acting springs secured to the platform and to the auxiliary wheels, whereby said wheels are normally retained in central positions beneath the platform, substantially as described.

11. The combination of the platform A, having centrally-located driving-wheels, supporting-wheels J J, connecting-arms K, pivotally connected at the center of the platform and rigidly attached to axles *j*, supporting the wheels J, supporting-plates *k'*, located above said axles *j*, and provided with extensions *m*, vertically-acting springs L, mounted upon said plates, and laterally-acting springs M, attached to the extensions *m*, substantially as described.

408,012. GAME. ROBERT M. WASHBURN, Burlington, Iowa. Filed Dec. 31, 1888. Serial No. 295,028. (No model.)



Claim.—1. In a game, a box or case consisting of two compartments each having a labyrinthine channel communicating with the other by an aperture, and each channel beginning at said aperture and terminating at an exit from the box.

2. In a game, an opaque box divided in two compartment having labyrinthine channels dissimilarly arranged and communicating with each other, and each channel provided with an exterior outlet.

3. In a game, the box or case having the upper and lower compartments each provided with a labyrinthine channel, said channels communicating with each other and one communicating with an inlet-opening in the box or case and the other communicating with an outlet-opening therein, and a ball (one or more) adapted to traverse the said channels, substantially as described.

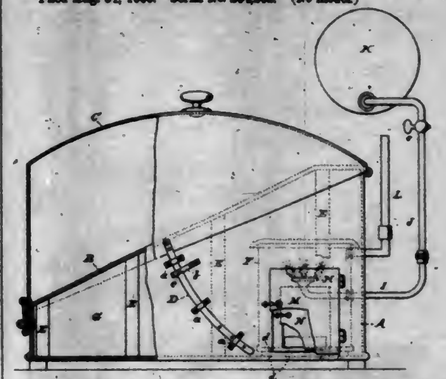
408,013. SASH-HOLDER. JAMES WEATHERS, Indianapolis, Ind. Filed Feb. 23, 1889. Serial No. 301,470. (No model.)



Claim.—1. The combination of a window frame and sash, a metallic box inserted in the said frame, an adjustable plate secured to the inclined back of this plate, this plate being vertically adjustable and provided with a supporting-lip, and a gravitating roller, substantially as described.

2. The combination of a window-frame, a metallic box inserted in a recess in the same, this box consisting of an inclined back plate, *a*, and sides *a' a'*, a vertically-adjustable plate, *b*, secured to the back plate, *a*, between the sides *a' a'*, and provided at its upper end with a supporting-lip, *c*, a gravitating roller normally resting upon this lip *c*, a window-sash provided with a vertical groove in its edge, a strip inserted in this groove and provided with guiding-pins, and springs for actuating this strip, substantially as described.

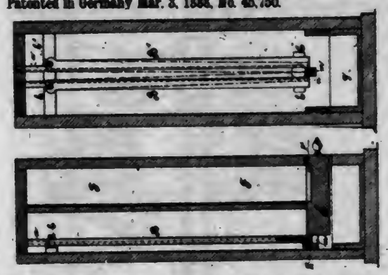
408,014. FOOT-STOVE. HAMILTON E. WELSH, Harrisburg, Pa. Filed Aug. 31, 1888. Serial No. 284,262. (No model.)



Claim.—1. The foot warmer or stove consisting of the box having the inclined top and a heating agent or machine, and provided with the hinged cover having downwardly-extended curved arms provided with series of apertures, and entering-keepers applied to the sides of the box, said box also having applied thereto latches having engagement with the apertures of said arms, substantially as and for the purpose set forth.

2. The foot warmer or stove consisting of the incline-topped box having a fire-box chamber and a hot-air chamber arranged distantly from the fire-box chamber and beneath the foot-resting portion of the box, and the cover hinged to said box and provided with downwardly-extended curved arms having series of apertures, and entering-keepers applied to the sides of said box, said box also having applied to it latches engaging with the apertures of said arms, substantially as set forth.

408,015. VENDING APPARATUS. BRUNO WIESELMANN, Hamburg, Germany. Filed Feb. 19, 1889. Serial No. 300,436. (No model.) Patented in Germany Mar. 3, 1888, No. 45,750.



Claim.—A locking mechanism for coin-operated apparatus, said locking mechanism consisting of swinging arms, which engage the releasable portion of the apparatus, said arms forming a guide for the coin, which moves the arms to their releasing position, substantially as described.

408,016. CAR-COUPLING. FRANK A. WESTERCOK, Port Jervis, and WINFIELD S. COOK, Middletown, N. Y. Filed Feb. 15, 1889. Serial No. 299,973. (No model.)

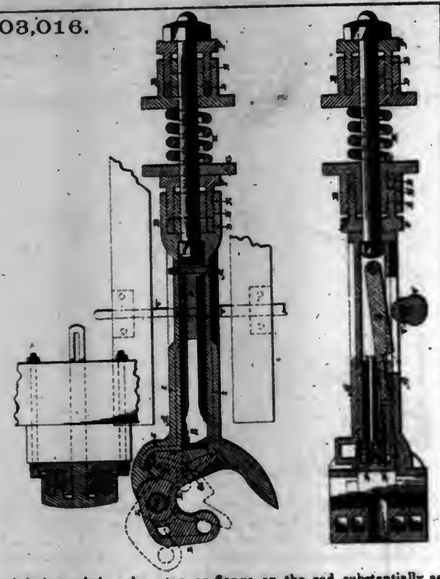
Claim.—1. A draw-head provided with a series of grooves in its thicker portions, so as to enable the head to be annealed, substantially as shown.

2. A coupling-head formed of a series of thin layers which are separated at a suitable distance from each other, substantially as described.

3. The combination of the draw-head with the draw-bolt, two chambers placed upon the draw-bolt, two castings provided with circular tongues or flanges, and the rubber cushions which are placed in the chambers, substantially as described.

4. The combination of the locking-lever, the draw-head in which it is pivoted, the coupling-head provided with a shoulder, T, the endwise-moving operating-rod V, the cam U, the boxes X, in which the

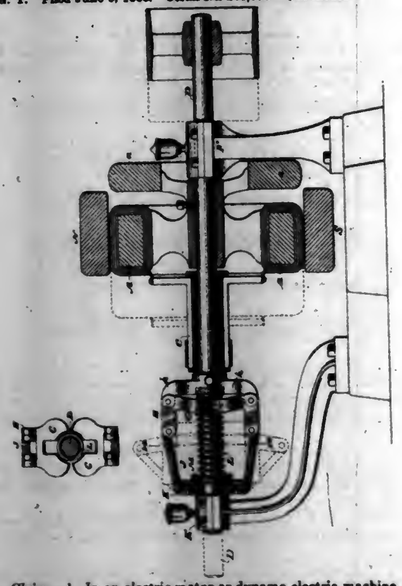
403,016.



rod is journaled, and a stop or flange on the rod, substantially as shown.

5. The combination of the draw-head, provided with a series of horizontal grooves in its front end, with the pivoted coupling-head provided with a series of flanges, P P', on its inner end, substantially as described.

403,017. AUTOMATIC GOVERNOR FOR ELECTRIC MOTORS OR DYNAMO-ELECTRIC MACHINES. SCHUYLER S. WHEELER, New York, N. Y. Filed June 9, 1888. Serial No. 276,650. (No model.)



Claim.—1. In an electric motor or dynamo-electric machine, the combination, with the pole-pieces and the armature which are constructed to have their positions changed with respect to each other, of a dummy-armature or magnetic substitute for the armature, substantially as described.

2. In an electric motor or dynamo-electric machine, the combination, with an armature constructed to be moved out of the field, of a supplementary magnetic core similar to that of the armature and mechanically connected to it, which takes the place of the armature as the latter moves out of the field, whereby the opposition of the armature to displacement is balanced to a greater or less extent and the magnetism of the field is shunted, substantially as described.

3. In an electric motor or dynamo-electric machine, the combination, with an armature constructed to be moved out of the field, of a magnetic plate placed with respect to the field in the position of maximum longitudinal attraction, whereby the opposition of the armature to its movement out of the field is sustained or balanced, substantially as described.

4. In an electric motor or dynamo-electric machine, the combination of a field-magnet and armature which are constructed to have their positions changed with respect to each other, and means whereby the attraction between said field-magnet and armature is magnetically balanced in the direction of movement, substantially as described.

5. In an electric motor or dynamo-electric machine, an armature constructed to move longitudinally into or out of the magnetic field, in combination with means whereby the attraction between the field-magnet and the armature is magnetically balanced in the direction of movement, substantially as described.

6. In an electric motor or dynamo-electric machine, the combination, with the armature, of a dummy-armature or supplementary magnetic core mechanically connected to and rotating with the armature-shaft, substantially as described.

7. In an electric motor or dynamo-electric machine, an armature-core wound or provided with electric conductors, in combination with an unwound magnetic core or dummy-armature, which parts are rigidly connected and rotate together, substantially as described.

8. In an electric motor or dynamo-electric machine, the combination, with the armature, of a dummy-armature or supplementary core and a governor or regulator mechanically connected to said parts, the armature and its dummy being secured to and rotating with the armature-shaft, substantially as described.

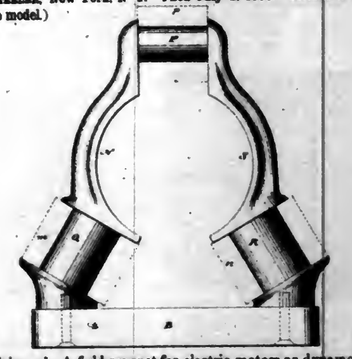
9. In an electric motor or dynamo-electric machine, an armature and field-magnet which are constructed to have their positions changed with respect to each other, in combination with a dummy-armature or supplementary core, and a mechanical regulator which effects said change of position, substantially as described.

10. In an electric motor or dynamo-electric machine, an armature constructed to move into or out of the magnetic field, in combination with and mounted upon the same shaft, with a supplementary core or dummy-armature and a centrifugal governor which effects or controls said movement, substantially as described.

11. In an electric motor or dynamo-electric machine, the combination, with the armature, of a supplementary or dummy core of greater magnetic strength or capacity than the armature itself, substantially as described.

12. In an electric motor or dynamo-electric machine, automatic regulating mechanism consisting of an armature constructed to move longitudinally into or out of the magnetic field, in combination with and mechanically connected to a supplementary or dummy core of greater magnetic strength or capacity than the armature itself, whereby said dummy is attracted into and the armature forced out of the magnetic field with an increase of energizing-current, and vice versa, substantially as described.

403,018. FIELD-MAGNET FOR DYNAMOS. SCHUYLER S. WHEELER, New York, N. Y. Filed July 3, 1888. Serial No. 278,914. (No model.)



Claim.—1. A field-magnet for electric motors or dynamos, made in the general form of a triangle, with a core at the vertex capable of being freely wound through the armature-space and cores near the base at the two sides and placed at an angle to each other, so as to be freely wound without interference, substantially as shown and described.

2. A field-magnet for dynamo-electric machines or electric motors made in the general form of the letter A, with a core at the top joining the pole-pieces and forming one magnetic circuit, and a core at each side below, which, with the base or yoke, forms another magnetic circuit, substantially as described.

3. In a field-magnet for a dynamo-electric machine or motor, a core-piece of horseshoe type made of a single piece of magnetic material, with three field-coils, two of which are located near the ends of the core-piece, while the third is located at an intermediate point, the winding of said coils being such that effective field-poles of opposite polarity are created at points between the opposite ends of the intermediate coil and the adjacent ends of the other two coils, substantially as described.

4. In a field-magnet for a dynamo-electric machine or motor, a core of a single piece of magnetic material and three field-coils located, respectively, near the opposite ends and center of said core, the contour or shape of the core being such that a plane passing substantially at a right angle through any one of said coils will intersect the core once and only once, substantially as described.

5. In a field-magnet for a dynamo-electric machine or motor, a core of a single piece of magnetic material of curvilinear or angular shape, and two field-coils, one at or near each end of the core, the angular relation of said coils being such that a plane passing through either of them at substantially a right angle to the core and parallel to the winding of said coil will cut the core once and only once, substantially as described.

6. A dynamo-electric machine having a field-core of a single piece of magnetic material and three or more field-coils, in combination with a magnetic base or support to which the ends of the field-core are secured, substantially as described

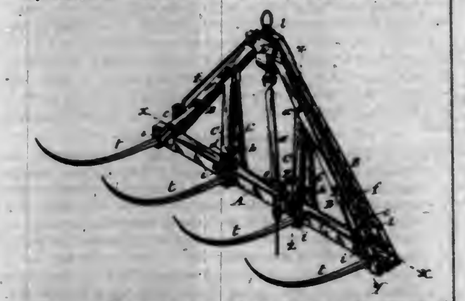
7. In a dynamo-electric machine or motor, a field-core of a single piece of magnetic material, in combination with three or more field-coils and a magnetic base or support, both ends of said field-core being fixed or secured rigidly to said base, the coils being so disposed that they create a consequent field and prevent a magnetic short circuit through the support or base, substantially as described.

8. In a field-magnet for a dynamo-electric machine or motor, a core of a single piece of magnetic material, that portion between the two effective poles of said core constituting a magnetic brace, in combination with a magnetic brace or support, substantially as described.

9. In a field-magnet for a dynamo-electric machine or motor of bipolar form, a core-piece made of a single piece of magnetic material with two or more field-coils, the contour or shape of the core being such that a plane which passes at substantially a right angle through either one of said coils and the core will cut said core once and only once, substantially as described.

10. In a field-magnet for a dynamo-electric machine or motor, a core of a single piece of magnetic material of curvilinear or angular shape, and two field-coils located on said core, the angular relation of said coils being such that any plane passing through either of them at substantially a right angle to the core will cut said core once and only once, substantially as described.

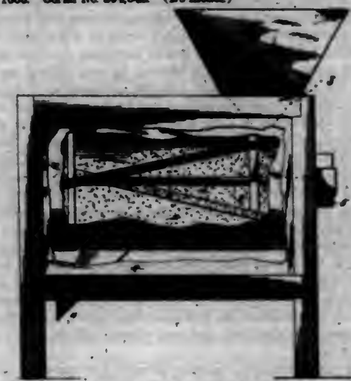
403,019. HORSE HAY-FORK. HARRY WIARD and JAMES L. JUDD, Syracuse, N. Y. Filed Nov. 28, 1888. Serial No. 292,098. (No model.)



Claim.—1. The combination of the head-beam A, the two sets of braces B B, embracing between their lower ends the end portions of said beam and united at their upper ends, the double struts C C, embracing between their lower ends the aforesaid head-beam and having their upper ends inserted between the braces B B of the respective sets, bolts *g g*, passing through the said braces and intervening portions of the struts, blocks *b b*, interposed between the lower portions of the struts, bolts *d d*, passing through the struts and blocks, the straps *i i*, hung on said bolts, and the tines having their heels passing through the straps and through the braces and struts and intervening beam, substantially as described and shown.

2. The combination of the head-beam A, the two sets of braces B B, embracing between their lower ends the end portions of the head-beam and united at their upper ends, the brackets *e e*, mounted on the end portions of the head-beam between the aforesaid braces and fastened to said beam and formed with the sleeve *l*, the bolt *d*, passing through the braces and intervening sleeve *l*, and the bail *f*, hinged to the brackets *e e*, substantially as described and shown.

403,020. GRAIN-SCOURER. HENRY WILHELM, Oneida Mills, assignor of one-half to Benton Smith, near Minerva, Ohio. Filed Dec. 19, 1888. Serial No. 294,042. (No model.)



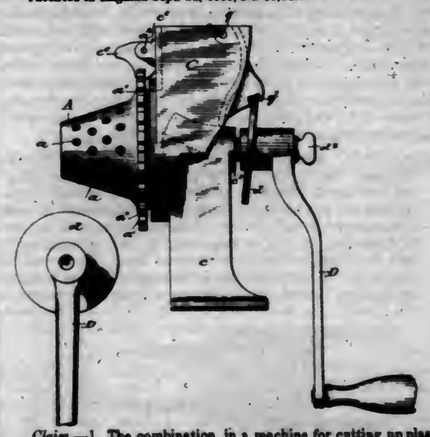
Claim.—As a new article of manufacture, a beater and scouring-case for grain-scourers, composed of a composition of baked fire-clay and sand, substantially as described.

403,021. PEN. JASPER L. ACKERMAN, Lowell, Ind. Filed Sept. 10, 1888. Serial No. 285,060. (No model.)



Claim.—A pen re-enforced integrally or made thicker centrally for a suitable width at a point inward from the inner end of its slit and thence outward along the meeting edges of said slit for a suitable distance, substantially as and for the purpose specified.

403,022. MACHINE FOR CUTTING MEAT. HERMANN ALBRECHT, Philadelphia, Pa. Filed July 20, 1888. Serial No. 280,508. (No model.) Patented in England Sept. 22, 1888, No. 13,740.



Claim.—1. The combination, in a machine for cutting up plastic or yielding substances, of the following instrumentalities, namely: first, a conical shell having within its larger end spiral cutting-ribs and beyond said ribs perforations through its walls; second, a rotary cutter-head formed as a continuous spiral knife, the cutting-edge of which conforms to the interior of the shell and forms an acute angle with the ribs within said shell, and, third, a hopper at or near the larger end of the shell, substantially as and for the purposes set forth.

2. The combination, in a machine for cutting up plastic or yielding substances, of the following instrumentalities, namely: first, a conical shell having within its larger end spiral cutting-ribs and be-

yond said ribs perforations through its walls; second, a rotary cutter-head formed as a continuous spiral knife, the cutting-edge of which conforms to the interior of the shell and forms an acute angle with the ribs within said shell; third, a hopper at or near the larger end of the shell, and, fourth, a movable feed-plate within said hopper, substantially as and for the purposes set forth.

3. The combination, in a machine for cutting up plastic or yielding substances, of the following instrumentalities, namely: first, a conical shell having within its larger end spiral cutting-ribs and beyond said ribs perforations through its walls; second, a rotary cutter-head formed as a continuous spiral knife, the cutting-edge of which conforms to the interior of the shell and forms an acute angle with the ribs within said shell; third, a journal projecting from the larger end of said cutter-head; fourth, a bearing for said journal beyond the larger end of the conical shell, and, fifth, a hopper at or near the larger end of said shell, substantially as and for the purposes set forth.

4. The combination, in a machine for cutting up plastic or yielding substances, of the following instrumentalities, namely: first, a conical shell having within its larger end spiral cutting-ribs and beyond said ribs perforations through its walls; second, a rotary cutter-head formed as a continuous spiral knife, the cutting-edge of which conforms to the interior of the shell and forms an acute angle with the ribs within said shell; third, a journal projecting from the larger end of said cutter-head; fourth, a bearing for said journal beyond the larger end of the conical shell; fifth, a hopper at or near the larger end of said shell; sixth, a vibratory feed-plate applied to said hopper; seventh, a cam upon the journal of the cutter-head which occasions the vibratory movement of the feed-plate, and, eighth, means for rotating the journal, cutter-head, and cam, substantially as and for the purposes set forth.

5. The combination, in a machine for cutting up plastic or yielding substances, of the following instrumentalities, namely: first, a conical shell having within its larger end spiral cutting-ribs and beyond said ribs perforations through its walls; second, a rotary cutter-head formed as a continuous spiral knife, the cutting-edge of which conforms to the interior of the shell and forms an acute angle with the ribs within said shell, and which is provided with a radial cutting-heel, and, third, a hopper at or near the larger end of the shell, the discharge-opening of which is into said shell across a cutting-edge with which the cutting-heel of the cutter-head co-operates and forms a shears, substantially as and for the purposes set forth.

6. The combination, in a machine for cutting up plastic or yielding substances, of the following instrumentalities, namely: first, a conical shell having within its larger end spiral cutting-ribs and beyond said ribs perforations through its walls; second, a rotary cutter-head formed as a continuous spiral knife, the cutting-edge of which conforms to the interior of the shell and forms an acute angle with the ribs within said shell, and which is provided with a radial cutting-heel; third, a hopper at or near the larger end of the shell, the discharge-opening of which is into said shell across a cutting-edge with which the cutting-heel of the cutter-head co-operates and forms a shears; fourth, a vibratory feed-plate applied to said hopper; fifth, a cam upon the journal of the cutter-head, and suitable means, essentially, for instance, such as set forth, for occasioning the vibratory movement of the feed-plate, and, sixth, means for rotating the cutter-head, substantially as and for the purposes set forth.

408,028. MANUFACTURE OF GLASS BOTTLES, &c. HOWARD M. ASHLEY, Ferrybridge, County of York, England. Original application filed Sept. 26, 1887, Serial No. 250,767. Divided and this application filed Nov. 10, 1888. Serial No. 290,508. (No specimens.) Patented in England Mar. 7, 1887, No. 3,434; in Austria-Hungary Sept. 19, 1887; in Belgium Sept. 23, 1887; in France Sept. 24, 1887; in Canada Jan. 3, 1888, No. 28,396; in Italy Feb. 17, 1888; in Norway Mar. 2, 1888; in Victoria Apr. 18, 1888; in New South Wales Apr. 30, 1888; in Tasmania Apr. 21, 1888; in Spain July 13, 1888, and in Portugal Aug. 3, 1888.



Claim.—1. In the manufacture of hollow glassware, the within-described process of making a hollow parison, which consists of measuring the molten glass and casting a solid parison in inverted position with a head that is finished as to external shape, forming a recess or cavity therein by punching upwardly into the parison while it is inverted, and thus carrying the chilled glass which is cut from within the head into the hotter portion of the mass, for the purposes set forth.

2. In the manufacture of hollow glassware, the within-described process of making a hollow parison, which consists of casting the parison in inverted position, punching upwardly thereinto, and then retracting the punch while simultaneously admitting a gaseous fluid into the cavity to prevent the collapsing of the parison, substantially as hereinbefore specified.

3. In the manufacture of hollow glassware, the within-described process, which consists of casting a parison in inverted position, forming the cavity therein by punching upwardly into the parison while it is inverted, and subsequently expanding the parison by gaseous pressure, substantially as hereinbefore specified.

4. In the manufacture of hollow glassware, the within-described process, which consists of casting a parison in inverted position, forming the cavity therein by punching upwardly into the parison while it is inverted, reverting the parison, and subsequently expanding it by gaseous pressure, substantially as hereinbefore specified.

5. In the manufacture of hollow glassware, the within-described process, which consists of casting a parison in inverted position, forming the cavity therein by punching upwardly into the parison while it is inverted, reverting the parison, and subsequently substituting a shaping-mold for the parison-mold and expanding the parison within the shaping-mold by gaseous pressure, substantially as hereinbefore specified.

6. In the manufacture of hollow glassware, the within-described process, which consists of casting a parison in inverted position, forming the cavity therein by punching upwardly into the parison while the latter is inverted, withdrawing the punch from within the parison, and subsequently expanding the parison by introducing a gaseous fluid into the cavity, substantially as hereinbefore specified.

7. In the manufacture of hollow glassware, the within-described process, which consists of casting a parison in inverted position with a head that is finished as to external shape, forming an initial recess or cavity therein by punching upwardly into the parison while it is inverted, then reverting the same and suspending the body portion by the head, and expanding the depending body portion within a shaping-mold by the direct pressure of a gaseous fluid, as air, substantially as hereinbefore specified.

8. In the manufacture of hollow glassware, the within-described process, which consists of casting a parison in inverted position with a head that is finished as to external shape, forming an initial recess or cavity therein while it is inverted, then reverting the parison and suspending the body portion by the head, and expanding the depending body portion by pressure of a gaseous fluid, as air, substantially as hereinbefore specified.

9. The within-described process of manufacturing hollow glassware, which consists of measuring the glass and casting a solid parison in inverted position with a head that is finished as to external shape, including the face of the lip, completing the mouth, and forming an initial recess or cavity in the body portion by punching upwardly into the parison while it is inverted, reverting the parison, and expanding the body portion thereof by pressure of a gaseous fluid, as air, substantially as hereinbefore specified.

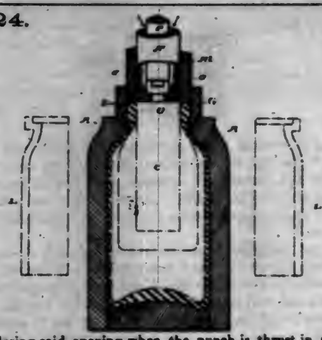
10. The within-described process of manufacturing hollow glassware, which consists of measuring the glass and simultaneously casting a solid parison in inverted position with a head that is finished as to external shape, including the face of the lip, completing the mouth, and forming an initial recess or cavity in the body portion by punching upwardly into the parison while it is inverted, immediately retracting the punch, reverting the parison, and suspending it by its head for elongation, regulating its elongation, and slightly chilling its extremity by paddling, and finally confining the depending portion of the parison within a suitable shaping-mold and blowing it by the internal pressure of a suitable gaseous fluid, as air, substantially as hereinbefore specified.

408,024. MACHINERY FOR MAKING GLASS BOTTLES, &c. HOWARD M. ASHLEY, Ferrybridge, County of York, England. Original application filed Sept. 26, 1887, Serial No. 250,767. Divided and this application filed Nov. 10, 1888. Serial No. 290,507. (No model.) Patented in England Mar. 7, 1887, No. 3,434; in Austria-Hungary Sept. 19, 1887; in Belgium Sept. 23, 1887; in France Sept. 24, 1887; in Canada Jan. 3, 1888, No. 28,396; in Italy Feb. 17, 1888; in Norway Mar. 2, 1888; in Victoria Apr. 18, 1888; in New South Wales Apr. 30, 1888; in Tasmania Apr. 21, 1888; in Spain July 13, 1888, and in Portugal Aug. 3, 1888.

Claim.—1. In machinery for making bottles and other like articles of hollow glassware, the combination, with a suitable mold which receives the molten glass, of a hollow punch adapted to be thrust endwise into the glass and immediately withdrawn therefrom to provide the glass with an initial cavity, and having an opening to admit a gaseous fluid, as air, into such cavity while the punch is being retracted, substantially as hereinbefore specified.

2. In machinery for making bottles and other like articles of hollow glassware, the combination, with a suitable mold, of a hollow punch adapted to be thrust endwise into the mold and withdrawn therefrom and having an outlet-opening, and suitable means, as a plug, for closing said opening when the punch is thrust in, substantially as hereinbefore specified.

408,024.



3. In machinery for making bottles and other like articles of hollow glassware, the combination, with a suitable mold, of a hollow punch adapted to be thrust endwise into the mold and withdrawn therefrom and having an outlet-opening in its face, and a plug within said punch fitted to said opening for closing it and having a stem which projects rearwardly through the punch as means for operating both, said plug and punch being connected by a suitable lost-motion device, as a lateral pin and longitudinal slot, substantially as hereinbefore specified.

4. In machinery for making bottles and other like articles of hollow glassware, the combination, substantially as hereinbefore specified, of an invertible mold which receives the molten glass in its inverted position, and a punch at the neck end of the mold adapted to be thrust upward into the inverted mold to provide the molten glass with an initial cavity.

5. In machinery for making bottles and other like articles of hollow glassware, the combination of an invertible mold comprising a body-mold and a distinct head-mold or collar at the neck end of said body-mold, and a punch movable upwardly through said collar into the body-mold, substantially as hereinbefore specified.

6. In machinery for making bottles and other like articles of hollow glassware, the combination of an invertible mold comprising a body-mold and a head-mold or collar at the neck end of said body-mold, a nozzle within said collar, and a punch of substantially the required mouth-diameter, adapted to be thrust upward into the body-mold and withdrawn therefrom, substantially as hereinbefore specified.

7. In machinery for making bottles and other like articles of hollow glassware, the combination of an invertible mold comprising a longitudinally-divided body-mold and a divided head-mold or collar fitted to the neck end of said body-mold, a nozzle within said collar, and a punch fitted to said nozzle and adapted to be thrust upward into the body-mold and withdrawn therefrom, substantially as hereinbefore specified.

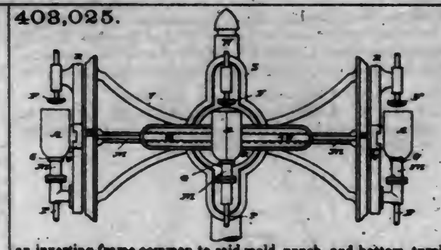
8. In machinery for making bottles and other like articles of hollow glassware, the combination, with an invertible mold comprising a longitudinally-divided body-mold and a divided head-mold or collar fitted to the neck end of said body-mold, of a hollow punch adapted to be thrust upward through said collar into said body-mold and having an outlet-opening at its face end, and a conduit supplied with a gaseous fluid, as air, under pressure, in communication with the interior of said punch, substantially as hereinbefore specified.

9. In machinery for making bottles and other like articles of hollow glassware, the combination, with a suitable head-mold or collar for molding the head of the bottle on a cast parison in inverted position, of a nozzle fitted thereto and having at its top in its inverted position an annular surface which shapes the outer face of the lip, substantially as hereinbefore specified.

408,025. MACHINERY FOR MAKING GLASS BOTTLES, &c. HOWARD M. ASHLEY, Ferrybridge, County of York, England. Original application filed Sept. 26, 1887, Serial No. 250,767. Divided and this application filed Nov. 10, 1888. Serial No. 290,508. (No model.) Patented in England Nov. 13, 1886, No. 14,737, and Mar. 7, 1887, No. 3,434; in Austria-Hungary Sept. 19, 1887; in Belgium Sept. 23, 1887; in France Sept. 24, 1887; in Canada Jan. 3, 1888, No. 28,396; in Italy Feb. 17, 1888; in Norway Mar. 2, 1888; in Victoria Apr. 18, 1888; in New South Wales Apr. 30, 1888; in Tasmania Apr. 21, 1888; in Spain July 13, 1888, and in Portugal Aug. 3, 1888.

Claim.—1. In machinery for the manufacture of bottles and other like articles of hollow glassware, the combination of a suitable mold, a suitable punch adapted to be thrust endwise into the neck end of the mold, a movable bottom fitted to the other end of the mold, and

408,025.



an inverting-frame common to said mold, punch, and bottom, turning on a horizontal axis, substantially as hereinbefore specified.

2. In machinery for the manufacture of bottles and other like articles of hollow glassware, the combination, with a suitable mold comprising a longitudinally-divided body-mold, of an inverting-frame provided with lateral ways, and lateral slides working in said ways and carrying the parts of said body-mold, substantially as hereinbefore specified.

3. In machinery for the manufacture of bottles and other like articles of hollow glassware, the combination, with a suitable mold comprising a suitable body-mold and a divided head-mold or collar fitted to the neck end of said body-mold, of an inverting-frame provided with lateral ways, and lateral slides working in said ways and carrying the parts of said divided collar, substantially as hereinbefore specified.

4. In machinery for the manufacture of bottles and other like articles of hollow glassware, the combination, with a suitable mold and a hollow punch adapted to be thrust endwise into the neck end of the mold and having an outlet-opening in its face, of an inverting-frame common to both turning on a horizontal axis, and a conduit for a gaseous fluid, as air, entering said frame at said axis, and communicating with the interior of said punch, substantially as hereinbefore specified.

5. In machinery for the manufacture of bottles and other like articles of hollow glassware, an inverting-frame provided with a suitable mold, which receives the molten glass in its inverted position and is reverted preparatory to the blowing operation, an open-ended hollow punch at the neck end of the mold, adapted to be thrust upward into the inverted mold to provide the molten glass with an initial cavity and then withdrawn, a movable bottom fitted to the other end of the mold, and a conduit for a gaseous fluid, as air, under pressure, communicating with the interior of said punch, for the purposes set forth.

6. An invertible glass-mold for bottles or the like, comprising a suitable body-mold, a vertically-divided head-mold or collar fitted to the neck end of the said body-mold, a nozzle within said collar, and a suitable bottom at the other end of the body-mold, in combination with a hollow punch adapted to be thrust upward through said nozzle into said body-mold and having an outlet-opening in its face, and a conduit supplied with a gaseous fluid, as air, under pressure, in communication with the interior of said punch, substantially as hereinbefore specified.

7. In combination with a vertical hollow support supplied with a gaseous fluid, as air, under pressure, and a revolving frame mounted thereon and having conduits connecting therewith, a number of invertible bottle-molding machines, each comprising a suitable body-mold, a vertically-divided neck mold or collar, a nozzle within said collar, a suitable bottom, and a hollow punch, the latter being in communication with one of said conduits and adapted to be thrust upward through said nozzle into said body-mold and having an outlet-opening in its face, substantially as hereinbefore specified, whereby machines are adapted to be used in succession, first, for making hollow parisons, and, secondly, for making bottles therefrom in the same molds by a mechanical blowing operation, for the object stated.

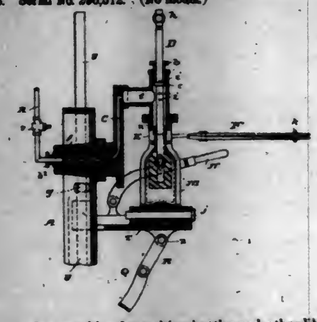
408,026. MANUFACTURE OF BOTTLES, &c. HOWARD M. ASHLEY, Ferrybridge, County of York, England. Original application filed Sept. 26, 1887, Serial No. 250,767. Divided and this application filed Nov. 10, 1888. Serial No. 290,511. (No specimens.) Patented in England May 25, 1887, No. 7,560; in Austria-Hungary Sept. 19, 1887; in Belgium Sept. 23, 1887; in France Sept. 24, 1887; in Canada Jan. 3, 1888, No. 28,396; in Italy Feb. 17, 1888; in Norway Mar. 2, 1888; in Victoria Apr. 18, 1888; in New South Wales Apr. 30, 1888; in Tasmania Apr. 21, 1888; in Spain July 13, 1888, and in Portugal Aug. 3, 1888.

Claim.—1. In the manufacture of internally-stoppered bottles, the within-described process of forcing the cool glass stopper into and through the mouth of the finished bottle while the glass of the latter is in the transition state between plastic and elastic.

2. In the manufacture of internally-stoppered bottles, the within-described process of punching the mouth of slightly less diameter

than the stopper and forcing the cool glass stopper into the body of the bottle through the mouth while the glass of the bottle is in the transition state between plastic and elastic, whereby the annular recess for the rubber ring is provided with an overhanging edge, as aforesaid.

408,027. MACHINERY FOR MAKING GLASS BOTTLES, &c. HOWARD M. ASHLEY, Ferrybridge, County of York, England. Filed Nov. 10, 1888. Serial No. 290,512. (No model.)



Claim.—1. In a machine for making bottles and other like hollow glassware, the combination, substantially as hereinbefore specified, of a suitable support, an invertible part connected therewith by a horizontal pivot and terminating at one end in a nozzle having an external circumferential groove or the like, a suitably-divided head-mold or collar fitted to said nozzle and having an external circumferential groove or the like at its opposite end, and interchangeable parison and shaping molds fitted internally to the latter at their neck ends, whereby a proper alignment of the parts is insured and the parison-mold is adapted to be held in place and suspended by the attached neck-mold during and after the reversion of the parison.

2. In a machine for making bottles and other like hollow glassware, the combination, with a nozzle and interchangeable parison and shaping-molds, of a diametrically-divided head mold or collar provided with tongs having jaws attached to the respective halves of the collar, substantially as hereinbefore specified.

3. In a machine for making bottles and other like hollow glassware, the combination, with a head-mold or collar, of a diametrically-divided parison-mold fitted at its neck end to embrace said collar and provided with tongs having jaws attached to the respective halves of said mold, substantially as hereinbefore specified.

4. In a machine for making bottles and other like hollow glassware, the combination, with a suitable nozzle, a head-mold or collar, and a parison-mold, of an axial punch sliding through said nozzle and provided with a fixed stop to limit its retraction and an adjustable stop to regulate its insertion into the inverted parison, substantially as hereinbefore specified.

5. In a machine for making bottles and other like hollow glassware, the combination, substantially as hereinbefore specified, of a suitable support, an elevated invertible part connected therewith by a horizontal pivot, a nozzle and a head-mold or collar depending from said part in its reverted position, a divided parison-mold depending from said collar and having laterally-moving parts, and a vertically-moving shaping-mold that is normally beneath the plane of the depending parison-mold.

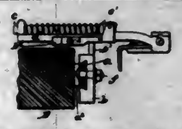
6. In a machine for making bottles and other like hollow glassware, the combination, substantially as hereinbefore specified, of a suitable support, an elevated invertible part connected therewith by a horizontal pivot, a nozzle and a head-mold or collar depending from said part in its reverted position, a divided parison-mold depending from said collar and having laterally-moving parts, a vertically-moving shaping-mold that is normally beneath the plane of the depending parison-mold, and a treadle and suitable mechanical connections for elevating the shaping-mold to inclose the suspended parison.

7. In a machine for making bottles and other like hollow glassware, the combination of a hollow punch, a suitable nozzle through which it works, a hollow T-piece to which said nozzle is attached, suitable hollow connections, a pipe supplied with a gaseous fluid, as air under pressure, and provided with a suitable valve, a hand-lever working said valve, a spring holding said lever normally in an elevated position, and a pair of adjustable stops for regulating the limits of the motion of the lever, substantially as hereinbefore specified.

408,028. LOOM-TEMPLE. JOSEPH BARNES, Fall River, assignor to the Dutcher Temple Company, Hopedale, Mass. Filed June 21, 1888. Serial No. 277,741. (No model.)

Claim.—1. The combination, with the temple-stand having the series of notches or projections and the holding portion b^2, in which

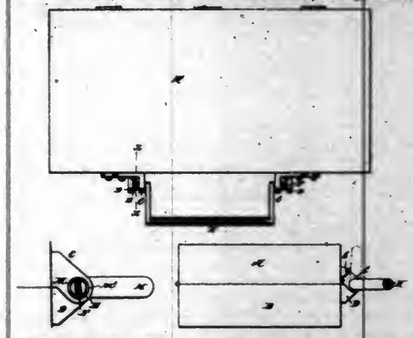
408,028.



the stand is fitted, of means for clamping the said stand in adjusted position in the said holding portion and a locking device to engage one of the said notches or projections, according to the position of the stand in the holding portion, and prevent the said stand from accidentally slipping forward when the stand is unclamped, substantially as described.

2. The longitudinally-slotted bar dovetailed in cross-section, the horizontally-adjustable slide b, fitted on the said bar, the cross-slide b', dovetailed to slide on the slide b and having a projection, b^3, combined with the temple-stand and with the bolt to hold the cross-slide in the slide b' and the latter in place on the bar B, substantially as described.

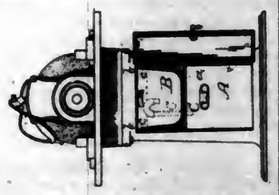
408,029. CATCH FOR BOXES, &c. JOHN A. BARRETT, Brooklyn, N. Y., assignor to the John A. Barrett Company, of Baltimore City, of Maryland. Filed Feb. 8, 1888. Serial No. 263,362. (No model.)



Claim.—1. The combination, with a portable box, bag, or other receptacle formed in two parts adapted to be closed together and having a carrying-handle permanently pivoted to one of said parts, of a locking device composed of a sleeve or collar cut away, as described, and a lug adapted to enter said collar secured, respectively, to the two parts of the receptacle, one of the parts of said locking device being in operative connection with the carrying-handle and so arranged that when the handle is swung into carrying position the lug and collar are locked against separation, substantially as described.

2. The combination, with the sleeve or collar cut away and the lug or pin, either adapted to rotate or turn and secured, respectively, to the two parts of the box or other receptacle requiring to be secured together, of a spring, G, of any suitable form, placed in the path of the rotating element, so as to prevent the same from being turned to unlocking position, as and for the purpose set forth.

408,030. WATER-TANK OF GRINDING-MACHINES. CHARLES A. BAUER, Springfield, Ohio. Filed Jan. 29, 1887. Serial No. 225,836. (No model.)

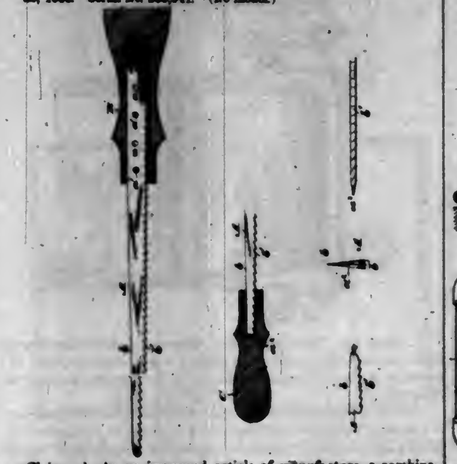


Claim.—1. The combination, with a grinding-machine, grinding-stone, and means for supplying water thereto, of tank B, into which the impure water from the grinding devices drains, and pipe C, having its upper end bent, as described, so as to drain the water from said tank between the surface and bottom of the water therein, substantially as set forth.

2. The combination, with a grinding-machine, grinding-stone, and means for supplying water thereto, of tank B, into which the impure water from the grinding-stone is drained, pipe C, having its upper end bent, as described, so that its mouth is below the plane of the bore in its bend, so as to drain the water in said tank from below its surface and above its bottom, of a reservoir, A, into which the water from

pipe C drips and from which the water is taken to moisten the grinding-stone, as set forth.

408,031. COMBINATION-TOOL. EUGENE K. BECKWITH, Niantic, assignor of one-half to Franklin B. Wright, Meriden, Conn. Filed Aug. 23, 1888. Serial No. 283,541. (No model.)



Claim.—1. As an improved article of manufacture, a combination-tool which consists of a blade which is tapered longitudinally, said blade being also tapered in cross-section to provide a thick portion on one edge in which saw-teeth are formed or cut, and opposite thereto a cutting-edge, one end of the blade forming a boring-point, a handle permanently attached to the large end of the blade, and a removable handle having a socket in which the pointed end of the blade can be placed, substantially as shown, whereby the implement can be used either as a compass-saw, boring-tool, drawing-knife, or saw with handle at each end.

2. A key-hole saw-blade having the cutting-edges of the teeth at the point arranged diagonally with relation to the sides of the blade, the angle of the cutting-edges of the teeth decreasing gradually toward the rear end of the blade, where the cutting-edges of the teeth are at right angles with said sides, substantially as described.

3. A key-hole saw-blade having a boring-point at its outer end and the cutting-edges of the teeth arranged at progressively-decreasing angles to the sides of the blade from front to rear, substantially as described.

408,032. PLOW. MARCUS M. BOWERS, Baltimore, Md., assignor to the Roland Plow Works, same place. Filed Dec. 22, 1888. Serial No. 294,955. (No model.)



Claim.—1. A plow-standard setting away from the landside and rising centrally with respect to a cross-section of the share and having a slotted and recessed cap, a foot, A, integral with the standard, said foot having a recessed vertical side, a, provided with a handle-projecting leg, c, and also having a wing side, e, provided with a handle-leg, d.

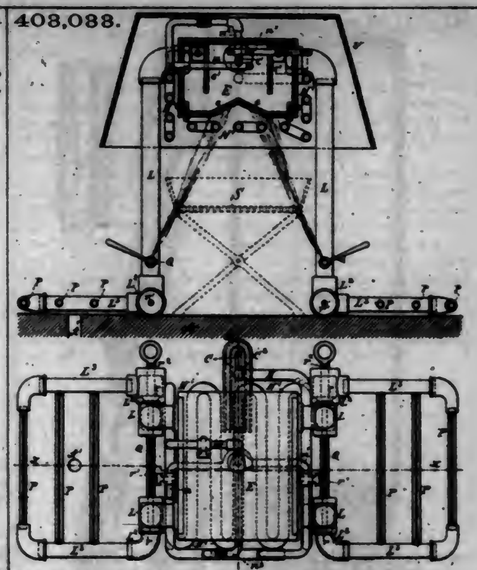
2. The combination, with the plow-standard A, of the mold D, landside B, and a share, C, provided at its upper landside edge with an upwardly-projecting lug, k, which takes under the mold and between it and the landside, as and for the purpose set forth.

408,033. APPARATUS FOR BURNING PETROLEUM. JOSEPH W. DUDD and GEORGE D. CARROLL, New York, N. Y.; said Dudd assignor to Edward Thistle, West Hoboken, N. J. Filed Nov. 16, 1885. Serial No. 182,690. (No model.)

Claim.—1. The tubular frames L^2 and the slotted or perforated pipes P, passing across from one tubular frame to the other and capable of being partially rotated, in combination with the tubular legs L, generator E, superheating steam pipe and coil, and the pipe for supplying liquid hydrocarbon, substantially as set forth.

2. The tubular legs L, tubular sockets L^2, valve-seats, and valves, in combination with the tubular frames L^2, slotted or perforated tubes

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P P and Q, generator E, petroleum-supply pipes C, and pipe for supplying superheated steam into such generator, substantially as specified.

3. The generator E, formed as a hollow box with partitions d and a double inclined bottom, c, in combination with the pipes for supplying liquid hydrocarbon and superheated steam into such generator and commingling the same within the generator, pipes for conveying away the inflammable gases, and perforated pipes below the generator, from which the gases issue and are burned beneath the generator and the superheating-pipes, substantially as specified.

4. The generator E, having within it the partitions d, in combination with the tubular legs L, for supporting the generator, the perforated pipes Q, for the issuing gas that is burned to heat the generator, and the superheating steam-pipes N', passing across below the generator, substantially as specified.

5. The generator E, having a double inclined bottom, in combination with the oil-supply pipes and the pipe for superheated steam, both discharging downwardly, so that the combination of the steam and hydrocarbon vapors is promoted by contact with the heated interior of the generator, substantially as specified.

408,034. GRADING AND DITCHING MACHINE. MORTON G. BUSHELL, Chicago, Ill., assignor to Frederick C. Austin, same place. Filed Jan. 24, 1889. Serial No. 297,448. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, with the conveyer-belt, of one or more brushes for sweeping off the soil.

2. The combination, substantially as hereinbefore set forth, with the conveyer-belt, of one or more rotary brushes arranged for sweeping the soil from the belt, and means for revolving said brush or brushes simultaneously with the travel of the conveyer-belt.

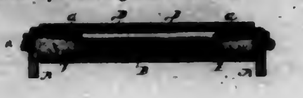
3. The combination, substantially as hereinbefore set forth, with the conveyer-belt, of one or more rotary brushes, F, set obliquely to the direction of travel of the conveyer-belt and arranged between the leaves of the same.

4. The combination, with the conveyer-belt and a rotary brush for sweeping soil therefrom, of a cleaner or wiper for said brush, substantially as and for the purpose set forth.

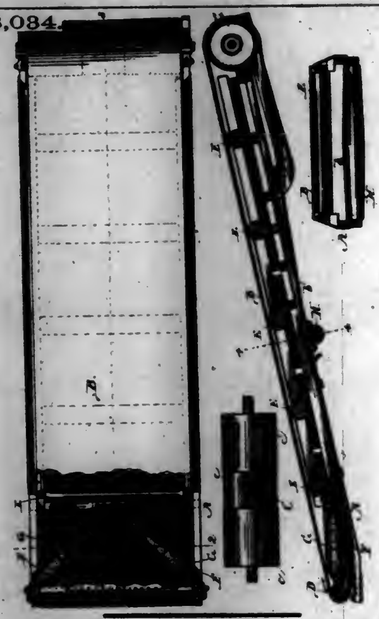
5. The combination, with the conveyer-belt, of a roll supporting the lower leaf of the conveyer-belt and made tapering from its middle toward its ends, substantially as and for the purpose described.

6. The combination, with the conveyer-belt and the roll H, of the driving-roll C, having its end portions of greater diameter than its middle portion, for the purpose described.

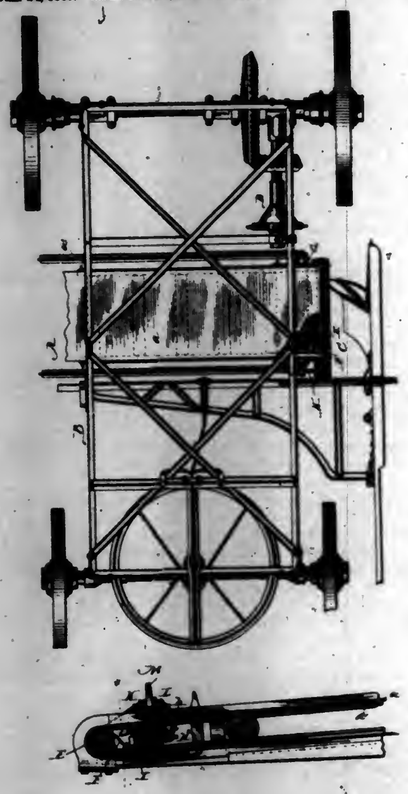
7. The combination, with the conveyer-belt and the roll H, of the driving-roll C, having its end portions made of greater diameter than its middle portion by a covering, such as set forth.



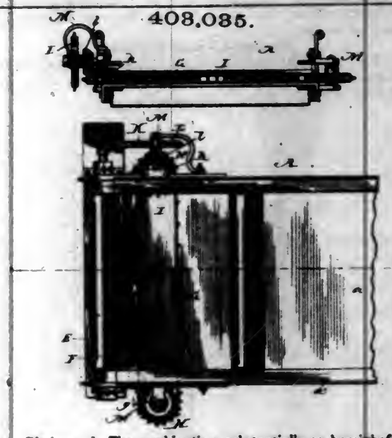
408,084.



408,085. GRADING AND DITCHING MACHINE. MORTON G. BUSNELL, Chicago, Ill., assignor to Frederick C. Austin, same place. Filed Jan. 24, 1889. Serial No. 297,447. (No model.)



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Claim.—1. The combination, substantially as hereinbefore set forth, with the elevator-belt in a grading and ditching machine, of a conveyer to carry off soil that has entered between the leaves of the elevator-belt.

2. The combination, substantially as hereinbefore set forth, with the elevator-belt and a roll about which it passes, of a scraper for removing soil from said roll, and a conveyer for carrying off the soil thus removed by the scraper.

3. The combination, substantially as hereinbefore set forth, with the elevator-belt, of a conveyer, G, consisting of an endless chain or belt provided with conveying teeth or fingers, for the purpose described.

4. The combination, substantially as hereinbefore set forth, with the elevator-belt and roll E, of the conveyer and gearing—such as set forth—for driving said conveyer from said roll.

5. The combination, substantially as hereinbefore set forth, with the elevator-belt and roll E, of the scraper F, conveyer G, and a plate forming in conjunction with the scraper a trough along which the said conveyer travels.

408,086. HOLDBACK FOR VEHICLES. MORRIS E. BURR, Lowville, New York, assignor of two-fifths to Frank C. Bowdish, same place. Filed Jan. 30, 1889. Serial No. 298,072. (No model.)



Claim.—1. In a holdback, the combination, with the plate *a*, chambered, as shown, and formed with the curved hook C, of the spring within the portion *a*, and the tongue pivoted to the walls of the chamber, with its inner end bearing on the spring, and the portions of said tongue upon both sides of its pivot extending in the same general line, substantially as shown and described.

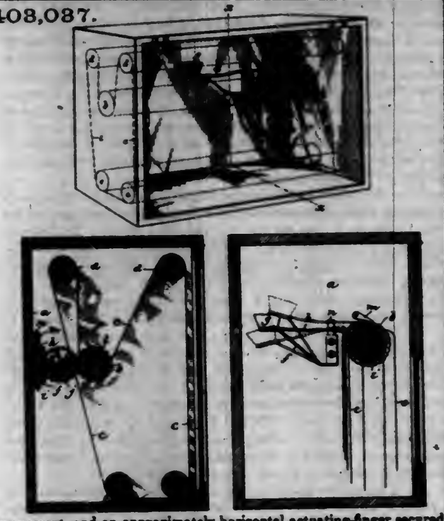
2. The holdback described, consisting of the plate *a*, chambered, as shown, and formed with the curved hook C, forming more than one-half of a circle, with the portion of the base of the hook upon the side nearest the center curved and forming a continuation of the curve of the hook upon the inside, as shown, and the end of the hook terminating in a flat bearing, the spring F, and the tongue pivoted to said plate, with its heel bearing on said spring and its end extending in line with the free end of the hook, and the heel portion extending in line with the outer portion of the tongue, substantially as shown and described.

408,087. ADVERTISING DEVICE. JAMES CASTLE, Toronto, Ontario, Canada. Filed Oct. 10, 1888. Serial No. 287,746. (No model.)

Claim.—1. The combination, with a movable exhibit, of an approximately horizontal spring-bar rigidly secured at one end and having its free vibratory end weighted and connected with and adapted to move the exhibit by a finger secured to the free end of the bar, substantially as described.

2. An inclosing-case, in combination with a movable exhibit in the same, and a spring-bar weighted at one end and rigidly secured in the case at the opposite end to allow the weighted end a vibratory

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movement, and an approximately horizontal actuating-finger secured to the weighted end of the bar and operating the exhibit, substantially as described.

3. The combination of an inclosing-case, an interior movable exhibit, a spring-bar rigidly secured at one end and having its opposite free vibratory end weighted, an actuating-finger rigidly secured to and moving with the vibratory end of the bar and having its opposite free end adapted to rotate a ratchet-wheel to move the exhibit, and a guide for the finger, substantially as described.

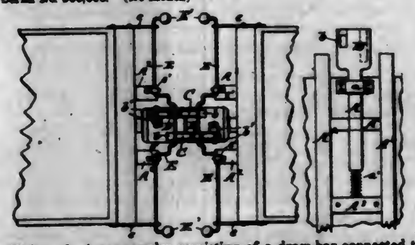
4. In combination, an inclosing-case having a roller therein to actuate a movable exhibit, a ratchet-wheel to rotate the roller, a spring-bar rigidly secured at one end near the wheel and having its vibratory end weighted, a finger secured to the vibratory end and having its free end adapted to engage and rotate the wheel, and a guide to allow the free end of the finger a limited movement and hold it in position to engage the teeth of the wheel, substantially as described.

408,088. SNAP-HOOK. MICHAEL COUDS, Lake, assignor of one-half to Lewis G. Blossom, Chicago, Ill. Filed May 17, 1888. Serial No. 274,129. (No model.)



Claim.—A snap-hook having its shank vertically recessed to receive the base of the latch, and longitudinally recessed to receive a coiled spring, said recess being screw-threaded, a coiled spring therein, seated at one end against a follower screwed into the longitudinal recess and at the other against the base of the latch, the latter being cam-faced, whereby the tension of the spring is increased as the latch closes, substantially as described.

408,089. CAR-COUPLING. ENGELBERT DIETRICH, Cincinnati, Ohio, assignor of one-half to Joseph Fois, same place. Filed Feb. 15, 1888. Serial No. 300,006. (No model.)

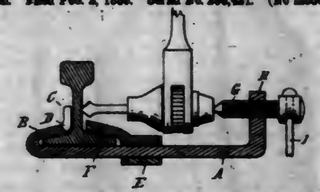


Claim.—1. A car-coupler consisting of a draw-bar connected to the bottom end portion of a car, substantially as set forth, and having a slotted opening in the head thereof, in combination with a coupling-jaw pivoted to the top portion of said head and a bent rod passing through a slotted lug on the jaw, said rod having a weighted ball at each end, and suitable mechanism for connecting said rod to the car.

2. In combination with a draw bar and head suitably connected to the car bottom and frame, said head having a slotted opening, *b*, the jaw C, pivoted to the top of said head and having a slotted lug, D, bent rod E, passing through said slotted lug and having the weighted balls E' at each end thereof, bars *c*, and brackets *d*, for securing said rod to the car, substantially as set forth.

3. In a car-coupler, the draw-bar A, having an opening, *b*, therein and connected to the car by means of the bracket *a* and bar A', passing through a slot in said draw-bar, the bar A' being rigidly connected to the side frames, A², and a suitable spring, *a'*, interposed between the rear end of the draw-bar and cross-piece A², in combination with the jaw C, pivotally connected to the draw-head B, and rod E passing through the slotted lug D on the jaw, said rod having the weighted balls E' on each end thereof, and suitable connecting mechanism for securing the rod to the car.

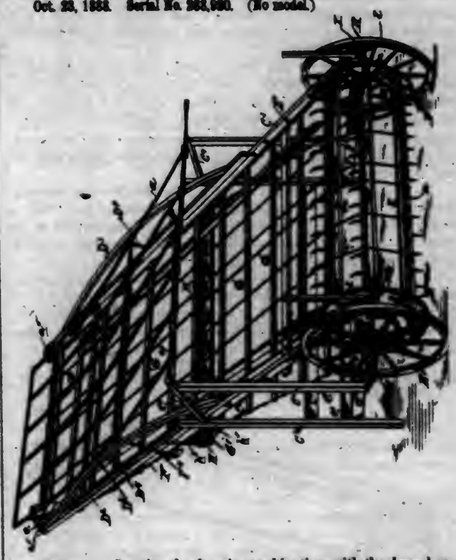
408,040. RAIL-DRILL. JOHN DOYLE and JOHN WILLIAMSON, Ionia, Mich. Filed Feb. 2, 1889. Serial No. 298,621. (No model.)



Claim.—1. In a rail-drill, a rail-clamp consisting of the stationary jaw provided with the laterally-extending shank and with the upwardly-notched lip fitting against the web of the rail, the movable jaw slidingly secured on the lateral shank, and the feed-screw on the end of the shank, the parts being constructed to operate in connection with a ratchet-drill, substantially as described.

2. In a rail-drill, a rail-clamp consisting of the stationary jaw B, provided with the laterally-extending shank A and with the upwardly-extending notched lip C, parallel with and fitting against the web of the rail, the movable jaw E, slidingly embracing the shank A and provided with the tongue F and the feed-screw G, carried in the upturned end of the shank, substantially as described.

408,041. HAY-LOADER. JAMES W. FOOTE, Sterling, Ill. Filed Oct. 23, 1888. Serial No. 288,990. (No model.)



Claim.—1. In a hay-loader, the combination, with the drum having heads provided with circumferential grooves in their outer peripheries, of the drive-wheels, and the forks attached to the frame of the machine on each side in rear of the drum, with the points of the forks one in said groove and the other in close proximity to the inner side of the rim of the drive-wheel, substantially as and for the purpose specified.

2. The combination, with the frame and the endless elevator-belt, of an adjustable roller on the under side of said frame and over which said belt passes, and a shield, H, over the top of said roller, substantially as and for the purpose specified.

403,042. OIL-CAN. CHARLES A. FRAYER, Kutztown, Ill. Filed Aug. 22, 1888. Serial No. 283,490. (No model.)



Claim.—1. In an oil-can or like vessel, an internal flexible pipe valved at its lower end where it touches the bottom, combined with the nozzle and with a pumping mechanism above the nozzle and between it and the discharge-tube, said pumping mechanism being adapted for operation by the hand grasping the can-handle.

2. In the can A, the internal flexible tube, B, having the valve C at its lower end seated in the annulus D and moving on stem *c'*, and provided with spring *c*, and combined with the nozzle G and with the pumping mechanism above it.

3. In an oil-can or like vessel having above the oil-chamber a tube intermediate between the nozzle and the outlet proper, and in connection therewith the vacuum-producing mechanism, consisting of the plunger I and its rod and the spring L, attached to the plunger, combined with the pipe B, having the spring-closing valve C at its end, and the valves G and N, respectively situated below and above the said mechanism, substantially as described.

4. In an oil-can or similar vessel, the combination of a pumping mechanism exterior to and above the oil-chamber proper, with a flexible pipe connecting with the oil-chamber, spring-valved at its lower end, and a pumping-chamber between the nozzle and outlet or spout, whereby all backflow of the oil is prevented.

5. In an oil-can or like vessel, the internal pipe, B, having spring-valve and annulus D at its lower end, the spring-valves G and N in the portion above the oil-chamber, the pump-chamber F between said valves, the side tube, H, the piston I, actuated as described, the spring L in said chamber, and the outlet O, all substantially as described.

403,043. TEMPORARY BINDER. CHARLES A. GILDERMEYER, Haddonfield, N. J. Filed Feb. 1, 1889. Serial No. 298,335. (No model.)



Claim.—1. A temporary binder having a rigid back, in combination with a plate, E, secured to the edge of the back, a screw, I, journaled at one end, *i*, in said plate, and having its other end, *i'*, shaped to engage with a key, a guide-rod, F, secured to plate E at one end and extending therefrom parallel to screw I, a jaw, H, and a jaw, H', having a threaded perforation, *h*, adapted to fit on and engage with screw I, and a perforation, *h'*, adapted to fit and slide on guide-rod F.

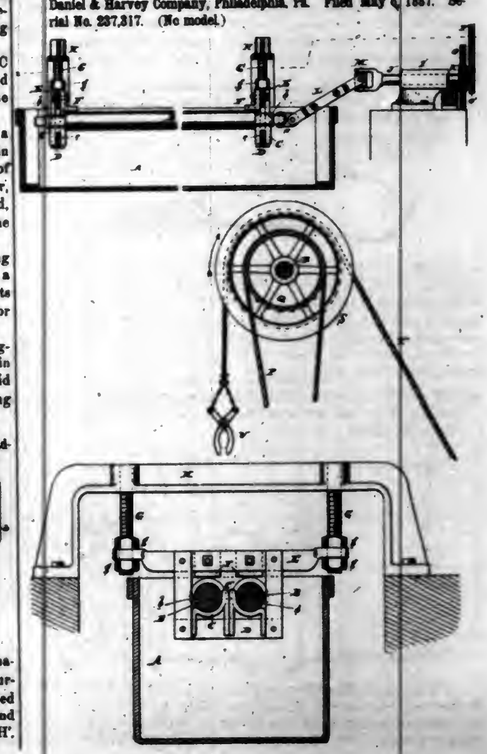
2. A temporary binder having a rigid back, in combination with a plate, E, secured to the edge of the back, a screw, I, journaled at one end, *i*, in said plate, and having its other end, *i'*, shaped to engage with a key, a guide-rod, F, secured to plate E at one end and extending therefrom parallel to screw I, a plate, G, secured on the edges of the back opposite to the plate E to serve as a support for the end of rod F, a jaw, H, and a jaw, H', having a threaded perforation, *h*, adapted to fit on and engage with screw I, and a perforation, *h'*, adapted to fit and slide on guide-rod F.

3. A temporary binder having a rigid back, A, with one or more transverse slots, A', in combination with a plate, E, secured to the edge of the back over the end of a slot, A', a screw, I, journaled at one end, *i*, in said plate, and having its other end, *i'*, shaped to engage with a key, a guide-rod, F, secured to plate E at one end and extending therefrom parallel to screw I, a jaw, H, and a jaw, H', having a threaded perforation, *h*, adapted to fit on and engage with screw I, and a perforation, *h'*, adapted to fit and slide on guide-rod F.

4. A temporary binder having a rigid back, in combination with a wire hinge-rod secured on the edge of the back, a sheet-metal hinge-plate, C, a side cover, D, secured to said hinge-plate, a plate, E, secured to the edge of the back, a screw, I, journaled at one end, *i*, in said plate, and having its other end, *i'*, shaped to engage with a key, a guide-rod, F, secured to plate E at one end and extending therefrom parallel to screw I, a jaw, H, and a jaw, H', having a threaded perforation, *h*, adapted to fit on and engage with screw I, and a perforation, *h'*, adapted to fit and slide on guide-rod F.

5. A temporary binder having a rigid back, in combination with a wire rod secured to the back by being inserted through holes passing through the same and bent to form hinge-rods B B' on each edge of the back, sheet-metal hinge-plates C C, embracing the rods D' D', side covers, D D, secured to said hinge-plates, a plate, E, secured to the edge of the back, a screw, I, journaled at one end, *i*, in said plate, and having its other end, *i'*, shaped to engage with a key, a guide-rod, F, secured to plate E at one end and extending therefrom parallel to screw I, a jaw, H, and a jaw, H', having a threaded perforation, *h*, adapted to fit on and engage with screw I, and a perforation, *h'*, adapted to fit and slide on guide-rod F.

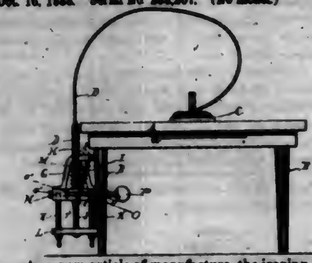
403,044. APPARATUS FOR COATING OR GALVANIZING SHEET METAL. EDMUND A. HARVEY, Wilmington, Del., assignor to the McDaniel & Harvey Company, Philadelphia, Pa. Filed May 6, 1887. Serial No. 237,317. (No model.)



Claim.—1. In combination with a bath for coating sheet metal, rollers suspended in adjustable frames and driven from gears situated outside of the bath by means of connections L, secured to said rollers and to the gear-shafts by universal joints M N, said shafts and rollers being so arranged with respect to their supporting-bearings as to be longitudinally movable therein, so that the roller-frame can be adjusted without altering the length of the connections L.

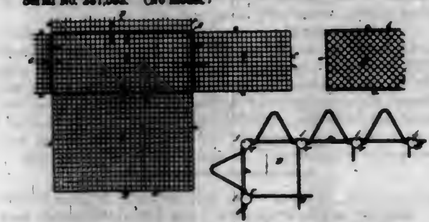
2. In combination with a bath for coating sheet metal, substantially as shown and described, skimming-rollers B B, situated in the said bath with their axes substantially in the same horizontal plane, a grooved pulley, S, situated above the bath, and gearing connecting said rollers and pulley, whereby they are caused to move with the same peripheral velocity, all substantially as and for the purpose specified.

403,045. IRONING DEVICE. CALDWELL HAYES, Ottaloosa, Kans. Filed Oct. 16, 1888. Serial No. 288,207. (No model.)



Claim.—As a new article of manufacture, the ironing device consisting of a bed-plate, N, having terminal hooks O, for attachment, by set-screws P, to the legs of a table, a shaft, F, superposed over the plate N and secured thereto as shown, having terminal bell-cranks H, connected by springs I and hooked-pins J to the yoke L, suspended from plate N, the spring-lever D, pivotally held in the shaft F, having a collar, *d*, a nut, *d'*, and encircled by spring M, the hook *d'*, for attachment to the iron C, and the lever E, that serves to reciprocate the lever D.

403,046. BALE-COVERING. MARK A. HEATH, Providence, R. I., assignor to himself and John S. Lynch, same place. Filed Oct. 8, 1888. Serial No. 287,582. (No model.)



Claim.—1. A bale-covering composed of rectangular pieces of wire-netting which have a selvage-wire at their boundary edges and are connected to each other by means of hooks, which serve to form hinge-joints between the two adjoining rectangular pieces, whereby the same can be folded for transshipment, substantially as described.

2. A bale-covering composed of rectangular pieces of wire-netting having a selvage-wire at their boundary edges, and which are connected to each other by means of hooks which serve to form hinge-joints between the two adjoining rectangular pieces, and provided with a supplementary inner lining, substantially as and for the purpose specified.

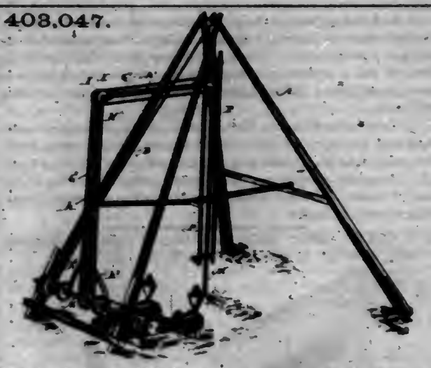
3. The improved bale-covering, consisting of a wire-netting composed of wires which are each turned into loops at their intersecting points and are secured by means of rivets having heads which project above the wire fabric, substantially as described.

403,047. WELL-SINKING APPARATUS. JAMES W. HUNT, Paw Paw, assignor to Frederick C. Austin, Chicago, Ill. Filed Mar. 19, 1888. Serial No. 267,791. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, in a well-sinking apparatus, of a suspended rotary stock for the purpose described, a raising and lowering device by which the rotary stock is suspended, and a flexible power-transmitting device for driving the rotary stock from some suitable source of power, the power-transmitting device being arranged to yield during the descent of the rotary stock and permit it to drop by gravity in a vertical path.

2. The combination, substantially as hereinbefore set forth, in a well-sinking apparatus, of a suspended rotary stock, a raising and

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lowering device by which the rotary stock is suspended, and a flexible power-transmitting device arranged for driving and permitting the descent by gravity of the rotary stock, and consisting of a jointed swinging pulley-support provided with connected endless belts and pulleys therefor, said jointed support being fulcrumed at its lower end to permit it to swing and yield to allow the rotary stock to descend in a vertical path.

3. In a well-sinking apparatus, the rotary stock provided with a gear, in combination with a vertically-movable head with which the rotary stock is connected by a rotary joint, and a gear carried by said head and engaging the gear upon the rotary stock, substantially as set forth.

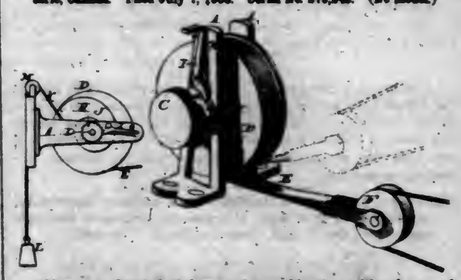
4. In a well-sinking apparatus, the combination, with a flexible power-transmitting device, such as set forth, of the rotary stock, having a rotary connection with a suspended and vertically-movable head or bearing, and a gear-connection between the rotary stock and the said flexible power-transmitting device, substantially as described.

5. In a well-sinking apparatus, the combination, with a head or follower and a gear, E, carried thereby and having its spindle extended to provide a bearing, for the purpose set forth, of the rotary stock and a gear, F, arranged thereon and having a rotary connection with said head or follower, substantially as described.

6. In a well-sinking apparatus, the combination, with the head or follower C, pivotally attached to a vertically-movable slide, of the rotary stock having a rotary connection with said head or follower, substantially as set forth.

7. In a well-sinking apparatus, the combination, with the rotary tube-holding stock swiveled to a suspended head and a raising and lowering device by which the head is suspended, of the jointed support provided with sprockets and belting thereon and having a swivel-joint at a point along its length, for the purpose specified.

403,048. BELT-TIGHTENER. CHARLES W. JONES, London, Ontario, Canada. Filed July 7, 1888. Serial No. 279,249. (No model.)



Claim.—1. In a belt-tightener, the combination, with a drum and a spring, of a flexible band and an unsupported wheel or pulley secured to the free end of the band.

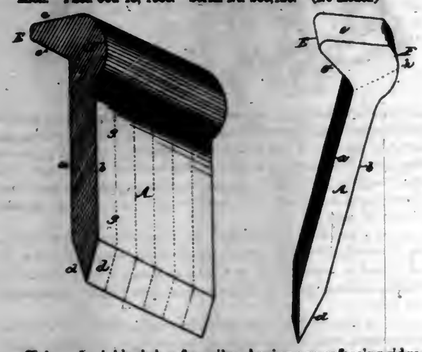
2. In combination with a suitable support, a shaft journaled therein, a drum mounted loosely upon the shaft, but connected therewith by means of a spring, a ratchet-wheel secured to the shaft, a pawl adapted to engage with the ratchet, and a band secured to the drum and provided at its free end with a wheel or pulley.

3. In a belt-tightener, the combination, with a suitable support, of a shaft mounted therein, a drum, a spring, a band secured at one end to the drum and provided at its opposite end with a wheel or pulley to receive the belt to be tightened, and a device for changing the tension of the spring.

4. In a belt-tightener, the combination, with a suitable support, of a shaft mounted therein, a drum, a spring, a band secured to the drum and provided with a wheel or pulley to receive the belt to be tightened, and a tension-equalizing device arranged, substantially as shown, to maintain a uniform tension during the coiling and uncoiling of the spring.

5. The combination of a shaft, a drum, a spring secured at opposite ends to the drum and shaft, a band secured to the drum and provided at its end with a wheel or pulley to receive the belt to be tightened, a device for winding or unwinding the spring to increase or decrease its tension, and a device, substantially such as shown, for maintaining a uniform tension.

408,049. SPIKE-BLANK BAR. JOHN T. JOHNS, Iron Mountain, Mich. Filed Oct. 15, 1888. Serial No. 288,126. (No model.)



Claim.—1. A blank bar for spikes, having a re-enforcing ridge at the back of the portion which forms the lip of the spike when the blank is severed into sections, such ridge extending laterally past a point opposite the point of juncture of the lip with the body of the spike, substantially as described.

2. A spike-blank having a ridge formed on one side at the edge of the blank and a second ridge upon the opposite side and at the same edge of the blank extending laterally past a point opposite the point of juncture of the first ridge with the body of the blank, the first ridge being adapted to form the head upon spikes cut from said blank and the second ridge a swell at the back of said lip extending below the angle formed at the juncture of the lip and the body of the spike, substantially as described.

408,050. SADDLE. ARTHUR W. M. KERR, Melbourne, Victoria. Filed Jan. 14, 1889. Serial No. 296,356. (No model.)



Claim.—In a riding-saddle, the herein-described elastic metallic tree, consisting of the rim-piece *a*, having at its forward end the main upright neck-piece *a'*, and a supplemental similarly-shaped upright neck-piece, B, situated in rear of and substantially parallel with said main neck-piece and secured at its lower ends to the rim-piece, substantially as specified.

408,051. DRAFT-EQUALIZER. CHARLES KIRKER, Baltimore, Md., assignor of one-half to Henry W. Ironmonger and Louis C. Gude, same place. Filed Oct. 27, 1888. Serial No. 289,287. (No model.)



Claim.—1. The combination of the base-plate 8, provided with the slanting ribs 9, forming a dovetailed slideway, and further provided with the stud 12, projecting within the said slideway, the draw-bar 10, fitted to slide in the said way and made hollow and provided with a removable end or gate, 13, and further provided with means for attaching a doubletree, and a spring, 11, adapted to fit between the said stud 12 and gate 13, substantially as shown and described.

2. The combination of the draw-bar 10, provided with the hinge-ears 18 at one end and a bolt-hole at the other end, and the link 17, hinged between the said ears and having a bolt-hole to register with the said bolt-hole in the draw-bar, substantially as shown and described.

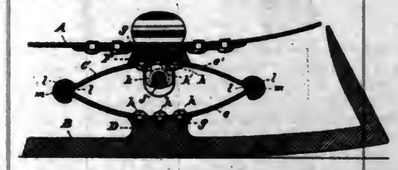
3. The combination of the base-plate 8, provided with the slideway described, the draw-bar 10, fitted to slide in the said way and having a removable end or gate, 13, the bolt 16 in the draw-bar, the yoke 19, freely pivoted on the said bolt, shoulders 21 on the draw-bar, adapted to engage each arm of the yoke, and chains 20, adapted to connect the ends of the yoke with the wagon-axle 7 near the wheels, substantially as shown and described.

4. The combination of the base-plate 8, provided with the slideway described, and with the stud 12, projecting therein, the hollow draw-bar 10, fitted to said slideway, and the gate 13, pivoted upon the end of the draw-bar to swing across the end of its hollow, substantially as shown and described, whereby a spring may be admitted and held within the draw-bar, as set forth.

5. The combination of the base-plate 8, provided with the slideway and the stud 12, projecting therein, as described, and the draw-bar 10, fitted to be reversed in the said slideway, substantially as shown and described.

6. The combination of the base-plate 8, provided with the slideway and the stud 12, projecting therein, the draw-bar 10, reversibly fitted to the slideway and provided with a shoulder, 22, adapted to engage the base-plate, and a spring, 11, adapted to fit within the said draw-bar and proportioned to be guarded by the said shoulder against being overstrained, substantially as shown and described.

408,052. SKATE. JOSEPH KIRK, Troy, N. Y. Filed Feb. 15, 1888. Serial No. 299,933. (No model.)



Claim.—1. The skate having its runner provided upon the upper surface with upwardly-extending or elevated concave-faced bearings, and its body provided upon the under side with downwardly-projecting concave-faced bearings, in combination with the elliptic springs arranged in the plane of the runners, and means for fastening the springs in place, substantially as set forth.

2. The skate having its runner provided with elevated concave-faced bearings and its body provided upon the under side with downwardly-extending or pendent concave-faced bearings, in combination with the elliptic springs, and screw fastening said springs upon said bearings, the upper leaves of said springs having their outer ends curved, and embracing corresponding bearings at the ends of the lower leaves, which bearings of the lower leaves receive the connecting-bolts of the leaves of the hinges, substantially as set forth.

408,053. SHUT-OFF FOR HOSE-NOZZLES. WILLIAM T. KIRK, Cambridge, assignor of one-half to Charles E. Berry, Watertown, Mass. Filed Oct. 13, 1888. Serial No. 288,439. (No model.)

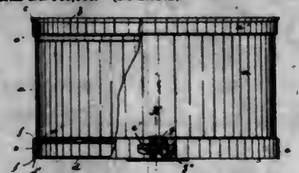


Claim.—1. The chambered plate or disk *b*, externally screw-threaded, and the nozzle *a*, eccentrically secured in said plate or disk, the end of the said nozzle projecting beyond the surface of said plate or disk, combined with the cap *c*, internally screw-threaded to be turned upon the plate or disk and having the hole *c'* of larger diameter than the internal diameter of the end of the nozzle, whereby the water has unimpeded exit, substantially as and for the purposes set forth.

2. The nozzle *a* and the eccentrically-secured chambered plate or disk *b*, externally screw-threaded and having the hole 3, combined with the internally-screw-threaded cap *c*, having the hole 3, substantially as described.

3. The nozzle *a* and the plate or disk *b*, provided with the peripheral groove or passage *d*, having an inclined bottom, combined with the cap *c*, having the pin *e*, entering said passage and bearing upon the inclined bottom thereof, substantially as described.

408,054. BUTTER-CAN. JOHN R. LEVARSEUR, Monticello, Iowa, assignor to Granville W. Simpson, Somerville, Mass. Filed Mar. 27, 1888. Serial No. 305,016. (No model.)



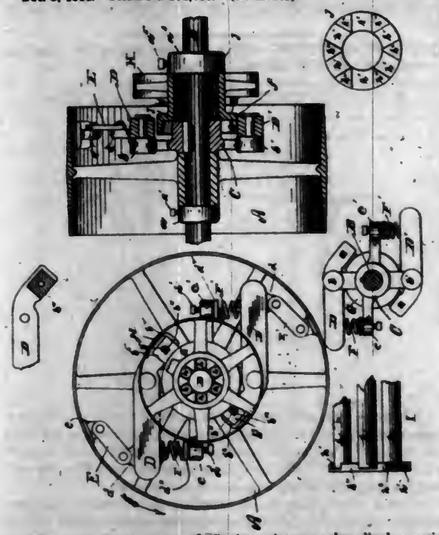
Claim.—The can-body having a permanently-attached cover, *b*, in its upper end and a detachable bottom, *d*, adapted to fit against and around its lower end, combined with a soldered metal binder-strip, *c*, having flap or tongue *c'*, and an angular key secured to said flap and having its lower portion adapted to lie against the under side of the can-bottom, substantially as and for the purpose set forth.

408,055. FRUIT-JAR CLAMP. WILLIAM W. LYMAN, Meriden, Conn. Filed Mar. 30, 1888. Serial No. 305,341. (No model.)



Claim.—A fruit-jar clamp having a yoke and a screw passing through said yoke, the end of the screw being recessed and provided with a plug of elastic material, said plug being partly contained within the body of the screw and partly projected beyond the end of said screw, substantially as and for the purpose described.

408,056. AUTOMATIC FEED-REGULATOR. CHARLES A. MILLER, Urbana, Ohio, assignor of one-half to Sherman Husted, same place. Filed Dec. 5, 1888. Serial No. 292,700. (No model.)



Claim.—1. In an automatic feed-regulator, as described, a main driving-wheel and a feed-wheel, both mounted loosely upon their supporting-shaft, a spider secured rigidly to said shaft between the said driving and feed wheels, and a friction-clutch between said spider and feed-wheel adapted to be released by the propelling force applied to the driving-wheel, substantially as specified.

2. In an automatic feed-regulator, a driving-wheel and a feed-wheel, each mounted loosely on the same supporting-shaft, a friction-wheel connected to said feed-wheel, brake-arms bearing against said friction-wheel, connected to said shaft so as to turn positively therewith, springs to force said arms against said friction-wheel, and connections from said arms to the driving-wheel, whereby the resistance to the driving-shaft operates with the propelling force to overcome the tension of the said springs and release the said friction-wheel, substantially as specified.

3. The combination, with a driving-wheel and a feed-wheel, each mounted loosely on the supporting-shaft, of the spider connected rigidly to said shaft and provided with pivoted brake-levers attached thereto, a friction-wheel connected to said feed-wheel, springs attached to force said levers against said friction-wheel, connecting-links from said levers to the driving-wheel, and means for regulating the tension of said springs, substantially as specified.

4. In an automatic feed-regulator, a driving-wheel and a feed-wheel mounted on the same supporting-shaft and adapted to turn loosely thereon, said feed-wheel being provided with a roller-bearing, as described, a friction-wheel connected to said feed-wheel, brake-arms engaging with said friction-wheel, springs for operating said brake-arms, connecting-links from said arms to said driving-wheels, and means for connecting said arms to the supporting-shaft, so they shall turn positively therewith, substantially as specified.

5. The combination, with a driving-wheel and a feed-wheel, each mounted loosely on the same supporting-shaft, of a friction-wheel connected to said feed-wheel, a spider connected rigidly to said shaft and provided with brake-levers supported thereon, adjustable brake-blocks in the said brake-levers, springs for operating the said brake-levers against the said friction-wheel, and connecting-links from the said brake-levers to the driving-wheel, substantially as specified.

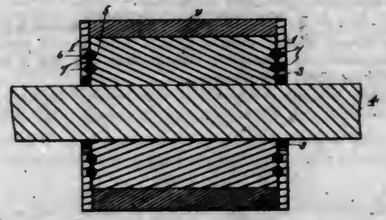
6. The combination, with a driving-wheel and a feed-wheel mounted loosely on the same supporting-shaft, said feed-wheel being provided with a roller-bearing and a friction-wheel, as described, of a spider having brake-levers with removable brake-blocks adapted to bear against said friction-wheel, springs for operating said brake-levers against said friction-wheel, connecting-links from the said brake-levers to the driving-wheel, and means for adjusting the tension of the said springs, substantially as specified.

408,057. LUBRICATOR FOR LOOSE PULLEYS. WILLIAM P. MILLER, Brooklyn, N. Y., assignor to the William P. Miller Company, same place. Filed Sept. 20, 1888. Serial No. 285,949. (No model.)



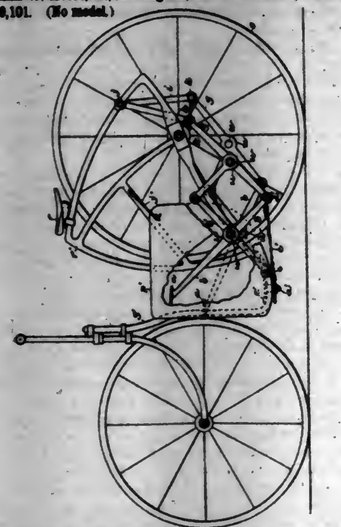
Claim.—In a lubricator for loose pulleys, the combination, with a cup for containing the lubricant, having cylindrical sides and a substantially flat bottom integral therewith, and a piston fitted to slide in said cup having a hollow or tubular stem or rod through which the lubricant is forced, of a flat adjustable perforated feed-regulating plate pivotally attached to the piston for regulating the supply of lubricant through the piston and rod to the journal, and a securing device for said plate for securing it in any position into which it may be adjusted, substantially as specified.

408,058. ANTI-FRICTION JOURNAL-BOX. ROBERT W. MOFFETT, Denver, Colo., assignor to the Moffett Journal Box Company, of Colorado. Filed June 20, 1888. Serial No. 278,179. (No model.)



Claim.—In an anti-friction journal, the combination of a series of main rollers each having a circular groove in each of its ends, end plates or rings each having circular grooves on its inner face corresponding to the circular grooves in the ends of the main rollers, means for securing the end plates or rings in proper position, and a plural number of roller-bearings at each end of each main roller lying partly within the main-roller groove and partly within a groove in a head or end, substantially as set forth.

408,059. BICYCLE. THOMAS W. MOORE, Plainfield, N. J., assignor to Thomas W. Moore, Jr., Los Angeles, Cal. Filed Feb. 6, 1888. Serial No. 263,101. (No model.)



Claim.—1. The combination, with the driving-wheel of a bicycle or other velocipede or vehicle, of the extension-lever treadles and the reciprocating rotatory ratchet mechanism connecting them with the axle, substantially as described.

2. The combination, with the driving-wheel of a bicycle or other velocipede or vehicle, of the extension-lever treadles, and the reciprocating rotatory ratchet mechanism connecting them with the axle and carrying guides to control the terminals of the said extension-lever treadles connected to the ratchets, substantially as described.

3. The combination, with the driving-wheel of a bicycle or other velocipede or vehicle, of the extension-lever treadles, the reciprocating rotatory ratchet mechanism connecting them with the axle, and the carrying link-guides to control the terminals of the said extension-lever treadles connected to the ratchets, substantially as described.

4. The combination of the retracting walking-beam and connecting-chains with the extension-lever treadles, substantially as described.

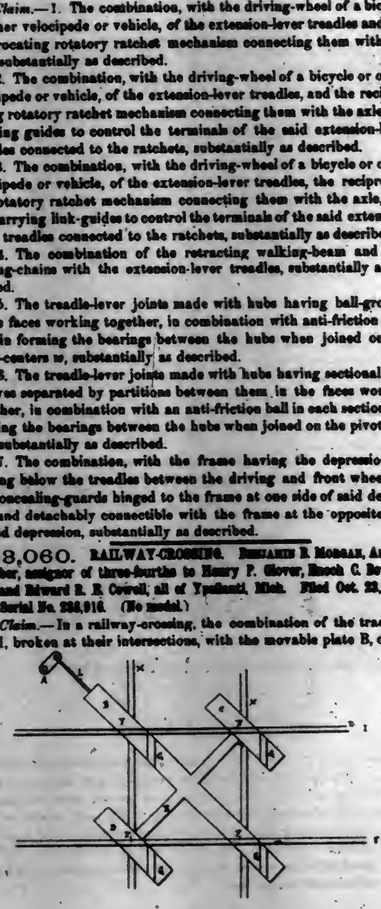
5. The treadle-lever joints made with hubs having ball-grooves in the faces working together, in combination with anti-friction balls therein forming the bearings between the hubs when joined on the pivot-centers *m*, substantially as described.

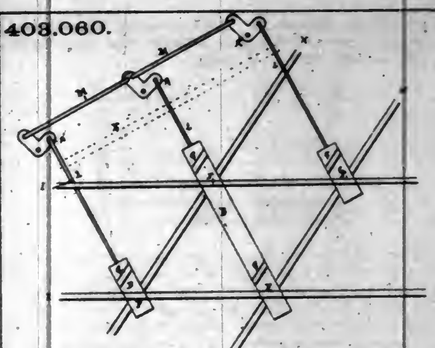
6. The treadle-lever joints made with hubs having sectional ball-grooves separated by partitions between them in the faces working together, in combination with an anti-friction ball in each section and forming the bearings between the hubs when joined on the pivot-centers, substantially as described.

7. The combination, with the frame having the depression extending below the treadles between the driving and front wheels, of the concealing-guards hinged to the frame at one side of said depression and detachably connectible with the frame at the opposite side of said depression, substantially as described.

408,060. RAILWAY-CROSSING. BENJAMIN B. MORGAN, Ann Arbor, assignor of three-fourths to Henry P. Glover, Enoch C. Bowling, and Edward B. B. Covell, all of Ypsilanti, Mich. Filed Oct. 22, 1888. Serial No. 288,916. (No model.)

Claim.—In a railway-crossing, the combination of the tracks H and I, broken at their intersections, with the movable plate B, carrying the four rail-sections F F and G G, and the movable plates C D, each carrying two rail-sections, F G, substantially as shown and described.





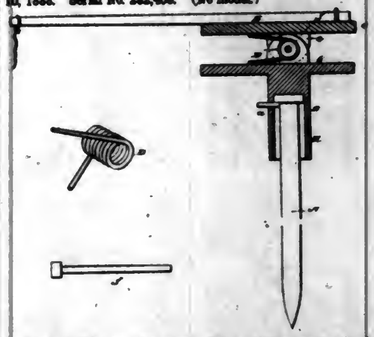
408,061. PROCESS OF MAKING IRON PRINTS BY PHOTOGRAPHY. CHARLES B. MCBLAIR and ALEXANDER A. RAFF, Washington, D. C. Filed Dec. 15, 1888. Serial No. 293,697. (No specimens.)

Claim.—1. The method of sensitizing paper for the production of prints and pictures in black lines by a solution of water, sesquichloride of iron, ammonia citrate of iron, nitric acid, tartaric acid, and gelatine, in or about the proportions hereinbefore set forth.

2. The method of sensitizing paper for the production of prints and pictures in permanent black lines directly from a positive by a solution of water, sesquichloride of iron, ammonia citrate of iron, nitric acid, tartaric acid, and gelatine.

3. The process of reproducing drawings, which reproduction will present the same appearance as that of the original, consisting in first sensitizing the paper upon which the reproduction is to be taken, with the following solution: water, sesquichloride of iron, ammonia citrate of iron, nitric acid, tartaric acid, and gelatine, or their chemical equivalents, mixed in substantially the proportions above specified; second, placing the sensitized paper in contact with the original and subjecting both to the action of solar or other strong light; third, developing such reproduction by the use of gallic acid or its equivalent.

408,062. TETHER. WILLIAM J. HERNE, Seneca, S. C. Filed Aug. 10, 1888. Serial No. 282,409. (No model.)



Claim.—1. The combination, with a stake or post, of a hitching-beam, a rotatable cap on the said stake, a hinge connecting the beam with the plate, a spring surrounding the hinge-pintle, so as normally to keep the free end of the hitch-beam elevated, and a cap-plate covering the hinge and spring, substantially as specified.

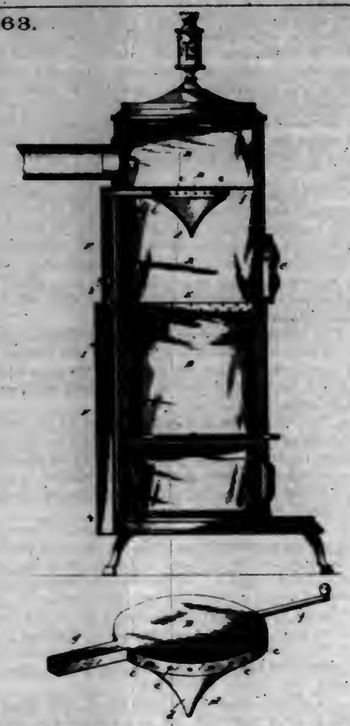
2. In a cattle-grazer, the combination, with a stake, of a plate adapted to rotate thereon, a plate hinged to this rotatable plate, a spring interposed between the two plates, and a hitch-beam secured to the upper plate, substantially as specified.

408,063. STOVE. CHARLES NEWBURGH, Washington, D. C., assignor to Kate E. Newburgh. Filed Dec. 12, 1888. Serial No. 293,244. (No model.)

Claim.—1. In a stove, the perforated air-heating chamber D, suspended in the combustion-chamber A, its lower or under side forming the imperforated deflector *d*, substantially as and for the purposes specified.

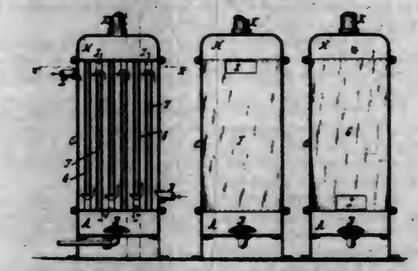
2. In a stove, the combination of the perforated air-heating chamber D, suspended in the combustion-chamber A, its lower or under side forming the imperforated deflector *d*, with the bar *f*, the hollow duct or flue *g*, and the pipe F, substantially as and for the purposes specified.

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3. In a stove, the combination of the perforated air-heating chamber D, suspended in the combustion-chamber A, its lower or under side forming the imperforated deflector *d*, the bar *f*, the hollow duct or flue *g*, with the air-heating chamber E, located above or upon the upper edge of the fire-pot B, and concentrically therewith, and having the perforations *h*, the hollow duct or flue *i*, and the pipe F, substantially as and for the purposes specified.

408,064. AIR-HEATER. THOMAS HUSSEY, New York, N. Y. Filed Jan. 3, 1889. Serial No. 295,285. (No model.)



Claim.—An air-heater consisting of the air-heating chamber C, having at its base a burner or other source of heat separated from such chamber by a partition, an air-inlet, D, an air-outlet, E, an escape or chimney, K, and a series of vertical hollow partitions arranged in the heating-chamber and providing the alternating air-passages for compelling the air to be heated to traverse a zigzag circuit, said hollow partitions being open at both ends for conducting the products of combustion from the combustion-chamber to the chimney, substantially as described.

408,065. CLARIONET. ROMEO GIBE, Milan, Italy, assignor to Alexander A. Bessi, New York, N. Y. Filed May 17, 1888. Serial No. 274,126. (No model.) Patented in Italy Nov. 10, 1881, XXV, and in Belgium Belgium Nov. 10, 1882, No. 59,583.

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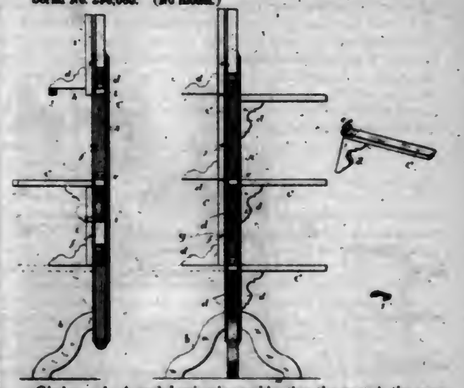


Claim.—1. In a wind-instrument composed of separate sections, the combination of one section having a two-way groove, *d g*, near its end, with another section having a pin, *h*, near its end adapted to enter the groove *d g* and to contact the closed ends of the groove, whereby the sections may be held extended or contracted in the same alignment, substantially as herein shown and described.

2. In a wind-instrument composed of separate sections, the sleeve *e*, adapted to be carried by one of the sections and having the two-way groove *d g*, combined with the adjoining section, having a pin, *h*, near its end adapted to enter the groove *d g* and to contact the closed ends of the groove, the ends of said groove portions *d g* being aligned, substantially as herein shown and described.

3. In a wind-instrument composed of separate but longitudinally-extensible sections, the key F, carried on one section, in combination with the lever *j*, having rounded outer side carried on another section, the lever *j* being arranged to pass under and operate the key F, substantially as described.

408,066. CLOTHES-HORSE. ELMER A. PARRISH, Baltimore, Md., assignor of one-half to James A. Brooks, same place. Filed Jan. 17, 1889. Serial No. 296,663. (No model.)



Claim.—1. A rack having in combination the post A, the arms C, each having attached a bracket-hook, *d*, the arm and bracket being connected at right angles to each other, and a hinge, *e*, connecting the arm and its hook to the post, as shown and described.

2. A rack having in combination the post A, the arms C, each having attached a bracket-hook, *d*, the arm and bracket being connected at right angles to each other and having an offset, *h*, at the back of the bracket-hook, a hinge, *e*, connecting the arm and hook to the post, and a foot, *i*, attached to the bracket-hook to straddle a turned-up arm next below.

408,067. LASTING-MACHINE. JOHN PATTEN, New York, N. Y. Filed Nov. 27, 1888. Serial No. 292,001. (No model.)

Claim.—1. The combination, with a last, of a rubbing-stretcher, substantially as described, for acting upon the outside of the upper, and lateral pressers, consisting of a plurality of independent fingers which are stationary relatively to the movement of the stretcher, for pressing said stretcher and the upper against the toe and side of the last, substantially as described.

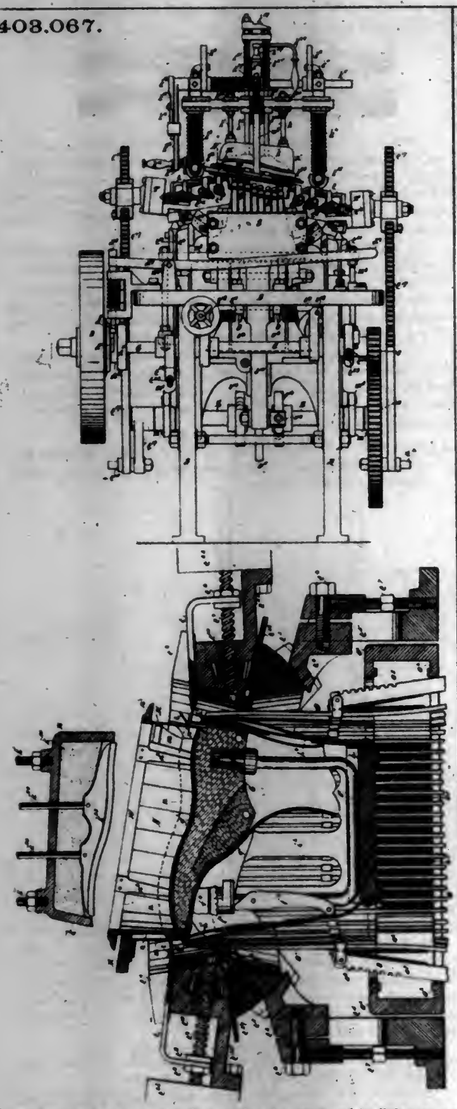
2. The combination, with a last, of a rubbing-stretcher, substantially as described, for acting upon the outside of the upper, lateral pressers, which are stationary relatively to the movement of the stretcher, for pressing said stretcher and the upper into contact, and a shield interposed between said pressers and stretcher, substantially as described.

3. The combination, with a last, of rubbing-stretchers, substantially as described, for acting, respectively, upon the inside and outside of the upper, and lateral pressers for pressing said stretchers and the upper into contact, substantially as described.

4. The combination, with a last, of rubbing-stretchers, substantially as described, for acting, respectively, upon the inside and outside of the upper, lateral pressers for pressing said stretchers and the upper into contact, and a shield interposed between said pressers and the outer stretcher, substantially as described.

5. The combination, with a last, of inner, outer, and intermediate

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and the upper against the last, and a shield interposed between said fingers and the outer stretcher, substantially as described.

10. The combination, in a lasting-machine, of the last and means for supporting the last, a rubbing-stretcher, substantially as described, for acting upon the outside of the upper, lateral pressers, consisting of a plurality of independent fingers which are stationary relatively to the movement of the stretcher, for pressing said stretcher and the upper against the toe and sides of the last, and side and heel and toe crimpers for folding over the edge of the upper, substantially as described.

11. In a lasting-machine, a rubbing-stretcher consisting of flexible material suspended from a head-plate, with its lower edge hanging free and extending around the toe and along the sides of the last where the upper is to be stretched, substantially as described.

12. In a lasting-machine, an inner rubbing-stretcher consisting of elastic strips *n*, suspended from a head-plate and adapted to be inserted between the last and the portions of the upper which are to be stretched, substantially as described.

13. In a lasting-machine, an inner rubbing-stretcher consisting of elastic strips *n*, suspended from a head-plate and adapted to be inserted between the last and the portions of the upper which are to be stretched, and having the legs n^3, for regulating the extent of such insertion, substantially as described.

14. The combination, in a lasting-machine, of an inner rubbing-stretcher and an outer rubbing-stretcher, arranged one within the other and adapted to extend around the portions of the last where the upper is to be stretched, the inner stretcher being adapted to be inserted between the last and the upper, and the outer stretcher to extend outside the upper, substantially as described.

15. The combination, in a lasting-machine, of inner and outer rubbing-stretchers, arranged one within the other and adapted to receive the upper between them and to extend around the portions of the last where the upper is to be stretched, the inner stretcher being composed of elastic material and the outer stretcher of leather or similar flexible material, and lateral pressers for pressing the stretchers and the upper into contact, substantially as described.

16. The combination, in a lasting-machine, of the inner and outer rubbing-stretchers suspended from head-plates n' m', which overlap one another, substantially as described.

17. In a lasting-machine, the combination, with lateral pressers arranged to press toward the last, of a wedge-shaped head, o^9, for operating the pressers, substantially as described.

18. The combination, in a lasting-machine, of a rubbing-stretcher, lateral pressers, and an expansible shield interposed between said stretcher and pressers, substantially as described.

19. The combination, in a lasting-machine, of rubbing-stretchers, lateral pressers, and an expansible shield interposed between said pressers and the outer stretcher, substantially as described.

20. In a lasting-machine, the combination, with the independently-adjustable supports *o*, of the presser-fingers O, pivoted to said supports, and the springs o^7, for normally retracting said fingers, substantially as described.

21. In a lasting-machine, the combination, with the presser-fingers O, of the independently-adjustable supports *o* for said fingers, and the locking-frame provided with the clamping plates and blocks o^3 o^4 for said supports, substantially as described.

22. In a lasting-machine, the combination, with inner and outer rubbing-stretchers, of means, substantially as described, for moving the outer stretcher in advance of the inner stretcher, substantially as described.

23. In a lasting-machine, the combination, with the inner and outer rubbing-stretchers, one supported upon the other, of means, substantially as described, for imparting a vertical movement to the outer stretcher and through that to the inner stretcher, with lost motion between the two, substantially as described.

24. In a lasting-machine, the combination, with the inner and outer rubbing-stretchers, one supported upon the other, of the standards m^6, cross-heads m^8, and cams m^7, for imparting a vertical movement to the stretchers, substantially as described.

25. In a lasting-machine, the combination, with the inner and outer rubbing-stretchers and means for imparting a vertical movement to them, of the standard m^9 and the catch for engaging with said standard to retain the stretchers in their raised position, substantially as described.

26. In a lasting-machine, the combination, with the last, of the loose removable jack, substantially as described, for supporting the last in the machine, substantially as described.

27. The combination, with the last, the loose removable jack for supporting the last from beneath, and a downhold for the last, of inner and outer rubbing-stretchers for stretching the upper around the last, and lateral pressers for pressing said stretchers and the upper against the last, substantially as described.

28. The combination, with the last and an underneath support for the last, of a downhold for the last, inner and outer rubbing-stretchers for stretching the upper around the last, and lateral pressers for pressing said stretchers and the upper against the last, substantially as described.

rubbing-stretchers arranged to receive the upper and its lining or cap between them, respectively, and lateral pressers for pressing said stretchers and the upper, including its lining or cap, into contact, substantially as described.

6. The combination of a last and a rubbing-stretcher, substantially as described, for acting upon the outside of the upper, with lateral pressers, composed of adjustable fingers which are stationary relatively to the movement of the stretcher, for pressing the stretcher and the upper against the last, substantially as described.

7. The combination, with a last and a rubbing-stretcher, substantially as described, for acting upon the outside of the upper, of lateral pressers composed of adjustable fingers for pressing the stretcher and the upper against the last, and a shield interposed between said fingers and stretcher, substantially as described.

8. The combination, with a last, of rubbing-stretchers, substantially as described, arranged to receive the upper between them, and lateral pressers composed of adjustable fingers for pressing the stretchers and the upper against the last, substantially as described.

9. The combination, with a last, of rubbing-stretchers, substantially as described, arranged to receive the upper between them, lateral pressers composed of adjustable fingers for pressing the stretchers

29. In a lasting-machine, the combination, with the last and means for supporting it from beneath, of a telescopic downhold consisting of two members, one of said members being yielding with respect to the other, substantially as described.

30. In a lasting-machine, the combination, with the last, of a telescopic downhold composed of an inner and an outer member, and means, substantially as described, for moving one member away from the last in advance of the other, substantially as described.

31. In a lasting-machine, the combination, with the rubbing-stretchers having the standard m^9, of the catch k^{27} and the vertically-moving guide-rod k^3, carried by the downhold mechanism, substantially as described.

32. In a lasting-machine, the combination, with the telescopic downhold composed of inner and outer members, each having a vertical movement independent of the other, of means, substantially as described, for depressing said members simultaneously, substantially as described.

33. In a lasting-machine, the combination, with the telescopic downhold composed of inner and outer members, each having a vertical movement independent of the other, of means, substantially as described, for depressing said members simultaneously, and springs for raising said members independently, substantially as described.

34. In a lasting-machine, the combination, with the telescopic downhold composed of outer and inner members and springs for raising said members independently of each other, of the bar k^2, shaft k^3, and cams k^4, for depressing said members simultaneously, substantially as described.

35. In a lasting-machine, the combination, with the telescopic downhold composed of inner and outer members, of springs for raising said members independently of each other and an automatic tripper for releasing said outer member, substantially as described.

36. In a lasting machine, the combination, with the last and an underneath support for the last, of a telescopic downhold for the last, composed of an outer member which conforms approximately to the shape of the insole and bears upon its margin, and an inner member which bears upon the insole inside the outer member, and means for raising the outer member in advance of the inner member, substantially as described.

37. The combination, with means for supporting the last and for stretching the upper around the last, of side-crimpers carried upon oscillating arms s^{10}, and eccentrics s^{14}, for rocking said arms to move the crimpers to and from each other, substantially as described.

38. In a lasting-machine, the combination, with the last and means for stretching the upper around the last, of side-crimpers carried upon oscillating arms s^{10}, and the eccentrics s^{14}, forming the fulcra for said arms, substantially as described.

39. The combination, with the last and means for stretching the upper around the last, of side-crimpers carried upon oscillating arms s^{10}, the eccentrics s^{14}, forming the fulcra for said arms, and the driven eccentrics s^{20}, connected to said fulcra, to impart a rising-and-falling movement to said crimpers, substantially as described.

40. The combination, with the last and means for stretching the upper around the last, of side-crimpers carried upon oscillating arms s^{10}, the eccentrics s^{14}, forming the fulcra for said arms, the driven eccentrics s^{20}, connected to said fulcra, to impart a rising-and-falling movement to the crimpers, and the eccentrics s^{14}, for imparting an oscillating movement to the arms carrying the crimpers, substantially as described.

41. In a lasting-machine, the herein-described side-crimper, consisting of a head, s^5, the loose removable head-blocks s^3, fitting into a chamber in said head, the loose removable blocks s^6, and clamping-screw s^7, for locking said blocks s^3 in any position to which they are adjusted, and the crimping-fingers *s*, having shanks which enter openings in said head-blocks and are adjustable therein, substantially as described.

42. The combination, with the last and means for stretching the upper around the last, of heel and toe crimpers, each composed of a number of radially-arranged independently-moving crimping-fingers, and independent means, substantially as described, for imparting a rising-and-falling movement to said fingers independently of their movement toward and from the last, substantially as described.

43. In a lasting-machine, the combination, with the independently-moving radially-arranged crimping-fingers *t*, of the adjustable spheroidal head-blocks t^6, carrying said fingers and resting in concave bearings, whereby said fingers can be adjusted to different inclinations both vertically and laterally, substantially as described.

44. In a lasting-machine, the combination, with the radially-arranged crimping-fingers *t*, of the threaded rods t^9 t^{12}, connected to said fingers, and the engaging gears t^{10} t^{13}, for imparting simultaneous and independent movement to said fingers, substantially as described.

45. In a lasting-machine, the combination, with the radially-arranged crimping-fingers *t*, of the threaded rods t^9 t^{12}, connected to said fingers, the engaging gears t^{10} t^{13}, for imparting simultaneous and independent movement to said fingers, and the rack and pinion for imparting movement to one of said threaded rods, substantially as described.

46. In a lasting-machine, the combination, with the radially-arranged crimping-fingers *t*, of the threaded rods t^9 t^{12}, connected to said fingers, the engaging gears t^{10} t^{13}, for imparting simultaneous and independent movement to said fingers, the rack and pinion for imparting movement to one of said threaded rods, and the universal joint t^{14}, through which said movement is imparted, substantially as described.

47. In a lasting-machine, the combination, with the independently-moving radially-arranged crimping-fingers *t*, of the driven eccentric t^{20} and connections, substantially such as described, for imparting a rising-and-falling movement to said fingers, substantially as described.

48. In a lasting-machine, a heel or toe crimper consisting of a number of independently-moving screw-actuated radially-arranged crimping-fingers, *t*, which converge and overlap as they move toward and diverge as they move away from the last, substantially as described.

49. In a lasting-machine, the combination, with a stretching mechanism for stretching the upper around the last and crimpers for folding over its edge, of a driving-shaft and connections for operating said stretching mechanism and crimpers in proper sequence, a clutch for starting and stopping said shaft, a lever for operating the clutch, an automatic tripping mechanism, substantially as described, for tripping said clutch to stop the shaft after the stretching and after the folding operations, respectively, and an automatic tripping mechanism, substantially as described, for tripping the lever to disconnect it from the clutch after the clutching has been effected, substantially as described.

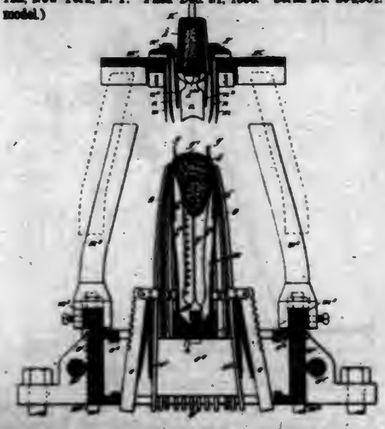
50. The combination, in a lasting-machine, of means for supporting the last, inner and outer rubbing-stretchers and co-operating lateral pressers for stretching the upper around the last, substantially as described, and side and heel and toe crimpers for folding over the edge of the upper, substantially as described.

51. The combination, in a lasting-machine, of an underneath support for the last, a telescopic downhold composed of inner and outer members, each having a vertical movement independent of the other, rubbing-stretchers and co-operating lateral pressers for stretching the upper around the last, substantially as described, and side and heel and toe crimpers, substantially as described.

52. The combination, in a lasting-machine, of the removable jack for supporting the last, the telescopic downhold consisting of two members each having a vertical movement independent of the other, rubbing-stretchers and co-operating lateral pressers for stretching the upper around the last, substantially as described, side-crimpers, and heel and toe crimpers composed of radially-arranged independently-moving crimping-fingers, substantially as described.

53. In a lasting-machine, the combination, with the last and means for stretching the upper around the last, of lateral pressers, substantially as described, arranged around the toe and along the sides of the last where the upper is to be stretched and adapted to be closed against the last to hold the upper in its stretched condition after the stretching, and mechanism for simultaneously closing said pressers against the last, substantially as described.

408,068. METHOD OF LASTING BOOTS OR SHOES. JOHN PATTEN, New York, N. Y. Filed Dec. 21, 1888. Serial No. 294,301. (No model.)

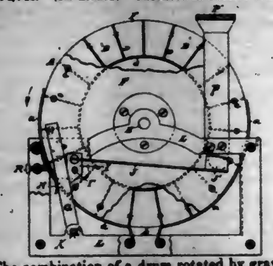


Claim.—1. The herein-described method of stretching the uppers of boots or shoes in lasting by the rubbing action of a moving flexible surface which is pressed laterally toward the toe and sides of the last and against those parts of the upper intervening between said surface and said parts of the last by a plurality of pressing instrumentalities which are stationary relatively to the movement of such surface, substantially as described.

2. The herein-described method of stretching the uppers of boots or shoes in lasting by the rubbing action of moving flexible surfaces which are pressed against the inner and outer sides of the upper to be stretched by instrumentalities which are stationary relatively to the movement of said surfaces, substantially as described.

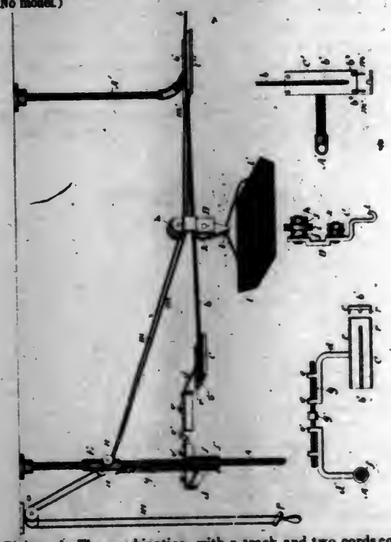
3. That improvement in the art of lasting boots or shoes which consists in stretching the upper over the last between moving flexible surfaces applied inside and outside of the upper, holding the upper in position after such stretching operation, and folding the edge of the upper over upon the insole and securing the same, substantially as described.

403,069. VENDING APPARATUS. STEPHAN FRASCHL, Paris, France, assignor to M. Morris Mihalovitch, Cincinnati, Ohio. Filed Dec. 27, 1888. Serial No. 294,741. (No model.) Patented in France Jan. 27, 1888, No. 186,871.



Claim.—The combination of a drum rotated by gravity and provided with a series of peripheral receptacles for the storage of vendible articles, said drum having at one end an annular series of projections, *c*, a spring-pressed catch-lever, G, having pins *c c'*, to engage said projections, the chute P, the swinging arm J, provided at one end with an eccentric, I, that bears on the catch-lever, and carrying at its other end a pan, J', that is normally supported beneath the chute to receive a coin dropped therein for tripping the catch-lever and permitting the drum to rotate by gravity, and the curb *a*, located beneath the drum and having a central opening for the discharge of articles, substantially as described.

403,070. STORE-SERVICE APPARATUS. GEORGE W. PRICE, Baltimore, Md., assignor to John R. Johnson, Franklin M. Dunn, and John F. Walters, all of same place. Filed Dec. 21, 1888. Serial No. 294,352. (No model.)



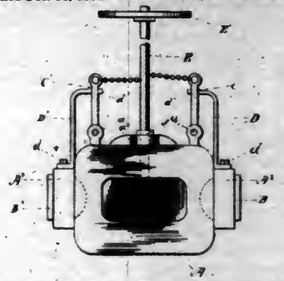
Claim.—1. The combination, with a track and two cords constituting a flexible extension, of a carrier provided with a roller having a central track-groove and a groove on each side thereof to receive the cords, the flexible extension being adapted to receive and to start the carrier.

2. The combination, with a track and two cords constituting a flexible extension, of a carrier having two rollers, one of which takes above the track and the other below, and one roller provided with a central groove and a groove on each side thereof to receive the cords, the flexible extension being adapted to receive and to start the carrier.

3. The combination, with a track and two cords constituting a flexible extension, of a vertical rod, A, a sleeve movable up and down on the said rod and provided with side rollers, a pulley, *o*, fixed at an elevation above the sleeve, a carrier provided with a roller having a central track-groove and a groove on each side thereof to receive the cords, the said two extension-cords both passing up under the side rollers of the sleeve to the elevated pulley *o* and then down.

4. The combination, with a track and two cords constituting a flexible extension, of an end supporting-plate, C, provided with a central bead or rib and a cord-guard each side thereof, and a carrier provided with a roller having a central track-groove and a groove on each side thereof to receive the cords.

403,071. CAR-COUPLING. WILLIAM W. PUTNAM, Bloomer, assignor of two-thirds to G. W. Spugle and J. H. Raney, both of Auburn, Ark. Filed Dec. 31, 1888. Serial No. 295,099. (No model.)



Claim.—In a car-coupler, the combination, with a draw-bar, A, having the head A' and the recessed lateral extensions A^2, of the clutch-blocks B B', located in the recesses of said extensions, and having curved points *b b* and flaring slots b^2, the levers C C', pivoted to extensions upon the upper surface of the draw-bar, the lower ends of the levers engaging the slots in the clutch-blocks, springs D D', secured at their lower ends to the lateral extensions A^2 and engaging the upper ends of the levers C C' and the vertical operating-shaft E, and the chains connecting the upper ends of the levers with said operating-shaft, substantially as described.

403,072. SCREW-SWAGING MACHINE. EDWARD E. GUILBY, Orange, N. J., assignor to Hayward A. Harvey, same place. Filed Feb. 6, 1889. Serial No. 298,842. (No model.)

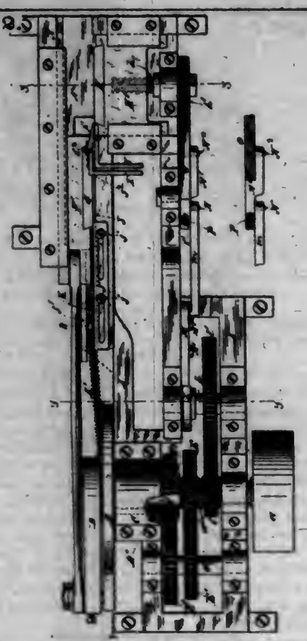
Claim.—1. In a screw-swaging machine of the type in which the thread upon the shank of the blank is formed by the rolling of the blank to and fro between the suitably-ribbed opposing faces of two dies, the combination, as herein set forth, of a supporting-die and an endwise-reciprocating die, and means for imparting to the reciprocating die a prescribed number of relatively short strokes for rolling the blank forward and backward along the face of the supporting-die, and then a longer stroke for effecting the discharge of the finished screw preparatory to the delivery of another blank to the operation of the dies.

2. The combination, as herein set forth, of a supporting-die, an endwise-moving die mounted upon a reciprocating carrier, a movable crank-arm, a pitman connecting said carrier with a crank-pin inserted in said movable crank-arm, and a cam for varying at prescribed intervals the distance of said crank-pin from the axis of the crank-shaft and correspondingly varying the movement of said reciprocating carrier.

3. The combination, as herein set forth, of the supporting-die H, the endwise-moving die G, the reciprocating-die carriage F', the pitman F, the radially-movable crank-pin *d*, the crank-pin cam B, loosely mounted upon the crank-shaft *a'*, and suitable gearing for rotating said cam at a speed varying in prescribed degree from the speed of rotation of said crank-shaft.

4. The combination, as herein set forth, of a supporting-die, an endwise-reciprocating die, means for producing an elongated stroke of said reciprocating die at prescribed intervals and thereby discharging the finished screw, and a deliverer for delivering a blank to the dies during the first portion of the next following return-stroke of said reciprocating die, whereby the blank is fed to the same end of the supporting-die as that from which the finished screw was discharged.

403,072.



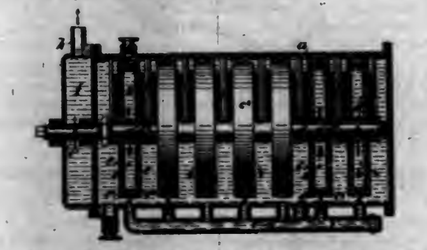
5. The combination, as herein set forth, of the slide-bar or deliverer J, with the shouldered arm *f'*, connected to the reciprocating-die carriage F', the pivoted arm K, the spring-tooth *k*, mounted upon the arm K, the tripper k^2, and the spring K', for the purpose of effecting the operation of the deliverer by motion derived from the die-carriage F'.

6. The combination, as herein set forth, of the dies G and H, the ways composed of the stationary bar *i* and the hinged bar *i'*, the deliverer J, and means, substantially as described, for imparting prescribed endwise movements to the die G and to the deliverer J, respectively.

7. The combination, as herein set forth, of a reciprocating die and a supporting-die, and appropriately-arranged ways for guiding blanks suspended in said ways, with a magnetic deliverer for delivering blanks successively from said ways to said dies.

8. The combination, as herein set forth, of the laterally-sliding die-carriage H', the feed-screw A, the pinion *h'*, the segmental gear O, the radially-adjustable crank-pin N, the pitman *m*, and slide-bar M, with the cam L and retracting-spring Q.

403,073. FILTERING APPARATUS. CARL W. RAMIN, Hamburg, Germany, assignor to Heinrich Jürgen Ernst Jessen and Johann Julius Adolph Kohlhil, both of same place. Filed Jan. 19, 1888. Serial No. 261,264. (No model.) Patented in Germany Dec. 18, 1884, No. 31,915, Apr. 2, 1886, No. 36,436, and May 14, 1887, No. 41,357; in England Apr. 24, 1886, No. 5,060, and in Belgium June 17, 1887, No. 77,846.



Claim.—The combination, in a filtering apparatus, of a chamber, one or more filtering-drums located therein and covered with felt or cloth and provided with brushes for cleaning the filtering-surface, a mixing-chamber located at one side of the main chamber for containing the filtering fibers and communicating with said main chamber, and an agitator located in said mixing-chamber, substantially as set forth.

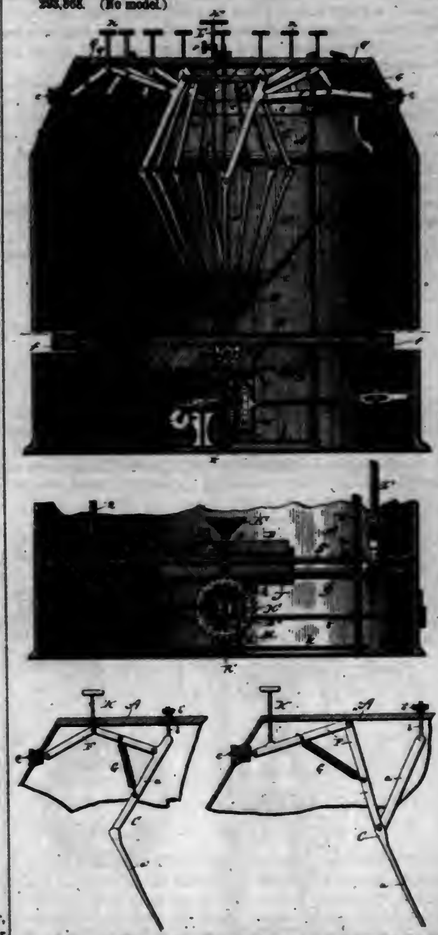
403,074. HITCH FOR THE ENDS OF CORD OR ROPE. GEORGE RACE, Norwich, N. Y., assignor of one-half to William Breese, same place. Filed Aug. 22, 1888. Serial No. 283,422. (No model.)



Claim.—1. In a hitch for ropes, &c., the combination, with a hook, of the swinging jaw arranged in contact with the side of the hook and pivoted at its upper edge to the extremity of the same, the jaw being provided at its rear side with a notch, I, and having a lateral stud or projection, L, substantially as specified.

2. In a hitch for ropes, the combination, with a hook, A, having a shoulder, D, at the rear side of its hooked portion, of the swinging notched jaw F, pivoted at its upper edge to the extremity of the hook, the said jaw being provided with a lateral stud or projection, L, and a curved flange or lip, K, which conforms to the outline of the notch and bears against the inner surface of the hooked portion of the hook A, substantially as specified.

403,075. TYPE-WRITING AND MATRIX-MAKING MACHINE. WILLIAM RENSTROM, Norristown, Pa. Filed Dec. 17, 1888. Serial No. 293,868. (No model.)



Claim.—1. The combination of a frame, a circular series of toggle-levers, operating-keys connected to the toggles, and a circular series of type-bars pivotally connected to the said toggle-levers, as and for the purpose set forth.

2. The combination of a frame, a circular series of jointed type-

bars, means for guiding these type-bars, a series of radial toggle-levers pivotally connected at their inner ends to the said jointed type-bars, operating-keys, and springs for restoring the parts to their normal positions, substantially as described.

3. The combination of a casing, the vertically-adjustable type-bars, the adjustable toggle-levers radially arranged and connected to the said type-bars, and operating-keys connected to the toggle-levers.

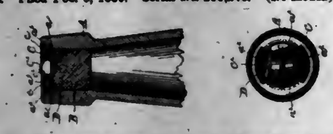
4. The combination of a frame, a pivotally-supported jointed type-bar depending from the said frame, a toggle-lever pivotally connected to this depending type-bar, an operating-key connected to the toggle-lever, and a spring for restoring the parts to their normal position, as and for the purpose set forth.

5. The combination of a frame, a depending pivotally-supported type-bar connected to this frame, this type-bar being constructed of two sections pivotally connected together at their adjoining ends, a toggle-lever, F, pivotally connected at its inner end to the joint or knuckle of the said jointed type-bars, an operating-key resting upon the said toggle-lever, and a spring for restoring the parts to their normal position, whereby the type-bar sections themselves form a toggle, as and for the purpose set forth.

6. The combination of a frame, type-bars, toggle-levers for operating the said type-bars, a vertically-guided ring arranged below the said toggle-levers and operated thereby, a depending operating-rod, P, connected to the said ring, a pivoted escapement-lever connected to rod P, a pinion provided with an internally-toothed escapement-wheel, and a spring-actuated carriage provided with a rack-bar upon its under side controlled by said pinion and escapement, as and for the purposes specified.

7. The combination, with a spring-actuated carriage provided with a rack-bar upon its under side, of a shaft journaled below the said carriage, a pinion upon this shaft and engaging the said rack-bar upon the carriage, two or more internally-toothed escapement-wheels connected to the said pinion, these escapement-wheels being provided with a different number of teeth, means for adjusting the said shaft, an escapement-lever constructed to engage the teeth of the said escapement-wheels, and means for operating the said escapement-lever, substantially as described.

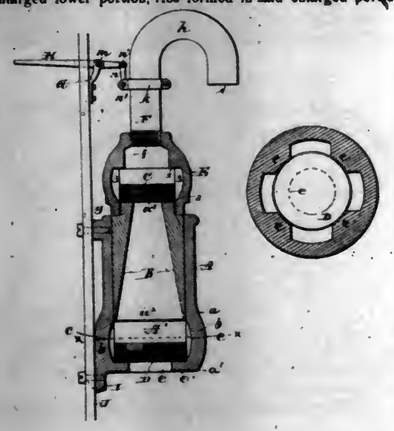
408,076. BOTTLE-STOPPER HOLDER. JOSIAS J. SANDS, Merton, Wis. Filed Feb. 9, 1889. Serial No. 299,576. (No model.)



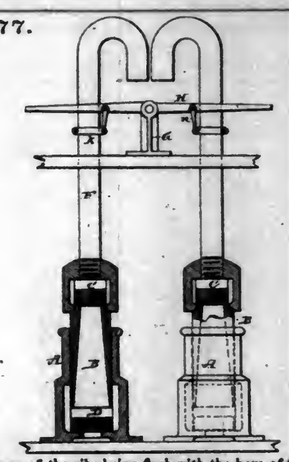
Claim.—The combination, with a vessel the orifice of which is provided with opposite shoulders a', separated by opposite spaces a^5, and with a stopper in said orifice, of a holding-bar, C, having a central arch or outward bend in which is formed a slot for the admission of a flat instrument by which the holding-bar may be rotated into and out of its place beneath the shoulders a'.

408,077. PUMP. URIAH P. SAWYER, Camilla, Ga., assignor of one-half to Joseph A. Dollar, same place. Filed Nov. 23, 1888. Serial No. 291,617. (No model.)

Claim.—1. The combination, with a cylinder having an internally-enlarged lower portion, ribs formed in said enlarged portion,



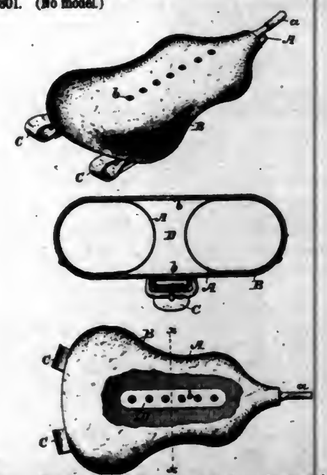
408,077.



the inner faces of the ribs being flush with the bore of the main portion of the cylinder, and a valve, of a hollow plunger and a discharge-pipe attached to the plunger, substantially as set forth.

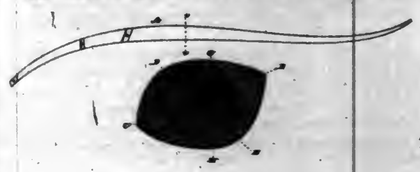
2. In a pump, the combination, with a cylinder enlarged internally near its lower end, ribs formed in this enlarged portion of the cylinder, and a valve covering the inlet-opening, of a plunger having a tapering bore, a cap secured to the upper end of the plunger and provided with internal ribs, a valve located within the cap and resting on the top of the plunger, and a discharge-pipe leading from the cap, substantially as set forth.

408,078. SADDLE FOR VELOCIPEDES. CHARLES F. SWETT, Auburn, Me., assignor of two-thirds to Charles R. Morse and Charles E. Kershaw, Jr., both of same place. Filed Sept. 29, 1888. Serial No. 286,801. (No model.)

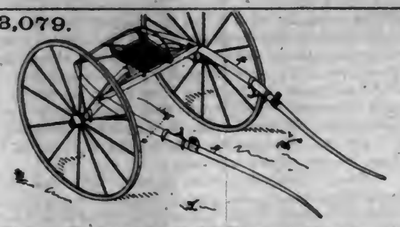


Claim.—The herein-described saddle for velocipedes, consisting of a pointed or saddle-shaped inflatable bag, a leather covering for the same, and suspending-straps secured to the said covering, one at the forward or small end of the saddle and two at the rear or broad end, substantially as shown.

408,079. THILL FOR SULKIES. SAMUEL TOOMEY, Canal Dover, Ohio. Filed Mar. 11, 1889. Serial No. 302,841. (No model.)



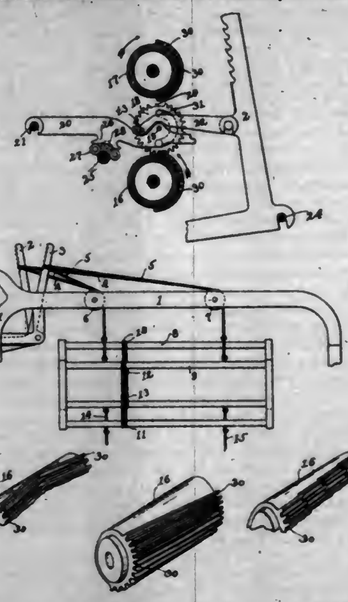
408,079.



Claim.—The herein-described thill, irregular in cross-section, the diameter of the cross-section being greatest in the oblique direction from B to C, and having bulges on opposite sides, one above and one below the horizontal axis, substantially as set forth.

408,080. SHEDDING MECHANISM FOR LOOMS. WILLIAM WATTIE, Worcester, Mass., assignor to the Knowles Loom Works, same place. Filed Jan. 17, 1889. Serial No. 296,661. (No model.)

Brief.—By setting the teeth on the cylinder-gears at an angle to the axis of rotation the initial tooth will engage the vibrator-gears successively, thereby raising the harness-frames successively, and by bringing the warp-threads to the central plane at different times cause them to pass each other with less than the customary friction.



Claim.—1. In a loom-harness mechanism, a cylinder-gear provided with teeth arranged at an angle to the axis of rotation of said gear, for the purpose stated, substantially as set forth.

2. In a loom-harness mechanism, the cylinder gear or gears having teeth thereon extending in a line not parallel to the axis of rotation of said gear or gears, for the purpose stated, substantially as shown and described.

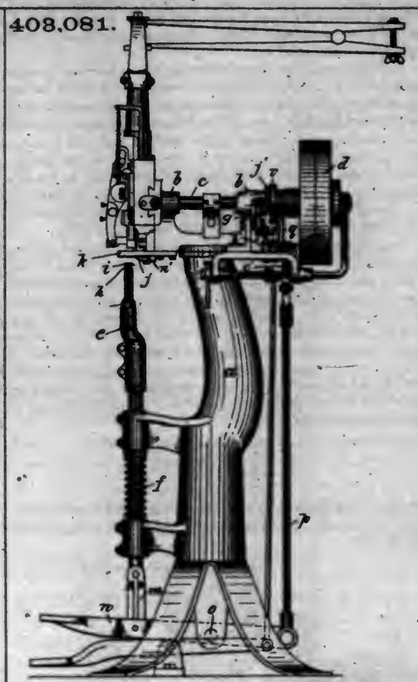
3. In a loom-harness mechanism, the cylinder gear or gears having teeth extending in a broken or zigzag line, for the purpose stated, substantially as set forth.

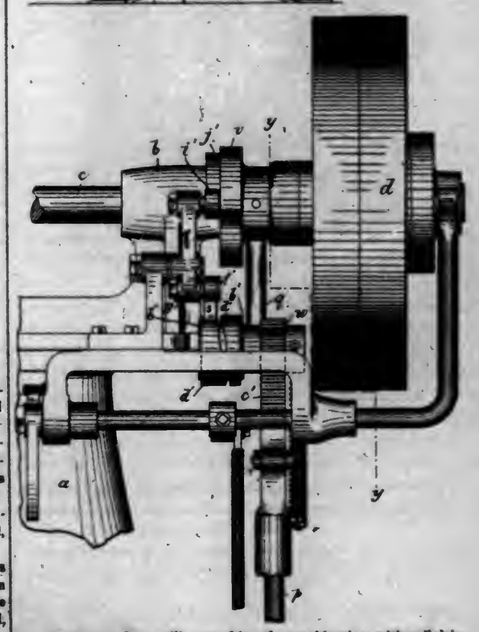
4. In a loom, the pattern-indicators controlling vibrator-levers and the vibrator-levers, vibrator-connectors, and harness-levers, in combination with vibrator-gears and cylinder-gears adapted to engage successively the vibrator-gears in the series, for the purpose stated, substantially as shown and described.

5. In a loom, the combination, with the pattern-indicators, the vibrator-levers, the vibrator-connectors, and harness-levers, of the vibrator-gears and cylinder-gears, the cylinder-gears provided with teeth adapted to engage successively the vibrator-gears, for the purpose stated, substantially as set forth.

408,081. BOOT OR SHOE NAILING MACHINE. MORRIS WILSE, Quincy, Mass., assignor to the Union Metallic Fastening Company, of New Jersey. Filed Dec. 22, 1888. Serial No. 294,400. (No model.)

408,081.





Claim.—1. In a nailing-machine, the combination, with nail-driving and work-feeding mechanism, of a horn having a heavy supporting-spring, *f*, mechanism whereby the horn is depressed at intervals to release the work from the pressure of said spring, and a foot supported on the horn by a lighter spring, whereby the work is lightly held while relieved of the pressure of the spring *f*, as set forth.

2. In a nailing-machine, a vertically-movable horn provided with a spring-supported foot adapted to rotate in the horn, combined with an edge gage or guide for the work, as set forth.

3. In a nailing-machine, the combination of a horn having a foot,

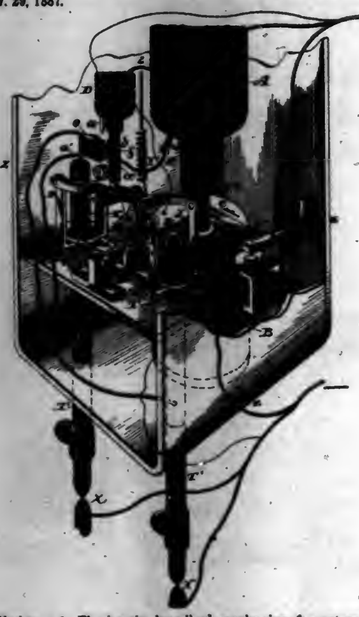
i, the throat *k*, the movable gage *j* on said throat, and the plate *n'*, engaged with said gage and having a diagonal slot, *p'*, and a fixed guiding-pin, *o'*, as set forth.

4. In a nailing-machine, the combination of the horn and its supporting-spring *f*, the pivoted bell-crank lever having a pinion on one of its arms and a collar or hub, *b'*, affixed to said pinion, the spiral band or brake surrounding said hub and having one end supported by the bell-crank lever, the rod *p*, having a rack meshing with said pinion, a treadle connected with the horn and the rod, a cam on the driving-shaft whereby the bell-crank lever is displaced periodically, and means for compressing the band or brake upon the hub during the displacement of the bell-crank lever, whereby the pinion is locked and the rod *p* is rigidly connected to the bell-crank lever, as set forth.

5. In a nailing-machine, the combination of the horn and its supporting-spring *f*, the pivoted bell-crank lever having a pinion on one of its arms and a collar or hub, *b'*, affixed to said pinion, the spiral band or brake surrounding said hub and having one end supported by the bell-crank lever, the rod *p*, having a rack meshing with said pinion, a treadle connected with the horn and the rod, a cam on the driving-shaft whereby the bell-crank lever is displaced periodically, a cam, *j'*, operated by the driving-shaft, and a lever, *g'*, pivoted to the frame of the machine and having one arm arranged to be moved by the cam *j'* and another arm in contact with a lug on the free end of the band or brake, as set forth.

REISSUES.

11,002. ELECTRIC-ARC LAMP. CLARENCE R. NOBLE, Cleveland, Ohio. Filed Feb. 15, 1889. Serial No. 300,078. Original No. 374,129, dated Nov. 29, 1887.



Claim.—1. The herein-described mechanism for automatically switching the current from one set of carbons to the other, consisting of the magnet D, carrying a coil of fine wire which is located in a shunt around the arc, and also a coil of coarse wire which is adapted to form a part of the main circuit, the core of said magnet being movable, connected with the tilting lever *h*, and carrying contact-piece *b'*, in combination with two pairs of contacts so arranged that when the piece *b'* bridges one pair the main current shunts the magnet D, and when it bridges the other pair the main current passes through the said magnet, as set forth.

2. In an electric lamp in which two sets of carbons are operated successively, the combination, with a tilting lever carrying at each end a clutch for operating to feed each set of carbons, of an arm, K, magnet D and its core, and spring Y', for making operative successively the clutches when they are thrust within its reach by the tilting lever, the motions of the lever being controlled by the partial or entire consumption of a set of carbons, as specified.

3. In an electric lamp, a slotted core for the main and shunt magnets, a slotted block sliding within the slot in the core, a pin passing through the core and a slot in said block, an arm connected with said pin, and a pair of contacts adapted to be brought together by the movement of said arm, the said contacts completing a circuit to cut out the lamp, substantially as described.

4. The combination, in an arc lamp, with the coarse and fine wire magnets for establishing and regulating the length of the arc, of a magnet carrying a coil of coarse and fine wire, the fine wire being in a shunt around the arc and the coarse wire adapted to be thrown in circuit with the second set of carbons, and having a movable core which is attached to one end of a tilting lever, which carries at each end a clutch to feed each set of carbons, and a spring connected to the other end of said lever to counterbalance the pull of the magnet, and an arm extending beneath each clutch to operate successively the clutches when they are lowered upon it by the tilting lever, the motions of the lever being controlled by the partial or entire consumption of a set of carbons, as described.

5. In an electric-arc lamp in which two sets of carbons are burned successively, the combination of arc establishing and regulating magnets, a core movable therein, clutches, an arm actuated by the movable core and extending beneath the clutches, and a device engaging both clutches for holding them, one at a time, out of the way of the arm when the latter moves up to establish the arc.

6. The herein-described mechanism for automatically switching the current from a burned-out set of carbons to an unburned set of carbons, consisting of an independent circuit for each set of carbons, and the arc establishing and regulating mechanism, in combination with a tilting lever carrying at each end a clutch for feeding each set of carbons, a magnet carrying a coil of coarse and fine wire, the fine wire being in a shunt around the arc and the coarse wire adapted to be thrown in circuit with the second set of carbons when the first set has been consumed, the core of said magnet being movable and carrying a contact-piece which plays between two pairs of contacts so arranged that when the said contact-piece bridges one pair the main current passes through the first set of carbons and shunts the said magnet and the second set of carbons, and when the contact-piece bridges the other pair of contacts the main current passes through this magnet and the second set of carbons and shunts the first set of carbons, substantially as set forth.

7. A cut-out for an electric-arc lamp, consisting of the main and shunt arc establishing and regulating magnets, respectively, of a slotted core movable therein, a pin passing through the side thereof, an arm secured to said pin, a slotted block inserted in the slot in the core and hung on said pin, a spring supporting the weight of said core, and a pair of contacts adapted to be brought together to cut out the lamp by the movement of said arm, the movement of said arm being produced when the shunt-magnet increases in strength abnormally, due to the consumption of the carbons in the lamp, substantially as described.

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DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

DANIELS *v.* MORGAN.

Decided May 1, 1889.

1. RIGHT OF THE COMMISSIONER OF PATENTS TO REHEAR THE DECISIONS OF HIS PREDECESSOR IN OFFICE—HISTORY AND REVISIONS OF RULE 144 OF THE RULES OF PRACTICE DISCUSSED AND DECISIONS THEREUNDER REVIEWED.

Rule 144 had its origin in an executive order, was transformed into a judicial rule when the Commissioner of Patents was, by act of July 1, 1870, substituted for the Supreme Court of the District of Columbia as the tribunal having final jurisdiction, and at a later date the office of Commissioner was recognized as a continuing one, placed upon the same footing as a court, and given the power of granting new trials.

2. JURISDICTION OF THE COMMISSIONER TO REHEAR.

Rule 144, based upon the procedure in courts of law, does in terms confer, and was intended to confer, upon the Commissioner jurisdiction to rehear the decisions of his predecessor when grounds other than those based on fraud, error in computation, or newly-discovered evidence are alleged and set forth in motions filed for the rehearing of such decisions.

3. DUTIES OF THE COMMISSIONER DEFINED—WHICH ARE SUBJECT TO REVIEW.

The duties of the Commissioner of Patents are in part administrative and in part of a judicial nature. In the discharge of the latter duties he acts as the direct representative and agent of the law, subject to no appeal excepting to the tribunals expressly designated by statute. The rule limiting the right of an administrative officer to review his predecessor's decision to the three cases specified may be applicable to the Commissioner in his capacity as an administrative officer; but it is clear that it is not binding upon the Commissioner in the discharge of his judicial duties.

4. IN DISCHARGE OF OFFICIAL DUTIES, REASONABLE RULES AND REGULATIONS ARE VALID.

Since the Commissioner of Patents in the discharge of his judicial duties in determining the question of priority between interfering parties exercises the function of a court, reasonable rules and regulations, based upon analogies derived from the procedure in courts of law, are valid rules and regulations when prescribed by the competent authority.

5. IN INTERFERENCE PROCEEDINGS A REHEARING OTHERWISE ALLOWABLE SHOULD NOT BE BARRED BECAUSE OF A CHANGE IN COMMISSIONER.

It certainly would be a hardship if in an interference proceeding, when the Commissioner who rendered the decision would on sufficient showing have been swift to afford a rehearing, the defeated applicant should be without remedy because of the succession to office of a new Commissioner, and a rule adapted to prevent such a result certainly commends itself as a part of a system of procedure designed to do justice between parties who are asking the Patent Office to determine which of them is the prior inventor of an invention which can be patented to but one of them.

MOTION to dismiss motion for rehearing.

MECHANISM FOR COILING WIRE RODS.

Application of Fred. H. Daniels filed June 26, 1886, No. 206,323. Application of Charles H. Morgan filed June 24, 1886, No. 206,009.

Mr. Charles H. Burleigh for Daniels,
Mr. Anthony Pollok for Morgan.

MITCHELL, *Commissioner:*

On March 22, 1889, my predecessor, having previously heard the parties to this interference, awarded priority of invention to Morgan. On the 26th day of March a motion for rehearing was filed, and under the Commissioner's direction the motion was assigned for hearing on April 16, 1889. At that time it was fully understood by him that his successor was to take charge of the Office from and after the 1st day of April.

The motion for rehearing, alleging that in the former decision were palpable errors of law and fact, came before me for disposition on the day fixed by the former Commissioner. Thereupon counsel for Morgan presented a motion to dismiss the motion of Daniels for rehearing, stating the ground of said motion as follows:

The ground is that the said motion for rehearing cannot be entertained by the Commissioner, inasmuch as it asks for a reconsideration of a decision of his predecessor upon the same facts and evidence upon which such decision was based, contrary to the rule of the Patent Office and to the rule and practice of all the executive departments of the Government.

In support of this motion it was urged that by the practice of all the executive departments of the Government no officer has the right or the power to re-examine a question finally disposed of by his predecessor, excepting in the cases either of fraud, error in computation, or of the discovery of new evidence, and that Rule 144 of this Office was intended to give no greater power of reconsideration to a new Commissioner than he would have if it contained a limitation to the three cases specified. It was also contended that if the rule gives any greater latitude for reconsideration than the foregoing it is to that extent in contravention of law and should be disregarded.

Two questions therefore arise: *First*, what is the lawful construction of Rule 144? *Second*, if it is intended to confer, and does in terms confer, upon the Commissioner any greater power of reconsideration than that based upon fraud, error in computation, or newly-discovered evidence, is such rule to that extent void?

Rule 144 is as follows:

Cases which have been deliberately decided by one Commissioner will not be reconsidered by his successor, except in accordance with the principles which govern the granting of new trials.

This rule was first enacted in its present form in the year 1879, and was re-enacted in the revision of the Rules of the Patent Office under date of April 13, 1888, by my predecessor, with the approval of the then Secretary of the Interior, pursuant to section 483 of the Revised Statutes, which is as follows:

The Commissioner of Patents, subject to the approval of the Secretary of the Interior, may from time to time establish regulations, not inconsistent with law, for the conduct of proceedings in the Patent Office.

Although the rule in its present form dates from

the year 1879, as already stated, I find that rules regulating the power of a Commissioner to reconsider the action of his predecessor have existed from an early date. As early as 1849 the following was one of the printed rules:

> A decision deliberately made and affirmed by one Commissioner cannot be disturbed by his successor. Some years since the evils arising from such revisions became so apparent and embarrassing that a positive rule to that effect was adopted. It was submitted to and approved by the President of the United States. This Office cannot, therefore, except under extraordinary circumstances, disturb decisions so reaffirmed, but must refer all who consider themselves aggrieved to their remedy by appeal. For instructions with regard to which or withdrawal see sec. VI, par. 3 & 4. For instructions relative to interfering applications, sec. VI, par. 5.

The sections referred to provide a remedy by appeal to the Chief Justice of the District Court of the District of Columbia.

In the printed edition of August 1, 1871, the rule is as follows:

> Cases which have been deliberately decided by one Commissioner will not be reconsidered by his successor upon the same state of facts. They may, however, be reopened in accordance with the general principles which govern the granting of new trials.

It will thus be seen that power was given to one Commissioner to reconsider the decisions of his predecessor under certain limitations prescribed by the rule. One reason for conferring the power of reconsideration, doubtless, was the abolishment by the act of July 1, 1870, of the remedy by appeal to the Supreme Court of the District. It is noticeable that when the right of appeal was done away with the right to a new trial was recognized; but it is noticeable also that the rule seems to be hostile to a reconsideration "upon the same state of facts." In the edition of December 1, 1879, however, the rule was put into the form which now appears in Rule 144, in which occurs the significant omission of the words "the same state of facts." It will thus be seen that the rule under consideration, having its origin in an executive order, was transformed into a judicial rule when the Commissioner of Patents was, by the act of July 1, 1870, substituted for the Supreme Court of the District of Columbia as the tribunal having final jurisdiction, and that at a later date the office of Commissioner was recognized as a continuing one, placed upon the same footing as a court, and given the power of granting new trials, with no proviso forbidding reconsideration upon the same state of facts.

It will be remembered that the words "the same state of facts" were first omitted from the rule in the edition of December 1, 1879. But in *Huttner et al.* v. *Knox et al.*, decided March 6, 1879, (C. D., 1879, 231,) Commissioner Paine seems to have understood the second clause of the rule then existing as warranting the opening of a case for a rehearing in accordance with the general principles which govern the granting of new trials, even when there was no new evidence presented. This was shortly before he caused the rule to be redrafted into its present form. Again, in the case of *Packard* v. *Sandford*, (C. D., 1879, 315,) decided December 12, 1879, the same Commissioner says:

> It is also true that upon a motion for a rehearing or for a new trial the findings of fact will not be disturbed unless wholly unsupported by or manifestly against the facts.—

thus showing that in his opinion rehearings and new trials were to be regarded as interchangeable terms under the rule, and that the rule would not stand in the way of the correction of manifest errors in the former decision. I find, too, that it has been customary for my predecessors to construe the rule so as to include other grounds for reconsideration than fraud, newly-discovered evidence, and miscalculation. Thus in the case of *Stevens* v. *Putnam*, (C. D., 1880, 164,) Commissioner Marble says:

> My predecessor, on April 15, 1880, issued an order allowing the present motion on behalf of Putnam for a rehearing of this interference to be made. The grounds upon which this motion is based are alleged errors of law and fact in the findings of my predecessor in that portion of his decision rendered April 10, 1880, wherein priority of invention as to the first issue of the interference was awarded in favor of Stevens.

After discussing the alleged errors of fact and the law involved, the Commissioner adds:

> I must therefore hold that the first ground in the motion for rehearing is well taken, and that there was an error in the finding that Stevens was the first to conceive the invention at issue. I have reached this conclusion realizing fully the fact that to warrant the grant of a motion of this character the error must appear to have been such a one as would entitle the defeated party to a new trial in the courts, and I should feel great hesitation in disturbing the judgment of my predecessor were I not satisfied from the proofs that substantial justice requires me so to do.

In the case of *Atha* v. *Wheeler* (MS. Dec., Vol. 34, 188) this rule (then Rule 139) was interpreted by my predecessor as follows:

> Rules 137 and 139 seem to control this motion. The latter provides that "cases which have been deliberately decided by one Commissioner will not be reconsidered by his successor except in accordance with the principles which govern the granting of new trials."
>
> Some attempt was made in the argument to take the case out of this rule by claiming that the decision had not been "deliberately" made by the preceding Commissioner, because of the doubt or uncertainty expressed by him as to where the priority belonged, and because of the expression in his decision "without going into the evidence in detail," &c. But the fact that the case is close and the mind, after examination of the evidence, not wholly satisfied, does not suggest the idea of non-deliberation, but rather the contrary; and as to the expression "without going into the evidence," &c., it is clear, and simply means without analyzing or attempting to set out the evidence in detail in his opinion, and cannot justify the inference attempted to be drawn that he had not gone into or examined the evidence fully or deliberately.
>
> I see no justification for taking this motion out of the rule. Indeed, but for this rule it is doubtful if there could be any rehearing in any case under any circumstances. Such appeals and decisions are effectual by operation of the statute.
>
> What then are the principles of new trials?
>
> *First.* The former decision has the force and effect of a verdict of a jury or a finding of a court.
>
> *Second.* A new trial will not be granted except where the verdict is unsupported by evidence or is manifestly the result of prejudice, bias, or passion, or where, the facts being conceded, there has been a clear error or mistake in the application of the rules of law to them.

Whatever view may be taken as to the correctness of this interpretation of the rule, it is certainly clear that it was regarded by Commissioner Hall as conferring jurisdiction to reconsider other cases than those based upon fraud, miscalculation, or newly-discovered evidence, and it is equally clear that it must have been intended, when it was re-enacted by the same Commissioner (with the approval of the Secretary of the Interior) who had thus interpreted it, to confer at least as comprehensive a power of revision as had been by him ascribed to the same rule before its enactment.

In view of this history of the development of the rule and of the expositions of it by former Commissioners and of its re-enactment after such expositions had been given to it, and in view also of its manifest meaning upon its face, I have no doubt that the power of reconsideration conferred by it is not limited to cases of fraud, miscalculation, and newly-discovered evidence—that is to say, is not limited so as to be merely declaratory of the rule which is claimed to be applicable to purely administrative officers.

The remaining question is whether, so expounded, the rule is contrary to law, to the extent to which it

aims to confer jurisdiction in motions for reconsideration upon other grounds than the three grounds specified. If I had any serious doubt upon this question I should proceed with great caution. It would certainly require a strong case to justify me in declaring that a rule deliberately enacted by competent authority is either wholly or in part invalid. Especially is this true in view of the concession made at the hearing that if I have no jurisdiction then Morgan would be entitled in any event to compel me, by mandamus, to issue a patent, under the decision of my predecessor, without reference to my own opinion, because in that case my action would be wholly void, and I therefore think that it would be my duty in any other case than a very clear one indeed to uphold the rule as established and leave any aggrieved party to the clear remedy pointed out. In this instance, however, it seems to me very clear that Rule 144 is the result of a lawful exercise of the authority reposed in the Commissioner of Patents and the Secretary of the Interior to establish rules and regulations.

The duties of the Commissioner of Patents are in part administrative and in part of a judicial nature. In the discharge of the latter duties he acts as the direct representative and agent of the law, subject to no appeal excepting to the tribunals expressly designated by statute. (*Butterworth* v. *Hoe*, 112 U. S., 50.) This distinction between the judicial and administrative duties devolving upon the Commissioner is clearly drawn in the decision of the Secretary of the Interior in the matter of *Sargent*, (12 O. G., 475,) where the following language occurs:

> In the discharge of your judicial duties you hear and determine the rights of parties within the statute governed by the same rules as a court. In the discharge of your administrative duties, whether of a ministerial or directory character, the law must be executed according to its letter and intent.

While it may be admitted that the rule limiting the right of an administrative officer to review his predecessor's decision to the three cases specified may be applicable to the Commissioner in his capacity as an administrative officer, it is, I think, equally clear that it is not binding upon the Commissioner in the discharge of his judicial duties in determining questions *inter partes*, in such sense that the power of the Commissioner to establish rules and regulations, with the approval of the Secretary, is subordinate thereto.

Since the Commissioner in the discharge of his judicial duties in determining the question of priority between interfering parties exercises the function of a court, I cannot doubt that reasonable rules and regulations, based upon analogies derived from the procedure in courts of law, are valid rules and regulations when prescribed by the competent authority.

That this rule (144) is based upon the procedure in courts of law appears from the decision in *Insurance Company* v. *Wilson*, (8 Peters, 291, 303,) where the Supreme Court says:

> In this case the district judge seems to think that as the judgment was not rendered by him he has no power to grant a new trial, as he is not acquainted with the facts and circumstances which should influence his discretion in making such an order. * * But the district judge is mistaken in supposing that no one but the judge who renders the judgment can grant a new trial He, as the successor of his predecessor, can exercise the same powers, and has a right to act on every case that remains undecided upon the docket as fully as his predecessor could have done. The court remains the same, and the change of the incumbents cannot and ought not, in any respect, to injure the rights of litigant parties.

It is impossible for me to doubt that it was competent for the Commissioner of Patents, with the approval of the Secretary of the Interior, to make the practice in this Office in causes to be adjudicated between parties conform to the practice in the courts as thus recognized.

The argument from inconvenience adds but little to the weight of the argument derived from the fact that in determining interference cases the procedure of this Office is essentially like the procedure of a court, and yet it is worthy of consideration. In the pending case the decision of my predecessor was rendered on the 22d day of March, 1889. That the defeated party was entitled to a rehearing upon a proper showing no one would question, if that rehearing could have been had by the same Commissioner who heard the case originally; but it was practically impossible for my predecessor to accord such rehearing, the time being too limited. Hence the action of the Commissioner in causing a day to be fixed for bringing up the motion before me. It certainly would be a hardship if, in a case of such a nature that the Commissioner who rendered the decision would have been swift to afford a remedy, had opportunity been presented—and such cases might arise—the applicant should be without remedy because of the succession to office of a new Commissioner; and a rule adapted to prevent such a result certainly commends itself as a part of a system of procedure designed to do justice between parties who are asking the Patent Office to determine which of them is the prior inventor of an improvement that can be patented to but one of them.

I hold, therefore, that Rule 144 is not inconsistent with the law, within the meaning of section 483 of the Revised Statutes, but is a reasonable rule in aid of a procedure essentially judicial, and therefore the motion to dismiss the motion for a rehearing for want of jurisdiction is overruled.

It is not intended by this opinion to foreshadow to any extent the action of the Commissioner upon the motion for rehearing or to indicate any definite construction of Rule 144, but simply to hold that he is not without jurisdiction to grant a rehearing in a proper case, and that proper cases are not limited to the rule applicable to strictly administrative offices.

GREEN *v.* HALL *v.* SIEMENS *v.* FIELD.

Decided March 29, 1889.

1. PRACTICE IN THE PATENT OFFICE—MOTIONS FOR REHEARINGS.

   The practice of splitting up cases and allowing separate parties to file separate motions and present them at different times condemned. In interference proceedings motions for rehearings presented by the parties thereto ought to be heard at the same time, in order that the entire case may be disposed of at once.

2. MOTION FOR REHEARING OVERRULED—SIEMENS.

   Siemens's motion for rehearing overruled, and *Held*, *first*, that while the law does not require that a caveat shall give a complete and accurate description of the construction and details of an invention, the caveat filed by Field is a full and complete disclosure of the subject-matter in controversy. *Second*, that knowledge of foreign invention, although of an earlier date than an original invention in this country, is not necessarily a bar to a domestic patent.

3. SAME—GREEN.

   Green's motion for rehearing overruled because (*first*) it involves a question of merits which is *res adjudicata* by reason of the previous decision of the Commissioner and also that of his predecessor, and (*second*) because it shows no error in the former decision which Green seeks to have set aside

MOTION for rehearing.

ELECTRIC RAILWAYS.

Application of George F. Green filed May 15, 1886, No. 202,287. Application of Thomas Hall filed July 22, 1885, No. 172,325. Application of Ernst W. Siemens filed October 25, 1884, No. 146,473. Application of Stephen D. Field filed March 10, 1880, No. 4,752.

Mr. R. D. O. Smith and *Mr. G. W. Dyer* for Green.

Mr. E. N. Dickerson and *Messrs. Foster & Freeman* for Hall.

Mr. C. S. Whitman for Siemens.

Mr. F. L. Pope, *Mr. F. W. Whitridge*, and *Messrs. Marble & Mason* for Field.

HALL, *Commissioner:*

Since the Commissioner's decision of March 6, 1889, Green, Hall, and Siemens have respectively filed motions for a rehearing in this case. On the day of the hearing a motion was made by the counsel for Hall to postpone such hearing on account of the absence of counsel owing to professional engagements in other parts of the country. This motion not being sustained, Hall at once withdrew his motion for a rehearing, and took no part in the proceedings. Whether this was done with a view of renewing the motion at some future period it is impossible to determine; but I think it is proper to suggest the unadvisability of splitting up cases and allowing separate parties to file separate motions and present them at different times. Although there are four applicants in this controversy, there is but one case to which they are all parties, and motions for rehearing ought to be presented and heard at the same time, in order that the entire case may be disposed of at once.

It is the practice in many courts that when a motion for a new trial has been filed and a party subsequently sees proper to dismiss or withdraw it, such action precludes his right thereafter to file a similar motion, except when new matter has been subsequently discovered.

SIEMENS' MOTION.

Siemens presents no new points so far as I have been able to observe, and has simply reargued the merits of the case as they were originally presented. He insists—

First. That the caveat filed by Field on the 21st of May, 1879, did not disclose the invention, because it did not contain a specific description of the circuit-controller or manner in which it should be incorporated into the combination, but only suggested a circuit-controller. I am not able to accept this view of the meaning and construction of the caveat. The law does not require that a caveat shall give a complete and accurate description of the construction and details of the invention; and I may further say, however, that, in my opinion, this caveat is a full and complete disclosure of the invention. Every one of the elements embraced and described or spoken of was well known to those learned in the art, and with the description contained in this caveat all that was left to be done so far as the construction of the invention was concerned was for the mechanic.

Second. Siemens presents a legal proposition which is founded upon the allegation that Field did not believe himself to be the first inventor, because at the time he filed his application he had seen in a publication a description of Siemens's railway and knew that Siemens, although a foreign inventor, had made the invention at an earlier date than he (Field) had. He relies upon section 4923 of the Revised Statutes, and insists that an American applicant who is a true inventor, but who, before he files his application, becomes aware of the fact that an inventor in a foreign country has made the invention at an earlier date, is barred of his right to prosecute his application and obtain a patent. Siemens cites in support of the proposition *Forbush* v. *Cook*, (2 Fish., 668.) The quotation made by counsel is an imperfect one and does not fairly express the meaning of Curtis, judge. It should have been quoted as follows:

> The act of Congress of July 4, 1836, section 15, has provided that when it shall satisfactorily appear that the patentee, at the time of his making his application for a patent, believed himself to be the first inventor or discoverer of the thing patented, the same shall not be held to be void on account of the invention or discovery, or any part thereof, having been before known or used in any foreign country, it not appearing that the same, or any substantial part thereof, had before been patented or described in any printed publication. If you find that when Crompton made application for the patent, he believed himself to be the first inventor of the thing patented therein, his patent is not invalidated by the prior existence of the Witch loom in England. But in considering whether he did believe himself to be the original inventor of what was patented to him, it is material to determine whether he was, in fact, the original inventor thereof. If he was, there is an end to all inquiry on this subject. If he was not, still he may have believed himself to be so.

Many other cases might also have been cited, stating the same proposition, viz: that the evidence of an earlier invention or an earlier knowledge and use in a foreign country, which has been brought home to the knowledge of the American inventor, is competent and proper, and may be considered by the jury for the purpose of establishing the fact that the American inventor was not a true inventor, but borrowed the ideas or obtained the invention from such knowledge. But neither of these authorities intimates that foreign invention, although of an earlier date than an original invention in this country, bars the inventor here from his right to a patent. Indeed, the statute itself is express that such foreign invention shall not have this effect. *Roemer* v. *Simon* (95 U. S., 214) is to the same effect where it is said:

> Antecedent patents here or elsewhere are not set up in the answer; and it is clear that proof of prior use in a foreign country will not supersede a patent granted here, unless the alleged invention was patented in some foreign country. Proof of such foreign manufacture and use, if known to the applicant for a patent, may be evidence tending to show that he is not the inventor of the alleged new improvement; but it is not sufficient to supersede the patent if he did not borrow his supposed invention from that source, unless the foreign inventor obtained a patent for his improvement, or the same was described in some printed publication.

GREEN'S MOTION.

The entire argument in behalf of Green proceeds upon the proposition that the combination involved in the issue, with a galvanic battery as the generating source of power, is the equivalent of the same combination with a dynamo as the source of electric power. This question is *res adjudicata* in this case, and the motion which asks me to set aside my own decision upon the merits will also require me to set aside the decision of Commissioner Montgomery when the question was presented to him as to whether Green's original application of 1879 could be admitted into this interference.

The history of the case is as follows: Green's original application had been filed and he made a motion before the Office to be admitted into the interference, when a question arose as to whether his application showed the invention involved in the issue. The matter was referred to a committee, who reported to the Commissioner and advised him that the application did not show the invention. The Commissioner so held and overruled the motion of Green to be admitted into the interference. Thereupon, on May 15, 1886, Green filed the present application, by which he was admitted and introduced into the interference. It will thus be seen that Green has not taken any steps to relieve himself from the decision of Commissioner Montgomery, by mandamus or otherwise to compel the Commissioner to act, but has acquiesced in that ruling, filed a new application, come into the interference, and the case has been tried and heard upon that construction. I do not now feel myself justified in reversing that decision or reorganizing the case upon a different construction. Not only this, but I am satisfied that they are not equivalents. There is no question at all but that both of the elements—the galvanic battery and the dynamo-generator—supply electricity; but they supply it under different conditions and in a manner which requires different construction and arrangement for its utility.

There are many authorities holding that the question whether the introduction of one element is an invention over another may be satisfactorily determined by reference to the results. In this case the combination involved with a galvanic battery for the source of electric energy has never been introduced or made commercially valuable; but as soon as the dynamo was employed the invention at once assumed a status among the valuable and practical inventions of the world and was immediately recognized as such, and there is no limit to the results which may be obtained by its use. I might further add that the supply of electricity through the instrumentality of such a generator is such as to require different means of control and management in its practical application, and I am not prepared to believe that in a proper sense the use of such a generator is the equivalent of the galvanic battery.

The question of equivalency being settled, I do not see that any other question of importance has been urged against the correctness of the decision sought to be set aside. Green has shown that he experimented from 1874 to 1880 with models and devices involving all of the elements except the dynamo, for which he substituted the galvanic battery, and that during these experiments and while conversing with other parties he repeatedly suggested that he intended to employ a dynamo. Some ten or eleven witnesses have been introduced, who establish this fact with a great degree of certainty. Some of them testify that he represented he was going to purchase a dynamo as soon as he could, and expected to see what the results would be from the introduction of a dynamo instead of a galvanic battery. All this testimony can only have the effect, giving it its greatest force, of establishing a conception. It is not pretended that Green ever reduced the invention thus organized to practice; but, on the contrary, in 1878, when he constructed a railway with the combination involved, he still employed the galvanic battery. Giving to him, therefore, the full benefit of all he claims, he had made a conception of the invention at the early dates mentioned from 1874 to 1880, but had not reduced it to practice nor had he filed an application for the invention until 1886. There is no reason shown why Green should postpone filing his application, which is regarded by the Office as constructive reduction to practice, for so long a period. There is no pretense that he was not able to have furnished the necessary means to prosecute an application, and his omission to do so under the circumstances must be regarded as negligence. In other words, he is in the situation of one who has not prosecuted his conception with the necessary diligence to give him priority over another person who has conceived the invention and diligently prosecuted it by caveat and application, in accordance with the statute.

I see nothing to change the conclusions reached by me in the decision of March 6, 1889, and therefore I am forced to overrule both the motions.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—District of Massachusetts.

MCMURRAY *et al. v.* EMERSON.

Decided November 21, 1888.

INFRINGEMENT—ESTIMATING DAMAGES.

The basis for estimating damages for infringement should be the amount of profit or savings made by the use of the infringing device over what could have been made by the use of devices free and open to the public.

STATEMENT OF THE CASE.

This was an action for infringement of Reissue Patent No. 8,781, dated July 1, 1879, for an invention of Abel Barker, and Reissue Patent No. 10,672, dated December 15, 1885, for an invention of Jabez A. Bostwick, each invention being for an improvement in tools for soldering the caps or covers on tin cans, and both patents being owned by the plaintiffs as as ignees.

Mr. Benjamin Price and *Mr. Causten Browne* for the complainants.

Mr. A. H. Briggs for the defendant.

The court instructed the jury as follows:

NELSON, *J.:*

In this suit the plaintiff seeks to recover damages for the infringement of two patents of which he is the owner, the Barker patent and the Bostwick patent. These patents relate to improvements in tools for soldering tin cans. There does not seem to be any dispute between the parties as to the ownership of the patents nor as to their validity. The defendant concedes that the plaintiff owns them and that they are valid, and also that he has infringed them by the use of a tool in his tin canning establishment, and that tool has been produced and exhibited to the jury. The defendant also concedes, and the plaintiff accepts the concession as true, that the tool embodying the improvements has been used by the defendant in soldering fifty thousand tin cans.

In regard to the rule of law applicable generally to the case as to the construction which the jury are to give to the patents, it is not necessary for the court to make any extensive or elaborate explanation, be-

cause they will not be troubled with the consideration of any question as to their validity or as to the defendant's infringement; and it is only necessary for the court to read to the jury two prayers which the plaintiff has requested the court to give upon this branch of the case, and to say that the court adopts these prayers as containing a correct exposition of the law. The defendant concedes, also, that these prayers state the rule of law correctly.

In regard to the Barker patent, the plaintiff requests the court to give, and the court does give, this instruction: That the fifth claim of the Barker reissue patent is for a soldering apparatus consisting of a disk to melt and spread the solder, which disk is formed with a recess in its under side, to give room for the convex lid of the can and confine the soldering process to the outer edge of the lid, this disk being in combination with and mounted upon a rod movable independently of the disk, which rod holds the can-cap in place while the disk is moved down to the solder, and back and forth upon the solder, to melt and spread it evenly around the edge of the can-cap. And if the jury find that the defendant's soldering apparatus contains substantially such a disk mounted upon substantially such a rod, the disk and rod operating substantially in the same manner as described in plaintiff's patent and producing substantially the same results, the verdict must be for the plaintiff.

The second prayer is in regard to the Bostwick patent, and the plaintiff requests the court to give, and the court does give, this instruction: That the claim in the Bostwick patent is for a hollow soldering-iron having a handle and having its lower rim beveled, in combination with a rod located centrally within the hollow soldering-iron, to guide the soldering-iron properly to the cap to be soldered, and to hold the cap firmly till secured by the solder. And if the jury find that the defendant has used substantially such a soldering-iron and rod, combined and operated substantially as described in the Bostwick patent and producing substantially the same result, their verdict must be for the plaintiff. So upon the question of the validity of the patent, and also to the question of infringement, the jury will find a verdict for the plaintiff.

The more important question is the question of damages. It has been stated by the counsel that this is one of a number of cases, and that it is to be treated as a test case for the purpose of obtaining a judicial determination by a jury of a fair measure of damages for the infringement of the patents, in order that the verdict of the jury and the judgment of the court in this case may be used in obtaining settlements with other infringers and for ending other legal proceedings. Therefore it is necessary for the jury to consider very carefully what the damages are in this case, remembering that the public generally have some interest in the decision of the jury.

The jury will notice that the only evidence in the case upon the subject of damages is proof of what saving results in that part of the process of manufacturing canned goods which consists in fastening the cover by solder from the use of these ingenious inventions over the old process of using a soldering-iron. The plaintiff has produced evidence from persons familiar with the business and skilled in this manufacture, from which it appears that by the new process there is a saving of labor; that where by the old process a skilled workman could solder only 1,500 cans a day, under the new process a laborer less skilled can solder 4,000 cans a day, so that the actual saving resulting from diminished labor by the use of the new process over the old amounts, according to the plaintiff's computation, to $1.20 per 1,000 cans. There is also evidence that by the patented operation there is a saving of solder and less waste, and that where under the old process a pound of solder would be sufficient to seal or fasten only 80 cans, by the new process the same amount of solder will seal or fasten 150 or 160 cans. The plaintiff figures out, on this evidence, a saving of 75 cents per 1,000 cans in the quantity of solder used. Both together amount to $1.95 per 1,000 cans. The only evidence in the case is that which I have called your attention to, and that is all the evidence before you from which you can compute the damages to which the plaintiff is entitled for the infringement. It is frequently the case that a license-fee is established by the owner of a patent for the use of his invention, and that is ordinarily the basis upon which a jury estimates its verdict; but there is no evidence in this case of a license-fee ever having been established by the plaintiff for these patents or fixed by a court, and therefore the jury have no such evidence of that character to guide them. The jury have simply the saving which results from the use of the patented devices over the old process. Upon this evidence the jury are justified, if they see fit, in finding a verdict of $1.95 per 1,000 or $1.75 per 1,000, which was the amount suggested by the counsel for the plaintiff. There is no claim here that this amount should exceed $1.95 per 1,000 cans, and the jury therefore will be justified in finding that sum or any other less sum which they think would be a fair compensation to the plaintiff for the infringement of his rights as the owner of the patents. I will read to you the prayer which the plaintiff has asked the court to give. I am requested to instruct you that the jury are to award the plaintiff a sum equal to the actual damage caused by the infringement, and in forming their estimate of damages they are to consider as evidence of such damages the amount of profits or savings made by the defendant by the use of the infringing device over what the defendant could have made by the use of tools free and open to the public use; and I instruct you that in accordance with that prayer you are to award the plaintiff an amount equal to his damage, and you are to consider as evidence the gains or savings made by the defendant by the use of the patented device.

You are also to find the amount of the plaintiff's damages per 1,000 cans. The verdict which the clerk will hand to you will contain a memorandum of the number of cans on which the device has been used by the defendant—50,000—and you are to fill the blank with the amount which you find the damage to be per 1,000 cans.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

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The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1887, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

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Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Notice.

UNITED STATES PATENT OFFICE,
Washington, D. C., April 13, 1889.

To expedite the distribution of the mail in this Office, and to insure the prompt and certain delivery of communications to the divisions and officials having charge of the matters to which they relate, attorneys and correspondents are respectfully requested to enter upon the upper left-hand corner of amendments and other communications, if known to them, the number of the room and the name of the examiner or designation of the division to which the communication should be sent.

BENTON J. HALL,
Commissioner of Patents.

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Issue of May 14, 1889.

Patents	430	No. 403,082 to No. 403,501, inclusive.
Designs	16	No. 19,088 to No. 19,103, inclusive.
Trade-Marks	30	No. 16,561 to No. 16,590, inclusive.
Labels	3	No. 5,905 to No. 5,907, inclusive.
Reissues	None.	
Total issue	469	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	....	1	Nebraska	3	....
Arizona Territory	....	....	Nevada	....	....
Arkansas	2	....	New Hampshire	2	....
California	16	....	New Jersey	18	1
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Connecticut	16	....	New York	79	16
Dakota Territory	1	....	North Carolina	1	....
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Maine	1	....	Wisconsin	5	1
Maryland	6	....	Wyoming Territory	....	....
Massachusetts	33	....	United States Army	....	....
Michigan	15	....	United States Navy	....	....
Minnesota	4	....			
Mississippi	1	....	Total to citizens of the United States	405	29
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TO CITIZENS OF FOREIGN COUNTRIES.

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Belgium	....	....	Newfoundland	....	....
Bermuda	....	....	New South Wales	....	....
Brazil	....	....	Norway	....	....
Canada	3	....	Russia	1	....
Chili	....	....	Scotland	3	....
Costa Rica	....	....	Spain	....	....
Curaçoa	....	....	Switzerland	1	....
Denmark	....	....	Victoria	....	....
England	13	3			
Finland	....	....	Total to citizens of foreign countries	31	4
France	3	....			

DESIGNS.

19,088.—BOTTLE-CASE.—*William Bettmann*, New York, N. Y., assignor to *Restorff & Bettmann*, same place. Application filed October 18, 1888. Serial No. 288,470. Term of patent 14 years.

19,089.—CARPET.—*Louis Clémencet*, West Hoboken, N. J., assignor to *The Bigelow Carpet Company*, Clinton, Mass. Application filed April 15, 1889. Serial No. 307,354. Term of patent 3½ years.

19,090.—ORNAMENTATION OF PISTOL-HANDLES.—*Gilbert H. Harrington* and *William A. Richardson*, Worcester, Mass. Application filed August 8, 1888. Serial No. 282,253. Term of patent 14 years.

19,091 to 19,094, inclusive.—FABRIC FOR CLOAKS, &c.—*Frank T. House*, Port Chester, N. Y., assignor to *The Hawthorne Woolen Mills*, Glenville, Conn. Applications filed April 10, 1889. Serial Nos. 306,717 to 306,720, inclusive. Term of patents 3½ years.

19,095 to 19,097, inclusive.—KNITTED FABRIC.—*George D. Kinsey*, Brooklyn, N. Y., assignor to *The Australian Knitting Company*, Paterson, N. J. Applications filed April 12, 1889. Serial Nos. 307,031 to 307,033, inclusive. Term of patents 7 years.

19,098.—KNITTED FABRIC.—*Peter S. Kinsey*, Newark, assignor to *The Australian Knitting Company*, Paterson, N. J. Application filed April 12, 1889. Serial No. 307,034. Term of patent 7 years.

19,099.—ORGAN-CASE.—*Louis H. Marston*, Chicago, Ill. Application filed March 1, 1889. Serial No. 301,707. Term of patent 3½ years.

19,100.—OPERA-GLASS RECEPTACLE.—*Joseph E. Neiswanger*, Chicago, Ill., assignor to *William J. Jefferson*, same place. Application filed March 11, 1889. Serial No. 302,903. Term of patent 7 years.

19,101.—BROOM-HOLDER.—*John St. John*, Bridgeport, Conn., assignor to *The Smith & Egge Manufacturing Company*, same place. Application filed February 6, 1889. Serial No. 298,904. Term of patent 7 years.

19,102.—WATCH CHARM OR PENDANT.—*Theodore B. Stayner*, Providence, R. I. Application filed April 12, 1889. Serial No. 307,035. Term of patent 3½ years.

19,103.—SMOKER'S SET.—*William S. Whiting*, Waterbury, Conn., assignor to *Charles F. Trott*, same place. Application filed January 28, 1889. Serial No. 297,832. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,561.—SMALL CARDS, BANNERS, PANELS, HANGERS, FANS, CALENDARS, AND THE LIKE.—*Cosack & Co.*, Buffalo, N. Y. Application filed February 21, 1889. Used since January 1, 1887.
"The letter 'B' inclosed in a diamond-shaped figure."

16,562.—SEWING-MACHINES AND THEIR PARTS AND ATTACHMENTS. *Demorest Fashion and Sewing Machine Company*, New York, N. Y. Application filed January 23, 1889. Used since December 1, 1888.
"The word 'COLUMBIA.'"

16,563.—SMOKING-TOBACCO.—*Fishburne Bros.*, Roanoke, Va. Application filed January 11, 1889. Used since 1879.
"The words 'GOLD LEAF,' in combination with an outspread leaf of the tobacco-plant, the said phrase 'GOLD LEAF' being invariably set horizontally above the said pictorial representation of an outspread leaf of the tobacco-plant, and the said pictorial representation being invariably set horizontally below said phrase."

16,564.—BITTERS.—*The Hochstadter Company*, New York, N. Y. Application filed February 18, 1889. Used since January 8, 1889.
"The figure of a woman in a sitting posture, having in her left hand a wine-glass and her right arm resting on a bottle bearing an outline of the label used."

16,565.—SOCKS AND STOCKINGS.—*August Kitz*, New York, N. Y. Application filed March 27, 1889. Used since December, 1888.
"The representation of an arrow."

16,566.—BLACK SOCKS AND STOCKINGS.—*August Kitz*, New York, N. Y. Application filed March 27, 1889. Used since December, 1888.
"The words 'MIDNIGHT DYE,' inclosed in a crescent and the words 'GUARANTEED ABSOLUTELY FAST & STAINLESS.'"

16,567.—SOCKS AND STOCKINGS.—*August Kitz*, New York, N. Y. Application filed March 27, 1889. Used since December, 1888.
"The representation of a star with letter 'D' inside the same, and beneath said star the words 'MIDNIGHT DYE.'"

16,568.—EXTRACTS AND ESSENCES OF MEATS.—*John Lawson Johnston*, London, England. Application filed February 26, 1889. Used since November 2, 1886.
"The word 'BOVRIL.'"

16,569.—PERFUMERY.—*Ladd & Coffin*, New York, N. Y. Application filed March 16, 1889. Used since 1849.
"The word 'LUNDBORG.'"

16,570.—TOBACCO OF ALL KINDS, INCLUDING CIGARETTES.—*Joseph Meyer*, London, England. Application filed February 25, 1887. Used since 1870.
"The representation of two pyramids and a sphinx."

16,571.—REMEDIES FOR CHICKEN DISEASES.—*William F. Muchmore*, Morristown, N. J. Application filed March 22, 1889. Used since August 1, 1888.
"The word 'CHICKDUCKATURK.'"

16,572.—SOAP-POWDER.—*Rutherford & Barnes*, Brooklyn, N. Y. Application filed March 14, 1889. Used since March 1, 1889.
"The representation of a shield having a globe produced thereon, a crown surmounting the shield, and branches at each side of the shield."

16,573.—LOZENGES.—*A. Slauson & Co.*, New York, N. Y. Application filed March 9, 1889. Used since August 25, 1886.
"The word 'MEDALLION.'"

16,574.—LIQUID FOR HEALING BURNS AND FLESH WOUNDS.—*Henry Carl von der Lühe*, Brooklyn, N. Y. Application filed March 19, 1889. Used since January 1, 1888.
"The representation of a salamander in the central field of two concentric broad bands inclosing an annular or segmental space."

16,575.—[Withdrawn.]

16,576.—COMPLEXION-POWDER.—*Bettie L. Binford*, Topeka, Kans. Application filed January 24, 1889. Used since July, 1887.
"The words 'LA MARGUERITE.'"

16,577.—MEDICAL COMPOUND FOR ALL NERVOUS AND INFLAMMATORY DISEASES.—*Joseph Winslow Bird*, Millville, Ind. Application filed January 3, 1889. Used since August, 1887.
"The words 'DR. BOOTH'S.'"

16,578.—ALKALOIDS MADE FROM THE CALABAR-BEAN.—*C. F. Boehringer & Soehne*, Waldhof, near Mannheim, Germany. Application filed March 16, 1889. Used since April, 1888.
"The word 'ESERIDINE.'"

16,579.—FLOUR.—*Bourne, Graham & Fell*, London, England, and New York, N. Y. Application filed March 23, 1889. Used since March 20, 1889.
"The words 'LA FAMA.'"

16,580.—SHEET-METAL ROOFING.—*Caldwell & Peterson Manufacturing Company*, Wheeling, W. Va. Application filed March 23, 1889. Used since January 1, 1889.
"The words 'PEEPING ROOFERS.'"

16,581.—CACHOUX.—*Thomas Jackson*, Manchester, county of Lancaster, England. Application filed March 21, 1889. Used since 1849.
"The initials and words 'H. R. H. PRINCE ALBERT'S.'"

16,582.—CIGARS, CIGARETTES, AND CHEROOTS.—*L. Kahner & Co.*, New York, N. Y. Application filed March 5, 1889. Used since January 1, 1886.
"The words 'THE OLD OAKEN BUCKET.'"

16,583.—BRANDY.—*Edward Kane & Son*, Brooklyn, N. Y. Application filed December 13, 1888. Used since January 1, 1885.
"The representation of a series of three French coins arranged to touch circumferentially and to form a triangular figure upon a gold ground."

16,584.—RHEUMATIC REMEDIES.—*John Lloyd*, Wyoming, Pa. Application filed April 13, 1889. Used since February 20, 1889.
"The word 'RELAXOR.'"

16,585.—CONDENSED PUDDINGS.—*S. Elwood May*, Nyack, N. Y. Application filed February 8, 1889. Used since October 23, 1888.
"The three letters 'U F P.'"

16,586.—STONEWARE LAUNDRY TUBS AND SINKS.—*Henry McShane & Co.*, Brooklyn, N. Y. Application filed March 21, 1889. Used since October 11, 1886.
"The word 'CROWN' or the representation of a crown."

16,587.—COUGH-MEDICINE.—*The Piperine Medicine Co.*, Racine, Wis. Application filed March 23, 1889. Used since February, 1887.
"The word 'PIPERINE.'"

16,588.—REMEDIES FOR RHEUMATISM.—*Rumalto Manufacturing Co.*, Cleveland, Ohio. Application filed April 12, 1889. Used since April 4, 1889.
"The word 'RUMALTO.'"

16,589.—MEDICAL COMPOUND FOR THE CURE OF SNAKE-BITES.—*Howell Marshall Strange*, Beaver Valley, Ala. Application filed March 27, 1889. Used since January, 1887.
"The words 'SIC SEMPER SERPENTIBUS' associated with a representation of the Goddess of Liberty."

16,590.—RHEUMATIC REMEDIES.—*Dr. J. G. Wannamaker Manufacturing Company*, Orangeburg, S. C. Application filed March 16, 1889. Used since February 1, 1889.
"The word 'COHOSHINE.'"

LABELS.

5,905.—Title: "IRWIN'S POKE ROOT POWDERS."—*Barnett & Jones*, Atlantic, Iowa. Application filed April 22, 1889.

5,906.—Title: "HUNGARIAN OINTMENT."—*Charles A. Kish*, Chester, Pa. Application filed April 22, 1889.

5,907.—Title: "LIGHT WEIGHT STEEL FRAME PIANO."—*Albert Riley*, New York, N. Y. Application filed April 10, 1889.

DISCLAIMER.

248,930.—*Charles F. Henis*, Philadelphia, Pa. Patent dated November 1, 1881. IMPROVEMENT IN DISINTEGRATOR AND STRAINER. Disclaimer filed May 9, 1889, by *Thomas D. Mowlds*, executor of said *Henis*, deceased.

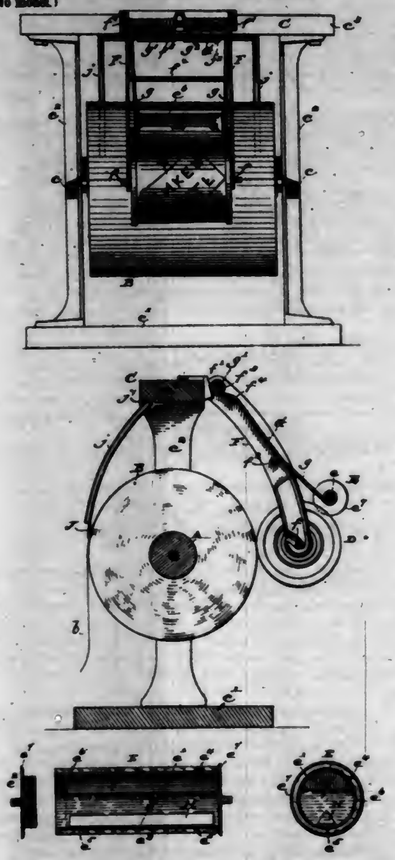
Enters his disclaimer to claim 2 of said patent, which is in the following words:

"2. In a disintegrator and strainer, the combination of a perforated cup or receptacle, a handle fixed thereto, and a handle pivoted to the receptacle and carrying a pressing-plate adapted to be vibrated therein or entirely withdrawn therefrom, substantially as set forth."

PATENTS

GRANTED MAY 14, 1889.

403,082. PRINTING DEVICE. STEPHEN G. ADAMS and CHARLES L. LEONARD, St. Louis, Mo. Filed May 7, 1888. Serial No. 273,040. (No model.)



Claim.—1. In a printing device, the hollow inking-roller E, having the circumferential outstanding flanges e^2 at its ends, closed at one end by the screw plug or stopper e^3, provided with a single longitudinal line of perforations, e^4, surrounded by the cloth e^5, which does not stand out quite as far as the flanges from the surface of the roller, and the interior loose bar, H, having a cross-section in the shape of an equilateral triangle, substantially as specified.

2. The herein-described printing device, composed of the frame C, having the base c', uprights c^2, and top plate or bar, c^3, the paper-roller A, journaled in bearings in the uprights c^2, the arm F, hinged to one side of the top plate and having the cross-bars f^3 and f^4, the coiled spring G, having the arms g, the inking-roller E, journaled in eyes in the ends of said arms, and the form-bearing roller D, journaled in the ends of the arm F, substantially as specified.

403,083. DRILL-CHUCK. MOSES L. ANDREW, Delhi, Ohio. Filed Feb. 14, 1889. Serial No. 299,853. (No model.)



Claim.—1. In a drill-chuck, the combination of the bit-holding head, the set-pin fitted to slide in said head, a screw-cap fitted over said head and pin, and a flaring ring within said cap to force the pin inward and clamp the bit-shank, substantially as set forth.

2. The combination, substantially as specified, of head A^2, having screw-threaded part a^3, inclined part a, and reduced end a', the said part a being perforated, as shown, the pin C, fitted to slide in said perforation, the ring E, fitted upon part a' and having its end flaring counter to part a of the head, and the screw-cap B, fitting over the reduced part a' and screw-threaded interiorly to engage the thread upon the head A^2, for the purpose set forth.

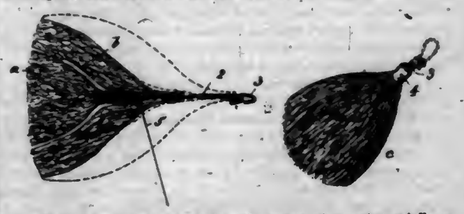
3. The combination, substantially as specified, of the chuck-head screw-threaded exteriorly and inclined at a, the pin c, fitted to slide through said inclined part, a spring having one end secured to the head and the opposite end secured to said pin, a flaring ring counter to the inclined part of the head, and a screw-cap to force said ring upon the pin for the purpose of securing the bit in the chuck.

4. In a lathe-chuck, substantially as described, the combination of the bushing F, adapted to fit the bore of said chuck and slotted upon one side, the latch F, fitted to play in said slot and hinged to the bushing, and a set-pin to force the latch inward, for the purpose set forth.

5. The combination of a chuck-head and a set-pin fitted to slide through said head, and means, such as shown, to force the pin inward and release the same, with a bushing having a hinged spring-latch, and a bit-shank having a flattened and inclined side upon which the latch presses and locks the bit against withdrawal when the set-pin is forced in, substantially as hereinbefore set forth.

6. The herein-described bushing for drill-chucks, consisting of the cylindrical shell F, having the outwardly-projecting flange f and slotted upon one side, the latch F, having the lug f', the pin f^2, passing through the flange f, and lug f', hinging the latch to the shell, substantially as specified.

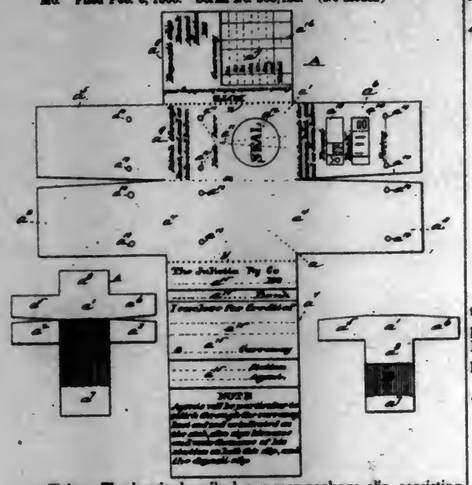
403,084. PLUME. WILLIAM P. BARNES, Florence, Mass. Filed Aug. 13, 1888. Serial No. 282,634. (No model.)



Claim.—1. A plume consisting of a center piece, substantially as described, having several successive tufts of wool, one above the other, secured thereto by a winding-wire, the outer one of said tufts enveloping the inner ones, but all having the same terminal length, substantially as set forth.

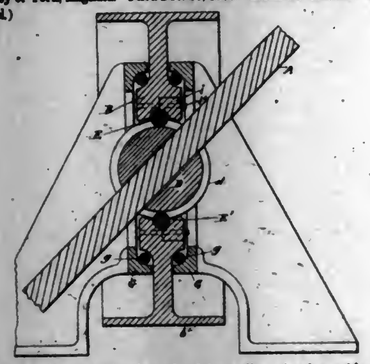
2. A plume consisting of a center of twisted wires, one of which wires has a hook formed on one end thereof, and several successive tufts of wool, one above the other, secured thereto by a winding-wire, substantially as set forth.

403,085. CURRENCY-PACKAGE. ENRIQUE S. BARRERAS, Kirkwood, assignor to the Buxton & Skinner Stationery Company, St. Louis, Mo. Filed Feb. 6, 1888. Serial No. 263,122. (No model.)



Claim.—The herein-described currency-package clip, consisting of the top and bottom parts adapted to be folded, and provided, respectively, with the laps and with the coupons, substantially as set forth.

403,086. DRIVE-PULLEY. WILLIAM H. BLENKLEY, Harrogate, County of York, England. Filed Dec. 20, 1888. Serial No. 294,213. (No model.)



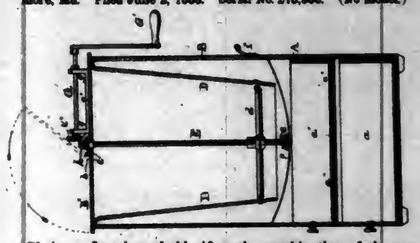
Claim.—1. The combination of a drive-pulley, circular guides or bearings encircling and supporting the outside of the pulley-hub, an axle provided with a spherical boss inside said pulley-hub, and permitting the plane of rotation of the pulley and the axis of rotation of the axle to be varied with reference to each other, and one or more balls interposed between the said boss and hub and engaging with both in the direction of rotation, thereby causing the said pulley and axle to revolve simultaneously.

2. The combination, with a drive-pulley having a spherical cavity in its hub, of an axle provided with a spherical boss fitting within said cavity, one of the said elements being provided with one or more curved lateral grooves, and the other element being provided with one or more square flat-bottomed receptacles, and a ball fitting into each receptacle and engaging with one of the said grooves, thereby causing the simultaneous revolution of the axle and pulley and permitting the plane of rotation of the pulley and the axis of rotation of the axle to be varied with reference to each other.

3. The combination, with a drive-pulley having a spherical cavity, and one or more curved lateral grooves in its hub, of an axle provided with a spherical boss having one or more square flat-bottomed receptacles in it, and a ball fitting into each receptacle and engaging with the corresponding groove in the hub, substantially as and for the purpose set forth.

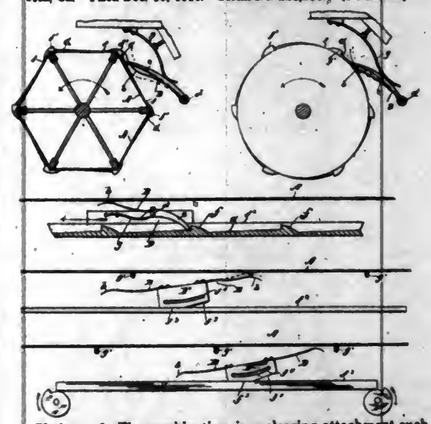
4. The combination, with a drive-pulley having a spherical cavity in its hub, and an axle provided with a spherical boss fitting within the said cavity, of one or more balls interposed between said boss and hub and engaging with both in the direction of rotation, thereby causing the axle and pulley to revolve together, and a ball-bearing for the said pulley to revolve in, substantially as and for the purpose set forth.

403,087. HOUSEHOLD SIFTER. HENRY S. BREWINGTON, Baltimore, Md. Filed June 2, 1888. Serial No. 275,886. (No model.)



Claim.—In a household sifter, the combination of the case A, the drawers *a a'*, the revolving case B, the open bottom pot, D, the perforated revolving plate *d*, shaft E, and operative gearing, the lid B', having the knob *b'*, and standards C, substantially as and for the purpose described.

403,088. BOLTING-CLOTH CLEANER. GEORGE S. BURNAP, Marietta, Ga. Filed Dec. 10, 1886. Serial No. 221,216. (No model.)



Claim.—1. The combination, in a cleaning attachment such as described and with the bolting material, a tilting traveling carriage provided with two sets of flexible rods or whippers and reversed bearings, ways co-operating with said bearings to maintain the whippers in position and guide the carriage, and devices, substantially such as described, acting upon the carriage to reciprocate and tilt the latter to bring each set of whippers into operative position alternately, substantially as described.

2. In combination with a flat bolting-surface, a reciprocating carriage supported upon ways and provided with one or more flexible rods or whippers held removed from the bolting-surface, ribs or projections engaging said rod or rods as they are reciprocated to set the latter in vibration, and cams acting upon the ways to elevate the carriage, substantially as described.

3. In combination with a horizontal bolting-surface, a reciprocating carriage supporting two sets of flexible whippers, guiding-plates having reversed inclines or bearings resting upon ways, and an endless belt at each end of the carriage, provided with a crank carrying a pin for engaging and tilting the carriage at the opposite ends of the bolt to alternately bring the whippers into operative position, substantially as described.

4. In combination with the traveling carriage, its two sets of whippers and the reversed bearings, the ways, the lifting-cams, the two endless belts, the arms on said belts, and the links connecting said arms to the carriage, substantially as described.

5. In combination with a horizontal bolting-surface, a reciprocating carriage provided with a flexible rod or whipper whose free end is held in proximity to the bolting-surface, ways upon which said carriage is guided, and ribs or projections engaging said flexible rod to set the latter in vibration and cause it while vibrating to impinge against the bolting material, substantially as described.

6. In combination with a horizontally-disposed bolting-surface, a reciprocating carriage supported upon ways, a flexible rod or whipper mounted upon the carriage, ribs or projections engaging said rod to set the latter in vibration, and inclines or cams operating upon the carriage to gradually advance the latter toward the bolting-surface while the rod is vibrating, substantially as described.

7. The combination, with a bolting-surface, of a reciprocating carriage or support, a flexible whipper mounted thereon, its freely-vibrating portion normally supported in proximity to but removed from the bolting-surface, and devices, substantially as indicated, connected to the support on which the whippers are carried for advancing the latter toward the bolting-surface while vibrating, substantially as described.

8. The combination, with a bolting-surface and an endless belt or chain supported upon pulleys, of a reciprocating cleaning attachment attached to the said belt or chain on the inner side thereof at a distance substantially equal to the radius of the pulleys, substantially as and for the purpose set forth.

9. In combination with a bolting-surface, an endless belt surrounding supports located at the ends of the bolting-section, and a cleaning attachment mounted to reciprocate beneath the bolting-surface, said attachment being pivotally connected to the traveling belt at a point below the upper line of bolting, substantially as described, whereby the cleaning attachment will be caused to traverse back and forth and in substantially the same plane beneath the bolting-surface, as set forth.

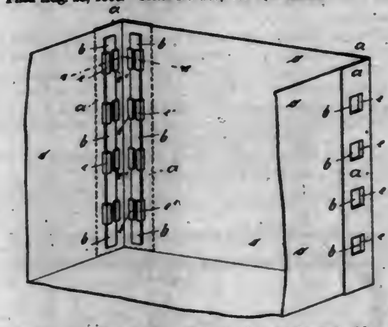
10. In combination, with a bolting-surface and a flexible vibrating rod held in proximity thereto, a reciprocating support upon which said rod is mounted for advancing the latter toward the bolting material as the vibrations of the rod diminish in length, substantially as described.

11. In combination with a bolting-surface and a vibrating flexible rod or whipper, a laterally-movable support for said whipper, and devices, such as described, engaging the whipper to set it in vibration, substantially as described.

12. In combination with a bolting-surface, a carriage reciprocating in a plane substantially parallel with said bolting-surface, and vibrating whippers mounted upon said reciprocating carriage in proximity to the bolting-surface.

13. In combination with a bolting-surface, a carriage reciprocating in a plane substantially parallel with the bolting-surface, and two series of vibrating whippers mounted upon said reciprocating carriage, one series operating alternately with the other as the carriage is reciprocated, substantially as described.

408,089. COLLAPSIBLE BOX. LEOPOLD CASPER, Berlin, Germany. Filed Aug. 25, 1888. Serial No. 283,779. (No model.)



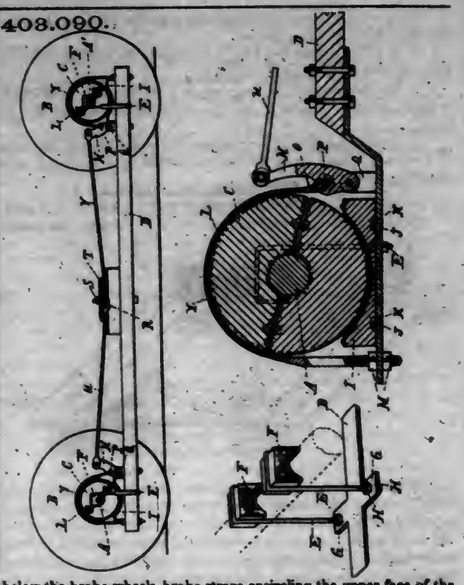
Claim.—A collapsible card-box having perforated side walls, *c*, and provided with edge-joinings *a*, having separated hooks *c c'*, arranged parallel and opposite to each other, passing through the perforations and secured by the metal strips *b*, which close the openings of the side walls, for the purpose as described.

408,090. CAR-BRAKE. GEORGE COLLIN, Detroit, Mich. Filed Oct. 29, 1888. Serial No. 289,379. (No model.)

Claim.—1. The combination, with a pair of brake-wheels secured upon the front and rear axles, respectively, of a brake-beam risingly and fallingly supported below such brake-wheels, brake-shoes supported upon the ends of the brake-beams below the brake-wheels, brake-straps encircling the upper face of each brake-wheel and having one end secured to the end of the brake-beams, and levers controlled by the brake mechanism pivotally secured near the ends of the brake-beams and having the free ends of the brake-strap secured thereto, substantially as described.

2. The combination, in a car-brake, of the brake-wheels secured to the front and rear axles, respectively, a brake-beam risingly and fallingly supported by means of hangers from the axles of the car, brake-shoes slidingly supported upon the ends of the brake-beams

408,090.



below the brake-wheels, brake-straps encircling the upper face of the brake-wheels and having one end secured to the ends of the brake-beams, and levers N, operated by the brake mechanism, pivotally secured near the ends of the brake-beams and having the other end of the brake-strap secured thereto, substantially as described.

3. In a car-brake, the combination, with the front and rear axles having brake-wheels secured thereon, of a brake-beam risingly and fallingly supported below such brake-wheels and carrying brake-shoes slidingly secured thereon, and the brake mechanism for vertically operating such brake-beam, substantially as described.

4. The combination, with the front and rear axles of a car having brake-wheels secured thereon, of a brake-beam loosely supported from the axles below the brake-wheels and provided with brake-shoes on the under side of the brake-wheels, a brake-strap encircling the upper face of the brake-wheels, and secured at one end to the outer end of the brake-beam and its other end to the power-lever, pivotally secured to the brake-beam and actuated by the brake mechanism, substantially as described.

5. In a car-brake, the combination of the brake-beam with the hangers E loosely supporting such brake-beam from the axles, the brake-shoes I, slidingly supported upon the ends of the brake-beam, and the levers N, pivotally secured to the ends of the brake-beam and operated by the braking mechanism to the straps L, encircling the upper face of the brake-wheels and adjustably secured to the outer ends of the brake-beam, and provided at the inner ends with eyes pivotally secured to the levers N, substantially as described.

6. In a car-brake, the combination, with the front and rear axles having the brake-wheels C secured thereon, the brake-beam D, extending below the brake-wheels and constructed in two parts, with the central part above the plane of the outer ends, the brake-shoe I, slidingly supported upon the outer ends of the brake-beams by means of pins J and slots K, the hangers E, loosely supporting the brake-beam from the axles, the bearings F, upon which said hangers engage, the levers N, pivotally secured near the ends of the brake-beams, the straps L, secured at one end to the outer ends of the brake-beams and pivotally connected at their inner ends to the levers N, the brake-lever R, pivotally secured to the brake-beam, and the brake-rods U and V, connecting the brake-levers with the levers N, substantially as described.

408,091. CARRIAGE-BOW. JAMES C. COSS, Cleveland, Ohio. Filed Mar. 5, 1888. Serial No. 301,536. (No model.)



Claim.—1. The within-described bow-socket, consisting of the tube A, the tube B fitted therein, and the slat-iron C, substantially as shown.

2. The within-described bow-socket, consisting of two tubes, one tube being fitted within the other, and the slat-iron, substantially as shown.

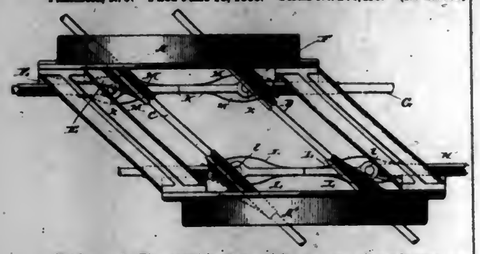
3. In a bow-socket, the double tube, one tube being fitted within the other, substantially as shown.

4. In a bow-socket, the tube B, having the slit *b*, in combination with the tube A, substantially as shown.

5. The combination, in a carriage-bow, of the tube A, the tube B, fitted within the tube A, and the short bow D, substantially as shown.

6. The combination, in a carriage-bow, of the tube A, the tube B, fitted within the tube A, the slat-iron C, and the short bow D, substantially as shown.

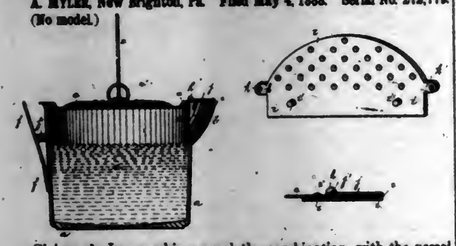
408,092. CONNECTOR FOR ELECTRIC RAILWAYS. LEO DAFT, Plainfield, N. J. Filed June 18, 1888. Serial No. 277,433. (No model.)



Claim.—1. The combination, with two sets of conductors arranged to cross each other at an angle, of a connector consisting, essentially, of a frame, supporting-arms connected to the frame for one set of conductors, and jaws connected to the frame for another set of conductors, and hinged arms connected to the jaws permitting the passage of the collector, substantially as described.

2. In a cross-connector for electric circuits, the combination, with the jaws connected to the terminals of the circuit, of hinged arms connected to the jaws, and springs arranged to maintain the arms in alignment with the jaws, substantially as described.

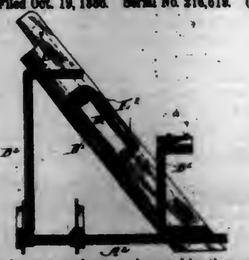
408,093. COOKING-VESSEL. EDWARD I. DAWES and WILLIAM A. MYLER, New Brighton, Pa. Filed May 4, 1888. Serial No. 272,779. (No model.)



Claim.—1. In a cooking-vessel, the combination, with the vessel having a pouring lip or spout, of the circular sheet-metal cover and the malleable-iron strainer extending over said pouring-spout, said strainer being secured to said sheet-metal cover, substantially as and for the purposes set forth.

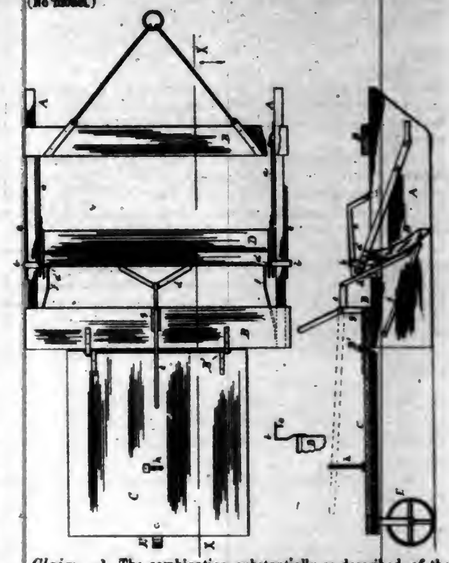
2. In a cooking-vessel, the combination, with the vessel, of a circular sheet-metal cover, a malleable-iron strainer secured thereto and having perforated wings cast thereon, and the flap journaled within said wings, the wings being turned up over pins or bearings on the flap, substantially as and for the purposes set forth.

408,094. HARVESTER ELEVATOR-FRAME. JAMES R. DEERING, Evanston, Ill. Filed Oct. 19, 1886. Serial No. 216,619. (No model.)



Claim.—In a harvester-elevator, in combination with the elevator-frame and the canvas-slides, a metallic sheet-lining located interiorly to the frame and exteriorly to the canvas-slides and secured by bolts passing through the supporting-posts of the frame and through the canvas-slides, substantially as set forth.

408,095. EARTH-LEVELING SCRAPER. DENNIS M. [illegible] and HIRAM W. CHILDS, Acampo, Cal. Filed June 8, 1888. Serial No. 276,541. (No model.)

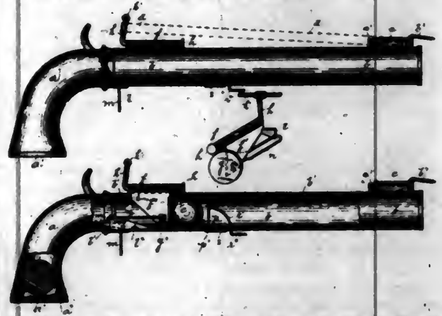


Claim.—1. The combination, substantially as described, of the sled-frame with a suitable draft attachment, the scraper D, the iron straps *a*, with bifurcated perforated upper ends, the Γ-shaped straps *b*, the detachable pins *a'*, the adjustable yokes *c*, the platform C, hinged to the rear of the rear bar B and provided with the supporting-wheel E, and a suitable lever for raising and lowering the blade D.

2. The combination, substantially as described, of a sled and frame, a scraper-blade suitably attached transversely of such frame between the sled-runners, a platform hinged to the rear of the sled-frame and supported at its rear by a pivot-wheel, a lever suitably attached to the scraper-blade and having its fulcrum at the rear of the sled-frame.

3. The combination, substantially as described, of the platform C and the hook-shaped post *h*, attached to the platform C, the sled and frame A B B, hinged to the platform C, and the scraper-blade D, suitably attached between the sled-runners A and provided with the controlling-lever mechanism, composed of the forked iron rod *d*, the lever *e*, and the fulcrum-post *g*.

408,096. SPRING-GUN. JACOB D. EGLER, Pittsburg, Pa. Filed Oct. 19, 1888. Serial No. 288,534. (No model.)



Claim.—1. In a marble-gun, the combination of a barrel having a slot extending along the top thereof and a buffer or elastic cushion at the forward end of the barrel, and an ejector fitting within the barrel and slot and having a bumper above the barrel adapted to strike against said buffer, substantially as and for the purposes set forth.

2. In a marble-gun, the combination of a barrel having a slot extending along the top thereof and a buffer having an elastic cushion on its face, an ejector fitting within the barrel and having a bumper or shoulder above the barrel adapted to strike against the cushion of said buffer, and an elastic-band connection between said ejector and the forward end of the barrel, substantially as and for the purposes set forth.

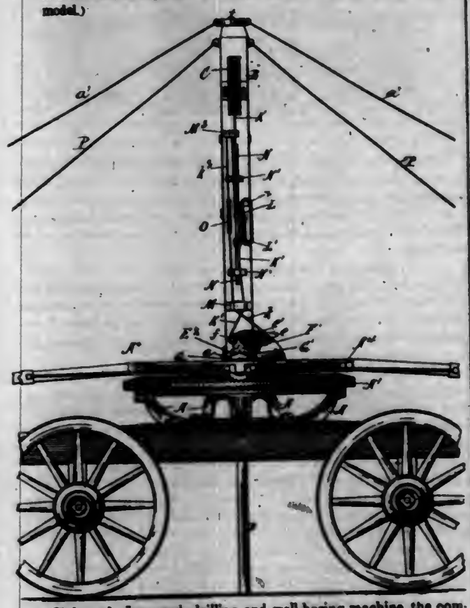
3. In a marble-gun, the combination, with the barrel having a slot extending along the top thereof, of the skeleton ejector *f*, fitting in said barrel and slot and provided with the longitudinally-extending body *f'*, having the circular disk *g*, forming an ejecting-face at the forward end, the shoulder *i* at the rear end, and the arm *k* above the barrel, and the elastic band connecting the arm *k* with the forward end of the barrel, substantially as and for the purposes set forth.

4. In a marble-gun, the combination, with the barrel having the slot extending along the top thereof and having a trigger, of the ejector fitting in said barrel and slot and provided with the body *f'*, having the ejecting-face *g* at the forward end thereof, the spring-loop *n*, engaging with said trigger and the arm *k* above the barrel, and the elastic band connecting said arm with the forward end of the barrel, substantially as and for the purposes set forth.

5. In marble-guns, the barrel *b*, having the ball-retainer *p*, hinged at its rear end to the base of the barrel and extending up into the same in the course of the ejector and provided with means for holding it in such position, but so as to be forced down when the ball is discharged, substantially as and for the purposes set forth.

6. In marble-guns, the combination, with the barrel, of the trigger formed of the triangular piece *l*, bent up so as to form parallel faces or guideways and having the inclined edges l^3 and shoulder l^4, the elbow-piece *m*, fitting between the parallel faces of said piece *l*, and the ejector mechanism within the barrel, substantially as and for the purposes set forth.

408,097. MACHINE FOR WELL-BORING AND DRILLING. CHAS. S. GARDNER, Chicago, Ill. Filed Apr. 12, 1888. Serial No. 270,477. (No model.)



Claim.—1. In a rock-drilling and well-boring machine, the combination of a vertical pivot-casting with a central vertical aperture, a horizontal circular cogged trackway, a hub-casting, with two spokes to revolve about said pivot, a frame bolted to the ends of said spokes, beams secured upon said hub by hinges and fastened together at their other ends by a cap-piece with a central aperture, a pulley secured near the end of one of said beams farthest from the hub, a shaft for drill or auger, a cord secured to said shaft and passing over said pulley, a windlass secured in said frame and furnished with lugs at right angles to its inner end, on which fingers may be fixed, an eccentric furnished with a lug at right angles to said lugs and fingers, and connected with the drill-shaft by cords passing over said pulley, an eccentric-wheel within said eccentric, and levers for the application of power, all secured upon the trucks of a wagon, for the purposes stated.

2. In a rock-drilling and well-boring machine, substantially as described, the combination of the hollow pivot A^9, the ring A^5 encircling it, the circular trackway A', the hub A^2, provided with two spokes, the frame A^4, bolted to the ends of said spokes, the horizontal shafts E and H, journaled in said frame and hub, the beveled pinions E^2 and H', secured on shaft so as to revolve in said trackway, the beams B, hinged upon said hub and held together at their ends by a cap-piece, and provided with the guides I' on their inner faces, the guy-ropes P and *a'*, secured to said cap-piece, the drill and auger shaft D, the weight I, provided with flanges to move in said guides, the cross-head J, the screw-threaded rods *i*, secured in said weight and in said cross-head, and levers for the application of power secured in the frame A^4, all secured upon the trucks of a wagon, as and for the purposes stated.

3. In a well-boring and rock-drilling machine, substantially as described, the combination of the eccentric-wheel F, keyed on the shaft E, against the inner end of the windlass E', the eccentric F', grooved on its outer edge and having at its upper corner the lug *f*, extending at right angles to its outer face, the windlass E', provided with the lugs *e*, extending from its inner end at right angles to its length, the finger-pieces *e'*, fitting on said lugs, the spring O, the rod N, moving in guides secured to the beam B, and furnished with the hooks L and L', the cord *k*, secured to the lower corner of said eccentric and passing about it and under said pulley and secured to the lower end of said spring, the pulleys M, M', and M^4, pivoted on said beam, the cord K', secured to the upper corner of said eccentric, passing about the pulley M and secured to the hook L', the cord *k*, secured to the upper end of said spring and passing over the pulley M^3 and secured to the hook L, and the cord K, secured to the cross-head J, passing over the pulley C, and secured to the hook L, as and for the purposes stated.

4. In a rock-drilling and well-boring machine, substantially as described, the combination of the anti-friction rollers a^6, the ring A^5, having said rollers pivoted to it at its periphery, the pivot-casting A^9, furnishing a trackway for said rollers, and the hub-casting A^2, resting on said rollers, substantially as stated.

5. In a rock-drilling and well-boring machine, substantially as described, the weight I, furnished with flanges to move in guides I' on the inner sides of the beams B, having an opening for the passage of the drill and auger shaft D, fitted with the rods *i*, rigidly secured to its upper part, in combination with the cross-head J above the head of said shaft, as and for the purpose stated.

6. In a well-boring and rock-drilling machine, substantially as described, the combination of the pinion H', rigidly secured on the shaft H, the gear-wheel H^2, secured to the pinion H', the gear-wheel A, keyed on the shaft A', and having a diameter equal to an aliquot part of the diameter of wheel H^2, the gear-wheel H^3, keyed on said shaft and being of equal diameter with wheel H^2, the gear-wheel A^3, pivoted on the shaft H and having a diameter equal to that of wheel A, the balance-wheel H^4, rigid with the wheel A^3 and pivoted on the shaft H, and having its hub pierced with a hole for a set-screw, as and for the purposes specified.

7. In a well-boring and rock-drilling machine, substantially as described, the combination of the shaft E, the worm G, the worm-wheel G', the eccentric-wheel F, the grooved eccentric F', having at its outer edge the lug *f*, the windlass E', having on the periphery of its inner end the lugs *e*, and the finger-pieces *e'*, made to fit upon said lugs, as and for the purpose specified.

408,098. FRICTION-CLUTCH. GEORGE L. GERHARD, Reading, Pa. Filed Nov. 10, 1888. Serial No. 290,490. (No model.)

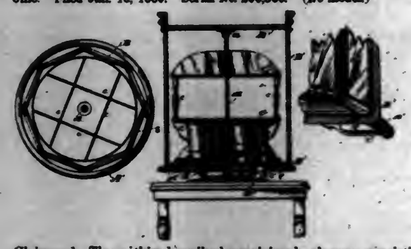


Claim.—1. In a clutch of the class described, the combination, with independent shafts 1 and 2, of the pulley 5, having the hub 6, fixed to the shaft 1 and formed with the flange 8, the clutch-pulley 9, mounted upon the shaft 2, and having the flanges 11 and 14, perforated, as at 12 and 13, and having the segments 15, provided with pins passing through the openings 12, and with perforated lugs 23, and of the sliding sleeve 19, mounted upon the gib 18 of the shaft 2, and the bearing-lugs 21, and toggle-links 22, connecting the lugs 21 and 23, substantially as specified.

2. The shaft 1, having the pulley 5, formed with the hub 6, and set-nut 7, and the peripheral flange 8, in combination with the shaft 2, having the gib 18, and the fixed clutch-pulley 9, having the flanges 11 and 14, perforated, as at 12 and 13, the segments 15, having pins 16, passing through openings 12, and having lugs 23, passing through openings 13, and provided with one member of a toggle-link, 22, and

the sliding collar 19, having the annular groove 20, mounted on the shaft 2, and having opposite lugs, 21, and provided with the opposite member of the toggle-link, each of said members having oppositely-disposed screw-threads, and an oppositely-threaded adjusting-sleeve for connecting said members, substantially as and for the purpose specified.

403,099. REVOLVING BOOK-CASE. CURTIS GODDARD, Alliance, Ohio. Filed Jan. 16, 1889. Serial No. 296,508. (No model.)

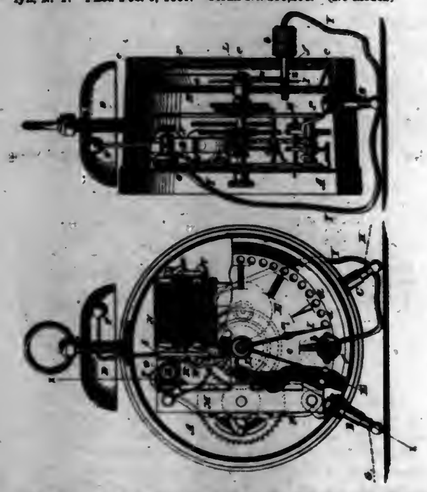


Claim.—1. The within-described revolving book-case, consisting of the central standard, A, secured to the base A', provided with the rail *a'*, the stationary case B', provided with a solid top cover, B, secured to the top of the standard A, and the door *b*, the bottom of the case having an opening adapted to receive and fit the lower revolving shelf, the inclosed revolving shelves C, with supports *c*, the casters E, attached to the lower revolving shelf, and the circular hand-rail C', secured to the lower shelf, C, by means of the arms *c'*, so placed as to extend said hand-rail beyond the outer edges of the exterior case, B, substantially as shown.

2. In a revolving book-case, the combination of the central standard, A, the stationary case B', having the solid cover B secured to the standard A, and the door *b*, the bottom of the case having an opening adapted to fit the lower shelf, the inclosed revolving shelves C, and means for revolving the shelves, consisting of the hand-rail C', secured thereto by the arms *c'*, substantially as shown.

3. The combination, in a revolving book-case, of the base A', supporting the central standard, A, the stationary case B', having the solid cover B secured to the standard A, and an opening in its bottom adapted to fit the lower revolving shelf, the inclosed revolving shelves, and the hand-rail C', secured to the lower shelf by the arms *c'*, substantially as shown.

403,100. ELECTRIC ALARM-CLOCK. THOMAS H. GRADY, Brooklyn, N. Y. Filed Feb. 9, 1889. Serial No. 299,291. (No model.)



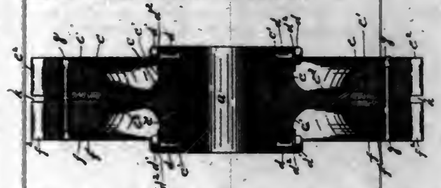
Claim.—1. In an electric alarm-clock, the dial of non-conducting material provided with the line of apertures, and the revoluble transparent face provided with an aperture in position to be brought over any one of the apertures in the dial, combined with the movable plug connected with the conductor from the electro-magnets and adapted to be inserted through said apertures, the vibrating armature connected with the bell-hammer and arranged between the electro-magnets and the back contact, the latter being in connection with one wire of the battery, and a hand upon the clock forming a conductor through the clock mechanism to the other wire of the battery and adapted during its travel to come into contact with the plug in said apertures, substantially as set forth.

2. In an electric alarm-clock, the dial of non-conducting material provided with the line of apertures, and the transparent revoluble face provided with an aperture in position to be brought over any one of the apertures in the dial, combined with a movable plug adapted to be inserted through said apertures in the desired position, and a hand traversing the dial and of a length to be arrested by contact with said plug, the hand and plug forming the terminals of the electric circuit in which the alarm-hammer is connected with the vibrating armature, substantially as set forth.

3. In an electric alarm-clock, the hammer and bell, the dial having the series of apertures, and the transparent face having an aperture in line with the apertures in the dial, combined with the movable plug adapted for insertion into said apertures, the hand traversing said dial and of a length to be arrested by said plug, and an electric circuit of which said hand and plug are the terminals, and in which the armature is connected with the said hammer, substantially as set forth.

4. An alarm-clock having its bell-hammer connected with the armature in an electric circuit, and a dial having a series of apertures, combined with a hand traversing the dial and extending to said apertures, and a removable plug adapted to be inserted into said apertures and to arrest said hand, the hand and plug forming the terminals of the circuit, substantially as set forth.

403,101. GEAR-WHEEL. MARTIN T. GRAF, Buffalo, N. Y. Filed Aug. 13, 1888. Serial No. 282,527. (No model.)



Claim.—1. A gear-wheel having two annular series of teeth of corresponding size and shape around its periphery and having a circumferential space between the two sets of teeth, formed by offsets upon the ring and main portion, the teeth of one series exactly registering with the open spaces between the teeth of the other series, as set forth.

2. A gear-wheel comprising a central sleeve, a hub, an outwardly-extending web, two annular series of teeth of corresponding size and shape, the teeth of one series registering with the spaces between the teeth of the other series, and a circumferential chamber interposed between the teeth and the hub and having a non-sonorous filling, substantially as set forth.

3. A gear-wheel comprising a hub, an outwardly-extending web having an annular recessed enlargement, said annular recessed portion constituting a portion of the rim of the wheel and having a circumferential series of teeth, and an annular recessed ring constituting the remaining portion of the rim and having a circumferential series of teeth, said rim or ring fitting within the recessed side of the web and being secured in position, as described.

4. A gear-wheel having two annular series of teeth upon separable parts, each part having an annular recess, one part formed integrally with a web extending from the hub and the other part separately therefrom and removably attached thereto.

5. A gear-wheel having two annular series of teeth upon separable parts of the rim of the wheel, each part having an annular recess, one part formed integrally with the hub and the other part separately therefrom and removably attached thereto, the respective parts forming a seed-chamber between them, and the two series of teeth having a circumferential division-space, as set forth.

6. A gear-wheel comprising the sleeve, rim, and hub described, keys *d*, and securing-bolts connecting said sleeve and hub together, and a non-sonorous material interposed between the adjacent contact-surface of the sleeve, hub, and keys, substantially as described.

403,102. FASTENER FOR THE MEETING-RAILS OF SASHES. GEORGE M. GRISWOLD, New Haven, Conn. Filed Feb. 16, 1889. Serial No. 300,147. (No model.)

Claim.—1. In a lock for the meeting-rails of sashes, the combination, with a vertically-projecting post fast upon one sash, of a housing upon the rail of the other sash, said housing having an opening therein in line with said post, and a roll arranged within said housing and adapted to engage the post, substantially as set forth.

2. In a lock for the meeting-rails of sashes, the combination, with the stationary and vertically-projecting post arranged upon the rear rail, of a housing mounted upon the outer rail, a vertical opening in

403,102.



said housing in the same plane with and adapted to admit the post, a rolling wedging element mounted within said housing and having a movement therein at an angle to the line of entrance of the post, and an operating-lever or the like engaging said wedging element and accessible from without the housing, whereby the wedging element may be raised upward and backward out of its engagement with the post, substantially as specified.

3. The combination, with the vertically-disposed post, of the recessed housing, into and out of which said post is adapted to slide, a roll mounted within said housing and adapted when in its normal position to engage the post upon one side and the wall of the housing upon the other side, a spring whereby said roll is impelled downward into engagement with said post, and means, as a knob or lever, arranged without the housing, whereby the roll may be lifted upward and backward out of engagement with the post, substantially as specified.

4. In a lock for the meeting-rails of sashes, the combination, with the post secured to the rear rail and projecting upward vertically therefrom, of the housing mounted upon the outer rail and having a recess for the accommodation of the post, said recess increasing in cross-section from bottom to top, a wedge-roll arranged within said recess and lying against the inside wall thereof, and a spring-actuated frame arranged about the roll, and whereby the latter may be raised and lowered in the recess, substantially as specified.

403,103. HAY-ELEVATOR. JOHN L. HARRISON, Mason City, Iowa. Filed Feb. 13, 1889. Serial No. 299,807. (No model.)

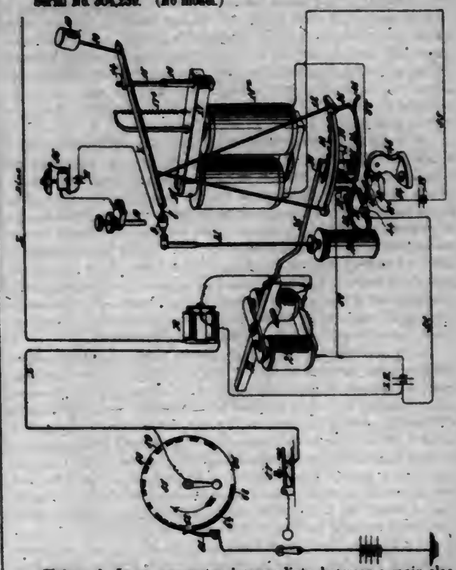


Claim.—1. A carrier for hay-elevators, comprising the frame having two pulleys arranged one above the other at its upper end links pivoted near the middle and the lower end, a supporting-hook pivoted at the lower end to the side opposite to the links, a keeper for retaining the free end of the said hook, and a pulley arranged above the said keeper, and the trip-cord attached to the keeper and passing over said pulley, substantially as set forth.

2. A carrier for hay-elevators, comprising the side pieces or cheeks, A A, the pulleys C D, journaled between the latter, the shank K, links J P, supporting-hook N, pivoted keeper S, pulley H, and trip-cord E', all combined and operating substantially as set forth.

3. In a hay-carrier, the combination of the herein-described car having pulleys C D, links J P, trip-hook N, keeper S, and pulley H, with the rope V, pulleys W X Z, loose pulley B', having hook C', and the sling D', all arranged and operating substantially as and for the purpose set forth.

403,104. ELECTRICAL SIGNALING APPARATUS. ADIN A. HATCH, Kansas City, Mo., assignor to Benjamin F. Jones, Edward L. Martin, and Alfred W. Jones, all of same place. Filed Mar. 22, 1888. Serial No. 304,230. (No model.)



Claim.—1. In an apparatus intermediate between a main electrical conductor and a separate signaling or other instrument, the combination, with a plate or support having single and manifold keys, representing, respectively, one electric pulsation or a series of such pulsations, with intervals between the single and manifold keys, of an armatured escapement-lever vibrated by said pulsations and provided with a finger adapted to engage said key-bars and work out the combination represented, said plate having normally a progressive movement proportioned to the character of said pulsations, and said escapement-lever having a vibrating finger by which the movements produced by the long pulsations are spaced or equalized, substantially as described.

2. In an apparatus of the type set forth, the combination, with a plate or support having normally a progressive movement, of an armatured escapement-lever having a rigid finger and carrying a vibrating escapement-finger, each having alternate engagement with a series of key-bars on said plate arranged to represent a predetermined combination of long and short pulsations transmitted over a main line upon which a series of apparatus of the type specified is arranged, a restoring-magnet acting upon a lever by which the key-supporting plate is restored to normal position, a short circuit for the magnet operating the escapement-lever, and means for closing said circuit and the circuit of the restoring-magnet automatically, substantially as described.

3. In an apparatus of the type specified, the combination, with a mechanically-rotated rock-shaft, of a plate or support suspended therefrom and provided with a series of key-bars representing electrical pulsations of different length, with open intervals between, an armatured escapement-lever having a rigid finger resting upon and a vibrating escapement-finger lying below said key-bars, a restoring-magnet attracting a lever which is linked to a toggle-arm on the rock-shaft, a circuit for said magnet automatically closed by the failure of the lever-fingers to engage the key-bars, and means for retarding the rotary motion of the mechanically-revolved rock-shaft, substantially as described.

4. In an apparatus of the type specified, the combination, with a continuous electrical conductor, of an apparatus comprising a plate or support carrying a series of key-bars formed and arranged to repre-

sent a predetermined combination of electrical pulsations of different length, means for imparting to said plate a constant progressive movement, an escapement-lever operated by a magnet lying in a local circuit, said lever provided with a rigid finger descending on said keys and a vibrating escapement-finger engaging the latter when the rigid finger is raised, a lever-link connected to the parts supporting said plate, a magnet attracting said lever, an independent local circuit for said magnet, a short circuit for the escapement-magnet, means for automatically making and breaking said circuits, and a separate signaling or other circuit closed by the complete working out of the combination of pulsations, substantially as described.

5. In an apparatus of the type specified, the combination, with a plate or support having a series of keys mounted thereon, each single key consisting of a key-bar bent to the form of a staple inclosing a definite space and each double key inclosing two or more of such spaces, of an escapement-lever having a finger the end of which engages said keys successively or drops through open intervals between the same, a magnet energized by said pulsations to vibrate the escapement-lever, a restoring-lever, a magnet operating the latter, and a circuit therefor closed by the drop of said lever caused by the finger passing between the keys, substantially as described.

6. In an apparatus of the type specified, the combination, with a weight-impelled rock-shaft supporting a plate upon which are mounted a series of single and double keys, with suitable open intervals between, of an escapement-lever, a magnet vibrating the same, a rigid finger and a vibrating escapement-finger, both carried by said escapement-lever and alternately engaging the keys, a short circuit for the escapement-magnet closed by a contact carried by the escapement-lever, a restoring-magnet attracting a lever linked to an arm on the rock-shaft, and a spring-lifted circuit-closing arm arranged beneath the vibrating end of the escapement-lever to close the circuit of the restoring-magnet upon the fall of the lever by the passage of its fingers between the keys on the plate, substantially as described.

7. In an apparatus of the type specified, the combination, with a swinging plate carrying a series of single and double keys with open intervals between, of an escapement-lever having a rigid detent-finger and a vibrating spacing or escapement finger, each engaging the keys alternately, a contact, also carried by said lever, adapted to engage a bracket on the plate as the escapement-lever drops by the passage of its rigid finger through one of the intervals between the keys, a short circuit for a magnet operating the escapement-lever closed by such drop, a restoring-magnet operating a lever retracting the swinging plate, a circuit for said magnet, a circuit-closing arm normally raised by a spring to break the circuit of the restoring-magnet and depressed by the fall of the escapement-lever to close the said circuit, and a continuous electrical conductor connected with a relay opening and closing the circuit of the escapement-magnet, substantially as described.

8. In an apparatus of the type specified, the combination, with a swinging plate carried by a weight-impelled rock-shaft and having a series of keys separated by open intervals, of an escapement-lever, a magnet connected with the continuous electrical conductor to operate said lever, a restoring-circuit including a magnet acting upon a lever producing retrograde motion of the rock-shaft, a circuit-closer operated by the fall of the escapement-lever and establishing the restoring-circuit, a retarding-magnet lying in a circuit made by the rise of the restoring-lever and broken by its fall, and a pivoted retarding-lever linked at one end to an arm of the rock-shaft and having an armature which is drawn over the core of the retarding-magnet by the rotation of the rock-shaft, substantially as described.

9. In an apparatus of the type specified, the combination, with a continuous electrical conductor, of a series of local circuits opened and closed by relays in the main line, a series of escapement-magnets lying in the local circuits, escapement-levers operated by said magnets and having rigid and vibrating or escapement fingers, a series of vibrating or swinging plates carrying keys of the form described, arranged with open intervals to present a series of different combinations of long and short electric pulsations, means for vibrating said plates in one direction, a series of restoring-magnets actuating levers which vibrate said plates in the opposite direction, a series of short circuits for the escapement-magnets, a series of independent circuits for the restoring-magnets, means for simultaneously closing said circuits, and a series of separate circuits closed by the complete vibration of said plates, substantially as described.

10. In an apparatus of the type specified, the combination, with a continuous electric circuit, of an escapement-magnet lying in a local circuit, a relay, a vibrating plate having keys formed like single and double staples with open intervals between and arranged to represent a predetermined combination of long and short pulsations, a lever vibrated by the escapement-magnet and having a rigid finger engaging and resting upon said keys, said lever carrying a chair having a forked stop-plate in which is pivoted a spring-actuated escapement-finger limited in its vibrations by the forks of the stop-plate, said finger being arranged under the keys, a weight giving progressive movement to the plate between the rise and fall of the escapement-lever, a restoring-magnet attracting a lever producing motion in the opposite direction, a short circuit for the escapement-magnet, an independent circuit for the restoring-magnet, a contact carried by the chair on the lever and making engagement with a bracket-piece carried by the vibrating plate to close the short circuit, and a circuit-closing arm pivoted beneath the escapement-lever and raised by a spring to break the circuit of the restoring-magnet and thrown down to close said circuit by the descent or fall of the chair and lever, substantially as described.

408,105. VETERINARY INCISOR-CUTTER. REINHARD HAHNMANN, Chicago, Ill. Filed Dec. 12, 1887. Serial No. 257,567. (No model.)



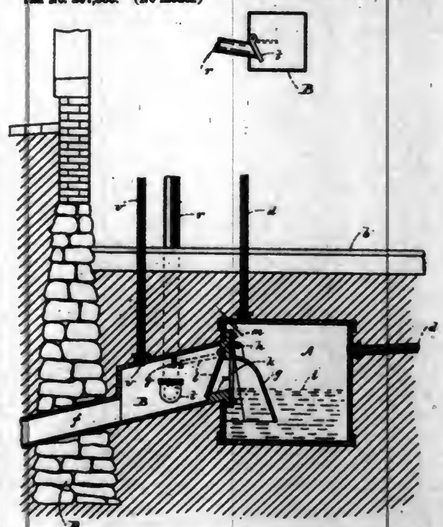
Claim.—1. In a veterinary dental incisor-cutter, the cutting-jaw having a straight cutting-edge, and the sustaining-jaw pivoted together, in combination with a supplemental jaw supported by and movable on the sustaining-jaw, the edge of the cutting-jaw extending at a right angle to the length of the supplemental jaw, substantially as described.

2. In a veterinary dental incisor-cutter, the cutting-jaw having a straight cutting-edge, and the sustaining-jaw pivoted together, in combination with a supplemental jaw pivoted to the sustaining-jaw, the edge of the cutting-jaw extending at a right angle to the length of the supplemental jaw, substantially as described.

3. In a veterinary dental incisor-cutter, the cutting-jaw, and the sustaining-jaw pivoted together, in combination with a supplemental jaw supported by and movable on the sustaining-jaw, and provided at its inner end with a flange or shoulder, substantially as described.

4. In a veterinary dental incisor-cutter, the combination of a cutting-jaw, a sustaining-jaw, and a supplemental jaw pivoted to the sustaining-jaw, the bearing of said supplemental jaw being in a line coincident with that traversed by the cutting-edge of the cutting-jaw, substantially as described.

408,106. SEWER-TRAP. DANIEL HIGGINS, Boston, Mass., assignor to himself and James J. Costello, same place. Filed Jan. 25, 1889. Serial No. 297,555. (No model.)



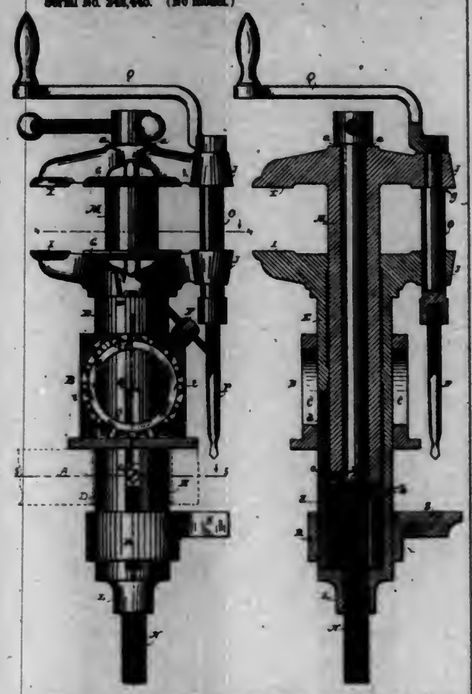
Claim.—1. In a sewer-trap, the combination of a receiving-box disposed within the building, an inclined trap connecting said box with the sewer, waste-pipes opening into said box, a waste-pipe opening into said trap and provided with a hinged valve, a ventilating-pipe for said trap, a hinged valve closing the mouth of the trap within its body and adapted to be opened by the water from said box, and a hinged hood closing the mouth of said trap within said body, all being arranged to operate substantially as described.

2. In a sewer-trap, the combination of the receiving-box A, the waste-pipes *d*, opening therein, the inclined trap B, connecting said box and the sewer, the waste-pipe *r*, opening into said trap and provided with the valve *t*, the hinged valve *l*, for automatically closing the mouth of said trap, and the hood *g*, hinged to said trap within said body, substantially as and for the purpose set forth.

3. In a sewer-trap, the receiving-box A and waste-pipes *d*, opening therein, in combination with the inclined trap B, opening into said box, the hinged valve *l*, for automatically closing the mouth of said trap, the hook *q*, for holding said valve open, the hood *g*, hinged to the trap within said box, the waste-pipe *r*, opening into said trap and provided with the valve *t*, and the ventilating-pipe *v*, all being arranged substantially as described.

4. In a sewer-trap, a receiving-box into which the waste-water pipes of the building empty, in combination with an inclined trap connecting said box with the sewer, a closet waste-pipe opening into said trap, and a hinged valve in said trap adapted to be opened by the water from said box, whereby the waste from said closet-pipe may be carried from the trap, substantially as described.

408,107. VISE. RUSSELL HOLLY, Lockport, N. Y., assignor of one-fourth to Thomas S. Bellah, Wilmington, Del. Filed June 25, 1887. Serial No. 242,445. (No model.)



Claim.—1. The fixed holder formed, as described, to hold the fixed portion of a vise in either a horizontal or a vertical position, in combination with the fixed portion of the vise and the sliding portion carried by said fixed portion, substantially as set forth.

2. The fixed three-way holder provided with holding-apertures on its six sides, in combination with a vise constructed, as described, so that it may be held in any opposite pair of said apertures, substantially as set forth.

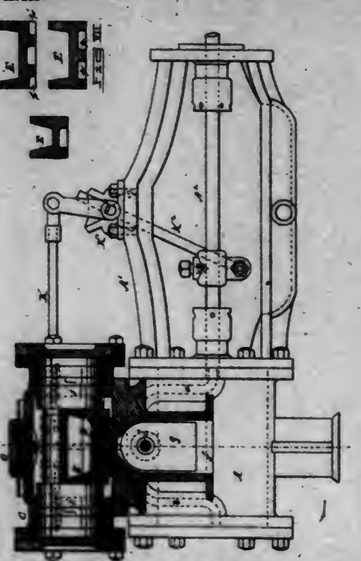
3. The fixed three-way holder provided with holding-apertures on its six sides and a vise which may be inserted in any opposite pair of said apertures, in combination with a set-screw carried by said holder and bearing against said vise, the axis of said screw being substantially in line with the center of the holder, substantially as set forth.

4. A vise having four fixed jaws extending radially at right angles to each other, in combination with four movable jaws extending radially at right angles to each other and adapted to the fixed jaws each to each, substantially as set forth.

5. The fixed hollow mandrel having a series of four jaws extending radially at right angles to each other, in combination with a sliding mandrel fitting and sliding within said fixed mandrel, said sliding mandrel having a series of four similar radially extending jaws adapted to the jaws of the fixed mandrel each to each, substantially as set forth.

6. The fixed and sliding mandrels and two jaws, one of each mandrel formed with oppositely-arranged bores or apertures, and a drill having a bearing in the apertured jaw of the sliding mandrel, whereby it may be advanced by movement of said mandrel, and the shank of said drill extending through the aperture in the jaw of the fixed mandrel, in combination with a removable and adjustable drill-plate supported by the fixed mandrel, substantially as set forth.

408,108. DOUBLE-CYLINDER DIRECT-ACTING ENGINE. WILLIAM D. HOOKER, St. Louis, Mo. Filed July 6, 1888. Serial No. 279,173. (No model.)



Claim.—1. The combination of a main direct-acting supplemental-valved engine, as A, with a secondary engine, as B, said secondary engine having no independent supplemental valve or valve-moving device, and a main valve to supply and exhaust the steam simultaneously to and from both engine-cylinders, so that the main engine shall control the steam admitted and exhausted to drive the main pistons in their cylinders by the use of the one main valve only, said main pistons being separate and having no mechanical connection with each other, so that one can run in advance of the other, as set forth.

2. A supplemental-valved engine-cylinder, combined with its secondary engine-cylinder having but one main valve to supply and exhaust the steam to and from both engine-cylinders, and a regulating-valve in the main exhaust, so that the main supplemental-valved engine shall impart the motion to and the regulating-valve control the motion of both main pistons in their engine-cylinders, as set forth.

3. The combination, in a double-cylinder direct-acting engine, of a regulating-valve in the main exhaust to close the opening of the exhaust of the secondary engine, whereby said secondary engine is stopped and the main engine permitted to run alone and independently of the secondary engine, as set forth.

4. In a double-cylinder steam-engine, a regulating device in the exhaust-passage common to both engines, consisting of an adjustable plate to control the motion of either engine, as set forth.

5. In a double-cylinder steam-engine, a regulating device in the exhaust-passage common to both engines, consisting of a plate having an elongated end to separate the exhaust of the two engines, as set forth.

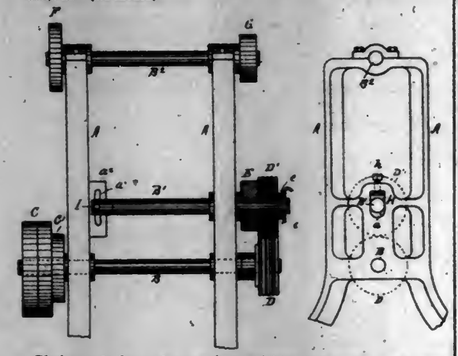
6. In a double-cylinder steam-engine, the combination, with the separate exhaust-ports and main exhaust-passage, of a screw-rod operated from the outside, and a regulating device placed in the main exhaust between the mouths of the separate exhaust-ports, said device consisting of a plate having a threaded opening and being suspended upon the threaded portion of the rod, as set forth.

7. In a double-cylinder direct-acting steam-engine employing but one main valve for both engines, and one engine having no independent valve-moving device, the combination, with said cylinders and main valve, of the supplemental ports and the main ports, said main valve controlling all of the ports, steam being supplied through both the main and supplemental ports to both ends of both main steam-

cylinders and released through the main ports only, to arrest and cushion both main pistons at the termination of their strokes, as set forth.

8. In a double-cylinder direct-acting steam-engine, the combination, with a main valve having a B exhaust-cavity at one end and a D exhaust-cavity at the other, and transverse narrow cavities between them, and side cuts, of the main steam-ports *a* and *b*, having the exhaust-port *c* between them, the main steam-ports *a'* and *b'*, having the exhaust-port *c'* between them, and the secondary steam-ports *c e*, *d e'*, opening into the main-valve seat longitudinally between the end sets of ports, as set forth.

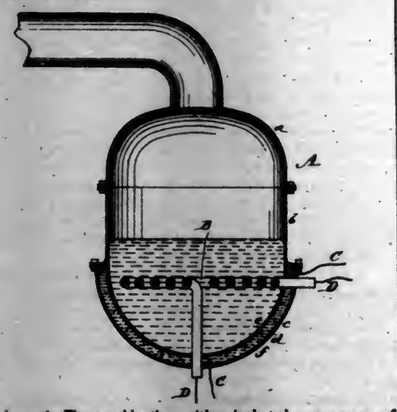
408,109. FEED DEVICE FOR WIRE-WEAVING MACHINES. ORELLO R. HUNT, Minneapolis, Minn. Filed Mar. 5, 1889. Serial No. 301,946. (No model.)



Claim.—1. In a wire-weaving machine, a rotating and a non-rotating shaft, the latter being supported by an adjustable pivot and having a spring tension in the direction of the former shaft, and feed-rolls, one of which is rotated by the former shaft and the other by a pulley on the latter shaft, substantially as set forth.

2. In a wire-weaving machine, a frame, a driving-shaft and pulleys, a driven shaft and pulleys, a non-rotating shaft sliding in a slot in said frame, an adjustable pivotal support therefor, and an adjustable spring whose tension thereon is in the direction of the driving-shaft, a feed-roll and pulley thereon rotated by belting from the driven shaft, and a roll rotated by the driving-shaft, substantially as set forth.

408,110. ELECTRICALLY-HEATED VACUUM-PAN. GAIL B. JOHNSON and MILBANK JOHNSON, Elgin, Ill. Filed June 1, 1888. Serial No. 275,729. (No model.)

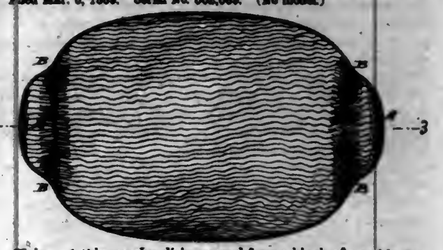


Claim.—1. The combination, with a jacketed vacuum-pan, of electric resistance-wires within the liquid-containing part of the pan and also around the lower part of the same, substantially as set forth.

2. The combination, with the vacuum-pan A, having its rounding bottom provided with a jacket, of an insulating heat-conducting material within the jacket, an electric resistance-wire passing spirally around the jacketed space and inclosed in said material, a horizontal coil of pipe within the liquid-containing part of the pan and having its ends extending through the pan, and an electric resistance-coil within said pipe and insulated therefrom, substantially as set forth.

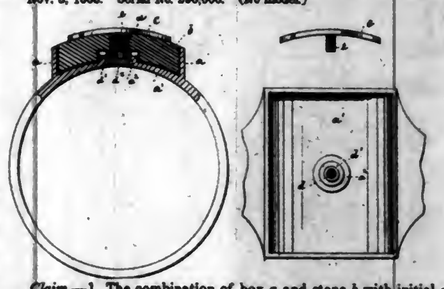
3. The combination, with the heating-coil B and the wire D, arranged within the said coil, of the spiders A, adapted to support the wire in a central position in the coil, substantially as specified.

408,111. WOODEN DISH. WILLIAM D. JOHNSON, Seymour, Ind. Filed Mar. 6, 1889. Serial No. 302,069. (No model.)



Claim.—A thin wooden dish scooped from a block of wood in concavo-convex form, with end extensions or ears formed by the outward curve, B, and upward curve, C, for bracing the fibers and preventing warping and chipping, substantially as and for the purpose described.

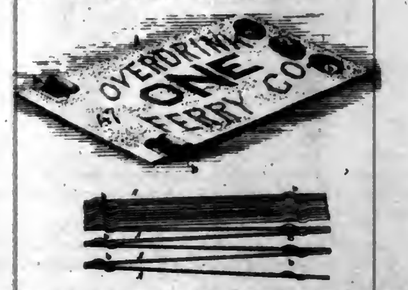
408,112. RING. FREDERICK KAFFEMAN, New York, N. Y. Filed Nov. 5, 1888. Serial No. 290,000. (No model.)



Claim.—1. The combination of box *a* and stone *b* with initial *c*, having downwardly-projecting screw *e*, and with the screw *d*, projecting upwardly into box *a*, and provided with a collar, *d'*, within the box, one of the screws *c d* being hollow for the reception of the other screw, substantially as specified.

2. The combination of box *a*, having base-plate *a'* and shoulder a^2, with the screw *d*, having collar *d'* and head d^3 on opposite sides of said shoulder, and with perforated stone *b* and initial *c*, having screw *e*, one of the screws *c d* being hollow and internally threaded for the reception of the other screw, substantially as specified.

408,113. TICKET. JOHN KELLER, New York, N. Y. Filed Oct. 1, 1887. Serial No. 251,162. (No model.)



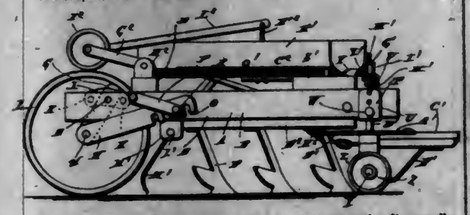
Claim.—1. A ticket adapted for single-trip use on ferries or railways, permanently provided with a prominence or projection adapted to support the body of the ticket upon a plane surface with its edges elevated at a distance above said surface, substantially as and for the purpose described.

2. A series of tickets adapted for single-trip use upon ferries or railways, said tickets being situated in contact with each other and being provided with prominences and depressions, the projecting portion of one ticket corresponding with and resting in the depression of the next.

3. A ticket-strip in width equal to one dimension of the ticket, with transverse lines of perforations at the points of separation between the tickets, and provided with points of prominence on one side and corresponding depressions on the other, whereby the prominences of one ticket enter the depressions of the one next above or below it when they are packed together.

4. A ticket-trip consisting of a series of tickets adapted for single-trip use on ferries or railways, each ticket being embossed with a prominence or projection adapted to support the body of the ticket, when detached upon a plane surface, with its edges elevated at a distance above said surface, substantially as and for the purpose described.

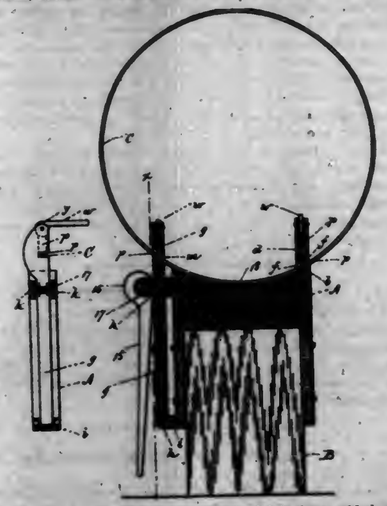
408,114. COMBINED PLOW, CULTIVATOR, AND SEEDER. HENRY M. KINGSBURY, Middletown, Cal. Filed Sept. 18, 1888. Serial No. 285,723. (No model.)



Claim.—1. The combination of the frame having the diagonally-arranged beams with plows, the truck having the upwardly-extending king-bolt pivoted to the front end of the frame, the adjusting-lever H', fulcrumed on the upper end of the king-bolt and connected to the frame, the pivoted arm G at the rear end of the frame, the supporting-roller L, journaled in said arms, the brace-arms N, pivoted to arms G, and having the adjusting-notches O engaging studs R projecting from the frame, the diagonally-arranged hopper supported on the frame, the rock-shaft thereon having the stirring-arms and the arm F^2, the arms G^2, pivoted on the frame, the roller P^2, journaled in said arms bearing on the roller L and having the crank, and the pitman connecting the crank to the arm F^2, substantially as described.

2. The frame having the supporting-truck at the front end, the roller L at its rear end, and the diagonally-arranged beam with plows, the hopper diagonally on the frame and having the rock-shaft with stirring-arms and arm F^2, the pivoted arms G^2, with roller P^2, journaled therein, bearing on the roller L and having the crank, the pitman connecting the latter to the arm F^2, the scatter-box arranged under the hopper, and the shaft L', arranged transversely in the frame in rear of the hopper, and having the stirring-plows N' and the lever O' secured to the said shaft to adjust the stirring-plows, substantially as described.

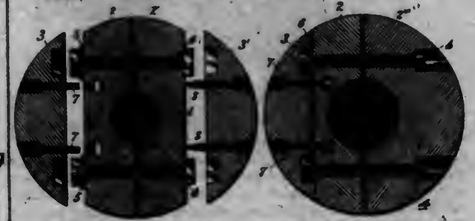
408,115. TIRE-SHRINKER. ROSS B. LANCILL, River John, Nova Scotia, Canada. Filed Jan. 26, 1889. Serial No. 297,542. (No model.)



Claim.—1. The combination of a solid body provided with a curved upper face adapted to serve as an anvil, standards secured at one end of said body and provided with a curved slot, a vertical bar pivoted at the opposite end of said body, and also provided with a curved slot, clamping-plates projecting into said slots, cam-levers for forcing said plates into engagement with the tire, and a cam-lever pivoted to said body for forcing the pivoted bar toward said standard, substantially as described.

2. In a tire-shrinker, the combination of the body A, provided with the curved shoe *b*, the standard *d*, secured thereto and having the slot *f*, the bars *g*, pivoted to said body and provided with the slot *m*, the cam-lever 15, for actuating said bar, the clamping-plates *p* in said bar and standard, the springs *t* and rods *r*, for elevating said plates, and the cam-levers *w*, for depressing said plates, all being arranged to operate substantially as described.

408,116. PULLEY. P. V. LAWSON and WALLACE L. FIELD, Menasha, Wis. Filed Oct. 20, 1888. Serial No. 288,113. (No model.)

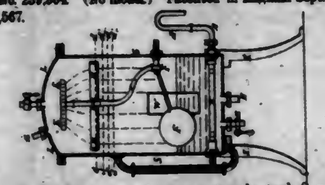


Claim.—1. As an improved article of manufacture, a separable pulley divided into two equal parts upon a plane longitudinally with its bore, each of said parts being divided upon a parallel plane into two segments, and having clamp-bolts, as 4 4, whereby the inner segments thereof may be connected together and clamped upon a shaft, and means, as described, for securing the outer circular segments to the aforesaid inner ones, substantially as described.

2. As an improved article of manufacture, a separable pulley consisting of sections divided upon planes parallel with its bore, the sections containing said bore being provided with bolts for their connection together and for being clamped upon a shaft, and means, as described, for securing the outer circular segment of a section to said section, substantially as described.

3. In a separable pulley divided into two equal sections upon a plane longitudinally of its bore, one of said sections being divided upon a parallel plane into two segments, the combination of the iron plate 6, arranged upon the outer surface of the inner one of said segments, and clamp-bolts, as 4 4, for clamping said plate, inner segment, and the undivided section together and upon a shaft, and means, as described, for securing the outer circular segment to the inner one, substantially as set forth.

408,117. APPARATUS FOR MANUFACTURING AERATED WATER. JOHN T. LIGHTON, Edinburgh, Scotland. Filed May 25, 1887. Serial No. 239,304. (No model.) Patented in England Sept. 20, 1886, No. 11,567.

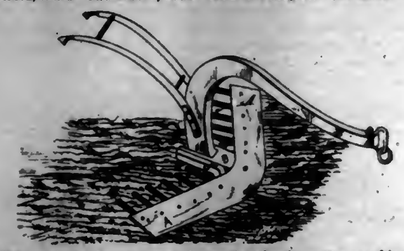


Claim.—1. In a water-aerating apparatus, the tank S, water-supply pipe C, rose-pipe E, tray D, float-valve F, and strainers *d* and *d'*, in combination with the perforated gas-pipe B, the pipe A, connected therewith, the gas-outlet pipe G, located at the top of the said tank S, the water-outlet pipe H, located at the bottom of said tank, the air-outlet pipe or tap J, located on top of the aforesaid tank S, and the outlet-pipe K, connected with the bottom of the said tank S, substantially as shown and described.

2. In a water-aerating apparatus, the tank S, containing the water-supply pipe C, connected with the float-valve F, the rose-pipe arranged on the end of said pipe C, the tray D, suspended within the said tank S, the strainer *d*, placed within said tray D, the strainer *d'*, located beneath the said tray D, the perforated gas-pipe B, connected with the pipe A, the sight-hole, the gas-outlet pipe G, connected with the top of the tank S, the water-outlet pipe H, connected with the bottom of said tank, the air-outlet pipe J or tap, connected with the top of said tank S, and the outlet-pipe K, connected with the bottom thereof, in combination with the cooler Y, substantially as shown and described.

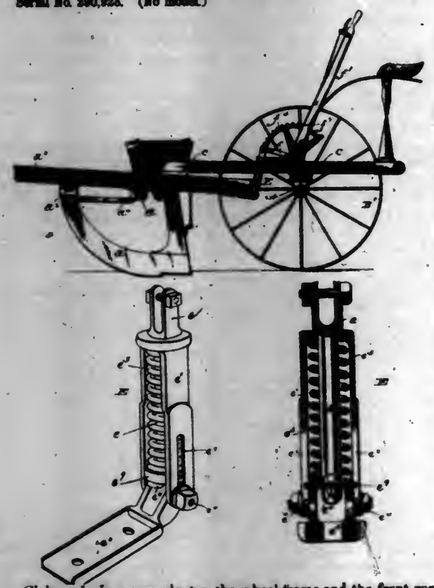
3. The combination substantially as shown and described, consisting of the tank S, containing the water-supply pipe C, terminating at its top end with the rose-pipe E, the float-valve connected with said pipe C, the tray D, containing the strainer *d*, the strainer *d'*, located beneath said tray D, the perforated gas-pipe B, pipe A, sight-hole W, the gas and air outlet pipes G and J, located on top of the tank S, and the water-outlet pipes H K, connected with the bottom thereof, the whole forming a complete apparatus.

408,118. STIRRER AND PULVERIZER. IRVIN C. LIGHTY, Warnerton, Kans. Filed Dec. 1, 1888. Serial No. 292,387. (No model.)



Claim.—As an improvement in earth-pulverizers, the combination of the share, the rearwardly-projecting fingers secured to the under side of the share, the shank secured to the under side of the share projecting rearwardly therefrom and having a longitudinal slot in its rear end, the standard having its end secured in said longitudinal slot, and the braces lying alongside the shank and secured thereto, and having their front ends bent outward and secured to the under side of the share, as specified.

408,119. CORN-PLANTER. AUGUST LINDGREN, Moline, Ill., assignor to the Moline Plow Company, of Illinois. Filed Nov. 15, 1888. Serial No. 290,923. (No model.)



Claim.—1. In a corn-planter, the wheel-frame and the front runner-frame hinged thereto, in combination with an intermediate extensible and compressible spring-coupling, substantially as described, whereby the runner-frame is permitted to yield in opposite directions from its normal position.

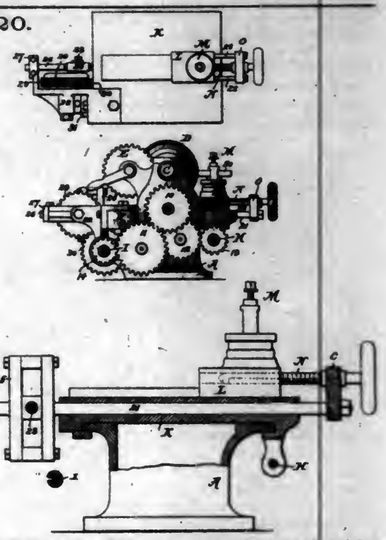
2. In a corn-planter, the combination of the wheel-frame, the front runner-frame hinged thereto, the hand-lever and its locking device, and the spring-coupling consisting of the parts movable longitudinally in relation to each other and the intermediate spring resisting the movement of said parts in each direction.

3. In a corn-planter, the wheel-frame and the runner-frame jointed to its front, in combination with an intermediate spring-coupling which resists the descent of the rear end of the runner-frame.

4. The coupling consisting of the rod, the spring and loose washer thereon, and the outside member seated on the spring and arranged to slide on the rod.

408,120. LATHE FOR TURNING NON-CIRCULAR FORMS. JAS. W. MALOY, Marietta, Ga. Filed July 7, 1888. Serial No. 279,255. (No model.)

Claim.—1. The combination, with a slide-rest and a tool-post mounted thereon, of a driven crank-disk carrying an adjustable stud, and a rod mounted to reciprocate in fixed bearings having connections with said tool-post and having a yoke embracing said stud for reciprocating said tool-post, substantially as described.



2. The combination, with a slide-rest, means for moving it longitudinally, and a tool-post mounted adjustably thereon, of a crank-disk carrying an adjustable stud, a rod mounted to reciprocate in fixed bearings having connections with said tool-post at one end and at the other provided with a yoke embracing said stud for reciprocating said tool-post, a driven shaft, and a gear mounted to turn therewith and slide longitudinally thereon for driving the crank-disk, substantially as described.

3. The combination, with a slide-rest, a tool-post mounted thereon, a head, and an adjusting screw-rod for varying the position of the tool-post on the slide-rest, of a driven crank-disk carrying a stud, a connecting-rod mounted to reciprocate in fixed bearings, one end provided with a yoke embracing said stud and the other rigidly secured to said head to reciprocate the tool-post, substantially as described.

4. The combination, with a slide-rest, a tool-post mounted thereon, a head and an adjusting screw-rod for varying the position of the tool-post on the slide-rest, and a lead-screw shaft for moving the slide-rest and tool-post longitudinally, of a toothed crank-disk carrying a stud, a connecting-rod, one end provided with a yoke embracing said stud and the other rigidly secured to said head to reciprocate the tool-post, a driven lead-shaft, and a gear mounted to rotate therewith and slide longitudinally thereon for driving the said crank-disk, substantially as described.

5. The combination, with a slide-rest and a tool-post mounted thereon, of a driven crank-disk carrying a stud, a rod mounted to reciprocate in said slide-rest and provided with a yoke at one end embracing said stud and at the other end secured to a head, O, and an adjusting screw-rod between said head and the tool-post, substantially as described.

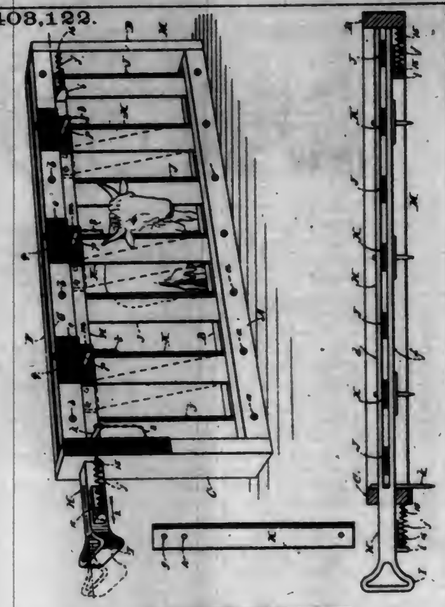
408,121. LINIMENT. MORGAN P. MARTIN, Brunswick, Ga. Filed Mar. 29, 1888. Serial No. 268,869. (No specimens.)

Claim.—The herein-described composition of matter to be used for the purpose and in the manner as specified, said composition consisting of the following ingredients: turpentine, kerosene, camphor-gum, oil of sassafras, oil of peppermint, oil of pennyroyal, chloroform, in the proportions specified.

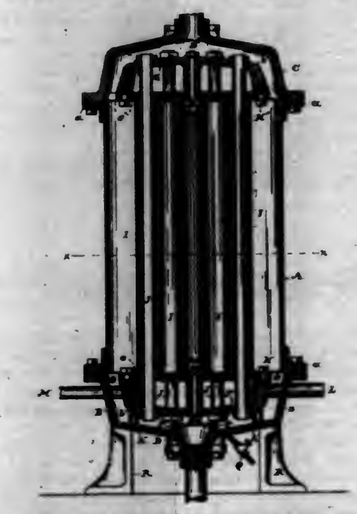
408,122. STANCHION. ALBERT P. MEARS, Wakefield, Mass. Filed Oct. 9, 1888. Serial No. 287,642. (No model.)

Claim.—The combination of a frame, a series of vertical fixed stanchions, a series of pivoted stanchions alternating with the fixed stanchions and provided with pin-holes near their upper ends, a horizontally-movable bar sliding in said frame, and provided with a laterally-projecting lug near one end and with pin-holes at intervals opposite the pivoted stanchions, pins for connecting said pivoted stanchions with the sliding bar, a spring interposed between the post of the frame and said lug for automatically sliding said bar to open the stanchions, and a key for holding said bar in normally-closed position.

408,122.



408,123. STEAM WATER-HEATER. WILLIAM MEARS, Cleveland, Ohio. Filed June 23, 1888. Serial No. 278,444. (No model.)

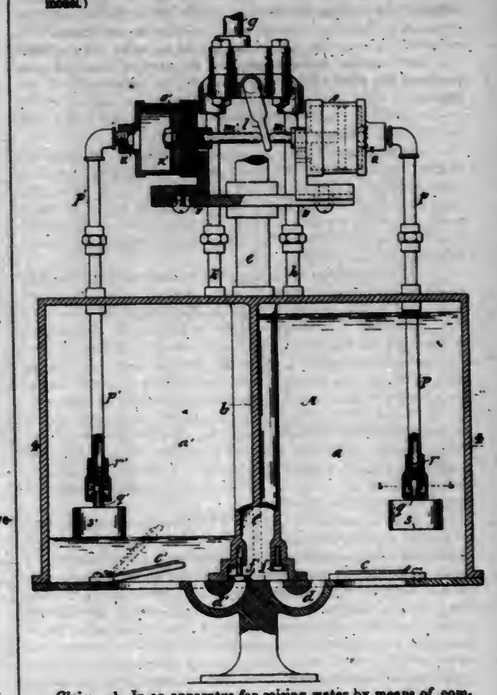


Claim.—1. In combination, the outer jacket, a series of water-pipes within the same, the hollow heads F G at each end of said pipes, the said heads being held within the jacket and away from the walls thereof, inlet and outlet pipes for the water, a series of steam-pipes extending through the water-pipes and hollow heads, and inlet and outlet pipes for the steam, whereby the steam may circulate through and around the water-pipes and also through and around the hollow heads, substantially as described.

2. In combination, the vertical jacket, the vertical water-pipes within the same, the hollow heads at each end of said pipes, the steam-pipes, inlet and outlet pipes for the steam and water, and the supporting-posts K for the hollow head F, whereby all the water and steam pipes and the heads F and G are held within the jacket to permit the steam to circulate freely.

3. In combination, the outer jacket, the series of water-pipes, the hollow heads F G, with inlet and outlet pipes for the water, the steam-pipes and the inlet and outlet pipes for the steam, and the partition in the hollow head F, whereby the water is caused to flow through the pipes, substantially as described.

408,124. APPARATUS FOR RAISING WATER. ABEL B. MERRILL, Bound Brook, N. J., assignor to the Hartford Compressed Air Pump Company, of New Jersey. Filed Jan. 12, 1888. Serial No. 260,518. (No model.)



Claim.—1. In an apparatus for raising water by means of compressed air or gas, the combination, with two compartments adapted to contain water and each provided with an exit-passage for the water, of a valve controlling the direction of the air or gas into one compartment or the other, and an exit-passage for the compressed air or gas from each compartment, each of said exit-passages being closed by a valve connected with a float, and one of said floats being arranged to operate its valve for a higher level of water than the other, substantially as described.

2. In an apparatus for raising water by means of compressed air or gas, the combination, with two compartments adapted to contain water and each provided with an exit-passage for the water, of a valve controlling the direction of the air or gas into one compartment or the other, the ports connecting the valve-chamber with the passages to the respective compartments being arranged so that when the valve is centered each port will be slightly open, whereby the water will be forced out of both the compartments, substantially as described.

3. In an apparatus for raising water by means of compressed air or gas, the combination, with two compartments adapted to contain water and each provided with an exit-passage for the water, of a valve controlling the direction of the air or gas into one compartment or the other, return-passages whereby the air is returned from said compartments to operate said valve, a valve controlling each of said return-passages, a float located in each compartment, connecting mechanism between each float and one of said last-mentioned valves, whereby, when the compartment within which the float is located is free from water, the said float will be suspended from said valve and hold the same open by its weight, said floats being each adapted to be raised by the buoyancy of the water to permit its valve to close, substantially as described.

4. In an apparatus for raising water by means of compressed air or gas, the combination, with two compartments adapted to contain water and each provided with an exit-passage for the water, of a valve controlling the direction of the air or gas into one compartment or the other, and return-passages whereby the compressed air or gas is returned from each compartment to operate the valve, said return-passages connecting with their respective compartments below the level of the water therein, whereby the water within the compart-

ments acts as a packing to assist in preventing the escape of the air into the return-passage until the level of the water within the compartment has fallen, substantially as described.

5. In an apparatus for raising water by means of compressed air or gas, the combination, with two compartments adapted to contain water and each provided with an exit-passage for the water, of a slide-valve controlling the direction of the air or gas into one compartment or the other, return-passages whereby the compressed air is returned from each compartment to operate the valve, and a cylinder and piston actuated by the compressed air returned from each compartment, the pistons being connected with the exhaust side of said slide-valve, substantially as described, whereby the connections for moving the slide-valve from the returned compressed air do not enter the pressure-chamber of the slide-valve.

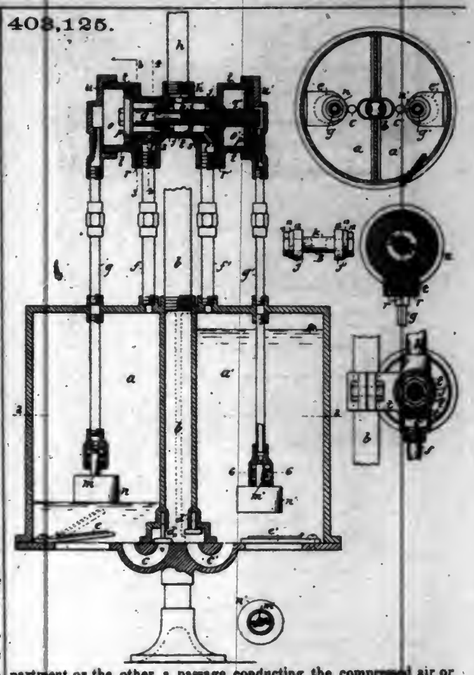
6. In an apparatus for raising water by means of compressed air or gas, the combination, with two compartments adapted to contain water and each provided with an exit-passage for the water, of a valve controlling the direction of the air or gas into one compartment or the other, and the pipes *p* and *p'*, extending down toward the bottom of the respective compartments and each provided with a valve, substantially as described.

7. In an apparatus for raising water by means of compressed air or gas, the combination, with two compartments adapted to contain water and each provided with an exit-passage for the water, of a valve controlling the direction of the air or gas into one compartment or the other, and the pipes *p* and *p'*, each provided with a valve having its seat located within the pipe at a distance back from the end thereof, whereby the air entrapped in the end of the pipe will prevent the entrance of same into the valve-seat, substantially as described.

8. In combination, the passage *g*, whereby the air is conducted to the valve, the reciprocating slide-valve, the passages *h* and *h'*, into which the air is alternately directed by the valve, the cylinders *o* and *o'* and their respective pistons, and the lever *l*, whereby the power of the compressed air or gas is applied to the movement of the slide-valve, substantially as described.

9. In an apparatus for raising water by means of compressed air or gas, the combination, with two compartments adapted to contain water and each provided with an exit-passage for the water, of a valve controlling the direction of the air or gas into one compartment or the other, return-passages whereby the compressed air is returned from each compartment to operate the valve, and a cylinder and piston operated by the compressed air returned from each compartment, the said pistons being connected with the valve to move the same, and the said cylinders being each provided with an exhaust-passage, *u*, of relatively small area to the area of the return-passage, substantially as described.

403,125. APPARATUS FOR RAISING WATER. FRANK H. MERRILL, Bound Brook, N. J., assignor, by mesne assignments, to the Hartford Compressed Air Pump Company, of New Jersey. Filed Jan. 31, 1888. Serial No. 262,541. (No model.)



Claim.—1. The casting *t*, containing at either end the cylinders *o* and *o'*, connected by a cylinder, *i*, of lesser diameter, in combination with a sliding valve within the cylinder *i* and the pistons *p p'* within the cylinders *o* and *o'*, substantially as described.

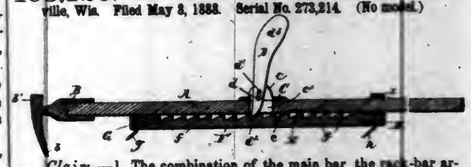
2. In combination, the valve-chamber *i*, the cylinders *o* and *o'*, the valve B, the compressed-air passage *h*, leading to the valve-chamber between the flanges of the valve, the pistons *p* and *p'*, each having its piston-rod supported in the end of the valve, and the compressed-air passages *g* and *g'*, leading, respectively, into the cylinders *o* and *o'* on the outsides of the pistons, the said valve being spool-shaped, whereby the flanges thereof exclude the pressure of the compressed air from the inner sides of the pistons, substantially as described.

3. In an apparatus for raising water by means of compressed air or gas, the combination, with two compartments adapted to contain water and each provided with an exit-passage for the water, of a valve controlling the direction of the air or gas into one compartment or the other, and return-passages from the respective compartments for the air or gas, whereby the compressed air or gas, after forcing the water, is brought to bear upon mechanism whereby the valve is moved, the said valve being constructed spool-shaped, substantially as described, whereby the pressure of the air upon it is balanced, substantially as described.

4. A valve for controlling the flow of compressed air, consisting of a body, *k*, provided with end flanges, 3 4, and said flanges being perforated and grooved, substantially as described, whereby the pressure of the compressed air in the valve-chamber is brought to bear upon the packing, as set forth.

5. In an apparatus for raising water by means of compressed air or gas, the combination, with two compartments adapted to contain water and each provided with an exit-passage for the water, of a slide-valve controlling the direction of the air or gas into one compartment or the other, a passage conducting the compressed air or gas into the valve-chamber between the flanges of the valve, passages leading thence to the respective compartments, and passages leading from the respective compartments back to mechanism for moving the valve, the said valve being spool-shaped, and the last-named passages leading from below the high-water level in the respective compartments and being respectively controlled by float-operated valves, substantially as described.

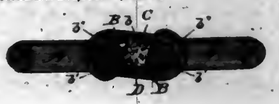
403,126. CARPET-STRETCHER. AUGUST W. MÜHLHAUSER, Platteville, Wis. Filed May 8, 1888. Serial No. 273,214. (No model.)



Claim.—1. The combination of the main bar, the rack-bar arranged below the same and having the rack-teeth on its upper side, the lever fulcrumed on the main bar and having its lower end passing therethrough and engaging the rack-bar, the cross-bars secured to the ends of the rack-bar, the bracket I, secured to the rear cross-bar and passing over the main bar, and the spring, having one end secured to the under side of the main bar and its other end projecting downward therefrom, and having a transverse arm engaging the rack-bar and projecting laterally beyond the same, substantially as specified.

2. The herein-described carpet-stretcher, comprising the main bar A, the pin *b* on the bracket B, secured to the outer end of the said bar, the slotted bracket C, secured to the main bar with its slot registering with the slot therein and provided with the bearing-ears *e*, the pivoted actuating-lever D, having the slot *d*, the pivotal pin *d'*, passing through said slot, the rack-bar F, having the teeth *f*, the cross-bars G H, the teeth *g h*, secured to said bars, respectively, the spring-detent E, having the transverse detent-arm *e* on its free end, and the bearing-bracket I, secured to the cross-bar H and straddling the main bar, substantially as specified.

403,127. DRIVE-CHAIN. THOMAS H. MCCRAY, Chicago, Ill., assignor of one-half to Alexander H. Gunn, same place. Filed Sept. 3, 1888. Serial No. 284,396. (Model.)

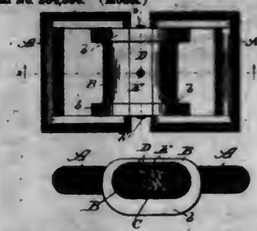




Claim.—1. A coupler for drive-chains, composed of duplicate C-shaped pieces, substantially the width of the sprocket-openings of the links, each of said pieces having a hook at one end thereof and a larger hook at the other end thereof, in combination with and adapted to engage the links of a chain by drawing the larger of said hooks over the smaller thereof, in substantially the manner and for the purposes described.

2. In a drive-chain link, the combination of a metal half-link formed of a piece of metal having a hook at one end thereof and a larger hook at the other end thereof, with a like half-link having like hooks thereon, the larger of said hooks being adapted to fit over the smaller thereof, and forming a link adapted to receive the end bars of adjacent rectangular links, and the lock-guard adapted to slide in place in the link formed by said half-links and between the end bars of said rectangular links, all substantially as described.

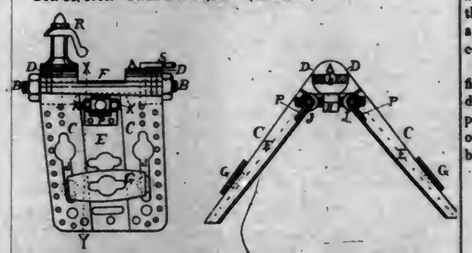
403,128. DRIVE-CHAIN. THOMAS H. MCCRAY, Chicago, Ill., assignor of one-half to Alexander H. Gunn, same place. Filed Sept. 3, 1888. Serial No. 284,396. (Model.)



Claim.—1. In a drive-chain, the combination of a link having a hook at each end thereof, a lock having ears or projections at the ends thereof, rectangular links having end bars fitting into said hooked link, the said lock fitting into said hooked link and holding said rectangular links in position by the ears or projections thereon, the body of said lock forming the top, the ears thereon the ends, the end bars of said rectangular links the sides, and the portion of said hooked link between said end bars the bottom of a closed chamber suitable for the placing therein of lubricating material, substantially as described.

2. In a drive-chain, the combination of a link having a hook at each end thereof, a rectangular link having end bars fitting into said hooked link, a lock having ears thereon adapted to form a lock holding said rectangular links in place, and a receptacle in said hooked link and between the end bars of said rectangular link, and porous material, as oakum, placed in said receptacle and adapted to have placed thereon lubricating material, all substantially as described.

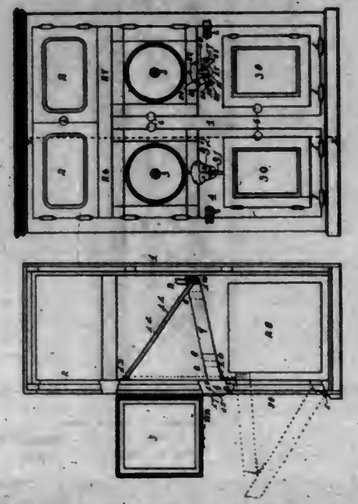
403,129. SADDLE-TREE. ANDREW MCKAY, Philadelphia, Pa. Filed Dec. 31, 1888. Serial No. 295,060. (No model.)



Claim.—1. A saddle-tree consisting of the block A, cut away centrally at the top and bottom and provided at each end with the vertical triangular holes and a longitudinal bore, the check-hook and crupper-loop having the triangular posts adapted to fit in the triangular openings in the block, the sides C C, provided with bearings D D, and rod B, having a nut at each end and adapted to hold the several parts together, substantially as set forth.

2. A saddle-tree consisting of the block A, check-hook R, crupper-loop S, and sides C C, secured together substantially as set forth, said sides having the slots *d d*, in which the button-heads of the cross-bars G are fitted, said cross-bars and the right and left adjusting-screw fitted in pivoted nut-bearings in the sides C C, said bearings secured in the sides by the caps P, substantially as set forth.

403,130. BEER CHEST OR REFRIGERATOR. OTTO NEUMAN, Denver, Colo. Filed Jan. 21, 1889. Serial No. 296,969. (No model.)



Claim.—1. The combination, with the frame of a beer chest or refrigerator, of a door pivoted or hinged thereto and a keg-supporting rack pivoted or hinged to such door and swinging outwardly therewith, substantially as set forth.

2. The combination, with the frame of a beer chest or refrigerator, of a door hinged thereto to swing downwardly and outwardly, a keg-rack pivoted or hinged at its front end thereto, and supports for the rear end of the rack pivoted thereto and to the body or frame of the chest, substantially as set forth.

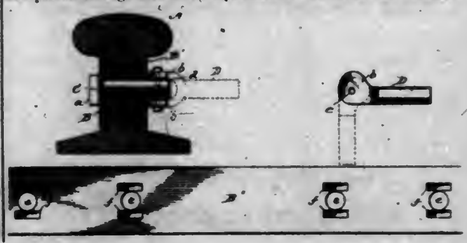
3. The combination, with the frame of a chest or case, 1, of a door, 4, a keg-rack pivoted thereto at 10, and rods or straps 11, pivoted at their upper ends to the frame and at their lower ends to the rear end of the rack, substantially as set forth.

4. The combination, with the door of a beer chest or refrigerator, of a base-plate to be secured thereto, wings or guard-plates pivoted to the base-plates and swinging either to or from each other, and a top plate holding the wing or guard plates to the surface of the door, substantially as set forth.

403,131. BOLT-LOCKING DEVICE. CHARLES I. PENROSE, Chatham, N. Y. Filed Jan. 19, 1889. Serial No. 296,841. (No model.)

Claim.—1. The combination, with the adjacent ends of two connecting railway-rails and the fish-plates upon either side thereof, of the bolts passed through said plates and rails, the bifurcated lever adapted to embrace the outer end of the bolt, and the pin or bolt connecting said lever and bolt, substantially as described.

2. The combination, with the two adjacent railway-rails and the fish-plates B and B', the plate B' being provided with recesses *f*, as described, of the bifurcated lever D, the free ends of the bifurcated portions of which are cam-shaped and adapted to embrace the end of the bolt and engage the recesses *f* in the fish-plate B', and a pin or bolt passed through said cam-shaped ends of the lever and through

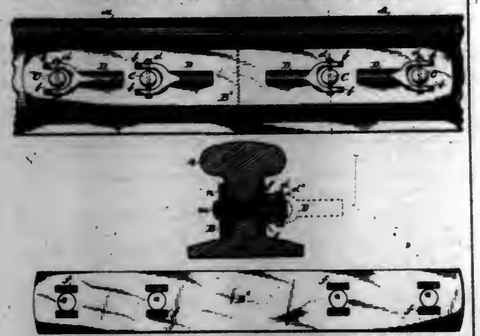


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the opening in the end of the bolt, substantially as and for the purpose described.

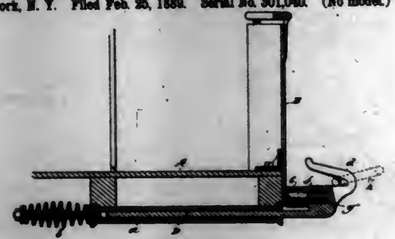
408,132. BOLT-LOCKING DEVICE. CHARLES I. PENROSE, Chatham, N. Y. Filed Feb. 16, 1889. Serial No. 300,096. (No model.)



Claim.—1. The combination, with the adjacent ends of two connecting railway-rails and the fish-plates upon either side thereof, of a bolt passed through said plates and rails, a bifurcated lever adapted to embrace the outer end of the bolt, a pin connecting the lever and bolt, and a nut adapted to engage the screw-threaded inner end of the bolt and to bear against the flanged base portion of the rail, substantially as and for the purpose specified.

2. The combination, with the two adjacent railway-rails and the fish-plates, of a bolt passed through said rails and plates, a nut engaging the screw-threaded inner end of the bolt, a bifurcated locking-lever the arms of which are cam-shaped and adapted to embrace the end of the bolt, and a pin or bolt passed through said cam-shaped ends of the lever and through a transverse opening through the end of the bolt, substantially as and for the purpose specified.

408,133. DRAW-BAR AND HOOK. BRADLEY N. PHELPS, New York, N. Y. Filed Feb. 25, 1889. Serial No. 301,040. (No model.)



Claim.—1. The combination, with the draw-bar D, movable in the guide-casing *a*, of the spring *b*, located upon the inner end of the bar and arranged to receive the draft exerted upon the bar, and the elastic buffer *c*, located between a shoulder, *f*, formed upon the outer end of the bar and the dash, substantially as described.

2. The combination, with the draw-bar D, removable in the guide-casing *a*, of the spring *b*, located at the inner end of the bar and arranged to receive the draft put upon the bar, and the elastic buffer *c*, seated in a recess formed within a shoulder upon the outer end of the bar and acting against the dash, substantially as described.

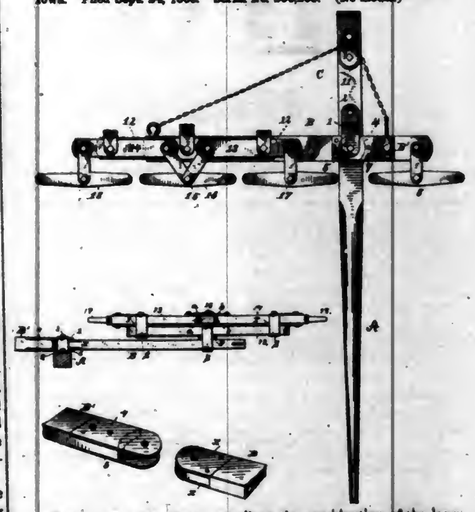
3. The herein-described hook of a draw-bar, having the side projections, 3, for preventing the link from being drawn off the hook by lateral draft, substantially as described.

408,134. HYDROCARBON-BURNER. AMBROSE A. PHILLIPS, Toledo, Ohio. Filed Oct. 31, 1887. Serial No. 253,325. (No model.)



Claim.—A hydrocarbon-burner consisting of a block of refractory material provided interiorly with a central chamber extending through the base of the block, lateral channels extending through the side walls of said block, said channels located one above the other, an oil-pipe located in the upper and a steam-pipe in the lower channel, and an ejector-nozzle placed in said chamber and forming the communication between the oil-supply and the chamber, and lugs formed upon the base of the block serving to elevate the latter for the escape of the flame, substantially as described.

408,135. DRAFT-EQUALIZER. WILLIAM R. PLUMER, Sioux City, Iowa. Filed Sept. 24, 1888. Serial No. 286,295. (No model.)

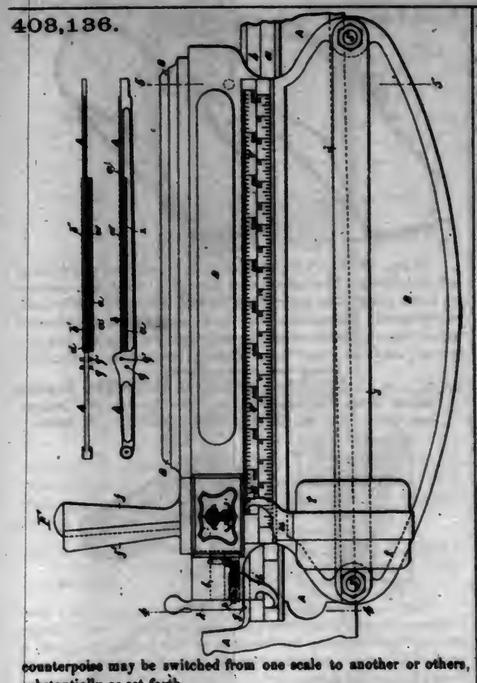


Claim.—In a four-horse equalizer, the combination of the long and short levers B B', having their inner ends placed one within the other, the lever B being secured to the tongue by the pivot-bolt and the short lever B' being secured to said bolt by the elongated plates, said levers being connected by a chain, C, the doubletree 12, pivotally mounted on washers at its center to the lever B at a point near its free end inside of the chain C, and the levers 13 and 14, mounted on washers at the ends of said doubletree, their long arms being pivotally connected to each other and to the singletree 16 by the straps *a b*.

408,136. STEELYARD FOR WEIGHING-MACHINES. HENRY POOLEY, Liverpool, County of Lancaster, England. Filed June 4, 1886. Serial No. 204,107. (No model.) Patented in England Nov. 10, 1885, No. 13,642; in France May 8, 1886, No. 176,006; in Belgium May 10, 1886, No. 73,051; in Norway May 26, 1886, No. 74; in Sweden May 26, 1886, No. 744; in Germany June 5, 1886, No. 38,447; in Canada June 14, 1886, No. 24,232, and in Spain Sept. 1, 1886, No. 9,845.

Claim.—1. The combination, with a steelyard, of a counterpoise, two or more engaging notched bars thereon, and a device upon the counterpoise having two or more projections alternately engaging with the notches on one or the other of said bars, whereby the sliding

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counterpoise may be switched from one scale to another or others, substantially as set forth.

2. The combination, with a steelyard, of a counterpoise, two or more notched bars thereon, a device upon the counterpoise having two or more shifting projections for engaging with the notches on one or the other of said bars, two or more corresponding scale-plates attached to said steelyard, and two or more pointing-fingers rigidly attached together, substantially as described.

3. The combination, with a steelyard, of a counterpoise, two or more notched bars, an engaging device with two or more shifting projections for engaging with the notches on one or other of said bars, and two or more corresponding scale-plates for the major units of weights, and two or more scale-plates and a sliding pointer for the minor units of weights, substantially as described.

4. The combination, with the steelyard A, of the scale-plates *a b*, arranged with an upward inclination, the counterpoise B, the engaging device K, engaging-notches *a' b'*, pointer *i*, scale-plates *v*, pointer *u*, weight *t*, and its guide-bar *s*, substantially as set forth with reference to the drawings.

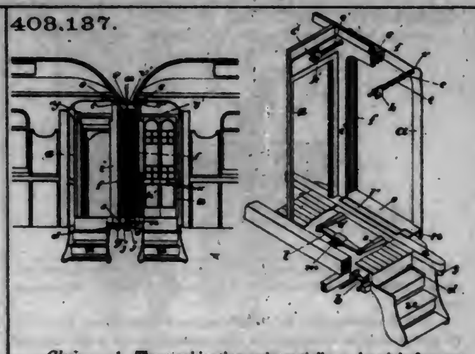
5. The combination, with a steelyard and a counterpoise-weight, of a plurality of scale-plates bearing scale-divisions of different lengths, a plurality of notched bars, and a device having a plurality of projections alternately engaging with the notches on one or the other of said bars, substantially as described.

6. The combination, with a steelyard and a counterpoise-weight, of a plurality of scale-plates, a plurality of notched bars, a device having a plurality of projections alternately engaging with the notches on one or the other of said bars, and a sliding pointer having a plurality of pointing-fingers arranged one ahead of the other, substantially as described.

7. The combination of a steelyard and counterpoise-weight, a plurality of notched bars, a device having a plurality of projections alternately engaging with the notches on one or the other of said bars, a plurality of scale-plates bearing divisions corresponding to those on said notched bars, and a sliding pointer having fingers rigidly attached to each other and one set ahead of the other, substantially as described.

8. The combination of a steelyard and counterpoise-weight, scale-plates bearing scale-divisions of different lengths, a sliding pointer attached to said counterpoise having fingers set one ahead of the other and being rigidly attached to each other, scale-plates on said counterpoise bearing scale-divisions of different lengths, and a sliding pointer moving on said counterpoise having fingers set one ahead of the other and being rigidly attached to each other, substantially as described.

408,137. VESTIBULE-CONNECTION FOR RAILWAY-CARS. GEO. M. PULLMAN, Chicago, Ill. Filed May 13, 1887. Serial No. 238,134. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of a face-plate forming the open end of a vestibule-extension to a railway-car when not coupled with another car in a train, and a buffer-plate which is pivotally connected with a spring-extended buffer-rod and arranged, as described, to be capable of oscillating on a fixed center, but restrained by guide-rods, as described, to compel its center of oscillation to move only in a line passing longitudinally and horizontally through the center of the car, the said buffer-plate and the face-plate of the vestibule connected therewith being free to move angularly with such fixed longitudinal line of their movement.

2. The combination, substantially as hereinbefore set forth, of a face-plate forming, when railway-cars are not coupled, the open end of a vestibule-extension of a car, a buffer-plate pivotally connected with a spring-extended buffer-rod, and a threshold-plate, the said buffer-plate and threshold-plate being arranged, as described, to be capable of oscillating on a fixed center, but restrained as to other movements to one in a line passing longitudinally and horizontally through the center of the car.

3. The combination of a face-plate, forming, when railway-cars are not coupled, the open end of a vestibule-extension to a car, a buffer-plate pivotally connected with a spring-extended buffer-rod, and the said face-plate connected at its upper end with spring-extended guide-rods, substantially as described, and its foot to the buffer-plate, whereby the said face-plate is made capable both at its top and at its bottom to oscillate on a vertical central line, but is restrained as to other movements to one in a line passing longitudinally and horizontally through the center of the car, substantially as hereinbefore described.

4. The combination of a face-plate forming, when railway-cars are not coupled, the open end of a vestibule-extension to a car and arranged, as hereinbefore described, to be capable of oscillating on a vertical central line, but restrained as to other movements to one in a line passing longitudinally and horizontally through the center of the car, and a flexible bellows or equivalent extensible connection uniting the face-plate with the car-body structure, substantially as described.

5. A vestibule-extension to a car-body, which is made up of the following components: first, an extension of the car-body, so as to practically inclose the entrance-platform and provided with doors at the sides; second, an extensible section of flexible material uniting the said extension of the car-body with a face-plate, which forms, when railway-cars are not coupled, the open end of the vestibule; third, the said face-plate, combined with the car structure and arranged, as described, to oscillate on a central vertical line, but restrained as to other movements to one in a line passing longitudinally and horizontally through the center of the car, and, fourth, a threshold-plate having the same movements and restraints as the said face-plate, substantially as described.

408,138. WATER-HEATER. PHILIP H. REED, Chicago, Ill., assignor to the Chicago Gas Stove Company, same place. Filed Apr. 3, 1888. Serial No. 269,453. (No model.)

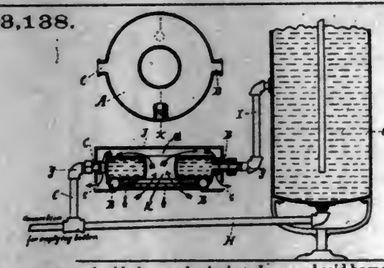
Claim.—1. The combination, in a water-heater or water-front, of a water compartment or boiler provided integrally with a gas compartment or burner, substantially as described.

2. The combination, in a water-heater or water-front, of the annular water-ring and the annular gas ring or burner cast integrally with it on the under side thereof, substantially as described.

3. The combination, in a water-heater or water-front, of the annular water-ring A, substantially rectangular in cross-section, and the annular gas ring or burner B, cast integral with the water-ring around the outer, upper, or lower edges thereof, substantially as described.

4. The combination, with the water-ring and the gas-ring formed integral therewith, near the lower outer edge thereof, of an open-

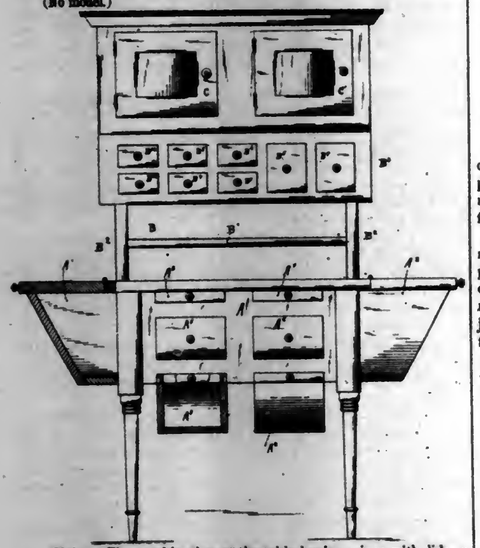
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ing in the center of said ring, and a jacket, J, around said burner and water-ring, substantially as shown and described, and for the purpose specified.

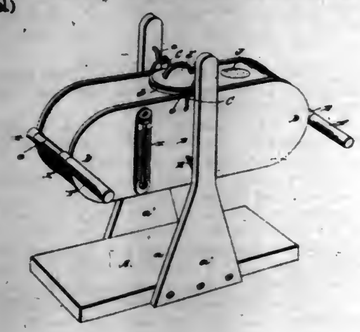
5. The combination, in a water-heater or water-front, of a vertical series of single water-heaters, each consisting of a water-ring and a gas ring or burner integrally formed therewith and of intermediate connections between said water-rings alternately upon opposite sides, substantially as described.

408,139. KITCHEN TABLE AND DRESSER. CHARLES W. E. RIPLEY, Washington, D. C. Filed Jan. 26, 1889. Serial No. 297,675. (No model.)

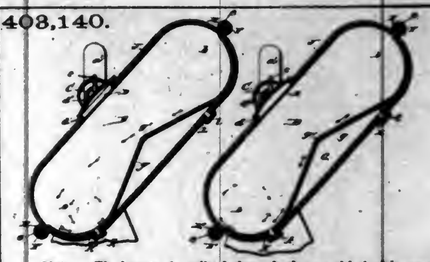


Claim.—The combination of the table having wings with lids, a drawer-frame having its drawers arranged substantially as described, and a shelf-frame upon said table between the wings and supporting the drawer-frame, and having a shelf interposed between the top of the table and the bottom of the drawer-frame, substantially as described.

408,140. CHURN. GEORGE F. ROBERTSON and WILLIAM D. GANNON, Morristown, Tenn. Filed Mar. 5, 1888. Serial No. 266,188. (No model.)



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Claim.—The herein-described churn-body, provided with rounded ends and having a false bottom with upwardly-curved ends conforming to the shape of the end walls of the said churn-body, and a raised central portion intermediate the curved ends, forming a transverse apex, whereby a compartment is constituted between the false bottom and the lower wall of the churn-body, substantially as described.

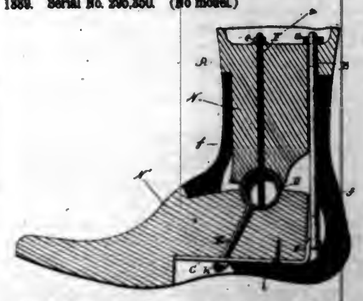
408,141. METAL PACKING FOR CAR-AXLE BOXES. HAMILTON ROGERS, Toledo, Ohio, assignor to the Rogers Car Axle Box Company, same place. Filed Mar. 16, 1888. Serial No. 267,430. (No model.)



Claim.—1. In combination with a car-axle box provided with an oil-receptacle and axle-journal revolving within the box, a flexible packing for conducting the lubricant to the journal, composed of metal wire having a covering of waste or analogous material, as and for the purpose set forth.

2. In a combination with a car-axle box and axle-journal, an oil-receptacle beneath the journal provided with a supplemental channel-plate packed with a flexible oil-conducting medium, consisting of a central core of resilient metal and an outer covering of textile material in contact with the journal, the packing being held beneath the journal by means of the channel-plate, as and for the purpose set forth.

408,142. ARTIFICIAL LEG. BENJAMIN F. ROUNDS, Kansas City, Mo., assignor of one-half to James P. Bird, same place. Filed Jan. 3, 1889. Serial No. 295,350. (No model.)



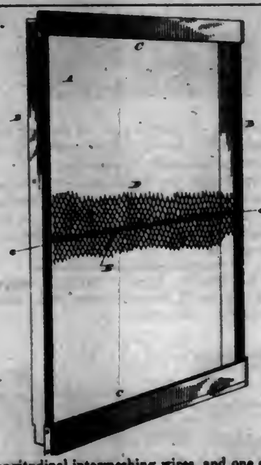
Claim.—The artificial leg consisting of the articulated leg and foot sections, the metallic plate having an upwardly-projecting hook at its outer end, said plate being disposed in a longitudinal recess in the under side of the foot-section, the oblique rod loosely connected at its upper end to the leg-section and passed through said foot-section in an inclined direction and secured to said hooked plate, and made adjustable, and the cord secured at its upper end to the leg-section and passed down in a substantially straight line and looped upon the hook of said metallic plate, substantially as set forth.

408,143. WOVEN-WIRE BED-BOTTOM. JAMES B. RYAN, New York, N. Y. Filed May 23, 1888. Serial No. 274,877. (No model.)

Claim.—1. In a bed-bottom composed of a frame and a woven-wire fabric, the combination, with such fabric, of stiffening rods or strips passed transversely through its meshes and having their ends connected to the side edges of the fabric, substantially as described.

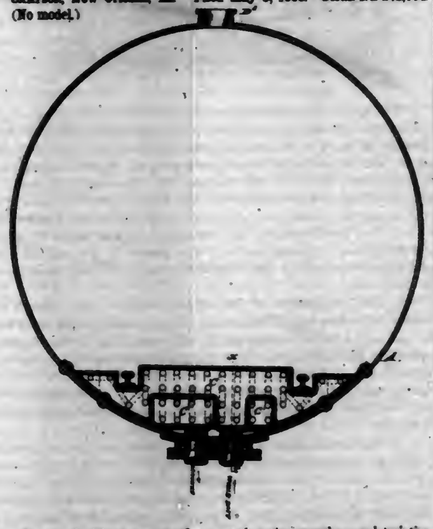
2. In a bed-bottom, the combination of a rectangular frame, a woven-wire bottom disconnected at the sides from the frame, and

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composed of longitudinal intermeshing wires, and one or more transverse strips secured to the edges of the woven-wire bottom and extending through the coils formed by the intermeshing wires, substantially as and for the purpose set forth.

408,144. PROCESS OF PRESERVING LUMBER. THOMAS H. SAMPSON, New Orleans, La. Filed May 5, 1888. Serial No. 272,991. (No model.)



Claim.—1. The process of preventing the warping and twisting of lumber, which consists in first removing the sap, then dissolving the imperfectly-formed cellular tissue by an alkaline solution and extracting it by a vacuum, and finally precipitating the remaining matters in the wood in an insoluble state by a basic metallic salt and drying, substantially as described.

2. The process of preventing the warping and twisting of lumber, which consists in first removing the sap by heating the wood to a temperature below the coagulating point of the sap and extracting the same by a vacuum, then dissolving the imperfectly-formed cellular tissue by an alkaline solution and extracting it by a vacuum, then precipitating the remaining matters in the wood in an insoluble state by a basic metallic salt and drying, substantially as described.

3. The process of preventing the warping and twisting of lumber, which consists in first removing the sap by heating the wood to a temperature below the coagulating point of the sap and extracting the latter by a vacuum, then dissolving the imperfectly-formed cellular tissue by an alkaline solution and extracting it by a vacuum, then precipitating the remaining matters in the wood in an insoluble state by a basic metallic salt, and finally drying the wood first in a vacuum and then under pressure, substantially as and for the purpose described.

408,145. VETERINARY FILE-HOLDER. DAVID M. SCHEFFER, New Castle, Ind., assignor to Haussmann, McComb & Dunn, Chicago, Ill. Filed July 26, 1888. Serial No. 281,130. (No model.)



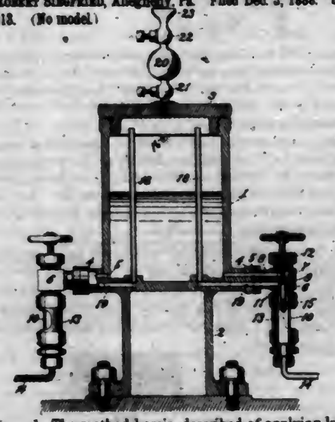
Claim.—1. The combination, with a file, of a holder provided with a socket for the reception of said file, and a spring clamping device for locking the file in position, whereby friction alone operates to hold the file, substantially as described.

2. The combination, with a file, of a holder provided with a socket for the reception and of substantially the depth of said file, a spring-arm on said holder, and a screw working through said arm and engaging the body of said holder, substantially as described.

3. The jointed holder composed of sections having a hinge-connection therebetween, in combination with files mounted in each of said sections, substantially as described.

4. The jointed holder composed of sections hinged together, each of which has a file-socket therein, and tongue-shields at the reverse sides of said sockets, in combination with files fitting into each of said sockets and spring clamping devices for locking said files in position, substantially as described.

408,146. METHOD OF FEEDING LUBRICANTS. ALBERT SOBBIE and ROBERT SIEGFRIED, Allegheny, Pa. Filed Dec. 3, 1888. Serial No. 292,513. (No model.)



Claim.—1. The method herein described of applying lubricants, which consists in feeding the lubricant in regulated quantities to fluid under pressure, and then delivering such lubricant to the place or places of desired application by such fluid-pressure, substantially as set forth.

2. The method herein described of applying lubricants, which

consists in feeding the lubricant by gravity to fluid under pressure and then delivering such lubricant to the place or places of desired application by such fluid-pressure, substantially as set forth.

408,147. CAR-COUPLING LINK. JACOB SCHNEBELLER, Pittsburg, Pa., and JOHN T. JONES, Iron Mountain, Mich. Filed Nov. 21, 1888. Serial No. 291,626. (No model.)



Claim.—1. A car-coupling link formed of a continuous band of metal wrapped in several layers or strands, and having the ends of the band united to the body of the link, some of the layers or strands being curved or sprung at or near the center of the link to impart elasticity thereto, substantially as and for the purposes set forth.

2. A car-coupling link formed of a continuous band of metal wrapped in several layers or strands, and having the ends of the band united to the body of the link, some of the layers or strands being curved or sprung at or near the center of the link to impart elasticity thereto, and one or more of the layers or strands being straight between the bent ends of the link, substantially as and for the purposes set forth.

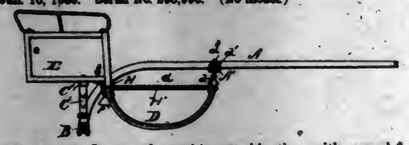
3. A car-coupling link formed of a continuous band of metal, said band being wrapped in several layers or strands, the one upon the other, and having the ends of the band united to the body of the link, substantially as and for the purposes set forth.

4. A car-coupling link formed of a continuous band of metal, said band being wrapped in several layers or strands, the one upon the other, and having some of the layers curved or bent at or near the center of the link to impart elasticity thereto, substantially as and for the purposes set forth.

5. A car-coupling link formed of a continuous band of metal wrapped in several layers or strands, and having the several strands united at one or both ends, said strands being unconnected in the central portions thereof, substantially as and for the purposes set forth.

6. A car-coupling link formed of a continuous band of metal wrapped in several layers or strands, and having said strands united together at one end and unconnected at the other end and in the central portions thereof, substantially as and for the purposes set forth.

408,148. ROAD-CART. ROBERT D. SCOTT, Pontiac, Mich. Filed Jan. 10, 1889. Serial No. 295,906. (No model.)

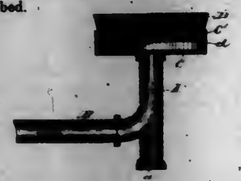


Claim.—1. In a road-cart, the combination, with curved foot-board sills extending from the front backward and up to the seat, of a close body beneath the seat, the forward upright edges of the said body framed to the upright rear portions of the said curved foot-bar sills, substantially as described.

2. In a road-cart, the combination of curved foot-board sills D, extending from the front backward and up to the seat, a box beneath the seat having its forward upright edges framed to the upright portions of said sills, adapted to sustain the box, and rods G, passing through the bracket and joining the upright portions of the foot-board sills, substantially as described.

408,149. FORGE-TUYERE. WILLIAM H. SHANK, Huntington, Ind. Filed Mar. 18, 1889. Serial No. 303,732. (No model.)

Claim.—1. In a forge-tuyere, the combination, with the tuyere-pipe and the blast-pipe leading into the same, of the flanged disk on the tuyere-pipe and a grate for dividing the blast on said disk, substantially as described.



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2. The grate, as D, consisting of the inclined outer portion, the ring F, and deflector G, having inclined walls and united with each other by supports, substantially as described.

3. In a forge-tuyere, the combination of the tuyere-pipe A, having the slide *a* in its bottom, the blast-pipe B, leading into the pipe A, the disk on the pipe A, and the grate, as D, on the disk having a series of inclined divisional rings or bars for deflecting the blast, substantially as described.

408,150. ENGINE. JABEZ F. SHAWHAN, Dayton, Ohio, assignor of one-half to James W. Carpenter, same place. Filed Mar. 23, 1888. Serial No. 268,266. (No model.)



Claim.—1. The combination of a series of reciprocating engines connected with each other and revolving around one axis, a revolving head at an angle to the said axis and connected with the piston-rods of the said engines, a governor and a governor-shaft arranged parallel with the axis of the said engines and connected with one of the said revolving parts to control the flow of motor-fluid to the engines, and a case which surrounds all of said parts, substantially as set forth.

2. The combination of the revolving engines, barrel E, inclined revolving head 7, connected with the pistons of the engines, and a governor connected by a flexible shaft with said head, substantially as described.

3. The combination of the series of reciprocating engines connected to revolve around a common axis, a revolving head at an angle to the said axis and connected to the piston-rods of the engines, a revolving block connected with one of the said revolving parts to be driven thereby, the L-shaped levers carried by said block, a reciprocating rod against which said levers bear, and a valve connected with said rod controlling the steam-passage to the engines, substantially as described.

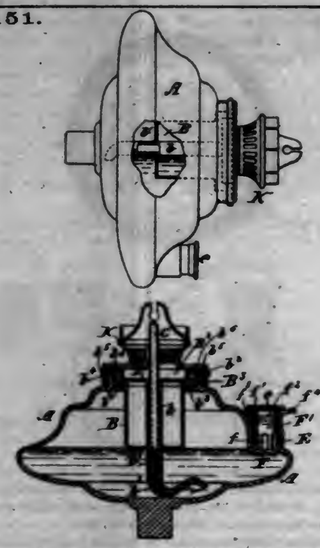
4. The combination of the series of reciprocating engines connected to revolve around a common axis, a revolving head at an angle to the said axis and connected to the piston-rods of the engines, a revolving block, 16, mounted adjacent to the said head and connected thereto by a flexible shaft, a reciprocating rod mounted parallel with the axis around which the engines revolve, connected to move the governing-valve, and the levers carried by the said block connected to reciprocate the said rod as the speed of the engines varies, substantially as described.

5. The combination, with the series of engines connected to revolve around a common axis, of a frame having a chamber, *x*, a ring provided with inlet and outlet ports mounted in the said chamber and having the shoulder or offset *v*, whereby the ring is held against the heads of the revolving engines by the steam-pressure, and the steam and exhaust passages in the frame, substantially as described.

6. The combination of the series of revolving engines, the inclined head 7, provided with a shaft, B, the piston-rods connecting the engines with the said head, the case inclosing the said parts, and a removable cap having an inclined bracket wherein is mounted the shaft of the said head, substantially as described.

408,151. HYDROCARBON-LAMP. STEFAN SIERHAKL, Vienna, Austria-Hungary, assignor of one-half to Adalmar Breden, same place. Filed Jan. 12, 1888. Serial No. 260,574. (No model.) Patented in France Jan. 16, 1886, No. 173,576; in Belgium Jan. 16, 1886, No. 71,660; in Germany May 14, 1887, No. 42,494, and in England June 1, 1887, No. 7,956.

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Claim.—1. In a hydrocarbon-lamp, the combination, with the oil-fount and a wick-tube projecting axially into the fount and terminating in close proximity to the bottom thereof, of a filling-aperture located in a plane dividing the fount horizontally, so that the capacity of the portion below said plane will not exceed the capacity above the same, substantially as and for the purpose specified.

2. In a hydrocarbon-lamp, the combination, with the oil-fount and a wick-tube projecting axially into the fount and terminating in close proximity to the bottom thereof, and having its lower end curved laterally, as shown, of a filling-aperture located in a plane dividing the fount horizontally, so that the capacity of the portion below said plane will not exceed the capacity above the same, substantially as and for the purpose specified.

3. In a hydrocarbon-lamp, the combination, with the oil-fount, a wick-tube, and a wick-tube sheath extending close to the bottom of the fount, said sheath being formed of two tubes so arranged as to form a hiatus between them, of a filling-aperture located in a plane dividing the fount horizontally, so that the capacity of the portion below said plane will not exceed the capacity of the portion above the same, substantially as and for the purpose specified.

4. In a hydrocarbon-lamp, the combination, with the oil-fount, a wick-tube, and a wick-tube sheath extending close to the bottom of the fount, said sheath being formed of two tubes and a closed chamber with which both tubes communicate, of a filling-aperture located in a plane dividing the fount horizontally, so that the capacity of the portion below said plane will not exceed the capacity of the portion above the same, substantially as and for the purpose specified.

5. In a hydrocarbon-lamp, the combination, with the oil-fount, of the casing B, the open-ended tubes *b* and *b'*, connected therewith, as described, and the wick-tube C, fitted loosely in said tubes *b* and *b'*, of a filling-aperture located in a plane dividing the fount horizontally, so that the capacity of the portion below said plane will not exceed the capacity of the portion above the same, substantially as and for the purpose specified.

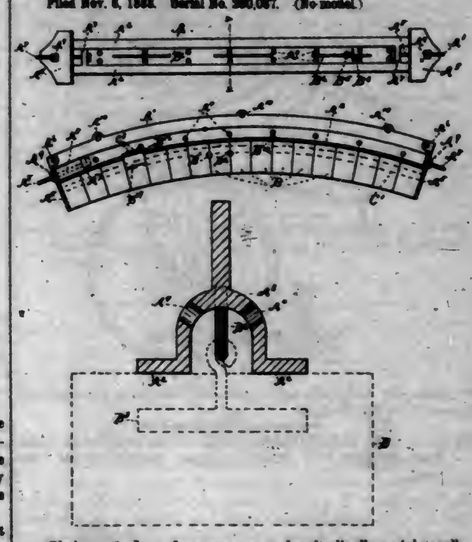
6. In a hydrocarbon-lamp, the combination, with the oil-fount, of the casing B, having a recess formed in its top or cover, the open-ended tubes *b* and *b'*, connected therewith, as described, and the wick-tube C, fitted loosely in said tubes *b* and *b'*, of a filling-aperture located in a plane dividing the fount horizontally, so that the capacity of the portion below said plane will not exceed the capacity of the portion above the same, substantially as and for the purpose specified.

7. In a hydrocarbon-lamp, the combination, with the oil-fount and the wick-tube, of a wick-tube sheath comprising two open-ended tubes and a closed chamber with which said tubes communicate, said chamber having a recessed or cupped top or roof surrounding the wick-tube, substantially as and for the purpose specified.

8. In a hydrocarbon-lamp, the combination, with the oil-fount and the wick-tube, of a wick-tube sheath comprising a casing whose top plate is recessed or cupped, a tube extending axially into said casing to near the bottom thereof, and a tube projecting from the bottom of said casing, substantially as and for the purpose specified.

9. In a hydrocarbon-lamp, the combination, with the oil-fount and the wick-tube, of a wick-tube sheath comprising a casing whose top plate is recessed or cupped, a tube extending axially into said casing to near the bottom thereof, and a tube projecting from the bottom of the casing and terminating near the bottom of the fount, said tube having its lower end bent laterally, substantially as and for the purpose specified.

408,152. FURNACE-COVER. WILLIAM SLEICHER, Jr., Troy, N. Y. Filed Nov. 6, 1888. Serial No. 290,067. (No model.)



Claim.—1. In a furnace-cover, a longitudinally and laterally arched brick-supporting beam made of a single bar of ir6n, substantially as described.

2. In a furnace-cover, the combination, with a brick-supporting beam, of end clamps pivoted upon the beam, one at each end, a row of fire-bricks inclosed between the clamps, and adjustable connections for securing the oscillatory ends of the clamps upon the ends of the beam, as screw-bolts A^5 and cross-bars A^7, substantially as described.

3. In a furnace-cover, the combination, with a brick-supporting beam having end clamp, of a row of clamp-inclosed bricks and a brick-supporting link connecting an individual brick in the row with the beam, substantially as described.

4. In a furnace-cover, the combination, with a brick-supporting beam having an end clamp, of a row of clamp-inclosed bricks having link-channels between contiguous bricks, and supporting-links adapted to fit such channels secured to the iron beam, substantially as described.

5. In a furnace-cover, the combination, with a brick-supporting beam, of a row of bricks having key-channels, a brick-supporting link connecting a brick central of the row with the beam, and brick-supporting keys, substantially as described.

408,153. BICYCLE. WILLIAM E. SMITH, Washington, D. C., assignor, by mesne assignments, to Philip T. Dodge, trustee, same place. Original application filed Feb. 16, 1888, Serial No. 264,187. Divided and this application filed Oct. 15, 1888. Serial No. 288,127. (No model.)

Claim.—1. In a bicycle, the combination of two ground-wheels arranged one directly in advance of the other, the connecting-frame provided with a seat and depressed between the wheels and forward of the seat to about the level of the rider's feet, and an elevated brace spanning the depressed portion of the frame and connected thereto in front and rear, said brace movably connected to the frame, substantially as described, whereby the frame may be stiffened for the use of male riders or adjusted to admit the skirts of female riders at will.

2. In a bicycle having a front steering and a rear driving wheel, and the main frame depressed between the wheels, as described, a brace to span the depressed portion and connect the two ends of the frame, hinged at one end to said frame and detachably connected thereto at the opposite end, whereby said brace may be disconnected at one end and turned out of its operative position without removal from the frame.

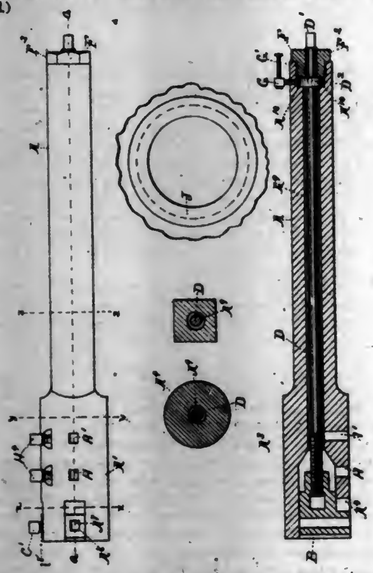
3. In combination with the frame depressed between the wheels and provided with a seat-standard, J, and the ears *k* and k^2, the brace hinged to the seat-standard, detachably connected to the front end of the machine and adapted to swing downward to the ear k^2, whereby

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the brace may be thrown out of action and fastened in place without removal from the machine.

408,154. ADJUSTABLE MULTIPLE-CUTTER BORING-BAR. JAMES STONE, Waterford, N. Y. Filed Aug. 4, 1888. Serial No. 281,924. (No model.)



Claim.—1. In a multiple-cutter boring-bar, a stationary fixed bar provided with a tool-socket, in combination with a tool-carriage for carrying a separate tool, movably supported by such fixed bar and adjustable longitudinally thereon, for the purpose of simultaneously cutting two interior faces, substantially as described.

2. The combination, in a multiple-cutter boring-bar, of a shank, A, head A', provided with tool-sockets H, tool-carriage B, movably mounted upon the head, carriage-adjusting stem D, and means for locking the adjusting-stem, as binding-screw G, substantially as described, and for the purpose of simultaneously working two cutting-tools upon the opposite faces of a straight-way valve.

408,155. RIBBON-HOLDER. CHESTER R. SULLY, Spencer, Iowa. Filed Sept. 1, 1888. Serial No. 284,941. (No model.)

Claim.—1. A ribbon-holder formed of a single piece of wire, comprising a transverse middle part having opposite longitudinally-extending arms B B', formed by bending the wire twice upon itself,

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straight parts C C', extending at right angles to said arms, the sides D D', springs formed on the sides, and the trunnions projecting inwardly from the springs, substantially as set forth.

2. A ribbon-holder comprising a middle part, side arms, D D', terminating at their lower ends in the curved springs E E', formed at their ends with the bent parts F F', respectively, each provided at its end with the inwardly-projecting trunnions G G', said trunnions being held from outward movement by the side arms, substantially as set forth.

3. A ribbon-holder formed of a single piece of wire, comprising a middle transverse part having longitudinal arms with their ends bent downward, straight sides extending at right angles to the transverse middle part, springs formed at the ends of the said sides and passing in the front and rear of the said sides, projecting ends formed on the said springs, and trunnions formed on the said ends, substantially as shown and described.

408,156. COVER FOR FRUIT-BASKETS. FREDERICK A. THOMAS, Chicago, Ill. Filed Mar. 25, 1889. Serial No. 304,663. (No model.)

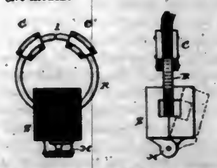


Claim.—1. The cover for fruit-packages, provided with a lower row of slats to keep the fruit in place, and an upper row of slats to take the weight in piling, substantially as set forth.

2. The combination, with a fruit-package, of an upper and a lower row of slats covering the package, and end pieces to which the slats are secured, substantially as set forth.

3. The combination of end pieces having ledges *d*, with upper slats, E, and lower slats, D, secured to said end pieces, substantially as set forth.

408,157. METHOD OF ELECTRIC WELDING AND SHAPING OF METALS. ELIHU THOMSON, Lynn, Mass. Filed Oct. 15, 1888. Serial No. 288,163. (No model.)



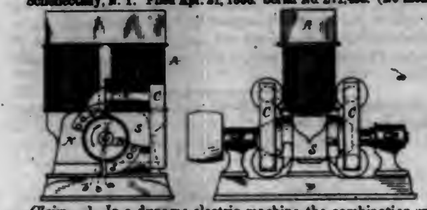
Claim.—1. The herein-described improvement in electric metal-working, consisting in setting up or establishing a counter electro-motive force or tendency in those parts of the work which form a shunt to the part to be heated, for the purpose of confining or localizing the heating-current at the part to be operated upon.

2. The herein-described improvement in electrical ring-welding,

&c., consisting in establishing in the continuous portion of the blank a counter electro-motive force or tendency opposing the flow of current therethrough from one to the other of the clamps by which the heating-current is supplied.

3. The herein-described improvement in electric metal-working by alternating currents, which consists in establishing in the part of the work forming a shunt to the portion to be heated a series of alternating currents derived from the same source as the main heating-currents, and tending to oppose the main heating-current in the shunt, while at the same time assisting such main currents in heating the work.

408,158. DYNAMO-ELECTRIC MACHINE. HENRY R. WALTER, Schenectady, N. Y. Filed Apr. 21, 1888. Serial No. 271,498. (No model.)



Claim.—1. In a dynamo-electric machine, the combination, with the armature and main field-magnet, of an extra magnet having coils in series with the armature and acting on the armature-coils outside of the main field of force, substantially as set forth.

2. In a dynamo-electric machine, the combination, with the armature and main field-magnet, of two extra magnets, each having coils in series with the armature and acting upon the armature-coils at opposite ends of the armature and outside of the main field of force, substantially as set forth.

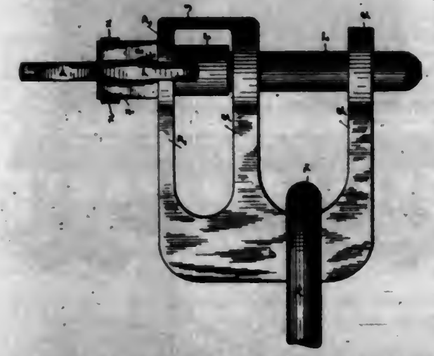
3. In a dynamo-electric machine, the combination, with the armature and main field-magnet, of an extra magnet having coils in series with the armature whose poles are situated so as to act upon the armature-coils outside of the main field of force and so as to assist the parts of the main magnet-poles which are weakened by the armature magnetism, substantially as set forth.

4. In a dynamo-electric machine, the combination, with the armature and main field-magnet, of the extra magnet having coils in series with the armature and acting upon the armature-coils outside of the main field of force, the effective poles of the main magnet and extra magnet being situated so as to act upon the armature at an angle with each other, substantially as set forth.

5. In a dynamo-electric machine, the combination of the armature, the field-magnet, and the extra magnet acting on the armature-coils outside the main field of force and wound partly in series and partly in shunt with the armature, substantially as set forth.

6. In a dynamo-electric machine, the combination of the armature, the field-magnet, an extra magnet having coils in series with the armature and situated so as to prevent self-induction in the armature-coils, and an extra coil on the field-magnet in series with the armature, substantially as set forth.

408,159. COUPLER FOR MINING-CARS. WILLIAM WALTER, Greensburg, Pa., assignor of one-fourth to Samuel A. Clements, same place. Filed Feb. 3, 1888. Renewed Mar. 19, 1889. Serial No. 303,944. (No model.)



Claim.—1. In a flexible or loose coupler, the clevis *o*, provided with an extra bar, *p*, the coupling-pin *r*, having secured in suitable bearings two levers, *v*, each provided with a hook, *w*, adapted to engage with the under surface of the top bar, *p*, of the clevis.

2. In a flexible or loose coupling such as described, the clevis *o*, provided with an extra bar, *p*, as and for the purpose described.

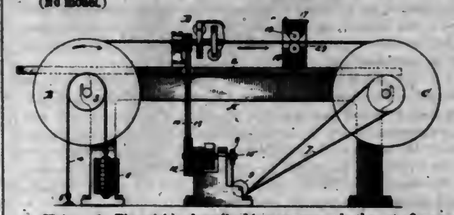
3. In a coupling such as described, the clevis *o*, provided with an extra bar, *p*, and connecting-bar *s*, substantially as described.

4. A coupling-pin consisting of the pin *r*, having secured in suitable bearings at the top two levers, *v*, each provided with a hook, *w*, capable of moving toward or away from the body of the pin.

5. A coupling-pin for the purpose set forth, consisting of the pin *r*, having secured in suitable bearings at the top of the same two levers, *v*, each provided with a hook, *w*, capable of moving toward or away from the body of the pin *r*, and a spring, *x*, connecting the two levers *v* together, as and for the purpose set forth.

6. In a loose coupling such as described, the combination consisting of the clevis *o*, provided with an extra bar, *p*, and connecting-bar *s*, the pin *r*, having two parallel flanges, *l*, formed on the top of the same, the levers *v*, each provided at their lower extremities with hooks *w*, the spring *x*, connecting the two levers *v* together, and the small bar *y*, arranged between the same, substantially as set forth and described.

408,160. MANUFACTURE OF DRESS-STIFFENERS. IRA DE VER WARNER, Bridgeport, Conn. Filed Sept. 20, 1888. Serial No. 286,759. (No model.)



Claim.—1. The within-described improvement in the art of manufacturing stiffening-blades, the same consisting in arranging fibers longitudinally in bundles and then bringing two or more of said bundles parallel side by side and binding them together under tension, whereby the fibers of said bundles are brought into substantially parallel straight lines and held in this condition, substantially as set forth.

2. The within-described process of forming stiffening-blades, consisting in arranging fibers longitudinally in bundles and arranging two or more of said bundles parallel side by side, binding them together under tension, and subjecting the composed bundle to heat and pressure, substantially as set forth.

3. In the manufacture of stiffening-blades, arranging fibers longitudinally in bundles, bringing two or more of said bundles together parallel side by side, binding them together under tension, coating the same with cement, and flattening under heat and pressure, substantially as set forth.

408,161. CORSET-STIFFENER. IRA DE VER WARNER, Bridgeport, Conn. Filed Sept. 29, 1888. Serial No. 286,760. (No model.)



Claim.—1. A flat stiffening-blade consisting of bundles of fibers arranged side by side, with a surrounding binding material confining the fibers of the said bundles in straight lines parallel with each other and with the edges of the blades, substantially as set forth.

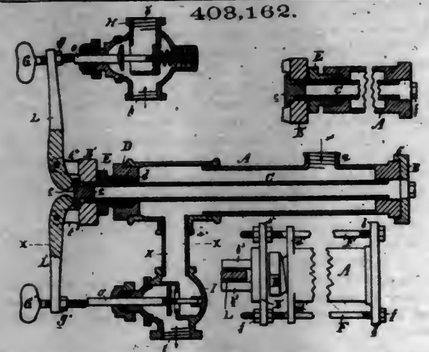
2. A flat stiffening-blade consisting of bundles of fibers arranged side by side, with a surrounding binding material confining the fibers of the said bundles in straight lines parallel with each other and with the edges of the blade and cemented to the inclosed fibers, substantially as set forth.

408,162. STEAM TRAP AND REGULATOR. ADOLPH WEBER, Detroit, Mich., assignor of one-half to William L'H. Mahon, same place. Filed Jan. 11, 1889. Serial No. 296,112. (No model.)

Claim.—1. The combination of the iron cylinder A, provided with the inlet and outlet pipes and the wings *b* and *d'*, the gland E, the cap B', having wings b^3 and provided with the studs b^3 b^3 and b^4 b^4, the rods F F, with the nuts *f f*, for connecting the cap B' with the cylinder and for regulating the extent of the action of the thermostatic tube C, the thermostatic tube C, the lever L, operated by the thermostatic tube, the means for controlling the extent of the opening of the valve H, and the valve H, substantially as and for the purpose described.

2. The combination of the iron cylinder A, provided with inlet and outlet passages and wings *b d'*, the gland E, the cap B', having

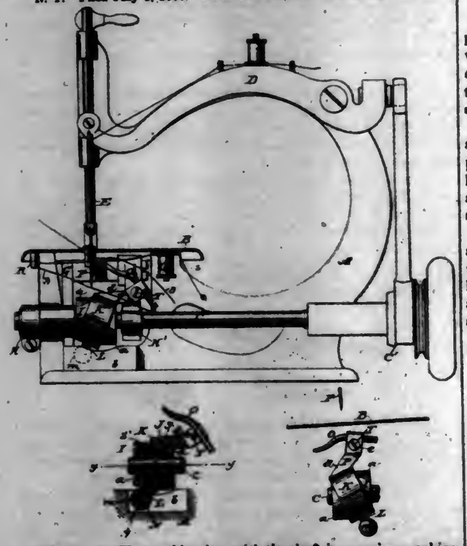
408,162.



wings b^3 and provided with the studs b^3 b^3 and b^4 b^4, the rods F F, and nuts for connecting the cap B' with the cylinder A and for regulating the extent of the action of the thermostatic tube C, the thermostatic tube C, the lever L', the means for regulating the extent of the opening of the valve I, the valve I, and the pipe K, substantially as and for the purpose described.

3. The combination of the iron cylinder A, provided with the inlet and outlet pipes and the wings b c, the gland E, the cap B', having wings b^3 b^4 and provided with the studs b^3 b^4, the rods and nuts for connecting the cap B' with the cylinder and for regulating the extent of the action of the thermostatic tube C, the thermostatic tube C, the levers L L', the means for regulating the extent of the opening of the valves H and I, the valves H and I, and the tube K, substantially as and for the purpose set forth.

408,163. SEWING-MACHINE. CHARLES W. WEBB, Brooklyn, N. Y. Filed July 5, 1888. Serial No. 279,044. (No model.)



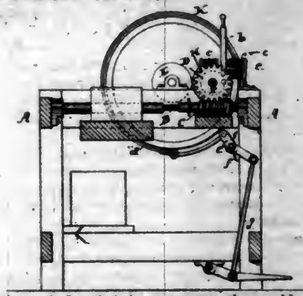
Claim.—1. The combination, with the shaft in a sewing-machine, of a cylindrical block fixed upon said shaft and having a peripheral groove formed thereon in a plane inclined to its axis, an oscillating non-revoluble band encircling said groove loosely, and a looper carried by said band, substantially in the manner and for the purpose herein set forth.

2. The combination, substantially as described, of the rotating cylindrical block I, having an inclined peripheral groove, the band K, encircling said groove loosely, the looper O, carried by said band, the guide-arm L, projecting from said band and terminating in a ball or spherical end, m, and the lateral parallel guide-walls b b, between which said plates are fitted to move freely.

3. The combination, in the stitch-forming mechanism of a sewing-machine, of the rotating shaft C, the reciprocating needle F, the means, substantially as described, whereby the needle is actuated by the rotation of the shaft, the looper O, traversing the path of the needle, the cylindrical block I, secured upon the shaft C and having an inclined groove encircling its periphery, and the oscillating non-revoluble band encircling said groove and to which the looper is secured, substantially in the manner and for the purpose herein set forth.

4. The combination, in the stitch-forming mechanism of a sewing-machine, of the bed-plate B, the reciprocating needle F the longitudinally-perforated looper O, traversing the path of the needle under the bed-plate, the rotating shaft C, the cylindrical block I, secured upon the shaft immediately under the needle and having a groove encircling its periphery at an inclination to the axis of the shaft, an oscillating non-revoluble band, K, encircling said groove and by which the looper is carried, means, substantially as described, for actuating the needle by the rotation of the shaft, an eye, R, upon the under side of the bed-plate at a point in front of the looper, and a tension device, Q, fixed under the bed-plate at a point in the rear of the looper, all substantially in the manner and for the purpose herein set forth.

408,164. HOIST. JOHN WIEST, York, Pa. Filed Sept. 19, 1887. Serial No. 250,097. (No model.)

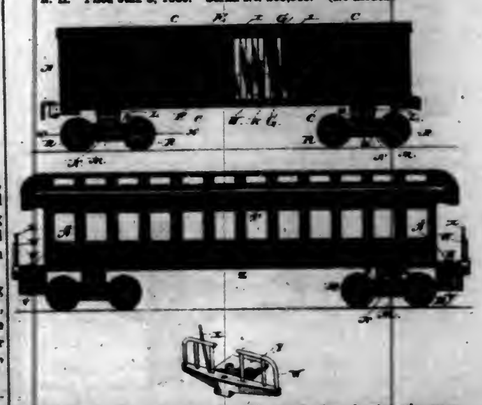


Claim.—1. In a hoisting apparatus, the combination, with the power-shaft having a worm-gearing, of the counter-shaft provided with a worm-wheel and having a universal bearing at one end and carrying a friction-pulley at the other end, the slotted journal-box, the lever connected thereto, and the windlass having a friction-pulley, substantially as set forth.

2. The combination of the shaft E, having one end provided with a universal bearing, a windlass-shaft and windlass, a hollow friction-pulley and its smaller pulley located on said windlass-shaft, a pulley located on the shaft E, and electro-magnets for moving said shaft E against the interior of said hollow pulley or its smaller pulley, substantially as and for the purpose set forth.

3. The combination of the power-shaft B and counter-shaft E, and worm-gearing between the same, a universal bearing and a transversely-movable bearing for said shaft E, pulley on the latter, a windlass-shaft having hollow friction-pulley and smaller friction-pulley, and a lever for moving said transversely-movable bearing, substantially as and for the purpose set forth.

408,165. TOY RAILROAD-CAR. JAMES S. WILKINS, Jr., Keene, N. H. Filed Jan. 5, 1889. Serial No. 295,515. (No model.)



Claim.—1. In a toy car, the sides or castings having the openings or doorways B, the studs C, projecting from their outer sides, the bottom D, projecting from their inner sides, the wires or rods stretched on the studs and having their ends passed through openings in the sides of the car and clinched, and the sliding doors guided between said wires or rods and the sides of the cars, said doors having the studs bearing on the wires, substantially as described.

2. In a toy car, the sides or castings having the openings or doorways B, and the studs C, projecting from their outer sides, the wires or rods G, stretched between the studs across the upper and lower sides of the doorways, and having their ends passed through openings in the sides of the car and clinched, and the sliding doors made of cast metal and guided between said wires or rods and the sides of the car, said doors having the outwardly-projecting studs I K, cast with them at their upper and lower sides and bearing on the upper and lower sides of the upper and lower wires, respectively, substantially as described.

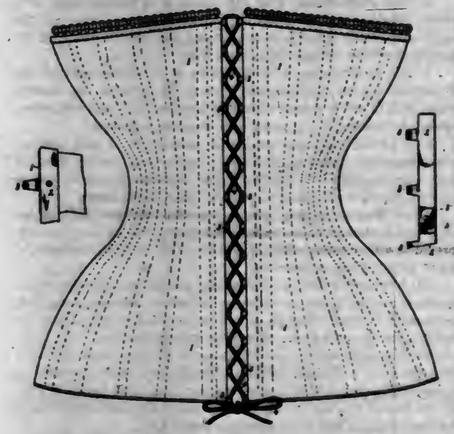
3. In a toy car, the combination, with the box or body having the depending standards L, of the castings M, centrally pivoted to said standards, and the car-axles having their ends journaled in recesses on the inner sides of the castings at the ends thereof, substantially as described.

4. In a truck for toy cars, the castings M, representing the side springs, bars, and axle-boxes of a car-truck, and the axles having their ends journaled in recesses on the inner sides of the castings M, at the ends thereof, substantially as described.

5. The combination, in a toy car, of the body having the platforms at its ends, and the hand-rails having the plates Y secured under the car-platforms, substantially as described.

6. In a toy car, the body formed of longitudinal separable sections or castings having the end platforms, in combination with the hand-rails having the plates Y under said platform, said plates being riveted or secured to the platforms and thereby securing the ends of the car-sections together, substantially as described.

408,166. CORSET-FASTENING. NATHANIEL B. WILLIAMS, Bridgeport, Conn. Filed Jan. 3, 1888. Serial No. 260,751. (No model.)



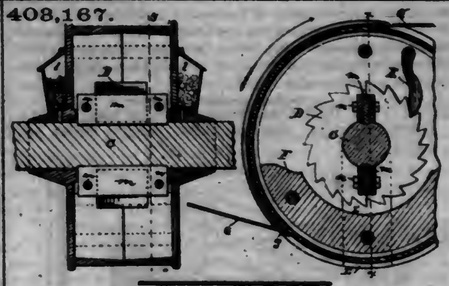
Claim.—1. The combination, with a corset-lacing stay provided with projecting eyes extending beyond its edge and open in the direction of the length of the stay, of strips of thickening material placed at each side of the stay and between the latter and the corset fabric, to thicken the back edge of the corset, so that crossed lacing-cords will not project outside of the outer face of the corset, substantially as set forth.

2. The combination, with a corset-lacing stay provided with projecting metallic eyes extending beyond its edge and open in the direction of the length of the stay, said eyes being flattened in the plane of the stay to form elliptical openings through which the lacing-cord can freely pass, of strips of thickening material placed at the sides of the stay to thicken the back edge of the corset, so that the crossed lacing-cords will not project outside of the outer surface of the corset.

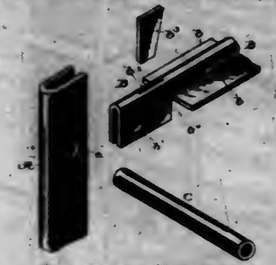
408,167. CAR-STARTER. BARTHOLOMEW WHITAR and MILES PRETTE, Wellington, Ontario, Canada. Filed Mar. 11, 1889. Serial No. 302,733. (No model.)

Claim.—In a car-starter, the combination of the weighted loose drum B, provided with movable section L and pawl E, ratchet-wheel D, provided with keys n n, and chain G-G' with car-axle C, all constructed and arranged as and for the purpose shown and described.

408,167.



408,168. FILE CASE OR CABINET. WILLIAM T. WOOD, Washington, D. C. Filed Dec. 14, 1888. Serial No. 293,547. (No model.)



Claim.—1. The knockdown cabinet for file-boxes, consisting of standards A A', the independent flanged bars B, and cross-bars C, passing through and uniting the standards and bars B, substantially as shown.

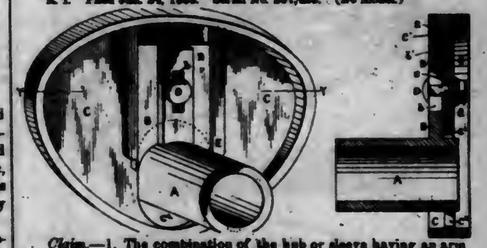
2. In a case for file-boxes, the channeled standards, the bars B, fitted at their ends therein, the transverse rods uniting the standards and bars, and the keys, applied substantially as shown.

3. A file-case having a front suspension-rod, C, and box-sustaining bars with side flanges separated from the rod by an opening, b^4, in combination with a file-box having suspending plates or hooks adapted to pass through the openings and underride the bars, whereby the box is guided within the case and automatically arrested and suspended when withdrawn in position to be disconnected.

4. A case for file-boxes, having the front standards, the rear standards of greater width, and the intermediate flanged rails, whereby the boxes are sustained.

5. In a file case or cabinet, the combination of the standards A', the cross-rods C, and the plates c', inserted between the rods and standards, substantially as described and shown.

408,169. ADJUSTABLE CAM. ALVIN D. WOODWARDS, Bristol, R. I. Filed Jan. 24, 1888. Serial No. 297,450. (No model.)



Claim.—1. The combination of the hub or sleeve having an arm or plate, B, projecting therefrom, and a cam, C, the said arm and cam being provided with teeth and adapted to engage each other, whereby the throw of the cam may be varied and the cam be held in a fixed position on said arm when adjusted, substantially as set forth.

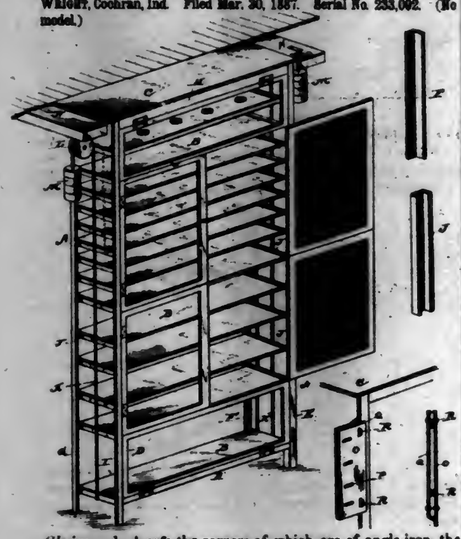
2. The combination of the hub or sleeve having an arm or plate, B, projecting therefrom, and a cam, C, the said arm and cam being provided with teeth and adapted to engage each other, and a rib or ribs, E, located upon the cam for engaging the arm, substantially as set forth.

3. The combination of the hub or sleeve having an arm or plate, B, projecting therefrom, and a cam, C, the said arm and cam being provided with teeth and adapted to engage each other, and the cam having an opening or hole, c^2, therein, substantially as and for the purposes specified.

4. The combination, with the hub or sleeve A, having an arm or

plate, B, which is perforated, of the cam C, perforated and having a rib or ribs, E, the said cam and arm being provided with teeth and adapted to engage each other, and a fastening passing through the perforations in the arm and cam and adjustably securing the parts to each other, substantially as set forth.

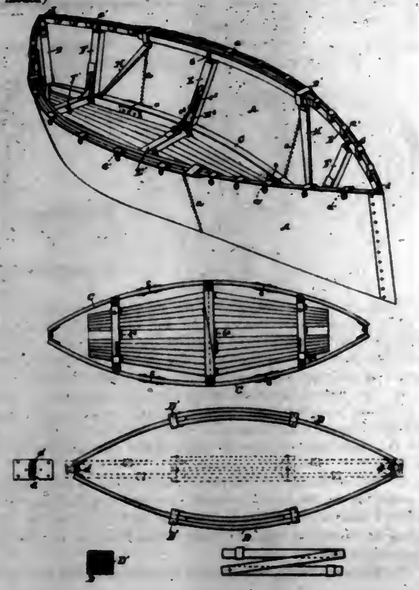
408,170. VERTICALLY-MOVABLE KITCHEN-SAFE. JOHAN C. WRIGHT, Cochran, Ind. Filed Mar. 30, 1887. Serial No. 233,092. (No model.)

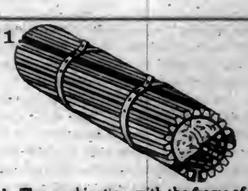


Claim.—1. A safe the corners of which are of angle-iron, the rear posts being so placed that the sides of the iron will register with the back and ends of the safe, while the front posts are so placed that only one side of each post will register with the ends of the safe and the other side will project from the safe, in combination with guides within which the sides of the front posts are placed.

2. A safe the sides of which are provided with flanges, in combination with guides provided with slots and having a channel or groove upon the inner edge of each and anti-friction rollers journaled along said channel.

408,171. FOLDING BOAT. DAVID H. ALLEN and WILLIAM H. GAMBLE, Miamisburg, Ohio. Filed Sept. 17, 1888. Serial No. 285,615. (No model.)





Claim.—1. The combination, with the frame of a folding boat, of a separable and expansible gunwale made in three sections and composed of overlapping strips hinged together and provided with sleeves or ferrules adapted to slip over the pivotal joint thereof, substantially as described.

2. In a folding boat, the combination, with the ribs and gunwale thereof, of the interposed screw yokes or forks located on the upper ends of said ribs for adjusting the height of the gunwale, substantially as described.

3. In a folding boat, the combination, with the gunwale and bottom frames, of the cross-brace E', the ribs E, hinged thereto, the adjustable brace e^3, and means, substantially as described, for fastening said brace.

4. The combination, with the gunwale and bottom frame of a folding boat, of the cross-brace E' and the ribs E, united by a knee pivoted at the junction of said cross-brace and ribs and provided with a foot or downward extension and lip, e^5, on said extension for engaging said bottom frame, and an adjustable brace, e^3, attached to said knee, and means for fastening the same, substantially as described.

5. In a folding boat, and in combination with the gunwale and bottom frame, the ribs F, provided with the socketed knees F^3, and a jointed expanding cross-bar, F', engaging said socketed knees and having its ends notched or shouldered for engaging said bottom frame, for the purpose and substantially as described.

6. The combination, with the frame of a folding boat, of a jointed cross bar or brace made in two overlapping pieces pivoted together and at its opposite ends engaging the bottom frame for expanding the same, substantially as set forth.

7. The combination, with the frame of a folding boat, of the pivoted brace-arms H, interposed between the gunwale and bottom frame, both of which extend the entire length of the boat, and retaining-feet *h*, substantially as and for the purpose described.

8. A folding and expansible frame provided at its ends with tubular hinge-pins, in combination with a canvas sack having blocks B at its ends, provided with hinge-pins and recesses adapted to receive the ends of said folding and expansible frame, as set forth.

9. A folding and expansible frame provided with the tubular hinge-pin, in combination with a canvas sack having blocks B at its ends, provided with screw-threaded pins b^2 and nuts b^3 thereon, substantially as and for the purpose described.

10. A separable covering for folding and sectional boats, consisting of a canvas sack made in one piece, folded and seamed as described, and secured to blocks B at its ends, and provided with hooks *a'*, for engaging the gunwale-frame, all substantially as specified.

11. The combination, with the frame of a folding boat, provided with pins i^2, of a flooring made in two sections, each composed of tapering slats united by a flexible strip or sheet, and hooks or eyes secured to said flooring for suspending it from the cross-braces E' and F', substantially as and for the purpose described.

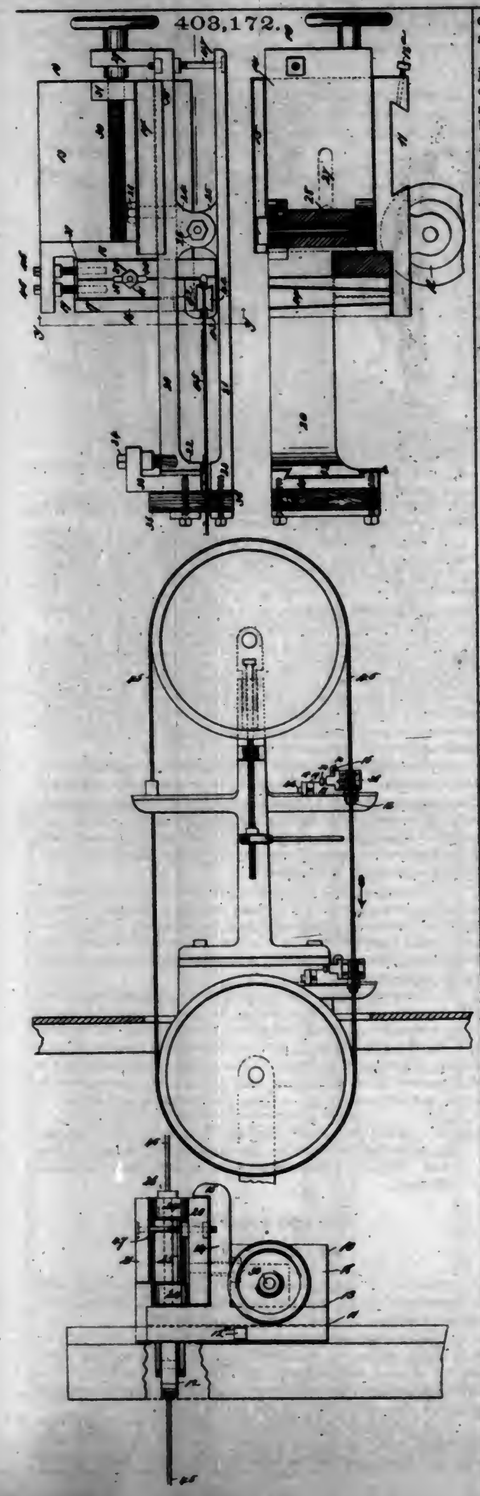
12. The combination, with the frame of a folding boat, of a flooring composed of slats united by a flexible strip or sheet, and hooks and pins secured to said flooring and to the cross-braces E' and F', of the frame for supporting said flooring, substantially as specified.

13. The combination, with the frame of a folding boat, of a separable and expansible bottom frame composed of a number of strips or pieces, C, of wood or suitable material, an equal number on either side of the frame, said strips or pieces being pivotally united by means of parallel side straps, *c*, adapting the frame as a whole to be folded one section upon another, and the end pieces provided with hinges at either end of the frame, whereby said bottom frame may be expanded or folded compactly, as shown and described.

14. A covering for folding boats, made of a single piece of canvas folded and seamed, as described, and provided with hooks secured thereto, in combination with a folding and expansible frame having an adjustable gunwale and screw-yokes, substantially as described, for adjusting the height of said gunwale, for the purpose specified.

408,172. GUIDE FOR BAND-SAWS. CHARLES R. BACKUS, Evansville, Ind. Filed May 4, 1888. Serial No. 272,817. (No model.)

Claim.—1. The combination, with a ribbed guide-bed and spaced pivoted jaws adapted to slide upon said bed, having secured to their outer ends adjustable clamping-blocks, of parallel angular guide-blocks having the contiguous faces of their vertical members recessed to re-



ceive a soft-metal block, and means for adjusting the jaws laterally and endwise, substantially as shown and described.

2. The combination, with a ribbed guide-bed and pivoted spaced jaws sliding upon said bed, one jaw being provided with an adjustable clamping-block upon its outer end and the opposite jaw upon the same end with an opposing fixed clamping-block, of angular guide-blocks adjustable upon the guide-bed, the vertical members of which guide-blocks project upward between the opposing jaws, having grooved contiguous faces and metal blocks secured in said grooves, and means, substantially as shown and described, for adjusting the jaws endwise and laterally and means for adjusting the guide-blocks, as and for the purpose specified.

3. The combination, with a ribbed guide-bed and pivoted spaced jaws sliding upon said bed, one jaw being provided with an adjustable clamping-block at its forward end and the other jaw with an opposing fixed clamping-block, angular guide-blocks sliding upon said guide-bed the vertical members of which project upward between the inner faces of the jaws, having grooves in their contiguous sides, and soft-metal blocks inserted in said grooves, of a screw secured to one jaw and passing through a nut upon the guide-bed, a screw uniting the rear ends of the jaws, and adjusting-screws passing through the said guide-bed into the said guide-blocks, all combined to operate substantially as and for the purposes specified.

408,173. LATCH. JUDSON A. BALDWIN, Winooski, Vt. Filed Oct. 27, 1888. Serial No. 289,804. (No model.)



Claim.—The combination of the keeper, the locking-lever, the pivotal bolt, the plate provided with an opening, and the spring having a turned-out end and made to project through the opening and to catch in a recess in the inner side of the lever, substantially as shown.

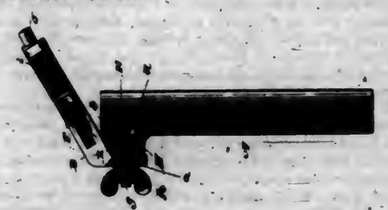
408,174. LAMP-BLACK MACHINE. ERASTUS R. BLOOD and SWAN P. WENSTRAN, Ludlow, Pa., assignors to Martha P. Blood, same place. Filed Oct. 29, 1888. Serial No. 289,465. (No model.)



Claim.—1. In a lamp-black machine, the combination, with a condensing-plate having a vent or slot through it directly over the center of the flame for the escape of non-condensed products of combustion, of a secondary plate supported above said vent.

2. In a lamp-black machine, the combination, with a condensing-plate having through it a vent for the escape of the non-condensed products of combustion, of a clearer for keeping the said vent open.

408,175. GAGE FOR GRINDING TWIST OR FLAT DRILLS. ADOLPH F. BREWER, San Francisco, Cal. Filed Aug. 15, 1888. Serial No. 282,830. (No model.)



Claim.—1. The combination, with the box-square and gage-rule, of a guide-box formed thereon and provided with a bevel, as described, and adapted to serve in sustaining the gage-rule, substantially as specified.

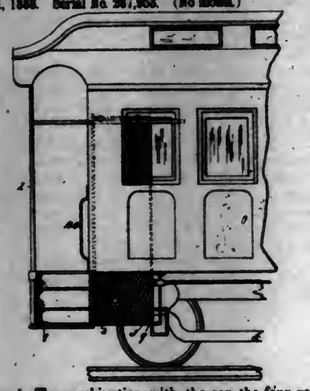
2. The combination, with a box-square provided with a guide-box beveled as described, of a slide arranged in said guide-box, a gage-rule connected with said slide, and a set-screw for adjusting the slide and rule, substantially as specified.

3. The combination, with a box-square, of a gage-rule connected therewith, and a screw for laterally adjusting the rule with relation to the square, substantially as specified.

4. The combination, with the gage-square provided with the guide-box beveled as described, of the slide arranged in said box and hav-

ing an internally-threaded aperture, a reduced rectangular portion and a reduced threaded portion, a set-screw journaled in the guide-box and engaging the threads in the slide, the gage-rule having an aperture to receive the reduced rectangular portion of the slide, and a wing-nut to receive the reduced threaded portion of said slide, substantially as specified.

403,176. APPARATUS FOR OPERATING SAFETY-GATES OF RAILWAY-CARS. William M. Brown, Jr., Sacramento, Cal. Filed Mar. 21, 1888. Serial No. 267,953. (No model.)



Claim.—1. The combination, with the car, the four gates at the steps thereof, of the horizontal lever 18, pivoted between its ends to the under side of the car, oppositely-projecting rods 16, pivotally connected at their inner ends with the ends of said lever, two transverse levers, 11 11, pivoted at each end of the car, with their inner ends, 14, overlapped and slotted, a pin or bolt extending through said slots into the outer ends of the two rods 16, a rod connecting the end of each lever 11 with a gate, and means for operating the lever 18 to throw and retract the rods 16, substantially as set forth.

2. In an apparatus for opening and closing the safety-gates of a passenger-car, the combination, with the cylinder 24, connected by means of main supply-pipes 28 and 30 with pipes 29 31, and having the piston-head 27 with piston-rod 26, and sliding block 21, mounted on frame 22, of the double-ended lever 18, mounted in brackets 19, connected at one end by means of pivoted rod 20 with sliding block 21, actuating-rod 16, connected at one end with the double-ended lever 18, mounted in brackets 17, and having a pin, 15, levers 11, pivoted in brackets 12, having slotted ends 14, engaging pin 15, and the bars or rods 10, connecting levers 11 with gates 1, all located and arranged beneath a car, substantially as described.

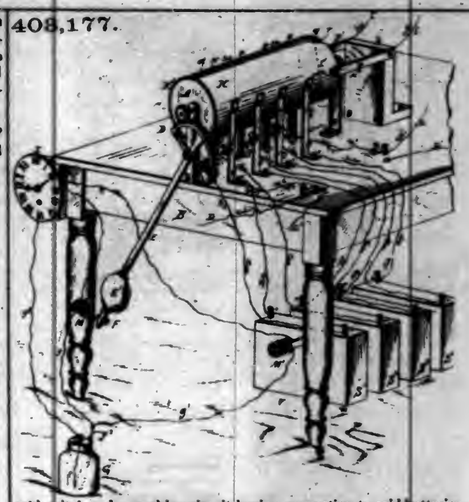
3. In an apparatus for opening and closing the safety-gates of a railway passenger-car, the combination, with sliding gates 1, having grooved rollers 3, mounted on tracks 4 5, the tracks 5, having projections 8 and 9 9, located at the forward and rear ends thereof, the pockets or recesses 6, to receive the gates, pivoted rods 10, connected with said gates and with pivoted levers 11, and actuating-rods 16, having a pin, 15, at one end, engaging the slotted ends 14 of levers 11, and pivoted at their other ends to a double-ended lever, 18, in combination with rod 20, pivoted to one end of double lever 18 and at its other end to block 21, sliding in frame 22, piston 27, connected with block 21 cylinder 24, branch pipes 28 and 30, and main supply-pipes 29 and 31, leading to the locomotive, substantially as shown and described.

4. An apparatus for operating the safety-gates of railway passenger-cars, consisting of sliding gates 1, having rollers 3, mounted on tracks 4 5, the latter having stops 8 9 9, levers 11, pivoted rods 10, connecting with gates 1, double-ended lever 18, with actuating-rods 16, having a sliding connection with the slotted ends of levers 11, cylinder 24, with piston 27, connecting with double lever 18, main steam-supply pipes 29 31, connecting with the ends of cylinder 24 by branch pipes 28 and 30, and couplings connecting the sections of pipes 29 and 31, consisting of sections 32 clamped thereto, and having automatically-closing hooks 33, lugs 35, guide projections 37, and lugs 38, automatically-closing valves 40, and projecting arms 43, holding valves 40 open, all constructed and arranged substantially as shown and described.

403,177. TIME-SWITCH FOR SECONDARY BATTERIES. Charles R. Bull, New Haven, Conn. Filed Nov. 15, 1881. Serial No. 45,422. (No model.)

Claim.—1. The combination, with a charging-circuit of secondary batteries and a switch for connecting said circuit to said secondary batteries, of a branch of said charging-circuit leading around

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said switch and a working-circuit having connection to said batteries through independent switch mechanism.

2. The combination, with a charging-circuit and a secondary battery, of a switch for alternately connecting said circuit to and disconnecting it from said battery, a branch circuit comprising a resistance through which the charging-circuit is connected when said battery is disconnected therefrom, and a working-circuit having connection to said battery through independent switch mechanism.

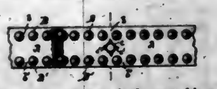
3. The combination of a charging-circuit, a series of stations, each provided with a secondary battery, and a switch for alternately connecting said battery to and disconnecting it from said circuit, a branch circuit through which the charging-circuit is connected when said battery is disconnected therefrom, and a working-circuit at each station, having connection to said battery through independent switch mechanism.

4. The combination, with a charging-circuit, a working-circuit, and a secondary battery or batteries, of an automatic switch and time-indicating devices adapted to connect said battery or batteries at predetermined intervals with the charging-circuit to be charged and the working-circuit to be discharged, and to indicate time, with independent switch devices for opening and closing the working-circuit at will, substantially as described.

5. The combination of a charging-circuit charged by a suitable electrical generator with one or more secondary batteries, a switch, and an electro-magnet for controlling it for connecting or disconnecting the said secondary battery to or from the charging-circuit, and a working-circuit having connection to said battery through independent switch mechanism.

6. The combination of a charging-circuit charged from a suitable generator, secondary or storage batteries located at intervals along said charging-circuit, and devices for introducing the batteries into the charging-circuit at the several stations, a branch at each through which the charging-circuit is connected when the battery is disconnected therefrom, whereby the batteries may be charged in series, and independent circuits from the batteries at each station.

403,178. BOX-STRAP. Spencer C. Cary, Baldwin, N. Y., assignor, by mesne assignments, to the Cary Manufacturing Company, of New York. Filed Mar. 5, 1888. Renewed Oct. 13, 1888. Serial No. 288,048. (No model.)



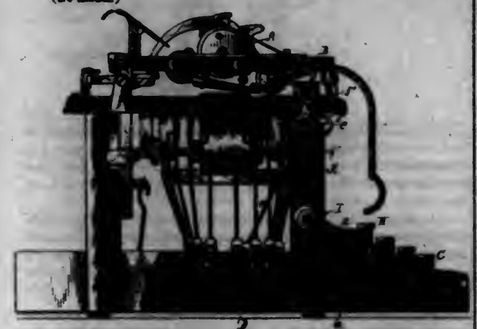
Claim.—1. A box-strap composed of a metal band having a series of successive bosses at each side edge and extending longitudinally thereof, substantially as and for the purpose set forth.

2. A box-strap composed of a metal band having bosses of uniform shape and size and equidistant from each other in series along the side edges of the band, each individual boss in the series at one edge being respectively opposite to an individual boss in the series at the other edge, substantially as and for the purpose set forth.

3. A box-strap of indefinite length composed of metal bands having similar bosses successively in series throughout their length, with their ends overlapped flatwise, with the said similar bosses fitted to

each other in the respective bands and provided at or near their said lapped ends with corresponding transverse apertures, with the rims thereof clamped together, substantially as and for the purpose set forth.

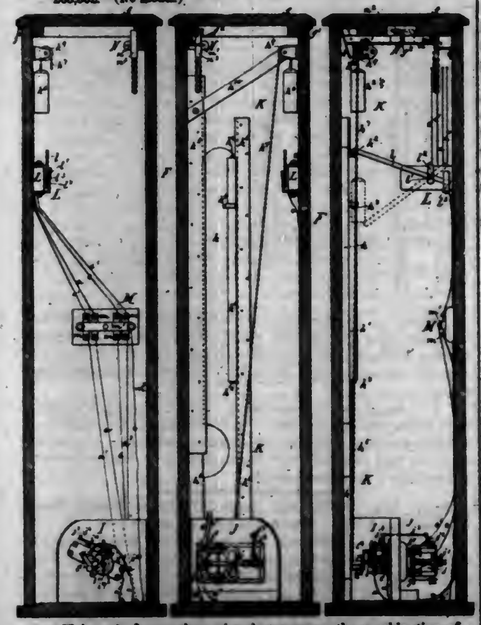
403,179. FRACTION-KEY FOR TYPE-WRITING MACHINES. Asa Davis and James H. W. Marriott, Baltimore, Md.; said Davis assignor to Warren H. Sadler, same place. Filed May 6, 1886. Serial No. 201,294. (No model.)



Claim.—1. A fraction-key for type-writing machines, which consists of a lever or key pivoted to a suitable part of the machine and arranged to bear upon the upper-case lever, in combination with the roller-frame of the machine and the upper-case lever connected thereto, whereby the roller-frame may be shifted with a positive motion backward to any desired position between the upper and lower case positions, substantially as described.

2. A fraction-key for type-writing machines, which consists of a lever or key pivoted to a suitable part of the machine and arranged to bear upon the upper-case lever, in combination with the roller-frame of the machine, the upper-case lever connected thereto, and an adjustable stop or set-screw co-operating with the fraction-key, whereby the throw of said key and consequent motion of the roller-frame may be determined, substantially as described.

403,180. ELECTRICAL FLOAT-SIGNALING APPARATUS. John R. De Mier, Las Cruces, N. Mex. Filed Aug. 21, 1883. Serial No. 283,302. (No model.)



Claim.—1. In an alarm-signal apparatus, the combination of a flag mechanism, K, comprising a flag-staff, chain, pulley, weight, flag-furling rod, flag-detent, and a flag-staff detent, an electric signaling mechanism, I, comprising a main driving-wheel, notched crank-handle pinion-wheels, signal-disk i^9, escape-wheel i^8, escape-lever i^{10}, check and contact plate i^{12}, insulated contact-plates i^{13} i^{14} i^{15}, and insulating-blocks i^{16} i^{17} i^{18}, clock-starting mechanism J, comprising electric magnet j, armature j', lever j^2, check-rod j^3, having insulated head j^4, battery E, float d^3, electric switch d, and connecting-wires a a', c c', and telegraph-line wire, substantially as and for the purpose described.

2. The combination, with the flag-staff k and float d^3, of the clock-work I, having escape-lever i^{10}, and magnet j, having a starting-rod, j^3, and a battery, E, and a float-switch, d, substantially as and for the purpose set forth.

3. The combination of the clock-work I, having crank-lever i^{11}, with notch i^{19}, and flag-staff k, having detent k^2, chain k^3, pulley k^9, and weight k^4, substantially as and for the purpose set forth.

4. In the described flag mechanism K, the combination of the chain k^3, pulley k^9, weight k^4, flag-staff k, guides k^5, cross-bar k^{10}, flag k', unfurling-rod k^7, and flag-detent k^2, substantially as and for the purpose set forth.

5. In the described flag mechanism K, the combination of the flag-staff k, the locking-hook n^4, sliding rod n, inclined plate n^2, and swinging top f, having locking-pin f^3, substantially as and for the purpose described.

6. The combination of the switch L, battery E, magnet j, flag-staff k, detent k^2, notch-lever i^{11} of clock-work I, chain k^3, pulley k^9, and flag-staff-operating weight k^4, substantially as and for the purpose set forth.

7. The combination of the flag mechanism K, comprising a flag-staff, chain, pulley, weight, flag-furling rod, flag-detent, flag-staff detent, electric signaling apparatus I, comprising main driving-wheel, notched crank-handle, pinion-wheels, signal-disk i^9, escape-wheel i^8, escape-lever i^{10}, check and contact plate i^{12}, insulated contact-plates i^{13} i^{14} i^{15} and insulating-blocks i^{16} i^{17} i^{18}, clock-starting mechanism J, comprising electric magnet j, armature j', lever j^2, check-rod j^3, having insulated head j^4, battery E, float d^3, electrical switch d, thermostat G, telegraph-line wire A, and connecting-wires a a' c c' c^3 c^4, substantially as described.

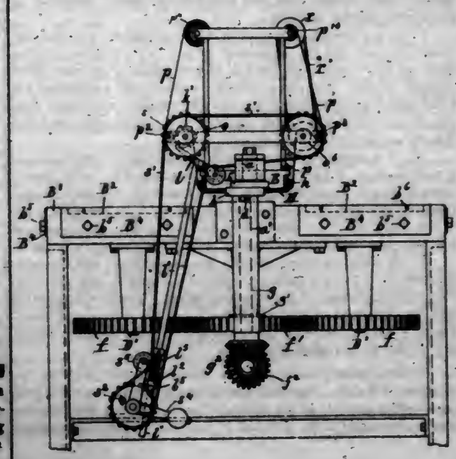
8. The within-described signaling apparatus, comprising float, thermostat, switches thereof, starting mechanism J, battery and circuit-wires thereof, signaling mechanism I, and flag mechanism K, whereby signals at stations and at a bridge can be given both by action of high water and fire, substantially as and for the purpose described.

403,181. PLATE-PRINTING MACHINE. Ulrich Eberhardt and Henry E. Eberhardt, Newark, N. J. Filed May 3, 1888. Serial No. 273,631. (No model.)

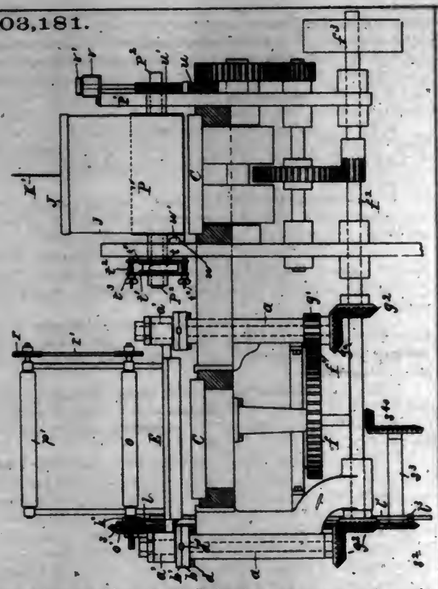
Claim.—1. In a plate-printing press, the combination, with the horizontal driving-shaft f^2 and the sprocket-wheel shafts D', of the spur-wheels f, the spur-wheel f', intermediate to the same, and the pinion g', driven by the bevel-wheels g^2, substantially as herein set forth.

2. In a plate-printing press, the combination, with the horizontal driving-shaft f^2 and the sprocket-wheel shafts D', of the shafts a, for driving the crank-pins a', the bevel-wheels connecting such shafts with the main shaft f^2, the spur-wheels f upon the sprocket-wheel shafts, the spur-wheel f', intermediate to the same, and the pinion g', applied to one of the shafts a to drive the intermediate wheel, as and for the purpose set forth.

3. In a plate-printing machine, the combination, with the pad-frame E, provided internally with the grooves e, of the T-shaped



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presser-bars provided with rib E', fitted to such grooves and movable vertically within the pad-frame, as and for the purpose set forth.

4. In plate-printing machine, the combination, with the pad-frame E and the pad H, of clamps *h*, secured to the opposite edges of the pad, and the hanger-bolts *h'* and nuts fitted upon the pad-frame to tighten the pad, substantially as set forth.

5. In a plate-printing machine, the combination, with the eccentric-shafts *a* and the disks *b*, fixed thereon, of the disks *b'*, provided with the crank-pins *a'*, the key *d'*, for guiding one disk upon the other, and the bolts *d*, for clamping the disks when adjusted, as and for the purpose set forth.

6. In a plate-printing machine, the combination, with the pad-frame, the pad, and the wiper rag or cloth, of two feed-rollers for the wiping-cloth, provided each with a continuously-rotating friction-wheel, and a ratchet with latch for intermittently releasing one of such rollers, as and for the purpose set forth.

7. In a plate-printing machine, the combination, with the pad-frame, the pad, and the wiper-cloth, of a feed-roller rotated intermittently to feed the cloth beneath the pad, a feed-roller rotated continuously upon the cloth at the opposite side of the pad, and a winding roller for winding up the cloth, as and for the purpose set forth.

8. In a plate-printing machine, the combination, with the pad-frame, the pad, and the wiper-cloth, of two feed-rollers provided each with a continuously-rotating friction-wheel, a ratchet-wheel fixed removably upon one of the rollers, and a latch held normally in the teeth of such ratchet-wheel and intermittently drawn therefrom, as and for the purpose set forth.

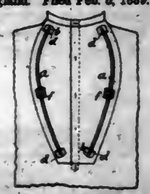
9. In a plate-printing machine, the combination, with the pad-frame, the pad, and the wiper-cloth, of two feed-rollers for winding cloth, provided each with friction clamping-disks, a sprocket-wheel clamped between said disks, a chain provided with a tightener and rotating such sprocket-wheels continuously, a ratchet-wheel fixed upon one of such rollers, and a latch operating to intermittently release the ratchet, as and for the purpose set forth.

10. In a plate-printing machine, the combination, with the frame A and the ways B, formed parallel with the four sides of the frame, of the planks C, propelled in such ways as set forth, the spring-plates affixed to the frame at the forward ends of the ways, the notches cut in the frame, and the wooden blocks secured to the spring-plates and operating as a buffer for the planks C, substantially as herein set forth.

11. In a plate-printing machine, the combination, with the compression-roll P and a blanket, J, operated normally to reverse the roll after each impression, of the segmental brake *t*, formed with tapering ends and attached to the roll-shaft P², and the stationary friction-clamps *t'*, adapted to admit the brake and to grasp the same elastically, as and for the purpose set forth.

12. In a plate-printing machine, the combination, with the impression-roll P and a blanket, J, operating normally to reverse the roll after each impression, of the segmental brake *t*, formed with tapering ends and attached to the roll-shaft P², and the stationary clamp-plates *t'*, with leather facing *t*² and adjustable toward one another by the bolts provided with nuts *t*³, as and for the purpose set forth.

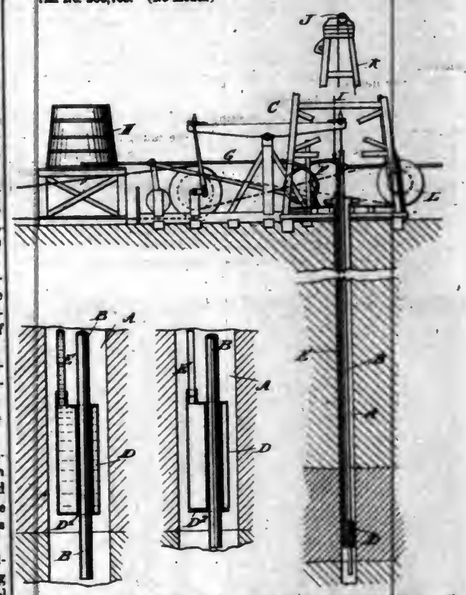
403,182. SHIRT AND SHIRT-BOSOM SUPPORTER. PHILIP E. EVANS, London, England. Filed Feb. 6, 1889. Serial No. 298,857. (No model.)



Claim.—1. In combination with a shirt provided at the back of its bosom with the upper and lower button-holed tabs *d d* at each side of said back, the pair of separate independent flexible retainers *a*, each provided at each of its ends with a stud to engage with such tabs, all as set forth.

2. In combination with a shirt provided at the back of its bosom with the loops *f*, and also with the tabs *d*, provided with button-holes, the retainers *a*, as described, having studs at each of their ends and adapted to be applied to the bosom and to be held to place by the loops and tabs, as set forth.

403,183. APPARATUS FOR REMOVING GUMMY MATTER FROM OIL-WELLS. JOHN F. FIETH, Titusville, Pa. Filed Oct. 22, 1888. Serial No. 288,763. (No model.)



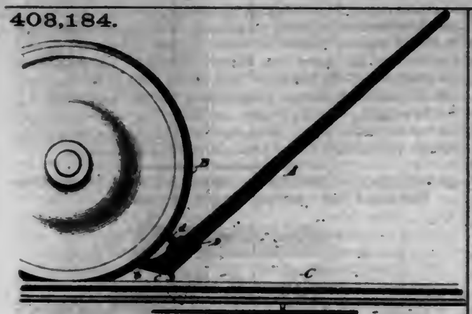
Claim.—1. An apparatus for removing gummy matter from oil-wells, comprising a receptacle to enter the bore of the well and having a lateral discharge, and a vertically-movable pipe on the lower end of which said receptacle is suspended in the well, substantially as set forth.

2. In an oil-well, the combination, with the tubing, of a receptacle having openings and held to slide vertically on the said tubing, a supply-pipe supporting the said receptacle, and a tank or boiler for supplying said receptacle with steam, benzine, or other substances, substantially as shown and described.

403,184. PINCH-BAR. PETER C. FORRESTER, Wilkeson, Wash. Filed Mar. 8, 1889. Serial No. 302,451. (No model.)

Claim.—The combination, with the pinch-bar proper, A, of the slotted and slidable fulcrum piece or attachment D, in block form, adapted to freely receive the bar A through it, and provided with a sharp tooth, *c*, on its under side pointed with or formed of steel, and means, substantially as specified, operating from the exterior of the bar to clamp or hold the fulcrum piece or attachment to its place of adjustment upon the bar, essentially as and for the purposes herein set forth.

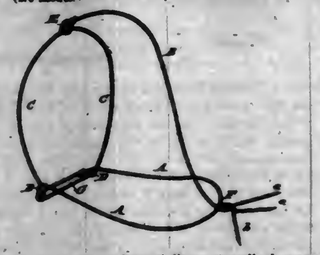
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408,185. ALTERATIVE TONIC. THEODORE C. FULLER, Pawtucket, R. I. Filed Jan. 21, 1889. Serial No. 297,044. (No specimens.)

Claim.—The herein-described composition of matter to be used for stomach difficulties and illness of like nature, consisting of prince's pine, (*Chimaphila*,) buckthorn-berries, checkerberry (*Gaultheria*) leaves, yellow-dock root, burdock-root, sarsaparilla-root, wild-cherry bark, green of alder, bay-bush leaves, bloodwort, water, and alcohol, in the proportions specified.

408,186. CALF-WEANER. ERNST H. GEBLER, Deshler, Nebr., and MOSES SIMPSON, Meaden, Kans. Filed Aug. 1, 1888. Serial No. 281,632. (No model.)



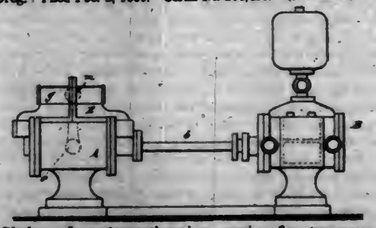
Claim.—1. A weaner, substantially as described, comprising a number of wire rods bent to form a halter-like frame and united at a point near their forward ends, such wires being extended forward beyond the point of their connection to form prongs, substantially as set forth.

2. A weaner, substantially as described, consisting of a wire bent to form the connecting-rods C and the side wires, A, and provided with a fastening arranged to connect the opposite side rods at the juncture of same with the connecting-rods C, and the crown rod or wire B, united at its rear end with the rods C at the crown of the arch *e*, formed thereby, the said rods A and B being twisted together at a point near their forward ends and extended beyond said twist, forming prongs or barbs, substantially as set forth.

3. The herein-described weaner consisting of the wire halter-like frame having its side and connection bars looped, forming eyes, and provided with the fastening-link held to one of said eyes and arranged to engage the other eye, substantially as set forth.

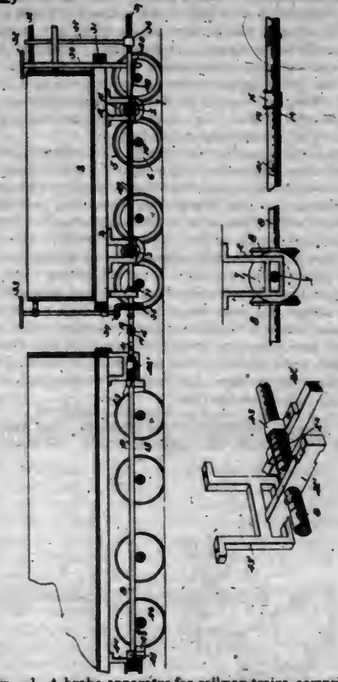
4. The improved calf-weaner consisting of the side wires or rods having the connecting-rods bent therefrom and looped, forming eyes, the fastening-link connected with one of said eyes and arranged to engage the other, and the crown-rod connected with the connecting-rods, the crown-rod and side rods being twisted together and extended, forming prongs, substantially as set forth.

403,187. STEAM-ACTUATED VALVE. JOHN W. GREEN, Astoria, Oreg. Filed Feb. 2, 1889. Serial No. 298,450. (No model.)



Claim.—In reciprocating-piston engines for steam-pumps and other purposes in which the reciprocating action of the piston within its cylinder is controlled by a steam-thrown valve, which in its turn is controlled by valves actuated by the engine-piston, the combination, with the engine or main valve having opposite end piston-heads, *h h*, and opposite terminal reduced cylindrical extensions *i i*, of the valves H H, arranged to work within cylinders G G for direct action by the engine-piston, as described, said cylinders having steam and exhaust ports *r s*, and the valve-chest constructed with a cylindrical body portion, *g*, and cylindrical end chambers, *k k*, and having steam-passages *n n*, with branch passages *o o*, arranged to connect with the cylinders G G, substantially as and for the purposes herein set forth.

408,188. BRAKE FOR RAILWAY-TRAINS. JAMES K. HARDWICK, Marshall, N. C. Filed Sept. 14, 1888. Serial No. 285,260. (No model.)



Claim.—1. A brake apparatus for railway-trains, comprising the following elements in combination, to wit: a rotary shaft extending from end to end of a train and coupled between the cars, the brake-frames of the cars having a screw-threaded connection with the rotary shaft, the hand brake mechanism of the several cars geared with the rotary shaft, and a brake-adjusting mechanism consisting of sliding shafts with friction-pulleys located between the wheels of the tender, an adjustable gearing connecting the sliding shafts with the main rotary shaft, and an operating crank mechanism connected with the sliding shafts for throwing the friction-pulleys reversely in and out of engagement with the car-wheels, substantially as described.

2. A brake apparatus for railway-trains, consisting of the combination, with the brake-frames of a train, of a rotary shaft extending from end to end of the train, having a screw-threaded connection with the brake-frames and coupled between the cars, and a brake-adjusting mechanism consisting of sliding shafts with friction-pulleys located between the wheels of the tender, an adjustable gearing connecting the sliding shafts with the main rotary shaft, and an operating crank mechanism connected with the sliding shafts for throwing the friction-pulleys in and out of engagement with the car-wheels of the tender, substantially as described.

3. In a brake apparatus for railway-trains, the combination, with a rotary shaft mounted in the bottom of a tender, of a brake-adjusting mechanism consisting of rotary shaft 9, extending lengthwise of the tender and having the bevel gear-wheels 8, the sliding shafts 1, mounted in supports 2 and having at one end pulleys 4, located between car-wheels 5 and pulleys 6 thereon, and at their inner end bevel gear-wheels 7, located between bevel gear-wheels 8, rods 27, connecting the shafts 1 on each side of shaft 9, and the double-ended lever 29, having its ends connected by rods 28 with the forward shafts, 1, and provided with the vertical shaft 30 and hand-wheel 32, substantially as described.

4. In a brake apparatus for railway-cars, a rotary-shaft extending lengthwise of a car and mounted in sliding supports having a screw-threaded connection therewith, in combination with brake-frames loosely mounted on the rotary shaft and having an elastic connection with the sliding supports, substantially as described.

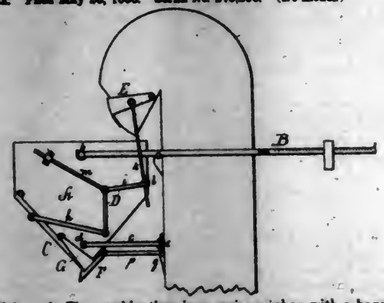
5. In a brake apparatus for railway-trains, a rotary shaft extending from end to end of a train and coupled between the cars, and brake-frames having a screw-threaded connection with the rotary shaft, in combination with a horizontally-movable indicator having a threaded connection with the rotary shaft, substantially as described.

6. In a brake apparatus for railway-trains, the combination, with rotary shaft 9, mounted in the bottom of tender 3 and having the threaded portion 37, and sliding brake-frames having a threaded connection with shaft 9, of a vertical indicator-rod, 35, with a threaded sleeve, 36, engaging the threaded portion 37 of shaft 9 and movable in a guide, 38, and mechanism, substantially as described, for operating the rotary shaft 9, substantially as described.

7. In a brake apparatus for railway-cars, a rotary shaft, 9, and bars 22', sliding in supports 23', in combination with brake-bars 22, loosely mounted on shaft 9 and connected by a coiled spring, 24, with sliding bars 23', substantially as described.

8. A brake apparatus for railway-trains, consisting of a rotary shaft extending from end to end of the train and coupled together between the cars, bevel gear-wheels thereon meshing with hand brake mechanisms on the cars, sliding brake-bars loosely mounted on the rotary shaft, sliding bars joined to the sliding brake-bars by an elastic connection and having a screw-thread connection with the main rotary shaft, and a reversible brake-operating shifting-gear mechanism consisting of forward and rear sets of sliding shafts mounted between the forward and rear axles of a car and connected together on each side of the main rotary shaft, with friction-pulleys on their outer ends located between the adjacent car-wheels, and bevel gear-wheels on their inner ends located between bevel gear-wheels on the main shaft, and a double-ended lever pivotally connected by rods to the forward sliding shafts and having a vertical shaft and hand-wheel, substantially as described.

408,189. AUTOMATIC GRAIN-WEIGHER. JOHN HENRY, Ardoch, Dak. Filed May 28, 1888. Serial No. 275,296. (No model.)

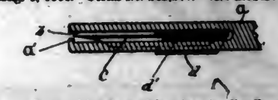


Claim.—1. The combination, in a grain-weigher, with a hopper-shaped receiver mounted between the arms of a bifurcated scale-beam and having one section of its angular bottom hinged at its upper edge, so as to swing outwardly upon pressure from within the receiver, and a self-closing cut-off on the supply-spout, of a bell-crank lever journaled upon the side of the receiver, a rod connecting one arm of the said lever with the valve, the other arm of the lever having a slot near its extremity, a rod connected with the cut-off and passing through the said slot, a stop or collar upon said rod above the said slotted arm to limit the movement of the arm upon the rod, and a weighted arm attached to the bell-crank lever to operate the same, substantially as described, whereby the closing of the valve raises and opens the cut-off, and the opening of the valve allows the cut-off to close.

2. The combination of the forked scale-beam, hopper-shaped receiver suspended between the arms thereof and having one section of its angular bottom hinged at its upper edge so as to swing outwardly, a lip or shelf, G, having arms extending upwardly on the sides of the receiver and pivoted thereto, the edge of the lip or shelf projecting outwardly beyond the sloping fixed bottom of the receiver opposite the valve, and means for automatically closing and retaining the valve after each discharge, substantially as and for the purpose herein specified.

3. The combination of the forked scale-beam, hopper-shaped receiver pivotally mounted between its arms and having one section of its angular bottom hinged at its upper edge so as to swing outwardly, a self-closing cut-off on the supply-spout, a bell-crank lever journaled upon the side of the receiver, having one of its arms connected with the valve and the other arm of the lever having a slot near its extremity, in which a rod connected with the cut-off is adapted to slide, a stop on the said rod above the slot to limit the upward movement of the slotted arm thereon, a weighted arm attached to the other arm of the bell-crank lever at the point of its connection with the valve-rod, the said weighted arm having a longitudinal slot therein engaging with a pin upon the side of the receiver, whereby the arm may have both a turning and a sliding movement upon the said pin, substantially as and for the purpose herein specified.

408,190. PEN-HOLDER. ALGERNON S. HUSSELL, Norwich, Conn. Filed Aug. 8, 1888. Serial No. 282,277. (No model.)



Claim.—In combination with a longitudinally-slotted holder, a pen-support formed with a barrel portion movably located on one limb of said holder and provided with an inturned spring-lip that bears frictionally against the other of said limbs, as set forth, said holder being formed with a stop-lug, *a'*, at its open end adapted to engage and check the pen-support, substantially as and for the object specified.

408,191. CHILL-CORE FOR CASTING SASH-WEIGHTS. CHARLES S. HUMPHREY and HENRY H. GOOD, Bellefontaine, Ohio. Filed Sept. 26, 1888. Serial No. 286,469. (No model.)

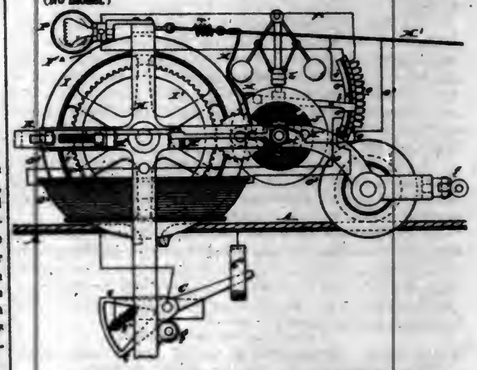


Claim.—1. The combination of the pattern, the plug or core support H, and the molding-box having a hole in the end for the withdrawal of the pattern, with the horn-shaped core A, having the rounded smooth face D, as and for the purpose set forth.

2. The combination, with box K, having a hole in its end for the withdrawal of the pattern, of the horn-shaped core A, having the smooth face D and stem or neck E, as and for the purpose set forth.

3. The combination of the pattern, the box K, having a hole in its end for the withdrawal of the pattern, the movable gate L, the horn-shaped core A, and the plug H, as and for the purpose set forth.

408,192. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa. Original application filed May 22, 1886, Serial No. 202,950. Divided and this application filed Dec. 13, 1888. Serial No. 293,484. (No model.)



Claim.—1. The combination of a sectional working-conductor, the end sections thereof being curved and all the sections being arranged end to end, but insulated from each other to form a mechanically-continuous but electrically-interrupted conductor like a severed loop, switches at all the breaks but one to normally bridge from one section to the next and close the breaks, an electric generator, and connecting-conductors connecting the working-conductor sections on each side of the unclosed break in the looped portion with the two poles of the generator, substantially as and for the purpose specified.

2. The combination of the end sections of two lines of working-conductors arranged end to end to form a mechanically-continuous conductor, but having the adjacent ends of said sections electrically insulated from each other, a traveling electric motor receiving electricity therefrom, an electric generator, and connecting-conductors connecting the respective working-conductors with the opposite poles of the generator, whereby the electric motor coming in on one line may run out on the other line without interruption, substantially as and for the purpose specified.

3. In the herein-described system of telpherage, the combination of a conductor divided into sections, switches which normally bridge from one section to the other and are adapted to be actuated by a passing train or vehicle, traveling trains or vehicles, one or more electric motors on the trains or vehicles by which they are driven, and devices operated by the trains or vehicles to move said switches successively and divert the current through the motors on said trains or vehicles, so that the motors are connected in series through the sectional conductor, and a locking device to lock said switch in either of its extreme positions, substantially as and for the purpose specified.

4. In the herein-described system of telpherage, the combination of a conductor divided into sections, switches which normally bridge from one section to the other, traveling trains or vehicles, one or more electric motors on the trains or vehicles by which they are driven, and devices operated by the trains or vehicles to move said switches successively and divert the current through the motors on said trains or vehicles, so that the motors are connected in series through the sectional conductor, and a spring device to assist in the movement of the switch and then retain it in the position assumed, substantially as and for the purpose specified.

5. The combination of a support or roadway, electrically-actuated trains or vehicles traveling along said support or roadway, an electric circuit, a source of electric energy, and one or more motors on the trains or vehicles for driving them connected in series in said circuit, a governor carried by the motor, and a variable resistance in the armature-circuit controlled by the governor, substantially as and for the purpose specified.

6. The combination of a support or roadway, electrically-actuated trains or vehicles traveling along said support or roadway, an electric circuit, a source of electric energy, and one or more motors on the trains or vehicles for driving them connected in series in said circuit, a governor carried by the motor, and a variable resistance in the armature-circuit controlled by the governor, and a short-circuiting device, also controlled by the governor, to short-circuit the armature, substantially as and for the purpose specified.

7. The combination of a support or roadway, electrically-actuated trains or vehicles traveling along said support or roadway, an electric circuit, a source of electric energy, and one or more motors on the trains or vehicles for driving them connected in series in said circuit, a governor carried by the motor, and a variable resistance in the armature-circuit controlled by the governor, and means, also controlled by the governor, to short-circuit the armature and vary the resistance of the armature-circuit, substantially as and for the purpose specified.

8. The combination of a support or roadway, electrically-actuated trains or vehicles traveling along said support or roadway, electric circuit, a source of electric energy, and one or more motors on the trains or vehicles for driving them connected in series in said circuit, a governor carried by the motor, a variable resistance in the armature-circuit controlled by the governor, means, also controlled by the governor, to short-circuit the armature and vary the resistance of the armature-circuit, and a danger-signal located in said armature-circuit, substantially as and for the purpose specified.

9. The combination of a support or roadway, electrically-actuated trains or vehicles traveling along said support or roadway, an electric circuit, a source of electric energy, and one more motors on the trains or vehicles for driving them connected in series in said circuit, a governor carried by the motor, a varible resistance in the armature-circuit controlled by the governor, means, also controlled by the governor, to short-circuit the armature and vary the resistance of the armature-circuit, a danger-signal located in said armature-circuit, and a switch controlled by the speed of the motor to actuate the danger-signal, substantially as and for the purpose specified.

10. The combination of a support or roadway, electrically-actuated trains or vehicles traveling along said support or roadway, an electric circuit, a source of electric energy, and one or more motors on the trains or vehicles for driving them connected in series in said circuit, a governor carried by the motor, a variable resistance in the armature-circuit controlled by the governor, means also controlled by the governor, to short-circuit the armature and vary the resistance of the armature-circuit, a danger-signal consisting of an electric lamp, and a switch controlled by the speed of the motor to put it into circuit, substantially as and for the purpose specified.

11. The combination of a support or roadway, electrically-actuated trains or vehicles traveling along said support or roadway, an electric circuit, a source of electric energy, and one or more motors on the trains or vehicles for driving them connected in series in said circuit, a governor carried by the motor, a variable resistance in the armature-circuit controlled by the governor, means, also controlled by the governor, to short-circuit the armature and vary the resistance of the armature-circuit, a danger-signal consisting of an electric lamp arranged to be connected with armature-circuit, and a switch controlled by the speed of the motor to put it into circuit with the armature, substantially as and for the purpose specified.

12. In an electric railway, the combination of a traveling vehicle, an electric motor carried thereon for actuating it, a danger-signal, and means controlled by the speed of the vehicle to display the danger-signal, substantially as and for the purpose specified.

13. In an electric railway, the combination of a traveling vehicle, an electric motor carried thereon for actuating it, an electric danger-signal, a switch, and means controlled by the speed of the vehicle to close the switch and display the danger-signal, substantially as and for the purpose specified.

14. In an electric railway, the combination of a traveling vehicle, an electric motor carried thereon to actuate it, a governor, a variable resistance, and circuit switches and connections, substantially as set forth, controlled by said governor during a gradually-increased speed of the vehicle to perform the following duties, viz: cut the armature out of line-circuit, put it into a closed or short circuit, and increase the resistance of the closed armature-circuit, substantially as and for the purpose specified.

15. In an electric railway, the combination of a traveling vehicle, an electric motor carried thereon to actuate it, a governor, a variable resistance, and circuit switches and connections, substantially as set forth, controlled by said governor during a gradual increased speed of the vehicle to perform the following duties, viz: increase the resistance of the line armature-circuit, cut the armature out of line circuit, put it into a closed or short circuit, and increase the resistance of the closed armature-circuit, substantially as and for the purpose specified.

16. In an electric railway, the combination of a traveling vehicle, an electric motor carried thereon to actuate it, a governor, a variable resistance, a danger-signal, and circuit switches and connections, substantially as set forth, controlled by said governor during a gradual increased speed of the vehicle to perform the following duties, viz: increase the resistance of the line armature-circuit, cut the armature out of line-circuit, put it into a closed or short circuit, increase the resistance of the closed armature-circuit, and interpose in the armature-circuit an electric danger-signal, substantially as and for the purpose specified.

17. In an electric railway, the combination of a traveling vehicle, an electric motor carried thereon to actuate it, a governor, a variable resistance, and circuit switches and connections, substantially as set forth, controlled by said governor during a gradual increased speed of the vehicle to perform the following duties, viz: increase the armature-circuit resistance and then cut the armature out of line-circuit, substantially as and for the purpose specified.

18. In an electric railway, the combination of a traveling vehicle, an electric motor carried thereon to actuate it, a governor, a variable resistance, an electric danger-signal, and circuit switches and connections, substantially as set forth, controlled by said governor during a gradual increased speed of the vehicle to perform the following duties, viz: increase the armature-circuit resistance, then cut the armature out of line-circuit, and interpose an electric danger-signal in the armature-circuit, substantially as and for the purpose specified.

19. In an electric railway, the combination of a traveling vehicle, an electric motor carried thereon to actuate it, a traction-increasing helix, a governor, a variable resistance, and circuit switches and connections, substantially as set forth, controlled by said governor during a gradual increased speed of the vehicle to perform the following duties, viz: reduce the traction-power of the vehicle by cutting out the traction-helix and then increase the resistance of the armature-circuit, substantially as and for the purpose specified.

20. In an electric railway, the combination of a traveling vehicle, an electric motor carried thereon to actuate it, a traction-increasing helix, a governor, a variable resistance, and circuit switches and connections, substantially as set forth, controlled by said governor during a gradual increased speed of the vehicle to perform the following duties, viz: reduce the traction-power of the vehicle by cutting out the traction-helix, then increase the resistance of the armature-circuit, and finally short-circuit the armature, substantially as and for the purpose specified.

21. In an electric railway, the combination of a traveling vehicle, an electric motor carried thereon for actuating it, a magnetizing-coil around the traction-wheel, and a switch controlled by the speed of the vehicle to put said coil in and out of circuit, whereby it shall always be in circuit at slow speeds or when starting, but out of circuit at high speeds, substantially as and for the purpose specified.

22. In an electric railway, the combination of a traveling vehicle, an electric motor carried thereon for actuating it, a magnetizing-coil around the traction-wheel, a switch, and a governor controlled by the speed of the vehicle to operate the switch and put said coil in and out of circuit, whereby it shall always be in circuit at slow speeds or when starting, but out of circuit at high speeds, substantially as and for the purpose specified.

23. In an electric railway, the combination of a traveling vehicle, an electric motor carried thereon for actuating it, the field-magnets and armature being arranged in multiple-arc connection, a variable resistance in the field-magnet circuit, and an automatic resistance-changer adapted to vary the resistance in accordance with changes in the current strength, substantially as and for the purpose specified.

24. In an electric railway, a traveling vehicle, an electric motor carried thereon for actuating it, the field-magnets and armature being arranged in multiple-arc connection, a variable resistance in the field-magnet circuit, and an automatic resistance-changer adapted to vary the resistance inversely in accordance with changes in the current strength, in combination with a variable resistance located in the armature-circuit, substantially as and for the purpose specified.

25. In an electric railway, a traveling vehicle, an electric motor carried thereon for actuating it, the field-magnets and armature being arranged in multiple-arc connection, a variable resistance in the field-magnet circuit, and an automatic resistance-changer adapted to vary the resistance inversely in accordance with changes in the current strength, in combination with a variable resistance located in the armature-circuit and a switch to short-circuit the armature, substantially as and for the purpose specified.

26. In an electric railway, a traveling vehicle, an electric motor carried thereon for actuating it, the field-magnets and armature being arranged in multiple-arc connection, a variable resistance in the field-magnet circuit, and an automatic resistance-changer adapted to vary the resistance inversely in accordance with changes in the current strength, in combination with a variable resistance located in the armature-circuit, and a switch to short-circuit the armature and increase the resistance in the short-circuit of the armature, substantially as and for the purpose specified.

27. In an electric railway, the combination of a traveling vehicle an electric motor carried thereon for actuating it, the field-magnets and armature being arranged in multiple-arc connection, an automatic resistance-changer interposed in the field-magnet circuit, and a resistance-changer located in the armature-circuit, substantially as and for the purpose specified.

28. In an electric railway, the combination of a traveling vehicle, an electric motor carried thereon for actuating it, the field-magnets and armature being arranged in multiple-arc connection, a resistance-changer interposed in the field-magnet circuit, and a resistance-changer located in the armature-circuit, and a switch to short-circuit the armature, substantially as and for the purpose specified.

29. In an electric railway, the combination of a traveling vehicle, an electric motor carried thereon for actuating it, the field-magnets and armature being arranged in multiple-arc connection, a resistance-changer interposed in the field-magnet circuit, and a resistance-changer located in the armature-circuit, a switch to short-circuit the armature, and a governor to actuate said switch, substantially as and for the purpose specified.

30. In an electric railway, the combination of a traveling vehicle, an electric motor carried thereon for actuating it, the field-magnets and armature being arranged in multiple-arc connection, a resistance-changer interposed in the field-magnet circuit, and a resistance-changer located in the armature-circuit, and a governor to actuate said armature-resistance changer, substantially as and for the purpose specified

31. In an electric railway, the combination of a traveling vehicle an electric motor carried thereon for actuating it, the field-magnets and armature being arranged in multiple-arc connection, a resistance-changer interposed in the field-magnet circuit, and a resistance-changer located in the armature-circuit, a switch to short-circuit the armature, and a governor to actuate said armature-resistance changer and switch, substantially as and for the purpose specified.

32. In an electric railway, the combination of the traveling vehicle, an electric motor carried thereon for actuating it, a buffer and lever mechanism actuated by said buffer to change the relative position of the commutator-sections with the brushes to reverse the motor, and a lock to retain said parts in their new relative position, substantially as and for the purpose specified.

33. In an electric railway, the combination of the traveling vehicle, an electric motor carried thereon for actuating it, a buffer and lever mechanism actuated by said buffer to change the relative position of the commutator-sections with the brushes to reverse the motor, and a circuit-breaker controlled by the backward travel of the vehicle to cut the motor out of circuit to arrest its movement, substantially as and for the purpose specified.

34. In an electric railway, the combination of the traveling vehicle, an electric motor carried thereon for actuating it, a buffer and lever mechanism actuated by said buffer to change the relative position of the commutator-sections with the brushes to reverse the motor, a lock to retain said parts in their new relative position, and a circuit-breaker controlled by the backward travel of the vehicle to cut the motor out of circuit to arrest its movement, substantially as and for the purpose specified.

35. The combination of a traveling vehicle, an electric motor carried thereon for actuating it, and a circuit-breaker controlled by the backward movement of the vehicle or motor to cut the motor out of circuit, substantially as and for the purpose specified.

36. The combination of a traveling vehicle, an electric motor carried thereon for actuating it, a circuit-breaker consisting of the thread *j*, the loose nut Q, and contacts Q', controlled by the backward movement of the vehicle or motor to cut the motor out of circuit, substantially as and for the purpose specified.

37. The combination of a traveling vehicle, an electric motor carried thereon for actuating it, and a circuit-breaker consisting of the thread *j*, the loose nut Q, contacts Q', and spring *q*, controlled by the movement of the vehicle or motor to cut the motor out of circuit, substantially as and for the purpose specified.

38. The combination of a traveling vehicle, an electric motor carried thereon for actuating it, a governor controlled by the speed of the vehicle and adapted to cut the motor-armature out of line-circuit and put it in a short or closed circuit, a reversing device, and a switch controlled by the reversing device to couple the armature into line-circuit, substantially as and for the purpose specified.

39. The combination of a traveling vehicle, an electric motor carried thereon for actuating it, a governor controlled by the speed of the vehicle and adapted to cut the motor-armature out of line-circuit and put it in short or closed circuit, a reversing device, and a switch controlled by the reversing device to couple the armature into line-circuit again, and a circuit-breaker to break the line-circuit after the motor has run back a short distance, substantially as and for the purpose specified.

40. The combination of a traveling vehicle, an electric motor carried thereby for actuating it, a spring-buffer attached thereon, and motor-reversing devices actuated thereby to reverse the motor automatically upon a collision, substantially as and for the purpose specified.

41. The combination of a traveling vehicle, an electric motor carried thereby for actuating it, a spring-buffer attached thereon, and motor-reversing devices actuated thereby to reverse the motor automatically upon a collision, an armature-circuit closer also actuated by said buffer, and a lock to keep said circuit closed, substantially as and for the purpose specified.

42. The combination of a traveling vehicle, a motor carried thereon for actuating it, the brushes K' and commutator K, having part *k*, constructed, as set forth, for reversing, said commutator being movable longitudinally upon the armature-shaft, a spring-buffer, and intermediate connections to move said commutator, substantially as and for the purpose specified.

43. The combination of a traveling vehicle, an electric motor carried thereon for actuating it, armature-resistances normally in circuit, means to reverse the motor, and a switch to automatically cut out the armature-resistances upon reversing the motor, substantially as and for the purpose specified.

44. The combination of a sectional working-conductor, a train of vehicles of a length equal to or greater than one of the sections of the conductor, electric motors on said train for propelling it, switches for bridging the sections of the working-conductors and actuated by the passing train, and a motor-circuit extending from the front to the rear of the train and connecting with the working-conductors, and springs to keep said motor-conductor taut and yet allow for movement of the cars or vehicles of the train, substantially as and for the purpose specified.

45. The combination of the conductor-sections A A, supports D^2, and clamps D^3, substantially as and for the purpose specified.

46. The combination of the conductor-sections A A, supports D^2, insulation E, and clamps D^3, substantially as and for the purpose specified.

47. The combination of the conductor-sections A A, supports D^2, rollers *d*, and clamps D^3, substantially as and for the purpose specified.

48. In the herein-described system of telpherage, the combination of a conductor divided into sections, switches which normally bridge from one section to the other, traveling trains or vehicles, one or more electric motors on the trains or vehicles by which they are driven, and devices operated by the trains or vehicles to move said switches successively and divert the current through the motors on said trains or vehicles, so that the motors are connected in series through the sectional conductor, and a spring device to assist the movement of the switch, substantially as and for the purpose specified.

49. The combination, with conductor-sections insulated from each other, a traveling motor receiving electricity from said conductor, a pivoted switch, C, to connect said sections together, a spring, *c*, connecting said switch with its support and placed so as to be under compression in the two extreme positions of said switch to assist both in opening and closing the switch, and a trip carried by the traveling motor to shift the switch as it passes from one section to the next.

50. The combination of a stationary working-conductor arranged along the railway, a traveling vehicle, a motor carried thereon to propel the same and receiving electricity from said conductor, a magnetizing-coil surrounding the lower part of one of the wheels of said vehicle, and a circuit in connection with line-working conductor to pass a current through said coil, substantially as and for the purpose specified.

51. The combination of a stationary working-conductor arranged along the railway, a traveling vehicle, a motor carried thereon to propel the same and receiving electricity from said conductor, a magnetizing-coil surrounding the lower part of one of the wheels of said vehicle, a circuit in connection with the motor-circuit to pass a current through said coil, and a switch to open or close said circuit, substantially as and for the purpose specified.

52. The combination of a stationary working-conductor arranged along the railway, a traveling vehicle, a motor carried thereon to propel the same and receiving electricity from said conductor, a magnetizing-coil surrounding the lower part of one of the wheels of said vehicle, a circuit to pass a current through said coil, and a variable resistance in the magnetizing-circuit, substantially as and for the purpose specified.

53. The combination of two terminals of conductors brought close together, a pivoted switch adapted to close or interrupt the circuit between said conductors, and a spring to resist the movement of the switch on starting to shift it, the said spring being positively connected with the switch.

54. The combination of two terminals of conductors brought close together, a pivoted switch adapted to close or interrupt the circuit between said conductors, and a spring to resist the movement of the switch on starting to shift it, the said spring being positively connected with the switch, and assist it upon the last portion of its movement in being shifted.

408,193. MEANS FOR THE ELECTRICAL PROPULSION OF BOATS. RUDOLPH M. HOSTER, Philadelphia, Pa. Filed Dec. 26, 1888. Serial No. 294,587. (No model.)



Claim.—1. A canal having two portions thereof at different levels and a lock for transferring boats from one level to the other, in combination with a water-power motor operated by the difference in level of the water of the canal, an electric generator operated by the water-power motor, a line-conductor arranged along the canal, or substantially parallel thereto, receiving electric current from said electric generator, an electrically-propelled boat, and a collector carried by the boat and making a traveling contact with the line-conductor.

2. A canal having two portions thereof at different levels and a lock for transferring boats from one level to the other, in combination with a water-power motor operated by the difference in level of the water of the canal, an electric generator operated by the water-power motor, a line-conductor arranged along the canal, or substantially parallel thereto, receiving electric current from said electric generator, an electrically-propelled boat, a collector carried by the boat and making a traveling contact with the line-conductor, and a regulator on the boat for controlling the current passing to the motor thereon to govern the speed of the boat.

3. A canal having two portions thereof at different levels and a lock for transferring boats from one level to the other, in combination with a water-power motor operated by the difference in level of the water of the canal, a water-way for supplying water to the motor, leading from the canal above the lock and discharging into the canal below the lock, an electric generator operated by the water-power motor, a line-conductor arranged along the canal, or substantially parallel thereto, receiving electric current from said electric generator, an electrically-propelled boat, and a collector carried by the boat and making a traveling contact with the line-conductors.

4. The combination of a canal or water-way having different water-levels, locks for transferring boats from one level to another, electric conductors arranged along the canal or water-way, an electrically-propelled boat, and a detachable current-collecting device connected to the boat for making a detachable electrical connection between the electric conductor and motor on the boat.

5. The combination of a canal or water-way, a line supply-conductor insulated from the earth, arranged along or over the water-way, a return-conductor normally connected with the ground, an electrically-propelled boat, and current-collecting devices carried or moved with the boat for making traveling contact with the supply and return conductors and supplying electric current to the motor on the boat.

6. The combination of a canal or water-way, a line supply-conductor insulated from the earth, arranged along or over the water-way, a return-conductor normally connected with the ground and lying upon the bottom of the water-way, an electrically-propelled boat, and current-collecting devices carried or moved with the boat for making traveling contact with the supply and return conductors and supplying electric current to the motor on the boat.

7. The combination of a canal or water-way, a line supply-conductor insulated from the earth, arranged along or over the water-way, a return-conductor normally connected with the ground and lying upon the bottom of the water-way, an electrically-propelled boat, and current-collecting devices carried or moved with the boat for making traveling contact with the supply and return conductors and supplying electric current to the motor on the boat, the said collecting devices consisting of wheels running in contact with the conductors.

8. The combination of a water-way, a line-conductor arranged parallel to the water-way and insulated from the ground, a line-conductor arranged to lie normally in electrical contact with the bottom of the water-way, and an electric generator for supplying electricity of different polarities to said conductors.

9. The combination of an electric conductor normally resting upon the bottom of a water-way with an electrically-propelled boat and a current-collecting device connected to the boat for making a traveling contact with said conductor, and means for supplying current to the motor on the boat.

10. The combination of an electric conductor normally resting upon the bottom of a water-way with an electrically-propelled boat and a current-collecting device connected to the boat for making a traveling contact with said conductor, consisting of a contact-wheel which travels under the conductor, and means for supplying current to the motor on the boat.

11. The combination of a water-way and a line-conductor insulated from the ground and in the line of travel of the boat with a boat having a propeller acting on the water, an electric motor to rotate said propeller to propel said boat, and a current-collecting device connected to the boat and making a traveling contact with the conductor for supplying electricity to the motor.

12. The combination of a water-way and a line-conductor insulated from the ground and in the line of travel of the boat with a boat having a propeller acting on the water, an electric motor to rotate said propeller to propel said boat, and a flexible current-collecting device connected to the boat and making a traveling contact with the conductor for supplying electricity to the motor and allowing of irregular movements in the line of travel of the boat.

13. The combination of a water-way and a line-conductor insulated from the ground and in the line of travel of the boat with a boat having a propeller acting on the water, an electric motor to rotate said propeller to propel said boat, and a jointed current-collecting device connected to the boat and having a vertically-arranged grooved current-collecting wheel making a traveling contact with the conductors for supplying electricity to the motor.

14. The combination of a water-way and a line-conductor insulated from the ground and in the line of travel of the boat with a boat having a propeller acting on the water, an electric motor to rotate said propeller to propel said boat, and a flexible current-collecting device connected to the boat and supported at its free end by the conductor, and making a traveling contact with the conductor for supplying electricity to the motor.

15. The combination of a line-conductor, an electrically-propelled boat having a propeller acting on the water, an electric motor to rotate said propeller, and a current-collecting device between the boat and conductor, consisting of an arm extending substantially horizontally from the boat, and having a contact device consisting of a vertically-arranged current-collecting wheel, which rests against the horizontal surface of the conductor to collect current and supply it to the motor.

16. The combination of a line-conductor, an electrically-propelled boat having a propeller acting on the water, an electric motor to rotate said propeller, and a current-collecting device between the boat and conductor, consisting of an arm extending substantially horizontally from and movably connected with the boat, and having a vertical grooved wheel contact device, which rests against the horizontal surface of the conductor to collect current and supply it to the motor.

17. The combination of a line-conductor, an electrically-propelled boat, and a current-collecting device between the boat and conductor consisting of an arm extending laterally and substantially horizontally from the boat, having a contact device, which rests against the conductor, and a second arm hinged to the first-mentioned arm at one end and to the boat at the other end.

18. The combination of a line-conductor, an electrically-propelled boat, a current-collecting device between the boat and conductor, consisting of an arm extending laterally and substantially horizontally from the boat, and having a contact device which rests against the

conductor, a second arm hinged to the first-mentioned arm at one end and to the boat at the other end, and a tie connecting the lateral arm with the boat.

19. The combination of a water-way, a line-conductor arranged in line with the path of travel of a boat, having a propeller acting upon the water and driven by an electric motor on said water-way, an electrically-propelled boat, and a flexible current-collecting device between the conductor and boat, which, while maintaining an electrical connection, shall permit the free lateral movement of the boat with respect to the line-conductor to compensate for irregularities in the boat's travel.

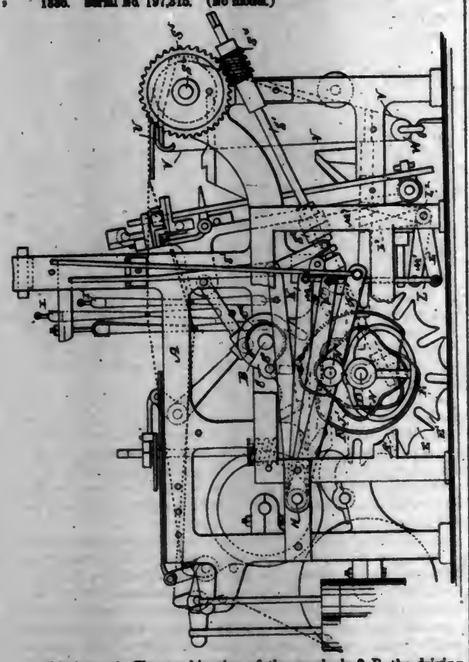
20. A water-way, in combination with an electrically-propelled boat having a propeller acting upon the water and driven by an electric motor, a supporting-wheel on the boat, a line-conductor arranged in the path of travel of said boat and supported by said wheel, an electrical connection between said wheel and motor, a regulating device to control the speed of the motor, and an electric generator to supply electricity to said line-conductor.

21. The combination of a water-way, a line-conductor, a traveling electrically-propelled boat having a propeller acting upon the water and driven by an electric motor, and a current-collecting device between the line-conductor and boat and connected to the boat at or close to its rear or stern part.

22. The combination of a water-way, two line-conductors insulated from each other, an electric generator, an electrically-propelled boat having a propeller acting upon the water and driven by an electric motor, and current-collecting devices for contact with the two conductors carried with the boat.

23. The combination of a water-way, two line-conductors insulated from each other, an electric generator, an electrically-propelled boat having a propeller acting upon the water and driven by an electric motor, and current-collecting devices for contact with the two conductors carried with the boat, and having independent contact parts.

408,194. LOOM. JOSEPH JAGGER, Glenham, N.Y. Filed Mar. 31, 1886. Serial No. 197,315. (No model.)



Claim.—1. The combination of the crank-shaft B, the driving and locking wheel C, and the section-wheel E, with the fine chain-cams F and F', the levers G and G', provided with the friction-rollers G^2, the heads and intermediate devices between the heads and levers, substantially as shown and described.

2. The combination of the crank-shaft B, the driving and locking wheel C, and the section-wheel E, with the working-cams J and J', the levers K and K', provided with the friction-rollers K^2, the picking-shafts O and P, and intermediate mechanism between the said shafts and levers, substantially as shown and described.

3. The combination of the section-wheel E, the driving and locking wheel C, the crank-shaft B, and the working-cams J and J', having cam-grooves J^3, with the shafts O P, the levers K and K', having the friction-rollers K^2, the connecting-links L and M, the arms L' and M', the shaft L^2, having the arm L^3, and the sleeve M^2, having the arm M^3, substantially as herein shown and described.

4. The combination of the working-cams J and J', having cam-grooves J^3, the levers K and K', provided with friction-rollers K^2, the links L and M, and the arms L' and M', with the shaft L^2, provided with the arm L^3, the picking-shaft O, the sleeve M^2, provided with the arm M^3, and the picking-shaft P, substantially as shown and described.

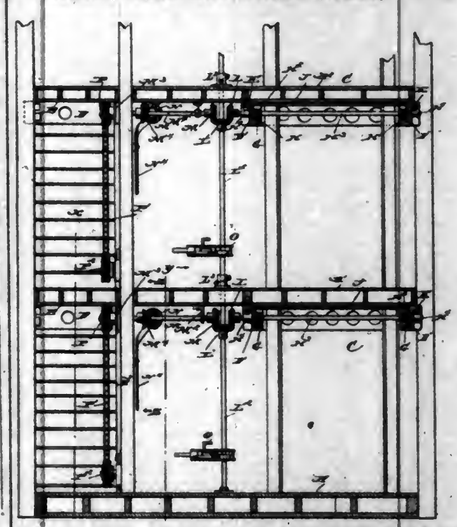
5. The combination, with the shaft D, the shaft S^2, the breast-roller S, and means for operating the shaft S^2 from the shaft D, of the roller T, provided with the pegs T', and the endless belt V, substantially as herein shown and described.

408,195. APPARATUS FOR OPERATING RAILWAY-SWITCHES. ARTHUR H. JOHNSON, Jersey City, N. J. Filed July 31, 1888. Serial No. 281,504. (No model.)



Claim.—The combination, with two switches adapted to be moved between railway-rails, of two rods connected one to each of said switches, an equalizing-lever interposed between and connected with the said rods, and an operating-rod connected with said lever between the points of connection of the rods first named, substantially as herein described, whereby the movement of said operating-rod will cause the two switches to be always moved to predetermined limits and both to be brought to their normal positions, substantially as herein set forth.

408,196. HATCHWAY. JOHN P. KETTERINGHAM, Natchez, Miss., assignor of one-half to Stephen Duncan, same place. Filed May 20, 1885. Renewed Apr. 10, 1889. Serial No. 306,754. (No model.)



Claim.—1. The combination, with the rectangular frame D, constructed to be attached to the ceiling around a hatchway, and having opposite and inwardly projecting guide-rails G, of rack-bars sliding on said guideways, a cut-off door secured to the said bars, a transverse shaft journaled in the frame, and pinions on the said shaft meshing with the said rack-bars, substantially as described.

2. The combination, with the floor of a building having a hatchway, of plates D', depending from the ceiling on opposite sides of the hatchway and having parallel inward-projecting guide-rails G, a pair of rack-bars, H, having their teeth on their upper faces mounted to slide on the respective rails G and carrying one door-section, pinions H^3, engaging the respective rack-bars, a transverse shaft, H^2, carrying the pinions, another pair of rack-bars, K, having their teeth on their lower faces riding on the pinions H^3 and carrying the opposite door-section, and means for rotating the shaft H^2, substantially as described.

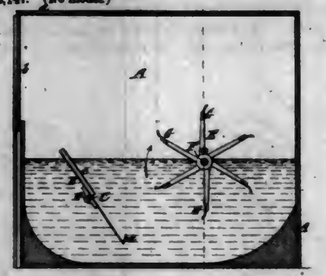
3. The combination, with the floor of a building having a hatchway, of plates D', depending from the ceiling beneath said floor on opposite sides of the hatchway, and formed with shaft-bearings H^6 H^4 and parallel inwardly-projecting guide-rails G, bars H, mounted to slide lengthwise on the respective rails G, having elevated supports 1 on one end carrying a door and rack-teeth H' on their other ends, pinions H^3, engaging the respective rack-teeth H', a shaft, H^2, carrying the pinions H^3 and journaled in the bearings H^4, and means for rotating the shaft H^2, substantially as described.

4. The combination, with a building having hatchways, of sliding cut-off doors for the respective hatchways, a transverse shaft, H^2, across each hatchway, and gearing for operating the said cut-off doors therefrom, a vertical shaft, L^2, extending through the several floors of the building, gearing connecting the shaft L^2 with each of the shafts H^2, and a reverse ratchet-lever for turning the shaft L^2 in either direction, substantially as described.

5. The combination, with a building having a hatchway, of cut-off doors for the hatchway, a transverse shaft across the hatchway, gearing for operating the doors from the said shaft, sprocket-wheels, endless chains or bands passing over the said sprocket-wheels, and intermediate gearing between one of the sprocket-wheels and the said transverse shaft, substantially as herein shown and described.

6. The combination, with a building having hatchways B C and sliding sectional doors J J' for each hatchway, provided with racks, of the transverse shafts H, provided with the pinions engaging the said racks and with bevel gear-wheels, the vertical shaft L^2, provided with bevel gear-wheels, the horizontal shaft M', provided with bevel gear-wheels on its ends, the counter-shaft N', provided with bevel gear-wheels, and means for operating the shaft L^2, substantially as herein shown and described.

408,197. APPARATUS FOR METALLIZING ELECTROTYPE-MOLDS. SILAS P. KNIGHT, Brooklyn, N. Y. Filed June 5, 1888. Serial No. 276,147. (No model.)



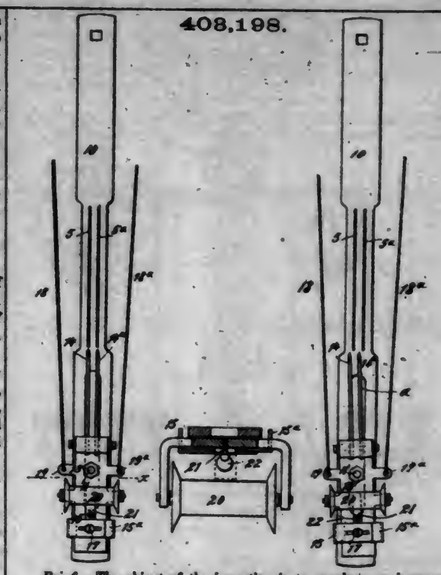
Claim.—1. In an apparatus for metallizing electrotype-molds, the combination, with a tank for containing a liquid, and a holder therein for the reception of the mold, of a spray or current wheel arranged within said tank, substantially as described, to dip into the liquid therein for the purpose of taking up said liquid and throwing it in currents or spray against the face of the mold, as herein set forth.

2. In an apparatus for metallizing electrotype-molds, the combination, with a tank and an adjustable holder therein for the reception of the molds, of a spray or current wheel by the revolutions of which fluids contained in the tank may be driven in currents or spray against the face of the mold, substantially as herein described and set forth.

3. In an apparatus for metallizing electrotype-molds, the combination, with a tank and a holder therein for the reception of the mold, of a spray or current wheel having digitated blades or buckets by the revolutions of which fluids contained in the tank may be driven in currents or spray against the face of the mold, substantially as herein described and set forth.

4. In an apparatus for metallizing electrotype-molds, the combination, with a tank and a holder therein for the reception of the mold, of a spray or current wheel having interchangeable digitated and brush buckets by the revolutions of which the face of the molds may be brushed and the fluids contained in the tank may be driven in currents or spray against the face of the mold, all substantially as herein described and set forth.

408,198. LOOM ATTACHMENT FOR WEAVING CENTER SELVAGES. FRED LACEY, Adams, Mass., assignor of one-half to Alfred R Mole, same place. Filed Dec. 21, 1888. Serial No. 294,258. (No model.)



Brief.—The object of the invention is to produce an improved attachment for weaving center selvages upon looms on which splits are woven.

Claim.—1. The combination, with the longitudinally-slotted plate adapted to be connected to a loom-frame, of a tilting needle-carrying slide, a bolt extending through said slide and slot, and laterally-extending stops projecting from opposite sides of the slide and embracing the said plate to limit the tilting of the slide without interfering with its sliding movement, substantially as set forth.

2. The combination, with the slotted plate, of the needle-carrying slide thereon, having spool-bearings, substantially as set forth.

3. The combination, with the plate 10, having a longitudinal slot, *a*, and parallel thread-slots 5 5^a, of the tilting needle-carrying slide, through which and the said slot *a* a bolt, 11, passes, and the laterally-adjustable stops on the slide embracing the sides of the plate, and the lugs or ears 19 19^a projecting from opposite sides of the slide for connection with selvage harness or levers, substantially as set forth.

4. The combination, with a slotted plate arranged for connection with a loom-frame, of a tilting needle-carrying slide mounted to move vertically upon said plate and adapted to carry a spool, and stop-plates carried by the slide, substantially as described.

5. The combination, with a slotted plate arranged for connection with a loom-frame, of the needle-carrying slide mounted to move vertically on said plate and arranged for connection with a harness, stop-plates carried by the slide, spool-bearings upon the slide, and a spring projecting between the said bearings, substantially as described.

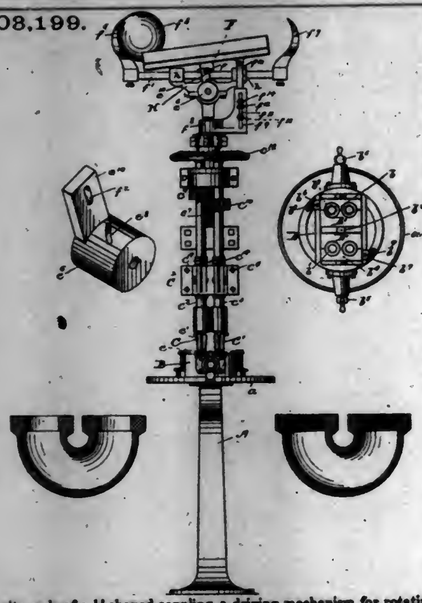
6. The combination, with a plate, 10, arranged for connection with a loom-frame and formed with slots 5, 5^a, and *a*, of a slide, a bolt connected to the slide and passing through the slot *a*, needles carried by the slide, plates 15 and 15^a, formed with lugs or ears 16, and a set-screw by which said plates are connected to the slide, the slide being arranged for connection with selvage harnesses or levers, substantially as described.

408,199. MACHINE FOR TAPPING ELBOWS AND RETURN-BENDS. DANIEL G. LADELAUTE and OTIS E. MOULTON, Dover, N. H., assignors to the Somersworth Machine Company, same place. Filed Nov. 7, 1887. Serial No. 254,572. (No model.)

Claim.—1. In a tapping-machine, the combination, with a work support or table, of a work-holder pivotally mounted thereon and having two clamps for holding a coupling and two rotating and reciprocating tap-carrying spindles arranged side by side and parallel to each other, and separated a proper distance to cause their taps to enter the opposite ends of a U-shaped coupling, said spindles moving simultaneously in the same direction toward and from the said table, substantially as set forth.

2. In a tapping-machine, the combination, with a work support or table, of a work-holder pivotally mounted thereon and having two clamps for holding a coupling, two rotating and reciprocating tap-carrying spindles arranged side by side and parallel to each other, and separated a proper distance to enable their taps to enter the op-

408,199.



posite ends of a U-shaped coupling, a driving mechanism for rotating and simultaneously reciprocating said spindles to cause them to move toward and from the said table in the same direction together, and an automatic reversing mechanism for the said driving mechanism, substantially as set forth.

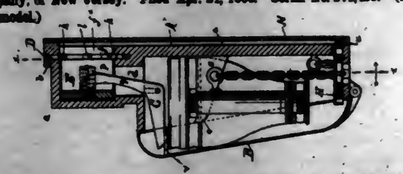
3. In a tapping-machine, the combination, with the taps and their spindles and driving-gearing, of a driving-shaft carrying a clutch, two reversely-driven loose pulleys on said shaft, a tilting table, a weight or ball to roll on said table, a sliding bar having two stops to be engaged by said weight or ball, and connections between said sliding bar and the said driving-gearing and clutch, whereby when the tap-spindles have traveled endwise a certain desired distance in one direction the said table will be tilted, the clutch moved, and the direction of rotation of the said driving-shaft thus automatically reversed, as set forth.

4. The combination, in a machine for tapping couplings, elbows, &c., of the taps C C', their spindles c^4, the nuts c^5, the long pinion c^9, and the pinions c^8 c^{10}, as and for the purposes described.

5. The combination of the taps C C', spindles c^4, the shaft c^{12}, connected with the spindles, substantially as specified, the nuts c^5, the pulleys D D', the clutch E, and a traveling nut, f^6, connected with the clutch E by means of the tilting table F, the slide-rod c^4, cam c^6, link f^{10}, arm f^9, and pin f^8, and the ball f^7, substantially as described.

6. The combination of the spindle c^4, the taps C C' carried thereby, the shaft c^{12}, connected with the spindle c^4, substantially as specified, the pulleys D D', slide-clutch E, the rod c^4, cam c^6, tilting table F, connected with the cam, the nut f^6, the arm f^9, having the long slot f^{11}, the link f^{10}, its stop f^{13}, the stops f^{12} f^{14} upon the arm f^9, and the weight f^7, substantially as described.

408,200. COIN-OPERATED LOCK. FRANK M. LEAVITT, Brooklyn, N. Y., assignor, by mesne assignments, to the Opera Glass Supply Company, of New Jersey. Filed Apr. 21, 1888. Serial No. 271,453. (No model.)



Claim.—1. A coin-operated lock consisting of the combination, with the locking-catch, of a casing having a coin-receiving chamber into which the coin is inserted, a stop or detent arranged to project into said chamber and adapted to be displaced by direct contact with the coin when the latter is forced in, and a spring-pressed plunger connected to said catch and normally restrained from moving by said stop, whereby it holds the lock fastened, and constructed to be released by the displacement of said stop, whereby it effects the withdrawal of the catch.

2. A coin-operated lock consisting of the combination, with a locking-catch, of a casing having a coin-receiving chamber, a spring-pressed plunger to which said catch is connected, and stops or detents consisting of spring-pressed pawls mounted to enter the coin-receiving chamber in advance of the plunger and arranged to prevent the movement of the plunger until they are displaced by the insertion of a coin.

3. In a coin-operated lock, the combination of a casing having a coin-receiving chamber and formed with a recess communicating with said chamber for receiving the spent operating-coin, a plunger adapted to enter said chamber and arranged on opposite sides thereof from said recess, a spring pressing said plunger toward said chamber, and a stop or detent arranged to normally project into the chamber and adapted to restrain the plunger, whereby the insertion of a coin displaces the stop and releases the plunger, and the latter then moves into the chamber and expels the coin therefrom into said recess.

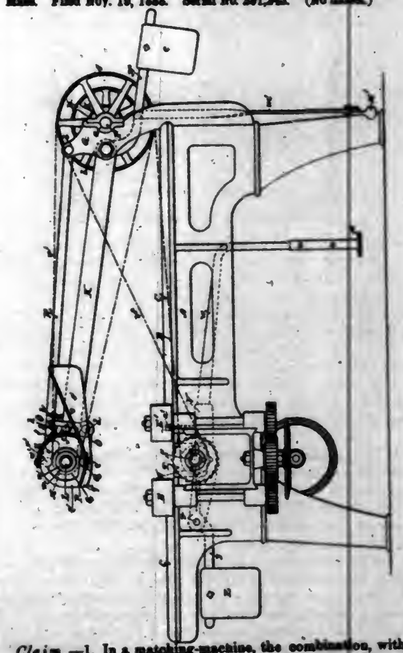
4. A coin-operated lock consisting of the combination, with the locking-catch and a casing having a coin-receiving chamber, of a spring-pressed plunger, restraining-stops therefor, consisting of spring-pressed pawls mounted to project into the coin-receiving chamber in advance of the plunger, and a lever pivotally connected at one side of the coin-receiving chamber, substantially as described.

5. A coin-operated lock consisting of the combination, with a casing having a coin-receiving chamber, of a spring-pressed and slotted plunger, spring-pressed pawls mounted to enter the coin-receiving chamber in advance of the plunger, and a catch provided with an arm that rides in the plunger-slot, substantially as described.

6. A case and a lid hinged thereto, in combination with a catch adapted to hold said lid, a spring-pressed plunger co-operating with said catch and tending to release the same, and a stop serving to arrest said plunger and arranged to be displaced from the path thereof by the insertion of a coin.

7. A case and a lid hinged thereto, in combination with a spring-pressed plunger, a pivoted catch adapted to hold said lid closed and engaging said plunger, whereby the plunger may be restored by moving said catch, and a stop serving to arrest said plunger and arranged to be displaced from the path thereof by the insertion of a coin.

408,201. MATCHING-MACHINE. BENJAMIN G. LUTHER, Worcester, Mass. Filed Nov. 19, 1888. Serial No. 291,943. (No model.)



Claim.—1. In a matching-machine, the combination, with the feeding-rollers and the table or support for one edge of the board, of a pivoted frame located above the table or support, a saw or cutter held upon a shaft in the pivoted frame, and an adjustable guide pivoted to the pivoted frame for gaging the depth of the cut to be made in the edge of the board, substantially as described.

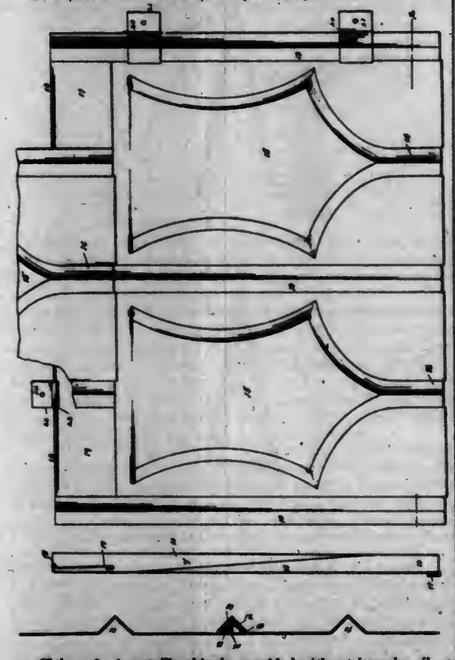
2. In a matching-machine, the combination, with the feeding-rollers and the table or support for one edge of the board, of a pivoted frame, a saw or cutter held upon a shaft in the pivoted frame, the adjustable guide pivoted to the pivoted frame and adapted to gage the depth of the cut to be made in the edge of the board, and the rod which forms the parallel movement for preserving the proper relation of the guide and the table or support for the board at the varying inclination of the pivoted frame, substantially as described.

3. In a matching-machine, the combination, with the feeding-rollers and a table or support for one edge of the board, of a pivoted frame, a saw or cutter held upon a shaft in the pivoted frame, the adjustable guide adapted to gage the depth of the cut to be made in the edge of the board, the pivoted lever and screw-bolt for adjusting the guide, and the connecting-rod which forms the parallel movement for preserving the proper relation of the guide and the table or support for the board, substantially as described.

408,202. PROCESS OF OBTAINING GOLD AND SILVER FROM ORES. JOHN S. MACARTHUR, Pollokshields, County of Renfrew, and ROBERT W. FORREST and WILLIAM FORREST, Glasgow, County of Lanark, Scotland. Filed Nov. 9, 1887. Serial No. 254,699. (No specimens.) Patented in England Oct. 19, 1887, No. 14,174; in Cape of Good Hope Jan. 7, 1888, No. 6/101; in Victoria Jan. 19, 1888, No. 5,573; in New South Wales Jan. 21, 1888, No. 463; in South Australia Jan. 23, 1888, No. 948; in Tasmania Jan. 24, 1888, No. 589; in New Zealand Feb. 1, 1888, No. 2,775; in Canada Feb. 6, 1888, No. 28,471; in France Apr. 6, 1888, No. 189,906; in Belgium July 24, 1888, No. 82,673; in Brazil Aug. 23, 1888, No. 619; in Portugal Aug. 30, 1888, No. 1,373; in Italy Sept. 30, 1888, No. 23,833, and in Spain Oct. 3, 1888, No. 8,533.

Claim.—The process of separating precious metal from ore containing base metal, which process consists in subjecting the powdered ore to the action of a cyanide solution containing cyanogen in the proportion not exceeding eight parts of cyanogen to one thousand parts of water.

408,203. METALLIC SHINGLE. JOSHUA MILLS, Ottawa, Ill. Filed Feb. 2, 1889. Serial No. 298,472. (No model.)

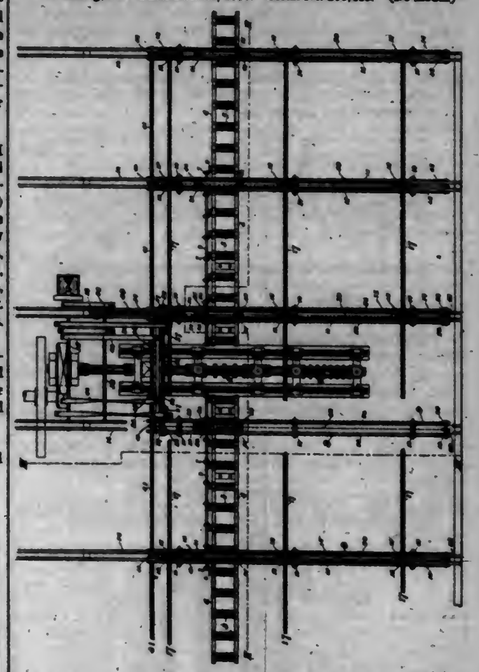


Claim.—1. A metallic shingle provided with a triangular rib at each longitudinal side, the edge of one rib being carried horizontally inward and the edge of the opposite rib horizontally inward and vertically upward, substantially as shown and described.

2. A metallic shingle provided with a triangular rib at each longitudinal side, the edge of one rib being carried horizontally inward and the edge of the opposite rib horizontally inward and vertically upward, and a central triangular rib located at one end of the body of the shingle, substantially as shown and described.

3. A metallic shingle provided with a triangular rib at each longitudinal side, the edge of one rib being carried horizontally inward and the edge of the opposite rib horizontally inward and vertically upward, and having a short loop at one end upon the under face and a longer loop upon the opposite end upon the outer face, and the said latter loop provided with an outer longitudinal bead, substantially as shown and described.

408,204. FEED-TABLE FOR ROLLING-MILLS. JAMES MORGAN, Pittsburg, Pa. Filed Feb. 11, 1889. Serial No. 299,415. (No model.)



Claim.—1. The combination, with a rolling-mill feed-table, of elevated supports from which it is suspended, substantially as and for the purposes described.

2. A rolling-mill feed-table, in combination with a laterally-movable elevated support from which it is suspended, substantially as and for the purposes described.

3. A rolling-mill feed-table, in combination with a vertically-movable elevated support from which it is suspended, substantially as and for the purposes described.

4. In a rolling-mill plant, the combination of elevated tracks or ways, carriages mounted thereon, feed-tables suspended from the carriages, and a power-engine for moving the carriages on the tracks, substantially as and for the purposes described.

5. In a rolling-mill plant, the combination of elevated tracks or ways, carriages mounted thereon, feed-tables suspended from the carriages, a power-engine for moving the carriages on the tracks, and lifting mechanism by which the tracks are elevated vertically, substantially as and for the purposes described.

6. In a rolling-mill plant, the combination of elevated tracks or ways, carriages mounted thereon, feed-tables suspended from the carriages, a power-engine for moving the carriages on the tracks, a driving-shaft leading from one at least of the carriages to the feed-rollers, and a traveling power-connection in gear with the said driving-shaft, whereby power is transmitted thereto in any position of the carriage, substantially as and for the purposes described.

7. In a rolling-mill plant, the combination of elevated tracks or ways, carriages mounted thereon, feed-tables suspended from the carriages, a power-engine for moving the carriages on the tracks, lifting mechanism by which the tracks are elevated vertically, and arched yokes connecting the tracks with the suspending mechanism, substantially as and for the purposes described.

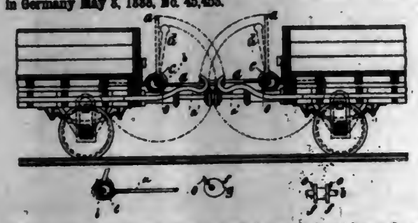
8. The combination, with a rolling-mill feed-table, of hangers or stirrups open at one side and connected with the table, and elevated supports from which the said hangers or stirrups and the table are suspended, substantially as and for the purposes described.

9. The combination, with a feed-table and lifting mechanism by which it is movable vertically, of upright movable bars carried by the

table and extending below the same, whereby on descent of the table said bars shall engage the floor or other support, and shall thereby be elevated relatively to the table to turn the metal thereon, substantially as and for the purposes described.

10. The combination, with a feed-table and lifting mechanism by which it is movable vertically, of upright movable bars carried by the table and extending below the same, whereby on descent of the table said bars shall engage the floor or other support, and shall thereby be elevated relatively to the table to turn the metal thereon, and vertically-movable stop-bars also carried by the table, substantially as and for the purposes described.

403,205. CAR-COUPLING. PAUL R. MÖLLER, Sorau, Prussia, Germany. Filed Feb. 6, 1889. Serial No. 299,798. (No model.) Patented in Germany May 8, 1888, No. 45,453.

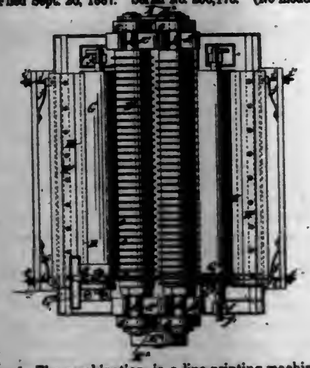


Claim.—1. The combination of shaft *b*, cam *c*, hand-lever *d*, and collars *f* with the link *a*, having shoulders *n*, and with hook *a'*, substantially as specified.

2. The combination of shaft *b*, cam *c*, and collars *f* with link *a*, sliding bar *l*, having cam *k*, and with hook *a'*, substantially as specified.

3. The combination, in a car-coupling, of the following elements: shaft *b*, having cam *c* and hand-lever *d*, link *a*, having shoulders *n*, collars *f*, having stops *o*, and rod *l*, having cam *k*, substantially as specified.

403,206. LINE-PRINTING MACHINE. JOHN MCADAMS, Brooklyn, N. Y. Filed Sept. 20, 1887. Serial No. 250,170. (No model.)



Claim.—1. The combination, in a line-printing machine, of pairs of rollers, those of each pair being arranged one above another and all provided with disks *c*, and which are interchangeably fitted in the machine, so that either of each pair may serve as a printing-roller and its companion as a supporting-roller, and of inking apparatus for supplying color to the disks of the printing-rollers, substantially as herein described.

2. The combination, with pairs of line-printing and supporting rollers arranged side by side and those of each pair one above another, of friction-wheels applied to their journals and bearing one on another, and a driving-shaft having friction-wheels in contact with those upon the lower rollers of the pairs, whereby the rollers are driven and held out of contact and at the proper distance apart for printing, substantially as herein described.

3. The combination, with the printing-rollers and their opposite supporting-rollers, all supplied with disks *c*, of ink fountains and rollers for supplying color to the disks of the printing-rollers, and separate ink fountains and wheels or ink-rollers for supplying color to certain of the disks of the supporting-rollers, substantially as herein described.

4. In a line printing or ruling machine, the combination, with printing-rollers provided with series of disks for line-printing, of color-rollers and color or ink fountains arranged at an inclination toward the printing or pen rollers and made self-adjusting relatively thereto, substantially as herein described.

5. In a line printing or ruling machine, the combination, with the line printing or ruling devices, of tapes or cords, which carry the paper on its way to the said printing or ruling devices, and brushes or beaters past which the tapes or cords travel, and which serve to clean the paper while it is carried by the tapes or cords, substantially as herein described.

6. In a line printing or ruling machine, the combination, with the printing or ruling devices, of pairs of tapes or cords between which the paper is carried on its way to said devices, a beater for knocking or beating the tapes or cords and paper to clean the under surface of the paper, and an air-blast pipe for cleaning the upper surface of the paper, substantially as herein described.

7. In a line-printing machine, the combination, with printing and supporting rollers and color wheels or rollers, of an ink or color fountain having compartments formed by transverse partitions, wherein wheels operate to deliver one or more colors upon certain of the printing-disks, and having the remaining portions in communication by a passage or passages leading beneath the first said compartment or compartments, substantially as herein described.

8. The combination, in a line-printing machine, with a printing-roller and a supporting-roller, of an ink-fountain and an inking-roller turning therein for supplying the disks of the printing-roller, and a wiper of india-rubber, arranged approximately tangential to the inking-roller and operating thereon, substantially as herein described.

9. The combination, in a line-printing machine, with a printing-roller provided with printing-disks and the oppositely-arranged supporting-roller, of the ink-fountain and an inking-roller, a sliding holder carrying a wiper, which is arranged approximately tangential to the inking-roller, and which bears thereon, and devices whereby said holder is adjustable to vary the lap of the wiper on the inking-roller, substantially as herein described.

403,207. FLOATING LIFE-LINE CARRIER. ARARIAH D. NEWELL, New Brunswick, N. J. Filed Oct. 4, 1888. Serial No. 287,243. (No model.)



Claim.—1. A floating carrier consisting of a tapering floating body provided with a rear annular flange extending in a backward and outward direction from the carrier and forming a tapering chamber adapted to catch the wind and waves and to be propelled thereby, substantially as described.

2. A floating carrier consisting of a tapering floating body provided with a rear annular flange extending in a backward and outward direction from the carrier and forming a tapering chamber adapted to catch the wind and waves and to be propelled thereby, and also provided with a center rod, G R, or equivalent guiding device, substantially as described.

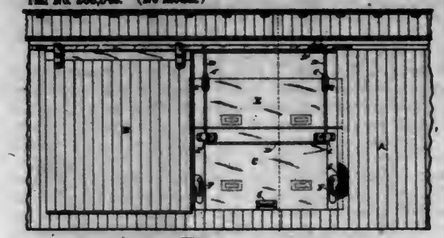
3. Two or more floating carriers consisting of tapering floating bodies, each provided with guide-rods and a rear annular flange extending in a backward and outward direction from the carrier and forming a tapering chamber to catch the wind and waves and to be propelled thereby and connected by a line, C L, the two extremities of which are attached, as shown, respectively, to the rear end of the guide-rod of the first and to the front of the guide-rod of the following carrier, as and for the uses and purposes set forth.

4. A floating carrier consisting of a tapering floating body with rear flange and center rod extending beyond base of carrier and provided at the rear of the same with a life-line, R, as and for the uses and purpose set forth.

5. A floating carrier consisting of a tapering floating body with rear flange and center rod extending beyond apex and base of carrier, and provided with a steering-line, G L, and a life-line, R, attached, respectively, to the front and rear end of the guide-rod, substantially as and for the uses and purpose set forth.

6. Two or more floating carriers consisting of tapering floating bodies and provided with guide-rods and with a rear annular flange extending in a backward and outward direction from the carrier and forming a tapering chamber adapted to catch the wind and waves and to be propelled thereby, and connected together by a line, C L, the two extremities being attached, as shown, respectively, to the rear end of the guide-rod of the first and to the front of the guide-rod of the second, the rear carrier being provided with a life-rope, R, as and for the uses and purposes set forth.

403,208. GRAIN-DOOR FOR FREIGHT-CARS. JOHN S. PATTERSON and JOHN R. LAWRENCE, Cincinnati, Ohio. Filed Oct. 19, 1888. Serial No. 288,542. (No model.)





Claim.—1. The combination, substantially as specified, of the car-body, the yoke D, suspended therefrom, the door C, the loops coupling it to the yoke, and the hook for catching over the lower bar of said yoke and retaining the door and yoke in the upper position.

2. The combination, substantially as hereinbefore set forth, of the two door-sections, a swinging yoke suspended in the upper timbers of the car-body for carrying the same, the links connecting the upper section to the yoke, whereby it is movable independently of the lower section, hooks hung from the car-roof to catch over the lower bar of said yoke and sustain the sections in the upper position, locking-levers pivoted on the lower door-section, and catches in the posts to receive the locking ends of the levers, for the purpose specified.

3. The combination of the car-body, the swinging door carrier D, having its upper ends bent, as shown, the loops D', by which the yoke is hinged to the roof-timber of the car, the door C and loops coupling it to the swinging frame, the levers F, pivoted upon the door and having their locking ends beveled and cam-shaped, as shown, and the locking-plates *f*, recessed in the upright door-stiles, substantially as specified.

4. In a grain-door composed of two sections hung upon a swinging yoke, the combination of the upper section, E, the swinging links coupling the same upon the swinging yoke, whereby the said upper section is adapted to be pushed up and swung against the roof of the car independent of the lower section, the inwardly-bent ends of the yoke for sustaining the lower edge of the door in its upper position, and the hooks pivoted upon the roof-timber for sustaining the opposite edge, substantially as specified.

403,209. DROP-PERCH FOR VEHICLES. HENRY W. PELL, Rome, N. Y. Filed July 3, 1888. Serial No. 278,902. (No model.)

Claim.—1. A vehicle having a drop-perch provided substantially at its extremities, with braces secured thereto, rigidly securing the perch at one extremity to one axle and pivoting the perch at its opposite extremity to a saddle or saddles rigidly secured to the opposite axle, substantially as and for the purpose set forth.

403,209.



2. A vehicle having a drop-perch provided, substantially at its extremities, with braces or perch-irons secured thereto and formed concave in cross-section, one of which is attached directly to one axle and the other pivoted to a saddle or saddles rigidly secured to the opposite axle, substantially as and for the purpose set forth.

3. The combination of one circle of a fifth-wheel secured to the axle of the vehicle with the other circle pivoted thereto, bearing thereupon, and formed integral with the drop-perch braces secured to one extremity of the perch, substantially as and for the purpose set forth.

4. The combined drop-perch brace *a* and fifth-wheel circle *c*, substantially as and for the purpose set forth.

5. The combination of the axle A, saddles *s s*, fifth-wheel circles *c c'*, pivots *b b'*, and strap *a*, whereby the fifth-wheel is secured to the axle without a king-bolt, substantially as and for the purpose set forth.

6. The combination, with the axle A, perch B, and perch-brace *a*, of the fifth-wheel having one circle secured to the axle and provided with the pivot-bolt *b*, and the opposite circle formed integral with the perch-brace *a*, substantially as and for the purpose set forth.

7. The concavo-convex fifth-wheel circles *c c'*, having the section *e* thereof formed integral with the drop-perch iron, substantially as and for the purpose set forth.

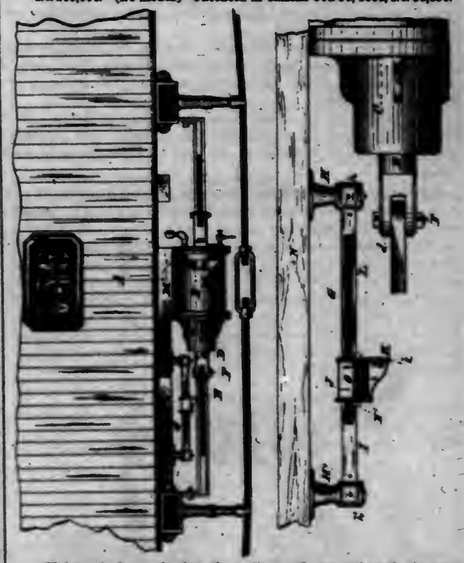
8. The concavo-convex fifth-wheel circles *c c'*, having the upper section thereof formed in one piece with a drop-perch iron concave in cross-section, substantially as and for the purpose set forth.

9. The concavo-convex fifth-wheel circles *c c'*, in combination with a drop-perch, substantially as and for the purpose set forth.

10. A fifth-wheel for vehicles, composed of concavo-convex circles, saddles *s s'*, pivot *b*, formed integral with the lower half of the fifth-wheel circle and the clips C, substantially as and for the purpose set forth.

11. A fifth-wheel for vehicles, composed of concavo-convex circles, saddles *s s'*, pivot *b*, and clips C, substantially as and for the purpose set forth.

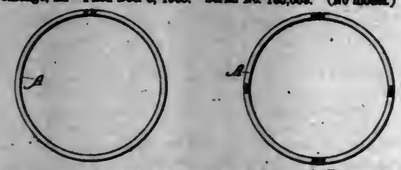
403,210. REGISTERING-GAGE FOR RAILWAY-CAR BRAKES. ROBERT POTTS, St. Thomas, Ontario, Canada. Filed Oct. 25, 1888. Serial No. 288,196. (No model.) Patented in Canada Oct. 20, 1888, No. 30,080.



Claim.—1. In car-brakes, the indicator G, secured to the bottom of the car-body and provided with a slide actuated by the piston-rod of the brake-cylinder in one direction only, said slide indicating the maximum motion of said brake-piston up to the time of inspection, it being independent of and disconnected from said brake mechanism, as and for the object set forth.

2. The combination, in brake-indicators, with the base N, of the standards H H', having heads *h h'*, the bar I, having scale-indications L, as described, and the slide K, retained in sliding position upon said rod by the feather and spring, as and for the purpose set forth.

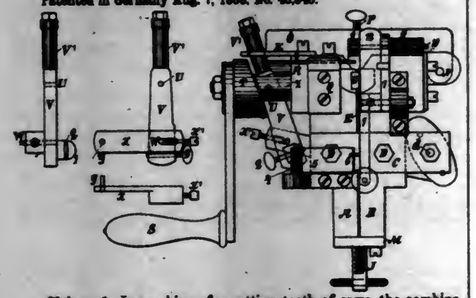
408,211. MAGNETIC SHIELD FOR WATCHES. HARRY P. PRATT, Chicago, Ill. Filed Dec. 3, 1885. Serial No. 185,059. (No model.)



Claim.—1. A watch-movement partially or wholly surrounded by a permanently-magnetic shield whereby a magnetic current flows constantly around the movement, substantially as and for the purpose set forth.

2. A watch-movement surrounded by a permanently-magnetic continuous ring, A, substantially as and for the purpose set forth.

408,212. SAW-SETTING MACHINE. MORITZ PISCHNER, Görlitz, Prussia, Germany. Filed Mar. 13, 1888. Serial No. 267,143. (No model.) Patented in Germany Aug. 7, 1883. No. 46,345.

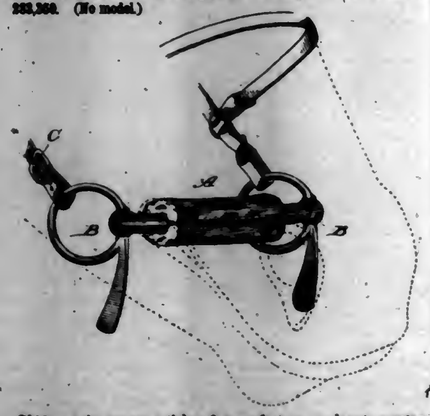


Claim.—1. In machines for setting teeth of saws, the combination of the frames A B, joined together by bar C, leaving a space, E between said frames, the handle S, turning loosely on stud Z, provided with a hub having at its end the oblique plane T, the lever V, levers *x*, *b*, *h*, and *l*, with the setting-tool bearers *r* and *s*, and setting-tools *q*, substantially as specified.

2. In machines for setting teeth of saws, the combination of frames A B, connected together to leave space E, with plate F, bolt K, and hollow screw J, and with lever O, provided with screw P, substantially as specified.

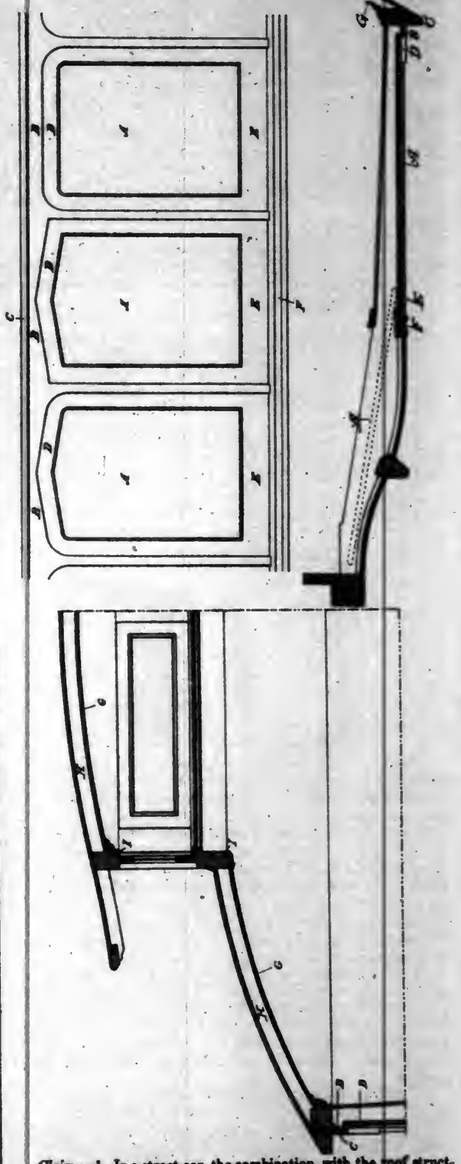
3. In machines for setting teeth of saws, in combination with a lever, V, the screw 2, angle-levers 3 and 5, lever 7, with adjusting-screw 8 and pin or projection 6, and latch 9, as and for the purpose described.

408,213. DEVICE FOR ADMINISTERING MEDICINE TO ANIMALS. PHILIP GUTHAN, Chicago, Ill. Filed Aug. 21, 1888. Serial No. 283,269. (No model.)



Claim.—As a new article of manufacture, a closed envelope formed of porous fabric containing veterinary medicine and of dimensions permitting it to be secured to a bit and inserted within the mouth of the animal to be treated, substantially as described.

408,214. STREET-CAR. ASHBY RAFF, Pullman, assignor to George M. Pullman, Chicago, Ill. Filed Feb. 3, 1887. Serial No. 226,405. (No model.)



Claim.—1. In a street-car, the combination, with the roof structure, of a narrow longitudinal strip, B, set edgewise into the bottom of the roof-timbers, and windows A, extended upward approximately to the roof and resting, when raised, against said strip B, substantially as set forth.

2. A street-car having its roof-timbers re-enforced by a continuous sheet or thin layer of wood attached to the under side of the carlings of the roof, the margins of said sheet being attached to the longitudinal timbers of the car, substantially as described.

408,215. ATTRITION-MILL. GEORGE RAYMOND and ALBERT RAYMOND, Chicago, Ill. Filed June 27, 1883. Serial No. 278,260. (No model.)



Claim.—1. In an attrition-mill having a circular pulverizing-chamber, one or more recessed heads mounted within said chamber upon a rotatable shaft, a feed-opening communicating with one side of the pulverizing-chamber, a separating-chamber communicating with the side of said pulverizing-chamber opposite the feed-openings, and an air-duct communicating with the pulverizing-chamber, substantially as described.

2. In an attrition-mill having a circular pulverizing-chamber, rotatable recessed heads mounted upon a common shaft within the chamber, feed-hoppers communicating with one side of the pulverizing-chamber, and a separating-chamber communicating with the side of said pulverizing-chamber opposite the feed, and air-ducts communicating with the pulverizing-chamber, substantially as described.

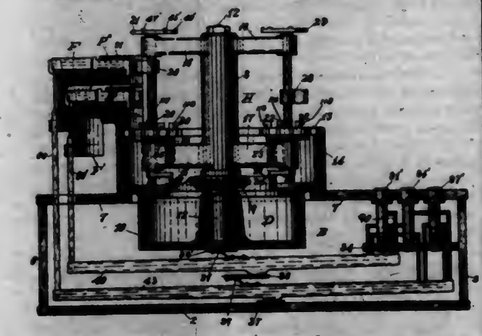
3. In an attrition-mill having a circular pulverizing chamber or chambers, a rotatable shaft mounted centrally within said chambers and carrying heads recessed to receive material to be operated upon and adapted by their rotation to pulverize such material by its attrition upon the stationary material within the pulverizing-chamber, and a separating-chamber communicating with the pulverizing-chamber, said chamber having a hard metallic lining to receive the impact of the flying particles, substantially as described.

4. In an attrition-mill having a circular pulverizing-chamber within which are mounted upon the same shaft rotatable recessed heads of less diameter than said chamber, flanged linings bridging the space between said heads and the wall of the chamber, feed-hoppers communicating with one side of the pulverizing-chamber, a separating-chamber communicating with the side of the pulverizing-chamber opposite the feed-entrance, and air-ducts communicating with the pulverizing-chamber, substantially as described.

5. In an attrition-mill having a circular pulverizing-chamber within which are mounted upon the same shaft rotatable recessed heads of less diameter than said chamber, flanged linings secured to the peripheral wall of the chamber between the heads, the flanges bridging the vertical space between the heads and the wall, whereby passages are formed between the heads and the wall, and air-ducts communicating with said passages, substantially as described.

6. A head for attrition-mills, double-cone-shaped in form, whereby to provide a pocket or recess to contain material to be operated upon, substantially as described.

408,216. TYPE-WRITING MACHINE. FRANCIS H. RICHARDS, Springfield, Mass., assignor to Darius W. Dodson, Wilkes-Barre, Pa. Filed Nov. 24, 1886. Serial No. 218,784. (No model.)



Claim.—1. The combination, in a type-writer, of a revoluble turret, two revoluble shafts carried on said turret, two tiers of shaft-starting latches, a starting-arm on the first shaft operated by one tier of latches, and a starting-arm on the second shaft operated by the other tier of latches, substantially as described.

2. The combination, in a type-writer, of a paper-carriage having a ratchet, the type-shaft carrying a type-wheel and having feed-pins corresponding to the types on said wheel, and feed devices, substantially as described, actuated by said pins and actuating said carriage, all substantially as set forth.

3. In a type-writer, the combination, with the printing mechanism, of a key-board having separate duplicate keys for the printing of one character, and these keys interspersed among the keys for other characters, all of said duplicate keys for the same character being operatively connected with said mechanism through a single connecting device, all substantially as described.

4. The combination, in a type-writer key-board, of perforated plates, as 7 and 34, a key, as 80, having a sliding movement in bearings in the plates, a key-lever, as 40, and the arm 90, projecting laterally from said key and resting on said lever, substantially as described.

5. The combination, in a type-writer, of a revoluble type-wheel having an orbital movement and provided with a starting-arm, and a series of independent reciprocating latches set alongside of the orbit of said type-wheel, each latch being constructed and located to properly start said wheel for the printing of a particular character, and said latches being each operated from a finger-key through a tripping-rod connected therewith, substantially as described.

6. The combination, in a type-writer having a revolable turret carrying two revoluble type-wheels situated in the same plane, of substantially duplicate type-wheel-operating mechanisms, substantially as described, each mechanism operating one type-wheel to the exclusion of another wheel, substantially as described.

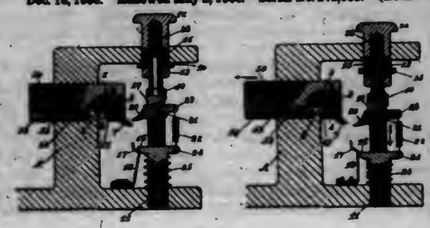
7. The combination, in a type-writer having a paper-carriage and a revoluble turret, of a revoluble shaft mounted on said turret at a distance from the axis thereof, a rack or internal gear concentric with said turret outside of said shaft, a segmental gear fixed on said shaft and adapted to mesh with said rack, and a segmental type-wheel fixed on said shaft and adapted to roll against said carriage, said type-wheel and gear corresponding in circumferential position on said shaft, and the types on said wheel corresponding to the teeth of the gear, substantially as described.

8. In a type-writer of the class described, the combination and arrangement, with the revoluble turret thereof having upper and lower bearings for a type-shaft at a distance from the axis of said turret, of the type-shaft journaled in said bearings, the starting-arm fixed on said shaft between said bearings, latches acting on said arm to start and revolve said shaft, and the type-wheel fixed on said shaft above said upper bearing, substantially as described.

9. In a type-writer, the combination of a printing mechanism having two revoluble type-wheel shafts carried on a revoluble turret, a shaft-starting arm on one shaft at one point and another starting-arm on the other shaft at another point longitudinally of said shafts, one series of starting-latches located to operate on one starting-arm and another series of starting-latches located to operate on the other starting-arm, (whereby one type-shaft may be started to the exclusion of the other shaft,) two tiers of key levers, and connections from the first tier of levers to the latches of the first series of latches, respectively, and from the second tier of levers to the second series of latches, respectively, substantially as described.

10. In a type-writer, the combination of a printing mechanism having two revoluble type-shafts carried on a revoluble turret, a shaft-starting arm on each shaft and located, respectively, at different points longitudinally of said shafts, two series of shaft-starting latches located to operate on said arms, respectively, one set of key-levers connected to operate latches of one series of latches and another set of levers connected to operate latches of the other series of latches, and a key-board in which the several keys of one row of keys are connected some to one set of levers and some to the other set of levers, whereby one key in one row serves to start one type-shaft and an adjacent key in the same row of keys serves to start the other type-shaft, substantially as described.

408,217. MECHANICAL MOVEMENT. FRANCIS H. RICHARDS, Springfield, Mass., assignor to Darius W. Dodson, Wilkes-Barre, Pa. Filed Dec. 18, 1886. Renewed May 2, 1888. Serial No. 272,893. (No model.)



Claim.—1. The combination, in a latch mechanism of the class described, of the latch carrying a pawl that terminates in an arm whereby it is operated, a carrier having a movement crosswise to the latch-movement, and an arm projecting from said carrier, to strike and unhook said pawl, said carrier being operated from a key, all substantially as set forth.

2. The combination of the latch and its pawl, a carrier having a snap-pawl, 20, a detent resisting the first movement of said carrier, and a key and springs operating in connection with the detent to impart a sudden movement to said carrier, all substantially as set forth.

3. The combination of a reciprocating carrier having a detent-arm, a spring having a corresponding detent-notch, a key, and a spring intermediate to said key and carrier, all operating substantially as and for the purpose set forth.

4. The combination of carrier 10, having arm 16, spring 18, having notch 17, spring 25, key 12, and spring 28, all constructed and operating substantially as shown and described.

408,218. FOUNTAIN WINDOW-CLEANER. HENRY C. ROSE, Leadville, Colo. Filed Aug. 15, 1888. Serial No. 282,943. (No model.)



Claim.—1. In a fountain window-cleaner, the combination of the framing provided with a water-receptacle at its upper end, a jet-tube connected with the water-receptacle, an elastic roller journaled in the sides of the frame, arranged to normally close the apertures in the jet-tube, and a receiving-chamber arranged below said roller, substantially as described.

2. The combination, with the frame A, provided with a water-receptacle at its upper end, a jet-tube connected with and disposed below said receptacle, and a receiving-chamber formed in the lower end of said frame provided with extensions, of an elastic roller adjustably journaled in the sides of the frame between the extensions, said roller adapted to normally close the apertures in the jet-tube, substantially as and for the purposes described.

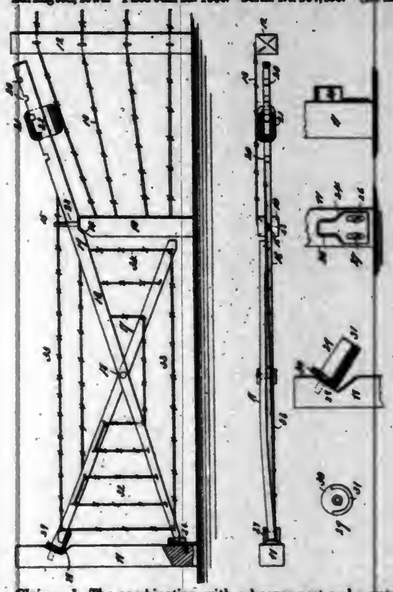
3. In a fountain window-cleaner, the combination, with the frame A, provided with a water-receptacle at its upper end, a jet-tube connected with and disposed below said receptacle, and a receiving-chamber formed in the lower end of said frame, provided with lateral extensions at one side thereof, of an elastic roller journaled in the sides of said extensions, and horizontal scrapers mounted in the outer ends of said extensions, their outer ends arranged slightly within the outer line of the peripheral face of the said roller, all arranged substantially as shown and described.

4. In a fountain window-cleaner, the combination, with the main frame provided with a water-receptacle at its upper end, a jet-tube arranged transversely in said frame, disposed below and connected with the said receptacle, and a receiving-chamber formed in said frame below the water-receptacle, having extensions *a' a'*, of an elastic roller adjustably journaled in the frame to the upper and lower edges of said roller, disposed with the extensions *a' a'*, and horizontal scrapers mounted in the outer ends of said extensions, said scrapers inclined toward the outer periphery of said roller, said extensions forming ways for leading the waste or dirty water to the receiving-chamber, substantially as shown and described.

5. In a fountain window-cleaner, the combination of the framing provided with a water-receptacle at its upper end, a jet-tube disposed below and connected with the water-receptacle, an elastic roller journaled in the sides of the frame, arranged to normally close the apertures in the said jet-tube, a receiving-chamber arranged below said roller, and a depending tube connected to the receiving-chamber, said tube adapted to form a receptacle for the waste or dirty water, and a socket for the reception of the operating-handle, substantially as shown and described.

6. The hereinbefore-described improvements in fountain window-cleaners, consisting of the main frame provided with a water-receptacle, B, at its upper end, a supplemental scraper, M, arranged at the upper rear edge thereof, a receiving-chamber arranged below said water-receptacle, a transverse jet-tube arranged therein, said tube connected with water-receptacle, an elastic roller, F, journaled in the front edge of said frame, extensions *a' a'*, formed on the side walls of the receiving-chamber and extended one over and the other under the roller F, horizontal scrapers mounted in the outer ends of extension, their outer ends inclined toward the roller, and a depending tube projected from the lower end of said receiving-chamber, said tube forming a receptacle for the waste or dirty water, and a socket for the operating-handle, substantially as shown and described.

408,219. BARBED-WIRE-FENCE GATE. TRUMAN M. SAMPSON, Burlington, Iowa. Filed Jan. 22, 1889. Serial No. 297,152. (No model.)



Claim.—1. The combination, with a keeper-post and a gate-post of less height than the former, of a gate consisting of crossed diagonal beams, one of which beams is pivoted upon the gate-post and made to extend upwardly and rearwardly beyond the same, a counterpoise-weight adjustably held upon the upper extending end of the pivoted beam, and vertical and horizontal wires secured to both of the said beams, all combined for operation substantially as shown and described.

2. The combination, with a keeper-post and a gate-post of less height than the former and provided with a beveled upper end, of a gate consisting of a long beam recessed to fit upon the top of the gate-post, having one end projecting beyond the post and provided with an adjustable weight, a pin securing the said beam to the gate-post, a short beam diagonally crossing the longer beam and attached thereto at the point of intersection, vertical and horizontal wires attached to the two beams, and means, substantially as shown and described, for locking the gate to the keeper-post, as and for the purpose specified.

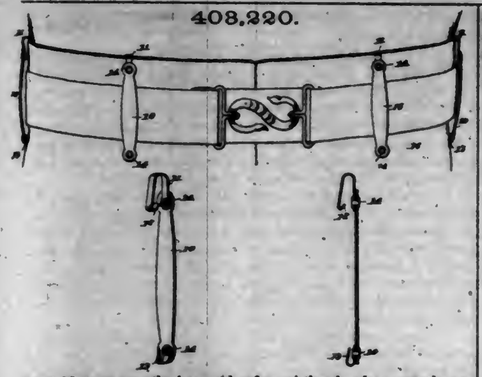
3. The combination, with a keeper-post and a shorter gate-post provided with a beveled top, of a diagonal beam pivoted upon the gate-post and extending beyond the same, a counterpoise-weight adjustably held upon the upper extending end of the beam, a shorter beam crossing the weighted beam and attached thereto, and vertical and horizontal fence-wires secured to both of the said beams, substantially as shown and described.

4. The combination, with a keeper-post provided with an adjustable keeper and a pivoted scoop-like latch, and a gate-post provided with a beveled top and of less height than the keeper-post, of a diagonal beam pivoted upon the gate-post, and capable of a slight vertical movement, having one end projecting upward beyond the said gate-post, a counterpoise-weight adjustably held upon the upper projecting end of the beam, a second shorter beam crossing the weighted beam between the keeper and gate posts, and vertical and horizontal wires secured to said beams, substantially as set forth.

408,220. SUPPORTER FOR BELTS. LOUIS SANDERS, Brooklyn, N. Y. Assignor, by mesne assignments, to ELIZA SANDERS, of same place. Filed Mar. 13, 1888. Serial No. 302,123. (No model.)

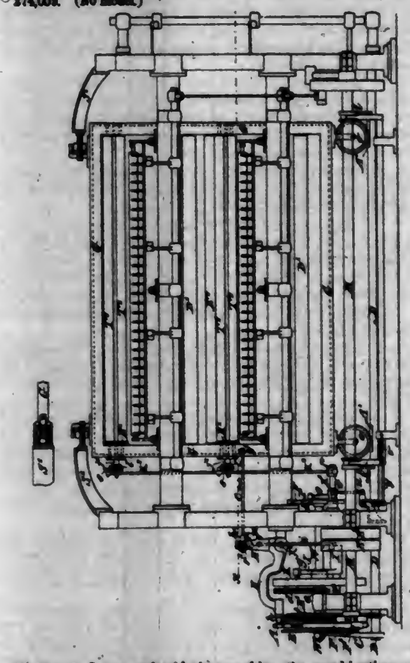
Claim.—As an improved article of manufacture, a belt-support for waistbands, consisting in a flexible strip having hooks 11 and 13 on its ends extending toward each on the inner side of the strip, the lower extremity or free end of the upper hook being bent upward,

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as at 12, to engage the inner side of a waistband and prevent the upper hook from moving upwardly.

408,221. EMBROIDERING-MACHINE. ADOLPH SAURER and ERNST LEUTHOLD, St. Gallo, Switzerland. Filed May 16, 1888. Serial No. 274,059. (No model.)



Claim.—1. In an embroidering-machine, the combination, with a frame, of intermittently-rotating rollers upon which the material is wound, driving mechanism, a shaft driven therefrom, pattern-cams operated from said shaft to cause movements of the said frame in planes at right angles to each other, another cam on said shaft, mechanism operated by said cam to cause said intermittent rotation of the feed-rollers, a second shaft, a cam on said second shaft, and levers operated from said second-named cam for causing the movement of said frame simultaneously with and in a direction at right angles to the direction of forward feed of the goods, substantially as specified.

2. In an embroidering-machine, the combination, with a frame, of intermittently-rotating rollers upon which the material is wound, driving mechanism, a shaft driven therefrom, pattern-cams operated from said shaft for causing movements of the said frame in planes at right angles to each other, another cam upon said shaft, mechanism operated by the last-named cam to cause said intermittent rotation of the feed-rollers, a second shaft, a cam on said second-named shaft, a connection between said second-named cam and the frame for moving said frame simultaneously with and in direction at right angles to the direction of forward feed of the goods, and a speed-regulator for automatically changing the speed of the machine during the forward feed of the goods, substantially as specified.

408,222. KNOB ATTACHMENT. SIMON SCHRAM, Buffalo, N. Y. Filed Jan. 26, 1889. Serial No. 297,730. (No model.)



Claim.—1. In door-knob fasteners, the combination, with the knob having the pivoted dog, of the door-plate having the notched movable collar, and the serrated spindle, as and for the object stated.

2. The combination, with the knob of the pivoted dog having the projection *f*, of the spindle C, provided with the serrations H, the plate B', having the annular projection *a'*, and the movable notched collar J upon said annular ring *a'*, the whole being constructed and combined in the manner as and for the purpose stated.

408,223. KNOB ATTACHMENT. SIMON SCHRAM, Buffalo, N. Y. Filed Feb. 6, 1889. Serial No. 298,865. (No model.)



Claim.—1. In door-knobs, the combination, with the door A, of the door-plate D, the spindle C, having near one end the holes *i i'*, for the reception of a pin for fastening the knob B, and at the other end a series of teeth, *h*, the knob B', having a shank, *b*, provided with an opening, *a*, the pivot *e*, the V-shaped dog E, journaled upon said pivot and engaging the serrations *h* of the spindle C, and the door-plate D, having a circular recess provided with the spiral spring I, said dog being held in mesh with the serrations in the spindle by said spring pressing upon the knob B and disengaged therefrom by pushing said knob toward the knob B', all as hereinbefore described.

2. In door-knob fasteners, the knob B', having the V-shaped dog pivoted at the point of the angle, in combination with the serrated spindle and the spiral spring in the door-plate, said dog being held in mesh with the serrations by the said spring acting upon the shank of the knob B, in the manner as and for the purpose set forth.

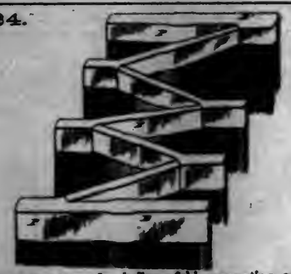
3. The combination, substantially as described, with the serrated spindle C, of the door-knob B, affixed to said spindle by the pin *i'*, the door-plate D, having the annular projecting ring L, fitted with the spiral spring I, and the door-knob B', having the shank *b*, fitted with the pivoted V-shaped dog E, engaging said serrations in the spindle, said dog being locked in position by its thumb-piece F bearing upon the shank *b* through the intervention of the spiral spring I, as stated.

408,224. BELLOWS-FOLD COUPLING. HENRY H. SESSIONS, Pullman, assignor to the Pullman's Palace Car Company, Chicago, Ill. Filed Nov. 19, 1887. Serial No. 255,660. (No model.)

Claim.—1. As an element in the construction of vestibules or inclosures between adjacent ends of railway-cars, the bellows-fold connection consisting of alternate layers of textile fabric and rubber and formed in folds in which the series of said folds are joined one to another by adhesion of layers throughout a portion of their breadth, re-enforced by layers external and internal to the angles of intersection of said folds.

2. In railway-cars, the combination, with a timber or plate, *b*, attached to the end of the platform, and an adjustable buffer-plate, *d'*, adapted for extension or contraction with relation to said por-

408,224.

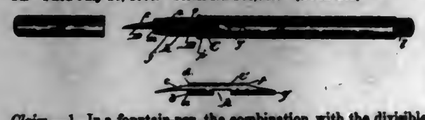


manent timber or plate, of a bellows-fold connection consisting of alternate layers of textile fabric and rubber and formed in folds, in which the series of said folds are joined one to another by adhesion of layers throughout a portion of their breadth, re-enforced by layers external and internal to the angles of intersection of said folds.

3. As a new article of manufacture, a bellows-fold device consisting of a series of folds that are composed of alternate layers of textile fabric and rubber, said folds being united one to another by adhesion of layers throughout a portion of their breadth, effected by heating, and re-enforced by layers of like construction external to the primary layers, and further re-enforced by rubber gussets at the inner angles of intersection, which gussets are made an adhesive part of the folds by heating or pressure.

4. As a new article of manufacture, a bellows-fold device consisting of a series of folds that are composed of alternate layers of textile fabric and rubber, said folds being united one to another by adhesion of layers throughout a portion of their breadth, effected by heating, and re-enforced by layers of like construction external to the primary layers, and further re-enforced by gussets at the inner angles of intersection.

408,225. FOUNTAIN-PEN. LAFORREST A. SHATTUCK, Bloomsburg, Pa. Filed July 28, 1888. Serial No. 281,243. (No model.)



Claim.—1. In a fountain-pen, the combination, with the divisible case A B and the pen D, of the adjustable automatic stopper C, which is provided with the pen-seat *a*, the central ink-duct, *o*, the lip or feed-bar *c* in contact with the pen, and the peripheral air-vent groove *e*, independent of the ink-feeding channel and pen, substantially as described.

2. In a fountain-pen, the combination, with the divisible case A B and the pen D, of the adjustable automatic stopper C, having the lip *c* in contact with the pen, pen-seat *a*, the bilateral arms or ink-abducers *g g*, the capillary space *k*, the peripheral groove *e*, completing, in union with the case, an air-vent, and an ink-feeding channel or channels, substantially as described.

3. In a fountain-pen, the combination, with the divisible tubular case A B and the pen D, of the adjustable automatic stopper C, having the lip *c* in contact with the pen, the pen-seat *a*, the peripheral air-vent groove *e*, independent of the ink-feeding channel and pen, the central ink-feeding channel, *o*, and one or more supplementary channels, substantially as described.

4. In a fountain-pen, the combination, with the divisible case A B and the pen D, of the adjustable automatic stopper C, having the lip *c* in contact at its sides and point with the back of the pen, and the pen-seat *a*, the central ink-feeding channel, *o*, the supplementary channels *i* and *j*, the storage-chamber *h*, the bilateral arms or ink-abducers *g g*, the capillary space *k*, the recess *m*, and the peripheral air-vent groove *e*, independent of and arranged above the ink-feeding channel and pen, substantially as described.

5. In a fountain-pen, the combination, with the divisible case A B and the pen D, of the adjustable automatic stopper C, having the lip *c* resting flat upon the back of the pen, the ink-feeding channel *o*, the pen-seat *a*, the supplementary channels *i* and *j*, the storage-chamber *h*, the bilateral ink-abducers *g g*, the capillary space *k*, and the peripheral air-vent groove *e*, independent of and arranged above the ink-feeding channel and pen, substantially as described.

6. In a fountain-pen, the combination, with the divisible tubular case A B and the pen D, of the adjustable automatic stopper C, having the lip *c* in contact with and extending over the pen to its point, the pen-seat *a*, the ink-feeding channel *o*, the supplementary channels *i* and *j*, and chamber *h*, arranged on the upper side, the bilateral arms *g g*, the capillary space *k*, and the peripheral air-vent groove *e*, independent of and arranged below the ink-feeding channel and pen, substantially as described.

7. In a fountain-pen, the combination, with the divisible case A B and the pen D, of the adjustable automatic stopper C, having the lip *c* in contact with and extending over the pen to its point, the pen-seat *a*, the ink-feeding channel *o*, the supplemental channels *i* and *j*, the storage-chamber *h*, the bilateral ink-abducers *g g*, the capillary space *k*, and the peripheral air-vent groove *e*, outwardly independent of and arranged either above or below the ink-feeding channel and pen terminating in the storage-chamber, substantially as described.

8. In a fountain-pen, the combination, with the divisible case A B and the pen D, of the adjustable automatic stopper C, having the lip *c* in contact with and extending under the pen, the pen-seat *a*, the ink-feeding channel *o*, the supplemental ink-channels *i* and *j*, and the chamber *h*, arranged on the upper side, the bilateral arms *g g*, the capillary space *k*, and the peripheral groove *e*, completing in union with the case an air-vent independent of and arranged below the ink-feeding channel and pen, substantially as described.

9. In a fountain-pen, the combination, with the case A B and the pen D, of the adjustable automatic stopper divisible in two parts, as C C', having the anterior lip *c* in contact with the pen, the pen-seat *a*, the ink-channel *o*, the supplementary channels *i* and *j*, the storage-chamber *h*, the shelf *w*, the peripheral air-vent groove *e*, and the integral ink-abducing arms *g g*, extending into the reservoir, substantially as described.

10. A fountain-pen provided with a stopper, as C, fitting the bore of the nozzle and having an ink-passage through it, and a bifurcated peripheral groove, as *e*, completing in union with the case an air-vent independent of the ink-passage to a point in rear of the heel of the pen, substantially as described.

11. A fountain-pen provided with a stopper fitting the bore of the nozzle and having an ink-passage through it, a peripheral air-vent groove, as *e*, independent of the ink-passage, a forward extension for a feed-bar, as *c*, a rear double-armed extension, as *g g*, and a reduced section, as at *k*, substantially as described.

12. A fountain-pen provided with a tubular ink-stopper, as C having two integral ink-abducing arms, as *g g*, separated by a tapering space, as *k*, substantially as described.

13. An ink-stopper for fountain-pens, forming a combined automatic stopper and pen-seat of a diameter equal to that of the bore of the nozzle, and having a peripheral groove, as *e*, for air-vent purposes only, and a separate channel for an ink-passage, independent of the air-passage, to a point in rear of the heel of the pen, a pen-seat slot, and a reduced section for a storage-chamber, for the purpose and substantially as described.

14. In a fountain-pen, the tubular stopper transversely divisible in two parts, as C C', having two integral horizontally-arranged ink-abducing arms, as *g g*, extending into the reservoir, substantially as described.

15. An ink-stopper for fountain-pens, as C, having a section of its body cut away to form a semi-cylindrical storage-chamber, as *h*, within the upper end of the nozzle, and having a semi-cylindrical bridge or shelf, as *w*, extending across said chamber to convey air by means of the groove *e*, formed in said shelf, independent and to a point in rear of the storage-chamber, substantially as and for the purposes described.

16. A fountain-pen provided with an ink-storage chamber, as *h*, within the nozzle-section and an air-vent, as *e*, which is independent of the ink-passage, to a point backward of the chamber, substantially as described.

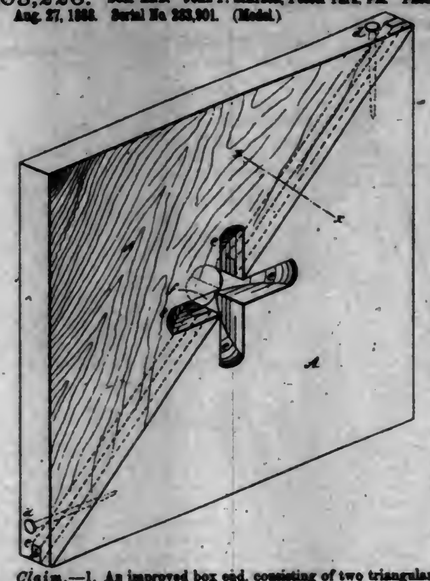
17. In a fountain-pen wherein the ink is prevented from descending too freely by an automatic stopper, as C, closely fitting the bore of the nozzle, aided by a partial vacuum at the upper end of the reservoir, the bifurcated air-vent groove, as *e*, formed in the periphery of the stopper, said groove forming with the wall of the nozzle lying over it an air-vent separate and distinct from the ink-passage to a point entering directly into the reservoir-section of the case, substantially as described.

18. In a fountain-pen wherein the ink is prevented from descending too freely by a stopper closely fitting the bore of the nozzle, as C, aided by a partial vacuum at the upper end of the reservoir, a feed-bar arranged to convey ink from the stopper over the back of the pen to its point, as *c*, and a peripheral groove, as *e*, completing in union with the nozzle-section of the case an air-vent independent of the ink-passage to a point in rear of the heel of the pen, substantially as described.

19. In a fountain-pen, the bifurcated groove *e* cut in the periphery of the stopper, said groove having two external mouths arranged at the sides of the pen in line with the pen-slot, but converging upward and backward into one groove on the upper side, and entering the reservoir by one internal mouth, substantially as shown, and for the purposes described.

20. The fountain-pen provided with an air-passage, said air-passage having two external mouths or openings and but one internal mouth or opening, substantially as described.

408,226. BOX END. JOHN F. SIMPSON, Foster Park, Fla. Filed Aug. 27, 1888. Serial No. 283,901. (Model.)

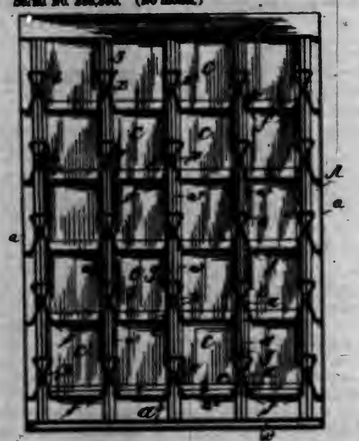


Claim.—1. An improved box end, consisting of two triangular sections secured together with their meeting surfaces in a plane diagonal to the box end, each section having the grain of the wood parallel with the said meeting surfaces, substantially as described.

2. An improved box end, consisting of two triangular sections tongued and grooved together at their meeting surfaces in a plane diagonal to the end, and provided with intersecting grooves at the center of the said end, each section having the grain of the wood parallel with the said meeting surfaces, substantially as described.

3. As an improved article of manufacture, a box end consisting of two triangular sections, A, tongued and grooved together at their meeting surfaces in a plane diagonal to the end, and provided with cross-grooves *e*, intersecting each other at the center of the end and forming a ventilating-aperture, *f*, each section having the grain of the wood parallel with the said meeting surfaces, as set forth.

408,227. SKYLIGHT. JOHN H. SMITH, Dublin, Ga. Filed Dec. 12, 1888. Serial No. 293,395. (No model.)



Claim.—1. The combination of the bars a^2, having the longitudinal grooves a^3, the panes resting on the edges of said bars adjacent to said grooves, the studs in said bars, and the clips mounted on said studs and engaging the panes, as set forth.

2. The combination of the bars a^2, the studs B, the panes resting on the bars, and the clips mounted on the studs and having the bearing-loops *b*, as set forth.

3. The combination of the bars a^2, the studs B, the panes resting on the bars, and the clips mounted on said studs and having the arms *c*, engaging the panes, as set forth.

4. The combination of the bars, the studs, the panes, and the clips having the loop *b*, coil *d*, arms *c*, and hooks *f*, all arranged and operating substantially as specified.

408,228. DOOR-HANGER. WILBER W. SMITH, Grand Rapids, Mich. Filed May 29, 1888. Serial No. 276,490. (No model.)



Claim.—1. In a door-hanger, the combination, with a door having a recess in its upper edge, of an angular bracket having its horizontal arm slotted, a screw for securing the said bracket to the door, and a dog pivoted to one edge of the horizontal arm of the said bracket, substantially as and for the purpose set forth.

2. The combination, with a door having an inclined recess in the top and screws or bolts provided with flat rectangular heads secured in the upper edge of said door near the ends, of angular brackets having a slot cut in one side of the horizontal arm thereof to receive the screws or bolts, a dog pivoted to the horizontal member of the said brackets adapted to enter the recess in the door, a horizontal hanger-bar connecting the several brackets at their upper ends, a track supported parallel with the hanger-bar above the screws in the door, a longitudinal guide-rib formed centrally upon the upper face of said track, and trucks consisting of an axle and wheels united thereby, rotating in engagement with the said track and hanger-bar, one wheel of said trucks traveling upon each side of the track guide-bar, substantially as and for the purpose specified.

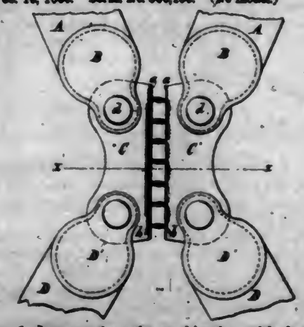
408,229. BRAKE-SHOE FOR CAR-TRACKS. JOHN STEPHENSON New York, N. Y. Filed July 30, 1888. Serial No. 280,511. (No model.)



Claim.—1. A car-track brake-shoe with a wood sole and an integral member projecting a distance from the side of the shoe and uprising to contact with stops adapted to prevent displacement of the shoe when operating on the tram-rail, substantially as and for the purpose described.

2. A track brake-shoe having a channeled under side suitable for receiving and holding a wood sole, and on the upper side of the shoe lugs fitted for the actuating-rods, and projecting sidewise from one of the shoe-walls one or more uprising members integral with the shoe and adapted to guide-channels controlling the vertical motions of the shoe, substantially as and for the purpose described.

408,230. SUSPENDERS. ROWIN B. STIMPSON, Brooklyn, N. Y. Filed Feb. 16, 1888. Serial No. 300,188. (No model.)



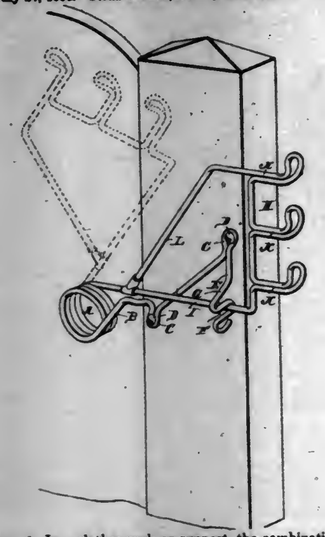
Claim.—1. In suspenders, the combination, with shoulder-straps and back button-hole tabs, of connecting-pieces between the shoulder-

straps and tabs with which the shoulder-pieces are pivotally united, said connecting-pieces being connected together along their adjacent edges by two or more flexible connections, substantially as specified.

2. In suspenders, the combination, with shoulder-straps and back button-hole tabs, of connecting-pieces with which both the shoulder-straps and the button-hole tabs are pivotally united, said connecting-pieces being connected together along their adjacent edges by flexible connections, substantially as specified.

408,231. WARDROBE-HOOK. William Watson, Jr., Ilion, N. Y.

Filed July 27, 1888. Serial No. 281,196. (No model.)



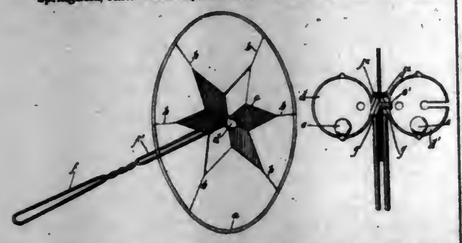
Claim.—1. In a clothes rack or support, the combination of the supporting-arm provided with a catch or loop, F, and the spring-actuated bracket provided with hooks and adapted to engage the said catch or loop, substantially as specified.

2. In a clothes rack or support, the combination of the spring-coil, the supporting-arm connected to one end of the coil, and the bracket provided with hooks and connected to the other end of the coil, substantially as specified.

3. In a clothes rack or support, the combination of the stationary supporting-arm, the catch-arm integral with the supporting-arm and provided with a catch or loop, F, and the bracket provided with the hooks K K and connected to one end of the supporting-arm by the spring-coil A, the said bracket being provided with an arm, 1, to engage the catch or loop F when the bracket is in its operative position, substantially as specified.

408,232. TOY. Frank K. Way, Dayton, and William T. Parker, Springfield, Ohio.

Filed Sept. 21, 1888. Serial No. 286,046. (No model.)

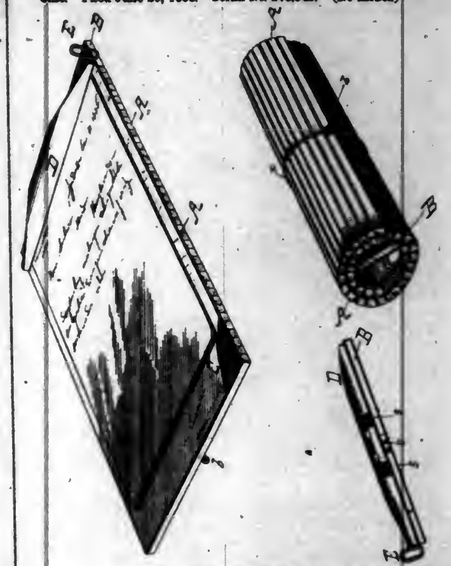


Claim.—1. A hoop having a centrally-located star suspended at the center of said hoop by means of small resilient wires and spherical projecting bells secured rigidly to either side of said star at the center, substantially as set forth.

2. The combination, with a hoop having a centrally-located star suspended at the center by resilient wires, of the spherical projecting bells secured rigidly to either side of said star, and a handle journaled on the inner portion of said bells and projecting beyond the periphery of said wheel, substantially as specified.

3. A hoop of resilient metal, having the centrally-located star suspended therefrom by means of resilient wires which pass transversely through the body of said hoop, leaving the periphery free, and projecting bells at the center of said hoop, one of said bells being provided with a screw-threaded stud and the other being provided with an opening adapted to screw onto said stud, substantially as specified.

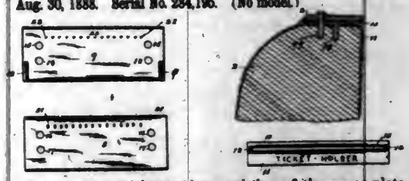
408,233. FOLDING CLIP-BOARD. William G. Weagly, Galion, Ohio. Filed June 29, 1888. Serial No. 278,545. (No model.)



Claim.—1. As a new article of manufacture, a folding clip-board consisting of narrow slats flexibly connected with each other and provided with a suitable clamping device, as D, as and for the purposes set forth.

2. The combination, in a folding clip-board, of a series of narrow slats, a flexible facing for said slats, and a clamping device, as D, substantially as set forth.

408,234. TICKET-HOLDER. John G. Webb, Rye, N. Y. Filed Aug. 30, 1888. Serial No. 284,195. (No model.)



Claim.—1. A ticket-holder consisting of the upper plate, the lower plate, and the abutments 12, arranged between said plates to define the width of opening, in combination with a seat-back and binding-strip, as set forth.

2. A ticket-holder consisting of the upper plate and the lower plate, in combination with a seat-back, a binding-strip, and the retaining-screws 18 beneath said binding-strip, as and for the purposes set forth.

3. A ticket-holder consisting of a sheet of metal bent upon itself to form an upper and a lower plate with a space between them, and provided with a transverse row of teeth at the mouth or front, the said plates being rigid or inflexible and the said space constant, so that it is impossible to push a ticket into the space between the plates without scoring the surface of the same, substantially as set forth.

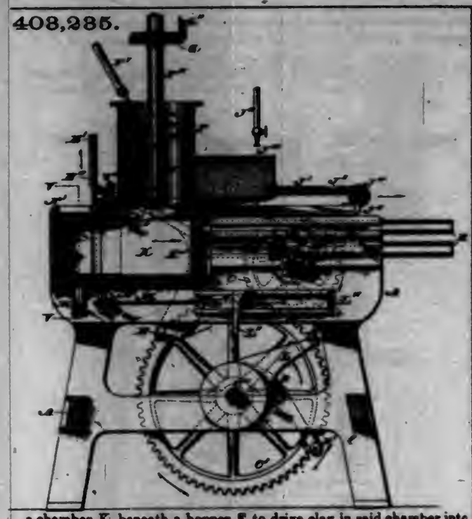
4. A ticket-holder consisting of an upper plate and a lower plate, and having an opening between them and provided with blades 22 at the rear end of said opening, arranged in vertical planes to indent the edge of a ticket when pushed against the same, as set forth.

408,235. BRICK-MACHINE. William Webber, Philadelphia, Pa.

Filed Dec. 17, 1888. Serial No. 293,234. (No model.)

Claim.—1. The combination of compressor H, adapted to traverse

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a chamber, K, beneath a hopper, F, to drive clay in said chamber into a mold, water-tank J‴, shifting water-pipe J′, provided with opening J″ and attached to pipe J×, which is perforated near its end and attached to said compressor, whereby as the latter is moved forward the said pipe is drawn with it until pipe J′ moves forward sufficiently to bring opening J″ within said water-tank, whereby water will flow from said tank through pipes J′ and J× and find exit through the perforations in the latter to spray the walls of said chamber K behind said compressor, substantially as described.

2. The combination of shaft C′, actuating-wheel C, said shaft being provided with an arm, L, lug L″, attached to block L‴, sliding in guide L×, cord M, attached to said block, pulleys N N, slide O, engaging with the mold-box and moving in a guide, and to which slide one end of said rope is attached, cord O′, attached to slide O, and weight O″, attached to said cord O′, whereby when the arm L strikes lug L″ the block L‴ is shifted to draw cord M and slide O, and the mold is removed from its casing and is returned to place by the weight O″ and cord O′, substantially as described.

3. A compressor, H, adapted to traverse a chamber, K, rack-frame H′ H″, attached to the rear of said compressor, provided with end-beveled teeth H×, and arms H‴ H⁴, sliding freely in side slots in the frame of the machine, cog-wheel H², adapted to engage with the lower rack of the said frame, and a cog-wheel, H×, adapted to engage on the other side with the upper rack of said frame, both of said wheels being mounted on a shaft, B′, whereby when cog-wheel H× drives said rack forward it finally strikes the beveled tooth on the rear of the upper rack and shifts the latter sidewise, throwing its rack out of gear with it and the lower rack into gear below with cog-wheel H², whereby the rack is moved backward until wheel H² strikes the beveled cog on the lower rack, when the operation is reversed, thus giving a reciprocating motion to the compressor, substantially as described.

4. The combination of compressor H, slanted arms T, secured thereto, bellows P×, sand-boxes P P, each provided with an air-chamber, P″, connected with said bellows by openings P×, exit sand-pipes Q, and die J, part of said pipes being arranged, substantially as shown, to direct the sand-blast in front of said die to strike the clay coming through it above and the others being arranged to strike the clay from below, whereby all the sides of the clay will be coated, all arranged and operating substantially as described.

408,236. VEHICLE-POLE TIP. George T. Wilson, Lowville, N. Y., assignor to John D. Hough and Samuel Garber, same place. Filed Jan. 30, 1888. Serial No. 296,070. (No model.)

Claim.—1. A device for the purpose described, comprising a main portion, a flat spring arranged within the same, and a hook pivoted to said portion with one end bearing on said spring and the other end having a flattened portion concaved upon its under side, substantially as shown and described, and for the purpose specified.

2. As an improved article of manufacture, a combined pole-tip and clip formed integral, said tip being provided with a pivoted hook the forward end of which extends below its pivot and is flattened and concaved upon its under side, substantially as and for the purpose specified.

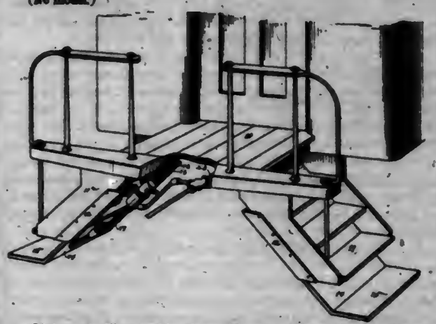
3. As an improved article of manufacture, the pole-tip described,

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consisting of the tip B, formed with ring A and chambered portion, and the hook pivoted within said portion and having a flat portion bearing on said spring, and its other end concaved on its under face to correspond with the curvature of the tip B, and with its free end when in engagement with the tip on a plane between the tip and the pivot of said hook, substantially as shown and described.

408,237. EXTENSIBLE CAR-STEP. James F. Wood and John F. Wood, Wilmington, Del. Filed Mar. 5, 1888. Serial No. 302,488. (No model.)



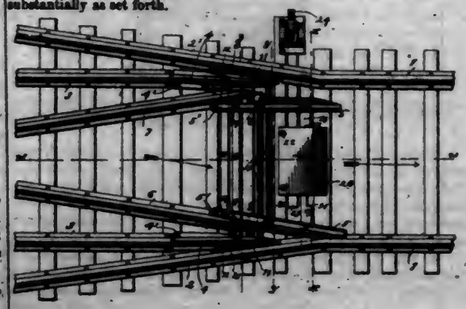
Claim.—1. The combination, with a tread formed with a diagonal leaf, of an arm connected to said leaf, a piston carried by the arm, a spring arranged in connection with the piston, a cylinder, and connections between the cylinder and the compressed-air reservoir, substantially as described.

2. The combination, with the permanent steps of a car, of a tread adjustably connected thereto, a cylinder, a piston arranged therein, connections between the piston and the tread, and connections between the cylinder and the compressed-air reservoir, substantially as described.

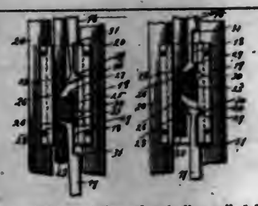
3. The combination, with the permanent steps of a car, of castings formed with ways connected thereto, treads having diagonal leaves which carry anti-friction rolls, said rolls resting within the ways, arms connected to the leaves, pistons connected to the arms, cylinders within which the pistons ride, springs arranged in connection with the pistons, and connections between the cylinders and the compressed-air reservoir, substantially as described.

408,238. THREE-THROW OPEN SPLIT SWITCH. George L. Worth and John B. Wyatt, Wymore, Nebr. Filed Oct. 22, 1888. Serial No. 288,309. (No model.)

Claim.—1. The combination, with two pairs of switch-points pivoted, respectively, to the straight main-line and inner rails of a right and left hand siding, of the throw-bars having laterally-projecting heads, an operating-bar having recesses arranged for a timed engagement with the heads of the throw-bars, and an operating-lever, substantially as set forth.



408,238.



2. A railway-switch consisting of main-line rails 1 1 and 3 3, side rails, 2 2', branching outwardly from rails 1 1, fixed siding-rails 6 7, inner switch-points, 4 4, pivoted at the ends of main-line rails 3 and located between the ends of siding-rails 6 7, and outside siding-rails, 2 2', outside or main switch-points, 5 5, pivoted at the ends of fixed siding-rails 6 7, and bars 15, connecting the inner switch-point, 4, on one side of the track with the outer switch-point, 5, on the opposite side of the track, in combination with throw-bars 16 and 17, connected at one end to switch-points 5 5, and having inclined heads 28, with rear projections, 29, located in a groove, 18, in a casing, 19, having V-shaped recesses 30 in the side of groove 18 adjacent to projections 29, and an operating-bar, 23, located in groove 18, and having outwardly-inclined recesses 26, with which the heads 28 are adapted to engage, substantially as shown and described.

3. The combination, with throw-bars 16 and 17, having their inner ends formed with heads 28, inclined toward each other, with rear wedge-shaped projections, 29, and shoulders 31, limiting their inward movement, and a guide-frame having a groove, 18, in which the inner ends of throw-bars 16 and 17 rest and are adapted to slide, with V-shaped recesses in the side of groove 18 adjacent to projections 29, of a sliding operating-bar, 23, projecting into groove 18, and having a lateral projection, 25, with inclined sides 27 and bearing against the side of groove 18, and diagonal slots 26, adjacent to the inclined sides 27 of projection 25, with which the heads 28 are adapted to engage, substantially as shown and described.

4. A three-throw railway-switch, consisting of main rails 1, bent and extended diagonally to form the outside siding-rails, 2 2', the continuation main rails 3 3, inside siding-rails, 6 7, with pointed ends 10 and tapered flange portions 9 and 14, inner switch-points, 4 4, pivoted at the ends of rails 3 3, and having narrowed portion 11 and tapering flange portions 12 adjacent to tapering inside flange portions, 13, on the outside siding-rails, 2 2', and outside switch-points, 5, with tapering portions 8, pivoted at the ends of rails 6 and 7, and adapted to bear against the ends of inside siding-rails, 6 and 7, the outer ends of points 5 being adapted to bear against the main rails 1, and cross-bars 15, connecting each inside switch-point 4 with the switch-point 5 on the opposite side of main track, in combination with a throw-bar mechanism which successively acts to throw to position one inside switch-point and one outside switch-point on the opposite side of the main track, and then the other inside switch-point and the other outside switch-point on the opposite side of the main track, substantially as shown and described.

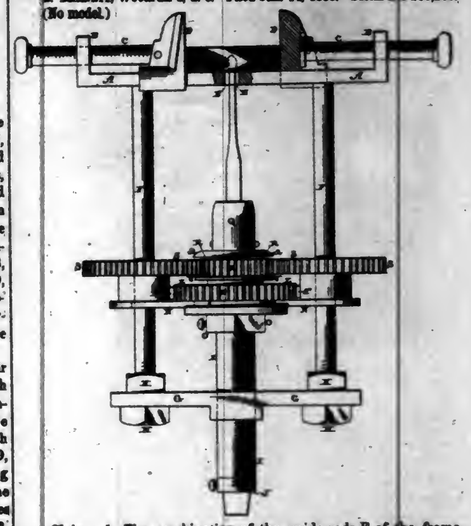
408,239. DINNER-PAIL. JOHN H. YARNELL, Somerset, Ohio. Filed Feb. 26, 1889. Serial No. 301,196. (No model.)



Claim.—1. An improved dinner-pail composed of a lower receptacle for liquid and an upper receptacle for solid food set into the top of the liquid-receptacle, combined with a tube for conveying liquid from the liquid-receptacle, opening at its upper part out of the top of said liquid-receptacle and communicating with the interior of the latter, as described.

2. The combination, with the liquid-receptacle B and the solid-food receptacle F, set into the top of the liquid-receptacle, of the tube H, opening at its upper end out of the top of the liquid-receptacle and communicating at its lower end with the interior of the liquid-receptacle through the medium of a strainer, as set forth.

408,240. MACHINE FOR BORING AND DRILLING. BARNARD R. BARNETT, Woodruff's, S. C. Filed Jan. 14, 1888. Serial No. 296,366. (No model.)



Claim.—1. The combination of the guide-rods F of the frame, the end piece G, for securing their ends together, the sleeve I, the wheel L, secured to the end of the sleeve, a cross-piece, N, the wheels S, provided with projections for operating the wheel L, and the drill shaft provided with a pinion for operating the wheels S, substantially as specified.

2. The combination of the frame composed of the two end pieces and the two guiding-rods which connect the end pieces together, the drill-rod, a sleeve through which the rod passes, a pinion upon the rod, and the intermediate operating-wheels for feeding the screw-threaded sleeve forward, substantially as shown.

408,241. END-GATE FOR WAGONS. ALBERT E. BRANCH, Audubon, Iowa. Filed Mar. 5, 1889. Serial No. 301,969. (No model.)



Claim.—1. A wagon end-gate having wings at its ends, a rod having a hook at its center and cranks on its diverging end portions hinged to the rear side of the gate, bars having notches in their top edges fixed to the sides of a wagon-box, and movable loops on said bars connected with cranks of the ends of the rod and hook, arranged and combined to operate in the manner set forth.

2. The rod C, having a hook, *d*, at its center and cranks *d'* on its ends, the end-gate A, having wings A^3 and projections *b* at the corners of the wings, the bars *g*, having notches *i*, the loops *k*, and the connecting-rods *k*, arranged and combined with a wagon-box having a fixed cross-piece, *m*, substantially as shown and described, to operate in the manner set forth, for the purposes stated.

408,242. SIGHT FOR FIRE-ARMS. JOHN S. BLANCHAR, Washington, D. C. Filed Jan. 10, 1889. Serial No. 296,907. (No model.)

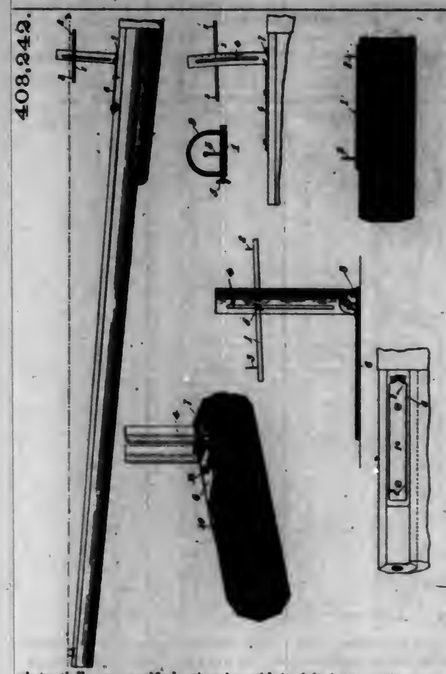
Claim.—1. In combination with a gun or like implement, two sight-pins secured to a laterally-adjustable plate, substantially as specified.

2. In combination with a gun or like implement, two sight-pins secured to a laterally-adjustable plate provided with a scale to indicate the lateral adjustment, substantially as specified.

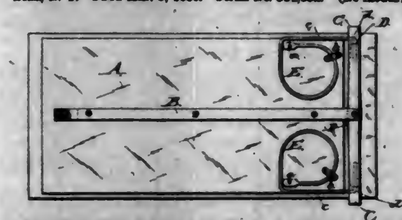
3. In combination with a gun or like implement, two sight-pins secured in a plate having a set-screw or journal, the U-shaped sight leaf having two members provided with slots to receive the screw and having their feet in contact laterally with a plate secured to the gun and having a hinge-connection with said plate, substantially as specified.

4. In combination with a gun or like implement, a vertically-adjustable plate carrying sight-pins, and a sight-leaf hinged to a plate secured to the gun and bearing against the side or edge of said plate, substantially as specified, whereby said leaf is held against lateral movement.

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408,243. VEHICLE-SPRING. CHARLES M. BLYDENBURGH, Riverhead, N. Y. Filed Mar. 5, 1889. Serial No. 301,852. (No model.)



Claim.—1. Torsion-springs for vehicles, having one end bent inwardly parallel with the bolster or head-block, in combination with a bolster having recesses for the bent ends of the springs, whereby a pivot-connection is formed, substantially as herein described.

2. The combination of a bolster or head-block having its ends bored lengthwise, and torsion-springs having their front ends bent inwardly and passed into the bored ends of the bolster, substantially as described.

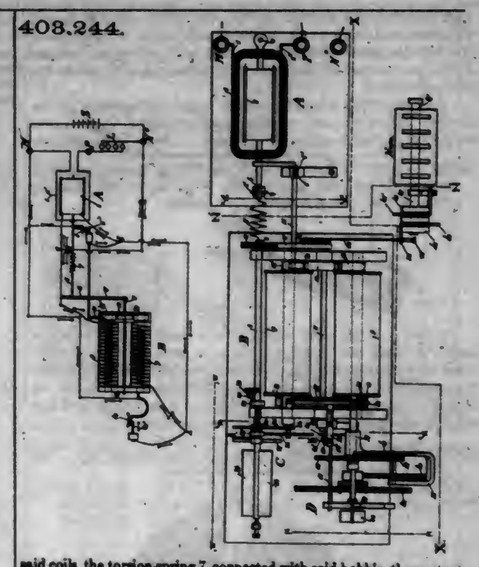
3. The combination of a bolster or head-block having its ends bored lengthwise, and torsion-springs secured to the body of the vehicle and provided with vibrating or free arms, which are bent at right angles at their front portions and inserted into the bored ends of the bolster, whereby a pivoted connection is formed between the springs and bolster, substantially as described.

408,244. APPARATUS FOR REGISTERING THE CONSUMPTION OF ELECTRIC ENERGY. LUCIEN BELLIÉ, Paris, France. Filed Dec. 29, 1888. Serial No. 294,962. (No model.) Patented in France Apr. 14, 1888, No. 189,949.

Claim.—1. A meter or apparatus for measuring the strength of continuous or alternating electric currents, consisting of a torsion electro-dynamometer, an electromotor acting on said dynamometer, a clock-movement operated by the electromotor and controlling the intervals between each measuring operation, a speed regulator or governor for said torsion-dynamometer and electromotor, and a counter operated by the electromotor, substantially as set forth.

2. In a meter or apparatus for measuring the strength of continuous or alternating currents, the combination, with a torsion-dynamometer composed of fixed coils 1 1', the movable bobbin 3 within said coils, the torsion-spring 7, connected with said bobbin, the contact-pieces 6 6', for closing the circuit between the dynamometer and other parts of the apparatus, an electromotor acting on said dynamometer, a clock-movement operated by the electromotor, a speed-regulator for the dynamometer and electromotor, and a counter operated by said electromotor, substantially as set forth.

408,244.



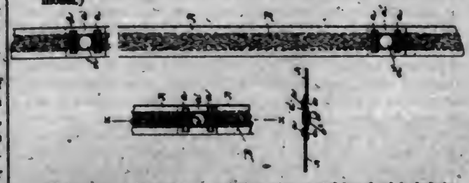
3. In a meter or apparatus for measuring the strength of continuous or alternating currents, the combination, with a torsion electro-dynamometer, of an electromotor, B, containing the magnets *g g*, the pole-pieces 12 12', connected with the magnets 9 9, the oscillating bar 13 at the ends of the magnets, the pawl 44, the shaft 16, the tappet 15 on one end of the same, which tappet is operated by the contact-piece on the dynamometer, which can establish contact with the contact-piece 6', a clock-work driven by the electromotor, a speed-regulator for the dynamometer and electromotor, and a counter operated by the electromotor, substantially as set forth.

4. In a meter or apparatus for measuring the strength of continuous or alternating currents, the combination, with a torsion electro-dynamometer, of an electromotor acting on said electro-dynamometer, a counter operated from the electromotor by a friction-clutch, a clock-movement operated by the motor, and a speed-regulator for the dynamometer and electromotor, substantially as set forth.

5. In a meter or apparatus for measuring the strength of continuous or alternating electric currents, the combination, with a torsion electro-dynamometer, an electromotor, a friction-clutch, a clock-movement containing the wheels 39 and 40, the contacts 43 43', the levers 60 63 65, and the screw 64', of a speed regulator and governor and a counter, substantially as set forth.

6. In a meter or apparatus for measuring the strength of continuous or alternating currents, the combination, with a torsion electro-dynamometer, an electromotor, a frictional brake or clutch, a clock-movement, a speed regulator or governor containing the satellite-wheels 26 and 27, the swinging frame 28, the driving-wheel 25, and the counter, substantially as set forth.

408,245. METAL STRAP FOR BOXES. SPENCER C. CARY, Baldwin, N. Y., assignor, by mesne assignments, to the Cary Manufacturing Company, of New York. Filed Oct. 22, 1888. Serial No. 288,788. (No model.)



Claim.—1. A box-strap consisting of a metal band of indefinite length, composed of strips or sections of similar width having at their ends the oblong corrugations *a*, extending laterally of the sections between the side edges thereof, said sections being lapped upon

each other endwise successively, with the said corrugations thereon fitted into each other at the laps, and an eyelet or rivet, a^2, passed through the lapped ends alongside said corrugations and clamped down upon the faces of the band-sections, substantially as and for the purpose set forth.

2. A metal box-strap of indefinite length, having upon its face along its central line and extending longitudinally of the strap the roughened surface B, substantially as and for the purpose set forth.

408,246. BOX-STRAP. SPENCER C. CARY, Baldwin, assignor to William H. Vanderbilt, Brooklyn, N. Y. Filed July 25, 1887. Renewed Dec. 14, 1888. Serial No. 293,058. (No model.)



Claim.—A box-strap composed of a metal band of indefinite length, provided with a strip of textile or felted fabric of coequal length and imposed flatwise upon one face of the metal band, with the longitudinal side edges of the band turned around and over the respective side edges of the strip and down upon the outward face thereof, as described, and for the purposes set forth.

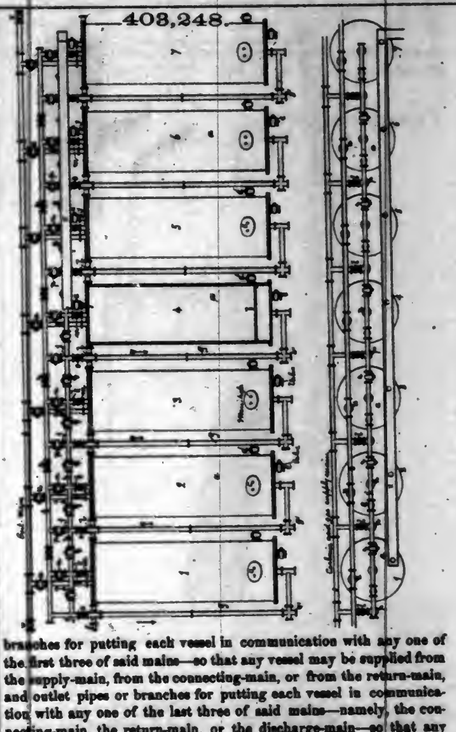
408,247. BOX-STRAP. SPENCER C. CARY, Baldwin, N. Y. Filed Jan. 31, 1888. Serial No. 298,173. (No model.)



Claim.—1. A reel for metal box-straps, consisting of a spool, C, adapted to have the metal strap coiled upon it, a hollow axle, c, upon which said spool is journaled to turn freely, and by which the reel may be secured upon a support, and a frame, D, composed of the parallel arms d and d', in which the said axle is mounted, and which extend radially therefrom alongside of and beyond the rim of said spool, as described, and are united at their outer ends, and therein have the corresponding openings, d^3, adapted to receive a fastening-pin, substantially as and for the purpose specified.

2. A reel for metal box-straps, consisting of a spool, C, adapted to have the metal strap coiled upon it, an axle, c, upon which said spool is journaled, and a frame, D, composed of parallel arms d and d', in which said axle is mounted, and which extend diametrically across said spool and reach in opposite directions beyond the rim thereof, as described, and are united at their outer ends, and therein have the respective corresponding openings, d^3 and d^3, adapted to receive fastening-pins, substantially as and for the purpose set forth.

408,248. APPARATUS FOR OBTAINING SULPHURETED HYDROGEN FROM ALKALI. ALEXANDER M. CHANCE and JAMES F. CHANCE, Oldbury, County of Worcester, England. Filed Dec. 14, 1888. Serial No. 293,526. (No model.) Patented in England June 16, 1887, No. 8,066; in France Sept. 6, 1887, No. 185,677, and in Belgium Sept. 7, 1887, No. 73,790.



Claim.—1. Apparatus for obtaining sulphureted hydrogen separated from a large portion of other gases, such apparatus consisting of a number of vessels for containing the alkali waste and water, a supply-main for the carbonic acid, a connecting-main for establishing connection between the vessels, inlet-pipes for conveying the carbonic acid into the bottom of said vessels, two branches for each of said inlet-pipes, one putting the inlet-pipe in communication with the supply-main and the other in communication with the connecting-main, and both provided with taps or valves, a discharge-main for the products of decomposition, provided with two outlets and taps, whereby the gases may be discharged from either outlet, and pipes connecting the upper part of each vessel with the connecting-main and the discharge-main and provided with taps or valves intermediate the said vessel and each of the said mains, substantially as described.

2. In combination with a number of vessels, a supply-main, a connecting-main, a return-main, and a discharge-main provided with branch pipes and taps or valves as follows, whereby said vessels can be connected in series in any order—that is to say, inlet pipes or branches for putting each vessel in communication with any one of the first three of said mains—so that any vessel may be supplied from the supply-main, from the connecting-main, or from the return-main, and outlet pipes or branches for putting each vessel in communication with any one of the last three of said mains—namely, the connecting-main, the return-main, or the discharge-main—so that any vessel may discharge into any one of them, substantially as described.

3. Apparatus composed of a number of upright vessels, a main with a branch to each vessel for supplying liquid to the same, a gas-inlet pipe communicating with the lower part of each vessel, a draw-off tap or taps at the bottom of each vessel, a supply-main, a connecting-main, a return-main, branches and taps for putting the said gas-inlet pipes in communication with any one of the three last-mentioned mains, a discharge-main provided with two outlets and taps therefor, and branch pipes and taps for putting the upper part of each vessel in communication with said connecting-main, with said return-main, or with said discharge-main, substantially as described.

408,249. OBTAINING HYDROGEN SULPHIDE FROM ALKALI WASTE. ALEXANDER M. CHANCE and JAMES F. CHANCE, Oldbury, County of Worcester, England. Filed Dec. 14, 1888. Serial No. 293,526. (No specimens.) Patented in England June 16, 1887, No. 8,066; in France Sept. 6, 1887, No. 185,677, and in Belgium Sept. 7, 1887, No. 73,790.

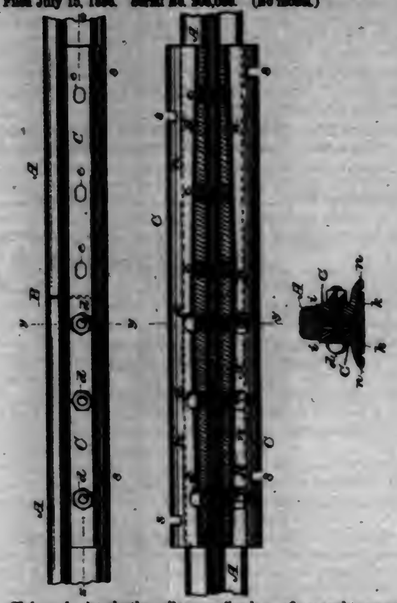
Claim.—1. The process of obtaining sulphureted hydrogen from alkali waste by decomposing such waste with gases containing carbonic acid, passing the resultant gases containing sulphureted hydrogen in contact with fresh alkali waste, so that the said sulphureted hydrogen unites therewith, and afterward decomposing with gases containing carbonic acid the composition or product formed by the union of the sulphureted hydrogen and alkali waste and collecting apart the rich gases from such decomposition, substantially as described.

2. The process of obtaining sulphureted hydrogen from alkali waste by passing gases containing carbonic acid through a mixture of alkali waste and water in a series of vessels, afterward, when the sulphureted hydrogen from the waste in the first vessel or vessels of the series has been transferred to the waste in succeeding vessels, drawing off apart the gases rich in sulphureted hydrogen from an intermediate vessel in the series, and when these gases have become poor in that material conducting the gases containing carbonic acid through the waste and water in the intermediate and succeeding vessels of the said series and fresh waste and water in an additional vessel or vessels, thus constituting a new series, with which the operations are repeated, substantially as described.

408,250. METHOD OF REDUCING AND SEPARATING MAGNETIC ORES. JOHN D. CHEEVER, New York, N. Y. Filed Feb. 20, 1888. Serial No. 300,610. (No specimens.)

Claim.—The method of treating magnetic ore for the separation of the magnetic from the non-magnetic particles by first heating the ore; second, reducing or disintegrating it while hot, and, third, separating the magnetic from the non-magnetic particles by bringing both together into and through a magnetic field, substantially as described.

408,251. RAILWAY SPLICE-BAR. JAMES T. CLARK, Milwaukee, Wis.; Mary P. Clark administratrix of said James T. Clark, deceased. Filed July 15, 1886. Serial No. 208,092. (No model.)

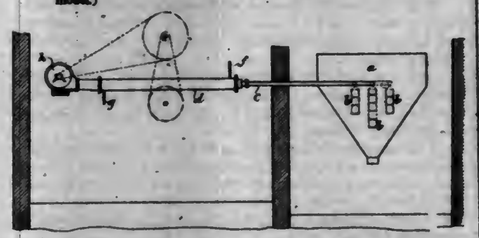


Claim.—1. An elastic railway splice-bar, of wrought or rolled metal, tapering uniformly, or nearly so, from its center to its extremities, and provided with the usual means of fastening to the rails, substantially as and for the purposes set forth.

2. The combination of two railway-rails and one or more elastic splice-bars, tapering uniformly, or nearly so, from their center to their extremities, so as to make the wave of deflection of continuously uniform depth, or nearly so, and provided with the usual means of attachment to the rails, substantially as and for the purposes set forth.

3. An elastic railway splice-bar, of wrought or rolled metal, tapering uniformly, or nearly so, from its center to its extremities, and provided with the usual means of fastening to the rails, and having its inner wall straight, substantially as and for the purposes set forth.

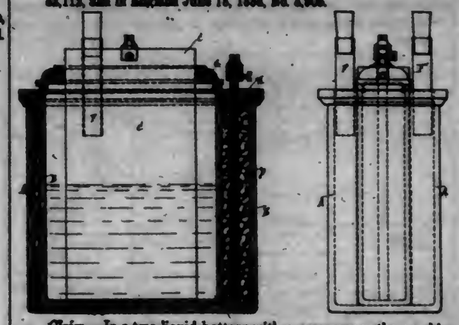
408,252. APPARATUS FOR BREWING. CHARLES CLINCH, Leeds, County of York, England. Filed July 5, 1887. Serial No. 243,394. (No model.)



Claim.—1. The hereinbefore-described apparatus for treating malt in brewing, consisting of the combination of the hopper for containing the malt, the heater, a fan which drives air through the heater, the perforated air-distributer in the hopper, adapted to be immersed in the malt, and through which the hot air is distributed into the malt, substantially as set forth.

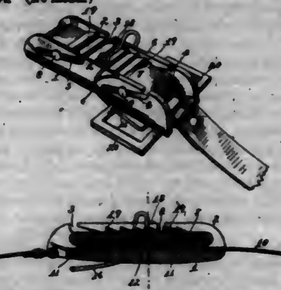
2. The hereinbefore-described apparatus for treating malt in brewing, consisting of the combination of the steam-jacket, its inlet and outlet pipes, the fan, the air-conduit connected with the fan and inclosed in the steam-jacket, the transverse steam-tubes in the air-conduit, the air-main, the hopper, and the perforated air-cylinders in the hopper, connected with the air-conduit, through which the heated air is delivered to the malt, substantially as set forth.

408,253. GALVANIC BATTERY. CHARLES CHAS, Lille, France, assignor to Hector Lebrasse & Co., same place. Filed Oct. 1, 1888. Serial No. 286,949. (No model.) Patented in Belgium June 6, 1888, No. 83,113, and in England June 16, 1888, No. 8,905.



Claim.—In a two-liquid battery with a porous cup, the combination of a solution of bisulphate of mercury and concentrated nitric acid in suitable proportions and a zinc plate in one cell, with granular-retort carbon and ordinary carbons and nitric acid in the other cell, substantially as herein set forth.

408,254. BUCKLE. LOYAL M. DOSSINGER, Stanton, Mich., assignor of one-half to Hiab Ely, same place. Filed Feb. 9, 1889. Serial No. 299,234. (No model.)



Claim.—1. A harness-buckle consisting of a frame having the curved ribs or flanges 6 at its sides, the clamping-slide fitted between the sides of the frame and connected thereto, so as to be capable of movement laterally of the frame and in the direction of its length, said slide having serrations on its lateral faces, and the lever 16, having the bail which embraces the frame and is curved to fit closely against the curved ribs of said frame, said bail having the tongue 18, which is arranged between the sides of the frame and is adapted to take into the serrations on the outer face of the slide, substantially as and for the purpose described.

2. A harness-buckle consisting of a frame having the diagonal slots in its side flanges, and the curved flanges 6, on opposite sides thereof, at points between the slots, the serrated clamping-slide provided with pins or studs which fit in said slots, and a lever having a curved bail fitted on the frame to bear against the curved flanges 6 thereof and bent upon itself to form a tongue, 18, which fits between the side flanges of the frame and is adapted to engage the serrations on the clamping-slide, all arranged and combined for service, as herein shown and described.

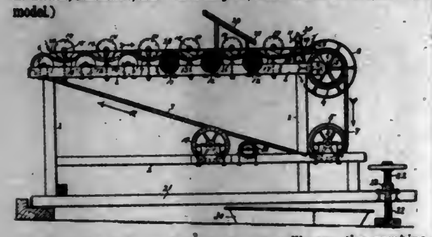
408,255. ROCKING OR SHAKING GRATE-BAR. CHARLES J. DORRANCE, Chicago, Ill. Filed July 2, 1888. Serial No. 170,444. (No model.)



Claim.—In a grate, a series of bars, B B', provided with pivots or trunnions located on one side of a line drawn vertically through the center of the grate-surface of said bars, said bars being provided with depending arms B^2 B^3, two bars, C C, one of which bars is connected with the arms B^2 of the alternate bars B, and the other with the arms B^2 of the intermediate bars, B', a rock-shaft provided with opposite lugs severally connected with the said bars C C, whereby the

alternate grate-bars will be oppositely moved when the rock-shaft is oscillated, and means for actuating the rock-shaft, substantially as described.

403,256. DEVICE FOR COLLECTING METALLIC ORES. HENRY H. HAHN, Baltimore, Md. Filed May 14, 1888. Serial No. 273,767. (No model.)

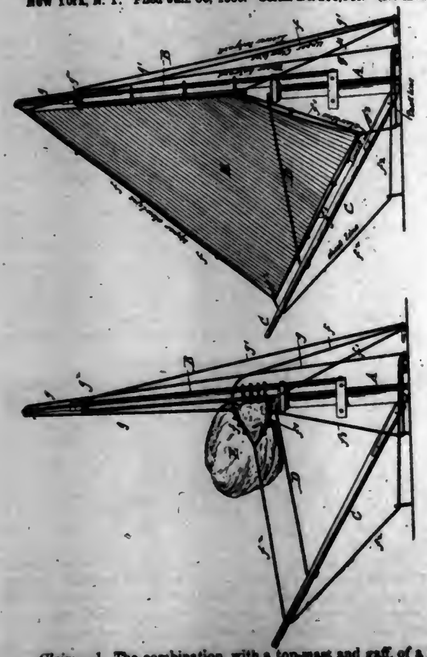


Claim.—1. In a device for collecting metallic ore, the combination of a moving endless bed provided with the metallic plates 26, means for causing an electric current to pass through the said plates, and means for causing a stream of water to flow over the said bed, for the purpose set forth.

2. In a device for collecting metallic ores, the combination of an endless bed, 7, provided with the raised sides 17, rollers 12, for supporting said bed, intermediate rollers, 14, provided with the flanges 16 thereon, in which move the raised sides 17 of the bed, and whereby an undulating movement is imparted thereto, means for causing a stream of water to flow over the said bed, and means for imparting movement to the said bed, for the purpose set forth.

3. In a device for collecting metallic ores, the combination of an endless bed, 7, provided with the metallic plates 26, means for causing an electric current to pass through the said plates, consisting of the rods 28, connected, respectively, to the negative and positive poles of a dynamo or galvanic battery, the swinging arms 29, suspended from the said rods and placed in the path of the said plates 26, whereby the electric current will be caused to pass therethrough, the said arms and rods being placed over the upper surface of the said bed 7, whereby, when the bed leaves this upper surface, the current of electricity through the plates 26 will be broken, means for causing a stream of water to flow over the said bed, and means for imparting movement to the said bed, for the purpose set forth.

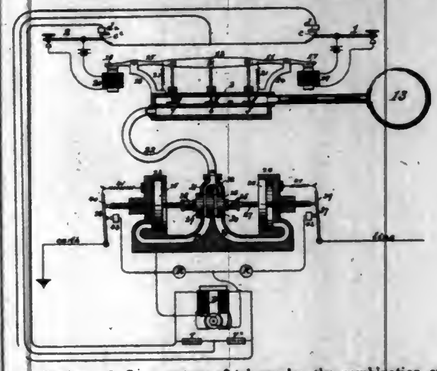
403,257. GAFF-TOPSAIL FOR VESSELS. LAWRENCE W. FALCK, New York, N. Y. Filed Jan. 30, 1889. Serial No. 298,046. (No model.)



Claim.—1. The combination, with a top-mast and gaff, of a gaff-topsail, an upper clew-line extending along the outer edge of the sail, a lower clew-line extending along the lower and inner edges of the same, an upper halyard applied to the upper corner of the sail, a lower halyard attached to the gaff-sail near the lower mast-hoop, a sheet-line applied to the outer corner, and a tack-line applied to the inner corner of the sail, substantially as set forth.

2. The combination, with a top-mast and gaff, of a gaff-topsail, an upper clew-line extending along the outer edge of the sail, an upper halyard attached to the upper corner of the sail, a sheet-line attached to the outer corner, a tack-line attached to the inner lower corner, a lower clew-line extending along the lower and inner edges of the sail up to the lowest mast-hoop, and a lower halyard attached to the sail near the lower mast-hoop and passing over a sheave or pulley of the top-mast, substantially as set forth.

403,258. VIBRATORY-TELEGRAPHY. STEPHEN D. FIELD, Stockbridge, Mass. Filed Nov. 21, 1888. Serial No. 291,477. (No model.)



Claim.—1. In a system of telegraphy, the combination of a source of current, a line, and a single main-line vibratory transmitting-key comprising contacts and a controlling-vibrator therefor having a variable periodicity of vibration.

2. In a system of telegraphy, the combination of a source of current, a line, a single main-line vibratory transmitting-key comprising contacts, and a controlling-vibrator therefor having a variable periodicity of vibration, and means for varying the same operated by subsidiary keys in local circuits.

3. In a system of telegraphy, the combination of a source of current, a line, a single main-line vibratory transmitting-key comprising contacts, and a controlling-vibrator therefor having a variable periodicity of vibration, subsidiary keys in local circuits, and interposed controlling devices for said main-line key and dependent for operation on the subsidiary keys.

4. In a system of telegraphy, the combination of a source of current, a line, a single main-line vibratory transmitting-key comprising contacts, and a controlling vibrator therefor having a variable periodicity of vibration, and a single receiver responsive to all the transmitted vibratory impulses.

5. In a system of telegraphy, a main-line transmitting-key comprising a vibrator having a variable periodicity of vibration, and contacts operated by said vibrator and controlling the direction of currents in the line.

6. In a system of telegraphy, a main-line transmitting-key comprising a vibrator having a variable periodicity of vibration, a source of current, and contacts arranged to reverse the current on the line at each change of phase in the vibrator.

7. In a system of telegraphy, a main-line transmitter comprising a reciprocating rod adapted to reciprocation at variable rates of speed and having line-contacts, in combination with devices for controlling the rate of speed, subsidiary manipulating or make-and-break keys in local circuits, and magnets in the local circuits operating said controlling devices.

8. In a system of telegraphy, a main-line transmitter comprising a reciprocating device arranged in operative relation to the line-contacts and capable of variations in its rate of vibration, a source of energy for effecting the movement of the reciprocating device, and a group of subsidiary make-and-break keys controlling the amounts of energy applied to the reciprocating device.

9. In a system of multiplex telegraphy wherein the signals are made by makes and breaks in sets of vibrations of different rates, a source of current, a vibratory transmitting-key capable of varying rates of vibrations, and a group of subsidiary manipulating-keys controlling the vibration of said transmitting-key, and having extra contacts arranged in operative connection with the source of current and automatically governing its electro-motive force.

10. In a system of multiplex telegraphy wherein the signals are made by makes and breaks in sets of vibrations of different rates, the combination of a single source of current, an inharmonious vibratory transmitting-key, and a group of subsidiary manipulating-keys controlling the vibration of said transmitting-key, each subsidiary key having extra contacts arranged in local circuits controlling the source of current of the main line and in operative connection with the source of energy of the transmitting-key, whereby the potential of the current source is raised with increase of vibratory rate and the motive power of the transmitter is increased correspondingly.

11. In a system of telegraphy, a main-line transmitter comprising a neutral or inharmonious vibratory key, in combination with a tuned fork adapted to be placed in controlling connection with said key, whereby the latter is forced to vibrate in unison with the fork.

12. In a system of telegraphy, a main-line transmitter comprising a neutral or inharmonious vibratory key, in combination with two or more tuned forks adapted to be severally or jointly placed in controlling connection with said key, whereby the latter is forced to vibrate in unison with any one fork separately connected to it, and in unison with a multiple of the several rates of vibration when more than one fork is connected to it.

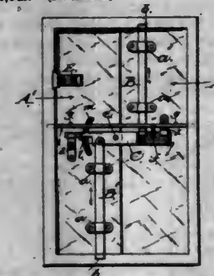
13. In a system of telegraphy, a main-line key comprising a pair of pistons connected by a rod and having suitable line-contacts and a valve and ports for effecting the reciprocation of the rod, in combination with a source of pressure and interposed admission-valves controlled by subsidiary keys in respectively independent local circuits, each including electro-magnetic devices for operating one of the said admission-valves.

14. In a system of telegraphy, a receiving-instrument comprising a magnet, a magnetic plug adapted to reciprocate in the field of the magnet, and an inharmonious compensating-spring opposing the attractive force of the magnet.

15. In a system of telegraphy, a receiving-instrument comprising a magnet, a magnetic plug adapted to reciprocate in the field of the magnet, and an inharmonious spring of spherical form whose resistance under compression increases in an increasing ratio.

16. In a system of telegraphy, the relay consisting of a magnet, a magnetic plug adapted to reciprocate in the field of said magnet, an inharmonious retractile spring, and local-circuit contact-points between the plug and magnet.

403,259. SHUTTER-FASTENER. MICHAEL FITZPATRICK, St. Louis, Mo., assignor to Annie M. Fitzpatrick, same place. Filed Nov. 2, 1888. Serial No. 289,845. (No model.)



Claim.—An improved shutter-fastener consisting of a lever pivoted to the inside of the shutter and provided with the hook-shaped bar, a vertically-arranged bar attached to the lever and having its lower end seated in a socket in the window-frame, a second vertically-arranged bar loosely seated upon the opposite end of the lever and having its upper end adapted for engagement with a socket in the upper portion of the window-frame, a bar, *g*, passing transversely across said frame and engaged by the hook-shaped bar, and a lever, D, mounted on the pivot of the lever C and the spring E, said lever D having a flange, *h*, and a pin, *l*, which projects through a curved slot in the shutter and rests under one end of the lever C, as herein described.

403,260. ATTACHING DEVICE FOR WHIP-SOCKETS. DANIEL D. FRASER, Boston, Mass. Filed Feb. 13, 1889. Serial No. 299,999. (No model.)



Claim.—1. In a whip-socket attaching device, the combination of an encircling band or ring terminating in an arm and perforated, as described, with a binding-bracket having at one end a solid wall and a projection, each perforated for the reception of a binding and clamping screw, respectively, and at the other end a cross-bar, substantially as specified.

2. In a whip-socket attaching device, the clamp-bracket E, having the perforated projection E', the adjacent solid end perforated, as at E^4, and the opposite open end provided with a cross-bar, E^2, in combination with an encircling spring, substantially as specified.

403,261. AIR-EJECTOR FOR CASKS. JOHN W. FUSON, Stapleton, N. Y. Filed Feb. 15, 1889. Serial No. 300,014. (No model.)

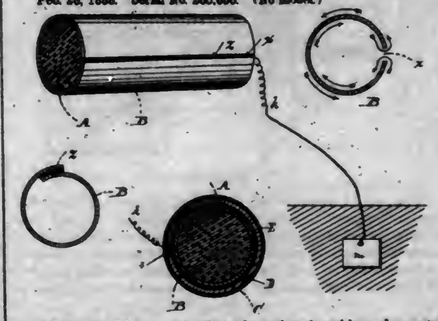


Claim.—1. An air-ejector for preventing explosions in casks when varnishing the same, consisting of a main tube inserted into the bung-hole of the cask, a flanged collar for supporting said main tube on the cask, and an air-supply tube having a nozzle at the interior of the main tube, substantially as set forth.

2. An air-ejector for preventing explosions in casks while varnishing the same, which consists of a main tube that is inserted into the bung-hole of the cask, a flanged collar for supporting the same on the cask, and an air-supply tube passing through a boss of said collar into the interior of the main tube, said air-tube having a nozzle and discharge-orifice in line with the axis of the main tube, substantially as set forth.

3. An air-ejector for preventing explosions in casks when varnishing the same, which consists of a main tube inserted into the bung-hole of the cask, a flanged collar for supporting the main tube, and an air-supply tube having a nozzle and discharge-orifice at the interior of the main tube, said air-tube being connected with a suitable supply of compressed air, the flanged collar being provided with bosses, one boss serving for attaching the air-tube, while the other boss is provided with openings for inserting conducting-wires for an incandescent lamp, substantially as set forth.

403,262. COVERING FOR ELECTRIC CABLES. REES F. GARLAND, Lynn, assignor of one-half to Solomon H. Holbrook, Salem, Mass. Filed Feb. 28, 1888. Serial No. 265,690. (No model.)



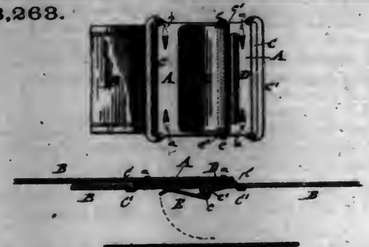
Claim.—1. The combination of an electric cable and a metallic pipe inclosing said cable, said pipe being slit longitudinally and its slit edges separated from each other by a water-proof strip of insulating material.

2. The combination of an electric cable, a metallic pipe inclosing said cable, said pipe being slit longitudinally and its slit edges separated from each other by a water-proof strip of insulating material, a coating of insulating material surrounding said pipe, and a second pipe of larger diameter inclosing said coated pipe, said second pipe being also slit and having its slit edges insulated and an insulating covering surrounding said outer pipe.

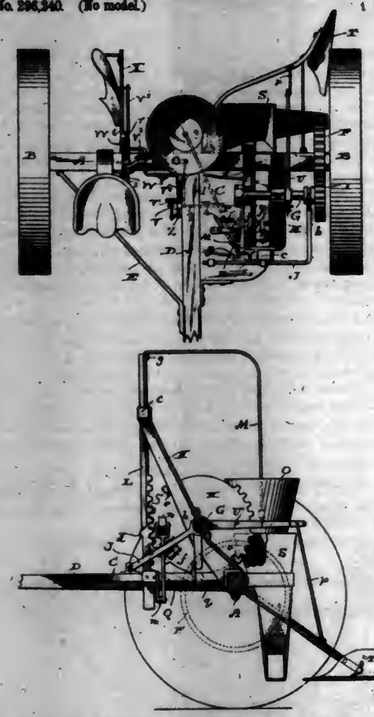
403,263. BELT-BUCKLE. AUGUST GOERTZ, Newark, N. J. Filed Nov. 23, 1888. Serial No. 292,066. (No model.)

Claim.—A buckle for belts, composed of a main plate provided with guide-slots at both ends, fastening-prongs made integral with said plate, a raised rib in said plate parallel with said slots, bent-up ears, also made integral with the plate, and a cam-plate pivoted to said ears close to said rib, substantially as set forth.

408,268.



408,264. POTATO-PLANTER. SAM GIBSON, Hurley, Wis., assignor of one-half to Charles F. La Clair, same place. Filed Jan. 14, 1889. Serial No. 296,340. (No model.)



Claim.—1. A potato-planter comprising a carriage, a hopper and delivery-trough secured to the carriage, a vertically-moving bar actuated at predetermined intervals, a rod loosely connected to the bar to move therewith, and means, substantially as described, for imparting a partial rotation to the rod and for suddenly arresting its downward movement independent of said bar, as and for the purpose set forth.

2. A potato-planter comprising a carriage, a hopper and delivery-trough secured to the carriage, a vertically-moving bar actuated at predetermined intervals, a rod loosely connected to the bar to move therewith, means, substantially as described, for imparting partial rotation to the rod and for suddenly arresting its downward movement independent of said bar, and a coverer secured to said carriage to follow the delivery-trough, as and for the purpose set forth.

3. A potato-planter comprising a carriage, a hopper and delivery-trough secured to the carriage, a vertically-moving bar actuated at predetermined intervals, a rod loosely connected to the bar to move therewith, means, substantially as described, for imparting a partial rotation to the rod and for suddenly arresting its downward movement independent of said bar, a coverer secured to said carriage to follow the delivery-trough, and a plow, also secured to the carriage, as and for the purpose set forth.

4. A potato-planter comprising a carriage, a hopper and delivery-trough secured to the carriage, a vertically-moving bar actuated at predetermined intervals, a rod loosely connected to the bar to move therewith, means, substantially as described, for imparting a partial rotation to the rod and for suddenly arresting its downward movement independent of said bar, a coverer shackled to the carriage-axle, and a lever mechanism for raising and lowering said coverer, as set forth.

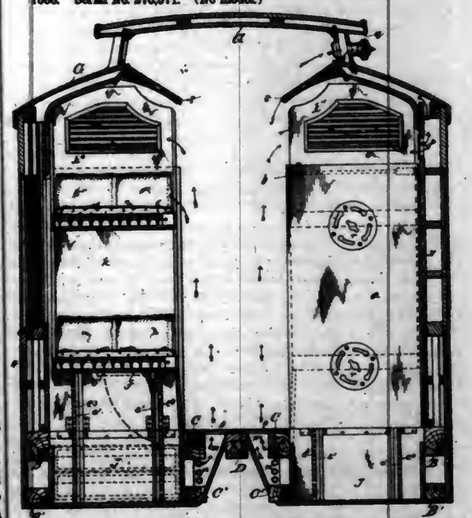
5. A potato-planter comprising a carriage, a hopper and delivery-trough secured to the carriage, a vertically-moving bar actuated at predetermined intervals, a rod loosely connected to the bar to move therewith, means, substantially as described, for partially rotating the rod and for suddenly arresting its downward movement independent of said bar, a coverer arranged to follow the delivery-trough, a pivotally-adjustable plow secured to said carriage, and a lever mechanism for adjusting said plow, as set forth.

6. A potato-planter comprising a carriage, a hopper and delivery-trough secured to the carriage, a vertical rack-bar, a mutilated pinion arranged to actuate the rack-bar, a plain pinion splined on the shaft of the mutilated one, a gear-wheel fast to the adjacent carriage-wheel, a sliding lever connected to the plain pinion, a rod loosely connected to said rack-bar to move therewith, and means, substantially as described, for imparting a partial revolution to the rod and for suddenly arresting its downward movement, as and for the purpose set forth.

7. A potato-planter comprising a carriage, a hopper and delivery-trough secured to the carriage, a vertical rack-bar, a mutilated pinion provided with detachable teeth and arranged to actuate the rack-bar, a plain pinion splined on the shaft of the mutilated one, a gear-wheel fast to the adjacent carriage-wheel, a sliding lever connected to the plain pinion, a rod loosely connected to said rack-bar to move therewith, and means, substantially as described, for imparting a partial revolution to the rod and for suddenly arresting its downward movement, as and for the purpose set forth.

8. A potato-planter comprising a carriage, a hopper and delivery-trough secured to the carriage, a vertical rack-bar, a mutilated pinion arranged to actuate the rack-bar and having one of its sides provided with a cam-lug, a plain pinion splined on the shaft of the mutilated one, a gear-wheel fast to the adjacent carriage-wheel, a sliding lever connected to the plain pinion, a bent rod loosely connected to said rack-bar and having a right-angular foot-piece, a vertical spring-controlled lever pivoted to the carriage-platform and having a curved upper end, a pivotal arm linked to the vertical lever and carrying an anti-friction roller arranged to come in the path of said cam-lug, a vertical post arranged adjacent to said vertical lever, a flat spring impinged against the post, and a stop for the foot-piece on said bent rod, all arranged to operate substantially as and for the purpose set forth.

408,265. RAILWAY-CAR. LOUIE J. HARRIS, Boston, Mass., assignor of one-fourth to Arthur W. Greenley, same place. Filed Apr. 13, 1888. Serial No. 270,571. (No model.)



Claim.—1. A railway passenger car or coach provided on each side with a series of berth-storage apartments beneath the floor, removable coverings to each of said apartments forming the floor of the car, a berth in each of said apartments independent of the cover thereof, and means for lowering the berth into and raising it out of the storage-apartment, substantially as set forth.

2. A railway passenger car or coach having that portion of its body between the trucks extended or carried down therebetween, and provided on each side with a series of berth-storage apartments or wells in said downwardly-extended portion and beneath the floor, removable coverings to each of said apartments, forming the floor of the car, a berth in each of said apartments independent of the cover thereof, and means for lowering the berth into and raising it out from the storage-apartment, substantially as set forth.

3. A railway passenger car or coach provided with berth-storage apartments beneath the floor, removable sections of the flow covering said apartments, constructed and arranged to be placed in vertical position between the berth-sections, to form partitions therebetween, and berths in said apartments adapted to be raised out of and lowered into said apartments, substantially as set forth.

4. A railway passenger car or coach having that portion of its body between the trucks extended or carried down therebetween, berth-storage apartments formed in said downwardly-extended portion, removable sections of the floor covering said apartments, constructed and arranged to be placed in vertical position between the berth-sections to form partitions therebetween, and berths in said apartments adapted to be raised out of and lowered into said apartments, substantially as set forth.

5. A railway passenger car or coach provided with berth-storage apartments beneath the floor, berths in said apartments adapted to be lowered therein and raised out therefrom, and removable sections of the floor hinged at one end to the frame of the car and adapted to be raised into vertical position and secured to the stationary frame of the car to form partitions between the berth-sections, substantially as set forth.

6. A railway passenger car or coach provided with berth-storage apartments beneath the floor, a berth stored in each of said apartments and adapted to be lowered into and raised out of said apartments and supported in position for occupancy, and gearing connected with the berth and engaging corresponding devices connected with the berth-support for raising and lowering the same, substantially as set forth.

7. A railway passenger car or coach provided along the side with a series of storage-apartments beneath the floor, and two removable sections of the floor covering each of said apartments, each hinged at one of its ends to the frame of the car and adapted to be raised into vertical position and secured to the stationary frame to form partitions at intervals in the car, substantially as set forth.

8. A railway passenger car or coach provided at the side with berth-storage apartments beneath the floor, partitions between said apartments, berths in said apartments, gearing connected with said apartments, a rack and guideway connected with said partitions, and means for operating said gearing to raise said berths out of and lower them into said apartments, substantially as set forth.

9. A railway passenger car or coach provided with berth-storage apartments beneath the floor, partitions between said apartments, two berths in each of said apartments, gearing connected with each of said berths, devices, substantially as set forth, to connect said gearing to operate the same in unison, a rack and guideway connected with said partitions, and means for operating said gearing to raise said berths out of and lower them into said apartments, substantially as set forth.

10. A railway passenger car or coach provided with berth-storage apartments beneath the floor, two removable sections of the floor covering each of said apartments, each hinged at one of its ends to the frame of the car and adapted to be raised into vertical position and secured to the stationary frame to form partitions at intervals in the car, berths in said apartments adapted to be raised out therefrom and supported in position between said partitions, and foot and head boards hinged to the frames of said berths and adapted to be folded down thereover or raised against said partitions, substantially as set forth.

11. A railway passenger car or coach provided with sleeping-berths, foot and head boards hinged to the frames of said berths, and a curtain-supporting rod removably connected with said foot and head boards, substantially as set forth.

12. A railway passenger car or coach provided with a series of berth-storage apartments on each side of the car beneath the floor, and chambers M, running longitudinally of the car between said berth-storage apartments, substantially as set forth.

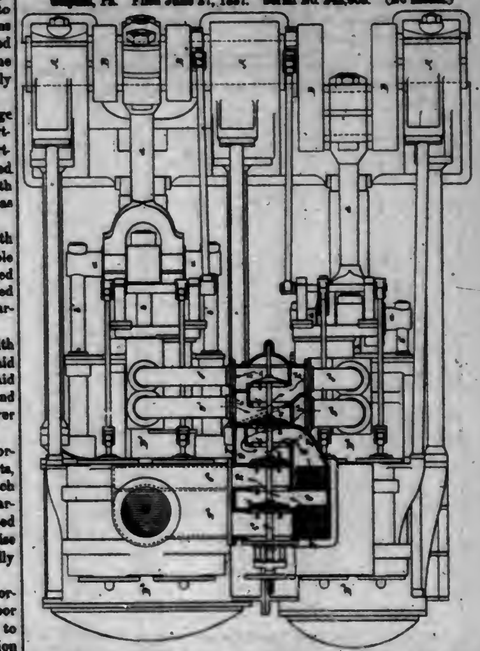
13. In a railway passenger car or coach, the combination, with a sleeping-berth, of a board secured to the forward part of the berth-frame and a lock or latch for locking or latching said board or door to the frame of the car, whereby baggage, &c., may be locked beneath the berth, substantially as set forth.

14. A railway passenger car or coach provided with a berth-storage apartment coextensive with a berth-section beneath the floor, a complete berth and its equipment substantially coextensive with said apartment removably arranged therein, means for lowering the berth into and raising it out of the storage-apartment, and a section of the floor independent of said berth removably arranged over said apartment, substantially as set forth.

15. A railway passenger car or coach provided with a berth-storage apartment coextensive with a berth-section beneath the floor, a movable berth, with means for lowering the berth into and raising it out from said apartment and supporting it in position for occupancy, and a removable section of the floor independent of said berth, constructed and arranged to cover said apartment when the berth is stored therein, and to be removed to permit the berth to be moved therefrom, substantially as set forth.

16. A railway passenger car or coach having a body normally unobstructed, with a berth or berth-supports above the floor, and provided with a berth-storage apartment coextensive with a berth-section beneath the floor, movable upper and lower berths, with means for lowering the berths into and raising them out of the storage-apartment and supporting them in position of occupancy, and a removable section of the floor independent of said berths, constructed and arranged to cover the apartment when the berths are stored therein and be removed to permit the berths to be raised out therefrom, substantially as set forth.

408,266. QUADRUPLE-EXPANSION ENGINE. JOHN HAUG, Philadelphia, Pa. Filed June 27, 1887. Serial No. 242,603. (No model.)



Claim.—1. The combination, in a quadruple engine, of four cylinders of differential diameter, a live-steam inlet, an exhaust-outlet, passages for connecting the cylinders either in a continuous series or in simultaneously-operating pairs, and valves for controlling the flow through said passages, all substantially as specified.

2. The combination, in a quadruple engine, of four cylinders of differential diameter, passages connecting the first and second cylinders of the set with the steam-inlet, passages connecting the first cylinder with the second and third, passages connecting the second cylinder with the third and fourth, passages connecting the third cylinder with the fourth and with the final outlet, a passage connecting said fourth cylinder with said final outlet, and valves for opening and closing said passages, as described, whereby live steam may be directed to the first cylinder only and worked in the series of cylinders in succession before reaching the final outlet, or said live steam may be simultaneously admitted to the first and second cylinders, the first cylinder exhausting into the third, the second cylinder into the fourth, and the third and fourth into the final outlet, all substantially as specified.

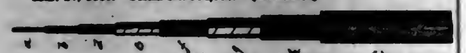
3. The combination, in a quadruple engine, of four cylinders of differential diameter, passages for connecting the cylinders either in a continuous series or in pairs, and duplex valves located in the eduction-chambers communicating with the first, second, and third cylinders, all substantially as specified.

4. The combination, in a quadruple engine, of four cylinders of

differential diameter, passages for connecting the cylinders either in continuous series or in pairs, duplex valves located in the eduction-chambers communicating with the first, second, and third cylinders, and a single valve controlling the communication between the induction-chambers of the first and second cylinders, all substantially as specified.

5. The combination, in a quadruple engine, of four cylinders of differential diameter, a directing-chest having passages for connecting the cylinders either in a continuous series or in pairs, and a series of valves carried by a single stem and controlling the flow through said passages, all substantially as specified.

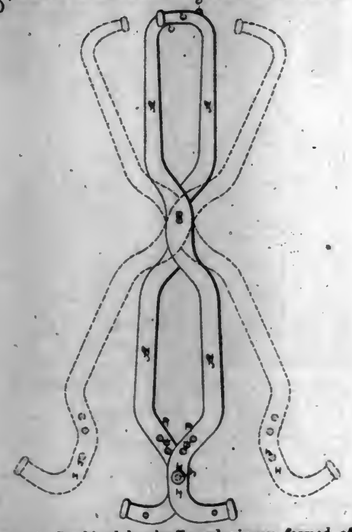
408,267. INSULATED WIRE. SALOMON HEIMANN, New York, assignor of five-twentieths to Frank L. Pommer, Stapleton, N. Y. Filed Mar. 27, 1888. Serial No. 304,966. (No model.)



Claim.—1. An insulated wire composed of an electric wire, a layer of cotton thread on the same, a coating of soluble glass and glycerine, and a layer formed of pulverized pumice-stone and plumbago, substantially as set forth.

2. An insulating-covering for electric wires, composed of soluble glass and glycerine and a coating of pulverized pumice-stone and plumbago, substantially as set forth.

408,268. COMBINED HANDCUFFS AND NIPPERS. WILLIAM A. HICKS, Rankin Station, Pa. Filed Nov. 23, 1888. Serial No. 291,672. (No model.)



Claim.—1. Combined handcuffs and nippers formed of two jaws, which are pivoted together at a point between their ends, so that all four ends of the two jaws can be opened outward, the ends of the jaws being turned inward toward each other so as to overlap, in combination with a fastening device which is passed through or applied to the jaws at one end, substantially as shown.

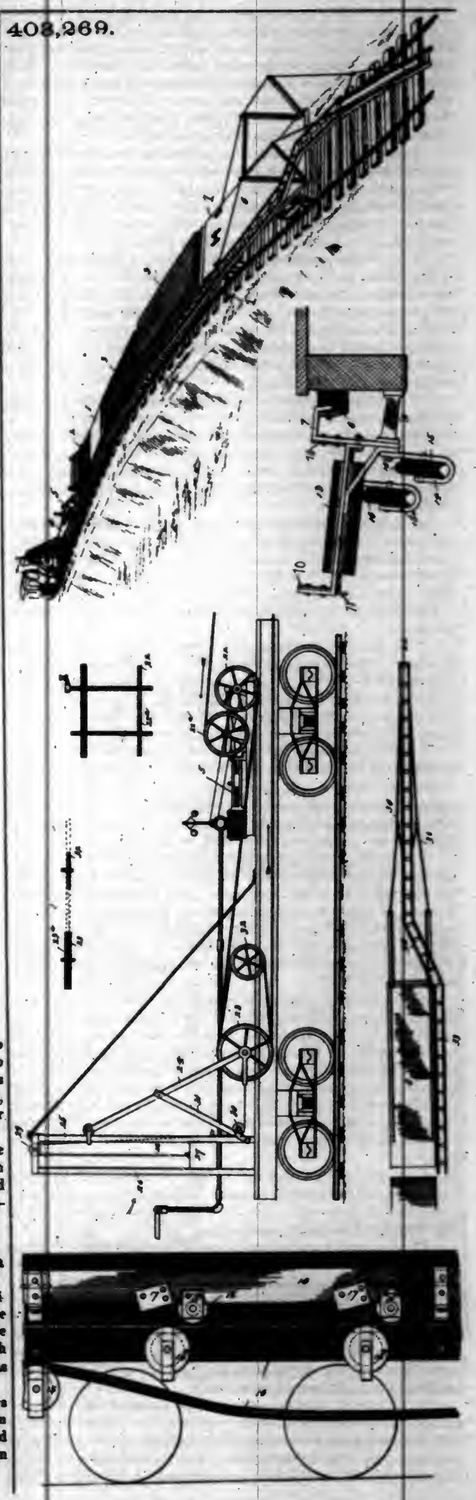
2. In combined handcuffs and nippers, the combination of the two jaws A, shaped as shown, the pivot B, which is passed through the jaws nearer to one end than the other, and which are provided with turned-out handles at one end and the turned-in points or projections C at the other, substantially as set forth.

408,269. CONVEYER. ROBERT B. HURLEY, Des Moines, Iowa. Filed May 17, 1888. Serial No. 274,136. (No model.)

Claim.—1. In a conveyer for ties or other materials, the combination of a guideway having a series of rollers each of which has one end vertically adjustable, whereby the superimposed weight of the article moved thereon shall depress said roller, and a cable upon which the depressed roller bears and by which it is rotated, substantially as described.

2. In a conveyer for ties, &c., the combination, with guideways provided with rollers, one end of which is vertically adjustable, of an endless cable adapted to be brought into frictional contact with said rollers when the latter are depressed, and an engine for giving motion to said cable, substantially as described.

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3. In a conveyer, the combination, with guideways having rollers rotatably secured therein, said rollers having one of their ends vertically adjustable in its bearings, of an endless cable adapted to be brought into frictional contact with the rollers when depressed, and sheaves to sustain said cable in such frictional contact, substantially as described.

4. In a conveyer for railway-ties, the combination, with guideways consisting of brackets 7, rails 10, and brace 9, of rollers 13, journaled therein and having one end vertically adjustable, cable 16, and sheaves 15^a, substantially as described.

5. A roller for conveyers consisting of a cylindrical shell, separable heads therefor having a flanged circumference and a sunken central portion with a hub to form a journal-bearing for an axle, an axle extended through the shell and journaled in the heads, and bolts or rivets having their heads and securing-nuts seated upon the sunken portion of the heads, substantially as described.

6. The combination, with an endless cable, of a device for taking up the slack of such cable, comprising a sheave, 23, connected to a swinging arm, 24, and a weight connected by a cord with said sheave, whereby the slack of the cable is taken up by the descent of the weight and the drawing back of the sheave, substantially as described.

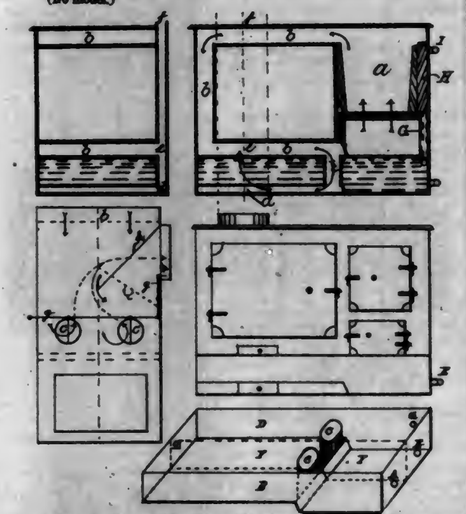
7. In a slack-take-up device, the combination, with an endless cable, of a system of pulleys over which the cable is passed, two of said pulleys being secured to rotate upon a common axis, and being movable, substantially as described.

8. The combination, with an endless cable, of a slack-take-up device comprising a movable pulley over which the cable is passed, a swinging and endwise-movable arm to which said pulley is connected, and a weight connected to said pulley, whereby to move it to take up the slack of the cable, substantially as described.

9. In a track-laying apparatus, the combination, with a car, of a guideway affixed to the side of said car and inclined upwardly from rear to front thereof, a section of guideway projecting from the side of the car to near the middle of its width, and a downwardly-inclined section of guideway projecting out over the middle of the road-bed and in front of the train, said sections constituting a continuous guideway whereby the ties are carried from the side of the car to the middle of the road-bed, substantially as described.

10. In a track-laying apparatus, the combination of a guideway comprising the sections 33 34 35, with a suitable suspending medium, 36 37 38, substantially as described.

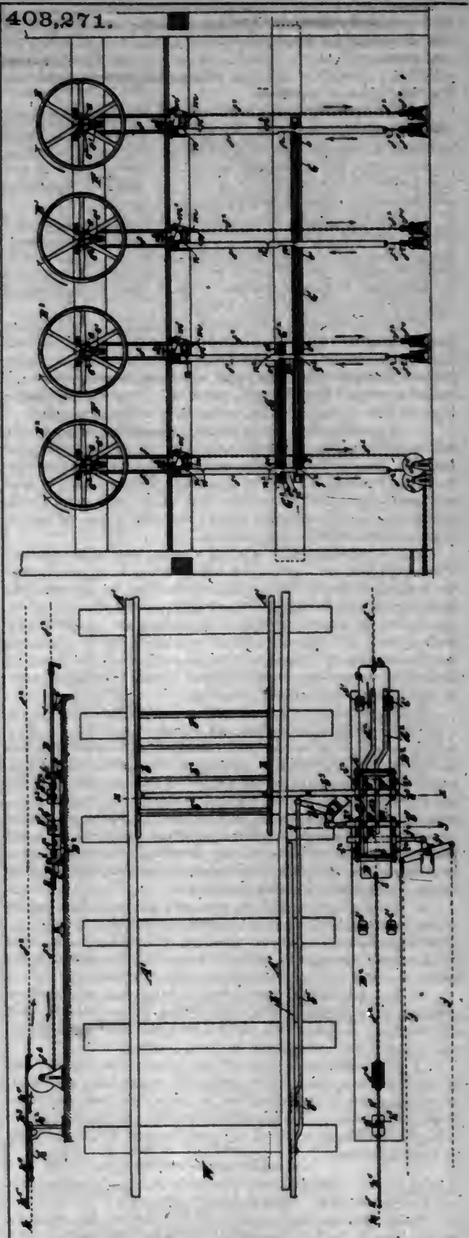
408,270. HOT-WATER RESERVOIR FOR RANGES OR STOVES. ABRAHAM HURST, Philadelphia, Pa. Filed Mar. 2, 1889. Serial No. 302,422. (No model.)



Claim.—The combination, with a stove or range having an oven and fire-pot arranged side by side, of a water-reservoir extending the entire length of the stove or range and under both oven and fire-pot, and provided with a passage for the products of combustion, the said stove or range having suitable flues communicating with the passage in the water-reservoir.

408,271. RAILWAY SWITCH AND SIGNAL OPERATING AND INTERLOCKING DEVICE. HENRY JOHNSON and CHARLES B. JOHNSON, Pittsburg, Pa. Filed Aug. 18, 1886. Serial No. 211,134. (No model.)

408,271.



Claim.—1. The combination, with two or more systems of connections for moving switches, switch-locks, and signals, and purchase-wheels or equivalent handles for operating said systems, of notched locking-bars movable by the purchase-wheels or handles, a positive lock for each bar under manual control of the operator, and interlocking devices between the several bars, whereby the purchase-wheels or handles and the systems which they operate are controlled automatically one by another, substantially as herein described.

2. The combination, with two or more systems of connections, each for moving a switch and signal or signals and each formed in part by a notched locking-bar, of purchase-wheels or equivalent handles corresponding in number to the number of said systems and each arranged and connected in permanent operative relation with one of

said systems, but having no operative connection with the other system or systems, and interlocking devices between the bars of the several systems, whereby the purchase-wheels or handles and the systems which they operate are controlled automatically one by another, substantially as herein described.

3. The combination, in a grade crossing, of a facing-switch with its accompanying switch-lock and signal or signals, and a trailing switch on the opposite side of the crossing, and a single purchase-wheel or equivalent handle, and connections through which it operates both the facing-switch with its lock and signal or signals, and also the trailing switch, substantially as herein described.

4. The combination, with a switch, switch-lock, and signal, and separate connections for operating them, of a sliding motion-plate or bar provided with cam-like devices for moving the switch, switch-lock, and signal separately and in the order named to prepare them for traffic and in the reverse order to return them to their normal condition, substantially as herein described.

5. The combination, with a switch, switch-lock, home signal and distant signal, and separate connections for operating them, of a sliding motion-plate or bar provided with cam-like devices for moving the switch, switch-lock, home signal, and distant signal in the order named to prepare them for traffic and in their reverse order to return them to their normal condition, substantially as herein described.

6. The combination, with a switch, switch-lock, and signal, of a sliding motion-plate or bar for operating said devices in the order named to prepare them for traffic and in reverse order to return them to normal condition, a system of connections for moving said plate or bar, and a purchase-wheel or equivalent handle arranged and connected in permanent operative relation with said system of connections, substantially as herein described.

7. The combination, in a grade crossing, with a facing-switch with switch-lock and signal, and a trailing switch on opposite sides of the crossing, of sliding motion-plates or bars, one for operating the facing-switch with its switch-lock and signal and the other for operating the trailing switch, a system of connections for operating both motion-plates or bars, and a single purchase-wheel or equivalent handle arranged and connected in permanent operative relation with the system of connections and serving to operate both motion-plates or bars, substantially as herein described.

8. The combination, with a switch, switch-lock, and home signal, of a single motion-plate or bar and system of connections, and a purchase-wheel or equivalent handle arranged and connected in permanent operative relation to said system for shifting said switch, switch-lock, and signal in the order named to prepare them for traffic, and in the reverse order to return them to normal condition, a distant signal and devices for operating it from the motion-plate, connections whereby the distant signal will be moved to "safety" as the said plate completes its movement in one direction, and will be returned to "danger" as said plate commences its movement in the other direction, substantially as herein described.

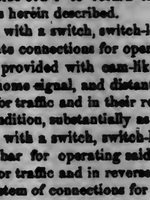
9. The combination, with the connected point-rail of a switch or with a switch-lock, of duplicate connections for shifting it, and a single sliding motion-plate or bar operating upon both connections for simultaneously transmitting motion through both connections to the switch or switch-lock, substantially as herein described.

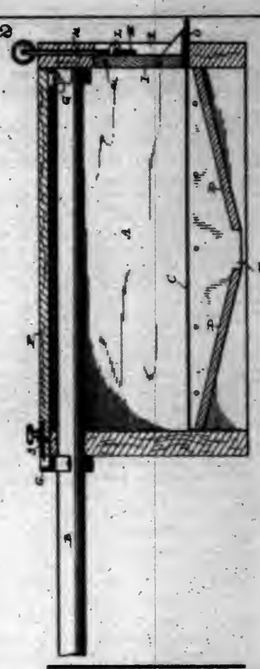
10. The combination, with a switch or switch-lock and duplicate connections for shifting it, of a single sliding motion-plate provided with duplicate cam-slots with which said connections are engaged, one with each slot, substantially as herein described.

11. The combination, with the two point-rails of a switch, and tie-rods connecting them and insuring their simultaneous movement, of operating rods or bars connected one with each point-rail, and a single motion-plate or bar by which equal and simultaneous motion is transmitted through said rods or bars to the two rails, substantially as herein described.

408,272. ASH-SIFTER. WILLIAM J. KATNER, Milwaukee, Wis. Filed Feb. 11, 1889. Serial No. 299,410. (No model.)

Claim.—The combination, in an ash-sifter, of the box and handle passing through one end thereof and secured in the other end, and the sliding top provided with loops through which the handle passes, one of which loops is located outside and the other inside the box, substantially as set forth.

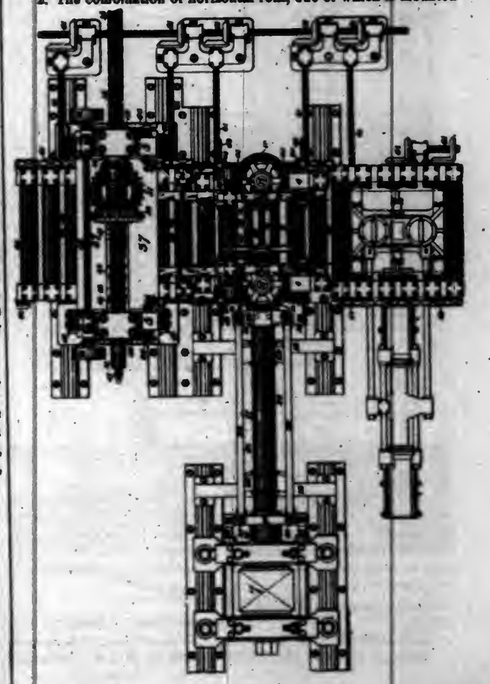


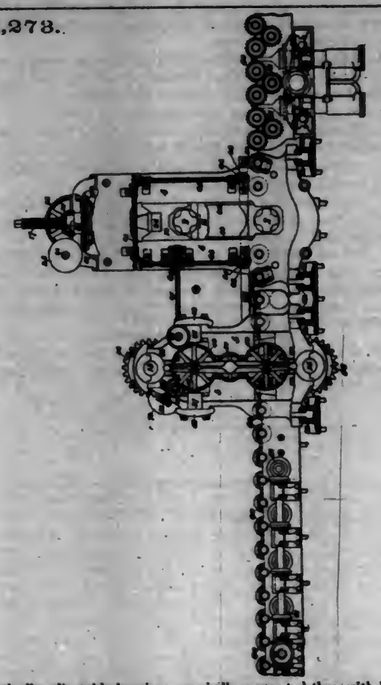


408,273. UNIVERSAL ROLLING-MILL. JULIAN KENNEDY and HENRY AIKEN, Homestead, Pa. Filed Mar. 16, 1888. Serial No. 267,406. (No model.)

Claim.—1. In a universal mill, the combination of the vertical and horizontal rolls and separate reversible engines by which they are driven independently, substantially as and for the purposes described.

2. The combination of horizontal rolls, one of which is mounted





in vertically-adjustable bearings, a spindle connected therewith by a coupling-box, and a cradle supporting the spindle, said cradle being suspended by connections attached at substantially the centers of pivotal motion of the spindle ends in the coupling-boxes, substantially as and for the purposes described.

3. The combination, with the rest-bars which carry the vertical rolls, of the housings between which the rest-bars are mounted, each of the said housings having a window at the end of one of the lower rest-bars, through which the rest-bar may be inserted and withdrawn longitudinally, and fastening devices, substantially as described, by which the rest-bar is secured to the housing, substantially as and for the purposes described.

4. In a universal mill, the combination of the rest-bars which carry the vertical rolls, the housings between which the rest-bars are mounted, the said housings having openings or windows in which the lower rest-bars are fastened and through which they may be withdrawn longitudinally, and wedges for securing the rest-bars in said housings, substantially as and for the purposes described.

5. The combination, with the vertical roll, its carrier, and the screw mechanism by which the carrier is adjusted, of a hydraulic cylinder and its piston, which exert force on the carrier against the force of the screw mechanism, substantially as and for the purposes described.

6. The combination, with the laterally-adjustable vertical roll and the driving-shaft, of a movable pinion on said shaft connected with a pinion on the roll, and a cylindrical bearing encircling the end of the roll, which projects on the outer side of the pinion and movable with the pinion on the shaft, substantially as and for the purposes described.

7. The combination, with the laterally-adjustable vertical roll and its driving-shaft, of a pinion having a sleeve encircling the shaft and movable lengthwise thereon, and a collar loosely encircling the sleeve and having a tubular bearing which encircles the end of the vertical roll which projects on the outer side of its pinion, substantially as and for the purposes described.

8. In a universal mill, the combination, with the vertical and horizontal rolls, of guides extending from the vertical rolls between the horizontal rolls, substantially as and for the purposes described.

9. In a universal mill, the combination, with the horizontal rolls and laterally-adjustable vertical rolls, of guides extending from the vertical to the horizontal rolls, and screws which move the guides laterally, said screws being geared to move simultaneously with the adjusting-screws of the vertical rolls, substantially as and for the purposes described.

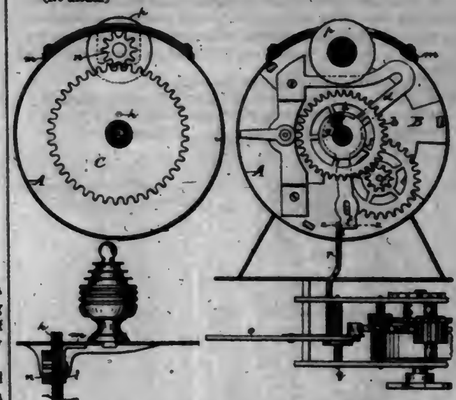
10. The combination, with the horizontal roll and its adjusting-screws, housings, and bearings, of a bar which extends across the housings and is interposed between the screws and the said bearings, said bar being made separate from the bearings, though held against the same by the pressure of the adjusting-screws, substantially as and for the purposes described.

11. The combination of horizontal rolls, a spindle, a carrier for the spindle, and a bar extending across the housings of the rolls and resting on the bearings thereof, said carrier being suspended from the said bar, substantially as and for the purposes described.

12. The combination, with the vertical rolls and their housings, of rest-bars for the rolls, which rest-bars extend between the housings and are notched or offset at the ends and provided with shoulders which bear against the inner and outer sides of the housings, bracing the same in both directions, substantially as set forth.

13. The combination of horizontal rolls, one of which is mounted in vertically-adjustable bearings, a spindle connecting the adjustable roll with its driving-shaft, and a cradle having separate bridge-pieces or supports 29, which support the spindle on both sides of the middle of its length, substantially as and for the purposes described.

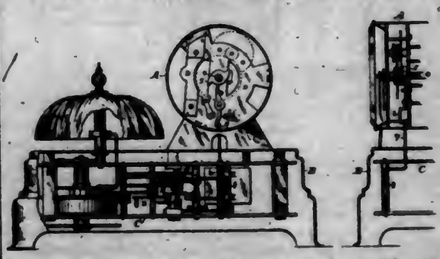
408,274. SETTING MECHANISM FOR ALARM-CLOCKS. ALBERT M. LANE, Meriden, Conn. Filed July 31, 1888. Serial No. 281,583. (No model.)



Claim.—1. In an alarm-clock, the combination of the shouldered cam *g*, revolving with the hour-wheel and sliding on the hour-socket, the setting-wheel C, having the pin *h* for engaging said cam, and the setting pinion and button mounted on an axis which is parallel with the center shaft, substantially as described, and for the purpose specified.

2. In an alarm-clock having a setting-wheel, as at C, the detachable cap *m*, bearing a lug and having pivoted thereon the setting pinion and button for engagement with the setting-wheel, substantially as described, and for the purpose specified.

408,275. CLOCK STRIKING MECHANISM. ALBERT M. LANE, Meriden, Conn. Filed Aug. 13, 1888. Serial No. 282,546. (No model.)

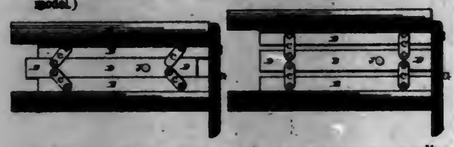


Claim.—1. The herein-described striking-clock, consisting of a clock-case, a time-movement having a strike-tripping mechanism within said case, and a striking-movement outside said case having a rigid arm extending from the warning-wire to a point by the side of the tripping mechanism within the clock-case, substantially as described, and for the purpose specified.

2. The combination of a clock-case, a time-movement within said case, the cam 5, attached to and moving with said time-movement, the tripping-lever 6, having one end in engagement with said cam, and the striking mechanism separate from the time-movement

and having an arm disunited from said lever and extending from the warning-wire to a point by the side of the other end of said lever, substantially as described, and for the purpose specified.

408,276. DEVICE FOR HANDLING GREEN TILES. JOHN W. LAUGHLIN, Parkville, Ill. Filed Jan. 29, 1889. Serial No. 297,956. (No model.)

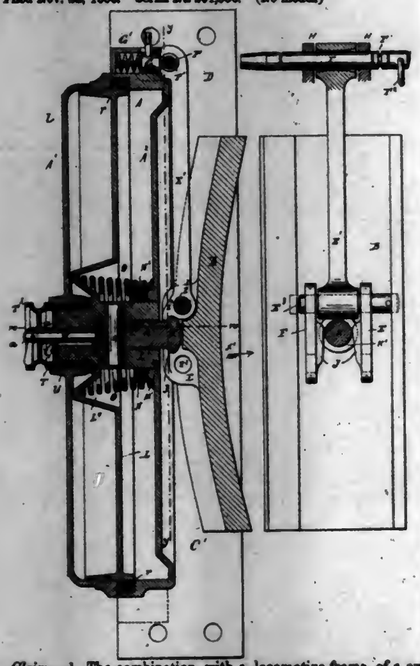


Claim.—1. The combination of the two supports, an expanding-bar placed between them, the connecting-links, and a stop which is secured to one end of one of the supports, substantially as described.

2. The combination of two supports, an expanding-bar placed between them, connecting-links, and a stop which is secured rigidly to one of the supports and to which the other support is movably attached, substantially as set forth.

3. The combination of the two supports, an expanding-bar, the connecting-links, and a stop which is loosely attached to one of the supports and rigidly secured to the other and which is made to project at one of its ends beyond one of the supports, substantially as specified.

408,277. LOCOMOTIVE-BRAKE. LOUIS P. LAWRENCE, Passaic, N. J., assignor to the Lawrence Railway Brake Company, New York, N. Y. Filed Nov. 22, 1888. Serial No. 291,536. (No model.)



Claim.—1. The combination, with a locomotive-frame, of a cylinder projecting laterally from said frame adjacent to the rim of the wheels, the open end of said cylinder facing the rim of the wheel, and the said cylinder being flattened to have approximately the width of the wheel-rim, the long axis of said cylinder being parallel with one of the diameters of the wheel, a piston in said cylinder, and a brake-shoe connected with said piston and located between said piston and the rim of the wheel, substantially as set forth.

2. The combination, with a locomotive-frame, of a cylinder projecting laterally from the same, the open end of said cylinder facing the rim of the wheel, a piston in said cylinder, a brake-shoe operated by said piston and located between the piston and the rim of the wheel, and a link pivoted to the brake-shoe and to the top of the cylinder containing the piston that operates the shoe, substantially as set forth.

3. The combination, with a cylinder, of a piston in the same provided with a screw-threaded stem, and a cylindrical nut screwed on the stem and mounted to slide in an aperture in one head of the cylinder, substantially as set forth.

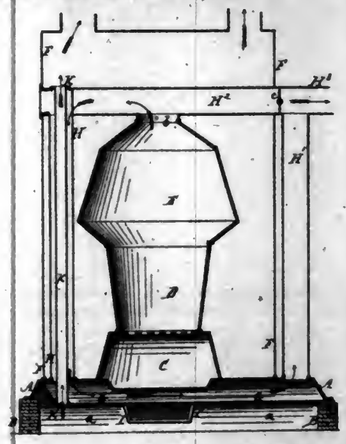
4. The combination, with a cylinder, of a piston having a screw-threaded stem, a cylindrical nut screwed on said stem and mounted to slide in an aperture in one head of the cylinder, and a bolt for locking the nut on said stem, substantially as set forth.

5. The combination, with the cylinder A, of the piston L, having the projection L', the link K, pivoted in the bore of said projection L', and having the head K' on its outer end, and the brake-shoe B, having the flanged lugs E, substantially as set forth.

6. The combination, with the cylinder A, of the piston L, having the projection L', the brake-shoe B, the spring O, the packing N, and the flanged ring N', substantially as set forth.

7. The combination, with a cylinder projecting from a plate and having a wing on that side of the cylinder opposite the one connected with the plate, of a brake-shoe between said plate and wing, and a piston in the cylinder connected with the brake-shoe, substantially as set forth.

408,278. HOT-AIR FURNACE. JAMES B. LONG, Rochester, N. Y., assignor to Rebecca B. Long, same place. Filed Oct. 1, 1887. Serial No. 251,220. (No model.)



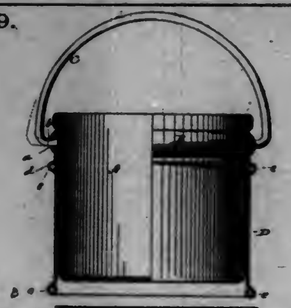
Claim.—1. In a hot-air furnace, an air-chamber, a cold-air inlet, a combustion-chamber, a flue for products communicating with the combustion-chamber and extending downwardly, and having vertical and horizontal parts within the hot-air chamber, and the air-pipe located within the vertical part of said flue and communicating at its top and bottom with the air-chamber, whereby both the exterior and the interior of the current of escaping products are utilized to heat the air and the escaping products thoroughly cooled within the casing, and an updraft-pipe located outside the furnace, whereby said pipe and the interior of the horizontal part of the flue within the casing are made conveniently accessible, substantially as specified.

2. A hot-air furnace having a combustion-chamber, an ash-pit, an indirect-draft flue including a downdraft-pipe located in the air-space and an updraft-pipe outside the casing, the two being connected by a horizontal flue supporting the bottom of the ash-pit and supported by the masonry on which the furnace stands, said furnace having a direct flue connecting an upper horizontal part of the downdraft-pipe with the combustion-chamber, and also with the top of the exterior updraft flue or pipe, said part being at its opposite end extended through the furnace and provided with a cap, all as shown and described, whereby the exterior flue is made accessible, and whereby both horizontal flues may be easily cleaned, and the several parts so connected as to support each other, substantially as specified.

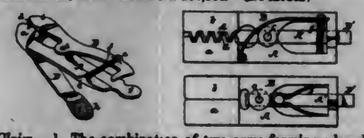
408,279. COOKING-VESSEL. HENRY A. MANNING, New York, N. Y. Filed Oct. 17, 1887. Serial No. 252,534. (No model.)

Claim.—The herein-described cooking-vessel, consisting of the vessel A, constructed with an annular shoulder, *d*, upon its outside near its upper edge, and also provided with a bail, combined with a jacket, D, made from sheet metal of ring shape and of a depth greater than the depth of the kettle from said shoulder to the bottom, the internal diameter of the jacket at both its upper and lower ends corresponding substantially to the diameter of the kettle at the said shoulder, substantially as described, and whereby the said jacket is not only made detachable from the kettle, but is also adapted to be inverted.

408,279.



408,280. CUFF-RETAINER. JACOB M. MARCH, Phœnixville, Pa. Filed Jan. 24, 1888. Serial No. 297,261. (No model.)



Claim.—1. The combination of two arms forming a longitudinal clamp for engagement with a cuff, a jaw at the inner end of one of said arms, a lever having a jaw at its inner end, a spring acting on said lever, and a transverse pivot-pin, whereby said lever is hung to the arm of the longitudinal clamp so as to swing laterally, whereby its jaw forms, in connection with that of the arm, a laterally opening and closing clamp for engagement with the sleeve of a coat or other garment, substantially as specified.

2. The combination of two arms forming a longitudinal clamp for engagement with a cuff, a jaw at the inner end of one of said arms, a lever having a jaw at its inner end, a spring acting on said lever, a transverse pivot-pin, whereby said lever is hung to the arm of the longitudinal clamp, so as to swing laterally, whereby its jaw forms, in connection with the jaw of the arm, a laterally opening and closing clamp, one of said jaws being provided with a projecting needle-point and the other jaw having an orifice for the reception of said needle-point, substantially as specified.

3. A cuff-holder consisting of two clasps secured together with their clamping-jaws at reverse ends, the one comprising a fixed arm and a laterally-movable arm pivoted to the fixed arm near the end thereof, and the other clasp having arms pivoted together midway, or thereabout, of their length and provided with laterally-movable jaws, substantially as described.

408,281. PLOW. ORLAN S. MEEKS, Evansville, and JOHN C. BROWN, Eureka, Ind. Filed Oct. 17, 1888. Serial No. 288,376. (No model.)

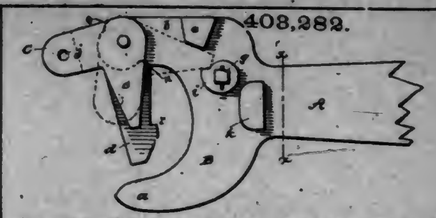


Claim.—A plow having a half-dovetail abutment, *c*, inclined obliquely backward, and a broad vertical bearing-surface, *s*, extending from said abutment to the heel of the landside, in combination with a broad-base colter beveled to interlock with said shoulder both vertically and laterally, and secured by transverse bolts to the plow, whereby the colter forms the main portion of the landside and is positively locked in its place, as specified.

408,282. CAR-COUPLING. ABNER J. MCGEHEE, Jackson, Tenn., assignor to himself and HENRY W. MCCORRY, same place. Filed Jan. 23, 1888. Serial No. 297,267. (No model.)

Claim.—1. The draw-head B, having the arms *a b*, the arm *b* being provided on its upper face with the stop *e* and on its lower face with the stop *f*, in combination with the jaw C, pivoted to the arm *b*

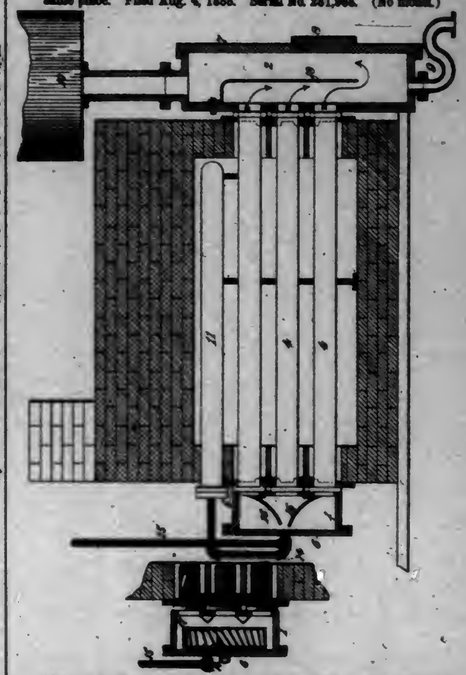
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and provided with the arms *c d*, and the sliding bolt *g*, provided with the collar *i*, substantially as described.

2. The draw-head B, having the arms *a b*, the arm *b* being provided with the stop *e* on its upper face, the recessed stop *f* on its lower face, and the shoulder *n* on its inner face, in combination with the jaw C, pivoted to the arm *b* and provided with the arm *c d*, the arm *d* being provided with the projection *l*, and the sliding pin *g*, having the beveled lower end, *k*, and provided with the collar *i* at its upper end, substantially as herein shown and described.

408,283. APPARATUS FOR THE PRODUCTION OF GAS. ROBERT HAYSMITH, Pittsburg, Pa., assignor of one-half to Arthur J. Wilkinson, same place. Filed Aug. 4, 1888. Serial No. 281,968. (No model.)



Claim.—1. In a gas-producing apparatus, the combination of a furnace, a feeding-box and a delivery-box fixed, respectively, on opposite sides of said furnace, a multiple series of tubular retorts passing through the furnace and communicating at their opposite ends with the feeding and delivery boxes, and an oil-pipe, a steam-pipe, and an air-pipe each leading into the feeding-box, and frames fixed to the sides of the furnace and supporting said retorts adjacent to their ends and independently one of the other, substantially as set forth.

2. In a gas-producing apparatus, the combination of a furnace, a feeding-box and a delivery-box fixed, respectively, on opposite sides of said furnace, a multiple series of tubular retorts passing through the furnace and communicating at their opposite ends with the feeding and delivery boxes, an oil-pipe, a steam-pipe, and an air-pipe, each leading into the feeding-box, and frames fixed to the sides of the furnace and supporting said retorts with the capacity of independent insertion and removal upon the detachment of the feeding-box, substantially as set forth.

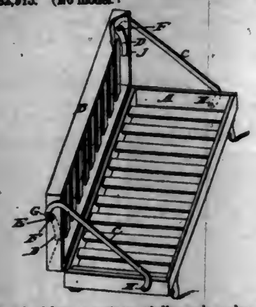
3. In a gas-producing apparatus, the combination of a furnace, a feeding-box and a delivery-box fixed, respectively, on opposite sides of said furnace, a multiple series of tubular retorts passing through the furnace and communicating at their opposite ends with the feed-

ing and delivery boxes, an oil-pipe, a steam-pipe, and an air-pipe, each leading into the feeding-box, and a mixer and distributer located within the feeding-box, substantially as set forth.

4. In a gas-producing apparatus, the combination of a furnace, a feeding-box and a delivery-box fixed, respectively, on opposite sides of the furnace, a multiple series of tubular retorts passing through the furnace and communicating at their opposite ends with the feeding and delivery boxes, an oil-pipe, a steam-pipe, and an air-pipe, each leading into the feeding-box, a discharge-pipe leading out of the upper portion of the delivery-box, and a deflecting-plate projecting downwardly in the delivery-box between the ends of the retorts and the discharge-pipe, substantially as set forth.

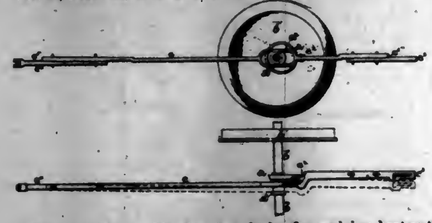
5. In a gas-producing apparatus, the combination of a furnace, two separate series of tubular retorts passing through the furnace, the retorts of each series communicating at their opposite ends with a feeding-box and a delivery-box, respectively, steam and air superheaters located in the furnace and communicating by pipes with the feeding-boxes of both series of retorts, and oil-pipes leading into said feeding-boxes, substantially as set forth.

408,284. BED-LOUNGE. CASEY NEWHOUSE, Los Angeles, Cal., assignor of one-half to Henry O. Bell, same place. Filed Nov. 16, 1885. Serial No. 182,913. (No model.)



Claim.—In a bed-lounge substantially such as described, the combination, as set forth, of the back of the lounge, the seat-frame of the lounge, the brace C, pivoted by one end to the seat-frame, the arm E, pivoted to the other end of the brace C, the bolt F, rigidly secured to the arm E and pivoted in the back of the lounge, and the leg D, rigidly secured to the bolt F.

408,285. CAR-BRAKE. FRANK D. PARADISE, Chicago, Ill. Filed Dec. 26, 1888. Serial No. 294,573. (No model.)



Claim.—1. The combination, in a device for applying brakes to railroad and other cars, of a cam-wheel with a bevel-face and a sleeve and collars fixed to the axle of the truck, all substantially as set forth.

2. The combination, in a device for applying brakes to railway and other cars, of a pivoted sliding bar with adjustable ends and yoke for securing same to the sleeve of the cam-wheel on the sleeve or axle, and a friction-roller on the sliding bar, substantially as described.

3. The combination, in a device for applying brakes to railway and other cars, of a pivoted hand-lever provided with a friction-thimble on its end, and the pivoted sliding lever provided with a slot, all substantially as set forth.

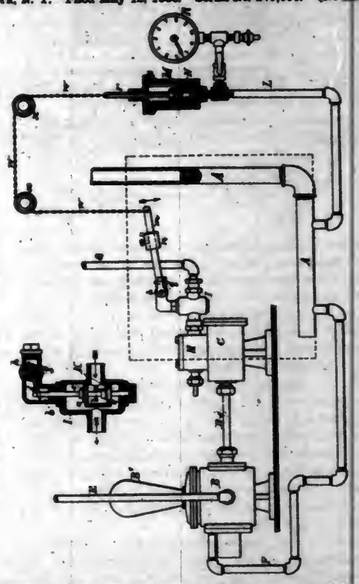
408,286. CALL-BELL. EUGENE H. PECK, Meriden, Conn., assignor to the Meriden Bronze Company, same place. Filed Apr. 16, 1888. Serial No. 270,849. (No model.)

Claim.—In a call-bell substantially such as described, the post B, constructed with a hammer opening through it and with laterally-projecting cheeks each side said opening, and the cheeks constructed with notches *a a*, opening laterally from the post and of a depth greater than the diameter of the trunnions on the hammer, the hammer constructed with a trunnion projecting each side its head and set into said notches, and the cheeks closed upon the trunnions, substantially as described.

408,286.



408,287. STEAM-HEATING APPARATUS. JOHN T. PEEK, New York, N. Y. Filed May 12, 1888. Serial No. 273,690. (No model.)

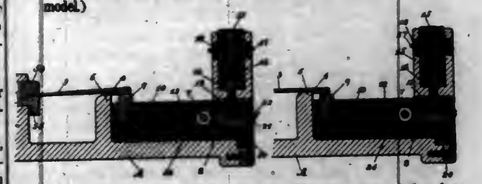


Claim.—1. The combination, with the steam-pump, steam-supply pipe, and valve for the same, of the reservoir for receiving the water of condensation, the separate cylinder M, and the pipe L, leading from the same to the reservoir, and a piston within the cylinder M, and a connection from the same to the lever of the steam-valve, substantially as and for the purposes set forth.

2. The combination, with the receptacle for the water of condensation, of a pump and connecting-pipe, a steam-engine, and a valve for controlling the supply of steam for the same, a separate cylinder, M, and a pipe, L, connecting from the cylinder to the reservoir, a cup-leather piston within the cylinder, and a chain connecting the piston-rod to the lever of the steam-valve, substantially as set forth.

3. The combination, with the reservoir or vessel for the water of condensation, of a steam-pump, a pipe connecting the reservoir to the pump, a steam-supply pipe and valve for the engine, the separate cylinder M, and the pipe L, connecting the cylinder to the reservoir, a piston within the cylinder, a piston-rod, a chain passing over the pulleys, and the lever for moving the steam-valve, substantially as set forth.

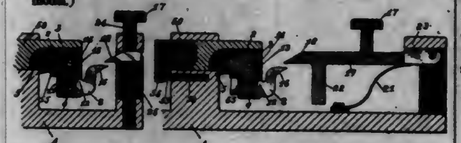
408,288. MECHANICAL MOVEMENT. FRANCIS H. RICHARDS, Springfield, Mass., assignor to Darius W. Dodson, Wilkes-Barré, Pa. Filed Dec. 18, 1886. Renewed May 2, 1888. Serial No. 272,532. (No model.)



Claim.—1. The combination, in a latch mechanism of the class described, of a latch having a hook engaging with a fixed notch, a key, and a hammer operated by said key and having an overthrow movement for disengaging the hook, all substantially as described.

2. The combination, with the latch and hook and a fixed notch for engaging said hook, of a divided key and an intermediate spring, the overthrow-hammer, and a detent resisting the first movement of said hammer, substantially as described.

408,289. MECHANICAL MOVEMENT. FRANCIS H. RICHARDS, Springfield, Mass., assignor to Darius W. Dodson, Wilkes-Barré, Pa. Filed Dec. 18, 1886. Renewed May 2, 1888. Serial No. 272,534. (No model.)



Claim.—1. The combination, in a latch mechanism of the class described, of a reciprocating latch, a compound latch-pawl carried thereon, the two parts of which pawl have a slack connection, a key, and a tripping device intermediate to said key and pawl, all substantially as specified.

2. The combination, with a reciprocating latch, of pawl 4, carried thereon and constructed to carry lever 8, the lever 8, carried on said pawl and adapted to have a movement limited by stops, and a tripping-point, substantially as described, for operating said lever, substantially as specified.

3. The combination of the latch, a compound latch-pawl carried thereon, the two parts of which pawl have a slack connection, a key, and a rotary tripping device actuated by said key and intermediate to said key and pawl, all substantially as specified.

408,290. ROLLING-MILL. JAMES ROBERTSON, Birmingham, County of Warwick, England. Filed Aug. 31, 1887. Serial No. 248,302. (No model.) Patented in England Nov. 21, 1885. No. 14,290.



Claim.—1. The combination of an elongated channel-housing with rolls traversing said housing, a guide for the rolls, and means for forcibly passing the material through between the rolls and thereby traversing the latter in the housing.

2. The combination of an elongated channel-housing with a pair of rolls traversing said housing, a guide for the two rolls, and means for applying power to the material to forcibly pass it through between the rolls and thereby traverse the latter in the housing.

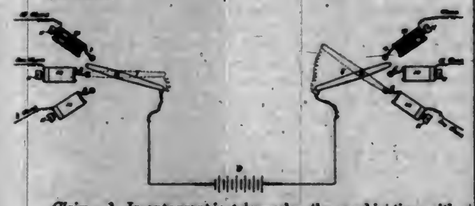
3. The herein-described machine for rolling metal and other objects, said machine comprising a pair of rolls between which the material is operated on and a guide for the rolls, in combination with elongated channel-housings in which bearing-surfaces of the rolls traverse and are revolved by frictional contact.

4. The combination of an elongated channel-housing with grooved rolls traversing said housing, a guide for the rolls, and means for applying power to the material to pass it through between the rolls and thereby traverse the latter in the housing.

5. The combination of an elongated channel-housing with grooved rolls traversing the housing, a guide for the rolls, and a mandrel to be passed with the metal through between the rolls, substantially as described.

6. The combination of an elongated channel-housing with two pairs of grooved rolls at right angles to each other and traversing said housing, a guide for the rolls, and means for applying power to the material to pass it through between the rolls and thereby traverse the latter in the housing.

408,291. EXCHANGE SYSTEM FOR TELEGRAPHS. JAMES H. ROBERTSON, Rutherford, N. J. Filed Nov. 23, 1886. Serial No. 219,561. (No model.)



Claim.—1. In autographic telegraphy, the combination, with a number of conductors of different resistances extending from the subscribers' instruments to and terminating in a central office, of switching means for electrically connecting any two of said conductors, and equalizing-resistances, whereby the combined resistance of any two conductors that may be connected with each other is made approximately the same, substantially as described.

2. The combination, with a number of conductors of varying resistance terminating in a central or exchange office, of a pile of carbon disks inserted in each conductor, each pile being provided with an adjusting-screw for adjusting the resistance thereof, whereby the combined resistance of any two conductors that may be connected with each other is made approximately the same, substantially as described.

408,292. COMBINED TELEPHONY AND TELEGRAPHY. JAMES H. ROBERTSON, Rutherford, N. J. Filed Jan. 6, 1887. Serial No. 223,537. (No model.)



Claim.—The combination, with an autographic telegraph, of a telephone the secondary circuit of which is arranged in inductive proximity to the receiver electro-magnets of the autographic telegraph, substantially as described.

408,293. TOOL FOR REMOVING SHELL-CROWNS FROM TEETH. CHARLES H. ROSENTHAL, Cincinnati, Ohio, assignor of one-third to Louis W. Wyler. Filed Mar. 13, 1889. Serial No. 303,063. (No model.)



Claim.—In a device for removing shell-crowns from teeth, the elongated internal screw-threaded nut N, adapted to receive a screw-thread shaft, S, in combination with the clamp C, loosely journaled on the nut N, having the flanges *c*, substantially as shown and described.

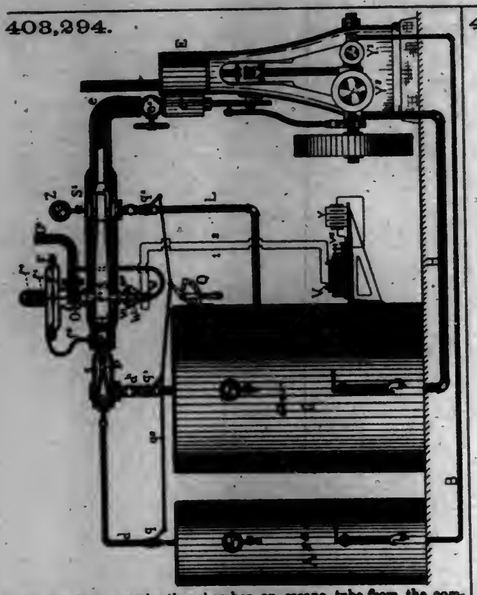
408,294. AIR AND GAS ENGINE. ALBERT SCHMID and J. CHARLES BECKFELD, Allegheny, Pa. Filed May 17, 1886. Serial No. 274,194. (No model.)

Claim.—1. The combination of a gas-reservoir, an air-reservoir, a mixing-chamber, a combustion-chamber into which the mingled gas and air is delivered and in which it is burned, and an automatic pressure-regulating device determining an unchangeable excess of pressure in the mixing-chamber above that in the combustion-chamber.

2. In an air and gas engine, a mixing-chamber, a combustion-chamber, and an outlet from the combustion-chamber to the atmosphere, in combination with a regulating device for determining the relative opening of the outlet from the combustion-chamber to the atmosphere.

3. The combination of an air-reservoir, a gas-reservoir, a mix-

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ing-chamber, a combustion-chamber, an escape-tube from the combustion-chamber, a movable body, connections from the mixing-chamber to one side of the movable body and connections from the combustion-chamber to the other side of the movable body, and a valve for the escape-tube whose position is controlled by the relative pressures upon the two sides of the movable body.

4. In an air and gas engine, a combustion-chamber and a pressure-regulator therefor, consisting of a movable body, a chamber including the same, a spring exerting a tension in one direction upon the movable body, an outlet from the combustion-chamber controlled by the position of the movable body, and openings upon opposite sides of the chamber from the combustion and the air and gas chambers, respectively.

5. The combination of an air-reservoir, a gas-reservoir, a mixing-chamber, tubes leading from the reservoirs to said mixing-chamber, a combustion-chamber, an escape-tube from the combustion-chamber, a diaphragm, connections from the mixing-chamber to one side of the diaphragm, connections from the combustion-chamber to the other side of the diaphragm, a valve for the escape-tube whose position is controlled by the relative pressures upon the two sides of the diaphragm, and a spring exerting its pressure upon one side of the diaphragm.

6. In an air and gas engine, a mixing-chamber receiving air and gas, a combustion-chamber, and an intervening perforated wall or burner, in combination with a regulating device for predetermining a fixed and constant excess of pressure on the mixing-chamber side.

7. In an air and gas engine, the combination, with the combustion-chamber and the tubes supplying air and gas to the same, of an independent air-supply tube terminating in the combustion-chamber, and a regulating device operating to permit a continuous flow of air to the combustion-chamber through the independent air-supply tube.

8. In an air and gas engine, the combination of the air and gas reservoirs, the mixing-chamber, the tubes leading thereto from the air and gas reservoirs, the cooling-chamber, and the tube leading from the air-reservoir to the cooling-chamber, with a regulating device operating to permit a continuous flow of air to the cooling-chamber and thence through the regulator-valve to the atmosphere.

9. In an air and gas engine, the combination of air and gas reservoirs, the mixing-chamber, the tubes leading thereto from the air and gas reservoirs, the cooling-chamber, the tube leading from the air-reservoir to the cooling-chamber, valves for controlling the openings of the respective tubes, and a lever for controlling the position of all of said valves simultaneously.

408,295. MACHINE FOR COATING OR IMPREGNATING BAGS WITH WAX. ADOLPH SMAL, Camden, N. J. Filed Mar. 20, 1888. Serial No. 267,736. (No model.)

Claim.—1. The combination of the two aprons, rolls for guiding and feeding the same, means for applying wax to the contiguous faces of the aprons, and a spreader for separating the aprons after they have been waxed, so that the bags can be inserted between them, substantially as specified.

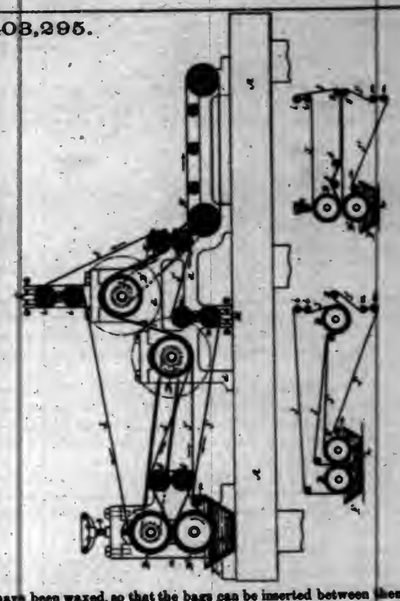
2. The combination of the two aprons, rolls for guiding and feeding the same, means for applying wax to the contiguous faces of the aprons, and one or more heated rolls for imparting pressure to the waxed aprons after the bags have been inserted between them.

3. The combination of the two aprons, rolls for guiding and feeding the same, means for applying wax to the contiguous faces of the aprons, a spreader for separating the aprons after they have been waxed, and one or more heated press-rolls for acting upon the aprons after the spreading of the same, all substantially as specified.

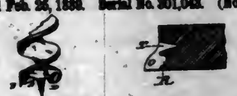
4. The combination of the two aprons, heated rolls around which said aprons pass, means for applying wax to the aprons as they pass around said heated rolls, rolls for holding the aprons in contact with each other after they have passed around the heated waxing-rolls, and means for imparting movement to the rolls, so as to cause the traversing of the aprons, substantially as specified.

5. The combination of the two aprons, guide-rolls therefor, heated waxing-rolls, one or more press-rolls, means for applying wax to one of the aprons as it passes around its heated waxing-roll and before it comes in contact with the apron passing around the other waxing-roll, a spreader for the aprons, located between the waxing-rolls and press-roll, and means for driving the rolls so as to traverse the aprons, substantially as specified.

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408,296. DIE FOR FORMING AUGER-HEADS. HENRY I. SHALER, Deep River, Conn., assignor of one-half to Simeon H. Jennings, same place. Filed Feb. 26, 1889. Serial No. 301,042. (No model.)



Claim.—The herein-described dies for forming the heads of augers, the said dies consisting of two parts, each part constructed with a longitudinal cylindrical groove of a diameter corresponding to the diameter of the auger to be headed, the said grooves constructed with diagonal ribs I, corresponding to one twist of the auger back of the head, and the one part, F, constructed with a similar diagonal rib, having its face of the shape desired for the inside of the gouge-lip, the corresponding rib, L, of the other part presenting a flat face, M, upon the opposite side of the groove to the projection K, and a cylindrical follower having its end constructed with two projections, O P, corresponding to the face of the auger-head, the one projection P having a cavity, R, formed therein corresponding to the exterior surface required for the gouge-lip, and the other projection, O, having a surface corresponding to the flat surface M of the other die.

408,297. GAS-METER. WILLIS Y. STANBROUGH, Brooklyn, N. Y. Filed Jan. 8, 1888. Serial No. 255,773. (No model.)

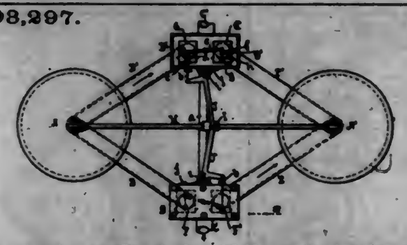
Claim.—1. A gas-meter comprising in its structure a pair of bellows, valves for controlling the flow of fluid, centrally-pivoted toggle-levers connected with said valves, a beam connected with the bellows and engaging with the toggle-levers, and springs acting on the toggle-levers for completing the movement of the latter to actuate the valves, substantially as described.

2. A gas-meter comprising in its structure a pair of bellows, receiving and discharge pipes, valves controlling the same, toggle-levers connected with said valves, a beam vibrated by the movement of the bellows, an arm on said beam engaging with the joint of the toggle-levers, and springs engaging with cam-surfaces on the ends of said toggle-levers for actuating the valves, substantially as described.

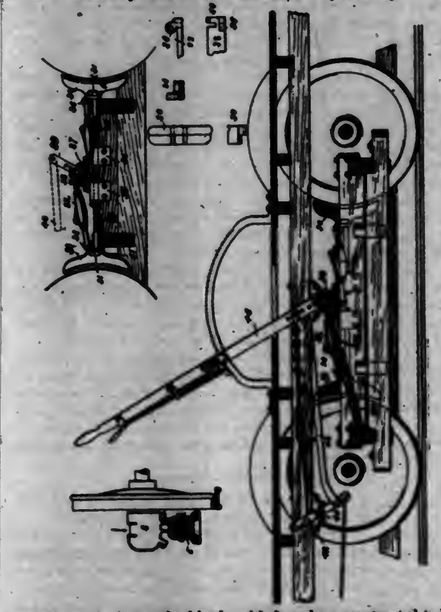
3. In a gas-meter, the combination of a pair of bellows, separate receiving and discharge chambers having pipe-connections with the bellows, as described, four valves controlling the said pipe-connections, a beam vibrated by the movement of the bellows, toggle-levers engaged by the beam, the two members of the toggle-levers being connected, respectively, with two of the valves, and a connection between each of said valves and its companion valve, substantially as described.

4. A gas-meter comprising in its structure a pair of bellows, separate receiving and discharge chambers, two receiving-pipes connected with the receiving-chamber and leading to the respective bellows, two discharge-pipes leading from the respective bellows and terminating in the discharge-chamber, and four valves—one for each pipe—located in the respective chambers, substantially as and for the purpose set forth.

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408,298. CAR-TRUCK BRAKE. JOHN SCHAMMEL, New York, N. Y. Filed July 20, 1888. Serial No. 280,609. (No model.)



Claim.—1. A car-wheel brake with four shoes constructed to be slipped sidewise on four tenons of four slide-bars, supported by four cross-rails of a truck, with four wheels on two axles, having four journals outside of the four wheels, with four axle-boxes having four pendent limbs, to which are connected the four corners of the car-truck, substantially as and for the purpose described.

2. A car-brake shoe having a lug at one side of the center of the back, provided with a polygonal mortise and adapted to fit a laterally-extended polygonal tenon at the end of the brake-shoe bar, and having a fastening device to retain the shoe in an invariable vertical position, substantially as described.

3. A wheel-brake shoe with a transverse mortise or eye in part of its thickness, and a recess in the remaining part of its thickness, the mortise and recess adapted to the tenon and shoulder of a brake-shoe bar to hold the shoe perpendicular in its movements to and from the car-wheel, substantially as and for the purpose described.

4. A wheel-brake-shoe bar with part of its head forming a shoulder against which the brake-shoe rests, and another part extended to form a tenon adapted to occupy a correspondingly-shaped mortise in the brake-shoe, whereby the combination of the shoulder with the tenon is adapted to maintain the brake-shoe in a vertical position when moved to and from the car-wheel, substantially as described.

5. A car-wheel brake having a slide shoe-bar, with a lug fitted to receive the end of an extensible bar connected with an arm of the truck rock-shaft, substantially as and for the purpose described.

6. A car-wheel-brake-shoe bar resting on a section of a cross-bar between the wheel-faces, and carrying a shoe at the head of the bar, with the tail of the bar free to slide through a keeper secured to the inner side of the truck-sill, substantially as and for the purpose described.

7. A car-wheel brake with its shoe-sliding bar in a guide-box on the truck cross-rail and the end of said bar in a guide secured to the truck-sill, substantially as and for the purpose described.

8. A car-wheel-brake rock-shaft with ends journaled to the sills and sub-sills sustained below the axles and pedestals by pendants integral with the axle-box shells, each rock-shaft having an arm with articulated rod adapted to transmit the energy of the operator to the brake mechanism, substantially as and for the purpose described.

9. A car-truck with its four corners carried by four integral pendants of four axle-boxes on four journals of two axles having on them four wheels, the sills and sub-sills of the truck sustaining the bearings of four journals of two rock-shafts, with their arms and connecting-rods adapted to communicate the energy of the operator to move the four brake-shoes to and from the four car-wheels of the truck, substantially as shown and described.

10. A car-wheel brake having at each side of the car-truck an arm on opposite sides of a rock-shaft, each arm having an articulated bar capable of expansion and contraction lengthwise between the arm and the lug of the sliding shoe-bar, which, with its shoe, is borne by a cross-rail of the truck, substantially as and for the purpose described.

11. A car-wheel-brake mechanism carried by a truck borne by its four corners beneath four pendants integral to four axle-box shells on four axle-journals of two car-axles with four wheels, the two truck rock-shafts having four arms connected by four articulated adjustable rods with four lugs on four sliding bars resting on four cross-bars of the truck and carrying four brake-shoes adapted to be moved horizontally to and from the wheels by the energy of the operator transmitted through a floor rock-shaft secured to the car-body beneath its floor, and an arm on each end of the floor rock-shaft having rod-connections with the rock-shaft at each side of the truck, substantially as and for the purpose described.

12. A wheel-brake rock-shaft arm holding a recoil-rod on which is a spring adapted to retract the brake, substantially as and for the purpose described.

13. A car-wheel-brake mechanism composed of brake-shoes, shoe-bars supporting the same, guides for said bars, articulated bars directly or indirectly connecting the shoes to the rock-shafts, recoil-rods connected to retract the brake, parallel rods connecting the floor and truck rock-shafts, and an operator's lever-handle connected with the rock-shaft by an operator's energy-transmitting rod, all arranged to operate substantially as and for the purpose described.

408,299. TRACK-BRAKE FOR CARS. JOHN SCHAMMEL, New York, N. Y. Filed July 20, 1888. Serial No. 280,610. (No model.)

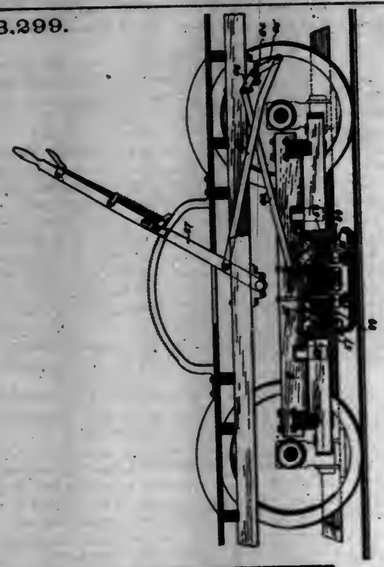
Claim.—1. The within-described car-track-brake mechanism, consisting of twin rock-shafts with their arms connected by an articulated bar, substantially as and for the purpose described.

2. The within-specified car-track-brake mechanism at each side of a car, with an articulated bar connecting twin rock-shafts, which shafts are connected by articulated bars with the track-brake shoe, substantially as and for the purpose described.

3. Car-track-brake mechanism with an arm of its rock-shaft and a stop on the housing arranged to be struck by the arm before a dead-center is reached by the connections between the shoe and rock-shaft, substantially as and for the purpose described.

4. Car-track-brake mechanism with articulated bars connecting the track-shoes and coupled twin rock-shafts, one of which shafts has an elongated arm, with an articulated rod for transmitting the energy of the brake-operator to the brake mechanism, substantially as and for the purpose described.

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408,300. CAR-TRACK-BRAKE HOUSING. JOHN STEPHENSON, New York, N. Y. Filed July 30, 1888. Serial No. 280,512. (No model.)

Claim.—1. A track-brake housing consisting of a rigid frame secured to the car truck or carriage at one side of the car and constructed with bearings for horizontal rock-shafts, and with vertical guides to support the working parts of the car track-brake, substantially as and for the purpose described.

2. A track-brake housing having vertical guides adapted to vertical members of the track-shoe to control the motion thereof, and with a vertical wall with sockets or bearings for the ends of horizontal rock-shafts, substantially as and for the purpose described.

3. A track-brake housing having at the under side of its head-plate one or more rock-shaft journal-bearings for horizontal rock-shafts, substantially as and for the purpose described.

4. A track-brake housing with bearings for twin rock-shafts having arms with articulated bars coupled to the shoe, substantially as and for the purpose described.

5. A track-brake housing having bearings for a rock-shaft, and having a stop adapted to limit the revolution of the rock-shaft, substantially as and for the purpose described.

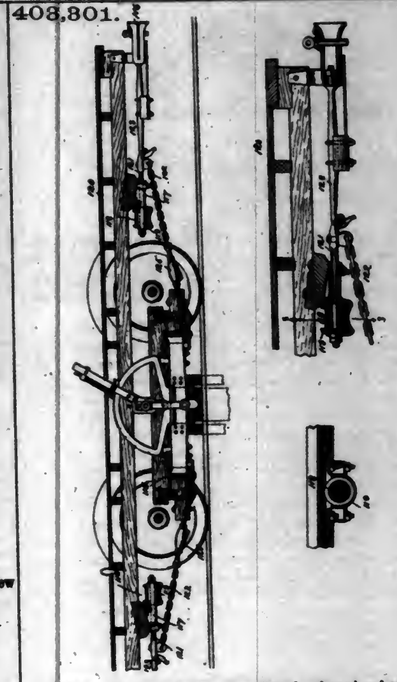
6. A track-brake housing supporting a rock-shaft united to the brake-shoe by an articulated bar, and an arm of the rock-shaft with an articulated bar connected with the hand-lever and adapted to convey the energy of the operator to the brake mechanism, substantially as and for the purpose described.

7. A track-brake housing supporting a track-shoe with two articulated bars connecting the shoe with twin rock-shafts united by an articulated bar, and each rock-shaft having its two journals in bearings in the housing-walls, one of the rock-shaft arms connected with a rod capable of conducting the energy of the brake-operator to the track-shoe, substantially as and for the purpose described.

8. A track-brake housing with shaft-bearings and guides holding in assemblage the mechanism of a brake and constructed for attachment to the car, substantially as and for the purpose described.

9. A track-brake housing having on its rear wall guides for vertical members of the track-shoe, substantially as and for the purpose described.

408,301. DRAW-GEAR FOR CABLE CARS. JOHN STEPHENSON, New York, N. Y. Filed July 30, 1888. Serial No. 280,513. (No model.)



Claim.—1. A car having at each end a draw-head connected by a stiff bar with the head of a slide-bar having its smaller end passing through a spring in a socket or housing secured to the bottom of the car-body, the slide-bar being connected by a chain with a grip-carrier capable of end motion affecting only the spring and draw-head behind the grip-carrier, substantially as described.

2. A cable car with a draw-head at each end of the car, each draw-head having a stiff bar-connection with a slide-bar extending through a spring in a socket or housing secured to the car-bottom, the slide-bar having a chain-connection with a grip-carrier, which grip-carrier, with the two chains, two springs, two slide-bars, two stiff connecting-bars, and two draw-heads, are all arranged to be moved when either of the draw-heads is pulled, substantially as described.

3. A cable car having a draw-head system with a chain-connection between the spring slide-bars and the grip-carrier adapted to let the cable control only the grip-carrier and the part of the system behind it, substantially as shown and described.

4. A cable car with a chain connecting the grip-carrier with the slide-bar, and a spring attached to the floor of the car-body at a place intervening between the draw-head and the grip-carrier, the chain being extensible and adapted to adjust the distance between the draw-head and the grip-carrier, substantially as shown and described.

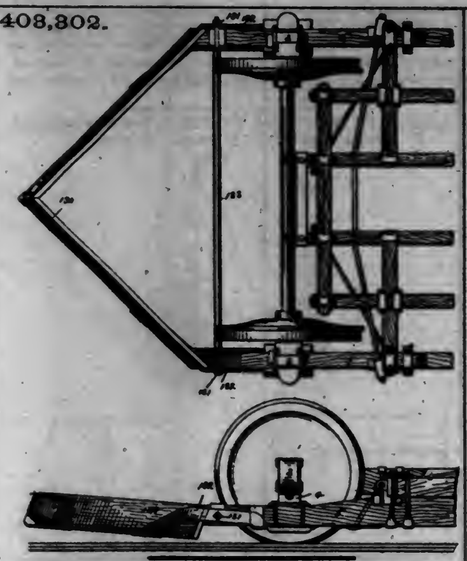
5. A car having a system of draw-heads containing the following elements, to wit: two draw-heads with two stiff bars connecting the draw-heads with two spring slide-bars having on their tails two springs with four spring-cups in two spring-sockets, and two chains connecting the two slide-bars with one grip-carrier, all connected and adapted to co-operate in performing functions of the car service, substantially as shown and described.

408,302. CAR-TRACK GUARD. JOHN STEPHENSON, New York, N. Y. Filed July 30, 1888. Serial No. 280,514. (No model.)

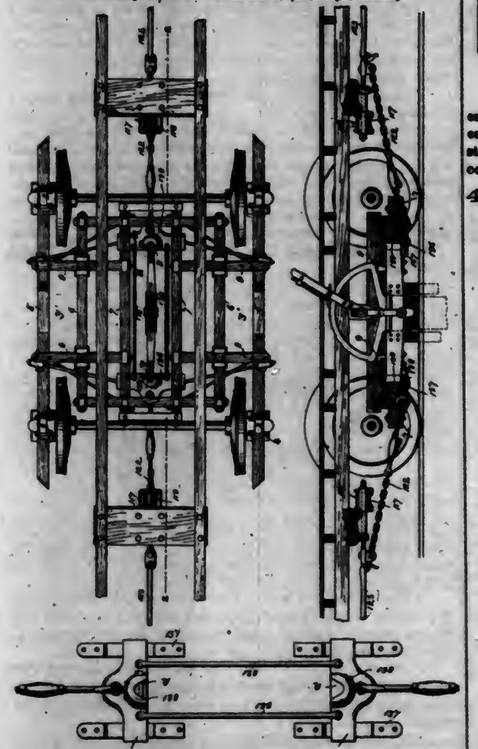
Claim.—1. A car having a truck-frame supported at the ends of the axles by pendants integral with the axle-box shells, and having the truck-sills extending endward before the car-wheels, with a car-track guard pivoted to the ends of the truck-sills and adapted to automatically push from the track accidental obstructions and overcome surmountable obstacles, substantially as described.

2. A car-track guard extending across the track in advance of the car-wheels and jointed to the sills, the wings of the guard provided with metal joint-plates extending beyond the wings and joint-bolts and continuing along the truck-sills, with the ends of the joint-plates bent under the sills and adapted to contact with the sills to counterpoise the track-guard and hold its guard at its desired elevation above the road-surface, substantially as shown and described.

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408,303. CABLE-GRIP CARRIER. JOHN STEPHENSON, New York, N. Y. Filed July 31, 1888. Serial No. 280,630. (No model.)



Claim.—1. A cable-grip carrier consisting of two end bars and two articulated rods, forming a four-sided frame capable of assuming variable angles as it is controlled by the grip, each end bar having at its external edge an eye or hook suitable to be connected with the draw-head spring, adapting the grip-carrier to be put in motion by the cable while the car is quiescent, substantially as and for the purpose described.

2. A cable-grip carrier with its two end bars having each a grip-lodge in form of a cove adapted to receive the upper corners of the grip, the walls of the lodge rising above the grip, and a key passing through both walls and crossing the grip and adapted to keep the same in place, substantially as and for the purpose described.

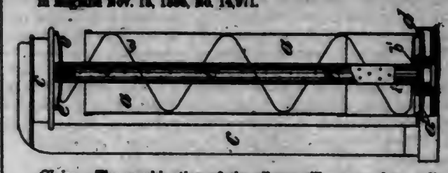
3. A cable-grip carrier with each end bar provided with a grip-lodge holding the corners of a cable-grip, kept in place by a key with its bit in a horizontal plane, passed through the lodge-walls above the grip, and the key-bit provided with a handle, so as by its gravity when in place, to assume a position preventing the escape of the key, substantially as and for the purpose described.

4. In a car-truck, the combination of a truck-frame rigidly supported from the axle-box shells by pendants thereof and provided with plates for the brake mechanism, and a cable-grip carrier adapted to said frame and movably supported therein below the axle-journals outside of the wheels, substantially as described.

5. A cable-grip carrier adapted to a truck-frame having its supports outside of the car-wheels, the carrier being in the central part of the truck and supported by keepers to permit endwise and lateral motion, substantially as described.

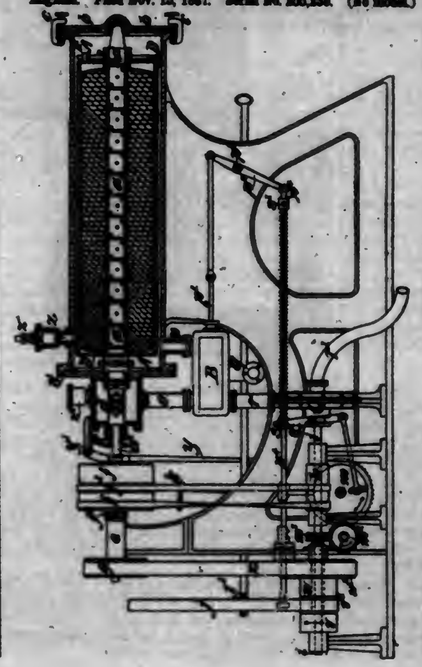
6. In a car-truck, a truck-frame rigidly supported from the axle-box shells by pendants and provided with a central wall, *x*, for the cable-grip mechanism, and also provided with two walls, *y y*, for brake mechanism, one on each side of the truck-frame, substantially as described.

408,304. SILVER-COILING CAN FOR CARDING-MACHINES. ELY SUTCLIFFE and GEORGE H. SUTCLIFFE, Halifax, County of York, England. Filed Nov. 15, 1887. Serial No. 255,292. (No model.) Patented in England Nov. 15, 1886, No. 14,971.



Claim.—The combination of the silver-coiling can of a carding-engine with a perforated tube removably mounted therein, a movable end plate upon the tube, and a spring supporting the plate, all substantially as described, whereby the silver from the engine will be coiled upon the perforated tube, as set forth.

408,305. APPARATUS FOR WASHING, BLEACHING, AND DYEING. ELY SUTCLIFFE and GEORGE H. SUTCLIFFE, Halifax, County of York, England. Filed Nov. 15, 1887. Serial No. 255,293. (No model.)



Claim.—1. An apparatus for washing, bleaching, or dyeing textile materials, said apparatus comprising a closed chamber and a hollow perforated shaft therein adapted to be surrounded by the materials to be treated, in combination with driving-pulleys, belts, and a belt-shifter for reversing, supply-pipes communicating with the interior of the shaft and the interior of the chamber to allow a flow of liquid through them, and a valve for reversing the direction of the flow at intervals, all substantially as set forth.

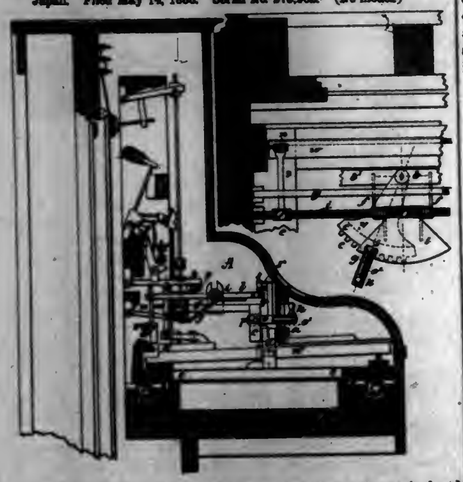
2. An apparatus for washing, bleaching, or dyeing textile materials, and comprising a closed chamber, a hollow perforated shaft therein provided with collars, and a perforated inclosing-tube to fit over the collars on the shaft, in combination with driving-pulleys, belts, and a belt-shifter for reversing, supply-pipes communicating with the shaft and chamber, and a valve for reversing the direction of the flow of liquid, all substantially as set forth.

3. An apparatus for washing, bleaching, or dyeing textile materials, and comprising a chamber and a hollow perforated shaft to carry the said materials in the form of a package around the shaft, in combination with driving-pulleys, belts, and belt-shifter for reversing, supply-pipes communicating with the shaft and chamber, a valve for reversing the flow of liquid, and an additional set of driving belts and pulleys to give more rapid revolution to the shaft when the liquid is to be discharged from the package, all substantially as specified.

4. An apparatus for washing, bleaching, or dyeing textile materials, and comprising a closed chamber and a hollow perforated shaft inclosed within the materials and contained in the said chamber, in combination with a four-way valve connecting with the interior of the shaft, the interior of the chamber, and with a liquor-pump and a discharge-pipe, mechanism to reverse the direction of revolution of the hollow shaft at intervals during the operation, and devices, substantially as described, for operating the valve at intervals to reverse the direction of the current of liquid, all substantially as set forth.

5. An apparatus for washing, bleaching, or dyeing textile materials, and comprising a closed chamber, a hollow perforated shaft provided with collars, and a perforated inclosing-tube to carry the said materials and to fit on the shaft, in combination with mechanism for forcing or drawing liquid through the materials, substantially as set forth.

408,306. TRANSPOSING KEY-BOARD. SHOMÉ TANAKA, Awaji, Japan. Filed May 14, 1888. Serial No. 273,902. (No model.)



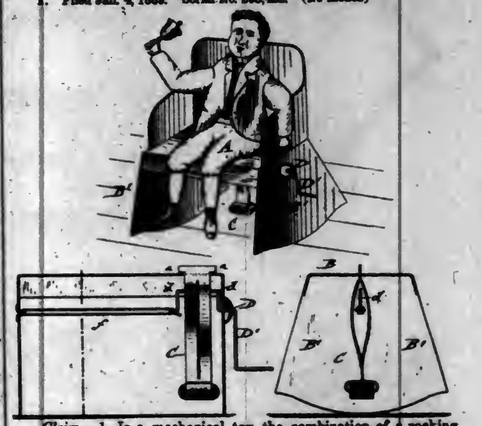
Claim.—1. In a transposing device for pianos, the rack *d* and the key-board frame carrying the same, combined with the lever *y*, having a toothed sector. *c*, engaging said rack, and with the wall *a*, having notches in which the lever can rest to retain the key-board, substantially as shown and described, and for the purpose set forth.

2. In a transposing device for pianos, the combination of the key-board that is movable sidewise and a lever, *y*, having a toothed sector, *c*, with the rack *d*, fastened to the key-board frame, and with means, substantially as described, for lifting the feet *m* from the felts *s* of the key-beams prior to the displacement of the key-board, as specified.

3. The combination of the movable key-board *c*, lever *y*, for actuating same, and means for retaining said lever, upright *g*, lever *l*, engaged thereby, shaft *i*, carrying said lever, arms *t* on said lever, cross-bar *g* on said arms, springs *f*, wings *h*, and feet *m*, substantially as shown and described, and for the purpose set forth.

4. In a transposing device for pianos, the key-board adapted to be shifted, in combination with the swinging bar *w*, to prevent the rising of the key-beams, and with means, substantially as described, for actuating said bar *w*, substantially as shown and described, and for the purpose set forth.

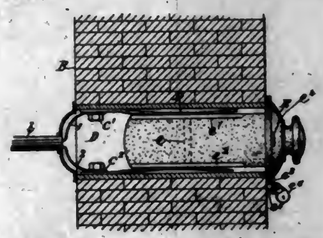
408,307. MECHANICAL TOY. RICHARD THOMMANN, Brooklyn, N. Y. Filed Jan. 4, 1889. Serial No. 295,422. (No model.)



Claim.—1. In a mechanical toy, the combination of a rocking frame, a pendulum provided with a slot or opening and pivoted to said platform in the plane of the center of gravity of the same, a crank-shaft journaled to said rocking frame and engaging by its crank the slot of the pendulum, and a torsion-spring attached at one end to the crank of the crank-shaft and at the opposite end to the rocking frame, substantially as set forth.

2. In a mechanical toy, the combination of a rocking-frame, a pendulum pivoted to said rocking frame at a point in the plane of the center of gravity of the same, said pendulum being made of two concave-convex sections, a crank-shaft journaled to said rocking frame and engaging by its crank the sections of said pendulum, and a torsion-spring connected to the crank and to a fixed point of the rocking frame, substantially as set forth.

408,308. SYSTEM OF ELECTRICAL DISTRIBUTION. EDWARD P. THOMPSON, Elizabeth, N. J. Filed Mar. 18, 1887. Serial No. 231,374. (No model.)



Claim.—1. The combination, with an electric converter, of a circuit-closing plug carried thereby, contact-plates upon said plug connected with the respective terminals of one of the coils of the converter, and a short-circuiting contact carried by said plug.

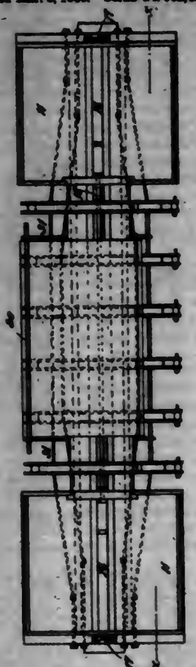
2. The combination, with an electric converter, of a circuit-closing plug carried thereby, contact-plates upon said plug connected with the respective terminals of one of the coils of the converter, and an electric-lamp socket carried by said converter.

3. An electric converter, means for forming electrical connections with the primary coil of the same, and an electric-light socket carried upon the converter in which the terminals of the secondary coil terminate.

4. The combination, with the wall of a building having an aperture and the terminals of an electric circuit placed within said aperture and insulated from each other, of a sliding plug between the terminals and a covering for the aperture closing the same, said wall having a second aperture beneath the first for receiving said plug when pushed from between said terminals.

5. The combination, with an electric converter, of an electric-light socket supported thereby and connected therewith and a regulator serving to modify the length of one of the coils of the converter.

408,309. RAILWAY-CAR. JAMES J. THEARDE, Hastings-upon-Hudson, N. Y. Filed Mar. 5, 1888. Serial No. 302,412. (No model.)



Claim.—1. A car provided with end platforms and with a central longitudinal girder which rests upon said platforms, substantially as described.

2. A car provided with end platforms, a central longitudinal girder, A-frames carried by the end platforms, and a horizontal shaft supported by said frames, substantially as described.

3. In a car, the combination, with the end platforms, of a central longitudinal girder, A-frames carried by the platforms, struts arranged in connection with the frames, a horizontal shaft carried by the frames, intermediate A-frames supported by the girder and supporting the shaft, knees mounted upon said shaft and formed with hooked lower ends and with laterally-extending sections, and skids carried by the knees, substantially as described.

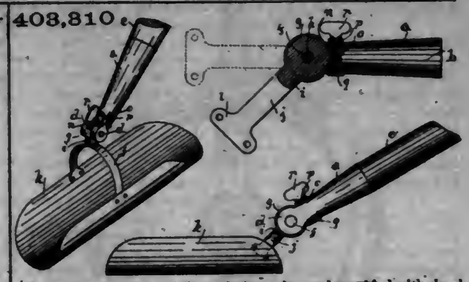
4. In a car, the combination, with the end platforms, of a longitudinal girder carried thereby, A-frames carried by the platforms, a horizontal shaft supported by the frames, intermediate A-frames supported by the girder and supporting the shaft, knees mounted upon the shaft, skids carried by the knees, and bars connected to the intermediate A-frames and arranged for connection with lateral extensions from the knees, substantially as described.

5. In a car, the combination, with the end platforms, of a longitudinal girder carried thereby, A-frames carried by the platforms, a horizontal shaft supported by the frames, intermediate A-frames supported by the girder and supporting the shaft, knees mounted upon the shaft, skids carried by the knees, bars connected to the intermediate A-frames and arranged for connection with lateral extensions from the knees, links 31, and a bar or rail, 30, substantially as described.

408,310. HANDLE ATTACHMENT FOR SHOVELS, &c. ROBERT TRIMBLE, Chattanooga, Tenn. Filed June 16, 1888. Serial No. 277,230. (No model.)

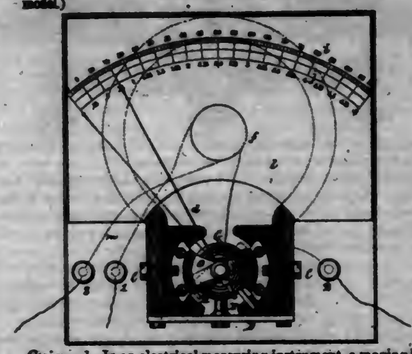
Claim.—The combination, with the ball or shank of a shovel or other implement provided with a circular projecting portion, *g*, having on its periphery worm-screw teeth, a handle-socket provided on one end with ear-pieces placed on each side of the said portion *g*, and a pin, *f*, passed through the said ear-pieces and the portion *g*, of an





adjusting-screw, *e*, passed through the socket and provided with shoulders *p* and *q* above and below the socket, and with the thread on its body portion between the shoulders engaging with the teeth on the said portion *g*, substantially as set forth.

408,311. ELECTRICAL MEASURING-INSTRUMENT. EDWARD WESTON, Newark, N. J. Filed Feb. 28, 1888. Serial No. 301,500. (No model.)



Claim.—1. In an electrical measuring-instrument, a moving index or pointer and two scales in proximity to and indicating the extent of movement of said pointer, the said scales being similarly and uniformly divided, and corresponding divisions on said scales being marked, and representing on one scale a unit or number of units and on the other scale a certain fraction of said unit or number of units, substantially as described.

2. In an electrical measuring-instrument, a moving index or pointer and two parallel scales in juxtaposition in proximity to said pointer and indicating the extent of movement of said pointer, the said scales being similarly and uniformly divided, and corresponding divisions on said scales being marked, and representing on one scale a unit or number of units and on the other scale a certain fraction of said unit or number of units, substantially as described.

3. A magnet, an electrical conductor in coil or loop form supported and vibrating in the field of force of said magnet, a resilient body interposed between said coil and an abutment, a pointer or index connected to and moved by said coil, two bodies of relatively different electrical resistances in branch circuit with said coil, and two scales disposed in proximity to said pointer for indicating the extent of movement thereof, the said scales being similarly and uniformly divided, and corresponding divisions on said scales being marked, and representing on one scale a unit or number of units and on the other scale a certain fraction of said unit or number of units, substantially as described.

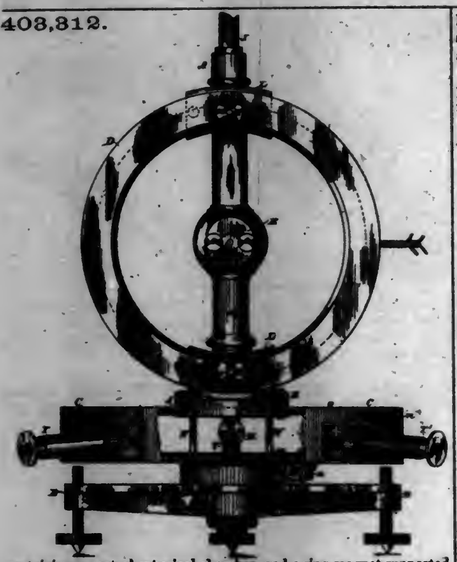
408,312. PORTABLE TANGENT GALVANOMETER. EDWARD WESTON, Newark, N. J. Filed May 10, 1888. Renewed Mar. 18, 1889. Serial No. 303,818. (No model.)

Claim.—1. In a galvanometer, in combination with a hollow standard and a vibrating magnet, a removable body of diamagnetic metal supported in said standard and having a central chamber wherein said magnet is supported, substantially as described.

2. In a galvanometer, a damping device for the magnet, consisting of two separable pieces of diamagnetic metal with a recess formed in one face of each piece, the said recesses, when said pieces are in contact, forming a chamber for the reception of the magnet, substantially as described.

3. In a galvanometer, in combination with a hollow standard, a removable body of diamagnetic metal supported in said standard and

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containing a central spherical chamber, and a ring-magnet supported within said chamber, substantially as described.

4. In a galvanometer, in combination with a hollow standard containing a cylindrical transverse opening, two cylindrical bodies of diamagnetic metal placed end to end in said opening and having a chamber formed in their meeting faces, and a magnet supported in said chamber, substantially as described.

5. In a galvanometer, in combination with a hollow standard containing a cylindrical transverse opening, two cylindrical bodies of diamagnetic metal placed end to end in said opening and having a chamber formed in their meeting faces, a means—such as screws—of connecting said cylindrical bodies together, and a magnet supported in said chamber, substantially as described.

6. In a galvanometer, in combination with a hollow standard, a body of diamagnetic metal supported in said standard and containing a chamber, a ring-magnet supported in said chamber, and a sight-aperture extending through said body in line with the center of said chamber, substantially as described.

7. In a galvanometer, in combination with a hollow standard, a body of diamagnetic metal supported in said standard and containing a central chamber, a ring-magnet supported in said chamber, and two sight-apertures extending through said body in line with the center of said chamber and relatively disposed at an angle, substantially as described.

8. In a galvanometer, a ring-magnet needle having a sight disk or ball supported at its center, substantially as described.

9. In a galvanometer, in combination with a hollow standard, a body of diamagnetic metal supported in said standard and containing a chamber, a sight-aperture extending through said body in line with the center of said chamber, and a ring-magnet having at its center a sight disk or ball and supported in said chamber, substantially as described.

10. In a galvanometer, in combination with a standard having a spherical chamber, a ring-magnet supported in said chamber, the outer contour of the cross-section of said magnet being concentric with the periphery of the said chamber, substantially as described.

11. In a galvanometer, in combination with a standard having a spherical chamber, a ring-magnet supported in said chamber, the outer contour of the cross-section of said magnet being concentric with the periphery of said chamber, and the inner contour of said cross-section being the arc of a circle struck from the middle point of the arc forming the outer contour and joining the ends of said arc, substantially as described.

12. In a galvanometer, a ring-magnet needle, a clamp embracing the body of said magnet, and a support for said magnet connected to said clamp, substantially as described.

13. In a galvanometer, a central hollow standard, a magnet suspended in said standard, a body rigidly connected to and suspended from said magnet, and a scale surrounding said body, substantially as described.

14. In a galvanometer, a base, a circular scale-chamber supported thereon and having a scale marked on its inner periphery, a central hollow standard supported on said chamber, a magnet suspended in said standard, and a mirror in said scale-chamber and connected to and vibrated by said magnet, substantially as described.

15. In a galvanometer, a central hollow standard, a magnet suspended in said standard, a mirror rigidly connected to and suspended from said magnet, and a circular scale-chamber surrounding said mirror, disposed below said standard, and having on its inner periphery a scale for showing the mirror deflections, substantially as described.

16. In a galvanometer, a central hollow standard, a magnet therein, a mirror vibrated by said magnet, and a scale-chamber secured to said standard and concentric therewith and extending around said mirror, substantially as described.

17. In a galvanometer, a central hollow standard, a magnet therein, coils secured in parallel planes on opposite sides of said standard, and a scale-chamber secured to and surrounding said standard and concentric therewith and arranged below said coils, substantially as described.

18. In a galvanometer, a hollow vertical standard, a circular horizontal scale-chamber concentric therewith, a magnet suspended in said standard, a mirror suspended from said magnet and entering said chamber, and a base, in combination with means for rotating said standard and chamber about a vertical axis, substantially as described.

19. In a galvanometer, a hollow standard, parallel coils supported on opposite sides thereof, a circular scale-chamber supporting said standard and concentric therewith, a magnet suspended in said standard, a mirror in said scale-chamber and rigidly connected to and suspended from said magnet, a base, and a central pivot on the lower side of said scale-chamber entering said base, in combination with means—such as a tangent-screw and segment—for rotating said standard and scale-chamber upon said pivot, substantially as described.

20. In a galvanometer, a central standard, coils supported thereon, a circular scale-chamber below said standard, and in said chamber a central support upon which said standard rests, substantially as described.

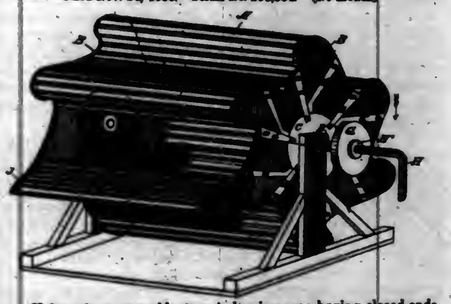
21. In a galvanometer, the combination of the central hollow standard, A, having brackets or supports L, coils secured upon said supports, scale-chamber C, having upper plate, S, and means for connecting standard A and plate S, substantially as described.

22. In a galvanometer, the combination of the central hollow standard, A, having brackets or supports L, coils secured upon said supports, scale-chamber C, plate S, and means for connecting said standard and said plate, and an independent support extending upward from the bottom of said chamber for said plate S, substantially as described.

23. In a galvanometer, the combination of the magnet F, rod c, having clamping-arms c, rod d, and suspension fiber I', substantially as described.

24. In a galvanometer, the combination of the magnet F, rod d', having clamping-arms d', rod d', rod K, and mirror H, substantially as described.

408,813. CARPET-CLEANER. WILLIAM P. WHITE, Cincinnati, Ohio. Filed Nov. 24, 1883. Serial No. 291,804. (No model.)

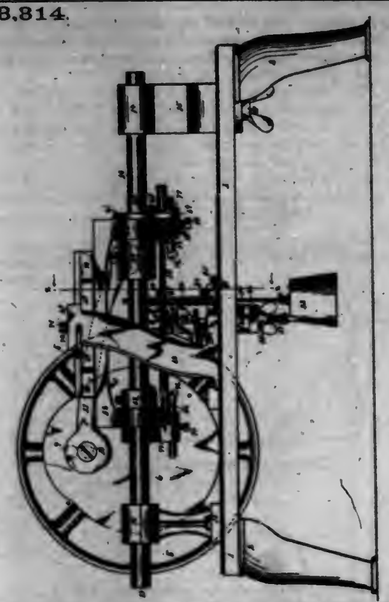


Claim.—1. A rotatable carpet-cleaning cage having closed ends, in combination with the hollow journals and flanges, the frame-work of the ends of said cage being connected to said flanges, and suitable blow-pipes for forcing air into the cage through said hollow journals and flanges, substantially as set forth.

2. In combination with a carpet-cleaning cage having closed ends, the hollow journal D and flange C, said journal having the collars E and E' and band-wheel G, and blow-pipe H, substantially as set forth.

408,814. MACHINE FOR FILING, SETTING, AND STRAIGHTENING SAWS. CHARLES E. WRIGHT, Waterbury, Conn. Filed Nov. 16, 1888. Serial No. 290,641. (No model.)

408,814.



Claim.—1. In a machine of the class described, disk 6, having a cam, 8, and clamping-plates whereby the saw is held, in combination with cam-plates 34 and 37, one of which is provided with an arm, 38, rock-lever 42, one arm of which engages the disk and cam, the other arm engaging arm 38, and means, as a cord and weight, whereby the upper arm is held in contact with the disk and cam.

2. The clamping-plates, one of which is provided with a threaded pin, 25, cam-plates 34 and 37 on said pin, one of said cam-plates having an arm, 38, and means—for example, the disk, cam, rock-lever 42, and a weight—whereby said arm is oscillated to alternately open and close the clamping-plates.

3. The clamping-plates and the cam-plates by which they are operated, one of said cam-plates having an arm, 38, in combination with the rock-lever connected to said arm, and disk 6, having a cam whereby the rock-lever is oscillated.

4. The disk having cam 8 and clamping-plates and cam-plates 34 and 37, one of which is provided with an arm, 38, in combination with a rock-lever, the upper arm of which engages the disk and cam, the lower arm of said lever being loosely connected to arm 38, and a pawl pivoted to the lower arm of said lever, which is adapted to engage the teeth of a saw held by the clamping-plates.

5. The combination, with the disk, cam, and rock-lever, of the clamping-plates, cam-plates 34 and 37, one of said plates having an arm which loosely engages the rock-lever, a pawl pivoted to the rock-lever and adapted to engage the teeth of a saw being operated upon, and a weight connected to arm 38, whereby when the swinging lever is held in contact with the disk the clamping-plates are held closed, and when said lever is engaged by the cam the clamping-plates are loosened and the pawl is moved forward to perform the feeding operation.

6. In a machine of the class described, disk 6, having a cam upon its face, and a rock-lever, in combination with clamping-plates for the saw to be operated upon, cam-plates 34 and 37, an arm, 38, rigidly connected to one of the cam-plates and loosely connected to the swinging lever, and a weight connected to arm 38, whereby the clamping-plates are held closed and the swinging lever held in engagement with the cam.

7. Disk 6, having cam 8, and a rock-lever adapted to engage said cam, in combination with stationary and movable clamping-plates, cam-plates 34 and 37, which act on the movable clamping-plate, and an arm, 38, rigidly connected to one of the cam-plates and loosely connected to the rock-lever, whereby when said lever is moved by the cam the clamping-plates are loosened, as and for the purpose set forth.

8. Disk 6, having a cam upon its face, and a rock-lever, the upper arm of which is adapted to engage said cam, in combination with a stationary cam-plate, 21, having a threaded stud, 25, a clamping-plate, 22, moving on said stud, a cam-plate, 34, fixed on said stud, and a clamping-plate, 37, adapted to turn thereon and having an arm, 38, which engages the lower arm of the rock-lever, and a weight connected to arm 38, which holds the cam-plates at their closed position until the rock-lever is lifted by the cam.

9. Disk 6, having a cam upon its face, and a rock-lever, the upper arm of which is adapted to engage said cam, in combination with a stationary clamping-plate, 21, having a threaded stud, 25, a clamping-plate, 22, moving on said stud, a cam-plate, 34, fixed on said stud, and a cam-plate, 37, adapted to turn thereon and having an arm, 38, which engages the lower arm of the rock-lever, and a pawl pivoted to the lower end of said lever and adapted to engage the teeth of the saw being operated upon, said pawl being moved forward to feed the saw at the instant the clamping-plates are loosened by the engagement of the cam with the rock-lever.

10. The combination, with the disk having a cam, 8, a rock-lever, and the stationary and movable clamping-plates, of cam-plates 34 and 37, one of which is provided with an arm engaging the rock-lever, and springs 22', whereby the movable clamping-plate is held in position at the instant it is loosened by the engagement of the cam with the rock-lever.

11. The combination, with the disk having a cam upon its face, the clamping-plates, and cam-plates 34 and 37, one of which is provided with an arm, 38, of a rock-lever, 42, which is engaged by arm 38 and is provided with a contact portion, 45, which engages the cam, and a set-screw, 46, which bears against the contact portion, as and for the purpose set forth.

12. The combination, with the disk having a cam upon its face, the clamping-plates, and cam-plates 34 and 37, one of which is provided with an arm, 38, of a rock-lever, 42, which is engaged by arm 38 and engages the cam, a pawl pivoted to said lever, which is adapted to engage the teeth of the saw that is being operated upon, and a set-screw, 47, which engages lever 42 and determines its forward movement, thereby controlling the feed of the saw.

13. The combination, with the clamping-plates having grooves 30, one being provided with lugs 26, of plate 19 between the clamping-plates to support the saw in use, and adjusting-screws 27, which pass through said lugs and engage plate 19, whereby said plate may be raised or lowered for different widths of saws.

14. The stationary clamping-plate having lugs 26, in combination with the movable clamping-plate resting on said lugs and engaging the stud, cam-plates 34 and 37, whereby the clamping-plates are closed together, and an adjustable plate, 19, between the clamping-plates, upon which the saw rests while being operated upon.

15. The stationary cam-plate having lug 26 and threaded stud 25, in combination with the movable clamping-plate resting on said lugs and engaging the stud, cam-plates 34 and 37, whereby the clamping-plates are closed together, plate 19, upon which the saw rests and which is provided with hubs 33, and adjusting-screws 27, threaded to engage the lugs and whose upper ends engage hubs 33.

16. The combination, with the clamping-plates, the cam-plates, and arm 38, of the feeding-pawl, rock-lever 42, and means, as a disk and cam, whereby said lever is oscillated to open and close the clamping-plates, thereby straightening a saw.

17. The clamping-plates, one of which is provided with lugs 26 and the other with flanges 29, in combination with a plate, 19, which supports the saw, adjusting-screws for raising or lowering the blade, and means, substantially as described and shown, for closing the clamping-plates upon the saw.

18. The combination, with the clamping-plates and cam-plates 34 and 37, whereby they are operated, of supporting-plate 19, which lies between the clamping-plates and is provided with blocks at its ends, and adjusting-screws 27, whereby said plate is raised or lowered.

19. The combination, with the slide-rods and the oscillating file-frame having a stump, 73, of guide-bar 70, switch-cam 68, and spring 74, which holds the saw-frame in operative position, except when the stump is engaged by the switch-cam.

20. The slide-rods and an oscillating file-frame having a stump, 73, in combination with bracket 65, carrying guide-bar 70, switch-cam 68, spring 69, acting to hold the switch-cam in contact with the guide-bar, and spring 74, acting to hold the frame in operative position.

21. The slide-rods, frame 54, carrying the file and having stump 73, and spring 74, acting as described, in combination with the guide-bar, the switch-cam, and spring 69, which holds the point of the switch-cam against the guide-bar, so that in the forward movement the stump rests against the guide-bar, passing within the switch-cam, thereby holding the file in operative position, and during the return movement the stump rides over the switch-cam, thereby oscillating the frame and throwing the file out of operative position.

22. The combination, with the slide-rods, the file, and the oscillating frame by which it is carried, said frame having a stump, 73, of adjustable bracket 65, a guide-bar, and a switch-cam carried by said bracket, and springs acting to hold the point of the switch-cam in contact with the guide-bar and to hold the file-frame in the operative position, substantially as described.

23. In a machine of the class described, the combination, with the guide-rods, of adjustable guides secured thereto and setting-punches carried by the guides.

24. In a machine of the class described, the slide-rods, frame 54, having stump 73, and the file-bracket 65, the switch-cam and the guide-bar on said bracket, and a block, 75, adapted to engage the top of the bracket and the switch-cam, so that stump 73, in both backward and forward movements, will pass along the outer face of the block and the switch-cam, but cannot pass within the switch-cam, thereby holding the frame in such position that the file is retained out of operative position.

25. In a machine of the class described, the slide-rods, frame 54, having stump 73, the file, the guide-bar and the switch-cam which are engaged by stump 73, and a block, 75, placed over the guide-bar and switch-cam to be engaged by stump 73 when it is desired to hold the file out of operative position.

26. The combination, with the guide-rods, crank-rod, and disk 6, having cams 8, of feeding mechanism, substantially as described, actuated by said cams, and setting-punches carried by the guide-rods, which set a tooth each time the mechanism is actuated.

27. The combination, with the slide-rods, frame 54, having stump 73, the guide-bar, and the switch-cam, of the clamping-plates, the feeding mechanism, and disk 6, having a crank-rod connected to the slide-rods, and a cam whereby the clamping-plates and feeding mechanism are operated.

28. The combination, with the slide-rods, file, and frame 54, having stump 73, of the switch-cam, the guide-bar, the clamping and feeding mechanism, and disk 6, having a crank-rod pivoted to the slide-rods, and a cam by which the feeding and the clamping mechanism is operated.

29. The combination, with the slide-rods, the setting-punches, and the file-frame having stump 73, of the guide-bar and the switch-cam engaged by said stump, as described, disk 6, having inner and outer holes 9, and a crank-rod connected to the slide-rods and adapted to be pivoted in either of said holes, so that the filing operation may be performed either with or without the setting operation.

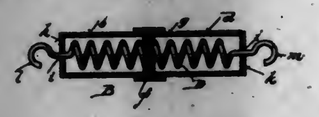
30. In a machine of the class described, the slide-rods, setting-punches, file-frame having stump 73, the guide-bar and switch-cam engaged by said stump, and a block, 75, adapted to engage the switch-cam and guide-bar and to be engaged by stump 73 as it passes off from the switch-cam, so that the file-frame is held out of operative position when it is desired to set without filing.

31. The combination, with the slide-rods, the file-frame having stump 73, and the switch-cam and guide-bar engaged by said stump to throw the file into and out of operative position, of the clamping-plates, feeding-pawl, disk 6, having a crank-rod connected to the slide-rods, and a cam, 8, and intermediate mechanism, substantially as described and shown, whereby the clamping-jaws are loosened and the feeding operation performed at the instant that the file is out of operative position.

32. The combination, with the slide-rods, the setting-punches, and cam-plates 34 and 37, one of which is provided with arm 38, of disk 6, having a crank-rod connected to the slide-rods, and a cam, 8, swinging lever 42, adapted to engage said cam and engaged by arm 38, a feeding-pawl pivoted to said lever, and a set-screw, 47, which engages the lever to limit the throw of the feed-pawl, as set forth.

33. The combination, with the slide-rods, setting-punches, file, and frame 54, having stump 73, of the guide-bar and the switch-cam engaged by said stump, disk 6, having a crank-rod connected to the slide-rods, and a cam, 8, and feeding and clamping mechanism, substantially as described, operated by said cam.

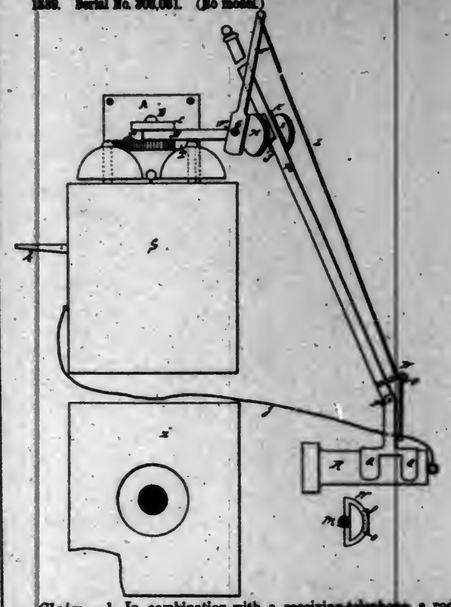
408,315. HAMMOCK. HORACE M. YORK, Keansburk, Ma. Filed Dec. 26, 1888. Serial No. 294,622. (No model.)



Claim.—1. The improved hammock-hook herein described, consisting of a cylinder formed in separable sections and a coiled spring disposed in said cylinder, the ends of said spring projecting through the heads thereof and being bent to form hooks proper, substantially as set forth and described.

2. In a hammock-hook, the combination of a cylindrical body comprising separable sections having central openings in their heads, a coiled spring disposed in said cylinder, and hooks proper secured to the ends of said spring, and said ends projecting through and fitted to work in said opening, whereby said spring may act to impart vertical motion to the hammock when in use, substantially as described.

408,316. DEVICE FOR HOLDING TELEPHONES. SAMUEL J. ADAMS, Detroit, Mich., assignor of three-fourths to Monroe Rosenfield, Jacob Brown, and Arthur Brown, all of same place. Filed Mar. 12, 1888. Serial No. 266,661. (No model.)



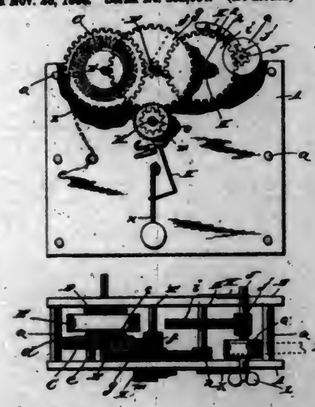
Claim.—1. In combination with a receiving-telephone, a rod having on one end a clip to engage with the telephone, a pair of movable jaws adapted to engage with said rod, a swinging arm carrying said jaws, an arc and a locking-dog at the pivotal end of the swinging arm, and a lever connected with said arm and adapted to simultaneously lock said arm and jaws, substantially as shown and described.

2. In a telephone-supporting device, the combination, with the supporting-plate A, of the pivoted arm D, toothed arc E, jaws H and I, rod M, lever F, and cord L, substantially as shown and described.

3. In combination with the supporting-plate A, carrying the toothed arc E, the pivoted arm D, having thereon the fixed jaw H, the movable bar U, carried by the arm D, having on one end the jaw I and on the other end a dog, T, the movable clamps J and K, carried by said jaws H and I, and the lever F, provided with the opposite inclined planes W and Z and fulcrumed on a bolt, G, connecting said jaws, substantially as shown and described.

4. In a telephone-supporting device, the combination of the fixed jaw H and movable jaw I with the lever F, having thereon a cam adapted to draw the movable jaw toward the fixed jaw, the cord L, connected with said lever, and the rod M, carrying the cleat O, substantially as shown and described.

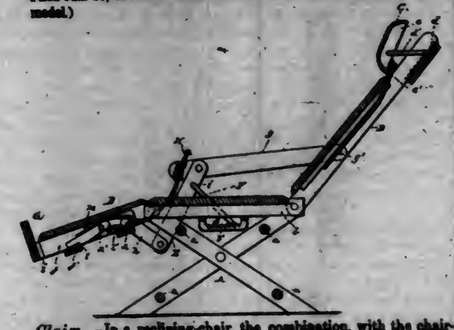
408,317. MOTOR. JOHN H. ABEL, Jackson, Greene County, Iowa. Filed Nov. 23, 1888. Serial No. 292,067. (No model.)



Claim.—1. In a motor, the combination of the curved bars having openings, the adjustable shaft J, having threaded openings in its ends, and the thumb-screws, substantially as and for the purpose described.

2. The herein described and shown motor, composed of the sides A and B, the shaft B', having the gear-wheel C, the drum D, and the ratchet-and-pawl connection between the drum and the gear-wheel C, the shaft H, having the pinion h and the gear-wheel i, the shaft J, having a pinion and threaded openings in the shaft ends, the curved bars K, having a series of openings, the thumb-screws L, and the escapement, combined, arranged, and operating substantially as and for the purpose described.

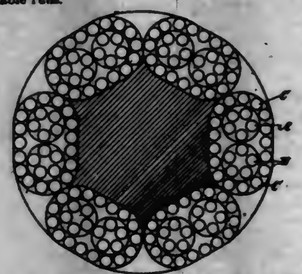
408,318. RECLINING-CHAIR. ROLLIN H. ARNOLD, Rensselaer, N. Y. Filed Jan. 26, 1888. Renewed Dec. 24, 1888. Serial No. 294,517. (No model.)



Claim.—In a reclining-chair, the combination, with the chair-seat, the foot-rest pivoted thereto, having the side rails, f, and the braces f', and the extension portion, of the short arms k', pivoted to the inner face of the bars f' and having the notched free end, the stop-bar k, the springs l', secured thereto and bearing upon the inner arms, k', and the cords or chains secured at one end to the upper side of the arms k', substantially as specified.

408,319. WIRE CABLE. TELFORD C. BATEMAN, West Kensington, County of Middlesex, and ARTHUR LAYCE, South Shields, County of Durham, England. Filed Mar. 6, 1888. Serial No. 266,317. (Specimens.) Patented in England Aug. 25, 1888, No. 12,285.

Brief.—The object of the invention is to provide a cable of such construction that a plurality of wires shall at all times bear uniformly throughout the length of the cable upon the wheel or roller over which the cable runs.

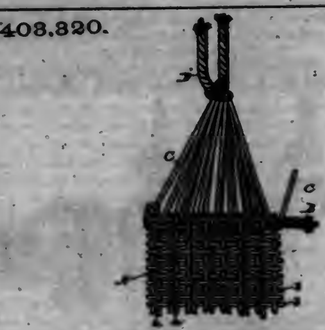


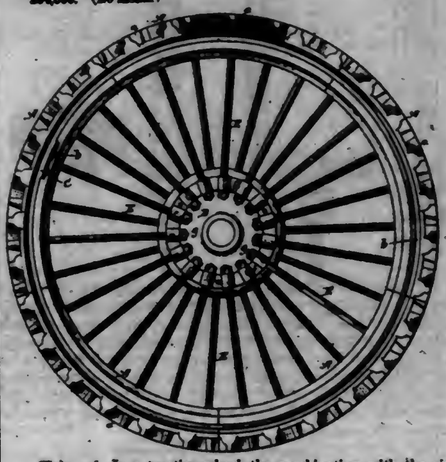
Claim.—1. A wire cable composed of a series of spirally-wound substantially-flattened strands, each strand comprising a core and spiral wires thereupon, substantially as described.

2. A wire cable composed of a central core and a series of spirally-wound substantially-flattened strands thereupon, each strand comprising a wire core and spiral wires thereupon, substantially as described.

3. A wire cable composed of a central core and a series of spirally-wound substantially-flattened strands thereupon, each strand comprising independent cores A B placed side by side, and spiral wires C thereupon, substantially as described.

408,320. TRACTION-WHEEL. EDGAR M. BIRDSALL, Buffalo, N. Y., assignor to Mary Birdsall, same place. Filed Dec. 26, 1883. Serial No. 294,560. (No model.)





Claim.—1. In a traction-wheel, the combination, with the rim composed of segmental sections and provided in its side with an annular groove or depression, of a clamping-band arranged in said groove, whereby the rim-sections are secured together, substantially as set forth.

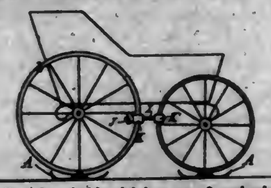
2. In a traction-wheel, the combination, with the rim composed of segmental sections, each of which is provided in its side with a concentric groove or depression, and an endless clamping-band secured in said grooves by being shrunk into the same, substantially as set forth.

3. The combination, with the rim and spokes of a traction-wheel, of a hub, D, provided with perforated radial lugs f, which receive the inner ends of the spokes, screw-nuts g, applied to the inner ends of the spokes and bearing against said lugs, and a locking-plate, H, provided with an annular row of recesses, i, fitting over the outer portions of said nuts, and projections j, formed around the outer edge of said locking-plate and fitting between the lugs f of the hub, substantially as set forth.

408,320. HAMMOCK. AUGUSTUS BEALS, North Weymouth, Mass. Filed May 3, 1888. Serial No. 272,626. (No model.)

Claim.—In a hammock, the combination of a woven fabric, a stay cord or rod hemmed in place by the entire warp-threads of the fabric, and a supporting-cord looped into the fabric and around the stay rod or cord, its loops passing through the fabric, so as to form bights around the rod or cord, and extending outwardly to a suspension-rope, substantially as described.

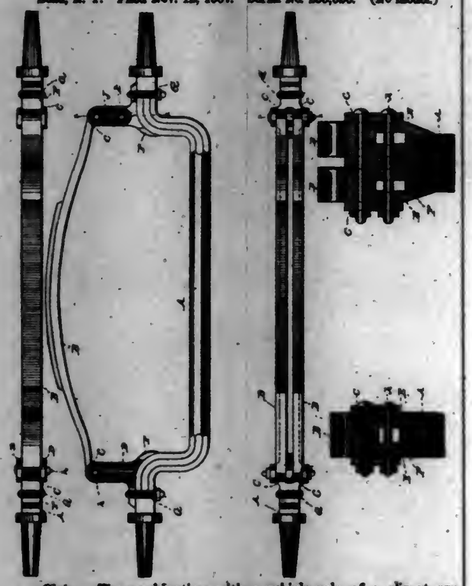
408,322. RUNNER FOR WHEELED VEHICLES. JOHN BARKART, Detroit, Mich., assignor of one-half to Simon C. Kerver, same place. Filed Nov. 21, 1888. Serial No. 291,466. (No model.)



Claim.—In a detachable sleigh-runner for wheeled vehicles, the combination of the runners A, provided with the raised bearing C, the stationary jaw D, the movable jaw F, the threaded bolt G and nut H, the wheel-clamping device consisting of the threaded tie-rod

I, the clamping-hooks K and K', and the thumb-screw J, the parts being constructed and arranged to operate substantially as described.

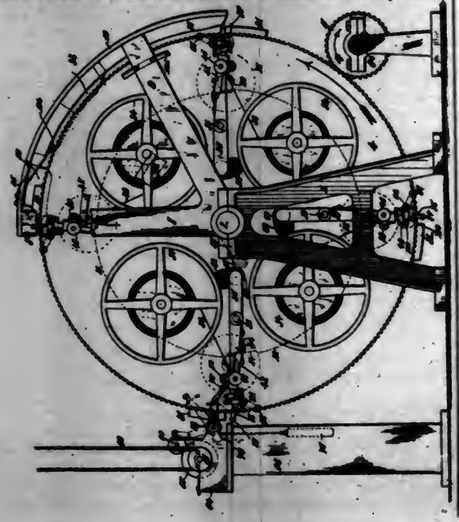
408,323. VEHICLE-SPRING. CHARLES M. RUDENBURGH, Riverhead, N. Y. Filed Nov. 12, 1887. Serial No. 255,028. (No model.)



Claim.—The combination, with a vehicle-axle, of a clip at one end having short lugs perforated transversely to the axle and a clip at the opposite end having long lugs similarly perforated, of an arched vehicle-spring extending lengthwise above said axle and provided with eyes at its ends, a pivot-bolt connecting one end of the spring to the long lugs at one end of the axle, and an upwardly-projecting link connecting the other end of the spring to the opposite short lugs, whereby said spring has its lateral play in the same plane of the axle, substantially as specified.

408,324. MACHINE FOR MAKING CIGARETTE MOUTH-PIECES. SAMUEL BROWN, Seaford Hundred, Del., assignor to Charles G. Emery, Brooklyn, N. Y. Filed Oct. 23, 1888. Serial No. 288,894. (No model.)

Claim.—1. The combination of a rotary mandrel, a reel for supplying paper to said mandrel, a presser-foot for holding the paper in contact with the mandrel as it is coiled thereon, and a rotary carrier

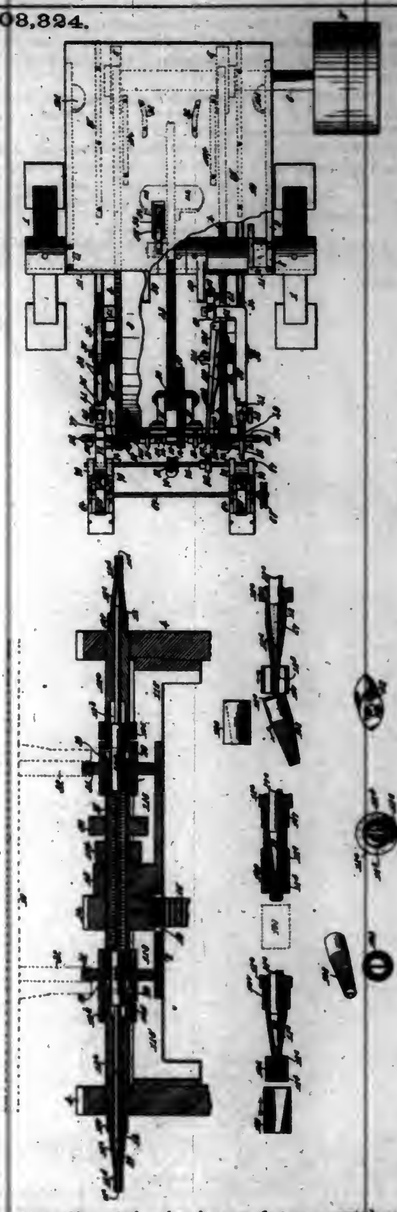


on which said mandrel, reel, and presser-foot are mounted, substantially as described.

2. The combination of a rotary hollow and slotted mandrel, an expander located in said mandrel, means for forcing the expander outward in the mandrel, means, substantially as described, for retracting said expander, a reel for supplying paper to the mandrel, a presser-foot, and a rotary carrier for said mandrel, reel, and presser-foot, substantially as described.

3. The combination of a rotary partly-conical and partly-slotted hollow mandrel having a hollow and slotted shaft, a conically-pointed expander located in said mandrel, a spring for causing the expander to dilate the mandrel, a friction-gear mounted on the mandrel-shaft and connected with the expander, and a cam for engaging said gear to retract the expander and collapse the mandrel, substantially as described.

408,324.



4. The combination of a rotary slotted mandrel, a reel for supplying paper to said mandrel, a rotary carrier on which said mandrel and reel are mounted, a lever pivoted to said rotary carrier and provided with mechanism for engaging the paper and feeding it to the mandrel, a presser-foot for holding the paper in contact with the mandrel as it is being coiled thereon, a cutter carried by the pivoted lever, and means, substantially as described, for tripping said lever to cause the cutter to sever the paper, substantially as described.

5. The combination of a rotary slotted mandrel, a reel for supplying paper to the mandrel, a presser-foot for holding the paper in contact with the mandrel while it is coiled thereon, a rotary carrier for said mandrel, reel, and presser-foot, a tappet on the mandrel-shaft, and a cam to act with said tappet to cause the mandrel to present its slot in position to receive the paper, substantially as described.

6. The combination of a rotary mandrel, mechanism for feeding a paper strip to said mandrel, a cutter for severing the paper strip after it has been partly coiled on the mandrel, means, substantially as described, for applying paste to the uncoiled end of the paper strip on the mandrel, and a rotary carrier, substantially as described.

7. The combination of a rotary partly-conical and partly-slotted mandrel, mechanism for feeding a paper strip into engagement with the slot in said mandrel, a cutter for severing the paper strip after it has been partly coiled on the rotating mandrel, means, substantially as described, for applying paste to the uncoiled end of the paper strip on the mandrel, a die for forming the coiled and pasted strip into a cone on the mandrel, and an ejector for removing the paper cone from the mandrel, substantially as described.

8. The combination of a rotary partly-conical and partly-slotted mandrel, an expander located in said mandrel, mechanism for feeding a paper strip to said mandrel, a presser-foot, a cutter, means, substantially as described, for applying paste to the uncoiled cut end of the paper strip on the mandrel, a die for forming the coiled and pasted paper strip into a cone, an ejector for removing the paper cone from the mandrel, and a rotary carrier for the mandrel and its accompanying cone-forming mechanism, substantially as described.

9. The combination of an intermittingly-rotary mandrel, a presser-foot, a reel, a pivoted lever provided with mechanism for feeding a paper strip from said reel to the mandrel, a spring for holding said lever in place, a cutter attached to said lever, means, substantially as described, for tripping the lever to cause the cutter to sever the paper coiled on the mandrel, mechanism for applying paste to the uncoiled portion of the paper strip on the mandrel, a die for forming the coiled and pasted paper strip into a cone on the mandrel, and an ejector for removing said paper cone, substantially as described.

10. The combination of the rotary carrier 3, the mandrels 12, the reels 34, the pivoted levers 35, each of said levers having guideway 37, yielding finger 42, feed-wheels 39 and 41, and friction-wheel 46, and the cam 47, substantially as described.

11. The combination of the rotary carrier 3, the intermittingly-rotary mandrels 12, having slots 12', the tappets 52 on the mandrel-shafts, the cams 53, the reels 34, and means, substantially as described, for feeding paper strips from the reels to the mandrels, substantially as described.

12. The combination of the rotary carrier 3, the slotted mandrels 12, the expanders 27, the spring 28, the friction-wheels 31, mounted on the mandrel-shafts and connected with the expanders, and the hood 10, having cams 32 to engage said friction-gears, substantially as described.

13. The combination of the mandrel 12, the lug 48, having star-wheel 49, the lever 35, having flange 50 to engage the lug 48, a spring, 51, to hold said lever in place, paper-feeding mechanism, and a cutter carried by said lever to cut the paper strip, substantially as described.

14. The combination of the rotary carrier 3, the mandrel 12, the lug 48, the reel 34, the pivoted lever 35, having a flange, 50, to engage said lug, the spring 51, a paper-feeding mechanism, and a cutter, 57, carried by the lever 35, the roller 60 on an arm of said lever, and the roller 58 to engage the roller 60 and trip the lever, substantially as described.

15. The combination of the rotary carrier 3, the intermittingly-rotary mandrel 12, the pinion 14, gear 15, friction-wheel 20, and stationary friction-disk 23, having arc-cams 21 and 22 and recesses 24 and 25, substantially as described.

16. The combination of the rotary carrier 3, the intermittingly-rotary mandrels 12, paper feeding and cutting mechanisms, substantially as described, a paste-fountain, 64, fountain-roller 65, auxiliary roller 66, and the flexible paster-arm 72, carrying a paste-roller, 77, substantially as described.

17. The combination of the shaft 71, having a pulley, 80, provided with cord and weight, the friction-disk 82, mounted on said shaft, the rotary carrier 3, having wipers 81 to engage said friction-disk, and the flexible paster-arm 72, carrying a paste-roller, 77, substantially as described.

18. The combination of the rotary carrier 3, the mandrel 12, the boss 83, having an angle-arm, 84, the presser-foot 85, pivoted on said arm and provided with a spring, 86, and friction-roller 87, and the hood 10, having cam 88, substantially as described.

19. The combination of the rotary carrier 3, a mandrel, 12, the bracket 89, the shaft 91, having arms 95 and 99, the pin 96, the spring 97, the roller 98, mounted on the arm 95, the cam 104, and the die 100, mounted on the arm 99, substantially as described.

20. The combination of the rotary carrier 3, the bracket 89, the shaft 91, having roller 92 and arm 99, the spring 94, the die 100, and the cam 101, substantially as described.

21. The combination of the rotary carrier 3, having slot 115, the mandrel 12, the sliding cross-head 105, the annular ejector 107, the rods 106, for connecting said cross-head and ejector, the ejector-lever 108, and the spring 110, substantially as described.

22. The combination of the rotary carrier 3, having slot 115, the mandrel 12, the ejector 107, the cross-head 105, connected with said ejector, the lever 108, connected with the cross-head and provided with a friction-roller, 111, and the cam 112, substantially as described.

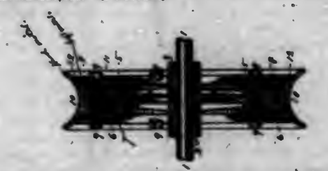
22. The combination of the rotary carrier 3, the mandrel 12, the ejector 107, sliding cross-head 105, lever 108, having friction-rollers 109 and 111, the spring 110, and the cam 112, substantially as described.

408,325. ATTACHMENT FOR ROCKING-CHAIRS. WILLIAM I. BUSKER, La Grange, Ill. Filed Jan. 29, 1889. Serial No. 298,014. (No model.)



Claim.—In a platform rocking-chair, the combination of a rocker and base-rail, at least one of these members being provided with a groove or recess narrowed and deepened toward its end nearest the spring, a spiral spring forming the connection between the rocker and base-rail, and two attaching-brackets securing the spring to the chair, at least one of the brackets having a widened and beveled projecting portion fitted and held in the recess of the chair, whereby the spring is removably attached at one end and its position fixed, substantially as described.

408,326. SHEAVE OR PULLEY FOR CABLE RAILWAYS. THOS. H. BURRIDGE, St. Louis, Mo.; THOMAS J. BURRIDGE, same place, administrator of said Thomas H. Burridge, deceased. Filed Oct. 11, 1888. Serial No. 287,789. (No model.)



Claim.—1. A sheave or pulley having a body formed with a flanged annular part, a rim distinct from the body having an inner part, 11, entering between the flanges, the bolts connecting the flanges, and the soft metal interposed between the rim and inner part and the flanged annular part, substantially as described.

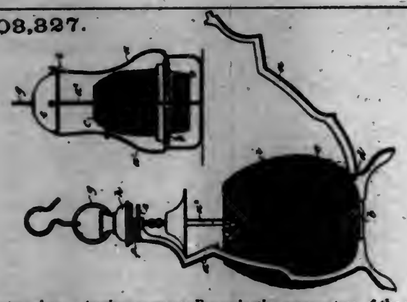
2. A sheave or pulley having a body formed with a flanged annular part, 5 6, and a removable ring, 8, bolts connecting the ring and flange, a rim, 10, distinct from the body and having a part, 11, entering between the flange and ring, and soft metal interposed between the rim and the parts 5 6 8, substantially as described.

408,327. LAMP HOLDER OR FRAME. SAMUEL CLARKE, Childs Hill, County of Middlesex, England. Filed May 21, 1888. Serial No. 274,542. (No model.)

Claim.—The combination, substantially as hereinbefore set forth, of the cup, its removable dome, the cup-support, the uprights secured at their lower ends to the cup-support, a hinge-connection between one of the uprights and the cup-support near the bottom of the cup,

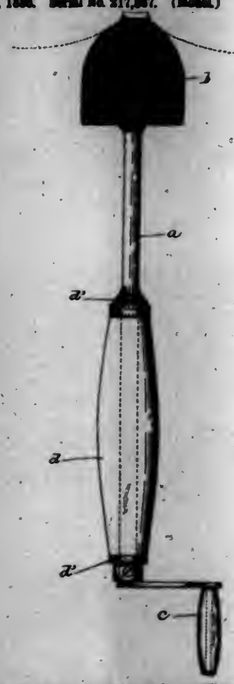


408,327.



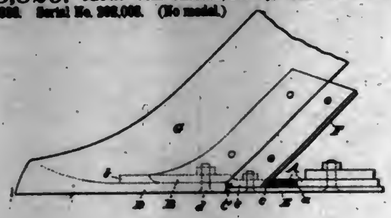
the top piece, *c*, having an upwardly-projecting screw-stem, *f*, the ring *g*, passing through the upper end of the stem, and the cap A, working vertically on the screw-threaded stem of the top piece, *c*, and engaging with the upper end of the hinge upright.

408,328. ROTARY BRUSH. T. HENRY CLARK, Brookline, Mass. Filed Nov. 3, 1888. Serial No. 217,927. (Model.)



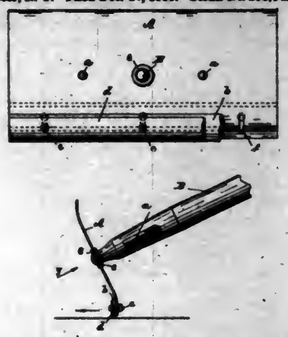
Claim.—As an improved article of manufacture, the herein-described rotary brush, comprising the rotary shank or spindle having a central and a lower collar, a tubular handle inclosing a portion of said shank and secured between said collars, the brush-head affixed to one end of said rotary shank or spindle and having its apex or convexed end extending across said end of the shank or spindle, and the crank secured to the end of said rotary shank or spindle, substantially as shown and described, whereby said brush is held by one hand and operated by the other.

408,329. PLOW. JOSIF GLATTER, Fridley, Minn. Filed Nov. 27, 1888. Serial No. 292,068. (No model.)



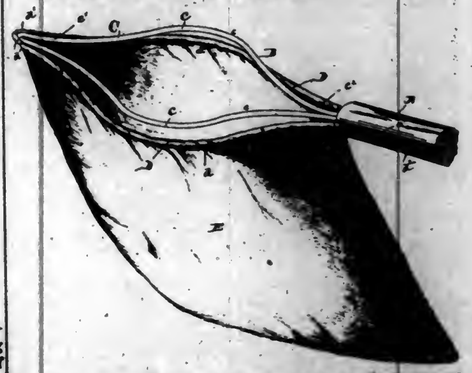
Claim.—As an improved article of manufacture, a plow provided with the landside having its forward portion set inward out of alignment with its rear or offset portion, a vertical transverse shoulder being formed thereby, facing forward, and with a share-landside resting upon the said shoulder and provided with a rearward plate-extension resting and secured upon the rearward offset portion of the landside proper, said share-landside having a rearwardly-facing shoulder at its point of conjunction with the forwardly-facing shoulder of the aforesaid landside, substantially as set forth.

408,330. COMBINED HOE AND SCRAPER. AARON F. COPPER, Rochester, N. Y. Filed Dec. 17, 1888. Serial No. 293,845. (No model.)



Claim.—A scraper consisting of a blade rectangular in form, having two of its opposite edges curved, as shown, and formed with transverse slots near one of its edges, a handle secured to the blade, a strip of soft material, a clamping-strip for said soft strip, and clamping-screws for said strips passing through said slots of the blade, said clamping-strip being curved longitudinally to correspond to the curvature of the opposing face of the blade, substantially as shown.

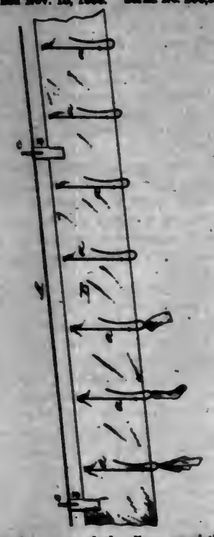
408,331. FRUIT-PICKER. WILLIAM P. CRAIG, Holden, Mo. Filed Dec. 20, 1888. Serial No. 294,595. (No model.)



Claim.—1. In a fruit-picker, the frame made of a single piece of wire bent into the shape shown to form the diamond-shaped detacher having the converging sides *c c*, which form angles *c'* and *c²*, the tang formed by the inner ends of the said sides, and the sack-holder having the sides *d d*, which are connected at their outer ends to the outer ends of the sides *c c* by the interlaced loops or beads *d' d'*, combined with the handle attached to the tang of the frame, and the sack attached to the sack-holder, substantially as specified.

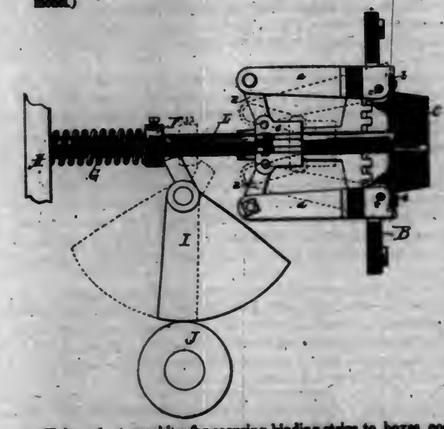
2. In a fruit-picker, the combination, with the handle provided with a socket, *a*, in its end and the grooves *a' a'* in its sides, of the frame comprising the detacher C, having the angles *c'* and *c²* at its outer and inner ends, respectively, and provided with the sides *c c*, which are connected at their inner ends to form a tang, *c³*, fitting in the socket *a* in the end of the handle, and the sack-holder having the sides *d d*, the outer ends of which are integral with the outer ends of the sides *c c*, and provided at their inner ends with extensions *d² d²*, fitting in the grooves *a' a'*, and having detents on their ends fitting in sockets *a² a²* in the sides of the handle, and the sack attached at its upper edge to the holder, substantially as specified.

408,332. CLOTHES-LINE ATTACHMENT. MARSHA DENNIS, Burlington, Iowa. Filed Nov. 15, 1888. Serial No. 290,968. (No model.)



Claim.—An attachment to clothes-lines, consisting of a strip of flexible material provided with hooks which are connected thereto at suitable distances apart throughout the length of said strip, substantially as and for the purpose set forth.

408,333. MANUFACTURE OF WOODEN BOXES. ERVIN DENNOM, Coronado, Cal. Filed Dec. 1, 1888. Serial No. 292,495. (No model.)



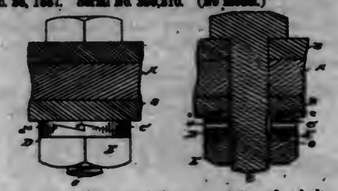
Claim.—1. A machine for securing binding-strips to boxes, consisting of a former for the boxes, a pivoted lever on each side of the former, each of said levers having its front end projecting over or beyond the rear edge of the base of the former, whereby said levers are adapted to press the binding-strips securely over the front edges of the box, and means for operating said levers, substantially as described.

2. In combination with a former, pivoted levers *e*, arranged with their forward faces in line with the base of the former, a reciprocating shaft, I, a collar carried on said shaft, and links *d* between the collar and pivoted levers, substantially as described.

3. In combination, a former, pivoted levers with means for operating them, and a face-plate having a concave edge extending across the end of each lever, substantially as described.

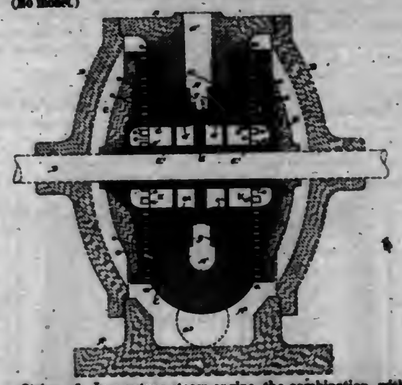
4. In combination, a former, pivoted levers having their front edges in line with the base of said former, one of said levers arranged at each side, a reciprocating shaft, toggle-levers between said shaft and pivoted levers, means for moving said shaft in one direction, and a spring for operating the shaft in the other direction, substantially as described.

408,334. NUT-LOCK. JONATHAN DENNIS, Agusta, Ohio. Filed Dec. 26, 1887. Serial No. 259,210. (No model.)



Claim.—A nut-lock consisting, essentially, of a bolt, a nut provided with one or more recesses in its inner face, and a pair of separate independent similar flat circular washers provided with central apertures to receive the bolt, one of the washers forming the inner locking-washer and having one or more lugs on its inner side fitting in recesses in the angle-bar, and radial ratchet-notches on its outer side extending from the aperture to the periphery, and the other similar outer locking-washer having similar corresponding oppositely-inclined notches on its inner side tightly fitting in the notches of the inner washer, the nut being screwed tightly down upon the outer plane face of the outer washer, and one or more lugs on its outer side fitting in the recesses of the nut, as set forth and shown.

408,335. ROTARY STEAM-ENGINE. JOSEPH H. DOW and HERBERT H. DOW, both of Cleveland, Ohio; said Herbert H. Dow assignor to William Chisholm, same place. Filed Aug. 25, 1888. Serial No. 283,751. (No model.)



Claim.—1. In a rotary steam-engine, the combination, with stationary disks with steam-chamber located between the disks and opposing rotating wheels located outside the disks, the wheels being mounted on the engine-shaft, substantially as indicated, of an engine-shaft, and a disk mounted on the engine-shaft between the line of the stationary disks, said rotating disk extending into and dividing the eduction of the said steam-chamber, substantially as set forth.

2. In a rotary engine, the combination of shaft carrying with it two wheels and a disk between them, these wheels being opposed inwardly by stationary disks, the central or revolving disks being opposed on opposite sides by rings connected with the stationary disks, leaving annular spaces between the central disk and rings that act as steam-ports, substantially as set forth.

3. The combination, with a rotary engine of the variety indicated, having stationary disks and movable disk, the latter being mounted on the engine-shaft and extending into the steam-space between the stationary disks, of rings mounted on each stationary disks and adjustable toward and from the rotating disk, substantially as set forth.

4. The combination, with stationary disks and intervening rotating disk, the latter being mounted on the engine-shaft, substantially as indicated, of screw-threaded rings engaging the stationary disks, each rings being adjustable toward and from the rotating disk, and lock-nuts mounted on the respective rings, substantially as set forth.

5. In a rotary engine, the combination of stationary disks and rotating wheels, the former bearing wings separated so as to form intervening ports and the latter bearing buckets separated so as to form intervening vents, the system of ports and vents being arranged in curved lines deflecting in opposite directions, the aggregate area of the vents being less than the aggregate area of the ports, substantially as set forth.

6. In a rotary engine, the combination, with stationary disks provided with a curved series of ports, and revolving wheels provided with a curved series of vents, the latter being arranged in curved

lines deflecting in opposite directions to those of the ports, said revolving wheels being provided with inwardly-projecting limbs, of a revolving disk located on the shaft between the adjacent ends of said limbs and extending into and dividing the steam-outlet of the steam-chamber, substantially as set forth.

408,836. NECKTIE-FASTENER. JAMES C. DOLIN, Jr., Washington, D. C. Filed Feb. 5, 1889. Serial No. 298,735. (No model.)

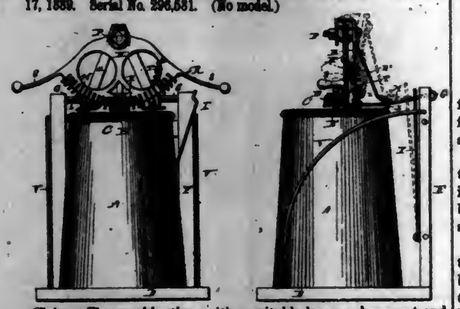


Claim.—1. In a necktie-fastener, the combination of the two plates A and B, constructed to clamp the collar-button on opposite sides, guides on one of said plates formed to permit a relative longitudinal movement of the said plates and prevent their lateral separation, the outer end of either plate extending beyond the inner end of the opposite plate, whereby the said outer ends of the plates are free, and are adapted to be connected to the neckbands of a necktie adjacent thereto, and to be operated by said bands.

2. In a necktie-fastener, the plate A, having the opening C for the passage of the collar-button, the upwardly and inwardly turned flanges a', and the lips a^2 on said flanges, in combination with the plate B, having the opening D for the collar-button, and arranged to move between the under face of said flanges and the body portion of the plate A, and stops b on said plate B, constructed to encounter the lips and limit the movement of the plates.

3. In a neckfie-fastener, the combination of the two clamping-plates A and B, guides on one of said plates constructed to confine the opposite plate, said plates having the transverse slots near their outer ends for the passage of the neckbands, and the perforations beyond said slots for fastening threads.

408,837. CHURN. JOHN W. FERRENBURG, Hego, Ind. Filed Jan. 17, 1889. Serial No. 296,581. (No model.)



Claim.—The combination, with a suitable base and support and a churn and dasher-rod, the latter provided with a pinion, of a frame, H, pivoted to the said support, and a standard, M, pivotally attached to the said swinging frame, this standard carrying a pivoted toothed segment adapted to engage the said pinion upon the dasher-rod, the said segment being provided with cogs both upon its face and periphery, as and for the purposes herein set forth.

408,838. TIME-PIECE DIAL. AUGUST FRÖHER, White Hall, Ill., assignor of one-half to James F. Potts, same place. Filed Aug. 26, 1884. Serial No. 141,479. (No model.)



Claim.—1. The combination of a perforated disk, with a movable dial having the hours marked upon it from 1 to 24, with a movable disk which has the hours 12 and 24 alone marked upon it, and a mechanism for moving both the dial and the disk every twelve hours, substantially as shown.

2. In a watch or clock, the combination of the movable dial, having the hours from 1 to 24 marked thereon, with a disk which is used in connection therewith and which has the hours 12 and 24 marked upon it, the disk being provided with an operating-arm, the dial and the disk being connected to the operating mechanism which moves the disk and the dial at different periods every twelve hours, substantially as described.

3. The combination, with a movable dial having the hours from 1 to 24 marked upon it, of a spring, the hour-hand provided with a projection, the hook which is connected to this spring, the spring L, provided with an arm to engage with the hook and a shoulder, the revolving arms which engage with the shoulder, a shaft, the cams or eccentrics placed upon the shaft, the operating-levers, and a spring, substantially as set forth.

4. The combination of the movable dial and the disk with the two springs H I, of unequal length, the hour-wheel provided with a projection, a spring, L, provided with a shoulder, and the mechanism connected with the spring L for shifting the dial and the disk at different periods, substantially as specified.

5. The combination, with a stationary dial or shield having perforations at the hour-points, of a movable dial or disk having a double set of numbers or figures, only one set of which can be seen through the perforation on the dial or shield, and adapted to be automatically shifted every twelve hours, substantially as described.

408,839. BED DRIER AND WARMER. JASPER FORBATT, Ind. Ter. Filed July 5, 1888. Serial No. 279,090. (No model.)



Claim.—1. A bed drier and warmer comprising an elliptical frame, in combination with a fire-pot support suspended within the frame between the upper and lower parts thereof, substantially as described.

2. A bed warmer and drier comprising a frame formed of elliptical side members having transverse upper and lower boards or plates, in combination with a fire-pot holder supported between the top and bottom transverse boards or plates, and a fire-pot in said holder, substantially as and for the purposes set forth.

3. In a bed warmer and drier, the combination, with the elliptical frame consisting of the elliptical side members united at top and bottom by transverse boards and plates, of a fire-pot holder within the frame between its upper and lower boards, and posts interposed between said upper and lower boards to brace the same and form a support for the fire-pot holder, substantially as and for the purposes set forth.

4. The herein-described bed warmer and drier, consisting of the elliptical members 10, joined together at top and bottom by the boards or plates 11, in combination with the posts bracing said boards, the fire-pot holder supported from said posts and having a central seat, 3, and a fire-pot, 14, having a reticulated cover, 15, and resting in said seat, substantially as and for the purposes set forth.

408,840. GLASS KNOB. EDWARD A. FOY, Cincinnati, Ohio. Filed Aug. 13, 1888. Serial No. 282,496. (Specimens.)



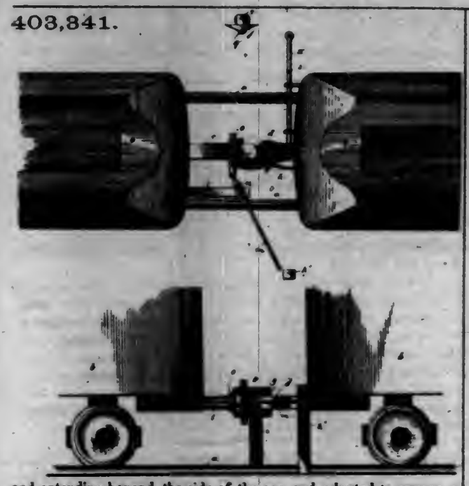
Claim.—A hollow amber-colored glass knob coated upon the inside with a solution of silver, as a new article of manufacture.

408,841. CAR-COUPLING APPARATUS. DAVID H. FREEMAN, Brazil, Tenn. Filed Feb. 5, 1889. Serial No. 298,741. (No model.)

Claim.—1. A car-coupling head provided with an uncoupling rod or arm extending laterally from the same beyond the side of the car and adapted to engage and be moved by a post located beside the track, and thereby release the coupling-head from the opposite coupling member, substantially as described.

2. A car-coupling comprising two coupling-heads, a movable yoke to detachably hold the heads coupled, a lever connected to the yoke and extending beyond the side of the car, and adapted to engage a post located beside the track and move the yoke to allow the separation of the heads, and a rod or arm extending from one of the heads and adapted to engage and be moved by a post located beside the track, and thereby unlock the heads, substantially as described.

408,841.



3. An automatic car-coupling comprising a coupling-head consisting of a laterally-swinging hook to engage the opposite coupling member, and a longitudinally-movable rod to swing the hook laterally to uncouple the same and adapted to engage and be operated by a post located beside the track and when the car is moving, as set forth.

4. An automatic car-coupling comprising one coupling member consisting of a draw-bar having an open frame or head on its end provided with an end bar, the other member consisting of a hook to engage said bar, and a yoke movable on the draw-bar and adapted to partially close the opening in the head and hold the hook therein, substantially as described.

5. An automatic car-coupling, a coupling member consisting of an open frame or head upon the end of a draw-bar, a yoke movable on the draw-bar and adapted to partially embrace the open head, and a lever pivoted to an arm of the car to operate the yoke and extending beyond the side of the car and adapted to engage a post and be operated thereby, substantially as described.

6. Means to automatically uncouple railway-cars, comprising a post hinged at its lower end beside a railroad-track to swing from a vertical position backwardly from the track and provided with a block having inclined faces on its side toward the track, adapted to be engaged by and move longitudinally a rod connected with and adapted to uncouple passing cars, substantially as described.

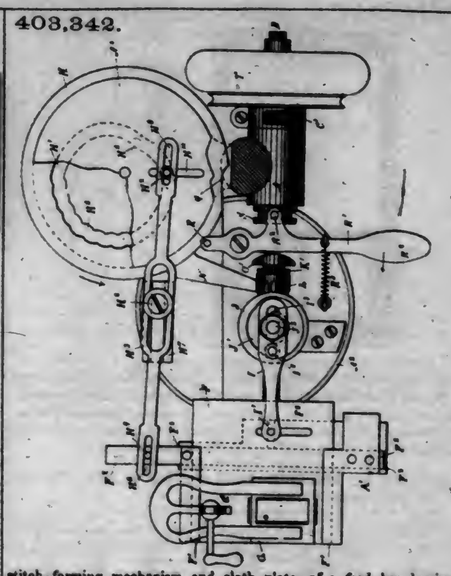
408,842. BUTTON-HOLE SEWING-MACHINE. JOHN S. FRENCH, Brooklyn, N. Y. Filed May 11, 1886. Serial No. 201,808. (No model.)

Claim.—1. In a button-hole sewing-machine, the combination, of a cloth-plate, F, fitted in parallel guideways F', a feed-bar, F^3, carrying said ways of the cloth-plate, guideways F^4 for said bar on the machine-frame, a feed-wheel, H, having two cam-grooves, H' N', one connected with said feed-bar, a cloth-plate-operating wheel, J, having a cam-groove, J', an operating-rod, I, connecting the cloth-plate with said groove of the operating-wheel, a driving-shaft, D, a driving-wheel, L, on said shaft geared with the operating-wheel, a sliding block, K, on said shaft engaging the driving-wheel, a staff, J^3, on said block, carrying the operating-wheel, and an adjusting-lever, N, connecting the sliding block with the second cam-groove, N', of the feed-wheel, substantially as and for the purpose described.

2. In a button-hole sewing-machine, the combination, with the stitch-forming mechanism and cloth-plate, of a feed-bar having mounted thereon guideways F' for said plate, guideways F^4 for said bar on the machine-frame, a feed-wheel having a cam-groove, H', provided with a plain portion of a shape to move the cloth-plate uniformly in reverse directions and to render said plate immovable during one interval between said reverse directions of feed motion, and also provided with a serpentine portion of a shape to move said plate reciprocally in the line of feed during the other interval between said reverse directions of feed motion, said cam-groove of the feed-wheel being connected with the feed-bar, a cloth-plate-operating mechanism, and a driving-shaft connected with the feed-wheel and said operating mechanism, all substantially as herein described, for the purpose set forth.

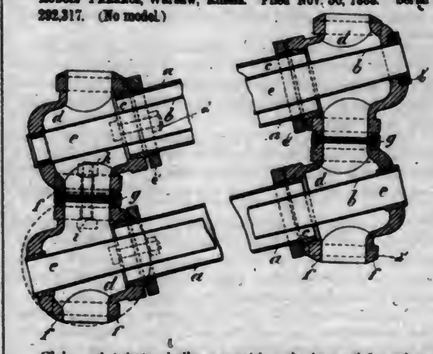
3. In a button-hole sewing-machine, the combination, with the

408,842.



stitch-forming mechanism and cloth-plate, of a feed-bar having mounted thereon guideways F' for said plate, guideways F^4 for said bar on the machine-frame, an operating-wheel having a cam-groove, J', connected with the cloth-plate, a feed-wheel having cam-grooves, H' N' in its opposite faces, one, H', partly plain and partly serpentine and of a shape to move the cloth-plate uniformly in reverse directions and reciprocally in the line of feed during one interval between said reverse directions of feed motion, and the other, N', entirely plain and of a shape to move said operating-wheel together with the cloth-plate opposite to the line of feed in one direction during one interval and in the other direction during the other interval between said reverse directions of feed motion, said two cam-grooves of the feed-wheel being connected, respectively, with the feed-bar and the operating-wheel bearing, and a driving-shaft connected with the feed-wheel and operating-wheel, all substantially as herein described, for the purpose set forth.

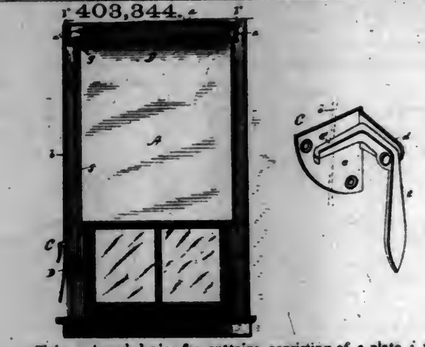
408,843. BOILER. KONRAD GANPER, Sielce, near Sosnowice, and RUDOLF FABIAN, Warsaw, Russia. Filed Nov. 30, 1888. Serial No. 292,317. (No model.)



Claim.—A tubular boiler comprising the internal fire-tubes, the external inclosing water-tubes, and the separate water-circulating chambers, each pair of fire and water tubes having a pair of separate chambers secured to their opposite ends, the fire-tubes extending completely through the chambers and removably secured to the same, the water-tubes opening into the front sides of the chambers and removably secured thereto, each of said chambers being formed integral and having openings in its top and bottom formed by flanges, said chambers being movably secured together with their upper and lower openings registering, and packing-rings interposed between the adjoining edges of said flanges, as set forth.

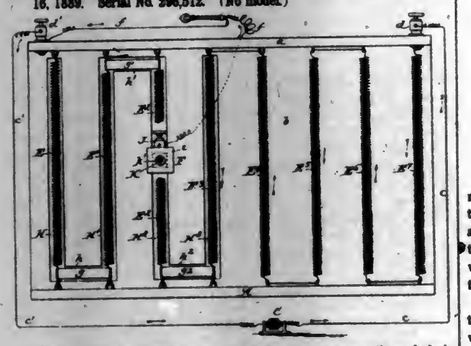
408,844. CURTAIN-FIXTURE. AARON W. GATHART, Washington, Pa. Filed Feb. 9, 1889. Serial No. 299,365. (No model.)

403,344.



Claim.—A reel device for curtains, consisting of a plate, *j*, provided with a circular notched flange, *j'*, and a central spindle, a reel journaled upon this spindle, a screw for holding the reel upon the spindle, and a crank pivoted to the face of the reel and provided with an angular arm, *l''*, this arm being adapted to engage the aforesaid notched flange, and thereby hold the reel against turning.

403,345. RHEOSTAT. JOHN I. GEE, Jackson, Mich. Filed Jan. 16, 1889. Serial No. 296,512. (No model.)



Claim.—1. The combination, with two resistance-coils and their connection, of a movable contact-point and a guide on which the contact-point can be moved along each coil and from one coil to the other along their connection without breaking contact, substantially as set forth.

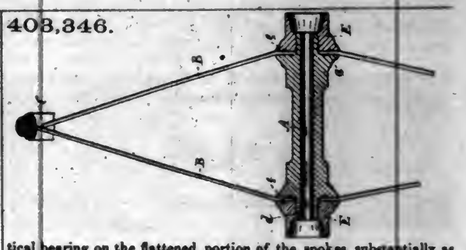
2. The combination, with two resistance-coils and their connection, of a frame provided with a continuous way opposite said coils and their connection, and a movable contact-point arranged in said way and adapted to bear against said coils and their connection, substantially as set forth.

3. The combination, with several resistance-coils having their adjacent ends connected by flat metallic bars, of a frame provided opposite said coils and bars with a continuous slot or way, and a movable contact-point arranged in said slot or way, substantially as set forth.

4. The combination, with a resistance-coil, of a stationary frame provided with a slot or way opposite said coil, a sliding frame, I, arranged in said slot or way, a binding-post, J, provided with a socket, *j*, arranged in said sliding frame, and a contact-bolt, K, and spring *k*, arranged in said socket, substantially as set forth.

5. The combination, with a resistance-coil, of a stationary frame provided with a slot or way opposite said coil, a sliding frame, I, arranged in said slot and provided with a sleeve, i^3, having a slot, j^3, a binding-post, J, provided with a socket, *j*, arranged in the sleeve i^3 and having a projection, j', entering the slot j^3, a contact-bolt, K, provided with an anti-friction roller, K', and having a projection, *l*, entering a groove, *l'*, in the socket *j*, and a spring, *k*, arranged in said socket behind the contact-bolt, substantially as set forth.

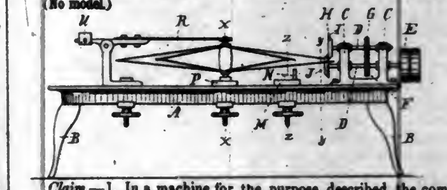
403,346. VEHICLE-WHEEL. FRANK H. HARRIS, Auburndale, Ohio. Filed Oct. 2, 1888. Serial No. 286,943. (No model.)



Claim.—1. A vehicle-wheel composed of the hub provided with the radial spoke-notches *c*, tapered, as described, and slightly shallower than the ends of the spokes, the spokes having their inner ends flattened to form a wedge-shaped dovetail, said dovetail being tapered in two planes at right angles to each other and in inverse directions to each other, and the cap E on the spindle of the hub, and having a flat vertical bearing on the flattened portion of the spokes, substantially as shown and described.

2. In a vehicle-wheel, the combination, with the wire spokes B of the wheel, of a dovetail, *a*, formed on the inner end of the spokes and tapering inversely to each other in two planes at right angles to each other, the hub of the wheel provided upon its end with radial spoke-notches corresponding with the dovetail formed upon the ends of the spokes, or slightly shallower, the cap E, provided with an annular recess, *e*, upon its inner face, and the spindle-box on the hub, as the means for securing and clamping the cap to the hub, substantially as described.

403,347. MACHINE FOR TRIMMING WIRE SPOKES. FRANK H. HARRIS, Auburndale, Ohio. Filed Oct. 29, 1888. Serial No. 289,361. (No model.)

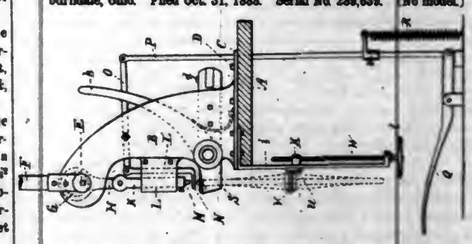


Claim.—1. In a machine for the purpose described, the combination, with the bed, of a slidingly-adjustable wheel-support and of two rotary disks, the lower one being provided with spoke-notches and the upper one with a cutting-edge adapted to cut off the ends of the spokes in conjunction with the lower disk, into the notches of which the ends of the spokes are adapted to be engaged, all substantially as described.

2. The combination, with the frame of the machine and the rotary disks I and K, adapted to cut off the ends of the spokes, of the wheel-support P, slidingly adjustably secured on the bed of the machine and provided with a receiving-socket for the shaft of the wheel, and of the hinged arm R, having a corresponding socket to engage with the upper end of the shaft of the wheel, all substantially as described.

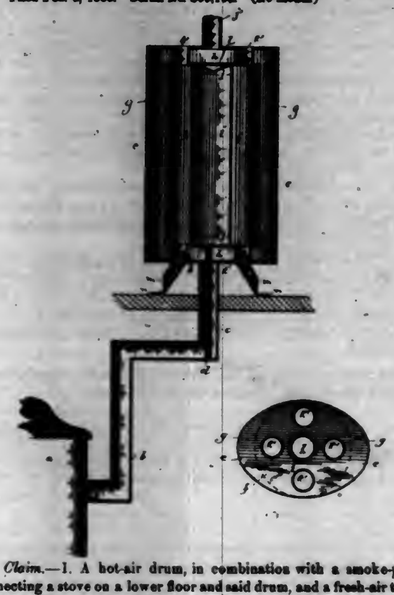
3. In a machine for the purpose described, the combination, with the bed of the machine, of the rotary disks I and J, revolving in opposite directions to each other, the upper disk being provided with the beveled cutting-edge I, and the disk J having its periphery inversely beveled and provided with spoke-notches K, and of one or more wheel-supports, substantially as described, slidingly adjustably mounted upon the bed, substantially as described.

403,348. HAND RIVETING-MACHINE. FRANK H. HARRIS, Auburndale, Ohio. Filed Oct. 31, 1888. Serial No. 289,639. (No model.)



Claim.—In a hand riveting-machine for the purpose described, the combination, with the frame B of the machine, of the vise S, detachably secured thereto and provided with a hand-lever, A, and adjusting-nut *g*, the reciprocating riveting-tool secured in a guide-bearing, L, on the frame of the machine, the actuating hand-lever F and its connections with the riveting-tool, the reciprocating pressure-foot N, secured in vertical guide-bearings of the frame, the actuating foot-lever Q and its connection with said pressure-foot, the frame *i*, provided with the vertical slot *j* and index *m*, the wheel-support U, slidingly mounted in the slot of the frame *i* and provided with the adjusting-screw W, having the hand-wheel *l*, and the stop-shaft V, carried by the wheel-support U, all combined to operate substantially as described.

403,349. HEATING-DRUM. JAMES HENDERSON, Moorhead, Minn. Filed Feb. 8, 1888. Serial No. 263,195. (No model.)



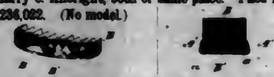
Claim.—1. A hot-air drum, in combination with a smoke-pipe connecting a stove on a lower floor and said drum, and a fresh-air tube longitudinally extending through a portion of said pipe and communicating with the atmosphere of the lower floor and opening into said drum, substantially as described.

2. A hot-air drum having a passage for the hot products of combustion therethrough, and a fresh-air-heating chamber therein having hot-air outlets, in combination with a smoke-pipe connecting a stove and said passage of the drum, and a fresh-air pipe longitudinally located in said pipe and communicating with the atmosphere at one end and opening into the fresh-air-heating chamber of the drum at its other end, substantially as described.

3. A hot-air heating-drum comprising an outer casing through which the products of combustion from a stove pass, a fresh-air-heating chamber in the casing having fresh-air-induction openings and hot-air-eduction openings, and hollow supporting-legs for the drum opening into said induction-openings, and through which fresh air is supplied to the same, substantially as described.

4. A hot-air heating-drum comprising an outer casing, an interior cylinder forming upper and lower spaces communicating by vertical flues outside of the cylinder and inside of the casing, an inner cylinder in the interior cylinder, the interior of the two cylinders communicating, a smoke-pipe opening into said lower space, an exit-pipe from said upper space, fresh-air tubes extending through the casing and said lower space into the interior cylinder, hot-air-exit tubes extending from the interior cylinder through said upper space to the outer air, and a fresh-air tube extending through a portion of the smoke-pipe and lower space into the inner cylinder, substantially as described.

403,350. ADJUSTABLE PAD FOR CLEANSING AND POLISHING TEETH. GEORGE F. HOBBY, Utica, N. Y., assignor to Charles L. Bartlett and Harry C. Allbright, both of same place. Filed Apr. 26, 1887. Serial No. 236,022. (No model.)



Claim.—1. In combination with the piece of felt having the roughened face at right angles to the planes in which its fibers run, the stiffening-back cemented to the side of the piece opposite to the roughened face, substantially as and for the purpose described.

2. A polishing or cleansing pad consisting of a block of felt having its rubbing-face at right angles to the planes in which the fibers of the felt run corrugated transversely, and a layer of stiff material attached to the side of the felt block opposite to the rubbing-face by means of cement, substantially as and for the purpose set forth.

403,351. CHECK-HOOK FOR HARNESS. MARY INGERSOLL, Erie, Pa. Filed Apr. 4, 1888. Serial No. 269,607. (No model.)



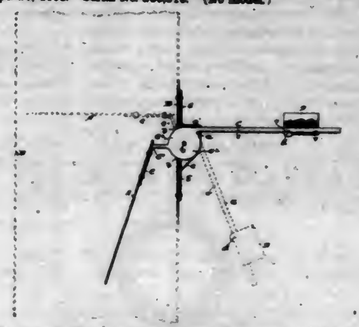
Claim.—In a check-hook, the combination of the hook A, sheave B, within said hook, safety-bar C, pivoted at the base of said hook and reaching across its mouth, and a spring, D, acting upon said bar near its pivot.

403,352. COUPLING FOR UNDERGROUND CONDUITS. WILMOT LAKE, Washington, D. C. Filed Oct. 2, 1888. Serial No. 286,906. (No model.)



Claim.—A terra-cotta coupling for electric-wire conduits, consisting of a short rectangular band, collar, or sleeve scored or grooved on opposite sides, substantially as and for the purposes described.

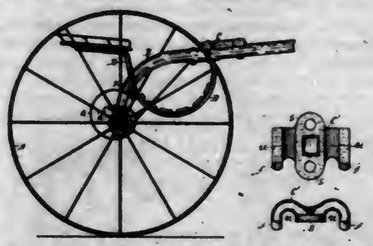
403,353. DAMPER. CHRISTIAN F. LANGE, Cleveland, Ohio. Filed Sept. 27, 1888. Serial No. 286,513. (No model.)



Claim.—1. The combination, with damper, pipe, and damper-lever, the latter being of the bell-crank variety, arranged substantially as indicated, of plate E, having flanges *c* and cap *c'*, the flanges embracing the damper-lever, and the cap serving as a stop for engaging such lever when the damper is depressed, substantially as set forth.

2. The combination, with a damper-lever of the bell-crank variety having a hub for closing the slot in the pipe, of a damper secured to one arm of said lever and a poise secured to the other arm, substantially as set forth.

403,354. TWO-WHEELED VEHICLE. ABNER L. LAY, Battle Creek, Mich. Filed Sept. 5, 1888. Serial No. 284,969. (No model.)



Claim.—1. In a two-wheeled vehicle, the thills, body-bars having their forward ends fulcrumed thereon, and the axle, in combination with coil-springs, the lower extremities of which are secured to said axle, and vertically-adjustable horizontally-vibrating links or rods connecting said springs with the body-bars.

2. In a two-wheeled vehicle, the axle, thills, and seat, in combination with body-bars having series of perforations and fulcrumed at their forward extremities on said thills, coil-springs, one extremity of each of which is secured to the axle, and depending vertically-adjustable horizontally-vibrating rods, one extremity of each of which is secured to the body-bar at any of the points of perforations thereof and its opposite end secured to the upper forward extremity of one of the coil-springs, all substantially as and for the purposes herein set forth.

3. In a two-wheeled vehicle, the axle, thills, and seat, in combination with coiled supporting-springs, one extremity of each of which is secured to said axle and its opposite formed as an eye, body-bars having series of perforations and fulcrumed at their forward extremities on said thills, and depending equalizer-links having perforated extremities, pins or bolts for securing said extremities, respectively, to the body-bars at the points of perforations thereof and to the forward extremities of the coil-springs, for the purposes set forth.

4. In a two-wheeled vehicle, the axle, thills, and seat, in combination with bent body-bars having series of perforations and fulcrumed at their forward extremities on said thills, coiled supporting-springs, one extremity of each of which is secured to the axle and its opposite formed as an eye, vertically-adjustable longitudinally-vibrating links, the upper extremities of which are formed to embrace opposite sides of the body-bars and are secured thereto at the points of perforations thereof by bolts or pins, and the lower extremities of which are formed to receive the eyes on the ends of the coil-springs and are secured thereto by pins or bolts, yokes provided with vertical channels for the passage of the coil-springs, and a clasp for firmly securing said springs to the axle, all substantially as and for the purposes herein set forth.

5. In a two-wheeled vehicle, the axle *a'*, the thills B, and cross-bar C, the body-bar D, provided with the adjustable link or equalizer *r*, the circular springs *a a*, and the yoke C', provided with semicircular channels *u u*, lugs *f f*, and perforated ears *s s*, for attaching said springs to the axle by means of a clip or embracing-clamp, substantially as and for the purposes illustrated and described.

6. As a new article of manufacture, a clasp for fastening vertical circular springs to the axles of vehicles, consisting of the clip and its engaging-yoke C', the latter provided with vertical channels *u u*, lugs *f f*, and perforated ears *s s*, constructed, combined, and used substantially in the manner and for the purpose set forth.

403,355. UMBRELLA-TIP RING. EDWIN J. LUBLEY, Washington, D. C., assignor, by direct and mesne assignments, to James A. Bealmear, Baltimore, Md., and Thomas A. Mitchell, Washington, D. C. Filed Aug. 8, 1888. Renewed Mar. 30, 1889. Serial No. 305,500. (No model.)

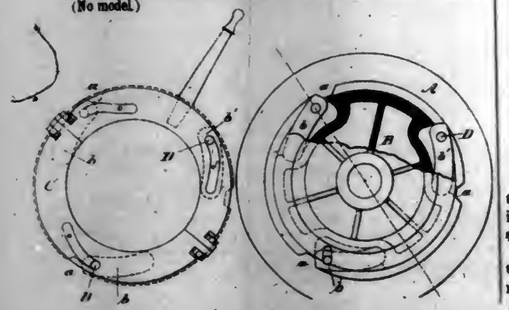


Claim.—1. A ring formed from coiled wire, the end coils of the wire abutting against each other and held in that position by means of a link inside of said coils, substantially as described.

2. A ring formed from coiled wire, the end coils of the wire abutting against each other and held in that position by means of a link provided with an enlargement at each end inside of said end coils, substantially as described.

3. A ring formed from coiled wire, the end coils of the wire loosely abutting against each other and held in that position by means of a link consisting of a shank having a head on each end, the ends of the link being inserted within the end coils and the ends of the wire coiled around the shank, substantially as described.

403,356. LOCKING-GEAR FOR SHIPS' WINDLASSES. FRANK S. MANTON, Providence, R. I. Filed Jan. 30, 1889. Serial No. 298,104. (No model.)



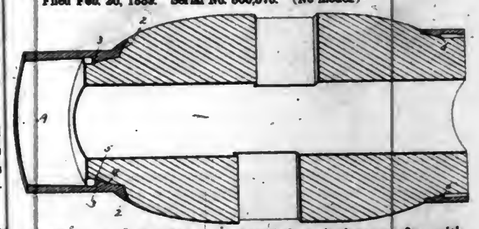
Claim.—1. The combination, with a wildcat loosely mounted on a windlass-shaft, of a driving-head rigidly secured to the shaft and provided with locking-pawls to engage with the wildcat, a portion of them being adapted to drive it in one direction and the other portion being adapted to drive it in the other direction, substantially as described, and a slotted ring for simultaneously moving all the pawls into or out of position to engage with the wildcat.

2. The combination, with a wildcat loosely mounted on a windlass-shaft and provided with thrust-blocks, of a driving-head rigidly secured to said shaft and carrying locking-pawls, some of which are adapted to engage with one face of the thrust-blocks and drive the wildcat in one direction, while the others are adapted to engage with the opposite face of the thrust-blocks and drive the wildcat in the opposite direction, and a slotted ring for simultaneously moving all the pawls into or out of position to engage with the thrust-blocks, substantially as described.

3. The combination, with the driving-head B, having the oppositely-disposed locking-pawls *b b'*, of the ring C, having the cam-slots *c c'*, adapted to throw all the pawls in or out simultaneously, substantially as described.

4. The combination, with the wildcat A, having the thrust-blocks *a*, of the driving-head B, carrying the locking-pawls *b*, engaging with one face of the blocks *a*, and the pawl *b'*, projecting between two thrust-blocks, in position to engage with the opposite face of one of them when the motion of the driving-head is reversed, substantially as described.

403,357. VEHICLE HUB-BAND. JARED MARIS, Columbus, Ohio. Filed Feb. 20, 1889. Serial No. 300,570. (No model.)

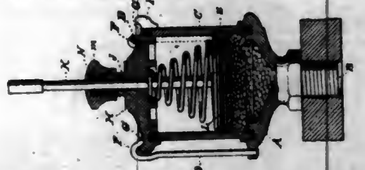


Claim.—1. A metallic band provided on its inner surface with one or more inwardly-projecting ribs, each being elongated in form and sharpened or pointed at its inner end to adapt it to be driven lengthwise through the wood, said ribs extending only partly the width of the band, and thereby insuring an unobstructed space within the outer end of the band, within which the fibers of the wood may expand and close against the outer ends of the ribs.

2. A metallic band provided on its inner surface with one or more inwardly-projecting ribs, each being elongated in form and sharpened at its inner end to adapt it to be driven lengthwise through the wood, the outer end of the rib being blunt, pointed, or shouldered, and located within the band and at such a distance from its outer end as to insure an unobstructed space within the outer end of the band, within which the wood may expand and close against the outer ends of the ribs, substantially as set forth.

3. A metallic band provided at one end with an outwardly-flaring flange, and provided on its inner surface and adjacent to its flanged end with one or more inwardly-projecting ribs, each being elongated in form and sharpened at one end to adapt it to be driven lengthwise through the wood, the rib extending only partly the width of the band, and thereby insuring an unobstructed space within the outer end of the band, within which the fibers of the wood may expand and close around the outer end of the rib, substantially as set forth.

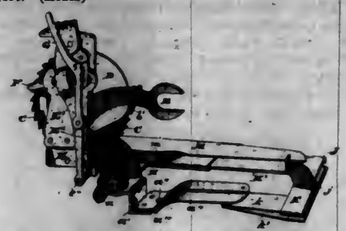
403,358. GREASE-CUP. JOHN MASSETT, North Tarrytown, N. Y. Filed Feb. 15, 1889. Serial No. 299,940. (No model.)



Claim.—1. In a grease-cup, the cylinder and base, in combination with the hooked tie-rods and the marginally-notched cap having inclined arc-shaped bearing-grooves for the hooks of said tie-rods, substantially as specified.

2. The grease-cup comprising the base, notched cap, and hooked tie-rods, the gland and piston-rod packing, the piston, tapered piston-rod, and spiral spring, substantially as specified.

403,359. PLAITING ATTACHMENT FOR SEWING-MACHINES. THOMAS L. MELONE, Chillicothe, Ohio; Juliette S. Melone administratrix of said Thomas L. Melone, deceased. Filed May 17, 1888. Serial No. 95,190. (Model.)



Claim.—1. In a plaiting attachment for sewing-machines, the combination, substantially as hereinbefore described, of the presser-foot having an upwardly and outwardly extending curved arm provided with a cut-away portion and a guide-plate secured to the curved arm, with the pivoted plaiting-blades, substantially as set forth.

2. In a plaiting attachment for sewing-machines, the combination of the presser-foot with the pivoted plaiting-blade of two parts, and a guide-piece whereon both of said parts are fixed, said blade having means of vibration and reciprocation, as described, and adapted to carry the strip between the two portions of the blade and to form alternate plaits against said presser-foot and the bed-plate of the sewing-machine.

3. In a plaiter, the combination of the ratchet-wheel having graduated openings within its circumference, and the pivoted tripping-lever engaging said openings, said lever being pivoted so that it may be swung toward or from the center of the wheel, for the purpose substantially as described.

4. In a plaiting attachment for sewing-machines, a ratchet-wheel provided with openings, and a pin or its equivalent for the purpose of depressing the plaiting-blade, in combination with said blade, and a vibrating guide-plate having a connecting-piece, as set forth.

5. In a plaiter, the combination, with the plaiting-blade, of a ratchet-wheel having graduated openings for the purpose of breaking and restoring connection between working parts of the attachment and provided with a pin or its equivalent for depressing the plaiting-blade, and means for connecting said pin and blade, all substantially as set forth.

6. In a plaiter, the combination of a ratchet-wheel having openings, as described, and a pin for depressing a vibrating guide-plate, with the said vibrating guide-plate provided with a movable bearing-piece for regulating the contact of the pin and the said guide-plate, the plaiting-blade, and their connecting-piece, as and for the purpose set forth.

7. In a plaiter, the combination of a ratchet-wheel having openings within its circumference and a pin upon its side, for the purposes described, with a plaiting-blade connected with a vibrating guide-plate, and said guide-plate provided on its under side with a spring to automatically elevate the said plate, as set forth.

8. In a plaiter, the combination of the vibrating guide-plate M, hinged to the main frame, as described, and provided with spring *m*, and a movable piece, *o*, with the plaiting-blades below and the ratchet-wheel above, the said wheel being provided with means for depressing the vibrating guide-plate, as and for the purpose set forth.

9. In a plaiter, the combination of the ratchet-wheel having means for depressing a vibrating guide-plate, and the said vibrating guide-plate, with the slide having downwardly-projecting lugs, and a pivot-pin for carrying the plaiting-blade, as set forth.

10. In a plaiter, the combination of a ratchet-wheel having its teeth formed on its outer edge, the axis on which it turns, a shield for covering the teeth of said wheel and pivoted on said axis and provided with a tooth or projection, and a series of ratchet-teeth with which said tooth engages to retain the shield in a determined position, with a lever adapted to receive motion from the needle-bar and provided with a pawl having a depressing-spring, so that it may ride upon the shield and turn the wheel when brought into engagement with its teeth and actuate the plaiting-blade, substantially as set forth.

11. The combination, with the plaiting-blade, the ratchet-wheel, and their connecting mechanism, of the main frame A, having an extension, A°, with notches in its upper part, and the shield D, extending above the ratchet-wheel and provided with a tooth, *d*, for engaging in the notches and for regulating the rotation of the ratchet-wheel and the consequent frequency of the plaits.

12. In a plaiter, the combination, with the ratchet-wheel supported on a flexible upright carrying a slotted plate and having openings within its circumference, as described, of mechanism for receiving motion from the needle-bar and transmitting it to the plaiting-blade, with an independent adjustable tripping-lever adapted to ride upon the surface of the wheel and to connect and disconnect the operative portions of the attachment, as set forth.

13. In a plaiter, the combination, with a main frame having means of attachment to the presser-bar and provided with a flexible upright support carrying a slotted plate having a tripping-lever for engaging with the ratchet-wheel, of a lever adapted to receive motion from the needle-bar and provided with a lug for moving in the slotted plate and with means for throwing the plaiting-blades, as set forth.

14. In a plaiter, the combination, with the blades, of the ratchet-wheel C, having openings as described, the flexible support E, the slotted plate E', the tripping-lever F, for bearing against the ratchet-wheel and bending the flexible upright, and the L-shaped lever for receiving motion from the needle-bar and for rotating the ratchet-wheel, and provided with a lug extending through the slotted plate, with the lever E", connected to the plaiting-blade below and adapted to throw the same when connected to operate.

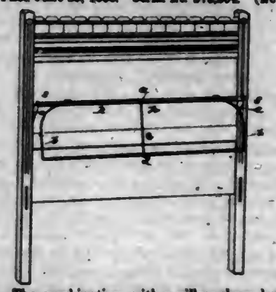
15. In a plaiting attachment for sewing-machines, the combination of the L-shaped lever, which derives its motion from the needle-bar having a pawl, a circular ratchet having an opening within its circumference, for the purpose set forth, a shield for covering the teeth on the ratchet-wheel and preventing their engagement by the pawl, a pivoted lever vibrated by said L-shaped lever, the plaiting-blade, and connections between said pivoted lever and the plaiting-blade, whereby the latter is moved by every stroke of the needle-bar, as set forth.

16. In a plaiting attachment for sewing-machines, the combination, with the pivoted lever E", having the toothed rack and direct connection with the ruffling-blade, and the arm G, pivoted to the lever E", and having a tooth for engaging any one of the teeth of said rack, of the pivoted L-shaped lever B, having the projection *b"*, which enters between the lever E" and arm G, and engages therewith at a point between the pivot and tooth of the said arm, substantially as set forth.

17. In a plaiter, the combination, with a lever vibrated by the needle-bar, and a pivoted lever having connection with the plaiting-blade, of a ratchet-disk rotated by the movement of the needle-bar, having a slot or cut-away portion for permitting a projection upon the lever which is vibrated by the needle-bar to engage at intervals with the lever which has connection with the ruffling-blade.

18. In a plaiter, the combination, with the vibrating L-shaped lever, the pawl carried thereby, and the circular ratchet, of a shield for covering any desired number of the teeth of said ratchet, a tooth carried by said shield, and a toothed rack with which the tooth on said shield engages, the teeth of said rack corresponding in number and position to those on the circular ratchet, substantially as and for the purposes set forth.

403,360. PILLOW-SHAM HOLDER. NORMAN C. MOFFETT, Clinton, Iowa. Filed June 26, 1888. Serial No. 278,204. (No model.)



Claim.—The combination, with a pillow-sham holder consisting of the bar and frame attached thereto, of the elastic brackets flexible in the direction of the length of the bar and the screw-eyes passing through the elastic brackets and into the bar, whereby by the tightening of the screw-eyes the brackets are, through their resiliency, utilized to retain the holder in any desired position, substantially as described.

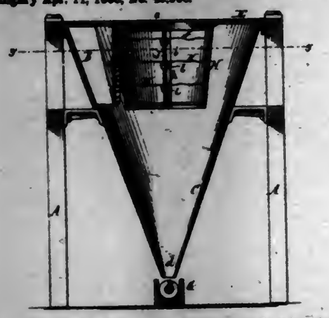
403,361. SASH-CORD FASTENER. HENRY MORGAN, Oakleigh, Isle of Wight, England. Filed May 17, 1888. Serial No. 274,173. (No model.) Patented in England Jan. 9, 1888, No. 334.



Claim.—The combination of the window-sash having a groove extending from end to end of its side rail, the plate secured across the groove and having eyes located in the groove, and the window-

cord provided with a metallic ferrule, *k*, through which the cord passes, and to which cord it is fastened by a transverse rivet, *l*, said ferrule being slidable with the cord out through the open end of the groove at the lower end of the sash-rail, substantially as shown and described.

403,362. DUST-COLLECTOR. ORVILLE M. MONEE, Jackson, Mich., assignor to the Knickerbocker Company, same place. Filed Mar. 31, 1888. Serial No. 197,307. (No model.) Patented in England July 30, 1888, No. 4,423; in Germany July 26, 1888, No. 39,219; in France July 27, 1888, No. 177,638; in Belgium July 27, 1888, No. 74,005; in Canada Sept. 3, 1888, No. 34,854; in Italy Dec. 15, 1887, No. 23,535, and in Austria-Hungary Apr. 11, 1888, No. 49,960.



Claim.—1. A dust-collector consisting of a chamber having an imperforate peripheral wall in which the whirling body of air forms a vortex and in which the air moves from the periphery toward the axis of the vortex as it becomes freed from the solid matter, said chamber being provided at one end with a discharge-aperture for the purified air opening into the atmosphere and at its opposite end with a discharge-opening for the separated dust and with a tangential inlet for the dust-laden air, substantially as set forth.

2. The combination, with a dust-collector consisting of a separating-chamber constructed with an imperforate peripheral wall in which the whirling body of air forms a vortex, and which is provided in one end with a discharge-aperture for the purified air opening into the atmosphere and at its opposite end with a discharge-opening for the separated dust, of a tangential inlet-spout and a fan whereby the dust-laden air-current is propelled through said spout into the dust-collector, substantially as set forth.

3. A dust-collector consisting of a tapering separating-chamber constructed with an imperforate peripheral wall, in which the dust-laden air forms a vortex or whirling body, and which is provided in its large end with a central discharge-opening for the purified air, at its small end with a discharge-opening for the separated dust, and with an external inlet-spout for the dust-laden air entering the large portion of the chamber tangentially, substantially as set forth.

4. The combination, with the separating-chamber constructed with an imperforate peripheral wall, in which the dust-laden air forms a vortex or whirling body, and which is provided at one end with a central discharge-opening for the purified air and at its opposite end with a discharge-opening for the separated dust, of an external inlet-spout for the dust-laden air entering the separating-chamber tangentially, and an internal deflector whereby the dust particles are deflected toward the dust-discharge, substantially as set forth.

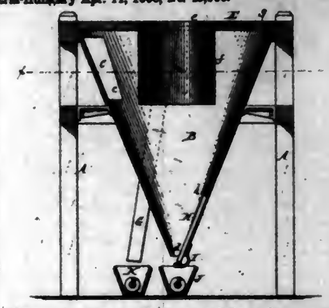
5. The combination, with the separating-chamber constructed with an imperforate peripheral wall, in which the dust-laden air forms a vortex or whirling body, and which is provided at one end with a central discharge-opening for the purified air and at its opposite end with a discharge-opening for the separated dust, of an external inlet-spout for the dust-laden air entering the separating-chamber tangentially, and a deflector secured to the inner side of the peripheral wall in the rear of the inlet-opening, whereby the dust particles are deflected toward the dust-discharge beyond the inlet-opening, substantially as set forth.

6. The combination, with the separating-chamber in which the dust-laden air assumes a whirling motion and which is provided with a dust-discharge opening and an air-discharge opening, of an auxiliary dust-separator surrounding the air-discharge opening and provided with an outlet through which the dust passes from the auxiliary separator into the main separating-chamber, substantially as set forth.

7. The combination, with the conical separating-chamber C, provided with a dust-discharge opening, *d*, and an air-discharge opening, *e*, of an auxiliary dust-separator, H, provided with a longitudinal skimming-opening, A, substantially as set forth.

8. The combination, with the conical separating-chamber C, having a dust-discharge opening, *d*, and an air-discharge opening, *e*, of an auxiliary separator, H, provided with a dust-discharge opening, *h*, and cleaners K, rotating within the auxiliary separator H, substantially as set forth.

403,363. DUST-COLLECTOR. ORVILLE M. MONEE, Jackson, Mich., assignor to the Knickerbocker Company, same place. Filed June 9, 1886. Serial No. 204,634. (No model.) Patented in England July 30, 1888, No. 4,423; in Germany July 26, 1888, No. 39,219; in France July 27, 1888, No. 177,638; in Belgium July 27, 1888, No. 74,005; in Canada Sept. 3, 1888, No. 34,854; in Italy Dec. 15, 1887, No. 23,535, and in Austria-Hungary Apr. 11, 1888, No. 49,960.



Claim.—1. A dust-collector consisting of a separating-chamber having an imperforate peripheral wall in which the whirling body of air forms a vortex, and in which the air moves from the periphery toward the axis of the vortex as it becomes freed from the solid matter, said chamber having at one end a discharge-aperture for the purified air opening into the atmosphere, and provided with a tubular guard projecting into the separating-chamber, at its opposite end a discharge-opening for the separated dust, and a tangential inlet for the dust-laden air, substantially as set forth.

2. A dust-collector consisting of a tapering separating-chamber having an imperforate peripheral wall in which the whirling body of air forms a vortex, and in which the air moves from the periphery toward the axis of the vortex as it becomes freed from the solid matter, said chamber having at its large end a tangential inlet for the dust-laden air, and a discharge-aperture for the purified air opening into the atmosphere, and provided with a tubular guard projecting into the separating-chamber, and at its small end a discharge-opening for the separated dust, substantially as set forth.

403,364. WHIFFLETREE-HOOK. WILLIAM H. MURPHY, Lowell, Mich. Filed Feb. 26, 1889. Serial No. 301,530. (No model.)



Claim.—1. The combination, with the ferrule A, provided with forwardly-extending walls, the upper wall being provided with a key-hole slot, and a swinging hook secured to the ferrule, provided on its end with an enlarged portion adapted to pass through the key-hole slot to locate the end of the hook within the open-ended box, substantially as shown, and for the purpose set forth.

2. The combination, with a ferrule having horizontal and vertical walls *b*, which project forwardly from said ferrule, the upper wall being provided with a key-hole slot, *c*, and a swinging hook secured to the ferrule so as to encircle the end of the whiffletree, the end of the hook being extended rearwardly beyond the forward portion of the ring and provided with an enlarged end, substantially as shown, and for the purpose set forth.

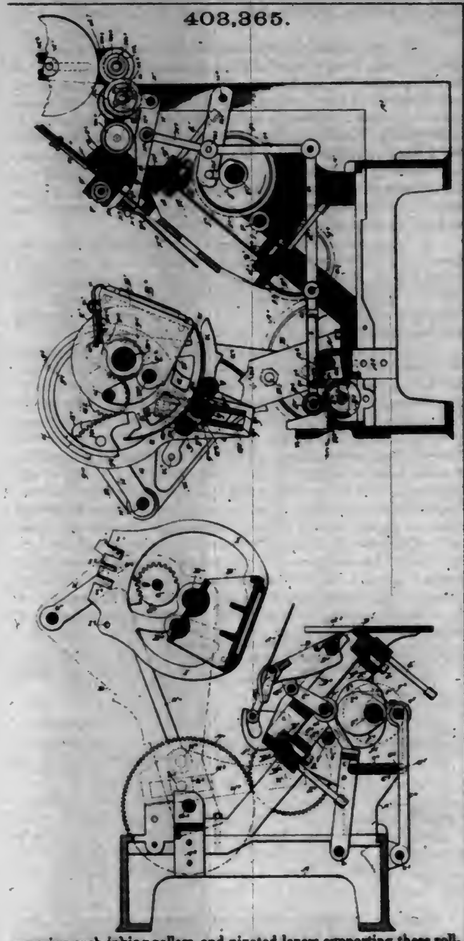
403,365. PLATEN PRINTING-PRESS. FLEMING W. MUMBTTER, Fostoria, Ohio. Filed Mar. 7, 1888. Serial No. 266,410. (No model.)

Claim.—1. The combination, with bed for holding the form and side pieces or supports for such bed, of two tie-bars for rigidly connecting the bed and such side supports, leaving spaces between the ends of the bed and such supports, substantially as set forth.

2. The combination of form and stationary and reciprocating distributing-rolls, ink-plate composed of a segment of a hollow cylinder, and mechanism, preferably as indicated, for oscillating such ink-plate on its axis past the distributing-rollers, substantially as set forth.

3. The combination, with inking-rollers, oscillating frame for

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carrying such inking-rollers, and pivoted levers supporting these rollers, said levers having a yielding sliding connection with the oscillating frame, of oscillating inking-plate arranged to meet and overlap the inking-rollers at the termini of the respective strokes thereof, substantially as set forth.

4. The combination, with oscillating inking-plate, substantially as indicated, of reciprocating distributing-rollers and inking-fountain located midway of the stroke of the inking-plate, substantially as set forth.

5. The combination, with inking-rollers, oscillating frame for holding the same, pivoted levers supporting these rollers, said levers having a yielding sliding connection with the oscillating frame, and oscillating inking-plate, substantially as indicated, of distributing-rolls for distributing ink to the said inking-plate with reverse movements of the latter, substantially as set forth.

6. The combination, with stationary and reciprocating distributing-rolls, of oscillating inking-roller frame and oscillating ink-plate, having, respectively, different axes and intergeared, so as to move simultaneously in opposite directions, substantially as set forth.

7. The combination, with stationary and reciprocating distributing-rolls, ink-roller frame, and ink-plate intergeared and arranged to operate simultaneously in opposite directions, of pinion mounted on the axle of the ink-roller frame, a toothed sector for engaging such pinion, and mechanism, preferably as described, for oscillating such sector, the respective movements of the latter being turned to the strokes of the bed, substantially as set forth.

8. The combination, with oscillating ink-roller frame bearing sliding blocks for holding the ink-rollers, of carved levers for engaging an attachment (preferably a roller) of such sliding blocks for supporting the inking-rollers during the lower part of their travel, substantially as set forth.

9. The combination, with roller-frame, inking-rollers, sliding blocks, and curved levers, substantially as indicated, of one or more springs connected with each curved lever for giving an upward pressure to the inking-rollers, substantially as set forth.

10. The combination, with ink-fountain and distributing-rolls, the latter being journaled in frames adapted to reciprocate endwise, of oscillating ink-roller frame having inclined tracks adapted to engage and reciprocate the distributing-roller frame, substantially as set forth.

11. The combination, with a distributing-roller having stationary journal-boxes, and an inking-fountain adapted to move to and from such distributing-roller, of distributing-rollers having reciprocating end movements, substantially as set forth.

12. The combination, with a distributing-roller having stationary journal-bearings and ink-fountain movable to and from such distributing-roller, of reciprocating distributing-rollers and oscillating ink-roller frame, the latter bearing inclines for reciprocating such distributing-rollers, substantially as set forth.

13. The combination, with a vibrating ink-fountain, distributing-roller having stationary journal-boxes, and distributing-rollers having end movement, of inclines on the ink-roller frame, said inclines being arranged in pairs and in reverse order for reciprocating the movable distributing-rolls simultaneously in opposite directions, substantially as set forth.

14. The combination, with bed, supporting-frame, and tie-bars connecting the bed with such support, substantially as indicated, of stationary and reciprocating distributing-rolls, ink-roller frame having an independent shaft with bearings in the side supports, segmental cylindrical ink-plate journaled on one of the tie-bars, and mechanism, substantially as indicated, for oscillating the inking-roller frame and ink-plate simultaneously in opposite directions, substantially as set forth.

15. The combination, with toothed sector for operating the inking mechanism, of tilting link connected by pitman with such sector, a crank for operating the tilting link, and a sliding block mounted on the crank-wrist, said sliding block operating in the slot of the link, substantially as set forth.

16. The combination, with toothed sector, connecting-pitman, tilting link, and crank-wrist, of crank for operating such mechanism, press-driving shaft, and impressional crank-shaft, all three so connected and intergeared that two complete revolutions of the impressional crank-shaft occur during one complete revolution in the inking-mechanism crank, substantially as set forth.

17. The combination, with rock-arm for operating the impression throw-off, of a register and rod for operating the latter, said rod being connected with the said rock-arm, the arrangement of parts being substantially as indicated, whereby the register is made inoperative when the impression throw-off is in use, substantially as set forth.

18. The combination, with a platen and an adjustable frame in which the latter is supported and on which it rests during the impression, of toggle-joint for actuating the platen and cam mechanism, preferably as indicated, for operating the toggle-joint, substantially as set forth.

19. The combination, with platen, of sub-platen or frame located back of the platen, such platen and sub-platen being pivoted or hinged together, and retaining-bolts and adjusting-screws for retaining and adjusting the sub-platen with the frame of the press, substantially as set forth.

20. The combination, with co-operating feed-rolls having, respectively, broad and narrow faces, substantially as indicated, of disks mounted on the axle of the narrow-faced feed-roll and on either side of the latter, said disks being adjustable lengthwise of the axle and being less in diameter than the intervening feed-roll, substantially as set forth.

21. The combination, with rack-bars connected with a crank in common for actuating the feed mechanism and delivering paper to and from the platen, of slip-joint had on one of the rack-bars, and mechanism, preferably as described, for regulating the lost motion of such slip-joint, substantially as set forth.

22. The combination, with co-operating feed-rolls arranged the one above the other, the lower roll having stationary journal-boxes and the upper roll being mounted on tilting-lever, of a clamping device for the paper, the upper member of such clamping device being connected with the tilting-lever and the lower member rising against the upper, the parts being arranged substantially as indicated, whereby the paper is clamped and the feed-rolls separated at the same operation, substantially as set forth.

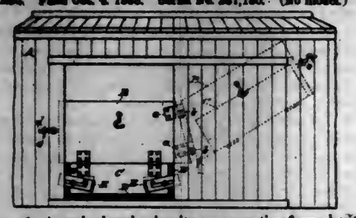
23. The combination, with feed mechanism for feeding paper to the platen and rock-arm for throwing such feed mechanism in and out of gear, substantially as indicated, of grippers connected with a free end of such rock-arm for holding the paper on the platen, substantially as set forth.

24. The combination, with the tilting-levers and feed-rolls mounted thereon, of cam mounted on the crank-shaft for actuating

such tilting-levers, and links connecting such tilting-levers with the respective feed mechanisms, all arranged substantially as indicated, whereby both sets of feed mechanism are simultaneously made operative or inoperative, substantially as set forth.

25. The combination of rock arm or lever for throwing an oscillating roll or gear in and out of mesh with the feed mechanism, said oscillating gear being held by said rock arm or lever and oscillated by a motion independent of the motion had by the rock arm or lever, substantially as set forth.

403,366. DOOR FOR GRAIN-CARS. Grande W. Orosz, Columbus, Ohio. Filed Oct. 4, 1888. Serial No. 287,120. (No model.)

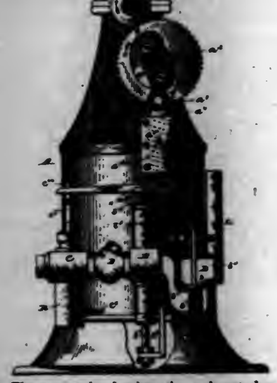


Claim.—1. A grain-door having its upper section formed with an acute-angle hinged end, and provided with an outwardly-swinging lower section folding back upon said upper section, substantially as specified.

2. In a grain-door for cars, the combination of the upper section having the acute-angle end, the butt-hinges, and the outwardly-swinging lower section having the flexible strips, substantially as specified.

3. In combination with the car, the grain-door adapted to swing on the sockets *b*, placed out of a vertical line with each other, the hinged lower section adapted to swing outwardly through the door-opening, and the locking-plates, substantially as specified.

403,367. GAS OR GASOLINE ENGINE. Lewis C. Parker and Beaumont Parker, Kansas City, Mo. Filed Jan. 11, 1889. Serial No. 296,063. (No model.)



Claim.—1. The gas-engine having the exhaust-chamber and its valve, the power-cylinder having an inlet port or passage, the ignition-chamber having a heated tube or thimble, a valve seated in the mouth or lower open end of said tube or thimble, and the specified means for operating said valves, the check-valve, and the vertically-movable carburetor having a valved lower tubular portion and orifices or apertures feeding the gas from its tubular portion out upon aerially apertured or perforated plates carried by said carburetor, substantially as and for the purpose set forth.

2. In a gas-engine, the combination of the engine, including its power-cylinder, the gear-wheels, one having the cam a^3, and the cams I, I^2, and S, the bar or lever a^4, carrying the roller, the spring a^7, acting upon the bar or lever a^4, the exhaust chamber and valve located over the passage or port b', the valve l', controlling the opening to the thimble or tube l by means of the rod l^2, and spring l^3, operated from the bar a^4, substantially as specified.

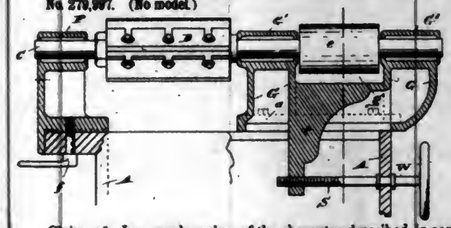
3. In a gas-engine, the combination of the engine, including its power-cylinder, the crank-shaft, the gear a', cam-wheel a^2, gear a^3, for actuating the bar or lever a^4, which causes the rod l^2 to open and close the mouth of the valve-seated thimble or tube l, having a closed outer end, the exhaust-chamber and the port b', and burner N, having gasoline fed to it by means of atmospheric pressure upon its surface to give the gasoline a uniform steady flow, substantially as set forth.

4. In a gas-engine, the combination of the engine with its cylinder, the gear a', cam-wheel a^2, gear a^3, for actuating the bar or lever a^4, which causes the rod l^2 to open and close the mouth of the valve-seated thimble or tube l, having a closed outer end, the exhaust-chamber and the port b', burner N, and the chamber or tank L, having a lower gasoline-compartment, a diaphragm or partition having an orifice around which is secured a tube having an upper open end and surrounded by water, the freely-moving closed-top cylinder, and the tube dipping in the lower gasoline-compartment of said chamber or tank and connecting with the burner tube or pipe, substantially as and for the purpose set forth.

5. In a gas-engine, the combination of the engine, its cylinder, the gears a' a^3, cam-wheel having cams specified, the bar or lever a^4, the valves l' and b, thimble or tube l, the stem or rod carrying plates c^3 and having the passage therein, the orifices c^4, communicating with said passage, and the valve c^5 to the lower part of said passage, spring c^6, inlet-passage c^4, cock c^3, and rod c^{3*}, substantially as set forth.

6. In a gas-engine, the combination of the engine, its cylinder, the actuating gears and cams, the bar or lever a^4, the exhaust-chamber having the passages b' b^2, the thimble l, controlled by the valve upon the rod l', which is actuated by rod l^2 and spring l^3, the burner N, the tank L, having an inverted or open-bottomed and closed-top cylinder exerting atmospheric pressure upon the liquid or gasoline through a tube secured upon a partition or diaphragm in said tank or chamber, tube m', connecting with the burner-pipe, the cock m, the ignition-chamber E, the check-valve D, and the carburetor C, having the horizontal and vertical chambers, one having a narrow downward extension and the stem or rod carrying the serially-apertured plates, and in the lower end of its passage a valve, said stem or rod also having a series of apertures or orifices and a spring applied thereto, itself having connection with the lever or bar a^4 and acted upon by the engine-governor, said downward extension of the vertical chamber of the carburetor having connection with a gas-supply, substantially as and for the purpose set forth.

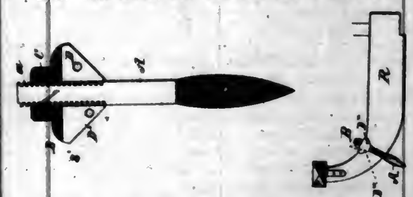
403,368. WOOD-WORKER. George W. Fassel, Cincinnati, Ohio, assignor to J. A. Fay & Company, of Ohio. Filed July 14, 1888. Serial No. 279,997. (No model.)



Claim.—1. In a wood-worker of the character described, in combination with the cutter-arbor, its cutter-head, and driving-pulley, a detachable but relatively-fixed front bearing for said arbor, and two adjustable bearings, one intermediate between the cutter-head and belt-pulley and the other terminal beyond the belt-pulley, said two latter bearings being adjustable upon the bed of the machine to determine the position of the cutter-head, substantially as set forth.

2. In a wood-worker, in combination with the cutter-arbor and its drive-pulley, a yoke-frame affording rigidly-connected bearings for the arbor at each side of the drive-pulley and adjustable upon the supporting-bed in the line of the arbor to vary the position of the latter longitudinally in its front or fixed bearing, substantially as set forth.

403,369. CORN-PLANTER ATTACHMENT. Walter Price, Lyons, Nebr. Filed Oct. 22, 1888. Serial No. 288,870. (No model.)

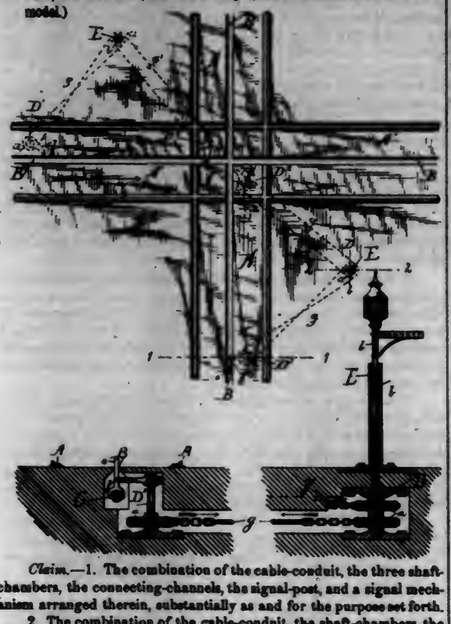


Claim.—1. In a corn-planter attachment, the tooth A, having the slot S, for bestriding the runner R, in combination with the adjustable cap B, for securing the tooth thereto, substantially as set forth.

2. In a corn-planter attachment, the combination of the slotted tooth A and the cap B, whereby the tooth may be reversed when worn, substantially as described.

3. In a corn-planter-attachment, the slotted tooth A, screw-threaded at the top, in combination with the cap B and nut C, whereby the tooth may be adjusted and reversed when desired, substantially as set forth.

403,370. AUTOMATIC SIGNAL FOR RAILWAYS. Gustave Provost, San Francisco, Cal. Filed July 9, 1888. Serial No. 279,465. (No model.)



Claim.—1. The combination of the cable-conduit, the three shaft-chambers, the connecting-channels, the signal-post, and a signal mechanism arranged therein, substantially as and for the purpose set forth.

2. The combination of the cable-conduit, the shaft-chambers, the connecting-channels, the three vertical shafts, the sprocket-wheels, the chains *g g'*, the two reciprocating arms, and the gripping mechanism, substantially as and for the purpose described.

3. The combination of the cable-conduit, the shaft-chambers, the connecting-channels, the car-grip, the reciprocating arms, the upright shafts, the sprocket-wheels, the chains *g g'*, the signal-rod, and the protecting-post, all substantially as set forth.

403,371. HORSE-POWER. John C. Prust, El Dorado Springs, Mo. Filed Dec. 14, 1887. Serial No. 257,635. (No model.)



Claim.—In a horse-power, a master-wheel provided at its periphery with inclined teeth which engage with a vertically-arranged bull-pinion, which is threaded to engage with the inclined teeth of the master-wheel, the lower end of the shaft of the bull-pinion carrying a pinion oppositely threaded, the last-mentioned pinion meshing with a spirally-grooved pinion on a horizontal shaft, whereby when the master-wheel is turned the vertical shaft having the oppositely-threaded pinions will be caused to rotate without exerting a tendency to raise or lower said shaft, substantially as shown, and for the purpose set forth.

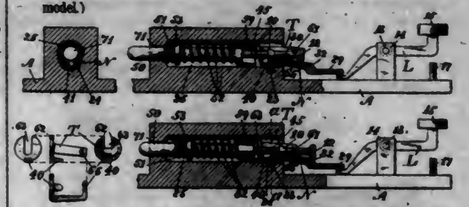
403,372. HORSE-POWER. John C. Prust, El Dorado Springs, Mo. Filed Jan. 31, 1889. Serial No. 298,203. (No model.)



Claim.—1. The combination, substantially as described, of the master-wheel having oppositely-inclined V-shaped grooves 1 and 2 extending from the center of the periphery to the respective edges, two similarly-grooved pinions mounted to mesh with the master-wheel and having the lower ends of their shafts fitted with worm-wheels, a counter-shaft arranged between the worm-wheels and provided with a worm or worms to engage said wheels, and a sweep secured to the upper face of the master-wheel.

2. The combination, substantially as described, of the master-wheel having oppositely-inclined grooves, the two similarly-grooved pinions engaging the master-wheel at diametrically-opposite points and having their shafts fitted near their lower ends with worm-wheels, the counter-shaft mounted between the worm-wheels and fitted with worms to engage therewith, and a sweep secured to the upper face of the master-wheel.

403,373. MECHANICAL MOVEMENT. Francis H. Richards, Hartford, Conn., assignor to The Office Specialty Manufacturing Company, of New York. Filed Apr. 18, 1888. Serial No. 271,074. (No model.)



Claim.—1. In a mechanism of the class specified, the combination of the spring-actuated latch provided with two catches set one in advance of the other, the escapement having two corresponding catches, and a lever pressing said latch against said escapement, said escapement being pivoted at one end thereof and said lever taking its bearing on the escapement between said pivot and said latch, all substantially as described.

2. The combination, in a mechanism of the class specified, of a spring-actuated latch and lever, substantially as described, and the escapement having the notch 41, said lever having the tongue 40, engaging said escapement in said notch, substantially as described.

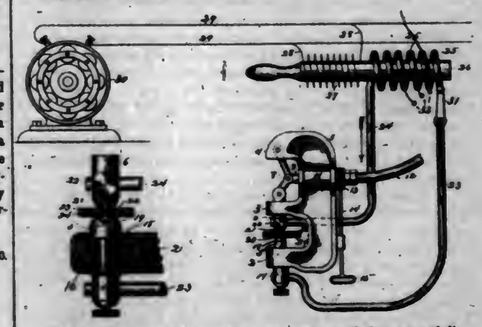
3. The combination, with the latch, the lever T, and the spring on said latch, of the conical thimble 59, all substantially as described.

4. The combination, with a frame having the bore 25, and the fulcrum-notch 24 in said bore, of the latch 50, escapement N, lever T, spring 52, and thimble 59, substantially as described.

5. The combination of latch 50, having the reduced portion 45, and the lever T, having the vertical slot 63, as and for the purpose set forth.

6. The combination, in a mechanism of the class specified, with the spring-actuated latch arranged to be unhooked, substantially as described, and having collar 53, of the spring 51, forward of said collar, all substantially as described, and for the purpose specified.

403,374. ELECTRIC RIVETING APPARATUS. Elias E. Ries, Baltimore, Md. Original application filed Sept. 15, 1888, Serial No. 285,555. Divided and this application filed Mar. 5, 1889. Serial No. 301,914. (No model.)



Claim.—1. An electric riveting apparatus consisting, essentially, of a metallic anvil and a metallic heading-tool, and a charged electric circuit including the anvil and tool, substantially as described.

2. An electric riveting apparatus consisting, essentially, of a metallic anvil, a metallic heading-tool, an electric generator, and conductors leading from the generator and terminating in the anvil and tool, respectively, substantially as described.

3. An electric riveting apparatus consisting, essentially, of a relatively stationary metallic anvil, a reciprocating metallic heading-tool, and a charged electric circuit including the said anvil and tool, substantially as described.

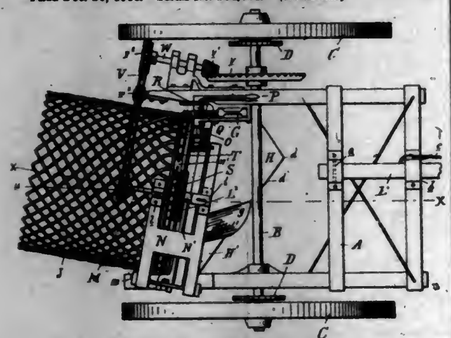
4. An electric riveting apparatus consisting of an insulated and relatively stationary metallic anvil, a reciprocating metallic heading-tool, an electric generator, and conductors leading from the latter to the anvil and heading-tool, respectively, substantially as described.

5. An electric riveting apparatus consisting of an insulated metallic anvil, a metallic heading-tool, an electric generator, conductors leading from the generator to the anvil and heading-tool, and a current-regulator, substantially as described.

6. A riveting apparatus consisting, essentially, of an anvil and a heading-tool, constituting the terminals of an electric circuit, which terminals are adapted to be bridged by a metallic rivet, substantially as described.

7. The combination, with the terminals of a charged electric circuit adapted to pass a heating-current through and exert endwise pressure upon a rivet or rivet-blank, of a current-regulator for controlling the heat of the rivet while under such pressure, substantially as described.

403,375. POTATO-DIGGER. CYRUS ROGERS, Three Rivers, Mich. Filed Dec. 26, 1888. Serial No. 294,721. (No model.)



Claim.—1. In a potato-digger, the combination, with the digging-plow, of the rotary cage consisting of an annular head provided with an outwardly-projecting flange and with rearwardly-projecting tines, and of supporting devices comprising the supporting-roller on the inside of the head and outside rollers upon the sides of the head and on top thereof engaging with the outwardly-projecting flange of the head, substantially as described.

2. In a potato-digger, the combination, with the digging-plow, of the rotary cage consisting of the annular head I, provided with the outwardly-projecting flange and the rearwardly-projecting tines, the supporting-roller K on the inside of the cage at the top thereof, the side bearing-rollers, L and L', and the top roller, L'', said rollers L, L', and L'' engaging with the flange on the head of the cage, substantially as described.

3. In a potato-digger, the combination, with the digging-plow, of the rotary cage consisting of an annular head provided with outwardly-projecting flange and with rearwardly-projecting tines, and of circumferential supporting devices comprising the supporting-roller K on the inside of the head and mounted upon a hinged frame risingly and fallingly supported, the outside rollers, L and L', stationarily secured to the frame of the machine and engaging with the flange A on the head of the cage, and the top rollers, L'', engaging with the flange A on the head of the roller, and risingly and fallingly supported by a hinged frame connected to the hinged frame of the supporting-roller, substantially as described.

4. The combination, with the revolving cage, of a potato-digger provided with the head I and circumferential flange A, the drive-chain passing around the head of said cage, and the sprocket-wheel mounted on top of the cage, and of independent circumferential bearings for said cage, consisting of an inside roller, K, under the head of the cage, the outside rollers, L and L', and the top roller, L'', engaging with the flange on the head of the cage, substantially as described.

5. The combination of the revolving cage of a potato-digger provided with the head I and the circumferential flange A, the drive-chain passing around the head of said cage, and the sprocket-wheel mounted on the shaft M on top of the cage, the rising and falling frame N, on which the said shaft is mounted, the independent supporting-roller K under the head of the cage, the rising and falling frame N', upon which said roller is mounted, the connection between the frame N and N', the winding-roller o, from which the frame N is supported, the rock-shaft O, upon which said winding-roller is mounted and the lever P, for actuating said rock-shaft, substantially as described.

6. The combination of the revolving cage provided with the head I and the circumferential flange A, the drive-chain passing around the head of said cage, and the sprocket-wheel mounted on the shaft M on top of the cage, the hinged frame N, on which the said shaft is mounted, the independent supporting-roller K under the head of the cage, the hinged frame N', upon which said roller is mounted, the connection between the frames N and N', the stationary outside roller, L'', on the shaft M on top of the cage, the winding-roller o, supporting the hinged frame N, the rock-shaft O, upon which the roller is adjustably secured, the lever P, for actuating the rock-shaft, the toothed segment secured to the rock-shaft, and the digging-plow provided with the rising and falling standard G, provided with the toothed rack j, engaging with the segment Q, all arranged substantially as described.

7. The combination, with the supporting-wheels, axle, and frame of a potato-digger, of the rock-shaft mounted on top of said frame and provided with a raising and lowering lever, and of a digging-plow risingly and fallingly supported by actuating connection with said rock-shaft, and the revolving cage risingly and fallingly supported by actuating-connection with the same shaft, substantially as described.

8. In a potato-digger, the combination of the supporting-wheels, axle, and frame thereof, the rock-shaft on top of said frame and provided with the raising and lowering lever, the toothed segment secured on said rock-shaft, the digging-plow provided with the toothed standard engaging with the said toothed segment, the winding-roller secured upon said rock-shaft, and the revolving cage suspended from said roller, substantially as described.

9. In a potato-digger, the combination of the supporting-wheels, axle, and frame thereof, the rock-shaft mounted on top of said frame and provided with the raising and lowering lever, the toothed segment secured on said rock-shaft, the digging-plow provided with the toothed standard engaging with said toothed segment, the winding-roller adjustably secured upon said rock-shaft, and the revolving cage suspended from said winding-roller, substantially as described.

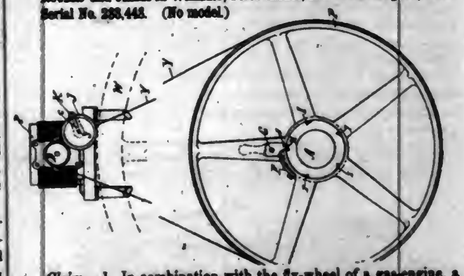
10. In a potato-digger, the combination, with the plow, of the revolving cylindrical cage arranged to the rear of the plow and consisting of the annular head and spiral tines secured thereto and supported at their forward ends only, said cage being adapted to operate as a screw-discharge, substantially as described.

11. In a potato-digger, the combination, with the digging-plow having its discharge end to one side of the center of the plow, of the revolving cage mounted in the rear of said discharge end of the plow at an angle to the line of draft and having its discharge end in the center of the plow, with its teeth arranged spirally with their forward ends only supported, substantially as described.

12. In a potato-digger, the combination, with the revolving cage, of the digging-plow mounted in front of said cage and consisting of the standard G, risingly and fallingly secured to the frame of the plow, the central share, H, having the cutting-edge *d'* and the point *d*, the upturned sides *f* and *g*, and the outside scraper, H', substantially as described.

13. In a potato-digger, the combination, with the digging-plow, of the rotary cage, consisting of an annular head provided with an outwardly-projecting flange, the circumferential bearing-rollers engaging with said head, and the supporting-roller on the inside of the head risingly and fallingly supported from the frame of the machine, substantially as described.

403,376. DYNAMO-SPEEDER FOR GAS-ENGINES. NEWTON ROGERS and JAMES A. WHARRY, Terre Haute, Ind. Filed Aug. 22, 1888. Serial No. 283,442. (No model.)



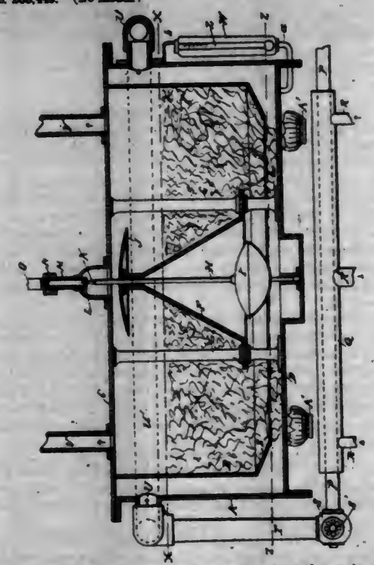
Claim.—1. In combination with the fly-wheel of a gas-engine, a friction-wheel mounted adjustably in a slotted standard, and a speed-pulley on a dynamo-shaft, said friction-wheel being adapted to transmit motion from the fly-wheel to said speed-pulley and to be thrown out of gear by movement in said slot, substantially as described.

2. In a gas-engine, the combination, with the main shaft, fly-wheel thereon, and friction connections between said fly-wheel and the speed-pulley, of a dynamo, a crank screw-threaded into the end of the main shaft by means of which the shaft and dynamo are turned in starting the engine, and which automatically unscrews from the shaft when the engine attains a normal speed, substantially as described.

3. In combination with the main-shaft of a gas-engine, a dynamo operated thereby, and a crank screw-threaded into the end of the shaft, said crank automatically unscrewing itself from the shaft when the speed of the shaft exceeds the speed with which the crank is turned manually, substantially as described.

4. In combination with the main shaft of a gas-engine, a fly-wheel attached thereto, speed-connections between said fly-wheel rim and the spindle of a dynamo, a loose pulley on said shaft held in connection between said pulley and the spindle of the dynamo, a crank for turning the main shaft manually, all arranged substantially as described, whereby, when the shaft is operated manually, the dynamo receives its motion from the rim of the fly-wheel, and when the engine attains its normal speed the dynamo may receive a slower relative speed from the shaft-pulley, substantially as set forth.

408,377. CARBURETOR FOR GAS-ENGINES. NEWTON ROGERS and JAMES A. WHARRY, Terre Haute, Ind. Filed Aug. 22, 1888. Serial No. 283,449. (No model.)

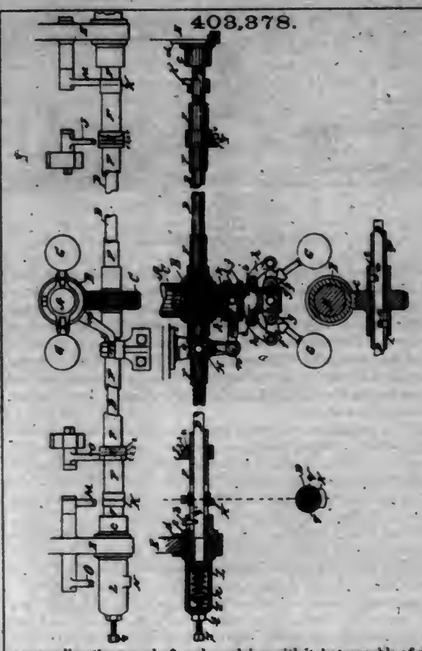


Claim.—1. In a carburetor, the combination of a main closed vessel, an annular partition within the same extending from the top nearly to the bottom of the vessel and inclosing the central portion of the vessel, an annular inwardly-extending ledge around the bottom of the partition, an air-induction pipe entering the outer portion of the main vessel, a vapor-exit from the central portion of the main vessel, an oil-induction pipe to the central portion of the main vessel, and a valve to said oil-pipe provided with a float located within the main vessel and adapted to regulate the flow of oil, substantially as described.

2. In a carburetor, the combination of a main closed vessel, an annular partition within the same extending from the roof nearly to the floor of said vessel and inclosing the central portions of the vessel and provided with an inwardly-extending ledge around its lower portion, an air-induction pipe to the outer portion of the main vessel, an oil-induction pipe to the central portion of the main vessel, a valve to said oil-pipe, a float within the central portion of the main vessel connected to said valve and adapted to regulate the flow of oil, a shield fixed over said float, and a spreader carried by the shield, substantially as described.

408,378. GOVERNOR FOR GAS-ENGINES. NEWTON ROGERS and JAMES A. WHARRY, Terre Haute, Ind. Filed Aug. 22, 1888. Serial No. 283,450. (No model.)

Claim.—1. In combination with the main shaft of a gas-engine, a worm on said shaft gearing with a worm-wheel on a way-shaft, which operates the engine-valves, a centrifugal governor on the main shaft, bell-crank connections between the governor-sleeve, a sleeve



surrounding the way-shaft and revolving with it, but capable of sliding longitudinally thereon, and a cam rigidly secured to said sleeve for operating the engine inlet-valve, substantially as described.

2. In combination with the main shaft of a gas-engine, a centrifugal governor on said shaft, driving-connections between said shaft, a driving-link between the movable governor-collar and a sliding sleeve on the way-shaft, a connecting-pin between the sleeve and the way-shaft, a slot in said sleeve surrounding said pin; whereby the said sleeve is caused to revolve with the way-shaft and to slide by the action of the governor, and an engine inlet-valve cam on said sliding cam.

3. In combination with the main shaft of a gas-engine, a centrifugal governor on said shaft, a sliding collar on said shaft operated by the governor, a double-forked bell-crank lever, one fork fitting in a groove on said sliding collar, the other fork fitting a grooved collar on a sleeve surrounding the way-shaft, a connection between said sleeve and the way-shaft, a slot in said sleeve surrounding said connection, a driving-connection between the main and way shafts, and a gas-inlet valve-cam on said sliding sleeve, substantially as described.

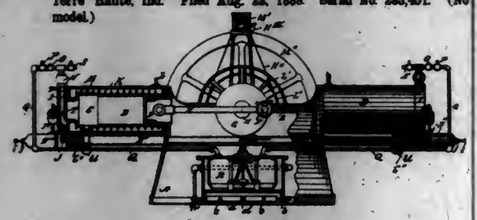
4. In combination with the main shaft of a gas-engine, a way-shaft operated thereby, a governor on said main shaft, connections between said governor and a sleeve on said way-shaft, a pin for causing the sleeve and way-shaft to revolve together, a slot in said sleeve to slide under the influence of the governor, and a spring pressing on the end of said sleeve to oppose the motion produced by the governor, and a gas-inlet valve-cam on said sleeve, substantially as described.

5. In combination with a way-shaft driven by the engine, a sleeve surrounding said way-shaft, a gas-inlet valve-cam on said sleeve, a pin connecting the sleeve and the way-shaft, a slot for said pin in said sleeve, a spring pressing against the end of the sleeve, an adjusting device for said spring, a speed-governor operated by the engine, and connections between the governor and the sleeve whereby a variation in the speed of the governor produces a sliding motion in the sleeve, substantially as described.

6. The combination of the shaft A, worm-wheel B on said shaft, gearing with a worm-wheel, C, on a shaft, D, a sleeve, F, a pin, *a*, slot *c*, a governor on the main shaft, double-forked bell-crank M O, connecting the governor with sleeve F, a spring, *r*, adjusting-screw *s* at the end of sleeve F, and a cam, I, on the sleeve, substantially as set forth.

7. In a duplex gas-engine, the combination of the valve-actuating way-shaft, a sliding sleeve thereon operated by a centrifugal governor, and two cams on said sleeve for operating the inlet-valves of the two cylinders, said cams being so situated with respect to the valve-levers that one cam operates to cut off the gas-inlet quicker than the other, whereby the power of one cylinder is reduced and finally destroyed in advance of the other, substantially as described.

403,379. GAS-ENGINE. NEWTON ROGERS and JAMES A. WEARRY, Terre Haute, Ind. Filed Aug. 23, 1888. Serial No. 283,451. (No model.)



Claim.—1. The combination, with a gas-engine, a main shaft thereof, a worm thereon, a wheel gearing with said worm rigidly secured to a way-shaft, an exhaust-cam on said way-shaft, and a sleeve adapted to move longitudinally on and revolve with the way-shaft, of an inlet-valve cam on said sleeve and revolving bearings in which the ends of the way-shaft are secured and in which the sleeves move longitudinally, and means for shifting the sleeve longitudinally in the bearings and on the way-shaft upon a change of speed of said engine, substantially as described.

2. In a gas-engine, the combination of a way-shaft operated from the main shaft, revolving bearings in which the ends of the way-shaft are secured, a sliding sleeve on said way-shaft and in said revolving bearings, an exhaust-valve cam on the way-shaft, inlet-cam on the sleeve, a cap secured to the end of the revolving bearings, and an ignitor-cam on said cap, substantially as described.

3. In a duplex gas-engine, the combination, with a main shaft, a way-shaft operated thereby, revolving bearings in which the ends of the way-shaft are secured, a sleeve sliding on said way-shaft and in said revolving bearings, exhaust-cams on the way-shaft, inlet-cams on the sleeve, caps secured to said bearings containing springs bearing on the ends of the sleeve, ignitor-cams on said caps, and connections with a governor for sliding said sleeve independently of the way-shaft, whereby the positions of the inlet-cams may be altered without altering the positions of the exhaust-cams, substantially as described.

4. In combination with the way-shaft of a gas-engine operated by worm-gear connection with the main shaft thereof, a governor on the main shaft and connections therefrom to a sliding sleeve on the way-shaft, revolving bearings carried by brackets secured to the ends of the way-shaft in which said sleeve slides, connections between the way-shaft and the sleeve for causing them to revolve together, springs for keeping the sleeve in a normal position longitudinally on the way-shaft and to resist the action of the governor, means for adjusting the compression of said springs, inlet-cams on the sleeve, ignitor-cams attached to the revolving bearings, and exhaust-cams on the way-shaft, substantially as described.

5. In combination with the two gas-engines, connections therewith and with a single crank-pin and crank-shaft, a way-shaft operated by this shaft, two exhaust-cams on the way-shaft, a sleeve on the way-shaft, two inlet-cams on this sleeve, the distance between them being less than the distance between the respective inlet-valve levers operated by said cams, means for shifting the sleeve lengthwise as the speed of the engine varies, whereby the inlet-valve of one engine is rendered inoperative in advance of the other, and revolving bearings and caps secured to the way-shaft in which the sleeve slides having ignitor-cams thereon and operating a reciprocating electric ignitor, substantially as set forth.

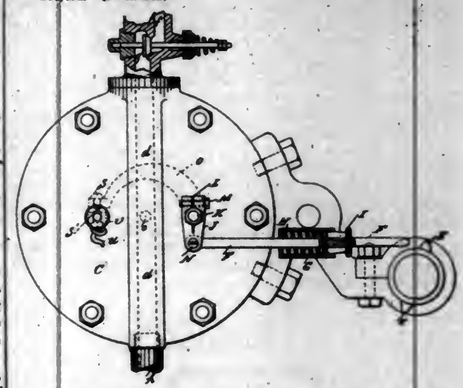
6. A gas-engine cylinder provided with heat-radiating surfaces surrounded by a water-jacket, whereby the cooling contact with the air-circulating water is increased, substantially as described.

7. In combination with the two cylinders of a duplex gas-engine, inlet-valves therefor, connections between said valves and a carburetor, exhaust-valves connected with the cylinders and connections therewith and with a jacket surrounding the air suction-pipe of the carburetor, a common outlet from said jacket, and a cold-air valve in said suction-pipe for varying the temperature of the heated air of the carburetor and controlling the temperature of the charge admitted to the cylinders, and air-valves connected with the engine-inlet, substantially as described.

8. The combination, with the main shaft H of a gas-engine, of a worm, A', thereon, a worm-wheel, A^3, gearing therewith, secured by pins *g* to a way-shaft, A^2, a sleeve, D^2, sliding on the shaft A^2, and slots *g'*, to permit this sliding by the pins *g*, said pins causing the shaft A^2 and sleeve D^2 to revolve together, said sleeve and way-shaft serving to carry the inlet and igniter cams and the exhaust-cams, respectively, substantially as described.

9. In combination with a duplex gas-engine, a way-shaft and governor operated thereby, a sliding sleeve on the way-shaft operated by said governor, inlet-cams on the sleeve, exhaust-cams on the way-shaft, revolving bearings for keeping the way-shaft in a fixed longitudinal position, igniter-cams attached to said bearings, adjustable electric igniting devices operated by said cams, and a carburetor heated by the waste heat of the engine for supplying the gas to the inlet-valves, and connections from the exhaust-valves of the cylinders to a heater for the air-inlet of the carburetor, substantially as described.

403,380. IGNITOR FOR GAS-ENGINES. NEWTON ROGERS and JAMES A. WEARRY, Terre Haute, Ind. Filed Aug. 22, 1888. Serial No. 283,452. (No model.)



Claim.—1. In a gas-engine igniter, the combination of a reciprocating spring-held rod, a rocker-arm secured thereto, and vibrating electrode attached to said rocker-arm, and a fixed electrode secured to the cylinder, substantially as set forth.

2. In an electric-igniter device, a spring-held rod, means for reciprocating the rod, and a rocker-arm operated by said rod, in combination with an oscillating electrode attached to the rocker-arm inside of the cylinder, a fixed electrode carried by the cylinder, and means for adjusting the position of the oscillating electrode with respect to the rocker-arm, whereby the throw of the reciprocating rod may be altered and the length of passing spark to be changed, substantially as described.

3. The combination of the rod F, spring G, casing H, adjusting-nut I, rocker J, provided with slit L and clamp-bolt M, electrode O, secured to rocker J, and the fixed electrode, substantially as described.

4. The combination, with a shaft operated by the engine and provided with one or more cams, and a rod reciprocated by said cams, of a rock-shaft operated by said rod, said rock-shaft being adapted to oscillate a moving electrode of a gas-engine ignitor, substantially as described.

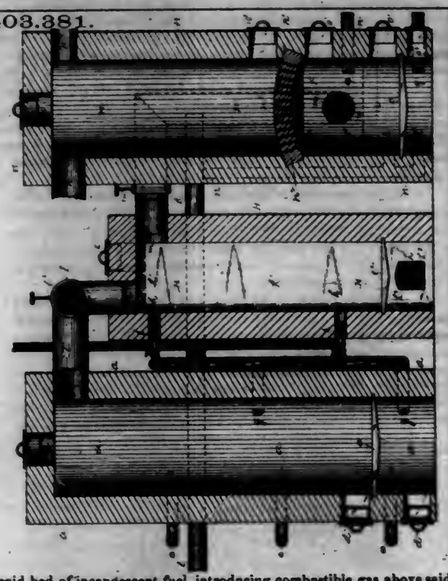
403,381. PROCESS OF MANUFACTURING GAS. JAMES M. ROSE, Allegheny, Pa., assignor, by mesne assignments, to the National Heat and Power Company, of New Jersey. Filed Feb. 23, 1888. Serial No. 264,982. (No model.)

Claim.—1. The herein-described process of manufacturing gas, consisting in raising a mass of coal or coke to incandescence, passing the products of combustion therefrom through a mass of refractory material containing hydrocarbon, burning said products and the hydrocarbon vapors over a second mass or bed of incandescent fuel and passing the heated products therefrom through a mass of fixing material composed of dolomite or other refractory material having solid carbon intermingled therewith to heat the same, and then passing steam into said first mass of incandescent coal and the gases formed through said refractory material, passing steam through said second bed of incandescent fuel, and mixing all the resultant gases and passing them through said fixing material, substantially as and for the purposes set forth.

2. The herein-described improvement in the manufacture of gas, consisting in blasting a mass of carbon to incandescence and passing the products of combustion therefrom through a mass of refractory material, burning the products after such passage over a second mass or bed of incandescent carbon, and passing the heated products therefrom through a mass of fixing material to heat the same, then passing steam into the first mass of incandescent carbon, the gases formed thereby through the refractory material, passing steam through the second mass of incandescent carbon, and mixing all the gases and passing them through the heated fixing material, substantially as and for the purposes set forth.

3. The herein-described steps in the manufacture of gas, consisting in heating and burning unconsumed products of combustion above a bed of incandescent fuel and passing the resultant gases through a mass of fixing material to heat the same, then passing steam through

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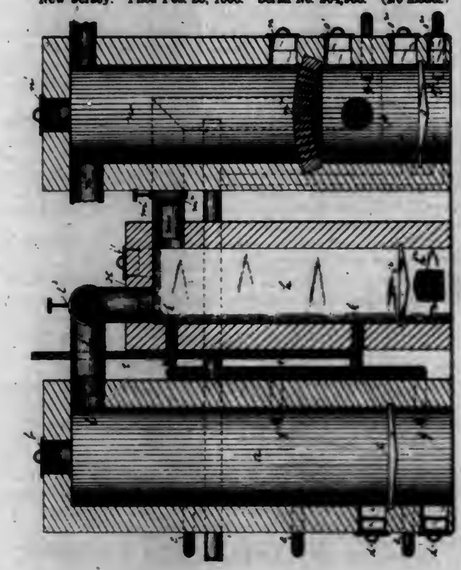


said bed of incandescent fuel, introducing combustible gas above said bed of fuel, and intermingling said gases and passing them through said heated fixing material, substantially as and for the purposes set forth.

4. The herein-described steps in the manufacture of gas, consisting in raising a bed of fuel to incandescence and passing the products therefrom through a mass of fixing material composed of dolomite or other refractory material having solid carbon intermingled therewith, and then passing steam through said bed of incandescent fuel and the resultant gas through said mass of fixing material, substantially as and for the purposes set forth.

5. As steps in the manufacture of gas, blasting a mass of carbon to incandescence and passing the products of combustion therefrom through a mass of refractory material, and then burning the products after such passage over a second mass of carbon and passing the heated products therefrom through a mass of fixing material to heat the same, substantially as and for the purposes set forth.

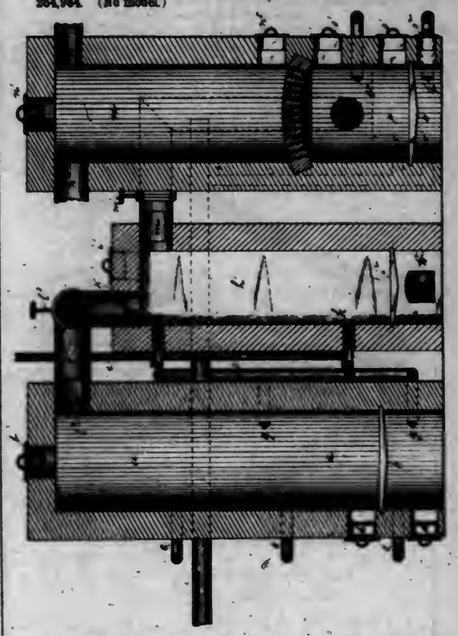
403,382. PROCESS OF MANUFACTURING GAS. JAMES M. ROSE, Allegheny, Pa., assignor to the National Heat and Power Company, of New Jersey. Filed Feb. 23, 1888. Serial No. 264,983. (No model.)



Claim.—1. The herein-described process of manufacturing gas, consisting in raising a mass of coal or coke to incandescence, passing the products of combustion therefrom through a mass of refractory material and during their passage introducing liquid or solid hydrocarbons into said products and said refractory material in such quantity as to coat the refractory material, and burning the said products and the resultant hydrocarbon vapors to heat a body of fixing material, and subsequently passing steam into said mass of incandescent carbon and the gases formed through said coated refractory material and said heated fixing material, substantially as and for the purposes set forth.

2. The herein-described steps in the manufacture of gas, consisting in raising a mass of coal or coke to incandescence, passing the products of combustion therefrom through a mass of refractory material and during their passage introducing solid or liquid hydrocarbons into said products and said refractory material in such quantity as to coat the refractory material, and burning said products and the resultant hydrocarbon vapors to heat a body of fixing material, substantially as and for the purpose set forth.

403,383. PROCESS OF MANUFACTURING GAS. JAMES M. ROSE, Allegheny, Pa., assignor, by mesne assignments, to the National Heat and Power Company, of New Jersey. Filed Feb. 23, 1888. Serial No. 264,984. (No model.)



Claim.—1. The herein-described process of making fuel-gas, consisting in carrying the products of combustion obtained in raising one mass of carbon to incandescence through a mass of refractory material and during their passage introducing a hydrocarbon into said products and said refractory material, and then passing the gases so obtained through a mass of fixing material previously heated by the products of combustion from another mass of ignited carbon and thence to the gas-holder, and subsequently passing steam through both bodies of incandescent carbon, carrying the gases from one such body through the coated refractory material, mixing them with the gases from the other such body, and passing all the gases through the fixing material and into the gas-holder to mingle with those obtained from the first steps of the process, substantially as and for the purposes set forth.

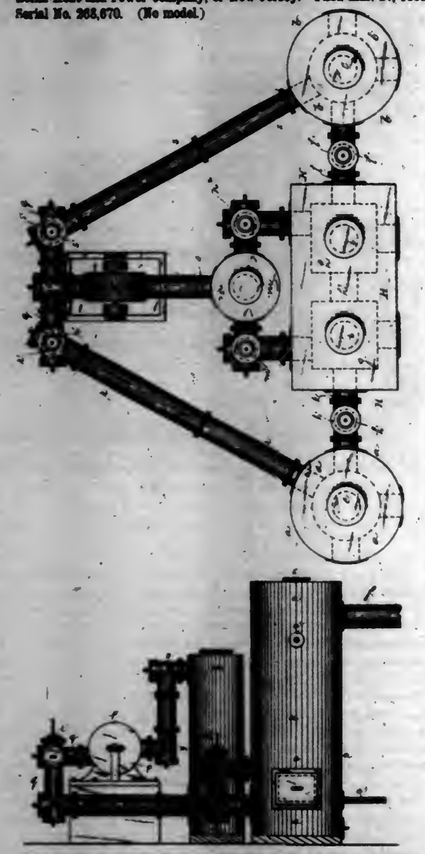
2. The herein-described process of making fuel-gas, consisting in carrying the products of combustion obtained in raising a mass of carbon to incandescence through a mass of refractory material, and during their passage introducing liquid or solid hydrocarbons into said products and said refractory material in such quantity as to coat such refractory material, and then passing the gases so obtained to the gas-holder, and subsequently passing steam through said body of incandescent carbon and the gases obtained through said coated refractory material, and thence to the gas-holder to mingle with those obtained from the first steps of the process, substantially as and for the purposes set forth.

3. The herein-described improvement in the art of making fuel-gas, consisting in raising a mass of carbon to incandescence, carrying the heated products therefrom through a mass of refractory material, and during their passage introducing liquid or solid hydrocarbons into said products and said refractory material in such quantity as to coat such refractory material, and then passing the gases so obtained through a mass of heated fixing material, substantially as and for the purposes set forth.

4. The herein-described process of making fuel-gas, consisting in raising a mass of carbon to incandescence, and carrying the heated products therefrom through a mass of refractory material and during their passage introducing liquid or solid hydrocarbons into said products and said refractory material in such quantity as to coat such refractory material, substantially as and for the purposes set forth.

5. The herein-described steps in the manufacture of fuel-gas, consisting in carrying the products of combustion from one mass of incandescent carbon through a mass of fixing material to heat the same, then raising another mass of carbon to incandescence and carrying the heated products of combustion from said second mass through a mass of refractory material and during their passage introducing a hydrocarbon into said products and said refractory material, and then passing the gases so obtained through said mass of fixing material previously heated, as aforesaid, and thence to the gas-holder, substantially as and for the purposes set forth.

408,884. APPARATUS FOR THE MANUFACTURE OF GAS. JAS M. ROSE, Allegheny, Pa., assignor, by mesne assignments, to the National Heat and Power Company, of New Jersey. Filed Mar. 27, 1888. Serial No. 268,670. (No model.)



Claim.—1. A gas apparatus having two or more cupola-generators with a casing containing a hydrocarbon-chamber connected to each generator, a scrubber connected to said hydrocarbon-chamber, an exhauster connected at one end to said scrubber and at its other end to each of the generators, and suitable valves for controlling said connections, substantially as and for the purpose set forth.

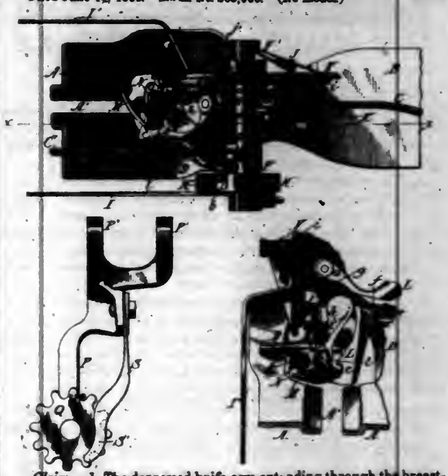
2. A gas apparatus having two or more cupola-generators with a casing containing a hydrocarbon-chamber connected to each generator, an exhauster communicating at one end with said hydrocarbon-chamber and at its other end to each of the generators, and suitable valves for controlling said connections, substantially as and for the purposes set forth.

3. A gas apparatus having a cupola-generator, a casing containing a hydrocarbon-chamber connected thereto, a scrubber connected to said hydrocarbon-chamber, a second cupola-generator, and an exhauster connected at one end to said scrubber and at its other to the bottom of the second generator, substantially as and for the purpose set forth.

4. A gas apparatus having the two cupola gas-generators *a b*, the casing containing the double-compartment hydrocarbon-chamber, H, the two compartments *h g* of which are connected by a flue, *n*, a pipe or flue connecting the generator *a* and compartment *g*, and a pipe or flue connecting the generator *b* and compartment *h*, substantially as and for the purposes set forth.

5. A gas apparatus having two cupola gas-generators, a casing containing a double-compartment hydrocarbon-chamber, the compartments of which are connected, connections between each generator and one of the compartments, a scrubber, connections between said scrubber and each of the compartments of the hydrocarbon-chamber, an exhauster which is connected at one end to the scrubber and at the other end to each of the generators, and valves for controlling the several connections, substantially as and for the purpose set forth.

408,885. GRAIN-BINDER. CHRISTIAN H. SALSMAN, Chicago, Ill. Filed June 12, 1886. Serial No. 205,668. (No model.)



Claim.—1. The depressed knife-arm extending through the breast-plate, in combination with the breast-plate, constructed as described, and the knotter O brought down to the breast-plate, whereby the knot is formed nearer to the bundle and the cord shortened, substantially as described.

2. The combination of the knotter-frame, the spring *f*, the swinging knife-arm L, and the knotter O, whereby an intermitting pressure is applied to the pin *g* of the knotter, substantially as specified.

3. The knife-arm L, having notch *c*, for passage of the knotter-bill, side operating-arm L′, projections or plates M N, and knife *l*, in combination with the cam H H′, knotter-bill, and knotter-stand D, substantially as shown and described.

4. The arm L, having the notch or opening *c*, in combination with the knotter-bill, substantially as specified.

408,886. NUT-LOCK. ALLAN T. SAMPSON, Philadelphia, Pa. Filed Aug. 27, 1888. Serial No. 283,911. (No model.)



Claim.—The improved single nut-lock bar herein described, formed with two independent springs, one in the eye-coil embracing the bolt and one in a bow-arm extending over and outside of the end of the eye-locking point, bringing both locking-points of the separate springs in opposite contiguous relation, one projecting outwardly beyond the other, and the bow-spring part terminating in the non-spring arm *a*, whereby the two independent locking-spring parts *d b*′ are caused to act upon the inner face of the nut in the way shown and described.

408,887. MILK-CAN. MAX SENWARD, Alexandria, Va. Filed Jan. 29, 1889. Serial No. 297,960. (No model.)



Claim.—The combination, with the can having the supports G, the handle H, pivoted to the said supports, and the locking-flange R, of the cover comprising the concavo-convex portion having the vertical peripheral flange *a* to fit in the neck of the can, the upper portion, *b*, having the vertical annular rim *c*, the annulus *d* at the lower edge of said rim and forming a groove to receive the upper edge of the neck of the can, and in the inner side of which groove the upper edge of said flange *a* is secured, the bar J, extending across the center of the cover and having its ends secured inside of the annulus to the grooved annulus *d*, the catches N, secured to and projecting from opposite sides of the cover and adapted to engage under the ends of the handle H, and the locking-flange P, secured to and projecting from the cover, adapted to register with the locking-flange R of the can when the handle ends are engaged by the catches, the said locking-flange P having the downturned stop Q, adapted to engage the flange P, for the purpose set forth, substantially as described.

408,888. CARRIAGE-CURTAIN FASTENER. SAMUEL P. SCOTT, Hillsborough, Ohio, assignor to the Star Manufacturing Company, same place. Filed Feb. 12, 1889. Serial No. 299,580. (No model.)



Claim.—1. The combination of the base and the head having a central bore with a sleeve secured in the bore of the head and projecting therefrom and having notches in its inner end, the stem secured to said base and passing through said sleeve, having lugs on its upper end engaging the notches of the latter, and the coiled spring interposed between the bore and head, all substantially as and for the purpose set forth.

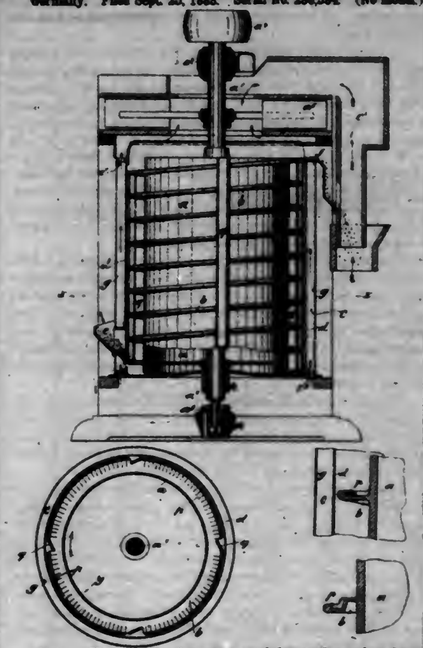
2. The combination of the base and the head, each having a central bore, substantially as described, the tubular sleeve secured in the bore of the head and having one end projecting therefrom, with the stem secured to said base and passing through said sleeve and adjustably engaging the inner end thereof, and the coiled spring placed on said stem between the base and the sleeve and entering an enlargement of the bore of the sleeve, substantially as described.

3. The combination of the base having a central bore, enlarged as described, and a head having a chamber, with a tubular sleeve having a notched end seated in the chamber of the head and having a projecting end adapted to enter the enlargement of the base-bore, the stem secured to said base and passing through said sleeve, having lugs on its end within the head to engage the notches of the sleeve, and the spring interposed between the sleeve and base, substantially as set forth.

4. The combination of the base, the head having a central bore, and the stem secured to said base, having lugs on its outer end, with the sleeve C, having notches in one of its ends and an enlarged bore at its other end, and a coiled spring partly entering the enlarged bore of the sleeve and the bore of the base, all substantially as set forth.

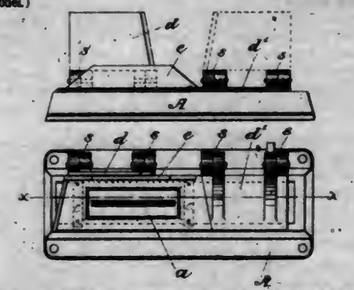
5. The combination of the base having a central bore enlarged at its outer end and a head having a chamber with a stem having lugs on its outer end, a sleeve, C, slipped on said stem and secured in the chamber of head A, but projecting therefrom, said sleeve having notches in its inner end to engage the lugs of the stem and an enlarged bore at its outer end, and a coiled spring on said stem between the sleeve and base, all substantially as and for the purpose described.

408,889. GRAIN-SCOURER. HEINRICH SECK, Dresden, Saxony, Germany. Filed Sept. 25, 1888. Serial No. 286,384. (No model.)



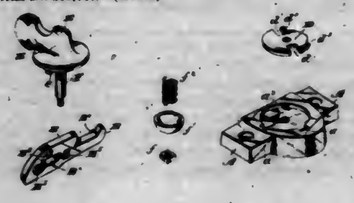
Claim.—The combination of an upright perforated casing, a revolving cylinder having a helical rib on its periphery, and vertical blades secured to the rib in a position oblique to the cylinder-surface and in the direction of revolution of said cylinder and leaving spaces between them and the surface of the cylinder, substantially as described.

408,890. BELT-HOLE COVER. WILLIAM E. SHARPLES, Fall River, Mass., assignor of one-half to the Geo. W. Stafford Manufacturing Company, Providence, R. I. Filed Nov. 17, 1888. Serial No. 291,171. (No model.)



Claim.—A belt-hole cover consisting of a bed-plate, A, having an opening provided with two covers, *d d*′, hinged to said bed-plate, and a belt-guide, *b*, arranged to slide in said opening, provided with vertical flange *c*, to automatically raise one cover and lower the other cover when moved in either direction, substantially as and for the purpose set forth.

408,891. SASH-FASTENER. THOMAS E. SMITH, Washington, D. C., assignor to Hobart B. Ives & Co., New Haven, Conn. Filed Feb. 3, 1888. Serial No. 262,840. (Model.)



Claim.—1. In a sash-fastener, in combination with a suitable base, the rotary piece thereon forming a turn-table, and the latch having a sliding connection with the piece, substantially as and for the purpose specified.

2. In a sash-fastener, in combination with a suitable base, a swinging and reciprocating latch engaging locking devices on the base and latch to lock the latter when it is reciprocated, and a rotary piece on the base connected with the latch by a sliding connection adapted to allow reciprocation of the latch, substantially as and for the purpose shown.

3. In a sash-fastener, in combination with the base having a latch-locking notch and a curved latch-guiding surface, the latch having a projection to engage the latch-guiding surface and the locking-notch on the base, and a rotary piece provided with suitable guides to confine the latch to reciprocation with reference to the rotary piece, substantially as and for the purpose set forth.

4. In a sash-fastener, in combination with the base having a locking-notch and a curved guiding-surface, the latch having a projection to engage the guiding-surface and locking-notch, a rotary piece on the base having a sliding connection with the latch adapted to allow reciprocation of the latch, but to cause the piece and latch to swing or rotate together, a rotary knob or handle, and a cam slot-and-pin connection between such knob and the latch, substantially as and for the purpose described.

5. In a sash-fastener, in combination with the base having a locking-notch and a curved latch-guiding surface, the latch having a guiding and locking projection and the longitudinal slot, the rotary piece having a radial slot for engaging the projection on the latch, and the pivot-pin, substantially as and for the purpose specified.

6. In combination with the swinging and reciprocating latch provided with the two lugs, the base provided with a curved guiding-surface and a locking-notch to engage one of the lugs on the latch, and a rotary piece on the base provided with the radial slots to engage the two latch-lugs, substantially as and for the purpose set forth.

7. In combination with the swinging and reciprocating latch provided with the two lugs, the base provided with curved guiding-surfaces and locking-notches to engage both of the lugs, and the rotary piece on the base provided with radial slots to engage the lugs, substantially as and for the purpose described.

8. In combination with the swinging and reciprocating latch having the two guiding and locking lugs, the base having the curved guiding-surfaces and locking-notches for engaging the latch-lugs, and the rotary piece on the base provided with opposite radial slots and suitable stop devices to limit the rotation of such piece as it is turned in one direction to bring one of its radial slots opposite one of the locking-notches in the base and in the other direction to bring its other slot around to the other locking-notch, substantially as and for the purpose specified.

9. In combination with the base provided with a circular recess and the two locking-notches, the rotary piece in the recess provided with a radial slot, the latch provided with a longitudinal slot and with a projection engaging the slot in the rotary piece, the pivot-pin passing through the longitudinal slot in the latch, and stops to limit the rotation of the rotary piece, substantially as and for the purpose shown.

10. In combination with the base having the recess with curved walls and the locking notches or offsets from the recess, the rotary piece in the recess provided with the opposite radial notches, suitable stops for limiting the rotation of the piece as it is turned one way or the other to bring its notches in line with one or the other offset or notch in the base, the latch having the two lugs, a rotary knob or handle, and a slot-and-pin connection between the latch and such knob or handle, substantially as and for the purpose described.

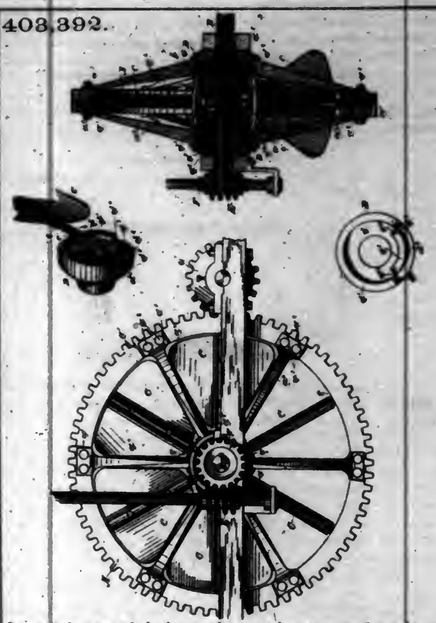
11. In a sash-fastener, in combination with a suitable keeper, the latch adapted to be moved longitudinally to fasten the sashes together, having a cam-surface to engage the keeper, so as to force the sashes carrying, respectively, the keeper and latch up and down in opposite directions as the latch is drawn into its fastening position, substantially as and for the purpose described.

12. In a sash-fastener, in combination with the hooked latch having a cam projection on its upper side, the keeper having the upright portion to be engaged by the latch-hook, and an arm or projection to be engaged by the cam projection as the latch is moved to cause the hook to engage the keeper, substantially as and for the purpose specified.

403,392. FEATHERING PADDLE-WHEEL. HENRY F. W. SOMST, San Francisco, Cal. Filed Oct. 20, 1888. Serial No. 288,692. (No model.)

Claim.—1. In a paddle-wheel, a rotary frame and wings or blades in radial planes thereof and axially pivoted, said wings or blades having each a stem provided with two lugs, one being above and at right angles to the other, in combination with separated disks between which the stems are mounted, said disks having a rim-piece or flange cut away at corresponding opposing portions and having shoulders

403,392.



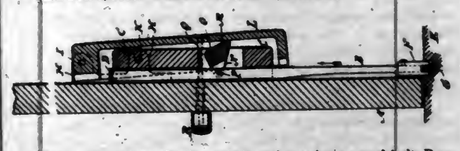
for engaging one of the lugs, and a second segment or flange having shoulders engaging the other lug, whereby the wings are turned, substantially as herein described.

2. In a paddle-wheel, a rotary frame having axially pivoted wings or blades in radial planes thereof, each blade having two lugs, one set at right angles to the other, in combination with a shaft about which the frame rotates, said shaft having a pinion engaged by an operating-worm, whereby the shaft is rotated, separated disks on the shaft having each two independent flanges with shoulders engaged, and the independent lugs on the stems of the wings, whereby said wings are axially moved and the periods of their movement varied, substantially as herein described.

3. In a paddle-wheel, the rotary frame having axially-pivoted wings or blades in radial planes thereof, each wing or blade having a stem provided on its inner end with lugs or projections, one above the other and at right angles with each other, in combination with the separated disks between which the stems travel and are guided, said disks having recessed faces, and independent flanges having cam-shoulders, against which the lugs or projections of the stems come in contact at different periods, whereby the blades or wings are turned from a position in line with the wheel's rotation to a position at right angles thereto and back again, substantially as herein described.

4. In a paddle-wheel, a rotary frame having axially-pivoted blades or wings in radial planes thereof, each blade or wing having a stem with lugs or projections at right angles, as described, in combination with the separated disks between which the stems travel, said disks having recessed faces with flanges cut away to form cam-shoulders, which engage one series of lugs, and short flanges below the cut-away portions for engaging the lugs of the other series, substantially as and for the purpose herein described.

403,393. DOOR-CHECK. HARRY STANTOCOURT, Elizabeth, N. J. Filed Feb. 9, 1889. Serial No. 299,304. (No model.)

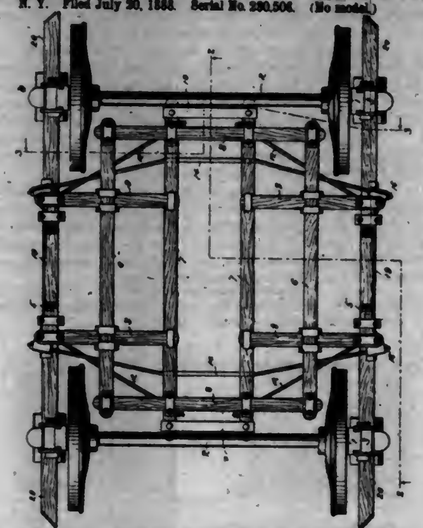


Claim.—1. A door-check consisting of a spring-pressed bolt, B, a block or guide, C, a bell-crank lever, M N, pivoted on and carried by the block or guide, and a pivoted push-plate, I, having a recess in which the lever-carrying block or guide is arranged, said push-plate being adapted to press directly against the bell-crank lever, substantially as described.

2. A door-check consisting of a spring-pressed bolt, B, a pivoted bell-crank lever, M N, connected with the bolt, a pivoted push-plate,

I, at one side of of the door, adapted to press on the bell-crank lever to release the bolt, and a pull-handle, R, arranged at the opposite side of the door and having connection through the door with the push-plate to operate the latter, whereby the door may be released from either side, substantially as described.

403,394. CABLE-CAR TRUCK. JOHN STEPHENSON, New York, N. Y. Filed July 20, 1888. Serial No. 280,506. (No model.)



Claim.—1. A car-truck frame constructed with the following elements adapted to suspension beneath the car-axle boxes, to wit: two sills, two sub-sills, two cheek-sills, two end cross-bars, and four central cross-bars, substantially as and for the purpose described.

2. A car having a truck-frame with its sills outside of the wheels, the sills being rigidly connected to integral limbs pendent from the bottom of the axle-box shell, the pendent limbs being adapted to transmit to the car-body the motive power which impels the car, substantially as described.

3. A car-truck having its two sills suspended from pendent limbs of the axle-box shell, two sub-sills inside the wheels and parallel to the sills, and two cheek-sills, also parallel, but located nearer the center line of the truck, two end cross-bars framed on the ends of the sub-sills and cheek-sills, and, with the cheek-sills, constituting the four walls of a well adapted to receive and permit the motion of the grip, substantially as and for the purpose described.

4. A car-truck with its sills outside the wheels and its central structure upheld by supporting-rods having their ends carried by the sills and the central parts of the rods deflected to pass under the ends of the sub-sills and cheek-sills, substantially as and for the purpose described.

5. A car-truck with its sills outside the wheels and the central part of the truck structure supported at its ends by deflected supporting-rods having their ends in sockets carried by the sills, substantially as shown and described.

6. A car-truck frame with sills, sub-sills, cheek-sills, and cross-bars preserved in rectangular form by racking-stays extending across the angles and through the sills and cheek-sills and adapted to prevent distortion of the truck-frame, substantially as and for the purpose described.

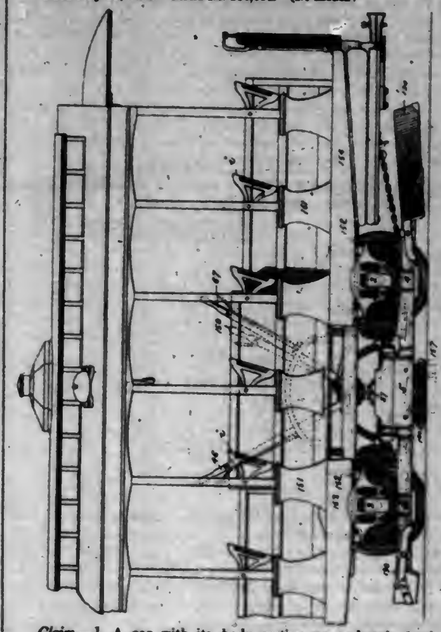
7. A car-truck with two wheels on each axle and with its sills and sub-sills connected by cross-bars between the wheel-faces and adapted to receive the wheel brake-shoe bar, with its shoe capable of being moved horizontally to and from the wheel, substantially as and for the purpose described.

8. A car-truck with two wheels on each axle, the sills outside and the sub-sills inside the wheels and the ends of the sub-sills within the extremes of the wheels, and the cross-rails between the wheel-faces connecting sills and sub-sills, the latter carrying the heads of the shoe sliding bars, with their shoes adapted to move horizontally to and from the wheels, all substantially as and for the purpose described.

9. A car-truck carried entirely by its sills attached to pendants integral to the axle-box shells, and the sub-sills supported by cross-rails carried by the sills between the wheel-faces, the combination being adapted to the mechanism of the wheel-brake rock-shafts, articulated connecting-rods, shoe sliding bars, and brake-shoes moving horizontally to and from the wheels, substantially as and for the purpose described.

10. A car-truck with its sills beneath the axle-journals and secured to the box-shell pendants by clips surrounding the pendent limbs and the sill ends, the shanks of the clips extending below the sills and through coupling-plates, with screw-nuts beneath the coupling-plates, which are flanged to protect the screw-nuts, substantially as and for the purpose described.

403,395. CABLE-GRIP CAR. JOHN STEPHENSON, New York, N. Y. Filed July 23, 1888. Serial No. 280,631. (No model.)



Claim.—1. A car with its body resting on pedestals, having spring-bearing saddles supporting the car-body and astride axle-boxes, from whose shells pendants carry the truck, substantially as and for the purpose described.

2. A car with a truck suspended from the limbs of axle-box shells with swing (link) motion and the car-body resting on cushioned pedestals with springs intervening between the pedestals and the saddles of the axle-boxes, substantially as and for the purpose described.

3. A car with truck having its axles journaled outside the wheels and the truck pendent from limbs integral with the axle-box shells, the car-body resting on cushions upon the pedestals, substantially as and for the purpose described.

4. An open summer-car with its body-sills strengthened with side metal plates in lieu of truss-work beneath the sills and a truck suspended near its four corners by pendants integral with the axle-box shells, substantially as and for the purpose described.

5. A car with its body cushioned on pedestals, with axle-boxes having saddles whose pedals are capable of a swinging motion, carrying springs upholding the car-body, the shells of the axle-boxes terminating downward in pendants, adapted to sustain the car-truck with its appendages, substantially as and for the purpose described.

6. The combination, with a truck-frame carrying the grip mechanism and the wheel-brake and track-brake mechanism, of the car with its floor structure adapted to support transverse benches each side of an aisle expanding in the middle to form a well for the location and operation of the handles of the grip, wheel-brake and track-brake mechanism of these three parts now named, all being located on the truck, with exception of the union rock-shafts with their articulated rod-connection, and the handles which project into the well, substantially as described.

7. A car with its truck secured to integral limbs pendent from the bottoms of axle-box shells on axle-journals outside the car-wheels, the truck carrying the cable-grip, substantially as described.

8. A car with its truck dependent from the limbs integral with the axle-box shells on axle-journals outside the wheels, and in conjunction with the car-body carrying the operating mechanism of the wheel-brakes, substantially as described.

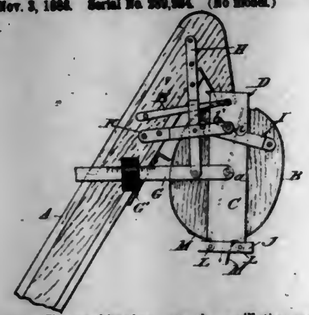
9. A car with its truck dependent from limbs integral with the axle-box shells on journals outside the car-wheels, in conjunction with the car-body carrying the operating mechanism of the track-brake, substantially as described.

10. A car with its truck secured to integral limbs pendent from the bottom of axle-box shells on axle-journals outside the car-wheels, the truck-sills' ends extending endward and carrying under the car-body a track-guard adapted to rise and fall without human agencies, as circumstances require, substantially as described.

11. A cable car with its truck borne by the four axle-journals outside the wheels, on which axle-journals are axle-boxes having at the bottoms of their shells rigid pendent limbs to which the sills of the car-truck are inflexibly secured, the truck having at its middle a well containing an opening for a grip-carrier, and at each side of the well an opening, each of which is adapted for the location of a wheel-brake and a track-brake, substantially as described.

12. A cable car with its body strengthened by metal plates on the outer sides of the body-sills to which the plates are secured, adapted to stiffen the body sufficient to dispense with truss-bracing beneath the body-sills, substantially as described.

403,396. GRAIN-METER. ARCHIBALD STEWART, Keota, Iowa. Filed Nov. 3, 1888. Serial No. 289,804. (No model.)



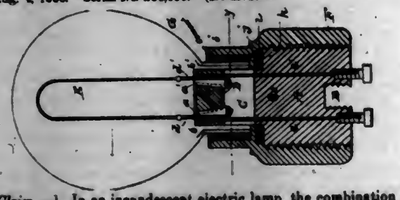
Claim.—1. The combination, with the oscillating grain-box and the elevator having a feed-spout, of the supporting-frame for said box, having at its upper end a hopper located directly beneath the feed-spout and directly above the oscillating box and provided at its lower end with means for attaching a grain-box thereto, the horizontal arms movably connected to the elevator and to the box-frame, and the scale-beams, all substantially as described.

2. In a grain-meter, the combination of the frame C, the hopper D, secured within the upper end thereof, the feed-spout of the elevator, the oscillating grain-box pivoted in said frame and having a vertical partition, B', and automatically-operating doors M M, and the scale-beams, substantially as described.

3. The combination of the oscillating grain-box having the vertical partition and the bottom covers, M M, the supporting-frame in which said box is pivotally hung having at its lower end rollers L L, the feed-spout of the elevator, the scale-beams connected to the pivots of the grain-box and pivotally attached to rigid arms on the elevator, the pivotal arms attached to the upper end of the frame C, and also to the elevator, and the rigid horizontal arms secured to the elevator and carrying small rollers adapted to enter notched straps on the sides of the grain-box, substantially as described.

4. In a grain-meter, the combination of the feed-spout, the supporting-frame, the hopper in the upper end of said frame beneath the feed-spout, the oscillating grain-box pivoted in the frame and having a vertical partition, B', and the gravity-doors M M, adapted to be closed by riding upon rollers L L on the supporting-frame, and the rectangular frame J, secured to the lower end of frame C, substantially as described.

403,397. INCANDESCENT LAMP. JAMES STEWART, New York, N. Y., assignor of one-half to Edmund C. Stanton, same place. Filed Aug. 4, 1888. Serial No. 281,959. (No model.)



Claim.—1. In an incandescent electric lamp, the combination of the conductors *c c'*, the standard C, provided with the ledges *b b'*, the jaws *a a'*, and the wedge D, inserted between the jaws and adapted to clamp the wires *d d'* of the carbon filament in contact with the wires *c c'* of the lamp-base A, substantially as specified.

2. In an incandescent electric lamp, the solid base-piece A, having a passage, *c*, extending through it from end to end and enlarged and screw-threaded, as at *f*, a recess, B, in the bottom of the base-piece, a passage, *h*, leading from the upper end of the recess into the enlarged passage *f*, and the screw *g*, entering the passage *f* and adapted to close the passages *c* and *h*, substantially as set forth.

3. In an incandescent electric lamp, the combination, with the lamp-base, its movable wire-clamping jaws and their opposing fixed jaws or ledges, of a wedge for forcing both jaws toward said fixed jaws or ledges, whereby the two filament-supporting wires may be firmly clamped in their operative position, substantially as set forth.

4. The combination, with the lamp-globe G, provided with the lugs *n*, formed in the material of the globe, of the socket *i*, having right-angled recesses *m*, substantially as specified.

5. In an incandescent lamp, the combination of the chambered base-piece A, provided with the conductors *c c'*, and standard C, having ledges *b b'*, the pivoted jaws *a a'*, the wedge D, the wires *d d'*, and carbon filament E, connected with the said wires, the collar F, provided with the socket *i*, and the lamp-globe G, having its neck inserted in the socket *i*, substantially as specified.

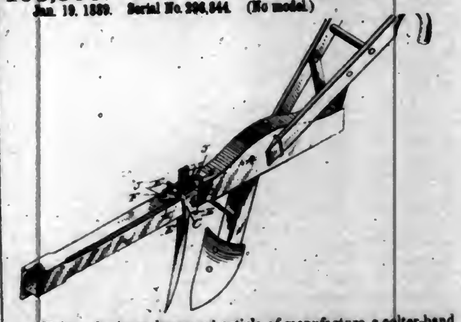
408,398. BOX-FASTENER. JOHN A. STRONG, Cain, Kans. Filed Feb. 12, 1889. Serial No. 299,599. (No model.)



Claim.—1. In a box-fastening, the combination of the piece *b*, having slots, secured at one end of the box, and the piece *c*, having a central cut, and an ear, *f*, connecting the adjoining ends of said piece, and the spring-catch J, having an inwardly-standing latch-head moving in the cut of piece *c*, with a cover having lugs at one end engaging the slots of piece *b*, and a notch at its other end to engage catch J, all substantially as and for the purpose described.

2. The combination of the box, the castings B C, secured to the ends thereof, having pieces *b* and *c*, respectively, at their upper sides, piece *b* being slotted, as described, and piece *c* cut away at its center and its adjoining ends connected by an ear, *f*, and the spring-catch J, playing through said cut in piece *c*, with the cover having a transverse strip at one end provided with projecting lugs engaging the slots in piece *b*, and having a notch and strip at its other end to engage catch J, substantially as and for the purpose specified.

408,399. COLTER-BAND. ALONZO J. TATUM, Finch, Ark. Filed Jan. 19, 1889. Serial No. 296,644. (No model.)



Claim.—1. As an improved article of manufacture, a colter-band having the upper portion thereof provided with laterally-extending perforated flanges, its upper and under portions each provided with longitudinal slots, and vertically-extending lugs, said lugs being provided with screw-threaded holes, and having its sides provided with screw-threaded holes, substantially as set forth.

2. The combination, with the beam of a plow provided with a series of longitudinal slots, of the colter-band having its upper and under portions each provided with a series of longitudinal slots registering with the slots in the beam, said upper portion being also provided with laterally-extending perforated flanges, upwardly-extending lugs provided with screw-threaded holes therein, the colter or cutter, and the set-screws, substantially as set forth.

3. The combination, with the beam of a plow provided with a series of longitudinal slots, of the colter-band having the upper portion thereof provided with laterally-extending perforated flanges, and also having its upper and under portions each provided with longitudinal slots and vertically-extending perforated lugs, the colter or cutter, and the set-screws and bolts, substantially as set forth.

4. The combination, with the beam of a plow provided with a series of longitudinal slots, of the colter-band having the upper portion thereof, provided with laterally-extending perforated flanges, its upper and under portions each provided with longitudinal slots and vertically-extending lugs, said lugs having screw-threaded holes, and having its sides provided with screw-threaded holes, the colter or cutter, and the set-screws and bolts, substantially as set forth.

408,400. LAMP. LEVI H. THOMAS, Chicago, Ill. Filed Jan. 19, 1889. Serial No. 296,823. (No model.)



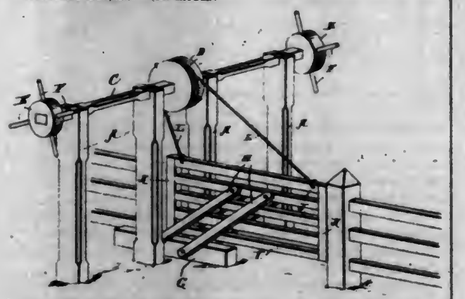
Claim.—1. As a new article of manufacture, the herein-described body, bowl, or fount, consisting in the combination, with a paper cylinder, of a paper head and a paper bottom grooved to receive the end of the cylinder and extended to serve as a support or base for the bowl or body, substantially as described.

2. In a lamp, the combination, with a cylindrical paper bowl or body formed of paper rolled upon itself, of a solid paper disk forming the head and a solid paper disk forming the bottom, said disks being grooved to receive the ends of the cylinder, and the bottom disk being extended to serve as a supporting-base for the lamp-body, substantially as described.

3. In a lamp, the combination of the cylindrical body formed of paper rolled upon itself, a solid paper head, a solid paper bottom, said head and bottom being grooved to receive the ends of the paper cylinder, and said bottom being extended to serve as a supporting-base for the lamp-body, and a metallic collar secured to the paper head for the attachment of the burner, substantially as described.

4. In a paper lamp, the combination, with the solid paper head of the lamp-body, of the metallic collar D, for the attachment of the burner, having an inturned screw-threaded flange, *d*, a shoulder, *e*, adapted to rest on the upper surface of the head, and with a crimped shoulder, *f*, on its lower edge, that presses into and grasps the paper material of the head, substantially as described.

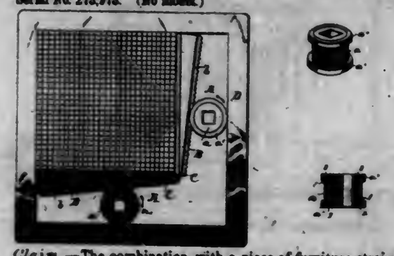
403,401. GATE. CHARLES TIBBS, Vandalia, Ill. Filed Mar. 5, 1889. Serial No. 301,981. (No model.)



Claim.—1. The combination of the swinging levers, the gate supported thereby, the pulley arranged above the gate, means for operating said pulley, and the cables having their ends secured to the pulley at diametrically-opposite points, extending over the pulley in opposite directions, and secured to the opposite upper corners of the gate, as set forth.

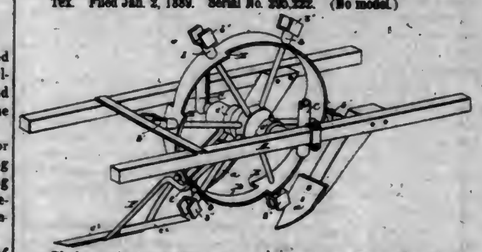
2. The combination of the transverse sill, the swinging levers pivoted at their lower ends to the said sill, the gate pivoted to the upper ends of the said levers, the rotary shaft, the grooved pulley secured on said shaft, and the cables secured to the opposite upper corners of the gate and extending to and over the pulley and secured thereto, as set forth.

408,402. PRINTER'S QUOIN. SAMUEL D. WEBB and SULLIVAN S. SWETT, Washington, D. C., assignors, by direct and mesne assignments, to said Swett and Thomas A. Mitchell, same place. Filed May 16, 1888. Serial No. 273,973. (No model.)



Claim.—The combination, with a piece of furniture straight on one side and having an inclined toothed rib on the opposite side, of a quoin consisting of a toothed cylinder having an opening for the reception of a key and two rollers of slightly greater diameter than the cylinder, one of said rollers being loosely attached to each end of the cylinder, substantially as described, and for the purposes set forth.

403,403. COTTON-CHOPPER. AMASA O. WOODBURY, Pennington, Tex. Filed Jan. 2, 1889. Serial No. 295,222. (No model.)

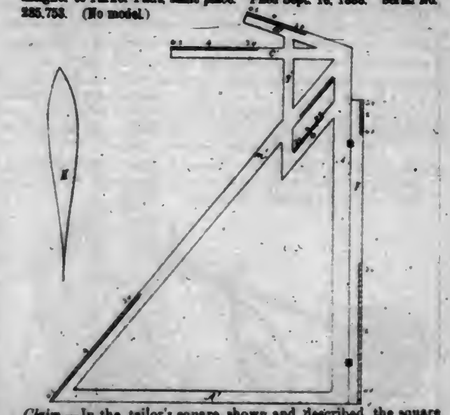


Claim.—1. As an improvement in cotton-choppers, the wheel having the cotton-fenders, and the overlapping hoes having their bars operated by said wheel, substantially as set forth.

2. The combination, with the frame and axle, of the axle-supporting boxes or tubes C, the blocks D, the springs *d*, and the adjusting-screws *d'*, whereby the axle-wheel is journaled in a yielding bearing, substantially as shown and described.

3. The combination, in a cotton-chopper, of the wheel having the series of arms, the V-shaped fenders secured thereto, the rim having offsets and tapering side edges, the hoe-bars having rollers, and overlapping hoes at their outer ends, substantially as set forth.

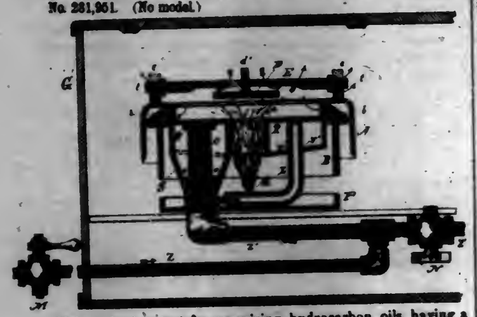
403,404. TAILOR'S SQUARE. SILAS W. YATES, Wilmington, Ill., assignor to Parker Faut, same place. Filed Sept. 18, 1888. Serial No. 285,753. (No model.)



Claim.—In the tailor's square shown and described, the square

A A', having the scale-brace *n'*, scale-blades *a'*, *c'*, and *e*, brace *g'*, and folding-leaf scale-rule F, all combined and arranged to operate substantially as and for the purpose set forth.

408,405. OIL-BURNING STOVE OR FURNACE. CHARLES M. YOUNG and PIERRE L. GIBBS, Clinton, Iowa. Filed Aug. 4, 1888. Serial No. 281,961. (No model.)



Claim.—1. A retort for vaporizing hydrocarbon oils, having a central opening or flame-passage and provided with a depending pocket to form an oil-reservoir, in combination with the supply-pipe extending into said pocket, provided with openings near the bottom of the reservoir and from which the oil passes from the pipe to the reservoir, substantially as described.

2. In a stove for vaporizing hydrocarbon oils, the combination, with the retort, provided with a central opening or flame-passage and with a depending pocket to form an oil-reservoir, of the delivery-tube connected with the supply-pipe, entering through the bottom of the reservoir and extending nearly to the top of the retort, said pipe provided with lateral openings near the bottom of the pocket for the passage of the oil to the retort, substantially as set forth.

3. In a stove for vaporizing hydrocarbon oils, having a central opening or flame-passage and provided with the depending pocket to form an oil-reservoir, in combination with the supply-pipe extending into the pocket, and provided with the openings near the bottom of the reservoir, through which the oil passes from the pipe to the reservoir, and a pipe extending into the retort, provided with openings near the bottom of the retort for supplying the oil to the lighting-pan through said pipe, substantially as described.

4. In a stove for vaporizing hydrocarbon oils, the combination of the retort having a central opening or passage for the burning vapor, a baffle-plate provided with the notched or serrated edge and the central semicircular openings, and a deflector arranged below the central openings to spread and deflect the flame and to cause a downward current of air through the central opening to mingle with the products of combustion, substantially as described.

5. In a stove for vaporizing hydrocarbon oils, the combination of the retort having the central opening for the passage of the flame, a baffle-plate provided with the notched or serrated edge and the central semicircular openings, deflector arranged below the central openings, and means for adjusting the same to or from the opening in the retort, substantially as set forth.

6. In a stove for vaporizing hydrocarbon oil, the combination of the retort having the central opening for the passage of the flame, a baffle-plate provided with the notched or serrated edge and the central semicircular openings, the jacket provided with the openings, a deflector arranged below the central openings in the baffle-plate, all substantially as set forth, whereby a downward current of air is caused to pass through the central openings in the baffle-plate and mingle with the products of combustion, and an upward current through the openings in the ring to mingle with the products of combustion passing through the notches or serrations in the baffle-plate.

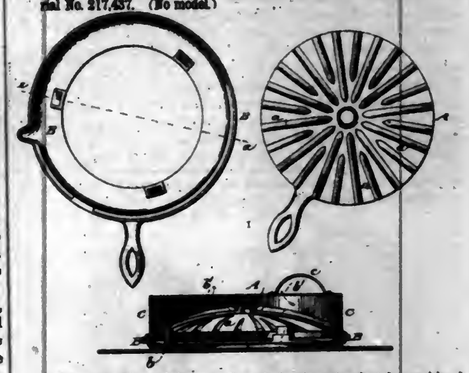
408,406. VELOCIPEDE. FRANCIS M. ABBOTT, Jeffersonville, Ind., assignor of one-half to Charles W. Rodgers, same place. Filed Sept. 29, 1888. Serial No. 286,803. (No model.)



Claim.—1. The combination, with a tricycle, of a buggy-body or carryall having its side walls slotted to receive the axle, and a strap on its dash-board for connecting it with the branches of the backbone, substantially as specified.

2. A buggy-body or carryall attachment having semicircular slots in its side walls which communicate with an upwardly-directed slot, in combination with a cushion in the latter slot, a hinge dash-board, and means for connecting the hinge dash-board to the rearwardly-directed branches of the backbone of a tricycle, substantially as specified.

408,407. BROILER. MICHAEL C. ARMOUR, Chicago, Ill., assignor to George M. Clark & Company, same place. Filed Oct. 26, 1886. Serial No. 217,437. (No model.)

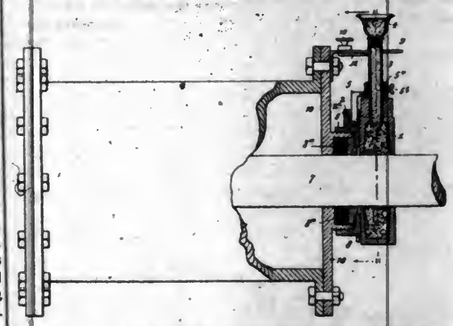


Claim.—1. The solid meat-plate A, having the feet *b*, combined with the trough B, the meat-plate being supported above the trough by the feet, whereby a space, *a'*, is formed, substantially as set forth.

2. The solid convex topped and ribbed meat-plate A, having the feet *b*, combined with the trough B, a space, *a'*, being left between the outer edge of the meat-plate and the trough, substantially as set forth.

3. The combination, with the cover C, of the solid meat-plate A, having the feet *b* and the trough B, supporting said meat-plate, a space, *a'*, being formed between the meat-plate and trough, substantially as set forth.

408,408. COMBINED WRENCH AND PISTON-LUBRICATOR. THOMAS J. BAKER and CHARLES E. BAKER, Findlay, Ohio. Filed Jan. 30, 1889. Serial No. 298,073. (No model.)



Claim.—1. A lubricating device comprising the divided and hinged gland 1, a tube, 3, and a filling-cup, 4, substantially as described.

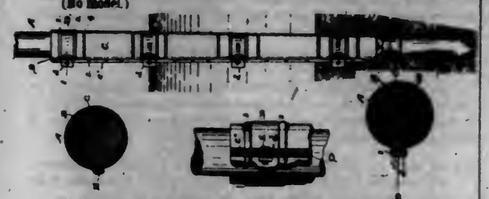
2. The combination of the lubricator having a tube, 3, provided with an arm, 11, the hanger 9, and the slot and set-screw connection between the arm and hanger, substantially as described.

3. The combination of the lubricator having a tube, 3, the stuffing-box follower 8, having notches 2^a, and the arm 5, having sleeve 5^a around the tube and adapted to engage the notches, substantially as described.

4. The combination of the lubricator having a tube, 3, the stuffing-box follower 8, having notches 2^a, and the adjustable arm 5, having sleeve 5^a around the tube, provided with a set-screw, 5^b, substantially as described.

5. The combination of the lubricator having a tube, 3, the stuffing-box follower 8, having notches 2^a, the adjustable arm 5, having sleeve 5^a, and the guide 2, substantially as described.

408,409. TERREDO-PROOF COVERING FOR PILES. GEORGE M. BARCHUSEN, San Francisco, Cal. Filed May 3, 1888. Serial No. 272,703. (No model.)

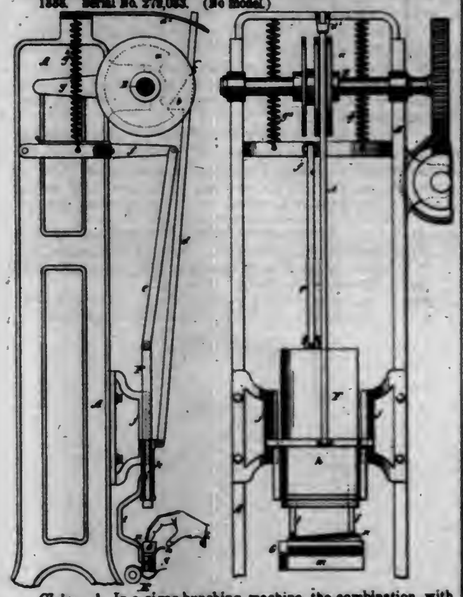


Claim.—1. A protecting-covering for piles and similar structures, consisting of the inner layer or wrapping formed of the hereinbefore-described composition and the outer metal covering inclosing the said composition and secured in position by joints and clamps, substantially as described.

2. A protecting-covering for piles and other similar structures, consisting of the inner covering of composition and the outer inclosing cover and protector of metal, having the beads and secured by joints and clamps, as described.

3. In combination with a pile or similar structure to be protected, the inner covering of composition produced from the hereinbefore-described ingredients, the outer protecting-covering of metal, the clamps, and the ferrule or stop at the bottom, substantially as hereinbefore described.

408,410. CIGAR-BUNCHING MACHINE. NICHOLAS H. BORSFELDT, Brooklyn, and ADOLPH LEWYN, New York, assignors to the National Progress Bunching Machine Company, New York, N. Y. Filed July 5, 1888. Serial No. 279,083. (No model.)



Claim.—1. In a cigar-bunching machine, the combination, with the plunger F, of the reciprocating plunger-guide A, separate filler-receiver *m* at a distance below said guide, and the arms *l*, for supporting the receiver *m*, substantially as described.

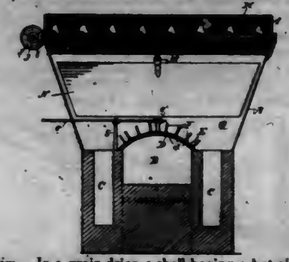
2. In a cigar-bunching machine, the combination, with the plunger F, of the reciprocating plunger-guide A, separate filler-receiver *m* at a distance below said guide, flanges *n* on said receiver, and the arms *l*, for supporting the receiver *m*, substantially as described.

3. The combination, with the plunger F, of the reciprocating plunger-guide A, separate filler-receiver *m* at a distance below and in line with said guide, arms *l*, connecting the guide A with the receiver *m*, and the rolling-apron E, substantially as described.

4. A filler-retainer consisting of the connected blades *o* and the flexible strip *p*, connected to said blades and extending between said blades in the form of a pocket, substantially as described.

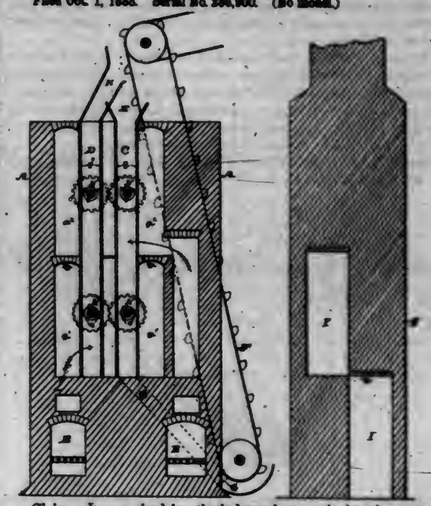
5. The plunger F, guide A, and filler-receiver *m* below said guide, combined with the filler-retainer G, consisting of the connected blades *o* and flexible strip *p* between said blades, substantially as described.

408,411. GRAIN-DRIER. LEWIS BOSLAND, San Francisco, Cal. Filed May 26, 1888. Serial No. 275,504. (No model.)



Claim.—In a grain-drier, a shell having a hot-air chamber and a heating-chamber below, in combination with plates in the hot-air chamber, dividing it into compartments, openings between the heating and hot-air chambers for the passage of heated air to the compartments above, dampers controlling the openings, and adjustable flanges or plates on the upper surface of the dampers, substantially as herein described.

408,412. GRAIN-DRIER. LEWIS BOSLAND, San Francisco, Cal. Filed Oct. 1, 1888. Serial No. 286,900. (No model.)



Claim.—In a grain-drier, the independent vertical grain-passages having perforated side walls, in combination with a drying-chamber about the lower portion of the passages and a separate drying-chamber about their upper portion, a fire-chamber communicating with one side of the lower drying-chamber and an exhaust-opening communicating with its other side, a fire-chamber communicating with the opposite side of the upper drying-chamber and an exhaust-opening communicating with its other side, and an elevator or conveyer communicating with the lower end of the passage which is cooler at its bottom than at its top and with the upper end of the other passage, substantially as herein described.

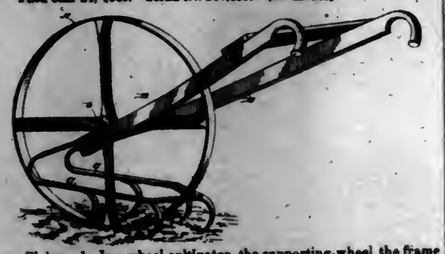
408,413. HAND GARDEN-CULTIVATOR. JAMES W. BOWMAN, College Corner, Ohio. Filed Feb. 12, 1889. Serial No. 299,636. (No model.)



Claim.—A hand garden-cultivator consisting of a handle, the

shank B, secured therein and formed with the diverging arms *b*, having eyes *c*, the transverse bar C, the bolts *d*, passed through said eyes and bar, the nuts on said bolts and the teeth having shanks, and the transverse bolts *f*, passed through said shanks, and nuts *g*, by which they are detachably secured to the front face of said bar, substantially as shown and described.

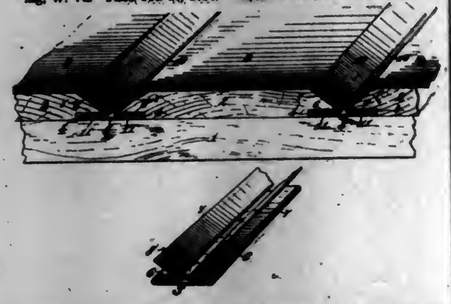
408,414. WHEEL-CULTIVATOR. ROBERT C. BUCKLEY, Peoria, Ill. Filed Jan. 21, 1888. Serial No. 297,055. (No model.)



Claim.—1. In a wheel-cultivator, the supporting-wheel, the frame mounted thereon, and the cultivator-teeth attached to the frame in line with the vertical plane of the axle of the wheel, whereby the weight of the frame and the strain incident to the use of the cultivator-teeth are brought directly on the axle of the wheel, substantially as described.

2. In a wheel-cultivator, the wheel, the frame attached thereto, the beams formed at their upper ends into handles and provided on each side of the axle of the wheel with hangers, and the cultivator-teeth attached to the hangers and arranged in vertical plane with the axle of the wheel, substantially as and for the purposes set forth.

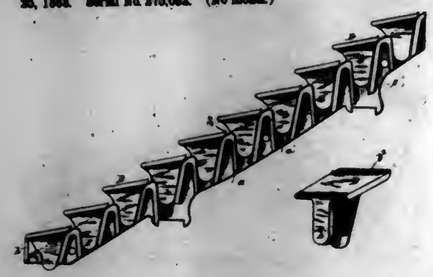
408,415. SHEET-METAL ROOFING. FRANK G. CALDWELL, Wheeling, W. Va. Filed Oct. 16, 1888. Serial No. 288,218. (No model.)



Claim.—1. The combination of the independent caps, each composed of a sheet of metal having a head, 5, inwardly-extending top walls, 6, and divergent wings 7, with the sheet-metal roofing-plates having beveled sides 10 and lateral flanges 11, to slide lengthwise into engagement with the top walls and wings of the caps, substantially as described.

2. A roofing consisting of the sheathing-boards having their opposite side edges beveled and rabbeted, the caps each composed of a sheet of metal having a head, inwardly-extending top walls and diverging wings, and the roofing-plates having side bevels and lateral flanges engaging the top walls and wings of the caps, substantially as described.

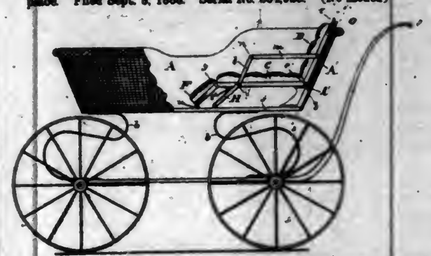
408,416. INCLINED GRATE. HENRY H. CAMPBELL, Cleveland, Ohio, assignor of one-half to Nathan W. Taylor, same place. Filed May 25, 1888. Serial No. 275,062. (No model.)



Claim.—1. The combination, with inclined grate-sections having pockets, of a series of independently-removable shelves connected with each section and held in the sockets solely by gravity, the shelves of a series overlapping each other lengthwise of the grate-sections, and the shelves of adjacent series overlapping and interlocking each other laterally, with horizontal air-spaces between the different shelves and series of shelves, substantially as set forth.

2. The combination of grate-sections A A', having pockets *a'*, with the lower removable shelves B, having depending shanks *b*, fitting in pockets *a'*, and depending flanges *b'*, overlapping the lower ends of said grate-sections A A', substantially as set forth.

408,417. BABY-CARRIAGE. FLORENCE J. D. CHAPPELL, Baltimore, Md., assignor of forty-nine one-hundredths to Riddle & Williams, same place. Filed Sept. 3, 1888. Serial No. 284,925. (No model.)

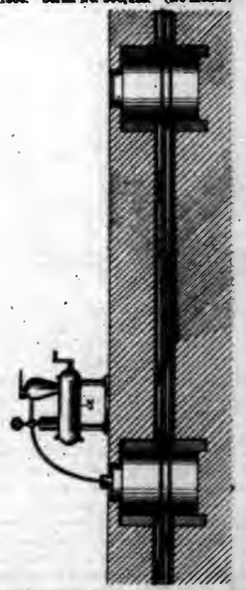


Claim.—1. A child's carriage having, in combination, a seat, a back, and a leg-board hinged together, two pivoted legs, H, connecting the seat and the bottom of the body, and a stationary standard, *k*, located at the rear, and on top of which the seat may rest.

2. A child's carriage having, in combination, a seat, a back, and a leg-board hinged together, two pivoted legs, H, connecting the seat and the bottom of the body, a stationary standard, *k*, located at the rear, and on top of which the seat may rest, and two bars, *l m*, jointed together, one being also jointed to the seat and the other to the back, for the purpose set forth.

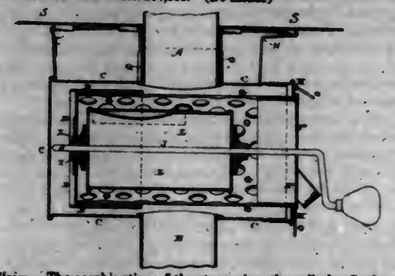
3. A child's carriage having, in combination, a seat, a back, and a leg-board hinged together, two pivoted legs, H, connecting the seat and the bottom of the body, a stationary standard, *k*, located at the rear, and on top of which the seat may rest, a hook, *k'*, on the said standard, and a locking-lever on the back to engage with said hook.

408,418. METHOD OF PROTECTING THE LEAD PIPE OF TELEGRAPH-CABLES FROM CORROSION. ARTHUR R. CLEATE, New York, N. Y., assignor to the Western Electric Company, Chicago, Ill. Filed Feb. 2, 1889. Serial No. 298,445. (No model.)



Claim.—The method of forming a coating of sulphide upon lead pipes, which consists in forcing sulphureted hydrogen into the conduit containing the lead-covered cables, substantially as and for the purpose specified.

408,419. COFFEE-ROASTER. JOHN T. COMB, Cochran, Ga. Filed Jan. 30, 1889. Serial No. 297,986. (No model.)



Claim.—The combination of the stove-pipe, the cylinder C, placed at right angles between two of its sections, the support placed inside of the cylinder at its inner end, the perforated cylinder provided with a supporting cap or cover at its outer end and which has its inner end to project into the support, the revolving shaft, the coffee-roaster secured thereto, and the cap or cover for closing the outer end of the perforated cylinder, substantially as shown and described.

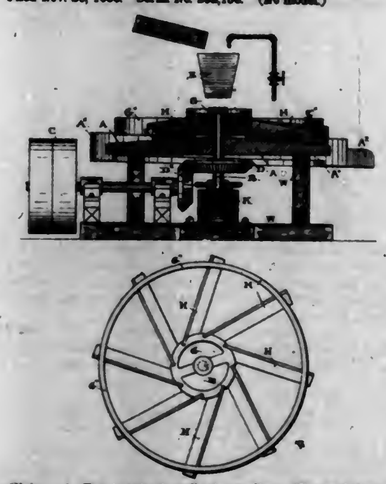
408,420. SHINGLE-MACHINE. WILLIAM H. DARNELL, Worthington, Ind. Filed May 26, 1888. Serial No. 275,340. (No model.)



Claim.—1. The movable bar C, having the inclined roughened-faced bed-block D in its side, combined with the guides B, the pressure rollers and springs acting on the journals of the same, and the inclined shaving-knife and the jointing-knife, substantially as described.

2. The bench A, having guides B, and the frame F, the pressure-rollers G in said latter frame, also the shaving and jointing knives E and H, the movable bar C, having the inclined bed-block in its side, the said bar passing between said rollers, the pressure of the same being regulated by springs *g* acting on their journals through blocks *g'* moving in guides *g''*, substantially as described.

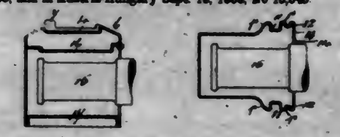
408,421. GRINDING-MILL. ESTEBAN DERBEC, San Francisco, Cal. Filed Nov. 28, 1888. Serial No. 292,132. (No model.)



Claim.—1. The herein-described grinding-mill, consisting of the stationary bed having a sloping surface, the surrounding trough, the upright shaft having the grinding-frame mounted on it, the grinding-frame composed of radial arms or plates set at an angle to present acutely-beveled edges to the surface of the bed, and mechanism for rotating said frame, substantially as described.

2. In a grinding-mill for ores, the combination, with the sloping surface A, of the shaft, hub G, arms H, having beveled grinding-edges and being set in angular position, and the ring G×, supported by the arms A, as set forth.

408,422. METHOD OF MANUFACTURING AXLE-BOXES FOR RAILWAY-CARRIAGES. JOHN DONNELLY, Parliament Street, and WILLIAM MCLAREN, Moorfields, County of Middlesex, and ARMSTRONG TRASK, Brockley, County of Kent, England. Filed Apr. 24, 1888. Serial No. 271,732. (No model.) Patented in France Apr. 9, 1888, No. 189,849; in Belgium Apr. 10, 1888, No. 81,367; in Italy June 30, 1888, XLVI, 203, and in Austria-Hungary Sept. 16, 1888, No 15,545.



Claim.—1. The herein-described process of manufacturing axle-boxes, which consists in imparting a dished or cupped form to sheet metal and then subjecting the partially-formed box to a succession of drawing operations by sets of dies of decreasing cross-sectional area until the said box is extended in length and reduced in cross-sectional area to approximately the desired form of finished axle-box, substantially as described.

2. The herein-described process of manufacturing axle-boxes, which consists in imparting a dished or capped form with extended side portions to sheet metal by forcing the same over a die-block formed with curved projecting side portions, subjecting the partially-formed box to a succession of drawing operations by sets of dies of decreasing cross-sectional area until the said box is extended in length and reduced in cross-sectional area to approximately the desired form of finished axle-box, and then drawing it over a die-block provided at opposite sides with ribs or projections by means of a bolster of corresponding form, said extended side portions being caused to bend around and enter the space between said ribs or projections and form axle-guard grooves, substantially as herein described.

3. The herein-described process of manufacturing axle-boxes, which consists in imparting a dished or capped form with extended side portions to sheet metal by forcing the same over a die-block formed with curved projecting side portions, subjecting the partially-formed box to a succession of drawing operations by sets of dies of decreasing cross-sectional area until the said box is extended in length and reduced in cross-sectional area to approximately the desired form of finished axle-box, and then drawing it over a die-block provided at opposite sides with three ribs or projections by means of a bolster of corresponding form, said extended side portions being caused to bend around and enter the spaces between said ribs or projections and form external axle-guard grooves and internal dust-guard grooves, substantially as herein described.

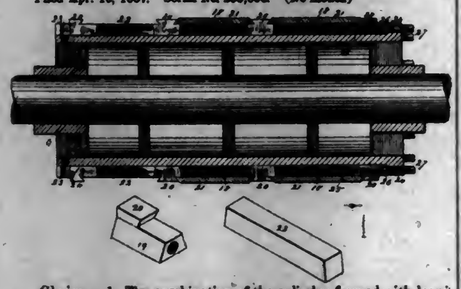
4. The herein-described process of manufacturing axle-boxes, which consists in imparting a dished or capped form with extended side portions to sheet metal by forcing the same over a die-block formed with curved projecting side portions, subjecting the partially-formed box to a succession of drawing operations by sets of dies of decreasing cross-sectional area until the said box is extended in length and reduced in cross-sectional area to approximately the desired form of finished axle-box, compressing the top of said partly-formed box between dies to form a recessed spring-seat, and drawing said box over a die-block provided at opposite sides with ribs or projections by means of a bolster of corresponding form, said extended side portions being caused to bend around and enter the space between said ribs or projections and form axle-guard grooves, substantially as herein described.

5. The herein-described process of manufacturing axle-boxes, which consists in imparting a dished or capped form with extended side portions to sheet metal by forcing the same over a die-block formed with curved projecting side portions, subjecting the partially-formed box to a succession of drawing operations by sets of dies of decreasing cross-sectional area until the said box is extended in length and reduced in cross-sectional area to approximately the desired form of finished axle-box, compressing the top of said partly-formed box between dies to form a recessed spring-seat, and drawing said box over a die-block provided at opposite sides with three ribs or projections by means of a bolster of corresponding form, said extended side portions being caused to bend around and enter the spaces between said ribs or projections and form external axle-guard grooves and internal dust-guard grooves, substantially as herein described.

6. The herein-described process of manufacturing axle-boxes, which consists in imparting a dished or capped form with extended side portions to sheet metal by forcing the same over a die-block formed with curved projecting side portions, subjecting the partially-formed box to a succession of drawing operations by sets of dies of

decreasing cross-sectional area until the said box is extended in length and reduced in cross-sectional area to approximately the desired form of finished axle-box, drawing it over a die-block provided at opposite sides with ribs or projections by means of a bolster of corresponding form, said extended side portions being caused to bend around and enter the space between said ribs or projections and form axle-guard grooves, removing a portion of one side, 13, of said axle-box, and finally securing a bent plate, 16, within the upper part of the same to form both a grease-box and a seat for a liner, brass, or bearing for an axle-journal, substantially as herein described.

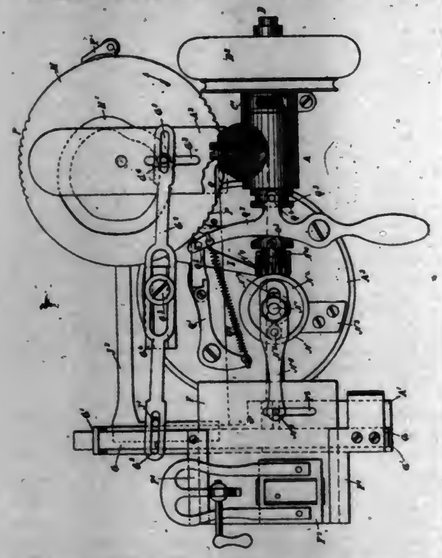
403,423. FORM-CYLINDER FOR PRINTING-MACHINES. JOHN C. FORD, Beverly, Mo., assignor to William Ross & Co., Keokuk, Iowa. Filed Apr. 16, 1887. Serial No. 235,098. (No model.)



Claim.—1. The combination of the cylinder formed with longitudinal undercut channels, the hook-blocks fitting the channels having their bases undercut at the ends, and the furniture-blocks occupying the channels having their ends overcut to fit the ends of the bases.

2. The combination of the printing-forms, the cylinder formed with longitudinal undercut channels extending from one end to near the other end, the hook-blocks fitting the channels, the screw-studs forming abutments at the open ends of the channels, the screws working in end blocks, each screw being formed with a shank having a squared end and a collar.

403,424. BUTTON-HOLE SEWING-MACHINE. JOHN S. FRESSE, Brooklyn, N. Y. Filed Mar. 19, 1888. Serial No. 267,730. (No model.)



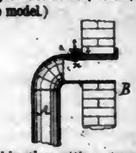
Claim.—1. In a button-hole sewing-machine, the combination, with the stitch-forming mechanism and cloth-plate, of a feed-bar mounted upon said plate, a feed-wheel having in one face a plain feed-cam, H', connected with the feed-bar, and having in the other face serpentine cam H^2 H^3 and an adjusting-cam, H^3, the former also connected with the feed-bar by means substantially such as herein described, an operating-wheel having a cam, N^4, connected with the cloth-plate, an adjusting-lever, I, connecting the operating-wheel with said adjusting-cam H^3 of the feed-wheel, and a driving-shaft connected with the feed-wheel and operating-wheel, the whole constructed and arranged substantially as herein described, for the purpose set forth.

2. In a button-hole sewing-machine, the combination, with the cloth-clamp and stitch-forming mechanism, of a feed-bar, a feed-lever, a feed-wheel having a cam for operating the feed-lever, a driving-shaft connected with the feed-wheel for operating the same, a crank-rod having a slot parallel to the feed-bar, a bell-crank having a pivot connecting it to the feed-bar, and two studs fitted, respectively, into a slot at one end of the feed-lever and into said slot of the crank-rod for reciprocating the feed-bar, and a means for reciprocating the crank-rod, substantially as and for the purpose described.

3. In a button-hole sewing-machine, the combination, with the cloth-clamp and stitch-forming mechanism, of a feed-bar, a feed-lever, a crank-rod having a slot parallel to the feed-bar, a bell-crank having a pivot connecting it to the feed-bar, and two studs fitted, respectively, into a slot at one end of a feed-lever and into said slot of the crank-rod for reciprocating the feed-bar, a feed-wheel having a cam for operating the feed-lever, a driving-shaft connected with the feed-wheel for operating the same, and cams in said wheel for reciprocating the crank-rod, substantially as and for the purpose described.

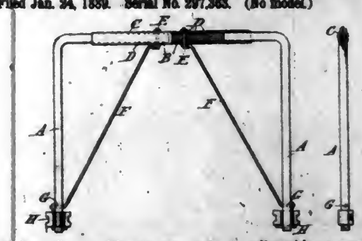
4. In a button-hole sewing-machine, the combination of a feed-wheel having a peripheral notch, a driving-shaft connected with the feed-wheel for operating the same, a loose pulley on said shaft, a clutch adapted to engage said pulley for connecting it with the shaft, a stop-lever having one end arranged in peripheral contact with the feed-wheel and constructed to drop into said notch of the wheel for releasing the driving-shaft from the pulley, a clutch-lever having a stop-pin for engaging said end of the stop-lever, and a spring connecting the stop-lever and clutch-lever, substantially as and for the purpose described.

403,425. STOVE-PIPE LOCK. EDGAR GASS, Macomb, assignor of one-half to Benjamin B. Durfee, Peoria, Ill. Filed Jan. 2, 1889. Serial No. 295,187. (No model.)



Claim.—In combination with a stove-pipe, a locking device consisting of a bar, *c*, having a slot, *a*, cut so as to form the teeth *d*, for the purpose of adjustment, and the inner end being bent up at right angles to form an inside stop, *f*, and the stay-bolt *n*, having thumb-nut *e*, and a toothed wheel, *i*, formed on the head for adjusting the bar *c* and securing it firmly to the stove-pipe, substantially as shown and described.

403,426. CORN-CULTIVATOR. WILLIAM J. GOHN, Oakwood, Ill. Filed Jan. 24, 1889. Serial No. 297,363. (No model.)



Claim.—In a cultivator, the rods A, adjustably secured in the sleeve C, the lower ends of said rods being journaled in the boxes H, which are secured to the beams I, the rods A being adjustably secured by means of the braces F, secured to said rods and the sleeve C, substantially as shown and described.

403,427. VEHICLE-COUPLING. SAMUEL H. HAAS, Philadelphia, Pa. Filed June 25, 1888. Serial No. 278,187. (No model.)



Claim.—1. An improved vehicle-coupling consisting of a vertical hooked pin provided with a pivotally-attached latch transverse to the direction of draft, having unequal arms, the longer one preponderating to retain it in horizontal position and curved at the ends, as shown and described, to automatically receive a coupling-link and prevent the disengagement thereof, substantially as set forth.

2. An improved vehicle-coupling consisting of a vertical hooked projection provided with a pivotally-attached latch placed transversely to the line of draft, having arms of unequal length, the longer one preponderating to retain it in horizontal position and curved at the ends, as shown and described, to automatically tilt and pass through a coupling-link and prevent the accidental disengagement thereof, combined with a tilting mechanism arranged to operate said latch from beneath for the purpose of disengaging the link, substantially as set forth.

3. An improved vehicle-coupling consisting of a vertical hooked projection provided with a pivotally-attached latch having arms of unequal length, the longer arm preponderating to retain it in horizontal position and curved at the ends, as shown and described, to automatically pass through a coupling-link and prevent disengagement thereof, combined with a tilting and lifting mechanism arranged to operate said latch and lift the coupling-link, substantially as set forth.

403,428. ARTIFICIAL TOOTH-PLUG. FLORIAN R. HANSEN, Minneapolis, Minn., assignor to Mary Covan Hansen, same place, and Olivia Petrina Hansen, St. Louis, Mo. Filed Mar. 16, 1889. Serial No. 303,542. (No model.)



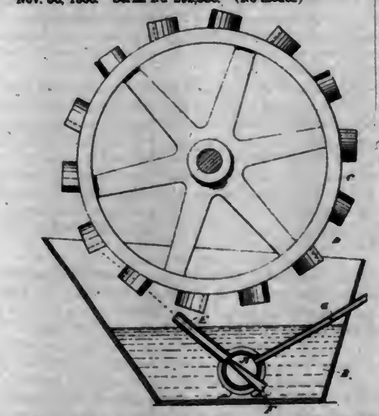
Claim.—1. As an improved article of manufacture, the connecting-plug for fastening a crown-tooth to the natural tooth-root, consisting of a single piece of metal formed with a screw-threaded part to enter the natural tooth-root, a collar at the base of the threaded part, and a wedge-shaped part to enter the crown-tooth, substantially as described.

2. The crown-tooth connecting-plug, comprised of a threaded part to enter the natural tooth-root, a collar at the base of the threaded part, and a flaring plug to enter the artificial tooth-crown, combined with a disk-plate arranged at the base of the threaded part and seated on the collar, substantially as described.

403,429. PROCESS OF ELECTROPLATING LEAD PIPES. LEONARD D. HOSFORD, Brooklyn, N. Y. Filed Mar. 12, 1888. Serial No. 266,978. (No specimens.)

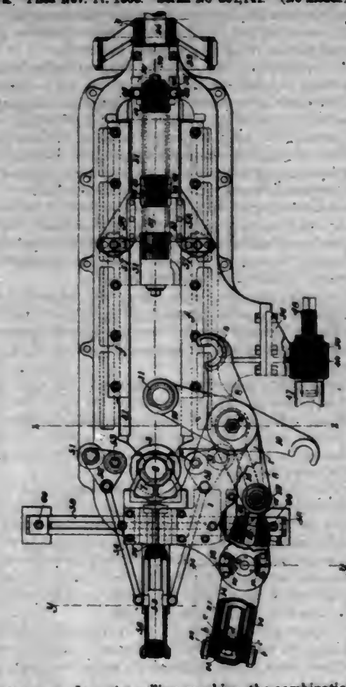
Claim.—The process of making plumbers' pipes having an exterior coating of a denser and tougher metal, consisting in taking a lead pipe, rendering its exterior surface chemically clean by scouring it, immersing in a solution of caustic alkali and afterward immersing it in a mercury-dip, and subsequently electroplating said pipe in a bath consisting of a solution of the salt of the metal to be deposited.

403,430. STEAM AND WATER MOTOR. CHARLES R. HUNT, Redding, assignor of one-half to Charles K. McElwee, Auburn, Cal. Filed Nov. 30, 1888. Serial No. 292,320. (No model.)



Claim.—The combination of the water-tank, the chamber A, submerged therein, the suction-pipe passing through the chamber and communicating with the contents of the tank, the discharge-nozzle into which the suction-pipe discharges, a steam-jet tube discharging into an annular space between the end of the suction and nozzle, and a rotary wheel having buckets upon its rim into which the jet discharges, said wheel having its lower portion within the tank, whereby the water discharged from the buckets returns to the tank, substantially as herein described.

408,431. TIRE-ROLLING MACHINE. JULIAN KENNEDY, Latrobe, Pa. Filed Nov. 17, 1883. Serial No. 291,141. (No model.)



Claim.—1. In a tire-rolling machine, the combination, with the inner and outer rolls, of a movable carrier by which one neck of the inner roll is supported, a second carrier which engages the roll at the opposite end, said last-named carrier being retractible from the roll to permit placing and removal of the tire, and a power-engine which moves the carriers with the roll for the purpose of reducing the tire, substantially as and for the purposes described.

2. In a tire-rolling machine, the combination, with the inner and outer rolls, of a swinging carrier-lever by which one neck of the inner roll is supported, a second swinging carrier-lever which is adapted to engage and apply pressure to the other neck of the roll, and means for applying pressure to said last-named carrier-lever, substantially as and for the purposes described.

3. In a tire-rolling machine, the combination, with the inner and outer rolls, of a swinging carrier-lever by which one neck of the inner roll is supported, a second swinging carrier-lever which is adapted to engage and apply pressure to the other neck of the roll, and an oscillating hydraulic cylinder whose plunger is connected with said last-named lever, substantially as and for the purposes described.

4. In a tire-rolling machine, the combination, with the inner and outer rolls, of a swinging carrier-lever by which one neck of the inner roll is supported, a second swinging carrier-lever which is adapted to engage and apply pressure to the other neck of the roll, a hydraulic cylinder whose plunger is connected with said last-named lever, and an adjustable stop for limiting the motion of the lever, substantially as and for the purposes described.

5. In a tire-rolling machine, the combination, with the inner and outer formative rolls, of outer guide-rolls, 51, mounted on oscillatory or pivoted frames, and a hydraulic cylinder the plunger of which is connected with both said frames and is adapted to impart simultaneous and equal motion thereto, substantially as and for the purposes described.

6. The combination of the swinging carrier-levers 8 and 10, having a common axis of motion, a pin, 13, on which both said levers have a bearing, and a power-engine—such as a hydraulic motor—which is connected with the pin between the ends of the levers, substantially as and for the purposes described.

7. The combination, with the swinging carrier-levers 8 and 10, of the post 9, which forms their center of motion, a hub or extended bearing on the lever 10, which encircles the post, and mechanism for operating said carrier-levers, substantially as and for the purposes described.

8. The combination of the swinging carrier-levers 8 and 10, hav-

ing a common center of motion, a pin, 13, on which both said levers have a bearing, a power-engine—such as a hydraulic motor—which is connected with the pin between the ends of the levers, and a radius-bar, 15, connecting the pin 13 with the center of motion of the levers, substantially as and for the purposes described.

9. The combination of the roll, the swinging carrier-lever 10, having a bearing in which the lower neck of the roll is removably supported, the upper carrier-lever, 8, which engages and supports the said roll laterally, a power-engine—such as a hydraulic cylinder—and its plunger, and a pin by which the plunger of the said cylinder is connected with the carrier-lever 8, and which is situated relatively to the lever 10, so as to engage and move the same forward, together with the lever 8, substantially as and for the purposes described.

10. In a tire-rolling machine, edging-rolls—such as the rolls 26 and 27—and their shafts, in combination with oscillatory bearings which support one of said shafts at a point remote from its roll, and vertically-movable bearings which support the same adjacent to the roll, substantially as and for the purposes described.

11. A tire-rolling machine having edging-rolls, the shaft of one of which is supported at a point remote from the roll in vertically-adjustable oscillatory bearings and has vertically-movable and oscillatory bearings adjacent to the roll, substantially as and for the purposes described.

12. A tire-rolling machine having edging-rolls, the shaft of one of which is supported at a point remote from the roll in oscillatory bearings and has vertically-movable bearings adjacent to the roll, and a motive cylinder having a plunger connected with the vertically-movable bearings by a rounded connection or joint, substantially as and for the purposes described.

13. In a tire-rolling machine, edging-rolls—such as the rolls 26 and 27—and their shafts, in combination with oscillatory bearings which support one of said shafts at a point remote from its roll, vertically-movable bearings which support the same adjacent to the roll, a lever or levers connecting the said oscillatory bearings with the vertically-movable bearings, and a motive cylinder by which the lever or levers are moved to elevate the said movable bearings and the roll, substantially as and for the purposes described.

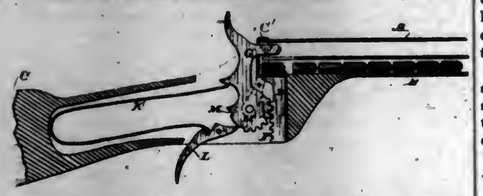
14. The hollow roll 3, one end of which is keyed to its shaft and is held by a shoulder thereon, while the other end is unrestrained and is free to expand when heated, substantially as and for purposes described.

15. In a tire-rolling machine, the combination, with the inner forming-roll having removable bearings to permit placing of the tire-bloom, of a hood or cap adapted to be set on the roll during the placing of the said bloom to protect the journal of the roll from scale, substantially as and for the purposes described.

16. In a tire-rolling machine, a vertical forming-roll having radially and horizontally movable bearings by which it is carried and a power-motor which applies pressure to move said bearings, substantially as and for the purposes described.

17. In a tire-rolling machine, an inner vertical forming-roll having bearings at both ends thereof, the bearings at the upper end being laterally removable to permit placing and withdrawal of the tire, substantially as and for the purposes described.

408,432. SPRING-GUN. EDWARD Y. KNAPP, Blue Lake, Cal. Filed Nov. 10, 1888. Serial No. 290,485. (No model.)

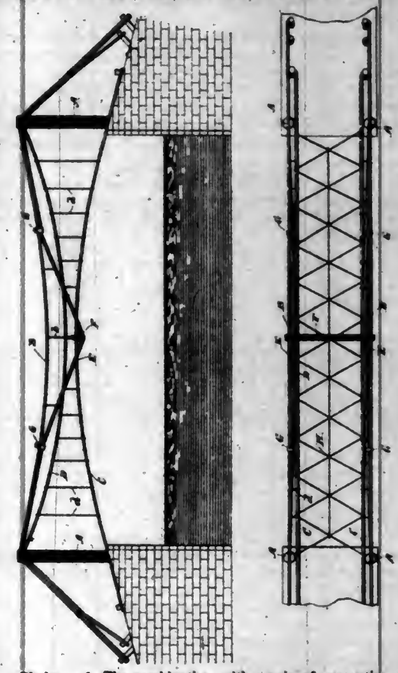


Claim.—1. The parallel barrel and magazine of the gun, the vertically-moving carrier D, having a fixed breech-plate common to both with an aperture in the upper part, in combination with a hammer, the striking part of which enters the aperture, said hammer having the circular tumbler formed upon its lower end and provided with teeth which engage the rack F on the lower rear edge of the carrier, the trigger L, and the spring K, substantially as herein described.

2. The perforated breech-plate C, with the extensions c, fitting the tumbler-shaft, the hammer with the elongated striking-point which passes through the slot in the breech-plate, and the vertically-moving carrier raised and lowered by said hammer and by which the projectile is raised and held so as to be struck by the falling hammer, substantially as herein described.

3. The parallel barrel and magazine, the fixed breech-plate common to both and having its upper part slotted or perforated, in combination with a spring-actuated hammer having a point adapted to pass through the aperture in the breech-plate, and a carrier actuated in conjunction with the hammer to raise a projectile from the magazine to a point opposite the barrel, where it is struck and impelled by the falling hammer, substantially as herein described.

408,433. SUSPENSION-BRIDGE. HORACE M. KOHER, Ridgeway, Kans. Filed Jan. 26, 1889. Serial No. 297,720. (No model.)



Claim.—1. The combination, with a pair of supporting-cables and a pair of stringers, of truss-cables extending from the supporting-cables on opposite sides of the middle obliquely downward to the stringers, and means for connecting the trusses with the stringers, substantially as set forth.

2. The combination, with a pair of supporting-cables and a pair of stringers, of truss-cables extending from the supporting-cables obliquely downward toward the stringers, and a girder located between the truss-cables and the stringers, forming a lock between the two, substantially as set forth.

3. The combination, with a pair of supporting-cables and a pair of stringers, of truss-cables extending from the supporting-cables obliquely downward to the stringers, and sliding clamps engaging the supporting-cables and their corresponding truss-cables, whereby the tension of the cables may be regulated, substantially as set forth.

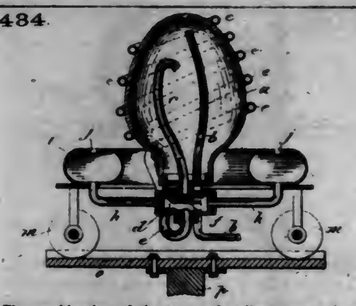
4. The combination, with a pair of supporting-cables, a pair of stringers, and a pair of intermediate supporting-cables, of hangers supporting the stringers from the intermediate cables in arch form, and truss-cables leading from the supporting-cables to the stringers at the crown of the arch, substantially as set forth.

408,434. APPARATUS FOR MAKING AND BURNING GASEOUS FUEL. JOSEPH LOCKE, Glenwood, and SOLON O. RICHARDSON, Jr., Wakefield, Mass., assignors of one-half to said Richardson, and R. D. Libby, Toledo, Ohio. Filed Apr. 2, 1888. Serial No. 269,233. (No model.)

Claim.—1. In an apparatus for making and burning gaseous fuel, the combination of a retort, an oil-supply pipe entering the interior of the retort, a gas-outlet pipe extending from the retort, a steam-pipe surrounding said retort and arranged to be heated for the decomposition of steam therein, and a burner receiving the gases from said pipes and having orifices for the combustion of the gases, as set forth.

2. In an apparatus for making and burning gaseous fuel, the combination of a retort, an oil or gas supply pipe entering the retort, a gas-outlet pipe extending from the retort, a steam-pipe surrounding said retort and arranged to be heated for the decomposition of steam therein, a mixing-chamber communicating with the gas-outlet and steam pipes, and a burner communicating with the mixing-chamber and surrounding the retort, as set forth.

408,434.



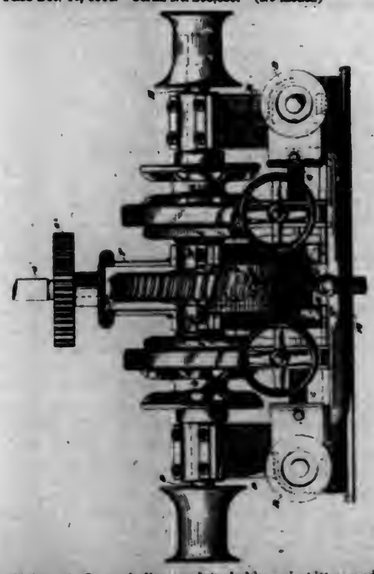
3. The combination of the retort, the oil or gas supply pipe entering said retort and extended to near the upper end thereof, the steam-supply pipe coiled upon the retort, the gas-outlet pipe extending from the interior of said retort, and the burner surrounding the retort and communicating with the gas-outlet and steam pipes, as set forth.

4. The combination of the retort, the oil or gas supply pipe entering said retort, the steam-supply pipe coiled upon the retort, the gas-outlet pipe extending from the retort, the mixing-chamber beneath said retort receiving the gas-outlet pipe at one side and the steam-pipe at the other side and having the interposed baffle-plate, and the burner surrounding the retort and communicating with the mixing-chamber, as set forth.

5. The combination of the retort, the oil-supply pipe entering the retort, the steam-supply pipe coiled upon the retort, a steam-regulator, *y*, in said pipe, the gas-outlet pipe extending from the interior of said retort, the burner surrounding the retort, and the mixing-chamber disposed beneath said retort and having the gas-outlet and steam pipes entering at opposite sides thereof, as set forth.

6. In an apparatus for making and burning gaseous fuel, the combination of a retort, an oil-supply pipe entering the retort, a branch, *b'*, adapted to admit gas from an outside source to said pipe, said pipe and branch being provided with valves whereby either may be shut off, a gas-outlet pipe extending from the retort, a steam-pipe surrounding said retort and arranged to be heated for the decomposition of steam therein, the mixing-chamber beneath said retort, and a burner receiving the gases from said pipes and having orifices for the combustion of the gases, as set forth.

408,435. STEAM AND CAPSTAN WINDLASS. WALTER MILLER, Cleveland, Ohio, assignor to the Globe Iron Works Company, same place. Filed Dec. 17, 1888. Serial No. 293,835. (No model.)

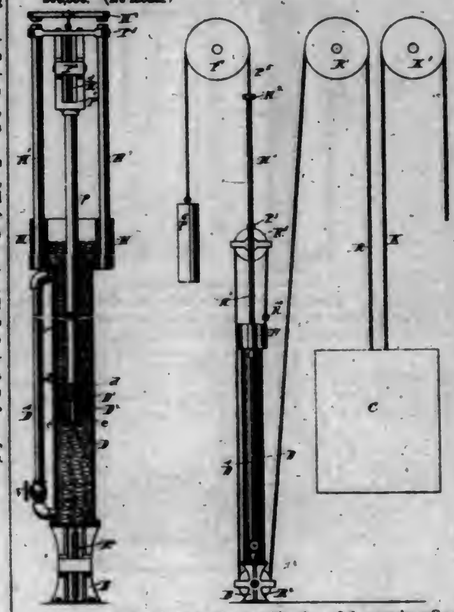


Claim.—1. In a windlass, a detachable main bitt or pedestal, F, in two vertical and integral portions provided with horizontal bearings F' and F², vertical bearings F³ and O, and detachable guard F⁴, in combination with stationary bed-plate A and shafts G, E, K, and O', substantially as described.

2. In a windlass, a detachable main bitt or pedestal, as F, in two equal vertical portions, connected and integral at their upper edges to form a bearing, O, in combination with an inclosed worm-wheel, N, and worm M, detachable guard F⁴, and bed-plate A, substantially as described.

3. In a windlass, a wild-cat loose on the windlass-shaft, provided with an overhanging flange and lugs on the interior side of said flange, a driving head or disk adjacent to the vertical face of the wild-cat and keyed to the shaft, provided with radial guides and slots, and an exterior disk loosely journaled upon the hub of the interior disk and having slots arranged spirally to the axis of the disk, in combination with dogs adapted to slide in the guides of the interior disk and bolts integral with the dogs passing through the radial slots in the interior disk into the spiral slots of the exterior or inclosing disk, substantially as described.

408,436. FLUID SPEED-REGULATOR FOR ELEVATORS. WILLIAM E. HENDERSON, Cambridge, Mass. Filed Feb. 5, 1889. Serial No. 298,589. (No model.)

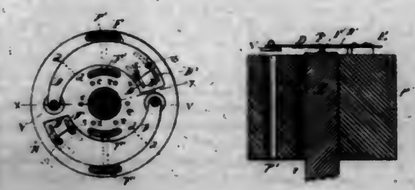


Claim.—In an elevator, the combination of the carriage C, retarding-rope R, piston D, having at the top of its rod P a pulley, R⁴, adapted to receive the retarding-rope R, and valve D⁴, with the cylinder D and retracting-weight P⁵, substantially as and for the purpose set forth.

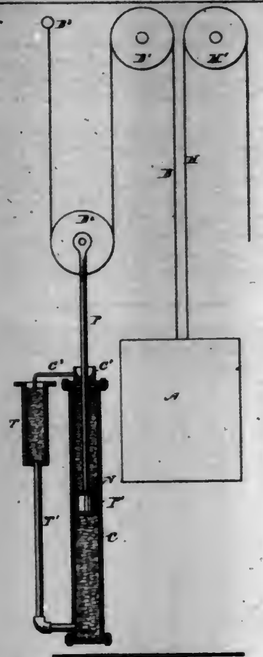
408,437. FLUID SPEED-REGULATOR FOR ELEVATORS. WILLIAM E. HENDERSON, Cambridge, Mass. Filed Feb. 4, 1889. Serial No. 298,560. (No model.)

Claim.—1. In a speed-retarding device, the combination of the cylinder C, piston-rod P, piston P', and valve V with the pipe T and reservoir T, having free communication with the lower part of the cylinder C, substantially as and for the purpose set forth.

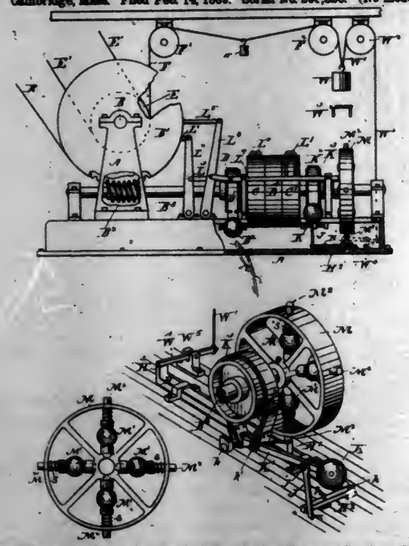
2. In a fluid speed-retarding device, the combination of the piston P' and valve V with the retractor-spring plate D and the fulcrum-piece F, adapted to adjust the tension of the retractor-spring, substantially as and for the purpose set forth.



408,487.



408,438. ELEVATOR SAFETY-BRAKE. WILLIAM E. NICKERSON, Cambridge, Mass. Filed Feb. 14, 1889. Serial No. 299,820. (No model.)



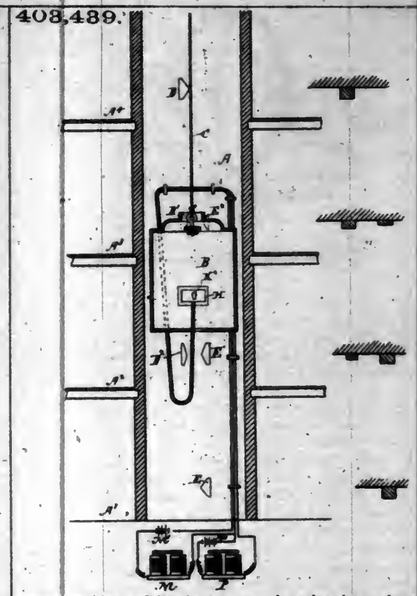
Claim.—1. In an elevator hoisting device, the combination of the hand-rope wheel E, the rope F, and weight W with the rope W', lever W^4, sliding rod H, having a stud, H', and the wheel M, having the slidable arms M^3, substantially as and for the purpose set forth.

2. In an elevator hoisting device, the combination of the shaft B^2, brake K^2 K^3, lever K', and post J with the lever H^3, sliding rod H, having a stud, H', and the wheel M, having slidable arms M^3, all operating substantially as and for the purpose set forth.

408,489. ELECTRIC CONTROLLING DEVICE FOR ELEVATOR-CARRIAGES. WILLIAM E. NICKERSON, Cambridge, Mass. Filed Mar. 5, 1889. Serial No. 301,573. (No model.)

Claim.—1. In an electrically-controlled elevator, the combination of series of fixed cam-pieces of varying projections with electrical

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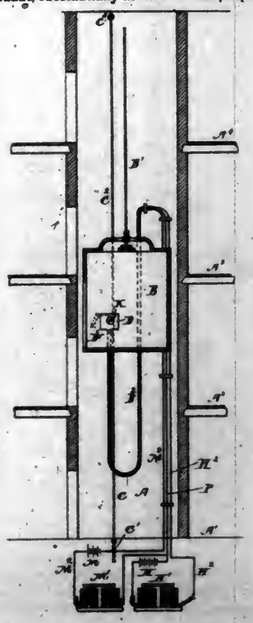


contact making and breaking levers adapted to be set by movable switch-blocks for automatic action, and movable switch-blocks, substantially as and for the purpose set forth.

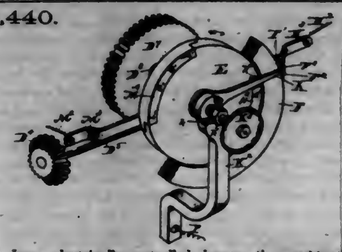
2. In an electrically-controlled elevator, the combination of the cam-pieces D D' D^2 and E E' E^2 and the levers N and L with the switch-blocks D^2 and E^2, substantially as and for the purpose set forth.

408,440. ELECTRIC CONTROLLING DEVICE FOR ELEVATORS. WILLIAM E. NICKERSON, Cambridge, Mass. Filed Mar. 7, 1889. Serial No. 302,248. (No model.)

Claim.—1. In an electrically-controlled elevator, the combination of contact-plates within the carriage, connected to electric devices and adapted to move in relation to an index the same as the carriage moves in relation to the floors, with an index-electrode adapted to be set by the attendant, substantially as and for the purpose set forth.

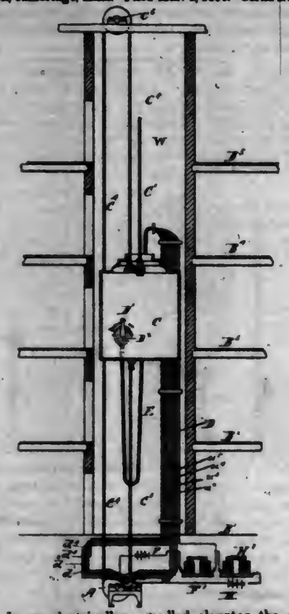


408,440.



2. In an electrically-controlled elevator, the combination of the ropes C and C^3, index-drum D', a transmitting mechanism, and the contact-plate block E and contact-plates M^4 H^4 with the index F and index-electrode K, all electrically connected, substantially as and for the purpose set forth.

408,441. ELECTRICALLY-CONTROLLED ELEVATOR. WILLIAM E. NICKERSON, Cambridge, Mass. Filed Mar. 8, 1889. Serial No. 302,454. (No model.)



Claim.—1. In an electrically-controlled elevator, the combination of a contact-plate block arranged to move in unison with the movement of the elevator-carriage and having contact-plates each connected to one pole of an electric device, and having resting upon it electric contact-points, each of which is connected electrically to switch-posts in the elevator-carriage, as described, with an index-electrode electrically connected with both electric devices and adapted to be set by the attendant, all substantially as and for the purpose set forth.

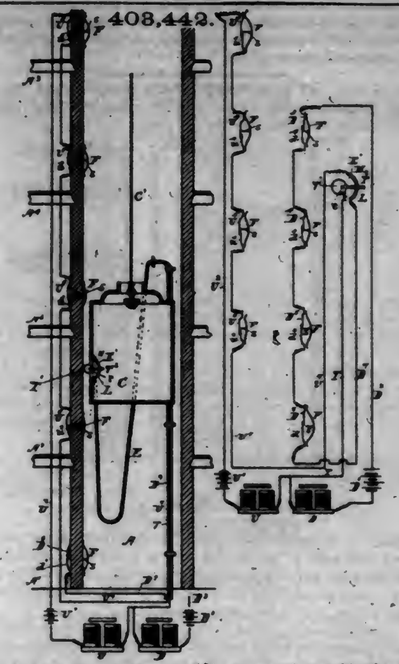
2. In an electrically-controlled elevator, the combination of the carriage C, ropes C^3 C^4, index-drum A, transmitting mechanism, and contact-plate block A^9, having contact-plates Z and U, with the contact spring-points l^2 l^3 l^4 l^5 and c' c^2 c^3 c^4 and contact-posts +2 +3 +4 +5 and −1 −2 −3 −4, index-electrode D', the electrical circuits, and devices, substantially as and for the purpose set forth.

408,442. ELECTRIC CONTROLLING MECHANISM FOR ELEVATORS. WILLIAM E. NICKERSON, Cambridge, Mass. Filed Mar. 9, 1889. Serial No. 302,709. (No model.)

Claim.—1. In an electrically-controlled elevator, the combination of a fixed automatically-operated circuit-breaker with an adjustable cam, an index-electrode, and connecting-circuits and electric devices, substantially as and for the purpose set forth.

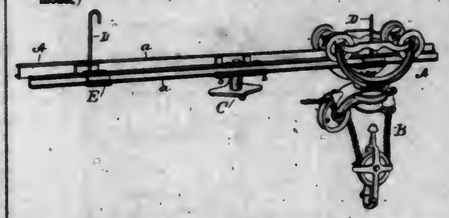
2. In an electrically-controlled elevator, the combination of a series of fixed circuit-breakers in the well-room, one for each floor, with an elevator-carriage having an adjustable cam adapted to operate the circuit-breakers, an index-electrode, and connecting-circuits and electric devices, substantially as and for the purpose set forth.

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3. In an electrically-controlled elevator, the combination of a series of circuit-breakers adapted for each floor by having different degrees of projections, as described, with an adjustable contact-breaker in the elevator-carriage operating in connection with circuits and electric devices, substantially as and for the purpose set forth.

408,448. TRACK FOR HAY-CARRIERS. CHARLES R. PATRIC and RICHARD H. ROGERS, Springfield, Ohio, assignors to the Superior Drill Company, same place. Filed Dec. 17, 1888. Serial No. 293,890. (No model.)



Claim.—1. The combination, with the rails a, formed of channel-iron, having the top and bottom flanges on the outside thereof, of a U-shaped clamping or supporting piece having projecting arms the ends of which are formed to fit between the flanges on the said rails, and an inner spreading-piece between said rails to force the same against the projecting arms of said clamping or supporting piece, substantially as specified.

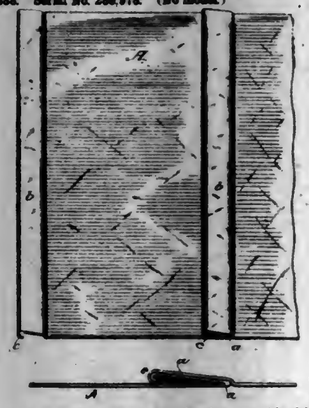
2. The combination, with the rails a, each provided with a lower projecting flange on the outside thereof, of an outer U-shaped clamping or supporting piece, the arms of which are adapted to rest against the outside of said rails, said projecting arms being grooved or formed to receive the lower flange of said rails and support the same, as described, and an inner U-shaped spreading-piece between said rails, substantially as specified.

3. The combination, with a track, as described, composed of channeled rails, of a stop mechanism having a top plate with hook-shaped flanges to engage the lower portion of said rails, a spreader between said rails to force the same in said hook-shaped top plate, and means for securing said flanges against longitudinal movement on the said rails, substantially as specified.

4. The combination, with a track composed of channeled rails connected together, as described, of a stop device secured to said channel-rails by hook-shaped flanges on a top plate adapted to engage with the lower part of said rails, spreaders between said rails,

set-screws passing through said top plate and adapted to impinge against said rails, and means for connecting said spreaders to said top plate, substantially as specified.

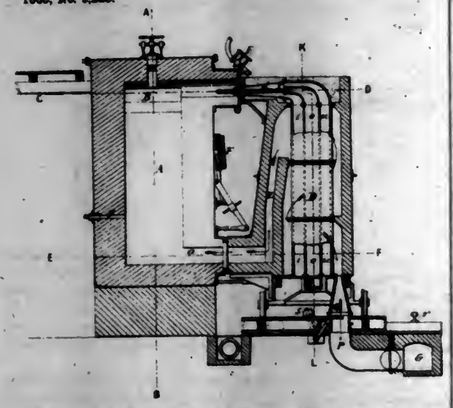
408,444. METALLIC ROOFING-PLATE. GEORGE PATTEN, Clarksville, assignor to himself, and Moultrie Patten, Nashville, Tenn. Filed Oct. 2, 1888. Serial No. 286,973. (No model.)



Claim.—1. A metallic roofing-plate having one side folded back to form a nailing-flange and the free edge of said fold turned under between the plate and fold, forming a core whose convex surface is adapted to engage and hold the hooked edge of an adjacent plate and form a joint, substantially as set forth.

2. A metallic roofing-plate having an underturned hook on one side and the other side folded back and turned under and resting near or upon the upper surface of the plate, so as to form with the hooked edge of an adjacent plate the joint connecting them, substantially as described.

408,445. APPARATUS FOR MAKING CHLORINE. ALFRED R. PECHINEY, Saltodres, Gard, France, assignor to the Weldon's Chlorine Processes Company, (Limited,) Westminster, England. Filed May 21, 1888. Serial No. 274,580. (No model.) Patented in England Aug. 1, 1885, No. 9,235.



Claim.—1. In an apparatus for heating solid bodies out of contact with products of combustion of the fuel employed, the combination of the furnace proper having entrance and discharge openings, a movable burner removably connected with the entrance-opening, the wheels on which the burner is mounted, and a wheeled truck on which the burner is supported moving toward and from the furnace, substantially as set forth.

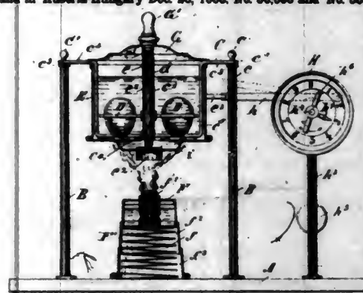
2. In an apparatus for heating solid bodies out of contact with the products of combustion of the fuel employed, the combination of a furnace proper, a movable burner, and connections for leading the heated air and gas or the products of combustion from the burner to the furnace proper and back to the burner, substantially as described.

3. In an apparatus for heating solid bodies out of contact with the products of combustion of the fuel employed, the combination of a furnace proper, consisting of one or more narrow working-chambers having thick walls, the said chambers (when the apparatus contains more than one of them) not communicating with one another, but all communicating with a common combustion-chamber, a movable burner for heating the narrow chambers, and connections for leading the heated air and gas or the products of combustion from the burner to the furnace proper and back to the burner, substantially as described.

4. The combination of the furnace having thick walls and narrow passages or compartments connected at one end with a common supply-chamber and having a discharge-opening at the opposite end, doors for closing said openings, a burner communicating with the entrance and discharge openings and mounted on movable supports, whereby it may be withdrawn from the furnace, the gas-supply pipe, detachable connections between the gas-supply pipe and the burner, the air-pipe, and detachable connections between the air-pipe and the burner, substantially as set forth.

5. The combination of the furnace having thick walls and divided into a series of narrow compartments communicating at one end with a common supply-chamber and at the opposite end with an exit-opening, the burner movable toward and from the furnace and parallel therewith and divided into a series of compartments, the air-openings through which air is supplied to some of the compartments, a gas-pipe, connections between the gas-pipe and the burner, the flue, and connections between the burner and the flue for carrying off the products of combustion after their passage through the furnace, substantially as set forth.

408,446. EGG-BOILER. RUDOLF REITHOFFER, Rudolfsheim, near Vienna, Austria-Hungary. Filed Oct. 5, 1888. Serial No. 287,574. (No model.) Patented in Germany Aug. 3, 1888, No. 46,796; in France Aug. 3, 1888, No. 192,209; in Sweden Aug. 3, 1888, No. 1,717; in Norway Aug. 4, 1888, No. 1,012; in Italy Sept. 30, 1888, XXII, 23,936, XLVII, 218, and in Austria-Hungary Dec. 20, 1888, No. 36,066 and No. 55,722.



Claim.—1. An egg-boiler composed, essentially, of socketed supports, an egg-carrier provided with arms terminating in an eye, and locking-pins adapted to pass through said eye and fitting into the sockets of the supports, in combination with a boiler adapted to move in the plane of the carrier, said carrier being constructed to fit into said boiler, substantially as and for the purposes specified.

2. In an egg-boiler, the combination, with a revoluble boiler having a simultaneous vertical and rotary motion on its support, and a stationary egg-carrier constructed to fit into said boiler, of a locking device to lock said boiler against rotation and vertical motion, substantially as and for the purposes specified.

3. In an egg-boiler, the combination, with a revoluble and vertically-movable boiler provided with a radial stop-arm and a stationary egg-carrier constructed to fit into and arranged in the plane of motion of said boiler, of a locking-lever adapted to engage the stop-arm of the boiler, and a timed releasing mechanism to break the engagement between the arm and lever, substantially as and for the purposes specified.

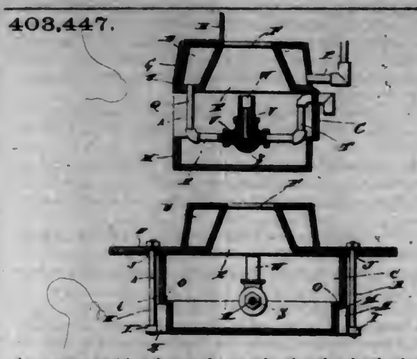
4. In an egg-boiler, the combination, with a movable boiler and a stationary egg-carrier constructed to fit within said boiler, of means for imparting a vertical and rotary motion to said boiler, consisting of a stationary helically-slotted tube and a support for the boiler fitting into said tube, said support being provided with a radial pin extending into the helical slot of said tube, substantially as and for the purposes specified.

5. The combination, with the stationary egg-carrier, consisting of the supporting-yoke C, sleeve c^2 thereof, carrier-tube d, and carrier D, connected therewith, and the spirally-slotted tube c', of the boiler E, and the spindle e, secured to the bottom of the boiler and projecting axially therethrough and through the tube c', and the guide-pin e', secured to said spindle and projecting into the spiral slot of the tube c', substantially as and for the purposes specified.

408,447. OIL AND GAS BURNER. RANSOM H. SARGENT, Titusville, Pa., assignor of one-fourth to James L. Dunn, same place. Filed Aug. 15, 1888. Serial No. 282,773. (No model.)

Claim.—1. The herein-described casing for hydrocarbon-burners,

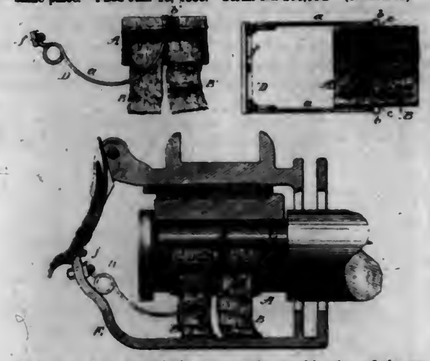
408,447.



the same comprising the annular superheating-chamber having laterally outward-extending base provided with downwardly-extending flanges formed integrally with said chamber, the bottom box having vertical sides and laterally outward-extending legs to support the flanges of the superheating-chamber at a distance beyond the walls of said bottom for the passage of air in a direct upward direction between said walls and flanges, and the connecting-bolts, in combination with the steam and oil pipes, the chamber having a diaphragm or partition forming separate compartments with which said steam and oil pipes are connected, the tube extending upwardly from the oil-compartment, and the nipple secured to the diaphragm connected with the steam-compartment and extending within the tube, substantially as and for the purpose herein set forth.

2. In a hydrocarbon-burner, the combination, with the superheating-chamber provided with a bracket or keeper on its front side, of an inverted-L-shaped shield or deflector having a shank, whereby it is mounted detachably in said keeper or bracket, so as to be conveniently accessible, as herein described, and for the purpose set forth.

408,448. CAR-AXLE LUBRICATOR. THEODORE SAUNDERS, Danbury, Conn., assignor to the Saunders Car Axle Lubricator Company, same place. Filed Jan. 10, 1888. Serial No. 296,014. (No model.)



Claim.—1. In a car-axle lubricator, the combination of the suspended lubricating-pad, the wicks pendent therefrom, and a pair of independently-resilient side supports, to which the ends of said pad are centrally pivoted, said pad being suspended between said supports, substantially as described.

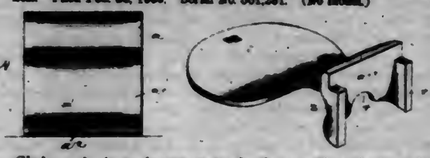
2. The combination, substantially as hereinbefore described, of a bracket having two independently-resilient arms and adapted to be mounted upon the front end of a car-axle journal-box and to project inwardly therefrom, and a lubricating-pad which is suspended between said arms and provided with pendent wicks, and is pivotally connected at its end to said two arms for maintaining it in position for contact with an axle-journal.

3. The combination, substantially as hereinbefore described, of a car-axle box, a suspended lubricating-pad having pendent wicks, and a pad-supporting bracket which is mounted upon and extends inwardly from the front end of said box, and which at its inner end has two arms, upon and between which said pad is suspended and to which the ends of the pad are separately pivoted.

408,449. COMPOSITION FOR PRESERVING WOOD. HILYARD STOKES, Beverly, N. J., assignor to Franklin S. Hovey, same place. Filed Feb. 9, 1888. Serial No. 263,239. (No specimens.)

Claim.—The herein-described composition of matter for preserving wood and rendering other materials water-proof, consisting of crude petroleum-oil, rosin-oil, oil of tar, and fine salt, combined in substantially the proportions set forth.

408,450. ART OF FORMING RAIL-BRACES. JOHAN A. TRAWEL, Chicago, Ill., assignor to the McGuire Manufacturing Company, of Illinois. Filed Feb. 20, 1889. Serial No. 301,291. (No model.)



Claim.—1. As an improvement in the art of producing rail-braces, notching the end portions of the web in a blank such as set forth and turning down the ends 2 of the base of the notched blank, for the purpose described.

2. Notching the end portions of the web of a blank such as set forth, flattening out the tread a of said blank, turning down the end portions, 2, of the base thereof, and subjecting the same to dishing-dies, substantially as described.

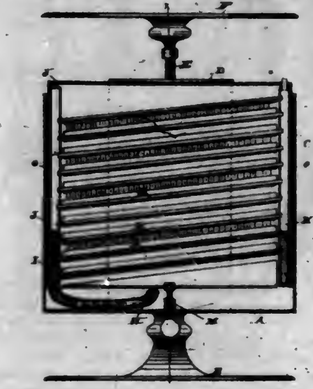
408,451. ELECTRIC BATTERY. JOHN A. BARRETT, Brooklyn, N. Y., assignor to the John A. Barrett Battery Company, Baltimore. Filed Feb. 8, 1888. Serial No. 263,353. (No model.)



Claim.—1. In a chloride-of-silver battery, the combination, with a mass of fused chloride of silver having a conductor-wire embedded therein, of a conductor applied to the surface of such mass and electrically connected with the embedded conductor.

2. The combination, with the battery-wire B and a mass of fused chloride of silver in which said wire is embedded, of an external conductor applied to the surface of the mass of chloride and connected with the embedded conductor, as and for the purpose described.

408,452. HYDROSTATIC WEIGHING-SCALE. FRANK BAXTER, Olds, Cal., assignor of one-half to W. S. Vanderburg, Marshfield, Oreg. Filed Dec. 22, 1888. Serial No. 294,407. (No model.)



Claim.—1. A weighing-scale having a float-chamber, a float disposed so as to rise and fall in said chamber and having a scale-pan supported upon it, in combination with an indicating dial or scale, said scale consisting of the inclined tubes, the lower one of which is connected with the float-chamber, the ends of all the tubes being so connected that the liquid may flow from one to another until it reaches the level of the surface within the float-chamber, substantially as described.

2. A weighing-scale comprising a float-chamber containing liquid, a float suspended therein and carrying a scale-pan, and an indicating dial or scale consisting of vertical tubes, one of which is connected with a float-chamber, and a series of inclined tubes extending between the vertical tubes, so that the upper end of each of the inclined tubes is on a level with the lower end of the succeeding tube above.

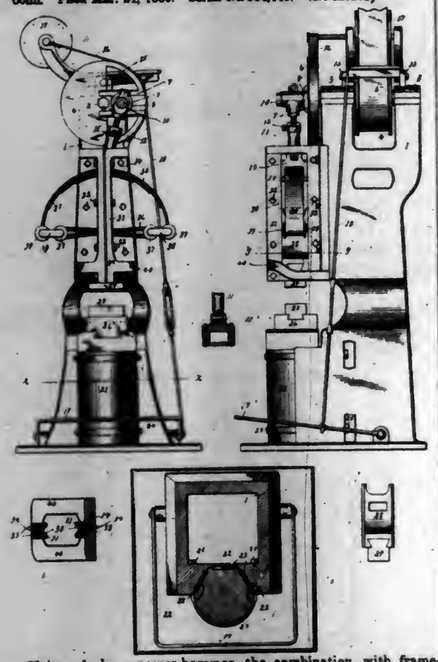
said tubes being subdivided and marked to indicate fractions of the unit, substantially as herein described.

3. The float-chamber, the vertically-moving float suspended therein and supporting the scale-pan, in combination with the indicating dial or scale consisting of a series of inclined tubes having their ends connected with approximately vertical tubes, one of which is connected with the float-chamber, the vertical distance between the inclined tubes representing the unit of weight, and a series of subdivisions marked from end to end of the inclined tubes indicating the fractional subdivisions of the unit, substantially as described.

4. The float-chamber, the vertically-moving float suspended therein and carrying the scale-pan, in combination with the dial or scale consisting of the inclined subdivided tubes having their ends connected with approximately vertical tubes, the lower end of one of which is connected with the float-chamber and the upper end of the other provided with an opening for the free passage of air, together with the regulating or adjusting screw, whereby the level of the liquid may be changed in the dial-tube, substantially as herein described.

5. In a weighing-scale, a float-chamber, a vertically-moving float suspended therein and carrying a scale-pan, in combination with a dial having vertical tubes at its ends connected with the float-chamber, and inclined connecting-tubes extending between them, said dial and tubes being vertically adjustable with relation to the float-chamber, substantially as herein described.

403,453. POWER-HAMMER. RUSSELL A. BELDEN, New Haven, Conn. Filed Mar. 21, 1889. Serial No. 304,115. (No model.)



Claim.—1. In a power-hammer, the combination, with frame-work and a ram, of an anvil-block wholly independent from the frame-work and made polygonal upon its inner side, corresponding mortises in the face of the frame-work and the anvil-block, blocks of wood in said mortises, and means—for example, metallic straps—whereby the anvil-block is held in position without transmitting the jar of the blows to the frame-work.

2. In a power-hammer, the combination, with the frame-work and ram, of ways cast in two parts, 31, strips of wood between said parts, and bolts connecting said parts to each other and to the frame-work.

3. In a power-hammer, the combination, with the frame-work and ram, of ways cast in two parts, having bars 33 of steel cast therein, strips of wood, 34, between said parts, and bolts securing them together and to the frame-work.

4. In a power-hammer, the combination, with the frame-work and ram, of ways cast in two parts, and strips 34 between said parts, the lower ends of both parts being curved upward, so that the view of the anvil is unobstructed in use.

5. In a power-hammer, the combination, with the ram, a crank-disk, crank-pin, and connecting-rod, of a slide to which the connecting-rod is hinged, a bow-spring carried by the slide, and straps which pass through the ram and are connected to the opposite ends of the spring, so that in use the shock of the blows of the ram is not transmitted to any other part.

6. In a power-hammer, a ram, a slide carrying a bow-spring, and a strap passing through the ram and connected to the ends of the spring.

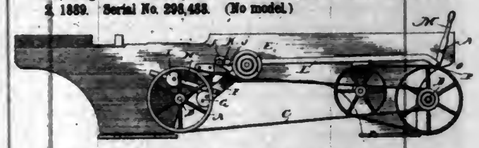
7. In a power-hammer, a slide carrying a bow-spring, a ram, a strap passing through the ram and connected to the ends of the spring, and inner and outer ways by which the ram and slide are supported.

8. In a power-hammer, a ram, a slide carrying a bow-spring, a connecting-rod hinged to the slide, whereby movement is imparted, and a strap passing through the ram and connected to the ends of the spring.

9. The combination, with a slide carrying a bow-spring, of a ram, a strap connected to the ram and to the opposite ends of the spring, two-part ways in which said slide and ram are guided, and strips 34 between the parts of the ways, as and for the purpose set forth.

10. In a power-hammer, the combination, with an anvil-block polygonal upon its inner side, and frame-work corresponding with said block, of corresponding mortises in said block and frame-work and blocks of wood in said mortises, which take up the shock of the blows of the hammer.

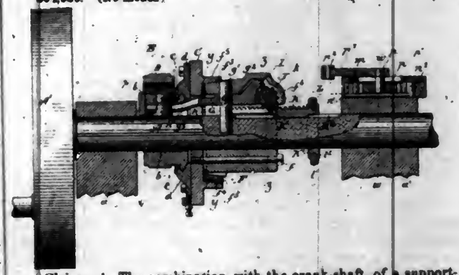
403,454. BELT-TIGHTENER. EDWIN BENJAMIN, South Evanston, Ill., assignor to the Benjamin Machine Company, of Illinois. Filed Feb. 2, 1889. Serial No. 298,453. (No model.)



Claim.—1. The combination, in a belt-tightener, of a pivoted arm carrying the tightener-pulley and means for shifting said tightener, consisting of a hand-lever and a connecting-rod from said hand-lever, the latter connected to the tightener-pulley arm by a stud adjustable in a series of holes arranged circumferentially with reference to the pivot of said arm, as set forth.

2. The combination of arm F, tightener-pulley E, rod L, connected to the arm F and lever M, the latter being pivoted to the frame, and the stop O, which arrests the movement of the lever M after the pivotal point P has reached a straight line joining the points K and N.

403,455. VALVE-GEAR. EDGAR M. BIRDSALL, Buffalo, N. Y., assignor to Mary Birdsall, same place. Filed Dec. 29, 1888. Serial No. 294,929. (No model.)



Claim.—1. The combination, with the crank-shaft, of a supporting-disk secured to said shaft, an eccentric capable of movement on said support, a shifting-lever pivoted to said shaft, whereby said eccentric is shifted, and a worm whereby said shifting-lever is actuated, substantially as set forth.

2. The combination, with the shaft A, the support C, secured thereto, and an eccentric capable of movement on said support, of a shifting-lever connected with said eccentric, a worm provided with gear-teeth whereby said shifting-lever is actuated, and a gear-rack whereby said worm is rotated, substantially as set forth.

3. The combination, with the shaft A, the support C, secured thereto, and the eccentric B, capable of movement on said support, of a movable block, H, seated in said eccentric, a shifting-lever movably attached to said block and provided with a gear-segment, a worm engaging with said gear-segment, and a longitudinally-movable rack-bar whereby said worm is rotated, substantially as set forth.

4. The combination, with the shaft A, the support C, secured thereto, and an eccentric capable of movement on said support, of a shifting-lever connected with said eccentric and provided with a gear-segment, a longitudinally-movable rack-bar, and a pinion provided with several rows of teeth arranged in line with each other lengthwise of the pinion and extending spirally around the same, substantially as set forth.

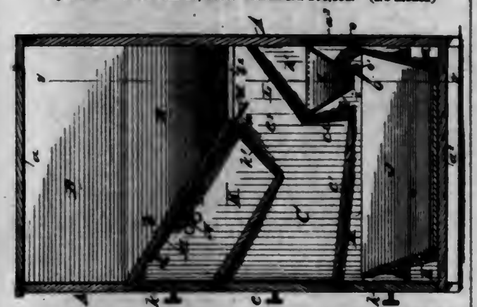
5. The combination, with the shaft A, the support C, and the eccentric B, arranged movably on said support, of a casing, F, surrounding the shaft, a pin, *g*, whereby said support and casing are secured to said shaft, a shifting-lever, G, pivoted to said pin, connected at one end to said eccentric and provided at its opposite end with a gear-segment, a combined worm and gear pinion, J, arranged in the casing F and engaging with said gear-segment, and a gear-rack, whereby said worm-pinion is rotated, substantially as set forth.

6. The combination, with the shaft A, the support C, and the eccentric B, capable of movement on said support, of a tapering socket, f^4, formed on said support, a casing, F, having beveled faces f^5 engaging in said socket, screw-bolts *f*, whereby said beveled faces are forced into said socket and said casing is secured to said support, a pin, *g*, whereby said casing is secured to said shaft, a worm-pinion, J, mounted in said casing, a shifting-lever, G, pivoted to said pin and engaging with said eccentric and with said worm-pinion, and a gear-rack, K, engaging with said worm-pinion, substantially as set forth.

7. The combination, with the shaft A, the disk C, and the eccentric B, supported on said disk and capable of movement thereon, of a casing, F, composed of sections f' f^3, surrounding said shaft and provided with inclined faces, a tapering socket formed on said disk and engaging over said inclined faces, screw-bolts *f*, whereby the inclined ends of said sections are forced into said socket and against each other, a transverse screw, f^6, connecting the outer ends of said sections, a worm-pinion, J, mounted on the screw f^6 within the casing F, a shifting-lever, G, engaging with said eccentric and provided with a gear-segment engaging with said worm, and a gear-rack, K, whereby said worm is rotated, substantially as set forth.

8. In a valve-gear, the combination, with the shaft A and the disk C, of the eccentric B, capable of movement on said disk, the eccentric-shifting mechanism mounted on said shaft and rotating therewith, a stationary rack-bar, m, a movable rack-bar, L, connected with the eccentric-shifting mechanism, a gear-wheel, *n*, meshing with the rack-bars *m* and L, and mechanism whereby said gear-wheel is rotated, substantially as set forth.

403,456. COAL AND WOOD CABINET. HENRY BRANDT, Brooklyn, N. Y. Filed Jan. 19, 1889. Serial No. 296,832. (No model.)

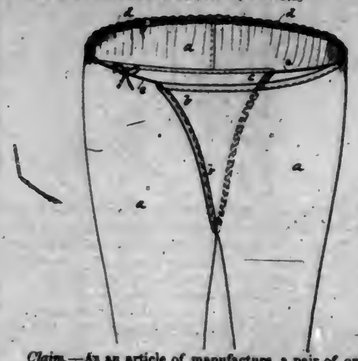


Claim.—1. In a cabinet, the combination, with a coal-bin, a communicating coal-delivery chamber, and a dust outlet at or below the passage between said bin and chamber, of an inclined grating or screen forming the floor of said passage and a self-closing valve fitted at the outlet for the dust below the screen, substantially as shown and described, whereby a dust-receiving pan or vessel placed below the dust-outlet will open the valve for discharge of dust into the vessel and the valve will close to retain the dust when the vessel is withdrawn, as herein set forth.

2. In a cabinet, the combination with a coal-bin, a communicating coal-delivery chamber, and a lower dust pan or vessel compartment, of an inclined grating or screen forming the floor to the passage between the coal-bin and coal-delivery chamber, a chute fitted below this screen, and a self-closing valve fitted to the chute-outlet and normally retaining the dust in the chute and adapted to be opened by a pan or vessel placed in the lower compartment, substantially as described, for the purposes set forth.

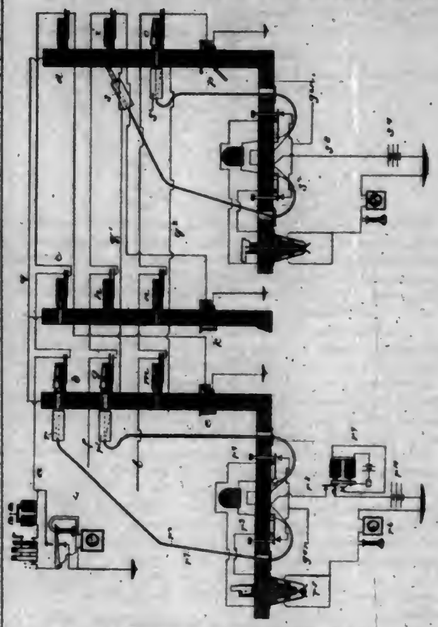
3. In a cabinet, the combination of a coal-bin, B, a coal-delivery chamber, C, a passage, c^3, connecting the bin and chamber, a dust-vessel compartment, H, below said chamber, an inclined screen, I, forming the floor of the passage c^3, a chute, I, below the screen, and a self-closing valve, O *o*, at the chute-outlet, substantially as herein set forth.

403,457. OVERALLS, &c. JUSTUS H. BROWN, Pittsburg, Pa. Filed Dec. 3, 1887. Serial No. 256,953. (No model.)



Claim.—As an article of manufacture, a pair of overalls having the overlapping flaps *b c* and a continuous elastic band extending around the waist of the garment along the edge of one flap to the crotch, and thence along the edge of the other flap back to the waist, substantially as herein shown and described, for the purpose set forth.

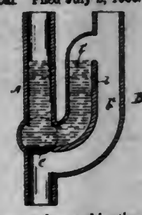
403,458. MULTIPLE-SWITCH-BOARD-TESTING APPARATUS. JOHN J. CARTY, New York, N. Y., assignor to the Western Electric Company, Chicago, Ill. Filed Feb. 2, 1889. Serial No. 298,448. (No model.)



Claim.—1. The combination, with telephone-lines connected each with a different switch on each of two or more switch-boards, of pairs of cords and plugs at each of said switch-boards, the tips of each pair being connected together and the sleeves of each pair being connected through a characteristic current-producing device, whereby it may be determined at one board whether any line wanted or called for is in use at any other of the boards, the particular board at which the connection is made being indicated by the characteristic tone, substantially as and for the purpose specified.

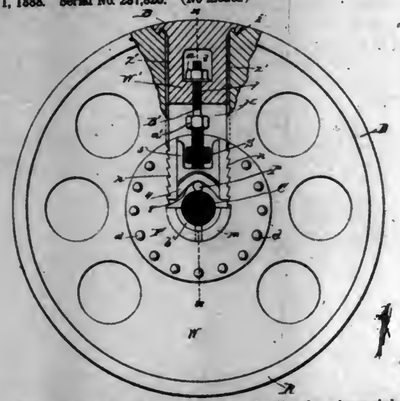
2. A pair of loop-plugs, the tips of said plugs being connected together by a strand of a pair of cords, the sleeves of said plugs being connected together by another strand which is connected through a rheotome, r^2, to ground, in combination with an operator's telephone, telephone-lines, and switching apparatus, substantially as described.

408,459. SEWER-TRAP. ABRAM E. COHN and GEORGE A. MERRILL, San Francisco, Cal. Filed July 2, 1888. Serial No. 278,818. (No model.)



Claim.—In a sewer-trap, the combination, with a soil-pipe, A, and a double-membered branch pipe having the passage b' and b^2 and the dam b between them, of a three-way valve, C, mounted in the soil-pipe at the mouth of branch b', and having passage-ways through it of equal capacity with said pipe A and passage b', as set forth.

408,460. DRIVE-PULLEY. GEORGE C. COWLES, East Saginaw, Mich., assignor of one-half to Edward Germain, same place. Filed Oct. 11, 1888. Serial No. 287,825. (No model.)

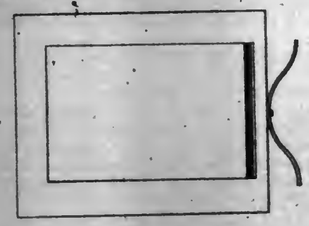


Claim.—1. A pulley having an opening leading from its periphery to its center, which opening is adapted to receive removable parts, the C-shaped and toothed flange-plates having the journal-bearing formed integral therewith, the yoke, the toothed locking-heads, the coupling-head, the detachable section B, and bolt coupling said section to the coupling-head.

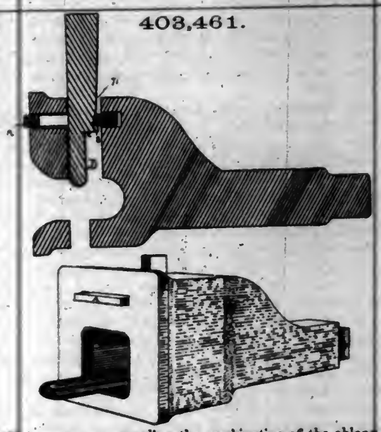
2. In a removable and self-gripping pulley, the main portion having an opening leading from the periphery to its center, the web W, having the grooves z', the toothed flange-plates F, having the journal-box m, the wood bushing therein, the yoke, the corrugated roller, the toothed locking-heads, the coupling-head, the section B, having the tongues f' attached thereto, and the bolt and nut coupling the part B to the coupling-head, as and for the purposes specified.

3. The herein-described pulley, comprising the following elements: the main portion having the central web, W, provided with the channels z' therein and the transverse grooves s' in the rim, the flange-plates having the toothed faces n and journal-box m, the wood bushing, the metal yoke S', the roller p, the locking-heads having the toothed faces n', the coupling-heads S, the section B, having the lips z and the tongues f', and the bolt B', adapted to pass through the web of the section B and having a nut at its upper end, the lower end of said bolt engaging with the coupling-head, substantially as and for the purposes specified.

408,461. CAR-COUPLING. MICHAEL D. COX, Knoxville, assignor of one-half to J. R. McCallum, Knox County, Tenn. Filed Mar. 3, 1889. Serial No. 302,560. (No model.)

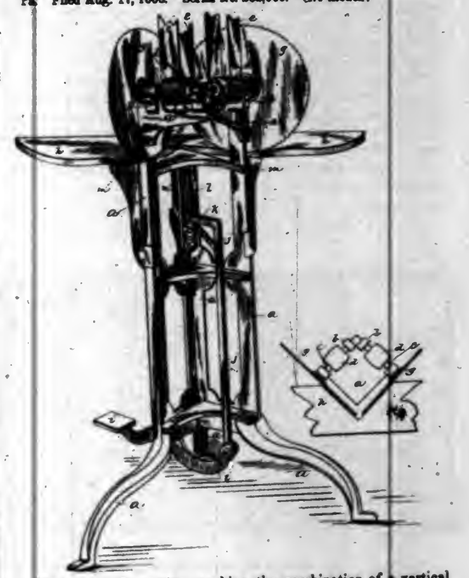


408,461.



Claim.—In a car-coupling, the combination of the oblong frame provided with the spring and the pin provided with the shoulder and the notch B, all substantially as described.

408,462. MITER-MACHINE. BENNINGTON V. CROWE, Pittsburg, Pa. Filed Aug. 17, 1888. Serial No. 282,969. (No model.)

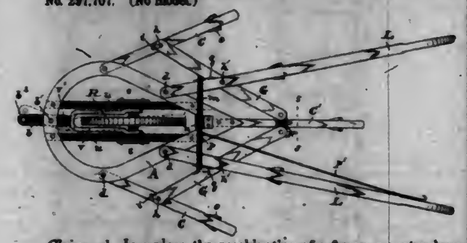


Claim.—1. In a miter-machine, the combination of a vertical triangular frame, the rotary shafts journaled in suitable fixed bearings and arranged at an angle to each other, the saws carried by said shafts, the vertically-movable table arranged in a horizontal position beneath said saws and having a V-shaped slot riding against the legs of the vertical frame, and a treadle connected by an intermediate rod with said table for moving the latter vertically, substantially as and for the purpose described.

2. In a miter-machine, the combination of a vertical triangular frame having a longitudinal slot, l, formed in one of the legs thereof, the inclined rotary shafts carrying the saws, the horizontal gravity-table arranged on the frame below the saws and having a V-shaped recess in one side thereof, the depending arms fixed to the table and having the guide-plates which slide on the legs of the vertical frame, a horizontal arm, k, working in the slot l and secured to one of said depending arms, and a treadle connected by an intermediate rod with said horizontal arm, substantially as and for the purpose described.

3. In a miter-machine, the combination of a vertical triangular frame, the inclined rotary arbors or shafts journaled thereon and carrying the saws, a horizontal gravity-table having a V-shaped slot in one side thereof and fitted close against the legs of said frame, the depending arms m, fixed to the table and carrying the clamping-plates which engage and slide on the legs of said frame, and a treadle for elevating the table, substantially as and for the purpose described.

408,468. CULTIVATING-PLOW. MILTON DAY, Berrett, assignor of one-half to Frank Brown, Baltimore, Md. Filed Jan. 26, 1889. Serial No. 297,707. (No model.)



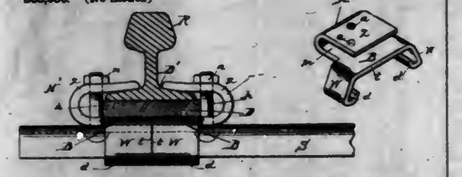
Claim.—1. In a plow, the combination of a frame, a center drag-bar rigidly attached to the frame, a drag-bar at each side pivoted to the frame, a slide-head movable on the center bar, a link-bar at each side connecting the drag-bar with the said slide-head, and two handles, each pivoted to the frame and also to the link-bars at each side.

2. In a plow, the combination of a frame, one or more drag-bars at each side of the frame and pivoted thereto, two link-bars, one at each side of the frame and each connecting the said pivoted drag-bars at its side, two handles pivoted to the frame and connected with the drag-bars and slide by means of link-bars, and an adjustment holding device to retain the parts where they may be set, substantially as described.

3. In a plow, the combination of a frame, shaft bearing-plates vertically adjustable on the frame, a wheel whose shaft is mounted in said adjustable plates, one or more drag-bars at each side of the frame and pivoted thereto, two link-bars, one at each side of the frame and each connecting the said pivoted drag-bars at its side, and two handles, each pivoted to the frame and also to the link-bars which connect the pivoted drag-bars with the slide on the rigid drag-bar.

4. In a plow, the combination of a frame, a draft-clevis pivoted intermediate of its ends at the forward part of the frame, shaft bearing-plates having a horizontal slot, a wheel whose shaft ends occupy the said slots, and a draw-yoke whose two arms are connected with the wheel-shaft and the front end of the yoke jointed to the inner end of the pivoted clevis.

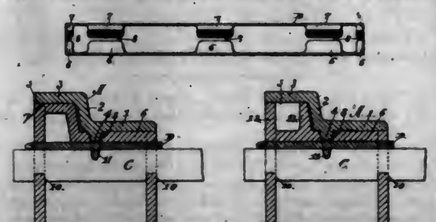
408,464. RAILWAY. ELIJAH J. DEVERS, Conwater, assignor to William W. Petherick, Detroit, Mich. Filed Aug. 25, 1888. Serial No. 283,333. (No model.)



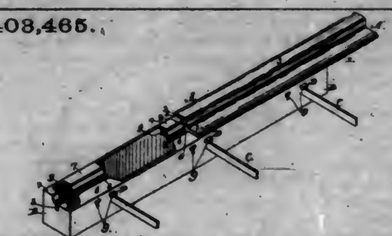
Claim.—In combination with the metal tie having the wings f, the two-part metal chair, each part having the curved wings with hooked ends and the clamping-lip Z, the rail, the wooden agent located between the rail and the chair, and the bolts passing through the tie and the lips of the chair, having nuts on their upper ends, substantially as and for the purposes specified.

408,465. CONSTRUCTION OF RAILWAY-TRACKS. THOMAS H. GIBSON, Albany, N. Y. Filed Dec. 17, 1888. Serial No. 293,795. (No model.)

Claim.—In a railway-track, the combination of a track-rail having a longitudinal rabbet formed under its head and a longitudinal rib pendent from its lower face, and a metallic stringer having two series of seats formed on its upper face—those at one side of said stringer being higher than the series at the opposite side—the higher seats forming a support for the rabbeted edge of said track-rail, said stringer also having a longitudinal slot through its upper face for receiving the pendent rib of said track-rail, as and for the purpose herein specified.



408,465.

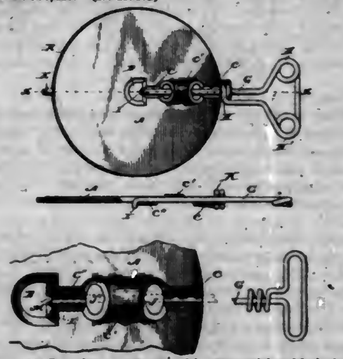


408,466. BOTTLE-STOPPER. STERLING GLOVER, Buffalo, N. Y., assignor of one-half to Frank H. Meyer, same place. Filed Jan. 25, 1889. Serial No. 297,554. (No model.)



Claim.—In a bottle, the combination, with the neck provided with inwardly-projecting ledges upon its inner wall, such ledges being centrally recessed upon their under surfaces, of the stopper having a shank and projecting lugs, all operating substantially as shown and described.

408,467. DAMPER. WILLIAM A. HAHN, Freeport, Ill., assignor to the Warner Manufacturing Company, of Illinois. Filed Feb. 19, 1889. Serial No. 300,419. (No model.)



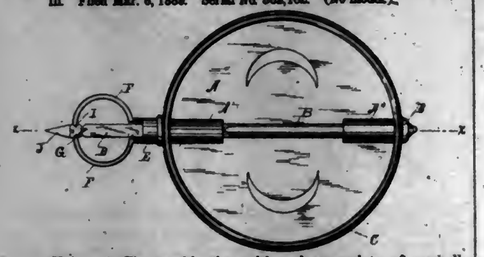
Claim.—1. In a damper, the combination, with a blade having a recess for the bent end of a handle shaft or spindle, of a handle-shaft having at its inner end a lateral bend lying in said recess and having its outer end bent upon itself, forming a spring pressing the edge of the blade, whereby the force of the spring tending to withdraw the shaft longitudinally presses the bent end into the recess and maintains the engagement of the handle with the blade.

2. The combination, with a blade having a radial passage into which a handle-shaft may be thrust and at the inner end of the passage a recess adapted to receive the laterally-bent end of such shaft, of a handle-shaft provided at its inner end with a bend or hook and having its outer end returned upon itself in the form of a spring pressing the edge of the blade, substantially as set forth.

3. The combination, with the blade having the groove, the bridges spanning the same, the openings, and the recess for the hooked end of the handle-shaft, of the handle-shaft having the hooked inner end lying in said recess and the integrally-formed spring pressing the edge of the blade, substantially as set forth.

4. The combination, with the blade A, having the opening D, with inclined walls recessed at M, the radial groove spanned by the bridges C C C', and the openings J J', of the handle-shaft G, lying in said groove, and having at its inner end the bend or hook I and at its outer end the integrally-formed spring-handle terminating in a coil about the shaft in close proximity to the edge of the blade, substantially as set forth.

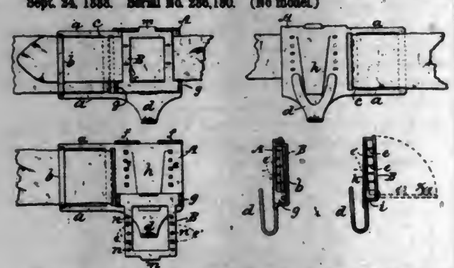
403,468. STOVE-PIPE DAMPER. WILLIAM A. HANCK, Freeport, Ill. Filed Mar. 6, 1889. Serial No. 302,102. (No model.)



Claim.—1. The combination, with a damper-plate, of a spindle projecting therefrom and provided with V-shaped notches upon its opposite sides, the handle sliding upon said spindle, and the opposite spring-catches pressing upon the outer incline of said notches, substantially as and for the purpose set forth.

2. The combination of the damper-plate, the squared projecting spindle rotating therewith and having the pyramidal point and the notches upon its opposite faces, the sleeve adapted to slide upon said spindle, and the outwardly-bent springs formed integrally with the sleeve and having their free ends in engagement, respectively, with said notches, substantially as and for the purpose set forth.

403,469. BUCKLE. JOHN H. HARRELL, Washington, D. C. Filed Sept. 24, 1888. Serial No. 286,180. (No model.)

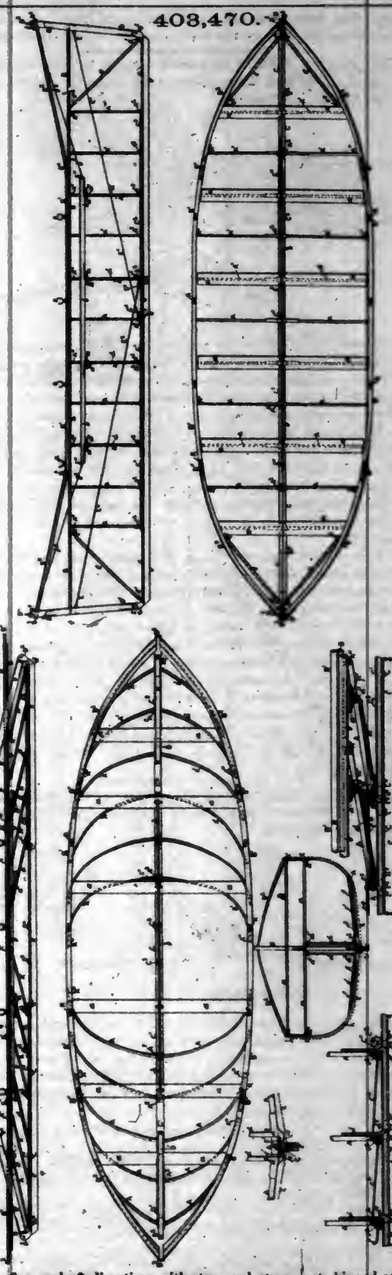


Claim.—1. In a fastening device, a plate having teeth projecting from its face and provided with a bifurcated hook extending from its lower end, said hook being adapted to be inserted under the edge of a collar and connect with a collar-button, in combination with another plate provided with teeth on its inner face and hinged at its lower end to the aforesaid plate, substantially as and for the purposes described.

2. The combination, with the plate A, provided with a spring, *h*, a hook, *d*, arms *a*, and bars *b* and *c*, of the plate B, which is hinged to plate A and is provided with a projection, *i*, which is pressed by the said spring, substantially as and for the purposes described.

3. The fastening device constructed from pieces of sheet metal which are stamped, cut, and bent into the required forms, and consisting of the plate A, provided with a spring, *h*, a hook, *d*, arms *a*, bars *b* and *c*, and points *e*, and the plate B, provided with points *e* and a projection, *i*, the two parts being hinged together and constructed substantially as and for the purposes described.

403,470. COLLAPSIBLE BOAT. CHARLES HENDERSON, Glasgow, Scotland. Filed Oct. 1, 1888. Serial No. 286,835. (No model.) Patented in England Aug. 12, 1887, No. 11,059; in Germany July 10, 1888; in France July 13, 1888, No. 191,806, and in Italy July 16, 1888, No. 216.



Claim.—1. A collapsible boat having its ribs jointed at their upper ends to the gunwales and fitted at their lower ends to slide and swivel on or over the keelson in a fore-and-aft direction, so that they fold down vertically to a nearly-horizontal position close over the keelson, substantially as herein set forth.

2. A collapsible boat having its ribs pivoted to fold down vertically in a fore-and-aft direction with the gunwale and thwarts close over the keelson, substantially as set forth.

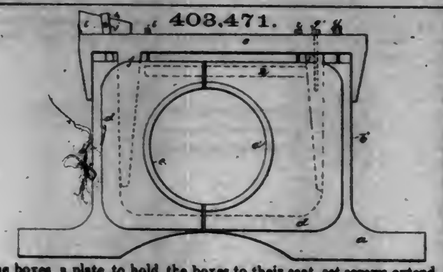
3. A collapsible boat having its ribs folding down vertically in a fore-and-aft direction and thwarts pivoted to the ribs to maintain a horizontal position in folding, substantially as described.

4. In collapsible boats, ribs having their lower parts fitted to slide and swivel on and over the keelson in a fore-and-aft direction, a longitudinal center stringer to which the thwarts are attached, and braces from the ends of the stringer to the stem and stern posts, respectively, to raise the boat to a vertical position, substantially as described.

5. A collapsible boat having ribs pivoted to fold down vertically in a fore-and-aft direction, with stem and stern posts hinged at their lower ends, as and for the purposes set forth.

403,471. PILLOW-BLOCK. SAMUEL M. HERBER, Lincoln, Ill., assignor to Theodore R. Peiler, same place. Filed Sept. 24, 1888. Serial No. 286,262. (No model.)

Claim.—1. The combination of a pillow-block having the vertical jaws forming a seat between them, the vertically-divided box located in said seat and consisting of a pair of similar box-sections adjustable toward each other, a vertically-adjustable cap-plate, wedge-shaped keys carried by the same and located between said jaws and the boxes, a plate to hold the boxes to their seat, set-screws extending through the cap-plate, a set-screw for adjustably securing one end of the cap to one of said jaws, a loop extending from the opposite jaw through the cap, and a wedge upon the cap extending through the loop, for the purpose described.

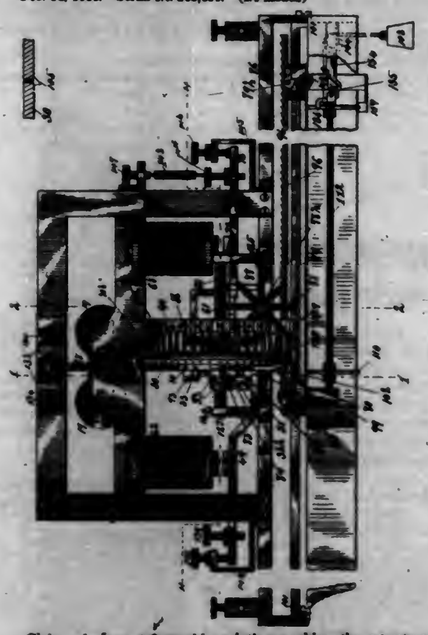


2. The combination of the pillow-block having vertical jaws forming a seat between them, the vertically-divided box located in said seat and consisting of a pair of similar box-sections adjustable toward each other and having flanges fitting upon the exterior of the jaws of the block and having their adjoining edges provided with recesses and intermeshing overlapping projections, whereby a continuous bearing is formed and the boxes can be adjusted to snugly fit the shaft, and a cap-plate secured to said jaws in vertical adjustment and provided with wedge-shaped keys fitting between the jaws and boxes to adjust the same, substantially as described.

3. A journal box or bearing comprising two sections surrounding and forming the bearing for and adjustable toward each other to snugly fit the shaft, and having their adjoining edges provided with corresponding series of recesses and intermeshing projections, whereby a continuous bearing is formed around the shaft and over the joints between the box-sections, substantially as described.

4. A journal-box comprising two similar sections forming the bearing for the shaft and joined together to form a continuous bearing by having their adjoining edges provided with series of recesses and corresponding snugly-fitting intermeshing and overlapping projections, substantially as described.

403,472. PRINTING TELEGRAPHY. ERROY P. HOTCHKISS, Oak Park, Ill., assignor of one-fourth to Carlos J. Ward, same place. Filed Feb. 11, 1888. Serial No. 263,999. (No model.)



Claim.—1. In a telegraphic printing-machine, the adjustment-post 40, in combination with the adjustment-posts 42½ and 64, the lever-escapement 39, the set-screws 17 and 62, and the retracting-spring 15, substantially as and for the purposes specified.

2. In a telegraphic printing-machine, the post 67, in combination with the adjustment-post 64, the magnets 68, the electrical connection 67½, the local battery 47, the wire 41, the lever-escapement 39, the armature 14, the spring 15, and the insulated set-screw 62, substantially as and for the purposes specified.

3. In a telegraphic printing-machine, the wire 18, in combination with the set-screw 17, the magnets 19, the local battery 23, the binding-post 25, the armature 14, the wire 18, the set-screw 58, the armature 55, the wire 61, the positive magnet 10 of the polarized relay, and the neutral relay 4, substantially as and for the purposes specified.

4. In a telegraphic printing-machine, the wire 41, in combination with the lever-escapement 39, the local battery 47, the magnets 42, the adjustment-post 42½, the wire 60, the insulated adjustment-post 59, the armature 55, the wire 61, the local battery 23, the wire 18, the binding-post 25, the armature 14, the negative magnet 8 of the polarized relay, and the neutral relay 4, substantially as and for the purposes specified.

5. In a telegraphic printing-machine, the ratchet-wheel 30, slotted at the point 92 and having forty-eight teeth equally distant from each other, which engage with the spring-pawls 29 and 33, in combination with the pawls 35 and the wheel 30½, bearing on its periphery forty-six type-characters for printing, said wheels revolving on the shaft 127, fixed in the vertical frame 75, substantially as and for the purposes specified.

6. In a telegraphic printing-machine, the type-wheel 30½, in combination with the coiled spring 86, attached to the shaft 127, the ring ratchet-wheel 90, and the ratchet-wheel 30, substantially as and for the purposes specified.

7. In a telegraphic printing-machine, the ring ratchet-wheel 90, having forty-eight teeth corresponding to those of wheel 30 and which engage with the pawl 89, in combination with the three slotted lugs 158 and the wheel 30½, substantially as and for the purposes specified.

8. In a telegraphic printing-machine, the ratchet-wheel 32½, having eight teeth, in combination with the spring 83, attached to the shaft 127, and with the ratchet-wheel 32, having eight corresponding teeth which engage with the pawl 35, said wheels revolving on shaft 127, substantially as and for the purposes specified.

9. In a telegraphic printing-machine, the combination of armature 28, magnet 19, pawl 31, spring 34, and the ratchet-wheel 30, engaging with the pawl 29, which revolves said wheel one tooth at a time, said wheel bearing on its side the pawl 35, engaging with ratchet-wheel 32, connected with ratchet-wheel 32½, which revolves wheel 30 eight teeth at a time, as hereinbefore shown.

10. In a telegraphic printing-machine, the lever 50, in combination with the armature 49, the lug 132, extending from the frame 75, the spring-pawl 51, engaging with the pin 53 on wheel 32½, and the retracting-spring 52, substantially as and for the purposes specified.

11. In a telegraphic printing-machine, the stop-arm 102, normally resting across the ratchet-bar 96, having a depending branch, 114, the arm continuing upward as a bent lever around the wheel 32 and above the projection 109 on the pawl 31, bent near its upper end at right angles twice and terminating in a wedge-shaped projection extending horizontally over pawl 31, said arm 102 being slotted, and in combination with the frame 75 at the point 148, substantially as and for the purposes specified.

12. In a telegraphic printing-machine, the armature 73, pivoted at the point 74 to the frame 75, and attracted by the magnets 68 68 when a local current of electricity is passing through them, in combination with the cross-bar 82, pivoted at one end to the hooked spring-pawl 77, which engages with the ratchet-wheel 78, and at the other end to the link-bar 88, substantially as and for the purposes specified.

13. In a telegraphic printing-machine, the stub-shaft 78½, having bearings in the frame 75, in combination with the ratchet-wheel 78 and the spoke-wheel 81, which impinges upon the type-bearing plates 129, substantially as and for the purposes specified.

14. In a telegraphic printing-machine, the sleeved lever 88½ upon the stub-shaft 78½, in combination with the link-bar 88 and the hooked pawl 89, engaging with the teeth of the wheel 90, and having on it a wedge-shaped projection corresponding to and in contact with the like projection on the bar 91, fastened to the horizontal frame 76, substantially as and for the purposes specified.

15. In a telegraphic printing-machine, the lugs 99, slotted on their inner faces to receive the sides of the sheet of paper to be printed on and apertured to pass over the bar 100, supported by the screws 101, passing into it through the frame 76, in combination with the ratchet-bar 96 and the socket-sleeves 152, which receive the screws 151, substantially as and for the purposes specified.

16. In a telegraphic printing-machine, substantially as described, the combination of the magnet 42, armature 49, lever 50 and its vertical arm 54, pawl 31, arm 107 and its projection 108, arm 102, ratchet-bar 96, lugs 99, weight 103, pawl 95, and wheels 78, as and for the purposes stated.

17. In a telegraphic printing-machine, the ratchet-wheel 78, in

combination with the pawl 95 and the stub-shaft 78¼, and engaging with the pawl 77, substantially as and for the purposes specified.

18. In a telegraphic printing-machine, the combination of the armature 73, pivoted to the frame 75 below the magnets 68 68, the lever 82, resting on said armature, the pawl 84, pivoted to said lever and engaging with ratchet-wheel 78, pivoted on stub-shaft 88¼, the pawl 95, pivoted on the sleeve 78¼ of wheel 78 and engaging with the ratchet-bar 96, the stub-shaft 88¼, pivoted to link-arm 88 and to pawl 89, the ratchet-ring 90, loosely secured by screws passing through its slots 158 to wheel 30¼, and the pin 93, rigidly secured to said wheel and passing through slot 92 in wheel 30 directly beneath the upper arm of pawl 35, substantially as and for the purposes specified.

19. In a telegraphic printing-machine, the stub-shaft 88¼, in combination with the link-arm 88, the ratchet-wheel 78, and the spring-pawl 89, which engages with the ratchet-wheel 90, substantially as and for the purposes specified.

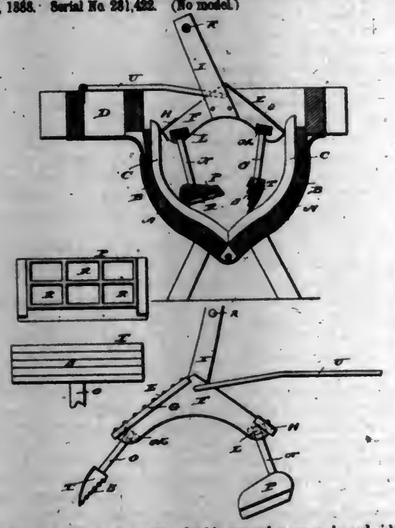
20. In a telegraphic printing-machine, the shaft 112, in combination with the lugs 99, the spur-wheels 110, the weight 103, and the pivoted lever 135, substantially as and for the purposes specified.

21. In a telegraphic printing-machine, the pivoted lever 135, bearing the wedge-shaped piece 142 at one of its ends, which piece slides up on a corresponding wedge-shaped piece, 154, fastened to the frame 76, in combination at above end with the spring-pawl 136, engaging with the teeth of one of the spur-wheels 110, and at the other end in combination with the spiral spring 137, fastened to the lug 99, substantially as and for the purpose specified.

22. In a telegraphic printing-machine, the spring 159, secured at one end to the bottom of that lug 99 which is nearest to the weight 103, in combination with a small lug notched in its upper face to receive a tooth of wheel 110, said notch being made shallow and spring elastic enough to permit the said wheel to revolve, as shown.

23. In the paper-carriage of a telegraphic printing-machine, the lever 135, pivoted on the shaft 112 near one of the lugs 99, carrying fixed to it at one end the spring-pawl 136 in contact with a tooth of wheel 110, and carrying the beveled piece 142 at this end to slide up on the beveled end of arm 154, fixed rigidly to the frame 76, thus partly revolving the wheel 110 on the return of the paper-carriage after the printing of a line and automatically moving the paper forward for the printing of a new line, substantially as shown.

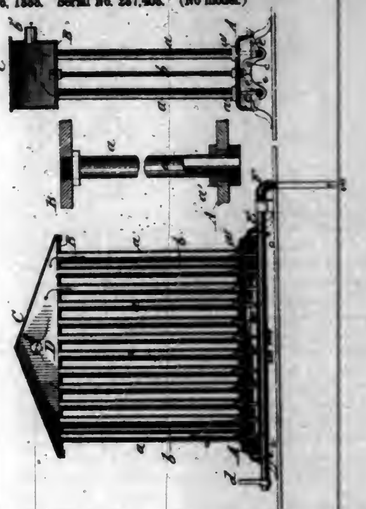
403,473. WASHING-MACHINE. William C. Huffman, Albany, Ind., assignor of one-half to James M. Leavell, same place. Filed July 30, 1888. Serial No. 281,422. (No model.)



Claim.—1. The body having double-curved or ogee-shaped sides, said sides having a lining of slats, the guide-strips C, secured to the slats, and the receptacle D, formed from a continuation of the upper portion of two of the walls and having a communication with the suds-box, in combination with a reciprocating rubber, substantially as specified.

2. The combination, with the tub or suds-box, of the reciprocating frame E, journaled on the bail U, the frame being of angular form and having the shield G, the bars L M, pivoted to the reciprocating frame, the arm N, depending from the arm L and having the counter-head secured to its lower end, and the clothes-turning head S, secured to the lower end of the arm O, substantially as specified.

403,474. HEATING APPARATUS. Jonathan Johnson, Lowell, Mass., assignor to himself and Edmund H. Packer, same place. Filed Oct. 6, 1888. Serial No. 287,408. (No model.)



Claim.—1. As an improvement in heating apparatus, the combination of a suitable base, the rows of vertical radiating-pipes open at both ends, the chamber into which the upper ends of the radiating-pipes open, and the rotating fuel-supply pipes provided with a burner for each radiating-pipe placed horizontally within the base and adapted to be rotated upon its axis to carry the burners away from beneath the open lower ends of the radiating-pipes, substantially as and for the purpose set forth.

2. As an improvement in heating apparatus, the combination, with the base, the radiating-pipes supported thereon, and the horizontally-placed fuel-supply pipes rotating upon their axes and provided with a burner for each radiating-pipe, of the supports c c, secured within and to the base, forming bearings upon which the supply-pipes are rotated by means of suitable handles attached to the pipe, substantially as specified.

403,475. COTTON-SPRINKLER. William Kister, Weimar, Tex. Filed Aug. 24, 1888. Serial No. 283,670. (No model.)



Claim.—The combination of the L-shaped nozzle, having the longer arm, C, and the shorter arm, D, the spring-valve secured to the side of the arm D and projecting over the end thereof, and provided with a boss, G, on its upper side, the L-shaped bracket H, secured to the side of the arm D and having one end projecting over the spring-valve and provided with a screw-threaded opening, I, and the thumb-screw J, inserted through and playing in said opening and having its end swiveled in the boss G of the spring-valve, as specified.

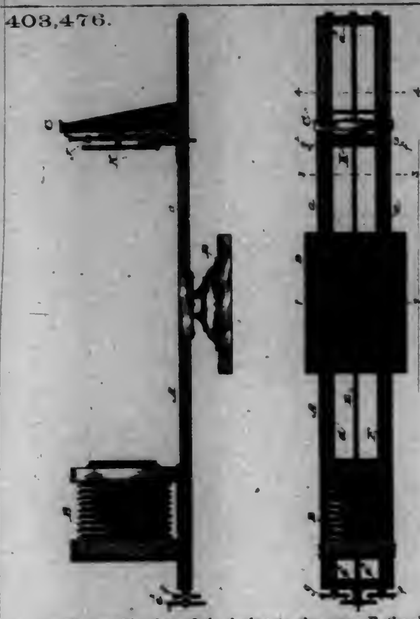
403,476. PHOTOGRAPHIC APPARATUS. Henry Kuhn, St. Louis, assignor to Henry A. Hyatt, Kirkwood, Mo. Filed June 15, 1888. Serial No. 277,160. (No model.)

Claim.—1. The combination of the bed-plate, the camera, the screw E, the easel, the picture-holder on said easel, the shaft G, and connections between said shaft and said picture-holder for raising or lowering the latter as said shaft is turned, substantially as set forth.

2. The combination of the bed-plate, the screw E, the nut made to open, as described, and the easel, substantially as described.

3. The combination of the bed-plate, the screw E, the shaft G, the bell-crank g^2 g^3, the pinion g', the handle g, the pin k, the easel, and the frame J, substantially as described.

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4. The combination of the bed-plate, the screw E, the shaft F, the pinion f', the handle f, the arm f^2, the bar M, the frame J, and the easel, substantially as described.

5. The combination of the bed-plate, the camera, the easel, the vertically-adjustable frame J, devices for raising and lowering it, and the holder K, attached to said frame, substantially as described.

6. The combination of the bed-plate, the screw E, the shaft F, the pinion f', the handle f, the arm f^2, the easel, the frame J, the holder K, and the bars M N, substantially as described.

7. In combination with the base, bed-plate, and camera, an easel adjustable longitudinally on said bed-plate and a picture-holder on said easel adjustable laterally, substantially as set forth.

8. In combination with the base, bed-plate, and camera, an easel provided with a frame which is adjustable vertically and laterally and a picture-holder moving with said frame, substantially as set forth.

9. The combination of the bed-plate, the camera, the easel, a frame adjustable vertically and laterally upon said easel, and means, substantially as described, for operating said frame from a position in the vicinity of the camera, substantially as set forth.

10. The combination of the bed-plate, the screw E, the shafts F G, the handles e f g, the pinions f' g', the arms f^2 g^2 g^3, the easel, the frame J, the holder K, and the bars M N, substantially as described.

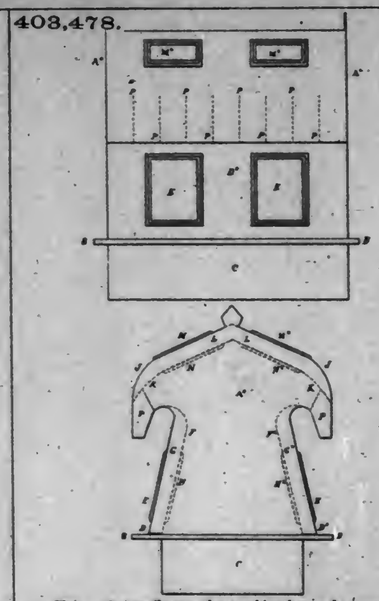
403,477. BUTTON. Russell H. Lewis, Providence, R. I., assignor to Albert Eddy, same place. Filed Feb. 7, 1889. Serial No. 299,964. (No model.)



Claim.—1. A button or stud provided with the post 5, having the arms 11 11 and the slot 12 at its free end, combined with a shoe provided with the spring-plate 7, the spring-finger 13, formed integral with the spring-plate 7, and the notches 14 15, formed in the finger 13, constructed to pivotally connect the post to the shoe and hold the shoe parallel with and at right angle to the shoe, as described.

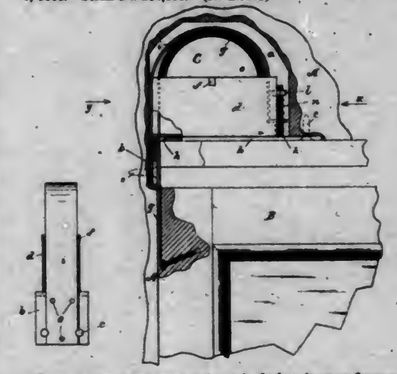
2. The combination, with the head of the button 4 and the post 5, bent at right angle at a point on the inner line of the shoe and bent in the reverse direction near its end, the arms 11, and slot 12, of the shoe 6, provided with the spring-plate 7, having the spring-tongue formed integral therewith, and the notches 14 15, constructed to secure the shoe to the post, as described.

403,478. VENTILATOR. Benjamin Merian, Boston, Mass. Filed Feb. 1, 1888. Serial No. 262,688. (Model.)



Claim.—In ventilators, the combination and arrangement of the ventilator herein described, consisting of the walls A^5 A^x D D^x and the roof J J, of any desired shape in horizontal section, and bearing one or more side pipes curved downward and with tunnel-shaped ends, with the dead-air chambers L L and G G^x, the ventilator and the inner walls making the said chambers being provided, respectively, with windows placed opposite each other, all substantially as described and shown.

403,479. SASH-BALANCE. James McArthur, Rochester, N. Y., assignor to the Pullman Sash Balance Company, same place. Filed Oct. 6, 1888. Serial No. 287,360. (No model.)



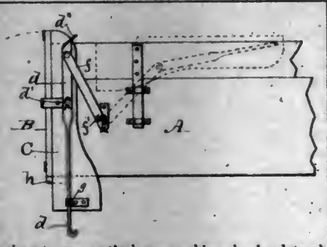
Claim.—A sash-balance having a bed-plate bent to form an angle, in combination with a frame secured to the bed-plate, an actuating-drum held by the frame, a suspending-band on the drum, a curved elastic friction strap or brake secured rigidly to the bed-plate in position to in part encircle the drum, and an adjusting-screw for the brake, provided with a spring and retaining-nut, substantially as and for the purpose set forth.

403,480. END-GATE FOR WAGONS. James A. McClellan, Prairie City, Iowa, assignor of two-thirds to C. W. Friedrich and J. F. Vangilder, same place. Filed Dec. 17, 1888. Serial No. 293,901. (No model.)

Claim.—1. The lever d, having a stop or lateral projection, d', at its end, and the bar f, having a lateral bend, f', in combination with a wagon end-gate having fixed clasps or hooks g, and a wagon-box having a fixed cross-piece, h, substantially as shown and described, for the purposes stated.

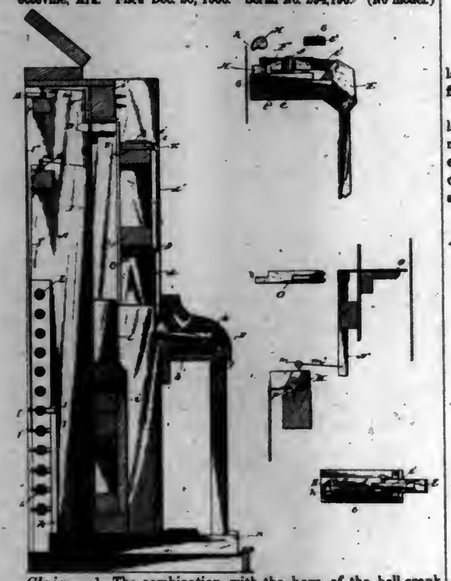
2. A wagon end-gate having wings projecting at right angles from its ends, levers having stop devices on their ends pivoted to said wings,

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hooks fixed to the wings to engage the levers, and bars having lateral bends pivoted under the stop devices on the ends of the levers and to the sides of the wagon-box, arranged and combined to operate in the manner set forth, for the purposes specified.

408,481. MUSICAL INSTRUMENT. EDWIN R. MORGROS, Fayetteville, Ark. Filed Dec. 20, 1888. Serial No. 294,196. (No model.)



Claim.—1. The combination, with the keys, of the bell-crank levers, the sliding head-blocks having elongated slots formed therein to one side of the centers thereof, the pickers connected with the head-blocks and secured to slides below the same, rods connecting the respective levers and keys, and the wires, substantially as described.

2. The combination, with the casing, the wires, and keys, of the bell-crank levers mounted near the upper end of the casing, rods connecting the same with the keys, the head-blocks F, connected with the levers, the slides G, on which the head-blocks are mounted, the guide-strips c^3, the pickers H, mounted loosely on the slides and having an eccentric connection with the head-blocks, and springs for forcing the slides back, substantially as described.

3. The combination, with the casing, the pedals, and keys, of rods attached to the keys, bell-crank levers connected with the rods, slides connected with the levers, pickers on the slides, head-blocks for rotating the pickers, a series of oscillating shafts connected with the pedals, a series of rocking levers located above and connected with the shafts, levers having connections with said rocking levers, frets on said levers, and springs for forcing the frets and pickers out, substantially as described.

4. The combination, with the casing and wires, of the keys, the rods d, the arms D, the rods d', the levers E, the head-blocks F, connected therewith, the slides G, the guides c^3, the pickers H, mounted on the slides and eccentrically connected with the head-blocks, said pickers being constructed with a rounded inner end and a finger, as A, and springs for drawing the slides back, substantially as described.

5. The combination, with the keys and wires, of pickers operated by the keys, consisting of a circular disk having a finger extending out therefrom and having a central and an eccentric opening therein, a slide for moving the picker forward and back, and a head-block for oscillating the same, substantially as described.

6. The combination, with the casing of a musical instrument, of a series of pedals, a series of oscillating shafts connected with the pedals, a series of rocking levers mounted on a cross-piece, a connecting rod or cord between the same and the shafts, a lever having connection with said rocking lever, and frets on said lever, substantially as and for the purpose specified.

7. The combination, with the keys and the rods connected therewith, of the bell-crank lever, a slide having an elongated slot therein on one side the center thereof, a finger on the slide and opening in the said finger, a connecting-link between the bell-crank lever and the slide, a slide below said other slide, a picker on said lower slide having a connection with the upper slide, and the strings or wires, substantially as described.

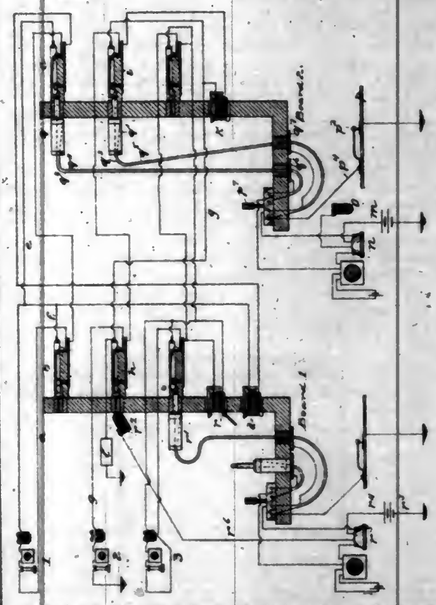
408,482. INSULATING TUBULAR IRON POSTS. WILLIAM H. O'BRIEN, Elgin, Ill., assignor to the Star Iron Tower Company, Fort Wayne, Ind. Filed Dec. 3, 1888. Serial No. 292,927. (No model.)



Claim.—1. The insulator for tubular posts, consisting of the insulator-block having oppositely-turned ends and intermediate annular flange, and the cup-shaped rain-guard, substantially as specified.

2. The combination, with the tubular post-sections, of the insulator-block having turned ends formed into said sections and an annular flange separating the same, and the inverted-cup-shaped guard engaging the lower end of the upper section and extending below and clear of the flange and the end of the lower section, substantially as specified.

408,483. TESTING APPARATUS FOR MULTIPLE SWITCH-BOARDS. JOSEPH J. O'CONNELL, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Oct. 22, 1888. Serial No. 288,819. (No model.)



Claim.—1. The combination, with telephone-lines, each connected with a different switch on each of two or more multiple switch-boards, of loop-plugs and cords for connecting the lines together on the different boards and in connection with each pair of cords a branch circuit to ground through a variable resistance and a ground-circuit, including a battery and a telephone or indicating device, and means for connecting said ground-circuit at any of the boards with the test-frame of any spring-jack switch thereon, whereby it may be determined at any given board whether a line wanted or called for is connected or in use at any other of the boards.

2. In a telephone-exchange, the combination, with two metallic circuit telephone-lines, each connected with a different switch on each of two or more multiple switch-boards and looped together upon one of the boards to form a complete metallic circuit, of a branch circuit to ground, containing a vibrating contact at the board where the lines are connected together and at one of the other boards a ground-circuit, and means for connecting said ground-circuit with the switch or test-piece of either of said united metallic circuits, whereby on observing or listening at the indicating apparatus included in said circuit when connection is made with the switch or test-piece of either line it may be determined whether either of said metallic circuits is connected or in use at another switch-board.

3. The combination, with a pair of loop-plugs and flexible cords connected therewith, of two telephone-lines looped together through said cords at one of two or more multiple switch-boards, branch connections through high resistance, say two thousand ohms, from each of said strands to ground, a vibrating contact being provided in each of said branches, and testing apparatus consisting of a ground-circuit, including a battery and telephone, and means for connecting said circuit to the switch of either of said lines at another board, whereby, when connection is made with either of said switches, a buzz will be heard in the telephone, while the different sides of said united metallic circuit will be balanced with respect to induced currents.

4. A testing apparatus consisting of a normally-open ground branch, m, including a battery and an extra winding upon the coil of a telephone, n, and a movable terminal connection, o, in combination with the different switches or terminals of telephone-lines upon a multiple switch-board, whereby connection may be made with any one of said switches or the test-piece of any of said switches, substantially as and for the purpose specified.

5. The combination, with the pivoted lever p^2, of insulated contact-springs on opposite sides thereof, between which the shank of said lever is adapted to be vibrated, the telephone n, provided with an extra winding connected between said springs, and the springs p^{10} p^{11} outside of the free ends of said springs p^3 p^3, against which springs p^{10} p^{11} the springs p^6 p^7 are adapted to be forced, respectively, to bring the telephone into circuit, substantially as and for the purpose specified.

6. The combination, with the strands of a pair of flexible cords provided with terminal loop-plugs, of a ground-circuit, including a vibrator, p^3, and branches p^4 and p^5, connected with said ground-circuit, and each including high resistance and extending each to a different one of said strands, and telephone-lines looped together by said loop-plugs, substantially as and for the purpose specified.

7. The combination, with the lever t', pivoted as shown, of the insulated springs or contacts forming the connections, respectively, of strands q^4 q^6 and q^5 q^7 of the flexible cords, the loop-plugs of said cords inserted in the switches of two telephone-lines to connect said telephone-lines together, and a generator, t, with its contacts near said springs, whereby on moving said lever t' current from said generator may be sent over the said lines, substantially as described.

8. The board or support p and means p' for keeping said board in vibration, in combination with contact p^3, connected to the united circuit of two telephone-lines, substantially as and for the purpose specified.

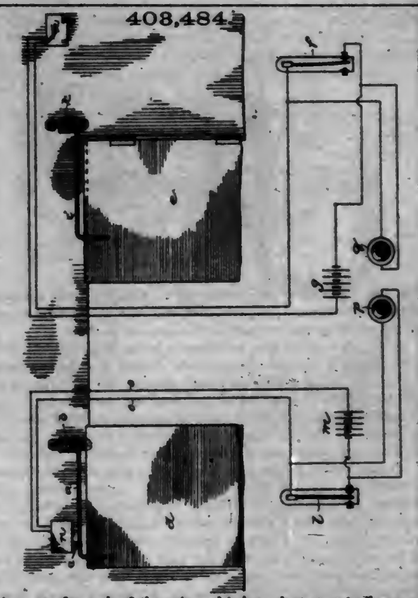
408,484. THERMOSTATIC DOOR-CLOSER. WILLIAM R. PATTERSON, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Feb. 7, 1888. Serial No. 263,084. (No model.)

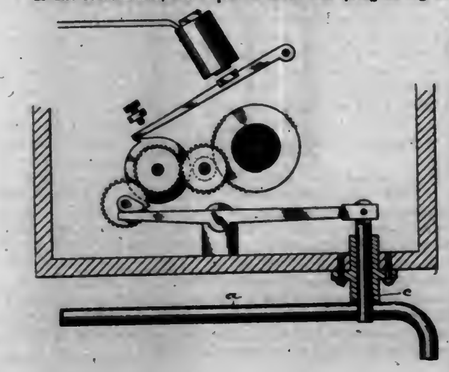
Claim.—1. The combination, with a pair of doors, of spring-closing devices, one for each door, and electrical apparatus adapted to be operated to close the doors by releasing the said springs in a particular sequence when the temperature rises above certain predetermined limits, substantially as and for the purpose specified.

2. The combination, with a pair of doors and spring-closing devices, one for each of the pair, and independent electrically-operated releasing bolts and circuits containing thermostats adjusted to different temperatures and adapted to operate respectively to withdraw the bolts in a particular sequence, substantially as and for the purpose specified.

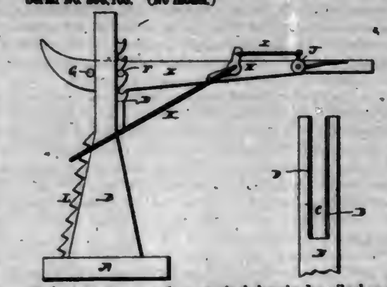
3. The combination, with a door, of a spring device adjusted to close the same when released, of an electric circuit containing a thermostat and electro-magnetic releasing mechanism, whereby on the temperature rising to close the thermostat the door is closed, substantially as and for the purpose specified.

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408,485. WAGON-JACK. GEORGE W. PATTON, Wartenburg, Mo., assignor of one-half to William H. Lee, same place. Filed Jan. 31, 1889. Serial No. 298,163. (No model.)

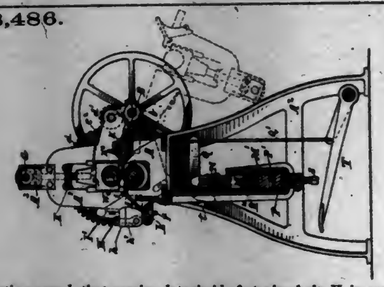


Claim.—The improved wagon-jack herein described and shown, consisting of a standard, B, having a slot, C, in its upper end, the rack-bars D, secured to the side walls of said slot and projecting rearward therefrom, the operating-lever E, having its end passed through the slot C and provided with the transverse pins F G, the pin F engaging the rack-bars D D, and pin G bearing against the front side of the standard, the rack-bar L, arranged in front of the lower portion of the standard, the angle-lever H, pivoted to one side of the operating-lever E, the locking-lever J, also pivoted to the side of the lever E, the link I, connecting the levers H J, and the bail K, secured to the angle-lever H, passing around the standard and engaging the rack-bar L, as specified.

408,486. LEATHER-SPLITTING MACHINE. HENRY C. PEASE, Worcester, Mass., assignor of one-half to Lester J. Pease, same place. Filed Oct. 27, 1888. Serial No. 289,250. (No model.)

Claim.—1. In a leather-splitting machine, the bed-frame A, formed in one casting, with bearings a, for the operating-shaft, as shown, the top housings, A', supported on said bed-frame and separable therefrom at the plane of the knife-seat, said housings having hinges f, that work on the operating-shaft as an axis, and forwardly-

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projecting ears A, that receive detachable fastening-bolts H, in combination with the operating-shaft, knife, feed and gage rolls, and roll-gearing, all substantially as and for the purpose set forth.

2. In a leather-splitting machine, the housings A', separable from the bed-frame in line with the knife and hinged at *f* upon the operating-shaft B to swing over backward, carrying the gage-roll, its adjustable journal-boxes and adjusting-screws, and the arch-girt A^2, rigidly connecting the tops of said housings one with the other above the rolls, as shown, with the screw-adjusting shaft G, having its bearings within said girt, all combined substantially as shown and described.

3. In a leather-splitting machine, the swinging levers L, disposed transversely to the axis of the feed-roll and having their rear ends fulcrumed upon the knife-bed frame, their forward ends being upwardly and downwardly movable, and the feed-roll journal-boxes supported by center pivots between upwardly-projecting ears fixed upon said levers, in combination with the gage-roll, knife, knife-bed, and feed-roll, and the spring and yielding connections that exert lifting action on said levers, substantially as and for the purposes set forth.

4. The combination, with the gage-roll D, feed-roll C, bed-frame A, and knife K, of the feed-roll journal-boxes C', supported on the screw-points or centering-pivots J to have swinging action in a plane coincident with the roll-axis, and the box-supporting levers carrying said pivots fulcrumed, as described, to have swinging action in a plane perpendicular to the roll-axis, the yielding supporting-connections, and the half-elliptic or bow spring for sustaining said levers, substantially as set forth.

5. In a machine for the purpose specified, the combination of the gage-roll D, the yielding feed-roll C, the swinging arms or levers L, fulcrumed at their rear on the frame, the feed-roll journal-boxes C', supported on said arms, the links N', pressure-bar N, and spring M, all substantially as set forth.

6. In a machine for the purpose specified, the combination, with the gage-roll, knife, yielding feed-roll, and swinging levers whereon the feed-roll journal-boxes are pivotally supported, of the adjustable stop-screws J', fitted in the forward ends of said levers, and lugs A^3 on the frame, against which said screws engage, as set forth.

7. In a machine for the purpose specified, the combination, with the knife, gage-roll, feed-roll, feed-roll journal-boxes, and yielding journal-box supporters, of a connecting-bar extending across the machine beneath the roll and joining said supporters, a half-elliptic or flat-leaf bow-spring centrally mounted on a rocking support and having its respective ends resting against the respective ends of said bar for giving upward pressure on said journal-box supporters and feed-roll, and means, substantially as described, for increasing or diminishing the tension of said springs, as set forth.

8. The combination, substantially as described, of the roll D, yielding roll C, its pivotally-supported journal-boxes C', the pointed screws or pivoting-studs J, the hanger-levers L, having ears *l*, carrying said studs, the fulcrum-pivots L', the adjusting stop-screws J', and lugs A^3, the link N', link-connecting bar N, and flat-leaf bow-spring M, centrally supported on its hanger, with its respective ends engaging the respective ends of said bar for giving upward pressure on said journal-supporting levers, as set forth.

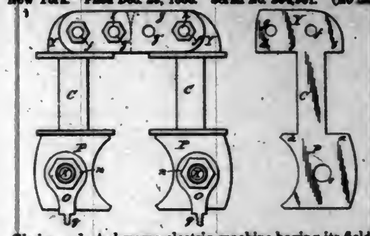
9. In a machine for the purpose specified, the combination, substantially as described, of the spring M, its supporting-hanger A^4, having the retaining-jaw, the grooved bearing-block P and spring-supporting rocker M', the cylinder or bar P', fitted between said bearing-block and rocker, and the adjusting-screw S, as set forth.

10. In a machine for the purpose specified, in combination with the rolls C and D, the inclined apron I, having the upwardly-projecting wrinkle-breaker lip *i*, substantially as set forth.

11. In a machine for the purpose specified, the combination, with the feed-roll, its journal-supports and presser mechanism, comprising the bar N and spring M, of the lever Q, fulcrumed on the frame and bearing on said lever in opposition to said spring, the connecting-rod Q', attached to the arm of said lever, and treadle mechanism for actuating said rod, all substantially as and for the purpose set forth.

12. In a machine for the purpose specified, the guard-rod W, located near and forward of the feed-roll D, and extending across the machine, with its ends supported on the housing-frames, in combination with the rolls D and C and feed-apron I, substantially as set forth.

408,487. DYNAMO-ELECTRIC MACHINE. FRANK A. PERRET, Brooklyn, N. Y., assignor to the Elektron Manufacturing Company, of New York. Filed Dec. 29, 1888. Serial No. 294,961. (No model.)



Claim.—1. A dynamo-electric machine having its field-magnet built up in layers of thin plates of sheet-iron in planes at right angles to the armature-shaft, each layer composed of at least two portions connected in closed magnetic circuit at the yoke, in combination with one or more clamping-bolts, one of which serves as a pivot upon which the respective portions of the magnet can be swung apart for winding.

2. In a dynamo-electric machine, a field-magnet built up in layers of thin plates of sheet-iron, each plate constituting in one piece a pole-piece, a core, and part of the yoke, and pierced with bolt-holes, in combination with bolts passing through all the layers and holding them in rigid relation together.

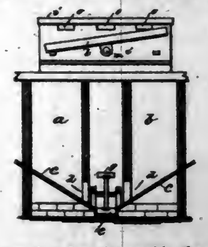
3. In a dynamo-electric machine, a field-magnet built up in layers of thin plates of sheet-iron, each plate constituting in one piece a pole-piece, a core, and part of the yoke, and pierced with bolt-holes, in combination with supplementary yoke-plates, also pierced with bolt-holes and interleaved with the other plates, and bolts passing through all the plates and holding them in rigid relation together.

4. In a dynamo-electric machine, a field-magnet built up in layers composed of thin plates of sheet-iron in planes at right angles to the armature-shaft, each plate having in one piece a pole-piece, a core, and part of the yoke, each plate on one limb being magnetically connected at the yoke to a corresponding plate on the other limb by bolts parallel with the armature-shaft, and all the plates forming one pole of the machine being secured together by bolts passing through their polar portions.

5. In a dynamo-electric machine having its pole-piece laminated and perforated with bolt-holes, the bolts or rods K, provided with nuts *n*, for compressing the pole-plates together, and having shoulders *m*, in combination with the armature-hangers H and nuts *s*, whereby the rods K serve to hang the armature in true alignment and prevent individual motion of the plates.

6. In a dynamo-electric machine having its pole-pieces laminated and perforated with bolt-holes, the bolts or rods K, provided with nuts *n*, for compressing the pole-pieces, and having shoulders *m*, in combination with the hangers H and one or more standards, O, secured between the nuts *n* and said pole-pieces.

408,488. ORE-WASHER. WILLIAM W. ROSENSTEIN, Pittsburg, Pa. Filed May 9, 1888. Serial No. 273,347. (No model.)



Claim.—In a coal-washer, the combination, with a bin divided longitudinally into compartments, of a horizontal washer, *i*, located immediately above said bin, transversely across the same, and having a series of overflow-openings, *o*, and a horizontally-inclined trough pivoted centrally to the side wall of the washer at a point immediately below the series of overflow-openings *o*, said trough being of a length less than the width of the bin, and arranged to receive the entire contents of the washer that escape through the openings *o* thereof, and adapted to direct the same into either compartment of the bin, substantially as and for the purpose described.

408,489. STOVE-PIPE DAMPER. SILAS C. SCHOFIELD, Prescott, Ill., assignor to Frederic Bartlett, same place. Filed Feb. 1, 1888. Serial No. 262,290. (No model.)



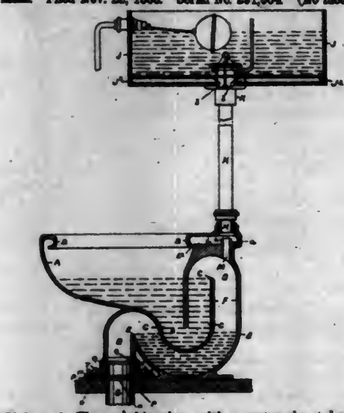
Claim.—1. The combination, with a damper, of a hollow handle having in both the part normally without and the part normally within the pipe-openings communicating with the interior of the handle, for the purpose set forth.

2. The combination, with a damper having at one side a bead or lug raised above the plane of its surface, of a split handle adapted to clasp the side of the damper and provided upon one of the clasping-surfaces with a recess adapted to receive said bead, substantially as set forth.

3. The combination, with a damper, of a split handle clasping the edge or side of the damper and a sliding collar placed upon said handle and adapted to prevent the separation of its parts, substantially as set forth.

4. The combination of the damper having the bead and the ribs raised above its surface, the divided and grooved handle clasping the side of the damper between said lugs and over said bead, the collar sliding upon the handle, and a spring coiled about the handle and pressing the collar toward the damper, substantially as and for the purpose set forth.

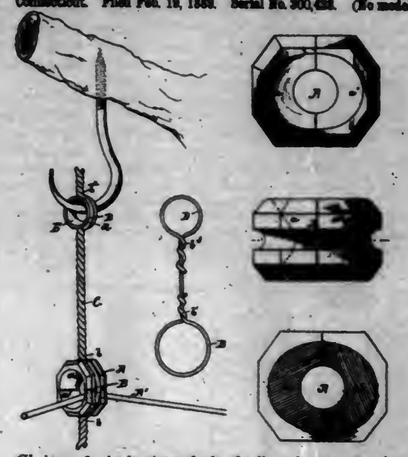
408,490. SIPHON WATER-CLOSET. WILLIAM SCOTT, Medford, Mass. Filed Nov. 22, 1888. Serial No. 291,604. (No model.)



Claim.—1. The combination, with a water closet bowl adapted to be flushed and having two water-traps with a column of air between located in the discharge-passage of the bowl and making a siphon, a single water-supply pipe leading to the flushing means of the bowl, and an opening and closing valve to open and close said water-pipe, of two separate waterways or passages leading from and both always in open communication with said water-pipe and one in communication with the flushing means of the bowl and the other directly with the air-column between the water-traps, and of an area less than the area of the water-pipe, whereby, with said valve opened, the water from the water-pipe is delivered simultaneously through one of said water-ways to the flushing means, and through the other of said water-ways to the air-column between the water-traps, and with said valve closed substantially only to the flushing means, substantially as and for the purposes described.

2. The combination, with a water-closet bowl adapted to be flushed and having two water-traps, with a column of air between, located in the discharge-passage of the bowl and making a siphon, a single water-supply pipe leading to the flushing means of the bowl, and an opening and closing valve to open and close said water-pipe, of two separate water ways or passages, L M, leading from and both always in open communication with said water-pipe, and one, L, in communication with the flushing means of the bowl, and the other, M, directly with the air-column between the water-traps and having a projection of its walls *a* into and across the water-way L, whereby, with said valve opened, the water from the water-pipe is delivered simultaneously through one, L, of said water-ways to the flushing means, and through the other, M, of said water-ways to the air-column between the water-traps, and with said valve closed substantially to the flushing means, substantially as described, and for the purposes specified.

408,491. INSULATING DEVICE FOR LINE-WIRES. THOMAS J. SMITH, Brooklyn, N. Y., assignor to the E. S. Greeley & Company, of Connecticut. Filed Feb. 19, 1888. Serial No. 300,428. (No model.)

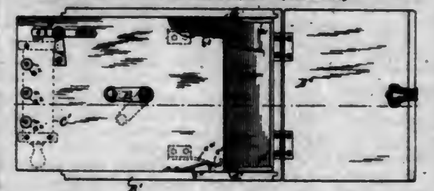


Claim.—1. An insulator device for line-wires, composed of the sectional insulator-ring A and the stem C, provided at one end with the band B, serving to encircle and hold together the sections of said ring, and at the opposite end with the closed or continuous eye D, serving to suspend the united parts, substantially as and for the purpose set forth.

2. An insulator device for line-wires, composed of a sectional insulator-ring, A, a band, B, consisting of a wire or wires encircling and holding said ring-sections united and twisted together beyond said sections, as set forth, and a stem, C, consisting of the same wire or wires as the said band and having integral therewith the eye D at the free end thereof, substantially as and for the purpose specified.

3. A sectional insulator-ring having upon the divisional faces of each section, respectively, a boss, a^3, and a corresponding depression, a^3, said boss and depression being similarly located on said respective faces of the section, whereby the sections may be used interchangeably in constituting an insulator-ring, substantially as and for the purpose set forth.

408,492. ELECTRO-MEDICAL APPARATUS. THOMAS J. SMITH, Brooklyn, N. Y., assignor to the E. S. Greeley & Company, of Connecticut. Filed Feb. 19, 1889. Serial No. 300,429. (No model.)



Claim.—1. In an electro-medical apparatus, the combination of the inclosing-case containing the battery or cell and provided with contact-points *d* and d', an insulating-base, C, carrying a magneto-coil, C', and contact-points c^3 and c^4, in electrical connection therewith and adapted to slide in ways in said case and to project therefrom, with electrical connection established with the battery through said contact-points, and a gate, B^4, adapted to close the side of the case through which said base projects, and in closing to swing to and impinge upon said base, substantially as and for the purpose set forth.

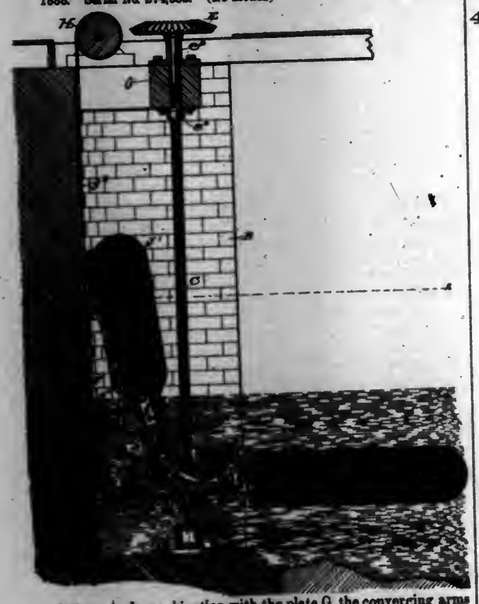
2. In an electro-medical apparatus, the combination of the case B, containing the battery or cell A and having the contact-points *d* and d' on the case-walls, the ways b^4 in said walls above said contact-points, the base C, adapted to slide in said ways and to project beyond the case, the stop device c' c^5, to limit the outward movement of said sliding base, the coil C' and its graduator C^3, carried on the projected end of said base, the contact-points c^3 and c^4 on said base and in electrical connection with said coil and adapted to engage the

contact-points on the case when said base is slid outward, together with the gate B^4, adapted to close the case where the said base projects and to swing to and impinge upon the projected end of said base in closing, substantially as and for the purpose described.

3. In an electro-medical apparatus, the combination, with the walls of the inclosing-case, of the partition *b*, extending laterally of the interior of the case and terminating vertically below the top of the case, and the sliding cover *b'*, working in ways in the case-wall and closing over the upper edge of said partition, together with the lid B^4, whereby a chamber, B', is constituted in the case adapted to inclose and shelter the battery-cell, and a chamber at one side and above said cell-chamber is constituted for the remaining operative and detachable parts of the apparatus, substantially as set forth.

4. In an electro-medical apparatus, the sliding base C, carrying the magneto-coil C' and contact-points c^3 and c^4, adapted to engage and disengage contact-points of the battery inclosed in the case in which said base slides, in combination with a circuit-breaker, E, placed in a circuit-wire between one of the contact-points on the base and the magneto-coil, substantially as and for the purpose set forth.

408,493. CURRENT-WHEEL. JOHN STRASSER, Manchester, Mo., assignor of one-half to De Witt C. Taylor, same place. Filed May 23, 1888. Serial No. 274,832. (No model.)



Claim.—1. In combination with the plate G, the converging arms g^2, extending therefrom, the hub g^4, attached to the outer ends of said arms, the arms g^5, extending outward divergently from said hub, the curved lifting-bar g^6, extending upward and backward from these outer arms, the brace-rod g^7, connecting the plate G with said lifting-bar, the shaft C, extending through said hub, and a series of feathering-paddles turning with said shaft and having their bars in contact with said lifting-bar, substantially as set forth.

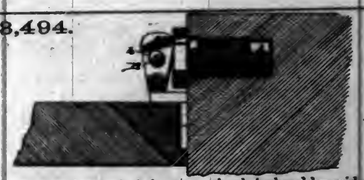
2. A shaft, C, in combination with a wheel, I, fast thereon, paddle-bars pivoted to said wheel, and a relatively-stationary lifting-bar inclined upwardly and rearwardly for causing the paddles to feather by its contact with said paddle-bars, the said wheel consisting of a base, a central boss, *i*, pairs of apertured lugs *i'*, to which said blades are pivoted, and curved bars i^3, arranged in pairs—one on each side of each paddle-bar—and extending from the top of said boss to the base of the wheel, and springs i^3, attached to said wheel, for the purpose set forth.

3. In combination with an upwardly and rearwardly inclined lifting-bar and curved bars arranged in pairs in vertical planes, a rotary wheel to which said curved bars are attached, and a series of paddle-bars pivoted to said wheel, each of said paddle-bars being arranged between a pair of said curved bars and provided with anti-friction rollers which are in contact with said lifting-bar and curved bars, for the purpose set forth.

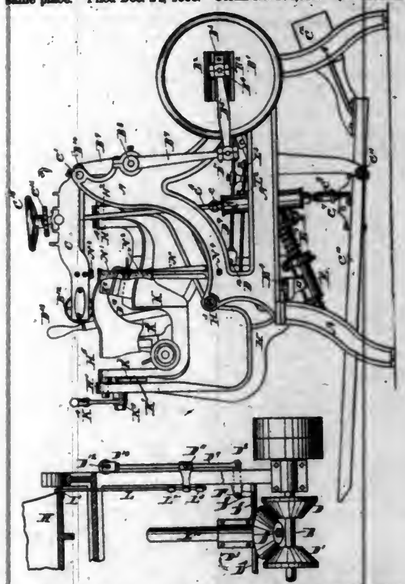
408,494. SPRING-HINGE. SUMNER P. STRESTER, Greenfield, Mass. Filed Dec. 8, 1888. Serial No. 293,012. (No model.)

Claim.—1. The screen door or blind hinge comprising the hollow screw, a spring-encircled arm or shank inclosed by said screw, a pintle secured thereon, and the leaf having a cam or eccentric arm or shank fitting upon the pintle and bearing against the head or outer end of the screw, substantially as and for the purpose set forth.

2. The screen door or blind hinge comprising the hollow screw having an angular aperture in its head or outer end, an arm cylindrical for the greater portion of its length and provided with an angular portion fitting said aperture of the screw-head, a pintle secured thereon at the outer end, a disk thereon at its inner end, a spring encircling said pintle arm or shank and bearing against said disk and against the inner portion of the hollow screw, and the leaf having an apertured cam or eccentric-arm fitting upon said pintle and resting against the screw-head, substantially as specified.



408,495. SOLE-LEVELING MACHINE. FREDERICK S. STROUD, East Bridgewater, Mass., assignor to the Carver Cotton Gin Company, same place. Filed Dec. 24, 1888. Serial No. 294,524. (No model.)



Claim.—1. In a shoe-sole-leveling machine, the combination of a jack for holding the shoe and adapted to oscillate in a path the line of which lies in a circular arc coinciding practically with the arc of the sole of the shoe, with a leveling-roller, B^{12}, frame C, and adjustable head-block N^7, substantially as described, and for the purpose set forth.

2. In a shoe-sole-leveling machine, the combination of the oscillating frame H H' H^3, oscillating nut E^3, screw-shaft E^7 E^{14}, and sliding housing D^3, with the friction-cone D^2, adapted to be actuated by the driving friction-cones D D', substantially as described, and for the purpose set forth.

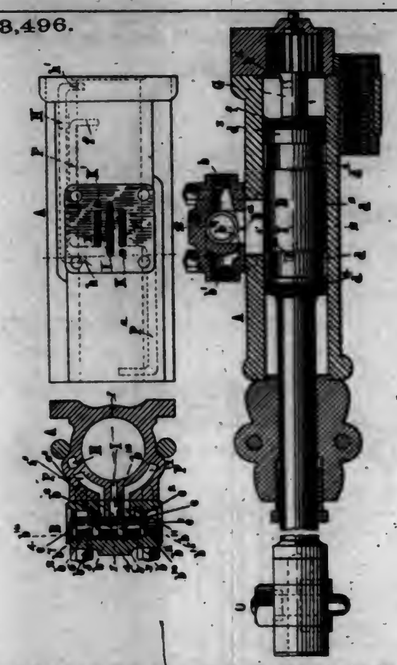
3. In a sole-leveling machine, the combination of the shaft E^7 E^{10}, sliding housing D^3, link D^5, bent lever D^6, and shipping-rod D^9, with the hand-lever D^{10}, spring-plate M, and spring M', all operating together substantially as described, and for the purpose set forth.

408,496. ROCK-DRILL. ABRAHAM J. STEPHEN, Iron Mountain, Mo. Filed Nov. 27, 1888. Serial No. 292,021. (No model.)

Claim.—1. A steam rock-drill or analogous machine having a cylinder, A, provided with a cushioning steam-passage, in addition to the passages which lead from the valve-chamber to the cylinder and used for supplying the steam to the cylinder for driving the piston, said cushioning steam-passage being independent of said other steam-passages, substantially as described.

2. The combination of the valve-chamber, the cylinder, the passages F F, the port I, the passage H, and the piston having the two recesses *d d'*, substantially as described.

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3. The combination of the cylinder A, having the cushioning steam-passage H, as described, and the piston having the two recesses *d d'*, substantially as and for the purpose described.

4. The combination of the valve-chamber, the port I, the cushioning steam-passage H, as described, and the piston having the two recesses *d d'*, substantially as described.

5. The combination of the cylinder and the piston, said cylinder having the port I, and the passages K K', and said piston having the recesses *d* and *d'*, substantially as and for the purpose described.

6. The combination of the cylinder, the valve-chamber, the valve, and the piston, said cylinder having the port I, said valve-chamber having the valve-seat and the spaces b^{13} b^{10}, said valve having the disks c' c^4, said piston having the recesses *d d'*, and said cylinder and valve-chamber together having the ports K K', substantially as described.

7. The combination of the valve-chamber, the valve-seat, the spaces b^{13} b^{10}, the recesses b^7 b^{11} b^{12} b^{14}, the outlet b', and the valve having the end disks, c' c^4, substantially as and for the purpose described.

8. The combination of the valve-chamber, the valve-seat, and the valve, said chamber having the inlet *b*, the exhaust-outlet b', the live-steam outlet b^{13}, the recesses and spaces b^7 b^9 b^{10} b^{11} b^{12} b^{14} b^{15} b^{16}, and said valve consisting of the stem and the four disks, substantially as described.

9. The combination of the valve-chamber having the bridges b^8 b^9 b^{15} b^{16}, with the longitudinally-moving valve having the stem and the disk c^3 c^4, the steam-inlet *b*, and the passages F F', substantially as described.

10. The combination of the valve-chamber having the recesses b^7 b^9 b^{10} b^{11} b^{12} b^{14}, the bridges b^8 b^9, and the outlet b', with the longitudinally-moving triple-spool valve, and the ports F F', substantially as described.

11. The combination of the valve-chamber having the spaces and recesses b^7 b^9 b^{10} b^{11} b^{12} b^{14} b^{15} b^{16}, the bridges b^8 b^9, the outlet b', with the longitudinally-moving triple-spool valve, and the ports F F', substantially as described.

408,497. THILL FOR VEHICLES. EDWARD WARREN, Ligonier, Ind. Filed Aug. 20, 1884. Renewed Oct. 20, 1886. Again renewed Nov. 5, 1888. Serial No. 290,043. (No model.)

Claim.—1. As an improvement in thills or shafts for carriages and wagons, a downwardly and rearwardly curved rear cross-bar, curved in a plane with the curved heels or extensions of the thills proper, and adapted to be connected at its lowest middle part to the axle-tree, substantially as set forth.

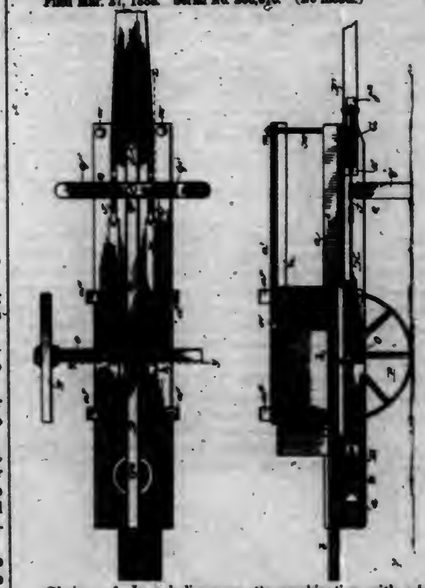
408,497.



2. The combination of the shafts A A, and rearwardly-curved rear cross-bar, B, having the middle part, B', of its lowermost end in a line with the ends of the curved heels A' A', substantially as set forth.

3. The combination of the shafts A A, rearwardly-curved rear cross-bar, B, having the middle part of its lowermost end in a line with the ends of the heels A' A', and the re-enforcing webs *a a*, substantially as set forth.

408,498. BALING-PRESS. VIRGIL L. WILLIAMS, Cartersville, Ga. Filed Mar. 27, 1888. Serial No. 268,610. (No model.)



Claim.—1. In a baling-press, the combination, with a baling-chamber, of a two-part hollow plunger, an operating-lever, and a strip-and-chain connection between the plunger and said lever, substantially as set forth.

2. In a baling-press, the combination, with a baling-chamber, of a two-part hollow plunger, substantially as set forth.

3. In a baling-press, the combination, with the baling-chamber, of a two-part plunger, an operating-lever, and strips and chains connecting the same with said plunger through slots in the baling-chamber, substantially as set forth.

4. In a baling-press, the combination, with a baling-chamber, of a plunger, a lever at one end of said chamber, a sheave at the opposite end, strips connected with the plunger, a chain passing around said sheave and connecting the corresponding ends of the strips, and a chain or chains connecting the opposite ends of said strips with the lever, substantially as set forth.

5. In a baling-press, the combination, with a baling-chamber, of a plunger, a lever at one end of said baling-chamber provided with a series of perforations, and a chain-and-strip connection between said plunger and lever, said perforations being adapted for adjusting the chain-and-strip connection, substantially as set forth.

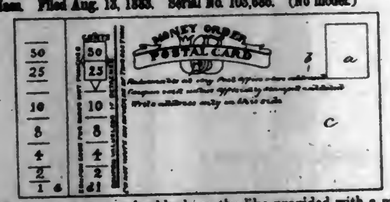
6. In a baling-press, the combination of a baling-chamber, a sheave pivoted at one end thereof, a lever pivoted at the opposite end and having a sheave mounted in a recessed end thereof, strips connected with a plunger through slots in the baling-chamber, chains connecting said strips and lever, and a chain passing around the sheave at the opposite end of the chamber and connected at each end to the corresponding free ends of the strips, substantially as set forth.

7. In a baling-press, a baling-chamber having slots in the bottom thereof, a plunger located therein, operating strips and chains connected with said plunger through the slots, a transverse slot in the top of the chamber adapted for the insertion of an end piece for the bale, clamping bolts and nuts at the front end, an axle and carrying-wheels mounted at one end, and a support or rest at the other end, substantially as set forth.

8. In a baling-press, a two-part plunger rectangular in cross-section, said parts being adapted to operate alternately to press the same bale, substantially as set forth.

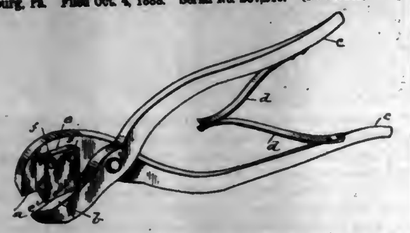
9. In a baling-press, the combination, with a baling-chamber, of a two-part tubiform plunger, a lever pivoted at the forward under side of the baling-chamber, recessed at its pivoted end and a sheave pivoted therein, a sheave pivoted at the opposite end of said chamber, longitudinal stripe connected with the sections of the plunger through longitudinal slots in the bottom of the baling-chamber, chains connected to the forward ends of the stripe, short strips pivoted to the free ends of said chains and having eyes or perforations in their other ends for securing said strips to the lever by a bolt passing through the same and one of a series of perforations in the lever, and a chain passing around the sheave at the opposite end of the baling-chamber and having its ends connected with the free ends of the longitudinal stripe, substantially as set forth.

408,499. MONEY-ORDER BLANK. JOHN J. WILLIAMSON, Boston, Mass. Filed Aug. 13, 1883. Serial No. 103,686. (No model.)



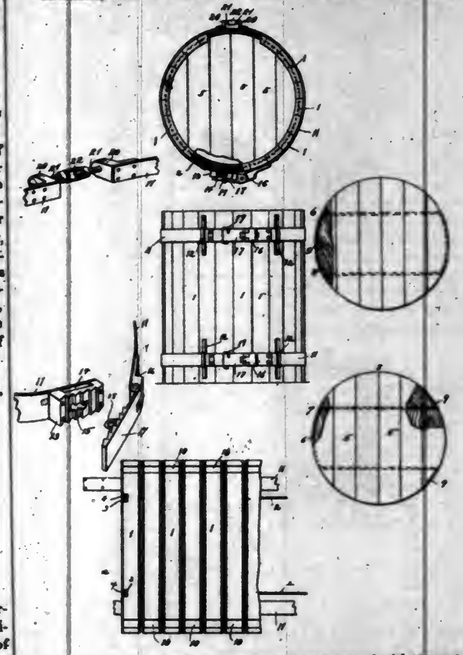
Claim.—A money-order blank or the like provided with a margin, upon which is printed a column of figures representing denominations of the currency of the country, as described, the additions of which figures will make the maximum amount for which the order may be drawn, which amount corresponds to a denomination of said currency, and the addition of selections from which, left uncanceled, will make a sum of lesser denomination of said currency, whereby the preparation of the order for the amount desired will be ready and instantaneous, like making change in the accustomed manner, and of the common standard of currency of the country, and the amount for which the order is given will be immediately recognizable.

408,500. FRUIT-GATHERER. WAYNE J. WIDENBOTH, Wilkinsburg, Pa. Filed Oct. 4, 1888. Serial No. 287,219. (No model.)



Claim.—The herein-described fruit-gatherer, consisting of the shear-blades *a b*, pivoted laterally together, the blade *b* having the broad flat edge adjoining the cutting-edge of the blade *a*, and a rubber block, *c*, detachably secured by transverse screws *f* to the lateral face of the blade *a* contiguous to the blade *b*, and arranged in line with the latter blade, said rubber block having one of its edges *c'* beveled, as described, and projecting beyond the cutting-edge of the blade *a*, to which said block is attached, whereby the beveled edge *c'* of the rubber block is adapted to close upon the stem of the fruit and grip the stem between itself and the broad edge of the blade *b*, substantially as and for the purpose described.

408,501. COLLAPSIBLE SHIPPING-CASK. JOHN H. MITCHELL, Bloomfield, Iowa. Filed Aug. 25, 1888. Serial No. 283,754. (No model.)



Claim.—1. A collapsible shipping-cask constructed with staves 1, having grooves 10, adjacent to their ends, and wires 2, extending through the staves and secured in recesses 4 in the end staves, heads 8, consisting of stripe 5, connected together by a U-shaped wire, 6, extending through the stripe 5, and having its ends secured in the edge of the head, the heads 8, resting in the grooves 10 of the staves, metallic bands 11, inclosing staves 1 and secured thereto by clamps 12, with a serrated metallic block, 13, having vertical slot 14 and lateral slot 15, opening thereinto, secured to one end of bands 11, and a metallic block, 16, secured to the other end of the bands 11, with serrated plate 17, pivoted thereto, engaging block 13, and having lateral staple 18, projecting through slot 15 into slot 14, and wire 19, passing through slot 14 and staple 18, with its ends bent over plate 17, substantially as described.

2. The head 8, consisting of stripe 5, connected together by U-shaped wire 6, extending through stripe 5, and having its folded end resting against one edge of head 8, and its ends bent against the opposite edge, substantially as described.

3. The band 11, having at one end metallic serrated block 13, with vertical slot 14 and lateral slot 15, opening into the same, and at the other end metallic block 16, with serrated plate 17, having staple 18, and pivoted block 16, substantially as described.

4. The band 11, having at one end metallic serrated block 13, with vertical slot 14 and lateral slot 15, opening into the same, and at the other end metallic block 16, with serrated plate 17, having staple 18, and pivoted to block 16, and joined between its ends by the lugs 20, having screw-threaded projections 21, with turn-buckle 22, substantially as described.

5. The staves 1, with grooves 10, adjacent to their ends, and wires 2, extending through staves 1 and secured in recesses 4 in the end staves, and metallic bands 11, secured to staves 1, with serrated metallic block 13 at one end having vertical slot 14 and lateral slot 15, opening thereinto, and the block 16 at the other end, with serrated plate 17, having staple 18 and pivoted to block 16, substantially as described.

PHOTO LITH NORRIS PETERS WASHINGTON D.C.

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

PETERS *v.* HANSON *et al.*

Decided March 5, 1889.

1. PETERS—VEHICLE-DASHES.

Claims 1, 2, and 3 of Letters Patent No. 213,529, granted March 25, 1879, to George M. Peters, for an improvement in vehicle-dashes, cover merely applications of old devices to new uses, not involving invention.

2. SAME—SAME.

There was no invention in providing a bearing-surface (covered by claim 4) upon the frame of the dash, to which the foot of the brace was to be attached to support the brace and dash, either by an increase in the quantity of metal or otherwise, so as to strengthen the proper part, in a proper way, for its proper duty.

3. PETERS—VEHICLE-DASH FRAMES.

Reissue Letters Patent No. 9,891, granted October 11, 1881, to George M. Peters, for an improvement in vehicle-dash frames, does not involve invention. The process was old in the state of the art of working metals.

APPEAL from the Circuit Court of the United States for the District of Indiana.

Mr. William Hubbell Fisher and *Mr. Benjamin Butterworth* for the appellant.

Mr. Arthur Stem for the appellees.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity, brought by George M. Peters, in the Circuit Court of the United States for the District of Indiana, against Julius A. Hanson and Cortland C. Van Camp, for the alleged infringement of two Letters Patent granted to George M. Peters, the plaintiff, namely, Letters Patent No. 213,529, granted March 25, 1879, for an improvement in vehicle-dashes, on an application filed June 19, 1875, and Reissued Letters Patent No. 9,891, for improvements in vehicle-dash frames, granted October 11, 1881, on the surrender of original Letters Patent No. 224,792, granted February 24, 1880, on an application filed May 5, 1879, the reissue having been applied for June 15, 1881.

The answer sets up as to both patents want of novelty and patentability, non-infringement, and the invalidity of the reissue, because it has been expanded beyond the invention disclosed in the original patent, and contains new matter not found in that patent, and is for a different invention.

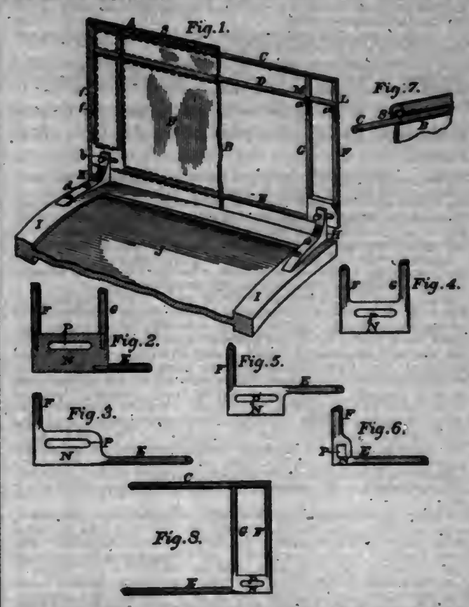
There was a replication to the answer, proofs were taken, and the circuit court dismissed the bill. The plaintiff has appealed from the decree. We are not furnished with any opinion given by the circuit court stating the ground for its action, but it said, in the brief for the appellant, that the ground was that the inventions were not patentable.

So much of the specification of No. 213,529 as is material, and the drawings referred to in it, are as follows:

My invention relates, * * * secondly, to the attachment of the dash to the vehicle; and this part of my invention renders the dash capable of attachment to vehicles of different widths, so that it can be sold as an article of manufacture, for application to the vehicle by the purchaser. These features of my invention render the construction easy, expeditious, and economical.

Another feature of my invention consists in such a novel construction of the dash as that there shall be at the part of the frame thereof to which the laterally-adjustable foot is to be attached a proper bearing-surface for the support and bracing of the dash.

In the accompanying drawings, which form a part of this specification, Figure 1 is a perspective view of sufficient of a vehicle to illustrate my invention; Fig. 2, a sectional detached view; Figs. 3, 4, 5, 6, 8, detached views illustrating modifications; and Fig. 7, a detached perspective view.



One mode of making the dash-frame is shown in the drawings, in which G F are parallel uprights at each end, C D E parallel cross-rods, and M L short continuations of the rods G F. * * *

In order to connect the frame to the vehicle, and further to permit a frame to be applied to vehicles of different sizes, I construct the frame and the foot H so that, by a lateral adjustment in relation to each other, the desired connection to bodies of different widths may be effected. The frames may be varied in construction to effect this result. Thus in Figs. 1 and 2 the frame has a wide bearing-piece, N, of any desired length, with a slot to receive the fastenings of the foot or attachment H, by which the dash and the body of the vehicle are connected adjustably, so that within the limits of the adjustment the foot secured to the dash may find its bearings on bodies of various widths.

The foot may be of any desired shape, being shown with two

branches, *b d*, one bolted or otherwise secured to the dash and the other to the body I of the vehicle.

By the above-described means the dashes may be furnished to the trade as independent articles of manufacture, as the foot may be fitted to vehicles in the process of construction or afterward, and the dash secured without altering or moving it. For the like reason, the feet adapted to the vehicles and dashes may be sold separately. * * *

The bearing N for the attachment or foot may be within the frame, as shown in Figs. 1, 2, 3, 4, and 8, or it may be in an extension outside of the frame, the result being the same—*i. e.*, the frame being adapted to be secured without change to bodies of different widths. This bearing portion N may be secured permanently or detachably to the frame-bars. Thus in Figs. 1 and 2 it is provided with sockets for the reception of studs at the ends of the bars. In any case it affords a strong and rigid connection between the foot and the frame, so that the latter cannot be bent over under anything less than destructive pressure. This is especially the case when both uprights, F and G, are secured to the bearing-piece N, whether within or without the frame proper; but when within the frame and extending up between the uprights it stiffens and braces the latter.

The adjustment of the dash and foot is not necessarily limited to the mode described. For instance, it may be effected by means of a series of holes, affording a means of adjusting the foot at different points. When the foot is not required, the dash may be connected directly to the body with like advantage, as the points of connection may be varied to suit bodies of different widths.

The feature of lateral adjustability set forth therein is applicable to dashes and feet, or equivalent laterally-adjustable attachments, other than those particularly herein described.

There are eight claims in the patent, the first four of which alone are alleged to have been infringed, namely:

Without confining myself to any special mode of connecting the foot and dash adjustably, I claim—

1. The combination of a dash and laterally-adjustable attachments, whereby the same may be connected to vehicles of different widths, substantially as set forth.

2. A dash or dash-frame having slots or openings, whereby attachments may be made at different points, substantially as and for the purposes set forth.

3. A dash provided with bearings having slots or openings, substantially as and for the purpose specified.

4. A dash-frame provided with bearings, arranged to strengthen the frame in those parts whereby the dash is to be connected to the laterally-adjustable feet or to the vehicle.

So much of the specification of Reissue No. 9,891 as is material, and the drawings referred to in it, are as follows:

One object of my invention is a novel construction of the dash-frame, whereby the latter is rendered light and strong, can be manufactured with little expense, and whereby the various portions of the frame are cheaply, readily, and firmly secured together, and also whereby the dash is cheaply, quickly, and firmly connected to a permanent or detachable portion of the vehicle.

Another object of my invention is a formation of a dash-foot for connecting a dash to a vehicle, whereby the foot is at once strong and light and can be cheaply manufactured.

Referring to the drawings forming part of this specification, Figure 1, A, B, C, and D represent a dash-frame constructed in accordance with my improvements, a section through the channeled lower rail of dash, and a sectional and perspective view of my special form of bar. Fig. 2, E and F are a perspective and sectional view of a modification of the mode of attaching the bar to the lower rail of the dash, where said lower rail is channeled on only one side; and G is a perspective view, showing a portion of the lower rail channeled only on one side and a channeled foot of my invention attached thereto, showing manner of attaching the foot to the lower rail by a T-headed bolt. Fig. 3, H I, Fig. 4, J K, and Fig. 5, L M, are sectional views, showing different modes of attaching the foot to the lower rail of the dash. Fig. 6 is a perspective view, showing how the extension *c'* of the upper bar may be riveted to the thin web or channeled portion of the lower rail.

A', Fig. 1, represents the lower rail of a dash-frame, channeled, as shown at B. This rail is provided at either end with the slot *a* or the holes *a'*, for attaching the feet to the dash-frame. The lower ends of the upright bars of the frame are split, and each half provided with a T-head. (Shown at D, Fig. 1.) These T-heads are made of the same width as the channel in the lower rail, into which they fit. The two halves of this split end are separated from each other to admit the lower rail between them. The upper ends of the upright bars are provided with notches *d*, for the reception of the upper rail of the dash-frame. * * *

By constructing dash-frames in the manner described much of the expense incurred in the ordinary mode of manufacture is saved. The lower rail is made broad and flat, so that the slot *a* or holes *a'* can be made therein and leave a strong bearing for the attachment of the feet. * * *

The wide vertical flat faces of the lower rail afford a desirable bearing for the dash-foot or vehicle-body (as the rail can be readily perforated for bolts or rivets, and the thick edges left above and below the perforations are first-rate bearings for said foot or body,) and possess great advantages over the customary convex or oval rails, the central portion of which, being thick, renders them hard to punch, and the edges afford no flat surface for said foot or body to press against. The rail therefore, when more or less flat on one or both sides, becomes a modification of the forms of rail shown herein and possesses some of their advantages.

Irrespective of the comparative advantages derived from the bearings being flat over being otherwise shaped, the following among other advantages obtains—viz., that the web allows the rail or bar to be readily and quickly perforated, the thick parts, however shaped, connecting said web serving as supports or bearings for the attachment of the foot or other portion of the vehicle to which the dash is connected.

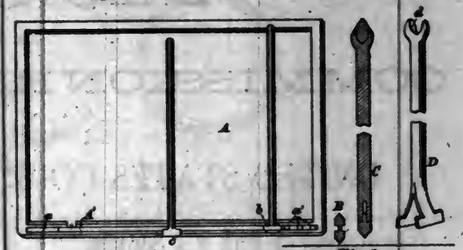


Fig. 1.

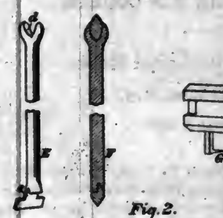


Fig. 2.

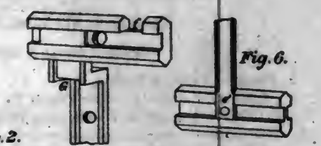


Fig. 6.

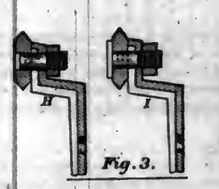


Fig. 3.



Fig. 4.

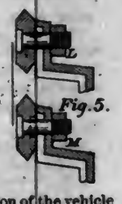


Fig. 5.

G, Fig. 2, is a perspective view of the under side of my channeled or concave foot. * * *

The foot may be channeled or concaved on the opposite side to that shown and described herein, or on both sides, these forms of construction being both obvious equivalents of the one shown and described.

The depth and the length of the channel or concavity in the dash rail or foot may be varied to suit the requirements of the manufacturer.

Another advantage of that portion of my invention which relates to channeling or recessing the foot is that the same may be readily cast of malleable iron, the channeling obviating the injurious effects arising from the presence of shrunken corners in thick malleable-iron castings. The channeling or recessing of the foot enables the latter to be made light and thin and to be better annealed.

There are thirteen claims in the reissue, but only claims 1, 2, 3, and 11 are alleged to have been infringed. Those claims are as follows:

1. A vehicle-dash whose lower bar is provided exteriorly with a channel or recess, the metal on either side of the channel or recess affording a bearing for the dash-foot or other portion of the vehicle to which the dash is connected, for the purposes specified.

2. A dash whose lower rail is composed near or at the ends of two thick portions united by an easily-perforated web, for the purposes specified.

3. A dash provided with a rail having vertically-flat sides, one or both of said sides being exteriorly channeled, substantially as and for the purposes specified.

11. The foot channeled on either or both sides, substantially as and for the purposes specified.

We will first consider claims 1, 2, 3, and 4 of No. 213,529. Claims 1, 2, and 3 relate to the means of adjusting laterally the feet of a dash. Formerly, the feet which connected the dash to the body were welded to the frame of the dash and made solid with it. When a manufacturer made both the dash and the body, he welded the feet of the dash to the frame at such points as were proper for the particular body for which the dash was designed. In the course of business, it came to pass that dashes were made by other persons than the manufacturer of the carriage, who either made

his carriage-body or bought it from some person other than the manufacturer of the dash. Under such a course of business, if the feet of the dash were welded to and made solid with the dash-frame, they might not fit the various sizes of carriage-bodies. Hence arose the idea of making the feet separate and not welding them to the dash, but attaching them thereto by a bolt and nut at the proper point. As the dash is covered with patent-leather, it is not convenient to bore through its iron frame after that frame is covered and in the hands of the carriage-maker. Therefore, a hole was bored in the lower rail of the frame of the dash, before it was covered, to receive the bolt by which the foot was to be attached to the frame. But, as vehicles varied in width and shape, it was necessary to place the feet sometimes nearer together, and sometimes farther apart from each other. Therefore, two holes, one on each side, in the frame of the dash, for receiving each a bolt, would not always be in the most convenient places. So it became obvious that it would be proper to make two holes, or even more, on each side, so that if one hole did not come at the right point, another would. Carrying out the same idea, it would be obvious that the bits of metal left laterally between the holes might be cut away, and thus a slot be made, or a long hole instead of two or more round ones, admitting of the more perfect adjustment of the place of attachment of the feet to the frame of the dash. It certainly required no invention to put two holes or a slot in the rail of a dash, instead of one hole, for the purpose indicated.

The use of a bolt passing through a hole and secured by a nut, to fasten one article of iron to another, was a well-known device; and so was the use for the same purpose of a slot which admitted of the adjustability or change of position of the bolt. The specification of the patent states that "the adjustment of the dash and foot is not necessarily limited to the mode described," but that "it may be effected by means of a series of holes, affording a means of adjusting the foot at different points."

The testimony of Mr. Wood, an expert for the defendants, on the subject of the state of the art in that regard, is as follows:

Q. 21. State whether or not there is anything novel in mechanics in the use of slots for the purpose of adjustment. A. 21. No; there is nothing novel about adjustable slots, elongated slots, or holes bored extra large for that purpose.

Q. 22. State, if you know, how long and in what manner and for what purposes adjustment has been accomplished by means of slots. A. 22. Well, any kind of mechanical work that has to be put together so as to be adjusted or duplicated in case of breakage—as, for instance, railroad-iron. The butt-ends are held together by bolts passing through elongated slots, so that the expansion and contraction of the rail will admit of self-adjustment; in fact, slots were a well-known mechanical principle, which has been used from a mouse-trap to a locomotive, you might say.

Q. 23. In the ordinary railroad-iron is or is not the T-rail channeled? A. 23. Yes, sir; T-channeled.

Q. 24. Are or are not the slots of which you speak as provided for adjustment made in the web of the rail? A. 24. They are.

Q. 25. Name some of the familiar uses in mechanics of slots for the purposes of adjustment, and describe the manner of their use. A. 25. They are so generally used in the construction of everything that is made of iron, or that iron is used in the construction of, that it would be almost impossible to pick out anything they were not used in for the purpose of adjustment.

Q. 26. Well, can't you name some of the familiar uses? A. 26. Bridge-work, jail-work, vehicles, dashes, tops.

Q. 27. Is it or is it not universally used on gages for lathes, sewing-machines, grain-drills, and all classes of machinery where the feed mechanism is made adjustable? A. 27. Yes, sir.

Q. 28. How long has it been so used? A. 28. Used, as I know of, for the last twenty-five years.

So, also, Mr. Brackett, another expert for the defendants, says:

Q. 11. Where it is desirable or necessary in mechanics to provide for adjustment of parts attached to one another, what is the most common form or manner of securing adjustability? A. 11. Where two pieces are bolted together the general form is by an oval or slotted hole. We have always used such a connection wherever it is possible, in frame structures or sliding parts, where difference in length or position is required.

Q. 12. Can you name a few of the applications of this slot for the purpose of adjustment, in your own business and outside of it? A. 12. We use it in all bearing-plates where bridges are anchored to the masonry, and where rollers are placed under one end, to allow for contraction and expansion. It is also used for roof-truss bearing-plates, to allow the roof to change its position on the wall, and for the fastening of columns to continuous girders, where the change of temperature changes the position of the girders or the columns. It is also in common use in such work as slide-gages, where the adjustment of the gage is required. It is used on an iron-planer, where the difference of the length of the parts is required at different times. It is also used on the ordinary carpenter's plane, to adjust the position of the knives. It is used on a rotary wood-planer for the same purpose, and, in fact, there is hardly an adjustable part of a machine where two pieces come in close contact but that it is the most common mode of adjustment, and I consider it as one of the commonest principles of mechanics, and one that has been used, that I know of, for fifteen years, and was an old principle at that time.

Q. 13. Would any ordinarily-skilled mechanic who had occasion to provide for the adjustment to different positions of the parts of any machine or device be able to apply this principle without suggestion or invention? A. 13. He could, for the reason that this would be the first manner in which he would try to make the connection, when, if it did not work, he would look for some other manner to make connection, for the reason that this is one of the simplest and easiest methods for connecting and allowing adjustment where both parts, when two pieces are used, are made of iron.

There is no contradiction of this testimony, and in view of it the improvements covered by claims 1, 2, and 3 of No. 213,529 are merely applications of old devices to new uses, not involving invention. (*Penn. Railroad* v. *Locomotive Truck Co.*, 110 U. S., 490, and cases there cited.)

In regard to claim 4 of that patent, the invention is stated in the specification to be the putting, at the part of the frame to which the foot is to be attached, a proper bearing-surface to support the brace and dash. Claim 4 states that the bearing is arranged to strengthen the frame in that part by which the dash is to be connected to the foot of the vehicle. There was no invention in providing such bearing, either by an increase in the quantity of metal or otherwise, so as to strengthen the proper part, in a proper way, for its proper duty.

As to Reissue No. 9,891, claims 1, 2, and 3 relate to channeling or recessing the rail or bar, so that the metal on each side of the channel or recess will be thicker than the metal at the channel or recess, the necessary effect of such arrangement being that the metal on each side of the channel or recess will be thick enough to form a bearing, and the metal in the channel or recess will be capable of being easily perforated. The channeling or recessing of the foot, covered by claim 11, involves the same idea, and the specification states that thereby the foot may be cast of malleable iron, and may be made light and thin, and be better annealed.

The idea of using iron with channels or recesses in it, to produce any result due to the existence of such channels or recesses, was old in the state of the art of working in metals. Mr. Wood testifies as follows:

Q. 3. State whether you are familiar with any uses to which channeled iron is applicable; if so, what uses, and the purpose and manner, and for how long you have known them. A. 3. Channeled iron, you might say, has been generally used in many different kinds of work and ways ever since I have been in the business. I first used it about twenty years ago in putting up hand-rails and stairs.

Q. 4. How long was it used for stairs and why? How did you apply it? A. 4. We used it for a hand-rail on the top of the rods which came from the steps, about three feet. We punched holes in the web of the iron—in the face of the iron—and riveted the vertical rods over, which left nice, smooth flanges to stiffen the rail and strengthen it, and was at the same time light and answered the purpose of a solid bar of iron with much less work.

Q. 5. Can you name other uses to which channeled iron has been

applied? A. 5. Yes; I fitted up a large lot of iron for Wood Brothers & Co., of Bridgeport, Connecticut, in 1870, for their landaus, carriages which they were making, which they used—this channel-iron—for dropping the tops and for holding the tops up in a position in different ways. These irons were fitted up with poles, with slots in them, for adjustable purposes. I bought the iron from a hardware store, as it was common stock or general stock. We had no trouble to obtain different sizes for the purpose. Since then I have seen it used in a great many different ways and for a great many different purposes; for instance, fire-proof buildings. The girders and beams, the lathe, and roofing are all made of channeled iron. The bridges, railroad-iron, gears of vehicles, jail-work, vault-work, safes, fire and burglar proof safes, fences, agricultural implements—in fact, it is used for a great variety of work which I can't call to mind just now.

Q. 6. For how long has it been so used? A. 6. Ever since I have been in the business.

Q. 7. What was the shape of the channeled iron you used in 1870 for the carriages made at Bridgeport? A. 7. The web of the iron was about two and one-half inches on the face; flanges about a half-inch deep. The web was about three-sixteenths of an inch deep.

Q. 8. What part of the iron was perforated with slots for adjustment purposes? A. 8. The web.

Q. 9. Did you buy it already channeled? A. 9. Yes, sir.

Q. 10. State whether or not you are familiar with the use of channeled iron for the purpose of feet, for any purpose. A. 10. Yes; the feet of desks, stoves, machinery of different kinds, vehicles.

Q. 13. Is channeled iron commonly used in carriage-work; and, if so, for what purpose? A. 13. Well, channeled iron has been used for years; dash-feet, dashes, tops, the bows on the tops, and for the tire on wheels.

Q. 14. For how long a time have you known it to be used for these purposes? A. 14. Twenty years.

Q. 15. What is the object in using channeled iron instead of solid bars? A. 15. Well, it's for the purpose of securing stiffness, lightness, and it is easy to work. It is easier to punch a hole through a light web than through a solid bar. It is economy to use it.

Q. 16. Can you state any use to which channeled iron could be applied in mechanics where its use would be novel or would constitute an invention? A. 16. I don't know of any.

Q. 17. Has or has not channeled iron been used in mechanics wherever it was desirable to combine lightness and strength? A. 17. Yes; we generally use it wherever we want to make that combination.

Q. 18. For how long has its use in that way been common and familiar? A. 18. Ever since I have been in the business.

Q. 19. State whether or not iron dealers keep in stock constantly various forms of channeled iron. A. 19. We never had any trouble to obtain channeled iron from most any of the stores.

Q. 20. How many various forms is it kept in in stock? A. 20. Well, I could not say as to that. A great many forms—for bridge purposes, house-building, jail-work, safe-work, vehicle-work; it is generally kept constantly on hand. Parties who generally use large lots of it for building, bridge purposes, and other purposes, make contracts for large lots of it and have it rolled to order, and get it cheaper that way.

Mr. Brackett testifies as follows:

Q. 4. State whether or not channeled iron is a common form for mechanical uses; and, if so, some of the uses to which it is put. A. 4. It has been commonly used in all frame structures where stiffness and lightness are desired. I have known of its use since 1862, when I first took an active part in manufacturing. We use it in bridges, roof-trusses, machine-frames, floor-beams, joists, tramways—in fact, hardly a frame structure but what it is used more or less. Then other classes of manufactories use it in numerous places, such as fence-pickets, bottom rail of fences, in stove manufacturing, furniture manufacturing, sewing-machine manufacturing, and in fact I hardly think there is any class of iron structures where lightness is required but that it could be used to advantage.

Q. 5. How long have you known of these uses you have referred to? A. 5. Fifteen years or more.

Q. 6. Should it be desirable to combine lightness and strength in the construction of vehicles or any parts of them, would it require any invention or would it be novel to apply channeled iron for that purpose? A. 6. No, sir; I think not, as channeled iron is in almost as common use as bar-iron, and hardly any framed work is made where stiffness and lightness are required but that it is used, because it is the stiffest form in which iron can be used in carrying a load between two points, either suspended or in the form of a —, and wherever a compressible strain occurs, or cross-strain, or any other strain than a purely tension strain, it is the cheapest iron to use, and it is in common use under such circumstances.

Q. 7. What other advantages or advantage, if any, is obtained by the use of channeled iron which is also old and familiar? A. 7. Wherever two members running either at an angle or in the same direction, its greatest convenience is in the easy manner and strength with which such attachments and connections can be made, on account of the thinness of its web, it being readily drilled or punched, requiring a great deal less labor and expense than flat bar-iron, and on this account it is in general use throughout the United States for the last fifteen to twenty years, that I know of.

Q. 8. Can you give any instances in which channeled iron has been used as supports—that is, legs or feet, prior to 1875?

[Witness here asks whether counsel means channeled on one side or both.]

Q. Either. A. 8. Sewing-machine legs, stove-legs, school-desk legs, steam-heater legs; that's all I think of just now.

Q. 9. Do you know of any use of iron for feet or supports where these supports are not made channeled, as a rule? A. 9. No, sir; I do not, and, as a question of economy of material, it should be done in every instance where practicable.

This testimony is uncontradicted, and in view of it the improvements covered by claims 1, 2, 3, and 11 of Reissue No. 9,891 amount only to applications of old devices to new uses, not involving invention.

The decree of the circuit court is affirmed.

Supreme Court of the United States.

PETERS *v.* THE ACTIVE MANUFACTURING COMPANY.

Decided March 5, 1889.

1. PETERS—TOOLS FOR ATTACHING SHEET-METAL MOLDINGS.
Claims 1 and 2 of Letters Patent No. 178,463, granted June 6, 1876, to George M. Peters, for an improvement in tools for attaching sheet-metal moldings, *Held* to be anticipated by a machine used by Joseph P. Noyes, Binghamton, N. Y., as early as September, 1867.

2. SAME—SAME—INFRINGEMENT.
Claim 3 not infringed by defendant's apparatus, in which no washers are used for adjustment.

APPEAL from the Circuit Court of the United States for the Southern District of Ohio.

Mr. William Hubbell Fisher and *Mr. Benjamin Butterworth* for the appellant.

Mr. Arthur Stem for the appellee.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity, brought in the Circuit Court of the United States for the Southern District of Ohio, in January, 1882, by George M. Peters against The Active Manufacturing Company, for the alleged infringement of Letters Patent No. 178,463, granted June 6, 1876, to the plaintiff, George M. Peters, for an improvement in tools for attaching sheet-metal moldings, on an application filed March 7, 1876.

The specification, drawings, and claims of the patent are as follows:

My invention comprises a peculiarly-constructed sheath or holder, wherewith the ornamental molding on the top of carriage-dashes may be applied in the most expeditious manner, and without bending or buckling, or otherwise injuring or marring either said molding or its supporting dash-board.

In its preferred form, said sheath consists of a two-part holder or receiver connected together with bolts and washers, and provided with a longitudinal groove or channel of such size and shape as to readily inclose the molding that is to be applied to the upper edge of the dash; a key or other suitable stop being fitted within the sheath to prevent the molding slipping through said longitudinal groove when the device is in use.

The sheath is rendered capable of carrying moldings of various lengths and sizes by an arrangement of adjusting devices whose details of construction will be hereinafter more fully explained.

In the accompanying drawing, forming part of this specification, Figure 1 is a perspective view of a two-part sheath in an inverted position, the middle portion and rear end of the device being broken away. Fig. 2 is a perspective view of the molding detached from sheath. Fig. 3 is a plan showing the molding located within the sheath. Fig. 4 is a longitudinal section through the rear end of the sheath, with a screw-stop for the molding to bear against. Fig. 5 is a transverse section at the line *x x*, showing the molding incased within the sheath; and Figs. 6 and 7 represent modifications of the holder.

A and B represent two metallic bars of any appropriate size, and having their lower outer edges slightly beveled off at *a* and *b*. These bars are maintained in a parallel position with reference to each other by means of bolts or screws C and washers or fillings D. Instead of washers and bolts or screws C, the bars may be maintained in parallel position, and separated or brought nearer together by means of right-and-left screws, the right-hand thread of said screw engaging a female screw in one bar, and the left-hand thread engaging a female screw in the other.

The bar A has a longitudinal groove, E, formed along its inner surface and near the lower edge of said bar. E′ is a precisely similar groove made in the other bar, B, and when the two members A B of the sheath are joined together the grooves E E′ form a channel that is approximately circular in its transverse section. F represents a hook, shackle, or link, pivoted to the front end of the sheath, and guttered at *f*, to avoid contact with the upper edge of the dash.

The bars are furnished with undercut notches *g g′* to receive a detachable key, G, which latter serves as a stop or abutment for the rear end of the molding to rest against. A series of similar notches may be made in the bars A B at such distances from the front end of the sheath as will correspond with the various lengths of moldings; or, if preferred, the notches and key may be dispensed with, and a screw, H, may be arranged for the molding to bear against, as seen in Fig. 4. This screw may be adjusted out or in to agree with the length of molding.

The advancing end of the sheath is rounded off at I, so as not

Fig. 1.

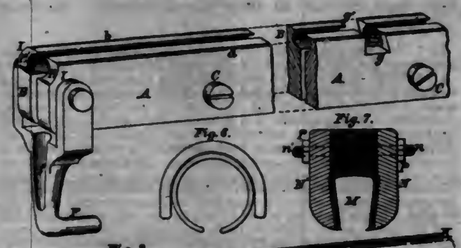


Fig. 6.

Fig. 7.

Fig. 2.



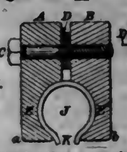
Fig. 3.



Fig. 4.



Fig. 5.



to tear up the leather coverings of the dash while the molding is being applied. The molding consists of a sheet-metal tube, J, having a longitudinal slot or parting, K, and a flaring or trumpet-mouthed end, L. This trumpet-mouth is located at the forward end of the molding.

As represented in Fig. 7, the sides of the molding M are straight, and have an outward flare, the top of said molding being somewhat crowning. This illustration shows a three-part sheath, the two outer bars N N′ being secured to the central member O by right-and-left-hand screws *n n′* and nuts P. Fig. 6 represents the sheath as made of a single piece of metal or other suitable material.

Previous to using the sheath the key G is first inserted in the notches *g g′* at such a distance from the end I as will correspond with the length of molding J, which latter is then slid into the groove E E′, the rear end of said molding being brought in contact with the vertical edge of said key. When thus located within the sheath the flaring mouth L of the molding has a slight projection beyond the chamfered end I of the bars A B, as represented in Fig. 3. The carriage-dash is then held perfectly rigid, and the upper margins of the coverings of the same are inserted in the flaring end L of the molding, after which any suitable power is applied to the hook F to draw the sheath along the top of said margins or projections. As the sheath advances the flaring mouth serves to conduct the leather margins into the slot K of the molding, and as the grooves E E′ prevent any radial distention of the tube J, it is evident that the molding is caused to embrace said margins in the most uniform and secure manner. After the molding has traversed the entire length of the dash the sheath can then be retracted, thereby leaving the tube J in its proper position upon the dash, the flaring end L being either filed off or else disposed of in any other suitable manner. During the progress of the sheath along the top of dash the molding is impelled forward by the key G, and consequently no strain whatever is brought to bear upon the flaring end L of the tube.

As a considerable degree of force is required to anchor the molding J securely to the leathern margins, it is evident that the driving action of key G would have a tendency to buckle said tube; but this defect is obviated by making the channel of the sheath of such capacity as to allow a pretty snug fit of the molding within it.

When a longer molding is to be applied to a dash, the key G is driven out and inserted in another set of notches nearer the rear end of the sheath; or the same results may be effected by causing the molding to abut against the end of screw H, the latter being adjusted either out or in, so as to agree with the length of molding that the sheath is to carry. The width of channel E E′ may be increased, to receive a molding of greater diameter, by removing washers or filling and inserting thicker ones in their place, or by turning the right-and-left-hand screws, where the latter are employed.

It is preferred to make the sheath of two pieces, on account of the facility of grooving them; but it is evident the holder may be made of a greater or less number, if desired. (See Figs. 6 and 7.)

It is also preferred to have the sheath embrace the molding as completely as possible, so as to bring the lower edges of the bars A B near the parting K, and thereby prevent any spreading of the tube at said slot; but if the tube is sufficiently stiff to prevent such spreading, the sheath need not surround the molding so completely. This modified form of sheath is shown in Fig. 6.

Furthermore, the sheath may be composed of wood lined with a metallic bushing. It is evident that this form of sheath may be advantageously employed for attaching sheet-metal moldings or tubes to various articles; and I reserve the right to use it for any and every purpose that it is capable of.

What I claim as new, and desire to secure by Letters Patent, is—

1. A sheath for applying metallic moldings, said sheath being furnished with a stop for advancing the molding, all substantially as and for the purpose specified.

2. The within-described sheath for applying metallic moldings, said sheath being furnished with recesses *f′ g′* and a key, G, or their equivalent stops, as and for the purpose explained.

3. A sheath composed of two grooved bars A E B E′, bolts or screws C, and washers D, whereby the sheath is rendered capable of adjustment to contain moldings of different diameters, as herein set forth.

4. The combination of bars A E B E′ and guttered hook or shackle F *f*, for the object stated.

Infringement is alleged of claims 1, 2, and 3.

The defenses insisted upon are want of invention, want of novelty, and non-infringement of claim 3.

The substance of the invention set forth in the specification is the use of a sheath or holder or receiver, having in it a longitudinal groove or channel, in which is placed the molding that is to be applied to the upper edge of the dash-board, the sheath or holder, when pulled, drawing with it the molding over the upper edge of the dash-board, and the key or stop being fitted within the sheath or holder, to prevent the molding from slipping through the groove. One useful effect of the sheath is to support the molding laterally, and prevent it from bending or buckling, or injuring the dash-board. Claim 1 covers the use of a sheath furnished with a stop, which operates to prevent the further advancing of the molding when it reaches the stop. Claim 2 covers the use of a sheath with a stop formed by means of notches or recesses, and a detachable key to be inserted in the notches. Claim 3 covers a sheath composed of two grooved bars, parallel to each other, and having bolts or screws connecting them, and washers between them, so as to render the apparatus capable of being adjusted to contain moldings of different diameters.

The circuit court entered a decree dismissing the bill, from which the plaintiff has appealed. The opinion of that court, reported in 21 Fed. Rep., 319, says in regard to claims 1 and 2:

The respondent's evidence establishes that, as early as September, 1867, Joseph P. Noyes, a manufacturer of combs at Binghamton, New York, used a machine for putting moldings on combs, in which the molding was held in a sheath fitting it closely, and having an extension enough smaller to fit the comb. In this extension there was a sliding follower fitted to abut against the end of the comb. At the extreme opposite end of the larger part of the sheath there was a slot across the sheath, containing a key or stop to prevent the sliding of the molding. The follower was attached to a slide and lever, so that when a molding was laid in the larger part of the sheath and the comb in the smaller part, the comb, being prevented from bending by the walls of the sheath, could be forced into the molding by the action of the slide and lever upon the follower, the molding being prevented from bending by the walls of the part of the sheath within which it was placed. This machine was in use more than three years before the date of the complainant's invention. That this was a comparatively small machine and used only for applying moldings to combs, is not material. (*Planing Machine v. Keith*, 101 U. S., 490.) Nor is it material that the groove or gutter was so open in cross-section that the molding could be dropped into it. Fig. 6 of the drawings accompanying the Letters Patent issued to complainant shows a sheath of like shape, and is referred to in the specifications as a modified form of the sheath patented, and the claim is so broad as to cover any sheath, of any material, shape, or size, for applying moldings to any article. There is nothing more in the sheath patented to the complainant than an adaptation of the sheath used at Binghamton to the application of moldings to carriage dash-boards—an adaptation which would have occurred to a skilled mechanic without the exercise of the inventive faculty. Had the complainant's invention been first in time

and patented, the Binghamton sheath would have been an infringement; and, conversely, had the Binghamton sheath been patented, the complainant's would have been an infringement. That which infringes, if later, would anticipate, if earlier.

We concur in these views.

The affirmative evidence on the part of the defendant, in regard to the Noyes apparatus, consists of the testimony of Noyes and Yingling, their testimony having been taken in August, 1882. Noyes testified that he had been engaged in making combs, at Binghamton, Broome county, New York, since 1860, and had, since 1864, made combs with metallic moldings for stiffening the backs. He produced one of such combs, marked A, and one of such moldings, marked B. He further testified as follows:

Q. 6. State whether or not you have ever used any machinery for putting these moldings on combs. A. I have.

Q. 7. Can you describe any of the machines used by you for putting moldings on combs? A. Yes. I have one machine in which the molding is held in a groove, which fits it closely, and the same groove has an extension enough smaller to fit the comb closely, and in this extension there slides a follower, which is fitted to abut against the end of the comb. At the extreme opposite end of the larger part of the groove there is a slot across the groove, containing a key or stop to prevent the molding sliding through the groove. The follower before mentioned is attached to a suitable slide and lever, so that when a molding is laid in the larger part of the groove, and the comb in the smaller part, the comb, being prevented from bending by the walls of the groove, can be forced tightly into the molding, by the action of the follower and its connected parts, the molding being, at the same time, prevented from bending by the walls of the larger part of the groove.

Q. 8. Can you produce a drawing illustrating the machine above described and its operation? A. I here produce a drawing which illustrates said machine. In this drawing, Figure 1, A represents the main body of the machine. In the part A is the groove C and its smaller extension D, in which are placed the molding and the comb, as described in my previous answer. O represents the slot in which is placed the key, marked Fig. 2. E, Fig. 1, represents the follower B, the slide of which the follower forms a part; L, K, M, and H the lever and connecting parts by which E and B is operated. Fig. 3 shows an end view of the slide and follower.

Q. 9. Into which of the grooves do you place the metallic molding? A. Into the groove C.

Q. 10. And into which the comb? A. Into the groove D.

Q. 11. In use, the key or stop, Fig. 2, is placed in the slot O to prevent the metallic molding sliding, is it not? A. It is.

Q. 12. State whether the groove C in the sheath A effectually prevents the metallic molding from bending as it is forced over the back of the comb. A. It does.

Q. 13. State how long you have used the above-described machine for putting metallic moldings on combs in the manner described. A. Since September, 1867.

Q. 14. Can you fix the date by any positive evidence besides your memory? A. I can. I have referred to the time-book of the men who made the machines, and find the machine to have been finished at the dated named, and remember that it was put into immediate use.

Q. 15. Has it been used ever since? A. It has been in continued use ever since without any alteration.

Q. 16. Have you ever made any effort to keep its use a secret, or has it always been open to the inspection of any person who might come into your shop? A. I have made no effort to keep it secret, but the shop has always been open to visitors, and any one could see the machine who cared to look at it.

The drawing so produced, marked C, shows a machine substantially like that of the plaintiff.

Yingling testified that he was, at the time of testifying, in the employ of Noyes, and, since 1868, or for about fourteen years, had used a machine like that shown by the drawing C, above referred to, for puting metallic moldings upon combs.

Noyes had stated, on cross-examination, in answer to a question as to who made the machine he had described as made in 1867, that William Knopp and his son were in his (Noyes's) employ as machinists at that time, and worked some on it; that his time-book, kept at that time, which he had consulted, contained a record of the fact that Knopp and his son so worked on the machine; and that the machine was built during the first week in September, 1867. In rebuttal, the plaintiff examined as witnesses William Knopp and three persons named Newman, Coyle, and McAuley.

Knopp testified that he was employed in Noyes's comb factory from 1865 to 1869, and was familiar with the kind of machinery manufactured by them during that time, for use in their comb-factory. He then proceeded:

Q. 5. In September, 1867, or at any other time, did you make machinery for putting metallic backs on combs? A. I did.

Q. 6. Without going into detail as to the kind you did make, I will ask you whether, in September, 1867, you made, or helped to make, a machine for putting moldings on the backs of combs, where the molding is held in a groove which fits it closely, and the same groove has an extension enough smaller to fit the comb closely, and in this extension there slides a "follower," which is fitted to butt against the end of the comb. At the extreme opposite end of the groove there is a slot across the groove, containing a key or stop, to prevent the molding from sliding through the groove. The follower is attached to a suitable slide or lever, so that, when a molding is laid in the larger part of the groove, and the comb in the smaller part, the comb is prevented from bending by the walls of the groove, and can be forced tightly into the molding, by the action of the follower and of the connecting parts? A. I do not remember that I made anything of that kind.

Q. 7. Did you at any other time make such a machine? A. I don't remember that I did.

Q. 8. Please examine the comb I now hand you, and state whether Noyes Bros. & Co., at that time when you worked for them, and since, manufactured a comb with metallic back similar to this one, and, if so, state how said metallic back was put on the comb? (Comb marked Exhibit A shown witness and offered in evidence by solicitor for complainant.) A. They manufactured a comb in general appearance similar. The metallic back was put on and fastened to the comb by compression. The back was compressed in a vise to make it fit in a groove in the comb tightly. The molding was placed on the comb by hand, and then put in a vise, and the molding pressed up tightly against the comb.

Q. 9. Do you remember working on or making machinery for compressing the molding on the comb, as above described? A. I do.

Q. 10. Is the mode above described the only way Noyes Bros. & Co. put metallic moldings on that kind of a comb? A. It is.

Q. 11. You was familiar at that time with the mode employed by them for putting moldings on combs, was you? A. I was.

This testimony of Knopp is very inconclusive. He merely testifies, thirteen years after he had left Noyes's establishment, that he does not remember that he made, fifteen years before the time when he was testifying, a machine like that described in question 6 put to him. The drawing produced by Noyes was not shown to Knopp.

The testimony of Newman, Coyle, and McAuley amounts to nothing. Although they were employed in the comb-factory of Noyes at the time they gave their testimony, in December, 1882, and had been employed there, Newman from 1862, Coyle for 14 or 15 years, and McAuley for about thirty years, neither of them was shown the comb A, nor the molding B, nor the drawing C, above mentioned, nor was a distinct question put to either of them as to the use of a machine like that described in question 6 put to the witness Knopp.

The only difference between Noyes's device and that of the plaintiff is, that in Noyes's the stop holds the molding stationary while the comb is forced into the molding by the action of the follower. But its action is substantially the same as that of the stop in the plaintiff's patent, which prevents the molding from slipping through the groove.

The case falls within the principle applied in *Pennsylvania Railroad* v. *Locomotive Truck Co.*, (110 U. S., 490,) and cases there cited.

As to the third claim, it is not infringed, because, in the defendant's apparatus, no washers are used for adjustment.

The decree of the circuit court is affirmed.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

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Attorneys.

DEPARTMENT OF THE INTERIOR,
Washington, D. C., May 10, 1889.

SIR: I am directed by the Secretary of the Interior to inform you that the order of the Department, dated February 12, 1885, disbarring John McLean, of Crookston, Minn., from practice before the Department of the Interior and the Bureaus thereof, has this day been rescinded.

Very respectfully,

E. M. DAWSON,
Acting Chief Clerk.

The Commissioner of Patents.

Fraudulent Practices by Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 18, 1888.

The attention of this Office having frequently been called to circulars and communications of persons pretending to have access to the records of this Bureau, and claiming to possess information of the pendency of applications for patents, notice is hereby given the public that all such persons in so advertising themselves are acting under false representations and are guilty of unprofessional conduct, and should not be entitled to credit.

The Office has also received information that certain attorneys disbarred from practice under section 487 of the Revised Statutes are continuing to prosecute applications for patents under the names of other persons.

Hereafter a list will be published in the OFFICIAL GAZETTE containing the names and addresses of all such persons, and the public warned against employing them or intrusting applications or interests to their charge.

BENTON J. HALL, *Commissioner.*

The Office has information that *Isaac S. McGiehan, No. 158 Broadway, New York*, a disbarred attorney, has been practicing under the name of *Alexander Melhado*.

Issue of May 21, 1889.

Patents	397	No. 403,502 to No. 403,898, inclusive.
Designs	8	No. 19,104 to No. 19,111, inclusive.
Trade-Marks	36	No. 16,591 to No. 16,626, inclusive.
Labels	4	No. 5,908 to No. 5,911, inclusive.
Reissues	2	No. 11,003 to No. 11,004, inclusive.
Total issue	449	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama			Nebraska	8	
Arizona Territory			Nevada	1	
Arkansas	1		New Hampshire	3	
California	10		New Jersey	11	3
Colorado	2		New Mexico Terri'y	1	
Connecticut	22	2	New York	49	9
Dakota Territory	4		North Carolina		
Delaware			Ohio	27	1
District of Columbia	3		Oregon	2	
Florida			Pennsylvania	36	5
Georgia	1		Rhode Island	4	
Idaho Territory			South Carolina	2	
Illinois	32	3	Tennessee	3	
Indiana	10	1	Texas	15	2
Iowa	5		Utah Territory		
Kansas	4		Vermont	3	
Kentucky	4		Virginia	1	
Louisiana	2	1	Washington Terri'y		
Maine	2		West Virginia	1	
Maryland	5	5	Wisconsin	11	1
Massachusetts	45	1	Wyoming Terri'y		
Michigan	18	1	U. S. Army		
Minnesota	5		U. S. Navy		
Mississippi	1				
Missouri	9	3	Total to citizens of the United States	363	38
Montana Territory					

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Australia			Germany	7	
Austria-Hungary	5		Hawaii		
Barbadoes			Italy		
Belgium			Mexico		
Brazil			Portugal	1	
Canada	5		Russia		
Canary Islands			Scotland		
Colombia, U. S. of			Sweden		
Cuba			Switzerland	1	
Denmark			Victoria	1	
Ecuador					
England	18	3	Total to citizens of foreign countries	42	4
France	4	1			

DESIGNS.

19,104.—LAUNDRY-WAGON.—*Henry Barnes*, New Haven, Conn. Application filed April 27, 1889. Serial No. 308,875. Term of patent 14 years.

19,105 and 19,106.—ORNAMENTATION OF GLASSWARE.—*Richard Briggs*, Boston, Mass. Applications filed March 28, 1889. Serial Nos. 305,178 and 305,177. Term of patents 14 years.

19,107.—BOTTLE.—*Jacob Gulden*, New York, N. Y. Application filed February 21, 1889. Serial No. 300,760. Term of patent 7 years.

19,108.—BOTTLE.—*Charles B. Millet*, Philadelphia, Pa. Application filed April 19, 1889. Serial No. 307,854. Term of patent 3½ years.

19,109.—FONT OF ORNAMENTAL TYPE.—*Herman Ihlenburg*, Philadelphia, Pa., assignor to *The MacKellar, Smiths & Jordan Company*, same place. Application filed April 26, 1889. Serial No. 308,722. Term of patent 14 years.

19,110.—HAMMOCK.—*Isaac E. Palmer*, Middletown, Conn. Application filed November 6, 1888. Serial No. 290,167. Term of patent 14 years.

19,111.—PLOW-HEAD.—*George Wilkinson*, Aurora, Ontario, Canada. Application filed March 28, 1889. Serial No. 305,175. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,591.—INGOT-COPPER.—*Baltimore Copper Smelting and Rolling Company*, Baltimore, Md. Application filed March 30, 1889. Used since January 1, 1887.
"The three letters 'B. C. W.'"

16,592.—LAUNDRY AND TOILET SOAP.—*Belknap & McCann*, Newburg, N. Y. Application filed March 12, 1889. Used since June 12, 1884.
"The words 'RIVER SIDE.'"

16,593.—CHEWING-GUM.—*William N. Brewer*, Cleveland, Ohio. Application filed November 16, 1888. Used since October 1, 1888.
"The words 'WHITE BAND.'"

16,594.—COFFEE.—*James H. Brookmire & Co.*, St. Louis, Mo. Application filed March 27, 1889. Used since March 1, 1889.
"The word 'MONIPOLE.'"

16,595.—STOVES AND RANGES.—*Buck's Stove and Range Company*, St. Louis, Mo. Application filed February 5, 1889. Used since 1877.
"The representation of a buck's head."

16,596.—TWINE FOR SELF-BINDING HARVESTERS.—*William Deering & Company*, Chicago, Ill. Application filed June 24, 1887. Used since May 24, 1887.
"The representation of a sheaf of wheat and ball of twine. The sheaf of wheat is represented as being tied with the twine, which extends therefrom in fancifully-curved lines in imitation of some letter or design to the ball."

16,597.—VANILLA PUDDING.—*William Pitt Clotworthy*, Baltimore, Md. Application filed March 30, 1889. Used since July 2, 1888.
"The word 'ROSE.'"

16,598.—PAINTS.—*Cyclone Wrought Iron Slag Paint Company*, Boonton, N. J., and New York, N. Y. Application filed March 26, 1889. Used since February 20, 1889.
"The representation of a winged head and the word 'CYCLONE.'"

16,599.—GRANULAR EFFERVESCENT SALT.—*Isaac E. Emerson*, Baltimore, Md. Application filed April 8, 1889. Used since January 15, 1889.
"The word 'BROMO-SELTZER.'"

16,600.—TROUSERS, OVERALLS, AND COATS.—*Erlanger Brothers*, Baltimore, Md., and New York, N. Y. Application filed February 20, 1889. Used since March 23, 1888.
"The words 'TWO FOR ONE,' in combination with the numerals '2 4 1.'"

16,601.—COFFEE SUBSTITUTE.—*George Floto's Sons*, Brooklyn, N. Y. Application filed April 10, 1889. Used since April 23, 1883.
"The picture of a city with an eagle above it and the words 'AUGUST KOENIG'S.'"

16,602.—COMPLEXION-POWDERS.—*Gale & Blocki*, Chicago, Ill. Application filed March 26, 1889. Used since December, 1880.
"The word 'EDELWEISS.'"

16,603.—SAUCES AND CONDIMENTS.—*Patrick F. Gillespie*, Chicago, Ill. Application filed March 28, 1889. Used since November 1, 1888.
"The representation of a shield and the letters 'L. J. C.,' together with the words 'P. F. GILLESPIE' and the words 'CHICAGO' and 'ILLINOIS' on either side of the shield."

16,604.—CERAMIC COLORS.—*Hancock & Son*, London, England. Application filed January 25, 1889. Used since July 1, 1868.
"A cross-band, two circles arranged behind the band, and the representation of a crown in the same."

16,605.—SOAP.—*Robert F. S. Heath*, Camden, N. J. Application filed March 25, 1889. Used since January 1, 1889.
"The word 'SOCIETY-SOAP.'"

16,606.—VARNISHES, PAINTS, OILS, AND JAPANS.—*William Hadwin Houghton*, Long Island City, N. Y. Application filed February 24, 1888. Used since September 1, 1887.
"The letters 'H H' or a monogram of the letters 'H H.'"

16,607.—CEREAL PRODUCTS, SUCH AS FLOUR AND MEAL.—*Henry Ferdinand Ihlee*, Battersea, county of Surrey, England. Application filed September 6, 1888. Used since June 20, 1888.
"The words 'FRAME FOOD.'"

16,608.—PILE-SALVE.—*John F. Joyce*, De Soto, Mo. Application filed February 11, 1889. Used since January 1, 1889.
"The words 'LOCOMOTIVE ENGINEER, JOYCE'S PILE DRIVER SALVE,' arranged about the cut or representation of a pile-driver."

16,609.—SOCKS AND STOCKINGS.—*August Kitz*, New York, N. Y. Application filed March 27, 1889. Used since December, 1888.
"A lozenge-shaped figure and the words 'COAL BLACK WARRANTED NOT TO CROCK' arranged parallel to its four sides."

16,610.—SOCKS AND STOCKINGS.—*August Kitz*, New York, N. Y. Application filed March 27, 1889. Used since December, 1888.
"The capital letters 'W. M. W. & Co.' and the words 'ANTI-CROCK DYE.'"

16,611.—PERFUMES.—*Herman Loeb & Co.*, New York, N. Y. Application filed March 25, 1889. Used since September 1, 1888.
"The words 'THE ARMANT PERFUMES,' printed over the vignette of a lion's head and a scroll."

16,612.—SEMI-SOLID MEDICINAL COMPOUND IN THE FORM OF PILLS.—*Elias Edwin Matthews*, Indianapolis, Ind. Application filed February 28, 1889. Used since January 15, 1889.
"The words 'PERUVIAN BEANS.'"

16,613.—CEMENT.—*McLean & Company*, (*Limited.*) London, England. Application filed January 6, 1888. Used since 1880.
"The word 'CORONET.'"

16,614.—CANNED OYSTERS, FRUITS, AND VEGETABLES.—*C. H. Pearson & Co.*, Baltimore, Md. Application filed January 27, 1888. Used since January, 1887.
"The word 'PEERLESS.'"

16,615.—WATCH-CASES.—*Philadelphia Watch Case Co.*, Philadelphia, Pa. Application filed March 9, 1889. Used since February 1, 1889.
"The word 'PHŒNIX' in combination with the word 'PHILADA.' and the words 'WATCH C. CO.'"

16,616.—WATCH-CASES.—*Philadelphia Watch Case Co.*, Philadelphia, Pa. Application filed March 9, 1889. Used since March 6, 1889.
"The word 'UNIQUE' in combination with the word 'PHILADA.' and the words 'WATCH C. CO.'"

16,617.—WATCH-CASES.—*Philadelphia Watch Case Co.*, Philadelphia, Pa. Application filed March 9, 1889. Used since February 1, 1889.
"The word 'IDEAL' in combination with the word 'PHILADA.' and the words 'WATCH C. CO.'"

16,618.—WATCH-CASES.—*Philadelphia Watch Case Co.*, Philadelphia, Pa. Application filed March 9, 1889. Used since January 1, 1888.
"A central wheel with a wing attached to each end of the hub thereof."

16,619.—HALF-TONE ENGRAVED RELIEF-PLATES FOR ILLUSTRATIVE PURPOSES.—*Purton, Stearns & McIntyre*, Philadelphia, Pa. Application filed February 26, 1889. Used since September 1, 1888.
"The word 'ELECTRO-TINT.'"

16,620.—FILTERS MADE ACCORDING TO THE PASTEUR SYSTEM.—*Société Anonyme du Filtre Chamberland, Système Pasteur*, Paris, France. Application filed May 28, 1888. Used since August, 1886.
"The representation of two dolphins resting on their mouths and supporting between their tails a filtering-bottle."

16,621.—PAILS, TUBS, AND ANALOGOUS WOODEN WARE.—*Two Rivers Manufacturing Company*, Two Rivers and Milwaukee, Wis. Application filed March 29, 1889. Used since March, 1871.
"The word 'DOWEL.'"

16,622.—PAINT PREPARED FOR IMMEDIATE USE.—*The Wadsworth Paint and Oil Manufacturing Company*, Brooklyn, N. Y. Application filed March 28, 1889. Used since September 15, 1888.
"The word 'ELECTRIC' and the representation of an incandescent light."

16,623.—PATENT FLOUR.—*William Henry Weiss*, San Antonio, Tex. Application filed December 3, 1888. Used since January 1, 1888.
"A large fancifully red-bordered black circle on a lemon-colored background and an inner representation of concentric circles containing the representation of the head of a lion in appropriate coloring."

16,624.—REED-ORGANS.—*The Wilcox & White Organ Company*, Meriden, Conn. Application filed March 25, 1889. Used since November 1, 1888.
"The word 'SYMPHONIA.'"

16,625.—REED-ORGANS.—*The Wilcox & White Organ Company*, Meriden, Conn. Application filed March 25, 1889. Used since November 1, 1888.
"The words 'PNEUMATIC SYMPHONY.'"

16,626.—REMEDY FOR NERVE, BRAIN, AND STOMACH DISORDERS.—*Williamson, Ingram & Griggs*, Detroit, Mich. Application filed March 27, 1889. Used since January 1, 1889.
"The words 'BROMO SEIDLITZ.'"

16,627.—TEA.—*Thomas Wood*, Boston, Mass. Application filed February 23, 1889. Used since December 1, 1888.
"The words 'MAY QUEEN.'"

16,628.—COPPER PAINT.—*Charles A. Woolsey*, Jersey City, N. J. Application filed March 13, 1889. Used since December, 1884.
"The representation of a Nereid on a sea-horse, with the words 'CHAS. A. WOOLSEY'S COPPER BEST PAINT.'"

LABELS.

5,908.—Title: "BLAIR'S STENOGRAPHIC GOLD FOUNTAIN PEN."—*John Blair*, New York, N. Y. Application filed April 24, 1889.

5,909.—Title: "CAN'T RUST 'EM." (FOR DRESS STAYS.)—*M. Cohn & Co.*, New York, N. Y. Application filed April 6, 1889.

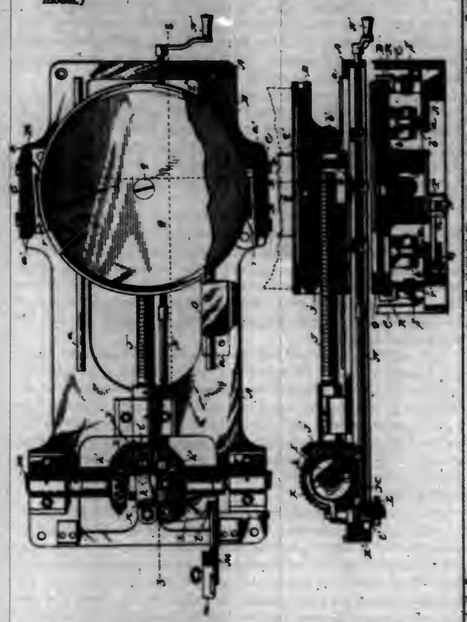
5,910.—Title: "SYPHILIS & GONORRHŒA PREVENTIVE."—*Green Berry Harris*, Mooreville, Tex. Application filed April 19, 1889.

5,911.—Title: "MAY'S MEXICAN FRUIT SHERBET."—*Eugene May*, New Orleans, La. Application filed April 26, 1889.

PATENTS

GRANTED MAY 21, 1889.

408,502. MOTOR FOR CULINARY BEATERS, MIXERS, &c. EDWIN BAILEY, Philadelphia, Pa., assignor to the Keystone Manufacturing Company, same place. Filed May 11, 1888. Serial No. 273,615. (No model.)



Claim.—1. The combination, with the bed, the table, means for reciprocating the table on the bed, and the shipper-lever, of the tappet-rod having a right and a left thread, journaled in the said bed and adapted to have a longitudinal and a rotary movement, the inner end of the rod being in connection with the shipper-lever, the tappets mounted on the said rod and moved to and from each other by rotating the rod, and means, as the crank N', for rotating the said tappet-rod, substantially as and for the purpose specified.

2. The combination of the bed, the table Q, having a stop, P, the feed-screw, means for rotating the feed-screw alternately in opposite directions, the shipper-lever, the arm L, connected with the shipper-lever, having the opening *l* in its end, the stud K', pivoted to the arm L, the tappet-rod journaled at one end in the stud K' and at its other end in the bed and having a right and a left thread, the tappets mounted on the threaded portions of the tappet-rod and having extensions, the guide-plate O, and the weighted lever M, having its end fitted in the opening *l* in the arm L, substantially as described.

3. The combination of the bed and the reciprocating table having a stop, of the tappet-rod journaled in the bed and having a right and a left screw-thread thereon, the tappets mounted on the threaded portions of the said rod and having extensions, and the plate O, forming a guide between it and the bed for the said extensions, substantially as described, for the purpose specified.

4. In a motor for mixers, beaters, &c., the combination of the reciprocating table, the turn-table carried by the said reciprocating table and having teeth about its periphery, and the two diametrically-opposite pawls, each having two heads which alternately engage with the turn-table to produce a continuous rotatory movement of the same simultaneously with its reciprocating movement, the head of one pawl engaging with the said teeth the moment the other head of the same pawl is disengaged, substantially as set forth.

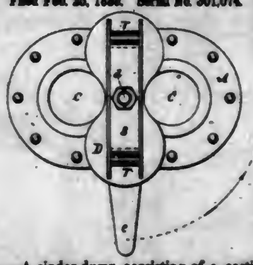
5. The herein-described machine for mixers, beaters, &c., composed of the bed A, having the standards C, the vertical shaft *e*, journaled in the cross-piece uniting the ends of the standards and provided with the beaters at its lower end, the shaft H, gearing connecting the shaft H with the said shaft *e*, the pinions A' and A^3 on the shaft H, the double clutch-sleeve I, for keying one or the other of the pinions A' and A^3 on the shaft H, the screw J, having pinion *j* on its outer end, which is in mesh with pinions A' and A^3, the rotatable and endwise-movable rod N, having a right and a left screw-thread thereon, the tappets mounted on the threaded portions of the rod N, the shipper-lever K, connected with the rod N, the weighted arm M, the table B, engaged by the screw J and having a stop to engage with the said tappets, the turn-table Q, having ratchet-teeth on its periphery, and the pawls R R, for engaging with and rotating said turn-table during its reciprocating movements, substantially as set forth, and for the purpose described.

408,503. PACKING-CASE. GEORGE W. BAKER, Brooklyn, N. Y. Filed Mar. 9, 1889. Serial No. 302,668. (No model.)



Claim.—The combination, in a packing-case, of a removable cover, corner-bracing pieces fastened to the case and extending above its upper edge, hooks E, staples G, hasps H, resting close to the hooks when both are in closed position, and locking devices K for the hasps, substantially as set forth.

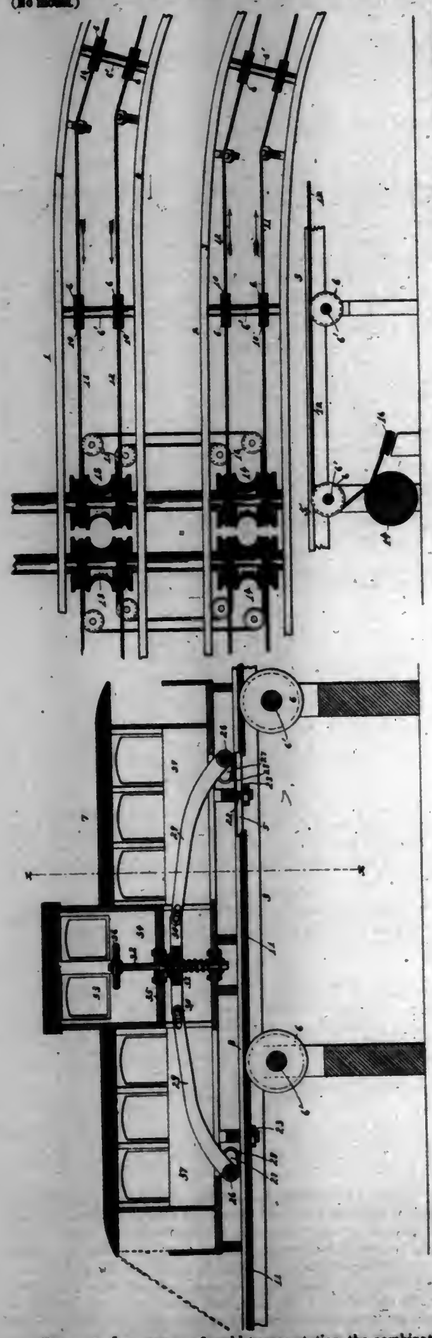
408,504. DOOR FOR CINDER-BOXES. JOSHUA B. BAKER, Springfield, Ill. Filed Feb. 25, 1889. Serial No. 301,074. (No model.)



Claim.—A cinder-dump consisting of a casting secured to the bottom of the smoke-box, and having two circular and funnel-shaped outlets closed and opened by a door centrally pivoted upon a stud rigidly secured in the partition between the outlets, said door being adapted to swing round in the plane in which the edges of the discharge-orifices lie, so as to close or open said orifices, and a spring pivotally secured upon the same stud as the door and adapted to sustain the latter against the edges or faces of the two outlets or dis-

charge-orifices by lock-nuts upon the stud upon which the spring is pivoted, all of said parts constructed, combined, and adapted to operate substantially as and for the purpose set forth.

403,505. SYSTEM OF RAPID TRANSPORTATION. CHARLES H. BARROWS, Willimantic, Conn. Filed Feb. 20, 1888. Serial No. 300,546. (No model.)



Claim.—1. In a system of rapid transportation, the combination of a track, a series of driving-rolls spaced at suitable intervals along the track and each having an annular groove in its periphery, a wheelless car carrying longitudinal runners which rest on the rolls to support the car solely by the rolls and adapted to be moved by frictional contact with said rolls, and the running power-cables passing through the annular grooves in said driving-rolls and arranged between the rolls and the runners when the latter rest on said rolls, substantially as and for the purpose described.

2. In a system of rapid transportation, the combination of a track, a series of positively-rotated driving-rolls spaced at suitable intervals along the track between the side girders thereof, a wheelless car, the longitudinal runners carried by the car and resting on the rolls to support the car on the rolls out of contact with the track, and friction devices carried by the car and arranged to engage the side girders of the track, substantially as and for the purpose described.

3. In a system of rapid transportation, the combination of a track, a series of positively-rotated driving-rolls spaced at suitable intervals on the track, and a car resting on and supported by the driving-rolls independently of the track and carrying devices which engage the track to prevent lateral and vertical displacement of the car, substantially as and for the purpose described.

4. In a system of rapid transportation, the combination of a track, a series of spaced driving-rolls, the running power-cables passing over said rolls to rotate the same, and a car having longitudinal runners or bars which engage with said driving-rolls by frictional contact only, substantially as and for the purpose described.

5. In a system of rapid transportation, the combination of a track, a series of spaced driving-rolls, the running power-cables, a car having the longitudinal runners or bars fixed to its lower side and resting on the driving-rolls and cables by gravity to move the same along the track independently of the latter and solely by frictional contact between said runners, the driving-rolls, and the cables, substantially as described.

6. In a system of rapid transportation, the combination of a track, the positively-rotated driving-rollers arranged between the sides of said track, the running power-cables spaced laterally of each other and passing over said driving-rolls, a car having frictional rollers adapted to engage the track, and the longitudinal runners or bars fixed to the car, on the lower side thereof, and adapted to be moved by frictional contact with the driving-rolls, substantially as and for the purpose described.

7. In a system of rapid transportation, the combination of a track, the positively-rotated driving-rolls, a car supported by the driving-rolls and capable of a limited vertical movement, substantially as described, the longitudinal runner-bars fixed to the car and adapted to have engagement with said driving-rolls, mechanism carried by the car for lifting the same vertically and disengaging the longitudinal runners from the driving-rolls, and devices on the car adapted to be forcibly pressed against the track when the car is elevated, substantially as described.

8. In a system of rapid transportation, the combination of a track, a series of positively-rotated driving-rolls spaced at suitable intervals along the track between the side girders thereof, the running power-cables passing over said rolls, a wheelless car, the longitudinal runners fixed to the bottom of the car and arranged to have contact with the driving-rolls and the power-cables, and friction-rollers carried by the car and arranged to have contact with the side girders of the track below an overhanging ledge on said girders, substantially as described.

9. In a system of rapid transportation, the combination of a track, the positively-rotated driving-rolls, a car having longitudinal runners adapted to rest on said driving-rolls, and friction-rollers carried by the car and arranged to be moved vertically by mechanism, substantially as described, to depress said rollers upon the track and elevate and support the car on the track out of contact with the driving-rolls, substantially as and for the purpose described.

10. In a system of rapid transportation, the two adjoining tracks, the driving-rolls arranged between the side girders of the track, the rotary power-drums, each arranged below one of the tracks and the driving-rolls thereof and driven in opposite directions, and a continuous endless cable passing over said driving-rolls, arranged around said drums and passing laterally from one track to the other, substantially as and for the purpose described.

11. In a system of rapid transportation, the two adjoining tracks, the driving-rolls arranged between the side girders of the tracks, the power-drums, each arranged below one of the tracks and rotated positively in opposite directions, a pair of endless cables arranged over the driving-rolls and around said drums and passing laterally from the drum of one track to the drum of the adjoining track, and guide-rollers intermediate of the drums and located laterally thereof, as and for the purpose described.

12. In a system of rapid transportation, the two adjoining tracks, the driving-rolls supported between the same, the rotary power-drums 13 14, located at suitable intervals along the length of the track and arranged laterally with respect to each other, the endless power-cables passing over the driving-rolls and laterally of the tracks from the power-drum 13 of one track to the power-drum 14 of the adjoining track, substantially as and for the purpose described.

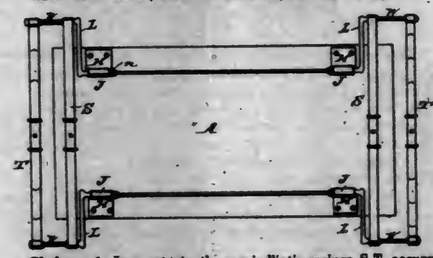
13. In a system of rapid transportation, the combination, with a track and a car-propelling mechanism, of a wheelless car, the rock-shafts journaled on the car and carrying friction-rollers arranged to engage the side girders of said track, and a cross-head connected with said rock-shafts to simultaneously move the latter and force the rollers thereof into engagement with the track when said cross-head is moved vertically in one direction, substantially as and for the purpose described.

14. In a system of rapid transportation, the combination, with a track and a car-propelling mechanism, of a car, the rock-shafts journaled in the car near the ends thereof and having arms which carry the friction-rollers, a vertical screw-shaft, a cross-head fitted thereon, and levers intermediate of said cross-head and the rock-shafts, substantially as and for the purpose described.

15. In a system of rapid transportation, a car having a longitudinal frame, the horizontal parallel runners fixed to said frame longitudinally thereof, rock-shafts journaled in said frame above the runners and having angular arms which carry friction-rollers, in combination with a track, the car-propelling mechanism, and mechanism carried by the car for simultaneously operating the rock-shafts to depress the rollers thereof into engagement with the track or withdraw said rollers from the same, as and for the purpose described.

16. In a system of rapid transportation, a car having a vertical central apartment provided with a look-out-chamber and the end passenger-apartments, the rock-shafts journaled in the car and carrying friction-rollers, a vertically-movable cross-head and a screw-shaft located in the central apartment, and the longitudinal levers arranged between the seats in the passenger-apartment and connected at their ends to the rock-shafts and the cross-head, substantially as and for the purpose described.

403,506. VEHICLE-SPRING. CHARLES A. BESLER, Cincinnati, Ohio. Filed Mar. 16, 1889. Serial No. 303,906. (No model.)



Claim.—1. In a vehicle, the semi-elliptic springs S T, occupying relatively-reversed positions, one being attached to the head-block, the other to the under side of the body, in combination with loops L, one end supporting extremity of springs, which are separated from one another by washer W, the other end being swiveled into a hinged and barreled coupling underneath the vehicle-body, substantially as shown and described, and for the purposes noted.

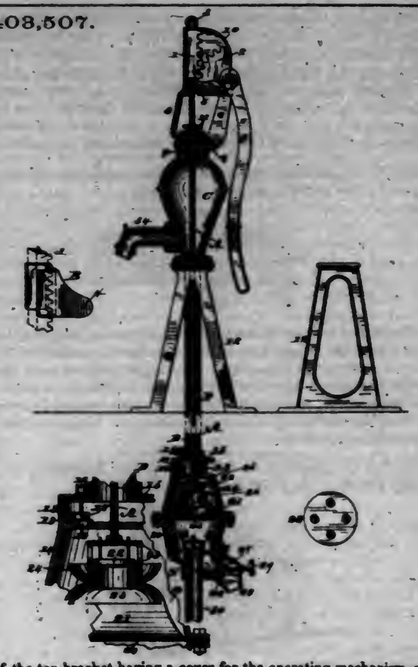
2. The body A and loops L on each corner thereof, said loops being loosely connected to a hinged and barreled coupling, in combination with two semi-elliptic springs occupying relatively-reversed positions, and in such shape fastened, respectively, to the head-block or axle-bed and vehicle-body, their extremities being mounted on the outer loop-stem and separated from one another by washer W, substantially as shown and described, and for the purposes specified.

3. In a vehicle, the body A, loops L, properly shackled to body and supporting spring portions S T, and washer W, the said loops extending the length of the vehicle-body, with barreled couplings I J, connected by an elongated link, L', through the instrumentality of which the springs can be elongated or contracted, substantially as shown and described.

403,507. PUMP. PETER J. BOSS, Belleville, Ill. Filed July 13, 1888. Serial No. 279,857. (No model.)

Claim.—1. In a pump, the combination of the pump-chamber, the perforated cap above the inlet thereof, the lower or foot valve arranged in said cap, the outlet having a hinged valve or cover, the screw for closing said valve-cover, the diaphragm in the pump-chamber carrying the perforated cap, the valve therein, and the plunger-rod having its lower end screwed into the cap and adapted to be screwed down on the valve, arranged and operating substantially in the manner and for the purpose described.

2. In a pump, the combination, with the pump-chamber having the diaphragm therein, the valve carried by said diaphragm, the perforated cap in which said valve is arranged, the piston-rod having its lower end connected to said cap, the supply-pipe, and air-chamber,

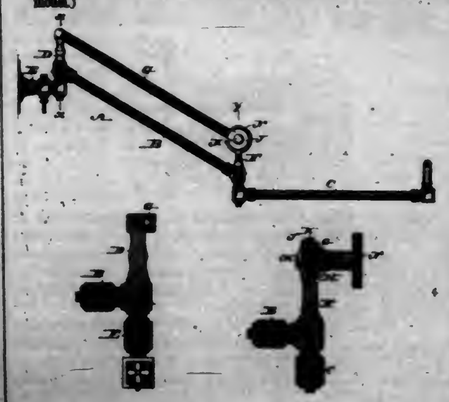


of the top bracket having a cover for the operating mechanism, and an annulus or collar embracing the top of the air-chamber, whereby said bracket may be rotated on the air-chamber to place the operating mechanism in a convenient position and may cause the plunger-rod to close the valve of the diaphragm or adjust the play of the same as desired, substantially as and for the purpose described.

3. In a pump, the pump-chamber provided with a foot-valve above the inlet thereof, having its lower wall inclined and an outlet at the termination of said wall, a hinged valve controlling said outlet, a screw for regulating the play of the valve or for closing the same on its seat, a diaphragm in the pump-chamber, a perforated cap carried by said diaphragm, a valve arranged in and guided by said cap, and a plunger-rod having its lower end adjustable in said cap, whereby the play of the valve may be regulated or the same closed on its seat, substantially in the manner and for the purpose described.

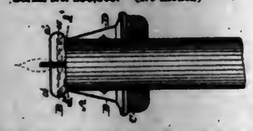
4. A pump having a chamber with a foot-valve controlling its inlet-passage, a hinged valve controlling its outlet-passage, a spout surrounding its outlet-passage and having a screw regulating the play of the said hinged valve, and a diaphragm in said chamber with operating-stem, said parts being combined substantially as and for the purpose set forth.

403,508. GAS OR LAMP BRACKET. WILLIAM BORNE and JULIUS BORNE, Philadelphia, Pa. Filed May 15, 1888. Serial No. 273,963. (No model.)



Claim.—The improved lamp or gas bracket herein described, consisting of a branch with a horizontal opening in the same, the vertical post D, rotatably connected with said branch, the vertical posts F, with serrated disk J at its upper end, the pipe B, pivoted to said posts, and the bar G, having the serrated disk H at one end and pivotally connected to said posts, the packing K between the disks J and H, the screw-bolt M and nut N, and the pipe C, rotatable on the lower end of the post F, said parts being combined substantially as described.

408,509. CANDLE-GUARD. HUBERT BOVÉ, Philadelphia, Pa. Filed Apr. 6, 1887. Serial No. 233,866. (No model.)



Claim.—An improved candle-guard consisting of a perforated conical body with weighted base and outwardly-dish-shaped rim B, with an inwardly-overhanging lip, *a'*, extending inwardly as far as the top edge of the body A, and adapted to retain within the chamber the melted material, as described, the said rim being connected to the body at the inwardly-projecting neck A', said parts being combined substantially as described.

408,510. BRIDLE-BIT. ZACHARY T. BOWLES, Hillsborough, Tex. Filed Sept. 20, 1888. Serial No. 285,969. (No model.)



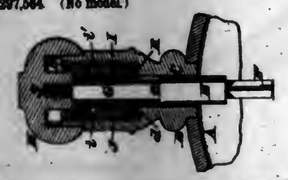
Claim.—1. In a bridle-bit, the combination, with the bit-bar, of the angle-levers swiveled on the said bar and having limited rotation thereon, the curb-chain connecting the upper arms of the said levers, and the reins connected to the lower arms of the same, substantially as specified.

2. In a bridle-bit, the combination of the bit A, having the loops B B attached to its ends, the angle-levers mounted on the bit-bar and comprising the arms E E, provided with sockets *e e*, and the arms F F, connected by the curb-chain G, and the loops or rings H H, provided with shanks mounted in the sockets *e e*, substantially as specified.

3. In a bridle-bit, the combination, with a bit-bar, A, provided with the loops B B, of the angle-levers D D, mounted on the said bar and having their corresponding arms respectively connected by the curb-chain and provided with rein loops or rings H H, and the studs or pins L on the levers engaging the loops B, substantially as specified.

4. In a bridle-bit, the combination, with the bit-bar, having loops B B attached thereto, of the levers mounted loosely on the said bar and provided with sockets *e e*, and the rings or loops H H, provided with shanks mounted in the said sockets, whereby the rings are adjustable, substantially as specified.

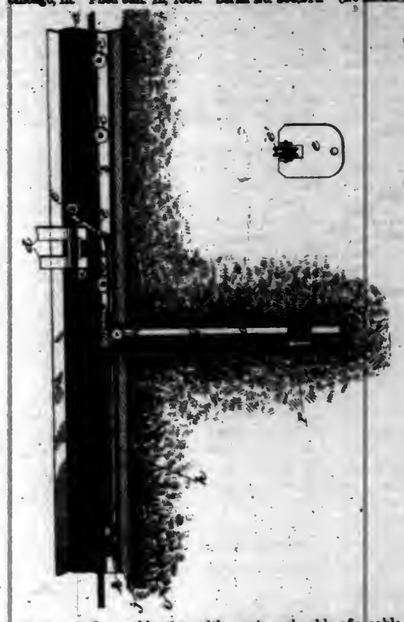
408,511. WATCH-CASE PENDANT. WILLIAM W. BRADLEY, Newport, Ky., assignor to John C. Dueber, same place. Filed Jan. 25, 1889. Serial No. 297,544. (No model.)



Claim.—1. A chambered watch-case pendant provided with an ungrooved longitudinally-shiftable push pin or stem, in combination with a clutch fitted within said chamber and grasping an ungrooved stem, so as to revolve in unison therewith, a keeper that prevents longitudinal sliding of said clutch, and a stop that limits the outward pull of said stem, substantially as described.

2. A watch-case pendant, as B, having a screw-threaded chamber, D, and bearing *b*, in combination with the longitudinally-shiftable push-pin E *e* G, clutch J *j* K, and a tubular keeper or nut, I, that engages with said chamber and holds said clutch against said bearing *d*, as herein described.

408,512. CABLE-RAILWAY MECHANISM. THOMAS BRADWELL, Chicago, Ill. Filed Jan. 12, 1889. Serial No. 296,214. (No model.)



Claim.—1. In combination with a grip and cable of a cable railway, a stop, *e*, attached to an elastic resisting mechanism, whereby a grip carrying a cable may be stopped, substantially as specified.

2. In combination with a grip and cable of a cable railway, a stop, *e*, attached to the piston of an air-cylinder wherein the air is caused to form an elastic resisting medium, whereby a grip carrying a cable may be stopped, substantially as specified.

3. In combination with a grip and cable of a cable railway, a stop, *e*, attached to an elastic resisting mechanism, whereby a grip carrying a cable may be stopped, and mechanism, as set forth, whereby said parts may be returned to their starting-points automatically, substantially as specified.

4. In combination with a grip and cable of a cable railway, a stop, *e*, attached to the piston of an air-cylinder wherein the air is caused to form an elastic resisting medium, whereby a grip carrying a cable may be stopped, and a weight by means of which said parts may be caused to return to their starting-points automatically, substantially as specified.

5. In combination with a grip and cable of a cable-railway, a stop, *e*, provided with a pulley, *d*, and said stop attached to an elastic resisting mechanism, whereby a grip carrying a cable may be stopped, substantially as specified.

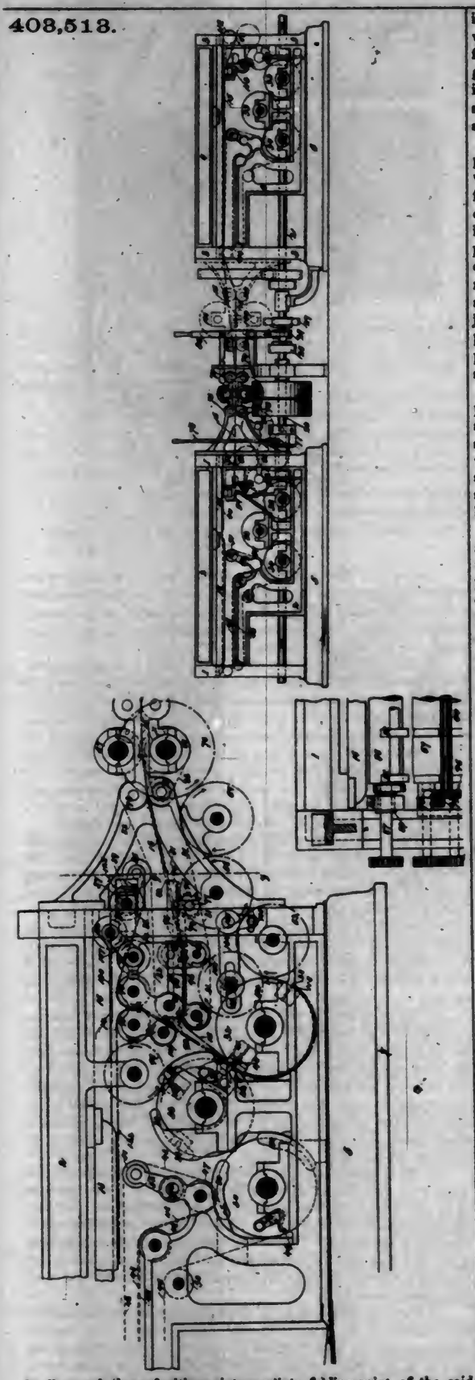
6. In combination with a grip and cable of a cable railway, a stop, *e*, provided with a pulley, *d*, and said stop attached to a piston of an air-cylinder wherein the air is caused to form an elastic resisting medium, whereby a grip carrying a cable may be stopped, substantially as specified.

7. In combination with a grip and cable of a cable railway, a stop, *e*, provided with a pulley, *d*, and said stop attached to a piston of an air-cylinder wherein the air is caused to form an elastic resisting medium, whereby a grip carrying a cable may be stopped, and a weight whereby said parts may automatically be returned to their starting-points, substantially as specified.

408,518. ROTARY PRINTING-MACHINE. JOHN BROWN, Plainfield, N. J. Filed May 12, 1888. Serial No. 273,708. (No model.)

Claim.—1. In a cutting or breaking and folding mechanism for printing-presses, the combination of the cutting-cylinders adapted to transversely cut a printed web in given lengths subsequent to its delivery from a press printing at a given surface speed, separate perforating-cylinders adapted to transversely perforate a printed supplement-web in half said given lengths subsequent to its delivery from a separate press printing at half the said surface speed, and parting-rolls succeeding said perforating-cylinders in the line of feed of the supplement-web, having the said given surface speed and located at a distance from the said cutting-cylinders, whereby they are adapted to part and accelerate the speed of the supplement-web to tally the

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leading end thereof with an intermediate folding-point of the said given cut lengths from the press having the aforesaid given surface speed, all substantially as and for the purposes set forth.

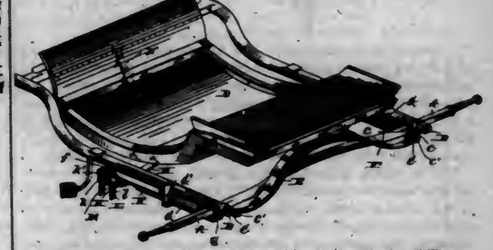
2. In a printing and folding mechanism, the combination of the separate co-operative presses, the one having the cutting-cylinders 32 33, adapted to sever its printed web in given lengths, the other having perforating-cylinders 66 67, adapted to partly sever its printed web in half said given lengths, and cutting-cylinders 108 109, adapted for alternative use to sever its printed web in lengths equal to said given lengths, and of the herein-described differential clutch mechanism connecting the two presses, whereby the relative speeds of the same are changed or the two disconnected, as and for the purposes specified.

3. In a cutting or breaking and folding mechanism for printing-presses, the combination of the cutting-cylinders adapted to transversely cut a printed web in given lengths subsequent to its delivery from a press printing at a given surface speed, separate perforating-cylinders adapted to transversely perforate a printed supplement-web in half said given lengths subsequent to its delivery from a separate press printing at half the said surface speed, and parting-rolls succeeding said perforating-cylinders in the line of feed of the supplement-web, having the said given surface speed and adjustable at variable distances from the said cutting-cylinders, whereby they are adjusted to part and accelerate the speed of the supplement-web at a period to tally the leading end thereof with an intermediate folding-point of the said given cut lengths from the press having the aforesaid given surface speed.

4. In a cutting or breaking and folding mechanism for printing-presses, the combination, with the diagonal bars 16 18, whereby the subdivisions of a double-width printed web are superimposed, and the superimposing-rolls 90 91, of the adjustable roll 88, adapted to change the length of course of one of said subdivisions, whereby the impressions of the same are registered with the impressions of the other of said divisions and the cutting and folding points thereof registered between the cutting-cylinders, as set forth.

5. In a cutting or breaking and folding mechanism for co-operative printing-presses, the combination, with the diagonal bars 16 18, whereby the subdivisions of a double-width printed web from the first press are superimposed, of the adjustable roll 88, adapted to tally the cutting and folding points of said subdivisions, the low-speeded perforating-cylinders 66 67, for perforating the web of the second press, and the normally-speeded parting-rolls 89 90, adjustable at variable points in the line of paper-feed from the said second press, whereby the leading ends of the sheets severed from said paper-feed will tally with the coincident folding-points in the said subdivisions of the first web, as and for the purposes set forth.

408,514. ROAD-CART. WALTER R. BURNS, Rising Sun, Md. Filed Dec. 7, 1888. Serial No. 292,862. (No model.)



Claim.—1. In a road-cart, the combination, with the thills secured near their rear ends to the axle, of the rear spring connected at its ends to the rear ends of the thills, the side springs arranged under and parallel with the thills, the central spring connected at its extremities to the free front ends of the side springs and vertically adjustable thereon, and the body connected at its center and rear end to the central and rear springs, respectively, substantially as and for the purpose set forth.

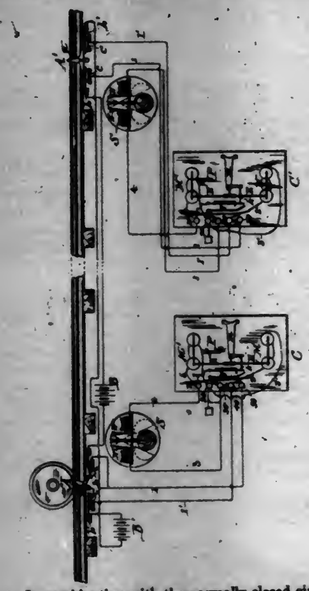
2. In a road-cart, the combination, with the axle, of the thills attached thereto, the side springs, F, attached to the thills, the rear spring, E, connected at its ends to the thills, and the body bearing at its rear end on the rear spring and connected at or about its center just in advance of the seat to the free front ends of the side springs, and the safety-strap connecting the front end of the body to the thills, as set forth.

3. In a road-cart, the combination, with the axle and the thills attached thereto, of the side springs arranged under and parallel with the thills and having free front ends, the clevises attached to the said front ends of the side springs, and the central spring arranged transversely across and secured to the body of the vehicle near the center just in advance of the seat, and provided at its ends with bolts engaging the clevises, and the safety-strap N, connecting the front end of the body to the thills, substantially as specified.

4. In a road-cart, the combination, with the axle and the thills attached thereto, of the side springs arranged under and parallel with the thills and provided at their front ends with loops *f f*, the clevises

provided with apertures, ears arranged on opposite sides of the side springs, and also provided with the depending parallel arms L L, having a series of registering perforations, *l l*, the bolts engaging the loops *f* and apertured ears, the central spring arranged transversely across and secured to the body of the vehicle near the center thereof, just in advance of the seat, and provided at its ends with transverse bolts engaging the registering perforations in the arms L L, substantially as specified.

403,515. RAILWAY-SIGNAL. THOMAS A. CASEY, New York, assignor, by mesne assignments, to William Wallace and George A. Porter, both of Syracuse, N. Y. Filed July 18, 1888. Serial No. 280,242. (No model.)



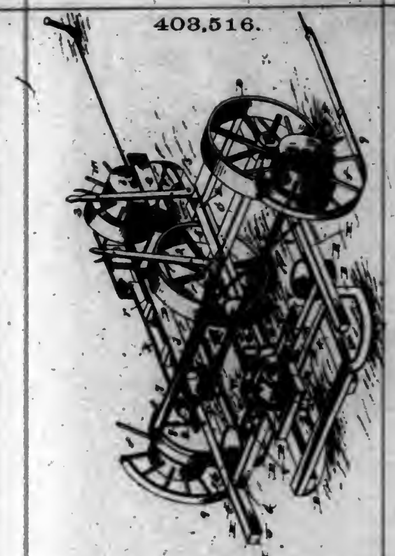
Claim.—1. In combination with the normally-closed circuit, circuit-breaker, electro-magnetic registering instrument and signal in said circuit, and said registering-instrument actuated by electric impulses produced by intermittent closing of the circuit, as described, a shunt normally open and forming then a more direct connection of the signal with the circuit and closed by the first break of the circuit and before the registering mechanism is actuated, as set forth.

2. In combination with the normally-closed circuit, circuit-breaker, electro-magnetic registering instrument and signal in said circuit, a shunt normally open and forming then a more direct connection of the signal with the circuit, a primary shunt-closing lever operating independently of the registering mechanism and actuated directly by the release of the armatures of the registering-instrument, and a secondary shunt-closing lever operated by the mechanism of the registering-instrument, as set forth.

3. In combination with track-instrument, circuit-breakers, magnets M' M' and signal S in one and the same circuit, armature D, lever E, connected to said armature, pawl *e* on said lever, worm-shaft *d'*, ratchet-wheel I and notched disk *i* on said shaft, notched wheel J, and gear-wheel *n*, operated by said worm-shaft, and the lever *m*, having lugs *m m'*, adapted to engage the notched disk and wheel, the metallic spring-arms *v* and *v'*, connected with the circuit and normally apart from each other, the lever *c*, having the cam *c'* across the free end of the arm *v*, the pins *g g*, projecting from the levers E E and supporting the lever *c*, and the two-armed lever *k*, pivoted to the frame and having one arm connected with the lever *m* and the other arm facing the free end of the spring-arm *v*, substantially as described and shown.

403,516. PLANTER. ALBERT CHARLES, Blue Mound, Kans. Filed Jan. 26, 1888. Serial No. 297,643. (No model.)





Claim.—1. The combination, with a shaft, of a ratchet-wheel secured rigidly thereon, the spike-wheel loosely mounted on the shaft and provided with a cylindrical casing, the series of pawls arranged within the casing and engaging the ratchet-wheel, and the springs bearing on the said pawls, as set forth.

2. The combination of the shaft M, the frame *k*, extending therefrom, the ratchet-wheels rigidly secured on the shaft near the ends of the same, one of said ratchet-wheels being provided with a crown-wheel on its inner face, the spike-wheels loosely mounted on the said shaft and carrying a series of pawls engaging the ratchet-wheels, the shaft *l*, mounted in the rear end of the frame *k*, the ratchet-wheel secured on said shaft and having a crown-wheel on one side, the longitudinal shaft provided at its ends with beveled pinions engaging the crown-wheels, and the spike-wheel on the rear shaft, *l*, carrying a series of pawls engaging the ratchet-wheel thereon, as set forth.

3. The combination, with the main frame and the seed-boxes secured thereon, of the cross-bar secured to the seed-boxes, the forwardly-projecting arms secured to the ends of the cross-bar, the bars K, pivoted to the said arms, the shaft M, geared to the seed-slide, the frame *k*, extending rearwardly from the shaft M, the operating-gearing carried by the said shaft and frame, the lever 3, fulcrumed on the main frame and connected to the rear end of the frame *k*, the lever 2, fulcrumed on the main frame and having a lower arm provided with a cross-bar, and the chains extending between said cross-bar and the bars K, as set forth.

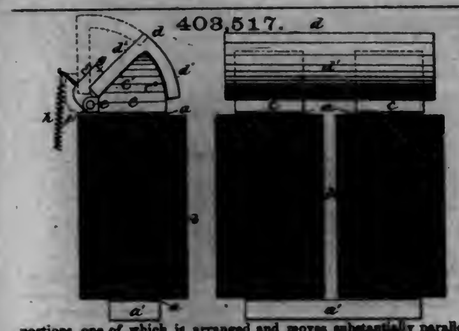
4. The combination, with the main frame and the seed-boxes secured thereon, of the shaft M, arranged in rear of the seed-boxes, the sprocket-wheel on said shaft, mechanism for rotating the said shaft, the divided cross-bar, the rearwardly-projecting arms attached to said cross-bar and adjustably secured to the seed-boxes, the shaft carried by said cross-bar, the sprocket-pinion on said shaft geared to the sprocket-wheel on the shaft M, the operating-wheel on the said shaft, the seed-slide, and mechanism actuated by the operating-wheel to reciprocate the seed-slide, as set forth.

5. The combination of the divided bar F, the arched bar I, connecting the members of the same, the seed-slide, the lever *a*, pivoted at its upper end on the bar I, the pitman *b*, connecting said lever with the seed-slide, the angle-levers W, pivoted on the bar F, the rod Y, connecting said levers W, the rod Z, connecting said levers to the lever *a*, the operating-wheel arranged between the ends of the levers W and adapted to operate the same, and mechanism for rotating said operating-wheel, as set forth.

6. The combination, with the corn-planter having the spiked operating-wheels, of the chains connected to and wound upon the said wheels and having their free ends secured at the starting end of the field, so as to unwind gradually from the wheels as the machine progresses and secure an even start, substantially as set forth.

403,517. ELECTRO-MAGNET AND ARMATURE. FREDERICK W. COLE, Newton, Mass., assignor of one-half to Moses G. Crane, same place. Filed May 24, 1888. Serial No. 274,260. (No model.)

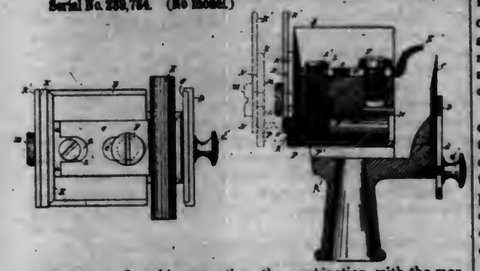
Claim.—1. The combination, with an electro-magnet having a pole-piece with converging surfaces, of an armature composed of two



portions, one of which is arranged and moves substantially parallel with one of the surfaces of the pole-piece, and the other of which portions approaches and recedes from the other surface of said pole-piece, substantially as described.

2. A horseshoe electro-magnet having two similar pole-pieces, each provided with pivot-lugs at one side, combined with an armature pivotally connected with said lugs having two portions, one substantially radial to the pivot-axis and the other substantially concentric with said pivotal axis, substantially as and for the purpose described.

403,518. HINGE-MORTISER. WILLIAM COOPER, ALONZO MILLIKEN, and GEORGE W. DUNCP, Minneapolis, Minn., assignors to the Northwestern Tool and Implement Company, same place. Filed Nov. 2, 1888. Serial No. 289,764. (No model.)



Claim.—1. In a hinge-mortiser, the combination, with the mortising-chisel, of a transversely-adjustable gage provided with an extensible face-plate, whereby the same gage is adapted to gage in opposite directions from two different levels, one above and the other below the cutting-edge of the chisel, substantially as described.

2. In a hinge-mortiser, the combination, with the mortising-chisel, of a transversely-adjustable gage provided with a face-plate in two sections, one fixed and the other movable thereon to form an extension in the same plane for measuring in opposite directions from levels above and below the edges of the knives, substantially as described.

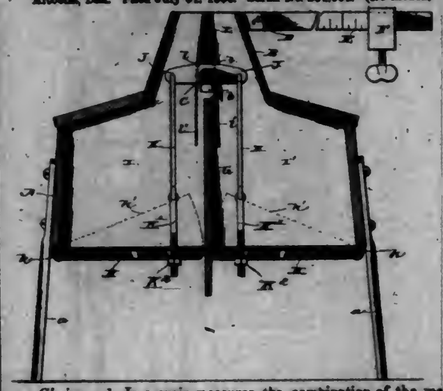
3. In a hinge-mortiser, the combination, with the mortising-chisel, of a transversely-adjustable gage provided with a face-plate in two sections, one fixed and terminating above the edge of the chisel, the other pivoted to the fixed sections and reversible thereon to form an extension in the same plane for measuring from a level below the edge of the chisel, substantially as described.

4. In a hinge-mortiser, the combination, with the mortising-chisel, of a transversely-adjustable gage provided with a face-plate in two sections, one fixed and the other movable thereon, to form an extension thereof in the same plane, and a locking device for locking the movable to the fixed sections, substantially as described.

5. In a hinge-mortiser, the combination, with the mortise-chisel, of a transversely-adjustable gage provided with a face-plate having two sections, one fixed and terminating above the level of the knives, and the other pivoted to the fixed section and reversible thereon to form an extension in the same plane to a level below said knives, and having depressions in its inner surface at diametrically-opposite points, and a spring-actuated catch mounted in the gage-shaft, adapted to engage said depressions and lock the movable to the fixed plate in the two different positions, substantially as described.

6. In a hinge-mortiser, the combination, with the head or stock, of a three-sided rectangular mortising-chisel secured thereto, a chip-removing knife secured to said stock opposite and slightly removed from the mouth of said chisel, a transversely-adjustable chip-gage mounted in the top of said stock or head between the knives of said chisel, an outside horizontally-adjustable gage having its stem mounted in said stock, provided with a face-plate in two sections, one fixed and the other movable thereon, to form an extension thereof, and an adjustable stop mounted on the face of the chip-knife for limiting the thrust thereof, substantially as described.

403,519. GRAIN-WEIGHING APPARATUS. JAMES R. CREIGHTON, Altoona, Dak. Filed July 31, 1888. Serial No. 281,901. (No model.)



Claim.—1. In a grain-measurer, the combination of the main casing having the vertical central partition, G, forming the compartments I I', the shaft C, journaled in the frame above the partition and having the arms J, the swinging doors H H' at the lower ends of the compartments, the rods K, connected to and depending from the arms J, the link-bolts K', loosely connected to the lower ends of the rods K and extending through the doors, and the adjusting-nuts K², screwed to the lower ends of the link-bolts and bearing under the doors, substantially as described.

2. In a grain-measurer, the combination of the main frame or casing divided into two similar vertical compartments by the partition G, the hinged and swinging doors forming the bottoms of said compartments, the shaft C, journaled in vertical slots in the sides of the casing and provided with arms J J, standing over the said compartments, the rods K, connecting said arms and doors, the swinging door L, provided with the kerf-slots *l* and having its corners journaled on the shaft C, and the curtains *l' l'*, depending from the door L on each side of the partition G, substantially as specified.

3. In a grain-measurer, the combination, with the opposite vertical compartments, I I', and the hinged doors forming the floors of said compartments, of the shaft C, journaled in vertical slots in the extension B of the casing, the lever D, journaled in said extension, the link-rods *d*, connecting the arms of the bifurcation of said lever with the ends of the shaft C outside of the casing, the weight F on the graduated arm of said lever, the studs M on said shaft, and the wheels N, against which said studs normally rest, substantially as specified.

4. The combination, with the main casing having the compartments I I', the hinged doors H H', the shaft C, provided with the studs M, beveled on each side transversely at their points, and the wheels N on the side of the extension B, of the lever having the graduated arm E, the link-rods *d*, the sliding weight F, the arms J J of the shaft C, and the link-rods K, substantially as specified.

403,520. DEVICE FOR WELDING THE ENDS OF BOILER-FLUES. JAMES CUMMINS, Buffalo, N. Y. Filed Mar. 28, 1888. Serial No. 305,146. (No model.)

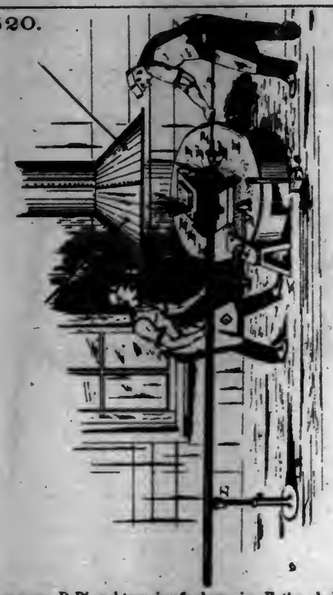
Claim.—1. The hereinbefore-described attachment for furnaces for welding the ends of boiler-flues, consisting of the block A, having longitudinal passage B C and transverse passages D D', and a feed-passage, E, the said block being adapted for use with the hearth and tuyere, as and for the purpose set forth.

2. The herein-described devices for welding the ends of boiler-flues, consisting of the following-named parts jointly: the hearth H and tuyere I, the furnace A, standard L, beak-horn M, push-rod P, swage N, and sledge-hammer O, as and for the object stated.

3. As an improved article of manufacture, a furnace-block, substantially as described, having longitudinal passage B enlarged at C,

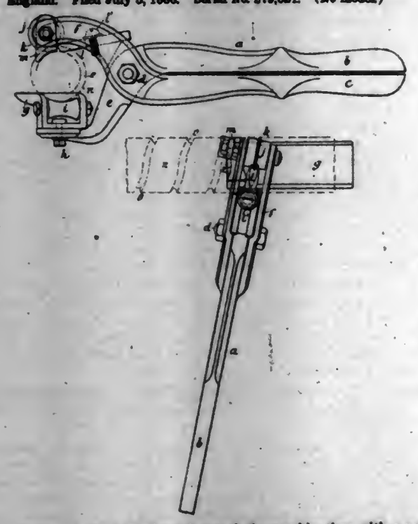


403,520.



transverse passage D D', and tapering feed-opening E, the whole being formed substantially as described and stated.

403,521. TOOL FOR SPIRAL TURNING. ELIAS CUTLAN, London, England. Filed July 5, 1888. Serial No. 279,021. (No model.)

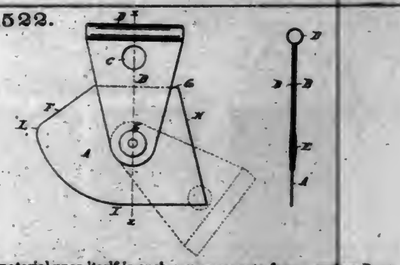


Claim.—1. In a spiral-turning tool, the combination, with a pair of pivoted handles and arms, of a guide adjustable relatively to the longitudinal axis of the tool and arranged upon one of the arms to run on the work or upon a bar or rod parallel to the work, and a blade, *k*, carried upon the other arm for causing the traverse of the tool relatively to the work, for the purpose specified.

2. In combination with a pair of pivoted handles and arms and with the cutter *l*, a leading-guide, *j k*, made adjustable in its supporting-arm *f* by means of pin *q*, and a series of holes, *p*, adapted to receive said pin, whereby the tool may cut spirals on pieces of different diameters.

403,522. SCRAPER OR CLEANER. GEORGE H. DU BOIS, Flushing, N. Y. Filed July 20, 1888. Serial No. 280,136. (No model.)

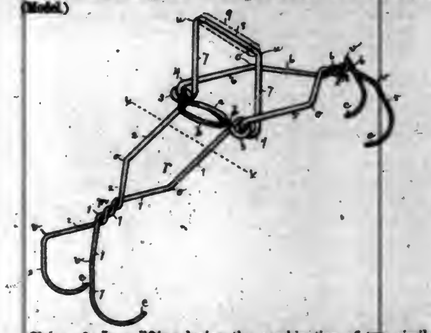
Claim.—A scraper or cleaner composed of blade A, provided with irregular edges G H I F and point L, and an adjustable handle, B, attached near the center thereof, said handle being formed by bending the material upon itself in such a manner as to form a spring, D, at its top, which causes the two sides thereof to fit snugly to the sides of the blade, for the purpose substantially as shown and described.



403,523. PAINT. SYLVESTER C. DUNHAM, Willow Springs, Nebr., assignor of one-half to George W. Lambert, same place. Filed Oct. 23, 1888. Serial No. 288,897. (No specimens.)

Claim.—The compound to be used as a dressing or paint for roofs, consisting of the admixture, with coal-tar, sulphur, brown oxide of iron, and air-slaked lime, of salt, in substantially the proportions specified.

403,524. LIFTING DEVICE. CYRENIUS ELLIS and ELLIS R. ESHBAH, New Martinsburg, Ohio. Filed May 28, 1888. Serial No. 275,408. (Model.)



Claim.—1. In a lifting device, the combination of two similar parts or halves, each formed of a single piece of wire or metal rod bent at its middle, as described, and having a loop or coil in each branch constituting a hinge part, and having its branches extending away from the hinge parts more or less parallel and then connected together at a suitable point, as by twisting the parts upon each other, and the branches terminating in a hook device, substantially as set forth.

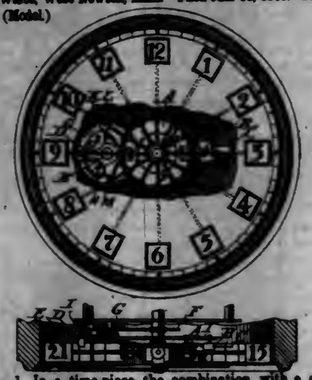
2. In a lifting device, the combination of two similar parts or halves, each formed of a single piece of wire or metal rod bent at its middle, as described, and having a loop or coil in each branch constituting a hinge part, and having its branches extending from the hinge parts approximately parallel to each other and then united at a suitable point by one or more twists, and the extremities of the branches then diverging and each being provided with a hook end, substantially as set forth.

3. In a lifting device, the combination of two parts, each having loops or coils constituting hinge parts whereby the two parts are connected, and each having its branches extended, bent, and twisted, connected as described, and provided with terminal hooks, and one part having a supporting-loop projecting from the central portion of the device, substantially as set forth.

4. In a lifting device, the combination of two parts, each having loops constituting hinge parts for hinging the parts together and each having projecting branches united at suitable points by bends or twists and provided with independent terminal hooks, and one part having a supporting-loop and the other part having a loop or coil as means for opening and working the device, substantially as set forth.

5. The lifting device consisting of the combination of two similar parts formed of wire or metal rods and hinged together by loops or coils formed in their bodies, and each part having projecting branches connected and braced at points more or less remote from the hinges and then diverging and terminating in separate hooks, and one part having a supporting-loop and a handle placed thereon and the other part having a thumb projection formed of a loop or coil, which, with the handle, serves as means for opening and working the device, substantially as set forth.

403,525. TIME-PIECE DIAL. MARTIN V. B. BRIMMER, Boston, Mass., assignor of two-thirds to John Swann, New York, N. Y., and Henry R. Watts, West Newton, Mass. Filed Jan. 16, 1888. Serial No. 261,078. (Model.)



Claim.—1. In a time-piece, the combination, with a series of rotary spindles, each having a pinion thereon, of a rotative gear intermeshing with the series of pinions and carrying relatively-movable weights, together with mechanical devices for adjusting the weights to cause the gear to rock, and thus shift the spindles, substantially as described.

2. In a time-piece, the combination, with a series of rotary spindles, each having a pinion thereon, of a loosely-mounted gear intermeshing with the pinions and having oppositely-projecting extensions or arms, suitable weights carried upon said extensions, and mechanism for moving said weights, so that one may overbalance the other, and thus rock the gear and shift the spindles, as set forth.

3. In a time-piece, a series of rotary spindles carrying the numeral-indicating devices and each provided with a pinion, in combination with a loosely-mounted gear engaging the pinions and supporting oppositely-located weights, and mechanism for adjusting the weights to rock the gear and shift the spindles, consisting of a cam, a link-connection between it and one of the weights, and a gearing-connection between the cam and the time-piece movement, all substantially as set forth.

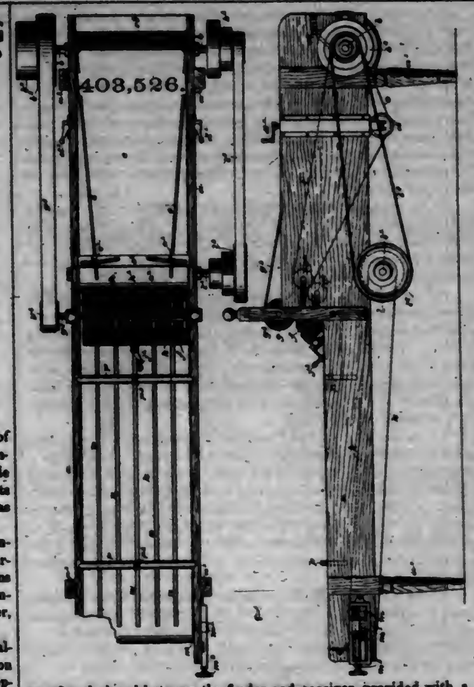
4. In a time-piece, the combination, with a series of spindles, a loosely-mounted gear engaging the spindles, so as to shift them when it is rocked and having oppositely-projecting arms, weights carried upon said arms, a rotating cam operated by connection with the time-piece mechanism and acting upon projections or pins on one of the weighted arms, while it connects with and causes the weight upon the other arm to slide thereon, all the parts operating to accomplish a rocking of the gear at stated intervals, substantially as described.

5. In a time-piece, a series of rotary devices carrying the numeral-indicators, a loosely-mounted wheel geared or connected to the spindles so as to shift them all in unison when it is rocked, said wheel having relatively-adjustable weighted extensions, and mechanism for moving the weights, so that one may overbalance the other and rock the gear, substantially as specified.

6. In a time-piece, the combination of the spindles having pinions *a*, the gear-wheel A, meshing with the pinions and having arms C and E, said arm C carrying sliding weight B, and said arm E carrying stationary weight D and having pins L and M, the cam H, secured on a gear which drives it, and the connecting-rod I between cam H and the weight B, substantially as described.

7. In a time-piece, the combination of a series of spindles having pinions *a*, a loosely-mounted gear-wheel, A, engaging the pinions, the weighted arms C and E, the cam H, and mechanical devices whereby the cam is enabled to cause the gear to rock at intervals, and thus shift the spindles, so that numerals from 1 to 12 and 12 to 24 will be exposed alternately, as described.

403,526. CRACKER-STACKING MACHINE. AUGUSTUS F. FITZGERALD, Brooklyn, assignor to the Van Duzer & Holmes Biscuit Company, New York, N. Y. Filed Oct. 25, 1888. Serial No. 289,103. (No model.)



Claim.—1. A cracker-stacking machine consisting of a feeder, a receiver placed below the feeder, a device independent of the feeder and receiver moving transversely of the machine and provided with fingers for separating the crackers, for arranging the crackers in a straight line or lines upon the receiver, and means for operating this separating device, substantially as shown and described.

2. A cracker-stacking machine consisting of a feeder, a receiver arranged below the feeder, a laterally-reciprocating frame independent of and placed between the feeder and receiver, provided with a channel or channels down which the crackers fall from the feeder to the receiver, and means for operating the reciprocating frame, substantially as shown and described.

3. A cracker-stacking machine consisting of a feeder, a receiver arranged below the feeder, a laterally-reciprocating frame independent of and placed between the feeder and receiver, provided with a channel or channels down which the crackers fall from the feeder to the receiver, means for operating the reciprocating frame, and a deflector which inverts the crackers as they fall to the receiver, substantially as shown and described.

4. A cracker-stacking machine consisting of a traveling apron which feeds the crackers, a second traveling apron arranged below the first, means for operating the aprons, a laterally-reciprocating frame placed between the two aprons, means for operating the reciprocating frame, vertical partitions in the reciprocating frame, longitudinal guide-bars over the lower apron, and pivoted links joining the lower ends of the partitions and the ends of the guide-bars adjacent thereto, substantially as shown and described.

5. A cracker-stacking machine consisting of a traveling apron which feeds the crackers, a second traveling apron arranged below the first, means for operating the aprons, a laterally-reciprocating frame, means for operating the reciprocating frame, vertical partitions in the reciprocating frame, longitudinal guide-bars over the second apron, pivoted links joining the lower ends of the partitions and ends of the guide-bars adjacent thereto, and an adjustable deflecting-plate in the reciprocating frame and extending across the same under the partitions, substantially as shown and described.

6. A cracker-stacking machine consisting of a traveling apron which feeds the crackers, means for operating the apron, a laterally-reciprocating frame independent of and placed below the apron, provided with partitions forming a channel or channels down which the crackers fall, means for operating the reciprocating frame, and guides above the apron to direct all the crackers into the channels in the reciprocating frame, substantially as shown and described.

7. A cracker-stacking machine consisting of a traveling apron which feeds the crackers, guides placed above the apron, a stripper bearing against the apron, a laterally-reciprocating frame provided with partitions extending over the stripper and forming channels down which the crackers slide from the receiving-apron, a second traveling apron arranged below the first or feeding-apron, guide-bars over the second apron, links connecting the lower ends of the partitions in the reciprocating frame with the ends of the guide-bars adjacent thereto, and means for operating the aprons and reciprocating frame, substantially as shown and described.

8. A cracker-stacking machine consisting of a traveling apron which feeds the crackers, guides placed above the apron, a stripper bearing against the apron, a laterally-reciprocating frame provided with partitions extending over the stripper and forming channels down which the crackers slide from the feeding-apron, and a deflector which inverts the crackers as they fall, a second traveling apron arranged below the first or receiving apron, guide-bars over the second apron, links connecting the lower ends of the partitions in the reciprocating frame with the ends of the guide-bars adjacent thereto, and means for operating the aprons and reciprocating frame, substantially as shown and described.

9. In a cracker-stacking machine, in combination, the traveling apron *c*, means for operating the apron, the guards c^3, extending transversely across the apron, and the adjustable guide-bars *e e*, extending longitudinally over the apron *c*, substantially as shown and described.

10. In a cracker-stacking machine, in combination, the traveling apron *c*, means for operating the apron, the adjustable guide-bars *e e*, extending longitudinally over the apron *c*, the laterally-reciprocating frame *f*, provided with partitions *h h*, adjustably clamped to the frame *f*, and means for operating the reciprocating frame, the guide-bars being arranged to guide crackers placed on the apron into channels formed by the partitions of the reciprocating frame *f*, substantially as shown and described.

11. In a cracker-stacking machine, in combination, the traveling apron *c*, means for operating the apron, the adjustable guide-bars *e e*, extending longitudinally over the apron *c*, the stripper c^3, bearing against the apron *c*, the laterally-reciprocating frame *f*, provided with partitions *h h*, adjustably clamped to the frame *f*, and means for operating the reciprocating frame, the guide-bars being arranged to guide crackers placed on the apron into the channels formed by the partitions of the reciprocating frame, substantially as shown and described.

12. In a cracker-stacking machine, in combination, the traveling apron *c*, means for operating the apron, the stripper c^3, bearing against the apron *c*, and the frame *f*, provided with a deflector consisting of the inclined side *i* and plate i', adjustably connected to and projecting from the side *i*, substantially as shown and described.

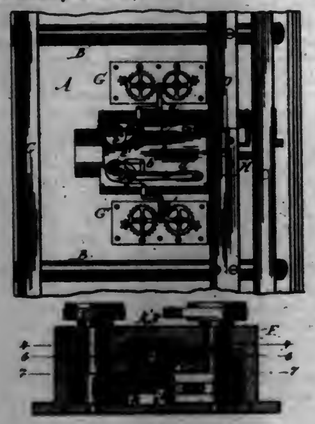
13. In a cracker-stacking machine, in combination, the laterally-reciprocating frame *f*, means for operating the frame *f*, the partitions *h h* in the same provided with extensions h^2 h^2, the traveling apron *k*, means for operating the apron *k*, the guide-bars *n n*, and the links *o o*, joining guide-bars *n* to extensions h^2, substantially as shown and described.

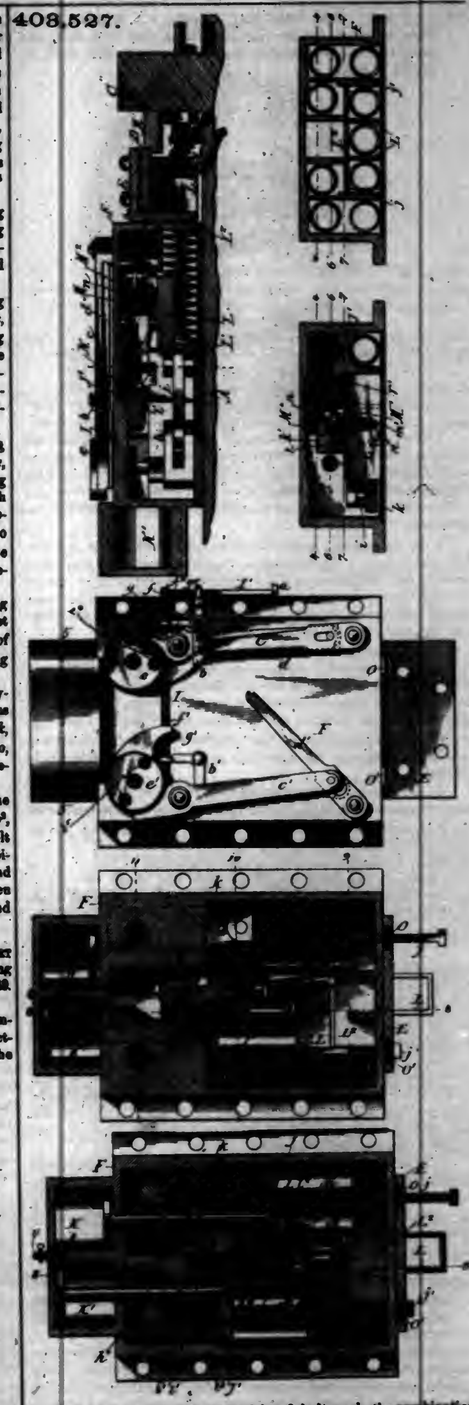
14. In a cracker-stacking machine, an adjusting device for the guide-bars, consisting of the main piece p', slotted clamping-piece p^3, bridge-piece p^2, secured to the clamping-piece p^3, and clamping bolt and nut p^4 p^2, joining the main piece p' and bridge-piece p^2, in combination with the guide-bars *n*, resting upon the traveling apron *k* and provided with headed bolts *n'*, the heads *n'* being clamped between the main piece p' and clamping-piece p^3, substantially as shown and described.

408,527. DEVICE FOR OPERATING SAFE BOLT-WORK.

ROBERT W. FOWLER, Chicago, Ill., assignor to The Yale & Towne Manufacturing Company, Stamford, Conn. Filed May 7, 1888. Serial No. 273,042. (Model.)

Claim.—1. In an apparatus for operating safe bolt-work, the combination, with the bolt-work, of two independent automatic retracting-powers adapted independently or simultaneously to retract the bolt-work, substantially as set forth.





2. In an apparatus for operating safe bolt-work, the combination, with the bolt-work, of two independent automatic retracting-powers adapted independently or simultaneously to retract the bolt-work and a time mechanism for tripping or releasing the retracting-powers, substantially as set forth.

3. In an apparatus for operating safe bolt-work, the combination, with the bolt-work, of two independent automatic retracting-powers adapted independently or simultaneously to retract the bolt-work, in combination with a casting-power, substantially as set forth.

4. As an improvement in devices for automatically operating the bolts of a safe or vault door, two automatic retracting-powers, in combination with two time mechanisms, each arranged to operate one of the retracting-powers independently of the other, substantially as set forth.

5. In an apparatus for operating safe bolt-work, the combination, with the bolt-work, of two automatic retracting-powers applied to the bolt-work to retract it, a casting-power applied to the bolt-work to cast it, and a lug secured to the case of the retracting-springs, adapted to trip and release the fastening of the casting-power whenever the retracting-power is released, substantially as set forth.

6. As an improvement in devices for automatically operating the bolts of a safe or vault door, two automatically-acting retracting-powers, which may be separately released to retract the bolts, in combination with a system of interlocking compound levers and detents arranged to hold the retracting-powers in check until released at a predetermined time by the power provided for that purpose.

7. The combination of detents for holding the automatic retracting-powers for operating safe bolt-work in check until each predetermined time as they are to be released, and an interlocking connection between the detents and time mechanism that will have to be released by the time mechanism before the time mechanism moves the detents to release the power that is provided to automatically retract the bolts of a safe or vault door.

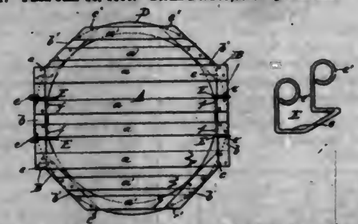
8. As an improvement in devices for automatically operating the bolts of a safe or vault door, two automatically-acting retracting-powers, in combination with a casting-power and mechanism that will enable the setting of either retracting-power to set the casting-power that is provided to cast the bolts.

9. As an improvement in devices for automatically operating the bolt-work of a safe or vault door, two automatic retracting-powers, in combination with a casting-power and pawl *l*, case J, dog *n*, and case L, to enable the casting and one retracting-power, when released, to be again set without releasing the other retracting-power, substantially as set forth.

10. In a device for the automatic operation of safe bolt-work, the combination of two cushions and two automatic retracting-powers with a cock or equivalent connection between them to adjust the resistance of the cushion to the work either power has to perform, substantially as set forth.

408,528. BASKET-COVER.

GEORGE C. GARDRANER, Watervliet, N. Y. Filed Jan. 10, 1888. Serial No. 295,967. (No model.)



Claim.—1. In covers for fruit or vegetable baskets, the combination, with the oppositely-located angular rim-bearing pieces B B, constructed of pieces, as above described, of the long slats *a a*, secured by their ends to bars *b b* of the said rim-bearing pieces, and the outer and shorter slats, *a' a'*, secured by their ends to bars *b' b'*, all substantially as described, for the purposes set forth.

2. The combination, with the cover A, composed of the two oppositely-located rim-bearing pieces B B, constructed of parts *b b' b'* and slats *a a'*, as described, of the fastening-pieces E, having holding-limbs *c*, for engagement with the lower side of rim-piece of the basket, and portion *c'*, for engagement with the cover at its upper side, substantially as and for the purposes set forth.

408,529. EXPANSIBLE MANDREL.

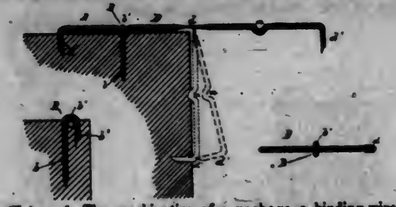
FRANCIS J. GAY, Providence, R. I., assignor to The Brown & Sharpe Manufacturing Company, same place. Filed Feb. 14, 1888. Serial No. 263,853. (No model.)



Claim.—In a universal holder, the combination, with a shank and expansible bushing connected thereto and a tapering plug for expanding the same, of two collars mounted upon the shank of said holder, the one so carried on the shank as to revolve upon the same against a shoulder on the shank, and the other connected with said plug so as to be incapable of revolution upon said shank, but so that it can slide thereon, the contacting faces of said collars being provided with inclined planes coacting with each other, whereby the revolution of the loose collar will give a longitudinal movement to the other collar and to the tapering plug connected therewith, substantially as described.

408,530. METALLIC STRAP FOR BOXES.

BURTON H. GUNN, Covington, Ky. Filed May 12, 1888. Serial No. 274,249. (Model.)



Claim.—1. The combination of a package, a binding-wire provided with notches or corrugations *a*, the said corrugations being embedded in the material of the package, and staples crossed in said corrugations, substantially as and for the purposes specified.

2. A binding-strap provided with corrugations *a* and points *d'*, the two elements lying in the same plane, substantially as and for the purposes specified.

3. A binding-strap provided with corrugations *a* and points *d'*, the two elements lying in the same plane, in combination with a package, substantially as and for the purposes specified.

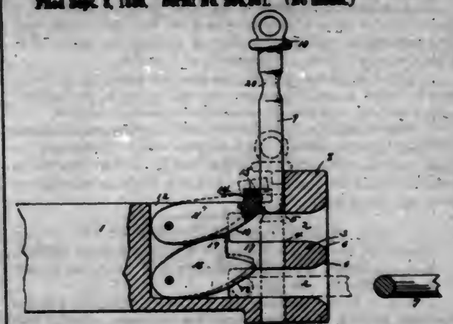
4. A binding-strap provided with corrugations *a* and points *d'*, the two elements lying in the same plane, in combination with a package and staples driven into the package across the corrugations, substantially as and for the purposes specified.

5. The combination of a package and a corner-strap of wire provided with pointed ends *d'* and corrugations *a*, the pointed ends and corrugations being embedded in the package, and staples crossed in the corrugations, substantially as and for the purposes specified.

6. A corner-strap of wire provided with pointed ends *d'* and corrugations *a*, lying in the same plane, and a central flattened space, *d*, substantially as and for the purposes specified.

408,531. CAR-COUPLING.

ALEXANDER H. GRANT, Hobart, N. Y. Filed Sept. 8, 1888. Serial No. 284,961. (No model.)

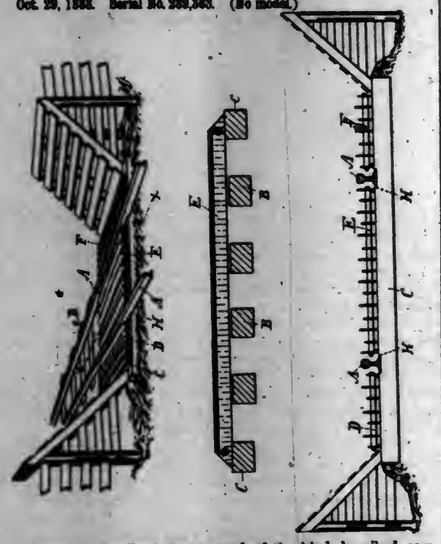


Claim.—1. In a car-coupling, a draw-head formed with horizontal link-recesses located above one another, a pivoted vertically-movable dog having its outer curved end projecting into the coupling-pin hole and across the rear of upper link-recess, and a second pivoted vertically-movable dog located beneath and bearing against the upper dog and having a curved end projecting across the rear of lower link-recess, substantially as shown and described.

2. A car-coupling consisting of draw-head 1, having horizontal link-recesses 2, slot 12, with vertically-movable dog 11 pivoted therein, and having curved portion 13 on its under side projecting across the rear of upper link-recess 2, with curved outer end projecting into pin-hole 5, and having concave slotted head 15, and the vertically-movable dog 16, pivoted in slot 17 beneath dog 11, and having curved portion 18 on its under side projecting across the end of lower link-recess 2, and the shouldered curved portion 19 on its upper side bearing against the under side of dog 11, substantially as shown and described.

3. A car-coupling consisting of draw-head 1, formed with the front elevated portion, 8, and with coupling-pin hole 5 at its rear, and having horizontal link-recesses 2, slot 12, with vertically-movable dog 11 pivoted therein, and having curved under portion, 13, projecting across the upper recess 2, with curved outer end projecting into pin-hole 5, and having concave slotted head 15 and the vertically-movable dog 16, pivoted in slot 17 beneath dog 11, and having under curved portion, 18, projecting across the end of lower link-recess 2, and the shouldered curved portion 19 on its upper side bearing against the under side of dog 11, in combination with the coupling-pin 9, having annular slot 20 adjacent to its flange 10, substantially as shown and described.

408,532. CATTLE-GUARD. JAMES T. HALL, St. Louis, Mich. Filed Oct. 29, 1888. Serial No. 289,363. (No model.)



Claim.—1. A railway cattle-guard of the kind described, composed of flexible bars set upon edge in the form of a grating and free to vibrate laterally, substantially as described.

2. A railway cattle-guard of the kind described, composed of flexible bars set up on edge lengthwise of the track and connected at their ends only in sections in the form of gratings and supported by raised ties under the ends, substantially as described.

3. The combination, with the ties extended as described, of sloping side fences having their posts secured directly to the extended ends of said ties, substantially as and for the purpose specified.

4. The combination, with the rails and ties, of the guard, between said rails, the extended ties supporting the ends of said guard, the sloping side fences secured to the ends of said extended ties, and a section of guard between the rail and the side fences, substantially as shown and described.

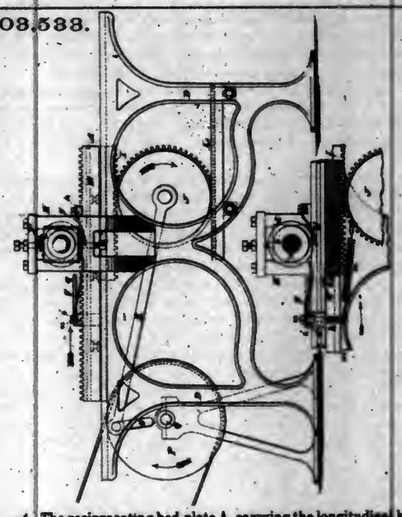
408,533. MACHINE FOR SLITTING SHEETS OF TIN. WILLIAM HIPPERLING, New York, N. Y., assignor to Stephen A. Gunn, Plainfield, N. J., and Richard A. Donaldson, Brooklyn, N. Y. Filed Jan. 5, 1889. Serial No. 295,489. (No model.)

Claim.— 1. The reciprocating bed-plate A, provided with the transverse grooves S, combined with the angle-bars crossing said grooves and carrying the longitudinal knives V, the adjusting-bolts W, for said bars, the rotating knives *d*, spring-fingers *g*, and mechanism, substantially as described, for imparting to the bed-plate a reciprocating movement and to the knives *d* a rotary movement, substantially as set forth.

2. The reciprocating bed-plate A, having transverse grooves S and carrying the angle-bars T, knives V, and rack-bars E, combined with the transverse shaft G, circular knives *d*, gear-wheels F, engaging said rack-bars, spring-fingers for stripping the widths of tin from the knives, and mechanism, substantially as described, for imparting to the bed-plate a reciprocating movement between the sides of the machine.

3. The reciprocating bed-plate carrying the longitudinal knives and rack-bars E, combined with the transverse shaft carrying circular knives and engaging said rack-bars, the rack-bars I L, gear-wheel J, connecting-rod K, and wheel P, the latter being upon the driving-shaft, substantially as and for the purpose set forth.

408,533.



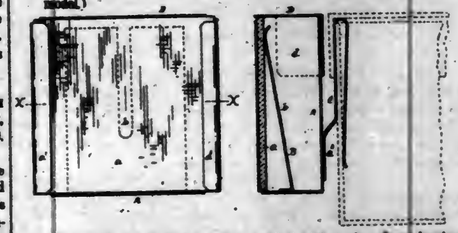
4. The reciprocating bed-plate A, carrying the longitudinal knives V, combined with the circular knives *d*, the transverse bar *i*, spring-fingers *g*, secured to said bar, standards *j*, bolts *k*, slots *m*, springs *n*, and mechanism, substantially as described, for imparting a reciprocating movement to the bed-plate, substantially as and for the purpose set forth.

408,534. VETERINARY INSTRUMENT. GEORGE W. HOLAND, Shelbyville, Ill., assignor to William W. Thornton, same place. Filed Mar. 16, 1889. Serial No. 303,503. (No model.)



Claim.—The combination of the hinged side bars, the bit-rods connecting the free ends thereof, and the notched bars pivoted to one of the bit-rods and engaging the other, substantially as described.

408,535. SAMPLE-HOLDER AND BOX-PULL. WILLIAM W. JOHNSON, Palmyra, Nebr. Filed Sept. 12, 1888. Serial No. 285,272. (No model.)



Claim.—1. An inclosing-case provided with a glass front having in combination therewith an interior upwardly-projecting tongue, constructed to hold a sample and a clasp to engage a box, substantially as described.

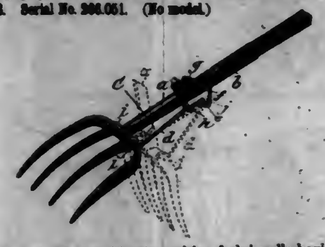
2. The combination, with the inclosing-case provided with a glass front and means for attachment to a box, of a spring-tongue secured at one end to the interior of said case and having its opposite end inclining toward said glass front, substantially as set forth.

3. An inclosing-case provided with a glass front having in combination therewith an upwardly-extended slotted tongue constructed to hold a sample and press it against the glass front, a clasp to engage a box without interfering with the box-cover, and a cap removably connected with the case, substantially as described.

4. The combination of the inclosing-case and a clasp united thereto toward the base and separated from the case at the top to

engage over the edge of a box without interfering with the box-cover, substantially as set forth.

408,536. FORK. OTTO KRAMER, Unionville, Mich. Filed Mar. 3, 1888. Serial No. 266,051. (No model.)



Claim.—1. The combination, with a fork-handle having a slot at its lower end, of a loop secured to said handle and having an offset, and a fork having its tine pivoted in the slot of the handle, and a slide-brace secured at one end to the fork and its opposite end bearing in the loop, substantially as specified.

2. The combination, with a handle having a slotted ferrule at one end, of a fork having its shank pivoted in the slot, a loop secured to the fork-head, with one end adapted to receive a set-nut and also having an offset, a set-nut adapted to hold the fork to the handle in a straight position, and the slide-brace secured at one end to the fork and having its opposite end bearing in the loop, so that the fork may be held in an angular position with respect to the handle, substantially as specified.

408,537. TOP ROLL FOR SPINNING-MACHINES. EDWARD LAFLOR, Willimantic, Conn., assignor of one-half to Theodore R. Stowell, Providence, R. I. Filed Dec. 15, 1888. Serial No. 293,099. (No model.)

Brief.—The object of the invention is to enable the two rolls of a pair to act independently one of the other and to diminish wear upon the rolls and their supporting devices



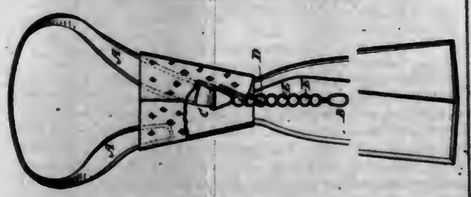
Claim.—1. The improved top roll herein described, having a shaft which is mounted in bearings, so as to be capable of vertical movement therein, but incapable of rotation, the shells B, pivotally mounted on said shaft and capable of limited vertical oscillation, and the rotatable shells C, mounted on the oscillating shells B and provided with suitable drawing-surfaces, substantially as specified.

2. The combination of the cap-bars D, having vertical slots, the shaft A, having the square-faced ends *a* and the saddle-bearing *d*, the shells B, the pins A, and the shells C, substantially as specified.

3. The combination of the vertically-slotted cap-bars D, the shaft A, having the square-faced ends *a*, the shoulders *b b'* *c c'*, and the saddle-bearing *d*, the shells B, the pins A, and the shells C, substantially as specified.

4. The combination of a vertically-movable non-rotatable shaft, bearings for said shaft, vertically-movable non-rotatable shells mounted on said shaft and capable of vertical oscillation thereon, and tubular draw-rolls mounted rotatably on said shells, substantially as specified.

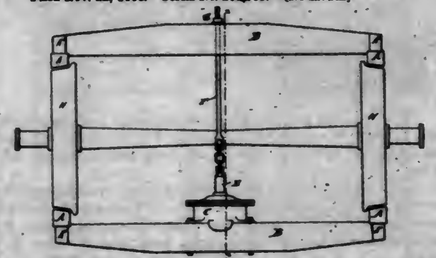
408,538. NECKSCARF. ADOLPH LANDER, New York, N. Y., assignor, by mesne assignments, to Sophie Lander, same place. Filed June 9, 1888. Serial No. 276,565. (No model.)



Claim.—1. A necktie having a detaining-pin, D, and provided with a neckband secured at one end to the necktie, and having at the outer extremity of its free end an attached metallic tip, B, provided with a series of orifices, E, arranged in line along the length of the tip, and through which the detaining-pin passes at a point beyond the neckband to hold the neckband in its adjusted position and secure the necktie to the neck of the wearer, substantially as described.

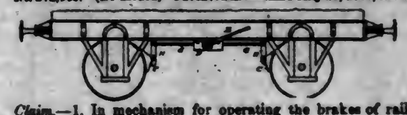
2. The combination, with a necktie having a detaining-pin, D, and a neckband, C, secured at one end to the necktie, of a tip secured to the outer extremity of the neckband, and consisting of a single piece of serpented wire bent between its ends to form two members, and having the serpented portions of one member crossing the serpented portions of the other member to form the line of separated orifices E, through which the detaining-pin passes at a point beyond the neckband to hold the latter in its adjusted position, substantially as described.

408,539. POWER-BRAKE. LOUIS P. LAWRENCE, Passaic, N. J., assignor to the Lawrence Railway Brake Company, New York, N. Y. Filed Nov. 22, 1888. Serial No. 291,595. (No model.)



Claim.—The combination, with two brake-beams carrying shoes which are adjacent to the rims of wheels, said beams being mounted to move toward each other when pressing the shoes against the rims of the wheels, of a brake-cylinder secured to the inner surface of one brake-beam, a piston in said cylinder mounted to move toward the inner edge of the brake-beam to which its cylinder is secured while operating, and a rod connected with said piston and with the other brake-beam, substantially as set forth.

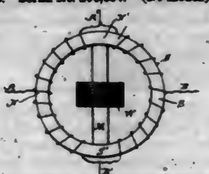
408,540. BRAKE FOR RAILWAY-WAGONS. WILLIAM S. LAYCOCK, Sheffield, County of York, England. Filed Apr. 26, 1888. Serial No. 272,165. (No model.) Patented in England May 25, 1887, No. 7,562.



Claim.—1. In mechanism for operating the brakes of railway rolling-stock, the combination, substantially as hereinbefore specified, of a transverse horizontal operating-shaft having at each end means for turning the same by hand, brake-shoes opposed to each other in customary manner, and screw-and-lever connections, substantially as shown, between said shaft and the brake-shoes, for the purposes set forth.

2. The combination of the transverse screw-threaded shaft A, its levers B and fixed collars, the brake-shoes C, internally-screw-threaded bearing D, bell-crank levers F, and connecting-rods G, substantially as hereinbefore specified, for the purpose set forth.

408,541. ELECTRICAL CONVERTER. HERMANN LEMP, Lynn, Mass., assignor to the Thomson Electric Welding Company, of Maine. Filed Feb. 4, 1889. Serial No. 298,857. (No model.)



Claim.—1. In an induction-coil or converter, the combination, substantially as described, of an alternating current primarily wound on an endless core, a magnetic bridge joining the sides of said core and carrying the secondary, and an electric switch connected with the primary coils for varying the position of the poles of the primary with relation to the ends of the bridge.

2. In an induction-coil or converter, the combination, with a circular or endless iron core or carrier having one set of coils wound upon it, of an iron bridge or connecting-piece joining opposite sides of said carrier and wound with a second set of coils constituting the primary or secondary, as the case may be.

3. In an induction-coil or converter, the combination, with an endless core or carrier wound with primary coils in series, of a stationary magnetic bridge-piece, and an adjustable commutator having blocks or plates connected in regular order to the circuit of the primary coils, and commutator-brushes for passing current through

said primary in two branches or circuits, as and for the purpose described.

4. A variable-current induction-coil or converter having a primary circuit formed through a commutator and coils constructed after the manner of a Gramme armature, in combination with a secondary wound on an iron bridge-piece connecting opposite sides of the iron core for the primary, as and for the purpose described.

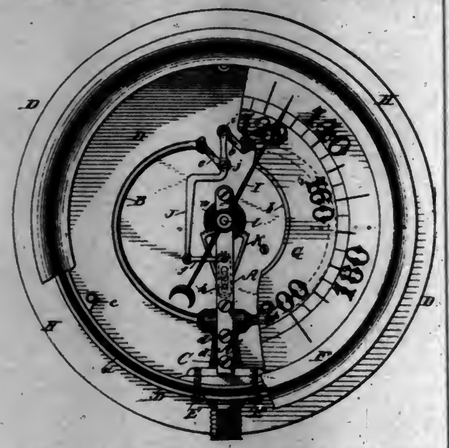
408,542. BRUSH. CHARLES LOCHER, Paris, France. Filed Jan. 3, 1889. Serial No. 295,272. (No model.) Patented in France Nov. 2, 1888, No. 190,831.



Claim.—1. As a new article of manufacture, a brush having its stock provided with tuft-receiving holes and with ventilating-openings communicating with the tuft-receiving holes, substantially as described.

2. As a new article of manufacture, a brush having its stock provided with tuft-receiving holes and with ventilating-openings communicating with the tuft-receiving holes, said openings being of smaller diameter than the tuft-receiving holes, substantially as described.

408,543. VACUUM OR PRESSURE GAGE. MARTIN LINCOLN, Bridgeport, Conn. Filed Jan. 19, 1888. Serial No. 261,290. (No model.)



Claim.—In a vacuum or pressure gage, the combination of the index pinion-shaft, the pivoted toothed segment, and the pivoted lever connecting the free ends of the tubes, said pivotal bearings being supported independent of the casing, the respective axes of such parts being adjusted in a vertical plane, and the stroke of the segment adjusted to assume a balance position when the index indicates a desired pressure indication, as set forth.

408,544. OIL-CAN. FRANKLIN MARANVILLE, Clinton, Ohio. Filed Mar. 21, 1888. Serial No. 304,210. (No model.)

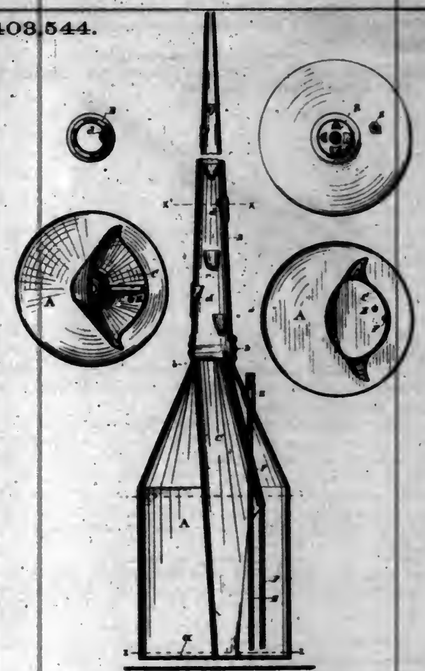
Claim.—1. An oil-can having the component parts consisting of an oil-chamber, A, a conductor, C, extending from the bottom to the top of said chamber, arranged in open connection with the tube B, in combination with an air-pipe, arranged in relation with the said chamber in the manner substantially as described, and for the purpose set forth.

2. In combination with the oil-chamber, a tube, B, provided with one or more cups in the interior thereof, and an air-tube extending into said chamber, with a conductor arranged therein for conveying oil therefrom to the said tube, in the manner and for the purpose substantially as described.

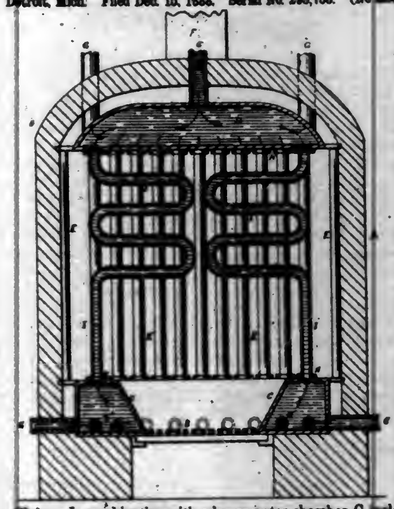
3. In an oil-can, a conductor extending from bottom to top of the oil-chamber, in combination with the tube B, constructed substantially as shown, and for the purpose set forth.

4. In combination with an oil-can, the tube thereof provided with cups, being at their upper side in communication with the interior of said tube and can, formed and arranged substantially as shown, and for the purposes described.

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408,545. CIRCULATING-WATER HEATER. JAMES HEATH, Detroit, Mich. Filed Dec. 15, 1888. Serial No. 293,753. (No model.)

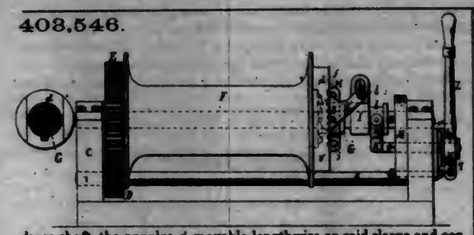


Claim.—In combination with a lower water-chamber, C, inclosing the fire-grate, an upper water-chamber, D, supported thereon by tubes or rods E K, a double series of identical and homogeneous tubes, I, also connecting said chambers, arranged on opposite sides of the fire-box with corresponding parts thereof in parallel, vertical, and horizontal planes with intervening spaces, and return circulation-tubes G, said heating-chambers and tubes being connected in such manner as to permit the exposure of their entire surfaces above the base to the action of the heat, substantially as and for the purpose set forth.

408,546. HOISTING APPARATUS. FRANCIS MCMAHON, Somerville, assignor of one-half to John W. McMahon, West Roxbury, Mass. Filed Feb. 2, 1888. Serial No. 263,486. (No model.)

Claim.—1. In a hoisting apparatus, the drum provided with the chamber *a*, and the annulus *c*, fixed to said drum, the sleeve G, provided with a flange arranged in the chamber *a* and splined to the

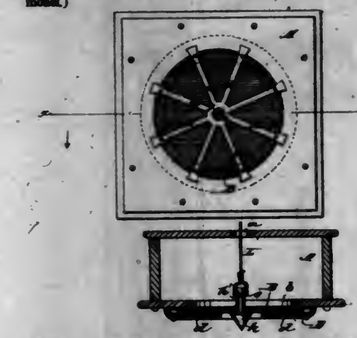
408,546.



drum-shaft, the annulus *d*, movable lengthwise on said sleeve and connected thereto by a spline, the clasp H, applied to the said sleeve and having pivots *g*, the levers *k*, fulcrumed on said pivots and at their outer ends arranged in the slot of slide I, the said slide splined to the drum-shaft, and the forked slide K, supported in the frame and having rolls *n* in the prongs of its fork to work in the groove *l* of the slide I and operated by a screw and nut, the latter worked by an arm, L, clamped to it, said mechanism being for clutching the drum of the apparatus to the drum-shaft, all being arranged and supported essentially as shown and set forth.

2. The combination of the drum-shaft adapted to be revolved by suitable mechanism, the drum chambered, as shown, the flanged sleeve G, connected to the drum by the annulus *c* fixed thereto, the annulus *d*, splined to the said sleeve, and the levers A, fulcrumed to the sleeve G and connected at their outer ends to the slot in the slide I, the latter operated longitudinally on the drum-shaft by a slide connected to a handle, L, essentially as shown, and for the purpose set forth.

408,547. MECHANICAL TELEPHONE. WILLIAM W. HUBBELL, New York, N. Y., assignor to the American Private Line Telephone Company, same place. Filed Oct. 1, 1887. Serial No. 251,304. (No model.)



Claim.—1. In a mechanical telephone, the combination, with the diaphragm B, of radial plates *d*, held in front of the diaphragm and secured at their ends to the casing and held under constant tension by the line-wire, substantially as described.

2. The combination, with the diaphragm B and the radial plates *d*, and central apertured plate, *f*, held in front of the diaphragm, and the plates *d*, secured at their ends to the casing, of the button A, formed with a reduced shank, *k*, pressed at *c* and adapted to pass through the center of the plate *f* and diaphragm and to be connected to the line-wire, so that the latter will exert a constant tension upon the plates *d f*, substantially as described.

408,548. COMPOUND FOR PIPING, BOWLS, &c. BENTH. H. CLARKE and CHARLES GARSIDE, Victoria, British Columbia, Canada. Filed Oct. 5, 1888. Serial No. 287,202. (No specimens.)

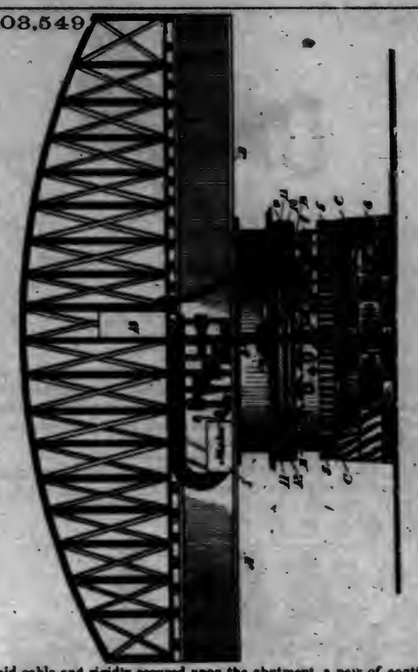
Claim.—1. The herein-described composition of matter, consisting of sand, forty-three per cent.; sulphur, thirty-three per cent.; pitch, one per cent., and an earth, such as ground burnt clay, twenty-three per cent., mixed together under the action of superheated steam, substantially as specified.

2. The herein-described composition of matter, consisting of sand, sulphur, pitch, and an earth, such as ground burnt clay, mixed together under the action of superheated steam, substantially as specified.

408,549. MEANS FOR OPERATING DRAW-BRIDGE SPANS BY ELECTRICITY. JOHN M. OSFORD, Bridgeport, Conn. Filed Mar. 2, 1889. Serial No. 301,745. (No model.)

Claim.—1. The combination, in an apparatus for electrically actuating draw-bridge spans, with a cable containing the circuit-wires and extended beneath the channel, of a pair of brushes connected to

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said cable and rigidly secured upon the abutment, a pair of continuous copper conductors secured upon and movable with the draw-span and engaged by said brushes, a motor connected to said conductors and geared to the driving-pinion, and suitable mechanism, as a rheostat and switches, interposed between the conductors on the span and the motor, whereby the speed and direction of rotation of the motor may be governed, substantially as set forth.

2. The combination, in an apparatus for electrically operating draw-bridge spans, with the abutment upon which said span is mounted and adapted to turn, of the shore-circuit extended beneath the channel and terminating in a pair of brushes affixed to the abutment, a pair of continuous metallic strips mounted upon and insulated from the draw-span base and engaged by said brushes, a motor secured in and moving with the draw-span, gearing arranged between the motor and the bridge-driving pinion-shaft, connections extending from the metallic strips to the motor, and suitable instruments for the control of said circuits located at a point accessible from the bridge-floor and interposed into the circuit between the motor and the metallic strips, substantially as specified.

408,550. STEM FOR CIGAR AND CIGARETTE HOLDERS OR PIPES. IRVING PAINE, Hornellsville, N. Y. Filed May 9, 1888. Serial No. 273,348. (No model.)



Claim.—1. A stem for a cigar-holder or pipe, having a longitudinal bore and cut away on its under side and provided with ways, in combination with a removable hollow sleeve longitudinally slotted and adapted to slide upon the ways and form an independent chamber below the plane of the bore, and an aperture connecting this chamber and bore, substantially as specified.

2. The stem 1, having the longitudinal bore 2, shoulder 3, recess 4, aperture 9, and opposite ways 5, in combination with the sleeve 6, threaded, as at 11, and slotted, as at 7, and mounted on the ways, and with the holder 13, having stem 12, substantially as specified.

408,551. TILTING COLTER-HOLDER. WILLIAM H. PERRIN, Smith's Falls, Ontario, Canada, assignor of one-half to Benjamin Osborne, same place. Filed Oct. 11, 1888. Serial No. 287,817. (No model.)

Claim.—The combination, with the plow-beam, of the colter arranged adjacent to one side of the beam and having a longitudinal series of transverse openings, the clip-plate passing around the beam and the colter and having the top *c*, resting on top of the beam, the bottom *c'*, bearing against the bottom of the beam in a vertical plane in rear of the vertical plane of the top *c*, and the downwardly and

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rearwardly inclined sides c^3 c^4, connecting the top and bottom, the side c^2 having a perforation and bearing against the side of the colter, and the side c^4 bearing against the side of the beam, and the set-screw mounted in the perforation in the side c^2, and passing through one of the openings in the colter, as set forth.

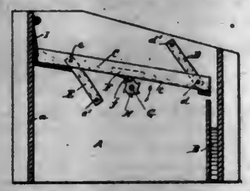
408,552. METHOD OF ORNAMENTING GLASS. LÉON PERTUS, Green Point, assignor to the Ravenswood Art Glass Works, New York, N. Y. Filed Feb. 7, 1889. Serial No. 299,001. (No model.)



Claim.—1. The method herein described of ornamenting vitreous articles, which consists in covering portions of the article with a protective layer, then revolving the article, and while revolving causing portions of the same to pass at intervals through an acid etching-bath to etch the unprotected portions, and continuously brushing off the eaten portions of the article while it is revolving through the bath, substantially as set forth.

2. The method herein described for ornamenting vitreous articles, which consists in covering portions of the article with a protecting layer and leaving other portions unprotected, then rotating the article, and while rotating subjecting the unprotected portions at intervals to the action of an etching-bath, and continuously removing the eaten portions while the article is revolving through the bath, substantially as set forth.

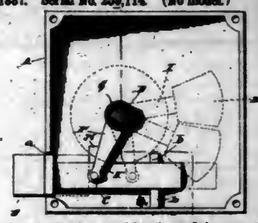
408,553. SCREEN. WILLIAM J. PHILLIPS and CHARLES HUMPHRYS, Wauseon, Ohio. Filed July 17, 1888. Serial No. 280,189. (No model.)



Claim.—1. In a sieve, the combination, with the stationary frame provided with a back piece for the screen to strike against, of the rearwardly-inclined arms pivoted to the ends of the sieve and to the said frame, the inclined sieve, the plates provided with sloping projections *f* and secured to the sieve midway between the screen pivot-pins, and the revolving ratchet-wheels journaled under the said plates and operating upon their sloping projections, and permitting the screen to fall downwardly and rearwardly against the said back piece, substantially as set forth.

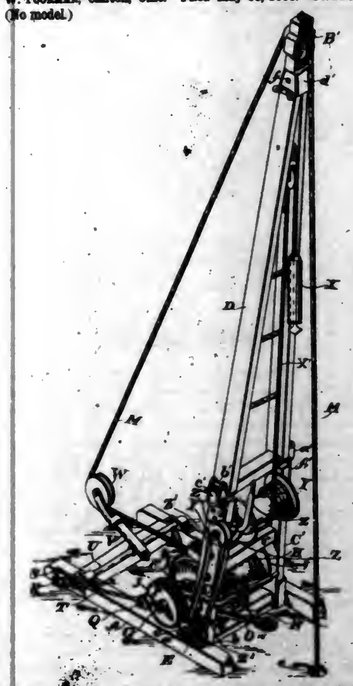
2. In a sieve, the combination, with the stationary frame having sides A and back *a*, of the inclined sieve, the inclined arms D, pivoted to the front end of the sieve and to the sides A above the sieve, the inclined arms E, pivoted to the rear end of the sieve and to the said sides below the sieve, the spring secured to the back *a* and pressing the sieve against it, the plates provided with sloping projections *f* and secured to the sieve between the pivot-pins, and the revolving ratchet-wheels journaled under the said plates for lifting and releasing the sieve, thereby causing it to strike against the said back piece at the extremity of its rearward and downward motion, substantially as set forth.

408,554. LATCH. FRANK L. PIERCE, Clay Centre, Kans. Filed Dec. 27, 1887. Serial No. 259,114. (No model.)



Claim.—In a lock, the combination of the case S, provided with an opening, *a*, the guide-studs *b b*, and the stop N, the bolt B, operating between the guide-studs and projecting through the opening *a*, the squared knob-shaft mounted in registering bearings in the sides of the case, the sleeve G, arranged on the said shaft within the case and provided with a lever or arm, F, having a loop, K, engaging a spindle, C, on the bolt, the said lever or arm being adapted to engage the stop N to limit the outward movement of the bolt, and the weighted arms L, connected to the knob-shaft, substantially as specified.

408,555. ROCK AND EARTH DRILLING MACHINE. SAMUEL W. POORMAN, Canton, Ohio. Filed May 18, 1888. Serial No. 274,234. (No model.)



Claim.—1. The combination, with the supporting-frame A, of a driving-pinion, E, shaft G, wheel J, loosely mounted thereon, said wheel having on its inner face clutch-lugs and on its outer face a series of internal rack-teeth, *k*, plate P, having on its inner face a pawl, *x*, and on its outer face a crank-pin, Q, connecting-rod T, crank-pin R, lever S, rock-shaft U, arm V, sheave W, and rope M, whereby the drill may be raised or dropped alternately, substantially as described, and for the purpose set forth.

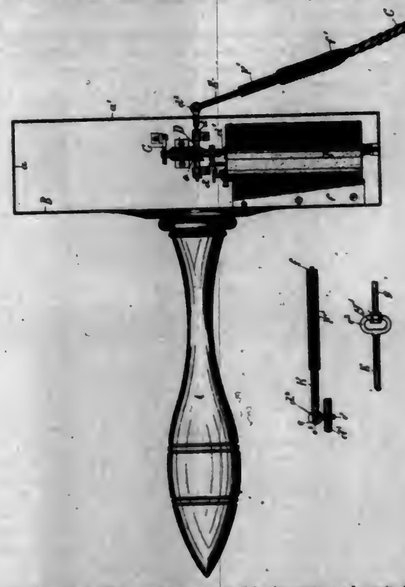
2. The combination, with the supporting-frame A, having standards C and C', of a driving-pinion, E, shaft G, wheel J, loosely mounted thereon, hangers F, having journal-boxes *e* pivotally secured therein, a spool, H, brake-wheel *j*, lever O, clutch K, and lever L, whereby the raising of the rope and drill may be under the control of the operating-power and the descent of the same controlled by the foot of the operator on the lever O, substantially as described.

3. The combination of the driving-pinion E, shaft G, wheel J, loosely mounted thereon and provided with rack-teeth *k*, a ratchet-plate, P, mounted on said shaft G and provided with a pawl, *x*, which engages the rack-teeth *k*, the rock-shaft U, the connecting-rod T, connecting said rock-shaft with said ratchet-plate, a vibrating arm, V, secured to the said rock-shaft, a sheave, W, journaled in said arm, rope M, spool H, upon which the rope is wound, worm-wheel *g*, and worm *q*, whereby the drill may be lowered or raised during the operation of the drilling, substantially as set forth.

4. The combination of the driving-pinion E, wheel J, geared therewith, clutch *k*, and spool H, mounted upon the shaft of the wheel J, rope M, wound upon said spool, brake-wheel *j*, secured to said spool, the lever O, for operating the brake-wheel *j*, and the lever N, for operating the clutch, whereby the drill may be raised and lowered, substantially as set forth.

5. In a rock and earth drilling machine, the combination of the driving-pinion E, a gear-wheel, J, having peripheral cogs and a series of internal rack-teeth, a ratchet-plate loosely mounted thereon, a pawl to engage the rack-teeth, a rock-shaft, U, provided with an arm, S, a rod, T, for connecting said rock-shaft and ratchet-plate, and an arm, V, secured to said rock-shaft and provided with a sheave, substantially as set forth.

408,556. MUSICAL SKIPPING-ROPE. LEWIS RITCHIE, Portland Place, County of Middlesex, England. Filed Oct. 6, 1888. Serial No. 287,405. (No model.) Patented in England Dec. 5, 1887, No. 16,711.



Claim.—1. The combination of skipping-rope end made fast to one member of a swivel, a swivel one member of which is so made fast to a skipping-rope end and the other connected by a knuckle-joint to the end of the first-motion shaft of a musical box, said knuckle-joint being produced in the adjacent ends of the said swivel member and the first-motion shaft, as set forth.

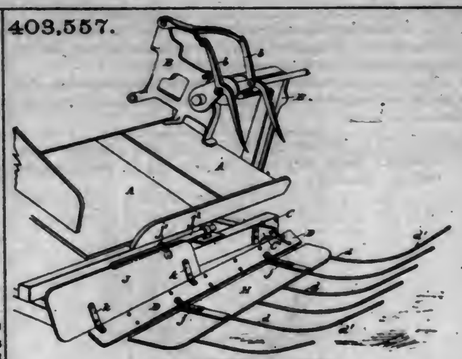
2. The combination of a musical box the first-motion shaft of which is continued through the side of the box, where it is connected by means of a knuckle-joint to a rod about which a tube to which a skipping-rope end is made fast is free to rotate, the said rod and tube together forming a swivel connecting the said skipping-rope end and the first-motion shaft, as set forth.

408,557. BUNDLE-CARRIER. JOHN M. ROSEBROCK, Hoosick Falls, N. Y. Filed May 9, 1888. Serial No. 273,263. (No model.)

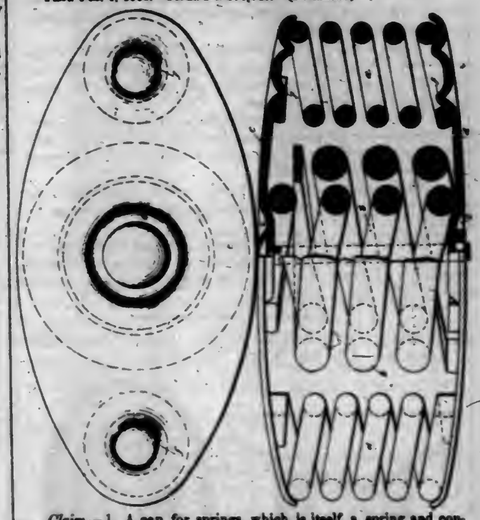
Claim.—1. The combination, with the downwardly-folding carrier-rods, of a hinged board resting upon the carrier-rods, substantially as and for the purpose specified.

2. The combination, with the downwardly-folding carrier-rods and the hinged supporting-board in which the rods are pivoted, of the board or shield J, hinged to the supporting-board, substantially as and for the purpose described.

408,557.



408,558. CAR-SPRING. CHARLES T. SCHOEN, Philadelphia, Pa. Filed Feb. 6, 1888. Serial No. 298,843. (No model.)

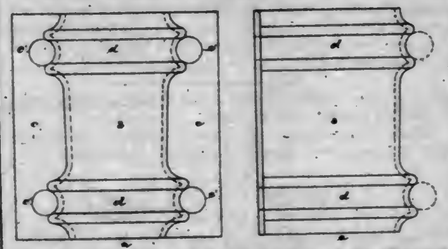


Claim.—1. A cap for springs, which is itself a spring and constructed curved, convex, or elliptical in longitudinal section, substantially as described.

2. A cap for springs, which is itself a spring and convex, curved, or elliptical in shape, substantially as described.

3. A spring composed of a suitable number of spiral springs, and caps which are themselves springs, arranged at opposite ends of the spiral springs and made curved, convex, or elliptical in shape, substantially as described.

408,559. STAKE-POCKET FOR CARS. CHARLES T. SCHOEN, Philadelphia, Pa. Filed Mar. 5, 1888. Serial No. 301,906. (No model.)

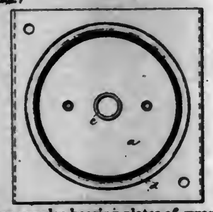


Claim.—1. A stake-pocket for cars constructed of wrought metal and having its bolt-receiving portions formed of the substance of the body elevated or projected beyond the plane of the body, whereby said stake-pocket is rendered interchangeable with ordinary cast-iron stake-pockets with respect to the U-bolts and holes therefor, substantially as described.

2. A wrought-metal stake-pocket for cars, having bolt-receiving portions elevated or projected beyond the plane of the body, and further provided with spuds, substantially as described.

3. A wrought-metal stake-pocket for cars, composed of the body *a*, bolt-receiving portions *d*, flanges *c*, with bolt-holes, and spuds *e*, substantially as described.

408,560. CENTER BEARING-PLATE FOR RAILWAY-CARS. CHARLES T. SCHOCH, Philadelphia, Pa. Filed Mar. 15, 1889. Serial No. 303,421. (No model.)



Claim.—1. Center annular bearing-plates of wrought metal, constructed with concentric ribs, combined with interposed bearing-pieces, substantially as described.

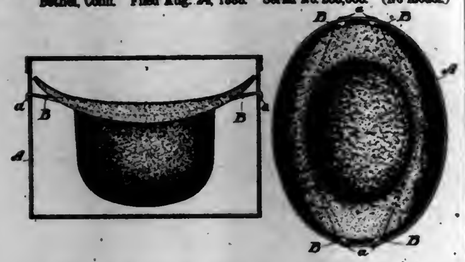
2. Center bearing-plates of wrought metal, constructed with concentric ribs and flanged central openings, combined with annular bearing-pieces interposed between the ribs, and also around the center openings, substantially as described.

3. Wrought-metal center bearing-plates constructed with concentric intermeshing ribs or projections, combined with an annular bearing-piece placed between said ribs and held from lateral displacement by them, substantially as described.

4. Center bearing-plates of wrought metal, constructed with stiffening-ribs and an interposed bearing-ring, substantially as described.

5. Center bearing-plate constructed of wrought metal with central flanged openings, and a bearing-ring surrounding such flanged openings and adapted to the shape of the plates adjacent to such openings, substantially as described.

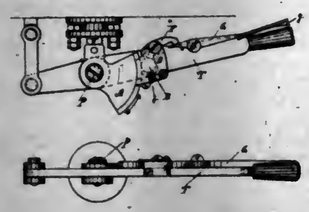
408,561. HAT-PACKING SUPPORT. MYRON C. SCHOONMAKER, Bethel, Conn. Filed Aug. 24, 1888. Serial No. 283,660. (No model.)



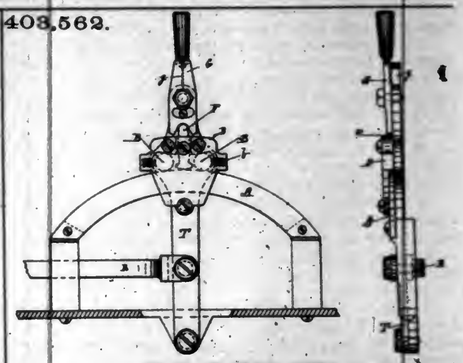
Claim.—A hat-packing support consisting of two parallel and elastic bands extending in the same horizontal plane diametrically across the interior of the bandbox, said bands being separated by a space considerably less than the diameter of the base of the hat crown, and normally secured at their extremities to the said box, whereby, when the hat-crown is inserted and depressed between said bands, the latter will automatically yield and by their resiliency exert a firm grip on said crown and hold the hat in suspension within the box, substantially as shown, and for the purposes set forth.

408,562. LEVER-CLUTCH. ALLISON M. STICKNEY, Medford, Mass. Filed Feb. 9, 1889. Serial No. 299,305. (No model.)

Claim.—In combination, the clutch A B, holder D, and levers F and G, all arranged and operating substantially as described.



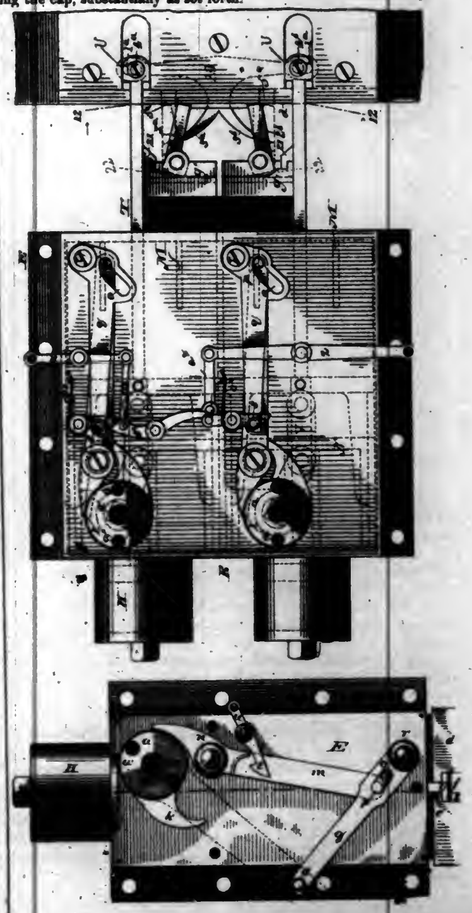
408,562.



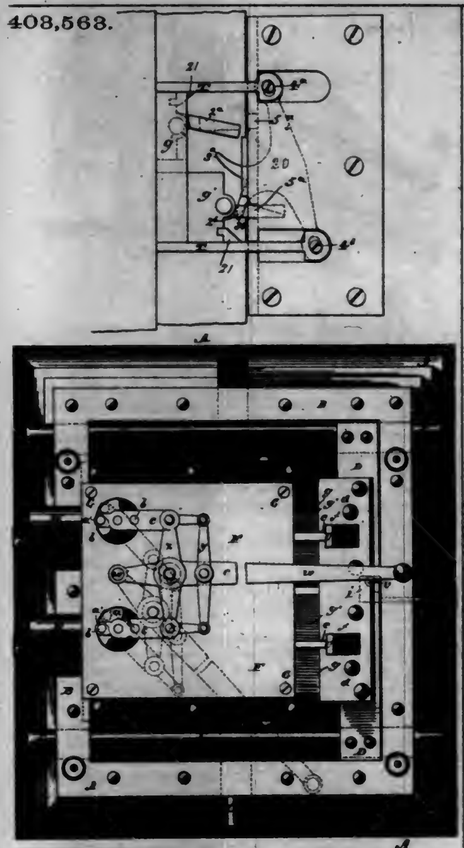
408,563. BOLT-WORK MECHANISM. EMORY STOCKWELL, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed July 2, 1888. Serial No. 278,775. (Model.)

Claim.—1. In an automatic double bolt-operating device, the combination of a series of locking and unlocking mechanisms and a series of fastening mechanisms adapted to release both locking mechanisms by the action of either one or more time mechanisms, substantially as set forth.

2. In combination with a case containing bolt-throwing mechanism, a cap for protecting the locking-levers and provided with an aperture, so that the setting-wrench may be applied without removing the cap, substantially as set forth.



408,563.



3. A double automatic bolt-operating device composed of duplicate single automatic bolt-operating devices, combined with mechanism for simultaneously setting them and with mechanism for simultaneously releasing them, substantially as set forth.

4. The combination of a double mechanism for throwing bolt-work and a double wrench for simultaneously setting both parts of the double mechanism, substantially as set forth.

5. In combination with a double automatic mechanism for throwing bolts, a double wrench constructed with parallel pivoted arms, so that neither of said arms can operate its proper locking or toggle shaft unless both mechanisms are unlocked, substantially as set forth.

6. In a double bolt-operating mechanism, the double wrench, in combination with two locking-shafts and a fixed pivot which serves as a guide and support around which the wrench rotates in setting the mechanisms, substantially as set forth.

7. In a double wrench for setting a double bolt-operating mechanism, a hand-lever, *w*, connected to two single arms or wrenches by means of the cross-arm *x*, substantially as set forth.

8. In a double bolt-throwing device, two pivoted push-dogs which normally rest against some portion of the bolt-work and either of which, upon the failure of its side of the bolt-throwing mechanism to work, may be pushed out of connection with the bolt-work, so as to offer no obstruction to its retraction, substantially as set forth.

9. In a double automatic bolt-throwing device, two independent draw-bars, each provided with a bracket or support for holding the push-blocks in proper position, substantially as set forth.

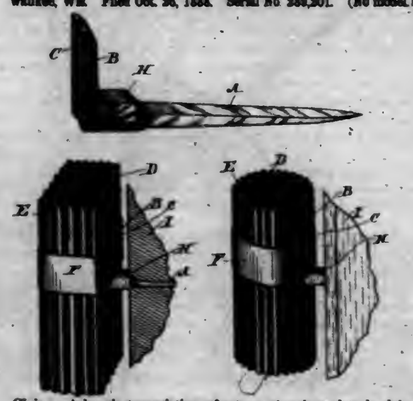
10. In a double bolt-operating mechanism, the combination of two independent draw-bars, and a yoke pivotally connecting them and provided with projecting arms resting against slotted push-dogs, whereby if one of said mechanisms fails to act the arm of the yoke will push aside and pass through the push-dog, thus disconnecting and rendering harmless that mechanism which has failed to work, substantially as set forth.

11. In a double automatic bolt-operating mechanism, the combination of a double pivotal arm and two retaining-hooks which are both moved by said arm through the operation of a time lock or locks and both mechanisms released thereby, substantially as set forth.

12. In a double wrench for setting a double bolt-operating mechanism, a hand-lever, *w*, connected to two single arms by means of the parallel pivoted cross-arm *x* and *y*, which maintain the arms parallel to each other, substantially as set forth.

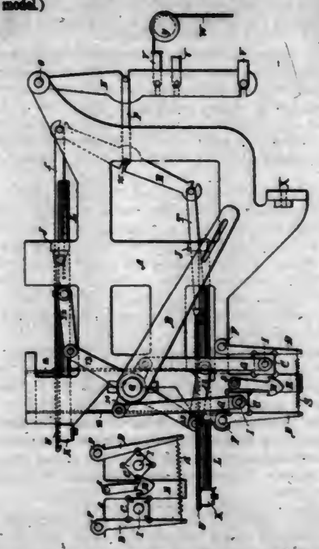
13. The combination, with the double mechanism for throwing bolt-work, of the pivoted lever *z*, the link z^3, the centrally-pivoted lever b^3, and the latches *t*, substantially as set forth.

408,564. PIPE-SUPPORTING DEVICE. HUGH J. SULLIVAN, Milwaukee, Wis. Filed Oct. 26, 1888. Serial No. 289,301. (No model.)



Claim.—A bracket consisting of a tang, A, adapted to be driven into the side of a building, an enlarged shank, H, and a head, B, having a vertical channel, C, in its face, in combination with a corrugated metal water-pipe and a band, F, fitting closely but movably about the pipe and the head of the bracket, the channel in the face of the bracket being constructed and adapted to receive therein and fit closely upon an outwardly-projecting corrugation of the pipe, substantially as described.

408,565. DOUBLE-LIFT OPEN-SHED DOBBIES. WILLIAM P. UHLINGER, Philadelphia, Pa. Filed Sept. 26, 1887. Serial No. 250,889. (No model.)

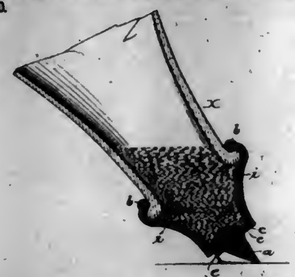


Claim.—1. In combination, hooks, means, substantially as described, to operate said hooks, lever R, links connecting said hooks and lever R, harness-actuating lever N, and link P, connecting said lever R and lever N.

2. In combination, the card-cylinders of a Jacquard machine, the arms D D, attached to the frame, and the spring S, connecting said arms, substantially as and for the purpose described.

3. In combination, the card-cylinders of a Jacquard machine, the arms D D, attached to the frame, and the spring S, connecting said arms and hook H, all constructed and operating substantially as and for the purpose described.

408,566. RESERVOIR-BRUSH. WALTER H. UNDERWOOD, Yonkers, N. Y. Filed Aug. 20, 1888. Serial No. 284,169. (No model.) Patented in England Feb. 28, 1888, No. 311, and in France July 30, 1888, No. 179,070.

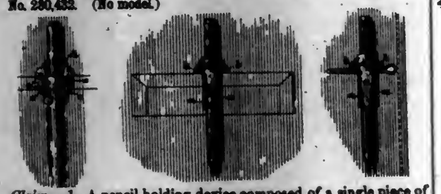


Claim.—1. A nozzle provided with a flattened slit end of flexible material and with a terminal blade of greater rigidity projecting outward adjacent to the slit, substantially as described.

2. The within-described nozzle, having a body portion adapted for attachment to a reservoir and closed by a top, *c*, a solid blade extending from said top, and slits *e e*, at an angle to each other in the top at the base of the blade, substantially as described.

3. A nozzle composed of a hollow nipple of flexible material having distributing-slits *e*, and air-inlet slits *i*, substantially as and for the purpose set forth.

408,567. PENCIL-HOLDER. SECURNEY WALES, Terre Haute, Ind., assignor to Charles B. Fox, Boston, Mass. Filed July 19, 1888. Serial No. 280,432. (No model.)



Claim.—1. A pencil-holding device composed of a single piece of metal provided with a suitable pencil-holding socket, *d*, having a plurality of downwardly-projecting fingers, *a*, and also provided with two downwardly-projecting fingers, *b b*, each provided with a series of teeth upon one edge thereof, said fingers *a* and *b* being so arranged relative to each other that said holder may be secured to the garment by inserting a portion thereof between two of the fingers *a* and the fingers *b b*.

2. A pencil-holding device composed of a single piece of metal provided with a suitable pencil-holding socket, *d*, having a plurality of downwardly-extending fingers, *a a*, and also provided with two downwardly-projecting fingers, *b b*, the lower end of each of which is arranged to overlap the edge of one of said fingers *a a*, whereby said fingers *a a* and *b b* are adapted to secure said holder to a garment by engaging with opposite sides of a portion thereof with said garment in position to press against and hold in position a pencil when it has been inserted in said socket.

3. A pencil-holding device composed of a single piece of metal provided with a suitable pencil-holding socket having a plurality of fingers, *a a*, extending downward therefrom, and also provided with two downwardly-projecting fingers, each having a series of teeth formed thereon, and arranged with its lower end overlapping one of the fingers *a*, whereby said holder may be secured to a garment by inserting a portion thereof between two of the fingers *a a* and the fingers *b b* in position to press upon and hold in position a pencil inserted in said socket.

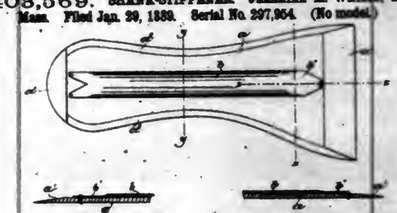
408,568. VAPOR-STOVE. JACOB R. WALLACE, Chicago, Ill., assignor to George M. Clark & Company, same place. Filed Apr. 30, 1888. Serial No. 273,243. (No model.)

Claim.—1. In a vapor-stove, the combination of a generating-burner having a partially-closable regulating-valve located in its vapor-passage from the generator of said burner with one or more non-generating burners, each fed from the generator by a separate vapor-passage and each having its own regulating valve or valves, substantially as set forth.

2. In a vapor-stove, the combination of a generating-burner having a partially-closable valve for regulating its own vapor supply, one or more non-generating burners supplied by a channel separate from that leading to the generating-burner, and a shut-off valve located in the passage from the generator, through which all the vapor flows and connecting with the passages feeding the several burners, substantially as specified.

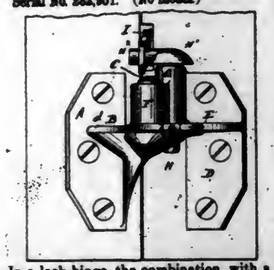
3. In a generating-burner having a generator located at the side of and above its base-plate and a deflector-tube located under said base-plate, the combination of such generator base-plate and deflector-tube, said plate being provided with a slot or passage, L, giving direct access by the flame from the tube to the generator, substantially as specified.

408,569. SHANK-STIFFENER. JEREMIAH M. WATSON, Boston, Mass. Filed Jan. 29, 1889. Serial No. 297,954. (No model.)



Claim.—The shank-stiffener herein described, comprising the piece of material *a*, and the metallic plate grooved or concaved from one to the other of its longitudinal edges and secured to said piece *a*, and provided with fastenings at its ends by which it is secured directly to said piece, the ends of the metallic plate being flattened to prevent the formation of shoulders thereat, substantially as described.

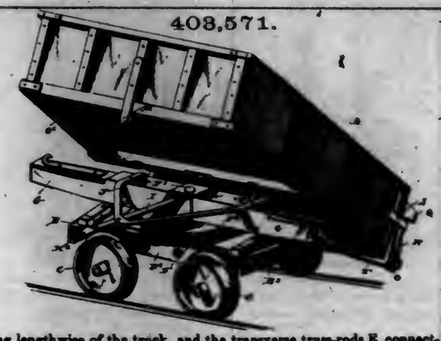
408,570. LOCK-HINGE. JOSEF WOLF, Newark, N. J. Filed Aug. 17, 1888. Serial No. 282,951. (No model.)



Claim.—In a lock-hinge, the combination, with a hinge-plate, of a bracket thereon provided with a pintle, two opposite notches, and angular shoulders on its upper face, a hinge-plate provided with a socket for the hinge-pintle, an additional socket and two straight edges to rest against the angular shoulders of the other bracket, a sliding bolt in the additional socket, and a lever for raising said bolt, substantially as described.

408,571. DUMPING-CAR. JAMES W. ALFERD, Wall, Pa. Filed Mar. 30, 1888. Serial No. 308,957. (No model.)

Claim.—1. The combination, with the truck-body and the central transverse timber thereof, of the plate E^3, having arms extending lengthwise of the truck, and the transverse truss-rods E, connecting the side timbers of the truck-body and bearing on said arms, substantially as shown and described.



2. The combination, with the truss-body and the central transverse timber thereof, of the plate E^3 on said transverse timber and formed with a hole to receive the king-bolt, and with arms extending lengthwise of the truck and formed with hooked ends, and the transverse truss-rods E, connecting the side timbers of the truck-body, bearing on said arms and engaging said hooked ends, substantially as and for the purpose described.

3. The combination, with the timber G, of the strip H, secured to said timber and bent to form a horizontal portion at the top and bottom of said timber, and with inclined portions connecting said horizontal portions, substantially as shown and described.

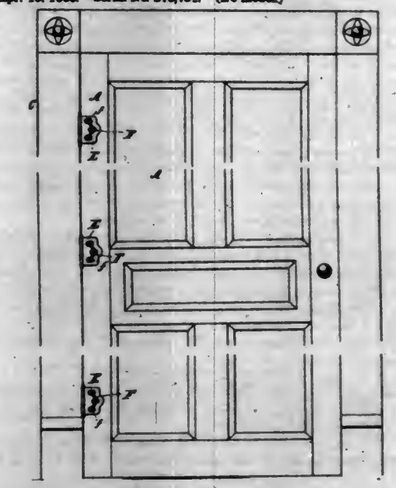
4. The combination, with the timber G, of the strip H, secured to said timber and bent to form a horizontal portion at the top and bottom of said timber, with inclined portions connecting said horizontal portions, and with one end extended, as at H^3, to engage a spring-catch upon the body of the car, substantially as and for the purpose described.

5. The combination, with the timber G, of the strip H, secured to said timber and bent to form a horizontal portion at the top and bottom of said timber, with inclined portions connecting said horizontal portions, with one end extended, as at H^3, to engage a spring-catch upon the body of the car, and the brace-strips I and J, substantially as shown and described.

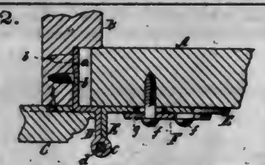
6. The combination, with the car-body and the timber G, of the truck and the locking-latch *e*, pivoted to said truck and formed with parallel arms adapted to embrace said timber upon opposite sides, substantially as shown and described.

7. The combination, with the car-body, of the strip O, secured to the end of the side timber and covering the end thereof, the vertical strip P, resting upon the strip O, the vertical rod R, the strip S, embracing said strip P, and the angle-iron T, arranged at right angles to the strip O, substantially as shown and described, and for the purpose specified.

408,572. DOOR-HANGING. WILLIAM J. BODA, Dayton, Ohio. Filed Apr. 16, 1888. Serial No. 270,731. (No model.)



408,572.



Claim.—1. The combination, with the hinging-jamb provided with a recess, of the door having its edge fitted into said recess, and adjustable hinges securing the door to said jamb, whereby the door may be adjusted in and out of said recess and close joints effected with both the hinging and latching jambs under all conditions of adjustment permitted by the hinge, substantially as described.

2. The combination, with a hinging-jamb provided with a recess whose outer wall is formed by the overlapping pilaster-facing, of the door having its edge fitted into said recess, and adjustable hinges securing the door to said jamb, substantially as and for the purpose described.

3. The combination, with the jamb and the door hinged thereto, of the pilaster-facing overlapping the hinging edge of the door to form a closed joint between the same and the jamb, substantially as and for the purpose described.

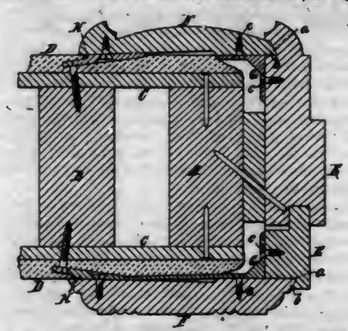
4. The combination, with the jamb and the door adjustably hinged thereto, of the pilaster-facing overlapping the hinging edge of the door to form a closed joint between the same and the jamb under different lateral adjustments of the door, substantially as and for the purpose described.

5. The combination of the jamb B, provided with the recess *a*, the door A, having its edge fitted into said recess, and the adjustable hinges, each composed of two leaves, D and E, the latter of which is provided with slots *e*, and a superimposed clamping-plate, F, substantially as and for the purpose described.

6. The combination of the jamb B, provided with the recess *a*, the pilaster-facing C, extended to form the outer wall of said recess, the door A, having its edge fitted into said recess, and the adjustable hinges securing said door to the jamb, substantially as and for the purpose described.

7. The combination of the jamb B, provided with a recess, *a*, the door A, having its edge fitted into said recess, and the adjustable hinges, each composed of two leaves, D and E, the former of which is bent to fit into the recess *a* and be secured to the jamb, and the latter of which is provided with slots *e*, and a superimposed clamping-plate, F, having screw-openings coincident with said slots and secured to the door, substantially as and for the purpose described.

408,573. FINISHING OF HOUSE INTERIORS. WILLIAM J. BODA, Dayton, Ohio. Filed Dec. 10, 1888. Serial No. 293,069. (No model.)



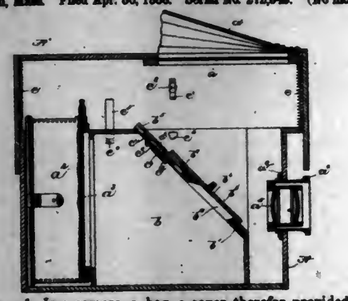
Claim.—1. As a new article of manufacture, a completed frame for doors or windows, consisting of the jamb and facings, said jamb having the facings interlocked thereto and secured by interior fastening devices, substantially as described.

2. As a new article of manufacture, a completed frame for doors and windows, consisting of the jamb and facings, said jamb projecting outside of the line of the wall and having the facings interlocked thereto and secured by interior fastening devices, substantially as described.

3. The combination, with the jamb E and facing F, interlocked with each other, of the angle-irons G, for securing said jamb and facing together, substantially as described.

4. The combination, with the interlocked jamb E and facing F, of the integral angle-irons G and lugs H, for uniting said jamb and facing and securing them to the wall, substantially as described.

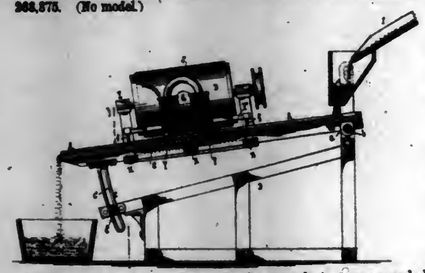
408,574. PHOTOGRAPHIC CAMERA. CHARLES E. BURLINGAME, Boston, Mass. Filed Apr. 30, 1888. Serial No. 272,349. (No model.)



Claim.—1. In a camera, a box, a cover therefor provided with a tell-tale, a sensitive surface, a lens, and a dark chamber interposed between said sensitive surface and lens and provided with an opening substantially in line with the said lens, combined with a mirror, a disk or support attached thereto, means to move said disk, a stop on said disk, and a locking device to engage said stop and operated from outside the box, substantially as described.

2. In a camera, a box, a cover therefor provided with a tell-tale, a sensitive surface, a lens, and a dark chamber interposed between said sensitive surface and lens and provided with an opening substantially in line with the said lens, combined with a mirror, a disk or support attached thereto, means to move said disk, a stop on said disk, a locking device to engage said stop and operated from outside the box, and a movable stop adapted to be moved into position to be engaged by the locking device, as and for the purpose specified.

408,575. MACHINE FOR SEPARATING IRON FROM ORES. GORDON CONKLING, Glens Falls, N. Y. Filed Mar. 29, 1888. Serial No. 268,875. (No model.)



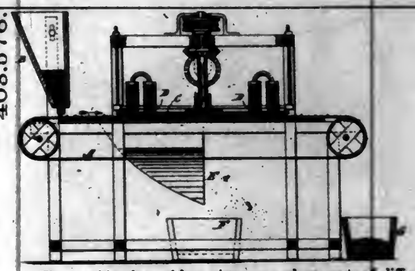
Claim.—1. The combination, with the trough A, transverse belt C, and means for moving the latter, of the magnetized plates F, extending or running in the direction of the length and travel of the belt to attract particles to the belt, substantially as described.

2. The combination, with the trough A, transverse belt C, and means for moving the latter, of the traverses F', extending across the belt, and the magnetized plates F, suspended from the traverses and extending or running in the direction of the length and travel of the belt, substantially as described.

3. The combination, with the trough A, the endless belt C, and the magnetized plate or plates F, of suitable means, substantially such as herein described, for adjusting the inclination of the trough.

4. The combination, with the trough A, the endless belt C, and the magnetized plate or plates F, of the frame H, which is attached to the trough and supports the endless belt, and the magnetized plate or plates, and means, substantially such as described, for adjusting the inclination of the trough, substantially as set forth.

408,576. MAGNETIC SEPARATOR. GORDON CONKLING, Glens Falls, N. Y. Filed Aug. 23, 1888. Serial No. 283,532. (No model.)



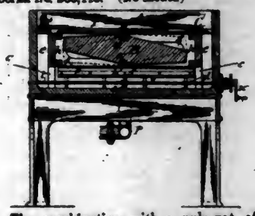
Claim.—1. The combination, with a conveyer for supporting the mass to be treated, of a magnet, a disk revolving independent of the conveyer and magnet at a point between said conveyer and magnet, and means for revolving the disk, substantially as described.

2. The combination, with a conveyer for supporting the mass to be treated, of a stationary magnet, a disk revolving between the conveyer and the stationary magnet, and means for revolving the disk, substantially as described.

3. The combination, with a conveyer for supporting the mass to be treated, of a magnet located above the conveyer, a disk revolving above the conveyer and under the magnet, and means for revolving the disk, substantially as described.

4. The combination, with a conveyer and magnets of different intensities relatively to the mass under treatment, of a revolving disk between the magnets and said mass, substantially as described.

408,577. PAPER-PULP SCREEN. PATRICK H. CRAGIN, Penn Yan N. Y., assignor to the Seneca Screen Company, same place. Filed Aug. 18, 1888. Serial No. 283,113. (No model.)



Claim.—1. The combination, with a pulp-vat, of a screen-box seated in said vat with a pulp-space between their sides and bottoms and provided with screen-plates at the top and bottom of said box, and an agitator in the screen-box, substantially as set forth.

2. The combination, with the pulp-vat, of a screen-box seated in said vat with pulp-passages between their sides and bottoms, and provided with ports through its ends and with screen-plates at its top and bottom, an agitator in the screen-box, and pulp-ducts leading from the ports of the screen-box, as set forth.

3. In combination with the pulp-vat, a screen-box seated in said vat with pulp-passages between their sides and bottoms and provided with ports through its ends, with screen-plates at its top and bottom and with recesses along the sides and ends of its interior, an agitator in said screen-box, and pulp-ducts leading from the ports of the screen-box, as set forth and shown.

4. In combination with a pulp-vat and a screen-box seated therein with a pulp-space between their bottoms and screen-plates on the bottom of said box, scrapers or wipers under the bottom screen-plates, substantially as and for the purpose set forth.

5. In combination with a pulp-vat and a screen-box seated therein with a pulp-space between their bottoms and screen-plates on the bottom and top of said box, an agitator in the screen-box, and scrapers under the bottom screen-plates, substantially as described and shown.

6. In combination with the pulp-vat and the screen-box seated therein with a pulp-space between their bottoms and screen-plates on the bottom of the said box, a horizontally-movable frame between the bottom of the vat and bottom of the screen-box, wipers or scrapers carried on said frame and in contact with the under side of the bottom screen-plates, a rack on the same frame, a shaft extended through the vat, and a pinion on said shaft meshing with the aforesaid rack, substantially as described and shown.

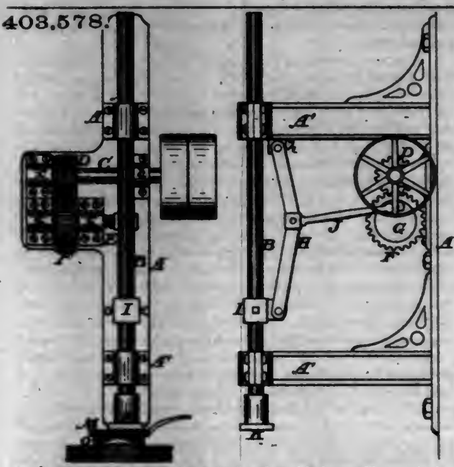
7. In combination with the pulp-vat, a screen-box seated therein with a pulp-space between their bottoms, and screen-plates on the top and bottom of said box, the rocking bar B, pivoted longitudinally in the center of said screen-box and having its top and bottom surfaces sloping from lines central of said surfaces and parallel with the axis of the bar, substantially as described and shown.

8. In combination with the pulp-vat, a screen-box seated therein with a pulp-space between their bottoms, and screen-plates on the top and bottom of said box, the rocking bar B, pivoted longitudinally in the center of said screen-box and provided midway the width of its top and bottom surfaces with the longitudinal grooves *a a*, and the ribs *b b*, secured to the screen-box and extending from the screen-plates into the aforesaid grooves, substantially as described and shown.

408,578. MACHINE FOR SETTING VAULT-LIGHT PACKING-RINGS. HARRY A. CROSBY, Cleveland, Ohio. Filed Apr. 17, 1888. Serial No. 270,968. (No model.)

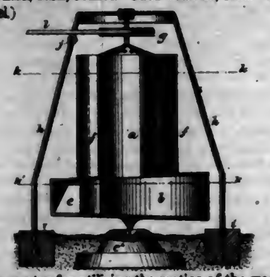
Claim.—A machine for setting vault-light packing-rings, comprising the ring-plate O, the vertically-movable shaft B, set in boxes

408,578.



on the bracket-frame A, the linked or knuckle levers H, attached at top end to frame A and the lower end attached to an adjustable sleeve, I, on the shaft and connected by pitman J to the crank-disk G on shaft E, and the gear F, and pinion D, all constructed to operate substantially as described.

408,579. APPARATUS FOR UTILIZING THE POWER OF WAVES. EMILE J. DELAURIER, Paris, France. Filed June 23, 1886. Serial No. 206,063. (Model.)



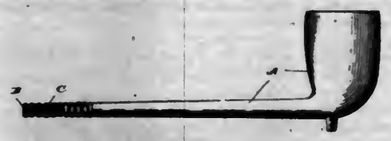
Claim.—An apparatus for utilizing the motion of the waves, consisting in the combination of a central swiveled chamber, *a*, with a tube, *b*, that is in direct communication with chamber *a*, the tube *b* having valves *d e*, and of curved blades *f*, disposed around said chamber *a*, as hereinbefore described, and for the purpose specified.

408,580. CLASP-PLATE. AUSTIN R. DICKINSON, Syracuse, N. Y. Filed Feb. 23, 1889. Serial No. 300,831. (No model.)



Claim.—As an improved article of manufacture, a transversely-slotted clasp-plate formed of a metal blank with solid longitudinal rolled marginal portions of greater thickness of metal than the longitudinal central portion, as set forth.

408,581. TOBACCO-PIPE. JOHN W. DOWLING, New York, N. Y. Filed Feb. 5, 1889. Serial No. 298,999. (No model.)



Claim.—As a new article of manufacture, the pipe having its stem provided with the series of circumferential swells or beads B and the soft yielding rubber tip slipped over the said stem, whereby similarly-shaped circumferential swells or beads are imparted to the tip and the latter is retained firmly on the stem, substantially as described.

408,582. DEVICE FOR STARTING CARS. EDWARD PALEN, Cleveland, Ohio. Filed Aug. 6, 1888. Serial No. 282,105. (No model.)



Claim.—1. In a device for starting cars and for analogous uses, the disks O, mounted on the hub of the ratchet-wheel, so as to offer a slight frictional resistance, as described, and the pawl flexibly connected to said disks, whereby the pawl is thrown into or out of engagement with the teeth of the ratchet-wheel by the movement of the axle.

2. In a device for starting cars and for analogous uses, the wheels or disks O, movably mounted on the hub or sleeve F, said disks being provided with eccentric slots to receive the pins for holding the pawl, as set forth.

3. In a device for starting cars and for analogous uses, the wheels or disks O, provided with eccentric slots and mounted on the hub F and in the frame M, as described, and the pawl provided with the pin *c*, for engagement with the slots *b* in said disks, as set forth.

4. In a device for starting cars and for analogous uses, the ratchet-wheel rigidly secured to the axle, the disks or wheels O, mounted loosely on the hub of the ratchet-wheel, and the pawl connected to the disks, so as to be thrown in or out of engagement with the teeth of the ratchet-wheel, as set forth.

5. In a device for starting cars and for analogous uses, the ratchet sleeve or hub F, having the offsets, said offsets being adapted to receive the bars I, forming the lever-frame M, and the wheels or disks for operating the pawl carried by said frame, as set forth.

6. In a device for starting cars, the swinging frame provided with the pawl for engagement with the ratchet-wheel, in combination with the rod for holding the pawl out of engagement with the ratchet, as set forth.

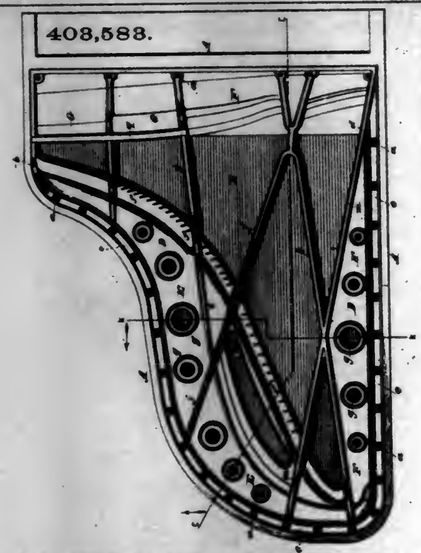
7. The bar A, mounted on friction-rollers B, and provided with pin E, in combination with the stops S and T and spring C, as set forth.

408,588. PIANO-PLATE. PAUL GERHARD, New York, N. Y. Filed Oct. 9, 1888. Serial No. 287,675. (No model.)

Claim.—1. The piano-plate or string-frame D, having continuous arched web E extending along two sides and one end of the plate D, and provided with the depressed supporting-flange *e* throughout its extent, so that the plate D is supported on opposite sides by said flange *e*, as specified.

2. In a piano-plate or string-frame, the continuous arched web E, extending along two sides and one end of the plate, the upper side of the web being on the same level, said web being in form of an arch whose ends are both supported by the flange *e*, substantially as described.

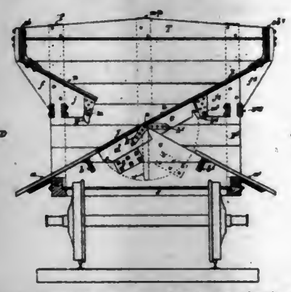
408,583.



3. In a piano-plate or string-frame, the continuous arched web E, extending along three sides of the plate, combined with the tuning-pin plate F, and with braces passing from said plate F to and along the side, top, and bottom of said web and projecting below the bottom thereof, substantially as described.

4. In a piano-plate or string-frame, the raised web E, having braces passing along and extending from the upper and also from the lower sides of said web and integral therewith, substantially as described.

408,584. DUMPING-CAR. JOHN M. GOODWIN, Sharpsville, Pa. Filed Oct. 26, 1888. Serial No. 289,186. (No model.)



Claim.—1. In a non-careening dumping-car having valves extending lengthwise of the car, which, when suitably held along one edge by appropriate detents, retain the load of the car, and when freed from such detents release such load, the valve-detent gear aforesaid, consisting of several detents acting in support of such valve as direct struts, suitably distributed parallel with, adjacent to, and below such edge of such valve, individually pivoted each on an appropriate journal-pin or suitably-formed abutment cast on or secured to a fixed member of the car and oscillating in a vertical plane, and an associated rocker shaft or rod operated by a lever applied at one end (or levers, one at each end) thereof and carrying opposite each such detent a rocker-arm connected with such opposed detent by a bar or link constructed, disposed, and operating substantially as and for the purposes set forth.

2. In a non-careening dumping-car having cargo-discharging valves extending lengthwise of the car and discharging its load through the dropping or letting down of such valves, or some of them, the valve-replacing gear consisting of a rocker shaft or rod extending lengthwise of the car, and at one or each end thereof beyond the cargo-box of the car, suitably mounted in appropriate bearings situated below the hinge-bearings of the valves aforesaid and having at one or each of its ends an actuating arm or lever, vibrating arms fixed on such shaft, and brackets or butts fixed upon the inferior face of each such valve, one opposed to each such vibrating arm, constructed, disposed, and operating substantially as and for the purposes set forth.

3. In a non-careening dumping-car combining in its construction fixed inclined floors, as *n* and *k*, the inboard edge of each thereof carried by brackets, as *j'*, and valves, each made up of cleats, as *c*, and floors, as *r* and *u*, each such cleat having its outboard end suitably fashioned for adjustment with a corresponding detent, as *y*, in the operation whereof, in order to carry a cargo, each such valve is, by detents suitably disposed, unyieldingly supported and held in association with the fixed inclined floor thereto correspondent, as on the side U of the car in Fig. 2, and for the purpose of discharging cargo each such valve is to be dropped by a uniform release of the outboard edge of the valve effected by a simultaneous withdrawal of the several members of the detent-gear supporting the same, the combination of the valves aforesaid, the detent-gear, whereof the tripping members, alternately supporting and releasing a valve, are individually pivoted each on a journal-pin or abutment fixed in or formed upon one of the floor-carrying brackets, as *j'*, and act in support of the valve as direct struts or posts, and the floor-carrying brackets, as *j'*, each provided with a journal-pin, as j^3, or other suitable abutment for support of a tripping member of the detent-gear, operating in association substantially as described, and for the particular purposes specified.

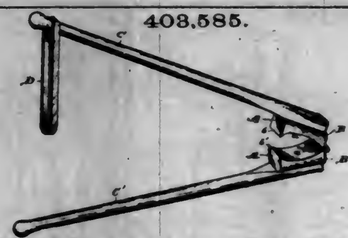
4. In a non-careening side-discharging dumping-car combining in its construction fixed inclined floors, as *a* and *n* and *a'* and *k*, extending lengthwise of the car and respectively along the sides of the same, the uppermost two of such floors, as *n* and *k*, serving primarily each as a cargo-carrying floor, but in the operation of dumping forming a section of a cargo-chute, and valves intermediate between each oppositely-fixed floors, wherein, by appropriate disposition of said valves, respectively, and association of one of them with that upper fixed floor with which it directly co-operates, and accompanying association of the other valve with the lower fixed floor, with which it directly co-operates, a continuous inclined plane is formed, extending from the uppermost edge of the upper fixed floor on either side of the car downward and entirely across the car to the lower edge of the opposite lower fixed floor, or by association of each valve with the lower inclined floor, with which it directly co-operates, two continuous inclined planes are formed, respectively extending from a common apex along the longitudinal middle line of the car downward and outward, each to the lower edge of that lower floor which forms part of that plane, as a means for retaining for carriage in such car material deposited upon an inclined plane formed as aforesaid and extending all across the car or upon either or both of the two oppositely-directed inclined planes declining outward, simultaneously formed as aforesaid, one upon each side of the middle line of the car, and for releasing such material in order that it may be dumped by operation of the said inclined floors upon which it lies, the supplementary side-boards hereinbefore described and herewith shown, each fitted with suspending-hooks and locking-bolts, whereby it is adjustable, externally, to either side of the car and along and upon the surface of an inclined lower floor of the car and removable at will by disengagement of its suspending-hooks from the staples, (as *g'* in the drawings,) carrying the same, constructed, applied, secured, released, carried, and operating substantially as and for the purposes set forth.

5. In a non-careening side-discharging dumping-car combining in its construction fixed inclined floors and valves arranged with relation to each other and operating substantially as hereinbefore described and as shown in Fig. 2, wherein, by appropriate disposition of said valves, respectively, as described, a continuous inclined plane is formed extending from either side of the car, as desired, all across the car, and operating as a chute for discharge of the entire load of the car upon that side thereof toward which such plane declines, the combination of the supplementary adjustable and removable side-board constructed and applied to such car, as described and as shown on the side U of Fig. 2, and the discharging floor or chute formed in such car by disposing and fixing the valves of the car so that they, with either of the lower fixed floors and the opposite upper fixed floor of the car, constitute a continuous inclined plane extending all across the car, as aforesaid, substantially as described, and for attainment of the supplemental result desired, as set forth.

408,585. BOOT-JACK. GEORGE H. HACKETT, South Royalton, Vt. Filed Oct. 11, 1888. Serial No. 287,832. (No model.)



408,585.



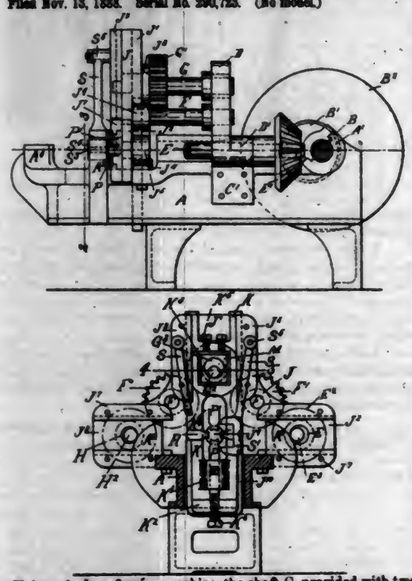
Claim.—1. The boot-jack herein described, consisting of the hinged jaws and the handles, substantially as shown and described.

2. The hinged jaws having biting-lips, in combination with the handles, as and for the purpose set forth.

3. A boot-jack consisting, essentially, of the handles and the jaws fixed to the handles and adjustably hinged together, substantially as described.

4. A boot-jack consisting, essentially, of a pair of handles, the jaws fixed to the handles and having the perforated arms, and a split pin passing through said arms to detachably and adjustably hinge the jaws together, substantially as described.

403,586. FORGING-MACHINE. JAMES A. HAMER, Reading, Pa. Filed Nov. 13, 1888. Serial No. 290,723. (No model.)



Claim.—1. In a forging-machine, the shaft G, provided with two eccentrics having their centers on opposite sides of the shaft-center, said eccentrics being connected with separate hammers which are guided radially upon a frame, substantially as set forth.

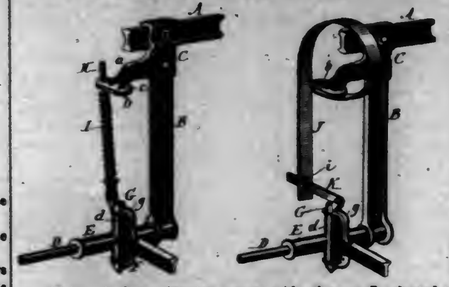
2. In a forging-machine, the parallel shafts E, G, and H, connected substantially as described, and provided with eccentrics connected with separate hammers which are guided radially upon a frame, two of said hammers being reciprocated in opposite directions by one of said shafts, substantially as set forth.

3. In a forging-machine, the combination of the horizontal bed-plate provided with anvil-block A^4, and the vertical frame secured thereto, a main shaft, B, with eccentric B', connected with a horizontal hammer, W, and engaging shafts E, G, and H, with eccentric ends connected with radial hammers R R, P, and P', and dies S^4, all arranged and operated substantially as set forth.

4. In a forging-machine having radial hammers guided in a vertical frame, substantially as described, the bottom hammer, P, secured to a sliding slotted plate, K, reciprocated in guides above the central forging-point, substantially as and for the purpose set forth.

5. In a forging-machine, the combination of the bed-plate A, main shaft B, parallel shafts E, G, and H, with eccentric ends, yoke D, vertical frame J, radial hammers R R, P, and P', horizontal hammer W, and swinging dies, all arranged and operated substantially as set forth.

408,587. CULTIVATOR. FREDERICK A. HEAD, Rock Island, Ill. Filed Jan. 24, 1889. Serial No. 297,401. (No model.)

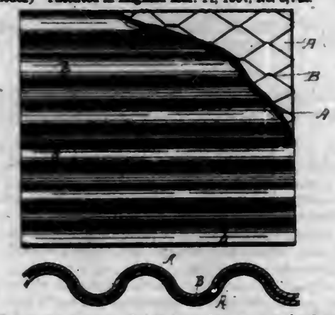


Claim.—1. In a cultivator, a removable piece, as G, adapted to be connected either with a rod, as H, or with a bar, as K, substantially as and for the purpose specified.

2. In a cultivator, an arm or bracket, as *a*, adapted to be secured to the arched axle, and a casting, as G, adapted to be connected with the joint which couples the shovel-beam to the axle, whereby either one of two forms of springs I and J can be used at pleasure in the same cultivator, substantially as and for the purpose specified.

3. In a cultivator, a socketed piece, C, provided with an arm or bracket, *a*, in combination with the parts A B of an arched axle, substantially as and for the purpose specified.

403,588. FELT ROOFING. GEORGE A. HERDMAN, London, County of Middlesex, England. Filed Sept. 27, 1887. Serial No. 250,352. (No model.) Patented in England Mar. 11, 1887, No. 3,742.



Claim.—A corrugated felt material composed of two or more sheets of felt and an intermediate interstitial web of metal united and corrugated, as set forth.

403,589. LATHE-CHUCK. FREEMAN HIGGINS, Manchester, N. H. Filed Jan. 12, 1889. Serial No. 296,131. (No model.)



Claim.—The combination, with the jaws, screws to operate them, and pinions on said screws, of the rack-bar in mesh with said pinions, and the hand-wheel secured to said rack-bar, whereby the said jaws may be operated simultaneously, substantially as described.

403,590. KITCHEN-CABINET. LU HOUSTON, Shockey, Kans. Filed July 19, 1888. Serial No. 280,365. (No model.)

Claim.—1. In a kitchen-cabinet, the combination, with the portion B, the extension B', the hinged doors D, and supporting-brackets *d*, of the bread-board F, the drawer G, secured to one of the front corners of the said board, and the hinged door *g* on the front of the portion B, and registering with the drawer G, substantially as specified.

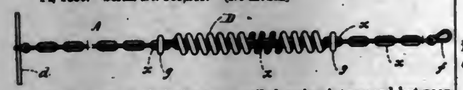
2. A kitchen-cabinet comprising the portion B, divided into bins and having doors hinged to its sides adapted to close the bins, and brackets to support the hinged doors when the latter are open, and provided with a sliding bread-board and a drawer attached thereto and slightly in advance of the same, said portion B having a door constructed in its front face, designed to open and allow the drawer to protrude and permit the bread-board to be fully drawn out, and the

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extension B', provided with drawers in its lower part, and divided into compartments which are closed by hinged doors, substantially as described.

408,591. CHAIN. JAMES INGRAM, Lawrence, Mass. Filed Mar. 14, 1888. Serial No. 303,215. (No model.)



Claim.—1. A chain having a coiled spring interposed between two of its links, substantially as and for the purpose set forth.

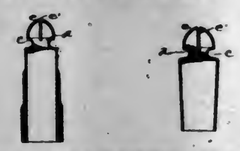
2. A chain of the character described, provided with a bar at one end, a catch at the opposite end, and a coiled spring interposed in its body, substantially as described.

3. A chain having a portion of its links grouped, and a coiled spring disposed around said portion, with its ends secured to said chain, substantially as described.

4. A chain of the character described, provided with a bar and catch and having a portion of its links grouped, a coiled spring being disposed around said portion, with its ends secured to a link at each end of said grouped portion, substantially as described.

5. The chain A, provided with the bar *d* and catch *f*, in combination with the spring D, secured around said chain, the links *x* thereof being grouped within said spring, substantially as and for the purpose set forth.

408,592. BURNER TIP OR PILLAR. WALTER M. JACKSON, New York, N. Y. Filed Nov. 1, 1888. Serial No. 289,753. (No model.)



Claim.—As a new article of manufacture, a gas-burner tip or pillar having a conoidal head, an internal shelf, and a gas-exit slot dividing the head into two parts and extending down into the inclined shelf, substantially as set forth.

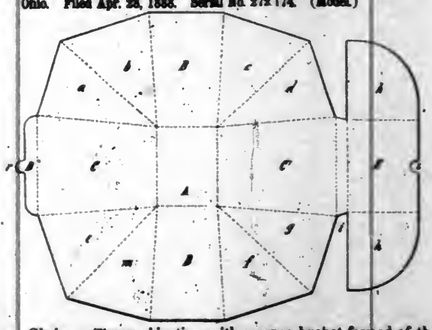
408,593. SECONDARY BATTERY. AUGUSTUS JAMIESON, Elizabeth, N. J. Filed Sept. 27, 1888. Serial No. 286,522. (No model.)

Claim.—1. The method of generating electric currents, which consists in forming a coating of sulphate of lead upon the surface of lead electrodes by immersion in sulphuric acid, converting the sulphate on one half the electrodes into sulphide of lead by immersion in a reducing agent—such as sulphide of sodium—converting the sulphate on the other half of the electrodes into plumbic peroxide by immersion in an oxidizing agent—such as hypochlorite of soda—replacing the electrodes in pairs in the sulphuric acid to form a battery, and connecting them up in an electric circuit.

2. The method of charging secondary batteries, which consists in converting the plumbic sulphate on one set of electrodes into plumbic peroxide by treatment with an oxidizing agent—such as hypochlorite of soda—and in converting the sulphate of lead on the other set of electrodes into sulphide of lead by treatment with a reducing agent, such as sulphide of sodium.

3. The method of forming plumbic peroxide upon a surface of lead, which consists in first converting some of the lead into the plumbic sulphate and then converting the sulphate into plumbic peroxide by treatment with hypochlorite of soda.

408,594. FOLDED PAPER BUCKET. HENRY S. JAPES, Dayton, Ohio. Filed Apr. 28, 1888. Serial No. 272,174. (Model.)



Claim.—The combination, with a paper bucket formed of the parts A, *a b*, B, *c d*, C, *g f*, B', *m e*, C D, *i* A, E, and A, and folded with the parts *a b* and *e m* upon the side C, the parts *c d* and *g f* upon the side C', the part E braced by the parts A and A to form a lid hinged by the part *i*, so as to be below the upper edge of the bucket and latched by the flap D of the bail O, fastened in opposite sides of the bucket and securing the same, substantially as and for the purpose set forth.

408,595. DECOY. WILLIAM H. JESSER, Clinton, Iowa. Filed Mar. 19, 1888. Serial No. 303,900. (No model.)

Claim.—1. A decoy-body hollowed out and having a lid, in combination with a removable head, substantially as described.

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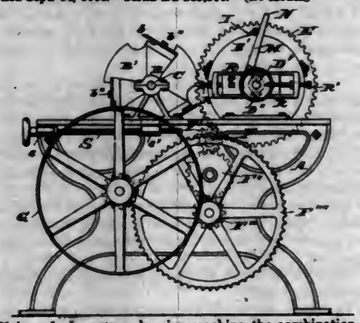
2. A decoy-body hollowed out and a pivoted lid for the same, in combination with a removable head, substantially as described.

3. A decoy-body hollowed out, and a lid pivoted upon a pin on the forward end of the same and having a diagonal edge, in combination with a removable head screwed onto the pivot of said lid, substantially as described.

4. A decoy-body having a collar, D', screwed into its forward end, in combination with a bolt screwing into said collar, and a removable head into which said bolt is fixed, substantially as described.

5. A decoy-body of the class described, said body being hollowed out, a collar screwed into the forward end of the same, and a lid pivoted upon said bolt, in combination with a bolt screwing into said collar, and a removable head screwing over said bolt, substantially as described.

408,596. STAVE-DRESSING MACHINE. FRANK H. KANE, River side, assignor to the Cincinnati Cooperage Company, Cincinnati, Ohio. Filed Sept. 14, 1888. Serial No. 285,306. (No model.)



Claim.—1. In a stave-dressing machine, the combination of a revolving cutter-head, a stave-feeding reel carrying dogs provided with bifurcated tangs adapted to automatically clutch the staves and having the periphery of its heads suitably cogged, pinions engaging therewith, and power-driven gear mechanism, substantially as and for the purpose specified.

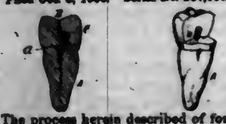
2. The combination, in a stave-dressing machine, of a revolving cutter-head provided with adjustable and detachable knives, a stave-carrying reel carrying thereon dogs provided with a series of bifurcated tangs adapted to clutch the staves, in the manner and for the purpose described.

3. The combination, in a stave-dressing machine, of two revolving cutter-heads adjustable with reference to each other, and a stave-carrying reel embracing one of the cutter-heads and adapted to deliver the staves between the two cutter-heads to be dressed, adjustable dogs on said reel provided with bifurcated tangs and adapted to clutch the staves, and the hereinbefore-described means for adjusting the same, in the manner and for the purpose specified.

4. The combination, in a stave-dressing machine, of a revolving cutter-head having knives mounted thereon, and a stave-carrying reel carrying thereon adjustable dogs provided with a series of bifurcated tangs adapted to clutch the staves, in the manner and for the purpose described.

5. The combination, in a stave-dressing machine, of a revolving cutter-head, a stave-carrying reel carrying thereon adjustable dogs provided with a series of bifurcated tangs, and anti-friction rollers moving in cam-grooves, connected with and adapted to actuate said dogs, in the manner and for the purpose described.

408,597. ARTIFICIAL TOOTH-CROWN. CHARLES H. LAND, Detroit, Mich. Filed Oct. 3, 1888. Serial No. 287,066. (No model.)



Claim.—1. The process herein described of forming an artificial crown or partial crown conformed to the lost portion of a tooth, consisting of securing an anchoring-post in the tooth, fitting thereupon and upon the adjacent tooth portions a thin plate of metal to form a matrix or supporting-base, then fusing upon said matrix or base an artificial crown or partial crown, substantially as described.

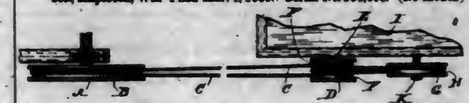
2. The process of forming an artificial crown or partial crown conformed to the lost portion of a tooth, herein set forth, consisting of securing an anchoring-post in the tooth, fitting thereupon and upon the adjacent portion of the tooth a thin plate of metal to form a matrix or supporting-base provided with a tube to engage the post, then molding upon said matrix or base a crown or partial crown of plastic porcelain body, and fusing said body, substantially as described.

3. The process of forming an artificial crown or partial crown conformed to the lost portion of a tooth, herein set forth, consisting of securing an anchoring-post in the tooth, fitting thereupon and upon the adjacent portion of the tooth a thin plate of metal to form a matrix or supporting-base provided with a tube to engage said post, then molding upon said matrix or base a crown or partial crown of plastic porcelain paste, and fusing said body, provided with an anterior veneer thereupon, substantially as described.

4. The process of forming an artificial crown or partial crown conformed to the lost portion of a tooth, herein set forth, consisting of securing an anchoring-post in the tooth, fitting thereupon and upon the adjacent portions of the tooth a thin plate of metal to form a matrix or supporting-base provided with a tube to engage said post, engaging a veneer with said tube by means of pins in the veneer, and molding thereupon an intermediate body of porcelain paste and fusing said body with the veneer and said matrix or base, substantially as described.

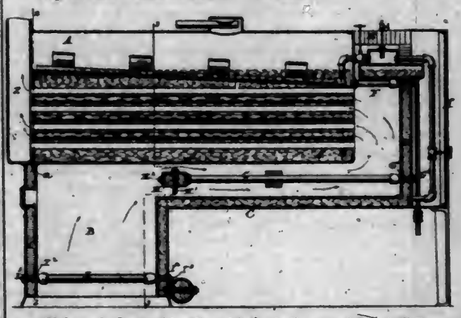
5. The herein-described process of forming a matrix or supporting-base for an artificial tooth-crown or partial crown, consisting of securing an anchoring-post in the tooth, fitting upon the tooth adjacent to said post a thin perforated metal plate, *b'*, then uniting upon said plate a tube, *b*, to engage said post, substantially as described.

408,598. DEVICE FOR TRANSMITTING POWER. ADOLPH LARSON, Mapleton, Wis. Filed Mar. 1, 1888. Serial No. 301,695. (No model.)



Claim.—The combination of a driving-wheel, A, having a groove in its periphery, a driven pulley, D, and an idle-pulley, G, the two pulleys D and G being supported on a thrashing-machine, I, at a considerable distance from the driving-wheel A, in combination with a cable-belt, C, carried entirely around the wheel A, around the idle-pulley G, and each strand of the cable being carried entirely around the pulley D in a groove in its periphery, the pulley D being located intermediate the pulley G and wheel A, substantially as described.

408,599. BOILER. FREDERICK LUDWIG, Glencoe, Minn. Filed Aug. 30, 1888. Serial No. 284,127. (No model.)

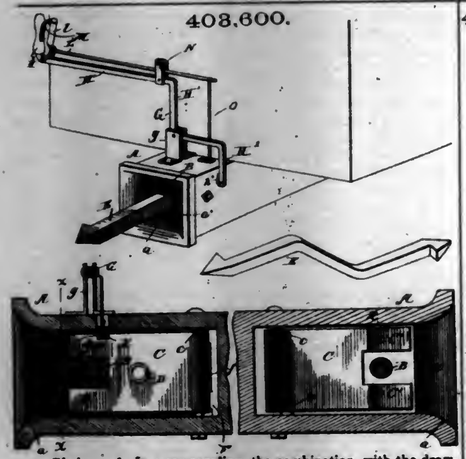


Claim.—1. In combination with the boiler A and the shell C, provided with the upturned end D, a box, H, placed between the boiler and shell and connected with the latter by means of hollow bolts H' and pipes G, connected at opposite ends with the parts D and H.

2. In combination with the boiler A and the shell C, provided with an upturned end, D, a box, H, connected with the shell by hollow bolts H', pipes G, connected with the box H and end D, and plugs G^2 and H^2, having removable plugs and arranged in line with the pipes.

408,600. CAR-COUPLING. HENRY P. MONDAY, Stoutland, Mo., assignor of one-half to Benjamin F. Tipton, same place. Filed Feb. 13 1889. Serial No. 299,740. (No model.)

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Claim.—1. In a car-coupling, the combination, with the draw-head provided at its mouth with the inwardly-extending lip *a'*, of the swinging jaw pivoted in the throat of the draw-head and adapted to swing at its free end in rear of the said lip, the spring to normally hold the free end of the jaw away from the said lip, and the operating-lever connected to the jaw to enable the latter to be drawn laterally against the pressure of the said spring substantially as specified.

2. In a car-coupling, the combination, with the draw-head having a transverse horizontal pin adjacent to its mouth, of the swinging jaw pivoted in the throat of the draw-head and provided at its free end with two members, C C, which are arranged, respectively, above and below the said transverse pin and have engaging shoulders *c' c'* to engage corresponding shoulders on the link, the spring connected to the said jaw, and the operating-lever connected to the jaw to enable the latter to be operated against the pressure of the spring, substantially as specified.

3. In a car-coupling, the combination, with the draw-head provided with a horizontal pin, B, near its free end, and having a stop-rib, F, provided with shoulders *f f*, of the jaw pivoted in the throat of the draw-head and provided with the shouldered members C C, the operating-lever connected to the free end of the jaw, and the link provided with shoulders to engage the shoulders of the jaw and having tapered ends to bear against the stop-rib and engage the shoulders thereof, substantially as specified.

4. In a car-coupling, the combination, with the draw-head and the swinging spring-actuated jaw pivoted in the throat thereof, of the operating-lever pivoted to the draw-head and engaging the jaw to lock it in position, and the latch-lever mounted on the operating-lever and connected to the latch, where the latch may be manipulated by the hand which grasps the operating-lever, substantially as specified.

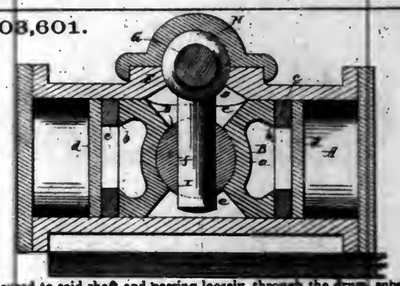
5. In a car-coupling, the combination, with the draw-head, the swinging spring-actuated jaw arranged therein, and the latch mounted in the throat of the draw-head and engaging the jaw, of the operating-lever provided with a long arm, H, and a depending arm, H^3, which is connected to the free end of the jaw, and the latch mounted on the operating-lever and connected to the latch, the handles of the said lever being arranged adjacent to each other and normally held separated by an interposed spring, substantially as specified.

6. In a car-coupling, the combination, with the draw-head, the swinging spring-actuated jaw arranged therein, and the latch K arranged in the throat of the drawhead and engaging a notch, *k*, in the jaw, to hold the latter in the engaging position, of the operating-lever G, pivoted to a bracket on the upper side of the draw-head and comprising the long arm H, which extends to the side of the car and is provided at its free end with a vertical handle, H^3, the angular portion H', and the depending arm H^3, which is connected at its lower end to the free end of the jaw by the link *h*, the latch-lever pivoted to the long arm of the operating-lever, extending through a guide-loop thereon and provided with a vertical handle which is arranged adjacent to the handle of the operating-lever, the connecting-rod between the free end of the latch-lever and the free end of the latch, and the leaf-spring arranged between the handles of the said levers, whereby they are normally held separated, substantially as specified.

403,601. STEAM-ENGINE. JAMES MCALLISTER, Chippewa Lake, Mich. Filed Jan. 26, 1889. Serial No. 297,502. (No model.)

Claim.—1. The combination, with a piston and a shaft mounted in proximity to the same, of a drum mounted in said piston, and a pin

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secured to said shaft and passing loosely through the drum, substantially as set forth.

2. The combination, with a piston having a recess with diverging walls and a shaft mounted in proximity to said piston, of a drum mounted in said piston, and a pin secured to the shaft and passing loosely through said drum, substantially as set forth.

3. The combination, with a piston and a shaft mounted in proximity thereto, of a drum mounted in said piston, a ring keyed to the shaft, and a pin projecting from said ring and passing loosely through the drum, substantially as set forth.

4. In a steam-engine, the combination, with a cylinder having an opening with diverging walls and a piston having a recess with diverging and curved walls, of a drum mounted in said piston, a shaft in proximity to the opening in the cylinder, and a pin secured to the shaft and passing through said opening and through an opening in the drum, substantially as set forth.

5. In a steam-engine, the combination, with a cylinder having an opening, and a piston in said cylinder having a recess with curved walls to produce bearing-faces, of a drum having a central perforation mounted in the piston and adapted to oscillate on said bearing-faces, a shaft mounted in proximity to the opening in the cylinder, and a pin secured to said shaft and passing through the openings in the cylinder and drum, substantially as set forth.

6. The combination, with a cylinder having an opening therein and a shaft mounted in proximity to said opening, of a piston in said cylinder, packing-rings secured to said piston and heads secured to said rings, and a drum mounted in said piston and having a perforation, and a pin secured to the shaft and passing through the drum, substantially as set forth.

7. In a steam-engine, the combination, with a cylinder and piston therein, of a drum mounted in said piston, a shaft carrying a crank-arm mounted in proximity to an opening in said cylinder, and a pin secured to said shaft and passing through an opening in the drum, substantially as set forth.

8. In a steam-engine, the combination, with a cylinder and a piston therein, of a drum mounted in said piston, a shaft mounted in proximity to an opening in said cylinder, a pin secured to said shaft and passing through an opening in the drum, a crank-arm at one end of said shaft, a second shaft carrying a crank-arm, and a pitman connecting said crank-arms, substantially as set forth.

9. In a steam-engine, the combination, with a cylinder, a shaft mounted in bearings cast integral with said cylinder, and a piston, of a drum mounted in said piston, and a pin secured to the shaft and passing through an opening in the cylinder and through said drum, substantially as set forth.

403,602. STEP-LADDER. JOHN A. NEILL, East Portland, Oreg. Filed Oct. 26, 1888. Serial No. 289,178. (No model.)

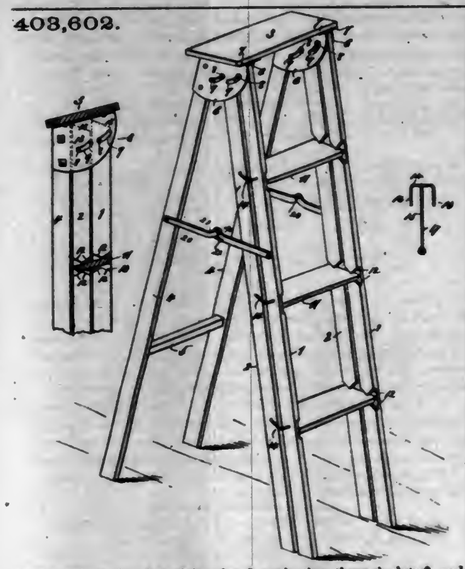
Claim.—1. A folding step-ladder constructed with uprights having recesses in their inner surface, with reverse double inclined V-shaped shoulders, and steps having their ends located in the recesses between the reverse double inclined V-shaped shoulders and pivoted to the uprights, substantially as shown and described.

2. A folding step-ladder constructed with a top with depending brackets, bracing-legs secured to the top, uprights having a sliding connection at their upper end with the top brackets, and recesses in their inner surface with reverse double inclined V-shaped shoulders, and steps having their ends located in the recesses between the reverse double inclined V-shaped shoulders and pivoted to the uprights, substantially as shown and described.

3. A folding step-ladder constructed with the bracing-legs 4, the top 3, the brackets 6, each having curved slots 9 and rocking steps 11, pivoted to the uprights 1 and 2, with supports for the steps on the uprights 1 and 2, secured to legs 4, and by means of flanges 7 to top 3, the uprights 1 and 2, connected at their upper ends to brackets 6 by pins 8, projecting through slots 9, substantially as shown and described.

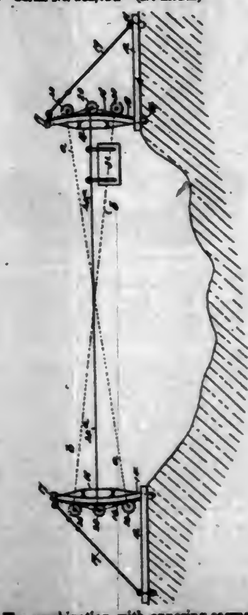
4. A folding step-ladder constructed with the bracing-legs 4, the top 3, the brackets 6, with curved slots 9, secured to legs 4, and by means of flanges 7 to top 3, the uprights 1 and 2, connected at their

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upper ends to brackets 6 by pins 8, projecting through slots 9, and having slots 10 in their inner face, with reverse double inclined V-shaped shoulders 12, and steps 11, having their ends located in slots 10 between the V-shaped shoulders 12 and pivoted to uprights 1 2 by the T-shaped castings 15, having the cross bent portion 16, connecting the uprights 1 2 on a side, the inturned ends 16, projecting through uprights 1 2 and into the end of steps 11, and the main portion 17, extending beneath the steps and having an eye, 19, secured to the step by a bolt, 18, substantially as shown and described.

408,603. CONVEYER. CHARLES H. NEWCOMER, Omaha, Nebr. Filed Aug. 14, 1888. Serial No. 282,734. (No model.)



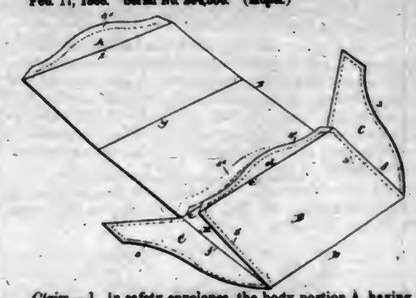
Claim.—1. The combination, with opposing segmental standards and a rack secured to the outer convex surface of each of the same, of a carriage meshing with the rack of said standards, a chain secured to and wound upon the axle of each of said carriages, a cable connecting the chains, and means, substantially as shown and described, for simultaneously moving the carriages in opposite directions, as set forth.

2. The combination, with opposing segmental standards arranged in pairs, having their bases in the same horizontal plane, and said standards being arcs of a circle whose center is midway between the opposing pairs, and a rack secured to the outer convex face of each of the standards, of a carriage meshing with the rack of each pair of standards, a chain secured to, coiled upon the axles, and connecting the carriages, and means, substantially as shown and described, for simultaneously moving the two carriages in opposite directions, as set forth.

3. The combination, with opposing segmental standards arranged in pairs, a rack secured to the outer convex surface of each of the same, a carriage meshing with the rack of each pair of standards, and a cable connecting the carriages, of a crank-shaft journaled in one pair of standards, a sprocket-wheel upon said shaft, and a chain belt, passing around said sprocket-wheel secured to opposite sides of one carriage at opposite ends, substantially as shown and described.

4. The combination, with opposing segmental vertical standards, each having a racked outer convex face, the center of the segments being midway between the pairs, of a carriage meshing with the rack of each of said standards, consisting of toothed wheels united by an axle, a chain secured to the carriage-axle, coiled around the same, a cable connecting said chain, and means, substantially as described, for raising and lowering one carriage, as set forth.

408,604. ENVELOPE. JOHN O. DONNELL, Lowville, N. Y. Filed Feb. 17, 1888. Serial No. 264,356. (Model.)



Claim.—1. In safety-envelopes, the body portion A, having folding sealing side wings, C C, a folding wing, B, sealed to the body portion, said side wings, C C, sealed upon the wing B, an elongated folding wing adapted to wrap once or more around the main portion of the envelope, and having sealing or adhesive material a^3, arranged to seal over the upper ends of the side wings, C C, and provided with a folding and sealing outer end portion, A, substantially as and for the purpose described.

2. A safety-envelope with an extending wing arranged to be folded once or more times about the main or body portion of the envelope, said wing provided with a supplemental gummed surface, a^3, adapted to be sealed to the body portion over the upper open end of the same, and a folding and sealing outer end, A, arranged to seal on the said wing portion over the aforesaid sealed portion a^3, substantially as and for the purpose described.

408,605. MANUFACTURE OF COLLARS FOR JUG-TOPS. ARCHIBALD W. PAULL, Wheeling, W. Va. Filed Nov. 19, 1888. Serial No. 291,233. (No model.)

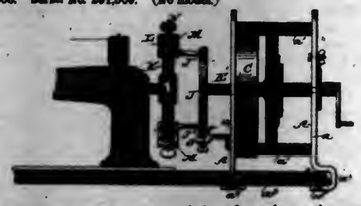


Claim.—1. An improvement in the manufacture of collars for jug-tops, which consists in forming a sheet-metal cup, drawing a second cup of less diameter within the cup first formed, folding back the base of the first cup upon itself to form a drip-trough, and removing the metal at the end of the second cup, substantially as and for the purposes described.

2. An improvement in the manufacture of collars for jug-tops, which consists in forming a sheet-metal cup, drawing a second cup of less diameter within the cup first formed, folding back the base of the first cup upon itself to form a drip-trough, removing the metal at the

end of the second cup, and cutting away or perforating the metal of the second cup at or near its junction with the metal of the first cup, substantially as and for the purposes described.

403,606. MOTOR. ARNIE W. PEARCE, Greenwood, S. C., assignor of one-half to Laura Henrietta Johnson, same place. Filed Nov. 21, 1888. Serial No. 291,509. (No model.)



Claim.—1. A spring-motor consisting of a casing, spring-actuated gearing mounted therein, one of the gear-shafts projected at each side of the casing, provided at one end with a disk, J, having arms adapted to detachably connect the motor with the drive-wheel of the machine to be driven, a ratchet-wheel at its opposite end, and an adjustable pawl for engaging the same, substantially as shown and described.

2. The combination, with the casing A, the shaft E, the intermediate gearing for operating it, and the ratchet-wheel *b'*, mounted thereon, of the adjustable pawl F, the spring G, and the diagonally-adjustable nut I, operating upon the spring G, substantially as and for the purposes specified.

3. The combination, with the shaft E, the intermediate gearing for operating it, and the ratchet-and-pawl mechanism connected therewith and operated as specified, of the disk J, secured upon the inner projecting end of said shaft, provided with projecting arms J' J', having boxes L at their outer ends, said boxes provided with adjustable elastic bearing-blocks, whereby said arms are detachably secured to the rim of the drive-wheel, substantially as and for the purpose hereinbefore described.

403,607. SAFETY-PIN. EMILE PICKHARDT, Islington, Mass., and DANIEL A. CARPENTER, New York, N. Y. Filed May 14, 1888. Serial No. 273,784. (No model.)



Claim.—1. In a safety-pin, the combination of the sharpened limb 1, unsharpened limb 2, coil 3, and a shield formed from a flat blank having the faces 5 5 united at the edge 7 and the open edge 9, said shield being attached to the limb 2, a portion of which is located immediately at the opening in the edge 9 of the shield and serves as a guide whereby the point of the pin is directed through that opening from either side, substantially as and for the purpose described.

2. In a safety-pin, the shield thereof drawn from a flat blank having faces 5 5 united across the end 6 and along the edge 7 and open at the two other edges, 8 and 9, said shield being secured to the pin's unsharpened limb, which constitutes a guide whereby the point is directed through the opening in the edge 9 from either side, substantially as and for the purpose described.

3. In a safety-pin, the combination of the sharpened limb 1, unsharpened limb 2, with the hook 4 at the end thereof, the coil 3, and a shield formed from a flat blank attached to the hook 4, said shield having the faces 5 5 united at the edge 7, and the open edge 9, through which the point of the pin is directed from either side by a portion of the limb 2, substantially as and for the purpose described.

403,608. SAFETY-PIN. EMILE PICKHARDT, Islington, Mass., and DANIEL A. CARPENTER, New York, N. Y. Filed Feb. 13, 1889. Serial No. 299,580. (No model.)

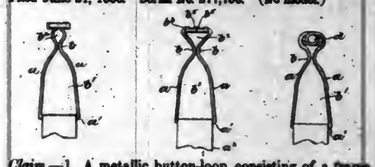


Claim.—1. The combination of the sharpened limb, coil, unsharpened limb, and shield, the shield having the faces 5 5 and the open edge 9, through which the point of the pin passes on either side, and the unsharpened limb having the offset formed by the section 10 and bend 11, substantially as and for the purpose described.

2. The combination of the sharpened limb, coil, unsharpened limb, and shield, the shield having the faces 5 5 united along the edges 6 and 7, and the open edges 8 and 9, and the unsharpened limb having the offset formed by the section 10 and bend 11, substantially as and for the purpose described.

3. The combination of the sharpened limb, coil, unsharpened limb, and shield, the shield having the faces 5 5 and the open edge 9, and the unsharpened limb being flattened and having the offset formed by the section 10 and bend 11, substantially as and for the purpose described.

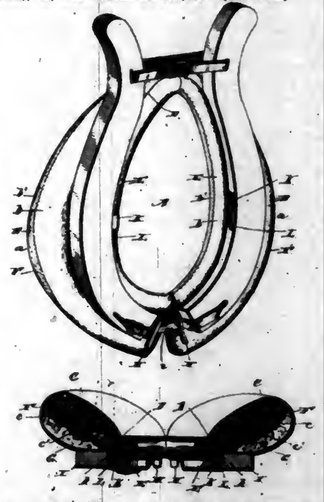
403,609. BUTTON-LOOP. EMILE PICKHARDT, Islington, Mass. Filed June 21, 1888. Serial No. 277,758. (No model.)



Claim.—1. A metallic button-loop consisting of a frame having two arms, *a'*, united by a cross-bar at one end and expansible at their opposite ends, the said arms being bent to form a contracted throat and leave between the contracted throat and the cross-bar a button-receiving eye, and on the opposite side of the said throat a button-holding eye capable of being enlarged, substantially as described.

2. A metallic button-loop consisting of a frame having two arms, *a'*, united by a cross-bar at one end and expansible at their opposite ends, and a connecting device, substantially as described, to unite said expansible ends, the said arms being bent to form a contracted throat and leave on opposite sides thereof a button-receiving and a button-holding eye, substantially as described.

403,610. HORSE-COLLAR. JAMES E. PURDY, New York, N. Y. Filed Aug. 16, 1888. Serial No. 282,846. (No model.)



Claim.—1. In a horse-collar, the sides *a a*, comprising the inclosing sacks or casings B B, the flexible pads arranged in the said sacks or casings, and the rows of stitching D through the sacks or casings and the pads and dividing the neck-rolls from the body-rolls, substantially as specified.

2. In a horse-collar, the sides *a a*, comprising the sacks or casings B B, having their open upper ends stitched together, the flexible pads C C, arranged in the sacks or casings in contact with the rear sides of the same, the rows of stitching D, and the filling G, between the pads and front sides of the sacks or casings, substantially as specified.

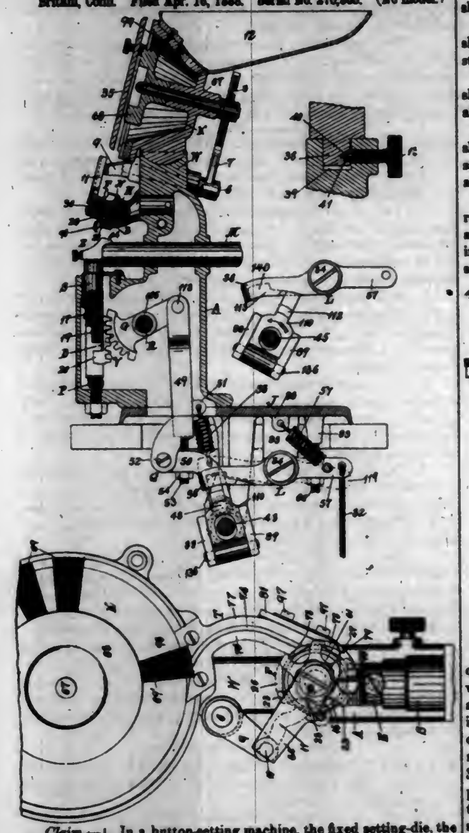
3. In a horse-collar, the sides *a a*, comprising sacks or casings B B, which are stitched together at their upper ends and are composed, respectively, of the front and rear sections, *b b'*, the flexible pads arranged in the sacks or casings, and the rows of stitching extending through the sacks or casings and the pads and thereby forming the neck and body rolls E F, substantially as specified.

4. The horse-collar herein shown and described, having the sides *a a*, connected together at their upper ends and loose at their lower ends, and provided adjacent to their lower ends with the hooks H H, which are adapted to engage the hame strings or latches, substantially as specified.

5. The horse-collar herein described and shown, having sides *a a*, provided at suitable points with loops K K, to engage keepers on the hames, substantially as specified.

6. The horse-collar A, provided with the sides *a a*, having free ends, the hooks H H, arranged near the lower ends of the sides, and the spring-loops K K, arranged at intermediate points of the sides and connected to the collar by the loops *k k*, in combination with the hames provided with the keepers L L, adapted to be engaged by the said spring-loops, and the hame strings or latches connecting the lower ends of the hames and engaging the said hooks H, substantially as and for the purpose specified.

403,611. BUTTON-SETTING MACHINE. FRANCIS H. RICHARDS, Hartford, assignor to the American Button Fastener Company, New Britain, Conn. Filed Apr. 16, 1888. Serial No. 270,863. (No model.)



Claim.—1. In a button-setting machine, the fixed setting-die, the presser-slide, the driver, the driving-crank having a fixed throw or stroke, and mechanism, substantially as described, connecting said crank and driver, said connecting mechanism having therein a spring arranged to yield on the fastener meeting obstructions, all substantially as described.

2. In a button-setting machine, the combination of the fixed setting-die, the driver, the revolving driving-crank, and mechanism, substantially as described, connecting said crank and driver, said connecting mechanism having therein a spring arranged to yield, as set forth, and having an adjustable stop regulating the normal relative positions of the crank and driver, all substantially as described.

3. In a button-setting machine, the combination of the head H the feed-wheel F, having flange N and having the re-entrant rim 32 and the die B, set on said head and standing within said wheel and rim, substantially as described.

4. The combination, with the feed-wheel F and the setting die, of the stud 30, and the feed-arm having a hub turning on said stud and within said feed-wheel, the hub extending within said wheel to said die to serve as a stop, all substantially as described.

5. The combination of head H, having shoulder 31, the die B, engaging said shoulder, stud 30, wheel F, and arm 64, substantially as set forth.

6. The combination, with the feed-wheel and die, of the arm 64, fitted to turn said wheel relative to said die, and the oscillating arm 9, said arm 64 having a cam-shaped groove, whereby the movement thereof by said arm 9 is timed to conform to the movement of the driver and presser-slide, all substantially as described.

7. The combination, in a machine of the class specified, of the feed-wheel actuated by arm 64, shaft 6, having arm 9, actuating arm 64, the hopper having a chute leading to said wheel, and having a rotary reciprocating brush delivering buttons to said chute, and gears 7 and 8, said hopper being removably attached to the machine, and the whole organized and coacting substantially as set forth, all substantially as described.

8. In a button-setting machine, the combination, with the presser-slide, of the indicator Y, as set forth.

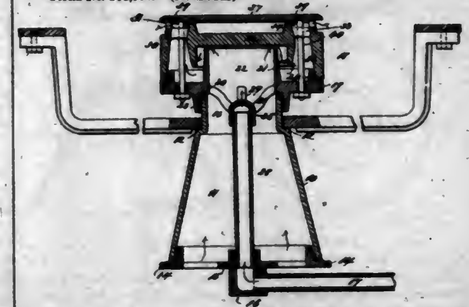
9. In a button-setting machine, the combination, with presser-slide, of the indicator Y, formed in two parts pivoted together, substantially as set forth.

10. In a button-setting machine, the combination, with the presser-slide, of the indicator 120, lever 122, and a cam operating said lever, all substantially as set forth.

11. In a button-setting machine, the combination, with the presser-slide, of indicator-arm 120, having stop 133, lever 122, a cam whereby said lever is moved back, and a spring to throw the same forward, all substantially as described.

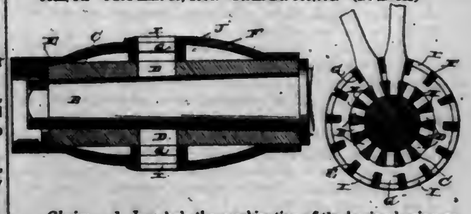
12. The combination, with the presser-slide and driver, of the rock-shaft operatively connected to actuate said driver and having arm 72, the indicator pivoted substantially as described, said arm and indicator having one of them a cam and the other resting against said cam, all substantially as described.

403,612. GAS BURNER AND HEATER. DANIEL S. ROBILLIARD and CHARLES G. DAVIES, Quebec, Quebec, Canada. Filed July 31, 1888. Serial No. 281,537. (No model.)



Claim.—The combination, with a base-plate, 19, having a central opening surrounded by an upwardly-extending collar, 21, and provided near the outer edge with an annular vertical flange, 24, lugs or arms 25, projected radially from the inner wall of the base-plate opening, an interiorly-threaded cap, 26, supported centrally within the opening of the base-plate by said arms 25, and having in the top an aperture, 27, and a gas-supply pipe screwed in the said cap, of a ring, 30, supported upon the base-plate 19, outside of the flange 24, a cap-plate attached to the said ring by horizontal arms and supported thereby a slight distance above the collar of the base-plate 19, the said cap-plate 32 being provided with downwardly and upwardly extending peripheral flanges, the inner walls of which are spaced from the outer wall of the base-collar 21, teeth formed upon the upper edge of the ring 30, and a crown-piece, 37, resting upon the upper flanged cap-plate and extending over and beyond the said teeth, substantially as shown and described, whereby a commingling-chamber, 22, is formed, having an outlet in the circuitous chambers 35 and 36, and a cooling-space provided between the cap-plate and the crown-piece, as and for the purpose specified.

403,618. HUB FOR VEHICLE-WHEELS. JAMES D. ROTH, Nazareth, Pa. Filed Mar. 13, 1888. Serial No. 303,091. (No model.)

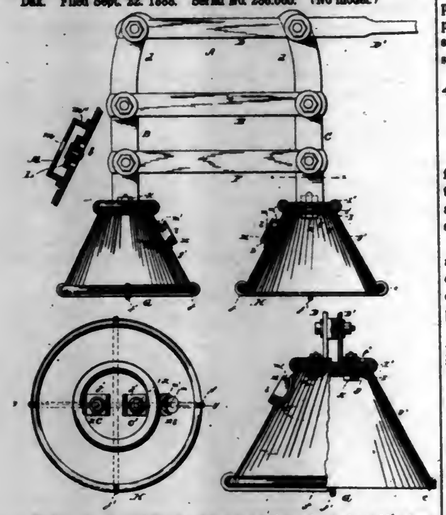


Claim.—1. In a hub, the combination of the boxing having an annular series of longitudinal recesses, and the shells fitted on the box-

ing and having their ends overlapping, and provided with annular series of openings adapted to coincide and register with the recess in the boxing, as set forth.

2. The improved hub herein described and shown, comprising the boxing provided with an annular series of longitudinal recesses, the shell E, fitted on the boxing and provided at its end with an annular series of openings adapted to register with the recesses in the boxing and larger than said recesses, and the shell F, fitted on the boxing and having its end fitting over the end of the shell E, and provided with an annular series of openings coinciding with the openings in the shell E, the said shell F being provided with an internal annular shoulder adapted to contact with the end of the shell E, as set forth.

403,614. WASHING-MACHINE. Alford A. Rounds, Yankton Dak. Filed Sept. 22, 1888. Serial No. 286,065. (No model.)



Claim.—1. A washing-machine consisting of a series of horizontal parallel bars, E F, and a handle-bar, D, a pair of vertical bars, B C, rigidly secured to the ends of said horizontal bars and having their lower ends extended below the horizontal bar F, the lower extremities of each pair of vertical bars B C being bent to form the feet *j j*, and the inverted cups G H, bolted to the feet of said vertical bars, all arranged and combined, substantially as and for the purpose specified.

2. A washing-machine consisting of a series of horizontal bars, E F, and a handle-bar, D, a pair of vertical bars, B C, rigidly secured to the ends of said horizontal bars and having their lower ends extended below the horizontal bar F, the lower extremities of each pair of vertical bars B C being bent to form the feet *j j*, and the inverted cups G H, each cup having two packing-disks, I I', which are provided with flaring annular rims that overlap the joint between the head and shell of the cup on both the interior and exterior surfaces of said cup, and bolts which pass through the feet *j j*, the packing-disks, and the head of the cup, substantially as described.

403,615. PROCESS OF LEACHING ORES WITH HYPOSULPHITE SOLUTIONS. Edward H. Russell, New Haven, Conn., assignor to the Russell Process Company, same place. Filed Dec. 29, 1887. Serial No. 259,338. (No specimens.)

Claim.—1. The method of preparing ores and metallurgical products for the use thereon of a hyposulphite leaching solution, which consists in introducing into the ore or product a compound adapted to precipitate copper out of a copper solution, and then treating the ore or product with a solution of a copper compound, substantially as and for the purpose specified.

2. The method of preparing ores and metallurgical products for the use thereon of a hyposulphite leaching solution, which consists in introducing into the ore or product a carbonate, and then introducing into it a copper salt or compound, substantially as and for the purpose set forth.

3. The method of preparing ores and metallurgical products for the use thereon of a hyposulphite leaching solution, which consists in introducing into the ore or product carbonate of soda, and then introducing into the mass sulphate of copper or blue-stone, substantially as and for the purpose specified.

4. The method of preparing ores and metallurgical products for the use thereon of a hyposulphite leaching solution, which consists in introducing into the ore or product a compound adapted to precipitate copper from a sulphate-of-copper solution and treating the mass with such a solution, substantially as and for the purpose described.

5. The process of extracting metal from ores and metallurgical products, which consists in introducing a carbonate into the ore or product, then introducing a salt of copper, and finally treating the mass with a hyposulphite solution, substantially as and for the purpose specified.

6. The process of extracting metal from ores and metallurgical products, which consists in introducing into the ore or product carbonate of soda, then treating the mass with a solution of sulphate of copper, and then treating it with a hyposulphite solution, substantially as and for the purpose described.

7. The process of extracting metals from ores and metallurgical products, which consists in introducing into the ore a compound to precipitate copper from a copper solution, then treating the mass with such a solution, and finally treating the ore or product with a hyposulphite solution, substantially as and for the purpose specified.

403,616. PROCESS OF LEACHING ORES WITH HYPOSULPHITE SOLUTIONS. Edward H. Russell, New Haven, Conn., assignor to the Russell Process Company, same place. Filed Mar. 3, 1888. Renewed Apr. 17, 1889. Serial No. 307,633. (No specimens.)

Claim.—1. As an improvement in the art of extracting metals from ores and metallurgical products by means of a leaching solution, the method of diminishing the power of the solution to dissolve lead and its compounds, which consists in introducing into the solution sulphate of lime, substantially as described.

2. As an improvement in the art of extracting metals from ores and metallurgical products, the method of extracting the metals, which consists in treating the ore or product with a hyposulphite solution containing a sulphate of lime or calcium, substantially as and for the purpose described.

3. The process of obtaining metals from ores and metallurgical products, which consists in treating the ore or product with a leaching solution into which sulphate of lime has been introduced and separating or precipitating the metals from the solution, substantially as and for the purpose described.

4. The process of obtaining metals from ores and metallurgical products, which consists in treating the ore or product with a hyposulphite leaching solution into which sulphate of lime has been introduced, and afterward separating the metals from the solution, substantially as and for the purpose described.

5. The process of obtaining metals from ores and metallurgical products, which consists in introducing sulphate of lime into a hyposulphite solution, treating the ore or product with the resultant solution, and then precipitating the lead from the solution, so as to leave the precious metals, substantially as and for the purpose described.

6. The process of obtaining metals from ores and metallurgical products, which consists in introducing sulphate of lime into a hyposulphite solution and using the resultant solution on the ore or product, then precipitating the lead by means of a carbonate, and finally precipitating the precious metals by means of a sulphide or sulphides, substantially as described.

403,617. HOISTING ATTACHMENT FOR ASH AND GARBAGE CARTS. John F. Schultz, New York, N. Y. Filed Feb. 5, 1889. Serial No. 298,712. (No model.)

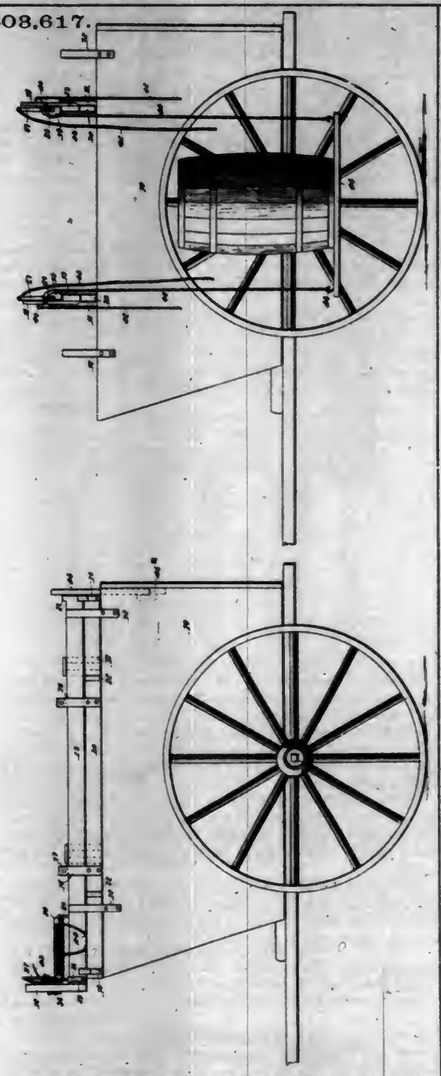
Claim.—1. In a hoisting attachment for vehicles, a frame consisting of a stationary bar and a parallel bar sliding thereon, a drum mounted upon the sliding bar of the frame, a platform, a rope connecting the drum and platform, and means, substantially as shown and described, for manipulating the drum, as and for the purpose specified.

2. In a hoisting attachment for vehicles, a frame consisting of a stationary bar and a parallel bar sliding thereon, a drum detachably mounted upon the sliding bar of the frame, a platform, a rope connecting the platform and drum, a ratchet-wheel secured to the drum, and a lever carrying a dog capable of actuating the drum, substantially as specified.

3. In a hoisting attachment for vehicles, the combination, with a frame consisting of a stationary bar and a parallel bar sliding thereon, of a drum detachably mounted upon the sliding bar of the frame, a ratchet-wheel secured to the drum, a lever carrying a weighted dog capable of actuating the drum, and a trip-lever capable of elevating the drum and tripping the dog, substantially as shown and described.

4. In a hoisting attachment for vehicles, the combination, with a frame consisting of a stationary bar and a parallel bar sliding thereon, of a drum detachably mounted upon the sliding bar of the frame, a ratchet-wheel secured to the drum, a lever carrying a weighted dog capable of actuating the drum, a trip-lever capable of elevating the drum and tripping the dog, a rope secured to the drum, and a platform detachably attached to the said rope, all combined for operation substantially as shown and described.

403,617.



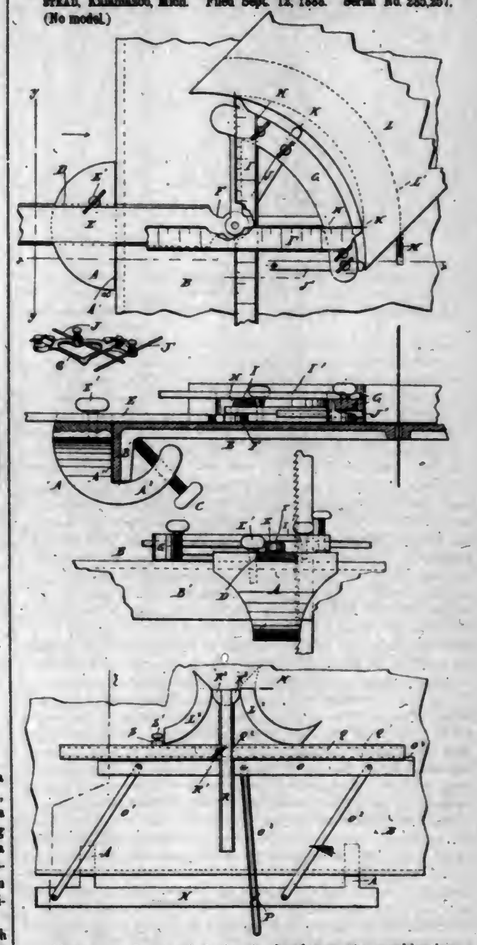
5. In a hoisting attachment for vehicles, the combination, with a frame consisting of a stationary bar and a parallel bar sliding thereon, of a drum detachably mounted upon the sliding bar of the frame, a ratchet-wheel secured to the drum, a spring-actuated lever carrying a weighted dog capable of normal contact with the ratchet-wheel, a pawl engaging with the said ratchet-wheel, a trip-lever capable of elevating the drum and dog, a rope secured to the drum, and a platform attached to said rope, all combined for operation substantially as specified.

6. In a hoisting attachment for vehicles, the combination, with the body of a vehicle provided with slotted vertical standards upon one face of the sides and solid vertical standards upon the opposite face of said sides, of a frame capable of being fitted in the slotted standards and between the slotted and solid standards, consisting of a stationary lower bar, an upper parallel bar held to slide thereon, and a hoisting mechanism attached to one outer end of the upper sliding bar, substantially as and for the purpose specified.

7. In a hoisting attachment for vehicles, the combination, with the body of a vehicle provided with slotted vertical standards upon one face of the sides and solid vertical standards upon the opposite face of the said sides, of a frame capable of being fitted in the slotted standards and between the slotted and solid standards, consisting of a stationary lower bar provided wih guides at the ends, stops intermediate of the ends, and vertical guide-standards arranged in pairs carrying friction-rollers, and an upper bar held to slide upon the lower bar below the friction-rollers, provided at one end with a stop and at the opposite end with a hoisting mechanism, all combined for operation substantially as shown and described.

8. A hoisting mechanism for vehicles, consisting of a revoluble drum provided with an attached ratchet-wheel, a spring-actuated lever held to turn upon the said drum, a pin secured transversely of the lever, a dog pivoted upon the said pin, having one weighted end capable of engagement with the ratchet-wheel, and a lip projected from the opposite end, a trip-lever adapted for contact with the pin on the drum-lever and capable of elevating the drum and dog, and a rope attached to the outer end of the drum-lever and the trip-lever, substantially as shown and described.

403,618. WORK-FEEDER FOR BAND-SAWS. Abram B. Springstead, Kalamazoo, Mich. Filed Sept. 12, 1888. Serial No. 285,257. (No model.)



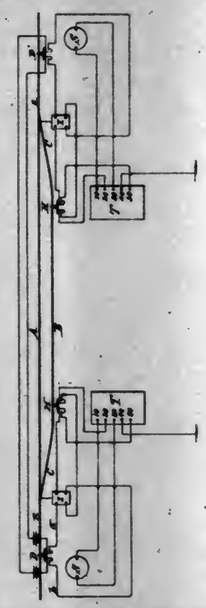
Claim.—1. In a work-feeder for band-saws, the combination, with the base-clamp, of a horizontal bar which slides in the grooved upper portion of said clamp, a frame or work-carrier, G, which is pivoted to and swings horizontally on the outer end of said bar, and horizontal arms which slide in said work-carrier and are provided with spurs for engaging the stuff to be sawed, all substantially as shown and described, to operate as specified.

2. In a work-feeder for band-saws, the combination, with the saw-table, of a detachable clamp, A, a transverse bar, E, adjustable on the clamp over the table, a carrier-frame, G, fastened to the bar E, and radially-adjustable arms on the said carrier-frame having stops on their outer ends, substantially as described.

3. In a work-feeder for band-saws, the combination, with the saw-table, of a clamp, A, a transverse bar, E, adjustable on the clamp A, a segmental frame, G, pivoted to the bar E and provided with radial dovetail slots and holes, and radially-adjustable stop-arms J J' and scaled measuring-arms I I', adjustable in said holes and slots, substantially as described.

403,619. SWITCH-INSTRUMENT FOR RAILROAD-SIGNALS.

GEORGE C. STEENBERGH, Syracuse, N. Y. Filed July 14, 1888. Serial No. 279,943. (No model.)



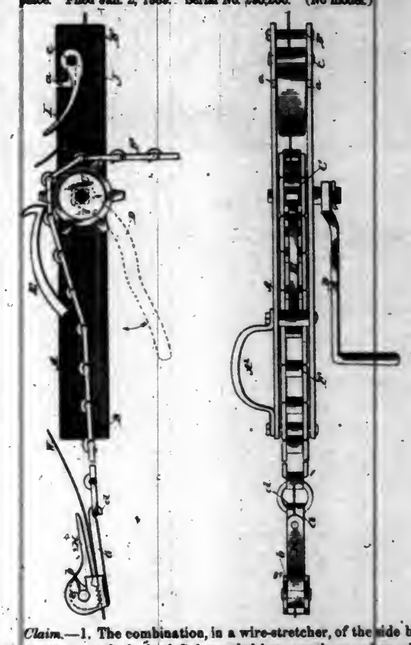
Claim.—1. The combination, with a block of railway main track and siding connected with said block, two electric circuits, circuit-breakers at each end of the block connected with said circuits and actuated separately by the cars passing over the block of road, registering mechanism in the circuits actuated in opposite directions, respectively, by the circuit-breakers at opposite ends of the block, and signals actuated by the registering mechanism, of two circuit-breakers separate and independent of the circuit-breakers at the ends of the block and connected, respectively, with the two circuits and actuated separately, one by the movement of the switch-rod in opening the switch of the siding and the other by the movement of the switch-rod in closing said switch, substantially as described and shown.

2. The combination, with a block of railway main track and siding connected with said block, two electric circuits, circuit-breakers at each end of the block connected with said circuits and actuated separately by the cars passing over the block of road, registering mechanism in the circuits actuated in opposite directions, respectively, by the circuit-breakers at opposite ends of the block, and signals actuated by the registering mechanism, of two circuit-breakers separate and independent of the circuit-breakers at the ends of the block and connected, respectively, with the two circuits and actuated separately, one by the movement of the switch-rod in opening the switch of the siding and the other by the movement of the switch-rod in closing said switch, and circuit-breakers connected with the same circuits and arranged at the side of the track-rail of the aforesaid siding to be actuated by the cars entering and leaving said siding, substantially as described and shown.

3. In combination with the shifting-rail of a railroad-switch and a rod connected to said rail, two electric circuits, two circuit-breaking bars, each in one of the aforesaid circuits and arranged side by side, a double guide-cam secured stationarily between the said circuit-breaking bars and having its ends beveled in opposite directions from each other, a reciprocating rod, a bell-crank connecting said rod at one end with the switch-rod, and an insulated double wedge secured to the opposite end of the reciprocating rod and adapted to pass between the circuit-breaking bars alternately at opposite sides of the stationary guide-cam during the motion of the aforesaid reciprocating rod in opposite directions, substantially as described and shown.

403,620. WIRE-STRETCHER.

FREDERICK STILES, Burnet, Tex., assignor of two-thirds to R. L. Harrell and H. A. Burns, both of same place. Filed Jan. 2, 1889. Serial No. 295,266. (No model.)



Claim.—1. The combination, in a wire-stretcher, of the side bars, A A, having a toothed wheel, C, journaled between them and provided with a crank, a set of cross bars or bolts connecting the two side bars, a pawl, E, hung upon one of the cross-bars and having its toothed end arranged to abut against the teeth of the wheel, and a chain, F, passing over the toothed wheel and underneath the pawl, substantially as shown and described.

2. The combination, with the frame-bars A, having right-angular slots *a*, of the gripping cam-lever I, having trunnions *c*, fitting in said slots, and the cross-bar J, connecting the frame-bars and forming a bearing beneath the cam-lever to grip the wire against, as shown and described.

3. The combination of frame-bars A A, with connecting-bolts B B', cross-plate J, and slots *a*, the gripping cam-lever I, cog-wheel C, with attached crank, detent E, chain F, and wire-holder G H, attached to the chain, substantially as shown and described.

403,621. COUPLING-POLE FOR LUMBER-WAGONS.

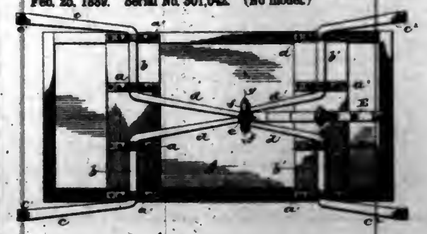
BENJAMIN R. STOCKDILL and WILLIAM A. WORLEY, Carl Junction, Mo. Filed Mar. 8, 1889. Serial No. 302,512. (No model.)



Claim.—The metallic plate B, formed with flat ends to fasten to the coupling-pole, and an intermediate raised or convexed part, *b*, with the longitudinal slot *b'* and journal or pivot holes b^2 b^3, in combination with an axially-perforated friction-roll turning upon a fixed pivot, as shown and described.

403,622. VEHICLE-SPRING.

HENRY C. SWAN, Oshkosh, Wis. Filed Feb. 25, 1889. Serial No. 301,042. (No model.)



Claim.—1. The combination, with a vehicle-body and rock-shafts connected thereto and provided with arms loosely connected at their inner ends, of a spring loosely connected at one end to said arms and bearing at its other end against said body, and a spring-supporting device at a point between its ends, substantially as set forth.

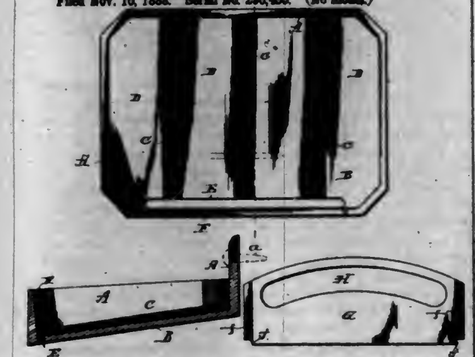
2. The combination, with a vehicle and rock-shafts mounted thereon having arms pivotally connected together, of a flexion-spring pivotally connected to the arms of the rock-shafts, and a clevis-bolt for adjustably connecting the flexion-spring with the vehicle, substantially as set forth.

3. The combination, with a vehicle and rock-shafts mounted thereon having arms pivotally connected thereto, of a flexion-spring pivotally connected to said arms, and a clevis-bolt having a yoke at one end to receive the flexion-spring, a screw-threaded upper end to pass through the vehicle-bottom, and a nut on said bolt, whereby the tension of the flexion-spring may be regulated, substantially as set forth.

4. The combination, with a vehicle-body and a set of rock-shafts loosely connected thereto, of a flexion-spring secured to the body by means of an adjusting-bolt, the free inner end of said spring being connected to the inwardly-extending arms of the rock-shafts in a manner to permit the free vertical movement of the body, substantially as set forth.

403,623. SOAP-HOLDER.

LE GRAND TERRY, Horseheads, N. Y. Filed Nov. 10, 1888. Serial No. 290,455. (No model.)



Claim.—1. A soap-holder having a sloping bottom with ribs and depressions therein and a rim around the bottom, said rim having a removable portion, substantially as set forth.

2. The combination, with a sloping bottom having ribs and depressions therein and a slot in its lowest edge, of a rim around the edge of the bottom and a removable front piece adapted to form one side of the slot, substantially as set forth.

3. The combination, with a sloping bottom having ribs and depressions therein and a slot at the lower edge into which said depressions lead, of a rim terminating opposite the ends of the slot in beveled seats and a removable front piece adapted to be held against said seats, substantially as set forth.

4. The combination, with a sloping bottom having ribs and depressions and a slot at its lower edge, into which said depressions lead, of a rim terminating at the ends of the slot in grooves, shoulders at the ends of said grooves, and a removable front piece adapted to slide in the grooves, substantially as set forth.

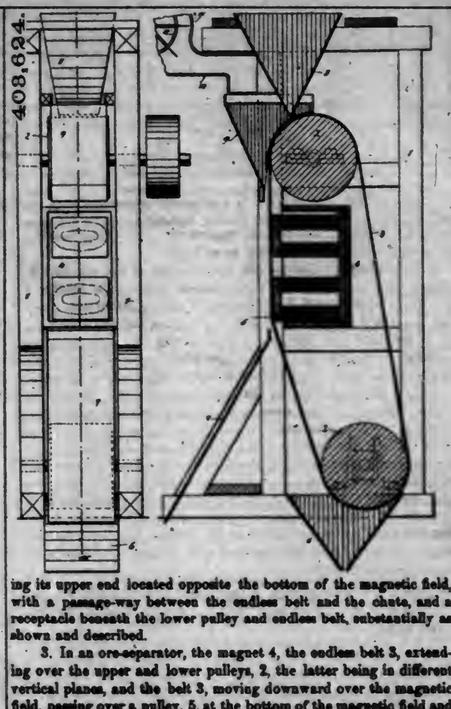
403,624. MAGNETIC ORE-SEPARATOR.

WILLIAM B. THOMAS, Catasauqua, Pa. Filed Mar. 30, 1888. Serial No. 305,373. (No model.)

Claim.—1. An ore-separator consisting of an endless belt mounted on upper and lower pulleys, a supply-chute having its lower open end located above the upper pulley and endless belt, a directing-chute closed at the top and open at its lower end opposite the upper pulley and endless belt, a magnet having its field located adjacent to and behind the vertically-descending portion of the endless belt, a chute having its upper end located adjacent to the bottom of the field of the magnet and in front of the endless belt, with a passage-way between the chute and belt, a hopper located beneath the lower pulley and the endless belt, a suction air-tube connected to the closed top of the directing-chute, and an exhaust-fan located in a chamber opening into the suction-tube, substantially as shown and described.

2. In an ore-separator, a magnet, an endless belt passing over upper and lower pulleys and vertically downward over the field of the magnet, a receiving-chute having its lower open end located above the upper roller and endless belt, a directing-chute having its lower open portion opposite the upper pulley and endless belt, a chute having its upper end located opposite the bottom of the magnetic field, with a passage-way between the endless belt and the chute, and a receptacle beneath the lower pulley and endless belt, substantially as shown and described.

403,624.



3. In an ore-separator, the magnet 4, the endless belt 3, extending over the upper and lower pulleys, 2, the latter being in different vertical planes, and the belt 3, moving downward over the magnetic field, passing over a pulley, 5, at the bottom of the magnetic field and extending rearward at an angle over the lower pulley 2, the receiving-hopper 8, opening onto the belt 3, above the upper pulley 2, the directing-chute 9, open at its lower end opposite the belt 3, passing over the upper pulley 2, and the chute 7, having its upper end located opposite the belt 3, beneath the pulley 5, with a passage-way between the belt 3 and said chute 7, substantially as shown and described.

4. An ore-separator consisting of a vertical endless belt, a magnet having its field located behind the vertically-descending portion of the endless belt, a receiving-chute opening onto the endless belt above its upper roller, a directing-chute with closed top open at its lower portion opposite the endless belt and its upper roller, a chute having its upper end located opposite to the endless belt below the field of the magnet, with a passage-way between the belt and chute and an air-exhaust tube, and mechanism connected with the upper end of the directing-chute, substantially as shown and described.

403,625. SCRAPER.

SAMUEL THOMPSON, Englewood, Ill. Filed July 10, 1888. Serial No. 279,554. (No model.)

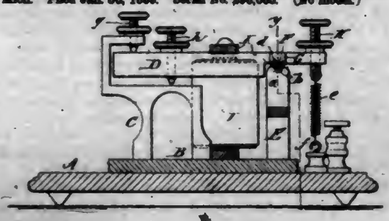


Claim.—1. In a scraper, the combination, with the reservoir A, provided with perforations *a*, of the clamping-plate C and the screws *b*, substantially as specified.

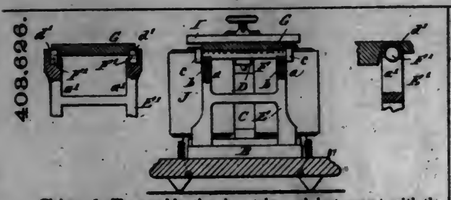
2. The combination, with the reservoir A, provided with perforations *a*, of the clamping-plate C, the screws *b*, and the strip D, substantially as specified.

403,626. TELEGRAPH-SOUNDER.

FRANK I. VAN EPPS, Hudson, Mich. Filed Jan. 30, 1889. Serial No. 298,063. (No model.)



408,626.

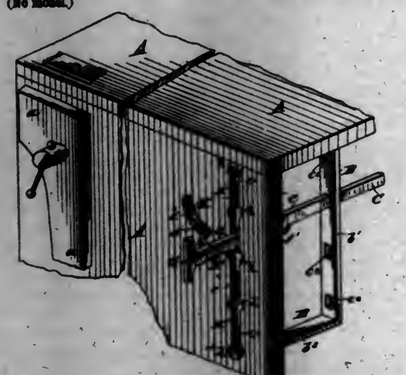


Claim.—1. The combination, in a telegraph-instrument, with the armature-lever and the standard, having registering curved recesses on their lower and upper surfaces, respectively, of a rolling bearing-piece in said recesses, substantially as set forth.

2. In a telegraph-sounder, the combination of the standard E, provided with arms *a*, having approximately semicircular notches *b* in the upper ends thereof, the rolling rod F, resting and turning freely in the notches *b* and provided with the heads *c*, and the armature-lever D, provided with the cross-arm G, having the approximately semicircular groove *d* receiving the upper side of said rod to allow the arm to rock on the rod and the rod to roll, substantially as specified.

3. In a telegraph-sounder, the combination of the standard E, provided with one or more arms, *a*, having approximately semicircular notches *b* in the upper ends thereof, the rolling rod F, resting and turning freely in the notches *b* and provided with the heads *c*, the armature-lever D, provided with the cross-arm G, having the approximately semicircular groove *d* receiving the upper side of the rolling rod to allow the arm to rock on the rod and the rod to roll, the ends of the arm G being flush with the outer sides of the standard and resting between the upper halves of the heads *c*, and the retractile spring *e*, adapted to hold the armature-lever D down upon the rod F, substantially as specified.

408,627. ADJUSTABLE WORK-REST FOR BENCHES. ALEXANDER WATSON, Brookline, Mass. Filed Dec. 20, 1888. Serial No. 294,153. (No model.)



Claim.—1. The combination, in a work-rest for benches, of a bar fitted to the bench for lateral adjustment and provided with a rack, a detent on the bench to which the rack is adapted, and a latch hung to the bench and provided with a lug adapted to lock the bar, substantially as herein set forth.

2. The combination, in a work-rest for benches, of a bar fitted to the bench for lateral and vertical adjustment and provided with a rack, a detent on the bench to which the rack is adapted, and a latch hung to the bench and provided with a series of lugs adapted to lock the bar, however it may be adjusted, substantially as herein set forth.

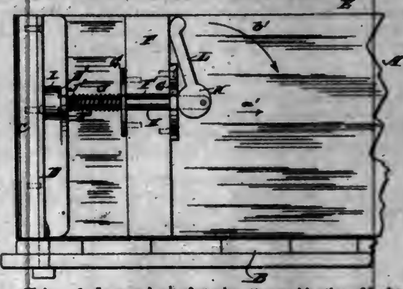
3. The combination, in a work-rest for benches, of a bar fitted to the bench for lateral adjustment and provided with a rack, a detent on the bench to which the rack is adapted, and a latch hung to the bench and having a lug adapted to lock the bar, said latch provided with a pin projecting into a slot of the bench to allow its operation from the outer face of the bench, substantially as herein set forth.

4. The combination, in a work-rest for benches, of a bar fitted to the bench for lateral and vertical adjustment and provided with a rack, a detent on the bench to which the rack is adapted, and a latch hung to the bench and provided with a series of lugs adapted to lock the bar, however it may be adjusted, said latch provided with a pin projecting through a slot of the bench to allow its operation from the outer face of the bench, substantially as herein set forth.

5. The combination, with a work-bench provided with a face slot or recess, H, and a curved slot, K, of a work-rest bar, C, fitted for lateral and vertical adjustment in the bench, a latch, D, hung to the bench and provided with a lug or lugs, *d*, adapted to overlie and lock the bar C, and having a pin, J, entering the slot K, and a keeper, E, for the latch, substantially as herein set forth.

6. The combination, with a work-bench having slots *c*¹ H K, of a frame, B, held thereto and provided with slots *c c*¹ and a detent, *f*, a bar, C, having a head, G, and rack F, and fitted to the bench and frame, a latch, D, hung to the frame B and having lugs *d d*², an arm, *d*³, and a pin, J, and a keeper, E, for the latch, all arranged for operation substantially as herein set forth.

408,628. END-GATE FOR WAGONS. WILLIAM R. WATT, Somerville, Tenn. Filed Feb. 20, 1888. Serial No. 300,517. (No model.)



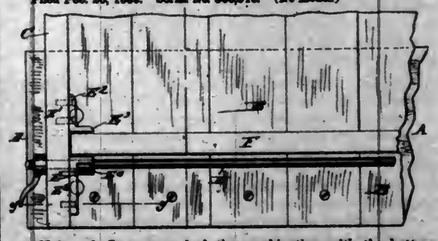
Claim.—1. In an end-gate fastening, the combination of L-shaped cleats secured on the sides of the wagon-bed, one of the said cleats being provided with an opening in its transversely-extending part, an end-gate fitting between the said cleats, and a shaft mounted to turn and slide on the end-gate and provided with a head adapted to enter the opening in the cleat, substantially as described.

2. In an end-gate fastening, the combination of L-shaped cleats secured on the sides of the wagon-bed, one of the said cleats being provided with an opening and a bearing in its transversely-extending part, an end-gate fitting between the said cleats, and a shaft mounted to turn and slide on the end-gate and provided with a head adapted to enter the opening in the cleat, substantially as described.

3. In an end-gate fastening, the combination, with L-shaped cleats secured on the sides of the wagon-bed, of an end-gate fitted between the said cleats, a shaft mounted to turn and to slide on the said end-gate, a fixed head secured on one end of the said shaft and adapted to engage an opening in one of the said cleats, and a cam-lever secured on the said shaft and serving to turn the said shaft and to cause it to slide laterally, substantially as shown and described.

4. In an end-gate fastening, the combination, with L-shaped cleats secured on the sides of the wagon-bed, of an end-gate fitted between the said cleats, a shaft mounted to turn and to slide on the said end-gate, a fixed head secured on one end of the said shaft and adapted to engage an opening in one of the said cleats, a cam-lever secured on the said shaft and serving to turn the said shaft and to cause it to slide laterally, and a spring held on the said shaft and operating in conjunction with the said lever, substantially as shown and described.

408,629. WAGON-BED. WILLIAM R. WATT, Somerville, Tenn. Filed Feb. 20, 1888. Serial No. 300,516. (No model.)

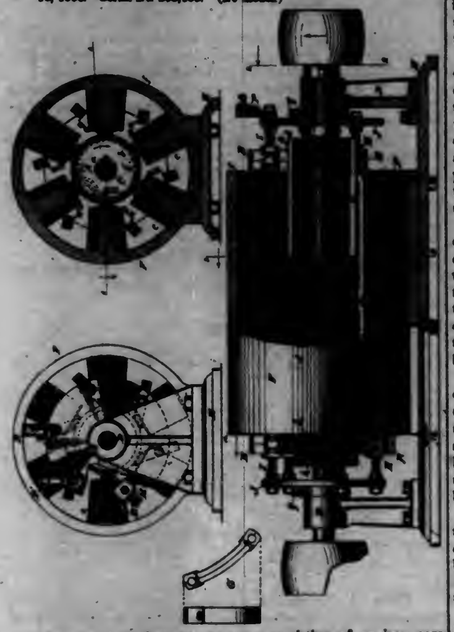


Claim.—1. In a wagon-bed, the combination, with the bottom, of sides adapted to rest on the said bottom, L-shaped metallic cleats secured to the insides of the said sides and forming a guideway for the end-gate, bolts formed on the lower ends of the said cleats to pass through corresponding apertures in the said bottom, and nuts screwing on the under sides of the said bolts, substantially as shown and described.

2. In a wagon-bed, L-shaped metallic cleats adapted to be secured to the sides of the wagon-bed to form a guideway for the end-gate, each cleat being provided on its lower end with a bolt adapted to pass through an aperture in the bed-bottom, and a nut adapted to screw on the said bolt, substantially as shown and described.

3. In a wagon-bed, the combination, with the wagon-bed bottom, and a transverse beam extending across the under side of the said wagon-bed bottom, of sides adapted to rest on the said wagon-bed bottom, L-shaped metallic cleats secured to the insides of the said sides to form a guideway for the end-gate, bolts formed on the lower enlarged ends of the said cleats and passing through corresponding apertures in the said bed-bottom and its transverse beam, and nuts screwing on the said bolts against the said transverse beam, substantially as shown and described.

408,630. DYNAMO-ELECTRIC MACHINE. THOMAS L. WILLSON, Brooklyn, N. Y., assignor to John C. McGuire, same place. Filed Dec. 10, 1888. Serial No. 293,132. (No model.)



Claim.—1. A dynamo-armature consisting of an iron core mounted to rotate on an axis, with a layer of independent and normally open-circuited conducting-bars insulated from each other extending longitudinally over the core and fastened thereto, so as to rotate therewith.

2. A dynamo-armature consisting of a cylindrical iron core mounted on a revolving shaft, and a layer of independent and normally open-circuited conducting-bars insulated from each other extending longitudinally over the cylindrical core and fastened thereto, so as to rotate therewith.

3. A dynamo-armature consisting of an iron core mounted to rotate on an axis, with a single layer of independent and normally open-circuited segmental conducting-bars applied over said core and fastened thereto, extending longitudinally thereof, insulated therefrom by an interposed insulating-envelope, and insulated from each other by being alternated with insulating-leaves.

4. A dynamo-armature consisting of a cylindrical iron core mounted on a revolving shaft, and a layer of independent and normally open-circuited conducting-bars insulated from each other applied around the exterior of the cylindrical core, fastened thereto to rotate therewith, extending longitudinally thereof, and projecting at the end beyond the end of the core.

5. The combination, with a field-magnet formed with converging poles of alternately-contrary polarities facing a central axis, of an armature consisting of a cylindrical iron core mounted to rotate on said axis, and a single layer of longitudinal conducting-bars insulated from each other fastened to said core, and extending at one end (or both) beyond the ends of the poles to form a commutating-surface, and a series of commutator-brushes equal in number to the field-poles arranged to bear on said commutating-surface in positions coincident with the respective fields of force.

6. The combination, with a field-magnet formed with converging poles of alternately-contrary polarities facing a central axis, of an armature consisting of a cylindrical iron core mounted to rotate on said axis, and a single layer of longitudinal conducting-bars insulated from each other, fastened to said core, and extending at both ends beyond the ends of the poles to form commutating-surfaces, and two series of commutator-brushes, one series arranged at each end to bear on said commutating-surfaces, and each series equal in number to the field-poles and arranged coincidently with the successive fields of force.

7. The combination of a field-magnet having converging poles of alternately-contrary polarities, an armature consisting of a cylindrical layer of longitudinal conducting-bars mounted to revolve within the field-poles, two series of collecting-brushes, each equal in number to the field-magnet poles, arranged to bear against said bars in coincidence with the fields of force, and electrical connections with the respective brushes, whereby they are all coupled together between the positive and negative terminals of the machine.

8. The combination of a field-magnet having converging poles of alternately-contrary polarities, an armature consisting of a cylindrical layer of longitudinal conducting-bars mounted to revolve within the field-poles, two series of collecting-brushes, each equal in number to the field-magnet poles, arranged to bear against said bars in coincidence with the fields of force, and electrical connections between alternately-successive pairs of brushes in each series, the connected pairs in one series alternating with those of the other series, whereby the generated current is caused to flow back and forth through the armature and to traverse the several brushes serially.

9. The combination of a field-magnet having converging poles of alternately-contrary polarities, an armature consisting of a cylindrical layer of longitudinal conducting-bars mounted to revolve within the field-poles, a series of collecting-brushes, equal in number to the field-poles, arranged to bear against the said bars in coincidence with the fields of force, holders for the respective brushes, and segmental coupling-bars constructed for engagement at their opposite ends with the respective holders and adapted to form electrical connections between them.

10. The combination of a field-magnet having converging poles of alternately-contrary polarities, an armature consisting of a cylindrical layer of longitudinal conducting-bars mounted to revolve within the field of force, a series of collecting-brushes arranged to bear against said bars in coincidence with the respective fields of force, holders for the respective brushes, and a yoke or disk mounted on a rotative bearing carrying said brush-holders and adjustable on its bearing to vary the lead of the brushes.

11. In a dynamo of the described type, the combination, with the armature having its end projecting to form a commutating-surface, of collecting-brushes bearing on said surface, a holder for each of said brushes formed with a projecting stud, and a segmental coupling-bar adapted to electrically connect two of said holders, and constructed at its ends to be clamped upon the studs thereof.

12. In a dynamo, the combination, with a brush-holder consisting of a rigid open frame, of a commutator-brush passing freely through said frame, two clamping-plates within said frame embracing the brush between them, and adjusting-screws reacting against the frame for pressing said plates against the brush and adjusting their inclination relatively to the holder.

13. In a dynamo, the combination, with a brush-holder consisting of an open frame formed with a rocker-bearing within it, of a commutator-brush passing freely through said frame, two clamping-plates within said frame embracing the brush between them, and one of said plates resting on said rocker-bearing, a screw engaging said latter plate for adjusting it on said bearing to different inclinations relatively to the holder, and a screw for pressing the opposite plate toward the rocking plate to clamp the brush between them.

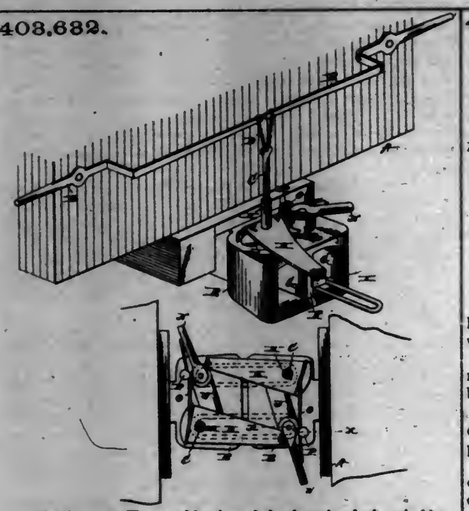
14. A dynamo-armature consisting of an iron core mounted to rotate on an axis and formed with longitudinal grooves, with a layer of independent and normally open-circuited conducting-bars insulated from each other extending longitudinally over the core, and with certain of the bars at intervals made wider than the others and projecting into said grooves in the core, with an insulating-layer interposed between the core and said bars.

408,631. PLASTIC COMPOUND FOR USE IN VARIOUS ARTS. ARTHUR T. WOODWARD, Boston, Mass. Filed Jan. 22, 1887. Serial No. 225,168. (No specimens.)

Claim.—The plastic compound herein described, the same being composed of pulverized silica or silicate, mineral or vegetable resin or pitch intimately mixed therewith, mineral or vegetable wax, linseed or other drying oil, and an oxide of zinc or tin, substantially as described, for the purposes specified.

408,632. CAR-COUPLING. CHARLES A. WOOLSEY and WILLIAM W. WOOLSEY, Ohio, Tex. Filed Dec. 15, 1888. Serial No. 293,897. (No model.)

403,632.

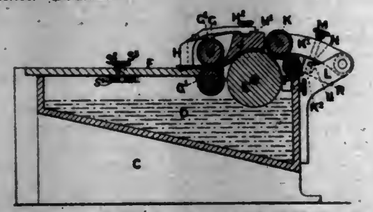


Claim.—1. The combination of the draw-head, the trip-block pivoted on the upper side of the same, the trigger secured to the upper side of the draw-head, and the spring bearing on the trip-block, as set forth.

2. The combination of the draw-heads having two compartments, the coupling-link held permanently in one of said compartments, the trip-blocks on the upper sides of the draw-heads and supporting the coupling-pins, the triggers guiding the coupling-pins and adapted to operate the trip-block, and the spring bearing on the trip-block, as set forth.

3. The improved coupling herein described and shown, comprising the draw-head having a central vertical partition, the weighted pin arranged in one of said partitions, the link secured by said pin, the trip-block pivoted on the upper side of the draw-head and having arms projecting therefrom in opposite directions, a spring bearing on one of said arms, a trigger secured to the draw-head projecting over the other of said arms and provided with a sleeve on its upper side and having its front end bent downward, and a coupling-pin supported in said sleeve, as set forth.

403,633. MACHINE FOR GUMMING PAPER. JOHN J. ALLEN, Halifax, County of York, England. Filed Sept. 18, 1888. Serial No. 285,736. (No model.)

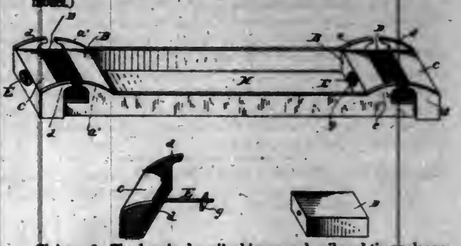


Claim.—1. The combination of a trough for holding gum, a gumming-roller revolving therein, the strickle and adjustable cover plate with groove for guides, the feeding-rollers in front of the gumming-roller, the top feed-roller being self-adjustable, the regulating-guides, the tension-roller adjustable as to its height by means of the pivoted lever and screws, the taking-off fingers, and finishing-roller, for the purposes substantially as shown and described.

2. The combination of a trough for holding gum, a gumming-roller revolving in said trough, the adjustable cover-plate F, provided with slots S^2 and having its outer corners provided with angles S, the strickle-plate F', attached to said cover-plate, the machine-frame C, having angles S', corresponding with the angles of the cover-plate, the studs S^2, the slotted bracket U', attached to the machine-frame, and the spindle T, tapped into the cover-plate, said spindle being provided with a milled head, T^2, and having a collar, T', working in the slotted bracket, substantially as described.

3. The combination of a trough for holding gum, a gumming-roller revolving in said trough, a self-adjustable feed-roller located above the gumming-roller, an adjustable tension-roller, a pivoted arm upon which said tension-roller is mounted, means for adjusting said pivoted arm, and a finishing-roller, substantially as described.

403,634. COMBINATION RAILROAD CROSS-TIE. WILLIAM H. BAGBY, Waco, Tex. Filed Dec. 26, 1888. Serial No. 294,611. (No model.)



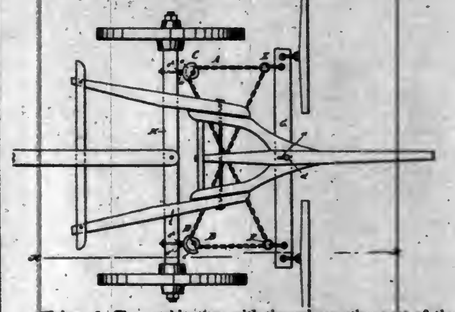
Claim.—1. The herein-described improved railroad tie or sleeper having removable end caps inclosing the ends thereof and provided with overhanging ears or short arms, substantially as set forth.

2. The herein-described improved railroad tie or sleeper having removable end caps inclosing the ends of said tie or sleeper, and the blocks secured by said caps, substantially as set forth.

3. The herein-described improved metallic railroad-tie having overhanging ears or short arms, and the removable end caps, also provided with ears or short arms, substantially as set forth.

4. The herein-described improved metallic railroad-tie having overlapping ears or short arms, the apertured partitions, the end caps, also having ears or short arms, the apertured blocks, and the nutted bolts, substantially as set forth.

403,635. DRAFT-EQUALIZER. JOHN BEVERS, Marine Mills, Minn. Filed Feb. 26, 1888. Serial No. 301,190. (No model.)



Claim.—1. The combination, with the axle or other part of the vehicle provided with pulleys located in line with the draft, or thereabout, of the whiffletree provided with rings or staples near its ends, and chains passing from each end of the whiffletree to and around the opposite pulley, thence to the adjacent end of the whiffletree, substantially as described.

2. The whiffletree A, provided near its ends with the rings E F, and the axle-tree provided with the pulleys C D, in combination with the two chains A B, the former attached at one end to the ring E, passed through pulley C, thence to the ring F, to which it is attached, the chain B, attached at one end to the ring F, passed around the pulley D, thence to ring E, to which it is attached, substantially as described.

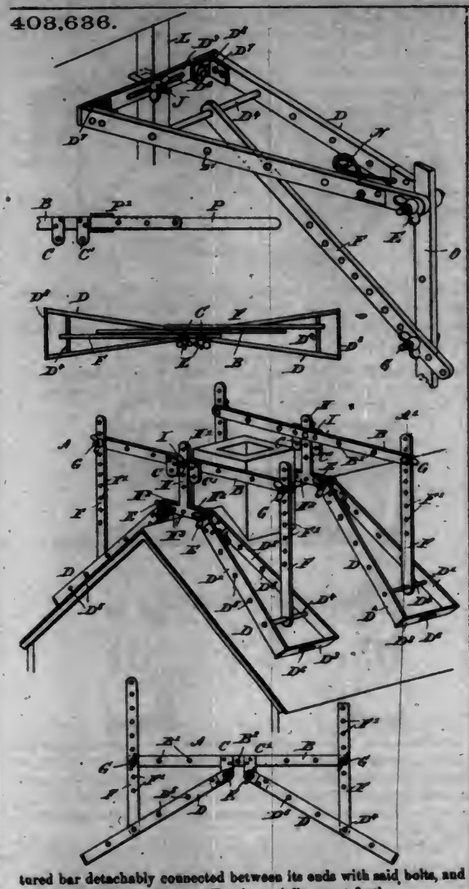
403,636. SCAFFOLDING. ADOLPH BITTERLY, Ottawa, Ill. Filed Oct. 2, 1888. Serial No. 286,969. (No model.)

Claim.—1. In a scaffold, a triangular leg comprising side bars, D' D^3, a cross-bar, D^3, connecting the bars at one end, a rod, D^4, connecting the side bars between their ends, and a removable clamping-bolt connecting the side bars at their opposite ends, and a bar, F, mounted at one end on the cross-rod D^4 to swing in the plane of the leg and provided with a series of transverse apertures, F', and an intermediate transversely-apertured bar bolted to the bar F and connected with the clamping-bolt, substantially as set forth.

2. In a scaffold, a triangular leg comprising side bars, D' D^3, a longitudinally-slotted cross-bar, D^3, connecting said side bars at one end, a bolt connecting the opposite ends of the side bars, an intermediate cross-rod, D^4, a hook-bolt, J, passed through said slot, an apertured bar mounted at one end on said cross-rod, and an apertured bar detachably connected with the bar F and the said bolt, substantially as set forth.

3. A scaffold consisting in two triangular legs or frames having removable bolts at their adjacent narrow ends, a cross-rod between their ends, apertured bars F, mounted on said cross-rods, and an apertured bar detachably connected between its ends with said bolts, and at its ends bolted to the bars F, substantially as set forth.

403,636.

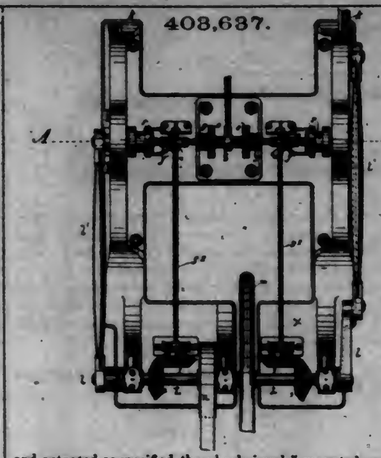


4. A scaffold consisting in the two triangular legs or frames having cross-rods between their ends and removable bolts at their adjacent narrow ends, apertured bars F, mounted at one end on said rods D^4, and the apertured cross-bar B, detachably connected between its ends by a T-shaped apertured bar, H, with said bolts, the vertical arm of said bar H being bolted to the bar B and the transverse arm to the legs, substantially as set forth.

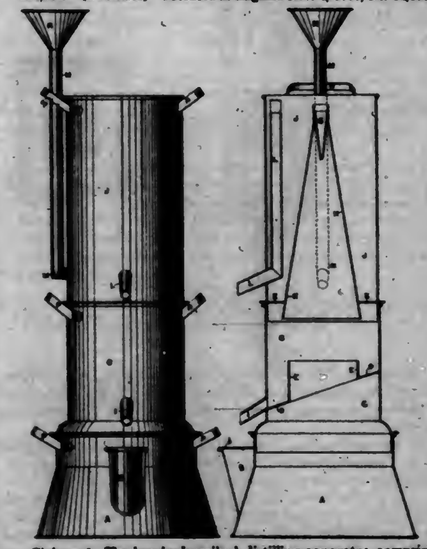
5. The herein-described scaffold, consisting in the legs or frames D, having bolts E at their adjacent ends, cross-rods D^4, the apertured bars F, and the removable T-shaped apertured bar H, through the transverse arm of which said bolts pass, and the apertured bar B, having depending apertured lugs C C', between which the vertical arm of the bar H passes, and a bolt detachably connecting said vertical arm with the bar B, substantially as set forth.

403,637. TRANSMISSION APPARATUS. THEODOR BOSSE, Mühlhausen, Germany. Filed May 12, 1888. Serial No. 273,741. (No model.)

Claim.—The combination, with suitable supporting-frame, a, main shaft L, mounted in suitable bearings in said frame, the fly-wheel m, the pulley n, and the wrist-cranks l, mounted upon said shaft, and the rod l', connecting said crank with the sliding rack K of the shafts e, f, and f', journaled in bearings in said frame, the wheels c and d, mounted upon said shafts and meshing, as specified, the sliding racks K, meshing with the wheels i and i', sliding in a groove in said frame and actuated as specified, the wheels i and i', mounted upon the shafts f f and provided with crown-ratchets, the wheels s, mounted upon said shaft L, the shafts s^2, journaled upon said frame, the wheels s', mounted upon said shafts s^2 and meshing with the wheels s, the eccentrics t, also mounted upon said shafts s^2 and working in the yokes v, said yokes v attached to the oscillating levers u, said oscillating levers u, the straps u', the collars r, mounted upon the shafts f and f' and constructed with pawl p, as specified, all substantially as and for the purpose set forth.



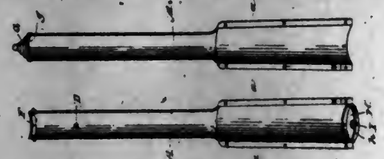
403,638. DISTILLING APPARATUS. PHILIP H. BRAGDEN, Wincanton, County of Somerset, England. Filed May 16, 1887. Serial No. 238,384. (No model.) Patented in England Nov. 4, 1886, No. 14,190.



Claim.—1. The herein-described distilling apparatus, comprising the three superimposed sections supported upon each other, the upper and lower sections being designed to retain water, the inclined diaphragm located in the intermediate section and having an upwardly-projecting hollow curb, and the cone open at its ends and located in the upper one of said sections and having its lower end wider than said curb above which it opens, substantially as set forth.

2. The herein-described distilling apparatus, comprising the three superimposed sections, the upper and lower ones of which are provided with water-supply openings, the cone secured in the upper one of said sections and having a smaller cone in its upper end, the water-outlet pipe in said upper section having its inner opening beneath the upper end of said cone, the inclined diaphragm having a curb projecting therefrom, and the outlet-pipe of the central section, substantially as set forth.

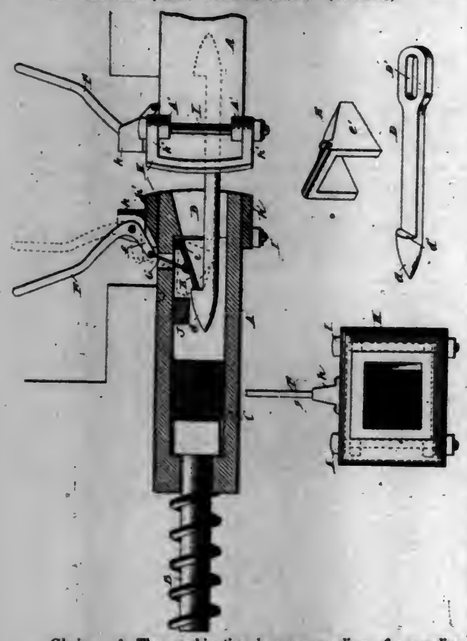
408,639. HYDRANT-CASING. PATRICK P. BRADLEY, Harrisburg, Pa. Filed Feb. 11, 1889. Serial No. 299,392. (No model.)



Claim.—1. In a hydrant-casing formed in halves, the combination, with the cylindrical or regular upper part and the base-section tapering from the bottom upward, of the extended flanges on the base-section for uniting the halves, substantially as described.

2. In a hydrant-casing formed in halves, the combination, with the base-section having the extended flanges, of the top formed integral therewith of substantially circular form, with the lapping extensions or flanges, substantially as and for the purpose set forth.

408,640. CAR-COUPLING. ROBERT L. BEETS, New Washington, Pa. Filed Mar. 6, 1889. Serial No. 302,055. (No model.)



Claim.—1. The combination, in a car-coupling, of a coupling-gate and a detachable frame adapted to be placed over a draw-head and carrying an operating-lever for lifting said gate, substantially as described.

2. The combination, with the draw-head, of a rubber buffer fitted therein, a coupling-gate also within the draw-head, a coupling-hook, and a lifting-lever for said gate, substantially as described.

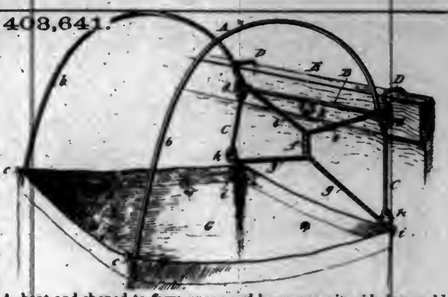
3. In a car-coupling, the following elements in combination, viz: a draw-head, A, provided with rubber buffer C therein, the coupling-gate E, formed with side flanges, *e'*, and pivoted within the draw-head by pivot-pin *e*, a detachable frame, H, formed with flanges *h'* and bracket *h*, the lever F, pivoted in said bracket and connected with gate E by a link, G, and the bolts I, securing the frame H to the draw-head by passing through the flanges *h'* and lugs A', substantially as described.

408,641. BAG-HOLDER. FRANK A. BROWN, Angelica, N. Y. Filed Apr. 23, 1888. Serial No. 272,130. (No model.)

Claim.—1. In a bag-holder, the wires A, bent to form two outwardly and downwardly projecting side arms, *b b*, terminating in hooks *c c* and further twisted and bent in the rear, forming loops *d d*, and continued to form a back composed of upper and lower extensions, *e e* and *g g*, united in the center at *f* and terminating below in opposite side loops, *h h*, and hooks *i i*, essentially as described.

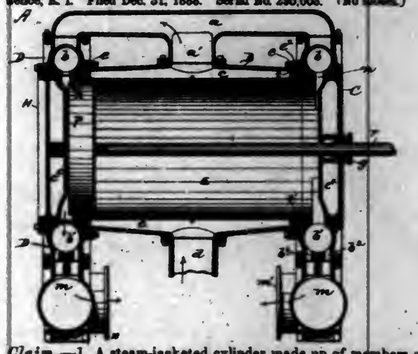
2. In a wire-frame bag-holder, the combination, with the wires

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A, bent and shaped to form upper and lower opposite side loops, *d h*, and front and rear hooks, *c c* and *i i*, of the cross-wire B, bent to form an eyelet, *k*, the attached hooks D D, and the stays C C, substantially as specified.

408,642. STEAM-ENGINE CYLINDER. WALTER F. BROWN, Providence, R. I. Filed Dec. 31, 1888. Serial No. 295,008. (No model.)

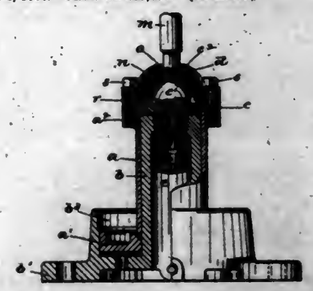


Claim.—1. A steam-jacketed cylinder made up of members or sections arranged and secured together, and having the cylinder-barrel, as E, free to expand and contract independently of the jacket-casing, and, further, having the free end of said barrel provided with a circumferential stuffing-box and gland, substantially as hereinbefore described and set forth.

2. The composite steam-jacketed cylinder hereinbefore described, consisting of the front and back end sections provided with steam and exhaust valve chests, the inner or cylinder barrel being secured to the said first end section and provided with a stuffing-box and gland fitted to expand and contract freely in the other end section, and the apertured jacket-section surrounding the inner barrel and secured to and intermediate of the end sections, all arranged and adapted for use substantially as set forth, and for the purpose specified.

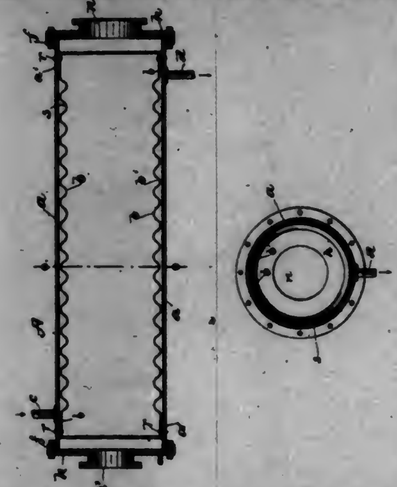
3. In a steam-jacketed cylinder, the combination, with the front and back end sections, C D, having steam and exhaust chests formed therein and the jacket-casing B, uniting said sections, of the cylinder-barrel E, secured to the front section, C, and having the rear portion of the barrel fitted to move freely in a longitudinal direction in the back end section, and, further, having such free end of the barrel provided with a circumferential packing-box and gland, and means for adjustably securing the gland in position, substantially as shown and hereinbefore described, and for the purpose set forth.

408,643. DASH-POT. WALTER F. BROWN, Providence, R. I. Filed Jan. 5, 1889. Serial No. 295,736. (No model.)



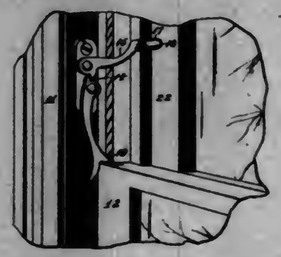
Claim.—The combination, with a drop-rod having a cup-shaped enlargement, *a*, at its lower end, of an annular plunger, *c*, a flange-plate, *e*, having a hemispherical projection formed on its upper side adapted to the cavity of the drop-rod, and a centrally-apertured hemispherical cap, *d*, having its under side connecting with the said projection of the flange-plate *e*, and adapted to the convex surface of the end *a* of the drop-rod, said flange-plate and cap being secured to the top end of the plunger, all arranged and adapted for operation substantially as shown and described.

408,644. STEAM-JACKETED RECEIVER. WALTER F. BROWN, Providence, R. I. Filed Jan. 5, 1889. Serial No. 295,734. (No model.)



Claim.—The steam-jacketed receiver hereinbefore described, consisting of the outer shell, *a*, provided with the inlet and outlet passages *c d*, heads secured to the ends of the shell, and the corrugated inner shell or lining, *b*, made of thin metal and secured at the ends to the outer shell by rivets or bolts, thereby forming joints adapted to be calked, substantially as shown and set forth.

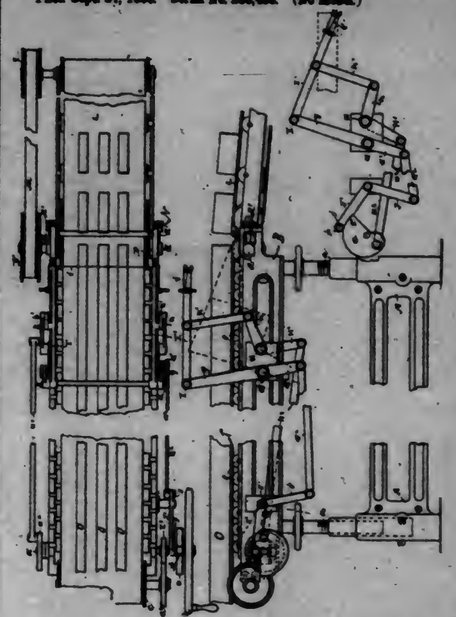
408,645. SASH-FASTENER. JOHN H. BURTNER, Cincinnati, Ohio. Filed Mar. 9, 1888. Serial No. 302,675. (No model.)



Claim.—1. A window fastener or holder consisting of a base-plate, an arm pivoted at the inner end above the center of said plate, provided with a spur upon the under side at the pivotal point, having a curved body and an essentially horizontal free extremity containing a flexible binding-block, and a second arm pivoted at one end below the center, provided with a spur capable of engaging the spur of the upper arm, and also provided near the free extremity upon the inner edge with a lug, all combined for operation substantially as shown and described.

2. In a sash lock or fastener, the combination, with a base-plate provided with a stop at the upper end and a second stop below the center near the inner edge, of an arm pivoted upon the said plate above the center, having a curved body and an essentially horizontal free extremity, and provided with a spur upon the under edge at the pivotal point, a lower arm pivoted below the center of the plate, provided with a spur at the pivotal point capable of contacting with the spur of the upper arm, the body of which lower arm is curved throughout its length and provided near its free extremity with a lug projecting at a right angle from the inner edge, substantially as shown and described, and for the purpose specified.

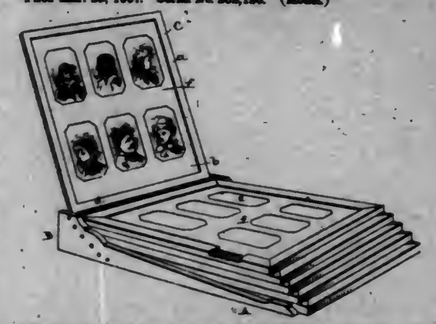
408,646. BRICK OR TILE CUTTING MACHINE. ELIJAH M. ROSS, Champaign, Ill., assignor to J. W. Penfield & Son, Willoughby, Ohio. Filed Sept. 27, 1888. Serial No. 286,402. (No model.)



Claim.—1. In brick or tile cutting machines, the combination, with a horizontally-moving carrier, of cutter mounted on the free end of swinging frame having up-and-down movement to and from the carrier, said frame being pivoted to upright arms having oscillating movement lengthwise of the carrier, and mechanism, substantially as indicated, for reciprocating such frame and oscillating such arms automatically from the movement of the carrier, substantially as set forth.

2. The combination, with a horizontally-moving carrier and tilting frame with cutter attached, said frame being pivoted to upright oscillating arms, substantially as indicated, of crank and connecting mechanism for actuating such tilting frame, and cam and connecting mechanism for oscillating the said arms, both crank and cam being operatively connected with and actuated by the said carrier, substantially as set forth.

408,647. PHOTOGRAPH-CABINET. JOHN CORBIN, Boston, Mass. Filed Mar. 22, 1887. Serial No. 232,123. (Model.)



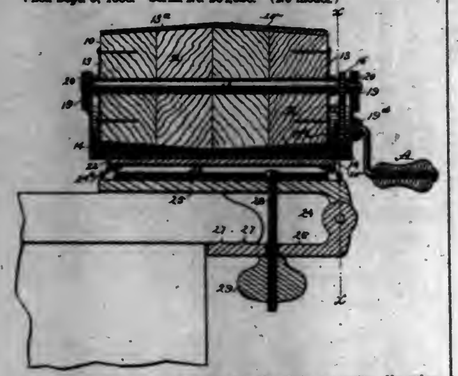
Claim.—1. The combination, with the base having its side pieces, D, tapering, and having the tapering uprights B, formed on the upper ends of the said side pieces, and the rods *d*, arranged in echelon and having their ends inserted in the said uprights B, and the leaves having eyelets in their rear edges, which eyelets are mounted on the rods and form hinge-connections between the rods, substantially as and for the purpose described.

2. The hereinbefore-described photograph-holder, composed of the base A, having the tapering sides D, and having the tapering uprights B, formed on the upper ends of the said sides D, the rods *d*

arranged in echelon and having their ends inserted in the said openings, and the leaves composed of frames having flexible centers for the reception of the pictures and having eyelets at their rear edges, which eyelets are mounted on the said rods and form the hinge-connections between the frames and the said rods, substantially as described.

408,648. RAZOR-STROP. GEORGE H. COURSEN, Baltimore, Md.

Filed Sept. 5, 1888. Serial No. 284,630. (No model.)



Claim.—1. A sharpening-wheel inclined in opposite directions from its center and formed of a series of circular sections secured face to face, with the grain of the wood in any two sections at right angles to each other, and a yielding circumferential cover or jacket for the roller, substantially as set forth.

2. The combination, with a rotatable wheel consisting of a series of united sections formed to the contour of two connected truncated cones of greatest diameter in the center, of a yielding peripheral jacket secured to the wheel, having one portion of the surface provided with a coating of a sharpening composition, substantially as shown and described.

3. The combination, with a casing and guards attached to the same, said casing and guards provided with aligning slots, of a rotatable sharpening-wheel, an axle passing through the wheel, and detachable journal-plates receiving the said axles, located between the casing and guards, said guards provided with a series of flexible tongues, substantially as shown and described.

4. The combination, with a casing and guards attached to the same, said casing and guards provided with aligning slots and flexible tongues, of a rotatable sharpening-wheel, an axle passing through said wheel, a detachable journal-plate receiving said axle, located between the casing and guards, and means, substantially as shown and described, for rotating the wheel and securing the casing to a support, as and for the purpose specified.

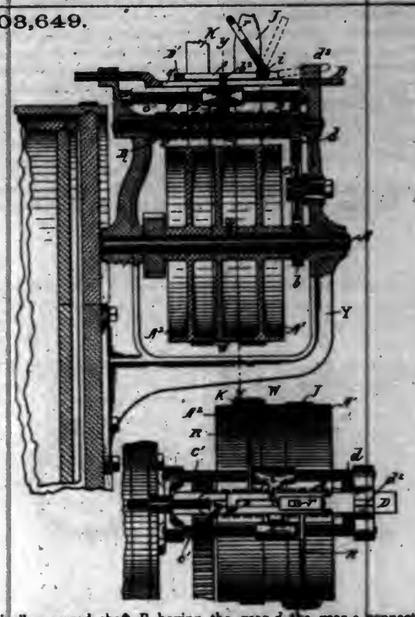
408,649. REVERSING MECHANISM FOR WASHING-MACHINES.

JAMES G. CRAWFORD, Boston, Mass. Filed Feb. 29, 1888. Renewed Apr. 19, 1889. Serial No. 307,872. (No model.)

Claim.—1. The combination, in a reversing mechanism, of the shaft A, the fast pulley W and the loose pulleys A' A^3 on said shaft, the gear or wheel *b*, affixed to the loose pulley A', the shaft B, having the intersecting spiral grooves or right and left threads, means, substantially as described, for transmitting motion from the gear or wheel *b* to the shaft B, whereby the latter is rotated with the loose pulley A', a pivoted dog, B', engaged with the spirally-grooved shaft and adapted to be reciprocated thereby, a stud, b^3, secured to said dog, and a belt-shipper adapted by means, substantially as described, to be acted on by the dog B' and its stud when the dog is near the ends of its reciprocating movements, as set forth.

2. The combination, in a reversing mechanism, of the shaft A, the fast pulley W and the loose pulleys A' A^3 on said shaft, the shaft B, having the intersecting spiral grooves or threads, the gear or wheel *b*, affixed to the loose pulley A', means, substantially as described, for transmitting motion from the gear or wheel *b* to the shaft B, whereby the latter is rotated with the loose pulley A', a pivoted dog, B', engaged with the shaft B and adapted to be reciprocated thereby, a belt-shipper, and an arm or lever, D', pivoted to said shipper and having a slot, *s*, formed to receive a stud or projection which moves with the dog B', said lever being movable, as described, whereby it may be separated from said stud to make the reversing mechanism inoperative, as set forth.

3. The combination, in a reversing mechanism for washing and other machines, of the shaft A, the fast pulley W, the loose pulley A^3, the loose pulley A', provided with the spur-gear *b* upon its hub, the



spirally-grooved shaft B, having the gear *d*, the gear *c*, connecting the gears *b* and *d*, the yoke C, the guide-rods *d' d'*, the dog B', engaged with the shaft B and pivoted to the yoke C, the shipper-rod D, provided with the hinged slotted bell-crank lever D', one arm of which is provided with the opening *r*, and the fixed lug d^3 on the frame, formed to engage the opening *r*, all arranged and operating substantially as described.

408,650. GRIPPER FOR CABLES. ELIJAH DAIBEY, Coal Bluff Fa. Filed Mar. 18, 1889. Serial No. 303,695. (No model.)



Claim.—1. The combination, with a cable, of a grip comprising a body portion provided with a recess in its upper edge, a link pivoted in said body, and a locking device adapted for contact with the link when in a horizontal position, substantially as described.

2. The combination, with a cable, of a grip comprising a body portion provided with a recess in its upper edge having oppositely-inclined walls, a link pivoted in said body having an attached handle, and a pin capable of passing through the body in contact with and above the link, substantially as shown and described.

3. The combination, with a car or other vehicle provided with an attached yoke or bail and a cable, of a grip swiveled to the vehicle yoke or bail comprising a body portion provided with a recess in its upper edge, a link pivoted in the body at one side of the recess, of a length sufficient to pass over one end of the body, and a removable locking device inserted in the body above the link, substantially as shown and described.

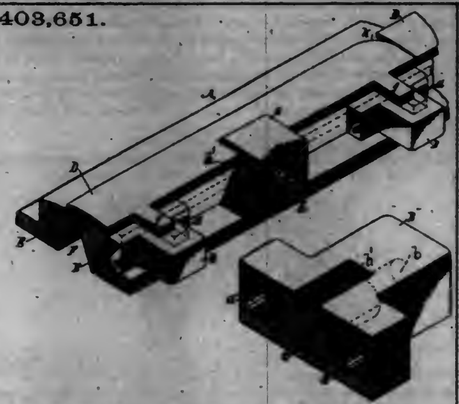
4. The combination, with a car or similar vehicle having a bail or yoke secured thereto, of a grip swiveled upon the yoke or bail comprising a body portion provided with a recess in its upper edge having oppositely-inclined side walls, a link pivoted in said body provided with a handle, and a locking-pin, all combined for operation substantially as shown and described.

408,651. GRIP-SLOT CLOSER FOR CABLE RAILWAYS. CHAS. DAVIS, Kansas City, Mo., assignor of two-thirds to Caroline Marder and Con. W. Marlin, same place. Filed Mar. 23, 1889. Serial No. 304,302. (No model.)

Claim.—1. The cap or plate covering the cable-track slot and



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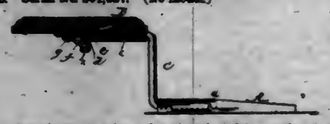


having at one of its side edges arms resting upon blocks or seats, said arms having pendants, also provided with arms, in combination with springs placed in said seats or blocks, substantially as set forth.

2. The cap or plate covering the cable-track slot and having a lateral movement, in combination with the chair bolted or secured at one side of the slot and having its horizontal portion resting upon said plate or cap, and having a horizontal or lateral recess providing for the reception of said plate or cap as it is moved laterally, substantially as set forth.

3. The combination of the cable-track having a gripper-receiving slot, the cap or plate sections curved or chamfered at the end edge and having the lateral arms provided with pendants, also having arms, the chambered seats or blocks, the springs arranged in the chambers of said blocks or seats and in the chair having a lateral recess, and its horizontal portion resting upon the top or plate section, substantially as specified.

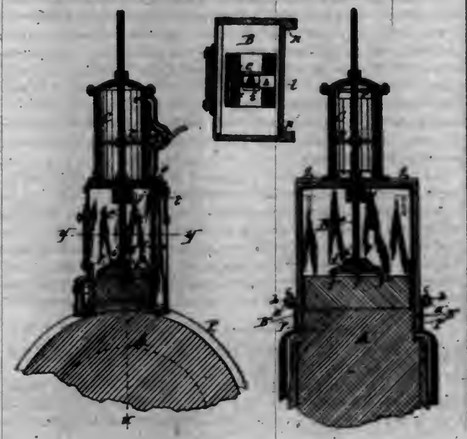
408,652. ARM-REST. ALBERT B. DICK, Chicago, Ill. Filed Nov. 24, 1888. Serial No. 291,837. (No model.)



Claim.—1. A base, A, adapted to be placed beneath a book, and an arm-rest, B, in combination with parallel rods C C, bent at right angles at their opposite ends, which are pivoted one to the base and the other to the arm-rest, racks *b*, and pawls *d*, substantially as specified.

2. A base, A, adapted to be placed beneath a book, and an arm-rest, B, in combination with parallel rods C C, bent at right angles at their opposite ends, which are pivoted one to the base and the other to the arm-rest, racks *b*, pawls *d*, and rock-shaft D, having arms *f*, substantially as and for the purpose specified.

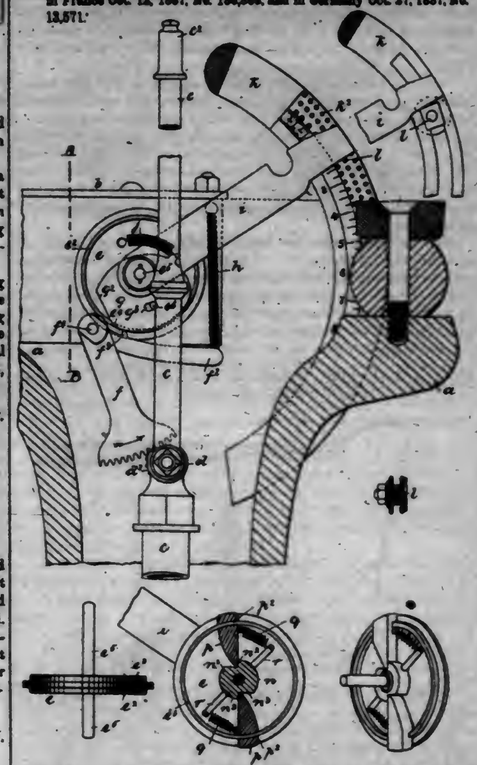
408,653. WOOD-PULP MACHINE. FRANK DILLS, Fulton, N. Y. Filed June 30, 1888. Serial No. 278,063. (No model.)



Claim.—1. In combination with the grinder A, the segmental plates P P, provided with flanges *a a* on their entire peripheries, the wood-holding boxes B B, mounted on said flanges and adapted to be shifted in the direction of the length of the flanges and adjustably secured thereto, and the cylinders C C, secured directly to said boxes, substantially as described and shown.

2. In combination with the grinder A and segmental side plates, P P, the wood-holding boxes B B, mounted on the peripheries of said plates and extending outward therefrom, and provided with the gates *l l*, adjustable toward and from the grinder and maintained parallel throughout their adjustment, as set forth.

408,654. AUTOMATIC AND INSTANTANEOUS GAS-LAMP EXTINGUISHER. JAMES S. ROSE and FRANCIS W. TESTSHIRE, Birmingham, County of Warwick, England. Filed May 16, 1888. Serial No. 274,089. (No model.) Patented in England Oct. 15, 1886, No. 13,197; in France Oct. 12, 1887, No. 186,309, and in Germany Oct. 27, 1887, No. 43,571.



Claim.—1. In an automatic instantaneous gas-lamp extinguisher, the combination, with a gas-lamp and its cognate parts—such as the supply-pipe burner and plug—of automatic mechanism for turning said plug, comprising a spring-actuated lever connected to the plug, a spring-actuated motor, a lever connected to the winding-arbor of said motor, a graduated time-plate arranged in the vicinity of said lever, and a movable stop on said time-plate adapted to limit the movement of said lever, a revolving detent, and a time-wheel carried by the motor mechanism and adapted to release the spring-actuated lever at a point dependent on the amount of movement of the winding-lever, substantially as described.

2. In an automatic gas-lamp extinguisher, the combination, with a gas-supply pipe and a cock thereon, of a lever connected thereto and provided with a tooth, f^3, a spring connected to said lever, a spring-actuated motor, a lever connected to the winding-arbor thereof, a notched time-wheel carried by the motor and adapted to receive said tooth f^3, a cam connected to the winding-arbor and adapted to impinge against said tooth, whereby when the lever is depressed the tooth f^3 will be disengaged from the time-wheel, the motor-spring wound, and the gas-cock opened, substantially as described.

3. In an automatic gas-lamp extinguisher, the combination of a spring-actuated motor, a notched wheel carried on a shaft of the same, a spring-actuated lever connected to a gas-cock and having a detent to engage with said wheel, and a winding-lever connected to the wind-

ing-arbor of the motor and to the said notched wheel, whereby the depression of said lever will wind the motor and turn the notched wheel in the same direction as the winding-arbor, substantially as described.

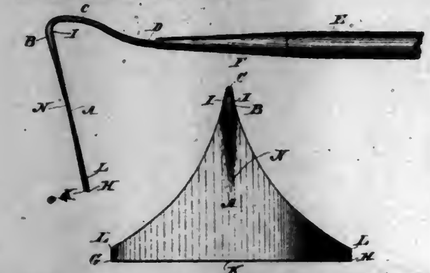
4. In an automatic and instantaneous gas-lamp extinguisher, the combination, with automatic extinguishing mechanism comprising a spring-actuated time-motor, of a graduated time-plate, *k*, with holes k^2 and graduations, a movable peg, *l*, and a winding-lever, *i*, connected to the winding-arbor of said motor, substantially as and for the purpose as set forth.

5. In an automatic and instantaneous gas-lamp extinguisher, the combination, with a gas-lamp and chronometric or time cutting-off mechanism comprising a spring-actuated motor, a lever connected to the winding-arbor thereof, a time-wheel connected to said motor and having a notched rim, and a cam upon said arbor, of a toothed quadrant, *f*, with arm and tooth f^1 f^2, normally engaging with the said tooth resting within the notch of the time-wheel, and with the teeth engaging with a pinion on the plug-axis and adapted to rotate the said plug either for turning on or for cutting off, substantially as set forth.

6. In an automatic gas-extinguishing apparatus, the combination, with the gas-supply pipe and a cock thereon, of a spring-actuated lever which engages with said cock and is provided with a detent, a spring-actuated motor carrying a time-wheel, *c*, with notched flange c^2, a lever, *i*, attached to the winding-arbor of said motor, a slotted cam carried upon said arbor and adapted to engage with said detent, and an adjustable clutch or grip mechanism interposed between said time-wheel and said motor, all constructed and arranged substantially as described.

7. The combination, with a gas-lamp, gas-burner, or gas-pipe, *c*, of mechanism consisting of a time-plate, main lever, cam-plate *g*, toothed quadrant with arm and tooth, geared gas-plug, time-wheel with notch and face rims, clutches and bows carried by great wheel, transmitting, reduction, and regulating gear, and motive power, which are constructed and arranged and operate substantially as and for the purpose as herein described, and set forth in Figs. 1, 2, 3, 4, and 5.

408,655. HOE. ELNATHAN J. GATES, Oronoco, Minn. Filed Aug. 24, 1888. Serial No. 283,644. (No model.)



Claim.—A hoe consisting of a blade having a long straight or slightly-curved bottom cutting-edge, and side edges curving inwardly upwardly from at or near the bottom to a central integral shank, the height of the blade being about two-thirds of its width, the blade so constructed being narrow both laterally and vertically, in combination with a shank integral with the blade, which shank terminates in a neck and tang adapted to enter a handle, substantially as described.

408,656. HINGED HANDLE. JACOB GERSTLE, Portland, Oreg. Filed Jan. 14, 1889. Serial No. 296,259. (No model.)



Claim.—1. As an improved article of manufacture, a hinged handle formed of the plate A, provided with the ear A', the arm B, connected with the plate by the pintle *a*, and the sliding fastener C, substantially as specified.

2. The combination, in a hinged handle, of the plate A, provided with the ear A', the arm B, connected with the plate by the pintle *a*, the sliding fastener C, and a stop-pin, *b*, substantially as specified.

3. The combination, with a pan or other culinary vessel, of a hinged handle formed of the plate A, provided with the ear A', the arm B, connected with the plate A by a hinge-joint having the pintle *a*, and the sliding fastener C, placed on the handle and adapted to engage the ear A', substantially as specified.

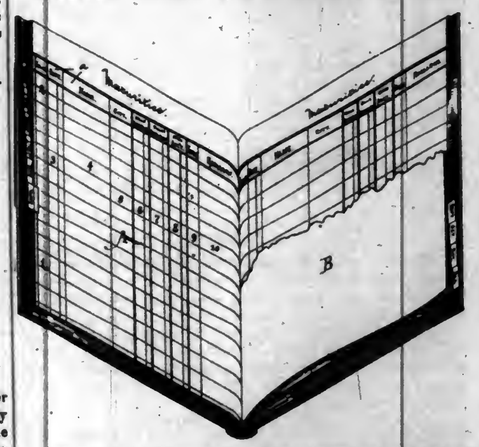
408,657. LUBRICATING DEVICE. JOHN R. GLOVER, Dubuque, Iowa. Filed Feb. 18, 1889. Serial No. 300,235. (No model.)



Claim.—1. A lubricating-cup provided with an interior tube extending upward from the bottom of the cup, and a channeled sphere provided with a pendulum pivoted in the upper end of said tube, substantially as and for the purpose described.

2. In combination, an oil-cup fitted with a tube, B, with an enlargement, C, at its upper end, having slots *a* and *b*, a sphere, D, with channels *c* and *d*, formed therein pivoted to said enlargement, and an arm with a ball, *g*, fixed thereto, whereby said sphere is made to oscillate and alternately admit and shut off the oil within the cup to and from the tube B, as and for the purpose described.

408,658. ACCOUNT-BOOK. SAMUEL W. GOLDBERG and EMANUEL M. TILLMANN, Dallas, Tex. Filed Jan. 18, 1889. Serial No. 296,754. (No model.)



Claim.—1. As a new article of manufacture, an account-book the pages of which are ruled to compose vertical sectional columns 1, 3, 4, 5, 6, 7, 8, 9, and 10, said columns arranged in consecutive order as named, and in said order respectively supplied upon their upper ends within spaces *a*, printed captions "Folio," "Date," "Name," "City," "Bills Payable," "Bills Receivable," "Open Account," "Term," and "Remarks," each page being supplied with parallel transverse lines 2, extending equidistantly from under the caption-spaces continuously to the bottom of the page for the purpose indicated, substantially as described.

2. An account-book having pages A and intermediate blotting-pages, B, said pages A having vertical sections 1, 3, 4, 5, 6, 7, 8, 9, and 10 arranged in successive progression from the left to the right side of said pages, said pages also ruled with transverse lines 2, all in combination with special denominate titles at the top of each column, whereby each of said columns has a special indicating-caption arranged in consecutive order to point out the functional character and purposes of each space, as and for the purpose indicated, substantially as described.

408,659. AXLE-LUBRICATOR. WILLIAM GOOD, Houston, Tex. Filed Nov. 5, 1888. Serial No. 290,053. (No model.)

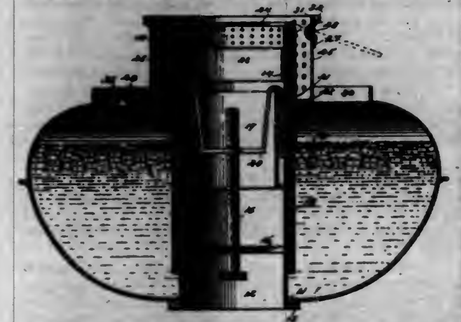
Claim.—In an axle-lubricator, the combination of a frame, cross-pieces secured therein, a box having its lower portion reduced to fit in the frame and its upper portion provided with a cellar and

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bearings above the cellar, and set-screws in the cross-pieces to elevate or depress the box, substantially as described.

408,660. LAMP. CHARLES H. GRUBE, Robinson, Ill. Filed Apr. 18, 1888. Serial No. 271,069. (No model.)



Claim.—1. The combination, with the main wick-tube 12, open at both ends and having longitudinally-extending slots 14, the oil-cup 17 within the tube 12 and connected therewith at its lower end below the slots 14, and the wick-raising tube 18, surrounding the main tube and covering its slots, of the screw 16, journaled within the main tube, whereby longitudinal movement of the screw is prevented, the vertically-movable spider 20, having a screw-threaded aperture through which the screw passes, and arms projecting upwardly over the top of the cup 17, then downwardly therein and through the slots 14, and secured to the tube 18, substantially as set forth.

2. The combination, with the bowl, the longitudinally-slotted tube 12, open at both ends and extending up through and above the said tube, the outer tube, 21, secured to the top of the bowl concentric with and extending above the upper end of tube 12, and the vertically-sliding tube 18, surrounding the tube 12 and between which and the tube 21 the wick-space is formed, of the collar 23, secured to the upper end of the tube 12 and having a flange, 24, projecting over the upper end of the wick-space, the screw journaled within the main tube and having rotary movement only, and the vertically-movable spider operated thereby and having arms extending through the slots in tube 12 and connected to the tube 18, substantially as set forth.

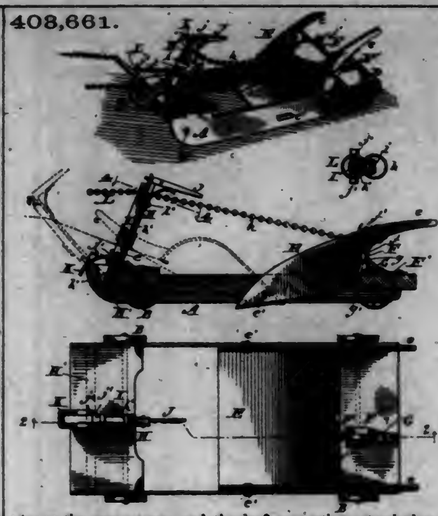
3. A lamp comprising a bowl, a slotted tube, 12, open at its ends and extending through the cap above the top of the bowl, a concentric tube, 21, in the top of the bowl and projecting above the upper end of tube 12, the intermediate vertically-sliding wick-operating tube, 18, the perforated collar 23, contracted to fit in the upper end of tube 12, and having a flaring flange, 24, extending over the wick-space, the operating-screw journaled within the main tube and having rotary movement only, the spider operated thereby and having arms passing through the slots in tube 12 and secured to the tube 18, and the outer perforated tube, 25, on top of the bowl and having the chimney-holder 32, substantially as set forth.

408,661. EARTH-SCOOPER. SYLVESTER W. HALL, Elmira, N. Y. Filed Oct. 4, 1888. Serial No. 287,267. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, of the gage-runners and the scoop pivoted near its point and behind its cutting-edge to the gage-runners near their lower edge, about midway of their bearing-surface.

2. The combination, substantially as hereinbefore set forth, of the gage-runners, the scoop pivoted near its point and behind its cutting-

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edge to the gage-runners, and the draft-connections attached to the gage-runners at their forward end.

3. The combination, substantially as hereinbefore set forth, of the scoop, the side runners to which the scoop is pivoted, the front and rear platforms connecting the runners, the upwardly-extending hinged arm on the front platform, and a flexible connection between said arm and the rear end of the scoop.

4. The combination, substantially as hereinbefore set forth, of the scoop, the sides to which the scoop is pivoted, the front and rear platforms, the rock-bar mounted on the front platform, the detent for locking said rock-bar, and connections between the rock-bar and the scoop.

5. The combination, substantially as hereinbefore set forth, of the scoop, the side bars to which the scoop is pivoted and below which it extends, the handles for moving the scoop, the front and rear platforms, the upwardly-extending arm on the rear platform, devices for adjustably securing the scoop to said arms, and draft-connections between the team and the scoop for overturning it.

6. The combination, substantially as hereinbefore set forth, of the scoop, the side bars, the front and rear platforms, the rock-bar mounted on the front platform and hinged to the side bars, a locking bar or detent working in a groove or recess in the rock-bar, and a guide-plate in which said bar works and with which the detent engages.

7. The combination, substantially as hereinbefore set forth, of the scoop, the side pieces to which the sides of the scoop are pivoted near their lower ends, and the flexible draft-connections secured to the rear end of the scoop for actuating it.

8. The combination, substantially as hereinbefore set forth, of the scoop, the side pieces to which the scoop is pivoted, the scoop-tilter, connections between the rear end of the scoop and the tilter, and draft-connections between the scoop-tilter and the team.

408,662. BALING-PRESS. LIBEN H. HALLAM, Bolton, Tex. Filed Oct. 11, 1883. Serial No. 287,752. (No model.)

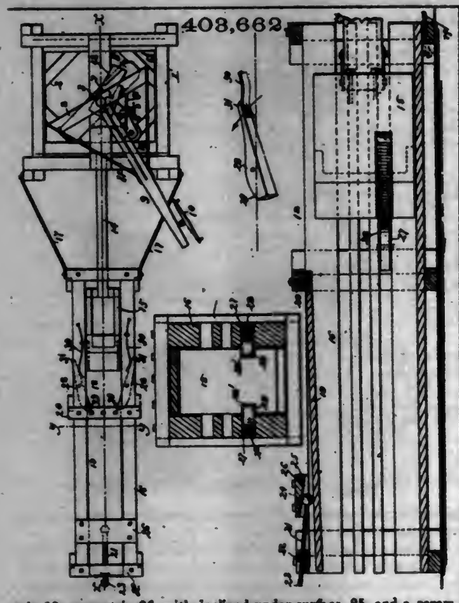
Claim.—1. A baling-press consisting of a plunger and plunger-rod, a reciprocating sliding frame connected therewith, a rotary shaft having an arm for actuating the sliding frame, a draft-sweep loosely mounted to turn on the rotary shaft, and an arm on the rotary shaft having a lug or projection against which the sweep bears, substantially as shown and described.

2. In a baling-press, the combination, with the plunger, of a sliding frame connected to the plunger, a rotary shaft, an arm secured to the shaft and provided with an anti-friction wheel at its end and one side for engaging the said sliding frame, a second arm secured to the upper end of the shaft and provided with a projection or lug, and a sweep loosely mounted on the shaft and adapted to engage the said lug to rotate the shaft, substantially as herein shown and described.

3. In a baling-press, a sliding reciprocating frame, 2, having a reciprocating sliding bar, 14, and cross-bars 13, and mounted in a frame, 1, in combination with a rotary shaft, 3, having a lateral arm, 5, adapted to alternately bear against the cross-bars 13, a lateral arm, 7, with a block, 12, at one end, and a sweep, 9, loosely pivoted on shaft 3 and engaging the lug of arm 7, substantially as shown and described.

4. In a baling-press, a receptacle, 16, having elastic compression-

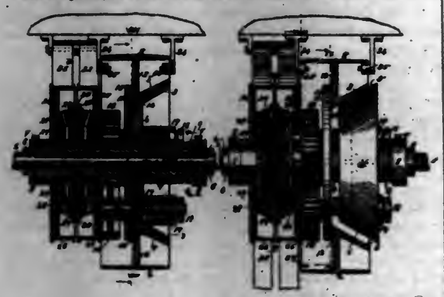
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strip 19, cross-strip 26, with inclined under surface, 25, and a screw-rod, 21, with a wedging-head, 24, located between strip 26 and strip 19, substantially as described.

5. A baling-press consisting of frame 1, reciprocating sliding frame 2, mounted in frame 1 and having cross-bars 13, and reciprocating shaft 14, with plunger 15, having side grooves, 28', and located in a receptacle, 16, the vertical shaft 3 in frame 1, with lateral arm 5, having anti-friction rollers 6 and 6' and located between cross-bars 13, the arm 7 on shaft 3, with block 12, the sweep 9, loosely pivoted to shaft 3 and engaging the arm 7, and the casing 16, connected to frame 1 and having top opening, 18, spring-actuated dogs 28, located in slots 27 in the sides of receptacle 16, beneath opening 18, and top elastic compression-strip, 19, with adjusting screw-rod 21, having a ball, 24, at one end located between cross-strip 26 and elastic strip 19, substantially as described.

403,668. FRICTION-CLUTCH. ALBERT HAMPE, St. Louis, Mo. Filed Sept. 15, 1888. Serial No. 285,457. (No model.)



Claim.—1. The combination, with a driving-shaft, of a hub mounted on the shaft having a disk, a pulley-rim having an outer conical bearing, an inner truncated cone-bearing, and screw-threaded rods having pinions and separably connecting one of the bearings with the disk, and the hub having central gear-wheel, substantially as described.

2. The combination, with a driving-shaft, of a hub mounted on the shaft having a disk, a pulley-rim having an outer conical bearing, an inner truncated cone-bearing, and screw-threaded rods having pinions and separably connecting one of the bearings with the disk, the hub having central gear-wheel and bevel gear-wheel, and the friction-drum and its brake, substantially as described.

3. The combination, with a driving-shaft, of a hub mounted on the shaft having a disk, a pulley-rim having an outer conical bearing, an inner truncated cone-bearing, and screw-threaded rods having pinions and separably connecting one of the bearings with the disk, the hub having central gear-wheel and inner bevel gear-wheel, the inner friction-drum, the outer bevel gear-wheel the outer friction-drum, the hub having a spindle, bevel-pinions on the spindle, and the brakes, substantially as described.

4. The combination, with a driving-shaft, of a hub mounted on the shaft having a disk, a pulley-rim having an outer conical bearing, an inner truncated cone-bearing, and screw-threaded rods having pinions and separably connecting one of the bearings with the disk, the hub having central gear-wheel and bevel gear-wheel, the inner friction-drum, the outer bevel gear-wheel the outer friction-drum, the hub having a spindle, bevel-pinions on the spindle, and the brakes, substantially as described.

5. The combination, with a driving-shaft, of a hub, 9, mounted on the shaft, having a disk, 10, a pulley-rim, 2, having an outer conical bearing, 12 3, an inner truncated cone-bearing, 4 5, mounted on the disk-hub, and screw-threaded rods having pinions and separably connecting the cone-bearing with the disk, and the hub having the gear-wheel, substantially as described.

6. The combination with a driving-shaft, of a pulley-rim, 2, having the outer member, 12, formed with conical bearing 3, the hub 9, having a disk, 10, the inner member, 4 5, mounted on the disk-hub, having sockets 18 and nuts 19, the screw-threaded rods 15, mounted in the disk, having pinions 16, the hub 22, having the gear-wheel 21, and mechanism for rotating the gear-wheel hub, substantially as described.

7. The combination, with a driving-shaft, of a pulley-rim having the outer member and the inner member of the friction-clutch within the rim, connecting the shaft with the rim, and hangers provided with friction-rollers for supporting the pulley-rim, substantially as described.

8. The combination, with a driving-shaft, of a pulley-rim, an outer conical bearing having the hub mounted on the shaft, having a disk, the inner truncated cone-bearing sliding on the hub, and the hangers provided with friction-rollers, substantially as described.

9. The combination, with a driving-shaft, of a pulley-rim having the outer conical bearing, the hub having a disk, the inner truncated cone-bearing, the screw-threaded rods having pinions, the gearing for rotating the pinions, and the hangers provided with friction-rollers for supporting the pulley-rim when not in use, substantially as described.

10. The combination of a shaft, 1, pulley-rim 2, having conical bearing 12 3, sleeve 6, hub 9, having a disk, 10, truncated cone-bearing 4 5, having sockets 18 and nuts 19, screw-threaded rods 15, having pinions 16, hub 22, having gear-wheel 21, bevel gear-wheels 24 and 23, spindle 30, having bevel-pinions 29, friction-drums 25 and 26, and brakes 32 and 32', substantially as described.

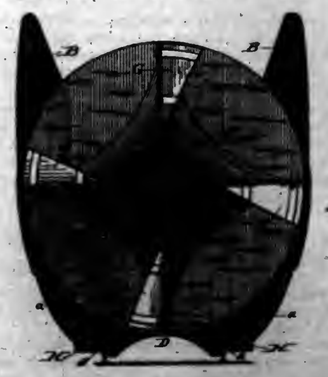
403,664. WHIFFLETREE AND HOOK. ALBERT T. HAYES, South Elgin, Ill. Filed Mar. 1, 1889. Serial No. 301,671. (No model.)



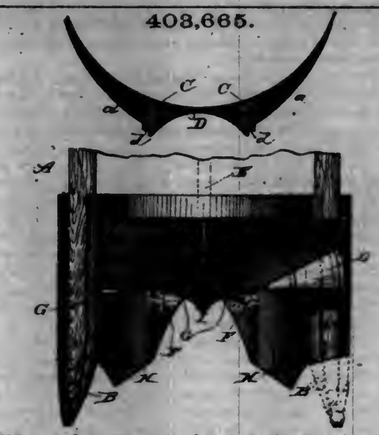
Claim.—1. In combination with a whiffletree, trace-hooks as made with two angular bends, *l l'*, therein, and with an extension, *l''*, beyond the same and pivoted directly on the whiffletree, all as and for the purposes set forth.

2. In combination with the whiffletree and its trace-rod, the center brace made in a single piece, having its central portion provided with the rabbets *g* and bolt-hole *i*, and having the arched end *e* and the curved part *f*, provided with the parts *h*, all as shown and described.

403,665. SNOW-PLOW. JOHN W. HAUSHAWOUT, Omaha, Nebr. Filed Oct. 12, 1888. Serial No. 287,960. (No model.)



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Claim.—1. In a rotary snow-plow, the combination of a series of blades rotated by a common shaft, sloping from their forward edges outward and backward in a double curve, substantially as described.

2. In a rotary snow-plow, a series of blades rotated by a common shaft, sloping from their forward edges outward and backward in a double curve, in combination with a series of reversible cutting-edges extending forward to enter the snow at an angle or with a boring movement, substantially as described.

3. In a rotary snow-plow, a series of blades rotated by a common shaft, in combination with wings hollowed out inwardly and rearwardly and forming an extension of the case upwardly and forwardly, whereby the snow is directed toward one side or the other of the track and discharged at a sufficient distance therefrom, substantially as described.

4. In a rotary snow-plow, a series of blades rotated by a common shaft and sloping from their forward edges outward and backward in a double curve, in combination with an inclosing cylindrical case, substantially as described.

5. In a rotary snow-plow, a series of blades rotated by a common shaft, in combination with a cutting-apron clearing the rails of the track at its front edge and resting thereon at its rear and arched on its under side between the rails, substantially as described.

403,666. VEHICLE-SPRING. BYRON J. HEALY, Kalamazoo, Mich. Filed Feb. 21, 1889. Serial No. 300,784. (No model.)



Claim.—1. A vehicle-spring consisting of a bowed or U-shaped spring and body-support, its middle portion journaled to a vehicle-body and its arms elastically fulcrumed by means of a cross-spring to a vehicle-body, all for the purpose specified.

2. A vehicle-spring support made in one continuous piece, bowed or U-shaped, having the arms C C approximately at right angles to the middle portion, D, which is journaled to the vehicle-body, the free ends of the arms C C attached at G to the gear, and the arms C C C C supporting the springs and body from the gear, all for the purpose specified.

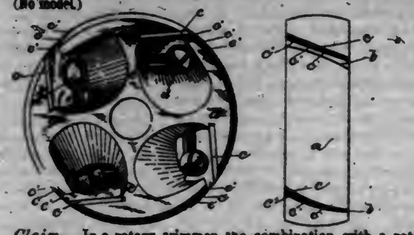
3. A vehicle-spring consisting of a bowed shaped spring and body-support having the middle portion journaled to a vehicle-body and the free ends or arms extending on each side of the body to the gear, and the semi-elliptic spring reaching across the arms and supporting the body, for the purpose specified.

4. In combination, the bowed or U-shaped spring-supports having the middle portion pivotally attached to a vehicle-body and the ends attached to the gear, and the semi-elliptic spring having the hooked ends engaging the arms and supporting the body, as shown and described, and for the purpose specified.

5. In combination, a vehicle-spring and the supports made in one continuous piece and bowed or U-shaped, the middle portion pivotally and adjustably connected to a vehicle-body near its center, and the arms extending to the gear and elastically and adjustably fulcrumed to the body by means of a common spring, as shown and described, and for the purpose specified.

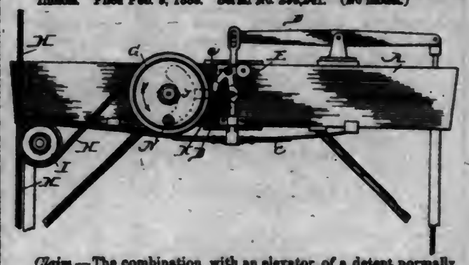
6. In combination, the vehicle-body, the spring-supports of the pattern shown, the springs with the hooked ends, the hangers to the supports, the braces, the spring-connections, and the gear, all as described and shown, and for the purposes specified.

403,667. ROTARY CUTTER. AMASA C. HEATH and FRED H. WHITE, South Boston, Mass. Filed Jan. 31, 1888. Serial No. 262,152. (No model.)



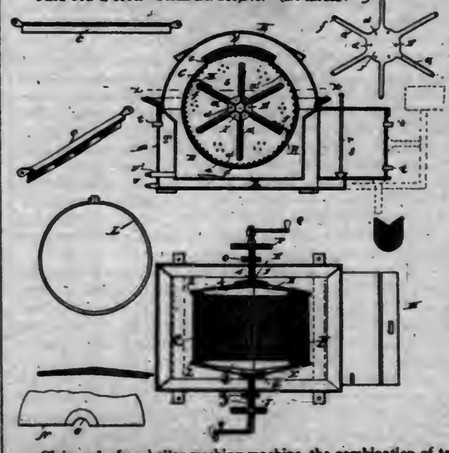
Claim.—In a rotary trimmer, the combination, with a rotary head or holder provided with a rounded or molded peripheral face, of a series of blades extending across said face and having teeth the sides of which, between the teeth of the series, are converging to form small or pointed cutting portions, and the said head in front of the said blades having escape-openings for the cuttings, substantially as set forth.

403,668. SAFETY DEVICE FOR ELEVATORS. THADDEUS W. HEERMANS, Chicago, Ill., assignor to The Crane Elevator Company, of Illinois. Filed Feb. 9, 1889. Serial No. 299,241. (No model.)



Claim.—The combination, with an elevator, of a detent normally holding the regulating or safety appliances thereof out of operation, a disk or pulley adapted to be revolved on the descent of the car, and a weight pivoted to said disk or pulley having its free end in advance of the pivoted end, the position of its free end being determined by the opposing action of the centrifugal force generated by its revolution, and a centripetally-acting spring, said advanced free end being adapted to make contact with said detent when a normal speed of descent is exceeded, substantially as described.

403,669. WASHING-MACHINE. CHARLES HESS, Danville, Ill. Filed Oct. 4, 1888. Serial No. 215,275. (No model.)

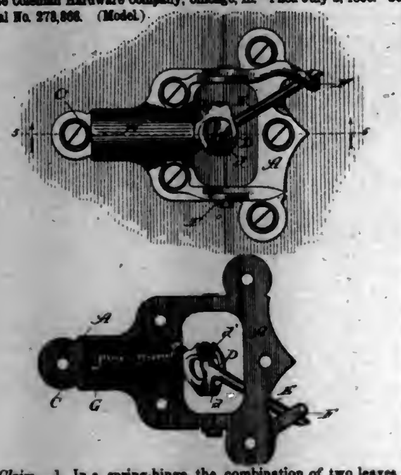


Claim.—1. In a boiler washing-machine, the combination of the outer casing, the suds-box, the revolving drum located therein and provided with convex heads, strengthening-loops extending around

the periphery of the drum, the interior braces secured to the heads of said drum and each cast in one piece, and consisting of a central convex portion, I, to fit in the closed concave center of a head and having a series of transverse rivet-holes, and the ribbed radiating arms G, having rivet-holes *f*, the gudgeons for supporting and revolving the drum, each cast in one piece separate from the drum, and the braces E, and consisting of a short stem, *g*, at the inner end provided with a flat concave plate, K, to fit snugly upon the exterior of the closed convex center of a head, said plates K and the closed centers of the heads being provided with transverse rivet-holes registering with the holes *d* in centers I, whereby the plates K and centers I are secured to the drum-heads by the same rivets passing through the same, all combined and operating substantially as described.

2. A washing-machine comprising a suds-box, a rotary drum located therein and having a corrugated periphery and convex heads and provided with a suitable opening normally closed by a door, the gudgeons for supporting the drum, each consisting of a short stem at the inner end provided with a circular concave plate fitting upon a closed exterior center of the convex drum-heads, the interior braces secured to the heads of said drum and each cast in one piece, and consisting of a central convex portion corresponding to the plates of the gudgeons and fitting in the interior center of a head, and the ribbed radiating arms projecting inwardly to catch the clothes, the said plates of the gudgeons and centers of said braces being riveted together through the drum-heads, and a pair of lifting-bars each composed of a single straight piece of sheet metal longitudinally corrugated and extending from one end of the drum to the other, secured to the end of an arm of each brace and projecting inwardly, whereby the clothes are lifted by said bars and the arms of the braces, substantially as described.

403,670. SPRING-HINGE. DANIEL M. HOYT, Morris, assignor to the Coleman Hardware Company, Chicago, Ill. Filed July 2, 1888. Serial No. 278,866. (Model.)



Claim.—1. In a spring-hinge, the combination of two leaves of suitable form provided with ears or lugs pivotally connected together at points outside of the plane of the hinge-leaves, a spring-axis arranged in bearings on one of the hinge-leaves and rotatable therein, a spring-wire coiled or bent around or partially around the spring-axis and having one of its ends held in a fixed position and the other of its ends carried around with the rotation of the spring-axis, and a lever engaging at one end with one end of the spring-axis and having its other end connected with the other hinge-leaf, whereby it is rotatable on its longitudinal axis by the folding of the hinge-leaves in that direction which rotates the spring-axis and further coils or bends the spring-wire, substantially as described.

2. In a spring-hinge, the combination of two leaves of suitable form provided with ears or lugs pivotally connected together at points outside of the plane of the hinge-leaves, a spring-axis arranged in bearings on one of the hinge-leaves and rotatable therein, a spring-wire coiled or bent around or partially around the spring-axis and having one of its ends held in a fixed position and the other of its ends carried around with the rotation of the spring-axis, and a lever arranged at an angle to the spring-axis when the hinge-leaves are open or unfolded and engaging at one of its ends with one end of the spring-axis and having its other end connected with the other hinge-leaf, whereby it is rotatable on its longitudinal axis by the folding of the hinge-leaves in that direction which rotates the spring-axis and further coils or bends the spring-wire until the lever reaches a point at right angles to the spring-axis, when the further folding of the hinge-leaves permits the spring-axis to be rotated in that direction which uncoils or unbends the spring-wire, substantially as described.

3. In a spring-hinge, the combination of two leaves of suitable form provided with ears or lugs pivotally connected together at points outside of the plane of the hinge-leaves, a spring-axis arranged in bearings on one of the hinge-leaves and rotatable therein, a spring-wire coiled or bent around or partially around the spring-axis and having one of its ends held in a fixed position and the other of its ends carried around with the rotation of the spring-axis, and a lever arranged at an angle to the spring-axis when the hinge-leaves are open or unfolded and engaging at one of its ends with one end of the spring-axis at a point within the angle and above the plane of the spring-axis and lever when the hinge-leaves are open or unfolded and having its other end connected with the other hinge-leaf, whereby it is rotatable on its longitudinal axis by the folding of the hinge-leaves in that direction which rotates the spring-axis and further coils or bends the spring-wire, substantially as described.

4. In a spring-hinge, the combination of two leaves of suitable form provided with ears or lugs pivotally connected together at points outside of the plane of the hinge-leaves, a spring-axis arranged in bearings on one of the hinge-leaves and rotatable therein and provided at one end with bearings on opposite sides of the axis, a spring-wire coiled around or partially around the spring-axis and having one of its ends held in a fixed position and the other of its ends carried around with the rotation of the spring-axis, and a lever having lugs on one end adapted to engage with the bearings on the end of the spring-axis and having its other end connected with the other hinge-leaf, whereby it is rotatable on its longitudinal axis by the folding of the hinge-leaves in that direction which rotates the spring-axis and further coils or bends the spring-wire, substantially as described.

5. In a spring-hinge, the combination of two leaves of suitable form provided with ears or lugs pivotally connected together at points outside of the plane of the hinge-leaves, a spring-axis arranged in bearings on one of the hinge-leaves and rotatable therein and provided at one end with bearings on opposite sides of the axis and adapted to engage the upper side of one lug and the lower side of the other lug of a lever and leave the opposite sides open or exposed, a spring-wire coiled around or partially around the spring-axis and having one of its ends held in a fixed position and the other of its ends carried around with the rotation of the spring-axis, and a lever having lugs on one end adapted to engage with the bearings on the end of the spring-axis at the opposite sides thereof on the upper side of one lug and the under side of the other lug and leave the opposite side open or exposed, and having its other end connected with the other hinge-leaf, whereby it is rotatable on its longitudinal axis by the folding of the hinge-leaves in that direction which rotates the spring-axis and further coils or bends the spring-wire, substantially as described.

6. In a spring-hinge, the combination of two leaves of suitable form provided with ears or lugs pivotally connected together at points outside of the plane of the hinge-leaves, a spring-axis arranged in bearings on one of the hinge-leaves and rotatable therein, an adjusting-collar mounted on the spring-axis and rotatable thereon and arranged to be locked or held at any desired position, a spring-wire coiled or bent around or partially around the spring-axis and having one of its ends connected with the adjusting-collar and the other of its ends carried around with the rotation of the spring-axis, whereby the rotation of the collar on the spring-axis increases or diminishes the tension of the spring-wire, and a lever engaging with one end of the spring-axis arranged at an angle thereto and having its other end connected with the other hinge-leaf, whereby it is rotatable on its longitudinal axis by the folding of the hinge-leaves in that direction which rotates the spring-axis and further coils or bends the spring-wire, substantially as described.

403,671. ARC LAMP. DARIUS HOUGHTON, Skowhegan, Me. Filed Dec. 15, 1888. Serial No. 293,637. (No model.)

Claim.—1. In an arc lamp, feed-rollers mounted with their peripherical face in contact with the edge of carbon disks, whereby the surface speed of the carbon disks will always be the same until the disks are burned out, substantially as set forth.

2. The positive carbon R, arms Q, pulley *r*, and hanger-bar M, in combination with feed-roller T, arm U, chain *p*, rod *g*, levers *d d'*, plunger *c*, and solenoid-magnet *a*, substantially as and for the purposes set forth.

3. The negative carbon R', arms Q', pulley *r'*, and hanger-bar M', in combination with feed-roller T', arm U', chain *p'*, bell-crank lever *n*, and spring *t*, substantially as and for the purposes set forth.

4. The feed-rollers T T', arms U U', hanger-bar M M', and forked bars V V', with pawls on their ends, in combination with bell-crank levers *x x'*, clamps *w*, and rod W, to which a reciprocating movement is imparted, substantially as and for the purposes set forth.

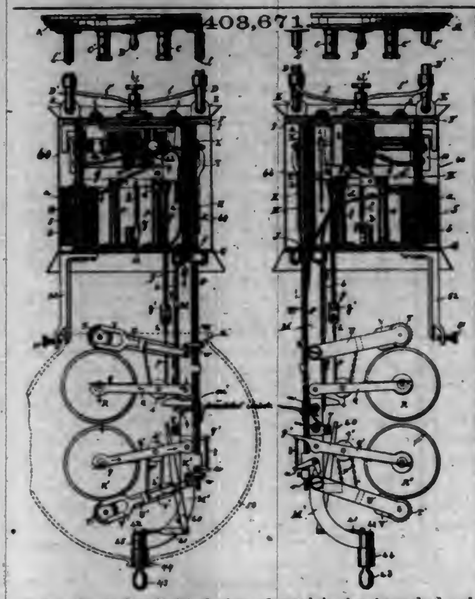
5. In combination with a disk carbon, a carbon-holder, S, consisting of a small cylindrical piece of metal having journals *s'*, and provided with springs *s s*, whereby it adjusts itself centrally in the hole in the carbon, substantially as shown and described.

6. The carbon R, arm Q, pulley *r*, feed-roller T, forked bar V, having pawls on its end, arm U, chain *p*, rod *g*, levers *d d'*, plunger *c*, and magnet *a*, in combination with the carbon R', arm Q', pulley *r'*, chain *p'*, bell-crank lever *n*, and spring *t*, substantially as and for the purposes set forth.

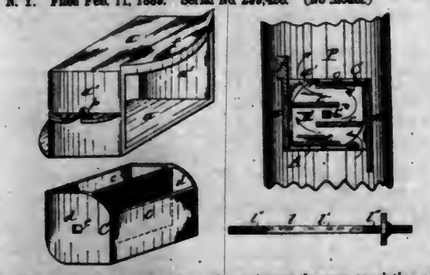
7. The switch 40, arm 41, disk 42, rod 45, and knob 43, in combination with the negative portion M' of the hanger-bar, point 7, and wire P, leading to the negative binding-post, substantially as shown and described.

8. In combination with an arc lamp, a governor consisting of a rim or ring, 35, a wheel, 31, secured to the driving-shaft 30 of an electric motor, levers 33, each pivoted at one end to the wheel 31, and the bar 34, connecting the opposite ends of the levers 33, substantially as shown and described.

9. The combination of the lever *d*, fulcrumed on post *e*, auxiliary lever *d'*, fulcrumed on post *f*, the inner ends of the levers *d d'* being connected together, whereby, when the outer end of the lever *d* is drawn down by the magnet *a*, a corresponding downward movement will be imparted to the rod *g* on the end of lever *d'*, the spring X', bar *y*, and regulating-screw *z*, for adjusting the length of the arc, substantially as set forth.



403,672. STOVE-PIPE DAMPER. GEORGE C. HUMPHREY, Delphi, N. Y. Filed Feb. 11, 1889. Serial No. 299,420. (No model.)



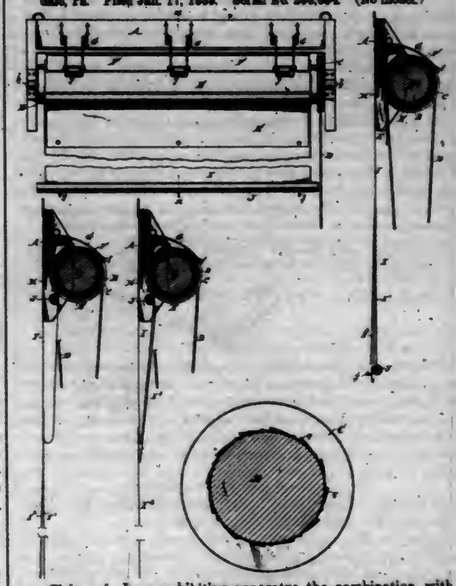
Claim.—1. The combination of a primary damper consisting of a case open at opposite sides and pivoted at its ends and a secondary damper consisting of diaphragms united at their ends and arranged rotatably inside of the primary damper, as set forth.

2. The combination of a primary damper consisting of a case open at opposite sides and pivoted at its ends and a secondary damper consisting of parallel diaphragms disposed successively, each with one of its side edges extending beyond that of the adjacent diaphragm alternately at opposite sides of the damper and firmly united and arranged rotatably inside of the primary damper, as set forth.

3. The combination of a primary damper consisting of a case open at opposite sides, a secondary damper arranged inside of the primary damper, and a shaft passing loosely through the ends of the primary damper and locked on the secondary damper, substantially as and for the purpose set forth.

4. The combination of the primary damper A, having the plates *a a*, each extending with one of its side edges beyond that of the other and provided with the circular apertures *b* in its ends, the secondary damper C, composed of parallel diaphragms *c c c*, disposed successively, each with one of its side edges extending beyond that of the adjacent diaphragm alternately at opposite sides of the damper, and having the end plates, *d d*, provided with a polygonal aperture, *e*, and the shaft *l*, formed with the polygonal portion *l'* and cylindrical end portions, *l' l'*, and passing through the apertures *b* and *e* of the dampers, substantially as described and shown.

403,673. EXHIBITING APPARATUS. CHARLES S. JENKINS, Lansdale, Pa. Filed Jan. 17, 1889. Serial No. 296,694. (No model.)



Claim.—1. In an exhibiting apparatus, the combination, with a fixed support adapted to be suspended at an altitude, of a rotatable support journaled therein and having a number of sheets to be exhibited secured thereto, so that when wound up their lower edges will project one beyond the other, means, substantially as described, to rotate said rotatable support successively in opposite directions, and a spring-guide secured to said fixed support and projecting over said rotatable support for the purpose of guiding the edges of the sheets as they are wound up and unwound.

2. In an exhibiting apparatus, the combination, with a fixed support adapted to be suspended at an altitude, of a rotatable support journaled therein and having a number of sheets to be exhibited secured thereto, so that when wound up their lower edges will project one beyond the other, means, substantially as described, to rotate said rotatable support successively in opposite directions, a spring-guide secured to said fixed support and projecting over said rotatable support and provided with rollers upon its edge for the purpose of guiding the edges of the sheets as they are wound up and unwound.

3. In an exhibiting apparatus, the combination, with a fixed support adapted to be suspended at an altitude, of a rotatable support journaled therein and having a number of sheets to be exhibited secured thereto, so that when wound up their lower edges will project one beyond the other, means, substantially as described, to rotate said rotatable support successively in opposite directions, and guide-rollers supported from the fixed support pressing upon the sheets at the front part of said rotatable support for the purpose of guiding their edges as the sheets are wound up or unwound.

4. In an exhibiting apparatus, the combination, with a fixed support adapted to be suspended at an altitude, of a rotatable support journaled therein and having a number of sheets to be exhibited secured thereto, so that when wound up their lower edges will project

one beyond the other, means, substantially as described, to rotate said rotatable support successively in opposite directions, guide-rollers supported from the fixed support pressing upon the sheets at the front part of said rotatable support for the purpose of guiding their edges as the sheets are wound up or unwound, and springs to press said rollers against said sheets with a yielding pressure.

5. In an exhibiting apparatus, the combination, with a number of sheets, E, secured to a rotatable support and adapted to be rolled up thereon, of one or more sheets, I, suspended from a fixed support arranged close to said rotatable support, and means to attach said sheets E and I together at their bottoms, substantially as and for the purpose specified.

6. In an exhibiting apparatus, the combination, with a number of exhibiting-sheets, E, secured to a rotatable support and adapted to be rolled up thereon, of a sheet, I, suspended from a fixed support arranged close to said rotatable support having a number of leaves, $I' I^2$, attached to its back, and means, substantially as described, to attach the bottom of said sheet I and leaves $I' I^2$ and sheets E together for the purpose of exhibiting objects upon said sheet I and leaves $I' I^2$

7. In an exhibiting apparatus, the combination, with the supporting-frame A, of the cylinder B, having a number of sheets secured thereto so that when wound up upon said cylinder their lower edges will project one beyond the other, guides F and H, to guide the sheets when they are rolled up upon the cylinder or unrolled therefrom, and means, substantially as described, to rotate said cylinder successively in opposite directions.

8. In an exhibiting apparatus, the combination, with the supporting-frame A, of the cylinder B, having a number of sheets secured thereto, so that when wound up upon said cylinder their lower edges will project one beyond the other, guides F and H, to guide the sheets when they are rolled up upon the cylinder or unrolled therefrom, and means, substantially as described, to rotate said cylinder successively in opposite directions, consisting of sheave C and endless band D.

408,674. INK-ERASER. CHARLES W. JOHNSTON, Louisville, Ky. Filed Jan. 17, 1889. Serial No. 296,626. (No model.)



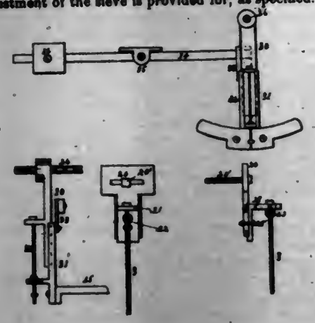
Claim.—As a new article of manufacture, a steel ink-eraser of plate or block-like construction, with its one marginal side or end of both convex form in direction of its length and rounded or of convex shape transversely thereto and finished with a file-cut dress, and having its opposite marginal side or end also of like double convex construction, but of a smooth finish on its surface, substantially as specified.

408,675. FLOUR-BOLT. JOHN JOHNSTON, Neenah, Wis. Filed Nov. 17, 1887. Serial No. 255,404. (No model.)

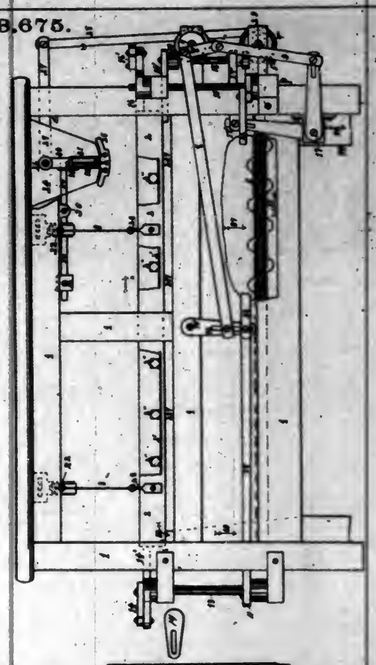
Claim.—1. The combination, in a flour-bolt, with the feeder, of depending swinging arms at opposite sides thereof, a plate at the lower end of said arms, and vertically-movable connections between the plate and arms and means for oscillating said plate, substantially as set forth.

2. The combination, in a flour-bolt, of the hopper 24, having an open bottom, the apron 25, the shaft 26, the hangers 30, the brackets 31, the bolts and nuts 32, the connections 33, the levers 34, having fulcra 35 and weights 36, and mechanism for imparting to the apron an oscillating motion, substantially as shown and described.

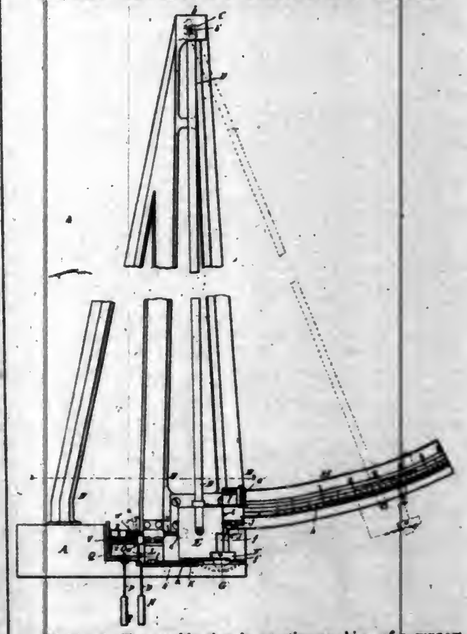
3. In a flour-bolt, the combination, with the sieve, its suspending-rod, and the machine-frame, of the plate 20, having horizontal and vertical slots, the angular bracket 21, having a slot in both arms, and bolts 20' 21' and eyebolt 22, passing through the respective slots, as shown and described, whereby lateral as well as longitudinal and vertical adjustment of the sieve is provided for, as specified.



408,675.



408,676. IMPACT TESTING-MACHINE. WILLIAM J. KEEP, Detroit, Mich. Filed July 20, 1888. Serial No. 280,462. (No model.)



Claim.—1. The combination, in a testing-machine, of a support for a hammer, a swinging hammer pivoted thereto, and a graduated arc curved to substantially correspond with the path of the hammer for gaging the force of the blow of said hammer, substantially as described.

2. The combination, in a testing-machine, of a swinging hammer, a graduated arc, a movable gage sliding on the arc and arranged to be held at any desired point thereon, and provided with a trip to retain and liberate the hammer, as desired, substantially as described.

3. The combination, in a testing-machine, of a reciprocating hammer and a transmitter arranged to receive the blow of the hammer and transmit it to the test-bar, as set forth.

4. The combination, in a testing-machine, of a support for the test-bar, a diagram-paper holder, a pencil-holder, and a connection, as the cage U, between the pencil-holder and the test-bar, arranged to be firmly clamped to said test-bar, substantially as described.

5. In a testing-machine, a hammer constructed and arranged to give the article under test a series of blows, and an intermittingly-moving diagram-paper holder, in combination with a pencil-holder connected to and moving with the article being tested, whereby the permanent sets of the succeeding blows are recorded, substantially as described.

6. In a testing-machine having a hammer constructed to give the article under test a series of blows, an intermittingly-moving pencil-holder arranged to move with the article being tested and make a zigzag line, thus recording the deflection after each blow and the total deflection of the test-bar, substantially as described.

7. In a testing-machine, a diagram-paper holder provided with means, as the moving weight, slide, and pins, for automatically moving said holder between each test, substantially as described.

8. In a testing-machine, a diagram-holder, a pencil-holder connected with the test-bar and moving therewith, and a second pencil-holder disconnected from the test-bar and operated by the first-mentioned pencil-holder, substantially as described.

9. The combination, in a testing-machine having a hammer constructed to give the article under test a series of blows, of a pencil-holder with an intermittingly-moving diagram-paper holder, substantially as described.

10. The combination, in a testing-machine having a moving hammer, of a pencil-holder, a diagram-paper holder, and means, as the dog F and slide I and intermediate connection between said dog and slide, for giving a short motion to the paper-holder at each blow of the hammer, substantially as described.

11. In a testing-machine having a moving hammer, the combination, with a pencil-carrier and a diagram-paper holder having pins o', of the slide L, spring M, and the dog F, moving with the hammer and operating through intermediate connections said slide L at each movement of the hammer, substantially as described.

12. In a testing-machine, and in combination with the frame and hammer thereof, the clamps R R, connected with the frame and arranged to firmly hold the test-bar in place against the recoil after each blow of the hammer, substantially as described.

13. In a testing-machine, in combination with the breaker thereof, guards, as $z z$, to prevent damage from unequal breakage of the bar, said breaker and guards being arranged on opposite sides of the test-bar.

14. The combination, in a testing-machine, of a moving hammer arranged to give a series of blows and a recorder constructed to indicate the number and force of the blows given by the hammer, substantially as described.

15. In a testing-machine, and in combination with the breaker thereof and a support for the test-bar, an indicating-arm, as V, and means, as the cage U and pin u^2, for communicating the motion of the test-bar to said indicating-arm, substantially as described.

16. The combination, in a testing-machine and with the base thereof, of a vertical support for a hammer, a swinging hammer hanging therefrom, and a graduated arc curved to substantially correspond with the path of said hammer for gaging the force of the blow, substantially as described.

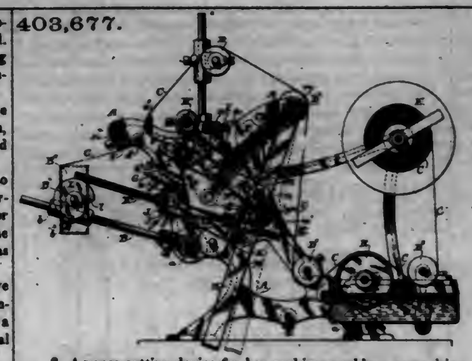
17. The combination, in a testing-machine and with the base thereof, of a vertical support for a hammer, a swinging hammer hanging therefrom, a graduated arc curved to substantially correspond with the path of the hammer, and a slide running on said arc provided with a holding and liberating device, as the trip J, for holding and releasing the hammer at any desired position, substantially as described.

18. The combination, in a testing-machine, of a swinging hammer, a graduated arc curved to substantially correspond with the path of the hammer, a gage for holding and releasing the hammer, and means, as the pin i, for holding said gage in any desired position, substantially as described.

408,677. PAPER-BOX-COVERING MACHINE. MARK D. KNOWLTON, Chicago, Ill. Filed Nov. 11, 1887. Serial No. 254,884. (No model.)

Claim.—1. A paper-cutting device for box-making machines, comprising a stationary cutter, a movable cutter, a spring actuating the movable cutter, a detent holding the movable cutter in its retracted position, a form-block, and a cam connected and turning with the form-block and having operative connection with the said detent, whereby the movable cutter may be released at a desired time, substantially as described.

408,677.



2. A paper-cutting device for box-making machines, comprising a stationary knife or cutter, a movable cutter, a spring actuating the movable cutter, a detent engaging the movable cutter for holding the latter retracted, a rotating form-block, a cam connected and turning with the form-block, and an arm connected with and moving the detent and engaging the cam, substantially as described.

3. The combination, with a stationary cutter, of a movable cutter, a spring for actuating said movable cutter, a detent for holding said movable cutter retracted, comprising a swinging arm and a spring-dog pivoted to said swinging arm, a rotating form-block, a cam connected and turning with the form-block, and an arm connected with the detent and engaging the said cam, substantially as described.

4. The combination, with a stationary cutter, of a movable cutter, a spring for actuating the movable cutter, a detent for holding the movable cutter retracted, a rotating form-block, a cam turning with the form-block and actuating the detent, and a lever for retracting the movable cutter, connected with the latter by a sliding connection, substantially as described.

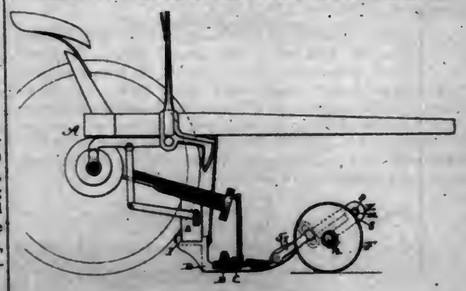
5. The combination, with a stationary cutter, of a movable cutter, a spring actuating the movable cutter, a detent holding the movable cutter retracted, a rotating form-block, a cam turning with the form-block and actuating the detent, and means for retracting the movable cutter, comprising a pivoted arm, N', a bar, O, pivoted to the said arm and connected with the movable cutter by a slotted connection, a spring engaging said arm N' for holding the latter in position to allow the forward movement of the cutter, and means connected with the said arm N' for turning the latter about its pivot, substantially as described.

6. The combination, with a stationary cutter, of a movable cutter, a spring actuating the movable cutter, a detent engaging the movable cutter for holding the latter retracted, a rotating form-block, a cam turning with the form-block and actuating the detent, a bell-crank lever, N, a connecting-bar, O, pivoted to the said bell-crank lever and having a slot-and-pin connection with the movable cutter, an actuating-lever, M, engaging the said bell-crank lever, and a spring engaging the bell-crank lever for holding the latter in position to allow the movement of the cutter, substantially as described.

408,678. METAAMIDOPHENOL. CARL KUHNAUL, Basle, Switzerland, assignor to the Society of Chemical Industry, same place. Filed Apr. 5, 1888. Serial No. 269,731. (No specimens.) Patented in Germany Mar. 18, 1888, No. 44,792, and in France Apr. 19, 1888, No. 190,096.

Claim.—The production of metaamidophenol by melting the metamonosulpho-acid of amido-benzole with alkalies at from 260° to 300° centigrade.

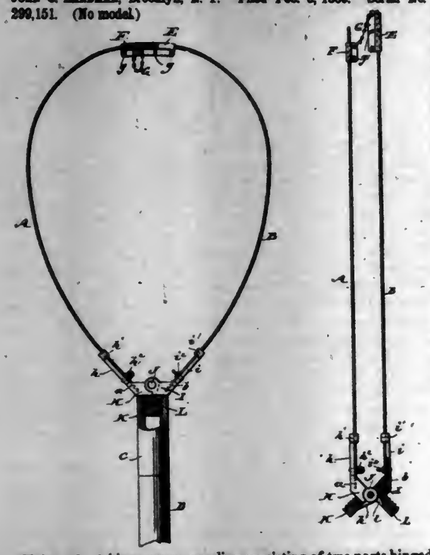
408,679. MOWING-MACHINE. CLINTON LA GRANGE, Guilderland Centre, N. Y. Filed Jan. 23, 1889. Serial No. 297,794. (No model.)



Claim.—In a mowing-machine, the combination of the finger-bar, the main shoe for said finger-bar, a carrying-wheel for said main shoe, and a spring-bearing for said carrying-wheel, said spring-bearing consisting of a stationary upper arm which is adjustably attached to said main shoe, a movable lower arm which is jointed to the outer end of said stationary arm, and a spring interposed between said arms to force them apart, the inner end of said movable arm being provided with a stud on which said carrying-wheel is fitted to rotate, as and for the purpose herein specified.

403,680. HINGE-SCREW COUPLING FOR FISHING-NET FRAMES.

JOHN G. LANDMAN, Brooklyn, N. Y. Filed Feb. 8, 1889. Serial No. 299,151. (No model.)



Claim.—1. A hinge-screw coupling consisting of two parts hinged together and provided each with a projection, both of which projections when closed together having exterior continuous screw-threads to receive a screw ferrule or handle, and the two parts of the coupling independently of the hinge provided, respectively, with a tongue or projection and a groove or recess which interlock to strengthen the hinge-coupling against lateral strains, substantially as herein set forth.

2. In a hinge-screw coupling for scalp-net frames, the combination of two parts, H I, hinged together at J, and provided, respectively, with arms for connection of the opposite side bars of the net-frame, said parts H I provided, respectively, with threaded projections K L, forming a screw-stud, and said parts also having interlocking tongue and groove *k l*, resisting lateral strains on the coupling, substantially as herein set forth.

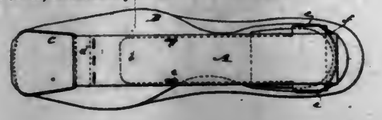
3. In a hinge-coupling for scalp-net frames, the combination, with two parts hinged together and provided with arms, as *h i*, and sockets *a b* at the bases of said arms, of the scalp-net frame-bars A B, held to the arms and entering the sockets *a b*, substantially as herein set forth.

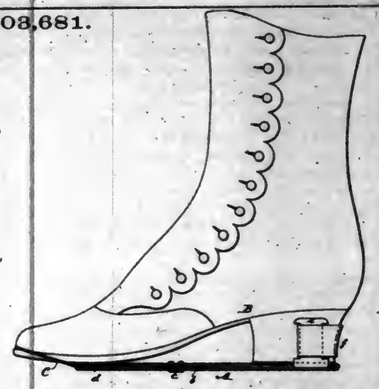
4. In a hinge-coupling for scalp-net frames, the combination, with two parts hinged together and provided with arms *h i*, having clips *h' i'*, and sockets *a b*, of the frame-bars A B, entering the clips and sockets, and screws holding the bars in the sockets and to the arms, substantially as herein set forth.

403,681. BOOT OR SHOE SOLE PROTECTOR.

LOUIS P. LANG, Allegheny, Pa. Filed Feb. 21, 1889. Serial No. 300,658. (No model.)

Claim.—1. A device for protecting the bottoms of boots or shoes from being soiled when said articles are being fitted or tried on the person, the same consisting of a longitudinally-elastic bottom cover, a wire connection at the forward end of said cover, adapted to engage with the toe part of the boot or shoe between its upper leather and welt or sole, and a raised heel-gripping attachment at the back end of said cover, substantially as shown and described.



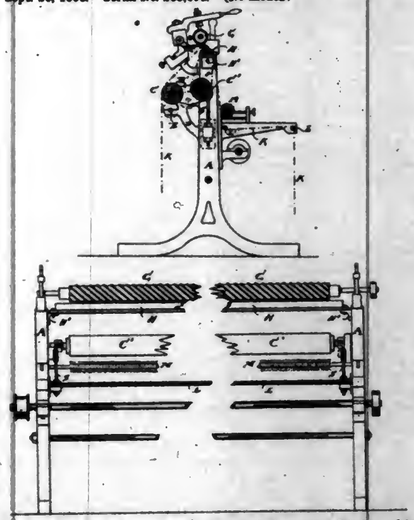


2. In a device for protecting the bottoms of boots or shoes from being soiled when said articles are being fitted or tried on the person, the combination, with the longitudinally-elastic bottom cover, A, having attached means in front for securing it to the toe part of the boot or shoe, of a flexible raised heel-gripping attachment at the back end of said bottom cover, and a base-plate supporting the same, essentially as described.

3. The combination of the longitudinally-elastic bottom cover, A, constructed to form a double web, the attached interposed plate *b*, having rear end side uprights, *c c*, the elastic band or strap *f*, connecting said uprights, and the wire loop C at the forward end of the bottom cover, substantially as shown and described.

403,682. METHOD OF CUTTING DESIGNS ON THE FACE OF FABRICS.

JOSEPH LOWDEN, Leeds, County of York, England. Filed Sept. 20, 1888. Serial No. 285,891. (No model.)



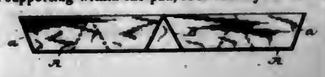
Claim.—1. The method of producing designs upon fabrics, which consists in superimposing said fabric upon a base, having the design in bas-relief thereupon, and while in such position subjecting the fabric to the action of a cutting-machine, substantially as described.

2. The method of producing designs upon fabrics, which consists in superimposing said fabric upon an endless belt on which the design is first produced in bas-relief by a cord or braid and then subjecting said fabric to the action of a cutting-machine, substantially as described.

403,683. CANDY-PAN.

JOHN H. MAGRUDER, Washington, D. C. Filed Dec. 13, 1888. Serial No. 293,420. (No model.)

Claim.—A partition for pans bent into A shape to render the same self-supporting within the pan, substantially as described.

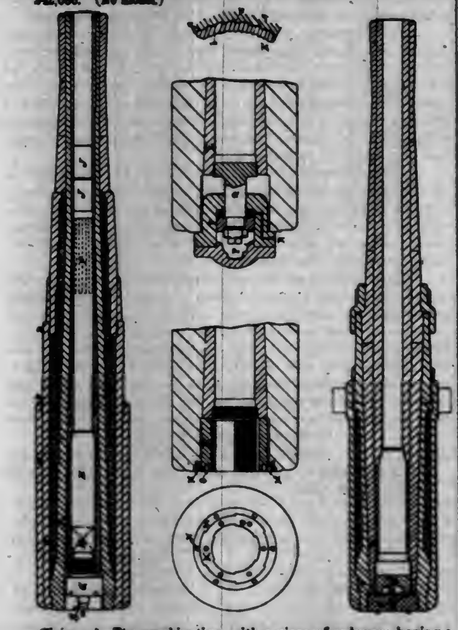


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403,684. CONSTRUCTION OF ORDNANCE.

RAWSLEY MAITLAND, London, County of Middlesex, England. Filed June 21, 1887. Serial No. 242,066. (No model.)



Claim.—1. The combination, with a piece of ordnance having a tapering bore and grooves or recesses near the center thereof, of a removable lining having exterior teeth or projections on its forward portion to enter said grooves or recesses and provided with an internal screw-thread at its rear, and a plug, Q, engaging said screw-thread and having an extended portion, substantially as and for the purpose stated.

2. The combination, with a piece of ordnance consisting of a series of sections and a continuous main tube having a tapering bore, grooves or recesses near the center thereof, and a rear screw-thread, of a removable lining made in a single piece and having teeth or projections entering said grooves or recesses and provided with an internal screw-thread at its rear end, the threaded ring engaging said rear screw-thread, and the block engaging said internal screw-thread, substantially as set forth.

3. The combination, with a piece of ordnance, of a lining located in the bore of the piece, a ring for retaining said lining and having grooves and recesses, and a locking-ring fitting said grooves and recesses and secured to one end of the barrel by screws passed therethrough, substantially as set forth.

403,685. BOX FOR MATCHES, &c.

JOHN F. MARSHALL, Waco, Tex., assignor to John H. Finks, same place. Filed Mar. 5, 1889. Serial No. 301,907. (No model.)

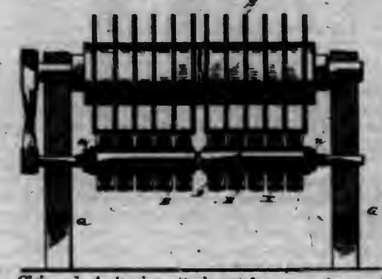


Claim.—1. The box or case having the respectively open and closed opposite extremities, the finger-slot extending between them, the permanent front portions or walls at opposite sides of said slot extending from the open to the closed extremity, and the securing flap or cover for closing the slot and open extremity to confine and protect the contents of the box or case, substantially as and for the purpose set forth.

2. The box or case open at one extremity and closed at the opposite extremity, having the finger-slot and the permanent front portions or walls at either side thereof extending from the open to the closed extremity, and with the securing flap or cover having the body-engaging lip and completely closing the open extremity and slot, substantially as and for the purpose set forth.

403,686. GIN-SAW CLEANER.

GEORGE P. MELCHIOR, Bellevue, Miss. Filed July 21, 1888. Serial No. 280,683. (No model.)



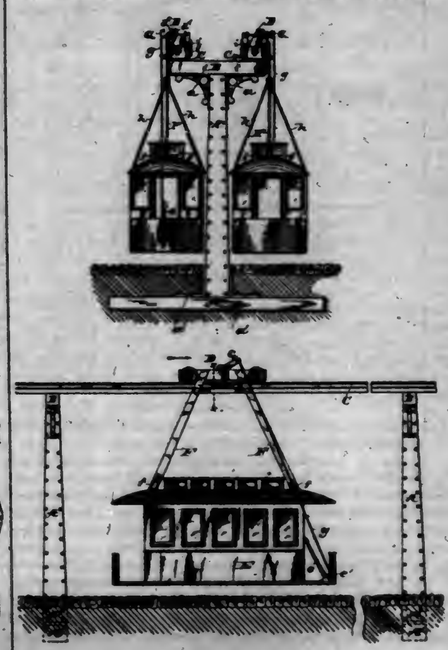
Claim.—1. A cleaning attachment for cotton-gins, consisting of a shaft, A, having a series of disks, B, arranged thereon, and formed with peripheries of reduced thickness provided with laterally-projecting rings of brushes, substantially as shown and described.

2. The combination, with the series of gin-saws in a cotton-gin, of a cleaner located just below the saws, and consisting of a shaft, A, having a series of disks, B, mounted thereon, and formed with peripheries of reduced thickness provided with laterally-projecting rings of brushes, substantially as shown and described.

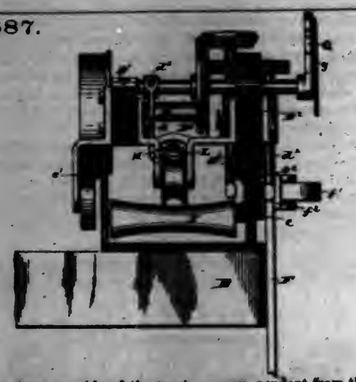
403,687. ROAD FOR RAPID TRANSIT.

MOSES A. MENDALM, Allegheny, assignor of one-half to John T. Moore, Pittsburg, Pa. Filed May 15, 1888. Serial No. 273,961. (No model.)

Claim.—1. The combination, with a double-rail track having horizontal flange on one rail and a truck therefor, of a car suspended



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below and from one side of the truck, an arm pendent from the opposite side of the truck, and provided with a wheel which travels on the under side of the said flange, substantially as and for the purposes set forth.

2. The combination, with a double-rail track having a horizontal flange on one rail and a track therefor, of a car suspended below and from one side of the truck, a pendent arm provided with a wheel which travels on the under side of the rail-flange, and a lateral brace-wheel on the suspension-rod of the car which travels in the web of the opposite rail, substantially as and for the purposes set forth.

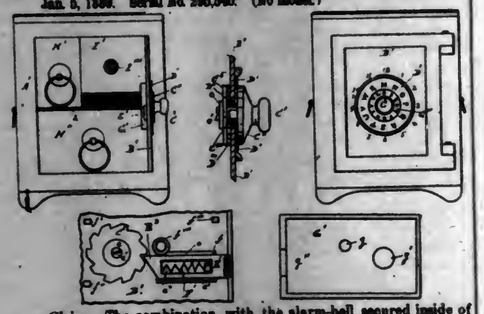
3. In an elevated railway, the U-shaped double rail track, one of whose verticals is provided with a horizontal flange, as at *d'*, substantially as and for the purposes specified.

4. In an elevated railway, the U-shaped double rail having two verticals, one of which has a single horizontal flange and the other a T-head or double flange, substantially as and for the purposes specified.

5. In an elevated railway, the combination, with the U-shaped track-iron having two unequal flanged verticals, of a rail of the common form, substantially as and for the purposes specified.

6. In an elevated-railway track for cable railways, the combination, with the U-shaped track having verticals of unequal height, of cable-rollers, and a separable cap-rail arranged on the short vertical which forms the journal-bearing of the cable-rollers, substantially as and for the purposes specified.

403,688. SAFE-ALARM. JOSEPH S. MIERS, Evansville, Ind. Filed Jan. 5, 1889. Serial No. 295,540. (No model.)

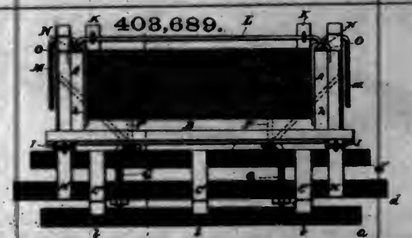


Claim.—The combination, with the alarm-bell secured inside of the safe, of the sliding rod and its actuating-spring, a projecting pin at one side of the rod, a pivoted piece, K, operated by said pin, a pivoted lever, L', and hammer M', operated thereby to strike the bell and sound the alarm when the door of the safe is opened or closed, substantially as and for the purposes set forth.

403,689. DUMPING-CAR. BERNARD MCARDLE, Geauga Lake, Ohio. Filed Sept. 25, 1888. Serial No. 286,375. (No model.)

Claim.—1. In a dump-car, the combination, with the truck and the car-body pivoted centrally and longitudinally thereon and provided at its ends with loops or staples, of the diagonal supports hinged near their lower ends to the central piece of the truck, and the rock-shafts journaled in the upper ends of the diagonal supports and provided with the lever-arms for actuating same and with hooks for engaging the loops or staples in the car-body, substantially as described.

2. In a dump-car, the combination, with the car-body pivoted centrally and longitudinally on the truck and supported in position by a rock-shaft provided with hooks adapted to engage with loops or staples in the end of the car-body and journaled in the outer ends of



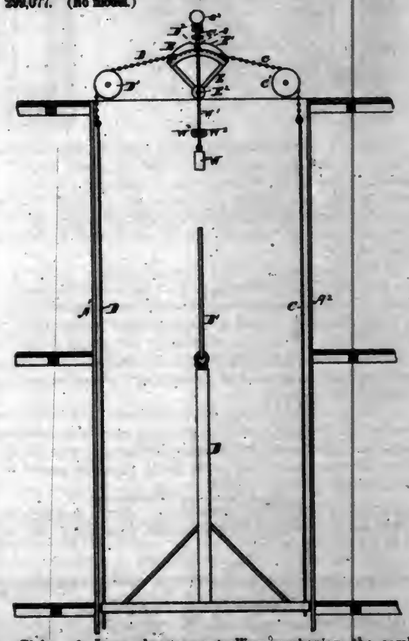
the diagonally-arranged hinged supports, of the swinging sides pivoted to the rock-shafts, substantially as and for the purpose described.

3. In a dump-car, the combination of the truck, the car-body pivoted centrally and longitudinally thereon, the diagonally-arranged supports resting upon the central longitudinal pieces of the truck, the hinged links pivotally connecting the lower end of the supports to the truck, the rock-shafts journaled in the outer ends of the supports and provided with the hooks adapted to engage the loops or staples in the car-body, and the lever-arms, all combined and arranged substantially as and for the purpose described.

4. The combination, in a centrally-pivoted car-body adapted to tilt toward either side, of the swinging gate C, hinged or pivoted to a frame supported upon the truck independent of the car-body, whereby it serves to close the side when the car-body is in its normal position and is held away from the body when the car is tilted, substantially as and for the purpose described.

5. In a dumping-car, the combination, with the truck provided with the longitudinal central bed-pieces, *d d'*, and the body centrally pivoted thereon, of the diagonal end supports resting upon and hinged near their lower ends to one of the bed-pieces of the truck, and the rock-shafts journaled in the outer ends of the supports and provided with hooks for engaging with staples on the car-body, and the gates C, hung to the rock-shafts and adapted to close the sides of the body when the car is in its normal position and to automatically open them when the car is tilted, substantially as and for the purpose described.

403,690. BELT-SHIFTING APPLIANCE FOR ELEVATORS. WILLIAM E. HICKERSON, Cambridge, Mass. Filed Feb. 7, 1888. Serial No. 299,077. (No model.)

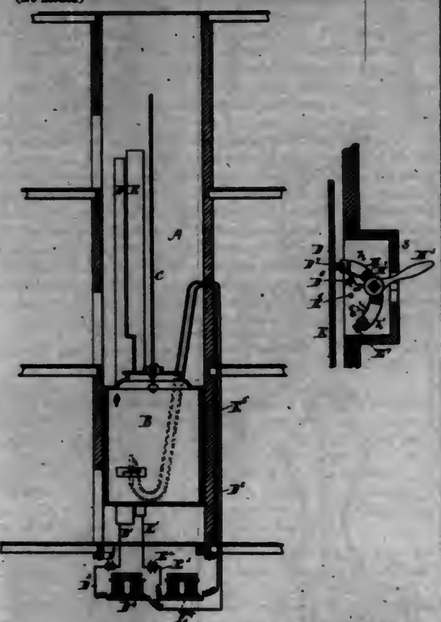


Claim.—1. In an elevator-controlling mechanism, the combination of the chains D and C with the switch-piece E and sliding rod S', substantially as and for the purpose set forth.

2. In an elevator-controlling mechanism, the combination of the chains D and C with the switch-piece E, weight W, and rope W', substantially as described, and for the purpose set forth.

3. In an elevator-controlling mechanism, the combination of the chains D and C with the switch-piece E, sliding rod S', weight W, and rope W', substantially as and for the purpose set forth.

403,691. ELECTRICAL SWITCH FOR ELEVATORS. WILLIAM E. HICKERSON, Cambridge, Mass. Filed Feb. 25, 1889. Serial No. 301,013. (No model.)



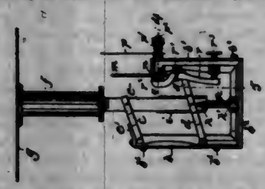
Claim.—1. In an electric switch device for elevator-carriages, the combination of the fixed electrodes D and E, arranged in offsets, with movable switch-brushes in the elevator-carriage adapted to be laterally adjusted for contact with said electrodes, substantially as and for the purpose set forth.

2. In an electric switch device for elevator-carriages, the combination of the electrodes D and E, arranged in offsets, with the brush-holding arc H upon the elevator-carriage having brushes and contact devices adapted to move laterally and also in and out of contact with the electrodes D and E, substantially as and for the purpose set forth.

3. In an electric switch device for elevator-carriages, the combination of the electric brush-holding arc H, having brushes and contact devices, with the switch-box S, having a lateral opening, S' S², and cross-openings 1 2 3 4 5, substantially as and for the purpose set forth.

4. In an electrical switch device for elevator-carriages, the combination of the fixed electrodes D and E, arranged in offsets, with one or more switch-brushes in the elevator-carriage adapted to make and break with said electrodes, substantially as and for the purpose set forth.

403,692. WEIGHING APPARATUS. JOHN H. HOLAN, Boston, Mass. Filed July 23, 1888. Serial No. 280,723. (No model.)



Claim.—1. The combination of the frame *b b' b²* with the levers pivoted on said frame and the weight-supporting upright pivotally connected with said levers, and a spring and supporting-upright therefor connected with the lower member, *b²*, of said frame, the said supporting-upright passing through and being attached to the upper end of said spring, which is embraced within and connected at its lower end with the said weight-supporting upright, the pointer-arbor having its bearings in the front member, *b'*, of said frame and provided with a pinion, and a rack meshing with said pinion connected with one of the levers with which the weight-supporting upright is connected, substantially as described.

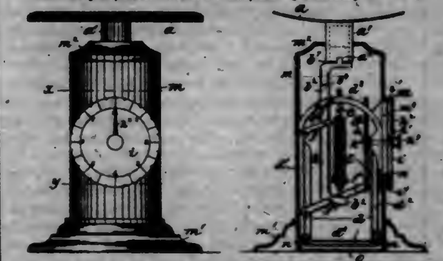
2. The combination of the pointer-arbor of a weighing apparatus, said arbor having a pinion fixed thereon, and also having a threaded portion with a conical sleeve screwed upon said threaded portion, the pointer and hub therefor having a conical socket engaging said sleeve, and a spring that presses the said hub against the said sleeve, and a screw fastened to said arbor and supporting the end of said spring, substantially as described.

3. The combination of the frame *b b' b²*, the levers pivoted thereon, and weight-supporting upright pivotally connected with said levers and the spring, with an independent case or shell inclosing said frame and detachably connected therewith, the operative parts being all supported independently of said detachable shell, substantially as described.

4. The combination of the frame, the levers pivotally connected therewith, and weight-supporting upright pivotally connected with said levers, and the counterbalancing-spring, with a pointer-arbor having a bearing in said frame and provided with a pinion and pointer frictionally held thereon, a rack engaging said pinion and connected with one of said levers, and a clamp for said pointer-arbor, consisting of a lever fulcrumed on said frame and having one arm that engages the end of said pinion and arbor to clamp the same against the frame-work while the pointer is being turned thereon, substantially as and for the purpose set forth.

5. The combination of the frame, the weight-supporting spring, and the pointer-arbor of a spring-balance connected therewith, with an inclosing-case having a lateral projection that receives the dial, and a detachable enlarging ring connected with said projection and having a flange overlapping said ring, and fastenings passing through the said flange of the dial and ring into the inclosing-case, substantially as and for the purpose described.

403,693. SPRING-BALANCE. JOHN H. HOLAN, Boston, Mass. Filed July 23, 1888. Serial No. 280,724. (No model.)



Claim.—1. A weighing apparatus comprising a frame, *d*, having a transverse member, *d²*, the weight-supporting standard *b*, its guiding-levers pivotally connected therewith and with the said frame, the said standard having an offset or arm at its lower end, a spring connected with the upper transverse member of said frame and with the arm of said standard, the pointer and its arbor having a bearing in said frame and provided with a pinion, and the rack meshing with said pinion and connected with one of said guide-levers, substantially as described.

2. A weighing apparatus comprising a frame, a weight-supporting standard, its guide-levers, a spring, the pointer-arbor and rack and a pinion supported on said frame, and the cylindrical shell *m*, having a base-flange, *m'*, at the outside of and above the lower end thereof, and the lateral cylindrical projection m^2 and dial *i*, supported thereon, substantially as and for the purpose described.

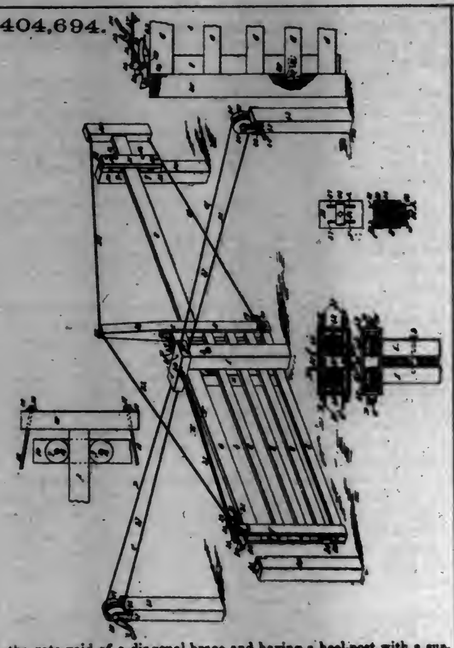
3. A weighing apparatus comprising a frame, *d*, having a transverse member, d^2, the weight-supporting standard *b*, having a recess, b^2, the shoulders at the ends of which engage said frame, the guiding-levers for said standard, the spring connected with said standard and with the frame d^2, and the rack connected with one of said levers, and pinion meshing with said rack, and pointer-arbor and pointer operated by said pinion, substantially as described.

404,694. SLIDING GATE. JACOB P. HOELIN, Humbar, Mo. Filed Jan. 21, 1889. Serial No. 297,040. (No model.)

Claim.—1. In a sliding gate, the combination of the gate, the double central supporting-posts, the track-roller that carries the gate between said posts, the journal-bolt that is inserted in the posts and carries said roller, the counterpoise-bar S, secured to the heel-post of said gate, the counterpoise brace-carrier bar 15, the guide-post 10, the anti-friction rollers 9, between which said counterpoise-bar runs, the journal-frame that houses said rollers, and the journal-bolts that carry them, substantially as described, and for the purpose set forth.

2. In a sliding gate, the combination of the double central supporting-posts, the track-roller that carries the gate between said posts,

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the gate void of a diagonal brace and having a heel-post with a surmounting extension, the horizontal counterpoise-bar 8, secured to the rear of said heel-post, the guide-post 10, the anti-friction rollers it carries, between which said bar runs as the gate slides, the vertical counterpoise-bar 15 on the end of the bar 8, the clevis 20, secured to the foot of said heel-post, the lower brace-rod, 16, that hooks in said clevis and runs through the lower end of the counterpoise-bar 15, the equalizing-washer 18 on the rear end of said rod, the nut 17, that adjusts the tension of said brace-rod, the clevis 24, secured at the top of the toe-posts of the gate, the compound brace-rod 22, that hooks into said clevis, is elevated and carried in a recessed seat at top of the surmounting extension of the heel-post, and runs through the upper end of the counterpoise-bar 15, the equalizing-washer 29, and the screw-nut 28, that regulates the adjustment of said upper brace-rod, substantially as described, and for the purpose set forth.

3. In a sliding gate, the combination of the gate, the supporting-posts between which, and the track-roller on which, said gate runs, the counterpoise-bars 8 and 15 to balance and steady the gate, the guide-post 10, the anti-friction rollers journaled to said post, between which rollers the bar 8 runs, the forward extension, 38, of one of the gate-bars near the bottom, the latching-post 35, planted at the forward limit of the gate when closed, the bevel-slot 39 in said post, in which the projecting end 38 of one of the gate-bars is seated when the gate is closed, the latch-plate 34 at the head of said post, and the trip-latch on the gate that engages therewith when the gate is closed, substantially as described, and for the purpose set forth.

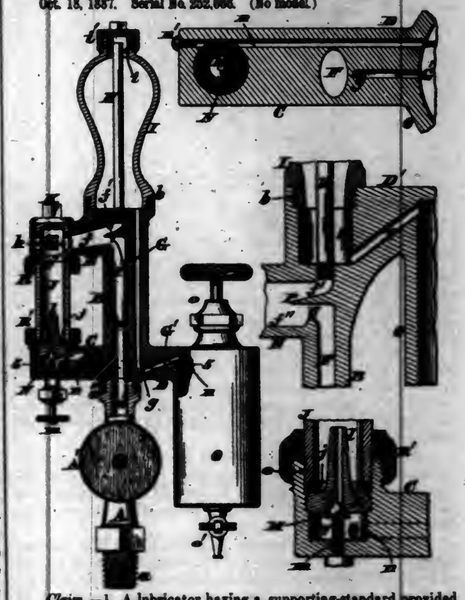
4. In a sliding gate, the combination of the gate having an elongated heel-post, the double posts 1, between which, and the track-roller 2 on which, the gate runs, the counterpoise-bars, the brace-rods, the double pulleys 42, that relatively surmount said posts, the perforated box-housing that incloses said pulleys, and the journal-bolts on which said pulleys run and that secure said pulleys and their housing to the heads of said post, substantially as described, and for the purpose set forth.

5. In a sliding gate, the combination of the gate, the two central posts between which, and the track-roller on which, said gate runs, the double pulleys 42, each journaled to the top of the post it surmounts, the box in which said pulleys are closely housed, the said box being perforated for the passage of the actuating-rope, the guide-post 10, having anti-friction rollers, the counterpoise-bars, the transversely-stationed posts 43, the journal-bearer brackets that surmount said posts, the hand-cranks 44, the axles 45, and the double draw-pulleys 48, that are mounted on said axles, substantially as described, and for the purpose set forth.

6. In a sliding gate, the combination of the double central posts between which, and the track-roller on which, the gate runs, the said gate provided with an elongated heel-post, the counterpoise-bars 8 and 15, the tension brace-rods 16 and 22, the automatic trip-latch 30, the latching-post and latch-plate with which said latch engages, the double transit-pulleys 42, journaled on the top of said central posts, the perforated box-housing that incloses said pulleys, the transverse outstanding posts 43, the journal-bearing brackets that surmount said posts, the axles having bearings in said brackets, the hand-cranks 44, mounted on said axles, the double draw-pulleys 48, the actuating-rope 37, that the crank-pulleys drive and that drives the gate, and the clamping-iron 53 and clamp-screw 54, that fastens the ends of the rope to its adjustment, substantially as and for the purpose set forth.

7. In a sliding gate, the combination of the gate, the two central supporting-posts, the track-roller journaled between said posts, on which roller the gate runs, the double transit-rollers 42, each respectively journaled to the top of the post it surmounts, the box perforated for the passage of the actuating-rope, the transversely-stationed posts 43, the mounted double draw-pulleys that surmount the last-named posts, the crank-handles that turn said pulleys, the actuating-rope 37, that coils around said draw and transit pulleys, the dividing-ridges between the concave sections of the draw-pulleys being provided with notches in which the rope is seated as it passes from one concave section to the other, arranged for the actuating-rope while operative to remain stationary in said notches, and the portions thereof on each side of said dividing-point at said notches to have relatively and alternatively as the gate opens and closes a positive draw and negative pay-out action, substantially as described, and for the purpose set forth.

408,695. LUBRICATOR. JAMES POWELL, Cincinnati, Ohio. Filed Oct. 18, 1887. Serial No. 252,666. (No model.)



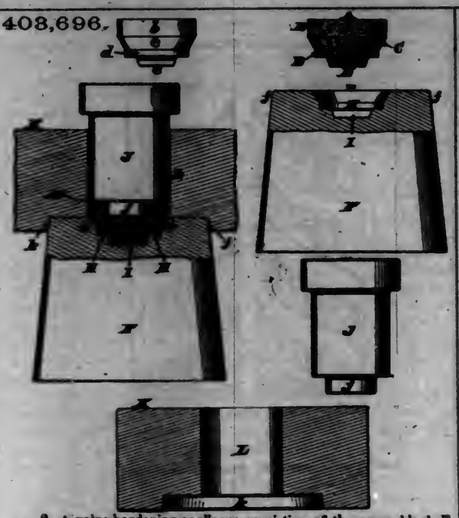
Claim.—1. A lubricator having a supporting-standard provided at bottom with a pair of lateral arms and at top with a condenser and a single lateral arm traversed by a duct communicating with the sight-feed chamber, steam-pipe, and main channel in the manner described, while the lever-arms are traversed by a channel extending from the top of reservoir to the bottom of said chamber, said reservoir being pendent from the arm, and being supplied with water by a channel or pipe leading up to the condenser, all of said parts being combined to operate substantially as set forth.

2. The combination, in a lubricator, of a channeled and counterbored standard, B F S, steam-pipe H, elevated condenser I, oil-reservoir O, and lateral arm D', which arm connects said reservoir O with the upper part of said standard B F S, and has an inclined channel, T, connecting the upper portion of said reservoir with the lower part of said counterbore S, all as herein described, and for the purpose set forth.

408,696. DIE FOR COMPRESSING VALVE-BLANKS. JAMES POWELL, Cincinnati, Ohio. Filed Oct. 22, 1888. Serial No. 288,861. (No model.)

Claim.—1. A valve-hardening appliance consisting of the swage-block F, having a pit, G, of less diameter at bottom than at top, in combination with the punch J, as herein described.

408,696.



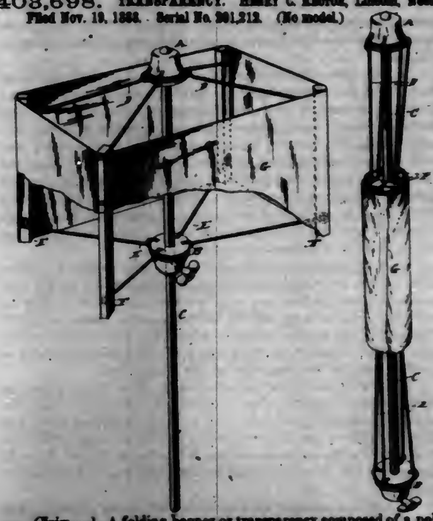
2. A valve-hardening appliance consisting of the swage-block F, having a pit, G, of less diameter at bottom than at top, in combination with the punch J and detachable curb K, the latter being provided with a bore, L, and counterbore *k*, as herein described.

3. A valve-hardening appliance consisting of the swage-block F, having a pit, G, of less diameter at bottom than at top, in combination with the punch J, which punch has at one end a shank, *j*, that enters a socket, as M, of the valve, as herein described.

408,697. WATERPROOFING STRAW GOODS. RENTON PYATT, Jr., New York, N. Y., assignor to Rogers & Pyatt, same place. Filed Dec. 17, 1887. Serial No. 258,312. (Specimens.)

Claim.—The herein-described process of waterproofing straw goods, which consists in first subjecting the goods to a bath of resin dissolved in water and sal-soda, then drying said goods, and then neutralizing the effect of the alkaline solution by an acid bath, substantially as in the manner set forth.

408,698. TRANSPARENCY. HENRY C. RENTON, Lincoln, Nebr. Filed Nov. 19, 1888. Serial No. 291,212. (No model.)

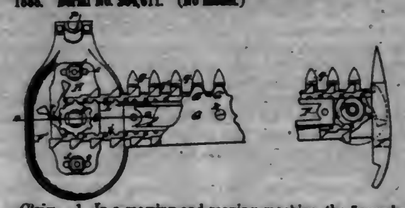


Claim.—1. A folding banner or transparency composed of a pole, frame-bars, and rods connecting each end of the frame-bars with the pole, substantially as described.

2. A folding banner or transparency composed of a pole, frame-bars, the heads on the pole, and the rods pivotally connected with the heads and with the upper and lower ends of the frame-bars, substantially as set forth.

3. The combination of the frame-bars, the fabric on the frame-bars, the head A, the rods D between the head A and the frame-bars, the head B, movable on the pole, the rods E, connecting the other ends of the frame-bars with the said head B, and the set-screw for fastening the said head B on the pole, substantially as and for the purpose described.

408,699. MOWING AND REAPING MACHINE. MARK A. REYNOLDS and HANNIBAL LABAUME, Cedar Falls, Iowa. Filed Feb. 20, 1888. Serial No. 264,611. (No model.)



Claim.—1. In a mowing and reaping machine, the finger-bar F, the inner shoe, F', outer shoe, F'', and guard-fingers *g g*, said finger-bar having a central longitudinal portion arched upwardly in transverse section, forming shoulders *m m*, adapted to serve as bearings for the cutting apparatus, in combination with a plane upper plate, G, having teeth G' G', beveled on the upper side, extending forward, and secured to said guard-fingers, substantially as and for the purpose set forth.

2. The combination of the plate G, having teeth G' G', the finger-bar F, and the guard-fingers *g g*, having lugs *g' g'*, adapted to be bent down upon the end of said teeth and secure them in position, substantially as specified.

3. In a mowing-machine, the described cutting apparatus, composed of a series of links having a body portion, *i*, with lug *i'* at one extremity and lugs *i'' i''* at the other, and provided with holes *n* and *n'*, respectively, pins *r*, connecting said links, a notch, 1, on the inner side of the link, adapted to engage with the teeth of a sprocket-wheel, and an extension, 3, with a knife thereon, the inner line of said extension coinciding with the line of the outer side, 2, of the body portion of the link, whereby the cutting apparatus is adapted to bend only in one direction, substantially as and for the purpose set forth.

4. In a mower cutting apparatus, the described section, consisting of a body portion, *i*, having a notch on the inner side adapted to engage with the teeth of a sprocket-wheel, and terminal lugs *i'* and *i''*, with suitable holes for a hinge-pin therein, and the extension 3, a portion of which constitutes the knife *i'''*, the inner line of said extension being coincident with the line of the outer side, 2, of the body portion of the section, whereby the sections when connected overlap and are locked in one direction, the said section being made of steel, substantially as and for the purpose set forth.

5. The combination of a cutting apparatus composed of a series of links with knives thereon, each of said links having hole *n* at one end and a countersunk hole, *n'*, at the other, adapted to receive the corresponding head of a pin, pins connecting said links and capable of being inserted or removed at will, and finger-bar having shoulders *m m*, corresponding practically to the vertical diameter of the links, and a plate removably secured to said finger-bar and forming an upper bearing for said cutting apparatus to prevent displacement of the loose pins, substantially as set forth.

408,700. NON-CONDUCTING JACKET. JOHN RILEY, Troy, N. Y. Filed Feb. 11, 1888. Serial No. 263,444. (No model.)



Claim.—1. A non-conducting jacket for radiating-surfaces, consisting of a base-layer, 1, the inner sheet, 3, of corrugated paper, the course or layer 5 on said corrugated paper, the outer sheet of corrugated paper on the said course or layer, and an external binding-envelope, 9, on the outer sheet of corrugated paper, substantially as described.

2. A non-conducting jacket for radiating-surfaces, comprising a fire-proof base-layer, 1, an inner corrugated sheet, 3, of non-conducting material, an outer corrugated sheet, 6, of non-conducting material, a course or layer, 5, interposed between the two corrugated sheets, and an external binding-envelope, 9, said sheets constituting an

inner set and an outer set of dead-air channels or spaces, substantially as described.

3. A non-conducting jacket for radiating-surfaces, consisting of a fire-proof base-layer, an inner corrugated sheet and an outer corrugated sheet, forming, respectively, a set of inner and a set of outer dead-air channels, a course or layer interposed between the two corrugated sheets, and a removable and replaceable textile binding-envelope buttoned in position on the jacket, substantially as described.

4. The combination, in a non-conducting jacket for radiating-surfaces, of an internal layer or sheet, 1, a course or layer, 5, an interposed corrugated sheet of paper having the alternating corrugations resting on the internal layer or sheet and the other alternating corrugations secured to a paper backing-sheet, and an external textile binding-envelope, substantially as described.

5. The combination, in a non-conducting jacket for radiating-surfaces, of an inner and an outer corrugated sheet of paper, each forming a set of separated dead-air channels, and an interposed course or layer between the corrugations of the respective paper sheets, substantially as described.

6. The combination, in a non-conducting jacket for radiating-surfaces, of an inner and outer corrugated sheet, each having an attached backing-sheet and forming a set of separated dead-air channels, and an interposed course or layer of non-conducting material, substantially as described.

7. The combination, in a non-conducting jacket for radiating-surfaces, of an inner and outer corrugated sheet of paper forming separated dead-air channels, an interposed course or layer of asbestus and hair, and an external binding-envelope, substantially as described.

8. A non-conducting jacket for radiating-surfaces, consisting of an internal layer or sheet, an inner and an outer corrugated sheet, each forming a set of separated dead-air channels, a course or layer of felted asbestus and hair interposed between the two corrugated sheets, and an external textile binding-envelope, substantially as described.

9. The combination, with a non-conducting jacket for radiating-surfaces, of a removable and replaceable external textile binding-envelope separate and independent of the jacket and provided with a pair of longitudinal stretching-wires, and buttons and button-holes, respectively, braced by said wires, substantially as described.

10. The combination, with a non-conducting jacket for radiating-surfaces, of a removable and replaceable external binding-cover having near each longitudinal edge a stretching or distending wire, and engaging and disengaging fastening devices adjacent to and respectively braced by said wires, substantially as described.

11. The combination, with a non-conducting jacket for radiating-surfaces, of an external binding-envelope having fastening-buttons and longitudinal stretching or distending wires, one securing and holding the buttons and the other bracing the parts that engage the buttons, substantially as described.

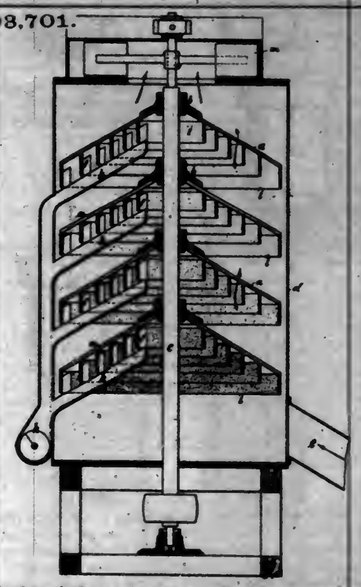
12. The combination, with a non-conducting jacket for radiating-surfaces, of a textile binding-envelope wholly independent of the jacket and removable and replaceable at will, said envelope having at one edge a line of button-holes and at the opposite edge an extension-flap and a line of buttons, substantially as described.

13. An external binding-envelope for the non-conducting jacket of a radiating-surface, composed of a sheet of fabric having at one edge portion a row of buttons, a stretching or distending wire engaging and securing the buttons, and an extension-flap, and at the other edge a stretching or distending wire and means to engage and disengage the buttons, substantially as described.

14. The combination, with a non-conducting jacket for radiating-surfaces, of an external binding-envelope composed of a sheet of fabric having wired longitudinal edges for keeping the latter stretched or distended, and means, substantially as described, for detachably connecting the wired edges, substantially as described.

15. An external binding-envelope for a non-conducting jacket, composed of a sheet of fabric having at or near each longitudinal edge a stretching or distending wire provided with hooked ends engaging the sheet, and fastening-buttons for securing the envelope, substantially as described.

408,701. DUST-COLLECTOR. HERMANN SENF, Dresden, SAXONY, Germany. Filed Jan. 3, 1888. Serial No. 259,504. (No model.) Patented in Germany Sept. 1, 1887, No. 44,377; in France Sept. 12, 1887, No. 185,788; in Belgium Sept. 12, 1887, No. 78,942; in England Sept. 13, 1887, No. 13,425; in Italy Sept. 30, 1887, No. 23,340/262, and in Austria-Hungary Mar. 8, 1888, No. 35,496 and No. 67,088.



Claim.—1. In a dust-collector, the combination of a closed casing having an inlet for the dust-laden air, an outlet for the purified air, and an exit for the collected dust, a revolving shaft, a series of vertically-arranged concentric rings connected to the shaft with their sides substantially parallel thereto and to each other and provided with free and unobstructed openings between both their upper and lower edges, and means, substantially as described, for moving the dust-laden air in through the openings between the rings at one edge and the purified air out through the openings between the opposite edges of the rings, substantially as described, whereby the latter force the impurities by centrifugal force against their interior surfaces and the air entering the openings between the lower edges of the rings passes off through the openings between the upper edges of said rings, as set forth.

2. In a dust-collector, the combination of a casing having closed side walls, an inlet for the dust-laden air, an outlet for the purified air, and an exit for the collected dust, a rotary shaft, a series of parallel vertically-arranged concentric rings, all connected with the shaft, provided with free and unobstructed openings between their upper and lower edges and having the lower edge of one extended below the lower edge of the adjacent ring in stepped form, and air-forcing mechanism for moving the dust-laden air through the openings between the rings at one edge and the purified air out through the openings between the opposite edges of the rings, substantially as described.

3. In a dust-collector, the combination of a closed casing having an inlet for the dust-laden air, an outlet for the purified air, and a discharge-opening for the collected dust, a revolving shaft, a series of vertically-arranged concentric rings connected to the shaft with their sides substantially parallel thereto and to each other and provided with free and unobstructed openings between both their upper and lower edges, means, substantially as described, for moving the dust-laden air in through the openings between the rings at one edge and the purified air out through the openings between the rings at their opposite edges, and dust-receivers below the rings and in communication with the dust-discharge opening.

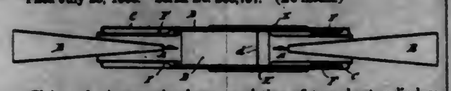
4. In a dust-collector, the combination of a casing, a rotating shaft therein, a series of concentric annular rings having smooth inner vertically-arranged faces and separated from each other at their top and bottom edges to provide for the free upward passage of air between the rings, scrapers acting to scrape the dust from the smooth inner vertical faces of the rings, and a fan for passing the air to be purified between the rings, substantially as described.

5. In a dust-collector, the combination of a casing, a rotating shaft therein, concentric rings separated at their upper and lower edges by intervening air-spaces and arranged in stepped form, with the lower edge of one projecting below the bottom edge of the adjacent one from the ring at the bottom to the ring at the top, and a fan for passing the air to be purified between the rings, substantially as described.

6. In a dust-collector, the combination of a casing, a rotating shaft therein, a series of concentric annular rings separated from each other at their top and bottom edges by intervening air-spaces to provide for the free passage of air between the rings and having vertically-arranged inner faces, scrapers for detaching the accumulating dust on said vertically-arranged inner faces, and a gutter extending under the lower edges of the rings directly beneath the scrapers to receive the dust detached by the latter, substantially as described.

7. In a dust-collector, the combination of a series of rotating rings arranged concentrically, whereby the impurities are driven out of the air forced into and through the apparatus, in combination with scrapers for removing the dust adhering to the said rings, and with curved plates fastened upon the latter, substantially as and for the purpose set forth.

408,702. CAMPAIGN-HORN. WILLIAM SELLERS, Haverhill, Mass. Filed July 23, 1888. Serial No. 280,757. (No model.)



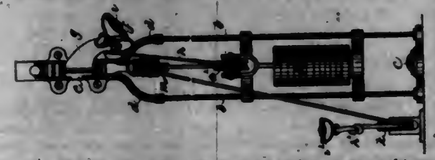
Claim.—1. A campaign-horn consisting of two short cylinders, each provided with a horn and connected together by a bar on each side and an outer cylinder provided with a central diaphragm and connected to the end cylinders by elastic cylinders in such manner that one folds upon itself and the other unfolds when the movable cylinder is pushed in one direction, and vice versa when the cylinder is pushed in the opposite direction, substantially as shown and described.

2. The cylinders A A, connected together by bars C C, and each provided with a horn, B, in combination with a sliding cylinder, D, provided with a diaphragm, *d*, and guides E E, and the elastic cylinders F, secured at one end to the cylinder D and at the other end to the cylinders A, substantially as and for the purposes set forth.

3. In combination with the cylinders A and cylinder D, the elastic cylinder F, whereby the space between the cylinders is air-tight, and yet one is free to slide upon the other without friction, substantially as set forth.

4. In a campaign-horn, a cylinder provided with a horn and a movable cylinder provided with a diaphragm, the two cylinders being connected together by an elastic cylinder in such manner that it folds upon itself when the movable cylinder is pushed in one direction and unfolds when pushed in the opposite direction, substantially as set forth.

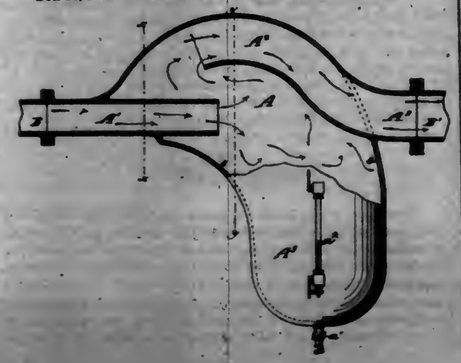
408,708. GYMNASTIC APPARATUS. LEWIS F. SMALL, Boston, Mass. Filed Mar. 1, 1888. Serial No. 301,046. (No model.)



Claim.—1. A gymnasium apparatus comprising upper and lower pulleys and a weight combined with a cord, the ends of which are provided with stops at or near said upper and lower pulleys, and intermediate running cord guides, whereby either end of said cord may be operated while the other end is held by its stop, substantially as and for the purpose described.

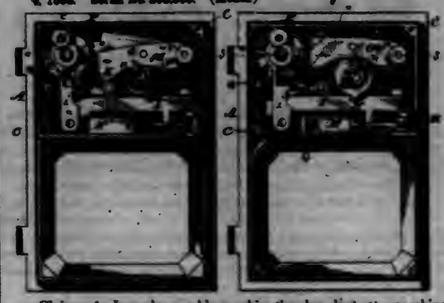
2. The combination of a weight and pulley connected therewith with a cord-guiding pulley above the upper end of the path traversed by said weight, and additional pulleys at the upper and lower levels, from which the said weight is to be operated, combined with a cord extending continuously and free to run over all of said pulleys and capable of operation from either end to raise and lower said weight, substantially as and for the purpose described.

408,704. SEPARATOR. SINCLAIR STUART, Plainfield, N. J. Filed Dec. 20, 1887. Serial No. 258,490. (No model.)



Claim.—A separator comprising an inlet branch and an outlet branch, a chamber into which both said branches extend, the outlet branch being of larger diameter than the inlet branch and having its opening in the chamber above the opening for the inlet branch, and a well below both said branches, said chamber being provided with walls inclined toward the well and the whole being cast in one integral piece, substantially as specified.

408,705. LOCK. WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Dec. 4, 1882. Serial No. 260,503. (Model.)



Claim.—1. In a changeable combination key lock, the combination of the main locking-key and the tumblers in parts geared together at all times except when the combination is to be changed, substantially as set forth.

2. In a changeable combination key lock having two-part tumblers, the combination, with a movable seat which supports one part of said tumblers, an auxiliary key which disengages one part of the tumbler or tumblers from the other, and a cap-plate through which said key passes, whereby said key cannot be removed from the lock until said parts are in engagement, substantially as described.

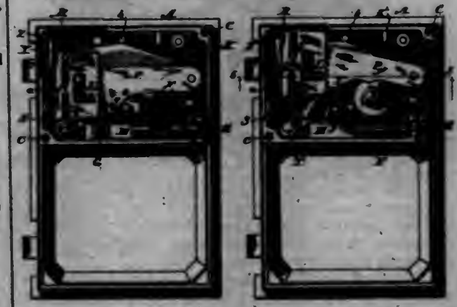
3. In a changeable combination key lock having two-part tumblers, the combination of an auxiliary key with the gated parts of the tumblers, and a spring-actuated carrier upon which said parts are mounted, whereby said parts when separated from the spring-actuated parts tend to move against said auxiliary key, acting as a stop until the gatings of said tumblers are brought in line, substantially as described.

4. The combination, with the circular parts of the tumblers, of a pivoted frame for supporting them, adapted to be swung to one side and the other, so as to engage and disengage the circular parts of the tumblers with the other parts, substantially as set forth.

5. The combination of the oscillating seat Z, the carrier, the circular parts of the tumblers, pivot-post *h*, the slotted key-post, the cap-plate, the thumb-nut *d*, and the spring-latch *l*, substantially as set forth.

6. The combination, with the slotted key-post, of the cap-plate provided with the slots *k k'*, and the key *g*, tapered at its end, and notch *m*, substantially as set forth.

408,706. LOCK. WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Dec. 10, 1888. Serial No. 293,092. (Model.)



Claim.—1. The combination, with the pivoted oscillating seat, of the sliding tumblers carried thereby, the sliding fence, the pivoted spring-catch Y, for engaging with the notches in the sliding tumblers, the pin *c*, and the latch *d*, substantially as set forth.

2. In a changeable combination key-lock, the combination of one or more tumblers in parts, an oscillating seat which carries one part of said tumblers, and a latch, whereby the said part may be separated

from the other and held by said latch ready for resetting to a new combination, substantially as set forth.

408,707. PROCESS OF ELECTRIC SOLDERING, BRAZING, AND WELDING. ELIHU THOMSON, Lynn, assignor to the Thomson Electric Welding Company, Boston, Mass. Filed Aug. 22, 1887. Serial No. 247,509. (No model.)



Claim.—1. The herein-described method of electric welding, brazing, or soldering, consisting in passing through one or both of the parts or pieces to be operated upon a heavy electric current in the general direction of the line or plane of the joint and of a volume sufficient to bring the piece or pieces to the requisite temperature.

2. The herein-described improvement in electric welding and brazing, which consists in making either or both of the parts or pieces to be joined a portion of a continuous electric circuit formed through each or either independently of the other and carrying a heavy electric current of a volume sufficient, as described, to effect the desired welding or brazing operation.

3. The herein-described process of forming longitudinal seams or joints in or between elongated metal pieces, consisting in passing a heavy electric current through the piece or pieces longitudinally and of a volume sufficient to heat the same to the desired welding or brazing temperature, as and for the purpose described.

4. The herein-described improvement in affixing light metal pieces to a heavier or base piece, consisting in passing an electric current through the latter of a volume sufficient to heat the same to the requisite welding, soldering, or brazing temperature.

5. The herein-described improvement in forming elongated longitudinal seams or joints, which consists in heating portions of the material in successive lengths by the agency of an electric current passing longitudinally and producing the seam or joint of each section while such section is included in the electric circuit, as and for the purpose described.

6. The herein-described improvement in electric welding, brazing, forging, or soldering, which consists in surrounding the parts acted upon by the electric current by a supporting and heat-retaining jacket or envelope, as and for the purpose described.

7. The combination, with the clamps or connectors, of the intermediate bed-plate, arranged as described, to support the body through which the heating electric current passes, as and for the purpose described.

408,708. METHOD OF ELECTRIC WELDING AND BRAZING. ELIHU THOMSON, Lynn, Mass. Original application filed Feb. 21, 1887, Serial No. 228,277. Divided and this application filed Oct. 19, 1888. Serial No. 288,594. (No model.)



Claim.—1. The herein-described method of forming a welded or brazed joint, consisting in passing an electric current through the material from one side to the other of the joint and then applying lateral pressure directly to the material at the part where the joint or weld is to be formed.

2. The herein-described process of forming a butt-welded joint, consisting in forming or providing the metal with an enlargement at the point of abutment, passing a heating electric current through the material, and then applying lateral pressure to the material directly at the joint, as and for the purpose described.

3. The herein-described improved method of forming an elongated metal joint, consisting in passing a heating electric current across the joint and applying transverse or lateral pressure to successive portions of the object directly at the joint, and for the purpose described.

4. The herein-described process of electric welding, consisting in passing an electric current of large heating effect across the joint and then compressing or compacting the joint by pressure applied laterally in a direction transverse to the general line or plane, including the joint and the pieces or portions of object adjacent to the joint.

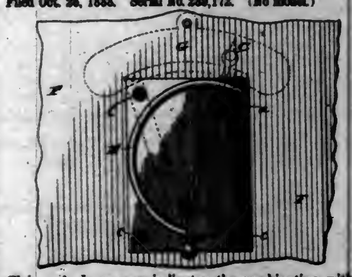
408,709. CARRIAGE-BODY JOINT. ERWIN L. UPSON, Hartford, Conn. Filed Mar. 7, 1888. Serial No. 302,351. (No model.)



Claim.—1. In a corner joint, the combination of the mitered sides, each having a channel, substantially as described, in the mitered face, and having a groove on the inner side located beyond said channel, the nut-plate in said channels, the clamp-plate fitting the inner angle of the side pieces and having lugs engaging in said grooves, and screws connecting and clamping the said plates, all substantially as described.

2. In a corner joint, the combination of mitered sides A B, each having a channel, substantially as described, in the mitered surface, and a groove on the inner side beyond said channel and of less length than the width of the side piece, the nut-plate, the clamp-plate C, engaging said grooves, and the clamp-screws, all substantially as shown and described.

408,710. OVEN-THERMOMETER. JOHN C. VOSS, El Paso, Tex. Filed Oct. 26, 1888. Serial No. 289,172. (No model.)



Claim.—1. In an oven-indicator, the combination, with a spindle having a lever and an index or pointer, of a compound bar secured at one end and bearing at its free end against one side of said lever, and a weight for returning the lever to its normal position.

2. In an oven-indicator, the combination, with the spindle B, provided with the weighted lever D and the index C, carried by the spindle, of the curved compound bar E, arranged to contact with the weighted lever D, substantially as specified.

3. In an oven-indicator, the combination, with the spindle B, provided with the weighted lever D and the index C, carried by the said spindle, of the curved compound bar E, arranged to contact with the weighted lever D, and the scale G, substantially as specified.

4. In an oven-indicator, the combination, with the spindle B, provided with the weighted lever D and the index C, carried by the said spindle, of the curved compound bar E, arranged to contact with the weighted lever D, and the scale G and guard H, having marked thereon different articles of food, together with figures indicating the temperature to which such articles should be subjected in the operation of roasting or baking, substantially as specified.

5. The combination, with the oven-door F, of the frame A, provided with studs *c*, the spindle B, extending through the oven-door, the weighted lever D and index C attached to the said spindle, the compound bar E, arranged to act upon the weighted lever D, and the scale G, attached to the oven-door, substantially as specified.

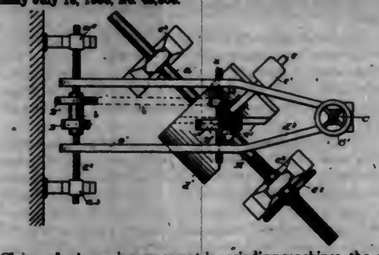
408,711. HAIR-CURLER. FRED WILSON, Decatur, Ill. Filed Mar. 13, 1889. Serial No. 303,169. (No model.)



Claim.—1. A hair-curler composed of a cylindrical coiling-rod bifurcated throughout the greater portion of its length, and a cylindrical clamp-rod pivotally connected with the integral portion of the coiling-rod, and having a clamp formation at its swinging end to embrace said coiling-rod, as set forth.

2. A hair-curler composed of a coiling-rod, comprising the integral portion *a* and forks *b b*, the latter having the internal bevels, *c*, and the rounded angles *b'*, and the clamp-rod *d*, having the right-angled bend *e*, pivotally connected with part *a*, and also having the clamp formed of the recurved portion *d'*, the bend d^2, and the deflection d^3, as set forth.

408,712. MACHINE FOR GRINDING THE CUTTERS OF WOOD-CUTTING MACHINES. OTTO A. WIRTH, Barmbeck, Prussia, Germany. Filed May 26, 1888. Serial No. 275,270. (No model.) Patented in Germany July 18, 1886, No. 43,808.



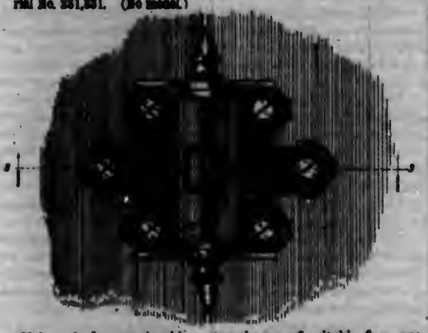
Claim.—1. As an improvement in grinding-machines, the combination of the knife holder or support and the grindstone, the former being disposed at about an angle of forty-five degrees to the latter, and the shaft for said holder having a limited movement therewith, substantially as set forth.

2. As an improvement in grinding-machines, the combination, with the grindstone, of the knife holder or support having a plate provided with a beveled or inclined edge, and the shaft running at an angle of about forty-five degrees to said grindstone, substantially as set forth.

3. The combination, with the grindstone, of the knife holder or support having upper and lower plates provided with inclined or beveled edges at right angles to each other, the shaft for said holder, and the roller against which said lower plate bears, substantially as set forth.

4. The combination, with the grindstone, of the knife holder or support having the upper and lower plates provided with inclined or beveled edges at right angles to each other, the weighted arm, the shaft having a threaded portion, and a hand-wheel and the lower roller, substantially as set forth.

408,713. SPRING-HINGE. CHARLES ZATTAU, Morris, assignor to the Coleman Hardware Company, Chicago, Ill. Filed Aug. 3, 1888. Serial No. 281,891. (No model.)

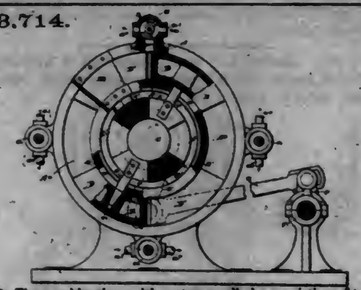


Claim.—1. In a spring-hinge, two leaves of suitable form provided with ears or lugs pivotally connected together outside of the plane of the hinge-leaves, in combination with two springs arranged, respectively, on the hinge-leaves transversely to the axis of the hinge, and a non-yielding and non-elastic link connecting the hinge-leaves together through the medium of the springs, substantially as described.

2. In a spring-hinge, two leaves of suitable form provided with ears or lugs pivotally connected together outside of the plane of the hinge-leaves and having spring chambers or cases on said leaves transverse to the axis of the hinge, in combination with springs arranged in such chambers or cases, and a link connecting such springs together, substantially as described.

408,714. STEAM-ENGINE. ROBERT T. ADELL, Cleveland, Ohio, assignor of two-thirds to Wesley Royce and John H. Francis, both of same place. Filed Nov. 26, 1888. Serial No. 291,894. (No model.)

Claim.—1. The combination, with a steam-cylinder composed of two concentric circular rims and heads, of rock-shafts, arms secured thereon and passing through the inner rim, and pistons secured on the ends of the arms.



2. The combination, with a steam-cylinder consisting of two concentric circular rims and heads secured against the outer edges of the rims, of segmental pistons arranged in series, the pistons of one series operating between the pistons of the other series, each series of pistons being mounted on a rock-shaft independent of the rock-shaft of the other series, but having a common axial line, substantially as set forth.

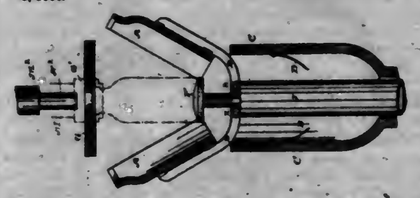
3. The combination, with a steam-cylinder composed of two concentric circular rims and heads secured against the outer edges of the rims, of segmental pistons located between the rims and arranged in series, the pistons of one series operating between the pistons of the other series, rock-shafts, arms passing through the inner rim and connecting the pistons and rock-shafts, and a rock-arm mounted on each rock-shaft, the said rock-arms being connected by pitmen with a crank-shaft, substantially as set forth.

4. The combination, with a steam-cylinder and segmental operating-pistons arranged in two series and operating in said cylinder, of a series of steam-chambers and a valve in each chamber, substantially as set forth.

408,715. FURNITURE-POLISH. GEORGE H. ALLEN, Greenbush, N. Y. Filed July 26, 1887. Serial No. 245,242. (No specimens.)

Claim.—The herein-described composition of matter to be used for furniture-polish, consisting of oil of cedar, linseed-oil, and turpentine, in substantially the proportions specified.

408,716. MACHINERY FOR MAKING GLASS BOTTLES, &c. HOWARD M. ASHLEY, Perrysbridge, County of York, England. Original application filed Sept. 26, 1887, Serial No. 250,767. Divided and this application filed Nov. 10, 1888. Serial No. 290,505. (No model.) Patented in England Nov. 12, 1886, No. 14,727; in Austria-Hungary Sept. 19, 1887; in Belgium Sept. 23, 1887; in France Sept. 24, 1887; in Canada Jan. 3, 1888, No. 28,296; in Italy Feb. 17, 1888; in Norway Mar. 2, 1888; in Victoria Apr. 18, 1888; in New South Wales Apr. 20, 1888; in Tasmania Apr. 21, 1888; in Spain July 13, 1888, and in Portugal Aug. 3, 1888.



Claim.—1. In machinery for the manufacture of bottles and other like hollow glassware, the combination, with a suitable mold, of an exhausting apparatus comprising a bell which incloses or partly incloses such mold, substantially as hereinbefore specified.

2. In machinery for the manufacture of bottles and other like hollow glassware, the combination, with a suitable mold, of a combined head-mold and true-plate fitted to one end thereof and provided with an aperture in communication with the interior of the mold, which suspends a hollow parison within the mold, and an exhausting apparatus comprising a bell which incloses or partly incloses the mold for expanding the glass within the latter, substantially as hereinbefore specified.

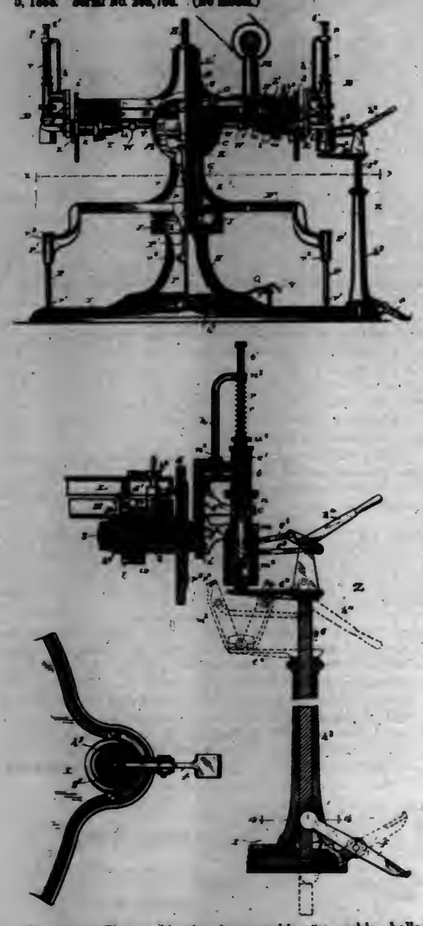
3. In machinery for the manufacture of bottles and other like hollow glassware, the combination of a longitudinally-divided mold, laterally-swinging arms which carry the respective mold parts, and springs which press together the mold parts, substantially as hereinbefore specified.

4. In machinery for the manufacture of bottles and other like hollow glassware, the combination of a longitudinally-divided mold, swinging arms carrying the mold parts, and an endwise-sliding bell provided internally with springs, and which incloses or partly incloses

the mold, and by said springs presses its parts together, substantially as hereinbefore specified.

403,717. MACHINERY FOR MAKING GLASS BOTTLES, &c.

HOWARD M. ASHLEY, Ferrybridge, County of York, England. Filed Dec. 5, 1888. Serial No. 292,766. (No model.)



Claim.—1. The combination, in a machine for making hollow glassware, of a series of initial mechanisms revolving in a horizontal plane, and each comprising a parison-mold, a head-mold or collar, and a punch, and a relatively stationary finishing mechanism comprising a shaping-mold and means for applying the same to the parisons in succession, substantially as hereinbefore specified.

2. The combination, in a repeating-machine for making hollow glassware, of a horizontal rotary disk or frame, a series of initial mechanisms carried by said frame, and each comprising a parison-mold, a head-mold or collar, and a punch, and relatively stationary actuating parts coacting with said mechanisms in succession, substantially as hereinbefore specified.

3. The combination, in a machine for making hollow glassware, of a vertical pillar and a top disk supported by said pillar, which are stationary, a horizontal rotary disk or frame which rotates upon said pillar beneath said top disk and is provided at its periphery with a series of initial mechanisms, each comprising a parison-mold, a head-mold or collar, and a punch, and actuating parts carried by said top disk and coacting with the said mechanisms in succession, substantially as hereinbefore specified.

4. In a machine for making hollow glassware, the combination, substantially as hereinbefore specified, of a horizontal disk or frame carrying at its periphery a series of initial mechanisms and having a frictional surface and stops at the respective mechanisms, and a relatively stationary brake provided with a detent and coacting with said frictional surface and stops, for the purpose set forth.

5. In a machine for making hollow glassware, the combination, with an inverting-frame carrying a parison-mold and its appurtenances, of a detent for locking the same in its stationary positions, substantially as hereinbefore specified.

6. In a machine for making hollow glassware, the combination of a parison-mold and punch revolving in a horizontal plane, and a relatively stationary actuating-cam for thrusting the punch upward into the parison-mold as it passes said cam, substantially as hereinbefore specified.

7. The combination, substantially as hereinbefore specified, of a revolving series of parison-molds and punches, a correspondingly-revolving series of motion-transmitters, and a relatively stationary actuating-cam which coacts with said transmitters to thrust the punches upward into the several parison-molds in succession as they revolve.

8. The combination, substantially as hereinbefore specified, of a revolving series of parison-molds and their appurtenances, comprising punches having terminal knobs, a correspondingly-revolving series of motion-transmitters having mouths to embrace said knobs in the effective position of the punches, and a relatively stationary undulating cam to coact with said transmitters, having receiving and delivering ends at the same level, whereby the punches are thrust upward and retracted without the aid of springs and the transmitters are left in position for the next operation after each actuation thereof.

9. The combination, with an inverting-frame carrying a parison-mold and its appurtenances, of a wheel fast on the spindle of said frame and turning paths or surfaces to engage with said wheel for reverting and inverting said frame, substantially as hereinbefore specified.

10. The combination, with a divided parison-mold and its appurtenances and an inverting-frame which carries the same, of a relatively stationary part and connections between the same and the respective mold parts, whereby the mold is closed and opened simultaneously with its inversion and reversion, substantially as hereinbefore specified.

11. In combination with an inverting-frame carrying parison casting and punching devices, comprising a two-part parison-mold with laterally-moving supports, a relatively stationary part formed with eccentric paths, and slides working therein and connected with said supports to open and close such mold, substantially as hereinbefore specified.

12. In combination with a horizontally-revolving series of initial mechanisms comprising parison casting and punching devices, a relatively stationary finishing mechanism comprising a shaping-mold and means for closing and opening said mold, substantially as hereinbefore specified.

13. In combination with a horizontally-revolving series of initial mechanisms comprising parison casting and punching devices, a relatively stationary finishing mechanism comprising a shaping-mold, means for raising and lowering said mold, and means for closing and opening it in its elevated position, substantially as hereinbefore specified.

14. The combination, in a repeating-machine for making hollow glassware, of a chambered central pillar, a pipe coupled to said pillar and supplied with a gaseous fluid, as air under pressure, a chambered hub embracing a perforated zone of said pillar, radial pipes leading therefrom to a revolving series of initial mechanisms, which comprise inverting-frames having hollow punches which form the cavities in the parisons, and suitable conduits connecting the radial pipes and the punches, substantially as hereinbefore specified.

15. The combination, with a horizontally-revolving series of initial mechanisms comprising parison casting and punching devices, of a conduit supplied with a gaseous fluid under pressure and communicating with each of said mechanisms, and valve mechanism for separately controlling the flow of fluid through said conduit to each of said initial mechanisms successively.

16. The combination, in a repeating-machine for making hollow glassware, of a chambered central pillar, a pipe coupled to said pillar and supplied with a gaseous fluid, as air under pressure, a chambered hub embracing a perforated zone of said pillar, radial pipes leading therefrom to a revolving series of initial mechanisms, which comprise hollow punches and suitable hollow connections, independent valves in the respective radial pipes for regulating the flow of the gaseous fluid, and suitable means, as a hand-lever and a retracting-spring, for actuating each valve, substantially as hereinbefore specified.

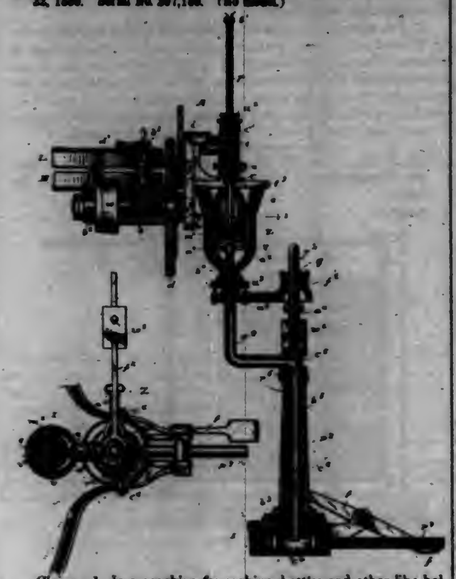
17. The combination, in a mechanism for casting and punching parisons, of a hollow punch, a tubular connection between the outer portion of the punch and an air-passage within the frame, and a stuffing-box at the outer end of the guideway through which the punch slides, substantially as hereinbefore specified.

18. The combination, with an inverting-frame, of parison casting and punching devices carried thereby, comprising a two-part head-mold or collar with laterally-moving supports, a lever fulcrumed to said frame, and connections between said lever and said supports, respectively, for opening and closing said collar, substantially as hereinbefore specified.

19. The combination, with an inverting-frame, of parison casting and punching devices which comprise a two-part head-mold or collar with laterally-moving supports, a lever connected by links with said supports, respectively, and a relatively-stationary path which engages with said lever to open the collar, substantially as hereinbefore specified.

408,718. MACHINERY FOR MAKING GLASS BOTTLES, &c.

HOWARD M. ASHLEY, Ferrybridge, County of York, England. Filed Jan. 22, 1889. Serial No. 297,189. (No model.)



Claim.—1. In a machine for making bottles and other like hollow glassware, the combination, with a vertically-sliding vacuum-bell, and a divided collar adapted to suspend a hollow parison by its head, and provided with a correspondingly-divided true-plate opposed to the upper end of said bell, of a shaping-mold within said bell, comprising a bottom having a longitudinally-movable stem, and laterally-swinging sides carried by arms which are hinged to said stem, substantially as hereinbefore specified.

2. In combination with a collar adapted to suspend a hollow parison by its head and provided with a horizontal true-plate, a self-opening shaping-mold fitted to said collar at its neck end and comprising a bottom having a longitudinally-movable stem and laterally-swinging sides carried by arms which are hinged to said stem, and a vertically-sliding vacuum-bell, to close and inclose said mold, having internal springs and inclines which coact with said arms, substantially as hereinbefore specified.

3. The combination of an initial mechanism for making hollow parisons in inverted position, reverting them and suspending them by their heads in succession, which travels in a longitudinal plane and comprises an invertible parison-mold and head-mold or collar, the latter provided with a true-plate, and a relatively stationary finishing mechanism which comprises a vertically-movable shaping-mold which is normally open and lowered so as to clear the depending parisons, their molds, and the supports of the latter, and a vacuum-bell which elevates and incloses the shaping-mold and itself closes against said true-plate, substantially as hereinbefore specified.

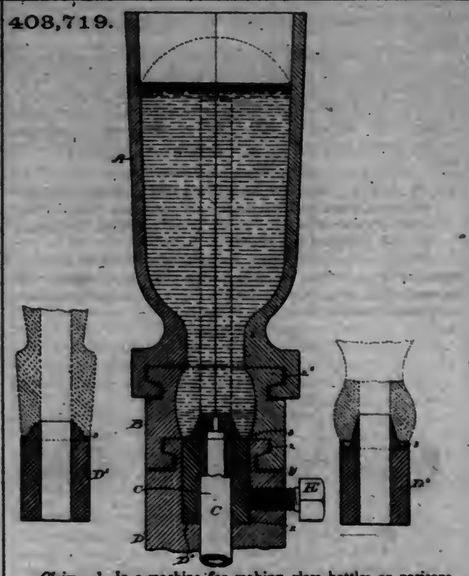
4. The combination, substantially as hereinbefore specified, of the vacuum-pipe p^7, the swivel-coupling c^4, the vertical pipe p^6, the elbow-coupling c^5, the bent pipe p^5, and the vacuum-bell v, the latter having a stuffing-box fitted to the vertical end of said pipe p^6, whereby provision is made for adjusting and working the bell without straining the air-tight joints.

5. The combination, with the vertically-movable vacuum-bell v and relatively stationary vacuum-pipe p^5, of the arm a^2, having the stuffing-box of the bell at one end and an anti-friction gland at its other end, the guide-rod r^4, foot-lever f, counterbalance-weight w^3, and suitable connections between said arm and said lever and weight, respectively, substantially as hereinbefore specified.

408,719. MACHINE FOR MAKING GLASS BOTTLES.

HOWARD M. ASHLEY, Ferrybridge, County of York, England. Filed Mar. 14, 1888. Serial No. 267,312. (No model.)

408,719.



Claim.—1. In a machine for making glass bottles or parisons therefor in which the bottle-head is cast in inverted position, the combination, with a suitable head-mold or collar, of a nozzle provided with a loose nipple which shapes the lip of the bottle, substantially as hereinbefore specified.

2. In a machine for making glass bottles or parisons therefor in which the bottle-head is cast in inverted position, the combination, with a suitable head-mold or collar, of a nozzle provided with interchangeable nipples and a punch to which they are all internally fitted, substantially as hereinbefore specified.

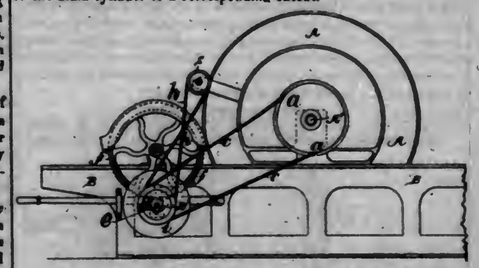
3. In a machine for making glass bottles or parisons therefor in which the bottle-head is cast in inverted position, the within-described interchangeable nipples of different patterns having at their face ends marginal shoulders of uniform height, and protruding portions to form the lip-surfaces of the bottle-mouths, in combination with a nozzle having a counterbore to which all are fitted, substantially as hereinbefore specified.

4. The combination, with a suitable parison-mold, a suitable head-mold or collar interlocked therewith, and a suitable axial punch, of a nozzle interlocked with said collar and provided with a loose nipple fitted internally to said punch, and with suitable means, as a screw, for fastening the nipple in said nozzle, substantially as hereinbefore specified.

403,720. DRIVING MECHANISM FOR CARDING-ENGINES.

GEORGE ASHWORTH and ELIJAH ASHWORTH, Manchester, County of Lancaster, England. Filed Oct. 5, 1888. Serial No. 215,286. (No model.) Patented in England Aug. 2, 1884, No. 10,881.

Brief.—The surface speed of the doffer is reduced during grinding, and suitable means are provided for reducing the surface speed of the main cylinder to a corresponding extent.



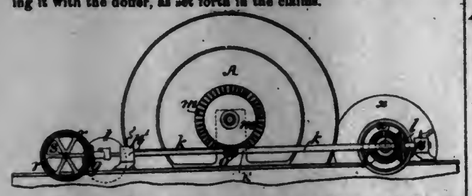
Claim.—1. The combination of the main cylinder and doffer-cylinder of a carding-engine with fast and loose pulleys on the main cylinder-shaft, a pulley, d, for driving the doffer-cylinder, a belt or band connecting the said loose pulley with the pulley d, and means, substantially as described, for driving the main cylinder at a speed to

correspond with the surface speed of the doffer, all substantially as set forth.

2. The combination of the main cylinder and doffer-cylinder of a carding-engine, and mechanism, substantially as described, whereby the doffer-cylinder is geared to the main cylinder to impart a slow motion thereto, with fast and loose pulleys on the main cylinder-shaft, a pulley, *d*, for driving the doffer-cylinder, and a belt or band connecting the said loose pulley with the pulley *d*, all substantially as set forth.

403,721. DRIVING MECHANISM FOR CARDING-ENGINES. GEORGE ASHWORTH and ELIJAH ASHWORTH, Manchester, County of Lancaster, England. Filed Feb. 23, 1888. Serial No. 264,975. (No model.) Patented in England May 18, 1886, No. 6,630.

Brief.—The doffer is given a slow motion during the grinding operation by a belt from the loose pulley of the main cylinder, and the speed of the main cylinder is correspondingly reduced by connecting it with the doffer, as set forth in the claims.



Claim.—1. The combination of the main cylinder and doffer of a carding-engine with a side shaft geared to the doffer-cylinder shaft and having a worm, *o*, a worm-wheel on the main-cylinder shaft, and devices, substantially as described, for driving the doffer-shaft, all substantially as specified.

2. The combination of the main cylinder and doffer of a carding-engine with a side shaft geared to the doffer-cylinder shaft and having a worm, *o*, keyed thereto, but movable thereon, a worm-wheel on the main-cylinder shaft, and devices, substantially as described, for driving the doffer-shaft, all substantially as specified.

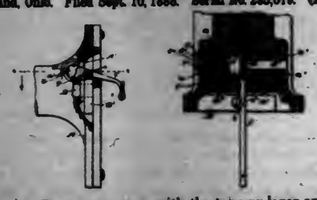
3. The combination of the main cylinder and doffer-cylinder of a carding-engine, a side shaft, *k*, geared to the doffer-cylinder, and having a worm, *o*, with a worm-wheel on the main cylinder, fast and loose pulleys on the main-cylinder shaft, a pulley, *k*, controlling the doffer-cylinder, and a band for connecting said loose pulley and the pulley *d*, all substantially as and for the purpose set forth.

408,722. HIGHWAY SIGN. JOHN S. BAILEY, Buckingham, Pa. Filed Mar. 9, 1888. Serial No. 266,897. (No model.)



Claim.—A highway sign comprising the parallel bars A, having their facing edges grooved longitudinally to receive letters, the base or bed plate E, to which the inner ends of the bars are attached, the approximately U-shaped spring-clamp B, adapted to embrace the outer ends of the bars A and retain the parts in position, said clamp being formed with projections *b* on its facing edges, which are sprung into corresponding notches on the top and bottom edges of the bars A, and the indicator-hand, substantially as specified.

408,723. SEWING-MACHINE TAKE-UP. GEORGE W. BAKER, Cleveland, Ohio. Filed Sept. 10, 1888. Serial No. 285,019. (No model.)

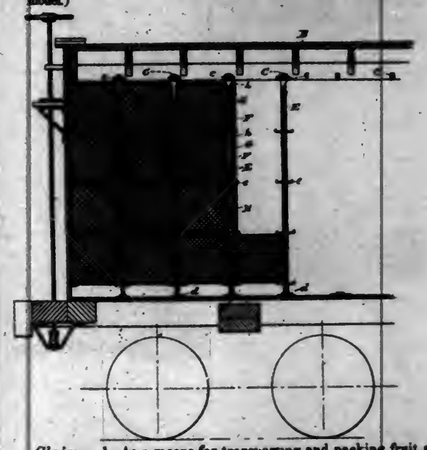


Claim.—1. The combination, with the take-up lever and cam, of an angular friction-block having a series of bearing-faces and a pivot-pin passing through the block and secured to the take-up lever, the said friction-block adapted to be turned on its pivot to present a new face to the cam, substantially as set forth.

2. The combination, with take-up lever, revolving cam for elevating the lever, and pivotal pin screwed into a lateral threaded hole of the lever, substantially as indicated, of spring for depressing the lever, said spring being coiled around the said axial pin, the arrangement of parts being substantially as described, whereby the action of the spring and cam, respectively, tend to tighten the screw-joint of the lever and pin, substantially as set forth.

3. The combination, with take-up lever, revolving cam for elevating the lever, and pivotal pin screwed into a lateral threaded hole in the lever, of an adjustable cap, and a spring coiled around the pivotal pin and secured at one end to said pin and at its other end to the adjustable cap, the arrangement of parts being substantially as described, whereby the action of the spring and cam, respectively, tend to tighten the screw-joint of the lever and pin, substantially as set forth.

408,724. CAR FOR TRANSPORTING FRUIT. FRANCIS M. BARBER, Washington, D. C. Filed Mar. 2, 1889. Serial No. 301,703. (No model.)



Claim.—1. As a means for transporting and packing fruit and for other purposes, a series of compartments separated from each other by partitions of reticulated material and built up of collapsible elements, substantially as described.

2. A vehicle for transporting fruit and for similar purposes, having its carrying-space subdivided by partitions of reticulated material, said partitions being removably supported in said vehicle, substantially as described.

3. A series of open-work compartments built up of elements composed of panels of reticulated material hinged together, substantially as described.

4. In a freight-car or other vehicle, the combination, with the elements or partitions adapted to form a series or ventilated compartments, of the supports comprising removable uprights and constituting a skeleton or frame-work by which the elements or partitions are removably supported, substantially as described.

5. The combination, with supports, of elements forming a series of ventilated compartments, said elements being composed each of a vertical and a horizontal panel and partitions, said parts being all made of reticulated material and hinged together, substantially as described.

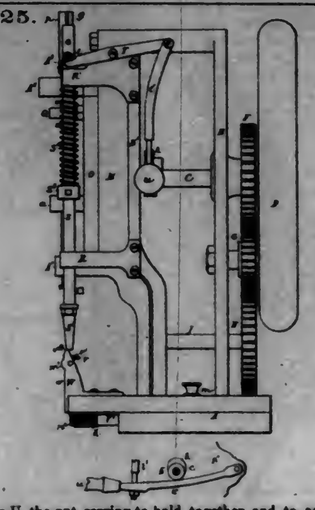
6. In a car or other vehicle, the combination, with removable supports, of removable and collapsible elements composed of reticulated material, and forming when in place a series of storage-compartments separated from each other by perforated partitions, so that the entire series is ventilated, substantially as described.

7. The combination, with supports, of elements composed of panels of reticulated material, said panels having a portion or portions hinged independently of the others, substantially as described.

408,725. PRESSER-FOOT-LIFTING DEVICE FOR SEWING-MACHINES. JONATHAN BARTLETT, Epping, and GEORGE B. WIGGIN, South New Market, N. H., assignors of one-half to John W. Hoard, Providence, R. I. Original application filed July 23, 1887, Serial No. 245,561. Divided and this application filed May 3, 1888. Serial No. 272,745. (No model.)

Claim.—1. The combination of the presser-foot and its bar brackets R R', frictional roller *t*, lever T, vertical rod *t'*, pivoted to said

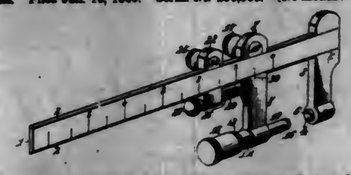
408,725.



lever, lever U, the nut serving to hold together and to adjust relatively this lever and rod, and cam K on the revolving short driving-shaft C, these parts being all located above the table and co-operating substantially as shown and described.

2. In combination with the presser-foot bar, the brackets R R', roller *t*, lever T, the rod *t'*, pivoted to said lever, cam K on the short revolving driving-shaft, and lever U, having a handle on its free end and pivoted at its other end to a standard, all located above the table, substantially as and for the purposes described.

408,726. MICROMETER-GAGE. STEPHEN H. BELLOWS, Athol, Mass. Filed Jan. 16, 1889. Serial No. 296,506. (No model.)



Claim.—1. A micrometer-beam caliper-gage consisting of a graduated bevel-edged flat beam having a stationary jaw, a slide adjustable on the beam and having a tubular end provided with a cylinder-extension containing on the external surface the stationary micrometer-gage graduations, a micrometer measuring-screw adjustable lengthwise in the slide and extending through the same in line with the contact-point of the stationary jaw and having a hollow shell working lengthwise upon the external surface of the cylinder-extension and having a beveled inner end provided with graduations, and a sliding block on the beam having a spring yielding connection with the slide, substantially as described.

2. A micrometer caliper-gage consisting of a graduated beam having a jaw, a slide movable on the beam and having a micrometer measuring-screw lengthwise adjustable on the slide in line with a contact-point on the jaw, a sliding block on the beam, a lengthwise-yielding screw-connection between the slide and sliding block for adjusting the slide and its screw and bringing the graduations of the beam and slide into perfect coincidence, and a spring encircling the screw-connection between the slide and sliding block, substantially as described.

3. A micrometer caliper-gage consisting of a graduated beam having a jaw, a slide movable on the beam and having a lengthwise-adjustable micrometer measuring-screw in its outer end and a socket between its opposite end and the measuring-screw, a sliding block on the beam, a cylindrical pin supported by the latter and movably engaging the socket in the slide, and a spring encircling the pin between the slide and sliding block, substantially as described.

4. A micrometer caliper-gage consisting of a graduated beam having a jaw, a slide movable on the beam and having a lengthwise-adjustable micrometer measuring device at its outer end and a screw-socket between its opposite end and the measuring device, a sliding block on the beam, a rotary cylindrical stem loose in the sliding block and screwing into the screw-socket in the slide, and a spring between the slide and sliding block, substantially as described.

5. The combination of the dovetailed beam having a jaw with the slide dovetailed to the beam and carrying an adjustable micrometer-screw, the locking-plate having a beveled edge parallel to the edge of the beam and provided with a lateral screw extending transversely through and beyond the slide, and a thumb-nut on the screw abutting the side of the slide for clamping the beveled edge of the locking-plate on the beveled edge of the beam to secure the slide in a fixed position, substantially as described.

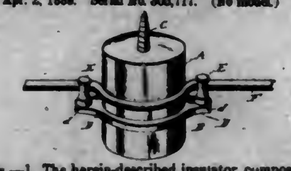
6. The combination of the dovetailed beam having a jaw with the slide dovetailed on the beam and carrying a micrometer-screw extending through the slide toward the jaw, the locking-plate having a beveled edge parallel to the edge of the beam, and a screw extending transversely through the slide, and a thumb-nut on the screw and abutting the side of the slide, substantially as described.

7. The combination, with the dovetailed beam having beveled edges and graduated on one face, of a slide dovetailed on the beam extending along one side only thereof and having one surface in the same plane as the graduated face of the beam to leave all the graduations on the latter visible, a micrometer-screw extending through and lengthwise adjustable in the slide, the locking-plate having a beveled edge engaging the beveled edge of the beam and provided with a lateral screw extending transversely through the slide, and a thumb-nut on the screw abutting the side of the slide for clamping the locking-plate on the beveled edge of the beam, substantially as described.

8. The combination, with the beam graduated on one face and having beveled edges and a stationary jaw carrying a contact-point, of a slide adjustable on the beam dovetailed and having one surface in the same plane as the graduated face of the beam and provided with an index, and a micrometer-screw carried by said slide in line with the contact-point of the stationary jaw, substantially as described.

9. A micrometer caliper-gage consisting of the graduated beam having a jaw and beveled edges, a slide dovetailed on the beam and having a screw-socket and carrying a micrometer-screw which projects through it toward the jaw and is lengthwise adjustable, a sliding block dovetailed on the beam, a rotating pin passing through the block and engaging the screw-socket in the slide, a spring encircling the pin between the slide and block, two locking-plates seated, respectively, in the slide and block and having lateral screws extending, respectively, transversely through the said slide and block and having straight beveled edges engaging one beveled edge of the beam, and thumb-nuts on the screws, substantially as described.

403,727. INSULATOR. JACOB C. BERRABE, Asbury Park, N. J. Filed Apr. 2, 1889. Serial No. 305,717. (No model.)



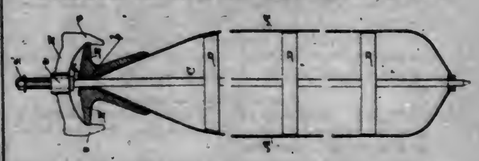
Claim.—1. The herein-described insulator, composed of the two insulating-blocks and the plate having arms held between the blocks, substantially as set forth.

2. The combination, with the two insulating-blocks, of the plate having retaining-arms held between the blocks, and having a central opening to receive a projecting portion of one of the blocks, substantially as described.

3. The combination, with the block A, having the groove *a*, of the plate D, having the retaining-arms E, substantially as and for the purpose described.

4. The herein shown and described insulator, composed of the blocks A and B, the block B having the projection *b* and the block A the groove *a*, the plate D, having the arms E and an opening, *d'*, to receive the projection *b*, and the screw C, combined and arranged substantially as set forth.

408,728. CABLE-RAILWAY-CONDUIT MOLD. IRA BISHOP, San Francisco, Cal. Filed Feb. 26, 1889. Serial No. 301,249. (No model.)

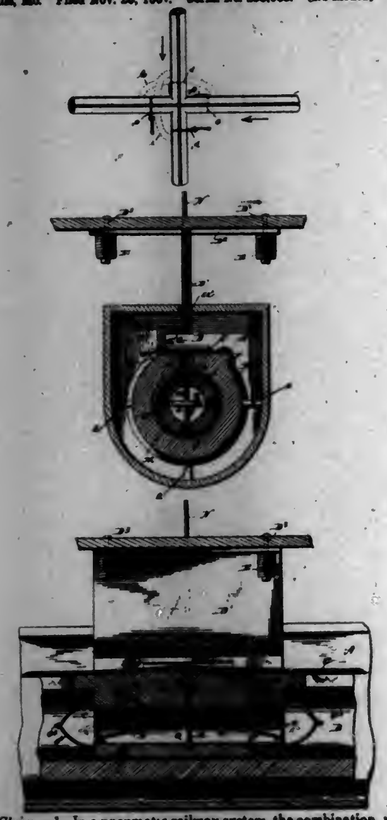


Claim.—1. A concrete-mold consisting of the separable opposing plates and the axially-rotary rod having arms rigidly secured to it, and adapted to hold the plates apart and to relieve them, substantially as described.

2. A concrete-mold consisting of the separable opposing plates, the axially-rotary rod having rigidly secured to it arms for holding the plates apart, and the locking-bar of the rod for keeping it from turning when in position, substantially as described.

3. The concrete-mold for the construction of cable-railway conduits, consisting of the separable opposing plates within the conduit and adapted to be removed through the grip-slot, the axially rotary rod passing down through the grip-slot, and having upon it the spreading-arms for holding the plates apart and relieving them, and the locking-bar fixed upon the upper end of the rod and having its ends adapted to engage the slot rails or irons, whereby said rod is held in fixed position when in use and relieved when not in use, so that it may free the mold-plates and be withdrawn through the grip-slot, substantially as described.

408,729. PNEUMATIC RAILWAY. MEINOLPH BOSENFELD, St. Louis, Mo. Filed Nov. 23, 1887. Serial No. 255,905. (No model.)



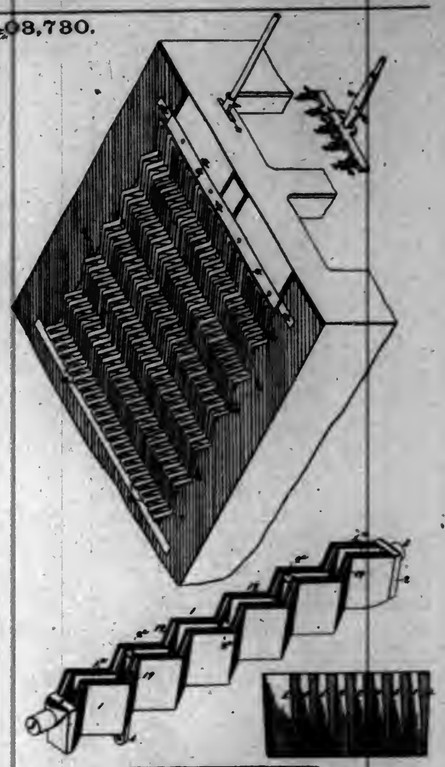
Claim.—1. In a pneumatic railway system, the combination, with two pneumatic tubes which cross, of by-passes communicating with the tubes to bridge the point of crossing, an automatically-operated valve in each tube at one side of the point of crossing, and a manually-operated valve at the opposite side of the point of crossing, substantially as set forth.

2. In a pneumatic system, the combination, with a tube having a longitudinal opening, of an elastic flap to close said opening, a web adapted to slide in the opening, a bevel-plate secured to the top of the web to move the flap, a bracket connecting the bevel-plate, and a frame attached to the car-truck, and a piston secured to the bottom of said web and adapted to slide in the tube, substantially as set forth.

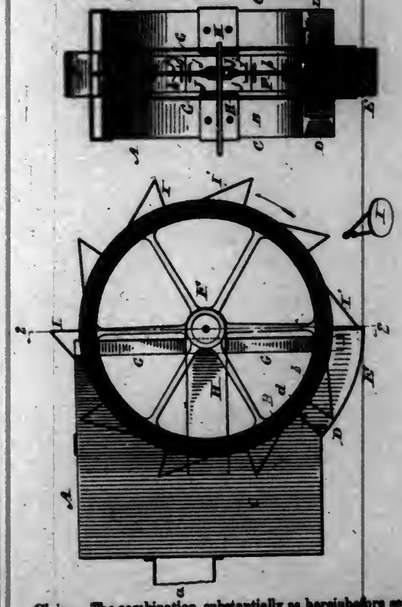
408,730. GRATE-BAR FOR FURNACES. ETIENNE BOILEAU, St. Louis, Mo., assignor to Lucerne J. Peck, same place. Filed Aug. 6, 1888. Serial No. 282,033. (No model.)

Claim.—A grate-bar constructed with two zigzag webs, 1, having their upper edges formed with grooves 19, the ends 2 forming with the webs an opening, 1*, the short blocks connecting the webs at long distances, the gudgeons 3 on the ends, and the lug 4 for rocking the bar, substantially as described.

408,730.



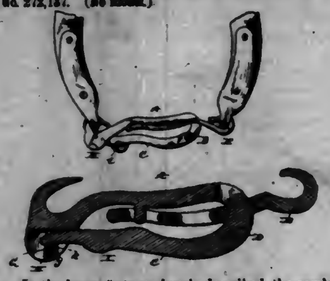
408,731. WATER-MOTOR. BYRON R. BOWER, Bainbridge, Ga. Filed May 23, 1888. Serial No. 274,896. (No model.)



Claim.—The combination, substantially as hereinbefore set forth, of the water-wheel having a narrow rim or periphery, the buckets rigidly secured to the periphery of the wheel, the braces extending from the outer edges of the buckets to the periphery of the wheel.

the penstock, forebay, or reservoir having an open top and a concavo-convex front wall, a flume or bucket-way joining the penstock, forebay, or reservoir at its lower front portion and provided with a slot or opening joining a slot or opening in the front wall of the penstock, and the independently-adjustable plates curved to correspond with the curvature of the front wall of the penstock and the top wall of the flume, and secured thereto by adjusting devices, so that one or more plates may be adjusted relatively to the rim of the wheel to take up wear and to prevent leakage at any desired point.

408,732. HAME-FASTENER. IRA W. BOWMAN, HARRY L. BOWMAN, and SAMPSON SHARP, East Liverpool, Ohio. Filed Apr. 26, 1888. Serial No. 272,137. (No model.)



Claim.—In the hame-fastener herein described, the combination, with the hooked plate having a housing at one end, the walls of which are provided with two shoulders, *h*, a U-shaped gravity-latch pivotally secured within the housing, one side of which is beveled, a hooked lever pivotally secured to the other end of the plate, the free end of which engages with and is automatically engaged by the latch, and an eye-plate, substantially as and for the purpose set forth.

408,733. FISHING-REEL. CHARLES K. BRADFORD, Lynnfield, assignor to William P. Kakas, Boston, Mass. Filed Dec. 13, 1888. Serial No. 293,473. (No model.)



Claim.—1. In a fishing-reel frame or mounting, the combination of the sheet-metal end rings or bands, the spool-supporting end plates made in separate pieces from said rings and secured therein, and the arched or bent sheet-metal tie-plates secured to and bridging the space between the rings and having elongated bearings on said rings, said tie-plates being made separately from said rings and secured thereto by screws or other suitable fastenings, as set forth.

2. A frame or mounting composed of the disks or end plates, the rings affixed thereto and internally supported thereby, the arched or bent tie-plates secured to and connecting said rings, one of said plates being provided with ears 8 8, and the pole-attaching plate bearing on said ears and attached to the tie-plate on which the same are formed, as set forth.

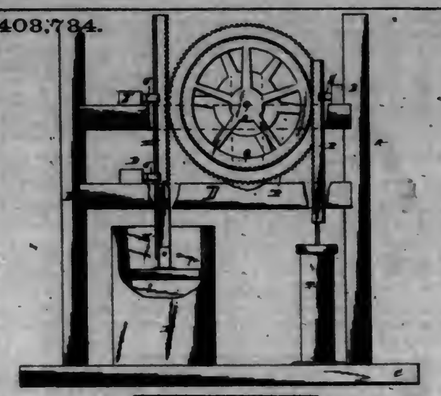
3. In a fishing-reel, the combination of a frame or mounting, a shaft journaled therein, a spool mounted on said shaft, and a system of gearing connecting the shaft and spool, whereby the rotation of the shaft is multiplied in being communicated to the spool, as set forth.

4. The frame or mounting having the end plates 5, the shaft journaled in said end plates, the spool mounted on the shaft, the eccentric stud *s'*, supported by one of the end plates, the gears 2 3, mounted on said stud and rendered adjustable thereby, and the gears 1 4, affixed, respectively, to the shaft and spool and meshing, respectively, with the gears 2 3, as set forth.

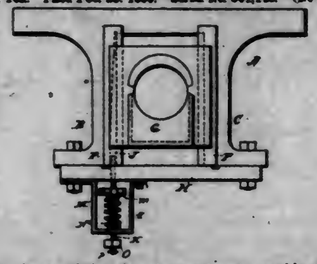
408,734. MACHINE FOR PACKING COTTON. FARLEY BRADY, Waxahachie, Tex. Filed June 23, 1888. Serial No. 277,940. (No model.)

Claim.—In a cotton-packer, the combination of the frame, guides mounted therein, rack-bars moving in the said guides, a press-box and steam-cylinder, and heads secured to the rack-bars and moving in the press-box and cylinder, respectively, cog-wheels of different diameters journaled in the frame and meshing with the rack-bars, and anti-friction rollers pivoted in the guides and bearing against the rack-bars, substantially as and for the purpose specified.

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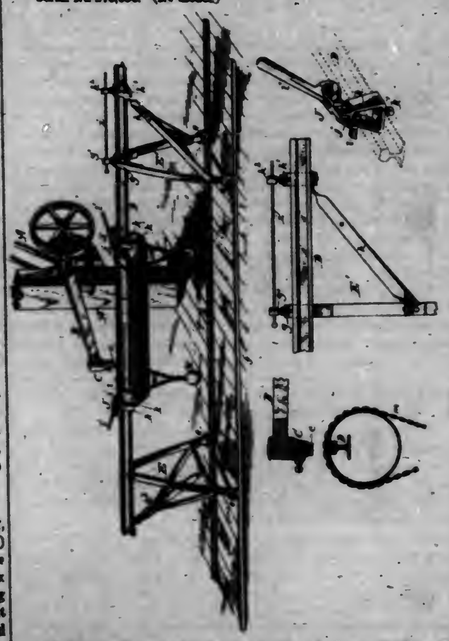


408,735. AXLE-BOX FOR LOCOMOTIVES. FRANK A. CARLSON, Dallas, Tex. Filed Feb. 25, 1889. Serial No. 301,146. (No model.)



Claim.—In an axle-box for a locomotive, the combination of the wedge, the bolt attached thereto, the flange, the spiral spring, and a suitable support for the same, substantially as specified.

408,736. MACHINE FOR BEATING AND POLISHING SHEET-METAL TUBING. WHITNEY G. CASE, Buffalo, N. Y. Filed Apr. 9, 1888. Serial No. 270,096. (No model.)



Claim.—1. The combination, with a power-hammer, of a movable supporting-bar arranged below said hammer, a truck rigidly se-

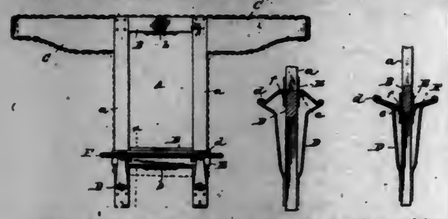
cured to one end of the bar, and a truck detachably arranged at the opposite end of the bar, substantially as set forth.

2. The combination, with a power-hammer, of a movable supporting-bar arranged below said hammer, a truck, E, rigidly secured to one end of said bar, and a detachable truck, E', arranged at the opposite end of the bar and provided with a loop embracing the bar, and a set-screw whereby the loop is secured to the bar, substantially as set forth.

3. The combination, with a power-hammer and a movable supporting-bar provided at one end with a fixed truck, of a detachable truck, E', arranged at the opposite end of the bar and provided with a loop, *g*, having a set-screw, *g'*, and a brace, *h*, having a loop, *h'*, and set-screw h^3, substantially as set forth.

4. The combination, with a power-hammer, of a movable supporting-bar provided at one end with a fixed truck, a detachable truck, E', arranged at the opposite end of the bar and provided with a loop, *g*, having a set-screw, *g'*, a brace, *h*, having a loop, *h'*, and set-screw h^3, and a locking-bar, *i*, whereby the set-screws *g'* and h^3 are held against turning, substantially as set forth.

403,737. SHIRT-STRETCHER. GEORGE COOPER, Bennington, Vt., assignor of one-half to Charles Cooper, same place. Filed Mar. 23, 1889. Serial No. 305,064. (No model.)



Claim.—1. The combination, with a frame for stretching and drying knit garments, of springs secured to the frame, and independent angular clamping-bar working therein and against the side of the flap of the body of the garment at any point near the spring and over the frame to stretch and hold the garment in position, as set forth.

2. The combination, with a frame having downwardly-extending bars, of springs secured on each side of said bars, extending upward and outward, the upper ends being turned inward, forming hooks, with angular clamping-bar working in the hooks and against the sides of the body of the flap of the garment at any point near the springs and over the frame to hold the garment in position, as set forth.

3. The combination, with a hinged frame having bars with upwardly-extending springs with inwardly-turned hooks at their upper ends, of a clamping-bar and shoe with their sides at an acute angle to each other, the edge of the clamp-bar inserted in the hook, and the shoe on the frame adapted to be forced down to stretch and hold a garment on the frame in position, as set forth.

4. The combination, with a hinged stretcher and drier frame having upwardly-extending springs with hooks on its sides, of a shoe-bar sliding on the side of the frame, having a clamp-bar hinged thereto, the outer edge of the clamp-bar engaging the hooks of the springs as the shoe is moved down on the frame and locked, thereby bringing the face of the clamp-bar at an acute angle with the upper portion of the shoe, as set forth.

403,738. BALING-PRESS. THOMAS J. CORNING, San José, Cal. Filed Jan. 29, 1889. Serial No. 296,016. (No model.)

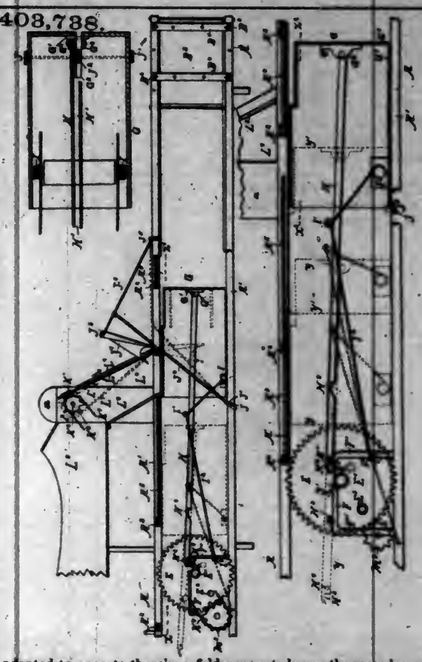
Claim.—1. In a baling-press, in combination, the bifurcated pitman having notches therein and guide-pins thereon, the wheel provided with bearing-pins—one of said pins being located near the periphery of the wheel and the other nearer the shaft of the same—projecting from the sides thereof and adapted to engage with the notches in said pitman, and guide-bars for supporting and guiding the free end of the pitman, substantially as described.

2. In a baling-press, in combination, the bifurcated pitman having notches H^3 H^3 therein and guide-pins H^4 thereon, a plunger attached to one end thereof, a wheel provided with bearing-pins E^3 E^4, arranged to engage with the notches in said pitman, and guide-bars adapted to support and guide the free end of said pitman, substantially as described, for the purpose set forth.

3. In combination, the pitman having notches H^3 H^3 therein and guide-pins H^4 projecting therefrom, a wheel provided with bearing-pins projecting from the side thereof and arranged to engage with the notches in said pitman, guide-bars adapted to receive and guide the free end of the pitman, and a plunger attached thereto and provided with a spring for propelling the same backward, after completing the compression-stroke, to the end of the retraction-stroke, substantially as described, and for the purpose specified.

4. In a baling-press, in combination, the baling-chamber, a plunger

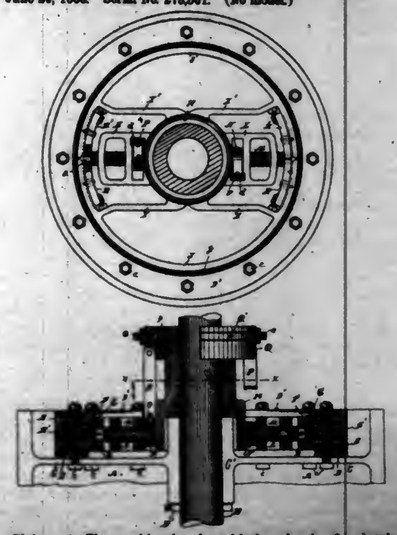
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adapted to operate therein, a folder mounted upon the press by means of swinging arms J^4, having forks J^7 attached thereto, the rock-shaft J, provided with double cranks J' and dog J^3, rigidly connected therewith, and connecting-rods J^6, substantially as described.

5. In a baling-press, in combination, the baling-chamber, a plunger adapted to operate therein, a longitudinally-reciprocating feeder, L, provided with downwardly-curved teeth projecting from the under side thereof and mounted upon the shaft K, the latter being supported by double cranks K' and axes K^2, side pieces, L^4, and part L^5, to form a spout, the folder J^8, mounted upon the press by means of swinging arms J^4, having forks J^7 attached thereto, the rock-shaft J, provided with double cranks J' and dog J^3, rigidly connected therewith, and connecting-rods J^6, substantially as described.

403,739. FRICTION-CLUTCH. HILEN C. CROWELL, Erie, Pa. Filed June 29, 1888. Serial No. 278,561. (No model.)



Claim.—1. The combination, in a friction-clutch, of a clutch-ring and a sectional friction-ring with radial shafts having elliptical or

cam-shaped ends operating and adapted to be partially rotated between the ends of the sections of the friction-ring to expand the same and thereby force it outward into contact with the clutch-ring, substantially as and for the purpose set forth.

2. The combination, in a friction-clutch, of a clutch-ring and a sectional friction-ring having adjustable segments adapted to vary the openings between the ends of the sections of the friction-ring with radial shafts having elliptical or cam-shaped ends operating and adapted to be partially rotated between the adjacent ends of said adjustable segments to expand said friction-ring and force it outward against the clutch-ring, substantially as and for the purpose set forth.

3. The combination, in a friction-clutch, of the shafts M, having elliptical ends *a* thereon and mounted in radial supports L, with the cranks N, links O, sliding levers P, and sliding sleeve Q, substantially as and for the purpose set forth.

4. The combination, in a friction-clutch, of the clutch-ring D, the semicircular friction-rings J and J', mounted on the arms I I and I' I', and the adjustable segments R R', with the radial shafts M M, operating between the ends of the segments R R', the cranks N, links O, sliding levers P, and sliding sleeve Q, substantially as and for the purpose set forth.

403,740. DRILL-GAGE. IRA CULVER, Cleveland, Ohio. Filed Aug. 9, 1888. Serial No. 282,373. (No model.)

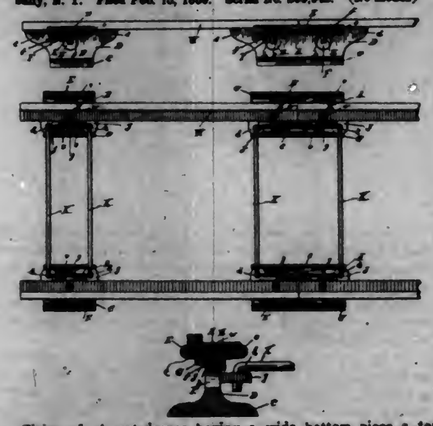


Claim.—1. The combination of the drill-guide, a main gage-blade jointed to the guide, and an auxiliary gage-blade jointed to the main gage-blade, substantially as hereinbefore set forth.

2. The combination of the drill-guide and the two gage-blades adjustably connected to each other and to the guide, substantially in the manner set forth, so that the angle at which the blades stand to each other and to the guide can be varied at will, and the elbow or apex of the angle formed by said blade can be raised or lowered with reference to the guide.

3. The drill-gage consisting of the V-guide A, the main gage-blade jointed to the guide by a slot-and-set-screw connection, and the auxiliary gage-blade C, jointed to the main gage-blade, as set forth.

403,741. STREET-RAILROAD TRACK. ROBERT DAMBMANN, Albany, N. Y. Filed Feb. 15, 1888. Serial No. 299,943. (No model.)



Claim.—1. A pot-sleeper having a wide bottom piece, a top piece, and vertical web uniting said pieces, said web having wings at its ends extending in the line of the sleeper and flush with the top piece thereof, substantially as described.

2. A sleeper having a top piece flanged at its side edges, a bottom piece, and a vertical web uniting said pieces and having extended wings *d d* at its ends, all substantially as specified.

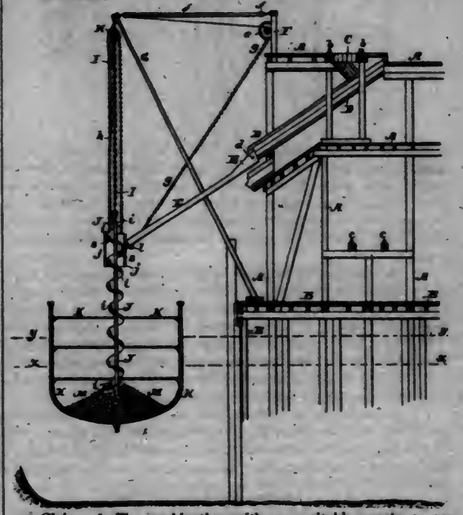
3. A pot-sleeper consisting of a base-piece, a top piece, and a central web uniting said pieces and having extended wings at its ends and laterally-projecting perforated ears on its inner face, substantially as set forth.

4. The combination of a pot-sleeper having a top piece, a bottom piece, a web, D, connecting said pieces and having wings *d d* at its ends, said web having a lateral opening through it, and the top piece having a vertical opening therethrough, with the rails, the slotted retaining-bolts, and wedge-keys, substantially as and for the purpose described.

5. The combination of the sleepers having top piece notched at its inner corners, a bottom piece, a vertical web, D, uniting said pieces and extended at its ends into wings *d d*, said web being perforated at F and said top piece at *f*, and the laterally-projecting perforated ears on the inner side of said web, with the rails, slotted bolts, and wedge-keys, and the tie-rods, all substantially as specified.

6. The herein-described pot-sleeper, consisting of a top piece laterally flanged, as described, the bottom piece, the upstanding web uniting said pieces having its ends extended into wings, the upper edges of which are flush with the top piece, and the perforated ears projecting from the inner face of said web, all substantially as and for the purpose described.

403,742. CONVEYER CONTRIVANCE FOR HANDLING COAL. JAMES M. DODGE, Philadelphia, Pa. Filed Feb. 1, 1889. Serial No. 298,338. (No model.)

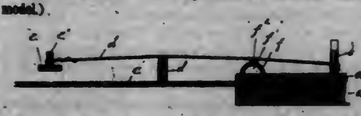


Claim.—1. The combination, with any suitable supply or conveyer trough through which the descending stream of coal is designed to pass, of a spiral trough or helical chute, J *i*, which is vertically adjustable, substantially in the manner and for the purposes set forth.

2. The combination, with any suitable supply-spout—such as seen at E—and an adjustable helical chute, of a tubular casing, *j*, surrounding a portion of the blade of said helical chute and formed or provided with a supply-nozzle, *m*, adapted to receive the material from the discharge end of the supply-spout and feed it to the upper surface of the blade of said helical chute, substantially as hereinbefore set forth.

3. The combination, with a suspended and adjustable helical chute and the cylindrical housing or casing *j*, into which the supply of material is discharged, of means by which an engagement between the blade *i* of the chute and said casing *j* is effected in such manner as to insure a given relationship of the upper surface of the blade *i* to the point or level at which the material is discharged or fed into said casing *j*, all substantially as and for the purposes set forth.

403,743. BRIDGE FOR STRINGED INSTRUMENTS. MARTIN DURICK, Buffalo, N. Y. Filed Sept. 24, 1888. Serial No. 286,151. (No model.)

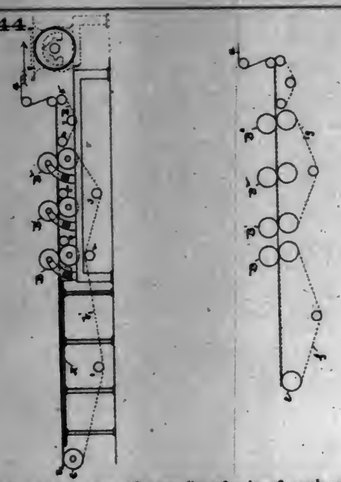


Claim.—A bridge for stringed instruments, consisting of a semi-tubular metallic strip, its open side adapted to rest upon the wrest-plank, and its upper side or apex having a raised rib or projection upon which the strings rest, substantially as shown and described.

403,744. MACHINE FOR MAKING PAPER. JOSEPH T. FLOOD Holyoke, Mass., assignor to Buchanan, Bolt & Co., same place. Filed Oct. 22, 1887. Serial No. 253,069. (No model.)

Claim.—1. The combination, with the tube-frame and driers of

408,744.



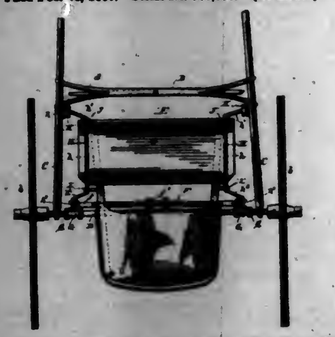
a machine for making paper, of a purality of pairs of couch-rolls located between said tube-frame and driers in such manner that the web of paper passes directly from the last pair of said rolls to the driers, and a wire serving to carry the web over said tube-frame and between each of said pairs of couch-rolls, arranged and operating substantially as described, whereby the use of press-rolls and felts is avoided.

2. In a machine for making paper, the combination, with roll *e*, of the three sets of couch-rolls B, B', and B², and wire *b'*, passing around roll e and the lower roll of set B² and between the upper and lower rolls of sets B B', substantially as and for the purpose set forth.

3. In a machine for making paper, the combination, with roll *e*, couch-rolls B B' B², and wire *b'*, arranged and operating substantially in the manner described, of rolls 6 7 8 and apron E, mounted upon said rolls, substantially as and for the purpose set forth.

4. In a machine for making paper, the combination, with roll *e*, couch-rolls B B' B², supporting and guiding rolls 1 2 3 4 5, and wire *b'*, arranged and operating substantially as described, of rolls 6 7 8 and apron E, mounted thereon, substantially as and for the purpose set forth.

408,745. ROAD-CART. GEORGE H. FOWLER, Taughannock Falls, N. Y. Filed Feb. 18, 1889. Serial No. 300,300. (No model.)

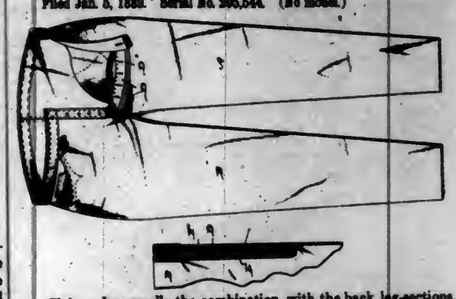


Claim.—1. In a vehicle, the combination, with the axle, thills, and body with seat attached, of the double-armed crank-rods having their central longitudinal portions journaled in bearings attached to the vehicle-body in order to support said body, the ends of their front arms journaled in bearings secured to the thills, and the rearwardly-bent projections of their rear arms journaled in bearings attached to the axle, substantially as specified.

2. In a vehicle, the combination, with the axle, the thills, the vehicle-body, and the bearing-irons I J, secured to said body at suitable points and respectively provided with the bearing-slots *i* and *j*, of the boxes or blocks G, clipped to the axle at the inner sides of the thill-irons and provided with the bearing-openings *g'*, the bearing-brackets K, secured to the thills on the inner sides thereof, and the crank-rods H, having the central longitudinal parts, A, journaled in the slots *i j* of the bearing-irons, the arms *h'*, provided with the journals *k*, mounted in the brackets K, the arms *h²*, and the rearward projections, *h³*, journaled in the boxes G, substantially as specified.

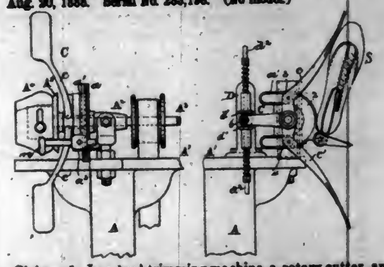
3. In a vehicle, the combination, with the axle, the thills, the body, and the bearing-irons I J, secured to the body at proper points, of the bearing-boxes G, secured to the axle, the bearing-brackets K, secured to the thills, the crank-rods H, journaled in the bearing-irons I J and in the boxes G and brackets K, and consisting of the central portion, *h*, the front arm, *h'*, having the journals *k*, and the rear arm, *h³*, having the extension *h³*, and the spring *f*, with its ends looped and attached to the extension *h³* and its central part clipped to a spring-bar secured to the back of the vehicle-body, substantially as specified.

408,746. TROUSERS, &c. MAX FRANKEL, New Orleans, La. Filed Jan. 5, 1889. Serial No. 295,544. (No model.)



Claim.—In overalls, the combination, with the back leg-sections, of the front leg-sections, each having a tongue or longitudinal strip on their adjacent inner sides, the strip of the right front leg-section extending across the crotch and up the inner side of the left leg-section to form the inner wall of the button-hole fly, and the strip of the opposite or left leg-section folded at the crotch and carried upwardly and united with the strip of the opposite leg to form the outer wall of the button-hole fly, and a re-enforcing strip extending across the crotch and having one branch secured between the walls of the button-hole fly and the opposite branch secured to the inner wall of the button fly, substantially as specified.

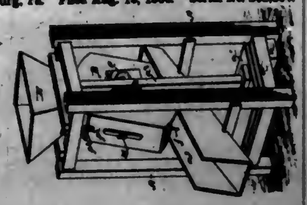
408,747. HEEL-TRIMMING MACHINE. CHARLES W. GLIDDEN, Lynn, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Aug. 20, 1888. Serial No. 283,196. (No model.)



Claim.—1. In a heel-trimming machine, a rotary cutter, an edge-rest, a movable carriage upon which the said edge-rest is mounted, and a guide for the said carriage, combined with means, as a lever, against which the shoe the heel of which is being trimmed may be pressed, the pressure of the said shoe against the said lever effecting the raising or lowering of the said edge-rest while the sides of the heel are being trimmed, substantially as described.

2. In a heel-trimming machine, a rotary cutter, an edge-rest, a carriage or support for the same, and a guide for the said carriage or support, combined with a three-armed lever and with means to retain it in normal position while the rear end of the heel is being trimmed, substantially as described.

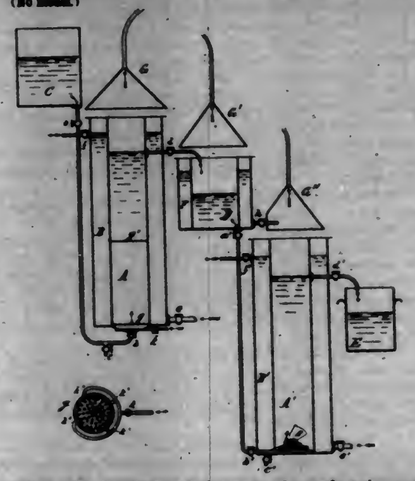
408,748. GRAIN-WEIGHING SCALES. PEARSE R. GRAHILL, Millersburg, Pa. Filed Aug. 10, 1888. Serial No. 282,897. (Model.)



Claim.—1. The vessel or receptacle having the diagonally-arranged board and the blocks or hollow chambers adjustably secured to said vessel, substantially as shown and described.

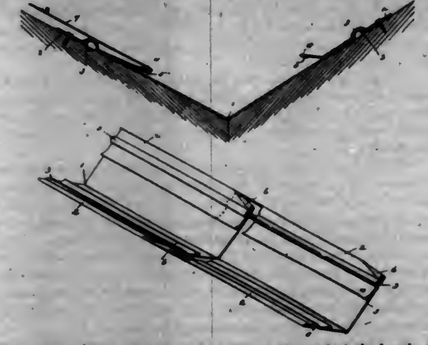
2. The combination of the frame, the movable base-board, the scales, the uprights or posts, the pivoted vessel or receptacle having the blocks or weights, the tallying device, the hopper having the swinging bottom, and the pivoted rod or bar, substantially as shown and described.

408,749. MANUFACTURING EXPLOSIVES. JOSEF A. HALBMAYR, Vienna, Austria-Hungary. Filed June 11, 1888. Serial No. 276,578. (No model.)



Claim.—The herein-described process of manufacturing explosives from tar oils, said process consisting in conducting the oils into a body of nitrating-acid from below the surface of the latter in a state of division and at the same time introducing cold air under pressure at the same point with the oils, all substantially as described.

408,750. METALLIC ROOFING. MILLARD F. HAMBLEY, Nashville, Tenn. Filed Feb. 11, 1889. Serial No. 299,414. (No model.)



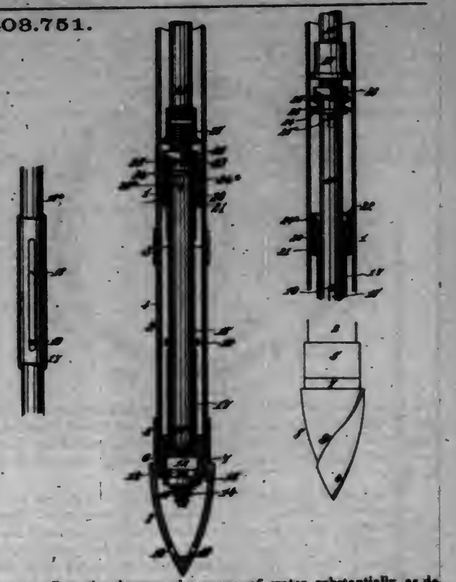
Claim.—1. As an improvement in metallic roofing, the herein-described valley-sheet turned back upon itself at each side and having the nailing portions 2, the ribs 3, and the upturned edges 4, as set forth.

2. The valley-sheet herein described, turned back upon itself at each side and having the nailing portions 2, the ribs 3, and the upturned edges 4, strengthened by the hem 5, as set forth.

3. The valley-sheet herein described, turned back upon itself at each side and having the nailing portions 2, and the ribs 3, and the turned-over corner 6, for facilitating its introduction into the adjoining sheet, substantially as described.

408,751. IMPLEMENT FOR BORING WELLS. LEWIS B. HARE, Plaquemine, La. Filed Sept. 26, 1888. Serial No. 286,260. (No model.)

Claim.—1. In a well-boring tool, a hollow conical point having openings above the apex or cutting-point, in combination with a casting having water-ports and a spring-actuated poppet-valve opening to allow the downward passage of water, substantially as described.



2. In a well-boring tool, the combination, with a hollow conical point having openings, of a spring-actuated valve opening to water flowing downward into said point, a casting on which said valve and point are mounted, a strainer connected to said casting, a well-pipe coupled to said strainer, an interior pipe having a right and left hand male thread on its upper and lower ends, respectively, and screwed by its lower end into the casting, and valves surrounding said interior pipe above the strainer to prevent passage of water in either direction, substantially as described.

3. In a well-boring tool, the combination, with a hollow conical point having openings, of a casting to which said point is screwed, a strainer and attached pipe having a right and left thread and engaged with the casting by the latter, a sleeve loose on said pipe, resting on the casting, and having slots which receive pins projecting from the pipe, a valve-coupling supported by said sleeve and supporting a valve which prevents the upward flow of water, a concave valve-seat resting on the coupling, and an upper valve lying between a ring and a loose collar supported by pins projecting from the pipe, substantially as described.

408,752. METHOD OF OPERATING ELECTRIC FURNACES. JOHN C. HOSEA, Lockport, N. Y. Filed Aug. 31, 1888. Serial No. 284,330. (No model.)



Claim.—The method of operating an electric furnace of the kind described, which consists in enveloping or covering the charge with wood cut into small pieces, as sawdust, and then passing a current through the charge, whereby the wood is carbonized, substantially as set forth.

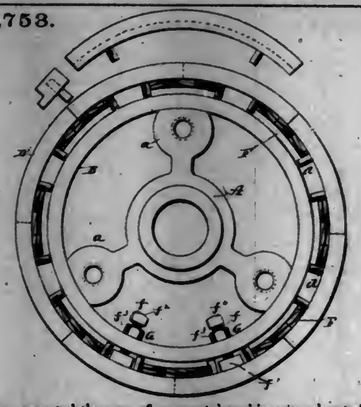
408,753. PISTON-PACKING. SAMUEL HUGHES, Charleston, S. C. Filed Jan. 9, 1889. Serial No. 296,288. (No model.)

Claim.—1. In a piston-packing, the combination, with a bull or junk ring having an outwardly-projecting flange, and a piston-follower, of segmental packing-rings arranged side by side, the edge of one ring overlapping the edge of the other, said packing-rings being secured between the follower and the flange of the bull-ring, substantially as set forth.

2. In a piston-packing, the combination, with piston-body or spider, a removable junk-ring having an outwardly-projecting flange and a follower, of segmental packing-rings greater in diameter than the bull-ring, and springs located within the space between the bull-ring and packing-rings and engaging abutments projecting inwardly from the inner faces of the segments composing the packing-rings, substantially as set forth.

3. In a piston, the combination, with a piston body or spider and

408,753.



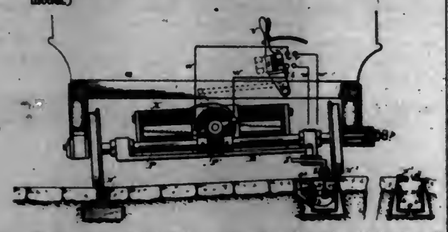
a bull-ring mounted thereon, of segmental packing-rings located side by side and having overlapping side edges, and springs located between the bull-ring and packing-rings for exerting longitudinal pressure upon the segments of each of the packing-rings, substantially as set forth.

4. In a piston, the combination, with a hub, of segmental packing-rings carried thereby and having overlapping longitudinal edges, pins projecting from the inner faces of each of said rings, springs bearing on said pins and adapted to exert a longitudinal pressure upon the segments of the packing-rings, and a follower secured to the hub and bearing on one of said packing-rings, substantially as set forth.

5. In a piston, the combination, with a hub, of a flanged bull-ring mounted thereon, packing-rings having overlapping longitudinal edges, pins projecting inwardly from both packing-rings, springs bearing on said pins and adapted to exert a longitudinal force on the segments of both rings, and a follower secured to the hub and extending parallel with the outer faces of the packing-rings, substantially as set forth.

6. In a piston-packing, the combination, with sectional packing-rings provided with pins on their inner surfaces, of springs having central and outer coils and provided with expansible arms which engage said pins, substantially as set forth.

408,754. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa. Original application filed Feb. 17, 1886, Serial No. 192,187. Divided and application filed Sept. 13, 1888, Serial No. 285,295. Again divided and this application filed Apr. 8, 1889. Serial No. 306,397. (No model.)



Claim.—1. A road-bed for an electric railway in which one rail is higher than the other and the roadway between the rails is inclined, in combination with an electric conductor arranged at or near the higher rail, substantially as and for the purpose specified.

2. A road-bed for an electric railway in which one rail is higher than the other and the roadway between the rails is inclined, in combination with a slotted conduit arranged at or near the higher rail, substantially as and for the purpose specified.

3. A road-bed for an electric railway in which one rail is higher than the other and the roadway between the rails is inclined, in combination with a slotted conduit arranged at or near the higher rail and two working-conductors supported within said conduit, substantially as and for the purpose specified.

4. A road-bed for an electric railway in which one rail is higher than the other and the roadway between the rails is inclined, in combination with a slotted conduit arranged at or near the higher rail and two sectional working-conductors supported within said conduit, substantially as and for the purpose specified.

5. A road-bed for an electric railway in which one rail is higher than the other, in combination with a car having a horizontal body and an inclined truck or axles and wheels, substantially as and for the purpose specified.

6. A road-bed for an electric railway in which one rail is higher than the other and the roadway between the rails is inclined, in combination with a slotted conduit arranged at or near the higher rail, two working-conductors carried within said conduit, a car having inclined wheels and axles and a horizontal car-body, a frame suspended from the car and projecting down through the slot of the conduit, and brushes carried by said frame to connect with the conductors in the conduit, substantially as and for the purpose specified.

7. A road-bed for an electric railway in which one rail is higher than the other and the roadway between the rails is inclined, in combination with a car having a horizontal body and an inclined truck or axles and wheels, positive and negative working-conductors arranged at the highest end of the road-bed, and a connection between the car and said conductors to convey electricity to the motor on the car, substantially as and for the purpose specified.

8. The combination of a slotted conduit, working-conductors contained therein, a frame provided with two guide-rollers to run in the slot and guide the frame, depending tubes arranged between and close to said rollers and projecting through the slot, and insulated conductors passing through said pipes or tubes and having electrical contacts with the working-conductors, substantially as and for the purpose specified.

9. The combination of a slotted conduit, working-conductors contained therein, a frame projecting down through the slot of the conduit and provided with two guide-rollers to run in the slot and guide the frame, brushes carried by said frame to form electrical contacts with said working-conductors, depending conductor-guards arranged between and close to said rollers and projecting through the slot, and insulating-conductors passing through said guards and having electrical contacts with the working-conductors, substantially as and for the purpose specified.

10. A brush for an electric railway, consisting of a curved arm to freely move in either direction over the conductor, and a holder to contain contact-strips or wearing-pieces arranged through the holder at the point of contact to compensate for wear, substantially as and for the purpose specified.

11. The brush-arm V, made with a curved end, in combination with the wearing-pieces V^2 to project through said arm at its place of contact with the conductor, and clamping-screw V^3, substantially as and for the purpose specified.

12. In an electric railway, two sectional working-conductors, in combination with a traveling motor electrically connected therewith, and a pair of brushes or contacts connecting the motor with the conductors, the said brushes being arranged one in front or in advance of the other, substantially as and for the purpose specified.

13. In an electric railway, the combination of two working-conductors having vertical working-faces, a traveling electric motor or locomotive, a brush-holder carried by said motor, and two brushes having vertical faces carried by said holder, and adapted to press one in contact with each of said working-conductors, substantially as and for the purpose specified.

14. The combination, with an electric locomotive, of a slotted conduit, and two conductors extending from said locomotive into said conduit in line with each other, and each having an independent connection with the locomotive, whereby each may be movable about a vertical axis.

15. The combination of a slotted conduit containing the working-conductors of an electric railway with a car, a frame depending from said car capable of lateral movement relative to the vehicle, and a contact device movable on a vertical axis extending from said frame and taking current from the conductors within the conduit.

16. In an electric railway, the combination of two line or working-conductors from which the motors receive current, an electrically-propelled vehicle having an electric motor, a motor-circuit thereon connecting with said line-conductors, and a switch to cut out the motor and complete the line-circuit through the car.

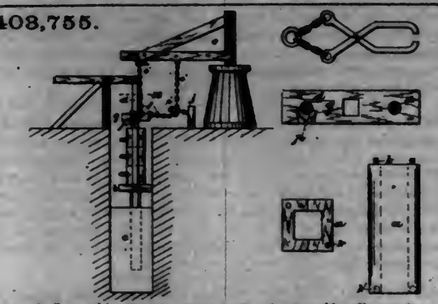
17. The combination of two railway parallel tracks having their adjacent rails higher than the others, with an electric conduit for each track arranged adjacent to the highest rail in each track, and an electric conductor in each conduit.

18. In an electric railway, the combination of a car-body supported on springs, an electric motor, power-transmitting connections between the motor and axle, a source of electric supply, a reversing-switch on and moving with the car-body, flexible conductors between the reversing-switch and motor, and a frame carried by the axle independent of the car-body to support the motor.

408,755. APPARATUS FOR CASTING INGOTS. JOHN ILLINGWORTH, Newark, N. J. Filed Dec. 20, 1887. Serial No. 258,440. (No model.)

Claim.—1. In combination, a sectional mold, an elevator, a die or fulcrumal bearing, and means co-operating therewith to sever an ingot from the casting, substantially as set forth.

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2. In combination, an elevator, a sectional mold, a die, a grip, and means for operating the same, substantially as set forth.

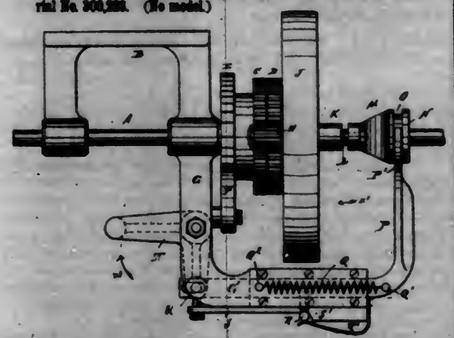
3. In combination, a vertically-disposed mold, a die arranged in a vertical line therewith, through which the casting may be caused to pass, means for presenting said casting to said die, and a grip actuated by a crane to sever the ingot from the body-casting, substantially as set forth.

4. In combination, a vertically-disposed mold, a clutch or tongs for stripping or baring an ingot cast therein, a power crane or hoist to separate an ingot from the body-casting, and a fulcrumal bearing or die to hold the body-casting while the ingot is being separated therefrom, substantially as and for the purposes set forth.

5. The combination of a series of mold-sections arranged vertically in line, means for lowering the said sections, a fulcrumal bearing and means for presenting the ingot to said bearing, and severing means, substantially as set forth.

6. In combination, a mold, a fulcrum, die, or bearing arranged at the open end of said mold, means for presenting the ingot to said fulcrum, and means for forcing the ingot against said fulcrum, substantially as and for the purposes set forth.

408,756. MECHANISM FOR IMPARTING SLOW OR FAST MOTION. JULIUS JUSTUS, Elizabeth, N. J. Filed Feb. 18, 1888. Serial No. 263,923. (No model.)

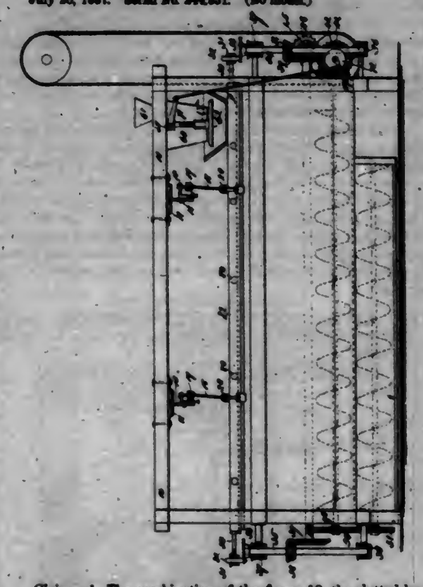


Claim.—1. In a fast-and-slow-movement mechanism, the combination, with a shaft, of two cog-wheels of the same size mounted on the shaft, one wheel being fixed and the other loose, and the fixed wheel having one tooth more than the loose wheel, a ratchet for engagement with the loose wheel, a pinion engaging said two cog-wheels and mounted on the pulley, a cross-piece fixed on the shaft, and pins for engaging said cross-piece with the pulley, substantially as set forth.

2. In a fast-and-slow-movement mechanism, the combination, with a shaft, of two cog-wheels on the same, one being fixed and the other loose, the fixed wheel having one tooth more than the loose wheel, a pawl engaging the loose wheel, a pulley mounted loosely on the shaft, a pinion on said pulley engaging the two cog-wheels, a cross-piece fixed on said shaft adjacent to the pulley, movable pins in said cross-piece for engaging the cross-piece with the pulley, a sliding clutch-piece carrying said pins, a movable arm for shifting said sliding clutch-piece, and a spring adapted to pull said sliding arm and the sliding piece toward the pulley, substantially as set forth.

3. In a fast-and-slow-movement mechanism, the combination, with a shaft, of two cog-wheels on the same, one being fixed and the other loose, the fixed wheel having one tooth more than the loose wheel, a pawl engaging the loose wheel, a pulley mounted loosely on the shaft, a pinion on said pulley engaging the two cog-wheels, a cross-piece fixed on said shaft adjacent to the pulley, movable pins in said cross-piece for engaging the cross-piece with the pulley, a sliding clutch-piece carrying said pins, a movable arm for shifting said sliding clutch-piece, a spring acting on said sliding arm and driving the same and the sliding clutch-piece in the direction toward the pulley, a spring-actuated bolt, a cam-slide which can act on said bolt, and a lever connected with the sliding arm and with the cam-slide, substantially as set forth.

408,757. FLOUR-BOLT. JOHN JOHNSTON, Neenah, Wis. Filed July 20, 1887. Serial No. 244,851. (No model.)



Claim.—1. The combination of the frame 10, the slotted brackets 11, the bolts 12, the angular arms 13, having their horizontal arms supported by said bolts, and having their vertical arms slotted and provided with lugs 17, having vertical set-screws 16, the angular brackets 14, adjustable on the slotted arms above the set-screws, on which they rest, and the sieve having brackets 21 on its sides, with the hangers 18, provided with universal joints connecting them to the brackets 14 and 21, respectively, substantially as set forth.

2. The combination, in a flour-bolt with the feeder, of depending swinging arms at opposite sides thereof, a plate at the lower ends of said arms, vertically-movable connections between said plate and arms, springs allowing a yielding movement between the arms and connections, and means for oscillating said plate, substantially as set forth.

3. The combination, with the feeder, of the depending slotted swinging arms at opposite sides thereof, provided with outward-projecting side lugs, a plate extending under the discharge-end of the feeder, provided with rods extending upwardly through the said lugs and sliding freely therein, and lugs 65, engaging the slotted arms, and the springs supporting the rods yieldingly, substantially as set forth.

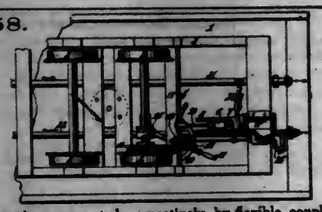
4. In a flour-bolt, the combination, with the sieve and its frame, of the apertured slats extending across the under side of said frame, blocks on the under side of the sieve, screws or pins extending from said blocks down through the slat-apertures, and springs on said screws or pins, substantially as set forth.

5. In a flour-bolt, the combination, with the sieve having blocks on its under face, and the frame to which the sieve is secured having apertured slats on its lower side, of the headed screws passing up through the apertures in the slat into the said blocks, the heads of the screws resting against the lower surfaces of said slats and limiting the upward movement of the screws and sieve, and the springs on the screws between the blocks and slats, substantially as set forth.

408,758. MEANS FOR PROPELLING RAILWAY-CARS. JOHN M. KNOX, Corsicana, Tex. Filed Jan. 3, 1889. Serial No. 295,592. (No model.)

Claim.—1. In a railway-car, the combination, with a wheel-axle, of a gear mounted loosely on said axle, a clutch for making said gear fast with the axle, a crank-shaft having a gear meshing with the axle-gear, a steam-cylinder mounted on the car-truck and having its piston and valves connected with said crank-shaft, separate live-steam

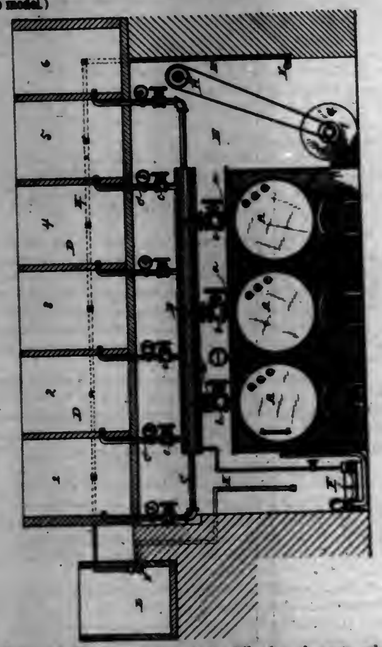
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and exhaust pipes connected, respectively, by flexible couplings to the live-steam and exhaust ports of the steam-cylinder, said pipes having at their ends flexible couplings to corresponding pipes on the adjacent car or cars, and a common steam-supply to which one of said pipes is connected, substantially as described.

2. In a railway-car, the combination, with a car-axle, of a steam-cylinder mounted on the truck-frame, a crank-shaft connected to the piston and valves of said cylinder, a gear fixed to said crank-shaft, a gear loose on the car-axle and meshing with the crank-shaft gear, a clutch splined on the axle, a shipping-lever for actuating said clutch, a live-steam pipe and an exhaust-pipe carried by said car and connected to the steam-cylinder, means for connecting said pipes to similar pipes upon an adjacent car or cars, and a steam-supply common to the steam-cylinders of several cars in a train, substantially as described.

408,759. APPARATUS FOR EXTINGUISHING FIRES. CHESTY KELSEY, Philadelphia, Pa. Filed May 20, 1885. Serial No. 166,163. (No model.)



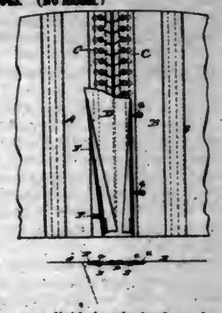
Claim.—1. The combination of the following elements, substantially as set forth, namely: a series of several boilers adapted to supply steam for operating an engine, the steam-pipe B, the separate pipes *a a*, the separate valves *b b*, whereby the steam may be taken through the said pipes *a* separately or through them all together, the series of pipes C, all communicating with the said pipe B, and each communicating separately with a compartment, D, and the separate valves *c* for the said pipes C, respectively, the said valves *b* and *c* being arranged in proximity to the boilers, substantially as set forth.

2. As a means for extinguishing fires, the combination, with a series of apartments, of two or more boilers, a main steam-pipe communicating with each of said boilers, stop-cocks between each boiler and the main steam-pipe, a series of discharge-pipes connecting with the main steam-pipe and opening into said apartments, and a series of stop-cocks, one for each discharge-pipe, arranged within convenient access of the attendant, substantially as and for the purposes set forth.

3. As a means for extinguishing fires, the combination, with a series of apartments, of a boiler, a series of discharge-pipes communicating with the boiler and opening into said apartments, a series of stop-cocks adapted to close said pipes, they being situated within convenient reach of the attendant, and a blowing mechanism, also within convenient reach of the attendant, and arranged and operating substantially as and for the purposes set forth.

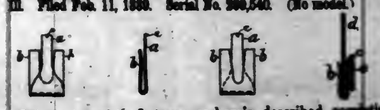
4. As a means for extinguishing fires, the combination, with a series of apartments, of a boiler, a series of discharge-pipes communicating with the boiler and opening into said apartments, a series of stop-cocks, *c*, which permit the steam to be rapidly exhausted from the boiler through one or more discharge-pipes, means for increasing the supply of water in the boiler while said valves are open, and means for forcing air to the furnace at the same time, whereby a high pressure of steam can be maintained while stop-cocks *c* are open, all of said operating devices being within convenient reach of the attendant, substantially as set forth.

408,760. CORSET. JOSEPH KOCH, New Haven, Conn., assignor to Lewis Schiele & Company, New York, N. Y. Filed Mar. 25, 1889. Serial No. 304,643. (No model.)



Claim.—In a corset divided at the back, each edge provided with the usual stays, eyelets, and lacings, the combination therewith of a vertical flap, D, over said lacings and connected at each edge to the respective sides of the corset by elastic connections, substantially as and for the purpose described.

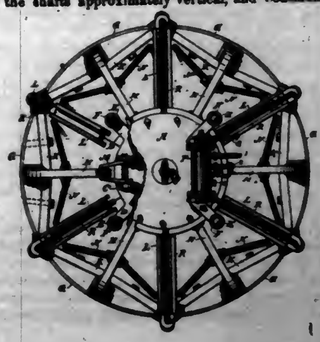
408,761. NECKTIE-FASTENER. WILLIAM H. KRAMER, Chicago, Ill. Filed Feb. 11, 1889. Serial No. 299,540. (No model.)



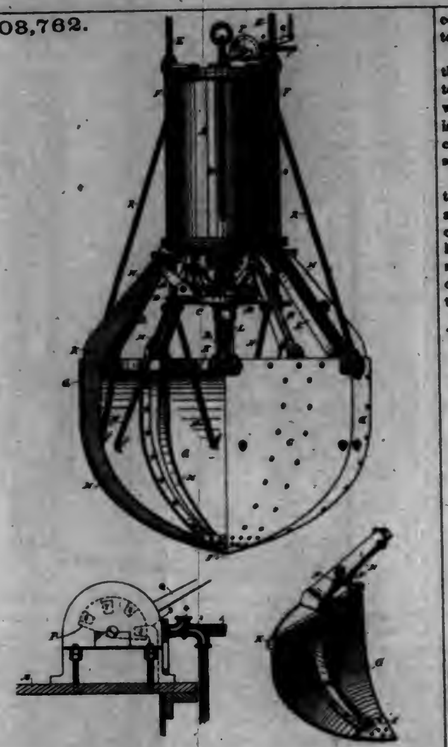
Claim.—A necktie-fastener, as herein described, consisting of a single piece of sheet metal doubled upon itself and cut away so as to form three spring-arms, of which the center one is the longest and forms one side of the device, and is of about one-third of the width of and has a base as wide as the entire device, and is provided at its top with a hook, *c*, and of which the lateral arms are on the opposite side of said central arm, are of about the width of said central arm and lower than it, have vertical edges, and a slot between them extending to near the lower edge of the device, substantially as specified.

408,762. EXCAVATOR. ISAAC P. LANNING, Ione, Cal. Filed Aug. 30, 1888. Serial No. 284,151. (No model.)

Claim.—1. In an excavator, the concave spheroidal segments having their upper edges journaled on supporting-shafts about a horizontal circle and their points presented downwardly, so as to be opened and closed with a common center, said sections having the portion nearest the shafts approximately vertical, and continuing from the



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shoulder in the form of a flattened curve toward the point, substantially as herein described.

2. In an excavator, the flattened segments having their bases upward and suspended upon journal-shafts about the periphery of a horizontal circle, the points presented downwardly so as to close at a common center, in combination with the removable shoes, dovetailed or attached to the points, substantially as herein described.

3. In an excavator, the sections journaled upon horizontal shafts around a circle, with the points presented downwardly so as to close toward a common center and form a flattened hemisphere, with central ribs extending from the points up to the upper edges of the sections, and having the arms or continuations H extending inwardly, in combination with the vertically-moving cross-head and the connecting-rods uniting said cross-head with the inwardly-inclined arms, substantially as and for the purpose herein described.

4. The segments forming the excavator, having journal-shafts extending across the upper edges and turning in journal-boxes in arms which extend downwardly and outwardly from the lower cylinder-head, curved strengthening-ribs extending from the point to the top of each section, and having inwardly-projecting extensions H, in combination with the cylinder A, piston and piston-rod, the cross-head secured to the lower end of the piston-rod, and the connecting-rods M, uniting the cross-heads with the arms, substantially as and for the purpose herein described.

5. The bucket-sections having their points presented downwardly and their bases supported upon horizontally-journaled shafts turning in boxes in arms which extend downwardly and outwardly from the lower cylinder-head, said journal-shafts having the centers bent inwardly and secured to the top of the sections, so as to act as transbraces to strengthen the upper edges of the buckets, substantially as herein described.

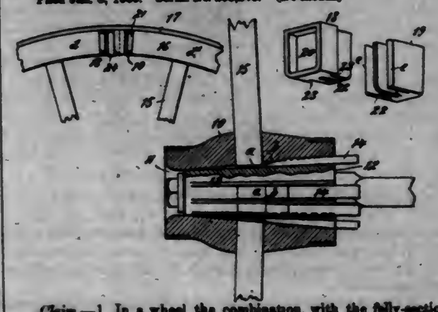
6. The vertically-suspended cylinder with the piston, piston-rod, cross-head, and guides, the radial arms projecting downwardly and outwardly from the lower end of the cylinder, and the journal-boxes fixed to the arms, as shown, in combination with the flattened hemispherical sections having shafts the journals of which turn in these boxes, and the extension-ribs H, together with the connecting-rods M, whereby the arms H are actuated with a resultant motion derived from the vertical movement of the cross-head, substantially as herein described.

7. The connecting-rods M, made V-shaped and having the apex connected with the arms H and the open ends fulcrumed or journaled to the cross-head, substantially as herein described.

8. The circularly-arranged segments journaled at the top so that their points meet at a common apex at the bottom, the arms or extensions H, connecting-rods M, and the cross-head, in combination with the cylinder A, piston, and piston-rod by which the cross-head is actuated, and a valve whereby air or steam is admitted to act successively below and above the piston and close and open the bucket-sections, substantially as herein described.

9. A dredger or excavator consisting of the segments journaled to open and close about a common apex at the bottom, lever-arms H, and connecting-rods M, in combination with a vertically-suspended cylinder, a piston, and piston-rod having at its lower end a cross-head, to which the connecting-rods M are journaled, and a valve mechanism whereby steam or air is first admitted below the piston to close the bucket-sections, and is then transferred above the piston to open the bucket-sections, substantially as herein described.

408,763. VEHICLE-WHEEL. JOHN O. LEEK, Glen Elder, Kans. Filed Jan. 3, 1889. Serial No. 295,573. (No model.)



Claim.—1. In a wheel, the combination, with the felly-sections forming the felly-circle of the tire, of clips secured on the approaching ends of the fellies, provided with spaced teeth adapted to interlock when brought together, and a wedge driven upward between one or more of the teeth and the wall of the recess receiving the same, substantially as shown and described.

2. In a wheel, the combination, with the felly-sections *d d*, of the metal clips secured on the meeting ends thereof, said clips consisting each of a body portion formed with a cavity, 20, adapted to receive the ends of the fellies, projecting teeth 22, and spaces 23, said teeth adapted to interlock when brought together, and wedges adapted to be driven up between one or more of the teeth 22 and the wall of the recess receiving the same, substantially as shown and described.

3. The combination, with the hub of a wheel having a tapering bore, spokes passing through the hub into the said bore, and the felly and the tire, of a conical or tapering thimble provided with longitudinal exterior ribs vanishing at the smaller end of the thimble, and wedges driven upon the thimble between the ribs and beneath the spokes, said wedges provided with a flat edge resting normally under the spokes and a tapering edge adapted to engage the spokes when the wedges are driven in, substantially as and for the purpose described.

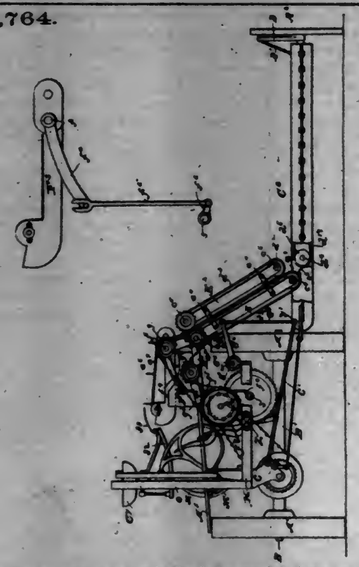
4. The hereinbefore-described improvement in wheels, consisting of a hub having a tapering bore, a conical thimble inserted in said bore, provided with exterior longitudinal inclined ribs, wedges inserted between the ribs, spokes projected from the hub and bearing on the inner ends of said wedges, felly-sections attached to the outer ends of the spokes, forming a felly-circle, metal clips secured on the approaching ends of the felly-sections, provided with outer spaced integral teeth, the teeth of the sections interlocking when brought together, a tire surrounding said felly-sections, and wedges inserted between one or more of the teeth and the walls of the opposing recesses, all arranged substantially as and for the purpose described.

408,764. HARVESTER. SAMUEL D. MADDEN, Miamisburg, Ohio, assignor to Mary Madden, Sarnia, Ontario, Canada. Filed July 9, 1888. Serial No. 171,136. (No model.)

Claim.—1. The combination, with the grain-platform frame, of a grain-elevator composed of upper and lower frames connected together at their forward sides only by means of hinges, which permit the upper frame to accommodate itself to the mass of grain being elevated, and each provided with a positively-driven traveling grain-carrying apron, and driving-gears connecting the upper apron-drums at the forward sides of the elevator-frames, whereby the upper frame may move away from the lower frame at the rear side to accommodate the grain without disengaging the driving-gears, substantially as described.

2. The combination of the platform-frame provided with a heri-

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zontal grain-carrying apron, an inclined elevator-belt, between which and the horizontal apron there is an open throatway, and loose flaps upon the elevator-apron passing through the said throatway, substantially as set forth.

3. The combination, with two traveling grain-carrying aprons arranged at angles to each other and with their ends adjacent to each other and separated by a throatway, of flexible strips e^3, carried by one of the said grain-carrying aprons to bridge the said throatway, substantially as described.

4. The combination, with the binder-frame and a platform-frame, of an intermediate frame pivotally connecting the binder and platform frames and composed of lateral bars *b*, pivoted both to the binder-frame and to the platform-frame, and the diagonal bars b^3, arranged between the bars *b* and pivoted to the binder-frame in line with the pivotal connections of the bars *b* therewith, substantially as described.

5. The combination of the table upon which the grain is delivered by the elevators, the shaft *f*, arranged above the table, the bracket b^3, supported on the shaft, the frame F^3, pivotally connected with the bracket, gear-wheels arranged between the said shaft and a shaft carried by the said frame, and a conveyer-chain driven by the last-named shaft, substantially as set forth.

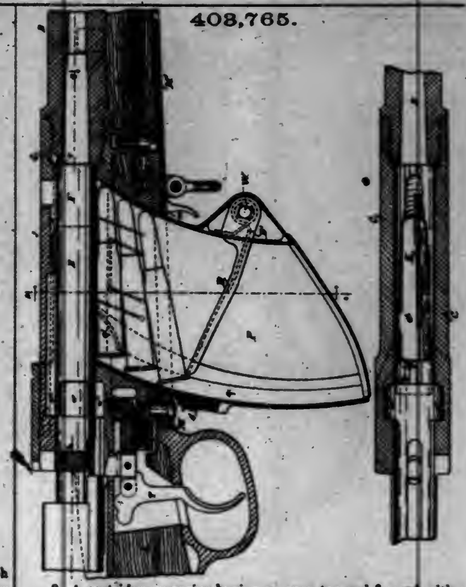
408,765. MAGAZINE FOR FIRE-ARMS. PAUL MAUSER, Oberndorf-on-the-Neckar, Wurtemberg, Germany, assignor to the Waffenfabrik Mauser, same place. Filed July 3, 1888. Serial No. 278,904. (No model.) Patented in Belgium Apr. 24, 1888, No. 81,886; in England May 11, 1888, No. 7,045; in Italy June 30, 1888, No. 23,598/335, and in Spain Aug. 20, 1888, No. 8,261.

Claim.—1. A cartridge-magazine consisting of a receptacle or cup adapted for direct attachment to the gun, having an open top and formed with a pocket or extension at the lower portion of its front side, in combination with a lever pivoted to said receptacle in said pocket and arranged to vibrate within the receptacle for pressing up the cartridges, and a spring pressing said lever upwardly, whereby the lever and spring are necessarily removable from the gun with the magazine.

2. A cartridge-magazine consisting of a receptacle having an open top curved at its front and rear sides in eccentric circular arcs in order that the cartridges shall be supported one upon another at the base and by tangential contact of their bullet ends with the eccentric front side of the receptacle, and the receptacle formed with a pocket or extension at the lower portion of its front side, in combination with a lever pivoted in said pocket and arranged to vibrate within the magazine for pressing up the cartridges, and a spring in said pocket for pressing said lever upwardly.



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3. A cartridge-magazine having an open top and formed with a fixed catch-tooth upon its exterior, in combination with a pivoted lever working within the magazine for pressing up the cartridges, a spring pressing said lever upwardly, a rotatively-mounted spindle to which said lever is fixed and which projects outside of the magazine, and an arm outside of the magazine fixed to said spindle, elastic in lateral direction, and arranged to engage with said catch-tooth by reason of said elasticity in order to hold said lever down against the tension of its spring and thereby throw the magazine out of operation.

4. A cartridge-magazine having an open top and provided with spring-flaps at its top on opposite sides, with their upper edges bent inwardly, formed by means of incisions in the material of its sides, and with stops or abutting shoulders on the sides of the magazine and on said flaps for preventing the pressing in of the flaps beyond the remaining portions of the sides of the magazine.

5. A cartridge-magazine having an open top and provided with spring-flaps of inverted-U shape at its top, formed by means of incisions in the material of its sides, and with stops for preventing the pressing in of said flaps beyond the remaining portions of the sides of the magazine, formed by oblique overlapping portions of said incisions.

408,766. SLEIGH. FELIX J. MEYER, Ruby Hill, Nev. Filed Oct. 6, 1888. Serial No. 287,266. (No model.)

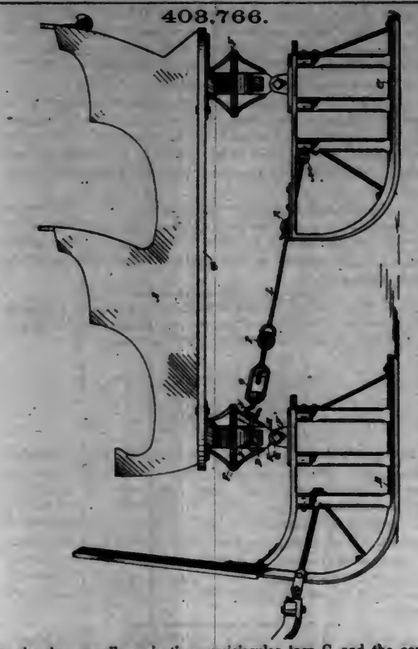
Claim.—1. In a sleigh, the two sets of runners supporting the front and rear ends of the body, respectively, in combination with the fifth-wheels and the king-bolts, by which each set of runners is connected with the sleigh-body, and the diagonal connecting-links L and turn-buckles by which the front and rear sets of runners are connected together, substantially as herein described.

2. In a sleigh, the front and rear sets of runners connected with the body of the sleigh by king-bolts and fifth-wheels, and the links or rods having their rear ends connected with the front of the rear set of runners and their front ends connected with the rear of the forward set of runners at a point above the plane of connection with the rear runners, substantially as herein described.

3. In a sleigh, the two sets of runners supporting the front and rear ends of the sleigh-body, the transverse bolsters, king-bolts, and fifth-wheels through which connection is made, and the hinged joints by which the ends of the bolsters are connected with their respective sets of runners, in combination with the connecting rods or links having their rear ends attached to the front portion of the rear sets of runners below the horizontal plane of the hinged joint and their front ends connected with the diagonally-opposite rear portions of the front runners at points above the level of the connections with the rear runners, substantially as herein described.

4. In a sleigh, the two sets of runners supporting the front and rear ends of the body, the transverse elastic bolsters, through the center of which the king-bolts of the two sets of runners pass, the clamps within which the outer ends of the bolsters are secured, having the corresponding flanges *h* and sockets *h'*, the yoke *j*, attached to each body part, the cam-levers pivoted to the yoke, and the washers located between the body parts of the coupling, all substantially as described.

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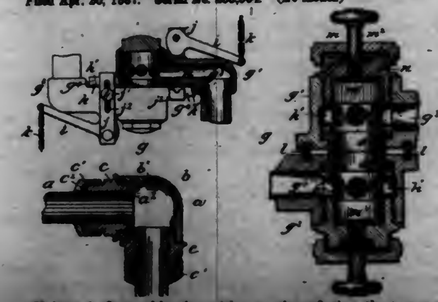
ing the downwardly-projecting semicircular legs G, and the corresponding upwardly-curved projecting legs F, fixed upon the runners, the pins by which the two are connected together, and the concave support K, fitted upon the upper curved portion of the legs F, substantially as herein described.

5. In a sleigh, the front and rear sets of runners supporting the front and rear ends of the sleigh and turning beneath them by means of king-bolts and fifth-wheels, elastic transverse bolsters having their ends hinged to the runners, as shown, in combination with the diagonal links uniting the opposite angles of the two sets of runners, the turn-buckles by which the length and tensions of the links are regulated, and the transverse turn-buckle for taking up the slack in making short turns, substantially as herein described.

6. In a sleigh, the two sets of runners supporting the front and rear ends of the sleigh-body, the king-bolts, the fifth-wheels, the elastic bolsters supported by hinged joints upon the runners, in combination with the links crossing diagonally, and connected, respectively, with the front and rear opposite sides of the two sets of runners, the adjusting and compensating turn-buckles, and the connecting-chains uniting them with the front ends of the rear set of runners, substantially as herein described.

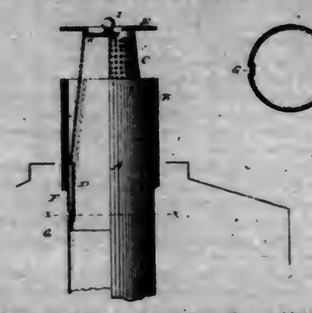
7. The double sets of runners with bolsters, and side rails secured to the ends of the bolsters, in combination with the independent detachable body, the latches attached to the body, and engaging-legs by which the body is secured to the runners, substantially as herein described.

408,767. PIPE-COUPLING. OSCAR J. MEYER, Hartford, Conn. Filed Apr. 20, 1887. Serial No. 235,504. (No model.)



Claim.—1. In combination with a section of pipe, the two-part coupling made up of the body parts f f^3, having on their bearing-

408,768. CENTRAL-DRAFT LAMP. JOHN C. MILLER, Meriden, Conn., assignor to the Meriden Brass Company, same place. Filed Dec. 17, 1888. Serial No. 293,230. (No model.)



Claim.—1. In a central-draft lamp, the combination of the central draft-tube, and an air-distributer supported by said tube and movable vertically with relation thereto, the distributer and the said tube, the one constructed with a vertical groove and the other with a corresponding projection adapted to work in said groove, and whereby limited vertical movement is permitted said distributer, substantially as and for the purpose described.

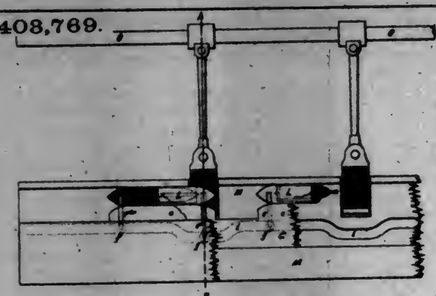
2. The combination of the central draft-tube, A, and an air-distributer, C, supported by said tube and vertically movable with relation thereto, the said tube and distributer, the one constructed with a vertical groove and the other with a corresponding projection adapted to limit the extent of vertical movement of said distributer, the upper end of the said distributer recessed and provided with a handle, substantially as described.

3. The combination of the central tube, A, and an air-distributer, C, arranged therein for vertical movement, the said tube and distributer, the one constructed with a vertical groove and the other with a corresponding projection adapted to limit the extent of vertical movement of said distributer, the said distributer diminishing in diameter toward its upper end, with a button, E, detachably secured to the upper end of said distributer, substantially as described.

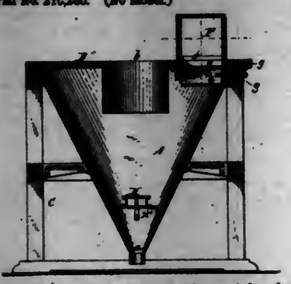
408,769. NARROW-WARE LOOM. AUGUSTO MORAES, Lisbon Portugal. Filed June 21, 1888. Serial No. 277,643. (No model.) Patented in Portugal Mar. 14, 1888, No. 1,225, and in England May 5, 1888, No. 6,718.

Claim.—The combination, with the lay or lays, of the stationary shuttle-box provided with a cam-groove, a shuttle or shuttles in said box, and the reciprocatory rule provided with an elevated rest or rests movable therewith, on which the shuttle or shuttles are supported, provided with projections which engage said cam-groove, substantially as described.

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408,770. DUST-COLLECTOR. ORVILLE M. MORSE, Jackson, Mich., assignor to the Knickerbocker Company, same place. Filed Oct. 14, 1886. Serial No. 216,285. (No model.)



Claim.—1. The combination, with the peripheral wall of the separating-case, of a head applied to one end of said wall and provided with an opening near the periphery thereof, and an external tangential inlet-spout communicating with said opening and delivering the dust-laden air into the case through said opening in the head thereof, substantially as set forth.

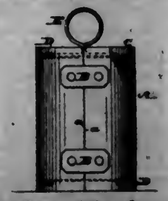
2. The combination, with the peripheral wall of the separating-case, of a head applied to one end of said wall and provided with an opening near the periphery thereof, an external inlet-spout communicating with said opening, and a deflector arranged within the separating-case opposite said opening and deflecting the entering current tangentially, substantially as set forth.

3. The combination, with the peripheral wall of the separating-case, of a head applied to one end of said wall and provided with an opening near the periphery thereof, an external inlet-spout communicating with said opening, and a reversible deflector arranged within the separating-case opposite said opening, substantially as set forth.

4. The combination, with the tapering separating-case having an imperforate peripheral wall and provided with an external tangential inlet-spout, a central opening for the escape of the purified air at its large end, and a dust-discharge opening at its apex, of a deflector arranged centrally within the separating-case below the air-inlet spout and above the dust-discharge opening, whereby the air-current entering the case through the dust-discharge opening is intercepted, substantially as set forth.

5. The combination, with the tapering separating-case provided with an external tangential inlet-spout and having a central opening for the escape of the purified air at its large end and a dust-discharge opening at its small end, of a central deflecting-disk, H, and an annular deflector, H', arranged one above the other within the separating-case below the air-inlet spout and above the dust-discharge opening, substantially as set forth.

408,771. FIRE-KINDLER. WILLIAM R. MYERS, Haddonfield, N. J. Filed June 14, 1888. Serial No. 277,073. (No model.)



Claim.—1. A fire-kindler consisting of an expansible body with the ends of the same fastened, forming a separable joint, an expansible plate or post arranged diametrically in the body, and closing-heads, said post resting against the inner sides of the body, so that when it expands it presses the sides of the body and opens the joints thereof, substantially as and for the purpose described.

2. A fire-kindler and fuel-block consisting of a casing of a piece of sheet metal having its adjacent edges connected by straps, an indestructible filling saturated with inflammable material, the separate heads C on said filling and within said casing, and the wires D, passing through the chines of said casing outside of said heads and having their ends bent, said parts being combined substantially as described.

3. A fire-kindler consisting of an expansible body with its ends made separable, an expansible post or plate arranged diametrically in said body, closing-heads at the ends of the body, and wires passed through said body outside the heads thereof, substantially as and for the purpose described.

408,772. JOINT FOR FOLDING CHAIRS. AUBURN F. OLD, Brooklyn, assignor to the Andrews Manufacturing Company, New York, N. Y. Filed Sept. 24, 1888. Serial No. 286,199. (No model.)



Claim.—The herein-described pivot for folding chairs, consisting of two plates, E F, having projecting ears therefrom, by which the plates may be secured, the said plates constructed the one with a central stud to form the pivot and the other with a corresponding central recess to form the seat for the pivot, one plate constructed with studs L M on its face, the other plate constructed with recesses J K concentric to the pivot, and corresponding to the said two studs L M, the ends of the said recesses forming, respectively, shoulders *a b*, against which the said studs may come to a bearing, substantially as described.

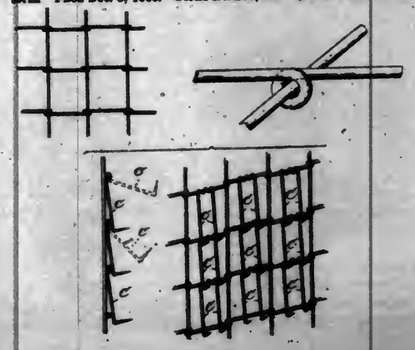
408,773. ROCKING-CHAIR AND CARRIAGE. ARNOLD PAHLOW, Philadelphia, Pa. Filed Aug. 1, 1888. Serial No. 281,615. (No model.)



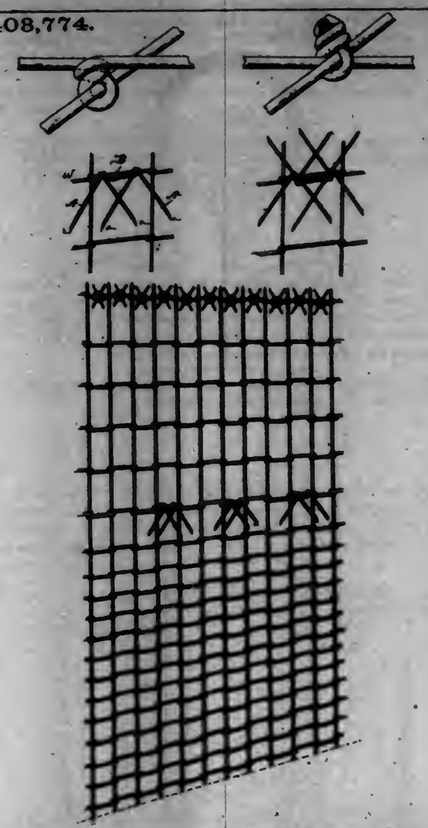
Claim.—1. The herein-described convertible chair and carriage-body, consisting of two body-sections hinged together, one of said body-sections having corner posts or uprights provided with heads, rockers having sockets to receive said heads, and caps or blocks for closing the sockets at the forward ends of the rockers to secure the heads in the said sockets, substantially as described.

2. In a convertible chair and carriage-body, the combination of the two body-sections hinged together, one of said sections having corner posts or uprights provided with heads, of rockers having sockets to receive said heads, and caps or blocks hinged in the rockers at the forward ends of the sockets for securing the heads in place and permitting the removal thereof, substantially as described.

408,774. WIRE-NETTING. ALFRED H. PEARSON, Northcote, Victoria. Filed Dec. 5, 1888. Serial No. 292,731. (No model.)



408,774.



Claim.—1. Wire-netting more especially designed for fencing, made with a square mesh, in combination with barbs pivotally connected with the cross-wires and arranged to subdivide the meshes of the netting, substantially as and for the purposes specified.

2. Wire-netting more especially designed for fencing, made with a square mesh, in combination with barbs pivotally connected with the cross-wires and arranged to project and swing in one direction only and to subdivide the meshes of the netting, substantially as and for the purposes specified.

3. In a wire fence, the combination, with the fence-posts, of an open-mesh wire fabric composed of interconnected woof and weft wires, the meshes of one portion of the fabric being smaller than those of the remaining portions, substantially as and for the purposes specified.

4. In a wire fence, the combination, with the fence-posts, of an open-mesh wire fabric composed of interconnected woof and weft wires, the meshes of the fabric being larger at the upper end of the post than at the foot thereof, substantially as and for the purposes specified.

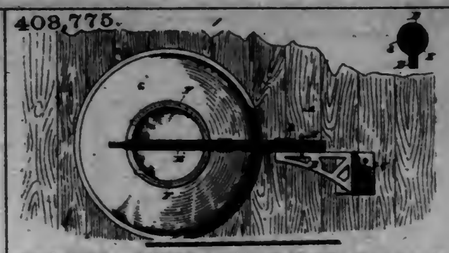
5. A wire fence composed of wire-netting the mesh of which varies from top downward, the larger meshes being at top of the fence, in combination with barbs for the larger meshes, substantially as and for the purposes specified.

6. A wire fence composed of wire-netting the mesh of which varies from top downward, the larger meshes being at top of the fence, in combination with barbs for the larger meshes, said barbs being pivotally connected with the cross-wires and arranged to subdivide the meshes, as described.

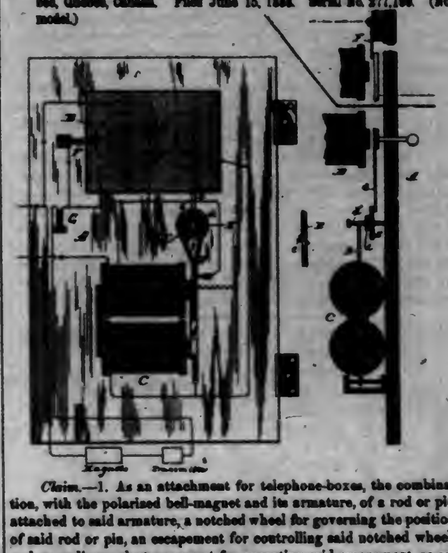
408,775. FOLDING BRACKET. JAMES H. PILSON, Washington, D. C. Filed Dec. 1, 1888. Serial No. 292,372. (No model.)

Claim.—The combination, with a swinging supporting-arm provided with a sleeve having an interior groove, of a basin-supporting rod engaged with said sleeve and provided with a feather to engage said groove, a clamp secured to said arm for removably holding a basin, and a stop-pin secured to said rod to limit its rotary movement, substantially as set forth.

408,775.



408,776. INDIVIDUAL CALL AND SWITCH. EDWIN POPE, Quebec, Quebec, Canada. Filed June 15, 1888. Serial No. 277,169. (No model.)



Claim.—1. As an attachment for telephone-boxes, the combination, with the polarized bell-magnet and its armature, of a rod or pin attached to said armature, a notched wheel for governing the position of said rod or pin, an escapement for controlling said notched wheel, and an ordinary electro-magnet for operating said escapement, as set forth.

2. The combination, with the bell-magnet and armature in an ordinary telephone-box, and with the telephone, of a short circuit around the telephone controlled by the position of the armature, a rod or pin attached to the armature normally held by a notched wheel, so as to close the short circuit, and an electro-magnetic escapement in the main line operatively connected with the wheel, as and for the purpose set forth.

3. In a unison device for individual telephone-calls, the wheels having corresponding notches, the escapement for rotating the same step by step, two lugs attached to each of said wheels, located one upon each side of the corresponding notches and one behind the other, and a detent-rod, as *e*, adapted to impinge against said lugs to check the movement of the wheels, as set forth.

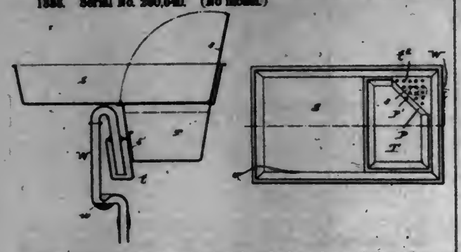
4. The combination, with the bell-armature and the notched wheel controlling its movements, of a stop, e^2, alongside the notches 8, as and for the purpose set forth.

5. In a unison device for individual telephone-calls, the wheels having corresponding notches, the escapement for rotating the same step by step, two lugs attached to each of said wheels, located one upon each side of the corresponding notches and one behind the other, a detent-rod, as *e*, adapted to impinge against said lugs to check the movement of the wheels, and retaining pieces or lugs to limit the lateral movement of said rod *e*, as and for the purpose set forth.

6. In an individual call apparatus for telephones, the magnet C, located in the main circuit, in combination with the polarized bell-magnet, also located in the main circuit, the armature of said magnet C being arranged to close a short circuit around the bell-magnet, as described.

7. In an individual call apparatus for telephones, the magnet C, located in the main circuit, in combination with the polarized bell-magnet, also located in the main circuit, the notched wheel E, operated by magnet C, the detent-rod *e*, controlled by said wheel and connected with the armature of the bell-magnet, a contact-strip, F, also connected with the bell-magnet armature, and a short circuit around the calling and speaking instruments controlled by said contact-strip, as and for the purpose set forth.

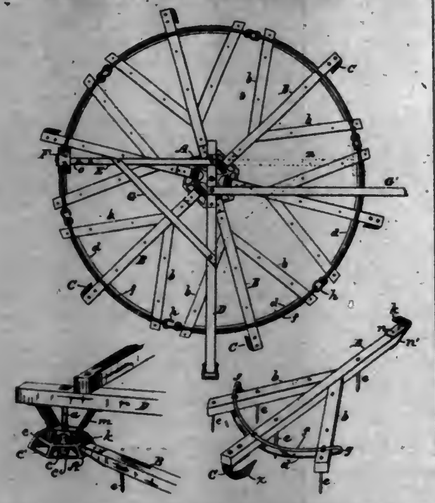
403,777. SINK. JOHN P. PUTNAM, Boston, Mass. Filed Jan. 13, 1888. Serial No. 260,642. (No model.)



Claim.—1. A sink provided with a flush-tank consisting of a receiving-chamber and a discharging-chamber, the former leading horizontally into the latter through a vertical opening or passage-way reaching to the bottom of said receiving-chamber and narrower than said receiving-chamber, and the latter furnished with an automatic discharge-siphon, the operative capacity of the passage-way between the two chambers during the last part of the operation being smaller than that of the siphon, substantially as described.

2. A flush-tank consisting of two chambers, a receiving-chamber and a discharging-chamber provided with a siphon discharge-pipe, the said receiving-chamber leading horizontally into said discharging-chamber through a vertical opening or passage-way, while the bottom of said discharging-chamber is sunk below the level of the bottom of said receiving-chamber, and the inlet-mouth of said siphon is in said sinkage, the operative capacity of the passage-way between the two chambers during the last part of the operation being smaller than that of the siphon, substantially as described.

403,778. ROTARY HARROW. ROLAND RAKESTRAW, Wyoming, Ill. Filed June 16, 1888. Serial No. 277,205. (No model.)



Claim.—1. In a rotary harrow, the combination, with a draft-beam, of a center piece provided with a central bolt-aperture, a series of division-walls and upper and lower rundles or cross-bars, and a series of harrow-sections provided with hooks to connect with said center piece, substantially as and for the purpose described.

2. The combination, with the center piece of a rotary harrow, of a series of harrow-sections, each of which is provided with a main beam, B, which is provided with a hook at its inward end, a beam, *b*, extending from each side of beam B, curved braces *d*, and rods *f*, provided with loops at their extremities, and hooks for connecting the said sections, substantially as and for the purposes described.

3. In a rotary harrow, a series of beams provided with teeth, said beams being provided with runners fastened to their lower sides and bent inward toward the center of the harrow, substantially as set forth and described.

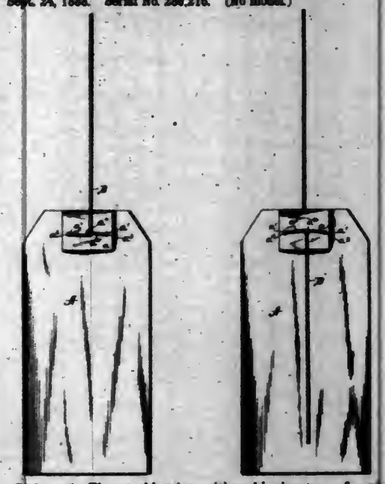
4. The center piece provided with division-walls and bars *c c'*, in combination with the draft-beam provided with the stirrup *m*, which rests on the center piece, and a central securing-bolt, substantially as set forth and described.

408,779. WATCH-CASE PENDANT. EDMOND C. ROBERT and ISIDORA JOSEPH, Waco, Tex. Filed Sept. 22, 1888. Serial No. 286,086. (No model.)



Claim.—The combination, with the pendant provided on its sides with arms, of a stem provided on its upper end with threads and on its lower end with an opening, the collar mounted on the stem and provided with a flange, and a collar located within the pendant and engaging the collar on the stem, substantially as specified.

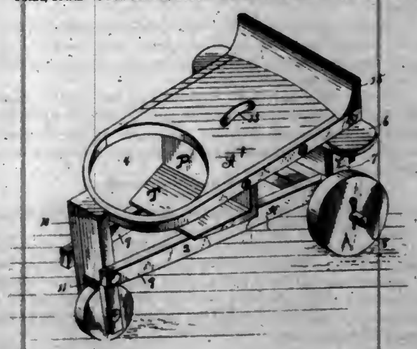
408,780. SHIPPING-TAG. FRED. G. ROTH, Morrice, Mich. Filed Sept. 24, 1888. Serial No. 286,216. (No model.)



Claim.—1. The combination, with a shipping-tag, of a wire having its ends inserted through the end openings in the strengthening-pieces, and one end passed through the center opening and under a loop on the opposite side of the tag, substantially as described.

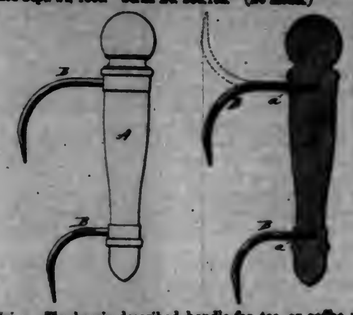
2. The combination, with a shipping-tag, of a wire having its ends inserted through the end openings in the strengthening-pieces, and one end passed through the center opening and under a loop on the opposite side, and the other end passed through the loop a^2, formed by the portion which passes through the center, and forming a bearing for the said end, both ends having a bearing, so as to prevent the wire tearing out the holes in the strengthening-pieces, substantially as described.

403,781. MILKING-STOOL. OLIVER G. SCRIVEN, Strawberry Point, Iowa. Filed Nov. 3, 1888. Serial No. 289,927. (No model.)



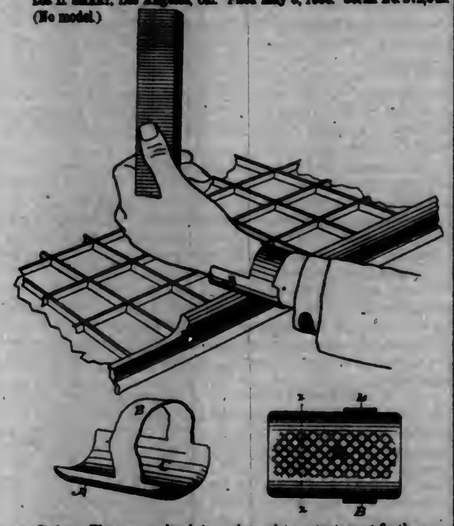
Claim.—In a milking-stool, the combination, with the triangular frame mounted on wheels, of the seat portion provided with the circular opening at its front portion, the interposed vertical guard in rear of the circular opening, and the inclined tilting board in front of the vertical guard and beneath the circular opening, substantially as described.

408,782. HANDLE FOR TEA OR COFFEE POTS. REMBRANDT SMITH, Meriden, Conn., assignor to Manning, Bowman & Company, same place. Filed Sept. 24, 1888. Serial No. 286,102. (No model.)



Claim.—The herein-described handle for tea or coffee pots and like vessels, consisting of the non-metallic body A, and the arms B B, screwed into the body A, one near each end, the projecting ends of said arms flattened and bent to the required angle and adapted to be secured to the vessel, substantially as described.

408,783. COMPOSITOR'S BRACELET WRIST-PROTECTOR. CARLOS L. SHARP, Los Angeles, Cal. Filed May 3, 1888. Serial No. 272,648. (No model.)

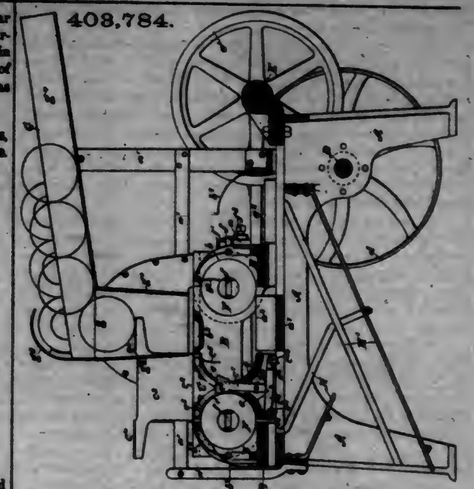


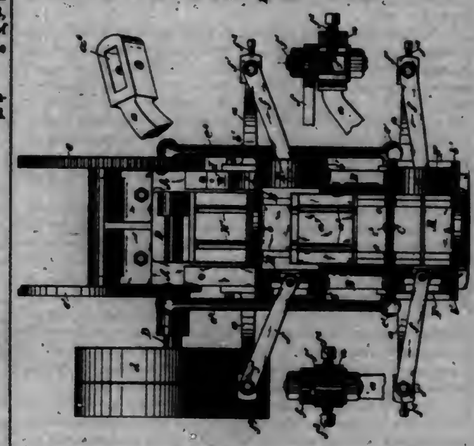
Claim.—The compositor's bracelet wrist-protector set forth, comprising a soft-rubber pad oblong in form having one side flat and provided with a roughened surface, and having the other side concave to fit the wrist, and provided near one end with a broad elastic band to encircle the wrist.

408,784. MACHINE FOR HEADING CANS. WILLIAM H. SMITH, Berkeley, Cal. Filed Nov. 22, 1888. Serial No. 291,593. (No model.)

Claim.—1. In a can-heading machine, the combination of a moving cross-head having a jaw for fitting one side of the can, a movable carriage having a jaw for fitting the other side, whereby the can is held between the jaws and moved with them, said carriage also receiving and carrying the heads, and pressers adapted to force the heads on the cans while the parts are in motion, substantially as described.

2. In a can-heading machine, the combination of a moving cross-head having a jaw for fitting one side of the can, a movable carriage having a jaw for fitting the other side, movable pressers, and connections for operating them through the movement of the carriage, said pressers being seated in the carriage at each end of its jaw for forcing the heads on the can, substantially as described.





3. In a can-heading machine, the combination of a moving cross-head having a jaw for fitting one side of the can, a movable carriage having a jaw for fitting the other side, pressers seated in the carriage at each end of its jaw for forcing the heads on the can, and pivoted toggle-levers operated by the movement of the carriage to operate the pressers, substantially as described.

4. In a can-heading machine, the combination of a stand having fixed side arms, a moving cross-head mounted on said stand and having a jaw for fitting one side of the can, a movable carriage mounted on the stand and having a jaw for fitting the other side of the can pressers seated in the carriage at each end of its jaw for forcing the heads on the can, and toggle-levers pivoted to the pressers and to the fixed arms of the stand, whereby they operate the pressers through the movement of the carriage, substantially as described.

5. In a can-heading machine, the combination of a moving cross-head having a jaw for fitting one side of the can, a movable carriage having a jaw for receiving the other side of the can, said carriage being mounted in the path of the cross-head, whereby it derives its movement therefrom, pressers seated in the carriage at each end of its jaw for forcing the heads on the can, and power-connections with the pressers for operating them through the movement of the carriage, substantially as described.

6. In a can-heading machine, the combination of a moving cross-head having a jaw for fitting one side of the can, a movable carriage having a jaw for receiving the other side of the can, the jaws clamping the can between them, said carriage being mounted in the path of the cross-head, whereby it derives its movement therefrom through the intervention of the can, pressers seated in the carriage at each end of its jaw for forcing the heads on the can, and power-connec-

tions with the pressers for operating them through the movement of the carriage, substantially as described.

7. In a can-heading machine, the combination of a stand having fixed side arms, a moving cross-head mounted on the stand and having a jaw for fitting one side of the can, a movable carriage mounted on the stand and having a jaw for receiving the other side of the can, said carriage being mounted in the path of the cross-head, whereby it derives its movement therefrom, pressers seated in the carriage at each end of its jaw for forcing the heads on the cans, and toggle-levers pivoted to the pressers and to the fixed arms of the stand, whereby they operate the pressers through the movement of the carriage, substantially as described.

8. In a can-heading machine, the combination of a reciprocally-moving cross-head having a jaw on each side, a movable carriage having a jaw in each end and mounted over the cross-head, whereby it lies in the path thereof and derives a reciprocating movement therefrom, pressers seated in each end of the carriage at each end of its jaws, and power-connections with the pressers for operating them through the movement of the carriage, substantially as described.

9. In a can-heading machine, the combination of a stand having fixed side arms at each end, a reciprocally-moving cross-head mounted on the stand and having a jaw on each side, a movable carriage mounted on the stand and having a jaw in each end, said carriage being over the cross-head and in the path thereof, whereby it derives a reciprocating movement therefrom, pressers seated in each end of the carriage at each end of its jaws, and toggle-levers pivoted to the pressers and to the fixed arms of the stand, whereby they operate the pressers through the movement of the carriage, substantially as described.

10. In a can-heading machine, an open-topped stand having supporting-ribs a^3, leaving a discharge-opening for the cans on each side thereof, and the runways H H', communicating with said openings, in combination with a reciprocating cross-head having a jaw on each side, a movable carriage having a jaw in each end and mounted on the stand over and in the path of the cross-head, whereby it receives a reciprocatieg motion therefrom, pressers seated in the ends of the carriage for forcing the heads on the cans, and power-connections with the pressers for operating them through the movement of the carriage, substantially as described.

11. In a can-heading machine, the combination of a reciprocally-moving cross-head having a jaw on each side, a jaw opposing each of said cross-head jaws and separated sufficiently to permit the movement of the cross-head between them, whereby cans are received between the jaws alternately at each end, and pressers for forcing the heads on the cans when confined by the jaws, substantially as described.

12. In a can-heading machine, a jaw for receiving the can and ribs for temporarily supporting the can, in combination with a moving cross-head having a jaw for clamping the can between it and the receiving-jaw, and a top forming a temporary support for the can before it drops between the jaws, substantially as described.

13. In a can-heading machine, a jaw for receiving the can and ribs a^3, for temporarily supporting said can, in combination with a moving cross-head having a jaw for clamping the can between it and the receiving-jaw, and a top on which the can rests before dropping between the jaws, and a fixed plate for pushing the can off the cross-head top by the movement of said cross-head, substantially as described.

14. In a can-heading machine, a jaw for receiving the can and ribs a^3, for temporarily supporting said can, in combination with a moving cross-head having a jaw for clamping the can between it and the receiving-jaw, and a top affording a temporary support for the can, a fixed plate for pushing the can off the cross-head top by the movement of said cross-head, and a runway above for feeding the cans, having an opening for directing them upon the cross-head top, substantially as described.

15. In a can-heading machine, a jaw for receiving the can and ribs a^3, for temporarily supporting said can, in combination with a moving cross-head having a jaw for clamping the can between itself and the receiving-jaw, and a top affording a temporary support for the can, a fixed plate for pushing the can off the top of the moving cross-head, flange-plate c^3, secured to said cross-head and having top flanges, c^4, for temporarily supporting the can above the cross-head top, and a runway for the cans, having an opening for directing them onto the flanges c^4, substantially as described.

16. In a can-heading machine, the open-topped stand A, having the can-supporting ribs a^3, and the movable carriage having a can-receiving jaw and mounted on the stand to move to and from the supporting-ribs a^3, in combination with a moving cross-head mounted on the stand and having a jaw for clamping the can between itself and the receiving-jaw of the carriage, substantially as described.

17. In a can-heading machine, the open-topped stand A, having the can-supporting ribs a^3, and the movable carriage having a can-receiving jaw and mounted on the stand to move to and from the supporting-ribs a^3, in combination with the moving cross-head mounted on the stand and having a jaw for clamping the can between itself and the receiving-jaw of the carriage, said cross-head having a top, c^3, for temporarily supporting the can, the fixed plate for pushing the can off the cross-head top, the supporting-flanges c^4, carried by the cross-head for temporarily supporting the can above the cross-head top, and the runway and opening g, for directing the cans onto the supporting-flanges, substantially as described.

18. In a can-heading machine, the open-topped stand A, having the fixed can-supporting ribs a^3, and the fixed runway G, having the opening g, with back and front guide-plates, g' g^2, in combination with the reciprocally-moving cross-head C, mounted on the stand and having a jaw, c, on each side and a top, c^3, the side plates, c^2, carried by the cross-head and having top supporting-flanges, c^4, on each end, and the movable carriage B, mounted on the stand over the cross-head and having a receiving-jaw, b, at each end, said carriage being in the path of the moving cross-head, whereby it derives a reciprocating motion therefrom, substantially as described.

19. In a can-heading machine, the carriage having a can-receiving jaw in its end, slots b^2 in the ends of its sides, for directing the heads into each end of the jaw, and a groove, b^3, in the top of its sides, for directing the can-heads to the slots, in combination with runways above for the heads and channels for directing the heads from the runways to the grooves b^3 of the carriage, substantially as described.

20. In a can-heading machine, the stand having the frame a', with side plates forming the channels a^2, and the runways g^4, formed by plates supported by frame a' and communicating with the channels a^2, in combination with the carriage mounted on the stand and having a can-receiving jaw, b, the slots b^2 in the ends of the carriage sides, for directing the heads into the ends of the receiving-jaw, and the grooves b^3 in the tops of the carriage sides, communicating with the channels a^2 and the slots b^2, substantially as described.

21. In a can-heading machine, the stand having the frame a', with side plates forming channels a^2, and the runways g^4, formed by plates supported by frame a' and communicating with the tops of the channels a^2, in combination with the movable carriage B, mounted on the stand and having a can-receiving jaw, b, in each end, the slots b^2 in the ends of the carriage sides, for directing the heads into the ends of the receiving-jaws, the grooves b^3 in the tops of the carriage sides, communicating with the channels a^2 and slots b^2, and the stop-flanges b^4, carried by the carriage and traversing the channels a^2, whereby the heads are directed alternately to each end of the carriage, substantially as described.

22. In a can-heading machine, the stand having a frame, a', with side plates forming channels a^2, each of which is divided into a forward and back portion by a rib, a^4, and the runways g^4, formed by plates supported by frame a' and communicating with the tops of the channels a^2, in combination with the reciprocating cross-head C, having a jaw, c, in each side, the movable carriage B, mounted over and in the path of the cross-head, whereby it derives a reciprocating motion therefrom, said carriage having a jaw, b, at each end, slots b^2 in the ends of its sides, and grooves b^3 in the tops of its sides, communicating with the slots and with the channels a^2, and the stop-flanges b^4, carried by the carriage and traversing the channels a^2, whereby the heads are directed alternately to each end of the carriage, substantially as described.

23. In a can-heading machine, the stand having a frame, a', with side plates forming channels a^2, each of which is divided into a forward and back portion by a rib, a^4, and the runways g^4, formed by plates supported by frame a' and communicating with the tops of the channels a^2, in combination with the reciprocating cross-head C, having a jaw, c, in each side, the movable carriage B, mounted over and in the path of the cross-head, whereby it derives a reciprocating motion therefrom, said carriage having a jaw, b, at each end, slots b^2 in the ends of its sides, and grooves b^3 in the tops of its sides, and the stop-flanges b^4, carried by the carriage and traversing the channels a^2, whereby the heads are directed alternately to each end of the carriage, and the pressers F, seated in the carriage ends, substantially as described.

24. In a can-heading machine, the open-topped stand A, having the can-supporting ribs a^3 and the fixed arms a, the frame a', the runway G for the cans and runways g^4 for the heads in the top of the frame, the guide-plates g' g^2 in the opening of the runway G, and the divided channels a^2, communicating with the ends of runways g^4, in combination with the reciprocating cross-head C, mounted on the stand and having a jaw, c, in each side, and a can-supporting top, c^3, and the side flange-plates, c^2, carried by the cross-head and having can-supporting flanges c^4, the movable carriage B, mounted on the stand over and in the path of the cross-head, whereby it receives a reciprocatieg motion therefrom, said carriage having a jaw, b, in each end, a slot, b^2, in the ends of its sides, and a groove, b^3, in the tops thereof for directing the can-heads to each end of the carriage-jaws, and the stop-flanges b^4, traversing the channels a^2, whereby the heads are directed alternately to each end of the carriage, the pressers F, seated in the carriage ends, and the toggle-levers f, pivoted to the pressers and to the fixed arms a of the stand, whereby the pressers are operated through the movement of the carriage, substantially as herein described.

25. In a can-heading machine, the reciprocating cross-head C, and the carriage B, deriving its movement from the cross-head, in combination with the stand and the binding-springs I on the stand-top, and on which the carriage rests and travels, substantially as and for the purpose herein described.

26. In a can-heading machine, the reciprocating cross-head and movable carriage, as described, in combination with the pressers F, seated in the carriage, the fixed arms a, the toggle-levers f, pivoted to the pressers, and the adjustable connection between the outer ends of the toggle-levers and the arms a, consisting of the movable pivot-pins f^* and the end and side set-screws, f^2 f^3, substantially as herein described.

27. In a can-heading machine, the pressers F, consisting of a shell having an inner flange, f^4, and an internally-threaded outer end, the bearing-plate f^5, fitted in the shell and receiving the connecting-pin, the cushion f^7 between the face of the bearing-plate and the inner flange, f^4, of the shell, and the glazed-nut f^6, fitted in the internally-threaded outer end of the shell and bearing against the plate f^5, substantially as herein described.

28. In a can-heading machine, the open-backed receiving-jaws b and the movable clamping-jaws c, between which the cans are held while being headed, in combination with the springs b^7, bearing on the cans through the open back of the receiving-jaws for throwing them out when relieved by the clamping-jaws, substantially as herein described.

29. In a can-heading machine, the movable carriage having open-backed jaws b, and the moving cross-head having jaws c, the cans being held between the jaws b and c, in combination with stationary springs b^7, adapted to press on the cans through the open backs of the jaws b and throw them out when relieved by the jaws c, substantially as herein described.

30. In a can-heading machine, the can-holding jaws b and c, in combination with the springs b^8 c^8 in the tops of the jaws b and c, respectively, for bearing down on and throwing the cans downwardly when relieved, substantially as herein described.

31. In a can-heading machine, the can-holding jaws b and c, in combination with the springs b^7, acting against the backs of the cans, and the springs b^8 c^8, acting on their tops to throw them outwardly and downwardly when relieved, substantially as herein described.

32. In a can-heading machine, the moving cross-head C, having the jaw c on each side, in combination with the pivoted swinging lever c^7, mounted in the cross-head, and having a head, c^8, the edges of which are adapted by the swinging of the lever to project alternately into the jaws c on each side, whereby the cans are thrown out of the jaws when relieved, substantially as described.

33. In a can-heading machine, the stand having the cross-plate a^7, and the moving cross-head C, having the jaw c on each side, in combination with the pivoted lever c^7, mounted in the cross-head, and having a head, c^8, the edges of which are adapted to project alternately into the jaws c on each side, the cross-foot c^9 of the lever, and the pivoted and limited cam-lugs c^{10} in the ends of the foot, adapted to come in contact with the plate a^7 of the stand, substantially as herein described.

34. In a can-heading machine, the carriage B, having the receiving-jaw b for the cans and a space at each end thereof for receiving the can-heads, said space and jaw having the straight planes b^{11}, inwardly-tapering planes b^{12}, and the straight planes b^{13}, respectively, as described, in combination with the cross-head C, having the clamping-jaw c, with its ends formed with straight planes c^{12}, corresponding to the straight planes b^{13} of jaw b and joining the taper planes of the spaces at the ends of said jaws, substantially as described.

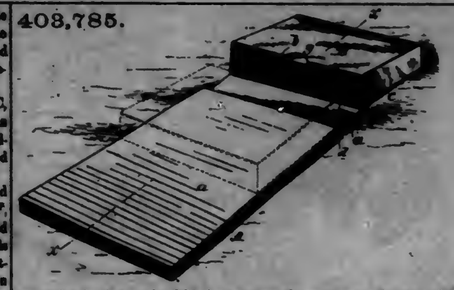
35. In a can-heading machine, the carriage B, having the receiving-jaw b for the cans and a space at each end thereof for receiving the can-heads, said space and jaw having the straight planes b^{11}, inwardly-tapering planes b^{12}, straight planes b^{13}, and inwardly-tapering planes b^{14}, respectively, as described, in combination with the cross-head C, having the clamping-jaw c, with its ends formed with straight planes c^{12} and inwardly-tapering planes c^{13}, substantially as and for the purpose herein described.

403,785. STATIONERY-PACKET. HORATIO W. SOUTHWORTH, Springfield, Mass. Filed Jan. 14, 1889. Serial No. 296,273. (No model.)

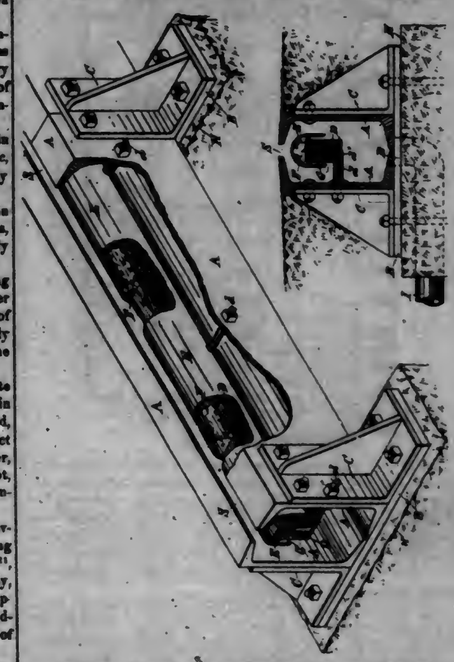
Claim.—1. Supporting and inclosing devices for writing-paper and envelopes, consisting of a book of rigid or semi-rigid material to constitute the base of a pad of writing-paper provided with an extension, C, carrying a case for envelopes having an open end which lies toward and a short distance from the line of the end of the pad, the portion of said extension between the open end of the case and the said end line of the pad being creased, as described, whereby said extension-back may be folded to present the case upon the top of the pad, with its open end closed by said intermediate portion of the extension, substantially as and for the purpose described.

2. In a stationery-packet, the combination, with a back, A, having an extension, C, the intermediate portion, m, of which being adapted to be bent in folding-lines d f, and the case B, formed on said extension, with its closed end coincident with the end of said extension and its open end with the folding-line m, of a pad of writing-paper on said back proper, with its one end coincident with the folding-line d of the said extension, substantially as and for the purpose described.

403,785.



403,786. ELECTRIC RAILWAY. FRANCIS M. SPRAGUE, San Francisco, Cal. Filed Jan. 30, 1888. Serial No. 262,067. (No model.)



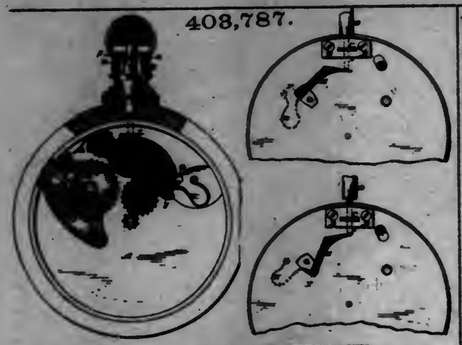
Claim.—1. In an electric-railway conduit, the combination which consists of a conductor having an inverted-U-shaped cross-section, its open side down, a strip of insulating material parallel with and in the interior of said conductor, insulated and supported from the conduit-walls, and insulators interposed between said conductor and said strip.

2. In an electric-railway conduit, the combination which consists of the walls A A of the conduit, the supporting-brackets d d, the strip D of insulating material, the insulators F, and the conductor E, substantially as and for the purpose described.

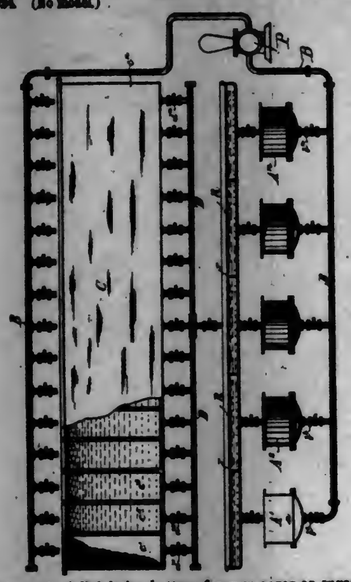
403,787. STEM WINDING AND SETTING WATCH. OSCAR F. STENDAHL, Havana, Ohio. Filed Apr. 12, 1888. Serial No. 270,445. (No model.)

Claim.—The combination of the endwise-moving winding-stem provided with a stop, P, and a spring or springs with the sleeve which is secured inside of the pendant and has an inclined shoulder at its outer end, substantially as set forth.

408,787.



408,788. LIXIVIATING-BATTERY FOR RAW SUGAR. CARL STIEVEN, Vienna, Austria-Hungary. Filed Dec. 20, 1888. Serial No. 294,294. (No model.)



Claim.—1. A lixiviating-battery for raw sugar or sugar mass, consisting of a central cellular vessel for containing the graded lixiviating material, a series of lixiviating-vessels for containing the sugar to be treated, and an interposed distributer having independent connection with each cell of the charging-vessel and in connection with each lixiviating-vessel of the series, whereby the contents of each cell are distributed and applied equally to the sugar in each lixiviating-vessel, substantially as described.

2. A lixiviating-battery consisting of the cellular vessel C, a series of lixiviating-vessels for the sugar to be treated, an interposed distributer, connections from each cell to the distributer, connections from the distributer to each lixiviating-vessel, and a return-pipe connecting with each lixiviating-vessel leading to the vessel C, with connections from said pipe to each cell, substantially as described.

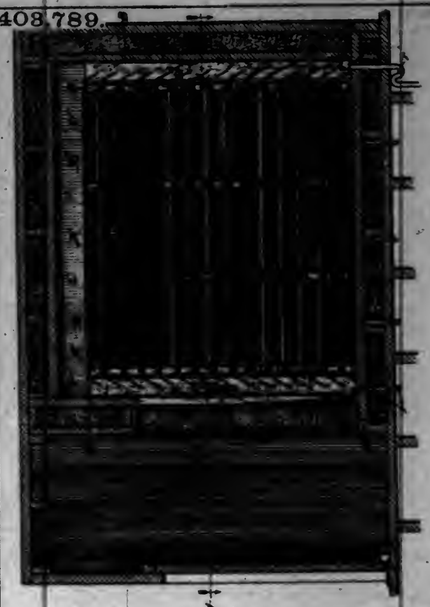
3. In combination with the cellular vessel C and the lixiviating-vessels, an interposed distributer divided into compartments equal in number to the number of lixiviating-vessels, and with a capacity equal to the contents of one cell, substantially as described.

4. In combination, a cellular vessel, C, a series of lixiviating-vessels, a distributer, R, valved pipe-connections from the bottom of each cell to a pipe, D, a valved connection between said pipe and the distributer, and a valved connection from each compartment of the distributer to a lixiviating-vessel, substantially as described.

408,789. REFRIGERATOR. JOHN SWEITZER, Chicago, Ill., assignor of one-half to John H. Rapp, same place. Filed May 1, 1888. Serial No. 272,457. (No model.)

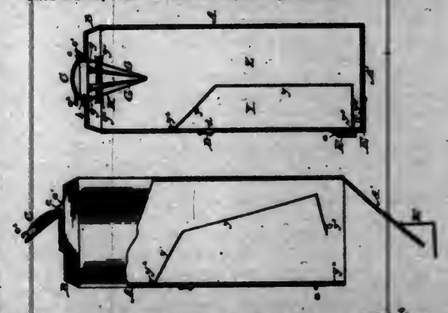
Claim.—1. In a refrigerator, the combination of an inclosure and a series of plates, F, supported in oblique position with reference to the wall, one above the other adjacent to the wall-surface and out of contact with the same along their lower edges, and each plate extending at its upper edge to or beyond the lower edge of the plate above it, the plates affording, with their support and the wall-surface, upwardly-flaring compartments G, to contain ice H, and intercommunicating vertically along the wall, thereby permitting the ice to be supplied to all the said compartments through the uppermost compartment, substantially as described.

408,789.



2. In a refrigerator, the combination of an inclosure and a series of plates, F, removably supported in oblique position with reference to the wall, one above the other adjacent to the wall-surface and out of contact with the same along their lower edges, and each plate extending at its upper edge to or beyond the lower edge of the plate above it, the plates affording their support and the wall-surface upwardly-flaring compartments G, for containing ice H, and intercommunicating vertically along the wall, thereby permitting the ice to be supplied to all the said compartments through the uppermost compartment, substantially as described.

408,790. LETTER-BOX. FARRIS T. TAYLOR, Mamaroneck, N. Y. Filed Jan. 20, 1888. Serial No. 266,019. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the letter-box divided into two compartments and having an opening at the top for the reception of packages, &c., an opening at the side for the reception of letters, an opening at the bottom through which mail-matter from both compartments may be taken, a bottom piece hinged to the lower end of the box and closing the delivery-opening therein, and covers or lids for the openings in the top and side of the box.

2. The combination, substantially as hereinbefore set forth, of the outer casing, the inner casing hinged to the outer casing, the bottom piece of the outer casing hinged to its lower end, said inner casing having an inclined top, and the outer casing being provided at the top with an opening for the reception of parcels and at the side with an opening for the reception of letters.

3. The combination, substantially as hereinbefore set forth, of a letter-box having an opening in its top, a lid to cover said opening, and a series of hinged spring-actuated sharp-pointed guard-bars within the box around its opening.

4. The combination, substantially as hereinbefore set forth, of the letter-box having an opening in its top, the sharp-pointed guard-bars arranged around said opening, the lugs to which the guard-bars are hinged, the pins projecting from the rear faces of the guard-bars, and the annular coiled spring embracing the guard-bars between the pins and normally holding the sharp-pointed lower ends of the guard-bars together.

408,791. MACHINE FOR CUTTING RIGHT AND LEFT THREADS ON NIPPLES. HARRISON H. TAYLOR, Detroit, Mich., assignor to the Michigan Radiator and Iron Manufacturing Company, same place. Filed Sept. 25, 1888. Serial No. 286,262. (No model.)



Claim.—1. In a screw-threading machine, the combination, with a support, of rotatable reciprocatory cutter-spindles located end to end, and a rotatable laterally-movable chuck to hold the work adjacent to the cutters, substantially as set forth.

2. In a screw-threading machine, the combination, with a support, of cutter-spindles, each having a rotatable and reciprocatory movement in said support end located end to end, a rotatable chuck to hold the work adjacent to the cutters, and mechanism to simultaneously reciprocate and rotate such spindles, substantially as set forth.

3. In a screw-threading machine, the combination, with a support, of rotatable cutter-spindles located end to end and provided each with a multiple cutter, a rotatable chuck to hold the work, and means to feed the cutters apart when in engagement with the work, substantially as set forth.

4. In a screw-threading machine, the combination, with a support, of sliding beds A' A^3, connected with a feed-screw having a right and left hand engagement with said beds, worm-gear to rotate said feed-screw, and mechanism to actuate said worm-gear, said beds provided each with a cutter-spindle, substantially as set forth.

5. In a screw-threading machine, the combination, with a support, of sliding beds A' A^3, cutter-spindles journaled in said beds, a rotatable chuck to engage the work, and mechanism to simultaneously reciprocate said beds and rotate said spindles, substantially as set forth.

6. In a screw-threading machine, the combination, with a support, of sliding beds A' A^3, rotatable cutter-spindles journaled in said beds, a feed-screw having a right and left hand engagement with said beds, a chuck to hold the work, and mechanism to rotate said feed-screw and said chuck, substantially as set forth.

7. In a screw-threading machine, the combination, with a support, of a rotatable chuck to engage the work, sliding beds connected with a feed-screw having a right and left hand screw-tapped engagement therewith, cutter-spindles journaled in said beds, worm-gear to rotate said feed-screw, and mechanism to rotate said worm-gear, substantially as set forth.

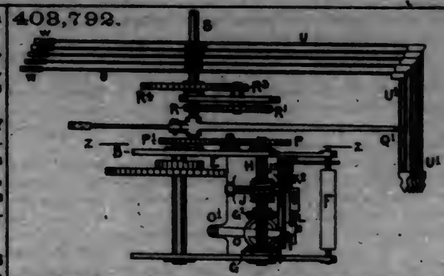
8. In a screw-threading machine, the combination, with a support, of sliding beds A' A^3, a feed-screw having a right and left hand screw-tapped engagement with said beds, a worm-gear loosely mounted upon the feed-screw, a handle having a screw-tapped engagement with said screw, whereby the gear may be tightened thereupon, and a worm meshing with said gear, substantially as set forth.

408,792. MUSIC-LEAF TURNER. THOMAS W. TWELEY, Sheffield, County of York, England. Filed Oct. 9, 1888. Serial No. 287,622. (No model.)

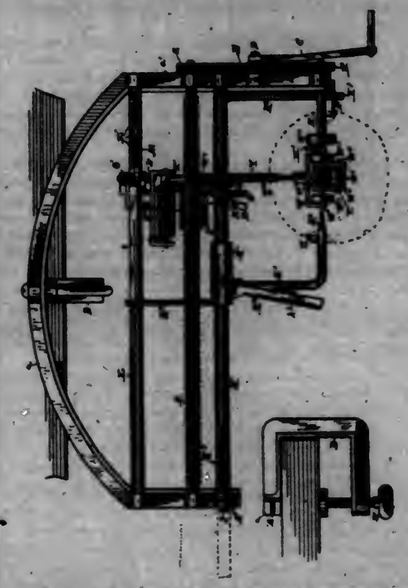
Claim.—1. The shaft S, combined with the series of cranks T and corresponding balanced arms, U, arranged substantially as described, whereby on the rotation of the shaft S the respective projections U' are brought nearer and consecutively into the required position on one side the shaft and further away from the center on the other, for the purpose herein set forth.

2. The combination, with the shaft S, having the series of cranks T and the corresponding number of balanced arms U, having projection U', of the revolving arm Q, and operating-gearing connecting the revolving arm with the shaft having the cranks, substantially as described.

408,792.



408,793. VEGETABLE-PARER. HENRY G. THOMAS, Cheyenne County, Nebr., assignor to William Holt, Denver, Colo. Filed July 21, 1888. Serial No. 280,667. (Model.)



Claim.—1. In a parer, the combination of the vegetable-holding devices with the paring devices, consisting of a movable sleeve, a rod pivotally connected thereto, the knife-holder frame mounted on the end of said rod, and the rollers and knife and its controlling-spring on said frame, all substantially as described.

2. The combination of the vegetable-holding devices, the threaded rod, the sleeve moving thereon, and the knife-supporting spring-controlled rod carried by said sleeve, with the knife-carrying frame mounted on said rod and the guide-rollers and knife mounted in said frame, substantially as described.

3. The combination of the screw-shaft and sleeve thereon, the described paring devices, with the threaded clutch attached to said sleeve and engaging the shaft through an opening in the sleeve, and the dog pivoted on said sleeve and engaging the clutch, all substantially as described.

4. The combination of the frame, the shaft and sleeve, the paring devices, and the revolving brad, with the adjustable brad, its dog K^4, and collar K', substantially as described.

5. The combination of the frame and paring devices, the revolving brad H', and the shaft and sleeve, with the collar K', its dog and brad K^2, and hook K', all substantially as described.

6. The combination of a revolving brad, H', the brad K^2, and the adjustable collar K' and its locking-dog, with the screw-shaft, the collar engaging the same carrying the paring devices and having a projecting arm adapted to engage collar K' upon the completion of the paring operation, substantially as specified.

7. The combination of the movable sleeve with the spring-controlled rod T^2, mounted thereon, the frame mounted on the end of

said rod, the guide-rollers mounted on said frame, and the spring-controlled knife, substantially as described.

8. The combination of the screw-shaft, the sleeve having a threaded clutch engaging said shaft, and the spring-controlled rod pivotally connected to and supported upon said sleeve, with the frame attached to the end of said rod having guide-rollers W^3, the knife mounted in said frame, and the roller W^4, for said knife and its controlling-spring, all substantially as described.

9. The combination of the holding devices for the fruit with a movable sleeve, a spring-controlled rod mounted thereon, the devices for rotating said rod, the frame on the end of said rod carrying guide-rollers, a spring-controlled knife, and a roller-guide therefor, and the spring for retaining said frame in position, substantially as described.

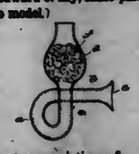
10. The combination of the main frame, the screw-shaft and revolving brad, the gearing for driving the same, and the sleeve having a half-nut or clutch engaging said screw-shaft with spring-controlled rod T^3, carried upon a frame mounted on said sleeve, the sector M, notched bar L, the spring-controlled frame on the end of shaft T^3, and the rollers and spring-controlled knife on said frame, all substantially as described.

11. The combination of the revoluble brad H', having blade H^3, and knife A', secured to the frame with the screw-shaft, the sleeve thereon, and the paring devices carried by said sleeve, substantially as described.

12. The combination of the frame, the screw-shaft I, and brad H', and gearing for driving the same, with the bar L, the sleeve P, having a half-nut or clutch engaging shaft I, and a frame thereon carrying a rod, T^3, provided with a segment, M, engaging bar L, to rotate the rod, the cutting devices on the end of rod T^3, and the shaft J and adjustable collar K' and brad K^3 thereon, all substantially as specified.

13. The combination of the frame, the revoluble screw-shaft I, and brad H', and the fixed rods J and L, with the sleeve P, mounted on shaft I, and having a clutch, S, engaging the same, the spring-controlled rod T^3, mounted on a frame on said sleeve, the knife-bearing frame mounted on said rod and the rollers thereon, and the sleeve K on rod J, its hoop K^1, and the collar K', having arm K^2, brad K^3, and its locking-dog, all constructed and arranged substantially as described.

403,794. NASAL IRRIGATOR. JOHN B. THOMPSON, Boston, Mass., assignor of one-half to Edward O. Ely, same place. Filed Aug. 21, 1886. Serial No. 211,545. (No model.)



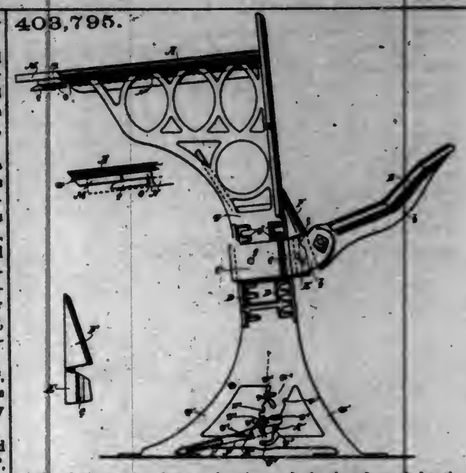
Claim.—A nasal irrigator consisting of a tube having a bulb at one end to enter the nostril, a mouth-piece at the other end to enter the mouth, said tube being bent over upon itself intermediate of its length, substantially as shown, to form a looped portion, *a*, to constitute a liquid-holding well below the said bulb, the opposite ends of the tube extending substantially at right angles with relation to each other from the looped portion *a*, as and for the purpose set forth.

403,795. SCHOOL-DESK. CHARLES R. TOWLE, San Francisco, Cal. Filed July 27, 1888. Serial No. 281,283. (No model.)

Claim.—1. In a school-desk, the sides thereof formed with longitudinal grooves and short intersecting grooves, arranged at right angles therewith, the seat, the clevises or brackets secured to said seat and embracing the sides and having pins or studs projecting from the inner sides and engaging said grooves, whereby said seat is vertically adjusted, and the movable stops E, fitted between the front sides of the clevises or brackets and back of the seat, whereby said clevises or brackets and seat are retained in position after adjustment, substantially as described.

2. In a school-desk, the sides of the desk and the seat having supporting-irons, in combination with a means for connecting the seat to the sides and adapting it to be vertically adjusted, consisting of the clevises or brackets, to which the supporting-irons of the seat are hinged, said clevises or brackets embracing the sides, the longitudinal grooves and short cross-grooves in the sides, the pins or studs in the clevises or brackets fitting in said grooves, and the removable stops E in the front ends of the clevises or brackets for holding their pins in the grooves and locking the seat, substantially as herein described.

3. In a school-desk, and in combination with its sides and the seat, the means for connecting the seat and adapting it to be vertically adjusted, consisting of the clevises or brackets hinged to the seat and embracing and movable on the sides, the longitudinal and cross grooves in the sides, and the studs or pins in the clevises or brackets fitting the grooves, the grooved stops fitting pins in the forward ends

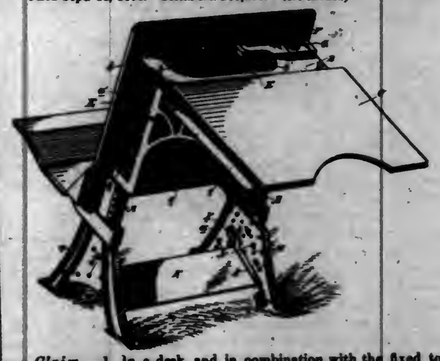


of the clevises or brackets, and acting as locks therefor and for the hinged seat, and the independent movable strip by which the stops are carried, said strip bearing against the forward edge of the side of the desk and against said bracket, to hold the latter in its forward position, substantially as herein described.

4. In a school-desk, its legs having a vertical series of notches on each edge, in combination with the vertically-adjustable foot-rest, having end arms provided with pivot-pins K, and adapted to fit in the notches of different series, whereby the foot-rest may be changed in position and turned into or out of use, and the locking-pins K' on each side of the pivot-pins and adapted to fit in the notches of different series on each edge of the legs, and to hold the foot-rest in position, substantially as herein described.

5. In a school-desk, the arm-rest hinged to the front edge of the desk-top, in combination with the sliding piece O, mounted under the desk-top and adapted to support the arm-rest when turned to position, and the short arm *o*, pivoted on the front of the sliding piece, for supporting the arm-rest when turned back under the desk-top, substantially as herein described.

403,796. SCHOOL-DESK. CHARLES R. TOWLE, San Francisco, Cal. Filed Sept. 11, 1888. Serial No. 285,130. (No model.)



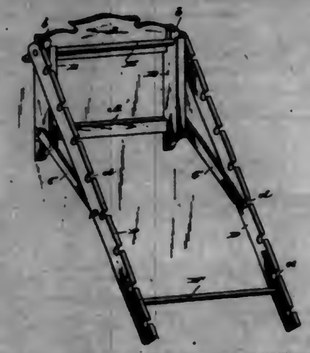
Claim.—1. In a desk, and in combination with the fixed top thereof, an adjustable top fitted and adapted to slide on the fixed top to or from the person and separated from said fixed top, whereby a space is left between them, substantially as herein described.

2. In a desk, the legs thereof having a vertical series of inclined rows of holes and projecting stop-lugs above and below said holes, in combination with the foot-rest having the end arms with projecting pins adapted to fit in said holes, and shorter projecting pins on opposite sides of the longer pins adapted to come in contact with the stop-lugs, substantially as herein described.

3. In a desk, and in combination with the legs thereof, having a vertical series of inclined rows of holes with projecting stop-lugs above and below each row, in combination with the foot-rest having the end arms with projecting pins adapted to fit the holes, and shorter projecting pins to come in contact with the stop-lugs, substantially as herein described.

4. In a desk, the legs thereof having holes more numerous in one leg than in the other and projecting stop-lugs above and below said holes, in combination with the foot-rest having the end arms with projecting pins adapted to fit the holes of the legs, and shorter pins on each side of the first-named pins adapted to come in contact with the stop-lugs, substantially as herein described.

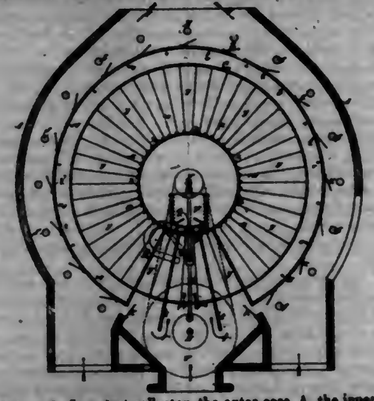
403,797. RACK FOR NEWSPAPER-FILES. CHARLES H. TOWER, Chippewa Falls, Wis. Filed Jan. 24, 1889. Serial No. 297,340. (No model.)



Claim.—1. In a newspaper file holder or exhibiting-rack, the combination of a rigid frame consisting of cross-bars A and A', having vertical side pieces, B B, the upper ends thereof being notched, supporting-bars D, connected to each other by cross-rods E and F, the bars D having notches *d d*, arms C C, pivoted to the outer edges of the vertical bars E and to the inner edges of the supporting-bars D, the parts being combined and organized substantially as shown, and for the purpose set forth.

2. The combination, in a newspaper file or rack, of a rigid frame having notches *b b*, arms C C, pivoted near the lower ends of the side pieces of the frame, the outer ends of said arms being pivoted to the inner sides of the supporting-bars D D, said supporting-bars being connected to each other by rods E F, the lower rod being of less length than the upper rod, substantially as and for the purpose set forth.

403,798. DUST-COLLECTOR. WILHELM TRAUTMANN, Berlin, Germany. Filed Oct. 27, 1887. Renewed Mar. 9, 1889. Serial No. 302,741. (No model.) Patented in England Oct. 19, 1887. No. 14,214.

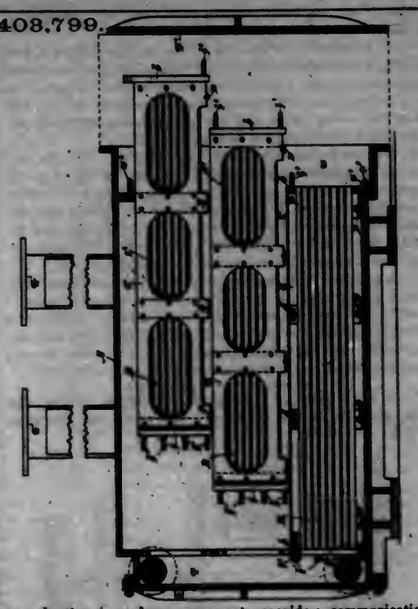


Claim.—1. In a dust-collector, the outer case, A, the inner case, B, having valved openings, the shaft F, and the revolving drum C, inside the case B, provided with the compartments *g* in its periphery, and an air-exhaust operated by the shaft H and the rod *i*, and an induct and the fan D, the whole constructed and combined in the manner and for the purposes set forth.

2. In a dust-collector, as described, the drum C, constructed and intermittently rotated, as described, and combined with the pipes U, the tubes R, and the bellows V, the shaft H and rod *i*, operating said bellows, and the fan D, substantially as and for the purposes set forth.

403,799. SURFACE CONDENSER. BYRON W. TOWLE, San Francisco, Cal. Filed July 6, 1888. Serial No. 279,201. (No model.)

Claim.—1. In a surface condenser, independent sections or groups of tubes, each framed in by side plates and arranged adjacent



to each other in such a manner as to provide a communication between the sections and to permit each section to be independently removed and replaced in the condenser-shell without disturbing the others, substantially as herein described.

2. In a surface condenser, independent sections or groups of tubes, each framed in by side plates, said sections or groups being arranged the one above the other and communicating vertically, and adapted each to be separately removed from and replaced in the condenser-shell, substantially as herein described.

3. In a surface condenser, the independent sections or groups of tubes, each section or group having a tube-sheet at each end and side plates framing it in, whereby each section or group may be separately removed from and replaced in the condenser-shell without disturbing the others, substantially as herein described.

4. In a surface condenser, the independent sections or groups of tubes, each provided with a tube-sheet at each end, side plates by which each is framed in, and cross-plates bolted to the side plates and supporting the tubes between the tube-sheets, substantially as herein described.

5. In a surface condenser, independent sections or groups of tubes, each section or group having a tube-sheet at each end, side plates framing each in, and cross-plates for supporting the tubes between the tube-sheets, and rollers mounted in their lower portion, upon which said sections rest and travel, whereby they may be separately removed and replaced, substantially as herein described.

6. In a surface condenser, and in combination with the shell, independent sections or groups of tubes arranged in vertical series in the shell, each section or group having a tube-sheet at each end, side plates framing each in, and cross supporting-plates for the tubes, and rollers in the lower portion of each section or group, whereby said sections may be moved within the shell and upon each other and adapted to be readily drawn out and pushed in independently, substantially as herein described.

7. In a surface condenser, the shell A, having a back plate with holes and a front flange with fixed studs or bolts, in combination with the independent separately-removable sections or groups of tubes, each having a tube-sheet at its rear end with studs or bolts fitting in the holes of the back plate, and a front tube-sheet with holes fitting over the studs or bolts of the front flange, whereby said sections or groups are supported in the shell, substantially as herein described.

8. In a surface condenser, the shell A, having a back plate with holes and a front flange with fixed studs or bolts, in combination with the independent separately-removable sections or groups of tubes, each having a tube-sheet at its rear end with studs or bolts fitting in the holes of the back plate and a front tube-sheet with holes fitting over the studs or bolts of the front flange, the side plates framing in each section or group of tubes, and the cross-plates supporting the tubes between the tube-sheets, substantially as herein described.

9. In a surface condenser, the independent separately-removable tube sections or groups, in combination with the butt-straps secured

across their fronts and overlapping their adjacent edges, substantially as herein described.

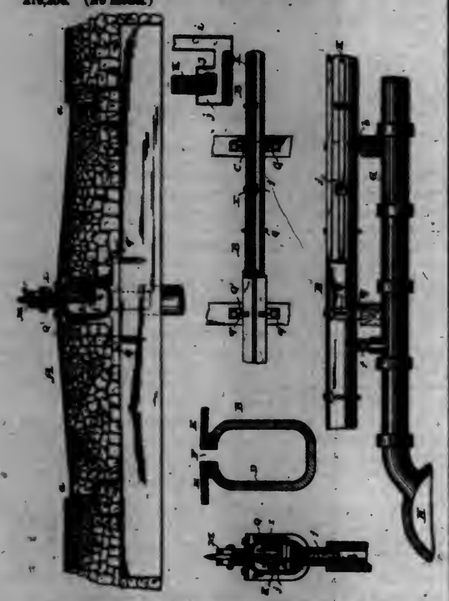
10. In a surface condenser, the shell having fixed studs or bolts on its front, in combination with the independent separately-removable tube sections or groups having tube-sheets with holes fitting over the studs or bolts of the shell, whereby they are secured, and the butt-straps secured across the front of the sections and overlapping their adjacent edges, substantially as herein described.

11. In a surface condenser, and in combination with the shell thereof, the independent separately-removable tube sections or groups arranged in vertical series and each having tube-sheets bolted to the shell, and side plates and cross-plates, as described, whereby each may be slipped in or out without interfering with one another, and the butt-straps bolted across the front of the sections or groups and overlapping their adjacent edges, substantially as herein described.

12. In a surface condenser, the independent separately-removable sections or groups of tubes, each tube having an elongated shape in cross-section, said sections or groups being framed in by side plates and having cross-plates supporting the tubes between the ends, the sections resting upon one another in vertical series, whereby they may be separately slipped in or out, substantially as herein described.

408,800. SLOTTED CONDUIT FOR ELECTRIC CONDUCTORS.

CHARLES J. VAN DEPOELE, Chicago, Ill. Filed June 6, 1888. Serial No. 276,262. (No model.)



Claim.—1. A metallic conduit for electric conductors, having a continuous interior lining of insulating material and a conductor and independent supports therefor within the conduit, substantially as described.

2. A conduit for electric conductors, comprising slotted metallic sections provided with a lining of fibrous material, impregnated with and secured to the inner walls of the said conduit by a plastic insulating compound.

3. A metallic conduit for electric conductors, having a continuous interior lining of insulating material, provided with outlets at suitable distances, and connections between said outlets, and a continuous drain independent of the conduit structure and extending along the line of the conduit, substantially as described.

4. The combination of a conduit inclosing an electric supply conductor or conductors, and formed with outlets therefrom, connections between said outlets and a drain-pipe independent of the conduit structure and extending continuously along the conduit, and connections between the drain-pipe and a suitable main sewer, substantially as described.

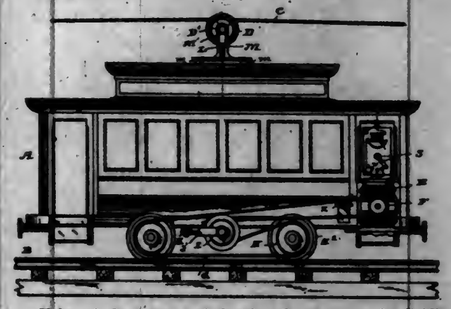
5. A conduit for electric conductors, comprising slotted metallic sections continuously united by suitable joints, a lining of insulating material applied to the inner walls thereof, and independent insulating conductor supports secured within the lining, substantially as described.

6. A conduit for electric conductors, comprising slotted metallic sections continuously united by suitable joints, a lining of insulating material within said conduit, metallic capping-plates resting upon the upper edges of the conduit and separated to form a continuous open slot, and independent insulating conductor supports secured within the lining, substantially as described.

7. A conduit for electric conductors, comprising a tubular body, insulated supports secured to the walls thereof and provided with metallic clamping fingers or jaws, and a conductor composed of sections the parts whereof are supported between and their ends electrically connected by the clamping-fingers.

408,801. ELECTRIC RAILWAY.

CHARLES J. VAN DEPOELE, Lynn, Mass. Original application filed June 28, 1886, Serial No. 160,410. Divided and this application filed Feb. 15, 1888. Serial No. 263,948. (No model.)



Claim.—1. In a system of electric railways, means for dividing the supply-current at starting between a plurality of motors connected in multiple arc between the main conductors, comprising an additional resistance in circuit with each motor and means for gradually withdrawing the resistance as the speed of the motor increases, substantially as described.

2. In a system of electric railways, a plurality of motors in multiple arc between the supply-conductors, a resistance in circuit with each motor acting to prevent a sudden fall of potential in the supply-circuit at starting, and means for gradually withdrawing the resistance as the counter electro-motive force rises in the motors being operated, substantially as described.

3. In a system of electric railways, a plurality of motors in multiple arc between the supply-conductors, a resistance substantially equal to the counter electro-motive force of the motor-armature at normal speed in circuit with each motor at starting, and means for gradually withdrawing the resistance as the counter electro-motive force rises, and vice versa, substantially as described.

4. In electric railways, the combination, with the supply-circuit, of a multiple-arc branch including a current-indicator, an automatic adjustable resistance, and an electro-dynamic motor, all arranged in series, substantially as described.

5. In electric railways, the combination, with parallel supply-conductors, of a plurality of motors in multiple arc between said conductors, each motor-circuit comprising a current-indicator, an adjustable resistance about equal to the counter electro-motive force of the armature of the motor at full speed, and means for automatically introducing and withdrawing the resistance in proportion to the rise and fall of counter electro-motive force in the motor, substantially as described.

6. In a system of electric railroading where a large number of vehicles are electrically propelled at one time and from the same source, a means for regulating the current by an additional resistance in circuit with each motor at the time of starting, preventing the short-circuiting of the current by placing such resistance in each motor-circuit independent of the other and corresponding to the electro-motive force of the current employed, and means for gradually withdrawing said resistance as the motor attains a certain speed, substantially as described.

7. In an electric-railway system, the combination of poles or supports placed on each side of the line of way, supporting-wires extending across the line of way and secured to opposite pairs of poles or supports, a main supply conductor or conductors suspended from the cross-wire, so as to have its under side free, and a grooved upward-pressing contact device engaging the free side of the conductor, substantially as described.

8. In an electric-railway system, the combination of poles or supports placed on each side of the line of way, supporting-wires extending across the line of way and secured to opposite pairs of poles or supports, a main supply conductor or conductors, insulating devices connected to the conductor and to the cross-wire for suspending said conductor, and a grooved upward-pressing contact device engaging the under side of the suspended conductor, substantially as described.

9. In an electric-railway system, the combination of poles or supports placed on each side of the line of way, supporting-wires extending across the line of way and secured to opposite pairs of poles or supports, a conductor or conductors arranged below the cross-wires and above the line of way, cars or balls permanently secured to the upper side of the conductor or conductors, and insulating devices connected with the cars or balls, and the cross-wires for sustaining the conductor or conductors, and an upward-pressing contact-wheel engaging the under side of the conductor, substantially as described.

408,802. GALVANIC BATTERY.

JOSEPH C. VIETTE, New York, N. Y. Filed Aug. 18, 1888. Serial No. 283,183. (No model.)



Claim.—1. A battery-cell having a partition extending from side to side of porous material, said partition being sealed in at the bottom with paraffine or other wax.

2. A battery-cell having a partition of porous material, said partition being sealed in at the bottom and top by wax or cement.

3. A battery-cell divided into two chambers by a partition of porous material, in combination with a frame or plate supporting the positive and negative electrodes and a pair of ventilating-tubes, one of said electrodes and one of said tubes extending down into each chamber, as described.

4. In a battery-cell, the plate *c*, provided with sleeve *d* and metallic thimble or cap *e*, and the vent-tubes, in combination with the positive and negative electrodes.

5. The combination, with the plate *c*, of the metallic cap or sleeve *e*, having spring-jaws for grasping one of the electrodes.

6. The combination, with the battery-cell, of the plate or frame *c*, resting upon the edge of the cell, and the sealing-block of cement or pitch for closing the mouth of the cell and securing said plate in position.

7. The insulating-strip or plate *c*, provided with the perforations through which pass the carbon and zinc elements and the vent-tubes, as set forth.

408,803. GAS-INCANDESCENT.

CARL A. VON WELSBACH, Vienna, Austria-Hungary, assignor to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed Mar. 31, 1888. Serial No. 269,203. (No specimens.) Patented in France Nov. 4, 1886, No. 172,094; in Belgium Nov. 4, 1886, No. 70,720; in England Mar. 13, 1888, No. 3,868; in Sweden Apr. 14, 1888, No. 667; in Germany Apr. 20, 1886, No. 41,946; in Finland July 10, 1888, No. 261; in Norway Aug. 25, 1886, No. 86; in Italy Oct. 13, 1886, XL, 415; in Portugal Apr. 6, 1887, No. 1,127; in Russia Dec. 31, 1887, No. 13,808, and in Austria-Hungary Mar. 26, 1888, No. 44,989 and No. 5,176.

Claim.—1. An incandescent burner for gas, consisting of a skeleton hood or frame containing oxide of thorium and oxide of erbium, substantially as described.

2. An incandescent burner for gas, consisting of a skeleton hood or frame containing oxide of thorium and an erbium element, as oxide of erbium, oxide of thallium, or oxide of holmium, substantially as described.

408,804. GAS-INCANDESCENT.

CARL A. VON WELSBACH, Vienna, Austria-Hungary, assignor to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed Mar. 31, 1888. Serial No. 269,204. (No specimens.) Patented in France Nov. 4, 1886, No. 172,094; in Belgium Nov. 4, 1886, No. 70,720; in England Mar. 13, 1888, No. 3,868; in Sweden Apr. 14, 1888, No. 667; in Germany Apr. 20, 1886, No. 41,946; in Finland July 10, 1888, No. 261; in Norway Aug. 25, 1886, No. 86; in Italy Oct. 13, 1886, XL, 415; in Portugal Apr. 6, 1887, No. 1,127; in Russia Dec. 31, 1887, No. 13,808, and in Austria-Hungary Mar. 26, 1888, No. 44,989 and No. 5,176.

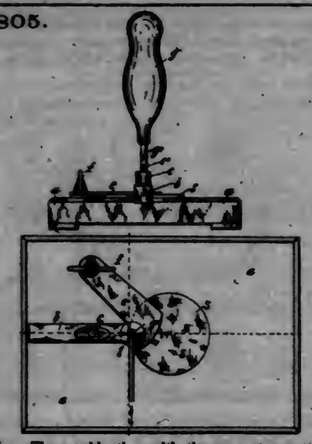
Claim.—1. An incandescent burner for gas, consisting of a skeleton hood or frame composed of the oxide of thorium and a cerite earth, substantially as described.

2. An incandescent burner for gas, consisting of a skeleton hood or frame composed of the oxide of thorium and the oxide of yttrium, substantially as described.

3. An incandescent burner for gas, consisting of a skeleton hood or frame containing the oxide of thorium, the oxide of zirconium, and a cerite earth, substantially as described.

408,805. LEATHER-THONG CUTTER.

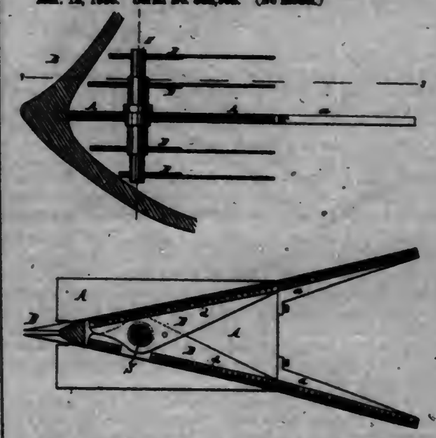
PAUL WALDER, Budo-Pesth, Austria-Hungary. Filed Sept. 13, 1888. Serial No. 285,290. (No model.)



Claim.—The combination, with the support or cutting-board *a*, having mortise *b'*, and recess to accommodate the plate *k*, of the gage *b*, adapted to said mortise *b'*, the nut and screw *c d'*, holding said gage in position in said mortise, the plate *k*, fastened partly under the inner end of said gage and formed with slot *i'*, the plate *c*, formed with the notch *i*, and extending over the plate *k* to hold a leathern disk in position while being cut, the thumb nut and screw *f*, securing said plate *c* in position, and the knife, all substantially as and for the purpose set forth.

408,806. SHIP'S RAM.

JOHN F. WARD, Jersey City, N. J. Filed Mar. 12, 1888. Serial No. 266,962. (No model.)



Claim.—The combination of the bow of a vessel and its ram-plate with a shaft passing through the ram-plate, and bracing plates or bars secured to the frame-work of the vessel, and through which the shaft also passes, substantially as described.

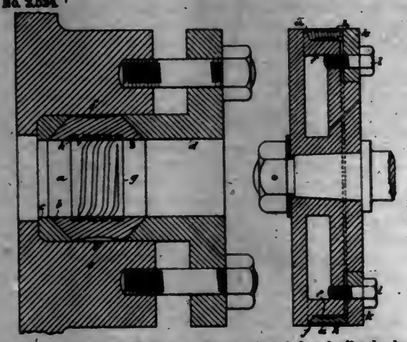
408,807. BRIDLE-CLOTHES-FASTENER.

ESTES J. WATERS, Scranton, Pa. Filed Jan. 3, 1888. Serial No. 256,201. (No model.)



Claim.—In combination, the head-board, the looped bolt secured thereto, the rectangular frame C, having the fastening-bar G, and a flexible strap, E, passing through the looped bolt and the rectangular frame, the free ends of the strap being connected by an adjustable connection, substantially as described.

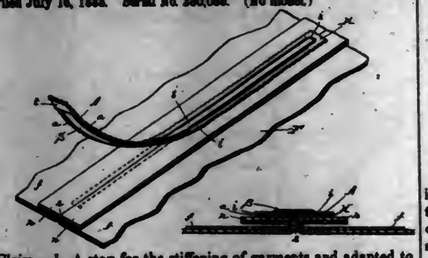
408,808. METALLIC PACKING. ROBERT WEATHERBURN, London, England, assignor to Thomas Hulburd, same place. Filed Dec. 11, 1888. Serial No. 293,314. (No model.) Patented in England Feb. 20, 1888, No. 2,594.



Claim.—1. A metallic packing having beveled or inclined edges, as set forth, diverging from a hollow or concave recess in that side which is opposite its working-face, substantially as set forth, and whereby it is adapted to be compressed between two oppositely-inclined surfaces.

2. A metallic packing having the described hollow or concave recess in its side which is opposite its working-face and having the inclined or beveled ends diverging from said recess, as set forth, and also provided with the described series of holes or recesses filled with asbestos or anti-friction material.

408,809. GARMENT-STAY. ROSCOE B. WHEELER, Detroit, Mich. Filed July 16, 1888. Serial No. 280,089. (No model.)



Claim.—1. A stay for the stiffening of garments and adapted to be attached thereto by heat and pressure, the same consisting, essentially, of a backing of cloth, a layer of gutta-percha identical in size with said backing and secured thereto, and the resilient metallic blade, narrower and shorter than the backing and adhesive to the face of the gutta-percha in such a position as to leave an exposed margin of gutta-percha surrounding said blade at the edges and ends thereof, whereby the whole structure may be attached in position upon the garment, substantially as set forth.

2. A garment-stay, the same consisting of a steel, S, and the fabric faced with gutta-percha tissue, whereon the steel S is centrally placed, and to which it is adherent, the aforesaid elements being arranged in the order and adapted to operate as and for the purpose set forth.

408,810. SASH-FASTENER. JOSEPH R. WEBB, Denver, Colo. Filed Feb. 26, 1888. Serial No. 301,290. (No model.)

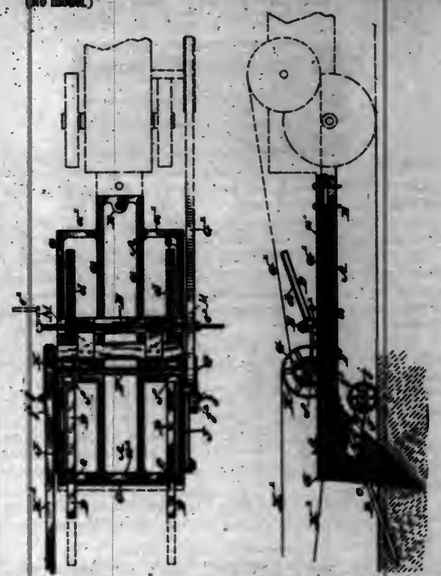


Claim.—1. As an improvement in sash-fasteners, the combination of the pivoted rod and the upper and lower catches, the latter being secured to said rod and operated in advance of the former, which is pivoted independent of said rod, substantially as set forth.

2. As an improvement in sash-fasteners, the combination of the pivoted rod, the upper and lower catches, the latter being secured to said rod and provided with an end tongue, and the spring bearing against said tongue, substantially as set forth, said upper catch being pivoted independent of said rod, as stated.

3. As an improvement in sash-fasteners, the combination of the pivoted rod, the upper and lower pivoted catches having projecting end tongues, said upper catch being pivoted independent of said rod, the dog secured on said rod and having end shoulders for engaging said tongue of the upper catch, the spring bearing against said lower catch, and the finger-bar secured to said rod, substantially as set forth.

408,811. ANCHORING DEVICE FOR PORTABLE MACHINES. JOHN C. WHITE, Swatara, Pa. Filed July 23, 1888. Serial No. 281,283. (No model.)

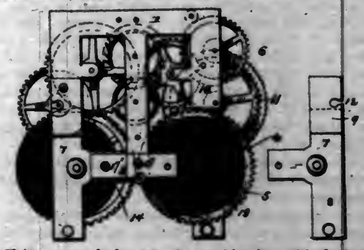


Claim.—1. The frame A, with anchor C, having the diagonal opening *c*, the rods D, having racks on their upper ends and passing through the opening *c*, the rotary shaft E, having thereon the gear-wheels M, engaging said racks, said parts *b* being combined substantially as described.

2. The frame A, with anchor C, having the arms J, secured at their upper ends to said anchor, and having at their lower ends the shaft *j*, with wheels *j'* thereon, said parts being combined substantially as and for the purpose set forth.

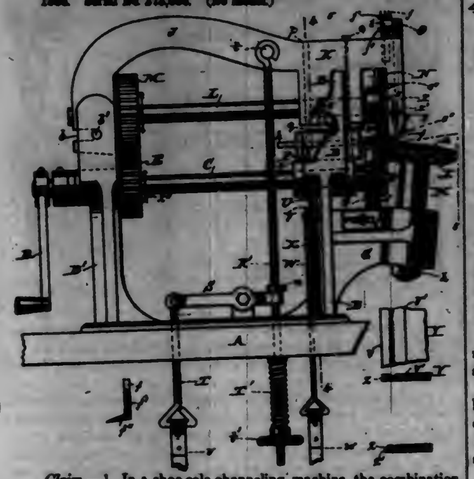
3. A frame and anchor at one end thereof, a shaft journaled in said frame and having the pulleys G and H thereon, a portable machine coupled to said frame at end opposite said anchor and having a rotary shaft with a pulley thereon, said pulley being connected with said pulley G by band G', said parts being combined substantially as and for the purpose set forth.

408,812. CLOCK-FRAME. DAVID A. WIANT, New Bethlehem, Pa. Filed Jan. 24, 1888. Serial No. 261,751. (No model.)



Claim.—In a clock-work, the combination, with the back plate, front plate, and the ordinary train of gearing, of the detachable part 7, inclosing the mainspring and having a portion cut out to give room for one end of the arbor of the striking-wheel, and the bar or portion 14 of the detachable part secured to the bar 15 of the frame by the joining-bar or flat piece 16, secured to the rear side of the horizontal bars of the frame and of the detachable part by screws fitted in registering perforations in said bars, substantially as specified.

408,813. SHOE-SOLE-CHANNELING MACHINE. GEORGE B. WILCOX, South New Market, and JONATHAN BASSETT, Epping, N. H., assignors of one-half to John W. Hazard, Providence, R. I. Filed May 7, 1888. Serial No. 273,092. (No model.)



Claim.—1. In a shoe-sole-channeling machine, the combination, with the knife-block support, of the knife-block O, adjustably supported thereon and having the yoke *i*, and the adjusting-screw *j*, provided with the collars *j'*, substantially as shown and described.

2. In a shoe-sole-channeling machine, the combination, with a standard, B, having the vertical arms, as set forth, of the removable knife-block P and its horizontal knife, and the recessed guideways *w w*, all substantially as shown, and for the purposes described.

3. In a shoe-sole-channeling machine, the combination, with the removable block P, of the knife *k*, screw *k'*, and slot *k''*, all substantially as shown and described.

4. In a shoe-sole-channeling machine, the combination, with the knife-block P and its frame or support, of the loose rod U, having its upper end adapted to bear against the bottom of said block and to raise it in its frame independently of the other mechanism, and the lever V, all substantially as shown, and for the purpose described.

5. In a shoe-sole-channeling machine, the combination of the knife-block P, the loose rod U, with its upper end adapted to come into direct contact with said block, the lever V, and vertically-adjustable rod or stop X, all substantially as and for the purpose described.

6. In a shoe-sole-channeling machine, the combination of the block P, having the adjusting-screw *o*, with the frame J, having the vertical hole *p*, all substantially as and for the purpose described.

7. In a shoe-sole-channeling machine, the combination, with the removable frame J, pivoted at *b'*, of the rod *d* and the adjusting-screw *e*, said rod and screw serving to support the outer end of the frame J and to adjust the same vertically, substantially as described.

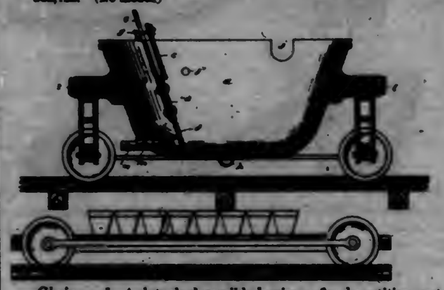
408,814. PAPER-REEL. HOMER T. WILSON, Harrodsburg, Ky. Filed Sept. 7, 1888. Serial No. 284,781. (No model.)



Claim.—1. The combination, with a suitable frame and a paper roll mounted therein and revolving upon an axial support, of two plates, one of them fixed with reference to rotation in contact, respectively, with the ends of the roll, and means for pressing them against said ends with any desired degree of force, whereby the ends of the rotating roll may be subjected to any desired retarding friction, substantially as set forth.

2. The combination of the standards B B, the gudgeon E, and disk H, formed integrally with one of them, the disk H', bearing the gudgeon E', and having a recess in its opposite face, the screw I, in the axial line of the first gudgeon, working in the opposite standard and provided with a lock-nut, K, and a nose-threaded end entering said recess, substantially as and for the purpose set forth.

408,815. DETACHED CRUCIBLE FOR LEAD-FURNACES. NEWTON B. WILSON, Seguin, Tex. Filed Aug. 14, 1888. Serial No. 282,732. (No model.)



Claim.—1. A detached crucible having a fixed partition and a movable gate applied or adapted to be applied thereto, substantially as and for the purposes set forth.

2. The combination, in a detached crucible, of a fixed partition, having a straight horizontal lower edge at such height as to afford an open and unobstructed passage thereunder for the mushy surface lead, with a detachable gate adapted to completely shut off said passage, substantially as set forth.

408,816. SINGLETREE ATTACHMENT. PHILIP S. WHEMAN, Springfield, Ohio, assignor of one-half to Ross Mitchell, same place. Filed Feb. 16, 1888. Serial No. 263,130. (No model.)



Claim.—1. The combination, with a singletree having its under side near the end recessed, of a gravitating pawl mounted to recede into said recess as the trace is slipped over the recess and against the under edge of the pawl, whereby the pawl without hand manipulation recedes before the trace and allows the trace to slip into place.

2. The combination, with a singletree having a recess in the under side thereof near its end, of a gravitating pawl having its outer end pivoted within said recess, and a projection to limit its descent and arranged to recede into said recess without hand manipulation when the trace is slipped over the singletree and against the under edge of the pawl.

3. The combination, with a singletree having a shoulder projecting therefrom and a recess in the under edge and between said shoulder and its end, of a gravitating pawl within said recess, and having a pin or projection which limits its descent, the pawl being arranged to recede into the recess without hand manipulation by the act of putting on the trace.

4. The combination, with a singletree having a recess in its under side near its end and a shouldered frame secured thereto, with a slot opposite said recess, of a gravitating pawl having its outer end pivoted within said recess, and a projection from its inner end which engages said frame, the pawl being arranged to recede into the recess without hand manipulation by the act of putting on the trace.

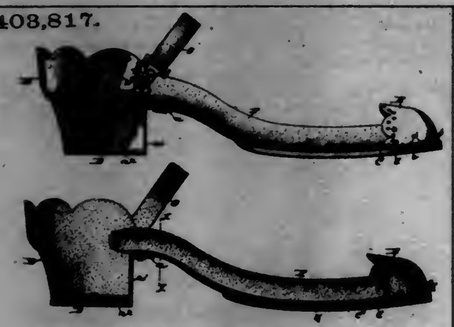
5. The combination, with a singletree and a recess formed in the under side near the end thereof, of a gravitating pawl pivoted at one end within said recess and having a projection to limit its descent, and an anti-rattling spring which holds the pawl firmly in its gravitated position, the pawl being arranged to recede into the recess without hand manipulation by the act of putting on the trace.

6. The combination, with a singletree and a frame secured to the outer end thereof and constituting a recess, of a gravitating dog pivoted at its outer end within said recess and a projection to limit its descent, the pawl being arranged to recede into the recess without hand manipulation by the act of putting on the trace.

7. The combination, with a slotted frame adapted to be secured to a singletree and having a shoulder and lugs extending therefrom, of a gravitating pawl having its pivot-pin fitted to said lugs, and a projection at the other end which engages the frame, and an anti-rattling spring coiled about its pivot-pin, terminating in upper and lower branches or prongs, the pawl being arranged to recede into the recess without hand manipulation by the act of putting on the trace.

408,817. OVERSHOT. SAMUEL C. WELTY, Chippewa Falls, Wis. Filed June 6, 1888. Serial No. 276,497. (No model.)

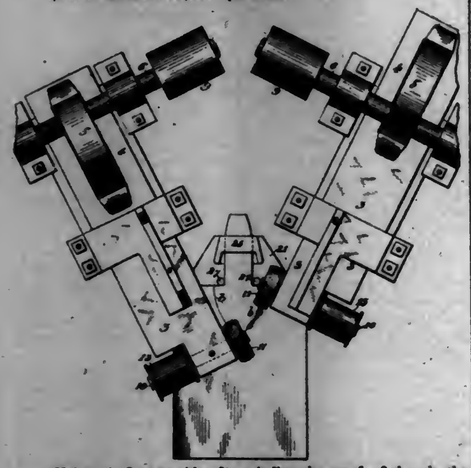
408,817.



Claim.—1. The combination, with the sole, the toe E, and the side pieces, F, of the metal heel and counter, the heel having a tang to which the sole is secured and the side pieces being fastened at their ends to the counter and toe, respectively, substantially as described.

2. The herein-described overshoe, composed of the following elements: the metal heel and counter having a tang, the sole and insole secured to the said tang, the sides F, fastened at their rear ends to the counter and having their lower edges lasted in between the sole and insole, the metal toe having an outer flange and secured to the sole by nails driven through the flange and fastened to the front ends of the said sides F, the soft lining applied to the heel-counter and the toe, the instep-strap, and the extra pieces applied to the heel and the sole, substantially as and for the purpose described.

408,818. MACHINE FOR GRINDING SHOVEL-BLANKS. JOSEPH R. WOLL, Pittsburg, Pa., assignor of one-half to Henry J. Thoma and William M. McCombs, same place. Filed Mar. 17, 1887. Renewed Mar. 7, 1889. Serial No. 302,389. (No model.)



Claim.—1. In a machine for grinding the scarfs of shovels, the combination, with a table for supporting the blank, of two rotary grinding-wheels having reciprocating bearings arranged to converge over the table, and mechanism for imparting alternate reciprocatory motion to said bearings, substantially as and for the purposes specified.

2. In a machine for grinding the scarfs of shovels, the combination, with an oscillatory or vibratory table, of a rotary grinding-wheel, bearings therefor arranged to move in a line tangential to a circle described around the pivot of the vibratory table, and mechanism for reciprocating the grinding-wheel and its bearings, substantially as and for the purposes specified.

3. In a machine for grinding the scarfs of shovels, the combination, with a horizontally-reciprocating grinder, of a sliding gravity or drop table having an oscillatory shovel-bed, and a pivoted lever, by means of which the sliding table can be raised, substantially as and for the purposes specified.

408,819. TOBACCO-HANGER. WILLIAM S. WOOTEN, Scottsburg, Va. Filed Apr. 12, 1888. Serial No. 270,521. (No model.)

Claim.—1. The combination, in a sectional hanger, of a plurality of separate uprights suspended and attachable one to the other, as described, and the tobacco-sticks S carried by said uprights.

408,819.



2. The combination of the tier *a*, the strips G, the uprights F, suspended from said strips, the cross-piece or lever H, and the tobacco-sticks S, carried by their middles by said uprights, substantially as set forth.

3. The combination, with the uprights having a series of lateral mortises, of the tobacco-sticks held by their middles in said mortises and provided with the grooves *s* for the cord, substantially as set forth.

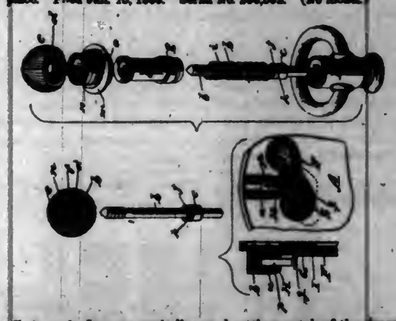
4. The combination, with the tobacco-hanger, of the gravitating lever H, pivoted in the same, and the strips G, substantially as set forth.

5. The combination, with the suspended hangers, of the strips connecting the lower ends of said hangers to prevent oscillation, contact, and breaking of the tobacco-leaves.

6. In a tobacco-hanger, the combination of uprights provided with tobacco-sticks, means, substantially as described, for suspending the topmost upright, and latches for detachably connecting the uprights end to end and suspending them one from the other, as set forth.

7. The combination of the upper beams or tier, *a*, the rigid and central uprights, F, having suspension devices at their upper ends and sustained by said tier, and having their lower ends at such height as to leave the lower part of the barn unoccupied, and the tobacco-sticks S, secured by their middles to said uprights, the latter being removable, substantially as set forth.

408,820. STEM WINDING AND SETTING WATCH. ABRAHAM H. YEAKEL, Sellersville, Pa., assignor to Crossman & Yeakel, same place. Filed Jan. 15, 1889. Serial No. 296,302. (No model.)



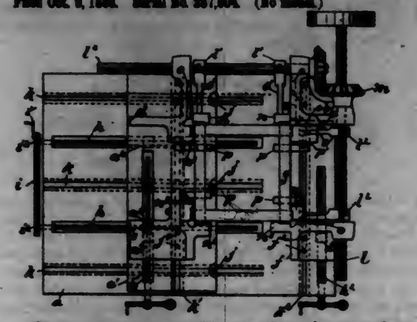
Claim.—1. In a stem winding and setting watch of the described class, the combination of the tilting yoke, yoke-spring, socketed arbor, plunger working in said arbor, and spring-actuated arbor-stem or key-pin bearing against the plunger and yoke with a greater downward pressure than the lifting-power of the yoke-spring, substantially as and for the purpose set forth.

2. In a stem winding and setting watch of the described class, the combination of the socketed winding and setting arbor, shouldered arbor-stem or key-pin, spiral spring, crown or winding-knob having a downwardly-projecting central threaded socket for the attachment of the arbor-stem, the inner sleeve encircling said stem and its spring, the collar screwed adjustably into the inner rim of the winding-knob, and the pendant, substantially as and for the purpose shown and set forth.

3. In a stem winding and setting watch, the combination of the case, pendant, central shouldered stem-arbor or key-pin, the washer

working on the shoulder of said pin, the spiral spring, shouldered sleeve, socketed and threaded crown or winding-knob, and the collar attached adjustably to the crown and adapted to slide upon the pendant, substantially as and for the purpose shown and set forth.

408,821. BOX-MAKING MACHINE. EDWARD ABBE, Chicago, Ill. Filed Oct. 6, 1888. Serial No. 287,604. (No model.)



Claim.—1. In a box-making machine, a base carrying one fixed and three adjustable standards, in combination with vertical and fixed jaws and oppositely-placed parallel and reciprocating jaws on said standards, said jaws moving in a vertical plane and in a line parallel to the base, substantially as specified.

2. In a box-making machine, a slotted base carrying one fixed and three adjustable standards, in combination with vertical fixed jaws, and oppositely-placed and parallel reciprocating jaws on said standards, and vertically-adjustable hangers attached to said standards to support the box, and fastening devices between said base and standards, substantially as specified.

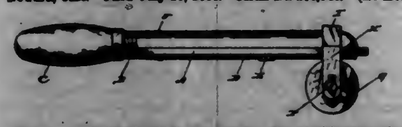
3. In a box-making machine, a channeled base, in combination with one fixed and three adjustable standards provided with vertical and fixed jaws, and oppositely-placed and reciprocating jaws, and equally-speeded shafts connected and at right angles to each other, carrying eccentrics connected to and operating said jaws, and fastening devices between said channeled base and standards, substantially as specified.

4. In a box-making machine, a base provided with a fixed and an adjustable standard and carrying an adjustable base having a fixed and an adjustable standard, said standards being relatively adjustable to each other and provided with fixed vertical jaws, in combination with parallel and opposed reciprocating jaws on said standards and mechanism to actuate said reciprocating jaws, substantially as specified.

5. In a box-making machine, a base provided with a fixed and an adjustable standard and carrying an adjustable base having a fixed and an adjustable standard, said standards being provided with fixed vertical jaws, in combination with parallel and opposed reciprocating jaws actuated by equally-speeded shafts placed at right angles to each other and carrying actuating mechanism connected to said reciprocating jaws, substantially as specified.

6. In a box-making machine, a base carrying a fixed and an adjustable standard, in combination with vertical and fixed and oppositely-placed parallel and reciprocating and toothed jaws on said standards, said jaws moving in a vertical plane and in a line parallel to the said base, said teeth bearing on the dovetail tenons having teeth a^5, spaced as described, substantially as specified.

408,822. HAND PRINTING APPARATUS. THOMAS BARTHOLOMEW, Newark, Ohio. Filed July 20, 1886. Serial No. 209,560. (No model.)



Claim.—1. In hand printing apparatus, the combination of a bar having an inking-pad upon one of its faces and a printing-cylinder mounted upon said bar to roll along said pad, whereby the cylinder may be inked upon one side while its opposite side prints upon any surface over which it is rolled.

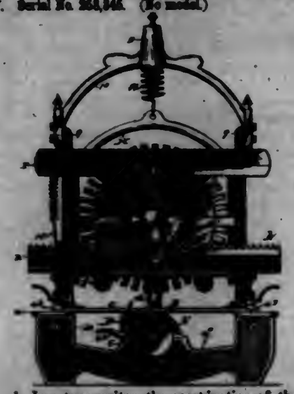
2. A handled bar, a sliding saddle mounted thereon, a printing-cylinder revolubly secured to said saddle, an inking-pad fixed to said bar tangent to said cylinder, and a spring adapted to resist while permitting the movement of the cylinder from its normal position, all combined substantially as set forth.

3. The combination, with a handled bar, of a printing-cylinder revolubly mounted in a saddle sliding on said bar and an inelastic cord fixed at each end to the opposite ends of the bar, passing once about the cylinder, and fixed thereto at one point, whereby the cylinder rotates equally in passing bodily through equal distances along the bar and conversely.

4. In a hand printing apparatus, an inking-pad and a printing-cylinder mounted to roll along said pad while printing with its opposite side, said cylinder having a letterless elemental space, and said pad an inkless band registering with said space as the cylinder passes along the pad, substantially as and for the purpose set forth.

5. The combination, with the bar A, having the adjustable handle C, of the pad D, divided and secured to the bar by the clamp E, the saddle I, sliding upon said bar and carrying the rotating cylinder G in contact with said pad, the elastic strip O upon said cylinder, the cord Q Q', passing around and having its middle point secured to said cylinder and its ends secured to the bar upon opposite sides of the cylinder, and the spring K, acting against said saddle and reacting against said handle, substantially as set forth.

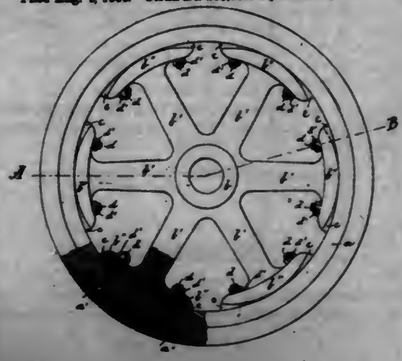
408,823. TYPE-WRITING MACHINE. JOHN W. BARTLETT, Moline, Ill., assignor of one-fourth to George W. Walker, same place. Filed Dec. 23, 1887. Serial No. 258,945. (No model.)



Claim.—1. In a type-writer, the combination of the spring-suspended sliding frame carrying the inking-rolls, the type-wheel having radial type, the sliding rack-bar supported in a grooved cross-bar of said frame, the pinion on the shaft of said type-wheel engaging said rack, the indicating-bar applied to said frame, the handled pointer carried by the sliding rack-bar, and the type-carriage having the slotted guide-finger engaging a circularly-arranged series of studs upon the type-wheel, substantially as set forth.

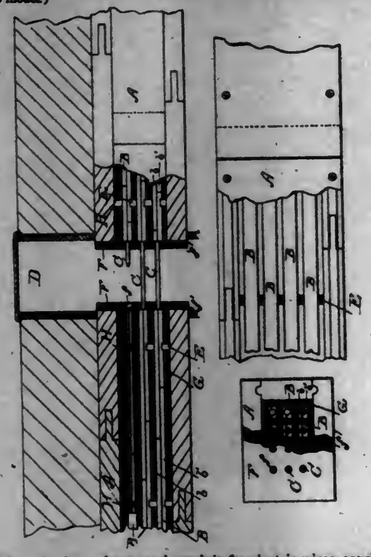
2. In a type-writer, the combination of the spring-suspended sliding frame carrying the inking-rolls, the type-wheel having radial type, the sliding rack-bar supported in a grooved cross-bar of said frame, the pinion on the shaft of said type-wheel engaging said rack, the indicating-bar attached to said frame, the handled pointer carried by the sliding rack-bar, the type-carriage having the slotted guide-finger engaging a circularly-arranged series of studs upon the type-wheel, the cross-rod carrying levers having spring-connection with the supporting-frame of the type-wheel frame and provided with pawls engaging ratchet or rack bars of the horizontal or base frame, said sliding type-wheel frame having a finger acting upon one of said pawl-carrying levers, substantially as set forth.

408,824. WOOD-RIM PULLEY. WILSON W. CAREY, Lowell, Mass. Filed Aug. 4, 1888. Serial No. 281,967. (No model.)



Claim.—The herein-described improved wood-rim pulley, consisting of the wood rim *a* and the metal spider *b*, having radial arms *b'* and the curved or inclined feet *b'' b''*, substantially as described, combined with the curved or inclined wedges *c c* and fastening-bolts *d*, as and for the purpose set forth.

403,825. UNDERGROUND CONDUIT FOR ELECTRICAL CONDUCTORS. CHARLES B. COLE, Detroit, Mich., assignor to the Cole Conduit Company, same place. Filed Oct. 11, 1888. Serial No. 287,801. (No model.)



Claim.—1. An underground conduit for electric wires, consisting of a wooden box or casing saturated with an insulating material, separable wooden tubes, also thoroughly insulated, into which the wires may be inserted, insulating-bridges adapted to keep the tubes in place, and a filling of plastic insulating compound adapted to exclude moisture, substantially as described.

2. An underground conduit for electric wires, consisting of a wooden box or casing saturated with an insulating material, separable wooden tubes saturated with an insulating material, in which the wire may be laid, said tubes being united throughout their length by groove-and-tenon joints, separate insulating-bridges adapted to sustain the tubes in proper position, and a filling of a plastic insulating compound adapted to exclude the moisture, substantially as described.

3. An underground conduit for electric wires, consisting of a wooden casing having a removable top, said casing and top saturated with paraffine, separable wooden tubes saturated with paraffine and adapted to receive the wires, the separate parts of said tubes united throughout their length by groove-and-tenon joints, separate insulating-bridges provided with recesses *b*, in which the tubes rest, end pieces for the casing consisting of a sheet of rubber and a cap of wood saturated with paraffine, the wood and rubber provided with orifices corresponding to the ends of the tubes, and a filling of a plastic insulating compound adapted to exclude the moisture, substantially as described.

4. An underground-conduit casing consisting of bottom, sides, and top made of wood, the ends of said bottom, sides, and top each joined to its meeting part by a deep mortise-and-tenon joint, the top or top and sides caused to break joints with the bottom of the casing, substantially as described.

403,826. TRANSFERRING PAPER FILE AND BINDER. WILLIAM A. COOKE, Jr., and CHARLES S. COOKE, Brooklyn, N. Y. Filed Jan. 19, 1887. Serial No. 224,821. (No model.)



Claim.—1. The combination of the transferring-file composed of united tubes 20 20, which form the detachable members of the binder, with the wires 17 17, having balls *k* on the ends, and the studs 18 18, substantially as specified.

2. The sequent combination of the tubular transferring-file, the fixed wires of a temporary file, and the fixed members of the binder, substantially as specified.

403,827. DEVICE FOR FORMING CIRCLES, CURVES, AND GEOMETRICAL FORMS. JOHN F. EARHART, Cincinnati, Ohio, assignor of one-half to John E. Richardson, same place. Filed June 11, 1888. Serial No. 276,672. (Model.)



Claim.—1. A device for curving or bending printers' rules, consisting of a frame and a holder pivoted therein just out of the center and provided with an opening through which the rule is fed, and side guards to guide the same, and a shaft journaled in the frame suitably provided along its length with a recess to hold one end of the rule.

2. In a rule curving or bending device, the combination of the frame, the movable holder pivoted therein and having a hollow handle, S, and side guards, M and N, with the crank-shaft journaled in the frame at right angles with the holder and adapted to receive along its length an end of the rule.

3. The combination of frame A, the pivoted holder I, having hollow handle S at one end and fixed guard M at one side, and a movable guard, N, at the other, and a suitable shaft to bend the rule.

4. In a machine, as described, the holder I, having fixed guard M on one side and a movable guard, N, on the other, provided with headed pins O, each having springs thereon, and the headed lugs R in the side of the holder, whereby the upper face of the holder can be adapted to receive wide or narrow pieces of metal rule.

5. The rocking holder I, upon which the metal rule is held and guided, pivoted near its center in the frame and having its forward end in close proximity to the shaft E, made as described and journaled in the frame, whereby in the operation of the machine the forward end of the holder can be brought in contact with the shaft or the metal thereon with any desired force.

6. In a metal-rule-bending device, the combination of the following elements, viz: a frame, a rocking holder pivoted near its center in the frame and constructed and adapted to contain and guide the rule, and the shaft constructed as described and journaled in the frame and located at right angles to the holder, all substantially as set forth.

408,828. PIPE-TRIMMING DEVICE. GEORGE T. PETTENGILL, West Chester, Pa. Filed Mar. 21, 1889. Serial No. 304,143. (No model.)



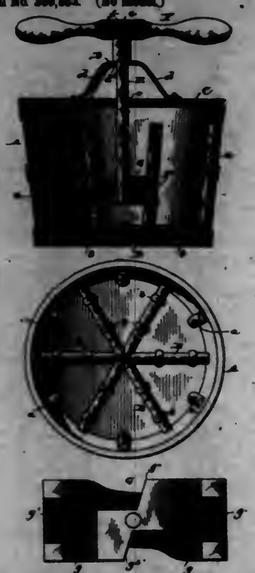
Claim.—1. A tool for trimming pipes, having a revolving cutter set at a suitable angle, in combination with an interchangeable guide mounted on and locked with a central mandrel or axis, substantially as described.

2. A tool for trimming pipes, consisting of a conical shell having an adjustable cutter lying in a slot thereof and provided with a mandrel rigidly mounted in the axis of the cone, said guide having a curved flange interlocking with a groove or channel in the mandrel and provided with a cam abutting against a cam on said mandrel, substantially as described.

3. A tool for trimming pipes, consisting of a mandrel having a conical shell provided with a slot in which lies an adjustable cutter, said mandrel having a tenon provided with a laterally-projecting cam, a tubular guide on said mandrel having a curved flange provided with an opening permitting the cam on the mandrel to pass and the curved flange to be turned beneath the said cam and the latter brought against a cam-stop on the curved flange, substantially as described.

4. In a pipe-trimming tool, a mandrel, 1, having a handle, 2, and provided with a rigid conical shell, 3, having a slot, 4, a knife, 5, mounted on a bracket, 6, on the shell and adjustable in said slot, a guide, 12, slipped on said mandrel and provided with a curved flange, 13, having an opening, 14, through which passes a cam, 10, on the reduced end of the mandrel, the guide being turned to carry said flange 13 under the cam 10 and bring the latter against a cam-stop, 15, on one end of the flange 13, substantially as described.

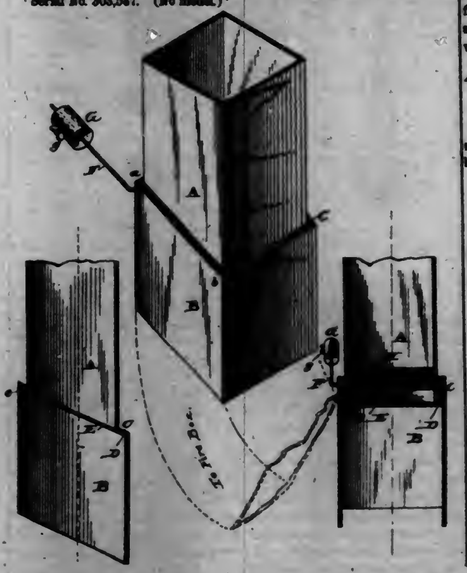
408,829. WASHING-MACHINE. LOUIS FLEISCHHAUER, Perry, Tex., assignor of one-third to Johannes Weikart, same place. Filed Apr. 6, 1888. Serial No. 269,823. (No model.)



Claim.—1. A rubber for washing-machines, adapted to be attached to the lower end of a shaft constructed substantially rectangular with beveled sides, and whose bottom has inward cuts reversely arranged in the sides to form parallel oblique abrading edges g^2, and angular end cuts, g', substantially as described.

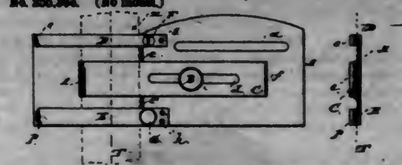
2. A washing-tub having radial ribs of equal width throughout their lengths running to a common center, and having a pair of rollers arranged on each rib at an equal distance from said center to form a uniform support for a rubber, and said ribs also forming pockets between each, and the sides of the tub having upright ribs projecting down centrally between the ends of said radial ribs to form counteracting abrading projections, as described, substantially as set forth.

408,830. CHUTE FOR FEEDING SAWDUST TO STEAM-BOILERS. GEORGE W. FLOOD, Pentwater, Mich., assignor of two-thirds to Edgar G. Maxwell and William R. O. Sands, same place. Filed Mar. 16, 1889. Serial No. 303,567. (No model.)



Claim.—In a device or chute for feeding sawdust to steam-boilers, the combination of the feeding duct or chute, consisting of the contracted upper part, A, and enlarged lower part, B, whereby an inside inclined shoulder or offset, D, is formed, automatic cut-off, and deflector H, substantially as and for the purpose herein shown and described.

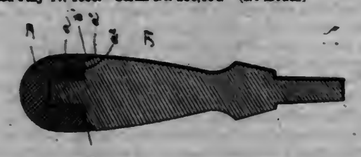
408,831. GUIDING ATTACHMENT FOR SEWING-MACHINES. ANTON H. FRENCH, Chicago, Ill., assignor, by mesne assignments, of one-half to Gustav Ernst Langer, same place. Filed Nov. 16, 1887. Serial No. 255,344. (No model.)



Claim.—1. A guiding attachment for sewing-machines, comprising a stationary plate, A, provided with the springs D and E and guiding studs or stops *c* and *c'*, and an adjustable plate, C, having a guiding-flange, *c*, whereby tape or ribbon of any desired width may be conducted under the springs and over the plate C to the stitch-forming mechanism, substantially as described.

2. In a guiding attachment for sewing-machines, a stationary plate, A, having at one end near its side edges the springs D and E, said springs being adjustable near their fastening places, and a sliding plate, C, located between said springs and being parallel to the same, said plate C being guided between the stops or studs *c* and *c'* on the plate A, said stops *c c'* forming with the stop *c* on the sliding plate a guide for any width of tape or ribbon passing over the sliding plate C and under the springs D and E, substantially as set forth.

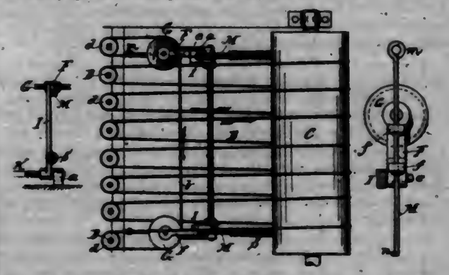
408,832. TOOL-HANDLE. CHARLES D. FULLER, Minneapolis, Minn. Filed July 17, 1888. Serial No. 280,164. (No model.)



Claim.—In a tool-handle, the combination, with the wooden body having its ends circumferentially rabbeted and provided with a central screw-threaded projection, and a flat annular bearing-surface at the base of said projection, of a metal cap having a threaded recess to receive the projection of the wooden body, a flat annular shoulder at the base of the cap surrounding the threaded recess, and a peripheral flange tapering from the annular shoulder, whereby, when the cap is screwed in place, the wood at the end will be compressed and prevented from splitting, substantially as described.

408,833. BAND-TENSION REGULATOR FOR SPINNING-MACHINES. JAMES GAUPP, Worcester, Mass., assignor to Joseph M. Bassett, same place. Filed Mar. 13, 1889. Serial No. 303,362. (No model.)

Brief.—The object of the invention is to provide improved mechanism for controlling and regulating the tension of continuous bands employed for driving a series of spindles.

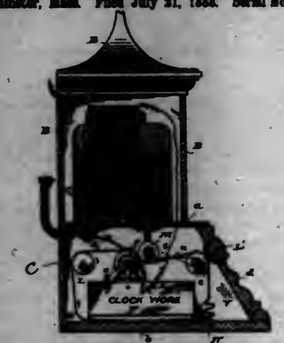


Claim.—1. A spindle-band regulator having a pair of pulleys or sheaves for guiding the spindle-driving band at the limits of the section or row of spindles, in combination with a rocker-shaft, a pair of swinging arms fixed upon and connected by said rocker-shaft, sheave-carriers pivoted on said swinging arms, and a tension-spring for giving backward pressure thereon, substantially as set forth.

2. The combination, with a cylinder, C, spindles D, and continuous band B, of the regulating-sheaves G, their supporting-carriers F, the upright backwardly and forwardly swinging arms I, on which said carriers are pivoted, the rocker-shaft K, connecting said arms, the guide-rods M, and tension-spring S, substantially as set forth.

3. The guide rod or wire M, having its forward end loosely attached to the frame, as at *m*, its rear end provided with a stop, *n*, and the sheave-supporting carrier having perforated lugs that embrace said guiding-wire, in combination with the band-guiding sheave, the swinging arm, the tension-spring, the spindle-band, and cylinder, substantially as and for the purpose set forth.

408,834. MECHANICAL MUSICAL INSTRUMENT. WILLARD H. GILMAN, Boston, assignor to Charles H. Dresser and William S. Reed, both of Leominster, Mass. Filed July 21, 1888. Serial No. 280,598. (No model.)

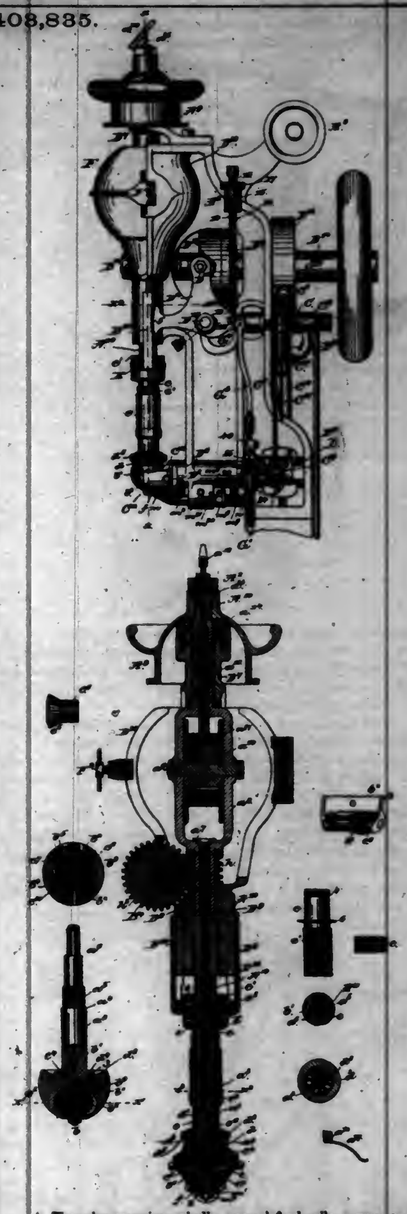


Claim.—1. The combination of a plurality of bells severally representing one or more musical notes, electro-magnetic means for severally actuating said bells, an electric circuit including said electro-magnetic means, a series of spring-fingers, G, controlling said electric circuit, the rotatable cylinder E, also included in said electric circuit, clock-work mechanism for rotating said cylinder, the perforated sheet N, passing between the fingers G and the cylinder E, and guiding-rollers M, L, and L′ for said sheet, substantially as described.

2. The combination, with a plurality of bells, of electro-magnetic means for severally actuating said bells, an electric circuit including said electro-magnetic means, a series of spring-fingers, G, also included in said circuit and severally connected with their respective electro-magnetic means, a single bar of insulation separating and supporting said spring-fingers G, a rotatable cylinder, E, also included in said electric circuit, the perforated sheet N, passing between the fingers G and the cylinder E, clock-work mechanism for actuating said cylinder E, and guiding-rollers for the said sheet N.

3. As a new article of manufacture, the combination, with the casing B, having a receptacle for the battery C, of the battery C, located therein, a series of bells, A A, mounted upon the casing B in a suitable manner, electro-magnetic means for actuating severally said bells, an electric circuit extending from said battery C to said electro-magnetic means, a series of spring circuit-controllers severally connected in said electric circuit and normally resting upon the face of the metal cylinder, a metallic cylinder also included in said electric circuit, a sheet of flexible material provided with perforations arranged to pass between said spring circuit-controllers and said cylinder, and mechanism for feeding said perforated sheet between the circuit-controllers and cylinder, the whole being mounted upon a suitable casing, in the manner shown, substantially as described.

408,835. MACHINE FOR UNITING SOLES TO UPPERS. LOUIS GOSOW, Winchester, assignor to James W. Brooks, principal trustee, Cambridge, and Frank F. Stanley, associate trustee, Boston, Mass. Filed July 30, 1888. Serial No. 281,267. (No model.)



Claim.—1. In a machine for uniting soles and uppers, a wire-carrying spindle and feed-rolls having gears c^7 c^8 and a gear, c^{10}, combined with the beveled gear having a sleeve-like portion, c^4, and with a gear to engage and rotate the said beveled gear, substantially as described.

2. The wire-carrying spindle, its geared feed-rolls, and a gear, *d*, having a clutch, and gearing between the said gear and the feed-rolls combined with a clutch-sleeve having spiral or diagonal flutes and with a reciprocating feeding-sleeve having spiral or diagonal flutes to actuate the said clutch-sleeve, substantially as described.

3. The wire-carrying spindle, its geared feed-rolls, and the screw-stud c^3, having an opening coinciding with the wire-passage, combined with the gear *d* and intermediate bevel-gear rotated thereby and in engagement with one of the feed-rolls, to operate substantially as described.

4. The wire-carrying spindle, geared feed-rolls, a gear, as *d*, having a clutch portion, and means intermediate the said gear and the feed-rolls, and a clutching-sleeve having spiral or diagonal flutes, and a feeding-sleeve having co-operating spiral or diagonal flutes, combined with a stop for the clutching-sleeve in its longitudinal movement, whereby the clutch-faces of the clutching-sleeve and the gear *d* may be separated and the clutching-sleeve be thereafter rotated for the proper distance, substantially as described.

5. In a machine for uniting soles and uppers, a horn or support for the work, a continuously-rotating fluted spindle provided with feed-rolls, and a reciprocating feeding-sleeve fluted to engage flutes of the spindle and to be rotated in unison therewith, the said feeding being farther fluted spirally or diagonally, combined with a clutching-sleeve having spiral or diagonal flutes and rotating at the speed of the spindle in one direction, and with gearing intermediate the said clutching-sleeve and the feed-rolls, the reciprocations of the feeding-sleeve longitudinally during its rotation with the spindle causing the clutching-sleeve to vibrate or oscillate about the spindle as it travels with the latter to feed the wire intermittingly, substantially as set forth.

6. The rotating wire-carrying spindle and the wire-carrying spool located between its ends, combined with bearings for the said spindle both above and below the spool, and with feed-rolls having gears meshed one with the other, and with means carried by and rotating with the spindle to rotate the said feed-rolls intermittingly, substantially as described.

7. The wire-carrying spindle, the wire-carrying spool between its ends, and bearings for the spindle above and below the spool, combined with the chambered pulley A^5, embracing the upper bearing, substantially as described.

8. The wire-carrying spindle and the spool between the ends of the spindle, combined with a spring-actuated presser-plate to bear upon the wire, substantially as described.

9. The wire-carrying spindle and its spool and presser-plate having a shank, a^{15}, combined with means to retain the presser-plate lifted from the spool, substantially as described.

10. The wire-carrying-spindle, the feeding-sleeve, and the yoke to support the said sleeve, combined with a lever reciprocating the said yoke and with a cam to actuate the said lever, substantially as described.

11. The wire-carrying spindle, the feeding-sleeve, and the yoke to support the said sleeve, combined with a lever reciprocating the said yoke, and with a cam to actuate the said lever, and with an upwardly-pressed horn, a measuring-leg connected with the said lever, and intermediate connections between the said leg and horn, substantially as described.

12. The wire-carrying spindle, the feeding-sleeve, and the yoke to support the said sleeve, combined with a lever reciprocating the said yoke, and with a cam to actuate the said lever, and with the rod 12, spring 14, and adjusting-nut 16, to operate substantially as described.

13. The wire-carrying spindle and a throat, *b*, combined with the cutter-carriers and the adjustable arc-shaped cutters having their cutting-edges in line with each other, to operate substantially as described.

14. The wire-carrying spindle having the spherical end a^9, feed-rolls therein, means to rotate the feed-rolls, and the throat *b*, combined with the cutter-carriers concaved at their upper sides to permit the rotation of the spherical head of the spindle and with the cutters and clamps to hold them, substantially as described.

15. The cutter-carrier D^9, having a tubular shank, and the cutter-carrier C^{10}, having its shank C^9 extended through the said tubular shank, combined with a lever, means to actuate it, and connecting mechanism between the said lever and the shanks of the said cutter-carriers to actuate them simultaneously in opposite directions, substantially as described.

16. The cutter-carrier D, having a tubular shank, and the cutter-carrier C^{10}, having its shank C^9 extended through the said tubular shank, combined with a lever, means to actuate it, and connecting mechanism between the said lever and the shanks of the said cutter-carriers to actuate them simultaneously in opposite directions, and with a stop and means to retain the said lever normally against the said stop, substantially as described.

17. The horn, the lever B^9, with which it is connected, and the rod B^8, combined with the two-armed lever B^9 $B^{9\times}$, having a roller or other stud, and with a cam, B^{13}, to automatically depress the horn at the proper time, substantially as described.

18. The lever D^{14}, its attached measuring-leg having a collar, 40, the oscillating rod 22, and the block 25, attached thereto, combined with a stop, substantially as described, actuated by the said block to prevent the descent of the said measuring-leg when it is desired to arrest the feed of the wire, substantially as described.

19 The feed-wheel having beveled teeth, the box by which the wheel is supported, and the shaft m^2, having beveled teeth to engage the said wheel, combined with a ratchet-wheel and with a pawl and means to operate the pawl to rotate the shaft, substantially as described.

20. The feed-wheel having teeth at its periphery and teeth m' at its under side, a shaft, m^2, to actuate the said feed-wheel, the ratchet of the said shaft, and the pawl and pawl-carrier, the box m^4, and friction-washer m^{12}, interposed between the ratchet-wheel and box, combined with means to act upon the said shaft and press it into the said box, the friction-washer preventing any accidental slipping of the ratchet-wheel on the shaft, substantially as described.

21. The wire-carrying-spindle having the spherical end a^9, feed-rolls carried by the said spindles to rotate the said feed-rolls, and a throat, *b*, combined with cutter-carriers concave at their upper sides to permit the rotation of the spherical end of the spindle and with means, substantially as described, to oscillate the said cutter-carriers.

22. The wire-carrying spindle, its feed-rolls, means to rotate them, and the throat *b*, combined with the cutter-carriers concave at their upper sides and convex at their lower sides, and with the rest *f*, concave at its upper side next the said cutter-carriers, substantially as described.

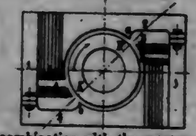
23. In a sailing-machine for uniting soles to uppers, a feed-wheel, the shaft m^2, to rotate the said feed-wheel, and the box or bearing m^4, in which the said shaft rotates, combined with a bearing in which the said box is made longitudinally adjustable, thereby enabling the feed-wheel to operate against the edge of the sole notwithstanding different distances at which the fastenings may be set back from the edge of the sole, substantially as described.

24. In a machine for uniting soles to uppers, a spindle to carry the wire, a spool-supporting yoke, and a spool having its center of rotation in line with the wire-passage through the said spindle, combined with the two bearings D^7 D^8, and the cup-like rigid portion D^{10}, connecting the said bearings, and the door E, to form a cover for the said cup D^{10}, substantially as described.

25. In a machine for uniting soles and uppers, a rotating wire-carrying spindle and a reel for the double-threaded wire rotating with the spindle, combined with feed-rolls for the wire and means to rotate them, the said feed-rolls having a series of projections, as *v*, which on the opposite feed-rolls are exactly in line, and with spaces also exactly in line, whereby the said projections and spaces are adapted to enter the exactly-opposite grooves and embrace the exactly-opposite threads *w* of the said double-threaded wire, substantially as described.

26. In a machine for uniting soles to uppers, the wire-carrying spindle having the enlarged lower end, combined with feed-rolls geared together and driven by a gear located wholly within the said enlarged lower end, substantially as described.

408,836. DYNAMO-ELECTRIC MACHINE. ALPHONSE I. GRAVIER, Paris, France. Filed Jan. 9, 1888. Serial No. 260,184. (No model.) Patented in France Jan. 17, 1887, No. 180,864; in Belgium Apr. 18, 1887, No. 77,108, and in England Apr. 18, 1887, No. 5,709.



Claim.—1. In combination with the rotatory armature of a dynamo-electrical machine, field-magnets provided on each side of said armature with two electro-magnetic cores of unequal magnetism and additional polar portions of less magnetism than either of said cores arranged after them in the direction of the armature's rotation, the cores of higher magnetism being in advance of the other cores and the said additional polar portions being magnetically connected with the magnetic frame of the machine intermediate the said cores of less magnetism of one pole and the bases of the more highly-magnetized cores of the succeeding pole, substantially as described.

2. In combination with the rotatory armature of a dynamo-electric machine, field-magnets provided with cores composed of two metals of unequal magnetic capacity, as soft iron and cast-iron, with the metal of greater capacity in advance, substantially as described.

3. In combination with the rotatory armature of a dynamo-electrical machine, field-magnets provided with cores or polar portions of like polarity, made of metal of different magnetic capacity, the core or polar portion whose metal is of greater capacity being in advance, substantially as described.

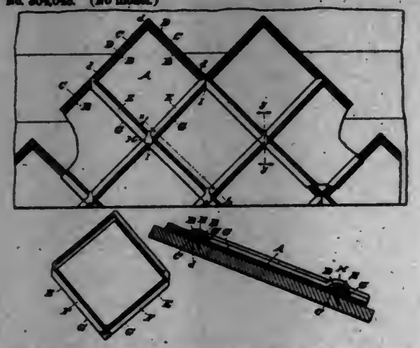
4. In combination with the rotatory armature of a dynamo-electric machine, field-magnets provided with cores of like polarity differing in cross-section and arranged with smaller cores in advance of the larger core or cores of the same polarity, substantially as described.

5. In combination with the rotatory armature of a dynamo-electrical machine, field-magnets of which the last, taken in the direction of the armature's rotation, is provided with a polar prolongation extending in the same direction preceded by a core with a smaller polar portion and of higher magnetism, substantially as described.

6. In combination with the rotatory armature of a dynamo-electrical machine, field-magnets having cores with their axes of winding transverse to the armature-axis and their polar ends turned toward the armature and provided with a prolongation extending from one side of a core of each pole and fastened at its outer end to the base or bases of the core or cores of the opposite pole, the prolongations lying on opposite sides of the armature and forming a magnetic yoke or frame of the machine, as well as polar portions for distributing field magnetism to the armature, substantially as described.

7. The improved dynamo-electrical machine provided with field-magnets whose normal magnetism diminishes in the direction of the armature's rotation and which are excited with said normally-diminishing magnetism by inducing-wire substantially equal in length to the induced wire of the armature, substantially as described.

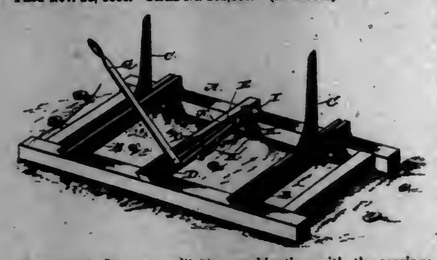
408,837. ROOFING-TILE. JOHN E. GOURTH and CARL W. BRAUN, Denver, Colo. Filed Feb. 21, 1888. Renewed Mar. 20, 1889. Serial No. 304,045. (No model.)



Claim.—1. A roofing-tile consisting of the flat surface having the ribs B near two of its edges, and the concavo-convex, having the miter portions I, substantially as specified.

2. A roofing-tile consisting of the flat surface A, having the ribs B and C and the channel D at two of its edges, the nail-opening, as described, and the concavo-convex edges having the raised portions H and the miter ends, substantially as specified.

408,838. LOG-PULLER. MILTON HARSON, New Edinburg, Ark. Filed Nov. 28, 1888. Serial No. 292,060. (No model.)



Claim.—1. In a saw-mill, the combination, with the carriage, having the block D, of the lever G, pivoted to the said block, the arm H, hook or finger I, connected at the lower end to the end of the arm H, and the connecting-rod L, connecting the upper end of the hook to an intermediate point of the lever, all constructed and arranged substantially as and for the purpose specified.

2. In a saw-mill, the combination, with the carriage A, having the head-blocks B B, movable standards C C, secured to said blocks B, and the block D between the blocks B, of the lever G, pivoted to the block D, arm H, pivoted on the same pivot with the lever, the spring M under the free end of the said arm, finger or hook I, connected at the lower end to the free end of the arm H by the link K, the connecting-rod L, connecting the upper end of the hook to the lever at a point above the pivot thereof, and the ears N N on the upper side of the arm H at the forward end, to guide the motion of the connecting-rod L, all constructed, arranged, and operated substantially as specified.

408,839. FURNACE AND APPARATUS FOR PRODUCING AND BURNING GASEOUS VAPORS. GEORGE H. HARVEY, Pittsburg, Pa. Filed June 6, 1888. Serial No. 276,285. (No model.)

Claim.—1. In combination, a blower connected by an air-conduit with an air-heating chamber, a burner adjacent to said chamber, an oil-receptacle of a carburetor, an air-conduit connected to convey air from the heating-chamber to the interior of the oil-receptacle, and a conduit connected to convey carbureted air to the burner, the conduit for carbureted air being inclosed to maintain its heat, substantially as specified.

2. In combination, a blower connected by an air-conduit with an air-heating chamber, a burner adjacent to said chamber, two carbureting oil-receptacles, an air-conduit provided with branches or extensions connecting the air-heating chamber with each receptacle, and a conduit connected with the burner and provided with branches or extensions connecting the same with the upper part of each carburetor, whereby two bodies of oil may be used to carburet air and the carbureted air from both may be mingled and conveyed to the burner, substantially as specified.

3. The combination of a blower connected by an air-conduit with an air-heating chamber, a burner adjacent to said chamber, a carbureting oil-receptacle, a conduit for heated air connecting the heating-chamber and carburetor, and a conduit for carbureted air connecting the carbureting oil receptacle and burner, the conduit for carbureted air being inclosed in the hot-air conduit, substantially as and for the purpose set forth.

4. The combination of a blower connected by an air-conduit with an air-heating chamber, a burner adjacent to said chamber, an air-conduit connecting the air-heating chamber and a carbureting oil-receptacle, and a by-pass pipe connecting the blower and the carbureting oil-receptacle, substantially as specified.

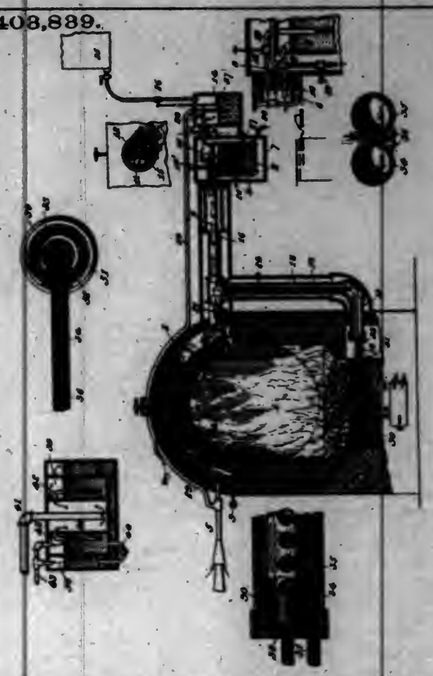
5. The combination of a blower connected by an air-conduit with an air-heating chamber, a burner adjacent to said chamber, two carbureting oil-receptacles, one of which is incased, a hot-air conduit connecting the heating-chamber with the space between the casing and its inclosed oil-receptacle, and also connecting said chamber by the medium of branch or extension pipes with both oil-receptacles, a pipe connecting the oil-receptacles for transferring oil, and a conduit for carbureted air connecting the receptacles with the burner, substantially as specified.

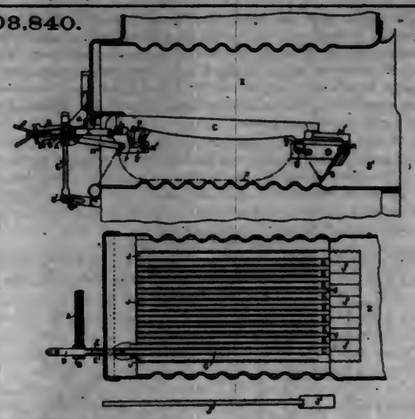
6. The combination of a blower connected by a conduit with a heating-chamber, a burner adjacent to said chamber, two carbureting oil-receptacles, one of which is incased and on a lower level than the other, a hot-air conduit connecting the heating-chamber with the space between the casing and its inclosed oil-receptacle and also, by the medium of branch or extension pipes, with both oil-receptacles, a pipe connecting the oil-receptacles for transferring oil, and a conduit for carbureted air connecting the receptacles with the burner, substantially as specified.

7. The combination of a blower connected by an air-conduit with a heating-chamber, a burner adjacent to said chamber, two carbureting oil-receptacles, one of which is incased and on a lower level than the other, which latter is provided with devices for automatically regulating the height of the liquid fed into the same, a hot-air conduit connecting an air-heating chamber with a space between the casing and its inclosed oil-receptacle, and also connecting said chamber by the medium of branch or extension pipes with both oil-receptacles, a pipe connecting the oil-receptacles for transferring oil, and a conduit for carbureted air connecting the receptacles with the burner, substantially as specified.

408,840. GRATE FOR FURNACES. THOMAS HENDERSON, Liverpool, England. Filed July 10, 1888. Serial No. 279,208. (No model.) Patented in England Oct. 2, 1876, No. 3,812.

Claim.—1. In combination, the horizontally-reciprocating bars K, a fixed bearer supporting the rear ends, an anti-friction roller supporting their front ends, the alternate bars J, having projections located near the forward end and supported at their rear ends upon a fixed bearing, an actuating-shaft having flanges formed thereon, and means for actuating said shaft, one of said flanges engaging the bars K for reciprocating them back and forth and the other flanges engaging the projections on the bars J, whereby they are tilted, substantially as described.



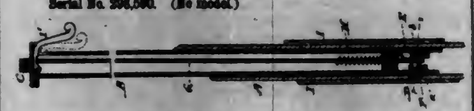


2. The combination of the shaft P, having vertical and horizontal flanges N N', a bar, C, having a notch formed therein and adapted to engage the vertical flange N, grate-bars K, having notches formed therein also adapted to engage said vertical flange, alternate bars J, having projections formed on their lower surface near the forward end and engaging the horizontal flange N', and means for actuating said bar C, whereby horizontal reciprocation is given the bars K and the bars J are tilted, substantially as described.

3. The combination of the alternate bars K with the alternate bars J, having horizontal flanges J' located below the level of the grate-surface and extended laterally and longitudinally beyond and for a short distance below the rear ends of the alternate bars K, whereby a flat dead-surface is formed with small or no air-spaces, substantially as described.

4. In combination with the shaft P, having vertical and horizontal flanges N N', bars J, having notched projections near their forward end adapted to engage the horizontal flange N', alternate bars K, having notches therein adapted to engage the vertical flange N, said notches being wider relatively to the flange N than the notches in the projections on the bars J, and means for actuating the shaft P, whereby in the movement thereof the bars J will be tilted before the bars K are reciprocated, substantially as described.

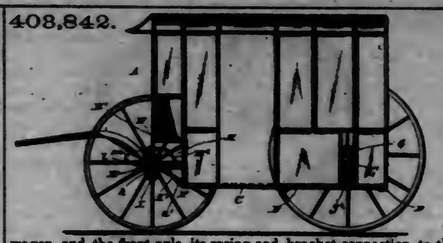
408,841. LAMP-STANDARD. WILLIAM C. HOGAN, Meriden, Conn., assignor to Edward Miller & Company, same place. Filed Feb. 4, 1889. Serial No. 298,590. (No model.)



Claim.—In a lamp-standard, substantially such as described, consisting of two tubes, one stationary and the other telescopically adjustable within the stationary tube, the combination therewith of a shoe attached to the lower end of the inner tube and so as to take a bearing upon the inner surface of the outer tube at one side, a corresponding shoe detached from the inner tube, but arranged opposite the attached shoe, the said two shoes constructed with seats upon their inner sides, a strut arranged in said seats, but of greater length than the distance between the said two seats of the shoe when in operation and so that the said strut lies in a diagonal plane, a rod within the inner tube, its lower end in connection with the said detached shoe, the rod extending upward to a convenient point above the outer tube, with means, substantially such as described, to force the said rod downward, and a spring the tendency of which is to yieldingly raise the said detached shoe, substantially as described.

408,842. DELIVERY-WAGON. GEORGE L. HOWLAND, Topsham, Me. Filed Mar. 16, 1888. Serial No. 268,581. (No model.)

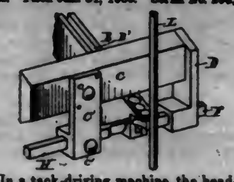
Claim.—1. The low-bodied wagon having the rear-axle chamber, the front-axle recess, and the low entrance portion, in combination with the rear axle, its elliptic spring and shackle connections, and the hanger-block secured to said spring and to the bottom frame of the wagon, and the front axle, its spring and bracket connection to the wagon-body, substantially as specified.



2. In a low-bodied wagon, the combination, with the recessed front and projecting front ledge over said recess, of the bearing-bracket having a goose-neck brace, the front axle, its spring supporting said bracket, the king-bolt, and its overhanging pivoted brace, substantially as specified.

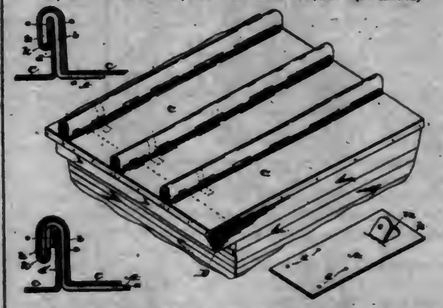
3. In a low-bodied wagon, the combination, with the transverse rear-axle recess having open ends, of the rear axle and its transverse elliptic spring in said recess, the shackles connecting the spring to the axle, and the hanger-block clipped to the spring and bolted to the sill-bar of the wagon, substantially as specified.

408,843. TACK-FEEDING MACHINE. LEANDER D. JUNKINS, Somerville, Mass. Filed Jan. 31, 1888. Serial No. 262,363. (No model.)



Claim.—In a tack-driving machine, the head-plate A, having a raceway-piece, B, the slide C, having rigidly attached to it the arms C' and D, in which are fixed, respectively, the segregating-bar H and the feed-bar F, as described, and adapted to operate substantially as set forth.

408,844. SHEET-METAL ROOFING. ALVIN C. KAUFFMAN, Canton, Ohio. Filed Oct. 30, 1888. Serial No. 289,490. (No model.)



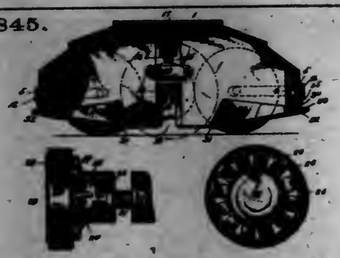
Claim.—In devices for securing sheet-metal roofing in position, the combination, with two adjacent upturned flanges of the sheets of metal of different heights, of an anchoring-piece secured at one end to the roof and projecting up between the said adjacent flanges of the sheets of metal, the anchoring-piece having a tongue partially severed therefrom, the base of the tongue being located at the upper edge of the lowermost of the two upturned flanges, the top of the anchoring-piece being embraced by a folded-over edge of the higher of the two upturned flanges, and the opening formed in the anchoring-piece by the partial severing of the tongue therefrom being free to receive the tongue in the finished seam, substantially as set forth.

408,845. CARPET-SWEEPER. GEORGE W. KELLEY, Goshen, Ind. Filed May 26, 1888. Serial No. 275,167. (No model.)

Claim.—1. In a carpet-sweeper, a case having its side walls projected beyond its end walls and longitudinally recessed, in combination with L-shaped spring-arms mounted in the recesses and projecting to the end of the case and provided with bearings, and drive-wheels mounted on said bearings, substantially as specified.

2. In a carpet-sweeper, a case the side walls of which are projected beyond the end walls, and are provided with longitudinal re-

408,845.



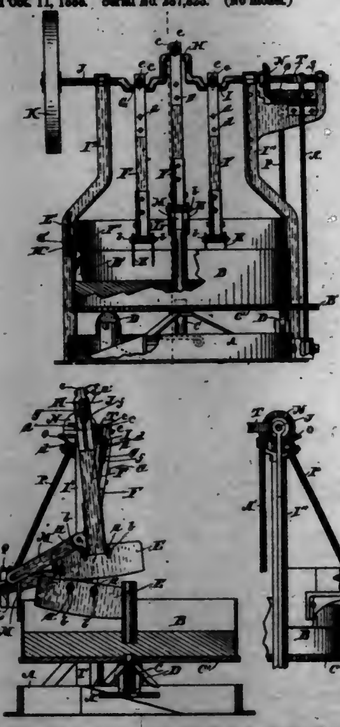
cases, in combination with L-shaped spring-arms secured in the recesses and projecting to the ends of the case and provided with bearings, drive-wheels mounted on the bearings, and bifurcated springs secured to the case and bearing against the drive-wheels, substantially as specified.

3. The case 1, slotted, as at 13, and formed with ways 14, in combination with the sliding plate 15, having the stud 16, the interposed spring 17, the depending shaft receiving spring-arms 18, and the keeper 19, substantially as specified.

4. The shaft 20, having the reduced neck portion 21 and end portion, 22, in combination with the pulley 23, having the body portion 24, mounted on the end of the shaft, said body being slotted, as at 26, bent, as at 27 and 28, and an outer rim, 25, substantially as specified.

5. In a carpet-sweeper, a brush-roll provided with a pulley at one end, the same consisting of a strip of metal secured to the roll to form a cylinder or body and slotted from its outer to near its inner edge, the slotted portion being flared and terminating in bent ends, and a frictional band mounted on the flared portion, substantially as specified.

408,846. MACHINE FOR CUTTING MEAT. HENRY KOEPP, Milwaukee, Wis., assignor of one-half to Frederick X. Hedden, same place. Filed Oct. 11, 1888. Serial No. 287,233. (No model.)

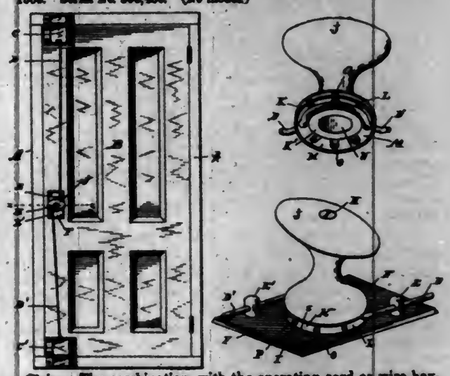


Claim.—1. In a meat-cutting machine, the combination, with the knife-bars F and the thereto-attached knives, of two crank-shafts, J and L, respectively connected with the respective ends of said knife-bars, and mechanism for rotating both of said crank-shafts, substantially as and for the purpose specified.

2. In a meat-cutter, the combination of the crank-shaft J, mounted in journal-bearings upon the supporting-standards I" I", knife-bars F, journaled at their upper ends to the arms of said crank-shaft J, crank-shaft L, connecting-bars M, pivoted at their upper ends to the lower ends of said knife-supporting bars F and journaled at their opposite ends to the arms of said crank-shaft L, knives E E, affixed to the lower ends of said bars F, and rotating meat-block B, all substantially as and for the purpose specified.

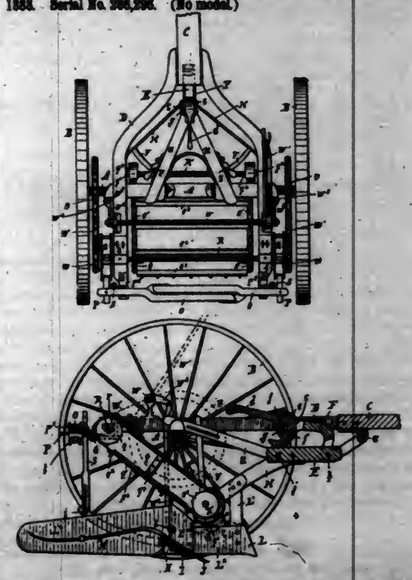
3. The combination, with the stationary frame of the machine, of the bracket E, provided with slot J', lever H', pivoted at one end to said bracket E and provided with slot K', bolt or pin G, secured at one end to said lever H' within said slots J' and K' and at its opposite end to the plow-supporting arm F', arm F', and plow D', all substantially as and for the purpose specified.

408,847. BOLT. CHARLES J. LARSENBACH, Dorchester, Iowa, assignor of one-half to Jacob F. Force, Minneapolis, Minn. Filed Jan. 16, 1889. Serial No. 296,486. (No model.)



Claim.—The combination, with the operating cord or wire having its ends connected to the oppositely-arranged spring locks or bolts, of the operating device consisting of the knob-plate, guide-studs, spindle, and recessed and apertured knob-disk and knob, constructed and combined to operate in the manner and for the purpose substantially as herein shown and set forth.

408,848. POTATO-DIGGER. JAMES H. LEWIS, Detroit, Mich., assignor of one-half to Charles G. Hampton, same place. Filed Mar. 6, 1888. Serial No. 266,296. (No model.)



Claim.—1. The combination, with a plow and supporting-frame of a potato-digger, substantially as described, of a carrier mounted on a frame pivotally secured at its rear end in bearings longitudinally adjustably secured to the frame and free to rise and fall at its front end, and a stop on the side plow to support said front end, substantially as described.

2. In a potato-digger, substantially as described, the combination of the supporting frame or bounds D, the transverse shaft R, the boxes *r*, in which said shaft is journaled, the supporting-brackets *s*, adjustably secured to the bounds, the sprocket-wheels *m*, secured upon said shaft and provided with drive-connection from the ground-wheel, the frame *q* of the carrier pivotally sleeved upon the shaft R, the shaft R', journaled in the lower ends of the frame *q*, and the carrier mounted upon the shafts R R', substantially as described.

3. In a potato-digger, substantially as described, the combination of the supporting frame or bounds D, the transverse shaft R, the boxes *r*, in which said shaft is journaled, the brackets *s*, supporting said boxes, adjustably secured to the bounds, the sprocket-wheels *m*, secured upon said shaft and provided with drive-connections from the ground-wheels, the carrier-frames *q*, sleeved upon the shaft R at their rear ends and loosely journaled upon their front ends, the extension-joints in said carrier-frames, the shaft R', journaled in the front ends of the carrier-frames, the sprocket-wheels mounted upon the shafts R R', and the carrier-chains *o'* and rakes *o²*, substantially as described.

4. In a potato-digger, substantially as described, the combination, with the shaking grates M, mounted in the rear of the plow, of the vibrating shaker-arms O, mounted upon the rear end of the frame transversely thereof and hinged to the rear extension of the bounds, the striker-arms P, transverse shaft R and its drive-connection with the ground-wheels, and the wheels Q, mounted upon the shaft R and provided with striker-arms or cocks, substantially as described.

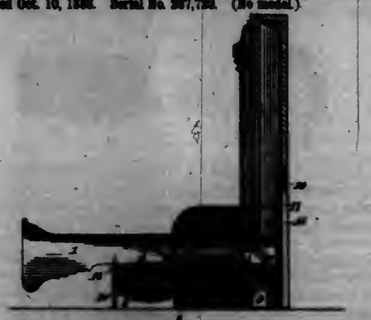
5. In a potato-digger, the combination, with the supporting-frame mounted upon the axle, of the plow-beam E, the lever F, pivotally secured to the plow-beam and fulcrumed at its forward end to the plow-frame, substantially as described, the elevised rear end, *c*, of the lever F, the eccentric cam-lever *d*, mounted therein, and adjusting-bolts *f f*, the parts being arranged to operate substantially as described.

408,849. WATCH-MAKER'S STAKING-TOOL. GASPARD MARTEL, Boston, Mass. Filed Mar. 1, 1889. Serial No. 301,850. (No model.)



Claim.—The stationary perforated bed-plate *b* and stationary base *a*, having the post or standard *c* and vertical pivot-pin *d*, having its axis coinciding with that of the plate *b*, in combination with the stake or punch carrying arm *e*, pivoted on the pin *d*, and a locking device for securing said arm to the standard *c* after being adjusted, substantially in a manner and for the purpose set forth.

408,850. BED-LOUNGE. ARTHUR H. MERRILL, Hartford, Conn. Filed Oct. 10, 1888. Serial No. 287,732. (No model.)



Claim.—1. In a bed-lounge, a bed-case and a mattress-frame, which is pivoted in said bed-case and is provided with socket-piece 16, in combination with a lounge-seat hinged to said bed-case and provided with pins 11, which are adapted to engage said socket-pieces, substantially as and for the purpose specified.

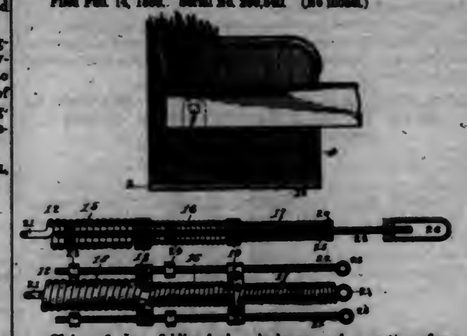
2. In a bed-lounge, a bed-case, a mattress-frame which is pivoted in said bed-case, and a reversible lounge-seat which is provided with legs 10 and is hinged to the base of said bed-case, in combination with one or more eyes and hooks 12, whereby said seat and frame are fastened rigidly together when each bed-lounge is arranged for use as a bed, substantially as and for the purpose specified.

3. In a bed-lounge, a bed-case, a mattress-frame which is provided with a socket-piece, 16, and is pivoted in said bed-case, and one or more springs which are adapted to facilitate the manipulation of said mattress-frame, in combination with a seat fitted to said bed-case and provided with a pin which is adapted to enter said socket when the bed-lounge is disposed as a lounge, substantially as and for the purpose specified.

4. In a bed-lounge, a bed-case, a mattress-frame which is pivoted in said bed-case, and a reversible seat which is hinged to the base of said case, in combination with one or more hooks and eyes, which are attached to said seat and mattress-frame and are adapted to fasten them firmly together when said bed-lounge is disposed as a bed, substantially as and for the purpose specified.

5. In a bed-lounge, a bed-case, a mattress-frame which is pivoted in said bed-case, a spring engaging both said mattress-frame and said bed-case and tending to raise the former to its erect position, and a reversible seat which is hinged to the base of said bed-case, in combination with one or more hooks and eyes, which are attached to said seat and mattress-frame and are adapted to fasten said seat and mattress-frame firmly together when the bed-lounge is disposed as a bed, substantially as and for the purpose specified.

408,851. FOLDING BED. ARTHUR H. MERRILL, Hartford, Conn. Filed Feb. 14, 1888. Serial No. 263,840. (No model.)



Claim.—1. In a folding bed, a bed-case and a mattress-frame which is pivoted in said case, in combination with a compound coiled spring attached to said case and to said frame, and consisting of a series of two or more coiled springs of unequal strength or elasticity, which are fastened end to end, and are provided with a corresponding number of terminal perforated heads, and an axial rod carrying an equal number of nuts adjustable thereon which are adapted to engage said heads, respectively, substantially as and for the purpose specified.

2. In a folding bed, a bed-case, a mattress-frame which is pivoted in said case, and a series of coiled springs of unequal strength or elasticity which are provided with terminal heads, in combination with an axial screw-threaded rod carrying nuts adjustable thereon which are adapted to engage said heads within said spring, substantially as and for the purpose specified.

3. In a folding bed, a bed-case, a mattress-frame which is pivoted in said case, and a series of two or more coiled springs of unequal strength or elasticity arranged in line, provided with heads fastened together and attached to said bed-case, in combination with a screw-threaded traction-rod which is provided with nuts for engagement with said heads and is attached to said mattress-frame, substantially as and for the purpose specified.

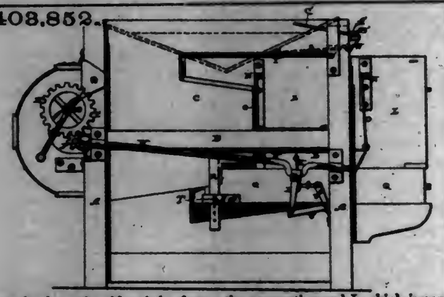
4. In a folding bed, a bed-case, a mattress-frame which is pivoted in said case, and a number of unequal-coiled springs, joined in one, provided with heads and attached to said bed-case, in combination with a screw-threaded traction-rod which is provided with nuts adjustable thereon for engagement with said heads and is attached to said mattress-frame, substantially as and for the purpose specified.

5. In a folding bed, a bed-case and a mattress-frame which is pivoted in said bed-case, in combination with a number of coiled springs of unequal elasticity having a fixed attachment to each other and to said bed-case, and provided with a traction-rod which has a fixed attachment to said mattress-frame and a sliding attachment to said springs, substantially as and for the purpose specified.

408,852. FANNING-MILL. ROBERT MILLER, Hebron, Nebr. Filed Feb. 6, 1889. Serial No. 298,905. (No model.)

Claim.—1. The combination of the cranked shaft H, which ex-

408,852.



tends along the side of the frame, the connecting-rod I, which is connected at its upper end to the crank, and the bent cranked lever U, which is pivoted upon the frame-work, and which has its outer end attached to the connecting-rod and its inner end to the lower shoe, substantially as shown.

2. The combination of the cranked rod, the connecting-rod connected thereto and provided with the perforated flange, the bent lever connected to the lower end of the connecting-rod for operating the lower shoe, the connecting-rod K, fastened to the flange, and the upper shoe, substantially as described.

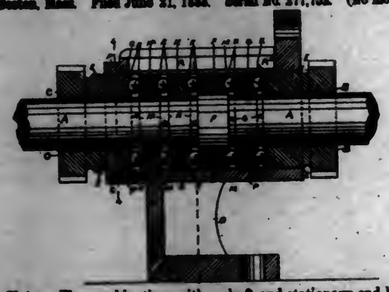
3. The combination of the movable portion of the bottom of the hopper, the rod connected thereto, the connecting-rods, the levers or arms, the operating-shaft, and suitable bearings for the shaft, substantially as specified.

408,853. BUCKLE AND BACK-BAND HOOK. REESE MUSSER, Calvert, Tex. Filed Jan. 14, 1889. Serial No. 296,571. (No model.)



Claim.—The back-band hook and buckle consisting of the plate having at one edge the parallel arms, each formed in a proximately U shape, and the proximately U-shaped hook having unequal-lengthed arms and hung or pivoted between two of the longitudinal portions of the U-shaped arms of said plate, the pivotal connection or point being near the inner end of the hook and the inner or free ends of the plate-arms, substantially as shown and described.

408,854. ANTI-FRICTIONAL BEARING FOR SHAFTS. FRED BRINK G. MYERS, Winthrop, assignor of one-half to Wellington P. Smart, Boston, Mass. Filed June 21, 1888. Serial No. 277,782. (No model.)

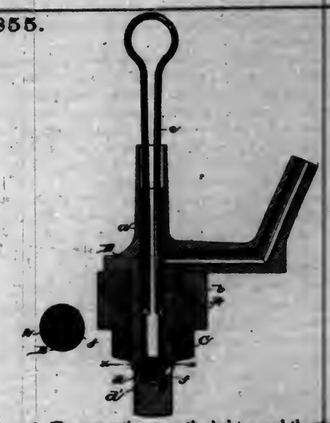


Claim.—The combination, with a shaft and stationary end bearings therefor, of a fixed and of loose collars on the shaft, having grooves or ways K in their opposite faces severally concentric with the shaft, loose balls J, located between and rolling in the grooves of said collars, and loose blocks L, placed between and separating the balls, substantially as described, for the purposes specified.

408,855. SUPPORT FOR SPINNING-SPINDLES. JAMES H. NORTHROP, Hopedale, Mass., assignor to George Draper & Sons, same place. Filed Jan. 2, 1889. Serial No. 295,193. (No model.)

Brief.—The object of the invention is to prevent the rotation of the step and the bolster in the supporting-case by means of a single pin.

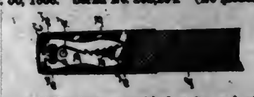
408,855.



Claim.—1. The supporting-case, the bolster, and the step therein, each notched as described, combined with a single vertically-placed pin or stop, *f*, to engage both the step and bolster, substantially as described.

2. The supporting-case, the bolster notched at its lower end, and the step therein, notched as described, the bolster and step being connected together adjustably by screw-threads, combined with a pin or stop to engage both the step and the bolster to restrain them from rotation, substantially as described.

408,856. BILLIARD-CUE. WILL R. OWENS, Springfield, Dak. Filed Nov. 30, 1888. Serial No. 292,294. (No model.)



Claim.—1. A billiard-cue provided at its end with a tip-fastener made in two parts pivoted together and having jaws, and a locking-bolt passing between them to hold and secure the tip, substantially as described.

2. In combination with a cue slotted at its end, a tip-fastener placed in said slot and composed of two parts pivoted together and having jaws above and serrated lower ends, and a bolt to spread the serrated ends of the parts and hold the fastener in the cue, as well as secure the tip, substantially as described.

3. In combination with the cue slotted at its end, the tip-fastener made in two parts pivoted together and having jaws above serrated and the bolt to spread the lower ends of said fastener, the ferrule B, to cover the end of the cue, and the tip-fastening mechanism, substantially as shown and described.

408,857. SPLIT PULLEY. MARSHAL T. REEVES and MILTON O. REEVES, Columbus, Ind., assignors to the Reeves Pulley Company, same place. Filed Sept. 24, 1888. Serial No. 286,208. (No model.)



Claim.—1. A split pulley consisting of the following elements, namely: two substantially semi-cylindrical sections, each having tenons projecting from its straight side at one side of its central plane, and corresponding recesses arranged on the other side of said central plane, the recesses in one section being adapted to receive the tenons of the other section, each section having a central hole passing through the plane of the pulley at right angles thereto, and a keyway arranged on one side of said central hole communicating therewith and extending transversely through both sections and their tenons, and a key fitted to said keyway, all combined and arranged substantially as specified, whereby the two sections are held together to form a complete cylinder.

2. In a pulley, the combination of two like semi-cylindrical sections, each having tenons projecting from its straight edge, and corresponding recesses to receive said tenons, and having a central hole passing through the plane of said section at right angles thereto, and keyways arranged on opposite sides of the central hole, said keyways being formed partly in each of the sections and extending through said tenons, and wedge-shaped keys fitted in said keyways, and a split hub fitted in said central hole, all arranged to co-operate substantially as specified, whereby the two sections are held together so as to form a complete cylinder, and the parts of the split hub are at the same time clamped together.

3. A belt-pulley having a central hole passing through the plane of the pulley at right angles thereto, and having a keyway formed therein at one side of said central hole and communicating therewith, a wedge-shaped key fitted in said keyway, and a split hub mounted in said central hole.

408,858. HUB FOR SPLIT PULLEYS. MARSHAL T. REEVES and MILTON O. REEVES, Columbus, Ind., assignors to the Reeves Pulley Company, same place. Filed Sept. 24, 1888. Serial No. 286,210. (No model.)



Claim.—1. The combination, in a split pulley, of two substantially semi-cylindrical diametrically-separable sections, each provided on its side with a semicircular annular groove, and a metallic hub adapted to be secured to the web of said pulley, and having an annular flange adapted to fit in said grooves, whereby the two pulley-sections are held together, substantially as specified.

2. A hub for split pulleys, consisting of two substantially semi-cylindrical diametrically-separable metallic sections, each having an annular lug projecting beyond the line of division, and a corresponding recess receding from said line, the recess in each section being adapted to receive the lug of the other section, and screws passing through the body of the hub into said lugs, whereby the two sections are secured together, substantially as specified.

3. A hub for split pulleys, consisting of two substantially semi-cylindrical diametrically-separable metallic sections, each having an annular lug projecting beyond the line of division, and a corresponding recess receding from said line, the recess in each section being adapted to receive the lug of the other section, screws passing through the body of the hub and through said lugs, whereby the two sections are secured together and the hub also thereby secured to a shaft, and an annular flange projecting from the hub and adapted to enter the web of the pulley, whereby the hub is adapted to hold the two sections of a split pulley together, all substantially as specified.

408,859. SPLIT PULLEY. MILTON O. REEVES and MARSHAL T. REEVES, Columbus, Ind., assignors to the Reeves Pulley Company, same place. Filed Nov. 24, 1888. Serial No. 291,751. (No model.)

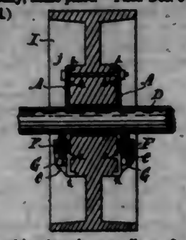


Claim.—1. A split pulley having a web formed of two like sections, each consisting of two disk segments secured together one upon the other, one of said segments being less than a half-circle, and the other segment being correspondingly more than a half-circle, so that when the two sections are placed together their larger segments overlap and the smaller segment of each forms with the larger segment of the other a complete circle.

2. A wooden pulley provided with a pair of metallic plates secured to opposite ends of the wooden hub of the pulley, each of said plates having a central opening of larger diameter than the shaft, and two lugs projecting inward from one of the sides of said opening, a keyway arranged in the side of the opening opposite the space between said lugs, and a key, all arranged to co-operate to secure the pulley on a shaft, substantially as specified.

3. A pulley having a central opening of larger diameter than the shaft, a pair of radial lugs projecting inward from one side of said opening and engaging the shaft, and a key arranged on the opposite side of the shaft to force the shaft against the lugs, whereby the pulley is secured upon the shaft, substantially as specified.

408,860. HUB-PLATE FOR WOODEN PULLEYS. MILTON O. REEVES and MARSHAL T. REEVES, Columbus, Ind., assignors to the Reeves Pulley Company, same place. Filed Dec. 31, 1888. Serial No. 295,067. (No model.)



Claim.—The combination, in a pulley, of a pair of metallic plates secured to opposite ends of the hub of the pulley, each of said plates having a central bearing adapted to fit one side of the shaft, a radial slot extending from said bearing to the periphery of the plate, a pair of lugs projecting from the outer side of the plate on opposite sides of said slot, a bar adapted to slide in said slot and arranged to engage said lugs, and means for forcing the bar against the lugs by pressure against the shaft mounted in the bar, whereby the pulley is secured to the shaft, substantially as specified.

408,861. TEMPORARY COVERING FOR PULLEYS. MILTON O. REEVES, Columbus, Ind., assignor to the Reeves Pulley Company, same place. Filed Feb. 26, 1889. Serial No. 301,080. (No model.)



Claim.—The above-described temporary covering for pulleys, consisting of a strip of paper or other wrapping material arranged to cover the face of the pulley, a series of wooden bars, each having a series of transverse grooves in one side, said bars being arranged at intervals outside of said wrapping-strip around the periphery of the pulley substantially parallel with its axis, and a cord passed around the pulley over the bars, resting in said grooves therein and tightly secured thereon, all substantially as and for the purpose specified.

408,862. SUPPORT FOR SPINNING-SPINDLES. JOHN S. KNIGHTON, Lowell, assignor of one-half to George Draper & Sons, Hopedale, Mass. Filed Aug. 26, 1888. Serial No. 283,780. (No model.)

Brief.—The object of the invention is to improve the construction of spindle-supports wherein the lower end of the spindle is allowed to move and to enable the step to move both vertically and laterally with the end of the spindle.



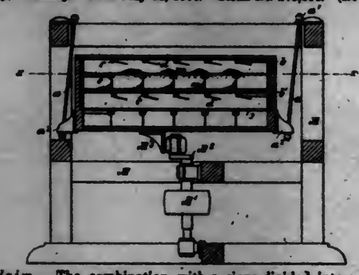
Claim.—1. The combination, with a sleeve-whirl spindle, a supporting case or holder, and a rigid bolster-bearing therein, of an independent elastic step-holder separated from the bolster, but securely held at or near its upper end within the said case, and a step connected to and carried by the lower freely-movable portion of the said step-holder, the said step-holder normally acting to keep the step in the desired or central position in the said case, substantially as described.

2. The combination, with the sleeve-whirl spindle, the supporting case or holder, and the rigid bolster-bearing, of the elastic step-holder *h*, firmly held at or near its upper end in the said supporting-case, and step *f* therein and suspended by the said step-holder, the step-holder being free to yield both laterally and vertically within the said supporting-case, substantially as described.

3. The combination, with a sleeve-whirl spindle, a supporting case or holder, and a bolster-bearing therein, of an independent elastic step-holder separated from the bolster, but securely held at or near its upper end within the said case or holder, and a step connected to and carried by the lower freely-movable portion of the said step-holder, the said step-holder normally acting to keep the step in substantially central position in the said case, substantially as described.

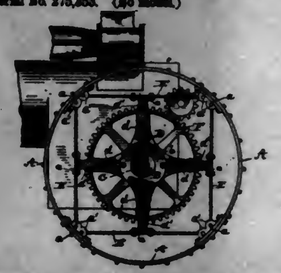
4. The combination, with a sieve-whirl spindle, a supporting case or holder, and a bolster bearing therein, and a laterally-movable step, of a step-holder composed of wire coiled to form a spring, the upper end of the said step-holder being securely held within said supporting case or holder and being connected at its lower end to the said step to suspend it in the case, whereby the step, besides being free to yield laterally, is also enabled to yield vertically, substantially as described.

408,863. SIFTING APPARATUS. HERMANN SEEK, Dresden, Saxony, Germany. Filed July 11, 1888. Serial No. 279,668. (No model.)



Claim.—The combination, with a sieve divided into compartments, of flaps or doors opened and closed by movement of the sieve for propelling the material along the sieve, substantially as described.

408,864. WHEEL. JESSE WALRATH, Racine, Wis. Filed May 26, 1888. Serial No. 275,253. (No model.)



Claim.—1. A wheel provided with three or more bar-springs interposed between the hub and the tire or rim, each spring being connected at its ends to the said tire or rim at points independent of the connections of the other springs, substantially as described.

2. A wheel provided with three or more bar-springs interposed between the hub and the tire or rim and connected to the hub, each spring being connected at its ends to said tire or rim at points independent of the connections of the other springs, substantially as described.

3. A wheel provided with three or more bar-springs, each spring being connected to the tire or rim at points independent of the connections of the other springs and connected centrally or intermediately with arms rigidly attached to said hub in line with said arms, substantially as described.

4. The combination, with the rim or tire, of bar-springs having their ends attached to said rim or tire at points independent of the connections of the other springs, arms rigidly attached to the hub and extending radially therefrom, and a flexible connection between each of the springs and one of the said arms, substantially as described.

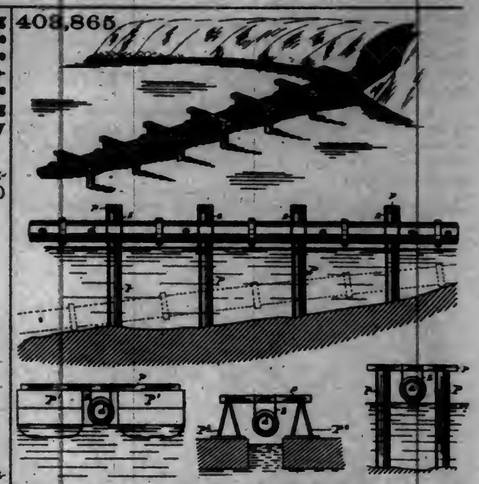
5. The combination, with the rim or tire, of the hub and spider rigidly attached thereto, bar-springs, each connected to the rim or tire at points independent of the connections of the other springs, and links connecting the spider-arms centrally with the said springs in line with said arms, substantially as described.

6. The combination, with the rim or tire, of the hub, arms rigidly attached thereto and extending radially therefrom, and two series of bar-springs in different vertical planes interposed between the hub and the tire or rim, each spring having its ends connected to the rim or tire and connected intermediate its ends with one of the said radial arms, the ends of one set of springs being connected to the tire or rim intermediate the ends of the other set of springs, substantially as described.

408,865. APPARATUS FOR LAYING PIPE. JOHN P. WARD, Jersey City, N. J. Filed July 28, 1888. Serial No. 280,712. (No model.)

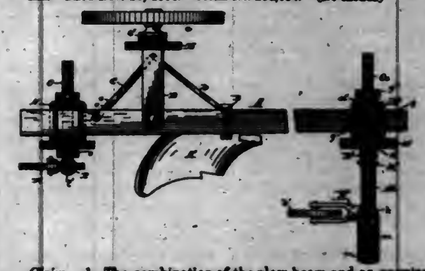
Claim.—The herein-described means for laying piping, said means

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consisting of supports combined with spaced slings each of a strength sufficient to support only its own section, so that on the severing or freeing of one of the slings the extra weight thrown on the other slings will cause them to break and the whole length of piping to drop, all substantially as set forth.

408,866. SULKY-PLOW. EDMUND C. WHITEVEAR, South Bend, Ind. Filed Nov. 27, 1888. Serial No. 291,957. (No model.)



Claim.—1. The combination of the plow-beam and an angularly-adjustable casting mounted thereon, with the shaft, its lever and locking sector therefor, and a caster-wheel connected to said shaft, but capable of an independent lateral swinging movement below the same, and the devices for locking said wheel, substantially as specified.

2. The combination of a plow, a casting secured to the beam thereof, and a short shaft journaled in said casting, and a lever for shifting said shaft, with a caster-wheel loosely connected to and swinging below said shaft and vertically adjusted thereby, and the devices for locking said caster-wheel independently of its movement by the shaft, substantially as described.

3. The combination of the casting having a bearing in its under surface and a sector on one end, and the shaft mounted in said bearing, with the caster-wheel yoke connected to and swinging horizontally beneath said shaft, and the lever on said shaft, and its catches for respectively engaging the sector and locking the swinging yoke, substantially as described.

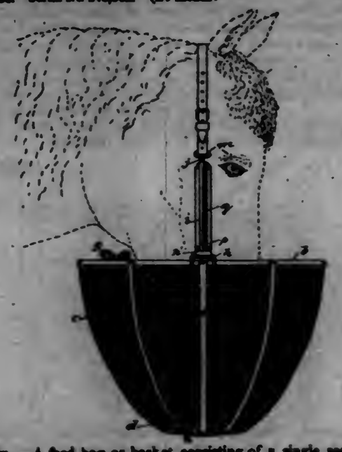
4. The combination of the casting, the shaft journaled therein having a depending stud, G', and the lever and sector for adjusting said shaft, with the caster-wheel yoke having a perforated boss mounted on said stud, a bracket rising from said boss, and a locking-arm secured to said bracket, and a catch on said lever engaging and locking said arm, all substantially as and for the purpose described.

5. The combination, with a plow, of a casting secured to the beam thereof and angularly adjustable thereon, the shaft journaled in bearings on said casting, and the caster-wheel connected to said shaft, and the mechanism for adjusting and locking the caster-wheel independently of the shaft, substantially as set forth.

6. The combination of the plow the bar B, extending to the land-side thereof, the wheel adjustably mounted on the end of said bar, and the adjustable braces for said bar respectively clipped and bolted to the beam, with the pair of castings F and N, respectively in front and in rear of the plowshare, the adjustable horizontal shafts jour-

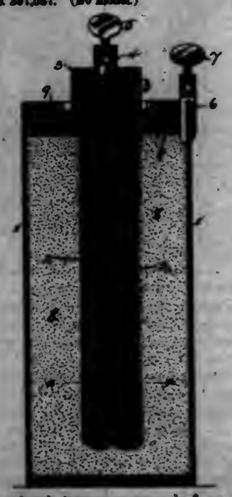
naled in said castings, the front and rear swinging caster-wheels on said shafts, and the locking devices for said wheels, all constructed and arranged substantially as specified.

408,867. FEED-BAG. JOHN H. WILLIAMS, Boston, Mass., assignor to the Boston Feed Basket Company, of New Hampshire. Filed May 10, 1888. Serial No. 273,502. (No model.)



Claim.—A feed bag or basket consisting of a single seamless piece of wire-cloth, having the upper edge or rim bound by strips of metal inclosing the upper edge of the fabric, broad metallic strips extending at short intervals from the binding of the rim around the body of the basket outside of the same, a metallic housing hinged to the binding-rim, a supporting-rod extending into said housing, and a spring interposed between the lower end of the rod and the upper end of the housing, whereby weight in the basket will compress the spring, substantially as and for the purposes set forth.

408,868. GALVANIC BATTERY. DON J. ARNOLD, Omaha, Nebr., assignor of one-half to Marian B. Coryell, same place. Filed Jan. 26, 1888. Serial No. 297,827. (No model.)



Claim.—1. A galvanic battery composed of a receiving and retaining jar and a solid filling consisting of litharge, chloride of zinc, muriate of ammonia, oxide of mercury, and a cement, as plaster-of-paris or hydraulic cement, a carbon or carbons, contact-posts, and a sealing-cap of asphaltum or mineral pitch.

2. A galvanic battery composed of a receiving and retaining jar, a solid filling consisting of litharge, chloride of zinc, muriate of ammonia, oxide of mercury, and a cement, as plaster-of-paris or hydraulic cement, a plurality of round carbons, a clamp inclosing and binding the upper ends of said carbons together, contact-posts, and a sealing-cap of asphaltum or mineral pitch.

3. A galvanic battery consisting of a jar, a plurality of round carbons contained therein, a clamp inclosing and binding said carbons together, contact-posts connected, respectively, to said carbon-clamp and jar, a solid filling surrounding said carbons and filling the spaces between the same and the jar, and a sealing cap or cover, whereby the battery is rendered incapable of being affected by atmospheric influences and can be readily transported from place to place without injury to or displacement of the current-exciting filling.

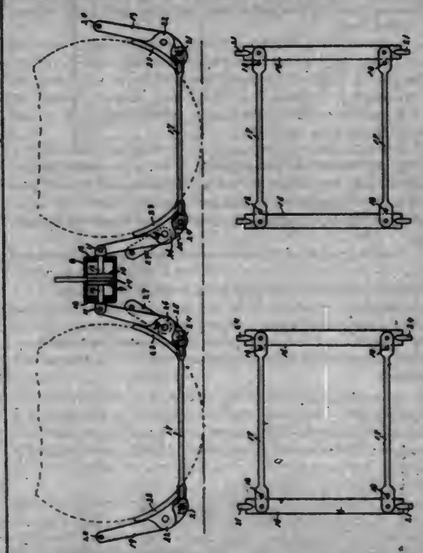
408,869. RECOVERING SPENT ALKALI. VICTOR G. BLOEDE, Baltimore, Md., assignor of one-half to John Bancroft, Wilmington, Del. Filed Apr. 13, 1888. Serial No. 270,503. (No specimens.)

Claim.—The process herein described for the recovery or rehabilitation of spent alkaline liquors, consisting of the following steps: first, the saturation or supersaturation of said liquors with phosphoric acid, thereby effecting the precipitation of the fatty and coloring matters; second, decanting or filtering the liquor from the separated impurities; third, when found desirable, destroying the residuary color in the decanted liquor with chlorine or its equivalent, and, fourth, subjecting the clarified liquor to the action of lime, barium, or other equivalent compounds capable of entering into an insoluble combination with or extracting the phosphoric acid and liberating the soda or potash in an available form as carbonate or hydrate.

408,870. RECOVERING ALKALI. VICTOR G. BLOEDE, Baltimore, Md., assignor of one-half to John Bancroft, Wilmington, Del. Filed June 13, 1888. Serial No. 276,998. (No specimens.)

Claim.—The process herein described for the utilization or recovery of spent alkaline lyes, consisting in the saturation or supersaturation of said lyes with sulphurous acid, thereby effecting the separation of the impurities and producing a sulphite or bisulphite of the alkali available as such, and the further conversion of the said sulphites or bisulphites into hydrates or carbonates by subjecting them to the action of caustic or carbonate of lime, barium, or other equivalent compounds.

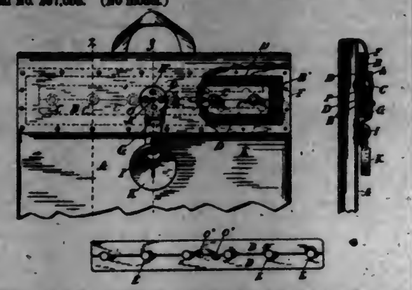
408,871. LOCOMOTIVE-DRIVER BRAKE. GEORGE A. BOYDEN, Baltimore, Md., assignor to the Boyden Power Brake Company, same place. Filed Dec. 15, 1888. Serial No. 293,573. (No model.)



Claim.—1. In a locomotive-driver brake, the combination, with a cylinder provided with two separate pistons, a supply-port in said cylinder between said pistons, the two floating levers 25, the brake-shoes 23, pivoted to said floating levers, the levers 19 and their brake-shoes, of the brake-beams 16 and the adjustable connecting-beams 17, whereby the brake-shoes may be adjusted on opposite sides of the wheels, substantially as specified.

2. The combination, with the floating levers 25 and the piston-rods by which they are operated, of the brake-beams 16 and brake-shoes, the adjustable tie-rods 17, pivoted to the levers 25 and 19 on opposite sides of the driver, and the links to which said floating levers are fulcrumed, substantially as specified.

408,872. MAIL-BAG. HOMER L. BOYLE, Grand Rapids, assignor of one-half to Horace B. Peak, Allegan, Mich. Filed Jan. 21, 1889. Serial No. 297,092. (No model.)



Claim.—1. The combination, with a bag having buttons and a flap having holes adapted to said buttons overlapping its mouth for closing the same, of a pair of parallel clamping-bars arranged connectedly to said flap, and a hasp pivoted to said flap, connected with said bars, and adapted to open and close said bars for embracing said buttons, substantially as described.

2. In combination with a bag having buttons arranged near its mouth and a flap having a lining having holes adapted to said buttons overlapping its mouth, a frame arranged between said lining and flap, and a pair of parallel clamping-bars arranged connectedly to said flap, a hasp pivoted to said flap, connected to said bars, and adapted to open and close the same, substantially as described.

3. In combination with a bag having a flap overlapping the mouth, said flap being provided with a lining and with a frame inserted between said lining and flap, forming a chamber, substantially as described, and having buttons attached to said bag for securing said flap, adapted to pass through openings in said lining into said chamber, substantially as described, and clamping-bars arranged in said chamber, adapted to embrace the shanks of said buttons, substantially as described, a hasp pivoted to said flap and connected with the clamping-bars and adapted to open and close said bars, substantially as described.

4. In combination with a bag having buttons attached and a flap having a lining provided with holes adapted to said buttons, overlapping the mouth, and having a frame inserted between said lining and flap, clamping-bars attached to a pivoted hasp adapted to open and close said bars for embracing the buttons and arranged inside of said frame, substantially as described.

5. In combination with a bag having buttons attached and having a flap provided with a lining having button-holes adapted to said buttons, clamping-bars arranged between the lining and flap, adapted to embrace the buttons and opened and closed by a pivoted hasp attached to said flap and connected with said bars, substantially as described.

6. In a bag provided with buttons arranged near the mouth and having a flap provided with a lining having holes adapted to receive the heads of the buttons, overlapping its mouth, the combination of a frame arranged between said lining and flap, clamping-bars arranged between the lining and flap and inclosed by said frame, and a pivoted hasp attached to said flap, connected with said bars, and adapted to cause the same to approach and recede from each other, substantially as described.

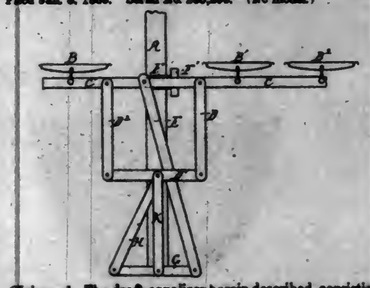
7. The combination, with a bag having a flap and provided with buttons adapted to secure the same, substantially as described, of a pivoted hasp attached to said flap and having a plate provided with curved slots arranged underneath the head thereof, and pins attached to clamping-bars arranged, secured to said flap, and adapted to close said bars, substantially as described.

8. In a mail-bag having a flap and buttons for securing said flap, arranged substantially as described, the combination, with a pair of clamping-bars having notched edges adapted for closing upon either side of the shanks of said buttons for locking the same, substantially as described, of a hasp pivoted to said flap and provided with pins connecting with said bars for opening and closing the same, and a plate having curved slots adapted to said pins arranged underneath the head of said hasp, substantially as described, and for the purposes herein set forth.

9. In a mail-bag substantially such as described, having a flap overlapping its mouth for closing the same, and buttons for securing said flap, the combination of a lining provided with holes, secured to the under side of said flap, a frame arranged between said lining and flap, a pair of clamping-bars provided with notched edges adapted for inclosing the shanks of said buttons, arranged in said frame, a hasp having a plate provided with curved slots arranged underneath the head thereof, pivoted to said flap, and provided with pins adapted to said curved slots, connected to said bar for opening and closing the same, substantially as described.

10. In a mail-bag having a flap having a lining overlapping its mouth and buttons for securing the same, substantially as described, the combination of a frame arranged and secured between said lining and flap, clamping-bars having notched edges adapted to the shanks of said buttons arranged in said frame, a hasp pivoted to said flap and having a plate having curved slots secured underneath the same, and pins connecting said bars and hasp, substantially as described, and a staple secured to said bag and adapted to said hasp for locking said bag, substantially as described.

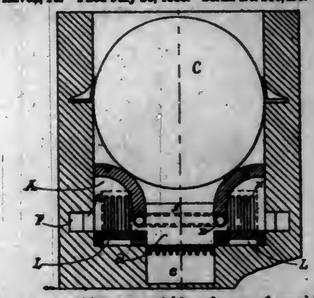
408,873. DRAFT-EQUALIZER. ALFRED G. BROWN, Egan, Dak. Filed Jan. 3, 1889. Serial No. 295,209. (No model.)



Claim.—1. The draft-equalizer herein described, consisting of the levers C and C', the diagonal brace E, the cross-bars D' and G, the parallel fulcrum-arms D and D^2, and the braces H and K, substantially as described.

2. In a draft-equalizer, the combination, with the pole, of the levers C and C', the fulcrum-arms D and D^2, the cross-bar D', the diagonally-arranged brace E, the bar F, having plate F on its end, the cross-bar G, and the braces H and K, substantially as described.

408,874. SMOKE AND GAS CONSUMING FURNACE. JOHN BURNS, Rochester, N. Y., assignor of one-half to Rowland W. Fredericks, Lock Haven, Pa. Filed July 20, 1888. Serial No. 280,455. (No model.)



Claim.—1. A coking-oven within a furnace formed by an arch resting on a circulating water-pipe connected to the boiler and the side wall of the furnace, and having space N communicating with the fire-chamber, in combination with communicating flues and openings entering the fire-chamber above the grate-bars and below the space N, substantially as herein described.

2. A flue within a furnace with a coking-oven located above it and openings and flues connecting said flue and coking-oven, in combination with flues or openings entering the fire-chamber above the grate-bars, for the purpose substantially as herein described.

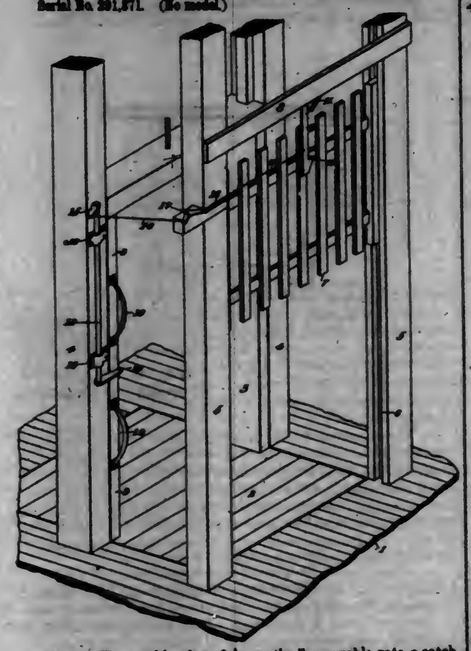
3. The combination, with a furnace, of a boiler, C, connecting with circulating water-pipe B, supporting fire-brick arch E, of coking-chamber A, forming communicating space N between the fire-box D and coking-chamber A, and flues M, L, K, and H, connecting coking-chamber A and fire-box D, substantially as set forth.

4. The combination, with a furnace, of a boiler, C, connecting with circulating water-pipe B, supporting the fire-brick arch E of coking-chamber A, forming communicating space N between fire-box D and coking-chamber A, with flues M, L, K, and H, connecting coking-chamber A and fire-box D, and flues F and G, substantially as set forth.

5. In a furnace, as described, having a coking-chamber and fire-chamber with communicating space N between them, the combination of the coking-chamber A, flues H and K, and the connecting-opening M, entering the fire-chamber above the grate and below the opening N, substantially as described.

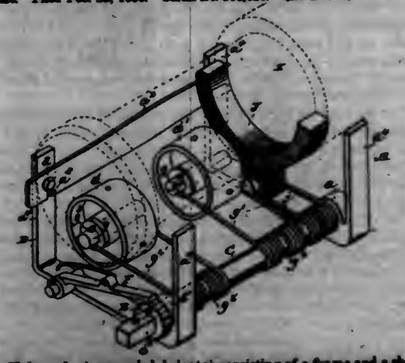
6. A coking-oven within a furnace having a close bottom to prevent air from passing up through the coal coking therein, in combination with a water-pipe connected to the boiler for the circulation of water therein and an arch supported thereon and constituting the side and top of the coking-chamber and forming a communicating space, N, between the furnace and the coking-chamber, substantially as specified.

408,875. ELEVATOR-HATCHWAY. MICHAEL J. DALY, Pittsburg, Pa., assignor to William C. Barr, Jr., same place. Filed Nov. 26, 1888. Serial No. 291,571. (No model.)



Claim.—The combination of the vertically-movable gate, a catch, 9, for retaining the same, a vertical rotary shaft, 12, provided with a projecting lever and connected by connections 16 and 18, and a bell-crank lever, 17, with the said catch, and cams 19, fixed to one of the uprights of the elevator-car, and adapted to engage said lever and thereby to rotate the shaft and to operate said catch, substantially as described.

408,876. CAR-AXLE LUBRICATOR. WILLIAM H. DANIELS and REBA CORLEY, St. Louis, assignors to Charles D. Moody, Webster Grove, Mo. Filed Feb. 25, 1888. Serial No. 265,583. (No model.)



Claim.—1. A car-axle lubricator consisting of a frame and a shaft provided with arms on which the lubricating-wheel is mounted, said shaft being adjustable to raise the said wheel to different heights, substantially as described.

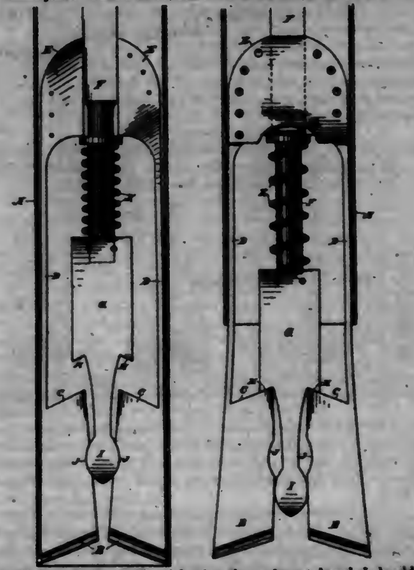
2. The combination of the uprights, the shaft, ratchet, and pawl, the wheels, and the spring-arms, substantially as described.

3. The combination of the uprights, the shaft, ratchet, and pawl, and the drip-collar, said drip-collar being supported from said shaft, substantially as described.

4. The combination of the uprights, the arm connecting the uprights, the shaft, and the wheels, said wheels being supported from said shaft, substantially as described.

5. The combination of the uprights, arm connecting said uprights, the shaft, ratchet, and pawl, wheels, drip-collar, and the spring-arms supporting said wheels and drip-collar, substantially as described.

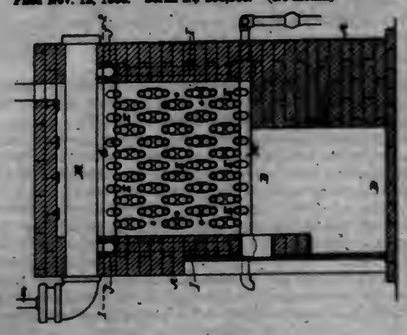
408,877. WELL BORING OR DRILLING APPARATUS. JEREMIAH H. DAY, San Francisco, Cal., assignor of one-half to Joseph Frary, same place. Filed Feb. 11, 1888. Serial No. 263,697. (No model.)



Claim.—1. The drill-rod having the undercut beveled shoulders at the lower end and the spear-head extending below these shoulders, as shown, in combination with the independent drill-shanks lying upon each side of the drill-rod and spear-head, the shanks of the drills being provided with shoulders corresponding with and engaging these of the rod when the latter is lowered, and having concavities or depressions within which the spear-head is inclosed when the rod is raised, substantially as described.

2. The drill-rod with undercut shoulders and spear-head, as shown, the drills inclosing said rod, having concavities within which the spear-head may lie, and shoulders which engage the shoulders upon the rod, in combination with a spring and a sliding collar or plate between which and a fixed collar upon the rod the spring is compressed, substantially as described.

408,878. STEAM-BOILER. ALBERT M. DIEHNER and ELMER E. SMITH, Wilkes-Barré, Pa., assignors to F. C. Sturges, trustee, same place. Filed Nov. 12, 1888. Serial No. 290,566. (No model.)



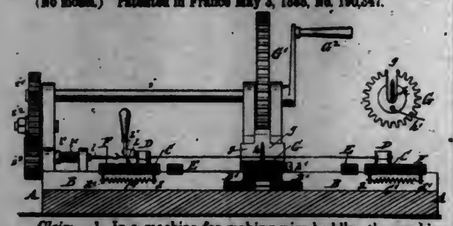
Claim.—1. The combination, in a steam-boiler, of the two quadrangular frames, each having a series of zigzag steam-generating tubes, and flanged connecting-pipes with a steam-drum having flanged T-branches secured to the flanges of the said connecting-pipes, the whole forming a steam-generating structure, substantially as described.

2. The combination, in a steam-boiler, of the quadrangular frames, each having a series of zigzag pipes connected thereto, the lower longitudinal pipe forming a mud-drum, the upper longitudinal pipe forming a steam communication with the steam-drum, and the vertical pipes built in the walls of the furnace and acting as return-tubes for water that may gain access to the steam-pipes, substantially as described.

3. The combination, in a steam-boiler, of the quadrangular frame composed of the mud-drum, upper steam-pipes, and return-tubes, with a series of zigzag pipes, each set communicating at the bottom with the mud-drum and at the top with the steam-pipe, and a steam-drum connected to said pipe, substantially as described.

4. The combination, in a boiler, of the two quadrangular frames, each composed of horizontal and vertical pipes, with a series of zigzag pipes, each set communicating at the bottom with one of said horizontal pipes and at the top with the other horizontal pipe, substantially as described.

403,879. MACHINE FOR MAKING WIRE HEDDLES. EMMANUEL EMERAYAT, Lyons, France. Filed Aug. 27, 1888. Serial No. 283,834. (No model.) Patented in France May 3, 1888, No. 190,347.



Claim.—1. In a machine for making wire heddles, the combination of spring-actuated slide-plates having vertical studs or posts, fixed abutments at both sides of said slide-plates, and a rotary pinion located intermediately between said slide-plates, said pinion being provided with a radial recess and a fixed spindle in said recess, substantially as set forth.

2. The combination of guided and spring-actuated slide-plates having vertical lugs or posts, fixed abutments at each side of said slide-plates, a rotary pinion located intermediately between said slide-plates, said pinion being provided with a radial recess and a fixed spindle in said recess, and a rotary and spring-actuated spindle having a hook-shaped end in line with said lugs and central spindle, substantially as set forth.

3. The combination of longitudinally-guided or spring-actuated slide-plates having studs or posts, fixed abutments on each side of said slide-plates, a rotary pinion supported in fixed bearings intermediately between said slide-plates, said pinion being provided with a radial recess, a fixed spindle in said recess, a rotary and spring-actuated spindle at one end of the machine and in line with the studs and central spindle, and a cutting device arranged transversely to the rotary end spindle for cutting off the twisted end of the heddle, substantially as set forth.

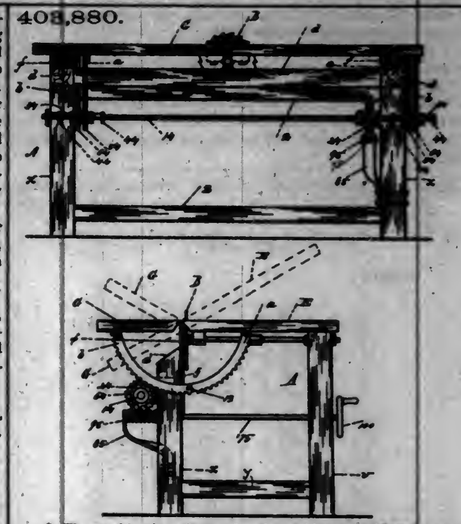
4. The combination of a supporting bed-plate having longitudinal guideways, spring-actuated slide-plates guided on said ways, fixed abutments at each side of said guideways, upright studs or posts on said plates, a rotary pinion supported midway between said slide-plates on fixed bearings of the ways, a rotary and spring-actuated spindle having a hook-shaped inner end located in line with the posts and central spindle, and a cutting device arranged transversely between the hook-shaped end of the rotary spindle and the stud next adjoining the same, substantially as set forth.

408,880. CIRCULAR SAWING MACHINE. FREDERIC R. FARWELL, Fitchburg, assignor of one-half to Henry A. Hawley, Waltham, Mass. Filed Sept. 17, 1888. Serial No. 285,576. (No model.)

Claim.—1. The combination of a saw-bench, a table proper hinged to the front thereof, a leaf, also hinged to the front thereof, a segmental rack attached to said table, a segmental rack attached to said leaf, a longitudinal shaft supported in bearings of said bench, and pinions on said shaft for engaging said segmental racks for adjusting the table and leaf simultaneously, substantially as described.

2. The combination of a saw-bench, a table proper hinged to the front thereof, a leaf, also hinged to the front thereof, a segmental rack attached to said table, a segmental rack attached to said leaf, a longitudinal shaft supported in bearings of said bench, and pinions longitudinally adjustable on said shaft for engaging said racks simultaneously or independently, substantially as described.

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3. The combination of a saw-bench, a table proper hinged to the front thereof, a leaf, also hinged to the front thereof, a segmental rack attached to said table, a segmental rack attached to said leaf, a longitudinal shaft supported in bearings of said bench, and pinions longitudinally adjustable on said shaft for engaging said racks simultaneously or independently, said racks being provided with pin-holes for a locking-pin.

4. The combination of a saw-bench, a table proper hinged to the front thereof, a leaf, also hinged to the front thereof, a segmental rack attached to said table, a segmental rack attached to said leaf, a longitudinal shaft supported in bearings of said bench, and pinions on said shaft for engaging said segmental racks for adjusting the table and leaf simultaneously, a transverse shaft provided with a hand-wheel and with a worm, and a pinion on said longitudinal shaft engaged by said worm, substantially as described.

408,881. REVERSING-GEAR FOR STEAM-ENGINES. DAVID A. FRAZER, Manistique, Mich., assignor of two-thirds to Oscar S. Rodenbaugh and Isaac M. Rodenbaugh. Filed Feb. 21, 1889. Serial No. 300,763. (No model.)



Claim.—1. In a steam-engine having two cylinders and two single-acting pistons, said cylinders having ports at each end of the stroke of said pistons and having a D-valve adapted for admitting steam to said ports, an intermediate valve adapted to change the steam to the opposite sides of said ports for reversing the motion of the engine, substantially as described.

2. In a steam-engine, the combination of two cylinders having single-acting pistons and ports at each end of the stroke of said pistons, a slide-valve having a port at either end, each port adapted for supplying steam to a separate cylinder, and an intermediate valve adapted to shift the current of the steam to the opposite sides of the respective pistons, substantially as described.

3. In a steam-engine, in combination with two cylinders having single-acting pistons and ports at each end of the stroke of said pistons, a slide-valve having a port at either end, each port adapted for supplying steam to a separate cylinder, and an intermediate rotary valve having segmental chambers adapted to shift the current of the steam to opposite sides of the respective cylinders, substantially as described.

408,882. SEED-SOWER. MICHAEL FREEMAN, Racine, Wis., assignor to the S. Freeman & Sons Manufacturing Company, same place. Filed Sept. 24, 1888. Serial No. 286,146. (No model.)

Claim.—1. In a sower, the combination of a revoluble casting provided with a central stay-piece and a series of radial wings, arranged on opposite sides of the stay-piece, cut-off shells for the winged portions of the casting, and means, substantially as described, for rotating said casting and laterally adjusting the shells in opposite directions, as and for the purpose set forth.

2. In a sower, the combination of a revoluble casting provided with a series of radial wings and a central annular groove, a ribbed box for engagement with the groove, cut-off shells for the winged casting, and means, substantially as described, for actuating said casting and adjusting the shells, for the purpose set forth.

3. In a sower, the combination of a revoluble casting provided with a series of radial wings and a central stay-piece having an annular groove, a ribbed box for engagement with the groove, cut-off shells for the winged casting, and means, substantially as described, for actuating said casting and adjusting the shells, for the purpose set forth.

4. In a sower, the combination of a revoluble casting provided with a series of radial wings, cut-off shells for the winged casting having closed outer ends provided with openings, and means, substantially as described, for actuating the casting and adjusting the shells, as and for the purpose set forth.

5. In a sower, a revoluble casting comprising a central stay-piece and radial wings arranged on opposite sides of the stay-piece, cut-off shells for the winged portions of the casting, and means, substantially as described, for actuating the casting, laterally adjusting the shells, and for locking the latter in their adjusted position, as set forth.

6. In a sower having its floor provided with a slot, the combination of a revoluble casting provided with a central stay-piece and a series of radial wings arranged on opposite sides of the stay-piece, cut-off shells for the winged portions of the casting, levers connected at their inner ends to said shells, an arm pivoted to the machine-floor and connected at its extremities with the outer ends of said levers, a screw-threaded projection on the pivoted arm passed up through the slot in said machine-floor, and a set-nut arranged on said projection, substantially as set forth.

7. In a sower, the floor thereof provided with a slot and graduations for the same, in combination with a revoluble casting provided with a central stay-piece and a series of radial wings arranged on opposite sides of the stay-piece, cut-off shells for the winged portions of the casting, levers connected at their inner ends to said shells, an arm pivoted to the machine-floor and connected at its extremities with the outer ends of said levers, a screw-threaded projection on the pivoted arm passed up through the slot in said machine-floor, and a set-nut arranged on said projection, substantially as set forth.

8. In a sower, the combination of the machine-floor provided with seed-openings, cut-off plates for said openings, an angular flange depending from said floor adjacent to the openings therein, a revoluble casting provided with a series of radial wings, cut-off shells for the winged casting designed to close in against the lower edge of said flange to form a trough therewith, and means, substantially as described, for actuating the casting and adjusting the shells, as and for the purpose set forth.

9. In a sower, the combination, with the distributer and a feeding mechanism, of a cup having a movable bottom pivotally connected to the distributer-shaft and provided with discharge-openings, substantially as set forth.

10. In a sower, the combination of a revoluble casting provided with a series of radial wings and a central stay-piece, a box surrounding the stay-piece and provided with a bearing for the distributer-shaft, cut-off shells for the winged casting, and means, substantially as described, for actuating said casting and adjusting the shells, as and for the purpose set forth.

11. In a sower, the combination, with the distributer and a feeding mechanism, of a cup having a movable bottom pivotally connected to the distributer-shaft and provided with discharge-openings, and a handle projecting from said bottom of the cup, substantially as set forth.

12. In a sower, the combination of a revoluble casting provided with a series of radial wings, adjustable cut-off shells for the winged casting, a seed-cup arranged below said casting and provided with a pivotally-adjustable bottom having openings therein, and a distributer arranged below the seed-cup, substantially as set forth.

13. In a sower, the combination of the machine-floor provided with seed-openings, cut-off plates for the openings, a revoluble casting provided with a series of radial wings, adjustable cut-off shells for the winged casting, a seed-cup arranged below said casting and provided with a pivotally-adjustable bottom having openings therein, and a distributer arranged below the seed-cup, substantially as set forth.

14. In a sower, the combination of the floor A, provided with seed-openings, the shaft I, having bearings depending from said floor, the casting N, fast on said shaft and provided with radial wings N' and stay-piece N², a box surrounding the stay-piece and provided with a bearing for the upper end of a distributer-shaft, the drive-shaft D, bevel-geared to said distributer-shaft, sprocket-gear connecting the shafts D I, and adjustable shells surrounding the winged casting, substantially as set forth.

15. A sower comprising the floor A, provided with seed-openings *m*, depending bearings *b*, and angular flange U, the shaft I, arranged in said bearings, the casting N, fast on said shaft and provided with radial wings N', the cut-off shells P P' for said casting, the arm R, pivoted to the machine-floor, levers Q Q', connecting the ends of said levers with the cut-off shells, the seed-cup V, distributer F, and the drive-shaft D, geared to said distributer and shaft I, substantially as set forth.

16. In a sower, the combination, with a distributer and a feeding mechanism, of a cup having a movable bottom pivotally connected to the distributer-shaft and provided with a central spreading-rib and bottom openings, and a handle projecting from said bottom of the cup, substantially as set forth.

17. In a sower, the floor thereof provided with a ring, a hopper having its lower end fitted within the ring, and another ring secured to said lower end of the hopper and bolted to said floor, substantially as set forth.

18. In a sower, the floor thereof cast with a ring, a hopper having its lower end fitted within the ring, and another ring detachably connected to said lower end of the hopper and provided with an inwardly-projecting flange for attachment to said floor, substantially as set forth.

408,883. OSCILLATING PIPE-JOINT. RICHARD GRIMM, Greenbush, N. Y., assignor of one-fourth to William H. Hogeboom, same place. Filed Jan. 14, 1889. Serial No. 296,264. (No model.)



Claim.—1. In a pipe-joint, the combination of two elbows, each provided near their adjoining ends with an exterior smooth surface, a ring, a gasket, and a thimble secured to each elbow and having a flange in contact with the gasket, one of the elbows having a barrel moving freely on the said smooth surface and extending over the rings, gasket, and thimble, having a threaded portion meshing with threads on a nut moving freely on the smooth portion of the other elbow, substantially as described.

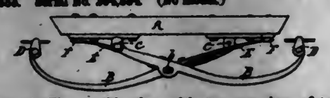
2. In a pipe-joint, the combination of two elbows, each provided near their adjoining ends with an exterior smooth surface, a ring, a gasket, and a thimble secured to each elbow, the nut A on one elbow having a threaded surface meshing with threads on the barrel C on the other elbow, with the nut L, secured to the barrel C and provided with a thread meshing with a thread on the nut A, substantially as described.

408,884. PIPE-COUPLING. RICHARD GODARE, Greenbush, N. Y., assignor of one-fourth to William H. Hopkirtall, same place. Filed Jan. 17, 1888. Serial No. 266,617. (No model.)



Claim.—In a pipe-coupling, consisting of two similar sections, the combination of a pipe provided with a gasket near one end, and also provided with an annular flange, a coupling-sleeve enveloping said pipe, a shaft passing through said coupling-sleeve provided with a cam operating in contact with said annular flange, a latch-hook pivoted to said coupling-sleeve, one end thereof engaging with a lug attached to the coupling-sleeve on the opposite section, the other end of said latch-hook provided with a recess in contact with one end of a cam-lever securely attached to the said cam-shaft, all substantially as described

408,885. CARRIAGE-SPRING. JOHN HERRMANN, Mount Vernon, assignor of one-half to Frederick C. Althoff, Evansville, Ind. Filed Dec. 20, 1888. Serial No. 294,884. (No model.)



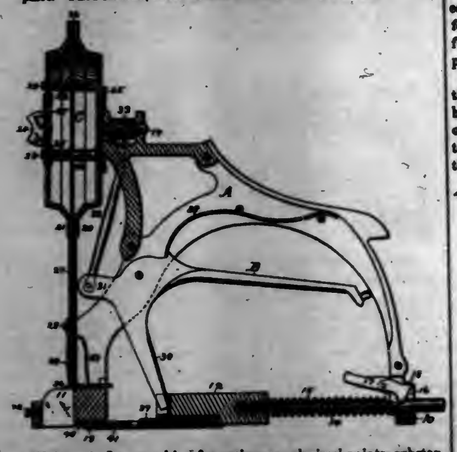
Claim.—1. The combination, with the cross-bar, of two levers secured to the opposite ends thereof and extending out therefrom in opposite directions, and a spring arranged between the levers and supported by the said levers and connected with said cross-bar, substantially as described.

2. The combination, with a cross-bar of a buggy, of two levers pivotally secured to the opposite ends and sides thereof and extending downward in opposite directions, and a spring interposed between the levers and supported by the same, its upper ends movably connected with the cross-bar, substantially as described.

3. The combination, with the cross-bar of a buggy, of the clasps, as C, and guides, as F, formed of single pieces of metal in substantially L shape, the levers B, pivotally secured in said clasps, and the spring E, arranged between the levers, its ends working in said guides, substantially as described.

4. The combination, with the cross-bar of a buggy, of two levers, as B, pivoted to the opposite ends and sides thereof and having elongated slots formed therein, as at *b*, of a leaf-spring, as E, interposed between the levers, having a yoke, as G, on its under side, which is formed with oppositely-extending cylindrical arms fitting in said slots, the ends of said springs working in guides on the cross-bar, substantially as described.

408,886. MACHINE FOR DRIVING GLAZIERS' POINTS. FRANKLIN HOLLAND, New Britain, Conn., assignor to the Stanley Works, same place. Filed Nov. 26, 1888. Serial No. 292,078. (No model.)



Claim.—1. In a machine for acting on glaziers' points, substantially as described, a revolving receptacle for delivering said points, having circular flanges flaring outwardly from each other and rigidly connected together, with a thin delivery-space at the periphery between the confronting faces of two adjoining flanges, substantially as described, and for the purpose specified.

2. In a machine for driving glaziers' points, the combination of a receptacle having two confronting flanges with a delivery-space between, feeding and driving mechanism, the lever B for operating the same, and mechanism connected therewith for imparting a partial revolution to the receptacle for each reciprocating movement of said lever, substantially as described, and for the purpose specified.

3. In a machine for driving glaziers' points, the combination of the chute 27, spring 29, having an inwardly-projecting arm, the spring-pressed slide 36, driving mechanism, and the lever B, having an arm, 30, for operating said driving mechanism and slide, substantially as described, and for the purpose specified.

4. In a machine for driving glaziers' points, the combination of the foot 11, having a vertical opening through it, a driver-guard fitted to move across the said opening in said foot, a driver underneath said guard, mechanism for operating said guard and driver, and feeding mechanism—as, for instance, the chute 27, spring 29, and slide 36—for feeding the points edgewise and delivering only one point at a time upon the top of said guard, substantially as described, and for the purpose specified.

5. In a machine for driving glaziers' points, the combination of the foot 11, having a vertical opening through it, a driver-guard fitted to move across the said opening in said foot, a driver underneath said guard, and mechanism for operating said guard and driver, substantially as described, and for the purpose specified.

6. In a machine for driving glaziers' points, the combination of the foot 11, having a vertical opening through it, the reciprocating hammer-block 12, the driver 13, secured thereto, and the sliding and spring-pressed driver-guard, the said foot having the lower face of the front wall of its opening extending downwardly substantially even with the under side of said driver-guard, substantially as described, and for the purpose specified.

7. In a machine for driving glaziers' points, the combination of the hammer-block 12, the driver connected therewith, the guide-rod attached to said hammer-block and having the recess or notch 16, the spring 15, the retaining-pawl 17, pivoted in the frame A, for engaging said recess, and the spring-actuated lever B, for moving said hammer-block and releasing said pawl, substantially as described, and for the purpose specified.

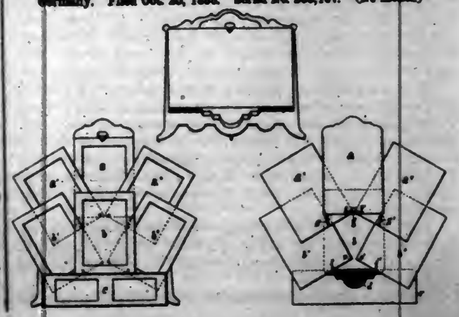
8. In a machine for driving glaziers' points, the combination of the hammer-block and driver, guide-rod 14, spring 15, a device for holding the hammer-block in its rearward position, the spring-actuated lever B, having an arm, 30, for pressing the hammer-block against its spring, said having the outer end of said lever adapted for engagement with the holding device for disengaging it, substantially as described, and for the purpose specified.

9. In a machine for driving glaziers' points, the combination of the foot 11, the hammer-block and driver and their operating mechanism, with the adjusting-screw 42 in the front of said foot, substantially as described, and for the purpose specified.

10. In a machine for driving glaziers' points, the combination of the chute 27, the spring 29, having an inwardly-projecting arm above its lower end, the reciprocating slide 36, adapted to close the lower end of the chute and also to bear against the lower end of said spring for withdrawing its projecting arm from the chute, and mechanism for operating said slide, substantially as described, and for the purpose specified.

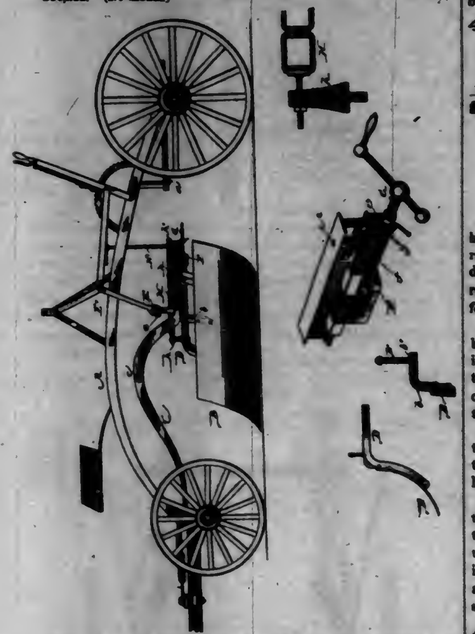
11. In a machine for driving glaziers' points, the combination of the foot 11, having a vertical opening through it, the reciprocating hammer-block, the driver secured thereto, the sliding driver-guard over said driver, and means for moving said guard separately from the movement of the said driver, substantially as described, and for the purpose specified.

408,887. PICTURE-EXHIBITOR. GEORGE D. KNIPP, Stuttgart, Germany. Filed Oct. 26, 1888. Serial No. 289,167. (No model.)



Claim.—In an upright folding album, the combination consisting of the central frames *a b*, the base *d*, the frames *a' a''*, hold to central frame *a* by pivots *l l'*, the straps *s s'*, to limit the fall of frames *a' a''*, the nose *g*, adapted to engage with the channel *k*, the frames *b' b''*, the legs fixed to said frames *b' b''* with the central frame *b*, the grooves made in the base *d*, the grooves made in the central frame *a*, adapted to engage with the guide *h*, made on the back portion, *c*, and the cover *e*, substantially as shown and described.

408,888. ROAD-SCRAPER. GEORGE H. MILLER, Ashton, assignor to Frederick C. Austin, Chicago, Ill. Filed July 17, 1888. Serial No. 280,252. (No model.)



Claim.—1. The combination and arrangement, substantially as hereinbefore set forth, of the reversible scraper-blade, the draft-bar extending over and to the rear of the scraper-blade, and the segment positioned as a whole in rear of the scraper-blade, said segment having its forward downwardly-extending end portions formed to provide abutments which back the scraper-blade, and having its horizontal portion which is back of its said end portions connected with the draft-bar in rear of the scraper-blade by a sliding connection which permits the segment to turn with the horizontal reversing movement of said scraper-blade, for the purpose described.

2. The combination of the arched draft-bar C and the reversible scraper-blade pivotally connected with the arched draft-bar at or near the rear end of the arch *c*, which said arch rises forwardly from a point over the top edge of the scraper-blade, as and for the purpose set forth.

3. The combination, substantially as hereinbefore set forth, of the draft-bar extending over and to the rear of the scraper-blade, and the scraper-blade provided with an arm, *b*, which is rigidly secured to the scraper-blade and pivoted to the draft-bar.

4. The combination, substantially as hereinbefore set forth, of the arched draft-bar C and the reversible scraper-blade having an arm, *b*, which is attached to the scraper-blade and pivoted to the draft-bar at the rear termination of the arch *c*.

5. The combination, substantially as hereinbefore set forth, with the scraper-blade, of the segment attached to the scraper-blade, and the bearing adjustably attached to the draft-bar and supporting the segment, for the purpose described.

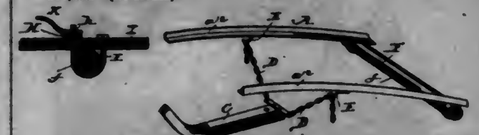
6. The combination, substantially as hereinbefore set forth, with the laterally-tilting scraper-blade, of the segment hinged to the scraper-blade, and a bearing supporting said segment and adjustable coincident with the line of progression, for the purpose described.

7 The combination, substantially as hereinbefore set forth, of the reversible scraper-blade, the draft-bar extending over and to the rear of the scraper-blade, the segment arranged back of and as a backing for the scraper-blade, and having in rear of the latter a connection with the draft-bar, which permits the segment to turn independently of the draft-bar, a chain-wheel mounted upon the draft-bar in rear of the scraper-blade, and a chain passing about the chain-wheel and attached to the segment.

8. The combination, substantially as hereinbefore set forth, of the scraper-blade, the segment hinged to the scraper-blade, and the arm *b*, attached to the upper portion of the scraper-blade and pivotally connected with the pivot B', for the purpose described.

9. The combination, with the scraper-blade, of the segment arranged in rear of the scraper-blade, and having the terminals of its downwardly-bent end portions hinged to the back of the scraper-blade, substantially as described.

408,889. ROAD-SCRAPER. GEORGE H. MILLER, Ashton, assignor to Frederick C. Austin, Chicago, Ill. Filed Jan. 28, 1888. Serial No. 297,333. (No model.)



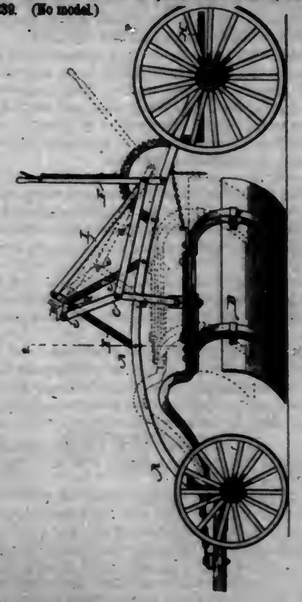
Claim.—1. In a road-scraper, the combination, substantially as hereinbefore set forth, of the body-frame supported to slide upon the rear axle, the scraper-blade connected with a draft attachment and drawn by a direct draft from ahead, and a stay device connecting the rear portion of the draft attachment with the side of the body-frame, for the purpose described

2. The combination, substantially as hereinbefore set forth, of the body-frame provided with a tubular bearing, F, the rear axle extending through said tubular bearing, the scraper-blade with a draft attachment and drawn by a direct draft from ahead, and a stay device connecting the rear portion of the draft attachment with the sides of the body-frame.

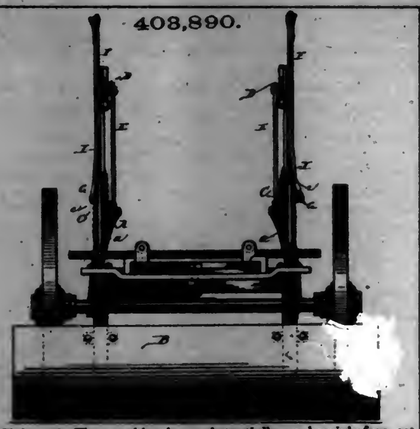
3. The combination, with the body-frame and rear axle, of the tubular bearing F, attached to the body-frame and fitted to slide upon the rear axle, and the clamp H, arranged to lock together said tubular bearing and rear axle.

4. The combination, substantially as hereinbefore set forth, with the rear axle, of the body-frame having its rear end portion arranged to slide upon said rear axle, the clamp for locking the body-frame upon the rear axle, and the adjusting device K, arranged for adjusting said clamp, and having a foot-piece within reach of the foot of an attendant standing upon the rear platform, I, for the purpose described.

408,890. ROAD-SCRAPER. ORTUS R. MOASE, Chicago, Ill., assignor to Frederick C. Austin, same place. Filed Jan. 2, 1889. Serial No. 290,239. (No model.)



408,890.



Claim.—1. The combination, substantially as hereinbefore set forth, with the scraper-blade, of a suspending device therefor having an individual lift, and an auxiliary lifting device arranged for operation conjointly with said suspending device and adapted for raising the point from which the latter is suspended, whereby during the conjoint action of said two lifting devices the scraper-blade may be raised to a distance equal to the sum of their respective lifting movements, for the purpose described.

2. The combination, with the scraper-blade, of a suspending device therefor having an individual lift, an auxiliary lifting device for raising the point from which said suspending device is hung, and a single hand-lever connected with and arranged for simultaneously operating said two lifting devices, substantially in the manner set forth, whereby the individual actions of said lifting devices are primarily caused from one operation of the hand-lever.

3. The combination, substantially as hereinbefore set forth, with the scraper-blade, of a suspending device therefor having an individual lift, an auxiliary lifting device consisting of a bell-crank, from which said suspending device is hung, whereby the point from which the said suspending device is hung can be raised by the action of the bell-crank, and at the same time the said suspending device be actuated to raise the scraper-blade to the extent of its individual lifting action.

4. The combination, substantially as hereinbefore set forth, with the scraper-blade, of a suspending device therefor having an individual lift, an auxiliary lifting device for raising the point from which said suspending device is hung, and a hand-lever connected with said two lifting devices, whereby their individual lifting actions can be simultaneously caused by the one hand-lever.

5. The combination, substantially as hereinbefore set forth, of the scraper-blade, a scraper-blade-suspending device consisting of the elbow or toggle jointed hanger, and auxiliary lifting-lever from which said elbow or toggle jointed hanger is suspended, said auxiliary lifting-lever being arranged to swing in a direction to permit the rise and fall of the point from which the hanger is suspended from said auxiliary lifting-lever, for the purpose described.

6. The combination, substantially as hereinbefore set forth, of the scraper-blade, the elbow-jointed hanger, an auxiliary lifting-lever from which the elbow or toggle jointed hanger is suspended, a hand-lever, and links respectively connecting the hand-lever with said elbow or toggle jointed hanger and auxiliary lifting-lever, for the purpose described.

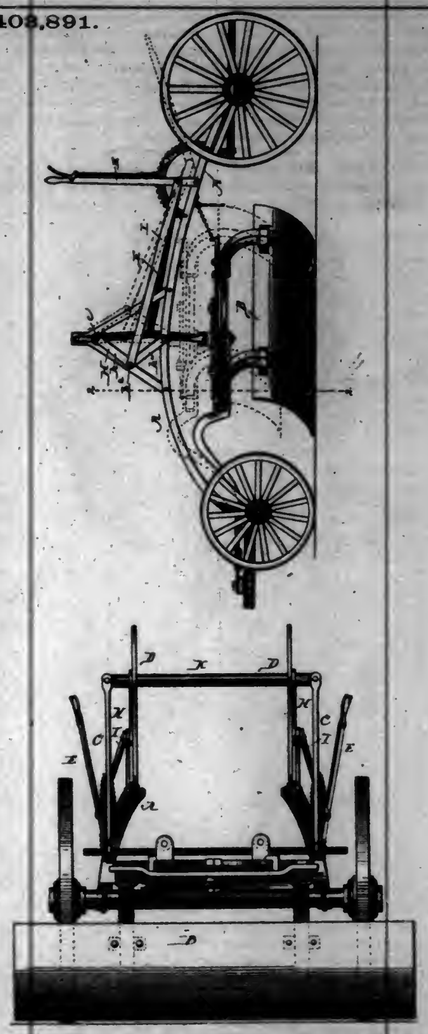
7. The combination, substantially as hereinbefore set forth, of the scraper-blade, the elbow-jointed hanger C, and the bell-crank from which said elbow or toggle jointed hanger is suspended, for the purpose set forth.

8. The combination, substantially as hereinbefore set forth, of the scraper-blade, the elbow or toggle jointed hanger, the bell-crank from which the elbow or toggle jointed hanger is suspended, the hand-lever, and link-connections between the hand-lever and said jointed hanger and bell-crank, for the purpose described.

408,891. ROAD-SCRAPER. ORTUS B. MEARS, Chicago, Ill., assignor to Frederick C. Austin, same place. Filed Jan. 2, 1888. Serial No. 259,260. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, of the scraper-blade, a hanger with which the scraper-blade is connected, a toggle pivotally supported at one end upon the body-frame of the machine and having its opposite free end provided with a pivot from which the hanger is suspended, and an upright guide by which said pivot is guided in such up and down movements as it may have as a result of the opening and closing of said toggle.

408,891.



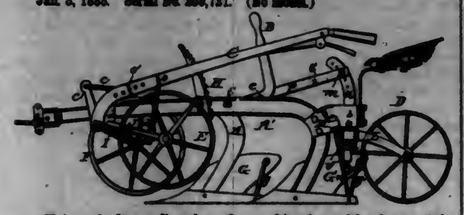
2. The combination, substantially as hereinbefore set forth, of the scraper-blade, the toggle H, supported upon the body-frame of the machine, a hanger connected with the scraper-blade and suspended from a pivot on the free end of the toggle, means for guiding said pivot in its up-and-down movement, and a hand-lever fulcrumed upon the body-frame of the machine and connected by a link, 1, with said toggle.

3. The combination, substantially as hereinbefore set forth, of the scraper-blade, the elbow or toggle jointed hanger connected with the scraper-blade and suspended from a movable support, and the toggle H, supported upon the body-frame and connected with said movable support from which the hanger is suspended, whereby, while the hanger may by suitable application of power be operated for raising the scraper-blade, the toggle H may by a similar application of power be operated as an auxiliary to the lift of the scraper-blade.

4. The combination, substantially as hereinbefore set forth, of the scraper-blade, the elbow or toggle jointed hanger with which the scraper-blade is connected, the toggle-lever fulcrumed on the body-frame of the machine and at its free end connected with the hanger, which is pivotally suspended from said end of the toggle-lever, and a couple of links, respectively connecting said toggle-lever and said jointed hanger with a hand-lever, for the purpose described.

5. The combination, substantially as hereinbefore set forth, of the scraper-blade, hangers connected with the scraper-blade, a vertically-sliding cross-bar from which the hangers are suspended, and toggle-levers pivoted at their lower ends upon the body-frame and at their upper ends connected with said cross-bar, for the purpose described.

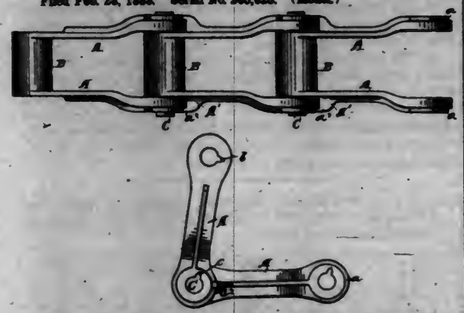
408,892. WHEEL-PLOW. GILPIN MOORE, Rock Island, Ill. Filed Jan. 3, 1888. Serial No. 259,731. (No model.)



Claim.—1. In a sulky-plow, the combination, with a beam of the same and a bracket bolted thereto, of an upright pivoted in said bracket and provided with a caster-wheel, a jointed rod, *p*, pivoted adjustably to the upper end of said standard, and the angular lever B, pivoted to said beam and to said rod *p* at different points, substantially as set forth.

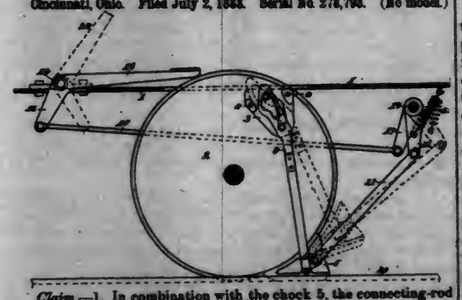
2. In a sulky or wheel plow, the combination, with a beam of the same and a bracket bolted thereto, of an upright, K, pivoted in said bracket and provided with curved perforated upper end, a caster-wheel connected with said upright, a jointed rod, *p*, a bolt, *m*, for adjustably connecting said rod with the upright, a projection, *v*, formed upon the end of said rod, an angular lever, B, pivoted to said beam and to said rod *p* at different points, and provided with a stop, *v'*, to engage the projection *v* and lock the rod *p* in position, and foot-lever *f*, substantially as set forth.

408,893. DRIVE-CHAIN. DAVID J. SHELDRICK, Columbus, Ohio. Filed Feb. 28, 1888. Serial No. 265,623. (Model.)



Claim.—In a drive-chain, the combination of the U-shaped links having in the ends of the side bars the circular pintle-seats provided with grooves *b*, the overlapping ears formed on the side bars on parallel planes therewith and adapted to prevent the outer ends of the side bars from spreading, and the cylindrical pintles provided with spurs *c c*, substantially as set forth.

408,894. CHOCK-BLOCK FOR TRAM-CARS. JOSEPH W. SIMS, Cincinnati, Ohio. Filed July 2, 1888. Serial No. 278,793. (No model.)



Claim.—1. In combination with the chock 5, the connecting-rod 8, hinged to said chock and to the bracket 3, provided with slot 10 and stud 9, attached to the connecting-rod 8 and turning in said slot 10, substantially as herein specified.

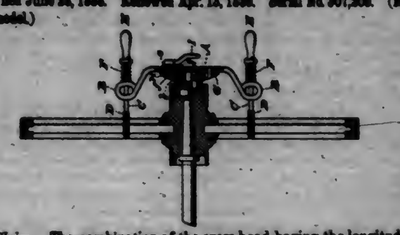
2. In combination with the chock 5, connecting-rod 8, provided with slot 11, and the bracket 3, provided with pin 12, projected into said slot and forming a bearing for the raising and lowering, substantially as herein specified.

3. In combination with the chock 5, the connecting-rod 8, provided with slot 11 and pin 9, and the bracket 3, provided with slots 10 and pin 12, for guiding the movement of the chock in raising and lowering, substantially as herein specified.

4. In combination with the chock 5, the connecting-rod 21, hinged to said chock and to the crank 17, connecting-rod 15, and lever 13, whereby the chock is elevated and depressed, substantially as specified.

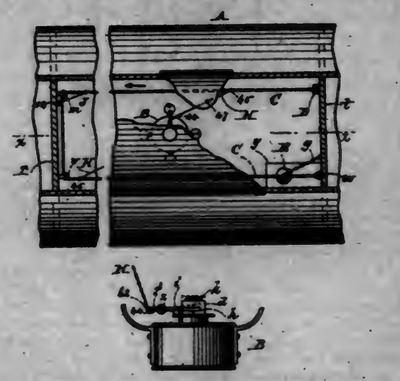
5. The chock 5, having its upper surface of a contour to fit the car-wheel, its lower surface of a contour to fit the track and rigidly connected to the connecting-rod 8 and hinged to the connecting-rod 21, for elevating and depressing said chock, substantially as herein specified.

408,895. WRENCH. WILSON B. SMITH, Beloit, Wis., assignor of two-thirds to Joseph Gem and Andrew C. Hutchison, both of same place. Filed June 26, 1888. Renewed Apr. 12, 1889. Serial No. 307,208. (No model.)



Claim.—The combination of the cross-head having the longitudinal slot and the inwardly-turned scroll-ends, the rods having the hook ends covered with a soft material, and the handle, the spiral springs between the handle and the scroll-bearing, the fixed jaw, the adjustable jaw having the flanges *d*, the set-screw, and the washer, substantially as specified.

408,896. LAMP-EXTINGUISHER. BENJAMIN D. STEVENS, Burlington, Vt. Filed Mar. 26, 1888. Serial No. 268,457. (No model.)



Claim.—1. In a device for extinguishing lamps in a railway-car, the combination of the following instrumentalities, to wit: a lamp disposed within said car and provided with an extinguisher proper, a cord mounted adjacent to said lamp, a tension-spring connected with said cord, a chain connecting said cord with the extinguisher proper of the lamp, a weight for actuating the extinguisher proper when said chain is slackened, and a pull connected with said cord, whereby the cord may be moved to slacken the chain and extinguish the lamp, substantially as described.

2. In a device for extinguishing lamps in a railway-car, the combination of the following instrumentalities, to wit: a lamp disposed within said car and provided with an extinguisher proper, a cord mounted adjacent to said lamp, a tension-spring connected with said cord, a gravitative ball connected with said cord, a stand or support for said ball, from which it may be dislodged by the overturning or partial overturning of the car, a chain connecting said cord with the extinguisher proper of the lamp, a weight for actuating the extinguisher proper when said chain is slackened, and a guide pulley or pulleys for the cord, substantially as set forth.

3. In a device for extinguishing the lamps in a railway-car, the cord C, spring D, pulleys *m v w*, ball E, stand *b*, lamp B, provided with the pivoted lever *f* and sleeve *d*, weight *x*, for actuating said lever, and the chain H, connecting said lever and the cord C, combined and arranged to operate substantially as set forth.

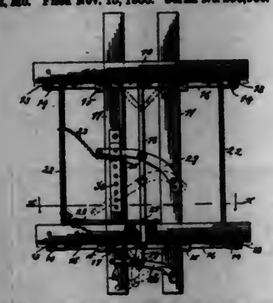
403,897. TIE-BAR CLIP FOR SPLIT SWITCHES. AXEL O. STROM, Austin, assignor to the Strom Manufacturing Company, Chicago, Ill. Filed Feb. 19, 1888. Serial No. 300,266. (No model.)



Claim.—1. A clip, A, for pivotally connecting a tie-bar with a switch-rail, of general U shape, substantially in the best form described, and having a base, *p*, and lateral openings *o* above the base to admit the pin for pivotally connecting a tie-bar with it, substantially as described.

2. A clip, A, for pivotally connecting a tie-bar with a switch-rail, comprising arms *r* in the best form described, affording the parts *q* and *q'*, a base, *p*, joining the parts *q'* at their ends, lateral openings *o* in the arms above the base to admit the pin for pivotally connecting the tie-bar with the clip, and perforated ears *l*, extending laterally from the ends of the parts *q* of the arms, substantially as described.

403,898. DOG ATTACHMENT FOR LOG-CARS. ROBERT J. THOMPSON, Grandin, Mo. Filed Nov. 15, 1888. Serial No. 290,906. (No model.)



Claim.—1. The combination, with the bolster or cross-beam of a log carrier or loader, of dogs pivoted near the opposite ends of said beam, push-bars connected at one end to the said dogs, toggle-levers connected at their outer ends to said push-bars, and an operating-lever connected with the pivotal ends of said toggle-levers, substantially as and for the purpose described.

2. The combination, with the bolster or cross-beam of a log carrier or loader, of dogs pivoted near the opposite ends of said beams, push-bars connected to the said dogs, toggle-levers connected at their outer ends to the push-bars, an operating-lever connected with the pivotal ends of the toggle-levers, and means, substantially as shown, for locking the said lever, substantially as shown and described.

3. The combination, with the front and rear bolsters or cross-beams of a log-carrier, of dogs pivoted near the outer ends of said bolsters, push-bars connected at one end to said dogs, toggle-levers connected at their outer ends with the inner ends of the push-bars, a longitudinal bar pivotally connected to the front and rear set of toggle-levers, an operating-lever connected with the said longitudinal bar, and means, substantially as shown, for locking the operating-lever in position, substantially as and for the purpose described.

4. The combination, with the bolsters or cross-beams of a log carrier or holder, of dogs pivoted to the said bolster or cross-beams, push-bars pivoted to said dogs, toggle-levers pivoted to the push-bars, an operating-bar engaging the toggle-levers of each bolster, an operating-lever connected with the operating-bar, and a lock-lever adapted to engage the said operating-bar, substantially as shown and described.

5. The combination, with the bolster or cross-beam of a log carrier or holder, of dogs pivoted thereto, a push-bar pivoted to said dogs, an apertured jacket inclosing said push-bars, toggle-levers pivoted to the push-bars and to one another, one of which toggles is projected to form a lever-handle, locking-pins adapted to enter the apertures of the jacket, a locking-bar, and a link connecting said locking-bar and the toggle-levers, all combined for operation substantially as shown and described.

6. The combination, with the bolster or cross-beam of a log carrier or holder, of dogs pivoted thereto, a push-bar pivoted to said dogs, an apertured jacket inclosing said push-bars, toggle-levers pivoted to the push-bars and to one another, one of which toggles is projected to form a lever-handle, locking-pins adapted to enter the apertures of the jacket, a locking-bar, a link connecting the locking-bar and the toggle-levers, a hook secured to the bolster adapted to receive the locking-bar, and shoulders formed upon the outer face of two opposing toggles, all combined for operation substantially as shown and described.

REISSUES.

11,003. EMBOSSED METALLIC PLATE. ALFRED C. HAFELY, New York, N. Y. Filed Apr. 11, 1888. Serial No. 306,919. Original No. 378,442, dated Feb. 28, 1888.

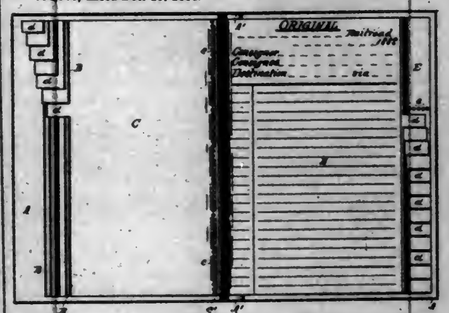
Claim.—1. The method herein specified of ornamenting thin metallic plates, consisting in oxidizing or discoloring the surface of the metal to render the same dark, pressing the metallic plate between dies to produce ornamental figures or designs in relief, and polishing the higher portions of the embossed figures or designs to reveal the color that contrasts with the oxidized surface, substantially as set forth.

2. The method herein specified of producing ornamental embossed copper plates, consisting in oxidizing uniformly the surface of the copper by sulphuret of potash or similar chemical substances to render the same dark and embossing the foil or sheet of copper, substantially as set forth.

3. The embossed copper plate having a dark oxidized surface and the dark color removed on the high portions to reveal the contrasting colors, substantially as set forth.

4. The method herein specified of producing thin ornamental metallic plates, consisting in oxidizing or discoloring the surface of the metal to render the same dark, attaching to the thin metal a backing of fibrous material, pressing the thin metal between dies to produce ornamental figures or designs, and polishing the higher portions of the embossed figures or designs to reveal the color that contrasts with the oxidized surface, substantially as specified.

11,004. INDEXED SHIPPING-BOOK. FREDERICK C. JOHNSON, Minneapolis, Minn. Filed Feb. 2, 1889. Serial No. 298,494. Original No. 304,576, dated Dec. 18, 1888.



Claim.—1. The combination, with a book having permanent and detachable leaves in alternation, of projecting index-tags provided on the one set of leaves and arranged in separate series, substantially as set forth.

2. In a book, the combination, with the leaves having projecting index-tags arranged in series, of detachable leaves at intervals covering the tags and separating the several series, substantially as set forth.

3. In a shipping-book, the combination, with the permanent leaves and the detachable leaves having projecting index-tags arranged in series along the margins, of the interposed leaves covering the tags and dividing them into sets and provided with perforations for detaching them, substantially as set forth.

PHOTO LITH. NORRIS PETERS

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

HURLBUT *v.* SCHILLINGER *et al.*

Decided April 22, 1889.

1. SCHILLINGER—CONCRETE PAVEMENTS—REISSUE.

Reissued Letters Patent No. 4,364, granted May 2, 1871, to John J. Schillinger, for an improvement in concrete pavements, as it stood after the filing of the disclaimer, (March 1, 1875,) was not open to the objection that it was not for the same invention as that of the original Patent No. 105,599, dated July 19, 1870.

2. SAME—INVENTION CONSTRUED.

Thus sustained and construed the invention is held to consist in dividing the pavement into blocks, so that one block can be removed and repaired without injury to the rest of the pavement, the division being effected by either a permanent or a temporary interposition of something between the blocks.

3. INFRINGEMENT.

The use of a bottom layer of coarse cement, and placing on it a course of fine cement, and dividing the upper course into blocks by a trowel run partially or wholly through the upper course while it is plastic, in a line coincident with the joints between the sections in the lower layer, accomplishes the substantial results of Schillinger's invention, in substantially the way devised by him, and is within the patent as it stands after the disclaimer.

4. SAME—FIRST CLAIM.

The first claim of the reissue, as it stands after the disclaimer, is infringed, because the defendant's pavement is a concrete pavement, laid in detached blocks or sections, substantially in the manner shown and described in the specification of the reissue, the detached blocks in the upper course being the equivalent of the detached blocks or sections of the Schillinger pavement.

5. SAME—SECOND CLAIM.

The second claim of the reissue is infringed, because the temporary use of the trowel or cutting-instrument, to divide the upper course into blocks, is the equivalent of the tar-paper of the Schillinger patent, the cutting making a division which controls the cracking, and facilitates the taking up and relaying of the blocks or sections in the upper course "without disturbing the adjoining sections," and the trowel being interposed to effect its object during the process of forming the pavement on the spot where it is to remain.

6. MEASURE OF DAMAGES.

The rule that "when the entire profit of a business or undertaking results from the use of the invention, the patentee will be entitled to recover the entire profits, if he elects that remedy," applied.

APPEAL from the Circuit Court of the United States for the Northern District of Illinois.

Mr. L. L. Bond and *Mr. E. A. West* for the appellant.

Mr. George W. Hey for the appellees.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity, brought in the Circuit Court of the United States for the Northern District of Illinois, by John J. Schillinger and Elmer J. Salisbury against J. B. Hurlbut, founded on the alleged infringement of Reissued Letters Patent No. 4,364, granted to John J. Schillinger, May 2, 1871, for an "improvement in concrete pavements," on the surrender of original Letters Patent No. 105,599, granted to said Schillinger, July 19, 1870. The defenses set up in the answer are the invalidity of the reissue, want of utility in the invention, want of novelty, and non-infringement.

The bill was filed in October, 1882. Salisbury having died, the suit was, so far as his interest was concerned, revived in March, 1884, in the name of Olive G. Salisbury as administratrix. The interest of Salisbury was that he was the exclusive licensee under the reissued patent for the State of Illinois. Issue having been joined, proofs were taken on both sides, and on the 15th of May, 1884, the court entered an interlocutory decree, adjudging that the reissued patent was valid, that the defendant had infringed it, and that the administratrix of Salisbury recover profits and damages from the 26th of August, 1882, the date of the license to Salisbury. The decree also ordered a reference to a master to take an account of the profits and the damages.

The master took proofs, and on the 30th of September, 1884, filed his report, to the effect that between August 26, 1882, and May 20, 1884, the defendant had laid 70,909 feet of pavement by the use of the plaintiff's patent, for which he should be held to account; and that the plaintiffs had shown an established license-fee of 5 cents a square foot, or $3,545.45, as damages, which amount he reported. He also reported that the defendant's profits had amounted to 4 cents a square foot. The defendant excepted to this report, and, on a hearing, the court held that the evidence did not establish a fixed license-fee as a royalty, and that the proper amount of recovery was the defendant's profits, at the rate of 4 cents a square foot, or $2,836.36; and it entered a final decree, on the 16th of November, 1885, for that amount. The defendant has appealed from that decree.

The specifications, claims, and drawings of the original and the reissued patents are as follows, the specifications and claims being placed in parallel columns, the parts of each which are not found in the other being in italic, and the drawings of the original and the reissue being the same:

Original.	*Reissue.*
Be it known that I, JOHN J. SCHILLINGER, of the city, county, and State of New York, have invented a new and useful Improvement in Concrete Pave-	Be it known that I, JOHN J. SCHILLINGER, of the city, county, and State of New York, have invented a new and useful Improvement in Concrete Pave-

ments; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—

Figure 1 represents my pavement *in plan view*. Fig. 2 is a vertical section of the *pavement*.

Similar letters indicate corresponding parts.

Fig. 1.

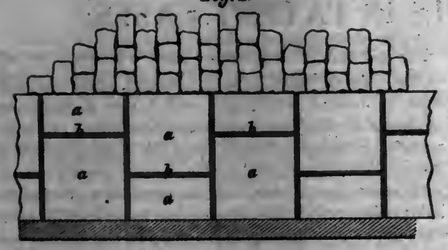
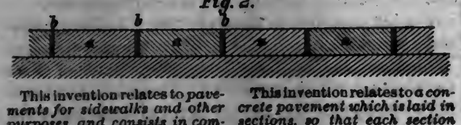


Fig. 2.



This invention relates to *pavements for sidewalks and other purposes, and consists in combining*, with the joints of concrete *pavements*, strips of tar-paper or equivalent material arranged between the several blocks in such a manner as to produce a suitable tight joint and yet allow the blocks to be raised separately without affecting *or injuring* the blocks adjacent thereto.

In carrying out my invention I form the concrete by mixing cement with sand and gravel or other suitable *materials* to form a *suitable* plastic *composition*, using about the following proportions: One part, by measure, of cement; one part, by measure, of sand, and from three to six parts, by measure, of gravel, *using* sufficient water to *make* the mixture plastic; but I do not confine myself to any proportions for making the concrete composition. While the mass is plastic I lay or spread the same *upon* the foundation or bed of the pavement, either in *molds* or between movable joists of the proper thickness, so as to form the edges of the concrete blocks *a a*, &c. When the block *a* has *been formed I take strips of tar-paper b, of a width equal or almost equal to the height of the block, and place them up against the edges of the block in such a manner that they form the joints between such block and the adjacent blocks.* After completing one block, *a*, I place the tar-paper *b* along the edge where the next block is to be formed, and I put the plastic composition for such next block up against the tar-paper joint and proceed with the formation of the new block until it is completed. In this manner I proceed *in making all the blocks* until the pavement is completed, interposing tar-paper between their several joints, as described. The paper constitutes a tight water-proof joint, but it allows the several blocks to heave separately from the effects of frost, or to be raised or removed separately, whenever

This invention relates to *a concrete pavement which is laid in sections, so that each section can be taken up and relaid without disturbing the adjoining sections.* With the joints *of this sectional* concrete *pavement are combined* strips of tar-paper or equivalent material arranged between the several blocks *or sections* in such a manner as to produce a suitable tight joint and yet allow the blocks to be raised separately without affecting the blocks adjacent thereto.

In carrying out my invention I form the concrete by mixing cement with sand and gravel or other suitable *material* to form a plastic *compound*, using about the following proportions: One part, by measure, of cement; one part, by measure, of sand, and from three to six parts by measure, of gravel, *with* sufficient water to *render* the mixture plastic; but I do not confine myself to any *definite* proportions *or materials* for making the concrete composition. While the mass is plastic I lay or spread the same *on* the foundation or bed of the pavement, either in *molds* or between movable joists of the proper thickness, so as to form the edges of the concrete blocks *a a*, *one block being formed after the other.* When the *first* block has *set* I *remove the joists or partitions from between it and the next block to be formed, and then I form the second block, and so on, each succeeding block being formed after the adjacent blocks have set, [and since the concrete in setting shrinks, the second block when set does not adhere to the first, and so on,] and when the pavement is completed each block can be taken up independent of the adjoining blocks. Between the joints of the adjacent blocks are placed strips b of tar-paper or other suitable material in the following manner:* After completing one block, *a*, I place the tar-paper *b* along the edge where the next block is to be formed, and I put the plastic composition for such next block up against the tar-paper joint and proceed with the formation of the new

occasion may arise, without injury to the adjacent blocks. The paper *does not adhere* when placed against the *edge of the fully-formed* block, and therefore the joints are always free between the several blocks, although *adherence may take place between the paper and* the *plastic* edges of the blocks *which are* formed after the *paper* joints *are set up in place.*

What I claim as new, and desire to secure by Letters Patent, is—

The arrangement of tar-paper or its equivalent between adjoining blocks of concrete, substantially as and for the purpose *described.*

What I claim as new, and desire to secure by Letters Patent, is—

1. *A concrete pavement laid in detached blocks or sections, substantially in the manner shown and described.*

2. The arrangement of tar-paper or its equivalent between adjoining blocks of concrete, substantially as and for the purpose *set forth.*

On the 1st of March, 1875, Schillinger filed in the Patent Office the following disclaimer:

To the Commissioner of Patents:

Your petitioner, John J. Schillinger, of the city and county and State of New York, represents that Letters Patent of the United States, Reissue No. 4,364, bearing date May 2, 1871, were granted to him for an improvement in concrete pavements. That he has reason to believe that, through inadvertence, accident, or mistake, the specification and claim of said Letters Patent are too broad, including that of which your petitioner was not the first inventor, and he therefore hereby enters his disclaimer to the following words: "And since the concrete in setting shrinks, the second block when set does not adhere to the first, and so on," and which occurs near the middle part of the said specification, and to the following words near the end of the specification: "In such cases, however, where cheapness is an object, the tar-paper may be omitted and the blocks formed without interposing anything between their joints, as previously described. In this latter case the joints soon fill up with sand or dust, and the pavement is rendered sufficiently tight for many purposes, while the blocks are detached from each other and can be taken up and relaid each independent of the adjoining blocks." Your petitioner hereby disclaims the forming of blocks from plastic material without interposing anything between their joints while in the process of formation. Your petitioner owns the said patent and the whole interest therein, except in the following places or territory, for which he has granted exclusive licenses under royalty, or sold rights under said patent, to wit, the counties of Kings, Queens, and Richmond, New York State; Hartford county, Connecticut; the District of Columbia; the States of New Jersey, Georgia, Maryland, Louisiana, Texas, Ohio, Michigan, Missouri, and Illinois, which above-named States and places comprise all the territory for which he has sold or granted exclusive licenses or rights in or under said patent, to the best of his recollection, knowledge, and belief.

The words specifically disclaimed by the disclaimer are embraced in brackets in the copy of the specification of the reissue above set forth.

The Schillinger patent has been before several of the circuit courts of the United States, and also before this Court, for adjudication.

In the Circuit Court for the Southern District of New York, before Judge Shipman, in February, 1877, in *Schillinger* v. *Gunther*, (14 Blatchford, 152, and 2 Ban. & Ard., 544, and 11 O. G., 831,) and in the same case, before Judge Blatchford, in August, 1879, (17 Blatchford, 66, and 4 Ban. & Ard., 479, and 16 O. G., 905;) in the Circuit Court for the District of California,

before Judge Sawyer, in May, 1881, in *California Artificial Stone Paving Co.* v. *Molitor*, and *The Same* v. *Perine*, (7 Sawyer, 190, and 8 Fed. Rep., 821, and 20 O. G., 813;) in the Circuit Court for the Northern District of New York, before Judge Blatchford, in July, 1883, in *Schillinger* v. *Greenway Brewing Co.*, (21 Blatchford, 383, and 17 Fed. Rep., 244, and 24 O. G., 495;) and in the Circuit Court for the Southern District of Ohio, before Judge Sage, in June, 1884, in *Kuhl* v. *Mueller*, (21 Fed. Rep., 510, and 28 O. G., 541;) the patent was sustained. In the Supreme Court of the District of Columbia, in general term, in July, 1885, in *Schillinger* v. *Cranford*, (4 Mackey, 450, and 37 O. G., 1349,) it was held void, on the question of novelty. It was also interpreted by Judge Sawyer, in the Circuit Court for the District of California, in *California Artificial Stone Paving Co.* v. *Freeborn*, in January, 1883, (8 Sawyer, 443, and 17 Fed. Rep., 735,) and by Judge Deady, in the Circuit Court for the District of Oregon, in August, 1887, in *Schillinger* v. *Middleton*, (31 Fed. Rep., 736.)

The patent was before this Court in *California Paving Co.* v. *Molitor*, (113 U. S., 609,) in March, 1885, but only on a question of contempt, and in *California Paving Co.* v. *Schalicke*, (119 U. S., 401,) in December, 1886.

We are of opinion that the proper construction of the reissued patent is, that the invention consists in dividing the pavement into blocks, so that one block can be removed and repaired without injury to the rest of the pavement, the division being effected by either a permanent or a temporary interposition of something between the blocks. Concrete pavement had been laid before in sections, without being divided into blocks. The effect of the disclaimer was to leave the patent to be one for a pavement wherein the blocks are formed by interposing some separating material between them. To limit the patent to the permanent interposition of a material equivalent to tar-paper, would limit the actual invention. The use of a bottom layer of coarse cement, and placing on it a course of fine cement, and dividing the upper course into blocks by a trowel run partially or wholly through the upper course while it is plastic, in a line coincident with the joints between the sections in the lower layer, accomplishes the substantial results of Schillinger's invention, in substantially the way devised by him, and is within the patent as it stands after the disclaimer. The disclaimer took out of the first claim of the reissue only so much thereof as claimed a concrete pavement made of the plastic material laid in detached blocks, without interposing anything in the joints in the process of formation, leaving that claim to be one for such a pavement laid in detached blocks, when free joints are made between the blocks, by interposing permanently or temporarily between them, in the process of their formation, tar-paper or its equivalent.

In *California Paving Co.* v. *Schalicke*, (*supra*,) it was said, (p. 406:)

> The evidence in the present case shows that the defendant, during the process of making his pavement, marked off its surface into squares. But the question is whether he, to any extent, divided it into blocks, so that the line of cracking was controlled, and induced to follow the joints of the divisions, rather than the body of the block, and so that a block could be taken out, and a new one put in its place, without disturbing or injuring an adjoining block. The specification makes it essential that the pavement shall be so laid in sections "that each section can be taken up and relaid without disturbing the adjoining sections." Again, it says that the joint between the blocks "allows the several blocks to heave separately, from the effects of frost, or to be raised or removed separately, whenever occasion may arise, without injury to the adjacent blocks." This is essential; and, in all the cases where infringement has been held to have been established, there have been blocks substantially separate, made so by the permanent or temporary interposition of a separating medium or a cutting-instrument, so that one block could upheave or be removed without disturbing the adjoining blocks. The patentee, in the disclaimer, expressly disclaimed "the forming of blocks from plastic material without interposing anything between their joints while in the process of formation." It appears that the defendant laid his pavement in strips from the curb of the sidewalk inward to the fence, in one mass, and then marked the strip crosswise with a blunt marker, which is made an exhibit, to the depth of about one-sixteenth of an inch; but it is not shown that this produced any such division into blocks as the patent speaks of, even in degree. There were no blocks produced, and, of course, there was nothing interposed between blocks. The mass underneath was solid, in both layers, laterally. So far as appears, what the defendant did was just what the patentee disclaimed. The marking was only for ornamentation, and produced no free joints between blocks, and the evidence as to the condition of the defendant's pavements after they were laid shows that they did not have the characteristic features above mentioned as belonging to the patented pavement.

In its decision in the present case, which was made before that in the Schalicke case, the Court said that the case was in no way different, so far as infringement was concerned, from the cases against Perine and Molitor and the case against the Greenway Brewing Company.

In the Schalicke case it was said, in the opinion of this Court, in regard to the pavement in the Molitor case:

> The defendant's pavement was made by cutting a lower course into sections with a trowel, to a greater or less depth, according to the character of the material, making a joint, and doing the same with an upper course, the upper joint being directly over the lower joint. Into the open joint, in each case, was loosely put some of the partially-set material from the top of the laid course, answering the purpose of tar-paper. A blunt and rounded joint-marker, which was said to be one-sixteenth or one-eighth of an inch in depth, was then run over the line of the joints, marking off the block. The pavement was weaker along the line of the joint than in any other place. This was held to be an infringement.

It was also there said that, in the Greenway Brewing Company case—

> it was held that the second claim of the reissue was infringed by a concrete pavement which had an open cut made by a trowel entirely through two courses of material, the line of cut in the upper course being directly over the line of cut in the lower course, and that the interposition of the trowel, though temporary, was an equivalent for the tar-paper, even though the joint was left open after the trowel was removed, and was not made tight.

In the present case, the only pavement for which the defendant was held liable was what was called in his account or statement before the master "concrete flag pavement," the manner of constructing which is thus described by Mr. Perkins, a witness for the plaintiff:

> First, joists are placed seven to eight feet apart, in front of the property where the work is to be laid. First, one stone is formed by placing a joist across between the others at right angles, generally at about four feet from the place of beginning. In this space a mortar, composed of sand, gravel, and cement, is put and thoroughly tamped, so that the coarse material will be from three to four inches in thickness, leaving about one-half inch on top for a mortar composed of sand and cement, which is troweled off and made even with the top surface of the joists. Then the short joist that is put in at right angles, as before described, is taken up and placed about the same distance as before, and again filled in. The finer material in the coarse concrete is generally worked next to the joist, so as to make a good, smooth, strong edge. When the top stuff is put on this last stone, and finished over on top with a trowel, the joint between the two stones being marked on the outer joist, a trowel is drawn through the top stuff to make a joint straight to correspond with the joint below.

The evidence is satisfactory that the trowel was used to cut through or into the top layer to an extent sufficient to make such a separation of the top layer into blocks, at a line corresponding with the joint below between the sections of the first layer, as to control the cracking of the top layer, by dividing it substantially into separate blocks. This division depends on

the depth of the cut. The defendant contends that the object and effect of the marking with the trowel was only to give to the pavement the appearance of flagging; but the evidence is entirely clear, that the cut was made sufficiently deep, in proportion to the thickness of the upper layer, to make such a separation of the upper layer into blocks as would compel any tendency to crack to follow the line of the cut made by the trowel and not run off into the body of the layer; and that thus the object of Schillinger's invention was attained. The defendant is, by the report of the master and the decree of the circuit court, made liable only for concrete flagging so laid and cut as to produce such result. The defendant was particular to have the cut in the upper layer made with the trowel directly over the line between the two sections of the lower layer, and it is shown that the upper layer of his pavement thus made would come up in separate blocks. He made his lower course of sand, gravel, and cement mixed in the proportions of one part of cement to six or seven of sand and gravel, while he made his upper course of one-half sand and one-half cement, made plastic with water. The lower course of his flagging was composed of material in which there was only one part of cement or adhesive substance to six or seven parts of non-adhesive substance, and there was but a slight tendency to adhere between the faces of the two sections in the lower course, while as the upper layer was composed one-half of adhesive substance, the tendency was for its material to adhere strongly. Therefore, a cut in the upper course, coincident with the joint below, would permit any action of the settling of the lower course, through frost or upheaval, to extend to the top of the upper course through a joint cut in that course, of sufficent depth to prevent the tendency of the upper course to crack in its body rather than in the line of the cut.

We are, therefore, of opinion that the first claim of the reissue, as it stands after the disclaimer, is infringed, because the defendant's pavement is a concrete pavement, laid in detached blocks or sections, substantially in the manner shown and described in the specification of the reissue, the detached blocks in the upper course being the equivalent of the detached blocks or sections of the Schillinger pavement; and that the second claim of the reissue is infringed, because the temporary use of the trowel or cutting-instrument, to divide the upper course into blocks, is the equivalent of the tar-paper of the Schillinger patent, the cutting making a division which controls the cracking, and facilitates the taking up and relaying of the blocks or sections in the upper course "without disturbing the adjoining sections," and the trowel being interposed to effect its object during the process of forming the pavement on the spot where it is to remain.

The invention of Schillinger was a very valuable one. The evidence is that it entirely superseded the prior practice of laying concrete pavements in a continuous, adhering mass.

The defendant introduced in evidence, on the question of novelty, the following patents: English patent to Claridge, No. 7,489, of 1837; English patent to D'Harcourt, No. 7,991, of 1839; United States patent to Russ, No. 5,475, of 1848; English patent to Chesneau, No. 350, of 1852; English patent to Coignet, No. 2,659, of 1855; English patent to De la Haichois, No. 771, of 1856; and United States patent to Van Camp, No. 93,142, of July 27, 1869. All of these patents, except the Van Camp patent, were introduced in evidence on the part of the defense in the case against the Greenway Brewing Company, and it was held in that case that none of them anticipated the Schillinger invention. A copy of the record in that case, embracing the pleadings, and the evidence and patents put in by the defendant in it, on the question of novelty, forms part of the record in the present case.

An examination of the patents put in evidence by the defendant, in connection with the testimony in regard to them, shows that the Claridge pavement was not a concrete pavement, and was not formed in detachable blocks, but was a continuous asphalt pavement; that the D'Harcourt pavement was not a concrete pavement laid in detached blocks or sections, nor could one section be removed without disturbing adjacent sections; that the Russ patent shows a concrete foundation for a stone pavement, the pavement proper being constructed of granite or syenite placed on top of the concrete foundation, such concrete foundation not being formed in detachable blocks, but only being provided at certain places with removable panels, consisting of frames filled with concrete, to be lifted out to give access to water-pipes or for other purposes; that the Chesneau pavement was not a concrete pavement laid in detached sections or blocks, but was a continuous pavement, provided with panels to give access in certain places to gas and water pipes, the panels being made of sections set in frames, which were removably inserted in the surrounding pavement, and there was no arrangement of tar-paper or its equivalent between adjoining blocks of concrete, for the purpose set forth in the Schillinger patent; that the Coignet patent did not show a concrete pavement, made in detachable blocks after the manner of Schillinger's, and built on the ground where it was to remain; that the De la Haichois pavement was not a concrete pavement laid in detachable blocks or sections, or having the arrangement of tar-paper or its equivalent between adjoining blocks of concrete, like that of Schillinger; and that the Van Camp patent showed only blocks formed in molds, and removable from the molds, or the pavement to be laid cemented in the molds, and it not being stated that the blocks should be formed on the spot where they were to remain, nor that they should be formed of cement and gravel or sand. It further appears that, in the Van Camp patent, when the blocks are made in molds, they are like bricks, or artificial stones, or wooden blocks, which are prepared and then brought to the place where they are to be laid and put down in the usual manner; and that, when the blocks remain in the molds and are thus laid, they do not present a uniform wearing-surface of concrete, or constitute a concrete pavement formed in detachable blocks by joints.

Other testimony as to prior public use was introduced in this case, taken from the record in the case of *Schillinger* v. *Phillip Best Brewing Co.*, in the Circuit Court for the Eastern District of Wisconsin, which testimony was also introduced in the case against the Greenway Brewing Company, having been taken in November, 1882. In the decision in the latter case it was correctly said of that testimony:

So far as it refers to prior use in Germany, not shown in a patent or printed publication, it was duly objected to in this case and must be excluded. As to the cement malt-floor which Row laid in Baltimore twenty-five years ago, he shows that it was not made in sections detachable by free joints. The testimony of Botzler as to a prior malt-floor laid by him in Chicago is too indefinite to amount to sufficient evidence to defeat a patent.

So far as that testimony related to a pavement used in Germany, it was objected to at the time it was introduced in this case, as incompetent. It was clearly inadmissible under section 4923 of the Revised Statutes, because it did not show anything that had been patented or described in a printed publication.

We do not think that the reissued patent, as it stood after the filing of the disclaimer, was open to the objection that it was not for the same invention as that of the original patent. Whatever there was of objectionable matter inserted in the specification or the first claim of the reissue, when it was granted, was removed by the disclaimer. The reissue was granted within ten months after the original. The single claim of the original patent was repeated in the reissue as the second claim of the latter, and the first claim of the reissue, as it stood after the disclaimer, did not expand beyond the claim of the original what was claimed in the reissue.

As to the amount of the decree, we think the court properly awarded the sum of 4 cents per square foot as the profits of the defendant, and that it was right to give to the plaintiff the entire profits made by the defendant by the laying by him of his concrete flagging, in view of the testimony in the case. It clearly appears that the defendant's concrete flagging derived its entire value from the use of the plaintiff's invention, and that if it had not been laid in that way it would not have been laid at all.

In *Elizabeth* v. *Nicholson Pavement Co.*, (97 U. S., 126, 139,) it is said that "when the entire profit of a business or undertaking results from the use of the invention, the patentee will be entitled to recover the entire profits, if he elects that remedy." This language was quoted with approval in *Root* v. *Railway Co.*, (105 U. S., 189, 203.) As in the case of the Nicholson patent, so in the case of the Schillinger patent, the pavement was a complete combination in itself, differing from every other pavement, and the profit made by the defendant was a single profit derived from the construction of the pavement as an entirety. (*Callaghan* v. *Myers*, 128 U. S., 617, 665, 666.)

Within the decision in *Garretson* v. *Clark*, (111 U. S., 120,) the proof in this case is satisfactory, that the entire value of the defendant's pavement, as a marketable article, was properly and legally attributable to the invention of Schillinger.

The decree of the circuit court is affirmed.

U. S. Circuit Court—Southern District of New York.

HAKE v. BROWN *et al.*

Decided March 5, 1889.

1. HAKE—VISITING-CARDS.

Letters Patent No. 219,464, granted September 9, 1879, to Philip Hake, for an improvement in visiting-cards, *Held* valid as to the first claim, which covers the process of arranging cards in oblique packs and beveling and ornamenting and finishing the sides and ends of the whole pack as though it were one card, but invalid as to the second claim, covering the product, which is old in the sense of the patent law.

2. DISCLAIMER—INFRINGEMENT.

The patent might be held to be invalid on account of its covering the product, of which the patentee is not the inventor, and which is a material and substantial part of the thing patented, (R. S., 4920;) but regarding this as claimed through inadvertence, accident, or mistake, without any willful default or intent to defraud or mislead the public, the patentee may file a disclaimer to the second claim now, and thereupon have a decree for the infringement of the first claim, without costs.

Mr. Arthur v. Briesen for the plaintiff.
Mr. Walter D. Edmonds for the defendants.

WHEELER, *J.*:

This cause rests upon Patent No. 219,464, dated September 9, 1879, and granted to the orator for an improvement in visiting-cards. The patent describes a method of making beveled-edged cards and of ornamenting the edges by piling them obliquely, first, so that the slope of the pack will correspond with the desired bevel, compressing them to hold them in that position, beveling and ornamenting and finishing the whole pack on the sloping edge, which will bevel, ornament, and finish that edge of each separate card by each operation, and of successively treating the other sides and ends of the pack in the same manner; by which means the whole pack is treated as readily as one card. The first claim is for the method of treating cards in this manner, and the second is for a card so treated. The defenses are want of novelty, want of patentability, and lack of proof of infringement.

According to the evidence bevel-edged cards were not new at the date of the orator's invention; neither was beveling in packs new; but arranging cards in oblique packs and treating one side or end till all the cards were complete on that side or end, as if they were one card, and treating the other side and ends successively in the same manner does not appear to have been known before. By this process the packs can be grooved or embossed and ornamented in a manner to present beveled designs upon the edges of such cards, which could not be produced by treating cards separately, and the making of bevel-edged cards of any design is greatly facilitated. This method seems to be ingenious and useful. Such an arrangement of mechanical operations that produces a new and useful result, or an old result in an easier or better manner, is understood to be patentable. (*Cochrane* v. *Deener*, 94 U. S., 789; *Telephone Cases*, 126 U. S., 1.) The first claim of the patent, therefore, appears to be good and valid for the method described.

There is nothing new about the bevel-edged cards produced by this process except that they are made in this way. They do not differ from those made in any other way, unless they do in design. The process does not inhere to the product so that it differs from any like product made in any other way, as was the case with Cummings's invention of rubber plates and teeth, in *Smith* v. *Goodyear Dental Vulcanite Co.*, (93 U. S., 486,) or the driven well, in *Eames* v. *Andrews*, (122 U. S., 40.) The product itself here is old, in the sense of the patent law, and there can be no patent for it, although produced in this new way. (*McCloskey* v. *Du Bois*, 9 Fed. Rep., 38; 8 Fed. Rep., 710;

McCloskey v. *Hamill*, 15 Fed. Rep., 750.) The second claim of this patent, therefore, appears to be invalid. The plaintiff's evidence tends directly to show that the defendants use this process, and the defendants do not in testimony deny that they do, nor dispute or meet this testimony. Upon this state of the evidence the infrigement is found, as a fact, to exist of the first claim.

The patent might be held to be invalid on account of its covering the product, of which the patentee is not the inventor, and which is a material and substantial part of the thing patented. (Rev. Stat., sec. 4920, sub-div. Fourth.) But when such material or substantial part has been claimed through inadvertence, accident, or mistake, without any willful default or intent to defraud or mislead the public, a recovery may be had for the infringement of any part which is *bona fide* the inventor's own—that is, a material and substantial part of the thing patented and definitely distinguishable from the part claimed without right, but without costs, unless a disclaimer is filed before suit brought. (Section 4922.) The benefits of the provisions of this section are to be denied if the entry of a disclaimer has been unreasonably neglected or delayed; but waiting to take the judgment of a court is allowable. (*Burdett* v. *Esty*, 15 Blatchf., 349; 3 Fed. Rep., 566.) No such willful default or intent to defraud or mislead appears or is claimed to exist thus far in this case. The orator therefore appears to be entitled to file a disclaimer of the second claim now, and thereupon to have a decree as to the first claim without costs.

Upon the filing of a duly-attested copy from the Patent Office of a disclaimer of the second claim let a decree be entered that the first claim is valid, and for an injunction and account accordingly, but without costs.

U. S. Circuit Court—Southern District of Ohio, Western Division.

THE SEIBERT CYLINDER OIL CUP COMPANY *v.* THE WILLIAM POWELL COMPANY.

Decided 1889.

LICENSE—INFRINGEMENT.

The defendant is a licensee of the Detroit Lubricating Company under a license which is limited upon its face to patents owned by that company. The Detroit Lubricating Company is the licensee of the complainant under a contract which does not grant an exclusive license for the manufacture or use of the Gates patent owned by the complainant, and which is infringed; *Held* that the defendant was not protected by its license in the manufacture of articles under the Gates patent.

Mr. Edmund Wetmore, Mr. J. H. Raymond, and *Messrs. Peck & Rector* for the complainant.

Mr. George J. Murray for the defendant.

SAGE, *J.*:

The complainant sues as assignee for infringement of Patent No. 138,243, granted to John Gates 29th of April, 1873, for improvements in lubricators for steam-engines. The validity of the patent, although denied in the answer, is not contested. The lubricators manufactured and sold by the defendant contain the complainant's invention. The defense rests solely upon the following facts: December 1, 1883, the complainant and the Detroit Lubricator Company (which was the owner of patents claimed to anticipate complainant's) entered into a contract that neither party should sue the other, or directly or indirectly authorize suit against the other or its agents or vendees, under any of the patents then or thereafter to be owned by it; that neither should imitate the styles or shapes of lubricators made by the other, and that, whereas the Seibert Company was the owner in whole or in part of certain Letters Patent granted to Nicholas Seibert for improvements in lubricators, and the Seibert Company claimed and the Detroit Company denied that the Detroit Company had infringed and was infringing the same, the Detroit Company should thereafter pay royalties, as specified in the agreement, to the Seibert Company so long as the Seibert Company should perform its covenants and stipulations and during the life of the agreement, which was to continue in force until the expiration of the Seibert patents, and in consideration thereof the Seibert Company agreed not to molest the Detroit Company, its agents or vendees, by suit or otherwise, for any alleged infringements of said Nicholas Seibert patents outside of the New England States. The Seibert Company also agreed not to authorize the use of the Nicholas Seibert patents outside of the New England States except as above. This agreement amounted to a license to the Detroit Company, and it included the Gates patent. (*Seibert Co.* v. *Detroit Co.*, 34 Fed. Rep., 216.)

The defendant is a licensee of the Detroit Lubricator Company. The license, upon its face, is limited to patents owned by that company. The lubricators manufactured by the defendant, although different in style and shape from that shown and described in the Gates patent and from those made by the Seibert Company, are nevertheless infringements of the Gates patent.

The contract of December 1, 1883, does not grant to the Detroit Company an exclusive license for the manufacture or use of the Gates patent. That feature of the contract appears only in the stipulation relating to the Nicholas Seibert patents. This conclusion disposes of the entire defense. The contract in evidence between the Seibert Company and the Western Railroad Association cannot avail the defendant. The Detroit Company and the defendant are alike strangers to it. It is only an agreement by the Seibert Company to release upon terms the railroad companies composing the association from any and all claims on account of their use of lubricators purchased from the Detroit Company or from its successors, assigns, agents, or licensees. This view of the case renders it unnecessary to consider whether the contract of December 1, 1883, between the Seibert Company and the Detroit Company has been rescinded.

A decree will be entered for the complainant for an injunction and account.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

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Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., May 17, 1889.

SIR: The Secretary of the Interior has ordered that A. C. Stokely, of Red River Iron Works, Ky., be not recognized after this date as attorney or agent in the prosecution of any claim or other matter before this Department or any bureau thereof.

Very respectfully,

E. M. DAWSON,
Chief Clerk.

The Commissioner of Patents.

Issue of May 28, 1889.

Patents	474	No. 403,869 to No. 404,372, inclusive.
Designs	13	No. 19,112 to No. 19,124, inclusive.
Trade-Marks	30	No. 16,629 to No. 16,660, inclusive.
Labels	14	No. 5,912 to No. 5,925, inclusive.
Reissue	1	No. 11,005.
Total issue	534	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	....	Nebraska	2	....
Arizona Territory	1	....	Nevada	....	....
Arkansas	1	....	New Hampshire	3	....
California	9	2	New Jersey	14	1
Colorado	3	1	New Mexico Terri'y	....	....
Connecticut	33	....	New York	78	10
Dakota Territory	2	....	North Carolina	2	....
Delaware	....	....	Ohio	33	....
District of Columbia	2	....	Oregon	2	....
Florida	....	....	Pennsylvania	42	9
Georgia	5	....	Rhode Island	5	2
Idaho Territory	....	....	South Carolina	2	....
Illinois	45	4	Tennessee	4	....
Indian Territory	....	....	Texas	6	....
Indiana	20	....	Utah Territory	1	....
Iowa	8	....	Vermont	2	....
Kansas	13	....	Virginia	2	2
Kentucky	4	....	Washington Terri'y	1	....
Louisiana	5	....	West Virginia	4	....
Maine	1	1	Wisconsin	8	1
Maryland	10	....	Wyoming Territory	....	....
Massachusetts	47	7	United States Army	1	....
Michigan	9	1	United States Navy	....	....
Minnesota	1	2	Total to citizens of the United States	444	43
Mississippi	....	....			
Missouri	14	....			
Montana Territory	1	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	....	....	Germany	9	....
Australia	....	....	Japan	....	....
Austria-Hungary	....	....	Mexico	....	....
Belgium	1	....	Newfoundland	....	....
Bermuda	....	....	New South Wales	....	....
Brazil	....	....	Peru	1	....
Canada	8	....	Russia	....	....
Chili	....	....	Scotland	....	....
Costa Rica	....	....	Spain	....	....
Curaçoa	....	....	Switzerland	3	....
Denmark	1	....	Victoria	1	....
England	17	2	Total to citizens of foreign countries	48	3
Finland	....	....			
France	2	1			

DESIGNS.

19,112.—FIRE-PLACE GRATE.—*Edsord L. Caley*, Philadelphia, Pa., assignor to *Gilbert Combs, John Bowden*, and *John H. Bowden*, Freehold, N. J. Application filed January 9, 1889. Serial No. 295,995. Term of patent 7 years.

19,113.—WOVEN FABRIC.—*John W. Fries*, Salem, N. C. Application filed May 2, 1889. Serial No. 309,370. Term of patent 14 years.

19,114.—ORNAMENTATION OF GLASSWARE.—*Thomas G. Hembes*, Corning, N. Y. Application filed April 29, 1889. Serial No. 308,074. Term of patent 14 years.

19,115.—TABLE.—*Peter Herbert*, Cincinnati, Ohio. Application filed January 14, 1889. Serial No. 296,294. Term of patent 3½ years.

19,116.—PLAQUE.—*Joseph Locke*, Toledo, Ohio, assignor to *The W. L. Libbey & Son Company*, same place. Application filed April 18, 1889. Serial No. 307,843. Term of patent 7 years.

19,117.—CARRIAGE RUG OR ROBE.—*Andrew M. Newlands*, Galt, Ontario, Canada. Application filed March 28, 1889. Serial No. 305,174. Term of patent 7 years.

19,118.—FRAME FOR ELECTRIC BELLS.—*William H. Powell*, Philadelphia, Pa., assignor to *J. Elliott Shaw*, same place. Application filed April 16, 1889. Serial No. 307,504. Term of patent 7 years.

19,119.—PENCIL.—*Gavin Rose*, Bridgeport, Conn. Application filed April 6, 1889. Serial No. 306,257. Term of patent 3½ years.

19,120.—SALT-BOX OR CONDIMENT-HOLDER.—*Albert Steffin*, New Bedford, Mass. Application filed November 10, 1887. Serial No. 254,339. Term of patent 7 years.

19,121.—THIMBLE.—*John F. Simons*, Philadelphia, Pa. Application filed February 15, 1889. Serial No. 300,060. Term of patent 14 years.

19,122.—TABLE-SERVICE.—*James G. Warren*, Providence, R. I. Application filed December 5, 1887. Serial No. 257,061. Term of patent 7 years.

19,123.—COUP.—*Abijah Wallace*, Stroudsburg, Pa., assignor of two-thirds to *Meyer Dittenhoefer*, New York, N. Y. Application filed April 25, 1889. Serial No. 308,619. Term of patent 3½ years.

19,124.—BACK OF A COUP.—*Abijah Wallace*, Stroudsburg, Pa., assignor of two-thirds to *Meyer Dittenhoefer*, New York, N. Y. Application filed April 25, 1889. Serial No. 308,620. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,629.—RAZOR-STROPS.—*American Enamel Company*, Providence, R. I. Application filed April 4, 1889. Used since June, 1888.

"The word 'GOLDSCHMIDT,' the initials 'I. P. G.,' and the word 'BERLIN.'"

16,630.—CORK AND CORK ARTICLES.—*Arnold & Co.*, Lancaster, Pa. Application filed March 16, 1889. Used since May 2, 1860.

"The abbreviation 'R,' ('prescription' or 'recipe.')"

16,631.—VETERINARY LINIMENT.—*Mirum Sulz-Bacher*, New York, N. Y. Application filed October 17, 1887. Used since September 26, 1887.

"The representation of a man in a Brother Jonathan suit with the words 'TESTED AND APPROVED' issuing from his mouth."

16,632.—INDIA-RUBBER BOOTS AND SHOES.—*Boston Rubber Company*, Boston, Mass. Application filed April 8, 1889. Used since January 15, 1889.

"The representation of a bell."

16,633.—NATURAL MINERAL WATERS.—*Erich Brünler*, New York, N. Y. Application filed April 1, 1889. Used since February 15, 1889.

"The word 'AURORA.'"

16,634.—SOAP.—*Benjamin Brooke & Company*, Philadelphia, Pa. Application filed November 19, 1888. Used since September, 1886.

"The words 'MONKEY BRAND.'"

16,635.—SOAP.—*Benjamin Brooke & Company*, Philadelphia, Pa. Application filed November 19, 1888. Used since December, 1879.

"The representation of a monkey viewing a reflection in a pan or skillet."

16,636.—PLATED SEAMLESS FILLED WIRE AND ARTICLES MADE THEREFROM.—*Burdon Seamless Filled Wire Company*, Providence, R. I. Application filed March 22, 1889. Used since October 26, 1888.

"The letter 'S' inclosed by a wreath."

16,637.—WINE, GIN, RUM, AND BRANDY.—*James E. Davis*, Detroit, Mich. Application filed April 10, 1889. Used since May 1, 1885.

"The word 'ST. BERNARD.'"

16,638.—MUSTARD.—*William G. Dean & Son*, New York, N. Y. Application filed April 4, 1889. Used since September 1, 1877.

"The representation of the earth, with clouds and lightning."

16,639.—MUSTARD.—*William G. Dean & Son*, New York, N. Y. Application filed April 4, 1889. Used since October 1, 1873.

"The word 'ARDENTER.'"

16,640.—PRESERVED AND CANNED FRUITS AND VEGETABLES.—*Patrick F. Gillespie*, Chicago, Ill. Application filed March 27, 1889. Used since November 1, 1888.

"The representation of a shield and the letters 'L. J. C.' above it, together with the words 'P. F. GILLESPIE,' arranged in a semicircle above the shield, and the words 'CHICAGO' and 'ILLINOIS' on either side of the shield."

16,641.—SHOES.—*Hamilton Hay*, Stoneham, Mass. Application filed April 9, 1889. Used since January 1, 1888.

"The words 'BIG DRIVE.'"

16,642.—SHOE-ELASTIC, BOOTS, AND SHOES.—*Herbert & Rapp Company*, Boston, Mass. Application filed April 5, 1889. Used since March 15, 1889.

"The word 'HUB.'"

16,643.—COMPOSITION FOR SHIPS' BOTTOMS.—*M. Holzapfel & Co.*, Newcastle-upon-Tyne, England. Application filed March 21, 1889. Used since April 21, 1883.

"The fac-simile signature 'HOLZAPFEL & Co.'"

16,644.—WHEAT-FLOUR.—*Walter, Horning & Co.*, Pittsburg, Pa., and Minneapolis, Minn. Application filed March 20, 1889. Used since January 1, 1889.

"The word 'AVALON.'"

16,645.—WHEAT-FLOUR.—*Walter, Horning & Co.*, Pittsburg, Pa., and Minneapolis, Minn. Application filed March 20, 1889. Used since May 1, 1887.

"The word 'IVORY.'"

16,646.—WHEAT-FLOUR.—*Walter, Horning & Co.*, Pittsburg, Pa., and Minneapolis, Minn. Application filed March 20, 1889. Used since February 1, 1880.

"The words 'GOLDEN WEDDING.'"

16,647.—WHEAT-FLOUR.—*Walter, Horning & Co.*, Pittsburg, Pa., and Minneapolis, Minn. Application filed March 20, 1889. Used since January 1, 1889.

"The word 'UNA.'"

16,648.—WHEAT-FLOUR.—*S. C. Hurt & Son*, Lynchburg, Va. Application filed April 2, 1889. Used since 1868.

"The words 'WHITE ROCK MILLS' and a double chain-like line composed of dashes inclosing the same."

16,649.—WATER-COOLERS AND COMBINED WATER COOLER AND FILTER.—*The John C. Jewett Manufacturing Company*, Buffalo, N. Y. Application filed March 25, 1889. Used since January 1, 1885.

"The words 'NEW ERA.'"

16,650.—REMEDY FOR ROUGHNESS OF THE SKIN AND FOR BURNS AND CHAFING.—*Frederick W. Lyons* and *Edward Ziegler*, Jersey City, N. J. Application filed November 9, 1887. Used since October 1, 1886.

"The compound word 'ANTI-CHAP.'"

16,651.—WHIPS AND LASHES.—*Massasoit Whip Company*, Westfield, Mass. Application filed April 3, 1889. Used since January 15, 1887.

"The words 'THE A. C. BARNES WHIP CO.'"

16,652.—MANUFACTURES FROM MINERAL AND OTHER SUBSTANCES FOR BUILDING AND DECORATING, INCLUDING CEMENT.—*McLean & Company, (Limited,)* London, England. Application filed March 21, 1889. Used since August 8, 1887.

"The representation of the head of a dog."

16,653.—PAPER CLOTHING.—*New York Paper Clothing Manufacturing Company*, New York, N. Y. Application filed April 4, 1889. Used since February 14, 1889.

"The word 'ZERO.'"

16,654.—GLOVES.—*Emile Ott*, Paris, France. Application filed April 3, 1889. Used since March 15, 1889.

"The word 'CENTENAIRE.'"

16,655.—CANNED SALMON.—*Pacific Packing Company*, San Francisco, Cal. Application filed March 14, 1889. Used since February 1, 1889.

"The word 'NATIONAL.'"

16,656.—COFFEE.—*George Ropes*, Boston, Mass. Application filed March 27, 1889. Used since July 1, 1875.

"The capital letter 'R,' inclosed in lines outlining the form of a diamond."

16,657.—CANNED SALMON.—*Royal Packing Company*, San Francisco, Cal. Application filed March 14, 1889. Used since February 1, 1889.

"The word 'CHIEFTAIN' and the pictorial representation of a tattooed face and feathered head of an Indian chief within a circle, and a fish upon the opposite end of the label."

16,658.—COTTON LININGS.—*Frank L. St. John*, New York, N. Y. Application filed February 18, 1889. Used since January 2, 1889.

"The word 'BEDFORD,' on a silver-colored parallelogram."

16,659.—REMEDIES FOR RHEUMATISM.—*William Henry Southard*, Leadville, Colo. Application filed March 16, 1889. Used since July 5, 1888.

"The words 'MOUNTAIN WONDER.'"

16,660.—BISCUIT.—*Wilson-Cass Company*, Philadelphia, Pa. Application filed March 22, 1889. Used since December 10, 1888.

"The word 'HEALTH' associated with a square figure containing the representation of a field of grain with two girls in the foreground, a parallelogram containing a picture of a grassy meadow on which eight children are circling hand in hand, and a parallelogram containing a representation of a grove of trees near which are two young girls, while in the foreground are two others, all in appropriate colors."

LABELS.

5,912.—Title: "ABBOTT'S MENTHOL SNUFF."—*Abbott's Menthol Plaster Co.*, Worcester, Mass. Application filed November 10, 1888.

5,913.—Title: "ABBOTT'S MENTHOL CREAM."—*Abbott's Menthol Plaster Co.*, Worcester, Mass. Application filed November 10, 1888.

5,914.—Title: "LIQUID PARIS GREEN." (FOR A VERMIN EXTERMINATOR.)—*The Albany Paris Green Manufacturing Company*, Albany, N. Y. Application filed May 1, 1889.

5,915.—Title: "THE ARCADIAN ANTI-MALARIAL TONIC."—*Arcadian Mineral Springs Company*, Waukesha, Wis. Application filed April 15, 1889. (Trade-Mark Registered.)

5,916.—Title: "WARSAW SALT."—*Beaupré, Keogh & Davis*, St. Paul, Minn. Application filed April 29, 1889.

5,917.—Title: "LIQUID FRENCH SOAP."—*Missouri Camp*, Pittsburg, Pa. Application filed May 4, 1889.

5,918.—Title: "QUININE WINE TONIC BITTERS."—*W. T. Gilmore* and *Christopher White*, St. Paul, Minn. Application filed May 2, 1889.

5,919.—Title: "SEMI-GLAZE COLOR."—*Grunewald & Busher*, Chicago, Ill. Application filed March 16, 1889.

5,920.—Title: "MATT WAX COLOR."—*Grunewald & Busher*, Chicago, Ill. Application filed March 16, 1889.

5,921.—Title: "E. MERCIER & Co." (FOR BRANDY.)—*Edward Kane & Son*, Brooklyn, N. Y. Application filed May 6, 1889. (Trade-Mark Registered.)

5,922.—Title: "YUCATAN PLUG TOBACCO."—*R. J. Kittick*, Chicago, Ill. Application filed April 17, 1889.

5,923.—Title: "ANIMATING GUM." (FOR MEDICATED CHEWING GUM.) *Henry J. Kintz*, Alexandria, Va. Application filed April 29, 1889.

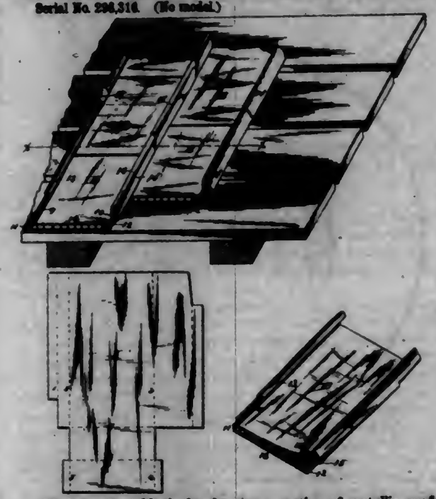
5,924.—Title: "KHASAN'S SANTIN." (FOR ANTI-SUDORIFIC POWDERS.)—*Naum Khasan*, New York, N. Y. Application filed February 8, 1889. (Trade-Made Registered.)

5,925.—Title: "COMPOUND VEGETABLE PANACEA."—*Frank H. Libby*, Saco, Me. Application filed May 2, 1889.

PATENTS

GRANTED MAY 28, 1889.

403,899. SHEET-METAL ROOFING. JOHN W. AMBRAHN, Allegheny, Pa., assignor to John Davis, same place. Filed Feb. 1, 1889. Serial No. 298,316. (No model.)

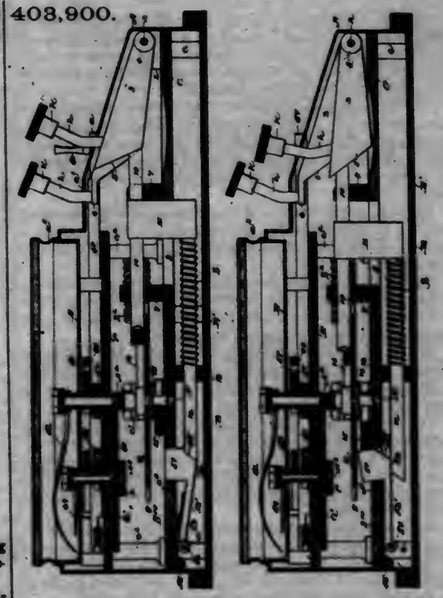


Claim.—1. A blank for forming a section of metallic roofing adapted to be folded on the lines 1 2 3 4 5 6 7 8, substantially as described.

2. A section of metallic roofing having vertical and angular flanges on its sides and a rabbet or seat at one end below the plane of the body of the section, substantially as described.

3. A section of metallic roofing having flanges 9 10 11 12 13 14 15 and a rabbet or seat, 16, formed by a double fold and integral with the sections, substantially as described.

403,900. ADDING-MACHINE. SAMUEL R. AUSTIN, Fort Valley, Ga. Filed June 10, 1887. Renewed Apr. 22, 1889. Serial No. 308,214. (No model.)



Claim.—1. In an adding-machine, a series of sliding rods of different lengths having forward-inclined ends, and a series of key-levers having corresponding projecting inclined ends adapted to engage with the forward ends of the said rods, substantially as described.

2. The combination, with the sliding rods having depending projections formed therewith, a spring-actuated rod connected to the said depending projection, and the key-levers, substantially as described.



3. In an adding-machine, the series of sliding rods of different lengths, the key-levers for actuating the same, the levers 14 and 15, to be actuated by the rods, and the registering mechanism worked by the movement of the levers 14 and 15, as set forth.

4. The combination, with the sliding rods of varying lengths mounted in suitable bearing-strips, of the key-levers engaging with the forward ends thereof, the lever 14, normally resting against the inner ends of said rods, and the coiled spring for returning said lever 14 to its normal position, substantially as described.

5. In an adding-machine, the combination of the key-levers 3, having the enlarged inclined ends 4, the projections 5, alternately formed with said lever, the key-post projecting above the said levers, and the sliding rods 10, of varying lengths, with which said levers engage, substantially as described.

6. The combination of the key-levers, the sliding rods 10, having rods 12, encircled by coiled springs connected to the under part thereof, levers 14 and 15, and the stop-levers 52, the registering mechanism operated by rods 10, and the stop mechanism operated by rods 12, substantially as described.

7. The combination, with the rods 10, having the projections 11, of the rods 12, encircled by coiled springs, substantially as described.

8. The combination, with the rods 10, having the projections 11, of the rods 12, encircled by coiled springs, the levers 52, having the projecting ends 54, and the spring for returning said levers 52 to their normal position, substantially as described.

9. The combination, with the levers 14 and 15, of the slide-pawl in connection with the lever 15 and the master-gear G, the stop mechanism for the lever 15, and the key-levers for actuating lever 14, and also to control the stop mechanism, substantially as described.

10. The combination, with the levers 14 and 15, of the key-levers for actuating the said levers 14 15, the slide-pawl in connection with

the lever 15, the master-gear G, in connection with the arbor A', and the index on the top portion of said arbor, substantially as described.

11. The combination, with the levers 14 and 15, of the spring-actuated slide-pawl in connection with the lever 15, operating in a line to the center of the master-gear G, the key-levers for working the levers 14 and 15, and the spring-actuated pawl for holding the master-gear in its desired position, substantially as described.

12. In an adding-machine, the combination, with the master-gear G, connecting with the registering mechanism, of the lever 15, for actuating the same, said lever having the hollow screws adapted to be filled with felt or the like and engaging the surface of the said master-gear, as set forth.

13. The combination, with the lever 14, of the link 27 connecting said lever with the lever 15, the slide block or pawl 29, and the vertically-arranged stud or pin adapted to engage the teeth of the master-gear G, substantially as described.

14. The combination, with the lever 15, carrying the spring-actuated sliding pawl, and the lever 14, of the arms projecting outwardly from the side thereof and adapted to engage with the spring-actuated sliding pawl, and the key-levers and sliding rods for actuating the lever 14, substantially as described.

15. The combination, with the lever 15, having the central recessed enlargement, of the stop-levers 52, having the forward enlarged ends, and the spring for returning said levers to their normal position, whereby the movement of the said lever 15 is limited proportionately to the length of the slide-rod 10, substantially as described.

16. In an adding-machine, the combination, with the key-levers, of the rods 12 actuated thereby, the master-gear G, the lever 15, operated by the key-levers, and the stop-levers 52, operated by the rods 12, as set forth.

17. The combination, with the slide-rods 10, connecting with the registering mechanism, of the key-levers 3, having the enlarged inner inclined ends, whereby a positive motion between the two parts is at all times afforded, substantially as described.

18. The combination, with the levers 14 and 15, of the slide-pawl carried by the lever 15, the master-gear operating in connection with said slide-pawl, and the pinion mounted upon the same arbor as the master-gear, substantially as described.

19. In combination with the master-gear G' and the actuating mechanism therefor, rods 10, of different lengths, to work the actuating mechanism, rods 12, encircled by springs and of varying lengths, and the levers 52, which are adapted to be projected upward to limit the movement of the actuating mechanism for the master-gear, substantially as described.

20. In combination with the levers 14 and 15, the diagonally-arranged slots in said lever, the slide-block arranged in connection with said diagonal slots, the spring-actuated rod, and the vertically-arranged pin mounted in the said sliding block and adapted to engage with the teeth of the master-gear, substantially as described.

21. The combination of the lever P', having the straight and curved portions *p* and *p'* formed integrally, the central projections formed therewith, the heart-cams mounted on the arbors of the indices, and the draw rod or lever whereby the indices may be returned to their normal position, substantially as described.

22. The combination, with the levers 3, constructed as herein set forth, of the slide-rods 10, the spring-actuated rods 12 in connection therewith, the levers 14 and 15, the slide-pawl mounted in connection with the lever 15, the master-gear G, the rear pawl adapted to engage with the said master-gear, and the stop-levers 52, substantially as described.

23. The combination, with the plate C, of the bearing-strips 7 and 8, mounted thereon and forming the front and rear walls of a slot, 9, constructed in said plate, and the slide-rods 10, having the depending projections 11, to which the rods 12 are secured, substantially as described.

24. In combination with the master-gear G, the hollow screws filled with felt and engaging the faces of the gear, as and for the purpose set forth.

25. In combination with the master-gear G, connecting with the registering mechanism, the spring-actuated graduated rods 10, the key-lever actuating the rods 10, the swinging lever engaging and turning the master-wheel, the said swinging lever being actuated by the rods 10, and the stop mechanism, also actuated by the movement of the sliding rods 10 to limit the movement of the swinging lever, as set forth.

26. In combination with the master-wheel G, connecting with the registering mechanism, the spring-actuated graduated rods 10, the transmitting mechanism operated by the sliding rods to move the wheel G, and the stop mechanism, also operated by the sliding rods to limit the movement of the transmitting mechanism and correspondingly limit the movement of the wheel G, as set forth.

27. In combination with the key-levers, the spring-actuated graduated sliding rods 10 operated thereby, the spring-actuated swinging levers operated by the sliding rods, the wheel G, the pawl on the levers to engage the wheel, and the stop-levers 52, also graduated and operated by the rods 10 to be thrown up in advance of the swinging levers to limit the movement of the latter, as set forth.

28. In combination with the master-gear G, the swinging levers to engage and actuate the gear, the key-levers to move the swinging levers, and the hollow screws filled with felt and fitted to the swinging levers, the felt being pressed by the screws against the gear, as set forth.

29. In combination with the master-gear G, the spring-actuated swinging levers 14 15, arranged above and below the gear, the pawl carried by the lower lever, 15, to engage the gear, the spring-actuated sliding rods 10 12, actuated by the key-levers, the rods 10, actuating against the lever 14, the stop-levers 52, to limit the movement of the lever 15, said stop-levers being actuated by the rods 12, as set forth.

408,901. ADJUSTABLE SPLIT PULLEY. HENRY C. BAILEY, Edinburg, Ind. Filed Jan. 17, 1889. Serial No. 296,677. (No model.)



Claim.—1. A pulley comprising two sections, the web provided with a central open space, the hub formed of two parts, each part provided with a semicircular flange fitting into corresponding central spaces formed in the web, and means connecting such flanges for uniting the hub-sections and clamping them upon the shaft, substantially as shown and described.

2. A split pulley comprising two sections, the web formed so as to leave an open space between its parts, the hub formed in two sections, each section having integral therewith a semicircular flange adapted to enter the space formed in the web and secured to the web by bolts passing through slots to admit of the parts of the hub being drawn together without any strain upon the pulley-sections, such hub being provided with a shaft-opening having a corrugated surface for gripping the shaft, and means—such as bolts—for drawing the flanges of the hub together and clamping the hub-sections to the shaft, substantially as shown and described.

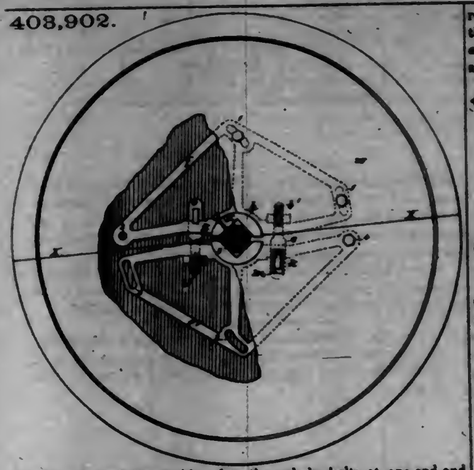
3. A split pulley comprising two sections, its web having a central recess formed therein to admit the hub-flanges, a hub formed in two sections, each one provided with a flange for entering the recess in the web, and with projections formed on the ends of the flanges, having threaded openings to receive bolts for clamping the hub-sections together, and having squared openings formed in the hub-sections for admitting the shaft, all combined substantially as described.

408,902. ADJUSTABLE SPLIT PULLEY. HENRY C. BAILEY, Edinburg, Ind. Filed Jan. 31, 1889. Serial No. 298,283. (No model.)

Claim.—1. A pulley comprising two sections, the web having a central open space between its sides, the hub formed of two parts, each provided with a flange fitting into the central space of the web, each flange having an opening for a hinge-bolt upon one end, slots for securing the bolts at the other angles or corners of the flange, and openings on each side of the hub-section to admit the passage of clamping-bolts, in combination with such clamping-bolts and means for clamping the hub-sections upon the shaft, and bolts for allowing the adjustment of one end of each section, substantially as shown and described.

2. A pulley comprising two sections abutting upon their edges, the web thereof formed with an open space between its sides, the hub formed in two sections having a squared shaft-opening, each section integral with a flange adapted to fit in the space between the parts

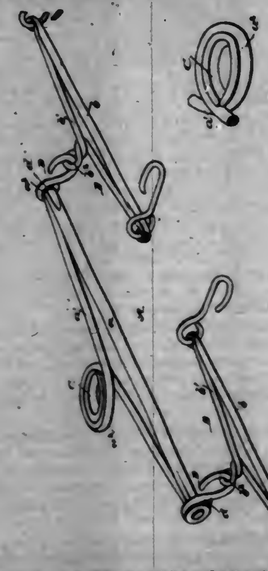
408,902.



of the web, such flanges hinged to the web by bolts at one end and secured by bolts passing through slots at the central and opposite ends of the flange, such sections having openings formed on each side of the hub upon the arms of the flange for admitting clamping-bolts, in combination with a pair of clamping-bolts, one on each side of the hub-section, means for adjusting one end of each flange-section, and clamping-bolts for drawing the flanges and pulley-sections together and securing the same at any desired point, substantially as shown and described.

3. A pulley comprising two sections, their edges abutting upon a central line, the web thereof having a central recess, the hub formed in two sections with squared shaft-opening, each section formed integral with a triangular flange set in a recess of the web, hinged by suitable bolts passing through the flanges at one corner thereof and secured at the upper central and opposite angle by bolts passing through longitudinal slots formed in such flange, clamping-bolts passing through the arms of the flanges on each side of the hub-sections, and means for drawing and locking the parts together, all combined substantially as shown and described.

408,903. WHIFFLETREE. WILLIAM J. BLACK, Alvord, Tex., assignor of two-thirds to John Boyett and C. K. Thomas, same place. Filed May 5, 1888. Serial No. 272,913. (No model.)



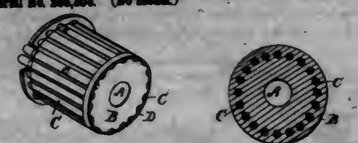
Claim.—A whiffletree comprising a front rod and a back rod or spring united together by welding, said whiffletree having its ends rounded to form shoulders a^2 and provided with hooks D, fitting upon the rounded ends and prevented from slipping inward by the shoulders a^2, and disks placed upon said rounded ends and retained thereon by swaging the latter, substantially as and for the purpose described.

408,904. WHIFFLETREE. WILLIAM J. BLACK, Alvord, Tex., assignor of two-thirds to John Boyett and C. K. Thomas, same place. Filed May 5, 1888. Serial No. 272,918. (No model.)



Claim.—A whiffletree comprising a front bar, a back rod or spring united to the front bar by welding, the ends of both said bar and rod being beat upon themselves and the parts welded together to construct an eye or opening, whereby both bar and rod are bent around the latter, substantially as shown in Fig. 4, a strengthening-piece placed between the front bar and the back rod or spring, and a casing secured to the back rod and adapted to hold the strengthening-piece in place, substantially as described.

408,905. COMMUTATOR. HARRY H. BLADES, Detroit, Mich., assignor to the Detroit Motor Company, same place. Filed Sept. 25, 1888. Serial No. 286,266. (No model.)



Claim.—1. A commutator consisting of the head B, of non-conducting material, and rods C, the head having the integral shoulder through which the rods are passed, said head and rods turned down to expose segment-faces *c*, and in connection therewith the band D, of insulating material, embracing the head and segments and dressed flush with the faces *c*, substantially as described.

2. The commutator consisting of the head B, segment-rods C *c*, and an annular recess formed on the end of the head B and rods C, and in connection therewith a band of insulating material adapted to fit the said recess and hold the rods from displacement, substantially as described.

408,906. INDICATOR FOR PIANOS OR ORGANS. LEVIN W. BLASIUS, Philadelphia, Pa. Filed Oct. 10, 1888. Serial No. 288,277. (No model.)



Claim.—1. In a piano, a scale permanently or securely attached thereto immediately above the keys and constituting a part of the instrument, and a movable part of the piano structure adapted to be moved for concealing or exposing said scale.

2. A piano provided with a scale and having a portion of its casing movable for concealing or exposing said scale.

3. A piano provided with a scale and having a pivoted curved portion of its outside casing immediately in front of the keys movable for concealing or exposing said scale.

4. In a piano, the outside casing, A, having the key-slip B, in combination with the curved cover E, adapted to be moved forward or backward.

5. In a piano, the outside casing, A, having the key-slip B, in combination with the curved cover E, adapted to be moved backward and forward over the key-slip and pivoted at each end by plates F.

6. In a piano, the outside casing, A, having the key-slip B, having a scale, G, upon the front face, in combination with the curved cover E, adapted to be moved backward or forward over the key-slip.

403,907. SAFETY-GUIDE FOR RAILWAY-CARS. JOHN G. BLAU, Philadelphia, Pa. Filed Dec. 20, 1887. Serial No. 258,595. (No model.)



Claim.—1. The guide-block B, provided with the two diagonal braces *g g* and with the two flanges *a b*, the flange *a* being also provided with the lateral extension G, all substantially as set forth.

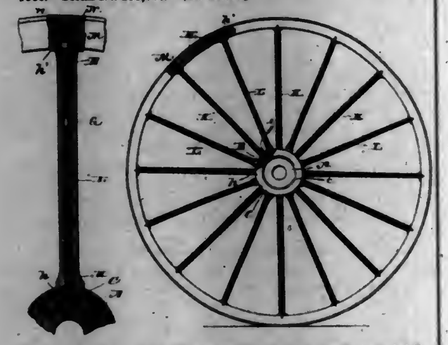
2. The guide-handle *f*, with its cross-block R, its two acute angles being blunted at *c c*, upon which the guide-block will rest, substantially as described.

3. The guide-holder N N, consisting of the plate *m*, having hooks *q q*, in combination with the horizontal handle or bar S, having the square socket E, and provided with the fastening-rivet and the lug *t*, all substantially as described.

4. The fish-tail reverse-plate A, having square-sided notch *x* in the center of its base-line, two short and square sides at right angles extending in fish-tail form, *y y*, and two square holes, *h h*, correspondingly opposite the prongs of the lock-plate, all substantially as set forth.

5. The lock-plate W, with its two extending prongs *v v*, its notched bevel *z*, in combination with the screw having the flat-faced round rim *e*, and the supplementary pin, all substantially as described.

403,908. WHEEL. JEROME BOLICK, Conover, N. C. Filed Jan. 8, 1889. Serial No. 295,729. (No model.)



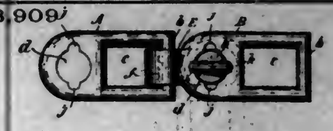
Claim.—1. In a wheel, the combination, with the hub and felly, of a central series of spokes provided with smooth tenons entering sockets in the hub and felly and the lateral series of spokes arranged on opposite sides of the central series and provided with screw-threaded tenons engaging the hub and felly, substantially as specified.

2. In a wheel, the combination, with the hub and felly, of the hollow spokes interiorly screw-threaded at their ends, the exteriorly-threaded tenons screwed in the inner ends of the spokes and engaging threaded sockets in the hub, the tubular tenons screwed in the outer ends of the spokes and provided with threaded bores, and the screw extending through apertures in the tire and engaging the threaded bores of the said tenons, substantially as specified.

3. In a wheel, the combination, with the hub, of the inclosing band or jacket having an inner section, C, extending beyond the line of the spokes and provided at its inner end with a sand-band, *e*, and an outer section overlapping the edges of the inner section, and provided with a flange, *d*, and the screws or pins engaging registering apertures in the overlapping edges of the sections, substantially as specified.

4. The herein-described tubular spoke provided with a series of strengthening-plugs, G G, in its bore, substantially as specified.

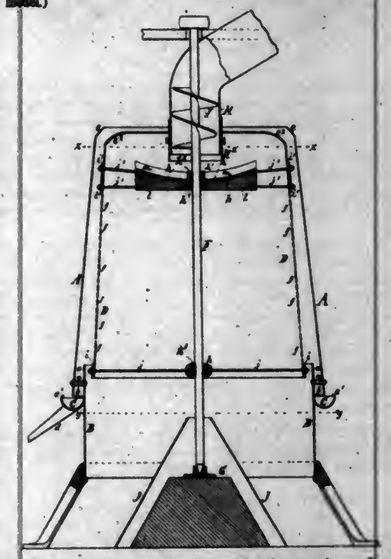
403,909. DRIVE-CHAIN. GEORGE G. F. BOSWELL, Indianapolis, Ind., assignor of two-fifths to Joseph R. Boswell and James F. Boswell, both of same place. Filed Jan. 2, 1889. Serial No. 295,133. (Model.)



Claim.—1. In a drive-chain, the combination of two like links, each having a straight cylindrical bar at one end, a circular eye at the other end, and an intermediate opening adapted to receive the tooth of a sprocket-wheel, and a separate plate arranged to connect said links, having a hook adapted to engage the straight cylindrical bar of one of the links and a cylindrical boss adapted to engage the eye of the other link, and provided with retaining-lugs, said hook and boss having their axes at right angles to each other, both projecting from the same side of the plate and arranged substantially as shown and described, whereby one link, when connected with the hook on the plate, is held in place by the engagement of the next link with the boss on said plate, substantially as specified.

2. In a drive-chain, the link having bar *b*, the link having eye *d* and recesses *j j*, and the plate having hook *f*, boss *h*, and lugs *k k*, all combined and arranged to co-operate substantially as specified.

403,910. CENTRIFUGAL MACHINE FOR TREATING GRAIN, &c. JOHN BOYD, Baltimore, Md., assignor of one-eighth to William G. White, same place. Filed Jan. 12, 1889. Serial No. 296,187. (No model.)



Claim.—1. In a centrifugal machine for treating refuse substances—as, for instance, mash—so as to dry the grain and separate the solid and liquid portions, the combination of the outer imperforated stationary jacket or case open at top and bottom, the inner perforated revolving cylinder or cone open at top and bottom, and an armed distributing-plate at the upper part of the vertically and freely discharging inner cone, substantially as and for the purpose described.

2. In a centrifugal machine for treating refuse substances—as, for instance, mash—the combination of the outer stationary jacket or case, A, open at top and bottom, the trough C, inner perforated cylinder or cone, D, open at top and bottom, shaft F, distributing-plate *k* at the upper part of the vertically-discharging inner cone, skirting B, and chute-space *c*, formed by the outer jacket and the skirting, substantially as and for the purpose described.

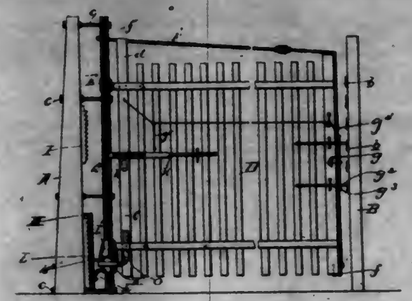
3. In a centrifugal machine for treating refuse substances—as, for instance, mash—the combination of the skirting and its attached trough with the outer jacket, A, and the inner perforated revolving cylinder or cone, D, and armed distributing-plate *k* at upper part of the downwardly-discharging inner cone, substantially as and for the purpose described.

4. In a centrifugal machine for treating refuse substances—as, for instance, mash—the inner perforated cylinder or cone provided with spider-hubs *h h'*, united to the cylinder or cone and stayed by metal bands and screw-bolts, and one of said spider-hubs being formed with a distributing-plate, *k*, having curved arms, substantially as described.

5. In a centrifugal machine for treating refuse substances—as, for instance, mash—the combination of the feed-spout, a feed-regulating screw, a revolving shaft, an inner perforated cone or cylinder, a revolving armed distributing-plate at the upper part of the downwardly-discharging inner cone, and an outer stationary cylinder or jacket, substantially as and for the purpose described.

6. In a centrifugal machine for treating refuse substances—as, for instance, mash—the combination of an outer jacket, a revolving perforated cone open at both ends, and a revolving distributing-plate at the upper part of the downwardly-discharging cone for supplying the mash to the surface of the revolving perforated cylinder or cone, substantially as and for the purpose described.

403,911. GATE. STEPHEN A. D. BOSELL, Atlanta, Ind. Filed Mar. 13, 1888. Serial No. 266,975. (No model.)



Claim.—1. The combination, with a post having a rod thereon, of a gate hinged on the rod and adapted to move vertically thereon, a rack-bar on the post, and a lever on the gate adapted to engage with said rack-bar, substantially as described.

2. The combination, with the post A, of the rod C, the gate hinged to the rod, a bearing below the hinges having a pawl pivoted thereon, a rack-bar on the post, a lever on the gate, and a rack-bar opposite said lever on the post, substantially as described.

3. The combination, with the post A and cylindrical rod C, of the gate movably supported on the rod, the vertically-moving bearing K on the rod, having a pawl pivoted thereon and an arm extending therefrom, the rack-bar L on the post, the yoke O on the gate clasping the bearing, and a lever on the gate for raising the same, substantially as described.

4. The combination, with the post A and the cylindrical rod C, of the gate hinged on the rod and adapted to be moved vertically, the lever H on the gate having an elongated slot therein, the rack-bar I on the post opposite the lever, the bearing K below the hinges having a pawl and arm thereon, the rack-bar L opposite the bearing, a guide in which the arm works, the yoke O on the gate clasping the bearing, and the latch on the front of the gate having a flexible connection with the rear, substantially as described.

5. The combination, with the rod C, of the gate hinged thereon, and a brace-rod, as F, extending from the bottom of the front of the gate to the upper end of the rod C, substantially as described.

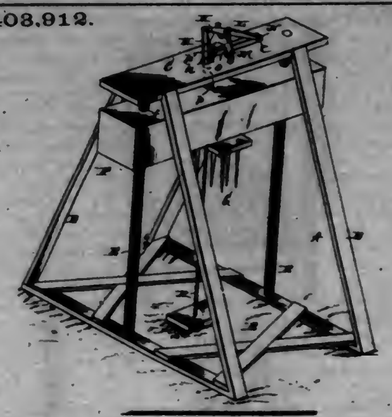
6. The combination, with the post having a rod thereon, of a gate supported on the rod, a movable bearing on the rod below the gate-supporting hinges, a rack-bar on the post, and a pawl on the bearing engaging said rack-bar, substantially as described.

403,912. MOLE-TRAP. RANDOLPH H. BROWN, Coleman, Ga. Filed Feb. 28, 1888. Serial No. 301,443. (No model.)

Claim.—1. In a mole-trap, the combination of the frame having guide-bars, the weight carrying points and sliding on the guide-bars, the loops on the weight, the lever pivoted to the frame having one end engaged by the loop, the horizontal arm loosely resting on said frame and having shoulders or notches, one in engagement with the inclined lever, a stud or point on the frame engaging the other shoulder of the horizontal arm, and the trip-rod having teeth at one end adapted to engage the inner end of the horizontal arm by the upward movement thereof and the other end bearing on the surface of the mole-hill, substantially in the manner and for the purpose described.

2. In a mole-trap, the combination of the weight carrying the impaling-points and the coupling-loop, the inclined pivoted lever having its inner end engaged by the loop, the horizontal sliding arm having shoulders, one in engagement with the outer end of the lever, the stud or point engaging the other shoulder, and the trip-rod having teeth at one end adapted to engage the horizontal arm, its other end bearing on the surface of the mole-hill, arranged and operating substantially in the manner and for the purpose described.

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403,913. NECKTIE-FASTENER. WALTER B. BROWN, Bordentown, N. J. Filed Jan. 30, 1889. Serial No. 298,111. (No model.)



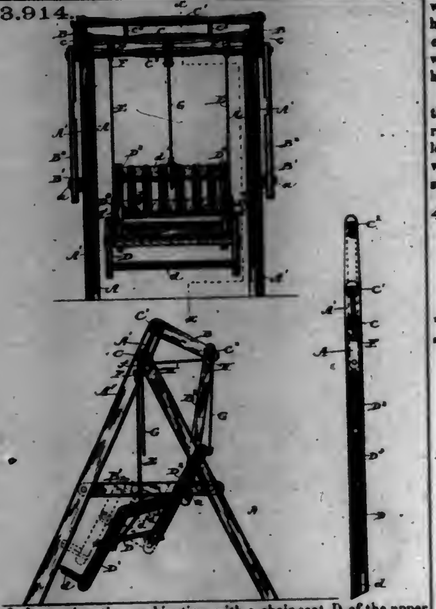
Claim.—1. The necktie A, having a band, B, provided with an elongated button-hole, C, at the back, in combination with the two independent stiffening-wires D, secured at their ends to said band, their bodies being curved outwardly and lying along the edges of said button-hole, whereby the tension of the band B will draw them toward each other, as and for the purpose set forth.

2. The necktie-band having a longitudinal button-hole therein, and the pliable stiffening-wires fitting in sheaths in the edges of the said button-hole and provided at their ends with eyes to receive stitching, substantially as specified.

403,914. SWING. JOHN CARMODY, Osborn, Ohio. Filed Aug. 7, 1888. Serial No. 282,300. (No model.)

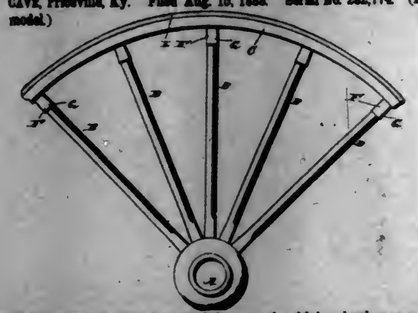
Claim.—1. An improved article of manufacture, consisting of a folding swing-frame and a folding chair, the same being constructed of standards A and A', located one outside of the other upon each side of the frame, braces B', detachably connected to one of said standards, supplemental frame-pieces B and B², pivoted to the standards A', to each other, and the latter to the braces B', the pieces B² being on the outside of B and B', and B on the outside of A', and cross-pieces C, C', and C², forming the pivotal connection, as described, a seat, D, upper and lower side pieces, D' and D², in different vertical planes and pivoted to the seat, arms D², pivoted on the outside of D² and on the inside of D', and a single rope at either side connecting one of the cross-pieces with the seat, substantially as shown and described.

403,914.



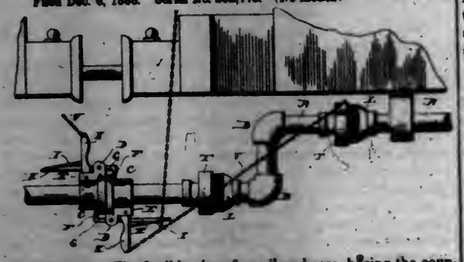
2. In a swing, the combination, with a chair-seat, D, of the upper and lower side bars pivoted thereto in different vertical planes, the arms pivoted to the outside upper bars and to the inside lower bars and provided with slots, sheaves mounted in said slots, and suspending-ropes connected to the chair and passing through the slots and between the sheaves, substantially as described.

403,915. VEHICLE-WHEEL. ROBERT W. CAVE and THOMAS J. CAVE, Prisoville, Ky. Filed Aug. 15, 1888. Serial No. 282,774. (No model.)



Claim.—The herein-described improved vehicle-wheel, comprising the hub, the spokes, the spoke-sockets having short cylindrical tenons, and the metallic rim shrunk in place direct upon the spokes, and having recesses in its inner side registering with and accommodating the tenons of the spoke-sockets, substantially as set forth.

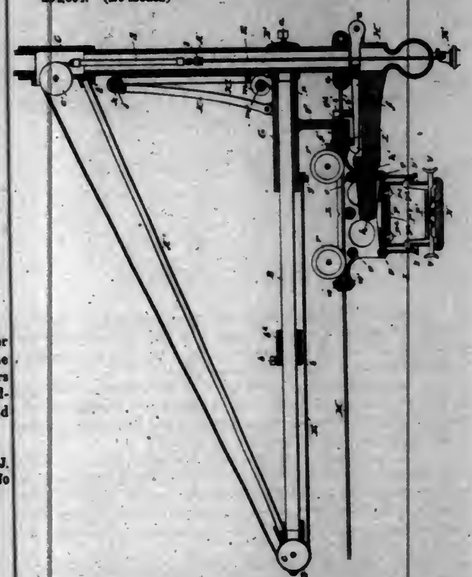
408,916. PIPE-COUPLING. JAMES I. COLLINS, Amsterdam, N. Y. Filed Dec. 6, 1888. Serial No. 292,773. (No model.)



Claim.—1. The flexible pipes for railroad-cars, having the coupling members C at their meeting ends, each member being provided with a flange, F, and the pairs of ears D E, in combination with the hooks G, adapted to engage said flanges and having arms H, and the covers K, pivoted between the ears E and having the openings through which the hook-arms extend, and thereby adapted to trip the said hooks, substantially as described.

2. In a pipe-coupling, the combination of the member C, having the flange F, the hook G, pivoted to said member and having the rearwardly-extending arm H, provided with the spring I, and the lever K, pivoted to the member and having the opening through which the arm H extends and with which the spring engages, substantially as described.

408,917. STORE-SERVICE APPARATUS. JAMES T. COWLEY, New York, N. Y., assignor, by mesne assignments, to the Lamson Consolidated Store Service Company, of New Jersey. Filed Apr. 13, 1887. Serial No. 234,691. (No model.)



Claim.—1. The combination, in a cash-carrier apparatus, of a vertical pendant, a horizontal guide supported thereby, a propelling-slide on said guide, provided with a cushioned carriage-striking arm, a jointed retractor for said slide, and a bumper or cushion, *p*, in rear of the slide, substantially as described.

2. In a cash-carrier apparatus, the slide mounted independent of the track-wire and provided with a carriage-striking arm extending to the track-wire and operated substantially as described, and an elastic cushion on said arm perforated to receive through it the track-wire and to be guided thereby, substantially as specified.

3. In a cash-carrier apparatus, the combination, with a vertical pendant having the track-wire secured to it, of an arm, I, rigidly secured to said pendant and carrying a guide for said wire, and an elastic frictional stop, a spring-actuated catch adjacent to this arm, adapted to engage with the carriage, a carriage-propelling device, and an operating-cord provided with a spring, S, and a stop for the said catch, substantially as described.

4. In a cash-carrier apparatus, the combination, with a supporting-bracket and a catch, of an elastic frictional cone independent of the track, adapted to enter between bearings of the carriage to arrest and prevent the rebound of the carriage on its way to be engaged by said catch, substantially as described.

5. In a cash-carrier apparatus, the combination, with the pendant A, the horizontal guide rigidly but adjustably secured to this pendant, a reciprocating carriage-propelling device, spring-actuated, as described, an arm, I, located beneath said horizontal arm, and provided with a spring-actuated catch, and a frictional conical carriage-holder, substantially as described.

6. The combination, of a store-service wheeled carriage having contiguous concave bearings independent of its wheels and a stop independent of the track, consisting of an elastic cone adapted to enter between said bearings, substantially as described.

7. In a cash-carrier apparatus, a carriage consisting of an upper horizontally-perforated portion provided with convex perforated end extensions, suspending-wheels to sustain the carriage upon a track, and horizontal concaved rollers independent of the suspending-wheels and adapted to receive and engage with an anti-rebounding cone, substantially as described.

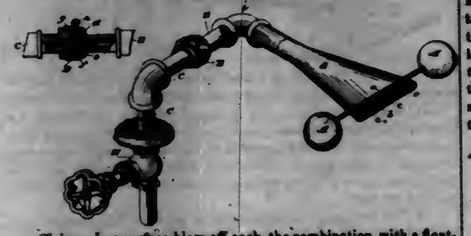
8. A cash-carrying carriage provided with convex perforated end extensions, recessed to engage with a locking-catch, the suspension-wheels, the horizontal rollers, and an inverted cup adapted to receive and have secured to it the cash-box, substantially as described.

9. A cash-box carriage formed of two vertically-divided halves and provided with suspension-wheels, the horizontal rollers, perforated end guides for the track-wire, a connecting-plate and its retaining-screws, and a spring-cushion between this plate and the top of an inverted cash-box holder, substantially as described.

408,918. DIE FOR HAMMERING SHEET METAL. ISAAC E. CRANE, Camden, Ohio. Filed Dec. 10, 1888. Serial No. 293,175. (No model.)

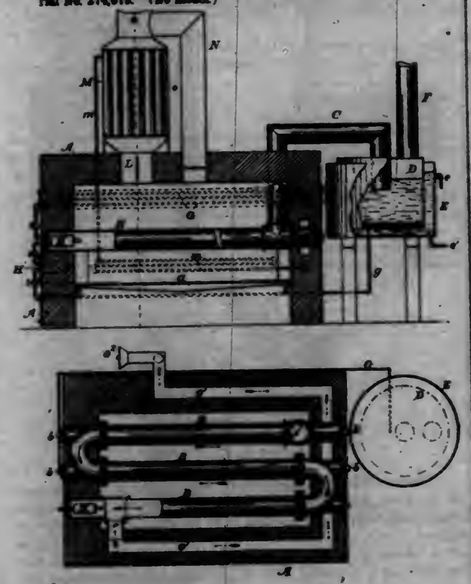
Claim.—An improvement in hammer-dies for the manufacture of polished sheet-iron, consisting in dressing the face of one or both of the hammer-dies into such degree of concavity when cold as will compensate for their unequal expansion when hot.

408,919. SURFACE BLOW-OFF. LOCKWOOD L. CRANE and WILLIAM H. PRINCE, Cleveland, Ohio; said Crane assignor to said Prince. Filed Dec. 4, 1888. Serial No. 292,694. (No model.)



Claim.—In a surface blow-off cock, the combination, with a floating escape-pipe provided with a fan-shaped opening, arranged as shown, at its floating end, and a conical-shaped bearing at its opposite end having a collar, said escape-pipe being provided with an angular formation intermediate between said mouth and conical bearing, of a discharge-pipe provided at its connecting end with a concave bearing and a nut fitting loosely on said collar and screw-threaded on the adjoining end of the discharge-pipe, said nut being provided with a set-screw adapted to engage with said discharge-pipe, substantially as set forth.

408,920. APPARATUS FOR THE MANUFACTURE OF GAS. GEORGE K. CROSWELL, Philadelphia, Pa., assignor, by mesne assignments, to the United States Gas and Fuel Company. Filed May 22, 1888. Serial No. 274,679. (No model.)

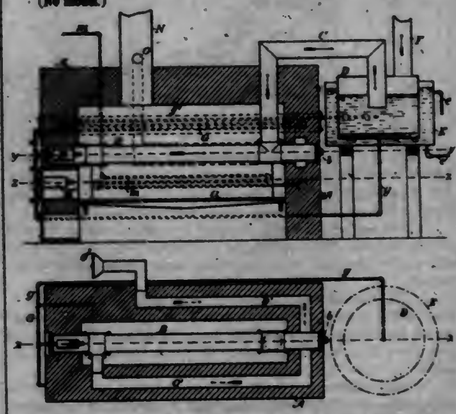


Claim.—1. In an apparatus for making gas, the combination of a furnace and a suitable number of retorts, an injector for introducing commingled superheated steam, hot air, or gas and oil into the retorts, a closed tank containing hydrocarbon oil at a temperature of from about 180° to below that of the gas emitted from the retorts, a pipe leading from the outlet end of the retorts into said closed tank and delivering the gas of the retorts into the oil in the said tank, and another pipe leading from the bottom of the closed tank back to the injectors to supply oil thereto, and a refrigerating apparatus surrounding the said tank, substantially as set forth.

2. In an apparatus for making gas, a furnace, and retorts in suitable number and arrangement therein, and an injector opening into the retorts and feeding commingled superheated steam, hot air, or gas and oil thereinto, a steam-boiler heated from the furnace, an auxiliary flue separately connecting the boiler-stack and retorts of the furnace, and valves for controlling communication between the retorts and such flue for utilizing the products of combustion or not, combined with a closed oil-tank, a pipe connecting the said tank and the gas-outlet of the retorts, and a refrigerating-chamber surrounding the oil-tank and maintaining the oil at from 180° Fahrenheit to a point below that of the incoming gas, substantially as described.

3. In an apparatus for making gas, the combination of a furnace and a suitable number of retorts, suitable means for introducing commingled steam, air, or gas and oil into the retorts, a closed tank containing hydrocarbon at a temperature of from about 180° to below that of the gas emitted from the retorts, a pipe leading from the outlet end of the retorts into said closed tank and delivering the gas of the retorts into the said tank, and another pipe for supplying the retorts with oil from the bottom of the said tank for mixture with the steam or like fluid, and a refrigerating apparatus surrounding the oil-tank, substantially as and for the purposes described.

408,921. PROCESS OF MANUFACTURING GAS. GEORGE K. CROSWELL, Philadelphia, Pa., assignor, by mesne assignments, to the United States Gas and Fuel Company. Filed May 22, 1888. Serial No. 274,680. (No model.)



Claim.—1. The process herein described of manufacturing heating and illuminating gas, which consists in passing highly-heated gases formed by the admixture of steam, oil, and air directly from the retort through a body of crude petroleum maintained at a temperature above, say, 180° Fahrenheit and below that of the incoming gas by a suitable refrigerant, whereby the lighter hydrocarbons of the crude oil are combined with the outgoing gases and the by-products precipitated, substantially as described.

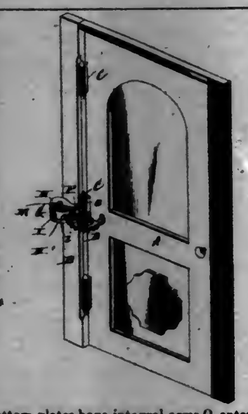
2. The process herein described of manufacturing heating and illuminating gas, which consists in passing highly-heated gases directly from the retort through a body of crude petroleum maintained at a temperature above, say, 180° Fahrenheit and below that of the incoming gas by a suitable refrigerant, whereby the lighter hydrocarbons of the crude oil are combined with the outgoing gases and the by-products precipitated, substantially as described.

408,922. DOOR-SPRING. JESSE W. DAVIS, Le Roy, Kans., assignor of two-thirds to Edwin B. Foster and John W. Leedy, same place. Filed Feb. 15, 1888. Serial No. 263,623. (No model.)

Claim.—1. The combination of the casing, a vertical arbor mounted therein, and a spiral spring and pinion on said arbor, with the segmental gear mounted on the pintle of the door-hinge and meshing with said pinion, substantially as described.

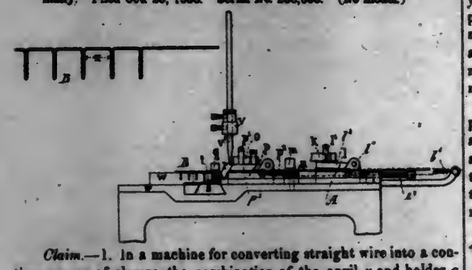
2. The hinge C, having its knuckle slotted, and the segmental gear D, secured to said hinge, in combination with the casing G,

403,922.



whose top and bottom plates have integral arms *O*, entering said slots and mounted on the pintle of the hinge, and the spring-actuated pinion N within said casing, meshing with said segmental gear, the whole operating substantially as described.

403,923. MACHINE FOR CONVERTING WIRE INTO A CONTINUOUS ROW OF CLAMPS. WILHELM DECKER, Mittweida, Saxony, Germany. Filed Oct. 23, 1888. Serial No. 288,893. (No model.)



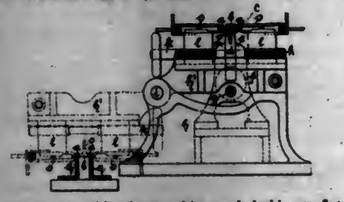
Claim.—1. In a machine for converting straight wire into a continuous row of clamps, the combination of the anvil *r* and holder *q* with the sliding tongs *p* and reciprocating wire-bending rod *v'*, the holder *q* being above the anvil, substantially as described.

2. The combination, with the anvil *r*, holder *q*, sliding tongs *p*, wire-bending rod *v'*, and means for moving the tongs *p* to press the wire against the anvil *r*, of the sliding tongs *l*, substantially as described.

3. The combination, with the anvil *r*, holder *q*, sliding tongs *p*, wire-bending rod *v'*, and wire-holder *m n*, of sliding tongs *l*, for feeding the wire into the machine, and means for moving the tongs *p* to press the wire of the clamp against the anvil *r*, substantially as described.

4. In a machine for bending wire into continuous clamps, the sliding tongs *p*, for feeding wire, combined with the anvil *r* and holder *q*, and means for moving the anvil in a direction at right angles to the feed of the wire, and the holder *q*, movable at right angles to the motion of the anvil, substantially as described.

403,924. MACHINE FOR FASTENING CARD-CLOTHING TO FLATS. WILHELM DECKER, Mittweida, Saxony, Germany. Filed Oct. 26, 1888. Serial No. 289,084. (No model.)



Claim.—1. In a machine for attaching card-clothing to flats, the supports *l l* and tongs *o o*, carried thereby, and means, substantially as described, for moving them laterally, combined with the supports *n n*, having tongs *p p*, and means, substantially as described, for moving said tongs, whereby said clothing may be stretched and held, and with a carrier for holding a flat against the stretched clothing, substantially as specified.

2. The flat-carrier *d*, adapted to receive a flat, and means, substantially as described, for raising and lowering said carrier, combined with means, substantially as described, for holding card-clothing stretched above the flat to receive fastening for securing the clothing to the flat, as specified.

3. In a machine for securing card-clothing to flats, the supports *l l* and tongs *o o*, carried thereby, means, substantially as described, for moving them laterally, and the supports *n n* and tongs *p p*, carried thereby, and means, substantially as described, for moving them, whereby clothing may be stretched and supported, combined with the carrier *d*, adapted to hold a flat, and with means, substantially as described, for raising and lowering said carrier to contact the clothing, substantially as described.

4. The combination of the fixed frames *h* and pivoted frames *h'*, carried thereby, supports *l l*, tongs *o o*, supports *n n*, and tongs *p p*, and means, substantially as described, for moving said tongs to stretch clothing, and the anvils *q q*, to receive card-clothing carried by said tongs, all arranged substantially as herein shown and described.

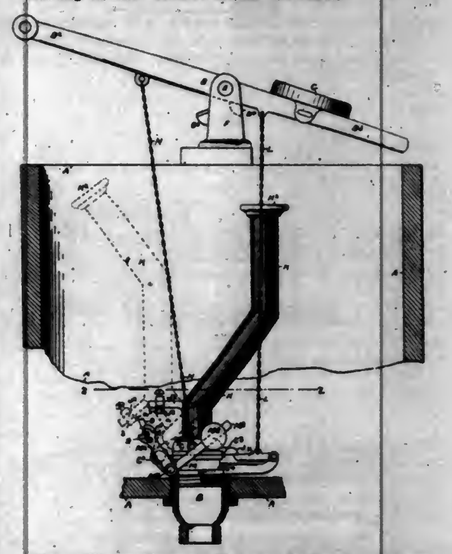
403,925. VEHICLE-POLE TIP. NELSON R. DOAN, Stoughton, Wis. Filed Sept. 4, 1888. Serial No. 284,543. (No model.)



Claim.—1. The pole-tip B, having two or more pairs of lugs or spurs, *a a*, projecting from its under side, in combination with the neck-yoke C and the neck-yoke ring D, secured thereto, and having two projections, *d*, and contracted apertures *d' d'* formed therein and communicating with the main aperture of the ring, all constructed and arranged substantially as shown and described, whereby the said neck-yoke ring may be secured upon or removed from the pole, in the manner set forth.

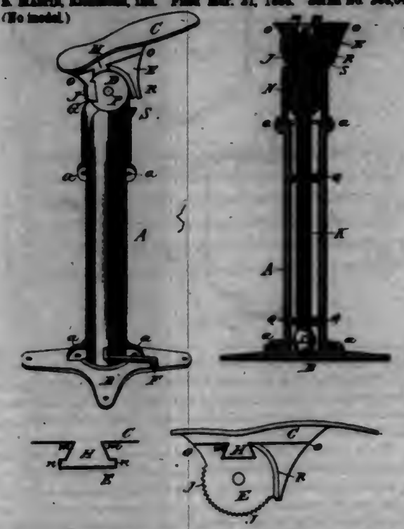
2. The pole-tip B, having a series of pairs of lugs or spurs, *a a*, projecting from its under side, in combination with a neck-yoke, C, and a neck-yoke ring, D, secured thereto, and having projections *d d* and contracted apertures *d' d'* formed therein and communicating with the main aperture of the ring, all constructed and arranged substantially as shown, whereby the neck-yoke ring may be secured upon or removed from the pole, in the manner set forth.

403,926. OPERATING MECHANISM FOR VALVES OF WATER-CLOSET AND OTHER TANKS. PATRICK W. DOHERTY, Boston, Mass. Filed Aug. 22, 1888. Serial No. 283,472. (No model.)



Claim.—The combination, with a tank for liquid, an outlet-pipe for the liquid, and an opening and closing valve to the outlet-pipe hinged at one side, of an operating-lever, D, fulcrumed on a stationary support, lines L N—such as chains—connected to it on opposite sides of its fulcrum, a lever, K, fulcrumed on a stationary support and having said line L connected to it, an abutment, J, of the valve or part moving with it for said lever K, an angular lever, M, fulcrumed at its angle on a stationary support and weighted at its arm M^2, and an abutment, J^2, of the valve or part moving with it for the arm M^3 of angular lever M, substantially as described, for the purposes specified.

403,927. LAST AND STAND. JAMES K. DOUGALL and CORNELIUS R. MANTH, Richmond, Ind. Filed Mar. 21, 1888. Serial No. 268,048. (No model.)



Claim.—1. The combination of head E, provided with notches J and beveled notch *m m*, last C, provided with beveled lug H, rod K, provided with head N, having corresponding notches to notches J, with eccentric L, provided with handle F, substantially as described and set forth.

2. The combination, in an iron-last stand, of a head provided with beveled notch *m m*, projections or shoulders O O, and detachable last C, provided with cleated lug H, with ears D D, substantially as described and set forth.

3. The combination of stand A, provided with guides Q Q, rod K, provided with notched head N, and eccentric L, provided with handle F, with last C, provided with lug H, substantially as described.

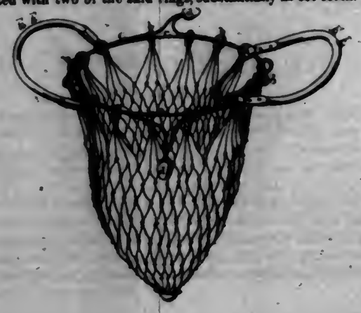
4. The combination of stand A, provided with ears D D, rod K, provided with notched head N, eccentric L, provided with handle F, and head E, provided with notches J, with last C, provided with lug H, as described and set forth.

5. The combination of stand A, rod K, eccentric L, and oscillating head E, as described, with detachable last C, provided with cleated lug H, as set forth.

6. In combination with stand A, provided with guides Q Q, rod K, provided with notched head N, and eccentric L, provided with handle F, the oscillating head E, and detachable last C, dovetailed together by cleated notches *m m n n*, and cleated lug H, substantially as described and set forth.

403,928. COLLAPSIBLE HAND BAG OR SACK. FRANK EHRBIC, San Francisco, Cal. Filed Dec. 12, 1888. Serial No. 293,265. (No model.)

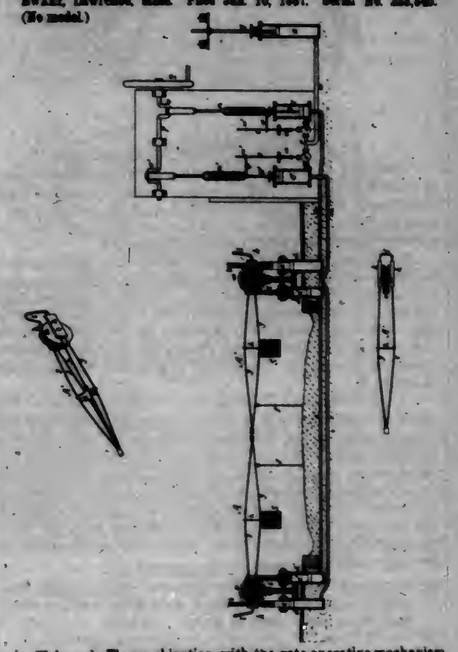
Claim.—A bag or sack provided at its open end with rings, a draw-string passing through the said rings, and with handles E, each connected with two of the said rings, substantially as set forth.



403,928.



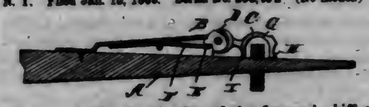
403,929. RAILWAY-GATE OPERATIVE MECHANISM. JOHN EWART, Lawrence, Mass. Filed Jan. 10, 1887. Serial No. 223,845. (No model.)



Claim.—1. The combination, with the gate operative mechanism, substantially as described, consisting of the gear *a*, its rack *b b'*, the pistons *c c'*, their barrels *d d'*, the connection-pipes *m m'*, and the barrels C C' and their pistons D D', having mechanism for actuating them (the said pistons,) as explained, of the apparatus, essentially as explained, for compensating for leakage or expansion of the fluid used in such gate operative mechanism, the said apparatus consisting of the cylinder *x*, weighted piston *y*, pipes *w* and *v*, stop-cocks *s s'*, buttons *t'*, springs *u*, and forked lever, arranged and applied essentially as represented.

2. The gate, substantially as described, composed of the four curved rods, their central connection, the junction pieces, and their connecting-bow, all being arranged essentially as represented.

403,930. WHIFFLETREE-HOOK. ADAM H. STRAHAN, Mohawk, N. Y. Filed Jan. 15, 1889. Serial No. 296,404. (No model.)



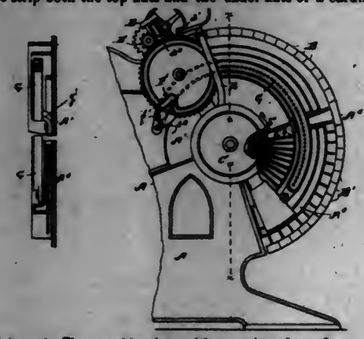
Claim.—1. The combination of the flattened whiffletree, the casing secured on the upper side of the same, the hook pivoted in the outer end of the casing having a notch, K, in its edge and provided with a flattened end, H, and a lip, I, both adapted to rest on the flat upper side of the whiffletree, and the spring secured in the casing and having its end engaging the notch in the edge of the hook, as set forth.

2. The combination of the casing, the hook pivoted therein and having the lip I and tongue J, and the spring secured in the casing and bearing on the hook, as specified.

403,931. STRIPPING MECHANISM FOR CARDING-ENGINES.

ALONZO FALLS, Lowell, Mass. Filed Jan. 25, 1888. Serial No. 267,568. (No model.)

Brief.—The changes set forth in the claims are made in the mangle-rack, cross-girt, and lifters, to enable a single stripping mechanism to strip both the top flats and the under flats of a carding-engine.



Claim.—1. The combination, with a series of top flats, a series of under flats, and a cross-girt arranged between one and the other of said series, of a stripping mechanism having a traverse-gear and a traverse-rack measuring the same angular distance as said cross-girt and all of said flats, as and for the purpose specified.

2. The combination of the frame having a cross-girt, a series of top flats arranged above said girt, a series of under flats arranged below said girt, all of said flats being of equal length with each other and each of said flats being longer than said cross-girt, and the stripping mechanism having lifters provided with inwardly-projecting pins, each of said pins being of a length less than the distance to which said flats project beyond said girt, as and for the purpose specified.

3. The combination of a frame and card sides, a series of top flats seated by their own gravity, a series of under flats seated by springs arranged outside of the card sides, the upper arches, the lower arches arranged outside of said springs and projecting laterally beyond said upper arches, and a stripping mechanism having traverse-pinions and traverse-racks arranged on opposite sides of said frame and parallel to each other, said racks being secured at their lower ends to said lower arches and being provided at their upper ends with brackets, and said brackets being secured to said upper arches, as and for the purpose specified.

403,932. PULLEY-BLOCK.

THOMAS B. FERRALL, Boston, Mass., assignor to the Boston and Lockport Block Company, of New Jersey. Filed Feb. 26, 1889. Serial No. 301,902. (No model.)



Claim.—1. In a double or multiple block, the head *c* and its lateral bars or saddle-pieces *c' c'*, and hook or eye *g g'*, journaled and loosely riveted to said head, combined with the bow-straps *d d'*, the block-body, and the spindle *e*, with its sheaves *f f*, substantially as and for the purpose set forth.

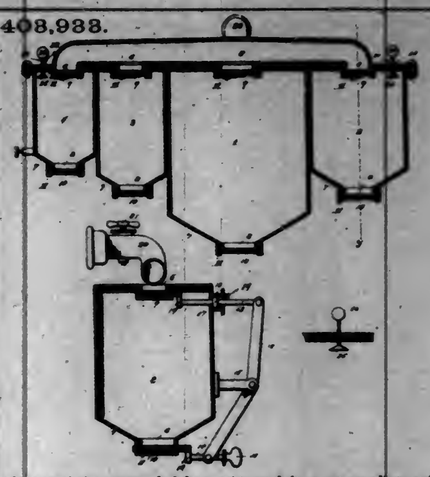
2. In a double or multiple block, the head *c*, and hook or eye *g g'*, loosely riveted to said head, the block-body having the bow-straps *d d'* suspended from the lateral bars or saddle-pieces *c' c'* of the head *c*, the spindle *e*, passing through the block-body, its sheaves, and bow straps, and the becket-strap *h*, suspended from the sheave-spindle and provided with the becket *i*, substantially as and for the purpose set forth.

403,933. FLUID-MEASURING APPARATUS.

WILLIAM H. FORBES, and JAMES GIBSON, Boston, Mass. Filed Jan. 28, 1888. Serial No. 267,859. (No model.)

Claim.—1. A measuring apparatus, substantially as described, consisting of a single continuous supply-conduit adapted to communicate with a source of supply, a series of vertical measuring-vessels

403,938.

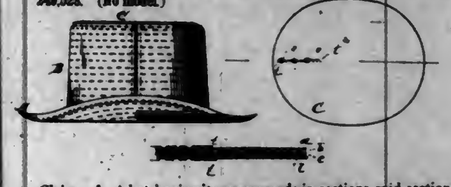


of assorted sizes suspended from said conduit at intermediate points of the length thereof and each communicating directly with the conduit through a port in its upper end, a valve located within the vessel for opening and closing the inlet-port between the conduit and vessel, and another valve in the lower end of each vessel, substantially as and for the purpose described.

2. In a measuring apparatus, the combination of a vessel having inlet and outlet ports at diametrically opposite ends, and a lateral stuffing-box in the side thereof near the upper end, a reciprocating valve operating over each of the ports, a lever connected directly to the lower valve, and an endwise-movable rod, 13, connected to the lever and upper valve and having a packing and the fixed stops, substantially as and for the purpose described.

403,934. HAT.

ANTON H. FRITSCH, Chicago, Ill., assignor of one-half to Valentin Mueller, same place. Filed Sept. 12, 1887. Serial No. 249,523. (No model.)



Claim.—1. A hat having its crown made in sections, said sections being united at their meeting edges and composed of several layers, each layer being of a different material, united together and provided with air-holes, said air-holes containing the thread used in uniting the several layers, as set forth.

2. A hat having its crown made in sections, said sections being united at their meeting edges and composed of several layers, the middle ones being millinet and pressed felt, united together and provided with air-holes, said air-holes containing the thread used in uniting the several layers, as set forth.

403,935. TOBACCO-PIPE.

ELIAS A. GROSS, Camden, N. J. Filed Jan. 29, 1889. Serial No. 297,979. (No model.)

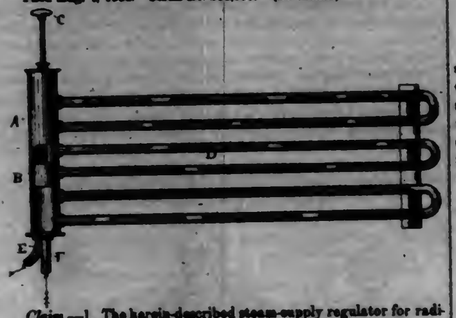


Claim.—The bowl A and stub-stem B, the latter having a reduced inner male-threaded end, *b*, forming the shoulder *b'*, in combination with the stem C, tapering gradually from its outer to its inner end, and having the longitudinal central bore, O, said stem comprising an outer section, *c*, having a comparatively large cavity, S, in its outer end, for the purpose set forth, an internal screw-thread therein adapted to fit the thread on the reduced portion *b* of the stub-stem B, and a conical nicotine-chamber, *s*, in rear of said cavity, its apex communicating with said central bore, O, said section also having a reduced and externally-screw-threaded extension, D, at its inner end,

and an inner section, *c'*, having a comparatively small cavity, S', in its outer end, for the purpose set forth, an internal screw-thread therein adapted to fit the thread on the reduced extension, D, of the stem-section *c*, and a conical nicotine-chamber, *s'*, in rear of said cavity, its apex communicating with said central bore, O, said inner section having a mouth-piece at its inner end, the whole arranged and adapted as and for the purposes described.

403,936. STEAM-RADIATOR.

LEROY HALSEY, Battle Creek, Mich. Filed Aug. 4, 1888. Serial No. 281,996. (No model.)



Claim.—1. The herein-described steam-supply regulator for radiators, consisting of a closed cylinder with a supply and exhaust pipe at one end and a series of coils of pipe opening into the same throughout its length, and a plunger or piston-head sliding in the same past the pipe-orifices and opening and closing any desired portion of them at one time, substantially as shown and described.

2. The herein-described steam-supply regulator for radiators, consisting of an elongated steam chest or chamber having a series of coils of pipe opening into the same throughout its length, a plunger or valve sliding in the same past the pipe-orifices and obstructing the flow of steam through said chamber, and the exhaust and supply pipes both on the same side of said plunger, all substantially as shown and described.

403,937. THERMOSTAT.

CHRISTIAN F. HILKER, Copenhagen, Denmark. Filed Dec. 20, 1888. Serial No. 294,977. (No model.) Patented in Denmark Apr. 20, 1886, No. 474, and in Norway Oct. 22, 1887, No. 734.

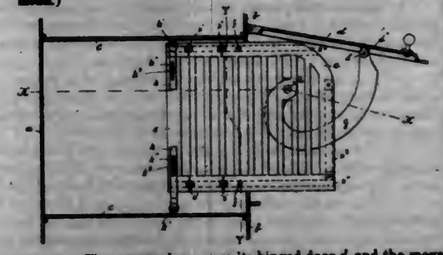


Claim.—1. A thermostat comprising a metallic hermetically-sealed chamber containing an expansive and contractile fluid, and having one or more of its walls constructed of spring metal having a portion thereof sprung out of its normal plane and adapted in operation to spring past such normal plane in both directions, substantially as described.

2. A thermostat comprising a flat disk-shaped chamber hermetically sealed, composed of a cup-shaped back and a flat front soldered together, the front being of spring metal, and having a portion thereof sprung out of its normal plane and adapted in operation to spring past the normal plane, substantially as described.

403,938. STOVE-OVEN.

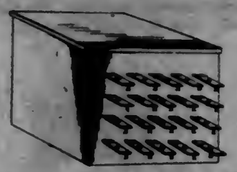
PETER HOCHSTEIN, Jr., and GEORGE F. RIMELEY, Beverly, Mass. Filed Feb. 23, 1889. Serial No. 300,944. (No model.)



Claim.—The oven or box *c* and its hinged door *d*, and the movable plate or grating *e*, connected to said door, as described, and having longitudinal grooves *c' c'*, in combination with the anti-friction supporting-rollers *d' d'*, the adjustable side rollers, *k' k'*, and pins or pins and rolls *f f*, all arranged and combined substantially in a manner and for the purpose as specified.

403,939. COMBINED CABINET AND CUTTER'S SIZE-TICKET.

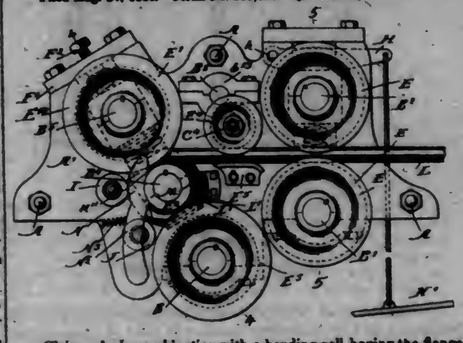
JOHN KELLER, New York, N. Y. Filed June 2, 1887. Serial No. 240,049. (No model.)



Claim.—The combination, with the cabinet provided with means, substantially as set forth, for holding the various ticket-strips in rolls, of the cutter's size-tickets formed in continuous strips in rolls, each of said strips having printed thereon at intervals one and the same size-number and being partially divided or severed on intervening lines, as set forth, the various strips in the cabinet constituting an orderly series of different numbers adapted for the cutter's use, substantially as described.

403,940. MACHINE FOR COILING SPIRAL SPRINGS.

JOHN W. KIRK, Chicago, Ill., assignor of one-half to F. M. Atkinson, same place. Filed Aug. 27, 1888. Serial No. 283,827. (No model.)



Claim.—1. In combination with a bending-roll having the flange E^{30}, the mandrel-roll having the flange E^{29}, said flanges having flat faces opposed to each other, the shaft of one of said rolls being longitudinally movable in its bearings to allow the flanges to separate, and a spring acting against such movable shaft to cause the flanges to approach, substantially as set forth.

2. In combination with the mandrel and the bending-roll and the pitch-producing device, the cam N, located beyond the mandrel, having the face n^{10}, as it extends around the mandrel in the direction of the rotation of the latter, sloping toward the vertical plane of the periphery of the bending-roll E', substantially as and for the purpose set forth.

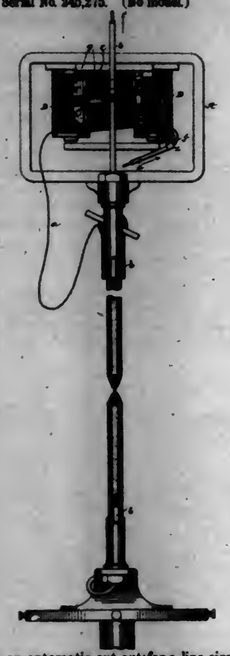
3. In combination with the mandrel, the bending-roll E', and the pitch-producing device, the cam N, having the cam-face n^{10} to engage the end of the first coil, said face sloping toward the plane of the periphery of the bending-roll, its upper end being removed from the rear face of the flange E^{30} a distance as great as the sum of the thickness of the end of the rod and the deflection caused by the deflecting devices, and its lower end being removed from said plane a distance not more than half the deflection caused by the deflecting devices, substantially as and for the purpose set forth.

4. In combination with the mandrel, the bending-roll, and the deflecting devices, the cam N, pivoted to the frame and adapted to oscillate toward and from the mandrel, and having the cam-face n^{10} located and sloping, as described, and the end n^{11} facing the plane of the axes of the mandrel and bending-roll, whereby the end of the coiled spring in the course of its second revolution is forced to collide with it and rock the cam away from the mandrel, substantially as set forth.

5. The combination, substantially as and for the purpose set forth, of the two frame-brackets A' A', formed, respectively, symmetrical, the shafts journaled therein and reversible end for end and carrying their respective feeding and coiling rolls and intermeshing gears, and a pitch-controlling device securable on the outer face of either one of said frames, whereby the machine is adapted to coil either right or left spirals.

6. In a machine for coiling spirals, the primal-bending-roll and the mandrel having peripheral flanges with flat faces transverse to their axes and laterally opposed and opposite to each other, for the purpose of gripping and guiding the flat faces of the rod coiled into planes transverse to the axis of the coil, substantially as set forth.

408,941. AUTOMATIC CUT-OUT FOR ELECTRIC LAMPS. EDWARD R. KNOWLES, Brooklyn, N. Y., assignor to the Mutual Electric Manufacturing Company, of New York. Filed Mar. 23, 1886. Renewed July 25, 1887. Serial No. 245,275. (No model.)



Claim.—1. In an automatic cut-out for a line-circuit, the combination of a fixed electro-magnet wound with a coil of comparatively low resistance connected to the line-wire in a normally-open shunt, and a vibrating electro-magnet of comparatively high resistance having an exciting-bobbin connected to the line-wire in a normally-closed shunt, the vibrating magnet being pivoted in close proximity to the fixed magnet, whereby when strongly excited, the vibrating magnet will contact with and complete the circuit through the fixed magnet, as and for the purpose set forth.

2. In an automatic cut out for a line-circuit, the combination of a fixed electro-magnet wound with a coil of comparatively low resistance connected in a normally-open shunt at one end to the line-wire and having its other end free and projecting from the core but insulated therefrom, and a vibrating shunt electro-magnet having a bobbin of comparatively high resistance connected to the line-wire in a shunt around the lamp, said vibrating magnet being pivoted in close proximity to the fixed magnet, whereby, when the resistance of the arc is increased, the vibrating magnet will come in contact with the fixed magnet and complete the circuit through the same, as and for the purpose set forth.

3. The combination of the fixed electro-magnet C, having one end of its wire *g* connected to the outgoing line, and the other end insulated and protruding from the pole at *v*, and the frame E, connected to the incoming line, with the vibrating shunt electro-magnet C' located in proximity to the fixed magnet and in electrical contact with the frame E, substantially as described.

4. A cut-out or protecting shunt for a line-circuit, comprising a fixed electro-magnet, C, wound with a coil of wire, *g*, of low resistance, one end of which passes through an aperture in the core at *v* and is insulated from the metal of said core, and the other end of which is connected with the line-wire at *y*, in combination with the vibrating magnet-C', and the bobbin *c*, passing around the core of said magnet and connected to the line at *x* and *y*, forming a loop or shunt of high resistance, substantially as set forth, for the purpose specified.

5. In an automatic cut-out for a line-circuit, the combination of a fixed electro-magnet wound with a coil of comparatively low resistance connected at each end to the line-wire in a normally-open shunt, and a vibrating electro-magnet pivoted in close proximity to the fixed magnet and encircled by a bobbin of comparatively high resistance connected to the incoming and outgoing line-wire at its respective ends, constituting a loop or shunt of comparatively high resistance across the arc, substantially as described.

408,942. METHOD OF REFINISHING RUBBER BLANKETS. FERDINAND H. KOCH, West Hoboken, N. J. Filed Oct. 23, 1888. Serial No. 288,963. (No specimens.)

Claim.—1. The herein-described method of refinishing rubber blankets, which consists in coating the worn surface of the blanket with a composition made up of varnish, gutta-percha, and white lead and oil, combined substantially in the proportions specified, in allowing the material so applied to dry, and in finally smoothing and polishing the surface, substantially as described.

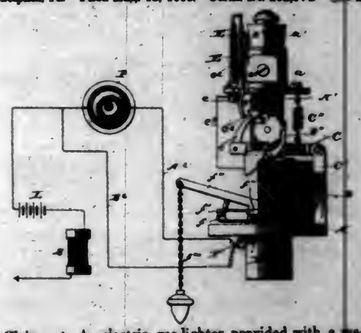
2. The herein-described method of refinishing rubber blankets, which consists in first cleaning the surface of the blanket, in then applying a coat of a composition made up of varnish, gutta-percha, white lead, and oil, combined substantially in the proportions specified, in smoothing and polishing the coat after it has been allowed to dry, and in then applying a coat of a composition made up of white lead, Japan varnish, and oil, combined substantially in the proportions specified, in polishing the surface after it has dried, and in finally applying a coat of shellac varnish, substantially as described.

408,943. SAFETY ATTACHMENT FOR WATCHES. CHARLES G. KREBAUM, Havana, Ill. Filed Aug. 2, 1888. Serial No. 281,738. (No model.)



Claim.—The herein-described watch-protector, constructed of rubber or similar material and adapted to fit around the stem of a watch, and having a concave or hollowed top to provide a rim, *a'*, the latter having the outward-projecting guards a^2 to engage the side of the pocket, and the notches a^2, substantially as described.

408,944. ELECTRIC GAS-LIGHTER. JOSEPH H. LEHMAN, Philadelphia, Pa. Filed Aug. 13, 1888. Serial No. 282,574. (No model.)



Claim.—1. An electric gas-lighter provided with a magnet and electrodes operated by the magnet having two branch circuits leading from the magnet, each including circuit-controlling devices, one located at the burner and the other at a distance from the burner, substantially as described.

2. In an electric gas-lighter, the combination, with a magnet, of an armature therefor and a pawl connected to the armature operating to turn the cock and break the contact at the electrodes, substantially as described.

3. In an electric gas-lighter, the combination of a magnet, an armature therefor, a pawl carried thereby, a ratchet connected with the cock and operated by the pawl, and a movable electrode arranged to be struck by the pawl, substantially as described.

4. In an electric gas-lighter, the combination of a magnet, an armature therefor, a pawl having a notch on one side engaging the ratchet to operate the cock, and a projection upon the other side engaging the movable electrode, substantially as described.

5. In an electric gas-lighter, the combination of a magnet, an armature operated thereby, a pawl, and a ratchet-wheel having teeth of varying sizes operated by said pawl, substantially as described.

6. In an electric gas-lighter, the combination of a pivoted movable electrode, a ratchet for moving the cock, and a pawl for operating both the pivoted electrode and cock, substantially as described.

7. In an electric gas-lighter, the combination of a pawl having a projection, a ratchet having teeth of varying sizes, and a movable electrode, the arrangement being such that the electrode is operated by the projection at each alternate movement of the ratchet, substantially as described.

8. In an electric gas-lighter, the combination of a magnet, an armature, a pawl carried thereby, a ratchet having teeth of varying depth, and a movable electrode operated by the pawl, the arrangement being such that the electrode is operated only when the pawl engages the shallow teeth, substantially as described.

9. In an electric gas-lighter, the combination of a magnet, an armature, a pawl and ratchet having teeth of varying lengths, and a holding-pawl having a series of notches engaging the ratchet, substantially as described.

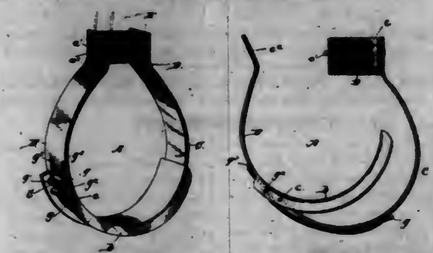
10. In an electric gas-lighter, the combination of a magnet, an armature, a ratchet for moving the cock, a movable electrode, and a pawl arranged to move the ratchet at one impulse and to contact with the movable electrode to produce a series of sparks at the burner-tip, substantially as described.

11. In an electric gas-lighter, the combination of a magnet, an armature, a ratchet-wheel controlling the cock having teeth of different sizes, a movable electrode, and a pawl arranged to move the cock at each closure of the circuit through the magnet and to contact with the movable electrode to produce a series of sparks at each alternate closure, substantially as described.

12. In an electric gas-lighter, the combination, with a fixed electrode, of a movable electrode, a plate forming a spring, and a guide for the movable electrode, substantially as described.

13. In an electric gas-lighter, the combination, with a magnet, of connectors connected with the circuit, plates normally out of contact extending between the connectors, and a pendent lever arranged to close the plates and complete the circuit, substantially as described.

408,945. STIRRUP. EDGAR A. LEONARD and GEORGE W. SHERTS, Karle, Ohio. Filed Oct. 12, 1888. Serial No. 287,897. (No model.)



Claim.—1. The combination, in a stirrup, of the inner section designed to be attached to the stirrup-strap, and the outer section pivoted to the inner one at or near its lower free end and having its lower end extended across the bottom of the stirrup, whereby the foot will be carried out of the stirrup when the outer section turns on its pivot, and a spring to hold the outer section normally vertical or closed, substantially as described.

2. In a stirrup, the combination of the inner section attached to the stirrup-strap and the bracket attached to the upper end of said section below the attachment of the stirrup-strap and guarding the same, with the outer section of the stirrup pivoted intermediate of its ends to the inner section, whereby its lower portion will lie under the foot, and the spring to hold the outer section normally vertical or closed, substantially as described.

3. In a stirrup, the combination, with the inner section, C, the bracket D, and the block E, of the pivoted outer section, B, having the depending edge flanges, *b*, adjacent to its lower end, the transverse rod pivoting the lower end of the section C in and between said flanges, and the spring forcing the said outer section upward upon its pivot after said section has been depressed.

4. In a stirrup, the combination, with the inner stirrup-section, C, the bracket D, the block E, for the attachment of the stirrup-strap F, and the rod *e*, passing through said block and having the journal *e'* outside of said bracket, of the outer stirrup-section, B, having the opening e^2 for engagement upon said journal, and the spring forcing said outer section upward, substantially as specified.

5. The herein-described stirrup, composed of the outer section, B, provided with the depending edge flanges, *b*, and the opening e^2 near its upper end, the inner section, C, pivoted to the outer section between said flanges at its lower end, the bracket D, secured to the upper end of the inner section, the block E, the rod *e*, passing through said block and having the journal *e'* at its free end, and the wire spring G, with its loop bearing on the section C, and the coils *g'* near its ends, surrounding the transverse bar g^2, having its ends journaled in the flanges *b*, substantially as specified.

408,946. APPARATUS FOR TREATING SEWAGE. OLOF R. MEYER and CHARLES H. WEBB, Milwaukee, Wis. Filed Oct. 5, 1888. Serial No. 287,241. (No model.)

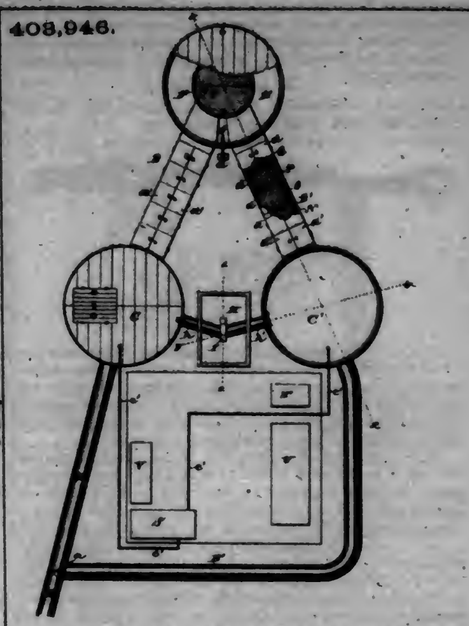
Claim.—1. The combination, in sewage apparatus, of a settling-chamber into which the sewage is discharged, and a conduit having open ends and closed sides leading laterally out of the side of said settling-chamber, above the bottom thereof, and divided by transverse screens into compartments which are filled with suitable filtering material, said conduit having movable sections, whereby the filtering material in each compartment may be renewed without disturbing that in the other compartments, substantially as and for the purposes set forth.

2. The combination, in sewage apparatus, of two settling-chambers connected by branches with the sewer-main, a gate arranged to direct the sewage into either branch and exclude it from the other, or direct it into both branches at the same time, and conduits leading laterally out from the sides of each settling-chamber, above the bottom thereof, and divided by upright screens into compartments which are filled with suitable filtering material, substantially as and for the purposes set forth.

3. The combination, in sewage apparatus, of two settling-chambers connected by branches with the sewer-main, a valve or gate at the junction of said branches with the main, arranged to divert the sewage into either branch and cut it off from the other, a separate elevator-well somewhat deeper than said settling-chambers, provided with hoisting apparatus, a conduit leading from the bottom of each settling-chamber into said well, downwardly-inclined filtering-conduits leading laterally out from the sides of said settling-chambers, above the bottoms thereof, and divided transversely by upright screens into compartments which are supplied with filtering material, and a well into which said filtering-conduits discharge, substantially as and for the purposes set forth.

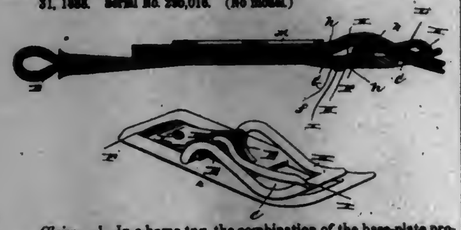
4. The combination, in sewage apparatus, of a settling-chamber into which the sewage is discharged, a downwardly-inclined filtering-conduit leading laterally out from the side of said chamber, above the bottom thereof, and provided with upright screens between which is interposed filtering material, a well provided with a cage having closed sides and horizontal screens between which is interposed filtering and deodorizing material and upon which said conduit discharges, means for removing the sediment from said settling-chamber and means for removing the water from said well, substantially as and for the purposes set forth.

5. The combination, in sewage apparatus, of two or more settling-chambers connected by branches with the sewer-main, a gate or valve arranged to close either branch and open the other, an elevator-well somewhat deeper than said settling-chambers and provided with hoisting apparatus and communicating through openings with the lowest parts of the settling-chambers, the bottoms of which are inclined downwardly toward said openings, cut-offs arranged to open and close the openings from the settling-chambers into the elevator-well, filtering-conduits leading laterally out of the sides of said chambers and divided by upright screens into compartments which are filled with



filtering material, movable sections in said conduits, whereby access is had to said screens and filtering material, and a well into which said conduits open at their discharging ends, substantially as and for the purposes set forth.

408,947. HAME-TUG. ELI B. MINER, Knoxville, Tenn. Filed Dec 31, 1888. Serial No. 296,016. (No model.)



Claim.—1. In a hame-tug, the combination of the base-plate provided with an opening, C, and having lugs E E adjacent to the said opening, and the buckle connected pivotally to the bar in rear of the lugs and arranged over the opening and having its tongue-bar engaged with the lugs or projections and adapted to be engaged by a strap passing through the opening, substantially as specified.

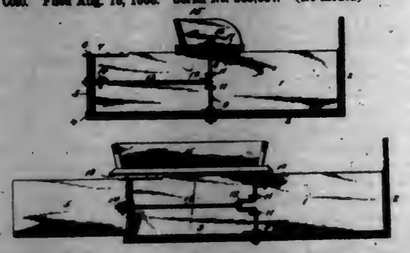
2. In a hame-tug, the combination of the base-plate provided with lugs or projections E E, the loop secured to the base-plate adjacent to the lugs or projections, and the buckle having its tongue-bar engaged in the said loop and bearing against the said lugs or projections and adapted to be engaged by a strap, substantially as specified.

3. In a hame-tug, the combination of the base-plate provided with a pocket, G, and the lugs or projections E E in rear of the pocket, the loop H, secured by a rivet or pin to the base-plate and fitting at its free ends in the said pocket, and the buckle having its tongue-bar engaged in the closed end of the loop and bearing against the said lugs or projections in position to be engaged by a strap, substantially as specified.

4. In a hame-tug, the combination of the base-plate provided at its rear end with an opening, C, lugs or projections E E in front of said opening, the channel F in front of the lugs, and the pocket G, the loop fitting at its free ends in the pocket and provided with apertures which register with an aperture in the base-plate and are engaged by a pin or rivet, and the buckle having its tongue-bar engaged in the loop and bearing against the lugs or projections in position to be engaged by a strap, substantially as specified.

5. A hame-tug consisting of the base-plate provided at its front end with an eye, B, and having the opening C, and the lugs or projections E E, recess F, having opening *f*, the loop H, seated in the recess and connected by rivet I, and at its rear end the buckle mounted in the loop and having its tongue-bar engaged with the lugs or projections E, and its tongue extending between the same, and the strap extending through the opening C and engaged with the buckle, substantially as specified.

408,948. CARRIAGE-BODY. CHARLES J. MIDGLEY, Colorado Springs, Colo. Filed Aug. 18, 1888. Serial No. 283,067. (No model.)

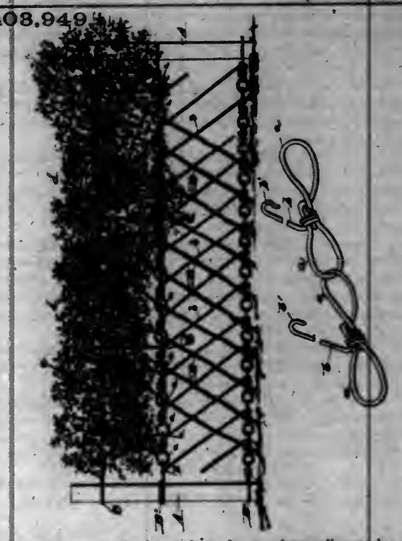


Claim.—1. The combination, with the sides and bottom of a vehicle, of the end-gate 5, the rod 8, mounted in bearings 9 and 10 and having the crank portion 12, seat 15, the rod 13, and the eye 14, substantially as specified.

2. The combination, with a vehicle having the bearings 9 and 10, of the rod 8, staples 11, for holding the same, intermediate crank portion, 12, the rod 13, the eye 14, the end-gate 5, seat 15, and plate 17, substantially as specified.

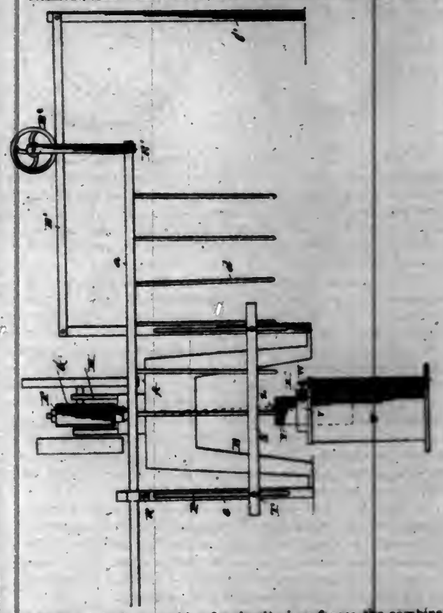
408,949. HEDGE. PHARES M. MIELER, Hagerstown, Md. Filed Nov. 12, 1888. Serial No. 290,591. (No model.)

Claim.—The combination, in a hedge, of the upright posts A A, the chain-rails B' B'', formed of loops *a a*, the diagonal braces *b*, formed integral with the chain-sections of the lower rail and hooked to the



upper rail between the loops thereof, a top loop-rail, *c*, and vertical tie-rods c^3, all constructed and adapted for joint operation, as specified.

408,950. FENCE-RIVETING MACHINE. WILLIAM W. MCCALLIP, Columbus, Ohio. Filed Mar. 16, 1889. Serial No. 303,585. (No model.)



Claim.—1. In a machine for riveting iron fences, the combination of the hammer, the die arranged out of vertical alignment therewith, the guide-frame to support one end of the fence bar or rail, and the traveling carrier to support the other end thereof, substantially as described.

2. The combination, in an iron-fence-riveting machine, with the hammer, of the supporting-frame having the arm or bracket R, for the purpose set forth, the guide-bars S, vertically adjustable on said frame, and the die, substantially as described.

3. The combination, with the hammer, of the block U, arranged below the same, the die-receiver supported in the block, and the die fitted adjustably in a recess in the upper end of the receiver, substantially as described.

4. The block U, having the vertical recess and collar X, with set-

screw W, the die-receiver having the spindles in said opening or recess and engaged by the set-screw, and the die fitted in the recess in the upper end of the receiver, all in combination, substantially as described.

5. The rail *c* and the bars or rods *d*, with one end secured thereto, said rods being inclined from opposite directions from the center to the ends of the rail, whereby the latter will be arched when the bars *d* are parallel, substantially as described.

6. The hammer, the die below the same, the supporting-frame having the arm or bracket R, the guide-bars S, secured to the said frame, the horizontal rail E', the grooved wheel adapted to travel on said rail, and the carrier suspended from the axis of said wheel, all in combination, substantially as described.

7. The combination, with the anvil having a dovetailed recess, of the slide or die fitting in said recess and having an opening or recess in its upper face, and a fastening-screw, substantially as set forth.

8. The combination of the hammer, the anvil having a dovetailed recess, the transversely-adjustable die having a recess in its upper face, and means for suspending and carrying the fence-rail transversely under the hammer and for guiding the pickets, substantially as set forth.

408,951. SEWING-MACHINE TAKE-UP. J. FRENIAN MCKENNEY, Baltimore, Md. Filed Aug. 30, 1886. Serial No. 212,168. (No model.)



Claim.—1. In a sewing-machine embracing a head having a front face provided with a vertical slot, *m*, a needle-bar, and a shuttle, the combination therewith of the take-up, consisting of two forks, *k*, attached to the needle-bar and each provided with a thread-eye, and a plate, G, having at the top and front an outwardly-curved edge, *h*, forming, substantially, the arc of a circle whose lower portion terminates at the broadest part of the plate and having below said broadest part an inward curve, h^3, said plate extending lengthwise of the vertical slot and having position between the said two thread-eye forks, as set forth.

2. In a sewing-machine, the combination, with the needle-bar and shuttle, of a take-up, one part thereof consisting of two forks, *k*, each provided with a thread-eye, and another part consisting of a plate, G, having at one end a front outwardly-curved edge, *h*, forming, substantially, the arc of a circle, one portion of which terminates at the broadest part of the plate and having an inward curve, h^3, said plate extending vertically and having position between the said two thread-eye forks, one of said parts being movable and the other stationary, as set forth.

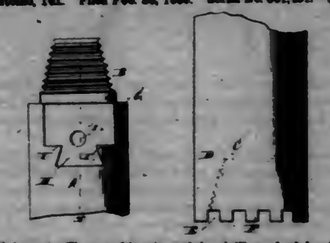
3. In a sewing-machine, the stitch-forming mechanism thereof, in combination with a take-up, one part thereof consisting of two thread-eyes and another part consisting of a plate between said thread-eyes, said plate having a cam-shaped outer edge curving inwardly both above and below its broadest part, one of said parts being movable and the other stationary, substantially as set forth.

4. In a sewing-machine, the stitch-forming mechanism thereof, in combination with a take-up, one part thereof consisting of two thread-eyes and another part consisting of a plate having at one end an outwardly-curved inclined edge, forming, substantially, the arc of a circle, one portion of which terminates at the broadest part of the plate and having an inward curve, said plate extending vertically and having position between the said thread-eyes, one of the said parts being movable and the other stationary, substantially as set forth.

5. In a sewing-machine, the head and stitch-forming mechanism thereof, the needle-bar of said stitch-forming mechanism, and two thread-eyes carried by said needle-bar, in combination with a stationary take-up plate located vertically between said thread-eyes, said plate having its outer edge curved or cam-shaped, the upper portion of said edge being curved downwardly and outwardly and terminating at the broadest part of said plate, and the lower portion of said edge curving from the broadest part of the plate downwardly and inwardly, substantially as set forth.

6. In a sewing-machine, the head and stitch-forming mechanism thereof, the needle-bar of said stitch-forming mechanism, and a take-up consisting of two thread-eyes carried by said needle-bar and of a stationary plate extending vertically between said thread-eyes, said plate having its outer edge cam-shaped and curving inwardly both above and below its broadest part, in combination with a stationary thread-eye on the sewing-machine head, through which the thread passes before passing through said thread-eyes on the needle-bar, said stationary thread-eye being located at or below the extreme downward limit of travel of said thread-eyes on the needle-bar, substantially as set forth.

408,952. DRILLING-TOOL FOR WELLS. HIRAM H. MCLANE, San Antonio, Tex. Filed Feb. 28, 1889. Serial No. 301,431. (No model.)

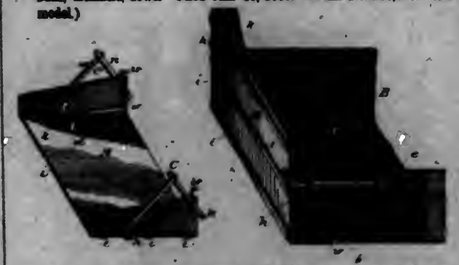


Claim.—1. The combination of the drill or shaft having a screw-threaded portion at its upper end, the drill-rod having a screw-threaded socket to receive the same and an annular notched flange below said socket, and a toothed key, adapted to be secured adjustably to the drill, engaging the said notched flange, substantially as and for the purpose set forth.

2. The combination of the drill or shaft having a screw-threaded portion at its upper end, the drill-rod having a correspondingly-threaded socket surrounded by a notched flange, a toothed key adapted to be secured adjustably to the drill, wedges adapted to be fitted at the sides of the said key, and a plate or block adapted to retain the said teeth and wedges in position, substantially as set forth.

3. The combination of the drill or shaft having a screw-threaded portion at its upper end and a recess adjacent thereto and provided with a transverse perforation extending from the bottom of said recess to the opposite side, a toothed key having shoulders formed on opposite sides thereof, wedges adapted to be fitted at the sides of said key, a shoulder block or plate adapted to retain said key and wedges in the said recess, a bolt adapted to secure said plate in position, and the drill-rod having at its lower end a screw-threaded socket surrounded by a notched flange, the whole combined and arranged substantially as and for the purpose set forth.

408,953. SHOVELING-BOARD FOR WAGONS. JOHNSON H. NEBLIN, Atlantic, Iowa. Filed Jan. 18, 1889. Serial No. 296,776. (No model.)



Claim.—1. The shoveling-board A, the jointed supports C, pivoted at one end to the outside of the sides of the shoveling-board and at the other end to the block *a*, the support *d*, pivotally connected to the shoveling-board and wagon-box, the wagon-box, the block *a*, firmly secured to the wagon-box and being provided with the catch *e*, all combined and arranged substantially as described.

2. The shoveling-board having pivoted to it the supports C and *d*, and having secured to it the hooked strap-bolt *w*, in combination with the wagon-box having secured to it the lug *b*, and block *a*, provided with the catch *e*, substantially as set forth.

408,954. STOPPER AND FASTENER FOR BOTTLES, JARS, &c. CHARLES T. HENTTINGALE, Binghamton, N. Y. Filed Mar. 2, 1889. Serial No. 302,017. (No model.)

Claim.—1. In a bottle-stopper, the combination, with the cap having an annular rim on its under side and provided with a surrounding annular flange, of a link secured transversely across the upper side of said cap and having its ends projecting beyond the edges of the latter, substantially as set forth.

2. The combination, with the cap or stopper provided with longitudinal parallel grooves in its upper side, of the link secured in said grooves and extending beyond the edges of the said cap, substantially as set forth.

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3. The combination, with the cap or stopper having longitudinal parallel grooves in its upper side, of the link secured in the said grooves and a top plate arranged over the said link, substantially as set forth.

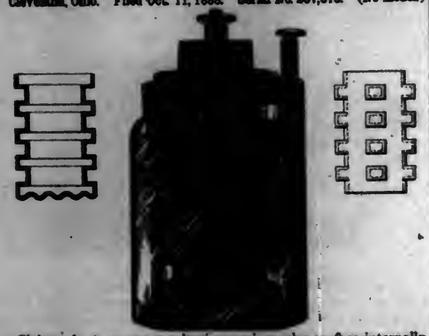
4. The combination, with the cap or stopper having projecting loops at diametrically-opposite points, of the hinge-plate and the clasp secured to the mouth of a jar or bottle, the said cap or stopper being connected permanently to the hinge-plate by means of one of its projecting loops, substantially as set forth.

5. The combination, with the cap or stopper having a link secured to its upper side and projecting at both ends, so as to form loops at diametrically-opposite points of said cap, of the hinge-plate and the clasp secured to diametrically-opposite sides of the mouth of the bottle or jar, the said cap being permanently connected to said hinge-plate by one of the loops or its projecting link, the other end of said link being adapted to engage the catch or clasp, substantially as set forth.

6. The combination, with the ring or collar secured upon the neck of a jar or bottle and provided with diametrically-opposite loops or recesses, of the hinge-plate and the spring-clasp seated in said loops or recesses and having notches or shoulders engaging the neck-ring to retain them therein, substantially as set forth.

7. The herein-described improved stopper and fastening device, the same comprising the cap, the link secured transversely to the upper side of the same and having projecting ends, and the hinge-plate and spring-clasp secured to diametrically-opposite sides of the mouth of a jar or bottle by means of a ring or collar, having loops or recesses to engage notches in the said hinge-plate and clasp, the said cap or cover being permanently connected with the hinge-plate by means of one of the projecting ends of the link secured to its upper side, the opposite end of said link being adapted to engage the spring-clasp, substantially as herein set forth.

408,955. POROUS CUP FOR BATTERIES. CLARENCE B. NOBLE, Cleveland, Ohio. Filed Oct. 11, 1888. Serial No. 287,810. (No model.)



Claim.—1. A porous cup having an irregular surface internally, externally, and on its bottom, substantially as set forth.

2. In a battery, the combination, with a jar, of a porous cup having irregularities projecting at right angles to the vertical axis of the cup and adapted to separate the battery elements and produce a medium for the process of osmose, substantially as set forth.

3. The combination, with a galvanic battery, of a porous cup having a non-regular surface on both its sides and bottom, within and without, substantially as set forth.

4. The combination, with a battery, of a porous cup having sides and bottom of the same thickness throughout, the said sides and bottom being of irregular shape for presenting an enlarged area of surface to the elements within and without the porous cup, substantially as set forth.

5. The combination, with a galvanic battery, of a porous cup with walls having irregularities running around the vertical axis of the cup, substantially as set forth.

6. The combination, with a galvanic battery, of a porous cup having its sides formed irregularly around the vertical axis of the cup, substantially as set forth.

7. The combination, with a galvanic battery, of a porous cup having sides of equal thickness throughout, the said sides being shaped irregularly and running around or at right angles to the vertical axis of the cup, inside and outside, substantially as set forth.

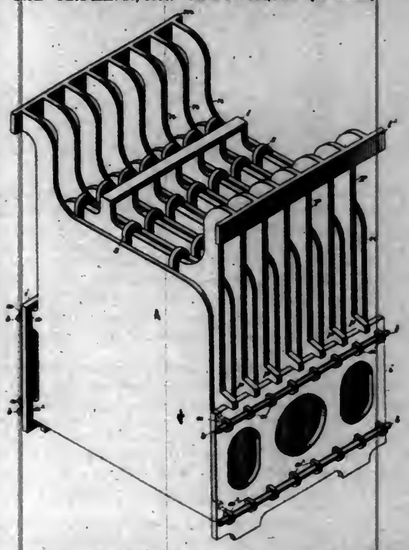
408,956. BUNG. FRIEDRICH PETTER and LUDWIG MATHESIUS, Dessau, Anhalt, Germany. Filed Feb. 27, 1889. Serial No. 301,221. (No model.)



Claim.—1. The combination of elastic block G with head A, having ports *l*, and with head B, having grooves *n*, and with screw-rod *b* and nut M, substantially as specified.

2. The combination of elastic block G with perforated head A, grooved head B, screw-rod *b*, having flange S, and with nut M, having flange *m*, substantially as specified.

408,957. SECONDARY BATTERY. JOHN R. PRICE, Wellaston Heights, Mass., assignor to The Electrical Accumulator Company, of New York. Filed Mar. 30, 1888. Serial No. 304,845. (No model.)



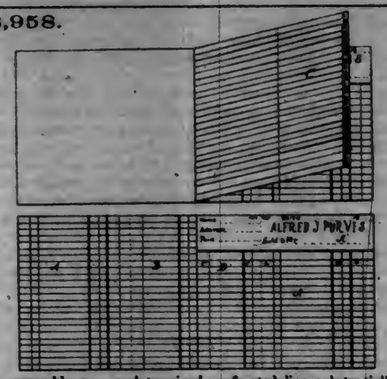
Claim.—1. In a secondary battery, the combination of two elements or electrodes, an inclosing-cell therefor, an electrolytic liquid, and means for supporting both electrodes free from the bottom of the cell, consisting of boards or strips of insulating material having one or more rows of perforations, perforated projections from opposite edges of one element located in said perforations, a removable rod for locking said projections in position, and a series of projections upon the complementary element supported by said board or strip, substantially as described.

2. In a secondary battery, the combination of two elements, each consisting of a series of plates interleaved with each other, a board of insulating material forming a support for said elements, a series of projections from opposite edges of one of said elements resting upon the edge of said board, and a series of perforated projections from the other element extending through perforations in said board, and one or more rods located in said perforated projections to removably fix said element in position, substantially as described.

408,958. ACCOUNT-BOOK. ALFRED J. PURVIS, Utica, N. Y. Filed June 4, 1884. Serial No. 133,732. (No model.)

Claim.—As an improved article of manufacture, an account-book provided with an index on a part of the leaves, each of the remaining leaves having on one margin a numbered stub provided with blanks for names of customers, residence, &c., and ruled vertical columns and horizontal lines for the dates and for dollars and cents and for items, and also having a printed bill-head on the same page, which is correspondingly ruled and numbered, said stub and bill-head

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being separable on a predetermined perforated line, substantially as described, and for the purposes set forth.

408,959. BREECH-LOADING FIRE-ARM. JOHN H. REDFIELD and SAMUEL H. REDFIELD, Linkville, Oreg. Filed Oct. 2, 1888. Serial No. 287,002. (No model.)



Claim.—1. The combination, in a breech-loading gun, of the case having the vertical guideway G at the rear of the breech of the barrel, the breech-block having its front and rear sides parallel and adapted to move in the vertical way G, the upper end of said block being rounded and the front side thereof being provided with the vertical recess, the pin or bolt M, secured in the lock-case and engaging said recess, the guard-lever pivoted to the lock-case, and the link connecting the same to the breech-block, for the purpose set forth, substantially as described.

2. The combination, in a breech-loading gun, of the lock-case, the vertical guideway G in rear of the breech of the barrel, the pin or bolt M, arranged transversely in the front side of the guideway, the breech-block fitted in the guideway G and having its front and rear sides parallel, said breech-block having its upper side rounded, provided in its front side with the vertical transverse notch U, engaging pin or bolt M, and having the vertical recess V on one side communicating with said notch, the extractor-arm pivoted on the pin or bolt M and having the rearward-extending cam at its lower end working in recess V, the guard-lever pivoted to the lock-case, and the link connecting the guard-lever to the breech-block, substantially as described.

3. The combination of the lock-case having the vertical guideway G, the vertically-reciprocating breech-block arranged in the said guideway, provided with the ears D', and having the slot or recess U in its front face, the pivotal pin M, seated in the lock-case and engaging the slot or recess U, the guard-lever pivoted to the lock-case and having the ears E', and the link C', having one end pivoted in said ears E' and the other end pivoted in the ears D', substantially as described.

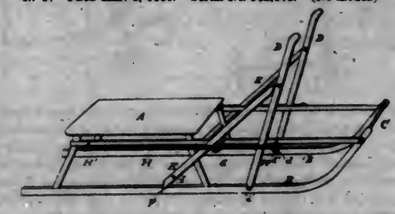
4. The combination, in a breech-loading fire-arm, of the lock-case, the breech-block guided therein, the guard-lever pivoted to the lock-case and having the shoulder L', the link connecting the said lever to the breech-block, and the pivoted swinging hammer-block carrying the hammer and trigger and having the arm K', engaging the shoulder L' of the guard-lever, substantially as described.

5. The combination, in a breech-loading gun, of the lock-case, the movable breech-block guided therein, the pivoted guard-lever connected to the breech-block and having the shoulder L', and the pivoted hammer-block carrying the hammer and trigger and trigger-spring and having the arm K', adapted to engage the shoulder L' of the guard-lever, for the purpose set forth, substantially as described.

6. The combination, in a breech-loading fire-arm, of the lock-case having the vertical guideway G, the recess I, the opening H, and the partition K between the recess and the guideway, the pin or bolt M, arranged transversely in the front side of the guideway, the extractor-arm pivoted on said pin or bolt and having the cam on its lower end, the breech-block fitted in the guideway having its upper side rounded, provided on its front side with the vertical recess U, engaging the pin or bolt M, and having the recess V on one side engaging a cam of the extractor-arm, the guard-lever having its front end pivoted to the lock-case and provided with the shoulder L', the link connecting said rod or lever to the breech-block, for the purpose set forth, the hammer-block arranged in the recess I and having its rear end pivoted, said hammer-block having its front end provided with the arm K', engaging the shoulder L', and the hammer, trigger, and spring secured to and carried by the hammer-block, the hammer being adapted to move upward and downward in the opening H, substantially as described.

7. In a fire-arm, the combination of the lock-case, the vertically-movable breech-block guided therein and having the transverse vertical recess, the upper end of the breech-block being rounded, the pivotal pin or bolt in the recess, and the guard-lever and connections between the same and the breech-block, substantially as described.

408,960. SLED-PROPELLER. FREDERICK ROBBIN, Rochester, N. Y. Filed Mar. 6, 1889. Serial No. 302,073. (No model.)



Claim.—1. In a propelling device for vehicles, the combination, with the push-bar arranged at an angle to the surface of the ground and movable in the direction of its length to propel the vehicle, of a support for the bar, with which it co-operates at the commencement of its stroke, substantially as described.

2. In a propelling device for vehicles, the combination, with the hand-lever, of the push-bar pivoted thereto, arranged at an angle to the surface of the ground and movable in the direction of its length to propel the vehicle, and a support with which said bar co-operates at the commencement of its stroke, substantially as described.

3. In a propelling device for vehicles, the combination, with the hand-levers arranged on opposite sides of the vehicle, of the push-bars pivoted thereto, arranged at an angle to the ground and movable in the direction of their length, and supports with which said bars co-operate at the commencement of the stroke, substantially as described.

4. In a vehicle-propeller, the combination, with the push-bar arranged at an angle to the ground and movable in the direction of its length, of the laterally-projecting pin thereon, and the rail or surface arranged above said pin for preventing vertical movement, substantially as described.

5. In a vehicle-propeller, the combination, with the hand-levers, of the push-bars pivoted thereto, and the guard-rails between which and the vehicle-body the push-bars operate, substantially as described.

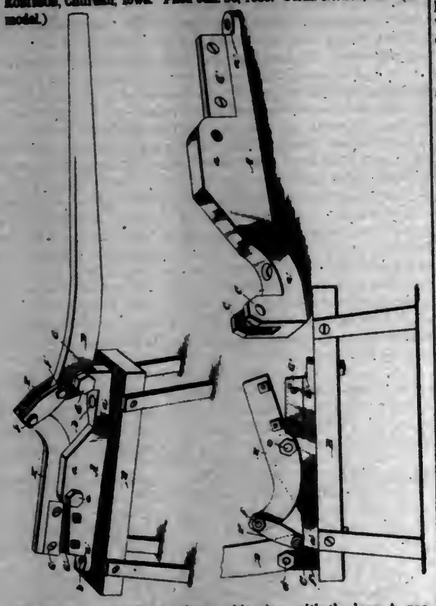
6. In a vehicle-propeller, the combination, with the hand-levers, of the push-bars pivoted thereto, and the projections arranged between said levers and bars, with which they both co-operate, substantially as described.

7. In a vehicle-propeller, the combination, with the hand-levers, of the push-bar pivoted thereto, the stops arranged forward of the levers, and the projections between the levers and bars, substantially as described.

8. In a vehicle-propeller, the combination, with an operating-lever and a push-bar, of the loop secured to the bar, the hinge-pin passing through the loop having eyes at the end, and the bolt passing through said eyes, substantially as described.

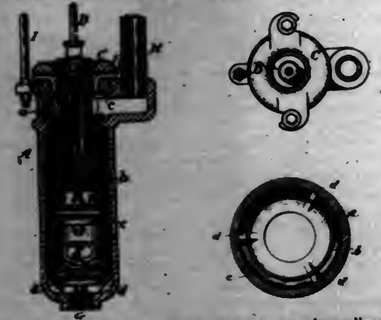
9. In a vehicle-propeller, the combination, with an operating-lever having the recess in its side, of the push-bar having the hinge-pin passing through said loop and secured to the lever, substantially as described.

403,961. SHEARS FOR CUTTING METAL BOLTS. WILLIAM ROBINSON, Churdan, Iowa. Filed Jan. 26, 1889. Serial No. 297,716. (No model.)



Claim.—In metal-shears, the combination, with the base A, provided with the intermediate elevated portion, *e*, carrying a stationary knife, G', and the depressed perforated portions *a' a'*, near the extremities of the base, of the blade-carrying lever E, fulcrumed to the elevated portion of the base below the level of the upper edge of the stationary knife and curved upwardly toward its rear end over the depressed rear end of the base, the operating-lever D, fulcrumed to the base beneath the upwardly-curved end of the blade-carrying lever, and the links connecting the extremities of the upwardly-curved portion of the blade-carrying lever to the shorter arm of the operating-lever, whereby an upward thrust is imparted to the end of the blade-carrying lever, substantially as specified.

403,962. PUMP. SAMUEL T. RUSSELL, Springfield, Ohio. Filed Nov. 30, 1887. Serial No. 256,575. (No model.)

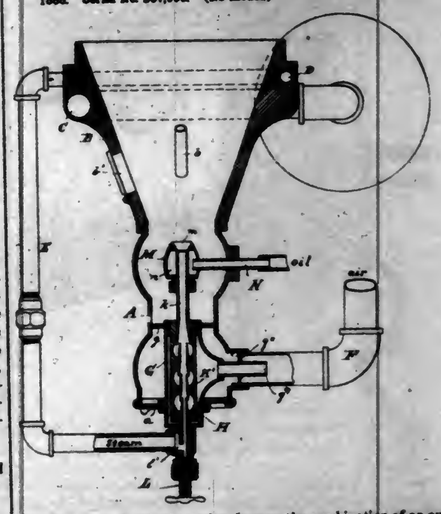


Claim.—1. In a force-pump, a barrel having two inwardly-projecting flanges at its upper end and radial self-centering cleats in its bottom end adapted to center and support a lining-cylinder and also to support a removable valve, in combination with said lining-cylinder and removable valve, a piston, a rod, D, a valve, F, a non-elastic removable ring seated on the uppermost of the flanges at the upper extremity of the barrel, a gasket formed to embrace the inner and upper sides of said ring, and means for securing said gasket in position.

2. In a force-pump, a piston and a barrel having a flange at its upper extremity extending toward but not into contact with said piston, in combination with a non-elastic ring removably seated on said flange, a gasket conforming in shape to the upper and inner sides of said ring, and having its skirt of substantially the same length as the thickness of said ring, and adapted to be pressed into contact with the piston-cylinder by the water in the barrel, and its top portion extending over upon the top of the barrel, a cap resting on said top portion of the gasket and having its outer edge substantially flush with the outer edge of said top portion, and means for securing said cap in position.

3. In a force-pump, a piston, a valve, F, a rod, D, a barrel formed with a flange at its top extending toward but not into contact with said piston, and also with radial self-centering cleats in its lower extremity adapted to serve both to center and support a lining-cylinder inserted within said barrel and also to support a removable valve, and the said lining-cylinder and removable valve, in combination with a non-elastic ring removably seated on the flange at the top of the barrel, a gasket conforming in shape to the upper and inner sides of said ring, and having its skirt of substantially the same length as the thickness of said ring, and adapted to be pressed into contact with the piston by the water in the barrel, a cap adapted to rest on the upper or horizontal portion of said gasket and having its outer edge substantially flush with the outer edge thereof, and means for securing said cap in position.

403,963. HYDROCARBON-BURNER AND COMBINED SUPERHEATER. EDWARD SHALLOW, Philadelphia, Pa., assignor, by mesne assignments, to the United States Gas and Fuel Company. Filed Oct. 13, 1886. Serial No. 287,990. (No model.)



Claim.—1. In a hydrocarbon-burner, the combination of an outer casing, an inner casing provided with a series of graduated nozzles and means for supplying air and steam thereto, a circular annular chamber having an exit-orifice and surrounding the outer nozzle, and means for supplying oil thereto, substantially as described.

2. In a hydrocarbon-burner, the combination, with the casing having a series of graduated nozzles and means for supplying air and steam thereto, of a circular annular chamber having an exit-orifice and surrounding the outer nozzle, and means for supplying oil thereto, substantially as described.

3. In a hydrocarbon-burner, the combination of the casing provided with a perforated plate containing a series of graduated nozzles and means for supplying air and steam thereto, a circular annular chamber having an exit-orifice and surrounding the outer nozzle, and means for supplying oil thereto, substantially as described.

4. In a hydrocarbon-burner, the combination of an outer casing, an inner casing provided with a perforated plate containing a series of graduated nozzles and means for supplying air and steam thereto, a circular annular chamber having an exit-orifice and surrounding the outer nozzle, and means for supplying oil thereto, substantially as described.

5. In a hydrocarbon-burner, the combination, with the inner casing having a perforated plate containing a series of graduated nozzles, of means for supplying air and steam thereto, a circular annular chamber having an exit-orifice and surrounding the outer nozzle, and means for supplying oil thereto, substantially as described.

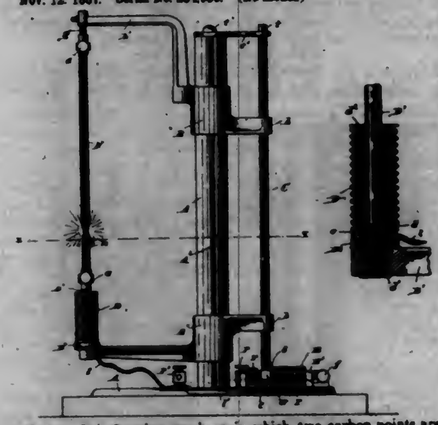
6. In a hydrocarbon-burner, the combination of a superheater provided with encircling superheating-coils and means for supplying thereto the material to be superheated, an outer casing, an inner casing provided with a series of graduated nozzles and means for supplying air and steam thereto, a circular annular chamber having an exit-orifice and surrounding the outer nozzle, and means for supplying oil thereto, substantially as described.

7. In a hydrocarbon-burner, the combination of a superheater provided with encircling superheating-coils and means for supplying thereto the material to be superheated, an outer casing, an inner casing provided with a perforated plate containing a series of graduated nozzles, means for supplying air and steam thereto, a circular annular chamber having an exit-orifice and surrounding the outer nozzle, and means for supplying oil thereto, substantially as described.

8. In a hydrocarbon-burner, the combination, with the casing having a perforated plate containing a series of graduated nozzles, and an annular oil-chamber connected thereto, as described, of the steam-supply pipe, and a regulating-valve connected to the perforated plate, whereby the flow of steam to the series of nozzles and the oil-supply to the combustion-chamber may be regulated, substantially as described.

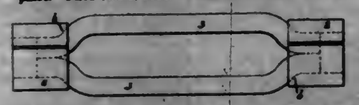
9. In a hydrocarbon-burner, the combination, with the outer casing, an inner casing having a perforated plate containing a series of graduated nozzles, and an annular oil-chamber connected thereto, as described, of the steam-supply pipe, a regulating-valve connected to the perforated plate, whereby the flow of steam to the series of graduated nozzles and the oil-supply to the combustion-chamber may be regulated, and an air-supply pipe communicating with the interior of the inner casing, substantially as described.

403,964. ARC LAMP. WILLIAM L. SILVEY, Cincinnati, Ohio. Filed Nov. 12, 1887. Serial No. 254,959. (No model.)



Claim.—In a focusing arc lamp in which two carbon points are fed toward each other simultaneously, the combination of a differential screw with a ratchet-wheel capable of being turned in one direction only by the operation of a single electro-magnet whose coils are in a derived circuit around the arc, the armature of the electro-magnet pivoted on the differential screw and having a pawl attached to one end for turning the ratchet-wheel, the other end having a spring-mounted circuit-breaker attached to it for the purpose of controlling the actions of the electro-magnets, a single electric circuit performing the entire operation of feeding the positive carbon point downward and the negative carbon upward, as specified.

403,965. ART OF MAKING TURN-BUCKLES. JAMES H. SIMPSON, Pittsburg, Pa., assignor to Carnegie, Phipps & Co., (Limited,) same place. Filed Oct. 3, 1888. Serial No. 287,508. (No model.)



Claim.—1. An improvement in the manufacture of turn-buckles, which consists in banding together the ends of strap-pieces and welding and shaping the parts of the blank so constituted to form the buckle, substantially as and for the purposes described.

2. An improvement in the manufacture of turn-buckles, which consists in shaping strap-pieces 3 3 into substantially the shape shown in Fig. 1 of the drawings, banding together the ends of the strap-pieces, and welding and shaping the parts of the blank so constituted to form the buckle, substantially as and for the purposes described.

3. An improvement in the art of making turn-buckles, which consists in encircling the ends of strap-pieces with bands and subjecting the ends of the blank to end pressure in suitable dies, whereby the bands are firmly welded to the straps and the ends of the blank are compressed and shaped, substantially as and for the purposes described.

4. An improvement in the art of making turn-buckles, which consists in encircling the ends of strap-pieces with bands and subjecting the ends of the bands and straps to end pressure in suitable dies, whereby the bands are forced on and firmly welded to the straps and the ends of the blank are compressed and shaped, substantially as and for the purposes described.

403,966. RESPIRATOR. HENRY SMITH, Columbus, Ohio, assignor of one-half to M. L. Seddens, same place. Filed Mar. 30, 1888. Serial No. 268,973. (No model.)



Claim.—1. In a respirator, the combination, with the main body of the inhaling-cup F, provided with a projection, F', and a perforated bottom plate, and a removable perforated cap, F'', applied to the outer end of the cup.

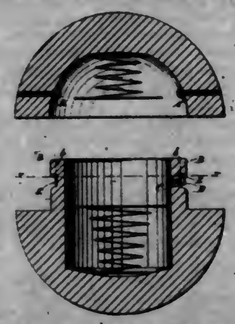
2. In a respirator, the combination, with the main body, of an exhaling-chamber, G, provided with an outwardly-opening valve, G', and removable perforated caps G'' and G'''.

3. In a respirator, the combination, with the front plate having a bent upper end, exhaling chambers or cups mounted in the bent portion of the plate, and an inhaling-cup mounted in the upright portion.

4. In combination with a rigid front plate, as C, the wire frame D, provided with arms D' D', to keep the plate C away the proper distance, and also having its ends D'' D'' separated, as shown, and a flexible covering.

5. The combination, with the frame D, having separated ends D'' D'', of a rigid front plate and a flexible cover.

403,967. CASH-CARRIER. SAMUEL H. SOUTH, Jr., Brighton, County of Sussex, England, assignor to William Stickney Lamson, Windham, N. H. Filed Feb. 25, 1889. Serial No. 301,110. (No model.)



Claim.—1. A cash-carrier in two sections, one provided with an annular projection having a groove and with a band secured within said groove and the other with radially-adjustable screws A, substantially as set forth.

2. The combination, with the section of a cash-carrier having an annular projection and groove therein, of a band confined within said groove at separated points and bowed out from the surface of the groove between said points, substantially as set forth.

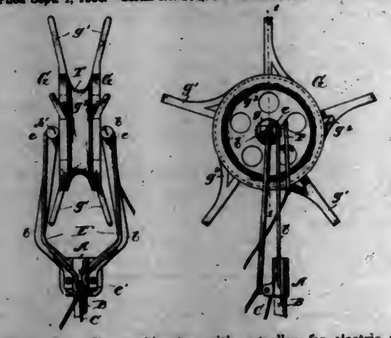
403,968. NUT-LOCK. JULIUS G. STRADER, Powelton, W. Va., assignor of two-thirds to William N. Page and David T. Evans, same place. Filed Feb. 2, 1889. Serial No. 298,476. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the rail, the fish-plate having a lateral extension, the bolt and nut for securing the fish-plate to the rail, the washer lying against the vertical face of the fish-plate and having a recess in its lower rear face, the key having an arm adapted to fit said recess, and an outer arm arranged on the outside of the plate or washer and engaging with the nut.

2. The combination, substantially as hereinbefore set forth, of the rail, the fish-plate having an inclined lateral extension, the plate or washer arranged against the vertical wall of the fish-plate and extending to its lateral extension and provided with a recess in its lower rear face, the bolt and nut for securing together the rail, the fish-plate, and the plate or washer, and the key consisting of two arms separated as described and joined at one end, one of said arms being inclined or beveled on its lower face, the other of said arms being raised slightly above the lower face of the other arm and provided with a lug, lip, or nose on its outer side to engage with the plate or washer.

403,969. TROLLEY FOR ELECTRIC RAILWAYS. THOMAS STREAT, Richmond, Va., assignor to himself and Edward Whitlock, same place. Filed Sept. 1, 1888. Serial No. 284,317. (No model.)



Claim.—1. The combination, with a trolley for electric railways, of revoluble guard-arms arranged on opposite sides of said trolley, substantially as and for the purposes specified.

2. The combination, with a trolley for electric railways, of revoluble guard-arms contructed of a conductive material and arranged on opposite sides of said trolley, substantially as and for the purposes specified.

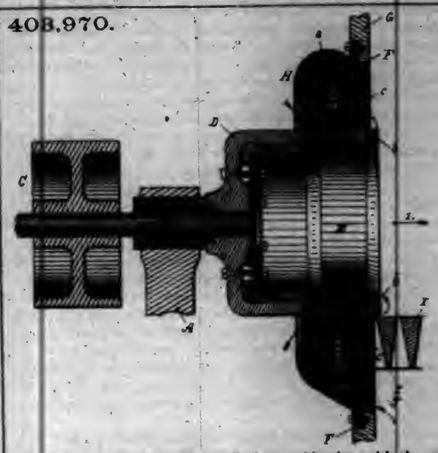
3. The combination, with a trolley for electric railways, of revoluble guard-arms arranged on opposite sides of the trolley, and a lock to lock said arms against rotation in one direction, substantially as and for the purposes specified.

4. The combination, with the trolley T, of the wheels G, having radial arms and provided with an annular recess for the reception of the flanges of the trolley, and a locking device to lock said wheels against rotation in one direction, substantially as and for the purposes specified.

5. The combination, with the trolley T, provided with the contact-faces *t t'*, of the guard-wheels G, provided with a recess, g^6, and radial arms g', substantially as and for the purposes specified.

6. The combination of the trolley T, the guard-wheels G, recessed to receive the flanges of the trolley, the ratchets G', connected with said wheels, and the pawls P, connected with the trolley-support, substantially as and for the purposes specified.

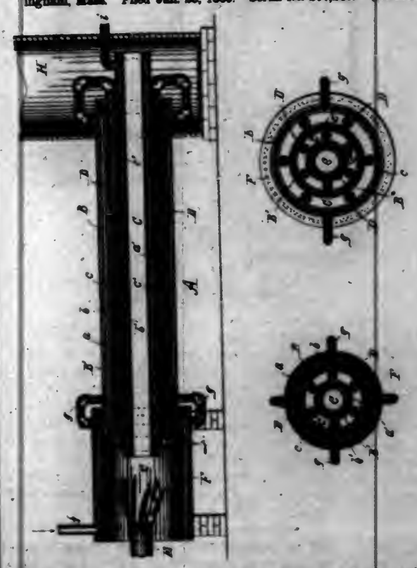
403,970. ATTRITION-MILL. THOMAS L. STURTEVANT, Framingham, and MILTON G. DAVIS, Somerville, Mass. Filed July 30, 1886. Renewed July 23, 1888. Serial No. 280,796. (No model.)



Claim.—1. In an attrition-mill, the combination, with the mill-casing and the rotary head, of an air-conveyer, as described, having the central opening, *b*, fitted directly to the grinding-chamber for external air-supply thereto, the circular lateral discharge-aperture *c*, also connecting with said grinding-chamber, and the tubular duct *a*, discharging by its port J within the mill-casing below the screen-bars, substantially as herein described.

2. The rotary head D, the mill-casing G, provided with the aperture F, and the screens I I, combined with the air-conveyer H, having a central external aperture, *b*, fitted directly to the grinding-chamber, the interior circular duct, *c*, leading from said chamber, the passage *a*, and outlet J, substantially as specified.

403,971. STEAM-GENERATOR. THOMAS L. STURTEVANT, Framingham, Mass. Filed Jan. 23, 1889. Serial No. 297,240. (No model.)



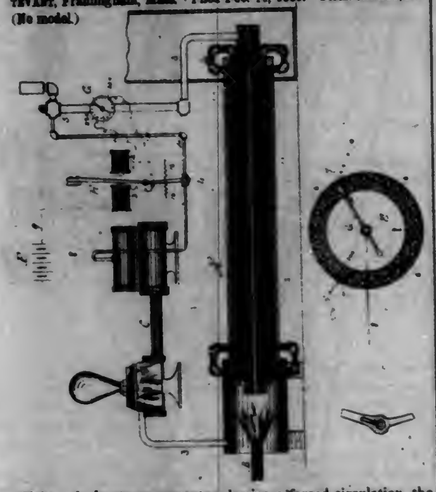
Claim.—1. A steam-producing element composed of a series of double-tube sections, as described, nested one within the other and with spaces between each two adjacent tube-sections, a series of pipes located within said spaces and contiguous to any two adjacent sections, a fluid-inlet supply in one of the tube-sections, and a steam-outlet discharge in a second, and co-operating double-tube section with means for heating, substantially as specified.

2. A steam-generating element composed of two or more double-tube sections concentrically disposed one within the other, a series of supports formed by a number of pipes between two adjacent sections and contiguous to the latter, said pipes interconnecting adjacent tube-

sections, combined with a combustion-chamber, as described, and a fluid-inlet supply and steam-discharge from different tube-sections of the element, as and for purposes herein set forth.

3. In combination with the vaporizing element A, composed of the sections B B', formed by the tubes *a b a' b'* and the longitudinal connecting-pipes D D', contiguous to two adjacent tube-sections, a combustion-chamber, F, of short double tubes secured to the element and intercommunicating therewith by pipes *g g*, the lamp E, stack H, inlet supply-pipe *f*, and steam-discharge *i*, substantially as described.

403,972. APPARATUS FOR AUTOMATICALLY REGULATING TEMPERATURE OF STEAM-GENERATING TUBES. THOMAS L. STURTEVANT, Framingham, Mass. Filed Feb. 11, 1889. Serial No. 299,449. (No model.)



Claim.—1. In steam-generators having a forced circulation, the combination, with a generator of such class and a suitable heating agency, of water-forcing apparatus, a thermostat controlled by the steam temperature within said generator, and electro-magnetic apparatus connected with and operated by said thermostat to regulate the steam delivered to the fluid-forcing apparatus, whereby the supply of water delivered serves to control the temperature of the tubes composing the generator, substantially as herein set forth.

2. In steam-generators provided with a forced circulation, the combination, with a generator of such class, a suitable heating agency, the liquid-forcing apparatus, and the main steam-discharge 5, of a thermostat connected with the latter interiorly and proximate to the generator at a point between the generator and the source to be supplied, whereby the amount of liquid admitted within the generator is to be varied to suit the intensity of the heating agency, substantially as herein described.

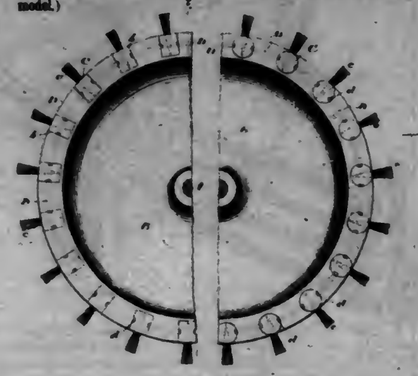
3. In combination with steam-generators having a forced circulation, a heating agency, liquid-forcing apparatus, and steam-discharge pipe, a valve located in a branch of said discharge-pipe and being between the steam-generating system and the source of supply to permit the continuous operation of the generator by alternately decreasing and increasing the supply of steam to the supply-pump, all substantially as set forth.

4. The combination, with a steam-generator having a forced circulation, water-forcing apparatus, and the feed-valve L, of a thermostat and the electro-magnetic apparatus actuated thereby and electrically united with said thermostat and with said valve L to control the movements of the pump and regulate the temperature of the steam-producing tubes, substantially as specified.

5. The steam-generator of the class herein described, its heating agency B, and the liquid-forcing apparatus C, combined with the steam-valve L, the thermometer G, regulated by the steam temperature within the generator, the lever-rod H, and means—namely, the electro-magnetic apparatus uniting said lever and the thermometer—whereby to control the forcing apparatus, as and for purposes described.

6. In combination with a steam-generator, A, having a forced circulation, its heating agency B, the liquid-forcing apparatus C, the valve L, and the thermostat D, which electrically controls the latter, the electro-magnets 12 13, the lever H, actuated thereby, and the terminals 7 7, changeable in the graduated dial-plate E to limit the temperature of the steam-producing tubes, as herein set forth and described.

403,973. COTTON-GIN BRUSH. WARNER M. SWANN and RICHARD T. SWANN, Dallas, Tex. Filed Jan. 7, 1889. Serial No. 295,693. (No model.)

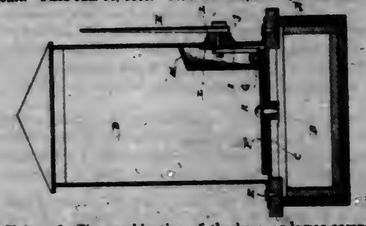


Claim.—1. The combination, substantially as hereinbefore set forth, of the heads B, having circular slots *b*, the longitudinal slotted circular brush-sticks, and the brushes or bristles therein.

2. The combination, substantially as hereinbefore set forth, of the slotted heads, the longitudinally-slotted brush-sticks, carrying brushes or bristles and having the side slots therein, and the interposed slats D, secured thereto.

3. The improved cotton-gin brush hereinbefore described, consisting of the combination of a central shaft, slotted heads mounted thereon, slotted brush-sticks connecting the heads, brushes secured in the sticks, and slats closing the spaces between the sticks, these members being and operating in combination substantially as hereinbefore set forth.

403,974. FLOUR BIN AND SIFTER. JOSEPH H. THOMAS, Alliance, Ohio. Filed Jan. 31, 1889. Serial No. 298,213. (No model.)



Claim.—1. The combination of the base or lower compartment having a screen-top, the upper compartment removably secured on the base, the agitating-screen centrally pivoted on the upper side of the screen-top, and a driving-shaft mounted horizontally in the side of the upper compartment and connected with the agitator, as set forth.

2. The combination of the base having a screen-top, the compartment D, secured on the base, the horizontal agitator pivoted on the upper side of the screen-top and having a vertical loop, G, on its upper side, the horizontal rock-shaft journaled in the side of the compartment and having an operating-lever at its outer end, and a crank-arm depending from the inner end of the said shaft and provided with a horizontal pin at its lower end engaging the loop G, as set forth.

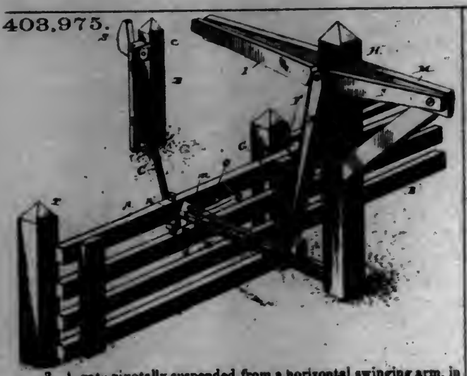
3. The combination of the compartment D, the rock-shaft journaled in the side of the compartment and having an operating-lever on its outer end, the horizontal agitator, the crank-arm on the rock-shaft connected with the agitator, and the cap secured within the compartment and extending over the end of the rock-shaft and the crank-arm, as set forth.

403,975. GATE. WILLIAM R. WHITE, Hooga, Ill. Filed May 8, 1888. Serial No. 273,183. (No model.)

Claim.—1. A gate suspended from the outer end of a horizontal swinging arm, constituting the sole support of the gate, in combination with a guide to maintain the gate in line with the gate-posts during its swinging movements, substantially as described.

2. A gate arranged in substantial line with a fence pivotally suspended from a horizontal swinging arm, in combination with a guide supported at one end by the gate and at the other by the fence, and arranged to direct the position of the gate on its pivot during its swinging movements, substantially as described.

408,975.



3. A gate pivotally suspended from a horizontal swinging arm, in combination with a pivoted guide-rod, E, an eye through which it slides, and stops to limit the lateral movements of the rod, substantially as described.

4. In combination with a gate having an endwise movement, a lever pivoted to one side of the gate and its free end engaging with a guide on the gate, said lever being provided with locking-shoulders to lock the gate in its open and closed positions, substantially as described.

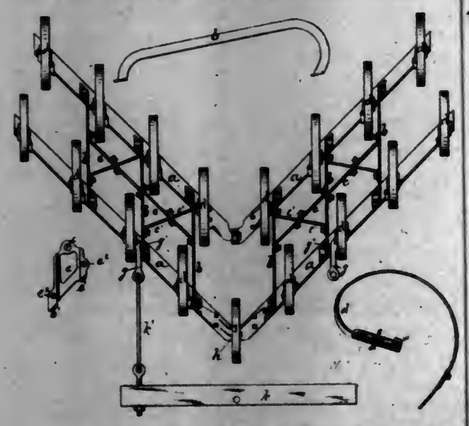
5. In combination with a gate having an endwise movement, a gravitating lever pivoted at one side of the gate and engaging with a guide on the gate and having opposed shoulders *m m*, which respectively lock the gate in its open and its closed positions, substantially as described.

6 In combination with a gate having an endwise movement, a gravitating lever pivoted at one side of the gate and engaging with a guide on the gate and having opposed shoulders *m m*, which respectively lock the gate in its open and its closed positions, and an operating-handle adapted to lift the lever to unlock and to move the gate, substantially as described.

7. In combination with a gate having an endwise movement, a gravitating lever, L, pivoted at one side of the gate and slotted at its upper end to engage with a guide carried by the gate, the slot being at its upper end divided by a tongue, Q, and terminating in seats *n'*, and an operating-lever for moving the lever L, substantially as described.

8. In combination with a gate having an endwise movement, a lever pivoted to one side of the gate and having its free end provided with a locking-shoulder adapted to engage with a guide carried by the gate, whereby the gate is locked, substantially as described.

408,976. SPRING-TOOTHED HARROW. HARRY WIARD, Syracuse, N. Y. Filed Jan. 16, 1888. Serial No. 260,900. (No model.)

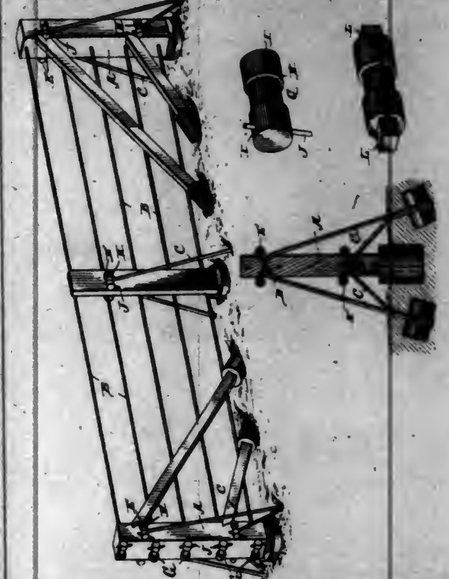


Claim.—1. In a spring-tooth harrow having a tooth bar or bars inclined in two directions to the line of draft, the combination therewith of a spring-tooth the shank of which is twisted, as herein described, to fit the double inclination of said bar, the tooth being held securely in position by a cap without interposing anything between the bar and tooth, as set forth.

2. The clip *g*, having the arm *g'* and eye therein combined with it for connecting the draw-bar with the harrow, constructed and arranged substantially in the manner and for the purposes herein specified.

3. The combination of the arm *g'* with the standard of the connecting-bar *b* and bar *a*, as and for the purposes specified.

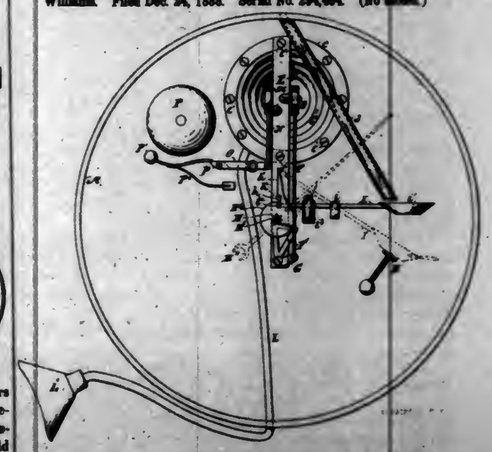
408,977. FENCE. LEWIS F. WICKERS and BARNEY C. WICKARD, Lebanon, Ind. Filed Mar. 13, 1888. Serial No. 268,171. (No model.)



Claim.—1. The combination of the post having transverse openings, buried anchors on opposite sides of the post, the stay-wires having their intermediate portions wrapped around the buried anchors and their ends passing through the transverse openings in the posts, and the stretching drums or cylinders secured to the ends of the stay-wires, as set forth.

2. In a fence-post, the anchors on opposite sides of the posts, the stay-wires having their intermediate portions wrapped around the anchors, and the stretching drums or cylinders secured to the ends of the stay-wires and connected to the fence-post at the top and bottom, respectively, as set forth.

408,978. COIN-RELEASED SPIROMETER. PERCY G. WILLIAMS and ALFRED W. ROOVERS, Brooklyn, N. Y.; said Roovers assignor to said Williams. Filed Dec. 24, 1888. Serial No. 294,464. (No model.)



Claim.—1. The combination of a motor constructed to be operated by lung-power, an index operated thereby, and a coin-operated

lock for said index, comprising a plate having a radial notch and a stop, substantially as specified.

2. The combination of a motor constructed to be operated by lung-power, an index operated thereby, a locking-plate connected to said index, having a radial notch and as top in line with said notch, and a coin-operated lever engaging with said plate, said lever being operated by the weight of a coin, substantially as specified.

3. The combination of a motor constructed to be operated by lung-power, an index operated thereby, a locking-plate connected to said index provided with a radial notch and a radial arm having a stop-shoulder in line with the notch, and a coin-operated lever, substantially as specified.

4. The combination of a motor constructed to be operated by lung-power, an index operated thereby, a lock for said index comprising a notched plate having a stop and a lever operated by the weight of a coin, and a bell operated by said motor, substantially as specified.

5. The combination, with the diaphragm C', of the lever D, segment-lever G, shaft H, locking-plate H^2, having a stop, a lever, I, having an adjustable weight, a coin-receptacle, and an ejector, substantially as specified.

408,979. LOOM-SHUTTLE. FREDERICK E. WRIGHT, Rochester, N. Y., assignor to the Steam Gauge and Lantern Company, same place. Filed Mar. 26, 1888. Serial No. 268,476. (No model.)



Claim.—1. The combination, with the shuttle-body having sockets for the bobbin-journals and provided on its front side with a projecting horizontal guide-frame, E, of a movable gate covering said guide-frame and attached to the shuttle-body by pivots arranged lengthwise of the shuttle, substantially as set forth.

2. The combination, with the shuttle-body provided with sockets for the bobbin-journals and having a projecting guide-frame, E, provided with guide-rollers *f f*, of a movable gate covering said sockets and guide-rollers, substantially as set forth.

3. The combination, with the shuttle-body provided with sockets for the bobbin-journals and having a guide-frame, E, of a movable gate attached to the shuttle-body, a depressed guard, M, formed on the under side of the shuttle-body, and a raised guard, N, formed on the movable gate, substantially as set forth.

408,980. ANVIL-SHEARS FOR CUTTING METAL. WILLIAM H. ADAMS, Franklin, La., assignor of one-half to Independence Alpha, same place. Filed Mar. 11, 1889. Serial No. 302,957. (No model.)



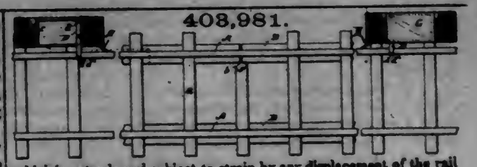
Claim.—1. Shears for cutting metal having a stationary cutter-bar, one end of said bar being extended to form an arm at an obtuse angle to the cutter, said arm having an adjustable guide-bar pivoted to its side and a lever to its end, the other end of the bar having a movable cutter pivoted thereto, and a link connecting the other end of the movable cutter and the lever, as set forth.

2. The combination, with a stationary cutter-bar having a pin in its center adapted to be held in an anvil, of an arm extending at an obtuse angle downward from the end of the bar, a lever pivoted to the end of the arm, and an adjustable guide-bar secured to the side of the arm and bent outward and extending parallel thereto, the opposite end of the stationary cutter-bar bent upon itself, forming a pivotal bearing for one end of the movable cutter-bar, the opposite end of the movable cutter connected to the lever by a link, as set forth.

408,981. RAILROAD DANGER-SIGNAL. FRANCIS ALLEN, Kansas City, Kans. Filed Dec. 31, 1888. Serial No. 295,095. (No model.)

Claim.—1. In a danger-signal for railways, the combination, with a housing, of a vertically-yielding and horizontally-swinging arm pivoted at one end in said housing and adapted to be locked to said housing in operative position and carrying a signal, and the arm-actuating wire connected to the arm and to the rail or rail-support along

408,981.



which it extends and subject to strain by any displacement of the rail or its support, substantially as set forth.

2. In a danger-signal for railways, the combination, with a movable signal, of a wire connected with the signal and secured to and concealed beneath the rail and subject to strain by any displacement of the rail, substantially as set forth.

3. The combination of a movable signal and a wire leading therefrom across a bridge, uprights O and M, a lever, N, fulcrumed to the upright O, a pulley pivoted on the upright M, the cylinder P, a piston within the cylinder having its end connected to one end of the lever N, and branch pipes communicating with said cylinder and leading to different parts of the bridge, the said wire passing around the pulley upon the upright M and connected to the opposite end of said lever, substantially as set forth.

4. The combination of the box provided with an opening at the side, the horizontally-swinging arm pivoted in the box and adapted to be swung through the side opening, the box-cover, the spring engaged with the cover and the swinging arm, and the arm-operating wire, substantially as set forth.

5. The combination of the box provided with an opening at the side, a recess in the bottom of the opening, the horizontally-swinging arm pivoted in the box and adapted to swing through the side opening, the box-cover, the spring engaged with the cover and the swinging arm, and the arm-operating wire, substantially as set forth.

6. The combination of the box provided with an opening at the side, the horizontally-swinging arm pivoted in the box and adapted to swing through the side opening, a signal-light support secured to turn with the arm and the box-cover, the spring engaged with the cover and the swinging arm, and the arm-operating wire, substantially as set forth.

408,982. LAST. ELIPHAS W. ARNOLD and GEORGE W. OSGOOD, Weymouth, Mass. Filed Dec. 14, 1888. Serial No. 293,554. (No model.)



Claim.—The body *a* of the last, its block *b*, and a fastening device to unite them, combined with a flexible connection attached to the body and to the block and extended through an eye of the fastening device, to operate substantially as described.

408,983. BRAKE-LEVER. GEORGE W. BARNUM, Philippi, W. Va. Filed Jan. 24, 1889. Serial No. 297,493. (No model.)



Claim.—1. The combination of a shaft having oppositely-toothed ratchet-wheels and the lever and shifting dog for operating said ratchets, with the locking ratchet-wheel and its locking-plate having a curved slot, and the rod and its operating devices connected to said lever and engaging the slot in said plate, for the purpose and substantially as specified.

2. The combination of the shaft, the ratchets thereon, the oper-

ating-lever and its adjustable dog for said ratchets, and the locking-ratchet and curved slotted locking-plate thereof, with the brake-bar and the connections between the said shaft and bar, substantially as described.

3. The combination of the shaft and its operating devices, with a locking-ratchet on said shaft, the toothed plate engaging said ratchet having a curved slot concentric to said shaft, and the devices engaging said plate, all substantially as described.

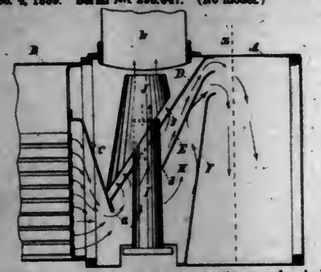
4. The combination of the brake-bar, its brake-shoes, and sprocket-wheel, with the shaft, its opposite ratchet-wheels and operating-lever engaging said ratchets, and the locking ratchet and plate, the sprocket-wheel on said shaft, and the chain connecting said sprocket-wheel with the wheel on the brake-bar, substantially as set forth.

5. The combination of the shaft, the opposite toothed ratchet-wheels thereon, the lever carrying a shifting dog, and the devices for shifting said dog mounted on the lever, with the locking-ratchet, its locking-plate having a curved slot concentric to said shaft, and the catch-block playing in said slot, and the rod mounted on said lever engaging said block, and the connecting devices between said rod and lever, whereby the plate is shifted simultaneously with the shifting of the dog, substantially as set forth.

6. The combination of the brake-bar, the brake-shoes and sprocket-wheel on said bar, with the shaft, the sprocket-wheel thereon, the chain connecting said sprocket-wheels, the opposite toothed ratchets on said shaft, the lever, the shifting dog pivoted on said lever adapted to engage either of said ratchets, the locking-ratchet, its slotted locking-plate, and the devices, substantially as described, attached to said lever, whereby the locking plate and dog may be shifted simultaneously, substantially as and for the purpose specified.

7. The combination of the frame, the shaft journaled therein, the oppositely-toothed ratchets thereon, the bifurcated lever and shifting dog engaging said ratchets, and the locking-ratchet and toothed, curved, and slotted plate for locking said ratchet, with the crank-iron on said lever, the link connecting said iron and the shifting dog, and the link, rod, and block connecting said iron and the slotted plate, whereby the dog and plate are operated together, substantially as and for the purpose specified.

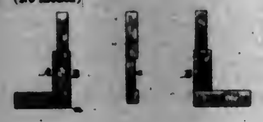
403,984. SPARK-ARRESTER. JOSHUA R. BARNES, Springfield, Ill. Filed Feb. 4, 1889. Serial No. 298,647. (No model.)



Claim.—1. In the smoke-box of a locomotive or other boiler provided with a partition-deflector, F, a baffling-plate, C, screen S, and deflector D, the three latter parts connected together and having positional reference to the deflector F, as herein described, the combination, with said parts, of an inclined deflector so interposed between the screen and the deflecting-partition F as to form with the screen and the deflector D a passage adapted to conduct the sparks and cinders that roll or slide up the face of the screen into the ash-bin, the interposed deflector being also adapted to intercept and conduct into the ash-bin the sparks and cinders that rebound from the partition-deflector, substantially as and for the purpose herein set forth.

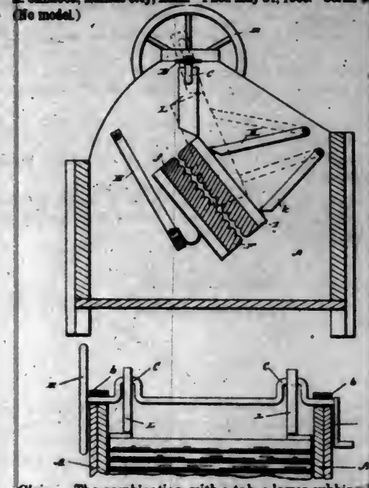
2. In the smoke-box of a locomotive or other boiler provided with an inclined screen adapted to arrest the sparks and cinders, and so located that the exhaust-pipes project vertically through its central part, the combination, with said screen, of a petticoat-pipe having its base sloped so as to coincide with the inclination of the screen and located slightly above it, substantially as shown, and for the purpose herein set forth.

403,985. SINKER-BAR FOR STRAIGHT-KNITTING MACHINES. FRANK E. BUSIEL, Laconia, N. H., assignor of two-thirds to John T. Busiel and Charles A. Busiel, both of same place. Filed Sept. 17, 1888. Serial No. 285,562. (No model.)



Claim.—In a knitting-machine, the combination of a sinker-bar provided with a series of vertical grooves and a longitudinal dovetailed groove cut in its front side, with a series of sinkers mounted in said vertical grooves and provided each with a dovetailed notch in its front edge, and a dovetailed locking-bar fitted to and movable endwise in the longitudinal groove of said sinker-bar and in the notches in said sinkers to firmly hold them in position and prevent any movement endwise or transversely thereof.

403,986. WASHING-MACHINE. JOHN W. CALHOON and JOHN W. A. CALHOON, Kansas City, Kans. Filed May 21, 1888. Serial No. 274,008. (No model.)



Claim.—The combination, with a tub, a lower rubbing-board pivotally secured in the tub, a cross-frame rigidly secured in the tub, and spring-arms secured to and projecting from said frame for supporting the lower rubbing-board, of an upper rubbing-board suspended in the tub over the lower rubbing-board, a crank-shaft journaled over the tub, hangers connecting the crank-shaft and the upper edge of the upper rubbing-board, and pivoted arms connecting said upper board and tub, whereby the board is swung by the rotation of the crank-shaft in an irregular curved path, substantially as set forth.

403,987. PULLEY. CHESTER W. CLARK and THERON D. KEASEY, Mishawaka, Ind., assignors to the Keasey Pulley Company, same place. Filed Feb. 17, 1888. Serial No. 264,372. (No model.)



Claim.—1. In a split pulley, the combination of the half-hubs provided with semicircular flanges, the separable flanges, the spokes, and the bolts *d d*, arranged between the spokes, substantially as set forth.

2. In a split pulley, the combination of the half-hubs provided with the semicircular flanges, the separable flanges, the spokes, the clamping-bolts, the segmental rim, and the bolts *A'* near the outer ends of the spokes, substantially as set forth.

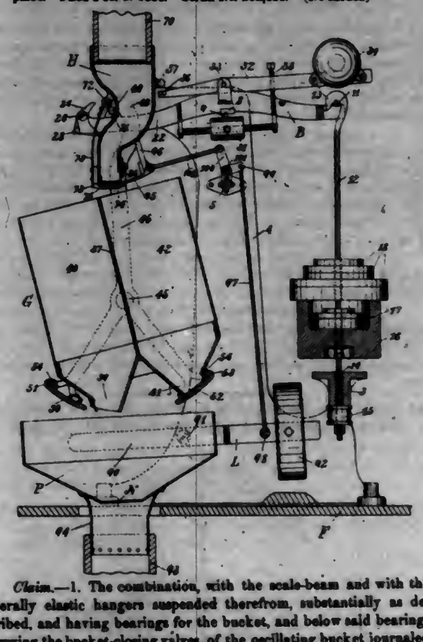
3. In a split pulley, the combination, with the spokes and the rim provided with the L-shaped seats, of the clamps *A*, having their outer ends seated in said seats and their inner ends secured to the spokes, substantially as set forth.

4. In a split pulley, the combination, with the spokes having their outer ends dovetailed, of the rim provided with segments having their flat faces in contact and provided with dovetailed seats for the ends of the spokes, substantially as set forth.

5. In a split pulley, the combination, with the spokes having their ends dovetailed upon one edge and the rim provided with correspondingly-shaped dovetailed seats for the ends of the spokes and with L-shaped recesses, of the clamps arranged upon the straight edges of the spokes with their L-shaped ends projecting from that edge of the spoke which is opposite to the dovetail-shaped part, substantially as set forth.

6. In a split pulley, the combination, with the segmental rim provided with L-shaped seats for the clamps, of the spokes having their outer ends seated in the rim, the clamps having their outer ends in the L-shaped seats, and the bolts *A'*, engaging with the spokes and the clamps, substantially as set forth.

403,988. AUTOMATIC GRAIN-SCALES. CHARLES H. COOLEY, Hartford, Conn., assignor to The Pratt & Whitney Company, same place. Filed Feb. 3, 1888. Serial No. 262,880. (No model.)



Claim.—1. The combination, with the scale-beam and with the laterally elastic hangers suspended therefrom, substantially as described, and having bearings for the bucket, and below said bearings carrying the bucket-closing valves, of the oscillating bucket journaled in said bearings and limited in its oscillating movement by abutments on said valves, all substantially as described.

2. The combination, with the hangers 44 46, of the bucket journaled therein and having spouts 39 41, valves 50 52, fixed to said hangers and arranged to close said spouts alternately, and the abutments 51 53 on the outer edges of said valves, respectively, substantially as described.

3. The combination and arrangement, with the grain-discharging hopper H, having its spout cut away on one side thereof at 83, of the vertically-adjustable plate 84 and the cut-off valve constructed and arranged to pass horizontally under said spout and plate from the side opposite of said plate 84, all substantially as described, and for the purpose specified.

4. The combination, with the hopper-spout, of the main valve 76, the supplemental valve 74, and the flexible apron 88, affixed to valve 76 and protecting the edge of valve 74, all substantially as described.

5. The combination, in a grain-weighing machine, of a grain-bucket, a chute for conveying grain thereto, a swinging cut-off valve arranged to swing under said chute to partially cut off the flow of grain to the bucket, a scale-beam carrying the bucket and operatively connected to open said cut-off valve on the rising of said beam, a swinging regulator-valve arranged to swing under said chute oppositely to said cut-off valve and to partially cut off the flow of grain to said bucket, and a vertically-movable regulator-hopper below said bucket and receiving the grain therefrom, said regulator-hopper being operatively connected to actuate said regulator-valve, whereby the two valves, acting together, operate to entirely cut off the flow of grain to the bucket, all substantially as described.

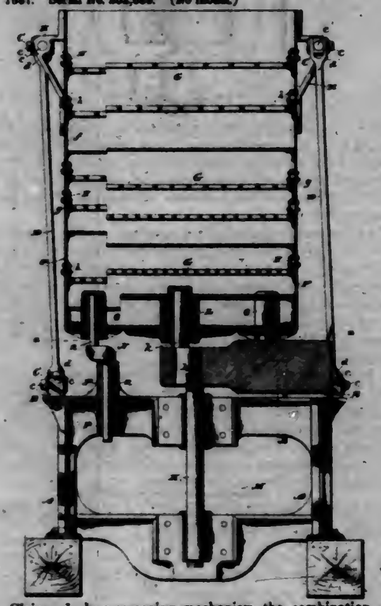
6. The combination, in an automatic grain-weigher, of the scale-beam, a grain-bucket suspended therefrom, a main weight suspended from said beam, the supplemental weight, the grain-chute above said bucket, the two cut-off valves constructed and arranged to swing one under the other and both under said chute, said valves being operatively connected to be opened from and on the rising of said beam, the regulator-valve constructed and arranged to swing under said chute oppositely to the first cut-off valve, and a vertically-movable regulator-hopper under said bucket and counterbalanced to normally open said regulator-valve, said hopper being operatively connected to close said regulator-valve on the downward movement of the hopper, and the whole being organized and coacting, as set forth, to close said regulator-valve before the supplemental weight is lifted and with the second cut-off valve standing open, all substantially as described.

7. The combination, with the spout of hopper H, of the oscillating cut-off valve 76 and the regulator-valve 95, both valves being suspended, substantially as described, and arranged to meet below said spout, the two valves being operated independently, all substantially as described.

8. The combination, with the spout of hopper H, of the cut-off valve 76 and the regulator-valve 95, both arranged to be moved toward each other under said spout, and the valve 74, arranged to be moved under both of the said valves 76 and 95, substantially as described.

9. The combination, with the vertically-movable double-chambered oscillating grain-bucket suspended, substantially as described, by hangers from knife-edges and provided with a stud or catch, 110, the whole being arranged to swing on its supporting knife-edges, of the stop-latch pivoted to the frame of the machine and having the notches 115 and 117, whereby the swaying movement of the bucket and hangers due to the discharge of one load carries the same over to and locks them substantially in the normal position due to the major part of the other load, substantially as described.

403,989. SCREENING MECHANISM. BECKLEY R. COXE and SAMUEL SALMON, Drifton, Pa.; said Salmon assignor to said Coxe. Filed Mar. 20, 1887. Serial No. 232,339. (No model.)



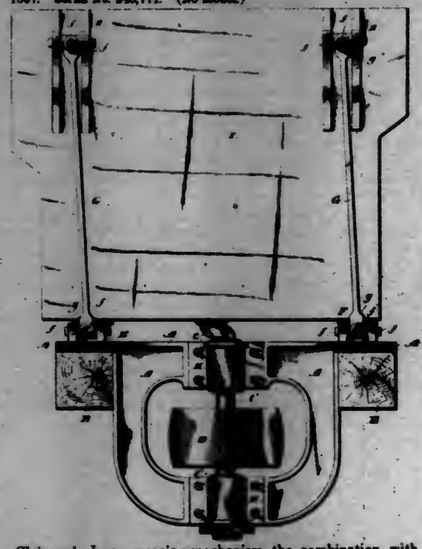
Claim.—1. In a screening mechanism, the combination, with a supporting-base and a screen-holding frame, of supporting solid bars having universal-joint connections with said base, and also with said frame at or near the top of the latter, and an actuating-crank connected with said frame to impart a circular motion thereto, substantially as and for the purpose specified.

2. In a screening mechanism, the combination, with a supporting-base and a screen-holding frame, of a series of supporting solid bars having at their lower ends universal-joint connections with said base and at their upper ends universal-joint connections with said frame, an actuating-crank for imparting a circular motion to said frame, and one or more parallel cranks for steadying said frame and limiting its motion, substantially as and for the purpose shown.

3. As an improvement in screening mechanism, the combination of the screen-frame, a screen having at its side edges upward-turned flanges, a clamping-plate which is adapted to have one of its ends engage with one of the flanged edges of such screen and to have its opposite end in engagement with the side of the screen-frame, and a bolt that passes through the frame side and through said clamping-

plate at a point between the ends of the latter and operates to draw the same firmly against the flanged edge of said screen, substantially as and for the purpose described.

403,990. SCREENING MECHANISM. ROXLEY B. COXE and SAMUEL SALMON, Drifton, Pa.; said Salmon assignor to said Coxe. Filed June 9, 1887. Serial No. 240,771. (No model.)

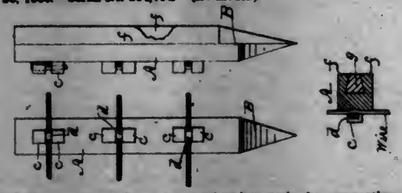


Claim.—1. In a screening mechanism, the combination, with a supporting-base, of a screen-holding frame provided with horizontal circular guides, vertically-journaled rollers supported by said base and engaging said guides, and a crank engaging said frame and serving to impart circular movements thereto, substantially as and for the purpose specified.

2. In a screening mechanism, the combination, with a supporting-base, of a screen-holding frame provided with horizontal circular recesses, the walls of which serve as guides, vertically-journaled rollers arranged within said recesses and of lesser diameter than the latter, supporting-bars jointed at their lower ends to said base and at their upper ends to said frame, and crank engaging said frame and serving to impart circular movements thereto, substantially as and for the purpose set forth.

3. In a screening mechanism, the combination, with the supporting-base A, of the screen-holding frame I, having the horizontal circular guides or recesses *i*, the vertically-journaled rollers L within said recesses, the supporting-bars G, universally jointed at their lower ends to said base and at their upper ends to said frame, and the vertical shaft C, having the crank *c* engaging the bottom of said frame, substantially as and for the purpose described.

408,991. FENCE-POST. WILLIAM CRAIG, Percy, Iowa. Filed Dec 26, 1888. Serial No. 294,704. (No model.)

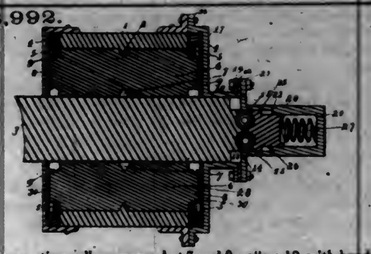


Claim.—A metal fence-post having integral wire supporting and fastening devices on one side and a wooden bar on the opposite side to which wooden boards can be nailed and the nails clinched, in the manner set forth.

408,992. JOURNAL-BOX. JOHN CURTIS, Denver, Colo., assignor to the Curtis Anti-Friction Roller Bearing Company, same place. Filed July 28, 1888. Serial No. 280,970. (No model.)

Claim.—1. The combination of the case or box having interior rib, 2, the supporting-rollers having grooves 7 in their bodies and end heads with grooves 9, the rollers 10, with heads having ribs 12, and the end rings having grooves 5, substantially as set forth.

2. A journal-bearing comprising the case or box having interior



rib, 2, supporting-rollers grooved at 7 and 9, rollers 10, with heads having ribs 12, end rings having grooves 5, a cap secured to the case and surrounding the end of the body of the main shaft, a thimble, 20, secured to the cap, a bearing-block, 25, with an angled shank, 26, within the thimble, and a spring therein acting upon the end of the shank, substantially as set forth.

3. A journal-bearing comprising an outer case with an internal rib, supporting-rollers with grooves fitting upon and meshing with such rib, supplementary or spacing rollers maintaining the supporting-rollers in a position away from each other, end rings maintaining such supplementary or spacing rollers in operative position, an end or cap, a thimble secured to such cap, and a spring-bearing for the end of the main shaft in such thimble, substantially as set forth.

4. The combination of the case 1, with rib 2, rollers 6 having grooves 7 and grooved heads 8, rollers 10, having ribbed heads 11, and end rings, 4, with internal grooves, 5, substantially as set forth.

5. A journal-bearing comprising the case, the supporting and the spacing rollers, of the cap steps or bends 16 17 18 19, thimble 20, with square or angled cavity 24, shaft 3, with reduced portion 13, bearing-block 25, ball-bearings 15, and spring 27, substantially as set forth.

403,993. UMBRELLA OR PARASOL. WILLIAM B. DURKEE, Philadelphia, Pa. Filed Dec. 18, 1888. Serial No. 293,960. (No model.)



Claim.—1. A parasol or umbrella having the lining attached at the top immovably to the stick and at points nearer the bottom to the ribs or cover, and intermediately detached from both ribs and cover.

2. A parasol or umbrella lining attached at the top immovably to the stick and nearer the bottom to the ribs or cover, having the intermediate portion at all points of less width than the corresponding portion of the cover.

3. In an umbrella or parasol, an interior canopy having its convexity toward the handle formed by a lining having its gores of less width in its upper parts than the gores of the cover, said lining-gores having their upper extremities turned upward toward the top notch and attached to a channeled ring, substantially as described.

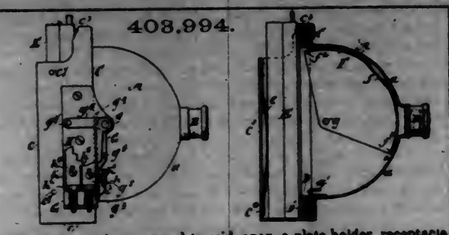
4. In an umbrella or parasol, the combination of a lining covering the stretcher-joint of the rib with a stretcher longer than the distance between the top of the rib and the stretcher-joint.

5. In an umbrella or parasol, the combination of a channeled ring between the top notch and top spring with a lining forming a canopy having the convexity toward the handle attached to said ring and exerting a downward pull thereon.

408,994. PHOTOGRAPHIC CAMERA. JAMES H. FORD, New York, N. Y., and MAX JURNICK, Jersey City, N. J.; said Jurnick assignor to said Ford. Filed May 26, 1888. Serial No. 275,027. (No model.)

Claim.—1. In a photographic camera, the combination of the following elements: a hollow spherical shell having a slightly-depressed portion near its apex, a lens secured to said apex, a plate-holder receptacle secured to the base of said shell, and a shutter in the form of a segment of a hollow sphere, having an opening at its apex and pivotally mounted to rock within said shell, substantially as described.

2. In a photographic camera, the combination of the following elements: a hollow spherical shell having a slightly-depressed portion



near its apex, a lens secured to said apex, a plate-holder receptacle secured to the base of said shell, a shutter in the form of a segment of a hollow sphere, having an opening at its apex and pivotally mounted to rock within said shell, one pivot being secured to said shutter, and provided with a coil-spring and hand-crank, said spring to actuate the shutter in one direction, and the said hand-crank controlled by detents for turning said shutter in the other direction for setting, substantially as described.

3. In a photographic camera, the combination of a dome-shaped shell provided with a lens and a plate-holder receptacle, a shutter in the form of a spherical segment working on pivots loosely within said shell, the latter having an annular depressed portion at a suitable distance from its apex to form a close-fitting connection with the shutter around the inner surface of the shell adjacent to the opening to the lens for excluding light, a coil-spring for actuating the shutter, a brake bearing against a pivot secured to the shutter for controlling its motion, a tripping device consisting of two spring-actuated detents adapted to engage with the extremity of a lever secured to said pivot, one of said detents having a shoulder bearing on the other detent, whereby an instantaneous or prolonged exposure is obtained by manipulating a single detent, and stops for limiting the motion of the shutter in both directions, substantially as described.

4. In combination with a photographic camera, substantially as described, the tripping device H, comprising two spring-actuated sliding detents, *h h'*, provided with hand-pieces, the detent *h* having a shoulder engaging the other detent, whereby the motion of the shutter may be made partial or complete by the manipulation of a single detent, substantially as described.

403,995. COIN-OPERATED FINGER-PULL. WILLARD H. GILMAN, Boston, assignor to William S. Reed, Leominster, Mass. Filed June 9, 1888. Serial No. 276,698. (No model.)



Claim.—1. As an improvement in coin-operated finger-pulls, the spring-pressed drum having a ratchet, the coin-chute, the locking lever or dog engaging said ratchet at one end, its other end being projected through an aperture of said chute, and the flexible pull secured to said drum, substantially as described.

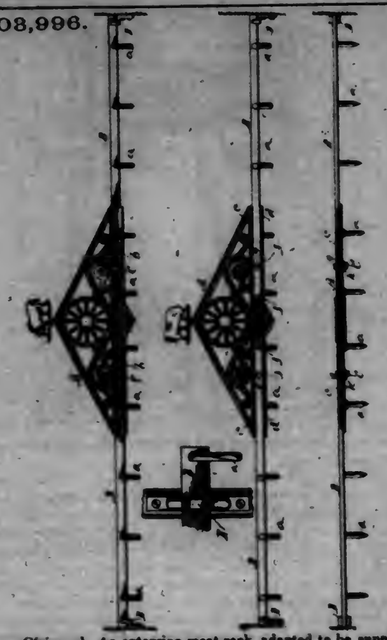
2. As an improvement in coin-operated finger-pulls, the combination of the fixed shaft, the spring-pressed drum rotatively mounted thereon, the ratchet secured to said drum, the coin-chute, the lever or dog having one end extending into said chute, and the flexible pull having a handled end, substantially as described.

3. As an improvement in coin-operated finger-pulls, the combination of the spring-pressed drum, its shaft, the ratchet, the coin-chute, the lever or dog engaging said ratchet, the toothed arm secured to said drum, the weighted lever engaging said arm and having a lug or projection, and the flexible pull, substantially as described.

4. As an improvement in coin-operated finger-pulls, the combination of the spring-pressed drum, its shaft, the ratchet secured to said drum, the coin-chute, the lever or dog engaging said ratchet and having one end projecting into said chute, the toothed arm, the weighted lever engaging said arm and having a lug or projection projecting beneath said chute, and the flexible pull, substantially as described.

5. In a coin-operated finger-pull, the combination of the spring-pressed drum having a ratchet, the coin-chute, the lever or dog engaging said ratchet, the flexible pull secured to said drum, the slide through which said pull is passed, and the guides therefor, substantially as described.

408,996. MEAT-RACK. CHARLES A. GLOECKLER, Pittsburg, Pa. Filed Aug. 10, 1888. Serial No. 282,542. (No model.)



Claim.—1. An extension meat-rack adapted to be supported at its outer ends, said rack being composed of a center bar having longitudinally-extending slots therein, of two adjustable and extensible end bars having bolt-holes, and of guide and fastening bolts extending through said slots in the center bar entering said bolt-holes in the end bars, said center and end bars being each provided with meat-hooks, substantially as set forth.

2. An extension meat-rack adapted to be supported at its outer ends, said rack being composed of a center bar having longitudinally-extending slots therein and flanges projecting at substantially right angles from its edges, of two adjustable and extensible end bars at opposite ends of said center bar and in line therewith, said end bars fitting and sliding between said projecting flanges and provided with bolt-holes, said center and end bars being each provided with meat-hooks, and of guide and fastening bolts passing through said slots in the center bar and entering said holes in said end bars, substantially as set forth.

3. An extension meat-rack adapted to be supported at its outer ends, said rack being composed of a center bar having longitudinally-extending slots therein and flanges projecting at substantially right angles from its edges, of two adjustable and extensible end bars at opposite ends of said center bar and in line therewith, the inner ends of said end bars fitting and sliding between said projecting flanges, said center and end bars being each provided with meat-hooks, and of guide and fastening bolts passing through said slots in said center bar and entering said holes in said end bars, in combination with stationary supporting-brackets having notches therein, in which the outer ends of said end bars rest, substantially as set forth.

408,997. CRUSHING OR GRINDING MILL. EDWIN C. GRIFFIN, Brooklyn, assignor to the Griffin Manufacturing Company, New York, N. Y. Filed June 1, 1888. Serial No. 275,730. (No model.)

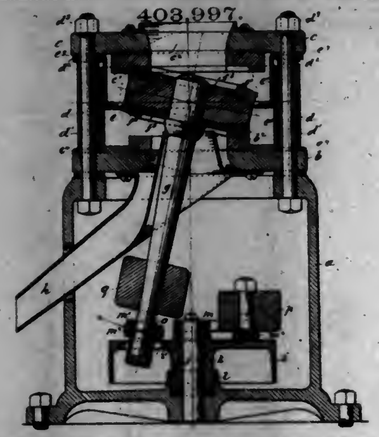
Claim.—1. In a crushing or grinding mill, the combination, with a gyrating runner or head having crushing-surfaces upon its upper and lower faces, of an upper and lower stationary crushing-disk, substantially as described.

2. In a crushing or grinding mill, the combination, with a gyrating runner or head having crushing-rings upon its upper and lower faces, of upper and lower stationary crushing-disks, substantially as described.

3. In a crushing or grinding mill, the combination of the upper and lower crushing-disks with the intermediate gyrating runner or head provided with depressions and crushing-rings upon its upper and lower faces, substantially as and for the purpose described.

4. In a crushing or grinding mill, the combination of the upper annularly-recessed crushing-disk, the lower plane-surfaced crushing-disk, and the intermediate gyrating runner or head provided with

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depressions and crushing-rings upon its upper and lower faces, substantially as described.

5. In a crushing or grinding mill, the combination of the upper and lower crushing-disks, the gyrating arm or stem passing through the latter, and the gyrating head provided with crushing-surfaces upon its upper and lower faces and adapted to be removed from said arm or stem and reversed, substantially as and for the purpose described.

6. In a crushing or grinding mill, the combination, with the casing, the top plate, and the upper stationary crushing-disk formed with the central feed-entrance, and the bottom plate and the lower stationary crushing-disk formed with the central discharge-aperture, of the gyrating crushing-head mounted between said upper and lower crushing-disks, substantially as described.

7. In a crushing or grinding mill, the combination of an upper and lower stationary crushing-disk, a drive-pulley concentric with said stationary disks, a runner or head having crushing-surfaces upon its upper and lower faces, and an arm or stem pivotally connected at an eccentric point of said pulley and operating to impart a gyrating motion to said runner or head as arranged between the stationary disks, substantially as described.

8. In a grinding or crushing mill, the combination of an upper and lower crushing-disk, a drive-pulley journaled concentric therewith, a runner or head having crushing-surfaces upon its upper and lower faces, an arm or stem pivotally connected at an eccentric point of said drive-pulley and having radial play at the same point, and means for forcing said stem outward, substantially as described.

9. In a grinding or crushing mill, the combination of an upper and a lower crushing-disk, a drive-pulley journaled concentric therewith, a runner or head having crushing-surfaces upon its upper and lower faces, an arm or stem pivotally connected at an eccentric point of said drive-pulley and having radial play at the same point, and a weight connected to said arm or stem to force it outwardly by centrifugal force, substantially as described.

10. In a crushing or grinding mill, the combination of an upper and lower crushing-disk, a drive-pulley journaled concentric therewith, a runner or head having crushing-surfaces upon its upper and lower faces, an arm or stem pivotally connected at its end at an eccentric point of said pulley and having radial play at the same point, a series of connected levers mounted upon said pulleys, and a weight attached to the end of the stem or arm at or near the point of its pivotal attachment, substantially as described.

11. In a crushing or grinding mill, the combination of the stationary crushing-disks, an intermediate gyrating runner or head having an arm or stem, a drive-pulley journaled concentric with the said head and having a radial slot for the free passage and play of the lower end of said arm or stem, a lever fulcrumed concentric with said pulley, levers pivoted at their ends at diametrically-opposite points on the face of said pulley and arranged parallel with the central lever, one of said levers having a weight secured at its middle, a weight secured to the lower end of the arm or stem of the gyrating head, and links connecting the middle lever to the opposite ends of the levers which are parallel therewith, substantially as described.

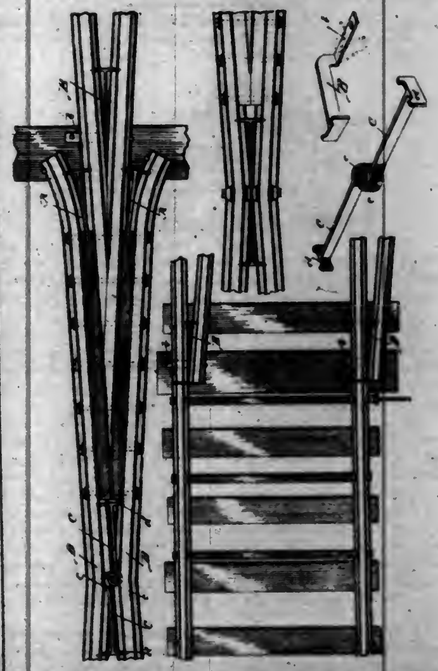
12. In a crushing or grinding mill, the combination of the centrally-open upper and lower crushing-disks, the gyrating runner or head having crushing-surfaces upon its upper and lower faces, an arm or stem passing through the central opening of the lower crushing-disk, a drive-pulley journaled concentric with said crushing-disks and having a radial slot for the free passage and play of the arm or stem, a lever fulcrumed at its middle concentric with said pulley, a lever pivoted at one end at an eccentric point of the pulley near its periphery and having a weight secured to its middle, a link connecting the free end of said lever with the corresponding end of the central lever, a lever pivoted to said pulley at a diametrically-opposite point to the other lever and having a partly-spherical recess in its middle, a spherical bearing or step fitted in said recess, and a link pivotally connecting the free end of this lever and the end of the central lever, substantially as described.

13. In a crushing or grinding mill, the combination of a cylindrical casing, a top and bottom plate provided with central apertures forming, respectively, the feed and discharge apertures, crushing-disks secured to the inner sides of the top and bottom plates and having central apertures, a gyrating runner or head having crushing-surfaces upon its upper and lower faces and having an arm or stem projecting through the central apertures of the bottom plate and its crushing-disk, and a discharge-spout secured around the discharge-aperture and provided with an inverted-funnel-shaped flange surrounding the said arm or stem and projecting above the lower crushing-disk, substantially as described.

14. In a crushing or grinding mill, the combination of a top plate and a bottom plate having crushing-disks secured upon their inner sides, a gyrating runner or head having crushing-surfaces upon its upper and lower faces and playing between and upon said crushing-disks, bolts passing through and connecting said plates and provided with nuts and enlarged heads, sleeves surrounding said bolts, and removable washers fitted upon said bolts between the upper ends of the sleeves and the under side of the top plate, substantially as and for the purpose set forth.

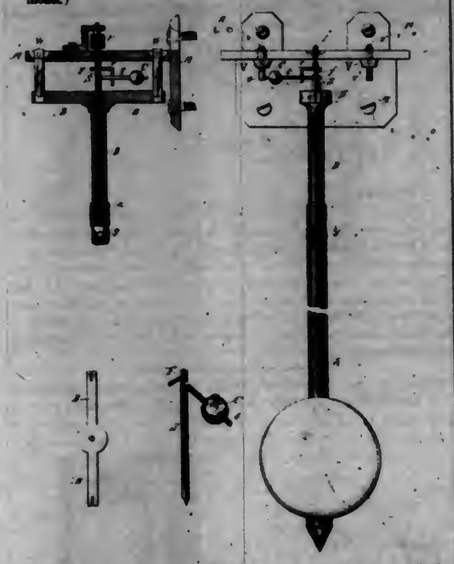
15. In a crushing or grinding mill, the combination of a top plate and a bottom plate having crushing-disks upon their inner sides, an intermediate gyratory crushing runner or head, bolts connecting the top and bottom plates and provided with nuts and enlarged heads, a casing consisting of cylindrical flanged shells fitted upon the bolts and telescoping at their meeting ends, sleeves surrounding the bolts and separating the top and bottom plates, and washers removably placed upon the bolts between the upper ends of the sleeves and the perforated flanges of the shells, substantially as and for the purpose set forth.

403,998. FOOT-GUARD. THOMAS A. GRIFFIN, Chicago, Ill. Filed Jan. 31, 1889. Serial No. 298,160. (No model.)



Claim.—A foot-guard for railway, consisting of a T-shaped piece of metal, its head being adapted to fit between the rails and having its stem bent at the end to a hook shape, whereby it is adapted to engage with another guard of similar shape, substantially as described.

403,999. GRAVITY CLOCK-ESCAPEMENT. FERDINAND GUDSORPH, Portland, Oreg. Filed Sept. 7, 1888. Serial No. 284,811. (No model.)



Claim.—1. In a gravity-escapement and in combination with the pendulum and the motor thereof, a revolving arm deriving motion from the motor, and means, as the pins *r r'*, for intermittently arresting the motion of the said arm, substantially as described.

2. In a gravity-escapement and in combination with the motor and pendulum thereof, a revolving arm connected to the pendulum and driven by the motor, and means, as the pins *r r'*, for intermittently arresting said arm, substantially as described.

3. In a gravity-escapement and in combination with the motor and pendulum thereof, an arm connected to the pendulum and driven by the motor, and means, as the pins *r r'* and wires *n n o*, for making and breaking an electrical circuit, substantially as described.

4. In a gravity-escapement and in combination with the pendulum and motor thereof, a revolving arm deriving motion from the motor, and means, as the pins *r r'*, for intermittently arresting the motion of said arm, substantially as described.

5. In a gravity-escapement and in combination with the motor and pendulum thereof, a revolving shaft stepped in the pendulum, an arm mounted on said shaft, a carrier acting on the arm and connected with the motor, and means, as the pins *r r'*, for intermittently arresting said arm, substantially as described.

6. In a gravity-escapement and in combination with the motor and pendulum thereof, a pinion, *p*, meshing with the motor, a shaft driven by said pinion, a carrier revolved by said shaft, a revolving arm, *l*, connected with the pendulum and revolved by the carrier, and means, as the pins *r r'*, for intermittently arresting said arm, substantially as described.

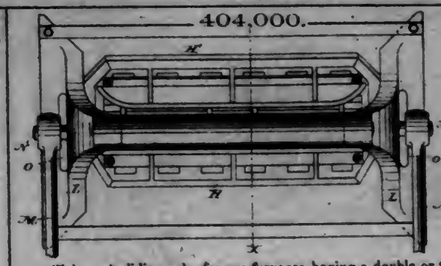
7. In a gravity-escapement and in combination with the motor thereof, a pendulum having a tube at its upper end, a shaft revolving in said tube, an arm attached to said shaft, a carrier connecting said arm with the motor, and means, as the pins *r r'*, for intermittently arresting the motion of the arm and shaft, substantially as described.

8. In a gravity-escapement and in combination with the motor thereof, a pendulum having a tube at its upper end, a shaft carrying an arm and revolving in said tube, a pivot-rest supporting said shaft, a carrier connected with the motor and driving the shaft, and the pins *r r'*, for intermittently arresting said revolving arm and shaft, substantially as described.

9. In a gravity-escapement and in combination with the motor thereof, a vertical shaft connected with the motor, a carrier connected with said shaft, a cross-head, B, having suspension-springs *f*, connected to a suitable support, a tube, D, beneath the cross-head, a revolving shaft, S, working in said tube, an arm, *l*, carried by said shaft, a weight, C, adjustable on said arm, the pins *r r'*, for arresting the motion of the arm, and the pendulum-rod *k*, connected to the bottom of the tube, substantially as described.

404,000. ORE-ROASTING FURNACE. ISAAC R. HANNOUR, Chicago, Ill. Filed Oct. 1, 1888. Serial No. 286,965. (No model.)

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Claim.—A sliding rake for ore-furnaces, having a double or two faced swinging head, each face being provided with suitable teeth, the said head being pivotally connected to the rake-body, rake-rods connected to the said swinging head outside the center, around which it swings, and stops, substantially as described, to limit the extent of swing of the head to bring one or the other of the rake-faces in working contact with the ore, substantially as and for the purpose set forth.

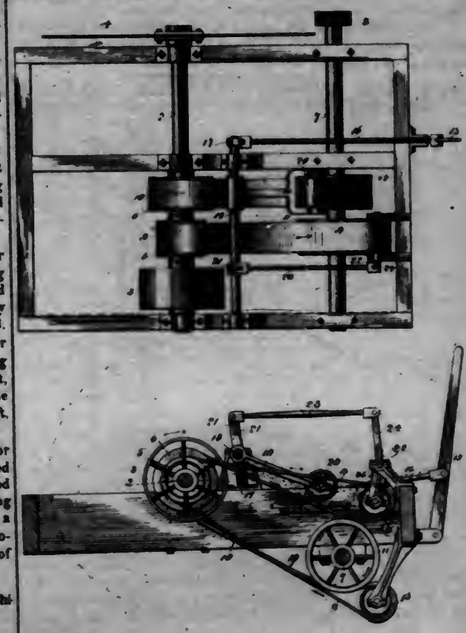
404,001. COMBINATION-TOOL. ELMER E. HEACOCK, STRAUB, KANS. Filed Jan. 4, 1889. Serial No. 295,449. (No model.)



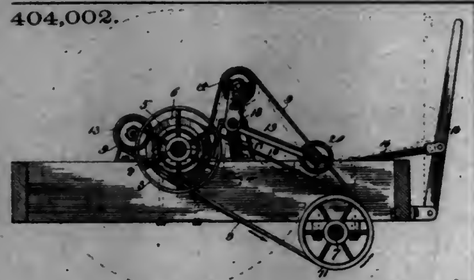
Claim.—The combination-tool herein described, the same consisting of a bar, C, a stationary head, A, attached at one end of the bar, the extended end of said head being fashioned into a wrench-jaw and its opposite end provided with a hammer-face and a tack or nail claw, a movable jaw, B, provided upon its lower face with extensions F and F', as described, the spring E, having one of its ends attached to the extension F and its free end provided with a pin to engage holes formed in the lower face of the bar C, the stop D upon the bar C, to limit the movement of the movable jaw, and the tube-wrench J, formed in the end of the bar C, substantially as shown and described.

404,002. SAW MILL FEED-WORKS. HOWARD P. HEACOCK, Missoula, Mont. Filed Jan. 21, 1889. Serial No. 296,957. (No model.)

Claim.—1. The combination, in a saw-mill, of two belts driven from the saw-arbor and running over pulleys on a shaft of the feed-



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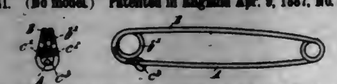


works, one of said belts having the same side in contact with both pulleys over which it runs, and the other belt having its opposite sides in contact with its respective pulleys, and a tightener adapted to operate alternately on said belts, substantially as described.

2. The combination of a pulley on the saw-arbor, a pulley on the feed-shaft, a belt running from one pulley to the other, a tightener-pulley acting on said belt, a second pulley on the saw-arbor and upon the feed-shaft, idler-pulleys on each side of one of the two pulleys last named, one of said idlers being movable and acting as a tightener, a belt passing over said idlers, and the pulleys on the saw-arbor and the feed-shaft, as described, and mechanism connecting the movable idler with the first-named tightener-pulley and adapted to cause them to alternately tighten their respective belts, substantially as described.

3. The combination of pulleys 6 and 12 and belt 10, pulleys 5 and 11, idlers 13 and 14, and belt 9, said belts being combined with a tightener consisting of lever 15, rod 16, arm 17, rock-shaft 18, arm 19, and pulley 20, arm 21, rod 23, arm 24, rock-shaft 22, and arm 25, carrying the idler 14, substantially as described.

404,003. SAFETY-PIN. GEORGE W. HERBERT, Birmingham, County of Warwick, and Samuel Guinery, Epsom, County of Surrey, England; said Guinery assignor to said Herbert. Filed Feb. 2, 1888. Serial No. 262,741. (No model.) Patented in England Apr. 9, 1887, No. 5,243.

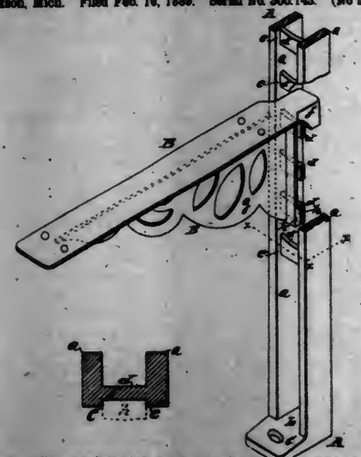


Claim.—1. In combination, the arm A, the arm B, the loop c^3, and the partition b', said partition being a coiled continuation of the arm B, substantially as described.

2. In combination, the arm A and the arm B, bent to form first the partition b', and then continued to form the loop c^3.

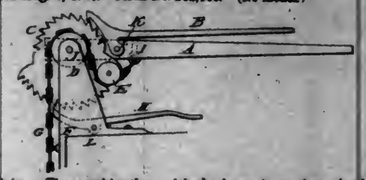
3. In combination, the arms A B, the partition, and the loop c^3, said loop being formed of the wire coiled back and forth from side to side of the partition, substantially as described.

404,004. ADJUSTABLE SHELF-BRACKET. ASSEL N. HOVEY, Jackson, Mich. Filed Feb. 16, 1889. Serial No. 300,143. (No model.)



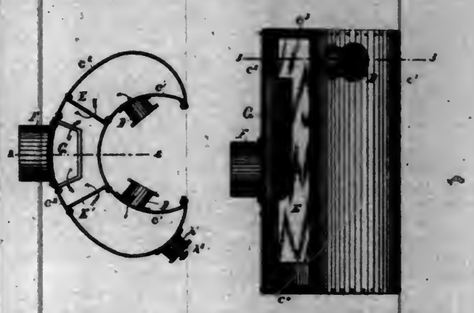
Claim.—The combination of the standard A A, composed of the side pieces, *a a*, and cross-pieces *d*, said cross-pieces being set somewhat back from the front of said standard to form the shoulders *e e*, and the shelf-supporting arm B B, provided with the hook *f*, and a brace adapted to pass between the side pieces, *a a*, and rest against the cross-pieces *d*, substantially as shown and described.

404,005. CAR-BRAKE. ANOS M. KENDALL, Sioux City, Iowa. Filed Aug. 6, 1888. Serial No. 282,106. (No model.)



Claim.—The combination, with the lever A, ratchet-wheel C, and grooved pulley D, all being attached to shaft J with loose bearings, so as to revolve independent of each other, of pawl B, rubber spring K, grooved pulley E, attached by loose bearings to ratchet-wheel C, chain G, secured to lever A, supported by uprights F F, together with pawl H, the mechanism so arranged that by the lever being raised the slack of the chain and brake are taken up, and by a downward pressure of the lever increased power is produced to set brake, substantially as described, and herein set forth.

404,006. HEATING-FURNACE. THEODORE KRUSE, Indianapolis, Ind. Filed June 29, 1888. Serial No. 278,597. (No model.)



Claim.—In a heating-furnace, the combination, with the circular combustion-chamber B, of the crescent-shaped radiator C, located at the rear of and extending around but a portion of the circumference of said combustion-chamber, as shown, and having the two transverse dividing-partitions E E', extending from the top of the radiator only a portion of its length, as set forth, flues connecting the radiator and combustion-chamber, and the smoke-box G, located centrally between the partitions and open at its top and closed at the bottom and having an outlet-opening in communication with its interior, substantially as described, and for the purpose set forth.

404,007. FOLDING GATE. DANIEL R. LADD, Schenectady, N. Y. Filed Feb. 1, 1889. Serial No. 298,827. (No model.)



Claim.—1. In combination with a post, the folding gate comprising bars A A' B B', hinged at their ends, and the slats pivotally secured at their ends to the bars.

2. In a gate, the combination, with bars A A' B B', grooved as shown, of slats seated at their ends in the grooves and pivotally attached to the bars and hinges connecting the bars.

3. In a gate, the combination, with the bars, of the slotted slats secured thereto and the hinges connecting the bars.

4. In combination with a post, a gate comprising bars A A' B B', one of which, A, is secured to the post, hinges connecting the bars, and slats pivotally connected at their ends to the bars.

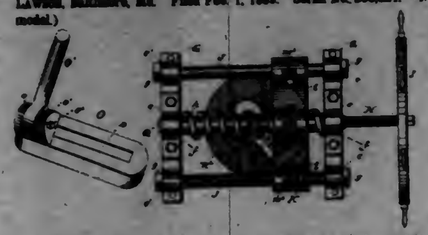
5. In a gate, the combination, with the bars A A' B B', two of which, A' and B, have their ends beveled, as shown, of the slats pivotally connected to the bars.

6. In a gate, the combination, with the post and the bars A A' B B', one of which, B', extends beneath the end of bar A, of hinges

connecting the bars, belts or fastenings for securing the bar to the post, and slats pivotally connected to the bars.

7. In a folding gate, the combination, with the bars A' B, of the hinge C, comprising two parts abutting squarely along their meeting edges.

404,008. STEERING APPARATUS. HENRY LAWSON and ALBERT LAWSON, Baltimore, Md. Filed Feb. 1, 1889. Serial No. 298,821. (No model.)



Claim.—1. In a steering apparatus, the combination, with a threaded steering-wheel shaft and a nut traveling thereon, of a slotted link adapted to receive a projection on the rudder-cap and a hinged connection between said link and the nut, as described.

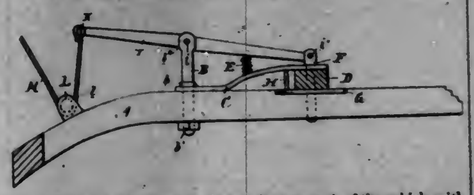
2. In a steering apparatus, the combination, with a threaded steering-wheel shaft and a nut traveling thereon, of a slotted link adapted to receive a projection on the rudder-cap and a hinged connection between said link and the nut, said link and nut being adapted to be reversibly connected, in the manner and for the purpose specified.

3. In a steering apparatus, the combination, with a threaded steering-wheel shaft and a nut traveling thereon provided with vertical openings, of a slotted link adapted to receive a projection on the rudder-cap and a pin pivoted to said link and adapted to enter either of the openings in the nut, as described.

4. In a steering apparatus, the combination, with the threaded steering-wheel shaft, the yoke G, secured to a housing, E, said yoke having bearings for said shaft, the guide-rods J J, having bearings in said yokes, the nut K, having a central threaded opening, *k*, and the openings *l' l*, of the link O, slotted to receive a projection on the rudder-cap, and the pin O', adapted to enter either of the openings *l*, as described.

5. In a steering apparatus, the combination, with the threaded steering-wheel shaft and a nut traveling thereon, of a rudder-cap provided with an angular projection, a link slotted to receive the latter, a connection between said link and the nut, a housing around said rudder-cap, and a brace secured to the housing and to the projection of the rudder-cap over the link to hold the latter in place, as described.

404,009. HORSE-DETACHER. FRANK LEBHART, Brazil, Ind. Filed Feb. 9, 1889. Serial No. 299,337. (No model.)



Claim.—1. The combination of the tongue A of the vehicle with the whiffletree D, the hasp C, the bolt F, upon which the whiffletree vibrates, the lever I to withdraw the bolt F, the standard B, supporting the lever I, the spring K, the pulley L, and the strap M, connected to the lever I and passing under the pulley L, substantially as and for the purposes described.

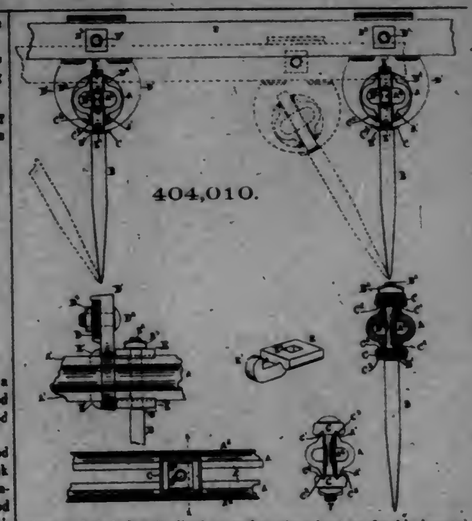
2. The combination of the tongue A of a vehicle with the hasp C, the whiffletree D, the bolt F, the standard B, the lever I, the spring E, the pulley L, the strap M, and the studs H, substantially as and for the purposes described.

404,010. HARROW. JAMES MARSHALL and FRANKLIN M. NEEDHAM, Rockford, Ill. Filed Aug. 17, 1888. Serial No. 282,905. (No model.)

Claim.—1. A harrow-beam consisting of two bars of metal secured together by means of teeth threaded at their upper ends or bolts transversely inserted between said bars, clamps having parallel grooves in their inner faces and openings therethrough adapted to engage with and secure said bars and teeth or bolts together, and nuts applied to said teeth or bolts to secure the herein-named parts together into a rigid whole.

2. In combination, two bars of iron having, preferably, beveled

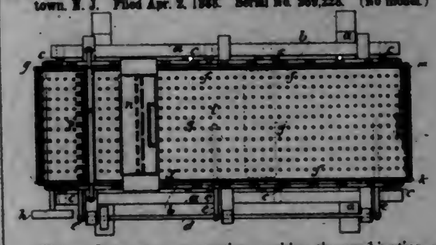
404,010.



edges and their longitudinal central portions bent preferably in semi-cylindrical form, any suitable number of harrow-teeth inserted between said bars, each having a horizontal shoulder thereon at any desired distance below the top of the same and the upper portion thereof cylindrical in form and threaded to receive a nut, clamps having parallel grooves in their inner faces adapted to receive the edges of said bars and the outer sides of said grooves being inclined toward the center of said clamps sufficiently to draw said bars into close contact with the harrow-teeth, and nuts for drawing said clamps together substantially as described, and for the purpose specified.

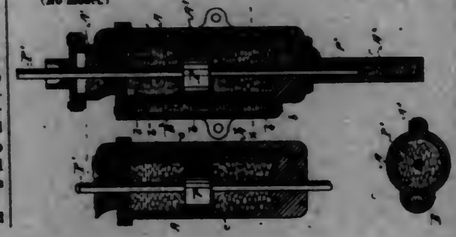
3. In combination, the herein-described two-part harrow-beam secured together by means of harrow-teeth inserted between the two parts composing the same, clamps and nuts, as shown, the cross-beams, the hangers secured to and depending from said cross-beams and having horizontal circular openings in the lower portions of the same to admit said two-part harrow-beams, and hook-lugs connecting with the latter and extending through and engaging with said hangers and forming with them oscillating bearings, by which said two-part harrow-beams are supported and in which they may be operated, substantially as described, and for the purpose set forth.

404,011. ORE-CONCENTRATOR. WALTER MCDERMOTT, Morristown, N. J. Filed Apr. 2, 1888. Serial No. 269,223. (No model.)

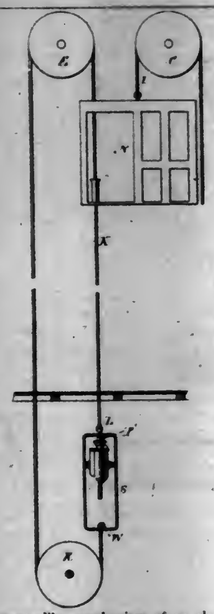


Claim.—In an ore-concentrating machine, the combination, with the water-distributer, of an endless traveling belt presenting a smooth surface in the lines of the water-jets and ore-retaining pockets between them, substantially as described.

404,012. ELEVATOR-CONTROLLING MECHANISM. WILLIAM R. NICKERSON, Cambridge, Mass. Filed Feb. 6, 1889. Serial No. 299,190. (No model.)

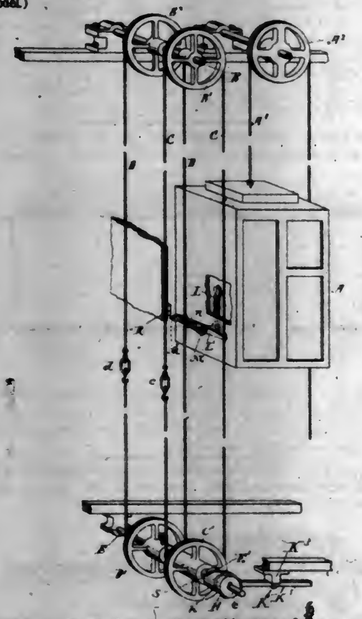


404,012.



Claim.—In the controlling mechanism of an elevator, the combination of the controlling-rope K and piston P with the cylinder A, having the passage-way B and the openings *b b*, substantially as and for the purpose set forth.

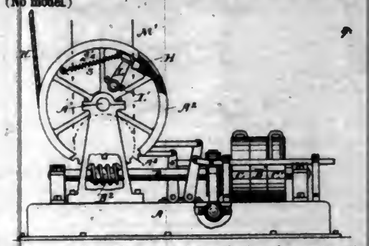
404,013. CONTROLLER FOR ELEVATORS. WILLIAM E. NICKERSON, Cambridge, Mass. Filed Feb. 11, 1889. Serial No. 299,467. (No model.)



Claim.—1. In an elevator, the combination of the carriage A, hoisting-rope A', ropes D and C, lever L', having the rope D attached to it on one side of its pivotal point and the rope C attached on the other side of said pivotal point, and the pulleys B' and B, with the pulleys D' and C, one of which is rigidly attached to the shaft E and the other loosely mounted upon said shaft and adapted by a rotary movement relative to the first to increase and diminish the axial distance between them, the shaft E, and a system of levers to convey the axial longitudinal movement of the loosely-mounted pulley to the controlling mechanism of the hoisting apparatus, substantially as and for the purpose set forth.

2. In an elevator-controlling device, the combination of the hand-lever L, controlling-lever M, rod M', and lever M², having a stud, M³, and the lever L', with the stop R, affixed to the well-room of the elevator, substantially as and for the purpose set forth.

404,014. SLACK-ROPE STOP FOR ELEVATORS. WILLIAM E. NICKERSON, Cambridge, Mass. Filed Feb. 15, 1889. Serial No. 299,956. (No model.)

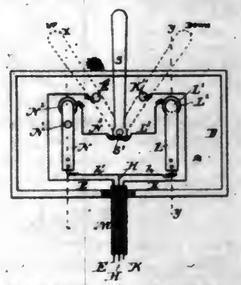


Claim.—1. In an elevator hoisting device, the combination of the winding-drum A², rigidly fixed to its shaft, and hoisting-rope H, with a movable rope-end coupling and retractor S, said end coupling having a transmitting mechanism adapted to operate the belt-shipping device, substantially as and for the purpose set forth.

2. In an elevator hoisting-device, the combination of the winding-drum A², rigidly fixed to its shaft, and hoisting-rope H, with the spring-retractor S, and a transmitting mechanism adapted to set a pawl or other clutch device in working connection with the controlling device of the elevator, substantially as and for the purpose set forth.

3. In an elevator hoisting device, the combination of the winding-drum A² and rope H with the arm or hook L, spring S, rocker-shaft L', pawl L², pinion K, gear K', shaft K², and hand-rope wheel M, substantially as and for the purpose set forth.

404,015. ELECTRICAL SWITCH FOR ELEVATORS. WILLIAM E. NICKERSON, Cambridge, Mass. Filed Feb. 28, 1889. Serial No. 301,505. (No model.)



Claim.—1. In an electric device for controlling the motion of an elevator-carriage, the combination of a series of cam-pieces on the walls of the elevator-well disposed with reference to the various landings and adapted to act upon a circuit-breaking device within the carriage and cause the carriage to automatically stop at said landings and so remain until the circuit has been manually re-established, with electrical circuits having terminals within the carriage connected to said circuit-breaking device, and an electric device adapted to actuate the controlling mechanism of the hoisting-engine, substantially as and for the purpose set forth.

2. In an electric device for controlling the motion of an elevator-carriage, the combination of the cams P P and a circuit-breaking device, as described, with an electric bridge adapted to re-establish the electric circuit at the option of the attendant when said circuit has been automatically broken at a landing by a fixed cam-piece, substantially as described, and for the purpose set forth.

3. In an electric device for controlling the motion of an elevator-carriage, the combination of the switch S, posts E⁴ K', contact-points N² L², contact-plates N L, and the several connecting and circuit wires, with an electric device, substantially as and for the purpose set forth.

404,016. NUT-CRACKER. HENRY M. QUACKENBOSS, Herkimer, N. Y. Filed Nov. 19, 1888. Serial No. 291,280. (No model.)

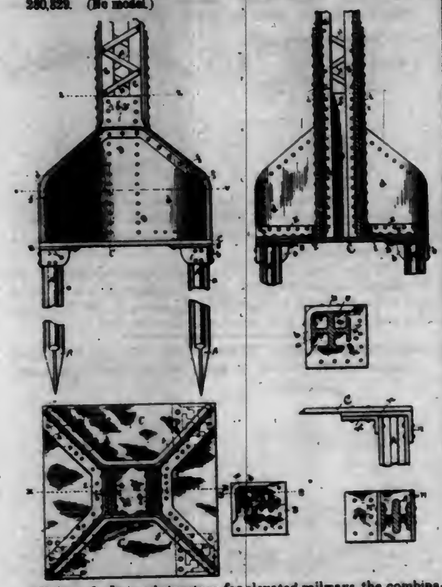
Claim.—1. A nut-cracker consisting of two levers connected at one end and of substantially cylindrical form in cross-section in the jaw portions, whereby the sides of the jaws are caused to project beyond the bearing-faces, and thus to guard the fingers against injury.

2. A nut-cracker consisting of two levers jointed one to the other, each lever having a serrated jaw portion the serrated face of which is narrower than the body of the jaw, whereby the projecting sides of the jaws serve to hold the fingers away from the serrations.

404,016.



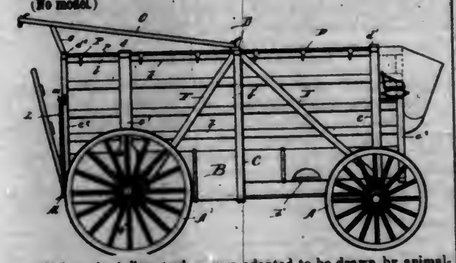
404,017. SUBSTRUCTURE FOR ELEVATED RAILWAYS. STILLMAN W. ROBINSON, Columbus, Ohio. Filed July 23, 1888. Serial No. 280,829. (No model.)



Claim.—1. In a substructure for elevated railways, the combination, with three or more piles having caps *b*, of a base-plate secured to caps and piles and a superstructure-supporting column supported on said base-plate, substantially as and for the purpose specified.

2. The combination, with three or more piles, A, having flanged caps *b*, to which they are secured, of base-plate C, secured upon said caps, a superstructure-supporting column supported upon said base-plate and plates D, and angle-bars secured to said base-plate and column, substantially as and for the purpose specified.

404,018. LIVE-STOCK WAGON. MADISON D. SHIPMAN and WALTER S. REYNOLDS, De Kalb, Ill. Filed Aug. 4, 1888. Serial No. 282,016. (No model.)



Claim.—1. A live-stock wagon adapted to be drawn by animal-power, of a size adequate to hold two animals and provided with stanchions for both said animals, such stanchions being located one at the front and one midway of the wagon, but upon the same side thereof, whereby the animals are confined with their heads to the front and their bodies at an angle to the line of the wagon, substantially as specified.

2. A live-stock wagon provided at one side with stanchions for two animals and a guard for positioning the front animal, substantially as specified.

3. A live-stock wagon adapted to be drawn by animal-power, having a stanchion for confining an animal at one side of the front end of the wagon and a driver's seat abreast of said stanchion, substantially as set forth.

4. A live-stock wagon having an elevated floor at its forward portion and a depressed floor at its rear portion and a stanchion for confining an animal upon each of such floor portions, substantially as set forth.

5. In a live-stock wagon, a depressed floor portion, E', secured to the under side of a straight or unbent rear axle, in combination with such axle, substantially as set forth.

6. A live-stock wagon the cage whereof embodies the diagonal braces F, extending from the axles, respectively, to the top center of the wagon, substantially as and for the purpose specified.

7. In a live-stock wagon, a cattle-stanchion consisting of a stationary bar and a movable bar, the latter connected by a connection pivoted to it and the stationary part, substantially as set forth.

8. In a live-stock wagon, a cattle-stanchion having a movable side, in combination with the slotted top brace, the floor-stop, and the pivotal connection to the stationary side, substantially as specified.

9. In a live-stock wagon, a cattle-guard, J, in combination with the cattle-stanchion K K', and connected to the movable part of the latter, substantially as specified.

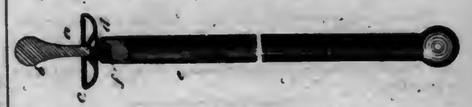
10. The combination, with a live-stock wagon, of an end-gate fastening consisting of the rod hinged to one side of the wagon and having a tightening-nut at its free end, and a hook carried upon the other side of the wagon and adapted to receive such free end of the rod, and provided with a projection or bend adapted to act with the nut to confine the rod in the hook, substantially as specified.

11. A live-stock wagon having a top pole, O, projecting from the rear and adapted to sustain a slaughtered animal, substantially as set forth.

12. A live-stock wagon having meat-hooks pivoted along the top rail and adapted to be swung over said rail when not in use, substantially as specified.

13. A live-stock wagon provided with an animal-holding device—such as a stanchion—at its forward end, and also with another stanchion adapted to hold an animal in its rear portion and capable of being moved out of the way when putting in or removing animals from the forward portion, substantially as specified.

404,019. PESSARY. ALFRED W. SPERRY, Hartford, Conn. Filed Nov. 24, 1888. Serial No. 291,756. (No model.)



Claim.—As a new article of manufacture, a pessary consisting of a stem with an enlarged head rising from the center of a cup-shaped base, which has a concavity in its bottom, said concavity having a dependent screw-threaded stem, and a handle with a rounded end in which is a threaded socket adapted to engage the screw-threaded stem, substantially as specified.

404,020. TRANSOM-LIFTER. JAMES K. SPRAGUE, Chicago, Ill. Filed Nov. 30, 1888. Serial No. 292,244. (No model.)

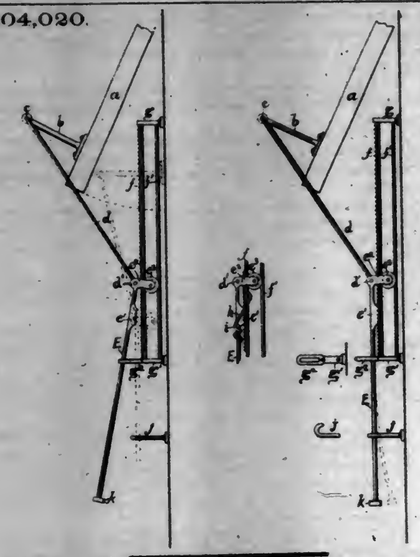
Claim.—1. In a transom-lifter, the combination, with the connecting-rod *d*, of the lever E, provided with roller e^3 and tracks for the same, and teeth *e'*, and fixed teeth to receive and hold said movable teeth, substantially as specified.

2. In a transom-lifter, the combination, with the spring locking-lever E, provided with guide-roller and guide-slot and teeth *e*, of the tracks for said roller, and fixed rack for said teeth, and connecting-rod *d*, substantially as specified.

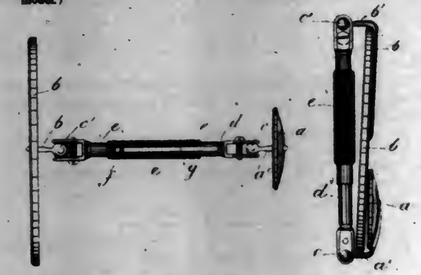
3. In a transom-lifter, the combination, with the elastic and toothed lever E, connecting-rod *d*, and roller e^3 on said lever, of the tracks for said roller, fixed rack for said teeth, and locking device for said lever, substantially as specified.

4. In a transom-lifter, the combination, with the right-angled and toothed lever E, provided with roller and connecting-rod *d*, and locking-spring *h*, of the tracks for said roller, fixed teeth to interlock with those of the rod E, and guide for said lever, substantially as specified.

404,020.



404,021. DENTAL MIRROR. EDWIN A. TICE, London, County of Middlesex, England. Filed Dec. 1, 1888. Serial No. 292,422. (No model.)

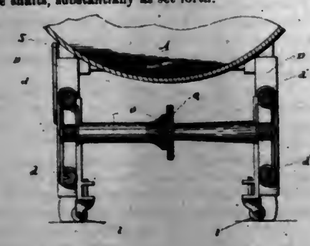


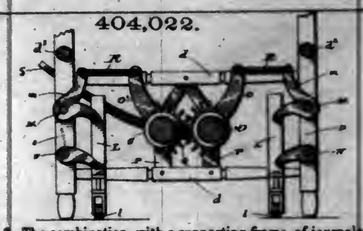
Claim.—In combination, the tube *c*, the tube *d*, fitted to slide within the same, the said tubes having bifurcated ends with adjusting-screws, mirrors having angular extensions *a' b'*, and spherical bearings *c c'*, held between the bifurcated ends of the tubes, substantially as described.

404,022. CASTER-FRAME FOR TUBS, &c. WILLIAM E. WASHBURN, Kansas City, Mo. Filed Dec. 14, 1887. Serial No. 257,915. (No model.)

Claim.—1. The combination, with a supporting-frame, of journaled shafts having intermeshing gears, a lever for operating said shafts, auxiliary supports provided with casters, and connections between the shafts and auxiliary supports, substantially as set forth.

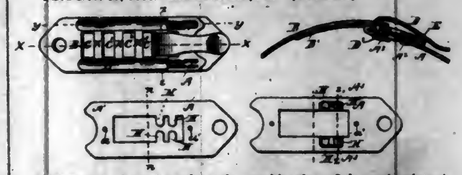
2. The combination, with a supporting-frame, of journaled shafts carrying intermeshing gears, an operating-lever secured to one of said shafts, arms on said shafts, auxiliary supports provided with casters, angle-levers pivoted to the posts of the frame and connected with the auxiliary supports, and rods connecting the angle-levers and the arms on the shafts, substantially as set forth.





3. The combination, with a supporting-frame, of journaled shafts carrying intermeshing gears, an operating-lever secured to one of said shafts, a keeper for said lever, arms on the shafts, angle-levers, and rods connecting them with the arms, auxiliary legs provided with casters pivotally connected with the angle-levers, and arms connecting the auxiliary legs with the posts of the machine-frame, substantially as set forth.

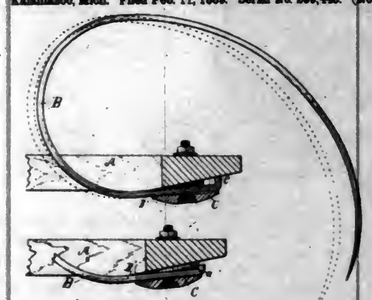
404,023. SHOE-CLASP. GEORGE A. WELD, Winchester, Mass. Filed Nov. 19, 1888. Serial No. 291,272. (No model.)



Claim.—1. In a shoe-clasp, the combination of the main plate A, having inwardly-folded ears H H and depressions A^3 A^3, adapted to be doubled onto itself, with the tongue D, substantially as described, and for the purpose set forth.

2. In a shoe-clasp, the attachment-plate B, having depressed ribs B' B', adapted to rest upon the sides of the clasp-plate A A' and to hold the cross-bars K K K above the spring-plate E, with the spring-plate E and clasp-plate A A', substantially as described.

404,024. HARROW-TOOTH HOLDER. MALCOLM B. WILLIAMS, Kalamazoo, Mich. Filed Feb. 11, 1889. Serial No. 299,443. (No model.)



Claim.—1. The combination of a harrow-beam having an inclined recess, a curved harrow-tooth having a straight shank, a bearing-point for the shank to rest upon between said shank and the inclined recess, and a clip-plate binding said shank to the beam, substantially as set forth.

2. The combination of a harrow-beam having the inclined recess, a curved harrow-tooth having a straight shank, and an inclined or wedge-shaped block between the shank of the tooth and the incline of the recess, substantially as set forth.

404,025. CHECK-ROW CORN-PLANTER. WILBUR M. WILLIAMS, Holden, Mo. Filed Oct. 24, 1888. Serial No. 289,049. (No model.)

Claim.—1. In a check-rower mechanism, the combination, with two sets of oppositely-disposed ratchet-teeth actuated by the planter-wheel, of a toothed ring interposed between the said sets of ratchet-teeth, means for throwing the toothed ring into engagement with either set of ratchet-teeth, the feed mechanism, and means for communicating the motion of the toothed ring to the feed mechanism, substantially as set forth.

2. The combination, with the feed mechanism and the ground-wheel of the planter, of two circular series of ratchet-teeth secured to the ground-wheel and concentric therewith, and a cam-carrying ring for operating the feed mechanism, the cam-carrying ring being loosely

404,025.



mounted between the said series of ratchet-teeth and having interlocking ratchet-teeth on its opposite edges, substantially as set forth.

3. The combination, with the feed mechanism, the ground-wheel of the planter, and operating devices connecting the ground-wheel and feed mechanism, of a pair of rising and falling markers, an inclined guideway, a slide seated in said guideway, flexible connections between the slide and the markers, and a holding and releasing device in connection with the slide and feed mechanism for operating the slide, and hence the markers, simultaneously with the dropping of the corn, substantially as set forth.

4. The combination, with the feed mechanism, the ground-wheel of the planter, and operating devices connecting the ground-wheel with the feed mechanism, of a pair of rising and falling markers, a guideway, a slide seated in the guideway, connections between the slide and markers, a spring-actuated latch to hold the slide, and a latch-operating lever in engagement with the spring-latch and with the feed mechanism, substantially as set forth.

5. The combination, with the feed-bar and the ground-wheel adapted to actuate the feed-bar, of a guideway, a slide seated in the guideway, a pair of rising and falling markers connected with the slide, a spring-actuated latch, a latch-operating lever in engagement with the feed-bar, and a guide located in the path of the latch-operating lever to throw it out of engagement with the feed-bar as it reaches the end of its stroke, substantially as set forth.

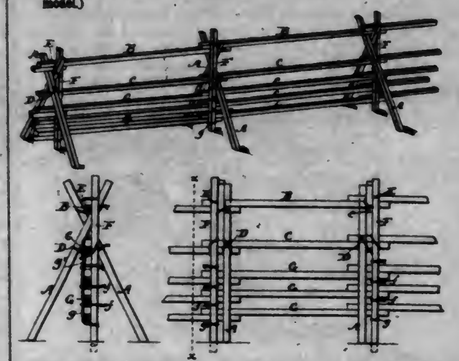
6. The combination, with the feed mechanism, the rotary cam and its support, the rising and falling markers, and the slide connected with the markers, of the toothed plate between which the cam-support is mounted and the springs for holding the cam-support in normal engagement with one of the toothed plates, substantially as set forth.

7. The combination, with the feed mechanism, the rotary cam-support, the rising and falling markers, and the slide connected with the markers, of the side-actuating arm on the cam-support, substantially as set forth.

8. The combination, with the rotary cam-support and the circular series of teeth between which it is mounted, of the pawl pivoted to an arm on the periphery of the cam-support, the said pawl carrying a claw-bar adapted to engage one of the series of teeth when the pawl is rocked forward, substantially as set forth.

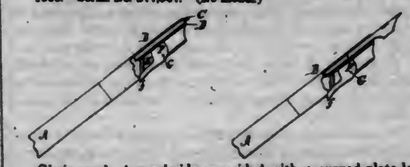
9. The combination, with the rotary cam-support and the series of teeth between which it is mounted, of the pawl pivoted to an arm on the periphery of the cam-support, the said pawl carrying a spring-actuated claw-bar adapted to engage one of the series of teeth, and a spring to hold the pawl normally tilted away from the arm to which it is pivoted, substantially as set forth.

404,026. FENCE. WILLIAM R. ARNETT and CALVIN W. ARNETT, Fairmont, W. Va. Filed Mar. 16, 1889. Serial No. 303,507. (No model.)



Claim.—As an improvement in fences, the combination of the cross-stakes A, the under crotch-rails, C, the upper crotch-rails, B, the lashings E, surrounding the ends of the rails B and of the stakes A, the two vertical binder-posts F between the crossed stakes of one panel of fence, the rails G, and the rail-supporting wire *g*, having its lower end fastened to the post F and its upper end encircling the under crotch-rails, C, and said binder-post opposite said rails, substantially as shown and described.

404,027. PEN-HOLDER. GEORGE W. BALDWIN, Schaghticoke, N. Y., assignor of one-half to George H. Stevenson, same place. Filed June 19, 1888. Serial No. 277,567. (No model.)



Claim.—1. A pen-holder provided with a curved plate loosely secured within the tube, and a cam, whereby a pen may be clamped between the curved plate and the tube by means of the cam, as set forth.

2. A pen-holder provided with two curved plates loosely secured within the tube, and a cam, said plates being of different curves, as set forth.

3. A pen-holder provided with two curved slotted plates, a pin passing through the slots and secured to the tube, and a cam-clamp operating to secure a pen in the holder, as set forth.

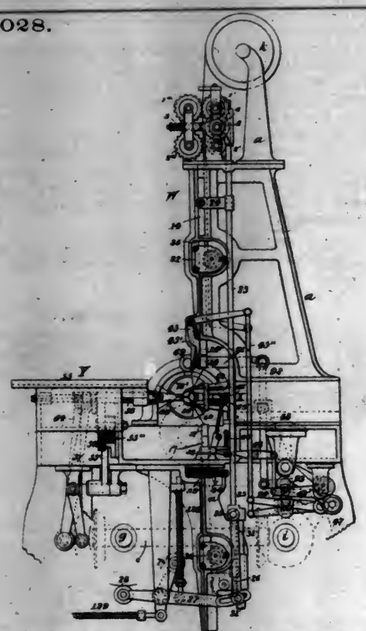
404,028. BOTTLE-WIRING MACHINE. ANDREW CAMPBELL, Brooklyn, assignor, by mesne assignments, to The H. B. Abbott Machine Company, New York, N. Y. Filed Oct. 1, 1888. Serial No. 286,905. (No model.)

Claim.—1. In a bottle-wiring machine, the combination, with a double set of wire-feeding wheels, of two sets of reciprocating wire-guides and a primary twister which unites the two wires between the upper and lower pairs of guides, substantially as set forth.

2. In a bottle-wiring machine, the combination, with two sets of wire-feeders for the wires driven at different rates of speed, of two sets of reciprocating wire-guides which move at different rates of speed, and a primary twister which unites the wires between the upper and lower pairs of guides, substantially as set forth.

3. In a bottle-wiring machine, the combination, with feeders which feed the two wires, of upper and lower reciprocating guides

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through which the wires pass longitudinally, said guides being axially aligned, wire-cutters for severing the wires at the upper guides, and a twister which unites the wires exposed by the separation of the upper and lower guides, substantially as set forth.

4. In a bottle-wiring machine, the combination, with the wire-feeders, of the reciprocating upper wire-guides and the guide-tubes which lead the wires from the feeders into the guides.

5. The combination, with the upper guide for the wire provided with a cutter-slide and its spring, of the elbow-lever having one arm arranged in the path of the projecting end of said slide, and the rod, lever, and cam which actuates said elbow-lever, substantially as set forth.

6. The combination, with reciprocating guides for the wires, of the primary twister for uniting the same between the upper and lower guides, said twister consisting of the tubular shaft rotating concentrically about the guides, the elbow-lever 41, mounted on said shaft, the twisting-blades 42, carried by said lever, the spring which actuates said blades, and the cam and lever whereby the blades are retracted, substantially as set forth.

7. The combination, with the shaft 38, the elbow-lever 41 carried thereby, the twisting-blades 42, carried by said lever, the spring which actuates said blades, the pinion 39 on said shaft, the wheel 127, gearing with said pinion, the pinion 126, ratcheted to wheel 127, the rack that drives the pinion 126, the lever 43, which retracts the twister-blades, provided with a keeper-notch to engage the arm of the elbow-lever 41, and the cam which actuates the lever 43, substantially as set forth.

8. The combination, with the upper guide, 14, and lower guide, 17, of the rod 23, connected to the upper guide, the connecting-rod 26, coupling said rod to the cam-lever, said cam-lever, the cam which actuates said lever, the rack 31, connected with rod 23, the rack 29 on the guide 17, and the toothed wheel 30, rotatively mounted in the frame and gearing on its opposite sides with the said racks 29 and 31, whereby the upper and lower guides are moved simultaneously in opposite directions.

9. The combination, with the two wire-guides forming a pair, arranged side by side and provided with racks, of the two connected pinions 33 and 33', of different diameters, gearing with the respective racks on the guides, whereby the movement of one guide of the pair imparts to the other guide a movement in the same direction, but at a different rate of speed.

10. In a bottle-wiring machine, the lower wire-guides, each provided with a clamp for the wire, substantially as set forth.

11. The combination, with the lower wire-guide, 17, provided with a longitudinal passage for the wire, of the clamp-jaw 18, arranged to bear on the wire, its spring 19, the loose pin 20, and the other lower wire-guide, 17', provided with a cam-like projection, 22, arranged to stand under said pin 20 when the two guides stand at the same elevation, substantially as set forth.

12. The combination, with the pair of wire-guides, each guide being provided with a rack on its face, of the frame 32, embracing said guides, the connected pinions 33 33', frictionally mounted in said frame and gearing with the respective racks, said pinions having different diameters, and the machine-frame a, loosely embracing said frame 32, so as to permit the guides to carry the frame and pinions a limited distance, substantially as set forth.

13. The combination, with the wire-feeding wheels 1 1', provided with gears 13 13', respectively, said gears having different diameters, of the rack 6, the wheel 5, gearing therewith, the shaft 4, the wheel 8 on said shaft, provided with a pawl, 9, the sleeve 11 on the shaft 4, the gears 12 12', fixed on said sleeve and gearing, respectively, with said gears 13 13', and the ratchet-wheel 10, fixed on said sleeve 11 and engaged by said pawl, substantially as set forth.

14. In a bottle-wiring machine, the device for placing or applying the band about the neck of the bottle, consisting of a reciprocating carriage, a pair of forked placing-fingers, 50 50, mounted in sliding bearings in said carriage and provided with a spring, 51, and a shoulder, 49', a pair of forked fingers, 52 52, fulcrumed on short levers 53 53, pivoted on the carriage, the said short levers having their tails arranged in the path of the shoulder 49', a spring arranged between the tails of the fingers 52, and the retracting-springs 54 54, all arranged to operate substantially as set forth.

15. The combination, with the wire-guides and the primary twister which form the wire band, the axis of said guides being at right angles to the axis of the bottle in the machine, of clamps for holding the bottle while it is being wired, the band-placer X, adapted to place the formed band about the bottle-neck, and a secondary twister arranged opposite the band-placer, which closes the band about the bottle-neck, substantially as set forth.

16. A twister for closing the band, consisting of a rotating tubular shaft, 58, two jaws, 60 and 60', hinged to the end of said shaft and provided with teeth, as described, to embrace the wires, and one of said jaws provided with a tooth which takes between the wires, the slide-rod 61 in shaft 58, and the device attached to rod 61 for actuating said jaws, said device comprising a spreader between the jaws and rollers or blocks 63 63', bearing on the exterior faces of the respective jaws and connected to said slide-rod, substantially as set forth.

17. In a bottle-wiring machine, a support and holder for the bottle, consisting of a reciprocating slide mounted on the machine-frame, a bearing-clamp which embraces the body of the bottle elastically, and a reciprocating carriage mounted in the machine-frame and bearing a clamp that embraces the bottle-neck elastically, said carriage being capable of movement to a limited extent independent of each other, whereby the bottle-neck is moved through the neck-clamp by the body-clamp, as and for the purposes set forth.

18. The combination, with the reciprocating carriage 100, of the reciprocating carriage 116, the rod 101, secured to the carriage 100, provided with collars 117 and 117' and playing through a lug on the carriage 116, said lug being arranged between said collars, the spring-actuated clamp mounted on carriage 100, and the spring-actuated clamp for the bottle-neck mounted on the carriage 116, substantially as set forth.

19. The combination, with the carriage 100, of the lateral jaws 106 106', pivoted thereon, the sliding jaw 106", the shaft 107', the wheel 107, fixed thereon, the links 108 108', coupled at one end to the respective jaws 106 106' and at the other end to the wheel 107, the disk 110, carried by the wheel 107, the link 108", coupling the jaw 106" to said disk, and the spring 111, which sets the jaws of the clamp, substantially as set forth.

20. The combination, with the carriage 116, the jaws 118, mounted thereon, the connected knuckle-levers which actuate said jaws simultaneously, the arm 119', connected with one of said levers and coupled to the rod 120, the said rod, and the spring 121 thereon, which closes said jaws, substantially as set forth.

21. The combination, with the carriage 100, the jaws of the clamp thereon, the gear-wheel 107, the links connecting said wheel with the jaws, the spring that closes the jaws, and the mechanism which opens the jaws, consisting of the long pinion 112, rotatively mounted in the frame and gearing with wheel 107, the segment-rack gearing with said pinion, the lever 114, and the operating-cam, substantially as set forth.

22. The combination, with the cam 113, the lever 114, the rack 115, the long pinion 112, gearing with said rack, its shaft 112', provided with a crank, 112", the carriage 116, the jaws of the neck-clamp mounted therein and their knuckle-levers, the slide-rod 120, coupled to the knuckle-levers and provided with a pin, 120', and the spring on rod 120, whereby, when the carriage 116 is drawn back, the pin 120' may be engaged by crank 112" for releasing the clamp, as set forth.

23. In a bottle-wiring machine, the combination, with a clamp that holds the bottle and a movable carriage on which said clamp is mounted, of pushers on said carriage and elastically embracing the neck of the bottle, said pushers being adapted and arranged to push the strands of the wire up over the fillet on the bottle, as set forth.

24. The combination, in a bottle-wiring machine, of a movable holder for the bottle, carrying forked pushers to engage the radial branches or strands of wire, said pushers elastically embracing the bottle-neck, and the movable crown or crown-twister serving as an abutment to stop the movement of the bottle while the said pushers are in action, as set forth.

25. The combination, with the carriage 116 and the neck-clamp mounted thereon, of the pushers 122, hinged to the jaws of the neck-clamp and provided with suitable springs, 122', substantially as set forth.

26. The combination, with the carriage 116 and the neck-clamp mounted thereon, of the spring-supported guide 123, mounted on said carriage.

27. In a bottle-wiring machine, the means for gathering the wires over the cork and to the center of the same, said means consisting of the casing, as 73, having a face-plate with slots to receive and guide the wires, which stands near the end of the cork, pushers, as 122, which push the wires up over the fillet and into said slots, and vibrating gatherers, as 75, which play in said slots and bunch the gathered wires at the center of the cork, all combined substantially as set forth.

28. The combination, with the rotatively-mounted casing, as 73, having radial slots in its face-plate to receive the wires, of the vibrating gatherers that play in said slots, the movable twisting-jaws in said casing that clamp on the wires, and the movable cutters that sever the twist, also mounted in said casing, substantially as set forth.

29. The crown-twister having its shaft mounted to rotate in swinging arms, whereby a lateral motion may be imparted to said twister in order to flatten the twist upon the cork.

30. The combination, with the casing 73, having a radially-slotted face-plate, of the gatherers 75, arranged to play in said slots and provided with gear-teeth at their pivoted ends, the tubular shaft of the casing, the slide-bar 76, arranged within said shaft and having a rack or racks on its inner end engaging the teeth on the gatherers, the spring which retracts the gatherers, and the cam and lever which actuate said gatherers through the bar 76, substantially as set forth.

31. The combination, with the bar 69, mounted loosely in suitable bearings, and the bearing-brackets 70, fixed to said bar, of the shaft 71, mounted rotatively in said bearings and provided with a pinion, 84, the casing 73 on the end of said shaft 71, the rocking lever 91, whereby said casing is moved or swung laterally, the lever 72, coupled to bar 69, whereby endwise movement is imparted to the casing, and the sector 85, gearing with pinion 84, substantially as set forth.

32. The combination, with the slotted shaft, as 58, of the secondary twister and the twisting-jaws hinged thereon, the jaw-actuating slide-rod, as 61, within said shaft, the slide 65', pinned thereto and sliding on shaft 58, the operating-slide 67, mounted on slide 65', and the cushion-spring 67', whereby the jaws of the twister are made to clamp the wires elastically, for the purpose set forth.

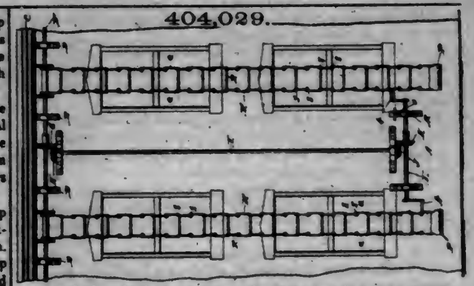
33. In a bottle-wiring machine, the combination, with two pairs of movable wire-guides which separate and thus expose the middle portions of the wires, in which the uniting-twists are formed, of mechanism, substantially as described, for actuating said guides, a primary twister which forms simultaneously the two uniting-twists in the wires between the ends of said guides, and mechanism, substantially as described, for actuating said twister.

34. In a bottle-wiring machine, the combination, with two pairs of movable wire-guides which separate and expose the middle parts of the wires by their movement thereon, of mechanism, substantially as described, for actuating said guides, a twister for simultaneously forming two twists in the exposed portions of the wires, said twister comprising two united blades adapted to embrace the wires and rotating about the latter, and mechanism, substantially as described, for actuating said twister, as set forth.

404,029. FIRE-ESCAPE. FREEMAN D. CHANDLER, Friendship, N. Y. Filed Jan. 31, 1888. Serial No. 262,945. (No model.)

Claim.—1. In a fire-escape, the combination of the horizontal main shaft, flexible ladders arranged to be wound upon drums on said shaft, a horizontal operating-shaft at the base of the building, a

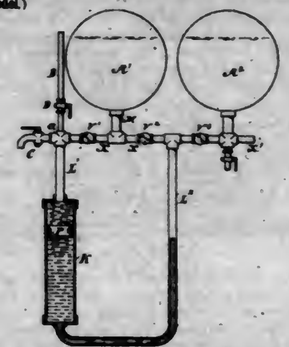




counter-shaft and miter-gear connecting the operating-shaft with the main shaft, and a hand-screw arranged in one of the bearings of the operating-shaft and adapted to press against the latter, so as to form a brake or lock, substantially as and for the purpose set forth.

2. In a fire-escape, the flexible ladder consisting of a single strip or band of sheet metal, having struck-up portions wound around the intermediate cross-bars thus formed, and constituting the rungs of the ladder, substantially as herein set forth.

404,030. APPARATUS FOR ELEVATING WATER. NATHANIEL A. COMSTOCK, Brooklyn, N. Y. Filed Aug. 23, 1888. Serial No. 283,559. (No model.)



Claim.—1. The combination, with a supply-pipe, B, of a pipe, X, in communication with the pipe B and comprised in a distributing system for buildings, two reflow check-valves in the pipe X, a compressed-air chamber in communication with the pipe X between said reflow check-valves, a receiver for water connected with the pipe X at two points, said valves being located between such connections, a third check-valve beyond said connections, and a pressure-exerting device in said receiver, substantially as and for the purpose specified.

2. The combination, with a supply-pipe, B, of a pipe, X, in communication with the pipe B and comprised in a distributing system for buildings, two reflow check-valves in the pipe X, a compressed-air chamber in communication with the pipe X between said reflow check-valves, a receiver for water connected with the pipe X at two points, said valves being located between such connections, a third reflow check-valve in the pipe X beyond the two valves first named, a second compressed-air chamber beyond the third reflow check-valve, and a pressure-exerting device in said receiver, substantially as and for the purpose specified.

404,031. TRUCK-BEAM FOR RAILWAY-CARS. JOHN COUP, New York, N. Y. Filed Mar. 4, 1887. Renewed Mar. 30, 1889. Serial No. 305,499. (No model.)



Claim.—1. A draft-beam for railway-cars, made in swinging sections and extending throughout the entire length of a car, and to which the car-body is attached, substantially as described.

2. A draft-beam for railway-cars, made in sections pivotally con

nected and having recesses or chambers at their outer ends to support a draw-bar, substantially as described.

3. A draft-beam for railway-cars, made in sections and provided with a recess in each outer end, and a pin or stud in the rear of said recess, in combination with a suitable draw-bar and buffer, substantially as described.

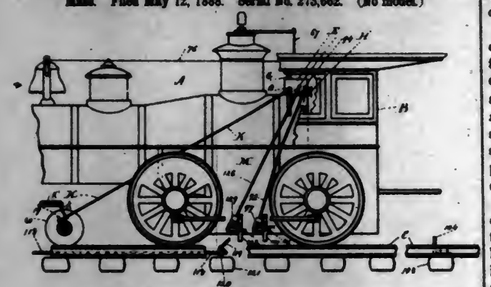
4. A draft-beam for railway-cars, made in sections and each section provided with a transverse recess or groove in its upper surface, in combination with a bolt having an elongated head adapted to slide in said groove, substantially as described.

5. A draft-beam for railway-cars, having recesses in the outer ends and a projecting pin or stud, in combination with a draw-bar having a chamber in its rear end, a spring, and a buffer, substantially as described.

6. A draft-beam for railway-cars, made in sections pivotally connected and secured to king-bolts which engage with the trucks, in combination with a car-body connected to the beam and adapted to swing laterally at its ends, substantially as described.

7. A draft-beam for railway-cars provided with transverse curved recesses or grooves on its upper surface, in combination with a car-body connected to said beam by headed bolts engaging with said grooves and to the center of the beam by a fixed bolt on which the body oscillates, substantially as described.

404,032. DEVICE FOR INDICATING AND RECORDING THE SPEED, &c., OF RAILROAD-TRAINS. HERBERT L. CURRIER, Lynn, Mass. Filed May 12, 1888. Serial No. 273,662. (No model.)



Claim.—1. The combination of a record-slip, actuating mechanism therefor connected with an axle of the train, a shaft provided with two gear-wheels, a horizontally-sliding rod provided with a rack at one end which is engaged by one of said gear-wheels and with a pencil-holder at the opposite end for carrying a pencil to inscribe said record-slip, a centrifugal governor comprising upper and lower inter-sliding tubes, arms hinged thereto and balls on said arms, the upper tube being provided with a cap having an interior chamber and the lower tube with a pinion, a vertical rod extending through said tubes and provided with a collet on its upper part within said chamber and with a rack at its lower end which engages the other of said gear-wheels, and mechanism for actuating said pinion connected with an axle of the train.

2. The combination of a record-slip, actuating mechanism therefor connected with an axle of the train, a shaft provided with two gear-wheels, a horizontally-sliding rod provided with a rack at one end which is engaged by one of said gear-wheels and with a pencil-holder at the opposite end for carrying a pencil to inscribe said record-slip, a centrifugal governor comprising upper and lower intersliding tubes, arms hinged thereto and balls on said arms, the upper tube being provided with a cap having an interior chamber and the lower tube with a pinion, a vertical rod extending through said tubes and provided with a collet on its upper part within said chamber and with a rack at its lower end which engages the other of said gear-wheels, mechanism for actuating said pinion connected with an axle of the train, an indicator, and a rack on the upper end of said vertical rod and engaging a pinion of the indicator for actuating the index-finger thereof.

3. In a device of the character described, the combination of a case, a record-slip within said case, mechanism actuated by a wheel of the train for moving said slip, a clock hinged to said case, the main shaft or arbor and sleeve thereof being extended and journaled in said case, two disks disposed, respectively, on said shaft and sleeve and provided with type-numerals on their peripheries, a track provided with a fixed vertically-arranged bar, and adjunctive mechanism on the train adapted to engage said bar and cause said disks to be forced against the slip and their numerals imprinted thereon, substantially as specified.

4. In a device of the character described, the combination of a locomotive, a track, a case, a record-slip within said case, mechanism actuated by a wheel on the locomotive for moving said slip, a clock hinged to said case and having its main shaft and sleeve journaled therein, two disks provided with type-numerals on their peripheries and respectively secured to said shaft and sleeve, a horizontal lever pivoted in said case, a curved elastic lever connecting said horizontal lever and shaft, a bell-crank lever pivoted to said locomotive, a vertically-arranged rod connecting said bell-crank lever with said horizontal lever, and a bar secured to the track in position to engage an arm of said bell-crank lever as the train passes over the same, substantially as set forth.

5. In a device of the character described, the combination of a case, a record-slip within said case, feed-rolls for said slip, mechanism actuated by a wheel of the train for rotating said rolls, a pencil disposed within said case, a track, a crossing-gate for said track, mechanism operated by said gate, whereby a bar is thrown into a vertical position on said track when the gate is lowered, and adjunctive mechanism on the locomotive adapted to be tripped by said bar and cause said pencil to indent said slip, substantially as specified.

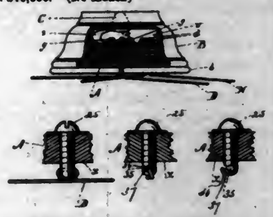
6. In a device of the character described, the combination of a case, a record-slip within said case, feed-rolls for said slip, mechanism for actuating said feed-rolls driven by a wheel on the train, a pencil, a horizontal lever pivoted in said case, a curved elastic lever connecting said horizontal lever and pencil, a bell-crank lever pivoted to the locomotive, an inclined rod connecting said horizontal lever and bell-crank lever, a track, a crossing-gate, and mechanism operated by the gate to throw a bar upward on said track when the gate is lowered in position to engage said bell-crank lever and cause the pencil to indent the slip as the train passes the gate, substantially as set forth.

7. In a device of the character described, the combination of a case, a record-slip within said case, feed-rolls for said slip, mechanism for actuating said feed-rolls driven by a wheel of the train, a pencil disposed within said case, a track, a crossing-gate operated by a crank, a rod disposed horizontally on said track, a lever pivoted to said crank and rod, a bell-crank lever pivoted to a tie and to the outer end of said rod, so that an arm thereof will project above the track when said gate is lowered, and mechanism disposed on the locomotive in position to be tripped by said bell-crank lever as the train passes and cause said pencil to indent said slip, substantially as specified.

8. The combination, with a railway-vehicle, of a time-recorder comprising a record-slip, mechanism actuated by a wheel of the vehicle for moving said slip, a disk provided with type-numerals indicating hours adapted to print on said slip, a disk provided with type-numerals indicating minutes, also adapted to print on said slip, a clock for rotating said disks, a fixed bar projecting from the road-bed, and mechanism on the train adapted to be tripped by said bar for causing said disk to imprint said slip.

9. In a device of the character described, the combination of a record-slip, a pencil adapted to mark or indent said slip, mechanism actuated by a wheel of the train for moving said slip, a crossing-gate, a bar connected with said gate and adapted to be thrown into position to engage mechanism on the train inclosing said gate, and adjunctive mechanism on the train adapted to engage said bar as the train passes it and cause said pencil to indent said slip, substantially as set forth.

404,033. PUSH-BUTTON. HERBERT L. CURRIER, Lynn, Mass., assignor to himself and Albert H. Breed, same place. Filed July 12, 1888. Serial No. 279,699. (No model.)



Claim.—1. The combination of an insulating block or body provided with a recess or chamber in its under side, a metallic plate on the upper side of said body, a metallic spring, also on the upper side thereof, a cap surrounding said body, a push-button in said cap for forcing said spring into contact with the plate, and screws passing through said plate and spring, respectively, and through said body into the chamber in the under side thereof, said screws being provided with hooks at their lower ends within said chamber for the conducting-wires.

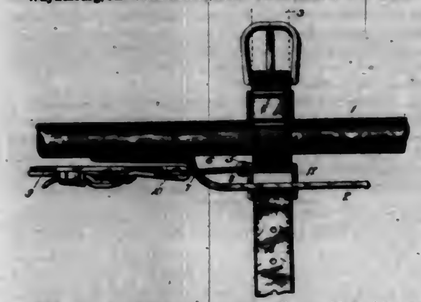
2. The combination of an insulating block or body, a metallic plate on the upper side thereof, a metallic spring, also on the upper side thereof, a cap surrounding said body, a push-button in said cap for forcing said spring into contact with the plate, and screws passing through said plate and spring, respectively, and through said body, said screws being provided at their lower ends with hooks which are entirely within the circumference of said body.

404,034. FRAME FOR HOLDING COPYING-PLATES. ALBERT R. DICK, Chicago, Ill. Filed Oct. 11, 1887. Serial No. 252,004. (No model.)



Claim.—The frame A, frame B, having the groove *a*, copying-plate I, fasteners C, and ears E, in combination with the pins *c c'*, spring-plate F, and base G, for securing the copying-plate in position for use, substantially as described.

404,035. HOLDBACK FOR VEHICLES. ROLAND F. DULANY, Waynesburg, Pa. Filed Feb. 28, 1889. Serial No. 301,464. (No model.)



Claim.—1. In a holdback, a pair of thills provided with prongs upon their under surface, in combination with a back-strap terminating in loops for receiving the thills and provided with rearward strap-loops having a double-eyed metallic coupling, and a holdback-strap or breeching terminating in opposite loops and connected with one of the eyes of the coupling, substantially as specified.

2. The shaft 1, having the prong 2, in combination with the back-strap 3, terminating in the thill-receiving loops 4, having the end loops, 5, the metallic couplings 6, having the opposite eyes, 7 and 8, the latter connected with the loops 5 and the former passing over the prong 2, and the holdback-strap 9, having the opposite loops 10, connected with the eyes 7, substantially as specified.

404,036. CARD-SETTING-MACHINE REST. NATHAN C. ROTH, Smithfield, R. I., assignor of one-half to J. & J. Murdock, Leicester, Mass. Filed Mar. 25, 1889. Serial No. 304,645. (No model.)

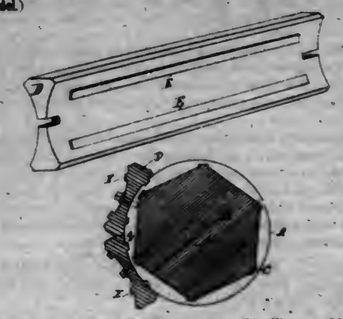


Claim.—1. In a card-setting machine, the combination, with the rest and its supporting-frame, of a supplemental adjustable rest adapted to present new points of wear for the wires which are supported thereon when the second bend is being made, substantially as set forth.

2. In a card-setting machine, the combination, with the rest adjustable back and forth on its supporting-frame, of a supplemental rest-blade adjustable laterally or endwise and means for securing the same to the rest, substantially as and for the purpose stated.

3. In a card-setting machine, the combination, with the rest adjustable back and forth on its supporting-frame and means for securing it in place, of a supplemental rest-blade movable laterally or endwise on said rest and wedge pieces and holding-screws for securing said supplemental rest in place, substantially as shown and described.

404,037. CONCAVE FOR HULLING-CYLINDERS. WILLIAM R. FIFE, Cincinnati, Ohio, assignor to the National Cotton Seed Oil and Huller Company, Memphis, Tenn. Filed Apr. 11, 1887. Serial No. 234,362. (No model.)



Claim.—1. A stave for the concave of hulling-machines, consisting of the part D, concave upon both sides and having the ribs E projecting from the concave parts upon opposite sides.

2. The combination, in a hulling-machine, of the hulling-cylinder, the end housings, A, and the staves D, said staves being concaved upon both faces and having the integral ribs E projecting from the opposite concaves and secured upon the housings, substantially as hereinbefore set forth.

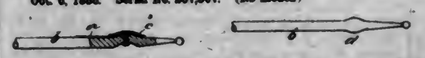
3. The staves D for hulling-cylinders, concave upon both faces and having the ribs E arranged opposite each other upon both concave surfaces, substantially as set forth.

404,038. DOOR-CHECK. THOMAS K. HANNBERRY, Norton, Kans. Filed July 12, 1888. Serial No. 279,696. (No model.)



Claim.—A combined door check and buffer consisting of a lever adapted to be pivoted centrally to a door and normally lie horizontally along the door out of contact with the floor, and having its lower portion curved and serrated and capable of engaging the floor and its upper portion straight and provided with a lateral projection, serving as a handle and a buffer, substantially as described.

404,039. UMBRELLA. CHARLES W. HARRIS, Hartford, Conn. Filed Oct. 6, 1888. Serial No. 287,367. (No model.)

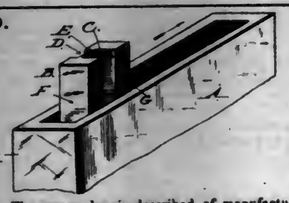


Claim.—1. As a new article of manufacture, an umbrella consisting of a stick, a frame the ribs of which are swelled near their ends and perforated at the swelled part, and a cover attached to the frame by metallic fastenings, each consisting of an enlarged head and a solid shank, which shank passes through the opening in the rib and is headed over on the side opposite from the enlarged head to cause the head to hold the cover close to the top of the swelled part of the rib, substantially as specified.

2. As a new article of manufacture, an umbrella consisting of a stick, a frame the ribs of which are swelled near their end and perforated at their swelled part, and a cover attached to the frame by metallic fastenings with oblong heads, their longer diameter being in the direction of the length of the ribs, the shanks of the fastenings passing through the perforations and headed over on the under side to cause the oblong heads to bite the cover between the fastenings and the swelled upper face of the rib, substantially as specified, and for the purpose set forth.

404,040. PROCESS OF MANUFACTURING ARTIFICIAL STONE. WILLIAM R. HAYNES and SAMUEL R. REAGEN, Denver, Colo. Filed Oct. 24, 1888. Serial No. 289,029. (No model.)

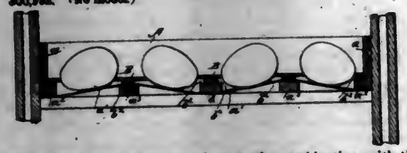
404,040.



Claim.—1. The process herein described of manufacturing artificial stone, consisting, essentially, in tamping on edge or end charges of coarse and fine material, the coarse material being on one side and the fine material being on the other side, substantially as herein described.

2. The process herein described of manufacturing artificial stone, consisting, essentially, in discharging into a suitable mold charges of coarse and fine material, so that the coarse material occupies one side of the mold and the fine material the opposite side, tamping said materials on edge or end, so that they may be caused to unite, advancing the mold longitudinally, then adding fresh charges, and finally tamping said charges, substantially as herein described.

404,041. **EGG-TRAY FOR INCUBATORS.** JOHN W. HILE, Valley Falls, Kans. Filed July 19, 1887. Renewed Feb. 23, 1889. Serial No. 300,982. (No model.)

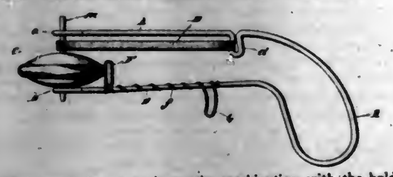


Claim.—1. In an incubator-drawer, the combination, with the side walls, *a*, and cross-strips a^2 a^3, of the fabric *a'*, passed alternately under and over said cross-bars, substantially as and for the purpose described.

2. The combination of an incubator-drawer having inclined surfaces upon which the eggs are supported, and a division-board having egg-shaped openings into which the eggs are fitted and held in an inclined position, substantially as described.

3. The combination of an incubator-drawer having cross-strips a^2 a^3, and canvas bottom *a'*, passed alternately under and over the said strips, and the division-board B, having egg-shaped openings and supported to slide upon the strips a^2, substantially as herein shown and described.

404,042. **TOP-SPINNER.** FREDERICK L. JOHNSON, Wallingford, Conn. Filed Nov. 23, 1888. Serial No. 291,632. (No model.)



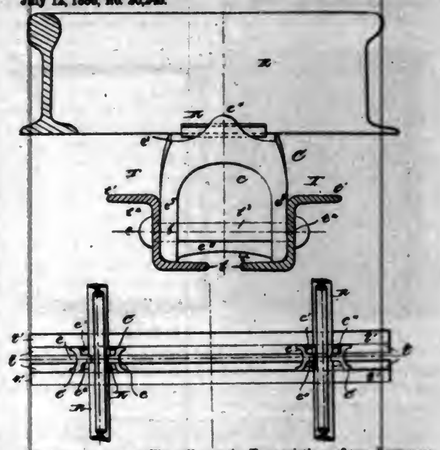
Claim.—1. In a top-spinner, the combination, with the holder comprising the two jaws *a* and *b* and the elastic secured at one end to the holder and adapted to have its other end wound around the shank of the top between the said two jaws, of the stop, the trigger, and the spring extended between and connecting the stop with the trigger, substantially as and for the purpose described.

2. The combination, with the holder having jaws, as *a* and *b*, to receive the shank of the top, of the elastic, as D, secured at one end to the holder and adapted to have its other end wound on the shank of the top between the two jaws, whereby when the top is released the reaction of the said elastic will spin the same, substantially as described.

3. The combination of the holder having approximately parallel arms and having jaws at the ends of the arms, the elastic D, adapted to be wound on said shank between the said jaws secured at one end to a projection of one of the arms, and the spring *f*, mounted on the other arm, the stop F at one end of the spring and the trigger G at the other end, substantially as specified.

4. The herein shown and described top holder and spinner, composed of a single wire bent to form the arms A and B, the jaws *a* and *b*, the handle H, and the projection *d*, the wire bent to form the stop F, the spring *f*, and the trigger G, and mounted on the arm B, and the elastic D, secured to the projection *d*, substantially as set forth.

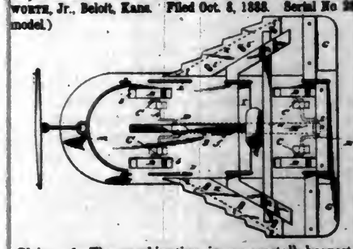
404,043. **METALLIC SLEEPER FOR RAILROADS.** FERDAN KOLSRAT, Brussels, Belgium. Filed Nov. 23, 1886. Serial No. 291,624. (No model.) Patented in Belgium Dec. 5, 1885, No. 71,103; in France Jan. 5, 1886, No. 173,806; in England Mar. 16, 1886, No. 3,666, and in Italy July 12, 1886, No. 20,943.



Claim.—1. A metallic railway-tie, T, consisting of two bars composed of a vertical web, and flanges *t t'*, projecting at right angles thereto in opposite directions, and a chair, C, interposed between said bars and bolted to the vertical web thereof, said chair being provided with lugs or horns c^4 for the reception of the rail-foot, substantially as and for the purposes specified.

2. A metallic railway-tie, T, consisting of two bars composed of a vertical web, and flanges *t t'*, projecting at right angles thereto in opposite directions, and a chair, C, interposed between said bars and bolted to the web thereof, said chair having open sides and top, a web, c^3, connecting the front and rear walls, and lugs or horns c^4, for the rail-foot, substantially as and for the purposes specified.

404,044. **STALK-FODDER HARVESTER.** HENDERSON F. LONGWORTH, Jr., Beloit, Kans. Filed Oct. 8, 1888. Serial No. 287,406. (No model.)



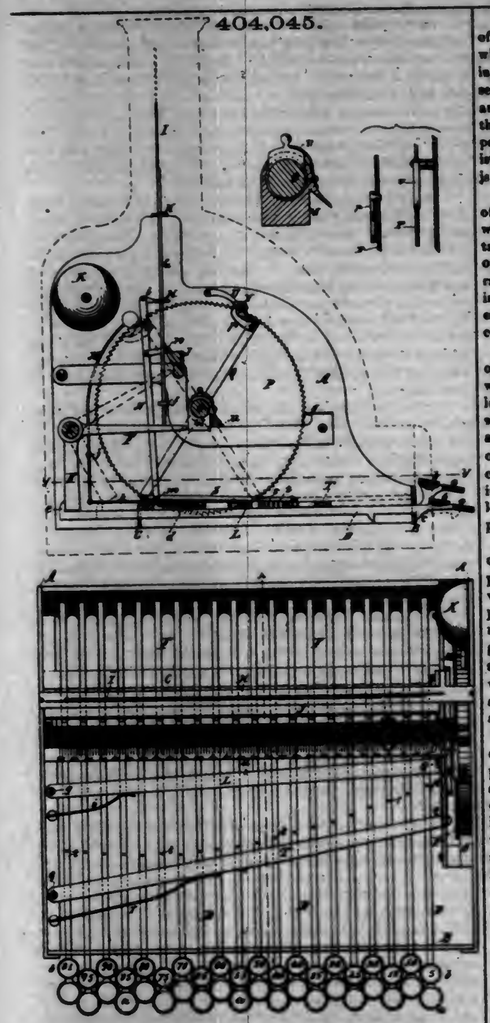
Claim.—1. The combination, in a cornstalk-harvester having a vertically-adjustable sled-runner frame, of the hinged detachable wings, the cutting-blades adjustably applied to the hinged detachable wings, the side guards, L, the keepers *h*, and a locking-bar, H, substantially as specified.

2. The combination, in a cornstalk-harvester having a sled-runner frame with slots *b* vertically through it, of the hinged detachable wings, the cutting-blades adjustably applied to the wings, the side guards, L, the keepers *h*, the locking-bar H, the double-cranked axles journaled beneath the frame, wheels applied on said axles and adapted to move in the slots of the frame, the bar E, having a slot, *e'*, and connecting the front and rear axles at their cranked portions, the hand-lever loosely entering the slot in the connecting-bar and pivoted to the main frame, the raised frame F, and engaging devices for the lever arranged on said frame F, substantially as specified.

404,045. **CASH INDICATOR AND REGISTER.** MARCUS U. LOREE, Miamisburg, assignor to the National Cash Register Company, Dayton, Ohio. Filed Mar. 16, 1888. Serial No. 267,205. (No model.)

Claim.—1. In a cash register and indicator, the combination, with a series of horizontally-reciprocating keys of fixed values, of a series of vertically-reciprocating tablet-rods carrying indicating-tablets and a series of bell-cranks actuated by said keys and engaging with said tablet-rods, whereby upon operating any one of said keys its corresponding tablet-rod is elevated to expose its tablet to view, substantially as described.

404,045.



2. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of vertically-reciprocating tablet-rods provided with projections and carrying indicating-tablets, a supporting-wing, and a series of bell-cranks actuated by said keys and engaging with the tablet-rods, whereby upon operating any one of said keys its corresponding tablet-rod is elevated and its tablet held exposed to view, substantially as described.

3. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of bell-cranks pivoted on a horizontal shaft at the rear of the machine, with their vertical arms engaging with the rear ends of the keys, a series of vertically-reciprocating tablet-rods provided with projections and resting at their lower ends on the horizontal arms of said bell-cranks and carrying at their upper ends indicating-tablets, and a supporting-wing, whereby upon operating any one of said keys its corresponding tablet-rod is elevated and its tablet held exposed to view, substantially as described.

4. In a cash register and indicator, the combination, with a series of horizontally-reciprocating keys of fixed values and a registering-wheel provided with a ratchet, of a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, and a pawl actuated by said bar and engaging with the ratchet on the registering-wheel, whereby upon operating any one of said keys its value is registered on said registering-wheel, substantially as described.

5. In a cash register and indicator, the combination, with a series of horizontally-reciprocating keys of fixed values and a registering-wheel provided with a ratchet, of a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, a vibrating pawl-carrier pivoted on the axis of the registering-wheel and connected to said bar, and a pawl carried by said carrier and engaging with the ratchet on the registering-wheel, whereby upon operating any one of said keys its value is registered on said registering-wheel, substantially as described.

6. In a cash register and indicator, the combination, with a series of horizontally-reciprocating keys of fixed values and a registering-wheel provided with a ratchet, of a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, a pawl actuated by said bar and engaging with the ratchet on the registering-wheel, and a stop arranged to engage with said pawl to positively lock the registering-wheel at the completion of the stroke of said pawl, substantially as described.

7. In a cash register and indicator, the combination, with a series of horizontally-reciprocating keys of fixed values and a registering-wheel provided with a ratchet, of a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, a vibrating pawl-carrier pivoted on the axis of the registering-wheel and connected to said bar, a pawl carried by said carrier and engaging with the ratchet on the registering-wheel, and a stop arranged to engage with said pawl to positively lock the registering-wheel at the completion of the stroke of said pawl, substantially as described.

8. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a registering-wheel provided with a ratchet, a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, a pawl actuated by said bar and engaging with the ratchet on the registering-wheel, a horizontal screw-shaft secured to the axis of the registering-wheel and revolving therewith, a pointer on said shaft and engaging with the thread thereof, and a registering-bar along which said pointer travels, substantially as and for the purpose described.

9. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a registering-wheel provided with a ratchet, a horizontally-vibrating bar pivoted at one side of the keys and extending transversely across the same, a series of projections on said keys arranged to engage said bar and vibrate it to different degrees, a pawl actuated by said bar and engaging with the ratchet of the registering-wheel, a horizontal screw-shaft secured to the axis of the registering-wheel and revolving therewith, a pointer on said shaft and engaging with the thread thereof, and a registering-bar along which said pointer travels, substantially as and for the purpose set forth.

10. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a registering-wheel provided with a ratchet, a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, a vibrating pawl-carrier pivoted on the axis of the registering-wheel and connected to said vibrating bar, a pawl carried by said carrier and engaging with the ratchet on the registering-wheel, a horizontal screw-shaft secured to the axis of the registering-wheel and revolving therewith, a pointer on said shaft and engaging with the thread thereof, and a registering-bar along which said pointer travels, substantially as and for the purpose described.

11. In a cash register and indicator, the combination of a series horizontally-reciprocating keys of fixed values, a series of tablet-rods and indicating-tablets operated thereby, a registering-wheel provided with a ratchet, a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, and a pawl actuated by said bar and engaging with the ratchet on the registering-wheel, whereby upon operating any one of said keys its corresponding tablet is exposed to view and its value registered on said registering-wheel, substantially as described.

12. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of vertically-reciprocating tablet-rods operated thereby and provided with projections and carrying indicating-tablets, a supporting-wing, a registering-wheel provided with a ratchet, a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, and a pawl actuated by said bar and engaging with the ratchet on the registering-wheel, whereby upon operating any key its value is registered on the registering-wheel and

its corresponding tablet-rod is elevated and its tablet held exposed to view, substantially as described.

13. In a cash-register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of vertically-reciprocating tablet-rods carrying indicating-tablets, a series of bell-cranks actuated by said keys and engaging with said tablet-rods, a registering-wheel provided with a ratchet, a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, and a pawl actuated by said bar and engaging with the ratchet on the registering-wheel, whereby upon operating any key its corresponding tablet is exposed to view and its value registered on the registering-wheel, substantially as described.

14. In a cash-register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of bell-cranks pivoted on a horizontal shaft at the rear of the machine with their vertical arms engaging with the rear ends of the keys, a series of vertically-reciprocating tablet-rods provided with projections and resting at their lower ends on the horizontal arms of said bell-cranks and carrying at their upper ends indicating-tablets, a supporting-wing, a registering-wheel provided with a ratchet, a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, and a pawl actuated by said bar and engaging with the ratchet on the registering-wheel, whereby upon operating any key its value is registered on the registering-wheel and its corresponding tablet-rod is elevated and its tablet held exposed to view, substantially as described.

15. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of tablet-rods and indicating-tablets operated thereby, a registering-wheel provided with a ratchet, a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, a vibrating pawl-carrier pivoted on the axis of the registering-wheel and connected to said bar, and a pawl carried by said carrier and engaging with the ratchet on the registering-wheel, whereby upon operating any one of said keys its corresponding tablet is exposed to view and its value registered on said registering-wheel, substantially as described.

16. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of vertically-reciprocating tablet-rods operated thereby and provided with projections and carrying indicating-tablets, a supporting-wing, a registering-wheel provided with a ratchet, a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, a vibrating pawl-carrier pivoted on the axis of the registering-wheel and connected to said bar, and a pawl carried by said carrier and engaging with the ratchet on the registering-wheel, whereby upon operating any key its value is registered on the registering-wheel and its corresponding tablet-rod is elevated and its tablet held exposed to view, substantially as described.

17. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of vertically-reciprocating tablet-rods carrying indicating-tablets, a series of bell-cranks actuated by said keys and engaging with said tablet-rods, a registering-wheel provided with a ratchet, a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, a vibrating pawl-carrier pivoted on the axis of the registering-wheel and connected to said bar, and a pawl carried by said carrier and engaging with the ratchet on the registering-wheel, whereby upon operating any key its corresponding tablet is exposed to view and its value registered on the registering-wheel, substantially as described.

18. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of bell-cranks pivoted on a horizontal shaft at the rear of the machine, with their vertical arms engaging with the rear ends of the keys, a series of vertically-reciprocating tablet-rods provided with projections and resting at their lower ends on the horizontal arms of said bell-cranks and carrying at their upper ends indicating-tablets, a supporting-wing, a registering-wheel provided with a ratchet, a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, a vibrating pawl-carrier pivoted on the axis of the registering-wheel and connected to said bar, and a pawl carried by said carrier and engaging with the ratchet on the registering-wheel, whereby upon operating any key its value is registered on the registering-wheel and its corresponding tablet-rod is elevated and its tablet held exposed to view, substantially as described.

19. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of tablet-rods and tablets operated thereby, a registering-wheel provided with a ratchet, a horizontally-vibrating bar arranged transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, a pawl actuated by said bar and engaging with the ratchet on the registering-wheel, and a stop arranged to engage with said pawl to positively lock the registering-wheel at the completion of the stroke of said pawl, substantially as described.

20. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of tablet-rods and tablets operated thereby, a registering-wheel provided with a ratchet, a horizontally-vibrating bar arranged transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, a vibrating pawl-carrier pivoted on the axis of the registering-wheel and connected to said bar, a pawl carried by said carrier and engaging with the ratchet on the registering-wheel, and a stop arranged to engage with said pawl to positively lock the registering-wheel at the completion of the stroke of said pawl, substantially as described.

21. In a cash register and indicator, the combination of a series of horizontal reciprocating keys of fixed values, a series of tablet-rods and indicating-tablets operated thereby, a registering-wheel provided with a ratchet, a horizontally-vibrating bar pivoted at one side of the keys and extending transversely across the same, a series of projections on said keys arranged to engage said bar and vibrate it to different degrees, a pawl actuated by said bar and engaging with the ratchet of the registering-wheel, a horizontal screw-shaft secured to the axis of the registering-wheel and revolving therewith, a pointer on said shaft and engaging with the thread thereof, and a registering-bar along which said pointer travels, substantially as and for the purpose described.

22. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of tablet-rods and tablets operated thereby, a registering-wheel provided with a ratchet, a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, a pawl actuated by said bar and engaging with the ratchet on the registering-wheel, a horizontal screw-shaft secured to the axis of the registering-wheel and revolving therewith, a pointer on said shaft and engaging with the thread thereof, and a registering-bar along which said pointer travels, substantially as and for the purpose described.

23. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of tablet-rods and tablets operated thereby, a registering-wheel provided with a ratchet, a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, a vibrating pawl-carrier pivoted on the axis of the registering-wheel and connected to said bar, a pawl carried by said carrier and engaging with the ratchet on the registering-wheel, a horizontal screw-shaft secured to the axis of the registering-wheel and revolving therewith, a pointer on said shaft and engaging with the thread thereof and a registering-bar along which said pointer travels, substantially as and for the purpose described.

24. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of vertically-reciprocating tablet-rods carrying indicating-tablets, a series of bell-cranks actuated by said keys and engaging with said tablet-rods, a registering-wheel provided with a ratchet, a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, a vibrating pawl-carrier pivoted on the axis of the registering-wheel and connected to said bar, a pawl carried by said carrier and engaging with the ratchet on the registering-wheel and revolving therewith, a pointer on said shaft and engaging with the thread thereof, and a registering-bar along which said pointer travels, substantially as and for the purpose described.

25. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of bell-cranks pivoted on a horizontal shaft at the rear of the machine, with their vertical arms engaging with the rear ends of the keys, a series of tablet-rods provided with projections and resting at their lower ends on the horizontal arms of said bell-cranks and carrying at their upper ends indicating-tablets, a supporting-wing, a registering-wheel provided with a ratchet, a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, a vibrating pawl-carrier pivoted on the axis of the registering-wheel and connected to said bar, a pawl carried by said carrier and engaging with the ratchet on the registering-wheel, a horizontal screw-shaft secured to the axis of the registering-wheel and revolving therewith, a pointer on said shaft and engaging with the thread thereof, and a registering-bar along which said pointer travels, substantially as and for the purpose described.

ranged to engage therewith, a vibrating pawl-carrier pivoted on the axis of the registering-wheel and connected to said bar, a pawl carried by said carrier and engaging with the ratchet on the registering-wheel, a horizontal screw-shaft secured to the axis of the registering-wheel and revolving therewith, a pointer on said shaft and engaging with the thread thereof, and a registering-bar along which said pointer travels, substantially as and for the purpose described.

26. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of bell-cranks pivoted on a horizontal shaft at the rear of the machine, with their vertical arms engaging with the rear ends of the keys, a series of tablet-rods provided with projections and resting at their lower ends on the horizontal arms of said bell-cranks and carrying at their upper ends indicating-tablets, a supporting-wing, a registering-wheel provided with a ratchet, a horizontally-vibrating bar extending transversely across said keys, a resetting-spring for said bar, a series of projections on said keys at varying distances from said bar and arranged to engage therewith, a vibrating pawl-carrier pivoted on the axis of the registering-wheel and connected to said bar, a pawl carried by said carrier and engaging with the ratchet on the registering-wheel, a stop arranged to engage with said pawl to positively lock the registering-wheel at the completion of the stroke of said pawl, a horizontal screw-shaft secured to the axis of the registering-wheel and revolving therewith, a pointer on said shaft and engaging with the thread thereof, a registering-bar along which said pointer travels, a second horizontally-vibrating bar extending transversely across the keys, a resetting-spring for said bar, a second series of projections on said keys arranged to engage with said bar, a gong, and a gong-hammer actuated by said bar, substantially as and for the purpose described.

27. In a cash register and indicator, the combination, with a series of horizontally-reciprocating keys of fixed values and a registering-wheel provided with a ratchet, of a horizontally-vibrating bar pivoted at one side of the keys and extending transversely across the same, a series of projections on said keys arranged to engage said bar and vibrate the same to different degrees, and a pawl actuated by said bar and engaging with the ratchet of the registering-wheel, whereby upon operating any one of said keys its value is registered on said registering-wheel, substantially as described.

28. In a cash register and indicator, the combination, with a series of horizontally-reciprocating keys of fixed values and a registering-wheel provided with a ratchet, of a horizontally-vibrating bar pivoted at one side of the keys and extending transversely across the same, a series of projections on said keys arranged to engage said bar and actuate it to different degrees, a vibrating pawl-carrier pivoted on the axis of the registering-wheel and actuated by said vibrating bar, and a pawl carried by said pawl-carrier and engaging with the ratchet of said wheel, whereby upon operating any one of said keys its value is registered on said registering-wheel, substantially as described.

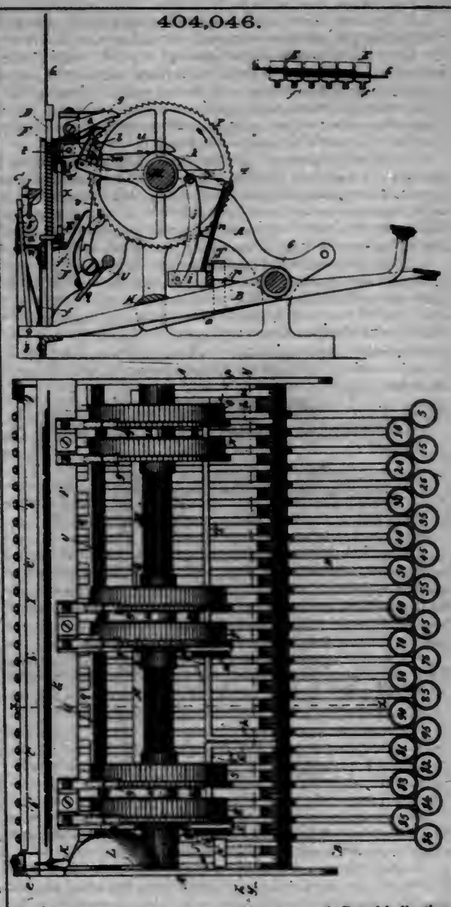
29. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of tablet-rods and indicating-tablets operated thereby, a registering-wheel provided with a ratchet, a horizontally-vibrating bar extending transversely across said keys, a series of projections on said keys arranged to engage said bar and vibrate the same to different degrees, and a pawl actuated by said bar and engaging with the ratchet of the registering-wheel, whereby upon operating any one of said keys its indicating-tablet is exposed to view and its value is registered on said registering-wheel, substantially as described.

30. In a cash register and indicator, the combination of a series of horizontally-reciprocating keys of fixed values, a series of tablet-rods and indicating-tablets operated thereby, a registering-wheel provided with a ratchet, a horizontally-vibrating bar pivoted at one side of said keys and extending transversely across the same, a series of projections on said keys arranged to engage said bar and vibrate it to different degrees, a vibrating pawl-carrier pivoted on the axis of the registering-wheel and actuated by said vibrating bar, and a pawl carried by said carrier and engaging with the ratchet of the registering-wheel, substantially as and for the purpose described.

404,046. CASH INDICATOR AND REGISTER. MANFRED U. LOEBE, Miamisburg, and CHARLES D. GRIMES, Dayton, assignors to the National Cash Register Company, Dayton, Ohio. Filed June 4, 1888. Serial No. 276,972. (No model.)

Claim.—1. In a cash register and indicator, the combination, with the registering-wheel P and the supplemental registering-wheel Q, of the interposed pivoted arm *u*, carrying the dog *v*, arranged to engage with the ratchet of the wheel Q, and a stud, *w*, projecting laterally from the wheel P and adapted to engage with and raise the arm *u* and cause its dog *v* to turn the wheel Q one number for each complete revolution of the wheel P, substantially as described.

2. In a cash register and indicator, the combination, with the ten-cent-registering wheel P and the five-cent-registering wheel N, of



the pivoted operating-keys B, carrying tablet-rods D and indicating-tablets G, inclined bar T, actuated by said keys, vibrating dog-carrier *k*, provided with a dog, *l*, engaging with the ratchet of the wheel P and connected to the bar T by a link, *j*, and the five-cent bar U, provided with projections *q*, engaged by the odd-numbered keys and carrying the dog *r*, engaging with the ratchet of the wheel N, substantially as described.

3. In a cash register and indicator, the combination, with the keys B, carrying the tablet-rods D and tablets G, and inclined bar T, of the registering-wheel P, vibrating dog-carrier *k*, provided with a dog, *l*, engaging with the ratchet of the wheel P and connected to the bar T by a link, *j*, and the coiled spring *n*, connected at its upper end to the forward end of the dog-carrier *k* and at its lower end to the bar T, substantially as described.

4. The combination of the keys B, carrying tablet-rods D and indicating-tablets G, the inclined bar T, the registering-wheel P and its supplemental registering-wheel Q, the registering-wheel N and its supplemental registering-wheel O, the vibrating dog-carrier *k*, provided with a dog, *l*, for actuating the wheel P, and connected to the bar T by a link, *j*, the five-cent bar U, actuated by the odd-numbered keys and provided with a dog, *r*, for actuating the wheel N, and a pivoted arm, *u*, interposed between each of the wheels N and P and its adjacent supplemental registering-wheel and carrying a dog, *v*, arranged to engage the ratchet of the supplemental wheel, and a stud or projection on each of the wheels N and P, arranged to engage and raise the arm *u* to cause its dog *v* to turn the adjacent supplemental registering-wheel, substantially as and for the purpose described.

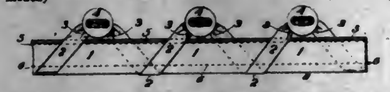
5. In a cash register and indicator, the combination, with the operating-keys B, the vibrating frame H, and the inclined bar T, of the upwardly-extending arm *p*, secured to the side arm of the frame H and projecting over the end of the bar T, substantially as and for the purpose described.

6. In a cash register and indicator, the combination, with the operating-keys B, registering mechanism actuated thereby, the vibrating frame H, the pivoted wing I, provided with the flange *d'*, and actuated by the vibrating frame H, through the medium of suitable tripping mechanism, of the arms V, pivoted to the rear ends of the keys, extending upward through guides, and provided on their inner faces with notches arranged to engage with the flange *d'* on the wing I, substantially as and for the purpose described.

7. In a cash register and indicator, the combination, with the operating-keys, registering mechanism actuated thereby, a series of tablet-rods and indicating-tablets, one for each key and carried thereby, and a projection on each tablet-rod, of a series of stops arranged to engage with the projections on the tablet-rods to prevent the operation of two or more keys simultaneously, substantially as described.

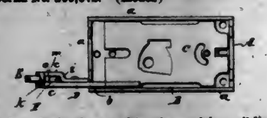
8. In a cash register and indicator, the combination, with the operating-keys, registering mechanism actuated thereby, a series of tablet-rods and indicating-tablets, one for each key and carried thereby, and a projection on each tablet-rod, of a series of pendent stops pivoted above said projections and arranged to be displaced by said projections to permit the operation of a single key and to be locked thereby to prevent the simultaneous operation of two or more keys, substantially as described.

404,047. METHOD OF MAKING BUTTON-STRIPS. HENRY W. LYON, Bridgeport, Conn. Filed Dec. 19, 1888. Serial No. 294,064. (No model.)



Claim.—The method of making button-strips for attachment to corsets or other garments, the same consisting in winding a continuous tape around a strip of webbing or the like, threading said tape through the successive buttons at the front edge of said strip, and finally sewing the tape to the strip by rows of stitching through the front and rear edges of said strip, substantially as set forth.

404,048. LOCK. FRANK W. MIX, New Britain, Conn. Filed Mar. 31, 1888. Serial No. 269,072. (Model.)

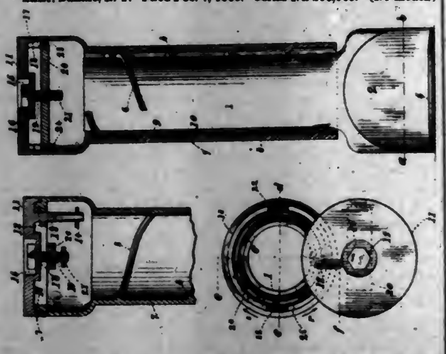


Claim.—1. In a lock, the combination, with a sliding bolt, of a latch pivoted to and projecting beyond the outer end of the bolt and wholly supported thereby, substantially as set forth.

2. In a lock, the combination, with a sliding bolt having an open slot formed in its outer end, of a yielding latch pivoted within said slot and located wholly outside the lock-casing, substantially as set forth.

3. In a lock, the combination, with a sliding bolt having a stop formed thereon, of a latch pivoted to and carried by the sliding bolt and arranged to project beyond its outer end, said latch being provided with a projection that engages a stop on the bolt for limiting its outward movement and a spring for forcing the latch to the limit of its outward movement, substantially as set forth.

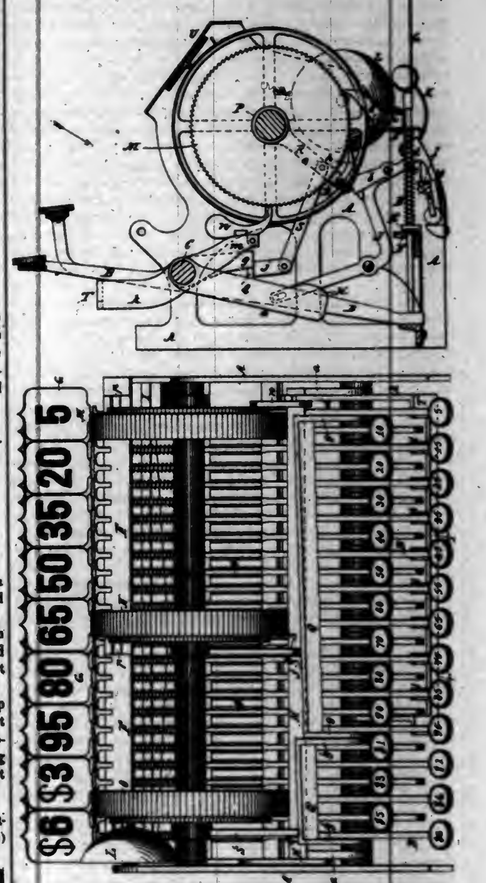
404,049. STOP-COCK BOX. ALEXANDER ORMSBY and HENRY EBERHART, Buffalo, N. Y. Filed Feb. 7, 1889. Serial No. 298,965. (No model.)



Claim.—1. In a stop-cock box, a cover pivoted thereto by an inside vertical hinge or screw-bolt passing through the cover and through a holding-bar and having a pin, 21, at the bottom, in combination with a flange, 23, having openings 22, and lugs 24 25 in the top of the box, for the purposes described.

2. The combination of a vertically-pivoted cover, 11, a depression, 15, in the cover, a bolt, 19, passing through a hole in the depression 15, a holding-bar, 20, through which the bolt 19 passes, a pin, 21, through the lower end of the bolt 19, and an inwardly-projecting flange, 23, having openings 22, and lugs 24 25, for the purposes described.

404,050. CASH INDICATOR AND REGISTER. JOHN H. PATTERSON, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed June 1, 1888. Serial No. 275,765. (No model.)



Claim.—1. In a cash register and indicator, the combination of a series of operating-keys indicating odd multiples of five above the first power, a ten-cent-registering wheel and a five-cent-registering wheel, a bar extending transversely across said keys and arranged to be actuated to different degrees by the operation of different keys, connecting mechanism between said bar and the ten-cent-registering wheel, a five-cent bar extending transversely across and arranged to be actuated to the same degree by all of said keys, and connecting mechanism between said five-cent bar and the five-cent-registering wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

2. In a cash register and indicator, the combination of a series of operating-keys indicating odd multiples of five above the first power, a ten-cent-registering wheel and a five-cent-registering wheel, each provided with a ratchet, a bar extending transversely across said keys and arranged to be actuated to different degrees by the operation of different keys, a dog actuated by said bar and engaging with the ratchet of the ten-cent wheel, a five-cent bar extending transversely across and arranged to be actuated to the same degree by all of said keys, and a dog actuated by said five-cent bar and engaging with the ratchet of the five-cent wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

3. In a cash register and indicator, the combination of a series of operating-keys indicating odd multiples of five above the first power, a ten-cent-registering wheel and a five-cent-registering wheel, a vertically-vibrating bar extending transversely across said keys and arranged to be actuated to different degrees by the operation of different keys, connecting mechanism between said bar and the ten-cent-registering wheel, a five-cent bar extending transversely across and arranged to be actuated to the same degree by all of said keys, and connecting mechanism between said five-cent bar and the five-cent-registering wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

4. In a cash register and indicator, the combination of a series of operating-keys indicating odd multiples of five above the first power, a ten-cent-registering wheel and a five-cent-registering wheel, each provided with a ratchet, a vertically-vibrating bar extending transversely across said keys and arranged to be actuated to different degrees by the operation of different keys, a dog actuated by said bar and engaging with the ratchet of the ten-cent wheel, a five-cent bar extending transversely across and arranged to be actuated to the same degree by all of said keys, and a dog actuated by said five-cent bar and engaging with the ratchet of the five-cent wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

5. In a cash register and indicator, the combination of a series of operating-keys indicating odd multiples of five above the first power, a ten-cent-registering wheel and a five-cent-registering wheel, a bar extending transversely across said keys and actuated thereby, the portions of said bar with which the different keys engage being arranged at different distances from said keys, connecting mechanism between said bar and the ten-cent-registering wheel, a five-cent bar extending transversely across and arranged to be actuated by all of said keys, and connecting mechanism between said five-cent bar and the five-cent-registering wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

6. In a cash register and indicator, the combination of a series of operating-keys indicating odd multiples of five above the first power, a ten-cent-registering wheel and a five-cent-registering wheel, each provided with a ratchet, a bar extending transversely across said keys and actuated thereby, the portions of said bar with which the different keys engage being arranged at different distances from said keys, a dog actuated by said bar and engaging with the ratchet of the ten-cent wheel, a five-cent bar extending transversely across and arranged to be actuated by all of said keys, and a dog actuated by said five-cent bar and engaging with the ratchet of the five-cent wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

7. In a cash register and indicator, the combination of a series of operating-keys indicating odd multiples of five above the first power, a ten-cent-registering wheel and a five-cent-registering wheel, a bar extending transversely across and inclined relatively to the plane of said keys, connecting mechanism between said bar and ten-cent-registering wheel, a five-cent bar extending transversely across and actuated by all of said keys, and connecting mechanism between said five-cent bar and five-cent-registering wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

8. In a cash register and indicator, the combination of a series of operating-keys indicating odd multiples of five above the first power, a ten-cent-registering wheel and a five-cent-registering wheel, each provided with a ratchet, a bar extending transversely across and inclined relatively to the plane of said keys, a dog actuated by said bar and engaging with the ratchet of the ten-cent-registering wheel, a five-cent bar extending transversely across and actuated by all of said keys, and a dog actuated by said five-cent bar and engaging with the ratchet of the five-cent-registering wheel, whereby upon operating any one of said keys the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

9. In a cash register and indicator, the combination of a series of operating-keys indicating even and odd multiples of five above the first power, a ten-cent-registering wheel and a five-cent-registering wheel, a bar extending transversely across said keys and arranged to be actuated to different degrees by the different odd-numbered keys and to different degrees by the different even-numbered keys, but to the same degree by each odd-numbered key and the next lower even-numbered key, connecting mechanism between said bar and the ten-cent-registering wheel, a five-cent bar extending transversely across and arranged to be actuated by each of the odd-numbered keys, and connecting mechanism between said five-cent bar and the five-cent-registering wheel, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

10. In a cash register and indicator, the combination of a series of operating-keys indicating even and odd multiples of five above the first power, a ten-cent-registering wheel and a five-cent-registering wheel, each provided with a ratchet, a bar extending transversely across said keys and arranged to be actuated to different degrees by the different odd-numbered keys and to different degrees by the different even-numbered keys, but to the same degree by each odd-numbered key and the next lower even-numbered key, a dog actuated by said bar and engaging with the ratchet of the ten-cent-registering wheel, a five-cent bar extending transversely across and arranged to be actuated by each of the odd-numbered keys, and a dog actuated by said five-cent bar and engaging with the ratchet of the five-cent-registering wheels, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

11. In a cash register and indicator, the combination of a series of operating-keys indicating even and odd multiples of five above the first power, a ten-cent-registering wheel and a five-cent-registering wheel, a vertically-vibrating bar extending transversely across said keys and arranged to be actuated to different degrees by the different odd-numbered keys and to different degrees by the different even-numbered keys, but to the same degree by each odd-numbered key and the lower even-numbered key, connecting mechanism between said bar and the ten-cent-registering wheel, a five-cent bar extending transversely across and arranged to be actuated by each of the odd-numbered keys, and connecting mechanism between said five-cent bar and five-cent-registering wheel, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

12. In a cash register and indicator, the combination of a series of operating-keys indicating even and odd multiples of five above the first power, a ten-cent-registering wheel and a five-cent-registering wheel, each provided with a ratchet, a vertically-vibrating bar extending transversely across said keys and arranged to be actuated to different degrees by the different odd-numbered keys and to different degrees by the different even-numbered keys, but to the same degree by each odd-numbered key and the next lower even-numbered key, a dog actuated by said bar and engaging with the ratchet of the ten-cent wheel, a five-cent bar extending transversely across and arranged to be actuated by each odd-numbered key, and a dog actuated by said five-cent bar and engaging with the ratchet of the five-cent-registering wheel, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

13. In a cash register and indicator, the combination of a series of operating-keys indicating even and odd multiples of five above the first power, a ten-cent-registering wheel and a five-cent-registering wheel, a bar extending transversely across said keys and actuated thereby, the portions of said bar with which the different odd-numbered keys engage being arranged at different distances from said odd-numbered keys and the portions with which the different even-numbered keys engage being arranged at different distances from said even-numbered keys, but the portions with which each odd-numbered key and the next lower even-numbered key engage being arranged at the same distance from said keys, connecting mechanism between said bar and the ten-cent-registering wheel, a five-cent bar extending transversely across and arranged to be actuated by each of the odd-numbered keys, and connecting mechanism between said five-cent bar and the five-cent-registering wheel, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

14. In a cash register and indicator, the combination of a series of operating-keys indicating even and odd multiples of five above the first power, a ten-cent-registering wheel and a five-cent-registering wheel, each provided with a ratchet, a bar extending transversely across said keys and actuated thereby, the portions of said bar with which the different odd-numbered keys engage being arranged at

different distances from said odd-numbered keys and the portions with which the different even-numbered keys engage being arranged at different distances from said even-numbered keys, but the portions with which each odd-numbered key and the next lower even-numbered key engage being arranged at the same distance from said keys, a dog actuated by said bar and engaging with the ratchet of the ten-cent-registering wheel, a five-cent bar extending transversely across and arranged to be actuated by each of the odd-numbered keys, and a dog actuated by said bar and engaging with the ratchet of the five-cent-registering wheel, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

15. In a cash register and indicator, the combination of a series of operating-keys indicating even and odd multiples of five above the first power, a ten-cent-registering wheel and a five-cent-registering wheel, a bar extending transversely across and inclined relatively to the plane of said keys and arranged to be actuated to different degrees by the different odd-numbered keys and to different degrees by the different even-numbered keys, but to the same degree by each odd-numbered key and the next lower even-numbered key, connecting mechanism between said bar and the ten-cent-registering wheel, a five-cent bar extending transversely across and actuated by each odd-numbered key, and connecting mechanism between said five-cent bar and the five-cent-registering wheel, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

16. In a cash register and indicator, the combination of a series of operating-keys indicating even and odd multiples of five above the first power, a ten-cent-registering wheel and a five-cent-registering wheel, each provided with a ratchet, a bar extending transversely across and inclined relatively to the plane of said keys and arranged to be actuated to different degrees by the different odd-numbered keys and to different degrees by the different even-numbered keys, but to the same degree by each odd-numbered key and the next lower even-numbered key, a dog actuated by said bar and engaging with the ratchet of the ten-cent-registering wheel, a five-cent bar extending transversely across and actuated by each of the odd-numbered keys, and a dog actuated by said five-cent bar and engaging with the ratchet of the five-cent-registering wheel, whereby upon operating an even-numbered key its value is registered on the ten-cent wheel, and whereby upon operating an odd-numbered key the tens of its value are registered on the ten-cent wheel and the five on the five-cent wheel, substantially as described.

17. In a cash register and indicator, the combination of a series of operating-keys indicating even and odd multiples of five above the first power, a series of tablet-rods and indicating-tablets actuated by said keys, a ten-cent-registering wheel and a five-cent-registering wheel, each provided with a ratchet, a bar extending transversely across said keys and arranged to be actuated to different degrees by the different odd-numbered keys and to different degrees by the different even-numbered keys, but to the same degree by each odd-numbered key and the next lower even-numbered key, a dog actuated by said bar and engaging with the ratchet of the ten-cent-registering wheel, a five-cent bar extending transversely across and arranged to be actuated by each of the odd-numbered keys, and a dog actuated by said five-cent bar and engaging with the ratchet of the five-cent-registering wheel, substantially as and for the purpose described.

18. In a cash register and indicator, the combination of a series of operating-keys indicating even and odd multiples of five above the first power, a series of tablet-rods and indicating-tablets actuated by said keys, a ten-cent-registering wheel and a five-cent-registering wheel, each provided with a ratchet, a vertically-vibrating bar extending transversely across said key and arranged to be actuated to different degrees by the different odd-numbered keys and to different degrees by the different even-numbered keys, but to the same degree by each odd-numbered key and the next lower even-numbered key, a dog actuated by said bar and engaging with the ratchet of the ten-cent wheel, a five-cent bar extending transversely across and arranged to be actuated by each odd-numbered key, and a dog actuated by said bar and engaging with the ratchet of the ten-cent wheel, a five-cent bar extending transversely across and arranged to be actuated by each of the odd-numbered keys, and a dog actuated by said five-cent bar and engaging with the ratchet of the five-cent-registering wheel, substantially as and for the purpose described.

19. In a cash register and indicator, the combination of a series of operating-keys indicating even and odd multiples of five above the first power, a series of tablet-rods and indicating-tablets actuated by said keys, a ten-cent-registering wheel and a five-cent-registering wheel, each provided with a ratchet, a bar extending transversely across said keys and actuated thereby, the portions of said bar with which the different odd-numbered keys engage being arranged at different distances from said odd-numbered keys and the portions with which the different even-numbered keys engage being arranged at different distances from said even-numbered keys, but the portions with which each odd-numbered key and the next lower even-numbered key engage being arranged at the same distance from said keys, a dog actuated by said bar and engaging with the ratchet of the ten-cent-registering wheel, a five-cent bar extending transversely across and arranged to be actuated by each odd-numbered key, and a dog actuated by said five-cent bar and engaging with the ratchet of the five-cent-registering wheel, substantially as and for the purpose described.

20. In a cash register and indicator, the combination of a series of operating-keys indicating even and odd multiples of five above the first power, a series of tablet-rods and indicating-tablets actuated by said keys, a ten-cent-registering wheel and a five-cent-registering wheel, each provided with a ratchet, a bar extending transversely across and inclined relatively to the plane of said keys and arranged to be actuated to different degrees by the different odd-numbered keys and to different degrees by the different even-numbered keys, but to the same degree by each odd-numbered key and the next lower even-numbered key, a dog actuated by said bar and engaging with the ratchet of the ten-cent-registering wheel, a five-cent bar extending transversely across and actuated by each of the odd-numbered keys, and a dog actuated by said five-cent bar and engaging with the ratchet of the five-cent-registering wheel, substantially as and for the purpose described.

404,051. SHEARS. HENRY PATTISON, Windsor, Nova Scotia, Canada. Filed June 26, 1888. Serial No. 278,294. (Model.)



Claim.—1. In a shears of the character described, the combination of the following instrumentalities, to wit: a lower cutting-blade provided with a handle and with an auxiliary blade standing at an angle thereto, the cutting-edges of said blades being continuous, a stop secured to said lower blade, an upper blade provided with two continuous cutting-edges standing at angles to each other and respectively adapted to work in conjunction with the cutting-edges of the lower and auxiliary blades, and a gage secured to said upper blade, said handles being pivoted together, substantially as set forth.

2. In a shears, a pivoted bar, as J, carried by a blade of said shears, said bar being adapted to act gravitatively to project a portion thereof past the cutting-edge of the blade on which it is mounted, whereby it may serve as a stop for the article being cut, substantially as described.

3. A plate, as H, provided with a slot, as 14, a bar, as J, pivoted to said plate, and a stop, as 15, for said bar, in combination with the blade of a shears, and a screw, as *g*, for securing said plate to said blade, substantially as set forth.

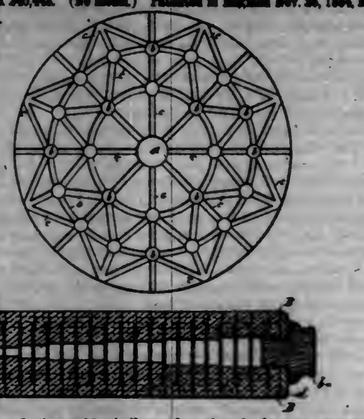
4. In a shears, the handle A, provided with the blade D, having the cutting-edge *v* and auxiliary blade *x*, having the cutting-edge *v*, said cutting-edges being continuous, the handle B, provided with the blade C, having the cutting-edge *t* and inclined cutting-edge *f*, said cutting-edges being continuous, the gage K, adjustably mounted on the blade C, the pivoted bar J, adjustably mounted on the blade D, and a stop for said bar, said handles being pivotally connected, and all being combined and arranged to operate substantially as described.

404,052. GAS-STOVE. WILLIAM H. PIER, London, England. Filed Nov. 9, 1888. Serial No. 290,344. (No model.) Patented in England Dec. 24, 1887, No. 17,707.



Claim.—In a gas stove or heater, the combination, with the casing A, adapted to be fitted upon a gas-burner and provided with the circular series of inlet-apertures D, and the drum A', open at both ends, supported within and concentric with said casing, providing the air-space C therebetween, of the plate F, supported on the rim of said casing and provided with the series of upwardly-ranging outlet-apertures F', and the series of vertical pins G, and the wire netting or gauze H, arranged between the casing A and the lower outer edge of said plate, substantially as shown and described.

404,053. CARTRIDGE FOR ORDNANCE. George Greer, Chipping-Campden, County of Gloucester, England. Filed June 6, 1887. Serial No. 240,443. (No model.) Patented in England Nov. 26, 1884, No. 15,548.

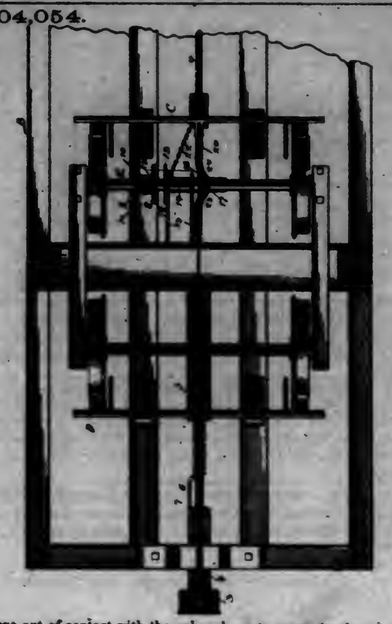


Claim.—1. A cartridge built up of a series of cakes of compressed gunpowder or other propelling composition or material, the said cakes having one large central orifice or perforation in combination with numerous smaller perforations, the said cakes having also projections and recesses formed on their faces, whereby when placed together face to face they shall interlock, not only to prevent any sliding or twisting motion of the said cakes in respect of each other, but also to bring the said small perforations in all the cakes composing the cartridge into continuous lines, as shown and described.

2. A cartridge built of a series of cakes of compressed propelling material, each having a large central orifice and sundry smaller ones, the adjacent cakes having projections and recesses whereby they shall interlock and insure the proper alignment of these smaller orifices, said cakes also having their central parts made thinner than the remaining parts, all substantially as shown and described.

3. Cakes of compressed explosive material having numerous longitudinal perforations *a b* through their thickness, and having interlocking projections and recesses in their surfaces, as set forth, and having numerous grooves or channels *c* on their flat sides connecting the perforations *a* and *b*, all arranged face to face and combined to form a cartridge, substantially as and for the purposes set forth.

404,054. CAR-BRAKE. George R. Gates, Thornton, assignor to himself and John H. Young, Chicago, Ill. Filed Feb. 7, 1888. Serial No. 299,050. (No model.)



Claim.—1. The combination of a friction-disk connected with an axle of a car-truck, a sliding tube or sleeve carrying a second friction-disk and supported in bearings which hold the sleeve out of contact with the axle, and a lever for moving the sleeve in its bearings, substantially as and for the purpose specified.

2. The combination of a friction-disk connected with an axle of a car-truck, a sliding tube or sleeve carrying a second friction-disk and supported in bearings which hold the sleeve out of contact with the axle, a lever for moving the sleeve in its bearings, and a sliding rod for operating the lever, substantially as and for the purpose specified.

3. The combination of a friction-disk connected with an axle of a car-truck, a sliding tube or sleeve carrying a second friction-disk and supported in bearings which hold the sleeve out of contact with the axle, a lever for moving the sleeve in its bearings, a sliding rod for operating the lever, and a draw-bar provided with a pin or projection to engage with the sliding rod, substantially as and for the purpose specified.

4. In combination with the brakes of a car-truck, a friction-disk on one of the axles of the truck, a second friction-disk on a sleeve supported in bearings independent of the axle and which hold the sleeve out of contact with the axle, a lever to move the sleeve, and a sliding rod to operate the lever, substantially as and for the purpose specified.

5. In combination with the brakes of a car-truck, a friction-disk on one of the axles of the truck, a second friction-disk on a sleeve supported in bearings independent of the axle and which hold the sleeve out of contact with the axle, a lever for moving the sleeve, a sliding rod to operate the lever, and a pin or projection on the draw-bar to engage with the sliding rod, substantially as and for the purpose specified.

6. In combination with the axle of a car-truck, a friction wheel or disk connected with and rotating with such axle, a sliding sleeve or windlass supported in bearings independent of the axle and carrying a friction disk or wheel adapted to be brought into contact with said wheel or disk which is connected with the axle, whereby the windlass or sleeve can be rotated, substantially as and for the purpose specified.

7. In combination with one of the axles of a car-truck, a friction wheel or disk secured to a sleeve which encircles the axle and is provided with slots, a collar which surrounds the sleeve, and set-screws which pass through the collar and the slots in the sleeve and hold the same upon the axle, whereby the sleeve can have a limited longitudinal movement upon the axle, substantially as and for the purpose specified.

8. In combination with one of the axles of a car-truck, a friction wheel or disk secured to a sleeve which encircles the axle and is provided with slots, a collar which surrounds the sleeve, set-screws which pass through the collar and the slots in the sleeve and hold the same upon the axle, and a spring between the friction wheel or disk and collar, substantially as and for the purpose specified.

9. In combination with the brakes of a car-truck, a friction-disk on one of the axles of the truck, a second friction-disk on a sleeve supported in bearings independent of the axle and which hold the sleeve out of contact with the axle, a lever to move the sleeve, a sliding rod to operate the lever, and a chain connected at one end to the sleeve or windlass and at the other end with a brake-lever, substantially as and for the purposes specified.

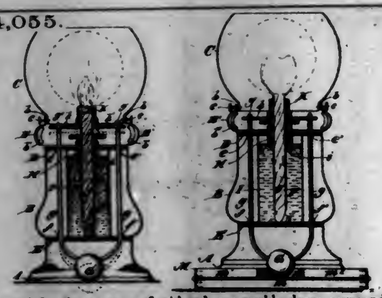
10. The combination of a friction-disk connected with an axle of a car-truck, a sliding windlass or sleeve carrying a second friction-disk and supported in bearings independent of the axle, and a washer on the axle between the two friction-disks, substantially as and for the purposes specified.

404,055. LAMP-EXTINGUISHER. Otto Reichma, Memphis, Tenn., assignor to George R. Dorian and Frederick A. Wittich, both of same place. Filed Apr. 11, 1888. Serial No. 270,231. (No model.)

Claim.—1. A lamp having a vertically-moving ball extending through the bottom thereof, in combination with a sleeve vertically movable over the upper end of the wick-tube, and a connection between said ball and said sleeve for causing the said sleeve to extinguish the lamp when the latter is set down on a plane surface, substantially as set forth.

2. A ball, G, and curved rod *g*, connected therewith, in combination with a casing, B, partitions D E, attached to said casing and

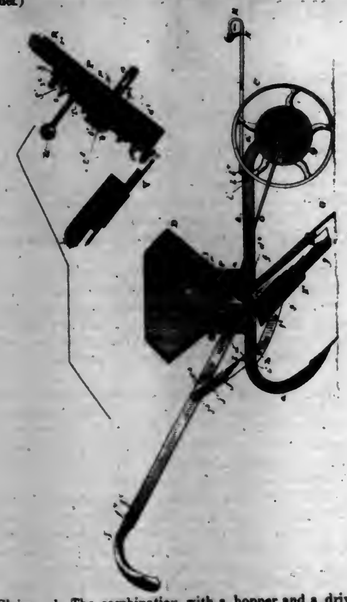
404,055.



perforated for the passage of said rod, a movable sleeve surrounding the upper end of the wick-tube, and arms *k K*, extending outward from said sleeve to engage hooks *g* on the ends of said curved rod, said ball being vertically movable through the base of said casing, substantially as set forth.

3. A lamp having a sleeve movable over the upper part of the wick-tube, a ball movable through the base of the lamp-casing, and connecting devices between said sleeve and said weight, whereby the former moves with the latter, in combination with a support having a recess to allow the downward motion of said ball, substantially as set forth.

404,056. COMBINED COTTON, CORN, AND SORGHUM PLANTER. JAMES D. SCHOFIELD, Rogers, Tex., assignor to the Fremont Cultivator Company, Bellevue, Ohio. Filed Jan. 3, 1889. Serial No. 295,296. (No model.)



Claim.—1. The combination, with a hopper and a driving-shaft projecting therein, of a disk loosely mounted on the end of the shaft and adapted to be locked to the hopper, and a second disk corresponding to and disposed within a recess formed in the first disk, said second disk being rigidly connected with the shaft and adapted to be locked to the first disk, substantially as and for the purpose set forth.

2. In a planter of the class described, the combination, with a driving-shaft, of a disk mounted thereon, and a second disk corresponding to and disposed within a recess formed in the first disk and provided with a diametrical slot, a key disposed in a transverse elongated slot in the shaft and seated in the disk-slot to prevent movement of said disk independent of the shaft, and a nut screwed upon the shaft against the second disk to retain the key in place, both the disks being adapted to be locked together, substantially as set forth.

3. In a planter of the class described, the combination of a disk adapted to be locked stationary and having a circular flange conforming in contour to the periphery thereof, and having a recess provided with an opening, and a second disk corresponding and adapted to be disposed in the recess of the former disk and provided with approximately-semicircular feed-notches at its periphery adapted to coincide with the opening in the first-mentioned disk, substantially as and for the purpose set forth.

4. In a planter of the class described, the combination, with a hopper having an adjustable slide in its rear wall and with a driving-shaft projecting through the front wall at right angles thereto, of a cotton-disk loosely mounted upon the shaft and provided with a feed-opening and with a series of upright teeth near its periphery, said disk being adapted to be locked to the hopper with its feed-opening coinciding with a feed-groove in the front wall of the hopper, and a corn-disk rigidly mounted on the shaft and provided at its periphery with feed notches adapted to coincide with the feed-opening in the cotton-disk, said corn-disk being adapted to be locked to the cotton-disk, substantially as and for the purpose set forth.

5. In a planter of the class described, the combination of a cotton-disk adapted to be locked stationary and provided with a circular flange conforming in contour to the periphery thereof and forming a central recess having a feed-opening, a corn-disk corresponding to and disposed within said recess and provided at its periphery with approximately-semicircular feed-notches adapted to coincide with the feed-opening in the cotton-disk, and a cut-off comprising a plate secured to the cotton-disk opposite the feed-opening and provided with perforations, and bristles secured in said perforations and forming a brush adapted to bear upon the top edge of the corn-disk, substantially as and for the purpose set forth.

6. In a planter of the class described, the combination, with a hopper and a driving-shaft extending therein, of a cotton-disk loosely mounted upon said shaft and adapted to be locked to the hopper when corn is to be planted, and a corn-disk rigidly mounted upon the shaft and adapted to be locked to the cotton-disk by an elongated thumb-screw to adapt the machine for planting cotton, said thumb-screw acting as a stirrer for the seed, substantially as and for the purpose set forth.

7. In a planter of the class described, the combination, with a hopper provided with a bearing-plate embedded in the front wall thereof and having an arm, and a driving-shaft having its upper end bearing in said plate, of a cotton-disk loosely mounted on the shaft and bearing against said plate, and adapted to be locked against rotation by a screw engaging a perforation in the disk and a coincident screw-threaded perforation in the arm of the bearing-plate, and a disk rigidly connected with the shaft and adapted to be locked to the cotton-disk by said screw through a perforation in the corn-disk and a coincident screw-threaded perforation in the cotton-disk, substantially as and for the purpose set forth.

8. In a planter of the class described, the combination of a cotton-disk provided upon its surface with a circular flange conforming in contour thereto, said disk being provided with a feed-opening between the flange and its center and adapted to be locked against rotation, and a corn-disk corresponding to and disposed within the recess formed by said flange and provided with semicircular feed-notches in its periphery adapted to coincide with the feed-opening in the cotton-disk, said flange forming a wall for the open edges of the feed-notches, substantially as and for the purpose set forth.

9. In a planter of the class described, the combination, with the frame, a hopper mounted thereon and provided in its rear wall with a feed-opening at one side its lateral center, and a driving-shaft projecting within the hopper directly above said feed-opening, of a drill disposed below said feed-opening and located at the lateral center of the planter, substantially as and for the purpose set forth.

10. In a planter of the class described, the combination, with a hopper, carrying-wheel, and axle, of a driving-shaft journaled at one end in the hopper and carrying planting-disks and at the other end in a laterally-adjustable block mounted upon the axle, a gear-wheel provided with a central angular perforation mounted upon the corresponding lower portion of the shaft and longitudinally adjustable thereon, a disk secured centrally to the carrying-wheel and provided with concentric rows of teeth adapted to mesh with the gear-wheel, and a key adapted to be passed through a perforation in the axle at the outer edge of the block to lock the gear-wheel in engagement with the disk, substantially as and for the purpose set forth.

11. In a planter of the class described, the combination, with the hopper, carrying-wheel, and shaft, of a two-part driving-shaft having one end journaled in said hopper and carrying planting-disks and at its lower end in a laterally-adjustable block mounted upon the axle and adapted to be locked thereon in adjusted position, the lower portion of said shaft being angular, a gear-wheel having a central perforation corresponding to said angular portion of the shaft and mounted thereon, and a disk centrally secured to the carrying-wheel and provided with a series of concentric grooves each of which is crossed by equidistant transverse ribs forming teeth adapted to mesh with the gear-wheel, substantially as and for the purpose set forth.

12. In a planter of the class described, the combination, with the frame, of an adjustable drill carrying an opener-plow at its lower end, said drill being pivotally mounted upon a transverse rod, and upwardly and rearwardly extending strips secured to the foot of the drill and provided with elongated slots at their rear ends embracing a second transverse rod, and nuts adapted to bind against said strips to lock the drill in adjusted position, substantially as and for the purpose set forth.

13. In a planter of the class described, the combination, with the frame the beams of which are connected by a front and rear transverse rod, of a drill carrying an opener-plow and pivotally mounted upon the former, the bearing portion of said drill extending across the space between the frame-beams, upwardly and rearwardly extending strips for bracing and adjusting the drill and plow secured at their forward ends to the foot of the drill and provided with elongated slots at their free ends engaged by the rear transverse rod, and nuts disposed on the latter adapted to be screwed against the strips to retain the plow in adjusted position, substantially as and for the purpose set forth.

14. The herein-described drill, comprising the front wall having the opener-plow secured at the foot thereof, the tube consisting of a curved metal plate having its side edges secured to the front wall, the lower end of said plate being cut vertically and horizontally, and the wings formed thereby curved outwardly to form mold-boards, substantially as and for the purpose set forth.

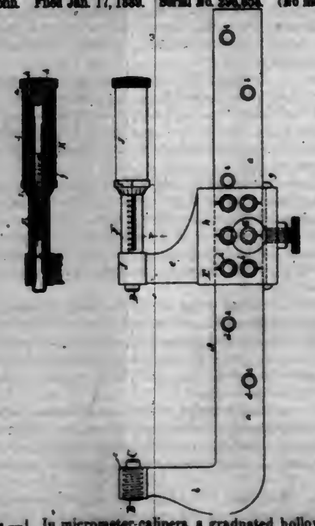
15. In a planter of the class described, the combination, with the frame comprising the horizontal beams having the downturned front ends, of a bail pivoted to the beams in the rear of said ends and formed with outwardly-projecting shoulders adapted to engage the upper edges of said ends to prevent the bail from falling below a horizontal plane, substantially as set forth.

16. In a planter of the class described, the combination, with the beams of the frame having the downturned front ends, of a bail provided with outturned ends bearing in perforations in the beams and keys passed through perforations in the ends of the bail, said bail being formed with outwardly-projecting shoulders adapted to rest upon the upper edge of the downturned beam-ends to retain the bail in horizontal position, substantially as set forth.

17. In a planter of the class described, the combination, with the beams of the frame having the downturned ends, of a bail having its ends pivoted to said beams and provided with outwardly-projecting shoulders adapted to engage the upper edges of the downturned beam ends to retain the bail in horizontal position, the sides of said bail curving inwardly and terminating in an upturned hook, and a forwardly-inclined link pivoted in the end of the hook, substantially as and for the purpose set forth.

18. In a planter of the class described, the combination of the frame comprising two rearwardly-divergent beams having the downturned front ends carrying the axle and the downwardly and inwardly curved adjustable rear ends carrying coverer-plows, and the adjustable handles pivoted to said beams, substantially as and for the purpose set forth.

404,057. MICROMETER-CALIPERS. MORRIS F. SMITH, New Haven, Conn. Filed Jan. 17, 1889. Serial No. 296,854. (No model.)



Claim.—1. In micrometer-calipers, a graduated hollow cylinder secured to the sliding arm and having an enlarged screw-threaded upper portion, in combination with an internally-threaded sleeve mating with the screw portion of the hollow cylinder and carrying an adjustable caliper-point which fits the bore of the hollow cylinder, substantially as described.

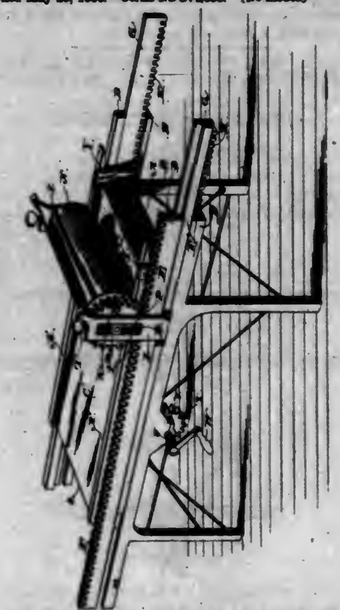
2. In micrometer-calipers, the graduated split part F, provided with the conical screw K, and having an enlarged threaded part, *j*, adapted to receive the threaded sleeve J, in combination with the threaded sleeve J, carrying a graduated part, I, and the part L, as shown and described.

3. In a micrometer-screw, a hollow graduated cylinder, the upper portion of which is enlarged and screw-threaded both internally and externally and split, in combination with an interiorly-threaded sleeve mating with the outer thread of the cylinder and carrying an adjustable caliper-point which fits the bore of the hollow cylinder, and an exteriorly-threaded bushing mating with the interior thread of the hollow cylinder, substantially as described.

4. In a micrometer-screw, a hollow cylinder secured to the movable arm and having the upper portion enlarged and screw-threaded internally and externally and split, in combination with an internally-threaded sleeve mating with the exterior thread of the hollow cylinder and carrying a perforated cap and an adjustable caliper-point, and an externally-threaded bushing mating with the interior thread of the split cylinder and provided with depressions registering with the perforations in the cap, substantially as described.

5. In micrometer-calipers, a rigid beam carrying the anvil and having a series of perforations, in combination with a sliding arm carrying a micrometer-screw and provided with a sliding box which fits the beam and has a series of perforations, each of which may be made to register with a corresponding perforation in the beam, and a pin which fits the perforation, substantially as described.

404,058. PRINTING-MACHINE. HARRY L. SNOW, Rosseville, Wis. Filed May 25, 1888. Serial No. 274,338. (No model.)



Claim.—1. The combination of the bed having the rack-bar F and the guide-bars D, with the slide-bars arranged in the guide-bars and having the racks H, the standards secured to the slide-bars, the impression-cylinder journaled in the said standards and having the spur-wheel engaging the rack F, and the operating-shaft having the wheels X, engaging the racks H, for the purpose set forth, substantially as described.

2. The combination of the bed or frame having the longitudinal guide-bars provided with grooves in their adjacent faces, the slide-bars guided between said guide-bars and having flanges fitting in the grooves thereof, the lower flanges being provided with teeth or racks, a shaft journaled transversely under the bed or frame, and pinions upon said shaft extending through slots or openings in the guide-bars and meshing with the racks upon the slide-bars, substantially as set forth.

3. The combination of the bed or frame having the longitudinal rack-bar F on its upper side, the guide-bars D D, arranged in pairs at each side of the frame, and standards Z at one end of the latter, the tympan-frame pivoted to said standards and having rearward-projecting arms, the rack-bars sliding longitudinally between the guide-bars, the standards secured to said sliding rack-bars and having vertical slots, the impression-cylinder journaled in boxes vertically adjustable in said slots, springs forcing the said cylinder in a downward direction, a shaft journaled transversely under the bed or frame and having an operating-crank, pinions upon said shaft meshing with the longitudinally-sliding rack-bars, and a gear-wheel upon the cylinder-shaft meshing with the longitudinal rack-bar upon the upper side of the bed or frame, substantially as and for the purpose set forth.

4. The printing-press comprising the bed having the rack-bar F and guide-bars D on its sides and the standards Y at one end, the slide-bars arranged in the guide-bars and having the racks H, the standards I, secured to the slide-bars, the impression-cylinder journaled in the standards I and having the spur-wheel engaging the rack, the tympan-frame pivoted at one end to the standards Y, and the operating-shafts having the wheels X, engaging racks on the slide-bars, substantially as set forth.

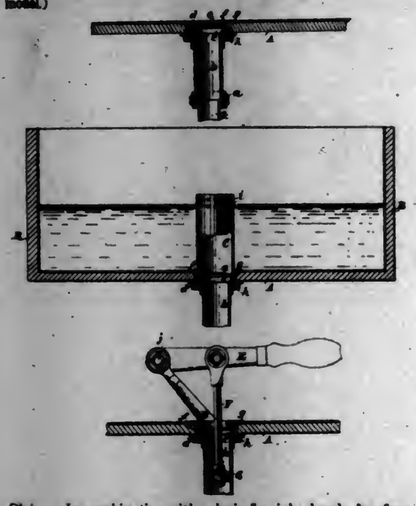
404,059. COVER FOR FRUIT-JARS. GUSTAV STAIB, Tompkinsville, N. Y. Filed Apr. 5, 1889. Serial No. 306,099. (No model.)



Claim.—1. The combination of perforated cover *a* with the bail *b*, disk *c*, and perforated cam *d*, the bail being secured to the disk and passing through the perforated cam, substantially as specified.

2. The combination of perforated cover *a* with the bail *b*, disk *c*, and perforated cam *d*, the cam *d* having handle d^3, that is provided with a beveled edge, substantially as specified.

404,060. DRAIN FOR SINKS, WASH-BOWLS, &c. FRANCIS A. STRATER, Boston, Mass. Filed June 12, 1888. Serial No. 277,014. (No model.)

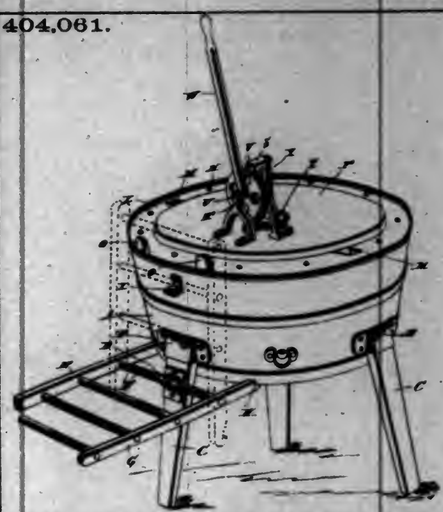


Claim.—In combination with a drain for sinks, bowls, &c., formed to perform the function of a pump-barrel, a removable stand secured to the drain, a lever pivoted to said stand, and a piston reciprocated by means of said lever, the drain being adapted to have a stand-pipe secured thereto after the removal of said stand, substantially as and for the purposes set forth.

404,061. WASHING-MACHINE. JOHN C. THOMAS, Jamestown, N. Y. Filed Oct. 31, 1888. Serial No. 289,627. (No model.)

Claim.—1. The combination of the tub, the supporting-legs therefor, the loop D, secured on one of said legs, the bench having





one of its rounds inserted loosely through said loop and the ends of its side bars projecting under the tub, and the spring-catch secured to the side of the tub and adapted to engage one of the rounds of the bench, as set forth.

2. The combination of the tub, the internal lid-supporting ring secured to the upper edge of the tub and having shallow recesses K in its upper side at diametrically-opposite points, the ring L, secured on the upper side of the lid-supporting ring and provided in its inner edge with the notches M, registering with the recesses K, but smaller than said recesses, so that a portion of the said ring projects over the recess, and the lid provided at diametrically-opposite points with the plates R, projecting beyond its edge and adapted to pass through the notches M into the recesses K and engage under the projecting portions of the ring L, as specified.

404,062. METHOD OF ORNAMENTING CLOTH. ABRAHAM VERNON, New York, N. Y. Filed Oct. 12, 1888. Serial No. 287,941. (Specimens.)

Claim.—The herein-described improvement in the method of ornamenting material for desk-edging, consisting in the employment of cloth and in interposing between and pasting to the same and the plate a layer of some soft inelastic material—such as wood pulp—whereby the cloth is adapted to receive an impression of a figure or ornamentation, substantially as described.

404,063. REGENERATIVE BURNER. ROUSBRIDGE WALLWORK and ARTHUR C. WELLS, Manchester, County of Lancaster, England. Filed Sept. 14, 1888. Serial No. 285,382. (No model.) Patented in Belgium Apr. 24, 1888, No. 81,537.

Claim.—1. The herein-described regenerative burner, comprising an injector and a multitubular regenerator having its tubes connected in series and arranged in a projection of the plane on one side of and in proximity to the injector-nozzle, said injector being connected with the terminal of the multitubular regenerator, substantially as and for the purposes specified.

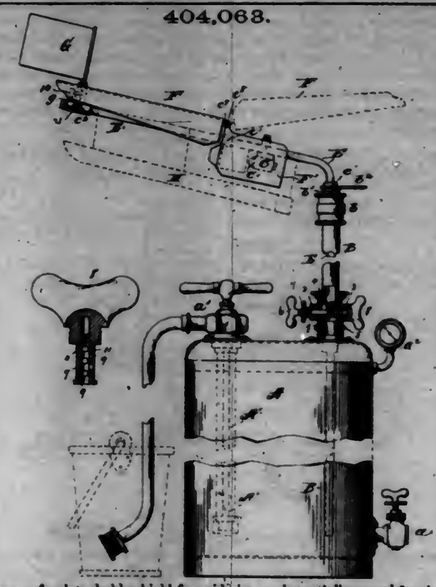
2. The herein-described regenerative burner, comprising an injector, a combining-cone arranged in front of the injector, and a multitubular regenerator having its tubes connected in series and arranged in a projection of the plane on one side of and in proximity to the injector-nozzle and combining-cone, said injector being connected with the terminal of the multitubular regenerator, substantially as and for the purposes specified.

3. The combination, with a burner for volatile combustible liquids, having its outlet-passage in a horizontal plane, of horizontal regenerative pipes arranged above and extending beyond said outlet-passage, said pipes being connected in series, the initial thereof communicating with a supply-pipe and the terminal with the burner, substantially as and for the purposes specified.

4. The combination, with a burner for volatile combustible liquids, having its outlet-passage in a horizontal plane, and horizontal regenerative pipes arranged above and extending beyond said outlet-passage, of a shield for said pipes, substantially as and for the purposes specified.

5. The combination, with a burner for volatile combustible liquids, having its outlet-passage in a horizontal plane, and horizontal regenerative pipes arranged above and extending beyond said outlet-passage, of a detachably-hinged shield for said pipes, substantially as and for the purposes specified.

404,063.



6. The combination, with a burner for volatile combustible liquids having its outlet-passage in a horizontal plane, and horizontal regenerative pipes arranged above and extending beyond said outlet-passage, of a detachably-hinged shield for said pipes, substantially as and for the purposes specified.

7. The herein-described burner for volatile combustible liquids, comprising the burner proper, having its outlet-passage in a horizontal plane, and horizontal regenerative pipes arranged above and projecting beyond the outlet-passage, said pipes being connected in series, the initial communicating with the supply of liquid and the terminal with the outlet-passage, a shield for said pipes, and a shield for the burner, substantially as and for the purpose specified.

8. The herein-described burner for volatile combustible liquids, comprising the burner proper, provided with a horizontal discharge-nozzle, a mixing-cone, D, arranged in front of said nozzle, and regenerative pipes arranged above and projecting beyond the nozzle and cone, and a shield inclosing the top and sides of the cone and burner, as well as one end of said burner, substantially as and for the purposes specified.

9. The herein-described burner for volatile combustible liquids, comprising the burner proper, provided with a horizontal discharge-nozzle, a mixing-cone, D, arranged in front of said nozzle, and regenerative pipes arranged above and projecting beyond the nozzle and cone, and a shield hinged to and inclosing the top and sides of the cone and burner, as well as one end of said burner, substantially as and for the purposes specified.

10. The herein-described burner for volatile combustible liquids, comprising the burner proper, provided with a horizontal discharge-nozzle, a mixing-cone, D, arranged in front of said nozzle, and regenerative pipes arranged above and projecting beyond the nozzle and cone, and a detachably-hinged shield inclosing the top and sides of the cone and burner, as well as one end of said burner, substantially as and for the purposes specified.

11. The combination, with a revoluble burner, of a directing-vane to maintain the burner in the direction of air-currents, substantially as described.

12. The combination, with a revoluble burner the tip or nozzle whereof lies in a horizontal plane, of a directing-vane to maintain the burner in the direction of air-currents, substantially as described.

13. The combination, with a revoluble burner the tip or nozzle whereof lies in a horizontal plane, of a horizontal shield arranged above the tip or nozzle and extending beyond the same, and a directing-vane, substantially as and for the purposes specified.

14. In an apparatus for illumination with combustible volatile liquids, the combination, with the supply-pipe for the liquid, of a horizontal burner revoluble on said supply-pipe and regenerative pipes connected with the supply-pipe and burner, substantially as and for the purposes specified.

15. In an apparatus for illumination with combustible volatile liquids, the combination, with the supply-pipe, a horizontal revoluble burner, and regenerative pipes connected with the burner and supply-pipe, of a directing-vane to maintain the burner in the direction of air-currents, substantially as and for the purposes specified.

16. In an apparatus for illumination with combustible volatile liquids, the combination, with the supply-pipe, a horizontal revoluble burner, and horizontal regenerative pipes extending beyond the burner above the plane of the flame and parallel therewith, of a shield arranged above said pipes and a wind-vane at the outer end of the pipes and shield, substantially as and for the purposes specified.

17. In an apparatus for illumination with combustible volatile liquids, the combination, with a forcing apparatus for the combustible liquid and the distributing-pipe of said apparatus, of a horizontal burner revoluble on said distributing-pipe and a wind-vane connected therewith, substantially as and for the purposes specified.

18. In an apparatus for illumination with combustible volatile liquids, the combination, with a forcing apparatus for the combustible liquid and the distributing-pipe of said apparatus, of a horizontal burner revoluble on said pipe, regenerative pipes connected with the burner and distributing-pipe, and a wind-vane to hold the burner in the direction of the wind, substantially as and for the purposes specified.

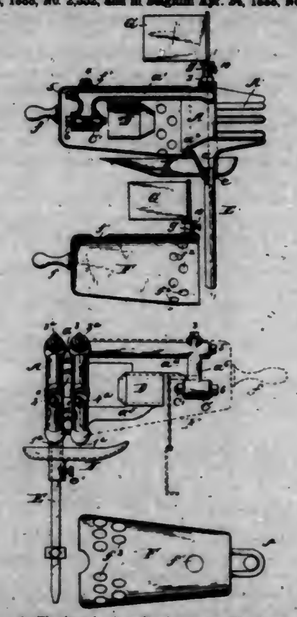
19. In an apparatus for illumination with combustible volatile liquids, the combination, with a forcing apparatus for the combustible liquid and the distributing-pipe of said apparatus, of a horizontal burner revoluble on said pipe, regenerative pipes connected with the burner and distributing-pipe and arranged in proximity to the burner-flame, a shield for said pipes and flame, and a wind-vane to hold the burner in the direction of the wind, substantially as and for the purposes specified.

20. The combination, with the burner C and the nozzle C', constructed substantially as described, of the screw-plug 24, provided with a recess, d^4, in which the open rear end of the nozzle is seated, substantially as and for the purposes specified.

21. The combination, with the mixing-cone D, of the burner C, the injector-nozzle C', connected therewith and provided with ports c^4, and the foraminous cylinder c^5, arranged within the nozzle, substantially as and for the purposes specified.

22. The combination, with the burner C, the injector-nozzle C', connected therewith and provided with ports c^4, and the foraminous cylinder c^5, arranged within the nozzle, of the screw-plug 24, provided with a seat, d^4, for the open end of said nozzle, substantially as and for the purposes specified.

404,064. REGENERATIVE BURNER. ROUSBRIDGE WALLWORK and ARTHUR C. WELLS, Manchester, County of Lancaster, England. Filed Sept. 14, 1888. Serial No. 285,383. (No model.) Patented in England Feb. 16, 1888, No. 2,352, and in Belgium Apr. 24, 1888, No. 81,537.



Claim.—1. The herein-described regenerative burner, comprising a converter or regenerator consisting of an endless tube of annular or parallelogrammatic form and having one or more convolutions, heater-ribs having the form of teeth or bars projecting forwardly

from one side of the converter on lines substantially parallel with the axis thereof, and an injector in communication with the converter and arranged axially in rear thereof, substantially as and for the purposes specified.

2. The herein-described regenerative burner, comprising a converter or regenerator consisting of an endless tube of annular or parallelogrammatic form and having one or more convolutions, hollow heater-ribs in communication with and projecting forwardly from the converter on lines substantially parallel with the axis thereof, and an injector in communication with the converter and arranged axially in rear thereof, substantially, as and for the purposes specified.

3. The herein-described regenerative burner, comprising a converter or regenerator consisting of an endless tube of annular or parallelogrammatic form and having one or more convolutions, an injector in communication therewith, a combining-cone in front of the injector and in the axial plane of the converter, said converter being arranged relatively to the cone so as to admit air freely into the open rear end of the cone around the injector-nozzle, in combination with a shield or casing inclosing the injector and cone, and the connection between said injector and the regenerator, substantially as and for the purposes specified.

4. The herein-described regenerative burner, comprising a converter or regenerator consisting of an endless tube of annular or parallelogrammatic form and having one or more convolutions, and an injector in communication therewith and consisting of an injector-nozzle and a combining-cone in front thereof, both in rear and in the axial plane of the converter, said injector being arranged relatively to the cone to admit air freely into the open rear end of the cone around the injector-nozzle, in combination with a shield or casing inclosing the injector and cone, and the connection between said injector and converter, said shield being provided with air-ports at a point intermediate of the combining-cone and converter, substantially as and for the purposes specified.

5. The herein-described regenerative burner, comprising a converter or regenerator consisting of an endless tube of annular or parallelogrammatic form and having one or more convolutions terminating in a rectilinear branch, an injector connected to the rear end of said branch in the axial plane of the converter, a combining-cone supported from said branch in front of the injector, and a removable shield or casing inclosing the injector and converter branch, said shield being provided with air-ports at a point intermediate of the converter and combining-cone, substantially as and for the purposes specified.

6. The herein-described regenerative burner, comprising a converter or regenerator consisting of an endless tube of annular or parallelogrammatic form, having one or more convolutions, an injector in communication therewith and in the axial plane thereof, and a pivot upon which said burner revolves, substantially as and for the purposes specified.

7. The herein-described regenerative burner, comprising a converter or regenerator consisting of an endless tube of annular parallelogrammatic form and having one or more convolutions, an injector in communication therewith and arranged in the axial plane thereof, a pivot upon which the burner revolves, and a wind-vane, substantially as and for the purposes specified.

8. The herein-described regenerative burner, comprising a regenerator consisting of an endless tube of annular or parallelogrammatic form, having one or more convolutions, an injector in communication with and in the axial plane of the converter, and a pivot upon which said parts revolve, in combination with a shield or casing, F, and a wind-vane, substantially as and for the purposes specified.

9. The herein-described regenerative burner, comprising a converter or regenerator of annular or parallelogrammatic form and having one or more convolutions, said converter having a rectilinear initial and terminal branch substantially at right angles to each other, an injector connected with the terminal branch, a supply-pipe, and a pivotal connection between the supply-pipe and initial rectilinear branch, substantially as and for the purposes specified.

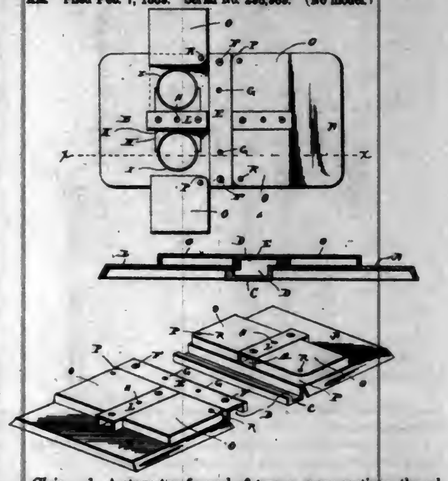
10. The herein-described regenerative burner, comprising a converter or regenerator of annular or parallelogrammatic form and having one or more convolutions, said converter having a rectilinear initial and terminal branch substantially at right angles to each other, an injector connected with the terminal branch, a supply-pipe, and a pivotal connection between the supply-pipe and initial rectilinear branch, and a directing or wind vane, substantially as and for the purposes specified.

11. The combination, with the burner having one or more regenerators, A, the supply-pipe E, and the dish H, of the chimney H', substantially as and for the purposes specified.

12. The combination, with the burner, constructed substantially as described, and the pivot-pipe E, provided with a collar, *e*, of the dish H, secured to said pipe between the collar *e* and the burner, substantially as and for the purposes specified.

13. A regenerative vapor-burner consisting, essentially, of a regenerator constructed of an endless tube of annular or parallelogrammatic form and having one or more convolutions, an open-ended more or less conical burner-tube arranged in the axial plane of and some distance from the regenerator, and an injector arranged with its discharge-nozzle in the axial plane of and some distance from the larger open end of the burner-tube, substantially as and for the purposes specified.

404,065. STOVE-TOP. WILLIAM H. WOOLDRIDGE, Birmingham, Ala. Filed Feb. 7, 1889. Serial No. 299,069. (No model.)



Claim.—1. A stove-top formed of two or more sections, the adjacent edges of which are provided with oppositely-offset portions, as C E, the offset of one section being adapted to take over and register with that of the other, and the two conjointly forming an air-space, D, substantially as specified.

2. A stove-top formed of two or more sections, the adjacent edges of which are provided with oppositely-offset portions, as C E, formed with perforations, as G, the offset of one section being adapted to take over and rest upon that of the other, and the two conjointly forming an air-space, D, substantially as specified.

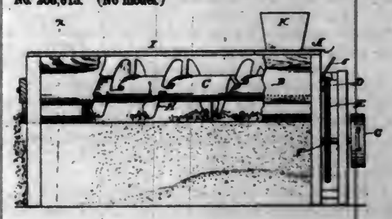
3. The stove-top having the openings I and the offsets or cleats arranged at right angles to each other, and the covers O, pivoted on the stove-top at their outer proximate corners, and thereby adapted to be swung over the openings or swung outward therefrom and extended beyond the sides of the stove-top, substantially as described.

4. The stove-top having the transverse offset on its upper side and the openings H, the bridge-plates adapted to fit in said openings, circular openings being formed in the ends of openings H and in the sides of the bridge-plate, the latter having the offsets or cleats L on their upper sides arranged at right angles to the offset on the stove-top, and the covers O, pivoted on the stove-top at their inner proximate corners, whereby said covers may be swung inward over the openings or swung outward and extended beyond the sides of the stove-top, and whereby the cleats or offsets constitute stops to limit the movement of the covers, substantially as described.

5. A center or bridge piece for stove-tops, provided on its upper side with a longitudinal hollow brace extending beyond its ends and adapted to support the same, substantially as herein described.

6. A stove-top provided with braces on its upper side, in combination with swinging covers arranged to be flush or level with said braces, substantially as set forth.

404,066. COTTON-SEED SEPARATOR. JAMES S. REESE, Hartwell, Ohio, assignor, by mesne assignments, to the National Cotton Seed Oil and Huller Company, Memphis, Tenn. Filed May 29, 1886. Serial No. 203,613. (No model.)

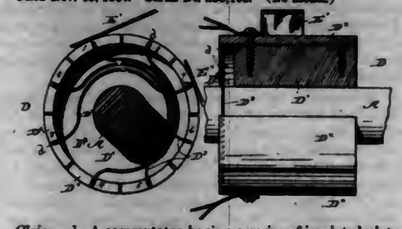


Claim.—1. In a cotton-seed separator, the combination, substantially as set forth, of the shaft C, the flights H, secured thereon upon different but parallel spiral lines, and the inclosing perforated case, within which the separator-shaft is mounted to revolve.

2. The combination, substantially as specified, of the case B, perforated at bottom, and U-shaped in cross-section, as shown, and the revolving separator and conveyer consisting of the shaft C and spirally-arranged flights H.

3. The combination of the supporting-frame A, the U-shaped perforated case having a discharge-opening at one end and the opposite end and top closed, the revolving separator-shaft having flights arranged as shown, and suitable gearing to revolve said shaft at a high speed, for the purpose set forth.

404,067. ELECTRIC MOTOR. WARREN S. BELDING, Chicago, Ill., assignor to the Belding Motor and Manufacturing Company, same place. Filed Nov. 15, 1887. Serial No. 255,192. (No model.)



Claim.—1. A commutator having a series of insulated plates, D^3, an annular recess, D^4, and wires D^5 in said recess and connecting said plates into groups, substantially as shown and described.

2. A commutator having a series of insulated plates, D^3, an annular recess, D^4, wires D^5 in said recess and connecting said plates into groups, and said recess D^4 filled with wax or other insulating material, substantially as shown, and for the purposes described.

3. A commutator having a series of insulated plates, D^3, an annular recess, D^4, and wires D^5 in said recess, said commutator-plates having recesses or slots *d* at their ends, and the ends of said wires being secured in said recesses or slots *d*, substantially as shown and described.

4. A commutator having a series of insulated plates, D^3, an annular recess, D^4, and wires D^5 in said recess, said commutator-plates having recesses or slots *d* at their ends, and said wires being secured in said recesses or slots *d*, and said recess D^4 being filled with wax or other insulating material, substantially as shown, and for the purposes described.

5. In an electric motor, a plurality of armature-sections connected with the plates of the commutator, and a commutator having an annular recess, D^4, and wires D^5 in said recess and connecting the commutator-sections into groups, whereby each armature-section is brought into communication with each brush more than once during each rotation of the commutator, substantially as shown and described.

6. In an electric motor, a plurality of armature-sections connected with the plates of the commutator and a commutator having an annular recess, D^4, and wires D^5, and an insulating material in said recess, said wires connecting the commutator-sections into groups, whereby each armature-section is brought into communication with each brush more than once during each rotation of the commutator, substantially as shown and described.

7. In an electric motor, a plurality of armature-sections connected in parallel, a commutator having a recess, D^4, wires D^5 in said recess and connecting the commutator-plates into groups, and two brushes held in contact with commutator-plates whose connections lead to armature-poles of opposite polarity, substantially as shown and described.

8. In an electric motor, a plurality of armature-sections connected in parallel, a commutator having a recess, D^4, wires D^5, and an insulating material in said recess, said wires connecting the commutator-plates into groups, and two brushes held in contact with commutator-plates whose connections lead to armature-poles of opposite polarity, substantially as shown and described.

404,068. DYNAMO. WARREN S. BELDING, Chicago, Ill., assignor to the Belding Motor and Manufacturing Company, same place. Filed Feb. 2, 1888. Serial No. 262,786. (No model.)

Claim.—1. An armature divided into bobbin-spaces and poles which are respectively equidistant and equal in dimensions, and each of which poles has a hole extending into or through it perpendicularly to the plane of the armature, whereby the exposed surface of the pole remains relatively large, while its mass is relatively small, substantially as and for the purposes herein specified.

2. An armature divided into bobbin-spaces and poles which are respectively equidistant and of equal dimensions, said poles being provided with outward extensions, into or through which extend holes perpendicularly to the plane of the armature, substantially as and for the purposes herein specified.

3. An armature consisting of alternate metal and insulation blanks and divided into bobbin-spaces and poles which are respectively equidistant and equal in dimensions, and each of which poles has a hole extending into or through it perpendicularly to the plane of the armature, whereby the exposed surface of the pole remains relatively large, while its mass is relatively small, substantially as and for the purposes herein specified.

4. An armature consisting of alternate metal and insulation blanks and divided into bobbin-spaces and poles which are respectively equidistant and of equal dimensions, said poles being provided with outward extensions, into or through which extend holes perpendicularly to the plane of the armature, substantially as and for the purposes herein specified.

5. An armature composed of two or more interlocking sections, said sections being composed of sheet-blanks each of which is a segment of a circle and divided into bobbin-spaces and poles which are respectively equal in dimensions and equidistant from each other and located unsymmetrically on said blank, so that there is a bobbin-space at one end of the blank and a pole at the other end, substantially as and for the purposes herein specified.

6. An armature composed of two or more interlocking sections, said sections being composed of sheet-blanks each constituting a segment of a circle and divided into bobbin-spaces and poles which are respectively equal in dimensions and equidistant from each other and located unsymmetrically on said blank, so that there is a bobbin-space at one end of the blank and a pole at the other end, each of said poles having formed in it a hole, substantially as and for the purposes herein specified.

7. An armature composed of two or more interlocking sections, said sections being composed of sheet-blanks each of which is a segment of a circle and divided into bobbin-spaces and poles which are respectively equal in dimensions and equidistant from each other and located unsymmetrically on said blank, so that there is a bobbin-space at one end of the blank and a pole at the other end, and said poles having each an outward extension, substantially as and for the purposes herein specified.

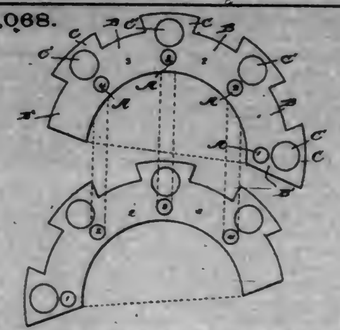
8. An armature composed of two or more interlocking sections, said sections being composed of sheet-blanks each of which is a segment of a circle and divided into bobbin-spaces and poles which are respectively equal in dimensions and equidistant from each other and located unsymmetrically on said blank, so that there is a bobbin-space at one end of the blank and a pole at the other end, and said poles having each an outward extension, and each such extension having formed in it a hole, substantially as and for the purposes herein specified.

9. An armature composed of two or more interlocking sections, said sections being composed of metal sheet-blanks M and insulation-blanks I, each of which is divided into bobbin-spaces and poles which are respectively equal in dimensions and equidistant from each other and located unsymmetrically on said blank, so that there is a bobbin-space at one end of the blank and a pole at the other end, substantially as and for the purposes herein specified.

10. An armature divided into bobbin-spaces and poles which are respectively equidistant and equal in dimensions, and each of which poles has a hole extending through it perpendicularly to the plane of the armature, and spiders S', located at each side of the armature, bolts T, extending through said holes and the spiders, and a shaft, S, extending through said spiders, substantially as described.

11. The combination, with an armature having holes extending through the armature between the bobbin-spaces B B, of a shaft, S, a spider, S', located on said shaft at each side of the armature and having bushings S^4, extending into said holes, and bolts T, extending

404,068.



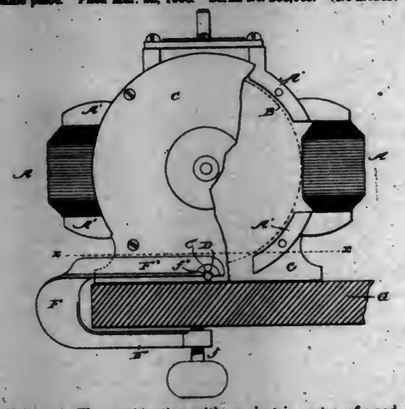
through said holes and bushings and the arms of the spiders, substantially as and for the purposes specified.

12. The combination, with an armature divided into bobbin-spaces and poles which are respectively equidistant and equal in dimensions and having holes A and C extending through the armature between the bobbin-spaces perpendicularly to the plane of the armature, of a shaft, S, a spider, S', located on said shaft at each side of the armature, and bolts T, extending through one of the spider-arms and the armature and threaded into the opposite spider-arm, substantially as and for the purposes herein set forth.

13. The combination, with an armature having holes A and C extending through the armature between the bobbin-spaces B B, of a shaft, S, a spider, S', located on said shaft at each side of the armature and having bushings S^4 extending into said holes, and bolts T, extending through one of the arms of said spider and the bushing thereon and through one of said holes and threaded into the opposite bushing and spider-arm, substantially as shown and described.

14. The combination, with an armature composed of two or more interlocking sections, said sections being composed of sheet-blanks each of which is a segment of a circle and divided into bobbin-spaces and poles which are respectively equal in dimensions and equidistant from each other and located unsymmetrically on said blank, so that there is a bobbin-space at one end of the blank and a pole at the other end, of spiders applied to the sides of said armature, and a shaft extending through the center or axis of said armature and said spiders, substantially as shown and described.

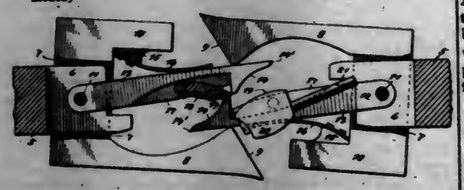
404,069. CLAMP FOR ELECTRIC MOTORS. WARREN S. BELDEN, Chicago, Ill., assignor to the Belding Motor and Manufacturing Company, same place. Filed Mar. 22, 1888. Serial No. 268,065. (No model.)



Claim.—1. The combination, with an electric motor, of a rod, D, extending through the lower portion of the frame of the motor, the ends of said rod projecting at each side of the frame, and a clamp, F, to engage the ends of said rod D and a table, substantially as shown and described.

2. The combination, with an electric motor having the field-magnets A A' and plates C C, secured to said magnets, substantially as described, of a rod, D, extending horizontally through said plates C C and having its ends projecting from said plates, and a clamp, F, to engage said rod D and a table, substantially as shown and described.

404,070. CAR-COUPLING. LEWIS W. BREWSTER and ROBERT SWIFT, Palmyra, Tenn. Filed Mar. 6, 1889. Serial No. 302,067. (No model.)



Claim.—1. An apparatus for coupling and uncoupling cars, consisting of a bumper, a horizontally-swinging frame mounted on the bumper parallel therewith and having a coupling-hook guard-arm, a horizontally-swinging coupling-hook located within the horizontally-swinging frame and parallel with the guard-arm, a spring acting on the coupling-hook to hold it toward the guard-arm, a cam-plate pivoted to the coupling-hook with a projecting arm, and a shaft mounted on a car with a hand-wheel at its upper end and a chain at its lower end connected to the projecting arm on the cam-plate, substantially as shown and described.

2. In an apparatus for coupling and uncoupling cars, a horizontally-swinging frame with a coupling-hook guard-arm, a horizontally-swinging coupling-hook located within the horizontally-swinging frame and parallel with the guard-arm, a spring acting on the coupling-hook to hold it toward the guard-arm, a cam-plate pivoted to the coupling-hook, and mechanism on the car for operating the cam-plate, substantially as specified.

3. In an apparatus for coupling and uncoupling cars, the extended portion 3, shaped as a draw-head and serving as a bumper and having the depending bracket 5, a horizontally-swinging frame pivoted to the bracket 5 and consisting of the coupling-hook guard-arm 8 with the inwardly-beveled end 9, the cross-piece 7, and the short arm 10, the horizontally-swinging coupling-hook 13, located between the arms 8 and 10 and parallel thereto and having the inwardly-beveled face 14 at its outer end opposite the beveled end 9 of arm 8, and the spring 16, mounted on arm 10 and holding the coupling-hook 13 toward arm 8, substantially as specified.

4. An apparatus for coupling and uncoupling cars, consisting of the draw-head and bumper 3, with the depending bracket 5, the horizontally-swinging frame pivoted to bracket 5 and consisting of the coupling-hook guard-arm 8, with inwardly-beveled outer end 9, the cross-piece 7, and short arm 10, the horizontally-swinging coupling-hook 13, located within the horizontally-swinging frame parallel with arm 8 and formed with the point 14' and the inwardly-beveled face 14 at its outer end, the shelf 17, the cam-plate 18, with curved face 19, pivoted on the shelf 17 at the forward part of hook 13 and having the flange 20 engaging the latter and the rearwardly-projecting arm 21, and a vertical shaft, 23, mounted on a car, with a hand-wheel, 25, at its upper end and a chain, 22, at its lower end connecting with the arm 21 of the cam-plate 18, substantially as specified.

404,071. END-GATE FOR VEHICLES. THEODORE B. BURR, Harlan, Iowa. Filed Dec. 31, 1888. Serial No. 295,002. (No model.)



Claim.—1. The combination, with a vehicle-body, a transverse plate attached to the bottom of the body at the end, provided with a gudgeon at each extremity, and a recess in the outer face near one end and a keeper, 13, spanning said recess, of an end-gate, strap-hinges attached to the said end-gate having a bearing upon the said gudgeons, jointed supporting-bars connecting the body and the end-gate, stops or ears secured to the side-boards of the body adapted to limit the forward and rearward throw of the supporting-bars, and a hinge, 18, secured to the outer face of the end-gate having a detachable bearing upon the keeper of the transverse body-bar, all combined for operation substantially as shown and described.

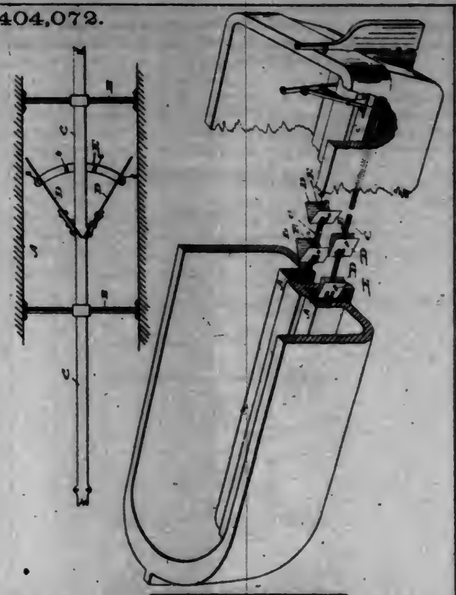
2. The combination, with a vehicle-body, of an end-gate detachably hinged thereto at its lower edge and jointed supporting-bars sliding one upon the other at their pivotal point and pivoted at their outer ends to the body and end-gate, respectively, substantially as set forth.

3. The combination, with the body having bar 10, and wear-plates 19, provided on their lower edges with front and rear stops 20 21, of the end-gate having downwardly-projecting straps or projections engaging said bar to rock thereon, and the jointed supporting bars, the sections *a'* of which are pivoted to the wear-plate and provided with a slot, 23, the sections *a* being hinged to the end-gate and provided with pivots extending through slots 23, substantially as set forth.

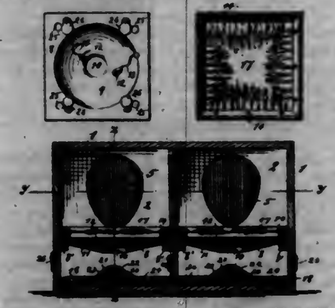
404,072. PROPELLER FOR CANAL-BOATS, &c. ALBERT DUBROWN, Hemlock, Ontario, Canada. Filed June 17, 1886. Renewed Oct. 10, 1888. Serial No. 287,783. (No model.)

Claim.—As a means for propelling vessels, open inverted troughs A, located on each side of the keel and extending from stem to stern, in combination with a reciprocating rod or shaft, C, journaled within each of the troughs, a series of valves or wings, D, hinged to each of the shafts, and a curved bar, E, secured to each shaft, passed through said valves, and provided with stops *e* upon opposite sides of the valves, substantially as shown and described, and for the purpose specified.

404,072.



404,073. HEN'S NEST. EBENEZER BUTTERICK, Brooklyn, N. Y. Filed Dec. 14, 1888. Serial No. 293,567. (No model.)



Claim.—1. In a hen's nest, a concave shelf provided with an opening and an artificial nest-egg or nest-eggs loosely attached to the shelf by a connection, so as to permit the egg or eggs to rest and roll on the shelf, substantially as described.

2. In a hen's nest, a concave shelf with an opening, a frame with a sheet of light fabric loosely mounted thereon beneath the shelf, and a vertical yielding projection below the opening in the shelf and supporting the center of the sheet of light fabric, substantially as described.

3. In a hen's nest, a concave shelf provided with an opening and one or more artificial nest-eggs loosely attached thereto by a connection to rest and roll on the shelf, in combination with a frame having mounted thereon hay or other suitable nest-forming material projecting over the shelf, substantially as described.

4. In a hen's nest, a concave shelf having an opening and one or more artificial eggs loosely connected to the shelf, a frame located above the shelf and having mounted thereon hay or other suitable nest-forming material projecting over the shelf, a flexible sheet of light fabric loosely mounted beneath the shelf, and a vertical yielding projection below the opening in the shelf and supporting the center of the flexible sheet of light fabric, substantially as described.

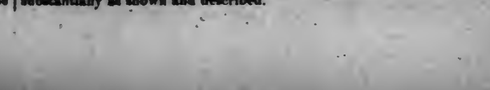
5. In a hen's nest, the frame 14, consisting of strips 15, secured together by pins 16, and hay or straw, 17, clamped between the strips 15 and projecting inwardly in the frame 14, substantially as described.

6. In a hen's nest, the shelf 8, having the concave portion 9, with a roughened surface, the central opening, 10, the artificial nest-eggs 12, resting on shelf 8 and connected thereto by cords 13, and the ventilating-holes 25, with pivoted covers 26, substantially as described.

7. In a hen's nest, the frame 18, having the inwardly-beveled edges 19, and the light flexible fabric 20, loosely mounted on the frame 18, in combination with the spiral spring 23, having the oval top piece, 22, supporting the center of the flexible fabric 20, substantially as described.

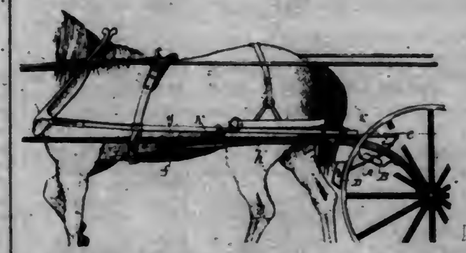
8. A hen's nest consisting of a casing, 1, formed with the receptacle 3, having cleats 8' on its sides, a door, 6, ventilating-holes 25, with pivoted covers 26, located in the side of the receptacle 3 below the cleats 8' and in the lower part of the door 6, a covered passage-way, 4, and a partition, 2, with opening 5, between the receptacle 3 and passage-way 4, in combination with a shelf, 8, resting on cleats 8' and having the concave portion 9, with roughened surface, the central opening, 10, the artificial nest-eggs 12, loosely connected by cords 13 to the top of shelf 8, and the ventilating-holes 25, with pivoted covers 26, a frame, 14, resting on shelf 8 and having hay or straw, 17, projecting over the latter, a frame, 18, with beveled edges 19, located in the bottom of the receptacle 3 beneath shelf 8, with a flexible fabric, 20, loosely connected thereto, and a spiral spring, 23, secured to bottom of receptacle 3 and having an oval top piece, 22, located below the opening 10 and supporting the fabric 20, substantially as described.

404,074. VETERINARY INSTRUMENT. BENJAMIN CHAMPLIN, Cortland, Ill. Filed Feb. 19, 1889. Serial No. 300,408. (No model.)



Claim.—An improved surgical instrument, consisting of a lance provided with a rounded head having shoulders projecting beyond the sides of the lance, substantially as specified.

404,075. AUTOMATIC BRAKE FOR VEHICLES. LEANDER B. CLARK, Alta, Iowa. Filed Aug. 13, 1888. Serial No. 282,604. (No model.)



Claim.—An automatic brake device for vehicles, comprising a rock-shaft, A, having arms C and brake-shoes on its free ends, springs *i*, and harness holdback-straps, in combination with shafts having holdback-irons *f*, and anti-friction pulleys *g*, to operate substantially as shown and described.

404,076. BRAKE FOR DUMB-WAITERS. HUGH DONOHUE, New York, N. Y. Filed Feb. 15, 1888. Serial No. 300,012. (No model.)

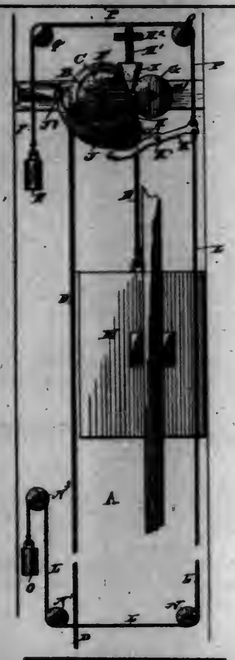
Claim.—1. The combination, with two aligning wheels, one of which is secured on a shaft to be controlled, of a brake-shoe held below one of said wheels, and a pin provided with a wedge supported on the free end of the brake-shoe to extend between said wheels, substantially as shown and described.

2. In a dumb-waiter, the combination, with a main shaft supporting the carriage-pulley, of a brake-wheel secured on the said shaft, a second wheel held in line with the said brake-wheel, a pin provided with a wedge and held between the said two pulleys, and a brake-shoe adapted to engage the said brake-wheel and supporting the said pin, substantially as shown and described.

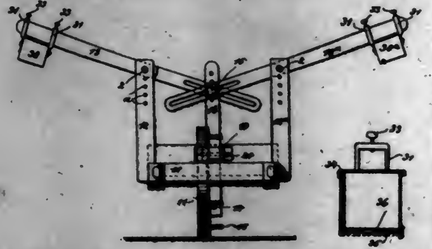
3. In a dumb-waiter, the combination, with a main shaft supporting the carriage-pulley, of a brake-wheel secured on the said shaft, a second wheel held in line with the said brake-wheel, a pin provided with a wedge and held between the said two pulleys, a brake-shoe adapted to engage the said brake-wheel and supporting the said pin, and a lever operating on the said brake-shoe and under the control of the operator, substantially as shown and described.

4. In a dumb-waiter, the combination, with a main shaft supporting the carriage-pulley, of a brake-wheel secured on the said shaft, a second wheel held in line with the said brake-wheel, a pin provided with a wedge and held between the said two pulleys, a brake-shoe adapted to engage the said brake-wheel and supporting the said pin, a lever operating on the said brake-shoe, and weighted ropes connected with the said lever to counterbalance and operate the same, substantially as shown and described.

404,076.



404,077. POISON-DISTRIBUTER. FRED EATON, Conway, N. H. Filed Mar. 8, 1889. Serial No. 302,495. (No model.)



Claim.—1. The combination, with a frame and the supporting-standards, of the vibrating levers pivoted to the standards, boxes provided with perforated bottoms attached to the outer ends of the lever-arms, and a vertically-reciprocating slide attached to the inner ends of the levers and operating the same, substantially as described.

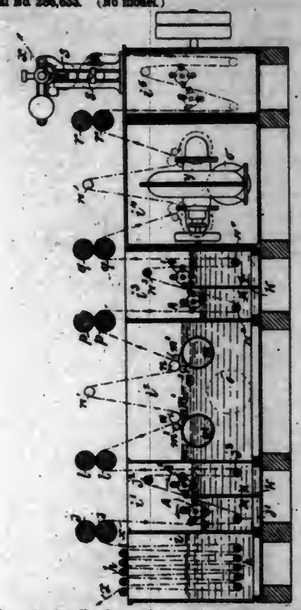
2. In a poison-distributer, the combination, with an operating-lever, of a box having a perforated bottom and laterally adjustable along the lever, and binding-straps for securing the box to the lever, substantially as shown and described.

3. In a poison-distributer, the combination, with a frame and a carrying-wheel journaled within the same, said wheel having a series of laterally-projecting pins upon one side arranged near its edge, of the upright standards attached to each side of the frame, the vibrating lever pivoted to the uprights, a vertically-reciprocating slide having a projection upon its lower end adapted to engage with the pins on the wheel, the upper end of said slide being adjustably secured to the inner ends of the vibrating lever, and the boxes having perforated bottoms secured to the outer ends of the lever, substantially as shown and described.

4. In a poison-distributer, the box 30, provided with strap 31 and set-screw 33, perforated bottom 36, and hinged bottom 35, all arranged and adapted to operate substantially as and for the purpose described.

5. The combination, with a pair of boxes, of vertically-vibrating levers upon which the boxes are supported, a vertically-reciprocating slide to which the levers are connected, a carrier-wheel provided with laterally-extending pins, and a pin or projection carried by the slide and extending into the path of the carrier-wheel projections, as and for the purpose stated.

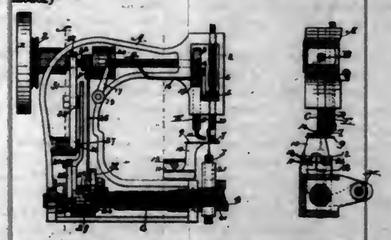
404,078. APPARATUS FOR WASHING TEXTILE FABRICS. JAS. B. FARMER, Salford, County of Lancaster, England. Filed Sept. 22, 1888. Serial No. 286,633. (No model.)



Claim.—1. A roller for washing and cleansing textile fabrics, consisting of disks mounted to rotate on a transverse shaft in a receptacle containing liquid, series of links or arms swiveled to the faces of said disks, and cylindrical vessels open at one side mounted on said links or arms and adapted as the shaft is revolved to dip up the liquid and project it upon the face of the fabric, substantially as shown and described.

2. In apparatus for washing and cleansing textile fabrics, the combination, with a tank divided into a series of sections containing liquid, series of guide-rollers for the fabric mounted to rotate in and upon said tank, series of perforated cylinders mounted to rotate in said tank and over which the fabric passes from and to the guide-rollers, and a series of squeezing-rollers through which the fabric passes to and from the guide-rollers, of a series of rollers consisting of disks mounted to rotate on transverse shafts in said tank, arms swiveled on said disks, and cylindrical vessels open at one side mounted on said arms adapted to raise the liquid and discharge it upon the faces of the fabric, and means for rotating said rollers and cylinders, substantially as shown and described, for the purposes set forth.

404,079. WAX-THREAD SEWING-MACHINE. WILLIAM FIELDER, North Adams, Mass. Filed Apr. 23, 1888. Serial No. 272,122. (No model.)

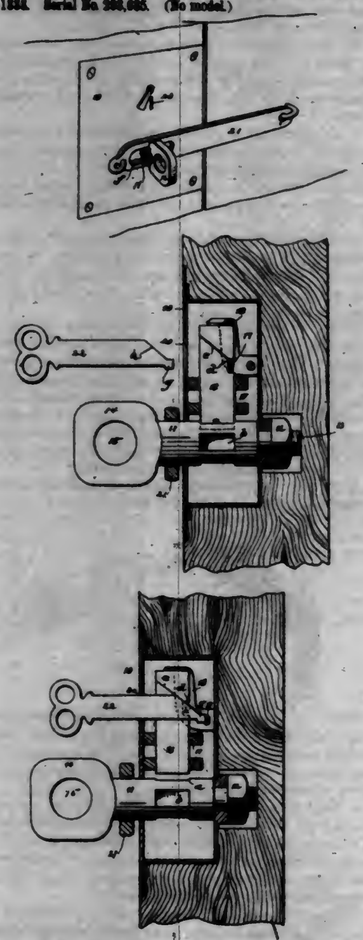


Claim.—1. In a sewing-machine, the combination of a driving-shaft, B, provided with a triangular cam, 37, a vibratile arm, 31, pivoted on a stationary stud, 34, and provided with a forked end which spans said cam, and with a slotted opening, 33, having a wrist-pin, 35, adjustably secured therein, a rock-shaft, G, having at its outer end a frame, 21, in which the needle-bar I is fitted to reciprocate, and near its inner end an arm, 22, provided with a curved slot formed concentrically to said rock-shaft, a slotted arm, 27, adjustably fitted on the arm 22, and provided with a binding-screw, 30, by which the arms 22 and 27 are adjustably secured together, and a needle-bar, I, and its attached needle, the wrist-pin 35 being fitted to engage in the slot of the arm 27, to produce a synchronous movement of the arms 27 and 31, as and for the purpose herein specified.

2. The combination of the frame A, provided with a dovetailed lug, 12, a throat-plate post, 10, provided with a split flange and with a clamping-screw, whereby said post is fitted to be adjustably attached to said lug, and a needle attached to an operating mechanism which is adjustable lengthwise of the machine, as and for the purpose herein specified.

3. In a sewing-machine, the combination of the frame A, provided with snugs 25, and a rock-shaft, G, having an arm, 22, detachably secured thereto, said arm having a lateral projection, 24, which is fitted to engage in said snugs, and thereby preventing said rock-shaft from shifting endwise when said arm is secured thereto, as and for the purpose herein specified.

404,080. LOCK. HALLER C. FROST, Farmington, Cal. Filed Dec. 15, 1888. Serial No. 293,685. (No model.)

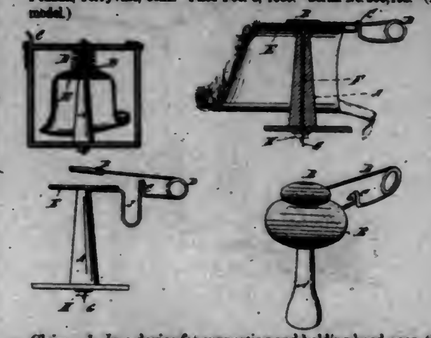


Claim.—1. The combination, with a casing having a key-hole therein and a revoluble staple formed with recesses, of a locking-bar arranged for engaging the recesses of the staple and provided with an inclined shoulder opposite the key-hole of the casing, substantially as described.

2. The combination, with a staple furnished with recesses, of a locking-bar formed with a side recess and an inclined shoulder and springs arranged in connection with the locking-bar, substantially as described.

3. The combination, with a revoluble and recessed staple, of the locking-bar 16, having the inclined shoulder *e* and recess *d*, the springs 18 and 19, engaging the bolt, and the key 22, having the inclined end *h* and nose *g*, substantially as herein shown and described.

404,081. DEVICE FOR HOLDING HEAD-GEAR. DEMILLIA M. FULLER, Terryville, Conn. Filed Feb. 8, 1889. Serial No. 299,192. (No model.)



Claim.—1. In a device for supporting and holding head-gear, the combination of a standard having a disk on its top, and a movable disk supported on a spring-arm, and a catch attachable to the spring-arm and arranged to engage with the spring-arm and to hold the two disks together.

2. In a device for supporting and holding head-gear, the combination of the standard A, having the disk E on its top, the disk B, supported on the spring-arm D, attached to the standard, and so bent at C as to form a hook and engage that part of the spring-arm which supports the disk B.

3. In a device for supporting and holding head-gear, the combination of the standard A, exterior disk, B, and a wire supporting the exterior disk, B, and forming the catch C and spring D, and extending through the standard A and having its projecting end provided with a screw-thread, G, and a nut, H.

4. In a device for supporting and holding head-gear, the combination, with the standard A and interior disk, E, attached thereto, of an elastic wire supporting the movable exterior disk, B, and formed with the catch C, arranged to hold the two disks together, and with the offset at J, for the purpose and substantially in the manner described.

404,082. BREECH-LOADING FIRE-ARM. EDGAR HARRISON, New Bond Street, County of Middlesex, England. Filed Sept. 8, 1888. Serial No. 284,870. (No model.)



Claim.—1. The combination, in a breech-loading fire-arm having a housing and a barrel that is pivoted thereto and swings downwardly as the breech opens upwardly, of an extractor having a leg extending along below the barrel and notched on its under side, the mainspring and hammer, and the lever A B, the forward end of which is adapted to take the notched leg and the rear end to be acted upon by the movement of the mainspring, there being a projection, E, at one side of the lever A B that comes into contact with the housing as the breech is opened to disconnect the lever from the notched leg, substantially as specified.

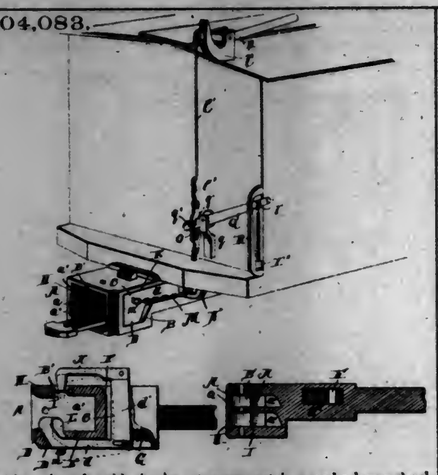
2. The combination, with the breech-loading fire-arm having a hinged barrel, of the ejector having a notched leg, D, in combination with the lever A B, having a projection, E, within a recess, F, and the hammer I, and mainspring receiving an endwise movement when the firing takes place, so as to act upon the portion B of the lever and cause the part to engage the leg D of the ejector, substantially as set forth.

404,088. CAR-COUPLING. ADAM HARTER, Apple Creek, Ohio. Filed Mar. 13, 1888. Serial No. 302,069. (No model.)

Claim.—1. In a car-coupling, the combination of the hollow draw-head having a stationary jaw, H, the swinging jaw pivoted in the draw-head, the trigger connected to the swinging jaw and arranged adjacent to the stationary jaw, as described, and means to operate the swinging jaw, substantially as specified.

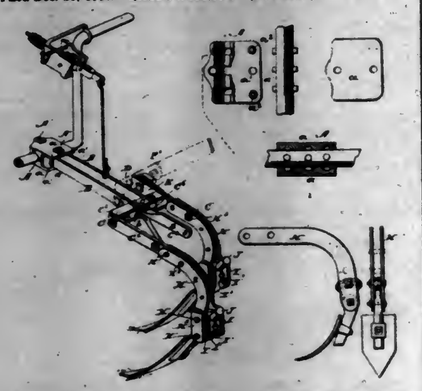
2. In a car-coupling, the combination, with the draw-head provided with a stationary jaw, H, the swinging jaw mounted in the draw-head and provided with a trigger, K, which is arranged at its free end close to the stationary jaw, the chain connected to the swinging jaw and provided with a slotted link, the upper operating-lever connected to the free end of the said chain, and the lower operating-lever fitting in the slotted link and operating at its outer

404,083.



end in a slotted guide having an upper notch, *r*, and a lower shoulder, *r'*, to engage the free end of the lever, substantially as specified.

404,084. CULTIVATOR. CHARLES R. HARTMAN, Vincennes, Ind. Filed Dec. 23, 1887. Serial No. 258,839. (No model.)



Claim.—1. In a cultivator, a beam-coupling having upper and lower plates rigidly united at one end, having fender-support E and beam C at such end and movable at their opposite ends toward each other, whereby they may be clamped against intermediate parts and the drag-bars fitted at their ends between the said plates, substantially as set forth.

2. In a cultivator, the drag-bars and hoes, combined with the beam-coupling having upper and lower plates and having the fender-bar E and beam C cast integral therewith, and a beam, C^3, substantially as and for the purposes specified.

3. The combination of the fender bar or support, the connection F, consisting of plate F', having mortise f' and serrations f^2, and the plate F^3, having serrations f^3 and a mortise, f^4, the fender-stem fitted in said mortises, and the clamping-bolt, substantially as set forth.

4. A fender-connection, substantially as described, comprising two plates, one having serrations and provided with a mortise in which the fender-stem will fit snugly so that part thereof will project laterally beyond the said plate and the other plate having serrations to engage those of the first and provided with a mortise into which the side of the fender-stem fits, such mortise being larger than the mortise of the first plate, whereby to permit a limited adjustment of the fender-stem, substantially as set forth.

5. In a cultivator, the standard having side bars or cheeks, H^2, combined with the shovel-stem held adjustably between said cheeks, and interlocking ratchets whereby the said stem may be held in any suitable adjustment, the cheeks H^2 being movable apart, whereby the ratchets may be disengaged when it is desired to vary the adjustment of the shovel-stem, substantially as set forth.

6. In combination with the standard H, the inner plates, I' I', having the grooves *i*, the ratchets i^2, the studs i^4, and the slots i^5, and the outer plates, I I, having the ratchets i^2, the sockets i^3, the openings i^7, and the pairs of plates having between them the recesses I^3, and the bolts K, for clamping the shovel-stem between the plates, substantially as shown and described, and for the purpose specified.

7. In combination with the plates I I I' I', constructed on their meeting faces with interlocking ratchets, the side bars or cheeks, H^2, and the shovel-stem held between plates I' I', substantially as and for the purpose specified.

8. The combination of the standard having side plates or cheeks, the plates I I', supported between said cheeks and having interlocking ratchets, and the shovel-stem held between plates I', one of such plates I I' having pivot-studs to enter sockets in the other, substantially as set forth.

9. In a cultivator, substantially as described, the combination of the plates I' I', having their inner faces constructed to receive and hold the shovel-stem and having their outer faces formed with ratchets, and outer plates held to said plates I' I' and having their inner faces formed with ratchets arranged to engage those of the said plates I', substantially as set forth.

10. The combination, with the standard and tooth-stem, of an inner plate, I', having grooves to receive such stem, a slot or slots, i^5, and ratchets to engage corresponding ratchets of a plate, I, or equivalent device or devices, combined with bolts K, substantially as set forth.

11. In a cultivator or other similar implement, a standard having side bars or cheeks, combined with a tooth-connection comprising plates operating pivotally and provided with slot or slots, and ratchets between such side bars or cheeks, joints being provided for the insertion of a bifurcated spreader or equivalent device, substantially as set forth.

12. The combination, with the cultivator-stem, of the inner plates, I', having grooves to receive the same and provided on their outer sides at their ends with serrations, and the outer plates, I, having serrations to engage those of the inner plates, I', and clamping-bolts, substantially as set forth.

13. In a cultivator, substantially as described, the combination, with the beam-coupling provided at its inner end with the feeder-bar or support formed integral with and arranged in the same horizontal plane with the beam-coupling, of the drag-bars pivoted at their rear ends to the beam-coupling, the drag-bars being provided at such end with outwardly-extended eye formations, whereby the drag-bars may be arranged close together at their rear ends and the necessary width for secure fastening be provided at such end, substantially as set forth.

404,085. CULTIVATOR. CHARLES R. HARTMAN, Vincennes, Ind. Filed Nov. 7, 1888. Serial No. 290,157. (No model.)



Claim.—1. An improved attachment for cultivators, plows, and the like, consisting of the cheeks, the foot-piece pivoted between the said cheeks and having ratchets arranged to engage, the spreader-spring operating between said cheeks, and the clamping or connecting bolt, substantially as set forth.

2. In an attachment, substantially as described, for cultivators, plows, and the like, the combination, with the cheek-plates and the foot-piece pivoted between such cheek-plates, of a spring whereby to force such cheek-plates apart, and a clamping or connecting bolt by which to hold said cheek-plates against the action of the spring, all substantially as and for the purposes specified.

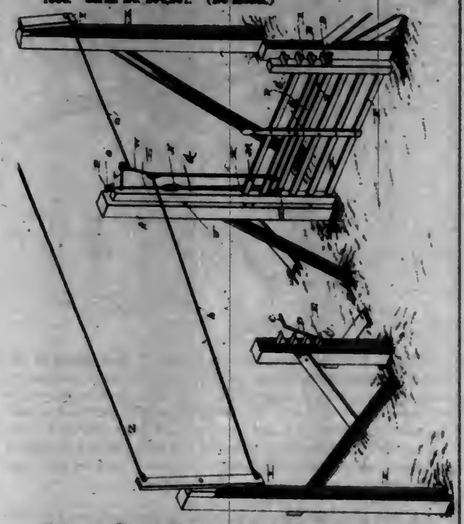
3. The combination of the cheeks having serrations *b*, the foot-piece pivoted between the cheeks and having serrations c^2 and opening F, the spring fitted in opening E and bearing between the cheeks, and the clamping or connection bolts, substantially as set forth.

4. The improved attachment herein described, comprising the cheeks B, having openings *c'* and serrations or teeth *b*, the foot-piece having ratchets c^2, slot c^3, and studs *c*, and the clamping or connection bolt, substantially as herein described.

5. In an attachment, substantially as described, the combination of the beam, the cheeks provided at their lower ends with ratchets and pivoted above such ratchets to the beam, the foot-piece pivoted above such ratchets to the cheeks and provided below its pivot with ratchets, and the clamping-bolt, substantially as set forth.

6. The improved attachment herein described, consisting of the cheeks having openings *c'* and serrations *b*, the foot-piece having socket H at its lower end, provided near its upper end with studs *c* to enter openings *c'*, and provided below such studs with openings E' and with ratchets c^2 and slot c^3, the spring fitted in opening E' and bearing between the cheeks, and the clamping or connecting bolt, substantially as set forth.

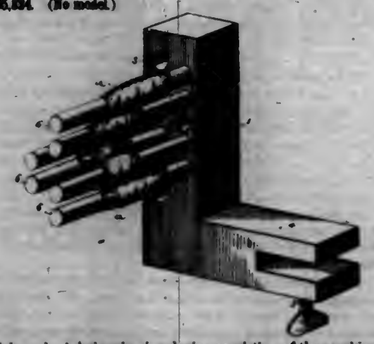
404,086. GATE. JAMES M. HAWLEY, Olin, Ill. Filed Dec. 21, 1888. Serial No. 294,261. (No model.)



Claim.—1. The combination of the latch-post having a series of catches, the gate, mechanism for adjusting the gate vertically, the latch pivoted thereon and adapted to engage one of said catches, mechanism for releasing the latch, and a vertically-disposed spring secured to the post and bearing on the gate, as set forth.

2. The combination of the posts A X X, the gate supported by the post A and having one end bar provided with an arm, V, the levers pivoted to the upper ends of the posts X X, connecting-rods extending between the upper ends of the said levers, the latch on the gate, the jointed connecting-rod extending between the arm V and the latch, the rod extending from the lower end of one of the levers to the end of the arm V, and the rod extending from the lower end of the other lever to the joint of the jointed connecting-rod, as specified.

404,087. HAIR-CRIMPING DEVICE. NICOLAS HEILNER and CHARLES L. LEITZ, New York, N. Y. Filed Jan. 9, 1889. Serial No. 295,834. (No model.)

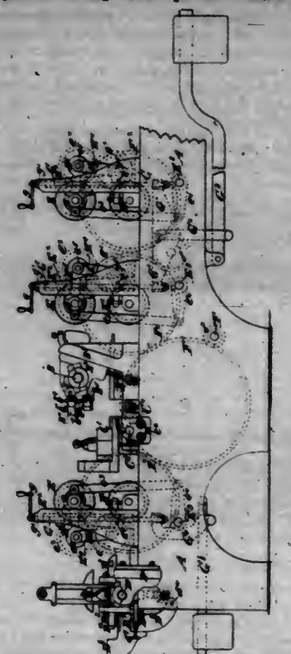


Claim.—1. A hair-crimping device consisting of the combination of a block and pegs carried thereby and arranged in two alternating parallel rows, substantially as described.

2. A hair-crimping device consisting of a perforated block and removable pegs adapted to be inserted into the perforations in the block, and around and between which the hair is laid, substantially as set forth.

3. A hair-crimping device consisting of the combination of a block provided with perforations 2 and 3 and adapted to be secured to a table, the alternating pegs 6, and a pin or hook, 7, substantially as set forth.

404,088. WOOD-PLANING MACHINE. ALFRED B. HUTCHINSON, Brooklyn, N. Y., assignor to the Glen Cove Machine Company, (Limited,) same place. Filed Aug. 13, 1887. Serial No. 246,230. (No model.)



Claim.—1. The combination, with the main frame, of the cutter-head frame therein having the shoes or cams d^4, the cross-bar or yoke D^3, having downwardly-extending arms pivoted to the main frame, and having the pockets d^5, the holder D^4 for the bar or mouth-piece, having its ends fitting said pockets and provided with adjusting-screws extending through the bottoms of the pockets and resting on said shoes or cams, and the bar or mouth-piece D^5, supported on the said holder and laterally adjustable thereon, substantially as herein described.

2. The combination, with a main frame, of an upper cutter-head bed, B', a bar, C^3, side cutter-head frames supported upon said bar, boxes C^5, in which said bar is supported near its ends, which boxes are bolted to the cutter-head bed B', and adjusting-screws c^9 between the main frame and said boxes for vertically adjusting the said boxes, substantially as specified.

3. The combination, with the upper cutter-head boxes and brackets or projections thereon, of a presser-bar holder secured upon said brackets so as to be laterally adjustable and extending beyond said brackets, a presser-bar and chip-breaker secured to said holder and having projections which extend outward under the brackets, and adjusting-screws between the projecting ends of the holder and the bar and chip-breaker, and arranged on the outer sides of the brackets, substantially as herein described.

4. The combination, with the lower cutter-head and its bar or mouth-piece adjustable toward and from the cutter-head and also adjustable vertically, of a yoke or cross-bar having downwardly-extending arms which are pivoted to the main frame below the cutter-head and on which the bar or mouth-piece is supported and adjustable, and an extension-table separate from the bar or mouth-piece and secured to the yoke or cross-bar and its arms, substantially as herein described.

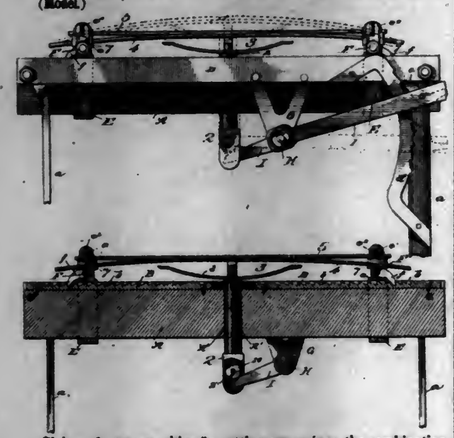
5. The combination, with the feed-rolls and the expansion-gears whereby they are connected, and the roll-stand, of a bracket, E^4, having a pivotal connection with the roll-stand and carrying the bearing for both the upper and lower gear-shafts or gears, and a swinging link, E^5, pivoted concentric with the upper roll and connected with the top of said bracket, substantially as specified.

6. The combination, with the feed-rolls, the expansion-gears whereby they are connected, and the roll-stand, of the bracket E^4, forming the bearing for both the upper and lower gear-shafts or gears, and having its end portion below the bearing extending inward toward the rolls and pivoted to the stand, and the swinging link E^5, pivoted

concentrically with the upper roll and supporting the upper end of the bracket, substantially as herein described.

7. The combination, with an upper presser-roll, of a roll-stand, an upper roll-box sliding on said roll-stand, a weight, connections between the said weight and the roll-box whereby motion is transmitted from one to the other, and an adjusting-screw journaled in the roll-stand and shouldered to prevent its lengthwise movement in one direction, said screw being directly engaged with the roll-box, whereby the roll-box and the weight may both be operated by the screw at one operation, substantially as specified.

404,089. **MACHINE FOR SETTING CAR-SPRINGS.** JAMES B. ILLINGSWORTH, Monroe, La. Filed Feb. 27, 1888. Serial No. 265,961. (Model.)



Claim.—1. In a machine for setting car-springs, the combination, with the beam or frame, and yokes arranged on the beam to hold the ends of the springs, of a vertically-movable spindle adapted to operate through the center of the beam, and adapted to bear against the central portions of the springs, and means for raising the spindle, substantially as shown and described.

2. A machine for setting car-springs, comprising a central beam, adjustable yokes arranged near the ends thereof, said yokes adapted to hold the ends of the springs being operated on, means for holding said yokes in adjusted positions, a vertically-movable spindle operating in the beam centrally between the yokes, and lever mechanism, substantially as shown, for raising the spindle and holding it in its raised position, as and for the purpose described.

3. A machine for setting car-springs, comprising a central beam, adjustable yokes arranged near the ends thereof and sliding on said beams, said yokes adapted to hold the ends of the springs being set, a vertically-movable spindle operating in the beam centrally between the yokes, a concave leaf-spring mounted on the upper end of said spindle, and means, substantially as shown and described, for raising the spindle, as and for the purpose described.

4. The combination, with the beam A and yokes mounted near the outer ends thereof for holding the ends of the springs, of a vertically-movable spindle operating in said beam centrally between the yokes, a concave leaf-spring mounted on the ends of the spindle, and means for raising said spindle, substantially as shown and described.

5. The combination, with the beam and yokes mounted thereon adapted to hold the ends of the springs, of a vertically-movable spindle operating in the beam centrally between the yokes, said spindle provided with a friction-roller in its lower end, a rock-shaft mounted below the beam provided with a crank-arm engaging the roller in the spindle, and a lever connected with said rock-shaft, substantially as and for the purpose described.

6. The combination, with the beam A, provided with longitudinal rack-bars B, of the adjustable yokes D, said yokes embracing the beam A, the upper arms thereof extended above the same, and pawls journaled in said arms adapted to engage the rack-bar, substantially as and for the purpose described.

7. In a machine for setting car-springs, the yokes E, said yokes consisting of a body portion adapted to embrace the beam A, a gravity-pawl journaled between the vertical arms, near the upper end thereof, and a detachable rod or pin mounted in the outer ends of said arms, substantially as shown, and for the purpose described.

8. In a machine for setting car-springs, the combination, with the yokes E, adapted to encircle the beam A, the upper extended arms thereof provided with beveled edges, of the detachable sliding caps 7, substantially as and for the purpose specified.

404,090. **HORSE-DETACHER.** JOHN J. JEYES, Campbellsville, Ky. Filed Dec. 27, 1888. Serial No. 294,795. (No model.)



Claim.—1. The improved horse-detacher, substantially as described, comprising the traces and detachable connections between such traces, the harness-draft bearing, the holdback or backing-strap connected at one end with the vehicle-shafts and provided at their opposite ends with rings *b*, and the ring-clips I, secured to the breeching, having hooks I′, opening rearwardly and arranged for engagement by rings *b*, and provided with detents by which to hold the said rings from jarring out of the ring-clips, all substantially as and for the purposes set forth.

2. In a horse-detacher substantially as described, the hames F, constructed with keepers G, the latch-pins D, operating in said keepers, the spring for actuating such latch-pins, guides *h*, constructed on the hames above the latch-pins, and the cords H, connected with the latch-pins and extended up through the guides *h*, all substantially as and for the purposes specified.

3. The improved horse-detacher herein described, consisting of the collar provided with keepers for the trace-eyes and with latch-pins operating therein, and provided above each latch-pins with guides *h* for cords H, the traces having eyes held in said keepers, the cords H, connected with the latch-pins and extended through guides *h*, the holdback or backing-strap secured to the thills and provided with the rings *b*, the breeching, and the ring-clips I, secured to such breeching and constructed with the hooks I′ for engagement by the rings *b*, and with spring-actuated detents *i*, all constructed, arranged, and adapted for use substantially as and for the purposes set forth.

404,091. **LOW-PRESSURE INJECTOR.** JOSEPH H. KELLEY, Hamilton, Ontario, assignor to himself, and Thomas Worswick, Toronto, Canada. Filed Aug. 25, 1883. Serial No. 263,753. (Model.)

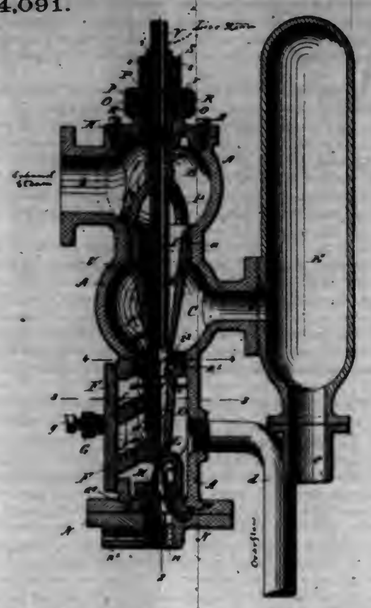
Claim.—1. The combination, in an injector, and with a case having three chambers, B C D, the first two having steam and water inlets *b c*, respectively, a steam-cone fitted at the chamber C and opening to the chamber B, a mixing-cone fitted at the chamber D and receiving the discharge of the steam-cone and the water from the chamber C, said steam-cone having a screw-threaded stem fitted in the injector-case cap, of a packing fitted to the steam-cone stem and cap, a nut, P, provided with a flange, *p*, and threaded to the stem beyond the packing, and a gland, R, provided with a flange, *r*, adapted to the nut-flange *p*, and fitted to the cap and holding the nut P, to pack the joint, while allowing rotation of the nut to adjust the steam-cone endwise for regulating the water-supply, substantially as herein set forth.

2. The combination, in an injector, and with its case having three chambers, B C D, and steam and mixing cones, and the stem of the steam-cone fitted loosely in the case or its cap, of a nut held to the case and in which the steam-cone stem is adjustable, and a collar, as S, fixed to the cone-stem and limiting the inward movement of the cone, substantially as herein set forth.

3. In an injector, the steam-cone provided at its discharge end or nozzle with fins or flanges having a bearing at the water-inlet of the mixing-cone, substantially as described, whereby the nozzle of the steam-cone will be centered and steadied by the mixing-cone, as set forth.

4. The combination, in an injector, of a case having three chambers, B C D, the first having steam and water inlets *b c*, respectively, a steam-cone fitted at the chamber C and opening to the steam-chamber B, a mixing-cone fitted to the chamber D and receiving the discharge of the steam-cone and the water from the chamber C, and said steam-cone provided at its nozzle with fins or flanges having a bearing at the water-inlet of the mixing-cone, substantially as herein set forth.

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5. In a low-pressure injector, the steam-cone provided with a stem fitted adjustably in the injector-case, combined with a live or high-pressure steam pipe, passed through the cone-stem and along the cone-body toward its discharge-nozzle, substantially as herein set forth.

6. In a low-pressure injector, the steam-cone provided with a stem fitted adjustably in the injector-case, combined with a live or high-pressure steam pipe fitted through said stem and into the cone-body, and said cone-stem having a pin entering a longitudinal slot of the live-steam pipe, substantially as herein set forth.

7. In an injector, the steam-cone made with a body portion fitted at the water-inlet chamber of the injector-case and a stem passing through the case and adapted for adjusting the cone, and said cone-body connected to the stem by three or more ribs, *i*, substantially as herein set forth.

8. In an injector, the combination, with its case having a fluid-chamber, D, of a cone, J, and a connected plug, *l*, having a shoulder, *l*′, fitting a recess of the case, a discharge-nozzle, M, having a shoulder, *m*′, and fitted to the plug *l*, and a bottom plate, N, holding the parts J *l* M into the injector-case, substantially as herein set forth.

9. An injector formed with a fluid-chamber having a hot-water outlet, a mixing-cone held in said chamber and provided with a loose or movable side plate, and said chamber having a removable side wall adjacent to said plate, substantially as herein set forth.

10. An injector made with a fluid-chamber having a hot-water outlet and a mixing-cone fitted in said chamber and provided with a loose side plate fitted for direct outward and inward bodily movement on guides held to the cone-body, substantially as herein set forth.

11. An injector made with a fluid-chamber having a hot-water outlet and a mixing-cone fitted in said chamber and provided with a loose side plate fitted for outward bodily movement on downwardly slanting or inclined guides held to the cone-body, substantially as herein set forth.

12. An injector made with a fluid-chamber having a hot-water outlet, a mixing-cone in said chamber and provided with a loose side plate fitted for outward bodily movement on guides held to the cone-body, and said side plate limited in its outward movement by contact with the injector-case or lugs thereon, substantially as herein set forth.

13. In an injector, the mixing cone or chamber L, made with a cone, J, having a loose bodily movable side plate, W, a plug, *l*, connected by ribs *i*′ to the cone J, and a nozzle, M, fitted in the plug *l*, substantially as herein set forth.

14. The injector bottom plate or case formed with two openings one for connection of a water-discharge pipe and the other for connection of a pressure-gage, substantially as herein set forth.

404,092. **ORNAMENTAL RING FOR JEWELRY.** GEORGE H. KNIGHT, Providence, R. I., assignor to William R. Lane & Co., same place. Filed Oct. 27, 1888. Serial No. 289,330. (No model.)



Claim.—A jointless ring having plated inner and outer surfaces, and having the base metal at the edge of the ring concealed by means of a flange which is beveled at its end, and turned so that the plating of the flange will be carried over the edge of the ring and over the base metal at the end of the flange, and be made to abut edge to edge with the plating of the opposite surface, substantially as described.

404,093. **ORNAMENTAL RING FOR JEWELRY.** GEORGE H. KNIGHT, Providence, R. I., assignor to William R. Lane & Co., same place. Filed Oct. 27, 1888. Serial No. 289,331. (No model.)



Claim.—1. A jointless ring having plated inner and outer surfaces, and having thickened edges formed by an outwardly-turned thinned portion or flange, which carries the inner plating outwardly and back against the surface of the outer plating over the edge of the ring and conceals the base metal, substantially as described.

2. A jointless ring having plated inner and outer surfaces and having angular thickened edges formed by an outwardly-turned thinned portion or flange, which carries the inner plating outwardly and back against the surface of the outer plating over the edge of the ring and conceals the base metal, substantially as described.

404,094. **ORNAMENTAL RING FOR JEWELRY.** GEORGE H. KNIGHT, Providence, R. I., assignor to William R. Lane & Co., same place. Filed Oct. 27, 1888. Serial No. 289,332. (No model.)

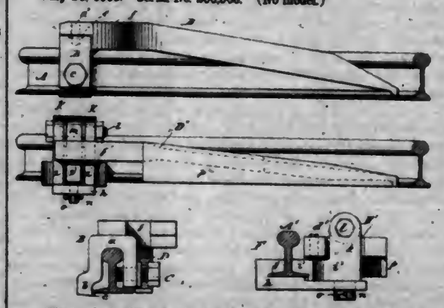


Claim.—1. An ornamental ring formed from a seamless plated tube and having the end portions of the tube turned backward, so that the ends thereof will abut against the surface of the tube and the exterior plated sides of the turned end portions will be in contact with each other, substantially as described.

2. An ornamental ring formed from a plated seamless tube and having the ends of the tube turned backward to meet at their plated side, substantially as described.

3. An ornamental ring formed from a plated seamless tube and having the ends of the tube turned to meet at their plated side and compressed to angular form, substantially as described.

404,095. **REPLACING-FROG.** JOSEPH J. LADD, Callao, Peru. Filed July 21, 1888. Serial No. 280,583. (No model.)



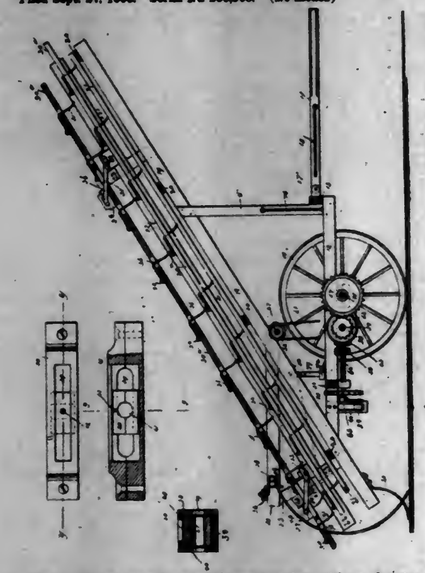
Claim.—1. In a replacing-frog, the clamp B, formed of a ∩ shaped bar, *a*, having one leg provided at its lower end with an offset, *b*, for receiving the base of the rail, said offset portion having an inwardly-projecting lip, *c*, to pass under the rail, and the bolt C, extending through the opposite leg of the clamp, substantially as set forth.

2. In a replacing-frog, the clamp F, consisting in the horizontal piece *h* to pass under the rail and slotted to receive one side of its base, the cross-bar *i*², resting on piece *h* and having the part *i*′ to engage the opposite side of the base of the rail, and the parts *i i*, each having an apertured ear, *k*, the shank *n*, passing downward through

a hole in the part *k*, and having an eye, *m*, in line with the ear-aperture, and the bolt *l*, passing through said ears and eye.

3. In a replacing-frog, the combination of the clamp B, adapted to engage the head of the rail, the clamp F, arranged to engage the foot of the rail, and the forked inclined bars D D', arranged to be supported and held in position of use by the said clamps, substantially as specified.

404,096. HAY-LOADER. ADOLPH LASACK, Oxford Junction, Iowa.
Filed Sept. 27, 1888. Serial No. 286,508. (No model.)



Claim.—1. In a hay-loader, the combination, with an elevator or chute, of two crank-shafts journaled transversely on the same near the top and bottom, a series of longitudinal rake-bars connected to the shafts, the journal-boxes receiving the arms of the lower crank-shaft being fixed on the bars and the journal-boxes receiving the arms of the upper crank-shaft movable on said bars, and angular fingers pivoted upon the said bars and projecting below the same, substantially as shown and described.

2. In a hay-loader, the combination, with a chute or elevator, crank-shafts having their cranks oppositely inclined, journaled transversely above the same near the top and bottom, a series of longitudinal rake-bars provided with stationary journal-boxes journaling the crank-arms of the lower crank-shaft, and reciprocating or sliding journal-boxes journaling the crank-arms of the upper crank-shaft, of angular fingers pivoted to the upper face of the rake-bars projecting downward through slots in the same, and means, substantially as shown and described, for rotating the crank-shafts from the axle, whereby the rake-bars are alternately reciprocated, as and for the purpose specified.

3. In a hay-loader, the combination, with an upwardly-inclined chute or elevator, a rake-head fixed to the elevator at the lower end thereof, provided with curved spring rake-teeth, crank-shafts journaled transversely above the said elevator or chute near the top and bottom, a series of longitudinal rake-bars attached to the crank-arms of the respective crank-shafts, and fingers pivoted upon the upper face of the said rake-bars and projecting through slots in the same, of auxiliary side rakes extending at a forward inclination from the elevator, a shifting device for each side rake provided with an outwardly and upwardly inclined guide-rod, an eye supporting the said rod and connected with the rake-heads of said rakes, a rod connected to each of the shifting devices, and intermediate gearing connected with each of the said rods and operated by the main axle, said gearing arranged to alternately move one of said shifting devices in an upward inclination while the other is moved in a downward inclination, substantially as and for the purpose hereinbefore described.

4. The combination, with an inclined elevator or chute and crank-shafts journaled near the top and bottom of the same and having their crank-arms oppositely disposed, of a series of longitudinal rake-bars, stationary journal-boxes attached to the lower ends of the said rake-bars, journaling the crank-arms of the lower crank-shafts, and sliding journal-boxes attached near the upper ends of the said rake-bars, journaling the crank-arms of the upper crank-shaft, substantially as shown and described, whereby the rake-bars are alternately and freely reciprocated without interference by the vibration or irregular motion of the loader when the loader is passed over rough ground, as specified.

5. The combination, with the elevator or chute of a hay-loader, longitudinal alternately-reciprocating rake-bars suspended over the elevator, and the axle and drive-wheel carrying the elevator, of auxiliary side rakes extending at a forward inclination from the elevator, a shifting device for each side rake provided with an outwardly and upwardly inclined guide-rod, an eye supporting the said rod and connected with the rake-heads of said rakes, and means, substantially as shown and described, for reciprocating the shifting devices from the axle in the same direction, as set forth.

6. In a hay-loader, the combination, with the elevator, crank-shafts journaled transversely above the elevator near the lower and upper ends, and longitudinal rake-bars having fingers attached thereto, of journal-boxes attached to the upper face of said rake-bars, journaling the crank-arms of the crank-shafts, the journal-boxes for the upper crank-shafts, consisting of a casing provided with a central longitudinal slot, and a movable journal-box to reciprocate in the said slot in the casing, all combined to operate substantially as shown and described.

7. The combination, in a hay-loader, of the axle and drive-wheels thereof, a spur-wheel mounted upon the axle, a transverse shaft journaled in the main frame of the loader parallel with the axle, having a pinion engaging the spur-wheel, a bevel-gear secured to the said parallel transverse shaft, and two parallel longitudinal connected shafts provided with similarly-disposed crank-arms, one shaft being provided at its forward end with a pinion meshing with the bevel-gear of the transverse shaft, with auxiliary rakes attached to the sides of the loader, a shifting device suspended from each of the auxiliary rakes in front of the teeth, consisting of a toothed carrying-frame, a guide-rod having an upward and outward inclination secured to the said frame, an eye connecting the rake-head and guide-rod, and connecting-rods uniting the frames of the shifting devices with the contiguous crank-arms of the said longitudinal shafts, as and for the purpose specified, whereby the two shifting devices are reciprocated in the same direction from the axle, the incoming shifting device being carried down an inclined plane and the outgoing shifting device up an inclined plane, as set forth.

8. The combination, with a hay-loader, of auxiliary rakes attached to opposite sides of the same, each consisting of a rake-head, teeth attached to the said head, and a bar projected rearwardly from the outer end of the head, a shifting device in front of the teeth, consisting of an essentially-rectangular toothed carrying-frame provided upon the top at or near the center with a guide-rod having an upward and outward inclination, an eye connecting the rod and the extremity of the rearwardly-projecting bar, a crank-shaft connected with the axle of the loader, and a pitman-connection between the crank-shaft and the frame of the shifting device, as specified.

9. In an auxiliary side rake for hay-loaders, the combination, with a rake-head having teeth attached thereto and a bar extending rearwardly from the outer end, of a shifting device in front of the teeth, consisting of an essentially-rectangular tooth-carrying frame, an upwardly and forwardly projecting guide-rod attached at or near the center of the said frame, and an eye attaching the said rod to the said rearwardly-extending bar on the rake-head, as and for the purpose described.

404,097. PRODUCTION OF YELLOW COLORING-MATTER. ADOLF LIEBMANN, Manchester, County of Lancaster, England. Filed Aug. 16, 1888. Serial No. 282,674. (No specimens.)

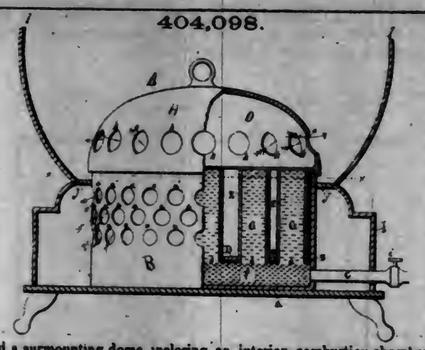
Claim.—As a new product, the soluble yellow coloring-matter herein described, which is decomposed by caustic alkalies, reproducing the original insoluble coloring-matter; when printed on cloth and afterward steamed, the product is decomposed and red color developed on the cloth; when dissolved in concentrated sulphuric acid, a claret color is produced and sulphurous acid simultaneously evolved, substantially as described.

404,098. OIL-BURNER. FRANK M. MAHAN, Chicago, Ill., assignor of one-half to Charles H. Morse, same place. Filed Mar. 26, 1888. Serial No. 268,591. (No model.)

Claim.—1. In an oil-burner, the combination of the walls of the burner and a surmounting dome inclosing an interior combustion-chamber and an underlying oil-chamber immediately beneath said combustion-chamber and subject to the heat thereof, a series of pipes communicating with said oil-chamber and extending up into the combustion-chamber, said pipes being filled with suitable material to carry the oil up to the tops thereof, and a series of openings in the walls of the burner below the level of the tops of said tubes, as and for the purposes set forth.

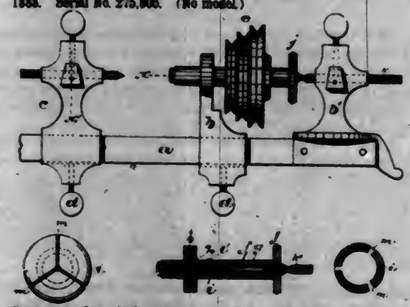
2. In an oil-burner, the combination of the walls of the burner

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and a surmounting dome inclosing an interior combustion-chamber and an oil-chamber contiguous thereto, a series of pipes provided with wicking leading from said oil-chamber into said combustion-chamber, a series of air-inlets into said combustion-chamber below the level of the tops of said pipes, and a surmounting dome, as and for the purposes stated.

404,099. WATCH-MAKER'S LATHE. STEPHAN MIESSNER, Newark, N. J., assignor of one-half to Jean Tack, same place. Filed June 2, 1888. Serial No. 275,903. (No model.)



Claim.—1. In a lathe, the combination, with the front and rear head-stocks thereof, the latter being provided with a center, of a hollow spindle, *f*, a chuck within the same, provided with expansible jaws having a taper connection with the forward end of said spindle, a draw-in spindle screw-threaded to said chuck and socketed at its outer end to said center, and a finger-piece secured to said draw-in spindle and shouldered against the spindle *f*, substantially as described.

2. In a lathe, the combination, with the front and rear head-stocks thereof, the latter having an adjustable center, *k*, of a hollow spindle, *f*, provided with a flange, as *h*, a chuck, *i*, and a draw-in spindle, *g*, screw-threaded to said chuck at its inner end, and provided at its outer extremity with a socket to receive the center *k*, and with a suitable finger-piece, substantially as and for the purposes set forth.

404,100. BOLTING-CHEST. HUGH W. MCEWEN, Tiverton, Ontario, Canada. Filed Jan. 25, 1889. Serial No. 297,513. (No model.)

Claim.—1. The combination, with a bolting-chest and a cloth covering terminating at the under side in offtake-chutes, of a horizontally-adjustable cut-off attached to the cloth covering and dividing the chutes, substantially as shown and described.

2. The combination, with a bolting-chest and a cloth covering terminating at the under side in offtake-chutes, of upper and lower rods passing longitudinally through the chest within the covering, and a cut-off held to slide upon the said rods, attached to said covering, and dividing the said offtake-chutes, substantially as and for the purpose specified.

3. The combination, with a bolting-chest and a cloth covering terminating at the under side in offtake-chutes, of a reel journaled in the frame of the chute within the covering, and a cut-off consisting

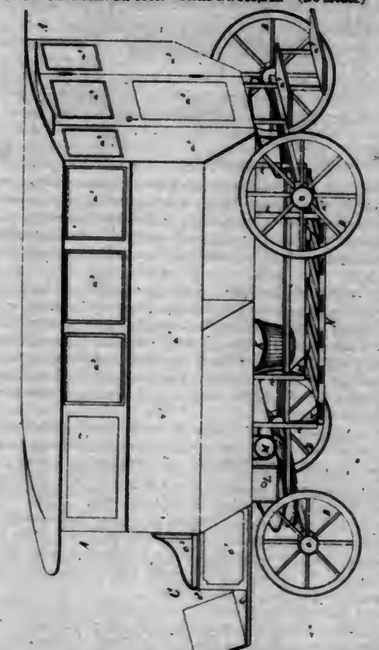




of a plate centrally bored to receive the reel, held to slide upon the said rods, and having attached thereto at opposite sides the cloth constituting the covering of the chest, whereby the offtake-chutes are divided, substantially as and for the purpose specified.

4. The combination, with a bolting-chest and a cloth covering terminating at the under side in offtake-chutes, of a reel journaled in the frame of the chest within the covering, rods passing longitudinally and horizontally through the chest above and below the reel and within the covering, a cut-off consisting of a plate centrally bored to receive the reel, held to slide upon the said rods, and having attached thereto at opposite sides the cloth constituting the covering of the chest, whereby the offtake-chutes are divided, set-screws passing through the cut-off and contacting with the said rods, and a rigid cover attached to the ends of the bolting-chest and covering the top of the same, substantially as shown and described.

404,101. CAMPING-VEHICLE. ALONZO J. MCMASTER, Lockport, N. Y. Filed Mar. 14, 1888. Serial No. 303,248. (No model.)



Claim.—1. In a camping-carriage, the combination of the swinging basin K, privy-seat I, and privy-door *i*, substantially as and for the purpose described.

2. In a camping-carriage, the combination of the driver's seat c^2, hinged at c^3, seat-box c', oil-stove c^4, windows c^5, and doors c^6, substantially as and for the purpose described.

3. In a camping-carriage, the combined arrangement of an ice-box, wardrobe, drawer-chest, wash-basin, privy, water-tanks, seats, and convertible sleeping-berths, substantially as described.

4. A camping-carriage having kitchen and toilet accommodations, provided with a portable sleeping-cot ladder, and supports n n' for said ladder, said supports being constructed and arranged to permit the ladder to be adjusted beneath the carriage at a proper alti-

tude for forming a sleeping-cot between the ladder and the carriage-bottom, substantially as described.

5. A camping-carriage provided with a wardrobe having a portable door with folding table-legs attached to it, substantially as and for the purpose described.

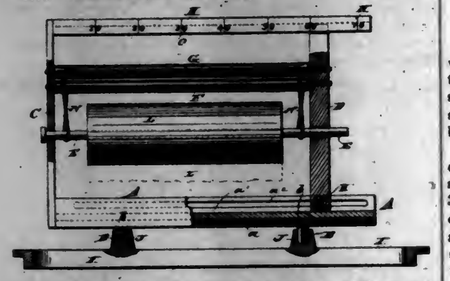
404,102. CATCH-PIN. EDWARD H. NASH, Westport, Conn., assignor to Lloyd Nash and Elbert H. Sipperley, same place. Filed Jan. 8, 1889. Serial No. 296,757. (No model.)



Claim.—1. A catch-pin consisting of an attaching-shank and a supporting-point formed by curving the wire downward, and then outward and upward, said attaching-shank extending below the curve of the supporting-point.

2. A catch-pin consisting of supporting-points curved downward and upward, and one or more sharpened attaching-shanks, the whole being formed from two pieces of wire attached together in any suitable manner, substantially as shown and described.

404,103. PAPER-HOLDING ATTACHMENT FOR TYPE-WRITING MACHINES. WILLIAM B. NORTHROP, Charleston, S. C. Filed May 29, 1888. Serial No. 275,458. (No model.)



Claim.—1. The combination, with the base-piece and the upwardly-projecting posts or arms having bearings, of fasteners depending from the base-piece and having a sliding connection therewith, whereby the fasteners may be adjusted toward and from each other without interfering with the relative position of the posts or arms, substantially as set forth.

2. A paper-holding attachment for type-writers, consisting, essentially, in a base-piece, vertical posts provided with bearings, one post being adjustable along the base-piece, and pins adjustable bodily along the lower side of the base-piece, whereby the space between the posts may be varied for rolls of different lengths without changing the relative positions of the pins, and said pins be adjusted for different type-writers without changing the relative positions of said posts, substantially as set forth.

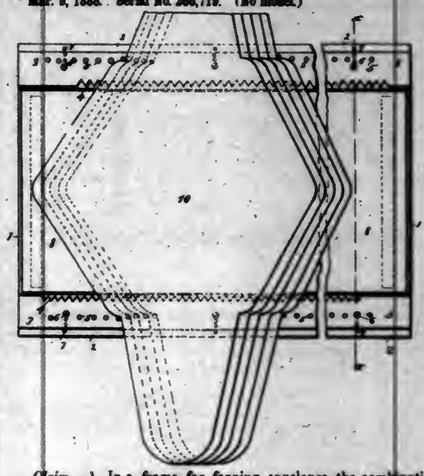
3. In a paper-holding attachment for type-writing machines, the combination, with a base-plate having a dovetailed slot and provided with bearings for a paper-holding roller, of fastenings holding the attachment to a type-writer carriage and having dovetail heads fitting the base-plate slot, substantially as herein set forth.

4. In a paper-holding attachment for type-writing machines, the combination, with a base-plate having a dovetail slot, *a*, in its under side and provided with posts or bearings for a paper-holding roller, of fastening-pins B, having heads *b*, fitting the slot *a* and adjustable therein, substantially as herein set forth.

5. A paper-holding attachment consisting in the top piece having a longitudinal dovetail slot in its lower side, the base-piece having a longitudinal slot in its upper side, a longitudinal dovetail slot in its lower side, and a transverse longitudinal slot in one wall of the upper slot, the fixed end post, the parallel opposite sliding end post having its ends corresponding with and mounted in the slots in the adjacent faces of the top and base pieces, an adjusting-screw extending through the transverse slot into the lower end of the adjustable end post, and the fastening-pins having dovetail heads entering the dovetail slot in the base-piece, the said posts having roller-bearings, substantially as set forth.

6. In a paper-holding attachment for type-writing machines, the combination, with a base-plate slotted at a' a^2 and a fixed post, C, on the base-plate, of an adjustable post, D, fitted in the slot a', and a screw, K, fitted in the post D, through the slot a^2, and provided with a nut, substantially as herein set forth.

404,104. FRAME FOR FANNING OUT WRITING-PAPER, ENVELOPES, CARDS, &c. JAMES C. OLIVER, Bergen Point, N. J. Filed Mar. 9, 1888. Serial No. 266,719. (No model.)



Claim.—1. In a frame for fanning envelopes, the combination, with the base-board 1, longitudinal side strips, 2, secured thereto, and the notched strips 3, laterally adjustable upon the upper face of the side strips, 2, of the removable board 9, arranged between the side strips, 2, said board forming the support for the body of the envelopes being formed, substantially as and for the purpose specified.

2. The herelsebefore-described improvement in frames for fanning envelopes, consisting of a base, 1, provided with longitudinal side strips, 2, strips 3, laterally adjustable on the side strips, 2, said strips 3 provided with equally-spaced notches on their inner edges and equally-spaced pins on their upper faces, and removable boards adapted to be placed between the side strips, 2, said boards forming supports for the body of the envelopes being operated on, substantially as and for the purpose described.

404,105. SYRINGE. MARTIN OVERLACH, Frankfort-on-the-Main Germany. Filed Mar. 12, 1889. Serial No. 302,953. (No model.)



Claim.—1. The combination, with the piston and open-ended cylinder of a syringe, of a detachable nozzle with a flange at its inner end, a detachable head-plate mounted on the nozzle and bearing against one end of the cylinder, with a detachable disk, and elastic packing-disk located on the nozzle between the head-plate and the flange of the nozzle, the edge of the packing-disk pressing against the wall of the cylinder, a detachable head-plate, a screw-threaded socket-bearing having an inner flanged end, through which the piston-rod passes, the socket-bearing projecting through the head-plate, an elastic packing-disk mounted on the socket-bearing between its flanged end and the head-plate, and a detachable cap screwing onto the socket-bearing, substantially as described.

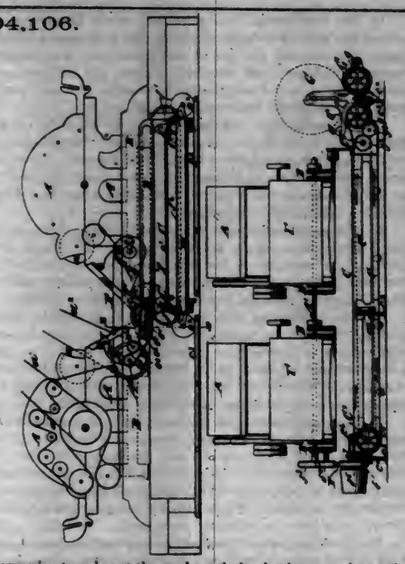
2. In a syringe, a cylinder with open ends, a detachable nozzle with a flanged inner end, a head-plate mounted on the nozzle and bearing against the end of the cylinder, and a disk, and elastic packing-disk mounted on the nozzle between its flanged end and the head-plate, the periphery of the packing-disk pressing against the interior wall of the cylinder, substantially as shown and described.

3. In a syringe, a cylinder with open ends, a piston and piston-rod, a detachable head-plate bearing against the ends of the cylinder, a screw-threaded socket-bearing with an inner flanged end, through which the piston-rod passes, the socket-bearing projecting through the head-plate, an elastic packing-disk located on the socket-bearing between its flanged end and the head-plate and having its edge pressing against the inner wall of the cylinder, and a cap screwing onto the socket-bearing, substantially as shown and described.

404,106. MACHINERY FOR MAKING LAPS. WILLIAM H. PALMER, Jr., Norwich, assignor to Palmer Brothers, Montville, Conn. Filed Jan. 30, 1888. Serial No. 262,402. (No model.)

Claim.—1. The combination, with two series of cards arranged side by side and the two series facing each other, of an apron having

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a progressive travel past the cards, and also having a reciprocating traverse in a direction transverse to its progressive travel, and mechanism, substantially such as described, for imparting the progressive and traverse movements to the apron, substantially as herein described.

2. The combination, with a series of cards arranged side by side and an elevated support for the cards, of an apron having a progressive travel past the series of cards, and also having a reciprocating traverse in a direction transverse to its progressive travel and beneath the elevated support, and mechanism, substantially such as described, for imparting the progressive and traverse movements to the apron, substantially as herein described.

3. The combination, with two series of cards, those of each series being arranged side by side and facing those of the other series, of delivery apparatus whereby the fleeces from two opposite cards are combined, an apron having a progressive travel past the cards, and also having a reciprocating traverse in a direction transverse to its progressive movement, and mechanism, substantially such as described, for imparting to the apron both its progressive and traverse movements, substantially as herein described.

4. The combination, with two series of cards, those of each series being arranged side by side and facing those of the other series, of an apron having a progressive movement past the cards, and having also a traverse movement in a direction transverse to its progressive movement, delivery-boards extending downward from opposite cards and one delivering against the other, whereby the fleeces from the two cards are combined before being delivered to the apron, and mechanism, substantially such as described, for imparting both the progressive and traverse motion to the apron, substantially as herein described.

5. The combination, with a series of cards arranged side by side, of an apron-carrying frame and an apron having a progressive movement therein past the series of cards, a mangle-rack and pinion-gearing for reciprocating the said frame in a direction transverse to the progressive movement of the apron, and mechanism, substantially such as described, for imparting the progressive movement to the apron in said frame, substantially as herein described.

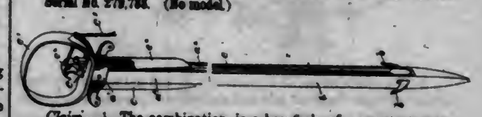
6. The combination, with a series of cards arranged side by side, of an apron-carrying frame having rollers and an endless apron passing around said rollers; a mangle-rack upon the frame, having adjustable portions at its end, and the pinion-guide, extensible, and having means for holding the extensible end portions in fixed position after adjustment, a mangle-pinion engaging said rack, and mechanism, substantially as described, for operating it, and mechanism for operating the apron-rollers to give the apron a progressive travel, substantially as herein set forth.

7. The combination, with a series of cards arranged side by side, an apron-carrying frame having rollers, and an apron having a progressive travel around said rollers in a direction past the series of cards, of mechanism, substantially such as described, for imparting a reciprocating traverse motion to the frame in a direction transverse to the progressive travel of the apron and for operating the apron roller or rollers, a pair of supporting-rollers beyond the apron in said frame and serving to support a take-up roller, and mechanism, substantially such as described, for driving the supporting-rollers both in the same direction, so that they will rotate the take-up roller placed upon them, substantially as herein set forth.

8. The combination, with a series of cards arranged side by side and an apron-carrying frame having rollers supporting a traveling apron for movement in a direction past the cards, of supporting-rollers beyond the apron in said frame for supporting upon them a take-up roll, mechanism, substantially such as described, for imparting a progressive travel to the apron and a reciprocating traverse motion to the frame and for rotating the supporting-rollers both in the same direction, the fixed slotted bearings H for the take-up roll, and the pivoted slotted bearings H', forming continuations of the slots in the fixed bearings, and having brackets H^3 for the support of a fresh roller, which will roll into the slots of the fixed bearings when the pivoted slotted brackets are swung on their fulcrums, substantially as herein set forth.

9. The combination, with a series of cards arranged side by side and an apron-carrying frame having rollers and an endless apron passing around said rollers, a mangle-rack upon the frame having adjustable portions at its ends, a pinion-guide made extensible, a pin for holding the extensible end portion in fixed position after adjustment, a mangle-pin engaging said rack, and mechanism, substantially such as described, for operating said pinion and the apron-rollers, substantially as specified.

404,107. HAY-FORK. CHARLES E. PATRIC, Springfield, Ohio, assignor to the Superior Drill Company, same place. Filed July 12, 1888. Serial No. 279,782. (No model.)



Claim.—1. The combination, in a hay-fork, of a penetrator provided with a connecting-piece adapted to hold the same in different positions of adjustment, and an operating-rod provided with openings in which the connecting-piece is adapted to engage, and having a seat at the bottom of the lower opening formed at right angles to the line of descent of the said penetrator, said connecting-piece having a bottom face parallel with said seat and formed rectangular in cross-section, substantially as and for the purpose set forth.

2. The combination, in a hay-fork, of a penetrator provided with a connecting-piece adapted to hold the same in different positions of adjustment, and an operating-rod provided with openings in which the connecting-piece is adapted to engage, and having a seat at the bottom of the lower opening formed at right angles to the line of descent of the said penetrator, a joint, *f*, in said seat, and beveled faces on each side of said joint, substantially as specified.

3. The combination, with the operating-rod provided with upper and lower openings, the upper opening having at the bottom thereof the beveled faces c^1 c^2, of a penetrator adapted to form a sheath for said operating-rod, a connecting-piece extending through said operating-rod and connected at each end of the sides of said penetrator, said connecting-piece being rectangular in cross-section, the said operating-rod being provided with a jointed seat at the bottom of the lower opening at right angles to the line of descent of said penetrator, and beveled faces on each side of said joint, substantially as and for the purpose set forth.

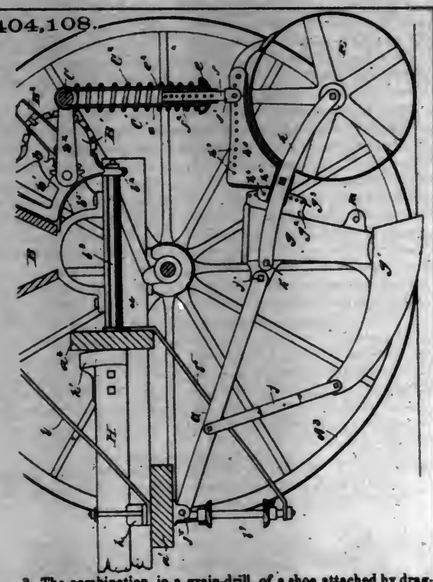
404,108. GRAIN-DRILL. CHARLES E. PATRIC and FRANK R. PACKHAM, Springfield, Ohio, assignors to the Superior Drill Company, same place. Filed Oct. 22, 1888. Serial No. 289,433. (No model.)

Claim.—1. The combination, with a shoe, of a wheel journaled in a hanger which is pivoted to the front of said shoe, a rib or flange on the rear of said shoe, and a guide on said hanger adapted to travel alongside of said flange, substantially as specified.

2. The combination, with a shoe, of a wheel journaled in a hanger pivoted to the front of said shoe, a rib or flange on the rear portion of said shoe, a guide on said hanger adapted to embrace said flange, and means, substantially as described, for connecting said hanger to said flange in different positions of adjustment.



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3. The combination, in a grain-drill, of a shoe attached by drag-bars to the main frame of said drill and a wheel journaled in a hanger pivoted to said shoe, the centers of the connections between said frame and shoe and said shoe and wheel being such that the bottom of the shoe shall stand below said wheel when said connections are in a straight line, substantially as specified.

4. The combination, in a grain-drill, with a shoe having a drag-bar attached to the frame, of a wheel journaled in a hanger pivoted to said shoe, so that the connecting-points between the shoe and the frame and the shoe and wheel shall be in a straight line when the shoe is slightly below said wheel, and means, substantially as described, for adjusting the frame of the drill to change the position of the point of attachment between the drag-bar and frame, substantially as specified.

5. The combination, with a shoe, of a gaging and pressing attachment pivoted thereto and provided with a rigid bearing-support, a pressure-bar with stirrups and springs, as described, and a connecting-bar from said springs and stirrups to said presser attachment, means for connecting said presser attachment rigidly to said shoe, and means, substantially as described, for adjusting the position of said connecting-bar on said bearing-support, substantially as specified.

6. The combination, with a shoe, of a gaging and pressing attachment pivoted thereto, a flange on said shoe having a series of openings through which said pressing attachment may be attached to said shoe in different positions of adjustment, and a bearing-support on said pressing attachment having a series of openings, whereby the lifting and pressure bar may be connected at different positions to said pressing attachment, substantially as specified.

7. The combination, with the pressure-bar and the lifting-levers adapted to operate the same, of the stirrups and springs thereon, said stirrups being formed in two parts having the hook-shaped ends adapted to be slipped over said pressure-bar, substantially as specified.

8. The combination, with the pressure-bar and a lifting-lever adapted to operate the same, stirrups on the said bar, springs about said stirrups, and shoes under said stirrups, of connecting-bars attached to said stirrups and to said shoes, and means, substantially as described, for adjusting said connecting-bars with reference to said stirrups to move the shoes to or from the said pressure-bar without changing the tension of the said springs, substantially as specified.

9. The combination, with the pressure-bar, the stirrups thereon, and the springs about said stirrups at right angles to said pressure-bar, of sleeves on said pressure-bar, each provided with end flanges thereon adapted to separate the said sleeves and engage in the ends of the said springs and hold the same in position about said stirrups, substantially as specified.

10. The combination, with a series of grain-drill shoes and a pressure-bar connected thereto, of the rocker-arms attached to said pressure-bar, one of said arms being provided with gear-teeth thereon, a lifting-lever having a segment of gear-teeth adapted to engage with the teeth on said rocker-arm, and a ratchet-stand on which said lever is journaled, substantially as and for the purpose set forth.

11. The combination, in a grain-drill, of the lifting-lever and pressure-bar, said lever being provided with a segment adapted to engage with teeth on the arm of said pressure-bar, a ratchet-stand secured to the hopper and adapted to support said lifting-lever and bar, and a sleeve and connecting-bolt extending from said ratchet-stand to the drill-frame, substantially as specified.

12. The combination, with the drill-frame and hopper, of a ratchet-stand secured to said hopper adapted to support the lifting-lever, a brace from said frame connected through said hopper to said ratchet-stand, a sleeve between said frame and ratchet-stand below said hopper, and a bolt or rod connecting said frame and ratchet-stand through said sleeve, substantially as specified.

13. The combination, with the shoes having the drag-bars attached rigidly thereto at one end, so as to project at an angle, as described, of the trunnions on the frame, to which said drag-bars are adapted to be attached, said bars being formed of resilient metal and adapted to spring over said trunnions, substantially as specified.

14. The combination, with the shoes having the angular faces to which the drag-bars are attached, of the drag-bars formed of resilient metal, secured to said angular faces so as to project at an angle, as described, and trunnions on the main frame, with which said bars are adapted to engage, said bars being held in position on said trunnions by the resilience thereof, substantially as set forth.

15. The combination, with the hopper and the ratchet-stand attached thereto, of the pressure-bars having crank-arms at either end thereof, one of the crank-arms of each bar being journaled to said ratchet-stand and provided with gear-teeth, lifting-levers having gear-teeth adapted to engage the teeth in said crank-arms, stirrups on said pressure-bars, springs on said stirrups, and connecting-rods from said stirrups to the shoes, substantially as set forth.

16. The combination, with a pressure-bar and its operating-lever, of the stirrups formed in two parts of resilient metal, springs on said stirrups, sleeves on said pressure-bar between said stirrups, said stirrups having flanges at the ends adapted to engage said springs, and connecting-rods from said stirrups to the drill-shoes, substantially as set forth.

17. The combination, in a grain-drill, of a shoe with a pressing and gaging wheel attached to and adapted to follow said shoe, a hanger in which said wheel is journaled, having a bearing-support connected rigidly to said hanger over said wheel, variable pressure-springs over said hanger, and means for connecting said springs to said bearing-support at different points, substantially as specified.

18. The combination, with a shoe having a gage and pressing attachment pivoted thereto, of a pressure-bar having a stirrup and spring thereon above said pressing attachment, and an independent bar connecting said pressing attachment to said stirrup, whereby said pressing attachment may be adjusted to or from said pressure-bar without changing the tension of said springs, said connecting-bar being provided with a series of openings adapted to receive the connecting pin or bolt which secures the same to the said stirrup, substantially as specified.

19. The combination, with a series of grain-drill hoes and a pressure-bar having the stirrups and springs arranged above said hoes, one stirrup and spring for each hoe, of independent bars connecting said stirrups to the respective hoes, and means, substantially as described, for changing the point of connection between the respective stirrups and bars to adjust the hoes to or from the pressure-bar without changing the tension of the spring, substantially as and for the purpose set forth.

404,109. TOE-WEIGHT. FRED H. PERRY, Montpelier, Vt. Filed Aug. 13, 1888. Serial No. 282,823. (No model.)



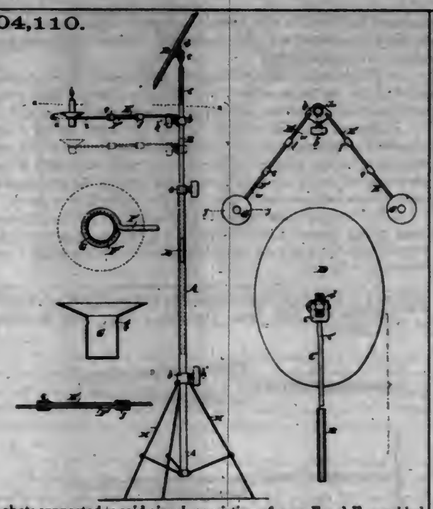
Claim.—The toe-weight A, provided with a fixed spur, F, and the orifice E, extending longitudinally through the weight, in combination with the screw-bolt B, fitting the orifice and provided with a hooked spur projecting oppositely to spur F, and fastening-nut, substantially as and for the purpose described.

404,110. PORTABLE SHAVING-STAND. HENRY PERRY, Rockaway, N. J. Filed May 29, 1888. Serial No. 275,459. (No model.)

Claim.—1. In a portable stand, the upright rod A, having collapsible legs H, in combination with rod B, vertically adjustable therein, looking-glass D, removably connected with said rod B by an adjustable connection, adjustable ring *b* upon said rod B, and adjustable candle-brackets E F, supported in said ring *b*.

2. In a portable stand, the upright rod A, having collapsible legs H, in combination with rod B, vertically adjustable therein, looking-glass D, removably connected with said rod B by an adjustable connection, adjustable ring *b* upon said rod B, and adjustable candle-brackets supported in said ring *b*, consisting of arms E and F, provided with rings *e* and *f*.

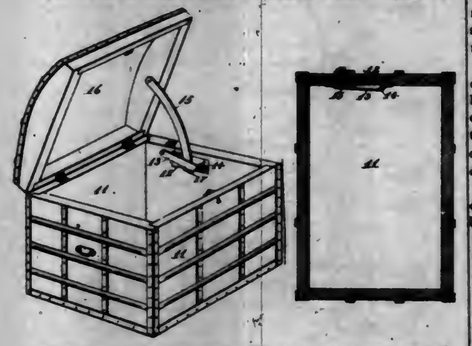
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3. In a portable stand, the upright rod A, having collapsible legs H, in combination with rod B, vertically adjustable therein, looking-glass D, removably connected with said rod B by an adjustable connection, adjustable ring *b* upon said rod B, and adjustable candle-brackets supported in said ring *b*, consisting of arms E and F, provided with rings *e* and *f*, the arms F, having spring ends, and candle-supports G, having grooves *g*, adapted to receive said spring ends.

4. In a portable stand, the upright rod A, having collapsible legs H, in combination with rod B, vertically adjustable therein, looking-glass D, supported on said rod B, ring *b* upon said rod B, consisting of two parts riveted together and forming spring-arms, and adjustable candle-brackets E F, supported in said spring, the arms of the ring *b* being firmly held by them, but with freedom of lateral adjustment.

404,111. TRUNK-FIXTURE. JAMES B. PORTER, Yarmouth, Nova Scotia, Canada. Filed Mar. 12, 1889. Serial No. 302,964. (No model.)

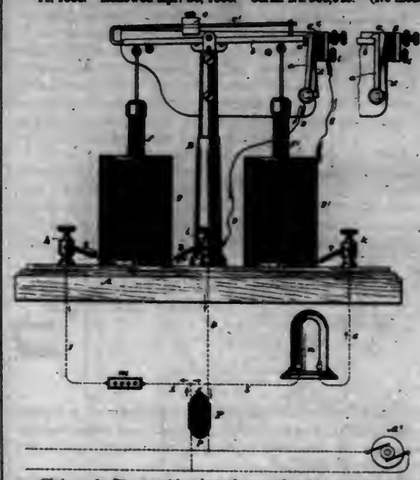


Claim.—1. In trunk-fixtures, a lid or cover stay consisting of a spring-plate, a keeper secured to one end of said plate, capable of extending outwardly therefrom and contacting with the opposite end, and a segmental bar adapted to be secured to the lid and sliding vertically and laterally between the keeper and the spring-plate and provided with a lip at the lower extremity, substantially as shown and described.

2. In trunk-fixtures, a lid or cover stay consisting of a spring-plate, a keeper diagonally secured to one end of the plate, capable of extending outwardly therefrom and contacting with the opposite end of the plate, and a segmental bar adapted to be secured to the lid and having vertical and lateral movement between the spring-plate and keeper and provided with a diagonal lip at the lower extremity, substantially as shown and described.

3. The combination, with the body of a trunk having a recess produced in the inner end face and a lid hinged to said body, of a spring-plate secured at one end in the body-recess, a keeper secured to the fixed end of the plate extending outwardly therefrom and transversely across the plate to a contact with the free end, and a segmental bar attached at one end to the lid and capable of passing downward between the keeper and spring-plate and provided at the lower extremity with a diagonal lip, substantially as shown and described.

404,112. AUTOMATIC CIRCUIT-INTERRUPTER FOR ELECTRIC CIRCUITS. ALBERT L. REHNARD and PHILIP LANGE, Pittsburg, Pa., assignors to the Westinghouse Electric Company, same place. Filed July 11, 1888. Renewed Apr. 20, 1889. Serial No. 308,049. (No model.)



Claim.—1. The combination of two solenoids, two cores respectively applied thereto and acted upon in opposition by said solenoids, a carbonized filament in circuit with one solenoid, and an automatic circuit-interrupter in series with only the last-named solenoid and the filament, whereby the circuit of that solenoid alone may be broken.

2. The combination of two solenoids, two cores respectively applied thereto and acted upon in opposition by said solenoids, a carbonized filament in circuit with one solenoid, an automatic circuit-interrupter in series with only the last-named solenoid and the filament, whereby the circuit of that solenoid may be interrupted without interrupting the circuit of the other solenoid, and a detent engaging the support of the cores and holding them in a predetermined position upon the interruption of the circuit by the circuit-controller.

3. The combination, with a source of alternating electric currents, of two branch circuits, two solenoids respectively included in said branch circuits, an adjustable resistance in the one branch, and a circuit-interrupter and a carbonized filament in the other branch, and thus in series with only one of said solenoids, whereby the circuit-connections of that branch may be interrupted independently of the other branch, substantially as described.

4. The combination, with a source of alternating electric currents, of two branch circuits, two solenoids respectively included in said branch circuits, an adjustable resistance in one branch, a carbonized filament and a circuit-interrupter in the other branch, whereby its circuit-connections may be severed independently of the first-named branch, two cores respectively applied to said solenoids, a pivoted support upon the respective arms of which said cores are carried, and a detent controlled by the circuit-interrupter holding the support in a given position, upon the interruption of the circuit through the corresponding solenoid, against the action of the other solenoid.

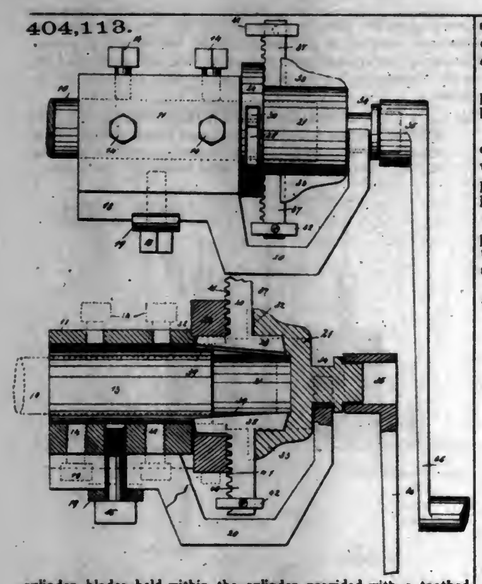
5. The combination of two solenoids, two cores respectively applied thereto, a pivoted lever upon opposite arms of which the solenoids are respectively carried, an arm normally pressed toward one end of said support, a contact-spring carried upon said arm or moved thereby, and a contact-point against which said spring is pressed when the core is withdrawn from its solenoid a predetermined distance.

6. In an automatic circuit-interrupting device or cut-out, the combination of a movable lever, *b*, the cores *f* and *f'*, suspended therefrom, and their corresponding solenoids, the lever or arm *a*, applied to said support, the contact-spring *c* and its point *c*, and a pressure-spring, *d*, all organized substantially as described.

404,113. MACHINE FOR TURNING TENONS. WILSON ROGERS, Barboursville, W. Va. Filed Oct. 24, 1888. Serial No. 288,013. (No model.)

Claim.—1. The combination, with a fixed casing provided with a tubular bore, a ring having one threaded face and attached to said casing, and a releasing device pivoted in the said ring, of a rotary

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cylinder, blades held within the cylinder provided with a toothed shank engaging the threaded surface of the ring, and means, substantially as shown and described, for rotating the said cylinder, as and for the purpose specified.

2. The combination, with a fixed casing provided with a central bore, and set-screws passing through to the interior of the casing, a ring secured to one end of said casing having one threaded face, and a releasing device pivoted within the ring, of a rotary cylinder, blades held within said cylinder provided with a toothed shank engaging with the threaded surface of the ring, and trip-blocks detachably secured to said shank, substantially as and for the purpose specified.

3. The combination, with a fixed casing provided with a central longitudinal bore, set-screws passing through the casing to the interior thereof, a ring secured to one end of the casing and having one threaded face, a toothed pawl pivoted within the ring engaging with the casing, and a pinion engaging with said pawl and provided with an outwardly-extending lug, of a rotary cylinder, blades loosely held within the cylinder, toothed shanks attached to said blades engaging the threaded surface of the ring, trip-blocks adjustably secured upon said shanks adapted to limit the movement of the blades, and means, substantially as shown and described, for rotating the cylinder, as and for the purpose specified.

4. The combination, with a base provided with an intermediate yoke-section and an upwardly-extending arm at one extremity, a casing provided with a central bore supported by said base, set-screws passing through said casing to the interior thereof, a binding-plate clamping at under side of the base beneath the casing, and a set-screw passing through the clamping-plate and base into the casing, of a ring secured at one end of the casing having one threaded face, a toothed pawl pivoted in the ring engaging the casing, a pinion meshing with the pawl provided with an outwardly-extending lug, a cylinder journaled upon the arm of the base abutting with the fixed casing, blades adjustably held in the cylinder, toothed shanks integral with said blades, a trip-block adjustably secured upon each shank, and means, substantially as shown and described, for rotating the cylinder, as and for the purpose specified.

404,114. ELECTRIC-CONVERTER BOX. ALBERT SCHMID, Allegheny, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Dec. 26, 1888. Serial No. 294,569. (No model.)



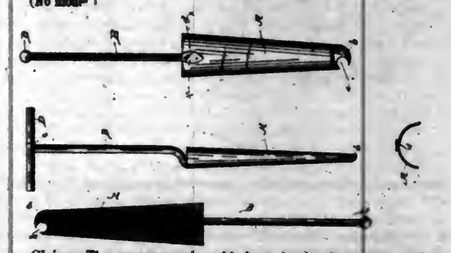
Claim.—1. A combined electric converter and converter-box consisting of the coils and core of the converter, the latter being formed of plates of soft iron, and a box having lugs between which the plates of the core are clamped.

2. The combination, with the core of an electric converter composed of thin flat plates of soft iron, of a converter-box having lugs between which the plates are compressed, substantially as described.

3. The combination, with an electric converter having a core composed of thin plates of soft iron surrounding the coils of the converter and having tongues which extend through such coils, of end plates applied to the core, and a converter-box having lugs upon its inner surface between which said end plates are held by pressure.

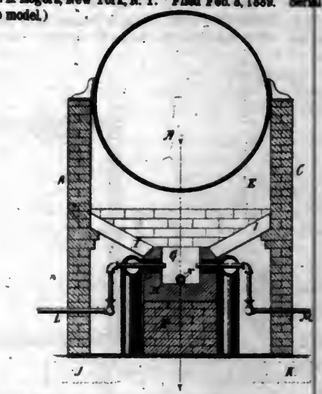
4. In an electric converter, the combination of the core B, composed of thin plates *b*, a box for the same having the shoulders *b'*, between which the plates are held, and the cover having a lug, *c*, substantially as described.

404,115. POST-HOLE DIGGER OR EARTH-AUGER. EDWARD F. SCHOLDER, Fort Scott, Kans. Filed Feb. 1, 1889. Serial No. 298,353. (No model.)



Claim.—The concave pod or blade A, having its upper portion, where connected to the shank, of greatest width and gradually tapering and terminating in a narrow portion, and an inwardly-curvilinear lip, *b*, formed by means of scalloping out a piece of metal as at *a*, said lip being located at one side of the longitudinal plane or axis of the pod, and having its cutting side or edge wider than its non-cutting or opposite side, and having the shank B and handle D, all substantially as described, and for the purposes herein set forth.

404,116. HEATING-FURNACE FOR STEAM-BOILERS. COURTNEY S. SERVOSS, Brooklyn, N. Y., assignor to R. Page Davis, same place, and Ann L. Rogers, New York, N. Y. Filed Feb. 8, 1889. Serial No. 299,107. (No model.)



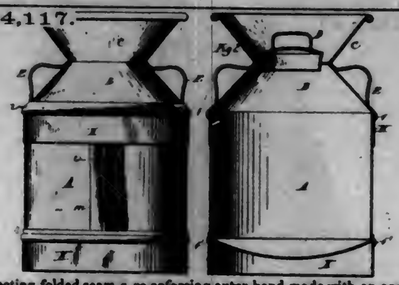
Claim.—1. The combination of a trough or box containing a chamber, air-pipes entering said chamber on opposite sides thereof and in line with one another, oil-pipes entering said chamber through said air-pipes and having their delivery-orifices disposed relatively opposite one another, and a water-delivery pipe arranged in said chamber and below said air and oil pipes, substantially as described.

2. The combination of the boiler and its supporting-walls, as B C D, a trough or box, H, arranged below said boiler, a series of bars, I, set at intervals apart and extending from said trough to said walls, air-pipes entering through the sides of said trough and disposed in line and relatively opposite one another, oil-pipes entering said trough through said air-pipes and having their delivery-orifices opposite one another, and a perforated water-delivery pipe in said trough below said air-pipe and oil-pipe, substantially as described.

404,117. MILK-CAN. FRANK P. SHEPHERD, South Elgin, Ill. Filed Mar. 28, 1889. Serial No. 304,414. (No model.)

Claim.—1. A milk-can having in combination with its outwardly-projecting folded seam a re-enforcing outer band made with an annular outwardly-projecting bead, as set forth, adapted to receive such seam, such band being applied to the can and seam, substantially as set forth.

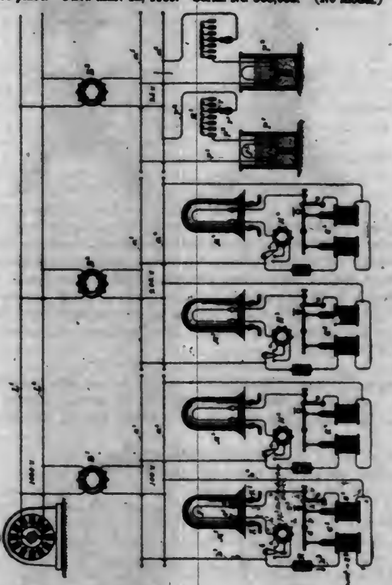
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2. In combination with a can having a conical top, and an outwardly-projecting seam connecting such top to the body of the can, a re-enforcing outer band made with an annular outwardly-projecting bead adapted to such seam as set forth, and with a conical portion projecting above such bead, the whole applied to the body of the can and its top, as set forth.

3. In a can having a vertical outwardly-projecting folding seam, a re-enforcing strip, *m*, provided with an outwardly-projecting bead or grooved rib, as described, adapted to cover and protect such seam and applied to the can, as set forth.

404,118. APPARATUS FOR TREATING FILAMENTS. FRANK S. SMITH, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Mar. 12, 1889. Serial No. 303,082. (No model.)



Claim.—1. In an apparatus for treating filaments for incandescent electric lamps, the combination of a source of alternating electric currents, supports or electrodes for the respective ends of the filaments, conductors leading thereto from the source, and a reactive coil included in one of the said conductors.

2. In an apparatus for treating filaments for incandescent electric lamps, the combination of a source of alternating currents, electrodes for receiving the respective ends of a filament, conductors leading thereto, a reactive coil included in one of said conductors, and an automatic circuit-interrupting device, also included in one of said conductors.

3. In an apparatus for treating filaments for incandescent electric lamps, the combination of a source of alternating electric currents, electrodes for receiving the respective ends of the filaments, conductors leading thereto, and a reactive coil included in one of said conductors, whose coefficient of self-induction increases as the resistance of the filament decreases, substantially as described.

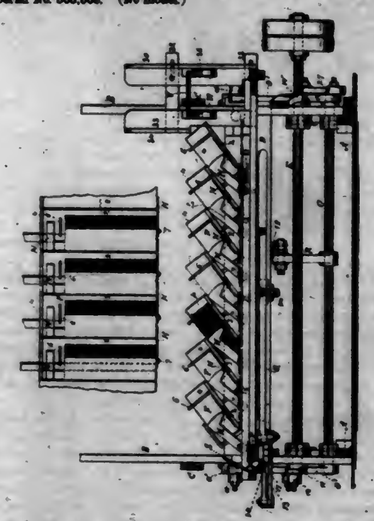
4. In an apparatus for treating filaments for incandescent electric lamps, the combination of a chamber for receiving the filaments, a source of alternating electric currents, an electric circuit therefor having its terminals within said chamber, and an adjustable reactive coil included in said circuit.

5. The hereinbefore-described organization of apparatus for treating filaments for incandescent electric lamps, consisting of two or more treating-chambers, circuits for supplying alternating electric currents thereto of different electro-motive forces, and a single source of alternating electric currents supplying said circuits.

6. An organization of apparatus for treating filaments by alternating electric currents, consisting of a source of alternating electric currents, electric converters deriving currents from said source independently of each other, independent treating-circuits derived from the respective secondary circuits of said converters, independent treating apparatus included in said secondary circuits, and reactive coils included in the respective treating-circuits.

7. The combination, with a treating apparatus for the filaments of incandescent electric lamps, consisting of a source of alternating electric currents, a circuit derived therefrom in which said filaments may be connected, and a reactive coil connected in said circuit, of apparatus for cementing or otherwise treating the filaments, also receiving currents from the said source, substantially as described.

404,119. MACHINE FOR GATHERING SIGNATURES. DAVID M. SMYTH, Hartford, Conn. Filed Aug. 27, 1887. Renewed Apr. 2, 1889. Serial No. 305,808. (No model.)



Claim.—1. The combination, in a machine for gathering signatures, of a range of bins for holding the piles of signatures, reciprocating pushers for discharging the lower signature of each pile of signatures automatically, a collecting-slide upon which the signatures fall, and a traveler for moving the signatures along upon the collecting-slide and gathering the signatures into a bundle, substantially as set forth.

2. The combination, with the range of inclined bins for holding the piles of signatures, of an adjustable separator at the end of each bin and a pusher in the bottom of the bin, and means for reciprocating the same along the bin and below the pile of signatures for removing automatically the lower signature from each pile of signatures and a collecting-slide for receiving said signatures, substantially as set forth.

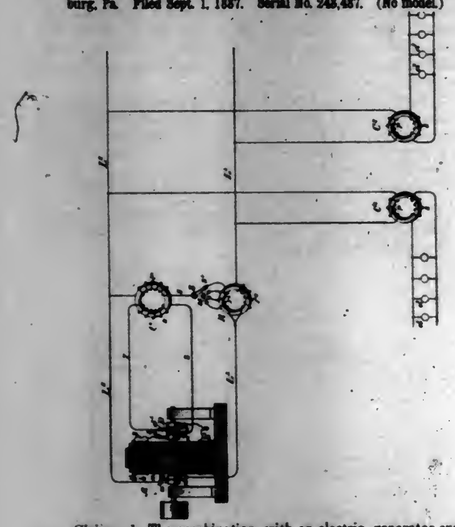
3. The combination, in a machine for gathering book-signatures, of a range of bins, separators at the ends of the bins, a reciprocating pusher in the bottom of each bin for discharging the lower signatures in the piles of signatures, a stock to which the pushers are connected, guide-bars for the same, connecting-rods, crank-levers, and a rock-shaft for giving motion to the stock, substantially as set forth.

4. The combination, in a machine for gathering book-signatures of a range of bins for holding the piles of folded signatures, automatic mechanism, substantially as specified, for discharging the lowest signature from each pile of signatures, a collecting-slide for receiving the signatures, a traveler, mechanism for actuating the same, and a pivoted push-plate and means for turning the same horizontally when the traveler is returning, and for swinging the push-plate nearly ver-

tical before moving the same to gather the sheets, substantially as set forth.

5. The combination, in a machine for gathering signatures, of a collecting-slide, means for delivering the signatures upon such collecting-slide, so as to lap one upon the other, a traveler for gathering the signatures into one pile, an elevating-table for receiving the pile or volume of signatures, and corner-pieces between which the volume of signatures is raised, substantially as set forth.

404,120. REGULATING SELF-EXCITING ALTERNATE-CURRENT ELECTRIC GENERATORS. WILLIAM STANLEY, Jr., Great Barrington, Mass., assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Sept. 1, 1887. Serial No. 248,487. (No model.)



Claim.—1. The combination, with an electric generator supplying alternate currents, of a converter having its primary coil connected across the terminals of the armature of the generator, a rectifying-commutator through which the currents from the secondary coil of the converter are delivered to the field-magnet coils of the generator, and a differential inductive resistance, one coil being included in series with the primary coil of the converter and the other coil in series with the work-circuit, substantially as described.

2. The combination, with an alternate-current electric generator, of an inductive resistance wound with opposing coils, one coil being connected in series with the work-circuit of the generator and the other in multiple arc with the work-circuit, a converter having its primary coil in series with the last-named coil, a rectifying-commutator connected with the terminals of the secondary coil of the converter, and conductors connecting the rectifying-commutator with the field-magnet coils of the generator.

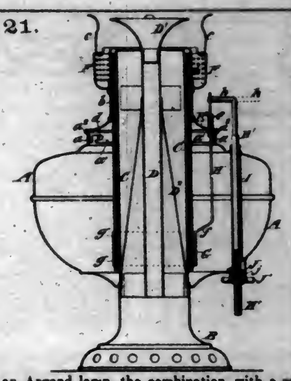
3. The combination, with an alternate-current electric generator, of an inductive resistance wound with opposing coils, one coil being connected in series with the work-circuit of the generator and the other in multiple arc with the work-circuit, a converter having its primary coil in series with the last-named coil, a rectifying-commutator connected with the terminals of the secondary coil of the converter, conductors connecting the rectifying-commutator with the field-magnet coils of the generator, and means for varying the relative lengths of the coils of the inductive resistance.

4. The combination, with an alternate-current electric machine, of a conductor connected across the poles of the same through which currents are supplied to the field-magnet coils, an inductive resistance included in said conductor, and a coil connected in the main circuit for varying the value of the inductive resistance in inverse proportion to the current consumed in the work-circuit.

404,121. WICK-RAISER FOR LAMPS. ALVIN TAPLIN, Forestville, Conn., assignor to the Bristol Brass and Clock Company, same place. Filed Oct. 10, 1888. Serial No. 287,765. (No model.)

Claim.—1. In an Argand lamp, the combination, with a reservoir, of a wick-tube, a wick-carrier, and a wick-raiser connected to the wick-carrier and having a portion extending upwardly above the reservoir, said portion being resilient, and a portion extending downwardly below the same provided with an arm above the reservoir adapted to be swung around to engage said first-named portion and around out of engagement therewith, substantially as specified.

404,121.



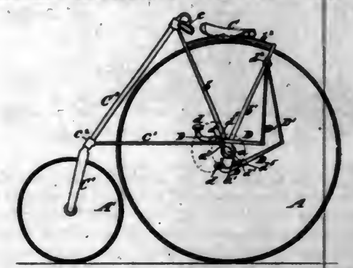
2. In an Argand lamp, the combination, with a reservoir, of a wick-tube, a wick, a wick-carrier, and a wick-raiser connected to the wick-carrier and having a portion extending upwardly above the reservoir and provided with one or more apertures, and another portion extending downwardly below the reservoir, the last-named portion being provided above the reservoir with an arm engaging one of said apertures, substantially as specified.

404,122. BOTTLE-STOPPER AND FAUCET. CHARLES A. TATUM, New York, N. Y., assignor to Whitall, Tatum & Co., same place. Filed Mar. 6, 1888. Serial No. 266,230. (No model.)



Claim.—The bottle-stopper and faucet, comprising the nut F, adapted to fit in the neck of the bottle and having the flange *e* at its upper end, the cock D, having the threaded tube A extending through the nut and having its lower end reduced in diameter and extending below the nut and provided with the shoulder *d*, the elastic ring or stopper E, fitting on the reduced end of the tube and bearing on the shoulder *d*, and the washer *b*, loose on said reduced end of the tube and bearing on the upper side of the ring or stopper, substantially as described.

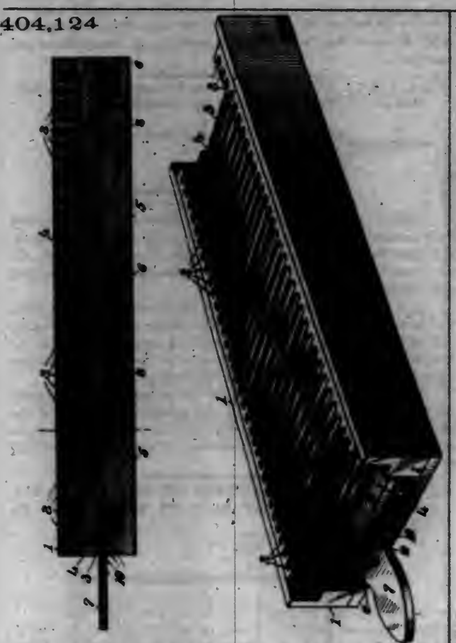
404,123. VELOCIPEDE. GEORGE J. TAYLOR, Salt Lake City, Utah. Filed Feb. 7, 1888. Serial No. 263,222. (No model.) Patented in England June 1, 1885, No. 8,015, and in Canada Sept. 17, 1885, No. 22,482.



Claim.—The combination, with the driving-wheel and its cranks, having foot-pedals on the crank-pins, of treadle-levers D, having foot-pedals at their forward ends and pivotally connected between their ends with the said crank-pins, whereby provision is afforded for using either the crank-pedals or the lever-pedals in propelling the machine, substantially as herein described.

404,124. APPARATUS FOR MAKING GARMENT-STAYS. ALFRED TAYLOR, Bridgeport, Conn.; Thomas P. Taylor administrator of said Alfred Taylor, deceased. Filed Dec. 7, 1888. Serial No. 292,954. (No model.)

404,124



Claim.—1. In a machine for making garment-stays, the trough having substantially parallel sides and pockets arranged in the walls thereof for the reception of the ends of the blades, in combination with a platform arranged within the trough and means for varying the vertical plane of the platform, substantially as set forth.

2. In a machine of the character described, the combination, with the trough whose side walls are substantially parallel, of the pockets located in the inner walls of the trough and arranged in opposed pairs, a platform lying within the trough, and means—as, for instance, wedges—for varying the plane of the platform, and a stop for the retention of the platform at the required height.

3. The combination, with the trough having in the inner side walls thereof the pockets arranged in pairs for the retention of the ends of the blades, of the platform arranged within the trough, a series of bars upon the surface of the platform, said bars extending one between each opposed pair of pockets, and means for the elevation and retention of the platform, substantially as specified.

4. The combination, with the trough and the pockets arranged in the side walls thereof, of the platform having thereon the bars, the slide-bar beneath the platform, the wedges for the elevation of the platform and slide-bar, and a stop for the retention of the platform, substantially as set forth.

5. The combination, with the trough, the same having pockets in the sides thereof and arranged in opposed pairs, of the platform, the slide-bar beneath the latter, the wedges, and a stop for the detention of the slide-bar, substantially as described.

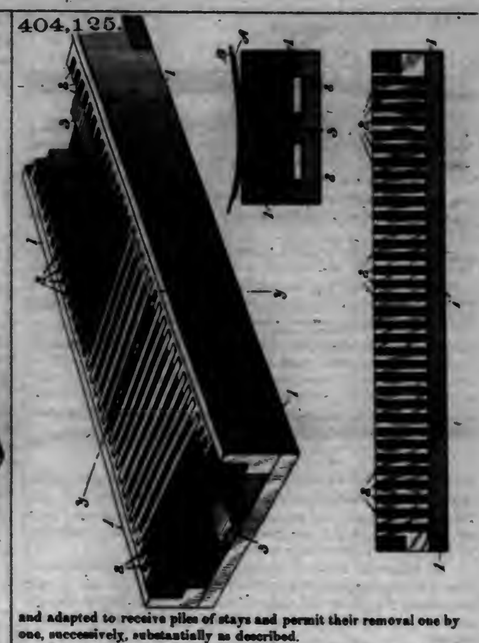
6. In a machine of the character described, the trough provided with pockets in the side walls thereof for the piling of the blades, the movable platform arranged in said trough, the longitudinal slide-bar, the wedges, and the stop-pin, whereby the slide-bar is retained, substantially as specified.

7. The combination, with the trough having pockets, as described, of the platform lying in said trough, the slide-bar carrying on its under surface a pair of wedges and arranged beneath the platform, and a pair of stationary wedges secured in the bottom of the trough and engaging the surfaces of the wedges on the slide-bar, and a stop, whereby the slide is secured.

404,125. APPARATUS FOR MAKING GARMENT-STAYS. ALFRED TAYLOR, Bridgeport, Conn.; Thomas P. Taylor administrator of said Alfred Taylor, deceased. Filed Jan. 18, 1889. Serial No. 296,745. (No model.)

Claim.—1. An apparatus for making garment-stays, the same consisting of a trough having a floor, side walls parallel to each other and extending vertically upward from said floor, and a series of pairs of pockets formed in the side walls and extending toward the floor

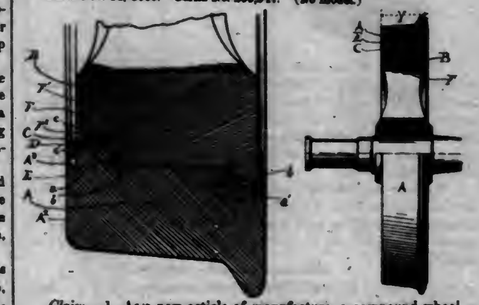
404,125.



and adapted to receive piles of stays and permit their removal one by one, successively, substantially as described.

2. As an apparatus for use in making garment and similar stays, the rectangular trough having in the side walls thereof pockets opening inward and upward, and a support for the center line of all the piles of blades arranged upon the floor of the trough and extending longitudinally thereof, substantially as specified.

404,126. CAR-WHEEL. FREDERICK W. TAYLOR, Philadelphia, Pa. Filed Feb. 11, 1889. Serial No. 299,547. (No model.)



Claim.—1. As a new article of manufacture, a compound wheel consisting of a tire having on its internal periphery or base two or more rabbeted ascending steps, a wheel-center having a male periphery of corresponding descending rabbeted steps engaging and registering with said tire's base, as well as having within its step of smallest diameter a peripheral annular chamber communicating with said wheel-center's adjoining side, and a retaining-ring having an inwardly and centrally extending body secured within said wheel-center's peripheral chamber by the overlying tire, and having an outwardly-protruding flange bent over onto said tire's adjoining cheek, so as to connect the wheel-center therewith and prevent the retreat of said rabbeted steps from interlocking, substantially as shown and described.

2. As a new article of manufacture, a tire-retaining ring having inwardly or centrally extending shoulders and a laterally-extending flange, the outer surface of said ring being provided with an annular recess or gutter, substantially as shown and described.

404,127. CURLING-IRON. GEORGE L. THOMPSON, Chicago, Ill. Filed July 24, 1888. Serial No. 280,898. (No model.)

Claim.—1. As a novel article, a curling-iron consisting of a mandrel, a handle, and a tube for uniting the handle and mandrel, said tube being attached to the handle and fitted over the end of the mandrel and permanently secured thereto, substantially as described.

404,127.

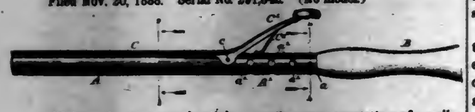


2. As a novel article, a curling-iron consisting of a mandrel, a handle, and an apertured tube for uniting the handle and mandrel, which is attached to the handle and is fitted over the end of the mandrel and permanently secured thereto, substantially as described.

3. A curling-iron comprising a mandrel, a handle, a tube connecting the same, and a spring-clasp pivoted to the said tube, substantially as described.

4. The combination, with a mandrel and a handle, of a tube connecting the handle and mandrel, a spring-clasp pivoted to said tube, a leaf-spring attached to the handle of the clasp and bearing on the tube, and a piece or layer of non-conducting material placed between the handle and spring, substantially as described.

404,128. CURLING-IRON. GEORGE L. THOMPSON, Chicago, Ill. Filed Nov. 20, 1888. Serial No. 291,342. (No model.)



Claim.—1. As a novel article, a curling-iron consisting of a cylindric mandrel, a handle, and a tube connecting the same, said tube forming a continuation of and being made of the same external diameter as and integral with the mandrel, and provided with a plurality of perforations, substantially as described.

2. As a novel article, a curling-iron consisting of a cylindric mandrel, a handle provided with a cylindric prolongation, *b*, and a tube connecting the handle and mandrel, said tube being integral with the mandrel and embracing the said prolongation *b*, substantially as described.

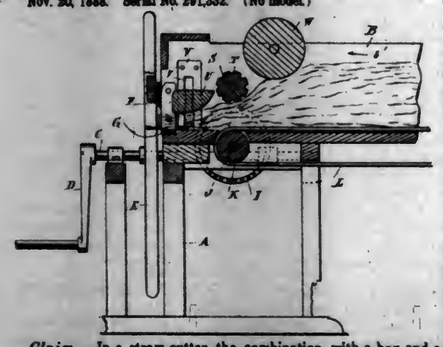
404,129. COMBINED COMB AND CURLING-IRON. GEORGE L. THOMPSON, Chicago, Ill. Filed Dec. 20, 1888. Serial No. 294,187. (No model.)



Claim.—1. A combined comb and curler consisting of a solid cylindric metal back provided with a longitudinal slot and a flat metal comb-plate inserted and immovably secured in said slot, with the inner ends of the slots or spaces between its teeth substantially flush with the adjacent parts of the back, thereby forming a cylindric surface about which the hair may be wrapped in curling the same, substantially as described.

2. The combined comb and curler consisting of the metal cylinder A, provided with a through-slot, *a a'*, and the comb-plate C, extending through the back in said slot and secured by a heading or lateral enlargement at the opening *a'* of the back, substantially as described.

404,130. STRAW-CUTTER. JOHN TÜPPER, Brooklyn, N. Y. Filed Nov. 20, 1888. Serial No. 291,332. (No model.)



Claim.—In a straw-cutter, the combination, with a box and a knife-wheel, of an endless belt, L, in the bottom of the box, the vertically-sliding block near the cutting end of the box, the fluted roller T above the endless belt and in rear of the said block, and the plain roller W above the fluted roller, substantially as herein shown and described.

404,131. FRYING-PAN. MILTON S. TRACY, Glastonbury, Conn. Filed Dec. 27, 1888. Serial No. 294,760. (No model.)

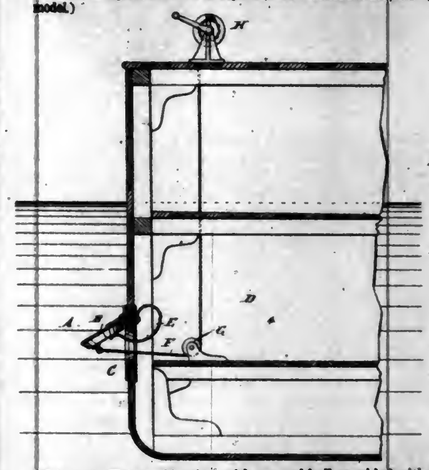


Claim.—1. A frying-pan or culinary vessel having the inclosed fume-passage 10 extending on the exterior of its sides 4 downwardly and thence inwardly through the bottom rim, 6, to a point inside the perimeter of the bottom, substantially as described, and for the purpose specified.

2. A frying-pan or culinary vessel having smooth interior sides, the fume-passage 10, extending on the exterior of the wall forming said smooth sides down to and through the bottom rim, 6, and the handle 8 and brace 11 on the projecting outer wall of said fume-passage, substantially as described, and for the purpose specified.

3. A frying-pan or culinary vessel having smooth sides 4, eccentric top rim and cover-seat, and the fume-passage 10, formed on the exterior of the sides 4 and extending from the wider portion of the cover-seat to the inside of the bottom rim, 6, substantially as described, and for the purpose specified.

404,132. FIRE-EXTINGUISHER FOR SHIPS. WILLIAM D. T. TRAVIS, Burlington, N. J. Filed Sept. 21, 1888. Serial No. 285,864. (No model.)



Claim.—1. The combination, with a vessel-hull provided with an opening therein below the water-line, of a valve hinged to the outside of the vessel adjacent to said opening, a spring secured to the hull and having its free end engaging the said valve, and means for locking the valve closed against the action of the spring, substantially as described.

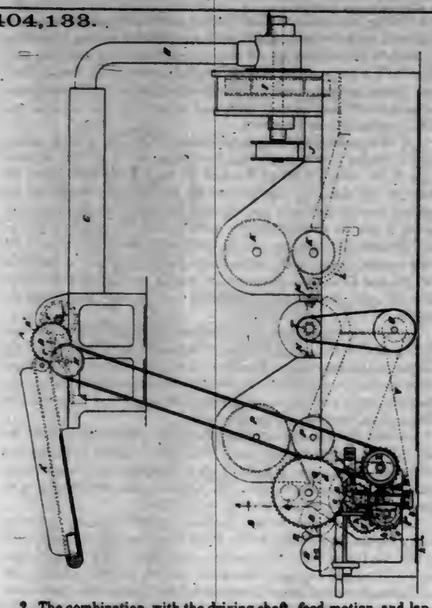
2. The combination, with the hull of a vessel provided with the valve-seat C, below the water-line, of the valve B, hinged to the seat, the spring E, secured to the inside of the valve-seat and having its free end engaging the valve, the windlass H, and the cable F, secured to the valve and wound on the windlass, substantially as herein shown and described.

404,133. MACHINE FOR OPENING AND SCUTCHING COTTON. SAMUEL TWEEDALE, Accrington, County of Lancaster, England. Filed Jan. 21, 1887. Serial No. 224,968. (No model.) Patented in England July 29, 1884, No. 10,092.

Brief.—The object of the invention is to provide improved driving mechanism whereby the lap-motion shall be continued in gear long enough after the feed has been stopped to withdraw the cotton from the trunk, and whereby on restarting the machine the feed will be started first and the lap-motion be started automatically when the trunk has been filled with cotton.

Claim.—1. The combination, with the driving-shaft and lap-motion, of an intervening driving-gear, an operating-lever for throwing said gear into or out of action, and a lost-motion device intervening between the operating-lever and said gear for delaying the effect on said gear of a manipulation of said lever.

404,133.



2. The combination, with the driving-shaft, feed-motion, and lap-motion, of gearing for driving the feed-motion, gearing for driving the lap-motion, and an operating-lever for starting or stopping said motions, connected directly to the feed-motion driving-gear for throwing it into or out of connection immediately upon the manipulation of said lever, and a lost-motion device intervening between said lever and the lap-motion driving-gear for delaying the stopping or starting thereof on a manipulation of said lever, whereby the feed-motion is started or stopped in advance of the lap-motion.

3. The combination, with the driving-shaft, the lap-motion, and gearing for driving the latter, of a clutch adapted to connect or disconnect said gearing and a cam for operating said clutch.

4. The combination, with the driving-shaft, the lap-motion, and gearing for driving the latter, of a clutch adapted to connect or disconnect said gearing, a rotary cam for driving said clutch, and an adjustable driving-gearing between said cam and the driving-shaft, whereby the speed of said cam relatively to the driving-shaft may be varied.

5. The combination, with the driving-shaft, the lap-motion, and gearing for driving the latter, of a clutch adapted to connect or disconnect said gearing, a rotary cam for driving said clutch, and another clutch adapted to engage with and drive said cam, and means for throwing said latter clutch into and out of engagement with said cam, whereby the rotation of said cam can be controlled and its action on the lap-motion driving-gear regulated.

6. The combination, with the driving-shaft, the lap-motion, and gearing for driving the latter, of a clutch adapted to connect or disconnect said gearing, a rotary cam for driving said clutch, and another clutch adapted to engage with and drive said cam, and a throw-off cam adapted to act against said latter clutch and to throw it into or out of engagement with said rotative cam.

7. The combination, with the driving-shaft, the feed-motion, and the lap-motion, of a feed-motion driving-gear for driving the feed-motion, a lap-motion driving-gear for driving the lap-motion, a clutch adapted to connect or disconnect said lap-motion driving-gear, a rotary cam for operating said clutch, another clutch adapted to engage with and drive said rotary cam, and a connection between said latter clutch and the feed-motion driving-gear, adapted to throw said latter clutch into action upon the stopping or starting of the feed-motion driving-gear, whereby the said cam is set in operation upon stopping or starting the feed-motion driving-gear.

404,134. SPINDLE FOR SPINNING AND SUPPORT THEREFOR. JOSEPH E. TYRAN, Paterson, N. J. Filed June 8, 1888. Serial No. 276,501. (No model.)

Brief.—The object of the invention is to enable a spindle to accommodate itself in its rotation to an unbalanced load.

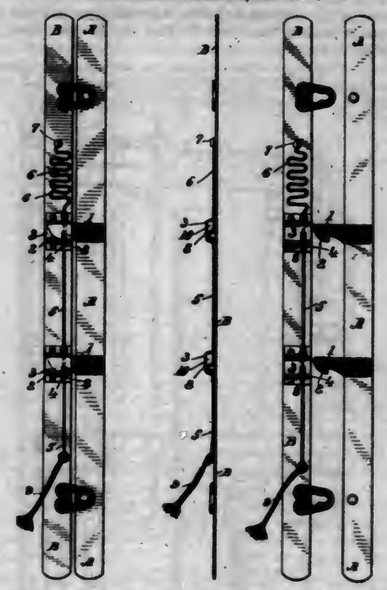
Claim.—1. The combination, with a rigid bolster containing a single bearing, of a spindle composed of an upper member for receiving the bobbin, a chambered lower member which alone is fitted to the said bolster, and an intermediate member which connects the said upper and lower members and which is flexible within the said chambered lower member which is within the bolster, substantially as herein described.

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2. The combination, with a spindle composed of an upper and a lower member and an intermediate flexible member, the said flexible member being connected with the lower member at or near the bottom thereof, and the lower member being chambered above said connection to permit the flexure of the intermediate member, a single unyielding bolster-bearing, to which only the said lower spindle member is fitted, and a whirl attached to the said upper member and overlapping the said lower member and having its band-groove opposite the connection between the said intermediate and lower members and outside the bolster, substantially as herein described.

404,135. CORSET-CLASP. DE VER H. WARNER, Bridgeport, Conn. Filed Feb. 23, 1889. Serial No. 300,899. (No model.)



Claim.—1. In a corset-steel fastening, the combination, with the hooks upon one of the steels, of the open-ended housings, into which the hooks may slide, the wire extending along the face of the steel beneath the housings, and the doubled latch-sections of said wire, one within each housing, whereby the hooks are retained as against retrograde movement, substantially as and for the purpose set forth.

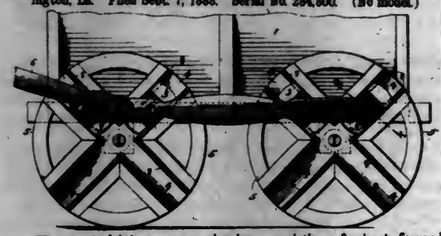
2. In a corset-steel fastening, the combination, with the hooks stationary upon one steel, of the open housings upon the other steel in the path of the hooks, and the wire extended along the steel beneath the housings and doubled within each housing, said doubled portion engaging and held by a guideway in said housing, substantially as and for the purpose set forth.

3. In a corset-steel fastening, the combination, with the hooks upon one steel, of the open-ended housings on the other steel opposite said hooks, a wire spring actuated in the direction of its length passing beneath each of the housings, a series of projecting latches rigid on the wire, one within each housing, and means, as a cord, for imparting lengthwise movement to said wire, as specified.

4. In a corset-steel fastening, with one of the steels thereof and the hooks arranged upon said steel, each hook having an oblique front edge, of the complementary steel, the open housings secured thereon and slotted through their top surfaces, the wire

lying along the steel and having the spring-loops at its upper end, the latches on said wire, one within each housing and engaging with the slot therein, and the operating-cord secured to the other end of the wire and adapted to operate the same in the direction of its length, substantially as described, and for the purpose set forth.

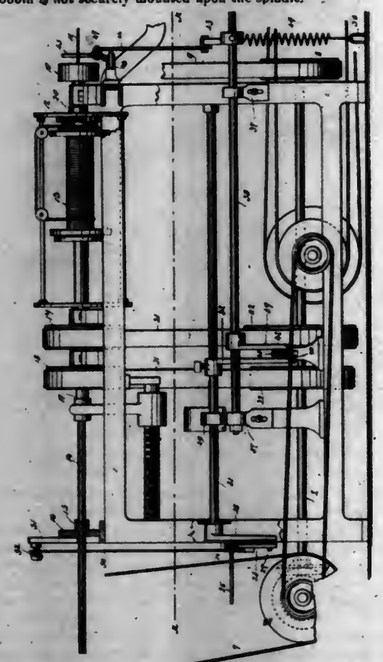
404,136. MECHANICAL POWER. LEMUEL B. WATKINS, Washington, La. Filed Sept. 7, 1888. Serial No. 284,800. (No model.)



Claim.—A driving-gear mechanism consisting of wheels formed with diametrical grooves crossing each other and having their sides provided with V-shaped edges, in combination with a connecting-rod having slides pivoted thereto and located in the diametrical grooves, said slides having V-shaped grooves engaging the V-shaped edges of the diametrical grooves, and a pitman pivoted to the connecting-rod, substantially as shown and described.

404,137. CORDAGE-SPINNING MACHINE. ANTON WEBER and CLEMENT LAMBERT, Elizabeth, N. J. Filed Mar. 30, 1888. Serial No. 268,995. (No model.)

Brief.—The object of the invention is to provide means whereby the machine is stopped if the cord breaks and cannot be started when the bobbin is not securely mounted upon the spindle.



Claim.—1. In a cordage-spinning machine, a belt-shifting mechanism, a counterweighted crank-shaft which moves the belt-shifting mechanism in one direction to shift the driving-belt from the fast to the loose pulley, a spring-actuated latching and tripping mechanism connected with and holding the counterweighted crank-shaft, an arm pivoted adjacent to the capstan-tube, adapted to normally bear against the cord, and a rod connecting said arm with the spring-actuated tripping mechanism, substantially as described.

2. In a cordage-spinning machine, a belt-shifting mechanism having a depending arm, a counterweighted crank-shaft having a depending arm pivotally connected with said depending arm on the belt-shifting mechanism, a shaft having a depending arm with a pin, a pivoted lever beneath which said pin projects, having a notch, a second arm depending from the counterweighted crank-shaft and provided with a pin engaged by said notch, a lever on the second shaft with retracting-spring, and an arm pivoted adjacent to the condenser, connected with said second shaft, and adapted to bear against the cord, substantially as described.

3. In a cordage-spinning machine, the combination, with sliding bar 24, having pins 25 projecting by driving-belt 7, and the depending arm 25', with slot 26, of the shaft 31, having depending arm 28 with pin 27, engaging slot 26, arm 29, with counter-weight 30, depending arm 32, having a pin, 40, shaft 38, with depending arm 39, having a pin, 33, pivoted arm 35, having notch 42 engaging pin 40 and shoulder 34 engaging pin 33, horizontal lever 43 on shaft 38, with retracting-spring 49, and arm 45, pivoted adjacent to pulley 10 and adapted to bear against the cord, rod 44, connecting arm 45 with lever 43, and stop-pin 45', adjacent to arm 45, substantially as described.

4. In a cordage-spinning machine, the combination, with the belt-shifting mechanism and the sliding detachable spindle of the winding-bobbin, of a sliding plate extending over the end of the spindle, a shouldered pivoted lever adjacent to the belt-shifting mechanism to engage the same, and a vertical rod connecting the shouldered lever with the sliding plate, substantially as described.

5. In a cordage-spinning mechanism, the combination, with the belt-shifting mechanism, of a shouldered lever adapted to engage one of the belt-shifting pins, a sliding plate extending over the end of the removable bobbin-spindle, and a rod connecting the sliding plate with the shouldered lever, substantially as described.

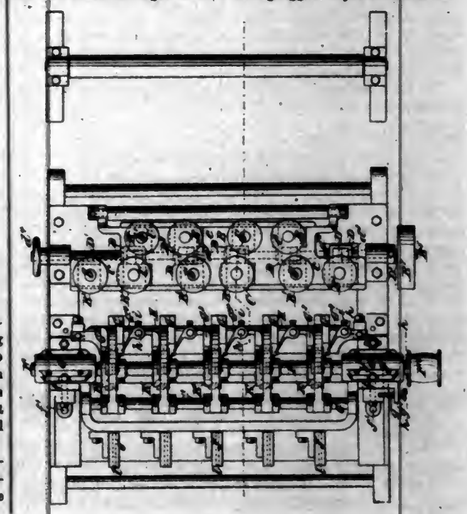
6. In a cordage-spinning machine, the sliding plate 51, having handle 52, the supporting-bracket 16, having sleeve 15, the removable spindle 14, the end of which is supported in said sleeve, rod 56, having a hooked end engaging handle 52, lever 53, pivoted to bracket 23 and having shoulder 54, and a belt-shifter having pins 25, substantially as described.

7. In a cordage-spinning machine, the removable bobbin-spindle, a vertically-movable plate extending over the end of spindle, a lever adjacent to the belt-shifting pins, and a rod connecting said lever and plate, in combination with the belt-shifting mechanism provided with said pins, a counterweighted crank-shaft connected with said belt-shifting mechanism, a spring-actuated latching tripping mechanism which holds and sets free the counterweighted crank-shaft, a pivoted arm adapted to bear against the cord, and a rod connecting said arm with the spring-actuated tripping mechanism, substantially as described.

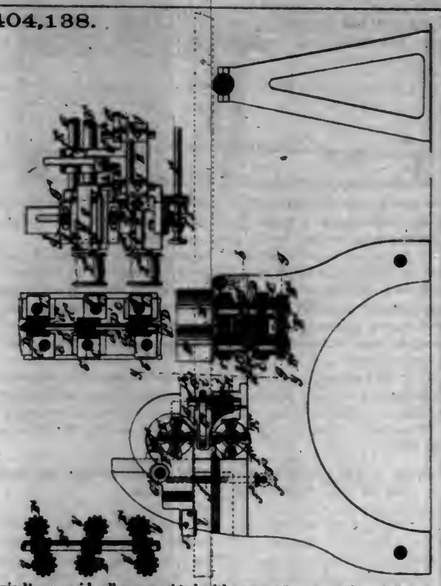
404,138. PLANING-MACHINE. JAMES F. WELCH, Brooklyn, N. Y., assignor to the Glen Cove Machine Company, (Limited,) same place. Filed Nov. 17, 1888. Serial No. 291,154. (No model.)

Claim.—1. The combination of pairs of vertically-extending presser and feed rollers arranged in rows and zigzagged, and horizontally-arranged cutter-heads arranged in pairs and one above another, substantially as specified.

2. The combination, with pairs of vertically-extending presser and feed rollers arranged in rows and zigzagged, of journal-boxes for



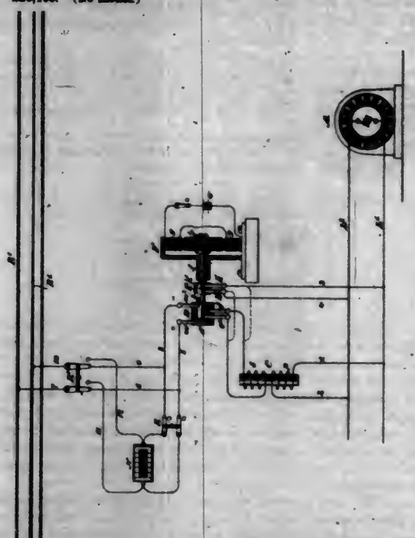
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spindles on said rollers, provided with nuts, and a screw-threaded shaft extending horizontally across the machine and engaging all said nuts, which shaft when rotated will adjust all the rollers in unison, substantially as specified.

3. The combination, with pairs of vertically-extending presser and feed rollers arranged in rows and zigzagged, of journal-boxes for the spindles of said rollers, boxes on said journal-boxes, nuts within said boxes, a screw-shaft engaging all said nuts for adjusting the rollers in unison, and springs operating on said nuts to admit of the yielding of the presser-rollers, substantially as specified.

404,139. SYSTEM OF ELECTRICAL DISTRIBUTION. GEORGE WESTINGHOUSE, Jr., Pittsburg, Pa. Filed Feb. 23, 1887. Serial No. 228,103. (No model.)



Claim.—1. The combination, substantially as described, of an alternate-current electric generator, a converter having primary and secondary circuits, the primary circuit being connected with the generator, an electric motor, an electric railway, and a rectifying-commutator driven by said motor, through which currents from said secondary circuit are supplied to said railway.

2. The combination, substantially as described, of an electric generator delivering alternating electric currents, an alternate-current motor driven thereby, a rectifying-commutator rendering continuous the current delivered from said generator, or a portion of the same, and an electric railway supplied by such continuous current.

3. The combination of an alternate-current electric generator, a converter reducing the potential of the currents delivered thereby, a rectifying-commutator rendering continuous such reduced currents, and an electric railway supplied by such continuous currents.

4. The combination, substantially as hereinbefore set forth, of an alternate-current electric generator, a converter supplied with currents therefrom, a rectifying-commutator straightening the currents from said converter, an electric railway supplied with such rectified currents, and a storage-battery charged by currents from said rectifying-commutator.

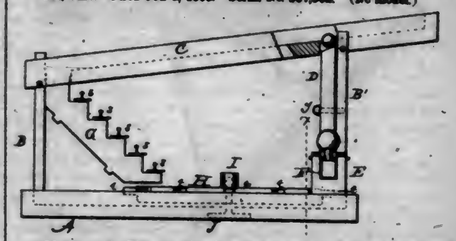
5. The combination of an electric railway, an electric locomotor moving thereon, a source of alternating electric currents, an electric converter having its primary connected with the source, a current-rectifier with which the secondary of the converter is connected, and means for conveying currents from said rectifier to said locomotor.

6. The combination of an electric locomotor, a current-rectifier upon said locomotor, a source of alternating electric currents, and means for connecting said source with said rectifier.

7. The combination, with an electric locomotor, of a current-rectifier and a storage-battery carried thereby, circuit-connections from said rectifier to said storage-battery, whereby the battery may be charged by currents delivered through said rectifier, and electrical connections from the storage-battery with the electrical locomotor.

8. The combination of an electric motor, a vehicle carrying the same, a source of alternating electric currents, and a rectifying-commutator through which currents are delivered from said source to said motor.

404,140. MUSICAL GAME-WHEEL. GOTTLIEB WILKENING, Dayton, Ohio. Filed Oct. 6, 1888. Serial No. 287,362. (No model.)

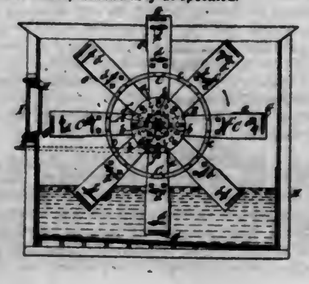


Claim.—1. The combination of frame A, having uprights and inclining trough thereon and rails holding sounding-plates *s*, the pivotal wheel H, having lugs at its periphery and numbered depressions on its face, the operating-bar F, with projection *w* on its upper surface, and pawl *u*, held from its under surface and arranged tangentially with reference to said wheel, and the discharging-bar D, having a beveled top held in a slot of said trough and directly over said operating-bar, as shown and described.

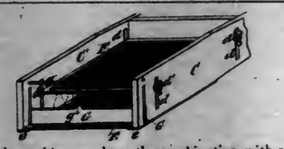
2. The combination of frame A, having uprights and inclining trough C thereon, rails holding a series of sounding-plates, *s*, in successive steps, the operating-bar F, with projection *w* and pawl *u*, and discharging-bar D, substantially as and for the purpose specified.

404,141. BOTTLE-WASHING MACHINE. OLIVER WILLCOX, Brooklyn, assignor of one-half to Robert A. Cheesbrough, New York, N. Y. Filed Nov. 16, 1888. Serial No. 291,046. (No model.)

Claim.—1. In a bottle-washing machine, the combination, with a tank, of a rotary wheel arranged in said tank, spokes comprised in said wheel, trays for containing the bottles arranged upon the spokes, and screens for maintaining the bottles upon the trays during the rotation of the wheel, substantially as specified.



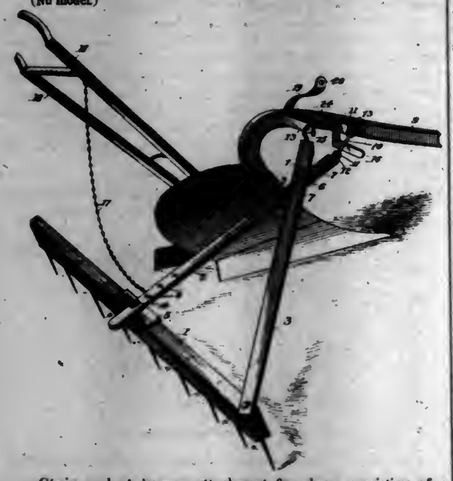
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2. In a bottle-washing machine, the combination, with a tank, of a rotary wheel arranged in said tank, spokes comprised in said wheel, trays for containing the bottles arranged upon the spokes, and adjustable screens for maintaining the bottles upon the trays during the rotation of the wheel, substantially as specified.

3. In a bottle-washing machine, the combination, with a tank, of a rotary wheel arranged in said tank, spokes comprised in said wheel, trays arranged on said spokes for holding the bottles, screens for maintaining the bottles upon the trays during the rotation of the wheel, and gates for preventing the trays and bottles from being thrown outwardly by centrifugal force, substantially as specified.

404,142. HARROW ATTACHMENT FOR PLOWS. JOHN F. WILLIAMS, Grand Forks, Dak. Filed Aug. 17, 1888. Serial No. 282,978. (No model.)



Claim.—1. A harrow attachment for plows, consisting of a toothed bar, a drag-bar pivoted at about the middle of its length, a brace-bar pivoted to one end of the toothed bar and to the drag-bar, and a U-shaped bar adapted to be secured to the plow-beam, and to the arms of which the drag-bar and brace-bar are flexibly connected, substantially as described.

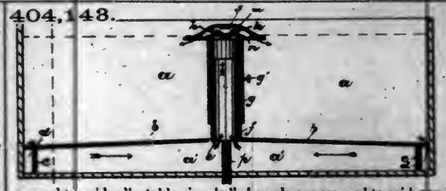
2. A harrow attachment for plows, consisting of the toothed bar 1, the drag-bar 2, pivoted to the middle of the toothed bar, the brace-bar 3, pivoted to the outer end of the toothed bar and to the forward end of the drag-bar, and the U-shaped bar 14, provided with the arms 13, one of which is provided with L-shaped arm 16, and the upwardly-projecting bar 19, the drag-bar and brace-bar being pivotally connected to the said arms 13, substantially as herein shown and described.

3. The combination, with plow-beam 9, of U-shaped bar 14, having perforated arms 13, and vertical arm 19, with hole 20, and L-shaped arm 16, secured to forward arm, 13, harrow 1, drag-bar 2, having one of its ends provided with perforations 8 and connected by pin 4 with harrow 1 and its other end resting on arm 16 and flexibly connected to forward arm, 13, by rod 10, having eyes 11 engaging said arm 13 and ring 12 in bar 2, brace-bar 3, pivoted at one end to the outer end of harrow 1, at its other end being connected by hook 15 to the rear arm, 13, and adjustably pivoted between its ends to drag-bar 2 by pin 6, by a series of adjacent holes, 7, in bars 2 3, and the chain 17, connected at one end to the outer end of rod 2 and at the other to one of the plow-handles 18, substantially as shown and described.

404,143. BEER-STEAMING APPARATUS. WILLIAM J. WIRTZ, Newark, N. J. Filed Dec. 20, 1888. Serial No. 294,935. (No model.)

Claim.—1. An improved steam tank or vessel, as herein described, having an intermediate or double bottom tapering downward from the center and with openings at the ends thereof, a central upwardly-extending pipe secured to said intermediate bottom over a central opening, an adjustable pipe fitting over said secured pipe, standards

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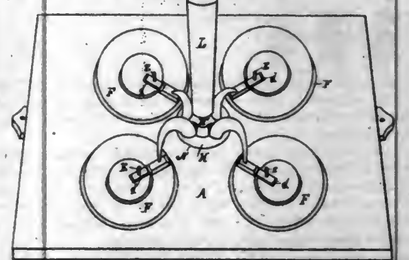


secured to said adjustable pipe, bell-shaped caps secured to said standards, as shown, and a steam-pipe arranged under said intermediate bottom, as shown, and for the purposes set forth.

2. An improved steam tank or vessel as herein described, having an intermediate or double bottom tapering downward from the center and with openings at the ends or sides, a central upwardly-extending pipe secured to said intermediate bottom over a central opening therein, bell-shaped caps secured to said pipes, as shown, and a steam-pipe arranged under said intermediate bottom, as shown, and for the purposes set forth.

3. In a steam-tank provided with suitable steam-pipes, the combination of a centrally-perforated bottom, *b*, openings *d*, intermediate chamber, *a'*, vertical pipe *f*, bell-shaped cap *m*, secured to said pipe *f*, and spreader *s*, secured to said pipe, as shown, and for the purposes set forth.

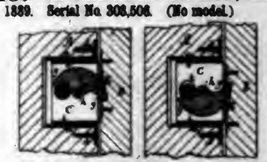
404,144. PATTERN-BOARD. JOHN WRIGHT, Cleveland, Ohio. Filed Mar. 18, 1889. Serial No. 303,797. (No model.)



Claim.—1. A pattern or match board provided with a series of two or more face-plates and patterns in pairs, substantially as herein described, in combination with horn-gates radiating from a central gate and communicating with a central sprue, substantially in the manner and for the purposes specified.

2. In combination, a pattern-board provided with face-plates and patterns, a series of horn-gates gating to and with a central connecting-gate, an anchor-plate, and a locking-sprue, the parts being constructed, arranged, and operating substantially in the manner and for the purpose described.

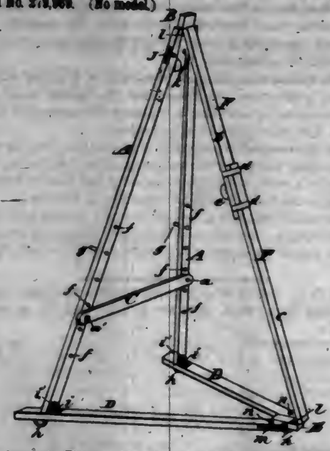
404,145. SASH-FASTENER. JOSEPH ABBOTT, Rumney, N. H. Filed Mar. 16, 1889. Serial No. 303,508. (No model.)



Claim.—1. The window-sash fastener, substantially as described, comprising the case *a*, having the flange *c* and bearing *m*, and adapted to receive and support the case *b*, the latter having bearings for the pin *j* and provided with slots *k*, the half-wheel *f*, provided with eccentric periphery and pivoted within and to the case *b*, the shaft D, arranged in the slots in case *b* and supported in a bearing in case *a*, and also in a nut, *o*, in combination with the sash and its casing, the latter having catches E, constructed, arranged in the casing, and to receive one end, *g*, of the half-wheel to lock the sash, essentially as set forth and represented.

2. The combination of the case *a*, provided with the flange *c*, hole *m*, and lips *e*, and adapted to receive and support the case *b*, the said case *b* provided with bearings for the pivot *j* and formed with slots *k*, the half-wheel *f*, pivoted to the case *b* and having eccentric periphery, and provided with bearings to rest against shaft D when either end of it is engaged with catch E, the eccentric-shaft D, one journal of which is supported in case *a* and the other in a bearing or nut, *o*, which is adapted to retain the shaft D in position in the case *a* and support said shaft while moving the case *b*, and the said nut *o*, all substantially as shown and set forth.

404,146. RAZEL WASHINGTON V. ACKERMAN, New York, N. Y., assignor to F. W. Devoe & Co., same place. Filed July 14, 1888. Serial No. 279,969. (No model.)



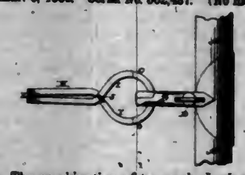
Claim.—1. The combination, in a folding easel, of a front portion having a joint at its upper end to permit of its being spread and contracted laterally at its bottom, a base hinged at its front to the bottom of the said portion and having a joint at its back to permit of its front part being spread and contracted laterally, and an extensible back leg hinged at its upper end to the upper part of said front portion and at its lower end to the back of the base, substantially as herein described.

2. The combination, in a folding easel, of a front portion composed of a spreader piece or head, and two legs pivoted at their upper ends thereto to provide for their lateral angular movement, a base composed of a spreader-piece and two bars pivoted thereto and hinged at their front ends to the bottom of the front legs, and an extensible back leg hinged at its upper end to the head of the front portion and at its lower end to the spreader-piece of the base, substantially as herein described.

3. The combination, in a folding easel, of laterally-folding front legs, a laterally-folding base hinged at its front to the said legs, and an extensible back leg connecting said base and front portion, and casters applied to said base, one under or near each of said front and back legs, substantially as herein described.

4. The combination, in a folding easel, with front legs having a pivotal connection at their upper ends, and the folding base composed of two bars having a pivotal connection at their rear ends, of the hinges *i i*, connecting the said front legs and bars and having their upper leaves connected with the front legs by pivotal connections *i' i'*, to permit the movement of the said legs toward and from each other while connected with the folding base, substantially as described.

404,147. WHIFFLETREE-IRON. ARON A. ACKLEN, Armistead, La. Filed Mar. 8, 1889. Serial No. 302,467. (No model.)



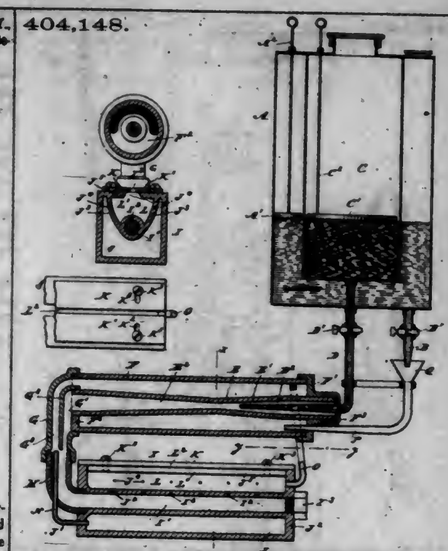
Claim.—1. The combination of two rods, I, pivoted together at J and having their outer ends formed into a hook and their inner ends into a ring, the rods being adapted to be turned upon their pivot for the purpose of opening or closing their ends, substantially as described.

2. A whiffletree-iron composed of the two parts B, the flat spring for connecting them together, and a screw, with the hook formed of two pivoted bars, which are shaped and bent as shown, substantially as set forth.

404,148. HYDROCARBON-BURNER. JOHN ADAMS, Nashville, Tenn. Filed May 1, 1888. Serial No. 272,409. (No model.)

Claim.—1. In a hydrocarbon-burner, the combination, with a steam-generator provided in its interior with a pipe into which the oil is sprayed, of a pipe divided by a partition into two compartments connected, respectively, with the said steam-generator and its central

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pipe, and a burner consisting of an apertured pipe connected with the lower end of the said double pipe, a casing inclosing the said perforated pipe, apertured partitions extending in the said casing to the said central pipe to form a mixing-chamber, plates held adjustably on the slotted top of the said casing, and a steam-pipe leading from the said steam-generator to the interior of the said mixing-chamber, substantially as shown and described.

2. In a hydrocarbon-burner, the combination, with a steam-generator provided in its interior with a pipe into which the oil is sprayed, of a pipe divided by a partition into two compartments connected, respectively, with the said steam-generator and its central pipe, and a burner consisting of an apertured pipe connected with the lower end of the said double pipe, a casing inclosing the said perforated pipe, apertured partitions extending in the said casing to the said central pipe to form a combustion-chamber, plates held adjustably on the slotted top of the said casing, a steam-pipe leading from the said steam-generator into the interior of the said mixing-chamber, and a second steam-pipe leading from the steam-compartment of the double pipe into the said casing, substantially as shown and described.

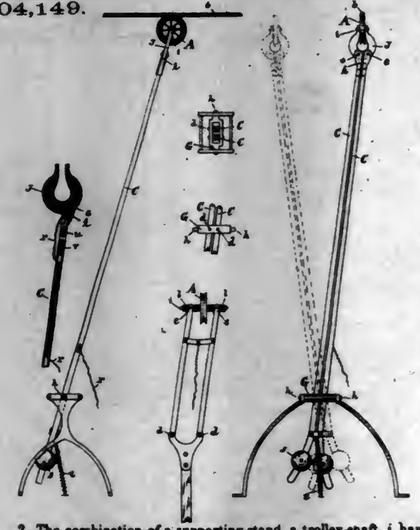
3. In a hydrocarbon-burner, the combination, with a water-tank and an oil-tank, each containing a float and each provided with a discharge-pipe, of a tube having a double cone shape, and into which discharges said oil-discharge pipe, a steam-generator surrounding the said tube and connected with the said water-outlet pipe, a double pipe held on the end of the said steam-generator and having two compartments opening, respectively, into the said tube and the said steam-generator, a burner consisting of a pipe connected with the said double pipe and having openings in its top, a casing surrounding the said pipe and having perforated partitions extending to the said perforated pipe, so as to form a mixing-chamber, and plates held adjustably on the slotted top of the said casing, substantially as shown and described.

4. In a hydrocarbon-burner, the combination, with a water-tank and an oil-tank, each containing a float and each provided with a discharge-pipe, of a tube having a double cone shape, and into which discharges said oil-discharge pipe, a steam-generator surrounding the said tube and connected with the said water-outlet pipe, a double pipe held on the end of the said steam-generator and having two compartments opening, respectively, into the said tube and the said steam-generator, a burner consisting of a pipe connected with the said double pipe and having openings in its top, a casing surrounding the said pipe and having perforated partitions extending to the said perforated pipe, so as to form a mixing-chamber, plates held adjustably on the slotted top of the said casing, and a steam-pipe leading from the said generator to the said combustion-chamber, substantially as shown and described.

404,149. TROLLEY FOR ELECTRICAL RAILWAYS. DAVID A. ADELIA, Richmond, Va. Filed Jan. 19, 1889. Serial No. 296,834. (No model.)

Claim.—1. The combination of a supporting-stand, a trolley-wheel hanger, parallel arms C, pivoted at the stand and at their upper ends to the said hanger, and a contact-wheel.

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2. The combination of a supporting-stand, a trolley-shaft, *i*, having bearings, parallel arms C, pivoted below at the stand and above at the shaft-bearings and the pivots of both arms an equal distance apart, and a contact-wheel mounted on said shaft.

3. The combination of the parallel arms C, each pivoted at two points which are an equal distance apart, an approximately U-shaped or horseshoe-shaped holder, to the lower rounded part of which the upper pair of said arm-pivots *e* are attached, a shaft, *i*, having bearings on the two arms of said holder, a contact-wheel occupying the space between the said two holder-arms, and a supporting-stand at which the parallel arms are pivoted.

4. The combination of a gimbal-frame, a trolley-wheel holder, two arms, C, each pivoted in the gimbal-frame and also pivoted to the said holder, the two pivots of one arm being the same distance apart as the pivots of the other, and a contact-wheel.

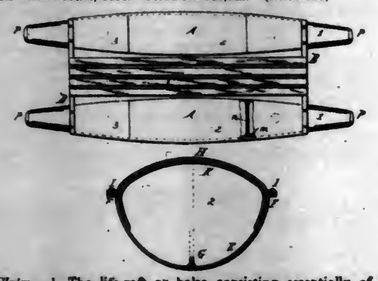
5. The combination of a gimbal-frame, a holder for a contact device, and two arms, C, each pivoted in the gimbal-frame and also pivoted to the said holder, the two pivots of one arm being the same distance apart as the pivots of the other.

6. The combination of a gimbal-frame, a holder for a contact device, two arms, C, each pivoted in the gimbal-frame and also pivoted to the said holder, the two pivots of one arm being the same distance apart as the pivots of the other, and counterpoise weights or springs attached to the lower ends of said parallel arms below the gimbal-pivots.

7. The combination of the contact-wheel, its holder, a plate, *k*, pivoted to the holder and attached to a coupling-plug of insulating material, and a tubular arm, C, whose end is occupied by said coupling-plug.

8. The combination of the contact-wheel, its holder, a plate, *k*, pivoted to the holder and attached to a coupling-plug of insulating material, a tubular arm, C, whose end is occupied by said coupling-plug, and an insulated wire passing down inside of the tubular arm.

404,150. BALSA OR LIFE-BOAT. DANIEL AMMEN, Ammendale, Md. Filed Oct. 2, 1888. Serial No. 286,942. (No model.)



Claim.—1. The life-raft or balsa consisting, essentially, of two molded floats, each float composed of sections held together and stiffened by longitudinal flanges, the floats being connected by binders which support the deck, all combined substantially as described.

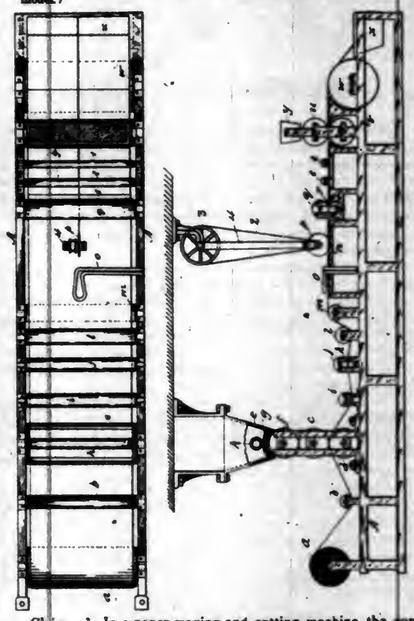
2. A float for a raft or balsa, consisting of molded sections, said sections having longitudinal flanges by which the parts are joined and stiffened, the whole forming a closed chamber impervious to water, substantially as described.

3. The float-section described, consisting of a molded body portion having longitudinal side flanges and the molded cover portion having corresponding side flanges, the flanges being secured together to make a tight joint, substantially as stated.

4. The float-section consisting of a molded body having an integral longitudinal rib for keelson and longitudinal side flanges, in combination with a cover having corresponding side flanges, whereby it is attached to the body portion, substantially as described.

5. The combination, in a float-section, of a molded body portion having side flanges, a molded cover having corresponding flanges, and ribs which extend transversely inside said cover, substantially as set forth.

404,151. PAPER WAXING AND CUTTING MACHINE. JORAH R. ANDERSON, Boston, Mass. Filed Nov. 3, 1888. Serial No. 289,899. (No model.)



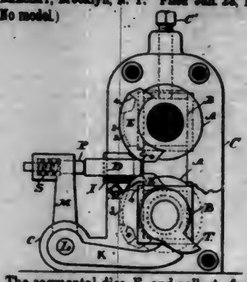
Claim.—1. In a paper waxing and cutting machine, the combination of the vertical series of cylinders *c d f* and a wax-receiving tank arranged above said cylinders and encompassing the upper portion of the upper cylinder, *f*, and provided with a perforated bottom, and a slide provided with perforations designed to register or coincide with the perforations of said bottom to regulate the supply of wax, substantially as set forth.

2. In a paper waxing and cutting machine, the combination, with the waxing-rollers and the table *n*, of means to draw the paper thereover, the cooling-tube O, and the rotating knife arranged adjacent to said cooling-tube, such tube projecting over the table to a point in front of and in line with the rotating knife, considered with respect to the direction of the traverse of the paper, as set forth.

3. In a paper waxing and cutting machine, the combination, with the waxing rollers and the table *n*, of means to draw the paper thereover, the cooling-tube, the rotating knife located in rear of said cooling-tube, and the rollers *q r*, arranged adjacent said knife and provided with cutting-blades, said cooling-tube projecting over the table to a point in front of and in line with the rotating knife, considered with respect to the direction of the traverse of the paper, substantially as set forth.

4. The herein-described improved paper waxing and cutting machine, comprising the series of cylinders *c d f*, a wax-receiving tank located above said cylinders and provided with a perforated bottom, the perforated slide within said tank, the series of guide and tension rollers, the table *n*, the rotating cutting-knife, the cooling-tube projecting over the table to a point in front of and in line with the rotating knife, considered with respect to the traverse of the paper through the machine, the cutting-rollers *q r*, the finishing-rollers, the dust-receiving tank located above said latter rollers, and the paper-receiving box, all constructed and arranged substantially as set forth.

404,152. MACHINE FOR MANUFACTURING TURN-BUCKLES. ROBERT L. BARCLAY, Brooklyn, N. Y. Filed Jan. 28, 1888. Serial No. 297,772. (No model.)

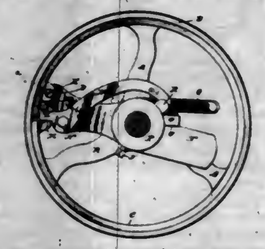


Claim.—1. The segmental dies E, and rolls A, for receiving the same, such segmental dies having end recesses, 4 4, side recesses, 3 3, and central corrugations, 7, for grasping and drawing in the heated blank in the manufacture of turn-buckles, substantially as set forth.

2. The combination, with the rolls A and segmental dies E, having end recesses, 4 4, and side recesses, 3 3, corresponding to the shape of the turn-buckle, of an automatic pusher adapted to act upon the heated blank and force the same endwise in between the segmental dies as such dies are carried around by the rolls, substantially as set forth.

3. The combination, with the rolls and the segmental dies, of the lever K, rock-shaft L, arm M, spring-pusher P, and the cam T, for automatically forcing in the heated blank between the dies and rolls, substantially as set forth.

404,153. FRICTION-CLUTCH. GEORGE A. BARBER, New Haven, Conn. Filed Jan. 14, 1889. Serial No. 296,345. (No model.)

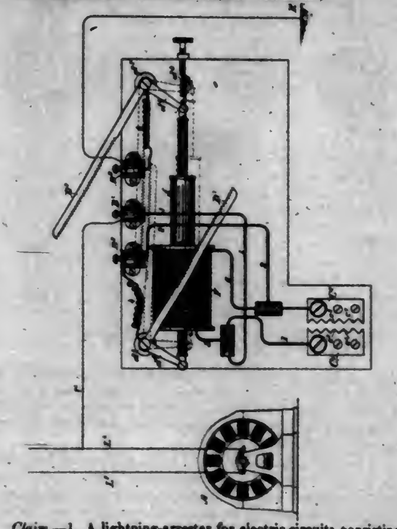


Claim.—1. The combination, with a pulley loosely mounted upon a shaft, of a friction-band normally disengaged from the said pulley, a carrier rigidly connected with the shaft and having one end of the band attached to it, a single operating-lever pivoted to the carrier, connected with the opposite end of the band and curved to extend around on the opposite side of the shaft from its connection with the carrier and band, and a collar movably mounted upon the shaft and carrying a beveled operating-finger adapted to engage with the end of the lever, which is constructed, as described, to secure a long leverage and to occupy the minimum of room.

2. The combination, with a pulley loosely mounted upon a shaft, of a friction-band normally disengaged therefrom, a carrier rigidly connected with the shaft having a carrying-arm to which one end of the band is attached, and two counterbalance-arms extending in opposite directions from the carrying-arm, a lever pivoted to the carrying-arm and connected with the opposite end of the band, and a collar provided with an operating-finger movably mounted on the shaft engaging with the operating-lever and playing between the counterbalance-arms, substantially as set forth.

3. The combination, with a pulley loosely mounted upon a shaft, of a band normally disengaged from the said pulley, a carrier consisting of a collar chambered to fit over the hub of the pulley, a carrying-arm to which one end of the band is attached, and two counterbalance-arms, an operating-lever pivoted to the said carrying-arm and connected with the other end of the pulley, and a collar movably connected with the shaft and carrying an operating-finger playing between the counterbalance-arms which confine it and prevent the collar from rotation with the shaft, and co-operating with the said lever to expand the band, substantially as set forth.

404,154. LIGHTNING-ARRESTER. REGINALD BELFIELD, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Oct. 14, 1887. Serial No. 252,290. (No model.)



Claim.—1. A lightning-arrester for electric circuits, consisting of two pairs or sets of discharge-points, one of said pairs being separable, and an electro-magnetic device for separating the latter included in a shunt-circuit around the other pair, substantially as described.

2. A lightning-arrester for electric circuits, consisting of two sets of discharge-points, a solenoid in a shunt-circuit around one of said sets, a core or armature applied to said solenoid and acted upon thereby, and connections between said core or armature and one of said sets of discharge-points, whereby the movement of the core or armature toward the solenoid will cause the points to separate.

3. A lightning-arrester consisting of a solenoid, a set of separable discharge-points in circuit therewith, an armature or core applied to the solenoid and connected with said discharge-points, whereby the latter are separated by the movement of the core consequent upon the vitalization of the solenoid and a high-resistance circuit around the solenoid.

4. In a lightning-arrester, the combination of the coil F, the core or armature *f* applied thereto, the movable levers D' and D², respectively pivoted to the respective ends of said core or extensions thereof, said levers having discharge-points normally confronting each other, and electric connections between said discharge-points and said coil whereby electric currents traversing the discharge-points traverse also said coil, substantially as described.

5. In a lightning-arrester, discharge-points movable with reference to each other, an electro-magnetic device for operating the same, consisting of a solenoid and a core movable therein under the influence of currents continuously escaping through the lightning-arrester, and levers connecting the core with the respective discharge-points, the pivotal points of the respective levers being between the core and discharge-points, whereby the core serves as a weight acting in opposition to the effects of such currents and operating to return the points to their normal position when the currents cease.

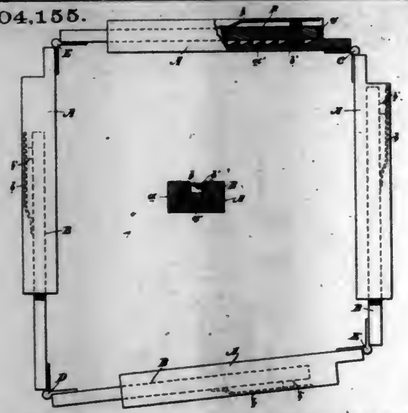
404,155. BUNDLE-BINDER. EUGENE BERRY and HOMER LAMBERT, Crescent City, Cal., assignors of one-third to Jacob Marhoffer, same place. Filed Mar. 16, 1888. Serial No. 303,611. (No model.)

Claim.—1. A bundle-binder consisting of a frame made of side pieces and sliding extension-pieces fitted thereto, said side pieces and extension-pieces having a pawl-and-ratchet connection between their adjacent faces to permit the expansion and contraction of the frame, substantially as described.

2. A bundle-binder consisting of a frame made of side pieces and sliding extension-pieces fitted in grooves therein, said side and extension pieces being so united as to permit the expansion and contraction of the frame, and pawl-and-ratchet locking devices between the adjacent faces of the side pieces and extension-pieces for holding the sliding extension-pieces in the position to which they are adjusted, substantially as described.

3. A bundle-binder consisting of a frame made of side pieces and sliding extension-pieces fitted thereto, said side and extension pieces

404,155.



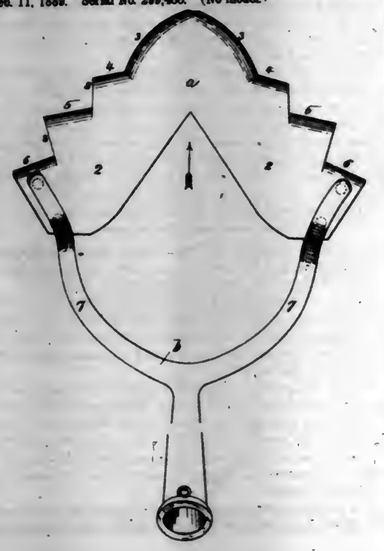
being so united as to permit the expansion and contraction of the frame; and means for locking the sliding extension-pieces in the position to which they are adjusted, consisting of pawls carried by the extension-pieces and ratchets on the side pieces, with which the pawls engage, substantially as described.

4. A bundle-binder consisting of a frame made of side pieces having the grooves *a* and sliding extension-pieces fitted thereto, hinges uniting the adjacent ends of the side pieces and extension-pieces, whereby the frame may be expanded and contracted and its sides made to conform or adjust themselves to the sides of the bundle, and a locking-pawl carried by the sliding pieces and engaging the side pieces, substantially as described.

5. A bundle-binder consisting of a frame made of side pieces and sliding extension-pieces fitted thereto, hinges uniting the side and extension pieces, whereby the frame may be expanded and contracted and made to adjust itself to the bundle by conforming its sides thereto, and means for locking the sliding extension-pieces in the position to which they are adjusted, consisting of pawls carried by the extension-pieces and ratchets on the side pieces, with which the pawls engage, substantially as described.

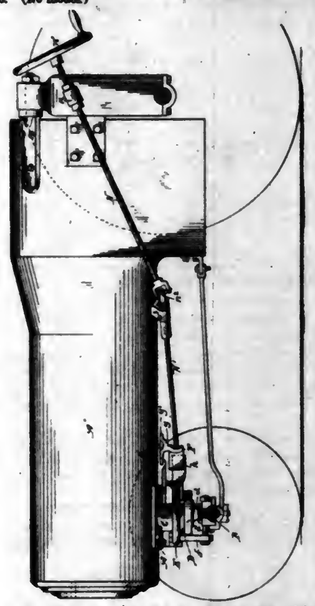
6. The bundle-binder herein described, consisting of the side pieces, A, having the T-shaped grooves, the sliding extension-pieces B, fitted to said grooves, the hinges C, D, and E, uniting the side and extension pieces, the ratchets in the grooves of the side pieces, and the spring-pawls carried by the extension-pieces and engaging the ratchets, substantially as described.

404,156. SCUFFLE-HOE. CHARLES H. BULL, Waltham, Mass. Filed Feb. 11, 1889. Serial No. 299,400. (No model.)



Claim.—A scuffle-hoe composed of the wings 2 2, arranged as shown, and having the blades 3 4 5 6 on their outer edges, said blades having their cutting-edges extended outwardly and inclined backwardly, as set forth.

404,157. TRACTION-ENGINE. EDGAR M. BIRDSALL, Buffalo, N. Y., assignor to Mary Birdsall, same place. Filed Dec. 29, 1888. Serial No. 294,928. (No model.)



Claim.—1. In a traction-engine, the combination, with the boiler support or saddle and the front axle, of a steering-post pivoted to the front axle and connected with the saddle, a spring or cushion interposed between the saddle and the steering-post, a gear-segment supported from the saddle and connected with the steering-post, and a worm-wheel engaging with the gear-segment, whereby the segment and steering-post are turned upon rotating the worm-wheel, substantially as set forth.

2. In a traction-engine, the combination, with the boiler support or saddle and the front axle, of a steering-post pivoted to the front axle, a spring seated in a socket formed in the steering-post and supporting the saddle, a movable gear-segment supported from the saddle and connected with the steering-post so as to turn therewith and move vertically independent of the steering-post, and a worm-wheel engaging with the gear-segment, whereby the segment and steering-post are turned upon rotating the worm-wheel, substantially as set forth.

3. In a traction-engine, the combination, with the boiler-saddle, the front axle, and the steering-post, of a movable gear-segment supported from the saddle and adjustably connected with the steering-post, a worm-wheel engaging with the gear-segment, and an adjustable hanger upon which the worm-wheel is mounted, whereby said worm can be engaged with or disengaged from the gear-segment, substantially as set forth.

4. In a traction-engine, the combination, with the boiler-saddle, the front axle, and the steering-post, of a gear-segment supported from the saddle and adjustably connected with the steering-post, a worm engaging with said gear-segment, and a sectional shaft attached to said worm and extending to the rear end of the machine, substantially as set forth.

5. In a traction-engine, the combination, with the boiler-saddle A, provided with a segmental rim, C, and a bracket, G, of the steering-post D, provided with a head, E, having a segmental slot, e^1, in which the segmental rim of the saddle engages, and radial arms h, formed on said head, and a movable gear-segment, F, supported from the bracket G and provided with vertical ways or jaws h', which engage with the arms h of the steering-post, substantially as set forth.

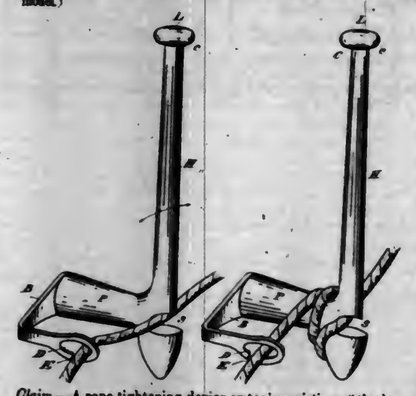
6. In a traction-engine, the combination, with the bracket G, provided with grooves g^1, and the gear-segment F, provided with flanges g', engaging in the grooves g^2 of the bracket, of an adjustable arm or hanger, L, pivoted to said bracket, a worm, H, mounted on an arbor arranged on said hanger, and a steering-shaft connected with said worm by a swiveling-connection, substantially as set forth.

7. In a traction-engine, the combination, with the bracket G, and the gear-segment F, supported by said bracket, of the worm H, meshing with said segment, and the adjustable hanger L, secured to the bracket G and carrying said worm, substantially as set forth.

8. In a traction-engine, the combination, with the saddle A, provided with a segmental rim, C, and a bracket, G, of a steering-post, D, a head, E, formed on said steering-post and provided with a segmental slot in which the rim C of the saddle engages, and a gear-segment supported on said bracket and movably connected with the head of the steering-post, substantially as set forth.

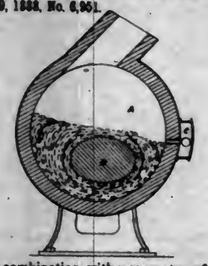
9. In a traction-engine, the combination, with the front axle, and the boiler-saddle A, provided with a segmental rim, C, and a bracket, G, of a steering-post, D, pivoted to the axle by a bolt, d', a head, E, formed on the steering-post and provided with a segmental slot in which the rim C of the saddle engages, a depending arm, f, formed on the head of the steering-post and secured at its lower end to the pivot-bolt d', and a gear-segment, F, supported from the bracket G and adjustably connected with the head of the steering-post, substantially as set forth.

404,158. DEVICE FOR TIGHTENING ROPES. WILLIAM F. BLAKEMORE, Davenport, Iowa. Filed Oct. 17, 1888. Serial No. 288,366. (No model.)



Claim.—A rope-tightening device or tool consisting of the bar or handle H, having the aperture in one side and near its end, the arm P, formed opposite the said aperture, the bracket B, pivoted to the arm and formed with the open loop D, and the locking-lug C near the other end of the bar or handle H, substantially as specified.

404,159. APPARATUS FOR CONVERTING CRUDE IRON INTO MALLEABLE IRON OR STEEL. JOHN W. BOOKWALTER, Springfield, Ohio. Filed June 13, 1888. Serial No. 276,906. (No model.) Patented in England May 9, 1888, No. 6,951.

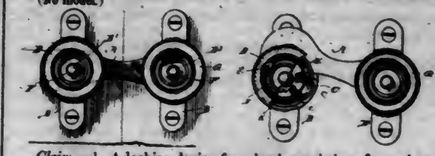


Claim.—1. The combination, with a converter, of a core arranged transversely therein and situated about the center of motion of the circulating mass of metal and below the level thereof, substantially as described.

2. The combination, with a converter having a tuyere arranged to deliver air transversely to the surface of the metal, of a core arranged transversely within the converter and situated so as to occupy the space which would otherwise be occupied by a comparatively inert mass of metal and below the level of the molten mass, substantially as described.

3. A converter provided with a transverse block, and with tuyeres arranged to inject a blast upon the metal from one side across said block, substantially as set forth.

404,160. LOCK-HOOK. CHARLES T. BROWN, Chicago, Ill., assignor to Flora L. Brown, same place. Filed Mar. 18, 1889. Serial No. 303,651. (No model.)



Claim.—1. A locking device for a hook, consisting of a stud, two disks rotatively mounted on the stud, each having an inwardly-directed ear extending into the plane of the hook, and a spring between and engaging both the disks, which spring yieldingly holds the ears substantially opposite each other, substantially as described.

2. A locking device for a hook, consisting of a stud, two disks rotatively mounted on the stud, of which the outer one has an inwardly-projecting marginal flange outside the plane of the hook and an ear, d', extending into the plane of the hook, and the inner one of which has a projection, c', adapted to enter the notch of the hook and extending into the plane of the hook, and a spring between and engaging the two disks, which spring yieldingly holds the ear d' and projection c' substantially opposite each other, substantially as described.

3. A locking device for a hook, composed of a stud, two disks having oppositely-directed marginal flanges set one within the other and forming an inclosed space between them, a projection on each disk extending into the plane of the hook, and a spring arranged between and engaged with the disks, which yieldingly holds the projections substantially opposite each other, substantially as described.

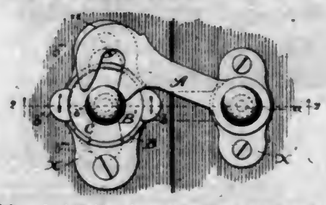
4. In a hook-locking device, the combination of the base B, the stud B^3 thereon provided with shoulders, disk C, resting on the inner shoulder of the stud, the disk D, supported by the inner disk, and the retaining-disk F, secured against the outer of the shoulders of the stud, substantially as described.

5. The combination of base B, provided with stop b^4 and stud B^3, of a disk, C, provided with projection c', proximating the base, the flanged disk D, provided with a marginal projection, d', also proximating the base, and with flange-shoulder d^3, and a coiled spring, E, having its ends attached to the several disks and arranged to cause the projection c' to yieldingly bear against the shoulder d^3, substantially as described.

6. The combination, with the hook-locking device composed of a base, B, provided with stop b^4 and stud B^3, disk C, provided with projection c', a flanged disk, D, provided with a marginal projection, d', and flange-shoulder d^3, and a coiled spring, E, having its ends attached to the several disks and arranged to cause the projection c' to yieldingly bear against the shoulder d^3, of a hook, a base, B', having the stud B^3, upon which the hook is pivoted, and provided with the stops b^9 and b^8, and a flanged cap covering the pivoted end of the hook, substantially as described.

7. In combination with a hook-locking device composed of a base, B, provided with stop b^4 and with the stud B^3, disk C, provided with projection c', disk D, provided with projection d' and flange-shoulder d^3, and coiled spring E, having its ends attached to the several disks and arranged to cause the projection c' to yieldingly bear against the shoulder d^3, of a base, B', having the stud B^3 and provided with the stops b^9, b^8, and b^{10}, the hook pivoted on the stud, flanged cap covering the pivoted end of the hook and having a projection, g', arranged between the stops b^9 and b^8, and a spring underneath the cap and engaging therewith and with the hook, substantially as described.

404,161. LOCK-HOOK. CHARLES T. BROWN, Chicago, Ill., assignor to Flora L. Brown, same place. Filed Feb. 8, 1888. Renewed Mar. 18, 1889. Serial No. 303,823. (Model.)

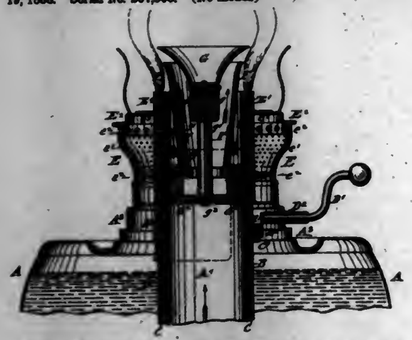


Claim.—1. A locking device for a hook, consisting of a post, two disks rotatively mounted on the post, an ear on each of the disks extending into the plane of the hook, and a spring engaging the disks and yieldingly holding the ears substantially opposite each other, substantially as described.

2. A locking device for a hook, consisting of a post, two disks rotatively mounted on the post, an ear on each of the disks extend-

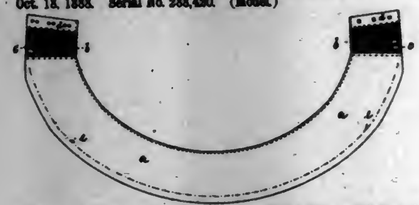
ing into the plane of the hook, and a spring engaging the disks and yieldingly holding the ears substantially opposite each other, in combination with a pivoted hook and a spring arranged to retract the hook from the post when released from the locking device, substantially as described.

404,162. LAMP. ALFRED O. BRUNER, Meriden, Conn. Filed Mar. 19, 1888. Serial No. 267,595. (No model.)



Claim.—The combination of a fixed central-draft tube, A', provided with inwardly-projecting studs *f*, a base-ring, F', supported on said studs and provided with an interior seat, *f'*, with segmental openings *f³*, and with a diametrical U-shaped yoke, G², having a socket, *g⁵*, a spindle, G', supported at its lower end in said socket and provided in its upper end with a shoulder, *g'*, a draft-cone, F, supported on the interior seat of said base-ring, and a deflector, G, provided at its lower end with a perforated socket, *g*, which receives the upper end of said spindle and rests on said shoulder thereof, substantially as described

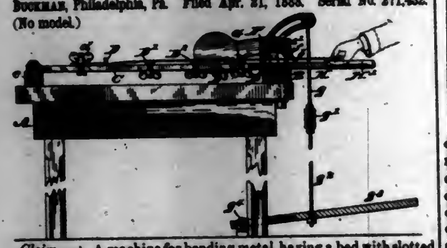
404,163. SKIRT-BELT. MARIE BRUNNER, Brooklyn, N. Y. Filed Oct. 13, 1888. Serial No. 288,420. (Model.)



Claim.—1. The combination of semi-annular belt *a* with the elastic sections *b* within the body of said belt, and with ruffles *c*, that extend across such elastic sections and are in line with the lower edge of the belt, substantially as specified.

2. The combination of semi-annular belt *a* with the elastic sections *b*, inserted therein, and with the ruffles *c*, secured across the face of said sections, the belt *a* being made of a double thickness and being wider in cross-section than the elastic sections, substantially as specified.

404,164. MACHINE FOR BENDING SHEET METAL. SAMUEL Y. BUCKMAN, Philadelphia, Pa. Filed Apr. 21, 1888. Serial No. 271,432. (No model.)



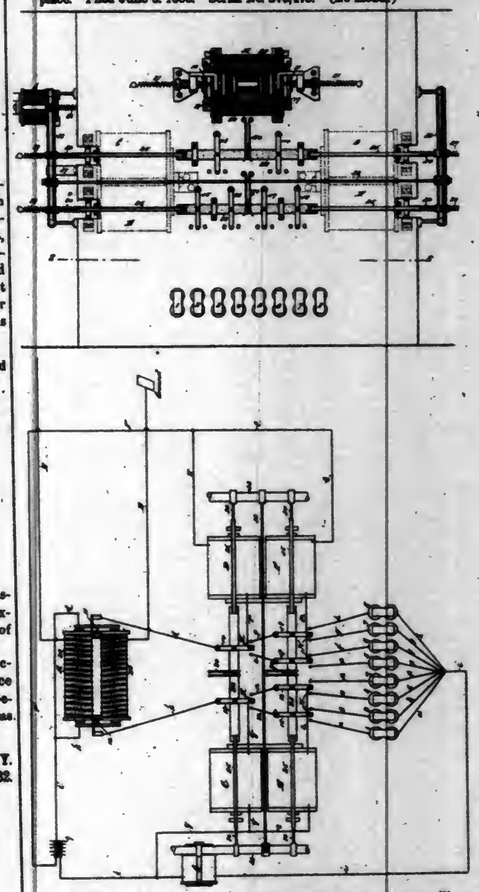
Claim.—1. A machine for bending metal, having a bed with slotted arms, a bender, and a creaser, a guide having its ends adjustably secured in said slots, and adjustable stops secured in said slots between the guide and creaser, said parts being combined, substantially as and for the purpose set forth.

2. In a machine for bending metal, the bed B, with ears therein, having the extension *d'*, the front face of which is vertical and in the same plane as the front face of the bed, a creaser with sharp front edge and journaled so as to be at an acute angle when in contact with the bed, and a bender adapted to bear against the vertical front face of the extension *d'*, said parts being combined substantially as described.

3. In a machine for bending metal, the combination, with the bender, of the adjustable slotted plate, substantially as and for the purpose described.

4. In a machine for bending sheet metal, a bed having slotted arms, a series of adjustable stops arranged in said slotted arms, ears having extensions or stops carried by the bed, a creaser pivoted to the ears and having weighted arms for returning the same to its normal position, and a bender adapted to contact with the extensions on the ears carried by the bed, said parts being combined and operating substantially in the manner and for the purpose described.

404,165. TELEGRAPH. JOHN BURRY, New York, N. Y., assignor of two-thirds to James R. Munson and Aloys Wirsching, both of same place. Filed June 8, 1888. Serial No. 276,475. (No model.)



Claim.—1. The combination, with a main circuit, of an auxiliary circuit having branches which include working-magnets, switches arranged to direct the current over the auxiliary circuit through the different branches, switch-magnets included in auxiliary circuits and connected to operate the switches, and connections between the main circuit and the switch-magnets, whereby different switch-magnets are energized by different conditions of the current over the main circuit, substantially as described.

2. The combination, with a main circuit including an electro-magnet, of an auxiliary circuit having branches which include working-magnets, a circuit-closer operated through the action of the magnet in the main circuit to close the auxiliary circuit, a switch mechanism for directing the current over the auxiliary circuit through different working-magnets, and switch-magnets also included in auxiliary circuits which are closed and broken through the action of the magnet in the main circuit, a catch mechanism for holding the switch mechanism in its shifted position, and a releasing-magnet, G, for operating said catch mechanism to release the switch mechanism, substantially as described.

3. The combination, with a main circuit including an electro-magnet, of an auxiliary circuit having branches which include working-magnets, a circuit-closer operated through the action of the magnet in the main circuit to close the auxiliary circuit, a switch connecting the auxiliary circuit to a plurality of branches, each of which has a switch connecting with a plurality of other branches which connect with said working-magnets, switch-magnets for shifting said switches, located in auxiliary circuits which are closed and broken through the action of the magnet in the main circuit, circuit-closers M N, located in the circuits of the respective switch-magnets and operating after each switch-magnet acts to break the circuit through that magnet and close the circuit through another, substantially as described.

4. The combination, with a main circuit including an electro-magnet, of an auxiliary circuit having branches which include working-magnets, a circuit-closer operated through the action of the magnet in the main circuit to close the auxiliary circuit, a switch mechanism for directing the current over the auxiliary circuit through different working-magnets, and switch-magnets also included in auxiliary circuits which are closed and broken through the action of the magnet in the main circuit, a catch mechanism for holding the switch mechanism in its shifted position, and a releasing-magnet, G, for operating said catch mechanism to release the switch mechanism, substantially as described.

5. The combination, with a main circuit including an electro-magnet, of an auxiliary circuit having branches which include working-magnets, a circuit-closer operated through the action of the magnet in the main circuit to close the auxiliary circuit, a switch connecting the auxiliary circuit to a plurality of branches, each of which has a switch connecting with a plurality of other branches which connect with said working-magnets, switch-magnets for shifting said switches, located in auxiliary circuits which are closed and broken through the action of the magnet in the main circuit, circuit-closers M N, located in the circuits of the respective switch-magnets and operating after each switch-magnet acts to break the circuit through that magnet and close the circuit through another, a catch mechanism for holding the switches in their shifted position, and a releasing-magnet, G, for operating said catch mechanism to release the switches, substantially as described.

6. The combination, with a main circuit including a polarized relay, of an auxiliary circuit having branches which include working-magnets, circuit-closers operated through the action of said relay to close the auxiliary circuit through different branches, according to the polarity of the current, a switch mechanism for directing the current over the auxiliary circuit through different working-magnets, and switch-magnets also included in an auxiliary circuit which is closed and broken through the action of the relay, substantially as described.

7. The combination, with a main circuit including a polarized relay, of an auxiliary circuit having branches which include working-magnets, circuit-closers operated through the action of said relay to close the auxiliary circuit through different branches, according to the polarity of the current, a switch mechanism for directing the current over the auxiliary circuit through different working-magnets and switch-magnets also included in an auxiliary circuit which is closed and broken through the action of the relay, a catch mechanism for holding the switch mechanism in its shifted position, and a releasing-magnet, G, for operating the catch mechanism to release the switch mechanism, substantially as described.

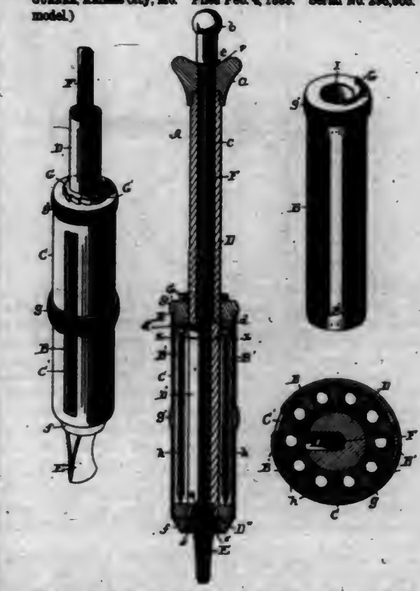
8. The combination, with a main circuit including a polarized relay, of an auxiliary circuit having branches which include working-magnets, circuit-closers operated through the action of said relay to close the auxiliary circuit through different branches, according to its polarity, switches 13 14, connecting each of said branches with a plurality of branches, each of which has a switch connecting with a plurality of other branches which connect with said working-magnets, switch-magnets for shifting said switches, located in auxiliary circuits which are closed and broken through the action of said relay, and circuit-closers M N, located in the circuits of the respective switch-magnets and operating after each switch-magnet acts to break the circuit through that magnet and close the circuit through another, substantially as described.

9. The combination, with a main circuit including a polarized relay, of an auxiliary circuit having branches which include working-magnets, circuit-closers operated through the action of said relay to close the auxiliary circuit through different branches, according to its polarity, switches 13 14, connecting each of said branches with a plurality of branches, each of which has a switch connecting with a plurality of other branches which connect with said working-magnets, switch-magnets for shifting said switches, located in auxiliary circuits which are closed and broken through the action of said relay, circuit-closers M N, located in the circuits of the respective switch-magnets and operating after each switch-magnet acts to break the circuit through that magnet and close the circuit through another, a catch mechanism for holding the switches in their shifted position, and a releasing-magnet, G, for operating said catch mechanism to release the switches, substantially as described.

10. The combination, with a main circuit including an electro-magnet, of an auxiliary circuit including an auxiliary magnet, P, and having branches which include working-magnets, a circuit-closer operated through the action of the magnet in the main circuit to close the auxiliary circuit, a circuit-closer, O, included in the auxiliary circuit and operated by the auxiliary magnet to close the auxiliary circuit at intervals, a switch mechanism for directing the current over the auxiliary circuit through different working-magnets, and switch-magnets included in auxiliary circuits which also include the auxiliary magnet and which are closed and broken through the action of the magnet in the main circuit, substantially as described.

11. The combination, with a main circuit including a polarized relay, of an auxiliary circuit including an auxiliary magnet, P, and having branches which include working-magnets, circuit-closers operated through the action of the relay to close the auxiliary circuit through different branches, according to the polarity of the current, a circuit-closer, O, included in the auxiliary circuit and operated by the auxiliary magnet to close the circuit at intervals, a switch mechanism for directing the current over the auxiliary circuit through different working-magnets, and switch-magnets included in auxiliary circuits which also include the magnet P and which are all closed by the action of the relay, and circuit-closers M N, included in said auxiliary circuits with the respective switch-magnets and operated by the auxiliary magnet to close the circuits through the respective switch-magnets successively, substantially as described.

404,166. NAIL-DRIVER. WILLIAM C. BURTON and ELBERT M. GURNEE, Kansas City, Mo. Filed Feb. 4, 1889. Serial No. 298,903. (No model.)



Claim.—1. In a nail driving and setting implement, the combination of a main tube slotted at one side to receive the nails, the driver-bar carried within said tube, and the spring cutting-blades mounted in the lower end of the tube on each side of the driver-bar, substantially as and for the purpose set forth.

2. The combination, with the main tube provided with a slot to receive the nails, of the shouldered nut secured in its lower end and carrying the spring-blades E, the knob *a*, carrying projection *p*, and the driver F, working in the main tube and provided with the lug *d*, adapted to slide in groove *c* and engage with projection *p*, substantially as shown and described.

3. In a nail driving and setting implement, the combination, with a main tube carrying a driver within the same and having in its lower end the spring-blades E, of a magazine secured upon said main tube and adapted to revolve around the same, substantially as shown and described.

4. The combination, with the main tube provided with a slot to receive the nails and carrying the blades E at its lower end, of a driver working in said tube and between the knives, a cylinder secured upon the main tube and slotted, as shown, and the jacket C, surrounding the cylinder B, substantially as shown and described.

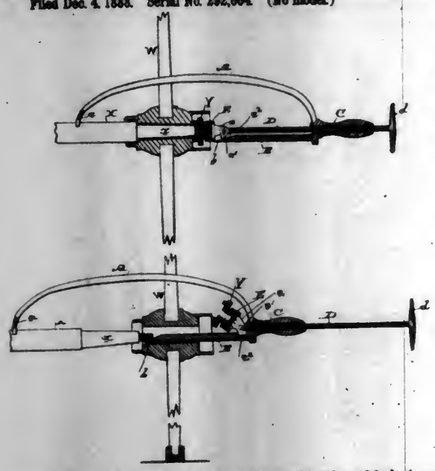
5. In a nail driving and setting implement, the combination, with a main tube having different-sized bores and slotted to receive the nails, of a driver working in said tube and shaped to correspond with said tube, the knob *a*, secured to the main tube and carrying projection *p*, the lug *d*, formed on driver F and sliding in groove *c* cut in main tube, the ratchet-wheel G, cast upon main tube and adapted to engage with the spring-pawl G', the cylinder B, and jacket C, all arranged and adapted to operate substantially as shown and described.

6. In a nail driving and setting implement, the combination, with a main tube slotted to receive the nails, of the driver F, working in said tube, the cylinder B, secured to the main tube and turning on the same, the slotted jacket C, surrounding the cylinder B, the shouldered nut D", slotted to receive the blades E, the nut *f*, working on nut D", the ratchet G, formed upon main tube, and the spring-pawl G', adapted to engage with said ratchet, substantially as shown and described.

7. A nail driving and setting implement having a slitting device comprising a pair of blades at its delivery end, said blades being disposed upon each side of the driver-bar of the implement, whereby a slot in the material for the reception of the nail to be driven and set may be opened, substantially as described.

8. A nail driving and setting implement having the oppositely-located slitting-blades projecting from its delivery end, whereby a slit may be opened in the material for the reception of the nail to be driven and set, substantially as described.

404,167. CARRIAGE-JACK. EDWARD F. BURTIS, Sacramento, Cal. Filed Dec. 4, 1888. Serial No. 292,664. (No model.)



Claim.—1. In a carriage-jack, and in combination with the bowed arm A and the axle rod or bar B thereof, a longitudinally-movable and rotary stem seated in the bowed arm and having a wrench upon its end adapted to fit the nut of the axle-spindle, substantially as herein described.

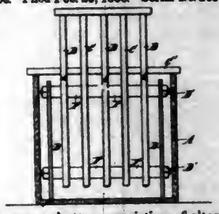
2. In a carriage-jack, and in combination with the bowed arm A and the axle rod or bar B thereof, the tubular handle C, the rotary and longitudinally-movable stem D, mounted in said handle, and the wrench E at the inner end of the stem, adapted to engage and remove the nut of the axle-spindle, substantially as herein described.

3. In a carriage-jack, the bowed arm A and the axle rod or bar B thereof, in combination with the longitudinally-movable and rotary stem D, seated in the bowed arm parallel with the axle rod or bar, and the wrench pivoted to the inner end of the stem and adapted to engage the nut of the axle-spindle, said wrench having arms adapted to come in contact with cams on the axle rod or bar to turn it upwardly and hold the nut safely when removed, substantially as herein described.

4. In a carriage-jack, the bowed arm A and the axle rod or bar B, having a beveled end, *b*, with inclined planes or cams *b'* on each side, in combination with the longitudinally-movable and rotary stem D, seated in the bowed arm, and the wrench E, having the arms *e* pivoted to the inner end of the stem, and projecting bearing-ends e^4, adapted to come in contact with the inclined planes or cams *b'* of the axle rod or bar, whereby the wrench is turned upwardly when retracted and holds the nut safely, substantially as herein described.

5. A carriage-jack comprising the bowed arm A, having the bearing *a* at its inner end for resting on the axle, the rod or bar B, secured to its outer end and having a beveled end, *b*, adapted to bear under the axle-spindle and provided with inclined planes or cams *b'* on its sides, the tubular handle C, the stem D, mounted in said handle and adapted to be moved longitudinally and rotated and having the handle *d* on its outer end, and the wrench E, having the arms *e* pivoted to the end of the stem D, with projecting bearing-ends e^4, adapted to come in contact with the inclined planes or cams *b* of the rod or bar B, substantially as herein described.

404,168. SECONDARY BATTERY. HENRY P. DE B. CAMERON and THOMAS HARRIS, Detroit, Mich., assignors of one-third to Alfred Woodward, same place. Filed Feb. 29, 1888. Serial No. 265,760. (No model.)



Claim.—1. A storage-battery consisting of alternate positive and negative plates supported free from the bottom of the cell by supports of non-conducting material, washers of non-conducting material interposed between said plates, bolts of non-conducting material passed through the plates and washers, and the plates and washers bound firmly together by nuts D', whereby warping and derangement of the plates and washers are prevented, substantially as described.

2. A storage-battery element consisting of a lead plate perforated with round holes for the reception of the salts of lead, said holes screw-threaded, thereby affording firm engagement for the said salts, substantially as and for the purposes described.

3. The combination, with the elements B and C, of one or more supports, *d'*, of non-conducting material, said support at its upper end projecting between the elements and constituting a washer, and in connection therewith a supporting-bolt of non-conducting material passed through the plates and washer, whereby the whole are bound together and to said washer, substantially as and for the purpose described.

404,169. COMBINED SHEARS, BUTTON-HOLE CUTTER, AND RIPPER. MORGAN S. CLARK, Toronto, Kans. Filed Sept. 22, 1888. Serial No. 286,061. (No model.)



Claim.—1. The combination, with one of the blades of the shears, having at its rear end a cutting-edge to be used in cutting button-holes, and a set-screw for regulating the size of the same, of a dove-tailed recess formed on its outer side, designed for the reception of a ripper, substantially as described.

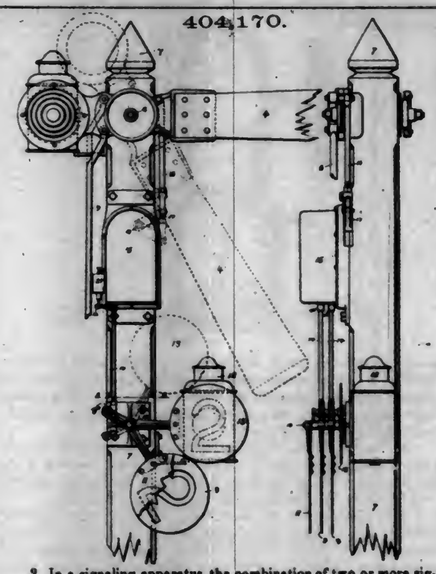
2. The combination, with one of the blades of a pair of shears, having at its rear end a cutting-edge formed for cutting button-holes, a set-screw engaging an opening in the said handle and designed to regulate the size of the holes to be cut, a dovetailed recess formed on the said blade, and a ripper provided with a cutting-edge and having its sides beveled to engage the said recessed opening, substantially as described.

3. The combination, with the ripper mounted in a dovetailed recess formed in the upper edge of one of the blades, of a spring secured within the said recess and adapted to hold the ripper in any desired position, substantially as described.

404,170. ELECTRICAL SIGNALING APPARATUS. JOHN P. COLEMAN, Swissvale, Pa. Filed Apr. 2, 1888. Renewed May 4, 1889. Serial No. 309,670. (No model.)

Claim.—1. In a signaling system wherein there are a primary signal and two or more secondary signals referring thereto, the combination of the primary signal and two or more secondary signals which are normally disconnected from the primary signal, and each of which is provided with a lock for connecting it with the primary signal, whereby motion of the primary signal will mechanically actuate that one of the secondary signals which is connected therewith, substantially as and for the purposes described.

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2. In a signaling apparatus, the combination of two or more signals, an actuating-rod provided with locks which adapt it to be connected with each of said signals, electro-magnets controlling said locks, and electric circuits wherein the magnets are included, substantially as and for the purposes described.

3. In a signaling apparatus, the combination, with two or more signals, of a shaft, 18, a system of levers connecting said shaft with each of said signals, and electro-magnets which engage said systems of levers and bring them into operative connection with said shaft 18, substantially as and for the purposes described.

4. In a signaling apparatus, the combination of two or more signals, an actuating-rod common to all said signals and normally disconnected therefrom, electro-magnets having armatures which engage and connect the secondary signals with the said actuating-rod, electric circuits in which the magnets are included, and a primary signal also connected with the actuating-rod, substantially as and for the purposes described.

5. In a signaling system, the combination, with a primary signal and two or more secondary signals, of electrical indicating-circuits and circuit-closers which are actuated by motion of the secondary signals to control said circuits, substantially as and for the purposes described.

6. The combination, with the signal and its actuating-rod, of the electro-magnet and its armature, and interlocking devices—such, for example, as the hooks *f* and *d*, one of which is moved by the electro-magnet into engagement with the other, and the other of which is movable in a reverse direction to engage the first-named hook and to tend to move the same and to free it from the electro-magnet—substantially as and for the purposes described.

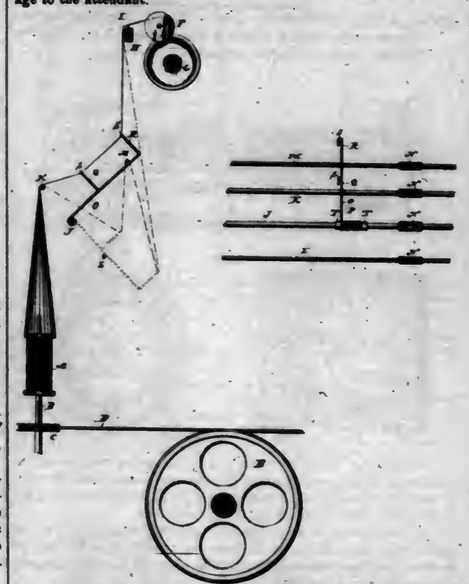
7. In a signaling apparatus, the combination, with a signal and its actuating-rod, which is normally disconnected therefrom, of an electro-magnet having an armature which engages and connects the signal with its actuating-rod, an electrical indicating-circuit, and a circuit-closer operated by movement of the armatures of the magnet to control the indicating-circuit, substantially as and for the purposes described.

8. In a signaling apparatus for railways wherein there are a primary signal and two or more secondary signals, each provided with an electro-magnet which controls it, the combination, with the said electro-magnets and their circuits, of railway-switches, circuit-controlling mechanisms (such as circuit-closers) operated by motion of the railway-switches and controlling the circuits of the magnets of the secondary signals, the circuit of the electro-magnet of the primary signal being connected with each of the circuits of the electro-magnets of the secondary signals, whereby the magnet of the primary signal is operated simultaneously with the operation of the magnets of each of the secondary signals, substantially as and for the purposes described.

9. In a signaling system wherein there are a primary signal and two or more secondary signals which refer to the primary signal, an actuating-rod common to all said secondary signals and normally disconnected therefrom, separate electro-magnets having armatures which engage and connect the secondary signals with the said actuating-rod, and electric circuits in which said magnets are included, said primary signal being also connected with said actuating-rod, whereby motion of the actuating-rod shall actuate the primary signal and one of the secondary signals simultaneously, substantially as and for the purposes described.

404,171. MACHINE FOR SPINNING AND WINDING SILK. HIRAM R. CONANT, Stonington, Conn. Filed May 31, 1887. Serial No. 239,736. (No model.)

Brief.—The object of the invention is to provide for machines for throwing, twisting, and spinning silk an improved take-up attachment combining the functions of taking up the slack, controlling more perfectly than heretofore the tension on the silk, and signaling a breakage to the attendant.



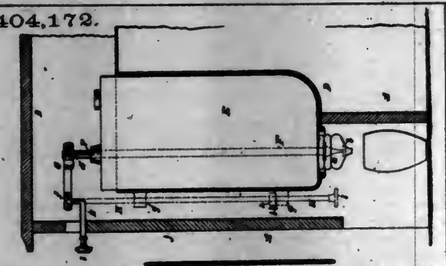
Claim.—1. In a machine for making silk, the combination, with a silk supporting and guiding wire located between a winding-off and a winding-up device, a suspension-wire located below the said silk supporting and guiding wire, a lift-detent wire located above the suspension-wire, a gravity take-up constructed and hung so as to swing free of all obstruction on the suspension-wire and having two silk-engaging arms separated to give clearance between them to the lift-detent wire, which is located in the arc in which the take-up moves, and a drop-detent wire located below the suspension-wire in the said arc, all of the said wires being parallel and the take-up being free to swing between the limits of the lift and drop detent wires, substantially as set forth.

2. In a machine for making silk, the combination, with a silk supporting and guiding wire located between a winding-off and a winding-up device, a suspension-wire located below the said silk supporting and guiding wire, a lift-detent wire located above the suspension-wire, a gravity take-up made of wire coiled to form a wide eye receiving the suspension-wire and bent to form two silk-engaging arms, which are separated to give clearance between them to the lift-detent wire, which is located in the arc in which the take-up moves, a drop-detent wire located below the suspension-wire in the said arc, and two collars mounted on the suspension-wire on opposite sides of the eye of the take-up, which they hold in place, all of the said wires being parallel and the take-up being free to swing between the limits of the lift and drop detent wires, substantially as set forth.

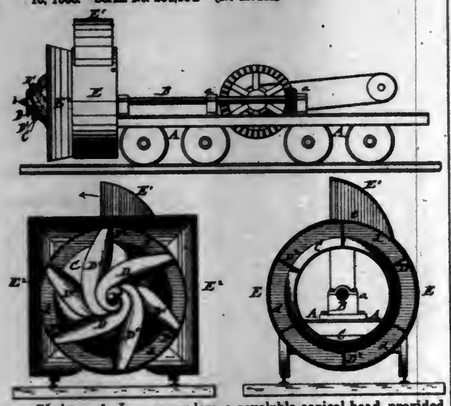
404,172. SODA-WATER APPARATUS. JOSEPH CONNER, New York, N. Y., assignor to The Firm of John Matthews, same place. Filed Mar. 2, 1888. Serial No. 301,737. (No model.)

Claim.—The syrup-tank E and valve-rod F, having the projecting arm G, said arm having a recess on its under side, in combination with the pusher-rod H, engaging said recess, all arranged to admit the removal of the syrup-tank without disturbing the rod H, substantially as described.

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404,173. SNOW-PLOW. JOSEPH CORBETT, New York, assignor, by mesne assignments, to Charles H. Otis, Brooklyn, N. Y. Filed Nov. 16, 1888. Serial No. 291,004. (No model.)



Claim.—1. In a snow-plow, a revoluble conical head provided with spiral blades increasing in width from the point toward the base of the head, and with alternating shorter blades that are not extended to the point of the head, substantially as set forth.

2. In a snow-plow, a revoluble conical head having a number of spiral blades increasing in width from the point toward the base of the head and bent into wings or paddles near the base of the head, substantially as set forth.

3. In a snow-plow, a conical revoluble head provided with a number of spiral blades increasing in width from the point toward the base of the head and bent at the base into wings or paddles radial to and parallel with the axis of the head, substantially as set forth.

4. In a snow-plow, a conical revoluble head provided with a number of spiral blades increasing in width from the point toward the base of the head and bent into the shape of radial wings or paddles near the base of the head, said wings being connected by a circumferential flange at the base of the head, substantially as set forth.

5. The combination of a revoluble conical head having spiral blades diminishing in width toward the point of the head and forming radial wings or paddles at the base of the same, with a cylindrical casing provided with a flaring front portion and with a discharge-aperture and hood at the top, substantially as set forth.

6. The combination of a conical revoluble head having spiral cutter-blades diminishing in width toward the point of the head and bent into radial wings or paddles at the base of the same, a circumferential flange connecting the wings or paddles, and a cylindrical casing surrounding the paddles and provided with a top opening and hood and with a flaring front portion recessed at the lower part, substantially as set forth.

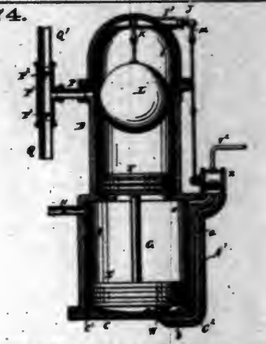
7. In a snow-plow, a conical revoluble head provided with spiral blades of increasing width and wing-shaped ends for lifting and throwing off the snow by centrifugal force, substantially as set forth.

8. In a snow-plow, a conical revoluble head provided with spirally-curved blades which terminate in an auger-shaped point at the apex and in paddles or wings at the base of the head, substantially as set forth.

404,174. STEAM-TRAP. HENRY UEHLING, New York, N. Y. Filed July 26, 1888. Serial No. 281,056. (No model.)

Claim.—1. In a steam-trap, the combination, with the united steam and water cylinders, of a piston in each cylinder, a rod uniting said pistons, a transverse shaft in the top of the water-cylinder, a float suspended from the inner end of said shaft, a valve-actuating rod connected with the outer end of said shaft, a cam-lever in the water-cylinder, a shaft on which said cam-lever is secured, and a rod connecting the outer end of said shaft with the valve-actuating rod, substantially as herein shown and described.

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6. In a steam-trap, the combination, with united steam and water cylinders, connected pistons in the cylinders, a float in the top of the water-cylinder, a valve-actuating rod connected with the float and provided with a hook on its lower end, of a rocking steam-valve, a weighted lever on said valve, and a pin on said rod, on which pin the hook on the lower end of the valve-actuating rod can catch, substantially as herein shown and described.

7. The combination, with a valve-casing, of a rocking shaft in the same, a valve on one end of the shaft, and a balancing-disk on the opposite end of the shaft, substantially as herein shown and described.

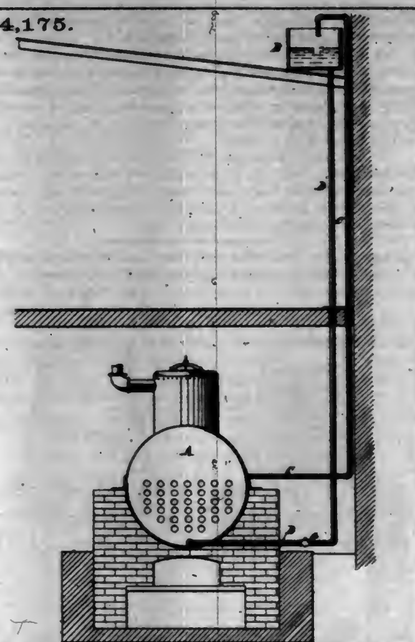
8. The combination, with a valve-casing, of a rocking shaft in the same, the valve S on one end of the said shaft, the balancing-disk S^2 on the opposite end of the shaft, the neck T on the outer side of the valve, which neck has the two opposite longitudinal grooves T^2, the rocking shaft U in the bonnet R^2 of the casing, the transverse pin U^2 in the inner end of the shaft U, the ends of said pin passing into the grooves T^2, and a lever on the outer end of the shaft U, substantially as herein shown and described.

9. The combination, with a valve-casing, of the bonnet R^2, provided with the neck R^4, the rocking shaft U in said neck, a weighted lever on the outer end of said shaft, the collar U^3 on said shaft U, and resting against the inner surface of the closed end of the neck R^4, the transverse pin U^2 in the inner end of the shaft U, the rocking shaft S^2, the valve S on one end of the same, the neck T on said valve, which neck is provided with the opposite longitudinal grooves T^2, and the balancing-disk S^2 on the opposite end of the rocking shaft, substantially as herein shown and described.

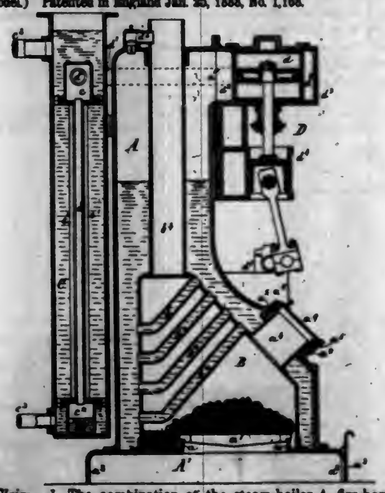
404,175. SAFETY APPARATUS FOR STEAM-BOILERS. WILLIAM F. CHEESEMAN, Brooklyn, N. Y., assignor of one-half to Enoch Rutzler, same place. Filed Jan. 23, 1889. Serial No. 297,319. (No model.)

Claim.—The combination, with a boiler, of a stand-pipe in communication with the boiler at one of its ends at a point approximating the water-level of the boiler, and opening at its other end into an an elevated tank, said open upper end of the pipe being in free communication with the atmosphere, and another pipe separated from the pipe first named communicating with said tank and also with the boiler at a distance below the water-level of the water, substantially as specified.

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404,176. STEAM-BOILER. HENRY DAVEY, Westminster, County of Middlesex, England. Filed Oct. 2, 1888. Serial No. 287,001. (No model.) Patented in England Jan. 25, 1888, No. 1,168.

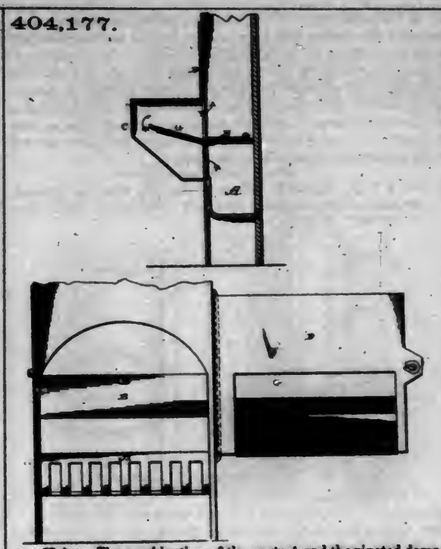


Claim.—1. The combination of the steam-boiler A, fire-box B, having inclined circulation-flues within it, plate A', and chimney b^4, all constructed and arranged substantially as described.

2. The combination of the steam-boiler A, fire-box B, fuel-chute a^4, packing-ring a^6, and packing a^5, substantially as and for the purpose described.

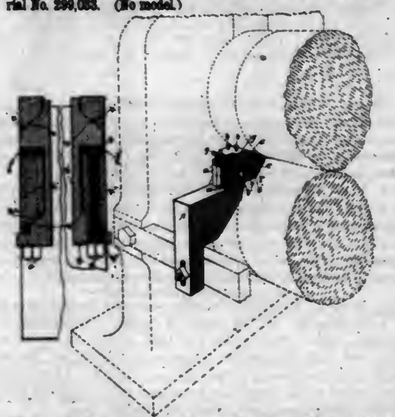
404,177. COMBINED COOKING-STOVE AND GRATE. ISAAC N. DAVIS and GEORGE TWEEDY, West Elizabeth, Pa. Filed Mar. 3, 1888. Serial No. 302,093. (No model.)

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Claim.—The combination of the grate A and the pivoted damper B above it with the pivoted casing C, provided with the stationary division-plate G and the vertical plate D, which closes the opening above the damper, the edge of the damper when closed being made to meet the edge of the division-plate when the casing is closed over the front of the grate, substantially as shown.

404,178. GUIDE-BOX. PATRICK I. DAY, Cleveland, Ohio, assignor to the American Wire Company, same place. Filed Feb. 7, 1889. Serial No. 299,083. (No model.)



Claim.—1. In a guide-box, the combination, with a guide, of adjusting mechanism engaging with the inner end of said guide and having its outer extremity located near the outer end of the guide-box, substantially as set forth.

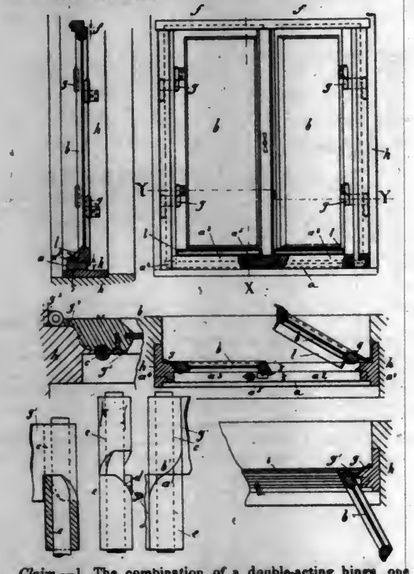
2. In a guide-box, the combination, with a guide, of a guide-adjuster having its inner extremity engaging with the inner end of said guide, the outer extremity of said adjuster located near the outer extremity of said guide-box, substantially as set forth.

3. In a guide-box, the combination, with a guide and a pin engaging with it, said pin having an angular head, of an actuating-bolt movably fitted in said guide-box and provided with an angular extremity engaging with the angular head of said pin, the head of said actuating-bolt located near the outer end of said guide-box, substantially as set forth.

4. In a guide-box, the combination, with a guide and a pin provided with an angular head, of a bolt threaded in said box, the head of said bolt located near the outer extremity of said guide-box, the point of said bolt of angular formation and engaging with the head of said pin, substantially as set forth.

5. The combination of a guide-box provided with a guide-opening and a pin-opening, said latter opening located near the inner end of the box, a guide fitting in said first opening, a pin rectangular in cross-section and fitting in said pin-opening, said pin provided with an angular head of greater transverse area than the body of the pin, said guide-box also provided with a barrel, and a bolt threaded in said barrel, the point of said bolt being angular and engaging with the head of the pin, the head of said bolt located near the outer end of the guide-box, substantially as set forth.

404,179. **WINDOW.** GUSTAV J. DOLLINER, Hamburg, Germany, assignor to Josef Steindecker, same place. Filed July 11, 1888. Serial No. 279,663. (No model.)



Claim.—1. The combination of a double-acting hinge, one of whose joints or hinge-points is made with spiral or inclined bearings, a casement hinged thereto, and a removable bottom strip arranged in the opening at the bottom of the casement for the latter to close against, substantially as and for the purpose described.

2. The combination of a double-acting hinge having inclined bearings at one of its articulations, a casement hinged thereto, a removable bottom strip for the lower part of the casement to bear against, and a lip, *l*, attached to the lower part of the casement and overhanging the removable bottom strip to catch the condensed water on the casement, substantially as and for the purpose described.

404,180. **PURIFYING WATER.** CHARLES A. DOREMUS, New York, N. Y. Filed Jan. 14, 1889. Serial No. 296,307. (No specimens.)

Claim.—The herein-described process for removing calcium, magnesium, and other like substances from waters, brines, &c., the same consisting in introducing into said waters, brines, &c., a fluorine compound, whereby the calcium or other substance is converted into an insoluble fluorine compound, substantially as described.

404,181. **REDUCTION OF IRON ORE.** CHARLES J. RAMM, New York, N. Y. Filed Jan. 19, 1889. Serial No. 296,536. (No model.)

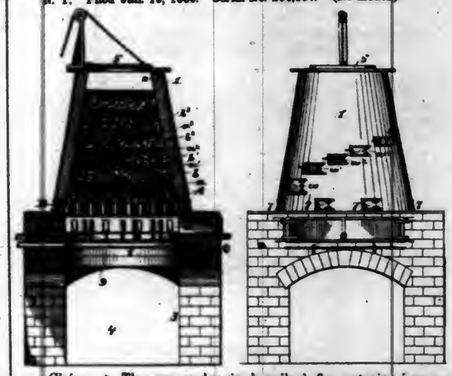


Claim.—1. The process herein described for reducing iron ores, which consists in subjecting alternately-arranged strata or layers of carbon and granulated iron ore and carbon in admixture to currents of heated carbonic oxide, which are caused to permeate said strata, substantially as and for the purposes specified.

2. The process herein described for reducing iron ore, which consists in subjecting alternately-arranged strata or layers of carbon and granulated iron ore admixed with carbon to currents of heated carbonic oxide, which are formed in a base-strata of carbon and which permeate the superimposed strata of iron ore, &c., substantially as and for the purposes specified.

3. As a step in the herein-described process of reducing iron ore, the arrangement of a bed-strata of graphitic carbon as a means of generating carbonic oxide, and a series of superimposed alternate layers of carbon alone and an admixture of carbon and iron ore, substantially as and for the purposes specified.

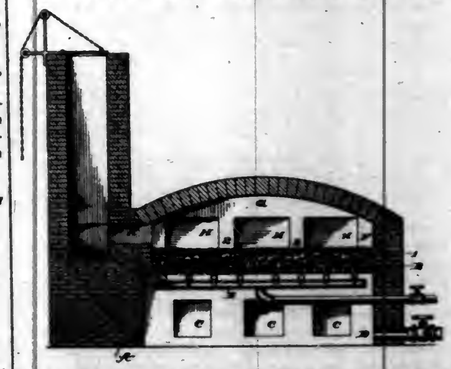
404,182. **REDUCING IRON ORE.** CHARLES J. RAMM, New York, N. Y. Filed Jan. 19, 1889. Serial No. 296,537. (No model.)



Claim.—1. The process herein described for reducing iron ore, which consists in arranging a series of layers composed alternately of lump carbon alone and granulated graphitic carbon mixed with granulated iron ore to currents of highly-heated carbonic-oxide gas, which permeate the several strata, substantially as and for the purposes specified.

2. The process herein described for reducing iron ore, which consists in arranging a series of layers composed alternately of lump carbon alone and granulated graphitic carbon admixed with granulated iron ore and subjecting the said layers to gaseous products in which a low state of combustion has been induced, said products being caused to permeate the several alternately-arranged layers of carbon alone and granulated iron ore mixed with granulated graphitic carbon, substantially as and for the purposes specified.

404,183. **PROCESS OF REDUCING IRON ORE.** CHARLES J. RAMM, New York, N. Y. Filed Jan. 19, 1889. Serial No. 296,539. (No model.)



Claim.—1. The method herein described for reducing ores, which consists in subjecting a single layer or stratum of granulated iron ore and granulated graphitic carbon intermingled, arranged on a permeable carbonaceous bed-layer and contained in a closed chamber, to the action of highly-heated currents of carbonic oxide, which currents pass up from the carbonaceous bed-layer into and through the stratum of iron ore and reducing agent, substantially as and for the purpose specified.

2. The process of reducing iron ores, which consists in arranging a single stratum of mixed granulated carbon and granulated iron ore upon a permeable bed-layer of graphitic carbon alone, and passing heated currents of carbonic oxide through the interposed permeable bed-layer of carbon and into and through the stratum of mixed carbon and ore, substantially as and for the purpose specified.

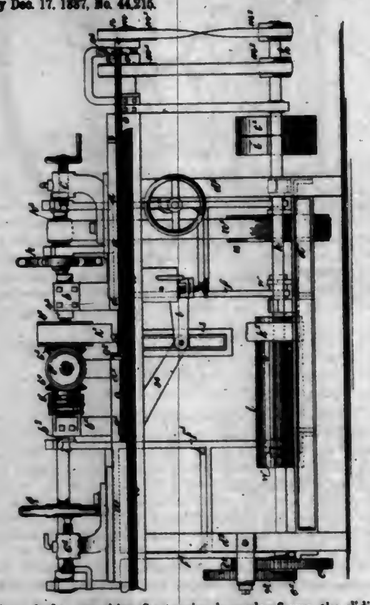
404,184. **REDUCING ORE.** CHARLES J. RAMM, New York, N. Y. Filed Feb. 7, 1888. Serial No. 298,062. (No model.)

Claim.—1. As an improvement in the art of carbonaceous reducing ore, subjecting a moist or plastic mass of admixed pulverized iron ore and a reducing agent to a reducing heat in a reverberatory or other suitable furnace, substantially as and for the purposes specified.

2. As an improvement in the art of reducing ore, subjecting a mixture of pulverized ore and a carbonaceous reducing agent which has been rendered moist or plastic by the addition of two fluids which distill or vaporize at different temperatures to a suitable reducing heat, substantially as and for the purposes specified.

3. As an improvement in the art of reducing ore, subjecting a moist or plastic mixture of pulverized ore and a carbonaceous reducing agent, to which has been added paraffine or crude petroleum residuum and water, to the action of a reducing heat in a suitable furnace, substantially as and for the purposes specified.

404,185. **MACHINERY FOR THE MANUFACTURE OF BOOT AND SHOE LASTS.** CHARLES W. EVANS, Old Compton Street, County of Middlesex, England. Filed Jan. 23, 1888. Serial No. 261,573. (No model.) Patented in England May 17, 1887, No. 7,180; in France Oct. 1, 1887, No. 186,163; in Belgium Oct. 1, 1887, No. 79,062, and in Germany Dec. 17, 1887, No. 44,215.

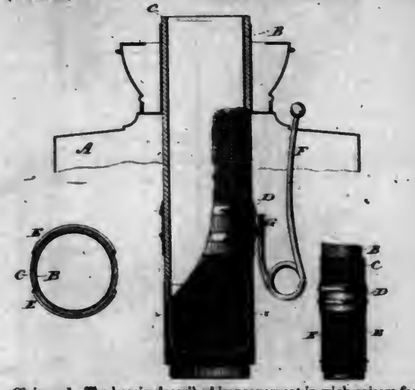


Claim.—1. In a machine for turning irregular forms, the sliding saddles *a'* and *a*, carrying, respectively, the pattern and the block to be cut, the rock-frame *f'*, wheel *g*, shaft *p*, and arm *p'*, link p^3, the rock-frame *f* and cutter-wheel, the arm *q*, link *q'*, and block q^4, and mechanism, substantially as specified, for adjusting the same, in combination with the link *s*, swinging on a fixed pivot, the arm *t*, connected to saddle *a*, the arm s^4, connected to saddle *a'*, and the sliding blocks s^3 s^3, connected to the arms s^4 and *t*, respectively, together with the means described for adjusting the arm *t*, all as hereinbefore set forth.

2. In a machine for turning irregular forms, the combination, with the sliding saddles *a'* and *a*, carrying, respectively, the pattern and the block to be cut, of the link *s*, swinging upon a fixed pivot, the arm *t*, connected to the saddle *a*, the arm s^4, connected to the saddle *a'*, the blocks s^3 and s^3, connected to the arms s^4 and *t*, respectively, and fitted to slide in the link *s*, and means, substantially as specified, for adjusting the arm *t*, as set forth.

3. In a machine for turning irregular forms, the combination, with the rock-frame *f'* and wheel *g*, carried by the same, the shaft *p*, arm *p'*, and link p^3, of the rock-frame *f* and cutter-wheel, the arm *q*, link *q'*, block q^4, and means, substantially as specified, for adjusting said block.

404,186. **WICK-RAISER FOR CENTRAL-DRAFT LAMPS.** CHARLES A. EVANS, Meriden, Conn., assignor to The Bradley & Hubbard Manufacturing Company, same place. Filed Nov. 26, 1888. Serial No. 291,862. (No model.)



Claim.—1. The herein-described improvement in wick-raisers for central-draft lamps, consisting of the ring D, encircling the wick within the fount and in connection with the wick-raising mechanism, the said ring constructed with springs extending vertically therefrom, adapted to impinge upon the surface of the wick at a distance from the ring, substantially as described.

2. In a central-draft lamp, the ring D, adapted to encircle the wick within the fount and in connection with the wick-raising mechanism, and provided with two or more U-shaped wire springs, the legs of the U attached to the ring and the bend of the U curved corresponding to the exterior surface of the wick and adapted to impinge on the wick at points distant from said ring, substantially as described.

404,187. **CHAPLET FOR SAND CORES.** ALVA J. FISHER, Chicago, Ill. Filed Sept. 28, 1888. Serial No. 286,673. (No model.)



Claim.—1. As a new article of manufacture, a chaplet composed of solid carbon, substantially as described.

2. A chaplet composed of solid carbon and having a shoulder, A^3, and oppositely-inclined swell *A'*, substantially as described.

404,188. **GROUND-AUGER.** JEFFERSON FLEMING, Kansas City, Mo. Filed Jan. 23, 1889. Serial No. 297,203. (No model.)

Claim.—1. In a drilling and boring machine, the combination, with a longitudinally stationary but revoluble worm or screw, of a movable screw meshing with the stationary screw and carrying the drill-shaft, substantially as shown and described.

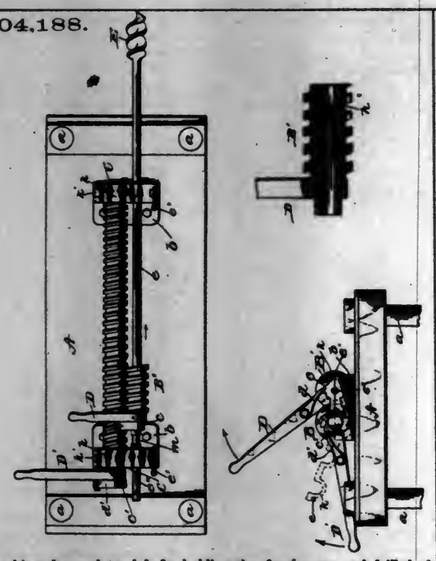
2. In a drilling and boring machine, the combination, with a stationary worm or screw supported in suitable bearings, of a movable worm or screw meshing with and fed along the stationary worm, said movable worm being hollow and adapted to receive the drill-shaft, substantially as shown and described.

3. In a drilling-machine, the combination, with a stationary worm, of a movable worm meshing with and fed along the stationary worm, said movable worm being hollow and adapted to receive the drill-shaft, and the levers attached to the worms for operating the same, substantially as shown and described.

4. The combination, with a fixed worm, of a movable worm carrying the drill-shaft and meshing with the fixed worm, the ratchet-wheels keyed on the ends of the worms, and the levers loosely mounted on the said ends and carrying pawls adapted to engage with the ratchets, substantially as and for the purpose described.

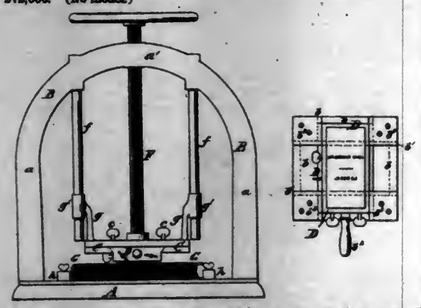
5. The combination, with a bed-plate carrying the bearings C C, of the fixed worm journaled in said bearings, the hollow movable worm meshing with the fixed worm and carrying the drill-shaft, which is also mounted in the bearings C C, the levers D D', carrying pawls *d d'*, adapted to engage, respectively, with the ratchet-wheels *c c'*, and

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the hinged cap-plates *k k*, for holding the fixed worm and drill-shaft in position, substantially as shown and described.

404,189. MACHINE FOR LETTERING THE COVERS OF BOOKS. WILLIAM J. FOSTER, Hoboken, N. J. Filed Apr. 27, 1888. Serial No. 272,006. (No model.)



Claim.—1. In a machine for lettering the sides of books, the combination, with a base, of a frame, a chase-holder, a screw journaled in the frame and having a loose connection with the chase-holder, and vertically-extending guide-rods secured near one of their ends to the frame and terminating at their other ends at a considerable distance above the base, said guide-rods having a loose connection with the chase-holder, substantially as specified.

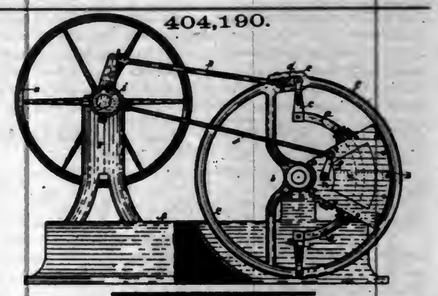
2. In a machine for lettering the sides of book-covers, the combination, with a chase-holder provided with slideways upon its under side extending at approximately right angles to each other, of a chase adapted to be inserted in either of said slideways, substantially as specified.

404,190. STEAM-ENGINE. WILLIAM GEID, Kalamazoo, Mich. Filed Oct. 10, 1887. Serial No. 251,880. (No model.)

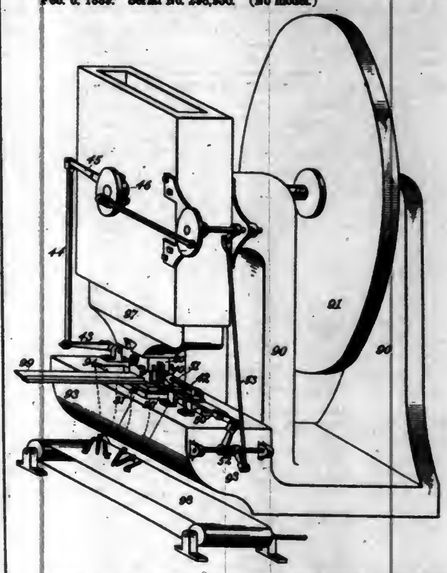
Claim.—In a steam-engine, the combination of the oscillating shaft, the oscillating wheel rigidly mounted on said shaft, the curved stationary cylinder, the piston-rod projecting out of each end of the cylinder and curved on a plane smaller than the rim of said wheel, the two radial arms, one attached rigidly to each end of said piston-rod, the free ends of said arms being pivotally attached to the rim of the oscillating wheel at points diametrically opposite each other, a cranked power-shaft, and a connecting-rod pivotally attached at one end to the rim of said wheel and to the crank of the power-shaft at the other end, substantially as set forth.



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404,191. SPIKE-MACHINE. HOWARD GREER, Lake View, Ill. Filed Feb. 6, 1889. Serial No. 298,930. (No model.)



Claim.—1. In a spike-machine, the combination of a punch-operating die conformed in its working-face to the irregular shape of one side of the spike to be made, a pair of supporting-dies, one on each side of the path of the punching-die, and each conformed in its working-face to the irregular shape of the opposite side of the spike to be made, and a stop and gripper arranged on the side toward which the feed movement takes place, the stop being arranged at a distance from the punching-die equal to the width of one spike, substantially as set forth.

2. In a spike-machine, the combination of a series or gang of die-punches, two or more in number, each conformed in its working-face to the irregular shape of one side of the spike to be made, and a series or gang of three or more supporting-dies interspaced with the punch-dies, and each conformed in its working-face to the irregular shape of the opposite side of the spike to be made, whereby each punch-die operates both as a punch-die and as a gripper or presser foot as regards the spike cut out on the adjacent die of the opposite gang, substantially as set forth.

3. A pair of dies, substantially such as A' A^1, suitably spaced for the cutting out of a spike from a suitably ribbed or beaded bar, and having each a shoulder, *c*, in combination with a punch-die, substantially such as B', for operating in the cavity so formed, and having a working-face conformed to the irregular shape of one side of the spike to be made, substantially as set forth.

4. A pair of dies, substantially such as B' B^2, suitably spaced for the cutting out of a spike from a suitably ribbed or beaded bar, and having each a shoulder, *c*, in combination with a die, substantially such as A^2, for operating in the cavity so formed, and having a working-face conformed to the irregular shape of one side of the spike to be made, substantially as set forth.

5. A spike-making die substantially such as A^2, and a pair of spike-making dies, substantially such as B' B^2, and relatively arranged substantially as described, in combination with a knocker operative endwise against the spike formed on A^2, so as to effect its discharge, substantially as set forth.

6. A series or gang of two or more punch-dies, and a series or gang of three or more supporting-dies relatively arranged with reference to severing a bar by transverse cuts into spikes without waste, in combination with a series or gang of knockers, 51, operative simultaneously by an endwise motion against the spikes formed on the supporting-dies, so as to effect their discharge, substantially as set forth.

7. The combination of a series or gang of punch-dies, a series or gang of supporting-dies, stripping-shoulders *s* and *c*, a stop, 40, and gripper 41, substantially as set forth.

8. The combination of a series or gang of punch-dies, a series or gang of supporting-dies, stripping-shoulders *s* and *c*, a stop, 40, gripper 41, and knocker 51, adapted to operate endwise against the otherwise undischarged spikes, substantially as set forth.

9. The combination of a series or gang of punch-dies, a series or gang of supporting-dies, stripping-shoulders *s* and *c*, a gripper and knockers, and suitable mechanism, substantially as set forth, for operating all said devices in orderly succession from a single shaft with reference to the production of cut steel spikes without waste from a rolled bar.

404,192. SIRUP-FAUCET. EDWIN HAAS, Philadelphia, Pa. Filed Aug. 18, 1888. Serial No. 283,075. (No model.)



Claim.—1. The combination, in a jar having a neck provided with a plug having a valve-seat, of a valve-plug having a stem, a collar mounted on the neck of the jar, and a weighted lever pivoted in the collar and connected to the valve-stem, substantially as specified.

2. In a faucet, the plug 4, having openings 5 and 6, and the valve-plug 7, fitting into said opening 5, and provided with a stem, 8, passing through said opening 6, in combination with a lever pivoted to said jar and attached to said valve-stem 8, a weight attached to said lever, and a depending bail, also attached to said lever, substantially as described.

3. The combination, in a jar provided with a neck, and a plug inserted therein having a valve-seat and a stuffing-box, of a valve provided with a U-shaped valve-stem, one end being connected to the plug and the opposite end projected through the stuffing-box to the outside of the jar, a collar mounted on the neck of the jar and having a depending arm terminating in a hook, and a weighted lever pivoted in the hook-arm and connected with the valve-stem, and provided with a glass-receiving depending arm, substantially as specified.

4. The jar 1, having the neck 2, and plug 4, having the seat 5, and stuffing-box 6, in combination with the plug 7, the stem 8, the glands 9, the collar 10, mounted upon the neck having the bolt 11 and the depending hooked-shaped arm 12, the lever 15, having the ring portion 16 mounted in the hook and connected to the valve, as at 17, and having the projecting arm 18, carrying the weight 19 and the depending glass-receiving bail 20, substantially as specified.

404,193. PROCESS OF DISSOLVING ANILINE COLORS. JACOB HAHN, New York, N. Y. Filed Nov. 9, 1888. Serial No. 290,361. (No specimens.)

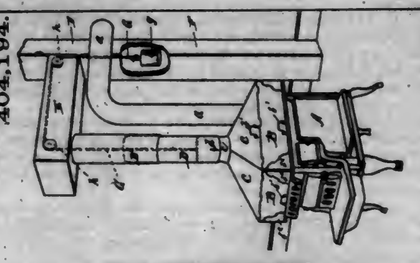
Claim.—The process of directly uniting aniline with vegetable oil, which consists in dissolving aniline in hot water, adding part of the solution to oil, boiling the mixture, adding the remainder to the boiling oil, and stirring the mixture until the water has evaporated, substantially as specified.

404,194. ODOR-PREVENTING DEVICE FOR COOKING-STOVES. CARL A. HOLM, Chicago, Ill. Filed June 20, 1888. Serial No. 277,656. (No model.)

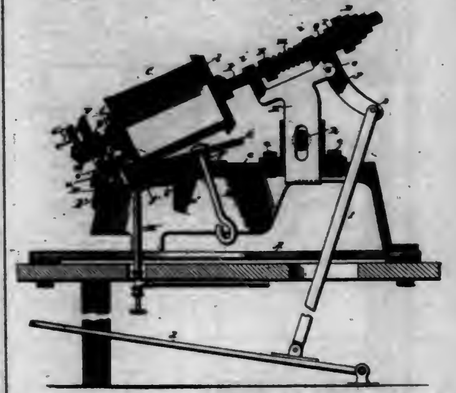
Claim.—1. The hood for carrying off odors and steam from a cooking-stove, having folding sides or leaves B, said leaves being provided with hinged corners, substantially as specified.

2. The hood for carrying off odors and steam from a cooking-stove, consisting of the hinged leaves or sides B, provided with hinged corners and the sloping-sided top C, substantially as specified.

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404,195. CAN-SOLDERING MACHINE. JOHN S. HULL, Baltimore, Md. Filed Mar. 26, 1888. Serial No. 304,794. (No model.)



Claim.—1. In a can-soldering machine, the combination of a base provided with a longitudinal slot, a support movable in the slot for the upper end of a can vertically and longitudinally adjustable on the base, a vertically adjustable, revoluble, and oscillating support for the lower end of the can, constructed to oscillate freely, and a solder bath into which the lower end of the can projects, substantially as described.

2. In a can-soldering machine, the combination of a longitudinally-reciprocating support for the upper end of a can, a support for the lower end of the can, constructed and mounted to revolve and oscillate freely, and a solder bath, substantially as described.

3. In a can-soldering machine, the combination of a reciprocating support for the upper end of a can, a revoluble support for the lower end of the can constructed to oscillate freely vertically with relation to the solder bath, a vertically-adjustable bracket in which the lower support is mounted, and a device for limiting the degree of oscillation of said support and for holding it in position for the insertion of a can between the two supports, substantially as described.

4. In a can-soldering machine, a solder bath and a soldering-iron supported on one side of the bath with its working end normally out of the solder, in combination with means for automatically withdrawing the working end of the iron from the solder when a can is removed, and a suitable burner, substantially as described.

5. In a can-soldering machine, a solder bath, an automatically-tilting soldering-iron, and a slot in the base through which said iron is heated, substantially as described.

6. In a can-soldering machine, a solder bath, a slot in front of the bath, and a deflector for directing flame against the end of a can, substantially as described.

7. In a can-soldering machine, a solder bath, a slot in front of the bath, and an adjustable deflector secured to the base of the machine, substantially as described.

8. In a can-soldering machine, a solder bath, a transverse slot in front of the bath, and a longitudinal slot in the rear thereof, in combination with a soldering-iron and a burner, substantially as described.

9. In a can-soldering machine, a base having an aperture in it, in combination with a hood secured over said aperture to direct flame against a can, substantially as described.

10. In a can-soldering machine, the combination of a base having a flame-aperture therein, an adjustable hood over said aperture provided with a discharge-nozzle constructed to direct flame against a can, and a burner, substantially as described.

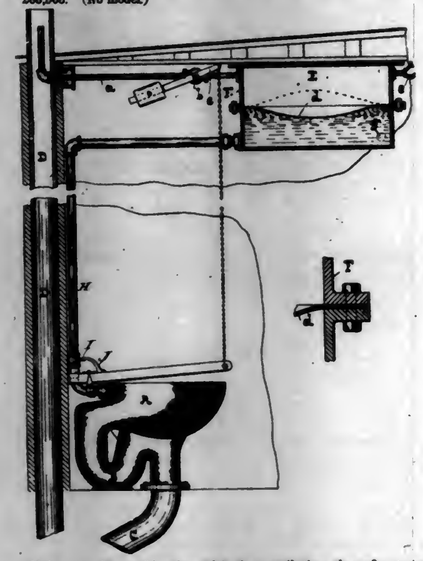
11. In a can-soldering machine, the combination of a base having a solder bath, a soldering-iron, a slot through the base in front of the bath, a slot in the rear of the bath, a hood, an aperture through the base communicating therewith for directing flame on one side of the bath, and a burner for supplying flame to the several flame-directing passages, substantially as described.

12. In a can-soldering machine, the combination of a base, an adjustable bracket, an oscillating can-support in said bracket, and a deflector secured by the bracket, and a slot for supplying flame to the deflector, a reciprocating support for the upper end of the can, and a burner, substantially as described.

13. In a can-soldering machine, a base provided with a solder bath, a soldering-iron, a slot through which the iron is heated, a flame-confining barrier in the rear of the bath, a slot in front of the bath, and a burner, substantially as described.

404,196. VENTILATING APPARATUS FOR WATER-CLOSETS.

JESSE L. HUTCHINSON, Baltimore, Md. Filed Aug. 23, 1888. Serial No. 283,563. (No model.)



Claim.—1. In combination with the ventilating-pipe of a water-closet, a reservoir of compressed air or water, a pipe leading from the said reservoir to the interior of the ventilating-pipe, a self-closing cock or valve in the said connecting-pipe, and a chain or wire whereby the said cock or valve may be opened and a current of air or water admitted to the interior of the said ventilating-pipe, substantially as and for the purpose specified.

2. In combination with the ventilating-pipe of a water-closet, a reservoir of compressed air or water, a pipe connecting the said reservoir to the ventilating-pipe, a cock or valve in the said connecting-pipe, a movable seat, and a connecting chain or wire, whereby in the movement of the seat the said cock or valve is opened and compressed air or water admitted to the interior of the said ventilating-pipe, substantially as and for the purpose specified.

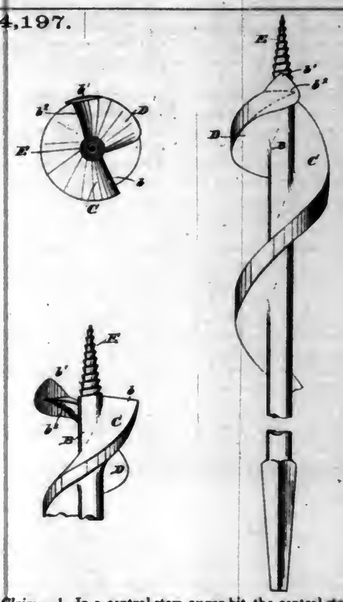
3. In combination with a water-closet and a ventilating-pipe leading therefrom, a tank having a flexible diaphragm therein which divides it into two compartments, one of which is provided with a water-pipe to fill it, and a discharge-pipe for flushing the water-closet bowl, and the other compartment fitted with an inwardly-opening air-check, and a discharge-pipe leading to the ventilating-pipe, having therein a controlling valve or cock, substantially as and for the purpose specified.

4. In combination with the ventilating-pipe of a water-closet, a tank, a flexible diaphragm to divide the tank into two compartments, one for air and the other for water, suitable pipes connected with the water-compartment, whereby the same is filled and discharged, and another pipe leading from the air-compartment to the said ventilating-pipe, whereby in the filling of the water-compartment air is compressed in the other and forced into the ventilating-pipe, substantially as and for the purpose specified.

404,197. AUGER-BIT.

CHARLES H. IRWIN, Wilmington, Ohio. Filed Oct. 20, 1887. Serial No. 252,935. (No model.)

404,197.

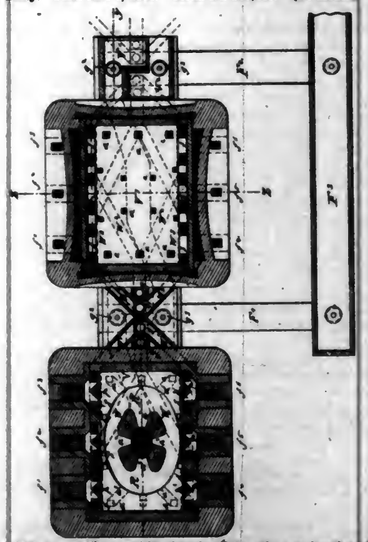


Claim.—1. In a central-stem auger-bit, the central stem, B, having a convoluted blade, C, terminating in a floor-lip, *b*, and a short convoluted blade, D, terminating in a floor-lip, b^3, and an outline-lip, *b'*, the latter extending out beyond and below the floor-lip b^3, substantially as set forth.

2. In a central-stem auger-bit, the central stem terminating in a screw-point and provided with a convoluted blade, C, terminating in a floor-lip, *b*, and a short convoluted blade, D, terminating in a floor-lip, b^3, and an outline-cutting lip, *b'*, the latter extending out beyond and below the floor-lip b^3, the cutting-edge of lip *b* being elevated above the lip b^3, substantially as set forth.

404,198. BRICK-KILN.

PAUL JOCHUM, Ottweiler, Prussia, Germany. Filed Jan. 4, 1889. Serial No. 295,415. (No model.)



Claim.—1. The combination, in a kiln, of a combustion-chamber, fire-places at both sides of the same, fire-walls located parallel to the side walls at the interior of the combustion-chamber, flues connecting the fire-places with the spaces between the side walls and fire-walls, draft-openings and flues in the bottom of the combustion-chamber, a ring-shaped flue below said bottom, a central smoke-flue, and radial channels connecting the ring-shaped flue with the smoke-flue, substantially as set forth.

2. The combination, in a kiln, with the combustion-chamber, a ring-shaped flue below the bottom of the same, draft-flues connecting the bottom of the combustion-chamber with the ring-shaped flue, a central smoke-flue, radial channels connecting the ring-shaped flue with the smoke-flue, an S-shaped transmitting-flue connecting the combustion-chamber of the first oven with the second oven, branch flues communicating by valves with the S-shaped transmitting-flue, and vertical flues connecting the branch flues intermediately of the direct flues with the bottom of the combustion-chamber, substantially as set forth.

3. The combination, in a kiln, of the combustion-chamber having a number of fire-places located at opposite side pillars of the rear ends of the fire-places, flues at both sides of the pillars communicating with the bottom of the combustion-chamber, intermediate vertical flues, and branch flues connecting said intermediate flues with the combustion-chambers of the adjoining ovens, substantially as set forth.

4. The combination, in a kiln, with the combustion-chamber, draft-flues in the bottoms of the same, a ring-shaped flue below the bottom, radial channels, a central smoke-flue, an S-shaped transmitting-flue, and valved auxiliary flues leading the fire-gases from the S-shaped transmitting-flue of one oven around the adjoining oven to the branch flues of the third oven, substantially as set forth.

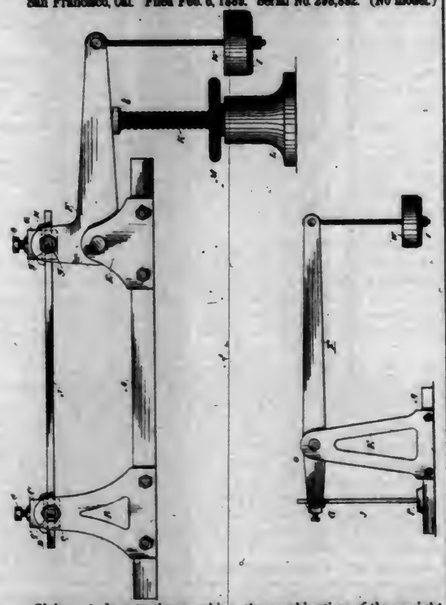
404,199. PROCESS OF MAKING ARTIFICIAL STONE.

PAUL JOCHUM, Ottweiler, Prussia, Germany. Filed Jan. 4, 1889. Serial No. 295,416. (No specimens.)

Claim.—The process herein described of making artificial stone, which consists in mixing pulverized clays containing iron clays with an emulsion composed of a saturated solution of sulphate of iron and finely-ground iron ore; secondly, shaping the mass into blocks and drying the same; thirdly, immersing the same in a second emulsion formed of a saturated solution of sulphate of iron, pulverized iron ore, and manganese, and, lastly, burning the blocks, substantially as set forth

404,200. TENSILE-STRAIN-TESTING MACHINE.

SAMUEL JUMP, San Francisco, Cal. Filed Feb. 6, 1889. Serial No. 298,892. (No model.)

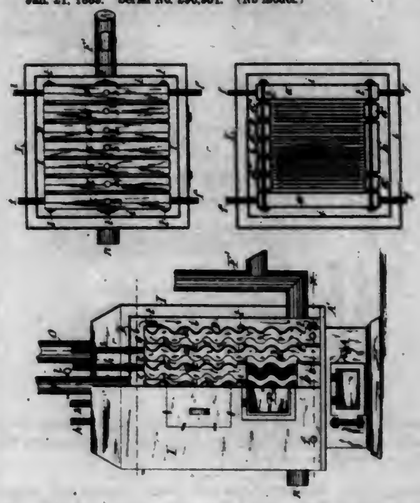


Claim.—1. In a testing-machine, the combination of the upright bracket B, having in its top the pivoted or rocking cross-head, with adjustable clamp for receiving and holding one end of the bar to be tested, the fixed bracket E, and pivoted elbow or bell-crank lever in said bracket and having one end adapted to receive the testing-weights, and the rocking cross-head in the other end of said lever and having an adjustable clamp for receiving and holding the other end of the bar to be tested, substantially as described.

2. In a testing-machine, the fixed brackets B and E, the rocking cross-head with clamp carried by bracket B, the elbow or bell-crank lever pivoted in bracket E and having one end adapted to receive the testing-weights, and the rocking cross-head with clamp in the other end of the lever, in combination with the vertically-movable or adjustable support K under the lever and adapted to receive it instantly when the bar to be tested is fractured, substantially as described.

404,201. BOILER.

WILLIAM W. KELSEY, Cortland, N. Y. Filed Jan. 21, 1889. Serial No. 296,951. (No model.)



Claim.—1. A steam or hot-water boiler comprising a plurality of hollow walls corrugated externally and internally and disposed side by side, with passages for the products of combustion between them and with the corrugations of each parallel with those of the adjacent wall, and the water-supply pipe communicating with the interiors of said walls, as set forth.

2. A steam or hot-water boiler comprising a plurality of hollow walls corrugated vertically, externally, and internally, and disposed side by side, with the convex portions of each directly opposite the concave portions of the adjacent wall, and with passages for the products of combustion between them, substantially as described and shown.

3. In a steam or hot-water boiler, the combination of a water-jacketed fire-pot, hollow walls rising from said water-jacket at opposite sides of the fire-pot and corrugated vertically, correspondingly-corrugated hollow walls between the aforesaid walls, and each having its convex portions directly opposite the concave portions of the adjacent wall, and forming between them serpentine fire-passages, and having their bases forming the crown of the fire-pot, and water-ducts connecting said hollow walls, as set forth.

4. A steam or hot-water boiler composed of a series of vertical hollow walls corrugated vertically and arranged parallel side by side, with passages for the products of combustion between them, the outer walls extending beneath the intermediate walls, and the grate surrounded by the bases of the outer walls, water-ducts connecting said walls, a case inclosing the aforesaid walls, with passages for the products of combustion between said case and outer walls, and a smoke-exit pipe connected to the said case, substantially as described and shown.

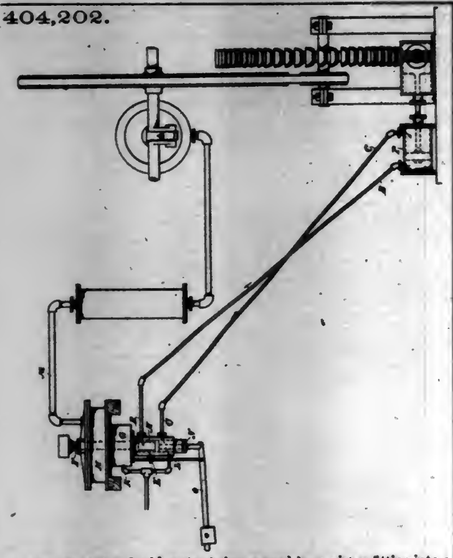
404,202. AUTOMATIC VALVE ATTACHMENT FOR POWER MECHANISMS.

SAMUEL N. KNIGHT, Sutter Creek, Cal. Filed Nov. 3, 1888. Serial No. 289,911. (No model.)

Claim.—1. The valve-chamber having the supply and exhaust passages B, C, and E, and the valve A, in combination with the pistons of different diameters moving in corresponding cylinders, the water and air supply passages opening into the said cylinders upon opposite sides of the two pistons, substantially as and for the purpose herein described.

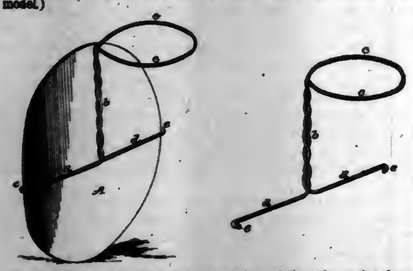
2. The cylinders G and H, having the pistons I and J fitted therein, a pipe supplying water or other medium under pressure beneath the lower piston, and a pipe supplying air under pressure above the upper piston, a valve connected with the common piston-rod of the two pistons, and supply and exhaust passages controlled by said valve, in combination with an air-compressor connected with the upper cylinder, and a motor from which power is derived to operate said com-

404,202.



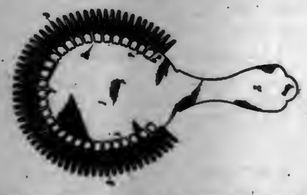
pressor, the gate of said motor being moved by a piston fitting into a cylinder, to the opposite ends of which the supply-passages from the valve A communicate, substantially as herein described.

404,203. SHADE-HOLDER FOR LAMPS. BENJAMIN G. KRAPF, Leavenworth, Kans. Filed Oct. 15, 1888. Serial No. 288,157. (No model.)



Claim.—A lamp-shade holder consisting of the wire twisted and formed at one end into a hanger-loop, the other end of the twisted part formed with the straight arms *d*, terminating in hooks bent over in return-laps *e*, in combination with a shade or screen of flexible spring material sprung into said return-hook laps, as shown and described.

404,204. JULEP-STRAINER. CHARLES P. LINDLEY, Bridgeport, Conn. Filed Dec. 26, 1888. Serial No. 294,615. (No model.)

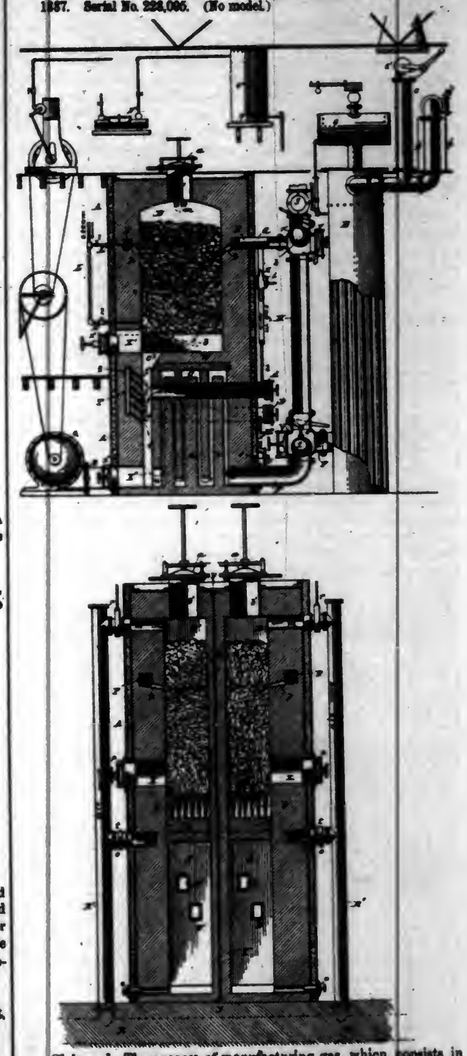


Claim.—1. A strainer consisting of a plate having a coil of wire secured around its outer edge.

2. A strainer consisting of a plate having openings near its outer edge, and a coil of wire surrounding said edge, the coils thereof being passed through said openings, as and for the purpose set forth.

3. A strainer consisting of a plate having a handle, and a coil of wire partially surrounding the outer edge thereof, said coil being loosely connected to the plate, so as to yield when the latter is pressed into a glass.

404,205. PROCESS OF AND APPARATUS FOR THE MANUFACTURE OF GAS. BURDETT LOOMIS, Hartford, Conn. Filed Feb. 18, 1887. Serial No. 228,095. (No model.)



Claim.—1. The process of manufacturing gas, which consists in superheating steam, then decomposing it in contact with a body of incandescent fuel, and at the same time distilling bituminous coal on top of and in contact with the body of incandescent fuel, and causing the resulting gas and vapors to pass downward through the distilling-coal into contact with the heated fuel below for converting them into fixed gas, and finally conducting off the coal-gas and the water-gas together, some distance below the surface of the distilling-coal and above the bed of the incandescent fuel, whereby fresh charges of bituminous coal are successfully coked and the hydrocarbons distilled therefrom converted into fixed gas without destructive decomposition.

2. The process of manufacturing gas, which consists in heating a body of fuel to incandescence by blasting with air, and by means of the resulting hot products heating a chamber containing refractory material, then shutting off the air and superheating steam in contact with the hot refractory material, decomposing it in contact with the incandescent fuel, and at the same time distilling bituminous coal in the form of lump or slack, in contact with the incandescent fuel, and causing the resulting gas and vapor to pass down through the distilling-coal into contact with the incandescent fuel for converting them into fixed gas, and finally conducting off the coal-gas and water-gas together below the more recent charge or charges of fresh coal and above the bed of incandescent fuel, whereby the coal is better coked, the formation of hard crusts by excessive heat of the water-gas is avoided, and the hydrocarbons are converted into fixed gas.

3. The process of manufacturing gas, which consists in heating two bodies of fuel to incandescence by blasting with air, burning the resulting gaseous products, and thereby heating two superheating and fixing chambers, superheating steam by passing it through one superheating-chamber, decomposing it by passage up through one body of incandescent fuel, and at the same time causing distillation of fresh charges of bituminous coal in contact with the bodies of incandescent fuel, and passing the evolved gas and vapor and water-gas from below the recently-charged coal into the second body of fuel below its surface and down through it for converting carbonic acid into carbonic oxide and hydrocarbons into fixed gas, then carbureting the mixed gas by means of hydrocarbon liquid, and finally combining and fixing the carbureted gas by passage through the heated fixing-chamber.

4. In a cupola gas-generating furnace, the fuel-chamber having a circular flue in its wall, eduction-ports opening therefrom into the chamber, and a connected gas-take-off pipe arranged at a distance below its top and above its central portion, in combination with an air-blast pipe connecting with the top of the furnace, and a steam-supply pipe connecting with the base of the fuel-chamber, for the purpose described.

5. In a cupola gas-generating furnace, the fuel-chamber having an air-blast pipe connecting with its top, and the gas-eduction pipe connecting below its top, as described, in combination with the superheating and fixing chamber placed at the base of the cupola, the connecting-flue O^2 and vaporizing-retorts extending transversely through the superheating and fixing chamber and opening into flue O^3, for the purpose described.

6. In combination with the fuel-chamber of a cupola gas-generator, the deep fire-clay grate-bars resting upon the floor of the chamber, for the purpose described.

7. In a cupola gas-generating furnace, the superheating and fixing chamber having vertical partitions forming connecting-flues, and the vaporizing-retorts extending transversely through the chamber and opening into a flue leading from the fuel-chamber, for the purpose described.

8. The two fuel-chambers connected by a pipe or pipes for the passage of gas from one to the other, in combination with the two superheating and fixing chambers having the vaporizing-retorts, and the outside gas-inlet pipes, K *k*, leading from the connecting gas-pipes of the fuel-chamber into the retorts for conducting water-gas to such retorts to mix with oil-vapor therein generated, all as described.

9. In a cupola gas-generator, the fuel-chamber above and the connected superheating and fixing chamber below, in combination with gas-take-off pipes G and F, connecting-pipe H, connecting valve-boxes U V, having seats at top and bottom, and the ball-valves suitably hung, so as to be adjustable upon either seat, for the purpose described.

10. The combination of the two fuel-chambers and two superheating and fixing chambers connecting therewith, and the double steam-boiler, pipes, and valves connecting the fuel-chambers with each other and with the chambers of the boiler, and pipes and valves connecting the superheating and fixing chambers with the chambers of the boiler, whereby either gas or products of combustion may be passed through each chamber of the boiler, as described.

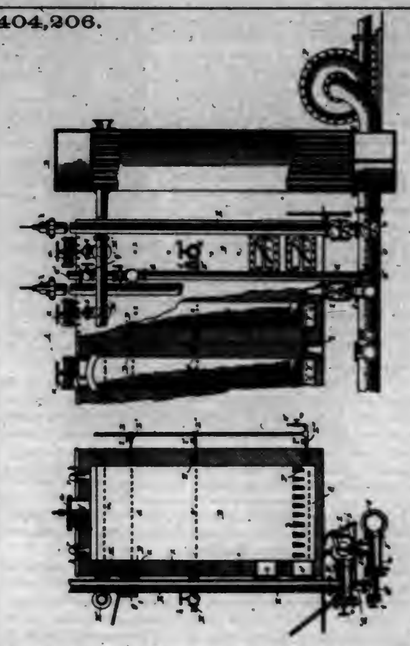
11. The two fuel-chambers and the two superheating and fixing chambers connecting with such fuel-chambers, in combination with pipes F F', having valve-boxes and valves connecting the superheating and fixing chambers with the double boiler, pipes G, G', and *g*, and valve-boxes provided with double seats, and ball-valves connecting the two fuel-chambers, and the pipes H H' connecting pipes G G' with pipes F F' through the medium of the valve-boxes.

12. The two fuel-chambers connected by a valved pipe or pipes below their tops and below the level at which the fuel is maintained, in combination with two superheating and fixing chambers having steam-supply pipes and valved take-off pipes for gas and products of combustion, as described.

404,206. PROCESS OF AND APPARATUS FOR THE MANUFACTURE OF GAS. BURDETT LOOMIS, Hartford, Conn. Filed May 18, 1887. Serial No. 238,093. (No model.)

Claim.—1. The process of manufacturing heating or fuel gas, which consists in decomposing steam in contact with a body of incandescent fuel, distilling bituminous coal by contact with such body of incandescent fuel, and conducting the resulting oily and tarry vapors downward into contact with such incandescent fuel, thereby converting them into fixed carbureted hydrogen gas, and at the same time generating producer-gas by the admission of air to the ignited fuel in a separate chamber, and mingling the water-gas resulting from decomposed steam, the carbureted hydrogen from the distilled coal, and the producer-gas in the same main.

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2. The process of manufacturing gas, which consists in decomposing steam in contact with a body of incandescent fuel, thereby producing water-gas in one chamber and simultaneously generating producer-gas in a separate chamber by causing the air blast or draft to pass down through bituminous coal and heated fuel, whereby oily and tarry vapors evolved from the coal are carried into the heated fuel and converted into fixed carbureted hydrogen and the producer-gas freed from condensable matter, and finally mixing the water-gas and the producer-gas containing the carbureted hydrogen.

3. The process of manufacturing gas, which consists in decomposing steam in contact with a body of incandescent fuel and distilling bituminous coal in contact with such fuel, thereby producing water-gas and carbureted hydrogen and causing gas and vapor from the coal to pass in contact with the heated fuel and off below the surface of the charge for converting them into fixed gas, and simultaneously generating producer-gas in a separate chamber by causing the air blast or draft to pass down through bituminous coal and heated fuel, whereby oily and tarry vapors evolved from the coal are carried into the heated fuel and converted into fixed carbureted hydrogen, and finally mixing the water-gas and producer-gas and carbureted hydrogen in a pipe or chamber beyond the generator.

4. In combination with two or more generating-chambers, the air-supply pipes connecting with the tops thereof, outlet-pipes for producer-gas leading from the bottoms thereof, and outlet-pipes for water-gas leading from the upper portions thereof, but below the level at which the charge of fuel is maintained, whereby oily and tarry vapors evolved from the fresh coal supplied to the tops of the bodies of heated fuel are caused to pass down into contact with such heated fuel and thereby converted into fixed gas in both the producer-gas and the water-gas, and whereby both kinds of gas may be simultaneously generated and the manufacture of both kinds be alternated in each chamber.

5. In combination with two or more generating-chambers, the air-supply pipes connecting with the tops thereof, outlet-pipes and valves for producer-gas leading from the bottoms thereof, and outlet-pipes for water-gas leading from the upper portions thereof, but below the fuel level, and a main take-off pipe, both sets of outlet-pipes connecting with the said main take-off pipe, whereby oily and tarry vapors evolved from the fresh coal supplied to the tops of the bodies of heated fuel are caused to pass down into contact with such heated fuel, and thereby converted into fixed gas in both the producer-gas and the water-gas, and whereby both kinds of gas may be simultaneously generated and mixed in the same main for heating purposes.

6. In combination with a gas-generating chamber, the annular escape-flue F, located in the wall below the grate, and ports or tuyeres *f*, leading from the ash-chamber below the grate into such flue, and the gas-outlet pipe connecting with such flue, whereby dust and ashes are better deposited from the outgoing gas in the ash-chamber.

7. In combination with a gas-generating chamber, the flues D, E, and F, formed at different heights in the furnace-wall and having ports or tuyeres *d e f* opening into the fuel-chamber and ash-chamber, and outlet-pipes connecting with said flues for conducting off water-gas, coal-gas, and producer-gas and leading to the main take-off pipe, whereby gas distilled from the coal may be caused to pass down through the proper depth of hot fuel to fix the volatile vapor and be passed off at such height as to avoid destructive decomposition of such vapors by excessive heat, according to the temperature of the body of fuel and the depth thereof in the generating-chamber.

8. In combination with a gas-generating chamber having an air-supply at the top, the gas-outlet-valve box I, connecting with its base, pipes J J, connecting the valve-box with main O, ball-valve *i*, arranged in the valve-box to close pipe J, and escape-pipe K K, connecting with the valve-box and having a valve or cap at its top, for the purpose described.

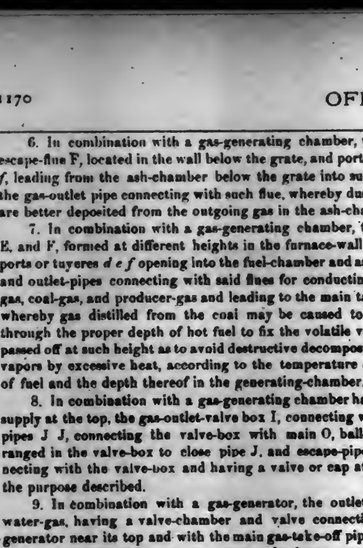
9. In combination with a gas-generator, the outlet-pipe G for water-gas, having a valve-chamber and valve connecting with the generator near its top and with the main gas-take-off pipe for mixed water-gas and producer-gas, a separate valved water-gas pipe leading from said valve-box for conducting off water-gas alone, and a separate pipe for producer-gas leading from the bottom of the generator to said main take-off pipe, substantially as described.

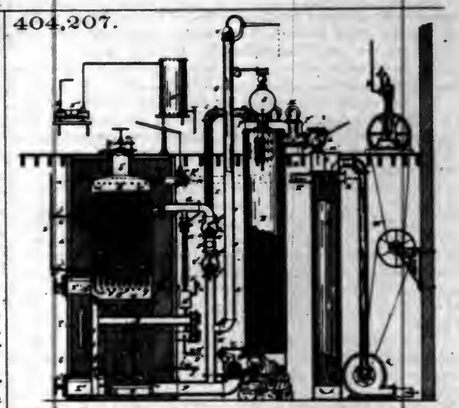
404,207. PROCESS OF, AND APPARATUS FOR THE MANUFACTURE OF GAS. BURDETT LOOMIS, Hartford, Conn. Filed May 24, 1887. Serial No. 239,242. (No model.)

Claim.—1. The process of manufacturing gas, which consists in heating a body of fuel to incandescence by drafts of air drawn downward into the fuel and by drawing off the gaseous products by an exhauster, whereby the fuel may be better fed, inspected, and arranged in the generator during the operation of heating up, then shutting off the air-draft and decomposing steam in contact with the fuel, thereby producing water-gas.

2. The process of manufacturing gas, which consists in heating a body of fuel to incandescence by downward drafts of air, and by means of the resulting gaseous products heating a superheating-chamber and drawing off the products by an exhauster, whereby the furnace may be charged and cleaned during the operation of the exhauster, then shutting off the air-drafts and superheating steam by passage through the superheating-chamber and decomposing it by passage through the incandescent fuel, thereby producing water-gas.

3. The process of producing gas, which consists in first igniting a bed of fuel within a generating-furnace, then admitting fresh air to the top of the fuel and drawing it down into and through the ignited fuel and drawing off the resulting gaseous products at the bottom of the generating-furnace, whereby the generator may be open at the top and supplied with fuel, the walls cleaned of clinker, the fire inspected, and the fuel arranged in the generator while the exhauster is in operation without any danger and delay caused by flame and smoke being blown into the operator's face, and also whereby the coal may be better coked and converted into gas.





4. In combination with a gas-generating cupola or furnace, an air-supply pipe or opening connecting with the top above the fuel, and an outlet for gaseous products leading from the bottom, and an exhauster connecting with such outlet-pipe for drawing off gaseous products from the bottom of the generator, as described.

5. In combination with the gas-generating furnace, a tubular air-heater, and gas-cooler having an air-inlet and pipe connecting it with the top of the generator, an exhaust-pipe for gaseous products leading from the bottom of the generator and connecting with the tubes of the heater, and a connected exhauster for drawing off the gaseous products through the tubes and drawing air through the chamber around the tubes and down into the fuel, whereby the gas is cooled by the circulating air and the latter is heated as it flows to the generator.

6. In a cupola gas-generating furnace, the fuel-chamber arranged above and the superheating and fixing chamber below, in combination with the valved take-off pipe F, leading from the superheating-chamber, outlet-pipe G, leading from the fuel-chamber, valved pipe H, connecting pipe G with pipe F, and escape-pipe O, having a closing cap or valve leading from pipe H, for the purpose described.

7. In a cupola gas-generating furnace, the two fuel-chambers and the two superheating and fixing chambers, in combination with valved pipes F F', pipes G G', connecting-pipes H H', having valves *h h'*, cross-pipe *g*, connecting the pipes H H' between the valves, and pipe I, leading from pipe *g* to the seal-box, as and for the purpose described.

404,208. APPARATUS FOR THE MANUFACTURE OF GAS. BURDETT LOOMIS, Hartford, Conn. Filed Apr. 25, 1888. Serial No. 271,792. (No model.)

Claim.—1. A gas-generator having a closed circumferential hearth and a central grate-opening, in combination with an exhauster connecting by suitable flues with the central grate-opening, for the purpose described.

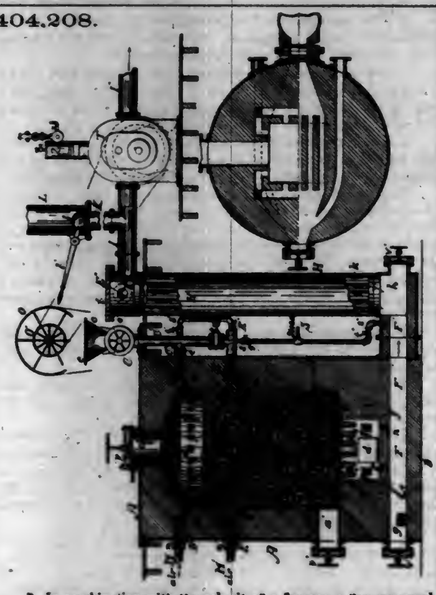
2. A downdraft generator having an air-supply pipe connecting with its top, and a closed circumferential hearth having a central opening and ash-pit, in combination with the exhauster connecting with such central ash-pit, whereby the air-draft and gaseous products are drawn away from the side walls of the furnace and more evenly through the body of fuel, for the purpose described.

3. A gas-generator having an air-supply pipe or opening at its top above the fuel and an outlet-pipe leading from its bottom, in combination with a cooler connecting with such outlet-pipe and an exhauster connecting with the cooler for drawing air down into the fuel and the resulting gases out from the bottom of the generator and through the cooler, as and for the purpose described.

4. A gas-generating furnace having a contracted grate-opening and ash-pit at the base thereof, a wide flue arranged below the ash-pit, and connecting flues and ports constructed in the brick-work, for the purpose described.

5. In combination with the ash-pit of a furnace, the wide central flue placed below it, and division-walls constructed in such flue for supporting the floor of the ash-pit and forming a steam-heating surface.

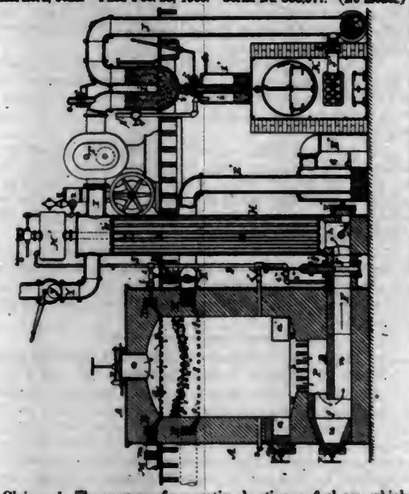
6. In combination with the ash-pit of a furnace, a central flue formed below it and containing supports for the ash-pit floor, and lateral flues opening by ports into the central flue and connecting with the ash-pit, for the purpose described.



7. In combination with the ash-pit of a furnace, a flue arranged below it, one or more lateral flues leading from the ash-pit and opening at one end into the flue below, and the deflecting-bridge *r*, arranged in the path of the gas in such flue for arresting dust and ashes.

8. A gas-generating furnace having a contracted grate-opening and ash-pit at the base thereof, a wide central flue arranged below the ash-pit, lateral flues G G', having ports *g* formed in the foundation-walls, passages *f'*, having ports *f* leading therefrom into the ash-pit, and outlet-pipe leading from flue F, for the purpose described.

404,209. PROCESS OF MANUFACTURING GAS. BURDETT LOOMIS, Hartford, Conn. Filed Feb. 23, 1889. Serial No. 300,877. (No model.)



Claim.—1. The process of generating heating or fuel gas, which consists in drawing both air and steam down into and through a body of ignited fuel, thereby causing combustion of the fuel with formation of producer-gas and decomposition of the steam with formation of water-gas, causing vapors distilled from the upper layers of coal to pass into the heated fuel below for conversion into fixed gas, and drawing the resulting mixed gases down through the fuel and out at the bottom of the generator, whereby the fuel may be supplied and arranged in the generator while the exhauster is in operation without any danger and delay caused by flame and smoke being blown into the operator's face, and also whereby the coal may be better coked and converted into gas.

2. The process of generating heating or fuel gas, which consists in admitting air to the top of a bed of ignited fuel for causing combustion thereof, and at the same time admitting steam into the more highly-heated fuel below the top, and drawing both the air and steam down into and through the heated fuel, thereby causing combustion of the fuel with formation of producer-gas and decomposition of the steam with formation of water-gas, causing vapors distilled from the upper layers of coal to pass into the heated fuel below for conversion into fixed gas, and drawing the resulting mixed gases down through the fuel and out at the bottom of the generator, whereby the fuel may be supplied and arranged in the generator while the exhauster is in operation without any danger and delay caused by flame and smoke being blown into the operator's face, and also whereby the coal may be better coked and converted into gas.

404,210. TEMPORARY BINDER. WILLIAM LUMLEY, Chicago, Ill. Filed Oct. 18, 1887. Serial No. 252,693. (No model.)



Claim.—1. The binder-frame, in combination with a holding-pin normally perpendicular to the bottom of said frame, and a pivot-connection between said frame and pin, whereby said pin may be deflected laterally to receive the index-sheets, substantially as and for the purpose described.

2. The binder-frame, in combination with a holding-pin normally perpendicular to the bottom of said frame, a pivot-connection between said frame and pin, and a catch device on the arm of said frame for engaging the free end of said pin and locking the pin in its upright position, substantially as described.

3. The binder-frame, a holding-pin perpendicular to the bottom of said frame, and a pivot-connection between said frame and pin, in combination with a spring actuating the pin resisting a lateral deflection thereof, whereby said pin will be automatically returned to its normal position when released, substantially as described.

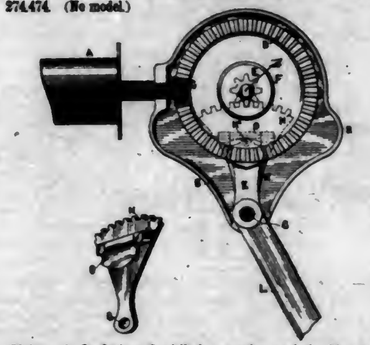
4. The binder-frame, a holding-pin normally perpendicular to the bottom of said frame, and a pivot-connection between said frame and pin, in combination with a spring engaging said pin, so as to resist a lateral deflection thereof, and a spring-catch secured to the rim of said frame and arranged to be automatically engaged by said pin, substantially as described.

5. In a temporary binder, the holding-pin provided with longitudinal peripheral grooves, in combination with a disk or head and pins secured to said head for engaging said grooves, substantially as described.

6. In a temporary binder, the index-holder, in combination with the index-frame, a pivot-connection between said frame and holder, and a stop device for preventing a reversal of the operative face of the index-frame with reference to the index-sheets, but permitting a vibration of said frame upon its pivot, substantially as described.

7. In a temporary binder, the index-holder consisting of a flat metallic bail provided with perforations therein, in combination with the index-frame and offset, portions of said frame passing through and working in said perforations and constituting a stop device for said index-frame, substantially as described.

404,211. FITTING FOR BLINDS, CURTAINS, &c. FERDINAND MATTHEY, St. Imier, Switzerland. Filed May 21, 1888. Serial No. 274,474. (No model.)



Claim.—1. In fittings for blinds, curtains, and the like, the com-

bination, with one of the roller-journals, of a pinion mounted thereon, a toothed wheel engaging with said pinion, a coiled spring operating to rotate the toothed wheel, a spring-actuated lever operating upon a dog to hold the same in engagement with said toothed wheel, and a lever adapted to operate upon said spring-actuated lever to allow the dog to release the toothed wheel, as described, for the purpose specified.

2. In fittings for blinds, curtains, and the like, the combination, with the curtain-roller, of a pinion mounted on one of the journals of said roller, a toothed wheel engaging with said pinion, a pinion adapted to rotate with said toothed wheel, a coiled spring acting to rotate the latter, a toothed arm or rack engaging with the latter pinion, a two-armed lever pivoted to said arm, one limb being provided with inclined bearing-surfaces, as described, a spring bearing upon the other limb of said pivoted lever, a dog located between the spring-actuated limb and the toothed wheel aforesaid, and an operating-lever adapted to engage with the inclined bearing-surfaces described, said parts being arranged for co-operation, as described, for the purpose specified.

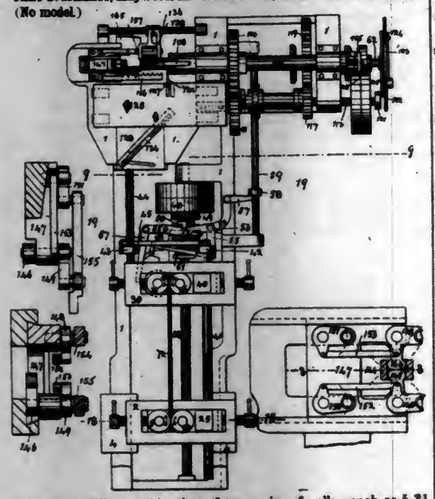
404,212. BROOM. JOHN A. MIDDLETON, Gordonsville, Ky., assignor of one-half to B. S. Bevier, same place. Filed June 19, 1888. Serial No. 277,509. (No model.)



Claim.—1. In a broom-head, a metallic clamp or holder comprising an outer section or casing the top of which has a transverse groove in its under side, and an inner section consisting of a front plate having inwardly-exteeding flanges that fit between the sides of the outer casing, and a top having on its upper side a transverse ridge entering the groove in the top of the outer casing, the tops of both casings being provided with registering openings for the passage of a tightening-bolt, substantially as set forth.

2. As an improvement in brooms, a clamping device comprising an outer casing the front of which is open and the top of which has a transverse groove in its under side, and an inner casing consisting of a front plate having inward-extending flanges that fit between the sides of the outer casing, and a top having on its upper side a transverse ridge entering the groove in the top of the outer casing, the tops of both casings being provided with openings that register with each other, in combination with a bolt passing upward through the said openings, and a handle having a nut secured in a recess in its lower end, substantially as and for the purpose set forth.

404,213. MACHINE FOR MAKING COILED SPRINGS. HUMPHREY D. MILLETT, Maywood, Ill. Filed Oct. 22, 1888. Serial No. 288,816. (No model.)



Claim.—1. The combination of two pairs of rolls—such as 5 31 and 20 35—for flattening or tapering the ends of rods or bars, a pair of tongs, a carriage carrying the tongs, a track for the carriage, and a mandrel for coiling a spring, substantially as and for the purposes specified.

2. The combination of a coiling-mandrel, a hollow shaft, as 101 a sliding rod, as 103, a clamp, as 108, a lever, as 105, and a spring, 104, substantially as and for the purposes specified.

3. The combination of a coiling-mandrel, a hollow shaft, as 101, a sliding rod, as 103, a clamp, as 108, a lever, as 105, a spring, 104, a cam, as 106, a lever, as 107, and a collar or plate on the end of the rod 103, substantially as and for the purposes specified.

4. The combination of the sliding plates, as 126 and 128, a roller, 135, secured to the plate 126, an adjustable bar, 134, a rack, as 129, and a gear-wheel, as 130, substantially as and for the purposes specified.

5. The combination of a coiling-mandrel on a shaft carrying a gear-wheel, as 110, a driving-shaft, as 113, a sleeve, as 115, having a clutch at each end, gear-wheels 118 and 119, a shaft, as 62, cams, as 61 and 162, lever 163, shaft 164, shaft 59, a clutch-lever thereon, arm 60, gear-wheel 111, having a face-clutch, 114, sleeve 112, worm 132, gear-wheel 133, shaft 131, clutch 161, gear-wheel 130, rack 129, and sliding plates 126 and 128, substantially as and for the purposes specified.

6. The combination of a driving-shaft, 113, a cam-shaft, as 62, disk 122, crank 121, lever 123, pawl 124, and connecting-bar 125, substantially as and for the purposes specified.

7. The combination of a coiling-mandrel, a pressure-roller, 136, shaft 138, levers 137 and 139, and cam 140, substantially as and for the purposes specified.

8. In a machine for flattening the ends of a rod and at the same time coiling another rod or bar to make a spring, the combination of a main driving-shaft, rolls for flattening the end of a rod, tongs to carry forward the flattened rod, a coiling-mandrel, and a shaft, 62, carrying cams for automatically controlling the operations of the machine, substantially as specified.

9. The combination of a pair of rolls, as 5 and 31, a second pair of movable rolls, as 20 and 35, for flattening the ends of a rod, dogs, as 25 and 40, a shaft, 41, a crank, 42, a rod, 45, a crank, 43, a shaft, 44, a lever, 46, and cam 47, substantially as and for the purposes specified.

10. The combination of two rollers, as 31 and 35, with shafts, as 32 and 36, worm-wheel 34, worm 39, shaft 38, a clutch, as 50, a pulley, as 48, having a clutch, 49, a spring, as 51, a clutch-lever, 52, bar 57, crank 58, shaft 59, levers, as 52 and 55, a bar, as 71, levers 70 and 67, a spring, 69, and disk *c*, having a projection, *b*, and a lever, 65, substantially as and for the purposes specified.

11. A pair of rolls, as 31 and 35, in a fixed frame, in combination with another pair of rolls, as 5 and 20, in a sliding frame, substantially as and for the purposes specified.

12. A pair of rolls, as 31 and 35, in a fixed frame, in combination with another pair of rolls, as 5 and 20, in a sliding frame, a rotating shaft, as 7, a gear-wheel, as 12, and a rack, *a*, substantially as and for the purposes specified.

13. A pair of rolls, as 31 and 35, in a fixed frame, in combination with another pair of rolls, as 5 and 20, in a sliding frame, two shafts, as 7 and 21, two gear-wheels, as 8 and 23, worm-wheel 11, and the worm *k*, sliding on a shaft, as 38, substantially as and for the purposes specified.

14. A coiling-mandrel, in combination with two toothed bars, as 156 and 157, bolted, respectively, to bars, as 154 and 155, bell-crank levers, as 148 and 149 150 151, connecting-bars 152 153, levers 145 and 146, keyed to pins secured to a slide, 147, which carry the levers 148 and 149, a bell-crank lever, as 144, a slide, 158, and cam 159 on a shaft, as 62, substantially as and for the purposes specified.

15. The combination of a sliding plate, as 126, hook 127, a sliding plate, as 128, a roller, 135, secured to the plate 126, an adjustable bar, 134, adjustably connected with the plate 128, a rack, as 129, a gear-wheel, as 130, and a coiling-mandrel, substantially as and for the purposes specified.

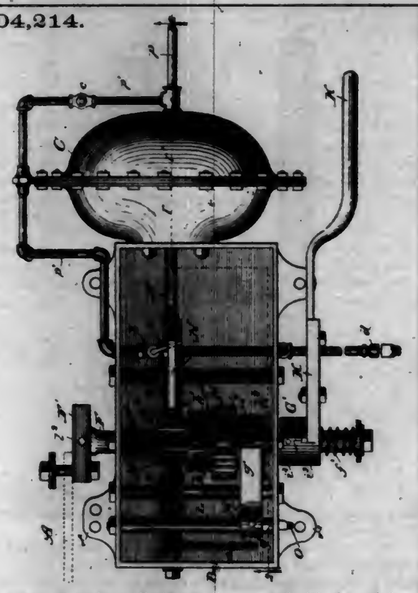
404,214. RAILROAD-SWITCH APPLIANCE. MORTIMER R. MILLS, Chicago, Ill. Filed Dec. 20, 1888. Serial No. 294,186. (No model.)

Claim.—1. In a railroad-switch appliance for throwing a switch, the combination of a rotary shaft having connected with it eccentrically the switch connecting-bar, and revolubly in one direction to throw the switch alternately in opposite directions, a reciprocating rack-bar engaging with the shaft, and means, substantially as described, connected with the rack-bar, to produce reciprocation thereof, substantially as set forth.

2. In a railroad-switch appliance for throwing a switch, the combination of a rotary shaft, F, having connected with it eccentrically the switch connecting-bar A and provided with a pinion, E, a reciprocating rack-bar, E, engaged by the pinion, and a clutch, G, on the shaft, substantially as described.

3. In a railroad-switch appliance for throwing a switch, the combination of a rotary shaft, F, having connected with it eccentrically the switch connecting-bar A and provided with a pinion, E, a reciprocating rack-bar, E, engaged by the pinion, a clutch, G, on the shaft, an

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air-receiver, C, having a diaphragm, D, connected with the rack-bar, and an air-conduit, *p'*, leading to a signal, *d*, and provided with a valve, *b*, opened and closed by the reciprocation of the rack-bar, substantially as described.

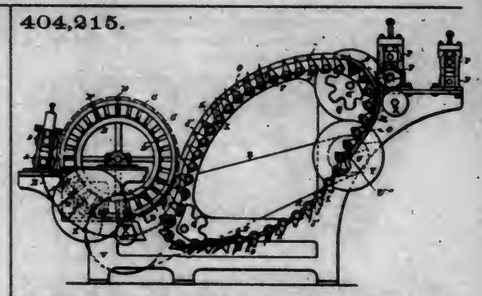
4. In a railroad-switch appliance for throwing a switch, the combination of a rotary shaft, F, provided at one end with a head, F', with which to pivotally connect the switch-bar A, a pinion, E', on the shaft, a reciprocating rack-bar, E, engaged by the pinion, and a clutch, G, on the shaft, substantially as described.

5. In a railroad-switch appliance for throwing a switch, the combination of a box, B, a rotary shaft, F, provided at one end with a head, F', having openings *k* and *k'* at opposite sides of and different distances from its center, and with which to pivotally connect the switch-bar A at one of the said openings, a pinion, E', on the shaft, a reciprocating rack-bar, E, engaged by the pinion, and a clutch, G, on the shaft, substantially as described.

6. In a railroad-switch appliance for throwing a switch, the combination of a box, B, a rotary shaft, F, provided at one end with a head, F', with which to pivotally connect the switch-bar A, and carrying a pinion, E', a clutch, G, a ratchet-wheel, H, and a cam, I, a reciprocating rack-bar, E, engaged by the pinion and carrying a bent arm, N, and an arm, *e*, a dog, *k'*, engaging with the ratchet, a rocking detent, M, having a finger, *g'*, normally engaging with the cam, and an arm, g^2, extending into the path of the arm *e*, an air-receiver, C, having a diaphragm, D, connected with the rack-bar, and an air-conduit, *p'*, leading to a signal, *d*, and provided with a valve, *b*, having a handle, *b'*, extending into the path of the arm N, substantially as described.

7. A railroad-switch appliance for throwing a switch, comprising, in combination, a box, B, a rotary shaft, F, provided at one end with a head, F', with which to pivotally connect the switch-bar A, and carrying a pinion, E, a clutch, G, a ratchet-wheel, H, a cam, I, a clutch, G', and a lever, K, a reciprocating rack-bar, E, engaged by the pinion and carrying a bent arm, N, and an arm, *e*, a dog, *k'*, engaging with the ratchet, a rocking detent, M, having a finger, *g'*, normally engaging with the cam, and an arm, g^2, extending into the path of the arm *e*, an air-receiver, C, having a diaphragm, D, connected with the rack-bar, and an air-conduit, *p'*, leading to a signal, *d*, and provided with a valve, *b*, having a handle, *b'*, extending into the path of the arm N, substantially as described.

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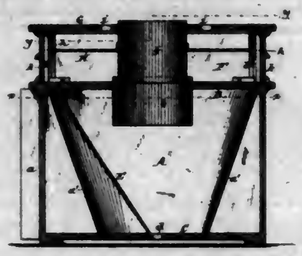
of the delivery-rolls while being withdrawn thereby from the combing-pins, substantially as described.

2. In a backling-machine, the combination of detaining-pins, means, substantially as described, for carrying said pins and causing them to advance and retreat, delivery-rolls and a backling-chain following the path of an irregular curve, at one point approaching and approximating the path of the detaining-pins and afterward approaching the delivery-rolls in an arc of reduced radius, and guides for causing the chain to follow said path, substantially as described.

3. In a backling-machine, the combination of advancing and retreating detaining-pins, means, substantially as described, for carrying said pins and causing them to advance and retreat, a chain carrying combing-pins following the path of an irregular curve, at one point approaching the detaining-pins in an arc of reduced radius and afterward approaching the delivery-rolls in an arc of reduced radius, delivery-rolls, and guides for controlling the movements of said combing-pins, whereby said pins are inclined to facilitate their entrance into the fiber held by the detaining-pins and moved into position to hold the fiber properly against the action of the delivery-rolls while being withdrawn thereby from the combing-pins, substantially as described.

4. In a backling-machine, the combination of a revolving cylinder, detaining-pins carried by said cylinder, and a backling-chain traveling in a path approximating the curve of the periphery of said cylinder at the points where the detaining-pins and combing-pins meet, and guides for causing the chain to follow said path, substantially as described.

404,216. DUST-COLLECTOR. ORVILLE M. MOSER, Jackson, Mich., assignor to the Knickerbocker Company, same place. Filed Aug. 26, 1886. Serial No. 211,892. (No model.)



Claim.—1. The combination, with the main separating-chamber provided with means whereby the dust-laden air is caused to assume a whirling motion, and which has an outlet for the purified air and a dust-discharge, of a supplementary dust-chamber provided with an air-passage of smaller size than the outlet of the separating-chamber, whereby the outer layer of the outgoing air-current is turned into the supplementary dust-chamber, while the inner portion of the outgoing air-current is permitted to escape, and with an outlet through which the purified air escapes from the supplementary dust-chamber, substantially as set forth.

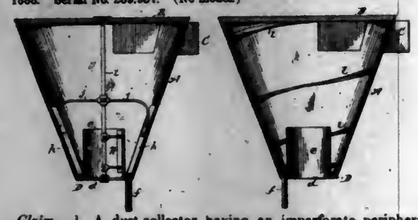
2. The combination, with a separating-chamber, A, having a head, B, and in the same an air-outlet *b*, of a supplementary dust-chamber, F, having a tubular air-passage, *f*, a deflector, H, arranged in a chamber, F, around the passage *f*, and air-escape openings *i*, substantially as set forth.

3. The combination, with a tapering separating-chamber, A, of a head, B, closing the large end of said chamber and provided with a central air-outlet, *b*, and a head, C, closing the small end of said chamber and provided with a peripheral dust-discharge, *c*, and a central air-inlet opening, *d*, substantially as set forth.

404,215. HACKLING-MACHINE. ALPHEUS W. MONTGOMERY, New York, N. Y. Filed Apr. 13, 1888. Serial No. 270,604. (No model.)

Claim.—1. In a hackling-machine, the combination of delivery-rolls, advancing and retreating detaining-pins, means, substantially as described, for carrying said pins and causing them to advance and retreat, a chain carrying combing-pins, and guides for controlling the movements of said combing-pins, whereby the said pins are inclined to facilitate their entrance into the fiber held by the detaining-pins and moved into position to hold the fiber properly against the action

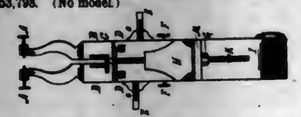
404,217. DUST-COLLECTOR. ORVILLE M. MORSE, Jackson, Mich., assignor to the Knickerbocker Company, same place. Filed Nov. 5, 1888. Serial No. 289,957. (No model.)



Claim.—1. A dust-collector having an imperforate peripheral wall, an inlet for the dust-laden air arranged to cause a whirling motion of the air and dust in the separating-chamber, a tight head closing one end of the separating-chamber, and an outlet for the air freed from dust and an outlet for the separated dust, both arranged at the opposite end of the separating-chamber, substantially as set forth.

2. A dust-collector having a tapering imperforate peripheral wall, an inlet for the dust-laden air arranged to cause a whirling motion of the air and dust in the separating-chamber, a tight head closing the large end of the separating-chamber, and an outlet for the air freed from dust and an outlet for the separated dust, both arranged at the small end of the separating-chamber, substantially as set forth.

404,218. DEVICE FOR JOINTING AND DRESSING THE TEETH OF SAWS. MICHAEL J. O'BRIEN, Dunbore, Pa. Filed Oct. 29, 1887. Serial No. 253,798. (No model.)



Claim.—1. In a saw-jointer, the combination, with the base, of the jaw-support mounted at one side thereof, and the jaws provided with files pivoted at opposite sides of the support, substantially as specified.

2. In a saw-jointer, the combination, with the base, of the jaw-support adjustably mounted at one side thereof, and the oppositely-pivoted adjustable jaws mounted on the support and provided with files, substantially as specified.

3. In a saw-jointer, the oppositely-located saw-embracing jaws, provided with opposite recesses, as *b*, on their inner faces, and having the side files, C, set in said recesses, substantially as specified.

4. In a saw-jointer, the adjustable jaw-support recessed at its upper end, in combination with the oppositely-located file-carrying jaws provided with set-crews and mounted in said recesses, said screws terminating in bearings formed in the support, substantially as specified.

5. In a saw-jointer, the base provided with opposite grooves upon one of its faces, in combination with the jaw-support having tongues adapted to ride in said grooves, and the opposite saw-clamping file-carrying jaws pivoted to said support, substantially as specified.

6. In a saw-jointer, a base provided with opposite grooves and with an abutment in rear thereof, in combination with the jaw-support having tongues adapted to ride in the grooves, and the screw extending through the abutment and into the support and provided with a set-nut, substantially as specified.

7. In a saw-jointer, the saw-embracing jaw-support having opposite lugs provided with set-screws, in combination with the L-shaped clamping-arms mounted transversely on the support and slotted longitudinally to receive said screws, substantially as specified.

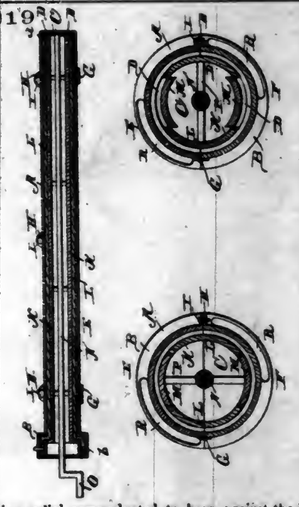
8. In a saw-jointer, the combination, with the jaw-support having a recessed outer end and provided with the opposite transverse openings, of the saw-clamping file-carrying jaws mounted in the recesses, bolts passing through the jaws and openings, the opposite saw-clamping set-screws mounted in the outer ends of the jaws, and similar set-screws mounted at their lower ends and bearing at opposite sides of the support, substantially as specified.

9. In a saw-jointer, the combination of the base I, slotted as at *h*, with the clamping-arm I, hinged thereto, and the set-screw K, projecting from the arm through the slot in the base, substantially as specified.

404,219. MOLD FOR FORMING DRAIN-PIPES. BERTEL E. OLSEN and CHARLES GABRIEL, Victoria, British Columbia, Canada. Filed Jan. 3, 1889. Serial No. 295,296. (No model.)

Claim.—1. In a pipe-mold, the combination of an outer shell composed of sections hinged together and having closed ends with a core composed of separable segmental sections, and a central revoluble

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shaft having radial arms adapted to bear against the inner sides of the core-sections, substantially as set forth.

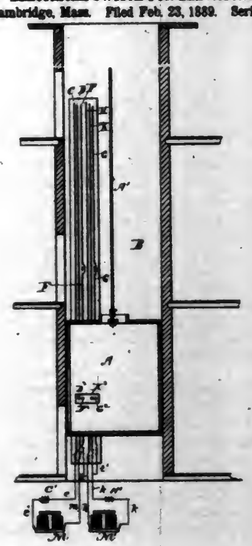
2. In a pipe-mold, the combination, with an outer shell having a closed end provided with an interior annular groove, of a core composed of separable segmental sections having one end fitted in said groove, and a central revoluble shaft having radial arms adapted to bear against the inner sides of the core-sections, substantially as set forth.

3. In a pipe-mold, the core composed of separable segmental sections, in combination with the outer shell, and the central shaft journaled in the ends of the latter and having radiating arms adapted to bear against the inner sides of the core-sections, substantially as set forth.

404,220. METHOD OF RENDERING NICKEL AND NICKEL ALLOYS NON-MAGNETIC. HENRICH OSTERMANN and CHARLES LACROIX, Geneva, Switzerland, assignors to the Usine Genevoise de Degrossissage d'Or, same place. Filed Dec. 20, 1888. Serial No. 294,219. (No specimens.)

Claim.—The method herein specified of rendering nickel and its alloys non-magnetizable and suitable for use in place of iron and steel in watches, consisting in melting chromium with such nickel in the proportion of less than thirty per cent. of chromium, substantially as set forth.

404,221. ELECTRICAL SWITCH FOR ELEVATORS. WILLIAM E. NICKERSON, Cambridge, Mass. Filed Feb. 23, 1889. Serial No. 300,533. (No model.)

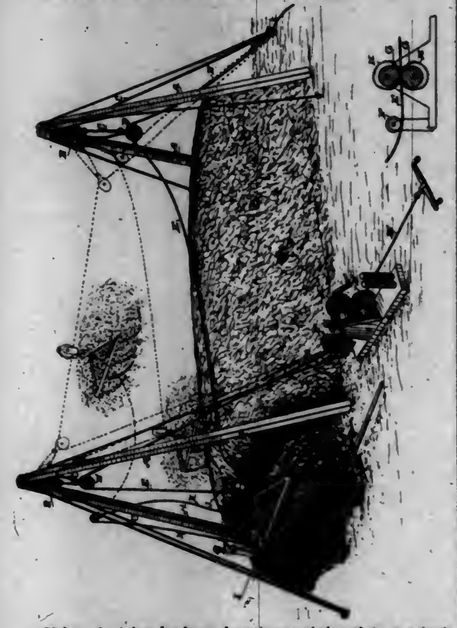


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Claim.—In an electrical switch device for elevators, the combination of the fixed continuous electrodes C and D and the fixed electrode F F, composed of sections, said sections all electrically connected together and having insulated spaces between them, said spaces corresponding to the various landings, with a switch mechanism within the elevator carriage, consisting, first, of an electric brush in permanent contact with the electrodes C; second, a brush adapted to be manually placed in contact with but normally out of contact with the electrode D, and, third, a brush adapted to be manually placed in contact but normally out of contact with the electrode F F, an electric circuit, and an electric device for actuating the controlling mechanism of the hoisting apparatus, substantially as and for the purpose set forth.

404,222. HAY-STACKER. THEODOR H. PALM, Sacramento, Cal. Filed Oct. 6, 1888. Serial No. 287,394. (No model.)



Claim.—1. A hay loader and stacker consisting of the standards and the adjustably-suspended pulleys D D', in combination with the rope E, passing over said pulleys, having one end secured at the opposite end of the stack from the load and the other passing between the holding eccentrics or cams, so that a team may be attached thereto, substantially as herein described.

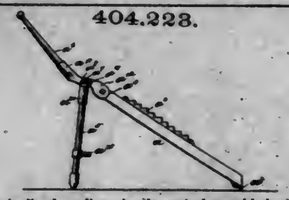
2. The standards having adjustably-suspended pulleys D D', the rope E, attached and connected as shown, in combination with the fork suspended so as to travel upon the rope E, and the unloading and tripping cord, substantially as herein described.

3. A hay unloader and stacker consisting of the standards or supports with the pulleys D D' suspended at different heights, as described, a rope passing over said pulleys, with one end fixed beyond the lowest pulley, D, and the opposite end passing beneath a guide-pulley between clamping or holding rollers and to a power mechanism or a team, by which the rope may be alternately slackened and tightened between the pulleys D D', together with a fork suspended from said inclined rope between the pulleys, so as to travel upon it by gravitation, and a rope, K, connected with the fork, substantially as and for the purpose herein described.

404,223. WAGON-JACK. WASHINGTON P. PICKERING, Boston, Mass. Filed Jan. 21, 1889. Serial No. 297,075. (No model.)

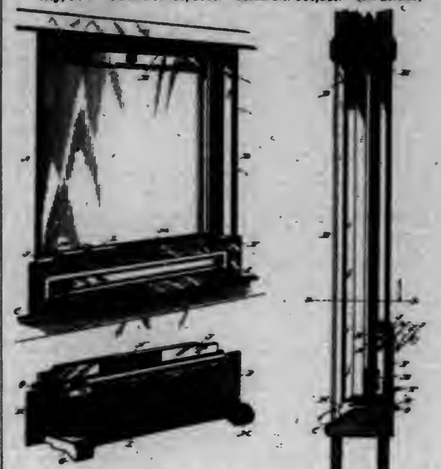
Claim.—A wagon-jack consisting of the long leg *a*, having at its upper end the metal piece a^{10}, provided with the ears a^{11}, the lever a^4, provided at its upper end with the metal part or socket-piece a^{17}, having the flattened part a^6, the bolt a^7, pivotally joining said lever

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and leg, the inclined or diverging legs a^4 a^5, provided with the metal part a^{16}, having the ears a^{11}, and the bolt a^7, joining said ears to said flattened part a^6 and serving as a fulcrum to said lever, substantially as set forth.

404,224. WINDOW-VENTILATOR. CHARLES E. RECTOR, Jersey City, N. J. Filed Feb. 16, 1889. Serial No. 300,140. (No model.)



Claim.—1. A window-ventilator consisting of the vertical side or panel F, extending, when the ventilator is in place, up and in front of the window-pane, so as to leave an air-passage between it and the pane, and the second perforated side at right angles thereto, consisting of the laterally-projecting feet G H, whereby the ventilator is held in place by the closing down of the window-sash, and the grating I, whereby the air is admitted and purified, substantially as hereinbefore set forth.

2. The combination, with a window-ventilator consisting of the vertical side or panel F, extending, when the ventilator is in place, up and in front of the window-pane, so as to leave an air-passage between it and the pane and the second side at right angles thereto, consisting of the laterally-projecting feet G H, adapted to fit over the window-sill and under the sash, of the cover J, having the aperture K, grating N, and valve L, substantially as and for the purpose set forth.

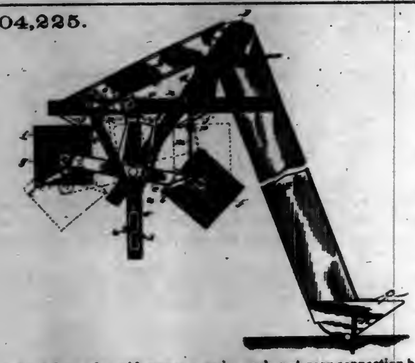
3. The combination, with a window-ventilator consisting of the vertical side or panel F, extending, when the ventilator is in place, up and in front of the window-pane, so as to leave an air-passage between it and the pane, and the second perforated side at right angles thereto, consisting of the laterally-projecting feet G H, adapted to fit over the window-sill and under the sash, and the grating I, of the hinged cover J, having the aperture K, grating N, and valve L, substantially as and for the purpose set forth.

4. The combination, with a window-ventilator consisting of the vertical side or panel F, extending, when the ventilator is in place, up and in front of the window-pane, so as to leave an air-passage between it and the pane, and the second side at right angles thereto, consisting of the laterally-projecting feet G H, adapted to fit over the window-sill and under the sash, of the hinged cover J, having the aperture K, grating N, valve L, groove Q, and projection P, substantially as and for the purpose hereinbefore set forth.

404,225. AUTOMATIC GRAIN-METER. EARL H. REYNOLDS, Propeistown, Ill. Filed May 14, 1888. Serial No. 273,873. (No model.)

Claim.—1. The measure, a pivotal support therefor, and a pivot-connection between said measure and support to one side of and below the center of said measure, in combination with a stop for maintaining the measure in an upright position when elevated, an adjustable

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counter-balance for said measure, and a rack-and-gear connection between said counter-balance and the support of the measure, substantially as described.

2. The measure, a pivotal support therefor, and a pivot-connection between said measure and support to one side of and below the center of said measure, in combination with an adjustable counter-balance for said measure, a rack-and-gear connection between said counter-balance and support, and a stop for maintaining it in position when elevated, substantially as described.

3. The chute, the measure, a pivotal support therefor, and a pivot-connection between said measure and support to one side of and below the center of said measure, in combination with a crank-arm on the pivot of said measure, a rod-and-stop connection between said arm and the chute-frame, a stop for maintaining said measure in an upright position when elevated, and a counter-balance for said measure, substantially as described.

4. The chute, the measure, a pivotal support therefor, and a pivot-connection between said measure and support to one side of and below the center of said measure, in combination with a crank-arm on the pivot of said measure, an eye on the chute-frame, a rod secured at one end to said crank-arm and having its free end working through said eye, stop-nuts on said rod on each side of said eye, a stop for maintaining said measure in an upright position when elevated, and a counter-balance for said measure, substantially as described.

5. The measure, a support therefor, and a pivotal bearing for said support, in combination with a crank-arm, a journal therefor, a rack-and-gear connection between one end of said arm and the support, and a counterbalance spring or weight secured to the other end of said crank-arm, substantially as described.

6. The measure, a support therefor, a pivotal bearing for said support, and a toothed rack secured to said support, in combination with a crank-arm, a journal therefor, a gear on the journaled end thereof engaging said rack, and a spring having one end secured to the other end of said crank-arm and fixed at its opposite end, substantially as described.

7. A chute provided with two discharge-openings, a rocking frame pivotally supported from said chute, two measures supported by said frame, and a rack secured to said frame, in combination with a crank-arm journaled at one end in the chute-frame, a gear thereon meshing with said rack, and a counterbalance spring or weight secured to said crank-arm, substantially as described.

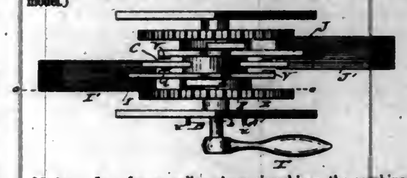
8. A chute provided with two discharge-openings, a rocking frame pivotally supported from said chute, two measures supported by said frame, and a rack secured to said frame, in combination with a crank-arm journaled at one end in the chute-frame, a gear thereon meshing with said rack, and a spring secured at one end to said crank-arm and at its opposite end to the chute-frame, substantially as described.

9. A chute-frame provided with two discharge-openings, a rocking frame journaled thereto, and two measures supported thereby under said openings, in combination with a counter-balance alternately opposed to said measures, a slide-gate arranged to alternately close said discharge-openings, provided with an elongated slot, and a rod or finger projecting from said rocking frame and engaging the slot in said slide-gate, substantially as described.

10. A chute-frame provided with two discharge-openings, a rocking frame journaled thereto, two measures pivotally supported in said rocking frame to opposite sides of and below their centers, and a counter-balance alternately opposed to said measures, in combination with crank-arms on the pivots of said measures, eyes on the chute-frame, rods secured at one end to said crank-arms and having their opposite ends working through said eyes, stop-nuts on said rods to one or both sides of said eyes, and a stop for maintaining said measures in an upright position when elevated, substantially as described.

11. A chute-frame provided with two discharge-openings, a rocking frame journaled thereto, a slide-gate arranged to alternately close said openings, actuated by said rocking frame, two measures pivotally supported in said rocking frame to opposite sides of and below their centers, and a counter-balance alternately opposed to said measures, in combination with crank-arms on the pivots of said measures, eyes on the chute-frame, rods secured at one end to said crank-arms and having their opposite ends working through said eyes, stop-nuts on said rods to one or both sides of said eyes, and a stop for maintaining said measures in an upright position when elevated, substantially as described.

404,226. FIRE AND POLICE SIGNALING APPARATUS. ARTHUR C. ROSSIUS, Brooklyn, N. Y. Filed Dec. 2, 1887. Serial No. 255,737. (No model.)



Claim.—In a fire or police alarm signal-box, the combination, with two signaling devices for sending definite signals and separate trains of gearing therefor, both loosely mounted on the same shaft, of a weighted lever for operating each train, and a disk or segment fixed to the shaft between two levers, the said disk or segment being provided with a pair of catches to engage with the respective levers, whereby, by moving the shaft in the proper direction, either weight may be brought into operative connection with its train, as set forth.

404,227. LATHING. LOUGLEY L. SAGENDORPH, Cincinnati, Ohio. Filed Dec. 10, 1888. Serial No. 293,170. (No model.)



Claim.—1. A sheet of metallic lathing having raised nailing-ribs and suitable retaining-burrs formed from said sheet between said ribs, substantially as set forth.

2. A sheet of metallic lathing having raised dovetailed nailing-ribs A and openings *a* therein, and suitable openings between said ribs having retaining-burrs B at the side thereof, substantially as set forth.

404,228. VEHICLE-BRAKE. FRED. SCHELP, Jr., and GEORGE H. SCHELP, St. Louis, Mo. Filed May 4, 1888. Serial No. 273,790. (No model.)



Claim.—1. In combination with the brake-lever B, the herein-described adjustable brake-rod, the same consisting of the parts C C', each having a brake-block on the outer end and flattened at the inner end and slotted at *c'* and perforated at *c²*, the said parts united by bolt and nut, all substantially as set forth.

2. The herein-described adjustable brake-rod, consisting of two parts, each flattened and slotted at the inner end and united by bolt and nut, and having a brake-block at the outer ends and combined with a brake-lever, substantially as set forth.

404,229. KNITTED SHIRT. ROBERT W. SCOTT, Philadelphia, Pa. Filed June 11, 1888. Serial No. 276,664. (No model.)

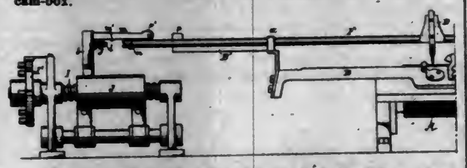
Claim.—1. A knitted shirt having a seamless tubular lower portion and an upper portion, comprising front and back webs connected at the top and having opposite tapered or shaped selvage edges, all substantially as specified.

2. A knitted shirt having a body with tubular seamless lower portion and an upper portion, comprising front and back webs connected at the top and having opposite selvage edges shaped as described, and sleeves consisting of seamless tubes widened at and near the shoulder portion and connected to the selvage edges of the webs forming the upper portion of the body of the shirt, all substantially as specified.



404,230. STRAIGHT-KNITTING MACHINE. ROBERT W. SCOTT and LOUIS H. D. WILLIAMS, Philadelphia, Pa. Filed Aug. 24, 1888. Serial No. 283,650. (No model.)

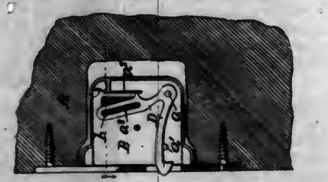
Brief.—The objects of the invention are to insure the proper application of the yarn to the end needles of the acting set and to insure the proper movement of the yarn-guide carrier in respect to the cam-box.



Claim.—1. The combination of the needle-bed and its needles, a cam-slide for actuating the needles, a frictionally-operated rock-bar carrying the thread-guide, a stop for limiting the movement of said bar, and a cam whereby, as it approaches the end of its movement, the guide-bar is rocked in its bearings, so as to slightly shift the guide, all substantially as specified.

2. The combination of the needle-bed and its needles, the cam-slide for actuating the needles, the frictionally-operated guide-bar, a stop for limiting the movement of the same, a catch for retaining the bar, and means for tripping said catch, so as to release the bar, all substantially as specified.

404,231. LATCH. JOHN R. SCOTT, Chicago, Ill. Filed Sept. 18, 1888. Serial No. 285,700. (No model.)



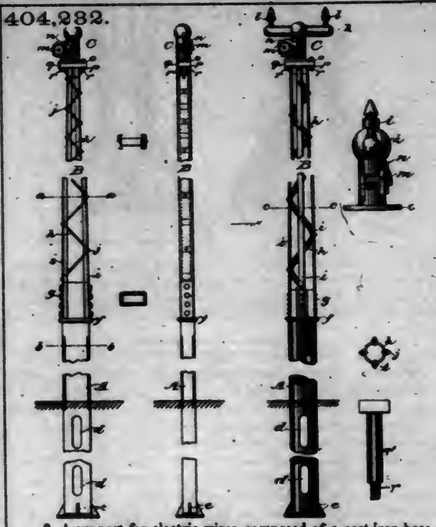
Claim.—1. In a door-latch, the combination, with the recessed escutcheon-plates provided with the stop-pin d^3, of the bottom plate or plates pivoted at one end to said escutcheon-plates, the opposite end being provided with the shoulder d^3, adapted to have contact with said stop-pin, and the finger bar or bars d^3, rigidly secured to the outer side of said bottom plates, whereby the movement of the same is confined to a fixed limit, substantially as and for the purpose set forth.

2. In a door-latch, the combination, with the recessed escutcheon-plates, of the movable bottom plates pivoted thereto, the pin or pins *b*, rigidly secured to the inner side of said bottom plates, the angular latch-bolt provided with the elongated slot a^3, the spring a^3, and the finger bar or bars d^3, secured to the outer side of said bottom plates, substantially as and for the purpose set forth.

404,232. POLE FOR ELECTRIC WIRES. UDOLPHO SHEAD, Louisville, Ky. Filed Jan. 23, 1889. Serial No. 297,302. (No model.)

Claim.—1. A support for electric wires, composed of a cast-iron base, an open wrought-iron upper part, and a completely-insulated top carrying insulators for such wires, and provided with means for tightening cross-wires, substantially as and for the purpose set forth.

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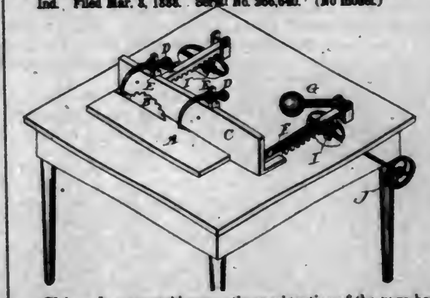


2. A support for electric wires, composed of a cast-iron base, an open wrought-iron upper part, and a completely-insulated top provided with means for tightening cross-wires, substantially as and for the purpose set forth.

3. In a support for electric wires, the combination of a cast-iron base and an upper part of wrought-iron composed of upright bars or rods connected by a bar running angularly or spirally between them, substantially as and for the purpose set forth.

4. In a support for electric wires, the combination of an upper wrought-iron part composed of upright bars or rods, connected by a bar running angularly or spirally between them, and a top part completely insulated, substantially as and for the purpose set forth.

404,233. SAW-TABLE GAGE. FREEMAN M. TREGUARDEN, Colfax, Ind. Filed Mar. 3, 1888. Serial No. 266,640. (No model.)



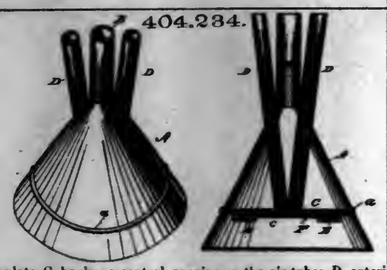
Claim.—In a saw-table gage, the combination of the gage bar or frame C, the rack-bars F F, attached thereto, the pinions I I, engaging the teeth upon the rack-bars and fast upon a shaft journaled in the main frame and having an operating-wheel, J, on one end thereof, the clamps G, for locking the gage-bar in any adjusted position, the brackets E E on the gage-bar C, and the curved dogs D D, pivoted upon the face of the brackets, so that their lower ends shall rest upon the material as it is fed to the saw, substantially as described.

404,234. CLOTHES-POUNDER. ELIAS W. TUCKER and ASBURY P. ORR, Arcadia, Ind. Filed Jan. 26, 1889. Serial No. 297,743. (No model.)

Claim.—The washing-pounder herein described, consisting of the conical body A, the cylindrical handle-tube B, the horizontally-dis-

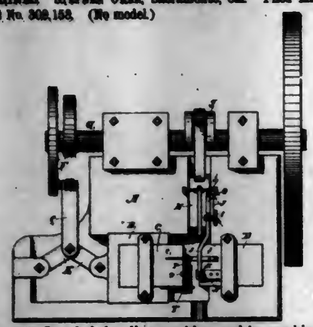


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posed plate C, having a central opening, c, the air-tubes D, entering said opening and extending to the outside of the cone, the clasps E, formed of strips of spring metal having depressed inner edges, and the flexible valve having its ends secured in the clasps, substantially as described.

404,235. SLOT-MAKING ATTACHMENT FOR BOLT-HEADING MACHINES. STEPHEN UREN, Sacramento, Cal. Filed Mar. 6, 1889. Serial No. 302,153. (No model.)



Claim.—1. In a bolt-heading machine, and in combination with the opposing dies for gripping and holding the bar, and the reciprocating plunger for upsetting its end to form the head of the bolt, a vertically-movable punch, L, adapted to make a slot or keyway in the end of the bolt, a pivoted lever engaging the upper end of the punch for operating it, a bracket secured to the reciprocating plunger, and having a cam-groove and connections between the rear end of the lever and the cam-groove, whereby said lever is operated, substantially as described.

2. In a bolt-heading machine, and in combination with the opposing dies for gripping and holding the bar, and the reciprocating plunger for upsetting its end to form the head of the bolt, a vertically-movable punch, L, adapted to make a slot or keyway in the end of the bolt, a pivoted lever engaging the upper end of the punch for operating it, said lever having at its other end a pin or stud, and a bracket on the reciprocating plunger provided with a cam-groove having a horizontal and an inclined portion, as described, and with which the pin of the lever engages, substantially as described.

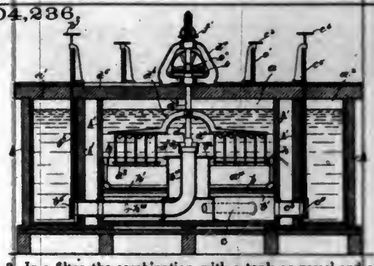
3. In a bolt-heading machine, and in combination with the opposing dies for gripping and holding the bar, and the reciprocating plunger, whereby the end of the bar is upset to form the head of the bolt, in combination with the punch-strip L, for making a slot or keyway in the end of the bolt, the grooved holding-bars K for said punch, and the clamps M, with set-screws for the holding-bars, the pivoted lever J, the forward end of which engages the holder of the punch, said lever having a pin, *j*, at its rear end, and the bracket on the reciprocating plunger, having a cam-groove, *c*, as described, engaging the pin of the lever, whereby said lever is operated, substantially as described.

404,236. FILTER. JOHN R. WARREN, Cumberland Mills, assignor to the Cumberland Manufacturing Company, Portland, Me. Filed Oct. 3, 1888. Serial No. 287,068. (No model.)

Claim.—1. In a filter, a tank or vessel and a filter-bed contained therein, combined with a well extended up through and below the filter-bed and closed at its bottom to receive sediment, and provided with a discharge-outlet through which the sediment in the said well is removed therefrom, and with an inlet-pipe extended into said well, substantially as and for the purpose set forth.

2. In a filter, a tank or vessel and a filter-bed contained therein, combined with a well extended through the filter-bed, and with a peripheral gutter, A, connected to said well, substantially as and for the purpose specified.

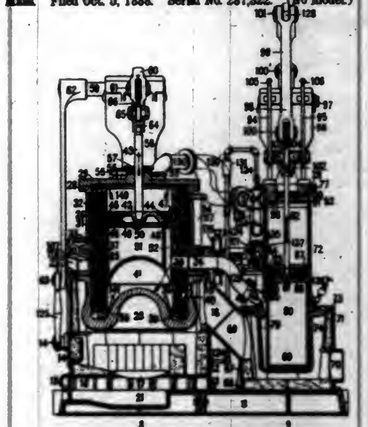
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3. In a filter, the combination, with a tank or vessel and a filter-bed therein, of a vertically-moving shaft, d^3, an agitator secured to said shaft and consisting of an arm having fingers, and a sweep or blade secured to said fingers, and automatic stop mechanism consisting of the threaded shaft f^3, sleeve f^{10}, having an arm, f^9, rod *g*, extended through said arm and provided with collars on opposite sides of said arm, and a clutch connected to said rod and operated through the said arm and collars to produce opposite travel of the shaft d^3, substantially as described.

4. In a filter, the combination, with a tank or vessel and a filter-bed therein, of a well, d^3, an inlet-pipe extended through said well, a vertically-movable shaft, an agitator secured thereto, and mechanism, substantially as described, to automatically stop or limit the movement of the said shaft in opposite directions, substantially as described.

404,237. AIR-ENGINE. JAMES A. WOODBURY, Winchester, and JOSHUA MERRILL, GEORGE PATTEN, and EDWARD F. WOODBURY, Boston, Mass. Filed Oct. 5, 1888. Serial No. 287,322. (No model.)



Claim.—1. An air-engine in which the temperature of the same mass of air is alternately raised and lowered, having a reverser provided with a hot and cold chamber, each of which is directly connected with a working-cylinder, substantially as and for the purpose set forth.

2. In an air-engine in which the temperature of the same mass of air is alternately raised and lowered, the reverser side, as 8, provided with the regenerator-space formed between the regenerator-cylinder, reverser-heater, and displacer-cylinder, within which is placed the regenerator, in combination with the tubular cooler having the cooling-tubes and provided with the cooler-cover, substantially as described.

3. In an air-engine in which the temperature of the same mass of air is alternately raised and lowered, having the reverser side, as 8, the combination, with the tubular cooler having the cooling-tubes and provided with the cooler-cover, of the regenerator composed of wire-cloth and placed within an annularly-constructed space at or near the inner surface of the outer shell of the heater, substantially as and for the purpose set forth.

4. In an air-engine, the combination, with reverser-heater provided with an annular regenerator-space at or near the inner surface of its outer shell, of the cooler provided with the annular tube and water-space, having the cooling-tubes and provided with the cooler-cover, substantially as described.

5. In an air-engine, the combination of the reverser-heater, a wire-cloth regenerator, the tubular cooler, and cooler-cover provided with the connecting-pipe by means of which the cold chamber is directly connected with a working-cylinder, substantially as and for the purpose set forth.

6. In an air-engine, the combination, with the reverser-heater, of the cooler provided with the annular tube and water-space and cooler-cover and having the cooling-tubes, and the cold chamber within which the displacer-piston reciprocates, substantially as described.

7. In an air-engine having a reverser side, as 8, the tubular cooler having the cooling-tubes and provided with the cooler-cover, within which cooler the displacer-piston reciprocates, provided with the displacer-cylinder portion cast on said cooler, said portion being adapted to receive within it the displacer-piston, substantially as described.

8. In an air-engine having a reverser side, as 8, the tubular cooler having the cooling-tubes and provided with the cooler-cover, within which cooler the displacer-piston reciprocates, provided with the displacer-cylinder portion, in combination with displacer-cylinder (adapted to receive within it the displacer-piston) fastened to said displacer-cylinder portion, substantially as and for the purpose set forth.

9. In an air-engine having a reverser side, as 8, the combination, with the cooler having the cooling-tubes and provided with the displacer-cylinder and cooler-cover, of the regenerator wound on said displacer-cylinder, composed of wire-cloth, substantially as described.

10. In an air-engine having a reverser side, as 8, the cooler provided with displacer-cylinder, which is provided with a series of regenerator-pins, as 37 and 38, in combination with the regenerator composed of wire-cloth and wound on said displacer-cylinder and between said series of regenerator-pins, substantially as described.

11. An air-engine in which the temperature of the same mass of air is alternately raised and lowered, having the reverser, each of which is provided with a hot and cold chamber when each of said chambers is directly connected with the working-cylinders, substantially as described.

12. In an air-engine in which the temperature of the same mass of air is alternately raised and lowered, the combination of two reversers and two double-acting working-cylinders with a regenerator composed of wire-cloth, said cylinders being directly connected by means of connecting-pipes, as shown, substantially as described.

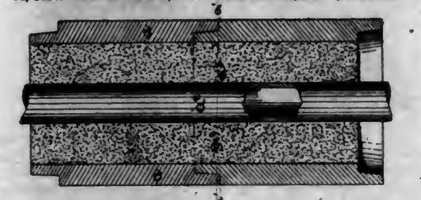
13. In an air-engine in which the temperature of the same mass of air is alternately raised and lowered, having a reverser provided with a hot and cold chamber, each of which is directly connected with a double-acting working-cylinder, in combination with a regenerator, substantially as described.

14. In an air-engine in which the temperature of the same mass of air is alternately raised and lowered, having a reverser provided with a heater, regenerator-cylinder, a wire-cloth regenerator, and a tubular cooler having the cooling-tubes and provided with the cooler-cover, so constructed and arranged as to provide for an annular port having straight or nearly straight sides and extending from the cooler to the bottom of the heater, so that the air may have a direct and a free passage to and from the hot and cold chambers, substantially as described.

404,238. MOLDING MATERIAL. CHARLES H. WILDER, Natick, Mass. Filed Mar. 1, 1889. Serial No. 301,997. (No specimens.)

Claim.—As an improved molding material, a composition of matter comprising coke, graphite, and a coked binder in a loose granular form, as set forth.

404,239. CORE FOR CASTING ORDNANCE. CHARLES H. WILDER, Natick, Mass., assignor to Frederick R. Atteaux, trustee. Filed Mar. 31, 1888. Renewed Mar. 5, 1889. Serial No. 302,016. (No model.)

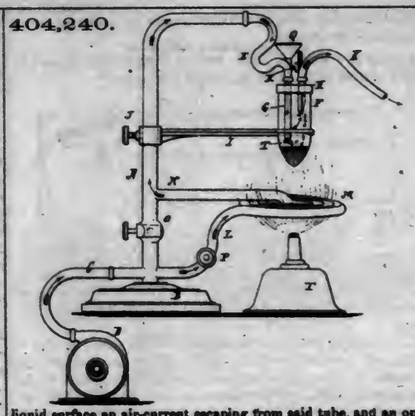


Claim.—The above-described core for use in casting ordnance and analogous articles, it consisting in an outer shell of coke, a central metallic tube, and a filling of sand between the shell and the tube, all substantially as described.

404,240. VAPORIZER. HERBERT F. WILLIAMS, Brooklyn, N. Y. Filed Jan. 16, 1889. Serial No. 296,537. (No model.)

Claim.—1. The combination of a closed vessel adapted to contain a liquid, a tube entering said vessel and terminating above and in proximity to the surface of said liquid, a means, such as a rotary wheel at the lower end of said tube, of scattering or diffusing over the said liquid surface an air-current escaping from said tube, and an opening in said vessel above said liquid surface, substantially as described.

404,240.

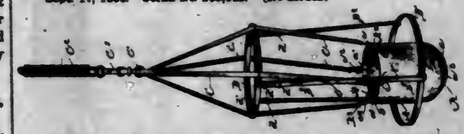


2. The combination of a closed vessel adapted to contain a liquid, two tubes entering said vessel and terminating above the liquid therein, a branch tube communicating at both ends with one of said tubes, a means, such as a lamp in proximity to said branch tube, arranged to heat said tube, and a valve in said branch tube, substantially as described.

3. The combination of a closed vessel adapted to contain a liquid, two tubes entering said vessel and terminating above the liquid therein, a branch tube communicating at both ends with one of said tubes, a means, such as a lamp in proximity to said branch tube, arranged to heat said tube, and a valve in said main tube between the points of connection of the branch tube thereto, substantially as described.

4. The combination of the closed vessel F, adapted to contain a liquid, the tube A, entering said vessel and terminating about and in proximity to the liquid surface, loop-tube L, communicating at both ends with the tube A, a source of heat, such as a lamp, T, and tube K, also entering said vessel F and terminating above the liquid, the vessel F being disposed above the lamp T, and the loop-tube L being interposed between said lamp and said vessel, substantially as described.

404,241. BABY-JUMPER. ADELE WILSON, Chicago, Ill. Filed Sept. 17, 1888. Serial No. 285,512. (No model.)



Claim.—In a baby-jumper, the combination, with a saddle-piece provided with a body-piece, a suspension-spring, C^3, suspension-straps $\bar{C}$, connecting the saddle-piece and spring, and a spreading-hoop, of a hoop, D', and adjusting-straps D^3, connecting said hoops, whereby said hoop D' may be adjusted relatively to the body-piece and serve as a rest for the hands or legs of the occupant, as and for the purpose specified.

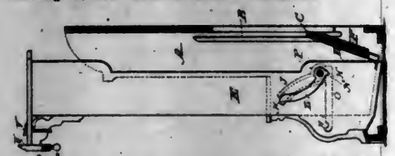
404,242. SAW. JOHN WIDGER, Harrison, Ark. Filed Aug. 22, 1888. Serial No. 283,434. (No model.)



Claim.—As a new article of manufacture, a saw-blade provided on its edge with the cutter-teeth arranged in pairs, the members of each pair having rounded points *b'* and convex edges *b* near said points and being beveled on opposite sides, and the drag-teeth arranged in pairs between and adjacent to the cutter-teeth, the members of each pair of drag-teeth curving from each other and having transverse chisel-edges, and beveled on the same side as the adjacent cutter-tooth, the

said bevel extending across the space between the cutter-tooth and the drag-tooth, as specified.

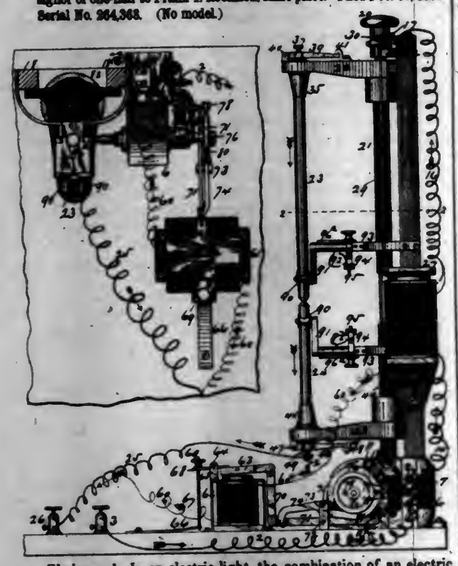
404,243. FOLDING BED. FRANCIS R. WOLFINGER, Chicago, Ill. Filed Aug. 22, 1888. Serial No. 283,496. (No model.)



Claim.—1. The combination of the stationary portion of the bed, grooved guides secured thereto, and the recessed tracks, with the folding part of the bed and the rockers secured thereto, and provided with friction-rollers at one end to catch in the grooved guides, substantially as shown.

2. In a folding bed, the combination of the stationary portion of the frame, and stationary tracks rigidly secured thereto and provided with recesses at each of their ends, with the movable portion of the bed, the rockers rigidly secured thereto and provided with pivots or bearing-points at their ends, the pivots or bearing-points being so arranged that the folding portion of the bed moves a given distance upon one pair of the pivots or bearing-points, then rocks to the other pair of pivots at the other ends of the rockers, and swings thereon the remainder of the distance, substantially as set forth.

404,244. ARC LAMP. LA MOTTE C. ATWOOD, St. Louis, Mo., assignor of one-half to Frank T. Robinson, same place. Filed Feb. 17, 1888. Serial No. 264,368. (No model.)



Claim.—1. In an electric light, the combination of an electric motor provided with a brake mechanism, carbons, screws supporting the carbons, shunt-coil and wire, armature operated by the shunt-coil, and connection consisting of bars and levers between the armature and the brake of the motor, substantially as and for the purpose set forth.

2. In an electric light, the combination of the carbons, upper and lower screws carrying the carbons, a motor for turning the screws, and a connection between the screws, consisting of a neck on one of the screws entering a hole in the other, and a key uniting the parts, substantially as and for the purpose set forth.

3. In an electric light, the combination of the carbons, upper and lower screws carrying the carbons, connection between the screws, consisting of a neck on one of the parts entering a hole in the other, a key passing through the parts, one of the parts being slotted to allow the upper screw to be lifted independently of the lower screw, and mechanism for lifting the upper screw, substantially as and for the purpose set forth.

4. In an electric light, the combination of the carbons, adjusting-screws, connection between the carbons and screws, consisting of arms having conical tubes receiving conical heads on the carbons, pins bearing on the ends of the carbons, and levers holding the pins on the carbons, substantially as and for the purpose set forth.

5. In an electric light, the combination of the carbons, adjusting-screws, arms connecting the carbons to the screws, connection between the arms and the carbons, consisting of conical tubes, pins having heads fitting on the ends of the carbons, pivoted levers, catches under which the free ends of the levers engage, and springs between the levers and heads on the pins, substantially as and for the purpose set forth.

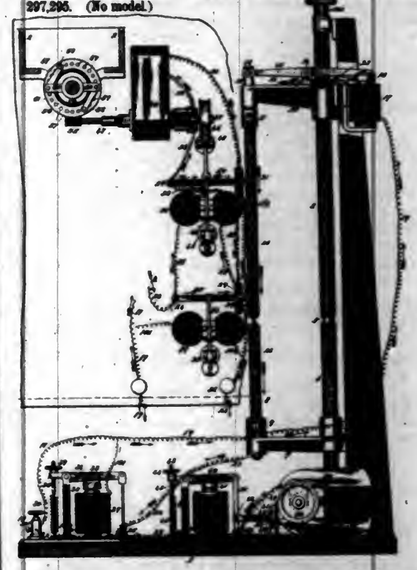
6. In an electric light, the combination of the carbons, guides consisting of rollers, arms on which the rollers are secured, journals on which the arms are secured, projections secured to the journals, springs bearing against the projections, adjusting-screws for regulating the tension of the springs, and heads through which the screws pass, substantially as and for the purpose set forth.

7. In an electric light, the combination of the carbons, adjusting-screws carrying the carbons, motor for turning the screws, and a brake mechanism consisting of straps 76 and 81, levers 71 and 74, connecting-bars 70, armature 63, shunt-coil 61, spring 66, and connection between the spring and the armature, substantially as and for the purpose set forth.

8. In an electric light, the combination of the carbons, arms 22 and 43, screws 21 and 44, motor having a wheel or drum connected to the screw 44 by worm and wheel, main wire 16, shunt-wire 60, shunt-coil 61, armature 63, and connection between the armature and the said brake wheel or drum, substantially as and for the purpose set forth.

9. In an electric light, the combination of the carbons, screws supporting the carbons, motor for turning the screws, brake for controlling the motor, and connection between the brake and the brush of the motor, substantially as and for the purpose set forth.

404,245. ELECTRIC-ARC LAMP. LA MOTTE C. ATWOOD, St. Louis, Mo., assignor of three-fourths to Frederick Strainka, Louis Strainka, and Edward R. Roth, all of same place. Filed Jan. 23, 1889. Serial No. 297,295. (No model.)



Claim.—1. In an electric-arc lamp, the combination of the feed-screws, arms connected to the screws and provided with clamps to hold the carbons, a stem on the clamp of the upper carbon passing through a perforation in the upper arm, a pivoted lever connected to the stem, an armature secured to the lever, and a magnet supported by the upper arm, substantially as and for the purpose set forth.

2. In an electric-arc lamp, the combination of the base, a vertical frame, cross heads movably secured to the frame, and upper and lower arms formed upon the cross-heads and provided with clamps for holding the carbons, a stem on the clamp of the upper carbon passing through a perforation in the upper arm, a lever having slot-and-pin connection with the stem, an armature on the lever, and a magnet carried by the upper arm, substantially as and for the purpose set forth.

3. In an electric-arc lamp, the combination of the carbon screws, a motor for automatically feeding the carbons, a magnet, an armature secured over the magnet by means of a pivoted lever, a connection between the lever and a brake of the motor, and plates operated by said armature, and wires adapted to automatically place the motor into and out of operation, substantially as and for the purpose set forth.

4. In an electric-arc lamp, the combination, with the carbons, of magnets 26 and 39, armatures 34 and 41, and contact-plates operated by said armature and wires, all arranged and operating to automatically regulate the distance between said carbons, substantially as and for the purpose set forth.

5. In an electric-arc lamp, the combination of the carbon-feed screws, a motor provided with a brake-wheel, a strap passing around the wheel and connected by one end to a bell-crank lever, a magnet, a pivoted lever having an armature located over the magnet, and a connection between the said levers, substantially as and for the purpose set forth.

6. In an electric-arc lamp, the combination of the screws for automatically feeding the carbons, a motor, a worm on the shaft of the motor, a wheel on one of the screws and engaging the worm, links secured to the screw, and pins on the links fitting in holes in the wheel, substantially as and for the purpose set forth.

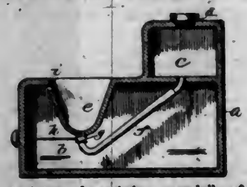
7. In an electric-arc lamp, the combination of the screws for feeding the carbon, a motor, a worm on the shaft of a motor, a wheel, 56, secured to the lower screw and engaging the worm, arm 60, secured to the screw, links 50, secured to the arms, and pins 58 on the links and fitting in holes 57 made in the wheel, said wheel having a groove, 61, substantially as and for the purpose set forth.

404,246. INK-WELL. STEPHEN G. BALDWIN, Marion, Ind. Filed Oct. 18, 1888. Serial No. 288,434. (No model.)



Claim.—An inkstand consisting, essentially, of a closed reservoir having a central threaded opening through its top wall, a pocket in the bottom of the reservoir beneath said opening, a hollow plug or mouth-piece located in said opening in vertical adjustment, having its upper end open and surrounded by a milled rim and its lower end shaped to fit in said pocket and provided with an ink-inlet, the portion of the plug between the rim and said end being of uniform diameter and externally threaded throughout to screw vertically in said opening, substantially as described.

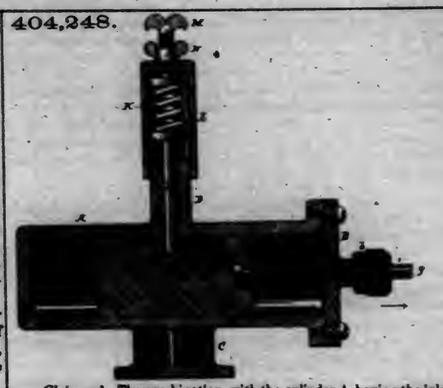
404,247. INK-WELL. STEPHEN G. BALDWIN, Marion, Ind. Filed Oct. 18, 1888. Serial No. 288,435. (No model.)



Claim.—1. An inkstand consisting, essentially, of a hollow body, a normally-closed supply-reservoir upon the rear portion of its top wall, an ink-well depending into the body from the front portion of its top wall, a tube extending from the bottom of the supply-reservoir to the bottom of the well, and a valve to close or open the tube and provided with a stem extending to the exterior of the body, substantially as described.

2. An inkstand consisting, essentially, of a hollow body, an ink-supply reservoir upon the same, an ink-well depending into the interior of the same below the plane of the reservoir and provided with an ink-overflow aperture near its top opening into the body, a tube located in the body and extending from the bottom of the reservoir into the bottom of the well, a cut-off valve in the tube, and a valve-stem to turn the same, extending to the front exterior of the body and provided with a head, substantially as described.

404,248. DIRECT-ACTING ENGINE. JOHN G. BARTLETT, Akron, Ohio, assignor of one-half to Stephen H. Pitkin, same place. Filed Nov. 14, 1888. Serial No. 290,764. (No model.)



Claim.—1. The combination, with the cylinder A, having the inlet E and outlet F and tube D, of the piston G, provided with the ports *c d f f'*, channel H, ledges I I', and inclined planes *i i'*, together with the rod D and spring K, all constructed and arranged substantially as shown, and for the purpose specified.

2. The combination, with a piston having inlet and outlet ports arranged by a partial rotation of said piston to alternately register with inlet and outlet cylinder openings and having a channel provided on opposite sides with ledges inclined in opposite directions, and inclined planes uniting alternate ends of said ledges, of a rod actuated by a spring, which successively travels along said ledges and planes for the purpose of partially rotating said piston, substantially as shown, and for the purpose specified.

404,249. PEN. HENRY BRIGHLING, Wilkeson, Wash. Filed Nov. 6, 1888. Serial No. 290,134. (No model.)



Claim.—1. A writing-pen having one of its nibs provided with a fountain-plate, the front of the pen being slightly concave in its upper face, whereby it is rendered reversible, substantially as and for the purpose specified.

2. A writing-pen having one of its nibs provided with a fountain-plate, said nibs being curved up opposite to the curve of the stem, thereby making the pen slightly concave on its upper face, whereby the said pen is rendered reversible and the flow of the ink regulated, substantially as and for the purpose described.

404,250. DESK AND CHAIR FOR SCHOOLS. GABRIEL A. ROBBINS, Boston, Mass. Filed Sept. 15, 1888. Serial No. 285,533. (No model.)



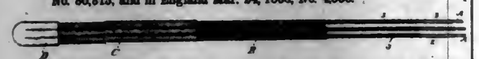
Claim.—1. The combination of the tubular standard having an enlarged upper slotted portion, the threaded shank having a longitudinal groove, binding-screws inserted through the side of the tubular standard and projecting into the groove in the threaded shank, the miter-wheel having upper and lower flat bearing-surfaces engaging, respectively, the upper and lower parts of the cut-away portion of the standard, and means, substantially as described, for operating said miter-wheel.

2. The combination of the tubular standard, constructed substantially as described, the longitudinally-grooved shank supporting a desk or chair body, one or more binding-screws inserted laterally through the standard and projecting into the groove in the threaded shank, the miter-wheel working upon said shank and projecting through an aperture in the tubular standard, and the removable gear-wheel detachably connected to the standard and adapted, when in its operative position, to engage and operate the miter-wheel, all constructed and combined to operate substantially in the manner and for the purpose shown and set forth.

404,251. PROCESS OF DISSOLVING GUM-COPAL, &c. GABRIEL A. BORRICK, Boston, Mass. Filed Sept. 15, 1888. Serial No. 285,524. (No specimens.)

Claim.—The herein-described method of dissolving resinous substances—such as amber, shellac, gum-copal, or their equivalents—in the products of naphtha—such as benzine or kerosene—which method consists in dissolving a suitable quantity of rosin in naphtha at a temperature between 150° and 250° Fahrenheit, and, while the mixture is boiling, adding thereto the amber, shellac, or gum-copal in suitable quantities, substantially as specified.

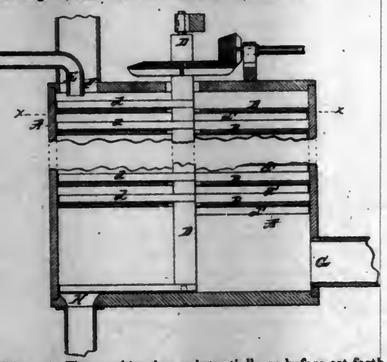
404,252. COVERED CORSET-STEEL. GUSTAVE BOCHARD, Paris, France. Filed Jan. 23, 1889. Serial No. 297,279. (No model.) Patented in France Apr. 14, 1887, No. 182,864; in Belgium Mar. 15, 1888, No. 80,813, and in England Mar. 24, 1888, No. 4,536.



Claim.—1. A stay, rib, or bone composed of a number of steel wires provided each with a close wrapping of thread, arranged side by side and flexibly connected as a flat web, substantially as described.

2. A stay, rib, or bone composed of paper-covered steel wires, each provided with a close wrapping of thread, arranged side by side and flexibly connected as a flat web, substantially as described.

404,253. APPARATUS FOR THE MANUFACTURE OF WHITE LEAD. ARTHUR C. BRADLEY and STEPHEN R. BRADLEY, Brooklyn, N. Y. Filed Aug. 19, 1887. Serial No. 247,353. (No model.)



Claim.—1. The combination, substantially as before set forth, of the tight converting-chamber, its solid shelves, each of said shelves having an opening in a different vertical plane from the opening in the next adjacent shelf, and the scraping-arms arranged to sweep one side of said shelves.

2. The combination, substantially as before set forth, of the tight converting-chamber, its solid shelves, each of said shelves provided with an opening in a different vertical plane from the opening or openings of its next adjacent shelf or shelves, the shaft, and the scraping-arms arranged to sweep over the under sides of said shelves.

3. The combination, substantially as before set forth, of the tight converting-chamber, its solid shelves, each of said shelves provided with an opening in a different vertical plane from the opening or openings of its next adjacent shelf or shelves, the shaft, the scraping-arms, the entry-opening for liquid at the top of said chamber, and the exit-opening for liquid at the lower end of said chamber.

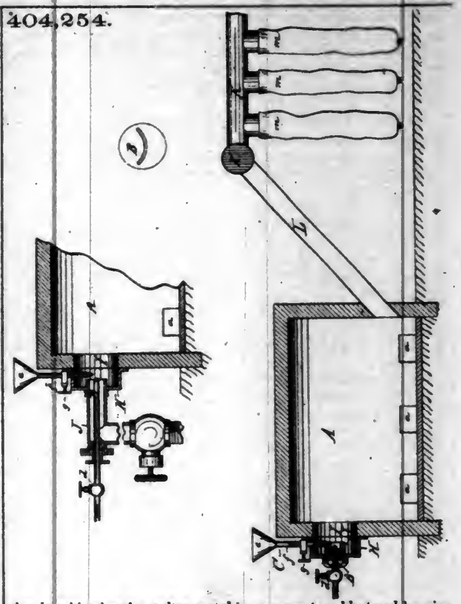
404,254. PROCESS OF MANUFACTURING OXIDES. STEPHEN R. BRADLEY and ARTHUR C. BRADLEY, Brooklyn, N. Y. Filed Feb. 18, 1888. Serial No. 264,516. (No specimens.)

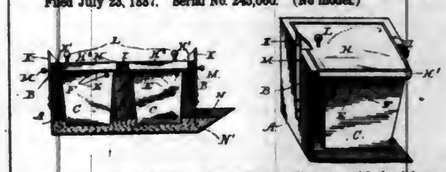
Claim.—1. The process, substantially as before set forth, of manufacturing metallic oxides by subjecting molten metal in a stream to a blast under confinement in the presence of burning inflammable gas.

2. The process, substantially as before set forth, of simultaneously comminuting molten metal, distributing it, and oxidizing it, which consists in subjecting the molten metal in a stream to a blast and burning inflammable gas in a confined space, whereby waste is prevented.

3. The process, substantially as before set forth, of simultaneously comminuting molten metal, distributing it, heating it to a burning-point, and saving the oxide, which consists in subjecting the molten metal in a stream and under confinement to a blast and burning inflammable gas and collecting the oxide produced.

404,255. STEAM-COOKER. ISAAC S. BRANDENBURG, Peoria, Ill. Filed July 23, 1887. Serial No. 245,060. (No model.)





Claim.—1. The combination of the shell A, provided with a top frame, B, having openings for the receptacles, and horizontal flanges D around the openings, leaving spaces above the flanges, the receptacles C, having horizontal flanges E at the top thereof resting on the frame-flanges, and the covers H, fitting within the spaces, having vertical flanges H^2 outside and surrounding the tops of the receptacles and fitting against the frame, substantially as described.

2. The combination of the shell A, provided with a top frame, B, having openings for the receptacles, horizontal flanges D around the openings, leaving spaces above the flanges, and curved sockets at the sides of the spaces, the receptacles C, having horizontal flanges E at the top thereof resting on the frame-flanges, and the covers H, fitting within the spaces, having vertical flanges H^2 surrounding the tops of the receptacles, and provided with upwardly-curved pins I, working in the sockets, substantially as described.

3. The combination of the shell A, provided with a top frame, B, having openings for the receptacles, and horizontal flanges D around the openings, leaving spaces above the flanges, the vertical spring-catches K, secured to the shell, having beveled heads, the receptacles C, having horizontal flanges E at the top thereof resting on the frame-flanges, and the covers H, hinged to the frame and fitting within the spaces, having vertical flanges H^2 surrounding the tops of the receptacles and resting on the flanges, the edges of the cover-flanges being adapted to rest on the beveled heads or to drop thereunder, substantially as described.

4. A steam-cooker consisting of the shell A, provided with a top frame, B, having openings for the receptacles, horizontal flanges D around the openings, leaving spaces above the flanges and curved sockets at the sides of the spaces, the vertical spring-catches K, secured to the shell, having beveled heads, the receptacles C, having horizontal flanges E at the top thereof resting on the frame-flanges, and the covers H, fitting within the spaces, having vertical flanges H^2 surrounding the tops of the receptacles and fitting against the frame, substantially as described, and the pins I, working in the sockets, substantially as described.

404,256. STALK-CUTTER. WILLIAM M. BERRIMAN, Bennettsville, S. C. Filed Sept. 28, 1888. Serial No. 286,673. (No model.)



Claim.—In a stalk-chopper, the combination, with the rectangular frame provided with the transverse shaft journaled therein and having the armed wheels C C on its ends, of the inclined blades connecting corresponding arms of said wheels, the conveyer-wheels journaled on adjustable arms F, and the diverging arms secured to the front of the rectangular frame and provided with outwardly and downwardly curved arms I, and the cutter provided with the rectangular blade K, substantially as specified.

404,257. AUTOMATIC GRAIN-WEIGHING MACHINE. LAUCHLIN M. BUCHANAN, Elmira, Ill. Filed Nov. 9, 1888. Serial No. 290,382. (No model.)



Claim.—1. The combination, with the frame A, suitably supported, and the stop M, standing upward from said frame, of the beam B, having the bifurcated arms D, pivoted at E upon the side arms of the frame, the shaft F, pivoted in the ends of the arms D and provided with the upstanding arm L, having the roller N at its end, the hopper suspended on the shaft F between the arms D, the valve K, secured to the shaft F within the hopper, and the pea C, sliding on the beam B, substantially as specified.

2. The combination, with the frame A, having the stop-slot A' and the stop M on said frame, of the beam B, having the arms D, the pea C, the shaft F, having the arm L, the hopper suspended on the shaft, and the valve K, mounted on the shaft within the hollow, substantially as specified.

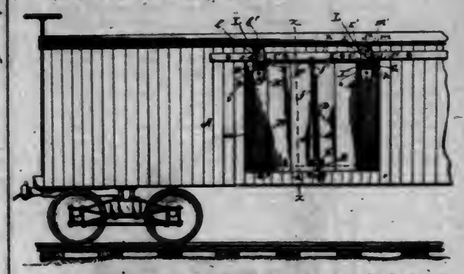
404,258. BROOM. FRANK J. CASE, Arrington, Kans., assignor of two-thirds to F. L. & H. J. Case, same place. Filed July 10, 1888. Serial No. 279,511. (No model.)



Claim.—1. In a broom, the handle, the two similar metal plates, C, connected to the handle by the projecting stripe c, and having the side flanges, E, and the curved bars G on the inner side of the plates, and the bolts passed through the plates and also through the bars, as set forth.

2. In a broom, the combination of the handle, the bundle of broom-straw unconnected to the handle, the metal plates C, provided with the projecting stripe c, the flanges E, and the transverse grooves F, and the curved bars G, lying in said grooves and connected through the straw to the metal plates and to each other, substantially as specified.

404,259. CAR-DOOR. JAMES CHARLTON, Houston, Tex. Filed Aug. 10, 1888. Serial No. 282,478. (No model.)



Claim.—1. The combination, with the car having the door-opening with its upper and lower edges parallel and inclined upward and inward, and the bolt-keeper secured to the sill of the car, of the door having correspondingly-inclined upper and lower edges, the guide-staple *b'* and fulcrum-bracket C, secured to the door at proper points, the operating-lever pivoted to said bracket, the link-rods *d* and bolt E, the link-rod *f*, pivoted at its lower end to the operating-lever and to the link-rods *d* at the same point, the shaft F, having the arm *f'*, pivoted to the rod *f*, and the hanging hinge-joint G, of which the shaft F forms the pintles, substantially as specified.

2. The combination, with the car-door B and the way-beam K, having the flat upper edge, *k*, of the operating-lever D, pivoted to the fulcrum-bracket C, secured to the door, the link-rod *f*, the shaft F, having the arm *f'*, the hanging hinge-joints G, composed of the plates H, having their upper edges sleeved at *h*, the plates I, having their lower edges sleeved and connected to the plates H by pintle-pins, and the plates J, sleeved at their lower ends and making joints with the plates I, of which joints the shaft F forms the pintle, and the anti-friction rollers M, the journals of which have bearings proper in the smaller circular upper portions, *l'*, of the openings L in the bent-over upper parts of the plates J, which openings have the larger circular lower parts, *l*, of greater diameters than those of said rollers, substantially as specified.

404,260. POCKET MEMORANDUM-BOOK. ALBERT F. COMART, Boston, Mass. Filed Feb. 25, 1889. Serial No. 301,012. (No model.)



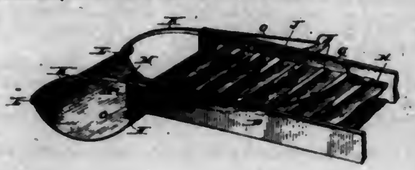
Claim.—1. As an improvement in memorandum-books, the covers and leaves formed with the recesses across the edges thereof and the intermediate slot, *c*, extending through the book, substantially as specified.

2. In combination with the book formed with the edge recesses and intermediate slot formed therein, as specified, the elastic binder *f*, arranged in said slot and recesses, as specified.

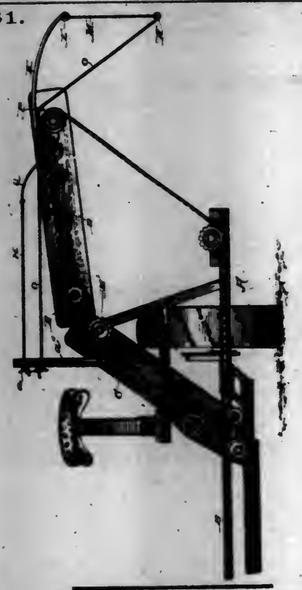
404,261. HARVESTER. GEORGE COX, La Delle, Dak. Filed Sept. 27, 1888. Serial No. 286,617. (No model.)

Claim.—1. The combination, with the elevator D, standing nearly horizontally, the ball G, and the rope H, that holds the said elevator in said position on the lower elevator, C, of the arms K, pivoted on the outer portion of the elevator D, the staples P, to support said arms in proper position on the elevator, the flap M, of canvas or other flexible material, the transverse rods L and N, and means, substantially as described, for drawing the free end of said flap under the adjacent end of the elevator D, substantially as specified.

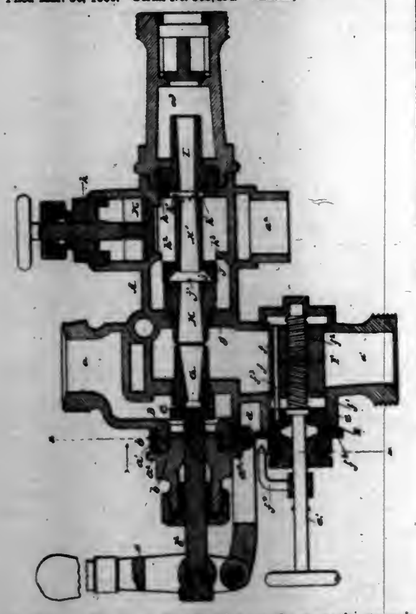
2. In combination with the discharge-elevator D, the arms K K, pivoted thereon at their inner ends, the rod L, connecting said arms at their outer ends, the rod N, the flap M, extending between rods L and N, and the ropes O, attached, respectively, to the ends of rod N and brought within convenient reach of the driver of the machine, substantially as shown, and for the purpose described.



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404,262. STEAM-INJECTOR. JOHN DESMOND, Brooklyn, N. Y., assignor to the Hayden & Derby Manufacturing Company, same place. Filed Mar. 30, 1889. Serial No. 305,404. (Model.)



Claim.—1. The herein-described improved automatic steam-injector having a continuous communication between the mouth of the combining-tube and the overflow-chamber, said communication being less during the working of the injector than in the starting thereof substantially as set forth.

2. A steam-injector having an overflow-chamber, and the lifting and combining tubes opening thereinto, and having a continuous passage-way or communication therewith, said communication being less during the working of the injector than in the starting thereof, as set forth.

3. As an improvement in steam-injectors having the lifting and combining tubes, the grooved valve sliding on said combining-tube, whereby a continuous passage-way or communication is had between the mouth of said combining-tube and the overflow-chamber, as stated.

4. As an improvement in steam-injectors having an overflow-chamber and the lifting and combining tubes opening thereinto, the sliding valve located at said opening of the tubes, and having holes or ports forming a continuous passage-way, substantially as set forth.

5. As an improvement in steam-injectors having the overflow-chamber, the combining-tube having holes or ports at or near its rear end, the sliding valve located on said combining-tube for closing said holes or ports in the starting of the injector, and having grooves or recesses for forming a continuous passage-way between the mouth of said combining-tube and the overflow-chamber, substantially as set forth.

6. The herein-described improvement in steam-injectors, comprising the lifting and combining tubes, and the valve sliding on said combining-tube and having its normal position against said lifting-tube, as set forth.

7. As an improvement in steam-injectors having a water-inlet arm, the water-inlet valve located in said arm and having two heads or disks fitted on dissimilar screws, and the spindle carrying a finger or pointer, substantially as set forth, said heads or disks being movable in opposite directions, as stated.

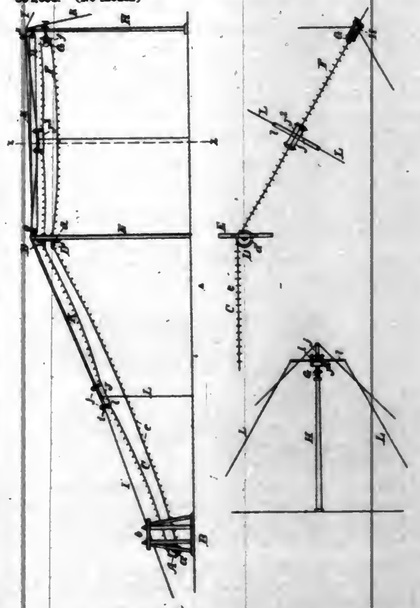
8. As an improvement in steam-injectors, the water-inlet valve having the two heads or disks, and the spindle provided with right and left hand screw-threads upon which said heads or disks are disposed, substantially as set forth.

9. As an improvement in steam-injectors, the water-inlet valve having the two heads or disks, the spindle provided with opposite screw-threads, the plug through which said spindle is passed, and the guide-rod projecting from said plug through said heads or disks, substantially as set forth.

10. In a steam-injector, the combination, with the water-inlet arm, of the valve having oppositely-movable heads or disks, the plug, the graduated scale, and the spindle having a finger or pointer, substantially as set forth.

11. In a steam-injector, the combination, with the water-inlet arm having the opposite circular extensions, of the plug having a flange provided with a scale, the heads or disks, the spindle having right and left hand screw-threads, the guide-rod projecting from said plug, and the finger or pointer, substantially as set forth.

404,263. CONVEYER FOR PILING COAL. JAMES M. DODGE, Philadelphia, Pa., assignor to the Dodge Coal Storage Company, Naugatuck, Conn. Filed Dec. 17, 1887. Renewed Mar. 30, 1889. Serial No. 304,952. (No model.)

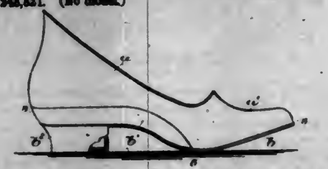


Claim.—1. In a coal-piling chain conveyer composed wholly of an endless chain provided with flights which project laterally in one direction, the combination, with said chain and its said flights, of a device which operates, as specified, to prevent the flighted chain from twisting at its upper run, and means for properly supporting said device independently of the chain, the whole arranged and operating together in substantially the manner hereinbefore set forth.

2. In a coal-piling chain conveyer composed wholly of an endless chain provided with flights which project laterally in one direction, the combination, with said chain and flights, of a device operating, as specified, to prevent any undue twisting of the upper run of the chain, and provided with means for partially supporting the gravity of said upper run, all substantially as hereinbefore set forth.

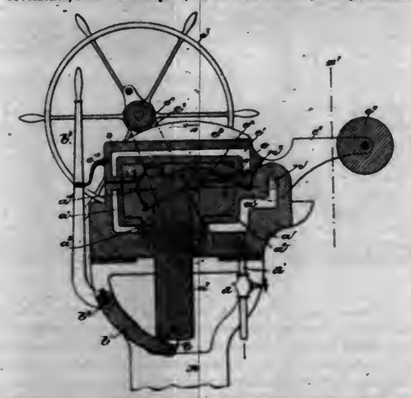
3. A device for both supporting and preventing the twisting of the chain and its flights, composed of a tube or tubular frame-work and provided with a traveling endless carrier, M, substantially as and for the purpose set forth.

404,264. RUBBER SHOE. HENRY J. DOGGETT, Malden, Mass., assignor to Joseph Banigan, Providence, R. I. Filed Sept. 5, 1887. Serial No. 248,821. (No model.)



Claim.—As an improved article of manufacture, a rubber shoe or foot-covering comprising, essentially, two sections or portions—viz., an upper portion, as *a*, and a portion molded or shaped to constitute not only the sole and heel portion, but also to leave a flange-like portion extended upwardly from the sole from the ball of the shoe backwardly along the shank and heel—the two portions or parts being permanently united together in the widest part of the shoe between the toe and heel thereof, substantially as shown and described.

404,265. MECHANISM FOR THE MANUFACTURE OF RUBBER SHOES. HENRY J. DOGGETT, Malden, Mass., assignor to Joseph Banigan, Providence, R. I. Filed Sept. 5, 1887. Serial No. 248,822. (No model.)



Claim.—1. In an apparatus for forming boots and shoes from rubber or equivalent plastic material, the mold a^4 and surrounding steam-chest and the mold c^3 and its surrounding steam-chest, combined with the last and its spindle extended through and adapted to reciprocate in one of the molds, one of the said molds being made movable with relation to the other, to operate substantially as described.

2. The mold a^4, its surrounding steam-chest, the mold c^3, shaped to aid in the formation of the sole and heel and also a part of the upper of the shoe about the heel, and the steam-chest surrounding the said mold c^3 and the metallic last, combined with steam-connecting devices, substantially as described, between the said steam-chest a^4 and c^3, whereby steam may be admitted into both when the said molds are opened and closed, to operate substantially as described.

3. In a machine for the manufacture of shoes from india-rubber compound, a metallic last, its co-operating two-part molds a^4 c^3, divided longitudinally at a point between the line of the bottom of the last and the top of the last for a portion of the length of the said molds where the last is of greatest thickness in longitudinal cross-section, and the steam-chests surrounding the said molds, to operate substantially as and for the purposes set forth.

4. The mold a^4, provided with a shoulder, combined with the last or inside former provided with a lip to co-operate with the said shoulder to form the mouth of the shoe, substantially as described.

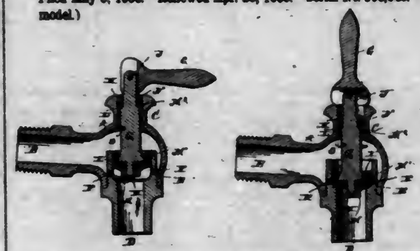
5. The mold a^4, having a shoulder and groove at or near the said shoulder, combined with the last or inside former having a lip, whereby the mouth of the shoe is provided with a bead and is trimmed smoothly, substantially as described.

6. In an apparatus for the manufacture of boots and shoes from rubber or other plastic material, a mold, a^4, to receive the material to form the chief part of the top of the shoe, and a metallic last having a shank, as described, to enter and slide vertically within the said mold, combined with a mold, c^3, to force the rubber or equivalent material upon the sole-forming portion of the last held within the mold a^4, the junction of the two molds being substantially in line of the widest part of the shoe throughout from toe to heel, substantially as described.

7. In an apparatus for forming boots and shoes from rubber or equivalent plastic material, a mold, a^4, its surrounding steam-chest, and a mold, c^3, and a steam-chest having cam-surfaces and surrounding the said mold, combined with a pressing-frame to travel over the said cam-surfaces and force the two molds in contact, substantially as described.

8. The mold a^4, its surrounding steam-chest, the pivoted mold c^3, and its surrounding steam-chest, combined with a counterbalancing-weight for the said mold c^3 and steam-chest *c*, substantially as described.

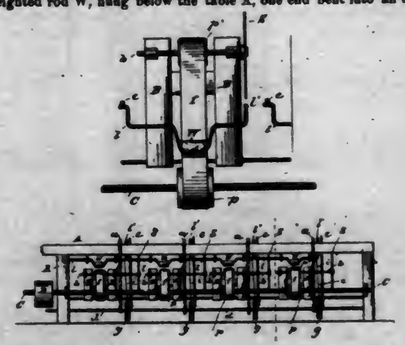
404,266. WATER-BIB. JOHN DOWLING, Wilkes-Barré, Pa., assignor of one-half to the Wilkes-Barré Self Closing Hydrant Company, (Limited.) Filed May 5, 1888. Renewed Apr. 26, 1889. Serial No. 308,040. (No model.)



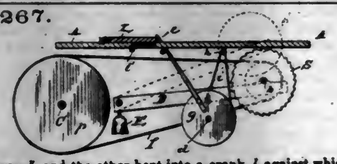
Claim.—The combination, in a water-bib, of a faucet having an inlet-pipe, a top branch, and a removable nozzle screwed into the globe of the faucet, the inclosed portion of the nozzle extending to about midway of the globe, whereby the water within the globe has free access to the top of the lower valve at all times, and is provided with a series of small apertures, through which the water passes to the exit of the nozzle, a reciprocating stem, two cup-shaped valves upon the stem, one of which is smaller than the other and is located within the top branch, and the larger valve is located within the inclosed portion of the nozzle, whereby the apertures in the end of the nozzle may be closed or opened by the movement of the stem, and a handle for moving the stem, substantially as set forth.

404,267. LUMBER-TRIMMER. WILLIAM DUNBAR, Larrabee, Pa., assignor of one-half to Judson J. Newman, Buffalo, N. Y. Filed Jan. 19, 1889. Serial No. 296,813. (No model.)

Claim.—In a lumber-trimmer, in combination with a table, A, swinging saw-frame B, and saws S, operated by shafts C *b*, pulleys *p p'*, belts *f*, levers *e*, pulleys *g*, shaft *d*, and cord *i*, the bent and weighted rod W, hung below the table A, one end bent into an up-

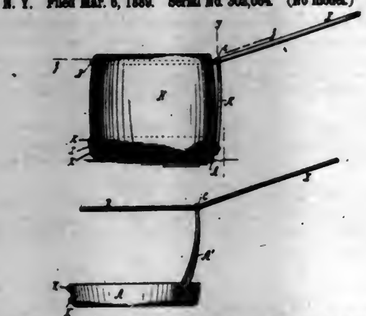


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right lever, *l'*, and the other bent into a crank, *l*, against which latter rests the arbor-lever *c*, which prevents the action of its saw by dropping it backward below the table when the opposite end, *l'*, is pushed forward, all as fully hereinbefore explained.

404,268. HOLDER FOR VESSELS. JOHN P. BOWEN, New York, N. Y. Filed Mar. 6, 1889. Serial No. 302,064. (No model.)



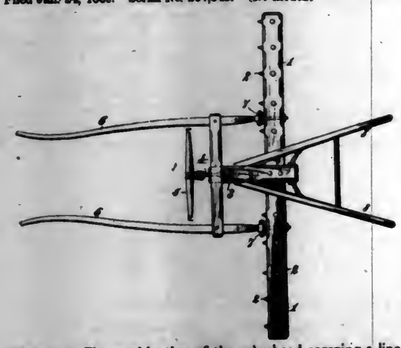
Claim.—1. A vessel-holder consisting of the base A, for supporting the bottom of the vessel, and having the arm or bracket A', the expansible and contractible spring-clamp B, and the handle E, rigid with the clamp, said clamp and handle connected with the arm or bracket by the hinge or joint *c*, which permits the clamp and handle to be moved to and fro, substantially as described.

2. A vessel-holder consisting of the base A, for supporting the bottom of the vessel, the handle E, connected with the base, and the expansible spring-clamp fixed to the handle for encircling the top part of the vessel, substantially as described.

3. A vessel-holder consisting of the base A, for supporting the bottom of the vessel, the handle E, connected with the base, the ring-clamp B, connected with the handle, and the lug I on the vessel, for securing the latter to the base, substantially as described.

4. A vessel-holder consisting of the base A, having a hole the edge of which is provided with a bead, K, the handle E, connected with the base, the ring-clamp B, connected to the handle, and the lug I on the vessel engaging the hole in the base, substantially as described.

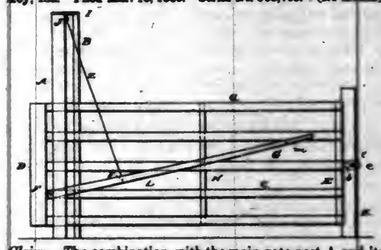
404,269. HORSE-RAKE. CHRISTOPHER E. G. FELL, Savannah, Ga. Filed Jan. 24, 1888. Serial No. 297,345. (No model.)



Claim.—1. The combination of the rake-head carrying a line of spring-teeth, the thills secured to the rake-head for guiding and directing the latter, a rigid draft-beam attached to and projecting in advance of the rake-head beneath the horizontal part of the thills for transmitting the draft-strain to the rake-head independent of the thills, and controlling-handles, substantially as described.

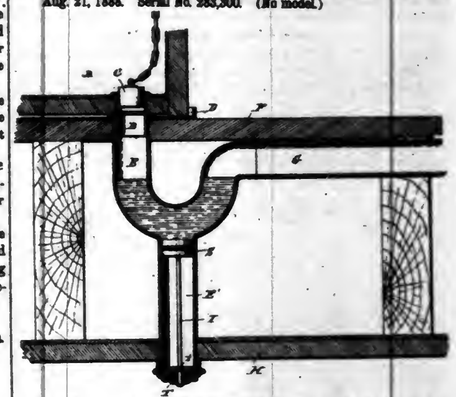
2. The combination of the rake-head carrying a line of spring rake-teeth, the thills hinged to the rake-head for guiding and directing the latter, a rigid draft-beam attached to and projecting in advance of the rake-head centrally between the hinges of the thills and below the horizontal parts of the latter and having a whiffletree at its front end for transmitting the draft-strain to the rake-head independent of the thills, and controlling-handles secured to the draft-beam between its forward end and the rake-head, substantially as described.

404,270. BALANCED SWINGING GATE. JAMES W. PIERR, Red Key, Ind. Filed Mar. 15, 1889. Serial No. 303,705. (No model.)



Claim.—The combination, with the main gate-post A and its subsidiary post B, diagonally arranged near the corner of said main post, the bridge connected to the tops of said posts, and the hook or loop projecting near the upper end of said main post, the gate playing in the interval between posts A and B, of the gate-post K, having the catch-studs *e* arranged one above another, the slotted extension *e* of the middle rail, the pivoted adjustable brace-lever L, having the headed stud *s* adapted to engage any one of said rails, and the suspending-wire Z, connecting the brace-lever to the hook or loop of the main post, substantially as specified.

404,271. TRAP. LAMBERT T. FOLLANSBEE, Washington, D. C. Filed Aug. 21, 1888. Serial No. 283,300. (No model.)



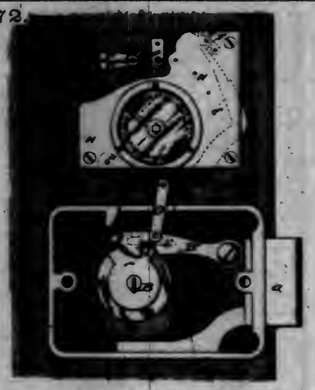
Claim.—1. A bath-tub trap consisting of a U or other suitably-bent pipe and a straight pipe communicating with the bent pipe at the under side of its bend, one end of the bent pipe passing up through the floor on which the tub sits and communicating with the interior of the tub, while its other end is connected to the discharge-pipe, the straight pipe passing downward through the ceiling of the room below and provided at its lower end with a screw-tap, substantially as described.

2. A bath-tub trap consisting of a U or other suitably-bent pipe and a straight pipe communicating with the bent pipe at the under side of its bend, one end of the bent pipe passing up through the floor on which the tub sits and communicating with the interior of the tub, while its other end is connected to the discharge-pipe, the straight pipe passing downward through the ceiling of the room below and provided with a stopper for closing its upper end, a screw-tap for closing its lower end, and a rod connecting the stopper and tap, whereby on unscrewing the latter the former may be withdrawn, substantially as described, and for the purposes set forth.

404,272. TIME-LOCK. BERNARD PEREE, Chicago, Ill. Filed July 11, 1888. Serial No. 278,677. (Model.)

Claim.—1. In a time-lock, a pivotal lever having a hook or lug forming a stop at the free end thereof, in combination with the actuating-lever of a permutation-lock and a disk eccentrically placed on the spindle of said lock, said pivotal lever and said actuating-lever being connected together, and the free end of said actuating-lever connected with the periphery of said eccentrically-pivoted disk, whereby

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rotation of said disk produces movement in said actuating-lever and in said pivotal lever, all substantially as described.

2. In a time-lock, a lever having a hook or lug forming a stop at the free end thereof and a second stop thereon, a spindle, a dog placed on said spindle adapted to come in contact with the hook or lug on said lever, a stop on said dog adapted to come in contact with said second stop on said lever, and a second dog pivoted on said first-named dog and adapted to engage with the teeth of one of the wheels of the train of a chronometer, in combination with a second spindle, a dog thereon, and a pin on said dog adapted to engage with said first-named dog, and an arm on said second spindle adapted to engage with the teeth of the scape-wheel of said chronometer, whereby when the pin on the dog pivoted on said second spindle is in the slot in said disk the arm on said spindle is in engagement with the teeth of the scape-wheel of the chronometer, the free end of the dog on said first-named spindle is raised from contact with the hook on said lever, and the dog pivoted on said last-named dog is in contact with the teeth of one of the wheels of the train of said chronometer, all substantially as described, and for the purpose set forth.

3. In a time-lock, a chronometer having an hour-wheel with a hub thereon projecting through the front plate of the chronometer and a shoulder thereon, a spring placed on said hub and against said shoulder, and a slotted disk having gear-teeth thereon placed on said hub and spring and secured thereto, in combination with a second gear-wheel having a hub projecting through a hole in the glass in front of the dial-plate of said chronometer, and a spring resting against said glass and against a handle placed on said projecting hub, whereby said last-named gear-wheel is adapted to engage with said first-named gear-wheel on said slotted disk and adjust the same independently of said hour-wheel, and the said hour-wheel actuating said slotted disk in the running down of said chronometer, all substantially as described.

4. In a time-lock, a lever having a hook or lug at the free end thereof forming a stop, and a second stop thereon, a spindle, a dog placed on said spindle adapted to come in contact with the hook or lug on said lever, a stop on said dog adapted to come in contact with said second stop on said lever, and a second dog pivoted on said first-named dog and adapted to engage with the teeth of one of the wheels of the train of a chronometer, in combination with a pin or lever on the hour-indicator spindle of said chronometer adapted to come in contact with a stationary stop in the running down of said chronometer, thereby stopping the same, all substantially as described.

5. In a time-lock, a pivotal lever having a hook and a lug at or near the free end thereof forming stops, the actuating-lever of a permutation-lock, and a disk eccentrically placed on the spindle of said lock, said pivotal lever and said actuating-lever being connected together and the free end of said actuating-lever connected with the periphery of said eccentrically-pivoted disk, whereby rotation of said disk produces movement in said actuating-lever and in said pivotal lever, in combination with a spindle, a dog placed thereon adapted to engage with the hook on said pivotal lever, a plate also placed on said spindle, and a dog on said plate adapted to engage with the teeth of one of the wheels of the train of a chronometer, and a stop on said plate adapted to engage with a lug on said pivotal lever, all substantially as described.

6. In a time-lock, lever E, having stops *c'* and *c''* thereon, spindle K, dog F, having stops P' and *f* thereon placed on said spindle K, dog M', pivoted on dog F and adapted to engage with the teeth of one of the wheels of the train of a chronometer, spindle *k*, dog L' and arm L'' on said spindle *k*, and stops S and *f''* on dog L', in combination with the actuating-lever of a permutation-lock connected to said lever E, all substantially as described.

7. In a time-lock, lever E, having stops *c'* and *c''* thereon, spindle K, dog F, having stops P' and *f* thereon placed on said spindle K, dog M', pivoted on dog F and adapted to engage with the teeth of one of the wheels of the train of a chronometer, spindle *k*, dog L' and arm L'' on said spindle *k*, and stops S and *f''* on dog L', in combination with the actuating-lever of a permutation-lock connected to said lever E, all substantially as described.

8. In a time-lock, lever E, having stops *c'* and *c''* thereon, spindle K, dog F, having stops P' and *f* thereon placed on said spindle K, dog M', pivoted on dog F and adapted to engage with the teeth of one of the wheels of the train of a chronometer, spindle *k*, dog L' and arm L'' on said spindle *k*, and stops S and *f''* on dog L', in combination with the actuating-lever of a permutation-lock connected to said lever E, and eccentrically-pivoted disk D' on the spindle of said permutation-lock, all substantially as described.

9. In a time-lock, lever E, having stops *c'* and *c''* thereon, spindle K, dog F, having stops P' and *f* thereon placed on said spindle K, dog M', pivoted on dog F and adapted to engage with the teeth on one of the wheels of the train of a chronometer, spindle *k*, dog L' and arm L'' on said spindle *k*, and stops S and *f''* on dog L', in combination with the actuating-lever of a permutation-lock connected to said lever E, and permutation-wheel D', having a V-shaped slot therein, whereby the rotating of the spindle of the permutation-lock and said wheel D' will produce movement in said lever E, all substantially as described.

10. In a time-lock, a chronometer having an hour-wheel with a hub thereon projecting through the front plate of the chronometer and a shoulder thereon, a spring placed on said hub and against said shoulder, and a slotted disk having a squared hub thereon, in combination with a key adapted to engage with said squared hub, whereby said slotted disk may be adjusted by said key independently of said hour-wheel, and the said hour-wheel actuating said slotted disk in the running down of said chronometer, all substantially as described.

404,273. HEATING-STOVE. ROBERT A. GARDNER and DAVID GARDNER, Baltimore, Md. Filed June 22, 1888. Serial No. 277,912. (No model.)

Claim.—The combination, with a latrobe-stove, of the smoke-flues connected with the stove-body, the air-heating chambers interposed between the smoke-flues and the stove-body and having hot-air-exit orifices in their upper portions, a thimble or flue for conducting the products of combustion to a chimney, the stove-base having a continuous flue communicating with the smoke-flues and air-inlet flues communicating with the air-heating chambers, and a casing or hood partially surrounding the stove and having an air-supply flue, substantially as described.

404,274. WICK-RAISING ATTACHMENT. PATRICK J. GLYNN, Highland, N. Y. Filed June 19, 1888. Serial No. 277,610. (No model.)

Claim.—1. The combination, with a lamp-fount provided with a vertical shaft carrying a bevel-gear and a burner provided with the usual threaded portion, and a wick-shaft provided with a bevel-gear, of an internally-threaded collar revolubly held to the fount, substantially as shown and described.

2. The combination, with the fount O, having the flanged ring L, with flange L^2, permanently secured in the neck-opening of the fount, of the rotary collar E, having an internal shoulder engaging the flange L^2, substantially as shown and described.

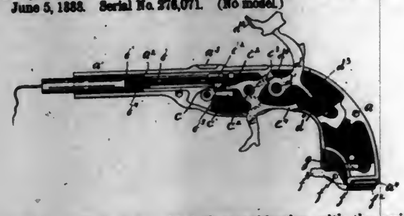
3. The combination, with the fount O, the threaded collar E, revolubly held to the fount, the shaft G, and pinion B', of the burner D, the shaft A, and pinion B, substantially as shown and described.

4. The combination, with a lamp having its neck formed with an internally-screw-threaded revoluble collar, a burner having a screw-threaded portion adapted to engage the screw-threaded collar, and a horizontal wick-shaft provided with a bevel gear-wheel, of a vertical operating-shaft mounted on the lamp and having a bevel gear-wheel adapted to mesh with the bevel gear-wheel on the horizontal wick-shaft, substantially as shown and described.

5. The combination, with a lamp having its neck formed with an internally-screw-threaded revoluble collar, a burner having a screw-threaded portion engaging the screw-threaded collar and seated on the neck of the lamp, and a horizontal wick-shaft provided with a bevel gear-wheel, of a vertical operating-shaft mounted on the lamp and having a bevel gear-wheel meshing with the gear-wheel on the wick-shaft, and an arm mounted on the lamp and having a notched end in which the wick-shaft rests, substantially as shown and described.

6. A lamp consisting of the fount O, with the revoluble ring B, revolubly attached thereto at the opening of the fount and having the internally-screw-threaded portion K, the burner D, having the screw D', engaging the screw-threaded portion K of the ring E, the horizontal wick-shaft A, provided with the bevel gear-wheel B, the tube G, mounted on the fount O and having an arm, S, with notch S' in its end, in which rests the wick-shaft A, the vertical shaft G', journaled in the tube G, and the bevel gear-wheel B' on the upper end of the shaft G, meshing with the gear-wheel B on the shaft A, substantially as shown and described.

404,275. TOY PISTOL. FRANCIS I. GORDON, Buffalo, N. Y. Filed June 5, 1888. Serial No. 276,071. (No model.)



Claim.—1. In a toy pistol, the combination, with the spring-pressed plunger *b*, having a catch, b^2, of the pivoted lever *c*, having a catch to engage the same, and a rearwardly-extending spring-pressed arm, and the trigger *e*, having the extension e^2, which engages said arm and holds the catch in engagement with the plunger, substantially as shown and described.

2. In a toy pistol, the combination, with the spring-pressed plunger *b*, having catch b^2, the pivoted catch *c*, with spring-pressed extension *c'*, and the hammer *d*, having the catch d^2 and spring-pressed extension d^3, of the trigger *e*, having the catch e^2, the forward extension, e^3, and the rear spring-pressed extension or arm, e^4, all operating substantially as shown and described.

404,276. RAILWAY-CAR FRAME. WILLIAM W. GREEN and JAMES MURDOCH, Chicago, Ill., assignors to the American Fire Proof Steel Car Company, of Illinois. Filed Aug. 29, 1883. Serial No. 284,073. (No model.)

Claim.—1. In a car-frame, the combination of the metal side pieces, *a*, bent at their upper end to form the ribs a^2, with separable pieces *a'* for the arch or raised deck, substantially as described.

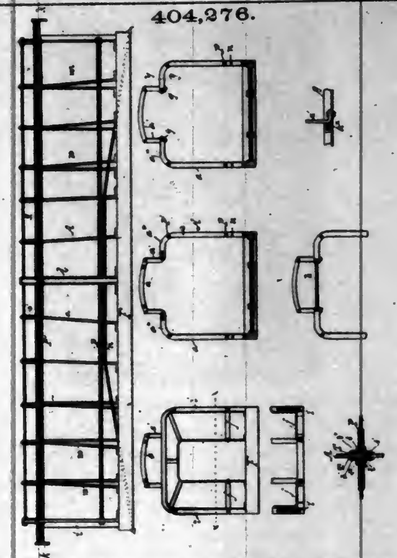
2. In a metal car-frame, the combination of the metal side pieces *a*, bent at their upper end to form the ribs a^2, with the separable pieces *a'* for the arch or raised deck and the angle-iron longitudinal member *g*, connecting the parts *a'* a^2, substantially as described.

3. In a metal car-frame, the combination of the angle-iron corner-posts *i* with the transverse frame-pieces A and their longitudinal connections, substantially as described.

4. In a metal car-frame, the combination of the transverse frame-pieces A, their longitudinal connections, and the bed-frame F with the braces *m*, extending from the bed-frame to the top plate, substantially as described.

5. In a metal car-frame, the combination of the transverse frame-pieces A and the longitudinal members P P' with the socket-pieces T

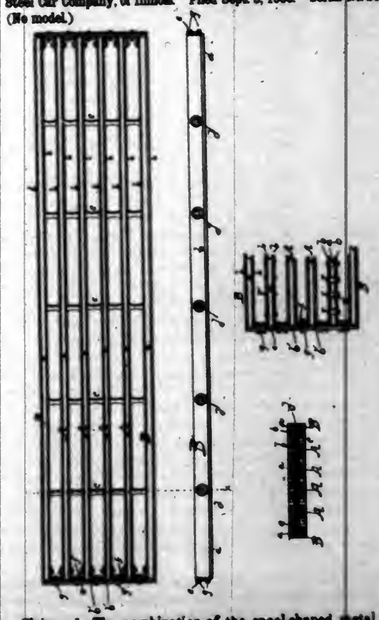
404,276.



provided with the exterior socket for the tubes and the perforation for the rods and clamped to opposite sides of the frame-pieces by the bolts *t'*, substantially as described.

6. In a metal car-frame, the combination of the transverse frame-pieces A and the longitudinal members P P' with the socket-pieces T, provided with the exterior socket for the tubes, the perforation for the rods, the interior concavity, t^3, and the filling-hole t^4, and clamped to opposite sides of the frame-pieces by the bolts *t'*, substantially as described.

404,277. BED-FRAME FOR RAILWAY-CARS. WILLIAM W. GREEN and JAMES MURDOCH, Chicago, Ill., assignors to the American Fire Proof Steel Car Company, of Illinois. Filed Sept. 5, 1883. Serial No. 284,067. (No model.)



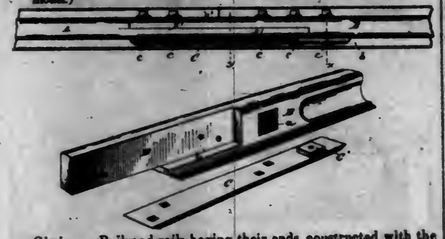
Claim.—1. The combination of the spool-shaped metal struts *c* and the tie-rods *d* with a series of longitudinal members, A B, arranged parallel to each other and each composed of two metal plates, *b*, connected together by bolts or rivets *r*, extending through an interposed spacing material, and by the tie-rods *d*, extending through the struts *c* from side to side of the frame, substantially as described.

2. The combination of a series of longitudinal members, A B, and terminal spacing members *f*, with the outside metal plates, *b*, bent around the corners of the frame, so as to extend longitudinally of its sides and transversely of its ends, and bolted to the spacing members *f*, substantially as described.

3. The combination of the longitudinal members A B, the terminal spacing members *f*, and the outside metal plates, *b*, bent around the corners of the frame, with the transverse end plates, *c*, bolted to the bent plates *b* and spacing members *f*, substantially as described.

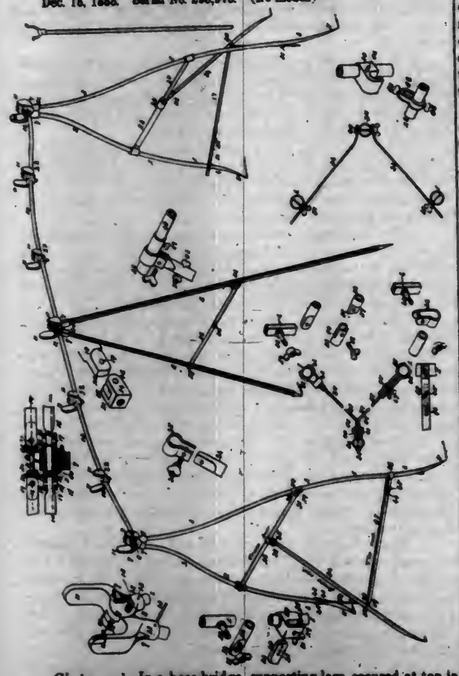
4. The combination of the composite longitudinal members A B, the struts C, the tie-rods *d*, the terminal spacing members *f*, the outside plates, *b*, bent around the corners of the frame, and the transverse end plates, *c*, bolted to the bent plates *b* and spacing members *f*, substantially as described.

404,278. MANNER OF JOINTING RAILROAD-RAILS. CHARLES R. HASTINGS, Buffalo, N. Y. Filed Jan. 4, 1889. Serial No. 295,372. (No model.)



Claim.—Railroad-rails having their ends constructed with the half-rail projections A' B', adapted to break joints by overlapping each other and fitting closely side by side, each projection resting on the base *b'* of the opposite rail, and the two rails held together by the plate C, having a square leg, C', on the inside and fitting in a slot, *a*, in the side of the rail B, and the usual bolts, *c c*, all substantially as and for the purpose specified.

404,279. HOSE-BRIDGE. CHARLES J. P. HEIM, St. Louis, Mo. Filed Dec. 14, 1888. Serial No. 293,970. (No model.)



Claim.—1. In a hose-bridge, supporting-legs secured at top in cast-metal jaws hinged together and having a double seat for two lines of hose, substantially as set forth.

2. The combination of supporting-legs, jaws 7, attached to the tops of the legs and connected by a pintle, 8, and bridge 18, hinged to the pintle and having the shoulder 20, adapted to abut against the latter, substantially as and for the purpose set forth.

3. The jaws 7, having hinge-lugs 9, connected by pintle-supporting legs attached to the jaws, the upward projection 10, and horns 11, substantially as and for the purpose set forth.

4. The combination, in a hose-bridge, of jaws secured to the top of supporting-legs and adapted to support and grasp the hose, and cross-bar 23, forming extensible connection between the legs, substantially as set forth.

5. The hose-bridge having a bridge-bar, 18, supported on three pairs of legs with hinged heads composed of jaws 7, the middle head being at at higher level than the heads at the ends of the bridge.

6. The combination, in a hose-bridge support, of the legs 1, secured to hinged jaws 7 and having adjustable connection by cross-bar 23, the brace-rod 34, connected to the cross-bar, and tie-rods 37, connecting the brace-rod with the legs, substantially as set forth.

7. The combination, in a hose-bridge, of a middle pair of supporting-legs, 6, and end pair of supporting-legs, 1, made, respectively, of round and square material to distinguish them from each other, substantially as and for the purpose set forth.

8. The combination, in a hose-bridge, of supporting-legs having a cross-bar with adjustable connection with the legs, a brace-rod having adjustable connection with the cross-bar, and tie-rods connecting the brace-rods with the legs and having means of extension, substantially as and for the purpose set forth.

9. The combination in a hose-bridge, of the pairs of supporting-legs 1 at the ends of said bridge, having extensible cross-bars 23 and brace-rods 34 hinged to the cross-bars and adapted to rest on the ground.

10. The combination, in a hose-bridge, of jaws secured to the top of supporting-legs and adapted to support the hose, the cross-bars 23, extending between said legs, collars on said legs, hooks on said collars for receiving the ends of said cross-bars, and screws in said hooks adapted to impinge said bars, as and for the purpose set forth.

11. The combination, in a hose-bridge, of a pair of supporting-legs, 1, secured to the jaws 7 at top, cross-bar 23, connecting the legs, brace-rod 34, extending from the cross-bar to the ground, and tie-rods 37, one of which has adjustable connection with its leg, for the purpose set forth.

12. The combination, in a hose-bridge, of the supporting pairs of legs 1 at each end, having cross-bars 23 between the legs, brace-rods extending from the cross-bars to the ground and adjustable, the cross-bars and tie-rods extending from the brace-rods to the legs, said tie-rods at one end having notches 52, and thumb-screws 51 on the legs, adapted to engage in said notches, substantially as and for the purpose set forth.

13. The supporting-legs of a hose-bridge bowed between the ends and having their lower ends inclined outward, substantially as and for the purpose set forth.

14. The combination, with the legs 1 of a hose-bridge, of cross-bar 23, brace-rod 34, tie-rods 37, connected to the brace-rod by pintle-bolt 50, and thumb-screws 53 in the brace-rod to engage the tie-rods, as set forth.

15. The combination, with the legs 6 of a hose-bridge, of the cross-bar 23, hinged to the legs and having a rule-joint, 57 58 59, and thumb-screw 56, for tightening said joint, substantially as set forth.

16. In a hose-bridge, the coupling between the bridge 18 and head 7, consisting of a pintle, 8, a nut, 14, screwing on the pintle and having lugs 16, and a pintle, 17, passing through the lugs and the ends of the bridge.

17. The coupling-nut 14, adapted to screw upon the pintle 8 and having lugs 16, substantially as and for the purpose set forth.

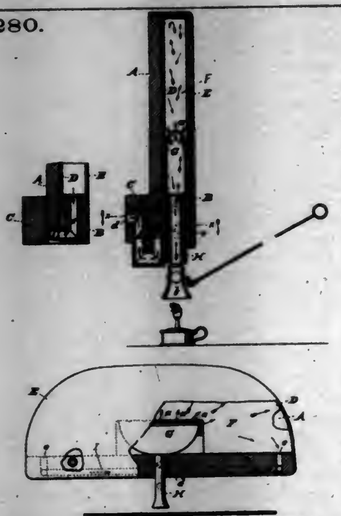
18. The combination of the two lengths of bridge 18, the head between the same, the coupling-pintle 8, the nut 14 on one end of the pintle, and the collar 61 on the other end of the pintle, serving, respectively, to couple to the pintle the two lengths of the bridge 18, substantially as and for the purpose set forth.

19. The hinge-connection between the bridge-section 18 and head of the supporting-legs, consisting of a nut, 14, with lugs 16, and pintle 17, the flat end of the bridge adapted to fit between the lugs and having a shoulder, 20, substantially as and for the purpose set forth.

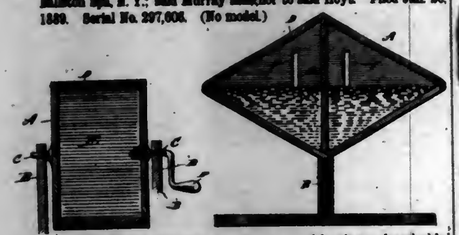
404,280. BED-FURNACE. ELWOOD R. HIATT, Noblesville, Ind. Filed Aug. 25, 1888. Serial No. 283,752. (No model.)

Claim.—The combination of the vertical wall having the metal lining and longitudinal slot, the deflector-plate having the holes in its top, the plinths B C, the metal front wall secured at its edges to the vertical wall and front plinth, the inlet-pipe, and the escape-tube communicating with the chamber F and having the outlet through the plinth, substantially as specified.

404,280.



404,281. CHURN. MATTHEW L. HOYT and HUGH F. MURRAY, Ballston Spa, N. Y.; said Murray assignor to said Hoyt. Filed Jan. 26, 1889. Serial No. 297,606. (No model.)



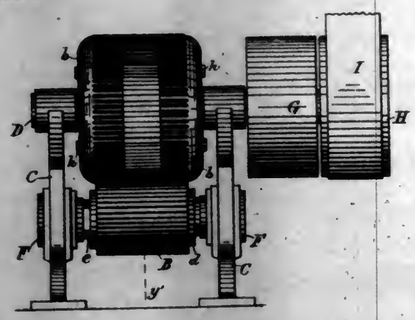
Claim.—The combination, in a churn-vessel having a rhomboidal or diamond shaped body, of an imperforate removable partition dividing the interior into two equilateral-triangular chambers, whereby the body of milk or cream in one chamber will accurately balance that in the other at all points in its revolution, substantially as specified.

404,282. TOOTH-PICK MACHINE. WILLIAM F. HUTCHINSON, Lynn, Mass., assignor to Mary E. Hutchinson, same place. Filed Sept. 3, 1887. Serial No. 248,767. (No model.)

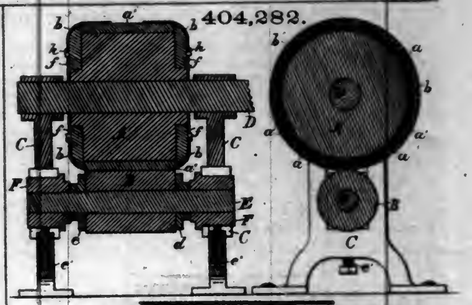
Claim.—1. A tooth-pick machine having the drum A, with the spacers *a* and knives *a'* arranged around its periphery, and suitable springs between said knives, in combination with the drum B, substantially as shown and described.

2. The flanges *f f*, beveled as shown and provided with the slot *c*, in combination with the knives *a'* and drum A, substantially as shown, and for the purpose described.

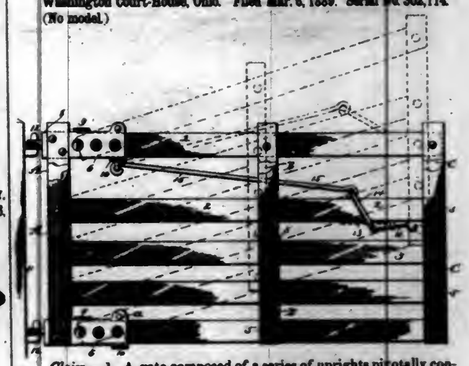
3. A tooth-pick machine having the drum A, with the knives *a'* arranged around its periphery, and suitable springs between said knives, in combination with the drum B, substantially as shown and described.



404,282.



404,283. GATE. SAMUEL G. JAMESON and EDWARD A. BAIRD, Washington Court-House, Ohio. Filed Mar. 6, 1889. Serial No. 302,114. (No model.)



Claim.—1. A gate composed of a series of uprights pivotally connected by horizontal slats, a bracket connected with one of said uprights, and a horizontal slat having one end resting loosely in said bracket and pivotally connected to the other uprights, substantially as set forth.

2. In a gate, the combination, with horizontal and upright slats, the latter being located in pairs and the former being pivotally secured between them, of brackets secured between one pair of uprights and adapted to receive ends of the horizontal slats and limit their downward movement, substantially as set forth.

3. The combination, with a series of uprights and a series of horizontal slats pivotally connected to said uprights, of a bracket secured to one upright, a horizontal slat pivotally secured to the other uprights, with its inner end resting in the bracket, and a truss-rod for holding the gate at different angles.

4. The combination, with horizontal and upright slats and brackets secured to the latter, said brackets consisting of a pair of plates with webs on their opposite edges at diametrically-opposite points, of a truss-rod adapted to engage the gate at different points, and a latch for disengaging the truss-rod, substantially as set forth.

5. The combination, with horizontal and upright slats pivotally connected with each other, the latter being in pairs, and a pair of brackets secured between one pair of the upright slats, said brackets each consisting of a restricted neck adapted to be located between the upright slats, and a pair of plates having webs on their edges at diametrically-opposite points, of a fastening device, a truss-rod, and a latch for operating the truss-rod, substantially as set forth.

6. The combination, with a series of uprights and a series of horizontal slats pivoted thereto, of a bracket secured to one upright, a horizontal slat pivotally secured to the other uprights, with its inner end resting in the bracket, and a removable pin in the bracket above the slat therein for locking the slats in a horizontal position, substantially as set forth.

7. The combination, with horizontal and upright slats pivotally connected with each other, and brackets secured to a pair of the uprights and provided with openings to receive ends of the horizontal slats, and eyelets to receive a locking-pin over the horizontal slats, of a link loosely mounted on one of the horizontal slats, a truss-rod connecting this link with one of the brackets, and a latch-rod for operating the link, substantially as set forth.

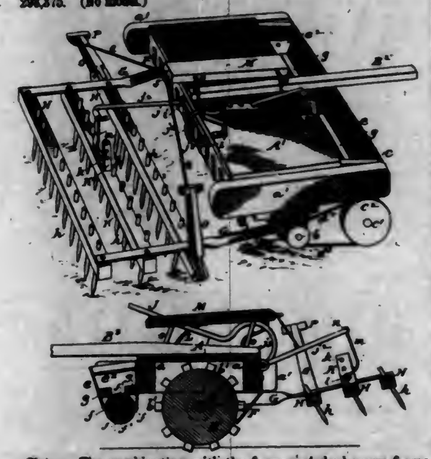
404,284. SPRING-WASHER. FRANK G. JOHNSON, New York, N. Y. Filed Oct. 17, 1888. Serial No. 288,338. (No model.)

404,284.



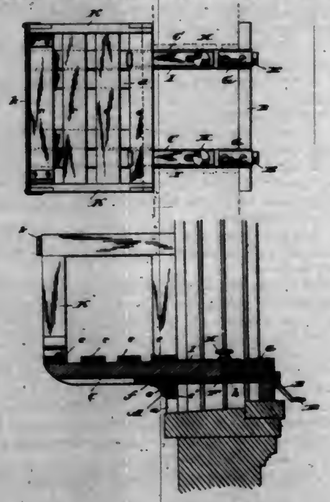
Claim.—A spring-washer, A A, for bolts having its zone in the form of a zigzag strip of metal, and having its said zigzag zone from the inner to the outer turns thereof concave on one of its sides and convex on the other side, whereby no part of the metal is compressed or stretched when the washer is flattened out, substantially in the manner and for the purpose set forth.

404,285. COMBINED PULVERIZER, SEEDER, AND HARROW. FRANKIE B. KENDALL, Monmouth, Ill., assignor of two-thirds to Casper M. Dull and Mark M. Lucy, same place. Filed Feb. 1, 1888. Serial No. 298,375. (No model.)



Claim.—The combination, with the frame and the harrow-frame, of the operating-lever journaled on the frame and formed with rearwardly-extending arm and right-angled portion j^3, the U-shaped piece on the harrow-frame, provided with a plurality of holes, K, and the links pivotally connected at one end with said piece and adjustable vertically, and at the other end formed with an eye, *n*, to receive the end of the portion j^3, substantially as and for the purpose specified.

404,286. PORTABLE BALCONY. MEPA I. KING and JAMES R. KING, Atlanta, Ga. Filed Jan. 31, 1889. Serial No. 298,181. (No model.)



Claim.—1. The window-balcony herein described, consisting of the sill-pieces C C, grooved longitudinally on their under edges, said sill-pieces being provided with downwardly-extending straps having outwardly-bent ends, through which straps passes a screw-threaded rod, which engages with a movable casting, *c*, said sill-pieces being provided on their upper edges with slotted straps having upwardly and inwardly bent ends, and a set-screw passing through the slots in said straps to engage with the sill-pieces, the parts being organized substantially as shown, whereby the sill-pieces can be attached to a window-frame and support a balcony rigidly thereon.

2. In combination with a balcony having a rigid removable floor made up of transverse slats, sill-pieces C, carrying on their upper edges adjustable straps I, which are adapted to clamp the floor of the balcony, the outer and inner beams, A and B, and screw-rods to clamp said beams in a window, substantially as shown, and for the purpose set forth.

404,287. HOLDER FOR BLANKS. ALBERT J. KLEINER, St. Louis, Mo. Filed June 17, 1887. Serial No. 241,656. (No model.)

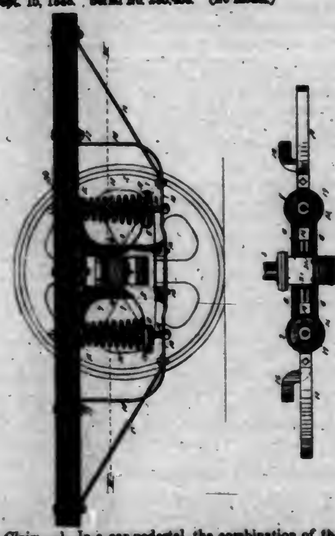


Claim.—1. The combination of the unjointed or integral bottom board, 1, the board 4 and strip 3, hinged together, and the U-shaped spring-clips having legs of different lengths and each having its longer leg pivoted to said board 1 nearer to the end than to the sides of said board and adapted to revolve in a plane therewith and embrace strip 3 with its short leg, as set forth.

2. In a holder for blanks, the combination, with the boards 1 4, between which the blanks rest, and the strip 3, hinged to the board 4 for resting upon the ends of the blanks, of the U-shaped spring-clips 6, having one leg pivoted to the bottom and near the corners of the board 1, and adapted to rotate around said corners in a plane with the board 1, whereby said clip is adapted to embrace strip 3 and board 1 between its legs, as set forth.

3. In a holder for blanks, the combination, with the boards 1 4, between which the blanks rest, and the strip 3, hinged to the board 4, of the U-shaped spring-clips 6, each having one leg longer than the other, and said longer legs being pivoted to the under side of the board 1 at a distance from the end of said board less than the length of the short leg of said clip, whereby the latter is adapted to rotate in a plane with said board 1 and to clasp or unclasp the board 1 and strip between its legs, as set forth.

404,288. CAR-PEDESTAL. PETER M. KLINE, St. Louis, Mo. Filed Sept. 15, 1888. Serial No. 285,438. (No model.)

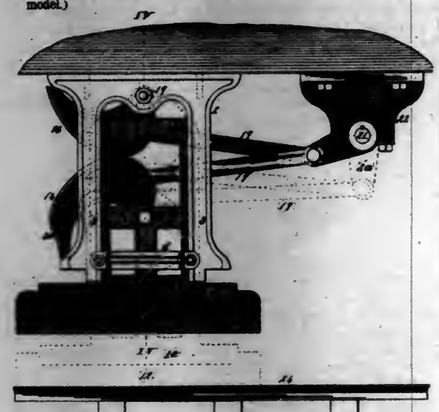


Claim.—1. In a car-pedestal, the combination of the main casting having arms with disks secured to their outer ends, a frame secured to the car-body and having arms embracing the body of the

casting and extending below strap secured to the lower end of the frame and connected to the car-body, and springs fitting at top in disks formed upon the frame by means of bolts and at bottom in disks formed upon the casting and connecting-bolts, substantially as and for the purpose set forth.

2. In a car-pedestal, the combination of the casting 5, frame 9, and rubber blocks 30, placed between the frame and the body of the car, substantially as and for the purpose set forth.

404,289. TRACK-BRAKE FOR STREET-RAILWAY CARS. PETER M. KLINE, St. Louis, Mo. Filed Feb. 12, 1889. Serial No. 299,663. (No model.)



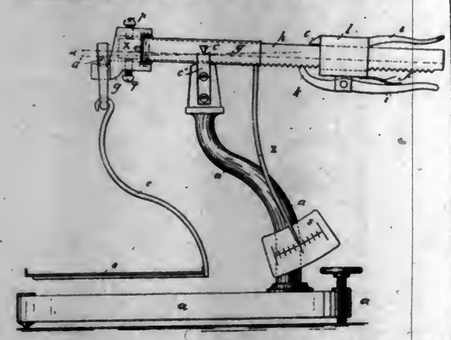
Claim.—1. In a track-brake, the combination of a fixed frame, a movable frame carrying a brake-shoe, pivoted cams, and mechanism for operating the cams to apply the brake, substantially as and for the purpose set forth.

2. In a track-brake, the combination of an outer frame, an inner frame, a shoe secured to the inner frame, a cam pivoted to the outer frame, a cam pivoted to the inner frame, links connected to the cams, a crank, a shaft to which the crank is secured, and an operating-lever, substantially as and for the purpose set forth.

3. In a track-brake, the combination of an outer frame consisting of end pieces, 3, top piece, 4, connecting-bars 6, an inner frame having a brake-shoe, 12, and lugs 13, cams 14 and 16, pivoted to the respective frames, and operating mechanism, substantially as and for the purpose set forth.

4. In a track-brake, the combination of the frames 2 and 8, cams 14 and 16, pin 30, and means for moving the cams, the frame 8 carrying a brake-shoe, substantially as and for the purpose set forth.

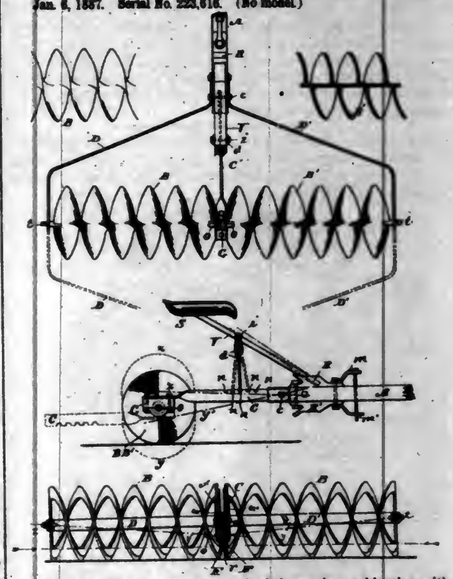
404,290. WEIGHING-SCALES. FERDINAND KOCH, Hanover, Prussia, Germany. Filed July 6, 1887. Serial No. 243,489. (No model.) Patented in Germany Feb. 4, 1887, No. 40,194, and July 10, 1887, No. 42,373; in Belgium May 31, 1887, No. 77,514; in France June 22, 1887, No. 184,379, and in England June 23, 1887, No. 8,958.



Claim.—1. In scales or balances, the set-screws *p q*, the lever *h*, and socket *g*, the said lever being pivoted in the socket *g*, and the said socket *g* bearing the knife-edges *d* and *c* and being so arranged that the lever *h*, bearing or forming the sliding weight, is adjusted by means of said set-screws, so that the line passing through the center of gravity in the direction of its length can be adjusted with reference to the two knife-edges *d* and *c*, for the purpose as described.

2. In scales or balances, the lever *h* and socket *g*, the socket *g* being provided with the knife-edges *d* and *c*, and means for adjusting the position of said knife-edges in relation to the lever or beam *h*, which bears or forms the sliding weight, for the purpose as described.

404,291. PULVERIZER. CHARLES LA DOW, Albany, N. Y. Filed Jan. 8, 1887. Serial No. 223,616. (No model.)



Claim.—1. In a pulverizer, a draft-frame, in combination with two independently-revolving opposing spiral cutters set in substantially a straight line with each other and adapted to turn furrows from each other as the implement is drawn forward.

2. In a pulverizer, a draft-frame, in combination with two independently-revolving and opposing spiral cutters adapted to cut and turn furrows in the soil when said cutters are set in line with each other.

3. In a pulverizer, a draft-frame, in combination with two spiral cutters, B B', adapted to revolve independently of each other, said cutter-blades being adapted to enter the earth in substantially the position shown in Figs. 8 and 10 of the drawings.

4. In a pulverizer, a draft-frame, in combination with two independently-revolving and opposing spiral cutters, the blades of each cutter being supported by their ends only and shaped to have both horizontal angle and vertical pitch within themselves.

5. In a pulverizer, two spiral cutters adapted to oppose each other, in combination with a reversible draft-frame.

6. In a pulverizer, two cutters adapted to oppose each other, in combination with the frame D D' and bar C, said frame being adapted to be reversed on its journal-bearings.

7. In a pulverizer, a draft-frame, in combination with two opposing spiral cutters adapted to vibrate vertically at their inner ends.

8. In a pulverizer, a draft-frame, in combination with two independently-revolving spiral cutters adapted to turn furrows when set in line with each other, and adapted to abut directly against each other at their inner ends.

9. In a pulverizer, a draft-frame, in combination with two independently-revolving spiral cutters recessed at their inner ends, substantially as shown.

10. In a pulverizer, a draft-frame, in combination with two independently-revolving spiral cutters adapted to turn furrows when drawn forward in one direction, and to roll over the ground without cutting it up when drawn backward, or in the opposite direction.

11. In a pulverizer, a draft-frame, in combination with two shaftless or hollow spiral cutters arranged on opposite sides of a central draft-line, the blades of one cutter opposing the blades of the other, so as to cut and divide the soil and turn it outward from between the cutters when the machine is drawn in one direction, and adapted to roll over the soil without cutting it up when the machine is drawn backward in the opposite direction.

12. In a pulverizer, a draft-frame, in combination with two revolving shaftless or hollow spiral cutters, the blades of one cutter being adapted to present an opposing angular and vertical pitch relatively to the other cutter, so as to create suction when revolved forward against the soil, and adapted to present a convex surface to the soil when revolved backward in the opposite direction.

13. In a pulverizer, a draft-frame and two gangs of cutters connected therewith, with the inner cutting-edges of the gangs in close proximity to each other, the inner ends of said gangs being formed with recesses extending into the gangs beyond their cutting-edges, in combination with mechanism located within said recesses and adapted to couple the inner ends of the gangs together.

14. In a pulverizer, the bar D D', or equivalent thereof, two cutters, and the bar C, or equivalent center connection, in combination with an angular or downward projection attached to the center connection and adapted to limit the vertical movement of the inner ends of the cutters.

15. In a pulverizer, the bars D D', or equivalent thereof, two cutters, and the bar C, or equivalent center connection, in combination with an angle or downward projection attached to the center connection, with the wheel r mounted on said projection.

16. In a pulverizer, a draft-frame, in combination with shaftless or hollow spiral cutters mounted upon each other in such manner as to have horizontal angles and vertical pitch within themselves.

17. In a pulverizer, a draft-frame and two spiral cutters, in combination with the buffer-rings *h h*, or equivalent mechanism, adapted to counteract the side-thrusts of both cutters between their inner ends and at a point below the center of their revolution.

18. In a pulverizer, a draft-frame and two vibrating cutters adapted to oppose each other, in combination with mechanism located and acting between the inner ends of the cutters in the same vertical plane as the cutters for limiting the vertical vibration of said cutters.

19. In a pulverizer, a draft-frame and two independently-revolving cutters, in combination with a wheel located between the inner ends of said cutters and adapted to have contact therewith on opposite sides of said wheel.

20. In a pulverizer, two cutters and a draft-frame attached to the outer ends of said cutters, in combination with a center coupling adapted to have contact at two points with the inner end of each cutter.

21. In a pulverizer, a draft-frame and two cutters, in combination with the buffer-rings *h h*, each ring being fastened to its cutter at two points.

22. In a pulverizer, spiral cutters having continuous cutting-edges revolving independently of each other, and a draft-frame attached to the outer end of each cutter, in combination with a center coupling for the cutters, which permits the cutting-blades of one cutter to revolve in close proximity to the blades of its fellow cutter.

23. In a pulverizer, a spiral cutter, in combination with the buffer-ring *h* and web *w*.

24. As a new article of manufacture, a spiral cutter twisted from sheet metal, so as to form solid blades that are concave or dishing in cross-section, substantially as shown in Fig. 10.

25. In a pulverizer, a draft-frame, in combination with two independently-revolving opposing spiral cutters, whose action can be reversed by applying the draft of the animals in opposite directions relatively to said cutters.

26. In a pulverizer, a draft-frame, two vertically-vibrating cutters flexibly connected at their inner ends, and a seat adjustably hinged to the draft-frame, in combination with mechanism for applying more or less of the weight of the driver directly to the inner ends of the cutters for limiting their vertical vibrations.

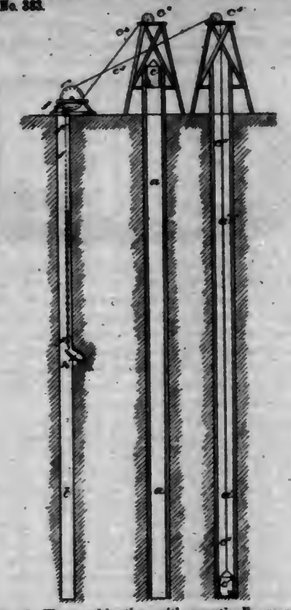
27. In a pulverizer, a draft-frame, two vertically-vibrating independently-rotating cutters arranged on opposite sides of the central draft line, and a seat hinged to the draft-frame, in combination with adjustable mechanism attached to the seat by means of which the pressure of the driver's weight upon the inner ends of the cutters can be varied.

28. In a pulverizer, a draft-frame adapted to be reversed by turning it upside down, two cutters, and a seat for the driver mounted on the draft-frame, in combination with suitable seat-supporting devices which are adapted to maintain the seat upon opposite sides of the draft frame.

29. In a pulverizer, a draft-frame with two gangs of cutters connected therewith with their inner cutting-edges in close proximity to each other, the inner ends of the gangs having recesses extending into them beyond the inner cutting-edges of the gangs, in combination with mechanism located within said recesses adapted to counteract or receive the side-thrusts of the gangs.

30. In a pulverizer, two gangs of cutters and a draft-frame attached to the outer ends thereof, in combination with independently-revolving wheel mechanism located between the inner ends of the gangs and adapted to counteract the side-thrust of the same, the thrust of the gangs being imparted to or received by said wheel mechanism at a point thereon outside of its center of revolution.

404,292. APPARATUS FOR EQUALIZING THE STRAIN ON WINDING-GEAR. GEORGE LAMBELL, Sandhurst, Victoria. Filed June 23, 1888. Serial No. 277,359. (No model.) Patented in Victoria Nov. 25, 1887, No. 5,465; in New South Wales Nov. 26, 1887, No. 358; in Queensland Jan. 14, 1888; in New Zealand Jan. 27, 1888, No. 2,788; in England Feb. 20, 1888, No. 2,519; in South Australia May 12, 1888, No. 1,022; in Tasmania May 12, 1888, No. 572/10; in Belgium June 21, 1888; in France Aug. 30, 1888; in Italy Sept. 1, 1888, and in India Sept. 20, 1888, No. 383.



Claim.—1. The combination, with a vertically-movable body and the haulage-rope from which said body is suspended, of a like movable flexible body composed of sections of increasing weight, the aggregate weight of the sections being equal to that of the haulage-rope and the body suspended therefrom, said bodies being arranged to move simultaneously, but in opposite directions, substantially as and for the purposes specified.

2. The combination, with a vertically-movable body and the haulage-rope from which said body is suspended, of a like movable flexible body composed of sections of increasing weight, the aggregate weight of the sections being equal to that of the haulage-rope and the body suspended therefrom, said bodies being arranged to move simultaneously, but in opposite directions, and an abutment or stop in the path of the flexible body to limit its downward motion and cause it to accumulate thereon, substantially as and for the purposes specified.

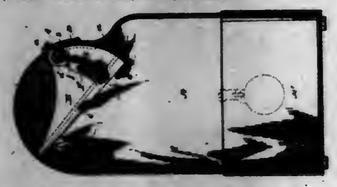
3. The combination, with two bodies of substantially the same weight, movable simultaneously in reverse directions, the haulage-ropes from which said bodies are suspended, and a winding-drum for each of said ropes, of a flexible vertically-movable counterpoise whose weight is equal to that of the haulage-rope of one of the movable bodies, a stop in the path of the counterpoise to limit its downward motion, a winding-drum for said counterpoise, a driving-shaft common to all the winding-drums, and a reversing mechanism operating to reverse the movement of the counterpoise when the two bodies have reached the same altitude, substantially as and for the purposes specified.

4. The combination, with two bodies of substantially the same weight, movable simultaneously in reverse directions, the haulage-ropes from which said bodies are suspended, and a winding-drum for each of the haulage-ropes, of a flexible vertically-movable counterpoise made up of sections of increasing weight, the aggregate weight of said sections being equal to that of one of the haulage-ropes, or such haulage-rope and body suspended therefrom, a stop in the path of said counterpoise to limit its downward motion, a winding-drum therefor, a driving-shaft common to all the winding-drums, and a reversing mechanism operating to reverse the movement of the counterpoise when the two bodies have reached the same altitude, substantially as and for the purposes specified.

5. The combination, with two bodies of substantially the same weight, movable simultaneously in reverse directions, the haulage-

ropes from which said bodies are suspended, and a winding-drum for each of the haulage-ropes, of a flexible vertically-movable counterpoise made up of sections of increasing weight, the aggregate weight of said sections being equal to that of one of the haulage-ropes, or such haulage-rope and body suspended therefrom, a stop in the path of said counterpoise to limit its downward motion, a winding-drum therefor, a driving-shaft common to all the winding-drums, and a reversing mechanism operating on the counterpoise to reverse its movement without reversing the rotation of the winding-drum, substantially as and for the purposes specified.

404,293. LETTER-BOX. JOHN T. LENMAN, Washington, D. C. Filed Feb. 8, 1889. Serial No. 299,099. (No model.)



Claim.—1. The combination, with a box the upper portion of which is rounded and has a letter-opening, of a tray pivoted in said rounded portion, and mechanism for operating it, (the said tray,) which comprises a bottom piece, side pieces whose front ends describe an arc of a circle coincident with the curvature of the box, and a front plate secured to the side pieces and partly closing the front end of the tray, being of such length and width that when in a horizontal position it will fill the space between the four walls of the box, substantially as described, and for the purposes stated.

2. The combination, with a box having an inward curve from its front side and a rounded upper portion, in which is formed the letter-opening, of a tray pivoted in said rounded portion and arranged to tilt downward at its front end, and mechanism for operating it, (the said tray,) which comprises a bottom piece, side pieces whose front ends describe an arc of a circle coincident with the curvature of the box, and a front plate secured to the side pieces and partly closing the front end of the tray, being of such length and width that when in a horizontal position it will fill the space between the four walls of the box, substantially as described, and for the purposes set forth.

3. The combination, with a box having an inward curve from its front side and a rounded upper portion, in which is formed the letter-opening, and a hinged lid covering said opening, of a tray pivoted in said rounded portion of the box and arranged to tilt downward at its front end, and mechanism for simultaneously raising the tray and lid, the said tray, which comprises a bottom piece, side pieces whose front ends describe an arc of a circle coincident with the curvature of the box, and a front plate secured to the side pieces and partly closing the front end of the tray, being of such length and width that when in a horizontal position it will fill the space between the four walls of the box, substantially as described, and for the purposes set forth.

4. The combination, with the box and the tray pivoted therein constructed as described, of the hinged lid which covers the letter-opening, having a lug that extends into the box, a lever pivoted to the tray and engaging at its upper end with said lug, and a stud secured to the tray and passing through the slotted lower end of said lever and a slot in the box, whereby the lid is caused to be raised by the upward movement of the receiving end of the tray, substantially as described.

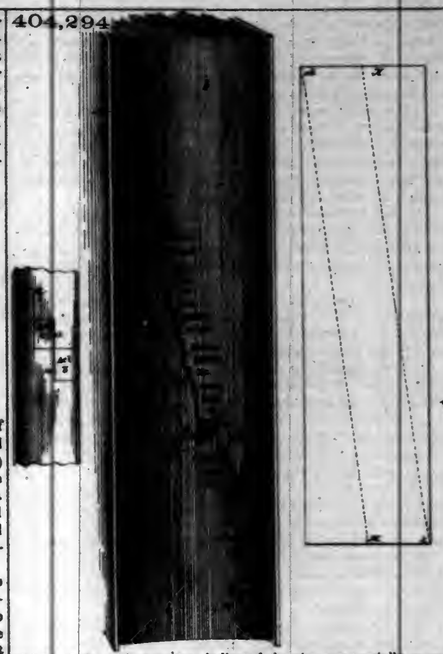
404,294. METHOD OF INDEXING BOOKS. WILLIAM M. LESTER, Springfield, Mass. Filed Jan. 26, 1889. Serial No. 297,673. (No model.)

Claim.—1. The improved method of indexing books herein described, the same consisting in indicating by delineating or otherwise marking on the combined edges of the leaves configurations having widths corresponding to the combined widths of the leaves comprising the subject-matters of the book, substantially as described

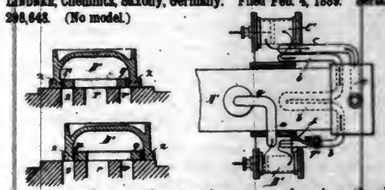
2. The improved method of indexing books herein described, the same consisting in indicating by delineating or otherwise marking on the combined edges of the leaves configurations having widths corresponding to the combined widths of the leaves comprising the subject-matters of the books, and in marking symbols on the edges of the book on or near said configurations to identify the subject-matters, substantialy as described.

3. The improved method of indexing books herein described, the same consisting in indicating by delineating or otherwise marking on the combined edges of the leaves configurations having widths corresponding to the combined widths of the leaves comprising the subject-matters of the book, and in indicating subdivisions of the widths of any or all of said configurations to determine the subdivisions of the subject-matters indicated thereby, substantially as and for the purpose described.

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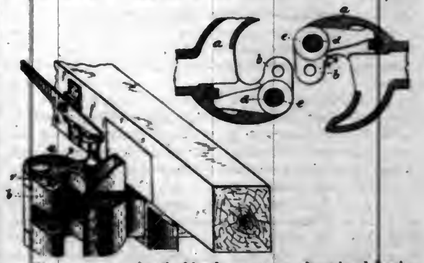
404,295. STARTING-GEAR FOR COMPOUND ENGINES. ROBERT LINDNER, Chemnitz, Saxony, Germany. Filed Feb. 4, 1889. Serial No. 298,643. (No model.)



Claim.—1. In a starting-gear for compound engines, the slide-valve D', with the ports *p q* on the exhaust side of the same fitted to the high-pressure cylinder, in combination with a high-pressure cylinder, B', and low-pressure cylinder C', and a steam-pipe, *a*, fitted with a suitable valve leading into the receiver-pipe *b*, substantially and for the purpose as described.

2. In a starting-gear for compound engines, the combination of the valve D', cylinders B' and C', valve V', with plug *d*, having the ports *m* and *n* at right angles to each other, lever *g*, and rod *k*, connecting the said lever *g* to the reversing-lever *h* and pipe *b*, substantially and for the purpose as described.

404,296. CAR-COUPLING. OTHO E. MICHAELIS, U. S. Army, assignor, by mesne assignments, to the Consolidated Coupling Company, New York, N. Y. Filed Apr. 20, 1888. Serial No. 271,233. (No model.)



Claim.—1. In a vertical-hook coupler, a draw-head having a vertical axis or hook fulcrum, and a hook-supporting surface, as a shelf or ledge, *s*, independent of said axis, combined with a hook or knuckle having an enlarged socket or bearing fitting said axis loosely, whereby the hook is adapted to play laterally on its axis, and provided with a bearing-surface, as *s'*, arranged to co-operate with the surface *s* of the draw-head, whereby the hook is adapted to come to a bearing on the draw-head without subjecting said axis to injurious stress or strain, as set forth.

2. In a vertical-hook coupler, a draw-head having a vertical axial pin, *c*, and a hook-supporting surface, as *s'*, independent of said pin, combined with a hook or knuckle formed to bear against said supporting-surface, and having an enlarged orifice, *d*, receiving said pin, and a bearing-surface, as *e*, the arrangement being such that all stress or strain exerted on the hook by an opposing coupler is supported by the said surfaces of the draw-head and hook, and the pin is relieved from such stress or strain, as set forth.

3. In a car-coupling, the combination, with the draw-head, the hook, and the loose pivotal connection between the draw-head and hook, of shoulders or abutments on the hook and corresponding shoulders or abutments on the draw-head, against which those on the hook take their bearings to prevent further rotation of and take up thrust on the hook and protect the pivot, substantially as described.

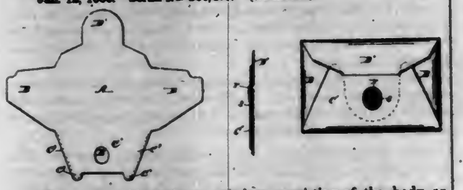
4. In a car-coupler, and in combination with a draw-head of the Dowling type, provided with a buffing-shoulder on the top and bottom plates of said draw-head, the buffing-surface of which is at substantially right angles to the axis of the coupler, a movable knuckle movable in said head and provided with a buffing-surface, also substantially at right angles to the axis of the coupler, and corresponding, when the knuckle is closed, with the buffing-surface of the draw-head, whereby the blow received by the knuckle in coupling is transmitted in a plane substantially parallel to the axis of the coupler.

404,297. OIL-BURNER. MARTIN D. MILLER, Leavenworth, Kans. Filed Sept. 3, 1888. Serial No. 284,490. (No model.)



Claim.—In an oil-burner for stoves, grates, &c., the combination, with a perforated supply-pipe, A, of the plate B, bent around such pipe and back upon itself, forming a space between said plates to be filled with a suitable absorbent, the lower plate extended to form the hearth for the oil, said plate to be provided with air-inlet slots, and the plate C and casing D, secured to and extending above said plate, and having air-inlet slots, forming a combustion-flue, all substantially as described.

404,298. ENVELOPE. ELISHA MORGAN, Springfield, Mass. Filed Jan. 12, 1888. Serial No. 260,479. (No model.)



Claim.—1. A blank for an envelope consisting of the body or main portion, the side flaps, the bottom flap cut away at its outer portion so as to form extensions, as described, and having the perforation in it, and the loose or top flap.

2. An envelope consisting of a body or main portion, side flaps folded inward, the bottom flap cut away at its outer portion so as to form extensions, as described, and folded down upon the side flaps and secured at its lateral edges thereto, and the loose flap having a tongue adapted to be inserted beneath the bottom flap and between the extensions thereof, as described.

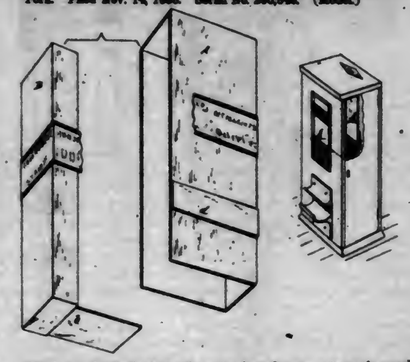
3. An envelope having a loose flap provided with the tongue-extension and a pocket or receptacle in one of its sides formed to receive the tongue of the loose flap and having a perforation in one of the walls of said pocket, through which the finger may be inserted for the purpose of sliding the loose flap and opening the envelope, and having the other wall of the pocket opposite the perforations left intact, substantially as described.

4. The herein-described envelope, consisting of the main portion, the overlapped side flaps, the bottom flap cut away at its extremity so as to form the extensions and having the perforation in it, and the loose flap having the tongue, substantially as described.

5. An envelope consisting of the main portion, the side flaps, the bottom flap having the perforation, and the loose flap having a ridge or projection formed on its tongue for engagement with the edge of the perforation in the lower flap to prevent said loose flap from working out, substantially as described.

6. The herein-described envelope having a loose flap provided with a roughened portion on its tongue, as described, and a pocket or receptacle for receiving the said tongue, having an opening or perforation through which said roughened portion of the tongue is exposed when the envelope is closed, substantially as described.

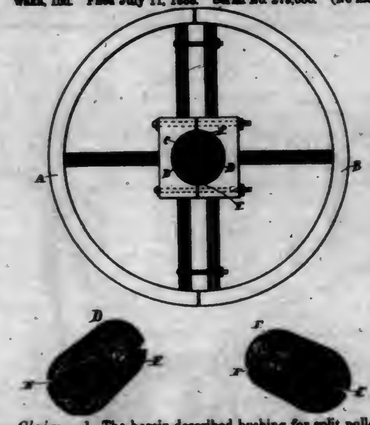
404,299. CIGARETTE-BOX FOR AUTOMATIC VENDING APPARATUS. JAMES M. O'KELLY, New York, N. Y., assignor, by direct and mesne assignments, to the Automatic Vending Box Company, of New York. Filed Nov. 14, 1888. Serial No. 290,548. (Model.)



Claim.—1. A cigar or cigarette box for an automatic vending apparatus, composed of a body open at the top and at one end, and a detachable lid provided with an extension-flap for closing the open end of the box, substantially as set forth.

2. A cigar or cigarette box for an automatic vending apparatus, consisting of a body having an open end, a transverse shoulder extending at one side of the body, and a lid having an extension-flap closing the open end of the box, substantially as set forth.

404,300. BUSHING FOR PULLEYS. FRANK G. PERKINS, Michawaka, Ind. Filed July 11, 1888. Serial No. 279,680. (No model.)



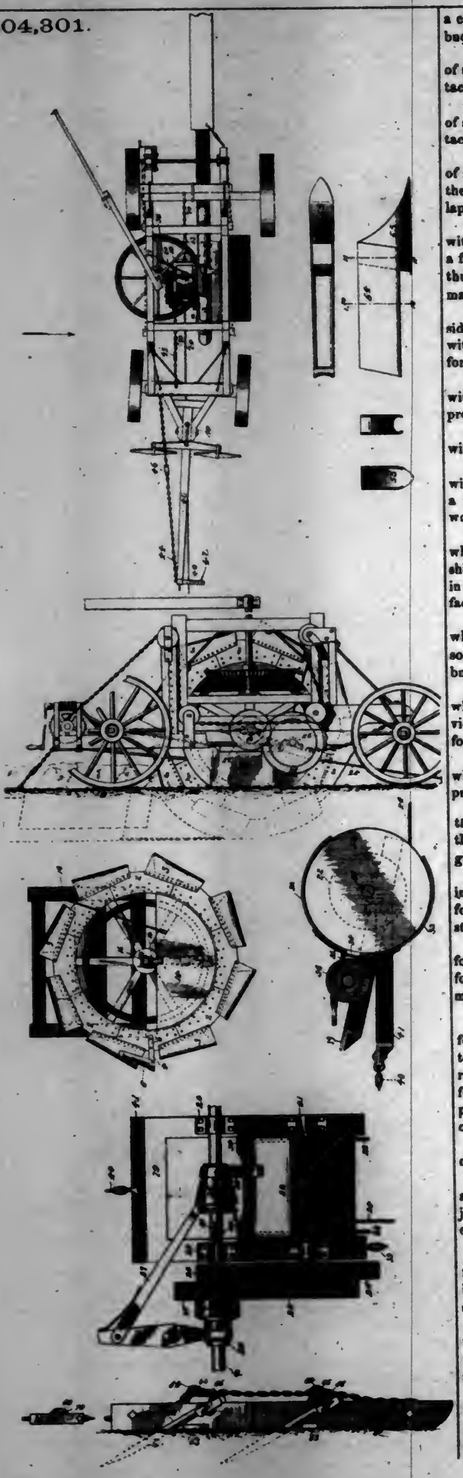
Claim.—1. The herein-described bushing for split pulleys, consisting of a cylindrical tube or sleeve composed of a flexible fibrous material split longitudinally at one side, so that it can be opened and sprung over a shaft, and longitudinally grooved on its exterior surface, substantially as and for the purpose specified.

2. The combination of the shaft and the sectional pulley having a diametrically-divided hub with the bushing D, composed of a flexible fibrous material having a longitudinal split, E, and an external groove, F, diametrically opposite said split, said bushing being interposed between the pulley-hub and shaft in such position that the joints of the hub will come, respectively, over split E and groove F, substantially as set forth.

404,301. DITCHING-MACHINE. DAVID J. POWERS, Chicago, Ill. Filed Oct. 20, 1886. Serial No. 217,822. (No model.)

Claim.—1. An excavating-wheel for a ditching-machine having

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a circle of segmental metal plates attached to its frame-work and buckets attached to said plates.

2. An excavating-wheel for a ditching-machine having a circle of segmental metal plates attached to its frame-work and buckets attached to said plates and overlapping and connecting adjoining plates.

3. An excavating-wheel for a ditching-machine having a circle of segmental abutting plates about its circumference and buckets attached to said plates and overlapping and connecting adjoining plates.

4. An excavating-wheel for a ditching-machine having a circle of segmental abutting plates attached to its frame-work and lying in the plane of the wheel and buckets attached to said plates and overlapping and connecting adjoining plates.

5. In a ditching-machine, the combination of a bucket provided with a hinged side and a rear door attached to said hinged side, with a fixed stop for preventing the hinged side from opening too far, and thus causing the rear door to come in contact with a fixed part of the machine, substantially as set forth.

6. The combination of the excavating-bucket having a hinged side and a rear door attached thereto, with fixed scraper 7, provided with one or more inclined fingers, 8 9, and stop 13, substantially as and for the purpose set forth.

7. In a ditching-machine, the combination of the excavating-wheel with a protecting-shield, the edge of the shield fitting into a groove provided for its reception in the circumferential part of the wheel.

8. In a ditching-machine, the combination of the excavating-wheel with a protecting-shield hung from the axle thereof.

9. In a ditching-machine, the combination of the excavating-wheel with a protecting-shield hung from the axle thereof and provided with a stay connecting the shield with the stationary part of the frame-work of the machine.

10. In a ditching-machine, the combination, with the excavating-wheel having on one side of its felly a metal facing, of a protecting-shield suspended from the machine, the edge thereof being received in a recess provided between the felly of the wheel and the said metal facing.

11. In a ditching-machine, the combination, with an excavating-wheel provided with fixed buckets, of detachable cutting-fronts for some or all of the buckets and braces connecting the same with the bucket.

12. In a ditching-machine, the combination, with an excavating-wheel provided with fixed buckets, of a detachable cutting-front provided with a shank for attachment to the wheel and one or more braces for connecting the cutting-front with the bucket.

13. In a ditching-machine, the combination, with the excavating-wheel provided with fixed buckets, of the detachable cutting-front 4, provided with shank 5 and braces 6, substantially as set forth.

14. The combination of a ditching-machine, means for propelling the same, and a chain connecting the forward part of the tongue with the frame-work on one side, whereby a permanent inclination may be given to the front axle with reference to the frame-work.

15. The combination, in a ditching-machine, of means for driving the same, a chain connecting the frame-work on one side with the forward part of the tongue, and means for adjusting said chain, substantially as set forth.

16. The combination of a ditching-machine, a cable and drum for propelling the same, and an adjustable connection between the forward part of the tongue and the cable, whereby a fixed inclination may be given to the forward axle.

17. In a ditching-machine, the combination of a drum and cable for propelling the same, means for connecting the forward part of the tongue with the cable, whereby movement of the tongue in one direction is prevented, and a chain connecting the tongue with the frame of the machine, whereby movement in the other direction is prevented and a permanent inclination of the front axle to the frame of the machine is secured.

18. In a ditching-machine, the combination, with the tongue 45, of the arm 47 and adjustable pulley 49.

19. In a ditching-machine, the combination of a swinging frame, a cable, a drum journaled on said swinging frame, and means for adjusting said frame so as to vary the position of the drum with reference to the surface of the ground.

20. The combination, in a ditching-machine, of the swinging frame 19, the drum 22, journaled therein, and the chain 40, connecting the rear end of said frame with the frame-work for holding up said frame-work when the cable is slackened, substantially as set forth.

21. The combination of the swinging frame 19, the chain 40, connecting the rear end of the same with the main frame-work, and means for adjusting said chain, substantially as and for the purpose set forth.

22. In a ditching-machine, the combination of a cable and drum for the same, a swinging frame in which said drum is journaled, and a connection between said swinging frame and the main frame-work of the machine for determining the position of the drum when the cable is under tension and taking a part of the strain of said cable, substantially as and for the purpose set forth.

23. In a ditching-machine, the combination of a cable, a drum for the same, a swinging frame in which said drum is journaled, and a connection between that part of the frame-work in which said drum is journaled and the main frame-work of the machine, for taking the strain of the cable and determining the position of the drum, substantially as set forth.

24. In a ditching-machine, the combination of a cable, a drum for the same, a swinging frame in which said drum is journaled, a connection between said frame and the main frame-work of the machine for determining the position of said frame-work, and means for adjusting said connection.

25. In a ditching-machine, the combination of cable 24, drum 22, swinging frame 19, in which said drum is journaled, bracket 41, and chain 40, substantially as and for the purpose set forth.

26. In a ditching-machine, the combination of a metal cable, a drum, a casing for retaining the cable when slackened upon the drum, and means for adjusting the pressure of said casing upon the cable.

27. In a ditching-machine, the combination of a metal cable, a drum for the same, a casing made in two parts for retaining the cable when slackened upon the drum, said parts having rearward extensions, and means for forcing said rearward extensions apart, so as to cause the two parts of the casing to clasp the cable more tightly when desired.

28. The combination of a metal cable, a drum, a piece of casing mounted so as to swing and having rearward extensions, and means for operating on said rearward extensions to cause the casing to bear more or less heavily upon the cable.

29. The combination, with the drum, of casing 32 and 33, having rearward extensions 35 with conical plug 36, substantially as and for the purpose set forth.

30. In a ditching-machine, the combination of a cable, a drum for the same, a secondary shaft upon which said drum is mounted, a casing for retaining the cable in position upon the drum, means for adjusting the pressure of said casing upon the cable, gearing between said secondary shaft and the main shaft of the machine, means for throwing said gearing in and out of gear with the main shaft, and a connection between the means for regulating the pressure of the casing upon the cable and the means for controlling the gearing of the main shaft with the secondary shaft, whereby, when the main shaft is engeared, the pressure of the casing on the cable will be increased.

31. The combination of cable 24, drum 22, secondary shaft 21, upon which said drum is mounted, casing 32 33, having rearward extensions 35, plug 36, arm 37, gearing 25 27, clutch mechanism 29, and lever 38, substantially as and for the purpose set forth.

32. A follower for a ditching-machine narrower at the rear than at the front, whereby clogging by a caving of the walls of the ditch against its sides is prevented.

33. The combination of a ditching-machine, a follower therefor, a bridge at the rear of the follower, and an adjustable connection between the follower and the bridge.

34. The combination of a ditching-machine, a follower having an inclined rear end, and a bridge bearing against said incline, whereby the follower is prevented from tipping.

35. The combination of a ditching-machine, a follower having an inclined rear end, a bridge bearing against the same, and an adjustable connection between the bridge and the ditching-machine, whereby the bridge may be adjusted to the follower for the varying depths of ditch.

36. The combination of a ditching-machine, a cable for propelling the same, a pivoted frame for holding the cable against the surface of the ground, and a removable stop for preventing the swinging of the frame backward when the machine is in operation.

37. The combination of cable 24, pivoted frame 50, roller 52, and stop 73, substantially as and for the purpose set forth.

38. In an anchor for a ditching-machine, the combination of a frame-work, pins pivoted to said frame-work, stops for preventing said pins from turning completely around, and connections between said pins and the cable, whereby the strain on the cable causes the points of the pins to be thrown downward into the earth.

39. In a ditching-machine anchor, the combination of the frame-work, a pin attached to a shaft journaled in said frame-work, and a projection from said shaft, to which the cable is attached, whereby the tension of the cable causes the points of the pins to be automatically thrown downward into the earth.

40. In a ditching-machine anchor, the combination of pins 62, shaft 60, and projection 64, with which the cable is connected, substantially as and for the purpose set forth.

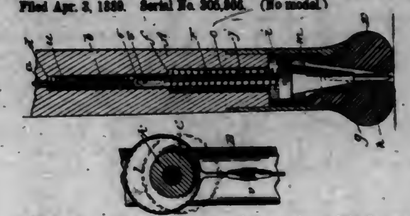
41. In a ditching-machine anchor, the combination of frame-work 56 57, pins 62, shaft 60, upwardly-projecting arm 64, and stop 63.

42. In a ditching-machine anchor, the combination, with a suitable frame-work, of pivoted pins, chain 66, and roller 71, substantially as and for the purpose set forth.

404,302. COMPOUND FOR PRESERVING TIMBER. JOSEPH W. PUTNAM, New Orleans, La. Filed Feb. 21, 1888. Serial No. 300,747. (No specimens.)

Claim.—A wood-preserving compound containing rosin, petroleum, and creosote-oil, substantially as described.

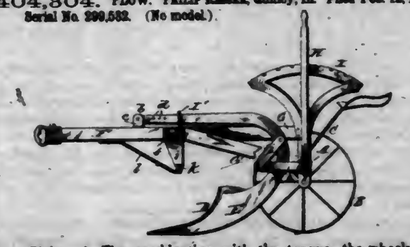
404,303. CRUTCH. LOUIS H. REMILLARD, Northampton, Mass. Filed Apr. 3, 1888. Serial No. 305,986. (No model.)



Claim.—1. A crutch having an axial bore through its lower staff portion, and having its intermediate handle-support provided with a cam mounted for rotation, a spur-spindle in said bore and a spring for forcing same outwardly, and a connection, *q*, by one end secured to said spindle and by its other provided with a ring-head engaging said cam, substantially as described.

2. A crutch having its lower staff portion axially bored and provided therein with the seats *d* and *f*, and having its intermediate handle-support provided with a cam, *l*, mounted for rotation, a shouldered spur-spindle in said axial bore having the bifurcated end and pin *s*, the connection *q*, provided at one end with the ring-head embracing said cam and at its other end with the slot by which it engages said pin, the springs *u* and *j*, and the apertured yielding knob, substantially as and for the purposes described.

404,304. PLOW. PHILIP REBER, Quincy, Ill. Filed Feb. 12, 1888. Serial No. 299,552. (No model.)



Claim.—1. The combination, with the tongue, the wheels, the axle, and the operating-lever, of the plow-beam, curved, as shown, and pivotally connected at its forward end to the tongue, the arms A, extending forward from the axle and loosely embracing the plow-beam, and the links pivotally connected at one end to the ends of said arms, and at the other end pivotally connected to the plow-beam above said arms, substantially as shown and described.

2. The combination, with the tongue, the wheels, the axle, and the plow-beam pivotally connected at its forward end to the tongue, of the arms A, the operating-lever rigidly connected therewith, the links *i*, pivotally connecting said plow-beam and arms, the adjustable brace G, and angular brace G', secured to the axle and to the rear of the tongue, substantially as shown and described.

404,305. MICROMETER-GAGE. JOHN RICHARDS, San Francisco, Cal. Filed Dec. 29, 1880. Serial No. 23,067. (No model.)

Claim.—1. As an improvement in measuring-machines, the combination, with a dividing-wheel, of an auxiliary scale and a double pointer for the purpose of indicating the errors of the screw, substantially as shown and described.

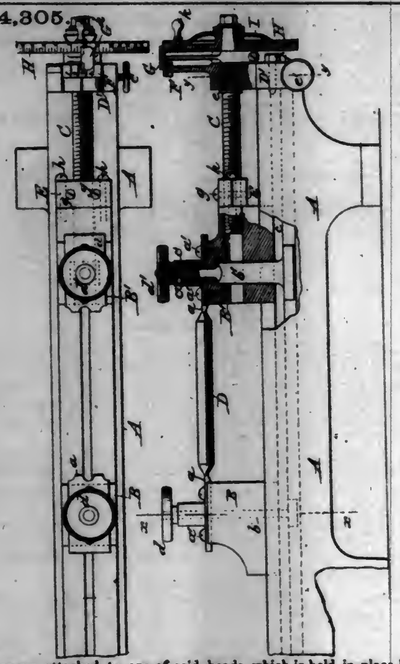
2. A movable double pointer placed between the scales of a measuring-machine, and in combination therewith, for the purpose of indicating the relation between an error-scale and a dividing-scale, substantially as set forth.

3. The combination, in a measuring-machine having inclined ways, of the measuring-screw, the movable or sliding heads provided with contact-points, and an adjustable divided nut clamped to one of the heads transversely to the axis of the screw and above the ways, said screws being placed between the contact-points and ways for the purpose of equalizing strain, substantially as specified.

4. The combination, in a measuring-machine, of a movable double pointer, a division-wheel, a slip-bar or friction-driver, an error-scale, and a measuring-screw, all constructed and arranged substantially as set forth.

5. The combination, in a measuring-machine, of ways with inclined surfaces, movable heads provided with contact-points, a measur-

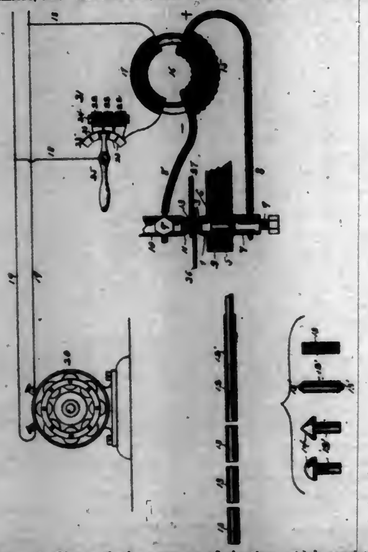
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ing-screw attached to one of said heads, which is held in place by devices giving an elastic or yielding pressure, a division-wheel having a slip-bar or friction-driver, an error-scale, and a double pointer, all constructed and arranged substantially as and for the purpose shown and described.

6. In a measuring-machine, the combination, with the division-wheel, of the measuring-screw and the auxiliary scale adapted to compensate for any error of pitch in said screw, substantially as described.

404,306. PROCESS OF ELECTRIC RIVETING. ELIAS R. RICE, Baltimore, Md. Filed Mar. 5, 1889. Serial No. 301,913. (No model.)



Claim.—1. The method or process of riveting, which consists in first interposing insulating material between the rivet and the articles to be riveted, then inserting the rivet into the rivet hole or holes, then heating the rivet by the passage through the same of an electric current of comparatively great quantity and low tension, and then heading the rivet, substantially as described.

2. The method or process of riveting, which consists in interposing insulating material between the rivet and articles to be riveted, then heating the rivet to the required degree of incandescence by the passage through the same of an electric current of suitable quantity and tension, then heading the rivet and maintaining the same in the desired state of incandescence by suitably regulating the current during the heading operation, substantially as described.

3. The method or process of riveting, which consists in first interposing insulating material between the rivet and articles to be riveted, then inserting the rivet into the rivet hole or holes, then passing an electric current of comparatively great quantity and low tension through the rivet until the latter is heated to the desired degree of incandescence, then heading the rivet and at the same time maintaining the incandescence of the same by the continued flow of current, and finally gradually reducing and cutting off the current while the heading is completed, substantially as described.

4. The method or process of riveting metal structures together, which consists in first inserting a metal rivet having an insulated shank and bare conducting ends into the rivet-hole, then connecting the bare ends of the rivet with the terminals of an electric circuit, then charging said circuit with an electric current or currents of proper heating effect until the rivet is heated to the desired degree of incandescence, and then heading the rivet, substantially as described.

5. The method or process of riveting metal structures together, which consists in first inserting a metal rivet having an insulated shank and bare conducting ends into the rivet-hole, then connecting the bare ends of the rivet with the terminals of an electric circuit, then charging said circuit with an electric current or electric currents until the rivet is heated to the desired degree of incandescence, then heading the rivet while the heating-current is maintained, but gradually diminished, and finally breaking the circuit, substantially as described.

6. The method or process of riveting metal structures together, which consists in first interposing insulating material between the rivet and the articles to be riveted, then making electrical contact between the ends of the rivet and an anvil and a heading-die, respectively, which constitute the terminals of an electric circuit, then charging said circuit with an electric current or currents until the rivet is heated to the desired degree of incandescence, and then forcing the heading-die upon the rivet until the heading operation is completed, substantially as described.

7. The method or process of riveting, which consists in interposing between the rivet and the articles to be riveted a coating of insulating material, then passing an electric current of the requisite volume through said rivet to raise it to the required temperature, and then heading or upsetting the rivet, substantially as described.

404,307. TRUSS. JOHN C. ROBEN, Wauseon, Ohio. Filed Feb. 13, 1888. Serial No. 263,775. (No model.)



Claim.—A hollow permanently-inflated rubber air-pad cast integral, and consisting of an inner convex face formed by an elastic pliable wall, a rigid flat rear wall formed by a double thickness of rubber, and a flat metal plate centrally located within and of about the same diameter as the wall, the rubber being cast around and completely surrounding said plate, thereby permanently and rigidly securing the same within the rear wall, and one or more screws or lugs extending through the outer rubber portion of the rear wall and secured to or formed with the plate, as set forth.

404,308. RAIL-JOINT. ABEL J. SCHAFF, Marion, Pa., assignor of one-half to William R. Early, same place. Filed Jan. 26, 1888. Serial No. 297,068. (No model.)

Claim.—1. In a rail-joint, the combination, with the chair having a base provided with an inclined upper surface, and having upwardly-extended flanges, and a web between said flanges, of the rail



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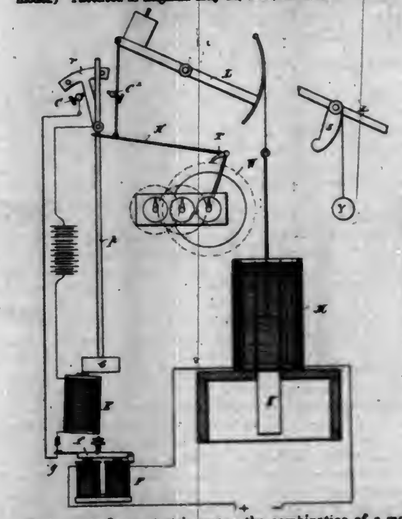
having longitudinal notches engaging said web, and the wedge inserted through the space between the rails and the inclined upper surface of the base of the chair, as set forth.

2. The combination of the chair having a base provided with an inclined upper surface, the flanges rising from the edges of said base, and the web between said flanges of the rails having longitudinal notches engaging said web, and the wedge inserted between the lower side of the rails and the upper surface of the base of the chair and having a tine adapted to be bent to one side, as set forth.

404,309. BLUE AZO DYE. JAKOB SCHMID, Basle, Switzerland, assignor to the Society of Chemical Industry, same place. Filed Sept. 24, 1888. Serial No. 286,242. (No specimens.)

Claim.—The blue dye-stuff or coloring-matter obtained by subjecting the dialkilized asonaphthalise-metaamidophenol to the action of a reducing agent and subsequent treatment with an oxidizing agent, said coloring-matter having the following characteristics: It presents a dark-blue powder of a metallic luster, which is but difficultly soluble in hot water; it dyes blue all animal fibers, as well as cotton prepared with tannin; its blue solution becomes dissolved upon the addition of a reducing agent, but when an oxidizing agent is added the blue color is immediately recovered.

404,310. ELECTRIC METER. ROBERT P. SELLON, Lambeth, County of Surrey, England. Filed Mar. 6, 1888. Serial No. 302,044. (No model.) Patented in England May 14, 1886, No. 6,508.



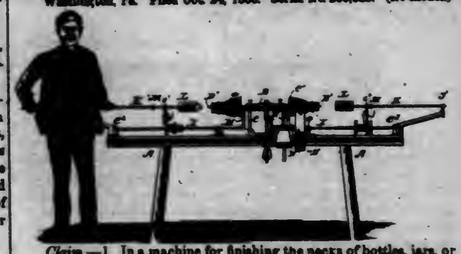
Claim.—1. In an electric meter, the combination of a moving body, such as a pendulum, a counting mechanism, a pawl for actuating the same, a link for transmitting the motion of said pendulum or body to said pawl, adjusting mechanism, as specified, for varying the point of connection between said link and said pendulum or body, and thereby varying the stroke of said pawl, and a solenoid in the circuit whose current is to be measured, the core of said solenoid being connected with and actuating said adjusting devices, substantially as described.

2. In electric meters, a moving body, such as a pendulum, a counting mechanism, a pawl or equivalent device acted upon by the said pendulum or moving body, so as to actuate the counting mechanism, a magnet or solenoid in the circuit of the current to be measured, and a lever, snail-cam, or equivalent device operated by the last-named magnet or solenoid to vary the stroke of the pawl or the like in accordance with the variation in the current to be measured, in combination with a magnet in the circuit of the said current and an armature which completes the circuit for operating the pendulum when a current to be measured is passing, all substantially as hereinbefore described.

3. In an electric meter, the combination of a counting mechanism, a pendulum, a pawl and ratchet-wheel actuated thereby, an oscillating link or connection-rod connected at one end with said pawl and at the other mounted on the pendulum-rod so as to move freely thereon, and an electro-magnetic device for moving said link vertically on said pendulum-rod as the current varies, substantially as described.

4. The combination of a moving body, such as a pendulum, a counting mechanism, a pawl, a variable connection for transmitting motion from said body to said pawl, a solenoid whose core controls said variable connection, a snail-cam or eccentric or a suitable axis interposed between said core and said connection, and a weight whose lift is varied by said eccentric or cam, substantially as described.

404,311. MACHINE FOR FINISHING THE NECKS OF BOTTLES, JARS, &c. HARRY SIMPLE, Steubenville, Ohio, and CHARLES H. BRADY, Washington, Pa. Filed Oct. 24, 1888. Serial No. 289,083. (No model.)



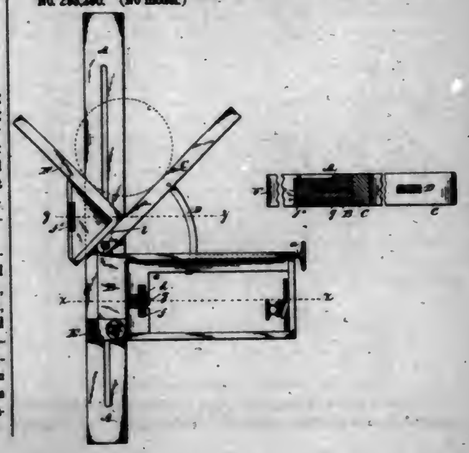
Claim.—1. In a machine for finishing the necks of bottles, jars, or other like articles, the combination of means to hold the outside of the neck and finish the inside of the same, adapted to have a rotative movement back and forth, a rod provided with a socket for holding, presenting, and withdrawing the bottle, jar, or other article from the plug and jaws, and another rod adapted to regulate the distance of travel between the bottle, jar, or other article and the plug and jaws, substantially as described.

2. In a machine for finishing the necks of bottles, jars, and other like articles, the combination of an upper rod provided with a stop to carry the socket for the bottle, jar, or other like article, adjustable supports to hold said rod at the desired elevation, and a lower rod carrying a vertically-adjustable screw-threaded standard and a clutch, substantially as and for the purpose described.

3. In a machine for finishing the necks of bottles, jars, or other like articles, the combination of an upper rod to carry the socket for the bottle, jar, or other like articles, a socket for the same, an adjustable lower rod carrying a standard and a clutch, a sleeve upon a shaft, a shaft having an adjustable plug, and a train of gears to give a rotative movement to the shaft, substantially as described.

4. In a machine for finishing the necks of bottles, jars, or other like articles, the combination of a rod to carry the bottle, jar, or other article, another rod to carry a clutch, a sleeve, and an arm-support upon a shaft, and arms and fingers to hold and finish the necks of such bottles, jars, or other articles, substantially as described.

404,312. COMBINED SQUARE, CENTER-SQUARE, AND BEVEL. EDWARD R. SHEPARDSON, Greenfield, Mass. Filed Dec. 11, 1888. Serial No. 293,260. (No model.)



Claim.—1. The combination, with the head B, provided with a slot at its base edgewise to fit over the blade of a square, and having a conical opening, and a T-opening to receive a conical-headed screw and the nut of the same, of the slotted conical clamping screw and head and the blade A, as and for the purpose set forth.

2. The combination, with the rectangular head B, the clamping screw and nut *g h*, fitted therein, as described, the screw *a*, and the slotted blade A, of the arm C, pivoted to an exterior angle of the said head, and the arc D, pinned to said arm and arranged to enter a slot in the edge of said head, as specified.

3. The combination, with the head B, hinged arm C, provided with an arc, D, substantially as described, of the blade A and auxiliary piece F, provided with a conical opening, and a slot to receive, respectively, the conical slotted screw and the head of the same, and the conical slotted screw-bolt, as and for the purpose set forth.

404,313. **HINGE.** LEVI K. SHERMS, New York, N. Y. Filed Jan. 24, 1889. Serial No. 297,411. (Model.)

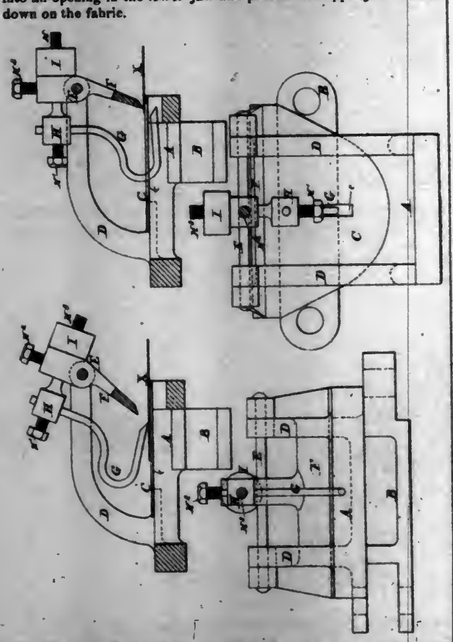


Claim.—1. The hinge-plates A A, and the pintle B, by which said plates are connected, and the axis of which is at right angles with the plane of said plates, in combination with the brace-plates D D, the pintle K, by which said brace-plates are hinged together, said pintle having its axis in the same plane, or one parallel, with the plates A A, and the pintles G G, hinging the plates D to the plates A, substantially as described.

2. The hinge-plates A A, in combination with the brace-plates D D, having ears or lugs E and F, the pintles G G, connecting the plates D to the plates A along the edges, and the springs H, coiled upon said pintles G, substantially as described.

404,314. **CLIP OR HOLDER FOR CLOTH-STRETCHING MACHINES.** DAVID P. SMITH, Salford Iron Works, near Manchester, County of Lancaster, England, assignor to Mather & Platt, same place. Filed Aug. 23, 1888. Serial No. 283,548. (No model.) Patented in England Feb. 25, 1887, No. 2,942, and in France Feb. 23, 1888, No. 183,930.

Brief.—The construction is set forth in the claims, and the object is to keep the upper jaw of the clip raised till the edge of the fabric is in the required position between the two jaws, when the guard drops into an opening in the lower jaw and permits the upper jaw to close down on the fabric.



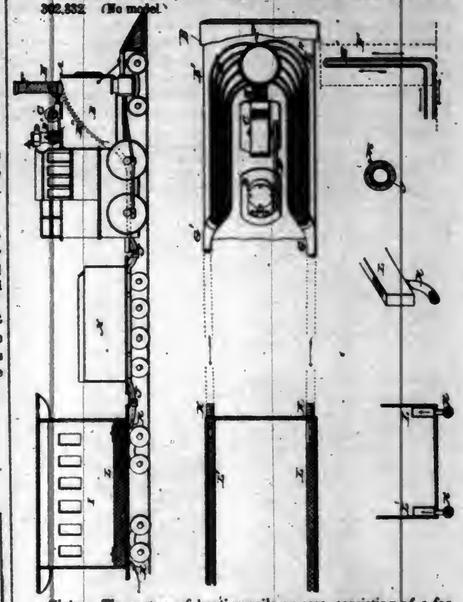
Claim.—1. The combination, with a link, of a clip or holder composed of a lower jaw fixed on the link, a pivoted upper jaw that drops by gravity toward the lower jaw to grip the fabric between them, and a guard carried by the pivoted jaw to rest on the fabric and keep the upper jaw raised until the fabric is drawn under the guard, substantially as described.

2. The combination, with a link carrying a fixed lower jaw, of a pivoted upper jaw that drops by gravity toward the lower jaw to grip the fabric between them, a guard movably connected with the pivoted jaw to rest on the fabric and keep the upper jaw raised until the fabric is drawn from under the guard, and means for adjusting the lower end of the guard to and from the gripping-edge of the pivoted jaw, substantially as described.

404,315. **RULING DEVICE.** MURRAY H. SPEAR, London, England. Filed Apr. 26, 1888. Serial No. 271,842. (No model.) Patented in England Mar. 15, 1888, No. 4,096.

Claim.—A disk for ruling purposes adapted to carry the marking compound, made of vulcanized fiber or equivalent material which is sufficiently fibrous to take the marking compound, and firm enough to form the perfect edge to give the impression to form the line, substantially as described.

404,316. **HEATER FOR RAILROAD-CARS.** DAVID SPRINGER and CHARLES A. SPRING, Royer's Ford, Pa. Filed Mar. 11, 1889. Serial No. 302,832. (No model.)



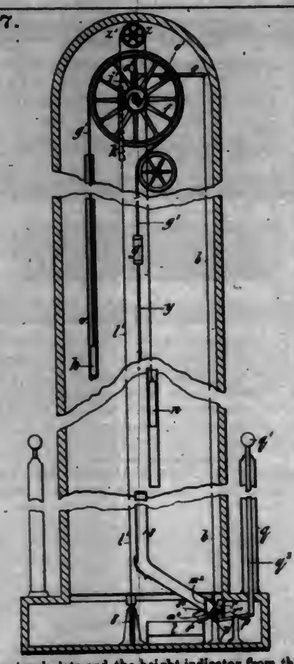
Claim.—The system of heating railway-cars, consisting of a fan or air pump driven by an engine separate from that of the locomotive and located upon the latter, a cluster of several pipes passing from the fan or air pump into the lower part of stack F and upward close to the inner surface of the latter, thence down again to a point near the bottom thereof, thence in two divided series close to the cylindrical surface of the boiler and between the latter and the outer jacket thereof on each side, then joining each series in one single pipe on each side of the locomotive, and conducting the heated air thence through a system of flexible non-conducting tubes from car to car, and through each car by hot-air conductors located above the floors thereof, substantially as described.

404,317. **MACHINE FOR MEASURING THE HEIGHT OF HUMAN BODIES AUTOMATICALLY.** WILLIAM F. STANLEY, South Norwood, County of Surrey, England. Filed Dec. 6, 1887. Serial No. 257,139. (No model.) Patented in England Apr. 5, 1886, No. 4,726.

Claim.—1. In a machine for measuring the height of a person, the combination of a rotary height-indicator, a descending and ascending head-plate to be brought in contact with the head of the person, and mechanism, substantially as specified, for connecting the head-plate and height-indicator, whereby said indicator is automatically operated by the movements of the head-plate, substantially as described.

2. The combination, in a machine for measuring the height of a person, of a movable platform on which the person stands, a movable height-indicator, a descending and ascending head-plate to be brought in contact with the head of the person, and mechanism for operating the head-plate and the height-indicator from the platform, substantially as described.

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3. The combination, in a machine for measuring the height of a person, of a movable platform on which the person stands, a descending and ascending head-plate to be brought in contact with the head of the person, a height-indicator, and mechanism for actuating the head-plate and the height-indicator from the platform, and a tube for the conduct of a coin to act on said mechanism to put it into action, substantially as described.

4. The combination, in a machine for indicating the height of a person, of a vertically-movable carriage, a descending and ascending head-plate connected with the carriage, a suspended weight which tends to counterbalance the carriage and head-plate, a movable height-indicator, and mechanism which actuates the height-indicator by the movement of the head-plate, substantially as described.

5. The combination, in a machine for indicating the height of a person, of a casing, a movable platform, a vertically-movable carriage, a head-plate connected to and movable with the carriage, mechanism for bringing the head-plate into action, a tube for the conduct of a coin to render said mechanism operative, a suspended weight which tends to counterbalance the carriage and head-plate, a movable height-indicator, and mechanism which moves the height-indicator by the movement of the head-plate, substantially as described.

6. The combination, in a machine for indicating the height of a person, of a height-indicator, a movable platform, connections between the platform and height-indicator, a descending and ascending head-plate which actuates the height-indicator, mechanism for bringing the head-plate into action, and a tube for the conduct of a coin to render said mechanism operative, substantially as described.

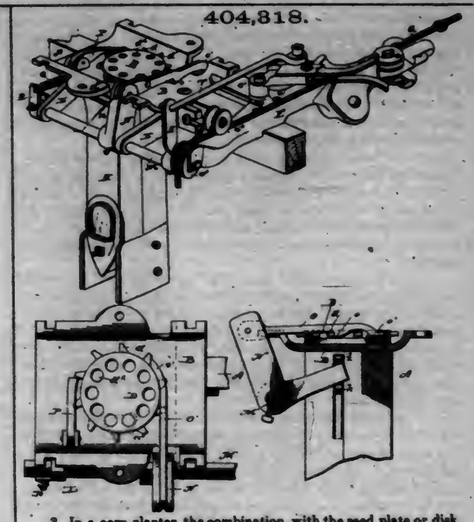
7. The combination, in a machine for indicating the height of a person, of a descending and ascending head-plate, a height-indicator a movable platform, and mechanism operated by the platform to move the head-plate and height-indicator to indicate the height of a person, substantially as described.

404,318. **CORN-PLANTER.** NILS O. STAHER, Madison, Wis. Filed Sept. 22, 1888. Serial No. 286,074. (No model.)

Claim.—1. In a corn-planter, the combination, with the seed plate or disk, of a reciprocating latch provided with a rigid tooth for rotating and a rigid stop for locking the said plate against further rotation, substantially as described.

2. In a corn-planter, the combination, with the seed plate or disk provided with peripheral teeth having one side flat and the other side beveled, of a reciprocating latch provided with a downward-extending tooth for engaging the said flat side of the teeth to rotate the seed-plate, and a curved end for engaging the beveled side to lock the seed-plate, substantially as described.

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3. In a corn-planter, the combination, with the seed plate or disk provided with peripheral teeth having one side flat and the other side beveled, of a reciprocating latch provided with a downward-extending tooth for engaging the said flat sides of the teeth to rotate the seed-plate, and a curved beveled end for engaging the said beveled sides to lock the seed-plate, substantially as described.

4. In a corn-planter, the combination, with the seed plate or disk provided with peripheral teeth having one side flat and the other beveled, of a reciprocating latch provided with a downward-extending tooth for engaging the said flat sides of the teeth to rotate the seed-plate, a curved beveled end for engaging the said beveled sides to lock the seed-plate, and a dog or pawl for preventing backlash, substantially as described.

5. In a corn-planter, the combination of the rock-shaft, a bell-crank fixed thereto, a combined reciprocating and locking latch pivoted to one end of the said bell-crank, a seed plate or disk provided with peripheral teeth, and a dog or pawl, substantially as and for the purpose specified.

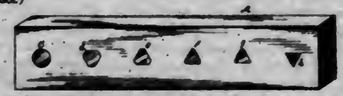
6. In a corn-planter, the combination of the rock-shaft, a bell-crank fixed thereto, a reciprocating and locking latch pivoted to one end of the said bell-crank, a seed plate or disk provided with peripheral teeth, a dog or pawl, and a retracting-spring secured to the frame of the machine and to the said rock-shaft, substantially as described.

7. In a corn-planter, the combination, with the rock-shaft, a bell-crank fixed thereto, and a vertically-reciprocating rack-bar connected with the lower limb of said bell-crank, of a rotary seed-valve provided with a cogged hub, substantially as and for the purpose set forth.

8. In a corn-planter, the combination, with the rock-shaft, a bell-crank fixed thereto, a combined reciprocating and locking latch pivoted to the upper end of the said bell-crank, a seed-plate provided with peripheral teeth, and a pivoted pawl or dog, of the rack-bar connected with the lower end of the said bell-crank, and a rotatable seed-valve provided with a cogged hub engaging the said rack-bar, whereby the seed-plate and the seed-valve are operated simultaneously, substantially as and for the purpose set forth.

9. In a corn-planter, the combination, with the rock-shaft, a bell-crank fixed thereto, a combined reciprocating and locking latch pivoted to the upper limb of the said bell-crank, a rotatable seed-plate provided with peripheral teeth adapted to engage with the said latch, and a pivoted pawl or dog, of a rack-bar connected to the lower limb of the said bell crank, a rotatable seed-valve provided with a cogged hub, and a retracting-spring for the said rock-shaft, substantially as and for the purpose set forth.

404,319. **METHOD OF DRAWING WIRE OF ONE SECTIONAL FORM INTO WIRE OF ANOTHER SECTIONAL FORM.** WILLIAM TAYLOR, Allegheny, Pa. Filed May 26, 1888. Serial No. 275,302. (No model.)



Claim.—1. The herein-described method of converting wire, or its equivalent, of one sectional form into a wire, or its equivalent, of

another sectional form, it consisting in subjecting it to a series of two or more drawing actions, at each of which a portion of the surface is forced away from its previous form, the material assuming the desired sectional form at the last action of the series, and being subjected during one or more drawing actions preceding the said last one to a drawing action by which a portion only of the surface is forced away from its previous form, the residue of the surface being thereby unaffected, substantially as set forth.

2. The herein-described method of converting wire of one sectional form into wire of another sectional form, it consisting in subjecting it to a series of drawing actions, at each of which a portion of the surface of the wire is forced away from its previous form, the residue of the surface remaining unaffected, and the extent of the surface acted on increasing with each successive action, substantially as described.

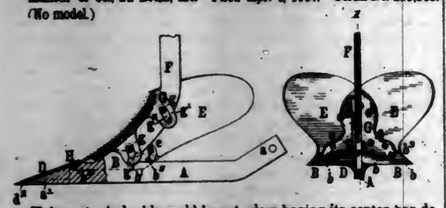
3. The herein-described method of converting wire of one sectional form into wire of another sectional form, it consisting in subjecting it to a series of drawing actions, at each of which only a portion of the surface is affected by the walls of the draw-plate, the residue of the surface remaining substantially unaffected, and at the last of which actions the extent of surface affected by the walls of the draw-plate is greater than that affected at any previous action, substantially as described.

4. The herein-described method of manufacturing wire triangular in section, it consisting in subjecting wire initially circular in section to a series of several drawing actions, at each of which three separate portions of the surface of the wire are pressed relatively inward, three intermediate portions of said surface being allowed to remain with the curvature they had prior to said action, substantially as set forth.

5. The herein-described method of manufacturing wire triangular in section, it consisting in subjecting wire initially circular in section to a series of several drawing actions, at each of which three separated portions of the surface are pressed relatively inward, and at each of which actions after the first the extent of the inward-pressed surface gradually increases relatively to the preceding, substantially as set forth.

6. The herein-described method of manufacturing wire of one gage and triangular in section, it consisting in subjecting wire initially circular in section and of a larger gage to a series of drawing actions, during the first one or more of which the wire remains round in section, but is reduced to the gage of the desired triangular wire, and during one or more of the remainder of which actions separated portions only of the surface are pressed relatively inward, the wire being thereby gradually brought to a triangular sectional form, substantially as set forth.

404,320. PLOW. LEWIS S. TEBBETTS and CHARLES H. POPE, St. Louis, Mo., and JOHN A. STEWART, Houston, Tex., assignors to Deere, Mansur & Co., St. Louis, Mo. Filed Apr. 4, 1887. Serial No. 233,583. (No model.)



Claim.—1. A double-mold-board plow having its center bar depressed and extended in front of the share and provided with the removable point, said point having a lip which laps upon the nose of the mold-board, as described.

2. The combination of the channeled center bar and the point D, having the flanges *d d* and shoulder d^3, as described.

3. The combination of the channeled center bar and the point D, having the flanges *d d* extended at *d'*, and the shoulder d^3, as described.

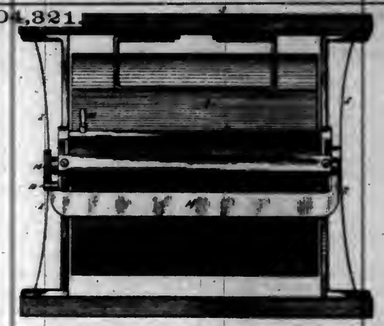
4. The combination of the mold-board, the shares, the standard, and the socket, said mold-board and shares as one piece being adjustable upon the standard, as described.

404,321. PAPER-CUTTER. WILLIAM H. TIVY and LEO EHRLICH, St. Louis, Mo., assignors to the American Roll Paper Company, same place. Filed June 12, 1888. Serial No. 276,792. (No model.)

Claim.—1. In a paper-cutter, the combination of a suitable support, knife, roll of paper, roller located close up against the knife, and a device for turning the roller to cause the paper to be moved by frictional contact between the roller and the knife, substantially as and for the purpose set forth.

2. In a paper cutter, the combination of a suitable support, knife, a roll of paper, roller located close up against the knife, and a means

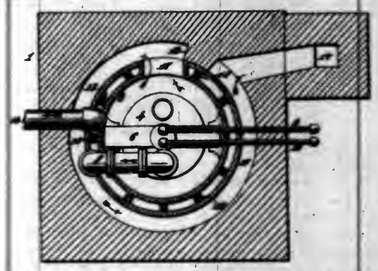
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for turning the roller, consisting of a pivoted plate having ratchet-connection with the roller, substantially as and for the purpose set forth.

3. In a paper-cutter, the combination of a suitable support, a knife, a roll of paper, a roller located close up against the knife, means for turning the roller to move the paper forward, and a pivoted ram-bar over the roller to prevent the retrograde movement of the paper, substantially as and for the purpose set forth.

404,322. APPARATUS FOR PRODUCING GAS. LORENZ R. TURNER, Columbus, Ohio. Filed Aug. 10, 1888. Serial No. 282,413. (No model.)



Claim.—1. In a gas-generating apparatus, the combination of a central retort having a box-conduit crossing its top, extending down along its sides, and communicating with the retort near its lower end, a surrounding shell containing alternating baffle-plates, a pipe connecting the top of the retort with the shell, and oil and steam pipes communicating with the box-conduit, substantially as described.

2. In a gas-generating apparatus, the combination of a central retort, a surrounding shell having a flue in its side, a pipe connecting the top of the retort with the interior of the shell, an inclosing furnace structure so arranged as to leave a draft-passage around the outside of the shell and provided with a chimney-flue near to the flue in the shell, but separated immediately therefrom by a buttress or projection in the wall, and a fire-box below the retort communicating with the flue in the shell, substantially as described.

3. In a gas-generating apparatus, the combination of a central retort having a box-conduit crossing its top, extending down its sides, and communicating with the lower part of the retort, a surrounding shell containing alternating baffle-plates and provided with flues in its sides, an inclosing furnace structure so arranged as to leave a draft-passage around the outside of the shell and provided with a chimney-flue near to the flue in the shell, but separated immediately therefrom by a buttress or projection in the wall, oil and steam pipes communicating with the box-conduit, a fire-box below the retort communicating with the flue in the shell, and a pipe connecting the top of the retort with the shell, substantially as described.

4. In a gas-generating apparatus, the combination of a central retort having a box-conduit crossing its top, extending down its sides, and communicating with the lower part of the retort, a surrounding shell provided with a flue in its side, an inclosing furnace structure so arranged as to leave a draft-passage around the outside of the shell and provided with a chimney-flue near to the flue in the shell, but separated immediately therefrom by a buttress or projection in the wall, a fire-box below the vertical retort communicating with the flue in the shell, oil and steam pipes communicating with the box-conduit, and a pipe connecting the retort with the shell, substantially as described.

5. In a gas-generating apparatus, the combination of a vertical retort having a central contraction and provided with a box-conduit crossing its top and extending down its sides and communicating

with the lower part of the retort, a surrounding shell containing a partition and alternating baffle-plates and provided with a flue in its side, an inclosing furnace structure so arranged as to leave a draft-passage around the outside of the shell and provided with a chimney-flue near to the flue in the shell, but separated immediately therefrom by a buttress or projection in the wall, oil and steam pipes communicating with the box-conduit, a fire-box below the vertical retort communicating with the flue in the shell, a pipe connecting the top of the vertical retort with the shell near the partition within the same, and an exit-pipe from the other side of said partition, substantially as described.

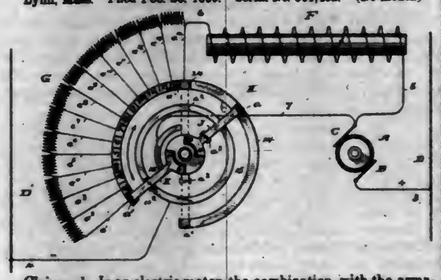
404,328. BUCKLE. GORDON M. TYRRELL, New Haven, Conn. Filed Sept. 8, 1888. Serial No. 284,860. (No model.)



Claim.—1. The combination of a frame, A, having an inwardly-turned upper edge and provided with spring-arms *a a*, formed integral with its side, with a movable slide, C, to operate said spring-arms, substantially as set forth.

2. The combination of a frame, A, having an inwardly-turned upper edge, and beveled sides having spring-arms *a a*, formed integral therewith, with a movable slide, C, to operate said spring-arms, substantially as set forth.

404,324. ELECTRO-DYNAMIC MOTOR. CHARLES J. VAN DEPOELE, Lynn, Mass. Filed Feb. 28, 1889. Serial No. 301,492. (No model.)



Claim.—1. In an electric motor, the combination, with the armature thereof, of a long field-magnet coil in series therewith, an adjustable resistance, and means for placing any desired portion of the resistance either in series or in shunt relation to the coils of the field-magnet, substantially as described.

2. In an electric motor, the combination, with the armature thereof, of a long series field-magnet coil, an adjustable resistance adapted to be connected in series therewith at starting, and means for placing said resistance or any desired portion thereof in derivation from the field-magnet coils, substantially as described.

3. In an electric motor, the combination, with the armature thereof, of a long series field-magnet coil, an adjustable resistance adapted to be connected in series therewith at starting, means for placing said resistance or any desired portion thereof in derivation from the field-magnet coils, an opposing or differential coil or coils upon the field-magnet, and series connections between the differential coil or coils and the resistance when in shunt relation with the field-magnet, substantially as described.

4. In an electric motor, the combination, with the armature, of a long field-magnet coil in series therewith, an adjustable resistance, a switch, connections between the coils of the field-magnets and the resistance and the switch, and means for placing the resistance in series or in shunt relation to the field-magnet coils or cutting it out entirely to regulate the power and speed of the motor, substantially as described.

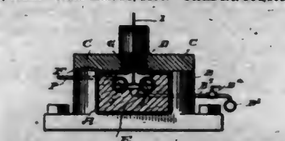
5. In an electric motor, the combination, with the armature, of a long series field-coil and an adjustable artificial resistance, a switch, and connections between the switch and the several portions of the resistance, said switch being so arranged that the resistance can be placed either in series or in derivation from the main field-magnet coils of the motor, substantially as described.

6. In an electric motor, the combination, with the armature, of field-magnet coils, an adjustable resistance, a switch, connections between the field-magnet coils and the coils of the resistance and the said switch, and a switch-lever adapted to be moved into successive engagement with the several parts of the switch, and to thereby connect the field-magnet coils and resistance in series, then gradually cut out the resistance, then connect the said resistance in derivations over the field-magnet circuit, and then gradually cut out the shunted resistance, or vice versa, substantially as described.

7. In an electric motor, the combination, with the armature, of a field-magnet coil in series therewith, an adjustable resistance, a switch, connections between the coils of the field-magnet and of the resistance and the switch, and a switch-lever adapted to be moved into engagement with the several parts of the switch and in one rotation to connect the resistance in series with the field-magnet coils, then to gradually cut it out, then to connect the entire resistance in derivation from the said field-magnet coils and cut it out altogether, substantially as described.

8. The combination, with a series field-magnet and a divided artificial resistance, of a switch having an extended terminal connected to one end of the field-magnet coil, a number of contact-points connected to terminals arranged along the resistance, an extended return-connection, a short segmental contact, a conductor extending from the beginning of the field-magnet to said contact, and a movable contact-arm provided with contacts adapted to engage the several parts of the switch and to connect the resistance in series or in derivation with the field-magnet coils, substantially as described.

404,325. CLOSED SLOTTED CONDUIT. CHARLES J. VAN DEPOELE, Lynn, Mass. Filed Mar. 21, 1889. Serial No. 304,195. (No model.)



Claim.—1. A conduit for electric conductors, comprising a slotted exterior casing, a conductor or conductors and supports therefor within the casing, flexible or yielding strips between the conductor-supports and the casing, and an elastic cushion or cushions between the flexible strips and the casing for holding the strips normally in close contact to close the slot.

2. A conduit for electric conductors, comprising a slotted exterior casing, a conductor or conductors, and an insulating support or supports therefor within the casing, strips of flexible insulating material between the conductor-supports and the casing, and elastic cushions between the casing and the strips acting to hold said strips normally in close contact.

3. A conduit for electric conductors, comprising a slotted exterior casing, a conductor or conductors and supports therefor within the casing, flexible strips between the conductor-supports and the casing, an elastic cushion or cushions between the flexible strips and the casing for holding the strips normally in close contact to close the slot, and means for supplying compressed air to the interior of the conduit to prevent the entrance of water.

4. A conduit for electric conductors, comprising a slotted exterior casing, a conductor or conductors, and an insulating support or supports therefor within the casing, strips of flexible insulating material between the conductor-supports and the casing, and elastic cushions between the edges of the slot of the casing and the strips for holding said strips normally in close contact and closing the slot.

5. A conduit for electric conductors, comprising a slotted exterior casing, a conductor or conductors and supports therefor within the casing, flexible or yielding strips of lubricated material between the conductor-supports and the casing, and an elastic cushion or cushions for holding the edges of the lubricated strips normally in close contact.

6. A conduit for electric conductors, comprising a slotted exterior casing, a conductor or conductors, and insulating-supports therefor within the casing, continuous strips of flexible material arranged along the upper part of the interior of the casing and having their upper inner surfaces in close contact and supplied with lubricating-material, continuous supports for the lubricated strips, and elastic cushions acting against the backs of said strips for holding them normally in close contact to close the slot of the casing.

7. A conduit for electric conductors, comprising a slotted exterior casing, a grooved insulating-filling for said casing, a conductor or conductors in the groove or grooves, flexible or yielding insulating-strips interposed between the filling and extending up into the slot of the casing, and elastic cushions against the backs of the strips in the slot and acting to hold them normally in close contact.

8. A conduit for electric conductors, comprising a slotted exterior casing, a conductor or conductors and supports therefor within the casing, flexible or yielding insulating-strips between the conductor-

support and the casing, a hollow elastic cushion or cushions between the upper edges of the strips and the casing, and means for distending the cushion or cushions for holding said strips normally in close contact to close the slot.

9. A conduit for electric conductors, comprising a slotted exterior casing, a conductor or conductors and supports therefor within the casing, flexible or yielding insulating-strips between the conductor-support and the casing, hollow elastic cushions interposed between the upper edges of the strips and the casing for normally holding the said strips in close contact to close the slot, and means for supplying compressed air to the interior of the hollow cushions for increasing their pressure upon the slot-closing strips, as desired.

10. A conduit for electric conductors, comprising a slotted exterior casing, flexible slot-closing strips normally in contact to close the conduit, contact devices engaging a conductor or conductors within the conduit, a thin blade or plate carrying contact devices at its lower edge and extending upwardly through the flexible slot-closing material and formed with upwardly-sloping extremities, whereby the slot is opened in an upward direction, but remains tightly closed about the sides of the plate.

11. The combination, with a closed slotted conduit, of an air compressor or compressors, electric motors for actuating the same, a circuit for supplying current to the motors independent of the conduit, and mains or pipes connecting the compressors and the conduit for supplying compressed air thereto.

12. The combination, with a closed slotted conduit, of means for supplying compressed air thereto, comprising one or more air-compressors, and an inlet pipe or pipes connecting the conduit and compressors, and valved outlets for facilitating the egress of water, when desired, and preventing the escape of air.

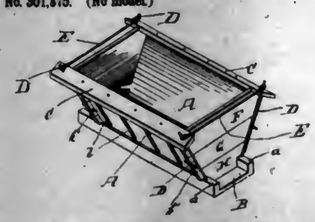
404,326. NUT-LOCK. CHARLES O. VINYARD, Navajo Springs, Ariz. Filed Jan. 10, 1889. Serial No. 296,006. (No model.)



Claim.—1. A nut-lock for a series of adjacent bolts, consisting of a plate or bar provided with a series of apertures to receive the nuts of said bolts and prevent the same from turning, the outer faces of the nuts lying beneath the outer face of said bar, a locking-nut upon an end of one of said bolts, screwed tightly upon the outer face of the bar, and a thin elongated spring-arm formed integral with said nut and extending radially from the same and adapted to engage the projecting end of an adjacent bolt, and thereby prevent the locking bar and nut from turning, said arm being sprung outwardly when the locking-nut is being rotated, substantially as described.

2. A locking-nut provided with an elongated thin spring-arm extending radially from the inner edge of the nut, said nut and arm being formed integral of spring-steel and the arm being adapted to be bent outwardly when the nut is being rotated, and when released to spring to its normal position and engage an adjacent bolt to hold the nut against loosening, substantially as described.

404,327. WOOD-RACK. HOMER N. WADSWORTH, Wellington, Ohio, assignor of one-half to J. H. Dickson, same place. Filed Mar. 5, 1889. Serial No. 301,875. (No model.)



Claim.—1. In a wood-rack, the bottom portion provided with upwardly-projecting perforated flanges, the hooked brace-rods, the end pieces having V-shaped notches formed in the upper corners thereof, and the end pieces having right-angle notches formed in the lower corners thereof, substantially as described, and for the purpose specified.

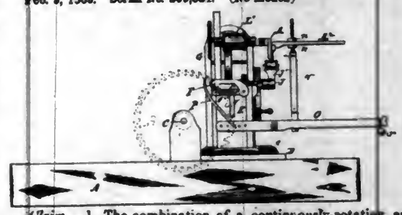
2. In a wood-rack, the combination of the bottom portion provided with upwardly-projecting perforated flanges, the hooked brace-rods, the notched end pieces, and the perforated cap-pieces, with the side-boards A, provided with side bars, *b*, substantially as and for the purpose set forth.

3. The combination, with a wood-rack, of the bottom B, provided with perforated flanges *a*, the rods D, and the perforated end piece, K, substantially as described and shown.

404,328. PROCESS OF SEPARATING PRECIOUS METALS FROM ORES. JULES WEHRICH, Béziers, Hérault, France. Filed May 10, 1888. Serial No. 273,492. (No specimens.) Patented in France Mar. 20, 1888, No. 176,471.

Claim.—The herein-described process of separating precious metals from auriferous or auro-argentiferous minerals, which consists, first, in freeing the mineral from sulphur, arsenic, antimony, &c., and oxidizing the base metals with which the precious metals are combined by heat; secondly, mixing with the mineral so prepared, in or about in the proportions set forth, a salt of the alkalies and silica, (when the mineral is deficient in silica;) third, converting the oxides of the base metals into silicates by fusion, and, lastly, separating the precious metals from the silicates by amalgamation, said silicates being previously pulverized.

404,329. SAW SHARPENER AND GUMMER. MICHAEL J. WELCH, Adel, Ga., assignor of one-half to John L. Studstill, same place. Filed Feb. 9, 1889. Serial No. 299,321. (No model.)



Claim.—1. The combination of a continuously-rotating emery-wheel, an oscillating frame or arm in which it is carried, a fixed plate attached to the frame or arm, an arm or plate pivoted at one end to the fixed plate and extending below the lower edge thereof, and a rocker-shaft and crank operating against the lower edge of the plates, substantially as set forth.

2. The combination of an oscillating arm, an emery-wheel carried thereby, the rocker-shaft and arm for causing the oscillation of the oscillating arm, a plate secured to the oscillating arm and operated upon by the arm of the rocker-shaft, a pivoted arm attached to and extending below the bottom of the plate, also operated upon by the rocker-shaft, a feed-lever connected to the pivoted arm, and a feed-finger connected to the lever for moving the saw in the manner hereinbefore set forth while the emery-wheel is being revolved, as set forth.

3. The combination of an oscillating arm, a side plate fixed to the free end thereof, a plate pivoted to the fixed plate at one end and held in a guide at the other and projecting beneath the lower edge of the said fixed plate, an arbor carried by the free end of the oscillating arm, an emery-wheel mounted in said arbor, a rocker-shaft mounted beneath the oscillating arm, having a roller-crank for operating on the lower edge of the plates, a pivoted feed-lever having a hook for feeding the saw, and connections from the pivoted plate to the feed-lever, as and for the purpose set forth.

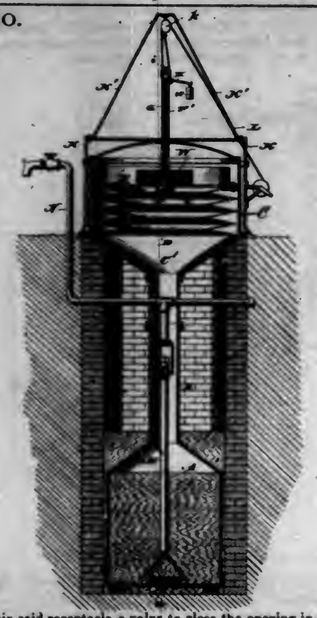
4. The combination of the double-arched standard bearing the main shaft-gears, the crank and pulley, arranged as described, the oscillating arm carrying the emery-wheel, arbor, and pulley, the steadying-post on which it is guided, the rocker-shaft having a slotted arm connected to the crank by a pitman which is detachable from the arm, and a roller-arm, a plate on the oscillating arm, under which the roller operates, a pivoted arm carrying the slotted extension, also resting upon the roller, the jointed rod, and the feed-lever, all substantially as and for the purpose set forth.

404,330. COMPRESSED-AIR WATER-ELEVATOR. MICHAEL WETZEL, Sidney, Nebr. Filed Feb. 28, 1889. Serial No. 301,524. (No model.)

Claim.—1. The combination, substantially as described, of the submerged reservoir provided at bottom with an inwardly-opening valve, a weighted bellows communicating through a pipe, b, with the upper end of said reservoir, a valved water-discharge pipe leading from near the bottom of the reservoir, an air-tube entering the bellows, a valve and its stem, and a weighted lever for controlling the position of the valve.

2. The combination, in a compressed-air water-elevator for wells, cisterns, or other bodies of water, of a frame or superstructure having a windlass attached thereto, a pulley, the cylindrical bellows provided with a weight and a valve-opening, said bellows being connected by a pipe to a submerged reservoir having a valve, *a*, a discharge-pipe

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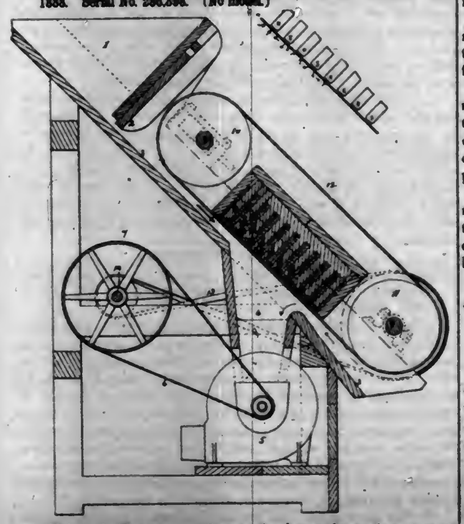


located within said receptacle, a valve to close the opening in the bellows, and a weighted lever to control the position of this valve, the parts being organized substantially as shown, and for the purpose set forth.

404,331. COMPOUND ORCIN DYE. RUPERT GRENVILLE-WILLIAMS, Albany, N. Y. Filed Nov. 1, 1888. Serial No. 289,761. (No specimens.)

Claim.—The process of producing new coloring-matters, which consists in combining one molecule of tetrazo-diphenyl or tetrazo-ditolyl or their sulpho-acids with first one molecule of naphthylamine or one of the present known sulpho-acids of naphthylamine, and then combining this intermediate product with one molecule of orcin or sulpho-acids of the same, substantially as set forth.

404,332. PROCESS OF SEPARATING ORES BY MAGNETISM. CLINTON M. BALL, Troy, and SHELDON NORTON, West Troy, assignors of one-third to Alexander T. Porter, West Troy, N. Y. Filed Sept. 26, 1888. Serial No. 286,398. (No model.)

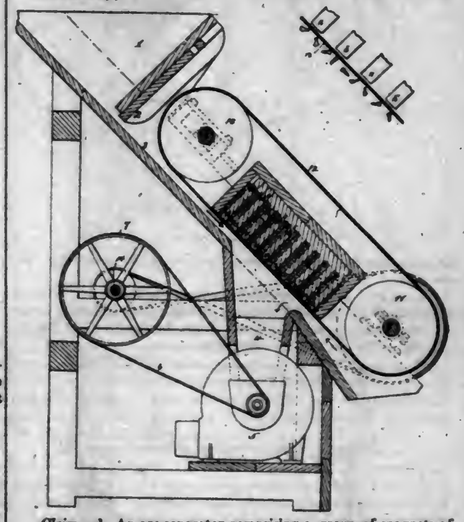


Claim.—1. The process of separating iron or its ore from impurities, consisting in forcing it in a state of division past a succession of two or more magnetic poles of alternating polarity, whereby the particles are forcibly caused to tumble or rotate end for end.

2. The process of separating iron or its ore from impurities, consisting in forcing it in a state of division past a succession of two or more magnetic poles of alternating polarity, while interposing a non-magnetic screen between the ore and the poles.

3. The process of separating iron or its ore from impurities, consisting in forcing it in a divided state past a succession of magnetic poles of alternating polarity, while subjecting the material to the action of a current of air.

404,333. MAGNETIC ORE-SEPARATOR. CLINTON M. BALL, Troy, and SHELDON NORTON, West Troy, assignors of one-third to Alexander T. Porter, West Troy, N. Y. Filed Oct. 5, 1888. Serial No. 287,329. (No model.)



Claim.—1. An ore-separator comprising a group of magnets of alternating polarity, in combination with means for forcibly conveying the ore past the said magnets successively without contact therewith.

2. An ore-separator comprising, in combination, a group of magnets of alternating polarity, a traveling screen adapted to move across the poles of said magnets, and means for delivering the ore in proximity to the screen.

3. An ore-separator comprising, in combination, a group of magnets of alternating polarity, a traveling screen of diamagnetic material adapted to move across the poles of said magnets, and means for delivering the ore in proximity to the screen.

4. An ore-separator comprising, in combination, a group of magnets of alternating polarity, a traveling diamagnetic screen adapted to move across the poles of said magnets, means for delivering the ore to the outer side of said screen, and means for forcing a current of air through the space traversed by the ore as it passes the magnet-poles.

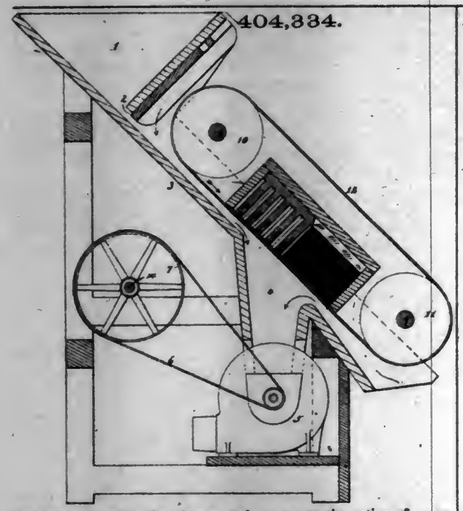
5. An ore-separator comprising, in combination, a group of magnets of alternating polarity, a traveling diamagnetic screen adapted to move across the poles of said magnets, and an apron adapted to confine the ore within inductive range of said magnets and deliver it in close proximity to said screen.

404,334. PROCESS OF SEPARATING ORES. CLINTON M. BALL and SHELDON NORTON, West Troy, N. Y., assignors of one-third to Alexander T. Porter, same place. Filed Jan. 14, 1889. Serial No. 296,372. (No model.)

Claim.—1. The process of separating magnetic ore from its accompanying impurities, consisting in causing the movement of the particles of ore through a magnetic field in a given direction by interposing a moving non-magnetic screen between the ore and the magnet producing such field, and at the same time subjecting the body of ore and gangue to the action of a current or currents of air in an opposite direction to that of the ore.

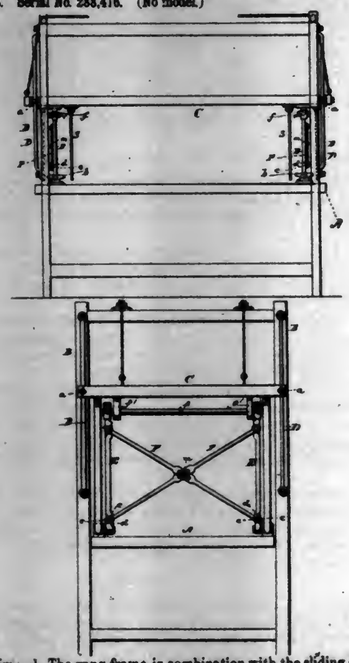
2. The process of separating magnetic ore from its accompanying impurities, consisting in causing the movement of the particles of ore through a magnetic field while interposing a moving non-magnetic screen between the ore and the magnet producing such field, and at

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the same time subjecting the ore and gangue to the action of a current of air.

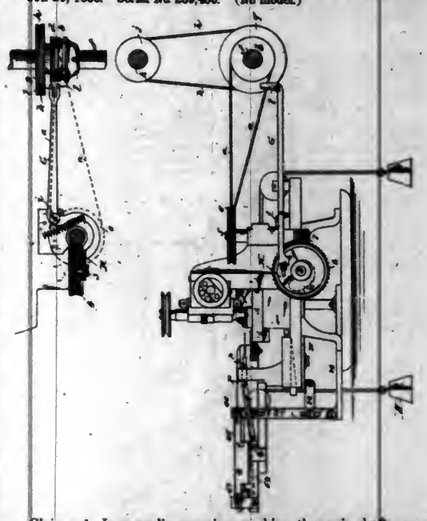
404,335. STONE-SAWING MACHINE. RUFUS L. BARNEY, Swanton, assignor of one-half to John N. Baxter, Rutland, Vt. Filed Oct. 16, 1888. Serial No. 288,416. (No model.)



Claim.—1. The gang-frame, in combination with the sliding cross-bars having a sliding combination with the upright supporting-frame, said gang-frame being connected to said cross-bars by hangers pivoted to said frame and to rods bearing boxes applied to the nader side of said cross-bars, substantially as set forth.

2. The gang-frame, in combinatiom with the cross-bars having a sliding connection with the upright supportidg-frame, said gang-frame being connected to said cross-bars by hangers pivoted to said frame and to rods bearing in boxes applied to the under side of said cross-bars, which cross-bars are connected together by braces having an adjustable or screw-bolt-and-slot connection at their crossing points, substantially as specified.

404,336. NEEDLE-GROOVING MACHINE. JOHN BERRY, Springfield, Mass., assignor to the National Needle Company, same place. Filed Oct. 29, 1888. Serial No. 289,430. (No model.)



Claim.—1. In a needle-grooving machine, the main-shaft worm-wheel having the cam, and the worm-screw shaft having a pulley, the fast and slow pulleys *d b*, and the belt *a*, combined with the pivoted belt-shifter by one end in engagemant with said cam and by its other with said belt, whereby on the swing of the shifter by the cam the belt will be moved from one of said pulleys to the other, substantially as and for the purpose described.

2. In a needle-grooving machine, the main-shaft worm-wheel having the cam M, and the worm-screw shaft having a pulley, the fast and slow rotating counter-shafts *k f*, the pulley *b*, fixed on the latter, and the pulley *d*, loosely rotatable thereon and receiving its rotary motion from said shaft *k*, substantially as described, and the belt *a*, combined with the pivoted belt-shifter by one end in engagement with said cam and by its other with said belt, all substantially as and for the purpose described.

3. The combination, with the slotted needle receiver and guide and the reciprocatory sliding clamp-finger 64, having the way *p* and a shoulder, *n*, substantially as described, of an obstruction-block normally covering the end of the needle-receiver slot, movable in said finger-way and located in the line of travel of said finger-shoulder, whereby at a period of the backward movement of said needle-finger said block will be rearwardly moved thereon, and means substantially as described, for automatically returning said block on the forward movement of said finger, substantially as described.

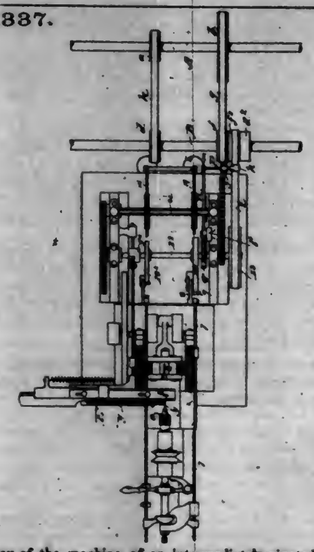
4. The combination, with the slotted needle receiver and guide and the reciprocatory sliding clamp-finger 64, having the longitudinal way *p* therein and the shoulder *n*, and carrying the shouldered abutment-bar Q, of the obstruction-block P, normally covering the end of the needle-receiver slot movable in said longitudinal way *p* and located in the line of travel of said finger-shoulder, and the compound link *q r*, secured to said block and to a stationary part of the machine, all arranged for operation substantially as and for the purpose described.

404,337. NEEDLE-MACHINE. JOHN BERRY, Springfield, Mass., assignor to the National Needle Company, same place. Filed Feb. 8, 1889. Serial No. 299,307. (No model.)

Claim.—1. The combination, with a needle-machine comprising a main shaft and driving-pulley, devices for feeding and presenting needle-blanks to be clamped, a carrier-chuck for clamping said needle-blanks, and devices, as swaging-dies or grooving-cutters, for acting on said needle-blanks conveyed thereto by said carrier, of the pair of pulleys having variable speeds, the belt between and around one of said pulleys and the driving-pulley of the said needle-machine, the belt-shifter engaging said belt, and the cam for actuating said belt-shifter, whereby the belt may be automatically moved from one to the other of said variably-speeded pulleys, substantially as and for the purpose described.

2. The combination, with the driving-shaft of a needle-machine having the cam *q* and a driving-pulley for said shaft, and with fast and slow speed pulleys and a belt between one thereof and said driving-pulley of the machine, of an intermediately-pivoted belt-shifter engaging said belt, a pivoted lever, *s*, actuated by said cam, and a connecting-rod between said lever and shifter, substantially as and for the purpose described.

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3. The combination, with the driving-shaft of a needle-machine having the cam *q* and a driving-pulley, 13, of a primary driving-shaft, A, having large and small pulleys *b* and *a* fixed thereon, a counter-shaft having fixed pulleys *d* d^2 and the loose pulleys *f* f^2 thereon, and the belts *c* and *g*, a belt, *i*, between and around one of said pulleys f^2 d^2 and said driving-pulley 13, an intermediately-pivoted belt-shifter, D, engaging said belt *i*, a lever, *s*, intermediately pivoted by one end bearing on said cam, and a connecting-rod, *m*, between the other end of said lever and said belt-shifter, substantially as described.

4. In combination, the main shaft having a cam thereon and the driving-pulley, the stationary rod *u*, the belt-shifter D, the pivoted lever *s*, provided with the latching-arm *z*, and the connecting-rod, substantially as and for the purpose described.

404,338. COMPENSATING DEVICE FOR ENGINES. GEORGE F. BLAKE, Belmont, assignor to the George F. Blake Manufacturing Company, Boston, Mass. Filed Aug. 31, 1888. Serial No. 284,267. (No model.)



Claim.—In a direct-acting engine, a high-pressure cylinder and a low-pressure cylinder, pistons located in said cylinders and provided with independent piston-rods having rack-bars 2 3, combined with a gear, 3^2, in mesh with said rack-bars and connecting said piston-rods, and with a compensating cylinder and its piston connected to said gear, to operate substantially as described.

404,339. LOCOMOTIVE-DRIVER BRAKE. GEORGE A. BOYDEN, Baltimore, Md., assignor to The Boyden Power Brake Company, of Baltimore City, Maryland. Filed Jan. 7, 1889. Serial No. 295,625. (No model.)

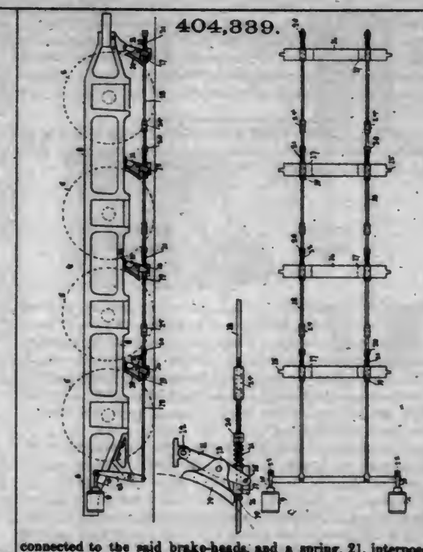
Claim.—1. In a car or locomotive brake, the combination, with the brake-rods 18, of the pulling headed beams located behind each set of wheels, the adjustable springs, and the links 11, pivoted to the beam, shoe, and frame, substantially as specified.

2. In a car or locomotive brake, the combination of the suspending-links 11, two or more brake-heads, 13, the rod 18, the springs 21, and a cylinder and piston to actuate the said rod 18, for the purpose set forth.

3. In a car or locomotive brake, the combination of the suspending-links 11, two or more brake-heads, 13, the rod 18, the springs 21, and the pulling-heads 17, in which may freely move the said rod 18, for the purpose set forth.

4. In a car or locomotive brake, the combination of two or more sets of brake-heads arranged to bear against the wheels, the rod 18,

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connected to the said brake-heads, and a spring, 21, interposed between the said rod and the brake-heads, whereby an equal brake-tension will be placed on each brake-shoe, for the purpose set forth.

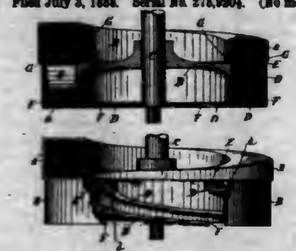
5. In a car or locomotive brake, the combination of two or more brake-heads arranged to bear against the wheels, the cross-beams 16, connected to the brake-heads, the rod 18, moving freely on the said beams, the spring 21, interposed between the said rod and the said beam, and a cylinder and piston for imparting movement to the said rod 18, for the purpose set forth.

6. In a car or locomotive brake, the combination of two or more brake-heads, 13, placed relatively on the same side of each wheel and connected one with the other, and springs 21, located on the said connection, whereby an equal brake-pressure will be applied to each brake-shoe when forced against the wheels, for the purpose set forth.

7. In a car or locomotive brake, the combination of two or more brake-heads, 13, placed relatively on the same side of each wheel and connected one with the other, springs 21, located on the said connection, whereby an equal brake-pressure will be applied to each brake-shoe when forced against the wheels, and a cylinder and piston for imparting power to the said brake-shoes, for the purpose set forth.

8. In a car or locomotive brake, the combination, with the brake-rods 18, of the brake-beams secured to said rods directly behind each set of wheels, the springs 21, mounted on the rods 18 and having bearings against the said beams and the nuts 20, the links pivoted at their ends to the frame of a car or locomotive and to the brake-beams, respectively, and the shoes pivoted to the links between their ends, substantially as specified.

404,340. TURBINE WHEEL. ZIMRI W. BURNHAM, Grand Rapids, Mich. Filed July 3, 1888. Serial No. 278,930. (No model.)



Claim.—1. In a turbine, the combination of a wheel having a pair of concentric vertical annular flanges at its periphery, with a series of underlapping buckets having concaved upper ends and extended downwardly and rearwardly from said concaved portion, and also having short forwardly and downwardly inclined flanges extending from their upper ends, all substantially as described.

2. The combination of the water-chamber A, constructed substantially as described, with the wheel B, having a pair of annular peripheral flanges, G G, the upper edges of which fit into an annular open-

ing in the bottom of chamber A, and which are connected by an imperforate web with the hub, and the series of similar underlapping buckets, D, having downwardly, outwardly, and rearwardly inclined extensions, concaved upper ends, and forwardly, downwardly, and outwardly inclined short flanges, all substantially as and for the purpose specified.

404,341. CRANK-WRIST AND BOXING. OLIVER H. CASTLE, Indianapolis, Ind., assignor of one-half to John R. Allen, same place. Filed Apr. 20, 1888. Serial No. 271,297. (Model.)



Claim.—1. A crank-driving shaft having an annularly-grooved crank-wrist whose central line is set at an angle to the line of bearings, bisected crank-boxings in which said crank-wrist is journaled, provided with circular flanges having annular projections for engaging with corresponding grooves in the halves of the connecting-rod, and a connecting-rod formed in two parts, its lower part adapted to lock over the trunnions of the crank-boxings, all combined substantially as shown and described.

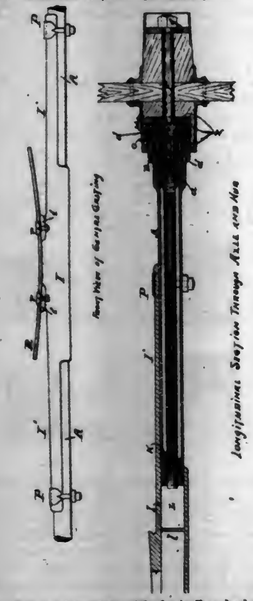
2. A crank-driving shaft for steam-engines, provided with an annularly-grooved crank-wrist journaled in bisected crank-boxings provided with similar grooves, such crank-wrist set at an angle to the line of bearings and adapted to conform to the amount of oscillation necessary to be given the piston, substantially as shown and described.

3. A crank-driving shaft having a grooved crank-wrist working in bisected boxings provided with similar grooves, the central line of such crank-wrist set at an angle to the line of bearings, substantially as shown and described.

4. A crank-driving shaft for steam-engines, having an annularly-grooved crank-wrist whose central line is set at an angle to the line of bearings and journaled in a bisected grooved crank-boxing provided with circular flanges having annular projections fitting into the grooves in the halves of the connecting-rod, in combination with such connecting-rod, substantially as shown and described.

5. A crank-driving shaft for steam-engines, having an annularly-grooved crank-wrist whose central line is set at an angle to the line of bearings, in combination with a crank-boxing having corresponding grooves and provided with trunnions formed integral with one section thereof, substantially as shown and described.

404,342. AXLE. FRANK L. G. CHAPMAN, Stevens Point, Wis. Filed Mar. 27, 1889. Serial No. 304,934. (No model.)



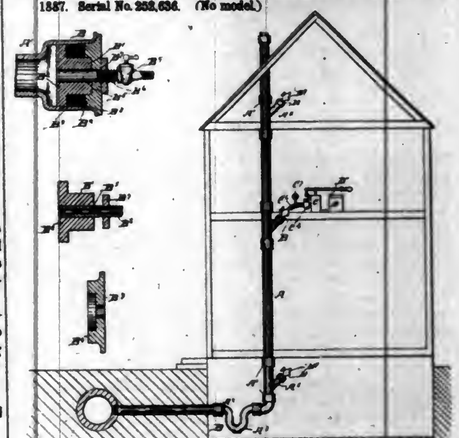
Claim.—1. The combination, with the hollow bed-piece I, having the arms I' and oil-chamber L, of the tubular axle A, screwed into the ends of the oil-chambers, and the clips P, fastening the tubular axle to the arms I', substantially as described.

2. The combination, with the tubular axle A, of the spindle B, having the collar C, and the sleeve D, screwed upon the outer end of the axle and having a flange, *d*, fitting outside of the collar C, substantially as described.

3. The combination, with the tubular axle A, having the enlargement *a*, of the bushing H, received within the enlargement, the spindle B, having a journal mounted in the bushing H, and a collar, C, adjacent to the end of the bushing and within the enlargement *a*, and the sleeve D, screwed upon the outside of the enlargement *a* and having a flange, *d*, fitting the journal outside of the collar C, substantially as described.

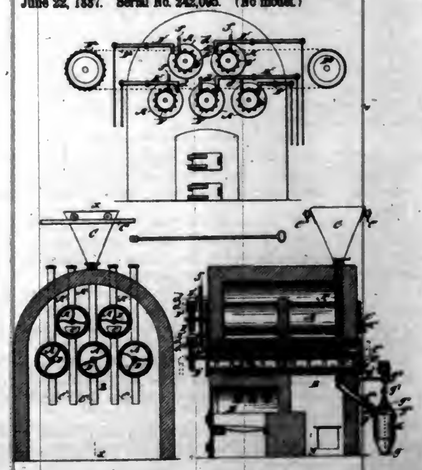
4. The combination, with the tubular axle A, of the spindle B, having a collar, C, and a shank, F, a hub mounted on the shank and recessed to receive the end of the axle A, and provided with a hole, O, and a sleeve, D, screwed upon the end of the axle within the recess of the hub and provided with a socket registering with the hole O, substantially as described.

404,343. METHOD OF TESTING AND DISINFECTING DRAIN AND SOIL PIPES. WILLIAM B. CLARK, Philadelphia, Pa. Filed Oct. 17, 1887. Serial No. 252,636. (No model.)



Claim.—The method of fumigating and testing soil-pipes, consisting of first generating air charged with disinfecting fumes or vapors in a separate vessel, next drawing air so charged through said vessel by a pump and forcing it through the pipes to be tested, then closing the outlets of said pipes, and by further pumping establishing a static pressure of the air charged with vapors, substantially as set forth.

404,344. APPARATUS FOR DEOXIDIZING IRON ORES. MICHAEL R. CONLEY, Brooklyn, assignor to William Bell, New York, N. Y. Filed June 22, 1887. Serial No. 242,095. (No model.)



Claim.—1. The combination, with a combustion-chamber, of disconnected retorts arranged therein, chutes communicating with said retorts, through which material may be supplied, stirrers arranged in said retorts, gearing for causing the rotation of said stirrers, discharge-chutes for the retorts, and a furnace, said retorts being wholly closed to the products of combustion from the furnace and to atmospheric air, substantially as specified.

2. The combination, with a combustion-chamber, of a number of fixed retorts arranged therein, chutes communicating with said retorts, through which material may be supplied, stirrers arranged in said retorts, which, when the retorts are all in use, rotate in unison, gearing for causing the rotation of said stirrers, and disengaging devices for causing the non-rotation of any of said stirrers without affecting the others, discharge-chutes for said retorts, and a furnace, substantially as specified.

3. The combination, with a fixed retort, of a rotary stirrer provided with fingers extending radially therefrom, two sets of said fingers being in line with each other, and another set of said fingers being arranged intermediate of the other two sets and extending at approximate right angles therefrom, substantially as specified.

4. The combination, with a fixed retort, of a scraper therefor arranged within the retort and provided with a shank extending to the exterior of the retort, a brace for engaging said shank, and an adjustable handle for engaging said shank and operating the scraper to remove material from the retort after the shank of the scraper has been disengaged from the brace, substantially as specified.

5. The combination, with a combustion-chamber, of a fixed retort arranged therein, a discharge-chute for said retort, and a car adapted to be moved beneath the outer end of said discharge-chute and suspended from a hanger, and a rail along which said hanger may be moved to convey the car away, substantially as specified.

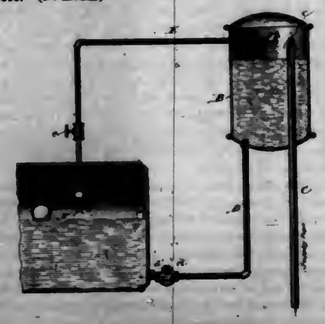
404,345. ROTARY BOLT. JOHN R. CORNWALL, Moline, Ill., assignor to the Barnard & Leas Manufacturing Company, same place. Filed July 9, 1888. Serial No. 279,385. (No model.)



Claim.—1. A bolting-reel frame provided at one end with a spider having a circumferential hoop, in combination with a bolting cloth or covering for said reel-frame, having two strips of flexible material attached to the ends thereof, whereby the cloth is attached to the spider by placing its rim between said strips and fastening the strips together beyond the edge of the rim, substantially as set forth.

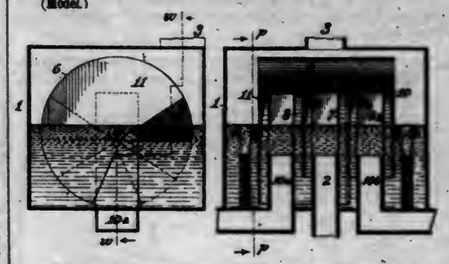
2. The combination, in a bolting-reel, of the central shaft, a head fixed thereon, and a spider at the opposite end of the reel adjustably mounted on the shaft, and the bolting-cloth attached to said head and having strips of flexible material at its other end adapted to be lapped over the rim of said spider and fastened to each other, thereby inclosing said rim and securing the cloth thereto, substantially as described.

404,346. BOILER-FEEDER. JULES CROLLARD, Chicago, Ill., assignor to Frederick C. Austin, same place. Filed Dec. 17, 1888. Serial No. 293,895. (No model.)



Claim.—The combination, substantially as hereinbefore set forth, with a boiler, of the closed supply-tank B, the steam-pipe E, connecting the boiler with the supply-tank and provided with a float-valve arranged within the boiler, the valved water-supply pipe C, which extends downwardly from the supply-tank and which also extends upwardly through the bottom of the said tank to an extent to bring its upper valved end at the upper portion of the chamber within the supply-tank, and the valved feed-water pipe D, leading from the lower portion of the tank to the lower portion of the boiler, as and for the purpose described.

404,347. FLUID-SEAL VALVE FOR METERS. CHAUNCEY N. DUTTON, Pittsburg, Pa., assignor to the Fuel Gas and Electric Engineering Company, (Limited,) same place. Filed Aug. 20, 1888. Serial No. 283,294. (Model.)



Claim.—1. The combination of an inclosing-casing provided with an outlet-pipe and adapted to contain a sealing-fluid, an oscillating valve having two or more compartments formed in a shell by heads, and a partition or partitions the edges of which are inclined relatively to a diametric plane of the valve and to each other, an inlet-pipe extending into one of the valve-compartments, and a pipe or channel extending into each of the other compartments, substantially as set forth.

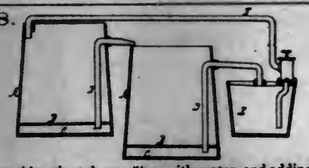
2. The combination of an inclosing-casing provided with an outlet-pipe and adapted to contain a sealing-fluid, an oscillating valve having three compartments formed in a shell by heads, and two intermediate partitions, the edges of said heads and partitions being inclined in alternate pairs in opposite directions relatively to a diametric plane of the valve, an inlet-pipe extending into one of the valve-compartments, and a pipe or channel extending into each of the other compartments, substantially as set forth.

3. The combination, in a fluid-seal valve, of a substantially semi-cylindrical shell, two end plates or heads, and two intermediate partition-plates secured thereto and forming three compartments therein, the edges of said heads and partition-plates being inclined in alternate pairs in opposite directions relatively to a diametric plane of the valve, an inner supplemental shell forming an annular space within the valve around its middle compartment, and a longitudinal partition dividing said annular space into two sections which communicate on opposite sides, respectively, of the axial line of the valve with the end compartments thereof, substantially as set forth.

404,348. PROCESS OF MAKING FERTILIZERS. HERMANN RUDOLPH, Brooklyn, assignor to Leopold Wallach, New York, N. Y. Filed Sept. 22, 1888. Serial No. 286,109. (No specimens.)

Claim.—1. The process for producing a fertiliser from tobacco, which consists in subjecting the tobacco to the action of a solution of

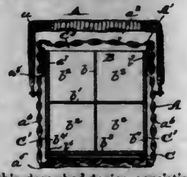
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mineral acid, washing the tobacco fiber with water, and adding to the extract produced basic material, substantially as described.

2. The process for producing a fertilizer from tobacco, which consists in moistening the tobacco, crushing the same, subjecting it to the action of mineral acid, washing the tobacco fiber with water, and adding to the extract produced basic material, substantially as described.

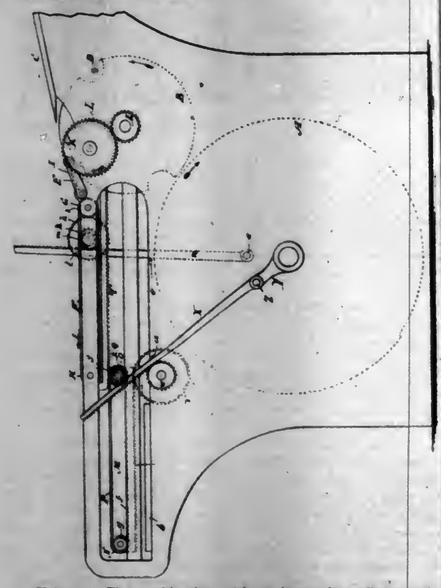
404,349. EGG-BASKET. JOHN T. FRAGER, St. Louis, Mo. Filed Mar. 31, 1888. Serial No. 269,060. (Model.)



Claim.—1. The within-described device, consisting of the wicker-work basket A, having an upper portion, a^7, and a shoulder, a^8, combined with the egg-case B, having plain walls, as and for the purpose stated.

2. The wicker-work basket A, having the upper binding portion, a^7, combined with the egg-case B, having plain walls projecting below its bottom, whereby the case comes in contact with the basket at its bottom edges, b^8, and at its upper portion, b^7, and a ventilating-space is provided between the sides and bottoms of the case and basket, substantially as set forth.

404,350. SHEET-DELIVERY APPARATUS FOR PRINTING-MACHINES. GEORGE P. FRENIER, New London, Conn. Filed Sept. 20, 1888. Serial No. 285,380. (No model.)

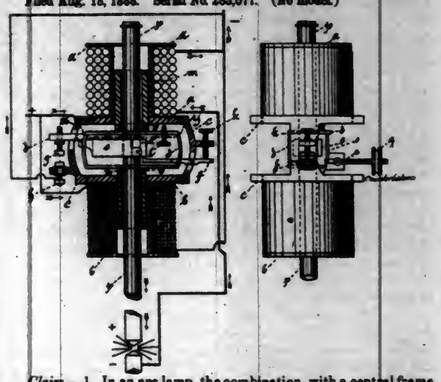


Claim.—1. The combination, with an impression-cylinder and a receiving-table, of an intermittently-moving delivery traveler or tapes, and a reciprocating carriage on which the printed sheet is deposited by the delivery-tapes, substantially as described.

2. The combination, with an impression-cylinder, a receiving-table, and delivery traveler or tapes, of a reciprocating carriage on which the printed sheet is deposited by the delivery-tapes, and a rack and clutch connection for imparting an intermittent motion to the delivery-traveler, substantially as described.

3. The combination, with an impression-cylinder, a receiving-table, and a reciprocating carriage, of a delivery traveler or tapes for delivering the printed sheet to the carriage, said delivery-traveler being actuated while a sheet is being delivered to the carriage, but being motionless when a sheet has been delivered to the carriage, substantially as described.

404,351. ELECTRIC-ARC LAMP. JOHN R. FOX, Fort Wayne, Ind. Filed Aug. 18, 1888. Serial No. 283,077. (No model.)



Claim.—1. In an arc lamp, the combination, with a central frame, of regulating-solenoids detachably secured thereto, hollow cores controlled by the solenoids, a positive carbon rod extending through the cores, and a clutch controlled by the cores, said clutch engaging the carbon rod.

2. In an arc lamp, the combination of an upper and lower regulating-coil, hollow cores rigidly connected corresponding to the coils, a clutch connecting the positive carbon rod mechanically with the cores, and an adjusting-screw to limit the upward thrust of the cores and the consequent length of the arc.

3. In an arc lamp, the combination, with the regulating-coils, of a vertically-movable frame controlled thereby, a clutch, a positive carbon engaged thereby, one end of the clutch being seated loosely in the frame to permit slight vertical and lateral movement, and a tripping device for engaging the other end of the clutch when it reaches a predetermined limit of depression.

4. In an arc lamp, the combination, with the regulating-coils, of a movable frame controlled thereby, and a clutch supported by the frame, one end of the clutch being provided with a tongue entering a recess in the frame and the other end engaging the positive carbon rod.

5. In an arc lamp, the combination, with the movable carbon rod, of a counter-balance therefor, comprising a weighted horizontal arm pivotally secured to the frame and a vertical rod pivoted to one end of the arm and bearing against the upper magnet-core.

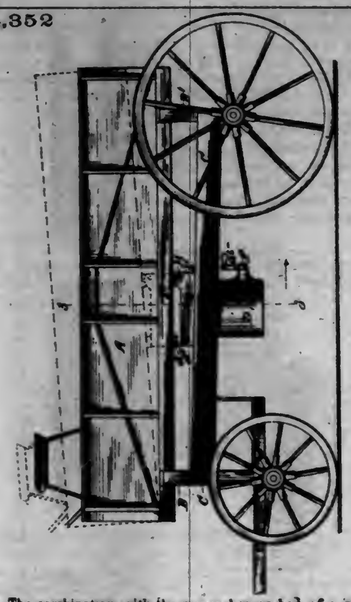
6. In an arc lamp, the combination, with the main and shunt solenoids secured to a central frame, a movable yoke within the frame, solenoid-cores secured to the yoke, a trip-lever, *f*, supported on the frame and co-operating with the clutch, and an adjusting-screw, *l*, for varying the length of the arc, substantially as and for the purpose set forth.

404,352. DUMPING-WAGON. WILLIAM W. GREEN, Chicago, Ill., assignor of two-thirds to A. H. Casey and CYRUS D. Lane, same place. Filed Feb. 12, 1889. Serial No. 299,644. (No model.)

Claim.—1. In a dumping-wagon, the combination, with the box or bed, of a chambered cylinder arranged vertically underneath said bed and supported in the frame-work of the running-gear, a vertical screw-shaft working in said cylinder, a vertically-moving piston inserted in said cylinder and having a threaded engagement with said screw-shaft, and a hinged connection with the box or bed, the pinion mounted on said screw-shaft, the horizontal shaft passing through the side of said cylinder, and the pinion and hand-crank mounted on the respective ends of said horizontal shaft, whereby the wagon box or bed may be elevated, swung on a pivot, and tilted to discharge the load, substantially as set forth.

2. In a dumping-wagon, the combination, with the framing-bars, of the chambered cylinder provided with holding-flanges, as described and bolted to said bars, the screw-shaft arranged vertically on the inside of said cylinder and journaled therein, means for rotating said shaft, the piston, flanged as described and inserted in said cylinder and having a threaded engagement with said shaft, and the box or bed to which the upper end of said piston is hinged, whereby said box may be raised bodily, tilted, and the load discharged at either side or end of the wagon, substantially as set forth.

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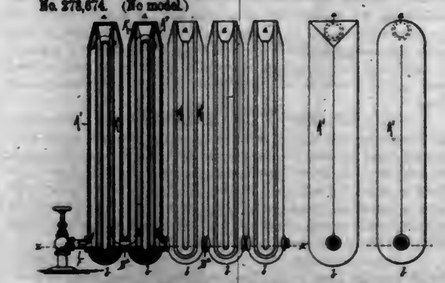


3. The combination, with the wagon box or bed, of a piston or plunger hinged to the under side of said box, the cylinder in which said piston has a vertical movement, the screw-shaft arranged on the interior of said cylinder and having a threaded engagement with said piston, the pinion mounted on the screw-shaft, the horizontal shaft having a companion pinion mounted on the inner end and a hand-crank on the outer end thereof, whereby a rotary motion is imparted to the screw-shaft and the piston raised or lowered, as may be required, substantially as and for the purpose set forth.

4. In a dumping-wagon, the combination, with the vertically-moving piston provided with a rectangular flange and having lugs extending upwardly from the back edge thereof, as described, of the box or bed provided with corresponding lugs projecting downwardly therefrom, the horizontal rod mounting all of said lugs, whereby a hinged connection is formed between the piston and box, and the transverse cleat secured to the under side of said box, a space being left between said cleat and flange on the piston when the latter is at its lowest position, substantially as and for the purpose set forth.

5. In a dumping-wagon, the combination, with the box or bed and frame-work, of a bolster hinged to the latter and adapted to be turned downwardly out of the way when tilting the box, substantially as set forth.

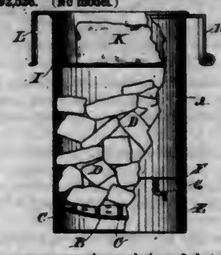
404,353. STEAM-RADIATOR. TIMOTHY HOLLAND, St. Paul, Minn., assignor to Mary C. Holland, same place. Filed June 30, 1888. Serial No. 278,674. (No model.)



Claim.—1. A radiator composed of separately-formed sections arranged in series, each section having in one piece two vertical branches—an inlet branch and an outlet branch—said branches being connected at their tops to form a passage for the steam, and being formed at their bottoms with a connecting trap-bend, in combination with horizontal connecting pipes or nipples connecting the outlet branch of one section with the inlet branch of the succeeding section, said connecting pipes or nipples being located above the highest point of the trap-bends in said sections, substantially as set forth.

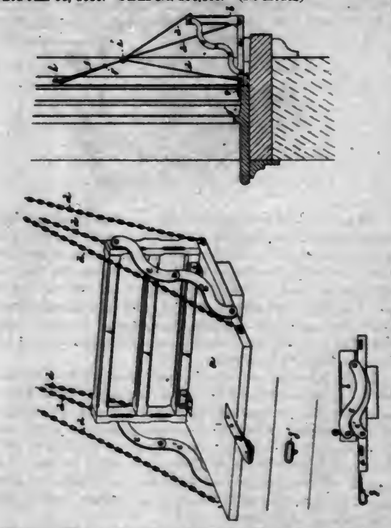
2. A radiator comprising a plurality of rows of radiating-sections, each of said sections having in one piece two vertical branches—an inlet branch and an outlet branch—said branches being connected at their tops to form a passage for the steam, and being formed at their bottoms with a connecting trap-bend, horizontal connecting nipples or pipes connecting the outlet branch of one section of each row with the inlet branch of the succeeding section of the same row, said connecting nipples or pipes being located above the highest point of the trap-bends in said sections, in combination with a single cross steam-inlet section connected with the initial radiating-section of each of the several rows of sections, substantially as set forth.

404,354. SOAP-RECEPTACLE. KATIE HUBER, Milwaukee, Wis., assignor of one-half to Charlotte Powell, same place. Filed Dec. 3, 1888. Serial No. 292,596. (No model.)



Claim.—A soap-receptacle consisting of the receptacle A, having a handle, H, and a perforated false bottom, B, and the thereto removably-secured tight cup-bottom E, in combination with the receptacle I, provided with a handle and a perforated bottom and adapted to fit into the top of the receptacle A, and to serve both as a receptacle and as a cover for the receptacle A, substantially as described.

404,355. WINDOW-CHAIR. BERTHA JACOB, New York, N. Y. Filed Jan. 30, 1889. Serial No. 298,115. (No model.)



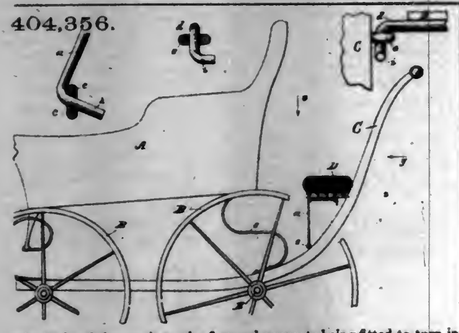
Claim.—The combination of a seat with a pivoted back, sectional arm-rests pivoted to the seat and the back, chains *d*, secured to seat and back and secured at their upper end to ring *e*, chains *f*, secured to said ring and carrying hooks *f'*, and with the snap-hook *g* secured to the seat, the hook *g* and chains *f* being adapted to engage staples secured to the window-frame, substantially as specified.

404,356. SEAT FOR A CHILD'S CARRIAGE. CHARLES V. KLIPFERT, Rochester, N. Y., assignor of one-half to Louis J. Vogt, same place. Filed Apr. 1, 1888. Serial No. 305,590. (No model.)

Claim.—1. In combination with the handle-bars or frame of a child's carriage, a seat back of the body of the carriage, and supports for the seat attached to the latter and entering rests in the handle-bars or frame, substantially as shown.

2. A seat for a child's carriage, having forward and rear supports therefor resting in rests secured to the handle-bars or frame in rear of

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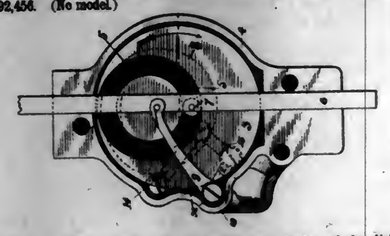
the body of the carriage, the forward supports being fitted to turn in their bearings in the seat, and the rear supports being fitted to slide longitudinally in their bearings in the seat, substantially as shown and described.

3. A seat for a child's carriage, provided with supports *a a* for its front edge and other supports, *d d*, for its rear edge, said supports *d d* being held to slide longitudinally in their bearings in the seat, and a fastener for said supports *d d*, substantially as and for the purpose specified.

4. A detachable seat for a child's carriage, having movable supports for its forward edge and other movable supports, *d d*, for its rear edge, the supports *d d* being formed with offset bends and parallel parts, substantially as shown, and a fastener to press said parallel parts of the holders, substantially as shown and described.

404,357. TAKE-UP MECHANISM FOR SEWING-MACHINES.

FRANCIS T. LEILICH, Bridgeport, Conn. Filed Dec. 3, 1888. Serial No. 292,456. (No model.)



Claim.—1. The combination, with the main shaft and the disk, mounted upon the end thereof and carried thereby, and provided with a circular groove cut in the face thereof and having a cam-groove at its rear side, of the needle-bar supported in ways in the head and engaged and actuated by the circular groove, the take-up arm at the front of the head, the rock-shaft upon which said take-up is mounted, and the links, arm, and radius-bar operated by the cam at the rear of the disk, whereby the sectoral throw is imparted to the take-up arm, substantially as specified.

2. The combination, with the main shaft, of the disk mounted upon the forward extremity thereof, a circular groove cut in the outer face of said disk and eccentric as to its center with the center of the disk and engaging the needle-bar, a cam-groove cut in the rear side of said disk, the take-up arm extending across the face of the head, the rock-shaft journaled in said head, upon which the take-up arm is mounted, and the rock-arm, radius-bar, links, and roller-stud, the latter engaged by the cam-groove, whereby the proper throw is imparted to the take-up, as set forth.

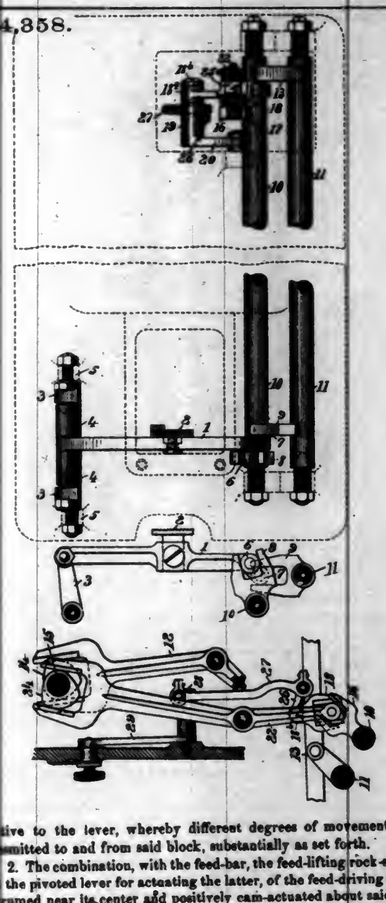
3. The combination, with the main shaft and the disk upon the end thereof, of the cam-groove cut in the rear side of said disk, the roller-stud 11, engaging said groove, the link 13, the radius-bar 14, and the rock-shaft having a short arm at one end pivotally secured to the link and having at the other end the take-up arm extending across the face of the head, substantially as described.

404,358. FEEDING MECHANISM FOR SEWING-MACHINES.

FRANCIS T. LEILICH, Bridgeport, Conn. Filed Feb. 12, 1889. Serial No. 299,653. (No model.)

Claim.—1. In a feeding mechanism for sewing-machines, the combination, with the main shaft, of the feed-lifting lever fulcrumed near its center, a cam engaging and actuating said lever at its upper end, and the feed-lifting rock-shaft positively operated by said lever, the cam-actuated feeding-lever fulcrumed near its center, the feed-driving rock-shaft and feed-bar, and the vibratory grooved block arranged between the lever and the shaft and movable to different positions

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relative to the lever, whereby different degrees of movement are transmitted to and from said block, substantially as set forth.

2. The combination, with the feed-bar, the feed-lifting rock-shaft, and the pivoted lever for actuating the latter, of the feed-driving lever fulcrumed near its center and positively cam-actuated about said fulcrum, the feed-driving rock-shaft and its connection to the feed-bar, the pivoted grooved block engaged by the lever and in turn engaging the feed-driving rock-shaft, and means, as described, whereby the shaft to which the block is secured may be turned to different angles of inclination, substantially as set forth.

3. The combination, with the feed-bar and the means, as described, whereby the same is properly raised and lowered, of the main shaft, the cam-actuated fulcrumed lever driven therefrom and provided with a roller at its lower end, the block engaged by said roller and journaled on a cranked shaft, the rock-shaft 10, actuated by said block, and a suitable rod and index, whereby said cranked shaft may be turned to various positions relative to its fulcrum, as set forth.

4. The combination, with the feed-bar and the lever and the rock-shaft, whereby said bar is positively raised and lowered, of the feed-driving lever pivoted near its center, the cam on the main shaft, whereby it is actuated, the stud upon the lower end of said lever, the block engaged by said stud, and the adjustable shaft on which said block is journaled, the rock-shaft actuated by said block through the arm, and the connection between the forward end of said rock-shaft and the feed-bar, substantially as specified.

5. The combination, with the feed-bar and means for imparting to the same the necessary vertical reciprocation, and with the feed-driving lever, the feed-driving rock-shaft, and the connection of the latter with the feed-bar, of a grooved block pivotally secured to a movable shaft, means for moving said shaft to various positions relative to its fulcrum, a connection between the driving-lever and said block, and a connection between said block and the rock-shaft, as specified.

6. The combination, with the feed-bar, of the fulcrumed oscillating link whereon one end of said bar is mounted, the slide-blocks projecting outward from the opposite sides of the other end of the

bar, the two rock-shafts actuated from the other end of the machine, and the two forked arms upon said shafts embracing the slide-blocks, the one lying in a horizontal and the other in a vertical plane and at the same end of the bar, substantially as set forth, whereby the appropriate coinpound movement is imparted to the feed-bar.

7. In a feeding mechanism for sewing-machines, the combination, with the main shaft and the cam mounted thereon and carried thereby, of the vibrating lever fulcrumed at its center and forked at each end, the upper end being operated by the cam, the fulcrumed and grooved adjustable vibratory block operated by the lower end of the lever, the feed-driving rock-shaft operated from said block, and means, as described, for imparting to the feed-bar its proper rising-and-falling movement, as set forth.

404,359. BUSH-HAMMER.

FRANCIS D. LEMON and WILLIAM LEMON, Merrickville, Ontario, Canada. Filed Dec. 6, 1888. Serial No. 292,822. (No model.)

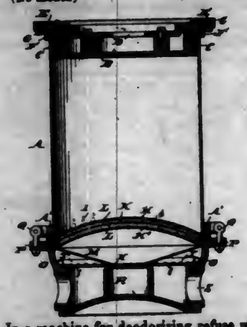


Claim.—1. A bush-hammer comprising a head, A, beveled inwardly at the sides toward both ends, tubular-tooth-holders C and C', sleeved on said head at opposite ends and connected by bolts F F', and rectangular-sided tapering teeth E, supporting one another within the tooth-holders, each tooth having an exposed pyramidical point and removable by disconnection of the tooth-holders from the hammer-head, as set forth.

2. The combination, with the hammer-head A, having the sides beveled inwardly at both ends, of the tubular tooth-holders C and C', sleeved thereon, the tapering teeth E, filling the tooth-holders, and bolts F F', connecting the tooth-holders, whereby the teeth are compressed together and confined against the hammer-head by drawing the tooth-holders closer together by the bolts, as set forth.

404,360. MECHANISM FOR DEODORIZING REFUSE MATTER AND CONVERTING IT INTO FERTILIZERS.

OSCAR D. MCCLELLAN, Philadelphia, Pa., assignor, by direct and mesne assignments, to Jacob Kennedy and Peter Hill Engle, same place. Filed June 5, 1888. Serial No. 276,103. (No model.)



Claim.—1. In a machine for deodorizing refuse matter and converting it into fertilizers, the combination of a vessel having a movable bottom with means, substantially as described, to operate said bottom, and a strainer located within said vessel, through which the liquid is forced from the refuse matter in the vessel by the compression due to said movable bottom, and a pipe located under said strainer, through which aerated water is jetted upon the liquid and mixed with it.

2. In a machine for deodorizing refuse matter and converting it into fertilizers, a vessel having a movable bottom, in combination with means, substantially as described, to operate said bottom, and a strainer located within the vessel, consisting of perforated screens H and H', and provided with projections I, extending upward from it.

3. The combination of a cylindrical vessel, a bottom movable within said vessel but not removable from it, flanges upon the base of the vessel to prevent said bottom being withdrawn, a removable strainer located below said movable bottom when the vessel is inverted, a cover adapted to clamp said strainer to the vessel having a receptacle for the expressed liquid below the strainer, and mechanism, substantially as described, unconnected with said movable bottom to operate it.

4. The combination of a cylindrical vessel, a bottom movable within said vessel but not removable from it, flanges upon the base of the vessel to prevent said bottom being withdrawn, a removable strainer located below said movable bottom when the vessel is inverted, a cover adapted to clamp said strainer to the vessel having a receptacle for the expressed liquid below the strainer, a circular guide between said strainer and receptacle, and mechanism, substantially as described, unconnected with said movable bottom to operate it.

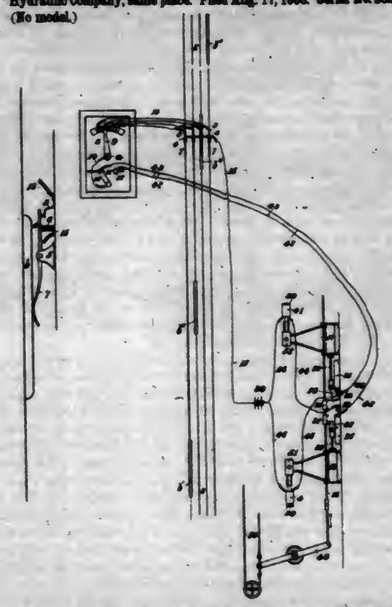
5. A donegan for refuse matter, consisting of a vessel having a movable piston-bottom within it guided upon its sides, and a removable air-tight cover or lid, and means to lock the removable lid tightly upon the open end of the donegan.

6. A donegan in which to collect and strain refuse matters, consisting of a cylindrical vessel of uniform cross-section on the inside and open on both ends, a movable piston-bottom within said vessel supported and guided upon the inside of said vessel, and having a packed periphery to prevent escape of liquid, a support upon the cylindrical vessel to prevent the piston-bottom being pushed out of the vessel at one end, a removable tight cover or cap for the other end of the vessel, and clamping devices to hold the cover or cap tightly to the cylinder to seal the donegan.

7. A donegan in which to collect and strain refuse matters, consisting of a cylindrical vessel of uniform cross-section on the inside and open on both ends, a movable piston-bottom within said vessel supported and guided upon the inside of said vessel, and having a packed periphery to prevent escape of liquid, a support upon the cylindrical vessel to prevent the piston-bottom being pushed out of the vessel at one end, a strainer removably supported to the other end of the vessel, a liquid-receiving chamber arranged below said strainer and detachably connected so as to support the strainer in position, and clamping devices to hold the receiving-chamber and the strainer tightly against the end of the vessel.

404,361. ELECTRICAL APPARATUS FOR CONTROLLING ELEVATORS.

RONALD F. MCFERLY, Pittsburg, Pa., assignor to the Electro-Hydraulic Company, same place. Filed Aug. 17, 1888. Serial No. 282,904. (No model.)



Claim.—1. The combination, with the main motor, its controlling valve, and the valve rod or stem, of independent secondary motors having pistons which move the said valve rod or stem to effect motion of the main motor in contrary directions, mechanism for disconnecting the respective pistons of the secondary motors from the said valve rod or stem at a middle point of the travel of the latter, valves controlling the secondary motors and electro-magnets controlling said valves, and an electric circuit and switch mechanism by which the magnets may be caused to operate either of said secondary-motor valves, substantially as and for the purposes described.

2. The combination, with the main motor of an elevator-car and its controlling-valve, of an electro-magnet for operating said valve, an electric circuit, several branch circuits, switch mechanism on the car by which any of said branch circuits may be included in the main circuit, and circuit breakers or closers on the car, one of the contacts of each being movable, and mechanism adapted to move the same and to break or to close the branch circuits as the car reaches or approaches the several floors of the building, whereby the action of said magnet is effected automatically to cause the stopping of the car, substantially as and for the purposes described.

3. The combination, with the motor of an elevator-car, of separate electro-magnets, one of which effects the motion of the valve to drive the motor in one direction and the other of which effects the motion of the valve to drive the motor in the other direction, an electric circuit, several branch circuits, a switch on the car by which any of the said branch circuits may be included in the main circuit, circuit breakers or closers on the car, one of the contacts of each being movable, and mechanism adapted to move the same and to break or to close the branch circuits as the car reaches or approaches the several floors of the building, whereby the action of said magnets is effected automatically to cause the stopping of the car, and a second switch by which either of the said magnets may be put in circuit, substantially as and for the purposes described.

4. In an electrical apparatus for controlling the valve of an elevator-car motor, wherein there is an electro-magnet and an electric circuit extending through the car, a device for automatically controlling said circuit, which consists in a circuit closer or breaker having a contact, 3, a movable contact-piece adapted to engage therewith, and a projection in the elevator-shaft which engages the movable contact-piece and operates the same as the car passes, substantially as and for the purposes described.

5. In an electrical apparatus for controlling the valve of a motor, the combination of two electro-magnets and their operative circuits adapted to effect the motion of the motor-valve in opposite directions, circuit-closers interposed in the said circuit, and mechanism, substantially as described, which on the exciting of one of the electro-magnets and the consequent operation of the motor-valve in one direction is actuated to break the circuit of the other magnet, substantially as and for the purposes described.

6. In an electrical apparatus for controlling the valve of a motor, the combination, with the main-motor-valve rod or stem, of secondary motors 17 and 18, having piston-rods 20, and provided with engaging devices—such as hooks—which engage projections on said valve stem or rod, whereby motion of one of said secondary motors will effect motion of the main-valve stem in the proper direction, and an electric circuit extending from the elevator-car and controlling the valves of the secondary motor, substantially as and for the purposes described.

7. In an electrical apparatus for controlling the valve of a motor, the combination, with the main-motor-valve rod or stem, of secondary motors 17 and 18, having piston-rods 20, and provided with engaging devices—such as hooks—which engage projections on said valve stem or rod, whereby motion of one of said secondary motors will effect motion of the main-valve stem in the proper direction, and an electric circuit controlling the valves of the secondary motor, said hooks being movable into and out of engagement with the said projections, and devices at the ends of the paths of said piston-rod which move the hooks out of engagement with the projections, substantially as and for the purposes described.

8. In an electrical apparatus for controlling the valve of a motor, the combination, with the main-motor-valve rod or stem, of secondary motors 17 and 18, having piston-rods 20, and provided with engaging devices—such as hooks—which engage projections on said valve stem or rod, whereby motion of one of said secondary motors will effect motion of the main-valve stem in the proper direction, electro-magnets which control the valves of the secondary motors, and circuit-closers arranged in the paths of said piston-rods, so that when the piston-rods are at their normal position they shall close the said circuit-closers, and that when the piston-rods leave said positions the circuit-closers shall be open, each of said rods controlling the circuit-closer of the circuit of the magnet which controls the valve pertaining to the other piston-rod, substantially as and for the purposes described.

9. In an electrical apparatus for controlling the valve of a motor, the combination of a main-motor-valve rod or stem, of secondary motors 17 and 18, having piston-rods 20 and pivoted hooks at the ends of said rods, which are adapted to engage projections on the said valve stem or rod, supports 25, which guide and support said hooks in their motions, and stops 26, which engage the said hooks and move the same out of the path of said projections when the piston-rods reach the ends of their strokes, and electro-magnets controlling the valves of said secondary motors, substantially as and for the purposes described.

10. In an electrical apparatus for controlling the valve of a motor, the combination of a main-motor-valve rod or stem, of secondary motors 17 and 18, having piston-rods 20 and pivoted hooks at the ends of said rods, which are adapted to engage projections on the said valve stem or rod, supports 25, which guide and support the said hooks in their motions, stops 26, which engage the said hooks and move the same out of the paths of said projections when the piston-rods reach the ends of their strokes, electro-magnets controlling the valves of said secondary motors, and circuit-closers in the circuits of said magnets, said circuit-closers being situated at the ends of the paths of said hooks, substantially as and for the purposes described.

11. In an electrical apparatus for controlling the main valve of a motor, the combination of a secondary motor which operates the said main valve, a valve controlling the secondary motor, a cylinder, 32, and its piston, which is connected with the valve of the secondary motor, a valve, 33, which controls a port leading to the cylinder 32, and an electro-magnet which controls the valve 33, substantially as and for the purposes described.

12. In an electrical apparatus for controlling the main valve of a motor, the combination of a secondary motor which operates the said main valve, a valve controlling the secondary motor, a cylinder, 32, and its piston, which is connected with the valve of the secondary motor, a valve, 33, which controls a port leading to the cylinder 32 on one side of its piston to produce motion thereof in one direction, a spring bearing on the piston to produce motion thereof in the other direction, and an electro-magnet which controls the valve 33, substantially as and for the purposes described.

13. In an apparatus for controlling the valve of an elevator, the combination, with the said valve and its stem or rod, of a mechanical connection—such as a rope—between the elevator-car and the valve-stem, a secondary motor and its controlling electrical circuit, which operates the main-valve stem, and mechanism which automatically detaches the valve stem or rod from the secondary motor when the latter reaches the end of its stroke, whereby the valve may be freely operated by the rope, substantially as and for the purposes described.

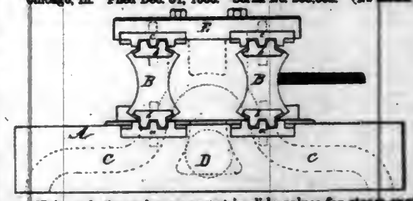
404,862. CONE OR FORMER FOR FELT-HARDENING MACHINES. JOHN PENDERGAST, Boston, and DANIEL PENDERGAST, Merrimac, Mass.; said John Pendergast assignor to William B. Stimpson, Whitinsville, Mass. Filed Dec. 26, 1888. Serial No. 294,618. (No model.)



Claim.—1. A former for shaping a completed wool hat during the hardening process, consisting of a flat body composed entirely of wire-cloth, substantially as set forth.

2. A former for shaping a completed wool hat during the hardening process, consisting of a flat body composed of two sheets of wire-cloth and a metallic binding-strip uniting said sheets at their edges, substantially as set forth.

404,868. ROLLING SUPPORT FOR SLIDE-VALVES. WARREN P. REASER, Fairmont, Nebr., assignor to the Round Valve Company, Chicago, Ill. Filed Dec. 31, 1888. Serial No. 295,092. (No model.)



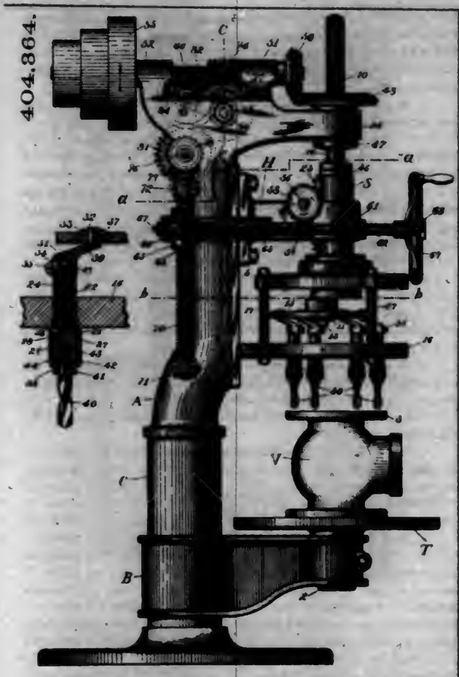
Claim.—1. As an improvement in slide-valves for steam-engines, the rolling supports for said valves recessed at their ends and provided with wearing-surfaces, and toothed segments *b b*, inserted in said recesses and adapted to be removed and replaced by others when worn, substantially as set forth.

2. As an improvement in slide-valves for steam-engines, the removable rack-plates *a* and *c*, set into recesses formed in the valve-face A and cap E, said plates having plane wearing-surfaces adapted to receive the wear of the rolling supports B, substantially as specified.

3. As an improvement in slide-valves for steam-engines, the rolling supports B, provided with removable segments *b*, in combination with a valve-face, A, the valve and cap E, said face and cap provided with removable toothed plates *a* and *c*, all arranged for joint operation in the manner and for the purpose shown and described.

404,864. DRILLING-MACHINE. FRANCIS H. RICHARDS, Hartford, Conn., assignor to Bickley R. Coxe, Drifton, Pa. Filed Dec. 6, 1888. Serial No. 292,543. (No model.)

404,864.



Claim.—1. In a drilling-machine, the combination of the vertical column having a way for a movable head, a movable head on said way, a spindle-slide working in said head and carrying thereon the drilling-head having the jig-plate carrying the drills, and means, substantially as described, for rotating the drills, said jig-plate being constructed to engage with and be guided by said way, all substantially as described.

2. In a drilling-machine, the combination of a frame-work having a vertical way, the head adjustable on said way and carrying the driving-spindle slide, the horizontal feed-shaft carried in bearings on said head, gearing, substantially as described, connecting said shaft with said slide, and the vertical worm-shaft 70, supported parallel to said way and operating said feed-shaft through a worm-wheel thereon, all substantially as described.

3. In a drilling-machine, the combination of a frame-work having a vertical way, the head adjustable on said way and carrying the driving-spindle slide, the horizontal feed-shaft carried in bearings on said head, gearing operatively connecting said feed-shaft and slide, the vertical worm-shaft 70, parallel to said way and operating said feed-shaft through a wheel thereon, the driving-shaft 60, and a system of connecting-shafts and gearing, substantially as described, actuating said worm-shaft from said shaft 60, said system comprising change-wheels whereby to vary the feed movement of said slide, all substantially as described.

4. In the feed mechanism of a drilling-machine, the combination, with the frame-work carrying the driving-shaft 60 and having the projecting fixed hub 85, of the worm-shaft 70, shaft 76, geared to said worm-shaft, shaft 75, driven by worm-wheel 77 from worm 74 on shaft 60, arm 84, carried on said hub and carrying stud 83, and the change-wheels 80, 81, and 82, connecting said shafts 75 and 76, all substantially as shown and described.

5. In a drilling-machine of the class specified, the combination of the changeable jig-plate bored, substantially as set forth, to receive the drill-sockets, the drill-sockets carried by said plate in said bores and carrying drill-spindles provided with cranks, the driving-spindle having a crank, and the driving-plate carried on said driving-crank and bored to receive the crank-pins of said drill-cranks, said driving-plate being bored larger than said crank-pins, thereby serving as a driver and also as an evener, to accommodate the irregularity and misalignment of the holes in said jig-plate with those of the driver, all substantially as described, and for the purpose specified.

6. In a drilling-machine, the combination of the driving-spindle 10, having a crank, the driving-plate carried on said crank, the jig-plate 16, the drill-sockets 24 set in said jig-plate, the drill-spindles 22, carried in said sockets, cranks 30 on said spindles, and operatively connected to be driven by said driving-plate, the spindle 10 being carried in a slide, and the jig-plate being supported by connections with said slide, substantially as described.

7. In a drilling-machine, the combination of the tubular socket 24, externally enlarged at its lower end and having its bore enlarged within said external enlargement, the spindle 22, fitting said bore and the enlargement thereof, the upper end of said enlargement furnishing a shoulder to resist the pressure of drilling, and the enlarged lower end of the socket furnishing a guide for the spindle against lateral movement, substantially as described.

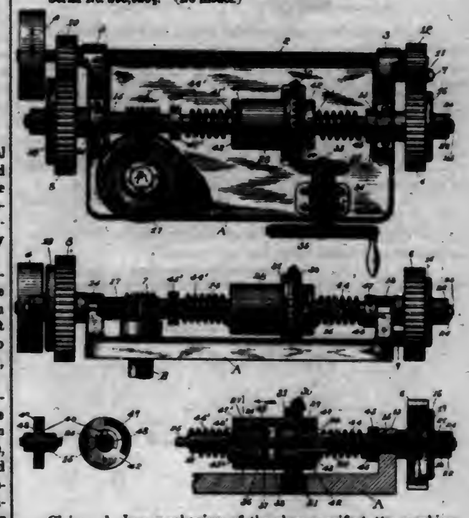
8. In a drilling-machine, the combination of the socket 24, the drill-spindle having the screw-thread 29, and the crank 30, fitting said thread and bearing on said socket and adapted to be screwed against the end of the spindle, substantially as shown and described.

9. The combination of socket 24, spindle 22, having thread 29, and the crank 30, fitting said spindle and thread, and having slot 34 and clamp-screw 35, substantially as described.

10. The combination of the socket 24, enlarged at its lower end, substantially as described, the spindle 22, having the enlargement 21, and the drill 40, fitting a socket within said enlargement 21, substantially as described, and for the purpose specified.

11. In a drilling-machine, the combination of the vertically-movable spindle-slide provided with connections adapted to carry the jig-plate, the jig-plate carrying the crank-provided drills and supported from said slide, the driving crank-spindle carried in said slide, and the driving-plate carried on said crank between said slide and jig-plate and engaging to drive said drill-cranks, all substantially as described.

404,865. FEED MECHANISM. FRANCIS H. RICHARDS, Hartford, Conn., assignor to Bickley R. Coxe, Drifton, Pa. Filed Jan. 10, 1889. Serial No. 296,220. (No model.)



Claim.—1. In a mechanism of the class specified, the combination, with a driven shaft and reversely-operating driving apparatus, substantially as described, of a sliding collar connected to engage and disengage said apparatus, and a revolving nut carried in a fixed position longitudinally on said shaft, constructed to actuate said collar and adapted to be revolved by hand, all substantially as described.

2. In a mechanism of the class specified, the combination of the shaft 15, driving apparatuses, substantially as described, for reversely revolving said shaft, collar 36, connected to engage and disengage said apparatuses one at a time, the revolving nut, and the hand-wheel connected to revolve said nut independently of and turn the same on said shaft, all substantially as described.

3. In a mechanism of the class specified, the combination, with the shaft 15, provided with a sliding collar, a clutch-rod, and driving apparatuses, substantially as described, of the revolving shell constructed to actuate said collar and adapted to be revolved independently of said shaft, and devices, substantially as described, operating to normally hold said shell in a middle position, as set forth, circumferentially of said shaft, substantially as described.

4. In a mechanism of the class specified, the combination of the shaft 15, having a stop-key, rod 25, collar 36, connected to said rod, the revolving nut actuating said collar and having lug 41, stop-collar 42, engaging said stop-key and lug, and a spring actuating said stop-collar, substantially as described.

5. In a mechanism of the class specified, the combination of shaft 15, collar 36, connected to engage the driving-wheels, substantially as described, the revolving shell actuating said collar, and oppositely-disposed stop-collars actuated, substantially as described, to normally hold said shell in a middle position circumferentially of said shaft, substantially as described.

6. In a mechanism of the class specified, the combination, with a frame-work, of the main shaft 15, wheels 6 and 8, clutches 16 and 18, rod 25, collar 36, connected to said rod, and a revolving part, substantially as described, carried on said shaft and adapted to be revolved independently of the shaft to actuate said collar, all substantially as described.

7. In a mechanism of the class specified, the combination, with the shaft 15, having enlargement 26 and slot 37, of the rod 25, key 38, collar 36, and a revolving shell, substantially as described, actuating said collar and taking its bearings on said shaft at either end of said enlargement, substantially as described.

8. In a mechanism of the class specified, the combination, with the shaft 15, having key 40, of the shell having lug 41, and stop-collar 42, having spaces 48 and 49, substantially as described.

404,366. DEVICE FOR TESTING COLOR-BLINDNESS. Lucius T. Stanley, Brooklyn, assignor to David L. Proudfit, New York, N. Y.

Filed Aug. 15, 1888. Serial No. 282,771. (No model.)



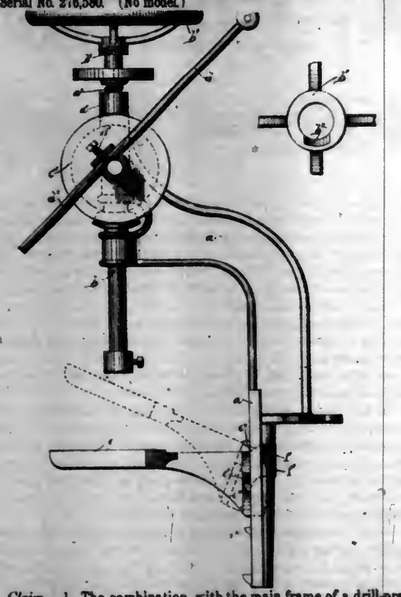
Claim.—1. In an apparatus for testing for color-blindness, the combination of two adjustably-attached cards or surfaces, one made up of different color-sections, and the other containing an opening or aperture upon a white surface, the card containing the color-sections being arranged so that the several sections can be brought to pass beneath the opening of the other card.

2. In an apparatus for testing for color-blindness, a card, A, provided with a plain white space, D, and with a white space, C, surrounding an opening, E, in combination with color-sections H, secured to the card and adapted to be passed under the said opening.

3. In combination, the card A, provided with the black spaces B B and with the white spaces C D, one of which has the opening E, and the color-disk F, adjustably secured to the card, so that its color-sections may be passed under the said opening E.

404,367. DRILL-PRESS. Edward C. Stearns, Syracuse, N. Y., assignor to Edward C. Stearns & Co., same place. Filed June 9, 1888.

Serial No. 276,580. (No model.)



Claim.—1. The combination, with the main frame of a drill-press provided with a series of projections on its face, of an adjustable work-supporting table formed with a cross-bar to rest on said projections, and with a pair of arms hooked around the edges of the main frame and having their rear ends beveled, substantially as and for the purpose set forth.

2. In a drill-press, the combination, with the drill-spindle, of a supporting bracket or frame, a shoulder, *a*, provided upon said spindle between its opposite extremities, a wheel or collar, *b'*, secured to the spindle on one side of the shoulder *a*, a loose screw-sleeve, a^3, mounted upon the spindle and interposed between said wheel *b'* and shoulder *a*, a roller, b^2, interposed between said loose screw-sleeve a^3 and the wheel *b'*, locking the screw-sleeve a^3 and wheel *b'* together, with gearing for actuating the spindle, and a hand-hold connected to said gearing and adjustable at different distances to the motor shaft or spindle of the gearing, substantially as and for the purpose set forth.

3. In a drill-press, the combination, with the main frame provided with a stud circumferentially grooved near its end, of a main driving-gear mounted upon said stud, and an adjustable handle passed through the hub of the gear and the groove in the stud, substantially as and for the purpose set forth.

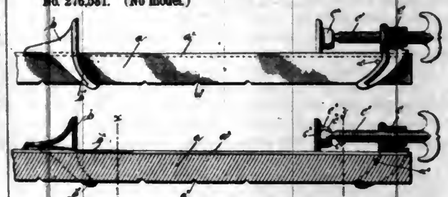
4. In a drill-press, the combination, with the drill-spindle, the screw-feeding sleeve thereon, and the main frame, of a wheel or collar secured upon the top of the spindle, having an inclined recess in its hub, and a small roller placed in said recess, substantially as and for the purpose set forth.

5. In a drill-press, the combination, with a drill-spindle, of a shoulder and loose screw-sleeve mounted on the spindle, means for engaging the screw-sleeve with its spindle, the plain extremity a^3, provided on the screw-sleeve, and a suitable bracket provided with threads engaging the screw-sleeve, substantially as and for the purpose set forth.

6. In a drill-press, the combination of the frame *a'*, spindle *b*, guided rectilinearly therein, a shoulder, *a*, projecting from said spindle between the opposite extremities thereof, a wheel or collar, *b'*, secured on the upper extremity of the spindle, a loose screw-sleeve mounted on a spindle and interposed between the collar and shoulder, an inclined recess in the hub secured on the spindle, and a roller placed in said recess and bearing upon the upper face of the loose screw-sleeve a^3, binding the opposite face of the screw-sleeve against the shoulder provided on the spindle *b*, substantially as and for the purpose set forth.

404,368. CLAMP. Edward C. Stearns, Syracuse, N. Y., assignor to Edward C. Stearns & Co., same place. Filed June 9, 1888.

Serial No. 276,581. (No model.)



Claim.—1. The combination, with the bar *a*, formed with a longitudinal groove in its upper face and having its lower face formed with a series of transverse notches, of the movable head *b*, having a forwardly-inclined loop rigidly secured thereto for embracing the bar and engaging the notches, the spring b^3, and the stationary head *c*, its screw *c'*, and follower c^3, all constructed and arranged to operate substantially as and for the purpose set forth.

2. The combination, with the bar *a*, having its lower face formed with a series of transverse notches, the movable head *b*, having a forwardly-inclined loop rigidly secured thereto for embracing the bar and engaging the notches, a spring for forcing the loop to engage the transverse notches, the head *c*, having a loop rigidly secured thereto for engaging a transverse slot in the bar *a*, the pin a^3, for the abutment of the head *c*, the screw *c'*, and the follower c^3, substantially as and for the purpose set forth.

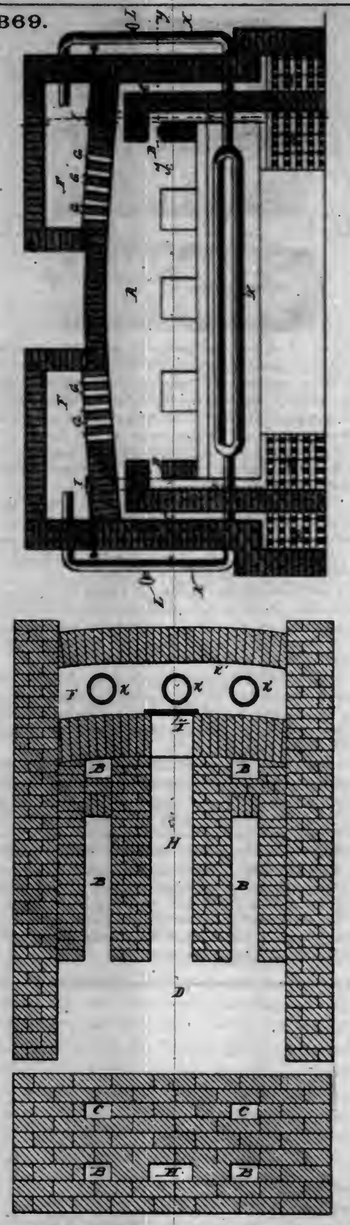
404,369. METALLURGICAL FURNACE. William Stubblebine, Bethlehem, assignor to the Stubblebine Patent Company, Philadelphia, Pa. Filed Feb. 16, 1888. Serial No. 264,205. (No model.)

Claim.—1. In a furnace for metallurgical operations and other purposes, the combination, with the combustion-chamber, of a mixing-chamber communicating therewith, an air-regenerator chamber also in communication with the combustion-chamber, a gas-regenerator chamber communicating through suitable flues with the mixing-chamber and with the combustion-chamber at or near the point of communication between the combustion and mixing chambers, and an air-supply pipe, K, communicating with the mixing-chamber for supplying air thereto, substantially as and for the purpose set forth.

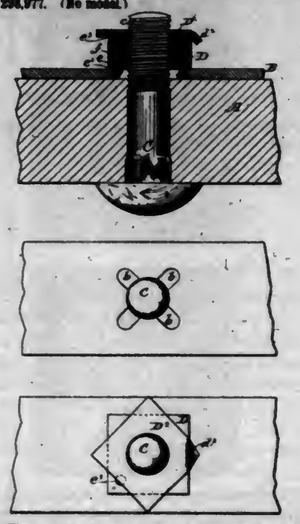
2. In a metallurgical or other furnace, the combination, with the combustion-chamber, of a mixing-chamber communicating therewith, an air-supply in communication with the mixing-chamber, an air-regenerator chamber communicating with the combustion-chamber, and a gas-regenerator chamber communicating through suitable flues with the mixing-chamber and with the combustion-chamber, substantially as set forth.

3. In a metallurgical or other furnace, the combination, with the combustion-chamber, of a mixing-chamber at each end, and communications between each of said mixing-chambers and the combustion-chamber, a gas-regenerator chamber at each end of the furnace, each of said regenerator-chambers communicating through flues with one of the mixing-chambers and with the combustion-chamber, an air-supply in communication with each mixing-chamber, and valves for wholly or partially cutting off either of the mixing-chambers at pleasure, substantially as described.

404,369.

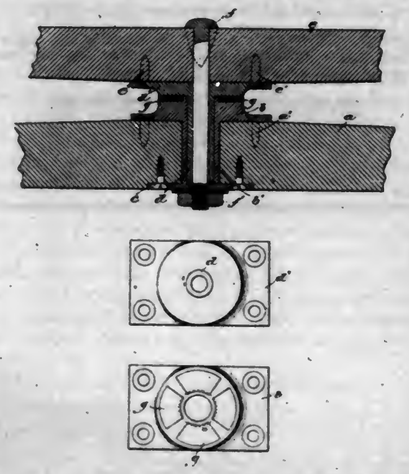


404,370. NUT-LOCK. George Van Nest, Raritan, N. J., assignor of one-half to Garret V. Clickener, same place. Filed Feb. 7, 1889. Serial No. 298,977. (No model.)



Claim.—The combination of a plate having perforations therein, a bolt, a nut, D, thereon, a coiled spring, and a pin within said nut, the nut having a countersunk seat for the head of the pin, with an auxiliary nut, D^3, upon the same screw-thread of the bolt as the nut D, whereby the spring-pin is locked, substantially as described.

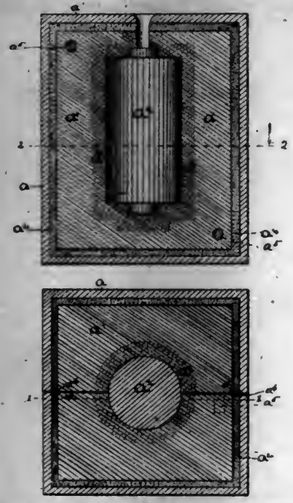
404,371. WHIFFLETREE-CONNECTION. Daniel D. Whitney, Cornwall, N. Y., assignor to the Whitney Coupling Company, Whitinsville, Mass. Filed Jan. 19, 1889. Serial No. 296,960. (No model.)



Claim.—1. In a whiffletree-connection, a bearing or chafer plate, *a'*, adapted to be secured to the whiffletree and having a sleeve extended downwardly into or through the cross-bar, and the retaining-bolt *f* within it, combined with a companion bearing or chafer plate, *b*, secured to the cross-bar and having a bushing, which also extends down into or through the said cross-bar and receives within it the said sleeve, substantially as described.

2. In a whiffletree-connection, the combination, with the protected retaining-bolt *f*, of two bearing or chafer plates located between a cross-bar and whiffletree, one of which plates has an anti-friction bearing-surface, or substantially so, substantially as described.

404,372. MOLD. CHARLES H. WILDER, Natick, assignor, by mesne assignments, to Frederick E. Atteaux, trustee, Boston, Mass. Filed May 4, 1888. Serial No. 273,002. (No model.)



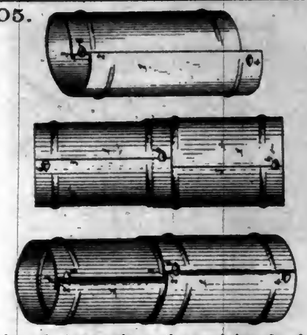
Claim.—1. As a new article of manufacture, a permanent mold formed of coke, graphite, and a coked binder, as described.

2. As a new article of manufacture, a permanent mold provided with an integrally-attached back, the face of the said mold being formed of a mixture of coke, graphite, and coked binder, all substantially as described, and the backing of said mold being formed of coke and a coked binder, the said mold and back being united, substantially as set forth.

REISSUES.

11,005. STOVE-PIPE. WALTER S. SHIPE, Minerva, Ohio, assignor to Oliver S. Garretson, Buffalo, N. Y. Filed Jan. 27, 1888. Serial No. 262,183. Original No. 366,515, dated July 12, 1887.





Claim.—1. A stove-pipe section consisting of a sheet of metal having its longitudinal edges provided with oppositely-turned interlocking flanges and provided near one of its ends with a lip which engages with one of said flanges and prevents the interlocking flanges from being engaged and disengaged in their normal position, but permits the engagement and disengagement of said flanges when displaced lengthwise and the engagement with and disengagement from said lip by a lengthwise movement of the interlocked flanges upon each other, substantially as set forth.

2. A stove-pipe section consisting of a sheet of metal having its longitudinal edges provided with oppositely-turned interlocking flanges and provided near its end with an internally-projecting lip arranged in rear of the inwardly-turned flange and bearing against the outwardly-turned flange, substantially as set forth.

3. A stove-pipe section consisting of a sheet of metal having its longitudinal edges provided with oppositely-turned interlocking flanges and provided near its end with an externally-projecting lip arranged in rear of the outwardly-turned flange and bearing against the inwardly-turned flange, substantially as set forth.

4. A stove-pipe section consisting of a sheet of metal having two of its opposite edges provided with oppositely-turned flanges and having a lip near one end of each of said flanges, said lips being upon opposite ends of the section and extending, respectively, inwardly and outwardly, substantially as set forth.

5. A stove-pipe section consisting of a sheet of metal having two of its opposite edges provided with oppositely-turned flanges and a lip near one end of each of said flanges, said lips extending, respectively, inwardly and outwardly, being upon opposite ends of said sections and struck up from the sheet of metal and projecting over and above their respective flanges, and the flanges being provided with a nick or notch at one end, substantially as set forth.

6. A stove-pipe section consisting of a sheet of metal having two of its opposite edges provided with oppositely-turned flanges and a lip near one end of each of said flanges, said lips being upon opposite ends of said section and one of them being nearer the end of the section than the other, substantially as set forth.

PHOTO-LITH. NORRIS PETERS WASHINGTON, D.C.

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

PETERS *v.* ACTIVE MANUFACTURING COMPANY.

Decided May 13, 1889.

PETERS—DIE FOR MAKING DASH-FRAMES.

Letters Patent No. 281,553, granted July 17, 1883, to George M. Peters, for an improvement in dies for making dash-frames for carriages, *Held* void for want of invention.

APPEAL from the Circuit Court of the United States for the Southern District of Ohio.

Mr. W. H. Fisher for the appellant.
Mr. Arthur Stem for the appellee.

Mr. Justic BLATCHFORD delivered the opinion of the Court.

This is a suit in equity, brought in the Circuit Court of the United States for the Southern District of Ohio, by George M. Peters against The Active Manufacturing Company, a corporation, founded on the alleged infringement of Letters Patent No. 281,553, granted to said Peters, July 17, 1883, on an application filed December 7, 1880, for an "improvement in dies for making dash-frames." A dash-frame is made of metal, and is to be used in constructing a dash-board for a carriage or other vehicle.

The defenses set up in the answer are want of novelty, non-infringement, and also that the devices described and claimed in the patent were, before the alleged invention thereof by Peters, old and well-known in forging, welding, and other metal-working, and that it required no invention to apply or adapt such devices to the old form and construction of dash-frames. Issue was joined, proofs were taken, and the circuit court, in its decree, found that the patent was "void for want of invention," and dismissed the bill. We concur in that conclusion.

The specification of the patent says:

The principal object of my invention is to provide an efficient and useful method of welding the end bars of a metal dash-frame to the bottom rail, and a method by which the bottom rail of the dash is strengthened at the weld and at the portion of said rail to which the dash-foot is to be attached.

Another object of my invention is to provide a means by which a recess is formed in the bottom rail, preparatory to punching said rail, to receive the bolt or other attachment which secures the dash-foot to the bottom rail, the operation of forming the recess being performed at the same time that the end bar is welded to the bottom rail.

The entire operation set forth in the specification, of welding the bars to the rail, of strengthening the bottom rail of the dash, and of forming a recess in the bottom rail at the same time that the welding is done, is described in the specification as effected by one and the same simultaneous action of two opposing dies, an upper die and a lower die, placed face to face. The dies are provided with channels or depressions, one, a, to receive the end bar of the frame, and the other, a', to receive the bottom rail, the channels, $a\ a'$, of one die coinciding with like channels in the other die, when the two dies are placed together. From the bottom of the depressions a' in the two dies rise tongues, a^2, which, like the depressions a, coincide with each other when the two dies are placed together, the tongues preferably not rising quite to the face of the dies, so that, when the dies are placed together, a slight space is left between the two tongues. The specification also states that, preferably, the tongues a^2 are so formed that when the dies are placed together the tongues will approach closer to each other at that portion of themselves which forms that part of the web in the lower bar which is to be punched through to receive the bolt or other device by which the dash-frame is connected to the foot or vehicle, than at any other point; in other words, the face of the tongues is inclined. The object of such a formation of the tongues is stated in the specification to be, to make the web left in the bottom rail thinner in that portion of such rail where perforations are to be made to receive the bolts which secure the dash-foot to the frame, the web being in other portions preferably left of a uniform thickness; and one of the objects of thus making the web thin is to enable it to be more readily punched or otherwise perforated. By means of those dies a recess is formed in either side of the bottom rail, which recess corresponds with the tongues a^2 of the dies.

The four claims of the patent are as follows:

1. The combination, substantially as before set forth, of the two dies having opposing angularly-joined depressions $a\ a'$, and a tongue, a^2, in the depression a' of either or both dies.

2. The combination, substantially as before set forth, of the two dies having opposing angularly-joined depressions $a\ a'$, and a tongue, a^2, in the depression a' of either or both dies, the depressions a' deepening toward their junctions with the depressions a.

3. The combination, substantially as before set forth, of the dies having opposing angularly-joined depressions $a\ a'$, and a tongue, a^2, in either or both of the said depressions, the face of said tongue or tongues being inclined.

4. The combination, substantially as before set forth, of the dies having opposing angularly-joined depressions $a\ a'$, and a tongue, a^2, in either or both of the said depressions, the depressions a' deepening toward their junctions with the depressions a, and the face of the tongue or tongues being inclined.

The whole of this alleged invention is based upon the idea, old and well known, that a metallic die, whether of a cameo or intaglio form, will, when impressed upon a piece of heated or yielding metal, leave

the latter of the converse form of the die, and that, when two dies are brought together over a piece of heated or yielding metal, the latter will take the shape of the space existing between the contours of the two dies. It is an inevitable consequence of the use of two dies in such a way, on two pieces of metal of proper size, heated to a welding heat, that swaging or welding will take place by the impact of the dies; that, when the dies have tongues and depressions in them, the metal acted on by such tongues and depressions will take the shape, in form and thickness, of the space left between the tongues or the depressions; and that a greater or less thickness of metal will be the result as the face of the tongues is more or less inclined. All this was old and common knowledge, and the whole of the operation resulting from such features is nothing but the well-known action of two dies so shaped as to give the desired conformation to the article acted upon by them.

If it was desired to preserve a channel in the bottom rail of the dash-frame, when the bottom rail was made of channeled iron, it was obvious, and not a matter of invention, that the die must be provided with a tongue to fit into the channel, to prevent the filling up of the channel by the forcing into it of metal by the action of the dies in welding the two pieces together. So, too, if it was desirable to make the welded parts thicker, and thus stronger, at the angle formed by the end-bar and the bottom rail, it was obvious that the bottoms of the recesses in the dies must be deepened at such angle. That is all there is of the alleged invention of Peters.

It appears from the testimony that it was not new, at the time of such alleged invention, to use channeled iron in making dash-frames; or new to weld channeled iron to flat or oval bars of iron; or new to use dies for swaging or welding together two pieces of iron. All that remained to be done in the present case, as in other cases, was to adapt the form of the dies to the shape desired in the article to be acted upon by them. Dies which act upon two pieces of metal which are capable of being welded to each other, and which are brought to a welding heat, necessarily will weld them together by the impact and action of the dies. There is no patentable invention in securing such result of welding or swaging, if there be no patentable invention in the construction and use of the dies to produce a given shape in the article acted upon by them.

The decree of the circuit court is affirmed.

U. S. Circuit Court—Southern District of New York.

GRANT *v.* WALTER.

Decided May 4, 1889.

1. GRANT—REELING AND WINDING SILK AND THREAD.
The claims of Letters Patent No. 267,192, granted November 7, 1882, to James M. Grant, for improvements in the art of reeling and winding silk and other thread, are for the skein merely as a product, and are void for want of novelty.

2. INVENTION DESCRIBED BUT NOT CLAIMED.
While the specification makes many references to the use of the skein in the process of dyeing, which process of using might be patentable, it is not covered by the claims, and they rigidly control.

3. DISCLAIMER NO REMEDY IN SUCH CASE.
To disclaim the skein except for use in the process of dyeing would not change the patent into one for the process. The patent for the skein would still be void and the process of using it be still free from the patent.

Mr. William Edgar Simonds for the complainant.
Mr. Henry Grasse for the defendant.

WHEELER, *J.*:

This suit is brought upon Letters Patent No. 267,192, dated November 7, 1882, and granted to the orator for what are called in the patent "improvements in the art of reeling and winding silk and other thread," and which are stated there to relate—

to a novel manner of winding silk or other thread upon the reels in a reeling-machine preparatory to its being dyed—

and to consist—

in winding the silk or other thread upon the reel in the form of a wide band, in which the thread crosses from side to side as it is wound, somewhat in the manner now employed, but so arranged as not to form single skeins by passing one layer over the other. I prefer to have the thread cross in five-sixths of one revolution of the reel, although other proportions will answer. When the required quantity has been wound, I lace the skein or band, before it is removed from the reel, in one or more places, generally on opposite sides of the reel, so as to divide it into a number of parts and hold it in its flat or band-like condition. This lacing constitutes the chief point of my invention, and is what preserves the skein in its shape and prevents its becoming entangled in the process of dyeing. After lacing the skein is removed from the reel and passes into the hands of the dyer. After winding in the manner above described the skein is so laid, one thread crossing the other, that its texture is more open even than the small skeins wound in the ordinary manner, and although much larger, the dye easily penetrates to every part and insures a uniform color. The several threads cannot become matted together, as with the ordinary skein wound in the customary manner.

The utility of the invention is set forth as that by means of it—

a great saving is made in the expense of manufacture, the waste of silk is greatly reduced, and less skill is required in the winding after the dyeing, thereby dispensing with the high-priced skilled operatives now employed upon this work.

There are two claims for—

1. A skein of silk or other thread wound upon a reel diagonally from side to side, in the manner described, and laced back and forth across its width to preserve its form, substantially as set forth.

2. The combination of the lacing B with a wide skein of silk or other thread in which the strands are diagonally crossed, substantially as described.

According to the evidence, silk in the shape in which it is formed by the silk-worm exists in the shape of cocoons which are soaked in a suitable bath, and the filaments of silk are unwound from the cocoons and formed in skeins on reels or swifts. In this shape it forms the raw silk of commerce and is imported into America in large quantities. In manufacture the raw silk is ungummed, dried to a sufficient degree, and then, in skein form, put on swifts from which it is wound onto spools or bobbins; then the silk, according to the use to which it is to be put, is further doubled, in which operation it goes from spool to spool, is twisted, in which operation it goes from spool to spool, and when of sufficient size as to number of threads and of condition as to twisting is reeled from the spool or bobbin into skein form. In this skein form it is dyed.

The term "winding" means the changing of the silk from the skein form to its form on a bobbin or spool, and by "reeling" is meant the putting of the silk into the skein form. Before the orator's invention the skeins for dyeing were made up of several small skeins of threads wound without being crossed. These smaller skeins were difficult to separate and straighten after the operation and skilled operatives were required. The orator's method produces a form of skein in which a larger quantity of silk can be reeled than by the old method. It requires less skill on the part of the operative to reel the silk, and a large part of the waste inseparable from the old method is prevented. There appears to be a saving of about forty per cent. in cost over that by the other method. After the skein has been dyed it can be wound without parting, and thus dispenses with the work of parting that required considerable skill and experience in the other method of manufacture. The evidence also abundantly shows that raw silk was reeled diagonally into broad skeins and laced across for convenience in handling and transportation before the orator's invention, but more closely, and not for the purpose of handling in the operation of dyeing. The great advantage of that form of skein for that purpose does not appear to have been known before.

What the orator invented was the method of dyeing and winding silk by the use of that form of skein in the operation and not the skein itself. That, being known before, was not patentable as such even for a new use. (*Pennsylvania Railroad Co.* v. *Locomotive Truck Co.*, 110 U. S., 490; *Miller* v. *Foree*, 116 U. S., 22.) The process of using it in dyeing and winding was probably patentable. (*Cochrane* v. *Deener*, 94 U. S., 780; *The Telephone Cases*, 126 U. S., 1.) He appears to have a patent for what he did not invent and not to have one for what he did invent. The looseness in winding and difference in size of the skeins made use of in the practice of the orator's invention are somewhat relied upon to uphold the patent for the skein; but they are not mentioned in the claims, and are no more covered by them than the process is, and if they were these differences in degree merely would not seem to be patentable. (*Estey* v. *Burdett*, 109 U. S., 633.)

The specification makes many references to the use of the skein in the process of dyeing, and this has been urged as forcibly as it could be as a ground for upholding the patent for such a skein in use in that process; but the claims are for the skein merely as a product, and they rigidly control. (*Burr* v. *Duryea*, 1 Wall., 531; *James* v. *Campbell*, 104 U. S., 356.) The orator offers to disclaim the skein except for use in the process of dyeing; but that would not change the patent into one for the process. The patent for the skein would still be void and the process of using it be still free from the patent. This is not like Cummings's patent for a set of artificial teeth made in a defined manner, which was held to cover as well the process as the product. (*Smith* v. *Goodyear Dental Vulcanite Co.*, 93 U. S., 486.) The skein of this patent is not the product and is not new. The product is the wound skein of dyed silk. This skein is merely put to a new use in the process of producing that, and when that is produced it is not different from the wound skein of dyed silk produced in the former mode, and would not seem to be patentable. (*McKay* v. *Jackman*, 12 Fed. Rep., 615.)

The invention of the orator is so meritorious and valuable that the conclusion that the patent does not, and cannot be made to, cover it has been reached with reluctance, and only after much consideration of all the grounds urged in favor of an opposite result.

Let there be a decree dismissing the bill of complaint, with costs.

U. S. Circuit Court—Southern District of New York.

H. TIBBE & SON MANUFACTURING COMPANY *v.* HEINEKEN.

Decided February 18, 1889.

1. TIBBE—PIPES.
Letters Patent No. 205,816, granted July 9, 1878, to Henry Tibbe, for an improvement in pipes, *Held*, in view of the state of the art, void for want of patentable novelty.

2. DEFENSE—ESTOPPEL.
A former licensee is not estopped from questioning the validity of a patent after his license has expired in vindication of acts done subsequent to its termination.

3. CONVEYANCE OF PATENT UNDER A POWER OF ATTORNEY.
A conveyance executed by an attorney under a power of attorney to sell for the patentees, for them and in their names, all their right, title, and interest in a patent, is in law their conveyance and not his.

Mr. Paul Bakewell and *Mr. Abram J. Rose* for the complainant.
Mr. Louis C. Raegener for the defendant.

LACOMBE, *J.*:

This is an application for a preliminary injunction to restrain infringement of Letters Patent No. 205,816, of July 9, 1878, granted to Henry and Anton Tibbe, for an improvement in pipes.

There has been no adjudication in support of the patent except a decree, which, being on consent, need not be regarded. Complainant insists that the validity of the patent has been suitably acquiesced in by the public, showing that its sales of articles covered thereby have run up into the millions. The weight of this argument is greatly weakened by the facts shown in defense—viz., that the defendant has been manufacturing the same pipes continuously and to a considerable extent since 1883; that the Tibbes, through their solicitor, threatened to prosecute him for infringement four years ago; that he then retained counsel and insisted that he had a right to manufacture and sell, communicating that fact to their solicitor, and that he has ever since openly continued the manufacture and sale of his pipes undisturbed by complainant or his grantors. In view of the other facts disclosed by the papers this branch of the subject need not be discussed. We may concede that the Letters Patent and proof of exclusive enjoyment make out a *prima facie* case and proceed at once to determine whether defendant's answering affidavits are sufficient to defeat that case.

The claim of the patent is:

As a new article of manufacture, a smoking-pipe made of corn-cob, in which the interstices are filled with plastic self-hardening cement.

In the specification plaster-of-paris is indicated as a suitable plastic cement. Inspection of the specification and drawings indicates that the patentee contemplated securing a patent upon other features of his pipe, such as the shape, stem, &c.; but these were all abandoned before issue, and the only claim retained in the patent is for filling the interstices, as above indicated. When a dry corn-cob is trimmed and hollowed out to a shape suitable for a pipe, it appears from an examination of the exhibits submitted with the papers that there are a great many interstices both on the inside and the outside of the bowl. It appears from defendant's affidavits that more than two years

prior to the application for the patent one Charles F. Willis manufactured corn-cob pipes, known and advertised as "Jackson pipes," which were extensively sold in New York and Philadelphia. The bowls of these pipes were lined with plaster-of-paris or a plastic cement prepared from meerschaum dust. This lining of course filled up the interstices on the inside of the bowl precisely in the same way as does the "plastic self-hardening cement" of the patent. Such being the state of the art, there was no invention in filling the outside interstices in the same way, and the patent is clearly void. The complainant, however, contends that the defendant cannot be heard to deny the validity of the patent in suit.

It appears that in May, 1879, the patentees, Henry and Anton Tibbe, gave to defendant an exclusive license to sell these pipes, agreeing not to appoint any other agents to sell, nor to sell or assign the patent without his consent, he to have 25 per cent. of all sales. This agreement expired by its own limitation May 14, 1885, and there is no authority for the proposition that a former licensee is estopped from questioning the validity of a patent after his license expires in vindication of acts done subsequent to its termination. It is also shown that, the patent standing in the name of Henry Tibbe and Anton Tibbe, copartners, they executed a power of attorney to the defendant (June 13, 1879) to sell for them and in their names all their right, title, and interest in the patent. By some other agreement, not expressed in the power of attorney, he was to receive 25 per cent. of the proceeds of the sale of the patent-right. Acting under this power of attorney and referring to it as his authority, the defendant conveyed the patent-right to one George Winzer. By various mesne conveyances it subsequently returned (November 5, 1882) to the firm of Henry and Anton Tibbe, into which partnership one Kahman had by that time been admitted. These last, with two other persons, subsequently organized the complainant corporation, and conveyed the patent to it February 1, 1887. Under these circumstances the question arises whether the defendant is estopped, either by deed or *in pais*, from denying the validity of the patent. After examination of the documents submitted and of the authorities cited by the complainant I am inclined to the opinion that he is not. The power of attorney was, for all that appears, revocable at pleasure of the Tibbes, and the conveyance executed by defendant to Winzer was in law their conveyance, not his. It is therefore not his own grant that he seeks to derogate from. The circumstances that he shared in the profit obtained from the sale to Winzer, and would thus be estopped, *in pais*, from questioning the character of what was sold, might be availed of by a subsequent grantee who stood in Winzer's shoes; but no authority is cited which would secure the same benefit to the original circulator of an invalid patent, except, perhaps, the English case, (*Chambers* v. *Crichley*, 33 Beav., 374.) On principle there is no more reason why the defendant should be estopped as against the Tibbes from questioning the validity of their patent because he has shared in the proceeds of its sale than there would be because he has shared in the proceeds of the sale of the articles made thereunder. As the point raised, however, is a new one, and a restraining order was granted in the case, the defendants should only be relieved from its operation upon proper terms.

Let the defendant give a bond for $2,000 and file monthly statements of the number of infringing pipes sold, with leave to complainant to move for an increase of security as the facts may warrant. Upon these terms the motion to continue injunction is denied.

U. S. Circuit Court—Northern District of Illinois.

McCORMICK HARVESTING MACHINE COMPANY *v.* DEERING.

Decided May 6, 1889.

1. PRACTICE—CROSS-BILL—SECTION 4915 REVISED STATUTES.

Leave to file cross-bill in proceeding under section 4915 Revised Statutes denied, the object of the cross-bill being to enjoin the complainant from infringing a patent for the same invention already issued to defendant.

2. SAME.

The original bill not necessarily involving the question of infringement of the defendant's patent, such a cross-bill is not germane thereto.

Messrs. Parkinson & Parkinson for the complainant.

Messrs. Banning & Banning & Payson for the defendant.

BLODGETT, *J.*, (orally:)

This is an application on the part of the defendant, William Deering, for leave to file a cross-bill. The original bill of complaint in this cause is filed under the provisions of section 4915 of the Revised Statutes for the purpose of procuring a determination that the complainant is entitled to receive Letters Patent for the invention claimed by him. The defendant is the owner of certain Letters Patent covering substantially, as is claimed, the same invention for which complainant seeks by his bill to obtain a patent. The defendant now asks leave to file his cross-bill charging the complainant with having infringed the patent held by Deering, and the only question for determination, as far as I can see, is whether the subject-matter of the proposed cross-bill is germane to the matter contained in the original bill. I am of opinion that the subject-matter of the original bill does not involve, necessarily, the question of infringement of the Letters Patent claimed by Deering. I do not think, therefore, that the subject-matter of the proposed cross-bill is germane to the bill of complaint, and for this reason the motion for leave to file the cross-bill is denied.

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United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

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Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified and subclassified in the Scientific Library for convenient and ready reference.

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Patents	411	No. 404,373 to No. 404,813, inclusive.
Designs	21	No. 19,125 to No. 19,145, inclusive.
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Reissues	None.	
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TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	....	Nebraska	....	....
Arizona Territory	....	....	Nevada	....	....
Arkansas	....	....	New Hampshire	1	....
California	13	1	New Jersey	36	4
Colorado	3	1	New Mexico Terri'y	....	....
Connecticut	16	2	New York	79	9
Dakota Territory	1	....	North Carolina	1	1
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Kansas	10	....	Vermont	4	....
Kentucky	2	....	Virginia	1	....
Louisiana	....	3	Washington Terri'y	1	1
Maine	3	....	West Virginia	2	....
Maryland	7	2	Wisconsin	8	2
Massachusetts	32	5	Wyoming Terri'y	1	....
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Missouri	22	3	Total to citizens of the United States	423	41
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TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Australia	....	....	Germany	6	2
Austria-Hungary	....	....	Hawaii	....	....
Barbadoes	....	....	Italy	....	....
Belgium	2	....	Mexico	....	....
Brazil	....	....	New South Wales	1	....
Canada	11	....	Norway	1	....
Canary Islands	....	....	Scotland	2	....
Colombia, U. S. of	....	....	Sweden	1	....
Cuba	1	4	Switzerland	2	....
Denmark	....	....	Victoria	....	....
Ecuador	....	....			
England	12	1	Total to citizens of foreign countries	39	7
France	....	....			

DESIGNS.

19,125.—BOTTLE.—*William Baker, Jr.*, Baltimore County, Md. Application filed April 29, 1889. Serial No. 309,116. Term of patent 14 years.

19,126.—SEGGAR.—*Thomas A. Bell*, Trenton, N. J. Application filed January 12, 1889. Serial No. 295,991. Term of patent 14 years.

19,127.—FIRE-PLACE LINING.—*Edward L. Calely*, Philadelphia, Pa., assignor to *Gilbert Combs, John Bawden*, and *John H. Bawden*, Freehold, N. J. Application filed January 9, 1889. Serial No. 295,887. Term of patent 7 years.

19,128.—INHALER-TUBE.—*James F. Cheadle*, Knoxville, Tenn. Application filed February 11, 1889. Serial No. 299,524. Term of patent 14 years.

19,129.—LATCH-CASE.—*Rodolphe W. E. Christesen*, New Britain, Conn., assignor to *The Russell & Erwin Manufacturing Company*, same place. Application filed April 1, 1889. Serial No. 305,606. Term of patent 14 years.

19,130.—DRESSING-CASE.—*Timothy J. Collins*, Toledo, Ohio, assignor to *T. J. Collins & Co.*, same place. Application filed February 25, 1889. Serial No. 301,121. Term of patent 3½ years.

19,131.—TEXTILE FABRIC.—*Lewis Haslam*, Ravenswood, near Bolton, county of Lancaster, England. Application filed April 9, 1889. Serial No. 306,592. Term of patent 14 years.

19,132 to 19,138, inclusive.—OIL-CLOTH.—*Charles T. Meyer* and *Victor E. Meyer*, Bergen, N. J., assignors to *Edward C. Sampson*, New York, N. Y. Applications filed May 11, 1889. Serial Nos. 310,458 to 310,464, inclusive. Term of patents 3½ years.

19,139.—METALLIC ROOFING-PLATE.—*Longley Lewis Sagendorph*, Cincinnati, Ohio. Application filed April 29, 1889. Serial No. 309,054. Term of patent 14 years.

19,140.—TOY MONEY-SAFE.—*Herman Scheller*, Jersey City, N. J. Application filed May 1, 1889. Serial No. 309,291. Term of patent 7 years.

19,141.—CANISTER.—*Rudolph Staudinger*, Brooklyn, N. Y. Application filed May 1, 1889. Serial No. 309,292. Term of patent 7 years.

19,142.—TOY CAP-EXPLODER.—*Orrin A. Wheeler*, Chicago, Ill. Application filed April 2, 1889. Serial No. 305,767. Term of patent 3½ years.

19,143.—BOX.—*Horace F. Whitman*, Philadelphia, Pa. Application filed April 13, 1889. Serial No. 307,189. Term of patent 3½ years.

19,144.—CIGAR-BOX.—*William P. Wilcox*, Cicero, N. Y. Application filed January 14, 1889. Serial No. 296,361. Term of patent 7 years.

19,145.—LATTICE OR MESH WORK.—*Francis A. Winslow*, Chicago, Ill. Application filed May 9, 1889. Serial No. 310,147. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,661.—WHISKY.—*M. & K. Gottstein*, Seattle, Wash. Ter. Application filed April 3, 1889. Used since March 1, 1888.
"The words 'PACIFIC CLUB,' and the representation of a canoe with an Indian seated therein."

16,662.—NEWSPAPER.—*Jerome A. Hart*, San Francisco, Cal. Application filed April 10, 1889. Used since March 25, 1877.
"The word 'ARGONAUT.'"

16,663.—TEA.—*The P. H. Kelly Mercantile Company*, St. Paul, Minn. Application filed March 19, 1889. Used since March, 1888.
"The conventional representation of a chrysanthemum having a gold disk and petals of alternate crimson and black, associated with the words 'THE ROYAL CHOP.'"

16,664.—PERFUMED ARTICLES, SUCH AS SOAP, SATCHET-POWDERS, AND THE LIKE.—*Ladd & Coffin*, New York, N. Y. Application filed April 19, 1889. Used since March 15, 1889.
"The words 'GOYA LILY.'"

16,665.—OPTICAL GOODS OF ALL KINDS.—*Andrew J. Lloyd*, Boston, Mass. Application filed April 1, 1889. Used since September 8, 1888.
"The representation of a lion issuant."

16,666.—CIGARS.—*Manuel Lopez & Co.*, Havana, Cuba. Application filed April 17, 1889. Used since December 23, 1885.
"The words 'FLOR DE REMATES.'"

16,667.—CIGARS.—*Manuel Lopez & Co.*, Havana, Cuba. Application filed April 17, 1889. Used since January 19, 1885.
"A monogram of the initials 'M L Y CA.'"

16,668.—CIGARS.—*Manuel Lopez & Co.*, Havana, Cuba. Application filed April 17, 1889. Used since December 15, 1884.
"The words 'VICTOR HUGO.'"

16,669.—CIGARS.—*Manuel Lopez & Co.*, Havana, Cuba. Application filed April 17, 1889. Used since November 18, 1884.
"The name 'LA VENCEDORA.'"

16,670.—WHEAT-FLOUR.—*D. & A. Luckenbach*, Bethlehem, Pa. Application filed March 8, 1889. Used since March 1, 1881.
"The representation of an anchor and the word 'ANCHOR.'"

16,671.—PILLS.—*Renealier MacFarland*, Genoa, Ohio. Application filed March 1, 1880. Used since August 10, 1888.
"A pictorial illustration of the globe with a sphere located above the same, and two figures of Indians holding herbs above the globe and pointing toward the sphere, with the words 'COMBINE THE TWO AND YOU HAVE THE BEST' arranged above the sphere and the words 'ON THE' between the sphere and the globe."

16,672.—FACE-WASH.—*James P. McGill*, South Bend, Ind. Application filed April 8, 1889. Used since February 1, 1889.
"The words 'LANGTRY LOTION.'"

16,673.—CIGARS, SMOKING-TOBACCO, AND CIGARETTES.—*Pine Needle Cigar Company*, Freehold, N. J. Application filed April 23, 1889. Used since November, 1888.
"The representation of a pine branch and cone."

16,674.—BITTERS.—*Clara Pickard*, Philadelphia, Pa. Application filed May 1, 1889. Used since April 1, 1889.
"The words 'PICKARD'S' and 'BITTERS' in connection with the picture of Mrs. S. A. PICKARD."

16,675.—GAME-BOARD.—*Sylvester T. F. Sterick*, Washington, D. C. Application filed April 10, 1889. Used since September, 1888.
"The word 'LAWNAQUET.'"

16,676.—CIGARS.—*F. Suarez & Son*, New Orleans, La. Application filed April 2, 1889. Used since July, 1885.
"The words 'MORNING STAR' and the representation of a six-pointed star placed within the circle of the sun, with rays of sun diverging in every direction from the circle."

16,677.—PLUG AND CUT TOBACCOS FOR SMOKING AND CHEWING.—*Thompson, Moore & Co.*, New York, N. Y. Application filed March 26, 1889. Used since March, 1879.
"The words 'HARD A PORT.'"

16,678.—CARBONATED GINGER.—*White Rock Mineral Spring Company*, Waukesha, Wis., and Chicago, Ill. Application filed May 3, 1889. Used since August, 1887.
"The word 'GINGERETTE.'"

16,679.—WATCH-MOVEMENTS.—*American Waltham Watch Company*, Waltham, Mass. Application filed April 12, 1889. Used since January 1, 1888.
"The letters and words 'A. W. W. Co., RIVERSIDE, WALTHAM,' and a circular design or frame-work inclosing them."

16,680.—MINERAL WATERS, GINGER-ALE, LEMONADE, TONIC DRINKS, AND SIMILAR LIQUIDS.—*The Arcadian Mineral Spring Company*, Waukesha, Wis. Application filed May 13, 1889. Used since January, 1885.
"The word 'ARCADIAN.'"

16,681.—REMEDY FOR PILES.—*Carrie E. Ashmead*, Jersey City, N. J. Application filed April 19, 1889. Used since November 15, 1888.
"The letters 'G. S. P. R.'"

16,682.—BUTTER.—*I. H. Ballou & Co.*, Boston, Mass. Application filed April 15, 1889. Used since April 1, 1887.
"The words 'BAY STATE.'"

16,683.—PAPER FOR LEDGERS.—*L. L. Brown Paper Company*, Adams, Mass. Application filed April 29, 1889. Used since January 1, 1876.
"The word 'ADVANCE.'"

16,684.—CIGARS.—*Buckingham, Swope & Co.*, Baltimore, Md. Application filed April 29, 1889. Used since March 3, 1882.
"The picture of a buck bucking a ham suspended from a broken branch, accompanied by the words 'MY NAME.'"

16,685.—MASK-FASTENERS.—*Charles H. Dessart*, New York, N. Y. Application filed April 22, 1889. Used since April 1, 1889.
"The representation of two masks of the human face."

16,686.—SPRING-MATTRESSES AND SPRINGS FOR THE SAME.—*Benj. Fitch & Co.*, New York, N. Y. Application filed April 25, 1889. Used since February 1, 1889.
"The word 'IMPERIAL.'"

16,687.—NEWSPAPER.—*Henri Gerard*, New York, N. Y. Application filed April 24, 1889. Used since January, 1889.
"The words 'MANUFACTURER AND BUILDER.'"

16,688.—BISCUITS, CRACKERS, WAFERS, AND SIMILAR ARTICLES.—*J. D. Gilmor & Co.*, New York, N. Y. Application filed April 15, 1889. Used since March 15, 1889.
"A border or frame having a smooth glassy non-transparent surface like that of a coating of vitreous enamel, and surrounding the display face or front of cans containing biscuit, crackers, and wafers."

16,689.—GLUE.—*Julius Herold*, Monzingen, Prussia, Germany. Application filed April 24, 1889. Used since April 1, 1879.
"The letters 'J. H.'"

16,690.—ELECTRIC BELTS OR BANDS.—*John E. Hetherington*, New York, N. Y. Application filed April 16, 1889. Used since March, 1887.
"The word 'BI-POLAR.'"

16,691.—COFFEE SCOURERS AND POLISHERS.—*Hercules Manufacturing Company*, Cardington, Ohio. Application filed April 25, 1889. Used since February 15, 1880.
"The word 'HERCULES.'"

16,692.—CEMENTS OR COMPOSITIONS FOR ROOFING AND PAVING.—*James B. Hinchman*, Denver, Colo. Application filed April 15, 1889. Used since December 1, 1888.
"The word 'PIONEER.'"

16,693.—COUGH-MIXTURE.—*Francis M. Jaques*, New London, Conn. Application filed April 22, 1889. Used since October, 1888.
"The words 'ROCK POLYPODE' and the representation of three fern-leaves with crossed stems."

16,694.—FEATHER PILLOWS.—*Frank E. Little*, St. Louis, Mo. Application filed April 25, 1889. Used since January, 1887.
"The word 'GLOBE.'"

16,695.—FEATHER PILLOWS.—*Frank E. Little*, St. Louis, Mo. Application filed April 25, 1889. Used since January, 1887.
"The word 'ROYAL.'"

16,696.—FEATHER PILLOWS.—*Frank E. Little*, St. Louis, Mo. Application filed April 25, 1889. Used since November, 1884.
"The word 'STAR' or the symbol of a star."

16,697.—KNITTING-COTTON.—*J. Turner Morehead & Co.*, Leaksville, N. C. Application filed April 22, 1889. Used since 1877.
"The words 'IRVIN RIVER.'"

16,698.—OPTICAL INSTRUMENTS.—*Charles F. Prentice*, New York, N. Y. Application filed April 12, 1889. Used since November 5, 1886.
"The word 'OPTICIST.'"

16,699.—KID GLOVES.—*J. Roeckl*, Munich, Germany. Application filed April 24, 1889. Used since 1889.
"The representation of a draped figure with the human face and the horns and feet of a goat and a scroll with the initials 'J. R.'"

16,700.—INSECT-POWDERS AND LIKE PREPARATIONS.—*William Henry Sayre*, Newark, N. J. Application filed April 24, 1889. Used since March 1, 1889.
"The word 'BUGBANE.'"

16,701.—APPLIANCES FOR TAKING PHOTOGRAPHS.—*Charles Spiro*, New York, N. Y. Application filed April 25, 1889. Used since April 1, 1889.
"The composite word 'ANTI-DARK-ROOM.'"

16,702.—BICYCLES, TRICYCLES, AND KINDRED VEHICLES AND THEIR PARTS AND ATTACHMENTS.—*Starley Brothers*, Coventry, England. Application filed April 1, 1889. Used since March, 1887.
"The word 'PSYCHO.'"

LABELS.

5,926.—Title: "CHASE" (FOR CARRIAGE ROBES, LAP ROBES, &c.).—*L. C. Chase & Co.*, Boston, Mass. Application filed May 13, 1889.

5,927.—Title: "CONGER'S NEWARK TRAY."—*Walter M. Conger, Jr.*, Newark, N. J. Application filed May 9, 1889.

5,928.—Title: "ROCK POLYPODE SYRUP."—*Francis M. Jaques*, New London, Conn. Application filed April 23, 1889.

5,929.—Title: "EAST INDIA PILE REMEDY."—*Samuel J. Ketchum*, Chicago, Ill. Application filed May 9, 1889.

5,930.—Title: "CAKES AND JUMBLES."—*Justin J. Langlés*, New Orleans, La. Application filed May 9, 1889.

5,931.—Title: "GINGER SNAPS."—*Justin J. Langlés*, New Orleans, La. Application filed May 9, 1889.

DISCLAIMERS.

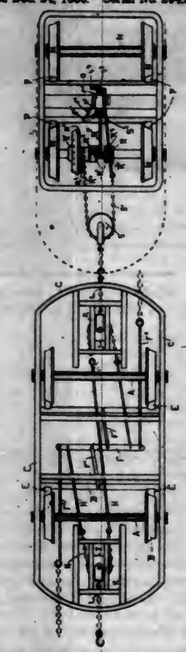
267,192.—*James M. Grant*, Hartford, Conn. ART OF REELING AND WINDING SILK AND OTHER THREAD. Patent dated November 7, 1882. Disclaimer filed May 27, 1889, by the patentee.
Enters his disclaimer—
"To so much of the claims as does or might make such claims apply to a skein which, by reason of being coated with gum, or by reason of the manner of its lacing, or for any other reason, is not in condition for dyeing for ordinary manufacturing purposes."

403,560.—*Charles T. Schoen*, Philadelphia, Pa. CENTER BEARING-PLATE FOR RAILWAY-CARS. Patent dated May 21, 1889. Disclaimer filed May 27, 1889.
Enters his disclaimer to the word "annular" in the first line of the first claim of said patent, which word was intended to precede "bearing-pieces" in the third line of said claim, so that the claim would read—
"1. Center bearing-plates of wrought metal, constructed with concentric ribs, combined with interposed *annular* bearing-pieces, substantially as described."

PATENTS

GRANTED JUNE 4, 1889.

404,373. CAR-BRAKE. WILLIAM L. ABBOTT and VIRGIL C. KILLIE, Chicago, Ill. Filed Dec. 24, 1888. Serial No. 294,539. (No model.)



Claim.—1. The combination of two fixed collars with the axle of a car, movable friction-plates between them, toggle-bars connected with such friction-plates, and a brake-chain secured to such friction-plate, so that by operating the toggle-bars the friction-plate is locked against the fixed collar and the chain is wound up to set the brakes.

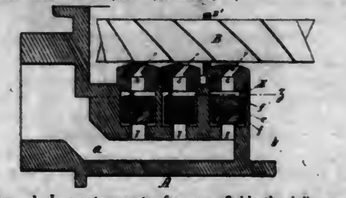
2. The combination of a car with a pivoted brake-lever and connections therefrom to the shoes, pulleys at the opposite ends of the cars supported so as to move along the length of the car, chains therefrom connecting the systems of contiguous cars, and a system of chains and rods extending from one end of such lever over both pulleys to the opposite end of the lever.

3. The combination of a car with a pivoted brake-lever and connections therefrom to the shoes, pulleys and sliding frames therefor on opposite ends of the cars and near the middle of the ends of such car, said frames adapted to slide along the length of the car, chains connecting the pulleys of adjacent cars, and a system of chains and rods extending from one end of such pivoted lever over both pulleys to the opposite end of such lever.

4. The combination of two fixed collars with the axle of a car, a movable friction-plate between them, toggle-bars connected with such friction-plate and to another point along the axle, and a brake-chain secured to such movable friction-plate, said friction-plate shaped so as to serve as a drum, substantially as and for the purpose set forth.

5. The combination of a fixed collar or friction-plate with the axle of a car, a movable collar or friction-plate thereon and formed like a drum, toggle-bars secured at one point to the axle and at another to the movable friction-plate, so that by operating the toggle-bars the movable and fixed friction plates or collars are locked together, and a chain secured to the drum so as to be wound thereon to set the brakes.

404,374. ROTARY METER. PHINEHAS BALL, Worcester, Mass., assignor to the Union Water Meter Company, same place. Filed Jan. 2, 1889. Serial No. 295,155. (No model.)



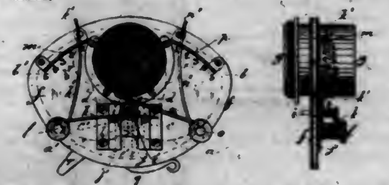
Claim.—1. In a rotary meter for gas or fluids, the delivery-nozzle or mouth-piece having the inclined orifice formed for concentrating and directing the stream of gas or fluid, in combination with a chamber anterior to said mouth-piece, having an inlet-passage surrounded by a valve-seat, and the weighted reacting valve disposed within said chamber between the inlet and nozzle for closing against said seat and stopping said inlet-passage in opposition to the entering flow, substantially as and for the purpose set forth.

2. In a gas or fluid meter, the combination of the rotatable measuring-wheel, the delivery mouth-piece having a concentrating-orifice for directing the gas or fluid against said wheel, the valve-chamber beneath said mouth-piece having an inlet-passage with valve-seats, as described, and a valve-puppet loosely disposed within said chamber between the inlet and delivery passages, whereby said delivery-passage is automatically closed when the pressure or active force of the current increases beyond the normal limit of resistance for which said valve is adjusted, substantially as hereinbefore set forth.

3. In a gas or fluid meter, the combination, with the rotatable wheel, of the series of mouth-pieces D, having passages increasing in size in succession, arranged for directing gas or fluid against said wheel for imparting motion thereto, and the series of resistance-valves F, arranged in chambers beneath said mouth-pieces and respectively controlling the passages, said valves being severally weighted or adjusted to resist different degrees of pressure, substantially as and for the purpose set forth.

4. In a gas or fluid meter, the combination, substantially as described, with the body or casing provided with inlet and outlet channels, and the rotatable measuring-wheel mounted within a chamber in the case, of a series of valve-chambers, a series of mouth-pieces having orifices of different caliber fitted to said valve-chambers and respectively disposed for directing a current of gas or fluid against said wheel, and automatic pressure-resisting valves disposed within said valve-chambers, severally weighted or adjusted for resisting different pressures in their relative order as the size of the orifices which they severally control, for the purpose set forth.

404,375. SHUTTER FOR PHOTOGRAPHIC CAMERAS. ROBERT E. M. BAIN, St. Louis, Mo. Filed Jan. 14, 1889. Serial No. 296,300. (No model.)



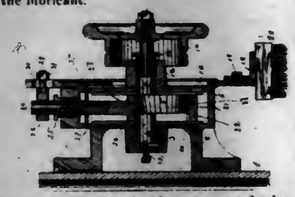
Claim.—1. In apparatus for opening and closing photographic-

camera shutters, the combination of two springs having different tensions and means for altering the respective tensions of said springs, with a pin passing through the shutters and through slots in the shutter-casing, substantially as shown, and for the purpose described.

2. In apparatus for opening and closing photographic-camera shutters, the combination of two springs having different tensions, each of said springs passing spirally round a fixed stud and engaging in either one of a series of notches formed in a fixed bar, with the pin passing through the shutters and through vertical slots in the shutter-casing, substantially as shown, and for the purpose described.

404,376. DABBING-BRUSH APPARATUS FOR COMBING-MACHINES. JAMES L. BALLANTYNE, Newton, Mass., assignor to the Nonantum Worsted Company, of Massachusetts. Filed Oct. 19, 1888. Serial No. 288,600. (No model.)

Brief.—On the interior of the box bracket and cover are curved ribs, which serve to prevent the splashing of the lubricant against the stuffing-box in the top of the apparatus and to insure the proper circulation of the lubricant.

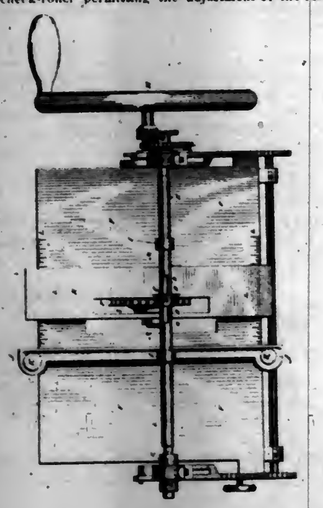


Claim.—1. In a dabbing-brush apparatus, the box 2 and box-cover 6, and the cam-shaft 4, journaled in bearings in said parts and provided with the cam or eccentric 5, the carrier and its sliding brush-carrying plate combined with the ribs 37 38 on the interior of said box and cover, substantially as and for the purpose set forth.

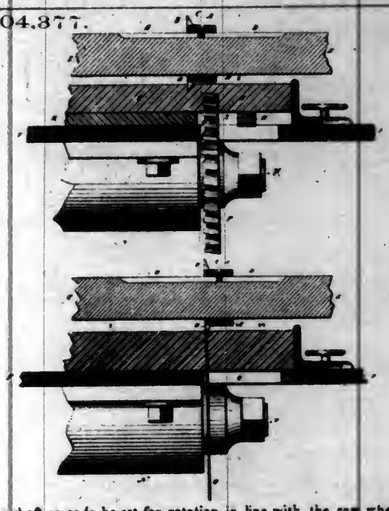
2. In a dabbing-brush apparatus, the box 2, having bearing 3 and regulating-screw 32, and the cover 6, having stuffing-gland 13, combined with the rotary shaft 4, having the cam or eccentric 5, and the carrier 22, having upwardly-projecting spindle 24 guided in the upper part of said box and cover and provided with a stuffing-gland 25, substantially as and for the purpose set forth.

404,377. CONVERTIBLE MACHINE FOR GROOVING AND SAWING WOOD. ELDRIDGE F. BARNES, New Haven, Conn. Filed May 29, 1886. Serial No. 203,594. (No model.)

Claim.—In a convertible machine for grooving and sawing wood, the combination, with a feed-shaft provided with a short longitudinal groove, of a check-roller having teeth at its edge and flat on one side and conical on the other side, and provided with a collar carrying a set-screw entering the groove in the shaft upon which the check-roller is mounted, a table F, a gage J, loose rollers I, mounted upon the shaft, movable bearings for the opposite ends of the shaft, gearing for rotating the shaft, and a tool-shaft located below the table and adapted to interchangeably carry a grooving-plow and a saw, the described grooving of the feed-shaft and the described construction of the check-roller permitting the adjustment of the roller on

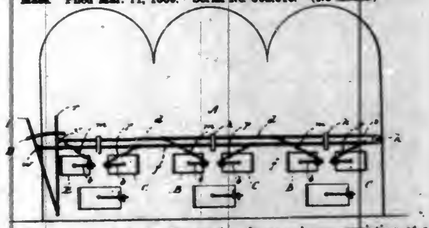


404,377.



the shaft so as to be set for rotation in line with the saw when the machine is converted for sawing and for rotation out of line with the plow when the machine is converted for plowing, substantially as set forth.

404,378. BOILER-FURNACE. EDWARD BARRETT, Fall River Mass. Filed Mar. 11, 1889. Serial No. 302,818. (No model.)



Claim.—1. A device for opening furnace-doors, consisting of a rod arranged to slide on the furnace-front and connected with said doors by cords or chains, substantially as described.

2. In a device of the character described, the combination of a rod fitted to slide on the furnace-front in the direction the furnace-door swings, with a chain connecting the rod with the door-latch, and a lever for actuating said rod, substantially as described.

3. In a device of the character described, the combination of a furnace, a rod fitted to slide in guide-rolls on the front thereof, a chain connecting the door-latch with said rod at a point opposite the center thereof, and a lever pivoted to said rod and the furnace-front, substantially as and for the purpose set forth.

4. In a device of the character described, the combination of a furnace provided with doors opening in opposite directions, two rods fitted to slide in the furnace-front and having their corresponding ends connected by a chain passing over a fixed pulley, chains connecting the latches of doors opening in like directions with one of said rods, and an actuating-lever for each rod, whereby the doors may be opened or closed as said rods are moved, substantially as described.

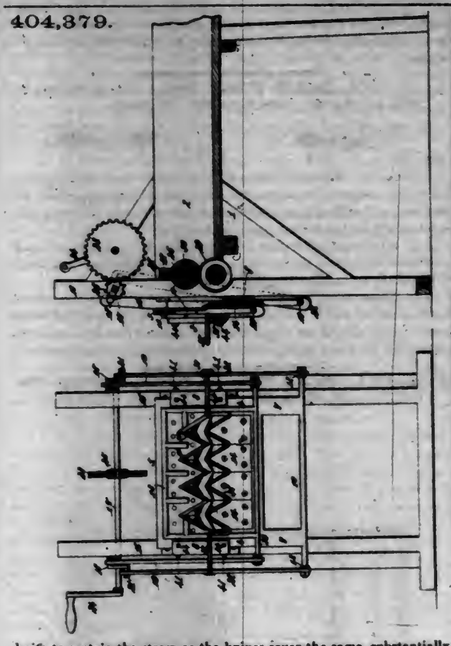
5. The furnace A, provided with doors B, having latches *b*, in combination with the rod *d*, fitted to slide between rolls *g* on the furnace-front, the chains *m*, connecting said latches and rod, and the lever *r*, for actuating said rod, substantially as described.

6. The furnace A, provided with doors B C, having latches *b*, in combination with the rods *d f*, fitted to slide between rolls *g* on the furnace-front, the chains *m p*, connecting said latches and rods, the chain *i* and pulley *k*, and the levers *r t*, all being arranged to operate substantially as described.

404,379. STRAW-CUTTER. WILLIAM C. BAYLESS, Mossy Creek, Tenn. Filed July 14, 1888. Serial No. 279,911. (No model.)

Claim.—1. The combination, in a straw-cutter, of two opposing knives, one movable toward the other and each comprising a series of cutting-dentations, with those of one knife alternating with and adapted to pass those of the other, a feed-box, and a bracing-support having a zigzagged portion corresponding substantially to the dentations of one

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knife to sustain the straw as the knives sever the same, substantially as described.

2. The combination, in a straw-cutter, of a feed-box, two opposing knives, one movable toward the other and each comprising a series of cutting-dentations, with those of one knife alternating with and adapted to pass those of the other, a pair of feed-rolls, each having a series of annular depressions, and a bracing-support having a zigzagged portion corresponding substantially to the dentations and depressions of one knife and roller to sustain the straw as the knives sever the same, substantially as described.

3. The combination, in a straw-cutter, of the feed-box for the straw, a pair of knives movable toward each other and each composed of a metallic plate formed with a series of cutting-dentations, with those of one plate alternating with and adapted to pass those of the other, a pair of feed-rollers, each having a series of annular V-shaped bosses and corresponding depressions alternating with each other and conforming substantially to the dentations of the knives, and means for simultaneously moving the knives toward each other, substantially as described.

4. The combination, in a straw-cutter, of the feed-box, the knives movable toward each other and each composed of a metallic plate having a series of cutting-dentations, with those of one plate alternating with those of another, and a zigzagged bar corresponding substantially to the form of the dentated knives and movable toward one knife to support the protruding ends of the straw as the knives act thereupon, substantially as described.

5. In a straw-cutter, the combination, with vertically-reciprocating cutter-frames moving in parallel ways, of shear-setting wedges lying in an angular recess between the vertical arms of said frames and adjusted by set-screws to force said frames apart and setting-plates lying against the outer faces of two parallel arms of one of said frames and having adjusting-screws, substantially as described.

6. In a straw-cutter, the combination, with reciprocating cutters, each having a serrated or angular edge alternating with the serrations of the other cutter, of a pair of distributing feed-rolls having outlines resembling the outline of the cutting-edge and arranged to have a similar alternation, substantially as described.

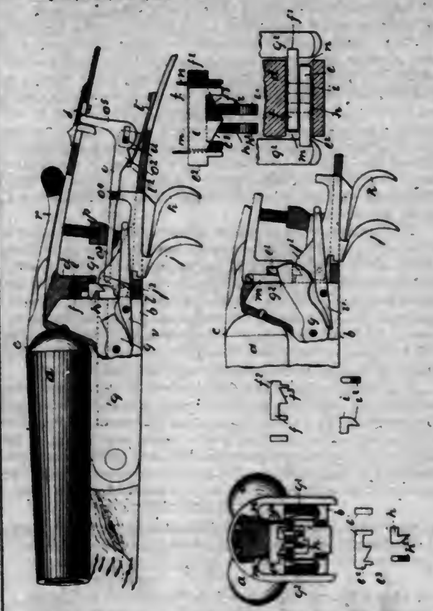
7. In a straw-cutter, the combination, with a pair of cutters, each having a serrated or angular edge alternating with the serrations or angles of the opposite edge of a brace-bar or board moving with the lower knife-frame, said bar being of a shape conforming to the cutting-edge of the lower cutter and arranged to lie beneath said edge, substantially as described.

8. In a straw-cutter, the combination, with a pair of cutters having serrated edges, the angles of one alternating with those of the other, of a brace-bar or board mounted on elastic supports carried by the lower cutter, the said bar conforming in shape to the angles of the cutting-edge, whereby it moves with and is drawn toward the lower cutter, beneath or opposite to the edge of which it lies as the knives operate, substantially as described.

9. In a straw-cutter, the combination, with a pair of cutters, each composed of a series of blades having two converging edges, of means, substantially as described, for imparting opposite reciprocation to both cutters, the cutting-edges of the one alternating with those of the other, a pair of distributing feed-rolls having bosses or corrugations which substantially correspond with the serrations of the upper and lower cutters, respectively, and a pawl-carrier reciprocated by a pitman actuated by one of the devices driving the cutters and having pawls meshing with ratchets on the ends of the feed-rolls, the pawl-carrier and pitman being either or both adjustable toward and from the point of support of the devices to which they are connected to shorten and lengthen the feed movement of the rolls, substantially as described.

10. In a straw-cutter, the combination, with the uprights of the cutter-box having parallel casings, of independent cutter-frames having their vertical arms moving in said casings and provided with ribs on their exterior faces and beveled upon their adjacent vertical angles, adjustable wedges lying in the angular space formed by said bevels, adjustable setting-plates bearing upon the outer faces of the vertical arms of one frame, and means for adjusting said wedges and setting-plates relatively to each other, substantially as described.

404,380. BREECH-LOADING FIRE-ARM. CHRISTOPHER G. DOUBLL, Belmont Row, Birmingham, County of Warwick, England. Filed June 29, 1888. Serial No. 278,519. (No model.) Patented in England May 30, 1888, No. 7,823.



Claim.—1. In a concealed-hammer gun, the combination, with the hammers thereof and the intercepting cross-bolts *e f*, arranged, respectively, side by side at the back of the breech-body part, of the pushers *h i*, formed with the inclines h^2 i^2, vertically movable below said bolts, and the triggers *j k*, upon which the pushers rest, substantially as described.

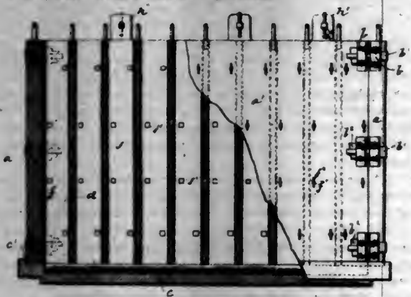
2. In a concealed-hammer gun, the combination, with the hammers and lock mechanism, of the transverse bolts *e f*, arranged side by side at the back of the breech-body and formed with the under side inclines e^2 f^2, engaged by vertically-movable pushers, and the springs *m n*, impinging against the ends of said bolts, substantially as set forth.

3. In a concealed-hammer gun, the combination, with the rear body part *d* and hammers *g g*, of intercepting-bolts *e f*, arranged at the back of the breech-body part, pushers *h i*, engaging with and located below said bolts and above the triggers, and the triggers $j j^2$ k^2, as set forth.

4. In a concealed-hammer gun, the combination, with the hammers *g g*, the cross-bolts *e f*, arranged at the back of the body part

and having inclines e^3 f^3, of the pushers h i, located below said cross-bolts and having inclines h^2 i^2, and the triggers i k, with fore extensions j^2 k^2, bearing on said inclines, substantially as described.

404,381. INGOT-MOLD. EDWARD L. CLARK, Pittsburg, Pa. Filed Nov. 5, 1888. Serial No. 290,027. (No model.)



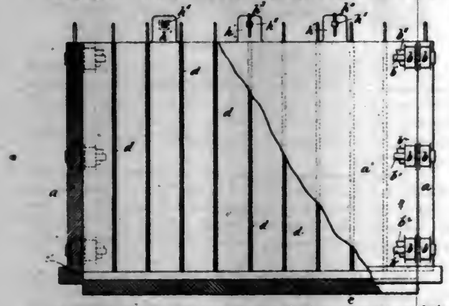
Claim.—1. An improvement in apparatus for casting simultaneously a series of two or more laterally-separate ingots by bottom casting, which consists in a mold subdivided into two or more compartments for separate ingots by upright removable partitions having openings under their bases, thereby establishing communication between the compartments, and forming at the base of the mold an open runner trough or gutter, substantially as and for the purposes described.

2. An improvement in apparatus for casting simultaneously a series of two or more laterally-separate ingots by bottom casting, which consists in a mold having a bottom piece formed with a concave or gutter-shaped surface, and upright partitions which divide said mold into two or more compartments for separate ingots, the bases of said partitions being elevated above the base of the concave or gutter-shaped surface of the bottom piece, thus establishing communication between the compartments and forming at the base of the mold an open runner trough or gutter, whereby the metal in the runners forms integral and reducible parts of the several ingots, substantially as and for the purposes described.

3. An improvement in apparatus for casting simultaneously a series of two or more laterally-separate individual ingots by bottom casting, which consists in a mold having separable ends and sides, partitions movably arranged in grooves in the sides and dividing the mold into a plurality of small molds for individual ingots, separate detachable linings for each of the small molds, and a base having recesses c', into which the sides and ends are detachably fitted, provided with a continuous longitudinal runner common to and communicating with all of the small molds, substantially as described.

4. A mold for casting simultaneously a series of two or more laterally-separate individual ingots, said mold having sides and ends, transverse partitions dividing the inclosed space into a series of smaller molds, a base having a unitary inlet or runner common to all the smaller molds, and an interior sectional lining of refractory material detachably secured in place in each of the smaller molds and co-operating with the partitions, substantially as described.

404,382. ART OF CASTING STEEL INGOTS. EDWARD L. CLARK, Pittsburg, Pa. Filed Nov. 5, 1888. Serial No. 290,028. (No model.)



Claim.—In the manufacture of steel, the improvement consisting in casting by bottom casting a series of two or more steel ingots separated laterally from each other and united laterally at their ends by thin webs or runners, which form integral and reducible parts of the several ingots, separating the ingots so formed by fracture of the webs between the adjacent ingots, and finally rolling each ingot and its integral fractured web or runner portion, thereby incorporating the runner portion with the ingot, substantially as and for the purposes described.

404,383. BALE-TIE BUCKLE. EDWARD L. CLARK, Pittsburg, Pa. Filed Jan. 23, 1889. Serial No. 297,331. (No model.)

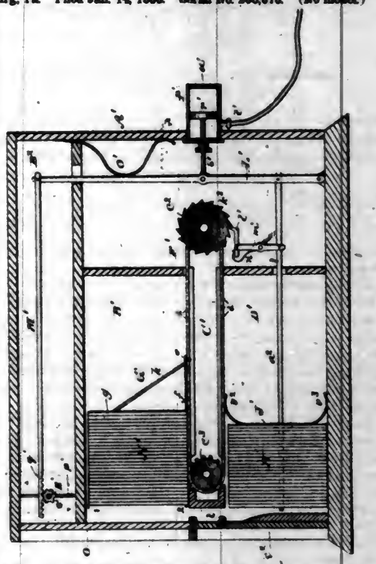


Claim.—1. A bale-tie buckle having a slot for receiving the bale-band, lips bent over the edges of the slot to form bearing-surfaces for the band, and supporting-surfaces which hold out and support the lips, substantially as and for the purposes described.

2. A bale-tie buckle consisting of slotted superposed leaves and a reflexed lip forming the bearing-surface of the bale-band in the slot, substantially as and for the purposes described.

3. A bale-tie buckle consisting of two superposed leaves, each of which is slotted and is provided with a lip, the lip of each leaf being bent over the edge of the slot of the other leaf and forming a bearing-surface for the band, substantially as and for the purposes described.

404,384. STATION-INDICATOR. VICTOR L. CUNNINGHAM, Pittsburg, Pa. Filed Jan. 14, 1888. Serial No. 260,673. (No model.)



Claim.—1. In a station-indicator, the combination, with a casing provided with a compartment for containing cards bearing the names of the streets or stations and having an aperture in one end of its bottom, of an endless carrier working in the bottom of the compartment for moving the cards over the aperture therein, and means for operating the endless carrier, substantially as described.

2. In a station-indicator, the combination, with a casing provided with compartments communicating with each other, of a series of cards bearing the names of the streets or stations and arranged in the upper compartment, an endless belt, a projection or bracket carried by the belt and engaging the cards, and means, substantially as described, for imparting motion to the endless belt, substantially as herein shown and described.

3. In a station-indicator, the combination, with a casing provided with compartments communicating with each other, of a series of cards bearing the names of the streets or stations and arranged in the upper compartment, an endless belt provided with a bracket engaging the cards, a ratchet-wheel on the shafts of one of the rollers of the endless belt, a spring-actuated pawl engaging the ratchet-wheel, a pivoted lever, a connection between said lever and pawl, and means for operating the lever, substantially as herein shown and described.

4. In a station-indicator, the combination of a casing provided with compartments communicating with each other, an endless belt working in the bottom of the upper compartment and provided with a bracket, a ratchet-wheel on the shaft of one of the rollers of the endless belt, a pawl engaging the ratchet-wheel, a pivoted lever, a connection between the said lever and pawl, and an air or steam cylinder having its piston-rod connected to the said lever, substantially as specified.

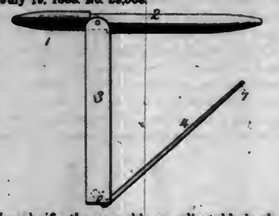
5. In a station-indicator, the combination, with a casing provided with a compartment for containing cards bearing the names of streets or stations and having an aperture in one end of its bottom, a carrier for moving the cards over the aperture in the bottom of the said compartment, and means for operating the carrier, of a rotating plate arranged above the compartment and operated from the card-moving mechanism, substantially as herein shown and described.

6. In a station-indicator, the combination, with a casing provided with compartments communicating with each other, of an endless belt for transferring the cards carrying the names of the streets or stations from one compartment to the other, card-holding arms in the compartment into which the cards drop after being displaced, and means for operating the said belt and arms, substantially as herein shown and described.

7. In a station-indicator, the combination, with a casing divided into compartments communicating with each other, of an endless belt for transferring the cards carrying the names of the streets or stations from one compartment to the other, a ratchet-wheel on one of the rollers of the endless belt, a lever pivoted in the casing, card-holding arms connected to the lever, a second lever pivoted in the casing and to the first-named lever, a spring-pawl carried by the second lever and engaging the ratchet-wheel, and means for operating the first-named lever, substantially as herein shown and described.

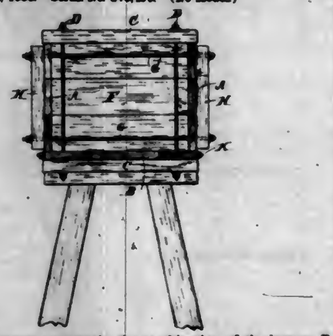
8. In a station-indicator, the combination, with a casing divided into compartments communicating with each other and an endless belt for transferring the cards carrying the names of the streets or stations from one compartment to the other, of a lever pivoted in the casing, card-holding arms in the lower compartment and connected to said lever, a follower in the said lower compartment, a second lever pivoted in the casing and connected to the first-named lever, a spring-pressed pawl on the upper end of the second lever, a ratchet-wheel on one of the rollers of the endless belt, a shaft in the top compartment provided with a plate and a pinion, and a rack engaging the pinion and connected with the first-named lever, substantially as herein shown and described.

404,385. CUTLERY. RICHARD DAINE, Halifax, Nova Scotia, Canada. Filed July 19, 1888. Serial No. 280,452. (No model.) Patented in Canada July 19, 1888, No. 29,506.



Claim.—In a knife, the movable or adjustable back fitted so as to admit of its being opened to allow either end of the double-ended blade aforesaid to pass out of the handle and being then closed to retain the blade in position.

404,386. WATER-RESERVOIR. HERMAN DAUE, Woodland, Wis. Filed June 28, 1888. Serial No. 278,458. (No model.)

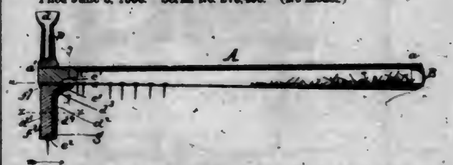


Claim.—In a water-reservoir, the combination of the bottom B, formed of separate pieces of plank, bottom-retaining bolts K, passing horizontally through apertures formed in the body of said plank, sides A A and side-retaining bolts J, passing through apertures formed in the plank composing said sides, vertical cross-pieces H, secured to the exterior surface of the respective sides of said tank by the retaining cross-bolts G, retaining cross-bolts G, horizontal cross-pieces C C, respectively located one above and the other beneath the respective sides of the tank and retaining-bolts D, said retaining-bolts D being adapted to draw said side planks A in close contact with each other and the bottom B, and said bolts G G being adapted to retain said side planks in contact with the respective ends of the end planks of said tank, all substantially as and for the purpose specified.

404,387. CLEANSING AND POLISHING COMPOUND. JOSEPH H. DUPAIN, Kansas City, Mo., assignor of one-half to Dwight O. Wallace, same place. Filed Jan. 21, 1889. Serial No. 297,047. (Specimens.)

Claim.—The herein-described cleansing and polishing compound, composed of a hydrocarbon, acetic acid, hydrochloric acid, trichloride of antimony, alcohol, and dragon's blood, (*Sanguis draconis,*) in the proportions substantially as specified.

404,388. HAMMER. ANDREW L. DE VOL, Binghamton, N. Y. Filed June 8, 1888. Serial No. 276,466. (No model.)



Claim.—1. A hammer having the handle A made hollow and provided with a slot a underneath, the head D, having the driving end d and the peen end d', the latter having a groove d^3 in its rear side connecting with the slot a, said groove being covered by a slotted guide-plate which extends around the extremity of the peen end of the hammer, as set forth.

2. The combination of a hollow handle having the guide-slot a, the head D, having the groove d^3, and the guide-plate F, having the hole f^3, the slot f^2, and the slot f^4, as set forth.

404,389. CRAYON-RACK FOR BLACKBOARDS. ADELBERT J. DOUGLASS, Ilion, N. Y. Filed Dec. 8, 1888. Serial No. 292,099. (No model.)



Claim.—The crayon-rack consisting of the crayon or chalk screen, the dust-trough, and the springs, the screen comprising a series of transverse wires bent down to form a vertical leg for the support of the rear edge of the tray and upward to form a guard at the front edge of the tray, said springs being formed with vertical end portions secured in the bottom of the trough, and with a horizontal portion bowed to project outward to secure the screen in place, substantially as shown and described, and for the purpose set forth.

404,390. SUBMARINE SEARCH-LIGHT. ANDREW L. DUTTON, Racine, Wis., assignor to himself and Walter B. Dutton, same place, and Marshall M. Dutton, Chicago, Ill. Filed Nov. 16, 1888. Serial No. 291,067. (No model.)

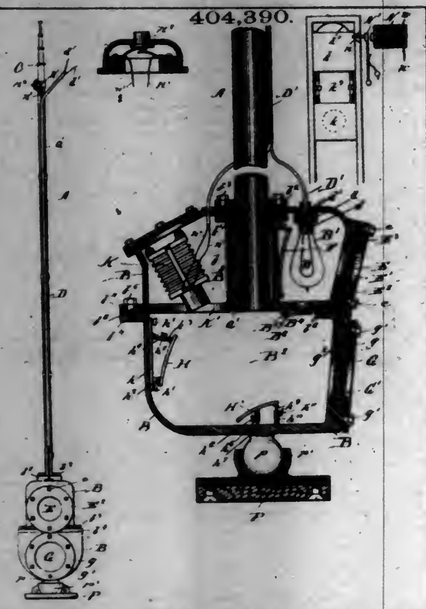
Claim.—1. The combination, with the shell or case B, of an observation-tube A, attached thereto, a lamp contained within said case for illuminating the object, lenses or reflectors, and a camera contained within said case or shell adjacent to said observation-tube, substantially as specified.

2. The combination, with the tube A, of shell or case B, having light-chamber B' and reflector-chamber B^3, electric lamp D, lens or window E, lens or window G, and two reflectors within said chamber B^3, one opposite said lens G and one opposite said observation-tube A, substantially as specified.

3. The combination, with the tube A, of shell or case B, having light-chamber B' and reflector-chamber B^3, electric lamp D, lens or window E, lens or window G, and two reflectors within said chamber B^3, one opposite said lens G and one opposite said observation-tube A, and camera K, contained within said case or shell adjacent to said observation-tubes, substantially as specified.

4. The combination, with the tube A, of shell or case B, having light-chamber B' and reflector-chamber B^3, electric lamp D, lens or window E, lens or window G, and two reflectors within said chamber B^3, one opposite said lens G and one opposite said observation-tube A, camera K, and an electric circuit and magnet for operating the shutter of said camera, substantially as specified.

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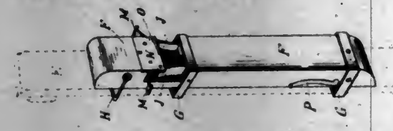
5. The combination, with tube A, of shell or case B, having light-chamber B' and reflector-chamber B^2, electric lamp D, lens or window E, lens or window G, and two reflectors within said chamber B^2, one opposite said lens G and one opposite said observation-tube A, said reflectors being hung adjustably within said chamber, substantially as specified.

6. The combination, with shell or case B, of an observation-tube A, attached thereto, a lamp contained within said case for illuminating the object, and lenses or reflectors, said case being provided with a base P, connected thereto by a ball-and-socket joint, substantially as specified.

7. The combination of observation-tube A, case B, having windows or lenses E G, lamp D, and base-plate P, said shell B, with its tube A, being rotatable on said base-plate, substantially as specified.

8. The combination, with the tube A, of shell or case B, having light-chamber B' and reflector-chamber B^2, electric lamp D, lens or window E, lens or window G, and two reflectors within said chamber B^2, one opposite said lens G and one opposite said observation-tube A, and a telescope at the upper end of said observation-tube, substantially as specified.

404,391. GATE-LATCH. PHILIP DYER, Mooretown, Ontario, Canada, assignor of one-half to William Abernethy, same place. Filed Nov. 1, 1888. Serial No. 289,779. (No model.)

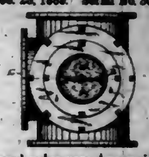


Claim.—1. The combination, with the latch-post and the vertically-adjustable gate, of a guide-rail secured to said post, a sliding block adjustable on said rail, gravity-latches, and a pivoted binder on said block engaging said rail, substantially as and for the purpose specified.

2. The combination, with the latch-post and a guide-rail secured thereto, of a vertically-adjustable gate, a recessed sliding block carrying the keepers and adjustably secured to said guide-rail by the strape G, and by the binder-H, and the notched plate N, the parts being arranged to operate substantially as and for the purpose described.

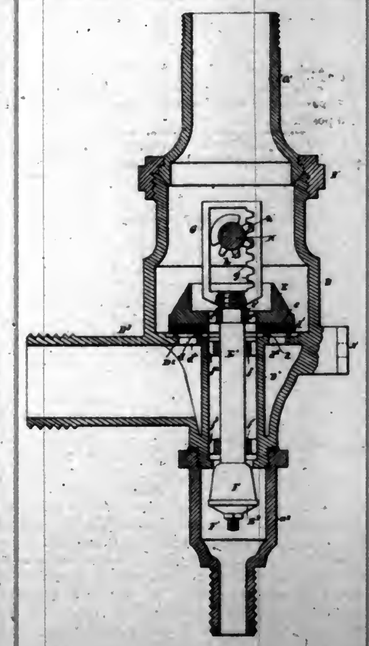
3. In combination with a vertically-adjustable farm-gate provided with the latch-pin L, the guide-rail E, secured to the latch-post, the recessed block F, having the notch O, slidingly secured upon the guide-rail E, the bail or binder H, the gravity-latches J, adapted to swing to the inside, the stops K, and the forked bail P, the parts being constructed and arranged to operate substantially in the manner and for the purposes herein set forth.

404,392. VALVE. FREDERIC BOSER and JOHN W. HARRIMAN, St. Louis, Mo. Filed Feb. 23, 1888. Serial No. 300,325. (No model.)



Claim.—The sectional valve-case A, provided with stuffing-box c and inlet and outlet openings, and with a refractory or fire-brick lining having a valve-seat therein, in combination with the water-vessel B, fitting and extending up through the stuffing-box, with its mouth or upper end projecting outside of the valve-case and open to the atmosphere, all constructed and arranged as hereinbefore shown and described.

404,393. WATER-CLOSET. ALBERT ELMENDORF, New London, Conn., assignor of one-half to Stephen A. Gardner and Charles Prentis, both of same place. Filed Mar. 6, 1888. Serial No. 302,107. (No model.)



Claim.—1. The combination, with the bowl and its flushing stand-pipe, of the ventilating-extension of said pipe, the ventilating-pipe connecting said bowl and ventilating-extension, the flushing-valve, and the valve in the ventilating-extension connected to the flushing-valve to be operated simultaneously therewith, substantially as described.

2. The combination, with the stand-pipe and bowl and the flushing-valve connecting said pipe and bowl, of the ventilating-extension of said stand-pipe provided with a valve connected to said flushing-valve, and a ventilating-pipe connecting said bowl with the ventilating-extension of said stand-pipe, substantially as described.

3. The combination, with the bowl and stand-pipe, of the interposed valve-chamber having the perforated diaphragm D^3 and inner tube D', and the connected valves E and F, arranged and operating substantially as described.

4. The combination, with the bowl A and its flushing stand-pipe B, of the interposed valve-chamber or section of the stand-pipe having the perforated diaphragm and the lateral flushing-pipe D^4 below said diaphragm, the lift-valve E, the water-supply valve F, connected to said lift-valve to operate as described, and the rock-shaft connected to said valves for operating them, substantially as described.

5. The combination, with the bowl in a flushing arrangement for water-closets, of the flushing-valve E, the ventilating extension or pipe C C', provided with a valve K, the ventilating-pipe b', connecting the bowl with the ventilating-extension pipe, and connections, substantially as described, for simultaneously operating the valves E and K, for the purpose specified.

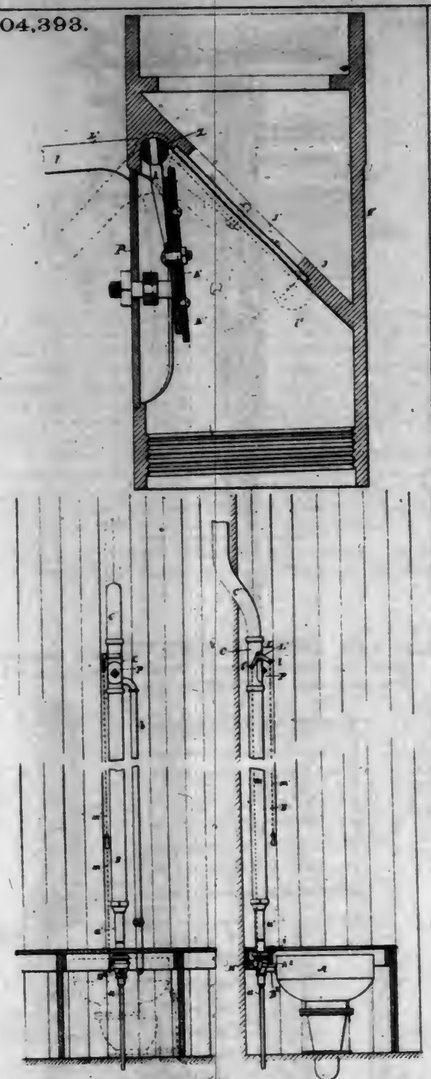
404,394. MECHANISM FOR CUSHIONING TRAVERSING BEDS OF RECIPROCATING MACHINERY. HENRY P. FRISTER, Philadelphia, Pa. Filed July 26, 1888. Serial No. 281,099. (No model.)

Claim.—1. The combination, in a machine, of the reciprocating or traversing bed with a piston connected to and moved with said bed, a cylinder in which said piston reciprocates pivoted or hinged at one end to the frame or foundation plate of the machine.

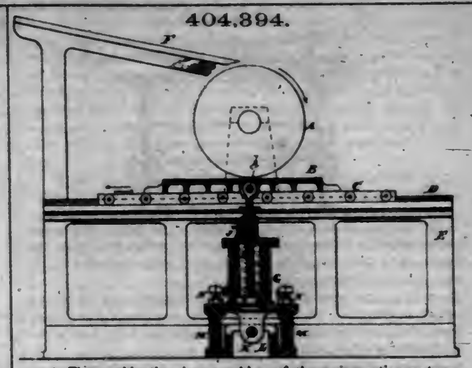
2. The combination, in a machine, of the reciprocating or traversing bed with a piston connected to and moved with said bed, a cylinder having its end closed and provided with a relief-valve, and in which cylinder said piston reciprocates, and in which the said cylinder is pivoted or hinged at one end to the frame or foundation of the machine.

3. The combination, in a machine, of the reciprocating or traversing bed with a piston connected to and moved with said bed, a cylinder in which said piston reciprocates pivoted or hinged at one end to the frame of the machine, and springs to counterbalance and cause said cylinder to normally assume an upright or substantially vertical position.

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4. The combination, in a machine, of the reciprocating or traversing bed with a piston connected to and moved with said bed, a cylinder in which said piston reciprocates pivoted or hinged at one end to the frame or foundation of the machine, springs to cause said cylinder to normally assume an upright or substantially vertical position, and means to adjust the tension of said springs.

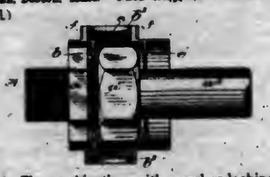
5. The combination of the reciprocating or traversing bed, a piston hinged to it on a transverse axis, and a cylinder closed at one end and hinged at or near its other end also on a transverse axis, and in which the piston reciprocates, the said cylinder having an aperture at or near one end for the admission of air above the piston when fully lowered.

6. The combination of the reciprocating or traversing bed, a piston hinged to it on a transverse axis, a cylinder closed at one end and hinged at or near its other end also on a transverse axis in which the piston reciprocates, the said cylinder having an aperture at or near one end for the admission of air above the piston when fully lowered, and a pressure relief-valve at or near its closed end.

7. A reciprocating or traversing bed, combined with a pivoted cylinder and piston connected to and operated by the movements of the bed to compress air in the cylinder.

8. The combination of a main frame, a reciprocating traversing bed, and a spring continually acting on said traversing bed and always opposing its movement and tending to bring it to a central and fixed position.

404,395. SEALING DEVICE FOR WATER-METERS. GEORGE A. FOLLANSBEE, Boston, Mass. Filed Aug. 6, 1887. Serial No. 246,284. (No model.)



Claim.—1. The combination, with a seal or locking device consisting of two parts $b' b^3$, having flanges $b^3 b^4$ and $b\,e$, the flanges b having holes c, of a fastening device or wire adapted to be inserted through said holes to unite the said parts, substantially as described.

2. The combination, with a seal or locking device consisting of two parts $b' b^3$, having flanges $b^3 b^4$ and $b\,e$, the flanges $b' b^3$ having holes c, of a wire inserted through the said holes, and a key to turn or bend said wire, substantially as and for the purpose specified.

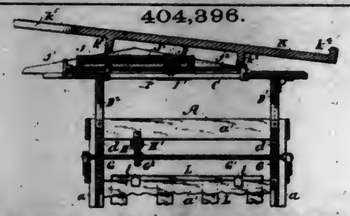
3. A seal or locking device for pipe-couplings, consisting of two parts $b' b^3$, provided with flanges $b^3 b^4$, having lips f and forming a cup or socket b^3, and a flange b, provided with a rabbet to prevent movement of the parts $b' b^3$ independent of each other in one direction, substantially as described.

404,396. CAMERA-STAND. WILLARD H. FULLER, Passaic, N. J., assignor to The Scovill Manufacturing Company, New York, N. Y. Filed Nov. 17, 1888. Serial No. 291,139. (No model.)

Claim.—1. A camera-stand consisting of a base-frame provided with wheels or casters and a vertically-adjustable bed and camera-support, the said support oscillating on its center, substantially as specified.

2. In a camera-stand having a base-frame and a vertically-adjustable bed and centrally-oscillating camera-support, the combination, with the base-frame, of wheels or casters secured to the sides of the base-frame so as to give the latter an extended base, substantially as specified.

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3. In a camera-stand, the combination of a base-frame, two vertically-adjustable frames combined therewith, springs bearing on said frames, and a bed hinged to one and detachably engaged with the other, substantially as specified.

4. In a camera-stand, the combination of a base-frame, a bed adjustably supported by the base-frame and having a central oscillation, a shaft for effecting the adjustment of the said bed, and a hand-wheel upon said shaft, substantially as specified.

5. In a camera-stand, the combination of a base-frame, two upright frames having a sliding connection therewith, racks upon said upright frames, a rotary shaft, gear-wheels upon said shaft engaging with said racks, a worm-wheel upon said shaft, another rotary shaft, and a worm upon the last-mentioned rotary shaft engaging with the said worm-wheel, substantially as specified.

6. In a camera-stand, a bed and a camera-support, both notched at one end, said notches being one above the other, and the arms of the notch in the support forming an extended bearing for the camera, substantially as specified.

7. In a camera-stand, the combination of a bed, a camera-support pivotally connected between its ends to said bed, a slide arranged between said bed and camera-support, and inclines carried by said slide operating to tilt the camera-support, substantially as specified.

8. In a camera-stand, the combination of a bed notched at one end, a camera-support notched at the corresponding end and pivotally connected between its ends to said bed, a slide arranged between said bed and camera-support, and inclines carried by said slide and arranged laterally beyond the notches of the bed and camera-support and operating to tilt the camera, substantially as specified.

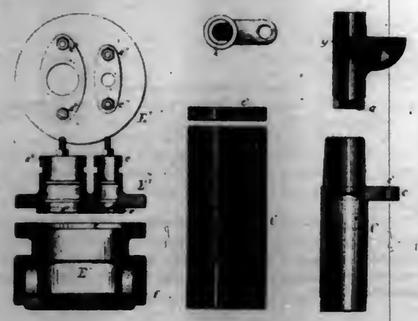
9. In a camera-stand, the combination of a bed, a camera-support pivotally connected between its ends to the bed, a slide between the bed and camera-support, inclines carried by the slide, a rack upon the slide, and a rotary shaft supported by the bed in a position parallel with the rack and operating to transmit longitudinal motion to the slide, substantially as specified.

10. In a camera-stand, the combination of a bed notched at one end, a camera-support notched at the corresponding end and pivotally connected between its ends to the bed, a slide intermediate of the bed and camera-support, inclines carried by the slide arranged laterally beyond the notches of the bed and camera-support and serving to tilt the camera-support, and a rotary shaft serving to impart longitudinal motion to the slide and having its end which is to be actuated by the operator located close to the inner ends of the notches in the bed and camera-support, substantially as specified.

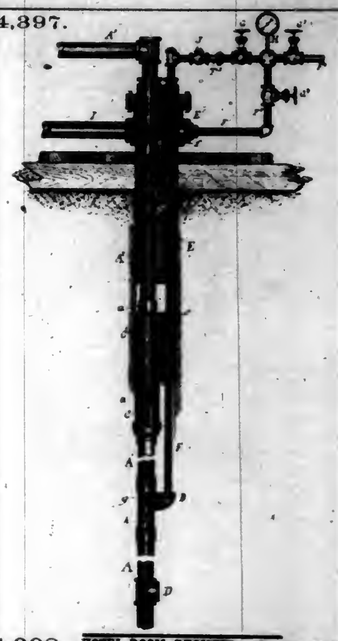
404,397. DEVICE FOR EJECTING OIL FROM OIL-WELLS. WILLIAM GEISER, Salina, Pa. Filed Nov. 1, 1888. Serial No. 289,709. (No model.)

Claim.—1. The combination, substantially as set forth, of the oil-tubing A A' A^2 with the pipe F, located outside of the oil-tubing, the ejector B, and check-valve J.

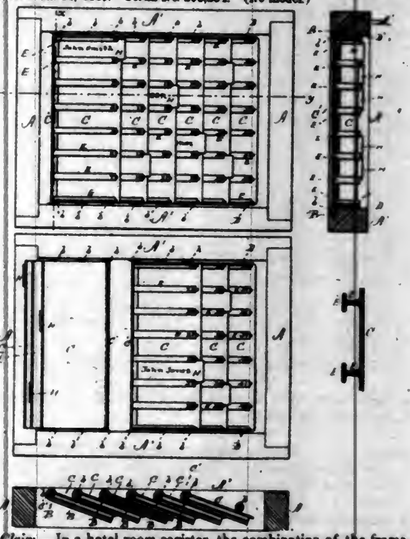
2. The combination, substantially as set forth, of a pipe F, check-valve J, ejector B, check-valve h, oil-tubing A A' A^2, packer C C' C^2, and casing-head E E^2.



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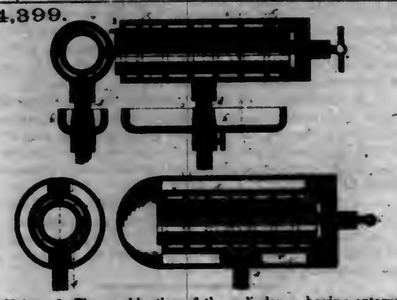
404,398. HOTEL ROOM-REGISTER. CHARLES H. GREENLEAF, Boston, Mass., assignor of one-half to William A. Tracy, Nashua, N. H. Filed Jan. 31, 1889. Serial No. 298,254. (No model.)



Claim.—In a hotel room-register, the combination of the frame A, the series of parallel rods or shafts B, whose ends are held in said frame, the series of leaves C, turning or swinging on said rods or shafts, each leaf being integral and swinging bodily and provided with recesses or spaces separated by partitions adapted for the easy insertion, withdrawal, and holding of cards or slips, on which may be written the names, &c., of guests, said partitions being provided near their outer ends with characters indicating the different rooms, and a stop piece or rod D, substantially as and for the purpose set forth.

404,399. APPARATUS FOR BURNING PETROLEUM OR SIMILAR SUBSTANCES. LOUIS P. GUIGNARD, Fluntern, near Zurich, and JAKOB SCHWEIZER, Unterstrass, near Zurich, Switzerland. Filed Aug. 30, 1888. Serial No. 284,174. (No model.) Patented in France May 4, 1888, No. 190,410, and in England July 24, 1888, No. 10,884.

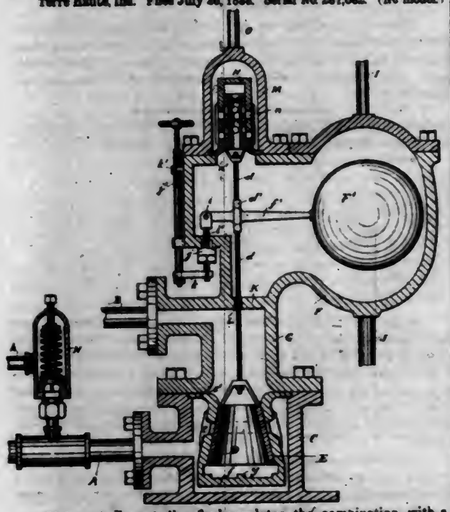
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Claim.—1. The combination of the cylinder a, having external annular flanges and provided with recesses a' in each of said flanges, jacket b resting on said flanges, forming chambers or spaces c between the cylinder and jacket, the chambers or spaces c communicating through the recesses a' with each other and with the feed-tube d, leading to one of the chambers or spaces c, and the jet e, leading from one of the chambers or spaces c to the interior of the cylinder a, substantially as described.

2. The combination of the cylinder a and jacket b around said cylinder, forming the chamber or space c between said cylinder and jacket, with the outer apertured jacket f, feed-tube d, leading to the chamber or space c, and jet e, leading from the chamber or space c to the interior of the cylinder a, substantially as described.

404,400. BOILER FEED-REGULATOR. WINFIELD O. GUSCKEL, Terre Haute, Ind. Filed July 26, 1888. Serial No. 281,062. (No model.)



Claim.—1. In a boiler feed-regulator, the combination, with a conical regulating-valve working in a seat provided with orifices for the passage of water, of an outer casing for said valve and its seat, a float operatively connected to said conical valve, a float-casing connected to said valve-casing, inlet and delivery pipes upon opposite sides of the regulating-valve, and a safety-valve secured upon the inlet-pipe, substantially as and for the purpose set forth.

2. In a boiler feed-regulator, the combination, with an open-ended conical regulating-valve, of a valve-seat provided with lateral orifices for the passage of water, and projections on its bottom for the said valve to rest on, of an outer casing for the said valve and its seat, a float operatively connected to said conical valve, a float-casing connected to the said valve-casing, inlet and delivery pipes upon opposite sides of the regulating-valve, and a safety-valve secured upon the inlet-pipe, substantially as and for the purpose set forth.

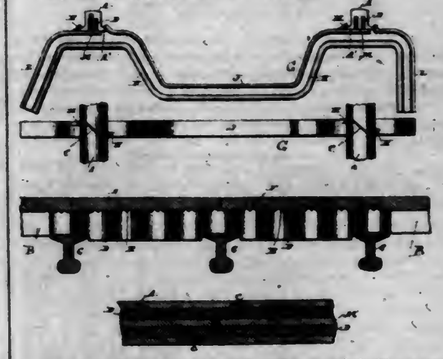
3. The combination, with the water-regulating valve of a boiler-feeder, of the float provided with a lever and operatively connected to said valve, a fulcrum-stem for the said lever passing through the float-casing, a connecting-piece secured to the end of said stem, and a revolubly screwed spindle engaging with a stationary screw-threaded projection and journaled in the connecting-piece for adjusting the fulcrum of the float, substantially as set forth.

4. In a boiler feed-regulator, the combination, with a water-regulating valve provided with a stem and a float operatively connected to the said stem, of an outer casing for the said valve, water inlet and delivery pipes upon opposite sides of the valve, a casing for the float connected to the steam and water spaces of the boiler, and a partition provided with a hole for the valve-stem and arranged between the water-space under the float and the water-space above the regulating-valve, whereby the float may rest in still water, substantially as set forth.

5. In a boiler feed-regulator, the combination, with a water-regulating valve provided with inlet and outlet pipes, and a safety-valve upon the said inlet-pipe, of a float provided with a pivoted lever and working in a casing above the said water-valve, a balanced steam-supply valve for the pump working in a cylinder on top of the float-casing, both valve and cylinder being provided with orifices for regulating the passage of steam from the float-casing, and a stem connecting the said steam and water valves with the float-lever, substantially as and for the purpose set forth.

6. In a boiler feed-regulator, the combination, with a water-regulating valve provided with inlet and outlet pipes, and a safety-valve on the said inlet-pipe, of a float provided with a pivoted lever, a steam-supply valve for the pump, a stem connecting the said steam and water valves with the float-lever, and casings inclosing the said water-valve and float and having their internal spaces separated by a partition provided with a small hole for the passage of the valve-stem, whereby the float may work in still water and the steam-valve receive dry steam direct from the upper part of the float-casing, substantially as set forth.

404,401. RAILWAY-TRACK. JACOB HAHN, De Kalb, Ill. Filed July 27, 1888. Serial No. 281,170. (No model.)



Claim.—1. The combination of the rail A, provided with recesses B B, and corrugations F, and bars D, provided with notches E, substantially as shown, and for the purpose described.

2. The combination of the tie G, provided with lugs H, formed in diagonal parallel lines thereon, and the rail A, provided with diagonally-formed ends C, substantially as shown, and for the purpose described.

3. The combination of the tie G, provided with lugs H, and rails A, provided with flanges A', and diagonally-formed ends C, substantially as shown, and for the purpose described.

4. The combination of the tie G, provided with lugs H, and central depression J, rails A, provided with recesses B, and central supporting-wall M, and flanges A', and the bars D, substantially as shown, and for the purpose described.

5. The combination of the tie G, provided with central depression J, and lugs H, the rails A, provided with diagonal ends C, wall M, and recesses B, provided with corrugations F therein, and the bars D, provided with notches E therein, substantially as shown, and for the purpose described.

404,402. CART. THOMAS HARDY, Toronto, Ontario, Canada. Filed Sept. 12, 1888. Serial No. 285,193. (No model.)

Claim.—1. The combination, with the body A, of the ledges B, secured to the top thereof, the bars C, secured to the sides of said body and extended across the tops of said ledges and across the bottom of the body, and the braces D, all substantially as shown and described, and for the purpose specified.

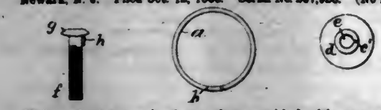
2. The combination, with the axle having a crank formed in it, as shown, the body, and the ledges secured to the top of said body, of the springs secured at their ends to the under side of said ledges, the T-pieces on the axle, the plate between the T-pieces and the bottom of the spring, and the clips J, passed around said spring and

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plate and through holes in the T-pieces, substantially as and for the purposes specified.

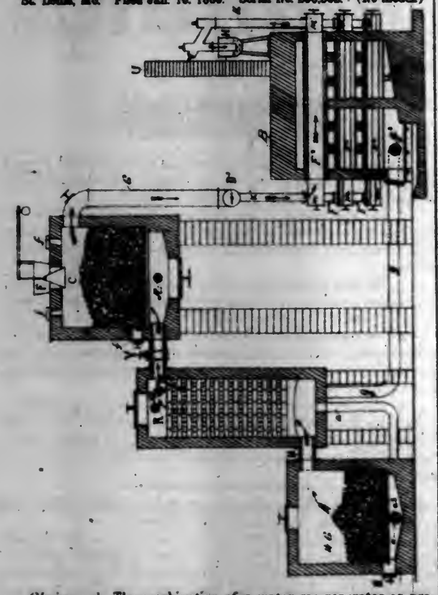
404,403. TERRET WITH SEPARABLE SHANK. EMERY E. HARDY, Newark, N. J. Filed Oct. 12, 1888. Serial No. 287,928. (No model.)



Claim.—1. A terret having a ring provided with an aperture in one side, a collar formed in a separate piece, and a through-bolt inserted through the ring and collar, the several parts of the terret being detachable from one another, substantially as shown and described.

2. A terret having a ring and collar united by a through-bolt provided with a feather to hold the bolt from turning in the side of the ring.

404,404. APPARATUS FOR THE MANUFACTURE OF FUEL AND ILLUMINATING GAS. JOHN W. HARRISON and FREDERIC BOSER, St. Louis, Mo. Filed Jan. 16, 1889. Serial No. 296,562. (No model.)



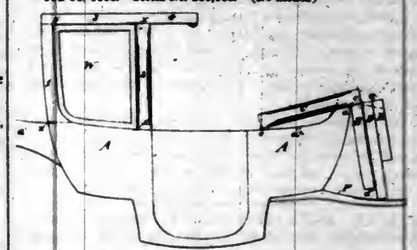
Claim.—1. The combination of a water-gas generator or producer, a superheater which receives the gases from the generator, a coal-distilling chamber which receives the gases from the superheater, and a bench of retorts to which the gases and vapors from the coal-distilling chamber directly pass, the whole connected and adapted to operate substantially in the manner hereinbefore set forth.

2. The combination, with the water-gas generators or sets of generators W G W' G', the superheaters R R', one for each water-gas generator or set of generators, and the coal-distilling chamber C, common to said superheaters, these elements being constructed, connected together, and adapted to jointly operate substantially in the manner and for the purposes hereinbefore set forth.

3. In combination with the retort-bench and the coal-distilling chamber, the regulator or superheater provided with three valve-controlled outlets, the one leading to the atmosphere, the next to the coal-distilling chamber, and the third to the combustion chamber or furnace of the retort-bench, substantially as and for the purposes hereinbefore set forth.

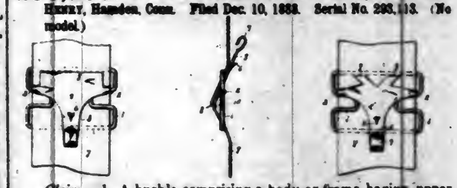
4. In combination with the superheaters and retort-bench, the intermediate coal-distilling chamber, connected on the one hand with the superheaters and on the other hand with the retorts, and provided with the air and steam inspirator A, substantially as and for the purposes hereinbefore set forth.

404,405. CARRIAGE. MICHAEL HAGERTY, St. Louis, Mo. Filed Oct. 31, 1888. Serial No. 289,063. (No model.)



Claim.—In a carriage-top, the jointing and hinging of the back B at a point higher than the front center pillar C, so that the top when open will fold in a vertical position outside of and parallel to the rear panel, all substantially as shown and described, and for the purposes set forth.

404,406. BUCKLE. ROBERT G. HENRY, Waterbury, and RENE L. HENRY, Hamden, Conn. Filed Dec. 10, 1888. Serial No. 293,113. (No model.)



Claim.—1. A buckle comprising a body or frame having upper and lower cross-pieces and bearings between said cross-pieces, a tongue pivotally attached to said bearings, and provided at its lower end with a hook and with a backwardly-extending prong 6 below said bearings, said tongue having its upper end extended above its pivotal bearings to form a clamping part 8, arranged to engage the web and clamp the same against the upper cross-piece of the said body or frame.

2. A buckle comprising a body having bearings and a tongue turning thereon and having a clamping-surface 8, a prong 6, and a prong 10 to engage the web, and a hook to engage an attaching-strap.

404,407. STOP MECHANISM FOR LOOMS. EDUARD HERRIG, West Hoboken, assignor to Rand H. Simon, Union, N. J. Filed Sept. 3, 1888. Serial No. 284,903. (No model.)

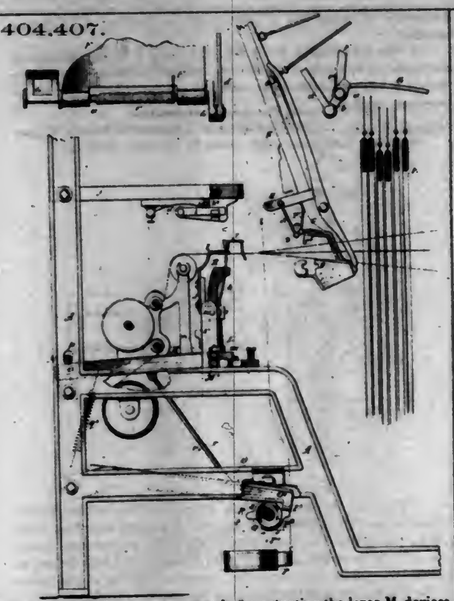
Claim.—1. In a loom, the batten B and the movable fly or fork G carried by said batten, and means, substantially as described, for actuating the fork G, combined with the fork J, a pivoted support carrying said fork, lever L, lever M, a cam or eccentric for actuating the lever M, devices intermediate said cam and lever, and a device operated by the lever M to stop the loom, substantially as set forth.

2. In a loom, the batten B, bracket F carried thereby, fly or fork G, carried by the bracket F, and lever H, carried by the batten above the fly G and connected with the fly or fork G, in combination with the stop or tongue I, and support *f*, carrying said tongue, said stop or tongue being above the fly or fork G, substantially as described.

3. In a loom, the batten B, bracket F, shaft *a* on said bracket, fly or fork G and crank *b* on said shaft, lever H, and link *d*, said lever being above the fly or fork G, combined with the tongue I, and support *f*, carrying said tongue, said tongue being above the fly or fork G, substantially as described.

4. In a loom, the batten B, bracket F, shaft *a*, fly or fork G and crank *b* on said shaft, lever H, and link *d*, combined with the tongue I, and support *f*, carrying said tongue, and with the fork J, lever A, levers L and M, a cam or eccentric for actuating the lever M, devices intermediate said cam and lever, and a device operated by the lever M to stop the loom, substantially as described.

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5. The batten B and the swinging fly or fork G carried thereby, and means, substantially as described, for actuating the fork G, combined with the fork J, lever A, levers L M, stop U, rod N, connected with the driving-gear, rod *r*, lever O, and cam P, all arranged for operation substantially as herein shown and described.

6. In a loom, the batten B, combined with the lever R, having a slight vertical movement, lever M^2, a cam or eccentric for actuating the lever M^2, devices intermediate said cam and lever M^2, and a device operated by the lever M^2 to stop the loom, as specified.

7. In a loom, the batten B, combined with the lever R, having opening *x*, pivot *w*, passing through said opening and carried by the support *v*, support *v*, spring *y*, lever M^2, a cam or eccentric for actuating said lever, devices intermediate said cam and lever M^2, and devices operated by the lever M^2 to stop the loom, as specified.

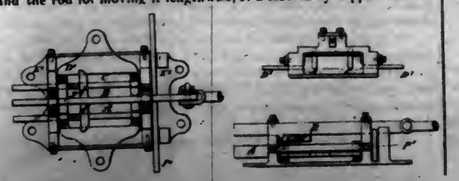
8. In a loom, the batten B, combined with the lever R, having a slight longitudinal movement, lever M^2, rod N, connected with the driving-gear, rod r^2, lever O^2, and cam P^2, all arranged for operation substantially as herein shown and described.

9. The batten B, bracket F, fork G, and lever H, connected to the fork and carried above the fly or fork G, combined with the tongue I, spring *g*, supporting the free end of said tongue, and support *f*, substantially as described.

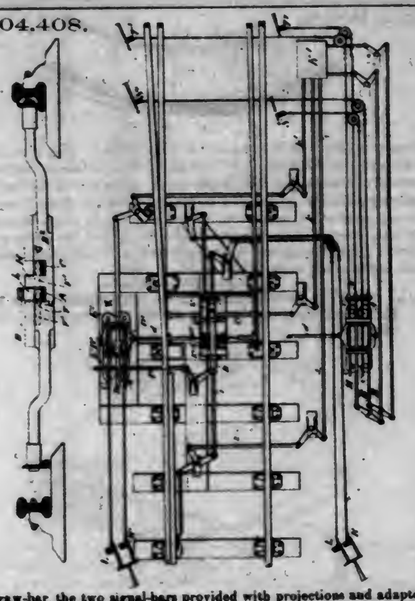
404,408. WORKING AND INTERLOCKING RAILWAY SIGNALS AND POINTS. JOSEPH HILL and JOHN P. O'DONNELL, London, County of Middlesex, England. Filed June 21, 1887. Serial No. 242,055. (No model.) Patented in England May 18, 1886, No. 6,061.

Claim.—1. The combination, with the draw-bar provided with long and short projections F' and F, and one rod for moving it lengthwise, of the two signal-bars provided with projections G and arranged one upon each side of the draw-bar and substantially parallel with it, and a second rod coupled to the points for opening and shutting them and simultaneously causing the respective signal-bar to engage with the draw-bar, so that it may subsequently be operated by the first-mentioned rod, substantially as set forth.

2. The combination, with the draw-bar provided with projections, and the rod for moving it lengthwise, of a stationary support for the



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draw-bar, the two signal-bars provided with projections and adapted to engage with those on the draw-bar and arranged one upon each side of the draw-bar, a support for the said signal-bars adapted to slide crosswise and rigidly connected to the points, and a second rod coupled to the points for opening and shutting them and simultaneously sliding the respective signal-bar into gear with the draw-bar, substantially as and for the purpose set forth.

3. The combination, with the longitudinally-movable draw-bar provided with projections F' and F of unequal length, of a stationary support for the draw-bar, the two signal-bars arranged upon opposite sides of the draw-bar and provided with projections which are always in contact with the longer projections F' of the draw-bar, a support for the signal-bars rigidly connected to the points and adapted to slide crosswise with them, thereby causing the projections on the signal-bars to be slid between the said short and long projections on the draw-bar and placing the appropriate signal-bar in gear with the draw-bar according to the direction of the motion of the points, substantially as set forth.

4. The combination, with the longitudinally-movable draw-bar, of the two signal-bars arranged upon opposite sides of the draw-bar and adapted to engage with it, a stationary support for the draw-bar provided with one or more locking-holes for the signal-bars to enter when moved by the said draw-bar, and a support for the signal-bars rigidly connected to the points and adapted to slide crosswise with them and to place the appropriate signal-bar into gear with the draw-bar and in front of the locking-hole, substantially as set forth.

5. The combination, with the points, of the stretcher secured between the points and provided with holes for the signal-bars to slide in, the longitudinally-sliding draw-bar supported above the stretcher and provided with projections, and the two signal-bars provided with projections and adapted to engage with the said projections on the draw-bar, substantially as and for the purpose set forth.

404,409. COLLAR-FASTENER. JOHN HIMMELSTEIN, Milwaukee, Wis. Filed June 7, 1888. Serial No. 276,324. (No model.)

Claim.—The metal collar-fastener constructed in two parts secured to the two ends of the collar, respectively, the face of one part having a T-shaped recess or slot G extending laterally from one edge nearly across the face and the other part having a corresponding T-shaped tongue H nearly across its face laterally, the tongue H being

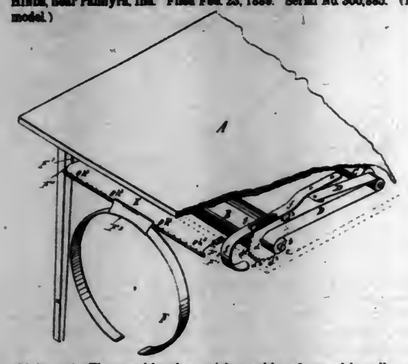


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adapted to enter and fit in the recess G, said fastener being also provided with a set of flanges L L on its lower outer surface on the two parts of the fastener at right angles to the longer axis of the slot G and tongue H, and so located as to form a continuous channel when the two parts of the fastener are locked together, in which channel the hame-strap is adapted to fit, whereby the ends of the collar are retained in position against lateral movement with reference to each other, substantially as described.

404,410. NAPKIN-HOLDER TABLE ATTACHMENT. JOHN M. HIBBS, near Palmyra, Ind. Filed Feb. 23, 1889. Serial No. 300,885. (No model.)



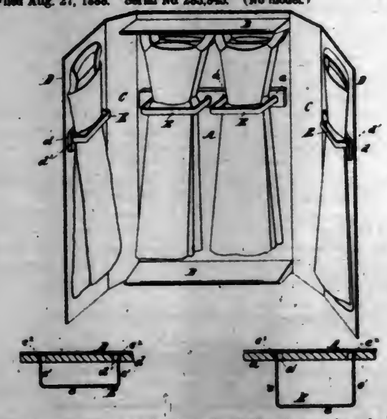
Claim.—1. The combination, with a table, of a napkin-roller applied underneath the top or frame of the table opposite the place where a person sits, upon and off which the napkin rolls, substantially as described.

2. The combination of a napkin-roller applied underneath the top or frame of the table opposite the place where a person sits, a napkin removably attached to it, and a split neckband removably attached to the napkin, substantially as described.

3. In a napkin-holder table attachment applied underneath the top or frame of the table opposite the place where a person sits, in combination, the napkin-roller, napkin, pawl, and ratchet, substantially as described.

4. The combination of the napkin-roller applied underneath the top or frame of the table opposite the place where a person sits, napkin, ratchet, pawl, and an automatic tension rolling-up device, substantially as described.

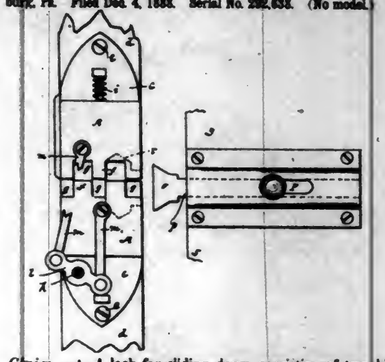
404,411. NECKTIE-HOLDER. GEORGE A. HUEWE, Cincinnati, Ohio. Filed Aug. 27, 1888. Serial No. 283,843. (No model.)



Claim.—1. The combination of a folding box, strip *c*, having openings *d'* and attached to the back of the box, and yoke E, having outwardly-springing legs *e'*, substantially as and for the purposes specified.

2. The combination of a folding box, strip *c*, having openings *d'* and attached to the back of the box, and yoke E, having outwardly-springing legs *e'*, provided with teeth *e²*, substantially as and for the purposes specified.

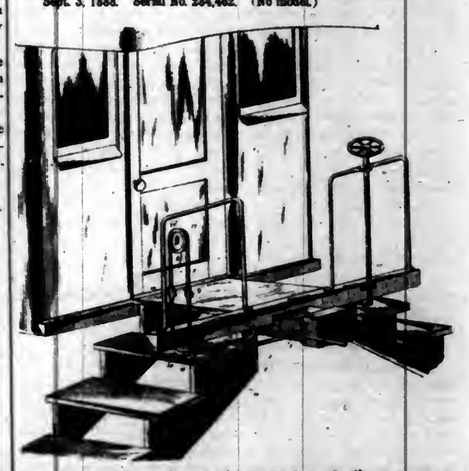
404,412. SLIDING-DOOR LOCK. STEPHEN W. HUSTON, Wilkinsburg, Pa. Filed Dec. 4, 1888. Serial No. 292,638. (No model.)



Claim.—1. A lock for sliding doors, consisting of two blocks limited to vertical movement in opposite directions on a fixed base, and having interlocking fingers formed in their opposing edges, and a recess for the reception of a bolt-head, and a headed bolt limited to endwise movement in a line at right angles to the line of movement of the blocks, substantially as and for the purpose described.

2. A lock for sliding doors, consisting of two sliding blocks limited to vertical movement in opposite directions on a guideway of a base, and having the interlocking fingers, and a recess formed in their opposing edges, an axially-turning shaft connected by intermediate devices with said blocks for adjusting the latter simultaneously in opposite directions, and a headed bolt, substantially as and for the purpose described.

404,413. PIPE-COUPLING. CYRUS F. HURREL, Holton, Kans. Filed Sept. 3, 1888. Serial No. 284,462. (No model.)

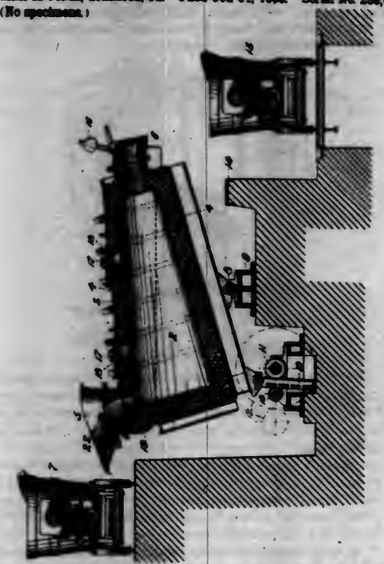


Claim.—1. A coupling for the steam-pipes of railway-cars, comprising a bent metallic pipe having two limbs and provided with one or more coils at the bend, the curvature of the coils being in the same plane with the arms and parallel with the direction of strain, and a connecting device for attaching it to the steam-pipes of abutting cars.

2. A coupling for the steam-pipes of railway-cars, comprising a bent metallic pipe having parallel limbs, both limbs being bent at an intermediate point and provided with one or more coils or turns at each bend to permit a ready yielding in the direction of strain, and a connecting device for attaching the coupling to the steam-pipes of abutting cars.

3. The combination of the pipes 1 and 2, attached to the cars, the coupling connected thereto, said coupling being provided with parallel arms adapted to yield in the direction of strain, a coil connecting the arms, said coils being in the same plane with the arm and parallel with the direction of strain, and springs 13 14, as and for the purpose set forth.

404,414. METHOD OF MIXING MOLTEN PIG METAL. WILLIAM R. JONES, Braddock, Pa. Filed Oct. 31, 1888. Serial No. 289,672. (No specimens.)

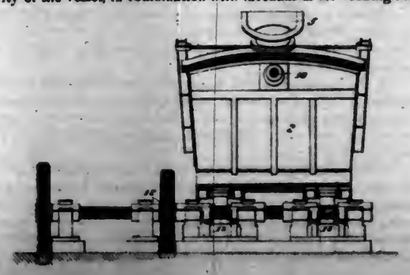


Claim.—1. In the art of refining iron directly from the smelting-furnace, the process of equalizing the chemical composition of the crude metal by thoroughly commingling or mixing together the liquid-metal charge and subsequently refining the mixed and equalized charge, substantially as and for the purposes described.

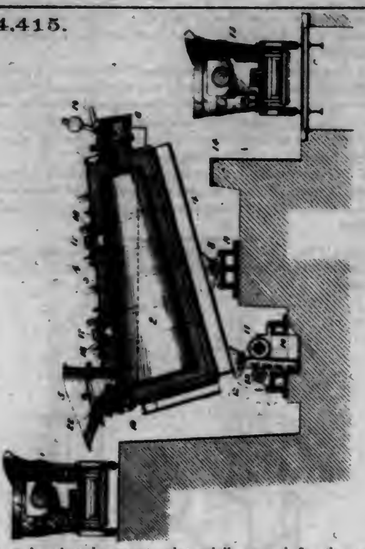
2. In the art of mixing molten metal to secure uniformity of the same in its constituent parts preparatory to further treatment, the process of introducing into a mixing-receptacle successive portions of molten metal nonuniform in their non-metallic constituents, (sulphur, silicon, &c.,) removing portions only of the composite molten contents of the receptacle without entirely draining or emptying the same, and successively replenishing the receptacle with fresh nonuniform additions, substantially as and for the purposes described.

404,415. APPARATUS FOR MIXING MOLTEN PIG METAL. WILLIAM R. JONES, Braddock, Pa. Filed Oct. 31, 1888. Serial No. 289,673. (No model.)

Claim.—1. An apparatus for receiving successive charges of molten metal from a blast-furnace or furnaces and mixing the same previous to further treatment, consisting of an iron vessel having a refractory and heat-retaining lining, and being of substantially rectangular and trapezoidal shape in longitudinal cross-section, covered on top with a removable refractory-lined cover or covers, and furnished with suitable man-hole or man-holes, and having a charging-hopper at or near the top at one end and a discharge-opening at the other end placed above the surface level of the fluid metal when the vessel is in its normal position, said vessel resting on a pivotal support or supports located nearer to the discharge end than the center of gravity of the vessel, in combination with mechanism for rocking the



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vessel on its pivotal support, substantially as and for the purpose hereinbefore described.

2. A mixing-vessel for molten metal, said vessel having a refractory lining, a heat-retaining cover, a charging-opening, and a discharging opening or spout, and provided with a pivotal support arranged forward of the center of gravity of the vessel, whereby the floor of the said vessel will normally incline downwardly from the discharge opening or spout toward the rear of the vessel, in combination with power mechanism for rocking the vessel on its pivotal support, substantially as and for the purposes described.

404,416. RUBBER BOOT OR SHOE. JOSEPH L. JOYCE, New Haven, Conn. Filed Oct. 22, 1888. Serial No. 288,791. (No model.)



Claim.—The herein-described improvement in india-rubber boots or shoes having solid heels, consisting in a boot having the lower edge of the counter turned over onto the insole, the heel portion of the outsole of an area smaller than the area of the heel portion of the boot, but the said heel portion of the sole joined to the inner edge of the turned-over portion of the counter, so as to leave a margin of the counter upon the heel-surface around the heel portion of the outsole, combined with a heel of hard material, its upper surface of an area corresponding substantially to the area of the heel portion of the boot and larger than the heel portion of the outsole, the heel applied and its outer edge resting directly upon the counter outside the edge of the outsole, and the said heel secured by nails through the heel and through the sole, the points of the nails turned down upon the inside of the sole, substantially as described.

404,417. WIRE MATTING. ISRAEL KINNEY, Windsor, Ontario, Canada. Filed Feb. 28, 1887. Serial No. 228,601. (Model.)



Claim.—1. A wire fabric consisting of flattened spiral coils A, interlocking with each other and lying in the same direction, and intermediate wires B, carried substantially parallel to said spirals and through the alternating coils of the adjacent spirals, substantially as described.

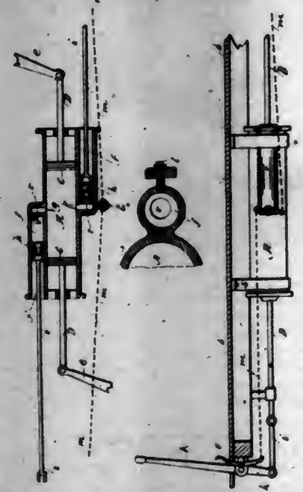
2. A wire fabric consisting of a series of spiral wires, as A, having the spirals interlocked, and wires B, running substantially in the direc-

tion of the spiral wires, each of said wires B passing through or interlocking with the alternate spirals or coils of the adjacent wires A, substantially as described.

3. In a wire fabric, the combination, with spirally-wound wires, of locking-wires engaging therewith and running in substantially the same direction as the spiral coils and crossing each other between the points where they engage with said coils, each locking-wire passing alternately over the wire of one coil and then under the wire of the adjacent coil, substantially as described.

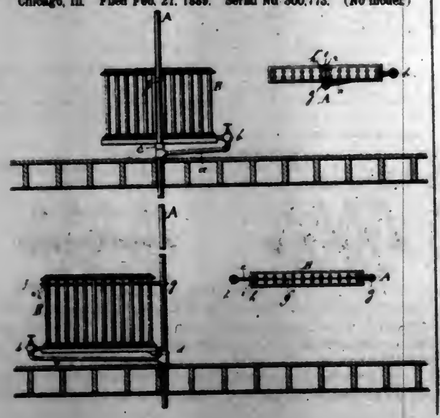
4. The fabric shown, consisting of the spiral coils A, connected by wires B and C, running in substantially the same direction as the coils and each engaging the adjacent coils alternately, substantially as described.

404,418. DEVICE FOR OPERATING CAR-BRAKES. ROBERT A. KNEADDEN, Allegheny, Pa. Filed July 9, 1888. Serial No. 279,456. (No model.)



Claim.—In a device for manually operating car-brakes, the combination, with a main cylinder and two pistons arranged in opposite ends thereof, of two supplementary cylinders *f f*, arranged on opposite sides of said main cylinder and each communicating at one end with said main cylinder at a point between the two pistons therein, and having a check-valve *r*, a valved piston *h*, operating in each of the supplementary cylinders and connected with a hand-lever at the end of a car, a relief-valve *l*, communicating with said main cylinder at a point between the pistons thereof and having an axially-turning body, and a treadle *o*, connected with said relief-valve by an intermediate connection *m*, whereby air may be admitted to the brake-cylinder through the relief-valve and operate the pistons in the main cylinder to release the brake-shoes, substantially as and for the purpose described.

404,419. STEAM-HEATING DEVICE. HERMAN A. KROESCHELL, Chicago, Ill. Filed Feb. 21, 1889. Serial No. 300,773. (No model.)

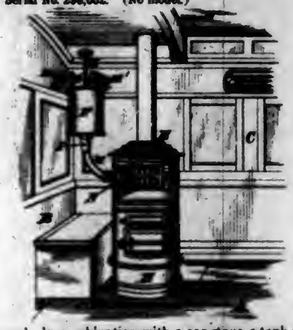


Claim.—1. In combination with a car-stove, a tank suspended by yielding supports, a pipe leading from the discharge-opening of said tank to said stove, a valve controlling said opening, and a stem that connects said valve with the upper part of the car, substantially as herein described.

2. In combination with a car-stove, as K, the tank F, suspended by springs G G', attached to brackets H H', a pipe M, leading from the seat I of said tank to said stove, a valve J, controlling the opening of said seat, and a stem K, that connects said valve with the upper part of the car, as herein described.

3. A flexibly-suspended tank connected by a metallic pipe to a fixed car-stove, the discharging end of said pipe being free to move within the stove-coupling, substantially as herein described, and for the purpose stated.

404,420. AUTOMATIC EXTINGUISHER FOR CAR-STOVES. HERMAN LEVOY and FRANK DAGWELL, Cincinnati, Ohio. Filed Jan. 29, 1889. Serial No. 298,082. (No model.)

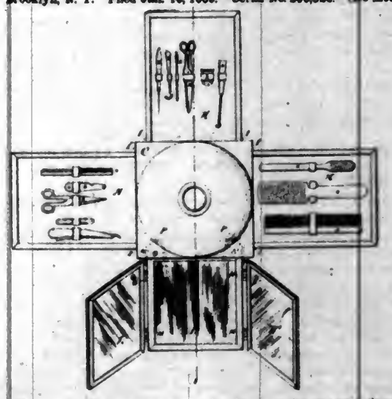


Claim.—1. In combination with a car-stove, a tank suspended by yielding supports, a pipe leading from the discharge-opening of said tank to said stove, a valve controlling said opening, and a stem that connects said valve with the upper part of the car, substantially as herein described.

2. In combination with a car-stove, as K, the tank F, suspended by springs G G', attached to brackets H H', a pipe M, leading from the seat I of said tank to said stove, a valve J, controlling the opening of said seat, and a stem K, that connects said valve with the upper part of the car, as herein described.

3. A flexibly-suspended tank connected by a metallic pipe to a fixed car-stove, the discharging end of said pipe being free to move within the stove-coupling, substantially as herein described, and for the purpose stated.

404,421. COMBINED LAMP AND TOILET-CASE. FRANK MAHER, Brooklyn, N. Y. Filed Jan. 16, 1889. Serial No. 296,526. (No model.)



Claim.—1. The combination of a lamp and a support therefor, the sides whereof are hinged, substantially as set forth, and provided internally with toilet or similar utensils, substantially as and for the purposes described.

2. The combination of a lamp and a support therefor, the sides whereof are hinged substantially as set forth, and provided internally with toilet or similar utensils and a base connected with the support for the lamp by a swivel-connection, substantially as and for the purposes described.

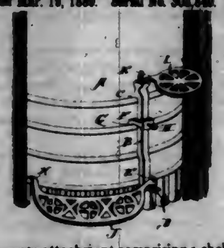
3. The combination of a lamp and a support therefor, a part of the sides whereof consist of a folding mirror constructed and arranged substantially as set forth, whereby it may be folded upon itself and swung into place as a part of the support for the lamp and a support for the mirror when unfolded, which is attached to the support for the lamp and rests against the mirror, substantially as set forth.

4. A lamp the support whereof is constructed and arranged to receive toilet or equivalent articles, and a door in the side of the support, whereby the said articles may be reached without removing the lamp, substantially as set forth.

404,422. COUGH-SIRUP. WILLIAM A. MAXWELL and OSCAR E. MEDDAUGH, Lakeport, Cal. Filed Mar. 6, 1889. Serial No. 302,123. (No specimens.)

Claim.—The herein-described composition of matter to be used as a medicine, consisting of extract of eriodictyon glutinosum, senega, squills, spirits of chloroform, glycerine, and sirup, in the proportions specified.

404,423. GRATE ATTACHMENT. JOHN J. MITCHELL, Birmingham, Ala. Filed Mar. 19, 1889. Serial No. 303,849. (No model.)



Claim.—1. A grate attachment comprising a shelf-supporting bar provided at its upper end with a hook adapted to engage the grate-bar and at its lower end with a forwardly-projecting lug and the shelves pivotally mounted on said lug and the upper end of the bar, as set forth.

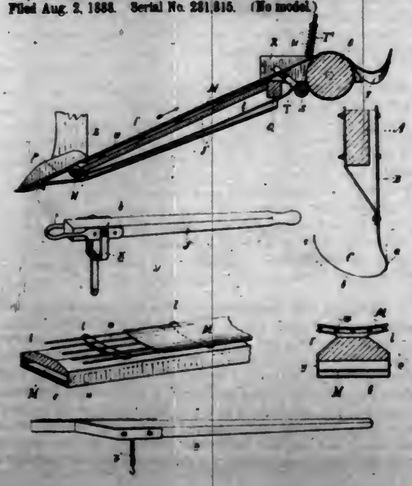
2. The combination of the shelf-supporting bar provided at its upper end with a hook adapted to engage the grate-bars and a pivot-pin projecting vertically from said end and provided at its lower end with a forwardly-projecting lug and a pivot-pin on the upper side of said lug, the shelves mounted on the pivot-pins, and the clamping-bar adapted to pass around the supporting-bar and engage one of the grate-bars and be clamped to the supporting-bar, as set forth.

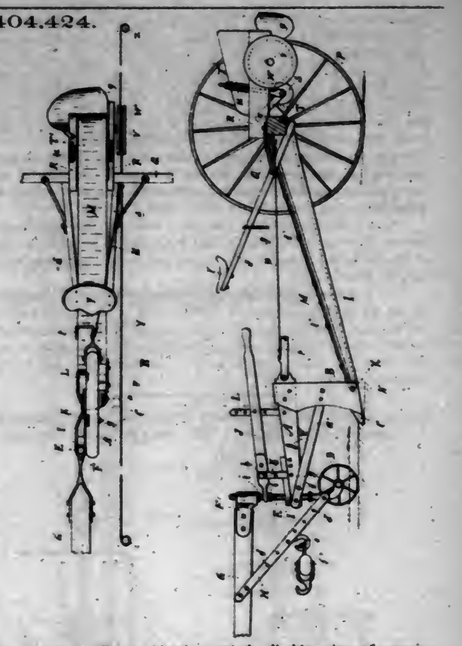
3. The combination of the shelf-supporting bar provided at its upper end with a hook adapted to engage the grate-bar, the swinging shelf mounted on the said supporting-bar, the clamping-bar passing on opposite sides of the shelf-supporting bar and provided with depending hooks adapted to engage the grate-bar, and the set-screw mounted in said clamping-bar and bearing against the shelf-supporting bar, as set forth.

4. In a grate attachment, the combination of the shelf-supporting bar and the extended shelf pivotally mounted at the lower end of said bar and provided at its free end with a depending hook adapted to engage one of the grate-bars, as set forth.

5. In a grate attachment, the shelf-supporting bar clamped to the grate, the shelf I, pivoted to the upper end of the said bar, and the shelf J, pivoted to the lower end and having the hook K at its outer end to engage one of the grate-bars, as set forth.

404,424. DITCHING-PLOW. RUSSELL H. MOSAR, Dundee, Mich. Filed Aug. 2, 1888. Serial No. 281,815. (No model.)





Claim.—1. The combination, with the ditching-plow, of a carrier mounted on a truck at the rear of the plow and having a hinged connection at its forward end with the scoop or plow, and the adjustable draft-connection with the rear end of the plow-beam, said connection being pivoted at one end to the plow-beam, substantially as described.

2. In a ditching-machine, the combination, with the ditching-plow, of the carrier mounted on the truck at the rear of the plow and having pivotal connection at its forward end therewith, and the adjustable draft-connection between the rear end of the plow and said truck, said draft-connection being pivoted at one end to the plow-beam and under the control of the operator, substantially as described.

3. In a ditching-machine, the combination, with the ditching-plow, of a carrier pivotally secured at its forward end to the scoop or plow and mounted with its rear end upon the truck, and a draft-connection between said truck and the rear end of the plow in the line of draft, consisting of the foot-lever *l* and the draft-connection *n*, substantially as described.

4. In a ditching-machine, the combination of the following elements: the ground-wheel mounted on a vertical standard, the draft devices applied thereto, the plow-beam provided at its forward end with the vertical bearing engaging with the standard of the ground-wheel, the scoop or plow secured to the rear end of the plow-beam, the raising and lowering device mounted upon the plow-beam, the carrier pivotally secured at its forward end to the plow and mounted at its rear end upon the truck, and the adjustable connection between the rear end of the plow and the truck, said connection consisting of the foot-lever *l* and the draft-connection *n*, substantially as described.

5. The combination, with the plow of a ditching-machine, of the endless carrier pivotally secured at its forward end to the rear end of the plow and mounted at its rear end upon a truck, a carrier-pulley mounted upon the truck and to which motion is applied, and a friction-pulley mounted below such carrier-pulley and pressing the belt against the face of the carrier-pulley, substantially as described.

6. The combination, with the plow of a ditching-machine, of a carrier consisting of the endless belt M, secured at its forward end to the plow and mounted at its rear end upon a truck, the belt-pulley O, mounted in suitable bearings upon the frame of the truck, the adjustable friction-pulley S, mounted in contact with the belt-pulley, the shaft V of the belt-pulley, and the grooved drive-pulley W, substantially as described.

7. The combination, with the ditching-plow, the carrier mounted in the rear thereof and supported upon the truck, the drive-shaft V of the carrier, the grooved pulley W upon said drive-shaft, and the wire rope Y, the parts being arranged to operate substantially as and for the purpose described.

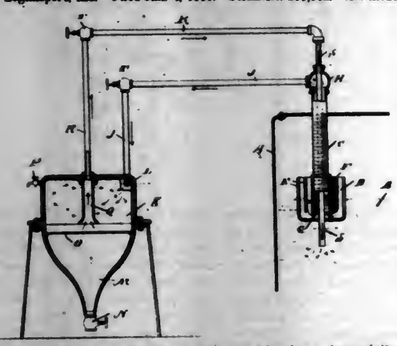
8. In a ditching-machine, the combination of the following elements: the ground-wheel D, the vertical standard E, carrying such

ground-wheel, the draft-bar H, the draft-connection adjustably secured to the draft-bar, the plow-beam provided at the forward end with the bearing l, into which the standard E engages, the raising and lowering lever J, pivotally mounted on top of the plow-beam and engaging by its forward end with the standard E, the adjusting devices of that lever, the scoop U, mounted on the standard B, the endless carrier M, the roller N, mounted in the scoop of the plow, the truck upon which the rear end of the carrier is mounted, the carrier-pulley O, over which the rear end of the carrier-belt passes, the friction-pulley S, the drive-pulley W, and the seat R, mounted on the rear truck in proximity to the rear end of the plow, substantially as described.

9. In a ditching-machine, the plow consisting of the plow-beam, the standard secured thereto, and the scoop secured to the lower end of the standard and having the digging portions *a*, *b*, and *c*, substantially as described.

10. In a ditching-machine, the combination of the ditching-plow, the carrier pivotally secured to the rear end of the ditching-scoop and mounted with its rear end upon the truck, a flexible draft-connection between the plow and the truck, the loop *w*, secured to the plow-beam, the lever *z*, and the hanger *y*, substantially as and for the purpose described.

404,425. BOILER-CLEANING APPARATUS. JOHN T. OBENCHAIN, Logansport, Ind. Filed Jan. 4, 1889. Serial No. 295,362. (No model.)



Claim.—1. In a boiler-cleaner, the combination, substantially as set forth, with a precipitating-chamber, a pipe leading thereto from the boiler, and a pipe leading therefrom to the boiler, of a skimmer within the boiler, having the form of a cup whose peripheral wall is provided with vertical slots having a uniform effective area throughout vertical depth, said first-mentioned pipe projecting downwardly into said cup and communicating with the interior thereof near the floor of the cup.

2. In a boiler-cleaner, the combination, substantially as set forth, with a precipitating-chamber, a pipe leading thereto from the boiler and a pipe leading therefrom to the boiler, of a skimmer within the boiler and attached to said first-mentioned pipe and having the form of a cylindrical cup whose peripheral wall is provided with vertical slots having a uniform effective area throughout the vertical depth, said first-mentioned pipe projecting downwardly into said cup and communicating with the interior thereof near the floor of the cup.

3. In a boiler-cleaner, the combination, substantially as set forth, with a precipitating-chamber, a pipe leading thereto from the boiler, and a pipe leading therefrom to the boiler, of a skimmer having the form of a cup with a vertically-slotted periphery and communicating with said first-mentioned pipe near the bottom of the cup only and below the level of the lower ends of said slots.

4. In a boiler-cleaner, the combination, substantially as set forth, with a precipitating-chamber, a pipe leading thereto from the boiler, and a pipe leading therefrom to the boiler, of a skimmer having the form of a cup with a vertically-slotted periphery, and having a central hollow hub connected with said first-mentioned pipe, and having apertures leading from the base of the cup to within the base of the hub.

5. In a boiler-cleaner, the combination, substantially as set forth, with a precipitating-chamber, and a pipe leading therefrom to the boiler, of a vertical skimmer-pipe having a threaded portion projecting downwardly into the boiler, a pipe connecting the said skimmer-pipe with the precipitator, and a slotted cup-shaped skimmer screwed upon the lower end of said skimmer-pipe and vertically adjustable thereon.

6. In a boiler-cleaner, the combination, substantially as set forth, of a precipitating-chamber, a skimmer within the boiler, a pipe leading from said skimmer vertically through the boiler-shell and thence to the precipitator, and a pipe leading from the precipitator to said vertical pipe and passing downwardly within the same and through the skimmer and into the boiler-space below the skimmer.

7. In a boiler-cleaner, the combination, substantially as set forth, of a precipitating-chamber, a skimmer within the boiler, a pipe T outside the boiler over the skimmer, a skimmer-pipe connecting the T with the skimmer, a pipe connecting the precipitator with said T and skimmer-pipe, and a pipe passing from below the skimmer upwardly through said skimmer and skimmer-pipe and out of said T, and thence to the precipitator.

8. In a boiler-cleaner, the combination, substantially as set forth, of a skimmer, a precipitating-chamber having a circular inwall, a pipe leading from said chamber to the boiler below the skimmer, and a pipe leading from the skimmer to said chamber and connected with said chamber at an outer point, and arranged to discharge tangentially against and cause the discharge to follow the complete circle of said inwall.

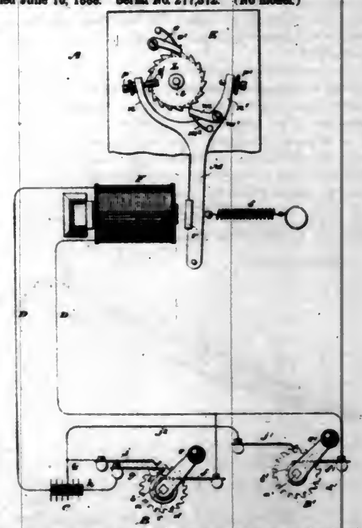
9. In a boiler-cleaner, the combination, substantially as set forth, of a skimmer, a precipitating-chamber, a pipe leading from the skimmer to the outer portion of the precipitating-chamber, and a pipe leading from the boiler-space below the skimmer to a point in the precipitating-chamber below the point of connection with said first-mentioned pipe.

10. In a boiler-cleaner, the combination, substantially as set forth, of a skimmer, a precipitating-chamber, a pipe leading from the skimmer to a tangential inlet at the outer portion of the precipitating-chamber, a centrally-disposed pipe projecting downwardly from the roof of the precipitating-chamber, and a pipe connecting said pipe with the boiler-space below the skimmer.

11. In a boiler-cleaner, the combination, substantially as set forth, of a skimmer, a napiform precipitating-chamber having a completely circular inwall, a clean-out valve at the base of the chamber, a pipe leading from the skimmer to the precipitating-chamber and discharging tangentially against the circular inwall thereof, and a pipe leading from the precipitating-chamber to the boiler-space below the skimmer.

12. In a boiler-cleaner, the combination, substantially as set forth, of a skimmer, a precipitating-chamber, a horizontal perforated septum in the chamber, a clean-out valve at the base of the chamber, a pipe connecting the skimmer with the chamber above the septum, and a pipe leading from the boiler-space below the skimmer to the chamber above the septum.

404,426. UNISON DEVICE. GEORGE F. OEHMEN, New York, N. Y. Filed June 16, 1888. Serial No. 277,372. (No model.)



Claim.—1. The combination of a step-by-step mechanism having a moving part formed with a unison-notch, a unison-stop normally resting in said notch and holding the step-by-step mechanism from movement when resting therein and until removed therefrom by an abnormal amount of power, a battery, a line, and an included magnet controlling said step-by-step mechanism, a unison-transmitter located in said line and connected at an intermediate point of the battery, so as to transmit a diminished amount of energy to said step-by-step mechanism, and a second transmitter located in the line connected with said battery controlling the full amount thereof, whereby the unison-stop will be dislodged from its notch by the full amount of current and the step-and-step mechanism operated by the normal current.

2. The combination of a step-by-step mechanism, a unison therefor holding said step-by-step mechanism from operation under normal currents when held at unison, a battery, a line-wire, and an included electro-magnet controlling said step-by-step mechanism, and a transmitter located in the line and connected to battery at more than two points and itself governing both the full and partial amount of battery thrown on said line.

3. In a unison device, the combination of step-by-step mechanism having a moving part provided with a unison-notch, a unison-stop for engaging the notch, an electro-magnet having an armature controlling the movements of the unison stop, a battery, and a line connected therewith and including the said magnet, transmitting apparatus located in the line and controlling at will part or all of the battery-power transmitted to the magnet, the said armature having a range of movement such that when the armature is in full open position to close the unison-stop the diminished amount of current will not induce it but the full amount will, substantially as and for the purpose set forth.

4. In a unison device, the combination of step-by-step mechanism having a moving part provided with a unison-notch, an electro-magnet having a spring-retracted armature provided with a unison-stop for engaging the unison-notch, a battery and a connected line, including the said magnet, two transmitters located in the line, one controlling only a part of the battery and the other controlling both a part and all of the battery, the range of movement of the armature being such that when the armature is in full open position to close the unison-stop and part only of the battery is thrown on the line the armature will be out of inductive proximity to the magnet, substantially as and for the purpose set forth.

5. In a unison device having the armature of the operating-magnet out of inductive proximity thereto when in full open position and the diminished amount of current is thrown on the magnet and operated by the full amount of the current, substantially as described, two transmitters located in the line with the magnet, the one controlling only a part of the battery and the other both a part and all of the battery, substantially as and for the purpose set forth.

6. A combined step-by-step mechanism and unison consisting in an operating-magnet having a pivoted spring-retracted armature with a spring-pawl and a unison-stop, both mounted thereon, a rotary spindle provided with a ratchet-wheel, and a detent for the wheel, said ratchet operated step by step by the engaging-pawl of the armature under the vibrations of the latter, the rotating part of said mechanism provided with a unison-notch engaged by the unison-stop carried by the said armature, substantially as and for the purpose set forth.

7. The combination of the operating-magnet having a pivoted spring-retracted armature provided near one end with an adjustable unison-stop, a spring-pawl mounted on the armature near the end thereof bearing the stop, a ratchet-wheel having a detent and formed with a unison-notch engaged by the stop on the armature.

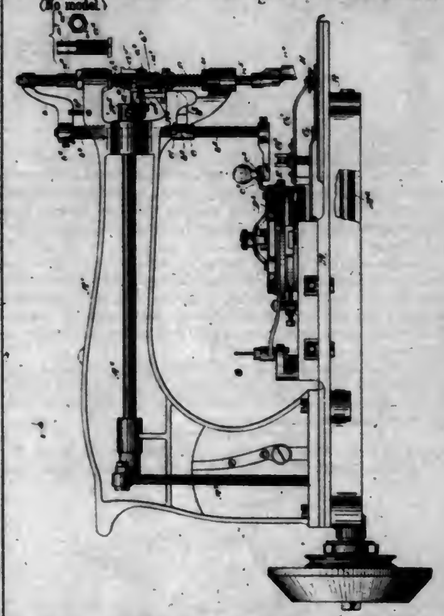
8. The combination of a ratchet-wheel, an operating-magnet having a pivoted spring-retracted armature provided with a forked end spanning the ratchet-wheel, and having a spring-pawl for engaging the ratchet and rotating it step by step under the vibrations of the armature, a detent for the ratchet, one prong of said forked armature provided with a unison-stop for checking the movement of the ratchet, the other prong thereof provided with an adjusting-screw for regulating the throw of the magnet in its vibrations, substantially as and for the purpose set forth.

9. The combination of a step-by-step mechanism having a unison-stop for checking its movement, the electro-magnet F, controlling said mechanism and stop, battery C and line D, connected thereto, the transmitter B, consisting in shaft *a*, provided with contact-disk *b* and break-wheels *c* and *d*, the contact-finger *f*, engaging disk *b* and in line D, the contact-finger *e*, engaging the break-wheel *c* and in line D, the contact-finger *j*, connected to an intermediate point of battery C and engaging with break-wheel *d*, the transmitter B', consisting in the shaft *a'*, provided with contact-disk *b'* and break-wheel *d'*, the contact-finger *f'* in line D and engaging disk *b'*, and the contact-finger *j'*, engaging wheel *d'* and connected to an intermediate point of the battery, as at point *k*, substantially as and for the purpose set forth.

10. The combination of the rotating spindle and ratchet-wheel, a detent for holding the parts from backward movement, the electro-magnet F, line D, battery C, and the transmitters B B', one controlling part and the other controlling both part and all of the battery, substantially as described, the pivoted spring-retracted armature M, provided with the unison-stop *p* for taking in a unison-notch formed on the rotating part of the mechanism, and the spring-pawl *m*, mounted on the armature and engaging the ratchet-wheel, substantially as and for the purpose set forth.

11. The combination of the ratchet-wheel L, formed with a notch and provided with a detent to prevent backward movement of the ratchet, the operating-magnet F, having the pivoted spring-retracted armature M, formed with the prongs *n o*, the unison-stop *p*, mounted on the armature and adapted to engage the notch in the ratchet-wheel, and the spring-acted pawl *m*, engaging the teeth of the ratchet and advancing the wheel step by step under the vibrations of the armature, substantially as and for the purpose set forth.

404,427. CUTTING MECHANISM FOR BUTTON-HOLE SEWING-MACHINES. FREELAND W. OSTROM, Bridgeport, and JOHN W. BOOTH, Stratford, assignors to The Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Filed May 25, 1886. Serial No. 203,207. (No model.)



Claim.—1. In a button-hole sewing-machine, the combination, with the work-clamp and its operating cam or disk, of a cutter-bar, operating mechanism therefor, a cutter carried by said bar, and a tripping device to throw the cutter-bar-operating mechanism into action, said tripping device having two members, one of which members, as arm or projection c^4, is connected to and moved in unison with the said clamp-operating cam or disk, and is thus a traveling member, the other member of the tripping device, as the arm or projection c^3, being normally stationary in the path of movement of a part of the said traveling member, one of the said members being adjustable or movable with relation to the normal path of movement of the said traveling member to enable the latter to pass the said stationary member without engagement therewith when desired.

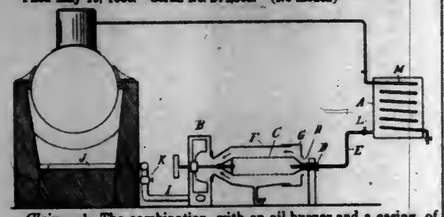
2. In a button-hole-stitching machine, a feeding-clamp, a cutter-bar, its cutter, the attached collar a^4, having a finger, a pin or projection, as b', carried by the cutter-bar, a spring to partially rotate the cutter-bar in one direction, needle-actuating mechanism, and a pin or projection deriving its movement therefrom to strike the said collar a^4 and depress the cutter-bar, combined with a movable beak or arm to co-operate with the said pin or projection of the cutter-bar and retain the cutter with its edge turned aside out of operative position with relation to the material to be cut and tripping mechanism, to operate substantially as described.

3. In a button-hole-stitching machine, a feeding-clamp, the cutter-bar and cutter, means to reciprocate and partially rotate the said bar, the tripping-rod having an arm c^4, the feed-clamp-actuating disk having a projection to act upon the said arm, and a beak to act against a pin or projection of the cutter-bar, combined with a spring to hold the said tripping-rod in its normal position, to operate substantially as described.

4. In a button-hole-stitching machine, a cutter, a cutter-bar having a projection b' and a projection b^2 moved in unison with it, means to reciprocate the cutter-bar, a spring to partially rotate the cutter-bar in one direction, a feed-clamp, and a feed-clamp-actuating disk having an attached tripping arm or projection, and a tripping-rod hav-

ing two arms or projections, one of which holds the cutter-bar turned aside, while the other arm rests in the line of travel of the tripping-arm made movable with the said disk, combined with an arm b^5, projecting from the tripping mechanism and located in the line of travel of the said projection b^5 of the cutter-bar, whereby the latter in its descent moves the tripping-arm longitudinally, substantially as described.

404,428. OIL-BURNER. GEORGE S. PAINE, Wyandotte, Mich. Filed May 19, 1888. Serial No. 274,302. (No model.)

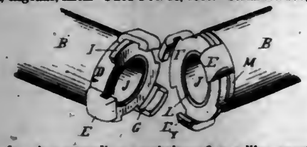


Claim.—1. The combination, with an oil-burner and a casing, of a fan, a tank, the perforated spraying-drum located within said casing, the supply-pipe from the tank entering the spraying-drum, and the discharge-connections from the fan to the furnace, substantially as described.

2. The combination, with the casing, a fan, the spraying-drum located within said casing and having a hollow trunnion and secured upon the axis of the fan, the supply-pipe to said drum, the head, means for adjusting the same, the tank, the heating-coil for heating the oil therein, and the discharge-pipes I J into the furnace, substantially as and for the purpose specified.

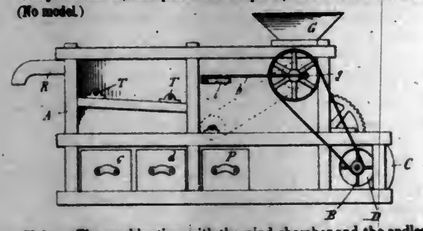
3. The combination, with an oil-burner, of a fan, a casing, and an oil-spraying device located within said casing, means for revolving the fan and sprayer, and an oil-supply pipe for bringing oil into said spraying device, substantially as described.

404,429. HOSE-COUPLING. SPAIN R. PEARCE and GEORGE W. MERRILL, Algonac, Mich. Filed Feb. 11, 1889. Serial No. 299,484. (No model.)



Claim.—In a hose-coupling consisting of two like members, the combination, with the grooved coupling-hooks E, with the spaces between the hooks formed with the plain part H and segmental flange I, of the stop M, arranged at right angles to the axis of the coupling and adapted to enter between two pairs of coupling-hooks when coupled, the spring O beneath said stop, and the elastic rings set angularly around the mouth of each of the members of the coupling, substantially as shown and described.

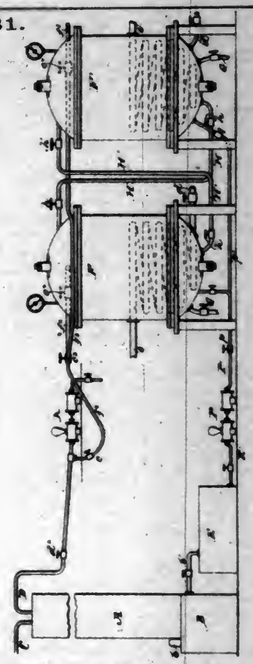
404,430. COFFEE-CLEANING MACHINE. CHANCY J. PICKETT, Bay City, Mich., assignor of two-thirds to Willard I. Brotherton and Henry N. Watrous, same place. Filed Sept. 19, 1888. Serial No. 285,788. (No model.)



Claim.—The combination, with the wind-chamber and the endless carrier, of the inclined direction-board U, loosely attached at one end to the frame of the machine and its other end riding loosely upon said carrier, substantially as described.

404,431. PROCESS OF DISINTEGRATING FIBROUS MATERIALS. RAOUL P. PICTET, Geneva, assignor of one-half to George L. Bruins, Lausanne, Switzerland. Filed Aug. 19, 1887. Serial No. 247,371. (No model.) Patented in France Apr. 6, 1887, No. 182,606; in Belgium Apr. 7, 1887, No. 77,009; in England Apr. 9, 1887, No. 5,389; in Sweden Apr. 13, 1887, No. 1,262; in Germany Apr. 15, 1887, No. 41,703; in Norway Apr. 20, 1887, No. 553, and in Austria-Hungary Dec. 24, 1887, No. 31,579 and No. 60,881.

404,481.



Claim.—1. The herein-described process in the production of cellulose, which consists in immersing the fibrous material in a solution of sulphurous acid of normal temperature and of a strength of about 1° Baumé, gradually increasing the strength of the solution to sursaturation and gradually increasing the temperature thereof to about 100° centigrade by passing heated sulphurous-acid vapors into said solution, substantially as and for the purposes specified.

2. The herein-described process in the production of cellulose, which consists in immersing the fibrous material in a solution of sulphurous acid of normal temperature and of a strength of about 1° Baumé, in a partial vacuum, gradually increasing the strength of the solution to sursaturation, and gradually increasing the temperature thereof to about 100° centigrade by passing heated sulphurous-acid vapors into said solution, substantially as and for the purposes specified.

404,432. SLED. LYMAN B. PICKETT, Montrose, Pa. Filed Mar. 29, 1889. Serial No. 305,241. (No model.)



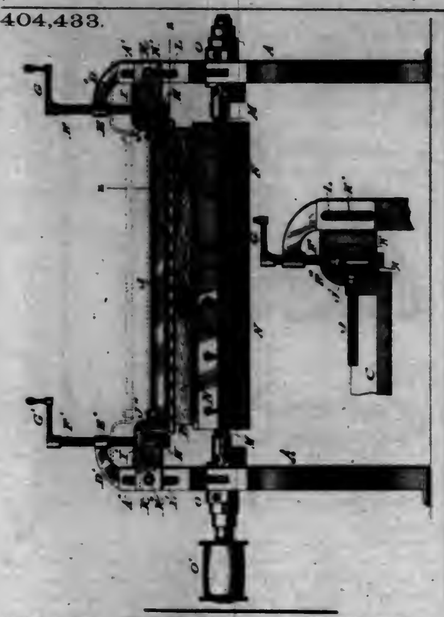
Claim.—The runners A, constructed of metal tubing, and platform C, in combination with the knees B and cross-bar D, having their ends split and spread at right angles and secured to the tubular runners, substantially as and for the purpose herein set forth.

404,433. WOOD-PLANING MACHINE. FRANK J. PLUMMER, Philadelphia, Pa. Filed Dec. 22, 1888. Serial No. 294,637. (No model.)

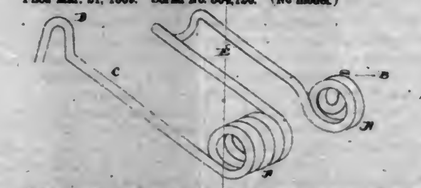
Claim.—1. In a planing-machine, the combination of the uprights A' A'', arms or projections D D', right and left screw-threaded rods F F', carriages F'' F''', guided by connecting-pieces setting in grooves in the uprights and rigidly attached to a pressure-bar C, shaft J, sustained by said carriages, with the gear-wheels to actuate the shaft, substantially as shown, whereby the said gearing rises and falls with the pressure-bar.

2. In a planing-machine, the combination of the uprights A' A'', arms or projections D D', right and left screw-threaded rods F F', closed boxes F'' F''', forming vertically-moving carriages for shaft J and pressure-bar C, pressure-bar C and shaft J, and the gear-wheels to actuate said shaft and to rise and fall therewith and with the pressure-bar, substantially as described.

404,433.

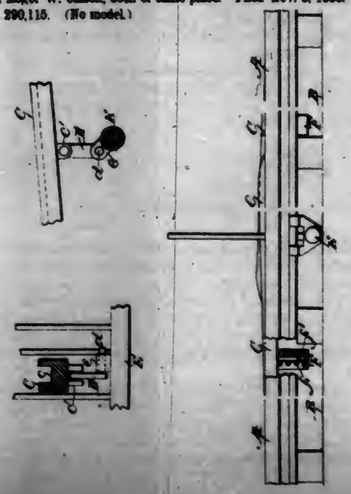


404,434. BUGGY-TOP SPRING. CORTES V. PUGH, Vandalia, Mo. Filed Mar. 21, 1889. Serial No. 304,126. (No model.)



Claim.—The improved spring for buggy-tops herein described and shown, consisting of a central coiled portion having the hook B at one end, the arm C at its other end provided with the hook D, and the intermediate U-shaped rest or supporting-arm E, substantially as specified.

404,435. AUTOMATIC GUARD FOR RAILROADS. JOHN V. REAMS, Midland, Mich., assignor of two-thirds to Frederick L. Beecham and Roger W. Clason, both of same place. Filed Nov. 6, 1888. Serial No. 290,115. (No model.)



Claim.—In an automatic cattle or other guard for railroads, the combination of the auxiliary rails C, pivoted at one end, forks c', secured thereto, carrying links D, provided with arms d, shafts E, secured in bearings and provided with teeth or pickets, lugs e, secured to the said shafts E, for receiving the arms d, and coil-springs f, seated in cups F and held in position by means of pins f', secured to the auxiliary rails, as and for the purpose described.

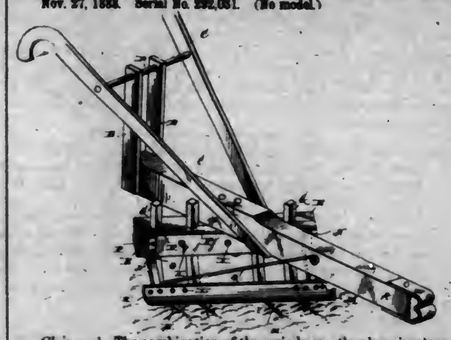
404,436. NECKTIE-FASTENER. JOSEPH REDL, Lewiston, Idaho. Filed Dec. 18, 1888. Serial No. 293,994. (No model.)



Claim.—1. The combination, with a necktie which is provided in its rear side with opening G to receive the collar-button, of the spring-actuated slide or catch arranged adjacent to the said opening to close the same, substantially as specified.

2. The combination, with a necktie provided with an opening G for the collar-button and having a brace b below the said opening, of the vertically-movable slide or catch K, having a concaved upper end to close the opening G and provided with an operating-button N, and the S-spring L, connected at its upper end to the slide or catch and bearing at its lower end on the brace b, whereby the slide or catch is normally held in its elevated or engaging position, substantially as specified.

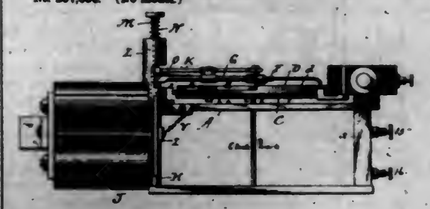
404,437. CULTIVATOR. CHARLES H. RUDDELL, Terrell, Tex. Filed Nov. 27, 1888. Serial No. 292,051. (No model.)



Claim.—1. The combination of the main beam, the clamping-bars secured to the under side of the beam and arranged at an angle thereto, the teeth clamped by and between said bars, the hangers having their upper ends adjustably secured to the ends of the clamping-bars, and the scraper secured to the lower ends of the hangers, as set forth.

2. The combination of the beam, the clamping-bars secured to the under side of the beam and arranged at an angle thereto, the teeth clamped by and between said bars, the hangers having their upper ends provided with a vertical series of openings, the securing-bolts passed through said openings into the ends of the clamping-bars, and the scraper having a horizontal series of openings in each end, and the securing-bolts passed through said openings into the lower ends of the hangers, as set forth.

404,438. NON-INTERFERING FIRE-ALARM SIGNAL-BOX. JOHN J. RUDDICK, Richmond, Ind., assignor, by mesne assignments, to the Interstate Fire Alarm Company, Omaha, Nebr. Filed Dec. 14, 1887. Serial No. 257,884. (No model.)



Claim.—1. In a closed-circuit fire-alarm-signal system and electro-magnet in the main circuit, a short circuit around the same, and circuit-controllers in the main and short circuits, in combination with means for keeping the short circuit open whenever the main circuit is being operated by its circuit-controller, such means consisting of an armature for the said electro-magnet operating to hold a lever in position to keep the circuit-controller in the short circuit open, and an annulus provided with notches positioned with relation to the number-groups on the circuit-controller and arranged in the path of the lever, the said lever and the said number-groups forming positive elements of the combination.

2. The combination, with the number-wheel and the rim or flange carried thereby, of notches in the said rim positioned with relation to the number-groups on the wheel, and a spring-pressed arm having a pin that bears against the said rim, both the number-wheel and the arm being adapted to engage with separate circuit-controllers, and the parts being so arranged that the pin always bears against a solid portion of the rim whenever the number-wheel is in a position to operate its circuit-controller, the rim being cut away at other points, so as to afford no obstruction to the pin, as and for the purpose set forth.

3. The combination, with the number-wheel C, having the teeth *c*, of the flanged wheel D and notches *d*, &c., the magnet J, armature-lever I, spring V, post H, arm G, lever K, and pin F, and the detent engaging with the latter, and the circuit-controllers governed, respectively, by the number-wheel and the arm G, as and for the purpose set forth.

4. The combination, with the arm G and its extension G′, and the circuit-controller with which the latter engages, of the pin F and the notched traveling circular detent D′, and the spring *c*, for throwing the arm out so as to break the circuit, as and for the purpose set forth.

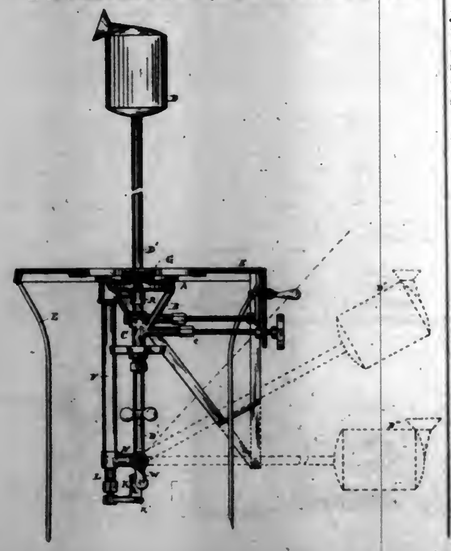
5. The combination, with an electro-magnet in a main circuit, a train controlled thereby, and a short circuit around the magnet and circuit-controllers in both main and short circuits, of a lever connected with the armature of the electro-magnet for holding the short circuit normally open, a distant circuit-controller in the main circuit for releasing the said lever, and a spring acting on the said lever momentarily to break the short circuit, the said spring being attached to a moving part of the train, whereby, on the opening of the circuit at a distant point, the lever will be released and afterward restored by the spring, as set forth.

404,439. SAFETY OIL-CAN ATTACHMENT FOR VAPOR-STOVES.

HENRY RUPPEL, Cleveland, Ohio, assignor to the Dangler Stove and Manufacturing Company, same place. Filed Dec. 24, 1888. Serial No. 294,466. (No model.)

Claim.—1. In combination with a vapor-stove, a stationary stand-pipe F, carrying the burner, a valve in said stand-pipe, a reservoir and a pivoted supply-pipe D′, leading therefrom to the stand-pipe, an arm on the supply-pipe, and an extension, as K, connected to the valve in the stand-pipe and located directly in the path of the arm on the pipe D′, substantially as described.

2. In combination with a vapor-stove, a stationary stand-pipe F,

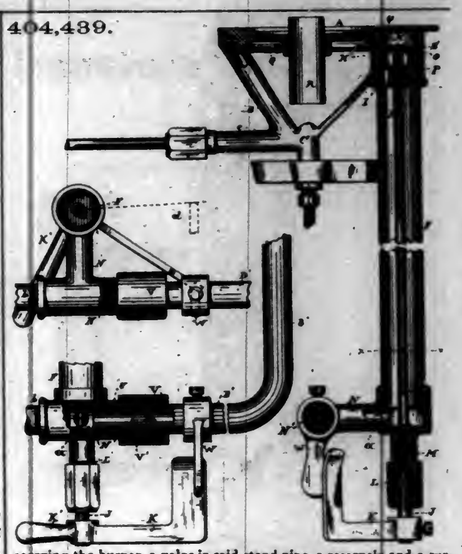


carrying the burner, a valve in said stand-pipe, a reservoir and a supply-pipe D′, leading therefrom to the stand-pipe, pivotally connected therewith, an adjustable arm W on said pipe, D′, and an extension K, adjustably connected to the valve in the stand-pipe and located in the path of the arm W, substantially as described.

3. In combination with the burner of a vapor-stove, generating-conduits leading thereto from the stand-pipe, a valve for controlling the burner, a second valve between the stand-pipe and the valve of the burner, a reservoir, a pivoted supply-pipe D′, supporting the same, and intermediate operating devices between the pivoted supply-pipe D′ and the stand-pipe valve, substantially as described.

4. In combination with a vapor-stove, a stationary stand-pipe F, a valve within the same for controlling the passage leading to the generating-conduits, an extension K connected to said valve, a reservoir and a pivoted supply-pipe for the same, an arm W on said supply-pipe, adapted to come in contact with the extension K of the valve to automatically operate the same, and a handle connected to said valve for operating the same manually, substantially as described.

404,439.



404,440. PROCESS OF PURIFYING TANNIC EXTRACTS.

LUDWIG SAARBACH, New York, N.Y. Filed Dec. 12, 1888. Serial No. 293,361. (No specimens.)

Claim.—The process herein described of purifying watery tannic juices for making extracts or tannic acid, said mode consisting in first mixing the extracts with acetate of lead without the addition of any acid, separating the precipitate from the juice, and then subjecting the solution to the action of acids, preferably oxalic acid, in about the proportions herein described, thereby obtaining a further precipitate, substantially as described.

404,441. MOTIVE MECHANISM FOR RAILWAY-CARS.

HENRY F. SHAW, Boston, and GEORGE F. SHAW, Dedham, Mass. Filed Jan. 26, 1889. Serial No. 297,633. (No model.)



Claim.—1. The combination of two electric motors, an eccentric on each of the motor-shafts, a rod having bearings for said eccentrics, two car-axles, and two external and two internal gears, two of said gears being fixed to said rod, one of said gears being fixed on each car-axle, and each internal gear being in engagement with the corresponding external gear, substantially as and for the purpose set forth.

2. The combination of two electric motors, an eccentric on each of the motor-shafts, a rod having bearings for said eccentrics, an external gear and an internal gear in engagement with each other, one of said gears being fixed to said rod and the other gear fixed on a car-axle to revolve therewith, substantially as and for the purpose set forth.

3. The combination of two electric motors, two eccentrics on each of the motor-shafts, two rods, each of which is mounted on an eccentric on each of said shafts, two gears fixed to each of said rods, two axles or shafts, each of which has fixed thereon two gears, each gear fixed to a rod being in engagement with a gear on an axle or shaft, one of any two gears in engagement with each other being an external and the other an internal gear, substantially as specified.

404,442. HYDROCARBON-BURNER.

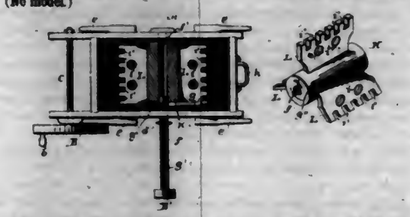
ANTHONY L. SHORE, Minneapolis, Minn. Filed Feb. 19, 1888. Serial No. 300,470. (No model.)



Claim.—The combination, with the retort-pipe 9, of the burner-pipe 12, extending beneath said retort-pipe, and provided upon its upper surface with the jets 13 and with the jets 15, of the rings or sleeves 16, arranged upon said pipe 12 and adapted to close said jets 15, and provided with the clamping-screws 19, substantially as described.

404,443. CHURN.

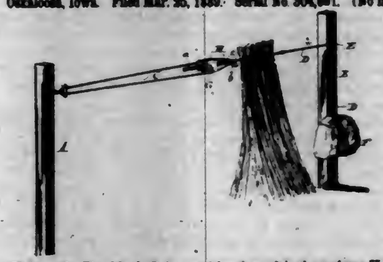
HEINRICH SOMMERFELD, Canton, assignor to A. Ehrlich, Lehigh, Kans. Filed Sept. 19, 1888. Serial No. 285,798. (No model.)



Claim.—The improved dasher consisting of the hub K, having the longitudinal perforation *f*″ and transverse perforation *g*″, and the radially-extending paddles L, said paddles having a series of notches *i* formed in their extreme terminal ends and a series of perforations *i* located between the notches and the hub, in combination with the perforated shaft *f* and pin *g*, substantially as shown and described.

404,444. WIRE-WEAVING APPARATUS.

HENRY STODDON, Jr. Oskaloosa, Iowa. Filed Mar. 26, 1889. Serial No. 304,691. (No model.)



Claim.—1. The block G, in combination with the twister H, movable through the block.

2. The block G, having its edges grooved to receive the wires to be twisted, in combination with the twister H, movable through the block.

3. In combination with block G, having an orifice *e*, twister H, provided with stem *a*, cross-bar *b*, and with grooves *d d* in the cross-bar.

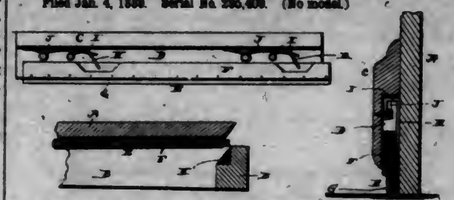
4. In combination with block G, having an orifice *e* and grooved on its edges, as shown, twister H, provided with an angular stem *a* to fit the orifice *e*, all substantially as shown, whereby the twister is permitted to move lengthwise through the block, but not to turn independently thereof.

5. The twister H, provided with a stem *a* and handles *c c*, in combination with a block provided with an orifice *e*, to receive the stem.

6. An apparatus for uniting wires to palings, &c., comprising a post A, having a swivel, a post B, provided with a tension device, a block G, adapted to be inserted between the separated strands, and a T-shaped twister movable lengthwise through the block.

404,445. WEATHER-STRIP.

ANDREW M. STODARD, Eureka, Kans. Filed Jan. 4, 1889. Serial No. 295,409. (No model.)

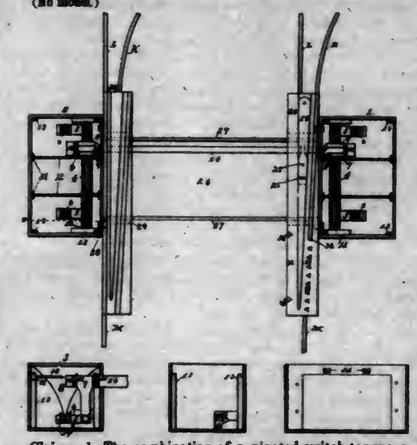


Claim.—1. The weather-strip comprising the cap-plate, the strip E, arranged between said cap-plate and the door, the hangers having their opposite ends pivoted, respectively, to the cap-plate and the strip E, and the springs secured to the cap-plate and having their free ends bearing on the hangers, as set forth.

2. The weather-strip comprising the cap-plate having a recess in its rear side, the strip arranged in said recess, hangers supporting said strip within the recess and provided with transverse shoulders, and the springs secured within the recess and having their ends bearing against the shoulders of the hangers, as set forth.

404,446. MECHANISM FOR OPERATING SWITCH-POINTS.

JAMES M. SWEM, Denver, Colo. Filed Oct. 5, 1888. Serial No. 287,301. (No model.)



Claim.—1. The combination of a pivoted switch-tongue, a connecting-bar, a lever connecting such bar with the switch-tongue, and two sets of mechanisms, one at either end of the connecting-bar and each consisting of a rocking lever having an upwardly-projecting arm connected to the connecting-bar, arms projecting outwardly at an angle to such upward arm and each carrying a cup-bearing, and a platform having legs taking in such cup-bearings, substantially as set forth.

2. The combination of the boxes 1 2, each provided with a top 3, having inwardly-projecting arms 8, shaft 4, with arms 7 and 5, the bar 14, connected to the arm 7 of each box, the convex-faced washers 17, the lever 22, and switch-point 19, substantially as set forth.

3. The combination, with the pivoted switch-point, the lever 22, and the bar 14, of the following instrumentalities located at either end of the bar and in suitable boxes thereat, to wit: the rock-shaft 4, with arms 7 and 5, the cup-bearings 6, detachably secured upon the arms 5, and the table or platform 3, having arms 8 taking at their ends in the cup-bearings, substantially as set forth.

4. The combination of a box having lugs 31 secured or formed upon its interior, cross-brace rods 32, seated therein, a vertically-moving platform-top seated in the upper part of the box, and a switch mechanism actuated thereby and located within the box, substantially as set forth.

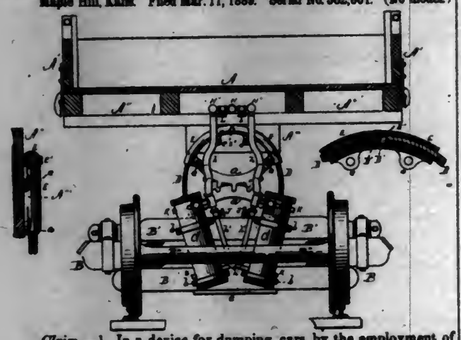
5. The combination of the boxes 1 2, each provided with a top having inwardly-projecting arms 8, shaft 4, with arms 5 and 7, the bar 14, connected to the arm 7 of each box, the lever 22, switch-point 19, pivoted on the frog-plate, having stops or lugs 36 on its inner edge, and the single rail on its outer edge formed with openings or apertures 33 through its body, substantially as set forth.

6. The combination, with the boxes 1 2, of the transverse box 26, having sides 27, formed with the flanges 28 29, substantially as set forth.

7. The combination of the shaft 4, having arms 5 and 7, the bear-

lugs 6 on the arms 5, the top 3, having arms 8 taking in such bearings, and the bearing-boxes for the shaft 4, each bearing-box having one half 11 formed with the inclosing-box and one half 12 secured thereto, and the inclosing-box, substantially as set forth.

404,447. CAR-DUMPING APPARATUS. ALBERT P. TRAYER, Maple Hill, Kans. Filed Mar. 11, 1889. Serial No. 302,861. (No model.)



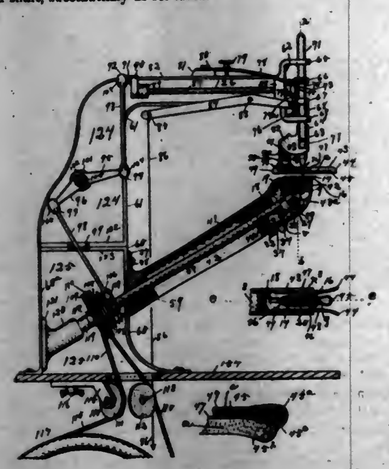
Claim.—1. In a device for dumping cars by the employment of steam, compressed air, or analogous power, the combination, with the car-body, truck, cylinders, and pistons, of the flexible piston-rods D, constructed and arranged substantially as above set forth.

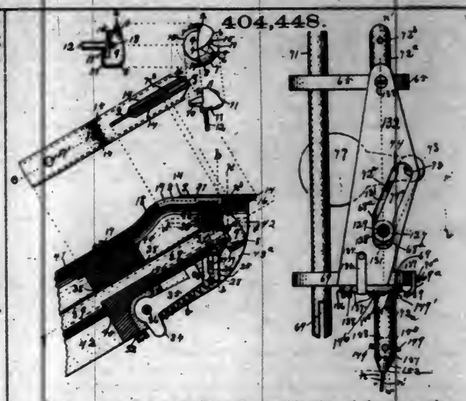
2. In a device for dumping cars by the employment of steam, compressed air, or analogous power, the combination of the truck, the pair of cylinders C C, provided with pistons C, the flexible piston-rods D, having their outer ends connected together, as shown, and the car-body and curved tubular frame E, arranged and constructed to operate substantially as described.

3. The combination of the car-truck, the cylinders C, supported thereby, pistons C, flexible piston-rods D, provided with the looped ends D', the tubular frame E, supported by the car, bolt E', pipes or tubes A' H' H, flexible tubes A, cocks and cut-offs J L, and car and rockers, substantially as and for the purpose described.

404,448. SHOE-SEWING MACHINE. JOSEPH L. TERRARE, Cincinnati, Ohio, assignor of two-thirds to Joseph S. Blacker and Gustave Gerstle, both of same place. Filed May 9, 1887. Renewed Apr. 19, 1889. Serial No. 307,886. (No model.)

Claim.—1. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a stitch-forming mechanism operating-shaft extending at an angle to the line of needle motion and backward under the bracket supporting the needle-bar and inclined downward from the stitch-forming point, a reciprocating needle-bar supported and guided by suitable framing, the eccentric 106 107 on the inclined driving-shaft, rod 98, bell-crank 95 96, rod 93, and rock-shaft 87, housed approximately in line with the needle-bar bracket 126 and suitably connected with and operating the needle-bar and needle in conjunction with the stitch mechanism operated by the said inclined shaft, substantially as set forth.





404,448.

2. In a shoe-sewing machine, the combination of the supporting and guiding projecting frame part, horn or post described, upon and over which the work is guided, a presser-foot having a forwardly-extending cord-guiding device with a recess or space in which the button-hole cord is guided, and suitable stitch-forming mechanism having a needle working through the top of the said projecting frame part, substantially as set forth.

3. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a presser-foot having forwardly-extending rigid cord-guides between which the button-hole cord is guided, and suitable stitch-forming mechanism having a needle working through the top of the said projecting frame part, the said guide as being connected in front and having an end gap, as 45^a, in front on the under side, substantially as set forth.

4. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a presser-foot having a forwardly-extending cord-guiding device provided with a recess or space between its sides, a gap at its extremity, as 45^a, for guiding the cord, and adjacent downwardly and outwardly flared or projecting parts, as 45^b, and suitable stitch-forming mechanism having a needle working through the top of the said projecting frame part, substantially as set forth.

5. In a shoe-sewing machine having a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, and in combination with the needle-plate and stitch-forming mechanism thereof, the presser-foot having the upright central portion 56, and the button-hole-fly guides 43, attached to the upright portion of the presser-foot, one on either side thereof, and having their guiding-surfaces extending near to and parallel with the presser-foot, whereby spaces *i i* are provided between the fly-guides and the upright portion of the presser-foot for the passage of the button-hole flies, substantially as set forth.

6. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a presser-foot having a recessed button-hole-cord guide, detachable button-hole-fly guides having guiding-surfaces extending in proximity to the presser-foot and being attached to the presser-foot part above the space provided for the passage of the button-hole fly, and suitable stitch-forming mechanism having a needle working through the top of the said projecting frame part, substantially as set forth.

7. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a stitch-forming mechanism driving-shaft housed within the said projecting frame part, a cam on the said shaft for lifting the feed device, another cam on the shaft for giving the said device a feed-stroke, a feed device having a slot or opening penetrated by the said shaft and guided by the parts around the said slot or opening and upon the shaft, a spring for replacing the feed device and a presser-foot opposing and acting with the feed device, substantially as set forth.

8. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a stitch-forming mechanism driving-shaft housed within the said projecting frame part, a cam on the said shaft for lifting the feed device, another cam on the shaft for giving the said device a feed-stroke, a feed device having a slot or opening penetrated by the said shaft and guided by its slotted part upon the latter, a spring for replacing the feed device, pivot-bearings for the body of the feed device, providing means for both the upward and backward movement induced by the said cams and spring, and a presser-foot opposing and acting with the feed device, substantially as set forth.

9. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a stitch-forming mechanism driving-shaft housed within the said projecting frame part, a cam on the said shaft for lifting the feed device, another cam on the shaft for giving the said device a feed-stroke, a feed device having a slot or opening penetrated by the said shaft and guided by its slotted part upon the latter, pivot-bearings for the body of the feed device, and a spring connected to the feed device and some stationary part, as the said framing, and acting to turn the feed device about its pivot-bearings, and a presser-foot opposing and acting with the feed device, substantially as set forth.

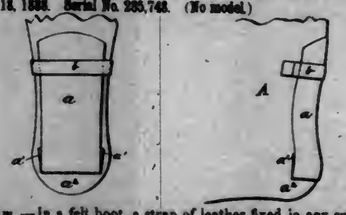
10. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a stitch-forming mechanism driving-shaft housed within the said projecting frame part, a cam on the said shaft for lifting the feed device, another cam on the shaft for giving the said device a feed-stroke, a feed device having a slot or opening penetrated by the said shaft and guided by its slotted part upon the latter, pivot-bearings for the body of the feed device, a spring connected to the feed device and some stationary part, as the said framing, and acting to turn the feed device about its pivot-bearings, a feed-regulator arranged adjustable between its support and the feed-device pivot, and a presser-foot opposing and acting with the feed device, substantially as set forth.

11. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a device, as a presser-foot, for holding the work, a reciprocating needle-bar having a needle-carrying extension pivoted thereto within its vertical axis, and a device operated by the needle-bar and arranged to strike or engage parts of the needle-carrying extension, whereby the extension is vibrated from side to side and caused to enter the fabric at an angle to the said needle-bar, substantially as set forth.

12. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, a device, as a presser-foot, for holding the work, a reciprocating needle-bar having a needle-carrying extension pivoted thereto within its vertical axis, which extension has projecting parts, as pins, and a device operated by the needle-bar and arranged to engage the said projecting parts alternately, whereby the extension is vibrated from side to side and caused to enter the fabric at an angle to the said needle-bar, substantially as set forth.

13. In a shoe-sewing machine, the combination of a supporting and guiding projecting frame part, as a projecting horn or post, upon and over which the work is guided, the sewing-needle bar having a needle-carrying extension pivoted at its end and provided with projecting side parts, the ratchet-wheel 146, through which the needle-bar works, and having a rim 154, provided with raised and depressed portions, as 140 and 145, and suitably retained in place, as described, a pawl operating said wheel and moved by a swinging arm operated by suitable connection with the needle-driving mechanism, the ratchet mechanism being arranged to alternately throw the needle from one side to the other, and the said swing-arm, substantially as set forth.

404,449. FELT BOOT. JOSEPH VAIL, Garden Grove, Iowa. Filed Sept. 18, 1888. Serial No. 285,743. (No model.)



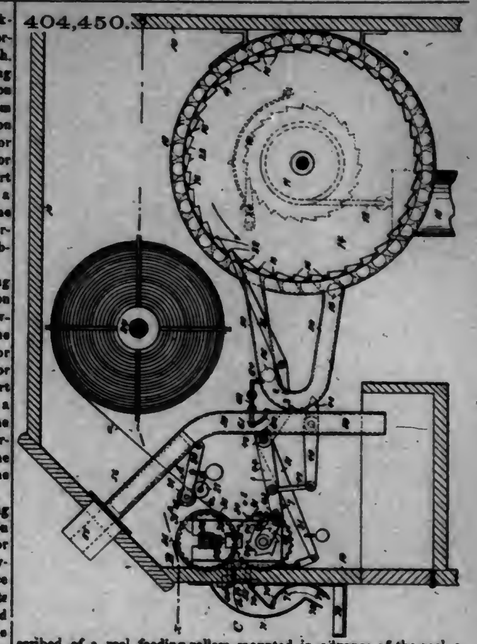
Claim.—In a felt boot, a strap of leather fixed in any suitable manner to the heel of said boot, and at its upper end held in position by a loop formed by a piece of elastic attached to said boot, facilitating the taking on or off of the aforesaid felt boot.

404,450. AUTOMATIC TICKET-SELLING MACHINE. JOHN W. VAUGHN, Jersey City, N. J. Filed July 7, 1888. Serial No. 279,220. (No model.)

Claim.—1. A delivery-chute for automatic selling-machines, consisting, essentially, of a casing and a pivoted trap mounted therein and formed with a forwardly-extending projection 76, as and for the purpose stated.

2. In an automatic selling-machine, the combination, with a weightway and a weight-releasing mechanism, substantially as described, of a reel, feeding-rollers mounted in advance of the reel, a tripping-lever provided with a toe which enters the weightway, and connections, substantially as described, between said lever and one of the feeding-rollers, as and for the purpose stated.

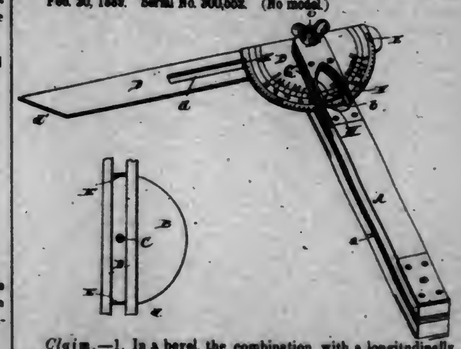
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3. In an automatic selling-machine, the combination, with a weightway and a weight-releasing mechanism, substantially as described, of a reel, feeding-rollers mounted in connection therewith, web-severing shear-blades, tripping-levers provided with toes which enter the weightway, and connections between one of the levers and one of the feeding-rollers and between the other lever and one of the shear-blades, substantially as described.

4. The combination, with a motor, of a coin-chute, a locking-lever for said motor, which lever can be operated by a coin passing through the coin-chute, a reel, a pair of feed-rollers operated by the motor, and a ticket-severing device, substantially as set forth, and also operated by the motor, substantially as herein shown and described.

404,451. BEVEL. GEORGE H. WAGGONER, Leslie, Mich. Filed Feb. 20, 1889. Serial No. 300,552. (No model.)

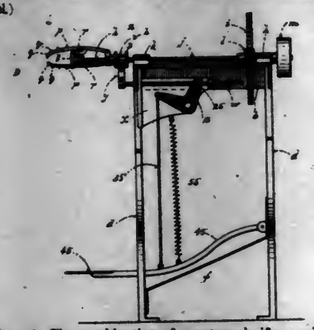


Claim.—1. In a bevel, the combination, with a longitudinally slotted stock, of the sector mounted in one end of the slot and the slotted blade sliding on up-struck projections on the sector and adapted to fold within the slot of the stock, substantially as specified.

2. In a bevel, the combination, with a longitudinally-slotted stock provided with a beveled opening and the indices arranged in the said opening, of the sector B, mounted on an adjusting-bolt near one end of the slot of the stock and provided with graduations suitably inscribed, which travel under the said indices, and the slotted blade sliding on projections on the sector, substantially as specified.

3. In a bevel, the combination, with the longitudinally-slotted stock provided with a beveled opening and the indices G and H, arranged in said opening, of the sector B, pivoted in the free end of said slot and provided with two series of graduations, one marking the degrees of a circle and the other marking roof and other timber angles, and the blade D, carried by said sector, substantially as specified.

404,452. MACHINE FOR PARING SQUASHES. FRED L. WEBSTER, Danvers, Mass. Filed Nov. 3, 1888. Serial No. 289,926. (No model.)



Claim.—1. The combination of a rotary knife provided with a pulley and a supporting-rod, an adjustable bracket adapted to be secured to the wall of a room, a tube swiveled in said bracket and adapted to receive said supporting-rod, a main driving-shaft bearing a pulley, and a belt connecting the pulleys on said knife and shaft, substantially as described.

2. The combination of the knife H, provided with the guard 54 and pulley 44, the supporting-rods 74 and 84, the tube 33, swiveled to a stationary object and adapted to receive the rod 84, and adjunctive mechanism for actuating said knife, substantially as set forth.

3. The combination of a body or frame, a rotating shaft journaled in said frame, an expansible holder secured to said shaft and provided with retaining-points, a sliding rod in said frame bearing an arm in engagement with said holder, a bell-crank lever for actuating said rod, a treadle pivoted in said frame and connected by a rod with said lever, and a spring connecting said treadle and frame, whereby said holder may be opened as the treadle is depressed and closed as said treadle is released, substantially as described.

4. The combination of the body A, provided with the shaft *h*, the holder D, secured to said shaft and provided with the sliding sleeve *v*, having flanges *z*, the sliding rod *w*, provided with the forked arm *y*, engaging said sleeve between said flanges, the bell-crank lever 15, for actuating said rod, the treadle 45, connected with said lever by the rod 35, and the spring 55, connecting said treadle and body, substantially as and for the purpose set forth.

5. In a machine of the character described, the combination of a body provided with a rotating shaft, an expansible holder disposed on said shaft, treadle mechanism provided with a spring, whereby said holder may be opened as the treadle is depressed and closed as it is released, a rotary knife provided with a pulley and a supporting-rod, a tube swiveled to a stationary object in which said rod is adjustably secured, and adjunctive mechanism for conjointly actuating said shaft and knife, all being arranged to operate substantially as specified.

6. The rotary knife H, comprising the frame 24, blades 14, and guards 34, secured to a shaft journaled in said frame, the guard 54, and handle 64, in combination with the supporting-rods 74 and 84, the tube 33, adapted to receive the rod 84 and swiveled in the block 23, secured to the adjustable bracket 13, and adjunctive mechanism for actuating said knife, substantially as set forth.

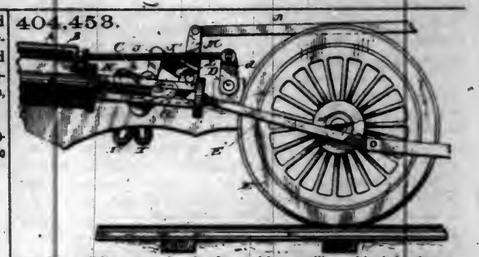
7. In a device of the character described, the combination of the body A, provided with the shafts *h j*, the expansible holder D, secured to the shaft *h* and provided with the sleeve *v*, fitted to slide on said shaft, treadle mechanism in said body for moving said sleeve, whereby the holder may be opened and closed, the rotary knife H, adjustably secured in the swiveled tube 33, and a main driving-shaft belted to said knife and the shaft *j*, whereby said holder and knife may be rotated conjointly, substantially as and for the purpose specified.

404,453. VALVE-GEAR. MICHAEL I. WELSH, Valdosta, assignor of one-half to John Joseph McDonough, Savannah, Ga. Filed Mar. 16, 1889. Serial No. 303,532. (No model.)

Claim.—1. In a valve-gear, the combination, with a projection upon the cross-heads, of a rocking oscillator-block having a groove in which the projection works, and a reverse-link connected at its center to the rock-shaft of the block, as set forth.

2. In a valve-gear, the combination, with a pin or projection carried by a sliding cross-head, of a rocking oscillator-block having a groove of approximately the shape of a figure 8, in which the pin or projection moves, a reverse-link, and a link-pin adjustable on the slot in said link, as set forth.

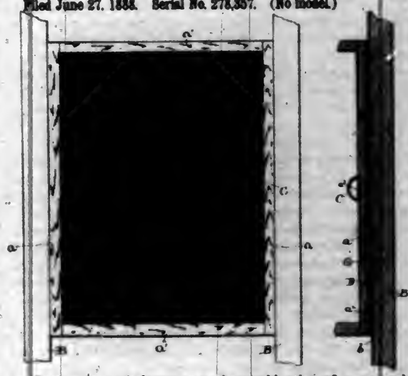
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3. In a valve-gear, the combination, with a pin or projection upon a sliding cross-head, said pin being vertically adjustable, of a rocking oscillator-block having a groove, as described, in which the pin or projection works, and a link operated by the block, as set forth.

4. In a valve-gear, the combination of the cross-head, a cheek F carried thereby, a vertical slot in said cheek, a pin *f* carried therein, and a set-screw F^a, for adjusting the height of the pin, with a rocking oscillator-block having a groove in which the pin works, and a link carried and operated by the block, as set forth.

404,454. WINDOW-SCREEN. JOHN S. WHITE, Portland, Me. Filed June 27, 1888. Serial No. 278,357. (No model.)



Claim.—In a window-screen, the combination of a grooved side bar, a tongue fitting said groove, a rod or wire having its ends bent at right angles to pass through said side bar and to enter said strip, coiled spring surrounding said ends for forcing said strip outward, said rod having formed in its central portion a loop or handle, whereby said strip may be retracted, substantially as shown.

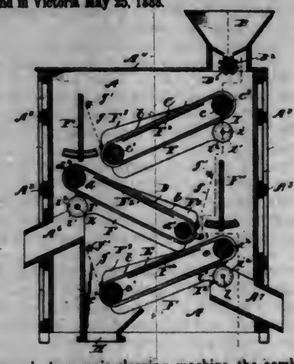
404,455. METHOD OF LASTING BOOTS AND SHOES. DON F. WILLIS, Lynn, Mass., assignor of one-half to James M. Griffin and John S. Griffin, both of same place. Filed Feb. 8, 1889. Serial No. 298,901. (No model.)



Claim.—1. The method of lasting boots and shoes, which consists in securing the heel portion of the inner sole to the last, placing the last within the upper, securing the fore part of the upper to the instep of the last, turning the edge of the heel portion of the upper over upon and securing it to the inner sole, placing the outer sole upon the turned-over heel portion of the upper, the inner sole, and the last, and securing it thereto, leaving the edge of the fore part of the upper free or unconfined by said sole, and then drawing the unconfined edge of the upper down over the edge of the outer sole and securing it to the outer edge of said sole.

2. The method of lasting boots and shoes which consists in partially straining the upper over the last in the act of assembling the parts preparatory to stitching the sole to the upper, securing the edge of the upper to the edge of the outer sole, and then completing the straining of the upper by the act of stitching the upper to the sole.

404,456. GRAIN-CLEANING MACHINE. JAMES F. WILSON, Orange, assignor to Thomas William Carr, Marrickville, New South Wales. Filed Oct. 13, 1888. Serial No. 288,267. (No model.) Patented in New South Wales Oct. 26, 1886; in South Australia Mar. 28, 1888, and in Victoria May 25, 1888.



Claim.—1. In a grain-cleaning machine, the combination of a plurality of inclined overlapping and upwardly-traveling endless aprons composed of a long-napped fabric and arranged to successively deliver the material from one to the other at a point proximate to the greatest elevation of the aprons, a feeding device adapted to feed the material to the upper apron of the series at the point of greatest elevation thereof, a discharge-chute adapted to deliver the material at the point of least elevation of the last or lowermost of the series of aprons, a beater for each apron arranged below the same in proximity to the point of greatest elevation of the aprons, adjustable diverting-boards F, arranged and operating to arrest rebounding sound grain as it passes down the aprons and to divert the impurities carried over the aprons and beaten therefrom into a separate delivery-chute, substantially as and for the purpose specified.

2. In a grain-cleaning machine, the combination, substantially as herein described, of a plurality of overlapping frames inclined alternately in reverse directions, said frames having side flanges increasing in height from a point near the greatest elevation of the frames to the point of least elevation, a roller-shaft mounted at each end of said frames, the upper shaft constituting the pivot for the frame, an adjustable hanger for the lower roller-shaft, an endless apron composed of a long-napped textile fabric supported from rollers on said shafts, mechanism, such as described, to cause said aprons to move in an upward direction, a whip for each apron arranged below the same in proximity to the point of its greatest elevation, and adjustable diverting-boards F, arranged and operating relatively to the aprons, substantially as and for the purpose specified.

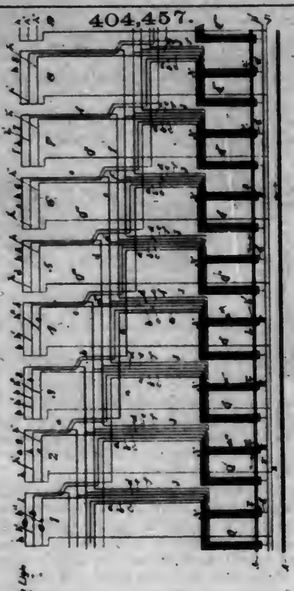
404,457. RAILWAY-SIGNAL. A. JACKSON WHEELER, Philadelphia, Pa. Filed Jan. 24, 1888. Serial No. 261,709. (No model.)

Claim.—1. In a system of electric signals for railroads, the combination, with rail A, of rod C, set parallel with and closely to the inner side of the rail, positive and negative contact-springs D D', connected with wires leading, respectively, to positive and negative mains B B', the wires from the positive main, with signals connected therewith in the line of their traverse, and negative connecting-wires *g*, so arranged that the pressure of the wheel-flanges of the train will depress rod C and effect electrical circuit, substantially as described.

2. In a system of electric signals for railroads, the combination, with rail A, of rod C, set parallel with and closely to the side of the rail, positive and negative contact-springs D D', connected with wires leading, respectively, to positive and negative mains B B', the wires from the positive main, with signals connected therewith in the line of their traverse, and negative connecting-wires *g*, so arranged that the pressure of the wheels of the train will depress rod C and effect electrical circuit, substantially as described.

3. In a system of electric signals for railroads, the combination, with the rail A, of spring-rod C, set parallel with and closely to the side of the rail, positive and negative contact-springs D D', connected with wires leading, respectively, to positive and negative mains B B', or wires from the positive main traversing back along the road, with a signal or signals in its or their traverse, one or more of said wires traversing back along the line of road and one or more of them traversing forward along the line, with signals set upon said wires in the lines of their traverse, and negative wires from contact-springs D',

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all operating, substantially as described, to throw signals simultaneously ahead of and behind the train.

4. In a system of electric signals, the combination, with rail A, of rod C, set parallel with and closely to the side of the rail, and positive and negative contact-springs D D', set at intervals along the line of the rail and connected with wires leading, respectively, to the positive and negative mains B B', the wires from the positive main being provided with signals in the line of their traverse and arranged in blocks, substantially as shown, whereby, as the train progresses and circuit is broken with one block behind, circuit is made or closed with an additional block farther ahead, continuous successive blocks of signals being thus operated as the rear signals cease to operate, substantially as described.

5. In a system of electric signals for railroads, the combination, with rail A, of rod C, set parallel with and closely to the rail, plate C'', with insulator D'', springs C', to sustain rod C, contact-spring D D', connected with wires leading, respectively, to positive and negative mains B B', signal-lamps set on the line of and operated by the positive wires when circuit is closed by the depression of rod C, and negative wire *g*, rod C being adapted to be depressed by the wheels of the train, substantially as described.

6. In a system of electric signals for railroads, the combination, with rail A, of rod C, set parallel with the rail, positive and negative contact-springs D D', connected with wires leading, respectively, to positive and negative mains B B', the wires from one of the mains having signals connected therewith in the line of their traverse, negative connecting-wires *g*, and a wheel or roller attached to one or more of the vehicles of the train to depress said rod and close circuit, substantially as described

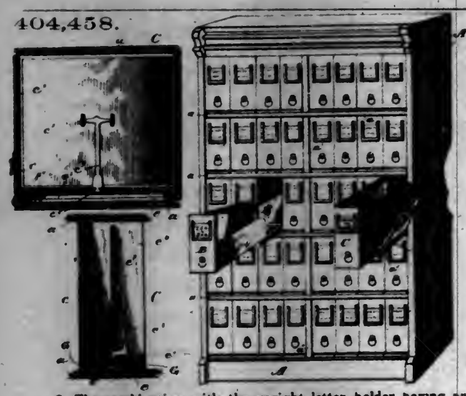
7. In a system of electric signals for railroads, the combination, with rail A, of rod C, set parallel with the rail, positive and negative contact-springs D D', connected with wires leading, respectively, to positive and negative mains B B', the wires from the positive main having signals connected therewith in the line of their traverse, negative connecting-wires *g*, and a depressor attached to the train and adapted to bear upon rod C to close circuit, substantially as described

404,458. DOCUMENT OR LETTER FILE. EDMUND W. WOODRUFF, Washington, D. C. Filed Mar. 11, 1889. Serial No. 302,787. (No model.)

Claim.—1. The combination, with the upright letter-holder having an open side, of the lateral file-board or follower operating in planes parallel with the front of the case, substantially as set forth.

2. The combination, with the upright letter-holder having the open side, of the lateral file-board or follower operating in planes parallel with the front of the case, and a card or leaf index arranged within said holder with its leaves parallel with the sides of the holder and its marked or indicating edge situated at the top of said holder, substantially as set forth.

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3. The combination, with the upright letter-holder having an open side, of the lateral file-board or follower operating in planes parallel with the front of the case, and a support engaging said follower and adapted to support the same in an inclined position at the side of said holder, substantially as set forth.

4. The combination, with the upright letter-holder having an open side, of the lateral file-board or follower operating in planes parallel with the front of the case, a support engaging said follower and adapted to support the same in an inclined position at the side of said holder, and a slide situated beneath the holder and adapt to sustain the same when drawn out, substantially as set forth.

5. The combination, with the cabinet or case A, of the document and letter holders of uniform appearance, said document-holder being provided with a file-board or follower operating in planes at right angles to the front of the holder, and the upright letter-holder having an open side and a lateral follower operating in planes parallel with the front of the holder, substantially as set forth.

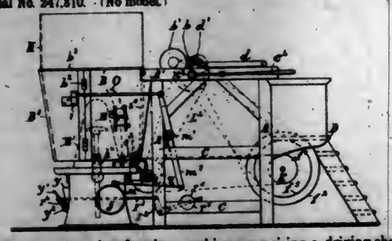
6. As a means for filing papers, the combination, with the cabinet or case A, of the document-holder provided with a file-board or follower operating in planes at right angles to the front of the holder, and the upright letter-holder having an open side and provided with a lateral follower operating in planes parallel with the front of the holder, said holders being interchangeable, substantially as set forth.

7. The combination, with the case or cabinet, of a slide engaging the same and provided with a longitudinal slot or space, and having a lateral recess c^2 at the rear end of the slot or space, whereby it is adapted to receive and sustain, when drawn out, either the document or letter holder, substantially as set forth.

8. The combination, with the case or cabinet having a shelf a and the holders, of the slides E, arranged contiguously to and adapted to keep each other in place on said shelf, and retaining devices which hold said slides to the shelf, but permit their reciprocation, substantially as set forth.

9. The combination, with the shelf a, of the slide E, having a longitudinal space with a lateral recess c^2, retaining devices which hold said slide to the shelf, but permit its reciprocation, and the holder provided with a stop which fits said space, and a lateral arm g, adapted to engage the under side of the slide, substantially as set forth.

404,459. HAT-FORMING MACHINE. GEORGE YULE, Newark, N. J., assignor to Carrie G. Yule, same place. Filed Aug. 25, 1887. Serial No. 247,810. (No model.)



Claim.—1. A hat-forming machine comprising a driving-shaft and a casing inclosing a perforated hat-forming cone, doors upon the said casing, and a cam operated by the driving-shaft and connected to the doors, as and for the purpose set forth.

2. A hat-forming machine comprising a driving-shaft and a casing inclosing a perforated hat-forming cone, a spray-discharger located within the casing adjacent to the cone, a water pipe and cock to supply water to the spray-discharger, a cam operated by the driving-shaft and connected with the cock to open the cock automatically, as and for the purpose set forth.

3. A fur-forming machine having a casing inclosing the perforated cone, a spray-discharger located within the casing adjacent to the cone, a water pipe and cock to supply water to the spray-discharger, an air-inlet in the vacuum-chamber beneath the turn-table, a driving-shaft, and a cam operated by the driving-shaft and connected with the air-inlet, as and for the purpose set forth.

4. A fur-forming machine having a casing inclosing the perforated cone, a spray-discharger located within the casing adjacent to the cone, a water pipe and cock to supply water to the spray-discharger, an air-inlet in the vacuum-chamber beneath the turn-table, an air-check vertically movable within the cone, a driving-shaft, and a cam operated by the driving-shaft and connected with the air-check, as and for the purpose set forth.

5. A fur-forming machine comprising a turn-table, a casing inclosing the same, a feeding-apron, pickers, brush for supplying fur to the cone, and a clutching mechanism connecting the feeding-apron with the driving-shaft and operated to disconnect the apron at intervals corresponding with the feeding of one bat, as and for the purpose set forth.

6. A fur-forming machine comprising the driving shaft, a casing inclosing the perforated cone, a spray-discharger located within the casing adjacent to the cone, a water pipe and cock to supply water to the spray-discharger, and a cam operated by the driving-shaft and connections to the cock and connections to the doors of the casing, the whole arranged and operated substantially as set forth.

7. A fur-forming machine comprising a driving-shaft, a casing inclosing the perforated cone, a spray-discharger located within the casing and adjacent to the cone, a water pipe and cock to supply water to the spray-discharger, an air-inlet in the vacuum-chamber beneath the turn-table, and a cam operated by the driving-shaft and connections to the water-cock of the spray-discharger and to the doors of the casing, the whole arranged and operated substantially as set forth.

8. A fur-forming machine comprising a driving-shaft, a casing inclosing the perforated cone, a spray-discharger located within the casing adjacent to the cone, a water pipe and cock to supply water to the spray-discharger, an air-inlet in the vacuum-chamber beneath the turn-table, an air-check vertically movable within the cone, and a cam operated by the driving-shaft and connections to the water-cock of the spray-discharger, to the air-inlet, to the air-check, and to the doors of the casing, the whole arranged and operated substantially as set forth.

9. A fur-forming machine comprising a driving-shaft, a casing inclosing the perforated cone, a spray-discharger located within the casing adjacent to the cone, a water pipe and cock to supply water to the spray-discharger, an air-inlet in the vacuum-chamber beneath the turn-table, an air-check vertically movable within the cone, a clutching mechanism connecting the feeding-apron with the driving-shaft, and a cam operated by the driving-shaft and connections to the water-cock of the spray-discharger, to the air-inlet, to the air-check, to the said clutching mechanism, and to the doors of the casing, the whole arranged and operated substantially as set forth.

10. A fur-forming machine having a turn-table and a casing inclosing the same, hinged doors in the casing, and a removable annular shield applied to the top of the casing above the doors, as and for the purpose set forth.

11. A fur-forming machine having a turn-table and a casing inclosing the same, hinged doors in the casing, a cam operated by the driving-shaft of the machine, a lever actuated by the cam for moving the doors, and a spring-connection between the lever and the doors for closing the doors elastically, as and for the purpose set forth.

12. A fur-forming machine provided with a rotary turn-table, a casing, and a spray-discharger within the casing, and having sundry movable attachments, (as the hinged doors upon the casing, the air-check, and a pipe and cock for supplying water to the spray-discharger,) and a driving-shaft to actuate the fur-forming cone, cams operated by the driving-shaft, with connections to automatically actuate such attachments, and a clutch for disconnecting the cams from the driving-shaft, as and for the purpose set forth.

13. A fur-forming machine having a turn-table, a casing inclosing the same, and a vertical draft-aperture in the casing provided with two sliding plates adapted to form an opening variable in height from the bottom of the casing, as and for the purpose set forth.

14. A fur-forming machine having a turn-table, a vacuum-chamber sustaining the same and provided with an air-inlet in the side above the bottom of the chamber, and a suction-blower at the side of the vacuum-chamber and connected with such inlet, as and for the purpose set forth.

15. A fur-forming machine having a turn-table, a vacuum-chamber sustaining the same and provided with an air-inlet in the side above the bottom and a water-pan in the bottom of the chamber, a spray-discharger adjacent to the turn-table, and a suction-blower at the side of the vacuum-chamber, as and for the purpose set forth.

16. In a fur-forming machine, the combination, with the turn-table and a vacuum-chamber sustaining the same, of a spray-discharger sustained adjacent to the turn-table and a water-trough beneath the margin of the turn-table, as and for the purpose set forth.

17. In a fur-forming machine, the combination, with the turn-table and a vacuum-chamber sustaining the same, of a casing inclosing the turn-table, a spray-discharger within the casing, and a water-trough beneath the margin of the turn-table, as and for the purpose set forth.

18. A fur-forming machine comprising a turn-table and a vacuum-chamber sustaining the same, a spray-discharger sustained adjacent to the turn-table, a water pipe and cock to supply water to the spray-discharger, and a cam operated by the driving-shaft of the machine and connections to the water-cock, as and for the purpose set forth.

19. In a fur-forming machine, the combination, with the turn-table, of a vacuum-chamber having a circular seat upon its top, a collar upon the turn-table fitted to such seat, an annular water-trough fitted to such top beneath the rim of the turn-table, and a casing inclosing the turn-table and sustained by the water-trough, as and for the purpose set forth.

20. In a fur-forming machine, the combination, with the turn-table, of a vacuum-chamber having a circular seat upon its top, a collar upon the turn-table fitted to such seat, an annular water-trough fitted to such top beneath the rim of the turn-table, and anti-friction wheels pivoted to the vacuum-chamber and fitted to the collar between the trough and the seat, as and for the purpose set forth.

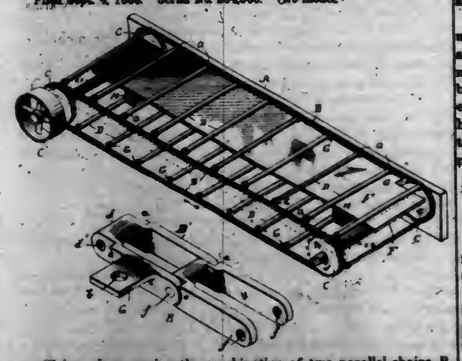
21. In a fur-forming machine, the combination, with the turn-table, of a vacuum-chamber having a circular seat upon its top, a collar upon the turn-table fitted to such seat, an annular gear formed upon the turn-table outside such collar between the water-trough and the seat, and anti-friction wheels and a rotating pinion fitted to the said collar and annular gear between the annular trough and the seat, as and for the purpose set forth.

22. A fur-forming machine comprising a turn-table, a vacuum-chamber of circular form, a water-pan fitted within the bottom and curved upwardly at its center and periphery, guides sustained upon the center of the pan, and a movable spindle fitted to the guides and provided at the top with the air-check p, as and for the purpose set forth.

23. A fur-forming machine comprising a turn-table, a vacuum-chamber of circular form, a water-pan fitted within the bottom and curved upwardly at its center and periphery, a circular seat upon the top of the vacuum-chamber, a collar upon the turn-table fitted to such seat, a bead projected from the seat below the collar, and a water-trough arranged beneath the periphery of the turn-table and having a circular support fitted to the seat and resting upon the bead, as and for the purpose set forth.

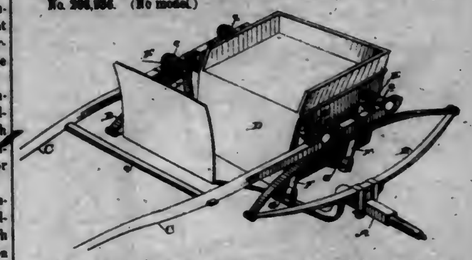
24. A fur-forming machine comprising a turn-table and a vacuum-chamber sustaining the same, a spray-discharger adjacent to the turn-table, a water pipe and cock to supply water to the spray-discharger, an air-inlet in the vacuum-chamber beneath the turn-table, and a cam operated by the driving-shaft of the machine and connected with the air-inlet, as and for the purpose set forth.

404,460. STRAW-CARRIER. GEORGE AKERSON, Weston, Mo. Filed Sept. 4, 1888. Serial No. 284,580. (No model.)



Claim.—In a carrier, the combination of two parallel chains B, made up of a series of connected U-shaped links B', the butt-end d of said links being cut away and provided with recesses e at its opposite sides for reception of the opposite end of the next link, said butt-end being provided with transverse perforation d', and the opposite end of the next link being provided with perforation f', registering with the perforation in the butt-end of the first-mentioned link, pins f, which are passed through the perforation in the butt of one link and perforation in the end of the next link, transverse lugs G, having perforations b and formed integral with and projecting at right angles from one side of a number of links upon the inner sides of both chains, transverse slats D, mounted upon lugs G, and bolts a, passed through perforations b in said lugs and corresponding perforations in said transverse slats, substantially as set forth.

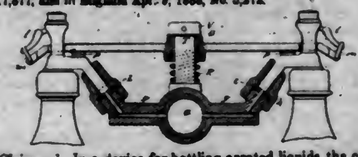
404,461. VEHICLE. HERMAN ARENBERG, Edgewood, Cal., assignor of one-half to George J. Clark, same place. Filed Jan. 19, 1889. Serial No. 296,956. (No model.)



Claim.—1. In a vehicle, and in combination with its running-gear and the body, the means for suspending the body from the running-gear, consisting of pivoted or rock bars on the body, pivoted or rock bolts on the running-gear, and intervening links or hangers pivoted to both bolts and bars, substantially as described.

2. In a vehicle, and in combination with its axle, springs, shafts, and body, the means for connecting the body, consisting of the pivot or rock bolts E on top of the shafts, the pivot or rock bars G under the body, and the intervening hangers or links F, pivoted at their upper ends to the rock-bolts and at their lower ends to the rock-bars, substantially as described.

404,462. MANUFACTURING AND BOTTLING AERATED WATER. OCTAVE AVERDE, Louvain, Belgium. Filed June 13, 1888. Serial No. 276,999. (No model.) Patented in Belgium Dec. 6, 1887, No. 79,822; in France Dec. 23, 1887, No. 187,787; in Germany Dec. 31, 1887, No. 47,677, and in England Apr. 9, 1888, No. 5,572.



Claim.—1. In a device for bottling aerated liquids, the combination of a main supply-pipe connected with a source of water, and also of gas, and provided with means by which one or both of them may be admitted to it, as desired, nozzles connected with said pipe by an invertible connection, and a yoke pivoted to the invertible connection, each end of which is adapted to engage the neck of a siphon-bottle, and hold it against a nozzle, substantially as described.

2. In a device for bottling aerated liquids, the combination of a main supply-pipe connected with a source of water, and also of gas, and provided with means by which one or both of them may be admitted to it, as desired, nozzles connected with said pipe by an invertible connection, and a yoke pivoted to the invertible connection, each end of which is adapted to engage the neck of a siphon-bottle and hold it against a nozzle, and provided with a ring or hook adapted to engage the valve-lever of the bottle and maintain it in an open position while the bottle is being filled, substantially as described.

404,463. FILAMENT FOR INCANDESCENT ELECTRIC LAMPS. TURNER D. BOTTOM, New York, N. Y. Filed Sept. 20, 1888. Serial No. 286,773. (No specimens.)

Claim.—1. The process of manufacturing filaments, consisting of forming a deposit of molybdenum compound in or upon a suitable filamentary body.

2. The process of manufacturing filaments, consisting in submitting a suitable filamentary body to a bath of a molybdenum compound, then changing such compound to molybdic sulphide, substantially as described.

3. The process of manufacturing filaments, consisting in incorporating a suitable filamentary body with oxide of molybdenum and then heating the same in the vapor of a sulphur compound, whereby the oxide is transformed into sulphide.

4. The process of manufacturing filaments, consisting in incorpo-

rating a suitable filamentary body with oxide of molybdenum and then electrically heating the same in the vapor of a sulphur compound, substantially as described.

5. The process of manufacturing filaments, consisting in incorporating a suitable filamentary body with oxide of molybdenum and then electrically heating the same in a rarefied vapor of a sulphur compound.

6. The process of manufacturing filaments, consisting in incorporating a suitable filamentary body with oxide of molybdenum and then electrically heating the same in the vapor of a compound of sulphur and hydrogen.

404,464. WAGON-BODY RAISER. WILLIAM S. BOURNE, Afton, Iowa. Filed Mar. 6, 1889. Serial No. 302,192. (No model.)



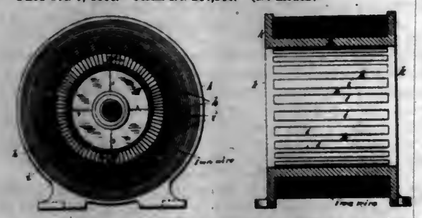
Claim.—1. The hoisting apparatus comprising the sills, the parallel guide-bars connecting the same, the cleats or stops E, arranged transversely under said guide-bars, the standards rising from the sills, the windlass-shaft journaled in bearings on the standards, said shaft having the crank and the ratchet-wheel, the pawl to engage the latter, the hoisting-frame pivoted between the standards, the ropes connecting one end of the hoisting-frame to the windlass, and the frames suspended from the inner side of the hoisting-frame and adapted to engage the wagon-bed, substantially as described.

2. The combination of the standards, the lifting-frame pivoted thereto and having the cross-bar I, the frames N, loosely hung on said cross-bar, and the rope arranged between the said frames, whereby they may be shifted along the said bar I, as set forth.

3. The combination of the standards, the lifting-frame pivoted thereto and having the cross-bar I, the rings F' on the said cross-bar, the frames N, loosely hung on the cross-bar I, the bails P, extending inward from said frames, and the rope secured to said bails and passing through the rings F', as set forth.

4. The combination of the standards, the lifting-frame pivoted thereto, having the cross-bar I, the rings M on said cross-bar, the bails L, hung from said rings, the frames N, depending from said bails, the bails P, extending inward from the frames N, and the rope between the bails P, as set forth.

404,465. ELECTRIC MOTOR. CHARLES S. BRADLEY, Yonkers, N.Y. Filed Oct. 5, 1888. Serial No. 287,319. (No model.)



Claim.—1. An electric motor comprising a field-magnet adapted to be energized by the eddying currents due to the rotation of the poles of the armature, in combination with an armature having magnetic poles rotating independently of its motion.

2. An electric motor comprising a field-magnet adapted to be energized by the eddying currents due to the rotation of the poles of the armature, in combination with an armature having magnetic poles automatically rotating independently of its motion.

3. An electric motor having an armature with insulated winding thereon and connections for the external circuit or circuits, in combination with a field-magnet disconnected from the armature and external circuits, and wherein the effective poles depend for existence on eddying currents circulating in its body.

4. In an electric motor, an armature constructed with no dependently-rotating magnetic poles, in combination with a mass composed partly of a magnetic metal and partly of a low-resistance metal placed in continuous inductive proximity to the armature and constituting its field-magnet.

5. In an electric motor, a rotary armature having independently-rotating magnetic poles, in combination with a surrounding compound annulus, partly iron or steel and partly of a low-resistance metal, the latter arranged in bars or sections parallel with the winding on the armature.

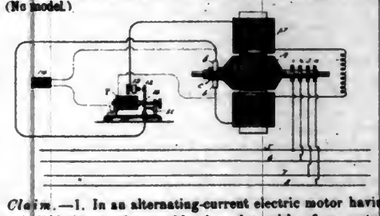
6. A compound annular field-magnet having its surface adjacent to the armature composed of alternate bars of iron or steel and a low-resistance metal—such as copper or bronze—substantially as described, whereby said low-resistance bars form paths for currents.

7. A compound annular field-magnet having its surface adjacent to the armature composed of alternate bars of iron or steel and a low-resistance metal—such as copper or bronze—and having the ends of said low-resistance bars connected to low-resistance heads or cross-bars, substantially as described.

8. A field-magnet composed of alternate bars of magnetic metal and low-resistance metal laid together to form a cylinder and bound externally with magnetic metal, which serves to retain the structure in form and complete the magnetic circuit.

9. A field-magnet composed of alternate bars of magnetic metal and low resistance metal laid together to form a cylinder and wound externally with iron or steel wire.

404,466. ALTERNATING-CURRENT ELECTRIC MOTOR. CHARLES S. BRADLEY, Yonkers, N. Y. Filed Feb. 18, 1889. Serial No. 300,270. (No model.)



Claim.—1. In an alternating-current electric motor having an induced field-circuit, the combination therewith of an automatic switch adapted to close said field-circuit on arrival of the armature at its normal speed.

2. In an alternating-current electric motor having an induced field-circuit, the combination therewith of an automatic switch adapted to close said field-circuit and means for closing said switch on arrival of the armature at its normal speed.

3. In an alternating-current electric motor having an induced field-circuit, the combination therewith of a switch adapted to close the field-circuit, means for holding said switch open till the armature arrives at its normal speed, and means for thereupon closing said switch automatically.

4. In an alternating-current electric motor having a rotary armature and its field-magnet provided with an energizing-circuit, the combination therewith of a switch in said field-circuit and means for automatically closing said circuit, dependent for operation upon the armature attaining its normal speed.

5. In an alternating-current differential-phase electric motor having a rotary armature and its field-magnet provided with an energizing-circuit, the combination therewith of a switch in said field-circuit and means for automatically closing said circuit, dependent for operation upon the armature attaining its normal speed.

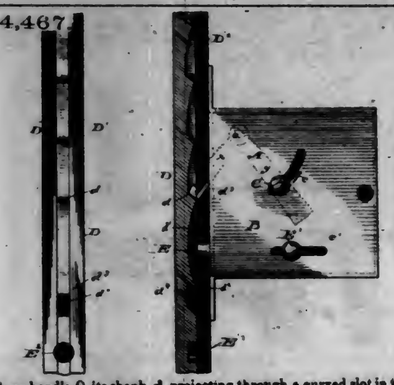
6. In an alternating-current electric motor comprising a stationary and a movable member, one of which has polar rotation set up in it by direct action of the operating-current and the other member has an energizing-circuit, the combination, with the said energizing-circuit, of a switch for opening and closing the same, and means for automatically closing said switch controlled by the speed of said movable member of the motor.

404,467. SASH-FASTENER. ROBERT J. BUCHANAN, Pittsburg, Pa. Filed Feb. 21, 1889. Serial No. 300,751. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, of the lock frame or casing, the bell-crank lever pivoted thereto, and having an outwardly-projecting arm x formed with an outer end curved from the axis of the lever as a center, a rack-plate having teeth curved to correspond with the curved end of the arm x, and a handle C, secured to the inwardly-projecting arm of the bell-crank lever and working in a curved slot in the lock frame or casing.

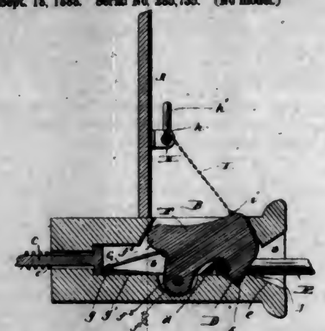
2. The combination, substantially as hereinbefore set forth, of the lock frame or casing, the bell-crank lever pivoted thereto and having an outwardly-projecting arm x and an inwardly-projecting arm y, the

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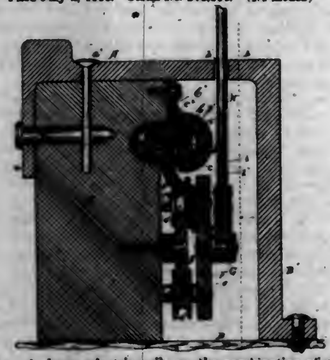
knob or handle C, its shank c^3, projecting through a curved slot in the lock-casing and through the arm y of the bell-crank lever and adapted to turn therein, a spring interposed between the inner end of the shank and the bell-crank lever, and the teeth c^4 on the shank, which engage with notches c' formed in the curved slot of the lock-casing, for the purpose specified.

404,468. CAR-COUPLING. JAMES E. BULL, Tracy City, Tenn. Filed Sept. 18, 1888. Serial No. 285,735. (No model.)



Claim.—The combination, with the draw-head B, longitudinally recessed, as at b, and having a vertically-communicating recess, and having the bottom recesses D and f^2, of the hook F, having the end f fitting in the recess D and the depending portion f' pivoted in the recess f^2 and extended to form the rearwardly-projecting shoulder f^3, and of the transverse shaft g, mounted in the rear end of the longitudinal recess b, and the V-shaped spring G, having its angle bent to form a shaft-embracing eye, and one terminal bearing against the bottom of the recess b and the other against the under surface of the shoulder f^3 of the hook, substantially as specified.

404,469. ELECTRIC RAILWAY. WILLIAM CAMPBELL, Cleveland, Ohio. Filed July 2, 1888. Serial No. 278,806. (No model.)



Claim.—1. In an electric railway, the combination of a trough provided with a longitudinal slot, a conduit and a rail located within said trough, an insulated conductor secured within said conduit, a current-collector engaging with the conductor, a carriage having bearing on said rail and located out of vertical line with the slot of said trough, and a flexible connection connecting said conductor and operating-vehicle, substantially as set forth.

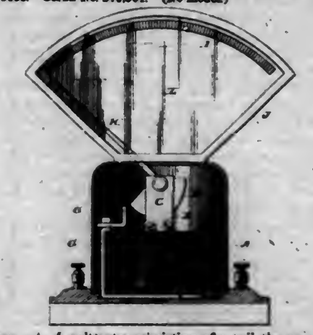
2. In an electric railway, the combination of a sleeper provided with a longitudinal groove, a conduit carrying a conductor secured partially within said groove, said conduit open on its lower face only, and a rail projecting over and protecting said conduit, substantially as set forth.

3. In an electric railway, the combination of a sleeper, a conduit C, secured thereto, and a rail that projects beyond the face of said sleeper, said rail provided with a downwardly-projecting flange, a bolt securing said rail to said sleeper, said bolt provided with an opening, and a cotter fitting in said opening, substantially as set forth.

4. In an electric railway, the combination of a trough provided with a slot, a non-conducting conduit located therein, an insulated conductor secured within the latter, a current-collector engaging with said conductor, and a coupling connected, respectively, with said cable and the operating-vehicle, said coupling being flexible where it passes through said slot, substantially as set forth.

5. In an electric railway, the combination of a trough provided with a longitudinal slot, a conduit and a rail located within said trough, an insulated conductor secured within said conduit, a current-collector engaging with the conductor, a carriage having bearing on said rail and located entirely within said trough, and a coupling engaging with said carriage and the operating-vehicle and flexible its entire length, substantially as set forth.

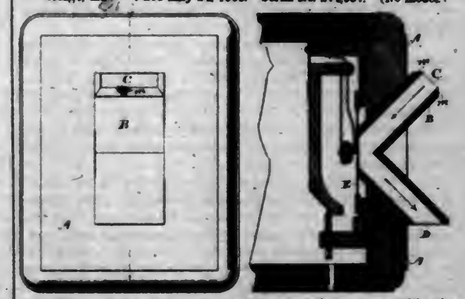
404,470. VOLTMETER. LEO DAFT, Plainfield, N. J. Filed July 10, 1888. Serial No. 279,501. (No model.)



Claim.—1. A voltmeter consisting of a coil, the core of which is provided with a slotted extension supporting a cam-shaped armature within the slot, and having a pointer connected to the armature, whereby the cam-shaped armature is normally maintained in a uniform field of force, and is operated by repulsion in accordance with the variations of the current passing through the coil, substantially as described.

2. In a voltmeter, the combination of the coil, the slotted core-extension, the cam-shaped armature supported therein, and a slotted adjustable polar extension G', substantially as described.

404,471. TELEPHONE-TRANSMITTER. EDWIN S. DRAKE, Cambridge, Mass. Filed May 24, 1888. Serial No. 274,937. (No model.)



Claim.—1. A telephone-transmitter embodying the combination of a diaphragm E with a supporting case or front A, provided with separate but connecting inlet and outlet air conduits or passages, so

respectively arranged relatively to the diaphragm that the vocalized impulses directed to the diaphragm through the inlet-passage will be reflected directly therefrom through the outlet-passage, as and for the purposes specified.

2. The combination of diaphragm E with a door or front A, provided with air-passages C and D, leading obliquely to and from the diaphragm at equal angles thereto, coinciding with the angles of incidence and reflection of the sound-waves conducted thereto and therefrom through said passages, as specified.

404,472. STEERING APPARATUS. ARBROSE C. DUNN, New York, N. Y., assignor to the Pneumatic Steering Gear and Manufacturing Company, same place. Filed July 27, 1887. Renewed Apr. 26, 1888. Again renewed Nov. 7, 1888. Serial No. 290,256. (No model.)



Claim.—1. The combination, with the rudder of a vessel and located on the deck or elsewhere, of a steering-cylinder provided with a perforated partition, and with pistons which connect with the rudder, and which has supply and exhaust ports at its ends, and a valve-chest containing a valve connected with and operated from the pilot-house first to open a supply-port at one end and an exhaust-port at the other, and then close the ports at both ends, substantially as described.

2. The cylinder provided with a central partition dividing it into two separate chambers communicating with each other by means of an opening in said partition, each chamber having an independent piston, and there being a liquid interposed between the pistons, whereby motion of either piston is at once communicated to the opposite piston, substantially as and for the purpose set forth.

3. The cylinder divided into two equal communicating chambers, each provided with an independent piston, and there being a liquid interposed between the pistons, whereby motion of either piston is at once communicated to the other piston, the cylinder having a separate chamber communicating with the space between the piston-heads, which chamber serves as a reservoir for an additional supply of interposed liquid to prevent leakage and insure a full supply at all times, substantially as described.

4. The combination, with a cylinder provided with a perforated partition and having an inlet and an exhaust port at each end, the inlet-port being beyond the exhaust-port at or near the end of the cylinder, of pistons arranged as described, and at the end of the outward stroke covering an exhaust-port, thus compressing the confined fluid, cushioning and preventing the rudder from going too far over, substantially as set forth.

5. The combination, with the steering-wheel, of cylinders having pistons and containing liquid against which the pistons bear, pipes containing liquid—further, cylinders having pistons and containing liquid which bears against them—and a rod which actuates a wheel or lever connected with the valve-stem, substantially as and for the purpose described.

6. The combination, with the rudder of a vessel having a yoke upon its post, of steering-cylinders the pistons of which connect directly with the yoke on the rudder-post and operate in opposite directions, the cylinders having supply and exhaust ports at their ends, and valve-chests containing valves connected with and operated from the pilot-house, and controlled first to open supply-ports at opposite ends of each cylinder and exhaust-ports at these ends and then close the ports at both ends, substantially as described.

7. The combination, with a steering-cylinder having a perforated partition, and the rudder having a quadrant, yoke, or tiller, of devices interposed between the same and the valve at the ports of the cylinder, the devices being operated from a moving part—such as the rudder—automatically to close the ports immediately after a movement of the rudder, whereby aeriform fluid will be confined in the cylinder on both sides of its piston or pistons and the rudder will be held elastically, substantially as specified.

8. The combination, with a steering-cylinder having a piston rod or rods and provided with a valve-chest containing a valve provided with a stem, of two cylinders containing pistons, a pipe connected with both cylinders, the cylinders and pipes containing a liquid, and a rod or rods connected to the piston rod or rods of the steering-cylinder or other part moved thereby, the rod or rods being fixed to the piston in the one cylinder and operating to push the piston and force the liquid in its cylinder through a pipe against the piston in the other cylinder, the piston-rod of which connects with the valve-stem of the steering-cylinder and causes the valve to close the ports, as set forth.

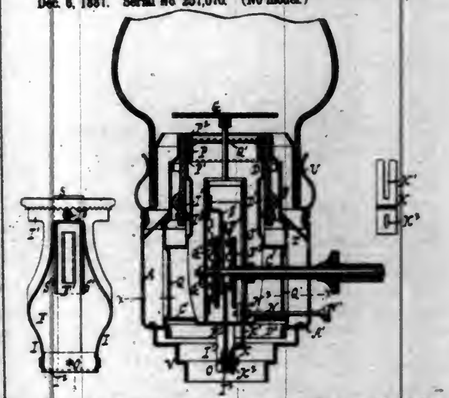
404,473. PROCESS OF REDUCING IRON DIRECT FROM ITS ORES. CHARLES J. KAMM, New York, N. Y. Filed Jan. 19, 1889. Serial No. 296,638. (No model.)



Claim.—1. The process herein described of reducing iron ore in reverberatory furnaces, which consists in subjecting a stratum composed entirely of an admixture of granulated iron ore and granulated coke-breeze or anthracite coal and devoid of flux, said stratum arranged on a coke-hearth, to the reverberatory action of a neutral flame or neutral gas-flame in a low state of combustion and under sufficient pressure to prevent the entrance of air into the furnace, substantially as and for the purposes specified.

2. The process herein described for reducing iron ore in reverberatory furnaces, which consists in subjecting a stratum of admixed granulated iron ore and granulated coke-breeze or anthracite coal and devoid of flux, said stratum being arranged on a coke-hearth and covered by a thin layer of coke-breeze, to the action of a neutral gas-flame under such pressure as will prevent the entrance of air into the furnace, substantially as and for the purposes specified.

404,474. ARGAND LAMP-BURNER. PETER J. FOULON, New York, assignor of one-half to George B. Constantine, Brooklyn, N. Y. Filed Dec. 6, 1887. Serial No. 257,070. (No model.)



Claim.—1. In an Argand burner, the combination of the stop-arm having two vertical slots, the screw-rod fitted into one of said slots for adjustably connecting the stop-arm to a fixed portion of the burner, and the wick-carrier having a stop-pin fitted into the other of said slots for regulating the motion of said carrier, substantially as and for the purpose described.

2. In an Argand burner, the combination, with the wick-tube, of a ring fitted thereon with an air space or chamber between said tube and the ring, substantially as and for the purpose described.

3. In an Argand burner, the combination, with a wick-tube having a flange on the upper end and a shoulder below said end, of a ring fitted loosely on said tube between said flange and shoulder, substantially as and for the purpose described.

4. In an Argand burner, the combination, with the open perforated shell, the inner and outer tubes, and the transverse tubes connecting the same, of the air-distributers fitted into or on said transverse tubes, substantially as and for the purpose described.

5. In an Argand burner, the combination, with a wick-carrier having an attached rack, which is left free on the upper end, as shown, of a spreader and extinguisher, also having an attached rack, and an arm secured to said spreader-rack to form a guide or support for the wick-rack, substantially as described.

404,475. SHIRT. BERTHOLD GALLAND, Scranton, Pa. Filed May 28, 1887. Serial No. 239,662. (No model.)



Claim.—1. A shirt having collar-band and wrist-band linings provided each with lateral integral extensions at its ends, adapted to form also facings for the edges of the adjacent openings, substantially as herein set forth.

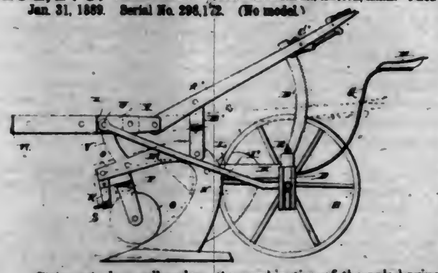
2. A shirt having its collar-band provided with a button-hole reenforce C, formed of a piece of cloth or other material inserted between the plies of the band at the place where the button-hole is cut, the ends of the said piece being doubled over across and outside of the ends of the button-hole, whereby the shirt is strengthened opposite to the ends of the button-hole, as herein set forth.

3. A shirt having a stay at the lower end of the opening or placket in the front or back of the same, the said stay consisting of a series of overcast loop-stitches, forming a continuous ridge of closely-laid threads transverse to the length of the opening and composing a bar across the width of the facing, substantially as herein set forth.

4. A shirt having gusset projections G G formed integrally on the adjoining edges of the cloth at the lower terminations of the side seams, the adjacent projections overlapping each other and adjacent portions of the cloth and being united to the cloth by a continuous row or rows of stitches near their edges and around the entire circuit thereof, substantially as and for the purpose herein set forth.

5. A shirt having gusset projections G G formed integrally on the adjoining edges of the cloth at the lower terminations of the side seams, the adjacent projections overlapping each other and adjacent portions of the cloth and being united to the cloth by a row or rows of stitches near their edges and the lower hem or hems of the shirt being continued along the lower edges of the projections and secured by stitching to the cloth, substantially as and for the purpose herein set forth.

404,476. SULKY-PLOW. JOSEPH A. GARBER, Hatton, Kans. Filed Jan. 31, 1889. Serial No. 298,172. (No model.)



Claim.—1. In a sulky-plow, the combination of the axle having a vertically-slotted plate, the slide moving in said slot and having a forwardly-extending arm, the plow-standard attached to the front end of said arm and carrying the plow, and the forwardly-extending beam having upwardly-extending bracket, the tongue connected pivotally with said bracket, an adjusting-lever pivoted to the rear end of the tongue, and a link connecting said lever with the plow-beam, substantially as set forth.

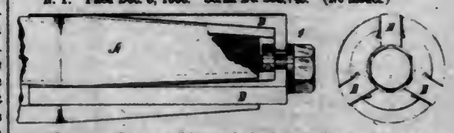
2. The combination of the axle having forwardly-extending converging arms, the plow, the beam of which is provided with an upwardly-extending bracket mounted upon a bolt connecting the front ends of said arms, the tongue having a rearwardly-extending arm mounted pivotally upon said bolt, an adjusting-lever pivoted at the rear end of the arm extending rearwardly from the tongue and connected by a pivoted link with the rear end of the plow-beam, a spring-latch at the rear end of the adjusting-lever engaging a segmental rack, and an arm connecting the plow-standard with a vertically-movable slide, substantially as set forth.

3. In a sulky-plow, the combination of the sulky-truck, the vertically-adjustable plow, the tongue having a laterally-extending bracket provided with a rearwardly-extending arms, whereby it is mounted detachably and reversibly between a pair of arms extending forwardly from the axle, the adjusting-lever pivoted to the rear end of the rearwardly-extending arm of the tongue and connected with the rear end of the plow-beam by a pivoted link, and an arm extending upwardly from the plow-beam and mounted pivotally between the converging ends of the forwardly-extending arms of the axle, substantially as set forth.

4. In a sulky-plow, the herein-described reversible tongue provided at its rear end with a laterally-extending bracket terminating in a rearwardly-extending arm, the same being formed by a pair of plates secured to the sides of the tongue, bent in proper direction parallel to each other and bolted together, suitable spacing-plates being interposed, substantially as set forth.

5. The combination of the sulky-truck, the plow adjustable vertically with relation thereto, and having a beam terminating in rear of the plow-point, and provided at its front end with a downwardly-extending arm having a clevis, a pair of converging arms extending forwardly from the axle and connected at their front ends by a bolt passing through an arm extending upwardly from the plow-beam, the reversible tongue having at its rear end a laterally-extending bracket terminating in a rearwardly-extending arm mounted upon the bolt which connects the forwardly-extending arms of the axle, the adjusting-lever pivoted to the rear end of the arm, extending rearwardly from the tongue and connected with the rear end of the plow-beam with a pivoted link, and means for retaining said lever in any position to which it may be adjusted, substantially as set forth.

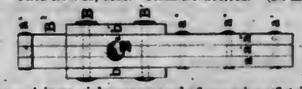
404,477. EXPANSIBLE MANDREL. PATRICK H. GRIFFIN, Buffalo, N. Y. Filed Dec. 5, 1888. Serial No. 292,745. (No model.)



Claim.—1. In expansible mandrels, the combination, with a tapering arbor A, provided with an internally-screw-threaded central aperture and with parallel dovetail longitudinal grooves at the periphery of the wedge-shaped jaws D, having parallel toes *g* at their heads, and the spindle B, having the head C and circular nut *c*, the whole being constructed to operate substantially as and for the purpose stated.

2. In expansible mandrels, the combination, with a tapering arbor having dovetailed longitudinal grooves at its periphery, of taper jaws having toes at their heads, a revolving screw-threaded spindle engaging said arbor, provided with a head having a circular base, and a removable nut upon said spindle, said toes engaging the neck *f* in said spindle, substantially as and for the object stated.

404,478. LOOM-PICKER. EUGENE S. GRINNELL, Waltham, Mass., assignor of two-thirds to Eben W. Blake and Robert Burgess, same place. Filed Nov. 12, 1888. Serial No. 290,652. (No model.)



Claim.—A loom-picker composed of a number of strips of leather secured together near the opposite ends thereof, having the striking face on the edge of said strips, and the re-enforcing strips on opposite sides secured to the body of the picker by rivets passing through the body at points above and below the striking-point, whereby provision is made for the lateral expansion of the body by separation of the strips when the picker comes in contact with a loom-shuttle.

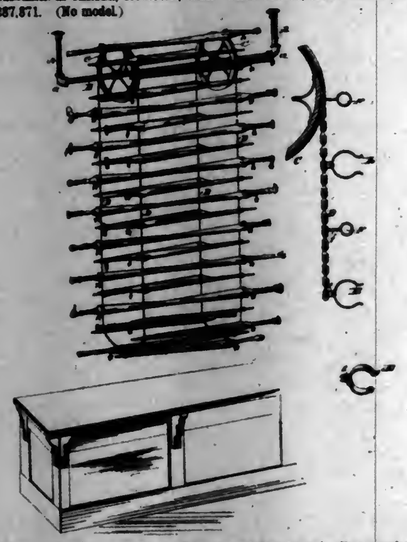
404,479. GRAIN-BINDING MACHINE. FRANK HARPER, Auburn, assignor to the D. M. Osborne & Company, of New York. Filed June 16, 1888. Serial No. 277,292. (No model.)



Claim.—1. In a grain-binder, the combination, substantially as described and shown, of a rotary tying-bill, the rotary cord-holding disk provided with a series of peripheral cord-receiving notches mounted on a stationary axis to turn freely under the stress of the cord and in position to receive the cord at the side farthest from the tyer, the cord-clamping shoe embracing the edge of the disk and adapted to confine the two ends of the applied cord in successive notches of the disk, and mounted, substantially as described, to rise from the disk at either end independently of the other, the spring acting to urge the clamp toward the disk, and the needle or binder arm arranged to lay the cord across the tyer to the distant edge of the disk, whereby the disk is enabled to receive and hold both ends of the cord and to turn under the stress of the cord, so as to yield the latter to the tyer during the formation of the knot.

2. In a grain-binder, the combination of the rotary tying-bill, the rotary cord-holding disk provided with peripheral notches and mounted to turn freely on an axis fixed in relation to the tyer and in position to receive the cord at the side farthest from the tyer, the shoe or clamp embracing the edge of the disk and provided at the delivery end with the cord-retaining shoulder adapted to confine the cord in successive notches thereof and free to rise from the disk at either end independently of the other, the pressure-spring acting upon the shoe midway of its length, and the cord-carrying arm or needle arranged to lay the cord across the tyer and thence to the distant edge of the disk, whereby the one clamp is enabled to hold the two ends of the applied band and to slacken the cord to the tyer during the formation of the knot without the assistance of mechanism to turn or to retard the disk.

404,480. **UMBRELLA-EXHIBITOR.** FREDERIC HARRINGTON and BENJAMIN L. CARTER, Cleveland, Ohio. Filed Oct. 11, 1888. Serial No. 287,871. (No model.)



Claim.—1. An umbrella-exhibitor consisting in an endless carrier or carriers, and a wheel or wheels on which said carrier or carriers are supported, with holders for the umbrellas on the carrier or carriers, substantially as set forth.

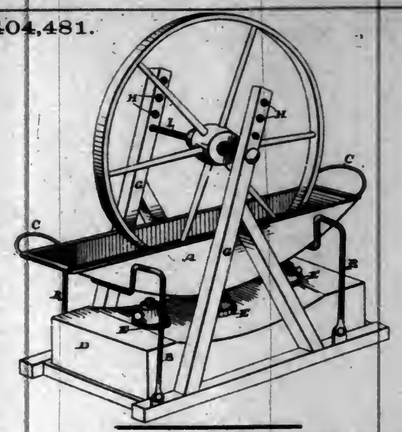
2. In an umbrella-exhibitor, endless chains, one of which has a spring-grip and the other a staple, with an eye for holding the umbrellas and wheels on which said chains are hung, substantially as set forth.

404,481. **DEVICE FOR OILING WHEELS.** FRANK W. HARRIS, Napa, Cal. Filed Nov. 1, 1888. Serial No. 289,780. (No model.)

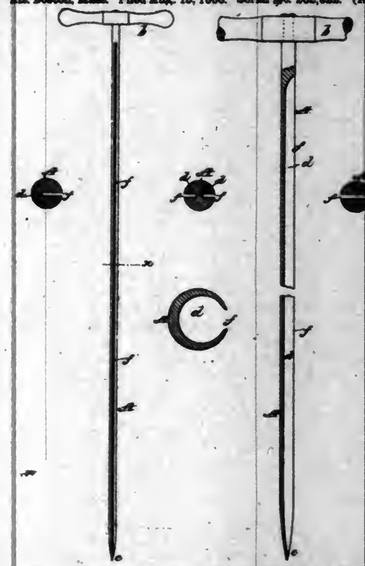
Claim.—1. A device for treating the follies of wooden wheels, consisting of a segmental tank and supporting-standards, said standards being movable toward and from each other, whereby the tank is vertically adjusted, in combination with a lamp or heater beneath said tank, and other standards upon which a shaft or pin passing through the wheel-hub is supported, substantially as herein described.

2. The segmental removable tank, with movable standards for adjusting its height, a lamp or heater beneath the tank, and standards upon each side having the holes H, and with a shaft the height of which is adjustable in said holes to support wheels of different sizes with their rims dipping into the tank, substantially as herein described

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404,482. **IMPLEMENT FOR MARKING CLOTH.** NATHAN HARRIS, Boston, Mass. Filed Aug. 15, 1888. Serial No. 282,822. (No model.)



Claim.—A cloth-marking implement consisting of a spindle A, provided at one end with a handle *b* and at the opposite end with a sharp point *c*, and having a longitudinal chamber or recess for containing powdered chalk or other suitable marking substance, and a continuous longitudinal slot or groove *f* for the passage of the marking substance to the cloth as the spindle is forced through the same, substantially as and for the purpose described.

404,483. **POLISHING COMPOUND.** GEORGE W. HASTINGS, Grafton, assignor to Edmund M. Wood, Natick, Mass. Filed July 2, 1888. Serial No. 278,849. (Specimens.)

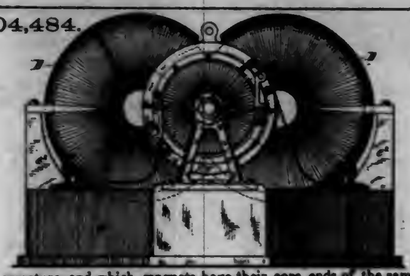
Claim.—As an improved article of manufacture, a polishing compound composed of carnauba-wax, ozocerite, crude or refined, spirits turpentine, French chalk, and oil of citronella, substantially as herein set forth and described.

404,484. **DYNAMO-ELECTRIC MACHINE.** WILLIAM HOCHHAUSEN, Brooklyn, N.Y. Filed Feb. 1, 1886. Serial No. 190,517. (No model.)

Claim.—1. In a dynamo-electric machine or motor, an armature core or carrier provided with shallow grooves or flutings, in which the armature-conductors are partially embedded, as and for the purpose described.

2. In a dynamo-electric machine or motor, a field-of-force magnet consisting of two electro-magnets whose cores are curved in the arc of a circle which, prolonged, would pass through the center of

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the armature, and which magnets have their core ends of the same name magnetically distinct, so far as concerns union, by a mass of magnetic material, but held in proper proximity and properly formed to constitute together a field-of-force pole-piece.

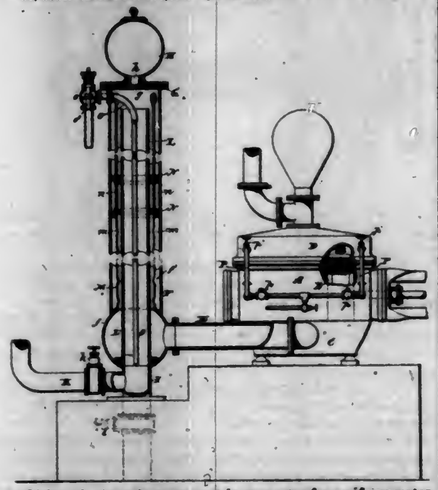
3. In a dynamo-electric machine or motor, a field-of-force pole-piece consisting of two magnet-core ends of the same polarity, arranged in proximity, with the axes of the magnet-cores at the end presented to the armature forming substantially a perpendicular to the circle of the armature periphery, in combination with uniting-pieces of non-magnetic material, as and for the purpose described.

4. In a dynamo-electric machine or motor, a field-of-force magnet consisting of two electro-magnets having like poles arranged on the same side of the armature, the cores of said magnets being formed of iron masses continuous in the direction of the magnetic axes, of the same or less area in cross-section than the body of the cores, as and for the purpose described.

5. In a dynamo-electric machine or motor, a field-of-force magnet composed of two electro-magnets whose like poles are placed in proximity but are magnetically disunited, in combination with the uniting diamagnetic block, and whose magnetic axes continued from their pole ends would cut the circular periphery of the armature at a right angle.

6. In a dynamo-electric machine or motor, a field-of-force magnet composed of two separate electro-magnets having their like poles juxtaposed, and whose poles are composed of curved iron plates superposed as described, the planes of said plates being transverse to the plane of curvature.

404,485. **APPARATUS FOR PURIFYING WATER.** OTIS S. HOWES, Cairo, Ill., assignor of one-half to Halliday Bros., same place. Filed Jan. 16, 1888. Serial No. 260,897. (No model.)

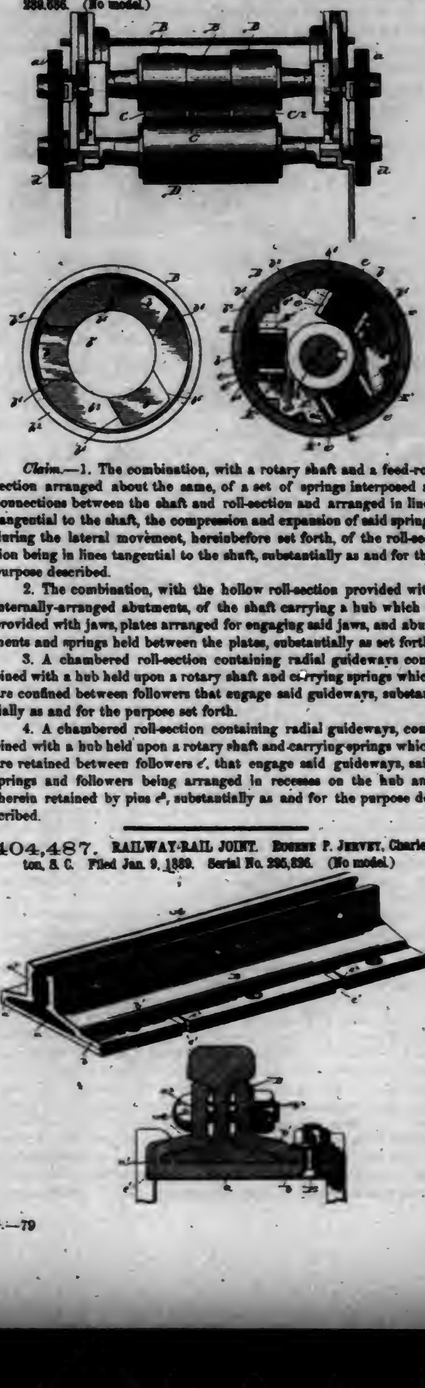


Claim.—1. As an improvement in apparatus for purifying water, the aerating-column provided with the central chamber for the admission of water, the centrally-discharging pipe for the admission of air, and the surrounding annular chamber having the perforated diaphragms for the mingling of said fluids, in combination with means for drawing water through said column, substantially as and for the purpose shown and described.

2. As an improvement in apparatus for purifying water, the combination, with a water-supply pipe or pipes and a force-pump, of an intermediate stand-pipe or column provided with a pipe which discharges air near the bottom thereof, and with an annular diaphragmed chamber in which the air and water are thoroughly mingled, substantially as and for the purpose set forth.

3. As an improvement in apparatus for purifying water, the combination, with a water-supply pipe or pipes and a force-pump, of a stand-pipe or column between said water-supply pipe or pipes and pump, said stand-pipe being provided with an air-discharging pipe which opens into the lower portion thereof, and also with an annular diaphragmed chamber in which the water and air are thoroughly mingled, and pipes connecting the inlet and outlet chambers of the said pump, substantially as and for the purpose shown and described.

404,486. **FEED-ROLL FOR PLANING AND SURFACING MACHINES.** LUCIUS P. HOYT, Aurora, Ill. Filed Oct. 31, 1888. Serial No. 289,636. (No model.)



Claim.—1. The combination, with a rotary shaft and a feed-roll section arranged about the same, of a set of springs interposed as connections between the shaft and roll-section and arranged in lines tangential to the shaft, the compression and expansion of said springs during the lateral movement, hereinbefore set forth, of the roll-section being in lines tangential to the shaft, substantially as and for the purpose described.

2. The combination, with the hollow roll-section provided with internally-arranged abutments, of the shaft carrying a hub which is provided with jaws, plates arranged for engaging said jaws, and abutments and springs held between the plates, substantially as set forth.

3. A chambered roll-section containing radial guideways combined with a hub held upon a rotary shaft and carrying springs which are confined between followers that engage said guideways, substantially as and for the purpose set forth.

4. A chambered roll-section containing radial guideways, combined with a hub held upon a rotary shaft and carrying springs which are retained between followers *e*, that engage said guideways, said springs and followers being arranged in recesses on the hub and therein retained by pins *e*², substantially as and for the purpose described.

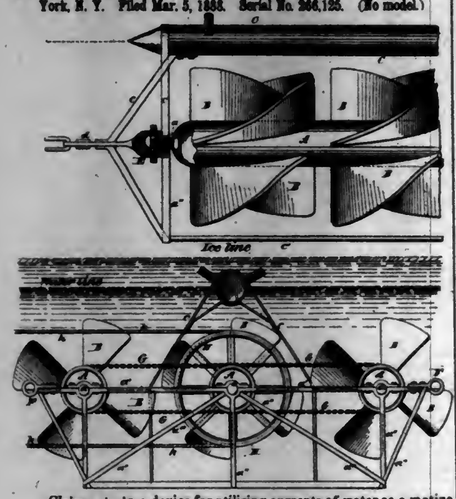
404,487. **RAILWAY-RAIL JOINT.** EUGENE P. JERVEY, Charleston, S. C. Filed Jan. 9, 1889. Serial No. 295,626. (No model.)

Claim.—1. In a rail-joint, the combination of the member A, provided with the base *a*, extending laterally beneath and beyond the rail, and the upwardly-extending portion to bear against the rail, the member B, provided with the flat portion *b*, to rest upon the exposed end of the base *a*, and the upwardly-extending portion to bear against the rail, and the vertical and horizontal fastening-bolts, the former extending through the base portions of the said members beyond the rail, and the latter passing through the upwardly-extending portions of the said members.

2. In a rail-joint, the member A, having the flat bed-plate *a*, the flange *a'*, the web a^2, and the grooves *c'*, in combination with the member D, having the flat bearing *b*, lip *b'*, web b^2, and grooves c^2, and the vertical and horizontal bolts uniting said parts in the manner described and shown.

3. In a rail-joint, the longitudinal members A B, adapted to embrace the rail and rest one upon the other, in combination with the vertical and the horizontal bolts, and the spikes passed through grooves in the two parts, as described and shown.

404,488. WATER-CURRENT MOTOR. FRANK G. JOHNSON, New York, N. Y. Filed Mar. 5, 1888. Serial No. 266,125. (No model.)

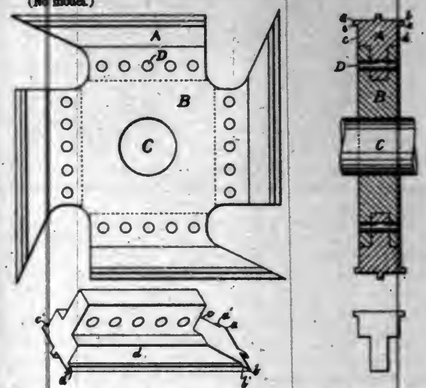


Claim.—1. In a device for utilizing currents of water as a motive power, the combination of the floating motors consisting of the hollow floating cylinders A A A, having the screw-blades B B B, the adjustable floating cylinder C, having suitable inlets and outlets for the ingress and egress of water and air, the connecting-bars *a' a' a'*, and ground-frame a^2 a^2 a^2, whereby the entire device, by introduction of water into the cylinder C, is lowered to the bed of the river, and by pumping the water out of the said cylinder C the entire device is again elevated to or near the surface of the river, and whereby when the device is lowered to the bed of the river the blades B B B are prevented by the ground-frame a^2 a^2 a^2 from striking the ground, substantially in the manner and for the purpose set forth.

2. In a device for utilizing currents of water as a motive power, the combination of the floating motors consisting of the hollow floating cylinders A A A, having the screw-blades B B B, the adjustable floating cylinder C, having suitable inlets and outlets for the ingress and egress of water and air, the connecting-bars *a' a' a'*, and ground-frame a^2 a^2 a^2, the connecting-chains G G, cable-wheel H, and cable *h h*, whereby the device can be lowered to the bed of the river by the introduction of water into the adjustable cylinder C and again raised to the surface of the river by the removal of the water from and the introduction of air into the said adjustable cylinder, substantially in the manner and for the purpose described.

3. In a device for utilizing currents of water as a motive power, the combination of the floating motors consisting of the hollow floating cylinders A A A, having the screw-blades B B B, the adjustable floating cylinder C, having suitable inlets and outlets for the ingress and egress of water and air, the connecting-bars *a' a' a'*, and ground-frame a^2 a^2 a^2, the connecting-chains G G, cable-wheel H, cable *h h*, the floating jetty consisting of the two converging hollow floating cylinders I I, having the jetty-blades J J, cross-bars *i i i i*, and suitable inlets and outlets for the ingress and egress of water and air, whereby the said jetty and the said floating cylinders A A A can be simultaneously lowered to the bed of the river by the introduction of water into the adjustable cylinder C and into the jetty-cylinders I I, and then again simultaneously raised to the surface of the river by the removal of the water from and the introduction of air into the said cylinders C and I I, substantially as and for the purpose set forth.

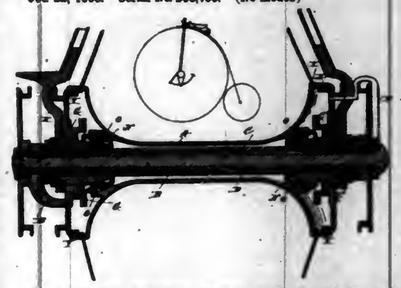
404,489. WOOD-WORKING TOOL. ISAAC R. JOSLIN and GILBERT T. LAWRENCE, New York, N. Y. Filed Nov. 20, 1888. Serial No. 291,367. (No model.)



Claim.—1. A cutter provided with a cutting-edge *a b*, similar in outline to the surface to be produced, in combination with a narrow supplemental side-cutting edge *a' c'*, formed by a substantially square jog extending to a cutter-body reduced in width immediately in rear of the said two cutting-edges, substantially as described.

2. In combination with a cutter-body, a surface-cutting edge *a b* thereon with lateral cutting-edges *a' c'* and *b' d'* on the sides thereof, said body being reduced in width immediately back of said cutting-edges with a square jog, substantially as set forth.

404,490. VELOCIPEDE. HOMER A. KING, Springfield, Mass. Filed Oct. 22, 1888. Serial No. 288,735. (No model.)



Claim.—1. The stationary tubular shaft B, with the fork-rests secured at each end by nuts, all inside of or between two outer retracing-drums.

2. A stationary tubular shaft inclosing two shafts arranged to revolve in opposite directions and bearing or encircled by only one revolving drum at each end.

3. The connection E, with one or more side projections, as E', for the purpose set forth.

4. The connection F, with one or more side projections, as F', for the purpose set forth.

5. A roller-case with lips projecting to inclose elongations on the ends of roller-bearings, and with an opening on one or both lips through which to insert the rollers.

6. A roller-case with projecting lips to inclose the elongated ends of rollers with an elevation, as N", to hold in position and receive the end pressure of inclined rollers encircled by a central groove.

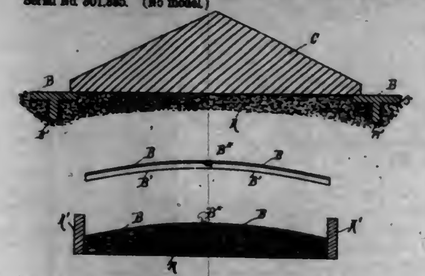
7. An inclined roller-bearing having two bearing-surfaces separated by a groove and with the bearing-surface on the smaller end broader than on the larger end, for the purpose set forth.

8. An inclined roller having two bearing-surfaces separated by a groove and an elongation at each end, for the purpose set forth.

9. The friction-spring K, doubled or thickened where wearing and bearing on a rotating part and with connection to J, for the purpose set forth.

10. The dogs H H, with connections I I to J and K, for the purposes set forth.

404,491. GUIDE-BAR FOR LINING UP THE CURVES OF STREET-SURFACES. JAMES M. MACK, Philadelphia, Pa. Filed Mar. 5, 1889. Serial No. 301,895. (No model.)

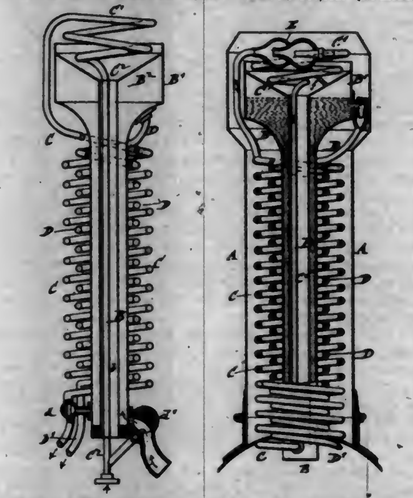


Claim.—1. A removable arched liner or gage for regulating the curve or arch of a road-bed formed upon a curve or shape to which the bed is to be conformed and having a flat top whose upper surface is adapted to coincide with the surface of the pavement, as set forth.

2. A removable arched liner or gage for regulating the curve or arch of a road-bed, consisting of a curved metallic piece T-shaped in cross-section, the head of the T resting upon and its top face being level with the upper surface of the filling, as set forth.

3. The combination of a pair of removable arched liners or gages extending from curb to curb and meeting in the center of the road-bed and having an offset-joint, as set forth.

404,492. CAR-HEATING APPARATUS. CHARLES A. MARRDEN, New York, N. Y. Filed Mar. 17, 1888. Serial No. 267,552. (No model.)



Claim.—1. The combination, with the smoke-stack of a locomotive, of a closed tubular reservoir located in the smoke-stack and provided with a central exhaust-channel and heating-coils located in the space between the smoke-stack and the reservoir and being connected with said reservoir, and having an outlet-pipe leading to the radiating-pipes in the cars to be heated, substantially as set forth.

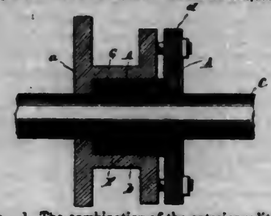
2. The combination, with the smoke-stack of a locomotive, of a closed tubular reservoir located in the smoke-stack and provided with an enlarged head and a central exhaust-channel, and heating-coils located in the space between the smoke-stack and the reservoir and being connected with said reservoir, and having an outlet-pipe leading to the radiating-pipes in the cars to be heated, substantially as set forth.

3. The combination, with the smoke-stack of a locomotive, of a closed tubular reservoir located in the smoke-stack, heating-coils in the smoke-stack connected with said reservoir, an inlet-pipe through the channel in the reservoir to one of said coils, and an outlet-pipe connected with the other coil, substantially as set forth.

4. The combination, with the smoke-stack of a locomotive, of a closed tubular reservoir in the smoke-stack provided with an enlarged head and funnel-shaped top, heating-coils connected to said reservoir, an intermediate heating-coil above said head, connected to one of said coils, an inlet-pipe connected with said intermediate coil, and an outlet-pipe connected to the other heating-coil, substantially as set forth.

5. The combination, with the smoke-stack of a locomotive, of a closed tubular reservoir in said smoke-stack, heating-coils connected to said reservoir, a supply-pipe passing through the inner channel of the reservoir, a coil connected with said supply-pipe at the upper part of the reservoir and with one of the heating-coils, an injector in said coil, and an outlet-pipe connected with the lower end of the other coil, substantially as set forth.

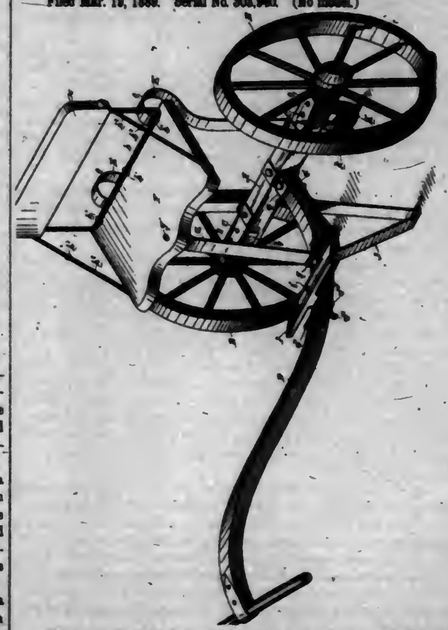
404,493. PACKING FOR PISTON-RODS. JOHN P. MURRAY, Jersey City, N. J., assignor of two-thirds to Robert Davis and Mark Curley, same place. Filed Feb. 27, 1889. Serial No. 301,360. (No model.)



Claim.—1. The combination of the exterior split packing-ring A, having the flared central opening C, the sheet metallic split expansion-ring E, flared in cross-section F to fit in said opening, and having the annular flange G, bearing on one side of said exterior packing-ring, and the split interior packing-ring I, having its exterior edge beveled to fit in the metallic expansion-ring, the said exterior ring being fitted in the packing-gland, and said interior ring being fitted on the piston-rod, substantially as described.

2. The combination of the exterior ring having the flared opening, the sheet metallic split expansion-ring, flared in cross section to fit in said opening and having the flange bearing on one side of the said ring, and the split interior packing-ring having its exterior edge beveled to fit in the flared expansion-ring, substantially as described.

404,494. FOLDING VEHICLE. JOSEPH MCBOYLE, Oakland, Cal. Filed Mar. 19, 1889. Serial No. 303,940. (No model.)



Claim.—1. In a folding vehicle, and in combination with its axle, wheels hinged to said axle, whereby they may be turned from their position when in use to a folded position when out of use, substantially as described.

2. In a folding vehicle, and in combination with its axle and wheels, journals on which the wheels are mounted, and a pivot or

hinge connection between said journals and the axle, whereby the wheels may be turned to a folded position, substantially as described.

3. In a folding vehicle, and in combination with its axle and wheels, journals on which the wheels are mounted, and vertical pivot-pins connecting the journals with the axle, whereby the wheels may be turned from a plane at right angles to said axle to a plane parallel therewith, substantially as described.

4. In a folding vehicle, and in combination with its axle and wheels, journals on which the wheels are mounted, fitted in slotted or grooved ends of the axle and adapted to be turned backwardly therein, and vertical pins pivoting the journals to the axle ends, whereby the wheels may be turned to the back of the axle in a plane parallel therewith, substantially as described.

5. In a folding vehicle, and in combination with its axle and wheels, the journals on which the wheels are mounted, fitting the axle ends, the vertical pivot-pins connecting the journals with the axles, whereby the wheels may be turned to a plane parallel with the axle, and the removable pins for holding the journals in line with the axle when the wheels are in use, substantially as described.

6. In a folding vehicle, and in combination with the axle, the tongue hinged or pivoted to said axle, adapted to be turned from a plane at right angles to the axle to a plane parallel therewith; substantially as described.

7. In a folding vehicle, and in combination with the axle, the tongue and the connection between the tongue and axle, consisting of the axle-clip into which the tongue fits, and the vertical pivot pin or bolt securing the tongue therein and permitting it to be turned to a plane parallel with the axle, substantially as described.

8. In a folding vehicle, and in combination with the axle, the tongue hinged or pivoted thereto, whereby it may be turned to a plane parallel with the axle, said tongue having a hinged joint in its own length, whereby one section may be folded over on the other section, substantially as described.

9. In a folding vehicle, and in combination with its wheeled axle and suitable seat-supports carried thereby, the seat hinged to said supports, whereby it may be turned from a horizontal to a vertical position, substantially as described.

10. In a folding vehicle, its wheeled axle, suitable seat-supports carried thereby, and its tongue, the seat hinged to said supports, whereby it may be turned from a horizontal to a vertical position, and the standard G, hinged to the tongue and adapted to support the seat in a horizontal position and to relieve it when about to be turned to a vertical position, substantially as described.

11. In a folding vehicle, its wheeled axle and the seat-supporting springs rising therefrom, in combination with the seat and the links hinged to both seat and springs, substantially as described.

12. In a folding vehicle, the combination of the hinged seat adapted to be turned from a horizontal to a vertical position, and the lazy-back hinged to the seat and supported by jointed braces, whereby said lazy-back may be folded down on the seat, substantially as described.

13. In a folding vehicle, and in combination with its tongue, the foot-rest pivoted upon said tongue and adapted to be turned from a position at right angles to said tongue to a position parallel therewith, substantially as described.

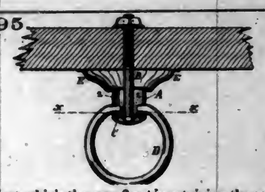
14. In a folding vehicle, the combination of the axle, the wheels having journals pivoted or hinged to said axle, whereby said wheels may be turned to the back of the axle in a plane parallel therewith, the seat-supporting springs rising from the axle and having backwardly-extending top portions avoiding the wheels when turned, and the seat supported by the springs, substantially as described.

15. In a folding vehicle, the combination of the axle, the wheels pivoted or hinged thereto, whereby they may be turned to the back of the axle in a plane parallel therewith, the seat-supporting springs rising from the axle, the folding seat hinged to said springs, the tongue hinged to the axle, whereby it may be turned to a plane parallel with the axle, and the seat-supporting standard hinged to the tongue, substantially as described.

16. A folding vehicle consisting of the axle, the wheels hinged thereto and adapted to be turned to the back of the axle, the springs rising from the axle, the seat hinged to the springs and adapted to be turned from a horizontal to a vertical position, the jointed tongue hinged to the axle and adapted to be turned to a plane parallel therewith, the seat-supporting standard hinged to the tongue, and the foot-rest pivoted on the tongue and adapted to be turned from a position at right angles to a position parallel with said tongue, substantially as described.

404,495. DRAWER-PULL. EDWARD P. HOBBS, Waterbury, Conn., assignor to the American Ring Company, same place. Filed Mar. 16, 1889. Serial No. 303,599. (No model.)

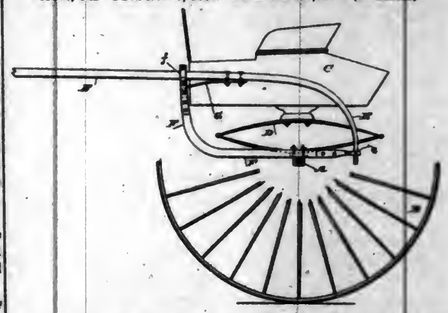
Claim.—1. The combination, with the screw B and ring D, of a socket A, having inwardly-projecting ears 2 cut from the socket at the openings into which the ends of the ring pass, and the washer or



head C, against which the ears 2 act in retaining the socket and screw in their relative positions, substantially as set forth.

2. The combination, with the ring D and the socket A, having inwardly-projecting ears 2, of the screw B, passing between the ends of the ring and having a head or washer that is clamped toward the end of the socket A by the ears 2, the ends of the ring passing into the openings in the sides of the socket behind such ears, substantially as set forth.

404,496. TWO-WHEELED VEHICLE. WILFRED PAGE, Penn's Grove, Cal. Filed Nov. 3, 1888. Serial No. 289,917. (No model.)



Claim.—1. In a wheeled vehicle, the axle, in combination with the bars clipped to the axle and having upwardly-curved forward ends loosely embracing the shafts, the shafts having downwardly-curved rear ends, a pivot or hinge connection between the rear ends of the shafts and the bars, and a spring-connection between the forward ends of the bars and the shafts, substantially as herein described.

2. In a two-wheeled vehicle, the axle and the shafts, in combination with connecting-bars clipped to the axle and extending in front of and behind said axle, said bars having loops or eyes which loosely embrace the shafts, a pivot or hinge connection between the rear ends of the shafts and the rear ends of the bars, and a spring-connection between the forward ends of the bars and the shafts, substantially as herein described.

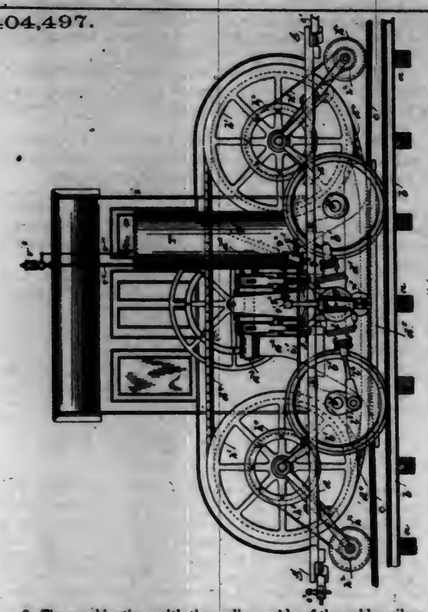
3. In a two-wheeled vehicle, the combination of the axle, the shafts extending over and past the axle and having downwardly-turned rear ends, the bars clipped to and extending on each side of the axle and having upwardly-turned forward ends loosely embracing the shafts, a pivot or hinge connection between the rear ends of the shafts and bars, and a spring-connection between the forward ends of said bars and shafts, substantially as herein described.

4. In a two-wheeled vehicle, the combination of the axle, the shafts extending over and past the axle, the bars clipped to and extending on each side of the axle, a pivot or hinge connection between the rear ends of the shafts and bars, a spring-connection between the forward ends of the bars and the shafts, and guide loops or eyes on said forward ends of the bars embracing loosely the shafts, substantially as herein described.

404,497. MEANS FOR OPERATING TRAINS UPON CABLE RAILWAYS. JOHN H. PENDLETON, Brooklyn, and ANDREW BETHOR, Jr., New York, assignors to the Rapid Transit Cable Company, New York, N. Y. Filed July 21, 1888. Serial No. 280,662. (No model.)

Claim.—1. The combination, with the endless traveling cable of the cable railway, the car wheels and axles of the motor-car and a grip for connecting the motor-car to the cable, of a reservoir upon said car for containing air under pressure, an air-pump oscillated by a connection to one of the car wheels or axle, a cock for admitting air to the pump, a pipe connecting the reservoir with the pump, a stationary cylinder and its piston and rod, a spring within said stationary cylinder and acting against its piston, a pipe connecting the stationary cylinder with said reservoir, and a connection from the stem of aforesaid cock to the piston-rod of the stationary cylinder, so that when air is being pumped into the reservoir said cock is more or less opened or closed automatically, according to the pressure of air in the reservoir, as set forth.

404,497.

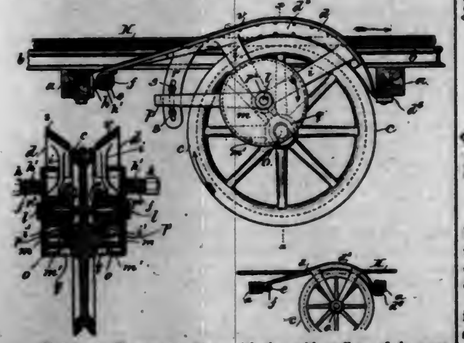


2. The combination, with the endless cable of the cable railway, the wheels and axles of the motor-car, and a grip for connecting said car to the cable, of the cylinder *l l*, and pistons l^v and rods l^6 connected with the axle or wheels of the car, bearings for said cylinders, valves and ports in said cylinders and bearings, a reservoir for compressed air connected with said cylinders, the cocks $p' p'$ and crank-arms $q' q^3$, links q^2 q^3 q^4, and rock-shaft q^4, for operating the cocks $p' p'$ simultaneously, as set forth.

3. The combination, with the cylinder *l* and its pistons and rod and bearings for said cylinder, of the ports 2 3, valves 4, 5, 6, and 7, branch port p^4, port or passage-way p^3, and check-valve p^5, the cylinder n', piston n^2, rod n^3, and spring n^4, the cock p^7, an arm connecting the rod n^7 and stem of said cock, and connections from the cylinders *l n'* to an air-reservoir, substantially as and for the purposes specified.

4. The combination, with the cylinder *l* and its piston and rod, a connection from said cylinder to an air-reservoir, and the ports 2, 3, p^4, 8, and 9, valves 4, 5, 6, and 7 in said cylinder *l*, of the bearing l^3, having the ports or passage-ways 10 11 15 16 19 p^3, the check-valve p^5, the cock p', having the passage-ways 17 18, and the barrel of said cock having an exhaust-opening, substantially as and for the purposes set forth.

404,498. GUIDE-PULLEY FOR CABLE RAILWAYS. JOHN H. PENDLETON, Brooklyn, and LINCOLN MOSS, New York, assignors to the Rapid Transit Cable Company, New York, N. Y. Filed July 21, 1888. Serial No. 280,662. (No model.)



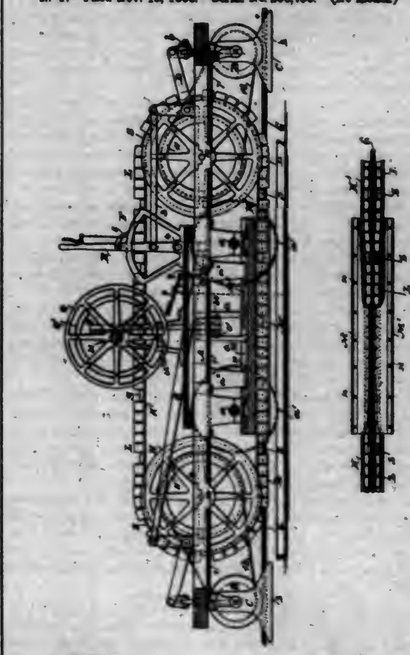
Claim.—1. The combination, with the guide-pulley, of the arms *d*, pivoted at one end and having inclined flanges adjacent to the guide-pulley, lifting-springs, and a stop at the other end of the arms to limit the upward movement, substantially as specified.

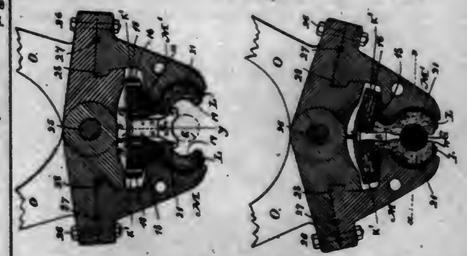
2. The combination, with the guide-pulley, of arms *d*, pivots at one end of such arms, and a spring for raising the arms and pulley, a stop to limit the upward movement, and flanged disks facing each other and receiving upon their flanges the axis of the guide-pulley, substantially as specified.

3. The combination, with the pivoted pulley-support and the guide-pulley and its axle, of disks or wheels at opposite sides of said pulley, pivots for said disks, circular flanges upon said disks for the ends of the axle of the guide-pulley to roll upon, and supports for the pivot-pins of the disks, substantially as specified.

4. The combination, with the pivoted pulley-support, guide-pulley and axle, flanged disks, and pivots and bearings for the same, of the swinging frame P, having forked ends to receive the axle *o*, the slotted arm *r*, and stops *s s*, substantially as and for the purposes specified.

404,499. GRIP FOR CABLE RAILWAYS. JOHN H. PENDLETON, Brooklyn, and CORNELIUS TIERS, ANDREW BETHOR, Jr., and LINCOLN MOSS, New York, assignors to the Rapid Transit Cable Company, New York, N. Y. Filed Nov. 13, 1888. Serial No. 290,730. (No model.)





Claim.—1. The combination, with the cable, of an endless belt, belt-wheels around which the belt travels, grip-blocks in pairs upon the endless belt adapted to swing apart for the reception or discharge of the cable, and mechanism for pressing the grip-blocks toward each other and at opposite sides of the cable, substantially as set forth.

2. The endless belt and belt-wheels around which the belt passes, in combination with grip-blocks connected to the endless belt, and sections of leather or similar material within the grip-blocks and recessed for the reception of the cable, and mechanism acting upon the grip-blocks for pressing them toward each other to grasp the cable, substantially as set forth.

3. The grip-blocks having convex exterior surfaces and sections

of leather or similar material in their inner faces, in combination with grip-jaws grooved to fit the convex exterior surfaces of the grip-blocks and mechanism for acting upon the grip-jaws to move them toward or from each other and grasp the cable between the surface of the grip-blocks, or to open such grip-blocks and allow the cable to drop, substantially as specified.

4. The grip-blocks L, formed as hollow castings with the bases 15, in combination with the sections or layers of leather or similar material introduced within the grip-blocks, the filling plates or layers 16, connected to the bases of the grip-blocks, and the endless belt K, to which the bases of the grip-blocks are fastened, substantially as set forth.

5. The combination, with the endless belt K and the wheels H H', of grip-blocks adapted to grasp the cable and provided with bases by which the grip-blocks are connected to the endless belt, and the pendent shields introduced at intervals and secured to the belt for preventing the cable being lifted too high and insuring the proper grasping of the cable as the grip-blocks are brought up at the sides thereof, substantially as set forth.

6. The combination, with the endless belt and the grip-blocks upon the same in pairs and adapted to receive the cable between them, of the grip-jaws having concave faces for acting against the grip-blocks, a pivot or hinge for connecting the grip-jaws together, and levers for acting upon the grip-jaws to open or close the same, substantially as set forth.

7. The combination, with the grip-jaws and the hinge or pivot for connecting the same together, of levers for acting upon the grip-jaws, links, a rack and pinion for opening or closing the grip-jaws, an endless belt between the grip-jaws, and grip-blocks in pairs connected upon the belt and passing between the grip-jaws, substantially as and for the purposes set forth.

8. The combination, with the guide-wheels B, lifters C, and mechanism, substantially as specified, for moving the same, of the endless belt, and grip-blocks in pairs, and the belt-wheels around which the endless belt passes, and pulleys and an endless band for giving motion to the belt-wheels from the guide-wheel when the cable is brought into contact with the latter, substantially as set forth.

9. The combination, with the endless belt and grip-blocks connected thereon, of grip-jaws, a pivot or hinge for connecting the jaws together, such grip-jaws being made in two parts and bolted together to allow for the removal of the portions or jaws that act on the grip-blocks for repair or renewal, substantially as set forth.

10. The endless belt or band and the two ranges of grip-blocks in pairs upon such belt, in combination with the belt-wheels around which the endless belt passes, and a wheel receiving rotation from the cable, and a connection therefrom to the belt-wheels for giving to the belt and the two ranges of grip-blocks a motion in the same direction as the cable, substantially as set forth.

11. The combination, with the guide-wheel B, of a cable-lifter having a hook-shaped shoe 2 at the lower end, an actuating-lever and connections from the same to the lifter for raising and lowering the lifter, and a cord or connection for drawing the lifter aside as it is lowered, so that the shoe may pass in below the cable, substantially as specified.

404,500. ENDLESS BELT FOR GRIPS FOR CABLE RAILWAYS.

JOHN H. PENDLETON, Brooklyn, and ANDREW BRYSON, Jr., CORNELIUS TIERS, and LINCOLN MOSS, New York, assignors to the Rapid Transit Cable Company, New York, N.Y. Filed Nov. 13, 1888. Serial No. 290,740. (No model.)



Claim.—1. The combination, with the band *f*, forming the body of the belt, of the blocks f^4, of layers of leather or similar material, secured to the same and forming the outer portion of the endless belt, substantially as and for the purposes specified.

2. The combination, with the band *f*, forming the body portion of the belt, of the blocks f^4 upon the outer portion of the band, metal plates at the inner part or back of said band, and means for securing the blocks and plates to the band, substantially as set forth.

3. The combination, with the band *f* and blocks-f^4 upon the outer portion of the same, of the metal plates f^7 at the inner part of said band *f*, and pins passing through the band and blocks for securing the plates and blocks to the band, substantially as set forth.

4. The combination, with the band *f*, blocks f^4, and plates f^7, having pins passing through the band and blocks, of wires f^{12}, passing through said pins and blocks, substantially as and for the purposes set forth.

5. The combination, with the band *f*, blocks f^4, and plates f^7, having pins passing through the band and blocks, of the metal case f^{14} around the sides of each block, substantially as specified.

6. The combination, with the band *f*, forming the body portion of the belt, of the blocks f^4 upon the same, each block being composed of layers of leather or other yielding material riveted together and secured to said band with the layers perpendicular to the band, substantially as and for the purposes set forth.

7. The combination, with the endless band *f*, forming the body portion of the belt, of metal plates f^7 at the inner part of said band, and blocks f^4, of leather or similar material, upon the outer portion of said band, each block having a semicircular groove in its outer face, substantially as and for the purposes set forth.

404,501. HAIR-CURLING DEVICE.

CARL A. G. PFANNE, Brooklyn, N. Y., assignor to Parker, Stearns & Sutton, same place. Filed Jan. 21, 1888. Serial No. 296,971. (No model.)



Claim.—1. A hair-curler composed of a stem upon which the hair is wound and an elastic retaining-cup on the end of the stem adapted to be turned inside out to uncover or to cover it, for the purpose stated.

2. A hair-curling device consisting of a stem upon which the hair is wound, having at each end an elastic retaining cup part, the length of both retaining parts being equal to the length of the stem, and adapted to be turned inside out upon the stem, for the purpose stated.

3. As a new article of manufacture, the herein-described rubber hair-curling device, consisting of a stem having on each end a cup-shaped retaining part adapted to be turned inside out, substantially as described, for the purpose specified.

404,502. RANGE.

GEORGE H. PHILLIPS, Geneva, N.Y. Filed Mar. 20, 1889. Serial No. 304,035. (No model.)

Claim.—1. The combination, with the range-plate, of the herein-described range-shelf provided with the hook C^3, substantially as and for the purpose specified.

2. The combination, with the range-plate, of the herein-described range-shelf having the hook C^3 cast integral therewith, substantially as and for the purpose specified.

3. The combination, with the range-shelf having a hook C^3, of the herein-described collar B, provided with the recess or depression B', substantially as and for the purpose specified.

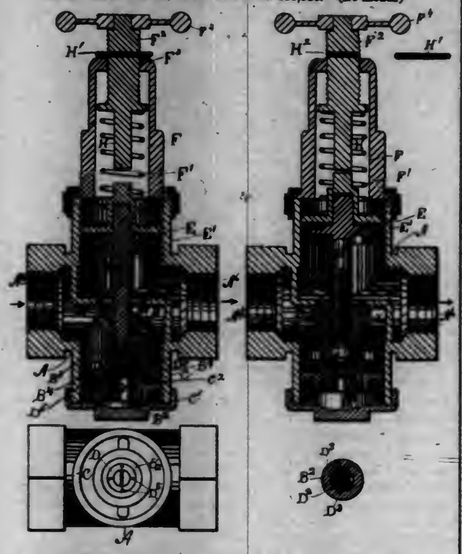
4. The combination of the top range-plate A and the collar B, provided upon said range-plate, with the shelf C, having the hook C^3, for engaging the range-plate, substantially as and for the purpose specified.

5. The combination of the top range-plate A, the collar B, provided upon said range-plate, the recess or depression B', provided in said collar, and an opening in the collar beneath said recess with the shelf C, and the hook C^3, provided upon the shelf for passing through the opening beneath the recess or depression B' and engaging the said range-plate, substantially as and for the purpose specified.

6. The combination of the top range-plate A with the shelf C, having the hook C^3, securing one side of the shelf to the said range-plate, and the shoulders *d'*, provided on the opposite side of said shelf and secured to the said range-plate by bolts E, substantially as and for the purpose specified.

404,503. FLUID-PRESSURE REGULATOR.

WILLIAM ROSS, Troy, N. Y. Filed Dec. 31, 1887. Serial No. 258,523. (No model.)



Claim.—1. A main-valve case having inlet and outlet chambers opening exteriorly and connected interiorly by a passage-way, in combination with the main valve controlling said passage-way, a connected valve-actuating piston and its cylinder closed at one end, the closed end being connected by runways with the inlet-and outlet chambers, and a runway-regulating valve, operated substantially as described, and linked to the main valve, for the purpose of regulating one of said runways and at the same time affording means for communicating positive movements to the main valve, substantially as described, and for the purposes set forth.

2. A main-valve case having inlet and outlet chambers opening exteriorly and connected interiorly by a passage-way, in combination with the main valve controlling said passage-way, a connected valve-actuating piston and its cylinder closed at one end, the closed end being connected by runways with the inlet and outlet chambers, a regulating-valve seat for each of said runways, and a regulating-valve located between said seats and common to both for the purpose of conversely and simultaneously controlling both of said runways, substantially as described, and for the purposes set forth.

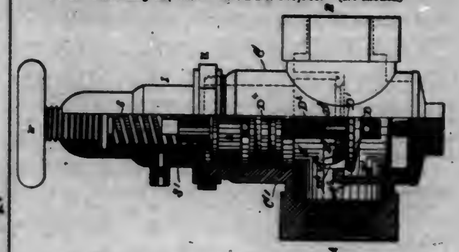
3. A main-valve case having inlet and outlet chambers opening exteriorly and connected interiorly by a passage-way, in combination with the main valve controlling said passage-way, a connected valve-actuating piston and its cylinder opened at one end, the closed end being connected by runways with the inlet and outlet chambers, a regulating-valve seat located upon the main valve, and a regulating-valve connected with and actuated by a movable part of the outlet-chamber case, the movable part being arranged to yield in a direction to seat both valves to an excess of pressure above a predetermined amount in the outlet-chamber, substantially as described, and for the purposes set forth.

4. A main-valve case having inlet and outlet chambers opening exteriorly and connected interiorly by a passage-way, in combination with the main valve controlling said passage-way, a connected valve-actuating piston and its cylinder closed at one end, the closed end being connected by runways with the inlet and outlet chambers, a runway-regulating valve located within the main valve and provided with a stem projecting from a loosely-fitting aperture in the face of the main valve through the chamber-connecting passage-way to a support in the outlet-chamber, whereby the supporting-stem of the regulating-valve serves to guide the main valve to its seat, substantially as described.

5. A main-valve case having inlet and outlet chambers opening exteriorly and connected interiorly by a passage-way, in combination with the main valve controlling said passage-way, a connected valve-actuating piston and its cylinder closed at one end, the closed end being connected by runways with the inlet and outlet chambers, a spring-inclosing chamber separated from the outlet-chamber by a movable spring-controlled bridge or section, a runway-regulating valve connected with the bridge, bridge-controlling spring, and spring-regulating screw fitting a threaded receiving-aperture opening out of the spring-chamber and provided with interiorly and outwardly projecting stems, the outward-projecting stem having a detachable stop for the purpose of changing a pressure-regulator from the control of a spring to the positive control of a screw, substantially as described.

404,504. FLUID-PRESSURE REGULATOR.

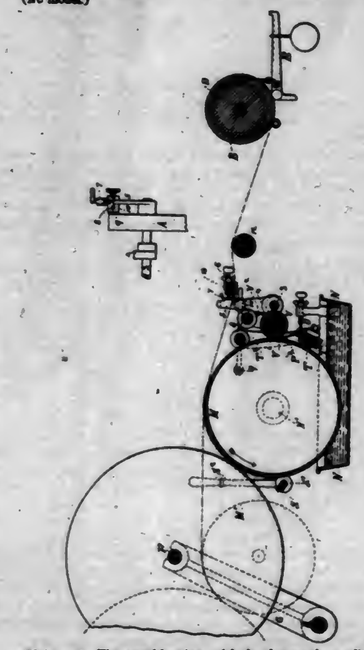
WILLIAM ROSS, Troy, N. Y. Filed May 28, 1888. Ser. .. No. 275,315. (No model.)



Claim.—In a fluid-pressure regulator, a valve-case having inlet and outlet chambers opening exteriorly and connected interiorly by a passage-way, in combination with a combined valve-seat and stop located at the junction of the passage-way and the outlet-chamber, a valve placed in the outlet-chamber and movable therein to and from said seat, a piston-cylinder, a piston-controlling spring, and two valve-actuating pistons connected by a common stem with the valve, one of the pistons fitting the cylinder more tightly than the other, and the cylinder-space between the pistons being connected with the outlet-chamber by a runway, substantially as described.

404,505. DAMPENING APPARATUS FOR ROLLS OF PAPER.

WALTER SCOTT, Plainfield, N. J. Filed Oct. 15, 1888. Serial No. 288,071. (No model.)



Claim.—1. The combination, with the dampening-cylinder M and water-trough N, of the cross-bar or scraper T, holder T', and pivoted arms for supporting the holder, and means for regulating the proximity of the cross-bar T to the surface of the dampening-cylinder, substantially as set forth.

2. The combination, with the dampening-cylinder M and trough, the scraper T and holder T', of the elastic roller V and the hanging arms for the same, the cross-shaft 3, and cams and lever for applying more or less pressure of the elastic roller upon the dampening-cylinder, substantially as set forth.

3. The combination, with the dampening-cylinder M and trough, of the cross-bar or scraper T and holder, the elastic roller V and its supporting-links, and the shaft 3, cams and lever-handle, and deflecting-plate F^2, substantially as specified.

4. The lever-handle 5, swinging block 7, pivoted to the same, and the set-screw 6, in combination with the dampening-cylinder M, the cams 4, cross-shaft 3, elastic roller V, and the links V^2 by which the same is suspended, for applying pressure to the elastic roller V or relieving the same by moving the swinging block, substantially as set forth.

5. The combination, with the frame and the roll for the web of paper, and the roll upon which the dampened paper is wound, of the water-trough N, dampening-cylinder M, over which the paper passes, the grooved spreader 13, with which the web of paper passes in contact to the dampening-cylinder, and the driving-pulley for rotating the winding-cylinder, and the brake for stopping the same and arresting the movement of the paper, substantially as set forth.

6. The combination, with the rollers for the web of paper, of the dampening-cylinder and a water-trough for supplying the water, and an elastic roller and mechanism, substantially as specified, for pressing the same against the dampening-cylinder to remove the surplus water, substantially as specified.

7. The combination, with the rolls for the web of paper, of a water-trough and a dampening-cylinder receiving the water from the said trough, and an elastic roll for removing the surplus moisture, the said dampening-cylinder also acting to give motion to the roll of paper as the web is wound up, substantially as set forth.

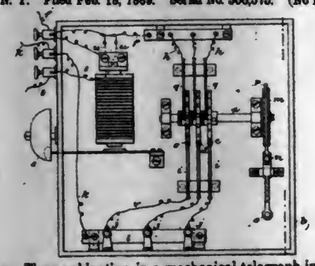
404,506. APLANATIC LENS. HENDRIK L. H. SCHRÖDER, 17 Alsharp Road, Upper Tooting, County of Surrey, assignor to John Stuart, Clapham, County of Surrey, England. Filed Mar. 13, 1888. Serial No. 303,120. (No model.) Patented in England Apr. 7, 1883, No. 5,194.



Claim.—1. An aplanatic lens composed of a plano-convex lens and a plano-concave lens joined together, the convex surface of the lens having a longer radius than that of the concave surface, substantially as described.

2. An aplanatic lens or objective giving a positive image, said lens or objective being composed of a plano-convex lens made of high refractive power and low dispersive power, and a plano-concave lens made of glass of lower refractive power and as high or higher dispersive power, the convex surface of said lens or objective having a longer radius than the concave surface, substantially as described.

404,507. TELEGRAPH APPARATUS. EBENEZER B. SHAFER, New York, N. Y. Filed Feb. 18, 1889. Serial No. 300,375. (No model.)



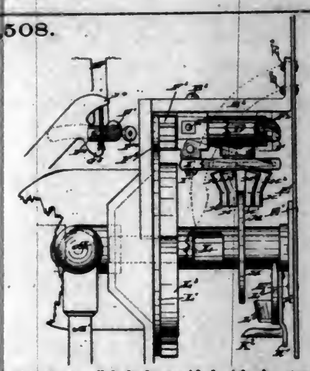
Claim.—The combination, in a mechanical telegraph-instrument, of the series of two or more contact-wheels keyed on but insulated from the carrying and operating shaft, the finger-pawl and ratchet-wheel for operating all the disks alike, the brushes and branch wire, and current-closing push-stud to each disk and separately connecting them in the circuit, substantially as described.

404,508. GRAIN-BINDER. OLE C. STORLE, Milwaukee, Wis., assignor of one-half to John H. Gordon, Rochester, N. Y. Filed Jan. 14, 1884. Serial No. 117,441. (No model.)

Claim.—1. The rotary knotter mounted in a stationary bearing and provided with the stop-pinion, in combination with the stop-motion gear engaging said pinion, the gear-shaft parallel with the axis of the knotter, and the stripper-arm secured to the gear-shaft and adapted, as shown, to extend beyond and sweep over the end of the knotter, and the knife secured to said stripper.

2. The rotary knotter provided with a stop-motion pinion, in combination with the parallel shaft provided with the stop-motion gear engaging the pinion, and with the stripper-arm adapted to extend across and sweep over the outer or under face of the knotter.

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3. The knotter provided with the stop-pinion, and adapted to form the knot by a revolution on its axis, and the cord-holder, all combined with the segment L^3, the arm K', knife K^3, and rack L^5, all revolving on a common axis, substantially as described.

4. The combination, with the knotter-driving shaft A, of the knotter F and the revolving knife K^3, arranged on axes substantially parallel with each other and provided with the cord-holder disk H, located between the axes and operated by means of pinion H^3, having stop-teeth H', tooth L^4, and notched flange M, revolving on the same axis with the knife, substantially as described.

5. The combination, with the knotter F and the revolving knife K^3, arranged on axes substantially parallel with each other, of the cord-holder disk H, placed between the knotter and the axis of the revolving knife and operated by means of the pinion H^3, and tooth L^4, revolving on the same axis with the knife, substantially as described.

6. The knotter, the breast-plate having the slot with the lateral extension E^4 to permit the discharge of the knot from the knotter, combined with the tucker having the supplemental finger J^3, substantially as described.

7. The knotter and its delay-pinion, in combination with a driving-gear L', with the gear-segment and delay-surface to impart complete intermitting rotations to the knotter, the driving-gear shaft L, parallel with the axis of the tyer, the cord-holding disk with the series of peripheral notches therein, the disk-operating pinion H, and the pinion-extension H', having the series of cross-slots therein, the rack-arm L^5, carried by shaft L and adapted to give partial rotation to the pinion and disk, and the notched disk M, also carried by the shaft L, whereby the differential rotations are imparted to the knotter and the disk.

8. The knotter-frame having the sleeve B', the stud-bolt C, at a right angle thereto, the shaft A, having the gear A^3, the sleeve carrying the mechanism for giving motion to the parts, and the gear L^3, all combined substantially as described.

9. The knotter-frame and the breast-plate, combined with the connecting stud-bolt C, said bolt adapted to form an axis for the mechanism for moving the various parts, substantially as described.

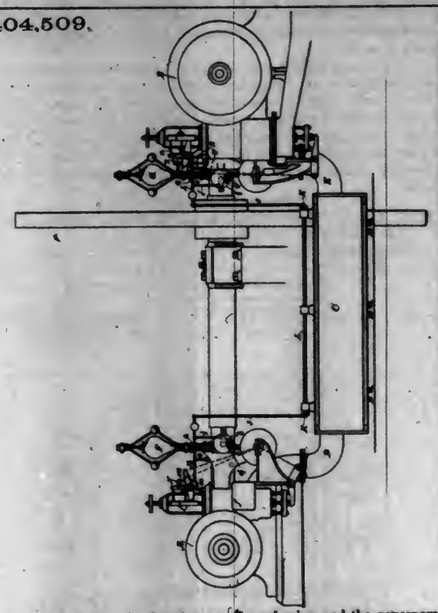
10. In combination with the rotary knotter and its stop-pinion and the adjacent cord-holder, a shaft parallel with the axis of the knotter, the knotter-driving pinion on said shaft, and the arm K, attached to said shaft, its outer end extended in the plane of rotation to sweep over the end of the knotter and strip the knot therefrom, and the knife secured to said arm at a distance from its end at substantially right angles to the plane of rotation, whereby it is adapted to pass between the knotter and holder.

404,509. VALVE-GEAR FOR COMPOUND ENGINES. JOHN C. H. STUT, San Francisco, Cal. Filed Dec. 26, 1888. Serial No. 294,065. (No model.)

Claim.—1. The initial and expansion cylinders, with their respective cut-off mechanisms and the governors by which said mechanisms are actuated, in combination with a connecting mechanism whereby said governors operate simultaneously and an oscillating link, together with a block adjustable in said link and connected with the cut-off mechanism of the expansion-engine, substantially as and for the purpose herein described.

2. The oscillating link connected with a lever which is moved by the action of the governors of the initial and of the expansion engines, a block fitted to said link and adjustable to either side of its center of oscillation, with a radius-rod connecting said block with the arm of the rocker-shaft, through which the cut-off mechanism of the engine is controlled, substantially as described.

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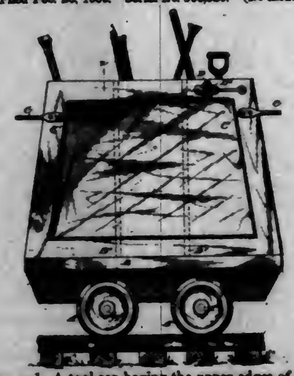
3. The engines having the cut-off mechanism and the governors by which said mechanisms are controlled, in combination with the mercury-air dash-pots by which the momentum of the governor is checked, substantially as described.

4. The dash-pot for checking the momentum of the governor, consisting of a circular hollow case mounted upon a horizontal shaft, a crank-arm connecting said shaft with a governor, a vertical partition separating the interior of said case, and a body of mercury partially filling said space and acting upon the confined bodies of air, substantially as described.

5. The mercury-air dash-pot for checking the momentum of the governors, consisting of a hollow case divided into two compartments by a vertical partition, the said compartments being partially filled with mercury, a connecting-pipe uniting the lower part of the compartments and having an adjusting cock or valve, said case being journaled upon a horizontal shaft and having an adjustable crank-arm, by which it is connected with the moving parts of the governor, so as to be oscillated from side to side, substantially as described.

6. The cut-off mechanisms of the initial and expansion cylinders of a compound engine, in combination with an intermediate mechanism whereby the cut-off of the expansion-cylinder is caused to take place either simultaneously with, later, or earlier than that of the initial cylinder, substantially as described.

404,510. TOOL-CAR FOR MINES. JOSEPH TREWEEK, Lead City, Dak. Filed Feb. 20, 1889. Serial No. 300,589. (No model.)



Claim.—1. A tool-car having the upper edges of its body disposed within the area of its bottom, substantially as specified.

2. A tool-car for mines, having inwardly-inclined side and end walls, substantially as specified.

3. A tool-car for mines, consisting of inwardly-projecting side and end walls, the body thereof being divided into compartments for the reception of tools, substantially as specified.

4. A tool-car for mines and similar places, consisting of inwardly-projecting side and end walls, the body thereof being divided into compartments, the opposite walls of which are inclined for the reception of tools, substantially as specified.

5. The combination, with a car for use in mines and similar places, consisting of the side and end walls projecting inwardly toward their top, divided into compartments for the reception of tools, of fastening-brackets at the sides thereof to hold the car on an elevator, substantially as specified.

6. The combination, in a car for carrying tools, consisting of the side and end walls projecting inwardly toward their top, of fastening-brackets at the sides thereof, and hand-holds at the ends for propelling the car backward and forward, substantially as specified.

404,511. ADJUSTABLE ATTACHMENT AND EXTENSION FOR FIRE-LADDERS. JAMES W. TULLY, San Francisco, Cal. Filed Oct. 3, 1888. Serial No. 287,545. (No model.)



Claim.—1. In combination with the main ladder, an auxiliary or supplementary ladder and bearing-hooks with protecting-springs attached to the auxiliary or supplementary ladder, whereby said ladder may be readily connected with the rounds of the main ladder and turned to any inclination, substantially as herein described.

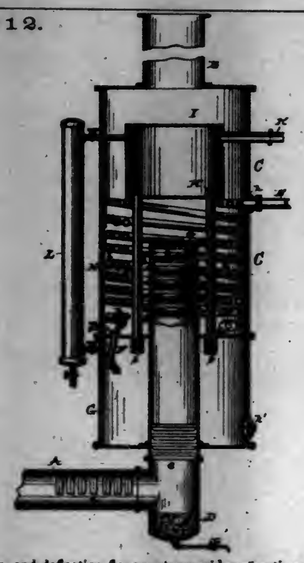
2. In combination with the main ladder, a detachable auxiliary or supplementary ladder having bearing-hooks at one end, by which it is hinged to any of the rounds of the main ladder, the springs protecting the openings to the hooks, the ropes attached to the auxiliary or supplementary ladder and passing through sheaves on the main ladder, and a winding-drum or windlass at the foot of the main ladder, to which the ropes are attached, whereby the auxiliary or supplementary ladder may be extended from the main ladder and turned to any suitable inclination, substantially as herein described.

404,512. FEED-WATER HEATER. JONATHAN H. VAIL, New York, N. Y. Filed June 9, 1888. Serial No. 276,617. (No model.)

Claim.—1. The combination, with an exhaust-pipe, of a chamber surrounding a portion of the same wherein the feed-water is heated, a settling-chamber below said heating-chamber also surrounding the exhaust-pipe and receiving the heated water, and a chamber above said settling-chamber and connected therewith by tubes through which the clear hot water rises, substantially as set forth.

2. An exhaust-pipe having a number of small perforations in its

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upper portion, and deflecting flanges above said perforations, in combination with a chamber surrounding said perforated portion, and an exit from such chamber, substantially as set forth.

3. The combination of an exhaust-pipe having a number of small perforations, a chamber surrounding the perforated portion of said pipe, and a coil of pipe in said chamber through which feed-water passes, substantially as set forth.

4. The combination of an exhaust-pipe, a chamber surrounding a portion of the same, a feed-water coil in said chamber, a settling-chamber connected with said coil and also surrounding a portion of the exhaust-pipe, and a clear-water chamber receiving the water from said settling-chamber, substantially as set forth.

5. The combination of an exhaust-pipe, a heating-chamber surrounding a portion of the same, an outlet from said pipe into said chamber, an exit-pipe leading from the top of said chamber, a settling-chamber surrounding the exhaust-pipe below said feeding-chamber with which said feed-water coil communicates, a clear-water chamber within the heating-chamber and communicating with the boiler, and tubes extending from said settling-chamber to said clear-water chamber, substantially as set forth.

6. The combination of the settling-chamber, the clear-water chamber above the same, the scum-chamber, passages to said scum-chamber from near the top of said settling-chamber and of said clear-water chamber, and valves in said passages, substantially as set forth.

7. The combination, with a vertical exhaust-steam pipe, of annular downwardly-inclined flanges within the same, and a receptacle below said flanges for the water and oil which collect on said flanges, substantially as set forth.

8. The combination of an exhaust-pipe having a number of small perforations, a heating-chamber surrounding the perforated portion of said pipe, a coil of pipe in said chamber through which feed-water passes, a settling-chamber connected with said coil and also surrounding a portion of the exhaust-pipe, a clear-water chamber connected with said settling-chamber, and an exit from said heating-chamber, substantially as set forth.

9. The combination of the exhaust-pipe, the settling-chamber, the clear-water chamber receiving the purified water, and an annular passage around said clear-water chamber connected with said exhaust-pipe, whereby the exhaust-steam surrounds said clear-water chamber, substantially as set forth.

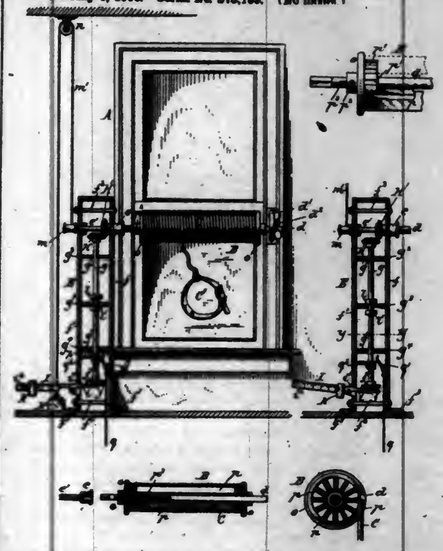
404,513. TEMPORARY BINDER. WILBUR F. WAKEMAN, Kansas City, Mo. Filed Dec. 20, 1888. Serial No. 294,294. (No model.)



Claim.—1. The herein-described binder one of the covers of which is provided with a longitudinal joint and a transverse joint, substantially as set forth.

2. The combination, with a series of coupon-slips, of a binder for securing the slips together and for protecting them, one of the covers of said binder having a joint extending longitudinally thereof and a joint extending transversely thereof, whereby the right-hand portion of the coupon-slip may be exposed throughout its length without disclosing the left-hand portion, and whereby the top of the slip may be disclosed without disclosing the lower portion, substantially as set forth.

404,514. FIRE-ESCAPE. GEORGE W. WORDEN, Lewiston, N. Y. Filed May 8, 1888. Serial No. 273,189. (No model.)



Claim.—1. In a fire-escape, the combination, with a horizontal drum, of a friction-disk, connecting mechanism whereby the rotary motion of the drum is transmitted to the friction-disk, and a weighted lever bearing directly against said friction-disk for retarding the motion of the same, substantially as set forth.

2. The combination, with a horizontal drum, of a vertical shaft geared with said drum and provided with a friction-disk, and a weighted lever bearing against said friction-disk, substantially as set forth.

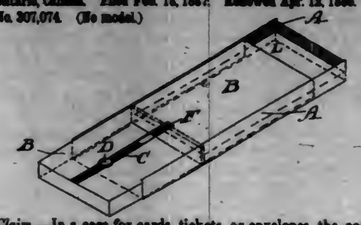
3. The combination, with a horizontal drum, of a gear-wheel mounted on said drum, a vertically-movable shaft provided with a gear-wheel meshing with the gear-wheel of the drum and having a friction-disk, and a lever bearing against said friction-disk, and provided with a movable counterpoise, whereby the pressure of the lever against said friction-disk may be regulated, substantially as set forth.

4. The combination, with the window-frame, the casing K, and the horizontal shaft c', mounted in said casing and provided with a bevel-wheel H' and at one end with a square or flat-sided socket c, of the removable drum B, having a shaft provided with a flat-sided end adapted to enter the socket c and formed at its opposite end to fit a hook-shaped bearing d', secured to the window-frame, a vertical shaft g, having a bevel-wheel H, meshing with the wheel H', a friction-disk j', secured to said shaft, and a weighted lever I, provided with a friction-disk j, bearing against the disk j', substantially as set forth.

5. The combination, with the rope C, the horizontal main drum B, and its shaft provided with the gear-wheel H', of the vertically-movable shaft g, provided with a gear-wheel H, meshing with the gear-wheel H' and with a friction-disk j', a lever I, provided at its inner end with a friction-disk j, bearing against the disk j', a counterpoise k, arranged upon the lever I, an auxiliary drum m, mounted on the shaft of the main drum, and a rope m', wound upon the auxiliary drum in an opposite direction to the rope C, attached to the main drum and provided with a weight N, whereby the rope C is automatically rewound upon the drum after being unwound, substantially as set forth.

6. In a fire-escape, the drum B, composed of hub-disks o, having radial grooves p', and removable radial slats or bars p, arranged in said grooves, substantially as set forth.

404,515. CARD OR TICKET CASE. ALEXANDER ALLEN, Toronto, Ontario, Canada. Filed Feb. 18, 1887. Renewed Apr. 12, 1888. Serial No. 307,074. (No model.)



Claim.—In a case for cards, tickets, or envelopes, the combination of knob D, sliding plate C, and the plate K, having the spring-strips cut and arranged substantially as described.

404,516. LOCK. ALVIN S. BOICE, New Richland, Minn. Filed Aug. 15, 1888. Serial No. 282,760. (Model.)



Claim.—1. In combination with the lock-bolt, a pivoted catch adapted to connect with said bolt when retracted, a loose trigger constructed to project through the face-plate of the lock and to be pressed inward, a sliding bar in position to engage with said trigger, and a suitable device connecting said bar with said catch, by which the said bolt may be released, substantially as set forth and described.

2. The combination, with the main bolt, of a lever connected therewith and provided with a spring which is adapted to thrust forward said bolt, a pivoted catch adapted to detain said bolt when retracted, a sliding bar, a loose trigger constructed to project through the face-plate of the lock, to be pressed inward, and to engage said sliding bar, and a pivoted angular lever which is loosely connected with said catch and the sliding bar, substantially as set forth and described.

3. The combination, with the main bolt provided with a shoulder c^3, of a pivoted catch H, provided with a stud c^2 in position to connect with said bolt, a spring-lever adapted to drive said bolt, and a rotative plug G, provided with an arm and adapted to engage said pivoted catch and said spring-lever successively, substantially as set forth and described.

4. In a lock, in combination with the knob-spindle, a circular plug fitting on said spindle and provided with a nipple m and an aperture p, a plate M, provided with an annular flange fitting around the said plug and provided with an aperture, with which the aperture p may be brought in line, a pin supported in position to enter said apertures and provided with means for projecting and withdrawing it, a series of notched tumblers adapted for engagement with said plug and said pin, a lock-bolt, a pivoted catch constructed to lock said bolt after it is driven forward, and a lever K, constructed to engage with plate M and with said pivoted catch, substantially as set forth and described.

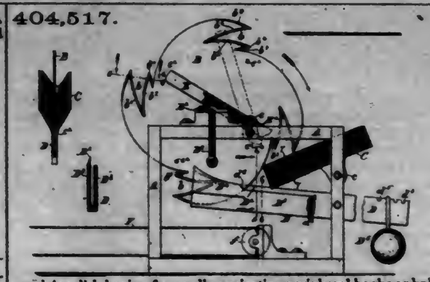
5. In combination with the lock-case having an aperture in its face-plate, a push-button, a pivoted spring-lever connected with said button, a movable bar which is loosely connected with said lever and is provided with a curved arm w, a combination-pin which is movably connected with said curved arm, a knob-spindle provided with a perforated plug, and plate M, adapted for connection with said plug by means of said pin, substantially as and for the purposes described.

6. In combination with the knob-spindle, the rotative plug L, fitting thereon and provided with a nipple m, the notched ring T, with projection x^4, and a series of tumblers adapted to be engaged by said ring, substantially as set forth and described.

404,517. FRUIT-STONING MACHINE. JOHN S. BIXBY and WELLS R. LEACH, San Buenaventura, Cal. Filed Dec. 4, 1888. Serial No. 292,567. (No model.)

Claim.—1. A machine for the purpose described, comprising a

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revolving disk having forwardly-projecting peripheral hooks or knives and a knife or cutter yieldingly supported and moving in a plane parallel with the disk and in contact with the periphery of the latter, substantially as described.

2. A machine for the purpose stated, comprising a revolving cutting-disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported and moving in a plane parallel with the disk and in contact with the periphery of the latter, and a movable inclined trough or guide for feeding the fruit to the disk and knife, substantially as described.

3. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported and moving in a plane parallel with the disk and in contact with the periphery of the latter, and divergent spreaders located at opposite sides of the disk adjacent to the end of the knife, substantially as described.

4. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported adjacent to the periphery of the disk, and yieldingly-supported parallel pit-guides arranged at opposite sides of the disk and adjacent to the said knife, substantially as described.

5. A machine for the purpose stated, comprising a revolving disk provided with forwardly-projecting peripheral hooks or knives, a knife yieldingly supported and moving in a plane parallel with the disk and in contact with the periphery of the latter, yieldingly-supported parallel pit-guides located adjacent to and at opposite sides of the periphery of the disk, and divergent spreaders located adjacent to and outside of the pit-guides, substantially as described.

6. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported adjacent to the periphery of the disk, and a movable feed-trough having its end nearest the knife sustained in position for operation by and movable with the latter, substantially as described.

7. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported adjacent to the periphery of the disk, and a weighted lever carrying said knife, substantially as described.

8. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported adjacent to the periphery of the disk, yieldingly-supported pit-guides located at opposite sides of the periphery of the disk, and a weighted lever sustaining said knife and pit-guides, substantially as described.

9. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported adjacent to the periphery of the disk, yieldingly-supported pit-guides arranged at opposite sides of the periphery of the disk, yieldingly-supported divergent spreaders arranged at opposite sides of the said pit-guides, and a weighted lever supporting said knife, pit-guides, and spreaders, substantially as described.

10. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives and sharpened points b^4, a knife yieldingly supported adjacent to the periphery of the disk, and a guide-trough, substantially as described.

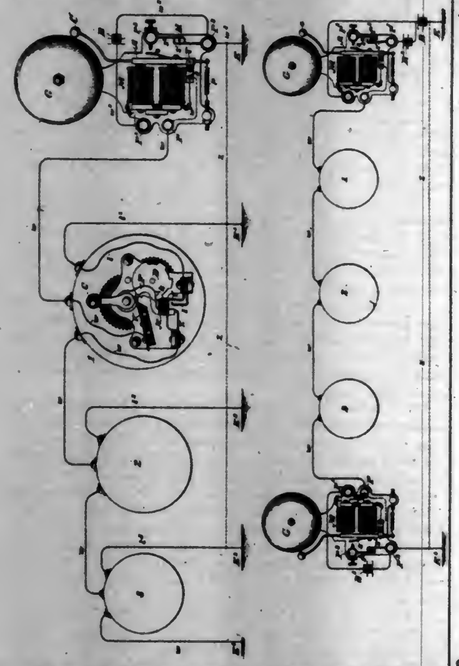
11. A machine for the purpose stated, comprising a revolving disk provided with forwardly-projecting peripheral hooks or knives, a knife yieldingly supported adjacent to the periphery of the disk, and a V-shaped inclined feed-trough having its sides arranged at an acute angle with each other, substantially as described.

12. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported adjacent to the periphery of the disk, a feed-trough, and a movable knocker for dislodging pits or stones from the said disk, substantially as described.

13. A machine for the purpose stated, comprising a revolving disk having forwardly-projecting peripheral hooks or knives, a knife yieldingly supported adjacent to the periphery of the disk, and spread-

ers for separating the halves of the fruit, one of said spreaders being continuous with the yielding knife and the other having a blunt edge adjacent to the knife adapted to enter the cut made by the knife, substantially as described.

404,518. FIRE-ALARM TELEGRAPH. SIDNEY A. CRANE, Evart, Mich., assignor of one-half to William R. Mapes, same place. Filed May 24, 1888. Serial No. 274,892. (No model.)



Claim.—1. In a fire-alarm system, a trembler-bell having an electro-magnet included in the main-line circuit, the armature of which carries a contact-spring adapted to contact with a circuit-closer on its back contact, in combination with two circuit-closing springs connecting such back contact with the battery through a local circuit, said circuit-closing springs being provided with a plug for separating them electrically, substantially as described.

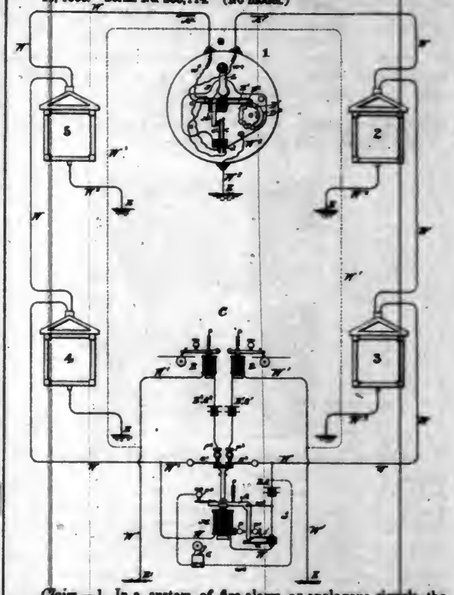
2. In a fire-alarm or signal system, a normally-closed conductor earthed at each end, one or more outlying signal or alarm stations having signaling mechanism, a vibratory electro-magnetic bell and battery located at the fire-alarm station, both connected directly in the main circuit with double circuit-connections, and a secondary circuit having a normally-closed contact between the back contact of the armature and the main circuit provided with an insulating-pin for electrically disconnecting the normally-closed contacts, whereby when a signal is transmitted the current generated from the main battery flows over the secondary circuit and vibratory impulse-signals are received, and when the main line is broken the normally-closed contacts may be opened electrically, substantially as described.

3. In a fire-alarm or analogous system, a vibratory electro-magnetic bell having an electro-magnet, the coils of which are connected in a closed main-line circuit, the armature having a contact-spring adapted to contact with a circuit-closer on its back contact, in combination with two contact-springs located between the back contact of the armature of the electro-magnet and the main circuit connecting the back contact electrically with the main battery through a secondary circuit, said contact-springs being provided with an insulating-pin for separating them, substantially as described.

4. In a fire-alarm system, a trembler-bell having an electro-magnet with double circuit-connections, the coils of the electro-magnet being included in the main-line circuit, the armature of the electro-magnet carrying a contact-spring adapted to contact with a circuit-closer on its back contact in electrical connection with two normally-closed contact-springs connecting the back contact with the battery, including the coils of the electro-magnet through a secondary circuit, said contact-springs being provided with an insulating-pin for separating them electrically, substantially as described.

5. In a fire-alarm system, the combination of two electro-magnetic vibrating gongs connected in a normally-closed main circuit, said gongs having double circuit-connections and a secondary circuit including electro-magnet, armature, and poles of a divided main-line battery, the secondary circuits having normally-closed contacts between the back contact of the armature and main circuit provided with an insulating-pin for electrically disconnecting the normally-closed contacts electrically, substantially as described.

404,519. DUPLEX FIRE-TELEGRAPH. SIDNEY A. CRANE, Evart, Mich., assignor of one-half to William R. Mapes, same place. Filed Sept. 11, 1888. Serial No. 285,114. (No model.)



Claim.—1. In a system of fire-alarm or analogous signals, the combination of a two-way transmitter composed of two signal-disks having a character-signal on each disk and contact-springs, with a normally-closed circuit shunting the transmitter and including in its circuit a circuit-closer and an electro-magnet located at a signal-receiving station, the circuit-closer being held closed by the armature of the magnet, and one or more normally-open signal-receiving circuits, including one or more signal-receiving instruments, the contact making and breaking devices representing the characteristic signals being located on the same side of the disks, so that both signals are transmitted simultaneously, or so that the signal is sent in by whichever of the two lines remains intact, substantially as described.

2. A signal-transmitter for use in a duplex system of fire or analogous signals, consisting of three disks, two of which have a definite signal on the same side of their periphery, the third having constant metallic contact with an earth-circuit, while the others are connected by individual contact-springs and normally-open main-line circuits running by diverse routes to a receiving-station, said main lines including receiving-instruments, substantially as described.

3. A signal-transmitter for use in duplex fire or analogous systems of signals, consisting of a mechanically-impelled motor geared to a signal-wheel composed of two signal-disks having two characteristic signals—one on each disk—and located between the same radial portions of said disks, in combination with two main-line circuits running by diverse routes to a signal-receiving station, and a shunt around said transmitter, including a circuit-breaker normally held closed by an arm connected to the motor-shaft, substantially as described.

4. In a duplex fire, police, or analogous system of signals, the combination of the following elements: two receiving-instruments located in normally-open earth-circuits at a signal-receiving station, and independent all-metallic circuit including one or more outlying signal-boxes and an electro-magnet and circuit-closer held closed by the armature of said magnet, a two-way signal-transmitter in each box connected to a normally-open earth-circuit, and a shunt around said signal-transmitter held normally closed by a motor which propels the signal-transmitter, the latter having its duplicate signals in the same radial position, so that as it rotates duplicate signals are sent by diverse routes, substantially as described.

5. A signal-transmitter for use in a duplex fire or analogous signaling system, composed of two circuit-breakers each adapted to give the same signal at the same time, in combination with two independent circuits running in diverse directions to a receiving-station and two independent receiving-instruments, one located in each of said circuits at the receiving-station, the transmitter having a constant connection to earth and the receivers being located in normally-open earth-circuits, substantially as described.

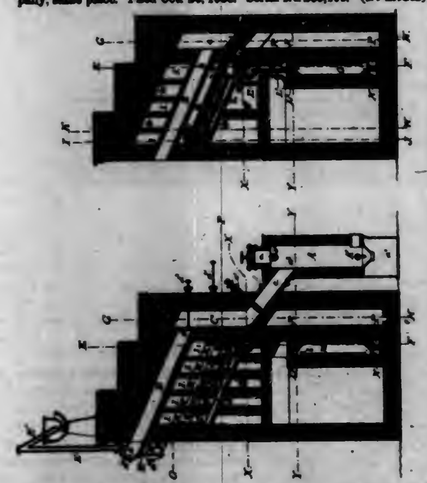
6. A signal-transmitter for use in a duplex system of fire, police, or analogous signals, consisting of two disks which have each a definite signal located on the same side of its periphery, having constant electric connection with an earth-circuit, and having open-circuit independent contact-springs, and circuit-connections branching to closed main-line circuits running by diverse routes to a receiving-station, said main line containing receiving-instruments, substantially as described.

7. In a non-interfering fire, police, or analogous signaling system, a duplex signal-transmitter composed of two duplicate signaling-disks each having the same characteristic signal located on the same radial portion of its circumference, in combination with normally-open circuit signaling contact-springs and circuit-connections, an earth-circuit disk having a continually-closed ground-circuit connection, an automatic circuit-changer at the receiving-station, having earth-circuits and normally-open circuit-connections, whereby duplicate signals may be sent simultaneously to the receiving-station in opposite directions at every revolution of the signaling-circuit disks, substantially as described.

8. A signal-transmitter for use in a duplex fire, police, or analogous system of signals, consisting of a mechanically-impelled motor geared to a signal-wheel composed of two signaling-disks having duplicate signals on the same radial portions of their circumferences and continuous electric connection with an earth-circuit, in combination with independent normally-open circuit signaling contact-springs and circuit-connections connected to opposite sides of a normally-closed shunt-circuit closer, connected in a metallic circuit shunting the transmitter, said circuit running to a central station, including an electro-magnetic circuit-changer and armature, and contacts and connections which connect independent earth-circuits, including receiving-instruments, whereby duplicate signals are transmitted simultaneously, substantially as described.

9. In a duplex fire, police, or analogous signaling system, the combination of the following elements: a main all-wire closed metallic circuit W, normally-open receiving earth-circuits W', transmitter ground-circuits W^2, with a series of duplex transmitters normally shunted out of the main circuit, but connected continually to earth-circuits, said transmitters composed of duplicate signaling-disks and continuity-preserving disks with definite signals located on the same radial portions of the circumferences of the transmitters, substantially as described.

404,520. APPARATUS FOR MANUFACTURING GAS. WALTON CLARK, Philadelphia, Pa., assignor to the United Gas Improvement Company, same place. Filed Oct. 26, 1883. Serial No. 289,198. (No model.)



Claim.—1. In an apparatus for manufacturing gas, the combination of a generator provided with air-blast and steam pipes, a set of retorts arranged above the generator, a chamber into which the retorts open freely at one end, a passage extending from said chamber downwardly into the generator, gas-pipes leading from the ends of the retorts opposite to those opening into the chamber aforesaid, combustion-chambers arranged externally around the retorts, said retorts being closed with respect to the combustion-chambers, a flue system leading from the generator into said combustion-chambers, an air-flue system also leading into the combustion-chambers, and valves in the inclined passage and flue leading from the generator, whereby both can be opened or closed at will, all as and for the purpose specified.

2. In an apparatus for manufacturing gas, the combination of a generator provided with air-blast and steam pipes, a set of inclined retorts arranged above the generator, a chamber into which the retorts open freely at one end, a passage extending from said chamber downwardly into the generator, gas-pipes leading from the ends of the retorts opposite to those opening into the chamber aforesaid, combustion-chambers arranged externally around the retorts, said retorts being closed with respect to the combustion-chamber, an independent flue system leading from the generator into said combustion-chambers, an air-flue system also leading into the combustion-chambers, and valves in the inclined passage and flue leading from the generator, whereby both can be opened or closed at will, all as and for the purpose specified.

3. In an apparatus for manufacturing gas, the combination of a generator provided with air-blast and steam-pipes, a set of retorts arranged above the generator, a chamber into which the retorts open freely at one end, a passage extending from said chamber downwardly into the generator, gas-pipes leading from the ends of the retorts opposite to those opening into the chamber aforesaid, combustion-chambers arranged externally around the retorts, said retorts being closed with respect to the combustion-chambers, an independent flue system leading from the generator into said combustion-chambers, an air-flue system also leading into the combustion-chambers, a flue system leading from the combustion-chambers to the stack arranged to heat the air-flue system, and valves in the inclined passage and flue leading from the generator, whereby both can be opened or closed at will, all as and for the purpose specified.

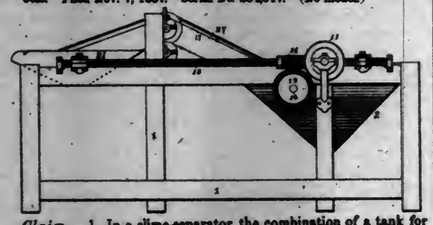
4. In an apparatus for manufacturing gas, the combination of two independent generators provided with air-blast and steam pipes, two sets of retorts arranged above the generators, two chambers, one for each set of retorts, into which said retorts open freely at one end, a passage leading downward from each chamber to the top of one of the generators, so as to connect each independent chamber with one of the generators, gas-pipes leading from each retort at the end opposite to that opening into the chambers aforesaid, combustion-chambers arranged externally around each set of retorts, said retorts being closed with respect to the combustion-chambers, an independent flue system consisting of separate and independent flues leading from each generator to a common flue-connection with both sets of combustion-chambers, air-flues also leading into the combustion-chambers, valves arranged to close the passage leading from the generators to the chambers into which the retorts open, and valves arranged to close each of the passages leading from the generators to the common flue aforesaid.

5. In an apparatus for manufacturing gas, the combination of two independent generators provided with air-blast and steam pipes, two sets of inclined retorts arranged above the generators, two chambers, one for each set of retorts, into which said retorts open freely at their lower ends, a passage leading downward from each chamber to the top of one of the generators, so as to connect each independent chamber with one of the generators, gas-pipes leading from each retort at their upper ends, combustion-chambers arranged externally around each set of retorts, said retorts being closed with respect to the combustion-chambers, a flue system consisting of independent flues leading from each generator to a common flue having connection with both sets of combustion-chambers, valves arranged to close the passages leading from the generators to the chambers into which the retorts open, and valves arranged to close each of the passages leading from the generators to the common flue aforesaid.

6. In an apparatus for manufacturing gas, the combination of two independent generators provided with air-blast and steam pipes, two sets of inclined retorts arranged above the generators, two chambers, one for each set of retorts, into which said retorts open freely at their lower ends, a passage leading downward from each chamber to the top of one of the generators, so as to connect each independent chamber with one of the generators, gas-pipes leading from each retort at their upper ends, combustion-chambers arranged externally around each set of retorts, said retorts being closed with respect to the combustion-chambers, a flue system consisting of independent flues leading from each generator to a common flue having connection with both sets of combustion-chambers, air-flues also leading into the combustion-chambers, a flue system leading from the combustion-chambers arranged in close contact with the air-flue system, so as to heat the entering air, valves arranged to close the passages leading from

the generators to the chambers into which the retorts open, and valves arranged to close each of the passages leading from the generators to the common flue aforesaid.

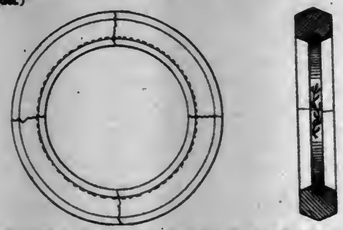
404,521. SLIME-SEPARATOR. PATRICK H. DUHAGAN, DENVER, Colo. Filed Nov. 7, 1887. Serial No. 254,517. (No model.)



Claim.—1. In a slime-separator, the combination of a tank for receiving the pulverized material and water, a second and independent tank for receiving the floats or slimes, a porous rough-surfaced belt dipping just below the water-line in the first tank to lift the slimes from the surface of the water, thence inclining upwardly and then downwardly to the slime-receptacle, rollers over which the belt passes at either end, central rollers in a higher position than the end rollers, and the means for communicating motion thereto, substantially as described.

2. In a slime-separator, the combination of a tank for receiving the pulverized material and water, a second and independent tank for receiving the slimes, a porous rough-surfaced belt dipping just below the water-line in the first tank to lift the slimes from the surface of the water, thence inclining upwardly and then downwardly to the slime-receptacle, rollers over which the belt passes at either end, central rollers in a higher position than the end rollers, and means for imparting to the end rollers both a rotary and a longitudinally-reciprocating motion, substantially as described.

404,522. METHOD OF MAKING RING-DIES. FREDERIC ECAUBERT, Brooklyn, N. Y. Filed Nov. 5, 1888. Serial No. 289,972. (No model.)



Claim.—The method herein specified of manufacturing annular dies, consisting in finishing up the ring of soft steel with the necessary contour, engraving, or ornamentation upon the interior surface thereof, hardening the said ring, and afterward breaking the ring apart into two or more sections adapted to being placed together for use or removed from the article that is rolled or otherwise formed to shape within such ring-shaped die, substantially as set forth.

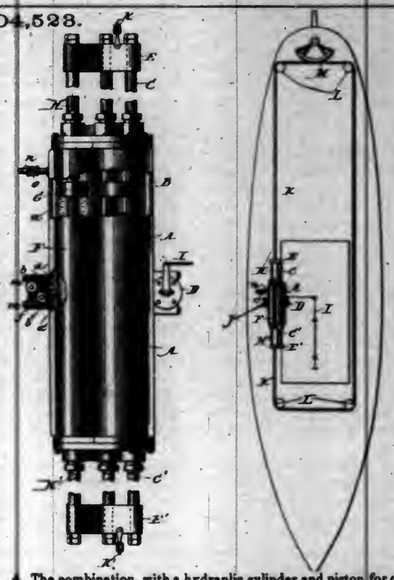
404,523. HYDRAULIC CYLINDER FOR CONTROLLING STEAM-CYLINDERS. CHARLES F. ELMER, Chicago, Ill. Filed Jan. 24, 1889. Serial No. 297,470. (No model.)

Claim.—1. The combination, with a hydraulic cylinder and piston for controlling the movements of a steam-cylinder piston, of valves located between the hydraulic cylinder ends operated in their movements solely by fluid-pressure, substantially as shown and described.

2. The combination, with the steam-cylinder and its piston, of a hydraulic cylinder having ports *a a'*, leading from its ends, a valve-chest *J'*, having the opposite ports *b b'*, communicating, respectively, with said hydraulic cylinder ports, the vertical passages *c c'*, rising, respectively, from the said valve-chest ports, the vertically-movable valves *d d'*, controlling said passages, the springs *f f'*, for closing the valves, the horizontal passages *k k'*, leading from the valve-spaces *j j'*, and the vertical passages *l l'*, leading, respectively, from said horizontal passages to the valve-chest ports *b b'*, substantially as described.

3. The combination, with a hydraulic cylinder and piston for controlling a steam-cylinder piston, of the valve-chest *J*, having the vertically-movable spring-closed valves *d d'*, provided with stems *f f'*, and the adjusting-screws *i i'*, operated from the exterior of the valve-chest and tapped therethrough to vary the height to which the valves and their stems rise, and thereby control the volume of liquid flowing through the valve-chest, substantially as described.

404,528.

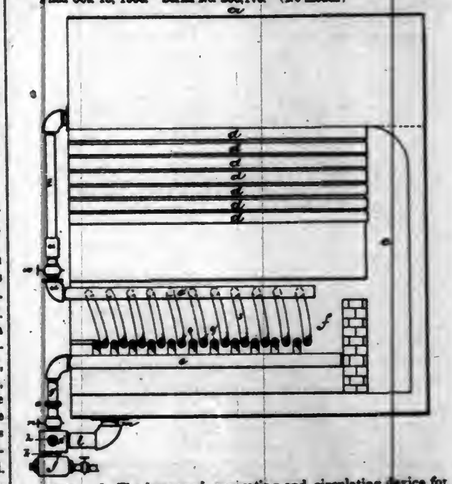


4. The combination, with a hydraulic cylinder and piston for controlling a steam-cylinder piston, of the valves *d d'*, controlling the liquid passage-way between the ends of the hydraulic cylinder, and the adjusting-screws *i i'*, movable in the valve-chest to and from the stems of said valves to vary their extent of movement and thereby control the volume of liquid flowing through the valve-chest, substantially as specified.

5. The combination, with the hydraulic cylinder F, having the passages or ports *a a'*, of the hydraulic chest J, having the ports *b b'*, passages *c c'*, valves *d d'*, and passages *k k'* and *l l'*, substantially as specified.

6. The combination, with the hydraulic cylinder F, adapted to control a steam-cylinder piston, of the pump-connecting pipe *n* and check-valve *o*, substantially as and for the purpose specified.

404,524. STEAM-GENERATOR. JOSEPH A. ESO, Newark, N. J. Filed Oct. 13, 1888. Serial No. 288,170. (No model.)



Claim.—1. The improved generating and circulating device for boilers, containing therein longitudinal pipes *c c*, supporting grate-bars *g*, and generating-pipes *p*, the latter being connected to a pipe *d'*, supply-pipes *g*, and return-pipes *t*, adapted to convey the water from the bottom of the boiler to said generating-pipes and from thence to return the same to the boiler, substantially as and for the purposes set forth.

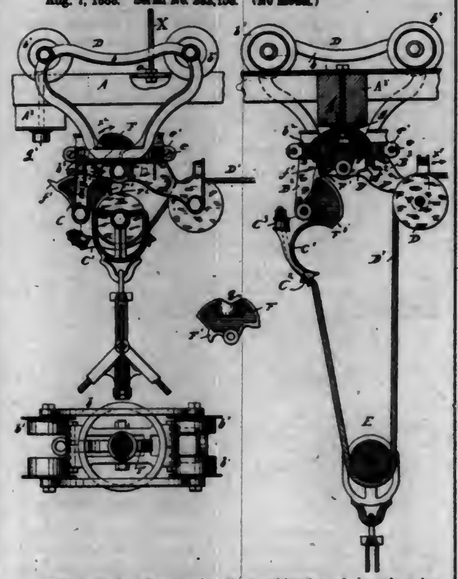
2. In combination with a boiler *a*, having a furnace *b*, longitudinal pipes *c c c'*, connecting-pipes *p'*, curved and conforming to the fire-chamber, jointed supply-pipes *g*, connecting with the bottom of the boiler, and jointed pipes *t*, connecting with the body of the boiler, all said parts being arranged and combined substantially as and for the purposes set forth.

3. In combination with the body of the boiler, pipes *c c*, generating-pipes bent to form a grate *g* and bent upward to connect with a pipe *c'*, lying at the top of fire-chamber, and said pipe *c'* and pipes *g* and *t* at the front of the boiler and connecting with the bottom and top thereof, respectively, and valved and jointed, substantially as and for the purposes set forth.

4. In combination with a boiler and suitable supply and return pipes, longitudinal pipes *c c* and *c'*, and generating-pipes *p*, extending from said pipes *c* upward and over the fire-chamber to the pipe *c'*, and being bent, as at *r*, to facilitate the movement of the water in the pipe *c'*, substantially as and for the purposes set forth.

5. In combination with a main boiler, the improved steam-generator combining therein jointed pipes *g* and *t*, connecting, respectively, with the bottom and top of the boiler, longitudinal pipes *c c* and *c'*, generating-pipes *p*, bent to form gratings *g* and connecting with said pipes *c c* and *c'*, all substantially as and for the purposes set forth.

404,525. HAY-CARRIER. JOHN FARRELL, Huntsville, N. J. Filed Aug. 7, 1888. Serial No. 282,153. (No model.)



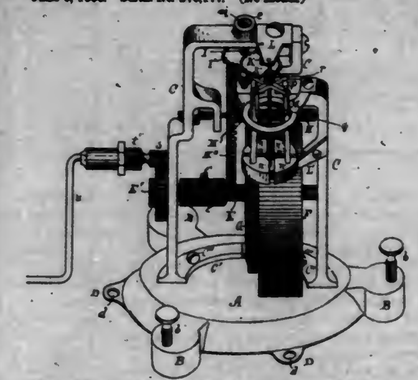
Claim.—1. In a hay-carrier, the combination of a carriage having a lower swiveled portion, a latch pivoted to said swiveled portion at the center of the same, and a locking-lever provided with an arc-shaped upper part having a stop at one end and an inclined portion at the other end, and with an arm at the lower end, substantially as set forth.

2. The combination, in a hay-carrier, with a track, of a carriage provided with a lower swiveled part, a latch pivoted centrally to said swiveled part and provided with a socket, a fixed stop on the track for engaging said socket, a fulcrumed locking-lever pivoted to the lower movable part of the carriage and provided with an arc-shaped upper part having a stop at one end and an inclined portion at the other end, and a guide-pulley for the fork-supporting rope, substantially as set forth.

3. The combination, in a hay-carrier, of a traveling carriage having a lower swiveled part provided with a fixed transverse stop, a latch pivoted centrally to said swiveled part and provided with a socket and with a stop at one end, a locking-lever provided with an arc-shaped upper part and a stop, a rope attached to the locking-lever, a traveling guide-pulley for the fork, and a pulley at the opposite end of the lower swiveled part, substantially as set forth.

4. The combination, in a hay-carrier, of a carriage having a lower swiveled part, a latch pivoted centrally to said swiveled lower part and provided in its top with a socket having its top edges inclined from two diametrically-opposite points in the longitudinal plane of the latch to two diametrically-opposite points on the transverse line of the latch, a track on which the carriage runs, a stop on said track, which stop can enter the socket on the latch, and a pivoted locking-lever that can be engaged and locked in place by the above-mentioned latch, substantially as set forth.

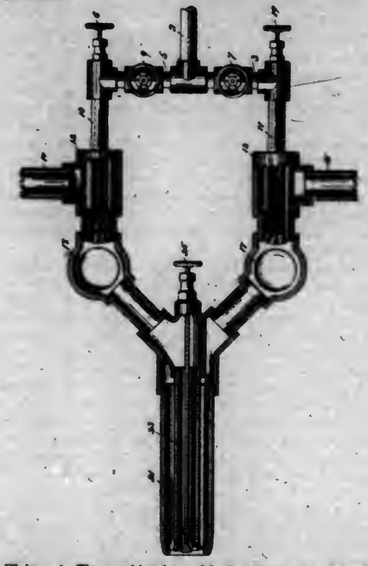
404,526. SPRING-MOTOR. ROBERT FARIS, Decatur, Ill. Filed June 6, 1888. Serial No. 276,177. (No model.)



Claim.—1. A motor-regulator comprising the shaft *q*, carrying cross-head *p*, rods *n*, suspended vertically from the cross-head, and annular band M, encircling the rods below their points of suspension, as set forth.

2. A motor-regulator comprising the shaft *q*, carrying cross-head *p*, rods *n*, suspended vertically from the cross-head and having weights *n'*, and annular band M, encircling the rods below their points of suspension, as set forth.

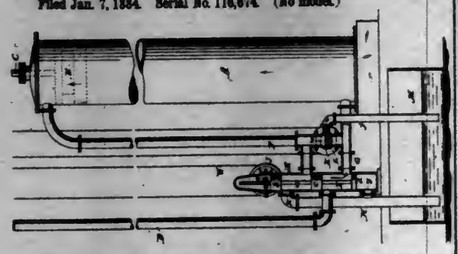
404,527. COMPOUND HYDROCARBON-GAS GENERATOR. ROBERT FERGUSON, St. Paul, Minn. Filed Jan. 26, 1889. Serial No. 297,587. (No model.)



Claim.—1. The combination, with the burner-pipes 21 and 23, of the receivers 17 and 18, connected with said pipes, the oil and steam pipes connected with one of said receivers and the oil and hot-air pipe connected with the other receiver, substantially as described, and for the purpose set forth.

2. The hydrocarbon-burner, comprising, in combination, the burner-pipe 21 and 23, the receivers 17 and 18, connected with said pipes, the oil-pipes connecting with said receivers, the steam-pipes surrounding one of said oil-pipes and connecting with the receiver, and the hot-air pipe surrounding the other oil-pipe and connected with the receiver, substantially as described.

404,528. HYDRAULIC ENGINE. CHARLES E. FOSTER, Washington, D. C., assignor to The Hydraulic Elevator Company, Chicago, Ill. Filed Jan. 7, 1884. Serial No. 116,674. (No model.)



Claim.—1. In a hydraulic engine, a cylinder, a piston therein, a main-valve device opening and closing communication between the cylinder and its supply, and pipes connecting said main-valve device with the cylinder at opposit ends, in combination with a passage to permit circulation between said latter pipes independent of the main-valve device, a valve to close said passage, and connections between said valve and the elevator-cage, substantially as described.

2. A hydraulic engine provided with a cylinder, piston, circulating, supply, and discharge pipes, and stopping and starting valve device, whereby the water circulates while the supply is cut off from the cylinder, and with a supplemental-valve device and communication between the same and a tank, and with connections between said supplemental-valve device and the cage, whereby at the will of the operator in the cage to establish and cut off communication independent of the main-valve device between the circulating-pipes and the tank, substantially as described.

3. A cylinder, a piston operating therein, main valve and casing, and circulating-pipes F and G, to connect the opposite ends of said cylinder with the main-valve chamber, in combination with a circulating-pipe K, connecting said pipes F and G, a pipe connecting said circulating-pipe K with a water-tank, and a valve arranged in said pipe K to open or close communication between the circulating-pipes F and G and between the circulating-pipe K and the pipe connected thereto, substantially as described.

4. The combination, in a hydraulic engine, of the cylinder, its piston and rod, and its supply and discharge pipes and their operating-valves with a circulating pipe or channel, a supply and receiving tank in communication therewith, and a valve to control said communication independent of the main-valve device, substantially as described.

5. A cylinder, a piston operating therein, circulating-pipes F and G, connecting said cylinder with the main-valve chamber, and a valve in said chamber to close communication with the supply in circulating, in combination with a circulating-pipe K, interposed between said pipes F and G, and having a valve, and a communication with a tank independent of the main discharge-pipe, and means, substantially as described, to operate said valve from the cage, substantially as and for the purpose specified.

6. The combination, with the cylinder, the piston head and rod, the supply, discharge, and circulating pipes or channels and their controlling-valves of a double-acting hydraulic engine, of a supply and receiving tank communicating with the circulating pipe or channel through an opening controlled by a supplemental valve independent of said main valve, and means, substantially as described, to operate said supplemental valve, as and for the purpose specified.

7. A cylinder, a piston operating therein, and circulating-pipes F and G, connecting the opposite ends of said cylinder with the main supply and discharge pipes, in combination with a circulating-pipe K, connecting said pipes F and G, a water-tank in communication with said pipe K, and a valve device adapted to simultaneously open or close communication between the circulating-pipes F and G and said pipe K and the water-tank, substantially as described.

8. In a hydraulic engine, a main supply-pipe, a valve-chamber communicating therewith, and pipes F and G, connecting said valve-chamber with the opposite ends, respectively, of a cylinder, in combination with a pipe or channel between said pipes F and G, a receiving and supply tank separate from the main supply, a pipe or channel forming a communication between said tank and the circulating-pipe, and a valve adapted to simultaneously open or close communication between the pipes F and G and pipe K and tank, substantially as described.

9. The combination of the cylinder, piston, and piston-rod, pipes F G, valve-case communicating with the water-supply channel and provided with a valve, pipe connecting the pipes G and F and valve in said pipe, supply and receiving tank, and connections between the platform and the valves, whereby both may be operated from the platform, substantially as set forth.

10. The combination of the cylinder, its piston and piston-rod, and circulating-pipes having a valve, and the supply-tank, with a case containing the main valve and provided with two discharge-ports and an intermediate port connecting with the supply-pipe, substantially as described.

11. The combination, with the hydraulic engine and its circulating-pipes, of a main valve controlling the supply to and discharge from the cylinder, a supply and receiving tank, and an independent valve controlling communication therewith, and mechanism, substantially as described, to hold one of said valves in stationary position while the other is being operated, as and for the purpose specified.

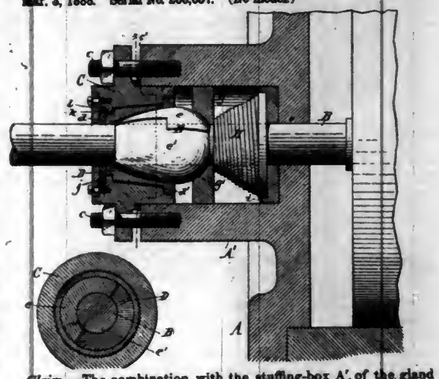
12. In a hydraulic engine, the combination, with an independent valve to control communication through the circulating-pipe thereof, and a notched disk, and a locking-lever, of mechanism, substantially as described, to operate said disk and lever to hold said valve in fixed position, as and for the purpose specified.

13. The combination, with the main valve and its toothed operating-pulley, and the independent valve of the circulating-pipe, of a locking-bolt and lever controlled by said independent valve, substantially as described.

14. The combination, with the main valve, its toothed operating-pulley, and a bolt adapted to engage therewith, of a lever adapted to engage and hold a valve within the circulating-pipe in stationary position when the main valve is being operated, substantially as described.

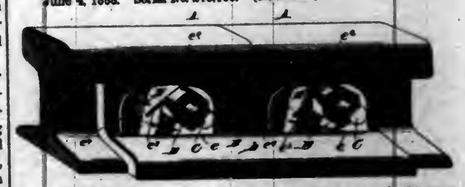
15. The combination, with the main valve, its toothed operating-pulley, and a bolt adapted to engage therewith, of an independent valve within the circulating-pipe, a notched disk secured to said independent valve, a locking-lever to engage said disk, and means, substantially as described, to move said lever into and out of engagement with said disk, as and for the purpose specified.

404,529. STUFFING-BOX. LOUIS C. S. FRICK, Buffalo, N. Y. Filed Mar. 3, 1888. Serial No. 266,057. (No model.)



Claim.—The combination, with the stuffing-box A', of the gland C, provided with a tapering cavity, the tapering bushing loosely fitting all around its sides in said cavity so as to leave an annular space, the flange *d'*, the shoulder *k*, the oval-shaped packing E, fitting in an oval cavity in the bushing so as to leave a space *d* between the two, and the ring *l*, loosely fitting around the piston, whereby provision is made for the settlement of the piston by wear, so as to preserve the fit of all the parts, substantially as set forth.

404,530. NUT-LOCK. GEORGE P. FULLER, Minneapolis, Minn. Filed June 4, 1888. Serial No. 276,160. (No model.)

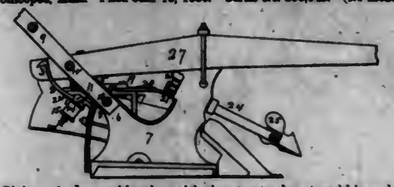


Claim.—1. A locking-plate for single nuts, constructed of heavy spring metal adapted to be secured beneath a nut to be locked and having an elongated end provided with a kerf-slit, forming a spring-tongue designed to engage the side of a nut, said elongated end being entirely free of any connection so as to be capable of springing outward upon depression of the tongue, substantially as and for the purpose described.

2. A locking-plate for single nuts, constructed of heavy spring metal adapted to be secured beneath a nut to be locked and having an elongated end located on one side of the nut and entirely free of any connection, and provided with a spring-tongue and capable of springing out upon depression of the tongue, said tongue being rounded off, whereby the elongated end is enabled to spring out with greater ease and readiness, substantially as and for the purpose described.

3. A locking-plate to lock single nuts made of heavy spring metal and provided with an opening so as to enable the plate to fit snugly on the bolt between the nut and the fish-plate, said plate being provided with a long slot extending at an angle less than a right angle to the nut, which slot extends nearly (more or less) half-way down the plate so as to form a tongue or lip, the end of which is turned outward from the point where the nut first touches the tongue, and the end of the plate on that side where the tongue is located being extended or elongated and left free of any connection, for the purpose set forth.

404,531. SWIVEL-PLOW. ANDREW GALE and EUGENE TREMBLAY, Chicopee, Mass. Filed Jan. 19, 1888. Serial No. 296,943. (No model.)

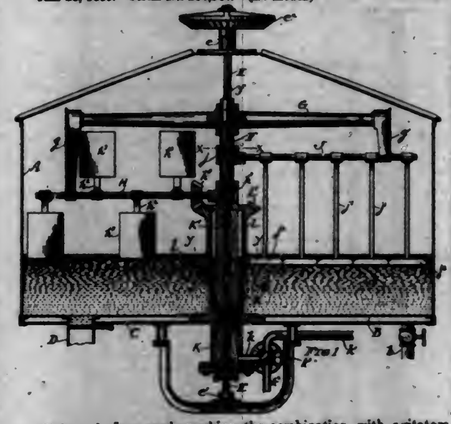


Claim.—1. In combination with the standard and mold-board of a reversible plow, the foot-latch having slotted plate 4, the slotted standard projection 17, the pivoted lever 20, pinion 23, and the jointer-arbor, substantially as shown and described.

2. The combination, with the reversible mold-board, of the plow-standard having the lug 11, the lock-plate 12, the foot-latch 1, the spring 14, and bolt 16, substantially as shown and described.

3. The foot-latch having the slotted plate 4 and its actuating mechanism upon the plow-standard, lever 20, having rack 21, and pin 22, in combination with the jointer 25, rotating stem 24, and pinion 23, substantially as shown and described

404,532. MASH-MACHINE. ROBERT GARDE, Chicago, Ill. Filed Jan. 23, 1889. Serial No. 297,317. (No model.)



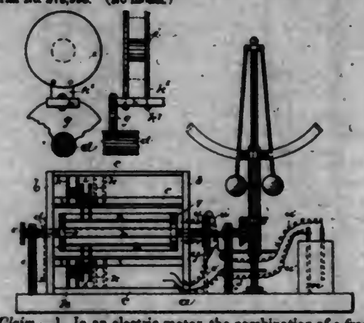
Claim.—1. In a mash-machine, the combination, with agitators arranged to rotate upon vertical and horizontal axes, respectively, of a single driving-shaft, a cylinder and piston in operative connection with said agitators and shaft, and means for lowering and raising said piston by hydraulic power, whereby said agitators may be positively and simultaneously rotated upon vertical and horizontal axes, respectively, and raised and lowered while in operation, substantially as shown and described.

2. In a mash-machine, the combination of a cylinder and piston, means for reciprocating said piston, a vertical shaft passing through the axis of said cylinder and piston, a non-rotating gear connected with said piston, a sliding sleeve splined to said shaft above said piston, a horizontal shaft radiating from said vertical shaft and having shovels thereon and a gear arranged to mesh into said non-rotating gear, a secondary radial shaft having scrapers depending from it, and means for driving said vertical shaft, substantially as shown and described.

3. The combination, in a mash-machine, of a vertical driving-shaft, a source of power, a sleeve loosely splined to said shaft, agitators, substantially as specified, attached to said sleeve, a cylinder and piston in operative connection with said sleeve, and means for actuating said cylinder, substantially as specified.

4. The combination, in a mash-machine, of a tub, vertical shaft E, a sleeve loosely splined thereon, arm G, having depending part *g*, horizontal shaft H, a hydraulic cylinder and piston, means for admitting water thereto, non-revolving gear L, in operative connection with said piston, and gear h^4 in engagement therewith.

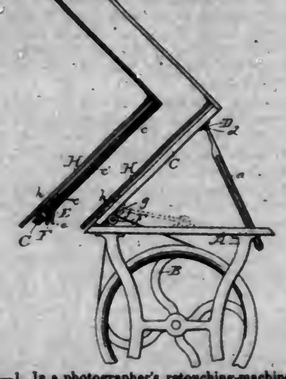
404,533. ELECTRIC MOTOR AND REGULATOR. ALFRED GARTNER, Newark, N. J., assignor, by mesne assignments, to the Continental Motor and Electrical Company, same place. Filed July 5, 1886. Serial No. 275,993. (No model.)



Claim.—1. In an electric motor, the combination of a frame and series of magnets secured therein, a shaft and a series of magnets secured thereon, the said magnets of one series alternating with those of the other series, and all of said magnets each having two end plates *k k'*, with a hub k^2 and wires k^3 between, all said parts being arranged and combined substantially as and for the purposes set forth.

2. In a motor, the combination, with a series of magnets having broad end plates with wires wound between, of another series of like construction, movable between the first, the plates of one series being presented to those of the other, substantially as and for the purposes set forth.

404,534. PHOTOGRAPHER'S RETOUCHING-MACHINE. LAURA O. GIRVIN and JOHN LOTZ, Chicago, Ill. Filed Apr. 18, 1887. Renewed Oct. 29, 1888. Serial No. 289,843. (No model.)



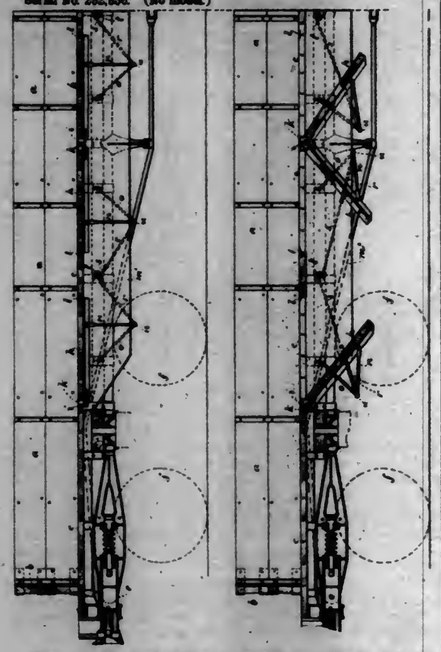
Claim.—1. In a photographer's retouching-machine, the combination, with a rectangular frame, of an independent oscillating vibratory negative-plate holder and means for actuating the same, as and for the purpose set forth.

2. In a photographer's retouching-machine, the combination, with a rectangular frame and plate-holder, of transverse shaft suitably journaled in said rectangular frame having eccentrics G, leg E, secured to the back of the plate-holder and having elongated bearings through which the eccentrics G pass, and means for operating said shaft, as set forth.

3. In a photographer's retouching-machine, the combination, with the rectangular frame C, independent vibratory negative-plate holder, and means for actuating the same, of a stationary hand-rest corresponding in transverse construction to and hinged to said rectangular frame, as and for the purpose set forth.

4. In a photographer's retouching-machine, the combination, with the rectangular frame C, vibratory negative-plate holder *c*, and adjustable pivotal screws D, of the transverse shaft F, journaled in bearings secured to frame C, and having eccentrics G, lugs E, having vertically-elongated bearings for said eccentrics G, pulley *f*, and drive-wheel B, as set forth.

404,535. CAR-BODY. JAMES T. GOODFELLOW, Huntingdon, Pa., assignor to the Iron Car Company, of Connecticut. Filed Aug. 16, 1888. Serial No. 282,530. (No model.)



Claim.—1. The combination, in a freight-car, with the bottom *c*, of hinged doors *k*, connected to and, when closed, forming a portion of the level and even bottom of said car, and with mechanism, substantially as described, for dropping said doors to discharge the contents of the car, and for raising said doors and supporting them in place, substantially as set forth.

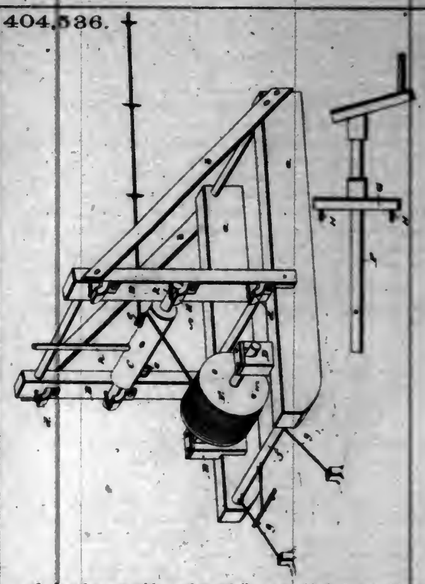
2. The combination, in a freight-car, with the bottom *c*, of the hinged doors *k*, connected to and, when closed, forming a portion of the bottom of said car, the strut-links *n*, connected at one end to the hinged doors, the tensile links *o*, connected at one end to the car-body, the shaft *u*, to which the other ends of the links *n* and *o* are pivoted, and operating-links *r*, connected at one end to the shafts *u*, the chains *s*, and cross-shafts *t*, by which the hinged doors are supported and operated, substantially as and for the purposes set forth.

3. The combination, in a freight-car, with the bottom *c*, of the hinged doors *k*, connected to and, when closed, forming a portion of the bottom of said car, the strut-links *n*, connected at one end to the hinged doors *k*, the tensile links *o*, connected at one end to the car-body, the shaft *u*, to which the other ends of the links *n* and *o* are pivoted, and operating-links *r*, connected at one end to the shafts *u*, the chains *s*, and cross-shafts *t*, by which the hinged doors are supported and operated, and the angle-iron bars *k' l*, connected to the bottom of the car and at two or more opposite edges of the hinged doors, substantially as and for the purposes set forth.

404,536. WIRE-STRETCHER. ELIJAH GUTHRIDGE, Fayette, Mo. Filed Feb. 26, 1889. Serial No. 301,483. (No model.)

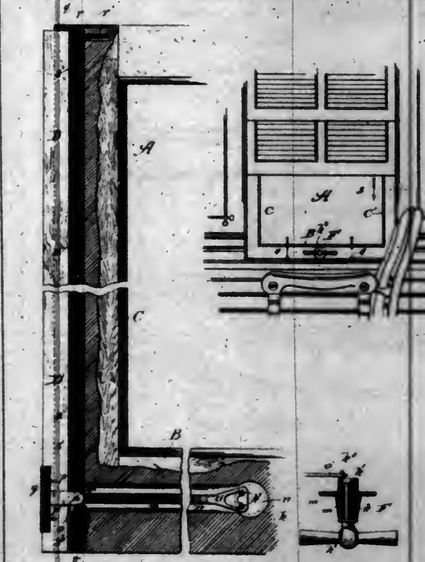
Claim.—1. The main frame composed of the runners *a* and cross-braces, in combination with the bearings D, secured to the runners, the standards B, also secured to the runners, the brackets *d*, secured to the forward sides of the standards, as shown, the spool journaled in the bearings D, the diagonal bars bracing the standards for the runners, and the tension-roll having lever-apertures to receive the removable levers, and also having staples or hooks for engaging the wire, one of said hooks being arranged near each end of a tension-roll, and the said roll being adapted to be placed in the brackets at different altitudes, substantially as specified.

404,536.



2. In a fence-machine, substantially as specified, the combination, with the main frame, of the standards having bearings, and the tension-roll having a staple near opposite ends to engage the wires, whereby the machine may be worked from the right or left hand side of a fence, substantially as specified.

404,537. SASH-HOLDER. OSCAR P. HAMMARLUND and EMIL LARSON, Chicago, Ill. Filed Oct. 30, 1888. Serial No. 289,523. (No model.)

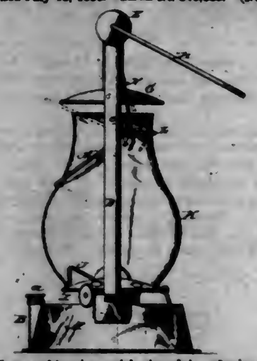


Claim.—1. In combination with a window, a strip D on a lateral edge of the window-sash to bear against the widow-casing, and provided on its outer surface toward one end with a projection *q*, a resilient medium maintaining the strip normally beyond the lateral edge of the window, with force sufficient to sustain the window at any adjusted height by the engagement of the projection *q* with the adjacent surface of the window-casing, a handle F, affording a window-lift located toward the middle of a horizontal rail of the window and connected with the strip D near the projection *q*, substantially as described.

2. In combination with a window, a strip D at the lateral edge thereof to bear against the window-casing, a resilient medium maintaining the strip normally beyond the lateral edge of the window, a rod E, loosely connected with the strip to afford lost motion, a spring maintaining the rod E normally at the limit of its outward movement, and a handle connected with the said rod and operative to retract the rod and with it the strip, substantially as described.

3. In combination with a window, a strip D at the lateral edge thereof to bear against the window-casing, a resilient medium maintaining the strip normally beyond the lateral edge of the window, a rod E, loosely connected toward one end with the strip to afford lost motion, a spring e^3, maintaining the rod E normally at the limit of its outward movement, a yoke e' on the opposite end of the rod E, and a handle F, carrying pins f^2, engaging with the yoke e', and operative, when turned in either direction, to retract the rod E and with it the strip D, substantially as described.

404,538. TUBULAR LANTERN. ROBERT HERMANCE, Schuylerville, N. Y. Filed July 13, 1888. Serial No. 279,883. (No model.)



Claim.—1. The combination, with the globe of a lantern, of the rest I and the guide J, connected at one end to the top of said rest, with the other end inclined toward the center of the rest, substantially as and for the purpose specified.

2. In a lantern, the combination, with the globe-rest thereof, of a wire attached at one end to the top of said rest near its periphery, and comprising a substantially vertical portion forming a stop and a radial portion forming a guide and extending toward the center of the rest, substantially as shown and described.

3. In a lantern, the combination, with the guard L, of the pivoted yoke M, terminating in a finger or bearing extension, and the spring N, substantially as and for the purpose specified.

4. In a lantern, the combination, with a guard for the globe and a yoke pivoted thereto, of a spring bearing upon the end of the yoke to retain it in a raised or lowered position, substantially as and for the purpose set forth.

404,539. SELF-CLOSING COVER FOR INKSTANDS, &c. ISAAC W. HETHERER, Philadelphia, Pa. Filed June 16, 1888. Serial No. 277,289. (No model.)



Claim.—1. As an article of manufacture, a self-closing cover for ink-wells, consisting of the hollow metal hood B, open beneath and adapted to be attached to the margin of an ink-well, having flanged opening B^2 in front and a pivoted valve D, adapted to close from the rear within said hood against the flanged sides of said opening B^2, said valve supported in bearings in the sides of said hood B, substantially as described.

2. As an article of manufacture, the hollow metal hood B, expanded and open beneath to cover an ink-well, and tapered above to form a transverse apex with a sloped rear side, said hood vertically open in front, and a rearwardly-swinging valve pivoted to the upper margin of said opening B^1, said opening having flanged sides, and said valve adapted to be swung back against said sloped rear side of said cover and to close against said flanges B^4 B^4 by a counter-weight attached thereto, and said hood B having external overlapping shoulder B', adapted to embrace the projecting neck of an ink-well, substantially as described.

3. In combination with inkstand A, having ink-well C, with circular aperture and lip A', the self-closing cover having circular base with overlapping shoulders B' B', adapted to embrace said lip A' and be cemented or otherwise attached thereto, said cover having central hood B, open beneath and tapered above to a broad transverse valve-seat, and flanged opening B^1, together with valve D, pivoted to the upper margin of said opening B^1, closed against flanges B^2 B^2 by a counter-weight attached in rear of said valve, and adapted to be swung backward in said hood B by pressure applied to the front thereof and close automatically against said flanges B^2 B^2, substantially as described.

4. As an article of manufacture, the hollow hooded cover B, open beneath, having opening B^2 in front, and flanges B^2 B^2, shoulders B' B' around the base thereof, the whole formed integral, and the valve D, attached to the upper margin of said opening B^1, adapted to be swung to the rear in said hood, closed automatically against flanges B^2 B^2 by a counter-weight upon said valve D, said valve supported by bearings in the sides of said hood B, the whole adapted to be attached to an ink-well, substantially as and for the purposes described.

5. In combination with the ink-well C, the hooded cover B, separate therefrom and adapted to be fitted thereto, said hood having open front B^2 opening beneath into said ink-well, flanges B^2 B^2, and rearwardly-swinging pivoted valve D, supported above said opening B^1, adapted to close against said flanges B^2 B^2, said valve extended downward below the lower margin of hood B and adapted to be swung to the rear within said ink-well, substantially as and for the purposes described.

6. In combination with the inkstand A, having ink-well C, the separate metal cover having shoulders B' B' to support the said cover upon the margins of said ink-well, hollow hood B, open into said ink-well, having opening B^2 and flanges B^2 B^2, transverse bottom part B^3 of said opening B^2, sloped downward and backward into the concavity of said ink-well, the free edge thereof continuous with said flanges B^2 B^2, together with rearwardly-swinging valve D, adapted to close automatically against said flanges B^2 B^2 and the free edge of said bottom B^3, said valve D hung with its lower part within the concavity of said ink-well and forming with the sloped surface B^3 an acute angle, substantially as described.

7. As an article of manufacture, a self-closing cover for inkstands, consisting of the hollow hood B, cast in a single piece, except the valve, of white-metal or other material unaffected by the acids of ink, open and expanded beneath, having shoulders B' B', adapted to support the same upon the margins of an ink-well, tapered above to a transversely-flat apex, said cover having opening B^2 in the front thereof, side flanges B^2 B^2 within said opening B^2, downwardly-sloping extended bottom B^3, and transversely-pivoted flat valve D, supported along the flattened apex B^3 of said hood in bearings in the sides of said hood B, and adapted to be swung backward within said hollow hood when pressed against from the front through said opening B^2 and to be closed by gravity against said flanges B^2 B^2 and the free edge of said sloped bottom B^3 when said pressure has been removed, the whole constructed separately from and independent of said ink-well and adapted to be applied thereto for temporary or permanent use, substantially as described.

8. In combination with the hood B, having self-closing valve D, operated by the insertion or withdrawal of a pen-point through the opening B^1, the inkstand A A^2, having ink-well C, opening vertically above and adapted to support the said hood B upon the marginal surfaces thereof, the lateral supply-reservoir C', and the small connecting-passage *c*, connecting the bottom portions of C and C', said reservoir C' air-tight above and adapted to maintain a uniform level of ink-surface in the said ink-well C, substantially as and for the purposes herein shown and described.

9. In combination with the pneumatic ink-supplying reservoir C', an open ink-well C and connecting-passage *c*, the hood B, covering said ink-well C and supported by the margins thereof, said hood having supporting-shoulders B' B', opening B^2 in front thereof, flanged sides B^2 B^2, and sloping bottom B^3, together with rearwardly-swinging valve D, pivoted at its upper margin to the apex B^3 of said hood B, and adapted to close automatically against said flanges B^2 B^2 and said sloped bottom B^3 and close said opening B^2, substantially as described.

10. An inkstand having a pneumatic ink-supplying reservoir C', open vertical ink-well C, and passage *c*, connecting the lower parts of C and C', in combination with a self-closing valve and cover B D, fixed at a definite height above the ink-surface of said ink-well C, said ink-level made constant in said ink-well by automatic supply from said reservoir C' through said passage *c*, substantially as described.

11. In combination with the hollow hood B, expanded and open beneath, tapered and transversely flattened to an apex B^3, adapted to be applied to and supported by the margins of an open ink-well C,

and provided with opening B^5 in the front of said hood, the flanges B^6 B^7 along the sides of B^4, said flanges inclined to the rear from above downward, and the self-closing valve D, pivoted at E transversely along the said apex, and adapted to rest by gravity in an inclined position against the said sloped flanges B^6 B^7 and close the said opening B^4, substantially as described.

12. In combination with the glass valve D, the slotted metal tube F, adapted to embrace the free upper margin of said valve, said valve securely fixed therein, the free ends F' F' of said tube F, cylindrical in cross-section and projecting laterally from the sides of said valve, adapted to form supports for the same, and the bearings B^7 B^7 in hood B, substantially as described.

13. In a self-closing ink-well cover, the valve D, of glass or the like, having transverse grooves *d d'* near the margin and on opposite faces thereof, in combination with the slotted metal tube F, having opposite edges F^3 F^3 along said slot adapted to engage with said grooves *d d'* and securely hold said valve in place in said slotted metal tube and form a metallic support for the same, substantially as described.

14. In combination with the valve D, having transverse grooves *d d'* on opposite faces and near one of the free edges thereof, the slotted tube F, adapted to support the said valve in bearings, having edge F^3 along said slot adapted to engage with groove *d* entirely across said valve, and the spring-lip F^3, projecting from the middle of the opposite edge of said slot, said spring-lip adapted to engage with said groove *d'* and by its spring tension force the opposite edge F^3 into groove *d* and securely hold the said slotted tube F in place upon said valve D, substantially as described.

15. In a self-closing inkstand-cover, in combination with the glass valve D, transversely grooved at *d* and *d'* upon opposite faces, the slotted spring-metal clamping-tube F, adapted to embrace the free margin of said valve and engage along the edge of said slot with one of said grooves and prevent displacement thereof, together with pivoted valve-supports attached to said slotted tube and pivoted in said cover B, substantially as described.

16. In combination with a flat glass valve having a transverse groove near its margin, a slotted spring-metal tube adapted to engage by one of the edges of said slot in said groove to prevent displacement thereof, and held in place by the pressure of the opposite edge of said slot against the opposite face of said valve, said slotted tube adapted to form a metal support for said valve and to be supported in bearings to allow motion of said valve thereupon, substantially as and for the purposes herein shown and described.

17. In combination with the hollow hood B, open beneath and adapted to be supported upon the margins of the open well C and form a cover for the same, said hood having opening B^4 in front, a self-closing valve pivoted at its upper margin within said hood, adapted to swing to the rear upon said pivot by pressure applied to the front of said valve and close automatically against flanged sides B^6 B^7 of opening B^4 when said pressure has been removed, said valve having a notch D^4 in its lower margin, adapted to give room for and permit withdrawal of a mucilage-brush or the like from said well C when said valve is closed, substantially as described.

18. In a self-closing ink-well cover B, the hollow metal hood open beneath into the ink-well C, and having opening B^4 in front provided with flanged sides B^6 B^7, said hood expanded beneath, flattened and brought to a broad transverse apex above, said cover B extended to said apex B^2 and closed behind, in combination with a rearwardly-swinging valve D, supported in bearings in the sides of said cover B, and adapted to close from the rear against said flanged sides B^6 B^7, said valve D elongated from above downward and having its lower edge D' bent backward, said edge D' adapted to be swung to and fro beneath the surface of the ink in said ink-well C, and close against the rear side of the flanges B^6 B^7 and the rear edge of sloped bottom B^3 of open front B^4, said rear edge extended down within said ink-well into or near the surface of the ink therein, substantially as and for the purposes described.

19. As an article of manufacture, a heavy cast white-metal cover B, provided with conical flattened hood open beneath, and open front, and having valve D supported therein, and shoulders B' B', the whole adapted to rest by its own weight upon ink-well C, substantially as described.

20. In combination with the inkstand A, having a vertically-sunk ink-well C in the upper face thereof, the hollow hooded cast-metal cover B, extended over said ink-space, having shoulders B' B', adapted to rest by gravity upon the sides of said ink-well open beneath, and having flanged opening B^4 in front, said opening vertical or inclined and in rear of the front margin of said ink-well opening, and sloped Bottom B^3, extending downward and backward from the front of said opening B^4, the rear edge thereof continuous with said flanged sides B^6 B^7, together with a valve supported above said opening B^4, extending downward into said ink-well C, adapted to close by a counter-weight attached to the rear side thereof against said flanges B^6 B^7 and said free lower edge of said sloped bottom B^3, the whole constructed substantially as and for the purposes herein shown and described.

21. In a self-closing inkstand-cover having hood B open beneath and opening B^4 in front of said hood, the glass valve D, in combination with a metallic strip attached to one margin thereof and adapted to form a pivot or support for the same, substantially as described.

404,540. LAMP-SHADE. Hugo Hohenstein, New York, N. Y.

Filed Apr. 16, 1888. Serial No. 270,809. (No model.)

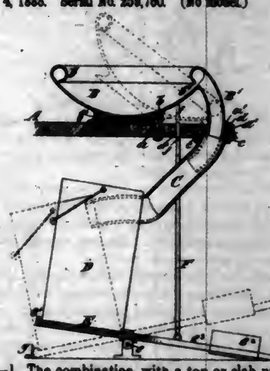


Claim.—1. A lamp-shade consisting of a body having a contracted neck, a ring at the neck, and an outwardly-bent re-enforcing layer provided with tapering fingers at the lower inner end, substantially as set forth.

2. A lamp-shade composed of a body having a contracted neck, a ring for re-enforcing said neck, an outwardly-bent layer applied to said ring and provided with tapering fingers, and a covering-layer extending from the contracted neck of the body over the inner surface of the ring and re-enforcing layer, substantially as set forth.

404,541. WASH-BASIN. Philip G. Hubert, New York, N. Y.

Filed Jan. 4, 1888. Serial No. 259,760. (No model.)



Claim.—1. The combination, with a top or slab provided with an opening, of a basin pivoted above the top or slab and having a curved discharge-nozzle working through said opening, a discharge-pipe in which said nozzle works, a tilting platform, a stop, and a connection between said tilting platform and stop, whereby when the platform occupies one position the rocking of the basin will be prevented, substantially as specified.

2. The combination, with a top or slab provided with an opening, of a basin pivoted above the top or slab and having a curved discharge-nozzle working through said opening, a discharge-pipe below said slab, a tilting platform, and a rod constituting a stop connected with said tilting platform and preventing the movement of the basin in one direction, substantially as specified.

3. The combination, with a slab or stand-top and the discharge throat or pipe presented at an opening therein, of the pivoted basin B and and its discharge-nozzle B', the balancing-platform E and the stop-rod *f* operated thereby, and a lock with which the platform automatically engages in descending and which serves to lock the platform with the stop-rod in an elevated position, substantially as specified.

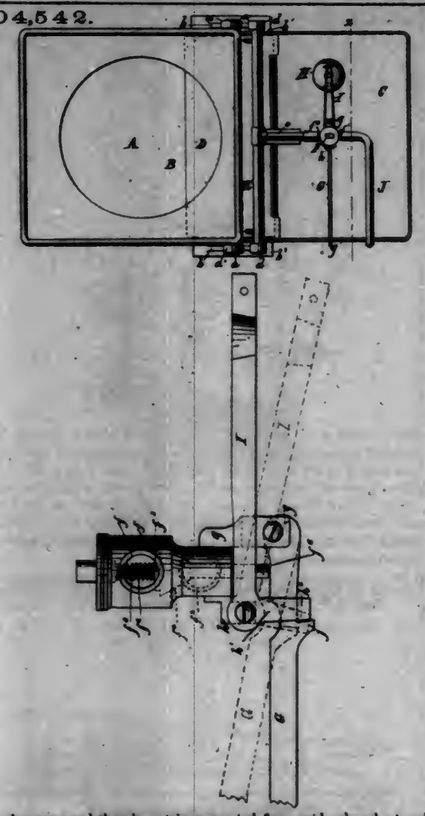
404,542. TIME-VALVE. Philip G. Hubert, New York, N. Y.

Filed Dec. 31, 1888. Serial No. 295,046. (No model.)

Claim.—In a time-valve, the combination, with a valve-chest, of



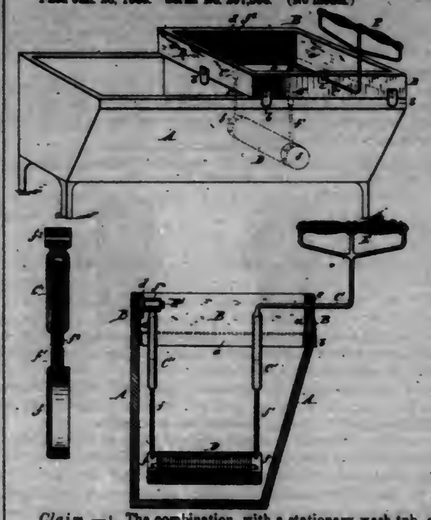
404,542.



a valve arranged therein, a trip supported from said valve-chest and adapted to come in contact with the valve or a part thereof to move the valve from its seat, a lever also supported from the valve-chest and operating to automatically lock said trip in a position to hold the valve open, and a float acting on said lever to release the trip, substantially as specified.

404,545. WASHING-MACHINE. Rosa Jane, New York, N. Y.

Filed Jan. 26, 1888. Serial No. 297,502. (No model.)



Claim.—1. The combination, with a stationary wash-tub, of a supporting-frame secured to the top of the same, a crank-shaft supported in bearings of said frame, a handle at the outer end of the crank-shaft, and a rubbing-roller at the lower part of the crank-shaft, substantially as set forth.

2. The combination, with a stationary wash-tub, of a supporting-frame secured to said tub, a crank-shaft supported in bearings of the frame and provided with tubular interiorly-threaded crank-arms, a handle at the outer upwardly-bent end of the crank-shaft, a rubbing-roller, and caps attached to the ends of the roller and provided with screw-rods for engaging the tubular crank-arms, substantially as set forth.

3. The combination, with an oscillating crank-shaft supported in suitable bearings and provided with tubular interiorly-threaded crank-arms, of a rubbing-roller and end caps attached to said roller and provided with screw-rods that engage the crank-arms, so as to adjust the roller higher or lower on the crank-arms, substantially as set forth.

404,548. METHOD OF REFINISHING CURTAINS. Christian Imandt, New York, N. Y. Filed Jan. 22, 1888. Serial No. 297,208. (No specimens.)

Claim.—The method herein described of refinishing lace curtains, which consists, first, in connecting a number of superposed curtains by basting their edges together; secondly, washing the so-basted curtains; thirdly, drying the same; fourthly, sizing the dried curtains, and, lastly, stretching and drying the same, substantially as set forth.

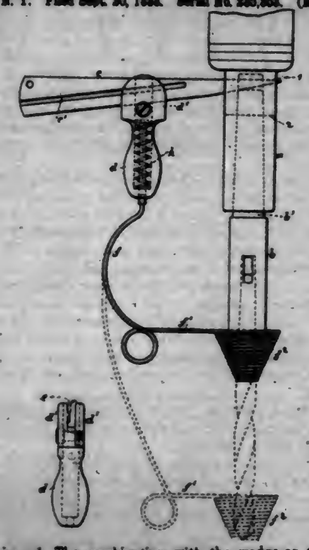
404,544. SHACKLE. John James and Alvin D. Goodenough, Henrietta, Tex. Filed Dec. 7, 1888. Serial No. 292,893. (No model.)



Claim.—1. A mitten provided with button-holes in its wrist, in combination with a handcuff provided with a fastening-button, substantially as specified.

2. A handcuff provided with a flexible wrist band or cuff and carrying devices whereby a mitten may be attached thereto, substantially as specified.

404,546. DRIFT AND DRILL CATCH. John T. Kenworthy, Flushing, N. Y. Filed Sept. 20, 1888. Serial No. 285,868. (No model.)



Claim.—1. The combination, with the wedge or drift tool for separating the shank of the tool or tool-holder from the vertical man-

drel, of the basket for holding the tool, and a connection between the basket and drift-tool, substantially as set forth.

2. The combination, with the wedge or drift tool having grooves *c'* in its side, of the basket for holding the tool, the handle *d* for receiving the wedge, and a connection from the same to the basket, substantially as specified.

3. The combination, with the wedge or drift tool, of the handle *d*, a spring within the handle, a basket for holding the drill or its stock, and a connection between the basket and the spring within the handle, substantially as specified.

404,547. SKATE-ROLLER. CHARLES J. KINTNER, Philadelphia, Pa. Filed Apr. 11, 1887. Serial No. 234,451. (No model.)



Claim.—1. In a roller-skate, a roller having grooves in its lateral faces and absorbent material located in said grooves for retaining the waste oil, substantially as described.

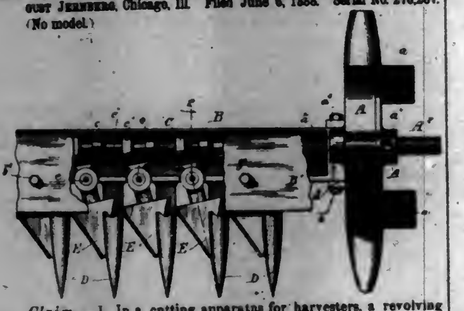
2. In a roller-skate, a roller having grooves in its lateral faces, absorbent material in said grooves, and means for retaining said absorbent material in place, substantially as described.

3. In a roller-skate, a roller having grooves in its lateral faces for catching the drip from the axle, in combination with oil-ducts running toward the center of the wheel, substantially as described.

4. In a roller-skate, a roller having grooves in its lateral faces, with absorbent material located therein, in combination with oil-ducts for conducting the oil to the axle of the skate.

5. In a roller-skate, a roller having grooves in its lateral faces for retaining the oil-drip, in combination with an oiling-groove and oil-ducts, substantially as described.

404,548. CUTTING APPARATUS. HJALMAR LINDSTRÖM and AUGUST JERNBERG, Chicago, Ill. Filed June 6, 1888. Serial No. 276,287. (No model.)

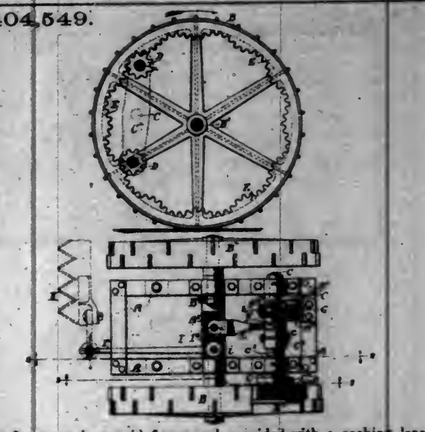


Claim.—1. In a cutting apparatus for harvesters, a revolving shaft mounted longitudinally in a suitable frame, a plurality of knives, each pivoted to said frame, and a plurality of cams, the cams for each knife being mounted in pairs on said shaft and at right angles to each other for the alternate engagement of said knife, substantially as specified.

2. In a cutting apparatus for harvesters, a revolving shaft mounted longitudinally in a suitable frame, a plurality of knives pivoted to said frame, said knives being formed with extensions *e'*, and a plurality of cams on said shaft mounted in pairs and at right angles to each other, said extensions *e'* being of such width as to engage at all times one cam of each pair of cams, substantially as described.

3. In a cutting apparatus for harvesters, a suitable frame, a shaft mounted thereon, a plurality of knives pivoted to the frame, and a plurality of cams on said shaft for engagement with the knives, the said frame being curved at its lower portion to form a trough or receptacle for oil or other lubricant into which the cams dip as they revolve and provided with a removable top plate B', all substantially as described.

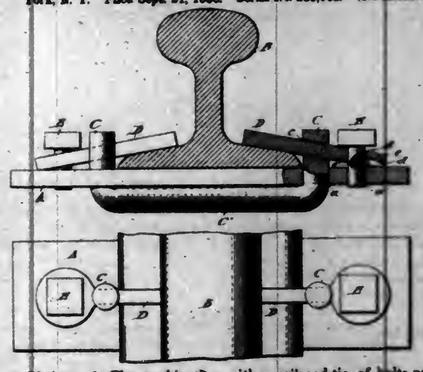
404,549. MOWER. HJALMAR LINDSTRÖM, Englewood, Ill., assignor of one-half to August Jernberg, same place. Filed Sept. 21, 1888. Serial No. 286,011. (No model.)



Claim.—1. The combination, with the frame and cutter-bar of a mower, of a drive-wheel provided with an annular scalloped toothed cam and a swinging lever provided with two toothed wheels or pinions upon its ends intermeshing with said toothed cam, substantially as described.

2. The combination, with the frame and cutter-bar of a mower, of a drive-wheel provided with a scalloped and toothed cam, a rock-shaft mounted on said frame and provided with a rocking lever, toothed pinions upon the ends of said lever engaging said cam, a longitudinally-grooved arm rigidly attached to said rock-shaft, a loose sleeve upon said rock-shaft provided with an arm adapted to engage the groove of the arm upon said rock-shaft, a hand-lever for moving said sleeve endwise upon the shaft, and a bell-crank lever, one arm of which is connected with the cutter-bar and the other with the arm upon the sleeve, substantially as described.

404,550. RAILROAD-RAIL FASTENER. CHARLES METZ, New York, N. Y. Filed Sept. 21, 1888. Serial No. 285,962. (No model.)



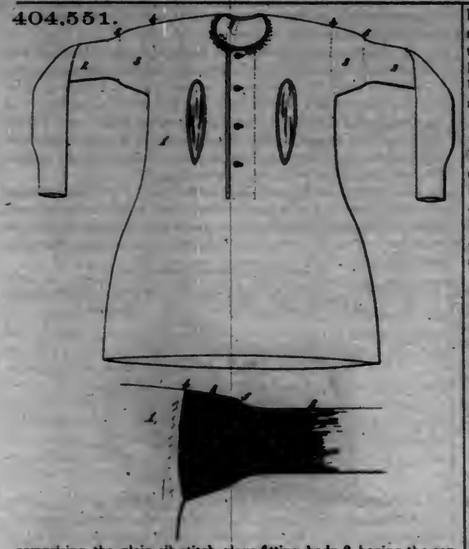
Claim.—1. The combination, with a railroad-tie, of bolts projecting upward therethrough at each side of the rail-flange and formed with a transverse slot, keys inserted in said slot to bear on the rail-flange at one end and formed with a vertical aperture at the opposite end, and bolts passing through the said apertures and corresponding apertures in the tie, substantially as described.

2. A rail-fastener comprising a bolt having a transverse slot, an elongated key adapted to said slot and formed with an aperture at one end, and a bolt adapted to said aperture, substantially as described.

3. The bolt E, formed with a transverse recess, and the spring-acted locking-pin *c* in said recess, in combination, substantially as described.

4. In a rail-fastener, the combination, with the tie, of a bar lying beneath the same and having upwardly-projecting ends extending through and above the tie at each side of the rail-flange, and keys or plates engaging said upwardly-projecting ends and bearing down on the rail-flange, the said keys being angular in cross-section, and thus adapted to be slid into position, substantially as described.

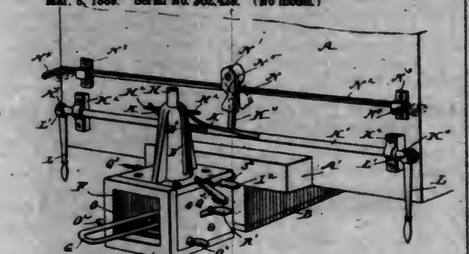
404,551. UNDER-VEST. CHARLES F. NORTH, Cohoes, N. Y. Filed Mar. 27, 1888. Serial No. 304,947. (Specimens.)



Claim.—1. As a new article of manufacture, a lady's under-vest consisting of a vest body and sleeves comprising a plain rib-stitch glove-fitting body 2, having a contracted cuff portion for the wrist, and the tuck-stitch section 3, sewed to the vest-body and gradually contracted from the latter to the rib-stitch glove-fitting sleeve-body, substantially as and for the purposes described.

2. A lady's under-vest consisting of the vest body and sleeves comprising the plain rib-stitch glove-fitting body 2, having the contracted gored cuff portion, and the tuck-stitch section 3, sewed to the vest body and contracted therefrom to the rib-stitch glove-fitting sleeve-body, substantially as and for the purposes described.

404,552. CAR-COUPLING. VINCENT NUBLY, Sandusky, Ohio. Filed Mar. 8, 1889. Serial No. 302,428. (No model.)



Claim.—1. The combination, with the draw-head and its notched pin, of a slide having an opening through which the pin passes, and a spring pressing the slide toward the car to bring the front wall of its opening into the notch at the front side of the pin, the rear end of the slide being adapted to abut against the car and be thrown forward when the draw-head moves rearwardly, substantially as set forth.

2. In a car-coupling, the combination, with a yielding draw-head, of a link-plate mounted to turn in the draw-head opening and adapted to raise and lower the link, a spring for holding the said link-plate in a lowermost position, an arm for raising said link-plate and provided with a notch, and a pin adapted to engage the said notch to lock the said arm in place, substantially as shown and described.

3. In a car-coupling, the combination, with a yielding draw-head, of a link-plate mounted to turn in the draw-head opening and adapted to raise and lower the link, a spring for holding the said link-plate in a lowermost position, an arm for raising said link-plate and provided with a notch, a pin adapted to engage the said notch to lock the said arm in place, and a yielding plate carrying the said pin, mounted to slide in the draw-head and provided with a projection adapted to engage the car when the draw-head is moved rearward, so as to automatically release the said link-plate, substantially as shown and described.

4. In a car-coupling, the combination, with a draw-head provided with an offset having slots, of a pin mounted to slide in the said draw-head and the said offset and provided with arms passing through the said slots, arms adapted to engage the said pin-arms, a shaft mounted to turn on the front of the car and carrying the said arms, and levers held on the said shaft for turning the latter, substantially as shown and described.

5. In a car-coupling, the combination, with a draw-head provided with an offset having slots, of a pin mounted to slide in the said draw-head and the said offset and provided with arms passing through the said slots, arms adapted to engage the said pin-arms, a shaft mounted to turn on the front of the car and carrying the said arms, and levers held on the said shaft for turning the latter, each of the said levers being provided with an offset adapted to engage the pin on the said shaft, substantially as shown and described.

6. In a car-coupling, the combination, with a draw-head provided with an offset having slots, of a pin mounted to slide in the said draw-head and the said offset and provided with arms passing through the said slots, arms adapted to engage the said pin-arms, a shaft mounted to turn on the front of the car and carrying the said arms, levers held on the said shaft for turning the latter, a vertically-extending arm held on the said shaft, and a lock-plate pivoted on the front of the car and adapted to engage the said vertical arm, substantially as shown and described.

7. In a car-coupling, the combination, with a draw-head provided with an offset having slots, of a pin mounted to slide in the said draw-head and the said offset and provided with arms passing through the said slots, arms adapted to engage the said pin-arms, a shaft mounted to turn on the front of the car and carrying the said arms, levers held on the said shaft for turning the latter, a vertically-extending arm held on the said shaft, a lock-plate pivoted on the front of the car and adapted to engage the said vertical arm, and a transversely-extending rod pivotally connected with the said lock-plate, and mounted to slide in bearings on the end of the car, substantially as shown and described.

8. In a car-coupling, the combination, with a draw-head, and a pin held to slide vertically in the said draw-head and provided near its lower end with a notch, of a slide held to slide horizontally in the said draw-head and adapted to engage the said notch, a spring pressing on the said slide, and handles extending from the said slide to the outside of the draw-head, substantially as shown and described.

9. In a car-coupling, the combination, with a draw-head, of a link-plate held in the draw-head opening, a spring-pressed shaft carrying the said link-plate, an arm held on the end of the said shaft, a second arm pivoted on the said draw-head and connected by a spring with the said first-named arm, a pin adapted to engage a shoulder on the said second arm, and a yielding plate carrying the said pin and held to slide transversely in the said draw-head, substantially as shown and described.

10. In a car-coupling, the combination, with a draw-head, of a link-plate held in the draw-head opening, a spring-pressed shaft carrying the said link-plate, an arm held on one end of the said shaft, a second arm pivoted on the said draw-head and connected by a spring with the said first-named arm, a pin adapted to engage a shoulder on the said second arm, a yielding plate carrying the said pin and held to slide transversely in the said draw-head, and a projection formed on the said plate and extending to the rear end of the draw-head to engage the car when the draw-heads are pressed together, substantially as shown and described.

11. In a car-coupling, the combination, with a draw-head, of a link-plate held in the draw-head opening, a spring-pressed shaft carrying the said link-plate, an arm held on one end of the said shaft, a second arm pivoted on the said draw-head and connected by a spring with the said first-named arm, a pin adapted to engage a shoulder on the said second arm, a yielding plate carrying the said pin and held to slide longitudinally in the said draw-head, and crank-arms connected with the said second arm for turning the same, substantially as shown and described.

404,553. STOVE-PIPE ANCHOR AND FLUE-CLEANER. LEONIDAS H. OLDFIELD, Newton, Kans. Filed Nov. 24, 1888. Serial No. 291,796. (No model.)



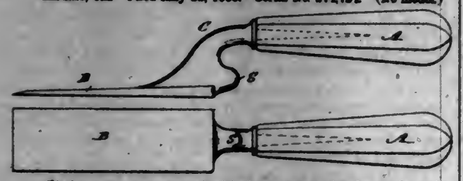
Claim.—1. The combination, with a rod provided with a spur extending from one side, of a plate extending from the other side of the rod, and a handle connected with the rod, substantially as described.

2. The combination, with a rod provided with a spur which extends from one side, of a plate extending from the other side, a socket-tube connected with the rod, and a weighted handle connected to the socket-tube, substantially as described.

3. The combination, with a rod 13, provided with a spur 14 and a plate 16, of a socketed weighted handle 18 and an inclined faced washer, substantially as described.

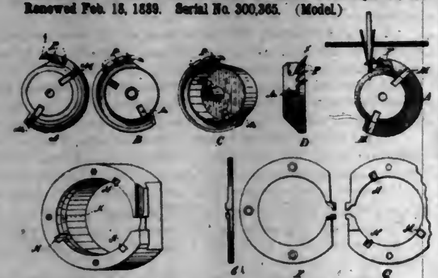
4. The combination, with a rod provided with a spur 14 and a plate 16, of auxiliary plates 23, and connections between the rods and plates, substantially as described.

404,554. CARPENTER'S CHISEL. THERON H. PALMER, San Bernardino, Cal. Filed May 22, 1888. Serial No. 274,734. (No model.)



Claim.—In a carpenter's chisel or gouge, the forward cutting blade or portion, in combination with the attached crooked shank constructed to receive a handle out of line or plane with said cutting blade or portion and provided with an anvil or hammer-block in rear of the cutting blade or portion, substantially as and for the purposes herein set forth.

404,555. SHUTTLE AND RACE MECHANISM FOR SEWING-MACHINES. FRED D. PARKER, Denver, Colo. Filed Apr. 29, 1887. Renewed Feb. 18, 1889. Serial No. 300,365. (Model.)



Claim.—1. In a rotary or oscillating shuttle sewing-machine, a rotary or oscillating shuttle whose race-bearing surface is provided with one or more knives, in combination with the race having walls for engagement and co-operation with the knives on the shuttle, substantially as described, and for the purpose set forth.

2. In a rotary or oscillating shuttle sewing-machine, a rotary or oscillating shuttle whose race-bearing surface is provided with one or more knives, in combination with the thread-guard N, and the race having walls for engagement and co-operation with the knives on the shuttle, substantially as herein shown and set forth.

404,556. SPRING-HINGE. JOSEPH R. PAYSON, Jr., Chicago, Ill. Filed Nov. 6, 1888. Serial No. 290,069. (Model.)



Claim.—1. A door-butt comprising two members, one for attachment to a door and the other for attachment to a door-frame, one or more outward projections upon one of the members, a spring arranged to force the two members toward each other, and a pivot located substantially midway of the thickness of the door and engaging openings in both the said projection or projections and the other member, the opening or openings in one or both of said parts being larger than the pivot, substantially as described.

2. A butt for a lower part of a door, comprising two members for attachment, one to the door and the other to the door-frame, one or more outward projections upon one of the members, and a pivot located substantially midway of the thickness of the door and engaging openings in both the said projection or projections and the other member, the opening or openings in one or both said parts being a slot, substantially as described.

3. The combination, with the two members of the butt, one of which is provided with an outward projection or projections, of a central vertical pivot engaging the projection or projections and the other member by holes which in one or both are in oblong form, and a coiled torsion-spring surrounding the pivot and engaged with the several members, so that its force is exerted to draw the members toward each other, substantially as described.

4. In a centrally-pivoted butt, horizontal lateral extensions or cams upon one of the members having curved outer edges, and a spring arranged to draw the members toward each other.

5. In a centrally-pivoted butt, the horizontal lateral extensions or cams upon one of the members having curved edges, one or more friction-rollers upon the other member arranged to bear upon the curved faces of said cam-extensions, and a spring arranged to draw the members of the butt toward each other.

6. The combination, with the two members of a butt, of a central pivot attached to one of said members and having a bodily movement toward and from the other, and a spring engaged with the pivot and also with the member with respect to which said pivot is movable.

404,557. ROTARY STEAM-ENGINE. HOMER L. PHELPS, Athens, Pa. Filed Aug. 6, 1888. Serial No. 282,063. (No model.)

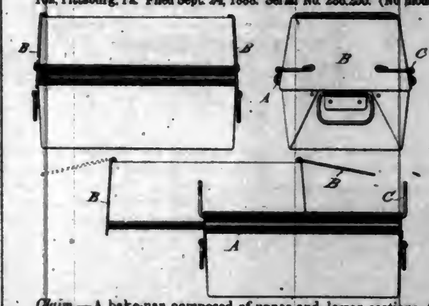


Claim.—1. In a rotary engine of the character described, the combination of the cylinder, a piston mounted eccentrically on a shaft passing through the same, a valve-chest at one side of said cylinder, the chambers G G', connected with said cylinder, separated from each other by a partition, and the valves E E', one in each chamber, substantially as and for the purposes set forth.

2. In a rotary engine, a sliding valve E, consisting of a flat body *f*, front *a*, projection *f''*, and side projections *g g'*, substantially as described.

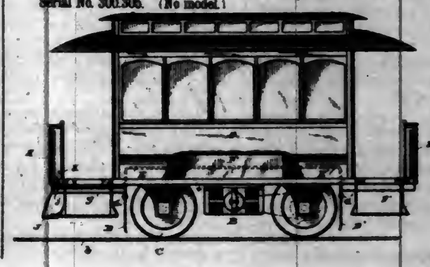
3. In a rotary engine, the combination, with the piston made in two parts mounted eccentrically on a shaft, of the valves E E', working in conjunction with said piston and bearing in the tracks *h h'*, substantially as described.

404,558. PAN FOR BAKING AND ROASTING. CLARISSA PRESTON, Pittsburg, Pa. Filed Sept. 24, 1888. Serial No. 286,255. (No model.)



Claim.—A bake-pan composed of upper and lower sections, the lower section having closed sides and ends and provided with longitudinal grooves along its upper edge, and the upper section having closed sides and hinged doors at its ends and resting in the grooves of the lower section.

404,559. TRACK-MOISTENING APPARATUS FOR ELECTRIC RAILWAYS. EDWARD D. PRIEST, Lynn, Mass. Filed Feb. 18, 1889. Serial No. 300,305. (No model.)



Claim.—1. In an electric railway in which the rails form part of the supply-circuit, means for decreasing the resistance between the wheel or wheels and said track, comprising apparatus for supplying a moistening-liquid to the track, or to the wheels and track, substantially as described.

2. In electric railways, the combination, with a motor-car, of a tank for carrying a supply of liquid, connections extending from said tank to a point near the rail or rails of the track, and valves for controlling the flow of liquid from the tank, substantially as described.

3. In electric railways, the combination, with a motor-car, of a tank for carrying a supply of liquid, connections extending from the supply-tank to a point near the rail or rails of the track, valves for controlling the flow of liquid from the tank, and connections for operating the valves, substantially as described.

4. In electric railways, the combination, with a motor-car, of a tank for carrying a supply of liquid, separate distributing-pipes and connections extending from the supply-tank to points in advance of the wheels of the car, valves for controlling the flow of liquid in both sets of pipes, and means for opening and closing, and thereby permitting the liquid to flow from the tank through either of the sets of distributing pipes as desired, substantially as described.

5. In electric railways, the combination, with a motor-car, of a tank for carrying a supply of liquid, distributing-pipes and connections extending from the supply-tank to points adjacent to the track and roadway, valves for controlling the flow of liquid in the several sets of pipes, and means for opening and closing the valves, substantially as described.

404,560. VEHICLE-SPRING. SILAS H. RAYMOND, Grand Rapids, Mich., assignor to George R. Raymond & Co., same place. Filed Mar. 2, 1889. Serial No. 301,782. (No model.)

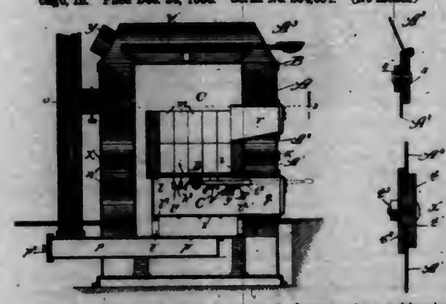


Claim.—1. In a vehicle, the vehicle-body, two arms, each pivoted to the vehicle-body at a point near the center of said arms, two side bars supporting the outer ends of such arms, a longitudinal spring, a movable shackle at each end of the spring and connected to the vehicle-body, and two center shackles, each of which center shackles is secured to the spring between the end shackles and pivoted, one to the inner end of each arm, substantially as described.

2. In a vehicle, the combination of the vehicle-body, two movable shackles supported by the vehicle-body, a spring with each end secured to one of these shackles and spanning the space between such shackles, two arms, and two side bars, each arm attached at its inner end to the spring near the center of said spring and at its outer end to a side bar, and supported at a point between its inner and outer ends on a pivot connected with the vehicle-body, substantially as described.

3. In a vehicle, the combination of the vehicle-body, arms supported at the outer ends by side bars, a spring attached at each end of the body near the outer side thereof and spanning the space between such connecting-points, said arms pivoted near the center of each arm to the body at their inner ends connected to the spring near the center thereof, said body supported upon such arms, which are in turn supported upon the side bars, said spring and arms acting as an equalizer, always keeping the vehicle-body in a horizontal position, substantially as described.

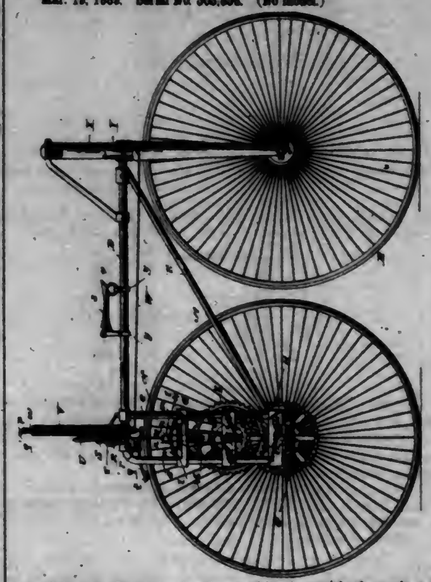
404,561. WARM-AIR FURNACE. BENJAMIN F. REYNOLDS, Chicago, Ill. Filed Dec. 28, 1888. Serial No. 294,651. (No model.)



Claim.—1. In a rectangular warm-air furnace, the combination, with the radiator, fire-pot, and ash-pit, of a casing A, comprising sections A' and A^2, joined at the adjacent edges by a strap *t*, having a tongue *t'* extending between the sections, a strap t^2, having a groove to receive the tongue *t'*, and nut-bolts t^3, securing the strips together, and a top section A^3, supported on a re-enforcing strip *s*, secured to the section A^2, substantially as described.

2. In a rectangular warm-air furnace, the combination, with the casing, fire-pot, and ash-pit, of a rectangular radiator B, comprising metal plates riveted together, having riveted thereto chutes *r q*, an indirect flue *p*, a flue *o*, radial corner flanges *n*, and intermediate zigzag flanges *n'*, substantially as described.

404,562. BICYCLE. STEPHEN D. REYNOLDS, Nevada, Mo. Filed Mar. 19, 1889. Serial No. 303,856. (No model.)



Claim.—1. In a bicycle, the combination, with the main drive-wheel having a hollow shaft and hub-gears, of the shaft-carrying pedal-levers, gears fixed thereto, one of said gears having a ratchet and the other a pawl, and a sliding frame carrying gears adapted to engage and disengage the gears on the hub and axle, substantially as specified.

2. In a bicycle, the combination, with the main wheel having its shaft provided with a gear at opposite ends, of the pedal-lever shaft, gears carried by the pedal-lever shaft, and a pawl-and-ratchet connection for said gears, substantially as specified.

3. In a bicycle, the combination, with the main wheel having its shaft provided with a gear at opposite ends, of the pedal-lever shaft, gears carried by the pedal-lever shaft, a pawl-and-ratchet connection for said gears, and a movable frame carrying gears adapted to engage and disengage the gears of the main-wheel shaft and those of the pedal-lever shaft, respectively, as set forth.

4. In a bicycle, the combination, with the main wheel having its shaft provided with a gear at opposite ends, of the pedal-lever shaft, gears carried by the pedal-lever shaft, a pawl-and-ratchet connection for said gears, and a movable frame carrying gears connected by pawl and ratchet and adapted to engage and disengage the gears on the main-wheel shaft and the gears on the pedal-lever shaft, substantially as specified.

5. The combination, with the main frame, of the drive-wheels having hub-gears, the sliding frames carrying gears, the sliding arms, the horizontal rock-shaft, the segmental levers secured to the rock-shaft, and the rods connecting the sliding arms with said levers, substantially as specified.

6. In a bicycle, substantially as described, the combination, with the main frame and the sliding frame, of the two oppositely-sliding blocks carrying lag-eyes, an interposed spring for keeping the blocks moved outwardly, the sliding arms, and the pivoted arms connecting the sliding blocks with the said sliding arms, substantially as specified.

7. In a bicycle, the combination, with the hollow guide-post, of the hollow guide-shaft arranged therein, the brake-rod passing through the shaft, the brake-lever fulcrumed on the main frame and connected with the brake-rod, and a hand-lever, also connected with the rod and fulcrumed on the cross-bar, substantially as specified.

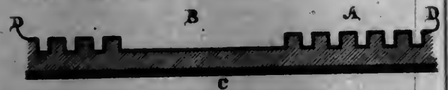
404,563. CAR-STARTER. GUSTAV SCHMIDT, Rhaine, Prussia, Germany. Filed Mar. 11, 1889. Serial No. 302,812. (No model.)

404,568.



Claim.—A car-starter consisting of the base A, with inclined shank A', pawl *c*, mounted thereon, and tubular inclined handle B, the arm C, with detachable plate *d*, and the grooved roller *a*, having flanges *b b'*, and ratchet-teeth *d'* on flange *b*, with which the pawl *c* engages, substantially as shown and described.

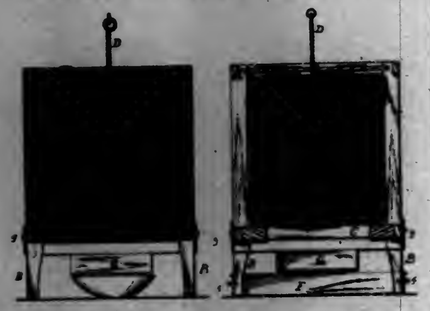
404,564. MATRIX FOR STEREOTYPING. FRIEDRICH SCHREINER and ARNOLD SCHOTT, Philadelphia, Pa. Filed May 9, 1888. Serial No. 273,274. (No model.)



Claim.—1. A matrix for stereotyping, composed of a sheet of fabric coated and partly impregnated with a semi-dry plastic mass and having a backing of pulp firmly connected with the back, substantially as herein shown and described.

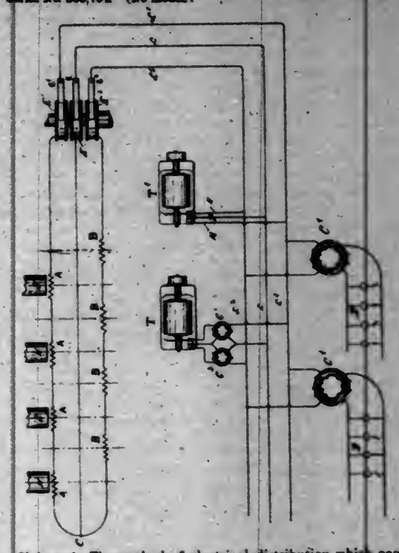
2. A matrix for stereotyping, composed of a sheet of fabric coated and partly impregnated with a semi-dry plastic mass, a sheet of fiber paper on the plastic mass, and a backing of pulp firmly connected with the back of the sheet of fabric, substantially as herein shown and described.

404,565. FLY-TRAP. ALBERT S. SCHUYLER, Pennington, N. J. Filed Oct. 31, 1888. Serial No. 289,647. (No model.)



Claim.—The combination, in a fly-trap, with the inclosed gauze-wire cage A, having legs B, removable cone-shaped bottom C, with opening *c* therein, suspending-hook D, and bait-hook E, of the bait-pan F, inclosing the bottom of the legs B, and bait-pan G, of smaller size than the pan F, and arranged between said pan F and the bottom C, and both of said pans F and G removably secured in position, as described, for the purposes specified.

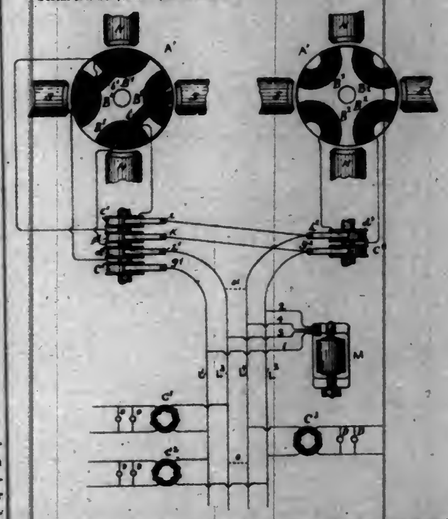
404,566. METHOD OF DISTRIBUTION BY ALTERNATING ELECTRIC CURRENTS. OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Aug. 22, 1888. Serial No. 283,764. (No model.)



Claim.—1. The method of electrical distribution which consists in the generation of an alternating current by the superposition of two alternating currents differing in phase and the derivation of currents therefrom, some dependent upon the component currents and some upon the resultant currents formed by their combined action.

2. The method of electrical distribution which consists in producing two alternating electric currents the phases of which differ in time and superposing portions of such currents, and thereby producing a resultant alternating current the phases of which differ in time from those of the original currents, utilizing such resultant current for operating translating devices, and causing the balance of the original currents to traverse independent circuits.

404,567. SYSTEM OF GENERATORS FOR ALTERNATING ELECTRIC CURRENTS. OLIVER B. SHALLENBERGER, Rochester, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Sept. 8, 1888. Serial No. 284,896. (No model.)



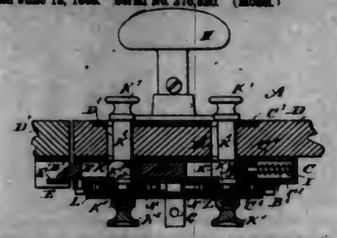
Claim.—1. The combination of two alternating-current electric generators and synchronizing-coils applied to the armature of one of the generators and connected in parallel with the coils of the other generator.

2. The combination of two alternating-current electric generators and their circuits and synchronizing-coils applied to the armature of one of the generators and connected in parallel with the coils of the other generator and having their magnetic axis at an angle with reference to the main coils of the first-named generator.

3. The combination, with two alternating-current electric generators, of synchronizing-coils applied to the armature of one of the generators and connected in parallel with the coils of the other generator, translating devices operated from the respective circuits of said armatures, and a single apparatus deriving independent currents from the circuits of said generators.

4. The combination, with two alternating-current electric generators delivering two currents differing in the time of their phases, of translating devices deriving currents from the respective generators and other translating devices deriving currents due to the superposition of the two currents of the said generators.

404,568. COMBINATION-LOCK. IRVIN A. SHAW, Kinsley, Kans. Filed June 13, 1888. Serial No. 276,920. (Model.)



Claim.—1. The combination, with a sliding bolt having a longitudinally-extending slot and a circular opening communicating with the inner end of said slot, of a shaft having a flat part, a circular tumbler having a slot receiving said flat part and turning in said circular opening, whereby, when said flat part and tumbler-slot are perpendicular to the bolt-slot, the bolt will be locked and when turned flatwise into the plane of the bolt-slot the bolt may be retracted, said tumbler sliding with the bolt, substantially as set forth.

2. In a combination-lock, the combination, with a locking-bolt provided with a circular slot connecting with a longitudinal slot, of a shaft provided with knobs and having a flat part, a tumbler held on the said flat part and fitting into the circular slot of the locking-bolt, a ratchet-wheel held on the said shaft and turning with it, and a spring engaging with its free end the teeth of the said ratchet-wheel, substantially as shown and described.

3. In a combination-lock, a locking-bolt provided with a circular slot continuing into a longitudinal slot, and a knob-shaft provided with a pin for operating said locking-bolt, in combination with a shaft provided with a knob on the inside and on the outside of the door, and also having a flat part adapted to engage the longitudinal slot of the said locking-bolt, a slotted tumbler held on the said flat part and fitting into the circular slot of the said locking-bolt, a ratchet-wheel held on and turning with the said shaft and provided with a space in its periphery, said space being formed by the breaking out of several teeth, and a spring engaging with its free end the teeth and space of the said ratchet-wheel, substantially as shown and described.

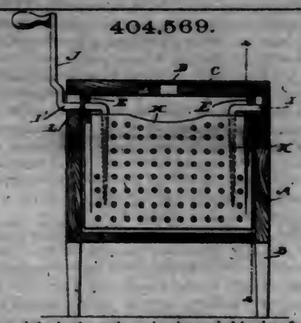
4. In a combination-lock, a locking-bolt provided with a circular slot continuing into a longitudinal slot, and a knob-shaft provided with a pin for operating said locking-bolt, and a spring bearing against said locking-bolt, in combination with a shaft provided with a knob on the inside and on the outside of the door, and also having a flat part adapted to engage the longitudinal slot of the said locking-bolt, a slotted tumbler held on the said flat part and fitting into the circular slot of the said locking-bolt, a ratchet-wheel revoluble on the said shaft and provided with a space in its periphery, said space being formed by breaking out several teeth, a knob screwed on the shaft against said ratchet-wheel and clamping it in place, and a spring engaging with its free end the teeth and space of the said ratchet-wheel, substantially as shown and described.

404,569. CHURN. WILLIAM M. SHIRA, Butler, Pa. Filed Nov. 12, 1888. Serial No. 290,667. (No model.)

Claim.—1. In a churn, the combination, with a perforated dasher, of the angular supporting-arms I I', each of said arms having a threaded tapering member K, adapted to enter the dasher, the horizontal members resting in the sides of the body, and a handle J, attached to the arm I', substantially as shown and described.

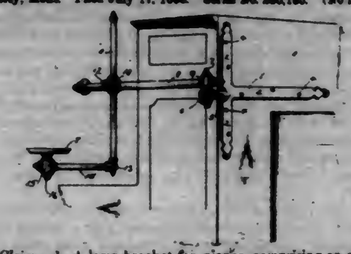
2. In a churn, the combination, with a body, of a perforated dasher H, having rabbeted ends *h*, as shown, the angular supporting-arms I I', having the threaded tapering portion K, adapted to enter

404,569.



the dasher, and the horizontal portion journaled in slots formed in the sides of the box, and a handle J, formed integral with supporting-arm I', substantially as shown and described.

404,570. PIANO LAMP-BRACKET. WILLIAM A. SMITH, Butte City, Mont. Filed July 17, 1888. Serial No. 280,183. (No model.)

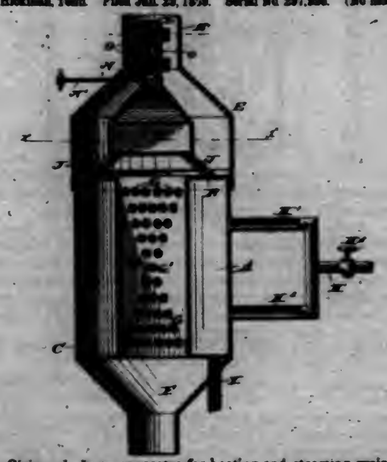


Claim.—1. A lamp-bracket for pianos, comprising an apertured base-plate provided with an arm, a horizontal arm secured to the arm of the base-plate, a sleeve on the said horizontal arm, an elbow-lever adjustably secured in the sleeve, and a lamp-stand secured to the horizontal member of the elbow-arm, substantially as described.

2. A lamp-bracket for pianos, comprising a four-armed base-plate having three of its arms apertured, a horizontal arm pivoted to one of the arms of the base-plate, a sleeve on the horizontal arm, a vertical arm adjustably secured in the sleeve and provided with a horizontally-projecting member, and a lamp-stand on the said horizontal member, substantially as herein shown and described.

3. A lamp-bracket consisting of base-plate 1, with arm 5, socket 6, horizontal rod 8, with socket 9, secured to socket 6 by pivot-pin 7 and having vertical sleeve 10, with set-screw 12 and vertical rod 11, held in sleeve 10 by set-screw 12, and having horizontal arm 14, with vertical socket 15, and lamp-standard 17, substantially as described.

404,571. HEATING AND STEAMING GRAIN. WILLIAM H. SMITH, Hickman, Tenn. Filed Jan. 29, 1889. Serial No. 297,998. (No model.)



Claim.—1. In an apparatus for heating and steaming grain, the combination, with a closed steam-vessel provided on top with a hood, of

a drying-chamber located centrally in the said steam-vessel and opening at its upper end into the said hood, and a steam-chest located in the said hood above the said drying-chamber and in communication with the said steam-vessel, substantially as shown and described.

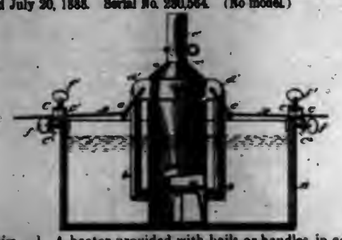
2. In an apparatus for heating and steaming grain, the combination, with a closed steam-vessel provided on top with a hood, of a drying-chamber located centrally in the said steam-vessel and opening at its upper end into the said hood, a steam-chest located in the said hood above the said drying-chamber and in communication with the said steam-vessel, perforated pipes held in the upper end of the said steam-chest and projecting into the inlet of the said hood, substantially as shown and described.

3. In an apparatus for heating and steaming grain, the combination, with a closed steam-vessel provided on top with a hood, of a drying-chamber located centrally in the said steam-vessel and opening at its upper end into the said hood, a steam-chest located in the said hood above the said drying-chamber and in communication with the said steam-vessel, perforated pipes held in the upper end of the said steam-chest and projecting into the inlet of the said hood, and a valve held in the said steam-chest for opening and closing the said perforated pipes, substantially as shown and described.

4. In an apparatus for heating and steaming grain, the combination, with a closed steam-vessel connected with a suitable source of steam-supply, a hood held on top of the said steam-vessel and provided with a grain-inlet pipe and a spout supported on the lower end of the said steam-vessel, of a drying-chamber held centrally in the said steam-vessel and opening at its upper end into the said hood and at its lower end into the said spout, pipes extending through the said drying-chamber into the said steam-vessel, a steam-chest held in the said hood above the said drying-chamber and in communication with the said steam-vessel, a pipe extending from the upper end of the said steam-chest, and perforated pipes extending transversely through the said pipe into the grain-inlet pipe, substantially as shown and described.

5. In an apparatus for heating and steaming grain, the combination, with a closed steam-vessel connected with a suitable source of steam-supply, a hood held on top of the said steam-vessel and provided with a grain-inlet pipe, and a spout supported on the lower end of the said steam-vessel, of a drying-chamber held centrally in the said steam-vessel and opening at its upper end into the said hood and at its lower end into the said spout, pipes extending through the said drying-chamber into the said steam-vessel, a steam-chest held in the said hood above the said drying-chamber and in communication with the said steam-vessel, a pipe extending from the upper end of the said steam-chest, perforated pipes extending transversely through the said pipe into the grain-inlet pipe, and a valve held in the said pipe to connect the same with or disconnect it from the steam-chest, substantially as shown and described.

404,572. WATER-HEATER. SIMON SPIRO, Birmingham, Ala. Filed July 30, 1888. Serial No. 280,564. (No model.)



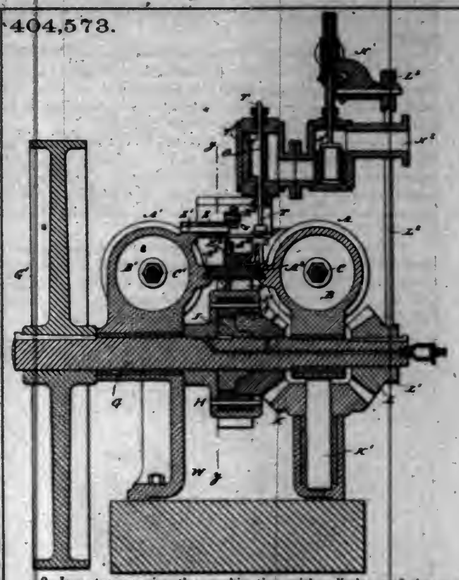
Claim.—1. A heater provided with bails or handles, in combination with the retaining-vessel, securing-straps engaging the handles or bails, and means for adjustably and detachably connecting the said straps to the retaining-vessel, substantially as described.

2. The heater provided with bails or handles, in combination with the brackets applied to a containing vessel or receptacle and having closed loops or eyes and flanges, the hooked plates or straps connecting with said bails or handles, and screws in the said brackets for adjustably connecting the plates to the brackets and detachably connecting the brackets to the receptacle, substantially as specified.

404,573. STEAM-ENGINE. ALFRED H. F. STRAUB, Los Angeles, Cal. Filed July 30, 1888. Serial No. 281,369. (No model.)

Claim.—1. In a steam-engine, the combination, with cylinders and pistons operating in the same, of steam-chests held on the said cylinders, slide-valves held in the said steam-chests, a valve-rod connecting the said slide-valves, a lever pivotally connected with the said valve-rod, and a bar secured to the pistons and sliding between the cylinders and operating on the said lever to shift the said slide-valves, substantially as shown and described.

404,573.

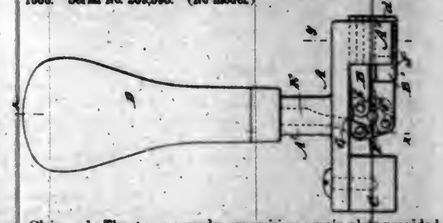


2. In a steam-engine, the combination, with cylinders and pistons operating in the same, of steam-chests held on the said cylinders, slide-valves held in the said steam-chests, a valve-rod connecting the said slide-valves, a lever pivotally connected with the said valve-rod, a bar having a reciprocating motion derived from the said pistons and operating on the said lever to shift the said slide-valves, and a cut-off valve connected with the said steam-chest and controlled by the said bar, substantially as shown and described.

3. In a steam-engine, the combination, with a cut-off valve, of a valve-stem carrying the said valve, a forked arm held on the said valve-stem and provided with friction-rollers, and a bar having a reciprocating motion derived from the action of the pistons, the said bar being provided with guideways for the said friction-rollers, substantially as shown and described.

4. In a steam-engine, the combination, with two slide-valves and a valve-rod connecting the said slide-valves, of a lever pivotally connected at one end with the said valve-rod and provided at its other end with a friction-roller, a bar having a reciprocating motion derived from the pistons, guideways formed on the top of the said bar and on which travels the said friction-roller, and stop-wheels held on the top of the said bar for reversing the said lever, substantially as shown and described.

404,574. STAMP-CANCELER. BENJAMIN SUMMERS, Petersburg, assignor of one-half to Caleb C. North, Huntingdon, Pa. Filed Apr. 4, 1888. Serial No. 269,595. (No model.)

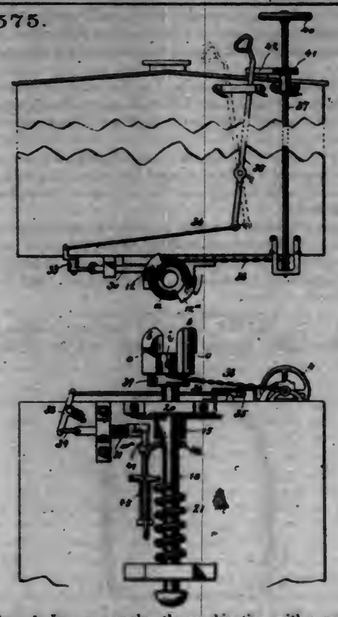


Claim.—1. The stamp-canceler comprising a main plate provided with a handle and parallel cheek-pieces, in combination with a tumbler, a rod connected thereto, and blocks held between the cheek-pieces in ways and connected to the tumbler, whereby the downthrust of the handle will move the said blocks in a straight line between the cheek-pieces, substantially as described.

2. The plate A, having projection G and tumbler F pivoted thereto, and the rod E, attached to the tumbler, in combination with the blocks B B', connected to the tumbler on opposite sides of its pivot, substantially as described.

404,575. CAR-COUPLING. ALFRED SWENSON, Greenview, assignor to Peter J. Palmquist, Menard, Ill. Filed Mar. 12, 1889. Serial No. 302,948. (No model.)

404,575.



Claim.—1. In a car-coupler, the combination, with a spring-actuated draw-bar mounted to turn in its bearings and provided with beveled hooks, of a spring-actuated bolt for engaging the draw-bar and an operating-lever connected to said bolt, substantially as described.

2. In a car-coupler, the combination, with a draw-bar formed with a rib 14 and a boss 15, of a spring connected to the draw-bar and to a fixed portion of the car, a bolt arranged to engage the boss 15, a draw-head formed with hooks 12 and 12a, having inclined faces b, a chain connected at one end to the draw-bar, and a shaft to which the other end of the chain is connected, substantially as described.

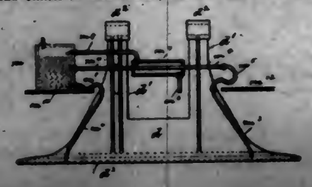
3. In a car-coupler, the combination of the following elements: a draw-bar 10, formed as described, a spring 21, bolt 30, spring 31, arranged in connection with the bolt, a bolt 44, a spring 45, arranged in connection therewith, an arm 46, extending therefrom, a lever 33, connected to the bolt 30, a lever 35, a rod connecting the levers 33 and 35, a chain 38, and a shaft 37, all the parts being arranged substantially as described.

404,576. GRIP FOR CABLE RAILWAYS. CORNELIUS TIERS, New York, JOHN H. PENDLETON, Brooklyn, and ANDREW BRYSON, Jr., New York, assignors to the Rapid Transit Cable Company, New York, N. Y. Filed July 21, 1888. Serial No. 280,668. (No model.)

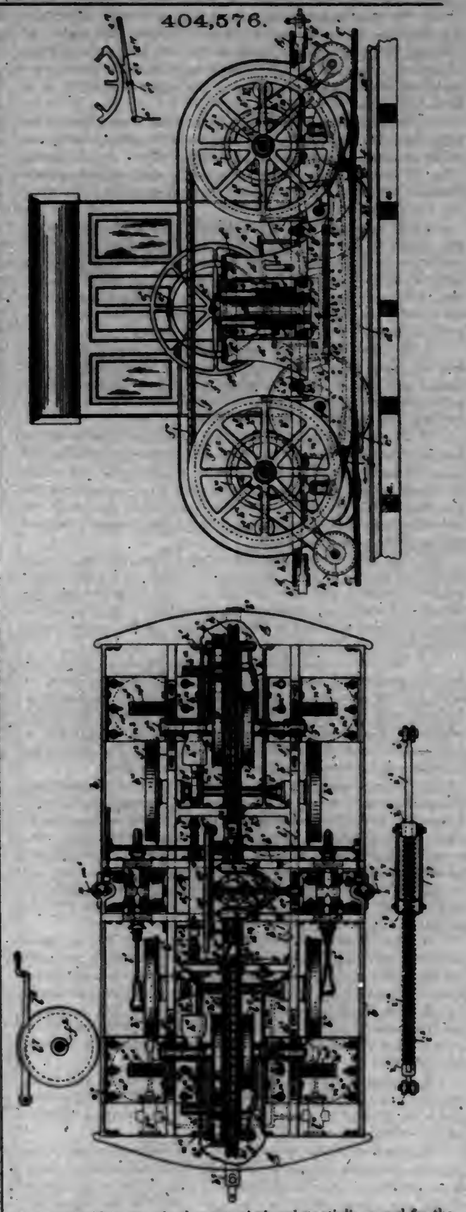
Claim.—1. The combination, with the stationary part of the grip and a support for the same, of a moving part having a hook at its lower end, a pivot-shaft for said hook to swing upon, means for raising and lowering said shaft, an endless belt against which the cable is clamped, and drums for supporting said belt, substantially as specified.

2. The combination, with the stationary part of the grip and a support for the same, of a moving part having a hook at its lower end, a pivot-shaft for said hook to swing upon, means for raising and lowering said shaft, an endless belt against which the cable is clamped, drums for supporting said belt, and means for rotating said drums and endless belt, substantially as specified.

3. The combination, with the stationary and moving part of the grip, the latter having a hook-shaped lower end, of an endless belt against which the cable is clamped, shafts and drums for supporting said belt, means for rotating said shafts and drums, a brake-wheel upon one of the shafts of said drums, and a brake for arresting the



404,576.



rotation of said brake-wheel and its shaft, substantially as and for the purposes specified.

4. The combination, with the stationary part of the grip and a support for the same, of the moving part of the grip, having a hook at its lower end, the cylinder d^9 and its plunger, the shaft d^{12}, passing through the plunger and supporting the moving part of the grip, the lever e' and arms e, the shaft e^3, ratchet-wheel e^4, and pawl-lever e^5 and the chain e^7, connecting the shaft e^3 to the lever e', substantially as specified.

5. The combination, with the stationary part of the grip, a support for the same, the moving part of the grip, the cylinder d^9, plunger d^8, and shaft d^{12}, of the lever e', arms e, the shaft e^3, ratchet-wheel e^4 and its pawl, the chain e^7, connected with said shaft e^3 and toggle-lever, and a spring connected with said chain, for the purposes specified.

6. The combination, in a gripping device for cable railways, of the stationary part of the grip, a pivoted moving part, means for lowering and raising said moving part of the grip, and a yielding connection to the moving part of the grip, so that said moving part may yield if the cable is obstructed in its passage in the grip, as set forth.

7. The combination, with the stationary and moving part of the grip, means for operating said moving part, the endless belt f, and shafts and drums for supporting said belt f, of the arm h', pivoted upon one of said shafts, the wheel h, carried by said arm h', the pulleys h^3 h^4 and band h^{12}, and means, substantially as specified, for lowering the wheel h, for the purposes set forth.

8. The combination, with the stationary and moving part of the grip, means for operating said moving part, the endless belt f, shafts and drums for supporting said belt, the arms h', wheels h, pulleys h^3 h^4, bands h^3, levers h^5, i, and i^3, links i', the arms h^{13} and rollers h^6, a connection between the arms h' and h^{13}, and a yielding connection between the lever i and the lever i^3, substantially as and for the purposes set forth.

9. The combination, with the stationary and moving part of the grip and means for operating said moving part, of the endless belt f, formed of bands of leather or other material, to which blocks of leather are secured, and means for supporting said endless belt, substantially as and for the purposes specified.

10. The combination, with the gripping device and the car-frame and its wheels and axles, of the pairs of pulleys n, supports for said pulleys fitted to move upon the car-frame, the springs n^6, the wheels n^3, carried by said pulley-supports, and a rail n^7, supported upon the cross-ties for moving and keeping the pulleys upon one side of the car into contact with the cable when the car is traveling upon a curved portion of the road, as set forth.

11. The combination, with the cable railway, the car, and its wheels and axles, a gripping device upon the car, and guide-pulleys and their supports, also upon the car, of a rail supported upon the railway structure at the curved portion thereof to act upon said guide-pulleys and keep the cable toward the center of the curved track, substantially as set forth.

12. The combination, with the stationary and moving part of the grip, the toggle-arms, chain, shaft, ratchet-wheel, and pawl-lever for holding up the moving part of the grip, of the lever o^2, connected to the pawl-lever by a link, an incline o^4 upon the roadway for disconnecting the pawl-lever and allowing the moving part of the grip to drop, and the shear o^5, for moving the hook of the grip from under the cable, substantially as and for the purposes specified.

13. The combination, with the stationary and moving part of the grip, of the plunger d^4, connected to said moving part of the grip, the toggle-arms, shaft c^3, chain, ratchet-wheel, and pawl-lever, the spring p', connected to said shaft c^3, the cylinder d^1, a reservoir containing compressed air, a pipe connecting said reservoir with the plunger-cylinder, a cock in said pipe, an arm connected with the plug of said cock, and an incline o^3 upon the roadway for moving said arm and opening the cock to admit compressed air to the plunger-cylinder and lift said plunger and the moving part of the grip, as specified.

14. The combination, with the gripping device, the car upon which it is mounted, a reservoir containing compressed air upon said car, the inclines o^4 o^5 o^3, and shear o^5 upon the roadway, and mechanism, substantially as specified, operated by said inclines, so that at the terminals of cable-sections the moving part of the grip is dropped and swung out from beneath one section of cable and then swung under and lifted to connect the cable of the next section with the grip, as specified.

15. The combination, with the stationary and moving part of the grip and means, substantially as specified, for supporting said moving part of the grip, of the links c^{11} c^{12} and rod c^{13}, for swinging the moving part of the grip by hand, as set forth.

16. The combination, with the stationary and moving part of the grip and the endless belt against which the cable is clamped, of a shoe of wrought-iron or other suitable material upon the stationary portion of said grip, against which shoe the inner surface of the endless belt is pressed when the cable is clamped by the grip, as set forth.

17. The combination, with the stationary part of the grip, of the moving part of the grip, having a hollow hook, a tank containing water or other fluid, and pipes connecting the respective ends of the hook with said tank, so that water or other fluid is caused to circulate through the hook as soon as the latter becomes heated, as set forth.

18. The combination, with the stationary part of the grip, of the moving part having a hollow hook, a tank containing water or other fluid, pipes connecting the respective ends of the hook with the tank, and a jacket for receiving exhaust compressed air surrounding the return water-pipe, so that the water or other fluid in the pipes and tanks is cooled by exhaust compressed air, as set forth.

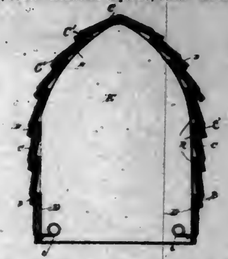
19. The combination, with the stationary part of the grip, of the moving part having a hollow hook, a tank containing fluid, and pipes connecting the grip with said tank, so that the fluid is caused to circulate through the grip as the latter becomes heated, substantially as set forth.

20. The combination, with the grip mechanism, one part of which is hollow, of a fluid-supplying device that causes the fluid to pass through the hollow part of the grip for cooling the same, substantially as specified.

21. The combination, in a grip for cable railways, of an endless belt against which the cable is clamped and means for putting said belt in motion prior to the contact of the cable with said belt, substantially as specified.

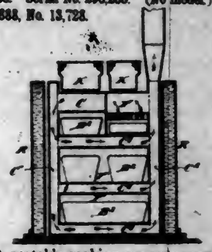
22. The combination, in a grip for cable railways, of an endless belt against which the cable is clamped, drums for supporting said belt, a wheel that is rotated by the cable, and a connection between said wheel and one of said drums for giving motion to said endless belt, substantially as specified.

404,577. HAY-CAP. WALTER R. THATCHER, Oskaloosa, Iowa. Filed May 18, 1887. Renewed Sept. 28, 1888. Serial No. 286,704. (No model.)



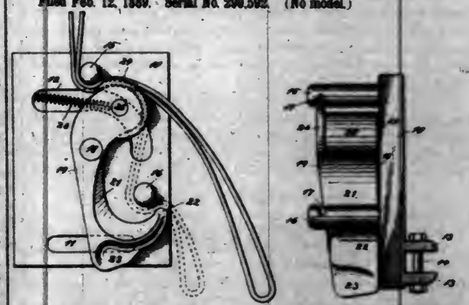
Claim.—The herein-described hay cap, roofing, and siding for temporary structures, consisting of the overlapping boards A, having perforations B at the ends near the lower edges thereof, and the single securing-wire C, passing over the outer surface of the one board A and through the apertures B therein and down over the outer surface of the next board and throughout the series, and secured by its end loops c, as set forth, substantially as described.

404,578. PORTABLE COOKING STOVE AND UTENSILS. ALFRED S. TORKINS, Holmwood, Caterham, County of Surrey, England. Filed Nov. 7, 1888. Serial No. 290,235. (No model.) Patented in England Sept. 22, 1888, No. 13,728.



Claim.—A portable cooking apparatus consisting of fire-place F, flues C C C^3, chimney C^4, ovens F', and boilers K, in combination with water-casing R, substantially as described.

404,579. REIN-HOLDER. WILLIAM F. TURNAM, Weatherford, Tex. Filed Feb. 12, 1889. Serial No. 299,502. (No model.)



Claim.—1. The combination, with a base-plate provided with spaced posts attached to one side thereof, of a lever pivoted to said

plate and provided with a cylindrical surface at one end and an essentially hook-shaped extremity at the opposite end adapted for engagement with the said posts, substantially as shown and described.

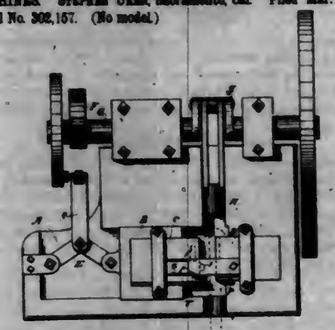
2. The combination, with a base-plate provided with spaced posts upon one surface, of a lever pivoted upon said base-plate, provided with a cylindrical surface at one end, with a flange integral with the outer face projecting beyond said cylindrical surface, and an essentially hook-shaped extension at the other extremity, all combined for operation substantially as shown and described.

3. The combination, with a base-plate and spaced posts upon one face of the said plate grooved on their adjacent sides, of a spring-actuated lever provided with a cylindrical surface at one end and a flange projecting from the outer face beyond said surface, the opposite extremity of the lever being curved to form, essentially, a hook, the cylindrical surface being adapted for engagement with one post and the hook extremity with the other post, substantially as shown and described.

4. The combination, with a base-plate provided with a curved slot near one end and posts projecting at a right angle from one face of the plate at opposite sides of the said slot, of a lever pivoted below the slot, provided with a cylindrical upper end, and a flange projected from the outer surface beyond the said cylindrical end and grooved on their adjacent sides, and a concaved inner face terminating in a hook-extension, a stud projected downward from the lever through the curved slot, and a spring secured to one wall of the slot and to the said stud, all combined for operation substantially as specified.

5. The combination, with a base-plate provided with a curved slot near one end, a transverse slot near the opposite end, a rib or flange extending downward from the under face of the said base-plate at each side of the transverse slot, and posts projected from the outer face of the said base-plate at opposite sides of the curved slot, of a lever pivoted upon the outer face of the base-plate, provided with an upper cylindrical end surface, and a flange projecting from the outer face beyond the cylindrical surface, a concave inner face, and a hook-extension at the lower end continuous with the said concave inner side, a stud projected downward from the inner face of the lever through the curved slot, and a spring connected with one wall of the slot and the said stud, substantially as shown and described.

404,580. SLOT-MAKING ATTACHMENT FOR BOLT-HEADING MACHINES. STEPHEN UREN, Sacramento, Cal. Filed Mar. 6, 1888. Serial No. 302,157. (No model.)



Claim.—1. In a bolt-heading machine and in combination with its dies, between which the bar is clamped, a fixed punch in one die adapted to make a slot or keyway in the end of the bolt, a punchway in the other die for receiving the punch after it passes through the bolt, and a guard-plate for preventing the bolt from spreading, substantially as described.

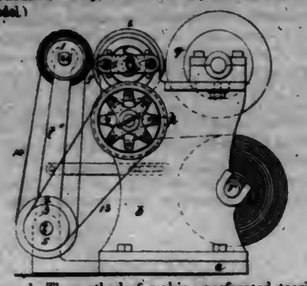
2. In a bolt-heading machine and in combination with its dies, between which the bar is clamped, a fixed punch in one die adapted to form a slot or keyway in the end of the bolt, a fixed guard-plate above and below said punch for preventing the bolt from spreading as the punch passes through it, and suitable ways in the opposing die for receiving the punch and guard-plates, substantially as described.

3. In a bolt-heading machine, the movable die C and the fixed die D, between the faces of which the bar is clamped, and a reciprocating plunger for upsetting the end of the bar to form the head of the bolt, in combination with the punch-strip secured in and projecting from the face of the movable die and adapted to make the slot or keyway in the end of the bolt, the punchway in the opposing face of the fixed die adapted to receive the punch-strip, and a guard-plate for preventing the bolt from spreading, substantially as described.

4. In a bolt-heading machine, the movable die C and the fixed die D, between which the bar is clamped, and the reciprocating plunger for upsetting the end of the bar, in combination with the punch-strip projecting from the face of the movable die and adapted to make a slot or keyway in the end of the bolt, the projecting guard-plates above and below said punch-strip and secured to the movable die, and the ways in the opposing fixed die for receiving the punch-strip and the guard-plates, substantially as described.

5. In a bolt-heading machine and in combination with the opposing dies by which the bar is gripped and held, said dies being made in two parts, as described, in combination with the independent guard-plates secured between the parts of one of the dies and projecting from its face, the independent punch-strip secured between said guard-plates and projecting from the face of the die, and the grooved punchway-shoes secured between the parts of the opposing die, substantially as described.

404,581. METHOD OF MAKING PERFORATIONS IN PAPER. SETH WHEELER, Albany, N. Y. Filed May 2, 1885. Serial No. 164,196. (No model.)

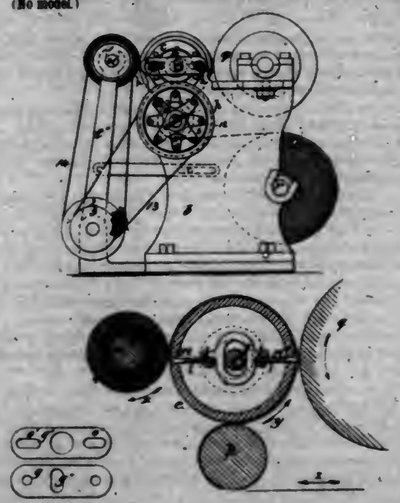


Claim.—1. The method of making perforated tearing-lines in paper, consisting of presenting plain paper to an abrading-surface and thereby grinding away portions of the paper in the lines desired, substantially as described.

2. The method of making perforated tearing-lines in paper, consisting of projecting plain paper by a series of teeth against a rotating abrading-surface and thereby grinding away the paper on said teeth, substantially as described.

3. The method of making perforated transverse tearing-lines in a web of paper, consisting of continuously moving the web and intermittingly projecting it by a series of teeth against a rapidly-moving abrading-surface and thereby grinding away the paper on said teeth, substantially as described.

404,582. MACHINE FOR MAKING PERFORATIONS IN PAPER. SETH WHEELER, Albany, N. Y. Filed May 2, 1885. Serial No. 164,197. (No model.)



Claim.—1. In a paper-perforating machine, the roller having an abrading-surface, in combination with the rotating cylinder carrying the intermittingly-projected teeth, substantially as described.

2. In a paper-perforating machine, the roller having an abrading-surface, in combination with the rotating cylinder, the eccentric shaft, and the plates having teeth intermittingly projected, substantially as described.

3. In a paper-perforating machine, the roller having an abrading-

surface, in combination with the rotating cylinder, the adjustable eccentric shaft, and the plates having teeth intermittingly projected, substantially as described.

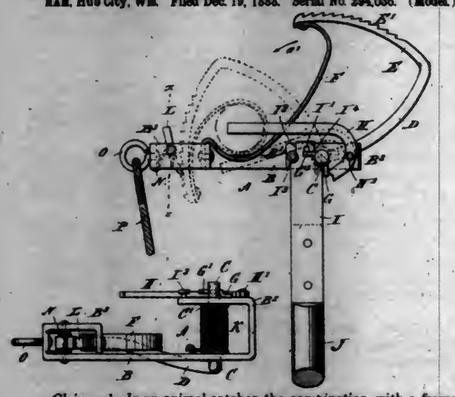
4. In a paper-perforating machine, the roller having an abrading-surface and the cylinder in which are mounted intermittingly-projected teeth, in combination with the rotating feeding and winding rolls by which a web of paper is continuously fed between said roller and cylinder, substantially as described.

5. In a paper-perforating machine, the combination of a roller having an abrading-surface, the cylinder carrying intermittingly-projected teeth, the feed-roll, the winding-roll having a friction-pulley on its shaft, and the driving-belts, substantially as described.

6. In a paper-perforating machine, the roller having an abrading-surface and the cylinder carrying intermittingly-projected teeth, in combination with the feeding-roll, the winding-roll and its adjustable friction-pulley, and the driving-belts, substantially as described.

7. The combination, with an abrading-roll, of a cylinder containing slots n and n', through which project teeth m and m', constructed on plates, such plates being attached to yokes, a shaft f set eccentric to the cylinder e and the plates $g\,g\,g\,g'$, so that the teeth $m\,m'$ will alternately project beyond the periphery of the cylinder e when opposite the periphery of the abrading-roll q and be withdrawn within such slots during the remainder of the revolution of such cylinder, substantially as described.

404,583. DEVICE FOR CATCHING ANIMALS. THOMAS WICKHAM, Hub City, Wis. Filed Dec. 19, 1888. Serial No. 294,036. (Model.)



Claim.—1. In an animal-catcher, the combination, with a frame, of a segmental arm fulcrumed on the said frame and actuated by a spring, and a band secured to the said frame and the said segmental arm, substantially as shown and described.

2. In an animal-catcher, the combination, with a frame, of a segmental arm fulcrumed on the said frame and actuated by a spring, a band secured on the said segmental arm and the said frame, and a tripping device for locking the said segmental arm in an open position, substantially as shown and described.

3. In an animal-catcher, the combination, with a frame, of a segmental toothed arm fulcrumed on the said frame and actuated by a spring, a band secured to the said frame and the said segmental arm, and a spring-pawl fulcrumed on the said frame and adapted to engage the said toothed segmental arm, substantially as shown and described.

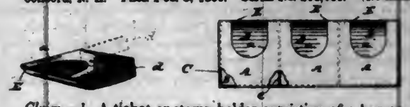
4. In an animal-catcher, the combination, with a frame, of a segmental toothed arm fulcrumed on the said frame and actuated by a spring, a band secured to the said frame and the said segmental arm, a spring-pawl fulcrumed on the said frame and adapted to engage the said toothed segmental arm, and a rope connected with one end of the said frame, substantially as shown and described.

5. In an animal-catcher, the combination, with a frame, of a segmental toothed arm fulcrumed on the said frame and actuated by a spring, a band secured on the said segmental arm and the said frame, a spring-pawl fulcrumed on the said frame and adapted to engage the said toothed segmental arm, and a handle for holding the said frame and adapted to be detached, substantially as shown and described.

6. In an animal-catcher, the combination, with a frame and a handle held on the said frame and adapted to be detached, of a shaft mounted to turn in the said frame and actuated by a spring, a tripping-arm held on the said shaft and adapted to hold the said handle in place, a tripping-lever fulcrumed on the said frame and engaged by the said tripping-arm, a segmental arm held on the said shaft, and a band secured to the said segmental arm and the said frame, substantially as shown and described.

7. In an animal-catcher, the combination, with a frame and a handle held on the said frame and adapted to be detached, of a shaft mounted to turn in the said frame and actuated by a spring, a tripping-arm held on the said shaft and adapted to hold the said handle in place, a tripping-lever fulcrumed on the said frame and engaged by the said tripping-arm, a segmental arm held on the said shaft, a band secured to the said segmental arm and the said frame, and a spring-pawl fulcrumed on the said frame and adapted to engage notches in the said segmental arm, substantially as shown and described.

404,584. TICKET AND STAMP HOLDER. ALFRED WILLIAMSON, Concord, N. H. Filed Feb. 5, 1889. Serial No. 298,709. (No model.)



Claim.—1. A ticket or stamp holder consisting of a box or case having vertical sides and back, the latter being open, a flat top having a curvilinear opening at its front, a curved bottom converging to a point adjacent with the front edge of said top, whereby a slot is formed for the extraction of a single ticket or stamp, and a hinged cap for normally closing the open back of said box or case, all substantially for the purpose set forth.

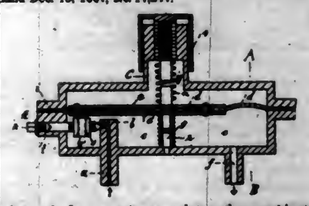
2. A ticket or stamp holder consisting of a box or case having vertical sides and back, the latter being open, a flat top having a curved opening at its front, a curved bottom converging to a point adjacent with the front edge of said top for the extraction of a single ticket or stamp, and a hinged cap for normally closing the open back, and the curvilinear opening in the flat top of said box or case.

404,585. COMBINED POT AND PROTECTOR FOR SEEDLINGS, &c. WILBUR L. WRIGHT, Bristol, Conn., assignor of one-half to Sigourney Bros., same place. Filed Feb. 11, 1889. Serial No. 299,397. (No model.)



Claim.—As a new article of manufacture, a combined pot and protector for seedling and other plants, made of paper and having a folded bottom, the folds whereof are adapted to be pulled out when the plant is set out, so as to permit the pot to be pulled up over and away from the roots of the plant and form a protector for the stem and leaves thereof.

404,586. PRESSURE REGULATING OR REDUCING VALVE. EMIL ANDER, Hanover, Germany, assignor to Franz Honser & Co., same place. Filed May 17, 1888. Serial No. 274,180. (No model.) Patented in Germany May 15, 1886, No. 40,647, and Mar. 3, 1887, No. 42,336; in France June 24, 1886, No. 176,992; in Belgium Apr. 26, 1887, No. 77,223; in Austria-Hungary July 22, 1887, No. 3,814 and No. 30,450, and in England Dec. 15, 1887, No. 17,277.

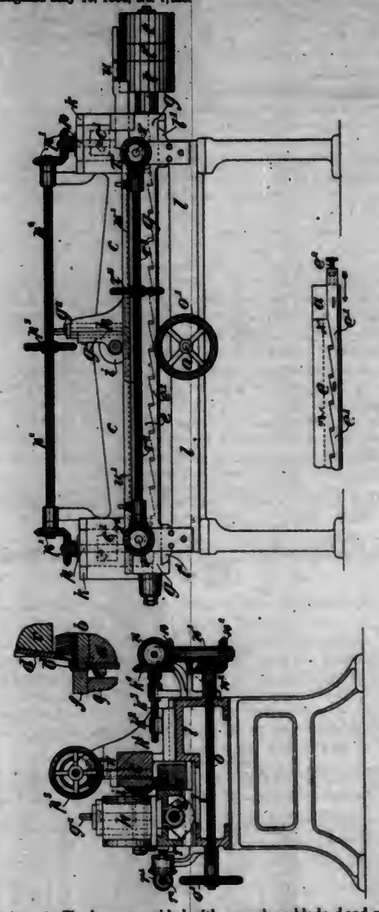


Claim.—1. In a pressure-regulator, the combination, with the casing, of a flexible diaphragm provided with stiffening-plates and a spring secured at one end to the casing, a valve connected with the diaphragm, two springs in positions to press, respectively, the opposite sides of the diaphragm, and a screw-cap by which one of said springs may be compressed, substantially as described.

2. The combination, with a flexible diaphragm d, which is provided with stiffening-plates, of a spring i, connected with the casing, a valve b, provided with a nut s, and a collar d', which is firmly connected with the diaphragm, substantially as and for the purposes described.

3. In combination with the casing provided with an aperture and a screw-plug to close the same, a needle-valve b, which extends into said aperture, a flanged nut on said valve, a collar placed loosely on said nut, and a flexible diaphragm with which said collar is firmly connected, substantially as set forth and described.

404,587. MACHINE FOR SECURING CLOTHING TO CARDING-ENGINES. ELIJAH ASHWORTH, Manchester, County of Lancaster, England. Filed July 10, 1888. Serial No. 279,513. (No model.) Patented in England May 19, 1888, No. 7,495.



Claim.—1. The bar c, provided with a comb or blade d and vertically and horizontally sliding carriage carrying the said bar, in combination with a vise or bed for holding the carding-engine flat-bar while the said comb or blade is pressed down upon the fabric of the card-clothing on such flat-bar and is moved in a direction across the flat-bar to stretch the said fabric, substantially as set forth.

2. The combination, with a vise or bed for holding a carding-engine flat-bar, of the bar c, provided with a comb or blade, carriages k', upon which the bar is mounted to slide in a direction at right angles to the face of the flat-bar, feed-screws for the bar, devices connecting the feed-screws to operate them together, feed-screws to move the carriage in a direction parallel with the face of the flat-bar, and devices, substantially as described, connecting these latter feed-screws to operate them together, substantially as and for the purpose set forth.

3. The combination of a vise or bed for holding the carding-engine flat-bar, a clamp for holding a clip to the under side of the flat-bar, and mechanism for bending the upper flange of the clip, with a clamping-plate f, a carriage g, upon which the plate is mounted and which can be moved toward and from said flat-bar, and coupled screws for moving the carriage to and fro and maintaining its parallelism with the edge of the flat-bar, all substantially as set forth.

4. The combination of a vise or bed for holding a carding-engine flat-bar with a clamping-plate e to hold a metal clip to the under side of the bar, means for pressing the said clamping-plate upward toward the back of the flat-bar, and mechanism, substantially as set forth, for bending the clip down onto the upper side of the bar, all substantially as set forth.

5. The combination of a vise or bed for holding a carding-engine flat-bar with a bar having a comb or blade to hold down the fabric of the card-clothing upon the said bar, a clamping-plate e and means for pressing it up toward the back of the bar, a clamping-plate f to hold the metal clip against the edge of the bar, and mechanism for bending the clip down onto the edge of the card-clothing.

6. The combination of a vise or bed for holding a carding-engine flat-bar with a bar having a comb or blade to hold the card-clothing in position upon the bar, clamps for holding a metal clip against the edge and back of the bar, and a rotating pressing-disk and a sliding carriage carrying the disk to close down the upper flange of the clip upon the margin of the card-clothing, substantially as set forth.

404,588. BRUSH. CHARLES J. BAILEY, Newton, Mass. Filed Nov. 9, 1888. Serial No. 290,357. (No model.) Patented in England Oct. 27, 1887, No. 14,630; in France Oct. 27, 1887, No. 186,635; in Canada Nov. 3, 1887, No. 27,920, and in Belgium June 6, 1888, No. 82,074.



Claim.—The back a and the cylindrical flat-ended teeth b, made integral with the back and of soft or flexible rubber and constituting a brush soft or flexible throughout, substantially as described.

404,589. FOLDING CHAIR FOR STEAMERS, &c. CHARLES P. BATT, Brooklyn, N. Y. Filed Feb. 13, 1888. Serial No. 299,702. (No model.)



Claim.—1. The combination of the seat and back of a folding chair pivoted together, with side arms connected to the seat and resting upon supports on the chair-back, and having a brace resting against the rear of the side bars of the latter to support the seat, substantially as described.

2. The combination of the seat and back of a folding chair pivoted together, with side arms pivoted to the seat and resting upon supports on the chair-back and provided with stops near their ends which engage with the rear edges of the side bars of the back to support the seat, the said side arms hanging down behind the back when the chair has been folded up with the seat against the back, all substantially as described.

3. The combination of the seat and back of a folding chair pivoted together, with side arms pivoted to the chair-seat near the front of the latter, the side arms having supports on the chair-back, and being connected together behind the latter by a cross-brace bearing on said back to support the seat, substantially as described.

4. The combination of the seat and back of a folding chair pivoted together, with front legs forming a continuation of the chair-back, and back legs forming a continuation of the chair-seat, and side arms pivoted to the chair-seat and resting upon supports on the chair-back, and having a cross-brace behind the latter to support the seat, all substantially as described.

5. The combination of the seat of a folding chair with side arms connecting the seat with the back, and headed bolts passing through the seat and pivot-pins connecting the bolts with the ends of the arms, substantially as described

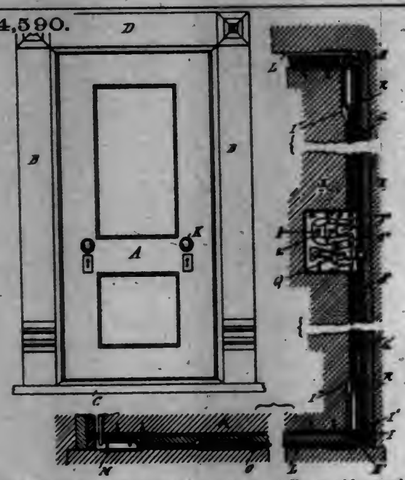
404,590. COMBINED DOOR LOCK AND HINGE. LOUIS BENFELDT and JOHN CHATEAU, Detroit, Mich. Filed Dec. 10, 1888. Serial No. 293,089. (No model.)

Claim.—1. A combined door lock and hinge, consisting of vertical rods normally extended and adapted to enter suitable apertures in the threshold and top rail of a door-frame, combined with a latch arranged at right angles to said rods to engage the extended ends thereof, substantially as described.

2. A combined door lock and hinge, consisting of two pairs of vertical rods, a spring adapted to normally expand them, suitable apertures in the threshold and top rail, and spring-catches adapted to engage with the extended ends of the rods, substantially as described.

3. In a combined door lock and hinge, the combination of two pairs of vertical rods normally extended by a spring beyond the top

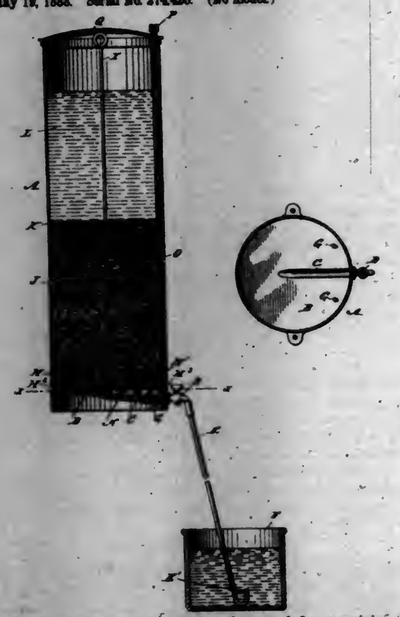
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and bottom of the door, the notches—such as J J'—in said extended portions, the spring-latches K', adapted to engage in said notches, and suitable latch mechanism for operating the vertical rods, substantially as described.

4. In a door provided upon both edges with vertical grooves, caps or moldings, two pairs of spring-actuated rods in said grooves adapted to be used as a lock or hinge for the door, combined with spring-catches movable at right angles to said rods, substantially as described.

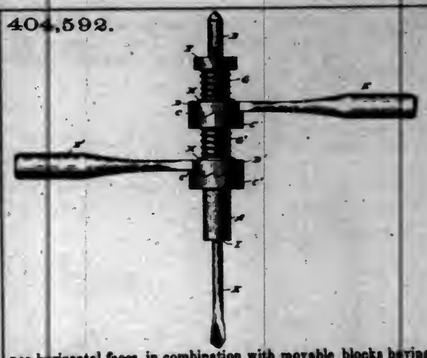
404,591. PERCOLATOR. THOMAS BOTCH, New York, N. Y. Filed May 19, 1888. Serial No. 274,420. (No model.)



Claim.—A percolator comprising the vessel for containing the menstruum and drug, having the chamber in its bottom under the strainers, a suction-tube leading down into the chamber and having a closure at its upper end, a discharge-cock leading from the chamber, and a tube depending from said cock and provided with an upward bend at its lower end, substantially as set forth.

404,592. RATCHET-DRILL. HENRY REINEMANN, Philadelphia, Pa. Filed Feb. 26, 1889. Serial No. 301,022. (No model.)

Claim.—1. In a ratchet-drill, a stem and permanent blocks rigidly secured thereto, said blocks having recesses cut into their upper horizontal faces, in combination with movable blocks having recesses cut into their lower horizontal faces and adapted to correspond with the ratchet formed by the recesses in said permanent blocks, said movable ratchet-blocks having handles rigidly secured to them, substantially as described.



2. In a ratchet-drill, a stem having ratchet-blocks rigidly secured thereto, said rigid blocks having recesses cut in their upper faces, in combination with movable ratchet-blocks adapted to rotate upon said stem and resting on the tops of said rigid blocks, and coiled springs on the tops of said movable blocks for holding said movable blocks in place independently, said movable blocks provided with handles rigidly secured thereto, substantially as described.

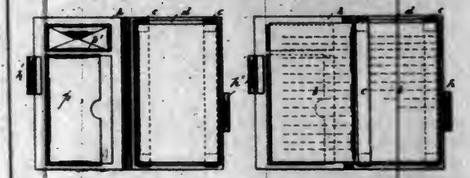
404,593. RULER. ARTHUR BROWN and PETER C. PAYETTE, Detroit, Mich. Filed Jan. 3, 1889. Serial No. 295,283. (No model.)



Claim.—1. The combination of a ruler grooved on both its edges and a metal straight-edge secured to the ruler and projecting centrally therefrom, one of the grooved edges of said ruler having inches and fractions of inches indicated thereon, substantially as described.

2. The combination, with a ruler grooved on both its edges, of a metal straight-edge set out centrally therefrom and secured to said ruler at its ends only, substantially as described.

404,594. PAPETERIE. ADOLPH BÜHLER, Reichenhall, Bavaria, Germany. Filed Sept. 14, 1888. Serial No. 285,421. (No model.)



Claim.—1. The combination, with a package of double sheets of letter-paper or of a plurality of superposed envelopes arranged with their sealing-flaps overlapping one another, of a holder c, of greater length than the paper or envelopes, and inserted between the two pages of the inner sheet of paper or under the flap of the upper envelope of the package along the fold thereof, and a backing of more or less rigid material to which said holder is secured, as described, for the purposes specified.

2. A block of letter-paper comprising a backing of more or less rigid material, a plurality of superposed packages of double-sheet letter-paper, said packages being arranged with their folded portions alternating with the edges of the sheets, and a holder c for each package inserted in the inner sheet along the fold thereof, the ends of said holder being secured to the backing, as described, for the purposes specified.

3. The combination, with a package of envelopes arranged with their sealing-flaps overlapping one another, of a holder consisting of a strip c, of more or less flexible material, provided with a slit or slot for the passage of said sealing-flaps, and a backing to which the strip c is secured, as described, for the purposes specified.

4. The combination, with two packages of envelopes c, arranged relatively to each other, as described, the holder or holders c for said packages, and a backing, of more or less rigid material, to which said holder or holders are secured, of a fastener secured to said backing and arranged to overlap the contiguous edges of the packages of envelopes, substantially as described, for the purposes specified.

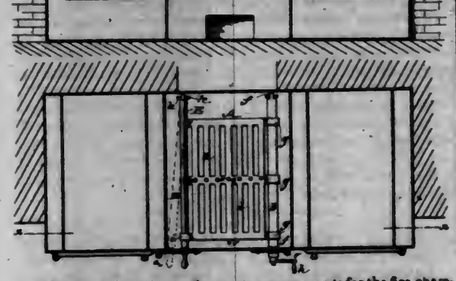
5. A block of letter-paper or envelopes comprising a plurality of superposed packages of such, arranged as described, and the holders c for the individual packages, and a backing or wrapper to which said holders are secured, said backing or wrapper being constructed to inclose the block of paper or envelopes, substantially as described, for the purposes specified.

6. The herein-described article of papeterie, comprising a doubled or folding wrapper, a block of envelopes consisting of a series of packages of such, holders for each individual package secured to the wrapper, as described, and a block of letter-paper consisting of a plurality of packages of such, holders for each individual package thereof, and a backing to which said holders are secured, said parts being arranged and combined substantially as described, and for the purposes specified.

7. The herein-described article of papeterie, comprising a double or folding wrapper A, provided on its edges with loops K, a block of envelopes consisting of a series of packages c of such, holders for each individual package secured to the wrapper, and a block of letter-paper consisting of a plurality of packages a of such, holders for each individual package thereof, and a backing to which said holders are secured, said parts being arranged and combined substantially as shown and described, and for the purposes specified.

8. The herein-described article of papeterie, comprising a double or folding wrapper A, provided on two of its meeting edges with loops K, and on one-half of its inner face with receptacles p and p, a block of envelopes consisting of a plurality of packages c of such, holders for each individual package secured to the wrapper, and a block of letter-paper consisting of a plurality of packages a of such, holders for each individual package thereof, and a backing d, to which such holders are secured, said parts being arranged and combined substantially as shown and described.

404,595. GRATE FOR RANGES, STOVES, OR FURNACES. SALVATORE J. DOMINI, New York, N. Y. Filed Feb. 13, 1889. Serial No. 299,710. (No model.)

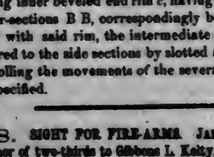


Claim.—1. In reciprocating-grate arrangements for the fire-chambers of ranges and other heating structures, the combination, with the reciprocating fire-grate A, composed of a series of connected parallel grate-bars a, all made to reciprocate in common, of the bed-plate B of the fire-chamber, beneath which the upper surfaces of said bars at their ends work, provided on its opposite sides, which are transverse to the line of motion of the grate, with projections c, arranged to enter down between the grate-bars, whereby and without specially constructing the grate-surface for the purpose fuel is prevented from being carried by the reciprocating grate beneath the bed-plate to jam or interfere with the free motion of the grate, essentially as shown and described.

2. In a shaking grate for ranges and other heating structures, the combination, with the bed-plate of the fire-chamber, of the reciprocating grate arranged below said bed-plate and provided with one or more clips on its one side and one or more toe rests or supports on its opposite side, a rocking bar fitted to pass loosely through the clip or clips of the grate and adapted to rock or turn the grate in common with it, and a laterally-movable rod or lever on the opposite side of the grate adapted to pass either under or from beneath the toe rests or supports of the grate, substantially as specified.

3. The combination, in a range or other heating structure, of the reciprocating and laterally-damping grate A, provided with socket-like clips g on its one marginal side and toe-rests i on its opposite marginal side, the laterally-adjustable rod or lever E on the toe-rest side of the grate, and the rocking bar D, adapted to pass loosely through said clips and to turn the grate in common with it and detachably fitted to its place and through the clips, whereby the grate may be readily removed when required, substantially as specified.

404,596. SHEET-METAL PACKAGE. FRANK G. CALDWELL, Wheeling, W. Va. Filed Feb. 26, 1889. Serial No. 301,070. (No model.)



Claim.—1. As an article of manufacture, a sheet or sheets of metal rolled into cylindrical form and having folds or laps formed on the side edges of the outer portion of the outer sheet and surrounded at each end with metal guards having lapped or folded edges that engage the folds or laps on the metal sheet, said guards being also secured to wooden cross-pieces at the ends of the roll, substantially as described.

2. As a new article of manufacture, a sheet or sheets of metal rolled into cylindrical form and having folds or laps formed on the side edges of the outer portion of the outer sheet and surrounded at each end with metal guards having lapped or folded edges that engage the folds or laps on the metal sheet, said guards being secured to wooden cross-pieces at the ends of the roll, and the inner cross-pieces being provided with circular blocks or projections that are closely surrounded by the metal sheet or sheets, substantially as described.

3. The combination, with a sheet-metal roll, of the metal guards 5, engaging the side edges of the outer portions of the outer sheet of said roll, and the wooden cross-strips 6 and 7 at the ends of the roll and secured to said guards, substantially as described.

4. The combination, with a sheet-metal roll, of the metal guards 5, engaging said roll at both ends, the recessed wooden strips 6, having blocks or projections 8, entering the said roll, and the wooden strips 7, engaging the recesses in the strips 6, said strips being secured to the metal guards, substantially as described.

404,597. COVER FOR BUTTER-TUBS, &c. HENRY C. CARTER, New York, N. Y. Filed Mar. 5, 1889. Serial No. 301,947. (No model.)



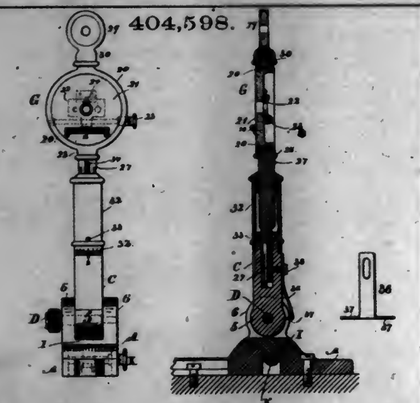
Claim.—1. An expanding and contracting cover for tubs and other vessels or packages, composed of independent side sections, a sliding wedge-shaped section in between the side sections, secured to the latter by slotted attachments, and pins or studs controlling the movement of the wedge-section and side sections relatively to each other, substantially as specified.

2. In sectionally-constructed covers for tubs and other vessels or packages, the sections B B, having grooves f in their inner edges, in combination with the intermediate sliding web-section C, provided on each of its opposite edges with a longitudinally-slotted web adapted to fit within the grooves f, and pins or studs g, passing through said slotted webs and securing the several sections together and controlling their movement relatively to each other, essentially as described, and whereby the wedge-section is made to form a handle for lifting and placing the cover, as set forth.

3. In combination with a tub or vessel provided with a shoulder b and projecting inner beveled end rim c, having opposite recesses d d in it, the cover-sections B B, correspondingly beveled on their outer edges to lock with said rim, the intermediate sliding wedge-shaped section C, secured to the side sections by slotted attachments, and pins or studs controlling the movements of the several cover-sections, substantially as specified.

404,598. SIGHT FOR FIRE-ARMS. JAMES W. CARVER, Pawlet, Vt., assignor of two-thirds to Gibbons L. Kelly, Brooklyn, N. Y. Filed Nov. 24, 1888. Serial No. 291,781. (No model.)

404,598.



Claim.—1. The combination, with the sight G, having a circular rim 20, of a screw at the top thereof and a screw-socket 28 at the bottom of the screw-rod 27, and a support for the same, there being a screw-thread at the top fitting the socket 28 and the second sight 29, with a screw-socket 30 fitting either the screw on the ring 20 or on the standard 27, substantially as specified.

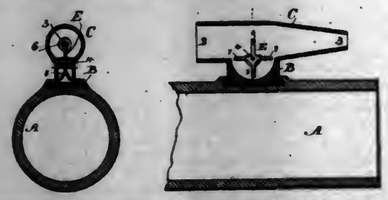
2. The standard C and base A, hinged together, the screw-rod 27, having a prismatic lower end and entering a corresponding longitudinal hole in the standard C, in combination with the sight supported by the rod 27, the tubular nut 32, surrounding the upper end of the standard C and acting upon the screw-threaded exterior of the rod 27, substantially as specified.

3. The combination, with the base A, joint-pieces 6, and hinge-pin D, of the standard C, through the lower portion of which the hinge-pin D passes, a spring 36, having T-shaped projections for passing into grooves in the hinge-pieces 6, and the attaching-screw passing through the slot in the spring, whereby the standard can be adjusted and held in a vertical position, substantially as set forth.

4. The combination, with the sight and the screw-rod 27, connected therewith, of the standard C, into which the lower end of the rod 27 passes, the tubular nut 32, surrounding the upper end of the standard and having an internal screw-thread receiving the screw-rod 27, there being divisions upon the standard C and upon the nut 32 and rod 27, for indicating the vertical adjustment of the sight, substantially as set forth.

5. The base A, having a transverse groove, in combination with the transverse slide I, adjusting-screw K, the standard C, hinged to the transverse slide, the tubular nut around the upper end of the standard, the screw-rod within the tubular nut and a sight attached to the screw-rod and adjusted vertically by the tubular nut, substantially as set forth.

404,599. SIGHT FOR FIRE-ARMS. JAMES W. CARVER, Pawlet, Vt., assignor of two-thirds to Gibbons L. Kelty, Brooklyn, N. Y. Filed Jan. 7, 1889. Serial No. 295,623. (No model.)



Claim.—1. The combination, with the bead or sight and the base that is connected with the gun-barrel, of a tubular shield surrounding the sight and having the rear end larger than the forward end, for the purposes and substantially as specified.

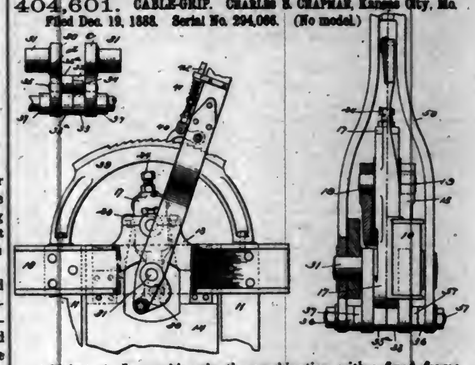
2. The combination, with the sight or bead and the base that is attached to the barrel, of a tubular shield surrounding the sight, the rear end of which is larger than the front end, and the rear portion of such shield is cylindrical, or nearly so, and the front portion tapering to the smaller end, substantially as set forth.

3. The combination, with the base, of the tubular shield the opening through which is larger at the rear end than at the front end, and a movable sight-holder within a channel or longitudinal groove in the base and having arms upon the ends of which are beads or sights of different sizes or shapes, substantially as specified.

404,600. DETERMINING THE TEMPER OF IRON OR STEEL. CARL A. CARPENSTEN, Forsbacka, Marrstahill, Sweden. Filed Feb. 12, 1889. Serial No. 299,649. (No model.)

Claim.—A method of determining the temper of iron or steel, consisting in conducting an electric current through a sample or test-piece of the iron or steel the temper of which is to be determined, melting it off, and comparing the intensity of the current requisite with the strength of the current required to melt off pieces of normal steel of the same minimum cross-section as the sample and of known temper, either directly by placing the above-mentioned normal pieces in the same electric circuit or indirectly by the aid of an amperometer, substantially as described.

404,601. CABLE-GRIP. CHARLES S. CHAPMAN, Kansas City, Mo. Filed Dec. 19, 1888. Serial No. 294,066. (No model.)



Claim.—1. In a cable-grip, the combination, with a fixed frame to which the grip-heads are connected, of a movable frame arranged for connection with the toggles of the grip, a link pivoted in the movable frame, a crank pivoted in the fixed frame and pivotally connected to the lower end of the link, and a lever mounted upon the pivots of the crank and having the lower end of its short arm connected to the lower portion of the said crank, substantially as herein shown and described.

2. The combination, with a fixed frame arranged for connection with the heads of a grip and with a car-body or platform, of a movable frame arranged for connection with the grip-jaws, a crank carried by the fixed frame, a link connected to the crank and to the movable frame, a lever fulcrumed on the crank-trunnions and connected to the lower crank-arms, a pawl carried by the lever, and a toothed rack with which the pawl engages, substantially as described.

3. The combination, with a frame made up of castings that are bolted or riveted together, of shanks 11, held by the casting-uniting rivets, said shanks being arranged for connection with a grip-head, a body-sheet 14, arranged for connection with the grip-jaws, a casting 13, carried by said body-sheet, a crank 30, formed with trunnions 31, journaled in bearings formed in the castings first referred to, a link 17, pivotally connected to the crank, a cross-head carried by the link and journaled upon the casting 13, a lever fulcrumed upon the trunnions 31 and connected to the crank 30, a retaining-pawl carried by the lever, a rack with which said pawl engages, and a pawl-operating attachment, substantially as described.

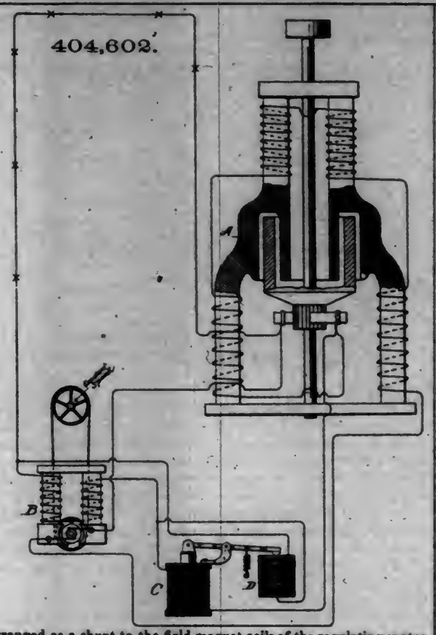
404,602. REGULATOR FOR DYNAMO-ELECTRIC MACHINES. ERNEST P. CLARK, New York, N. Y., assignor to the Clark Electric Company, same place. Filed Oct. 8, 1888. Serial No. 287,498. (No model.)

Claim.—1. A regulator for a shunt-wound dynamo, consisting of an electromotor whose armature is maintained at a constant speed and is included in the field-magnet circuit of the dynamo, and whose field-magnet coils are included in the main circuit of the dynamo for the purpose of varying the counter electro-motive force of the motor as the main current varies in strength.

2. A regulator for shunt-wound dynamo-electric machines, having its armature included in the field-magnet circuit of the dynamo and its field-maget coils included in the main circuit, a variable resistance arranged as a shunt to the field-magnet coils of the regulator, and an electro-magnet in the main circuit arranged to control said variable resistance for the purpose of magnifying the variations in magnetic strength of the regulator field-magnets caused by changes in strength of the current in the main circuit.

3. The combination of a dynamo-electric machine having its field-magnet coils in shunt or derived circuit, an electromotor maintained at a certain unvarying speed and having its armature in circuit with the field-magnet coils of the dynamo and its field-magnet coils in circuit with the lamps or other translating devices, a variable resistance

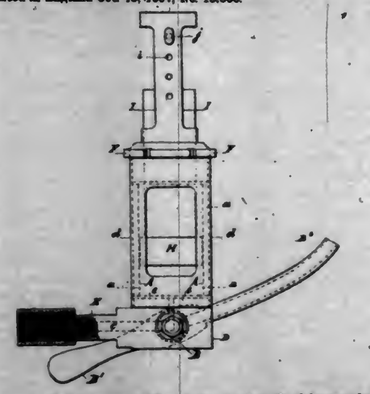
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arranged as a shunt to the field-magnet coils of the regulating-motor, and an electro-magnet or solenoid located in the main circuit, controlling said variable resistance and so arranged as to intensify the variations in magnetism of the field-magnets of the regulator caused by variation in the main current for the purpose of maintaining a constant strength of current in the main or working circuit, notwithstanding variations in potential or a varying speed of the dynamo.

4. A regulator for a shunt-wound dynamo, consisting of an electromotor whose armature is included in the field-magnet circuit of the dynamo and whose field-magnet coils are arranged so that the full current on the main circuit of the dynamo will pass through them for the purpose of varying the counter electro-motive force of the motor as the main current varies in strength.

404,603. MEASURING-VESSEL. THOMAS S. COCKCROFT, Liverpool, County of Lancaster, assignor to John Goldie Chapman, Birkenhead, England. Filed Mar. 6, 1889. Serial No. 302,073. (No model.) Patented in England Oct. 13, 1887, No. 13,860.



Claim.—1. In apparatus of the character described for supplying gaged quantities of liquids, the combination of a measuring-vessel having a plunger movable therein and automatically raised by the pressure exerted by the liquid flowing by gravity into said measuring-vessel, a valve having radial ports and a longitudinal duct *b*, and a swinging lever-handle B', fixed upon the outer end of the valve to oscillate in a vertical plane for turning the valve, said lever-handle containing a continuation of said valve-duct and provided with an attached discharge-nozzle B^3, that swings with the lever-handle and communicates with the duct therein, substantially as described.

2. In apparatus for supplying gaged quantities of liquids, the combination of the measuring-vessel A, having a valve-case provided with two separated ports *m* and *n*, arranged in alignment and having the lateral duct C, the oscillating valve B, having a longitudinal duct *b*, and two radial separated ports *k* and *l*, located out of alignment, and one of which is to communicate with the duct in the valve and the other with a supply-port in the valve-case, and a plunger H, automatically raised by the pressure of the liquid flowing by gravity into the measuring-vessel, substantially as described.

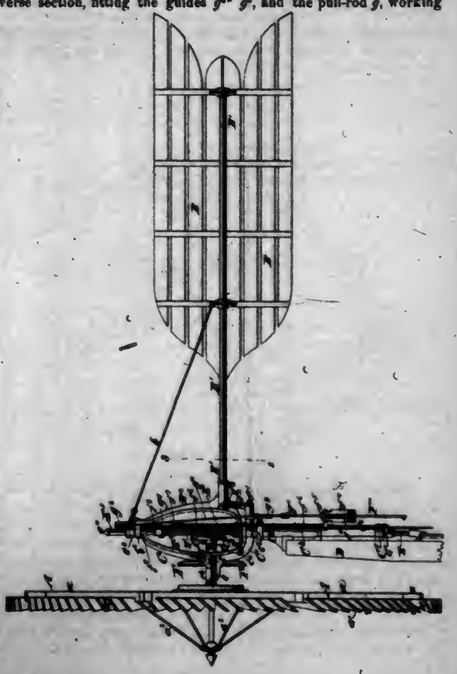
404,604. WINDMILL. ANDREW J. CONCORAN, Jersey City, N. J. Filed Mar. 19, 1888. Serial No. 267,590. (No model.)

Claim.—1. The combination, in a windmill, of a main frame having an upper vertical bearing, a reciprocating rod surmounted by an upper guide-rod fitting said bearing, the portion of the guide-rod working in said bearing being hollow to form a reservoir for lubricant, and having in its portion working in said bearing one or more lateral openings for the escape of lubricant to the bearing-surfaces, substantially as herein described.

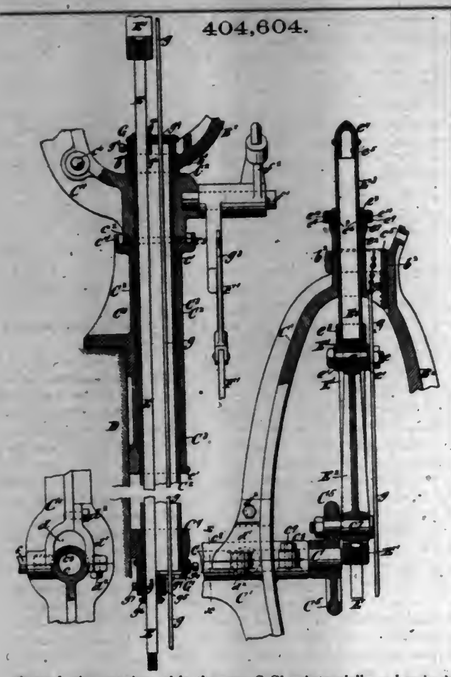
2. The combination, in a windmill, of a tubular main pivot and surmounting frame, a hollow post or support wherein the pivot may turn, a reciprocating rod working through the pivot and having its transverse section such that its exterior surface is at different distances from its center in different directions, and guides for said rod having surfaces against which said rod bears, conforming in shape to the shape of the rod, said guides being secured on the pivot so as to move with the pivot, one of said guides being arranged near the top of said pivot and the other near the bottom thereof, substantially as specified.

3. The combination, in a windmill, of a tubular main pivot and a surmounting frame, a hollow post or support wherein the pivot may turn, a reciprocating rod working through the tubular pivot and having such a transverse section both near the top and the bottom of the pivot that its outer surface is at different distances from its center measuring in different directions from its center, a cap applied to one end of the pivot and having a guide fitting the said rod, and a cap applied to the other end of the pivot and turnable thereon, and having a bore or socket, and a guiding-bushing conforming in shape internally to the rod and turnable in said bore or socket to guide said rod without twisting, substantially as herein described.

4. The combination, with the main pivot C^2 and its surmounting frame C', of the hollow support C^3, the caps G G', applied to opposite ends of the pivot, the cap G having a guide g^{4*}, and the cap G' having a guiding-bushing g^4, turnable within it, and both caps having the openings g^3, the reciprocating rod E, of square or analogous transverse section, fitting the guides g^{4*} g^4, and the pull-rod *g*, working



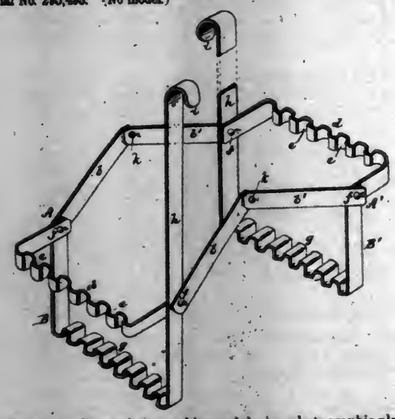
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through the openings g^2 in the caps G G', substantially as herein described.

5. The combination, with a wind-wheel A and a main shaft on which it is supported, of a main pivot C', and a surmounting main frame C, having a yoke d, wherein is the bearing for the main shaft, and one side of which is formed by a removable side piece, d', and a cap for the said bearing held within the yoke and secured in place independently of the said removable side piece d', substantially as herein described.

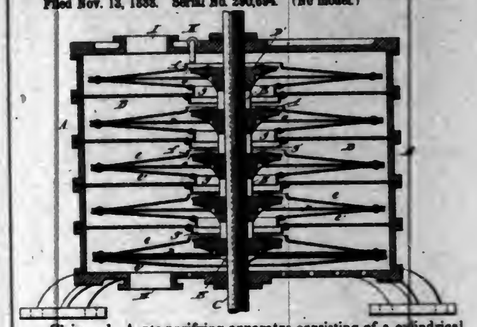
404,605. RACK FOR WASHING AND DRYING PHOTOGRAPHIC PLATES. WALTER S. CULLEN, Kearney, N. J. Filed Jan. 5, 1889. Serial No. 295,493. (No model.)



Claim.—1. In a rack for washing and drying photographic plates, the combination of an expansible and contractible main or body frame provided with opposite end strips having a series of plate-holding grooves in them and an open bottom support for the plates of U or stirrup shape construction pivoted to the main frame of the rack and capable of being closed into line therewith, essentially as specified.

2. In a rack for washing and drying photographic plates, the combination of the jointed or pivoted folding and angling side bars b b', the lower frame-plate supports B B', having side arms, to which said side bars are pivoted at their outer ends, and the opposite pivoted end strips d d, having a series of plate-holding grooves in them, substantially as shown and described.

404,606. GAS-WASHER. JOSEPH DE BROUWER, Bruges, Belgium. Filed Nov. 13, 1888. Serial No. 290,694. (No model.)



Claim.—1. A gas-purifying apparatus consisting of a cylindrical casing provided with a lower plate having a gas-supply opening and exit-openings for the purifying-liquids, a vertical shaft journaled centrally of said casing, and a turbine mounted on said shaft in said casing and apertured in its top and bottom sections for the passage of said gas and purifying-liquids, substantially as shown and described.

2. A gas-purifying apparatus consisting of a cylindrical casing provided with a lower plate having a gas-supply opening and exit-openings for the purifying-liquids and divided by fixed horizontal diaphragms having a central aperture into a series of overlying chambers, a vertical shaft journaled centrally of said casing, and a series of apertured horizontal drums mounted on said shaft to rotate in said chambers, the apertures in said drums being in the top and bottom sections thereof and in register with the diaphragm-aperture, whereby a vertical central passage is formed from end to end of the casing, substantially as set forth.

3. In a gas-purifying apparatus, the combination, with a cylindrical casing provided with a lower plate having a gas-supply opening and exit-openings for the purifying-liquids, and fixed horizontal centrally-apertured diaphragms dividing said casing into compartments, of a vertical shaft journaled in the casing and provided with horizontal drums rotating in said compartments, said drums consisting of upper and lower spaced plates or members, each having a central aperture or opening, the openings in the diaphragms registering with the openings in the upper members of the drums, substantially as set forth.

4. In a gas-purifying apparatus, the combination, with a cylindrical casing provided with a lower plate having a gas-supply opening and exit-openings for the purifying-liquids and horizontal centrally-apertured diaphragms dividing it into compartments, of a vertical shaft having horizontal drums rotating in said compartments, and each consisting of a hub and upper and lower spaced centrally-apertured members or plates, the openings in the lower members or plates registering with the diaphragm-openings to discharge through the upper opening of the next drum below upon the upper side of the hub therein, substantially as set forth.

5. In a gas-purifying apparatus, a purifying-drum consisting of a hub and the centrally-apertured spaced concave members e e, secured with their concave sides toward each other, the opening in the upper member e being of greater diameter than the hub, which in turn is of greater diameter than the opening in the member e, substantially as set forth.

6. In a gas-purifying apparatus, the combination, with a cylindrical casing provided with a lower plate having a gas-supply opening and exit-openings for the purifying-liquids and horizontal centrally-apertured diaphragms forming a series of overlying compartments in said casing, said diaphragms having annular depending flanges g around their openings, of a vertical shaft, horizontal two-part drums thereon within said compartments, the drums being formed of a hub having an annular deflector f on its upper face, and upper and lower centrally-apertured spaced parts e e, the upper aperture having a diameter larger than the annular flange g and the lower aperture having an annular flange g, entering the diaphragm-opening and of a smaller internal diameter than the deflector f, to discharge thereupon substantially as set forth.

404,607. RUNNER FOR GRINDING-MILLS. JOHN C. DELL, Philadelphia, Pa. Filed Jan. 25, 1889. Serial No. 297,497. (No model.)

Claim.—1. A runner having a wall formed with a throat, and a hub having an ear which is adapted to enter the runner through said throat, said ear being connected with the back of said wall within the runner and screwed or secured thereto, substantially as described.

404,607.



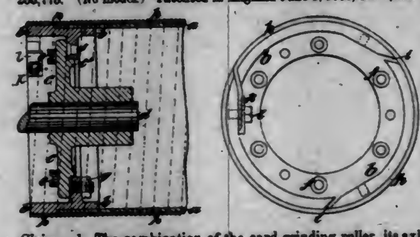
2. A runner formed of a hollow body and a separate hub, said body having a wall provided with a throat and an opening, and said hub having an ear which is secured to said wall by a screw which passes through said opening and enters said ear, substantially as described.

3. A runner with wall having a throat and an opening leading into a chamber in said runner, a hub with an ear in said chamber, a lug on the inner wall of said chamber, and a fastening-screw passing through said ear and bearing against said lug, said parts being combined substantially as and for the purpose set forth.

4. A runner with wall having a throat and opening leading into an inner chamber, a hub with ear in said chamber, a shaft on which the hub is mounted, and a key encircling the shaft and having its ends in the recesses in the walls of the runner, said parts being combined substantially as described.

5. A runner with wall having a throat and an opening leading into a chamber in said runner, a hub with an ear, a shaft on which the hub is mounted, a key encircling the shaft and having its ends in recesses in the runner, and a spring-bar passing through an opening in the shaft and seated in a recess in the key, said parts being combined substantially as and for the purpose set forth.

404,608. CARD-GRINDING ROLLER. JOSEPH S. BROOMFIELD, Oldham, County of Lancaster, England. Filed Apr. 5, 1887. Serial No. 233,775. (No model.) Patented in England June 5, 1886, No. 7,553.



Claim.—1. The combination of the card-grinding roller, its axle, and the ring b, adapted to the end of the roller, and having recesses f and slit i, with the clamp at the slit, and the flanged boss c, fixed to the axle and secured to the said ring, all substantially as set forth.

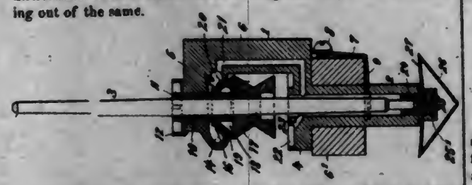
2. The combination of the card-grinding roller, its axle, and the ring b, adapted to the end of the roller, and having recesses f for weights, with the flanged boss c, secured to the axle and to the said ring and closing the said recesses in the latter, all substantially as specified.

3. The combination of the card-grinding roller, its axle, and the ring b, adapted to the end of the roller, and having a slit i, with the clamp at the slit, and the flanged boss fixed on the axle and secured to the ring, substantially as set forth.

4. The combination of the card-grinding roller, having at one flanged end thereof a slit i, with a spirally-wound fillet, the end of which passes through the slit, and a clamping-plate k, to bind the end of the fillet to the flange of the grinding-roller, and a screw l to secure the plate, substantially as specified.

404,609. SUPPORT FOR SPINNING-SPINDLES. JOSEPH DUFFY, Passaic, N. J. Filed Jan. 24, 1889. Serial No. 297,408. (No model.)

Brief.—The object of the invention is to provide for the proper distribution of the lubricant to the bearings and to prevent the throwing out of the same.



Claim.—1. A spindle-support provided with a socket in its lower portion, an apertured oil-chamber in its upper portion, and an oil-passage leading from the chamber to the socket, in combination with a spindle fitting in the socket, and a whirl on the spindle and having its upper end projecting into the said chamber, substantially as herein shown described.

2. The combination, with a spindle-support provided with a socket in its lower portion, an oil-chamber in its upper portion, with an opening in its bottom, and an oil-passage leading from the chamber to the socket, of a spindle seated in the socket, a chambered whirl on the spindle and having its upper end projecting into the oil-chamber, and a tubular bearing held in the support and projecting through the said oil-chamber into the chamber of the whirl, substantially as described.

3. The spindle-support 1, formed with the upper horizontal arm 5, the lower horizontal arm 4, the vertical portion 6, connecting arms 4 and 5, the depending tubular socket portion 2 to project through the rail, the annular oil-chamber 12 on the upper side of the arm 5, the annular oil-chamber 14 on the under side of arm 5, with opening 15 in its bottom surrounded by the upwardly-inclined annular portion 20, the opening 10, for the passage of the spindle connecting the oil-chambers 12 and 14, and the oil-passage 21, leading from the side of oil-chamber 14 down through the support to tubular socket portion 2, substantially as shown and described.

4. The spindle-support 1, formed with the upper horizontal arm 5, the lower horizontal arm 4, the vertical portion 6, connecting the arms 4 and 5, the depending tubular socket portion 2 to project through the rail, the annular oil-chamber 12 on the upper side of arm 5, the annular oil-chamber 14 on the under side of arm 5, with opening 15 in its bottom surrounded by the upwardly-inclined annular portion 20, the spindle-passage 10, connecting chambers 12 and 14, and the oil-passage 21, leading from the side of oil-chamber 14 down through the support to tubular socket portion 2, in combination with the spindle 3, having its lower end mounted in the tubular socket portion 2, the whirl 17, with the oil-chamber 18 in its upper portion having inclined sides 19 bearing against the upwardly-inclined portion 20 of chamber 14, and the neck 16, projecting through opening 15 in the latter, and the tubular spindle-bearing 11, extending through passage 10, with its upper end having oil-passages 13 opening into chamber 12 and its lower end projecting into chamber 18, substantially as shown and described.

5. The combination, with the rail 6', of the spindle and support, the latter having a tubular socket portion 2 projecting through the rail, and a lock consisting of the L-shaped metallic spring-strip 7, with an inclined arm secured by a detachable fastening to rail 6', and having the fork-shaped end 9 engaging the tubular socket portion 2, substantially as shown and described.

6. The combination, with the spindle and support, the latter having a tubular socket portion 2 projecting through the rail, with projections 29 on its lower end, of a trough 26, with a cross-strap 27, having an oblong aperture 28, with which the tubular socket portion 2 engages, substantially as shown and described.

7. A spindle-support having the tubular socket portion 2, to project through the rail and receive the lower end of the spindle, and a socketed spindle-bearing plug 24, inserted in the end of tubular socket 2 and secured by a solder filling 25, substantially as shown and described.

404,610. PORTABLE CHAIR. LARS EGGERSTSEN, Kampen, Christiania, Norway. Filed Dec. 19, 1888. Serial No. 294,049. (No model.) Patented in Norway Sept. 5, 1888, No. 913.



Claim.—In a portable chair, the combination, with the legs adapted to fold into compartments under the chair-body, of the boards b, hinged to the sides of the chair-seat and adapted to fold under and partially close the said compartments, substantially as described.

404,611. METALLIC WHEEL. FRANK H. RHODES, Toledo, Ohio. Filed Dec. 7, 1888. Serial No. 292,807. (No model.)

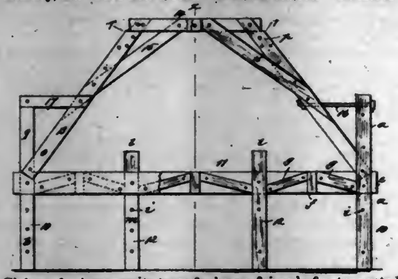


Claim.—1. In a metal wheel, hub-sections formed with oppositely-arranged circular projections and oppositely-arranged metal flanges adapted to meet when the sections are assembled to cause the annular faces to impinge spokes placed between the same, as and for the purpose set forth.

2. In a metal wheel, hub-sections formed with circular projec-

tions adapted to telescope within the hub, one projection being formed with a feather and the coacting projection with a groove, as and for the purpose set forth.

404,612. COMPOSITE TRUSS FOR BARNS. JAMES W. EVANS, Kearney, Mo. Filed Dec. 4, 1888. Serial No. 292,000. (No model.)

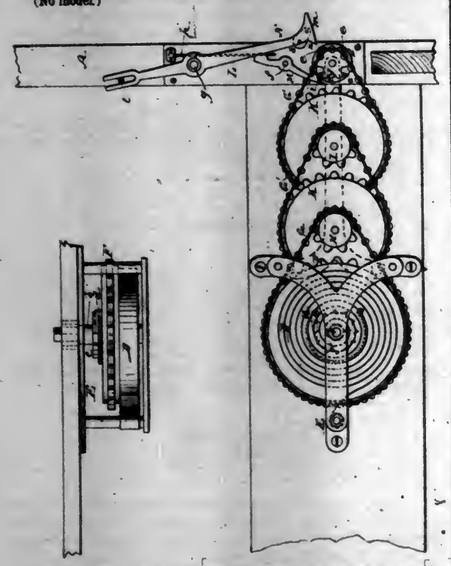


Claim.—1. A composite truss for barns, formed of outer posts 10, consisting of central planks *a*, shorter outer pieces *b*, secured thereto, chord 11, consisting of inner and outer planks embracing at their ends the plank *a* and resting thereat on the upper ends of pieces *b b*, the spacing-blocks between the chord-planks, the planking sub-rafters 13, secured at their lower ends to posts 10, straining-pieces 14, connecting the upper ends of the sub-rafters, and the braces connecting the upper ends of the central planks *a* with the sub-rafters, substantially as set forth.

2. A composite truss for barns, formed of the outer posts 10, consisting of central planks *a*, shorter outer pieces *b*, secured thereto, the chord 11, consisting in inner and outer planks embracing planks *a* between their ends and resting thereat on upper ends of pieces *b*, the shorter similarly-formed posts 12, the inner planks of which pass up between the chord-sections, the sub-rafters 13, secured at their lower ends to planks *a* at ends of chords 11, and the straining-piece 14, secured to upper ends of said rafters, substantially as set forth.

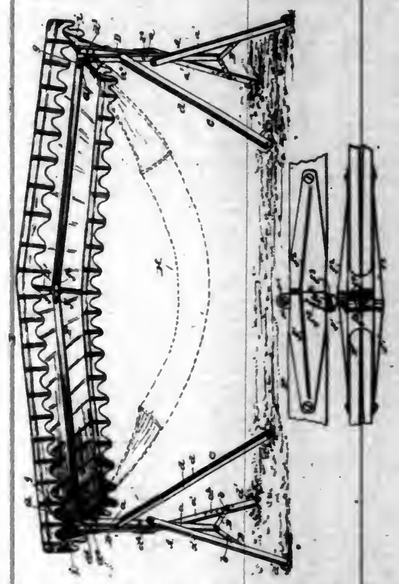
3. A truss for barns, consisting in the outer composite posts 10, having central planks *a* and shorter planks *b*, the chord 11, embracing the plank *a* at the upper ends of the planks *b*, the sub-rafters 13, secured to planks *a* and connected at their upper ends by straining-pieces 14, the braces connecting the upper ends of planks *a* with the said rafters, and the braces 15, connecting the said rafters with the straining-piece, substantially as set forth.

404,613. MOTOR FOR OPERATING SWINGING DEVICES. CHARLES J. R. GAUME, Brooklyn, N. Y. Filed Mar. 15, 1889. Serial No. 303,473. (No model.)



Claim.—In clock-work-escapement mechanism for actuating swinging cradles and other swinging structures, the combination, with the escapement-wheel J, provided with a series of pins *e*, of the stop-pawl M, controlled by a spring and having a concave shoe *i*, adapted to successively engage with said pins, and the releasing-lever N, adapted to operate the swinging structure, and having a shoe *m* for operation by the escapement-wheel, and a soft cushion or pad *s*, operating to release the stop-pawl from the escapement-wheel, essentially as shown and described.

404,614. COMBINED HAMMOCK AND CANOPY SUPPORT. JOHN GIFFORD, Watertown, N. Y. Filed Oct. 13, 1888. Serial No. 287,982. (No model.)



Claim.—1. As an improvement in hammock-supports, the supporting-frames having the vertical bars or uprights, the adjustable brace-legs secured thereto and provided with pivoted hooks at their outer lower ends, the double brace-legs pivotally secured to said vertical bars or uprights and having pivoted hooks at their outer ends, and the arms connecting the lower ends of said bars or uprights with said brace-legs, substantially as described.

2. As an improvement in combined hammock and canopy supports, the supporting-frames herein described, having vertical bars or uprights, and the arms pivotally secured at their lower ends to said bars or uprights, and the canopy attached to the upper projecting ends of said arms, which have a limited movement on either side of their pivots, substantially as set forth.

3. As an improvement in combined hammock and canopy supports, the supporting-frames having vertical bars or uprights, the arms pivotally secured to said bars or uprights, the cords or chains secured to said bars or uprights, and arms for limiting the movement of the latter and the canopy, substantially as described.

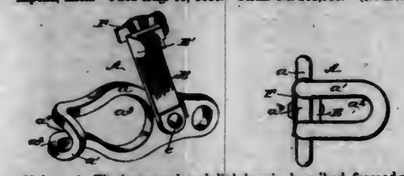
4. As an improvement in combined hammock and canopy supports, the supporting-frames herein described, having vertical bars or uprights, and the arms pivotally secured at their lower ends to said bars or uprights, and the canopy pivotally connected to the upper ends of said arms so as to be capable of being tilted and adjusted at the desired angle, said arms having a limited movement on either side of their pivots, substantially as set forth.

5. The supporting-frames having the vertical bars or uprights, the pivoted arms secured thereto, and the spring-tongues secured to said arms, in combination with the canopy attached to the upper ends of said arms, and having depending cords designed to be secured by said tongues by being passed thereunder for holding the canopy at the desired angle, substantially as described.

6. The supporting-frames having the pivotally-secured arms provided with upper recessed ends, and the spring-tongues secured to said pivoted arms, in combination with the canopy having the projecting studs resting in said recessed ends, and the depending cords designed to be secured by said tongues by being passed thereunder for holding the canopy at the desired angle, substantially as described.

7. In a hammock-support, the longitudinal connecting-bar composed of sections, the hinge connected to the inner meeting ends of said sections and having abutting ribs or flanges on their sides, the lower overlapping apertured ears projecting therefrom, and the pin designed to be inserted through said ears, substantially as set forth.

404,615. GRAB-LINK FOR TRACE-CHAINS. JOSEPH E. GIROUX, Alpena, Mich. Filed Aug. 13, 1888. Serial No. 282,506. (No model.)



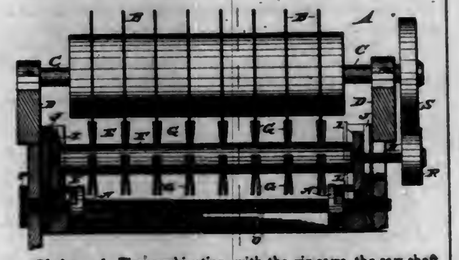
Claim.—1. The improved grab-link herein described, formed with a body part or portion and a gripping portion *a'*, having a narrow opening a^3, into which the chain may be slipped sidewise, and a fastening for holding the chain in said opening a^3, the latter being adapted to prevent any longitudinal movement of the chain when adjusted, substantially as set forth.

2. The improved grab-link herein described, having a body portion *a* and gripping portion *a'*, provided, respectively, with openings a^2 a^3, communicating, as described, and a fastening consisting of a bar pivoted at one end and movable at its other end into position to secure the chain in the opening a^3 of portion *a'*, substantially as set forth.

3. The improved grab-link herein described, formed with a body part or portion and with a gripping portion *a'*, and provided with a fastening consisting of a bar pivoted at one end and movable at its other or free end into position to secure the chain in the gripping portion *a'*, and the clamp whereby to hold said free end adjacent to the gripping portion *a'*, substantially as set forth.

4. The grab-link herein described, having a body portion and gripping portion provided, respectively, with openings a^2 a^3, and provided with a fastening pivoted at one end and provided at its opposite end with a clamp consisting of a spring secured at one end to the fastening and arranged to bear against the opposite side of the link from said fastening, substantially as set forth.

404,616. CLEANER FOR COTTON-GIN SAWS. JOHN C. GODWIN, Lloyd, Tex., assignor to himself and W. C. Godwin, same place. Filed Sept. 27, 1888. Serial No. 286,573. (No model.)



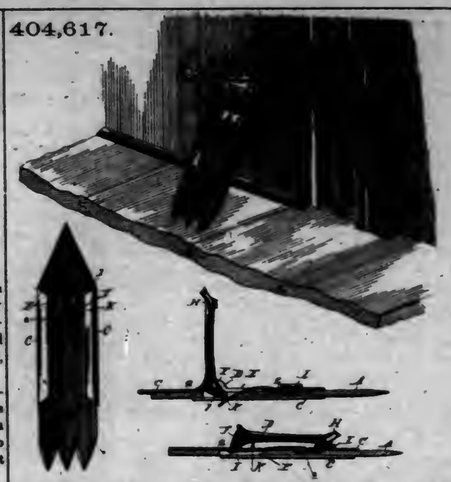
Claim.—1. The combination, with the gin-saws, the saw-shaft, and a friction-pulley on said shaft, of a drum mounted to rotate and to slide vertically, arms held radially on the said drum and adapted to engage the faces of the saws, a pulley held on the said drum, and means, substantially as described, for moving the drum up and down so that the arms engage or are disengaged from the saws as the said pulley is moved into frictional contact with the saw-shaft pulley, so as to impart a rotary motion to the drum, as set forth.

2. In a cleaner for cotton-gin saws, the combination, with a frame provided with standards, of plates held to slide in the said standards, a shaft journaled in the said plates, a drum on the said shaft, pairs of arms secured on the said drum, pins projecting from the said plates, cams operating on the said pins, and a shaft mounted to rotate in the said frame and carrying the said cams, substantially as shown and described.

3. In a cleaner for cotton-gin saws, the combination, with a frame provided with standards, of plates held to slide in the said standards, a, shaft journaled in the said plates, a drum held on the said shaft, pairs of arms secured on the said drum, pins projecting from the said plates, cams operating on the said pins, a shaft mounted to rotate in the said frame and carrying the said cams, and a hand-wheel for turning the said shaft, substantially as shown and described

404,617. COMBINED DOOR-FASTENER AND ALARM. SAMUEL GOULDEN, Newark, N. J. Filed Feb. 23, 1889. Serial No. 300,938. (No model.)

404,617.

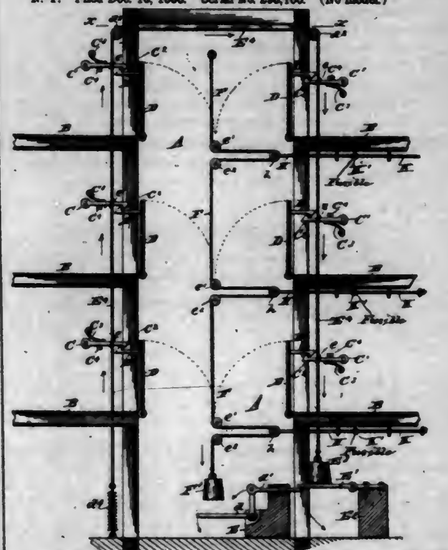


Claim.—1. The combination, with the plate or resisting-bar A and slide B, moving parallel therewith, of a hammer carried by one of said instruments and tripped by the other, and a spring for operating the hammer, substantially as described.

2. The combination of the plate A, slide B, embracing said plate and moving parallel therewith, the hammer mounted on said slide, and a spring attached to said slide for operating the hammer, substantially as described.

3. The combination, with the perforated plate A, the slide B, having its edges turned over the sides of the plate A, and ears formed on the face of said slide, of a hammer mounted in said ears, a spring acting on the hammer and attached to the slide, and a cup to receive a cap, substantially as described.

404,618. SELF-CLOSING HATCHWAY. FRANK J. GRIDLEY, New York, assignor to the Underwriters Hatch Door Company, Brooklyn, N. Y. Filed Dec. 10, 1888. Serial No. 293,100. (No model.)



Claim.—1. The combination, with a series of doors and pivoted latches capable of engaging with said doors, of a drop or trap door, a lever engaging with said door, a weighted trip-rope suspended over said lever, a rope connected to the latches and having a weight supported on the drop or trap door, a retaining-rope, and a fusible connection between said retaining and trip ropes, substantially as shown and described.

2. The combination, with a series of doors, latches to engage said

doors and hold them open facing, respectively, in opposite directions, a spring-actuated weighted rope connected with said latches, and a drop or trap door supporting said weight, of a lever engaging with the trap-door, a weighted trip-rope suspended over said lever, a retaining-rope, and a fusible connection between said trip and retaining ropes, substantially as shown and described.

3. The combination, with a series of doors provided with fixed latch-pins, pivoted latches engaging with the fixed latch-bars, a spring-actuated weighted rope connected with said latches, and a drop or trap door supporting the weight of said rope, of a weighted trip-rope, a lever pivoted beneath said trip-rope, a sliding trip-arm attached to the lever and engaging the trap-door, a release-bar connected with the trip-rope, a retaining-rope, and a fusible connection between said releasing-bar and retaining-rope, substantially as shown and described.

4. The combination, with a series of doors provided with fixed latch-pins, pivoted latches to engage said doors, a spring-actuated rope attached to said latches carrying a weight, and a trap or drop door supporting said weight, of pulleys arranged in pairs, a weighted trip-rope passing over said pulleys and provided with horizontal open loops, a release-bar having a pulley attached engaging with the said loops, a retaining-rope united to said release-bar by a fusible connection, an angled lever below the trip-rope, and a sliding trip-arm attached to said lever and supporting the trap-door, substantially as shown and described.

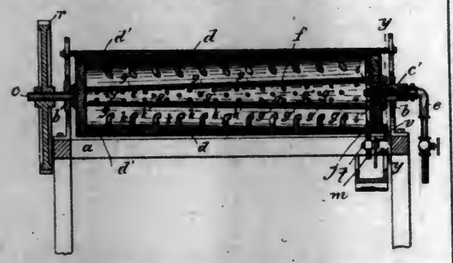
5. The combination, with the hinged doors and latches engaging with said doors, having a weighted operating-rope, of a retaining-rope, a trip-rope, a release-bar connected therewith, and a fusible link uniting the retaining-rope and release-bar, all arranged to operate substantially as shown and described.

404,619. PIPE-WRENCH. JOHN T. HAWKINS, Taunton, Mass. Filed Dec. 7, 1888. Serial No. 292,886. (No model.)



Claim.—In combination with a pipe-wrench constructed of a serrated or toothed jaw, as 2, and an opposite smooth or unserrated jaw, as 3, forming an acute angle with each other, an adjustable stop or tooth, as 4, supported upon or within a recess formed in the smooth jaw and adjustable practically in line with said smooth jaw, whereby said stop or tooth may be adjusted for any given diameter of pipe or rod within the range of said wrench's embrace, so as to allow the entrance of the pipe or rod into the angle formed by the jaws, by sliding upon said smooth jaw until the serrated jaw has taken firm hold upon said pipe or rod, and then preventing any further entrance of and resulting tendency to crush said pipe, to assist as a nearly oppositely applied stop or tooth in rotating said pipe, substantially as set forth.

404,620. MACHINE FOR SPONGING CLOTH. WILLIAM HENDON Boston, Mass. Filed Feb. 23, 1889. Serial No. 300,875. (No model.)

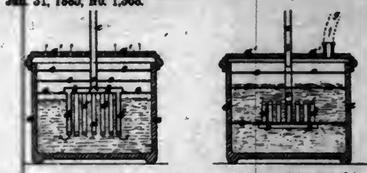


Claim.—1. In a cloth-finishing apparatus, a horizontal rotary perforated cylinder fitted to receive steam and provided with a tapered lining, whereby the lower internal surface of the cylinder is given a continuous incline from one end to the other, said cylinder being also provided with inwardly-projecting tubes having bent or hooded inner ends and with an outlet for the escape of water, as set forth.

2. In a cloth-finishing apparatus, the combination of a horizontal rotary perforated cylinder having inwardly-projecting pipes with bent or hooded ends, a perforated cone or cone-frustum having guard-tubes d', and a steam-supply pipe entering said cone, as set forth.

3. In a cloth-finishing apparatus, the combination of a horizontal rotary perforated cylinder having an outlet or waste pipe, an automatically-closed valve therefor, and means for opening said valve at a given point in the rotation of the cylinder.

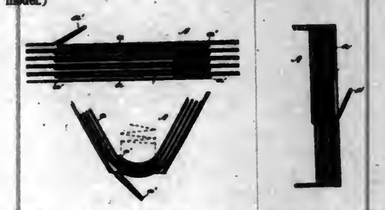
404,621. APPARATUS FOR PURIFYING ATMOSPHERIC AIR. WILLIAM HISBERT, Manchester, County of Lancaster, England. Filed Oct. 30, 1888. Serial No. 289,511. (No model.) Patented in England Jan. 31, 1885, No. 1,368.



Claim.—1. An apparatus for washing, purifying, and imparting medicinal properties to air, consisting of a vessel partly filled with an antiseptic mixture, an inner compartment, a series of finely-perforated tubes extending from the said compartment into the mixture, and a supply-pipe through which compressed air may be forced into the compartment and tubes, substantially as set forth.

2. A portable apparatus for cleansing and purifying air, consisting of a vessel containing an antiseptic mixture and a compartment having finely-perforated tubes, said compartment provided with an attachment consisting of a rubber pipe having a bulb and inlet-valve, whereby air is forced into the compartment, an outlet from the vessel, and a pipe connecting the outlet to a mouth-piece provided with a double-acting valve, substantially as set forth.

404,622. PACKAGE OF TOILET-PAPER. OLIVER H. HESS, Chicago, Ill. Original application filed Mar. 27, 1886, Serial No. 196,799. Divided and this application filed May 26, 1888. Serial No. 275,206. (No model.)



Claim.—1. The combination, with a package such as described, composed of a series of sheets, each containing a fold or overlapping portion, of a support for said bundle, provided with a slot or opening to which the fold or overlapping portion of each sheet is successively presented, substantially as described.

2. A bundle or package such as described, composed of a series of separable sheets superposed the one upon the other, each of said sheets being provided with a free edge projecting above the face of the sheet and formed by folding the sheet twice in its length and bending the overlapping portion down upon the face of the sheet, as and for the purpose set forth.

3. A bundle or package composed of separable sheets superimposed one upon another, each sheet folded twice, and the overlapping edge or fold bent down upon the face of the sheet, the bundle or package so formed being bent in line with the folds, substantially as described.

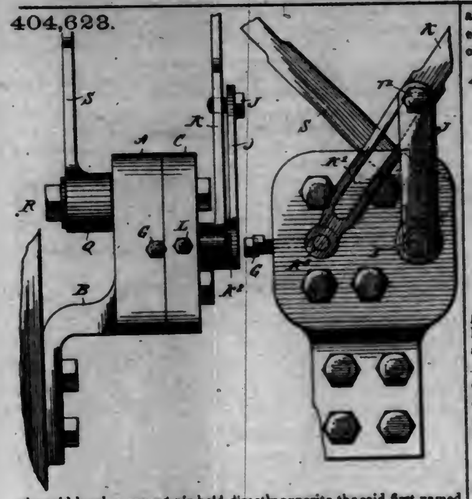
4. In combination with a box or case having a slot and supports or inclined walls on opposite sides of the opening, a bundle or package composed of separable sheets, each sheet containing a free fold or edge, the said bundle being bent in the line of the folds and resting within the case with the folds of the sheets in line with the slot, substantially as described.

404,623. SAW-SWAGING MACHINE. THOMAS B. HITT, Seattle, Wash. Filed Dec. 18, 1888. Serial No. 294,009. (No model.)

Claim.—1. In a saw-swaging machine, the combination, with a die-plate having recesses and a head secured on the front of the said die-plate, of a die having a beveled end and held adjustably in one of the said recesses, a cam located at the beveled end of the said die, a shaft mounted to turn in the said die-plate and head and carrying the said cam, an arm secured on the said shaft and provided on its outer end with a pin, and a slotted lever fulcrumed on the said head and connected with the pin of the said arm, substantially as shown and described.

2. In a saw-swaging machine, the combination, with a die-plate and a head secured on the same, of a die held adjustably in the said head and provided with a beveled end, a cam located in front of the said die, a shaft carrying the said cam and mounted to turn in the said die-plate and head, an arm projecting from the said shaft, a pin held on the said arm, a lever fulcrumed on the said head and provided with a slot into which projects the pin on the arm, a pin held in the said head, a second pin held directly opposite said first-named pin in the said die-plate, a second cam for operating said second-named pin, and a lever for operating said second cam, substantially as shown and described.

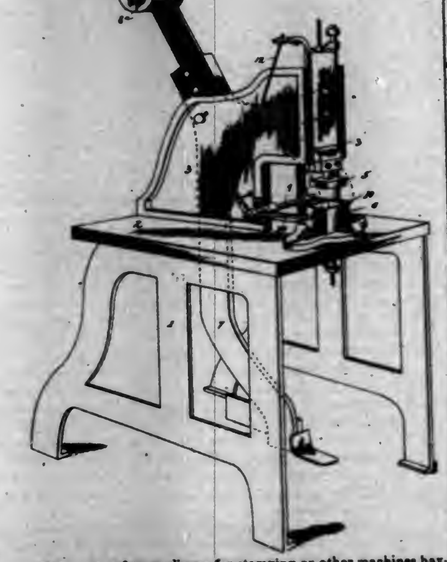
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the said head, a second pin held directly opposite the said first-named pin in the said die-plate, and a second cam for operating the said second-named pin, substantially as shown and described.

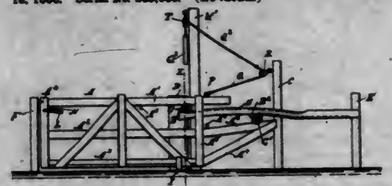
3. In a saw-swaging machine, the combination, with a die-plate and a head secured on the same, of a die held adjustably in the said head and provided with a beveled end, a cam located in front of the said die, a shaft carrying the said cam and mounted to turn in the said die-plate and head, an arm projecting from the said shaft, a pin held on the said arm, a lever fulcrumed on the said head and provided with a slot into which projects the pin on the arm, a pin held in the said head, a second pin held directly opposite said first-named pin in the said die-plate, a second cam for operating said second-named pin, and a lever for operating said second cam, substantially as shown and described.

404,624. SAFETY APPLIANCE FOR STAMPING OR OTHER MACHINES. THOMAS J. HOLMES, Chicago, Ill. Filed Aug. 9, 1888. Serial No. 282,206. (No model.)



Claim.—A safety appliance for stamping or other machines having a reciprocating plunger, comprising, in combination with said plunger, a rock-shaft provided with fenders, a rock-arm rigidly secured to the rock-shaft, and a link pivotally connecting the rock-shaft arm with the plunger, whereby, when the plunger descends, the fenders are operated to force the hands of an attendant out of the path of the plunger, substantially as described.

404,625. GATE. WILLIAM C. HOOKER, Abingdon, Ill. Filed Sept. 12, 1888. Serial No. 285,683. (No model.)



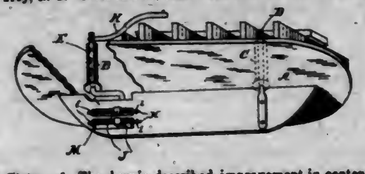
Claim.—1. The combination, with a rearward extension of the gate A, of the curved beam B, provided with grooves in its upper and lower edges, and the rollers G and G', adapted to travel in said grooves and supporting said gate, substantially as shown and described.

2. The combination, with the rearward extension of the gate A, of the curved beam B, provided with grooves in its upper and lower edges, the rollers G and G', adapted to travel in said grooves and support said gate, and means, substantially as described, for imparting an endwise motion to said gate, as set forth.

3. The combination, with the gate A, of the curved beam B, provided with grooves on its upper and lower edges, the rollers G and G', supporting said gate and adapted to travel in said grooves, and means, substantially as shown and described, for automatically locking said gate when in a closed position, as set forth.

4. In a gate, the combination, with the longitudinal bar A' and the extension A^4, of the curved fixed beam B and the rollers G and G', held, respectively, between said bar A' and the top of the beam B and the extension A^4 and the bottom of the beam B, substantially as shown and described.

404,626. STEERING CENTER-BOARD. JOSEPH H. HUFF, West Troy, N. Y. Filed Jan. 30, 1889. Serial No. 298,190. (No model.)



Claim.—1. The herein-described improvement in center-boards, consisting of a pivotal board provided with a permanent pivotal bearing at its forward portion, in combination with a pivotal shifting lever or crank at its rear portion, substantially as and for the purposes set forth.

2. The herein-described improvement in center-boards, which consists of a center-board pivoted near its forward end, in combination with a shifting lever or crank and a pivotal support for the center-board, said crank being provided with friction-bearings and connected to the rear portion of the center-board, substantially as and for the purposes described.

3. The herein-described improvement in center-boards, consisting of a board pivoted near its forward end, provided with metallic friction-bars secured to said board at their ends, in combination with a pivotal shifting lever and crank provided with friction-bearings and connected to said center-board back of the permanent pivotal-point support, substantially as and for the purposes set forth.

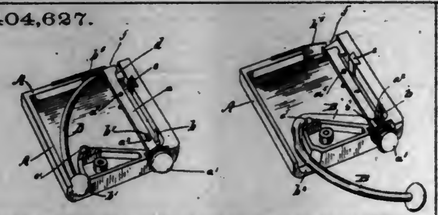
4. The herein-described improvement in center-boards, consisting of a board pivoted near its forward end and provided with metallic friction-bars secured to said board at their ends, said board partly cut away at its top to make room for the movement of the shifting-lever, in combination with a pivotal shifting lever and crank provided with friction-blocks and secured to said bars and located back of the permanent pivotal point of the board, substantially as described.

5. The herein-described improvement in center-boards, consisting of a board pivoted near its forward end and provided with metallic friction-bars secured to said board at their ends and partly cut away at its top to make room for the movement of the shifting-lever, in combination with pivotal shifting lever and crank secured to the rear portion of the center-board and metallic bearing-blocks pivoted thereto, said blocks being provided with perforations embracing said friction-bars and shifting-lever, substantially as described.

404,627. DOOR-CHECK. ABRAM HUBER, Yellow Springs, Ohio. Filed June 21, 1888. Serial No. 277,780. (Model.)

Claim.—1. In a door-check having a suitable frame or casing, a

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spring-actuated arm, a catch to engage said arm, and an operating-plunger adapted to release said catch, substantially as specified.

2. A door-check having a suitable frame or casing, a spring-actuated arm, a catch to engage said arm, a plunger to release said catch, and means, substantially as described, for connecting said arm and plunger, so that a longitudinal movement of said plunger will cause said arm to be engaged with said catch, substantially as specified.

3. An operating-plunger, a curved pivoted arm, a catch to engage said arm, adapted to be operated by said plunger, a projecting stud in said arm engaging in a slotted opening in said plunger, and a spring connected to said arm and adapted to move the same when released by said catch.

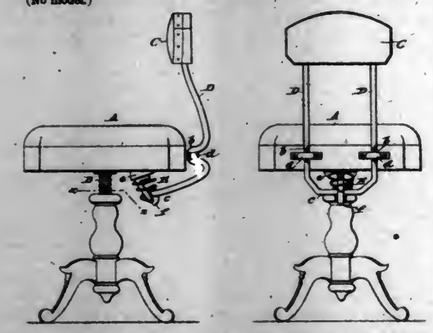
4. The outer casing, the operating-plunger therein, a curved arm pivoted to said casing, a catch operated by said plunger, adapted to engage said arm, and elastic cushions in said casing to limit the movement of said arm, substantially as specified.

5. The outer casing, the door-holding arm pivoted therein, the spring-catch for retaining said arm, a plunger for releasing said spring-catch, the operating-spring for said arm, and means, substantially as described, for connecting said plunger and arm, whereby the arm may be returned to its normal position by pressing on said plunger, substantially as specified.

6. The outer casing, the operating-plunger having a cushioned end extending into said casing, a swinging door-holding arm operated by said plunger, and a pin, substantially as described, for connecting the operating parts to the casing and thus holding said arm from movement when the cushioned end of said plunger is used as a simple door-stop.

7. The outer casing, the pivoted arm therein, the spring-catch adapted to engage said arm, the plunger adapted to operate said spring-catch, the operating-spring connected to said arm, the projecting stud on said arm engaging with the slotted opening in said plunger, and the spring adapted to hold said plunger in its normal position, substantially as and for the purpose set forth.

404,628. SPRING-BACK FOR STOOLS OR CHAIRS. WILLIAM P. JAMES, Lincolnton, N. C. Filed Oct. 13, 1888. Serial No. 287,995. (No model.)

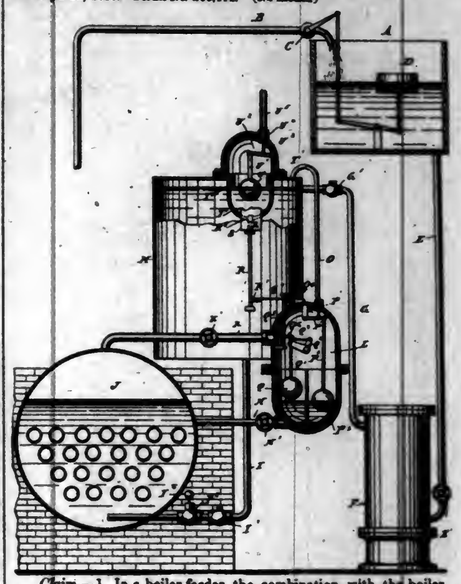


Claim.—1. In spring-backs for music and other stools or chairs, the back composed of the upper piece C and the frame D, constructed of a bar bent to form downwardly-projecting limbs, crooks *b b*, and a forwardly-projecting lower loop *c*, in combination with the loops *d d*, for connecting the back to the seat.

2. The combination, with the seat of the stool or chair, of the upper back support or piece C, the rod or bar, frame D, having crooks *b b*, and a forwardly-projecting lower loop *c*, the loops *d d*, secured to the back of the seat and receiving within them the crooks *b b*, and a spring beneath the seat operating to control the crooked or hinged and looped frame D, essentially as described.

3. The combination, with the stool or chair seat, of the plate *e*, with its attached hook *f*, secured to the under side of the seat, the spiral spring E, and the rocking or hinged back composed of the upper piece C, the frame D, bent to form crooks *b b*, and forwardly-projecting loop *c*, arranged for movement within the hook, and the loops *d d*, receiving the crooks *b b* within them, substantially as shown and described.

404,629. BOILER-FEEDER. ALBERT F. JONES, Salem, Mass. Filed Sept. 22, 1888. Serial No. 286,111. (No model.)



Claim.—1. In a boiler-feeder, the combination, with the boiler, of a closed reservoir connected by a pipe having a check-valve with the said boiler, a closed vessel in communication at the top and bottom with the said boiler, a pipe leading from the top of the said closed vessel into the top of the said reservoir, a valve held on the said pipe, and a float located in the said vessel and connected with the said valve to open and close the said pipe, substantially as shown and described.

2. In a boiler-feeder, the combination, with a closed reservoir connected with a water supply and with the boiler, of a pipe leading from the top of the said reservoir, a closed vessel in communication with the steam and water compartment of the boiler and connected at its upper end with the said pipe, a valve adapted to close the said pipe, and a float held in the said closed vessel and operating the said valve, substantially as shown and described.

3. In a boiler-feeder, the combination, with a closed reservoir in communication with the boiler and provided with a supply-pipe having a check-valve, of a steam-pipe leading from the upper end of the said reservoir, a closed vessel connected at its top with the said steam-pipe and held in communication with the steam and water compartment of the boiler, a valve for opening and closing the said pipe, and a float held in the said closed vessel to open and close the said valve and the said check-valve, substantially as shown and described.

4. In a boiler-feeder, the combination, with a reservoir connected with the boiler, of a supply-pipe having a check-valve and discharging into the top of the said reservoir, a receptacle held in or near the top of the said reservoir and in communication with the latter, a float held in the said receptacle, and a valve operated by the said float and adapted to close or connect the outside with the interior of the said receptacle, substantially as shown and described.

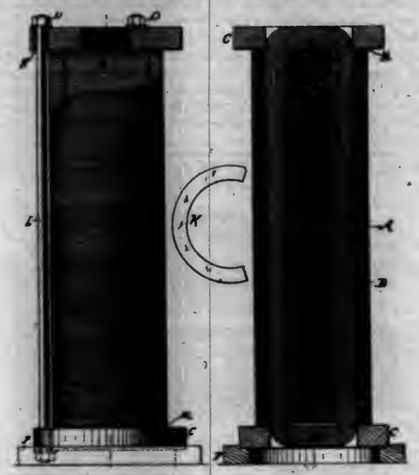
5. In a boiler-feeder, the combination, with a reservoir connected with the boiler, of a supply-pipe having a check-valve and discharging into the top of the said reservoir, a receptacle held in or near the top of the said reservoir and in communication with the latter, a float held in the said receptacle, a valve operated by the said float and adapted to close or connect the outside with the interior of the said receptacle, and a steam-pipe leading from the top of the said reservoir and connecting with the live steam in the boiler, substantially as shown and described.

6. In a boiler-feeder, the combination, with a reservoir connected with the boiler, of a supply-pipe having a check-valve and connected with the said reservoir, a receptacle held in or near the top of the said reservoir and in communication with the latter near its top, a float held in the said receptacle, a valve held in the said receptacle and opening to the outside, the said valve being operated by the said float, a steam-pipe leading from the said reservoir, a closed vessel connected with the said pipe and in communication with the steam and water compartments of the boiler, a valve for closing and opening the said steam-pipe, and a float held in the said closed vessel and operating the said valve, substantially as shown and described.

7. In a boiler-feeder, the combination, with a reservoir connected with the boiler, of a supply-pipe having a check-valve and connected with the said reservoir, a receptacle held in or near the top of the said reservoir and in communication with the latter near its top, a float held in the said receptacle, a valve held in the said receptacle and opening to the outside, the said valve being operated by the said float, a steam-pipe leading from the said reservoir, a closed vessel connected with the said pipe and in communication with the steam and water compartments of the boiler, a valve for closing and opening the said steam-pipe, a float held in the said closed vessel and operating the said valve, and a second float held in the said closed vessel and operating a plug-valve in the bottom of the said closed receptacle, substantially as shown and described.

8. In a boiler-feeder, the combination, with the boiler, of a closed reservoir located above the said boiler, a pipe connecting the bottom of the said reservoir with the bottom of the boiler, a check-valve held in the said pipe, a second valve held in the said pipe between the outer and the said check-valve, and a weighted ball secured to the valve-stem of the said second valve, substantially as shown and described.

404,630. INDUCTION-COIL. JOHN F. KELLY, Hoboken, N. J., assignor to the United States Electric Lighting Company, same place. Filed Oct. 30, 1886. Serial No. 217,563. (No model.)



Claim.—1. The combination, with a sectional longitudinally-grooved core and primary and secondary coils wound thereon, of a sectional casing or armature surrounding and inclosing the core and coils, as set forth.

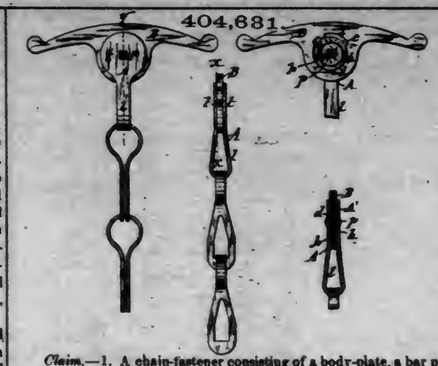
2. The combination, with a core formed of recessed iron plates with interposed sheets of insulating material and primary and secondary coils wound longitudinally around the core in the grooves formed by the recesses of the plates, of a casing composed of perforated plates or rings of iron with interposed insulating material built up around the coils and core, as set forth.

3. The combination, with a core composed of recessed iron plates with interposed sheets of insulating material and primary and secondary coils wound longitudinally around the core in the grooves formed by the recesses of the plates, of a casing composed of a series of iron rings with interposed insulating material, closely fitting the core, and means for binding the parts together, as and for the purpose set forth.

4. An induction coil or transformer of alternating electric currents, consisting of a sectional iron core provided with grooves or channels, primary and secondary conductors, and an outer sheathing, the primary and secondary conductors being wound in the same grooves or channels, and being equally close to both the core and the sheathing, as set forth.

404,631. CHAIN-FASTENER. HARRY E. KELLEY, Niagara Falls, assignor to the Oneida Community, (Limited,) Community, N. Y. Filed Nov. 28, 1888. Serial No. 292,094. (No model.)

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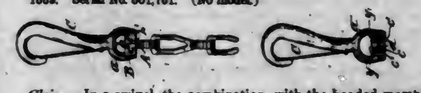
Claim.—1. A chain-fastener consisting of a body-plate, a bar pivoted to the body-plate, a stop arranged to arrest the movement of the aforesaid bar in one direction, and a coiled spring holding the bar normally resting on the stop, as set forth.

2. The improved chain-fastener consisting of a body-plate, a bar pivoted to the body-plate and provided with a chamber at its pivot, a stop in position to arrest the movement of the aforesaid bar in one direction, and a coil-spring seated in the aforesaid chamber and holding the bar normally resting on the stop, as set forth.

3. The combination of the body-plate A, formed with the case A', the bar B, pivoted in said case, a stop arranged to arrest the swinging of the aforesaid bar in one direction, and a coil-spring inclosed in the aforesaid case and holding the bar normally resting on the stop, substantially as described and shown.

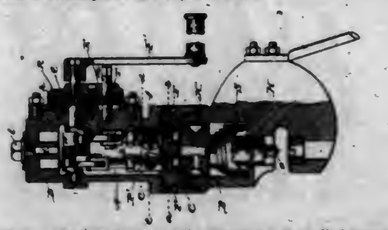
4. The combination of the body-plate A, formed with the case A', the disk *d*, confined in the said case and provided with the projection *e*, the bar B, formed with the eye *b*, and pivoted thereby on the aforesaid disk, and provided with the elongated notch *f* for the reception of the projection *e*, and the coil-spring *h*, seated in the eye *b* and connected at opposite ends, respectively, to the bar B and disk *d*, substantially as described and shown.

404,632. SWIVEL. HARRY E. KELLEY, Niagara Falls, assignor to the Oneida Community, (Limited,) Community, N. Y. Filed Mar. 2, 1889. Serial No. 301,761. (No model.)



Claim.—In a swivel, the combination, with the headed member, of the sleeved member formed with the yoke *a*, semi-cylindrical sleeve portion *c* on the ends of said yoke and axially in line with the article to which it is attached, and clinching-prongs *c' c'*, extending from the sleeve portion *c* and adapted to fold around the neck portion of the aforesaid headed member, substantially as described and shown.

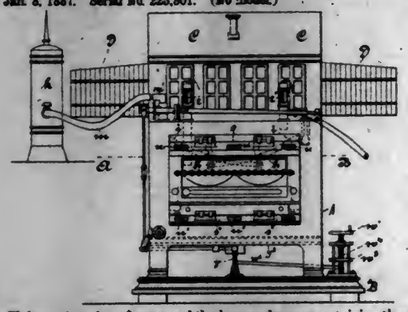
404,633. HYDRAULIC PUNCHING-MACHINE. CONSTANTIN C. KLIMM, FRIEDRICH PIENKOWSKI, and AUGUST GROSS, Königshütte, Prussia, Germany. Filed Nov. 7, 1887. Serial No. 254,729. (No model.) Patented in Germany Feb. 12, 1887, No. 41,746.



Claim.—The combination of the reservoir A, the cylinder secured to the base thereof and having the pressure-piston, the pumps arranged within the reservoir and having their lower ends screwed to the base thereof, the cap D, secured to the upper end of the reservoir, said cap and reservoir having the bearings formed in their meeting ends, the plate *t*, secured to the cap and reservoir, the housing E, bolted to the cap and reservoir, the crank-shaft journaled in the bearings in the reservoir and cap and in openings in the plate *t* and housing E, the cranks of the said shaft being connected to the pump-plungers, the wheel *h* on the said shaft, the shaft *m*, journaled in bearings in the housing and in the reservoir, and having the pinion *r*, meshing

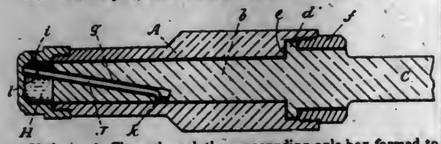
with wheel *h*, and the crank F', adapted to fit on the outer ends of either the crank-shaft or shaft *m*, substantially as described.

404,634. INCUBATOR. WILHELM KNOFF, Berlin, Germany. Filed Jan. 8, 1887. Serial No. 223,801. (No model.)



Claim.—A series of nests and the box or drawer containing them, in combination with a hot-water receptacle or artificial mother arranged for contact with said eggs, and a screw-shaft, nut, and levers for raising and lowering said artificial mother at will, substantially as set forth.

404,635. CARRIAGE-AXLE. FLORIAN LEBEL, Levis, Quebec, Canada. Filed July 16, 1888. Serial No. 280,049. (No model.)



Claim.—1. The axle and the surrounding axle-box formed to leave a chamber between them, the said axle having the oil-passage extending from the chamber to its periphery, in combination with the agitating-rod located within said oil-passage and arranged to be moved therein by the revolution of the wheel.

2. A carriage-axle provided with a rod J, playing loosely in the opening *g*, and held against the end of the chamber in the cap H by the spiral spring *l*, substantially as shown and specified.

3. The combination of the axle C, with the cap H secured to the box A, having the interior of its end wall indented or otherwise uneven, and provided with a filling-hole closed by the screw-plug *i*, substantially as specified.

4. The combination of the chambered cap H, having an indented interior surface and an opening fitted with a screw-plug *i*, with the rod J lying loosely in the opening *g* in the axle and held against the uneven wall of the cap H by the spiral spring *l*, as shown and described.

404,636. HOLDER AND PACKING-FRAME FOR HATS. WILLIAM M. LEVY, St. Louis, Mo., assignor of two-thirds to Adolph Bernd and Rothschild Brothers, all of same place. Filed Mar. 5, 1889. Serial No. 301,965. (No model.)



Claim.—1. In a holder and packing device for hats, the combination of sides or frames, each composed of bars jointed together on the lazy-tong principle, and bars or holders connecting the said frames, with means for locking the frames in the extended and closed positions, substantially as shown, and for the purpose described.

2. In a holder and packing device for hats, the combination of sides or frames, each composed of bars jointed together on the lazy-tong principle, bars or holders connecting the said frames, and means for locking the frames in the extended and closed positions, with means for securing the hats to the said connecting bars or holders, substantially as shown, and for the purpose described.

404,637. CURTAIN-RING. JOHN LINES, Waterbury, Conn., assignor to The Scovill Manufacturing Company, same place. Filed Mar. 15, 1889. Serial No. 303,382. (No model.)



Claim.—The herein-described curtain-ring, consisting of a tube bent into ring shape, the ends of the tube introduced the one within the other, one end overlapping the other, combined with a metal eye B, constructed with a loop *b*, embracing the overlapping ends of the ring, and struck down upon the said overlapping ends to form indentations in the two, whereby the ring is secured in place and the ends united to complete the ring.

404,638. CURTAIN-RING. JOHN LINES, Waterbury, Conn., assignor to The Scovill Manufacturing Company, same place. Filed Mar. 15, 1889. Serial No. 303,383. (No model.)



Claim.—The herein-described curtain-ring, consisting of a tube bent into ring shape, one end of the tube inserted into the other end to complete the ring, the overlapping ends pierced from the outside, combined with an eye made from wire bent into ring shape with radially-projecting ends, the said projecting ends introduced through the said perforation in the overlapping ends of the tube and struck down upon the inside as a means for securing the eye to the ring, and also serving to secure the two ends of the ring together, substantially as described.

404,639. COFFIN. EDWIN C. MANNING, Washington, D. C. Filed May 25, 1888. Serial No. 275,094. (No model.)



Claim.—1. The combination, with a coffin constructed with open ends, of frames having wire fabrics attached thereto, said frames secured to the open ends of the said coffin, and removably-secured end pieces, substantially as set forth.

2. A coffin provided with a reticulated basket suspended within its walls, free therefrom, in combination with ventilating-passages covered with wire-gauze, substantially as described.

3. The combination of a coffin, a corpse-supporting reticulated basket suspended therein, opposite openings through its walls covered with wire-gauze, and removable air-tight-fitting covers for said openings, substantially as and for the purposes described.

4. A ventilating coffin having openings at both ends covered with a fine-wire fabric, for the purpose specified.

5. The combination, with a coffin having open ends covered by a wire fabric, of the end pieces or covers H, the center pieces G, and the fastening-screws for securing said end pieces to the said center pieces, substantially as specified.

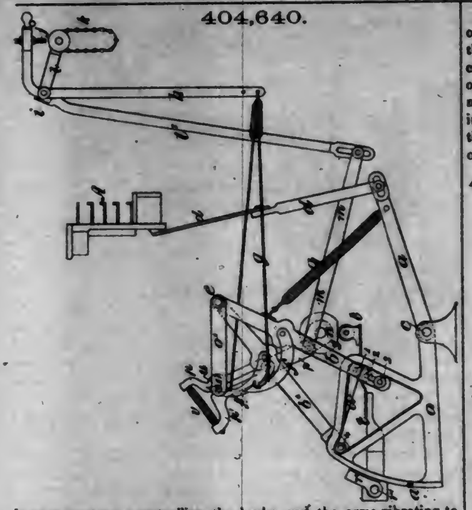
404,640. SHUTTLE-BOX MECHANISM FOR LOOMS. JOHN MATHIESON, Glasgow, County of Lanark, Scotland. Filed Nov. 8, 1887. Serial No. 254,662. (No model.) Patented in England Apr. 14, 1887, No. 5,407, and in France July 9, 1888, No. 184,708.

Claim.—1. In a loom drop-box motion, the lever *a*, the operating-spring, and the drop-box connected to the lever, in combination with vibrating arms provided with hooks, pattern mechanism controlling the hooks, a lifter for the hooks, and mechanism to operate the lifter, all substantially as set forth.

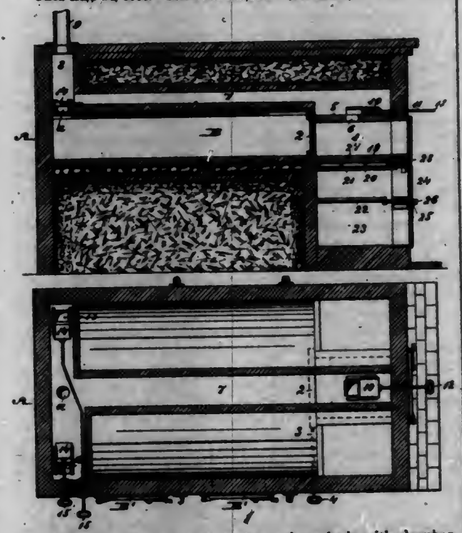
2. In a loom drop-box motion, the lever *a*, the drop-box, a spring to raise the drop-box, a brake to hold the lever, a holding or releasing cam or tappet controlling the brake, and the arms vibrating to raise one arm of the lever *a*, and thereby to lower the drop-box, in combination with hooks on the vibrating levers, pattern mechanism acting on the hooks, a lifter-bar, and means for operating the latter, all substantially as described.

3. The drop-box, the lever *a* controlling the drop-box, vibrating arms of varying length to rock the said lever on its fulcrum in one direction, and a spring to move the lever in the other direction, in combination with pattern mechanism for selecting the arms to be vibrated and with hooks connected to the arms, a vibrating lifter-bar, and mechanism to operate the latter, all substantially as set forth.

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404,641. BAKER'S OVEN. JOHN H. MEIER, Philadelphia, Pa. Filed Aug. 24, 1888. Serial No. 283,612. (No model.)

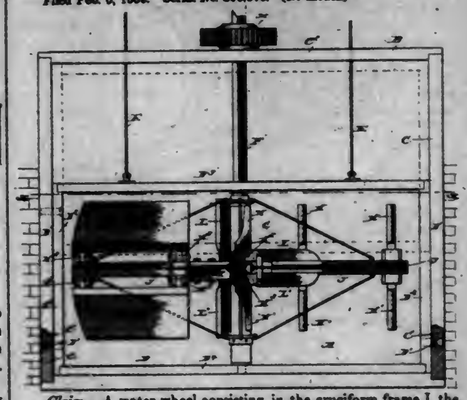


Claim.—1. A baker's oven having an inner body with chamber, a fire-chamber between said inner body and outer casing or wall, and a horizontal wall above the fire-chamber and connecting said inner body and outer casing or wall, said horizontal wall having an opening with valve, said parts being combined substantially as described.

2. A baker's oven having an inner body with chamber, a fire-chamber between said inner body and outer wall, a horizontal wall above said fire-chamber and having an opening with valve, and a channel above said inner body leading from said fire-chamber to a flue at the discharge end of the oven, said parts being combined substantially as described.

3. In a baker's oven, an inner body with chamber having an opening in its top, a fire-chamber, a slide between said chamber of the inner body and fire-chamber, a horizontal wall above said fire-chamber and connecting said inner body with outer wall and having an opening with valve, a channel above said inner body, and a flue communicating with said channel at the end of the oven and having openings with valve at its base, the opening in the top of the chamber of the inner body communicating directly with the flue, said parts being combined substantially as and for the purpose set forth.

404,642. WATER-WHEEL. LEE MIDDLETON, Clarksville, Mo. Filed Feb. 6, 1889. Serial No. 298,876. (No model.)



Claim.—A water-wheel consisting in the cruciform frame I, the arms J, bolted thereto and provided with vertical bars K K' projecting from their upper and lower sides, upper and lower pairs of horizontal lugs K^3 K^4, projecting at right angles to the arms J, and the upper and lower gates L L', hinged at their adjacent edges to said lugs to swing vertically toward and from each other, the said arms K K' forming stops for the gates when they are in their vertical positions one above the other, substantially as set forth.

404,643. CHECK-REIN-HOOK. GEORGE W. MOLIERE, Ocean View, Cal. Filed Sept. 1, 1888. Serial No. 284,380. (No model.)



Claim.—As an improved article of manufacture, the check-rein hook herein shown and described, consisting of the main part or hook proper A, having the two parallel shanks *a a'* provided with coincident holes to receive the screw which attaches the device to a harness-saddle, as specified.

404,644. CIGAR-HOLDER. HEINRICH MACHTANS, Hanau, Prussia, Germany. Filed Mar. 23, 1888. Serial No. 268,313. (Model.) Patented in England Dec. 19, 1887, No. 17,443, and in Germany Jan. 6, 1888, No. 42,913.



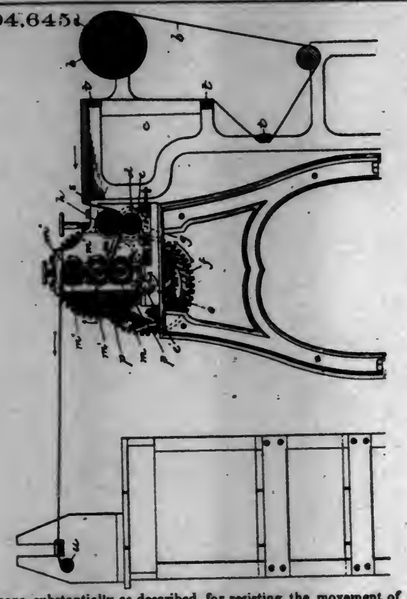
Claim.—1. A cigar-holder consisting of a smoke-tube, a holding-point on said tube provided with an opening leading to the interior of the tube, and a movable cap for covering said point when the holder is not in use, substantially as described.

2. A cigar-holder consisting of a smoke-tube, a holding-point, a box on said tube having threads on its periphery, and a covering-cap surrounding said box and in engagement with the threads thereof, substantially as described.

404,645. MACHINE FOR CUTTING CLOTH INTO STRIPS. JOHN G. MCCARTER, Boston, Mass. Filed Jan. 12, 1889. Serial No. 296,189. (No model.)

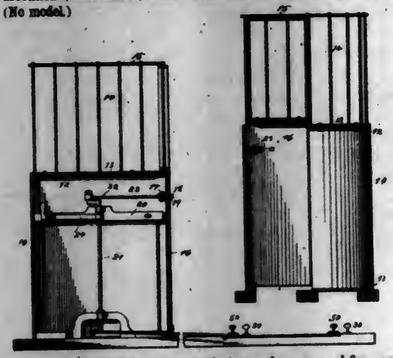
Claim.—In a machine for cutting sheet material into strips, the combination of a grooved idle-roll, a roll or shaft having a series of disk-knives coinciding with and entering the grooves of the idle-roll,

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means, substantially as described, for resisting the movement of the material to the knives and grooved roll, a support *s*, arranged as described with relation to the grooved roll and knives, whereby the material is held upon a portion of the periphery of said roll before reaching the knives, feed-rolls arranged at the opposite side of the grooved roll and knives from the support *s*, mechanism for rotating the feed-rolls in the direction required to draw the material from the grooved roll and knives, and mechanism for rotating the knives in a direction opposite to the movement imparted by the feed-rolls to the material, as set forth.

404,646. LOCK-HOUSE FOR SWITCH-STANDS. WILLIAM J. MCCARTHY, Menominee, Mich. Filed Feb. 4, 1889. Serial No. 298,606. (No model.)



Claim.—1. A lock-house for switch-stands, arranged for connection with the switch-ties and formed with an upper barred section, substantially as described.

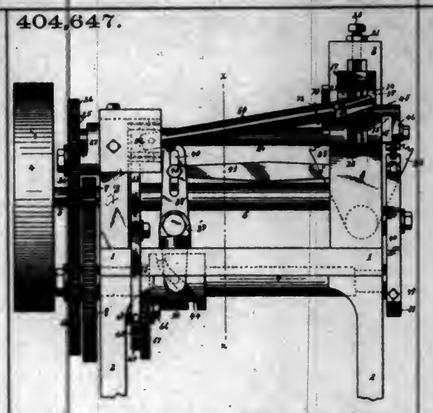
2. In a lock-house for switch-stands, the combination, with a lower sheet-metal section, of an upper barred section and a roof, substantially as described.

3. The combination, with a switch-stand, of a shaft formed with an upper crank, a house within which the stand is arranged, an eye connected to the house-door, and a link connecting the upper crank and the eye, substantially as described.

404,647. HAT-WIRE MACHINE. BERNARD MCCORMICK, Bridgeport, Conn., assignor of one-half to George J. Brown, same place. Filed Sept. 14, 1888. Serial No. 285,370. (No model.)

Claim.—1. In a machine of the class described, the combination, with the feed-rollers, of the twisting-sleeve 30, provided with a holding device and with a pinion 31, the segment-gear engaging said pinion, the

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lever 38, the cam for operating said lever, and the link 41, connecting said lever with said segment-gear.

2. In a machine of the class described, the combination, with the feed-rollers, of the twisting-sleeve 30, provided with a holding device and with a pinion 31, the segment-gear engaging said pinion and provided with the slot 37, the link 41, adjustably attached at its forward end to said segment-gear at said slot, the lever 38, to which the rear end of said lever is connected, and the cam for operating said lever.

3. In a machine of the class described, the combination, with the feed-rollers, of the twisting-sleeve 30, provided with a holding device and with a pinion 31, the segment-gear engaging said pinion and provided with slot 37, the lever 38, provided with slot 40, the cam for operating said lever, the link 41, and screw-studs 42 for adjustably attaching said link to said lever and segment-gear.

4. The combination, with the feed-rollers and the shaping-roller, of a lever 46, whereby said roller is carried, a lever 47, engaging lever 46, a rotating cam engaged by lever 47, and adjustable contact portions on said levers, whereby the movement of the shaping-roller may be varied to give any desired shape to the hat-wires.

5. The combination, with the feed-rollers, of a tube provided with a longitudinally-extending stationary cutter, a movable cutter pivoted to said tube and having a lug 54, and a rock-shaft within said tube, and provided at its end with a cam engaging said lug to operate said movable cutter.

6. The combination, with the feed-rollers, of a tube provided at the end with a stationary cutter extending lengthwise thereof, a movable cutter pivoted to said tube and provided with a lug 54, a rock-shaft within said tube and having at one end a cam to engage said arm to operate said cutter and provided at its opposite end with an arm, and a rotating disk having a cam to engage said arm to operate said rock-shaft.

7. The combination, with the feed-rollers, the tube carrying a stationary cutter and a movable cutter pivoted within the tube and having a lug 54, of a rock-shaft within the tube having a cam engaging said lug, a universal joint connecting the tube with the frame-work, a bracket to support the forward end of the tube, and a spring whereby it is retracted to position.

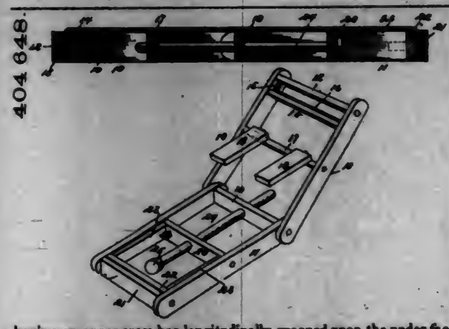
8. In a machine of the character described, the combination, with the feed-rollers, of an oscillating twisting-sleeve provided with a holding device and through which the wire passes to said rollers, a shaping-roller adjacent to said feed-rollers, a vibrating lever to carry said shaping-roller in the arc of a circle, and a cutting device to sever the wire at predetermined times, and consisting of a tube provided at one end with a longitudinally-extending stationary cutter, a movable cutter pivoted to said tube and having a lug 54, and a rock-shaft within said tube and having at one end a cam engaging said lug to operate said movable cutter.

404,648. TROUSERS-STRETCHER. DAVID F. MCHAIL, Wilkes-Barré, Pa. Filed Feb. 12, 1889. Serial No. 299,586. (No model.)

Claim.—1. In a trousers-stretcher, the combination, with an upper frame and a lower frame pivoted therein, of a clamp-bar sliding in the frame and capable of contact with the under face of the upper cross-bar of the upper frame, and a similar clamp-bar capable of contact with the inner face of the lower cross-bar of the lower frame, wedge-bars hinged to the upper and lower frames, engaging respectively the upper and lower sliding clamp-bars, and a lock-bolt capable of sustaining both frames in the same plane, substantially as shown and described.

2. In a trousers-stretcher, the combination, with an upper frame

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having an upper cross-bar longitudinally grooved upon the under face and a sliding clamp-bar provided with a rib adapted to enter said groove, of a lower frame pivoted in the upper frame, having a lower cross-bar grooved upon the upper face, a sliding clamp-bar provided with a rib capable of entering the groove of the lower cross-bar, a bolt locking the two frames in the same vertical plane, and means, substantially as shown and described; for locking the clamp-bars against the cross-bars, all combined for operation as and for the purpose specified.

3. In a trousers-stretcher, the combination, with an upper frame provided with an upper cross-bar having a groove in the under face, a sliding clamp-bar having a rib produced upon the upper face capable of entering the said groove, and an intermediate cross-bar, of a lower frame pivoted to the upper frame, provided with an intermediate cross-bar, a lower cross-bar having a groove in the under face, a clamp-bar sliding in the lower frame and provided with a rib adapted to enter the said groove of the lower cross-bar, wedge-bars hinged to the intermediate cross-bars of the upper and lower frames capable of exerting pressure upon the clamp-bars, and a bolt held to slide through the intermediate cross-bars of the frames, locking the same in a parallel vertical position, substantially as shown and described.

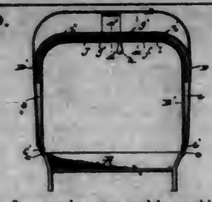
404,649. SHUTTLE-BINDER FOR LOOMS. SAMUEL J. HOSMER, Somerville, Conn. Filed Apr. 25, 1888. Serial No. 271,794. (No model.)

Claim.—1. The spine or back having the slots or openings and the spring or bow having rods or bolts loosely secured thereto, and provided with guide-blocks resting in said slots or openings, and having threaded apertures through which said rods or bolts project, substantially as shown and described.

2. The combination, with the spine or back, of the spring or bow, the notted rods or bolts secured thereto and projecting through apertures in said spine or back, and the guide-blocks wherein work said rods or bolts, substantially as shown and described.

404,650. CARRIAGE-TOP. JOHN T. HOOVER, Laramie, Wyo. Filed Nov. 6, 1888. Serial No. 290,131. (No model.)

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Claim.—1. In a carriage-top, and in combination with the longitudinally-slotted bow, the two curtains passed therethrough and arranged to slide vertically therein, said curtains being connected and constructed to operate in unison.

2. In a folding carriage-top, a series of bows jointed together to open and close, each bow provided with a longitudinal slot extending therethrough from front to rear, in combination with side curtains passing through the bars and arranged to slide upward and downward therein, and a sliding connection between the upper edges of said curtains.

3. In a carriage-top, a series of bows, each having a longitudinal slot opening therethrough from front to rear, curtains passing loosely through said slots and adapted to slide vertically therein, in combination with the operating device connected to said curtains and located within reach of the occupant of the vehicle, whereby he is enabled to raise or lower the curtains at will.

4. In a carriage-top, and in combination with the vertically-sliding curtains D D', the two guide-rods, the handle A, the guide-pulleys *i i'* at the opposite sides, and the two cords extended around said guide-pulleys and connecting the curtains, as described.

404,651. SAFETY ATTACHMENT FOR ELECTRIC MOTORS. WILLIAM S. PAGE, Baltimore, Md., assignor of one-half to John P. Page, same place. Filed Jan. 11, 1889. Serial No. 296,073. (No model.)

Claim.—1. In combination with an electrical motor, a short circuit around the motor and a circuit-closer sustained from contact with the terminals of the short-circuit wires by means of the driving-belt, substantially as specified.

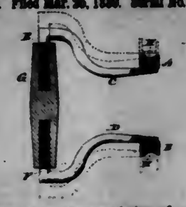
2. In combination with an electrical motor, a short circuit around the motor having spring-terminals, and a bell-crank one arm of which carries a short-circuit closer and the other a roller adapted to rest on the driving-belt, substantially as specified.

3. In combination with an electrical motor, a short circuit around the motor, and a bell-crank one arm of which carries a short-circuit closer and the other a roller adapted to rest on the driving-belt, substantially as specified.

4. In combination with an electrical motor, a short circuit around the motor and a short-circuit closer sustained from contact with the said short circuit by means of a roller, which rests on the driving-belt, substantially as specified.

5. In combination with an electrical motor, a short circuit around the motor and a pivoted arm sustained by the driving-belt carrying a short-circuit closer, substantially as specified.

404,652. VETERINARY MOUTH-SPECULUM. CHAS. H. PALMER, New Haven, Conn. Filed Mar. 26, 1889. Serial No. 304,634. (No model.)

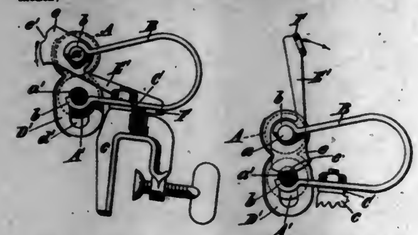


Claim.—1. A mouth-speculum consisting of a vertical handle provided with arms extending from the respective ends of the handle, combined with jaw-plates pivoted to the end of said arms, substantially as and for the purpose described.

2. The combination of the two jaw-plates, arms extending from said plates, the outer ends of the arms turned toward and into line with each other, a handle arranged upon the said ends of the arms and so as to rotate thereon, one of the said arms screw-threaded, and the handle correspondingly screw-threaded, and whereby under the rotation of the handle the said arms and the jaw-plates separate or approach each other, as the case may be, substantially as described.

3. A mouth-speculum consisting of a pair of arms, with means, substantially such as described, for supporting the said arms distant from each other, a jaw-plate pivoted upon the ends of said arms, the said jaw-plates provided with india-rubber cushions, substantially as and for the purpose described.

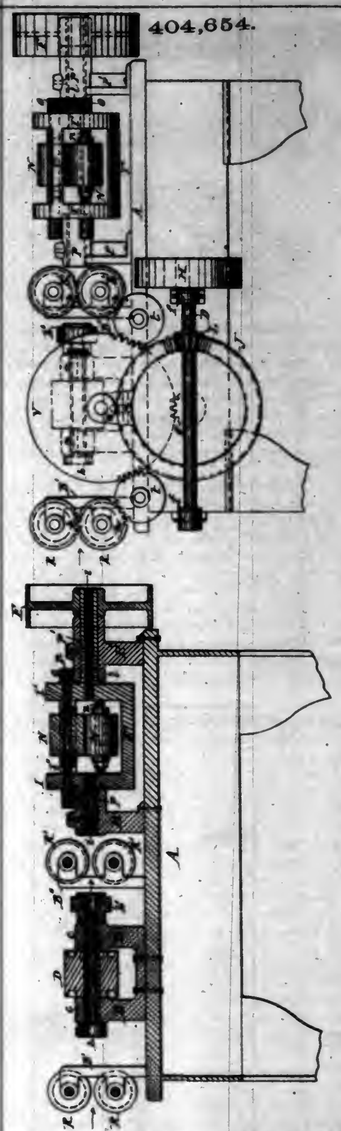
404,653. CLOTHES-WRINGER. LEWIS C. PARKER and BERNHARD VOGEL, Cincinnati, Ohio. Filed Feb. 11, 1889. Serial No. 299,470. (No model.)



Claim.—1. In a clothes-wringer, the combination, with the rubber rolls A A', having shafts *a a'*, and U-springs B B, having outer sockets or bearings *b b* for said shafts, of the inflexible or stiff levers E E', having longitudinal projections or cams *c* at their inner ends, and a flat cross-bar F, connecting their outer ends, the said levers being pivotally mounted upon the upper roll-shaft intermediate the opposite ends of the rubber roll and the U-springs, with their cams *c* normally out of engagement with any of the parts and readily brought into engagement with the periphery or face of the lower roll-shaft to spread the two rolls apart and relieve them of unnecessary pressure when not in use, substantially as herein set forth.

2. In a clothes-wringer, the combination, with the rolls A A', shafts *a a'*, U-springs B B, shields D D', and the bracing or tie bar C, of the levers E E', having cams *c*, and cross-bar or apron F, journaled to one of said shafts, said cams having concave notches *c c'*, which engage the other of said shafts, substantially as and for the purpose specified.

404,654. MACHINE FOR MANUFACTURING CYLINDRICAL RODS. HENRY H. POST, Oswego, N. Y. Filed Oct. 1, 1888. Serial No. 286,880. (No model.)



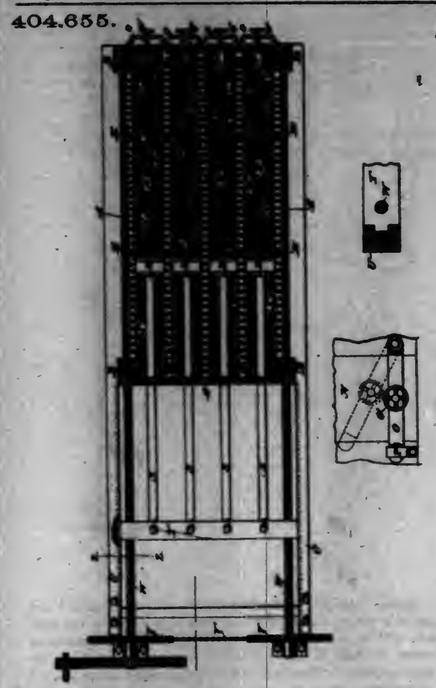
Claim.—1. The combination, with the pedestals P P', formed with journal-boxes, hollow shafts *i i*, mounted in said boxes, heads I I', rigidly attached to said shafts, driving-pulley F, attached to one of said shafts, shafts *n n*, journaled in said heads, and abrading-cylinders N N, and pinions *o o*, attached to the latter shafts, as shown, of the stationary gear-wheel *l*, meshing with the said pinion and rigidly attached to the journal-box of one of the pedestals, substantially as described and shown.

2. The improved machine for forming cylindrical rods, consisting of the bed A, pedestals B B B' B'' and P P', mounted on said bed, the hollow shaft *a*, journaled in the pedestals B B, pulley D, secured to said shaft between the pedestals, cutter-heads *b b'*, secured to opposite ends of the aforesaid shaft, feed-rollers R R, pivoted to the pedestal B' and formed with V-shaped grooves in their peripheries, guide-rollers R' R', pivoted to the pedestal B'' and formed with U-shaped grooves in their peripheries, the heads I I', rigidly united and having hollow journals *i i*, mounted in the boxes of the pedestals P P', the gear-wheel *l*, fixed to one of said boxes, the shafts *n n*, journaled in the heads I I', the abrading-cylinders N N, secured to said shafts, pinions *o o* on the ends of the shafts, meshing with the aforesaid gear-wheel, and the pulley F, attached to one of the journals *i*, substantially as described and shown.

404,655. GRAIN-PRESS. WILLIAM PRESTON, Brooklyn, N. Y., assignor of one-half to James J. Kelly, same place. Filed Aug. 17, 1888. Serial No. 283,080. (No model.)

Claim.—1. The combination, with an outer supporting-casing having perforated inner side walls, a perforated bottom, and a solid end wall, of a series of double partition-walls severally formed of detachable perforated plates and interposed transverse cleats, and which abut against the solid wall of the casing at one end and its uprights at the other, hinged doors closing the openings between said uprights, followers moving longitudinally in the compartments formed by the double partition-plates between the solid wall at one end and the doors at the other, and mechanism, substantially as described, for actuating

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said plungers and moving them to and from the end door of each compartment, substantially in the manner and for the purpose herein set forth.

2. The combination, with an outer supporting-casing having perforated inner side walls, a perforated bottom, and a solid end wall, of a series of double partition-walls severally formed of detachable perforated plates and interposed transverse cleats and which abut against the solid wall of the casing at one end and its uprights at the other, doors closing the openings between said uprights, followers moving longitudinally in the compartments formed by the double partition-plates between the solid wall at one end and the doors at the other, mechanism, substantially as described, for actuating said plungers and moving them to and from the end door of each compartment, a yoke spanning the openings for each door to limit its outward movement, and a set-screw working through said yoke to control said movement, all substantially in the manner and for the purpose herein set forth.

3. The combination, with an outer supporting-casing having perforated inner side walls, a perforated bottom, and a solid end wall, of a series of double partition-walls severally formed of detachable perforated plates and interposed transverse cleats, and which abut against the solid wall of the casing at one end and its uprights at the other, doors closing the openings between said uprights, followers moving longitudinally in the compartments formed by the double partition-plates between the solid wall at one end and the doors at the other, mechanism, substantially as described, for actuating said plungers and moving them to and from the end door of each compartment, double doors hinged at the top of the casing to extend transversely over its compartments, a batten-plate to cover the joint between each pair of doors, and a set-screw working against said batten through an upper cross-piece to fasten and secure the doors against internal pressure, substantially in the manner and for the purpose herein set forth.

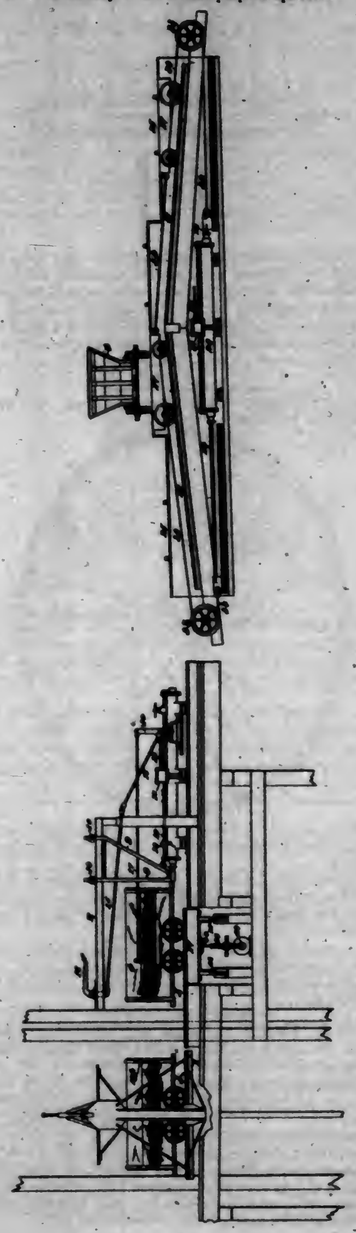
4. The combination, with an outer supporting-casing having perforated inner side walls, a perforated bottom, and a solid end wall, of a series of double partition-walls severally formed of detachable perforated plates and interposed transverse cleats and which abut against the solid wall of the casing at one end and its uprights at the other, doors closing the openings between said uprights, followers moving longitudinally in the compartments formed by the double partition-plates between the solid wall at one end and the doors at the other, a cross-head to which the followers are all secured, endless screws working through said cross-head, one at either end, gearing connecting said screws to cause them to rotate in unison, and mechanism for driving the same, substantially in the manner and for the purpose herein set forth.

404,656. APPARATUS FOR SHIFTING CARS. ROBERT RAMSAY, Mount Pleasant, Pa. Filed Feb. 25, 1889. Serial No. 301,004. (No model.)

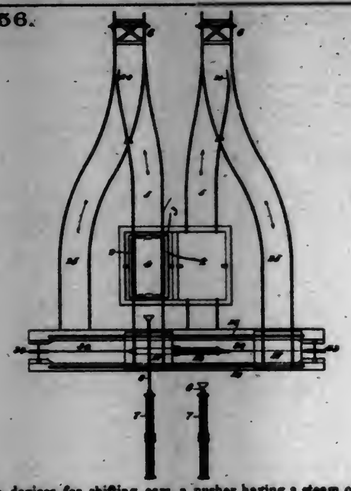
Claim.—1. In devices for shifting cars, the combination of an inclined delivery-track, a pusher, an inclined return-track, a transverse carriage, and apparatus for operating the pusher and the transverse carriage, substantially as and for the purposes described.

2. In devices for shifting cars, a pusher having a steam or hydraulic cylinder, a piston or pushing-rod, and a reversing-valve, substantially as and for the purposes described.

3. In devices for shifting cars, a pusher having a steam or hydraulic cylinder, a piston or pushing-rod, a reversing-valve, and a check-valve, substantially as and for the purposes specified.



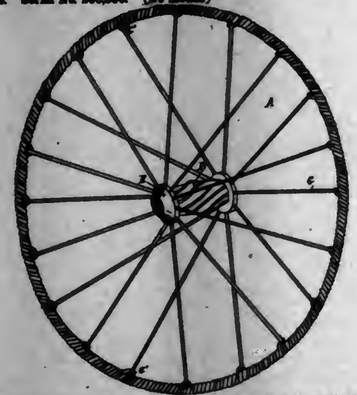
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4. In devices for shifting cars, a pusher having a steam or hydraulic cylinder, a piston or pushing device, a reversing-valve, and an arm connected with the reversing-valve and arranged to be operated automatically, substantially as and for the purposes described.

5. In devices for shifting cars, a pusher having a steam or hydraulic cylinder, a piston, a reversing-valve, and a hand-lever connected with the reversing-valve, substantially as and for the purposes described.

404,657. WHEEL. MILES C. ROOT, Toledo, Ohio. Filed Nov. 12, 1888. Serial No. 290,590. (No model.)



Claim.—1. In a metal wheel, a rim and spokes formed integral by coiling the ends of the spokes to form the rim, as and for the purpose set forth.

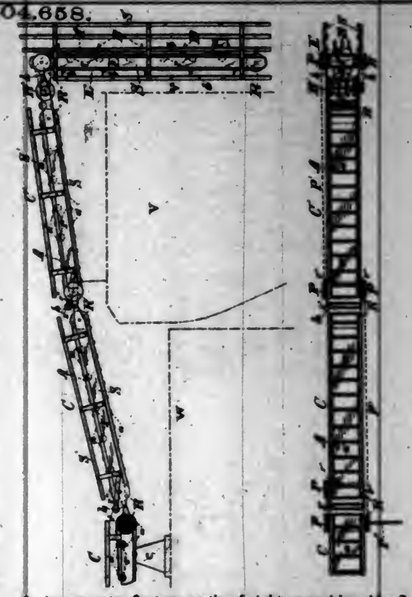
2. In a metal wheel, a hub, in combination with spokes formed with horizontal portions confined upon the hub and bent at right angles thereto and spirally twisted to form a rim or tire, as and for the purpose set forth.

3. In a metal wheel, a hub, in combination with spokes secured to the hub and twisted at their free ends to form a rim or tire, each spoke being secured to any desired succeeding spoke, as and for the purpose set forth.

404,658. FREIGHT ELEVATING AND TRANSPORTING APPARATUS. WILLIAM H. RUSSELL, Vancouver, British Columbia, Canada, assignor of one-third to Gideon Robertson. Filed May 10, 1888. Serial No. 273,503. (No model.) Patented in Canada Feb. 18, 1888, No. 28,542.

Claim.—1. An apparatus for elevating and transporting freight, comprising a series of carriers and an elevator hinged together endwise to assume different elevations and angles, said carriers and elevator consisting of channels the bottoms of which consist of traveling aprons running over a driving-roller at each end and intermediate friction-rollers, said driving-rollers connected for transmitting motion from one to another, and said elevator-apron provided with brackets or tables to receive the packages, substantially as set forth.

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2. An apparatus for transporting freight, comprising sides S and framing S', forming a channel, driving-rollers R, journaled at the ends, and some of them provided with pulleys P, friction-rollers r, journaled at intervals between the driving-rollers, suspended rollers r' at the joint, endless apron A, running over the driving-rollers and supported upon the friction-rollers, the hinges h at the ends of said sides, the rollers R' r', and chains P' upon the said pulleys P, for receiving and transmitting motion, substantially as set forth.

3. An apparatus for elevating freight, comprising sides S and frames S', forming a channel, driving-rollers R, journaled at the ends, and some of them having pulleys P, friction-rollers r, journaled at intervals between the driving-rollers, endless apron A', running over the driving-rollers and supported upon the friction-rollers, and tables B b, secured to said apron, substantially as set forth.

4. An apparatus for elevating and transporting freight, comprising hinged carriers C, consisting of sides S S', rollers R, r, and r', apron A, and pulleys P, hinged carriers C', consisting of sides S, rollers R and r, apron A, pulleys P, and grooved roller E', elevator E, consisting of sides S S'', rollers R and r, apron A', tables B b, and a pulley upon one of said rollers R, and the connecting-chains P', substantially as set forth.

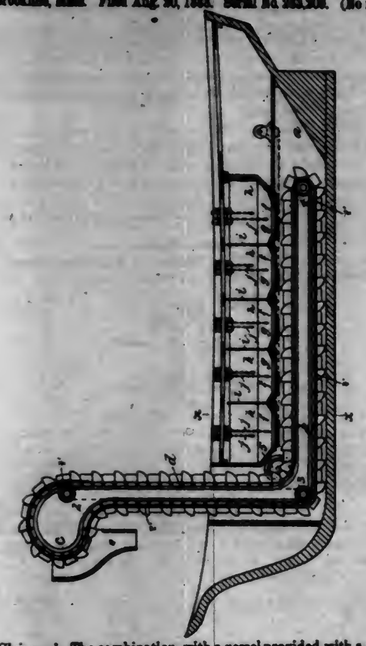
404,659. SWIVEL. JOHN F. SEARS, Clifton, Ontario, Canada, and HARRY R. KELLEY, Niagara Falls, N. Y., assignors to the Oneida Community, (Limited,) Community, N. Y. Filed Oct. 20, 1888. Serial No. 288,695. (No model.)



Claim.—1. A swivel consisting of a member formed with a neck and head on its coupling end, and a member formed of a metal plate folded upon itself with the end portions contiguous to each other and formed with semi-cylindrical recesses in the adjacent sides of said end portions embracing the aforesaid neck and provided with an aperture through the two thicknesses of metal between the integral end of folded plate and rear ends of the semi-cylindrical recesses, substantially as described and shown.

2. A swivel consisting of a member composed of a metal plate folded upon itself with the ends contiguous to each other and formed with a coinciding neck and head on said ends, and a member having its coupling end composed of two thicknesses of metal firmly united and formed in the adjacent sides of said thicknesses with semi-cylindrical recesses embracing the aforesaid necks and provided with an aperture at the rear ends of said recesses for the reception of the aforesaid head, substantially as described and shown.

404,660. ELEVATOR AND CONVEYER. CHARLES J. SEYMOUR, Brookline, Mass. Filed Aug. 30, 1888. Serial No. 283,909. (No model.)



Claim.—1. The combination, with a vessel provided with a trough or way beneath the floor and above the keel, of a vertically-arranged elevator-frame at the end of such trough or way, an endless chain of buckets and pans arranged in said trough or way and on said elevator-frame, and wheels to move and guide said chain, whereby the coal or other contents of the vessel may be taken therefrom and carried directly to and up the elevator-frame to be discharged, as set forth.

2. The combination, with a vessel provided with a trough or way beneath the floor and above the keel, of a vertically-arranged elevator-frame at one end of such trough or way, said elevator-frame being provided with an overhanging head c, an endless chain of buckets and pans arranged in said trough or way and on said elevator-frame, and wheels or pulleys and tracks t to move and guide said chain of buckets and pans, as set forth.

3. The combination, with a vessel provided with delivering holes or ports in its floor, of movable sections g of the floor, hinged at points at or near said delivering holes or ports, and leaves or shelves h, hinged to the side of the vessel, with their free edges in contact with said hinged sections of flooring, as set forth.

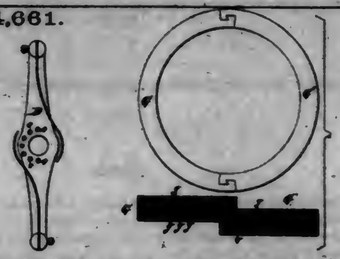
4. The combination, with a vessel provided with delivering holes or ports in its floor, of movable sections g of the floor, hinged at points at or near said delivering holes or ports, leaves or shelves h, hinged at the side of the vessel, with their free edges in contact with said hinged sections of flooring, and partitions i between each two sections, as set forth.

5. The combination, with a vessel provided with delivering holes or ports in its floor, of covers or cut-offs for said holes or ports, said covers or cut-offs being pivoted beneath the floor and provided with cables, whereby they may be swung around to close the ports or holes, or be moved in the opposite direction to open the same, tracks m beneath the free ends of the corners or cut-offs to support the same, and stops to limit the movement of the covers or cut-offs, as set forth.

404,661. ELECTRIC MOTOR. ROBERT D. SLATER, Detroit, Mich., assignor to the Bolding Motor and Manufacturing Company, Chicago, Ill. Filed Dec. 15, 1887. Serial No. 258,027. (No model.)

Claim.—1. In a dynamo-electric machine or motor, the combination, with its commutator and brushes, of a brush-holder provided

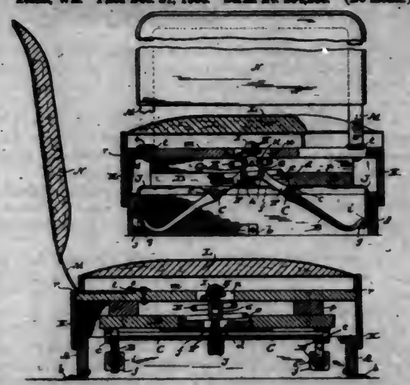
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with a series of hollow cavities e and a spring pawl or detent d' for giving to it a substantially rigid engagement at each of a series of adjustments, said spring-detent and cavities being housed between the face of the brush-holder and the adjacent supporting part of the frame, substantially as and for the purposes described.

2. An armature-ring made in sections, having a dovetail tenon and groove, whereby said sections are adapted to be slipped together and engaged at their extremities, each said section composed of lamine g, substantially as and for the purpose described.

404,662. LOCOMOTIVE-CAB SEAT. GEORGE W. STONE, Jr., Waukesha, Wis. Filed Dec. 21, 1888. Serial No. 294,289. (No model.)



Claim.—1. A locomotive-cab seat comprising a stationary frame, a spring-platform having a yielding connection with the stationary frame and adjustable as to tension, and a seat-supporting frame arranged on the spring-platform to surround said stationary frame and have telescopic movement with relation thereto, substantially as set forth.

2. A locomotive-cab seat comprising a stationary frame, a spring-platform having a yielding connection with the stationary frame and provided with brackets that extend down within the same and come close against the inner sides thereof, and a seat-supporting frame arranged on the spring-platform to surround said stationary frame and have telescopic movement with relation thereto, substantially as set forth.

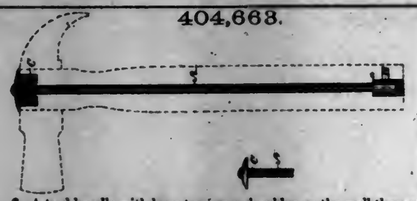
3. A locomotive-cab seat comprising a stationary frame, a spring-platform having a yielding connection with the stationary frame, the seat proper, a supporting-frame therefor arranged on the spring-platform to have telescopic movement with relation to said stationary frame, eyes secured to the supporting-frame, and a back-rest having depending braces turned up at their ends to form hooks for engagement with said eyes, substantially as set forth.

4. A locomotive-cab seat comprising a stationary frame provided with lateral ears for attachment to a side box in a locomotive-cab, a spring-platform having a yielding connection with the stationary frame, and a seat-supporting frame arranged on the spring-platform to surround said stationary frame and have telescopic movement with relation thereto, substantially as set forth.

404,668. DEVICE FOR SECURING TOOLS TO HANDLES. FRANK H. THOMPSON and GEORGE P. TURNEY, Philadelphia, Pa. Filed Apr. 26, 1888. Serial No. 271,895. (No model.)

Claim.—1. A tool-handle with a bore extending lengthwise thereof, a rod with head and a screw-threaded end, and a wedge interiorly screw-threaded, said wedge being driven into said handle and the screw end of said rod inserted in said wedge and riveted to the wedge, said parts being combined substantially as described.

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2. A tool-handle with bore having a shoulder on the wall thereof, as described, a wedge with an opening therein, a headed rod having one end inserted in said wedge and riveted thereon and its headed portion bearing against said shoulder, said parts being combined substantially as described.

3. A tool-handle with bore, a wedge with an opening therein, a rod having one end inserted in said wedge and riveted thereto, the other end having an attachment or projection adapted to engage a wall on the inner portion of the handle at an angle to the bore, substantially as described.

404,664. HAIR-CURLING IMPLEMENT. BENJAMIN I. TOQUET, Westport, Conn. Filed Jan. 16, 1889. Serial No. 296,501. (No model.)



Claim.—1. The combination, in a hair-curling implement, of the iron and its handle, the clamp, and an operating-sleeve which encircles the curling-iron and on the movement of which the clamp can be raised or lowered, substantially as described.

2. The combination, in a hair-curling implement, of the iron, the clamp pivoted thereto and having an arm connected to a plunger, a sleeve connected to the plunger, and a spring moving said plunger and tending to close the clamp, substantially as described.

3. The combination of the handle and the curling-iron extending into the handle with a pivoted clamp, a sliding sleeve connected to the clamp to open it, and a spring acting to close the clamp, substantially as described.

4. A curling implement having an iron with a pivoted clamp and a sleeve and a handle inclosing the working parts for moving the clamp.

5. The combination, in a hair-curling implement, of the iron hollow at its rear part and its handle with a clamp pivoted to the iron, a plunger in the hollow part of the iron, and a spring acting on said plunger to close the clamp, and a sleeve by which the clamp is opened and which incloses the working parts of the implement, substantially as described.

404,665. SMOKER'S SET. WILLIAM S. WHITING, Waterbury, Conn., assignor to Charles F. Trott, same place. Filed Jan. 23, 1889. Serial No. 297,769. (No model.)

Claim.—1. A smoker's set consisting of a case the front wall of which is hinged at the bottom and is provided with a cigar-holder, a hinged cover, a hinged operating-lever, and connecting mechanism, substantially as described and shown, operated by said lever, whereby the cover is raised and the front wall with the cigar-holder turned outward to place the cigars in position for use.

2. The case having a hinged front wall carrying a cigar-holder and a hinged cover having a downwardly-projecting arm 12, in combination with an operating-lever having a curved arm with an incline which engages arm 12 to raise and lower the cover, a bell-crank lever, and links 15 and 17, whereby the front wall and cigar-holder are moved, respectively, to the open and closed positions.

3. The case consisting of end and back walls 1, a front wall hinged to the end walls, and a hinged cover having an arm 12, in combination with an operating-lever having a curved arm extending into the case and provided with an incline which engages arm 12 to raise and lower the case, a bell-crank lever 13 within the case, and links 15 and 17, connected to the bell-crank lever and to the front wall and, operating-lever, respectively, as and for the purpose set forth.

4. The combination, with the side and back walls, of a front wall hinged at the bottom and carrying a cigar-holder, an operating-lever, a bell-crank lever, and links connected, respectively, to the front wall and to the operating-lever, whereby said front wall and cigar-holder are thrown to the open and closed positions.

5. The combination, with the walls, of a hinged cover having a depending arm 12 and a hinged operating-lever having a curved arm 8, provided with an incline adapted to engage arm 12, whereby the cover is raised and lowered, respectively, when the operating-lever is moved inward or outward.

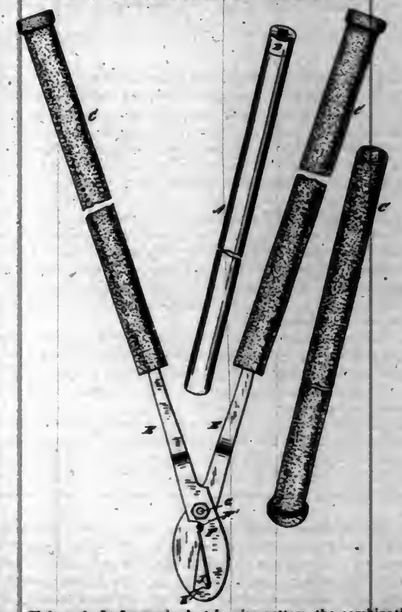
6. The combination, with the end and back walls, the front wall hinged thereto and carrying a cigar-holder, and an operating-lever having a curved arm extending within the case, of a hinged cover having an arm engaged by said curved arm, and mechanism, substantially as described and shown, operated by said lever, whereby the front wall is moved to the open or closed position and the cover is raised or lowered.

404,666. SASH-LIFT. WILLIAM A. WILLIAMSON, Newark, N. J. Filed Feb. 1, 1889. Serial No. 298,355. (No model.)



Claim.—A sash lift or pull made from a continuous piece of wire doubled and bent in the middle to form an eye for the reception of a screw or pin, and twisted, as at a^2, and the free ends thereof bent into hooks to form a pull portion, substantially as and for the purposes set forth.

404,667. FIREMAN'S ELECTRIC-WIRE CUTTER. DANIEL A. WOODHOUSE, Elizabeth, N. J., and THOMAS V. FORSTER, Brooklyn, N. Y. Filed Mar. 2, 1889. Serial No. 301,762. (No model.)



Claim.—1. In firemen's electric-wire cutters, the combination of metal handles for the said cutters, a wooden core provided with a hole in one end and fitted detachably upon each one of the metal handles, and a rubber tube surrounding and fitting tightly upon the said wooden cores.

2. In combination with the metallic handles of a pair of wire-cutters, detachable insulated handles.

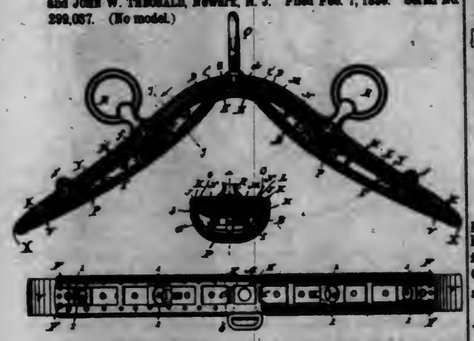
3. Insulated handles consisting of wooden cores provided with holes in the ends, in combination with rubber tubes having enlarged portions and passed over the said cores, the enlarged portions being at the ends of the said tubes and located upon the said cores at those ends opposite the ends of the cores containing the said holes.

404,668. WHIP-SOCKET. EZRA ALLEN, Freeport, Ill. Filed Oct. 26, 1888. Serial No. 289,190. (No model.)



Claim.—As an improved article of manufacture, the tubular whip-socket B, provided with spring-metal tongues *b*, continuous therewith, and forming a contracted neck and a flaring mouth for the socket, and with the U-shaped clips for attaching the socket to a vehicle.

404,669. HARNESS-SADDLE. HENRY ASCHENBACH, South Orange, and JOHN W. THEOBALD, Newark, N. J. Filed Feb. 7, 1889. Serial No. 299,037. (No model.)



Claim.—1. The combination, in a harness-pad, of the trough-shaped top plate A, having adjacent to the middle of its length the slots D and cross-bars E, with the under plates B, fixed at their outer ends to the top plate and having their inner ends passed through the said slots and loosely overlying the cross-bars, the cover-sections H I, surrounding the united plates, and the top pad-frame located in the trough of the top plate, substantially as described.

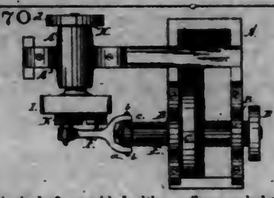
2. The combination, in a harness-pad, of the trough-shaped top plate A, provided with holes 4, and having the guiding-ribs 2 beside the holes 4, and provided with the slots D and cross-bars E, the under plates B, having their side edges turned upward and resting against and supporting the edges of the top plate, said under plates fixed at their outer ends to the top plate, bearing upon the guiding-ribs, and at their upper ends passing through the slots and overlying the cross-bars of the top plate, the cover-sections H I, surrounding the united plates, the top pad-frame L M N, located in the trough of the top plate, the nuts T between the guiding-ribs, and the terrets R, engaging the nuts, substantially as described.

3. The combination, in a harness-pad, of the top plate A, provided with holes 4, and having the guiding-ribs 2 at the sides of the holes 4, and provided with the pendent stop-hooks U, the nuts T, located between the ribs and bearing against the stop-hooks, the under plates B, and the terrets R, substantially as described.

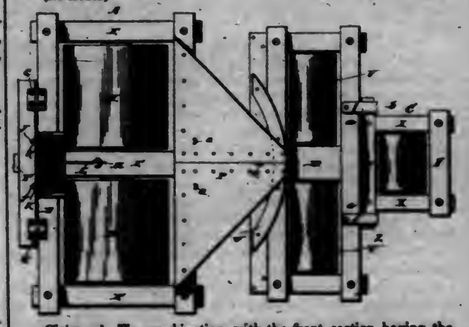
4. The combination, in a harness-pad, of the metallic top plate A, trough-shaped on its upper side, the under metallic plates B, having their side edges bent upwardly and supporting the edges of the top plate, said under plates being fixed at their outer ends to the top plate and loosely connected to the latter at their inner ends, the cover-sections H I, surrounding the united plates, and the top pad-frame L M N, located in the trough-shaped upper side of the metallic top plate, substantially as described.

404,670. GRINDSTONE AND MECHANISM FOR THE SAME. ROBERT A. AXTELL, Montague, Mass. Filed July 27, 1888. Serial No. 281,130. (No model.)

Claim.—The combination, with a rotary shaft and a pulley fixed thereon, the grooved head-block fixed to said shaft, and the block K, adjustably secured to said head-block by a bolt, the head of which fits in the groove of the said block, of a shaft arranged at right angles to the head-block shaft, provided with a pulley, a grindstone, and a loose collar, substantially as described, and the pitman, as described, pivoted to the said loose collar, and the block K, as and for the purpose described.



404,671. ROLLER FOR LEVELING SNOW OR ROADS. ISAAC R. BABCOCK, Newport Centre, Vt. Filed Jan. 23, 1889. Serial No. 297,260. (No model.)



Claim.—1. The combination, with the front section having the platform P, of the loops K M on the front cross-bar and the central longitudinal bar of the frame, respectively, the loops Q R on the platform, the seat having the hooks J, adapted to engage the loops K or Q, and the brace L, pivoted to the seat and having its lower end adapted to engage the loops M or R, as set forth.

2. The combination of the front section having a central rearwardly-extended bar, the vertically-disposed roller O, secured to the end of said bar, the middle section having a forwardly-extended central bar connected by a universal joint with the front section, and the curved track U, secured on the upper side of the middle section, over which the roller O moves, as set forth.

3. The combination of the middle section having its front cross-bar provided with circular ends, the keepers pivoted to the rear cross-bar of the middle section and adapted to be swung over the circular ends of the front cross-bar of the rear section, and the locking-pins passed vertically through the keepers into the bar, to which they are pivoted, as set forth.

4. The combination of the middle section, the keepers pivoted thereto, and the rear section having its front cross-bar provided with a front convex side and engaged by said keepers, as set forth.

5. The combination of the front section having the rearwardly-extended bar E, the roller O on the rear end of said bar, the tongue hinged to the front end of said section, the seat movably mounted thereon, the middle section loosely connected to the front section, the track U on said section, over which the roller O moves, and the rear section hinged to the middle section, as set forth.

404,672. ROAD-CART. MONROE BARBER, Mossington, Ill. Filed Mar. 7, 1888. Serial No. 302,316. (No model.)



Claim.—1. In a vehicle, the combination, with the body and shafts, of a spring secured to the body and connected at its ends with the front face of the shafts, and a sliding connection between the shafts and body.

2. In a vehicle, the combination, with the body, of the shafts, a

sliding connection between the body and shafts at the forward end of the body, a spring secured to the body near the rear end, and supports for the ends of the springs pivoted to the shafts.

3. In a vehicle, the combination, with the shafts, of the body connected therewith at its forward end by a sliding joint and a spring adapted to support the rear end of the body and pivotally connected with the shafts, said spring being adapted to adjust itself upon its supports as the body rises and falls.

4. In a vehicle, the combination, with the shafts, of the body connected at its forward end with the shafts by a sliding connection and a spring supporting the rear end of the body and pivotally connected with the shafts, said spring being adapted to be extended lengthwise and to rock upon its supports as the body rises and falls.

5. In a vehicle, the combination, with the shafts, of the body connected at its forward end with the shafts by a sliding connection, a spring supporting the rear end of the body, and laterally swinging supports for the ends of the spring secured to the shafts, whereby when a weight is applied to the body it will move downward and backward and cause the spring to rock or tip relatively to its supports.

6. In a vehicle, the combination, with the shafts, of the body provided with forwardly-extending arms slotted, as shown, U-shaped clips on the under side of the shafts, a cushion within the clips, and a bolt for each clip, all arranged substantially as shown.

7. In a vehicle, the combination, with the shafts and the body connected therewith at its forward end by a sliding joint, of hooks secured to the shafts on their forward faces and adapted to swing only laterally or at right angles to the line of draft, and a spring secured to the body and provided with rounded bearing-faces where it connects with the hooks, all substantially as shown.

8. In combination with the shafts, the sleeved washer secured thereto, the hook mounted on the washer, a bolt and nut securing the washers to the shafts and the hooks to the washers, a body, and springs connecting the body and the hooks.

9. In combination with an axle or bar, a brace-rod provided with an eye, and a plate O, provided with a socket in its upper face to receive and hold the eye against the bar or axle, all substantially as shown.

10. In combination with an axle and the shafts, the plates L, provided with threaded tangs, a brace-rod provided with an eye, a plate O, provided with a socket in its upper face to receive the eye, and bolts applied to the tangs.

11. In combination with an axle and the shafts, a brace-rod M, provided with an eye N, a plate O, provided with a socket in its upper face to receive the eye, plates L L, applied to the shafts and provided with tangs to pass through the eye, and means for securing the parts in position.

12. In combination with the axle and shafts, the brace-rod M, provided with an eye N, a plate O, provided with a socket in its upper face to receive and hold the eye, and provided also with a rearward extension P, plates L L, provided with tangs passing through the eye N and plate O, and nuts applied to the tangs.

13. In a road-cart, the combination, with the wheeled frame and the shafts rigidly attached thereto, of the body connected at its forward end with the shafts by a sliding connection, a spring supporting the rear end of the body, and laterally-swinging supports for said spring, all arranged substantially as shown, whereby when a load is applied to the body it will move downward and backward, and thereby cause the spring to be extended lengthwise and to rock forward or backward relatively to and upon its supports.

404,673. CORE FOR CASTING. GEORGE H. BENNETT, Brooklyn, N. Y. Filed Dec. 20, 1888. Serial No. 294,178. (No model.)



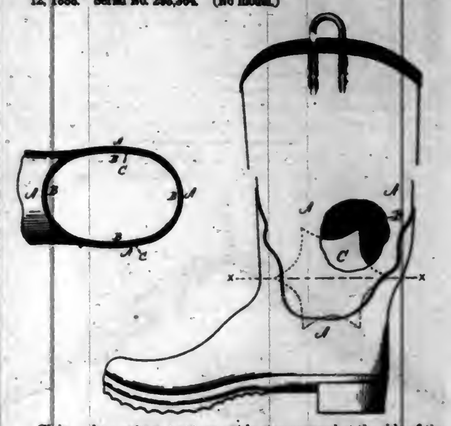
Claim.—1. A core for casting consisting of the sectional expansible shell having inclines, the travelers having screw-threaded sockets extending therethrough, and the rotary shaft supported in end bearings and having screw-threads engaging the screw-threads of the sockets to adjust the travelers, substantially as described.

2. A core for casting consisting of the sectional expansible shell having attached inclines provided with revolving rollers projecting beyond their inclined faces, the travelers having screw-threaded sockets and resting against the rollers on the inclines, and the rotary shaft mounted in end bearings and having screw-threads engaging the screw-threads of the sockets to adjust the travelers, substantially as described.

3. The combination of the sectional expansible shell having lips or projections M, the end bearings having flanges L joined to the lips or projections by pin-and-slot connection, the rotary shaft E, and means, substantially as described, for expanding the shell by the rotation of the shaft, substantially as described.

4. The combination of the expansible shell having lips or projections M, the end bearings having flanges L, arranged in pairs, receiving between them and guiding the lips or projections, the rotary shaft, and means for expanding the shell by rotation of the shaft, substantially as described.

404,674. RUBBER BOOT. ERSKINE P. BICKFORD, Malden, Mass., assignor to the Boston Rubber Shoe Company, same place. Filed Dec. 12, 1888. Serial No. 293,364. (No model.)



Claim.—In a rubber boot, an ankle-stay secured at the side of the ankle portion of the boot-leg between the lining and the rubber body, said stay having a series of radial points projecting in different directions laterally and vertically, which cross the lines on which there is any tendency to wrinkle and thereby prevent any continuous wrinkling and consequent breaking, substantially as set forth.

404,675. DOUBLE-POINTED PIN. JAMES H. BERRY, Flintsburg, Md. Filed Nov. 9, 1888. Serial No. 290,352. (No model.)



Claim.—The double-pointed pin or hook having a central looped or coiled portion forming a spring and having arms extending in the same straight line, and provided with inwardly curved and pointed ends, substantially as shown and described.

404,676. CAR-TRUCK. GEORGE R. BLAINE, Dayton, Ohio. Filed Oct. 5, 1888. Serial No. 287,262. (No model.)

Claim.—1. A bolster for railway-car trucks, consisting of a single plate of metal bent or rolled into the form, or substantially the form, of a hollow cylinder, with the longitudinal opposite or meeting edges of the plate unjoined, substantially as described.

2. A railway-car-truck bolster consisting of a single metal plate bent or rolled so that its longitudinal edges are brought opposite or directly meet, in combination with saddles and braces strengthening the bolster and preventing the longitudinal opposite ends of the plate from spreading, substantially as described.

3. In a car-truck, the combination, with a tubular bolster, of saddles secured upon and extending above the bolster and having openings or sockets extending therethrough, and arms located in said openings and supported by the saddles and provided with caps or seats on their upper ends, for the purpose set forth.

4. In a car-truck, a bolster composed of a bent or rolled metal plate and means for preventing the adjoining longitudinal ends of the same from spreading, in combination with the frames secured to the ends of the bolster for supporting the wheel-journal boxes, substantially as described.

5. A car-truck comprising a cylindrical bolster formed of a bent or rolled metal plate, in combination with saddles secured upon said bolster across and connecting the opposite ends of the plate forming the same, and thereby preventing the longitudinal edges from spreading, substantially as described.

6. A car-truck comprising a bolster formed of a metal plate rolled or bent into the form of an unjoined tube, in combination with exterior strengthening-braces secured to and partially embracing the same and preventing the bolster from spreading, substantially as described.

7. A tubular car-truck bolster, in combination with braces rigidly secured to the ends of the same, each provided with an inwardly-extending flange fitting upon the exterior of the bolster, and with wings at its opposite ends having side flanges forming seats and the arch and truss bars secured in said seats, substantially as described.

8. A tubular car-truck bolster and the arch and truss bars, in combination with curved strengthening-braces secured upon the exterior of the bolster and provided with end seats in which said bars are secured to prevent the same from bending, substantially as described.

9. In a car-truck, the combination of a metallic bolster, yielding arms supported by and extending above the bolster, and anti-friction rollers carried by the arms upon which the car-body rests, substantially as described.

10. In a car-truck, a bolster, in combination with vertically-yielding caps or seats supported by and located above the bolster, and anti-friction rollers mounted in the caps or seats, substantially as described.

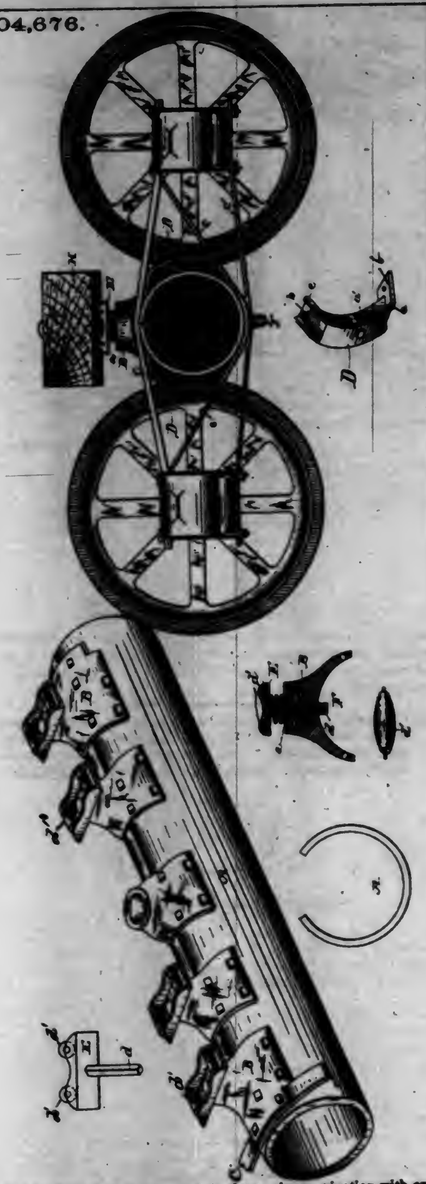
11. A tubular car-truck bolster, in combination with saddles secured upon the same and provided with openings extending therethrough, and vertically-movable arms carried by and extending above the saddles and provided with springs to yieldingly hold their upper ends at the limit of upward movement, for the purpose set forth.

12. In a car-truck, the combination of a bolster, saddles secured to the same and provided with openings or sockets, springs in the openings, caps or seats yieldingly supported by the springs and provided with downwardly-extending arms, and rollers mounted on the caps or seats, substantially as described.

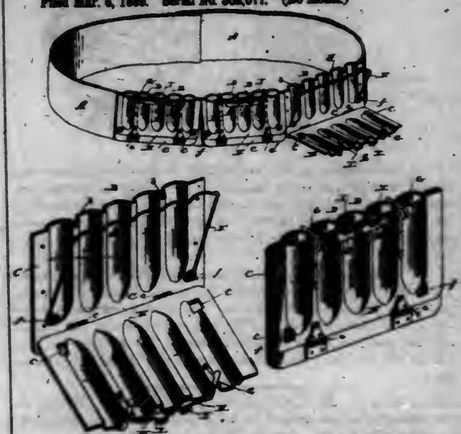
13. In combination, a car-truck bolster provided with saddles, caps or seats yieldingly supported and carrying rollers, the central saddle having an opening, and a king-bolt secured to the car and extending through said opening, substantially as described.

14. In combination, a car-truck bolster having saddles, the central saddle having a socket and opening therethrough, a spring in the socket, a king-bolt carried by the car and extending through the spring and opening, and a cap or socket moving with the bolt and bearing on the spring, substantially as described.

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404,677. CARTRIDGE-BELT. ANTHONY J. BLIX, Anaconda, Mont. Filed Mar. 6, 1888. Serial No. 302,077. (No model.)



Claim.—1. The combination, with the belt, of the individual holders or cartridge-carriers, each comprising a hinged recessed flap adapted to open outwardly and downwardly, a corresponding-recessed body-piece and a spring-catch for locking the free end of the hinged plate to the top of the recessed body-piece, substantially as and for the purpose shown and set forth.

2. The combination of the recessed body-piece or back plate, the correspondingly-recessed front plate hinged to the lower end of the recessed back, a spring snap or lock for closing the front plate upon the back, and the spring guard or keeper disposed between the hinged front and fixed back and adapted to guide the cartridges as these slide out of their respective recesses or chambers, substantially as and for the purpose shown and set forth.

404,678. ROOFING-TONGS. CHRISTIAN G. BLUM and PHILIP LEUTHAM, Collinsville, Ill. Filed Aug. 28, 1888. Serial No. 283,963. (Model.)

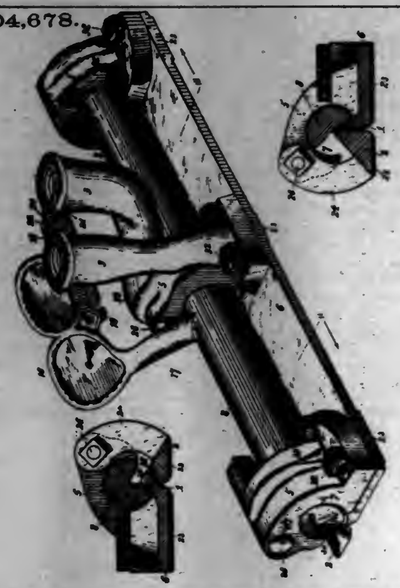
Claim.—1. In roofing-tongs, the right and left foot-treadles secured to the bending-bar to enable the operator to work it from either the right or left, substantially as and for the purpose set forth.

2. In roofing-tongs, the combination of the angular projections 41 from the end lower corners of the bending-bar and the recesses in the stationary jaw of the tongs which receive said projections, substantially as and for the purpose set forth.

3. In roofing-tongs, the combination of the right and left foot-treadles and the reactionary spring connected to the treadles and the handle of the movable jaw to have a reciprocating movement in unison with both parts with which it connects, substantially as and for the purpose set forth.

4. In roofing-tongs, the combination of the three journal-boxes, each having peripheral bearings for the bending-bar, the three journals of the movable jaw, and the rest-plate secured to the bottom of the bed-plate of the stationary jaw and to the bottom of the movable jaw to raise them above the cross-seams, substantially as and for the purpose set forth.

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5. In roofing-tongs, the combination of the three journal-boxes having the triple peripheral bearings for the bending-bar and the journals for the movable jaw, and the ogee working-face of the bending-bar which turns the overlap tin in a curve at the apex of the seam and tightly presses its under lip, substantially as and for the purpose set forth.

6. A roofing-tongs comprising a stationary jaw having three journal-boxes, each having a peripheral bearing for a bending-bar and a journal for a movable jaw above and in front of the peripheral bearing, a bending-bar supported in the peripheral bearings, and a movable jaw having a handle-shank and arms 24, pivoted upon the journals of the stationary jaw, substantially as and for the purpose set forth.

404,679. MACHINE FOR CUTTING KEY-SEATS. THOMAS W. BROOMELL, Erie, Pa., assignor of one-half to Frank C. Burton, same place. Filed Nov. 28, 1888. Serial No. 291,715. (No model.)

Claim.—1. The combination, in a key-seating machine, of two parallel screws revolving in opposite directions, and a carriage adapted to be moved longitudinally by said screws with a nut operating in a transverse slot in said carriage, a guide-nut M, and cam mechanism secured to the machine-frame near each end of the nut-guide, adapted to engage with the nut as it leaves the end of said guide and automatically move the nut out of engagement with one of said screws and into engagement with the other, substantially as and for the purpose set forth.

2. The combination, in a key-seating machine, of two parallel screws revolving in opposite directions, and a laterally-moving nut adapted to engage alternately with each of said screws, with an adjustable guide to retain the nut in contact with said screws, and springs adapted to move said nut out of contact with one of said screws after it has passed the guide and into contact with the other screw, substantially as and for the purpose set forth.

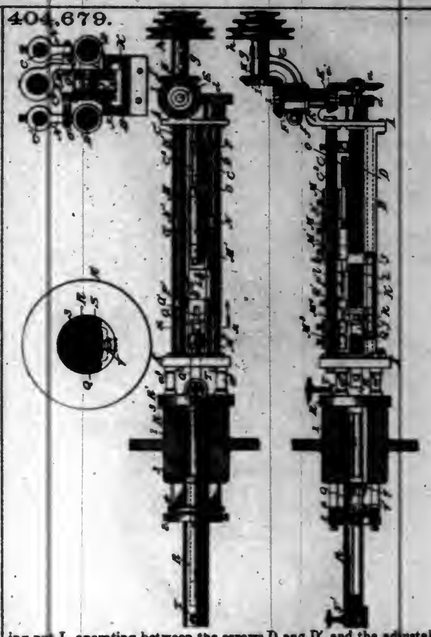
3. The combination, in a key-seating machine, of a reciprocating cutter-bar inclosed and traveling in an adjustable semicircular shell with an outer semicircular shell inclosing said inner shell, and adjusting-screws for adjusting said inner shell, substantially as and for the purpose set forth.

4. The combination, in a key-seating machine, of the screws D and D′, geared together so as to run in opposite directions, and a traveling carriage K, operating on ways parallel to said screws, with a reciprocating nut L, operating in a transverse slot in said carriage, and the sectional guide M, for retaining the nut in position during its traverse, substantially as and for the purpose set forth.

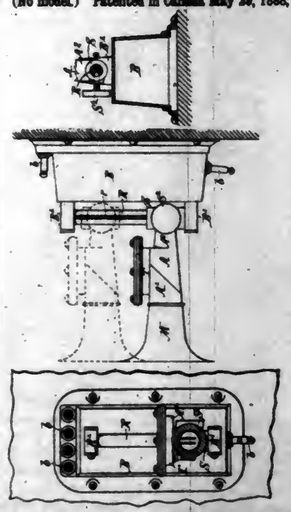
5. The combination, in a key-seating machine, of the frame-work A A′ B and the screws D and D′, geared together so as to run in opposite directions, with the reciprocating nut L, operating in the carriage K, between said screws, substantially as and for the purpose set forth.

5. The combination, in a key-seating machine, of the reciprocating nut L, operating between the screws D and D′, and the adjustable guide M, with the springs O and O′, for changing the position of the nut after it has passed the guide M, substantially as and for the purpose set forth.

404,679.



404,680. TELEPHONE-SUPPORT. CHARLES W. BROWN, Montreal, Quebec, Canada, assignor to the Bell Telephone Company of Canada, same place. Filed Mar. 31, 1888. Renewed Feb. 26, 1889. Serial No. 301,135. (No model.) Patented in Canada May 29, 1888, No. 29,234.

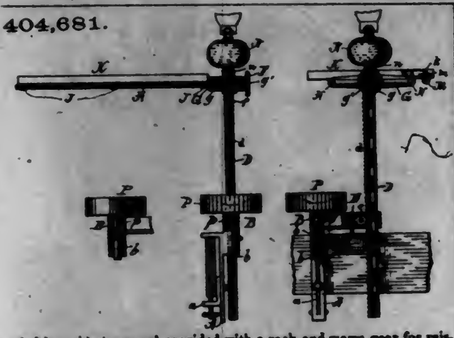


Claim.—A telephone-transmitter carried in a cup formed on a casting to which the mouth-piece is attached, said casting having an extension terminating in a sleeve sliding on a vertical rod secured to box containing induction-coil, or to any other suitable base, and means for securing sleeve at desired height, as set forth.

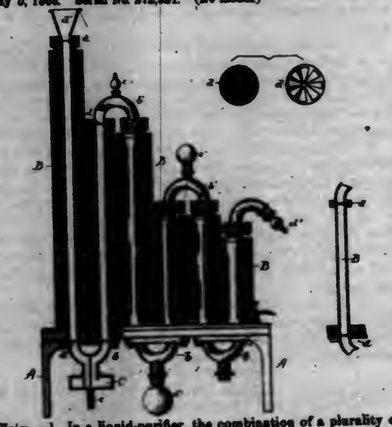
404,681. APPLIANCE FOR SICK-BEDS. GEORGE S. BROWN, Atlanta, Ga. Filed June 25, 1888. Serial No. 278,156. (No model.)

Claim.—In an apparatus for sick-beds, the combination of the clamp attached to the side rail of the bedstead, the standards D, carried by said clamp and provided with a rack and worm gear for raising and lowering the same, the spring-actuated clutch consisting of the arm F, provided with dentations, and the head G, having corresponding dentations, and the stud g′, the table E, having a hinged part h, the strap M, and screw m, for adjusting said hinged part of the table, all arranged to secure said table at any desired inclination, substantially as and for the purpose set forth.

404,681.



404,682. APPARATUS FOR PURIFYING AND AGING LIQUORS. SAMUEL G. GAMBLE, Washington, D. C., assignor, by direct and mesne assignments, to the Liquid Purifying Company, of West Virginia. Filed May 5, 1888. Serial No. 272,921. (No model.)



Claim.—1. In a liquid-purifier, the combination of a plurality of vertically-arranged hollow cores or legs connected together by return-couplings and corresponding electro-magnetic coils around said cores, substantially as described.

2. In a liquid-purifier, a conduit consisting of a series of tubular sections of magnetic material and an electro-magnetic helix surrounding said sections, the same being connected at the top by non-magnetic material and at the bottom by magnetic material, substantially as described.

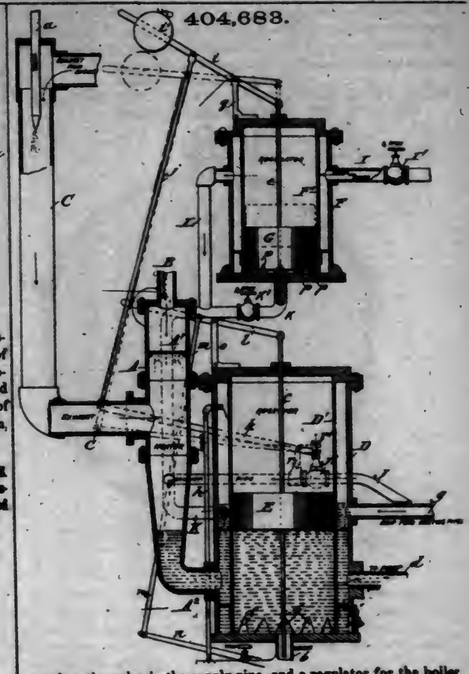
3. In a liquid-purifier, the combination of a hollow core of magnetic material serving as a conduit for the passage of liquid, interposed foraminated diaphragms, and an electro-magnetic helix or coil around said core, substantially as described.

4. In a liquid-purifier, an electro-magnetic conduit having a plurality of coupled tubes and foraminated diaphragms at the joints of the coupling, substantially as described.

5. In a magnetic purifier, the combination of a series of tubes of magnetic material arranged in pairs, which are connected magnetically at their lower ends and non-magnetically at their upper ends, and a series of electro-magnetic helices corresponding with the cores or tubes, substantially as and for the purposes specified.

6. The combination, with a series of electro-magnetic tubes, of a sediment drum or receptacle located below and connected with said tubes, substantially as and for the purposes specified.

404,683.



404,683. FEED-WATER HEATER AND REGULATOR. NICHOLAS CLUTE, Schenectady, N. Y. Filed Jan. 23, 1889. Serial No. 297,291. (No model.)

Claim.—1. As an improvement in feed-water heaters, the combination, with the boiler, of the water-receiver having a float connected to the valve in the supply-pipe, and a regulator for the boiler connected to the valve in the relief-pipe, substantially as described.

2. The combination, with the water-heating chamber having a transverse perforated diaphragm, of the water-supply pipe entering the upper end thereof, the water-receiver entered by the lower end of the heating-chamber, and a float within the receiver, and connecting mechanism between it and a valve in the supply-pipe, substantially as described.

3. The combination, with the water-heating chamber having a perforated diaphragm, of the water-supply pipe entering the top thereof, the steam-exhaust pipe entering the chamber below the perforated diaphragm, the water-pipe spraying into the exhaust, the receiver entered by the lower end of the heating-chamber, and the float within the receiver connecting by suitable mechanism with a valve in the supply-pipe, substantially as described.

4. The combination, with the water-heater and the water-supply pipe entering it, of the boiler, the water-receiver entered by the lower end of the heater, the float in said receiver, the connecting mechanism between the float and a valve in the supply-pipe, and the regulator for the boiler, substantially as described.

5. The combination of the boiler, its feed, overflow, and relief pipes, the regulator-chamber, a float therein, and connecting mechanism between it and a valve in the relief-pipe, substantially as described.

6. The combination, with the boiler, of the regulator-chamber, an overflow-pipe leading from the boiler to said regulator-chamber, a float within the regulator, the receiver from which the water is conveyed to the boiler, the water-heater connecting with the receiver, the relief-pipe leading from the boiler-feed to the water-heater, and connecting mechanism between the float and a valve in the relief-pipe, substantially as and for the purpose described.

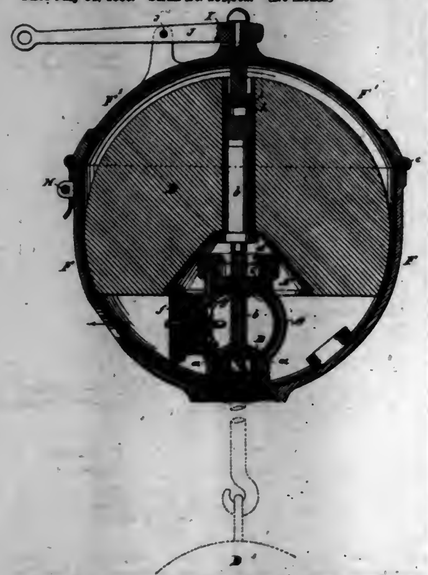
7. The combination of the boiler, its feed, overflow, and relief pipes, the regulator-chamber, the float therein, connecting mechanism between it and a valve in the relief-pipe, the water-heater entered by the relief, a supply-pipe entering the heater, the water-receiver, a float within the receiver, and connecting mechanism between it and a valve in the supply-pipe, substantially as described.

8. The combination of the boiler, the water-receiver, the pump, the pipe leading from the receiver to the pump, and the pipe leading from the pump to the boiler, the water-heater, the water-supply pipe entering the float in the receiver, and the connecting mechanism between the float and a valve in said supply-pipe, substantially as described.

9. The combination of the boiler, the pump, a passage from the pump to the boiler, the water-receiver having a float connected to a

valve in the supply-pipe, a water-passage between the receiver and pump, the regulator for governing the water-level in the boiler, having a float connected to a valve in the relief-pipe, and the water-heater, all arranged and operating substantially as described.

404,684. SAFETY-VALVE. JAMES M. COLVER, New York, N. Y. Filed July 31, 1888. Serial No. 281,502. (No model.)



Claim.—1. The combination of the shell A, having the valve-seat *a* at its lower end portion, the cylinder A' at its upper end portion of a diameter greater than the valve-seat, and the lateral steam-outlet *f*, located at a point between the said cylinder and valve-seat, the solid valve B, having a rigid stem *b*, of less diameter than the valve, the piston C, arranged on the stem and fitting the cylinder, and a weight D, acting on the stem, substantially as described.

2. The combination, with the shell A, of the solid valve B, seated in said shell, the cylinder A', formed in the shell and having a larger diameter than the valve, the solid piston C, fitted into said cylinder and being rigidly attached to the valve-stem *a*, a weight acting upon the valve-stem, a steam-inlet below the valve B, a steam-outlet which communicates with the shell A between the valve B and the piston C, and a movable check against the escape of steam through the steam-outlet, substantially as shown and described.

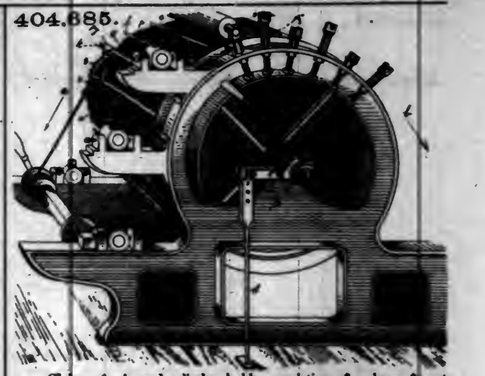
3. The combination, with the valve-shell A, having a valve-seat *a*, a cylinder A', and a lateral steam-outlet *f*, located between the cylinder and valve-seat, of a solid valve B, the piston C, the lengthwise-movable and axially-revoluble valve-stem *b*, rigidly connecting the valve and piston, and the spiral projection *k* on the valve, substantially as described.

4. The combination of a valve-shell A, the solid valve B, having the rigid valve-stem and the weight D on the stem, of the lock-box F, mounted on the valve-shell, inclosing said shell, stem, and weight, or spring, and a vertical lifting-rod I, extending through the top of the lock-box, and on the lower end of which rod the valve-stem is movable lengthwise, substantially as described.

5. The combination of a valve-shell A, the solid valve B therein, having a rigid valve-stem provided at its upper end with a recess *h*, the weight D on the stem, the lock-box F, inclosing the shell, spring, and stem, the rigid vertical rod I, projecting through the top of the lock-box and having a head *i* at its inner end loosely engaging the recess of the stem, and the pivoted lever J, engaging the upper end of the rigid rod, substantially as described.

6. The combination, with the valve-shell A, having the steam-inlet *e* and lateral steam-outlet *f*, the valve B, the stem *b*, and the weight D on the stem, of the lock-box F, carried by the valve-shell, inclosing said shell, weight or spring, and stem, and provided with orifices in line with the steam inlet and outlet of the valve-shell, substantially as described.

404,685. DEVICE FOR HOLDING CYLINDERS WHILE ATTACHING CARD-CLOTHING THERETO. IRVING R. COBURN, Worcester, Mass. Filed May 19, 1888. Serial No. 274,444. (No model.)



Claim.—1. A card-cylinder holder consisting of a sleeve for attachment to the shaft of the main cylinder, a collar having a roughened periphery secured to said sleeve, a retaining device for engagement with said collar, a movable support for said retaining device, and means for sustaining said support, all substantially as shown and described.

2. A card-cylinder holder consisting of a sleeve with a collar having a toothed or ratchet periphery attached to said sleeve, a pawl for engagement with said ratchet, a movable support for said pawl, and means for sustaining said support, all substantially as shown and described.

3. A card-cylinder holder consisting of a sleeve for attachment to the shaft of the main cylinder, a collar having a roughened periphery secured to said sleeve, a retaining device for engagement with said collar, a movable support for said retaining device, means for sustaining said support, and a bar for releasing the retaining device from engagement with the collar, all substantially as shown and described.

4. The combination of the sleeve 1, having a collar with a roughened periphery attached thereto, the bars 2, having the rings 20, a retaining device for engagement with said collar, and a support for said bars and retaining device, all substantially as shown and described.

5. The combination of the sleeve 1, having a collar with a roughened periphery attached thereto, the bars 2, having the rings 20, a retaining device for engagement with said collar, a support for said bars and retaining device, and the bar 9, all substantially as shown and described.

6. The combination of the sleeve 1, having a collar with a roughened periphery attached thereto, the bars 2, having the rings 20, a retaining device for engagement with said collar, and the brace 18, all substantially as shown and described.

404,686. GRINDING-MACHINE. RUDOLPH CONRADER, Erie, Pa. Filed Aug. 13, 1888. Serial No. 282,606. (No model.)

Claim.—1. The combination, in a grinding-machine, of a grinding-carriage supported by and traveling on an oscillating supporting-bed, with a traveling feed-nut, a feed-screw operating said nut, and a flexible connection between said grinder-carriage and said feed-nut, substantially as and for the purpose set forth.

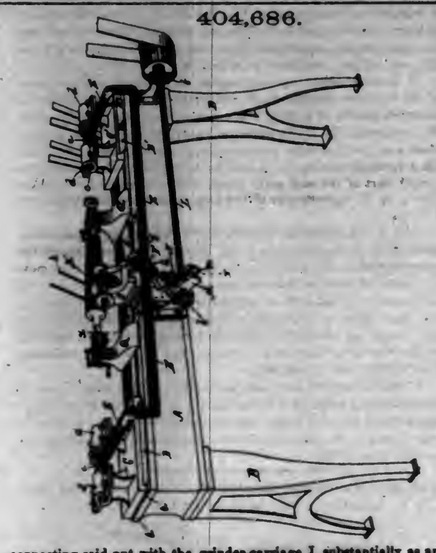
2. The combination, in a grinding-machine, of adjustable head-blocks on the machine-frame, an oscillating bell-crank shaft mounted in said head-blocks, and an adjustable traveling grinder-carriage mounted on said shaft and supported thereby, with a shaft and crank mechanism connecting with and operating said oscillating shaft, substantially as and for the purpose set forth.

3. The combination, in a grinding-machine, of adjustable tail-blocks mounted on ways on the machine-frame and adapted to support work to be ground, with a grinder-frame mounted upon an oscillating bell-crank shaft adapted to be moved in and out to and from the work to be ground, said grinder frame being adapted to travel laterally along said work on an adjustable bed secured to said oscillating bell-crank shaft, substantially as and for the purpose set forth.

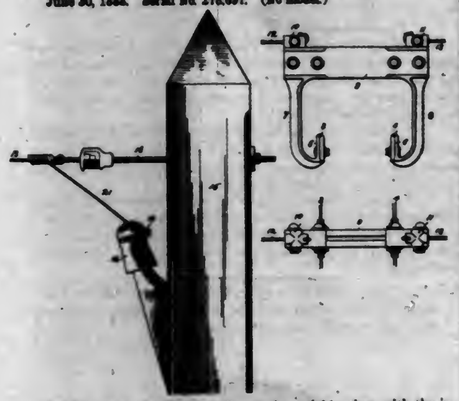
4. The combination, in a grinding-machine, of a grinder-carriage traveling on an adjustable bed mounted upon a laterally-adjustable oscillating bell-crank shaft, with a flexible arm connecting said carriage with a feed-nut, and a reversible feed-screw operating said feed-nut, substantially as and for the purpose set forth.

5. The combination, in a grinding-machine, of the heads O O', adapted to be adjusted across the bed A, and the oscillating bell-crank shaft E, mounted thereon, with the adjustable bed H, mounted on the shaft E, the grinder-carriage J, a rotary grinder K on said carriage J and traveling on said bed H, the crank M, connected to and operating to oscillate the shaft E and the grinder mechanism mounted thereon, and the reversible feed-screw P, nut O, and jointed arm *l e*, connecting said nut with the grinder-carriage J, substantially as and for the purpose set forth.

404,686.



404,687. ELECTRIC RAILROAD. LEO DAFT, Plainfield, N. J. Filed June 20, 1888. Serial No. 278,097. (No model.)



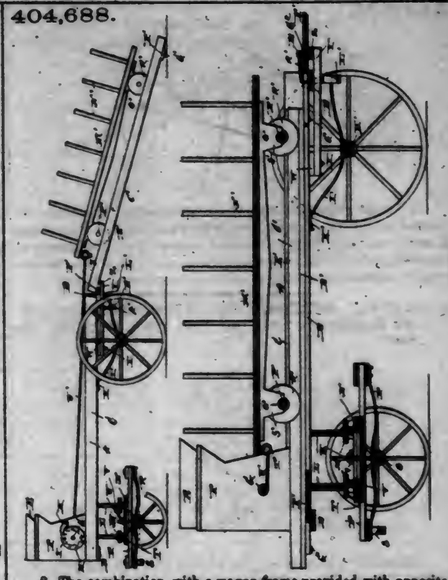
Claim.—1. In an electric railway, the combination, with the insulated plate, of the vise-grips secured thereto and supporting the trolley-conductors, posts arranged along each side of the track supporting the main-current conductors, wire-connectors between the posts and plate serving to support the plate and conduct the main current to the trolley-conductors, and electric connections between the connectors and the main-current conductors, substantially as described.

2. In an electric railway, the combination, with the insulated plate, of the vise-grips supporting the trolley-conductors at their ends, posts arranged along each side the track supporting the main-current conductors, wire-connectors attached to the insulated plates at one end and having their other ends attached to the posts and provided with tension-adjusting devices, and electric connections between the connectors and main-current conductors, substantially as described.

404,688. DRAY. JAMES L. DAVIS, Kimberton, Pa. Filed Mar. 23, 1889. Serial No. 304,260. (No model.)

Claim.—1. The combination, with a wagon-frame provided with opposite tracks, one arranged at each side thereof, of a skid provided with opposite side bars adapted to register in width with the side tracks of the wagon and loosely connected to be collapsed laterally and adapted to be inserted between the side tracks of the wagon, substantially as specified.

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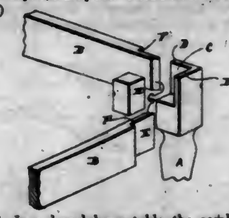


2. The combination, with a wagon-frame provided with opposite side tracks, of a truck mounted for movement thereon, and a laterally collapsible and movable skid designed to fit within the side tracks of the wagon and withdrawn and extended to register with said tracks, substantially as specified.

3. The combination, with the frame A, having the removably-extending bars Y, terminating in the chamfered bar Z, and having the bar D, provided with chain A', terminating in the hook B', of the skid provided with the staple G^3, adapted to engage with the hook and to rest upon the chamfered edge of the bar Z, substantially as specified.

4. The dray having the body provided with the longitudinal track boards or bars B, the bed or body having the supporting wheels or rollers, and the skid or inclined track comprising the side-track boards D', and the cross-bars F', pivotally connected thereto, whereby said skid or inclined track is adapted to be collapsed, substantially as described.

404,689. TABLE. JAMES M. DAVIS, Hudson, Ind., assignor of one-half to Silas Taylor, same place. Filed Feb. 2, 1888. Serial No. 298,422. (No model.)



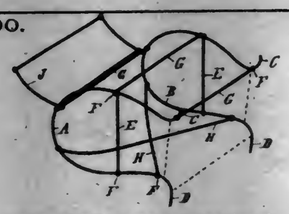
Claim.—1. In a knockdown table, the combination of the leg flanged at its upper end along its outer sides, a clamping-block seated in the recess thus formed, a screw or bolt passing diagonally through said block and through the corner of the flanges, and the frame-sides having mitered ends abutting against each other, substantially as herein set forth.

2. The combination of the table-leg having a rectangular recess at its upper end forming flanges D, the frame-sides B, having recesses E, forming shoulders F, and beveled or mitered ends, the clamping-blocks H, and screws or bolts I, substantially as and for the purpose set forth.

404,690. ATTACHMENT FOR LAWN-MOWERS. FRANK A. DELAND, Memphis, Mich. Filed Sept. 26, 1888. Serial No. 286,455. (No model.)

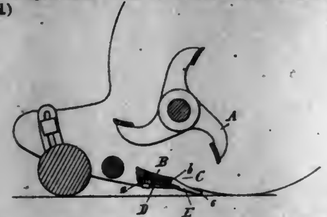
Claim.—1. An attachment to lawn-mowers, consisting of a receptacle made of a skeleton frame of spring-wire bent to form a contracted mouth, and said wire having projecting ends to engage parts of the mower to hold said frame thereto, and a fabric covering said frame, substantially as described.

404,690.



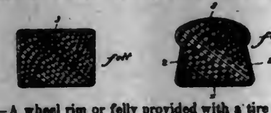
2. An attachment to lawn-mowers, consisting of a flexible receptacle made of a skeleton spring-wire frame formed of the loops A and B, connected by transverse and diagonal bars, substantially as described, and with the projecting ends C and D, and of an outer covering of fabric, substantially as and for the purpose described.

404,691. ATTACHMENT FOR LAWN-MOWERS. FRANK A. DELAND, Memphis, Mich. Filed Oct. 3, 1888. Serial No. 287,057. (No model.)



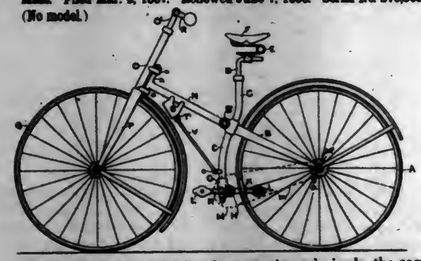
Claim.—In a lawn-mower, the combination, with the stationary knife-bar thereof, of a comb integrally cast in one piece, provided with a flat body D, having suitable means of attachment to said knife-bar, and provided with the tapering and forwardly-projecting teeth E, the upper faces of which are flush with the upper surface of the knife-bar at their rear ends, forming shoulders *b*, and inclined downwardly and forwardly therefrom, substantially as described.

404,692. WHEEL-TIRE. RUDOLPH W. DOMBOYER, South Bend Ind. Filed Mar. 14, 1889. Serial No. 303,205. (No model.)



Claim.—A wheel rim or felly provided with a tire of felt, as and for the purposes set forth.

404,693. VELOCIPEDE. ALFRED EASTHOPE, Wolverhampton, County of Stafford, England, assignor to Albert H. Overman, Boston, Mass. Filed Mar. 8, 1887. Renewed June 7, 1888. Serial No. 276,305. (No model.)



Claim.—1. In a rear-driving front-steering velocipede, the combination, with a steering-frame carrying one or more steering-wheels and having a transverse handle-bar connected with it, of a main frame having the said steering-frame movably connected with its forward end, carrying one or more driving-wheels, having a seat-support and a crank-shaft support and provided with a vertically-acting hinge, and an elastic connection joining parts of the main frame on opposite sides of the hinge, whereby the frame cushions vertically, substantially as set forth.

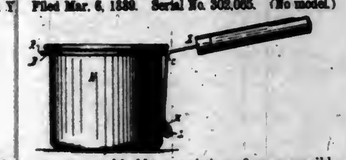
2. In a rear-driving front-steering velocipede, the combination, with a steering-frame carrying one or more steering-wheels and having a transverse handle-bar connected with it, of a main frame having the said steering-frame movably connected with its forward end, carrying one or more driving-wheels, having a seat-support and a crank-shaft support and provided with a vertically-acting hinge, and an elastic connection joining the forward part of the said main frame with the crank-shaft support which is on the opposite side of the hinge therefrom, substantially as set forth.

3. In a velocipede, the combination, with a steering-frame carrying one or more steering-wheels and having a transverse handle-bar connected with it, of a main frame having the steering-frame movably connected with its forward end, carrying one or more driving-wheels and provided with a seat-support, a crank-shaft support, and with a vertically-acting hinge, and an elastic connection joining the forward part of the said main frame with the crank-shaft support which is on the opposite side of the hinge therefrom, substantially as set forth.

4. In a velocipede, the combination, with a steering-frame carrying one or more steering-wheels and having a transverse handle-bar connected with it, of a main frame having the said steering-frame movably connected with its forward end, carrying one or more driving-wheels and provided with an upright seat-support and a depending crank-shaft support, substantially as shown, and with a vertically-acting hinge, and an elastic connection joining parts of the frame on opposite sides of the said hinge, whereby the same has a cushioning action, substantially as set forth.

5. In a velocipede, the combination, with a main frame having a vertically-acting hinge, of a tie connecting parts of such frame on opposite sides of the said hinge, and consisting, essentially, of a rod, a spring located at one end thereof, and a box inclosing such spring, substantially as set forth.

404,694. HOLDER FOR VESSELS. JOHN P. BUSTIS, New York, N. Y. Filed Mar. 6, 1889. Serial No. 302,065. (No model.)



Claim.—1. A vessel-holder consisting of an expansible and contractible spring-clamp, a handle, and a hooked catch connected with the handle, for steadying the bottom of the vessel, said clamp and handle joined by a hinge which permits the clamp to move to and fro, substantially as described.

2. A vessel-holder consisting of the catch for steadying the bottom of the vessel, the handle connected with the catch, and the expansible spring-clamp connected with the handle for encircling the top part of the vessel, substantially as described.

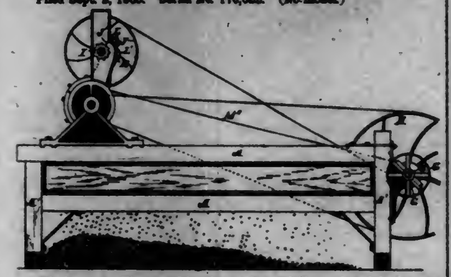
3. A vessel-holder consisting of a catch for steadying the bottom of the vessel, the handle connected with the catch, and the ring-clamp connected with the handle for encircling the top part of the vessel, said ring-clamp being provided with supporting-lugs R, substantially as described.

404,695. UMBRELLA OR PARASOL. FRENCH S. EVANS, Washington, D. C., assignor of one-fourth to Aldis D. Browne, same place. Filed Sept. 15, 1883. Serial No. 285,442. (Model.)



Claim.—The combination, with the frame and stick of an umbrella or parasol of ordinary form, of a removable cover, made of textile or other suitable material, provided with socketed tips in correspondence with the ribs of the frame, an externally-screw-threaded sleeve removably attached to said stick, and an internally-screw-threaded flaring or bell-mouthed cap to connect with said sleeve and the notch of the frame for the purpose of securing the cover in place, constructed and arranged substantially as and for the purpose described.

404,696. COTTON-SEED HULLER. WILLIAM R. PEE, Cincinnati, and JAMES S. ZERBE, Hartwell, Ohio, assignors, by mesne assignments, to the National Cotton Seed Oil and Huller Company, Memphis, Tenn. Filed Sept. 2, 1885. Serial No. 176,022. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, in a cotton-seed huller, of the hopper, the fluted feed-roll mounted to revolve therein, a hinged gate having a flange projecting inward in the direction of and above the feed-roll, and a set-screw for adjusting said flange with relation to the feed-roll, so as to regulate the feed from the hopper.

2. The conveyer-shaft C, having its ends convexed, in combination with gudgeons D, having concaved seats and provided with tapering bores, and adjusting-rods for adjustably securing said gudgeons to the end of the shaft, substantially as set forth.

3. The hollow cylinder N, cast in one piece, having ribs S, and curved depressions between said ribs and shoulders or offsets T, forming cutting-edges upon said ribs, substantially as set forth.

4. A concave V for cotton-seed hullers, substantially as hereinbefore set forth, having zigzag ribs W, arranged in pairs, as shown, the ribs of each pair being parallel with each other and the ribs of each pair being arranged at an angle to the ribs of the adjacent pair.

5. The combination, substantially as specified, in a cotton-seed huller, of the hollow hulling-cylinder having longitudinal ribs S and the concave V, having zigzag ribs arranged in pairs, as shown, the line of the ribs of each pair being parallel to each other and at an angle to the line of the pair adjacent.

6. The combination, substantially as specified, of the reversible hulling-cylinder having ribs S, intervening depressions S', and shoulders T, forming edges upon each side of the ribs, and the concave V, having zigzag ribs W.

7. In a cotton-seed huller, the combination, substantially as specified, of the frame A A', the separator consisting of the perforated screen B and separator-shaft within it mounted in said frame, the huller consisting of the hulling-cylinder and its concave mounted upon said separator, the hopper and its fluted feed-roll mounted upon the huller, and suitable means, such as shown, to transmit power from the same shaft to the feed-roll, huller, and separator.

404,697. SPRING HOLDER OR CLASP FOR PENS OR PENCILS. FREDERICK J. W. FISCHER, New York, N. Y., assignor to the Eagle Pencil Company, same place. Filed Mar. 22, 1889. Serial No. 304,283. (No model.)



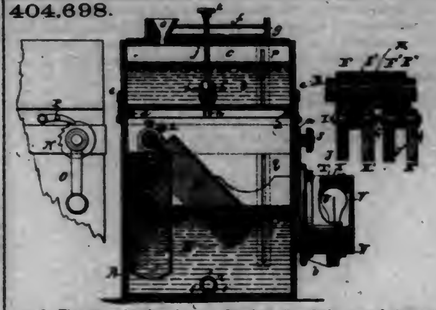
Claim.—The combination, with the base or supporting plate of the clasp, of spring wires or shanks secured at one end thereto, and at their free ends bent over upon themselves to form roll-supports, and rolls, of rubber or other suitable material, mounted on said supports, these parts being constructed and arranged for the purposes hereinbefore set forth.

404,698. PORTABLE ELECTRIC LANTERN. WILLIAM FRIEDMUTH, Philadelphia, Pa. Filed Nov. 8, 1888. Serial No. 290,222. (No model.)

Claim.—1. The combination, in a galvanic cell, of a containing-vessel, a rock-shaft extending across the same, an electrode rigidly secured at its upper portion to said shaft, and an electrode loosely secured to said shaft, the said shaft freely rotating in said last-mentioned electrode and carrying said first-mentioned electrode with it during its movement of rotation, substantially as described.

2. The combination, in a galvanic cell, of the vessel A, rock-shaft D, electrodes H' J', and rings E' F', supporting said electrodes, substantially as described.

404,698.



3. The combination, in a galvanic cell, of the vessel A, rock-shaft D, of insulating material, electrodes H' J', rings E' F', supporting said electrodes, and interposed ring M, of insulating material, substantially as described.

4. In a galvanic cell, the combination of a vessel containing the electrodes and electrolyte, a closed chamber or compartment detachably supported upon and hermetically closing the said vessel, and a valve in the lower part of said chamber, the said chamber being adapted to contain a supply of electrolytic liquid, and the said valve being disposed so as to govern the escape of said liquid from said chamber into said vessel, substantially as described.

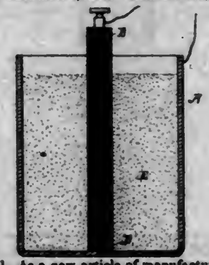
5. In combination with the vessel A, containing the elements of a galvanic cell and provided with the slot *q*, covered with transparent material, of the closed chamber *c*, supported upon and hermetically closing said vessel and provided with the slot *p*, covered with transparent material, a valve arranged in the bottom of said chamber and operating to govern the escape of liquid from said chamber, and a means of operating said valve outside of said chamber, substantially as described.

6. The combination of a containing-vessel divided into compartments, as B B', a rock-shaft D, extending across said compartments, a pair of electrodes, as J H J' H', in each of said compartments, a series of conducting-rings, as E F E' F', upon said shaft and supporting said electrodes, the rings, as F E', supporting the positive and negative electrodes, respectively, of adjacent compartments being in electrical contact, and the rings, as E F', supporting the positive and negative electrodes in the same compartment being insulated from each other, substantially as described.

7. The combination of the vessel A, containing the elements of a galvanic cell, plates R R' upon the exterior of said vessel and respectively electrically connected to the electrodes of said cell, an incandescing electric lamp and support T therefor, and means, such as clamping-screws S S', for detachably connecting said support to said plates R R', substantially as described.

8. The combination, with the vessel A, containing the elements of a galvanic cell, circuit-connections, and clamping devices, such as screws S S', of the cylinder T, circuit-connection, and lamp U therein, substantially as described.

404,699. GALVANIC BATTERY. WILLIAM FRIEDMUTH, Philadelphia, Pa. Filed Nov. 8, 1888. Serial No. 290,223. (No model.)



Claim.—1. As a new article of manufacture, a non-conducting porous insoluble refractory solid in dry comminuted form, containing in its pores a substance or substances capable of acting as a depolarizer in a galvanic cell, substantially as described.

2. As a new article of manufacture, pumice-stone in dry comminuted form, containing in its pores a substance or substances capable of acting as a depolarizer in a galvanic cell, substantially as described.

3. As a new article of manufacture, pumice-stone in dry comminuted form, containing in its pores bichromate of potash, substantially as described.

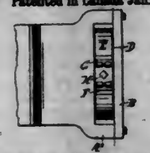
4. In combination with the electrodes of a galvanic cell, a mass of pumice-stone in comminuted form interposed between said electrodes, containing in its pores a depolarizing substance, and saturated with an electrolytic solvent of said substance, substantially as described.

404,700. PACKING FOR METALLIC BOXES. HENRY R. GILLINGHAM, Baltimore, Md., assignor to M. C. Cook, same place. Filed Mar. 15, 1889. Serial No. 303,423. (No model.)



Claim.—A packing for cans provided with screw-covers, and for other vessels of capacity, composed of comminuted cork saturated with linseed-oil and provided with a backing of canvas, substantially as shown.

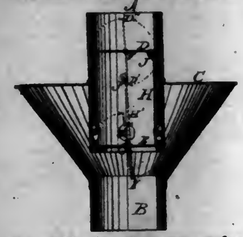
404,701. DUST-GUARD FOR CAR-AXLE BOXES. LOUIS GOULLOUD, Montreal, Quebec, Canada, assignor to the Union Bearing and Lubricator Company, Portland, Me. Filed Jan. 4, 1889. Serial No. 295,478. (No model.) Patented in Canada Jan. 31, 1889, No. 30,680.



Claim.—1. The combination, with the back plate of an axle-box, of a supplementary plate secured thereto, leaving space between them, the inner faces of both plates being trued up, a cork disk mounted on the axle, and a band partially surrounding the periphery of the disk and provided with a device for tightening it up on same, all substantially as herein set forth.

2. The combination, with the back plate A of an axle-box, of the plate B, secured to same, single cork disk D, mounted on axle between plates, strap E, encircling such disk, plates F and G, and set-screw H, all substantially as herein described.

404,702. FUEL-SAVING DEVICE. ARTHUR C. GREENLEE, Fergus Falls, Minn. Filed June 18, 1888. Serial No. 277,451. (No model.)



Claim.—1. The combination of an entrance-flue B, a radiating-chamber C, escape-flue A, with openings K from radiating-chamber, primary damper D, hung on shaft F, joint J, connecting-rod H, secondary damper E, hung on shaft G, counterpoised on side N, and stops O, all substantially as described.

2. The combination of an escape-flue having lateral openings near one end, a radiating-chamber surrounding the laterally-open portion of the said flue, dampers arranged in the flue above and below the lateral openings, respectively, and a rod connecting the said dampers, whereby both may be operated together, substantially as specified.

404,703. MOLD FOR THE MANUFACTURE OF ARTIFICIAL TEETH. WILLIAM R. HALL, Philadelphia, Pa. Filed Oct. 29, 1888. Serial No. 289,431. (No model.)





Claim.—In an artificial-tooth mold, the molding-frame A A', in combination with the mold-shells *a a'*, the backing-plate *b*, in which the mold-shells are set, the frame provided with the pins *c c*, and the orifices *c' c'*, substantially as hereinbefore set forth and described.

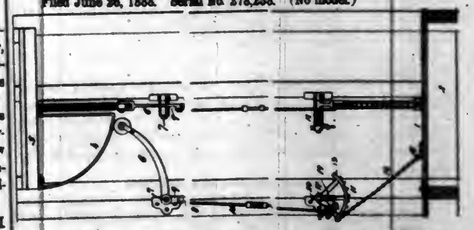
404,704. PIANO-ACTION. SIEGFRIED HARNISS, New York, N. Y. Filed Nov. 8, 1888. Serial No. 290,296. (No model.)



Claim.—1. In a grand-piano action, a hammer the shank of which is extended beyond the pivot and provided with a perforated enlargement or eye at the rear end, substantially as set forth.

2. In a grand-piano action, a hammer the shank of which is extended beyond the pivot of the hammer-pivot, the extension being provided with a slotted opening and with a perforated enlargement or eye at the rear end, substantially as set forth.

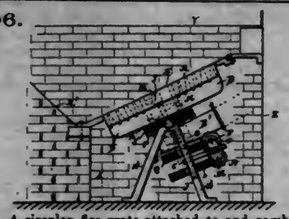
404,705. SELF-CLOSING HATCHWAY. EMIL J. HERRAN, St. Louis, Mo., assignor to the Safety Hatch-Door Company, same place. Filed June 26, 1888. Serial No. 278,238. (No model.)



Claim.—In a self-closing hatchway, the combination of the door, segment, chain 14, connecting the door to the segment, rod 10, lever 6, and spring 18, having arm 21, against which the segment bears when the door has nearly reached its closed position and not until then, substantially as and for the purpose set forth.

404,706. SELF-FEEDING FURNACE-GRATE. LEWIS HOPCRAFT, Stamford Hill, County of Middlesex, England. Filed Mar. 26, 1889. Serial No. 304,967. (No model.) Patented in England Nov. 22, 1886, No. 13,135.

404,706.



Claim.—A circular fire-grate attached to and combined with a central tube containing a worm, which grate and tube can be made to revolve in one direction while the worm is made to revolve in the opposite direction for the purpose of feeding fuel to the furnace and distributing it over the grate, the whole combination being capable of being tilted and worked at any desired angle.

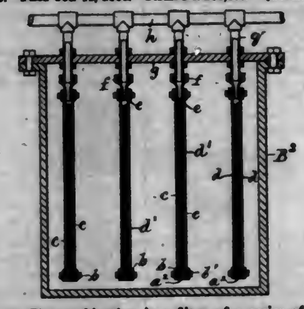
404,707. COFFEE-POT. FRANK A. HOVEY, Farmington Falls, assignor of one-half to Herbert Hivell, East Wilton, Me. Filed Feb. 26, 1888. Serial No. 301,865. (No model.)



Claim.—1. The pot A, having the imperforate truncated-cone-shaped concavity B, in combination with the perforated receiving-cylinder having its bottom concaved to fit the bottom B, substantially as specified.

2. The combination of the coffee-pot provided with a concave bottom, the perforated receiver provided with a concave bottom fitting around the concave bottom of the pot, the lid on the receiver, and the vertical rod or handle affixed at its lower end to the center of the bottom of the receiver and passing through a central opening in the lid thereof, substantially as and for the purpose specified.

404,708. APPARATUS FOR FILTERING. JOHN W. HYATT, Newark, N. J. Filed Oct. 11, 1888. Serial No. 287,852. (No model.)

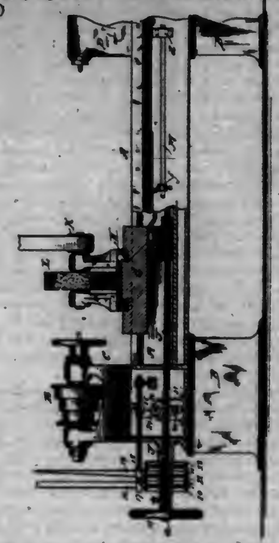


Claim.—1. The combination, in a filter, of a series of sheets of filtering material clamped together in pairs, with intervening packings between the pairs at their peripheries, heads pressed upon the entire series at its opposite ends, a discharge-pipe, a series of outlet-apertures formed through all the pairs of sheets and connected together and to the discharge-pipe by intermediate packings, and a series of openings formed through all the pairs to distribute the inlet-fluid between the same as an inlet, as and for the purpose set forth.

2. The combination, in a filter, of a series of sheets of filtering material clamped together in pairs, with intervening packings between the pairs at their peripheries, heads pressed upon the entire series at its opposite ends, a discharge-pipe, loose abrading material inserted in the separate spaces between the pairs, a series of outlet-apertures formed through all the pairs of sheets and connected together and to the discharge-pipe by intermediate packings, an outlet, and a series of openings formed through all the pairs of sheets to distribute the inlet-fluid between the same, as and for the purpose set forth.

3. A filter consisting in a series of pairs of flexible sheets and provided with an outlet-aperture, and a plate of metal having granular material cemented thereto being inserted between the sheets of each pair, as and for the purpose set forth.

404,709. DRIVING AND BELT-SHIFTING MECHANISM. ELWIN R. HYDE, Springfield, Mass. Filed Feb. 1, 1888. Serial No. 262,603. (No model.)



Claim.—1. In combination, a bed having slideways, a carriage capable of a reciprocatory movement thereon, a feed-screw shaft engaging said carriage, provided with loose and fixed pulleys 10, 12, and 11 and having a fixed momentum-wheel 15, the reversely-speeded belts 13 and 14, and a belt-shifter engaging said belts, substantially as described.

2. The combination, with a reciprocating carriage and a suitably-journaled feed-screw engaging therewith, having loose and fixed pulleys 10, 12, and 11 and a balance-wheel, of a belt-shifter shaft engaging said belts, a horizontal transverse shaft 20, provided with a crank-arm 24, engaging said belt-shifter shaft and having the arrow-head 28, and an independent spring-actuated arrow-head 30, substantially as and for the purpose described.

3. The combination, with a suitably-journaled feeding-screw shaft J, provided with a gear, and a reciprocating bed engaging said shaft J, a rotable shaft having a gear meshing with said feed-screw gear and having mounted thereon loose and fixed pulleys 10, 12, and 11, and reversely-speeded belts 13 and 14, of a belt-shifter shaft engaging said belts, a horizontal transverse rotatable shaft 20, provided with a crank-arm 24, engaging said belt-shifter shaft, which has the arrow-head 28, and an independent spring-actuated arrow-head 30, substantially as and for the purpose described.

4. The combination, with a suitably-journaled feeding-screw shaft J, provided with a gear, and a reciprocating bed engaging said shaft J, a rotatable shaft having a gear meshing with said feed-screw gear and having mounted thereon loose and fixed pulleys 10, 12, and 11 and a balance-wheel, and reversely-speeded belts 13 14, of a belt-shifter shaft engaging said belts, and a transverse rotatable shaft 20, provided with a crank-arm 24, engaging said belt-shifter shaft, substantially as and for the purpose described.

5. The combination, with a suitably-journaled feeding-screw shaft J, provided with a gear, and a reciprocating bed engaging said shaft J, a rotatable shaft having a gear meshing with said feed-screw gear and having mounted thereon loose and fixed pulleys 10, 12, and 11 and a balance-wheel, and reversely-speeded belts 13 14, of a belt-shifter shaft engaging said belts, a transverse rotatable shaft 20, provided with a crank-arm 24, engaging said belt-shifter shaft, and having the arrow-head 28, and an independent spring-actuated arrow-head 30, substantially as and for the purpose described.

6. The combination, with a bed or frame, a suitably-journaled feeding-screw shaft J, provided with a gear, and a carriage engaging said feed-screw shaft and adapted to travel along said bed, the shaft M, provided with the dogs *f f*, a rotatable shaft having a gear mesh-

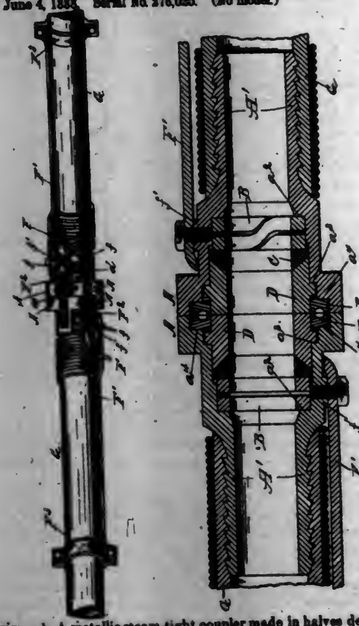
ing with said feed-screw gear and having mounted thereon loose and fixed pulleys 10, 12, and 11, and reversely-speeded belts 13 14, of a belt-shifter shaft engaging said belts, a horizontal transverse shaft 20, provided with a crank-arm 21, engaging said dog-shaft M, and a crank-arm 24, engaging said belt-shifter shaft, which has the arrow-head 28, and an independent spring-actuated arrow-head 30, substantially as and for the purpose described.

7. The combination, with a bed or frame, a suitably-journaled feeding-screw shaft J, provided with a gear, and a carriage engaging said feed-screw shaft and adapted to travel along said bed, the shaft M, provided with the dogs *f f*, a rotatable shaft having a gear meshing with said feed-screw gear and having mounted thereon loose and fixed pulleys 10, 12, and 11 and the balance-wheel 15, and the reversely-speeded belts 13 14, of a belt-shifter shaft engaging said belts, a horizontal transverse shaft 20, provided with a crank-arm 21, engaging said dog-shaft M, and a crank-arm 24, engaging said belt-shifter shaft, which has the arrow-head 28, and an independent spring-actuated arrow-head 30, substantially as and for the purpose described.

8. The combination, with a bed or frame, a suitably-journaled feeding-screw shaft J, provided with a gear, and a carriage engaging said feed-screw shaft and adapted to travel along said bed, the shaft M, provided with the dogs *f f*, and the adjustable collar 23, having lug 22, a rotatable shaft having a gear meshing with said feed-screw gear and having mounted thereon loose and fixed pulleys 10, 12, and 11 and the balance-wheel 15, and the reversely-speeded belts 13 14, of a belt-shifter shaft 16, engaging said belts provided with the adjustable collar 27, having lug 26, a horizontal transverse shaft 20, provided with a slotted crank-arm 21, engaging said lug 22, and a slotted crank-arm 24, engaging said lug 26, provided with the arrow-head 28, and an independent spring-actuated arrow-head 30, substantially as and for the purpose described.

9. The combination, with a bed or frame, a suitably-journaled feeding-screw shaft J, provided with a gear, and a carriage engaging said feed-screw shaft and adapted to travel along said bed, the shaft M, provided with the adjustable dogs *f f*, a rotatable shaft having a gear meshing with said feed-screw gear and having mounted thereon loose and fixed pulleys 10, 12, and 11 and the balance-wheel 15, and the reversely-speeded belts 13 14, of a belt-shifter shaft 16, having belt-shifting hooks 17 18, and the supplemental parallel guiding-shaft 19, a horizontal transverse shaft 20, provided with a crank-arm 21, engaging said dog-shaft M, and a crank-arm 24, engaging said belt-shifter shaft, the latter having the arrow-head 28, and an independent spring-actuated arrow-head 30, substantially as and for the purpose described.

404,710. STEAM-TIGHT COUPLER. THOMAS M. JENKS, Chicago Ill., assignor to the Jenks Railway Car Signal Company, same place. Filed June 4, 1888. Serial No. 276,035. (No model.)



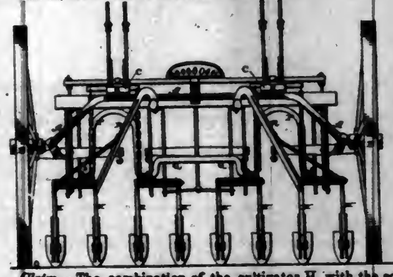
Claim.—1. A metallic steam-tight coupler made in halves detachable from each other, having a central hole for the passage of steam, corrugated stems to be inserted and secured in flexible hose, two annular compositions packings of expansible material in the central hole meeting at the section of the coupler and making a tight joint, and flat zinc rings at the opposite ends of the packings, substantially as stated.

2. In a metallic steam tight coupler, the two similar parts A A, united by a hinge and clasps and detachable from each other, and having a continuous hole provided in the respective parts with the shoulders a^3, a^3, and a^4, in combination, in its respective parts, with the spiral spring B, resting against the shoulder a^3, the zinc expansion-ring C, resting against said spring, the composition annular packing D, having an external circular ledge resting against the shoulder a^3, and the retaining-ring E, externally screw-threaded and screwed into internal screw-threading in the coupler until it rests against the shoulder a^4, substantially as and for the purposes specified.

3. In a metallic steam-tight coupler, substantially as described, the lever F, pivoted between the lugs *f*, formed on a side of the coupler near its central section and having the end of its short arm under the clasp *a'*, in combination with the lever F', pivoted on the lug *f'*, formed on the coupler immediately below the lug *f*, having its short arm curved upward and passed beneath the short arm of the lever F, and its long arm, near its end, curved under and about the hose G, secured on a stem of said coupler, as and for the purpose stated.

4. In a metallic steam-tight coupler, substantially as described, the combination of the clasps *a'*, secured to and holding together the respective halves of said coupler, and the levers F F, pivoted between the lugs *f f*, formed on the respective halves of said coupler and having their long arms curved upward and the end of their short arms under the ends of said clasps, as and for the purpose stated.

404,711. CULTIVATOR. JAMES W. JOHNSON, La Due, Mo. Filed Mar. 19, 1889. Serial No. 303,886. (No model.)



Claim.—The combination of the cultivator H, with the sockets N secured thereto, the castings placed upon the sockets, and the connecting-rods P Q, for connecting the cultivators together, substantially as described.

404,712. DETACHABLE BRUSH-HOLDER FOR DYNAMOS. JESSE F. KNEPER, Terre Haute, Ind., assignor of three-fourths to Joseph H. Briggs, same place. Filed Oct. 20, 1888. Serial No. 288,408. (No model.)



Claim.—1. A bearing for the armature-shaft, in combination with a collar loosely mounted upon the same and provided with an inwardly-extending annular flange surrounding the armature-shaft, and forming an annular space between itself and the edge of the bearing, and having a transverse aperture through the lower portion of the collar in communication with the space, and a brush-holder support carried by the collar, substantially as described.

2. In a dynamo or motor, an armature-shaft bearing having a reduced portion around its inner end, in combination with a collar loosely mounted upon the reduced portion and provided with an inwardly-extending annular flange embracing the armature-shaft a distance from the edge of the reduced portion, and a brush-holder carried by the collar, substantially as described.

3. In a dynamo or motor, the combination, with a journal-box for the armature-shaft, of a collar loosely and adjustably mounted on the same, a brush-holder support detachably secured to the collar, and a handle provided with a screw extending through the support and collar, substantially as described.

4. An armature-shaft bearing, in combination with a collar loosely embracing the same, a brush-holder support partially embracing the collar and removably secured to the same, and a handle to adjustably clamp the parts in position, substantially as described.

5. In a dynamo or motor, the combination of a shaft-bearing, a collar embracing and adjustable around the same, and provided with an inwardly-extending annular flange at the inner edge of the bearing and surrounding the shaft, a brush-holder support carried by the collar, and a handle provided with a screw-stud to extend through the collar and engage the bearing, substantially as described.

6. In a dynamo or motor, the combination, with an armature-shaft bearing, of a collar embracing and adjustable around the same, a brush-holder support provided with a recess in its under side fitting upon the upper side of the collar, set-screws securing the support to the collar, and a handle to adjustably clamp the collar to the bearing, substantially as described.

404,718. ARMATURE-CORE FOR DYNAMOS. JESSE F. KNEPER, Terre Haute, Ind., assignor of three-fourths to Joseph H. Briggs, same place. Filed Oct. 20, 1888. Serial No. 288,409. (No model.)



Claim.—1. As an article of manufacture, a removable interchangeable armature for dynamo-electric machines or motors, comprising a cylinder open at the ends, a series of rings embracing and clamped together upon the periphery of the cylinder, and end pieces provided with aligned central openings to removably receive the armature-shaft, and with radial arms engaging the ends of the cylinder, substantially as described.

2. In a dynamo or motor, the combination, with the armature-shaft having screw-threads, of an armature having a hollow core open at the ends removably located on the shaft, end pieces for the same provided with radial arms removably engaging the armature to hold the same to the shaft, and with central apertures to receive the shaft, one of said apertures being screw-threaded to screw upon the shaft and the other aperture of a size to slip over the screw-threads, and a nut on the shaft to hold the loose end piece.

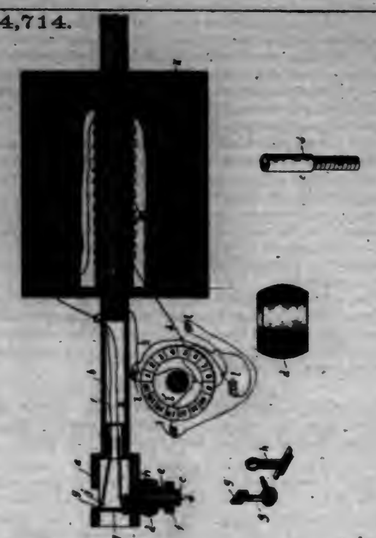
3. In a dynamo or motor, an armature-shaft provided with screw-threads, in combination with an armature removably mounted on the shaft and comprising a hollow cylinder open at the ends, end pieces provided with central apertures to receive the shaft and with arms holding the cylinder, one of said apertures being screw-threaded to screw upon the shaft, and a nut screwed upon the shaft to clamp the other end piece to the shaft, substantially as described.

4. As a new article of manufacture, an armature consisting of a hollow core open at the ends and upon the outer periphery of which the coils are adapted to be placed, the ends of said core being notched, and end pieces consisting of central aligned hubs to fit upon the armature-shaft, and radial arms to fit in said notches and hold the armature to the shaft.

404,714. REGULATOR FOR DYNAMO-ELECTRIC MACHINES OR MOTORS. JESSE F. KNEPER, Terre Haute, Ind., assignor of three-fourths to Joseph H. Briggs, same place. Filed Oct. 20, 1888. Serial No. 288,410. (No model.)

Claim.—1. A regulator for a dynamo or motor, comprising a regulating-circuit, a speed-governor mounted upon a rotating part of the machine, and a circuit-controller included in the circuit and comprising a stationary contact-point and a bell-crank lever pivoted to the rotating part of the machine, one arm of which is connected with the governor and the other arm forms the shifting contact movable to or from the stationary point, substantially as described.

404,714.



2. A dynamo or motor regulator comprising a speed-governor rotating with the armature-shaft, a normally-open short circuit, and a circuit-controller included within the same and comprising a stationary contact-point and a lever pivoted to the armature-shaft and connected with and operated by the governor, and provided with a movable contact to engage the stationary point and close the short circuit when a determined speed is attained.

3. In a dynamo or motor regulator, the hollow portion of an armature-shaft, in combination with a stationary contact therein, and a bell-crank lever pivoted therein at its elbow to allow one arm a swinging movement into or out of engagement with the contact, substantially as described.

4. A dynamo or motor regulator comprising a hollow extension of a shaft, a centrifugal governor rotating with the same, and a circuit-controller located in the hollow extension and comprising a stationary contact and a pivoted lever connected with the governor, and provided with a contact movable to or from the stationary contact in a plane parallel with the axis of the shaft.

5. A centrifugal governor for dynamo-electric machinery, comprising a hollow slotted guide externally screw-threaded upon its outer end, a sliding weight embracing the guide, an adjustable nut upon the screw-threaded portion of the guide, a coiled spring embracing the guide between the weight and nut, and a rod within the guide and connected to move with the weight, substantially as described.

6. In a dynamo or motor, a hollow extension of the armature-shaft and a bent lever pivoted in the same, in combination with a guide screwed into and extending radially from the hollow extension, a sliding weight embracing the guide, a spring to yieldingly hold the guide against centrifugal force, and a rod connecting the weight and one arm of said lever, substantially as described.

7. A dynamo or motor regulator comprising a normally-open short circuit, including one or more armature-coils, and a circuit-controller and speed-governor to close the circuit when a predetermined speed is reached.

8. A dynamo or motor regulator comprising a normally-open regulating or short circuit, including one or more armature-coils, a resistance within the same, a circuit-controller within the circuit, and a speed-governor carried by a rotating part of the machine and connected with the controller to close the circuit when a predetermined speed is reached, for the purpose set forth.

9. In a dynamo or motor, the combination of a circuit, a hollow guide extending radially from a rotating part of the machine, a governor-weight sliding on the same, a spring and adjustable nut to regulate the tension of the spring on the weight, a T-bar located in said guide and engaging the weight and operated by the same, and a circuit-controller comprising a stationary contact, and a contact-lever pivoted at its elbow and having a horizontally-movable contact, and an arm connected with the inner end of said T-bar, substantially as described.

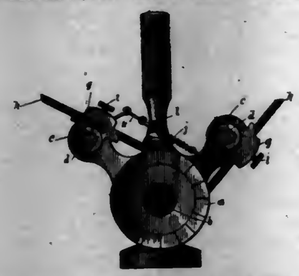
10. In a dynamo or motor, the combination of an armature-shaft, a regulating-circuit, a non-conducting hollow extension secured to said shaft, a centrifugal governor mounted upon and rotating with the same, and a circuit-controller located within said extension and comprising a stationary contact and a contact operated by the governor and movable to or from the stationary contact in a plane parallel with the axis of the shaft, substantially as described.

11. In a dynamo or motor, the combination, with an armature, of a normally-open short circuit including one or more armature-coils, a speed-governor, a circuit-controller, and a resistance-coil included in said circuit, for the purpose set forth.

12. In a dynamo or motor, the combination of an armature, a commutator for the same, a normally-open short circuit including two commutator-segments, a resistance included in said circuit, and a circuit-controller, and a speed-governor to operate the same, substantially as described.

13. A dynamo or motor regulator comprising a normally-open regulating-circuit, a circuit-controller included within the same, and a resistance-coil located within the armature, and also included within the circuit, to reduce sparking and equalize the abrupt effect when the circuit is closed, substantially as described.

404,715. BRUSH-SPRING FOR DYNAMOS. JESSE F. KESNER, Terre Haute, Ind., assignor of three-fourths to Joseph H. Briggs, same place. Filed Oct. 29, 1888. Serial No. 289,411. (No model.)



Claim.—1. In a dynamo or motor, a brush-holder support provided with spindles extending from the same parallel with the commutator, brush-holders loosely mounted upon the same to swing transversely to the axis of the commutator, and brushes carried by the holders to bear upon the commutator, in combination with arms extending from opposite sides of the holders, links of insulating material loosely secured to the arms, and a retractive spring and adjusting rod and nut connecting the links, for the purpose set forth.

2. In a dynamo or motor, a brush-holder support, two sets of brush-holders loosely carried by the same, and commutator-brushes carried by the holders, in combination with arms extending from the holders, a pair of insulating-links connecting the arms of each set of holders, and a retractive spring and tension-regulating rod connecting the two links, for the purpose set forth.

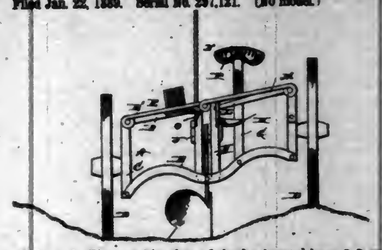
3. In a dynamo or motor, the combination of a brush-holder support provided with spindles extending parallel with the periphery of the commutator, brush-holders loosely mounted upon said spindles and provided with transverse sockets, brushes secured in said sockets to bear upon the commutator and swing to or away from the same in planes transverse to its axis, and a retractive spring connecting the holders to yieldingly hold the brushes engaging the commutator, substantially as described.

4. In a dynamo or motor, the combination of a brush-holder support, the loosely-mounted brush-holders, the brushes carried by the same and adapted to swing to or away from the commutator, links of insulating material loosely secured to the holders, and a retractive spring connecting the links to hold the brushes yieldingly in contact with the commutator, as set forth.

5. In a dynamo or motor, the combination of a brush-holder support extending in a plane above the commutator, brush-holders loosely supported by the same parallel with and over and above the commutator to swing in planes transverse to the axis of the same, commutator-brushes carried by the holders, and a retractive spring connecting the holders to yieldingly hold the brushes in engagement with the commutator, as set forth.

6. In a dynamo or motor, the combination of a brush-holder support provided with a pair of spindles extending parallel with and over the commutator, brush-holders, each having a longitudinal bearing loosely embracing a spindle and a transverse socket, brushes secured in the sockets to swing with the holders to or from the commutator, and a retractive spring connecting the holders to yieldingly hold the brushes in engagement with the commutator, substantially as described.

404,716. WHEEL-PLOW. GEORGE KIMBALL, Lawrence, Kans. Filed Jan. 22, 1889. Serial No. 297,121. (No model.)



Claim.—1. The combination of the horizontal bars B B, the vertical end bars C C, having their ends pivoted to the ends of the horizontal bars, the spindles projecting from the end bars, and the seat-supporting standard pivoted at its lower end to the lower horizontal bar B and at an intermediate point of its height to the upper horizontal bar B, as set forth.

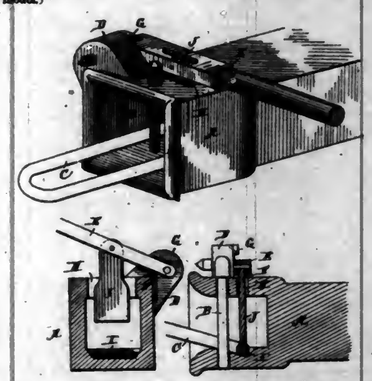
2. The combination of the horizontal bars B B and the vertical bars C C, having their ends pivoted together, the slotted supporting-arm H, pivoted to the horizontal bars B, and the yoke J, pivoted to the said arm H, the plow-beam being secured to the yoke J and projecting through the arm H, as set forth.

3. The combination of the horizontal bars B and the vertical bars C, having their ends pivoted together, the yoke E, pivoted to the bars C and supporting the tongue, the slotted supporting-arm H, pivoted to the bars B and having a forwardly-projecting branch I, pivoted to the yoke E, and the yoke J, pivoted to the arm H, the plow-beam being secured to the yoke J and projecting through the arm H, as set forth.

4. The combination of the horizontal bars B and the vertical bars C, having their ends pivoted together, the slotted arm H, pivoted to the bars B, the yoke J, pivoted to said arm H, the arm M, secured rigidly to one of the bars C, and the link L, connecting said arm with the yoke J, as set forth.

5. The combination of the bars B C, having their ends pivoted together, the arm H, pivoted to the bars B and having a forwardly-projecting branch I, the yoke J, pivoted to the arm H, the bent lever N, pivoted on the branch I of the arm H, and the link O, connecting said lever with the yoke J, as set forth.

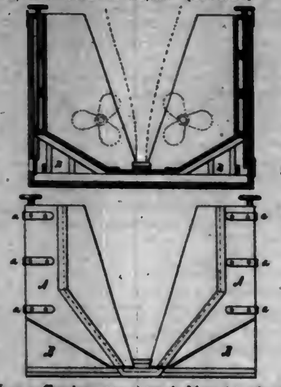
404,717. CAR-COUPLING. JONATHAN H. KING and BENJAMIN F. REED, Swan Creek, Ill. Filed Mar. 5, 1889. Serial No. 301,907. (No model.)



Claim.—1. The combination of the draw-head having a recess in its floor, the fulcrum-block on the draw-head, the lever fulcrumed on said block, the presser-plate pivoted to the lever and adapted to push the inner end of the link into the recess in the draw-head, and the spring secured to the draw-head and bearing on the lever to hold it normally elevated, as set forth.

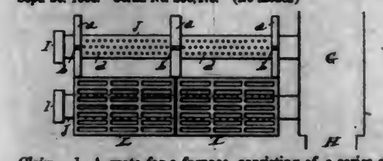
2. The combination of the draw-head having a recess in its floor and a transverse slot in its top, the fulcrum-block on the draw-head, the lever fulcrumed to said block and extending over the draw-head, the presser-plate pivoted to said lever and depending therefrom through the slot in the draw-head and having its lower end arranged over the recess in the floor of the draw-head, the spring secured to the draw-head and bearing against the lever, and the stop projecting laterally from the fulcrum-block above the lever, as set forth.

404,718. COFFER-DAM. HENRY P. KIRKHAM, Brooklyn, N. Y. Filed May 15, 1888. Serial No. 273,900. (No model.)



Claim.—In a coffer-dam, the gates A, hinged to the sides of the dam and extending from the top to the bottom of the dam, said gates having oblique bottom edges, as and for the purpose described.

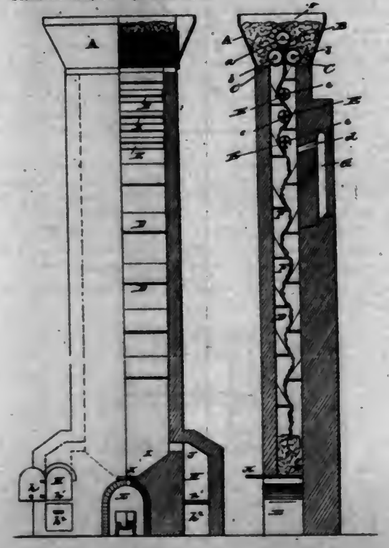
404,719. GRATE-BAR. GEORGE M. KNIGHT, Adrian, Mich. Filed Sept. 26, 1888. Serial No. 286,473. (No model.)



Claim.—1. A grate for a furnace, consisting of a series of pipes extending underneath and adjacent to a series of grate-sections and provided on their upper surfaces with perforations, of bearings on said pipes formed integral therewith for supporting said grate-sections, substantially as described.

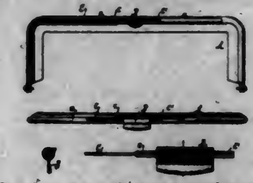
2. The combination, in a furnace-grate, of the grate-sections L, pipes J, having perforations *d*, bearing-plates *a*, formed integral with said pipes and provided with lugs *b*, and a chamber G, into which said pipes extend and from which a current of air is supplied to the pipes, substantially as described.

404,720. CALCINING-FURNACE. DAVID LEWIS, JOHN H. WILLIAMS, and MAGGIE MATTHEWS, Anaconda, Mont. Filed Aug. 2, 1887. Serial No. 245,986. (No model.)



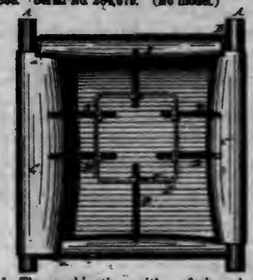
Claim.—In a furnace for calcining ores, the combination of a stack provided with oppositely-inclined internal projections and alternate fan-wheels located horizontally between said projections, a hopper upon the top of the stack provided with feed-rollers, a chamber at the bottom of the stack provided with an inclined bottom and a discharge-door at the lower part thereof, an open archway directly under said door, one or more furnaces near the bottom of said stack, having exit-flues communicating with said chamber, and a downcomer into which the stack opens near its upper end, substantially as described.

404,721. FRAME FOR POCKET-BOOKS OR OTHER ARTICLES. LOUIS MEMER, New York, N. Y. Filed Apr. 25, 1889. Serial No. 308,500. (No model.)



Claim.—In a frame for pocket-books or other articles, the combination, with the catch-carrying jaw of the frame and with the catch, of a spring-wire housed in the bead *a* of the jaw and extending through the catch along one side of the interior of the jaw and a certain distance down in the side of the jaw, the outer end of said spring-wire being bent back upon itself to form gudgeons *c c'* on both ends of the catch, substantially as described.

404,722. BED-BOTTOM AND MEANS FOR TIGHTENING AND SUPPORTING THE SAME. JOSEPH R. MOORE, Warwick, Mass. Filed Sept. 5, 1888. Serial No. 284,679. (No model.)



Claim.—1. The combination, with a chair or bedstead frame, a covering fabric and reeds enseamed within said fabric, substantially as described, of the clamping device composed of an endless ring, screw-threaded hooks taking hold of said fabric, and reeds and nuts run upon said hooks and bearing within said band to hold said fabric to a suitable tension, substantially as set forth.

2. The combination, with a chair or bedstead frame, two pieces of woven fabric (the one overlapping the other with their warp-threads crossing) folded over the ends and sides of said frame, and the strengthing-reeds for the said fabric held in fold by the hooks D, of the adjusting device composed of the metallic ring and screw-threaded hooks and nuts, said hooks taking hold of the said fabric and reeds, and the said nuts engaging the screw-threaded ends of the said hooks and bearing against the inner face of the said ring, as and for the purpose set forth.

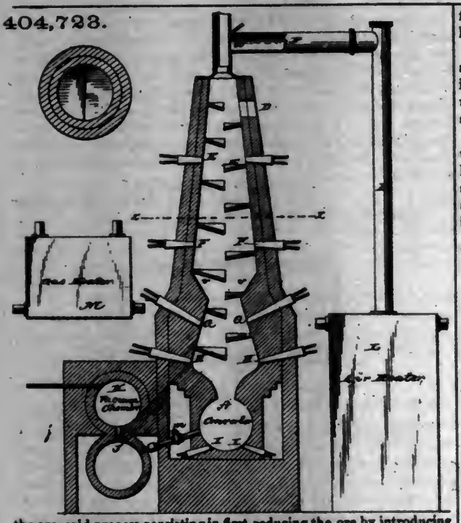
404,723. METHOD OF PRODUCING STEEL DIRECT FROM ORE. WILLIAM P. M. MCCARTY, Hagerstown, Md., assignor, by direct and mesne assignments, of part to Jane Logan, same place, Catherine Barton, Philadelphia, Pa., and Herman D. Wallbridge. Filed Feb. 26, 1888. Serial No. 301,297. (No model.)

Claim.—1. The process which consists in introducing into a highly-heated charge of iron ore and flux hydrogen gas, and subsequently at different points into the charge hydrogen and carbonaceous matter in a state of combustion in order to melt and subsequently carbonize the metal, substantially as set forth.

2. The process consisting in introducing into the highly-heated charge of iron ore and flux hydrogen gas to reduce the ore, subsequently introducing hydrogen and carbonaceous matter with air at different points into the same charge to melt the metal, and finally introducing hydrogen and atmospheric air with or without carbon into the molten metal to convert it into steel, substantially as set forth.

3. The process herein described of producing steel direct from

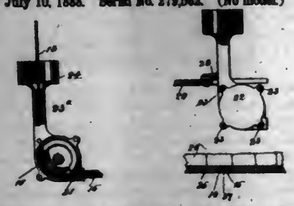
404,723.



the ore, said process consisting in first reducing the ore by introducing pure hydrogen into the charge of highly-heated ore and flux, then introducing hydrogen and carbonaceous matter with air to melt the metal, and subjecting the molten metal in its passage from the stack to the converter to the action of hydrogen and carbonaceous matter, substantially as described.

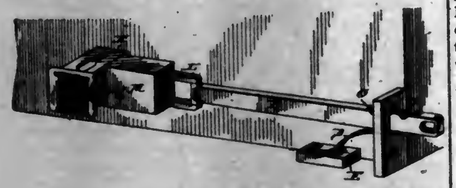
4. The herein-described continuous process of producing steel direct from the ore, said process consisting in first introducing hydrogen in the charge of highly-heated ore and flux to reduce the ore, then subjecting the charge to the action of hydrogen and carbonaceous material with air to melt the metal, then subjecting the molten metal to the action of purifying gases and air, and finally subjecting the molten steel thus produced to the action of a vacuum, substantially as set forth.

404,724. RAILWAY-GATE. ALEXANDER J. MCDONALD, Chicago, Ill. Filed July 10, 1888. Serial No. 279,562. (No model.)



Claim.—In a railway-gate, the combination, with a fixed part of the gate structure, of a cable guard or covering hinged thereto and adapted to support a sheave for the cable, and a conduit-pipe connected rigidly to said guard or covering, substantially as described.

404,725. CAR-COUPLING. SAMPSON S. MCKEAND, Ceredo, W. Va. Filed Mar. 28, 1888. Serial No. 305,162. (No model.)



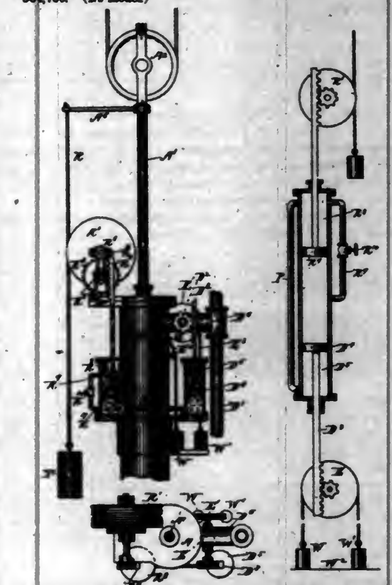
Claim.—1. The combination, with the draw-head and the bracket A, of the transverse sliding frame adapted to hold the link in the draw-head, the lever pivoted to said sliding frame and provided with notches in its edge adapted to engage the said bracket, and the spring bearing on the said lever to hold the notches in engagement with the bracket, as set forth.

2. The combination, with the draw-head having the longitudinal rib on its floor, of the link adapted to engage said rib, and the sliding frame passing transversely through the draw-head and adapted to hold the link in engagement with said rib, as set forth.

3. The combination of the draw-head having the rib G, the link adapted to engage said rib, the lifting-plate arranged longitudinally in the draw-head in rear of said rib, and the sliding frame having its upper arm adapted to pass over the end of the link and its lower arm adapted to raise the lifting-plate to release the link, as set forth.

4. The combination, with the draw-head having the lateral extension M and the rib G, of the link adapted to engage said rib, the lifting-plate arranged in the draw-head in rear of said rib, and the sliding frame moving in the extension M and having its upper arm adapted to enter the draw-head and its lower arm provided with an inclined surface N, adapted to act on the lifting-plate, as set forth.

404,726. SELF-REGULATING HYDRAULIC ELEVATOR. WILLIAM E. NICKERSON, Cambridge, Mass. Filed Mar. 26, 1889. Serial No. 304,700. (No model.)



Claim.—1. In a hydraulic elevator, the combination of the main hoisting-piston and its cylinder, and a port for inlet and outlet having a throttle-valve held normally open by a retractor device, with a piston located in a fluid-cylinder and adapted to close said throttle-valve (when the hoisting mechanism of the elevator attains undue speed) by impulse generated by the motion of a secondary piston adapted to move with a fixed ratio to the hoisting mechanism, said secondary piston being located in a secondary cylinder having a restricted passage from one side of its piston to the other, and a fluid connection with the cylinder containing the valve-moving piston, substantially as described, and for the purpose set forth.

2. In a hydraulic elevator, the combination of the main cylinder A and its piston and piston-rod, port D^6, for inlet and outlet, having a throttle-valve E, and valve-retractor device consisting of the pulley E', rope E^3 E^5, and weights W W', with the piston-rack D^3, piston D^4, cylinder D^5, pipe P, cylinder R^4, having a restriction-pipe R^5, and piston R^7, adapted to move in a fixed ratio to the movement of the elevator-carriage, substantially as and for the purpose set forth.

404,727. FLY-TRAP. JUSTIN E. PACKARD, Mendocino, Cal. Filed Jan. 26, 1889. Serial No. 297,632. (No model.)



Claim.—In a fly-trap, the combination, with the casing, of the detachable cage, and the revolving drum provided with a shaft having a shoulder *d*, the gear-wheel mounted loosely on the shaft and connected to suitable clock mechanism, and the spring O, coiled on the shaft and bearing against the said gear-wheel to press it against the shoulder *d*, substantially as and for the purpose specified.

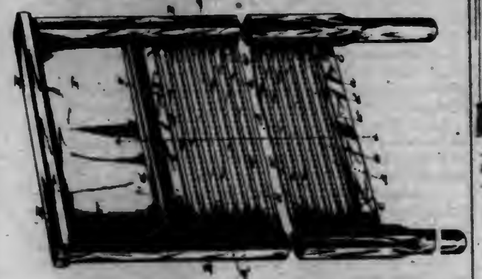
404,728. BOX-FASTENER. LUDWIG PETTERSON, Chicago, Ill. Filed Sept. 29, 1888. Serial No. 286,808. (No model.)



Claim.—1. As a new article of manufacture, a metallic fastener consisting of a center strip having a row of teeth along each edge with parallel sides and bent out of the plane of the strip on a line at an angle to the axis of the center strip, substantially as described.

2. As a new article of manufacture, a metallic fastener consisting of a center strip, a row of teeth along each side of and bent at an angle to this strip, a portion of said strip being left without teeth, whereby it is adapted to be bent around a corner, substantially as described.

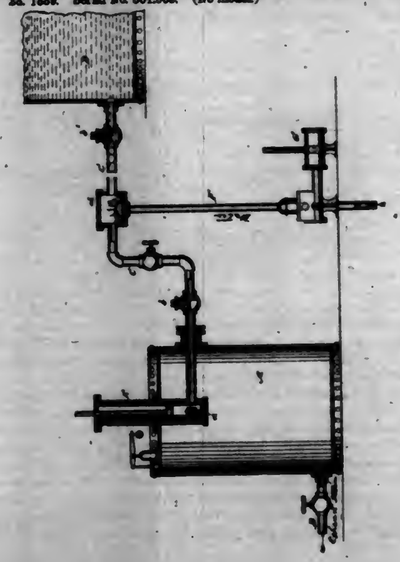
404,729. WASH-BOARD. ISAAC H. POE, Toledo, Ohio, assignor to the Union Manufacturing Company, same place. Filed Dec. 4, 1886. Serial No. 220,716. (No model.)



Claim.—1. A wash-board which is provided with a corrugated metal body that upon one face has plain smooth ribs, and upon its opposite face has its ribs divided into short sections by small cross-grooves, substantially as and for the purpose shown.

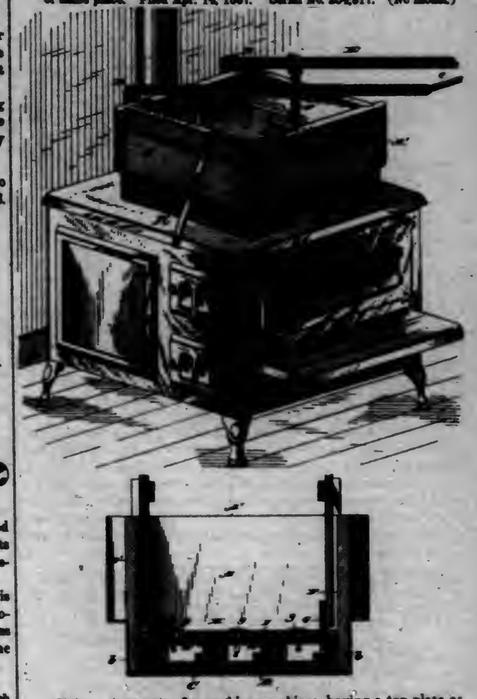
2. A wash-board which has a metal body that upon one face is provided with plain transverse ribs and grooves, and upon its opposite face has transverse ribs and grooves and small cross-grooves which pass through the tops of said ribs, substantially as and for the purpose set forth.

404,730. BOILER-FEED. JULIO H. RAE, Milford, Del. Filed Feb 23, 1889. Serial No. 301,503. (No model.)



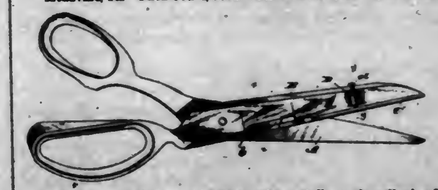
Claim.—The combination, with a steam-boiler and a tank for the reception of exhaust-steam from an engine, of a pump communicating with said tank, a valved feed-pipe leading from said pump to the boiler, and a water-spraying pipe discharging into the feed-pipe between the tank and the boiler, whereby the exhaust-steam is drawn from the tank, forced into the feed-pipe, condensed therein, and forced into the boiler, substantially as described.

404,731. WASHING-MACHINE. ZADOCK RANDEL, De Kalb, Mo., assignor of two-thirds to Harison B. Gardner and Henry R. Jones, both of same place. Filed Apr. 14, 1887. Serial No. 234,817. (No model.)



Claim.—A pounder for washing-machines, having a top plate or sheathing with elongated slots in two opposite sides thereof, and links to which operating-levers are adapted to be secured, projecting downward through said slots and attached to the inner surfaces of the side bars of the pounder above the lower edges of said strips, whereby obstructing projections are avoided on the sides and bottom of the pounder and permit the same to cover more space and fit snugly within the tub or receptacle, substantially as described.

404,732. ADDRESSING-MACHINE. JAMES W. H. REDMOND, Meadville, Pa. Filed Oct. 4, 1888. Serial No. 287,246. (No model.)



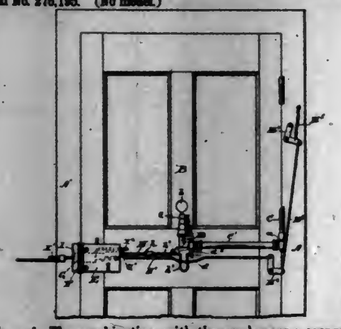
Claim.—1. The combination, substantially as described, of the blade A, the blade B, pivoted thereto and provided near its point with a threaded boss, a horizontal pressure-plate secured at its inner end to blade B near the pivot, and a vertical set-screw adjustably seated in the threaded boss to bear upon said plate near its outer end.

2. The combination, with the blades A and B, pivoted to each other and provided with operating-handles, of a plate C, carried by one of the blades, and a set-screw, also carried by the same blade, against which the plate will abut, substantially as shown, and for the purpose set forth.

3. The combination, with the blade A, of a blade B, having a pro-

jection *b*, to which a plate C is removably attached, and a lug secured to said blade between the point and projection *b*, said lug having a screw-threaded perforation for the reception of a set-screw *d*, against which the plate will abut, substantially as shown, and for the purpose set forth.

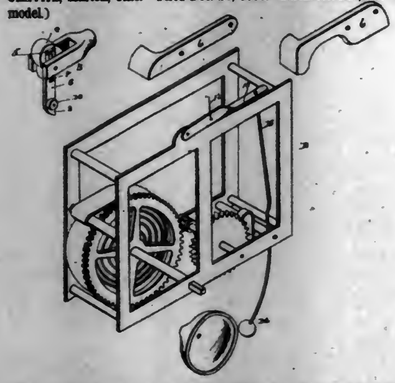
404,733. DEVICE FOR AUTOMATICALLY OPERATING THE STOP-COCK OF A GAS-BURNER. CHARLES M. RIDER, Newark, Ohio, assignor of one-half to William Baker, same place. Filed June 6, 1888. Serial No. 276,195. (No model.)



Claim.—1. The combination, with the gas-burner *c*, secured to a door and having the stop-cock D, provided with the lever-arm *d*, of the lock E, having the sliding locking-bolt G, and the rod H, connecting the locking-bolt and lever-arm and formed in two sections *h h'*, having a screw-threaded connection and provided with the loop h^3, all constructed, arranged, and operating substantially as shown and described, as and for the purpose set forth.

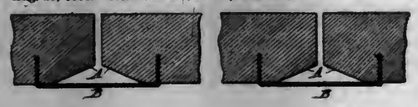
2. The combination, with the gas-burner *c*, having the stop-cock D, provided with the lever-arm *d*, the bearing d^2, set-screw d^3, mounted in said bearing and having a tapered end, and the stop d^5 on the portion of the gas-pipe in which the stop-cock is located, with which the end of the set-screw engages, of the lock E, having the locking-bolt G, and rod H, connecting said locking-bolt G and lever-arm *d*, all constructed, arranged, and operating substantially as shown and described, as and for the purpose set forth.

404,734. BURGLAR-ALARM. JOSEPH W. ROADS and THOMAS J. GRIFFITH, Marion, Ohio. Filed Dec. 22, 1888. Serial No. 294,364. (No model.)



Claim.—In a burglar-alarm, the combination of a bracket adapted to be secured over a window or door, a cam-shaped trigger pivoted in the bracket having a recess in one side, an adjustable arm moving in the said recess designed to rest against the window or door, ringing mechanism, a trigger for releasing the same, and a wire connecting the cam-shaped trigger and the trigger of the ringing mechanism, whereby, when the said adjustable arm is moved, the ringing mechanism will be released, substantially as described.

404,735. CAR-ROOF. GEORGE A. ROBERTS, Paducah, Ky. Filed Aug. 25, 1888. Serial No. 283,807. (No model.)

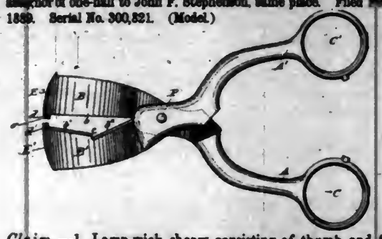


404,735.



Claim.—In a roof, the combination of the boards having their lower edges beveled away so as to form a chamber, with the pans B, having their edges turned up at right angles and made to fit in grooves formed in the under side of the boards, substantially as shown.

404,736. WICK-TRIMMER. JOHN L. SANFORD, Albany, N. Y., assignor of one-half to John F. Stephenson, same place. Filed Feb. 23, 1889. Serial No. 300,821. (Model.)

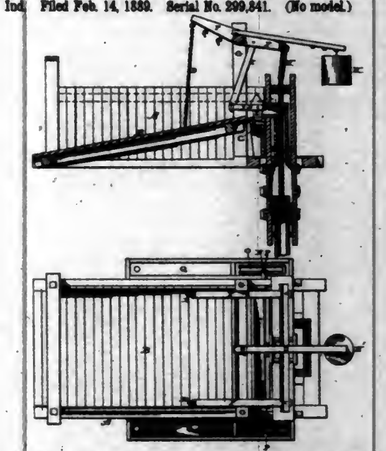


Claim.—1. Lamp-wick shears consisting of thumb and finger pieces C and C', handles A and A', and the curved blades B and B', said blades being unequally curved and furnished with the spurs *d* and *d'*, beveled on their opposing faces, substantially as set forth.

2. In lamp-wick shears, substantially such as described, one of the blades having a straight cutting-edge *b*, and the other blade formed with the angular cutting-edge *b'* and b^2, and the recess *c*, as hereinbefore set forth.

3. Lamp-wick shears consisting of thumb and finger pieces C and C', handles A and A', and blades B and B', said blades being unequally curved and furnished with the spurs *d* and *d'*, beveled on their opposing faces, the blade B having a straight cutting-edge *b*, and the blade B' formed with the angular cutting-edges *b'* and b^2 and the recess *c*, substantially as set forth.

404,737. STOCK-PUMP. GOTTLIEB W. SCHROEDER, Huntington, Ind. Filed Feb. 14, 1889. Serial No. 299,841. (No model.)

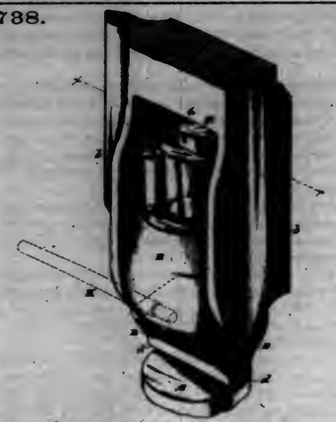


Claim.—1. In a stock-pump, the combination of the pivoted platform, the uprights G, the frame F, the weight H, connected to the frame, the chains D, for connecting the frame to the platform, the connecting-rod I, the pivoted lever J, operated by the rod I, the valve L, pivoted to the lever, and the trough C, having an opening through one end, substantially as shown.

2. The combination of the trough C, the platform, the pump, and the pivoted frame placed above the pump and connected both to it and the platform, with the trough Q, placed at the end of the one C, so as to receive water therefrom, the partition P, placed in one end of the trough, and the pivoted guide O, placed above the partition and having a float R secured to its inner end, substantially as described.

404,738. APPARATUS FOR STRAIGHTENING SAWS. DANIEL SIMONDS, Fitchburg, Mass. Filed July 23, 1888. Serial No. 281,221. (No model.)

404,738.



Claim.—1. In combination with a hammer-head, a rotatable die adapted to be rotated in a plane at right angles to the hammer-head, and the pivot-stem thereon connecting it with the head, substantially as and for the purpose shown.

2. In combination with a hammer-head, the rotatable die pivotally attached thereto having a narrow elongated striking-surface extending in a plane parallel to the plane of rotation of the die on the hammer, substantially as and for the purpose described.

3. In combination with a hammer-head, the rotatable die connected with the hammer-head by means of a pivot-stem and having an elongated striking-surface at right angles to the pivot-stem, substantially as and for the purpose described.

4. In combination with a hammer-head and the rotatable die, a handle for rotating the die, substantially as and for the purpose described.

5. In an apparatus for straightening saws, in combination with an anvil or support for a saw and the hammer-head, the rotatable die pivotally attached to the head, so as to be rotatable in a plane at right angles to the travel of the hammer, provided with an elongated striking-surface whose direction with reference to the anvil-surface is changed by the rotation of the die on the hammer-head, substantially as and for the purpose described.

6. In combination with the hammer-head and the rotatable die carried thereby, a movable pawl carried with the die, and a recess in the hammer-head to be engaged by the pawl to lock the die from accidental rotation, substantially as and for the purpose described.

7. In combination with the hammer-head and the rotatable die connected with the head by a stem, a spring acting upon such stem to hold the die up against the hammer-face, substantially as and for the purpose specified.

8. In combination with the hammer-head, the rotatable die having a stem engaging an opening in the head, the cap on the stem, and the spring around the stem within the cap, substantially as and for the purpose described.

9. In combination with the hammer-head, the rotatable die thereon provided with a stem extending up through an opening in the head, the cap rigidly connected with the stem, and the spring-actuated pin carried by the cap and adapted to engage suitable depressions in the head, substantially as and for the purpose specified.

10. In combination with the hammer-head and the rotatable die, a spring-actuated pin connected with the die, so as to be moved as the die rotates, and suitable depressions on the hammer-head to be engaged by the pin, substantially as and for the purpose shown.

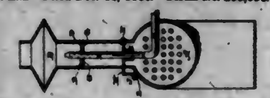
11. In combination with the hammer-head provided with one or more depressions, the rotatable die having the stem for connecting it with the head, the cap on the stem, the spring-pin carried by the cap, and the spring around the stem within the cap, substantially as and for the purpose set forth.

12. In combination with the hammer-head provided with a stop-pin, the rotatable die with its stem, and suitable stops rigidly connected with the stem for limiting the rotation of the die, substantially as and for the purpose described.

13. In combination with the hammer-head and the rotatable die carried thereby, a movable pawl carried with the die in its rotation, and suitable depressions in the hammer-head to be engaged by the pawl when the die has been rotated to different positions with reference to the hammer-head, substantially as and for the purpose shown.

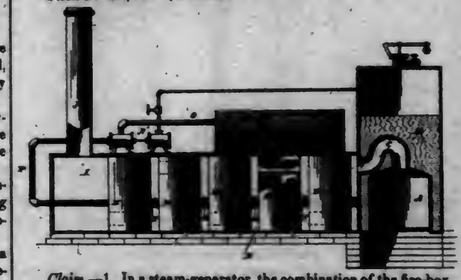
14. In combination with the hammer-head and the rotatable die carried thereby, suitable stop devices for limiting the rotation of the die in opposite directions, a pawl on the die, and the two pawl-engaging recesses or depressions on the hammer so situated as to engage the pawl and lock the die at opposite ends of its movement, substantially as and for the purpose set forth.

404,739. EXHAUST MECHANISM. JOHN D. SMITH, Murfreesborough, Tenn. Filed Dec. 18, 1888. Serial No. 293,993. (No model.)



Claim.—The combination of the stack, the exhaust-pipe, a pipe pivoted in the stack and having its lower end movable in relation to the exhaust-pipe, and a mechanism for adjusting the lower end of the movable pipe, the upper end of the movable pipe being contracted and perforated and thereby partially closed, substantially as described.

404,740. STEAM-GENERATOR. WILLIAM SMITH, Pittsburg, Pa., assignor of part to William Smith, same place, and Charles T. Russell, Allegheny, and William Guckert, Pittsburg, Pa. Filed Feb. 26, 1889. Serial No. 301,334. (No model.)



Claim.—1. In a steam-generator, the combination of the fire-box, the upright boiler within which the same is located, the curved flue in the top of the fire-box, the oblong heating-chamber communicating at one end with said flue and at the other end with the smoke-chamber, a series of heaters located within said chamber communicating with one another by pipes and provided with diametrical flues located alternately in the top and bottom part of said heaters, and the side walls or partitions built up between the sides of the several heaters and the adjacent sides of the chamber within which they are placed, substantially as and for the purpose shown and set forth.

2. In a steam-generator, the combination of the fire-box, the upright boiler within which the same is located, the curved flue in the top of the fire-box, the oblong heating-chamber communicating at one end with said flue and at the other end with the smoke-chamber, a series of heaters located within said chamber communicating with one another by pipes and provided with diametrical flues located alternately in the top and bottom part of said heaters, the side walls or partitions built up between the sides of the several heaters and the adjacent sides of the chamber within which they are located, the feed-water tank on top of the heating-chamber, the feed-water pump, and the pipe connecting said pump with that one of the heaters which is located farthest from the fire-box, substantially as and for the purpose shown and set forth.

404,741. APPARATUS FOR RAISING QUICKSAND. HENRY STOLTEN, Sr., Manitowoc, Wis. Filed Feb. 6, 1889. Serial No. 298,830. (No model.)

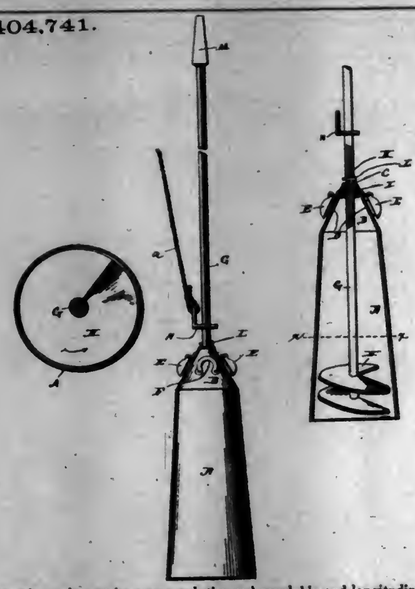
Claim.—1. The combination of the tapered case having the outwardly-opening valves at its upper end, the rod revoluble in the case, and the boring-bit attached to the said rod and arranged in the lower end of the case, substantially as described.

2. The combination of the tapered case having the valves at its upper end, the rod revoluble in the case and having the boring-bit at its lower end, means, substantially as set forth, to rotate the said rod, the plate N, pivotally connected to the said rod, and the elevating-rod attached to said plate, substantially as described.

3. The combination, in apparatus for raising quicksand, of the case having the valves at its upper end, the rod G, extending through an opening in the upper end of said case and revoluble therein, said rod having the collar I, adapted to bear under the top of the case, and the opening K above said collar, the boring-bit attached to the lower end of the rod and arranged in the bottom of the case, and the pin or key, adapted to be inserted in the opening K, substantially as described.

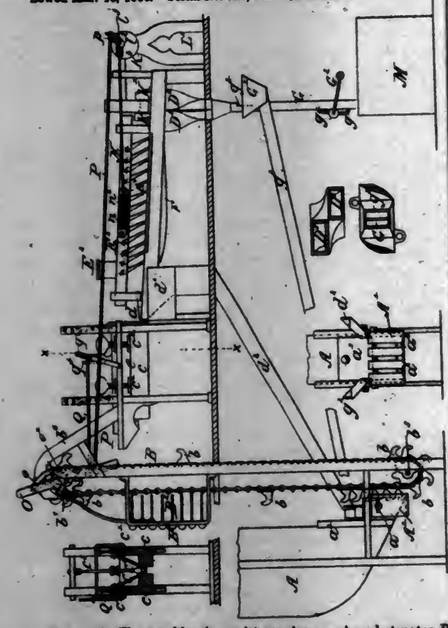
4. The combination of the tapered case having the outwardly-

404,741.



opening valves at its upper end, the rod revoluble and longitudinally movable in the case, and the boring-bit attached to the rod and arranged in the lower end of the case, substantially as described.

404,742. FEED MECHANISM FOR CHAIN-LINK MACHINES. JAMES D. STORIE, Oshawa, Ontario, Canada. Filed Nov. 14, 1887. Renewed Mar. 18, 1889. Serial No. 303,821. (No model.)



Claim.—1. The combination, with the hopper A and elevator B, having fingers or hooks thereupon, of the well or chamber A', having a slotted front through which said fingers project, for the purpose described.

2. The combination, with the hopper A and elevator B, having fingers or hooks thereupon, of the well or chamber A', adjustable horizontally and having a slotted front, substantially as and for the purpose specified.

3. The combination, with the frame and an elevator having hooks or fingers for carrying drive-chain links, of a brush adapted to adjust the links upon said hooks, substantially as and for the purpose specified.

4. The combination, with the elevator having hooks or fingers for carrying drive-chain links, of a comb arranged at the upper end of said elevator and adapted to remove such links from said hooks or fingers, substantially as and for the purpose set forth.

5. The combination, with the elevator B, having fingers or hooks b b, of the comb b^3, chute b^4, and a trough or receptacle for the links, substantially as set forth.

6. In a drive-chain-link feeding-machine, the combination, with a feeding-chute, of the trough C, constructed with adjustable beveled blocks c c and adjustable sloping inner walls c^3 c^3, substantially as and for the purpose described.

7. In a drive-chain-link feeding-machine, the combination, with a track or way adapted to receive the loose links and suspend them by their heads or knuckles, or raking or pushing devices engaging with said heads or knuckles, so as to move said loose links toward the point of delivery, substantially as specified.

8. In a drive-chain-link feeding-machine, the combination, with a track or way along which the loose links travel while suspended by their heads or knuckles, of a reciprocating bar carrying pivoted raking or pushing bars or teeth adapted to engage with the heads of such loose links and advance the latter along said track or way, substantially as specified.

9. The combination, with the trough C, of the reciprocating rakers C', substantially as and for the purpose specified.

10. The combination, with the rails D' D^3, of the reciprocating rakers E, substantially as and for the purpose specified.

11. In a drive-chain-link feeding-machine, the combination, with a rail adapted to be embraced or straddled by the hook portions of the links and with means for causing said links to move upon said rail, of means for lubricating the rail, whereby the interior of the locking knuckles or hooks may also be lubricated, substantially in the manner set forth.

12. In a drive-chain-link feeding-machine, the combination, with the track or way along which the links travel, of a device for scraping and cleaning the insides of the hooks, substantially as described.

13. The combination, with the track upon which the links travel, of the comb W, for the purpose set forth.

14. The combination, with a rail for conveying the links, of the hollow raker-bar E', hollow perforated pivots e, and hollow rakers E, whereby a lubricant is conveyed from the raker-bar to the rail, substantially as and for the purpose described.

15. In a drive-chain-link feeding-machine, the combination, with a rail for conveying the links and rakers for moving same thereon, of the friction-plate d^6, for the purpose described.

16. In a drive-chain-link feeding-machine, the combination, with a guideway in which the links travel with their heads uppermost, of two rails diverging from said guideway and adapted to catch the links whose hooks are turned toward them, substantially as and for the purpose specified.

17. In a drive-chain-link feeding-machine, the combination, with a guideway in which the links travel with their heads uppermost, of two rails diverging from said guideway and adapted to catch the links whose hooks are turned toward them, and right and left twisted spouts arranged to turn two series of links and deliver them through a single spout with their hooks turned all in the same direction, substantially as and for the purpose specified.

18. In a drive-chain-link feeding-machine, the combination, with a delivery spout or conductor, of an overflow device whereby surplus links will be thrown out and only a regulated quantity delivered at the end of the spout, substantially as and for the purpose specified.

19. The combination, with the double-twist spouts D^4 D^5 of the single spout G, having the overflow-opening g', for the purpose specified.

20. In a spout or chute for delivering links, having a device for stopping its outlet end, the overflow-opening g', for the purpose described.

21. In combination with the spout G, having an overflow-opening, the hopper G', and return-spout g^3, for the purpose described.

22. In combination with a guideway for drive-chain links, the shield d, for throwing out misplaced links, arranged substantially as described.

23. The combination, with the guideway D and shield d, of the hopper d' and return-spout d^3, for the purpose described.

24. The combination, with the rails for delivering and spouts for receiving the links, of the strikers K K' and means for operating same, substantially as and for the purpose described.

25. The combination, with the strikers K K', operating as described, the pivoted lever K^3, and driving shaft L, of the cam l, substantially as and for the purpose set forth.

26. In a drive-chain-link feeding-machine, the combination, with the rakers and means for driving same, of a spring adapted to compensate for the movement of said rakers when the latter are held stationary from any accidental cause, substantially in the manner described.

27. The combination, with the raker-bar E' and rakers connected thereto and with the rod N and means for working same, of the coiled spring n, substantially as and for the purpose specified.

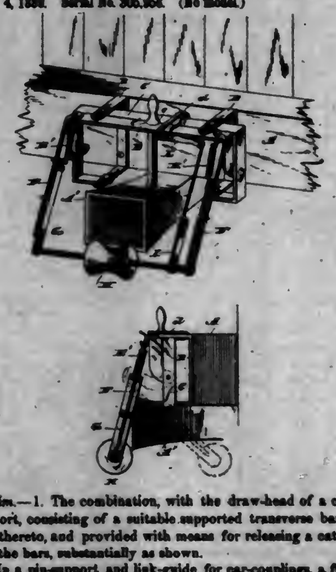
28. The combination, with the driving-shaft L, having a crank wheel or disk thereon, of rod P, lever O, having a pawl, shaft b^4, having a ratchet thereon, elevator B, and shaft b^3, all combined substantially as and for the purpose described.

29. The combination, with the raker-bar C^3, carrying rakers and having the fork q', of the pivoted bridle q, rod Q, and lever O, operated as described, all substantially as and for the purpose described.

30. The combination, with the rails D' D^3, of the knife-edges d^5 d^5, for the purpose set forth.

31. The oil-pan F, in combination with the rails D' D^3, rakers E, and hollow raker-bar E', as described.

404,743. CAR-COUPLING. ISAAC STOUT, Mackinaw, Ill. Filed Apr. 4, 1888. Serial No. 305,956. (No model.)



Claim.—1. The combination, with the draw-head of a car, of a pin-support, consisting of a suitable supported transverse bar, a bar pivoted thereto, and provided with means for releasing a catch connecting the bars, substantially as shown.

2. In a pin-support and link-guide for car-couplings, a frame C, adjustably secured to the car-body, the bar D, pivoted thereto and provided with rods F F, frame G, sliding upon said bars F, and carrying a roller on the cross-bar thereof, substantially as shown, and for the purpose set forth.

3. The combination, in a pin-support and link-guide for car-couplings, of brackets rigidly secured to the car-body above the draw-head, a rectangular frame supported thereby and carrying a frame D, which is pivotally attached thereto, the said frame D carrying depending bars, to which a sliding frame is connected, the cross-bar of the sliding frame carrying a roller, and an arm for operating a lever engaging with a spring-catch, whereby the pin-supporting bars are separated when the roller-carrying frame is depressed, substantially as shown, and for the purpose set forth.

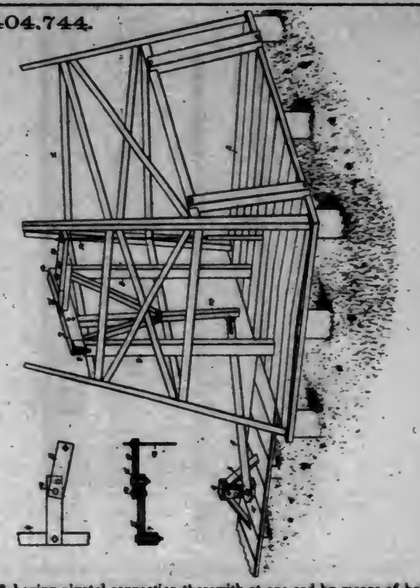
4. The combination, in a pin-support and link-guide for car-couplings, of a rigid frame attached to the car-body, said frame having a spring-catch and a central recess, a swinging frame pivoted thereto having a corresponding recess, a pivoted lever for releasing the spring-catch, guide-rods for supporting a sliding frame, the said sliding frame being connected to the guide-rods and to the pivoted frame by coiled springs, and carrying a roller and an arm, which is connected by a rod to the pivoted lever, the parts being organized substantially as shown, and for the purpose set forth.

404,744. WELL PUMPING RIG. CORBAN C. STOVER, Bradford, Pa. Filed Oct. 31, 1888. Serial No. 289,632. (No model.)

Claim.—1. The combination of a pump-beam with a laterally-movable beam pivoted to the pump-beam, and to which the polish-rod of a well may be connected, substantially as described.

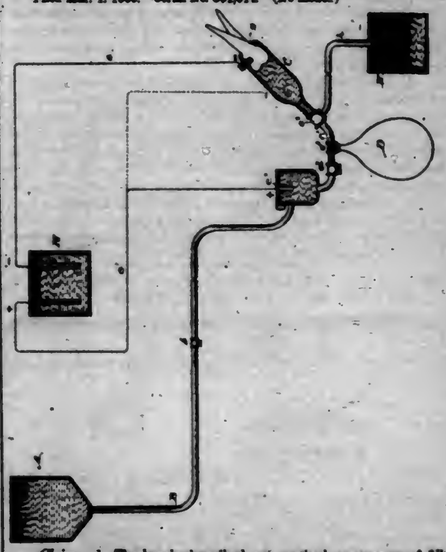
2. The combination of the pump-beam 11, laterally-movable beam

404,744.



13, having pivotal connection therewith at one end by means of bolt 14, and a removable bolt 15, substantially as shown and described.

404,745. METHOD OF FILLING TEETH. ELBERT C. TAYLOR, Humansville, assignor of three-fourths to Willis R. Humphreys and Frank H. Babbs, Stockton, and Alfred W. Mitchell, Humansville, Mo. Filed Mar. 1, 1889. Serial No. 301,614. (No model.)

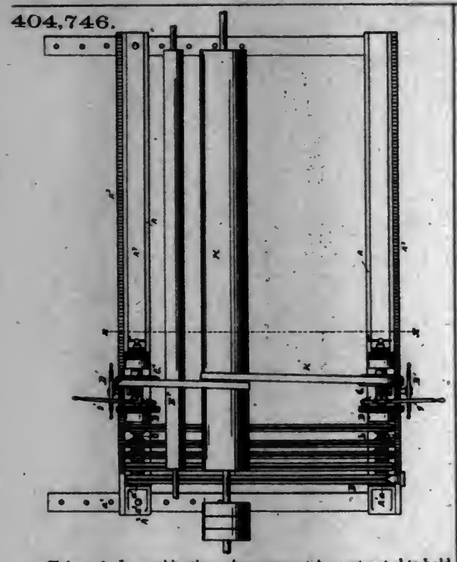


Claim.—1. The herein-described art, method, or process of filling teeth, which consists in electroplating the cavity.

2. The herein-described art, method, or process of filling teeth, which consists in cleaning the cavity, electroplating the walls thereof, then inserting a plug in the cavity, and subsequently filling up the space between the walls of the cavity and the plug and the remainder of the cavity by electro-deposition.

404,746. MACHINE FOR ASSEMBLING RADIATOR-LOOPS. HARRISON H. TAYLOR, Detroit, Mich., assignor, by direct and mesne assignments, to the Michigan Radiator and Iron Manufacturing Company, same place. Filed Apr. 26, 1888. Serial No. 271,907. (No model.)

404,746.



Claim.—1. In combination, a loop-support A, constructed to hold the loops in position, a head-block, a shaft mounted in said head-block carrying a chuck E, projecting beyond the face of the head-block, means for reciprocating the head-block, means to reciprocate the chuck-shaft independently of the head-block, and means to rotate the chuck-shaft, substantially as set forth.

2. In combination, a loop-support A, constructed to hold the loops in position, a sliding head-block D, a shaft mounted therein carrying an expansible chuck E, projecting beyond the face of the head-block, means for rotating said chuck-shaft, and means for reciprocating said chuck-shaft independently of the sliding movement of the head-block, substantially as set forth.

3. In combination, a loop-support consisting of two parallel arms constructed to hold the loops in position, and means for laterally adjusting one of said arms, a head-block having a sliding engagement on one of said arms, means for reciprocating the head-block, a shaft mounted therein carrying a chuck projecting beyond the face of the head-block, means to reciprocate the said chuck independently of the head-block, and means to rotate the chuck, substantially as set forth.

4. In combination, a loop-support A, constructed to hold the loops in position, a head-block D, a shaft mounted therein carrying a chuck E, projecting beyond the face of the head-block, and means to rotate the chuck, substantially as set forth.

404,747. FISH-HOOK GUARD. CHARLES W. TEED, Elmira, N. Y. Filed Oct. 16, 1888. Serial No. 288,199. (No model.)



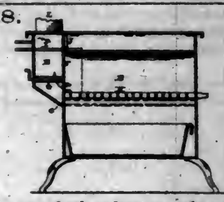
Claim.—1. A fish-hook shield consisting of a concave attachment-plate adapted to be secured to the rod, and having connected thereto a spring top plate C, forming a shield, substantially as specified.

2. The combination, with a fishing-rod, of a hook-shield consisting of the lower plate secured to the rod, and having the integral posts, and the top plate of spring metal adapted to hold the hook between its lateral edge and the lateral edge of the lower plate, substantially as specified.

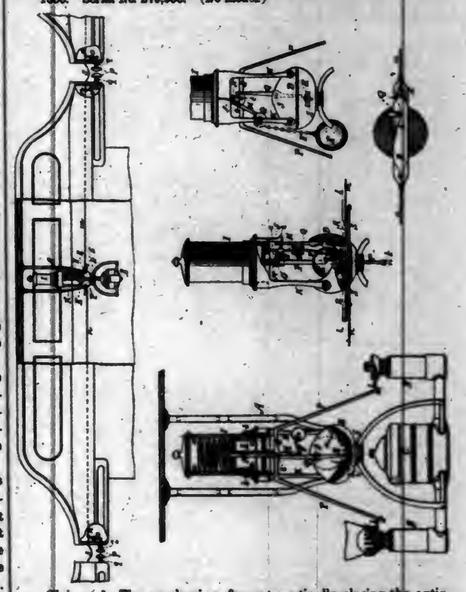
404,748. ATTACHMENT FOR STOVES OR RANGES. CHARLES B. TEFFT, Utica, N. Y. Filed Jan. 29, 1889. Serial No. 297,904. (No model.)

Claim.—In a stove or range, the fire-pot provided with the grate H in its bottom, the garbage-receptacle E, applied to one side of the stove at the end of the fire-pot, the partition F, placed between the fire-pot and receptacle, and provided with the opening *a* above the grate for the products of combustion to pass through and the opening *c* below the grate for the refuse to pass through, the damper I, the grate G, and the stove-pipe, substantially as shown.

404,748.



404,749. MECHANISM FOR EXTINGUISHING THE LIGHTS IN RAILWAY-CARS. ISAIAH N. TILLSON, Whitman, Mass. Filed July 14, 1888. Serial No. 279,963. (No model.)



Claim.—1. The mechanism for automatically closing the extinguishers of the lamp-burners of a railway-car, substantially as described, it consisting of the combination of the following elements: the spring-case secured to the lamp-supporting frame, its spring, and the sliding head, to which is connected by a rod the cross-head provided with arms having notches to receive the outer end of the levers of the extinguishers, said cross-head also having a stud *c*, the levers of the extinguishers, the lever Q, fulcrumed to the frame, the arm H, pivoted to the case and having the pin *e* and stud *d*, the spring *f*, for moving the arm H, and the slides R S, provided with inclines for moving the lever Q, the cords or wires *m n*, the former connecting the slides R of each lamp-supporting frame to each other and to a lever *o* at one end of the car, and the latter (the slide S) to each other and to a lever *o* at the other end of the car, the levers *o*, slides *p*, and springs *q*, all as set forth.

2. The mechanism for automatically closing the extinguishers of the lamp-burners of a railway-car, substantially as described, it consisting of the combination of the following elements: the spring-case secured to the lamp-supporting frame, its spring, and the sliding head, to which is connected by a rod the cross-head provided with arms having notches to receive the outer ends of the levers of the extinguishers, the levers of these extinguishers, the arm H, pivoted to the case and connected to the spring *f* for the purpose described, and having the stud *d* to operate with the stud *c* of the cross-head, the chain F, weight E, guide-wheel G, and the bearing for the weight, all as shown and set forth.

3. The mechanism for automatically closing the extinguishers of the lamp-burners of the cars of a railway-train, substantially as described, it consisting of the combination of the following elements: the spring-case secured to each lamp-supporting frame, its spring, and the sliding head to which is connected by a rod the cross-head provided with arms having notches to receive the outer end of the levers of the extinguishers, the levers of these extinguishers, the arm H, pivoted to the case and having the pin *e*, connected to the spring *f*, secured to the case, and also the stud *d* to operate with the stud *c* of the cross-head, the lever Q, pivoted to the frame, the slides R S, provided with inclines for moving said lever Q against the pin *e* of the arm H, cords or wires *m n*, connecting the slides, the lever *o*, and lines S, connecting the wire of one car with that of the other, all as shown and set forth.

404,750. APPARATUS FOR THE MANUFACTURE OF GAS. JOSÉ F. TORAYA, Havana, Cuba, assignor to the Toraya Patent Gas Company, Philadelphia, Pa. Filed Jan. 17, 1889. Serial No. 296,596. (No model.)



Claim.—1. An oil-vaporizing cartridge adapted to be removably located in a retort, said cartridge having its front end closed, a vertical longitudinal partition extending a portion of the length of the cartridge, forming two chambers in the same, communicating at their front ends only, a wall closing the portion of the rear end of the cartridge on one side of the partition, the remaining portion being open for the exit of vapor, and an oil-supply pipe extending through the front end of the cartridge and longitudinally through said cartridge almost to said rear end wall, substantially as described.

2. The combination, with a retort, of an oil-vaporizing cartridge removably located within the same and leaving heating spaces and passages between the ends and sides of the retort and cartridge, said cartridge having a partition extending from the rear end a portion of the distance to the front end thereof, the rear end of one of the chambers formed by the partition being closed and the other chamber having a vapor-escape into the retort, and an oil-supply pipe extending into the closed chamber on one side of the partition, substantially as described.

3. The combination, with a closed horizontal retort, of an oil-vaporizing cartridge removably located within the same and leaving heating spaces and passages within the retort for the vapor from the cartridge, said cartridge having an interior vertical partition extending a portion of the length thereof, an oil-supply pipe extending into a portion of the length of the cartridge, and a vapor-exit from the cartridge into the retort, substantially as described.

4. An oil-vaporizing cartridge adapted to be located in a retort, and formed of sheet metal with its front end closed, an interior partition extending from the rear end nearly to the front end of the cartridge, the rear end of the cartridge on one side of the partition being closed, an oil-supply pipe extending into the cartridge and provided with a union at the front end of the cartridge, whereby steam can be introduced into the pipe, and a man-hole in the front end of the cartridge, for the purpose set forth.

5. A normally-closed retort, in combination with an oil-vaporizing cartridge located therein, having a concaved bottom and of such size as to leave spaces between its sides and the walls of the retort for the passage and heating of the gas from the cartridge, the cartridge having a portion of its rear end open, a fluid-supply pipe extending into the cartridge, and a longitudinal partition in the cartridge extending from one end almost to the other end of the same and located between the discharge end of the fluid-pipe and the vapor-exit from the cartridge, substantially as described.

6. A cartridge for vaporizing oil adapted to be removably placed in a retort and formed of sheet metal with its head normally closed, a partition extending from the rear end of the cartridge a portion of the longitudinal length of the same, the rear end of the cartridge on one side of the partition being closed and the remaining portion open, and an oil-supply pipe extending through the front end of the cartridge and rearwardly within the same almost to the closed end of the cartridge, substantially as described.

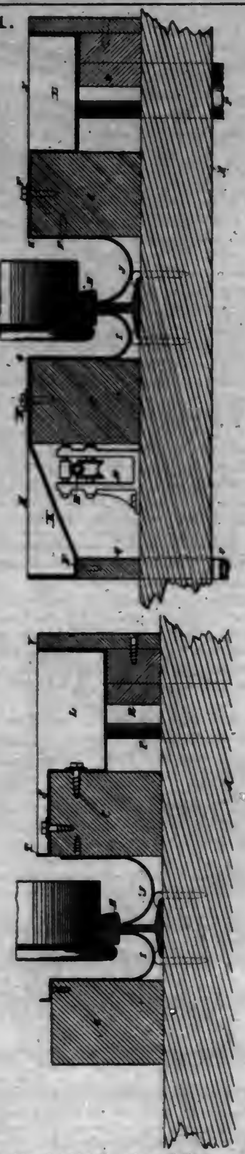
404,751. DRIP-PAN FOR ELEVATED RAILROADS. EDWARD A. TRAPP, Brooklyn, N. Y. Filed Mar. 11, 1889. Serial No. 302,850. (No model.)

Claim.—1. For elevated railroads, the guard-rails C upon opposite sides of the steel rails B, combined with drip-pans secured to said guard-rails, and forming gutters I J on each side of the steel rail, said drip-pans being formed of sheet metal, and at their contact with the guard-rails serving to cover the latter, substantially as and for the purpose set forth.

2. In the construction of elevated railroads, the guard-rails C at each side of the steel rail B, combined with sheet-metal drip-pans secured to said guard-rails, and forming receptacles to catch the drippings at each side of said rails, substantially as and for the purposes set forth.

3. In the construction of elevated railroads, the guard-rails C at each side of the steel rails B, combined with sheet-metal drip-pans secured to said guard-rails and forming longitudinal receptacles for drippings from the engine, brakes, and heating appliances, substantially as and for the purposes set forth.

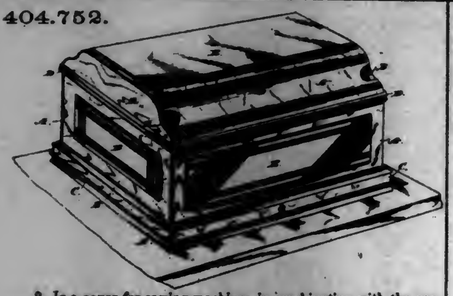
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404,752. COVER FOR SEWING-MACHINES. NATHANIEL R. VAN HORN, Toledo, Ohio, assignor to the Union Manufacturing Company, same place. Filed Aug. 17, 1887. Serial No. 247,163. (No model.)

Claim.—1. In a sewing-machine cover, in combination with the continuous piece of bent wood forming the top and the rear and front sides of the cover, the end pieces fastened to said bent piece, and reenforcing and strengthening panels superimposed upon the top, front sides, and ends of the cover, so as to aid in preserving the shape thereof, substantially as and for the purpose specified.

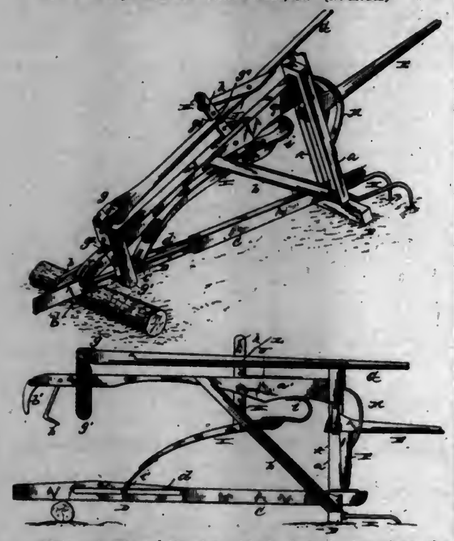
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2. In a cover for sewing-machines, in combination with the continuous piece of wood bent to form the top, front, and rear sides of the cover, with straight or plane surfaces, the end piece fastened to said bent piece, panels superimposed upon the end pieces and the straight or plane surfaces of the front and top of the cover, so as to strengthen and preserve the shape thereof, and a molding fastened to and extending around the lower portions of the cover, so as to define and preserve its shape, substantially as described.

3. The combination of the bent-wood piece which constitutes the front, top, and rear sides, the separately-formed end pieces, the re-enforcing and strengthening panels, the molding which extends horizontally around the lower part of said cover, and the horizontal molding that is secured to and extends around the upper part of the same, substantially as and for the purpose shown and described.

404,753. HAND-POWER SAW. JAMES M. VAUGHN, Water Valley, Ky. Filed Sept. 24, 1888. Serial No. 286,218. (No model.)



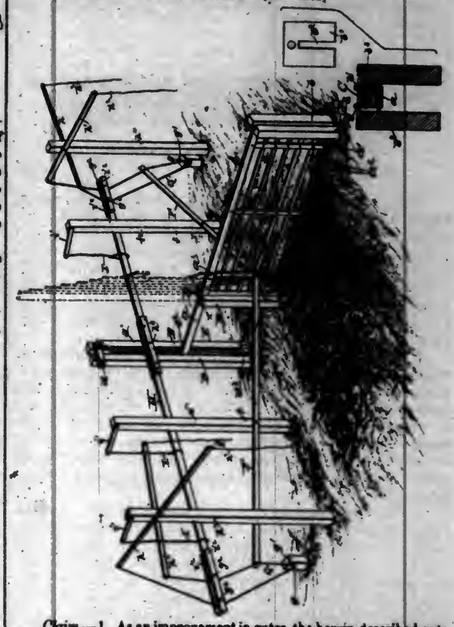
Claim.—1. The combination, with the frame having a lever pivoted thereto for operating the saw, of the arm I, the spring at its upper end connecting it with the arm a', and its lower end being provided with a movable pivot, and the saw provided with the slot d in the top of its blade, in which the movable pivot at the lower end of said arm I operates to permit the saw to be both reciprocated and raised when necessary, substantially as specified.

2. The combination, with the supporting-frame having the arm a', and the slotted saw-blade connected to the movable arm C, of the bar H, passing through a slot in the arm a', the arm I, connected to the lower end of the bar H, and connected to the arm a' by the curved spring i and to the slotted saw-blade by the movable pivot i', and the lever G, for imparting pressure to the saw, substantially as specified.

3. In a sawing-machine, the combination, with the arm a' and the lever G, having hook J secured thereto and adapted to engage the openings h in the bar H, of the bar I, connected with the arm a' and with the slotted saw-blade, and connected also with the perforated bar H above the arm a', substantially as specified.

4. In a sawing-machine, the combination, with the supporting-frame provided with the arm a', and the movable arm C, provided with the slotted saw-blade, of the connecting-arm having the spring i at its upper end and the pivot i' at its lower end, the guide M, and the lever E, provided at its inner end with the downwardly-extending arm F, having at its lower end a hinge, one leaf being attached to the arm F and the other leaf to the arm C, whereby, when the lever E is moved up and down, a reciprocating motion is imparted to the saw-blade, substantially as specified.

404,754. GATE. JOSEPH WALKER, near Manchester, Va. Filed Sept. 21, 1888. Serial No. 286,045. (No model.)



Claim.—1. As an improvement in gates, the herein-described gate having the upper pivoted right-angular beam, the posts between which said beam operates, and the gravity-latch pivotally secured to one of said posts and having grooves or recesses engaging said beam, substantially as set forth.

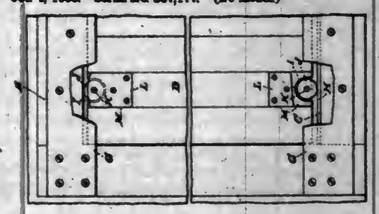
2. The gate having the upper pivoted beam, the posts D D, between which said beam operates, the pivoted gravity-latch secured to one of said posts, and the latch-operating bar pivotally secured to said latch and loosely supported in position, substantially as described.

3. The gate having the pivoted beam, the posts D D, between which said beam operates, the latch pivotally secured to one of said posts, the operating-bar pivotally secured thereto, and the ropes or chains for operating said bar, substantially as described.

4. The gate having the pivoted beam, the posts D D, between which said beam operates, the levers F F, secured to said gate at their inner ends, the gravity-latch pivoted to one of said posts, the operating-bar pivoted to said latch, the levers h h', and the ropes or chains connected to said latter levers and the levers F F, substantially as described.

5. The combination, with the gate having the pivoted beam and the posts D D, between which said beam operates, of the latch pivoted to one of said posts, the operating-bar pivoted to said latch, the guide-loops for supporting said bar, and the means for operating the latter at its outer ends, substantially as set forth.

404,755. CAR-DOOR. CHARLES L. WARD, Cavendish, Vt. Filed Oct. 4, 1888. Serial No. 287,177. (No model.)



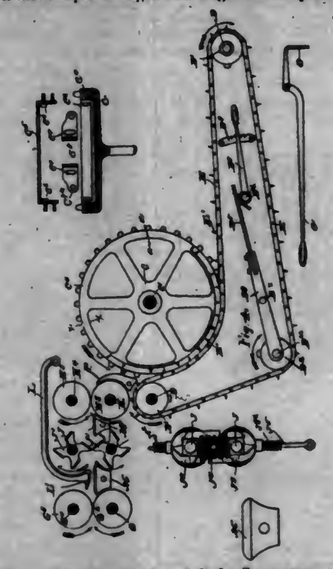
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Claim.—In a car-door, the combination, with the door, of bearing-plates seated in recesses in the door, rollers arranged in transverse recesses in the top and bottom edges of the door, journaled in the bearing-plates, and projecting beyond the edges of the door, the guideways applied to the car-body, having outer flanges projecting toward each other and lapping the outer roller bearing-plates, and a plate secured to the upper bearing-surface of the lower guideway, substantially as set forth.

404,756. MACHINE FOR SCRAPING THE PULP, &c., FROM FIBROUS PLANTS. RANDOLPH G. WARD, Baltimore, Md. Filed Feb. 15, 1888. Serial No. 264,061. (No model.)

Brief.—After being aligned by a gate at the lower end of the feed-trough, the leaves pass between crushing-rollers driven by eccentric gears upon their shafts, thence between separated rotary scrapers to holding-rolls, and thence between a scraping-cylinder and a scraping-chain. As soon as the forward ends of the leaves are seized by the holding-rolls the scraping-cylinders are brought together by rack-and-pinion gearing and a lever and scrape the leaves in a backward direction. The forward ends are scraped by the cylinder and chain. The material is thus scraped throughout its length at one operation.



Claim.—1. The combination of feed-rolls, scrapers, means for rotating said scrapers in a direction opposite to that in which material is fed to the same, feeding and holding rolls arranged beyond the scrapers in the line of feed, and rotating in a direction opposite to that of the scrapers, and scraping mechanism arranged beyond the feeding and holding rolls, substantially as specified.

2. Feeding-rolls, in combination with eccentrically-mounted gears connected with the rolls for operating the same.

3. Feeding-rolls, in combination with eccentrically-mounted gears connected with the rolls, and means for operating said gears, substantially as specified.

4. Rotary scrapers or cutters, means for rotating the said scrapers to scrape the material in a direction opposite to its travel in the machine and feeding and holding rolls, in combination with mechanism, substantially as described, for separating said scrapers at will, substantially as specified.

5. Feed-rolls having relatively variable surface speeds, in combination with rotary scrapers, and gearing, substantially as described, attached to said feed-rolls and scrapers for rotating the same in opposite directions.

6. Feed-rolls, eccentric gears operatively connected therewith, and mechanism, substantially as described, for driving said gears, in combination with rotary scrapers and gearing for driving said scrapers in a direction opposite to that of the travel of the material upon which they operate, and feeding and holding rolls, substantially as specified.

7. The combination of feeding-rolls, eccentric gearing attached to the same, as described, rotary scrapers, gearing to rotate the same in a direction opposite to that of the passage of the material, rolls arranged in advance of the scrapers in the direction of the movement of the material, scraping mechanism arranged in advance of said feeding and holding rolls, and mechanism for actuating the holding-rolls and the gearing of the feed-rolls, substantially as described.

8. Rotary scrapers or cutters, in combination with gearing for rotating the same continuously in a direction opposite to that of the material passing therebetween, feeding and crushing rolls arranged in advance of the cutters, holding-rolls arranged beyond said cutters, and a pivoted guard arranged over the cutters or scrapers and resting upon the material in advance of the cutters, substantially as described.

9. The scraping rolls or cutters J', working continuously in the direction specified, and provided with movable rack-bearings J^3, in combination with the pinion J^{3x}, springs J^5, rods J^6, lever J^4, and means for actuating said scraping rolls or cutters, substantially as specified.

10. The combination of the scraping-cylinder C, the scraping-chain E, the tightener D^2 D^3, the eccentric shaft D^4, the lever D^5, and the lever-holding device, substantially as described.

11. The combination, with the cylinder C, of the scraper C^3, slotted, as at C^4, and pivoted, as at C^{3x}, and with scraper-adjusting bolts C^4, substantially as specified.

12. The combination, with feeding and scraping rolls, means for operating the same, and the scraping-cylinder and scraping-chain, of intermediate gearing, and means, substantially as described, for adjusting the same, whereby the desired speed of motion is communicated from the cylinder to the gearing which operates said scraping-rolls and said feeding-rolls, substantially as specified.

13. Feeding-rolls and a system of gearing for driving the same, comprising a shaft and driving-pulley, and means for adjusting said pulley, in combination with a positively-driven shaft bearing a disk C^3, arranged adjacent to said adjustable pulley, whereby varied speeds with relation to that of the positively-operating shaft may be given to the feed-rolls, substantially as specified.

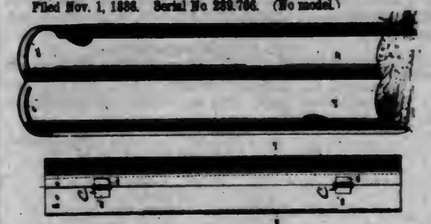
14. The combination of the disk C^3, the pulley F^4, nuts F^5, and the threaded and slotted shaft F, substantially as specified.

15. The guard L L', tables M M', the cutters J', feed-rolls H^2 H^3, rolls G^2 G^3, and the guard-piece, substantially as and for the purpose specified.

16. Separable scraping or cutting rolls, as J', the vertical shaft K, having wide-faced spiral gears K^2, intermeshing gears mounted on the cutter-shafts, and means, substantially as described, for effecting the separation of the scraping-rolls.

17. The combination of the spiral gears K^2, the shaft K, the gears J^3, and cutter-shafts J, substantially as specified.

404,757. TREE-PROTECTOR. HIRAM L. WEBBER, Stafford, Kans. Filed Nov. 1, 1888. Serial No. 289,706. (No model.)



Claim.—1. In a tree or plant protector, the combination of two metallic sections curved or bent from different centers, so that when the sections are placed edge to edge they will overlap and form tight joints, and hinges for connecting said sections, one series of the leaves thereof being located at the edge of one of the sections and the opposite leaves of the hinges being placed at a distance from the adjacent edge of the opposite section, substantially as shown, and for the purpose set forth.

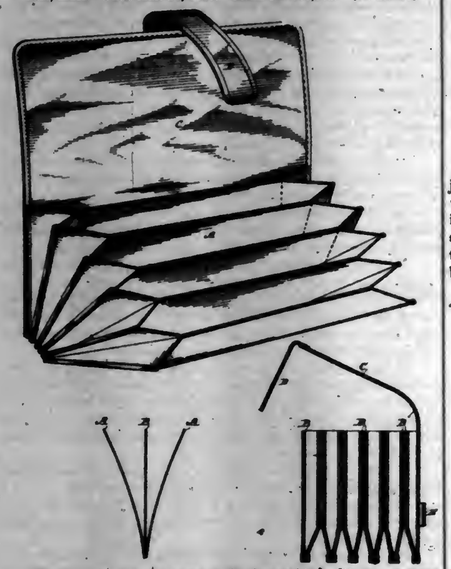
2. As an improved article of manufacture, a tree or plant protector made up of two longitudinal sheet-metal sections bent to form curved sections, one of said sections being of a greater curve than the other section, the sections being hinged to each other, the leaves of said hinges being secured to the outer edge of the larger curved section, the opposite leaves being secured at a distance from the edge of the smaller section, substantially as shown, whereby the sections may be opened to a greater distance than the diameter of the sections, and

when closed will form tight joints between the edges and will be retained in a closed position by the pressure of the free edges of the sections upon each other.

3. In a tree or plant protector, the combination of the sheet-metal sections A B, having struck-up metal prongs formed integral therewith for holding in place flexible tubes or packing, substantially as set forth.

4. In combination with a tree or plant protector having the body portion made up of sheet metal, flexible rubber tubes attached near the inner upper edges thereof and held removably in place by metal prongs formed integral with the body portion, substantially as shown, and for the purpose set forth.

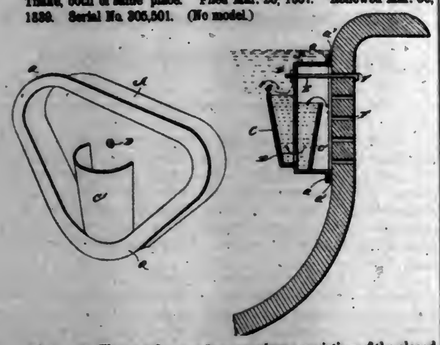
404,758. POCKET OR NOTE BOOK. EMIL WEHRROD, Greenfield, Mass. Filed Mar. 20, 1889. Serial No. 303,972. (No model.)



Claim.—1. A pocket or note book provided with one or more apartments made up of outside and dividing walls, said walls being composed of one or more thicknesses of combustible material and a sheet of asbestus or other non-combustible material, as and for the purpose specified.

2. The combination, with a pocket or note book provided with one or more apartments made up of outside and inside double walls, of the asbestus sheets inclosed within said walls, as and for the purpose set forth.

404,759. WATER-SEAL OVERFLOW-TRAP. EPHRAIM J. WHITLOCK, Brooklyn, N. Y., assignor of two-thirds to Ilas R. Byrnes and John Thake, both of same place. Filed Mar. 28, 1887. Renewed Mar. 30, 1889. Serial No. 305,501. (No model.)



Claim.—1. The trap for overflow-openings, consisting of the closed box A, secured directly to the side of the basin over the said openings, and the wells or receptacles C and C', arranged on reverse sides of the face-plate of the box A and connected by an opening B in said face-plate, the well C' being situated within and covered by the said box and the well C opening into the basin direct, substantially as described.

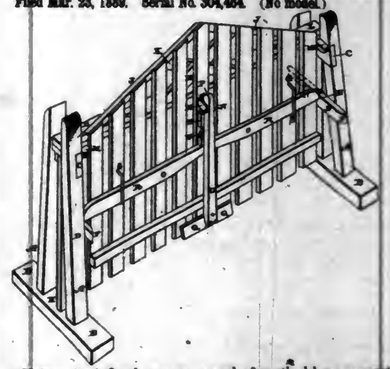
2. In a trap for overflow-openings, the combination of the closed box A, having the flanges *a*, the bolt E, secured in one of the overflow-openings at one end and to the box A at its other end, the receptacle or well C, arranged on the outer face of the box A and opening directly into the basin, the receptacle or well C', entirely inclosed by the box A and connected to the receptacle C by means of an opening B, formed in the lower portion of the face-plate of the box A, and the rubber gasket *a'*, substantially as described.

404,760. COUPLER FOR AIR-BRAKE MECHANISM ON RAILWAY-CARS. ANDREW J. WEBER, Philadelphia, Pa., assignor of one-half to Marcus P. Richardson, same place. Filed Jan. 12, 1886. Serial No. 188,343. (No model.)



Claim.—In an air-brake mechanism, the coupler having a single joint, substantially as described, with a longitudinally central dividing-wall L' L', with packing L^{IV} L^{VI} to maintain the integrity of the division, whereby two separate air-currents can be maintained through a single coupler and the branches O'' O'' from each air-division, whereby these currents may be carried through the intermediary of flexible hose to separate air-pipes beneath the cars, substantially as described.

404,761. FLOOD-GATE. HENRY A. WRIGHT, Spring Garden, Mo. Filed Mar. 23, 1889. Serial No. 304,464. (No model.)



Claim.—1. A flood-gate composed of vertical bars connected at their lower ends by a cross-bar, and their upper ends secured to the edge of a flat supporting and pivotal timber, in combination with suitable supporting-posts, whereby the supporting-timber when the gate is open will be approximately upon its edge, for the purpose described.

2. The combination, with a flood-gate, of the flat supporting and pivotal beam I, the posts A, bars C, flat upon their upper surfaces, and the transverse guiding-bars M, secured to the under side of the beam I near its ends, for guiding the gate and preventing endwise movement thereof when the gate is open, substantially as shown.

3. In a flood-gate, the combination of the gate, the latches pivoted thereto, the supporting-posts upon which the gate is pivoted, the operating-lever provided with a block at its lower end and a projection or cam at its upper end, the bracket secured to the gate near its upper end, between which the upper end of the lever is pivoted, and a vertically-sliding rod having its upper end beveled away to coact with the upper end of the lever, and a guiding-loop passed around it and secured to the gate, the lower end of the vertical sliding rod engaging the inner ends of the latches, whereby, when the lower end of the lever is acted upon by the water, the outer ends of the latches are raised, substantially as specified.

404,762. VAGINAL SYRINGE. OTTO G. ESSER and SILAS T. YOUST, Lafayette, Ind. Filed Sept. 24, 1888. Serial No. 286,254. (No model.)

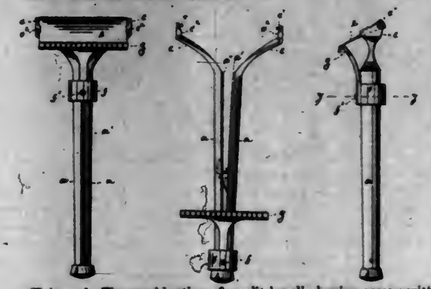
Claim.—The herein-described vaginal irrigator, consisting of a syringe, an injecting-tube A, enlarged and perforated in its front end, and having an enlarged screw-threaded flange *b* at its rear to connect with the syringe-tube, with the drainage-bulb B on said tube tightly

404,762.



fitting the same at its rear end, but having a large orifice in its front end, the hard grooved annulus *b*, fitting in and distending the front orifice of the bulb, and the drainage-tube C, connected to bulb B, all substantially as and for the purpose specified.

404,763. RAZOR. FRIEDRICH ASCHBURG, New York, N. Y., assignor to the Electric Cutlery Company, same place. Filed Feb. 12, 1888. Serial No. 263,577. (Model.)

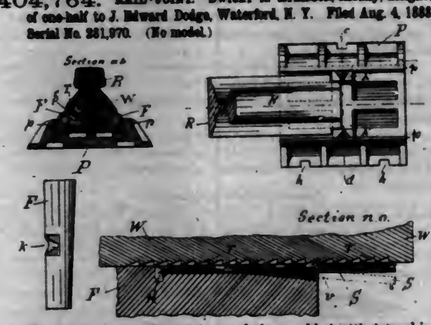


Claim.—1. The combination of a split handle having arms *e* with a surrounding ring *f* and guard *g* secured thereto, and with a blade adapted to be engaged by arms *e*, substantially as specified.

2. The combination of a split handle having arms *e* and pins *e'* with spring *d*, ring *f*, guard *g*, and blade *c*, having holes *c'*, substantially as specified.

3. The combination of split handle having groove *d'* and arms *e* with spring *d*, blade *c*, ring *f*, and guard *g*, the ring *f* having pin *f'*, substantially as specified.

404,764. RAIL-JOINT. DWIGHT R. ATKINSON, Albany, assignor of one-half to J. Edward Dodge, Waterford, N. Y. Filed Aug. 4, 1888. Serial No. 281,970. (No model.)



Claim.—1. In a railway-joint, a chair provided with lateral inwardly-projecting flanges and bosses placed on each side of the upper surface of the chair, provided with a lower portion square in form and an upper portion V-shaped, substantially as described, and for the purpose set forth.

2. In a railway-joint, the combination of a triangular wedge-shaped bar provided with a groove and notch, into which is placed a key-bar provided with a latch-catch, with a wedge provided with a series of notches, with which the latch-catch engages, all substantially as described, and for the purpose set forth.

3. In a railway-joint, the combination, with a chair provided with lateral inwardly-projecting flanges, of triangular wedge-shaped bars placed in contact with the foot of the rails on both sides, and also in contact with the chair-flanges, and wedges in contact with the under sides of the rail-heads, and also in contact with said bars, substantially as described.

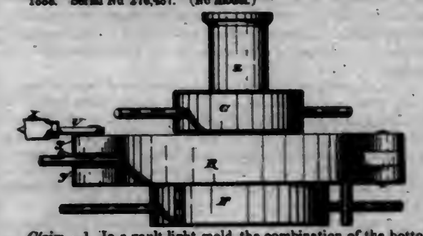
4. In a railway-joint, the combination, with a chair provided with lateral inwardly-projecting flanges, of triangular wedge-shaped bars placed in contact with the foot of the rails on both sides, and also in contact with the chair-flanges, and wedges located in contact with the rail-webs and under sides of the rail-heads, and also in contact with said bars, substantially as described.

5. In a railway-joint, the combination of a chair provided with an inwardly-projecting flange and a boss projecting inward from said flange, said boss having a lowered squared portion to fit recesses in the adjacent ends of the rails and provided with an upper inwardly-projecting V-shaped portion, a triangular wedge-shaped bar having a notch to fit the V-shaped portion of said boss, said bar being placed upon the foot of each rail and in contact with the chair-flange, and a wedge driven in contact with the under side of the head of each rail, and also in contact with said bar, substantially as described.

6. In a railway-joint, the combination of a chair provided with lateral inwardly-projecting flanges and bosses projecting inwardly from said flanges, said bosses each having a lower squared portion and an upper inwardly-projecting V-shaped portion, the rails having recessed ends to fit the squared portions of said bosses, triangular wedge-shaped bars notched to fit said bosses and placed upon the foot of each rail on both sides and in contact with the chair-flanges, and wedges driven in contact with said rails and bars on both sides, substantially as described.

7. In a railway-joint, the combination of a chair provided on both sides with inwardly-projecting flanges, triangular wedge-shaped bars resting on the rail-feet in contact with the chair-flanges and provided on their inner sides with key-latches, and wedges driven in contact with said rails and bars on both sides of the rails, and provided with notches to engage the key-latches, substantially as described.

404,765. MOLD FOR VAULT-LIGHTS. DAVID BARKER, Canton, Ohio, assignor to the Canton Glass Company, same place. Filed June 8, 1888. Serial No. 276,487. (No model.)



Claim.—1. In a vault-light mold, the combination of the bottom part A, having a series of perforations B, an annular peripheral rib D, recess H, and a bottom plate I, having a series of plungers J secured thereto and adapted to enter the perforations B, said plungers cut away at the upper portion to a line of angularity of about forty-five degrees from a line drawn vertically through the center of the plungers, substantially as described, and for the purpose set forth.

2. In a vault-light mold, a top portion G, having a series of depressions K, a central fount, as O, and communicating sprues P, and an annular rib Q, substantially as described, and for the purpose set forth.

3. The combination of the bottom portion A, having a series of perforations B, recess H, plate I, plungers J, annular ring D, a top portion G, having depressions K, sprues P, fount O, annular peripheral rib Q, plungers Z, and locking-clasp R, substantially as described, and for the purpose set forth.

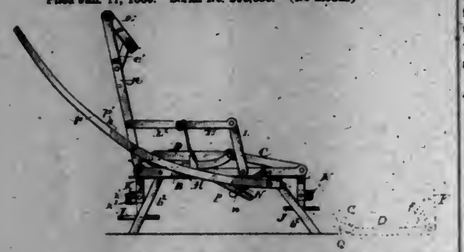
404,766. MOLD FOR MAKING GLASS PADS FOR HORSE-COLLARS. DAVID BARKER, Canton, Ohio. Filed Nov. 16, 1888. Serial No. 291,000. (No model.)



Claim.—1. The combination, with a mold for forming glass pads for horse-collars, as herein described, of the pins *n*, to form the apertures *m* in the pad, said pins having studs *p* secured therein, and drum C, pivotally secured to the body portion of said mold, having slots *l* to engage the studs *p*, whereby the pins *n* may be moved into and out of said mold, substantially as described, and for the purpose set forth.

2. The combination, with a mold for making glass pads for horse-collars, of pins having a sliding movement through the walls of said mold and through the said glass pad, and a rotatable drum having oblique guides which are engaged with said pins for the purpose of actuating the same, substantially as set forth.

404,767. CONVERTIBLE CHAIR. ABRAM BOTKIN, Wilmington, Del., assignor of one-tenth to Carpel Udelewitz, Washington, D. C. Filed Jan. 11, 1889. Serial No. 296,053. (No model.)



Claim.—1. In an article of furniture, the combination, with a main body composed of a series of four sections joined together by hinge-connections, of supports for one of the intermediate sections, and folding wheeled supports attached to said section and adapted be drawn out and made to engage and support the end sections, substantially as described.

2. In an article of furniture, the combination, with a section corresponding to a chair-seat, a section corresponding to the back of a chair, and supports for said seat-section, of a section or sections pivoted to said seat-section and adapted to fold upon the same, arms attached to said seat and back sections, and braces for supporting said supplemental section or sections in a vertical position engaging said arms and forming a continuation of the same, substantially as described.

3. In an article of furniture, the combination, with a section answering to the seat of a chair, a section answering to the back of a chair, and a supplemental section or sections pivoted to said seat-section and adapted to fold upon the same, of folding supports for said seat-section, folding wheeled supports adapted to be unfolded and made to support said section, and a brace for maintaining said supplemental section or sections in an upright position when desired, substantially as described.

4. In an article of furniture, the combination, with a section corresponding to the seat of a chair, a section corresponding to the back of a chair, supports for said seat-section, and rockers connected to said seat-section and adapted to engage said supports, of a supplemental section or sections pivoted to said seat-section and adapted to fold upon the same, arms for said seat-section, and braces pivoted to said supplemental section or sections engaging said arms and forming continuations of the same for supporting said supplemental section or sections in a vertical position, substantially as described.

5. In an article of furniture, the combination, with a section answering to the seat of a chair, a section corresponding to the back of a chair, and a supplemental section or sections adapted to fold upon said seat-section and pivoted to the same, of supports for said seat-section, slides connected to said seat-section, and a folding support connected to said slides and adapted to be drawn out and made to support said supplemental section or sections, substantially as described.

6. An article of furniture consisting of a section answering to the seat of a chair, a section answering to the back of a chair, supports for said seat-section, and rockers each connected to said seat-section at two points by a slotted-link construction and adapted to receive the supports for the seat-section, substantially as described.

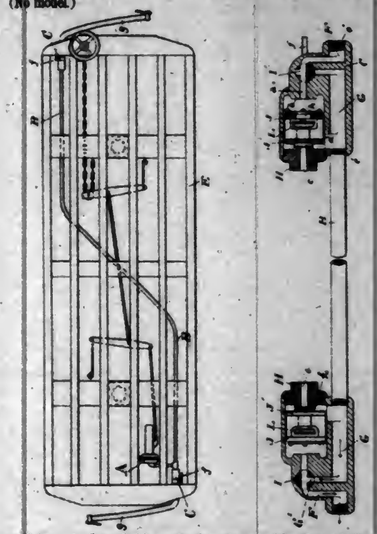
7. An article of furniture having a section corresponding to the seat of a chair and a section corresponding to the back of a chair, folding supports for said seat-section, and hinged standards connected to said seat-section and adapted to fold transversely thereof and provided with wheels, whereby said standards may be folded and the chair supported by the folding supports, or said standards and wheels may be unfolded and made to support the seat-section, substantially as described.

8. An article of furniture comprising four sections joined by hinge-connections, supports for one of the intermediate sections, slides connected to said supported section-wheels, and folding wheel-supports mounted on said slides, whereby said wheels can be extended, unfolded, and made to engage and support the outer sections, substantially as described.

9. In an article of furniture, the combination, with a section corresponding to the seat of a chair and a section corresponding to the back of a chair and pivoted to said seat-section, of a folding arm for said seat-section comprising a horizonal portion pivoted to the back-section and a vertical portion pivoted to the seat-section and to the horizontal portion, said horizontal portion consisting of two parts pivotally connected, and a brace pivoted to said seat-section and engaging the horizontal portion of said arm, substantially as described.

10. In an article of furniture, the combination, with the main body, which consists of four sections joined by hinge-connections and adapted to fold, as described, of the upholstering for said main body formed in sections and adapted to fold in a manner similar to that of the body-sections, one of the intermediate sections being provided with a supplemental portion on one or both sides of the same, substantially as described.

404,768. RELEASE-VALVE FOR AIR-BRAKES. GEORGE A. BOYDEN, Baltimore, Md., assignor to The Boyden Power Brake Company of Baltimore City, of Maryland. Filed Aug. 15, 1887. Serial No. 246,950 (No model.)

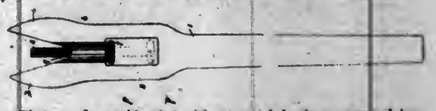


Claim.—1. In a fluid car-brake, the combination of the release-valve having passages F G for connection with the train-pipe, and a cock I', controlling said passages, whereby to make the valve operative or inoperative.

2. In a fluid car-brake, the combination of the train-pipe B on the car, an expansible chamber, two air-release valves, one on each side of the expansible chamber, and the cocks I', arranged to make either valve operative or inoperative.

3. In a fluid car-brake, the combination of the train-pipe having its terminals at opposite ends of the car, two air-release valves on the train-pipe between the said terminals, and the cocks, for the purpose set forth.

404,769. WRENCH. EDWARD S. BOYSTON, New York, N. Y., assignor to the Campbell Printing Press and Manufacturing Company, same place. Filed Nov. 26, 1888. Serial No. 291,872. (No model.)



Claim.—In combination with a wrench having a serrated jaw and an opposite plain jaw, forming a wedge-shaped opening between them, as 1, 3, and 4, an adjustable stop in the angle between the jaws, whereby said stop may be adjusted to any given diameter of object to be operated on, so as to permit of said object sliding on said smooth jaw until securely grasped by the teeth of the serrated jaw, and at that point to arrest the same from any further entrance into the angle of said jaws, thereby avoiding danger of the same being crushed, as set forth.

404,770. PIPE-WRENCH. EDWARD S. BOYSTON, New York, N. Y., assignor to the Campbell Printing Press and Manufacturing Company, same place. Filed Nov. 26, 1888. Serial No. 291,873. (No model.)



Claim.—In an adjustable wrench operating to rotate pipes or rods by means of a wedge-shaped opening on what is known as the "alligator" principle, the combination of a toothed or serrated jaw on one side of the angular opening, and a smooth jaw on the other side containing one or more steps or stops, as 2 3, whereby the opening between the jaws may be so adjusted that a firm hold is taken by the toothed jaw and flattening or crushing of the pipe or rod avoided, substantially as set forth.

404,771. BICYCLE. JOSEPH F. BIDEUX, Vineland, assignor of one-half to William H. Grosscup, Camden, N. J. Filed Feb. 18, 1888. Serial No. 300,334. (No model.)



Claim.—A bicycle having its backbone carved over and in the plane with the rim of the front wheel and having its lower end bent at substantially a right angle thereto, the rear wheel of substantially the same size as the front wheel and mounted on said bent end, and a saddle directly over the rim of the front wheel, said parts being combined substantially as and for the purpose set forth.

404,772. FILING-RECEPTACLE. AARON L. BROWN, Chicago, Ill. Filed Nov. 19, 1888. Serial No. 291,388. (No model.)



Claim.—1. The combination, with a filing-receptacle and a series of index-sheets, of a branched retaining post or rod having a part for detachable engagement with the index-sheets and laterally-projecting parts for engagement with the receptacle, substantially as described.

2. The combination, with a receptacle having a sectionally-T-shaped groove in its back wall, of a retaining-rod having laterally-extending parts engaging the wings of the T-groove, substantially as described.

3. The combination, with a receptacle having a sectionally-T-shaped groove in its back wall, of a retaining post or rod having a part engaged with the index-sheets and laterally-extending parts engaging the wings of the T-groove, substantially as described.

4. The combination, with the receptacle having a vertical groove or recess in its back wall and a recess *a* in its bottom and a series of apertured index-sheets, of a branched retaining-rod C, fitted at its rear side to rest against the walls of the groove, and provided with a part *e*, engaged with the aperture of the index-sheets, and constructed to engage the recess *a* at its lower and free end, and means constructed to retain the rod within the groove, substantially as and for the purpose set forth.

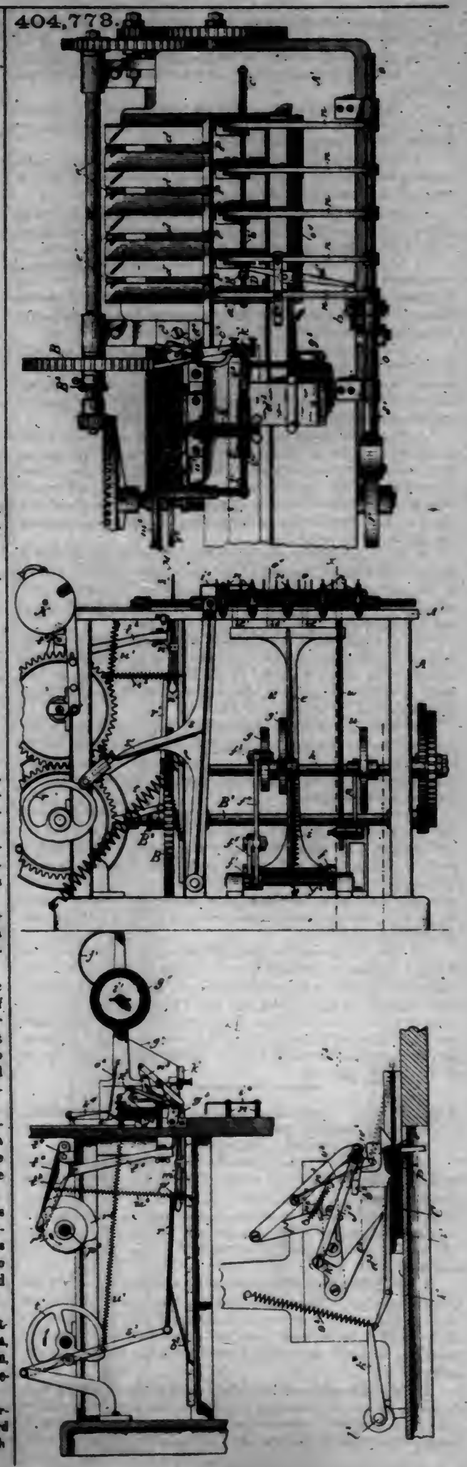
5. The combination, with a receptacle having a sectionally-T-shaped groove A^4, and provided with a recess *a* in its bottom, and a series of index-sheets, of a retaining-rod C, constructed to engage the wings of the T-groove and the said recess, and means for holding the rod in the groove, substantially as described.

6. The combination, with a receptacle having a T-groove in its back wall, and a series of index-sheets, of a rod C, having a part *e*, engaged with the index-sheets, and two laterally-separated parallel parts *e'*, connected with the part *e* at their upper ends and constructed to engage the recesses or wings of the T-groove, and means constructed to retain the said rod within the groove, substantially as described.

404,773. MACHINE FOR PACKAGING POSTAL-CARDS. WILLIAM H. BUNCE, Jersey City, N. J., and DWIGHT SLATE and JAMES RODDA, Hartford, Conn., assignors to Calvin C. Woolworth and Jno. S. Graham, New York, N. Y. Filed Mar. 13, 1886. Renewed Sept. 21, 1888. Serial No. 286,014. (No model.)

Claim.—1. In combination, the pockets *d* and the pocket-clearing device E, having the forward, downward, backward, and upward motions, all substantially as described, and for the purpose set forth

404,778.



2. The lateral feeding device composed of pivoted arms *n*, having the leftward, upward, rightward, and downward motions, as described, in combination with the independent pusher *a'*, actuated by lever *d'* and stop *b*, all substantially as described, and for the purpose set forth.

3. The pivotally-hung and vertically-reciprocating folding-finger p^3, in combination with its actuating-spring e^9, substantially as described, and for the purpose set forth.

4. In combination with the pivotally-hung and vertically-reciprocating folding-finger p^3, the reciprocating presser-lever w^5, all substantially as described, and for the purpose set forth.

5. In combination, pockets *d*, clearing device *e*, lateral feeding device *n*, pusher *a'*, tape-guide *k'*, grasping-pinchers *m' m'*, and shears e^8 e^9, all substantially as described, and for the purpose set forth.

6. In combination, in a machine of the within-described class, a receiving-pocket with slotted bottom, the pocket-clearing lever, and the mechanism, substantially as described, whereby the said pocket-clearing lever is given an intermittent reciprocation along the pocket alternately in and out of it, all substantially as described.

7. In combination with package-holding mechanism, substantially as set forth, the lever bearing the folding-finger and pivotally supported on a second lever, and the mechanism whereby the folding-finger is lifted from the end of the tape after it has been gummed and the package bound, all substantially as described.

8. The herein-described tape-feed mechanism, comprising a pair of pinchers consisting of levers *m' m'*, pivoted upon a reciprocating slide, the said levers being provided with cam-surfaces *w'*, pins *v'*, and a spring to hold the clamping ends separated when they advance to feed the tape, combined with the actuating-rod *r'* and links *p'*, carrying the pin *z'*, said links connecting the said rod and slide *n'* and operating the pincher-levers, as set forth.

9. The combination, with the pusher *a'* and the tilting folding-finger k^3, for doubling one end of the paper tape upon the package, of the mechanism for folding the other end upon the package, consisting of the pivotally-hung vertically-reciprocating folding-finger p^3 and its actuating-spring, substantially as described.

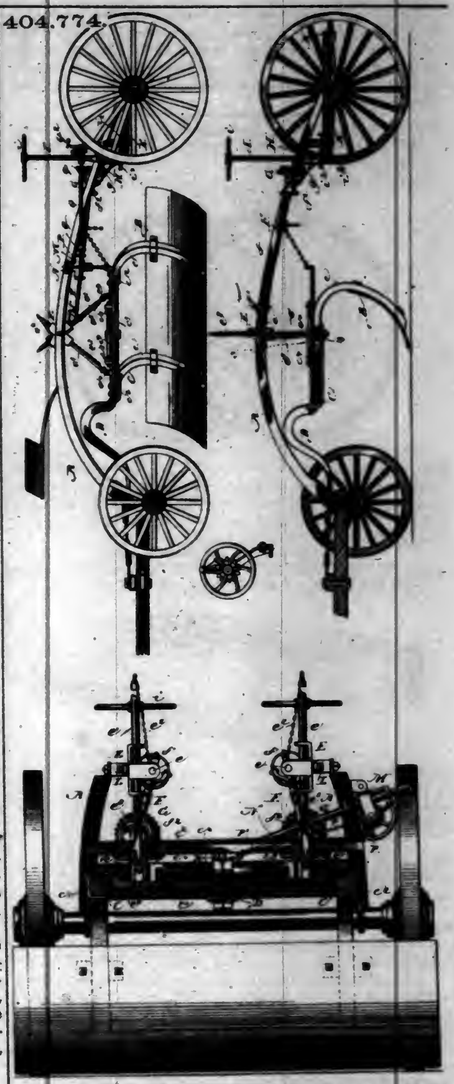
10. In a machine of the class described, the combination of the pockets *d*, pocket-clearing devices, substantially as set forth, and the lateral feeding device composed of pivoted arms *n*, having the leftward, upward, rightward, and downward motions, substantially as described, and for the purpose set forth.

11. In a machine of the class described, the combination of the pockets *d*, pocket-clearing devices, substantially as described, the lateral feeding device composed of pivoted arms *n*, having the four motions set forth, and the independent pusher *a'*, actuated by lever *d'* and stop *b*, as explained.

12. In a machine of the class described, the combination, with banding mechanism, substantially as herein described, in which the banding-tape is fed across the path of movement of the package of cards, of feeding mechanism, consisting of means, substantially as described, for imparting to a package of cards a main progressive movement, and a pusher *a'*, for imparting a supplementary movement to the package to move it into the place where it is bound with the tape, substantially as set forth.

13. In a machine of the class described, the combination, with the folding-finger p^3, pivotally hung to a lever l^6, and a lever l^5, pivoted to said lever l^3 and to the machine, of cams r^3 and r^3, substantially as shown, to operate the said levers in the manner described, whereby after the folding-finger has been operated to fold the tape upon a package its base is first lifted from contact with it and the finger drawn slightly backward before its downward movement begins, for the purpose set forth.

404,774. ROAD-SCRAPING MACHINE. MORTON G. BUNNELL, Chicago, Ill., assignor to Frederick C. Austin, same place. Filed Jan. 2, 1889. Serial No. 295,243. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the scraper-blade and a pair of extensible swinging hangers therefor, each comprising a member hung by a universal joint upon a support on the body-frame of the machine and a member having a suitable connection with the scraper-blade and a sliding connection with the said member which is hung by a universal joint, for the purpose described.

2. The combination, substantially as hereinbefore set forth, of the scraper-blade and a pair of sliding rods having jointed connections with the scraper-blade, and brackets supported from the body-frame of the machine by universal joints and provided with bearings with which the slide-rods have sliding connections, for the purpose described.

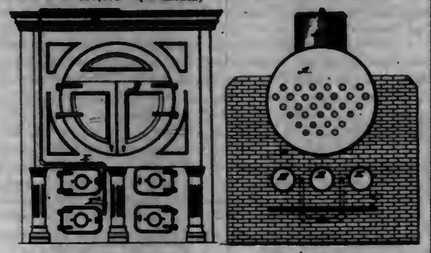
3. The combination, substantially as hereinbefore set forth, with the scraper-blade, of a swinging hanger therefor, comprising a slide-rod having a suitable connection with the scraper-blade, a swinging bearing with which the said rod has a sliding connection, and a winding-shaft supported with the swinging bearing and connected with the slide-rod by chains respectively for raising and lowering the same.

4. The combination, substantially as hereinbefore set forth, with the scraper-blade, of a swinging hanger therefor, comprising a slide-rod, a swinging bearing with which the said rod has a sliding connection, a winding-shaft connected with the slide-rod by chains, for the purpose specified, and a jointed rotary shaft connected with the rotary winding-shaft as a means for operating the same.

5. The combination of the scraper-blade and means for moving the scraper-blade toward either side of the machine, consisting of a slide-rod having a jointed connection with the scraper-blade and a sliding connection with a joint-supported bearing, and winding device, such as set forth, for operating the slide-rod.

6. The combination, substantially as hereinbefore set forth, of the scraper-blade, the segment C, consisting of a bar having its horizontal curved portion provided with notches and its bent ends secured to the scraper-blade, the draft-bar having a bearing for the horizontal portion of the segment, the locking-lever R, pivoted upon the draft-bar, a foot-lever *r'* below the driver's seat, and a rod *r*, connecting the foot-lever with the locking-lever, for the purpose described.

404,775. SMOKE-CONSUMER. JAMES C. BUTLER, Quincy, Ill., assignor of one-half to Hiram Best, same place. Filed Mar. 18, 1889. Serial No. 303,982. (No model.)



Claim.—1. The combination, with a boiler and the furnace and bridge-wall of the same, of flues leading through the bridge-wall, a main pipe passing through the bridge-wall below the furnace-grate, branch pipes leading from the main pipe up and forward through the bridge-wall above the furnace-grate, and a steam-pipe leading from the boiler-dome to the main pipe.

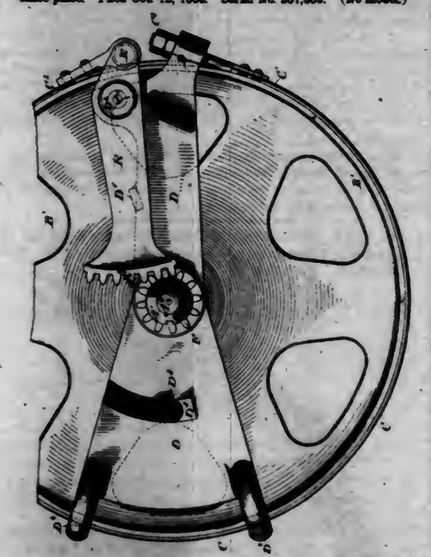
2. The combination, with a boiler and the furnace and bridge-wall of the same, of flues leading through the bridge-wall, the main pipe and the branch pipes, the apertured end cap, and the steam-pipe, substantially as set forth.

3. The combination, with a boiler and the furnace and bridge-wall of the same, of flues leading through the bridge-wall, the main pipe and the branch pipes, the apertured end cap, and the steam-pipe having the tapering lower end, substantially as set forth.

4. The combination, with a boiler and the furnace and bridge-wall of the same, of the tapering flues, the main pipe having the apertured end cap, the branch pipes, and the steam-pipe having the tapering lower end, substantially as set forth.

5. The combination, with a boiler and the furnace and bridge-wall of the same, of the tapering flues, the inclined floor, the main pipe having the apertured end cap, the branch pipes, and the steam-pipe, substantially as set forth.

404,776. FRICTION CLUTCH AND BRAKE. THOMAS W. CAPEN, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Oct. 12, 1888. Serial No. 287,889. (No model.)



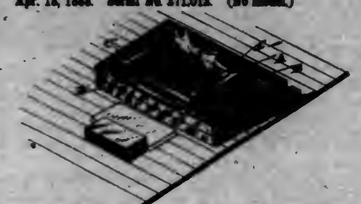
Claim.—The combination of a driving-shaft, a wheel provided with a friction-rim turning loosely on the shaft, a casting D, secured to the driving-shaft, a brake-lever pivoted to the casting, a strap secured at one end to the casting and at the other to the brake-lever, a pinion engaging with said lever to operate it, a handle secured to said pinion, and a locking device consisting of the socket D^2 in the casting, the bolt G', and the lever G^2, secured thereto in the handle, adapted to lock the handle in place, substantially as set forth.

404,777. FORK-GUARD. REGINALD R. B. CLAYTON, London, England. Filed Apr. 9, 1888. Serial No. 306,662. (No model.)



Claim.—A fork-guard having a plate adapted to lie along the top of the stem of the fork and whose end is bent downward and backward, passing between the prongs and holding beneath them, and which is provided with spring-jaws to clasp the stem of the fork, substantially as described.

404,778. DUPLICATING APPARATUS. GEORGE H. DAVIS, Washington, D. C., assignor to Augustus D. Kimber, New York, N. Y. Filed Apr. 18, 1888. Serial No. 271,012. (No model.)

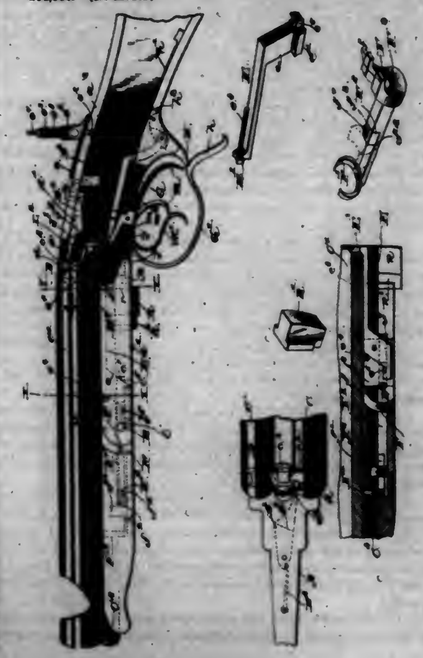


Claim.—1. In a duplicating apparatus, a printing-stencil with one or more air-holes made therein for releasing a sheet adhering to the said stencil, substantially as described.

2. In a duplicating apparatus, the combination, with a stencil-frame, of a printing-board constructed with an inclined surface at its hinged side and cut away between the hinges, so as to leave a longitudinal opening, substantially as and for the purposes described.

3. In a duplicating apparatus, the combination of a stencil-frame the inner side A' of which is rounded off, and a printing-board constructed with an inclined surface at its hinged side and cut away between the hinges, so as to leave a longitudinal opening, substantially as and for the purposes described.

404,779. BREECH-LOADING FIRE-ARM. WILLIAM DICKE and CASSIUS M. BARKER, Albion, Mich. Filed Nov. 21, 1888. Serial No. 291,510. (No model.)



Claim.—1. The combination, with the breech-frame having the barrels pivoted thereto, of the adjustable guard engaging the front end of the breech-frame at its rear end and provided at its front end with a spring-catch engaging the barrel, the stationary block on the barrel and adjustable block on the guard bearing against the stationary block, and the compensating screw mounted in the guard and bearing against the adjustable block, substantially as and for the purpose specified.

2. The combination, with the breech-frame having the barrels pivoted thereto, of the adjustable guard provided at its front end with a spring-catch F' to engage the barrel, the stationary block f' on the barrel, the slotted adjustable block F^3, mounted on a guiding-screw on the guard and adapted to bear against the rear side of the stationary block, and the compensating screw F^5, mounted in a threaded bore F^6 in the guard and bearing at its front end against the rear side of the adjustable block, substantially as specified.

3. The combination, with the breech-frame having a transverse hinge-pin in its front end, of the depending notched tongue on the barrel engaging the said hinge-pin, the depending lug R on the heel of the barrel, fitting in a slot in the breech-frame, and the compensating key R', located in front of the said lug and bearing against its front side, substantially as specified.

4. The combination, with the breech-frame having a transverse hinge-pin, of the depending notched tongue on the barrel engaging the said pin, the compensating plug arranged in a longitudinal bore in the tongue and bearing against the hinge-pin, and the screw-fitting in a threaded portion of the said bore and bearing against the said plug, substantially as and for the purpose specified.

5. The combination, with the breech-frame provided at its front end with a longitudinal slot, of the depending tongue on the barrel fitting in the said slot and pivoted to the breech-frame, the compensating plug fitting in a longitudinal bore in the tongue, and the adjustable guard attached to the front end of the breech-frame, all constructed and arranged substantially as specified.

6. The combination, with the breech-frame and the barrels pivoted thereto and having a depending tongue c, of the extractor mounted on the barrel and provided with a depending web e, having an inclined front side, the stationary pin c^4 in the breech-frame adjacent to the said web and adapted to bear on the inclined front side, and provided with ribs engaging grooves in the tongue c thereof, and the head on the extractor fitting in a notch at the breech of the barrels, substantially as and for the purpose specified.

7. The combination, with the breech-frame and the barrels pivoted thereto, of the extractors mounted on the barrels and provided with heads fitting in notches at the rear ends of the barrels, the forwardly-extending guiding-pins c^2 on the heads, the depending webs e e, provided with inclined front sides operating in contact with a stationary pin c^4, and the extensions or stops e^5 at the lower ends of the said webs on the front sides of the same, which are adapted to bear against the said stationary pin to limit the movement of the barrels, substantially as specified.

8. The combination of the breech-block having a transverse perforation a^4, the barrels provided with a lug c^3, having a flattened perforation c^5, adapted to register with the perforation a^4, the locking-bolt mounted in said perforations and having a flattened lower side and provided with a notch d, the operating-lever D', pivoted on the breech-block and having its front end engaging the notch d, and the spring D^2, secured to the breech-block and bearing on the heel of the lever, as set forth.

9. The combination, with the breech-frame having the block a, provided with a transverse perforation a^4, and the barrels pivoted to the said frame and adapted to bear at their rear ends against the said block, of the lug c^3 on the rear end of the barrels, fitting in a vertical slot a^6 in the block a, and provided with a transverse perforation c^5, which is flattened at its lower side and registers with the perforation a^4, and the locking-bolt D, mounted in the perforation a^4 and provided with a tapered and flattened inner end to fit the perforation in the lug c^3, and the spring-actuated lever connected to the said bolt, substantially as specified.

10. The combination, with the barrel having an open breech and the hammer aligned with the breech, of the cocking-lever arranged adjacent to the trigger-guard, and the draw-bar or link having its rear end pivoted to the cocking-lever and its front end engaging the hammer, substantially as specified.

11. The combination, with the hammer arranged opposite the open breech of the barrel and provided with a shoulder, of the cocking-lever, the spring bearing at its free end on the said lever to hold it normally in the desired position, and the draw-bar or link pivoted at one end to the cocking-lever and provided at its front end with a transverse pin to engage the shoulder on the hammer, substantially as specified.

12. The combination, with the hammer provided with a shoulder, of the trigger-guard cut away at its rear end, the cocking-lever pivoted to the trigger-plate and fitting in the opening in the trigger-guard to complete the same when in its normal position, and the draw-bar or link connected to the cocking-lever and provided with a transverse pin engaging the shoulder on the hammer, substantially as specified.

13. The combination, with the breech-frame, the barrels pivoted thereto and provided with a rearwardly-extending perforated lug c^3, fitting in an opening in the breech-frame, and the locking-bolt mounted in the breech-frame and engaging the perforated lug, of the spring-actuated operating-lever connected at its front end to the locking-bolt and provided with an inclined shoulder d', the hammer mounted in the breech-frame and provided with a shoulder, the cocking-lever provided with an operating-spring, and the draw-bar or link pivoted at its rear end to the cocking-lever and provided at its front end with a transverse pin engaging the shoulder on the hammer, and a beveled projection which bears against the inclined shoulder d' when the draw-bar or link is drawn rearwardly, substantially as and for the purpose specified.

14. The combination, with the barrels C C' C^2, of the hammers J J, provided with the shanks j j, having rear notches J^3 and shoulders J^5, and the firing-pins J', connected to the shanks, the hammer K, provided with a firing-pin and having a shoulder K^2 and sear-notches K^3, the springs coiled on the said hammers, the triggers M M, provided at their front ends with sears m m to engage the rear notches in the hammers J J, the trigger M', provided with the sear n' to engage the sear-notches in the hammer K, the sear-springs bearing on the heels of the said triggers, the cocking-lever, and the draw-bar or link connected to the said lever and provided with a transverse pin engaging the shoulders J^5 J^5 and K^2 on the hammers, substantially as specified.

404,780. WATER-CONVEYER. Frank D. Down, Cortland, N. Y. Filed Sept. 29, 1888. Serial No. 286,812. (No model.)



Claim.—1. An apparatus for conveying water, consisting of a series of telescopic tubes, each tube made tapering, whereby, when extended, the larger end of one tube will fit tightly within the smaller end of the adjacent tube, and a head-section provided with a mouth-piece carrying a swiveled head adapted to receive the spout or mouth-piece of a hydrant or supply-pipe, substantially as specified.

2. An apparatus for conveying water, consisting of a series of telescopic tubes, each tube made tapering, so that when extended for use the larger end of each tube will fit tightly within the smaller end of each adjacent tube, a head-section provided with a mouth-piece carrying a swiveled head, and a foot-piece provided with a rest or holder for retaining said foot-piece in proper position, substantially as specified.

3. A water-conveyer consisting of a series of intermediate telescopic tubes a, the end sections B and C, the former provided with a plate b and standards b', and the latter with an elbow c and swiveled head c' c^2, substantially as specified.

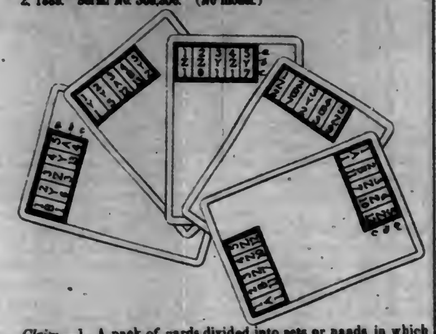
404,781. PIPE-WRENCH. Charles L. Dunham, Union City, Pa., assignor to William F. Rupp, Chicago, Ill. Filed Jan. 12, 1888. Serial No. 260,563. (No model.)



Claim.—1. The combination, with the handle, of two corresponding arms pivoted one at each side thereof and provided with lugs and curved springs having their free ends engaging said lugs, substantially as set forth.

2. The combination, with the handle, of two corresponding arms pivoted one at each side thereof and provided with lugs, lugs upon said handle, curved springs disposed one at each side the handle and engaging the lugs on the arms, said springs being secured between the lugs on the handle, a plate secured to the latter, an arm provided with teeth, and links connecting the same with the spring-actuated arms, substantially as set forth.

404,782. PLAYING-CARDS. Robert F. Fuerst, Baltimore, Md., assignor of one-half to Alexander J. Leith, New York, N. Y. Filed May 2, 1888. Serial No. 308,266. (No model.)



Claim.—1. A pack of cards divided into sets or nands, in which each card is provided with an indicator designating the order in which that card should be arranged in its hand, substantially as described.

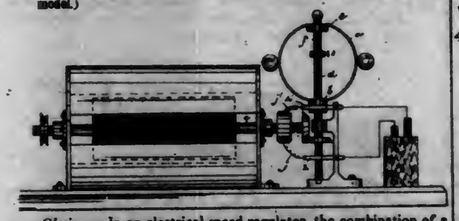
2. A pack of cards divided into hands, in which each card is provided with an indicator designating the order of playing in a prearranged game, substantially as described.

3. A pack of cards divided into hands, in which each card in each hand is provided with two indicators, one distinguishing the card from those of other players and the other designating the order in which the card should be played in a prearranged game, substantially as set forth.

4. A pack of cards divided into hands, and in which the cards are provided with two series of indicators, one series designating the cards of different players and the other the order of playing the cards in a series of prearranged games, substantially as set forth.

5. A pack of cards divided into hands, and in which each card is provided with indicators designating the hand to which it belongs and the order of its playing in prearranged games, and with a third series of indicators designating the order of the games, substantially as set forth.

404,783. REGULATOR FOR ELECTRIC MOTORS. Alfred Gartner, Newark, N. J. Filed June 7, 1888. Serial No. 276,371. (No model.)

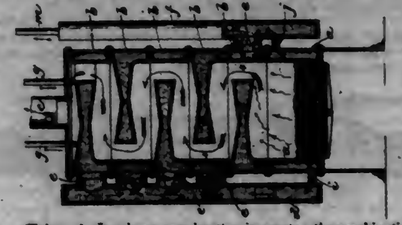


Claim.—In an electrical speed-regulator, the combination of a rotary shaft, an insulated collar, conductors j j', a hoop fixed to said insulated collar and moving longitudinally on said shaft under the influence of centrifugal force, and a contact-bearing adapted to engage the hoop and complete an electrical circuit, substantially as and for the purposes set forth.

2. In an electrical speed-regulator, the combination of a shaft d, an insulated hoop a, and a collar k, arranged on said shaft and adapted to transmit the current from the said hoop to the shaft, substantially as and for the purposes set forth.

3. In an electrical speed-regulator, the combination of an insulating-sleeve b', arranged on a rotary shaft d, a collar b, arranged on said sleeve, a hoop fixed to said collar and to a sliding collar insulated, as at c', from said shaft, and a collar k, adapted to make a contact with said sliding collar, and conductors j j', connected with the shaft and collar b, respectively, said parts being arranged and combined substantially as and for the purposes set forth.

404,784. WATER-HEATER. Ebenezer H. Gayer, Fitchburg, Mass. Filed Mar. 16, 1888. Serial No. 303,637. (No model.)



Claim.—1. In a hot-water heating apparatus, the combination of a fire-pot section having an outlet for hot water at its upper portion, a series of superposed sections arranged to be heated by the fire within the fire-pot section, and a return or inflow stand-pipe connected, as described, with the upper and lower portions of said superposed sections and with the lower portion of the fire-pot section, as set forth.

2. In a hot-water heating apparatus, the combination of a fire-pot section, a series of superposed sections arranged to be heated by the fire within the fire-pot section, a return or inflow stand-pipe connected, as described, with the upper and lower portions of said superposed sections and with the lower portion of the fire-pot section, and an outflow pipe or pipes connected with the upper portion of the fire-pot section, as set forth.

3. In a hot-water heating apparatus, the combination of a fire-pot section, a series of superposed sections arranged to be heated by the fire within the fire-pot section, an outflow-pipe connected with the upper portion of the fire-pot section and with the upper and lower portions of one or more of said superposed sections, and a return or inflow pipe connected with the upper and lower portions of the other superposed sections and with the lower portion of the fire-pot section, as set forth.

4. In a hot-water heating system, the combination of a fire-pot section and a series of superposed sections above the same, outflow-pipes communicating with the upper portion of the fire-pot section and conducting heated water therefrom, return-pipes conducting the return water to the highest of the superposed sections, and connections between said superposed sections and the fire-pot section, whereby the return water, the outflow of which is induced by the upward flow of heated water from the fire-pot section, is conducted from the upper superposed section successively through the other sections of said series and into the lower portion of the fire-pot section, as set forth.

5. In a hot-water heating apparatus, the combination of the fire-pot section a, the superposed sections b, relatively arranged, as described, and each composed of a hollow wall or water-leg, and a horizontal chamber located within the water-leg and above its lower portion, said chamber being separated from the water-leg at one side by an opening 4, the stand-pipe d, connected, as described, with the upper and lower portions of the sections b and with the lower portion of the fire-pot section, and an outflow pipe or pipes communicating with the upper portion of the fire-pot section, as set forth.

404,785. ORNAMENTAL VESSEL OR ARTICLE. Thomas R. Gibson, Glasgow, County of Lanark, Scotland. Filed June 8, 1888. Serial No. 276,526. (No model.)

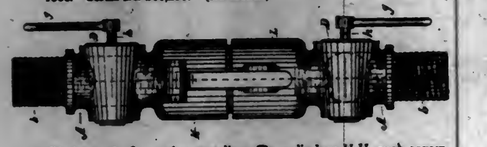


Claim.—1. An ornamental vessel or article consisting of the combination of a foundation or body substance with a woven-fabric covering of open-work stretched over the foundation and showing the color or ornamentation of the latter, substantially as and for the purpose herein set forth.

2. An ornamental vessel or article consisting of the combination of a foundation or body substance with a woven-fabric covering of

open-work carrying a design or ornamentation and stretched over the foundation, but showing through it the color of the latter, substantially as and for the purpose herein set forth.

404,786. STEAM-PIPE COUPLING. FREEMAN HARMON, Hollis, assignor of one-half to Charles B. Harmon, Biddeford, Me. Filed Jan. 7, 1888. Serial No. 260,253. (No model.)



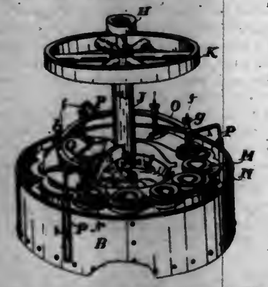
Claim.—1. In a pipe-coupling, the cylinders H H, each screw-threaded at its outer end and connected thereby with the part A, and each having on opposite sides projecting lug W and latching-rod Y, hinged thereto, and an inclined plane V, and lugs *b'* and cam-lever L, pivoted thereto, substantially as described.

2. In a pipe-coupling, the two cylinders H H, each screw-threaded at the end and provided with locking-latches and levers, as described, for securing them together and internally with stop *s* and rim *p*, and movably within it a spring-actuated central valve-stem *j*, centrally surrounded by the beveled collar *k*, having radial arms *m* and the rim *q*, and centered in cross-piece *l*, substantially as described.

3. In a pipe-coupling, the combination of the part A, screw-threaded, as described, at each end, and having the cock or valve D, with the cylinder H, screw-threaded at one end to engage with the part A, and having within it a spring-actuated valve and externally on one side an incline and a cam-lever and on the other side a latching-rod, substantially as described.

4. A pipe-coupling each part of which is composed of the following elements, viz: a screw-threaded end for attachment to the pipe, a drip-valve in said end, a cylinder connected with said end by screw-threads and having externally means for locking it to the opposite part, said means consisting of an incline and cam-lever on one side and on the opposite side a latching-rod and internally a central spring-actuated stop-valve adapted to be opened when the two parts of the coupling are united, substantially as described.

404,787. GRINDING-MACHINE. CHARLES H. HENDERSON, Canton, Ohio, assignor to the Canton Glass Company, same place. Filed June 8, 1888. Serial No. 276,445. (No model.)



Claim.—1. In a grinding-machine for glass and other wares, the combination, with the shaft D and the grindstone secured thereto, of a hollow shaft J, sleeved upon shaft D, a frame O, a plate Q, having a yielding connection with the said frame, means for adjusting said plate and frame in unison, and a disk for holding the ware to be ground, said disk secured to the shaft J, substantially as set forth.

2. In a grinding-machine for glass and other wares, the combination, with the shaft D and a grindstone secured thereto, of a hollow shaft J, sleeved upon said shaft D, a disk for holding the ware to be ground, an adjustable frame O, a plate Q, having a yielding engagement with said frame, means for adjusting said plate and frame in unison, and means for adjusting said disk independently of said frame and plate, substantially as set forth.

3. In a grinding-machine for glass and other wares, the combination, with a vertical shaft D and a horizontal grinding-stone adjustably secured thereto, of a hollow shaft J, embracing and rotating about said shaft D, disk M, secured to the shaft J, and pulleys H and *k*, by which the stone G and disk M may be rotated at different speeds, substantially as set forth.

4. In a grinding-machine for glass and other wares, the combination of the supporting-frame A, inclosing-case B, vertical shaft D, a plate F, adjustably secured to said shaft, a grinding-stone G, secured to said plate, a collar *c*, adjustably secured to shaft D, a hollow shaft J, embracing shaft D, a disk M, secured to said hollow shaft, holders N, secured to said disk, frame O, adjustably secured to the case B, pressure-plate Q, and pulleys H and *k*, by which the grinding-stone and the plate F may be rotated at different rates of speed, substantially as set forth.

404,788. FENCE-POST. JOHN KELLY, Troy, Ohio, assignor to himself, George C. Kelly, Orrin Kelly, George S. Heiman, and W. A. Evans, all of same place. Filed Mar. 6, 1889. Serial No. 302,360. (No model.)

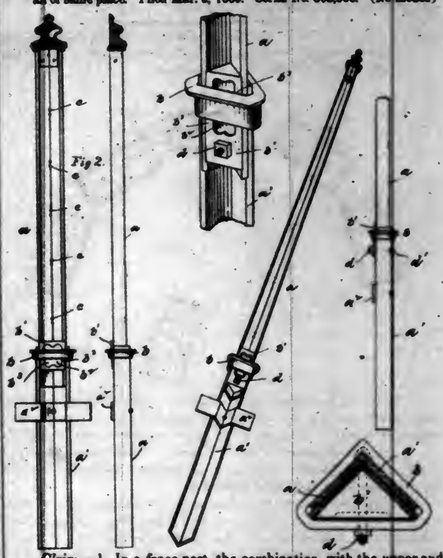


Fig 2.

Claim.—1. In a fence-post, the combination, with the upper and lower parts formed of angle-iron, as described, one of the parts being adapted to lap the other, with the wings of the angle-iron parallel, of a triangular wedge-shaped key adapted to fit in the angle of said iron, and a clamping-ring extending around said angle iron and key and adapted to be driven on said wedge to draw the parts together, substantially as specified.

2. The combination, with the upper and lower angle-iron pieces adapted to lap each other, as described, of a triangular clamping-ring extending around said pieces, a triangular wedge-shaped key having a depression and side ways thereon adapted to be inserted in the angle of the parts under said ring, and a fastening-bolt for securing said parts and key in position, substantially as specified.

404,789. WHEELBARROW. WILBER E. KILBORN, Sidney, Ohio, assignor of one-half to William H. C. Goode, same place. Filed Feb. 27, 1889. Serial No. 301,357. (No model.)

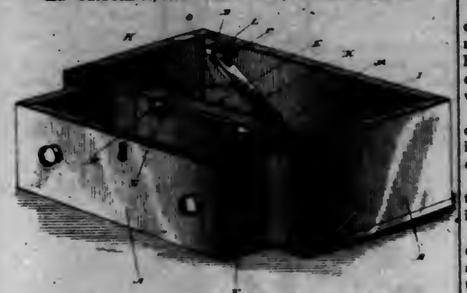


Claim.—1. In a wheelbarrow-frame, a bar-metal yoke for the support of the front end of the tray, said yoke being so shaped that its middle portion will conform to the outline of the tray transversely and so that its end portions will extend down to the ends of the wheel-axle to form bearings for the same, substantially as described.

2. In a wheelbarrow-frame, metal trusses for supporting the middle portion of the tray, each of which is so constructed as to spring from the end of the wheel-axle, over which it is passed, to the bottom of the tray and thence to the leg near its bottom, it being bolted to each of said parts, substantially as set forth.

3. A wheelbarrow-frame comprising the trusses, the yoke, the legs, and the handles, each leg being formed integral with one of the handles, and the longitudinal and transverse braces, all constructed and combined substantially as described, and for the purpose stated.

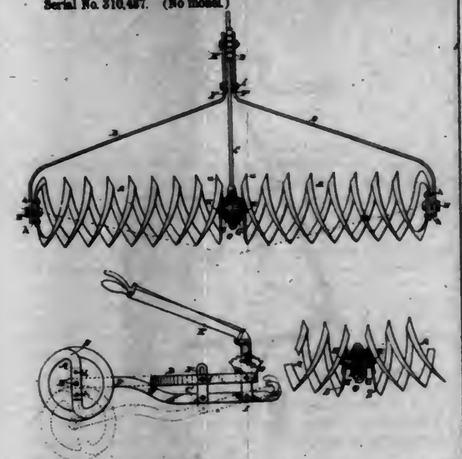
404,790. FURNITURE-DRAWER. JOSEPH H. KRAUS, Fayette, Mo. Filed Jan. 17, 1889. Serial No. 296,582. (No model.)



Claim.—1. The combination, with the case and drawer, of the bar K, pivotally connected at one end to a fixed point in the case and having the pin or screw at its free end, the bar H, secured to the drawer and having the slot I at one end engaged by the pin or screw, and the link-rod connecting the opposite end of the bar H with the center of the bar K, substantially as described.

2. The combination, with the case and the drawer, of the cleats F, secured to the latter, the bar H, rabbeted in recesses in the upper edges of said cleats and having the slot I at one end, the bar K, pivotally connected at one end to a fixed point in the case and having the pin or screw at its outer end working in the slot I, and the link-rod connected to the end of bar H opposite said slot, and also connected to the center of bar K, substantially as described.

404,791. PULVERIZING-HARROW. CHARLES LA DOW, Albany, N. Y. Original application filed Oct. 26, 1886, Serial No. 217,133. Divided and this application filed June 8, 1887. Renewed May 11, 1889. Serial No. 310,457. (No model.)



Claim.—1. In a pulverizer, the double spirals A, mounted upon each other, in combination with a draft-frame.

2. In a pulverizer, a draft-frame, in combination with a gang of spiral cutters mounted upon each other so as to have spring motion or resilience.

3. In a pulveriser, two gangs of opposing cutters, buffers having flattened abutting surfaces between the gangs, a box which loosely envelops the buffers, so they can roll upon each other, and a draw-bar for the box, in combination with a draft-frame.

4. In a pulverizer, two gangs of opposing cutters, buffers having flattened coavex abutting surfaces working against each other between the gangs, and a box which loosely envelops the buffers, so they can roll upon each other, for maintaining both buffers in a uniform horizontal and vertical plane with each other, in combination with a draft-frame.

5. In a screw-pulverizer, the combination of the double spiral cutters having the end pieces or bars S, for attaching the spirals to each other.

6. In a pulverizer, two gangs of horizontally-adjustable cutters and a draft-frame, in combination with a lever for operating the bar C, said lever being bent rearward, so as to be reached from the rear of the gangs.

7. In a pulverizer, a draft-frame, two gangs of cutters, and two opposing buffers having flattened abutting heads, each head being mounted on a stem smaller than the head, in combination with a coupling-box loosely enveloping the buffers, so they can roll upon each other, and having flanges which coact with the buffer-heads to prevent the gangs from spreading apart.

8. In a pulverizer, a cylindrical gang of spiral cutters composed of two or more strips of metal mounted upon each other by means of intermediate fastenings, which are attached to the strips at two points only at or near the ends of the gang.

9. In a pulverizer, a cylindrical gang of spiral cutters adapted to revolve upon hubs or pins attached to the ends of the spirals only, in combination with a draft-frame connected with said hubs or pins.

10. In a pulverizer, a draft-frame, in combination with a cylindrical gang of spiral cutters adapted to thrust part of the soil laterally and to permit part thereof to pass through the gang without encountering other obstruction than presented by the spirals.

11. In a harrow or pulverizer, the combination, substantially as set forth, of two gangs of cutters set at right angles to the line of draft and adapted to create end-thrust by contact with the soil, a draft-frame, connections between the extreme outer ends of the gangs, and said frame located in the axial line of the gangs, and a hinge-connection between the extreme inner ends of the gangs and frame on which each gang independently vibrates, also located in the axial line of the gangs, whereby the end-thrust of the gangs is counteracted from a point directly in line with the center of revolution of the gangs.

12. In a pulverizer, a cylindrical spiral cutter without an interior frame or axle, adapted to revolve in bearings at its ends, in combination with a draft-frame in which it is mounted.

13. In a pulverizer, two opposing gangs of right and left spiral cutters adapted to counteract the inward side-thrust of each other by contact between their inner ends, in combination with a draft-frame in which the gangs are mounted.

14. A spiral cutter formed of a continuous strip of metal coiled into a cylindrical spiral without an interior frame or axle shape, and supported at its ends only.

15. A cutter formed of a continuous strip of spring metal coiled into a cylindrical spiral the convolutions of which are capable of springing or vibrating, for the purpose described, in combination with a frame in which it is mounted.

16. The combination of the frame and draft devices and spiral cutters which throw the earth from each other and are so constructed as to permit part of the earth cut up to pass inwardly endwise through the cutters to fill the furrow formed at their inner ends.

404,792. WINDOW. HENRY MABURER, Brooklyn, N. Y., assignor of one-half to William Heinemann, same place. Filed Oct. 16, 1888. Serial No. 288,237. (No model.)



Claim.—1. The combination of a glass-holding frame pivoted at opposite sides to sliding sash-rabbet strips, said strips being provided with cord-receiving recesses extending from the upper rear edge thereof through to the front edge thereof, substantially as set forth.

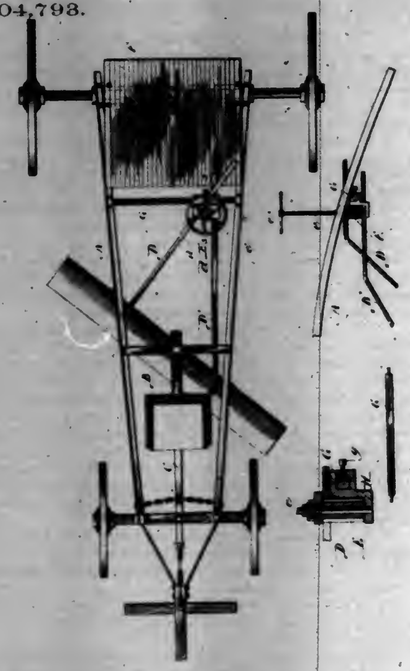
2. The combination of a glass-holding frame pivoted at opposite sides to sliding sash-rabbet strips, said strips being provided with cord-receiving recesses extending from the upper rear edge thereof through to the front edge thereof, and a cord-fastening pin, substantially as set forth.

3. The combination of a glass-holding frame pivoted at opposite sides to sliding sash-rabbet strips, said strips being provided with cord-receiving recesses extending from the upper rear edge thereof through to the front edge thereof, and a spring which presses the sliding strip to the glass-frame, substantially as set forth.

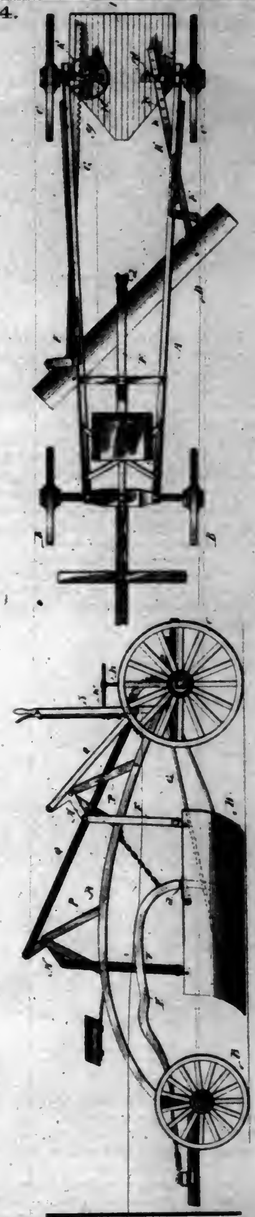
404,793. ROAD-SCRAPER. GEORGE H. MILLER, Ashton, assignor to Frederick C. Austin, Chicago, Ill. Filed Jan. 26, 1889. Serial No. 297,867. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, of the scraper-blade and a reversing device consisting of a couple of longitudinally-movable reversing-rods, and a reversing device com-

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mon to both rods and adapted for shifting the rods longitudinally in opposite directions.

2. The combination, substantially as hereinbefore set forth, with the scraper-blade, of the two reversing-rods and the reversing-gear common to both rods, for the purpose described.

3. The combination, substantially as hereinbefore described, with the scraper-blade, of the reversing-rods and a gear common to both rods and supported upon a rocking bearing.

4. The combination, substantially as hereinbefore set forth, with the scraper-blade, of the reversing-rods and the reversing-gear common to both rods and adjustable transversely to the line of progression.

5. The combination, substantially as hereinbefore set forth, with the scraper-blade, of the reversing-rods connected therewith, and the reversing-gear common to both rods and mounted upon a rocking bearing which is adjustable transversely to the line of progression.

6. The combination, substantially as hereinbefore set forth, with the scraper-blade, of the reversing-rods D and D', the reversing-gear common to both rods, the bearing H, carrying the reversing-gear, and the rocking shaft upon which said bearing is adjustably secured.

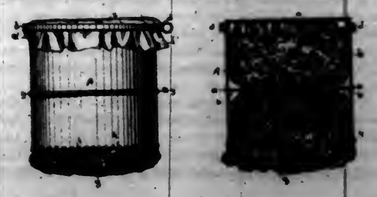
404,794. ROAD-SCRAPER. ORTUS E. MOATS, Chicago, Ill., assignor to Frederick C. Austin, same place. Filed Jan. 18, 1889. Serial No. 296,760. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, in a wheeled road-scraper, of the scraper-blade pivotally connected midway of its ends with a draft-bar, and a pair of adjusting-bars extending rearwardly from the scraper-blade and pivotally connected therewith at opposite sides of the pivotal connection between the scraper-blade and the draft-bar, said adjusting-bars being both adjustably held at the rear of the machine, for the purpose set forth.

2. The combination, substantially as hereinbefore set forth, with the scraper-blade arranged to swing or vibrate horizontally about a vertical line midway of its ends, of a pair of adjusting-bars extending rearwardly from the scraper-blade and connected therewith respectively at opposite sides of its longitudinal middle, one of said adjusting-bars being provided with a line of teeth, and a gear for operating said adjusting-bar, for the purpose described.

3. The combination of a draft-bar E, the scraper-blade D, pivotally connected with the draft-bar the, adjusting-bars G and K, the gear for adjusting one of said bars, and the device—such as set forth—for locking the other one of said bars, for the purpose described.

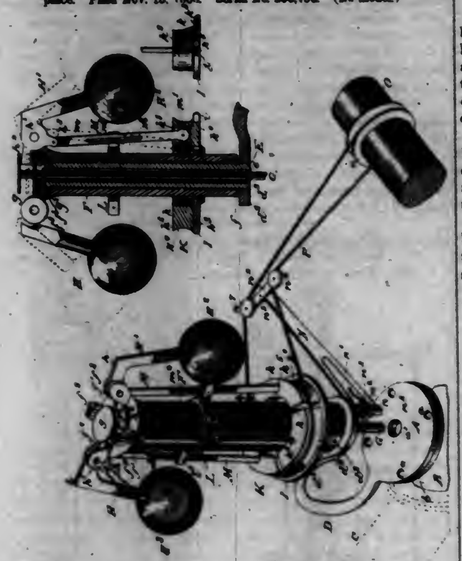
404,795. SLATE-CLEANER. JAMES M. MCFARLAND, Columbus, Ohio. Filed Aug. 30, 1888. Serial No. 284,156. (No model.)



Claim.—1. The combination, with the case A, having perforated partition *b*, of the supply and erasing sponges *h* and *g*, located, as described, within said case, and follower *c*, substantially as and for the purpose specified.

2. The combination, with the case A, having perforated partition *b* and hinged bail *d*, of the supply and erasing sponges *h* and *g*, located within the case, as described, follower *c*, and drying-cloth *i*, the latter held by bail *d*, described, substantially as and for the purpose specified.

404,796. STEAM-VALVE GOVERNOR. FREDERICK R. PETTENGILL, Rosedale, Kans., assignor of one-half to Edward Nicholson, same place. Filed Nov. 13, 1888. Serial No. 290,758. (No model.)



Claim.—1. In a centrifugal governor having fly-weights and a rotating sleeve, the combination, with said sleeve and weights, of a fixed plate, and an alternately expanding and contracting pulley having its sections movably keyed on said plate, and levers connected with said fly-weights and the sections of said pulley, substantially as described.

2. In a centrifugal governor having fly-weights and alternately expanding and contracting pulley, and oscillating bars connected with said pulley and said weights, for the purpose described.

3. In a centrifugal governor having fly weights and arms, the combination, with said arms, of a pulley consisting of movable sections, and oscillating bars connected with said arms and said sections and radially adjustable, as and for the purpose described.

4. In a centrifugal governor having a rotary sleeve and fly-arms on said sleeve adapted to support the fly-weights, the combination, with said arms and sleeve, of a pulley consisting of movable sections, oscillating bars connected with said arms and said sections, and an adjustable collar upon said sleeve having lugs pivotally connected with said bars, for the purpose described.

5. In a centrifugal governor, the combination, with the rotating sleeve, of fly-weights, a radial supporting-plate, and a pulley having alternately expanding and contracting sections, and a recess in each section, radial lugs on said sleeve, and oscillating bars connected with said fly-weights and pivotally connected with said lugs, having an anti-friction end portion adapted to enter said recess in said section, for the purpose described.

6. In speed-regulating mechanism for engines, a governor having fly-weights, an alternately expanding and contracting pulley on said governor having movable sections, a driven shaft, a power-conveying belt connected with the sections of said pulley and said shaft, and levers connected with the sections of said pulley and said fly-weights, for the purpose described.

7. In speed-regulating mechanism for engines, the combination of a governor having fly-weights, and an alternately expanding and contracting pulley having movable sections, levers connected with said sections and said fly-weights, a driven shaft, a power-conveying belt connected with the sections of said pulley and said shaft, and a self-acting belt-adjusting arm adapted to adjust the alignment of and tension of said belt, as described.

404,797. BOTTLE-STOPPER. GEORGE RENFUSS, JOHN G. RENFUSS, and MARTIN G. RENFUSS, Philadelphia, Pa., assignors to the Joly Stopper Company, same place. Filed Feb. 8, 1889. Serial No. 299,133. (No model.)

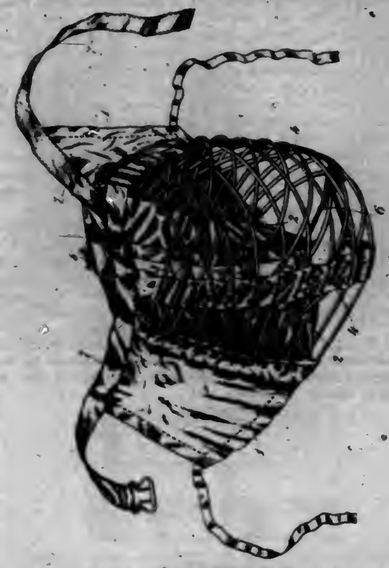


Claim.—1. The combination of the bottle, the stopper-carrying bail, and external tightening devices for the latter, with a stopper having a sealing-washer and a depression-stud connected to the bail and having a thin disk located above the washer and of such diameter that it can be drawn down through the mouth of the bottle, the disk on depression indenting the washer and causing the same to bind over its upper edge, substantially as specified.

2. The combination of the shouldered bottle, the stopper, and its bail, with the operating-lever hung to the bail and having arms engaging with the shoulder of the bottle, and a neck-wire free to move vertically on the bottle-neck and preventing lateral displacement of the lever thereon, substantially as specified.

3. The combination of the shouldered bottle, the stopper, and its bail, the vertically-sliding neck-wire, and the operating-lever hung to the bail and having arms with rounded ends which engage with the shoulder of the bottle, as set forth.

404,798. BUSTLE. HOMER R. RHEUBOTTOM, Woodsport, N. Y., assignor to the Rheubottom & Teall Manufacturing Company, same place. Filed Feb. 25, 1889. Serial No. 301,016. (Model.)



Claim.—A bustle comprising side supports, arched wires springing therefrom, a waistband, tapes secured to and extending vertically across the sides of the arched wires, and flies extending inwardly from the side supports, the inner side edges of the flies being connected by elastic tapes, in combination with the elastic tapes connecting the upper ends of the flies and the waistband and the elastic tapes connecting the lower end of said flies and the lower ends of the vertical tapes, as set forth.

404,799. BOTTLE-STOPPER. JONAS J. SANDS, Merton, Wis. Filed Dec. 10, 1888. Serial No. 293,125. (No model.)

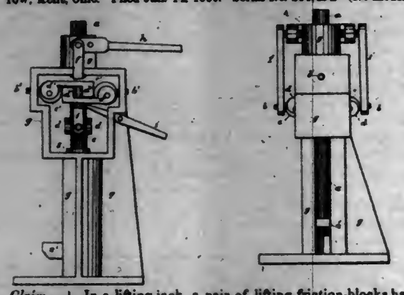


Claim.—1. The combination, with the walls of a vessel-orifice having internal shoulders and with a stopper in the orifice, of a flexible metal holding-bar inserted over the stopper and engaged at its ends with the said shoulders, the said metal bar being adapted to be withdrawn by outward flexure thereof between its ends and provided with a central prominence by which it may be engaged by a suitable instrument for its extraction.

2. The combination, with the walls of a vessel-orifice having internal shoulders and with a stopper therein, of a flexible metal holding-bar having a central arch or U-shaped bend, substantially as described.

404,800. LIFTING-JACK.

GEORGE H. SHAFFER and JOHN SAIRSTOW, Kent, Ohio. Filed Jan. 14, 1889. Serial No. 296,454. (No model.)



Claim.—1. In a lifting-jack, a pair of lifting friction-blocks having bearings opposite each other and on opposite sides of the lifting-bar, in combination with said bar, a cam pivoted to each of said blocks and having a bearing against the other and having a trunnion or suppert connected with the casing of the lifting-jack, and retaining friction-blocks, substantially as described.

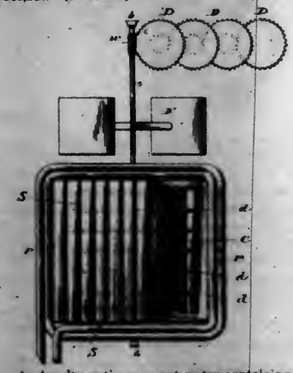
2. In a lifting-jack, a pair of lifting friction blocks and cams, the blocks having bearings on the lifting-bar opposite each other and the cams being pivoted to the blocks and each having a bearing against the end of the block of the other cam, substantially as described.

3. In a lifting-jack, the combination of a pair of lifting-cams and friction-blocks, connected by links, retaining-blocks, a lever to operate the retaining-blocks, and a lever and link to operate the friction-blocks, substantially as described.

4. In a lifting-jack, the combination of a pair of lifting friction-blocks having bearings on opposite sides of the lifting-bar, each of said blocks being provided with a cam supported in the frame of the lifting-jack and having bearing against the other block, retaining friction-blocks, a lever to operate the same, and a lever and links to operate the lifting friction-block, substantially as described.

404,801. ELECTRIC METER FOR ALTERNATE CURRENTS.

MARMADUKE M. M. SLATTERY, Fort Wayne, Ind., assignor to the Fort Wayne Electric Light Company, same place. Filed Mar. 14, 1889. Serial No. 303,217. (No model.)



Claim.—1. An alternating-current meter containing, in combination, a fixed primary coil conveying the current to be measured, a secondary closed coil of low resistance fixed relatively to the primary coil, so that its central plane shall cut the central plane of the primary coil, a cylinder of electrical conducting material organized to revolve in inductive relation with said primary and secondary coils, and carrying-disks of magnetic material cutting the magnetic field of force of each of said coils, with a retarding device and devices for counting and indicating the revolutions of the cylinder.

2. In an alternating-current meter having a fixed primary coil conveying the current to be measured and a secondary closed coil in inductive relation therewith, a moving part consisting of a copper cylinder carrying soft-iron disks and revolving in inductive relation to both said coils.

3. The combination, for use in an alternating-current meter, of a copper cylinder and soft-iron disks placed normal to its axis rotating in the inductive field.

4. In an alternating-current meter, a secondary coil or conductor consisting of successively-narrowing rectangles of copper laterally joined together and enveloping that member of the mechanism to which motion is communicated by induction, substantially as shown.

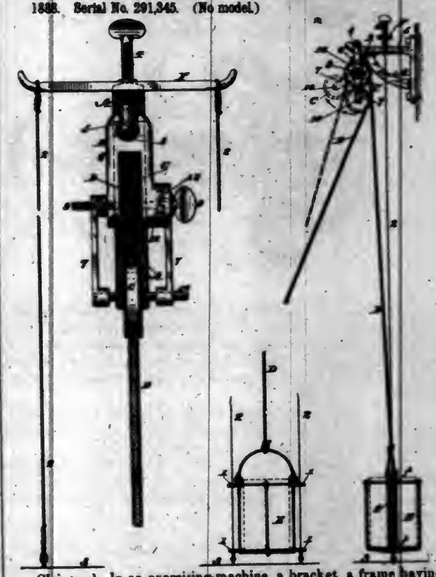
5. In an alternating-current meter, a secondary coil or closed conductor consisting of copper circuits of low resistance, all in electrical multiple connection with each other, substantially as shown.

6. In an alternating-current meter, a secondary coil consisting of copper circuits of low resistance integrally joined together by a mid-rib, substantially as described.

7. In an alternating-current meter, a secondary coil made from a continuous shell of conducting material sawed into ribs and enveloping that member of the mechanism to which motion is communicated by induction, substantially as shown.

404,802. EXERCISING-MACHINE.

JOSEPH J. SLEEPER, Camden, N. J., assignor to Ernest Y. Loomis, New York, N. Y. Filed Nov. 20, 1888. Serial No. 291,345. (No model.)



Claim.—1. In an exercising-machine, a bracket, a frame having pulleys thereon and depending from said bracket, a cord around said pulleys having a weighted cage on the end thereof, a cross-bar having a screw passing through the same with its point bearing against the top of the bracket, and wires secured to the ends of the cross-bar and serving as guides for said cage, said parts being combined substantially as described.

2. In an exercising-machine, a pulley-frame consisting of the two parts 6 and 7, the part 6 having a ratchet on its side, and the part 7 having a ratchet adapted to form a clutch with the ratchet of part 6, a connecting screw-bolt 9, and a pulley journaled on said bolt, a pin or shaft uniting the lower extremities of the part 7, and a pulley mounted on said pin or shaft, said parts being combined substantially as described.

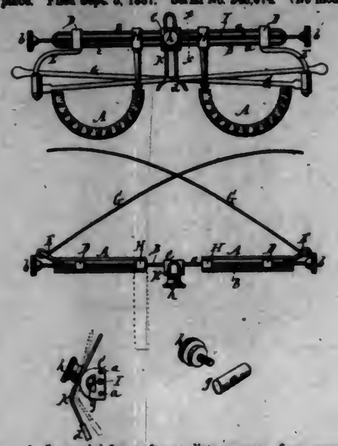
3. In an exercising-machine, a bracket with groove therein, a cross-bar with adjusting-screws, a two-part adjustable sectional frame depending from said bracket, pulleys mounted in said frame, a cord around said pulleys and carrying at one end a weighted cage, and wires secured to the ends of said cross-bars forming guides for said cage, said parts being combined substantially as described.

4. In an exercising-machine, a bracket, in combination with a two-part frame consisting of parts 6 and 7, part 6 having a side ratchet, and part 7 having a side arm with a ratchet adapted to engage with the ratchet of part 6 and form a clutch, a pulley carried by part 7, a cord on said pulley carrying a weighted cage, and guides for said cage, said parts being combined substantially as described.

5. The guides for the weight, in combination with a bar attached thereto, a bracket supporting said bar, and a screw connecting said bar and bracket, whereby the guides may be adjusted in tension and position, substantially as described.

404,808. TRIAL-FRAME FOR OCULISTS AND OPTICIANS.

ANDREW L. SMITH, Geneva, N. Y., assignor to the Geneva Optical Company, same place. Filed Sept. 3, 1887. Serial No. 248,674. (No model.)



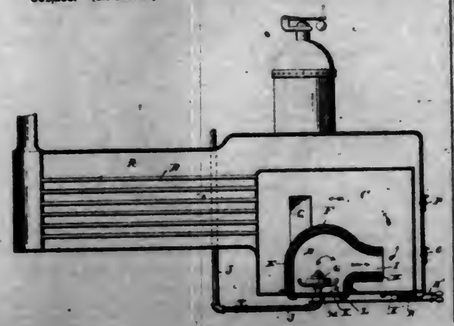
Claim.—1. In a trial-frame for oculists, an open frame consisting of two parallel rods, in combination with a central bearing-block through which said parallel rods pass, lens-frame bearing-nuts on each side of said central bearing-block, said nuts sliding on said parallel rods, and a right and left screw-rod parallel with and between said parallel rods and having its bearing in said central bearing-block and engaging with said sliding nuts to operate the same, substantially as set forth.

2. In a trial-frame for oculists, an open frame consisting of two parallel rods, in combination with a central bearing-block C, through which said parallel rods pass, lens-frame bearing-nuts H H on each side of said central bearing-block, and additional end nuts D D on each side of said central bearing-block, all of said nuts sliding on said parallel rods, and a right and left screw-rod parallel with and between said parallel rods having its bearing in said central bearing-block and engaging with said nuts H H and D D, substantially as set forth.

3. In a trial-frame for oculists, the frame-work thereof and the lens-holders adjustable thereon, in combination with the central bearing-block of said frame-work having its front face circular or segmental in shape, an adjustable nose bridge-piece resting against said circular or segmental face of the central block, an oscillating shaft mounted in said central block, and a clamping screw and nut engaging with the said shaft and clamping said nose bridge-piece against the face of said central block, substantially as set forth.

404,804. HYDROCARBON-BURNER.

WILLIAM SHER, Pittsburg, assignor to Charles T. Russell, Allegheny, and William Guckert and William Smith, both of Pittsburg, Pa. Filed Feb. 28, 1888. Serial No. 301,235. (No model.)



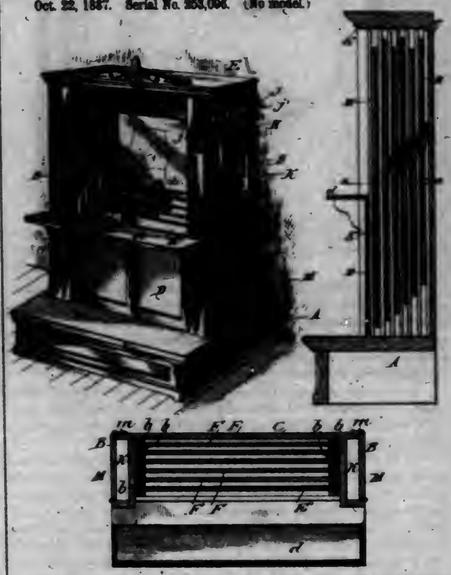


Claim.—1. In a boiler-furnace provided with a fire-box, the combination of the fire-box, the dome-shaped hood within the same bent downwardly and forwardly at its front side, the deflector arranged below the forward part of the hood, and the burner located below the arched top and within the hood, substantially as and for the purpose shown and set forth.

2. In a boiler-furnace provided with a fire-box, the combination of the exterior fire-box communicating with the flues of the steam-generator, the combustion-chamber located within the fire-box having an arched or dome-shaped top and narrow mouth or outlet facing the front end of the fire-box, the burner located within the combustion-chamber below its arched top and back of its outlet, the air-valve in the bottom of the combustion-chamber encircling the burner, and the bottom valve in the fire-chamber outside of the combustion-chamber, but below the outlet of the same, substantially as and for the purpose shown and set forth.

404,805. MAP-EXHIBITOR.

WILLIAM A. TAYLOR, Washington, D. C., assignor of one-half to George W. Loesintser, same place. Filed Oct. 22, 1887. Serial No. 253,096. (No model.)



Claim.—1. In a map-exhibitor, the combination of the sides having guides, the weights arranged outside of such guides, cords for connecting the weights with the maps, the short front piece, and the shelf provided thereon, all substantially as and for the purposes specified.

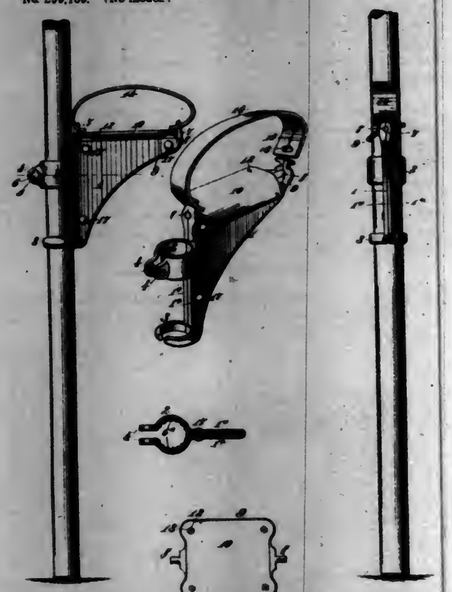
2. The map-exhibitor herein described, comprising the sides, the short front piece terminating below the upper ends of the sides, the shelf *d* at the upper end of said front piece, the maps movable in guides in said sides, the weights supported in wells in the sides, and the cords connecting the maps and weights, substantially as set forth.

3. In an exhibitor, substantially as described, the combination, with the framing having guides for the maps, &c., of the guide-pulleys arranged in two series—an inner series and an outer series—the pulleys of one series being arranged in line between those of the other series, substantially as and for the purposes specified.

4. The exhibitor, substantially as herein described and shown, consisting of the base, the sides having guides which terminate at their lower ends in different horizontal planes, and extend at their upper ends to the upper ends of the sides, the front piece and the top hinged, whereby it may be moved from over the guides of the side pieces, substantially as set forth.

5. As an article of office-furniture, a map-chest constructed and arranged to hold a series of maps sliding in vertical grooves and being kept in position for easy inspection in parts by counterbalance-weights alone, the said chest having right and left double sides, forming two accessible lateral receptacles for the hanging and handling of the maps, and provided with a sliding front door or slide, substantially as set forth.

404,806. STILT. HENRY TEMPLE, Grand Rapids, Mich., assignor of one-half to William Harrison, same place. Filed Feb. 8, 1889. Serial No. 299,189. (No model.)



Claim.—1. The combination, in a stilt, of the step-bracket divided vertically into two separate and similar sections, each of which is provided with the semicircular part, of a clasp for embracing a staff, and an oscillating step-plate having end journals arranged and held between divided upwardly-projecting lugs of the two sections of the bracket, substantially as described.

2. In a stilt, an adjustable step-bracket provided with lugs which receive the journals of an oscillating step-plate, said lugs being provided with cross-heads forming fastenings for a detachable strap, substantially as described.

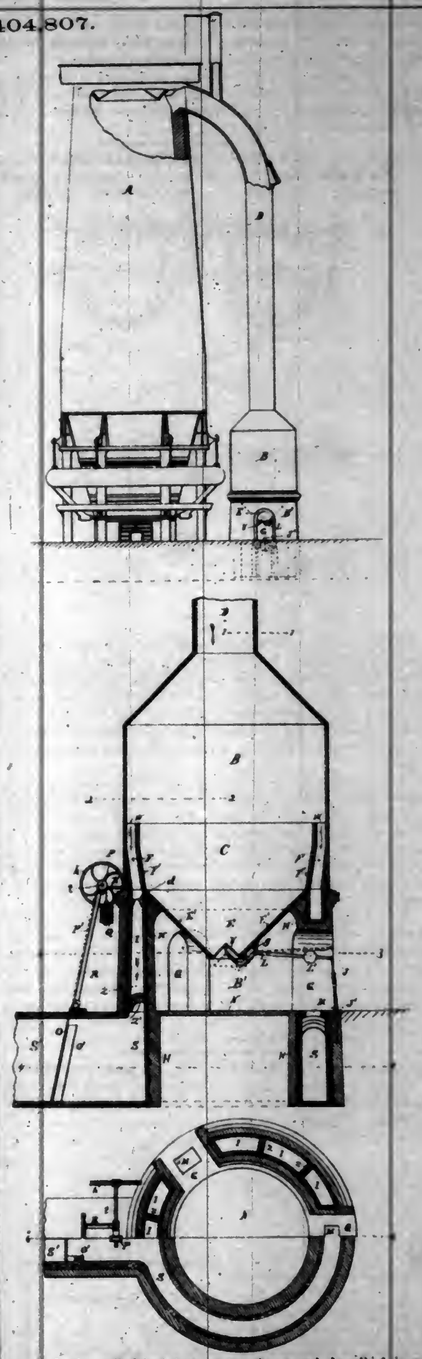
3. In a stilt, an adjustable step-bracket formed in two separate similar sections, each section having one member of the clasps, one part of each of the bearings for the oscillating step-plate and part of the cross-heads forming fastenings for a strap, each section being formed in a single integral piece and the two being united after the step-plate is inserted by suitable fastenings, substantially as described.

4. In a stilt, the combination, with the staff, of an adjustable foot-plate having two-part clasps engaging said staff, one of said clasps being provided with engaging-points and having lugs receiving a headed bolt having a tightening-nut, an oscillating step-plate having journals lying in lugs formed on said step-bracket, said step-plate being provided with a covering of suitable material, and a strap having slitted ends which engage T-shaped cross-heads formed upon the lugs which support the journals of the step-plate, substantially as described.

404,807. DUST-CATCHER FOR BLAST-FURNACES. FRANCIS H. TREAT, Joliet, Ill., assignor of two-thirds to Horace S. Smith and Charles Pettigrew, both of same place. Filed Apr. 6, 1888. Serial No. 269,809. (No model.)

Claim.—1. In the cylindrical dust-catcher shown and described, in combination with its outer wall, the inner wall arranged concentrically therein, and the space between said walls divided by cross-partitions forming vertical flues between said walls, the dust-receptacle supported concentrically within said inner wall and having vertical sides, and a funnel-shaped bottom provided with a discharge-opening controlled by a valve, substantially as and for the purpose set forth.

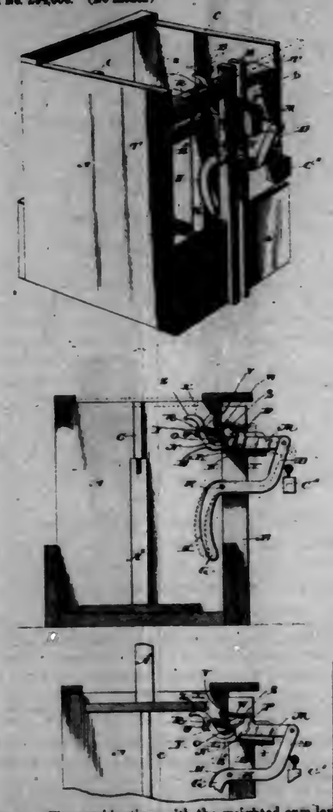
404,807.



2. In the cylindrical dust-catcher shown and described, in combination with the outer wall, the inner wall arranged concentrically therein and the space between said walls divided by cross-walls forming a series of vertical exit-flues between said walls, the dust-receptacle supported concentrically within said inner wall and having vertical sides and a funnel-shaped bottom, and the annular cover or shield secured to the inner side of said outer wall and immediately above said flues, substantially as and for the purpose set forth.

3. In the cylindrical dust-catcher shown and described, the combination, with the outer walls, and the dust-receptacle supported concentrically therein, said receptacle having vertical sides and a funnel-shaped bottom, of the vertical flues surrounding said receptacle, said flues being formed of two rows of vertical partitions, the upper row containing twice as many partitions as the lower, substantially as and for the purpose set forth.

404,808. ELEVATOR. ALEXANDER R. WALL, Colchester, Ill., assignor of one-half to Fred P. Blount, same place. Filed Dec. 18, 1888. Serial No. 294,009. (No model.)



Claim.—1. The combination, with the weighted cam-lever D, of the link M, the swinging support connected to the link, and the trigger X, pivoted in said swinging support, substantially as described.

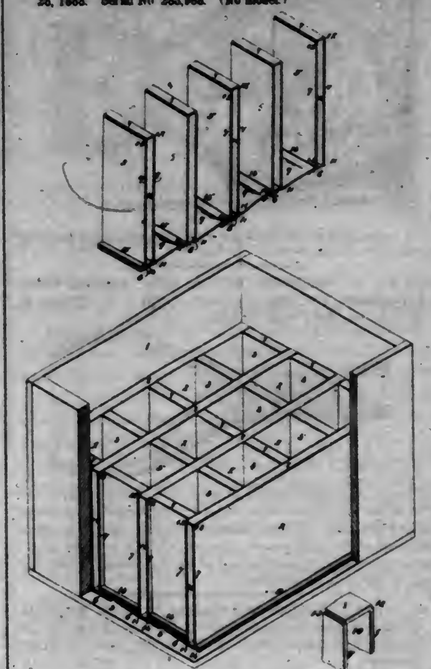
2. The combination, of the weighted cam-lever D, the saddle or support I, the link M, connected to lever D and adapted to engage the saddle, the pivoted board or support R, connected to the link, and the trigger X, pivoted to said board or support and having the arms Z and B', for the purpose set forth, substantially as described.

3. The combination of the weighted lever D, having the cam-arm G, the saddle or support I, the link M, connected to lever D and having the shoulder adapted to engage the saddle or support, the rocking board or support R, the chain or connection between the same and the link, the trigger X, having the arms Z and B', for the purpose set forth, and the ear adapted to engage and operate the cam G and trigger X, substantially as described.

4. The combination, with the pivoted board or support R and the trigger X, swinging therein, of the weighted lever, and the link M and the chain connecting the weighted lever to the pivoted board or support R, to raise said swinging board or support R, substantially as described.

5. The pivoted support or board R, combined with the weighted lever D, having cam-arm G, the link M, and the chain connecting the board R and the lever D, and the trigger X on the board R, to engage the lever D, as set forth.

404,809. FOLDING BOTTLE-CASE. ENOS L. WALKER, St. Louis, Mo., assignor of one-half to Gabriel Hoyt, Brooklyn, N. Y. Filed Aug. 28, 1888. Serial No. 283,968. (No model.)



Claim.—1. A cellular packing for bottle-cases, comprising partitions of flexible material, each having parallel walls and a top and bottom, forming between them an inclosed air-space, substantially as and for the purpose set forth.

2. In cellular packing for bottle-cases, the combination of the partitions of flexible material, each having parallel walls and a top and bottom, forming between them an inclosed air-space, and a series of cross-partitions of the same construction placed at a right angle to the aforesaid partitions in the spaces between them, the two series of partitions constituting the cells to inclose the bottles, substantially as and for the purpose set forth.

3. In cellular packing for bottle-cases, the combination of the parallel-wall incasement-partitions constructed from an integral blank of flexible material which is cross-scored at 11, 12, 13, and 14 and folded at said cross-scores to form the foot-sections 6, double partition-incasement 7, surmounting-cap 8, and bottom section 9 of said partitions, and a series of interdivisional partitions of the same construction and placed at right angles to the aforesaid partitions in the spaces between the same, and together therewith constituting the cells that inclose the bottles, substantially as and for the purpose set forth.

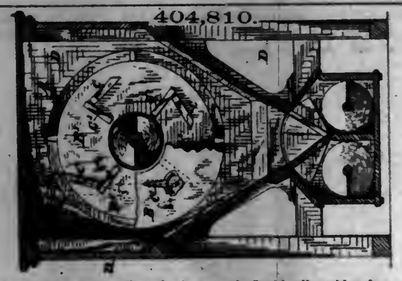
4. In cellular packing for bottle-cases, the combination of the parallel-wall incasement-partitions 2 of flexible material, cross-partitions 5 of the same construction, which partitions together constitute the bottle-cells, and elastic bottom cushions that are formed by the foot, and bottom sections that extend from the bottom of the partition and form a multiple elastic layer at the bottom of the cells beneath the bottles, substantially as and for the purpose set forth.

5. In cellular packing for bottle-cases, the combination of the parallel-wall incasement-partitions of flexible material, cross-partitions of the same construction, the partitions jointly constituting the bottle-cells, elastic bottom cushions formed by the foot, and bottom sections which extend from the bottom of the partitions and which cushion the bottom of the cells, and the line of stitches 15, that form flexible hinged connections of the sectional partitions, by which to erect the partitions for the package of bottles and fold them down for shipping empty, substantially as and for the purpose set forth.

404,810. BOLTING-REEL. JESSE WARRINGTON, Indianapolis, Ind., assignor to the Nordyke & Marmon Company, same place. Filed May 31, 1887. Serial No. 239,760. (No model.)

Claim.—The combination, with a bolting-reel, of one or more adjustable wings mounted in the head of its discharging end and sta-

404,810.



tionary wings arranged at the inner end of said adjustable wings and extending toward the center of the reel.

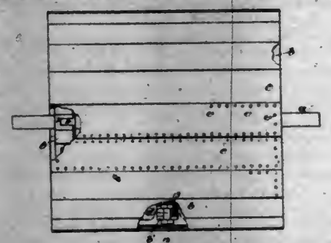
404,811. CARTRIDGE-CRIMPING TOOL. FRIEDRICK WICHELHAUS, Newark, N. J., assignor to Bailey, Farrell & Co., Pittsburg, Pa. Filed Jan. 31, 1889. Serial No. 298,211. (No model.)



Claim.—As a device for indenting cartridge-shells, pivoted jaws, one of which is provided at its end with a pyramidal or equivalent projection having its base outermost, and which is adapted to engage the exterior of the shell, and the other of which is provided with a recess or indentation the counterpart of said projection, substantially as and for the purposes described.

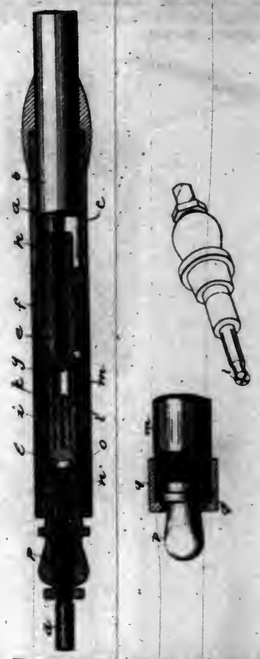
404,812. CYLINDER FOR CARDING OR OTHER MACHINES. GEORGE O. WICKERS, Lawrence, assignor to the Davis & Furber Machine Company, North Andover, Mass. Filed July 30, 1888. Serial No. 281,395. (No model.)

Brief.—The invention consists in the improved construction of cylinders for carding-machines, &c., relating particularly to the formation of the surface on which rests the card-clothing.



Claim.—The herein-described cylinder, consisting, essentially, of a shaft, spiders thereon, and a series of metallic lags convexed at their outer faces and placed side by side to form the periphery of the cylinder, the said lags having longitudinal ribs at their inner sides provided with projections 8, forming pockets for the reception of the heads of fastening-bolts, whereby the said lags are confined to the spider, and being provided with a series of nail-receiving plugs along their edges to receive the nails employed to hold the card-clothing in place, substantially as described.

404,813. ELECTRIC-CABLE TERMINAL. ROBERT H. WIDDICOMBE, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Apr. 1, 1889. Serial No. 305,619. (No model.)



Claim.—1. The combination, with the lead pipe of a telegraph-cable, of a sleeve *h*, secured thereto by a wipe-joint, a metal sleeve *c* over the end of the conductor *a* and soldered thereto at *g*, a rubber coupling *f* between the sleeve *h* and the sleeve *c*, the tube *i*, adapted to receive a plug screwed over the end of sleeve *c*, and the rubber coupling *m*, placed over the same, substantially as and for the purpose specified.

2. The combination, with the insulated conductor *d*, of the terminal plug, said plug being provided with a handle *p*, through which the conductor *d* is inserted, packing being provided between the plug-handle and the insulating-covering of conductor *d*, said plug being inserted in a socket or tube *i*, substantially as and for the purpose specified.

PHOTO LITH. NORRIS PETERS WASHINGTON D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

CORNELY *v.* MARCKWALD.

Decided May 13, 1889.

MEASURE OF DAMAGES.

The payment of a sum in settlement of a claim for an alleged infringement of a patent cannot be taken as a standard to measure the value of the improvements patented in determining the damages sustained by the owner of the patent in other cases of infringement.

APPEAL from the Circuit Court of the United States for the Southern District of New York.

Mr. B. F. Lee for the appellant.

Mr. W. A. Coursen for the appellee.

Mr. Justice BLATCHFORD delivered the opinion of the Court.

This is a suit in equity brought by Emile Cornely against Freeman D. Marckwald, for the alleged infringement of Letters Patent No. 83,010, granted to Cornely, as assignee of Antoine Bonnaz, the inventor, for an "improvement in sewing-machines for embroidering." There was an interlocutory decree for the plaintiff, establishing the validity of the patent and its infringement, and ordering a reference to a master to take an account of profits and damages.

The master reported that the defendant had made a profit of $142.92, by the sale of 26 infringing machines; and that he was not a willful and deliberate infringer. As to damages, he reported that the plaintiff had instituted 10 suits against other infringers on the patent, all of which, with one exception, were settled on the basis of $50 for each infringing machine; that the plaintiff claimed that that afforded a proper measure of damages, on the basis of an established license-fee; that there was a deviation in one instance because, as was stated by a witness, the case presented "circumstances of exceptional hardship," but what the circumstances were did not appear; that it did not appear that licenses were issued to any one other than in the settlement of a suit, or that the plaintiff had adopted the sum of $50 as a sum on the payment of which he was prepared to grant a license to any and all who wished to use the invention; and that the facts did not warrant the measurement of the damages by a fixed and established license-fee.

The master also reported that the plaintiff claimed that he had been forced to lower his prices to compete with the defendant; that the evidence did not show that any reduction in prices by the plaintiff was solely due to the acts of the defendant, or to what extent it was due to such acts; that as to damage to the plaintiff from the loss of the sale of machines which the defendant had sold, it did not appear what profits the plaintiff made on his machines, or what it cost to make them; and that, therefore, such damage could not be computed and could not be reported as exceeding the nominal sum of 6 cents.

The plaintiff excepted to the report, and, on a hearing, the court made a decree, (23 Blatchford, 163,) overruling the exceptions, and confirming the report, and awarding to the plaintiff the $142.92, with interest and costs, except the costs on the accounting subsequent to the master's draft report and the costs on the exceptions, which two items of cost it awarded to the defendant. The plaintiff has appealed from so much of the decree as awards to him no damages beyond the 6 cents.

The circuit court, in its opinion, held, that evidence of payments made for infringements was incompetent to establish a price as for a fixed royalty; that, as to loss by the plaintiff from the diversion of sales, he had failed to give any evidence showing the cost of his machines, or what his profits would have been; that, as there was no basis for a computation of the loss of profits, the determination of the master was correct; and that his conclusion was proper as to the alleged loss of the plaintiff by reason of the enforced reduction of his prices.

We concur in these views. As to the question of an established license-fee, the case is governed by the recent decision of this Court in *Rude* v. *Westcott*, (130 U. S., 152,) where it was held that the payment of a sum in settlement of a claim for an alleged infringement of a patent—

cannot be taken as a standard to measure the value of the improvements patented, in determining the damages sustained by the owner of the patent in other cases of infringement.

Decree affirmed.

U. S. Circuit Court—Southern District of New York.

YOUNG *et al. v.* FOERSTER.

Decided January 8, 1889.

1. INFRINGEMENT—RIGHT TO USE AND IMPROVE A PATENTED MACHINE.

A machine purchased of the complainant, the patentee, by the employer of the defendant was repaired and its construction somewhat changed by the defendant in his capacity as an employé of the purchaser. *Held* that the purchaser was at liberty to repair and improve it within the limits of his contract, and that so long as the identity of the machine was not destroyed its owner had the right to discard useless parts and add new ones which might improve its action.

2. SAME—PARTIAL USE.

One who has a license to use the whole of a machine does not become an infringer by the use of a part only.

Mr. Edwin H. Brown for the complainants.
Mr. Arthur v. Briesen for the defendant.

COXE, *J.:*

This is an action of infringement based upon Letters Patent No. 224,760, granted to Hugh Young February 17, 1880, for an improvement in machines for sawing stones.

In August, 1879, John R. Smith purchased of Young for $4,700 a machine embodying the patented features, and received a license to operate it under patents then owned by Young and under all patents for improvements on the same which thereafter might be owned by him. On the 8th of July, 1882, Smith entered into another agreement whereby, for the additional sum of $300, he received a license to use the machine according to the patent in suit, which had been granted since the purchase, and to embody any improvement covered by that patent or any other patent owned or controlled by Young. During the period in controversy Smith was the owner of the machine. The defendant was in Smith's employ, receiving $3.50 daily wages. He never used the machine except as an employé of Smith. He had no interest in or control over it. Soon after it was purchased it broke down, and since that time has been frequently repaired. No machine similarly constructed can run for more than a month without undergoing repair, which involves putting in new parts and changing old ones. In the spring and summer of 1886, on account of the removal of Smith's place of business, a more thorough overhauling was necessary. At that time new feed-screws, fly-wheels, and sash-heads were put in, the old ones being worn out. The crank-shaft and some little bolts, pins, and nuts were worn out also, and new ones were substituted. The slides on which the saw-sash runs were lowered about two feet, and all the attachments for imparting a lift or push motion to the blade were left off. Lift-motion is now imparted to the sash by an incline at each end of the guide-bars. The defendant had supervision of this work as employé of Smith. The complainants contend that what was done in 1886 constitutes an infringement. Many of the parts just mentioned—namely, "the large screws at the sides, the nuts thereon, the sash, and the crank-shaft"—had been renewed from time to time prior to 1886 with the knowledge of the patentee.

The defenses are, first, that in doing the acts of which infringement is predicated the defendant acted merely as the agent of John R. Smith; second, that Smith had a right to use and repair the machine, and that the work done by the defendant was necessary to put it in order; third, that the patent is void for lack of novelty.

The defendant did not use or vend the patented machine, and it can hardly be said upon this evidence that he made it, assuming now that an entirely new machine was constructed. The defendant acted solely as agent for Smith. He received his daily wages only. He made nothing by the transaction. The complainants expressly waive an accounting. The parts renewed were purchased of outside dealers, and put into the machine by their workmen. Very little of the manual labor was done by the defendant. He acted simply as superintendent. All that he did was done for Smith's benefit and under Smith's directions. He was there to protect Smith's interests and see that the work was properly done. This was all. The proof fails to establish infringement and brings the case within the following authorities: *Hussey* v. *McCormick*, (1 Fish., 509;) *Estes* v. *Worthington*, (30 Fed. Rep., 465;) *United Nickel Co.* v. *Worthington*, (13 Fed. Rep., 393;) *Delano* v. *Scott*, (Gilp., 498.) But is any one responsible as an infringer? Had not the owner a right to repair and improve the machine in the manner stated? The machine had a capacity to saw a stone 12 feet long and 5 feet high. It was bulky and expensive. Smith paid the patentee $5,000 for it and the right to operate it, with all the improvements covered by all the patents controlled by the complainants. When the machine broke down, as it frequently did, Smith was not required to abandon it and procure a new one. He was at liberty to repair and improve it within the limits of his contracts. These repairs were often necessary—were made with the consent of the patentee. The repairs complained of consisted, principally, in restoring portions which were worn out. True, other portions were taken off or their use discontinued. But one who has a license to use the whole of a machine does not become an infringer because he uses a part only. So long as the identity of the machine is not destroyed its owner has a right to repair it—to discard useless parts and add new ones which may improve its action. These alterations, though they changed somewhat the mode of operation, were rendered necessary, because equivalent parts had become worn out. Their addition did not make it a new machine. By putting the old machine in working order its owner did what he had a right to do. (*Gottfried* v. *Conrad Seipp Brewing Co.*, 8 Fed. Rep., 322; *Chaffee* v. *Boston Belting Co.*, 22 How., 217, 223; *Wilson* v. *Simpson*, 9 How., 109; *Union M. Cartridge Co.* v. *U. S. Cartridge Co.*, 2 Ban. and Ard., 595; *Syracuse Plow Co.* v. *Robinson*, 35 Fed. Rep., 502; *Singer Mfg. Co.* v. *Springfield Foundry Co.*, 34 Fed. Rep., 393; *Aiken* v. *Manchester Print Works*, 2 Cliff., 435.)

It is of course unnecessary to pass upon the defense, which disputes the validity of the patent.

The bill is dismissed.

U. S. Circuit Court—Southern District of New York.

AM ENDE *v.* SEABURY & JOHNSON.

Decided November 15, 1888.

1. AM ENDE—COMPOSITION OF BORATED COTTON.

Letters Patent No. 181,024, granted August 15, 1876, to Charles G. Am Ende, for an improvement in borated cotton, *Held* valid and not anticipated by such preparations as "lint steeped in a hot saturated solution of boracic acid" or "wadding saturated with a certain quantity of glycerine" or boracic acid dissolved in glycerine.

2. DESCRIPTION.

The description in the specification of the patent, which, it should be remembered, is addressed to persons skilled in the particular art to which the invention relates, is sufficiently explicit to enable a person skilled in the art to practice the invention.

Mr. Arthur v. Briesen for the complainant.
Mr. Norman T. M. Melliss for the defendants.

COXE, *J.:*

The complainant is the owner of Letters Patent No. 181,024, granted to him August 15, 1876, for an improvement in borated cotton. The object of the inventor was to produce a simple and inexpensive antiseptic dressing by combining the various advantages of cotton fiber with those possessed by boracic acid and glycerine. The specification asserts that prior to the invention boracic acid had been used as a preservative agent only in a fluid state or as a powder; and that it was necessary to immerse the matter to be preserved in the fluid or cover it completely with the powder, requiring in either case large quantities of the acid. The inventor accomplishes a better and more permanent result in a much simpler and more convenient way by saturating the cotton with the acid and glycerine in small proportions, thus adding to their preservative properties the germ-filtering quality and elasticity of the cotton. The manner of producing the borated cotton is described in the specification as follows:

> * * * I first prepare a solution of boracic acid in the usual manner, and add thereto a small proportion of glycerine. For the preservation of tender substances, such as veal, I may also add from ten to forty per cent. of soda or potash, never sufficient, however, to reach neutrality. The cotton, either in bulk or wadding, is next immersed in the solution until well impregnated therewith, and then pressed, to discharge all surplus solution, or so much thereof as may be required. The cotton is then dried and ready for use.

The claim is for—

> The borated cotton, being cotton fiber which is saturated with boracic acid and glycerine, substantially as herein shown and described.

The defenses are that the specification is not so clear and explicit as to enable a person skilled in the art to practice the invention, and that the patent is void for lack of novelty and invention. Infringement is clearly established, and is not denied in the brief submitted for the defendants.

In considering the question presented by the first defense it should be remembered that the language criticized by the defendants is addressed to persons skilled in the particular art to which it relates. To a lawyer or a banker the specification might seem vague and, perhaps, meaningless; but a pharmacist, a chemist, or even an educated physician would have little difficulty in understanding it. When the patentee says he prepares "a solution of boracic acid in the usual manner" he means as it has formerly been prepared. He speaks of it as he would speak of a solution of camphor or alum. Every druggist knows what he means. He certainly might have been more definite when he says that he adds to this solution "a small proportion of glycerine;" but it is thought that the intelligent chemist, setting out properly to combine the enumerated ingredients into which the cotton is to be immersed, and with which it is to be impregnated, could hardly go astray. Indeed, in examining the extracts introduced by the defendants to establish lack of novelty, copied from pharmaceutical journals of conceded reputation and authority, we find similar language used. Thus, in the *Druggists' Circular and Chemical Gazette* it is stated that Dr. Edmunds had used "a solution of boracic acid," and in the *Journal de Pharmacie* it appears that Prof. Gubler saturated his wadding with "a certain quantity of glycerine." The formula for preparing this dressing is then given. "It is only necessary," says the writer, "to pour a small quantity of glycerine over the square sheet," &c. Such expressions would seem to belong to the nomenclature of the art. The expression "well impregnated" means thoroughly, completely impregnated, the word "well" being used in the sense that a housewife might use it when telling her domestic to keep the bread or the joint in the oven until well done. Tested by the rule of *Loom Co.* v. *Higgins*, (105 U. S., 580,) the specification would seem to be sufficient.

The article translated from the *Journal de Pharmacie et de Chimie* is not an anticipation. It is entitled "Glycerized Cotton for Dressing Wounds." There is no reference to boracic acid. Two of the elements of Am Ende's combination—boracic acid and water, the acid in solution—are wanting. True, it is stated that Prof. Gubler found this wadding permeable to all medicinal liquids; but there is no hint that he knew that with it could be combined the preservative properties of boracic acid in an uncrystallized condition as a convenient, effective, and permanent antiseptic composition.

The article in the *American Journal of Pharmacy* of March, 1867, shows great familiarity with the characteristics and uses of glycerine on the part of the writer. He knew its excipient, hygroscopic, and penetrating properties. He knew that it was a solvent for boracic acid; but he certainly did not know—at least, he did not divulge the knowledge—that it could be combined with dissolved boracid acid, and thus held in cotton fiber for antiseptic purposes.

The quotation from the *Druggists' Circular* of June, 1875, is entitled "Boracic Acid," and describes a case of amputation in which the surgeon employed a "dressing of lint steeped in a hot saturated solution of boracic acid." This dressing was probably applied in a moist condition to the wound. No glycerine was used.

It cannot be demonstrated from the proofs that any one prior to Am Ende accomplished what he has described and claimed. Even though there be a doubt, it should be resolved in favor of the patent. The fact that others had done something quite similar—that they had used separately, or in different combinations, the ingredients of his claim—should not affect his patent. All that is described in the prior publications the defendants may use with perfect impunity. They may use "lint steeped in a hot saturated solution of boracic acid," or "wadding saturated with a certain quantity of glycerine," or boracic acid dissolved in glycerine; but they should not be permitted to use cotton saturated with a solution of boracic acid and glycerine in the manner described in the specification, for that belongs to Am Ende.

The complainant is entitled to the usual decree.

U. S. Circuit Court—Eastern Judicial District of Missouri, Eastern Division.

TAFT *v.* THE STEPHENS LITHOGRAPHING AND ENGRAVING COMPANY.

Decided March 26, 1889.

1. COPYRIGHT—SECTION 4963 CONSTRUED—PENALTY.

The language of section 4963 Revised Statutes, providing a penalty for falsely marking articles "Copyrighted," is not "for

each copy," and while it may be true that if upon different days, under different circumstances, separate copies are printed, each transaction thus separate would constitute a separate offense, yet when the printing of many copies is a single continuous act only one offense is committed thereby.

2. SAME—SAME—ARTICLES NOT COPYRIGHTABLE.

The law is clear that no offense is committed when the word "Copyrighted" is placed upon an article that is not the subject-matter of copyright—that cannot be copyrighted.

3. DEMURRER.

It being alleged in the petition that the print is not the subject of copyright, the demurrer sustained.

ON demurrer to the petition.

Mr. W. E. Fisse for the plaintiff.
Mr. Paul Bakewell for the defendant.

BREWER, *J.*:

This is a demurrer to the petition. The action is a *qui tam* action brought by the plaintiff as informer under section 4963 of the Revised Statutes of the United States to recover the penalty therein named.

The petition alleges that the defendant printed and circulated 10,000 copies of a chromo, which is described, putting on each the word "Copyrighted" or some equivalent word.

The section provides that—

every person who shall insert or impress such notice, or words of the same purport, in or upon any book, map, chart, musical composition, print, cut, engraving, or photograph, or other article for which he has not obtained a copyright, shall be liable to a penalty of $100, recoverable one-half for the person who shall sue for such penalty and one-half to the use of the United States.

The petition alleges that the defendant thus printed and issued 10,000 copies, and plaintiff asks judgment for $100 penalty for each copy, or $1,000,000 in gross. All this is stated in one count. And one ground of challenge is that either there are 10,000 different causes of action which should each be stated in a separate count, or if there is but one cause of action, a single penalty of $100 only is recoverable and the amount prayed for is excessive. The plaintiff pleads the great trouble and inconvenience there would be in setting out 10,000 causes of action.

We think that the rule is unquestioned, and see no reason why it should be deviated from in a case like this.

Plaintiff is not suing for the value of his services or for injury to his property, but simply to make profit to himself out of the wrongs of others, and when a man comes in as an informer and in that attitude alone asks to have a half million dollars put into his pocket, the courts will never strain a point to make his labors light or his recovery easy. So that if each separate imprint is a separate cause of action, we have no doubt that the petition is demurrable as joining 10,000 causes of action in a single count. But we think that, fairly construed, there is only one cause of action stated.

The petition alleges—

that heretofore, to wit, on the 2d day of November, A. D. 1888, and at divers times between said day and the commencement of this action, the said defendant did engrave, print, publish, and sell to the number of 10,000 copies a certain print, &c.

Now, the language of the statute is not "for each copy," and while it may be true that if upon different days, under different circumstances, the defendant printed separate copies, each transaction thus separate would constitute a separate offense, yet when the printing of many copies is a single continuous act only one offense is committed thereby. We had a similar question under the election statutes a year or two since, where false registrations were charged. We held there that where several names were falsely registered and all done at one time and as a single continuous act, it constituted but one offense, although if registered on different days and under different circumstances they might constitute separate offenses. Here the allegation is that "on the 2d of November and at divers times thereafter." This of course suggests a separation at least in the matter of time. Yet if the pleader claims that there were separate and distinct offenses there should be a clear divergence of each transaction both as to time and circumstances, and the court in a quasi criminal action like this ought to hold the pleader to language free from doubt, and hold as to a pleading like this that it simply alleges a continuous action in the printing and issuing of these 10,000 copies, and as such states but a single offense.

Another ground of demurrer is that the chromo upon which the word "copyrighted" was placed was not the subject of copyright.

The law is clear that no offense is committed when the word "copyrighted" is placed upon an article that is not the subject-matter of copyright—that cannot be copyrighted. The law is designed to guard against deception, and no one is deceived when the word "copyrighted" is placed upon an article that cannot be copyrighted, such as a kitchen-stove or a railroad-car.

Now, the plaintiff in this case describes the chromo, and the description discloses an article which could be copyrighted, and if the petition stopped with this description it would doubtless be sufficient. But it goes further and alleges that—

said printing and chromo has not been copyrighted by the defendant or any other person, nor was the same subject to copyright under said laws.

Thus it appears that the averment of disability is not limited to the person, but is cast upon the print. It was not the subject of copyright. There is in this an apparent contradiction to that which might be inferred from the language of description. Counsel suggests that the thought he had was that under the particular circumstances this print could not be copyrighted, and it is possible that there might be circumstances which would thus at the time exclude this print from copyright, although in its nature it was the subject-matter of copyright. But in a criminal or quasi criminal action the pleading should be clear and consistent. The court is not called upon to strain any language to remove doubt or secure consistency. There should be no labored effort at reconciliation of apparently contradictory averments, at least when the pleading is challenged before trial. So, because it is alleged that the print was not the subject of copyright, we think the demurrer should be sustained, and it is so ordered.

Subsequent pleading may be prepared with reference to the views of the offense as above expressed.

Plaintiff will be granted 30 days in which to file an amended petition, and defendant 30 days thereafter to plead thereto.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

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Attorneys.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., May 24, 1889.

SIR: The Secretary of the Interior has ordered that Roderick McDonald, of Gardiner, Kennebec county, Me., be not recognized after this date as agent or attorney in the prosecution of any claim or other matter before this Department or any bureau thereof.

Very respectfully,

E. M. DAWSON,
Chief Clerk.

The Commissioner of Patents.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1887, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages. In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Issue of June 11, 1889.

Patents	426	No. 404,814 to No. 405,239, inclusive.
Designs	11	No. 19,146 to No. 19,156, inclusive.
Trade-Marks	25	No. 16,703 to No. 16,727, inclusive.
Labels	11	No. 5,932 to No. 5,942, inclusive.
Reissues	2	No. 11,006 to No. 11,007, inclusive.
Total issue	475	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	1	Nebraska	12	....
Arizona Territory	....	....	Nevada	....	....
Arkansas	1	....	New Hampshire	5	....
California	9	2	New Jersey	19	2
Colorado	3	....	New Mexico Territory	....	....
Connecticut	20	....	New York	91	14
Dakota Territory	3	....	North Carolina	1	....
Delaware	1	....	Ohio	29	1
District of Columbia	4	....	Oregon	....	....
Florida	1	....	Pennsylvania	32	4
Georgia	1	1	Rhode Island	7	1
Idaho Territory	....	....	South Carolina	....	....
Illinois	36	....	Tennessee	1	....
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Iowa	9	1	Vermont	....	....
Kansas	5	1	Virginia	4	....
Kentucky	5	....	Washington Territory	....	....
Louisiana	3	....	West Virginia	1	....
Maine	3	1	Wisconsin	9	....
Maryland	6	....	Wyoming Territory	....	....
Massachusetts	30	1	United States Army	....	....
Michigan	17	....	United States Navy	....	....
Minnesota	5	1			
Mississippi	2	....	Total to citizens of the United States	408	32
Missouri	12	....			
Montana Territory	2	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
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Australia	....	....	Japan	....	....
Austria-Hungary	1	....	Mexico	....	....
Belgium	1	....	Newfoundland	....	....
Bermuda	....	....	New Zealand	1	....
Brazil	....	....	Peru	....	....
Canada	2	....	Russia	....	....
Chili	....	....	Scotland	....	....
Costa Rica	....	....	Spain	....	....
Curaçoa	....	....	Sweden	....	2
Denmark	....	....	Victoria	....	....
England	15	1			
Finland	....	....	Total to citizens of foreign countries	29	4
France	4	1			

DESIGNS.

19,146.—WALL-POCKET.—*Magnus Benas*, New York, N. Y. Application filed May 14, 1889. Serial No. 310,715. Term of patent 7 years.

19,147.—PORTABLE FIRE-PLACE GRATE.—*Edward L. Cately*, Philadelphia, Pa., assignor to *Gilbert Combs*, *John Bawden*, and *John H. Bawden*, Freehold, N. J. Application filed January 9, 1889. Serial No. 295,886. Term of patent 7 years.

19,148 and 19,149.—PORTABLE FIRE-PLACE GRATE.—*Edward L. Cately* and *Joseph A. Read*, Philadelphia, Pa., assignors to *Gilbert Combs*, *John Bawden*, and *John H. Bawden*, Freehold, N. J. Applications filed January 9, 1889. Serial Nos. 295,889, and 295,890. Term of patents 7 years.

19,150.—PORTABLE FIRE-PLACE GRATE.—*Edward L. Cately*, Philadelphia, Pa., assignor to *Gilbert Combs*, *John Bawden*, and *John H. Bawden*, Freehold, N. J. Application filed January 9, 1889. Serial No. 295,882. Term of patent 7 years.

19,151.—HARNESS-TERRET.—*Eugene L. Howe*, Cleveland, Ohio, assignor to *The Eberhard Manufacturing Company*, same place. Application filed May 10, 1889. Serial No. 310,321. Term of patent 7 years.

19,152.—DECORATIVE FABRIC.—*Charles H. Koster*, Brooklyn, N.Y., assignor to *The Unexcelled Fireworks Company*, same place. Application filed June 12, 1888. Serial No. 276,881. Term of patent 7 years.

19,153.—GEM-SETTING.—*James W. Lawson*, East Providence, assignor to *Hancock, Becker & Co.*, Providence, R. I. Application filed April 26, 1889. Serial No. 308,759. Term of patent 7 years.

19,154.—SHIRT-BOSOM.—*Victor Henry Rothschild*, New York, N.Y. Application filed May 13, 1889. Serial No. 310,647. Term of patent 3½ years.

19,155.—METALLIC CEILING.—*Longley Lewis Sagendorph*, Cincinnati, Ohio, assignor of one-half to *Harlan P. Lloyd*, same place. Application filed February 4, 1889. Serial No. 298,674. Term of patent 14 years.

19,156.—HANDLE FOR STOVE-LID LIFTERS, &c.—*William W. Sly*, Cleveland, Ohio. Application filed April 23, 1889. Serial No. 308,338. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,703.—BOOTS, SHOES, GAITERS, AND SLIPPERS.—*Acme Staple and Machine Company*, Philadelphia, Pa. Application filed May 15, 1889. Used since December 24, 1884.
"The word 'ACME.'"

16,704.—COMPRESSED COOKED BEEF.—*Armour Packing Co.*, Kansas City, Kans. Application filed October 18, 1888. Used since July 19, 1888.
"The representation of a block of beef upon a plate."

16,705.—PURE WHITE BALL SOLID NAPHTHALINE.—*Henry M. Black*, Pittsburg, Pa. Application filed May 8, 1889. Used since February 10, 1888.
"The words 'MOTH MARBLES.'"

16,706.—REVOLVERS, SHOTGUNS, AND RIFLES.—*Hermann Boker & Co.*, New York, N. Y. Application filed March 20, 1889. Used since July 1, 1888.
"The word 'CLIMAX.'"

16,707.—MEDICAL COMPOUNDS FOR EXTERNAL APPLICATION.—*Evelina de La Forest Kelly*, New Brighton, N. Y. Application filed April 19, 1889. Used since March 1, 1889.
"The word 'SOCORRO.'"

16,708.—VETERINARY MEDICINES OR SPECIFICS.—*Humphreys Homeopathic Medicine Company*, New York, N. Y. Application filed December 18, 1888. Used since 1873.
"The representation of a horse's head."

16,709.—DRESS-SHIELDS.—*A. Hutchinson & Co.*, Paris, France. Application filed April 3, 1889. Used since May 15, 1888.
"The words 'LA COLLERETTE.'"

16,710.—PERFUMED SOAP, SACHET-POWDER, AND THE LIKE.—*Ladd & Coffin*, New York, N. Y. Application filed April 19, 1889. Used since March 15, 1889.
"The word 'EDENIA.'"

16,711.—METALS AND MANUFACTURES THEREFROM.—*The Low Moor Company*, (*Limited*,) Low Moor, near Bradford, county of York, England. Application filed May 1, 1889. Used since March 7, 1782.
"The words 'LOW MOOR.'"

16,712.—WAISTS MADE FROM KNITTED GOODS.—*James McCreery & Co.*, New York, N. Y. Application filed May 8, 1889. Used since January 1, 1889.
"The word 'MATELOT.'"

16,713.—LADIES' AND CHILDREN'S SUITS.—*James McCreery & Co.*, New York, N. Y. Application filed May 8, 1889. Used since January 1, 1889.
"The word 'HOLLYWOOD.'"

16,714.—HYDRAULIC HOSE.—*New Jersey Car Spring and Rubber Company*, Jersey City, N. J. Application filed May 2, 1889. Used since January, 1889.
"The word 'EMERALD.'"

16,715.—GRAFTING COMPOUNDS AND PREPARATIONS FOR DESTROYING INSECTS.—*Ongerth Grafting Compound Company*, San Francisco, Cal. Application filed May 15, 1889. Used since June 1, 1888.
"The representation of a man and woman engaged in the operation of applying the preparation in the two forms of liquid and powder and the cans or packages in the foreground."

16,716.—CANNED FRUITS, VEGETABLES, AND SHELL-FISH.—*Piper Packing Co.*, Rockport and Union, Me. Application filed April 16, 1889. Used since September, 1888.
"The words 'MORNING GLORY.'"

16,717.—NEWSPAPER.—*Charles M. Palmer*, Minneapolis, Minn. Application filed March 25, 1889. Used since 1873.
"The words 'NORTHWESTERN MILLER.'"

16,718.—LINIMENTS AND BLOOD-PURIFIERS.—*Philibert François Perrin*, Columbus, Ga. Application filed March 15, 1889. Used since December, 1888.
"The letters 'P. F. P.' associated with a representation of a mortar and pestle."

16,719.—IRON AND STEEL AND MANUFACTURES OF IRON AND STEEL.—*Sandvikens Jernverks Aktie Bolag*, Sandviken, Sweden. Application filed November 30, 1888. Used since 1868.
"The representation of a fish and fish-hook."

16,720.—ARTICLES OF IRON AND STEEL.—*Sandvikens Jernverks Aktie Bolag*, Sandviken, Sweden. Application filed November 30, 1888. Used since 1868.
"The word 'SANDVIK.'"

16,721.—COTTON LININGS, SILESIAS, SATEENS, CAMBRICS, AND TWILLS.—*Frank L. St. John*, New York, N. Y. Application filed February 18, 1889. Used since January 2, 1889.
"The word 'OXFORD.'"

16,722.—PORTABLE STOVES, HEATERS, RANGES, AND FURNACES.—*Samuel A. Suydam*, New York, N. Y. Application filed March 27, 1889. Used since July 1, 1887.
"The words 'OUR CROWN.'"

16,723.—INFANTS' PREPARED FOOD.—*William C. Wagner*, Brooklyn, N. Y. Application filed May 7, 1889. Used since March 11, 1889.
"The arbitrary word 'NUTRITIVUM.'"

16,724.—MIXED PAINTS.—*The Wadsworth Paint and Oil Manufacturing Company*, Brooklyn, N. Y. Application filed May 16, 1889. Used since March 1, 1886.
"A representation of the Bartholdi statue of Liberty Enlightening the World, erected in the harbor of New York."

16,725.—SUGAR-CURED HAMS.—*Moses Walton, Jr.*, Spring Valley, Ohio. Application filed March 27, 1889. Used since December, 1876.
"The representation of a packing-house on the banks of a stream flowing through a valley, and across the stream is a bridge, near which is a train of cars, associated with the words 'SPRING VALLEY SUGAR CURED HAMS, SPRING VALLEY, OHIO.'"

16,726.—TRIMMINGS FOR DRESSES AND CLOAKS.—*Samuel Weil*, New York, N. Y. Application filed March 28, 1889. Used since January 2, 1889.
"The word 'STERLING' in script letters within a circle."

16,727.—GUANO.—*R. A. Wooldridge & Co.*, Baltimore, Md. Application filed May 14, 1889. Used since June 1, 1887.
"The word 'QUICK-STEP.'"

LABELS.

5,932.—Title: "EMULSION OF COD LIVER OIL WITH PEPTONATE OF IRON AND QUININE."—*Boeddike & Waller*, New York, N. Y. Application filed May 15, 1889.

5,933.—Title: "ALLIGATOR OIL" (FOR A MEDICINE.)—*J. F. Crow*, Jefferson, Tex. Application filed April 12, 1889.

5,934.—Title: "FRENCH'S ESSENCE OF CRUSHED VIOLETS" (FOR SODA WATER SIRUP.)—*French, Richards & Co.*, Philadelphia, Pa. Application filed May 14, 1889.

5,935.—Title: "GOSSER'S CREAM GLYCERINE."—*J. J. Gosser*, Emlenton, Pa. Application filed February 13, 1889.

5,936.—Title: "JOHNSTON'S CELEBRATED EAST INDIAN MALARIA CURE."—*Joseph B. Johnston*, Providence, R. I. Application filed August 23, 1889.

5,937.—Title: "KRAUSE'S HEADACHE CAPSULES."—*Norman Lichty*, Des Moines, Iowa. Application filed April 20, 1889.

5,938.—Title: "MUCILAGE."—*Pomeroy & Sons*, Newark, N. J. Application filed April 29, 1889.

5,939.—Title: "PURE FRUIT PEACH JUICE."—*S. Richards & Sons*, Mobile, Ala. Application filed April 1, 1889.

5,940.—Title: "DELATOUR" (FOR SODA WATER.)—*Ackley C. Schuyler*, New York, N.Y. Application filed March 29, 1889. (Trade-Mark Registered.)

5,941.—Title: "DR. STRASSMAN'S EMMENAGOGUE."—*Mrs. Dr. Strassman*, San Francisco, Cal. Application filed May 20, 1889.

5,942.—Title: "WAGNER'S INFANT FOOD."—*William C. Wagner*, Brooklyn, N. Y. Application filed April 15, 1889.

PATENTS

GRANTED JUNE 11, 1889.

404,814. PHOTOGRAPH-PRINT MOUNTER. JOHN W. ALLDERICE, Waterbury, Conn. Filed Aug. 30, 1888. Serial No. 284,161. (No model.)



Claim.—1. A photographic-print mounter consisting of a spring-roller, a frame in which said roller is mounted, a textile strip carried by said roller, the outer end being secured in a fixed position, and an operating-roller partially inclosed by the textile strip and provided with a handle, whereby the strip may be laid over the surface of the print with pressure and without friction.

2. A photographic-print mounter consisting of a spring-roller, a frame in which the roller is journaled, a textile strip carried by said roller, a winding-roller to which the outer end of the strip is attached, and an operating-roller partially inclosed by the strip and provided with a handle, as and for the purpose set forth.

3. The frame-work, a spring-roller journaled therein, a winding-roller engaging slots in the frame, and a locking-pin, whereby said roller is locked in position, in combination with a textile strip wound upon the spring-roller and having its outer end secured to the winding-roller, and an operating-roller having a handle, substantially as described.

4. In a device of the class described, the combination, with a spring-roller and a textile strip wound thereon, its outer end being secured in a fixed position, of a winding-roller journaled in a two-part carrier, the parts of said carrier having half-screws which register with each other, and a handle engaging the half-screws so that the parts are held together and the roller retained in position.

5. The frame, a spring-roller journaled therein and carrying a textile strip, a winding-roller also journaled in the frame-work to which the outer end of the strip is attached, and a locking device for said winding-roller, in combination with an operating-roller journaled in a two-part carrier, the parts of the carrier having half-screws which match each other, and a handle engaging said half-screws, as and for the purpose set forth.

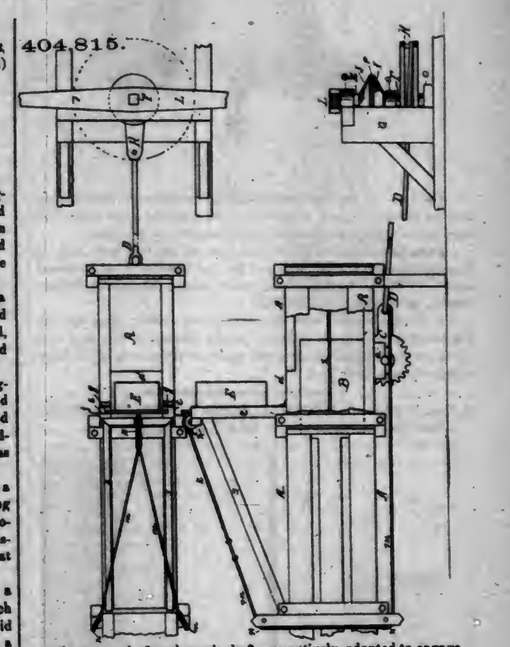
404,815. BALING-PRESS. FRED W. ADDEMAN, Maple Plain, Minn. Filed May 19, 1888. Serial No. 274,441. (No model.)

Claim.—1. The combination, with a horizontally-movable follower and a vertically-movable gravity-actuated condenser, of a segment-gear lever operating upon a corresponding rack upon the follower, means for operating said lever in one direction, and a cable or cables attached to said condenser passing over pulley-sheaves and connected with said lever, substantially as described, whereby the weight of the condenser operates the segment-gear lever in the other direction.

2. In a baling-press, a horizontally-movable follower, a gravity-actuated vertically-movable condenser, a longitudinally-extending rack upon said follower, a segment-gear lever adapted to mesh with said rack, a pitman connected with suitable power for oscillating said segment-gear lever in one direction, and a cord passing over sheaves *i* and *n* and connecting said segment-gear lever and condenser, whereby the drawing back of the segment-lever to move forward the follower raises the condenser, and the falling of the condenser draws back the follower, substantially as specified.

3. The combination, with the horizontally-movable follower and segment-gear lever for actuating the same, and a condenser connected with said segment-lever by cords and sheaves in such a manner that the weight of the condenser operates to cause the return movement of the follower, of a horse-power consisting of an upright crank-shaft, a pitman-rod connecting said crank and segment-gear lever, a sweep-shaft mounted above and in the axis of the crank-shaft, clutch members

404,815.

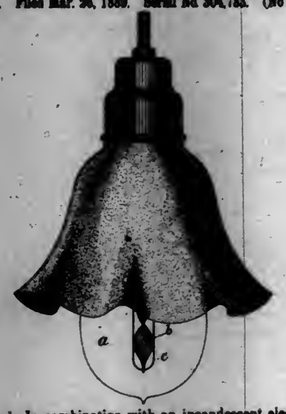


upon the sweep-shaft and crank-shaft, respectively, adapted to engage with each other when power is applied to the sweep-shaft and to become disengaged when power is applied to the crank-shaft, substantially as specified, whereby one-half a revolution of the crank-shaft from the inner to the outer dead-center is caused by the power applied by means of the sweep and the balance of the revolution by the downward movement of the condenser through its connection with the segment-lever and pitman independently of the movement of the sweep.

4. The clutch member I, mounted upon the crank-shaft, the gravity clutch member J, mounted and vertically movable upon the sweep-shaft and adapted to interlock with the clutch member I, when resistance is offered to the revolution thereof, and to ride over the same when clutch member I is caused to move independently in the same direction, in combination with the horizontally-movable follower, a segment-gear lever for operating the same, a pitman-rod connecting said lever and crank upon the crank-shaft, and means for drawing back said lever when the follower has finished its forward stroke, substantially as and for the purpose herein specified.

5. The combination, with a horizontally-movable follower, a segment-gear lever for actuating said follower, and a gravity-actuated condenser connected with said segment-gear lever in such a manner that the movement of the lever to move forward the follower raises the condenser, and the falling of the condenser draws back the follower, of a horse-power consisting of a vertically-mounted crank-shaft, a sweep-shaft mounted above the crank-shaft in the same axis, a pitman-rod connecting the crank upon the crank-shaft and the segment-gear lever, and clutch mechanism adapted to couple said shafts until the follower has completed its forward stroke and then to be released, substantially as and for the purpose herein specified.

404,816. INCANDESCENT LAMP. CHARLES A. BACKERTON, New York, N. Y. Filed Mar. 26, 1889. Serial No. 304,732. (No model.)

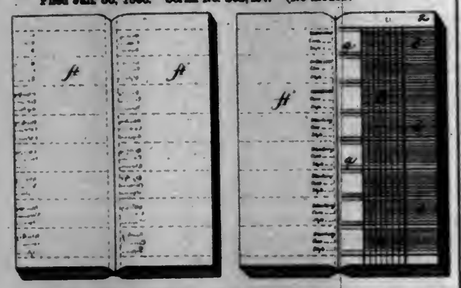


Claim.—1. In combination with an incandescent electric lamp and the filament thereof, a spiral standard attached to the base of the lamp and axially disposed therein, substantially as described.

2. In combination with an incandescent electric lamp and the filament thereof, a spiral standard for the support of said filament attached to the base of said lamp, made of glass and axially disposed therein, substantially as described.

3. In combination with an incandescent electric lamp and the filament thereof, a spiral standard axially disposed within said lamp for the support of said filament and made ont of the body of the lamp, substantially as described.

404,817. BLANK BOOK. NATHAN H. BAKER, Providence, R. I. Filed Jan. 30, 1883. Serial No. 262,457. (No model.)



Claim.—The described blank book having permanent leaves with spaces on both sides for the matter of which a record is to be kept, and a detachable leaf on each side of the permanent leaf, the printing on each detachable leaf conforming in position to the corresponding space on the opposite side of the permanent leaf, whereby the record from two sides of a permanent leaf may be transferred by carbon-paper to the detachable leaves on either side thereof, substantially as described.

404,818. AIR-ENGINE. JAMES S. BALDWIN, Newark, N. J. Filed May 19, 1888. Serial No. 274,453. (No model.)

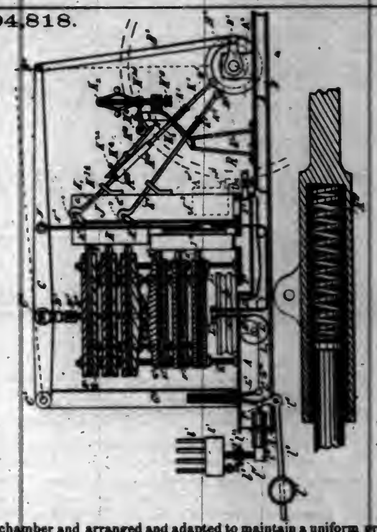
Claim.—1. In an air-engine, the combination of a hot-air chamber and a cold-air chamber exposed to the pressure of the outer air and each having flexible walls, a regenerator, and a heating apparatus heated by steam or hot water for the development of power, substantially as set forth.

2. In an air-engine, an operative chamber having flexible walls and arranged and adapted to have a suitable heating medium applied to warm a portion of the internal surface thereof independent of the heat supplied to the air employed therein, substantially as described.

3. In an air-engine, the combination of a series of automatically-movable plates and a series of hot-air chambers having flexible walls and flexible necks or outlets, said plates being arranged and adapted by their simultaneous action to transmit power from said chambers to the working parts of said engine, substantially as and for the purposes set forth.

4. In an air-engine, an accumulator, in combination with a hot-air chamber and arranged and adapted to maintain a uniform pressure in said hot-air chamber during the whole time the hot air is entering therein, as set forth.

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5. In an air-engine, an accumulator arranged and adapted to supply heated air to the hot chamber or chambers at the beginning of each inflation thereof before the cold-air chambers commence the delivery of their air, substantially as described.

6. In an air-engine, in combination, an accumulator, a spring, and an intermediate cam or equivalent graduating apparatus, said cam being arranged and adapted to change the varying strain of the spring into a practically uniform pressure on the accumulator, as set forth.

7. In an air-engine, in combination, an accumulator having flexible walls and a spring arranged and adapted to maintain a constant strain upon the movable head of said accumulator, as described.

8. In an air-engine, in combination, an accumulator having flexible walls and a cold-air chamber, said accumulator being arranged and adapted to receive cold air from the cold-air chamber and to supply said air under tension to the hot-air chamber, as set forth.

9. In an air-engine, an accumulator, in combination with a hot-air chamber, and adapted, as described, to maintain a uniform tension in said chamber during nearly the whole of the operative stroke of the engine, substantially as set forth.

10. In an air-engine, an accumulator, in combination with a regenerator, and adapted to transmit air through said regenerator into the hot-air chamber of said engine, substantially as set forth.

11. In an air-engine, in combination, an accumulator, a regenerator, a heater, and means, as described, for supplying said accumulator with cold air under pressure, as and for the purposes set forth.

12. In an air-engine, in combination, an accumulator, a hot-air chamber, and a governor, substantially as and for the purposes set forth.

13. In an air-engine, the combination of hot and cold air chambers having flexible walls and an accumulator, substantially as set forth.

14. In an air-engine, in combination, a cold-air pump and an automatic regulating device arranged to adapt the quantity of air delivered by said pump to that required by the engine, substantially as set forth.

15. In an air-engine, in combination, a cold-air chamber or pump and an automatic regulating device adapted to regulate the amount of air delivered by said pump by controlling the action of the inlet-valve of the said pump or chamber, substantially as and for the purposes set forth.

16. In an air-engine, in combination with a hot-air chamber, a relief-valve opening inwardly and arranged and adapted to admit warm air to the said hot-air chamber when a partial vacuum is formed therein, substantially as set forth.

17. In an air-engine, the combination of hot and cold air chambers having flexible walls, an accumulator, and a thermal apparatus, the whole constructed and operated substantially as and for the purposes set forth.

18. In an air-engine, in combination, a thermal apparatus, an accumulator, and a hot-air chamber or chambers, said thermal apparatus being arranged and adapted to control the tension of the air employed in said hot-air chamber or chambers by the action of the temperature of the external atmosphere, as set forth.

19. In an air-engine, a thermal apparatus actuated by the temperature of the external atmosphere, and a hot-air chamber or chambers, said thermal apparatus being adapted and arranged, as described, to cause an increase of the pressure of the air supplied to said hot-air chamber or chambers by the decrease of the temperature of said atmosphere, substantially as set forth.

20. In an air-engine, in combination with a hot-air chamber or chambers thereof, a thermal apparatus actuated by the temperature of the external atmosphere, and arranged and adapted, as described, to cause a decrease in the pressure of the air supplied to the hot-air chamber or chambers by the increase of the temperature of the atmosphere, substantially as set forth.

21. In an air-engine, the combination of a series of parallel movable plates connected by suitable rods or bars, a corresponding series of fixed parallel plates, and a series of cells or chambers having flexible walls interposed between said series of plates for receiving heated air under pressure, substantially as described, and for the purposes set forth.

22. In an air-engine, the combination of a series of parallel movable plates, a corresponding series of fixed plates, said fixed and movable plates being also adjustable in their relation to each other, and a series of cells or chambers interposed between said series of plates and having flexible wall for receiving cold air, substantially as and for the purposes set forth.

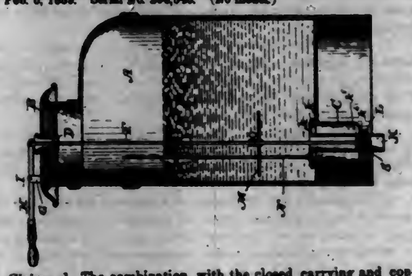
23. In an air-engine, the combination of the fixed plates F and F', movable plates G and G', chambers H and H', heater J, and regenerator J', constructed and operated substantially as described.

24. In an air-engine employing the heat of hot water or steam, the combination of a hot-air chamber, a cold-air chamber, each having flexible walls and exposed to the pressure of the outer atmosphere, and a valve adapted to cut off communication between said chambers, substantially as and for the purposes set forth.

25. In an air-engine employing the heat of steam or hot water, the combination of a series of hot-air chambers, a series of cold-air chambers, each having flexible walls and each exposed to the pressure of the outer air, a corresponding series of fixed and movable plates, a heater, and a regenerator, substantially as described, and for the purposes set forth.

26. In an air-engine employing the heat of steam or hot water, the combination of a series of hot-air chambers, a series of cold-air chambers, each having flexible walls, fixed and movable plates, as described, and a valve adapted to automatically cut off the supply of air under pressure from the hot-air chambers before their inflation is complete, substantially as described.

404,819. LIQUID TRANSPORTING AND MEASURING VESSEL. HARVEY P. BARNHART and SAMUEL L. BARNHART, Potsdam, N. Y. Filed Feb. 6, 1889. Serial No. 298,948. (No model.)



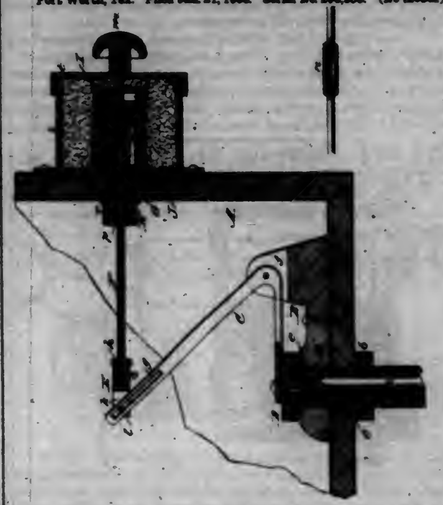
Claim.—1. The combination, with the closed carrying and containing vessel A, having the open-bottomed measuring-chamber C, of the piston S, the detachable cylinder K, and means for operatively closing the joints between the cylinder and the measuring-chamber, whereby the said chamber is adapted to be filled and emptied, as set forth.

2. The cylinder K, in combination with the measuring-vessel C, the latter open at top and bottom and the former having the covering-cap *k* at its upper extremity, the contracted lower end thereof being provided with a thumb-nut, and means for packing the top and bottom openings of the measuring-chambers, as set forth.

3. The carrying and containing vessel A, having the measuring devices described, comprising the cylinder K, the piston S, and chamber C, in combination with the agitator M, fixed to the piston-rod, whereby the operation of discharging the contents of the vessel simultaneously agitates and thoroughly incorporates the constituent parts of the same, as set forth.

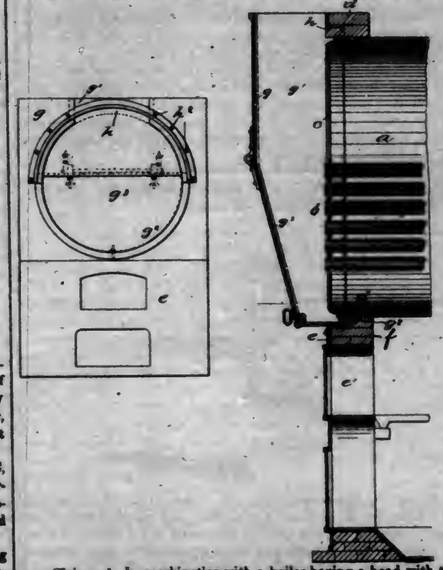
4. The closed vessel A, having the open-bottomed measuring-chamber C, the cylinder K, seated therein and provided with perforations k^4, and the sliding piston S, in combination with the air-inlet pipe N and float-valve *n*, connecting the said measure-chamber with the air-space in the top of the said closed vessel, as set forth.

404,820. ANTI-FREEZING TANK-VALVE. WILLIAM H. BARRETT, Fort Worth, Tex. Filed Jan. 21, 1889. Serial No. 296,953. (No model.)



Claim.—The combination, with the tank, its valve and lever, and the valve-rod F, of the frost-chamber having an annular space to receive the non-freezing compound, the stuffing-box G around the rod F and screw-threaded at the ends, and the screw-threaded caps H and I, having necks *p* and flanges *r*, all arranged and operating substantially as shown and described.

404,821. BOILER FRONT AND SETTING. HENRY L. BEACH, Hartford, Conn. Filed Jan. 24, 1889. Serial No. 297,336. (No model.)



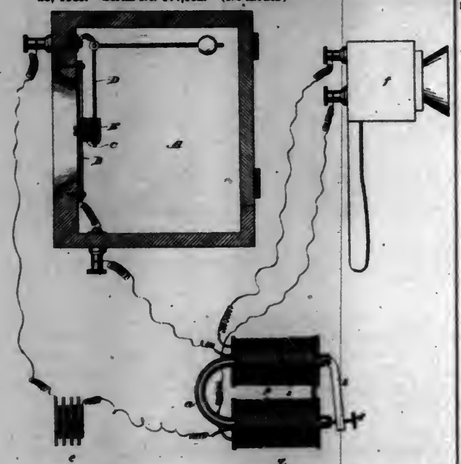
Claim.—1. In combination with a boiler having a head with the internal flange secured thereto, the boiler-front composed of a section *e* and the section *g*, the latter box-like in form and constituting the smoke-chamber *g'*, and having in its rear wall the socket g^2 for the end of the boiler, all substantially as described.

2. In combination with a tubular boiler having the shell *a*, the head *c*, with inturned flange *d'*, secured to said shell by rivets *d*, the section *e* of the boiler-front, and the hollow section *g*, with the boiler-socket g^3 in the rear wall, the edge of said socket lying back of the line of rivets *d*, all substantially as described.

3. In combination with a boiler having a flanged head secured therein, the lower front section *e* and the hollow upper front section *g*, having the boiler-socket g^3, the edge of which lies back of the front line of rivets, all substantially as described.

4. In combination with a boiler-front and setting composed of the lower section *e* and the hollow upper section *g*, forming smoke-chamber *g'*, and having a boiler-socket g^3 greater in vertical diameter than the boiler, the boiler having the flanged head secured therein by a line of rivets, the socket adjacent to the lower half of the boiler lying back of the front line of rivets, all substantially as described.

404,822. INDUCTION-COIL. FRED. H. BROWN, Fort Worth, Tex., assignor to the Magnetic Telegraph Company, of New York. Filed Sept. 23, 1885. Serial No. 177,932. (No model.)



Claim.—1. The combination of the core, the primary and secondary coils wound thereon, and means for bringing the poles of the core toward or from each other, substantially as described.

2. The combination of the bent core, the primary and secondary coils wound thereon, the adjustable armature connected to one pole (to form an extension thereof) and extending over the opposite pole, and the set-screw for moving the free end of the armature toward or from the disconnected pole to establish or break the magnetic circuit, substantially as described.

404,828. PLOW. CARL G. BUSCHNER, Webster, Dak. Filed Nov. 30, 1888. Serial No. 292,283. (No model.)



Claim.—1. The combination, with a plow, a hinged stub-axle, a seat mounted on the axle, and a land-wheel, of a supplementary beam loosely secured to the axle and the main beam of the plow, and a device to adjustably secure the axle to the handles of the plow, substantially as set forth.

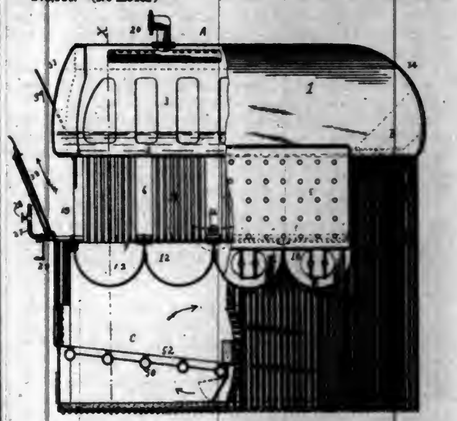
2. The combination, with a plow-beam, a mold-board, landside, and plow-handles, of a stub-axle hinged to one of the handles, a seat mounted on the stub-axle, a supplementary plow-beam removably attached to the front end of the main plow-beam and also pivoted on the stub-axle, and a connecting-rod that is loosely secured to the axle and adjustably attached to a bar which is fastened to the plow-handles, substantially as set forth.

404,824. BUSHING FOR PULLEYS. CHESTER W. CLARK and THERON D. KEASEY, Mishawaka, Ind., assignors to the Keasey Pulley Company, same place. Filed Feb. 28, 1888. Serial No. 265,542. (No model.)



Claim.—A pulley-bushing made of paper and an abrading material, substantially as set forth.

404,825. STEAM-BOILER. NATHAN B. CLARK, Washington, D. C., and FRANK B. KIRK, Baltimore, Md. Filed June 27, 1888. Serial No. 278,381. (No model.)



Claim.—1. A steam-boiler consisting, essentially, of a number of connected segments running longitudinally, a number of reversed segments running transversely thereof, and a series of water-tubes connecting these segments.

2. A steam-boiler consisting, essentially, of a number of connected top segments running in one direction, a number of reversed bottom segments running in a direction at a right angle thereto, but of less width than the length of the top segments, and tubes connecting the flat sides of the segments.

3. The combination, in a steam-boiler, of a water-tube box serving as a flue for the products of combustion, a pair of arched sections connected together at their edges, and a stay connecting these edges to the tube-box, substantially as described.

4. The combination, in a boiler, of a series of top segments and a series of bottom segments connected therewith, as described, each bottom segment having a depressed pocket, and a pipe extending into the interior of and opening inside the segment in proximity to the pocket.

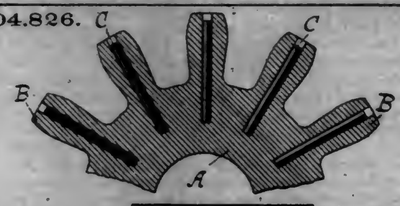
5. The combination, in a steam-boiler, of a series of water-tubes connecting the larger members and a movable perforated pipe extending between said tubes, said pipe having connections, substantially as described, whereby a jet of steam, air, or water may be conveyed to spaces between the tubes to clean the same, substantially as described.

6. The combination, with a boiler consisting of top section and bottom section and connecting-tubes, of a rotary perforated pipe between said tubes, a connecting-pipe leading to the same, and a handle whereby said perforated pipe may be rotated, substantially as described.

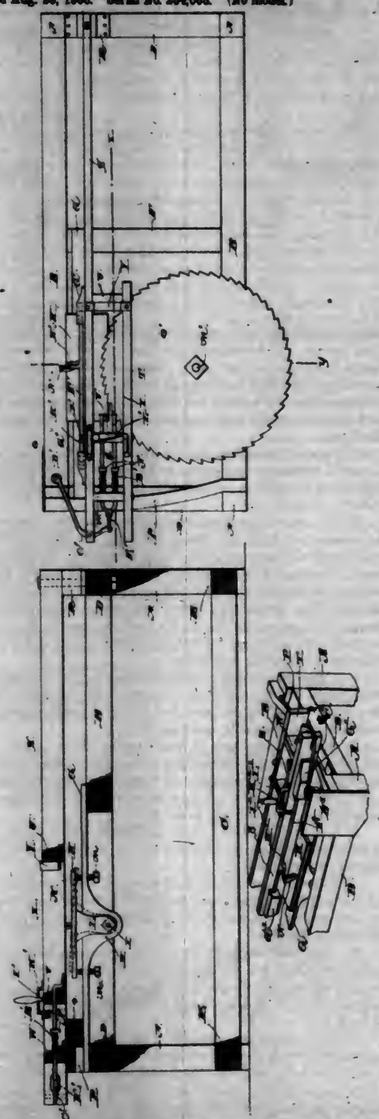
404,826. COGGED GEARING. WILLIAM COURTENAY, New York, N. Y. Filed Feb. 13, 1888. Serial No. 299,696. (No model.)

Claim.—Cogged gearing composed of vulcanized fiber, having strengthening-pins extending from the body of the gear into each tooth, said body and teeth being integral, substantially as described.

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404,827. MACHINE FOR SAWING SHINGLES. GEORGE J. DAVIS, Mill Bay, assignor of one-half to William D. Davis, Statesborough, Ga. Filed Aug. 20, 1888. Serial No. 284,063. (No model.)



Claim.—1. The combination of the frame, the saw, the carriage guided on the frame and adapted to be moved across and from the saw, the longitudinally-movable rod sliding in guides on the carriage, the tappet-arm, and the tilt-table having the cam or arm M, adapted to be engaged by the tappet-arm, for the purpose set forth, substantially as described.

2. The combination, in a machine for sawing shingles, of the frame having the stop O, the pivoted carriage movable toward and from the saw, the dogs Z in the said carriage, for the purpose set forth, the springs B' on the shanks of the dogs to normally move the said dogs in one direction, and the lever C', pivoted to the carriage and connected to the said dogs, and having the roller D', adapted to engage the stop O as the carriage is withdrawn from the saw, whereby the dogs will become disengaged, substantially as described.

3. The combination, in a machine for sawing shingles, of the frame, the tilting table supported thereon and having the arm N, the screws M, to limit the movement of the tilting table, the carriage, and the longitudinally-movable rod F, guided thereon and having the tappet-arm to engage the arm N, substantially as described.

4. The combination, in a machine for sawing shingles, of the frame, the tilt-table thereon having the arm N, the carriage, the longitudinally-movable rod F on the carriage, having the tappet-arm H', the handle to move the rod in one direction, and the spring L', to move the rod normally in the opposite direction, substantially as described.

404,828. LETTER-BOX. WILLARD D. DURRIN, Washington, D. C. Filed Jan. 31, 1889. Serial No. 298,173. (No model.)



Claim.—1. In a letter-box, the combination, with the body having an opening in one side thereof, of a plate pivoted to the body adjacent to one edge of the opening and adapted to close the same, said plate having a curved flange on one edge, and a curved guard-plate projecting into the body of the box diametrically opposite the curved flange on the pivoted plate, substantially as set forth.

2. In a letter-box, the combination, with the body and a restricted chamber on top of the latter, said chamber having an open side, of a plate pivoted in the body at the lower edge of the opening, a curved flange on one edge of the pivoted plate concentric with the axis of the latter, tapering segments at the end of the pivoted plate, and a curved plate projecting from the body diametrically opposite the curved plate on the pivoted plate, and concentric also with the axis of the latter, substantially as set forth.

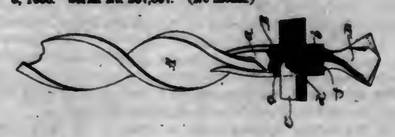
3. In a letter-box, the combination, with the body having an opening in its side, of a lid pivoted in the body, said lid having flanges at its ends adapted to lap over the adjacent edges of the body, substantially as set forth.

4. In a letter-box, the combination, with the body of the box and a restricted chamber at the top having an opening in its side, of a lid having a counterpoise at one edge, flanges at the ends to lap over the edges of the body, and an angle-plate projecting laterally from the lid and adapted to act as a stop to abut against the body, and thereby prevent the lid from being opened too far, substantially as set forth.

5. In a letter-box, the combination, with the body of the box and a restricted chamber at the top having an opening in its side, of a lid pivoted in the body at the lower edge of the opening and provided at its upper end with an inwardly-projecting flange, an angle-plate projecting out at right angles from the outer face of said lid, and adapted to abut against the adjacent surface of the body of the box and serve as a stop to prevent the lid from being opened too far, substantially as set forth.

6. In a letter-box, the combination, with the body having an opening therein and the lower door, of a dial supported on a pivot within the body, with its edge projecting over the lower opening, said dial having characters to be exhibited through the opening, and a flange located between the dial and the body and projecting over the crack formed between the meeting edges of the body and door, substantially as set forth.

404,829. DRILL-BIT. JAMES EAGEN, Wyoming, Pa. Filed Oct. 3, 1888. Serial No. 287,067. (No model.)

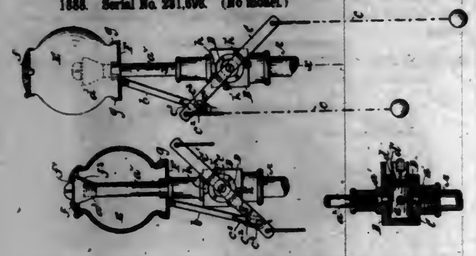


Claim.—1. In a drill-bit, the combination, with a stem having a transverse opening therein, of a removable knife located within said opening and having cutting ends and a notched side edge, and a leader secured to the stem below the knife and locking the latter in position.

2. In a drill-bit, the combination, with a stem having a screw-threaded bore at one end and a transverse slot through this bore, of a knife having a notch therein and adapted to enter this slot, and a leader having a screw-stem designed to enter the bore and the notch in the knife, whereby the knife is locked in place, substantially as set forth.

3. In a drill-bit, the combination, with a twist-stem and an integral tip having a screw-threaded bore and a transverse slot through the latter, of a knife having a notch in one edge and oppositely beveled or sharpened edges, and a twisted leader adapted to enter the bore of the tip and be seated in the notch of the knife, substantially as set forth.

404,830. GAS-BURNER. WILLIAM F. FOLMER, New York, N. Y., assignor of one-half to Walter R. Schwing, same place. Filed Aug. 1, 1888. Serial No. 281,696. (No model.)



Claim.—1. The combination, with a cock having a rotary plug, a burner, a globe, a rocking piece connected to the plug, and a link connected near one end to the globe and having a slotted connection near the other end, with a pin on said rocking piece, said slot having a notch and a spring, substantially as specified.

2. The combination, with a supply-pipe, of a cock having a rotary plug, a globe, a gas-burner, a swinging connection between the globe and the plug of the cock, a rocking bar on the plug, stops for varying the degree of rotation of the plug comprising a projection on the cock, and adjustable stops engaging the rocking bar on each side of the projection, substantially as specified.

3. The combination, with a gas-cock having a rotary plug, a gas-burner, a globe for the gas-burner, a swinging connection between the globe and the plug, and hinged covers for the globe provided with a central opening and adapted to contact with the burner-tip when the globe is moved in one direction, substantially as specified.

404,831. SPOOLING-MACHINE. JOHN W. FOSTER, Pawtucket, R. I., assignor of one-half to George B. Manning, Taunton, Mass. Filed Jan. 30, 1888. Serial No. 262,315. (No model.)

Brief.—The object of the invention is to produce an improved machine for doubling or winding yarn from cops or bobbins upon spools, effective in its operation and requiring little floor-space.

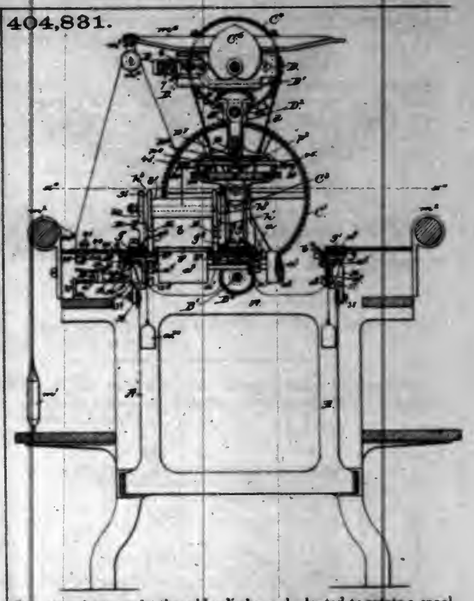
Claim.—1. The series of horizontally-placed driving-cylinders having their axes of rotation substantially at right angles to the frame, means to rotate them, and the series of drums resting thereon and adapted to rotate a series of spools by frictional contact, combined with a series of open-centered brakes, as b^3, interposed directly between the said driving-cylinders and drums, each brake having bars, as shown, extended in the direction of the length of the drum and at opposite sides of the axis of rotation of the said drum to thereby engage and instantly lift the drum above it from contact with the cylinder driving the said drum, the contact of the brake with the drum to lift the same from the cylinder acting instantly to check the rotation of the drum, substantially as described.

2. The cylinder a^3, the drum resting thereon, the slotted spool-stands to receive the journals of the said drum, and bearing means for the spool, also guided between and held by the said spool-stands, combined with the brake b^3, having an open center and interposed directly between the cylinder and drum, the bars or projections 400 400 of the brake acting upon the drum at the opposite sides of a vertical line drawn from the journals of the drum, whereby the drum is lifted vertically and is supported by the brake at each side, the said line thus instantly stopping the rotation of the spool, substantially as described.

3. The driving-cylinder, means to rotate it, the drum resting on and rotated by the said cylinder, the slotted spool-stands, and cheek-pieces to hold frictionally between them and clamp the spools, and having journals free to enter and rotate and slide vertically in the slots in the said spool-stands, substantially as described.

4. The driving-cylinder, means to rotate it, the drum resting

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thereon and rotated by the said cylinder and adapted to rotate a spool lying thereon, and spool-stands provided with slots and overhanging flanges 51 to form pockets, as 18, combined with bearing means, substantially as described, for the spools, the said bearing means consisting of independent cheek-pieces and journals, the latter entering the said pockets automatically when the spool has been filled, substantially as described.

5. The driving-cylinder, combined with slotted spool-stand adapted to receive between them the spool to be rotated, one of the said stands being made movable in a direction from and toward the other, substantially as described.

6. The series of driving-cylinders arranged across the machine in the direction of its length, drums resting on the said cylinders, and spool-stands slotted, as at 17 18, to leave flanges 51 overhanging the slots 17, combined with independent cheek-forming bearing means for both ends of the spools, the said bearing means, as the spools fill, rising and rotating in the said slots 17 until the bearing means meet the said flanges, the latter, as the yarn on the spool increases in diameter, acting on the bearing means to force the same into the slots 18 to stop the spool, substantially as described.

7. The driving-cylinder, means to rotate it, the spool-stands, the drum resting thereon, and the brake, combined with the brake-actuating lever, the spring-actuated bolt of the stop-motion, and means to actuate it, substantially as described.

8. The driving-cylinder, the intermediate drum adapted to support the spool, and the slotted spool-stands, one of which is movable upon a pivot in a direction from and toward the other, combined with a spring adapted to hold in operative position the pivoted portion of the spool-stand, substantially as described.

9. In combination, the revolving ratchet-wheel 33, the spring-operated bolt f, the lever pivoted thereon, and the drop-wires, substantially as described.

10. The driving-cylinder, means to rotate it, the drum, the brake, and the brake-actuating lever provided with the shelf, combined with the starting-lever to move the brake-actuating lever, to operate substantially as described.

11. The heart-cam shaft, the heart-cam thereon, the horizontally-sliding carriage D, and the wave-motion carriage, combined with the sector-lever actuated by the said carriage and connections, substantially as described, between it and the said wave-motion carriage, as set forth.

12. In a spooling-machine, two series of driving-cylinders arranged transversely of the machine and having their axes substantially in line, two series of drums parallel therewith and resting thereon, and two series of spool-stands, combined with bearing means, substantially as described, for the said spools, and with the open-center brakes interposed directly between the said cylinder and drum and having parallel bars acting upon opposite sides of the axis of the drum to lift each drum from each cylinder, and with means to actuate the said brakes, substantially as described.

13. In a spooling-machine, two sets of driving-cylinders at opposite sides of the frame, with their axes at right angles to the length of the frame, two sets of spool-stands, stand-rails to which they are bolted, rails on which the stand-rails rest, and means to adjustably connect the stand-rails with the said rails, combined with two sets of drums b, for rotating the spools b', and bearing means for the spools, whereby the spool-stands may be simultaneously adjusted to adapt the frame for the reception of spools of different lengths, substantially as described.

14. Two sets of driving-cylinders, one at each side of the frame, the axes of the said cylinders being arranged transversely of the frame, two sets of slotted spool-stands, and bearing means for the said spools between the said stands and above the said cylinders, combined with the wave-motion carriage located above the spools and having arms p^3, and thread-guides, as 24, for the yarns going to both sets of spools, and with means to rotate the said cylinders and actuate the wave-motion carriage, to operate substantially as described.

15. The slotted spool-stands, driving-cylinder, and drum, combined with metallic cheek-pieces, shaped substantially as described, at their inner side for engagement with the spool and provided at their outer side with journals entering the slots of the said stands, substantially as described.

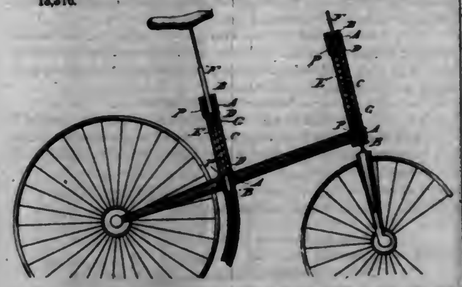
16. The cylinder a^3, the drum, the brake, and the brake-actuating lever having a toe and a shoulder 8 and weight to move the said lever, combined with the spring-actuated bolt, its attached lever, drop-wire, and ratchet, and means to move it, substantially as described.

17. In a spooling-machine, two sets of driving-cylinders at opposite sides of the frame, the said cylinders having their axes coincident, or substantially so, two sets of slotted spool-stands having flanges, as 51, to leave pockets 18 below them, two sets of drums having their axes parallel to the axes of and resting on the said cylinders, and bearing means for the spools, combined with the wave-motion carriage, and means, substantially as described, to reciprocate it transversely of the frame, the said wave-motion carriage and its actuating cam-shaft being located above the said drums and spools thereon, substantially as described.

18. In a spooling-machine, two series of driving-cylinders, one at each side of the frame, the said cylinders having their shafts or axes of rotation arranged transversely of the frame, means to rotate the said cylinders at uniform speed, two sets of slotted spool-stands, bearing means for the spools to be held by the said slotted stands and to be rotated between the said stands, a wave-motion carriage having yarn-guiding eyes to guide the yarn going to the said spools, and means for actuating the said wave-motion carriage, substantially as described.

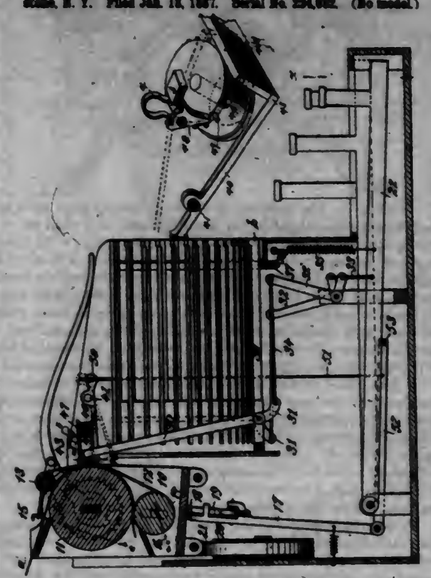
19. In a spooling-machine, two sets of driving-cylinders at opposite sides of the frame, the said cylinders having their axes coincident, or substantially so, two sets of slotted spool-stands having flanges, as 51, to leave pockets 18 below them, two sets of drums having their axes parallel to the axes of and resting on the said cylinders, and bearing means for the spools, combined with the wave-motion carriage, means, substantially as described, to reciprocate it transversely of the frame, the said wave-motion carriage and its actuating cam-shaft being located above the said drums and spools thereon, a series of brakes, brake-actuating levers, stop-motion devices, and with means for moving the said stop-motion devices on the breaking of a yarn, substantially as described.

404,832. VELOCIPEDE. WILLIAM GOULDEN, No. 1 Donegal Place, Clapton, London, County of Middlesex, England. Filed Nov. 8, 1887. Serial No. 254,652. (No model.) Patented in England Oct. 1, 1887, No. 13,316.



Claim.—The combination, in velocipedes and other wheeled vehicles, substantially as described, of a cylinder with stuffing-box attached at each or either end, the cylinder being dust-proof and containing a long coil spring or springs with piston-rod working through the center of coil spring or springs and stuffing-box or stuffing-boxes and extending through the box or boxes any convenient distance each way for the purpose of attachment at each or either end, substantially as set forth.

404,833. TYPE-WRITING MACHINE. ARTHUR GRANDY, White Plains, N. Y. Filed Jan. 18, 1887. Serial No. 224,662. (No model.)



Claim.—1. In a type-writing machine, the combination, with the type-arms and their operating-levers, of a tilting frame, ribbon-spools mounted on said tilting frame, and intermediate mechanism, substantially as described, for operating the tilting frame from the type-operating levers, as and for the purpose specified.

2. In a type-writing machine, the combination, with the type-arms and their operating-levers, of a tilting frame operated by the type-operating levers, ribbon-spools mounted on the tilting frame, and means, substantially as described, for turning the ribbon-spools at each throw of the said tilting frame, as specified.

3. In a type-writing machine, the combination, with the carriage and means for operating the same, of pivoted type-arms, a tilting frame, ribbon-spools mounted on said tilting frame, and a connection, substantially as described, between the said tilting frame and the carriage-operating mechanism, as set forth.

4. In a type-writing machine, the combination, with the main frame, of a tilting frame pivoted thereto, a ribbon-spool mounted on the said tilting frame, and a pawl on the main frame engaging the ribbon-spool to turn it at each throw of the said tilting frame, substantially as described.

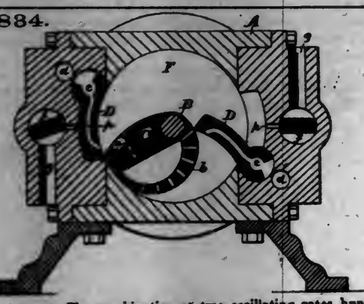
5. In a type-writing machine, the combination, with the main frame, of pivoted key-levers, pivoted type-arms, a tilting frame, ribbon-spools on the said tilting frame, toothed wheels carried by the spools, a spring-pressed pawl arranged in connection with one of the toothed wheels, and means, substantially as described, for operating the type-arms and tilting frame from the key-levers, substantially as specified.

6. In a type-writing machine, the combination, with the levers 22, of the type-arms 30, arranged in front of the carriage in a curve about a common center and pivoted a short distance from one end, the crank-levers 32, the rods 34, connected to long arms of the crank-levers and to the short arms of the type-arms, the rods 33, connecting the short arms of the crank-levers to the levers 22, and the springs 35 for returning the type-arms to their normal positions, substantially as described.

7. In a type-writing machine, the combination, with the carriage and its operating-frames 52 and 53, of the type-arms 30, the key-levers 22, intermediate mechanism, substantially as described, between said levers and type-arms, the pivoted ribbon-carrying frame 40, and the connection 51 between the ribbon-frame and the frames 52 and 53, substantially as described.

404,834. ROTARY ENGINE. HENRY HAAR, Bristol, Conn., assignor of one-half to J. B. Holley, same place. Filed Mar. 3, 1888. Serial No. 266,496. (No model.)

404,884.



Claim.—1. The combination of two oscillating gates hung at diametrically-opposite points, the piston mounted on a shaft for revolving in a given direction and having a concentric face at its outer edge and one pressure-face on its convex rear side that extends at an angle to said concentric face from the rear corner thereof to a point near the shaft on the arc of a circle whose radius is not greater than the length of each gate, the case having a cylindrical chamber with live-steam ports located at the back of said oscillating gates, and alternately-acting cut-off valves for said live-steam ports on opposite sides of said case, substantially as described, and for the purpose specified.

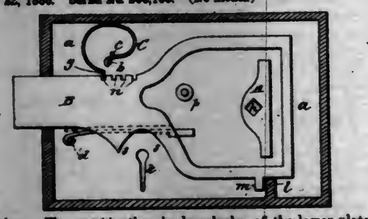
2. In a rotary engine having a case provided with a cylindrical chamber and inlet-ports and having a revolving piston within said chamber, the oscillating gate having an inclosed exhaust passage-way extending lengthwise through said gate, the induction of which passage opens into the cylindrical chamber on the inner concave face of said gate at a point near the swinging end thereof, and the eduction of which passage is at the pivotal end of said gate, substantially as described, and for the purpose specified.

3. In a rotary engine having a revolving piston, the combination of the oscillating gate having an inclosed exhaust passage-way through it that opens on the inner concave face of said gate at a point near the swinging end thereof and extends backward through said gate to its pivotal end, and a case having a cylindrical chamber for said piston with an inlet-port located at the back of said gate, substantially as described, and for the purpose specified.

4. The combination of a case having a cylindrical chamber and inlet-ports, the revolving piston mounted on a shaft within said chamber, the oscillating gates both having a bearing-contact with said piston when it is moving in a forward direction and having an inclosed exhaust passage-way through them that opens on the inner concave face of said gates at a point near the swinging ends thereof, and alternately-acting cut-off valves on opposite sides of said case, substantially as described, and for the purpose specified.

5. The combination of the case having a cylindrical chamber, the oscillating gates hung in the case, each having a concave inner face on the same arc as the wall of said cylinder, and the revolving piston having the cam *b* for actiug against the concave inner faces of said gates and provided with perforations for the passage of steam through said cam from one side to the other of the point where the gate bears against it and thereby prevent the gate from being forced out of contact with said cam, substantially as specified.

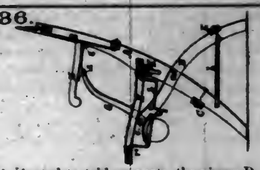
404,885. LOCK. SAMUEL C. HARLAN, Lake City, Minn. Filed Mar. 22, 1888. Serial No. 268,109. (No model.)



Claim.—The combination, in door-locks, of the lower plate or casing *a a a*, having a center-post *p* and lugs *l*, *b*, *c*, *d*, and *e*, a bolt B, for a latch and lock, provided with notches *n*, a lug *m*, a shoulder *f*, and two shoulders *e e*, with a spring C, having lug *y*, and a spring D, with its shoulder *g*, all substantially as set forth.

404,886. FOLDING CHAIR OR SETTEE. HERBERT J. HARWOOD, Littleton, assignor to the Harwood Manufacturing Company, Boston, Mass. Filed Jan. 12, 1889. Serial No. 295,963. (No model.)

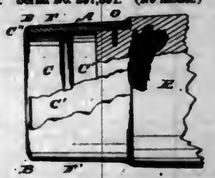
Claim.—1. The combination of the supports A, constituting the sides of the back frame and also the front legs, the seat arranged between and pivoted to said supports, the pieces D, constituting the rear legs and also supports for the seat, connected to each other by the bar E and pivoted to the supports A, the bar E, the links G, pivoted to the seat-supports and to arms H, the arms H, hinged to the supports A, and the connection *b*, secured to the legs, all substantially as shown and set forth.



2. The combination of the supports A, constituting the sides of the back frame and also the front legs, the seat arranged between and pivoted to said supports, the friction-hinges K at the pivots, the pieces D, connected by the bar E and constituting the rear legs and also supports for the seat and pivoted to the supports A, the bar E, and the connection *b*, secured to the legs, all substantially as shown and described.

3. The friction-hinge consisting of the bracket provided with the rests *g*, pin *h*, and hole *k*, the nut-lock having the prong and nut-socket, the bolt and nut and washer *l*, combined with the seat and supports A, all essentially as shown and set forth

404,887. HUB-BAND. WILLIAM LE B. HAWES, Cincinnati, Ohio, assignor of one-half to the Standard Wagon Company, same place. Filed Jan. 28, 1889. Serial No. 297,891. (No model.)



Claim.—1. An iron hub-band covered with a sheet-metal ornamental band locked in place by the lining C, substantially as and for the purpose described.

2. An iron hub-band countersunk to receive the screws for attaching it to the hubs and the whole covered by a sheet-metal ornamental band locked in place by the lining C, substantially as and for the purpose described.

404,888. VEHICLE-WHEEL HUB. WILLIAM LE B. HAWES, Cincinnati, Ohio, assignor of one-half to the Standard Wagon Company, same place. Filed Feb. 13, 1889. Serial No. 300,341. (No model.)



Claim.—1. A vehicle-wheel hub consisting of a wooden hub incased in a metallic shell made in two or more parts, locked to the wooden hub, one shell being provided with an external bead at its inner edge to hide the joint and resemble a plain wooden hub, substantially as and for the purpose described.

2. A vehicle-wheel hub consisting of a wooden center incased within a metallic shell made in two or more pieces, one piece being locked to the hub by means of teeth embedded in the wood, substantially as and for the purpose described.

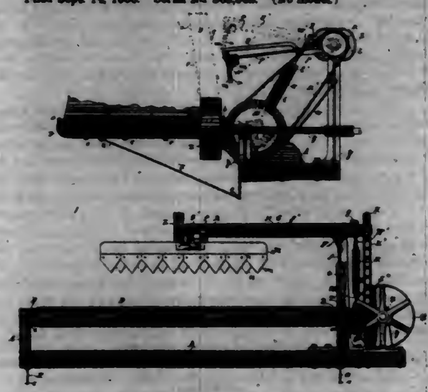
404,889. POINT-BAND FOR VEHICLE-HUBS. WILLIAM LE B. HAWES, Cincinnati, Ohio, assignor of one-half to the Standard Wagon Company, same place. Filed Mar. 6, 1889. Serial No. 302,090. (No model.)



Claim.—1. A point-band for vehicle-wheels, consisting of an iron band provided with an ornamental metal band expanded around it in the manner and for the purpose described.

2. A compound point-band for vehicle-hubs, consisting of an ornamental metal band expanded around an iron band, with the outer edge curved and locking in place an interior lining-band, substantially as and for the purpose described.

404,840. HAND-CUTTER. CHAUNCY H. HILL, Minneapolis, Minn. Filed Sept. 14, 1888. Serial No. 285,262. (No model.)



Claim.—1. In band-cutters, the combination, with an endless carrier, of a rock-shaft having a rigid arm overhanging said carrier transverse to the plane of its movement, a cutter on the outer end of said arm, a driving-shaft provided with an eccentric or crank, an extensible connecting-rod from said eccentric to said rock-shaft, and a resistance-spring acting on said rock-shaft in opposition to the pressure of the bundles, substantially as described.

2. In band-cutters, the combination, with an endless carrier, of a rock-shaft provided with a crank and a rigid arm overhanging said carrier transverse to the plane of its movement, a cutter on the outer end of said arm, a driving-shaft provided with an eccentric, a telescopic eccentric-rod connecting said eccentric and the crank of the rock-shaft, and a spring connecting and tending to draw together the telescoping parts of said eccentric-rod, substantially as described.

3. In band-cutters, the combination, with an endless carrier, of a hollow rock-shaft having a cutter-supporting arm overhanging said carrier transverse to the plane of its movement, a constantly-revolving shaft within said rock-shaft provided with a cam, fixed and movable cutters on said supporting-arm, and a connection from said cam to said movable cutters for operating the same, substantially as described.

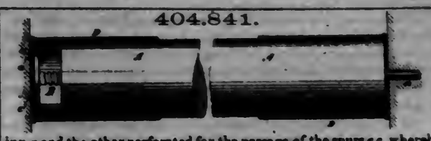
4. In band-cutters, the combination, with an endless carrier and a driving-shaft having an eccentric, of a hollow rock-shaft having a crank and a rigid cutter-supporting arm overhanging said carrier, an extensible eccentric-rod coupling together said crank and eccentric, a fixed and a movable cutter-bar provided with knives mounted on said supporting-arm, a constantly-revolving shaft located within said rock-shaft and provided with a cam, and a connection from said cam to said movable cutter-bar, substantially as described.

5. In band-cutters, the combination, with an endless carrier and a driving-shaft having an eccentric, of a shaft frame or support overhanging the path of the bundles, a hollow rock-shaft having a crank-arm and a rigid cutter-supporting arm overhanging said carrier transverse to the plane of its movement, fixed and movable cutter-bars having knives mounted on said arm, an automatically-extensible eccentric-rod coupling said eccentric and crank, a revolving cam-shaft within said rock-shaft provided with a cam, a bell-crank lever pivoted to said rock-shaft, having one arm in engagement with said cam and the other connected to said movable cutter-bar, and a connection from said cam-shaft to said driving-shaft, as and for the purpose set forth.

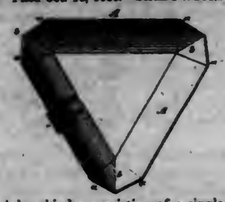
6. In band-cutters, the combination, with an endless carrier, of a rock-shaft having a crank and a cutter-supporting arm overhanging said carrier, a fixed and a reciprocating cutter mounted on said arm, a driving-shaft provided with an eccentric, and an automatically-extensible eccentric-rod coupling said eccentric and the crank of said rock-shaft, substantially as described.

404,841. CURTAIN-POLE. FRANK G. JOHNSON, New York, N. Y. Filed Feb. 7, 1888. Serial No. 263,363. (No model.)

Claim.—In combination with a curtain-pole A, the supporting-fixture consisting of the screw B, screwed into said pole and having the disk C attached to its outer end, the said disk being provided with two or more spurs *c c*, located near the periphery, the caps D, covering the ends of the pole, one of which is provided with a bearing *a* and the other perforated for the passage of the spurs *c c*, whereby the said screw is held from turning as the curtain-pole is turned to extend the same, as and for the purpose set forth.



404,842. METALLIC BOX-BINDER. FRANK G. JOHNSON, New York, N. Y. Filed Oct. 16, 1888. Serial No. 288,255. (Model.)



Claim.—A box-binder consisting of a single flat strip of sheet-metal A, bent on the three diagonal lines *a a*, *a a*, and *a a* and on the three cross-lines *b b b*, having three sides at right angles to and inclined toward each other, and having the two ends of the said strip fastened together, as and for the purpose set forth.

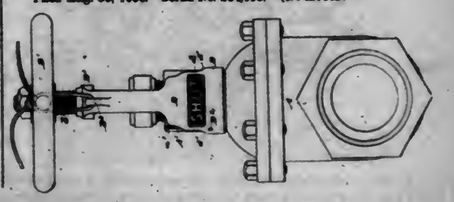
404,843. FLEXIBLE RECEPTACLE FOR LIGATURES. ROBERT W. JOHNSON, New Brunswick, N. J. Filed May 3, 1889. Serial No. 310,011. (No model.)



Claim.—1. A receptacle for ligatures for surgical purposes, consisting of a flexible tube in which said ligatures can be retained side by side in an unbent condition, with an antiseptic liquid therein, the whole hermetically closed, substantially as described.

2. A receptacle for ligatures for surgical purposes, consisting of a flexible tube of gelatasolve, in combination with ligatures retained side by side therein in an unbent condition and projecting beyond one of the ends of the tube, and an antiseptic liquid hermetically closed with flexible gelatine, substantially as described.

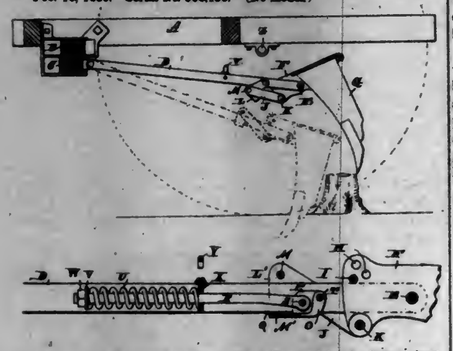
404,844. VALVE-INDICATOR. DANIEL KENNEDY, Brooklyn, N. Y. Filed Aug. 30, 1888. Serial No. 284,153. (No model.)



Claim.—1. In a valve having a casing A and boss A', with operating-shaft B, having a screw-thread *b*, the combination therewith of a sleeve D, surrounding such boss and connected therewith by the longitudinal groove *a'* and pin D^2, so as to allow longitudinal motion, and the yoke D', connecting such sleeve with the thread *b*, all arranged for joint operation, as herein specified.

2. The easily-destroyed fastening M, in combination with the casing A A', stem B, having hand-wheel B', and screw-thread *b*, and with the sleeve D, yoke D', and lug D^2, and with the groove *a'* and pin D^2, for holding the sleeve against rotation, all substantially as herein specified.

404,845. HOE FOR GRAIN-DRILLS. MARTIN L. KIBBELL, Springfield, Ohio, assignor to the P. P. Mast & Company, same place. Filed Feb. 16, 1889. Serial No. 300,136. (No model.)



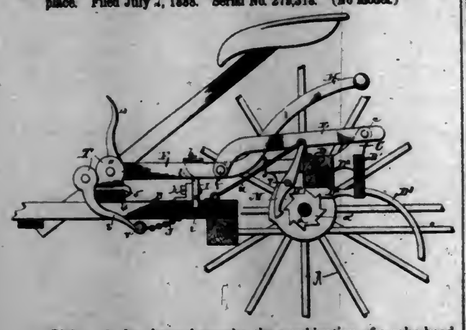
Claim.—1. The combination, with a hoe and its draft-bar pivotally connected to it, of a spring-rod carried by the draft-bar, a lever pivoted to the draft-bar at one end, links pivoted to the hoe and to the other end of said lever, a stop constituted by said lever between said last pivots, and a pivotal connection between the lever and the spring-rod.

2. The combination, with a hoe and its draft-bar pivotally connected thereto, of a spring-rod carried by the draft-bar, a lever composed of an upwardly-turned rear portion pivoted to the draft-bar, a body locked under and across the said bar and side pieces at the sides of said bar, and an arm within the draft-bar, a pivotal connection between the said arm and the spring-rod, and links pivotally connected with the hoe and with the said side pieces of the lever.

3. The combination, with a hoe, its draft-bar composed of two pieces pivoted to the hoe, a plate and rod between said pieces, a spring between the plate and an enlargement on the forward end of the rod, a stop-lever composed of a rear upwardly-extending portion pivoted to said draft-pieces, an arm extending from said portion and pivoted to said rod, a body beneath and across said draft-pieces and side pieces, and links pivoted to the upper forward ends of the side pieces and to the hoe below its pivotal connection with the draft-pieces.

4. A stop-lever composed of a horizontal body portion, side pieces extending above said portion, a rear upwardly-extended part, and a short arm projecting forward from said part, all of said parts being integral.

404,846. HORSE HAY-RAKE. LEONARD KIMMER, Lancaster, Ohio, assignor to the Hocking Valley Manufacturing Company, same place. Filed July 7, 1888. Serial No. 279,318. (No model.)



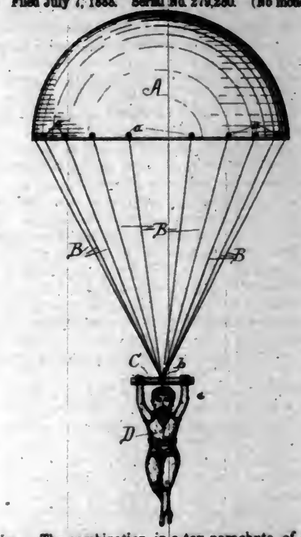
Claim.—1. In a horse hay-rake, the combination of a rake-head, automatic dumping mechanism, a bracket mounted on the frame, two levers pivoted thereon in the same vertical plane, intermeshing gears carried by the levers to cause them to vibrate in the same direction when pressure is applied to one of said levers, and connections between the other lever and dumping mechanism, substantially as set forth.

2. In a horse hay-rake, the combination of a rake-head, an automatic dumping mechanism, a bracket mounted on the frame, an upstanding treadle-lever and a depending lever, both pivoted on the bracket in the same vertical plane and provided with intermeshing teeth, a spring engaging one of said levers to restore them to their normal position, and connections between one of said levers and the dumping mechanism.

3. In a horse hay-rake, the combination of a rake-head, dumping mechanism, a bracket mounted on the frame and provided with recesses, intermeshing pinions mounted in said recesses and provided with projecting levers, connections between one of said levers and the dumping mechanism, and a spring engaging one of said levers for holding both levers in their normal positions, substantially as set forth.

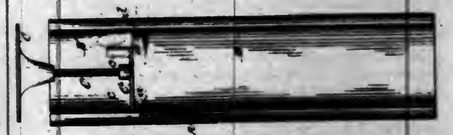
4. The combination, in a horse hay-rake, of the axle, two draft-wheels affixed thereto, a ratchet-wheel secured on the axle, a rake-head pivoted on the axle, and a dog pivoted on the rake-head and adapted to interlock with the teeth of the ratchet-wheel, of a depending lever pivoted on the frame and connected to the pivoted dog, an upwardly-projecting treadle-lever, also pivoted on the frame and geared to the first-named lever, and a spring engaged with the treadle-lever to restore it to its normal position, substantially as set forth.

404,847. TOY PARACHUTE. WILLIAM J. KUNTZEN, Syracuse, N. Y. Filed July 7, 1888. Serial No. 279,280. (No model.)



Claim.—The combination, in a toy parachute, of the umbrella portion A, having the attached cords B, converging downwardly to a common meeting-point and suitably secured to the horizontal bar C in an annular groove *b*, formed centrally thereon, and a weight, configurated as desired, pendent from said bar, said bar and weight being integral and formed of cast metal, substantially as described, and for the purposes specified.

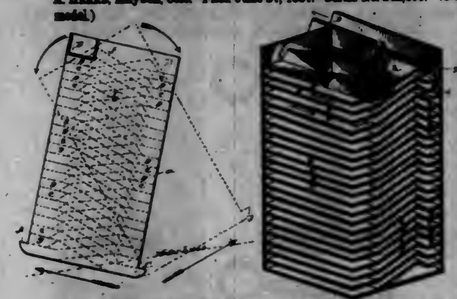
404,848. WICK-TUBE FOR LAMPS. THOMAS LAWSTON, Meriden, Conn., assignor to Edward H. Fessenden and Kate E. Jacobus, both of Brooklyn, N. Y. Filed Mar. 29, 1889. Serial No. 265,845. (No model.)



Claim.—1. In an annular wick-tube, the combination, with the outer wall and the upper inner section having the perforations, of the section having the reduced conoidal upper end seated in the upper section, forming the annular spaces, substantially as specified

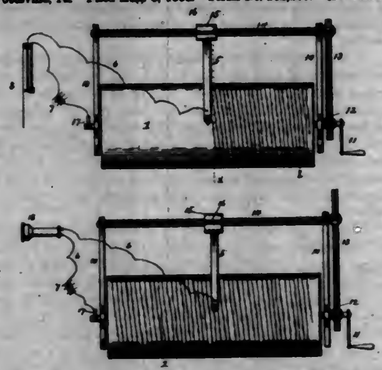
2. The combination, with an annular wick-tube consisting of an outer wall and the inner wall comprising the upper section having perforations and the lower section having the reduced conoidal portion forming a support, of the spreader having the spider base adapted to rest upon said support, substantially as specified.

404,849. WATER-ELEVATOR. ANDREWS LATHROP and LUCAS A. HEARD, Mayfield, Ohio. Filed June 27, 1887. Serial No. 242,699. (No model.)



Claim.—The water-elevator comprising the oscillating case having the vertical partition *i*, the inclines *f h* on opposite sides of said partition and extending in opposite directions, and provided at their ends with horizontal extensions *e g*, constituting receivers, the receiver at the higher end of each inclined plane being arranged at the lower end of the communicating inclined plane on the opposite side of the partition, whereby said inclined planes and receivers constitute a pair of channels running around the four sides of the case and ascending the same by a series of successive gradations, one of said channels having a scoop A at its lower end on one side of the case, and the other having the scoop C at its lower end on the opposite side of the case, and the discharge-spouts at the upper ends of said channels, substantially as described.

404,850. METHOD OF RECORDING AND REPRODUCING ARTICULATE SPEECH OR OTHER SOUNDS. GEORGE W. LITTLEHALES, Pottsville, Pa. Filed Aug. 6, 1888. Serial No. 282,260. (No model.)



Claim.—1. The method of producing a record of articulate speech or other sounds, which consists in producing permanent changes in the resistance of a conductor or partial conductor by and in accordance with a current of electricity varied by said speech or other sounds, substantially as described.

2. The method of producing a record of articulate speech or other sounds, which consists in producing permanent changes in the resistance of a conductor or partial conductor through the agency of an electrolyte decomposed and deposited thereon by and in accordance with a current of electricity undulated by the voice or by other sounds.

3. The method of producing a record of articulate speech or other sounds, which consists in changing the resistance of a conductor or partial conductor through the agency of an electrolyte decomposed and deposited thereon and acting chemically thereon by and in accordance with a current of electricity undulated by the voice or by other sounds.

4. The method of producing a record of articulate speech, which consists in causing a current of electricity undulated and controlled by the voice to decompose an electrolyte and to deposit the products of the decomposition of the same upon a conductor or partial conductor.

5. The method of producing a record of articulate speech, which consists in causing a current of electricity undulated and controlled by the voice to decompose an electrolyte and to deposit the products of the decomposition of the same upon a conductor or partial conductor, the components of said electrolyte forming two or more compounds, one or more with said conductor or partial conductor to change the resistance of the same, and one or more of the remaining components of said electrolyte forming a drier to fix said record more permanently, substantially as described.

6. The method of producing a record of articulate speech, which consists in causing a current of electricity undulated and controlled by the voice to decompose an electrolyte and to deposit the products of the decomposition of the same upon a conductor or partial conductor, one or more components of said electrolyte forming a resisting compound and one or more forming a drying compound, substantially as described.

7. The method of recording and reproducing articulate speech, which consists in undulating a current of electricity by and in accordance with sound-waves, causing said current to change the resistance of a conductor or partial conductor in accordance with its undulations, and then causing the record so formed to undulate a telephonic current by and in accordance with its varying resistance, substantially as described.

8. The method of recording and reproducing articulate speech, which consists in producing a record consisting of a line of varying conductivity by undulating a current of electricity by and in accordance with sound-waves, and then causing said record to change the resistance of an electric circuit.

9. The method of producing a record of articulate speech, which consists in undulating a current of electricity by and in accordance with sound-waves, causing said current more or less permanently to change, in accordance with its undulations, the resistance of a moving electric conductor or partial conductor.

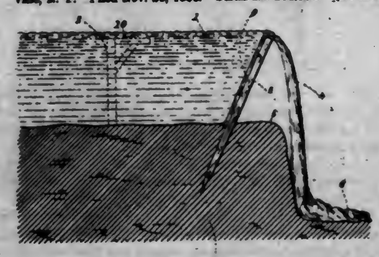
10. The method of recording and reproducing articulate speech, which consists in undulating a current of electricity by and in accordance with sound-waves, causing said current to decompose an electrolyte, the components of which will act chemically upon a conductor or partial conductor to change its resistance, and then causing a telephonic current to be undulated by and in accordance with the varying resistance of said conductor.

404,851. MEANS FOR OBTAINING WATER-POWER. DAVID H. LOUD, Williamsville, N. Y. Filed Sept. 20, 1888. Serial No. 285,857. (No model.)

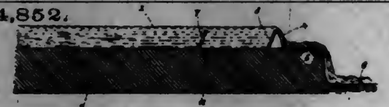


Claim.—The herein-described mode of obtaining water-power along the river above the river-falls, consisting in combining therewith an auxiliary canal located along the river above the river-falls, having its bed below the bed of the main stream or river and having its head or upper end closed and the foot or lower end open at some point near the surface of the river below the river-falls, in combination with a series of cross-cuts from said upper river to the canal, and a means located at suitable points for receiving and transmitting the power, substantially as described.

404,852. HYDRAULIC EXCAVATING. DAVID H. LOUD, Williamsville, N. Y. Filed Nov. 26, 1888. Serial No. 291,886. (No model.)

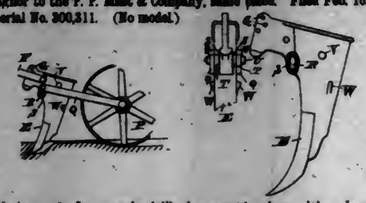


404,852.



Claim.—The herein-described method of excavating for ditches, canals, or other purposes, consisting in excavating the soil by hydraulic erosion by causing the water to flow over a dam upon and over a portion of the soil until removed, and then moving the dam upstream and securing it until another similar portion of soil is removed, which operation is repeated until the desired excavation is made, substantially as described.

404,853. GRAIN-DRILL. PHINEAS P. MAST, Springfield, Ohio, assignor to the P. P. Mast & Company, same place. Filed Feb. 16, 1889. Serial No. 300,311. (No model.)



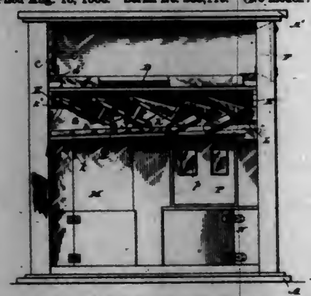
Claim.—1. In a grain-drill, the combination, with a hoe connected to the frame and devices to depress the hoe into the ground, of a grain and soil packing wheel, and its connecting-bars pivotally attached to the hoe, and a lateral projection on the hoe above and below said bars, the one to transfer the pressure on the hoe to the wheel and the other to lift the wheel with the hoe.

2. In a grain-drill, the combination, with a hoe, the frame, and devices to depress the hoe into the soil, of a grain and soil packing wheel, and its connecting-bars attached to the hoe by a vertically-adjustable pivot, and projections on the hoe near said pivot, and arranged to engage with the wheel-connecting bars when the hoe is adjusted to different depths, according to the adjustment of said pivot.

3. The combination, with a hoe having a substantially vertical slot and serrated surfaces about the slot and a lug or projection in proximity to the said slot, of a soil and grain packing wheel and its connecting-bars, serrated washers engaging said serrated surfaces, and a bolt which passes through said slot and binds said bars, washer, and serrated surfaces together.

4. The combination, with a hoe having a slot substantially in a vertical direction, serrated surfaces about said slot, a projection at each side in proximity to the said slot, and projections below the slot and near the rear edge of the hoe, of a soil and grain covering wheel, its connecting-bars, serrated washers fitted to said surfaces, and a bolt which passes through said slot and binds the bars, washers, and serrated surfaces together, whereby the wheel may be lifted and depressed by lifting and depressing the hoe.

404,854. REFRIGERATOR. MARTIN S. MILLARD, Kansas City, Mo. Filed Aug. 18, 1888. Serial No. 283,110. (No model.)

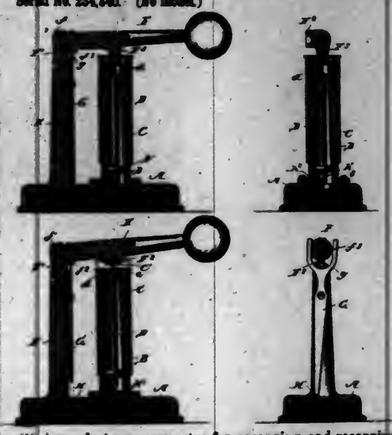


Claim.—1. In a refrigerator, the combination, with a suitable support provided with inclined seats and laterally-extending projections, of a series of drip-pans seated upon the support and provided with lugs adapted to catch under said lateral projections on the support and lock the pans in position, pivoted arms for tilting said pans, and a rod connected to said arms for operating them, substantially as set forth.

2. In a refrigerator, the combination, with a suitable support provided with inclined seats and with laterally-extending projections, of a series of drip-pans seated upon the support and provided with lugs or projections adapted to catch under the said lateral projections on the support and lock the pans in position, substantially as set forth.

3. In a refrigerator, the combination, with a series of overlapping and contacting drip-pans forming a closed roof or ceiling for the cooling-chamber, of a valve at one end of the series to open or close communication between the ice and cooling chambers, substantially as set forth.

404,855. DEVICE FOR UNCAPPING AND RECAPPING CARTRIDGE-SHELLS. NATHAN M. MUNT, Chicago, Ill. Filed Apr. 14, 1887. Serial No. 234,840. (No model.)



Claim.—1. In an apparatus for uncapping and recapping cartridge-shells, the combination, with the shell-support and the vertically-movable plunger therein, of the pivoted pressure-lever capable of rotation around its longitudinal axis, and provided with the uncapping and recapping projections at different points of its circumference above the shell-support, the cam-lever for actuating the plunger, and the intermediate lever connected to said cam-lever and actuated by the rotation of the pressure-lever, substantially as and for the purposes specified.

2. In an apparatus for uncapping and recapping cartridge-shells, the combination, with the shell-support and the vertically-movable plunger therein, of the pivoted pressure-lever capable of rotation around its longitudinal axis, and provided with the uncapping and recapping projections arranged at different points of its circumference above the shell-support, and the cam projection or projections on said pressure-lever, the cam-lever for operating the plunger, and the intermediate lever connected to said cam-lever and having a yoke to embrace the said cam projections, substantially as and for the purposes specified.

3. In an apparatus for uncapping and recapping cartridge-shells, the combination, with the shell-support and the vertically-movable plunger therein, of the pivoted pressure-lever capable of rotation around its longitudinal axis and provided with stops to limit said rotation, the uncapping and recapping projections arranged at different points on the circumference of said lever above the shell-support, and suitable connecting mechanism, actuated by the rotation of the pressure-lever, to operate the plunger, substantially as and for the purposes specified.

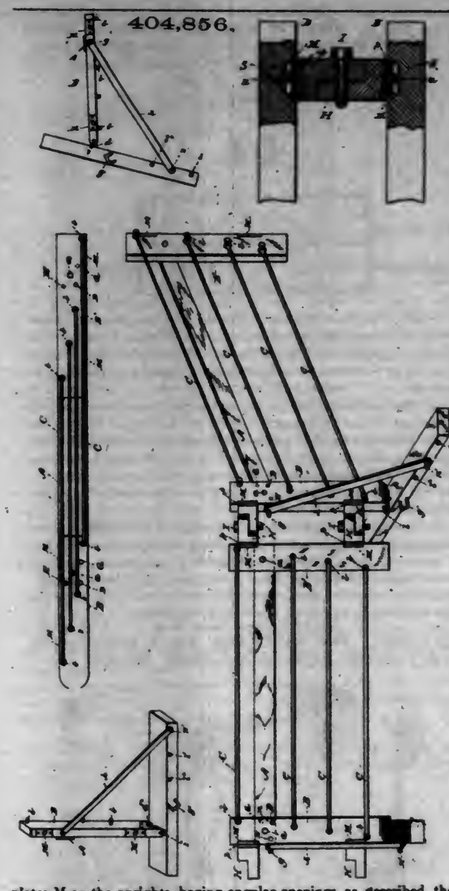
4. In an apparatus for uncapping and recapping cartridge-shells, the combination, with the shell-support and the vertically-movable plunger therein, of the cam-lever H, for operating said plunger, said cam-lever being arranged below the lower end of said plunger, and being provided with cam H', having inclined surface h' and flat top surface h^2, substantially as and for the purposes specified.

404,856. FOLDING ADJUSTABLE FENCE-PANEL. JAMES J. OSILVIE, Roscoe, Ohio. Filed Feb. 6, 1889. Serial No. 298,890. (No model.)

Claim.—1. The combination of the uprights B and B' of two adjacent fence-panels, one B having its foot beveled, pierced, and hollowed out for the purposes described, with the connecting-bars H, having plate p attached, said plate having a hooked projection, the-



404,856.

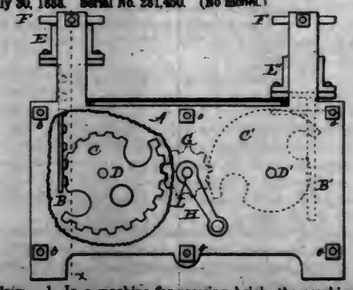


plates M on the uprights, having angular openings, as described, the sill provided with a connecting-link d, arranged to enter the opening d^2 in the foot of the upright, the pin i, and the brace k, all constructed, arranged, and operating substantially as described.

2. The combination of the bar H, having plate p attached, said plate being provided with a hooked projection, with the plate M, having an angular or L-shaped opening therein to receive hook u, the connecting-pin I, and the uprights B and B', all substantially as described.

3. The combination of two adjacent fence-panels provided with the plates M, having openings, as described, with the connecting-bars H, plates p, having hook u, and the connecting-pin I, all constructed, arranged, and operating substantially as described.

404,857. BRICK-MACHINE. BENJAMIN OWEN, Dayton, Ohio. Filed July 30, 1888. Serial No. 281,450. (No model.)

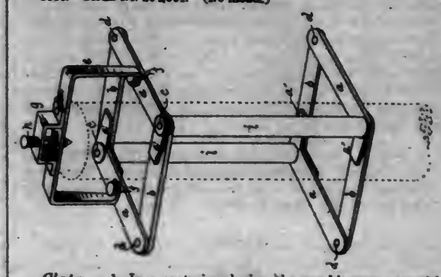


Claim.—1. In a machine for pressing brick, the combination of the frame A, with vertical grooves, cap-plate F, the rock-frame B, with mold E attached, discharging-plate I, with arm J on stem thereof, double sectors C, pivotally held in said frame and having the operating-arm K attached thereto, and the pinions G, attached to the crank-shaft L, substantially as shown and described.

2. In a brick-machine, the discharging device comprising the plate I, held in the rack-frame, and mold normally resting on said rack-frame, and the operating-arm of the double sectors to hold said plate at a fixed elevation during a partial descent of the mold, substantially as set forth.

3. In a machine for pressing brick, the combination of the frame A, with vertical grooves, cap-plate F, with plate to center the mold, the rack-frame B, with mold E attached, discharging-plate I, double sectors pivotally held in said frame, and pinions G, attached to the crank-shaft L, substantially as shown and described.

404,858. CENTERING DEVICE. JACOB A. PAINTER, Decatur, Ill., assignor of one-half to Charles M. Allison, same place. Filed Dec. 19, 1888. Serial No. 294,061. (No model.)



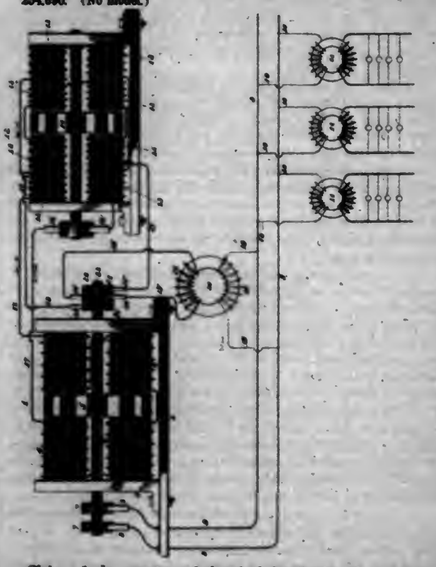
Claim.—1. In a centering device, the combination comprising a hinge-jointed quadrilateral frame and a punch-guide hinged to the frame, as set forth.

2. A centering device comprising two or more hinge-jointed quadrilateral frames held parallel by strut-bolts, and a punch-guide hinged to one of the frames, as set forth.

3. In a centering device, in combination, hinge-jointed bars a a and b b, having the angular extensions a' a' and b' b', and punch-guide frame c, pivotally connected with opposite bars, as set forth.

4. In a centering device, in combination, the hinged frames comprising the bars a a and b b, having angular extensions a' a' b' b', strut-bolts i i, holding the frames parallel, and punch-guide c g, hinged to opposite bars, as set forth.

404,859. REGULATION OF ALTERNATING ELECTRIC-CURRENT GENERATORS. GUSTAV FRANKENCHE, Cleveland, Ohio, assignor to the Brush Electric Company, same place. Filed Nov. 9, 1887. Serial No. 254,690. (No model.)



Claim.—1. In a system of electrical distribution, the combina-

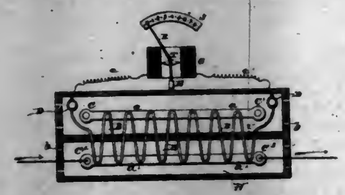
tion of one or more alternating-current dynamos and a separate exciting-dynamo having two sets of field-magnet coils, one set being included in circuit with the field-coils of the alternating-current generator and the other set included in the secondary circuit of an inductorium, the primary of which is in a multiple-arc branch of the main line, substantially as set forth.

2. The combination, with an alternating-current generator (one or more) and an exciting-dynamo for energizing the field-magnets of the alternating-current generator, said exciting-dynamo having differential field-magnet coils, the main coils of which are energized by current generated by the exciter, of an induction apparatus having its primary coil in a shunt across the brush-terminals of the alternating-current generator, the secondary coil having a commutator included in its circuit for straightening the current therein, and conductors for supplying the straightened current to the regulating field-magnet coils of the exciting-dynamo, substantially as set forth.

3. The combination, with an alternating-current generator (one or more) and an exciting-dynamo having two sets of field-coils, one set being included in circuit with the field-coils of the alternating-current generator, of an inductorium the primary coil of which is of fine wire and included in a multiple-arc branch of the main line, while the secondary coil is of coarse wire and has a commutator included therein for straightening the current flowing therein, and conductors for supplying the straightened current to the regulating field-magnet coils of the exciting-dynamo, substantially as set forth.

404,860. APPARATUS FOR INDICATING THE STRENGTH OF THE CURRENT IN AN ELECTRIC CIRCUIT.

GUSTAV PFANHUCHER, Cleveland, Ohio, assignor to the Brush Electric Company, same place. Filed Dec. 15, 1888. Serial No. 293,711. (No model.)



Claim.—1. In a current-indicator, the combination, with a thermo-pile or thermo-spiral, of an electric conductor combined therewith, said conductor constructed and adapted to be included in an electric circuit and be heated by the current flowing therein, whereby the heat thus generated will be transmitted to the alternate joints of the thermo-pile, substantially as set forth.

2. In a current-indicator, the combination, with a conductor adapted to be included in the circuit of a current to be measured, of a thermo-pile or thermo-spiral having its alternate joints connected with said conductor so as to be heated thereby, the other joints of the thermo-pile or thermo-spiral being exposed to the atmosphere, substantially as set forth.

3. In a current-indicator, the combination, with a conductor adapted to be included in the circuit of a current to be measured, of a thermo-pile or thermo-spiral arranged with part of its joints exposed to the heat of said conductor and another portion of its joints located in a separate compartment, substantially as set forth.

4. In a current-indicator, the combination, with a thermo-pile or thermo-spiral and a conductor arranged to transmit heat to the alternate joints of the thermo-pile or thermo-spiral, said conductor adapted to be included in the circuit of the current to be measured, of a galvanometer included in the circuit of the thermo-pile or thermo-spiral, substantially as set forth.

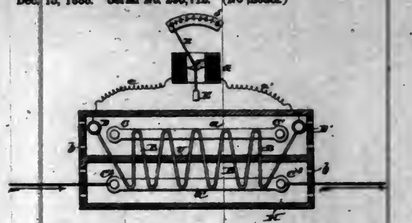
5. In a current-indicator, the combination, with a suitable box or receptacle and a partition dividing the box or receptacle into two compartments, of a thermo-pile arranged within the box with part of the joints in one compartment and a part in the other comparment and a conductor adapted to be included in the circuit of a current to be measured, said conductor being located within one of said compartments and arranged to transmit heat to the thermo-pile joints located in the same compartment therewith, substantially as set forth.

6. In a current-indicator, the combination, with a ventilated box or receptacle and a thermo-pile located therein, of a conductor arranged to transmit heat to the alternate joints only of said thermo-pile, said conductor being adapted to be included in the circuit of the current to be measured, and a galvanometer electrically connected to the terminals of the thermo-pile, substantially as set forth.

7. In a current-indicator, the combination, with the thermo-spiral, of the conducting-bars secured to the alternate joints of the thermo-spiral and insulated therefrom, and a galvanometer electrically connected to the terminals of the thermo-spiral, substantially as set forth.

404,861. METHOD OF INDICATING THE STRENGTH OF THE CURRENT IN AN ELECTRIC CIRCUIT.

GUSTAV PFANHUCHER, Cleveland, Ohio, assignor to the Brush Electric Company, same place. Filed Dec. 15, 1888. Serial No. 293,712. (No model.)



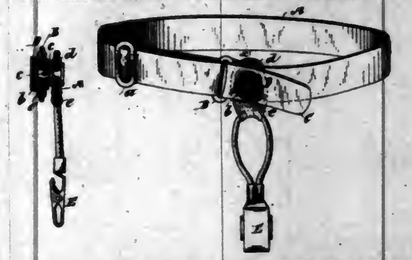
Claim.—1. The method of indicating the strength of an electric current of constant or varying strength, consisting in converting such current or a portion of it into a thermo-electric current and utilizing the latter to operate a current-indicating apparatus, substantially as set forth.

2. The method of indicating the strength of an electric current of constant or varying strength, consisting in heating an electric conductor by the current or a portion of the current to be measured and transmitting the heat thus generated to the alternate joints of a thermo-pile or thermo-spiral, and thereby generating an electric current and utilizing the latter in actuating a current-indicating apparatus, substantially as set forth.

3. The method of indicating the strength of an electric current, consisting in heating a conductor by passing through it the current to be measured, or a portion of it, transmitting the heat so generated directly to the alternate joints of a thermo-pile, and thereby generating a thermo-electric current and utilizing the latter in actuating a current-indicating apparatus, substantially as set forth.

404,862. STOCKING-SUPPORTER.

JOHN M. RAMSEY, Roseville, N. Y. Filed Dec. 24, 1888. Serial No. 294,469. (No model.)



Claim.—1. A garment-support consisting of a band, a non-elastic flexible finger-strip secured to one end thereof, a portion of a clasp thereon, a non-elastic flexible stay-piece secured to the opposite end of the band and having a loop portion, a portion of a clasp on said stay-piece, and a spring-actuated clasp having a flexible connection with the loop of the stay-piece, substantially as specified.

2. A garment-supporter consisting of an elastic band having a ring at one end, a non-elastic flexible finger-strip secured to said ring, a clasp portion on said finger-piece, a non-elastic flexible stay-piece secured to the opposite end of the elastic band and having a loop, a clasp portion on said stay-piece, a flexible connection in said loop, and a clasp at the lower end of the flexible connection, substantially as specified.

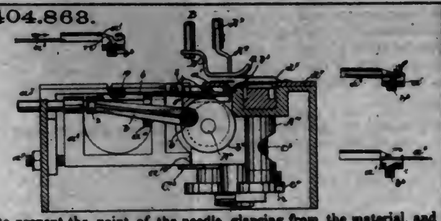
404,863. SEWING-MACHINE FOR FINISHING BUTTON-HOLE PIECES.

JOHN REECE, Boston, Mass. Filed Nov. 1, 1888. Serial No. 289,758. (No model.)

Claim.—1. In combination, the grooved or slotted throat-plate, a reciprocating bender to bend the material into the said groove or slot, an eye-pointed needle and complemental stitch-forming mechanism, devices to reciprocate the needle in the direction of its length and transversely to the said groove or slot, and devices to impart to the needle a lateral motion in opposite directions at each alternate thrust, or in a plane substantially at right angles to the bender-actuating plane, and a feeding mechanism acting in the direction of the needle's length, substantially as described.

2. In a sewing-machine, an eye-pointed reciprocating needle, complemental stitch-forming mechanism, a bender, and a throat-plate cooperating therewith to bend the material prior to the formation of each stitch, combined with a needle-guide and devices to vibrate it in a plane substantially at right angles to the needle-actuating plane

404,868.



to prevent the point of the needle glancing from the material, and feeding mechanism, substantially as described.

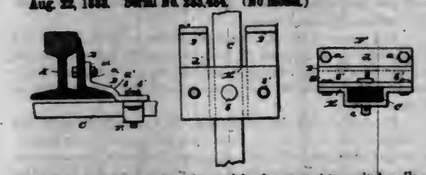
3. A grooved or slotted throat-plate, and a reciprocating bender to bend the material between it and the said throat-plate, combined with feeding mechanism, a needle-bar, and eye-pointed needle and complemental stitch-forming mechanism, and laterally-movable bearings in which said needle-bar reciprocates, whereby the needle of the stitch-forming mechanism at one thrust is enabled to penetrate a bent portion of the material held between the bender and throat-plate, and at another thrust to enter said material at a distance from the preceding stitch in the direction of the bend in the material, substantially as described.

4. The needle-bar, its eye-pointed needle, and complemental stitch-forming mechanism, the pivoted yoke in which the needle-bar has its bearings, devices to reciprocate the needle-bar, and devices to vibrate the said yoke, combined with a throat-plate grooved or slotted transversely to the path of reciprocation of the needle, a bender, and devices to actuate it, whereby the said bender forces the material into said groove or slot at right angles to the needle-actuating plane and feeding mechanism, substantially as described.

5. In a sewing-machine, a grooved or slotted throat-plate, a needle, and complemental stitch-forming mechanism, devices for moving the needle in a path transverse to said groove or slot, and devices to impart to it a lateral motion in opposite directions at each alternate thrust in a plane substantially at right angles to the bender-actuating plane, and a bender, and devices to reciprocate it to bend or press the material into the groove or slot of said throat-plate, combined with a spring-supported or yielding thrum-gatherer and feeding mechanism, substantially as described.

404,864. RAILWAY-SWITCH.

JOHN T. RICHARDSON, Harrisburg, assignor of one-half to Alexander H. Ege, Mechanicsburg, Pa. Filed Aug. 22, 1888. Serial No. 283,434. (No model.)

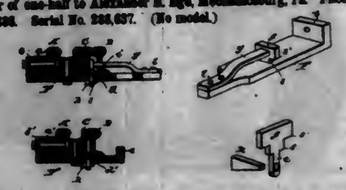


Claim.—1. The combination, with the movable switch-rails, of the connecting-bars and the brackets having the seats in which the connecting-bars are swiveled open at both ends, the said brackets consisting of the plates D, secured to the rails and bent to have longitudinal projecting portions, and other plates secured to the said horizontal portions of the plates D and forming the bottom of the said open-ended seats, substantially as set forth.

2. The combination, with the movable switch-rails, of the connecting-bars and the brackets in which they are swiveled, consisting of the plates D, secured to the rails and having the horizontal projecting portions d', and the stirrup-shaped plates E, secured to the portions d' of the plates D, and forming in connection therewith the seats for the bars, substantially as described.

404,865. RINDING-BAR.

JOHN T. RICHARDSON, Harrisburg, assignor of one-half to Alexander H. Ege, Mechanicsburg, Pa. Filed Oct 20, 1888. Serial No. 288,637. (No model.)



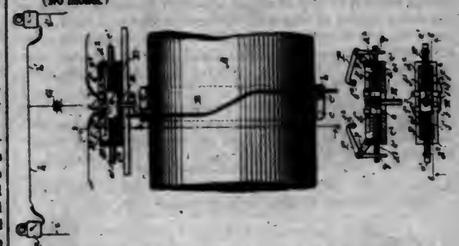
Claim.—1. In a railway-frog, the combination, with the tongue-rails, one of which has a notched flange, of the bearing-plate upon which the said rails rest, and the locking-leg having an expanded head resting upon the said rail-flange and also resting in the notch therein and secured to the said plate, substantially as set forth.

2. In a railway spring-frog, the combination of the tongue-rails, the fixed wing-rail secured to the tongue-rails, the movable wing-rail, the bearing-plate beneath the said rails, and a lug secured to the said plate situated between the movable wing-rail and the adjacent tongue-rail, and having an expanded head engaging with the flange of the tongue-rail, substantially as set forth.

3. The combination, with the tongue-rails and the wing-rails, of the bearing-plates below the said rails, and the locking-lugs *f*, having shouldered edges, seated in notches in the flange of the tongue-rail and passing through the said plates, to which they are secured by keys, substantially as set forth.

404,866. ELECTRIC SIGNAL FOR ENGINE-SHAFTS.

JAMES C. RICKETSON, Milwaukee, Wis. Filed Oct. 4, 1888. Serial No. 287,102. (No model.)



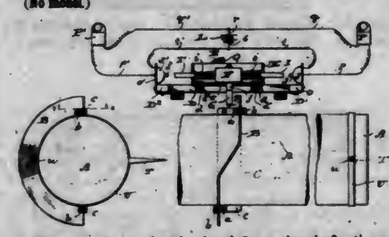
Claim.—1. The combination, with a revolving shaft having a two-sided or double cam attached thereto, of a pair of distant signals, a movable pin depending normally in the path of motion of said cam, a contact pin or pins connected or arranged in relation to said movable pin to move therewith, and a casing bearing metallic strips terminating in spring contact ends arranged in pairs in the paths of motion of said contact pin or pins and electrically connected to said distant signals, substantially as set forth.

2. The combination, with a revolving shaft having a two-sided or double cam attached thereto, of a pair of distant signals, a movable pin depending normally in the path of motion of said cam, a contact pin or pins connected or arranged in relation to said movable pin to move therewith, a casing bearing metallic strips terminating in spring contact ends arranged in pairs in the paths of motion of said contact pin or pins and electrically connected to said distant signals, and electric bells and switches located at points remote from the distant signals, one of said bells and switches being in the same circuit with one of the said distant signals and the other bell and switch in the same circuit with the other distant signal, substantially as set forth.

3. The combination, with a revolving shaft having a cam attached thereto, of a casing hinged to a suitable support and carrying a movable pin depending normally in the path of motion of said cam, a spring extending from said casing to a point above the same for raising said casing and withdrawing the movable pin from operative position, and another spring attached to said casing and to a cord for drawing down the casing against the force of the first-named spring and restoring the movable pin to operative position in the path of motion of the cam, substantially as set forth.

404,867. ELECTRIC INDICATOR FOR ENGINE-SHAFTS.

JAMES C. RICKETSON, Milwaukee, Wis. Filed Jan. 26, 1889. Serial No. 297,608. (No model.)



Claim.—1. In an electric signal for engine-shafts, the combination of a revolving shaft and a two-sided or double cam attached thereto, with a pair of push-buttons electrically connected to distant signals, and a pin adapted to be moved by said cam to actuate said push-buttons, substantially as set forth.

2. In an electric signal for engine-shafts, the combination of a revolving shaft, a two-sided or double cam attached thereto, and a movable pin depending in the path of motion of said cam, with a pair

of push-buttons electrically connected to distant signals and adapted to be actuated by said pin, substantially as set forth.

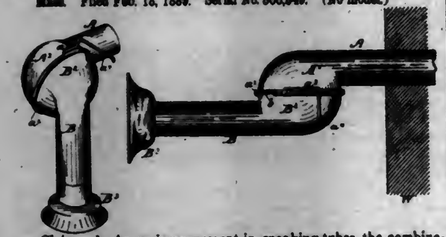
3. In an electric signal for engine-shafts, the combination of a revolving shaft, a two-sided or double cam attached thereto, a movable pin depending in the path of motion of said cam, and a slide connected to said pin, with a pair of push-buttons electrically connected to distant signals and adapted to be actuated by said pin, substantially as set forth.

4. In an electric signal for engine-shafts, the combination of a revolving shaft, a two-sided or double cam attached thereto, a movable pin depending in the path of motion of said cam, a slide connected to said pin, a contact pin or pins carried by said slide, and a pair of push-buttons electrically connected to distant signals and adapted to be actuated by said contact pin or pins, substantially as set forth.

5. The combination, with a revolving shaft, of a two-sided or double cam attached thereto, a pair of distant signals, push-buttons located adjacent to said shaft and connected by electric circuits to said distant signals, a horizontally-moving slide carrying a pin depending in the path of motion of said cam, and means, substantially as described, for closing one or the other of said electric circuits and actuating the signal in said circuit thereby closed, substantially as set forth.

6. In an electric signal for engine-shafts, the combination of a revolving shaft with a cam partially encircling the same, and an indicator secured to said shaft at a point on a horizontal line between the horizontal lines of the ends of said cam, substantially as set forth.

404,868. SPEAKING TUBE, PIPE, &c. JAMES H. ROSE, Boston, Mass. Filed Feb. 18, 1889. Serial No. 300,249. (No model.)

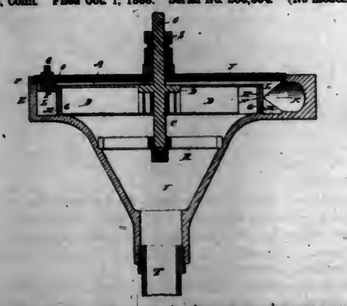


Claim.—1. As an improvement in speaking-tubes, the combination of the horizontal stationary tube having a chambered enlarged end in the elbow thereof, with a rigid metal tube having a mouth-piece at one end and a chambered enlarged end in the elbow thereof and pivotally connected with the enlarged elbow end of the stationary tube, substantially as and for the purpose described.

2. As an improvement in speaking-tubes, the combination of the stationary tube having a chambered enlarged end, with a rigid metal tube having a mouth-piece at one end and a chambered enlargement at the other end pivotally connected to one side of the chambered end of the stationary tube, whereby the mouth-piece-carrying tube is adapted to swing up and down in a plane parallel with a vertical plane passing through the stationary tube, substantially as and for the purpose described.

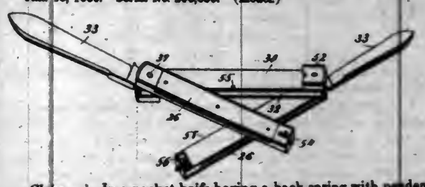
3. The combination of a stationary tube having a chambered end and a rigid metal tube having a mouth-piece at one end, a chambered enlargement at the other end formed integral therewith and pivotally connected to the chambered end of the stationary tube, with a spring having one end connected to the stationary tube and the other end to the movable tube, substantially as and for the purpose described.

404,869. TURBINE WATER-MOTOR. PERRY T. SANFORD, New Haven, Conn. Filed Oct. 1, 1888. Serial No. 286,864. (No model.)



Claim.—A turbine water-motor having an annular raceway, the inner wall whereof is provided with ports, a cone-shaped efflux-chamber located below such raceway, and a wheel located above the said efflux-chamber and having its blades shaped to follow involutes struck from its shaft to its periphery, and arranged so that the water will strike the outer ends of their convex faces, whereby a swirling motion will be imparted to the water in passing through the motor, substantially as set forth.

404,870. POCKET-KNIFE. JOHN C. F. SCHEPOL, Moline, Ill. Filed Jan. 10, 1889. Serial No. 296,039. (Model.)



Claim.—1. In a pocket-knife having a back-spring with pendent side pieces attached thereto, a blade-rivet supported crosswise in such side pieces, and a knife-blade having a shank provided with shoulders, the combination of said blade supported upon a sleeve through its shank, such sleeve supported on said blade-rivet, an engaging surface upon said sleeve, and an arm pivotally attached to a side piece provided with an engaging surface in circumferential line with the engaging surface on said sleeve, substantially as described.

2. In a pocket-knife having a back-spring with pendent side pieces attached thereto, a blade-rivet supported crosswise in such side pieces, and a blade having a shank provided with shoulders, the combination of said blade supported upon a sleeve through its shank, such sleeve supported upon said blade-rivet, an engaging surface upon each end of said sleeve, and two parallel arms connected together at one end, the opposite ends of each pivotally attached to one of said side pieces, and said arms provided with engaging surfaces in circumferential line with the engaging surfaces on said sleeve, substantially as described.

3. In a pocket-knife having a back-spring with pendent side pieces attached thereto, a blade-rivet supported crosswise in said side pieces, and a blade having a shank provided with shoulders, the combination of said blade supported upon a sleeve through its shank, such sleeve supported upon said blade-rivet, an engaging surface upon said sleeve, and an arm pivotally attached to a side piece, such arm provided with an engaging surface in circumferential line with the engaging surface on said sleeve and with a spring-actuated bolt registering with a notch in said side piece when such arm and side piece are side by side lengthwise, substantially as described.

4. In a pocket-knife, the combination of the back-spring 32, the side pieces 30, the knife-blade 33, with its shank 34 and aperture 35, the blade-sleeve 37 and engaging surface 40, the set-screw 36, the blade-rivet 39, the arm 23, and engaging surface 41, substantially as described.

5. In a pocket-knife, the combination of the back-spring 32, the side pieces 30, the rivet 39, the knife-blade 33, its shank 34 and aperture 35, the blade-sleeve 37, with engaging surface 40, the set-screw 36, the arm 23, and end pieces 25, such arms provided with the engaging surface 41, substantially as described.

6. In a pocket-knife, the combination of the back-spring 32, side pieces 30, rivet 39, knife-blade 33, its shank 34 and aperture crosswise therein, blade-sleeve 37 and engaging surfaces thereon, arms 23 and connecting end piece 25, such arms provided with engaging surfaces in circumferential line with the engaging surfaces on said blade-sleeve, a spring-actuated bar attached to the end piece 25, and an engaging notch in the blade-carrier handle, substantially as described.

404,871. STEAM-COOKER. CHARLES O. SCHROYER, Dawson, and WILLIAM H. PENN, Waynesburg, Pa. Filed Nov. 6, 1888. Serial No. 290,061. (No model.)



Claim.—1. In a steam-cooker, the combination, with a water-reservoir, upright supports projecting therefrom, and shelves attached to said upright supports, of a removable cap resting on the reservoir and inclosing the supports, a dome-shaped hood attached to the under surface of the top of the cap, and provided at its apex with an opening for the entrance of steam and at points near the side wall of the cap with openings for the escape of water of condensation, substantially as set forth.

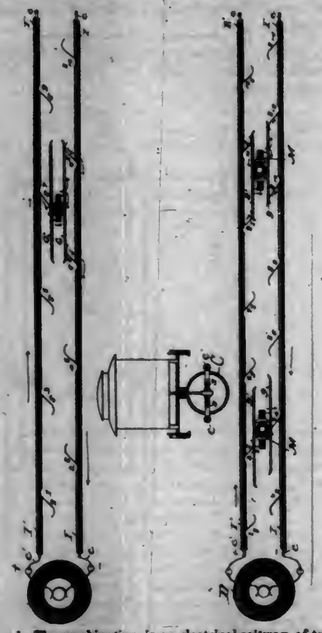
2. In a steam-cooker, the combination, with a water-reservoir having a flaring rim, upright supports attached to said rim, and shelves resting on said supports, of a cap or cover inclosing the supports and resting on the flaring rim and a dome-shaped hood secured to the under side of the top of the cap or cover and forming a condensing-chamber, the said hood being provided at its apex with an opening for the entrance of steam, and at its edge near the side wall of the cap with drip-openings for the escape of water, substantially as set forth.

404,872. COFFIN-FASTENER. SILAS A. SCOFIELD, Morenci, Mich. Filed Mar. 1, 1889. Serial No. 301,713. (No model.)



Claim.—A spring locking-plate H, secured to the under face of the casket-lid, said plate having a wedge-shaped protruding tongue *a* and extended spring end 4, having the lip *s* and depending nose *c*, all of said parts being formed integral, in combination with the groove-cavity D in the top of the casket, and the plate C located over said cavity, the tongue *a* and nose *c* of the spring locking-plate adapted to engage with the plate C on the top of the casket and lock the lid to the top of the casket, as specified.

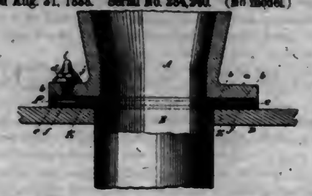
404,873. ELECTRIC RAILWAY. SIDNEY H. SHORT, Denver, Colo., assignor to the United States Electric Company, same place. Filed Feb. 16, 1887. Serial No. 227,796. (No model.)



Claim.—1. The combination, in an electrical railway, of two conductors in circuit with a current-generator insulated throughout their entire lengths, excepting at intervals, where contact-springs are permanently attached thereto, the said conductors being arranged parallel to each other, and the contact-points extending into a conduit toward each other, but separated therefrom, and a current-collector suitably connected to the car and with its sides insulated from each other but connected electrically to a motor carried on the car, the said collector being adapted to travel within the conduit and to come in contact with the contact-springs of the two conductors, substantially as described.

2. In an electrical railway in which the motors are run in multiple arc, the combination of a generator, a conduit, an underground conductor insulated throughout its entire length except at intervals, where it is provided with spring contact-arms permanently connected therewith, a current-collector traveling in the conduit and adapted for contact with the spring-arms, a car, a motor on the car, and means for moving the collector with the car, substantially as described.

404,874. FLOOR-FLANGE FOR WATER-CLOSETS, &c. BENJAMIN C. SMITH, Brooklyn, assignor to Fred Adee & Co., New York, N. Y. Filed Aug. 31, 1888. Serial No. 284,240. (No model.)

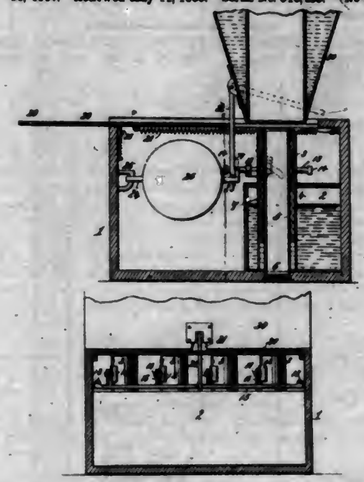


Claim.—1. The combination, with a water-closet A, having flange *a*, of the independent and separate ring E, having slots *b*, for the passage of bolts, and grooved below the slots to retain the heads of the bolts, and of bolts passing through said slots and through the flange *a* and nuts on the bolts, said nuts being on the upper side of the flange *a*, whereby said bolts may be adjusted in the slots to register with the holes in the flange *a*, substantially as described.

2. The floor-flange E, having the slots *b* and the grooves *c* beneath the slots, combined with the plates F and with bolts or screws for passing through said plates, substantially as described.

3. The combination, with a floor-flange having slots *b* and grooves *c*, of the plates F, having slots *i*, and of bolts or screws for passing through said plates, whereby the bolts may be adjusted around the flange and laterally thereon, substantially as described.

404,875. SAFETY EXTINGUISHING ATTACHMENT FOR HEATING AND ILLUMINATING APPARATUS FOR RAILWAY-CARS. ROSWELL T. SMITH, Nashua, N. H., assignor to himself and Nate W. Goddard, same place, and George H. Dunham, New York, N. Y. Filed Mar. 16, 1887. Renewed May 11, 1888. Serial No. 310,485. (No model.)



Claim.—1. In a safety extinguishing attachment for car heating and illuminating apparatus, a chest or casing adapted to contain material and devices for sustaining combustion, a cover normally impelled to close said casing, a swinging trigger-bar engaging said cover when open, and a gravity-catch sustaining the engagement between said cover and trigger-bar, substantially as specified.

2. In a safety extinguishing attachment for car heaters and lighters, the combination, with a chest or casing adapted to contain means and material for sustaining combustion, of a cover for said casing, which is normally impelled to close, a trigger-bar holding said cover open, a gravity-catch held in engagement with said trigger-bar by the pressure of the cover, and an automatic catch locking the cover as it closes, substantially as specified.

3. In a safety extinguishing attachment for car-heaters, the combination, with a chest or casing adapted to contain devices and material for sustaining combustion, of one or more wick-tubes rising to the

plane of the open top of the casing, a cover normally impelled to close the latter, a trigger-bar holding said cover open, and a gravity-catch engaging said trigger-bar, substantially as specified.

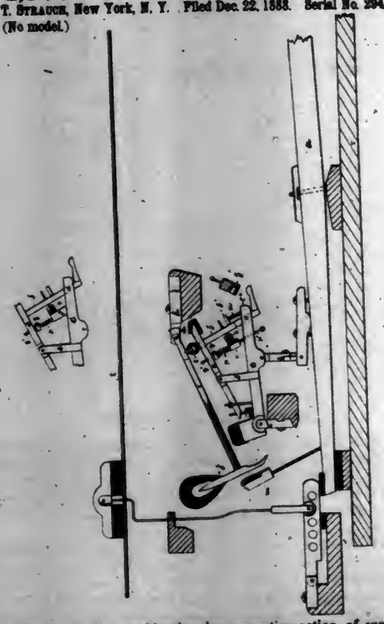
4. In heating or illuminating devices for railway-cars, a chest or casing, a cover constantly impelled to close the same, a closed oil-reservoir within said casing, one or more wick-tubes rising from said reservoir, a wick-adjuster engaging with each wick and a trigger-bar, and a gravity-catch holding said trigger-bar against the pressure of the cover, said trigger-bar being swept by the closing-cover against the bar connecting the wick-adjusters, whereby said wick-adjusters are operated automatically simultaneously with the closing of the cover, all combined substantially as specified.

5. In heating or illuminating devices for railway-cars, a chest or casing, one or more wick-tubes rising from a closed oil-reservoir within said casing, a wick-adjuster in each tube having a stud projecting through a slot cut spirally in the wick-tube, an actuating-slide engaging said stud or studs, a spring-impelled cover sliding over and practically closing the tops of said wick-tubes, and an automatically-released trigger-bar which holds and automatically releases said cover and by which the actuating-slide is operated to lower the wicks as the cover closes, all combined substantially as specified.

6. In heating or illuminating devices for railway-cars, a chest or casing, a spring-impelled slide closing the same, an oil-reservoir within said casing, one or more wick-tubes rising from said reservoir, a wick-adjuster in each having a stud projecting through a slot cut spirally in the wick-tube, a slide-bar having arms engaging said studs, a swinging trigger-bar holding the slide open, and a loaded latch holding said trigger, the latter when released swinging against and actuating the slide-bar to lower the wicks before the slide shoots over the tops of the wick-tubes and closes the same, all combined substantially as specified.

7. In heating or illuminating devices for railway-cars, a chest or casing, a reservoir containing material for sustaining combustion, burner-tubes rising from said reservoir, devices for raising and lowering the flame, a slide-bar actuating said devices, a spring-impelled slide closing said casing, means for holding and automatically releasing said cover, and an automatic locking-detent for retaining it in a closed position, the slide-bar being actuated by the releasing device as the slide closes over the tops of the burner-tubes, all combined substantially as specified.

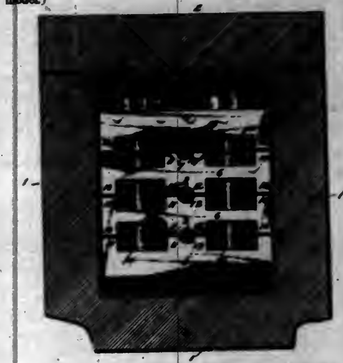
404,876. REPEATING-ACTION FOR GRAND PIANOS. ALBERT T. STRAUCH, New York, N. Y. Filed Dec. 22, 1888. Serial No. 294,419. (No model.)



Claim.—1. The combination, in a repeating-action, of support *c* and whip *d* with the whip-spring *p*, and with a button for adjustably securing the spring to the support and whip, and with the jack *f*, having regulating-button *e*, that is adapted to come into contact with one of the whip-spring buttons, substantially as specified.

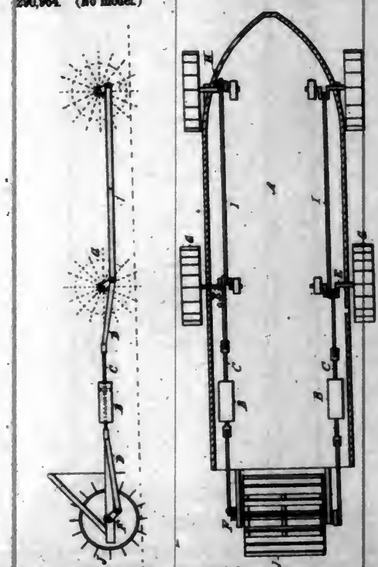
2. The combination, in a repeating-action, of support *c*, having forward extension c^2, with the jack *f*, having lug *f'*, and with the jack-spring *n* between the parts c^2 *f'*, substantially as specified.

404,877. UNDERGROUND CONDUCTOR. GEORGE E. TAILLEUR, Schenectady, N. Y. Filed Oct. 25, 1888. Serial No. 289,160. (No model.)



Claim.—A bracket for underground cables, formed of non-conducting material and consisting of end sections 4 and 5 and intermediate sections 6, each of the end sections being provided upon one of its faces with end projections 10 and central projections 11, grooved, as at 12, and the intermediate sections 6 being provided with similar projections and grooves upon each of their faces, and each of the sections being vertically perforated, as at 14, and binding-bolts 15, inserted through the opening and provided with nuts 16, substantially as specified.

404,878. SYSTEM OF APPLYING POWER TO STEAM-VESSELS. SAMUEL H. TIBBOTS, Evansville, Ind. Filed Nov. 15, 1888. Serial No. 290,964. (No model.)

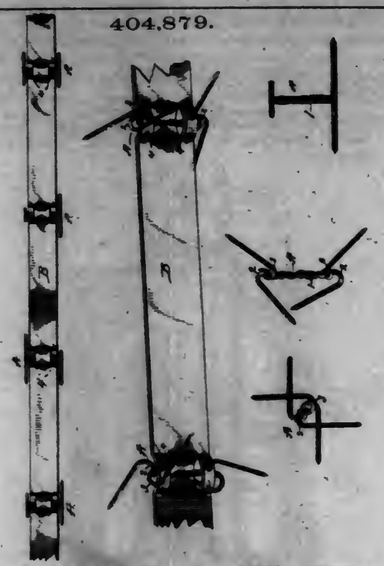


Claim.—A vessel having the stern-wheel and along the sides one or more sets of wheels, the train of wheels on each side and the stern-wheel being operated in unison by an engine provided with a piston-rod in each end of the cylinder, and the connecting parallel rods, substantially as herein set forth.

404,879. BARBED FENCE. CONSTANT S. TREVITT and SOLOMON F. MOUCK, Lincoln, Nebr. Filed Jan. 23, 1889. Serial No. 297,797. (No model.)

Claim.—1. The improved fence-barb herein described, formed with an axial bearing 1, curved surface bearings 2 3 at each end of the axis, arranged on planes at right angles to the axis, and terminating in barbs struck at right angles to each other, substantially as described.

404,879.



2. The improved fence-barb A, consisting of two wires twisted together to form an axial bearing 1, the four ends of the wires being formed into curved bearing-surfaces 2 3, arranged on planes at right angles to the axis and terminating in barbs arranged at right angles to each other, substantially as described.

3. The combination, with the strands formed with vertical bearings, of barbs composed of wires having a twisted shank constituting a bearing or axis, curved surface bearings at the end of the shank, and terminating in barbs arranged at right angles to each other, substantially as specified.

404,880. FRUIT-BOX. VANBUREN WHEAT, Orleans, N. Y. Filed Apr. 13, 1889. Serial No. 307,106. (No model.)



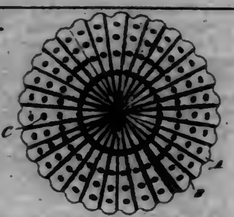
Claim.—1. A box having its ends grooved at their upper inward edges, which project above the sides of the box, a cover to slide in said grooves, and handles secured to the sides of the box adapted to to be turned over the ends of the box to release the cover, to be folded down upon the box-cover, and to be raised and used for carrying, and thus also locking the box, as herein set forth.

2. A box having its sides extended below its end pieces, a bottom fitted in between said sides and attached to the end pieces of the box, the said end pieces having grooves on the inner sides of their upper edges which extend above the sides of the box, a cover adapted to slide in said grooves, and handles so secured to the sides of the box that they may be turned outwardly to release the cover, upwardly to serve as handles, and that may be folded down upon the box-cover, substantially as and for the purposes herein set forth.

404,881. BOSOM-PAD. SETH WEBBLER, Albany, N. Y. Filed Mar. 7, 1888. Serial No. 266,433. (No model.)

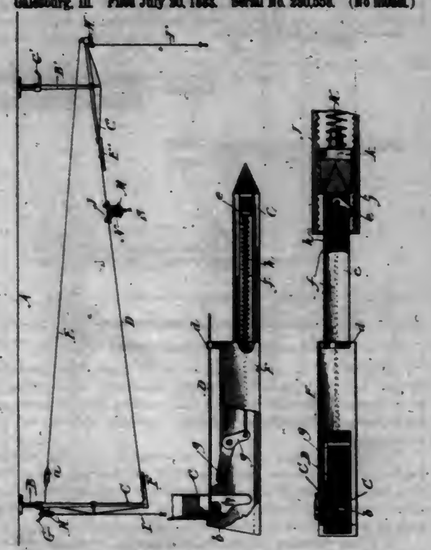


404,881.



Claim.—As a new article of manufacture, a bosom-pad formed of a single unseamed piece of fabric corrugated and perforated, substantially as described.

404,882. STORE-SERVICE APPARATUS. CHARLES A. WHIPPLE, Galesburg, Ill. Filed July 30, 1888. Serial No. 280,556. (No model.)



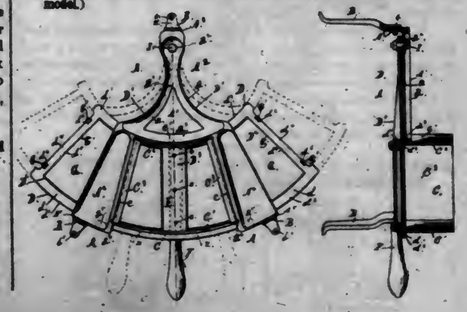
Claim.—1. The brackets B B', swinging arms C C', track D, and wire E, in combination with stops G G', catches H H', and ropes I I', substantially as and for the purpose specified.

2. The frame F, having a pointed stem e and a pawl *e*, in combination with a carrier-frame J, having teeth *j* and spring K, substantially as and for the purpose specified.

3. The toothed carrier-frame J and the frame F, having a stem *e*, a pawl *e*, rod *f*, and an elbow-lever *g*, in combination with a swinging arm C, adapted to engage with the lever *g*, substantially as and for the purpose specified.

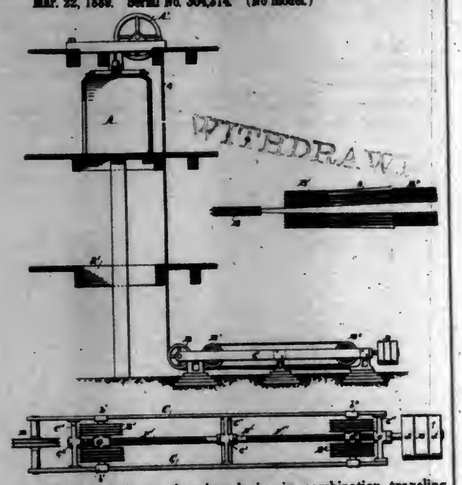
4. The carrier-frame J and beveled ring M, supported therefrom, in combination with the cup N, spring-catches O, bell-crank levers R, conical stem Q, and handle S, substantially as and for the purpose specified.

404,883. VEGETABLE-SLICER. THEOPHILUS ABBOTT, Floria, Pa. Filed Oct. 18, 1887. Renewed Nov. 20, 1888. Serial No. 291,414. (No model.)



Claim.—In a vegetable-slicing machine, the combination of the frame A, having ribs a^4, the hopper C, having grooves *c*, and the turn-button *c'*, with the reciprocating sector D, provided with the two-edged cutter E, the bottom guide-plates G, vertically adjustable in said sector, and the handle F, said sector D being fulcrumed to the under side of the frame A at a^2 and adapted to reciprocate under the hopper C by means of the handle F, substantially as set forth.

404,884. ELEVATOR. LEONARD ATWOOD, Philadelphia, Pa. Filed Mar. 22, 1889. Serial No. 304,314. (No model.)



Claim.—1. In an elevating device, in combination, traveling sheaves, a shaft threaded in opposite directions and working in threaded bearings connected with said traveling sheaves, a car, and connections, substantially as described, between said car and the traveling sheaves.

2. In an elevating device, in combination, traveling sheaves bearings on said sheaves, guides on which said bearings rest, a shaft threaded in opposite directions and working in threaded bearings connected with said traveling sheaves, a car, and connections, substantially as described, between the traveling sheaves and the car.

3. In an elevating device, in combination, traveling sheaves, bearings on said sheaves, guides on which said bearings rest, a shaft threaded in opposite directions, internally-threaded bearings connected with said sheaves on which said threaded portions of the shaft work, a rope secured at both ends and passing around said traveling sheaves, and a car connected to said rope.

4. In an elevating device, in combination, traveling sheaves, bearings on said sheaves, guides on which said bearings travel, a shaft threaded in opposite directions, internally-threaded bearings connected with said sheaves in which said threaded portions of the shaft work, a pulley to operate said shaft, a car, and connections, substantially as described, between the sheaves and the car.

5. In an elevating device, in combination, traveling sheaves, bearings on said sheaves, guides on which said bearings rest, a shaft threaded in opposite directions, internally-threaded bearings connected with said sheaves in which said threaded portions of the shaft work, a stationary sheave, a rope secured at both ends and passing around the stationary and traveling sheaves, and a car connected to said rope.

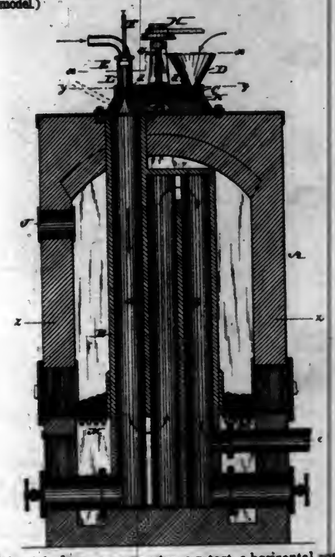
6. In an elevating device, in combination, traveling sheaves, bearings on said sheaves, guides on which said bearings travel, a shaft threaded in opposite directions, internally-threaded bearings connected with said sheaves in which said threaded portions of the shaft work, a pulley to operate said shaft, a stationary sheave, a rope secured at both ends and passing around the stationary and traveling sheaves, and a car connected to said rope.

404,885. VALVE. WILLIAM A. BABCOCK, South Coventry, Conn. Filed June 24, 1884. Serial No. 135,852. (No model.)



Claim.—In an air-compressor of the character described, the deflecting balancing plate or disk adjustably attached to the movable plug or plunger of the valve and disposed before the discharge-orifice, whereby the reactionary force of the discharge is regulated, substantially as shown and described.

404,886. APPARATUS FOR GENERATING GAS. WILLIAM G. BEDFORD, Philadelphia, Pa. Filed Apr. 17, 1888. Serial No. 270,992. (No model.)



Claim.—1. In a gas-generator, a retort, a horizontal rotary feeding-wheel provided with openings, a hopper or chute communicating with the openings, and a vapor-pipe also communicating with the openings of the feeding-wheel at a different place from the hopper, whereby the hopper supplies the charge to an opening of the feeding-wheel, which carries the same around under the vapor-pipe and deposits it into the retort, thereby thoroughly commingling the charge with the vapor, substantially in the manner and for the purpose described.

2. In a gas-generator, a retort, in combination with a steam-pipe, an intermediate rotary supply-wheel with opening communicating between said pipe and retort, and a vertically-removable flanged sleeve in said pipe, substantially as and for the purpose set forth.

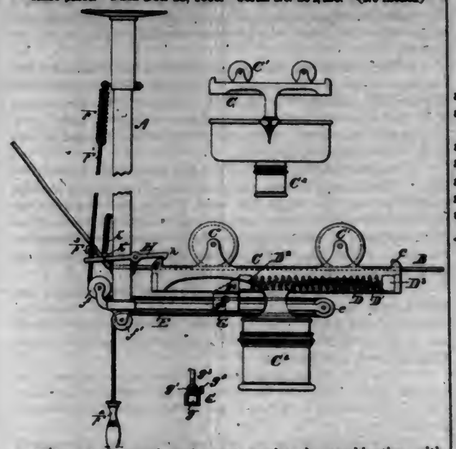
3. In a gas-generator, a furnace having a retort with tube located therein, a horizontal rotary feeding-wheel with openings mounted on a vertical shaft above said furnace, a hopper with an opening adapted to communicate with the openings of the feeding-wheel, a casting having its bottom adapted to close the lower end of said openings and cut away above the tube of the retort, a steam-pipe communicating with the tube of the retort by means of the openings in the feeding-wheel, and a hydrocarbon-vapor pipe leading into the steam-pipe, said parts being combined substantially as described.

4. In a gas-generator, a furnace with the retort having a tube, a horizontal feeding-wheel mounted above the furnace and having openings near its periphery adapted to communicate with the tube of the retort, the casting having its bottom adapted to close the lower end of the openings in the feeding-wheel, a steam-pipe communicating with the tube in the retort by means of the openings of the feeding-wheel, and a hydrocarbon-vapor pipe leading into the steam-pipe, said parts being combined substantially as described.

5. In a gas-generator, a furnace with a retort consisting of a series of vertical parallel tubes communicating alternately at opposite ends and having an inlet and outlet with an eduction-pipe, a housing or casing secured to the top of said furnace, a horizontal rotary wheel having openings within said casing, the said openings adapted to coincide with an opening leading to the retort, a steam-pipe leading into the retort through one of said openings, and a hydrocarbon-vapor pipe leading into the said steam-pipe above said wheel, said parts being combined substantially as described.

6. In a gas-generator, a furnace with a retort thereto, a casing above said furnace having the bottom cut away at an upper opening of the retort, a rotary wheel within said casing having openings coinciding with the upper opening of the retort, a steam-pipe leading into the retort through one of said openings in the rotary wheel, a hydrocarbon-pipe leading into the steam-pipe, and an expansible collar in said steam-pipe above the rotary wheel, said parts being combined substantially as and for the purpose set forth.

404,887. CASH-CARRIER. WILLIAM H. BILLING, East Saginaw, Mich., assignor of two-thirds to Arthur Caille and Edward A. Owen, same place. Filed Dec. 22, 1888. Serial No. 294,420. (No model.)



Claim.—1. In a cash and parcel carrier, the combination, with the taut wire, the hanger having an arm extending at right angles from the same and provided with pulleys, and a cord or strap passing over said pulleys and carrying a plunger-block, of a car adapted to travel on said wire and provided with a slotted cylinder, a coil-spring located in said cylinder and adapted to be compressed by the plunger-block entering the cylinder through the slot therein, means for holding the car at the station until the spring has been compressed, and means for releasing the car after the spring has been compressed, substantially as described.

2. In a cash and parcel carrier, the combination of the hanger A, having an arm E, provided with pulleys, the taut wire B, a car adapted to travel on said wire and provided with a slotted cylinder D, having a coil-spring D', and slides D^3 D^4, located therein, the cord F, having plunger-block G and nut F^6 attached thereto, and the trigger H, substantially as described.

404,888. APPARATUS FOR CASTING CHILL-RINGS. HANS BERGHOLL, Milwaukee, Wis., assignor to Edward P. Allis, same place. Filed Apr. 22, 1884. Serial No. 128,693. (No model.)



Claim.—1. The combination, in a mold for casting chill-rings for corrugated rollers, of a corrugated master-roll or chill-core, a sand mold formed about the same and having an annular depression at the bottom below the exposed face of said master-roll or chill-core, and a gate or gates leading into the upper part of said mold, substantially as and for the purposes set forth.

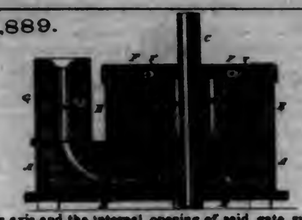
2. The combination, in a mold for casting chill-rings for corrugated rollers, of a corrugated master-roll or chill-core, a sand mold formed about the same, an annular depression at the bottom of said mold extending below the exposed face of said master-roll or chill-core, a feeding-basin formed at the top of said mold, and a gate or gates connecting said basin above its bottom with the upper part of said mold, substantially as and for the purposes set forth.

404,889. APPARATUS FOR CASTING CHILLED CORRUGATED ROLLERS. HANS BERGHOLL, Milwaukee, Wis., assignor to Edward P. Allis, same place. Filed Apr. 22, 1884. Serial No. 128,694. (No model.)

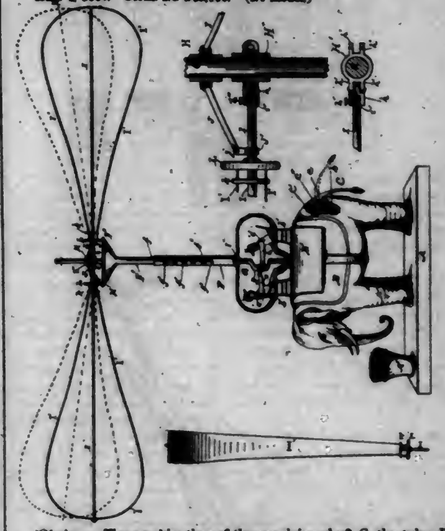
Claim.—1. In a mold for casting corrugated rollers, the combination of an internally-corrugated chill-ring, a gate opening on the outside above said mold and into the bottom of the same near the center, and a cylinder having oblique openings placed within said mold about its axis and the internal opening of said gate, substantially as and for the purposes set forth.

2. In a mold for casting corrugated rollers, the combination of an internally-corrugated chill-ring, a gate opening on the outside above said mold and into the bottom of the same near the center, and a fluted cylinder having oblique openings placed within said mold about its axes, and the internal opening of said gate, substantially as and for the purposes set forth.

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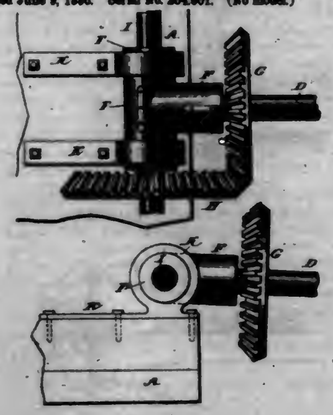


404,890. FLY-FAN. HENRY S. BERRINGTON, Baltimore, Md. Filed Aug. 4, 1887. Serial No. 246,166. (No model.)

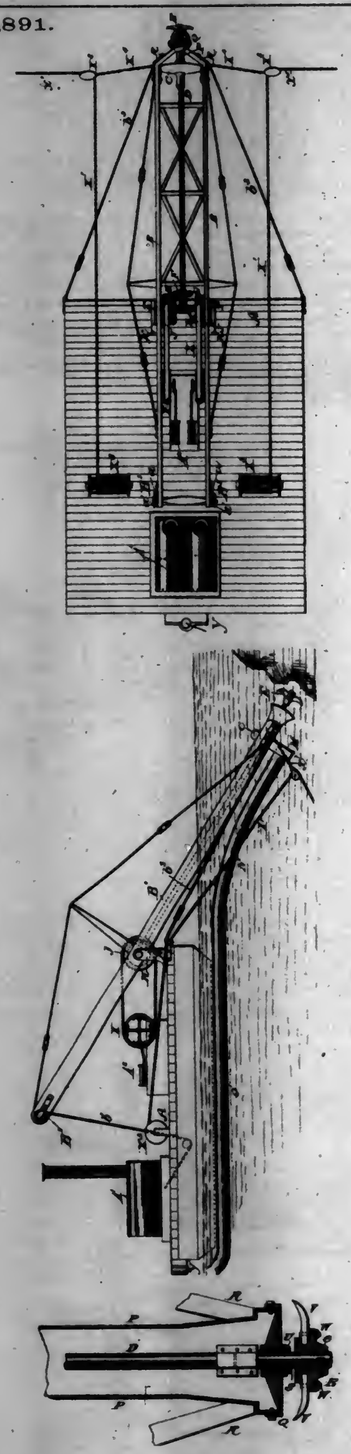


Claim.—The combination of the revolving shaft G, the tubes F and F', the latter of which is adjustably supported within the former by the pin *f''* and notches *f' f'*, &c., and has on its upper end a friction-plate F'', the friction-wheels L L, shafts I I, sliding sleeves H H', and connecting-rods J J and sockets A A, substantially as described.

404,891. DREDGING-MACHINE. HORACE S. BROWN, Quincy, Ill. Filed June 9, 1886. Serial No. 204,601. (No model.)



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Claim.—1. The combination, with the sweep-beam B, the trunnions T T, supporting the same, and the bearings for said trunnions, of the box-bearing F, rotating in bearings on the boat and supporting the shaft of the digger-wheel, substantially as described.

2. The combination, with the pivoted sweep-beam B, the trunnions T, supporting the same, and the bearings for said trunnions, of the box-bearing F, rotating in bearings on the boat and supporting the shaft of the digger-wheel, and also the cross-shaft from which said digger-wheel shaft derives its motion, substantially as shown and described.

3. The combination, with the sweep-beam B, the trunnions T, the bearings therefor, the box-bearing F, rotating in bearings on the boat, and the longitudinal shaft D, supported at one end by the box-bearing F, of the cross-shaft I, also supported by said bearing F, the pump operated by said shaft D, and the digger-wheel, also operated by said shaft, substantially as described.

4. The combination, with the pivoted sweep-beam B, the trunnions T, the bearings therefor, the box-bearing F, rotating in bearings on the boat, and the longitudinal shaft D, supported at one end by the said bearing F, of the cross-shaft I, also supported by said bearing F, the pump operated by said shafts, the digger-wheel, the engine, the pulleys J J on the shaft I, and the belts X, all substantially as shown and described.

5. The combination, with the trussed beam B, the pump C, carried thereby, and the flexible pipe N, connected to the discharge-opening of said pump, of the pipe-line O, connected with the pipe N and passed alongside the hull of the boat to a pivot-spud Y, substantially as shown and described.

6. In a dredging-machine, the combination, with the shaft D, of the short shaft S, connected thereto by a clamp-coupling, as described, and the digger-wheel E, carried by the shaft S, substantially as shown and described.

7. In a dredging-machine, the combination, with the shaft D, strainer-head Q, the bushed bearing U therein, and the short shaft S, passed through said bushed bearing and connected to the shaft D by a clamp-coupling, of the digger-wheel carried by the outboard end of said short shaft, substantially as and for the purpose specified.

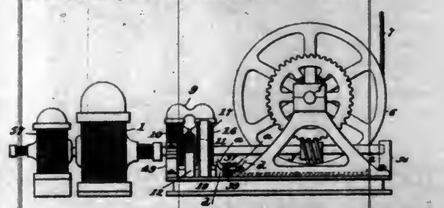
404,892. LATCH-CASE. CHARLES M. BURGESS, New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, same place. Filed Mar. 26, 1888. Serial No. 304,814. (No model.)



Claim.—1. The sheet-metal latch-case having the base 6 for the spring 11 formed integral with one of the latch-plates A, cut and bent from the body thereof, substantially as described, and for the purpose specified.

2. The herein-described sheet-metal latch-case having the rim or flange 10 swaged up from the plates A A and forming bearings for the latch-hub, substantially as described, and for the purpose specified.

404,893. ELEVATING-MACHINE. JAMES E. BYRNE, Brooklyn, N. Y. Filed Aug. 10, 1888. Serial No. 282,477. (No model.)



Claim.—1. The combination, in an elevating-machine, of a winding-drum and two electric motors, (one for hoisting and the other for lowering,) connected through a train of mechanism, consisting of a worm-shaft, a worm, a worm-wheel, and a drum-shaft, all substantially as set forth.

2. The combination, in an elevating-machine, of a winding-drum and two electric motors, (one for hoisting and the other for lowering,) connected through a train of mechanism, consisting of a worm-shaft, a worm, a worm-wheel, and a drum-shaft, the motors being in electrical connection with contact-points in the elevator-car, all substantially as set forth.

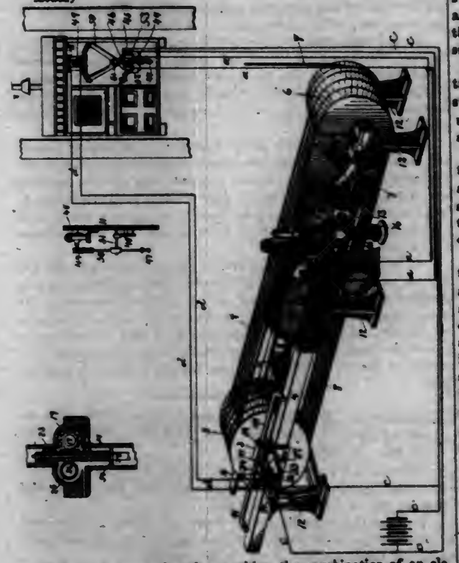
3. The combination, in an elevating-machine, of a band-brake having a slackening-spring and an electric motor, the band-brake and the motor being mechanically connected through a worm-shaft, a worm, a worm-wheel segment swinging about its shaft and fastened to the brake-band at two points, the slackening-spring being attached to segment at some point below its shaft and at some point without said segment, the motor being in electrical connection with a contact-point in the elevator-car, all substantially as set forth.

4. In an elevating-machine, the combination of a bracket having arms carrying electrical contact-points, the said electrical contact-points carried by the bracket-arms, a feather which prevents a traveling nut turning, a traveling nut carrying insulated arms which engage with the electrical contact-points carried by said bracket-arm, hoisting and lowering motors, contact-points in elevator-car, and a battery, the electrical contact-points carried by said bracket-arms being in the electrical circuit connecting the elevating-machine hoisting and lowering motors, the contact-points in elevator-car, and the battery, all substantially as set forth.

5. In an elevating-machine, the combination of a rocking lever having arms at one end upon which the hoisting-ropes fall when they unwind from the winding-drum, and at the other end an arm with an insulated tip, hoisting and lowering motors, contact-points with which the insulated tip on the end of the said rocking lever engages, contact-points in the elevator-car, and a battery, the contact-points with which the insulated tip on the end of the said rocking lever engages being in the electrical circuit connecting the hoisting and lowering motors, contact-points on the bracket-arms, contact-points in the elevator-car, and battery, all substantially as set forth.

6. The combination of two electric motors fastened to the same shaft, one for hoisting and the other for lowering, and a drum winding the hoisting-cables of an elevator-car connected through a train of mechanism, the motors being in electrical connection with a contact-point in the elevator-car, a brake operated by an auxiliary electric motor connected through a train of mechanism, the auxiliary motor being in electrical connection with a contact-point in the elevator-car, a nut traveling on the winding-drum shaft and carrying insulated arms which engage at the ends of the travel of the nut with contact-points mounted on the arms of a bracket which carries a feather for preventing the said nut from turning, said contact-points being in the electric circuit connecting the machine-motors with the contact-points in the car, a rocking lever which makes and breaks contact between the battery-wire and the machine-motor wires, and a switch connected with the battery-wire and extending through the side of the elevator-car and engaging with stops at the top and bottom of the elevator-hoistway, thereby altering the position of the switch in the car, all substantially as set forth.

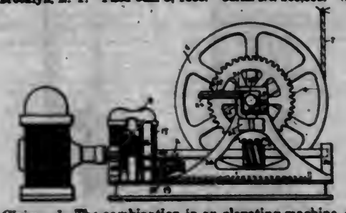
404,894. ELECTRICALLY-CONTROLLED ENGINE. JAMES E. BYRNE, Brooklyn, N. Y. Filed Dec. 24, 1888. Serial No. 294,564. (No model.)



Claim.—1. In an elevating-machine, the combination of an elevator-car, an electric switch in said car for operating same, a reversible electric motor in said car, a bracket attached to the elevating-machine cross-head slides and carrying a switch and contact-points, insulated arms carried by the elevating-machine cross-head and which engage with the said bracket-switch, and a suitable source of electricity, the car-motor and the car-switch being connected through a train of mechanism, the car-motor being in electrical connection with the arms of the bracket-switch, and the bracket contact-points being in electrical connection with the source of electricity, all substantially as set forth.

2. In an elevating-machine, the combination of an elevator-car, an electric switch and contact-points in said car for operating same, a reversible electric motor in said car, a bracket attached to the elevating-machine cross-head slides and carrying a switch and contact-points, insulated arms carried by the elevating-machine cross-head and which engage with the said bracket-switch, a reversible electric motor in mechanical connection with the elevating-machine operating-valve, and a suitable source of electricity, the car-motor and car-switch being connected through a train of mechanism, the car-motor being in electrical connection with the arms of the bracket automatic switch, the machine valve-motor being in electrical connection with the arms of the car-switch, and both the car and bracket contact-points being in electrical connection with the source of electricity, all substantially as set forth.

404,895. ELECTRIC ELEVATING-MACHINE. JAMES E. BYRNE, Brooklyn, N. Y. Filed Jan. 5, 1889. Serial No. 295,563. (No model.)



Claim.—1. The combination, in an elevating-machine, of an electric motor and a winding-drum connected by a train of mechanism, a reversible switch in the elevator-car, top and bottom and intermediate automatic stop-switches on the machine, a battery, and suitable electric connections between the machine-motor, car-switch, automatic switches, and battery, all substantially as set forth.

2. The combination, in an elevating-machine, of an electric motor and a winding-drum connected by a train of mechanism, a reversible switch in the elevator-car, top and bottom and intermediate automatic stop-switches, springs to keep the automatic switches in mid-position, a traveling nut carrying arms which engage with the top and bottom switch-arm, a rocking lever which engages with the intermediate automatic switch, a battery, and suitable electric connections between the machine-motor, car-switch, automatic switches, and battery, all substantially as set forth.

3. The combination, in an elevating-machine, of a reversible electric motor and a brake connected through a train of mechanism, a switch in the elevator-car, contact-points, and a battery, the switch, motor, contact-points, and battery having suitable electric connections, all substantially as set forth.

4. The combination, in an elevating-machine, of a reversible electric motor and a switch, both in the elevator-car, connected through a train of mechanism, top and bottom and intermediate automatic stop-switches on the machine and contact-points in the car, and a battery, the switches, battery, and contact-points having suitable electric connections, all substantially as described.

5. The combination, in an elevating-machine, of a reversible electric motor and a winding-drum connected through a train of mechanism, a reversible electric motor and a band-brake connected through a train of mechanism, a reversible electric motor and a switch in the elevator-car connected through a train of mechanism, top and bottom and intermediate stop-switches on the machine, a traveling nut carrying insulated arms which engage with the top and bottom automatic stop-switch, a rocking lever which operates in connection with the intermediate stop-switch, a lever which engages with projecting tappets on the sides of the elevator-hoistway, suitable contact-points, and a battery, the electric motors, switches, and contact-points having suitable electric connections, all substantially as described.

404,896. ADJUSTABLE CURVE FOR CASH-CARRIERS. FRANK S. CHURCH, Ovid, assignor to the Union Store Service Company, East Saginaw, Mich. Filed Jan. 26, 1888. Serial No. 267,500. (No model.)

Claim.—1. In a store-service apparatus, a curved track-section having arms for supporting the same, one or more of said arms being adjustable and adapted to vary the curvature of said section, substantially as described.

2. In a store-service apparatus, a curved track-section having arms for supporting the same, one or more of said arms being provided with a turn-buckle for lengthening or shortening the arms, substantially as described.

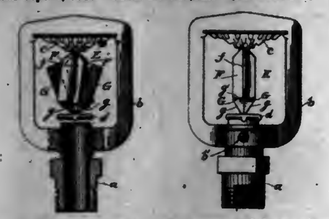
3. A curve for the track of a cash-carrier apparatus, consisting

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of a curved track-section supported midway between its ends by a fixed arm and adjustable arms located on each side of said fixed arm, the construction being such that the curvature may be varied by lengthening or shortening the adjustable arms, substantially as described.

404,897. AUTOMATIC SPRINKLER. JOSEPH CLAPP, Evanston, assignor to the Clapp Automatic Fire Extinguisher Company, Chicago, Ill. Filed Sept. 4, 1888. Serial No. 284,520. (No model.)



Claim.—1. The combination, with the cap and frame of an automatic sprinkler, of a separable intervening post having a member tapered to pivotally bear upon the axis of the cap, the body of which member is extended laterally from said axis, a secondary member having one end resting against the frame and the other provided with a positive eccentric point of bearing upon said first member, the main body of one of said members being inclosed within the other and having their contiguous surfaces united by means of fusible solder, whereby upon the yielding of the solder from heat said surfaces may slide laterally upon each other in the arc of a circle the center of which is said eccentric point of bearing, substantially as shown and described.

2. In an automatic sprinkler, a sectional sheet-metal post for normally holding the cap in position, consisting of independent members of less length than the entire length of the post, the body of the members forming one section of said post having radial flanges extending from the axis thereof, one of said members being partially inclosed within the other, fusible solder for uniting the contiguous surfaces of said members, and positive pivotal points of bearing therein eccentric to said axis, substantially as shown and described.

3. The combination, with the cap and frame of an automatic fire-extinguisher, of a sectional cap-holding post consisting of two independent sheet-metal members tapered to a point at and having a bearing upon the axis of the cap, one or more members soldered thereto to form the remainder of the post, which rests against the frame, and bearings or rests upon said tapered members eccentric to the axis thereof, substantially as shown and described.

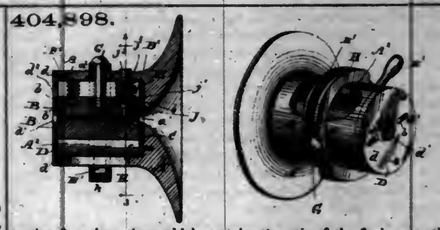
4. In an automatic sprinkler, a sectional sheet-metal post for normally holding the cap in position, consisting of two independent members of less length than the entire length of the post, pointed to meet and bear in common upon the axis of the cap, the bodies of which members extend laterally from said axis, one or more secondary members attached thereto with fusible solder and having eccentric points of bearing thereon, substantially as shown and described.

404,898. NIPPER FOR SPINNING-MACHINES. CHARLES D. CLARK, Chicago, Ill., assignor to William Deering & Company, same place. Filed Sept. 29, 1888. Serial No. 286,741. (No model.)

Brief.—The object of the invention is to provide means for preventing the unevenness in twine sometimes caused by small lumps in the fiber, which lumps cause an enlargement of the mouth of the nipper during the entire time that they are passing through it, and consequently cause an enlargement in the twine of corresponding length.

Claim.—1. In a nipper for a twine-spinning machine, in combination with the tubular shell having a flaring mouth, a pair of nipper-jaws located within the shell and having opposed faces normally in contact, a pair of opposed springs located within the shell and reacting between the wall thereof and the jaws, respectively, at their forward part, and a pair of springs located within the shell and reacting between the wall thereof and the jaws, respectively, toward their rear end, the opposed springs of each pair being of substantially equal tension, whereby the jaws are held normally with their opposed and contacting faces in a plane which contains the axis of the flaring mouth and are made capable of separating at either end without separating at the other, substantially as set forth.

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2. In a nipper for twine-spinning machines, in combination with a tubular shell having a flaring mouth, a pair of nipper-jaws having faces opposed to each other, and provided with coinciding longitudinal grooves constituting together a longitudinal duct, a pair of opposed springs located within the tubular shell and reacting between the wall thereof and said jaws, respectively, toward the receiving end of the jaws, and a pair of opposed springs located within the shell and reacting between the wall thereof and the jaws, respectively, toward the delivery end of the jaws, the opposed springs of each pair being substantially of equal tension, substantially as and for the purpose set forth.

3. In combination with the chambered shell, the nipper-jaws located therein, and the springs which yieldingly hold them together, said jaws being provided with stems which protrude transversely through the wall of the shell, and the cam-ring encircling the shell and having the eccentric cams engaging the protruding portion of the stems, respectively, substantially as set forth.

4. In combination with the chambered shell, the jaws located in said chamber, opposed springs reacting between them, respectively, and the wall of the chamber, said jaws being provided, respectively, with stems G G, which protrude through the chamber-wall and are exteriorly headed, and the cams guided on the exterior of the shell and engaging the protruding portions of the stems, respectively, substantially as and for the purpose set forth.

5. In combination with the chambered shell, the jaws located in such chamber, springs which react against the forward ends of the jaws, and other springs which react against the rear end of the jaws to yieldingly hold the jaws together at said ends, respectively, the stems G G, projecting from said jaws midway between said springs, and the shell having elongated apertures a^3, in which said stems, respectively, are guided, substantially as set forth.

6. In combination with the shell having the receiving-mouth and the rear chamber entered from said mouth, the jaws located in said chamber and provided with gudgeons *b*, and the guide-plates C and D, provided with the parallel slots c^2 and d^2, which receive the gudgeons, respectively, and the springs which force the jaws together, substantially as set forth.

7. In combination with the shell and the jaws located therein and the springs which force them together, the plunger-pins J J, protruding through said jaws to their opposed faces near the receiving end, said pins having grooves *j'* in their abutting ends diminishing in depth toward the discharge side thereof, and springs which react against said plunger-pins to force them toward each other, substantially as set forth.

8. In combination with the shell having the receiving-mouth and the rear chamber entered through the same, the jaws located in said chamber, and springs which react against said jaws, respectively, the plunger-pins within and extending to the opposed faces of the jaws, respectively, and the springs which react upon said plunger-pins to force them toward each other longitudinally, said springs being independent of the springs which act upon the jaws substantially as set forth.

404,899. TOY RACKET. GEORGE D. COREY, Lowell, Mass., assignor to Harry W. Coburn, same place. Filed Feb. 2, 1889. Serial No. 298,424. (No model.)

Claim.—1. A toy racket having a wire frame and a face of interlaced wires, the ends of said interlaced wires being bent around said frame, as and for the purpose specified.

2. A toy racket having a wire frame and a face of interlaced wires, the ends of said interlaced wires being bent around said frame and tinned thereto, as and for the purpose specified.

3. A toy racket having a compound wire frame consisting of two or more wires twisted together and then bent into form of an oval loop, the end portions of said compound wire being twisted together to form a shank, and having a face consisting of interlaced wires, the ends of which are bent around said frame, as and for the purpose specified.

4. A toy racket having a compound wire frame consisting of two

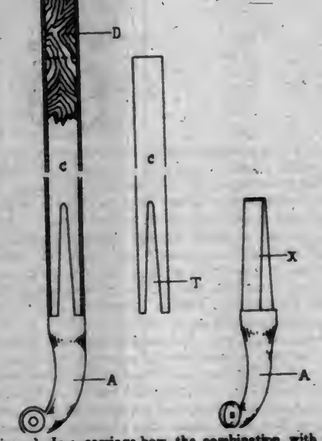
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or more wires twisted together and then bent into the form of an oval loop, the end portions of said compound wire being twisted together to form a shank, and having a face consisting of interlaced wires, the ends of which are bent around said frame and tinned thereto, as and for the purpose specified.

5. A toy racket having a wooden handle and having a frame of wire bent into an oval loop, the end portions of said frame-wire being twisted together to form a shank and inserted in said handle, as and for the purpose specified.

404,900. CARRIAGE-BOW. GEORGE L. CRANDAL, Binghamton, N. Y. Filed Mar. 18, 1889. Serial No. 303,810. (No model.)



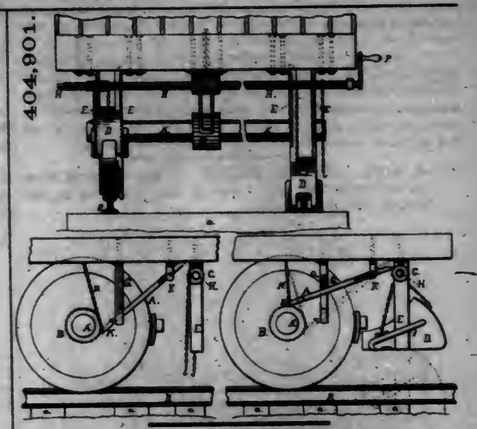
Claim.—1. In a carriage-bow, the combination, with the metal tubular bow-socket B and wood bow or filler D, of the slat-iron A, having the projecting tang X, and the metal strengthening-strip C, made with its lower end cut away at T, so as to fit over and rest upon the projecting tang X of the slat-iron A, substantially as described.

2. In a carriage-bow, the combination, with the metal tubular bow-socket B, of the slat-iron A, having the projecting tang X, and the metal strengthening-strip C, made with its lower end cut away at T, so as to fit over and rest upon the tang X, substantially as described.

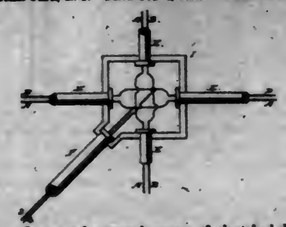
404,901. CAR-CHECK. JAMES M. DU WITT, Rutherford, N. J. Filed Mar. 1, 1889. Serial No. 301,722. (No model.)

Claim.—The combination of the hinged pawl A with the ratchet-wheel B on axle A and the ratchet-wheel C on rod H, the latter being provided with a check-elevating chain, all substantially as described.

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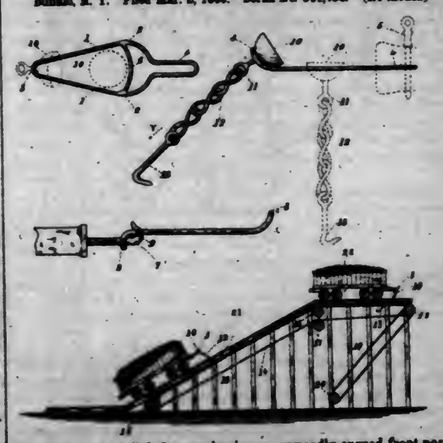
404,902. ELECTRICAL-DISTRIBUTION SYSTEM. THOMAS A. EDISON, Menlo Park, N. J. Filed Oct. 4, 1881. Serial No. 42,163. (No model.)



Claim.—1. In an underground system of electrical distribution, the combination, with a street-intersection box having pipe-openings in its sides, of two or more pairs of conductors, each pair forming the two sides of a circuit, pipes for the separate conductors entering the box, and connections within the box of conductors of the same polarity, substantially as set forth.

2. In an underground system of electrical distribution, the combination, with a street-intersection box having pipe-openings in its sides, of two or more pairs of conductors, each pair forming the two sides of a circuit, pipes for the separate conductors entering the box, connections within the box of conductors of the same polarity, and a line of conductors forming a feeding-circuit entering the box and connected to the intersecting conductors, substantially as set forth.

404,903. SELF-ACTING UNLOCKING-LINK. WILLIAM P. FISHER, Buffalo, N. Y. Filed Mar. 2, 1889. Serial No. 301,784. (No model.)

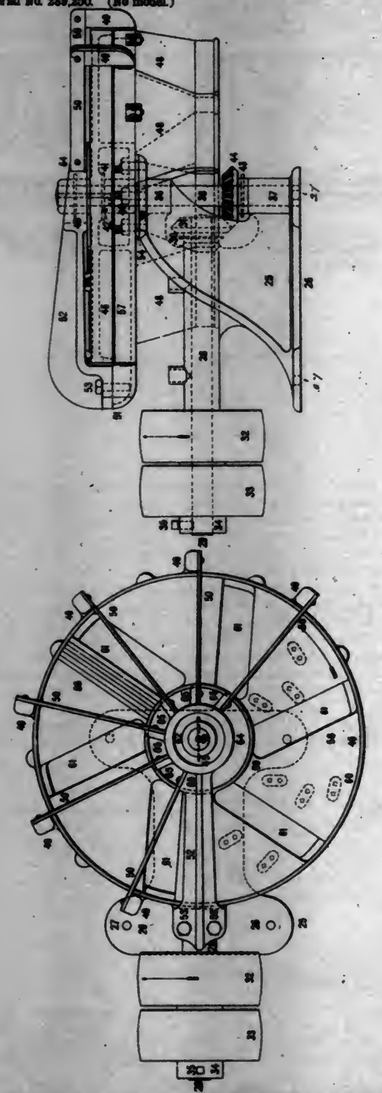


Claim.—1. A link for cars having an upwardly-curved front portion, with its sides spread outward, so that the opening between them is gradually enlarged from the front toward the rear, and having a

contracted portion at the rear adapted for connection with a car, substantially as and for the purposes described.

2. The combination of a connecting-link for cars having its sides spread outward so that the opening between them gradually enlarges from the front toward the rear, and a chain provided with a tapering or semi-spherical head at one end and a means at the opposite end for connecting with a movable cable or chain, the front portion of said link having an upward inclination, substantially as described.

404,904. ASSORTING-MACHINE. CHARLES S. GOODING, Brookline, and SHERMAN W. LADD, Somerville, Mass. Filed Oct. 26, 1888. Serial No. 289,250. (No model.)



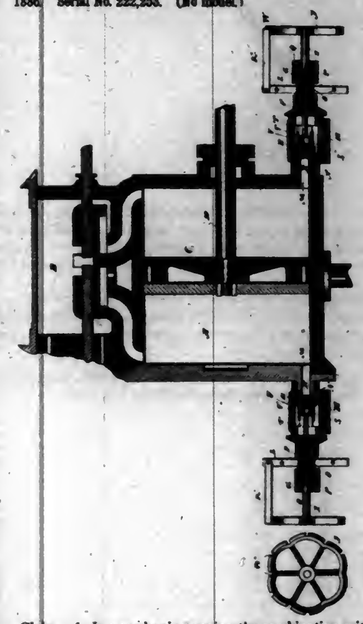
Claim.—1. In an assorting-machine for assorting articles of different thicknesses into several groups of uniform thicknesses, respectively, the combination of the following instrumentalities, to wit: a revolving perforated assorting feed-plate 46, revolving above a chute-plate 57, which is provided with chute-openings 47, said assorting feed-plate revolving below a series of assorting-fingers 50, which are fixed at graded distances above the upper surface of said feed-plate, and operative mechanism, substantially as and for the purposes set forth.

2. In an assorting-machine, the chute-plate 57, provided with chute-openings 47 and chutes 48, in combination with assorting feed-plate 46, assorting-fingers 50, and operative mechanism, substantially as described.

3. In an assorting-machine, the chute-plate 57, provided with assorting-finger lugs 49, arm 52, provided with lugs 65, and assorting-fingers 50, in combination with assorting feed-plate 46, provided with openings, and operative mechanism, substantially as described.

4. In an assorting-machine, the combination of the chute-plate 57 and assorting-fingers 50 with assorting feed-plate 46 and devices whereby the assorting feed-plate may be rotated, substantially as and for the purpose set forth.

404,905. LOW-PRESSURE ENGINE. HENRY HAAR, Bristol, Conn., assignor of one-half to Elisha S. Hollister, same place. Filed Dec. 22, 1886. Serial No. 222,253. (No model.)



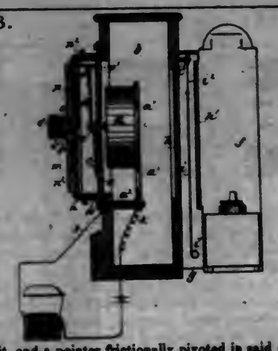
Claim.—1. In a condensing-engine, the combination, with a steam-cylinder in which a vacuum is produced by condensation in the normal operation of the engine, of a drip-discharge valve constructed and arranged to be opened by pressure within the cylinder, closed when a vacuum is formed therein solely by the pressure of the atmosphere, to which its outer end is directly exposed, and made adjustable in its opening to conform to the amount of water condensed, whereby the condensed water is freely and completely discharged without the expenditure of any power other than that required for moving the valve, and whereby the holding of water in the cylinder after the engine is stopped is avoided, substantially as set forth.

2. In a condensing-engine, the combination, with a steam-cylinder in which a vacuum is produced by condensation in the normal operation of the engine, of two automatic drip-discharge valves respectively located at the lower edges of the opposite ends of the cylinder, each of the said valves being constructed and arranged to be opened by pressure within the cylinder, closed when a vacuum is formed therein solely by the pressure of the atmosphere, to which its outer end is directly exposed, and made adjustable in its opening to conform to the amount of water condensed, whereby the condensed water is freely and completely discharged without the expenditure of any power other than that required for moving the valve, and whereby the holding of water in the cylinder is avoided, substantially as set forth.

404,906. ELECTRIC ALARM-CLOCK. WILLIAM R. HADLOCK, Wenham, Mass. Filed Feb. 3, 1888. Serial No. 263,416. (No model.)

Claim.—1. The combination of a clock-movement and hands thereof connected with an electric circuit, one of said hands being provided with an electric contact constituting one terminal of said circuit, with a crystal in front of said clock-hands provided with a circular metallic frame insulated from the clock-movement, but connected with and forming the other terminal of the before-mentioned

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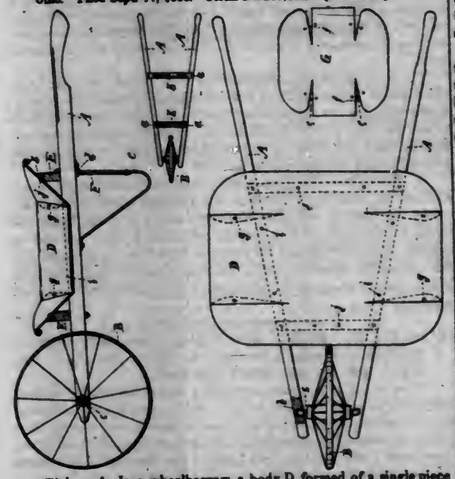


electric circuit, and a pointer frictionally pivoted in said crystal concentrically with the clock-hands, the end of said pointer bearing with spring-pressure against the metallic frame of said crystal and being provided with a contact co-operating with the one carried by the clock-hand, substantially as and for the purpose described.

2. The combination of a clock-hand and electric contact fixed thereon with a yielding contact-carrier insulated from said clock-hand and provided with a spring-pressed contact normally engaging the said contact on the hand and a stationary contact co-operating with said yielding carrier, substantially as described.

3. An electric circuit closer and breaker for clocks, comprising two members, one carried by the clock-hand and the other located in the path thereof and completing the circuit when the member carried by the clock-hand engages the other member, combined with a contact-piece in the same circuit co-operating with one of said members, which is operated by the movement of the clock-hand, as described, whereby the circuit is broken, while the two members that originally closed it still remain in engagement, substantially as described.

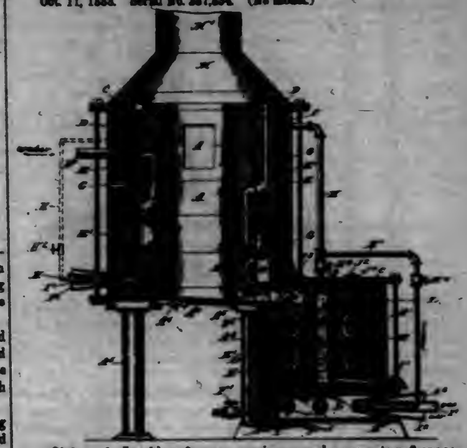
404,907. WHEELBARROW. FRANK H. HARRIS, Auburndale, Ohio. Filed Sept. 17, 1888. Serial No. 285,604. (No model.)



Claim.—1. In a wheelbarrow, a body D, formed of a single piece of material provided with triangular-shaped openings c upon opposite sides and extending lengthwise of the blank, said openings being made flaring at their outer ends, and the outer portions formed with rounded corners, as shown, and the sides and ends bent up and secured and seamed, substantially as shown and described.

2. In a wheelbarrow, the combination of the handles A, the wheel B, non-detachably secured by a transverse shaft b, socketed into the front ends of the handles, the legs C, secured near the rear end of the handles and provided with the cross-braces F, the cross-bars E of the handles beveled at their upper edges, and the scoop D, secured to the handles and cross-bars and formed of a single metal plate provided with openings upon its opposite sides and secured together in the form of a scoop by means of rivets through the overlapping edges of the openings, and a seam around the outer edge, and a strengthening-wire concealed in the folds of said seam, all arranged substantially as and for the purpose described.

404,908. CUPOLA OR BLAST FURNACE. GEORGE M. HATHAWAY, New York, N. Y., and EDGAR R. STOCKING, Washington, D.C. Filed Oct. 11, 1883. Serial No. 287,834. (No model.)



Claim.—1. In a blast-furnace, a primary and a secondary furnace communicating with each other by the throat of the former and each surrounded by a shell forming a gas-chamber, a communicating passage from the gas-chamber of one furnace to that of the other, and a burner or burners independent of the furnace arranged at the secondary furnace, substantially as specified.

2. In a blast-furnace, a primary and secondary furnace communicating with each other by means of the throat of the former, which furnace consists of a refractory lining, an annular shell forming a gas-chamber and an outer shell forming a non-conducting chamber, and burners independent of the furnace arranged at the secondary furnace, substantially as specified.

3. In a blast-furnace, a compound furnace comprising a primary furnace surrounded with gas and water chambers and having its throat communicating with a secondary furnace provided with annular gas and water spaces communicating with the gas and water spaces, respectively, of the primary furnace, and a fire-box communicating with the gas-spaces of the secondary furnace and provided with a burner or burners, and a steam-pipe extending from the non-conducting space of the primary furnace to the burners, substantially as specified.

4. In a blast-furnace, a compound furnace comprising a primary furnace arranged above and at one side of a secondary furnace and communicating therewith by its throat, said primary furnace being provided with a surrounding combustion or gas chamber, and a communicating passage leading from the gas-chamber of one furnace to that of the other, and a burner independent of the furnace arranged at the secondary furnace, substantially as specified.

5. A compound blast-furnace consisting of a primary furnace communicating by its throat with a secondary furnace, each provided with lining-brick and with surrounding communicating gas and water chambers, a communicating fire-box and a series of burners projected therein, and a burner communicating directly with the interior of the primary furnace, substantially as specified.

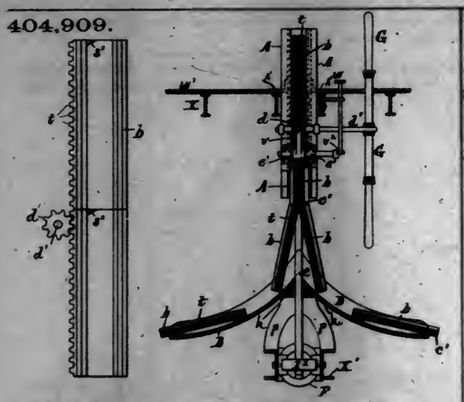
6. A blast-furnace consisting of a primary furnace arranged above and at one side of and communicating with a secondary furnace, and gas-burners independent of the furnace arranged against an outer wall of said secondary furnace, substantially as specified.

404,909. INGOT-CASTING MACHINE. WILLIAM R. RIDSDALE, Hoboken, N. J. Original application filed June 8, 1883, Serial No. 276,492. Divided and this application filed Mar. 13, 1889. Serial No. 303,146. (No model.)

Claim.—1. In an ingot-casting machine, the combination, with a series of molds provided each with rack-teeth upon one side, of a holder adapted to guide and to sustain the molds, as described, and a toothed pinion mounted adjacent to such rack-teeth and adapted to engage with the teeth upon the molds to move the same downward in the holder, as and for the purpose set forth.

2. In an ingot-casting machine, the combination, with a series of molds each divided longitudinally, of teeth formed upon the mold parts adjacent to the dividing-line, and adapted, when the molds are butted

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together, to form a continuous rack, and a holder adapted to guide and to sustain the molds, as described, and a toothed pinion mounted upon the holder and adapted to engage with the teeth upon both parts of each mold to move the same downward in the holder, as and for the purpose set forth.

3. In an ingot-casting machine, the combination, with a series of molds provided each with rack-teeth upon one side, of a holder adapted to guide and to sustain the molds, as described, a toothed pinion mounted upon the holder and adapted to engage with the teeth upon the molds to move the same downward in the holder, and a pawl adapted to prevent the rotation of the pinion, as and for the purpose set forth.

4. In an ingot-casting machine, the combination, with a series of molds provided each with rack-teeth upon one side, of a holder adapted to guide and to sustain the molds, as described, a toothed pinion mounted upon the holder and adapted to engage with the teeth upon the molds to move the same downward in the holder, a pawl adapted to prevent the rotation of the pinion, and a weight or spring to hold the pawl in operation, and a presser to disengage the pawl, as and for the purpose set forth.

5. In an ingot-casting machine, the combination, with a series of molds each divided longitudinally and provided with rack-teeth, of a holder adapted to guide and sustain the molds, a separator below the holder for dividing the mold parts, and a toothed pinion mounted upon the holder and adapted to sustain the molds within the holder while being filled, and to force the molds downward upon the separator to divide the mold parts, substantially as herein set forth.

6. The means for preventing the slipping of the mold upon the ingot-bar, consisting in a projection and a groove formed in the two elements and operating to lock the mold and ingot together in the process of casting, substantially as herein set forth.

404,910. THIMBLE. CHARLES HORNER, Halifax, County of York, England. Filed June 21, 1886. Serial No. 205,634. (No model.) Patented in England June 14, 1884. No. 8,954.

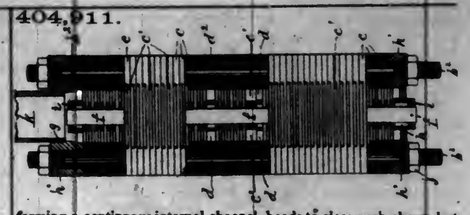


Claim.—A thimble composed of an outer casing and an inner lining, both of precious metal, in combination with a steel core interposed between said casing and lining, substantially as set forth, whereby a thimble having the appearance of the precious metal and the durability of steel is formed.

404,911. STRAINER FOR GRANULAR FILTER-BEDS. JOHN W. HYATT, Newark, N. J. Filed June 15, 1888. Renewed Apr. 17, 1889. Serial No. 307,634. (No model.)

Claim.—1. A strainer composed of a series of fixed and movable perforated disks arranged alternately, as described, with intervening apertures for the passage of the fluid, the perforations in the disks

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forming a continuous internal channel, heads to close such channel at the opposite ends of the series, an outlet from one of the heads, and means for rotating or oscillating the movable disks, as and for the purpose set forth.

2. In a strainer, the combination, with suitable tie-rods, of an outlet-socket, a series of perforated disks fixed to the tie-rods, a series of movable disks arranged alternately between the fixed disks, and means for rotating or oscillating the movable disks, as and for the purpose set forth.

3. In a strainer, the combination, with suitable tie-rods, of an outlet-socket, a series of fixed and movable perforated disks, a shaft fitted to the movable disks, and bearings secured to the tie-rods for such rock-shaft, substantially as set forth.

4. In a strainer, the combination, with suitable tie-rods, of an outlet-socket, a series of fixed and movable perforated disks, a square shaft fitted to square holes in the hubs of the movable disks, bearings secured to the tie-rods for such rock-shaft, and means for oscillating the rock-shaft, substantially as herein set forth.

5. In a strainer, the combination, with suitable tie-rods, of an outlet-socket, a series of fixed and movable perforated disks, an end bearing adjustable upon the tie-rods, a rock-shaft fitted to the end bearing and to the movable disks, and an intermediate bridge to support the rock-shaft, the outlet-socket, the fixed disks, the end bearing, and the bridge for supporting the rock-shaft being held in line at suitable distances apart by means of the tie-rods, substantially as herein set forth.

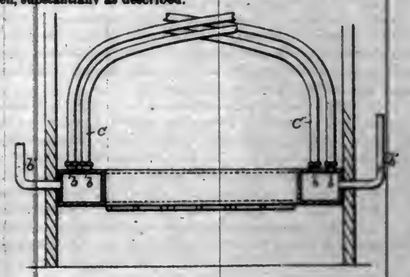
6. A strainer composed of a series of fixed and movable perforated disks arranged alternately, as described, and having seats upon their faces to separate the same, the perforations in the disks forming a continuous internal channel, heads to close such channel at the opposite ends of the series, an outlet from one of the heads, and means for rotating or oscillating the movable disks, as and for the purpose set forth.

7. In a strainer, the combination, with suitable tie-rods, of an outlet-socket, a series of fixed and movable perforated disks, a rock-shaft connecting the movable disks, and an arm upon one of said disks to oscillate them all, the outlet-socket, the fixed disks, and the end bearing being held in line at suitable distances apart by means of the tie-rods, as and for the purpose set forth.

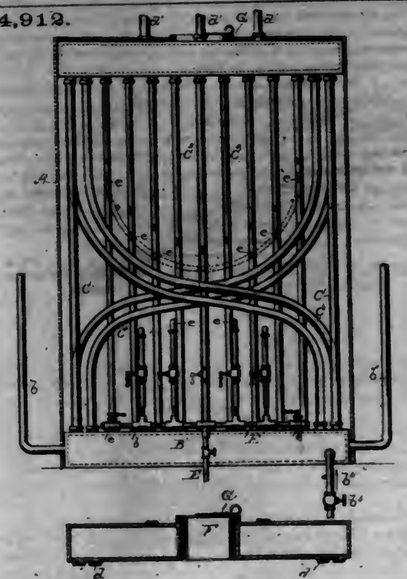
8. The combination, with a series of outlet-strainers constructed as described, with fixed disks and with alternate movable disks connected by a central rock-shaft, of a crank-arm *e*, projected from one of the movable disks in each strainer and adapted, when vibrated, to oscillate the rock-shaft and the movable disks in the same strainer, a link uniting the series of crank-arms, and means for oscillating such link to cleanse all the strainers simultaneously, substantially as herein set forth.

404,912. BOILER. MARK R. IRVING, Detroit, Mich., assignor of two-thirds to Cornelius S. Dyer and John Heffron, same place. Filed Sept. 8, 1888. Serial No. 284,931. (No model.)

Claim.—1. A hot-water-circulating boiler consisting of top and bottom shells united by water-tubes C', which curve in alternate directions across the intervening space from side to side, and in connection therewith water-tubes extending in like manner from the front of the upper shell downward and backward to the rear end of the lower shell, substantially as described.

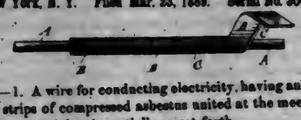


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2. A hot-water-circulating boiler consisting of horizontal top and bottom shells united by lateral tubes C' and longitudinal tubes C², both completely crossing the space between the shells, substantially as described.

404,913. INSULATED ELECTRICAL WIRE. HENRY W. JOHNS, Jr., New York, N. Y. Filed Mar. 23, 1889. Serial No. 304,555. (No model.)



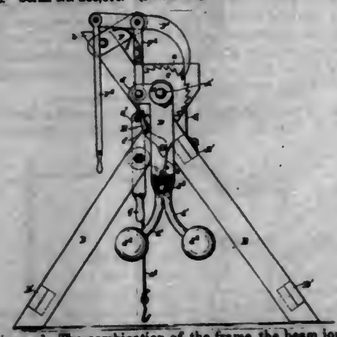
Claim.—1. A wire for conducting electricity, having an insulating covering of strips of compressed asbestus united at the meeting edges by cementing material, substantially as set forth.

2. A wire for conducting electricity, having an insulating covering of compressed vulcanized asbestus strips, the meeting edges whereof are joined by vulcanized cementing material, substantially as set forth.

3. A wire for conducting electricity, having an insulating covering of compressed asbestus strips underneath and an exterior layer of binding and waterproofing material, substantially as set forth.

4. A wire for conducting electricity, having an insulating covering of strips of compressed and vulcanized asbestus which overlap each other, and vulcanized cementing material at the overlapped joints, substantially as and for the purposes set forth.

404,914. WINDLASS. JOHN KNOCHE, Helena, Mont. Filed Oct. 1, 1888. Serial No. 286,960. (No model.)



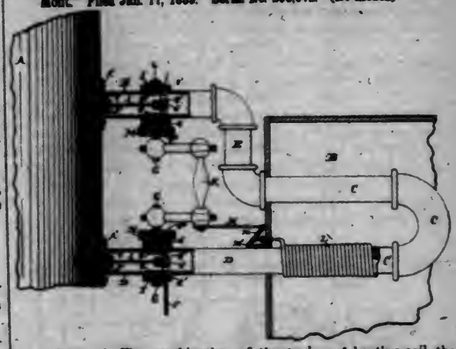
Claim.—1. The combination of the frame, the beam journaled therein, the ratchet C, secured upon the beam-shaft, the pendulous lever D, pivoted upon the beam-shaft in proximity to said ratchet, and the pawls E and F', connected to said lever upon arms at right angles to each other and engaging the teeth of the ratchet C, whereby a continuous rotary motion is imparted to the beam when the lever is vibrated, substantially as set forth.

2. The combination of the frame B B' *b*, the beam A, mounted therein, the ratchet C, secured upon the beam-shaft, the weighted angle-lever D *d*, pivoted upon said shaft, the pawl E, pivoted upon the lever, a spring to hold said pawl either in or out of engagement with the teeth of said ratchet, the pawl F', and links F F², connecting said pawl, respectively, with the frame and crank-arm *d* of said lever, the spring *f*, to hold the pawl in engagement with the ratchet, and the arm F², to disengage the pawl, substantially as set forth.

3. The combination, with a windlass frame and beam, of a ratchet secured upon the beam-shaft, a vibrating weighted lever pivoted upon said beam-shaft alongside the said ratchet, two pawls to engage the teeth of said ratchet and connected to the said lever upon arms at right angles to each other to impart a continuous rotary motion to the beam when the lever vibrates, and a brake, such as described, to arrest or regulate the movement of the beam, substantially as hereinbefore set forth.

4. An actuating mechanism for windlasses, consisting, substantially, of a ratchet secured upon the beam-shaft, a weighted angle-lever pivoted upon the same shaft, a pawl pivoted upon said lever to rotate the beam when the lever swings in one direction, and another pawl linked, respectively, to the frame of the machine and the angle-arm of the lever to continue the rotary movement of the beam when the lever swings in the opposite direction, and a spring to hold the ratchet in working position.

404,915. WATER-HEATING APPARATUS. JOHN KNOCHE, Helena, Mont. Filed Jan. 17, 1889. Serial No. 296,672. (No model.)

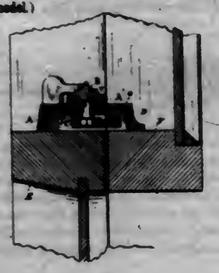


Claim.—1. The combination of the tank and heating-coil, the pipes D E, connecting the same and having branches *d d' e e'*, the crank-shafts G, fitted within said branches, the packing around the ends of said shafts, the valves F in the tank ends of said pipes D E, the rods *j*, connecting the valves and crank-shafts, and the crank-handle K, to simultaneously open and close said valves, substantially as specified.

2. The combination of the tank and heating-coil, the pipes D E, having branches *d d' e e'*, the crank-shafts G, fitted in said branches, the packing for the ends of said shafts, the vent-cock *i* and the waste-cock *i'*, and the crank-handle K, secured on the said shafts G, between the pipes D E, substantially as and for the purpose set forth.

3. The combination of the tank, the heating-coil, and pipes connecting them, with valves controlling the supply from the tank to the coil, crank-shafts for actuating said valves, a crank-handle connecting said shafts, and the rod M, link *m*, and coiled spring L, to automatically operate said handle by the expansion and contraction of the said spring, as set forth.

404,916. FASTENER FOR THE MEETING-RAILS OF SASHES. WILLIAM KOEHNE, Cleveland, Ohio. Filed Jan. 10, 1889. Serial No. 296,969. (No model.)

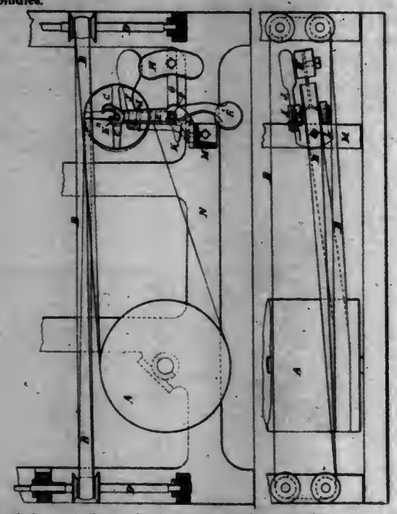


Claim.—1. In a sash-lock, the combination of the hub of the main casing having a recess with two or more inclined projections, and the pivotal lever carrying the locking-plate provided with corresponding depressions on the under side of the head thereof for lifting said plate, constructed and arranged substantially as shown and set forth.

2. In a sash-lock, the combination of the main casing-hub having a recess with one or more cam-faces, the pivotal lever, the locking-plate having a partly level and partly centrally-inclined face, and a lug depending from the casing of the upper sash, acting conjointly in the manner and for the purpose described.

404,917. TENSION-REGULATING DEVICE FOR SPINDLE-DRIVING BANDS. ARTHUR T. LAWSON and SOMERVILLE DEAR, Leeds, County of York, England. Filed Dec. 13, 1887. Serial No. 257,779. (No model.) Patented in England May 26, 1887, No. 7,904; in France Nov. 26, 1887, No. 187,290, and in Germany Dec. 8, 1887, No. 44,353.

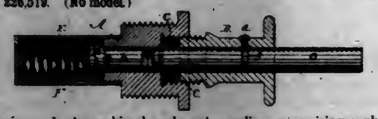
Brief.—The invention consists in the improved device for maintaining a uniform tension upon the band employed to drive a number of spindles.



Claim.—1. In mechanism for maintaining a uniform tension on the endless driving-tapes of spinning, twisting, and other machinery, the combination of the tension-pulley over which the endless tape is passed, the vertical frame mounted on pivots and carrying this pulley, said frame having the horizontal arm extending radially from the pivots and carrying a weight, and the curved segment fixed thereto and the weighted lever resting upon it to retard its movements.

2. In mechanism for maintaining a uniform tension on the endless driving-tapes of spinning, twisting, and other machinery, the combination of the tension-pulley over which the endless tape is passed, the vertical frame mounted on pivots and carrying this pulley, said frame having the horizontal arm extending radially from the pivots and carrying a weight, and the curved segment fixed to the arm, and the weighted lever resting upon it to retard its movements and serve as a catch to hold back the pulley from pressing against the band when the bracket has been moved to the end of its traverse away from the band.

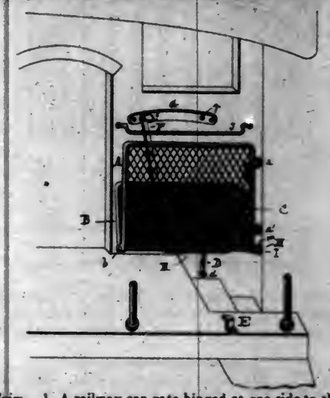
404,918. COMBINED COCK AND COUPLING FOR BARRELS, CASKS, &c. CHARLES C. LINDSLEY, Fort Edward, N. Y., assignor of one-half to H. Davis Northrup, same place. Filed Feb. 4, 1887. Serial No. 226,519. (No model.)



Claim.—1. A combined cock and coupling comprising a plug-section to be permanently secured in a barrel and provided with a longitudinal bore, a spring-seated valve having a tubular stem located in said bore, the detachable screw-plug provided with a longitudinal bore, a removable set-screw extending from the outer periphery into the bore of the screw-plug, and the herein-described connecting pipe-section uniform in diameter with said valve and extending completely through the bore of the screw-plug and provided with an annular groove in its outer periphery, into which the end of said set-screw removably extends, whereby the said pipe is held extending through the plug, for the purpose set forth.

2. The combination, with a plug-section that is permanently secured in a barrel and which is provided with a spring-seated valve B, having the perforated tubular stem *b*, of the screw-plug D, to screw into the plug-section and provided with a set-screw *d*, and the pipe G, passing completely through said screw-plug to enter the bore of section A and coact with the valve-stem to open the valve and form a continuous discharge through the valve-stem and pipe from the barrel, said pipe having an annular groove, into which the set-screw extends and by which the pipe is detachably held, extending through the screw-plug, substantially as described.

404,919. CAR-GATE. NATHAN F. MATHEWSON, Providence, R. I. Filed Apr. 13, 1889. Serial No. 307,186. (No model.)



Claim.—1. A railway-car gate hinged at one side to the car and having a lug extending from the bottom, and a folding platform hinged to said gate at its bottom, adapted to lie horizontally when the gate is closed and to fold up against said gate when the gate is open, in combination with a lever mounted pivotally on said car, and a link-bar connecting said lever and the lug of said gate, substantially as specified.

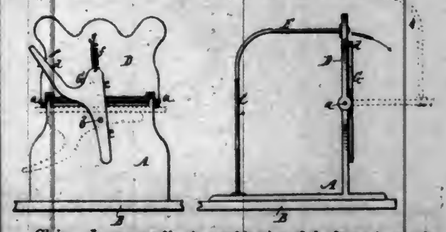
2. The combination of a gate hinged at one side to the car and having a lug extending from its bottom, a lever mounted pivotally on said car, and a link-bar connecting said lever and the lug of said gate, substantially as described.

3. The combination of the lever F, mounted pivotally on the car and having the handle *f* and the pin *n*, the locking-plate G, having slots *g*, the gate A, hinged at one side to the car and having the lug I, and the link-bar H, pivotally connected with said lever and lug, substantially as shown.

4. The combination of the lever F, mounted pivotally on the car and having the handle *f* and the pin *n*, the locking-plate G, having slots *g*, the gate A, hinged at one side to the car and having the lug I, the folding platform B, having the wheel C and hinged to the bottom of the gate A, the track D, and the link-bar H, pivotally connected with said lever and lug, substantially as described.

5. The combination of the gate A, hinged at one side to the car, the folding platform B, hinged to the gate A at its bottom, and the locking device E, located on the car-platform, substantially as and for the purpose specified.

404,920. FILE FOR LETTERS. LAWRENCE A. MERK, Rochester N. Y. Filed Jan. 22, 1889. Serial No. 297,213. (No model.)



Claim.—In a paper-file, the combination of the frame A, carrying the stationary wire C, the plate D, hinged to the back of the main frame and carrying the movable wire E, the lever G, pivoted to the back of the main frame and provided with arms *c d*, that shunt across the frame and plate and stiffen them in position, and the spring *f*, connecting the lever with the plate, as shown and described, and for the purpose specified.

404,921. MEANS FOR CHANGING THE CENTER OF GRAVITY OF GUNS. WILLIAM R. MILLER, Baltimore, Md. Filed Jan. 26, 1888. Serial No. 297,810. (No model.)

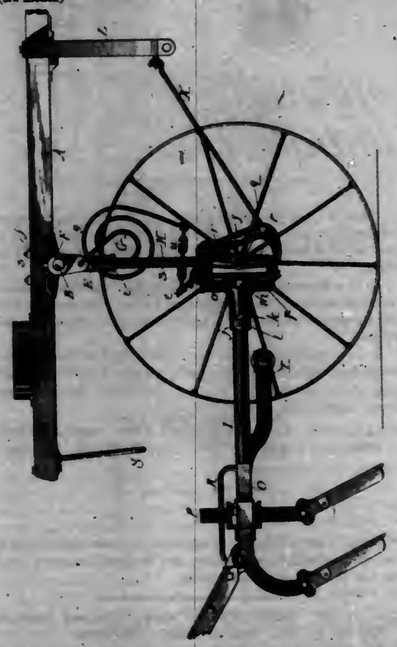


Claim.—1. A gun having a weight of constant gravity adjustable in position longitudinally of the stock and means for securing the weight in its adjusted positions, substantially as and for the purpose specified.

2. In a gun the stock thereof having therein a weight of constant gravity in two or more sections susceptible of independent movement, adjustable longitudinally of the stock, and means for securing the said weight in its adjusted positions, substantially as and for the purpose specified.

3. In a gun the stock thereof having a longitudinal cavity therein, combined with a threaded stem inserted in the said cavity and a weight of constant gravity screwed on the said stem, substantially as and for the purpose specified.

404,922. CULTIVATOR. GILPIN MOORE, Moline, Ill., assignor to Deere & Company, same place. Filed Nov. 19, 1888. Serial No. 291,300. (No model.)



Claim.—1. In a cultivator, a divided pipe-box, which forms a part of the coupling, the two parts of which *j k* are connected together and to the beam, the forward ends of said two parts being adjustably connected, each part carrying an arm or bracket, as *o* and *p*, substantially as and for the purpose specified.

2. A coupling for connecting the plow beam of a cultivator with the axle, consisting of a divided pipe-box, the two parts of which are connected together and to the beam, each part carrying an arm or bracket, as *o* and *p*, in combination with a pipe-box adapted to be placed on the axle and provided with two studs or pivots, as *r*, substantially as and for the purposes specified.

3. A coupling for connecting the plow-beam of a cultivator with the axle, consisting of a divided pipe-box, the two parts of which are connected together and to the beam, each part carrying an arm or bracket, as *o* and *p*, in combination with a pipe-box adapted to be placed on the axle and provided with two studs or pivots, as *r*, and an adjusting or tightening bolt, as *s*, substantially as and for the purpose specified.

4. The combination, with the axle and the laterally-swinging plow-beam, of a pipe-box on the axle, a bracket rigidly secured to the plow-beam and pivotally connected with parts of the pipe-box, and a draft-clevis extending back of the axle and pivoted to the bracket by a vertical pivot behind the axle and in rear of the pivotal point of connection of the bracket with the pipe-box, said draft-clevis being free to swing laterally on the bracket, substantially as described.

5. The combination, with the axle and the plow-beam, of a pipe-box mounted on the axle and having an upward and a downward projecting stud *r*, a bracket rigidly secured to the plow and having upper and lower portions pivoted, respectively, on the ends of said studs, and a draft-clevis having its ends extending under and over the axle and embracing and pivoted to the bracket by a vertical pivot *s* in the rear of the pivotal attachment of the said bracket to the ends of said studs, substantially as described.

6. A spring supported at its upper end by the shaft B, or by a projection thereon, and engaging at some distance from said fixed end with a projection on one of the swinging parts of the arch, whereby, when such swinging part of the arch swings either forward or backward, the lower end of the spring will be carried correspondingly forward or backward, while the beam retains its horizontal position, substantially as and for the purposes specified.

7. In combination with a plow-beam, a cross-head, as N, provided with two vertical holes and with two horizontal holes to receive the shovel-standards, substantially as specified.

8. In a cross-head, a socket adapted to receive a shovel-standard, a chamber by the side of and communicating with such socket and provided with an inclined wall, in combination with a key-bolt *l*, extending transversely to the standard through the socket and having an inclined head, substantially as and for the purposes specified.

9. In a cultivator, the combination of a handle and a plow-beam with the castings *a'* and *d'*, constructed and connected substantially as and for the purposes specified.

404,923. BACK-BAND PAD. GEORGE W. MOORE, New Orleans, La. Filed Dec. 5, 1883. Serial No. 292,763. (No model.)



Claim.—1. In combination with a back-band, bearing-pads having loops 3 3, and pivoted tongues 6 6, as described.

2. The combination of the back-band 1, the bearing-pads 2 2, the loops 3 3, having flat end portions 4 4, and longitudinal portion 5, and pivoted tongue 6.

404,924. RULE-HOLDER. MIKE MURPHY, Birmingham, Ala. Filed Jan. 3, 1889. Serial No. 295,257. (No model.)

Claim.—1. The rule-holder herein described, consisting of a bottom part A and a top part B, united as shown, and provided with prongs *c* and movable prongs *e*, and having the spring-clamps arranged substantially as specified.

2. In a rule-holder, the combination of the bottom A and open top B, united by wires C C and strip D, with the spring-clamps G H

404,924.

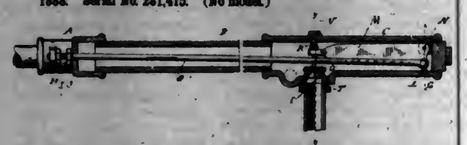


H and prongs *c c* and *e e*, all substantially as and for the purpose set forth.

3. The combination of the bottom A and the top B, united as shown, with the spring-clamps H H, having ears *h h*, and the clamp G, fixed prongs *c c*, and movable prongs *e e* on the wire E, arranged and shown as specified.

4. In the rule-holder described, the bottom A and the open top B, united by the wires C and strip D, with the spring-clamps G H H, the wire E, provided with lever F, and the prongs *c* and the prongs *e*, all constructed and arranged as and for the purpose herein set forth.

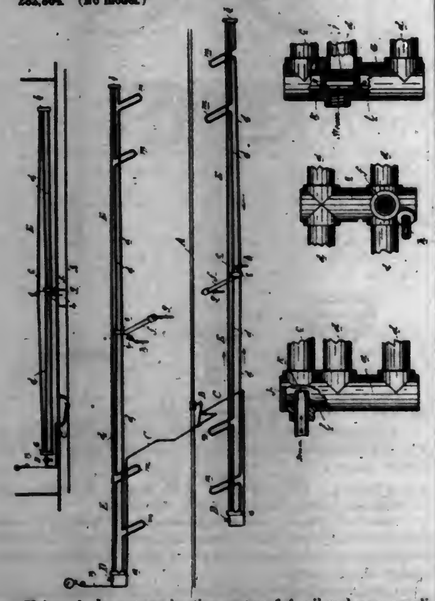
404,925. STEAM-TRAP. JAMES F. MCELROY, Lansing, assignor to the McElroy Car Heating Company, Detroit, Mich. Filed July 30, 1888. Serial No. 281,415. (No model.)



Claim.—1. The combination of the casing provided with a bend or offset E at one end, an expansion-rod inclosed within that casing and passing with its free end through the bent portion or offset of said casing to the outside, the lug H, into which the expansion-rod engages, and the lock-nuts I and J, substantially as described.

2. The combination of the casing consisting of the parts A, B, and C, the offset E of the part A, the expansion-rod G, within the casing and projecting through the offset E to the outside, the lug H, into which the expansion-rod engages, the adjusting-nuts I and J, the multiplying-lever M, fulcrumed at and pivotally secured with the short arm to the expansion-rod, the valve O, carried by the long arm of the lever and having the valve-stem P, the collar Q upon said valve-stem, the spring R, and the nipple T, secured in the walls of the casing, the parts being arranged and constructed to operate substantially as and for the purpose described.

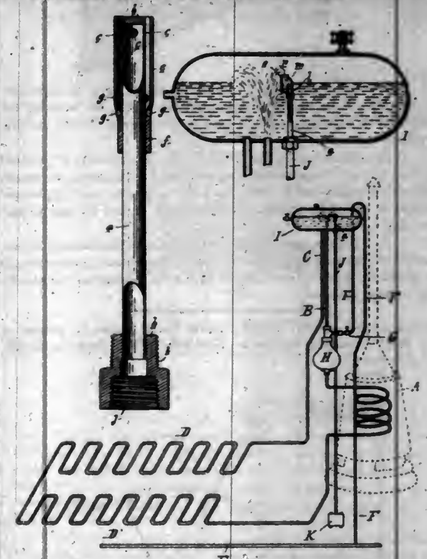
404,926. STEAM-HEATING SYSTEM FOR RAILWAY-CARS. JAMES F. MCELROY, Lansing, Mich. Filed Aug. 16, 1888. Serial No. 282,864. (No model.)



Claim.—1. In a steam-heating system for railroad cars, a radiator consisting of two or more courses of pipes extending longitudinally through the car and suitably inclined to conduct the water of condensation to an outlet in the center of the lower course, and connections at the ends of said courses of pipes, one of said connections being provided with a steam-supply pipe, and restricted ports proportioned in size to the capacity of the radiator-pipes with which they communicate, whereby they distribute the steam into the different courses of pipes in proper proportion, substantially as described.

2. The combination of a radiator having multiplex pipes with a distributing-connection provided with means, as the restricted ports *k l*, proportioned to distribute the steam in proportion to the length or capacity of the radiating-pipes supplied from said connection, substantially as described.

404,927. CAR-HEATING APPARATUS. JAMES F. MCELROY, Lansing, assignor to the McElroy Car Heating Company, Detroit, Mich. Filed Mar. 25, 1889. Serial No. 304,719. (No model.)

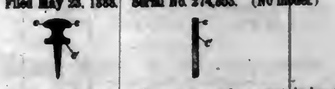


Claim.—1. In combination with a car-heating apparatus of the kind described and the drum thereof, an overflow-pipe having its aperture shielded from the effects of the ebullition, substantially as described.

2. In a car-heating apparatus of the kind described and the expansion-drum thereof, an overflow-pipe having a covered top and side shields, such shields having top and bottom apertures, substantially as described.

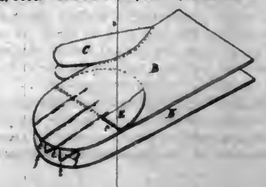
3. In a car-heating apparatus of the kind described, and the expansion-drum thereof, a reducing-plug, the pipe *a*, secured therein and capped at the top, the aperture *c*, and the shield *e*, open at the top and bottom, substantially as described.

404,928. CARRIAGE-CURTAIN KNOB. FRED A. NEIDER, Augusta, Ky. Filed May 23, 1888. Serial No. 274,853. (No model.)



Claim.—As a new article of manufacture, a carriage-curtain knob of the form substantially as shown and described, stamped out from a flat bar or sheet of wrought metal.

404,929. BOXING-GLOVE. DENIS J. O'SULLIVAN, Detroit, Mich. Filed Apr. 11, 1888. Serial No. 270,287. (No model.)



404,929.



Claim.—1. In a boxing-glove, the combination, with the palm and back pieces, each consisting of a single part, of the fourchettes stitched to the inner face of the part B′ and to the doubled or folded-in portions *e* of the palm-piece, as and for the purposes specified.

2. The combination, in a boxing-glove, of the palm B and back B′ and the fourchettes stitched to the adjacent faces of said parts, so as to cause the forward ends of said fourchettes to stand on a line back of the joined or stitched edges of the parts B B′, as specified.

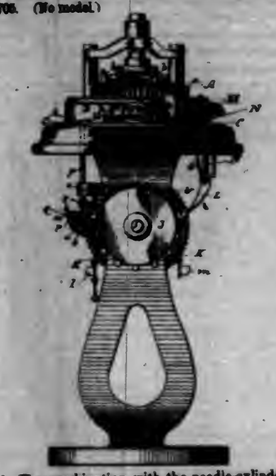
3. In an organized boxing-glove, the combination, with the palm and back pieces and the interposed fourchettes, of the finger-pad mounted on the palm-piece, substantially as and for the purposes specified.

4. In an organized boxing-globe, the combination of the palm and back pieces, the thumb, the buffer mounted on the back-piece, and the pocket or stall mounted on the buffer, so as to receive the thumb, substantially as specified.

5. In an organized boxing-glove, the combination of the parts B B′, the interposed fourchettes, the wristband, the buffer, and the elastic joining said buffer to the wristband, as and for the purposes specified.

6. In an organized boxing-glove, the combination of the parts B B′, the interposed fourchettes, the thumb, the buffer mounted on the part B′, the pocket D, mounted on the buffer, and the pad E, mounted on the part B, as and for the purposes specified.

404,930. CIRCULAR-KNITTING MACHINE. WILLIAM H. PEPPER and ALBERT T. L. DAVIS, Lake Village, N. H. Filed Dec. 12, 1887. Serial No. 257,709. (No model.)

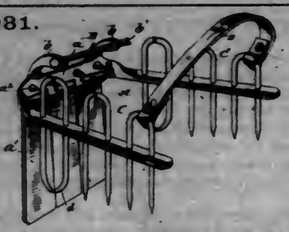


Claim.—1. The combination, with the needle-cylinder and needles, the cam-ring, and the needle-depressing cam, of a cam-bar having a series of depressing cam-faces, a pattern chain or wheel having a series of cam projections corresponding with the cam-faces on the cam-bar, and means, as the step-lever P, tappet R, and lever H, for connecting the movements of the said pattern chain-wheel and the cam-bar, substantially as and for the purpose herein set forth.

2. The combination, with the needle-cylinder and needles, the cam-ring, and the needle-depressing cam, of a cam-bar having a series of depressing cam-faces, a pattern chain or wheel having a series of cam projections, a step-lever having a series of steps thereon, a fixed tappet resting on one of the series of steps for adjusting its height, and a lever H, provided with a pin or projection *q*, arranged to strike the tappet as the cam-ring revolves, the said lever being attached to and adapted to move the cam-bar into its various positions as the cam-ring revolves, for the purpose herein specified.

404,931. CALF-WEANER. WILLIAM H. PRESMORE, Walworth, Nebr. Filed July 23, 1888. Renewed May 9, 1889. Serial No. 310,196. (No model.)

404,931.



Claim.—1. As an improvement in calf-weaners, the horizontally-disposed U-shaped frame having a series of vertical side bars projecting above and below the side arms thereof, substantially as described.

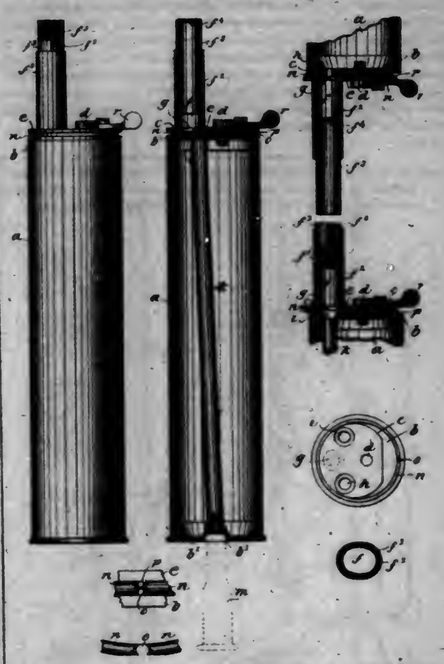
2. As an improvement in calf-weaners, the horizontally-disposed U-shaped frame and the series of vertical bars secured to and projecting above and below the side arms thereof, and having their upper ends bent or curved, as set forth.

3. As an improvement in calf-weaners, the U-shaped frame having the curved apertured arms, the cross-pin, the series of vertical side bars, and the strap, substantially as shown and described.

4. As an improvement in calf-weaners, the U-shaped frame having the vertical side bars, and the series of front barbs or teeth, substantially as shown and described.

5. The herein-described improved calf-weaner, comprising the U-shaped frame, the front cross bar or plate having a series of barbs or teeth, the hanger-plate secured to said bar or plate, the series of vertical side bars, the cross-pin, and the strap, substantially as shown and described.

404,932. POWDER-FLASK. FRANCIS J. RABBETH, Boston, Mass. Filed Aug. 27, 1888. Serial No. 283,823. (No model.)



Claim.—1. A flask comprising a magazine or receptacle, combined with a measuring-chamber composed of an outer and inner tube, the said inner tube being permanently closed at one end and being detachable from the outer tube and adjustable longitudinally therein when either its closed or its open end is inserted in said outer tube, substantially as and for the purpose described.

2. The combination of the magazine provided with a port-opening and discharge-passage with a measuring-chamber provided with an opening constituting both inlet and outlet thereto, said measuring-chamber being movable with relation to the magazine, whereby its opening may be placed in communication with the port-opening of

the said magazine or with the said discharge-passage, substantially as described.

3. The combination of the magazine provided with a port-opening and discharge-passage with a measuring-chamber provided with an opening constituting both inlet and outlet thereto, said measuring-chamber being movable with relation to the magazine, whereby its opening may be placed in communication either with the port-opening of said magazine or with the discharge-passage, and a spring by which the measuring-chamber is normally retained with its opening out of coincidence with said port and discharge-passage, substantially as described.

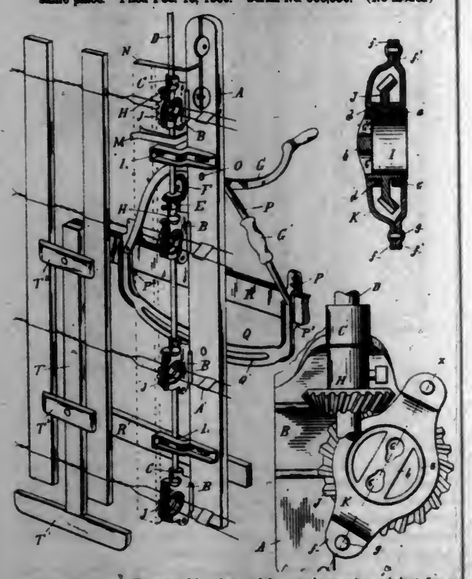
4. The combination, with a magazine, of a measuring-chamber composed of an inner and outer tube movable longitudinally, one relative to the other, and slightly oval in cross-section, the longer external diameter of the inner tube being slightly greater than the shorter internal diameter of the outer tube, whereby a slight rotation of the inner tube fastens it within the outer tube, substantially as and for purpose described.

5. The combination of the magazine provided with a port communicating with the interior of the magazine and a discharge-passage, with a measuring-chamber movable with relation to said port and discharge-passage, and having an opening which may be placed in communication with either one of them, substantially as and for the purpose described.

6. The combination of the magazine having an end portion provided with a seat and passages therethrough, with a measuring-chamber and supporting-plate therefor pivoted on said seat and provided with an opening into the said measuring-chamber, said plate closing the passages in said seat except when moved to place the opening in the measuring-chamber in communication with one or the other of said passages, substantially as described.

7. The combination of the magazine having an end portion provided with a seat and passages therethrough, with a measuring-chamber and supporting-plate therefor pivoted on said seat and provided with an opening into the said measuring-chamber, said plate closing the passages in said seat except when moved to place the opening in the measuring-chamber in communication with one or the other of said passages, and a spring the ends of which engage projections, one connected with the magazine and the other with the supporting-plate for the measuring-chamber, as set forth, the said spring opposing the movement of the chamber in either direction, substantially as described.

404,933. PICKET-FENCE MACHINE. BERA RAMSON, Flint, Mich., assignor, by direct and mesne assignments, of two-thirds to Oren Stone, same place. Filed Feb. 18, 1889. Serial No. 300,366. (No model.)



Claim.—1. The combination, with a twister of a picket-fence machine, of an independent spreader formed of two parts detachably secured together and slidingly engaging between the two wires of a strand in advance of the twister, substantially as described.

2. The combination, in a picket-fence machine, of the twister frame, a carriage pivotally secured thereto, and consisting of the frame P, pivotally secured at O the standard above its longitudinal center and provided below its longitudinal center with the circular slotted portion Q, the clamping-bolt and clamp-nut S, adjustably securing the same to the standard, and the travelers P', substantially as described.

3. The combination, in a picket-fence machine, of the twister-frame, a carriage pivotally secured thereto, and consisting of the frame P, pivotally secured at O to the standard above its longitudinal center and provided with the circular slotted portion Q, the clamping-bolt and clamping-nut S, adjustably securing the same to the standard, the travelers P', the guide-rail R, and the guide-flanges P², projecting underneath said guide-rail, substantially as described.

4. The herein-described tension mechanism, consisting of the frame, the shaft *k*, the sleeves *l*, having the ratchet-flanges *m*, the spools *n*, upon which the tension-cable is wound, and provided with a dog *o* and wrench-holds *n'*, the gear-wheel *r*, the pinion *s*, the brake-wheel *u*, the brake-shoe *v*, and the brake-lever *w*, adjustably secured to the tension-spring *y*, substantially as described.

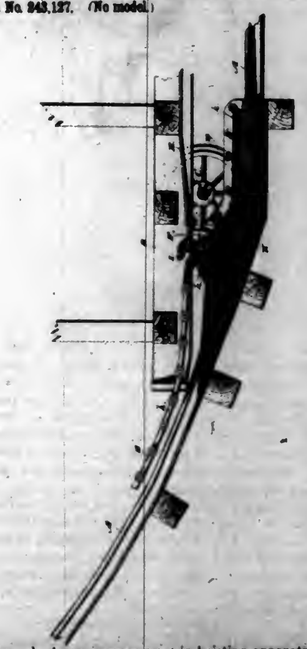
404,934. DEVICE FOR TWISTING WIRE CABLES OF SUSPENSION-BRIDGES. EDWIN R. RUNYON, Mountain Spring, Tex. Filed Apr. 1, 1889. Serial No. 305,583. (No model.)



Claim.—1. The cable-twister consisting of the casting B, the two disks C C', the bolt F, and the arms H, substantially as described.

2. The combination, with the casting B, having grooves *b b'* and openings *b² b²* therein, of the semicircular disks C and C', having grooves *c c'* therein and openings D, extending through the same, the bolt F, for binding the several parts together, and the arms H, extending out from the disks, substantially as described.

404,935. HOISTING APPARATUS FOR MINES. SAMUEL SALMON, Drifton, Pa., assignor to Bobley B. Coxe, same place. Filed July 1, 1887. Serial No. 243,127. (No model.)



Claim.—1. As an improvement in hoisting apparatus for mines, the combination of a car which is provided with a pivoted pendent link, a hoisting-cable that has pivoted upon its lower end an engaging-hook, and a grooved guide which is located at the lower end of the mine-slope, and is adapted to cause the hook to move beneath the link at an inclination that is greater than the inclination of the track upon which the car rests, substantially as and for the purpose set forth.

2. As an improvement in hoisting apparatus for mines, the combination of a mine-car having a pivoted link, a hoisting-cable, a hook which is pivoted upon the end of such cable, and a guide that engages with the hook as it reaches the lower end of the slope, and operates to move said hook in a plane which has an angle to the plane of the slope at such point, substantially as and for the purpose shown and described.

3. As an improvement in hoisting apparatus for mines, the combination of a hoisting-cable, a hook which is pivoted upon the end of such cable, a mine-car having a pivoted link that is secured upon it and is adapted to be engaged by the hook, and a guide which is located at or near the lower end of the slope and operates to move said hook at an angle to the plane of said car, and thereby cause it to be engaged with or to be disengaged from said link, substantially as and for the purpose specified.

4. As an improvement in hoisting apparatus for mines, the combination of an inclined track, a hoisting-cable, a hook which is pivoted to or upon the end of the same, a mine-car that is adapted to run upon or over such inclined track, and is provided with a pivoted link for engagement by the hook, and a guide which is located at or near the lower end of the slope, and is adapted to move said hook at an angle to the plane of said car to cause it to engage with or to be disengaged from said link, substantially as and for the purpose shown.

5. As an improvement in hoisting apparatus for mines, in combination with a mine-car having a pivoted link, the hoisting-cable provided with a hook, which is pivoted to or upon its lower end, is adapted for engagement with said car-link, and is provided at or near its outer end with laterally-projecting trunnions, and a guide which is located at the lower end of the slope, and is adapted to engage with said trunnions and move said hook out of engagement with the car-link when the car has reached the bottom of the slope, substantially as and for the purpose set forth.

6. As an improvement in hoisting apparatus for mines, in combination with a mine-car having a pivoted link, the hoisting-cable provided with a hook, which is pivoted to or upon its lower end, is adapted for engagement with said car-link, and is provided with laterally-projecting trunnions, and a guide which is located at the lower end of the slope, and is adapted to engage with the trunnions and move said hook into engagement with said link as said cable is drawn upward, substantially as and for the purpose shown and described.

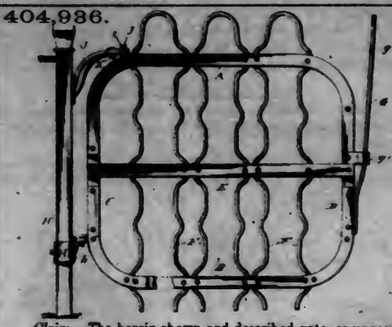
7. In combination with a mine-car having a pivoted link and with a hoisting-chain, the hook pivoted at its rear end upon the hoisting-chain and provided at its front end with laterally-projecting trunnions, the guide having a bearing for the pivoted end of said hook, a groove which is adapted to receive the body of the same, and grooves that engage with said trunnions, the arrangement being such that said hook is moved downward with relation to the plane of the inclined track when it passes downward over said guide, and is moved upward with relation to said inclined track when it is drawn upward over said guide, substantially as and for the purpose specified.

8. The hoisting-cable hook provided with laterally-projecting trunnions at or near its rear end, in combination with the hoisting-cable, the inclined guide-plate, which has a longitudinal T-shaped groove, and a mine-car having the pivoted hoisting-link upon it, substantially as and for the purpose shown.

9. In combination with the track of a mine-slope and with the hoisting-cable thereof, a hook pivoted at one end upon said cable and provided at its opposite end with laterally-projecting trunnions, a guide-plate which is located at the lower end of said slope and has cam-grooves for engagement with said trunnions, and a mine-car having a hoisting-link that is pivoted upon the lower side of it, and is adapted to be engaged with or disengaged from said hook as the latter is moved, respectively, upward or downward over and within said plate, substantially as and for the purpose set forth.

404,936. GATE. EDWARD F. SHILLABEER, Beaver Falls, Pa. Filed Feb. 28, 1889. Serial No. 301,462. (No model.)





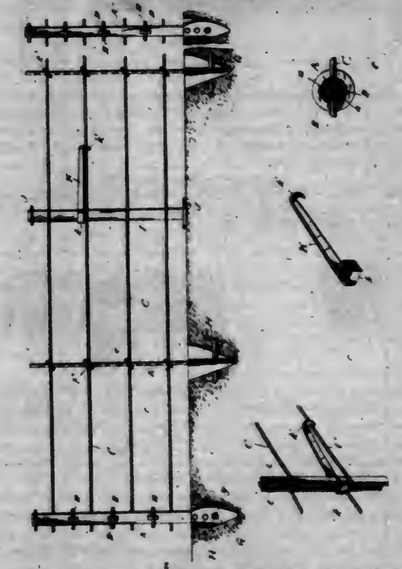
Claim.—The herein shown and described gate, composed of the end battens, the upper and the lower rails, each composed of two corresponding bars having their ends uniformly curved in opposite directions and embracing the ends of the end battens, and the vertical pickets secured between the bars of the said rails, substantially as described.

404,937. WATCH-MAKER'S TOOL. ALBERT F. THOMPSON, Adel, Iowa. Filed Aug. 23, 1888. Serial No. 283,547. (No model.)



Claim.—As an article of manufacture, a tool for watch-makers, consisting of two handles pivoted together, and provided beyond their connection with jaws bent upwardly, tapering toward their outer and upper ends and beveled on their adjacent side edges to form knife-edges, as and for the purpose set forth.

404,938. WIRE-FENCE TIGHTENER. REUBEN WARNER, Tomah, Wis. Filed Mar. 6, 1889. Serial No. 302,115. (No model.)



Claim.—1. The combination, with the wire-fence tightener, of the removable wrench having a hook to engage with a fence-wire, substantially as described.

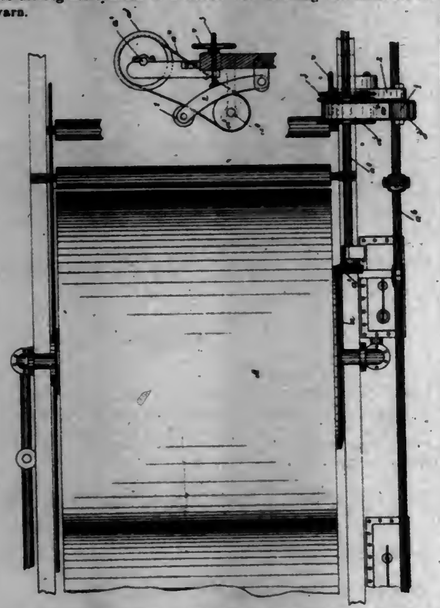
2. The combination, with the wire-fence tightener, of the wrench adapted to embrace the said tightener on three sides, being open on the fourth side, and having a hook at its outer end for engaging with the fence-wire, substantially as described.

3. The herein shown and described fence-wire tightener, composed of two bars which are adapted to have the fence-wires passed between them, the plate J, for connecting the bars at their lower ends

and supporting them on the ground, the plate J', for connecting the upper ends of the bars, and the wrench for turning the bars to wind the fence-wires thereon, said wrench being constructed to engage with one of the wires to prevent the bars turning back, substantially as described.

404,939. SLASHER. JOHN WATT, Saccarappa, Me., assignor to Woodbury K. Dana, same place. Filed Mar. 27, 1889. Serial No. 305,027. (No model.)

Brief.—The object of the invention is to provide improved means for driving the cylinder of a slasher and relieving the strain on the yarn.



Claim.—In a slasher, the combination of cylinder A and side shaft a^2 with gear a, pinion a', jack-shaft a^3, belt a^6, side shaft a^2, and a device for regulating the tension of the belt a^4, running from a pulley a^5 on jack-shaft a^3 to a pulley a^6 on side shaft a^2, substantially as and for the purpose set forth.

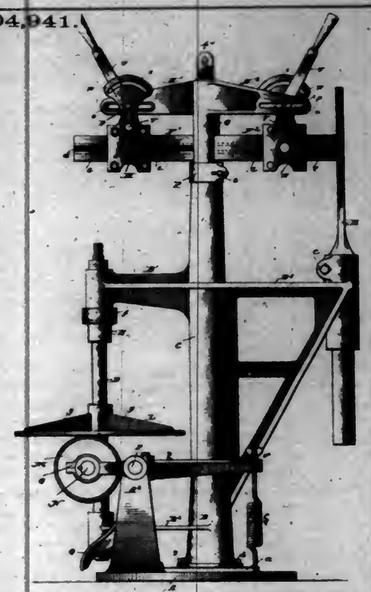
404,940. MILLING-CUTTER. AMOS WHITNEY, Hartford, Conn., assignor to The Pratt & Whitney Company, same place. Filed Feb. 18, 1889. Serial No. 300,328. (No model.)



Claim.—1. In a milling-head, the combination of the central plate or body carrying one set of cutters and having a laterally-projecting threaded ring, the sliding ring thereon and carrying another set of cutters, and means, substantially as described, serving to adjust said sliding ring and cutters relative to the other set of cutters carried by said body, all substantially as described.

2. In a milling-head, the combination of the body 4, having threaded ring 5, cutters 6, adjustably fixed in said body, the sliding ring 10, carrying a second set of cutters, the ring-nut 12, and means, substantially as described, connecting said rings 10 and 12, the one to turn on the other, substantially as described.

404,941. POTTERY-JIGGER. PETER WILKIE, Trenton, N. J. Filed July 27, 1888. Serial No. 281,190. (No model.)



Claim.—1. The combination, of the horizontal shaft P, having attached thereto and forming a part of the same the bearings O O, and the horizontal shaft held in such bearings and carrying the friction-wheel, substantially as described.

2. The combination, with the vertical spindle and its upper bearing, of the metal collar K, faced out on its interior surface and having around its upper edge a flange to form a lubricating-chamber, substantially as described.

3. The combination, with the shaft P, of the foot-lever Q, the horizontal arm R, provided at its end with a jaw, and the spring S, having its upper end passed through said jaw and its lower end screwed into the base-plate, the said spring being provided with the adjusting thumb-nut m, substantially as described.

4. The frame B, cast with the upper sleeve-bearing B', the clamp B^2, and the sleeve B^3, the said clamp B^2 being bored out smooth on its interior and slotted and provided with a tightening bolt and nut, substantially as described.

5. The upright column G, having the eye G^4, and turned smooth to fit into frame B, and cast or formed with the planed arms F^2 F^3 and arms H' H^3, the first-mentioned arms being formed for their entire length with T-slots adapted to receive adjustable stop-bolts, and the second-named arms being formed with oblong slots o o, substantially as and for the purpose described.

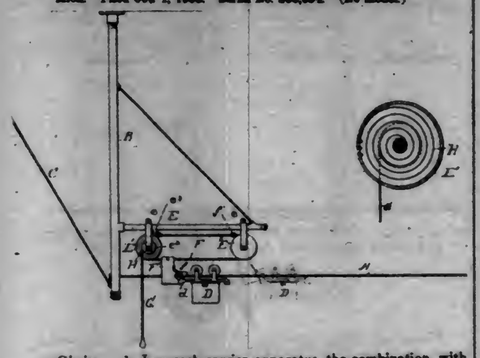
6. The combination, with the column G, having the upper and lower pairs of arms constructed as described, of the adjustable saddles or profile-holders and the stops therefor, the cranks W W, having the curved slots and connected to the tool-holders, and the levers for shifting the saddles, substantially as described.

404,942. MILLER-EXTERMINATOR. JOHN B. WOODS, Mineola, Tex. Filed Mar. 26, 1889. Serial No. 304,824. (No model.)



Claim.—A lamp having an external upwardly-projecting sleeve and a side socket and a wick projecting through said sleeve, in combination with a pole or standard fitting into said side socket and a pan having an inward sleeve fitting over said sleeve on the lamp, substantially as described.

404,943. CASH-CARRIER. EMIL P. SEIBE, Detroit, assignor to Edward A. Owen, Adolph A. Callis, and Arthur Callis, East Saginaw, Mich. Filed Oct. 1, 1888. Serial No. 286,634. (No model.)



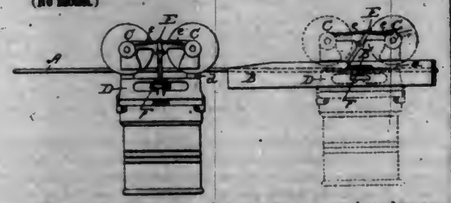
Claim.—1. In a cash-carrier apparatus, the combination, with the line-wire and the carrier mounted thereon, of two pulleys suspended above said wire, an endless strap on said pulleys, and a propelling-block attached to said strap and provided with a catch adapted to engage the carrier, said block adapted to be disengaged from the carrier by its forward end striking the forward pulley and tilting it, substantially as described.

2. In a cash and parcel carrier apparatus, the combination, with the usual taut wire and car, of an endless strap or cord extending between and embracing two pulleys situated at one end of the said wire, a propelling-block attached to said strap or cord and adapted to travel with it, a beveled latch on said propelling-block, constructed to engage with the car and retain it adjacent to the propelling-block until released, a strap wound upon a drum on one of the pulleys for revolving the same and projecting the propelling-block, and a spring adapted to return the propelling-block to its initial position, substantially as described.

3. A cash and parcel carrier mechanism consisting of the combination, with a line-wire, its supports, and a car, of pulleys F' F^2, belt F, and propelling-block F', actuating cord or strap G, and a retracting-spring, all situated at one end of the line-wire, substantially as described.

4. In a cash and parcel carrier apparatus, the combination, with the car and the propelling-block, the belt and pulleys, of the actuating cord or strap, said propelling-block provided with a latch to engage the car, said latch adapted to be automatically disengaged at or adjacent to the forward pulley, substantially as described.

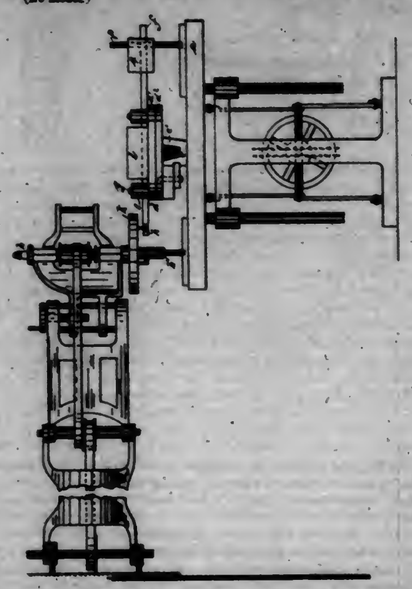
404,944. CASH-CARRIER. EMIL P. SEIBE and FRANK S. CHURCH, Detroit, assignors to Edward A. Owen, Adolph A. Callis, and Arthur Callis, East Saginaw, Mich. Filed Oct. 13, 1888. Serial No. 288,017. (No model.)



Claim.—1. In a cash-carrier apparatus, a car adapted to pass around a curve in the track, said car having its bed-plate open at one side to pass the supporting-arms of the curved track-section, and a small tilting lever pivoted to the bed-plate above the opening, said lever below the pivot bent inward to a point adjacent to the wire, its lower end adapted to close the opening in the side of the bed-plate, except when passing the supporting-arms of the curved track-section, and also to prevent the wheels from riding up onto the wire when passing from station to station, substantially as described.

2. In a cash-carrier apparatus, a car having one side of its bed-plate open, a lever pivoted to the bed-plate above the opening and having its lower end bent inward adjacent to the wire, and a spring or springs to assist in returning the lever to its normal position, substantially as described.

404,945. ROUTING AND WOOD-WORKING MACHINE. HOSMER M. ALLEN, Newark, N. J. Filed Aug. 18, 1888. Serial No. 283,157. (No model.)



Claim.—1. In combination with a revolving and laterally-movable cutter, a table having a track or way thereon, a carriage movable on said track or way, and a guide shaft or rod f, arranged in connection with said carriage and said cutter, said parts being arranged and adapted to operate substantially as and for the purposes set forth.

2. In combination with the shaft b, adapted to receive a cutter, of an annular frame k, collar j, arm h, rod f, connected to said arm and sliding between bearings c of a carriage d, a track c, and a guide-pin p, adapted to engage a pattern and secured upon said guide-rod, substantially as and for the purposes set forth.

3. In combination with a revolving shaft free to move horizontally in any direction, a guide-rod free to move in any direction in a horizontal plane and direct the said shaft therein, and an adjustable guide pin and carrier, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

4. In combination with the laterally-movable cutter, a track or way and a carriage arranged thereon, said carriage being made in parts, one of which is pivotally movable on the other, and a guide-rod connected with said cutter and sliding on said pivotally-movable part of said carriage, substantially as and for the purposes set forth.

5. In combination with a revolving and laterally-movable cutter, a track or way adjacent thereto, a carriage movable on said track or way, and a rod sliding on said carriage and connected with said cutter, substantially as and for the purposes set forth.

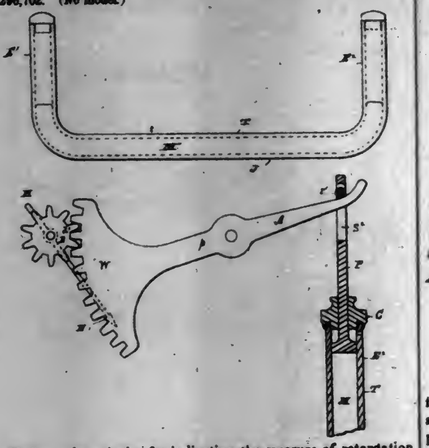
6. In combination with a revolving and laterally-movable cutter, a track or way, a pivotal carriage movable on said track or way, and a rod adjusted on said carriage and connected with said cutter, substantially as and for the purposes set forth.

404,946. FLY-CATCHER. CARL R. K. ANDERSSON, New York, N. Y. Filed Apr. 15, 1889. Serial No. 307,370. (No model.)



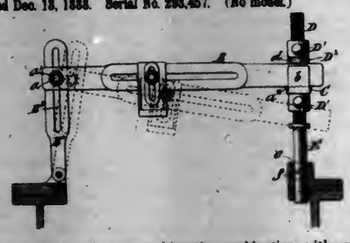
Claim.—The improved fly-net consisting of a dip-net of fine netting having the open end attached to the wire hoop of the staff and the drawn or gathered open bottom end and the funnel-trap of like material in the mouth of the net, all combined and arranged substantially as described.

404,947. DEVICE FOR INDICATING THE MEASURE OF RETARDATION APPLIED TO ARREST THE MOMENTUM OF A TRAIN. WILLIAM H. ARNOLD, Troy, N. Y. Filed Jan. 18, 1889. Serial No. 296,702. (No model.)



Claim.—In a device for indicating the measure of retardation applied to arrest the momentum of a moving train of cars, the combination, with a tube horizontally placed upon a locomotive and arranged parallel to the direction in which the latter must move, said tube having turned-up ends and containing mercury, of a piston arranged in one of the turned-up ends of said tube, a pivoted and geared sector making a connection with said piston by means of a lever-arm, a pinion provided with a pointer and meshing into said sector, and a dial-plate back of said pointer, substantially as and for the purposes set forth.

404,948. PLANING-MACHINE. ERNST F. AUTENRIETH, New York, assignor to the Glen Cove Machine Company, (Limited,) Brooklyn, N. Y. Filed Dec. 13, 1888. Serial No. 293,457. (No model.)



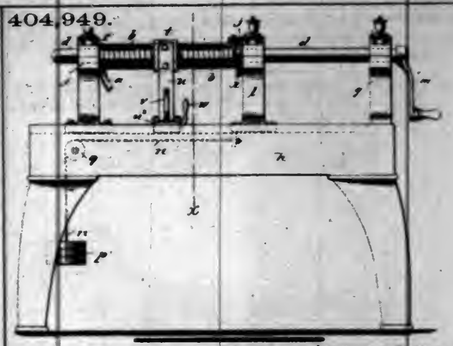
Claim.—1. In a planing-machine, the combination, with a presser-bar, of a swinging support therefor, to which the bar is connected near one of its ends and upon which it is adjustable, a support for the bar near its other end having a screw-threaded portion and an unscrew-threaded portion formed with the screw-threaded portion, the screw-threaded portion being provided with nuts, whereby the bar may be vertically adjusted, and the unscrew-threaded portion having a detachable connection with the frame of the machine, substantially as specified.

2. In a planing-machine, the combination, with a presser-bar, of a swinging support therefor near one end, a support for the same near the other end thereof, comprising a screw-threaded portion and an unscrew-threaded portion, said screw-threaded portion being provided with nuts, whereby the bar may be adjusted vertically, and the unscrew-threaded portion extending loosely through an aperture in the frame of the machine, and a set-screw for securing said unscrew-threaded portion in said aperture, substantially as specified.

404,949. PROCESS OF MAKING LEATHER WASHER-COILS. GEORGE H. AVERY, East Hampton, Mass. Filed Jan. 21, 1889. Serial No. 296,997. (No model.)

Claim.—The process of making a leather washer-coil, which consists, first, in winding a strip of leather spirally on a mandrel; second, subjecting said strip to a solidifying pressure in a direction transversely to the length of said strip, and, thirdly, finish-rolling the surface of the coiled strip, substantially as set forth.

404,949.



404,950. MEDICINE-DISPENSER. JOSHUA BARNES, Brooklyn, N. Y. Filed June 20, 1887. Serial No. 241,833. (No model.)



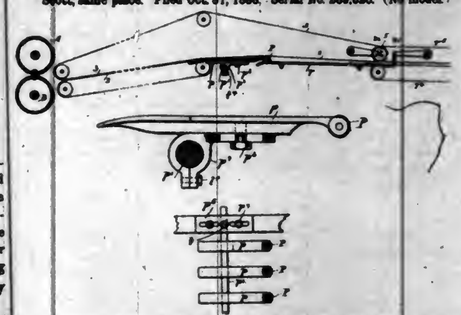
Claim.—1. The combination of a flexible elastic bulb with a flexible elastic sucking-nipple communicating with the said bulb, and a coupling and shield interposed between said bulb and nipple, for the purpose set forth.

2. The combination of a flexible elastic bulb with a flexible elastic sucking-nipple communicating with the said bulb, and a hollow shield coupled to and forming a conduit between said bulb and nipple in the described arrangement for induction and eduction through the nipple by the bulb, for the purpose set forth.

3. The combination of a flexible elastic bulb with a sucking-nipple communicating with the said bulb, and a transparent hollow shield coupled to and forming a conduit between said bulb and nipple in the described arrangement for induction and eduction through the nipple by the bulb, for the purpose set forth.

4. The combination of a flexible elastic bulb with a sucking-nipple communicating with the said bulb, and a transparent reservoir coupled to and forming a conduit between said bulb and nipple in the described arrangement for induction and eduction through the nipple by the bulb, for the purpose set forth.

404,951. SHEET-DELIVERY APPARATUS FOR PRINTING-MACHINES. AUGUST R. BARTLAU, Plainfield, N. J., assignor to Walter Scott, same place. Filed Oct. 31, 1888. Serial No. 289,690. (No model.)



Claim.—1. The combination, with the sheet-conveying belts or tapes and bars or tapes for receiving the associated sheets, of a roller having a toothed or roughened surface for passing down the rear end of each sheet as the sheets are laid successively upon said bars or tapes, substantially as set forth.

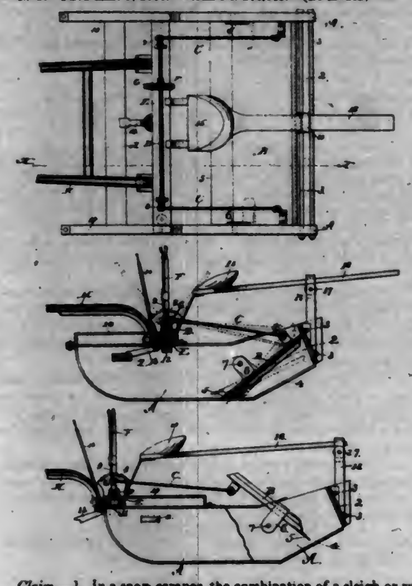
2. The combination, with the sheet-conveying belts or tapes and bars or tapes for receiving the associated sheets, of the sheet-depressing roller P, guide-bars for directing the sheets to such roller, and means, substantially as specified, for adjusting such guide-bars and roller, as set forth.

3. The combination, with the sheet-conveying belts or tapes and bars or tapes for receiving the associated sheets, of the guide-bars p, toothed rollers carried by said guide-bars, the slotted arms p^3, to which the bars p are clamped, and the rod or shaft p', to which the arms p^3 are secured, substantially as specified.

4. The combination, with the sheet-conveying belts and bars or tapes for receiving the associated sheets, of a roller having a roughened surface for carrying down the rear edge of each sheet and a movable stop for the front edges of the sheet, substantially as set forth.

5. The combination, with the sheet-conveying belts and bars or tapes for receiving the associated sheets, of a roller having a roughened surface for carrying down the rear edge of each sheet, a movable stop for the front edges of the sheets, and a forwarding device for moving the associated sheets when the stop is raised, substantially as set forth.

404,952. SNOW-SCRAPER. GEORGE A. RIDER, East Greenbush, N. Y. Filed Mar. 3, 1888. Serial No. 266,063. (No model.)



Claim.—1. In a snow-scraper, the combination of a sleigh or runners provided with a tilting face-board that is loosely fitted thereto, and a sliding cross-bar to which the animal-power is attached, and which is provided with a latch that is fitted to engage with a fixed part of said sleigh, the said sliding cross-bar being connected by pivoted rods to said face-board, as and for the purpose herein specified.

2. In a snow-scraper, the combination of a sleigh or runners provided with a loosely-fitted tilting face-board, a sliding cross-bar to which the animal-power is attached, and which is provided with a latch that is fitted to engage with a fixed part of said sleigh, and a rocking crank-shaft journaled on said cross-bar and provided with a hand-lever having a spring-latch that is fitted to engage in a notched quadrant, the cranks of said rock-shaft being connected by pivoted rods to said face-board, as and for the purpose herein specified.

3. In a snow-scraper, the combination of a sleigh or runners provided with stationary back-board, and a tilting face-board, which is loosely pivoted directly to said runners and whose uppermost edge is fitted to lie in close proximity to the face of said back-board, and the latter projecting above the uppermost edge of said face-board, so as to form a guard which will prevent the snow from escaping over the upper edge of the face-board, as and for the purpose herein specified.

4. In a snow-scraper, the combination of a sleigh or runners provided with a standard having a friction-roller journaled therein, and a sliding cross-bar having a driver's seat erected thereon, said seat being provided with a rearwardly-projecting arm which bears upon said friction-roller, as and for the purpose herein specified.

404,953. BOLT AND NUT. ADELBERT M. BRAINARD, Chicago, Ill. Filed Aug. 30, 1888. Serial No. 284,184. (No model.)

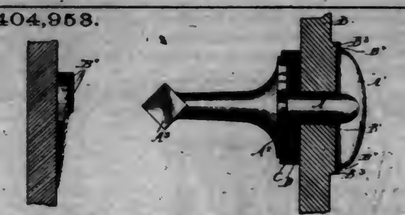
Claim.—1. A plate having a hole to admit the shaft of a bolt, and having on one or both faces of the plate one or more cams at the side of said hole, substantially as shown and described.

2. A plate having a hole to admit the shaft of a bolt, and having one or more cams at the side of said hole, said cams having depressions in their faces, substantially as shown and described.

3. A plate having a hole to admit the shaft of a bolt, and a slot or slots to admit the T-head of a bolt, and having on one or both faces one or more cams at the side of said hole, substantially as shown and described.

4. The combination, with a bolt having a shaft and a head at

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each end of such shaft, of one or more plates to surround said shaft, each plate being provided with one or more cams adapted to rest in contact with and engage one of said heads of the bolt, substantially as shown and described.

5. The combination, with a bolt having a shaft and a head at each end of such shaft, of one or more plates to surround said shaft, each plate being provided with one or more cams having depressions on their faces, said cams adapted to rest in contact with and engage one of said heads of the bolt, substantially as shown and described.

6. The combination, with a bolt having a shaft and a head at each end of such shaft, of one or more plates to surround said shaft, each plate being provided with one or more cams adapted to rest in contact with and engage one of said heads of the bolt, and a yielding washer suitably located on said shaft to regulate the longitudinal movement of the bolt, substantially as shown and described.

7. The combination, with a bolt having a shaft and a head at each end of such shaft, of one or more plates surrounding said shaft, each plate being provided with one or more cams having depressions in their faces, said cams adapted to rest in contact with and engage one of said heads of the bolt, and a yielding washer suitably located on said shaft to regulate the longitudinal movement of the bolt, substantially as shown and described.

8. The combination, with a bolt having a shaft and a head at each end of said shaft, of a plate surrounding said shaft and provided with one or more cams having depressions on their inner faces, said cams adapted to rest in contact with and engage one of said heads, a yielding washer surrounding said shaft and interposed between said plate and the head of the bolt farthest from said plate, and a second washer provided with a rim surrounding said yielding washer and a portion of the adjacent head of the bolt, substantially as shown and described.

9. The combination, with a bolt having a shaft and a head at each end of said shaft, of a plate surrounding said shaft and provided with one or more cams having depressions in their faces, said cams being adapted to engage one of said heads of the bolt, and a washer of asbestus surrounding said shaft and interposed between said plate and the head of the bolt farthest from said plate, substantially as shown and described.

10. The combination, with a bolt having a shaft and a head at each end of such shaft, of a plate surrounding said shaft and provided with one or more cams having depressions on their faces, said cams being adapted to engage one of the heads of the bolt, a washer of asbestus surrounding said shaft and interposed between said plate and the head of the bolt farthest from said plate, and a second washer having a rim to surround said washer of asbestus and a portion of the adjacent head of the bolt, substantially as shown and described.

11. The combination, with a bolt having a shaft and a head at each end of said shaft, of two plates surrounding said shaft and having their meeting faces provided with cams, and one of the plates having on its outer face the depressions b^3, or their equivalent, to engage the adjacent head of the bolt, substantially as shown and described.

12. The combination, with a bolt having a shaft and a head at each end, the inner face of one of said heads being provided with one or more cams, of a plate surrounding said shaft, and having on one of its faces one or more cams adapted to rest in contact with the cam or cams on the inner face of the head of said bolt, substantially as shown and described.

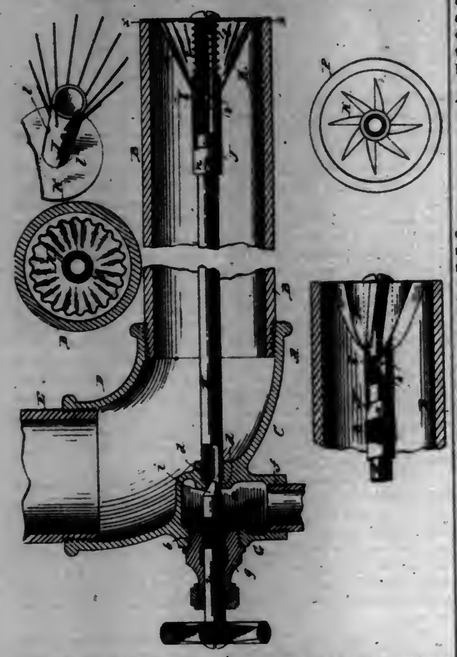
404,954. HEADER ATTACHMENT FOR HARVESTERS. HENRY BRYAN, Modesto, Cal. Filed Oct. 20, 1888. Serial No. 288,687. (No model.)



Claim.—The thrasher and header frames, the block C, fixed to the side of the thrashing-machine, and a second plate or block pivoted thereto and having the vertical guides, in combination with the slide

moving in said guides secured at different points by a bolt, and a pivot-pin by which the header-frame is connected and supported, said pin being hinged to the vertically-moving slide, substantially as herein described.

404,955. HYDROCARBON-BURNER. JAMES H. BULLARD, Springfield, Mass. Filed Feb. 14, 1889. Serial No. 299,842. (No model.)



Claim.—1. A hydrocarbon-burner consisting of a tube adapted at one end to be connected with an air-conduit and open at its other end, a tube of smaller diameter supported within said air-tube adapted by one end to be connected with an oil-conduit and provided near its outer end with an aperture, and a spreader having outwardly-flaring and corrugated walls, substantially as described.

2. A hydrocarbon-burner consisting of a tube adapted at one end to be connected with an air-conduit and open at its other end, a tube supported within said air-tube adapted by one end to be connected with an oil-conduit and provided near to its outer end with an aperture, a sleeve movable on said oil-tube having an aperture, and a spring for acting on said sleeve to normally maintain it in a position for a non-registration of its aperture with that of said oil-tube, and a spreader in advance of said aperture, substantially as described.

3. A hydrocarbon-burner consisting of a tube B, open at its forward end, and a coupling, to one end of which the inner end of said tube is connected, a supplemental coupling on said main coupling comprising the passage *d* and the passage *f*, and the oil-tube H, connected with said passage *d*, provided near its outer end with an aperture through its side and communicating with the interior of said tube B, and having in advance thereof an outwardly-flaring spreader, substantially as described.

4. A hydrocarbon-burner consisting of an air-tube B, open at its forward end, and an elbow-coupling on said tube comprising the passages *b* and *d* and the passage *f*, the oil-tube H, connected with said passage *d*, provided near its outer end with an aperture through its side, in advance of which it is provided with an outwardly-flaring spreader, a gland fitted in said passage *b*, and a spindle having a screw engagement with said gland and provided with a tapered end adapted on the movement of said spindle to vary the open area of the orifice of said passage *d*, substantially as and for the purpose described.

5. A hydrocarbon-burner consisting of a tube adapted at one end to be connected with an air-conduit and open at its other end, an oil-tube supported within said air-tube adapted by one end to be connected with an oil-conduit and provided near its outer end with an aperture *k* through its side, and having a shouldered extremity, a sleeve longitudinally movable on said tube having a slot-and-pin engagement therewith and provided with an aperture to register with the oil-tube aperture and having the conical-shaped spreader, and the spring between the shouldered tube end and the sleeve, substantially as described.

6. In an apparatus for burning hydrocarbon, in combination, a burner comprising an air-tube open at its outer end, an air-compressor and a conduit leading therefrom and connected to said tube, a tube supported within said air-tube having at its forward end an aperture through its side, a sleeve movable on said oil-tube having an aperture and provided with a spring for acting on said sleeve, substantially as described, and a spreader in advance of said aperture, a service oil-tank, and a conduit leading therefrom to and connected with said burner oil-tube, substantially as described.

404,956. FINGER-RING. LEVI L. BURDON, Providence, R. I. Filed Oct. 4, 1888. Serial No. 287,160. (No model.)



Claim.—1. As a new article of manufacture, a ring or other class of articles, as hereinbefore described, having a longitudinally roundabout seamless plated exterior surface of metal and an interior portion of inferior metal, substantially as and for the purpose set forth.

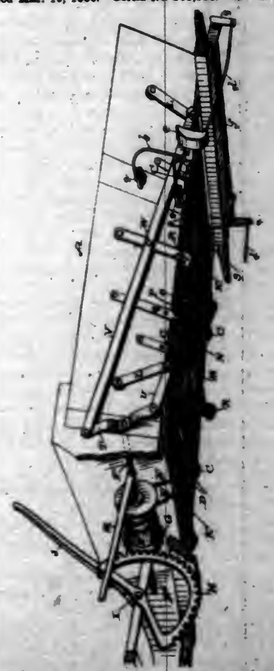
2. The ring or other analogous articles hereinbefore described, consisting of a piece of plated or composite externally-seamless wire bent and united at the abutting ends by solder, substantially as specified.

3. A composite ring having a roundabout seamless exterior surface *a*, of suitable metal, as alloyed gold, and an interior or filling portion, as *b*, of inferior metal or composition of metals united to said exterior portion, and having the ends of the ring united, substantially as shown and hereinbefore described.

4. The ring hereinbefore described, consisting of the exterior plate or shell *a*, of alloyed gold, seamless roundabout, and the interior or filling portion *b*, of gold of less value, united to the shell, thereby producing a filled ring having gold of different qualities, substantially as shown and set forth.

5. The composite tubular ring hereinbefore described, consisting of the longitudinally-seamless exterior plate or shell *a* and the longitudinally-seamless interior shell of inferior metal united to the outer shell, substantially as set forth.

404,957. DUMPING-WAGON. LEOPOLD BOSSE, San Francisco, Cal. Filed Mar. 19, 1889. Serial No. 303,933. (No model.)



Claim.—1. In a dumping-wagon, a bottom composed of sections hinged to the sides and meeting when closed at the center, arms extending from these hinged sections, a drum, and chain coiled around said drum and connecting with the arms of the sections, in combination with the pinion, segment, and operating-lever, whereby the chains may be coiled or uncoiled, substantially as herein described.

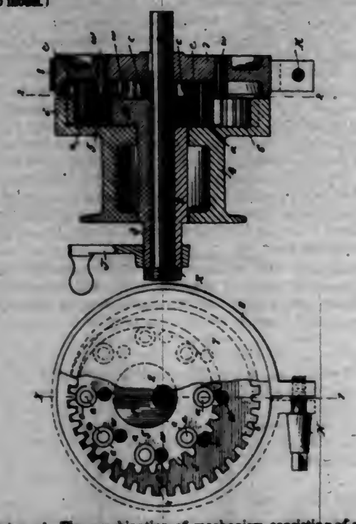
2. In a dumping-wagon, bottom sections hinged to the sides and closing toward the center, the winding-drum and actuating mechanism, and chains connecting said drum with the sections, whereby they may be closed by the rotation of the drum, in combination with locking-bars suspended by links from the sides of the wagon-body, so as to swing beneath the ends of the bottom sections when they are closed, substantially as herein described.

3. In a dumping-wagon, the hinged bottom sections closing toward the center, the winding-drum and operating mechanism whereby they are closed, and the horizontal bars suspended from the sides of the wagon and adapted to swing to and from each other, so as to lock or unlock the bottom sections, in combination with the connecting-rods and levers whereby the locking-bars are moved simultaneously, substantially as herein described.

4. The hinged centrally-meeting bottom sections, with mechanism for opening and closing the same, and the end locking-bars with connecting-levers, as shown, in combination with a central bar pivoted to one of the sections near its swinging edge, and the rod connecting said bar with a stationary point upon the side of the wagon, so that the bar is turned into a longitudinal position when the bottom sections begin to open and is turned into a transverse position beneath the sections when they are closed, substantially as herein described.

5. The hinged bottom sections closing toward the center, with the operating-drum and the end locking-bars and the central swiveled bar, in combination with the levers, and connecting-rods whereby the end bars are moved to lock or unlock the bottom sections, and the hooks R, which are moved simultaneously to engage or disengage with the ends of the central swiveled bar, substantially as herein described.

404,958. DIFFERENTIAL HOISTING MECHANISM. GEORGE P. CLEMSON, Springfield, Mass. Filed Aug. 22, 1888. Serial No. 283,441. (No model.)



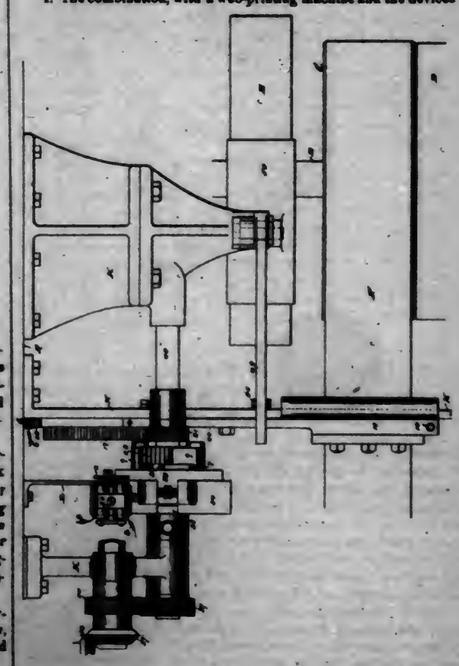
Claim.—1. The combination of mechanism consisting of a spur-gear carrying a series of pins, a pulley carrying a like series of pins for engagement with the pins on said gear, a rotatable eccentric acting on said spur-gear, as described, an internal gear with which said spur-gear engages, adapted to have a rotary motion about said eccentric, and a supporting-shaft, substantially as set forth.

2. The combination of mechanism consisting of a spur-gear carrying a series of pins projecting from the face thereof, a rotatable disk or pulley having also a like series of pins projecting from its face for engagement with the pins on said gear, a rotatable eccentric having said spur-gear thereon, a winding-spool integrally formed with an internal gear with which said spur-gear engages, said internal gear adapted to have a rotary motion about said eccentric, a supporting-shaft, and means, substantially as described, for rotating said eccentric, substantially as set forth.

3. The combination, with a pulley having a rim and the inwardly-extending flange 16, having a series of circularly-arranged pins *w*, projecting inwardly therefrom, of a spur-gear disposed within said flanged pulley, having an outwardly-extended and surrounding ring having a series of circularly-arranged pins thereon, an internal gear of longer diameter than said spur-gear surrounding same, and an eccentric for action on said spur-gear, as described, substantially as and for the purposes specified.

4. The combination, with a pulley 15, having a rim and the inwardly-extending flange 16, provided with a series of circularly-arranged pins *w*, projecting inwardly therefrom, of a spur-gear disposed within said flanged pulley, having an outwardly-extended and surrounding ring provided with a series of circularly-arranged pins thereon, and having the circular recess N, an internal gear of longer diameter than said spur-gear surrounding same, an eccentric for action on said spur-gear, as described, and the stop 17, pivoted on said pulley for engagement with or disengagement from the rim forming the wall of said recess, substantially as set forth.

404,959. STOP MECHANISM FOR WEB-PRINTING MACHINES. LUTHER C. CROWELL, Brooklyn, assignor to R. Hoe & Co., New York, N. Y. Filed June 22, 1887. Serial No. 242,108. (No model.)



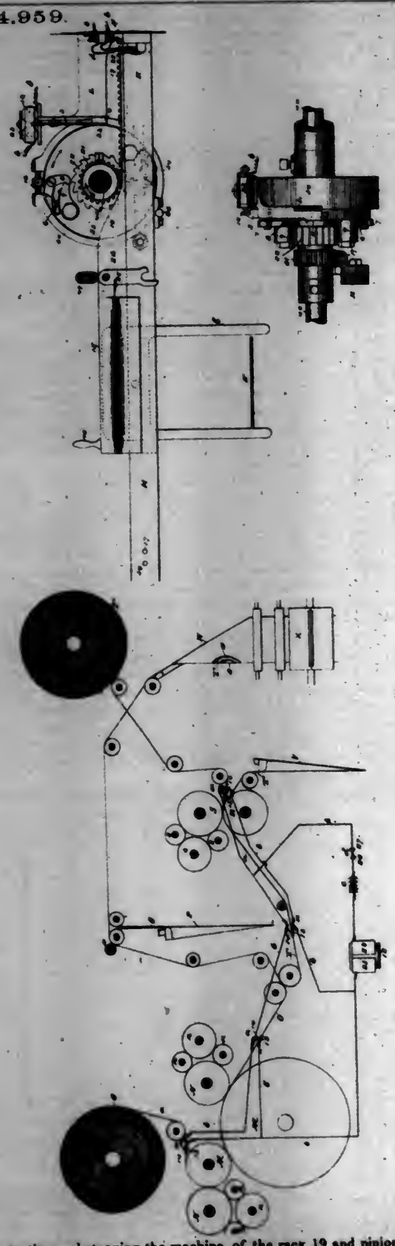
Claim.—1. The combination, with a web-printing machine and the devices for starting and stopping the same, of connections, including a clutch mechanism, for operating the latter from the former, an electro-magnet for controlling the operation of said clutch mechanism, one or more circuit-closers located in the path of the web through the machine and arranged to be controlled by the web, and electrical connections between said circuit closer or closers and said electro-magnet, all substantially as described.

2. The combination, with a web-printing machine, the mechanism for acting on its driving-belt to apply and remove the power, and the brake mechanism, of connections, including a clutch mechanism, for operating the latter mechanism from the former, an electro-magnet for controlling the operation of said clutch mechanism, one or more circuit-closers located in the path of the web through the machine and arranged to be controlled by the web, and electrical connections between said circuit closer or closers and said electro-magnet, all substantially as described.

3. The combination, with a web-printing machine, of a belt-shifter for applying and removing the power, and brake-connections, including a clutch mechanism, for operating the belt-shifter and applying the brake from the printing-machine, an electro-magnet for controlling the operation of said clutch mechanism, one or more circuit-closers located in the path of the web through the machine and arranged to be controlled by the web, and electrical connections between said circuit closer or closers and said electro-magnet, all substantially as described.

4. The combination, with a web-printing machine and the devices

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for starting and stopping the machine, of the rack 19 and pinion 21, for operating the starting and stopping mechanism, connections for operating said pinion from the printing-machine, including a clutch mechanism consisting of a ratchet and a pawl or pawls for making and breaking said connections, an electro-magnet for controlling said pawl or pawls, one or more circuit-closers located in the path of the web through the machine and arranged to be controlled by the web, and electrical connections between said circuit closer or closers and said electro-magnet, all substantially as described

5. The combination, with a web-printing machine and its belt-shifter and brake, of the rack 19 and pinion 21, for operating the belt-shifter and applying the brake, connections for operating said pinion from the printing-machine, including a clutch mechanism consisting of a ratchet and a pawl or pawls for making and breaking said connections, an electro-magnet for controlling said pawl or pawls, one or more circuit-closers located in the path of the web through the machine and arranged to be controlled by the web, and electrical connections between said circuit closer or closers and said electro-magnet, all substantially as described.

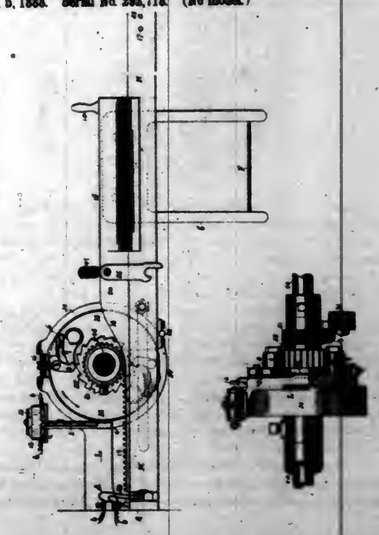
6. The combination, with a web-printing machine and the devices for starting and stopping the machine, of connections for operating said devices from the printing-machine, including a clutch mechanism for controlling said connections, and also including the disk 33 and friction-band 34, forming a yielding joint in said connections, an electro-magnet for controlling said clutch mechanism, one or more circuit-closers located in the path of the web through the machine and arranged to be controlled by the web, and electrical connections between said circuit closer or closers and said electro-magnet, all substantially as described.

7. The combination, with a web-printing machine and the devices for starting and stopping the same, of connections, including a clutch mechanism, for operating the latter from the former, an electro-magnet for controlling the operation of said clutch mechanism, one or more circuit-closers located in the path of the web through the machine and arranged to be controlled by the web, electrical connections between said circuit closer or closers and said electro-magnet, and a circuit-breaker *d*, controlled by the stopping and starting devices and arranged to break the circuit through the magnet when the devices are operated to stop the machine, all substantially as described.

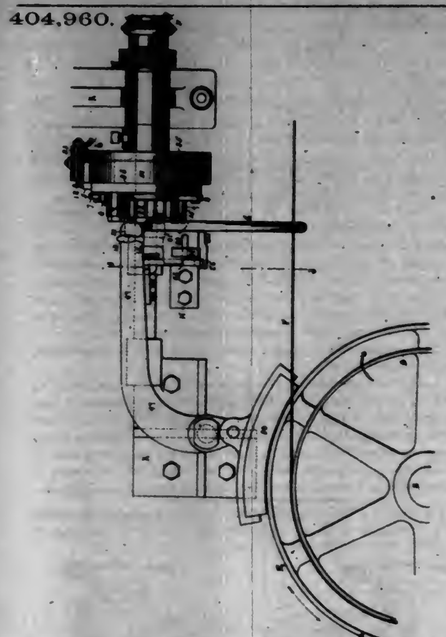
8. The combination, with a web-printing machine and its starting and stopping devices, of the rack 19 and pinion 21, for operating said devices, the disk 33, carrying a pawl or pawls 9 and driven through yielding frictional connections from the printing-machine, the ratchet 22, connected to the pinion 21 and arranged to be engaged by the pawl or pawls 9, the electro-magnet 23, having the lever 5, for tripping said pawl or pawl, one or more circuit-closers located in the path of the web through the machine and arranged to be controlled by the web, and electrical connections between said circuit closer or closers and said electro-magnet, all substantially as described.

9. The combination, with a web-printing machine and its starting and stopping devices, of the rack 19 and pinion 21, for operating said devices, the disk 33, carrying a pawl or pawls 9 and driven through yielding frictional connections from the printing-machine, the ratchet 22, connected to the pinion 21 and arranged to be engaged by the pawl or pawls 9, the electro-magnet 23, having the lever 5 for tripping said pawl or pawls, one or more circuit-closers located in the path of the web through the machine and arranged to be controlled by the web, electrical connections between said circuit-closer or closers and said electro-magnet, and a circuit-breaker *d*, controlled by the stopping and starting devices and arranged to break the circuit through the magnet when the devices are operated to stop the machine, all substantially as described.

404,960. STOP MECHANISM. LUTHER C. CROWELL, Brooklyn, assignor to R. Hoe & Co., New York, N. Y. Original application filed June 22, 1887, Serial No. 242,104. Divided and this application filed Dec. 5, 1888. Serial No. 292,718. (No model.)



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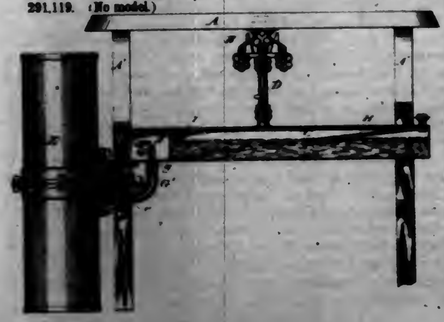
Claim.—1. The combination, with the driving-shaft B and the driven shaft 40, of the disk 33, driven by the shaft 40 through a yielding frictional connection, the pinion 21 and mechanism connected therewith for controlling the stopping and starting of the driving-shaft, and a clutch mechanism for connecting the pinion 21 to the disk 33, substantially as described.

2. The combination, with the driving-shaft B and the driven shaft 40, of the disk 33, driven by the shaft 40 through a yielding frictional connection, the pinion 21 and mechanism connectd therewith for controlling the stopping and starting of the driving-shaft, a pawl-and-ratchet clutch mechanism for connecting said disk and pinion, and a lever 5 for controlling said pawl-and-ratchet clutch mechanism, substantially as described.

3. The combination, with the driving-shaft B and the driven shaft 40, of the disk 33, driven by the shaft 40 through a yielding frictional connection, the pinion 21 and mechanism connected therewith for controlling the stopping and starting of the driving-shaft, a pawl-and-ratchet clutch mechanism for connecting said disk and pinion, a lever 5 for controlling said pawl-and-ratchet clutch mechanism, and an electro-magnet for controlling said lever, substantially as described.

4. The combination, with the driving-shaft B and a belt-shifter for applying power to and removing it from said shaft, and a brake for stopping said shaft, of the driven shaft 40, the disk 33, driven by said shaft 40 through a yielding frictional connection, the pinion 21, and a clutch mechanism for connecting said pinion and disk, and a rack-bar operated by said pinion to control said belt-shifter and brake, substantially as described.

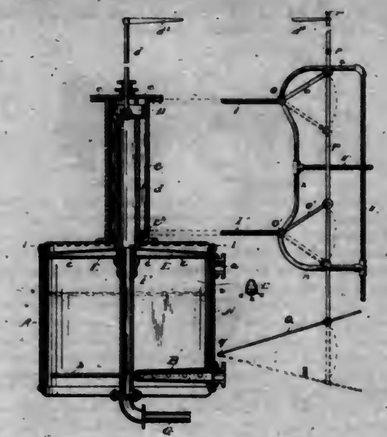
404,961. VAPOR-STOVE. SAMUEL DANIELS, Chicago, Ill., assignor to J. McGregor Adams, same place. Filed Nov. 17, 1888. Serial No. 291,119. (No model.)



Claim.—1. The combination, with a gasoline-tank and an air-pressure device, of an intermediate air-chamber, a pipe leading from the air-pressure device to a central point of the air-chamber, and a diagonal air-pipe leading from the air-chamber to the top of the gasoline-tank, substantially as described.

2. The combination, with a vapor-stove frame, a gasoline-tank and an air-pressure device, said tank and pressure device being separate from each other and separately secured to the frame, of a flexible air-tube connecting the air-pressure device to the tank structure, substantially as described.

404,962. WATER-FILTER. CHESTER R. DAVIS and EDWARD H. RIDDELL, Chicago, Ill. Filed Dec. 17, 1887. Serial No. 258,941. (No model.)



Claim.—1. In a water-filter, the filter-tank, in combination with a series of vertically-movable delivery-pipes arranged within the tank and perforated, as described, and actuating devices whereby said pipes may be moved up and down through the filter-bed within the tank to wash the filter-bed without removing it from the tank, substantially as and for the purposes specified.

2. In a water-filter, the tank, in combination with the radial perforated arms, the hydraulic cylinder, the piston within said cylinder, the inlet-pipe, and the hollow piston-stem to which said arms are connected, substantially as and for the purposes specified.

3. The filter-tank A, in combination with the hydraulic cylinder C, provided with ports c' c^2, the inlet-pipe, the piston D, provided with hollow stem *d*, the perforated pipes E at the lower end of the stem, the pipes I I', and a valve mechanism for directing and controlling the hydraulic pressure and exhaust through said pipes to the cylinder, substantially as and for the purposes specified.

4. In a water-filtering apparatus, the filter-tank provided with a bed of suitable filtering material, in combination with the hydraulic cylinder mounted on the filtering-tank and provided with ports c' c^2, the piston D, with its hollow stem *d* extending into the filter-tank, the radial perforated arms attached to the end of the hollow stem within the tank, an inlet-pipe arranged to deliver water to the hollow stem and radial arms attached thereto, the pressure and exhaust pipes I I', the pipe J, the pressure and exhaust pipes J, L', the four-way cock K, and the lever k^2, connected to said cock, substantially as and for the purposes specified.

5. In a water-filtering apparatus, the filter-tank provided with a bed of suitable filtering material, in combination with the hydraulic cylinder mounted on the filtering-tank and provided with ports c' c^2, the piston D, with its hollow stem *d* extending into the filter-tank, the radial perforated arms attached to the end of the hollow stem within the tank, an inlet-pipe arranged to deliver water to the hollow stem and radial arms attached thereto, the pressure and exhaust pipes I I', the sliding rod provided with stops and connected to the controlling-valves, the rod d', attached to the piston and projecting out through the head of the cylinder, and the arm d^3, attached to the said rod, substantially as and for the purposes specified.

6. In a water-filtering apparatus, the filter-tank provided with a bed of suitable filtering material, in combination with a series of vertically-movable delivery-pipes arranged within the tank and perforated, as described, actuating devices whereby said pipes may be moved up and down through the filter-bed within the tank, an inlet-pipe arranged to deliver water to the said movable pipes, and shifting devices operated by the movement of the movable pipes, whereby

the latter may be moved up and down repeatedly and automatically through the filter-bed to wash the latter without removing it from the tank, substantially as and for the purposes specified.

7. In a water-filter, the perforated collecting-pipes *b*, in combination with the wire b^3, wound coarsely upon the pipes, the wire-netting b^5, wrapped upon the outside of the wire b^3, and the wire b^4, wound upon the outside of the said netting, substantially as and for the purposes specified.

8. The filter-tank, in combination with the hydraulic cylinder, the piston in said cylinder, the hollow piston-stem, the perforated pipes at the lower end of the stem, and an inlet-pipe arranged to deliver water into the hollow stem, substantially as and for the purposes specified.

404,963. AIR-VALVE. GEORGE M. DAVIS, Chicago, Ill. Filed Mar. 8, 1889. Serial No. 302,439. (No model.)

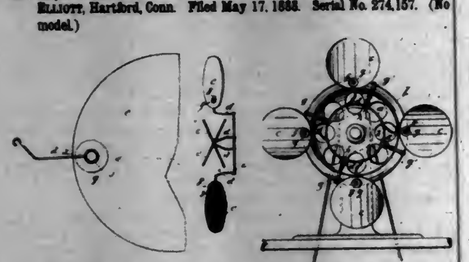


Claim.—1. The combination, with a radiator, of the valve-tube projecting inside of the steam-space and provided in the inner end with an inlet-opening and exteriorly with an escape-opening, and the expansion-stem inserted in said tube and closing said inlet-opening by expansion after the cold air is expelled and uncovering the same when the steam is shut off, substantially as and for the purpose set forth.

2. In air-valve, the combination, with the expansion-tube projecting inside of the radiator and having the outer enlarged mouth-end o threaded interiorly, and the exteriorly-threaded part a^3, of the expansion-stem inserted in said tube and provided with the threaded head a^3 engaging with the correspondingly-threaded mouth part, substantially as and for the purpose set forth.

3. In an air-valve, the combination, with the vented expansion-tube provided exteriorly with the threaded part a^3, and having the expansion end extending inside of the steam-space, of a radiator, and the expansion-tube provided longitudinally with a number of grooves and inserted in said tube, substantially as and for the purpose set forth.

404,964. SEWING-MACHINE FAN ATTACHMENT. WALTER S. ELLIOTT, Hartford, Conn. Filed May 17, 1888. Serial No. 274,157. (No model.)

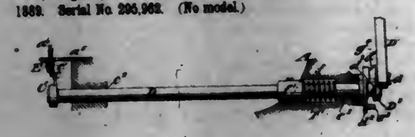


Claim.—1. The combination, in a rotary fan attachment for sewing-machines, of the base-ring *a*, wing-supporting arms *d*, and the fan-wings *c*, extensibly connected to the arms by friction pivot-joints adapted for variable radial projection of the wings, substantially as described.

2. In combination with the fly-wheel *b* of a sewing-machine, the rotary fan attachment having the ring *a*, the laterally-projecting fan-supporting arms *d*, and the spirally-adjustable fans, and the elastic bands and hooks connecting said ring and fly-wheel, substantially as described.

3. The combination, in a rotary fan attachment for sewing-machines, of the base-ring *a*, fan-wing-supporting arms *d*, attached to said ring, the ring or eye at the outer extremity of each arm, and a fan-wing pivoted to each arm through the ring or eye, and a friction-washer each side of the fan-wing, substantially as described.

404,965. SEWING-MACHINE. ALFRED FAULKNER, Jersey City, N. J., assignor to Eli W. Broadbent, New York, N. Y. Filed Jan. 10, 1889. Serial No. 296,962. (No model.)



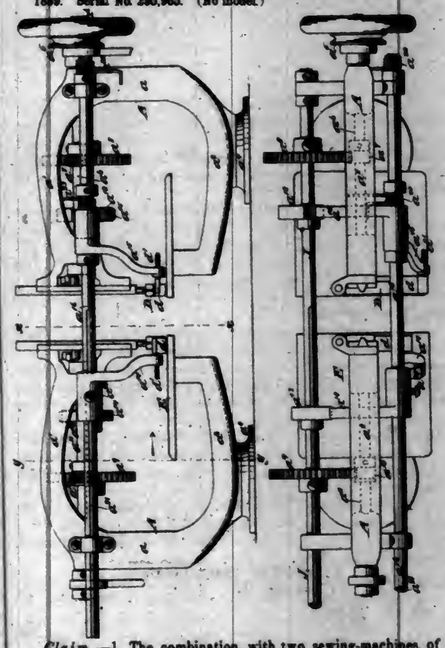


Claim.—1. In a sewing-machine, the combination, with a reciprocating needle, of a rock-shaft, a hooked looper mounted thereon, a cam disk or segment on said rock-shaft, a rigid cam adjacent to said cam disk or segment and against which the latter normally bears, and an eccentric-rod operated from the main shaft to impart rocking motion to said cam disk or segment, substantially as specified.

2. In a sewing-machine, the combination, with a reciprocating needle, of a rock-shaft, a hooked looper mounted thereon, a cam disk or segment on said rock-shaft, a rigid cam adjacent to said cam disk or segment and against which the latter normally bears, an eccentric-rod operated from the main shaft and provided with a longitudinally-extending cavity near its lower end, a coil-spring arranged in said cavity, a pin also in said cavity, said eccentric-rod being provided with a slot, and said crank disk or segment being provided with a pin extending through said slot, against which pin the pin first named bears, substantially as specified.

3. In a sewing-machine, the combination, with a reciprocating needle, of a rock-shaft, a hooked looper mounted thereon, a cam disk or segment on said rock-shaft, a rigid cam adjacent to said cam disk or segment and against which the latter normally bears, an eccentric-rod operated from the main shaft to impart rocking motion to said cam disk or segment, and a stop for limiting the movement of said cam disk or segment in one direction, substantially as specified.

404,966. SEWING-MACHINE. ALFRED FAULKNER, Jersey City, N. J., assignor to Eli W. Broadbent, New York, N. Y. Filed Jan. 10, 1889. Serial No. 296,965. (No model.)

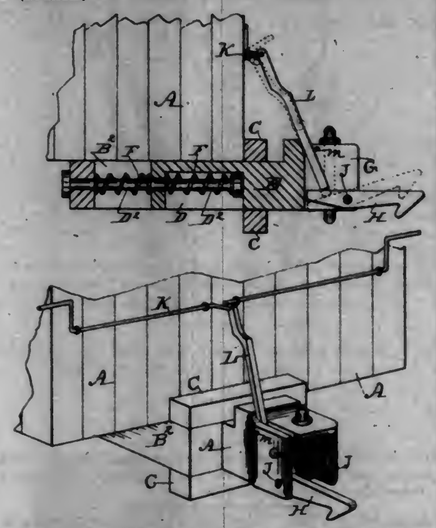


Claim.—1. The combination, with two sewing-machines, of a main shaft, a second shaft deriving motion from said main shaft, a third shaft deriving motion from the second-named shaft, cams on said second-named shaft, a rock-shaft, bell-crank levers on said rock-shaft, having one of their arms bearing upon said cams, and plaiting knives or tongues upon the other arms of said bell-crank levers, substantially as specified.

2. The combination, with two sewing-machines, of a main shaft, a second shaft deriving motion from the main shaft, a third shaft deriving motion from the second-named shaft, cams on said second-named shaft, a rock-shaft, bell-crank levers mounted on the rock-shaft, one of which levers is loose on said shaft and both of which have arms bearing against said cams, said cams being so timed that the levers are operated alternately in the same direction, and plaiting knives or tongues on the other arms of the levers, substantially as specified.

3. The combination, with two sewing-machines, of a main shaft, a second shaft deriving motion from the main shaft, a third shaft deriving motion from the said second shaft, cams on said second-named shaft, a rock-shaft, bell-crank levers mounted on said rock-shaft having arms bearing upon said cams, and plaiting knives or tongues on the other arms of said levers, said second-named shaft and the rock-shaft being arranged upon opposite sides of the machine, substantially as specified.

404,967. CAR-COUPLING. WILLIAM GREENWAY and JAMES STERLAND, Hastings, Nebr. Filed Oct. 22, 1888. Serial No. 288,991. (No model.)



Claim.—A draw-bar having a link-cavity adapted to receive a coupling-link of common form, a coupling-hook pivoted in a slot at the side of the link-cavity, and a pivoted bolt, or its equivalent, extended horizontally across the link-cavity, a rock-shaft in bearings fixed to the car, and a bar suspended from the rock-shaft to balance the hook by force of gravity and to elevate the hook by operating the rock-shaft, arranged and combined with a car to operate in the manner set forth, for the purposes stated.

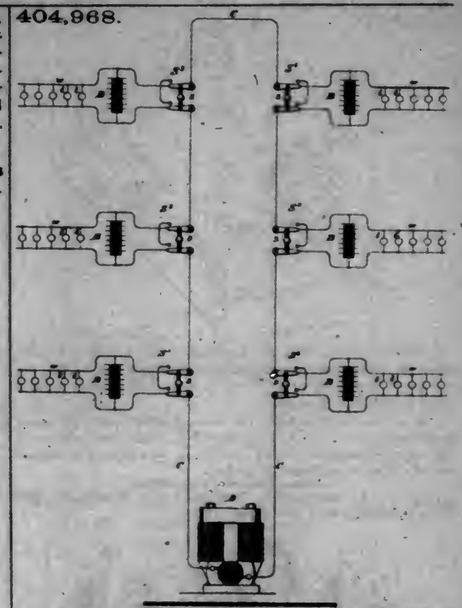
404,968. METHOD OF DISTRIBUTING ELECTRICITY BY SECONDARY BATTERIES. WILLIAM W. GIBBONS, Haverford College, assignor to the Electro Dynamic Company, Philadelphia, Pa. Filed Feb. 1, 1889. Serial No. 298,337. (No model.)

Claim.—1. The improved method of distributing electricity herein described, which consists in generating electricity at or near a suitable source of power, conveying it to the point of consumption through the medium of a current of comparatively-low intensity, there storing it in the form of chemical energy, as in a secondary battery, and then simultaneously directing the current from said generator and storage apparatus into a working-circuit containing translating devices consuming current at a rate exceeding the capacity of the storage apparatus alone, substantially as described.

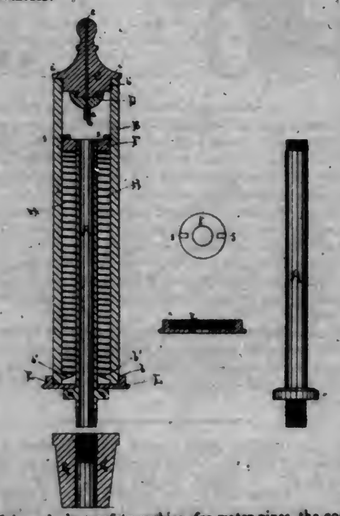
2. The improvement in the method of distributing electricity herein described, which consists in generating electricity at or near a suitable source of power, conveying it to two or more widely-separated points of consumption through the medium of a current of comparatively-low intensity, there storing it in the form of chemical energy, as in secondary batteries, and then simultaneously directing the current from said generator and storage apparatus into working-circuits containing translating devices, consuming current at a rate exceeding the capacity of the storage apparatus alone, substantially as described.

3. The method of distributing electricity herein described, which consists in generating electricity at or near a central point or station, conveying it to the point of consumption through the medium of a current of comparatively-low intensity, there storing it in the form of chemical energy, as in a secondary battery, and then simultaneously directing the current from said generator and storage apparatus into a working-circuit containing translating devices consuming current at a rate exceeding the capacity of either generator or storage apparatus when alone connected thereto, substantially as described.

404,968.



404,969. SAFETY-CUSHION FOR WATER-PIPES. ALFRED HATTERSLEY, Fort Wayne, Ind. Filed Feb. 9, 1887. Serial No. 226,999. (No model.)

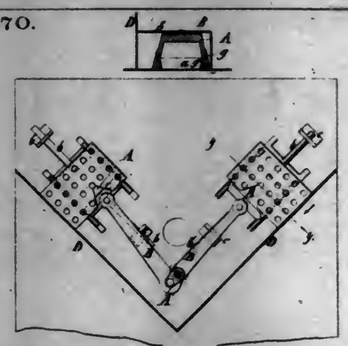


Claim.—1. In a safety-cushion for water-pipes, the combination of a movable chamber B, having caps C and E, with a fixed inlet-tube A passing through cap E, and having a spring-rest and guide-plate F, constructed to permit the water to pass it freely, secured to its inner end, and a spring arranged between said guide-plate and the cap E, substantially as described.

2. In a safety-cushion for water-pipes, the combination, with a fixed and movable portion, one of them constituting a chamber, of a spring interposed between them, one of them constituting a water-receiving chamber, a cap C on said chamber provided with a vent-hole c, and an inwardly-opening valve covering said vent-hole, substantially as described.

404,970. SLIDE-VALVE FOR GAS-METERS. JOHN HEARNE, New York, N. Y., assignor to Joseph Flannery and Walter P. Elliott, both of same place. Filed Apr. 8, 1889. Serial No. 306,305. (No model.)

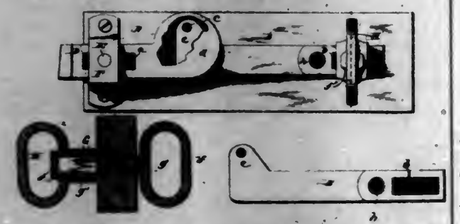
404,970.



Claim.—1. In a meter, the combination, with a slide-valve, of a guard for preventing the permanent displacement of the valve, the said guard being near to but normally out of contact with the said valve, substantially as specified.

2. In a meter, the combination, with a slide-valve and a soft-metal guide therefor, of a guard to prevent the permanent displacement of the valve, the said guard being near to and normally out of contact with the valve, substantially as set forth.

404,971. GATE-LATCH. MORTIMER F. HILL, Belleville, Ill. Filed June 4, 1888. Serial No. 275,966. (Model.)



Claim.—1. The latch composed of two sections, one section having one end enlarged and weighted and provided with an open recess in its under side, and the other section having its meeting end provided with a vertical extension on its upper side entering the recess in the under side of the first section and pivoted at its extremity in the upper end of said recess, as set forth.

2. The combination of the latch composed of two parts having slotted outer ends, one of said parts having an expanded weighted recessed inner end, and the other part having its inner end provided with an extension pivoted within the recessed end of the first-mentioned part, the operating-shaft passing through the slot in the end of one part, and the pin passing through the slot in the end of the other part, as set forth.

3. The combination, with the latch composed of two parts, which are pivotally connected together and pivotally supported at one end and having a slot at its other end, of the keeper and the pin passing through the keeper and the said slot, substantially as and for the purpose described.

404,972. BALING-PRESS. JOHN H. HOWARD, JAMES H. HOWARD, and EDWARD T. BOURFIELD, Bedford, England. Filed July 13, 1888. Serial No. 280,367. (No model.) Patented in France July 2, 1888, No. 191,561; in Belgium July 6, 1888, No. 82,463; in New South Wales Aug. 20, 1888, No. 879; in Italy Sept. 30, 1888, XXII, 23,799, XLVII, 134, and in Canada Oct. 10, 1888, No. 29,905.

Claim.—1. In a machine for baling hay, straw, and other materials, and having endless feeding-platens, projecting slats or ribs *y* thereon, made with their rear edges thinner than their forward gripping-edges, substantially as and for the purpose set forth.

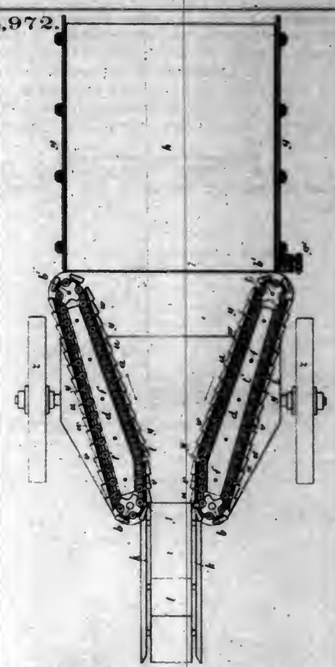
2. In combination with the two endless converging platens having ribs thicker at their forward than at their rear edges, a box or receptacle provided with an endless feed to convey the material to said platens, substantially as shown and described.

3. In combination with the endless conveying-platens having the described ribs, the receiving-table provided with the reduced portion *l*, substantially as and for the purpose set forth.

4. The receiving-platform *i*, provided with the grooves *k* near its opposite edges, and with clamps *j*, adapted thereto and serving to span the material at its top and at both of its sides.

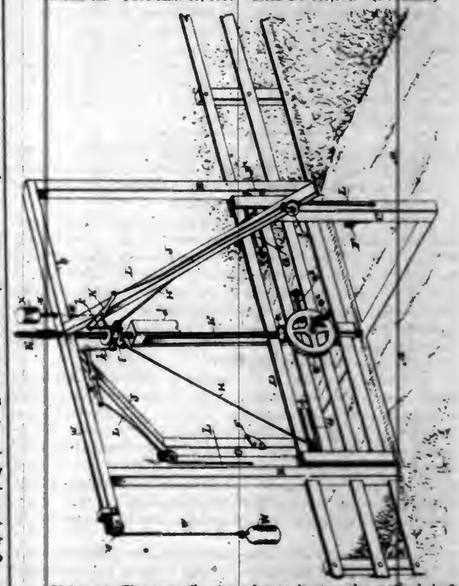
5. In combination, the receptacle *g*, having an endless conveyer

404,972.



h therein, the converging endless platens having the gripping-ribs *y*, and the table *i*, provided with the depression *l*, and side grooves *k*, substantially as shown and described.

404,973. GATE. FRED W. HYDE and ALVIN Z. DUTTERER, Daisville, Cal. Filed Mar. 13, 1889. Serial No. 303,168. (No model.)



Claim.—1. The centrally-pivoted gate having the vertical shaft E and the quartering gate-posts B and C in the roadway, in combination with the weight, the suspending cord or cable winding upon the central shaft of the gate, whereby the gate is turned, catches upon the gate-posts, pivoted latches on the gate, a sliding collar on the shaft E of the gate, connecting-rods between said collar and latches, and pivoted trip-levers having operating-cords, said levers being connected with the sliding collar, whereby the latches are relieved, substantially as described.

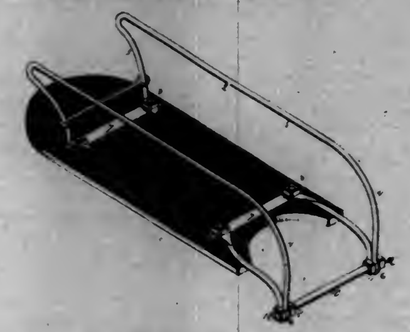
2. The centrally-pivoted gate and the revoluble shaft E, connected with said gate, in combination with the operating-weight and suspending-cord connecting it with the shaft, whereby the gate is turned, the quartering gate-posts and catches thereon, the pivoted latches carried by the gate, the trip-levers with their operating-cords, the sliding collar and connections, whereby the latches are relieved from the catches, and the means for winding up the weight, consisting of the pinion on the bottom of the shaft E and a spur-gear engaging said pinion, substantially as described.

404,974. GATE-LATCH. GEORGE G. LOAR, Atchison, Kans. Filed Aug. 3, 1888. Serial No. 281,907. (No model.)



Claim.—In a gate-latch, the combination, substantially as described, of the casing having cavity B and pin-hole D, and provided with a vertically-elongated slot A', extending laterally outward from said cavity B and formed in a common vertical plane with the pin-hole D, the pin operating in hole D, and the pin E', connected at one end with the pin E and extended laterally outward through the slot A', all being substantially as and for the purpose specified.

404,975. HAND-SLED. GUSTAV LUNDGREN, Rockford, Ill. Filed Oct. 10, 1888. Serial No. 287,718. (No model.)



Claim.—1. In combination, a sled-bottom, transverse bottom supports on the under side of the sled-bottom, two runners connected to the sled-bottom by bolts or rivets passing through the runners and bottom supports, each runner composed of a single piece of metal forming the runner and its knee-supports, and a transverse brace connecting the rear knees of the two runners, substantially as set forth.

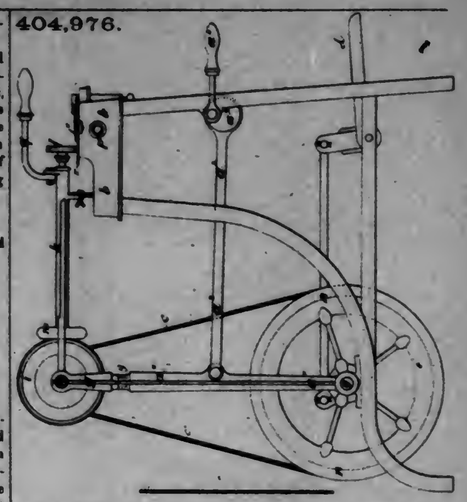
2. In combination, a sled-bottom, runners secured to said bottom, the forward upward ends of said runners being bent to form eyes, a brace having screw-threaded ends inserted through said eyes, and nuts for engaging said screw-threaded ends, substantially as set forth.

3. In combination, a sled-bottom, transverse supports secured to the bottom thereof, two runners, each of which is composed of a single piece of metal forming the runner proper and its knee-supports, the forward knee-support constructed to form an eye and terminating in an inwardly-curved arm, the end of said arm and the end of said knee being secured to the transverse supports, braces for connecting the rear knees and the forward knees, the brace connecting the forward knees passing through the said eyes of the forward knees, and nuts for engaging the end of said brace, substantially as set forth.

404,976. APPARATUS FOR SHARPENING THE CUTTERS AND FINGERS OF REAPING AND MOWING MACHINES. ROBERT MORGSON, Leigh, County of Lancaster, England. Filed May 4, 1887. Serial No. 237,085. (No model.) Patented in England July 1, 1886, No. 8,607; in France July 31, 1886, No. 177,711, and in Germany Aug. 15, 1886, No. 39,436.

Claim.—The combination of the fixed frame with a rocking frame, a fork swiveled on the latter, and a frame pivoted to the swiveled fork and carrying a spindle and grinding-tool, all substantially as described.

404,976.

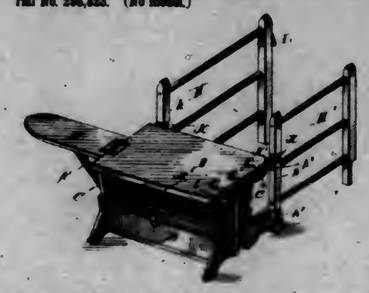


404,977. SASH-HOLDER. ARTHUR W. NELSON, Chicago, Ill. Filed Nov. 2, 1888. Serial No. 289,833. (No model.)



Claim.—In a window, the combination, with the inside bead provided with the recess *c* and the shoulder *c'*, of a spring arranged longitudinally and vertically in said recess, the interposed clamping-bar provided with a shoulder corresponding to and interlocking with the shoulder on the bead, substantially as and for the purpose set forth.

404,978. COMBINED SETTEE, IRONING-BOARD, AND CLOTHES-RACK. WILSON NORRIS, Mount Sterling, Ohio. Filed Feb. 6, 1889. Serial No. 298,823. (No model.)



Claim.—1. The combination, with a settee having side arms C C and back D, and studs *k'* on said back, of the racks H H', arranged in rear of said settee, the sleeves K, journaled upon said racks, and the slotted arms K', pivoted to said sleeves, their slots engaging said studs, substantially as described.

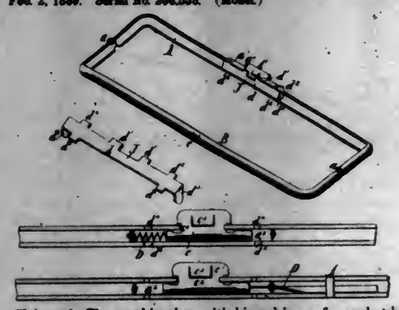
2. The settee having a base I and side arms or supports C, the hinges F on said supports, the ironing-board D, provided with slotted plates E, sliding on said hinges, and studs *k'* on said board D, in combination with the racks H H', journaled at their lower ends in said base in rear of the settee, the sleeves K', journaled upon said racks, and the slotted arms K', pivoted to said sleeves, their slots engaging said studs, substantially as described.

3. The settee having a base I and side arms or supports C, the hinges F on said supports, the ironing-board D, provided with slotted plates E, sliding on said hinges, as specified, the rearwardly-opening clips *k'* at the lower ends of the sides of said board, and the studs *k* in said sides remote from said clip, in combination with the racks H H', journaled at their lower ends in said base in rear of the settee, the sleeves K, journaled upon said racks, and the arms K', pivoted at one end to said sleeves and having longitudinal slots *k* engaging said studs

k', the bodies of said arms K' engaging said clips l^3 when the ironing-board is raised, substantially as described.

4. The settee provided with supports C, the ironing-board D, hinged thereto and adapted to form the back of said settee, and the press-board M, pivoted to the end of said ironing-board and adapted to be folded behind it, said press-board having a chamfered socket O' in its lower face, in combination with the leg N, hinged at its upper end to said press-board, and the catch O, pivoted transversely through the body of said leg and having a hooked end adapted to engage said socket, as and for the purpose set forth.

404,979. **FRAME FOR POCKET-BOOKS, &c.** ERNST OLDENBURGH, New York, N. Y., assignor to William Schimper & Co., same place. Filed Feb. 2, 1889. Serial No. 298,538. (Model.)



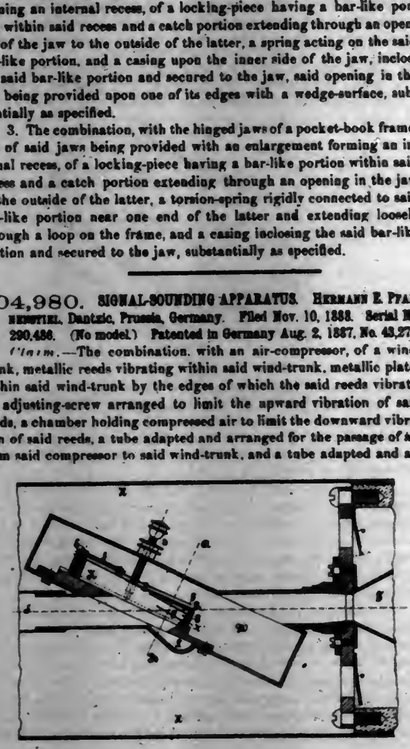
Claim.—1. The combination, with hinged jaws of a pocket-book frame, one of said jaws being provided upon its side with an enlargement forming an internal recess, of a locking-piece having a bar-like portion within said recess and a catch portion extending through an opening in the jaw to the outside of the latter, a spring acting on the said bar-like portion, and a casing upon the inner side of the jaw, inclosing the said bar-like portion and secured to the jaw, substantially as specified.

2. The combination, with the hinged jaws of a pocket-book frame, one of said jaws being provided upon its side with an enlargement forming an internal recess, of a locking-piece having a bar-like portion within said recess and a catch portion extending through an opening of the jaw to the outside of the latter, a spring acting on the said bar-like portion, and a casing upon the inner side of the jaw, inclosing said bar-like portion and secured to the jaw, said opening in the jaw being provided upon one of its edges with a wedge-surface, substantially as specified.

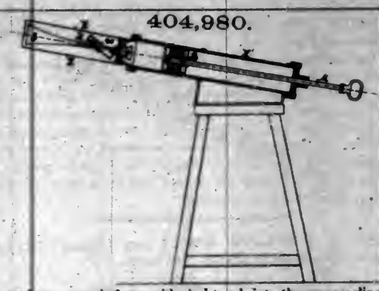
3. The combination, with the hinged jaws of a pocket-book frame, one of said jaws being provided with an enlargement forming an internal recess, of a locking-piece having a bar-like portion within said recess and a catch portion extending through an opening in the jaw to the outside of the latter, a torsion-spring rigidly connected to said bar-like portion near one end of the latter and extending loosely through a loop on the frame, and a casing inclosing the said bar-like portion and secured to the jaw, substantially as specified.

404,980. **SIGNAL-SOUNDING APPARATUS.** HERMANN E. PYANOWSKI, Dantzic, Prussia, Germany. Filed Nov. 10, 1888. Serial No. 290,436. (No model.) Patented in Germany Aug. 2, 1887, No. 43,279.

Claim.—The combination, with an air-compressor, of a wind-trunk, metallic reeds vibrating within said wind-trunk, metallic plates within said wind-trunk by the edges of which the said reeds vibrate, an adjusting-screw arranged to limit the upward vibration of said reeds, a chamber holding compressed air to limit the downward vibration of said reeds, a tube adapted and arranged for the passage of air from said compressor to said wind-trunk, and a tube adapted and arranged to carry air from said wind-trunk into the surrounding atmosphere, all substantially as and for the purpose set forth.



404,980.



404,981. **ALARM-SIGNAL FOR CABLE AND ELECTRIC RAILWAY CARS.** LOUIS PFINEST, Boston, and SUMNER A. PERRY, Springfield, Mass. Filed Jan. 31, 1889. Serial No. 298,286. (No model.)



Claim.—1. In an alarm-bell and operating mechanism therefor, in combination, the gong and a horizontal carrier-plate therefor, from one end portion of which said gong is supported in a pendent position, said carrier-plate being at its other end portion provided with a vertical socket, a hammer-lever intermediately thereof pivoted on the under side of said carrier-plate and adapted to normally rest with its hammer end depressed and away from the gong, and having its opposite end resting under and against said socket, and a push-rod vertically movable in said socket and supported in its uppermost position by the end of the hammer-lever, substantially as described.

2. In an alarm-bell and operating mechanism therefor, in combination, the gong and a horizontal carrier-plate *g* therefor, from one end portion of which said gong is supported in a pendent position, said carrier-plate being at its other end portion provided with a vertical socketed boss, and intermediately with the pendent ear-pieces *i*, a hammer-lever intermediately thereof pivotally hung in said ear-pieces and normally resting with its hammer end depressed and away from the gong, and having its opposite end resting under and against the end of said socketed boss, and a headed push-rod movable in said socket and normally resting on the end of said lever and adapted to have the extent of its downward movement limited, whereby on the downward depression of said rod to its full extent the hammer-lever may still have a slight further movement before its end contacts with the bell, substantially as and for the purpose described.

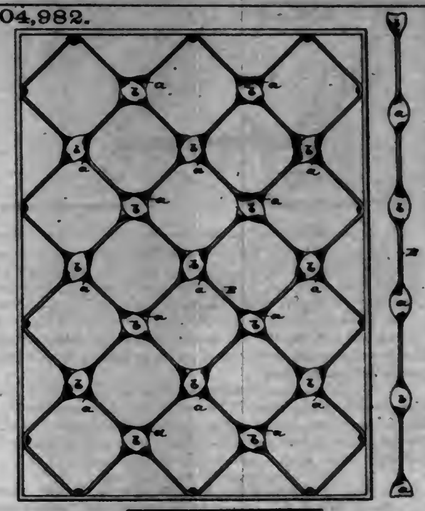
3. The combination, with the car-platform having the hole *p*, of the carrier-plate *g*, provided with the socketed and upwardly-extended boss *k*, passing therethrough and provided with the ear-pieces *i*, the gong-bell and the bolt *q*, passing through same, the carrier-plate, and the platform-floor, the hammer-lever intermediately pivotally hung in said ear-pieces and normally resting with its hammer depressed, and a removable headed push-rod playing in said socket and normally resting on the end of said lever opposite its hammer, the extent of the downward movement of said push-rod being slightly less than the extent of the downward swing of the adjacent end of the hammer-lever, substantially as and for the purpose described.

404,982. **METALLIC GRILL OR GUARD.** NIELS POULSON, Brooklyn, N. Y. Filed Jan. 29, 1889. Serial No. 297,941. (No model.)

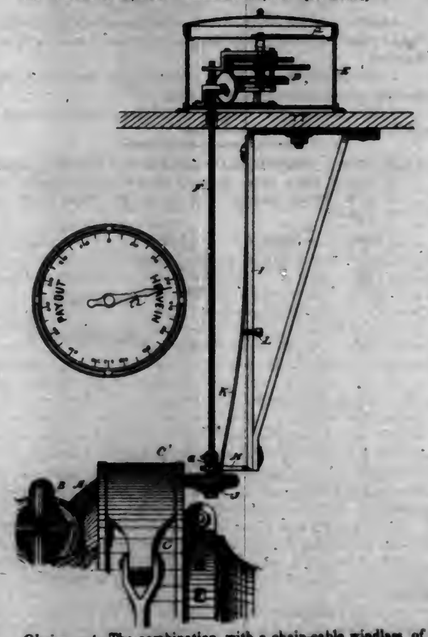
Claim.—1. A grill composed of crossed flat metallic bars severally formed at predetermined intervals, with alternately right-hand and left-hand spirals, and intersecting each other across said spirals, substantially as hereinbefore set forth.

2. A grill composed of interwoven flat metallic bars severally formed at predetermined intervals, with alternately right-hand and left-hand spirals, and intersecting each other across said spirals, substantially as hereinbefore set forth.

404,982.



404,983. **SHIP'S-WINDLASS INDICATOR.** DAVID H. RIVERS, Stoneham, Mass., assignor of one-half to Nicholas Smith, San Francisco, Cal. Filed Dec. 12, 1888. Serial No. 293,371. (No model.)



Claim.—1. The combination, with a chain-cable windlass, of a dial and index and train of gearing, a friction-wheel travelling in contact with the rotating drum of the windlass, and a shaft upon which said wheel is fixed, connecting it with a train of gearing and the index, substantially as herein described.

2. A rotary chain-cable windlass, a dial, an index, and a train of gearing fixed with relation thereto, in combination with a friction-wheel held in contact with the rotating portion of the windlass, the shaft of said wheel being connected with the train of gearing, so that the index-arm is moved over the dial to correspond with the rotation of the windlass, substantially as herein described.

3. The dial, the indicator, the train of gearing, the driving-shaft F, extending downwardly therefrom and having the frictional roller J fixed to its lower end, the slotted supporting-standard I, and the journal-box G, through which the shaft passes, fitted into said slot so as to have a motion to and from the windlass-drum C, in combination with the spring pressing upon the box, whereby the friction-roller is held in contact with the drum and adjusted to irregularities in the rotation of the same, substantially as herein described.

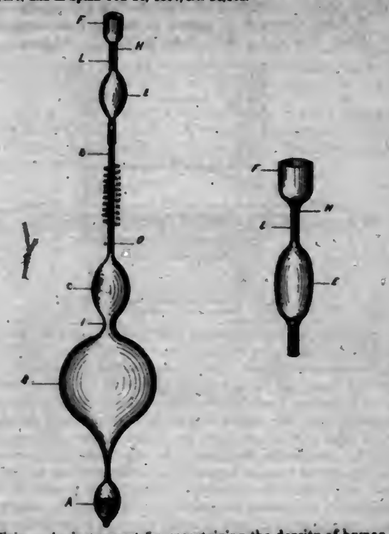
4. The rotating drum or windlass, a train of gearing, and an indicator connected therewith, a frictional roller, a shaft connecting the train of gearing with the frictional roller, a slotted guide in which the journal-box of the lower end of said shaft is fitted to move to and from the windlass-drum, a drum, a spring acting upon said box so as to hold the roller in contact with the drum, and a screw L, whereby the tension of the spring is regulated, substantially as herein described.

404,984. **WASH-TUB.** ALBERT G. ROBINSON, Brooklyn, N. Y. Filed Feb. 21, 1888. Serial No. 300,641. (No model.)



Claim.—The combination, with a wash-tub having an inclined or angularly-extending front face, of a detachable frame arranged upon the top of said tub and provided upon its front edge with a downwardly and angularly extending portion embracing the upper portion of the front face of the tub and upon its rear side with downwardly-extending projections for engaging the tub, substantially as specified.

404,985. **LACTOMETER.** AUGUSTE L. ROUSSE, Fontenay-le-Comte, France. Filed Nov. 1, 1887. Serial No. 254,090. (No model.) Patented in France Apr. 8, 1887, No. 182,916; in Luxemburg Oct. 11, 1887, No. 804; in Belgium Oct. 12, 1887, No. 79,177; in Germany Oct. 13, 1887, No. 42,964; in Italy Oct. 13, 1887, XXI, 22,485; in England Oct. 20, 1887, No. 14,368; in Austria-Hungary Oct. 20, 1887, No. 41,894 and No. 6,436, and in Spain Oct. 20, 1887, No. 11,872.



Claim.—An instrument for ascertaining the density of human or other milk, consisting of a graduated tube D, the lower end of which is extended to form three successive globular parts A B C, and thin necks between them, respectively, and the upper end being formed or provided with a cup-shaped tube F, which is contracted in or about the middle to form a small neck L, which cup-shaped tube F serves to hold the milk to be tested, substantially as described.

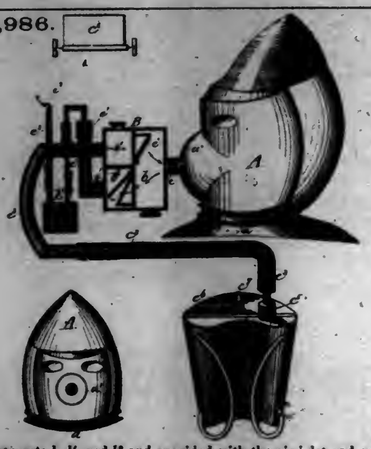
404,986. **INHALER.** JOSEF RUDOLFY, Szegedin, Austria-Hungary. Filed Mar. 23, 1887. Serial No. 232,815. (No model.) Patented in France Oct. 30, 1886, No. 179,356, and in Belgium Dec. 6, 1886.

Claim.—1. In an inhaler, the air-inlet pipe F, inserted in a hose G, in combination with the air-reservoir C, formed with a water-jacket c^4 and with the air-inlet D, formed with an air-whistle h^2, and water-vessel h^3, all substantially as and for the purpose specified.

2. In an inhaler, the reservoir C, formed at its top with a hot-water vessel c^3, communicating with the flexible air-inlet tube c^2, substantially as shown, and for the purpose specified.

3. The combination of the valve-box B, formed with the valve-

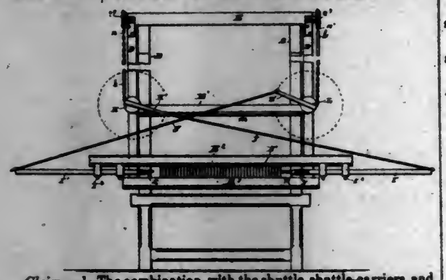
404,986.



compartments *b*, *b'*, and *b²* and provided with the air inlet and outlet valves *c'* and *c²* and trap E, with the mask A and air-reservoir C, by means of the pipes *c* and *c'*, respectively, for the purposes specified, all substantially as set forth.

4. In an inhaler, the combination, with the air-inlet pipe F, of the wires *i*, inserted therein and electrically connected to an alarm-bell and press-button, respectively, all substantially as and for the purpose specified.

404,987. POSITIVE SHUTTLE-MOTION FOR LOOMS. CHARLES B. RUMSEY, Homer, N. Y., assignor to the Wire Fabric Company, same place. Filed Aug. 5, 1887. Serial No. 246,208. (No model.)



Claim.—1. The combination, with the shuttle, shuttle-carriers, and devices for transferring the shuttle from one carrier to the other when the carriers are brought together, of oscillating wheels having crank-pins connected with the carriers, and means for oscillating said wheels in corresponding arcs, one extremity of each of which is nearer a line drawn through their centers than the other, substantially as described.

2. The combination, with the shuttle, shuttle-carriers, and devices for transferring the shuttle from one carrier to the other when the carriers are brought together, of oscillating wheels having crank-pins, each of which is connected to the carrier on the side of the reed opposite it, and means for oscillating said wheels in corresponding arcs, one extremity of each of which is nearer a line drawn through their centers than the other, substantially as described.

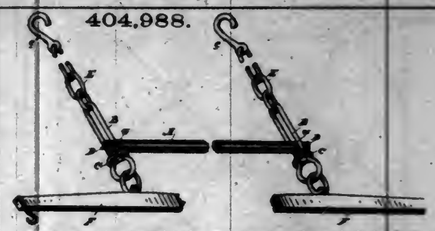
3. The combination, with the shuttle, shuttle-carriers, and devices for causing the transfer of the shuttle from one carrier to the other when the carriers are brought together, of oscillating wheels connected with the carriers, and adapted to oscillate in opposite directions alternately in corresponding arcs, one extremity of each of which is nearer a line drawn through the centers than the other, a chain engaging said wheels, and means, substantially as described, for pulling said chain in opposite directions alternately, as set forth.

404,988. STRETCHER-BAR. REICH SCHMIDT, Marysville, Cal. Filed Mar. 27, 1889. Serial No. 305,018. (No model.)

Claim.—1. In combination with the stretcher-bar, the main links B, fitted upon the ends of the bar, and a fixed stop traversing each link forward of the bar to prevent said bar from binding in the forward portion of the links, substantially as described.

2. In combination with the stretcher-bar, the main links B, fitted upon the ends of the bar, and the stop-links C, fitted on the links forward of the bar to prevent said bar from binding in the forward portion of the links, substantially as described.

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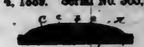


3. In combination with the stretcher-bar, the main links B, fitted upon the ends of the bar and having enlarged forward ends, and the stop-links C, fitted on the links B between their enlarged forward ends and the front of the bar, whereby the latter is prevented from binding in the forward portion of the main links, substantially as described.

4. In combination with the stretcher-bar, the links B, fitted upon its ends and carrying the rear connections and the singletrees, and the set-screws seated on the ends of the bar to hold the links in place, substantially as described.

5. In combination with the stretcher-bar, the main links B, fitted upon its ends, the stop-links C, secured on the main links forward of the bar to prevent said bar from binding in the forward portion of the main links, and the set-screws seated in the ends of the bar for holding the links in place, substantially as described.

404,989. PROP-BLOCK WASHER FOR CARRIAGES. AMOS SEARLS, Newark, N. J., assignor to the Searls-Randall Company, same place. Filed Apr. 4, 1889. Serial No. 305,954. (No model.)

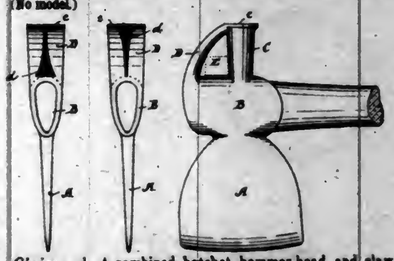


Claim.—1. A prop-block washer composed of a plate C with a flange *c* projecting through a covering A, substantially as set forth and described.

2. The plate C, provided with a flange D and covering A, substantially as and for the purpose set forth.

3. The combination of the plate C with flange *c* and coverings A and B, as and for the purpose set forth.

404,990. COMBINED CLAW-HAMMER AND HATCHET. GEORGE W. SIMONDS, Boston, Mass.; Melissa E. Simonds administratrix of said George W. Simonds, deceased. Filed Nov. 19, 1888. Serial No. 291,275. (No model.)



Claim.—1. A combined hatchet, hammer-head, and claw, the claw extending from the pole to the face of the hammer-head, substantially as shown and described.

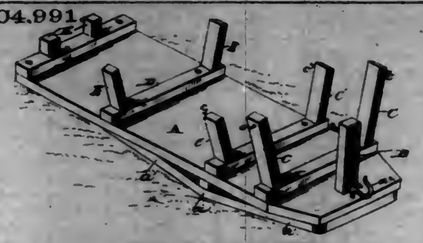
2. As a new article of manufacture, a hatchet A, projecting from one side of the pole B, a hammer-head C, projecting from the opposite side of the pole B, and a claw D, extending from the outer end of the pole to the face of the hammer, substantially as shown and described.

3. A detachable tool, in combination with the hammer-head C, pole B, and claw D, the lower part of said tool being formed to fit the space *d* in the center of the claw D and the space E formed by the upper side of the pole B, side of the hammer-head C, and inner side of the claw D, said tool being secured in place by a screw H, substantially as shown and described.

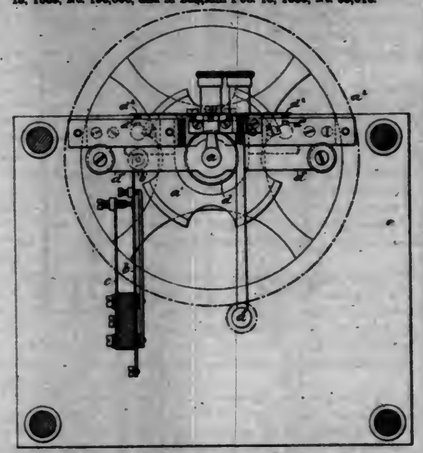
404,991. COTTON-CARRIER. ROBERT T. SMITH, Kaufman, Tex. Filed Jan. 22, 1889. Serial No. 297,164. (No model.)

Claim.—In a cotton-carrier, the bottom A, having the ridged portion *a* and the oppositely-inclined portions *a' a'*, said bottom being provided with a hook in front, the upright post in front for holding the lines, the posts C upon the sides near the front, to which the mouth of the bag is secured to be held open, and the upright posts on the sides in the rear of the posts C, for holding the bags when filled, substantially as described and set forth.

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404,992. SPEED-INDICATOR. CHARLES SPRATT, New Cross Gate, County of Kent, England. Filed Feb. 26, 1888. Serial No. 301,011. (No model.) Patented in England Feb. 4, 1888, No. 1,711; in France Feb. 13, 1888, No. 186,060, and in Belgium Feb. 15, 1888, No. 85,016.

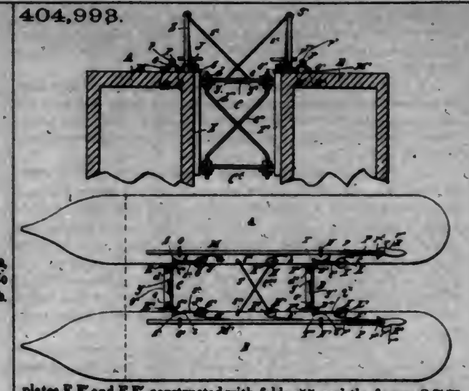


Claim.—1. A speed-indicator, substantially as described, consisting in a transmitter and receiver connected by electric circuits, and comprising clock-work which for a certain time allows a counting-circuit to be completed, a contact-maker actuated by the engine or machine and operating to close and open the counting-circuit during the interval allowed by the clock and more or less frequently in accordance with the speed of the engine or machine, an electro-magnet or electrical mechanism operated by the closing and opening of the counting-circuit, counting-wheels driven by such magnet or mechanism, and apparatus replacing the counting-wheels to the zero position after use and ready to again operate.

2. A speed-indicator, substantially as described, consisting in a transmitter and receiver connected by electric circuits, and comprising mechanism which for a certain time allows a counting-circuit to be completed, a contact-maker actuated by the engine or machine and operating to close and open the counting-circuit, an electro-magnet or equivalent mechanism operated by the closing and opening of the counting-circuit, counting-wheels operated by such mechanism, and a circuit-closer in the receiver in circuit with an electro-magnet or equivalent mechanism in the transmitter operating to start the mechanism when its indication is required.

3. The mechanism, substantially as described, for replacing the counting-wheels, consisting of parts which move the wheels into and out of gear with each other and with the driver, and cams on the axes of the wheels, and bars operating in conjunction with such cams to turn the wheels to the zero positions and to release them when they have again passed into the zero position.

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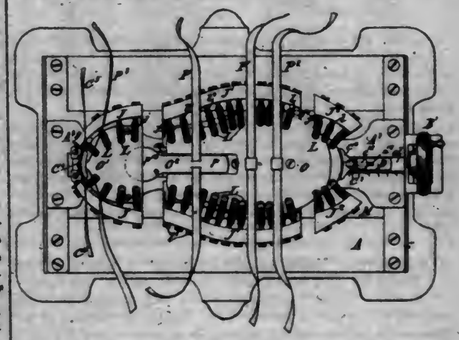
404,998. APPARATUS FOR COUPLING VESSELS. GUSTAV H. STEINBACH, Lichtenstein, Saxony, Germany. Filed Jan. 7, 1888. Serial No. 260,080. (No model.)

Claim.—1. The combination, with the hulls of ships, of sliding bars running in guides upon the decks thereof, eccentric-levers pivoted on said decks, helical springs attaching said bars and levers, spring-pawls upon said bars, winding-posts pivoted in said hulls, and ratchet-wheels upon said posts and engaged by said pawls, and cables wound around said posts and arranged to connect one hull with another, all substantially as and for the purpose set forth.

2. The combination, with the hulls of ships, of the upright metallic plates E E' and F F', constructed with folds e^{xx}, and the frames C C' C', constructed with the folds e^{x}, and adapted to fit to said upright metallic plates, winding-posts upon the decks of said hulls, and cables wound upon said posts attached to said frames to hold the same in place and extending from one winding-post to another to connect one hull with another, substantially as and for the purpose set forth.

3. The combination, with the hulls of vessels, sliding bars arranged upon the decks thereof, as specified, eccentric-levers working against said bars, springs connecting said bars and levers, pawls upon said bars, winding-posts journaled in said hulls, ratchet-wheels on said winding-posts engaged by said pawls, and upright metallic plates folded and attached to the sides of said hulls, as described, of metallic frames, substantially as specified, having side pieces adapted to said metallic plates and attaching said hulls together, and cables wound upon said winding-posts passing through the upper rail of said frame, arranged as set forth, holding said parts in place and further securing said hulls together, all substantially as and for the purpose set forth.

404,994. FOOT-MEASURING MACHINE. EDWIN B. STIMPSON, (2d.) Brooklyn, N. Y., and Edwin B. Stimpson, (2d.) executor of Edwin B. Stimpson, (1st.) deceased, late of same place. Filed Dec. 18, 1888. Serial No. 294,094. (No model.)



Claim.—1. In a foot-measuring machine, the combination, with a heel-plate, of frame-like supports upon said heel-plate, a toe-plate, side plates, a screw, connections between the screw and the toe-plate and side plates, whereby when the screw is rotated movement lengthwise of the machine will be imparted to the toe and side plates, frame-like supports movable with said toe and side plates, and spring-actuated fingers loosely mounted in said supports and adapted to be pressed outwardly upon the insertion of the foot, said fingers having portions extending downwardly below the said plates, substantially as and for the purpose specified.

2. In a foot-measuring machine, the combination, with a heel-plate, of side plates, a toe-plate, frame-like supports adjacent to said heel-plate, a screw, connections between said side plates, the toe-plate, and the screw, whereby when the screw is rotated the side plates and toe-plate will be moved lengthwise of the machine, frame-like supports movable with said side plates and toe-plate, spring-actuated fingers loosely mounted in said frame-like supports and adapted to be moved outwardly upon the insertion of the foot, said fingers being provided with portions extending below said plates, and an upwardly-movable

impression-plate below said fingers, adapted when moved upwardly to press paper or other material against the lower ends of said fingers to cause the taking of an impression from the fingers, substantially as specified.

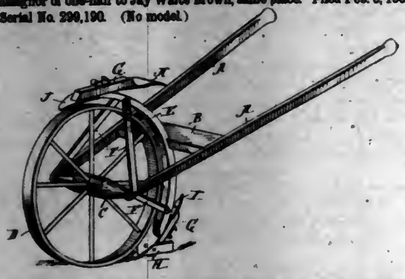
3. In a foot-measuring machine, the combination, with side plates, of a screw for imparting movement thereto, and guides acting on said side plates, whereby when the screw is rotated the side plates will be moved both lengthwise of the machine and widthwise thereof, substantially as specified.

4. In a foot-measuring machine, the combination, with a screw, of a toe-plate, side plates, a metal piece, a connection between the toe-plate and the screw, a connection between the side plates and the screw, a connection between said metal piece and the screw, and guides acting on said side plates, said screw being provided with threads of different pitch, whereby when rotated said toe-plate, side plates, and metal piece will be moved lengthwise of the machine at different speeds and the side plates will be moved by said guides widthwise of the machine, substantially as and for the purpose specified.

5. In a foot-measuring machine, a toe-plate having a movable section adapted to be moved independently of the toe-plate to lengthen or shorten the toe-plate, substantially as specified.

6. In a foot-measuring machine, the combination, with a toe-plate, of a movable section thereof adapted to be moved independently of the toe-plate to lengthen or shorten the toe-plate, and a locking device for securing said section when adjusted, substantially as specified.

404,995. HAND-CULTIVATOR. HENRY C. TUBBS, Bangor, Mich., assignor of one-half to Jay Waite Brown, same place. Filed Feb. 8, 1889. Serial No. 299,190. (No model.)



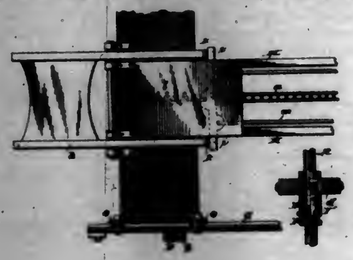
Claim.—1. A hand-cultivator comprising the handles, the wheel mounted between the ends of the handles, the yoke arranged in rear of the wheel, and the standards pivoted at their centers to the ends of the yoke and provided with the blades or shovels at both their ends, as set forth.

2. The improved cultivator herein described and shown, comprising the handles, the wheel mounted between the ends of the handles, the yoke secured at its center to the cross-bar between the handles, braces extending between the ends of the handles and the ends of the yoke, the standards pivoted at their centers to the ends of the yoke, and the cultivating-blades secured to the ends of the standards, as set forth.

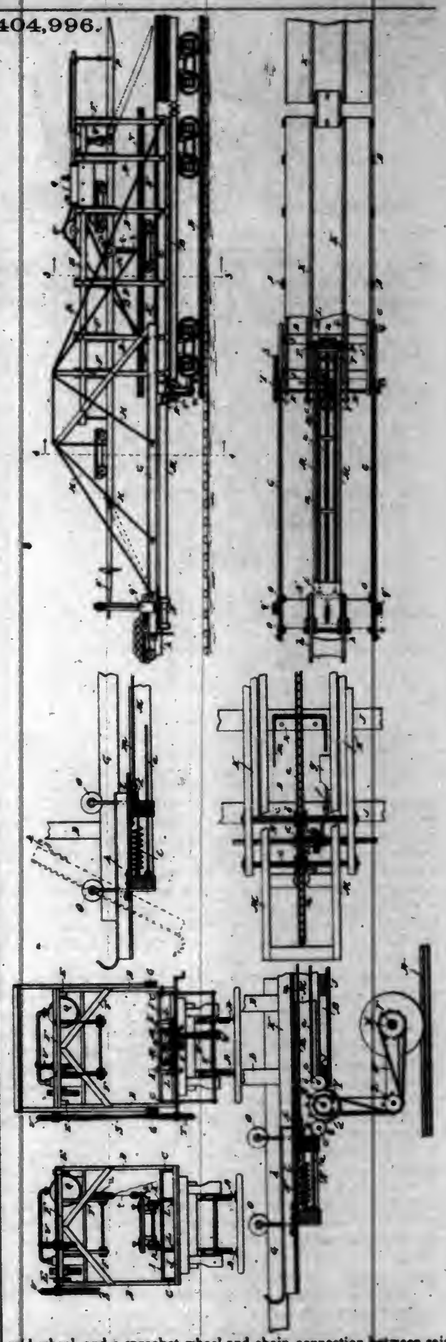
404,996. TRACK-LAYING MACHINE. FERDINAND F. VOIGT, Chicago, Ill. Filed Sept. 22, 1888. Serial No. 286,112. (No model.)

Claim.—1. The combination, with a track-laying machine provided with a forward extension-frame, of a carrier working on said frame and a gear-connection between the said carrier and the axle of the machine, whereby the forward movement of the machine will cause the carrier to be advanced, substantially as described.

2. The combination, with a track-laying machine provided with a forward extension-frame and a carrier working on said frame, of a power-shaft, a sprocket-wheel mounted thereon, a sprocket-chain secured at its ends, respectively, to the carrier and working around



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said wheel, and a sprocket wheel and chain connection between said shaft and the axle of the machine, substantially as described.

3. The combination, with a track-laying machine provided with a forward extension-frame, a carrier working on said frame, and means for advancing and withdrawing said carrier, of an automatic stop device for limiting the movement outwardly of said carrier, substantially as described

4. The combination, with a track-laying machine provided with a forward extension-frame, and a carrier working on said frame, of a power-shaft, a connection between said shaft and carrier, including a separable clutch device, whereby the rotation of said shaft will operate the carrier, and mechanism attached to said carrier for automatically unshifting the clutch and stopping said carrier, substantially as described.

5. The combination, with a track-laying machine provided with a forward extension-frame, and a carrier working on said frame, of a power-shaft, a sprocket-wheel mounted thereon, a sprocket-chain attached at its ends, respectively, to the carrier and working around said wheel and shaft, a clutch-lever, and a projection or incline on the carrier adapted and arranged to actuate the lever so as to shift the clutch, substantially as described.

6. The combination, with a track-laying machine provided with a forward extension-frame, and a carrier working on said frame, of a power-shaft, a sprocket-wheel mounted thereon, a sprocket-chain attached at its ends, respectively, to the carrier and working around said frame, a clutch connecting said wheel and shaft, a clutch-lever and a projection or incline on the carrier adapted and arranged to actuate the lever so as to shift the clutch, and a connection between said shaft and an axle of the machine for actuating the former, substantially as described.

7. The combination, with a track-laying machine provided with a forward extension-frame, of a carrier, means for advancing and withdrawing the same, a tilting track-section mounted on said carrier, and means for automatically tilting said section, substantially as described.

8. The combination, with a track-laying machine provided with a forward extension-frame, of a carrier working on said frame, means for advancing and withdrawing said frame, a tilting track-section, a lock device therefor, and means for automatically withdrawing said lock when the carrier reaches the limit of its forward movement, substantially as described.

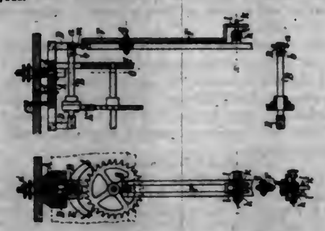
9. The combination, with a track-laying machine provided with a forward extension-frame and a carrier working on said frame, of a tilting track-section on said carrier, a spring-actuated lock device therefor, a rod for operating said device, and a fixed projection on the machine engaging said rod when the carrier reaches the limit of its forward movement, whereby the lock device will be automatically unlocked, substantially as described.

10. The combination, with a track-laying machine provided with a forward extension-frame, a carrier working on said frame, and a tilting track-section on said carrier, of means for advancing and withdrawing said carrier, an automatic stop device for limiting the outward movement of the carrier, and means for automatically and simultaneously tilting said track-section, substantially as described.

11. The combination, with a track-laying machine provided with a forward extension-frame and a carrier, of an overhead return-track, hinged end sections of said track adapted and arranged, respectively, to receive the tracks from the carrier when extended and deliver them at a point to the rear of the machine, substantially as described.

12. The combination, with a track-laying machine provided with a forward extension-frame and a carrier working on said frame, of overhead return-tracks having hinged end sections, supplemental tracks parallel therewith, and travelers working on said tracks provided with block and tackle and grappling-hooks for carrying the rails, substantially as described.

404,997. CLOCK-PENDULUM. JOSEPH WERNER, Dresden, Saxony, Germany, assignor to Arthur Dezendi, same place. Filed Oct. 10, 1888. Serial No. 287,778. (No model.) Patented in Germany Feb. 15, 1888, No. 44,446.



Claim.—The combination, with the vertically-adjustable carrier A, the anchor-spindle B, and the suspension-springs D, suspending the said spindle from said carrier, of the adjusting-lever F, suspended at its upper end from the anchor-spindle, the pendulum pivotally suspended from said lever between the ends of the latter, and also connected with the latter at the lower end thereof, and the adjusting-screw A, applied at the last-mentioned connection for the lateral adjustment of the pendulum, substantially as herein described.

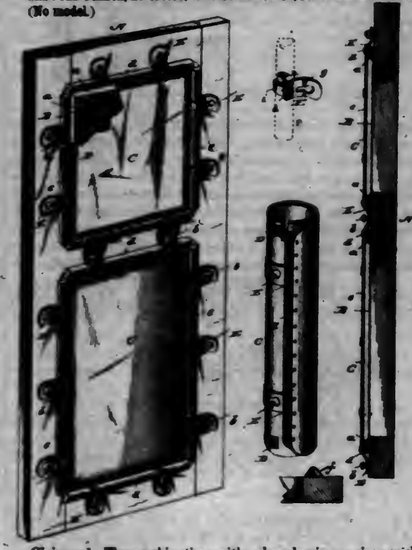
404,998. BLIND-STOP. MILEY B. WESTON, Fort Worth, Tex. Filed May 3, 1888. Serial No. 272,944. (No model.)



Claim.—1. The combination, with a shutter provided with pivoted slats, of a flat spring-metal fastening-plate provided with a slot for clearing the slat-pivot, and projections upon its surface for engaging with the end of the slat, and having its rear end secured to the shutter-frame and its front end projecting beyond the plane of the shutter-frame and forming a thumb-piece for operating said spring-plate, substantially as set forth.

2. A slat-fastener consisting of a flat spring-metal plate provided with slot *d*, the lugs *d'* at its rear end, the concavo-convex projections upon its surface, and the thumb-piece *e* at its front end, substantially as and for the purpose set forth.

404,999. SCREEN AND STORM DOOR. JOHN K. WIESENDANGER and JOHN ULRICH, La Crosse, Wis. Filed Dec. 12, 1888. Serial No. 293,347. (No model.)



Claim.—1. The combination, with a door having a wire panel and a molding-strip around the same, of the flexible panel adapted to cover the said wire panel, the strips having flat or plain inner sides to embrace and confine the edges of the flexible panel upon the said molding-strips, and the tabs secured to the said strips and having elongated eyes to receive headed studs in the door-frame, substantially as specified.

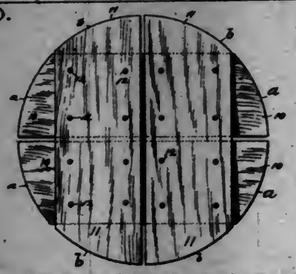
2. The combination, with a door-frame having a wire or open-work panel and a molding surrounding the same, of the flexible panel C, having flat-sided strips secured to two opposite edges, tabs secured to the said strips to receive headed studs in the door-frame, and two opposite strips removably secured at opposite edges of the flexible panel, and also having tabs whereby the said strips may confine the panel upon the molding-strips of the main panel, substantially as specified.

3. The flexible panel C, having the plates D secured thereto near its edges, the strips *c*, placed on the panel over the said plates D, and the tabs E, constructed as described and secured to said strips, whereby the four edges of the flexible panel may be confined upon the molding of the main panel, substantially as specified.

405,000. PACKAGE-HEAD. ISAAC J. W. ADAMS, Laurel, Del. Filed Mar. 5, 1889. Serial No. 301,985. (No model.)

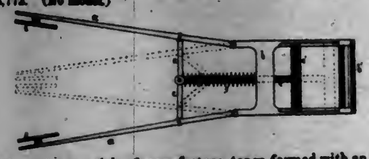
Claim.—As a new article of manufacture, a package-head consisting of two pairs of slats 10 and 11, having curved ends and secured together at right angles to each other, the combined width of each pair of slats when secured together being less than the diameter of

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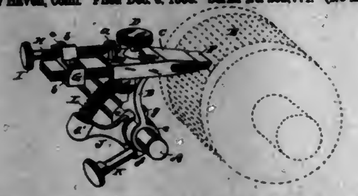
the package for which the head is made, whereby the ends of one pair of slats will project beyond the sides of the other pair and form a circular head having the grain of the wood exposed in its bearing-surface, all substantially as described.

405,001. TONGS. EDWARD P. BARTON, Ravenna, Ohio, assignor of one-half to Adaline Coy, same place. Filed Mar. 29, 1888. Serial 268,772. (No model.)



Claim.—As an article of manufacture, tongs formed with an open stationary handle *b'*, and a sliding T-shaped handle *c'* within the same, the lateral ends of the T-shaped handle arranged to slide in contact with the sides of the open handle *b'*, both handles being in the same plane with the arms *a a* and adapted to be grasped and operated with one hand, said handles being in combination with each other, frame *b*, arms *a a*, hinged at one end to the outer corners of frame *b*, struts or links *c c*, sliding rod *c*, frame *b* being perforated to receive said rod, and spring *f*, substantially as and for the purpose described.

405,002. BRUSH-HOLDER FOR DYNAMOS. WALTER S. BISHOP, New Haven, Conn. Filed Dec. 6, 1888. Serial No. 292,771. (No model.)



Claim.—1. The combination, with the brush F and the socket C, provided with the apertured lug *a*, of the clamp G, the screw H, having a circumferential groove *j*, and the notched pin *k*, substantially as specified.

2. The combination, with the loosely-pivoted brush-holding arm of a dynamo or electric motor, of a curved spiral spring and an adjustable arm forming the abutment for the spiral spring, substantially as specified.

3. The combination, in a brush-holder for dynamos and electric motors, of the brush-holding rod A, the arm B, provided with the sleeve *e*, placed on the said rod A, and provided with the socket C for receiving the brush, the brush F, the adjusting-screw H, pivotally connected with the socket C, and the clamp G, adapted to engage the brush F, substantially as specified.

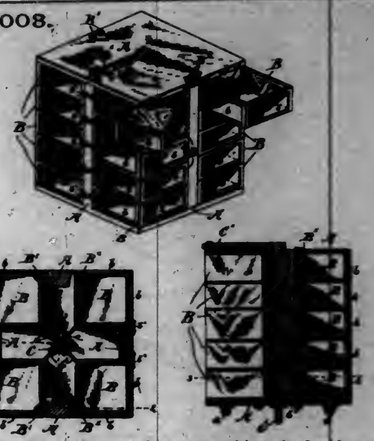
4. The combination, with the brush-holding arm B and the rod A, arranged to support the said brush-holding arm, of the arm J, placed on the rod A, and provided with the clamping-screw K, for clamping the said arm upon the rod A, and furnished with the stop-lug *g*, substantially as specified.

405,003. SHOW-CASE. JOHN W. BLACKLEDGE, Indianapolis, Ind. Filed Feb. 5, 1889. Serial No. 298,736. (No model.)

Claim.—1. In a show-case, the combination of the frame A, having the vertical post arranged midway of each side thereof, the tiers of drawers severally arranged in the corners of said frame, the pivot-rods B', extending through one corner of each of said tiers, and the means, substantially as described, for securing said drawers in position.

2. In a show-case, the combination of the frame A, the tiers of drawers B, pivoted therein, each drawer being provided with an eye on its inner corner, the rod C, pivoted centrally in said frame and

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provided with a catch arranged to engage with each of said eyes, a lever on the top of said rod, and a lock for securing said lever in position, substantially as set forth.

405,004. KEY FOR TIME-PIECES. MARTIN BOOK, Bethlehem, Pa. Filed Nov. 16, 1888. Serial No. 291,045. (No model.)



Claim.—1. A key for time-pieces, comprising a handle, a pipe freely rotatable in either direction, and a manually-operated clutch one member of which is connected to the handle and the other member to the pipe for governing the rotation of the pipe to let down a spring gradually as well as to wind it, substantially as described.

2. A key for time-pieces, comprising a pipe freely rotatable in either direction, a handle therefor, and a manually-operated friction-clutch interposed between the handle and pipe to regulate and to arrest the rotation of the pipe to thereby let down a spring as well as wind it, substantially as described.

3. A key for time-pieces, comprising a rotary pipe having a friction-cup on one end and a handle having a friction-plug, of wood, movable thereon toward and from the friction-cup, but not rotatable independently of the handle, substantially as described.

4. A key for time-pieces, comprising a rotary pipe, a handle, and a detent interposed between the handle and the pipe and interlocking with a fixed or rigid portion of the pipe to positively lock the pipe against rotation in either direction, substantially as described.

5. A key for time-pieces, comprising a rotary pipe, a handle, a clutch interposed between the handle and pipe, and a detent also interposed between the handle and pipe, substantially as described.

6. A key for time-pieces, comprising a freely-rotating pipe to engage the post or arbor of the mainspring, combined with a manually-operated friction-clutch by which the rotation of the pipe may be regulated so as to let down the spring gradually and easily without danger of breaking and without accident or injury to the workman, substantially as described.

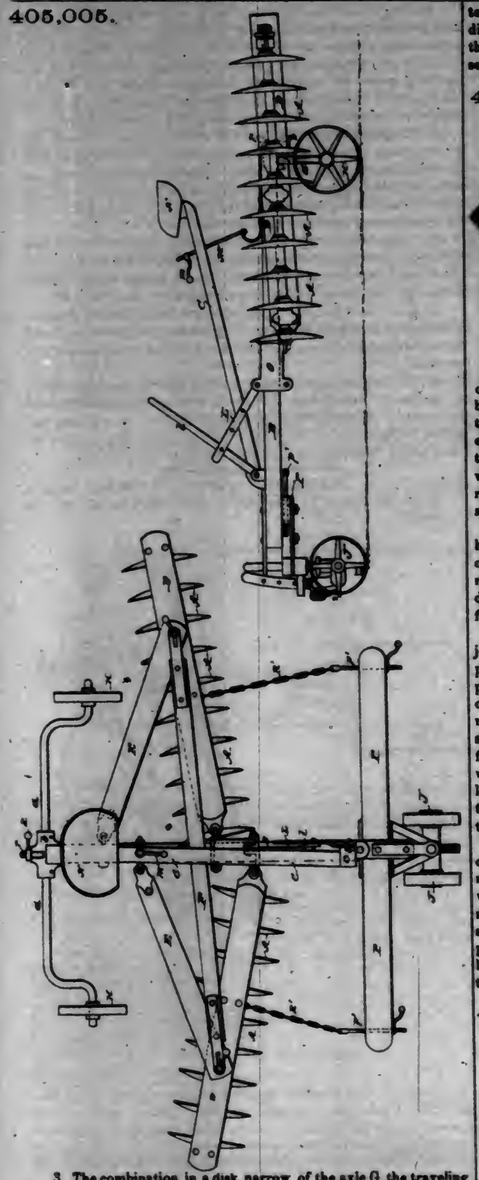
7. A key for time-pieces, comprising a freely-rotating pipe to engage the post or arbor of the mainspring, combined with a friction-clutch by which the rotation of the pipe may be regulated so as to let down the spring gradually and easily without danger of breaking and without accident or injury to the workman, and a detent or locking device for such pipe, whereby its rotation may be arrested as desired, substantially as described.

405,005. DISK HARROW. GEORGE T. BOOTH, Christchurch, New Zealand. Filed Mar. 24, 1888. Serial No. 268,450. (No model.) Patented in New Zealand Dec. 5, 1888, No. 1,040, and in New South Wales Aug. 20, 1887, No. 142

Claim.—1. The combination, in a disk harrow, of the framing having a box *b*, the cranked axle G, journaled at its center in box-*b* and having at each point a squared portion, the bolt *r*, having a squared opening receiving the squared portion of the axle, and the nut on bolt *r*, substantially as set forth.

2. The combination, in a disk harrow, of the hinged pole C, the screw-bolt M, the handle-nut *m*, the cross-bar F, and the disk-bars D D, with or without a spring S, as described herein, and illustrated in the accompanying drawings.

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3. The combination, in a disk harrow, of the axle G, the traveling wheels H, the axle-box *b*, and the screw-bolt *r*, as described herein, and illustrated in the accompanying drawings.

4. In a disk-harrow, the combination of the framing and wheels forming the carriage, and the disk bars or frames hinged at their inner ends to the carriage at a point in advance of the wheels, and braces for sustaining the disk-bars in operative position, such disk-bars when not in use being adjustable on their hinge-connections, whereby they may be set out of operative position and supported on the carriage, substantially as set forth.

5. The combination, with the framing and wheels forming a carriage, of the disk-bars having a swivel-connection with said framing, whereby such bars may be set to different working angles and may be lifted at their outer ends and adjusted onto the carriage, substantially as set forth.

6. The combination of the carriage-frame, the disk-bars D, connected at their inner ends adjustably with said frame, the bar F, extended over the carriage-frame and engaged at its outer end with the disk-bars, and the seat bar connected at its lower end adjustably with the carriage-frame and bearing upon the said bar F, substantially as set forth.

405,006. ANIMAL-TRAP. AUGUSTUS BRAWN, Pleasant Hill, Nebr., assignor of one-half to John H. Douge, same place. Filed Jan. 24, 1888. Serial No. 261,802. (Model.)



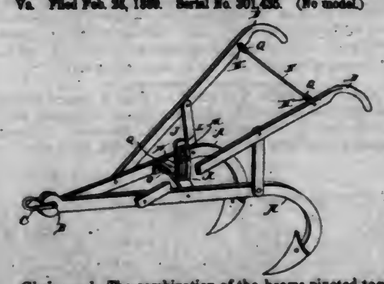
Claim.—1. In a trap, substantially as described, the combination of the casing or framing, the pivoted dump having side plate *u* and bottom K, the latch supported in the casing or framing and arranged to engage and secure the dump and movable into and out of such engagement, and the platform or tripper arranged immediately above the bottom K and pivoted between its ends, such platform being provided with a rigid arm or portion arranged to engage the latch and release same from the dump when the platform is tilted, substantially as set forth.

2. The improved trap herein described, consisting of the casing having partitions S and V and bait-holder L, the dump having pivoted platform or tripper J, provided with an arm or portion W, arranged to engage the latch D, the counterpoise connected with the dump, and the latch D, all substantially as and for the purposes set forth.

3. In a trap, the combination of the casing, a dump pivoted or journaled to said casing and having a side plate *u*, and provided in a plane approximately at right angles to plate *u*, with a tilting platform pivoted between its ends, a counterpoise whereby such dump when once turned to discharge the trapped animal may be returned to its normal position, a detent engaging the dump and arranged to hold same in its normal position, and an arm or portion on the tilting platform arranged to engage the detent, all substantially as described, whereby the weight of the trapped animal may tilt the platform, release the detent, and turn the dump to dump the animal, after which the counterpoise will return the dump to normal position, substantially as set forth

4. In a trap, substantially as described, the combination of the casing, the dump formed of side plate *u* and base-plate K, and journaled at the juncture of plates *u* and K to the casing, the detent whereby to secure the dump in normal position, the counterpoise connected with the dump and adapted to return it to its normal position, and the tilting platform or trip arranged directly over the plate K, pivoted between its ends to the dump, and having an arm or portion by which to engage and release the detent, all substantially as and for the purposes specified.

405,007. DOUBLE-SHOVEL PLOW. ELISHA C. BURNETT, Wilkes, Va. Filed Feb. 28, 1889. Serial No. 301,435. (No model.)

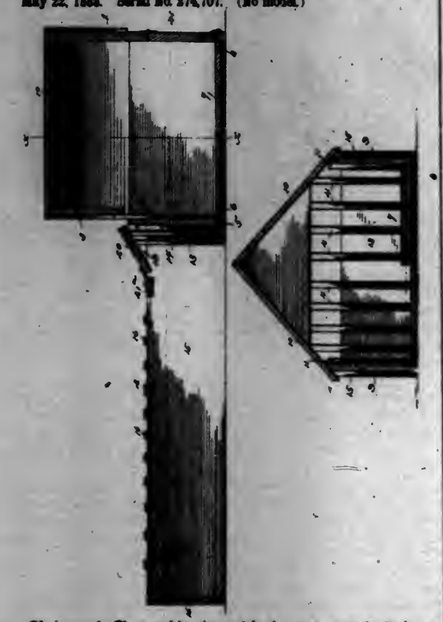


Claim.—1. The combination of the beams pivoted together at their front ends and the coupling consisting, essentially, of two brackets, one secured to each beam, one of said brackets having a vertical arm provided with a longitudinal slot and the other one having a vertical arm carrying a headed stud engaging said slot, as set forth.

2. The combination, with the beams pivoted together at their front ends, of the coupling connecting the beams, and consisting, essentially, of two brackets, one secured to each beam, one of the brackets having a vertical arm provided with a longitudinal slot and

the other bracket being composed of a horizontal bar provided with a longitudinal series of vertical perforations, and the angle-iron having its vertical arm provided with a headed stud engaging the longitudinal slot of the other bracket and its horizontal arm carrying a pin adapted to engage one of the openings in the said horizontal bar, as set forth.

405,008. HEN-COOP. EBENEZER BUTTERICK, Brooklyn, N. Y. Filed May 22, 1888. Serial No. 274,707. (No model.)

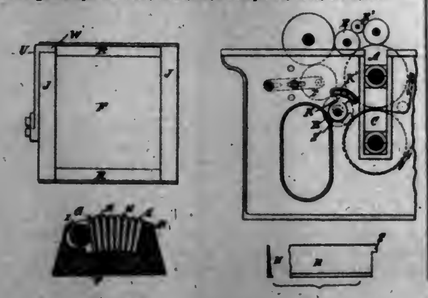


Claim.—1. The combination, with the coop or main inclosure having a slatted front, of the runway in front of the said coop and having its sides at their inner ends overlapping the sides of the coop, whereby the runway and coop may be set at different inclinations without causing an open joint between them, substantially as set forth.

2. The combination of the coop having the upper part of its front closed and the lower part slatted, with the runway having a vertically-swinging door inclined from the closed upper part of the front of the coop downward to prevent rain from driving through the slatted part, substantially as set forth.

3. The combination of the coop having its front closed above the top edges of its sides and slatted below the same, the said sides being extended in front of the slats, and cleats 11, forming vertical ways to allow a board to be inserted therein against the front sides of the slats, with the runway having the inner ends of its sides overlapping the sides of the coop, the vertical cleats 14 on the inner faces of the sides of the runway near their inner ends and abutting against the extended ends of the coop, and the inclined hinged door 20 on top of the runway at its inner end, substantially as set forth.

405,009. PRINTING MACHINERY. JOHN H. BUXTON, DAVID BRAITHWAITE, and MARK SMITH, Manchester, County of Lancaster, England. Filed May 11, 1888. Serial No. 273,008. (No model.) Patented in England Apr. 20, 1886, No. 5,470, and Apr. 23, 1888, No. 5,989.



Claim.—1. In combination with an impression-cylinder and a main printing-cylinder co-operating permanently therewith, an auxiliary printing-cylinder to co-operate with said impression-cylinder provided with a removable type-holding box and movable bars, and adjusting devices for moving said auxiliary cylinder into or out of action at will, whereby the press is adapted for making a single impression or for making a main impression and a minor impression.

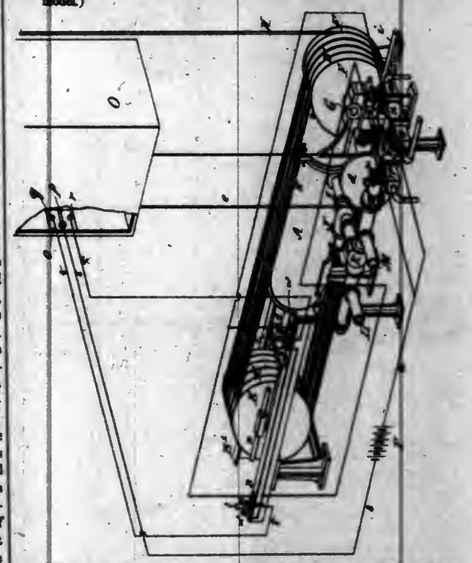
2. The printing-cylinder provided with the groove or recess and the removable type-confining box seated therein, in combination with the sliding detent or clamp mounted in said cylinder and having one end arranged to engage and confine the box and its other end exposed, whereby the detent may be moved endwise out of engagement with the box to permit the removal of the latter.

3. The printing-cylinder, in combination with a box removably seated therein, the type within the box, the tapered rules having shoulders to hold the type, and end projections to engage the box, and a pressure device within the box to confine the type and the rules.

4. In a type-holding box for a printing-cylinder, the end plates or shoulders J, one of said shoulders being recessed, in combination with the movable plate U, arranged to enter said recess, substantially as described.

5. The type-holding box for a printing-cylinder having the convex bottom and radial sides, the rows of type seated in said box, and the tapered rules extending longitudinally between the said rows parallel, or substantially so, with the radial sides of the box, and the lateral pressure device acting to confine said type and rules.

405,010. ELECTRICALLY-CONTROLLED ENGINE. JAMES R. BYRNE, Brooklyn, N. Y. Filed Apr. 19, 1888. Serial No. 271,183. (No model.)



Claim.—1. The combination, with the valve-operating mechanism of a hydraulic elevator, of an auxiliary cylinder provided with separate supply and discharge valves, electro-magnets arranged to operate the said valves, and a piston contained by the cylinder and connected with the valve-operating mechanism of the elevator, substantially as described.

2. The combination, with the valve-operating mechanism of an elevator, of a cylinder provided with a piston connected with the elevator-valve, separate supply and discharge balanced valves connected with the cylinder and provided with armatures, and electro-magnets arranged to operate the said valves, the discharge-valves being arranged to remain normally open and the supply-valves normally closed, substantially as described.

3. In valve-operating mechanism for elevators, the combination, with a double cylindrically-bored valve-seat, of a valve formed of two recessed disks, each provided with ports extending from the recess to the periphery, substantially as described.

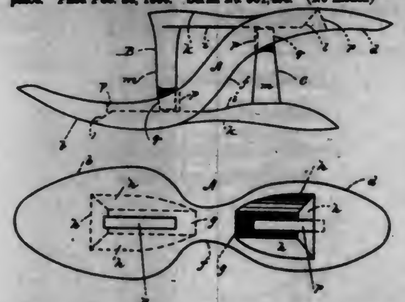
4. The combination, with the magnet attached to the valve-chest, having chambers and valve-seats, as specified, of the balanced valves arranged in line and having recesses in the upper side, and side ports which communicate with said recesses, and the armatures attached to the valve-stems, as shown and described.

5. The combination, with the valve-operating mechanism of an elevator, of an auxiliary cylinder provided with a piston connected with the valve-operating mechanism, separate supply and discharge valves connected with the auxiliary cylinder and provided with armatures, controlling electro-magnets arranged in the casing of the said valves, an electric generator, (such as a battery,) circuit-wires leading from the generator to the magnets and elevator-car, and a switch for shifting the current from one set of electro-magnets to the other, substantially as described.

6. The combination, with the valve-operating mechanism of a hydraulic elevator, of an auxiliary cylinder provided with a piston and furnished with supply and discharge valves, armatures attached to the supply and discharge valves, electro-magnets arranged to control the supply and discharge valves, an electric generator, a switch attached to the elevator-car, circuit-controlling devices attached to the elevator mechanism and arranged to be operated thereby when the car reaches the upper or lower part of its excursion, and the circuit-wire, substantially as described.

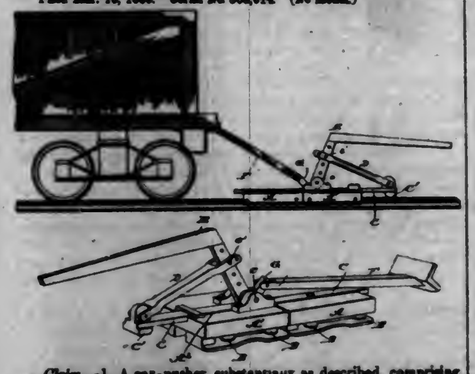
7. The combination, with the cylinder 16, having the piston 17, of supply-valves 19 19ª and discharge-valves 19ᵇ 19ᶜ, adjusting-screws 27, the valves 19ª and 19ᵇ being constructed to remain normally open armatures 26, carried by the valves, and electro-magnets 30, arranged adjacent to the armatures, substantially as described.

405,011. LAST. ANDREW K. CHASE, Nashua, N. H., assignor to himself, John R. McGuire, John J. Flood, and James O'Neil, all of same place. Filed Feb. 20, 1889. Serial No. 301,466. (No model.)



Claim.—A reversible last-body having two sole portions of different sizes facing in opposite directions, horizontal flaring sockets in the sole portions, and longitudinal rectangular slots extending through said body from the bottoms of said sockets, in combination with adjustable shanks adapted to fit said horizontal sockets and provided with vertical arms having wedge-shaped ends for projecting into said rectangular slots, substantially as described.

405,012. CAR-PUSHER. JOSEPH C. CHERRMAN, Sewell Depot, W. Va., assignor of two-thirds to R. H. Myles and Wm. H. Taylor, same place. Filed Mar. 16, 1888. Serial No. 303,614. (No model.)



Claim.—1. A car-pusher, substantially as described, comprising independent foot-sections adapted to slide freely along the rail in one direction and provided with grippers or clamps whereby to prevent their movement along said rail in a reverse direction, the lever mechanism, and connections, all being substantially as described, whereby the foot-sections may be operated in the manner and for the purposes set forth.

2. In a car-pusher, substantially as described, the combination of two foot-sections and a connection therebetween, such sections being formed with a way for the track-rail and having clamp mechanism by which to grip the rail and prevent the movement of the sections in one direction thereabout, all substantially as and for the purposes set forth.

3. In a car-pusher, a foot-section having a way for the rail, provided at one side of such way with a clamp or clamps adapted to permit the movement of the section along the rail in one direction and to prevent its movement in the reverse direction, and provided at the opposite side of the way with an adjustable bearing, whereby the section may be adapted to rails of different widths, substantially as set forth.

4. In a car-pusher, the combination of the front and rear foot-sections adapted to slide freely forward along the rail and to be clamped as against rearward movement, the slide-bar secured to the front section and extended in rear of the rear section, the fulcrum-bar pivoted at one end to the slide-bar, the lever pivoted to said fulcrum-bar and to the rear foot-section, and the pusher-bar, all substantially as and for the purposes set forth.

5. In a car-pusher, the front and rear foot-sections adapted to slide in one direction and clamp as against movement in opposite direction on the rail, a fulcrum-bar connected at one end with the front section, the lever pivotally connected with the rear section and fulcrumed to the fulcrum-bar, and the push-bar, all substantially as set forth.

6. In a car-pusher, the combination of the foot-section frame, the grippers pivoted therein near its opposite ends and on the same side of the way for the rail, and the spring-bar extended between said grippers and arranged to operate the same, substantially as set forth.

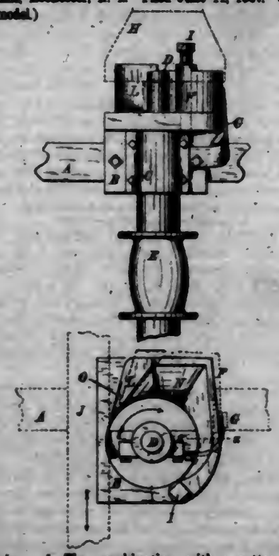
7. The combination, in a car-pusher, of the front foot-section, the rear foot-section, a slide-bar secured to the front section extended rearwardly beyond the rear section and constructed at its rear end to bear on the rail, the fulcrum-bar pivoted at one end to said slide-bar near its rear end, the lever, and the push-bar, all substantially as set forth.

8. In a car-pusher, the combination, with the front foot-section and the rear foot-section, of the lever, the block or support G, and the push-bar adapted for connection with either the lever or the support G, substantially as set forth.

405,013. DESSERT-FOOD COMPOUND. WILLIAM P. CLOTWORTHY, Baltimore, Md. Filed Mar. 30, 1889. Serial No. 305,406. (No specimens.)

Claim.—The herein-described nutritious, easily-digested, and palatable food compound or mixture in dry and powdered form, to be used for culinary purposes as a dessert, consisting of vanillin, powdered sugar, and powdered starch, in about the proportions specified.

405,014. CHIP-BREAKER FOR PLANING-MACHINES. JOHN CONNELL, Rochester, N. Y. Filed June 11, 1887. Serial No. 240,984. (No model.)



Claim.—1. The combination, with a cutter-head, of a chip-breaker arranged in proximity thereto, having the surface next the head, against which the chips first strike, inclined to the plane of the axis of the cutter-head, as set forth.

2. The combination, with a cutter-head, of a chip-breaker partially encircling it, having the surface next the head, against which the chips first strike, inclined to the plane of the axis of the head, substantially as described.

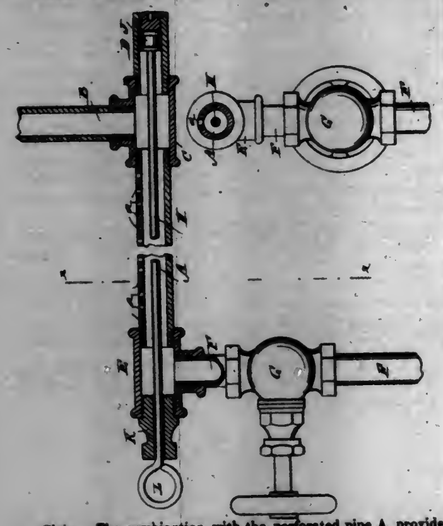
3. The combination, with a vertical cutter-head, of a chip-breaker partially encircling it, having the inner surface, against which the chips first strike, inclined to the plane of the axis of the head, and a hood connected with an exhaust-fan arranged over the cutter-head, substantially as described.

4. The combination, with a rotating cutter-head, of the pivoted chip-breaker E, having the lip L acting on the material to break the chip, and the surface N, against which the chips first strike, inclined to the plane of the axis of the head, substantially as described.

5. The combination, with a rotating cutter-head, of the pivoted chip-breaker F, having the lip L operating on the surface of the material to break the chips, and the inner surface N, against which the chips first strike, inclined to the plane of the axis of the head, substantially as described.

6. The combination, with a rotating cutter-head, of a surface arranged in proximity thereto, against which the chips first strike, inclined to the plane of the axis of the cutter-head, substantially as described.

405,015. SPRAY-CYLINDER CLEANER FOR PAPER-MACHINES. GRANVILLE D. CRANDE, Valatie, N. Y. Filed Apr. 14, 1888. Serial No. 270,613. (No model.)



Claim.—The combination, with the perforated pipe A, provided with supply-pipe B, the cap D, forming an extension of the tube A, the discharge-pipe F, and the plug K in the end of the tube A, of the rod H, provided with the handle L, and the swab J on the inner end of the rod H, substantially as herein shown and described.

405,016. PRINTING AND DELIVERY MECHANISM. LUTHER C. CROWELL, Brooklyn, assignor to Robert Hoe, Peter S. Hoe, Stephen D. Tucker, Theodore H. Mead, and Charles W. Carpenter, New York, N. Y. Filed Mar. 3, 1888. Serial No. 266,606. (No model.)

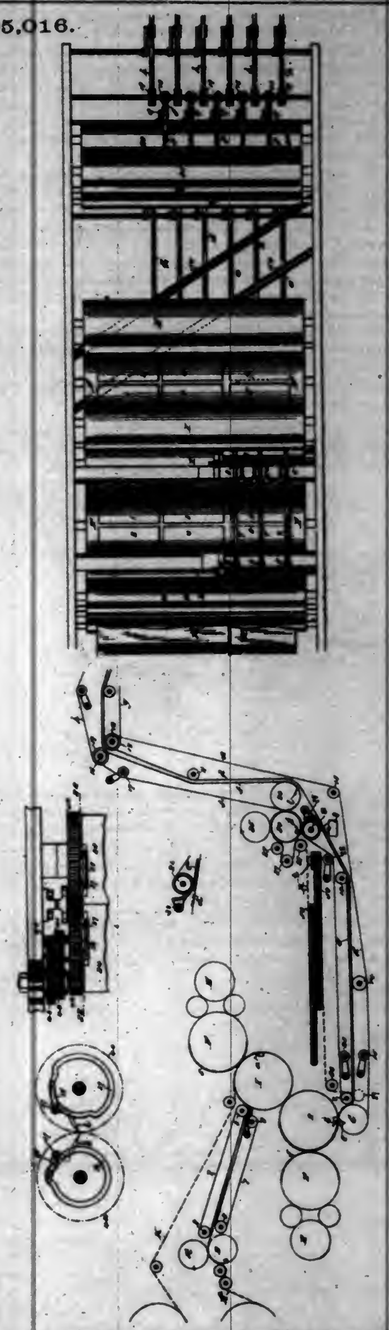
Claim.—1. The combination, with a form-cylinder, of a co-operating impression-cylinder provided with sheet-retaining devices extending a portion of its length, whereby a web may be printed by one end of said cylinders and sheets by the other, substantially as described.

2. The combination, with a form-cylinder, of a co-operating impression-cylinder provided with sheet-retaining devices extending a portion of its length, means for presenting two webs to said cylinders side by side, and a cutting mechanism for dividing one of said webs into sheets before it is printed, substantially as described.

3. The combination, with a form-cylinder, of a co-operating impression-cylinder provided with sheet-retaining devices extending a portion of its length, means for presenting two webs to said cylinders side by side at different speeds, and a cutting mechanism for dividing one of said webs into sheets before it is printed, substantially as described.

4. The combination, with the form-cylinders F, of the impression-cylinders I, provided with coacting sheet-retaining devices *a b*, extending a portion of the length of the cylinders, means for presenting two

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webs to said cylinders side by side and at different speeds, a cutting mechanism for dividing one of said webs into sheets before it is printed, and a cylinder having sheet-retaining devices for taking the sheets from the last impression-cylinder, substantially as described.

5. The combination, with the form-cylinders F and the impression-cylinders I, provided with sheet-retaining devices *a b*, of means for presenting a web and sheets side by side to said cylinders, and web-turning mechanism for transferring the web laterally, after being printed, into position to be associated with the sheets, substantially as described.

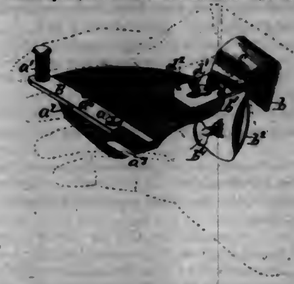
6. The combination, with the form-cylinders F and the impression-cylinders I, provided with sheet-retaining devices *a b*, of means for presenting a web and sheets side by side to said cylinders, web-turning mechanism for transferring the web laterally, after being printed, into position to be associated with the sheets, and a web-cutting and sheet-collecting mechanism, substantially as described.

7. The combination, with the form-cylinders F and the impression-cylinders I, provided with sheet-retaining devices *a b*, of means for presenting a web and sheets side by side to said cylinders, tapes for conveying the sheets from the last impression-cylinder, and web-turning mechanism for transferring the web laterally into position to be associated with the sheets, substantially as described.

8. The combination, with the form-cylinders F and the impression-cylinders I, provided with sheet-retaining devices *a b*, of means for presenting a web and sheets side by side to said cylinders, tapes for conveying the sheets from the last impression-cylinder, web-turning mechanism for transferring the web laterally into position to be associated with the sheets, and a web-cutting and sheet-collecting mechanism, substantially as described.

9. The combination, with a web-cutting and sheet-collecting mechanism for operating upon a main web, and tapes for conveying the collected sheets from the collecting mechanism, of tapes for conveying supplement-sheets to said collecting mechanism to be associated with the main sheets, and a switch for directing the supplement-sheets either to the collecting mechanism or to the tapes leading therefrom, substantially as described.

405,017. FRUIT-GATHERER. CHARLES H. CURTIS, Astor, Fla. Filed Sept. 3, 1888. Serial No. 284,402. (No model.)



Claim.—1. In a fruit-clipper, the combination, with the plate A, of a clamping device consisting of the curved back part *b*, the palm part *b'*, shaped to fit the hand between the thumb and forefinger, a concavo-convex plate loosely attached to the part *b'*, a thumb-screw for setting said plate into the palm of the hand, and the lug D, substantially as and for the purpose set forth.

2. In a fruit-clipper, the combination, with the plate A, of a clamping or attaching device consisting of the parts *b b'*, clasping the hand between the thumb and forefinger, and provided with the lug D, and the means described for adjustably securing said clamp in relation to the plate A, substantially as and for the purpose set forth.

3. In a fruit-clipper, the combination, with the plate A, provided with a number of perforations, of a clamp provided with the lug D, having the elongated slot *d'*, the thumb-screw *d'*, and the pivot-pin d^3, projecting from the under side of said lug and engaging with said perforations, substantially as and for the purpose set forth.

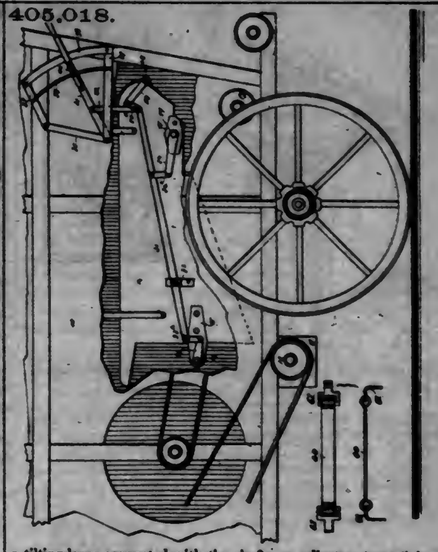
4. A fruit-clipper consisting, essentially, of the plate A, notched to receive the stem of the fruit, a cutting-blade pivoted to the upper side of said plate and arranged to traverse said notch, a spring for returning said blade to a normal position, a hand-clamp provided with the lug D and the parts *b b'*, the palm-plate b^3, a thumb-screw for adjusting the latter plate, and a thumb-screw for securing said clamp to the plate A, substantially as and for the purpose set forth.

405,018. ADJUSTABLE SIEVE ATTACHMENT FOR THRASHING-MACHINES. WILT K. DOSS, Marengo, Iowa. Filed Feb. 26, 1889. Serial No. 301,163. (No model.)

Claim.—1. The combination, with the shoe of a grain-separator, of a front and rear shaft journaled therein, front and rear vertical slides connected to the said shafts, having grooves in their inner faces, a sieve, a tilting-lever connected with the front and rear shafts, and an adjusting-lever linked to the tilting-lever, substantially as shown and described.

2. The combination, with the shoe of a grain-separator, of a front and rear shaft journaled therein, front and rear vertical slides connected to the said shafts, having grooves in their inner faces, a sieve,

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a tilting-lever connected with the shafts, an adjusting-lever linked to the tilting-lever, and a tail-board operated from the tilting-lever simultaneously with the slides, all combined for operation substantially as shown and described.

3. The combination, with the shoe of a grain-separator and a front and rear shaft journaled therein, of slides connected to the front shaft, having transverse grooves in the inner face, rear slides attached to the rear shaft, also provided with transverse grooves in the inner face and with a vertical channel, a sieve, a spring-key inserted in the said channels, a tilting-lever connecting the shafts, and an adjustable lever linked to the tilting-lever, all combined for operation substantially as shown and described.

4. The combination, with a grain-separator, a front and rear shaft journaled therein, a tilting-lever connecting the said shafts, and an adjusting-lever linked to the tilting-lever, of forward slides having transverse grooves in their inner faces attached to the forward shaft, rear slides provided with transverse grooves, and an intersecting vertical channel attached to the rear shaft, sieves horizontally held in the grooves of the front and rear slides, and a spring-key capable of insertion in the channel of the rear slides, and a contact with the rear end of the sieves, substantially as shown and described.

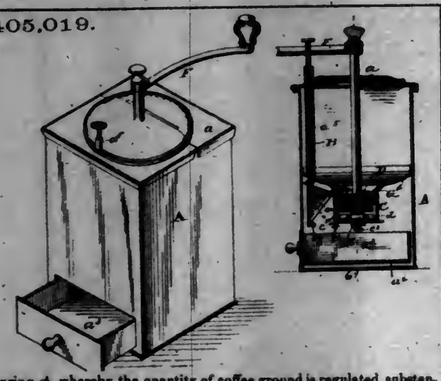
5. The combination, with a grain-separator, a front and rear shaft journaled therein, a tilting lever connecting the said shafts, and an adjusting-lever linked to the tilting-lever, of forward slides having transverse grooves in their inner faces attached to the forward shaft, rear slides provided with transverse grooves, and an intersecting vertical channel attached to the rear shaft, sieves horizontally held in the grooves of the front and rear slides, a spring-key capable of insertion in the channel of the rear slides and of contact with the rear end of the sieves, and a tail-board held to slide in the shoe, operated from the tilting-lever simultaneously with the movement of the slides, substantially as shown and described.

6. The combination, with the shoe of a grain-separator, front and rear shafts journaled therein, a tilting-lever connecting the said shafts, and an adjusting-lever linked to the tilting-lever, of front slides attached to the forward shaft, provided with a grooved inner face, rear slides attached to the rear shaft, provided with a transversely-grooved inner face and a vertical intersecting channel, a sieve, a spring-key capable of insertion in the channel of the rear slides, a sliding tail-board provided with racks upon the under surface, a shaft journaled in the shoe to the rear of the tail-board, provided with mutilated pinions capable of engagement with the racks, and a detachable connection between the pinion-shaft and the tilting-lever, all combined for operation substantially as and for the purpose specified.

405,019. COFFEE-MILL. LOUIS DEUDS, New York, N. Y. Filed Feb. 5, 1889. Serial No. 298,732. (No model.)

Claim.—In a coffee box and mill, the combination of the outside casing, the drawer for holding the ground coffee in the lower part of said casing, the vertical rod inclosed in the inner casing, the grinding shell and cone, said cone having the crank attached to its upper end, the discharge-box, the sweeps *d*, the hinged upwardly-moving cap c^2, on which the lower end of the vertical rod rests, and the spiral

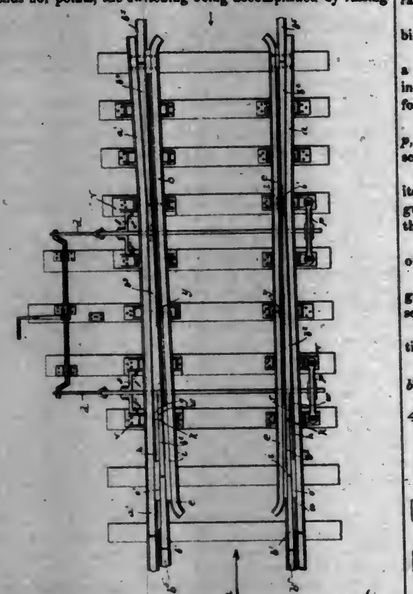
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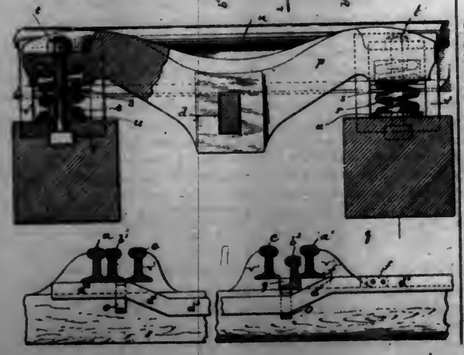


spring d^4, whereby the quantity of coffee ground is regulated, substantially as described and set forth.

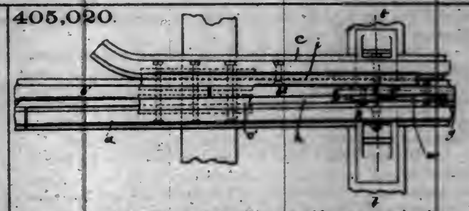
405,020. RAILROAD-SWITCH. JOHN A. DUGGAN, Quincy, Mass., assignor to the Burnham & Duggan Railway Appliance Company, Portland, Me. Filed July 17, 1886. Serial No. 208,288. (No model.)

Claim.—1. A switch having guard and stock or outside rails supported upon solid bearings, to which they are fixed so as to permit of no motion, in combination with a middle or switch rail having neither ends nor points, the switching being accomplished by raising





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the central portion of the switch-rail on one side and lowering it on the other, substantially as and for the purpose above described.

2. In a railroad-switch, a switch-rail having the middle part adapted to be raised and lowered and connected with sections of the switch-rail which form inclines when the middle portion is lowered, the inclined parts being jointed at one end to the fixed section of the rail and at the other end to the vertically-moving middle part, substantially as and for the purpose above described.

3. The horizontally-moving operating-rods *d*, having thereon the inclines d^7 d^7, and the horizontal supporting-faces d^8 d^8, in combination with the switch-rails and straps *e e*, substantially as and for the purpose above described.

4. The operating-rod, the switch-rail having neither ends nor points, the central portion of which is capable of being elevated and depressed throughout its entire length, and the arms *f f*, provided with the supporting-pieces *f' f'*, in combination, substantially as described.

5. The operating-rod *d*, the yoke *p*, the springs *s s*, and the switch-rails, in combination, substantially as described.

6. The yoke *p*, the spring *r*, bolt *s*, nut *t*, and washer *u*, in combination, substantially as and for the purpose above described.

7. The double chair *v*, provided with outside braces and having a central recess, in combination with the stock-rails and guard-rails independently secured to said braces, respectively, substantially as and for the purpose above described.

8. The incline *w*, in combination with the switch-rail, the yoke *p*, and the spring *r*, substantially as and for the purpose above described.

9. The stock-rail lapping by the joint between b' and b^3, having its top substantially level with the switch-rail and bolted through the guard-rail, in combination with the guard-rail, substantially as and for the purpose above described.

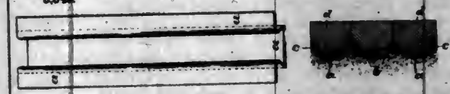
10. The blocks *i* and *o'*, in combination with the parts b' and b^3 of the middle rail, substantially as and for the purpose above described.

11. The vertically-sliding blocks *l' l'*, in combination with the guard and switch rails, substantially as and for the purpose above described.

12. The blocks *y y*, in combination with the middle rail, substantially as and for the purpose above described.

13. The pieces *k' k'*, in combination with the piece *i* and the parts b^2 b^3, substantially as and for the purpose above described.

405,021. PARQUET OR OTHER FLOORING. JOSEF F. HOSER, London, County of Middlesex, England. Filed May 22, 1888. Serial No. 274,757. (No model.) Patented in France June 19, 1886, No. 176,877; in Belgium June 19, 1886, No. 73,561, and in England Mar. 4, 1887, No. 3,348.



Claim.—1. The combination of a foundation-bed, binding-strips embodied in said bed and provided with undercut exterior surfaces and undercut channels, a layer of cement covering said foundation-bed and entering said channels, and floor-blocks supported on said layer and locked thereto by the entrance of the cement into said recesses, substantially as described.

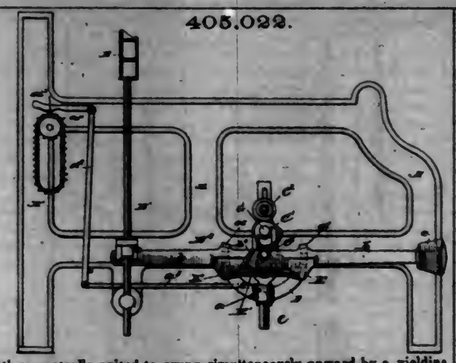
2. The combination of a foundation-bed, sheet-metal strips of dovetail cross-section dovetailed to said bed, a layer of cement covering said foundation-bed and dovetailed thereto, and a flooring composed of blocks dovetailed to said layer.

405,022. SHUTTLE-BOX-OPERATING LEVER FOR LOOMS. JOSEPH A. EVANS, Philadelphia, Pa. Filed Dec. 31, 1888. Serial No. 295,042. (No model.)

Brief.—The object of the invention is to provide a yielding lever of simple construction which will admit of the loom being operated at a high speed with safety.

Claim.—1. The combination, with the anchor and shuttle-boxes of a drop-box loom, of the shuttle-box lever constructed in two sections centrally united to swing simultaneously upward by a yielding connection, substantially as set forth.

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2. The combination, with the anchor and shuttle-boxes of a drop-box loom, of the shuttle-box lever above the anchor and constructed in two sections pivoted together on a fixed pivot projecting from the loom-frame to swing upward simultaneously when both sections are struck at the same time by said anchor, and operating as a single part when one section at a time is struck, substantially as set forth.

3. The combination, with the anchor and shuttle-boxes of a drop-box loom, of a shuttle-box lever constructed in two sections pivoted together and to the loom-frame by a single pivot or stud projecting from said frame above the anchor to permit of their simultaneous vertical movement, and a spring connecting the two sections below and at opposite sides of their pivotal point, substantially as set forth.

4. The combination, with the anchor and shuttle-boxes of a drop-box loom, of the shuttle-box lever constructed in two sections overlapped at their inner ends, provided with aligning apertures in said ends, and each having a series of stepped notches for the anchor to engage, a fixed pivot or stud projecting from the loom-frame through said apertures in the overlapped ends of the lever-sections to permit them to swing simultaneously upward, each section having a projection or lip engaging the inner end of the opposite section to hold the two sections in horizontal alignment, and a spring connecting the two sections below and at opposite sides of the pivot, substantially as set forth.

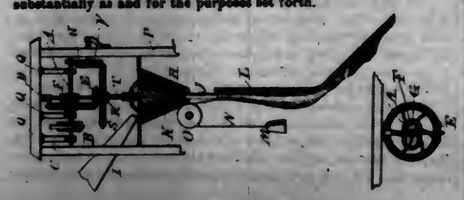
5. The combination, with the anchor and shuttle-box of a drop-box loom, of a shuttle-box lever consisting of two sections having beveled inner ends, a surface recess upon the inner face of one section and the outer face of the other, which recesses are provided with an inclined transverse wall, a lip formed upon each section projecting over the recess, a spring adapted for attachment to the several sections, and a projection integral with each section having notches stepped therein, substantially as shown and described.

6. In a drop-box loom, a shuttle-box lever constructed in two sections overlapped at their inner ends, a pivot uniting said overlapped ends and adapted to be connected to a loom-frame, the two sections each having a projection engaged by the end of the opposite section when the two sections are in alignment and permitting the upward swing of both sections on the pivot, and a spring uniting the two sections below the pivot and holding them normally in line with each other to operate as a single part, substantially as set forth.

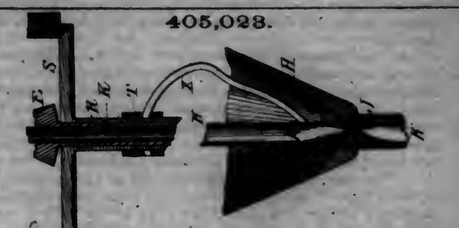
7. In a drop-box loom, a shuttle-box lever consisting in the two sections *b b'*, overlapped at their inner inclined ends and provided with pivot-apertures b^5, stepped projections *d d* on their inner sides, inclined surface recesses b^4 on the outer faces of each section for the inclined end of the opposite section to engage, and projections E, the spring E', secured at its ends to said projections, and the weight *e* on the section *b'*.

405,023. COLLAR-STUFFING MACHINE. CALVIN EWING, San Francisco, Cal. Filed Mar. 7, 1888. Serial No. 266,471. (No model.)

Claim.—1. In combination with the tube J and spiral stuffing rod K, the cam G, and yoke F, connected, constructed, and operated substantially as and for the purposes set forth.

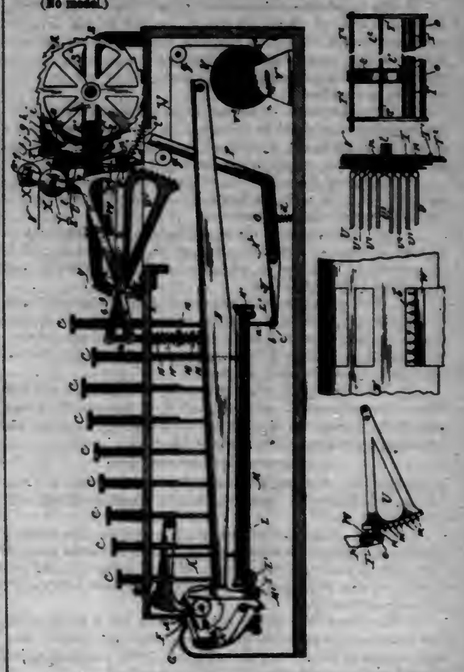


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2. The combination and arrangement of the stuffing-tube J, the stuffing-rod K, the feed-box H, the stirrers X, the sleeve T, the wheel S, the wheels U and V, and pinion W, the main driving-shaft A, the wheel D, the cam G and yoke F, the pinion E, the weight M, the cord N, and sheave O, constructed and operated substantially as and for the purposes set forth.

405,024. ADDING-MACHINE. DORR E. FELT, Chicago, Ill., assignor, by direct and mesne assignments, to the Felt & Tarrant Manufacturing Company, same place. Filed Jan. 19, 1883. Serial No. 261,294. (No model.)



Claim.—1. The combination, with the series of keys of an adding-machine, of a series of levers L, operated by said keys, a series of numeral-wheels A, type-heads, as U U' U² U³, a series of levers N, a rock-shaft N', common to all of said levers, stops J, wheels R and R', and an escapement mechanism between each of the levers L and the wheel R, substantially as and for the purposes specified.

2. The combination, with the series of keys of an adding-machine, a series of levers N, a common rock-shaft N', upon which said levers are mounted, and connections between said keys and levers, of an arm or lever O, carried by the rock-shaft, a bar P, connected with such arm or lever and carrying a compound pawl *e i*, a coacting escapement-wheel R, a pressure-bar T, and a wheel R', having teeth for advancing the pressure-bar, substantially as described.

3. The combination, with the series of keys of an adding-machine, of a series of stop-levers L, connections between said keys and levers, a series of levers N, operated from the stop-levers, a rock-shaft N', common to all of the levers N, an arm O, carried by the rock-shaft, a bar P, connected with said arm and carrying a double-acting pawl, an escapement-wheel R, with which the pawl coacts, a wheel R', connected with the wheel R and having a series of teeth, a moving power for both the wheels R and R', a pawl coacting with the

teeth of the wheel R', and a swinging pressure-bar T, substantially as described.

4. The combination, with the series of keys of an adding-machine, an escapement mechanism, and the bar P, carrying a double-acting pawl, of the toothed wheel R', means for actuating the escapement mechanism and the toothed wheel R', and the pressure-bar T, acted on by the toothed wheel, whereby said pressure-bar is forced against the paper to make an impression thereon with the descent of each key of the adding-machine, substantially as described.

5. The combination of the series of keys of an adding-machine, the levers L and N, connections between said levers, substantially as described, a common rock-shaft N', on which all the levers N are mounted, an arm O, carried by said rock-shaft, a bar P, pivotally connected with said arm and carrying a double-acting pawl, the escapement-wheel R, and the connected wheel R', whereby said wheel R' is advanced step by step with the striking of each key, substantially as described.

6. The combination, with the series of keys of an adding-machine, the bar P, carrying a compound pawl *e i*, and connections, substantially as described, between said bar and keys, of an escapement-wheel R, controlled by said pawl, the toothed wheel R', means for moving both wheels R R', the rubber *l*, and the pressure-bar T, substantially as described.

7. The combination, with several series of keys C of an adding-machine, a series of vibrating levers D, operated by said keys, and a series of numeral-wheels, of a recording-head for each series of keys, and connections between each vibrating lever and recording-head for operating said recording-head by the movement of said lever, substantially as described.

8. The combination of several series of keys C, a series of vibrating levers D, actuated by said keys, a series of numeral-wheels, a series of type-heads, and connections between the vibrating levers and the type-heads, substantially as described.

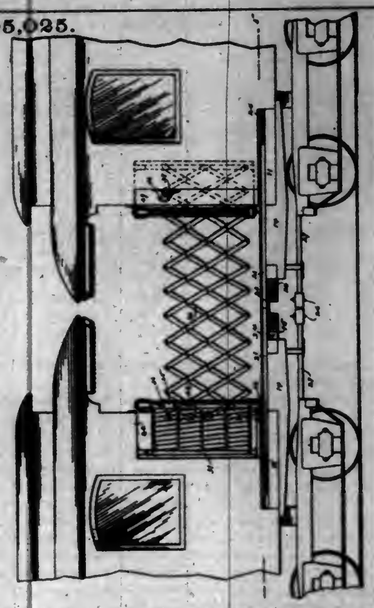
9. The combination of the keys C, the numeral-wheels A, and the levers D with rods, as 15, springs, as 17, arms, as 2, and a series of type-heads, substantially as described.

10. The combination of the numeral-wheels A, the series of keys C, stops J, levers L, levers N, rock-shaft N', having arm O, bar P, connected to said arm, and an escapement mechanism actuated by said bar, substantially as described.

11. The combination of a series of levers L and series of arms or levers N, a rock-shaft N', common to the levers N, arm O, a bar P, pawls *e* and *i*, wheel R, toothed wheel R', rubber *l*, and pressure-bar T with keys C, levers D, and a series of recording-heads operated from the levers, substantially as specified.

12. The combination, with the rock-shaft N', levers N, mounted thereon, and the levers L, and rock-shaft M, of the inclined connecting-arms L' between the levers L and rock-shaft M, for giving said levers uniform support, substantially as described.

405,025. PLATFORM FOR RAILWAY-CARS. ROBERT S. C. FULLER, New York, N. Y. Filed Feb. 12, 1889. Serial No. 299,609. (No model.)



Claim.—1. The combination, with a rigid platform, of an auxiliary platform pivoted thereon, capable of independent movement and provided with an opening in the forward end, and a door covering said opening, capable, when open, of exposing the draw-head, substantially as shown and described.

2. The combination, with a rigid platform and a spring at the rear of the same, of an auxiliary platform pivoted upon the fixed platform, capable of independent movement and having a bearing against the said spring, substantially as shown and described.

3. The combination, with a rigid platform and a spring pivoted at the rear of the same, of an auxiliary platform pivoted upon the fixed platform, slotted at the pivotal point to have longitudinal movement, the said platform being capable of independent movement and having a bearing against said spring, substantially as and for the purpose specified.

4. The combination, with the bottom of a railway-coach, provided with a horizontal recess in the upper face, a platform rigidly secured to the said bottom, and a spring pivoted in the floor-recess, of an auxiliary platform pivoted upon the fixed platform, capable of independent movement and having the rear end in contact with the said spring, substantially as shown and described.

5. The combination, with the bottom of a railway-coach, provided with a horizontal recess in the upper face, a platform secured to the said bottom, and a spring pivoted in the floor-recess, of an auxiliary platform pivoted upon the fixed platform, capable of independent movement and contact with the said spring, and wear-plates secured to the end of said platform at each side of the center, having a recessed under face, all combined for operation substantially as shown and described.

6. The combination, with the bottom of a railway-coach, provided with a horizontal recess in the upper face having an irregular rear wall, a platform rigidly secured to the said bottom, and a spring pivoted in the floor-recess, of an auxiliary platform of greater length than the fixed platform, pivoted to the rear and capable of independent movement and bearing against said spring, diagonal wear-plates secured to the rear end of the platform, one at each side of the center, and provided with a recessed under face, and a door hinged to the pivoted platform at the forward end, adapted to cover the recess produced therein, all combined for operation substantially as shown and described.

7. The combination, with the bottom of a railway-coach, provided with a horizontal recess in the upper face having an irregular rear wall, a platform rigidly secured to the said bottom, a block pivoted in the floor-recess near the center, and a bow-spring rigidly secured to the said block, of an auxiliary platform pivoted to the fixed platform and having a movement independent thereof and a bearing against the said spring, a friction-roller journaled in the base-wall of the floor-recess in contact with the pivoted platform, and a wear-plate secured to the rear of the platform, one plate at each side of the center, the said plates provided with a recess in the under face to receive the ends of the bow-spring, all combined for operation substantially as shown and described.

8. The combination, with a rigid platform, of an auxiliary platform pivoted thereon, of greater length than the fixed platform, and means, substantially as shown and described, for supporting the outer projecting ends of the pivoted platform, as and for the purpose specified.

9. The combination, with a rigid platform, of an auxiliary platform pivoted thereon, capable of independent movement and of greater length than the fixed platform, and fingers secured to the end sills of the fixed platform, adapted for contact with the under face of the projecting portion of the pivoted platform, all combined for operation substantially as shown and described.

10. The combination, with a rigid platform and fingers horizontally secured to the end sill of the same and an opposed platform, the upper surface of which is recessed to receive said fingers, of an auxiliary platform pivoted upon each fixed platform, having their ends projected beyond the sills above the fingers to contact each other, substantially as shown and described.

11. The combination, with a rigid platform and a spring pivoted at the rear of the same, of an auxiliary platform pivoted upon the fixed platform, capable of independent movement and having a bearing against said spring, and horizontal fingers attached to the end sill of the fixed platform, adapted for engagement with the under face of the pivoted platform, substantially as shown and described.

12. The combination, with a rigid platform, a spring pivoted to the rear of the same, and graduated fingers horizontally secured to the end sill of the fixed platform, of an auxiliary platform pivoted upon the fixed platform, capable of independent movement, and of greater length than the said fixed platform, and slotted for contact with the said spring, all combined for operation substantially as shown and described.

13. The combination, with a fixed platform provided with an end sill having a recess at each side of the center and ribs formed upon the recessed face, of an opposing fixed platform, fingers horizontally secured to the end sill of the latter platform, adapted for contact with the said recessed sill, and an auxiliary platform pivoted upon each of the fixed platforms, having square abutting outer ends projected beyond the sills of the said fixed platforms and above the said fingers all combined for operation substantially as shown and described.

14. The combination, with a railway-coach provided with a fixed platform and an auxiliary platform pivoted upon the fixed platform, of a folding gate attached to one side of the coach near each end and adapted to project over the platform of the adjacent coach and to be secured to the said coach, substantially as shown and described.

15. In a railway-coach, the combination, with a body provided with side recesses at each end, a fixed platform, and an auxiliary platform pivoted upon the fixed platform, of a folding gate secured within one of the side recesses, adapted to travel upon the platform, and a spring-actuated latch secured in the opposite side recess, all combined for operation substantially as shown and described.

16. In a railway-coach, the combination, with a body provided with side recesses at each end, a fixed platform, and an auxiliary platform pivoted upon the fixed platform, of a folding gate secured within one side recess, a horizontal spring-actuated latch secured in the opposite side recess, and a second folded gate pivoted upon the ends of the coach adjacent to the recess carrying the latch, all combined for operation substantially as shown and described.

17. In a railway-coach, the combination, with a body provided with side recesses at each end, a fixed platform, and an auxiliary platform pivoted upon the same, of a folding gate secured within one side recess, a spring-actuated latch held within the opposite recess, a second folding gate pivoted upon each end of the coach contiguous to the spring-actuated latch, and a third folding gate secured to the end of the coach-hood, substantially as shown and described.

18. In a railway-coach, the combination, with a body provided with side recesses at each end, a fixed platform, and an auxiliary platform pivoted to the fixed platform and extending beyond the same, of a folding gate secured within one of the side recesses of the coach, a spring-actuated latch secured within the opposite recess, a second folding gate pivoted at each end of the coach, a third folding gate hinged to the end of the coach-hood, provided with a locking device at the lower end, adapted for contact with the outer end of the pivoted platform, and means, substantially as shown and described, for securing the end gate in a horizontal position beneath the hood, as and for the purpose specified.

19. In a railway-coach, the combination, with a body provided with a pocket formed in each end and a fixed platform, of an auxiliary platform pivoted upon the fixed platform and a brake device located within the said pocket, substantially as and for the purpose specified.

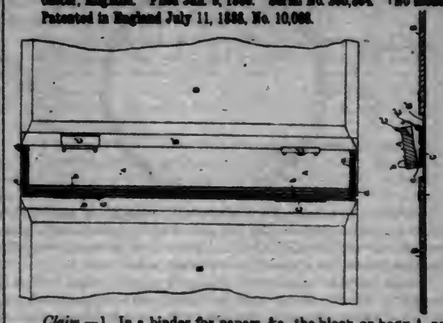
20. In a railway-coach, the combination, with a body provided with side recesses at each end, a fixed platform, a pocket in each end adjacent to one of the said recesses, and an auxiliary platform pivoted upon the fixed platform, of a folding gate secured within one side recess and a latch horizontally held in the opposite side recess, a second folding gate pivoted at each end of the coach, a third folding gate hinged to the end of the coach-hood, provided with a locking device adapted for contact with the outer end of the pivoted platform, a brake device located within the pocket of the body, and means, substantially as shown and described, for retaining the end-gate in a horizontal position beneath the hood, substantially as and for the purpose specified.

21. In a railway-coach, the combination, with a body having a bottom provided with a horizontal recess in the upper face, a platform rigidly secured to the bottom, and a spring pivoted in the floor-recess, of an auxiliary platform pivoted upon the fixed platform, of greater length than the fixed platform, capable of independent movement and having the rear end in contact with the said spring, a sliding folding gate secured at one side of the coach-body, adapted to travel upon the auxiliary platform, a latch attached to the opposite side of the body, a brake device located in a pocket formed in the end of the coach-body, a second folding gate pivoted to each end of the coach, and a third folding gate hinged to the end of the coach-hood, with means, substantially as shown and described, for locking the end-gate in a vertical and in a horizontal position, as and for the purpose specified.

22. The combination, in a railway-coach provided with doorways having a double-spaced partition at one side, of two sliding doors located between the partitions, one door provided with a transverse groove extending nearly from side to side, and the other door having secured thereto a lug capable of entering and sliding in the said groove, substantially as shown and described.

23. In a railway coach, the combination, with a body provided with a pocket at each end, doorways having a double-spaced partition, and fixed platforms, of an auxiliary platform pivoted upon each of the fixed platforms, a brake device located within the said pocket, sliding doors located between the said partitions, one door provided with a transverse groove extending, essentially, from side to side, and the other door with a lug capable of entering the said groove and sliding therein, all combined for operation as and for the purpose specified.

405,026. BINDER OR FILE FOR DOCUMENTS. PETER GARTON, ROBERT GARTON, and JOHN GARTON, Newton-le-Willows, County of Lancaster, England. Filed Jan. 9, 1889. Serial No. 296,864. (No model.) Patented in England July 11, 1888, No. 10,068.



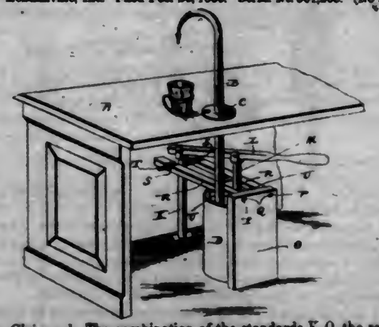
Claim.—1. In a binder for papers, &c., the block or body A, provided at its ends with the series of notches *a*, in combination with the independent fastening cords or strings *b*, extending lengthwise of the upper face of the block and in the said notches, and the stops or projections on the said cords arranged to engage the under face of the block to prevent their escape.

2. The block A, provided with the notch *a*, in combination with the fastening-string *b*, extending lengthwise of the upper face of said block and into the notch, and the stop or projection on said string in position to engage the under face of the block at the side of the notch, whereby the string may be removed to permit the insertion or removal of papers by disengaging the projection from the block.

3. In a binder for papers, the binding-rack A, the binding-cords extending along its upper face and terminating beneath the same, in combination with the cover or back hinged to said rack, whereby the latter may be tilted to permit the manipulation of the fastening-strings.

4. In a binder for papers, the binding rack A, the series of independent fastening-cords extending lengthwise of its upper face, their free ends terminating beneath the same, in combination with the back or cover B, hinged to said rack at one edge, and the fastening device for securing the opposite edge to the cover, whereby the free ends of the cords are confined and protected between the cover and the rack.

405,027. SODA-WATER APPARATUS. GEORGE W. GILBERT, Kendallville, Ind. Filed Feb. 26, 1889. Serial No. 301,205. (No model.)



Claim.—1. The combination of the standards K O, the reservoir arranged between the standards, the cylinder arranged in the reservoir, the discharge-pipe leading therefrom, the piston working in the cylinder, the bearing-plates mounted on the base of the cylinder, and beams engaging the standards and bearing on said plates, as set forth.

2. The combination of the standards K O, the reservoir between the same, the cylinder within the reservoir, having an enlarged base, the plates U, bearing on the enlarged base of the cylinder, the cross-bar T at the upper end of the standard K, and the beams R, having

their front ends engaging the standard O, and their rear ends provided with transverse notches engaging the cross-bar T, and their intermediate points bearing on the plates U, as set forth.

405,028. EARTHENWARE. CHARLES C. GILMAN, Eldora, Iowa. Filed Oct. 22, 1887. Serial No. 253,133. (No model.)

Claim.—A burned porous earthenware product having incorporated therein fibers of asbestine wool, substantially as described.

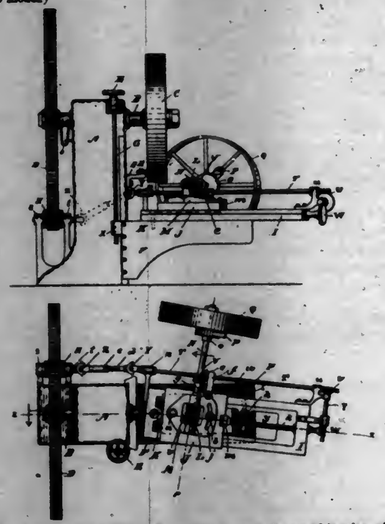
405,029. WIRE BARREL-HOOP. EDWARD C. GORDON, Chetopa, Kans. Filed Nov. 30, 1888. Serial No. 292,183. (No model.)



Claim.—1. A barrel-hoop composed of a length of wire wound to form a number of strands, the ends of the length of wire being locked, substantially as specified, and the body of the hoop being held in place at intervals by bands, substantially as described.

2. A barrel-hoop composed of a length of wire wound to form a number of strands, formed upon its leading end *a* with a loop *b* and portion *c*, and its other end bent through the loop *b*, the bent portion *e* being secured in place by a band *f*, and other bands *g* at intervals throughout the body of the hoop, substantially as specified.

405,030. MACHINE FOR CUTTING SPUR AND WORM GEARS. GEORGE R. GRANT, Malden, Mass. Filed Dec. 12, 1887. Serial No. 257,714. (No model.)



Claim.—1. In a machine for cutting gears, the combination of a spindle for holding the gear-blank, a carriage for holding the cutter-shaft, means for feeding the carriage, whereby the cutter is carried across the face of the blank, a cutter-head adjustably attached to the carriage, a cutter-shaft held by the cutter-head, and a positive connecting mechanism, whereby rotary motion is communicated from the cutter-shaft to the gear-spindle, substantially as described.

2. In a machine for cutting gears, the combination of a spindle for holding the gear-blank, a carriage for holding the cutter-shaft, means for feeding the carriage, whereby the cutter is carried across the face of the blank, a cutter-shaft adjustably secured to the carriage, whereby it may be set at an angle corresponding to that of the thread of the cutter to be employed, and a positive connecting mechanism, whereby rotary motion is communicated from the cutter-shaft to the gear-spindle, substantially as described.

3. In a machine for cutting gears, the combination of a spindle for holding the gear-blank, a carriage for holding the cutter-shaft, means for feeding the carriage, whereby the cutter is carried across the face of the blank, said carriage being made adjustable to vary the angle of its feed to the gear-spindle, a cutter-shaft adjustably secured to the carriage, whereby it may be set at an angle corresponding to that of the thread of the cutter to be used, and a positive connecting mechanism, whereby rotary motion is communicated from the cutter-shaft to the gear-spindle, substantially as described.

4. In a machine for cutting gears, the combination of a spindle for holding the gear-blank, a carriage for holding the cutter-shaft, said carriage being made adjustable to vary the angle of its feed to the gear-spindle, means for feeding the carriage, whereby the cutter is carried across the face of the blank, a cutter-head adjustably attached to the carriage, a cutter-shaft held by the cutter-head, and a positive connecting mechanism, whereby rotary motion is communicated from the cutter-shaft to the gear-spindle, substantially as described.

5. In a machine for cutting gears, the combination of a spindle for holding the gear-blank, a cutter-carriage for holding the cutter-shaft, means for feeding the carriage, whereby the cutter is carried across the face of the blank, a cutter-shaft and a spiral cutter secured on the carriage at an angle with the direction of the feed of the carriage substantially equal to the angle of the thread of the cutter with its axis, and a positive connecting mechanism, whereby rotary motion is communicated from the cutter-shaft to the gear-spindle, substantially as described.

6. In a machine for cutting gears, the combination of the frame A, the spindle B, the adjustable bed F, the frame I, adjustably secured on the bed F, the carriage J, sliding on the frame I, means for feeding the carriage on the frame I, the cutter-shaft N, adjustably secured to the carriage, and the positive connecting mechanism, whereby rotary motion is communicated from the cutter-shaft to the gear-spindle, substantially as described.

7. In a machine for cutting gears, the combination, with the gear spindle B, the cutter-shaft N, and the positive connecting mechanism, whereby rotary motion is communicated from the cutter-shaft to the gear spindle, of the pulley Q, loosely connected with the shaft N by a ratchet and pawl, whereby the accidental rotation of the shaft in the wrong direction is prevented, substantially as described.

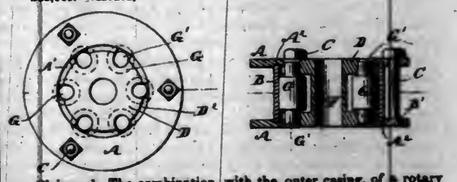
8. In a machine for cutting gears, the combination, with the frame-work and the horizontal spindle for holding the gear-blank having a play or movement within its bearings in the direction of its length, of the rest R, for the rear side of the gear-blank, substantially as described.

9. In a machine for cutting gears, the combination, with the frame-work and the horizontal spindle for holding the gear-blank having a play or movement within its bearings in the direction of its length, of the rest R, for the rear side of the blank, and the spring *o*, whereby the blank is pressed against the rest, substantially as described.

10. In a machine for cutting gears, the combination, with the cutter-shaft N, of the carriage J and bed F, arranged under the cutter-shaft for the purpose of supporting and operating the same and having apertures arranged substantially one above the other and under the cutter-shaft, whereby a clear passage is formed through which the chips may fall from the cutter, substantially as described.

11. In a machine for cutting gears, the combination, with the cutter-shaft N, of the sliding carriage J and the fixed bed F, an aperture in the carriage substantially under the cutter-shaft, and a long aperture in the fixed bed substantially under the aperture in the carriage, whereby a clear passage is formed through which the chips may fall from the cutter, substantially as described.

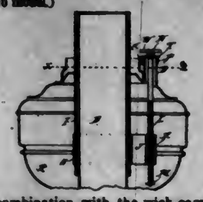
405,031. ANTI-FRICTION BEARING. ESTHUEL G. HANDY and GEORGE H. HANDY, Monroe, N. Y. Filed Sept. 20, 1888. Serial No. 285,865. (Model.)



Claim.—1. The combination, with the outer casing, of a rotary tubular box therein and a series of rollers journaled thereon parallel with its axis, the faces of the rollers contacting with the inner side of the casing, and there being a space formed between the outer surface or periphery of the tubular box and the rollers to prevent frictional contact, substantially as set forth.

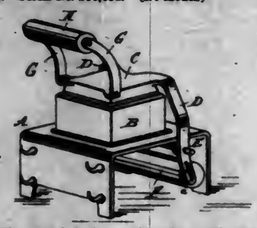
2. In an anti-friction bearing, a casing consisting of two plates A, each provided on its inner side with a circumferential groove and a band-ring seated in said grooves, in combination with a box consisting of a tube F, grooved and recessed flanges D, secured to the respective ends of said tube, and rollers G, journaled in the recesses of said flanges D, substantially as shown and described.

405,032. LAMP. HIRAM W. HAYDEN, Waterbury, Conn., assignor to Holmes, Booth & Haydens, same place. Filed Mar. 9, 1888. Serial No. 266,672. (No model.)



Claim.—The combination, with the wick-carrying ring H, provided with an arm J, bearing a nut K, of the vertical screw-threaded shaft L, terminating at its upper extremity in a manipulating-button W, and bearing a locking-ring P, provided with a tongue S, adapted and arranged to engage with perforations in the walls at the sides of a slot on the top of the oil-fount, substantially as shown and described.

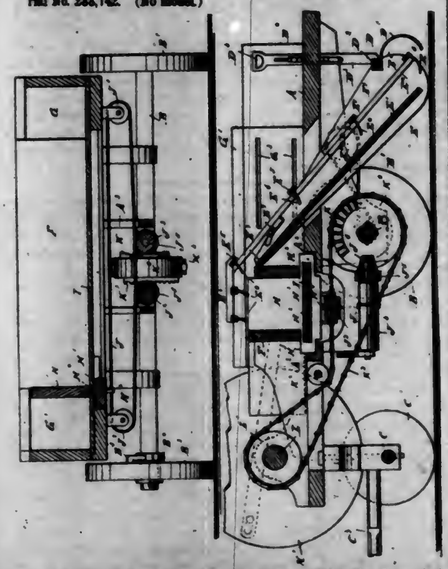
405,033. INKSTAND. JOHN J. HOEY, New York, N. Y. Filed Sept. 23, 1888. Serial No. 286,602. (No model.)



Claim.—1. The stand A, in combination with cover C, having arms G and D, the latter pivoted below the ink-receptacle and provided with the weight F, substantially as described.

2. The cover C, provided at its rear corners with the downwardly-projecting arms D and at the top with the upwardly-projecting arms G, substantially as described.

405,034. COMBINED HAY-RAKE AND BALING-PRESS. JOHN A. HOUTON and GILBERT L. WIARD, Atkinson, Nebr., assignors to themselves and Harry W. Mathews, same place. Filed Oct. 22, 1888. Serial No. 288,742. (No model.)



Claim.—1. The combination, with the parallel baling-boxes having a common receiving-box at right angles thereto, of the alternately-operating plungers in said baling-boxes, the reciprocating plunger in said receiving-box having two working-faces, and an operating mechanism outside of the receiving-box connected with said plunger therein, substantially as set forth.

2. A combined hay-rake and double baling-press comprising the hay-rake, the elevator, the longitudinally-extending baling-boxes, their alternately-operating plungers, and a feeder delivering alternately into said baling-boxes, substantially as set forth.

3. The combination, with a hay-rake and an elevator, of a transverse receiving-box into which the said elevator discharges, a plunger operating in the said receiving-box, a baling-box located at each end of the said receiving-box, and plungers operating in the said baling-boxes, substantially as shown and described.

4. The combination, with a hay-rake and an elevator, of a transverse receiving-box into which said elevator discharges, a plunger operating in the said receiving-box, a baling-box located at each end of the said receiving-box, plungers operating in the said baling-boxes, and followers held adjustably in the said baling-boxes, substantially as shown and described.

5. The combination, with a platform and a main driving-axle having a rotary motion, of a hay-rake held adjustably on the rear end of the said platform, an elevator receiving its motion from the said main axle and fed by the said hay-rake, a receiving-box held transversely on the upper end of the said elevator, a plunger moving transversely in the said receiving-box, deriving its motion from the said main axle baling-boxes located at the ends of the said receiving-box, a follower held adjustably in each of the said baling-boxes, and plungers moving in the said baling-boxes and deriving their motion from the said main axle, substantially as shown and described.

6. The combination, with a platform and a main axle, of a receiving-box located transversely on the said platform, a plunger mounted to slide in the said receiving-box, a rope connected by its ends to the said plunger, wheels around which the said rope is wound, beveled gear-wheels held on the said wheels, and segmental gear-wheels held on the said main axle and adapted to engage the said bevel gear-wheels alternately, substantially as shown and described.

7. The combination, with a platform and a main axle, of two baling-boxes located longitudinally on the said platform, plungers operating alternately in the same direction in the said baling-boxes, pitmen pivotally connected with the said plungers, crank-disks pivotally connected with the said pitmen, a shaft carrying the said crank-disks and deriving a rotary motion from the said main axle, a receiving-box mounted transversely on the said platform and discharging at its ends into the said baling-boxes, and a plunger held to slide in the said receiving-box and operated from the said main axle, substantially as shown and described.

8. The combination, with a platform and a main axle, of two baling-boxes located longitudinally on the said platform, plungers operating alternately in the same direction in the said baling-boxes, pitmen pivotally connected with the said plungers, crank-disks pivotally connected with the said pitmen, a shaft carrying the said crank-disks and deriving a rotary motion from the said main axle, a receiving-box mounted transversely on the said platform and discharging at its ends into the said baling-boxes, a plunger held to slide in the said receiving-box and operated from the said main axle, and adjustable followers held in the said baling-box, substantially as shown and described.

9. A combined raking and baling machine consisting of a supporting-frame mounted on drive-wheels, a hay-rake, an elevator receiving the hay from said rake, a receiving-box into which said elevator discharges, a plunger reciprocating in said box, a baling-box, a plunger reciprocating in said baling-box, and operating mechanism, substantially as set forth.

405,035. BOTTLE-STOPPER. THOMAS B. HOWE, Scranton, Pa., assignor to the Scranton Jar and Stopper Company, same place. Filed Nov. 30, 1888. Serial No. 292,284. (No model.)



Claim.—1. In a bottle-stopper fastening, the combination, with the bottle having the abrupt shoulder, the neck-wire, and the link or bail piece pivotally connected thereto, of the stopper, the catch-wire connected thereto and having both its ends bent down and pivotally connected to the link or bail piece on one side of the stopper, and having the diverging downwardly-extending portion on the opposite

side of the stopper, with the horizontal portion for engaging the abrupt shoulder bent inward at the center, substantially as described.

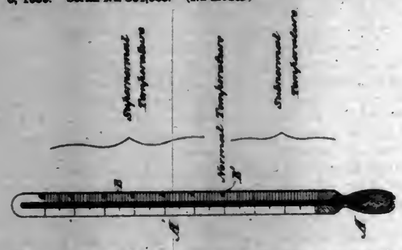
2. In a bottle-stopper fastening, the combination, with the bottle having the abrupt shoulder, the neck-wire, and the link or bail piece pivotally connected thereto, of the stopper, the catch-wire connected thereto and bent down and pivotally connected to the bail-piece by both its ends on one side the stopper, and the diverging downwardly-extending portions on the opposite sides of the stopper, with the horizontal portion for engaging the abrupt shoulder bent inward at the center, and the thumb-piece at the center of such inwardly-bent portion, whereby the same is permitted to spring outward while being locked, substantially as described.

3. The combination, with the bottle, of the metal cap-plate having the depending annular extension screw-threaded on both sides, the stopper fitting within the extension, the rubber washer around the same co-operating with the bottle-mouth to make a tight joint, and the catch-wire for retaining the stopper in position, substantially as described.

4. The combination, with the bottle, of the metal cap-plate having the depending annular extension screw-threaded on both sides, the stopper fitting within the extension, the rubber washer around the extension and having the downwardly-projecting annular flange extending over the edge of the extension on the cap-plate and adapted to fit within the mouth of the bottle to make a tight joint; and the catch-wire for retaining the stopper in position, substantially as described.

5. In a bottle-stopper fastening, the combination, with the catch-wire and neck-wire, of the link or bail piece connecting the neck-wire and catch-wire formed of the single piece of wire bent into the two side links with the eyes at each end forming separated bearings, as described, and the connecting-piece uniting said side links, substantially as and for the purpose set forth.

405,086. CLINICAL THERMOMETER. ROBERT H. HUMSTOCK, San Antonio, Tex., and ERNESTO CHÁVES, Guanajuato, Mexico. Filed Mar. 6, 1889. Serial No. 301,933. (No model.)

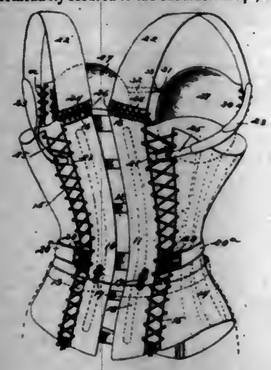


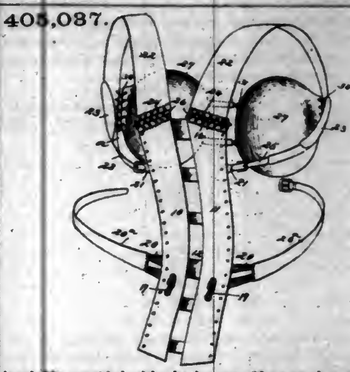
Claim.—1. A scale for thermometers having the zero-mark placed at the normal temperature of the body.

2. As an improved article of manufacture, a clinical thermometer, having a zero-mark of the scale placed at the normal temperature of the body, substantially as shown and described.

405,037. CORSET. LUCY J. JAMES, Pomona, Cal. Filed Feb. 5, 1889. Serial No. 298,717. (No model.)

Claim.—1. A corset comprising the back-stays 10 and 11, connected together, the shoulder-straps 22, provided with the elastic tape 25 at one end and detachably secured to the back-stays, the breast forms or pads detachably secured to the shoulder-straps, and the waist-

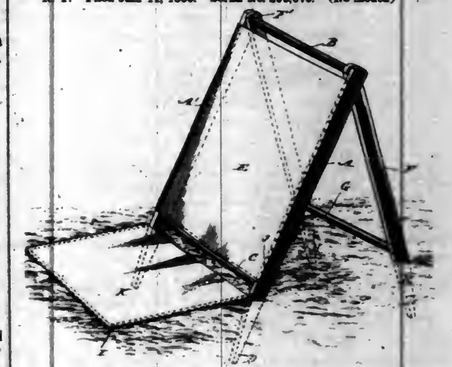




band 20ᵇ, provided with elastic tapes 20, secured to the back-stays, substantially as herein shown and described.

2. The herein-described corset, consisting of the back-stays 10 and 11, connected together, the side pieces 13 and 14, detachably secured to the back-stays, the shoulder-straps 22, detachably secured to the upper ends of the said stays, the detachably-connected breast forms or pads 27, detachably secured to the shoulder-straps, and the waistband 20ᵇ, secured to the back-stays, as specified.

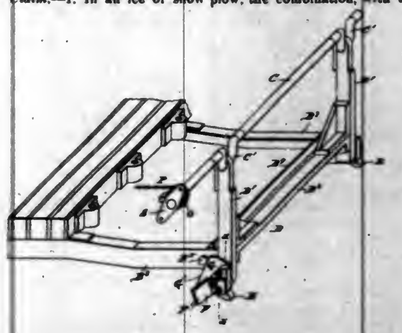
405,088. BEACH-CHAIR. CHARLES E. KOEHLING, New York, N. Y. Filed Jan. 11, 1889. Serial No. 296,079. (No model.)



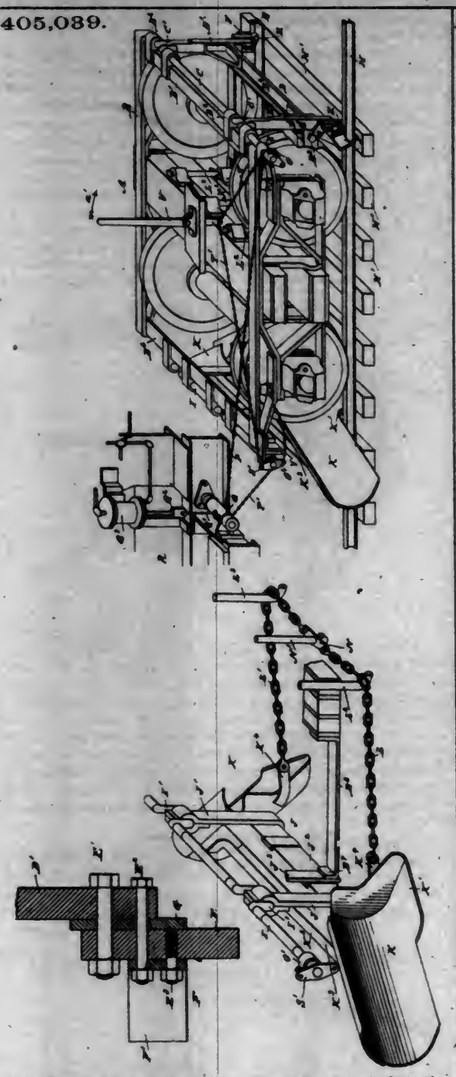
Claim.—The herein-described beach-chair, consisting of a back-rest formed of side pieces A A', united by rounds B C, and covered with the flexible material E, a brace-frame formed of the side pieces F F', united by the round G, and pivoted to the upper ends of the side pieces A A' and the metallic seat-frame I, pivoted to the side pieces A A' a short distance from their lower ends and covered with the water-proof material K, the said water-proof material being separate from the flexible material E, as specified.

405,089. ICE OR SNOW PLOW FOR RAILROAD-TRACKS. EDWARD LESLIE, Orangeville, Ontario, Canada. Filed May 2, 1888. Serial No. 272,552. (No model.)

Claim.—1. In an ice or snow plow, the combination, with the



405,089.



truck-frame, of front and rear frames adapted to be raised simultaneously or independently, and plows and scrapers secured to the said front frames, and flangers secured on the said rear frames, substantially as shown and described.

2. In an ice or snow plow, the combination, with the truck-frame provided with a shaft having crank-arms, and which is adapted to turn, of a frame pivotally suspended upon said crank-arms, and plows secured on the said frame, substantially as shown and described.

3. In an ice or snow plow, the combination, with the truck-frame provided with a shaft having crank-arms, and which is adapted to turn, of a frame pivotally suspended upon said crank-arms, and scrapers secured to the said frame, substantially as shown and described.

4. In an ice or snow plow, the combination, with the truck-frame provided with a shaft having crank-arms, and which is adapted to turn, of a frame pivotally suspended upon said crank-arms, and flangers supported on the said frame, substantially as shown and described.

5. In an ice or snow plow, the combination, with a truck-frame, a shaft mounted on the said truck-frame and having crank-arms, and a lever held on the said truck-frame for turning the said shaft, of a frame hung on the said shaft, and plows and scrapers held on the said frame, substantially as shown and described.

6. In an ice-plow, the combination, with a truck-frame, of a shaft journaled in the said truck-frame and provided with crank-arms, and a frame hung on the said crank-arms and guided on the said truck-frame, substantially as shown and described.

7. In an ice-plow, the combination, with a truck-frame, of a shaft journaled in the said truck-frame and provided with crank-arms, a frame hung on the said crank-arms and guided on the said truck-frame, and plows and scrapers held on the said frame, substantially as shown and described.

8. In an ice-plow, the combination, with a truck-frame, of a shaft journaled in the said truck-frame and provided with crank-arms, a frame hung on the said crank-arms and guided on the said truck-frame, and flangers secured to the said frame, substantially as shown and described.

9. In an ice or snow plow, a drum carried upon a car-body and adapted to be turned, in combination with shafts carried by a truck-frame having crank-arms and adapted to turn, frames pivotally suspended upon said crank-arms, and plows, scrapers, and flangers held on the said frames, the said drum and shafts being operatively connected by means of chains, substantially as shown and described.

10. In an ice or snow plow, the combination, with the post or device which carries the ice-plow, and the ice-plow, of two bolts of unequal strength, substantially as shown and described, whereby the weaker bolt will be sheared off in case of contact with a solid obstruction, as set forth.

11. In an ice or snow plow, the combination, with two bolts of unequal strength, of an ice-plow held on the said two bolts, and a scraper secured to the said ice-plow, substantially as shown and described.

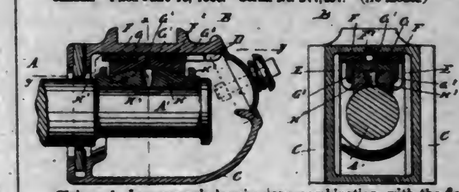
12. In an ice or snow plow, the combination, with a post, of two bolts of unequal strength and secured to the said posts, an ice-plow held on the said bolts, and a scraper secured to the said ice-plow, substantially as shown and described.

13. In an ice or snow plow, the combination, with flangers, of chains connected with the said flangers, and a fixed plate, to which the said chains are secured, and which will break centrally when the flangers receive an abnormal strain, substantially as shown and described.

14. In an ice or snow plow, the combination, with a frame mounted to swing, and flangers held on the said frame, of chains connected with the said flangers, and a fixed plate, to which the said chains are secured, and which will break when the flangers receive an abnormal strain, substantially as shown and described.

15. In an ice or snow plow, the combination of the flangers and the plate N, connected with the flanger-chains and weakened at the center, substantially as shown and described.

405,040. CAR-AXLE BOX. EDWARD LESLIE, Orangeville, Ontario, Canada. Filed June 18, 1888. Serial No. 277,457. (No model.)



Claim.—1. In a car-axle bearing, the combination, with the flat key fitting into the casing provided with a central aperture, of an intermediate plate held on the under side of the said key and the circular offset fitting into the aperture formed in the said key, substantially as described.

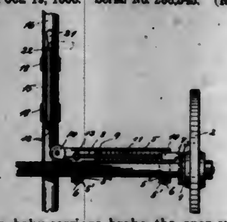
2. In a car-axle bearing, the combination of a flat key fitting into the casing, a central aperture formed therein, an intermediate plate on the under side of the said flat key and with a semi-cylindrical concave bearing on the under side, and downwardly-extending flanges formed on the side of said plate, and an axle-brass fitted between said flanges and provided with a semi-cylindrical convex bearing on its upper side, substantially as described.

3. In a car-axle bearing, the combination of a flat key fitted in the casing, a central aperture formed therein, an intermediate plate bearing against the under side of the key and provided with a circular offset fitting into the opening in the key, having on its under side a semi-cylindrical concave recess, downwardly-extending flanges, and an axle-brass having its bearing on the bottom of the intermediate plate and provided on its upper side with a semi-cylindrical convex surface and arranged within the downwardly-extending flanges, substantially as described.

4. In a car-axle bearing, the combination, with the box or casing, of a key fitted in the casing and provided with a central opening, an intermediate plate bearing against the bottom of the key and having a circular hub fitting within the aperture formed in the key, the said

intermediate plate being provided with an oil-hole and the semi-cylindrical concave under surface, and an axle-brass fitted to bear against the under side of the intermediate plate and provided with a central conical oil-aperture, substantially as described.

405,041. BRAKE FOR BABY-CARRIAGES. ISAAC LEVY, Newport, R. I. Filed Oct. 19, 1888. Serial No. 288,543. (No model.)

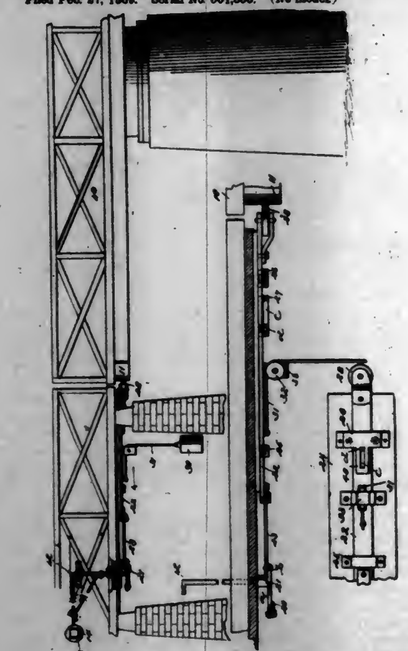


Claim.—1. In a baby-carriage brake, the open-ended casing 5, having integral arms overlapped at their ends to form axle-receiving sleeves 4', and the sliding locking-bolt mounted in said casing, substantially as set forth.

2. A ratchet-collar for the hubs of baby-carriages formed in two hinged parts with a fastening for holding the collar clamped to the hub, substantially as shown and described.

3. A brake for baby-carriages, consisting of collar 1 on the inner face of the hub of one of the rear wheels, and having ratchet-teeth 3, a bolt 7, with spring 11, for holding it in engagement with ratchet-teeth 3, mounted on the axle 4, adjacent to teeth 3, a casing 5, secured to the axle by sleeves having overlapping slotted ends held by a set-screw, the casing covering the bolt and spring, and a guide-rod 8, mounted in a guide-block 9 on the axle, a pulley 14 on the inner end of casing 5, a tubular casing 15, with a slot 22 at its upper end, mounted on one of the handle-arms 16, an L-shaped handle 20 in the upper end of casing 15, with an arm 21 fitting slot 22, and a chain 12, connected at one end to handle 20, extending through casing 15, passing under pulley 14, and connected to the end of guide-rod 8, substantially as shown and described.

405,042. DRAW-BRIDGE SIGNAL. MOSES H. LONG, Sabula, Iowa. Filed Feb. 27, 1889. Serial No. 301,356. (No model.)



Claim.—1. The combination, in a draw-bridge signal, of the vertically-adjustable crane 12, having a sliding collar 15, provided with a set-screw, a wear-plate 17, and a lever 19, having a collar or hub 18 on the lower end of the vertical arm of the frame, a set-screw *e* therefor, with the slide projecting beyond the draw-opening, and connections between the rear end of the slide and the lever 19, substantially as set forth.

2. The combination, with a bridge provided with a cam-face, of a slide provided with an anti-friction roll, straps by which the slide is supported, one of said straps being provided with a slot, a stud carried by the slide which rides in said slot, a weight connected with the slide, a bell-crank lever, connections between the bell-crank lever and the slide, a crane, a lever-arm carried thereby, and connections between said lever-arm and the bell-crank lever, substantially as described.

3. The combination, with a bridge provided with a cam-face, of a slide carrying an anti-friction roll against which the cam-face at times will bear, a weight connected to the slide, a bell-crank lever provided with slotted arms, a link connected to the slide and adjustably connected to one of the bell-crank-lever arms, a crane, a slotted lever-arm adjustably connected thereto, and a link connecting said lever-arm and one of the bell-crank-lever arms, substantially as described.

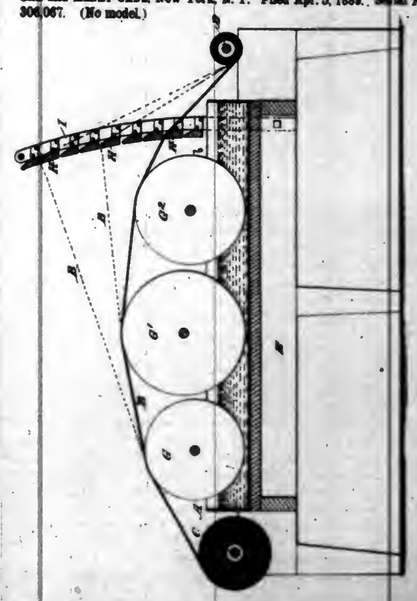
405,043. STAND FOR SEWING-MACHINES. WILLIAM A. MACK, Norwalk, Ohio. Filed Mar. 6, 1885. Serial No. 157,877. (No model.)



Claim.—1. In a sewing-machine stand, the combination, with two or more shelves supported in position by metallic arms, of two or more drawers supported on the upper side of said shelves, and each guided longitudinally by a tongue operating within a groove, substantially as set forth.

2. In a sewing-machine stand, the combination, with two or more shelves supported in position by detachable metallic arms, said arms extending within grooves or openings arranged transverse to the length of said shelves, of two or more drawers supported on the upper side of the latter, and a tongue or groove for guiding the same, substantially as set forth.

405,044. APPARATUS FOR COATING PAPER. GEORGE MANAHAN and HENRY GADE, New York, N. Y. Filed Apr. 5, 1889. Serial No. 306,067. (No model.)

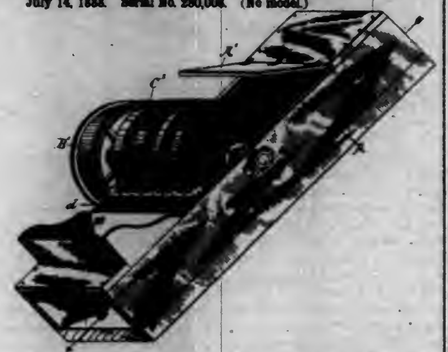


Claim.—1. The combination, with the web-carrying roller C, web take-up roller D, the vat A, and two or more smearing or coating rolls projecting down within the vat and arranged one behind the other, of a rack of fixed scrapers H H, arranged one above the other and extending above and to and below the level of the smearing-rolls, essentially as and for the purposes herein set forth.

2. The combination, with the vat A and the series of smearing or coating rolls arranged to work therein, of the fixed scrapers H H, arranged one above the other, and in overhanging relation with one another above and over the vat, substantially as specified.

3. The scrapers H, constructed with a recess *d* intermediately of their length and arranged one above the other, as described, in combination with the series of smearing-rolls, the vat, and the web-carrying and take-up rollers, essentially as and for the purpose herein set forth.

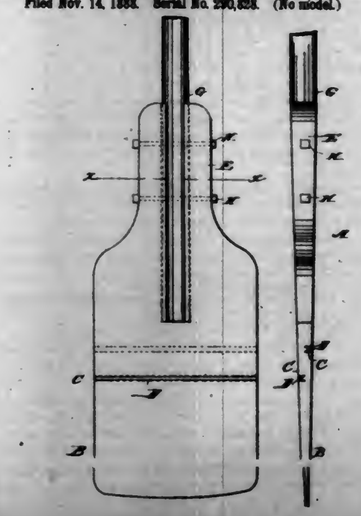
405,045. MAGNETIC MACHINE FOR REMOVING MINERAL SUBSTANCES FROM GRAIN. MARTIN L. MOWERS, Dayton, Ohio. Filed July 14, 1888. Serial No. 280,008. (No model.)



Claim.—1. The combination of the grain-spout A, the shaft B, journaled in bearings in its sides between its receiving and discharging ends, the series of wheels C, mounted thereon and extending partly inside and partly outside said grain-spout, each being provided with a series of magnets C' in its periphery, and the wiper D, mounted on the outside of said spout and formed to extend between said wheels and rest against the sides and edges of said magnets, all substantially as set forth.

2. The combination of the grain-spout A, the shaft B, journaled in suitable bearings and extending transversely through said spout, means for driving said shaft, a series of wheels C arranged thereon, each provided with a series of magnets C' in its periphery, and a wiper D, arranged on the outside of said spout in contact with said wheels substantially as described, and for the purposes specified.

405,046. BAKER'S PEEL. GUSTAV A. NAUMANN, New York, N. Y. Filed Nov. 14, 1888. Serial No. 290,828. (No model.)

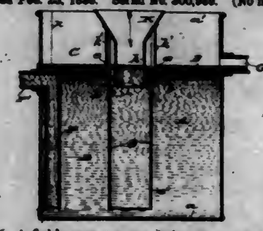


Claim.—1. A baker's peel having its blade provided with transversely-extending ribs embedded therein and serving to prevent the blade from warping, substantially as described.

2. A baker's peel consisting of a wooden blade having transversely-extending and U-shaped ribs embedded in opposite sides of the same, substantially as described.

3. The herein-described baker's peel, consisting of the wooden blade B, having the recess F in its upper end and the transversely-extending grooves C in opposite sides, the metal ribs D, secured in the grooves, and the handle G, secured in the said recess, as specified.

405,047. FLUID-SEPARATOR. THOMAS J. NEWBERY, Wilmington, N. C. Filed Feb. 23, 1889. Serial No. 300,989. (No model.)

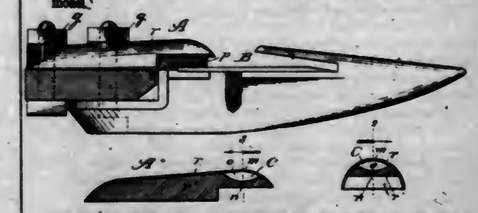


Claim.—1. A fluid-separator consisting of a vessel or tank provided with a horizontal diaphragm forming an upper and lower chamber, a central tube communicating at its upper end with the upper chamber, its lower end extended within the lower chamber near the bottom thereof, a discharge-pipe connected with the lower chamber above the lower end of the central tube, a discharge-pipe connected with the lower portion of the upper chamber, and a funnel or tube adapted to enter the upper end of the central tube and projected therein to a point below the diaphragm, substantially as and for the purpose described.

2. The combination, with the vessel A, provided with a horizontal diaphragm forming an upper and lower chamber, a discharge-pipe connected with the upper chamber just above the diaphragm, and a discharge-pipe connected with the lower chamber just below the diaphragm, of the tube E, centrally disposed within the lower chamber, its upper end projected above the diaphragm, its lower end extended to near the bottom of the vessel, and a funnel or tube K for leading the mixed fluid into the said vessel, said tube K projected within the upper end of the central tube a short distance below the diaphragm, said tube K being of a less diameter than the central tube E, substantially as and for the purpose described.

3. The hereinbefore-described improvement in fluid-separators, consisting of the vessel A, provided with a horizontal diaphragm forming an upper and lower chamber, a central tube communicating with the upper chamber and extended to near the bottom of the vessel A, a discharge-pipe F, connected with the lower chamber near the upper end thereof, and an outlet-cock J at the lower end thereof, a discharge-pipe G, connected with the lower portion of the upper chamber, and a funnel or tube K for leading the mixed fluid to the vessel, said tube projected within the central tube to a point below the diaphragm, said tube K being of a smaller diameter than the tube E, all arranged substantially as and for the purpose described.

405,048. CUTTER-BAR GUIDE FOR HARVESTERS. JOSEPH D NOREN, La Porte, Ind. Filed Dec. 20, 1888. Serial No. 294,164. (No model.)

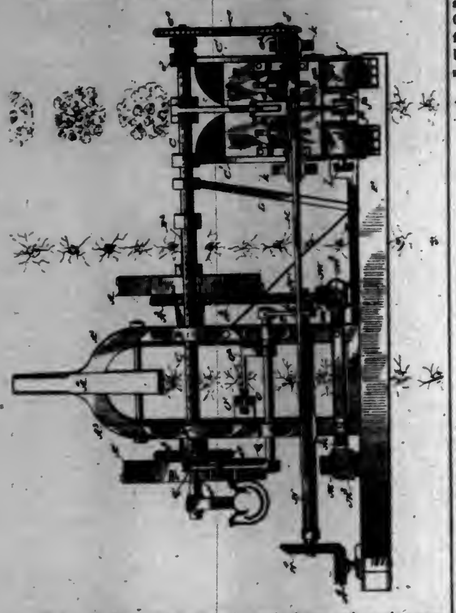


Claim.—1. In a guide A for the cutter-bars of harvesting-machines, the combination of a metal cap *r* and a wooden filling *r'* within the cap substantially as described.

2. A guide A for the cutter-bars of harvesting-machines, comprising a metal cap *r* and a filling *r'* within the cap provided with a lubricant-receptacle, substantially as described.

3. A guide A for the cutter-bars of harvesting-machines, comprising a cap *r*, provided with a perforation *m* near one end, a wooden filling *r'* within the cap, having a concavity *o* coincident with the perforation in the cap, and an opening *n* in its base, substantially as described.

405,049. COTTON-HARVESTER. RICHARD H. PURNELL, Rosedale, assignor of one-half to William E. Ringo, Mound Landing, Miss. Filed Aug. 23, 1888. Serial No. 283,528. (No model.)



Claim.—1. The combination of a main frame and running-gear, a hollow shaft C, made of a length to extend transversely across three rows of plants, a driving-shaft arranged within the same and geared to one of the supporting-wheels, and a cotton-picking device supported on wheels and pivotally connected by draft-arms to the outer end of the hollow shaft and having its operating parts connected to and worked by the driving-shaft within said hollow shaft, substantially as shown and described.

2. The combination, with the main frame and running-gear and the hollow shaft C, with a drive-shaft within it, of the picking-box supported on wheels and pivotally connected to the hollow shaft, and an adjusting-lever for raising and lowering the picking-box, and mechanism for operating the picker, substantially as shown and described.

3. The combination, with the main frame and running-gear, the hollow shaft C, with drive-shaft within it, a clutch-gear for connecting one of the supporting-wheels with said drive-shaft, a picking device supported on wheels and pivotally connected to the outer end of the hollow shaft and geared to and operated by the drive-shaft, a main cotton-carrier F, consisting of a trough or box with an endless belt having one end connected to the picking device and the other mounted upon the main frame, and a gearing with interposed clutch connecting the belt of its carrier to one of the main drive-wheels, substantially as shown and described.

4. The combination of the hollow shaft C, the picking-box D, made in two halves, the draft-arms C' C', connecting the box to the hollow shaft in a pivotal manner, the cross-head I, adjustable arm J^3, legs J J, with rollers at their lower ends, the guide-bar *l* on the box, and the braced frame composed of bars K and L and the main frame A^3, substantially as and for the purpose described.

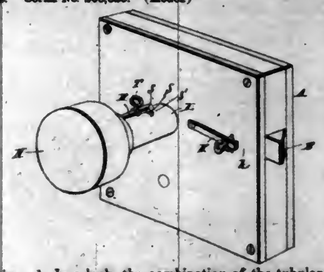
5. The combination, with the picker-box D, made in two halves, with curved pieces *a a*, guard-ribs *b*, teeth c^3, and rod b^3, of the horizontal belts *d d*, arranged in the bottom on each side, the vertical picker-cylinder E, with teeth *c*, the elevator-belt *f*, the grating *g*, and beater *h*, substantially as shown and described.

6. The combination of a pair of vertical picking-cylinders, a pair of horizontal belts to receive the cotton, located at the bottom of the picking-cylinders, a pair of toothed elevator-belts arranged vertically at the rear ends of the horizontal belts, a beater for driving down the hulls and sticks, and a revolving brush arranged upon the opposite side of the elevator-belt, substantially as and for the purpose described.

7. The combination, in a cotton-harvester, of the frame having the running-gear, the hollow shaft C, supported thereon, the picking-box arranged at the outer end of the shaft, a revolving shaft extending through the hollow shaft and operating the picker devices, and a cotton-carrier consisting of a trough or box F, with a belt in it connected at one end to the picker-box and at the other to the running-gear and arranged transversely to the line of draft, as described.

8. The combination, with the hollow shaft C and the inner drive-shaft c^7, of the picking-box D, mounted upon wheels, the draft-arms C' C', pivotally connecting the same to the hollow shaft, a sliding frame connected to the wheels for adjusting the box vertically, the braced frame K L, and the guide *l*, substantially as shown and described.

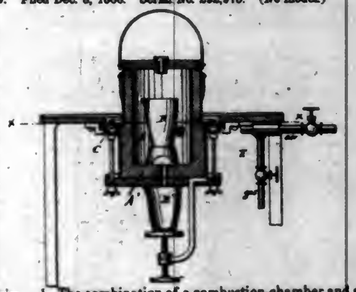
405,050. LATCH AND LOCK COMBINED. WILLIAM W. PURSEL and FRANK P. PURSEL, Berwick, Columbia County, Pa. Filed Mar. 29, 1888. Serial No. 268,825. (Model.)



Claim.—1. In a lock, the combination of the tubular shaft connected to the tumbler, the shaft O, mounted in the tubular shaft and having a groove or notch in its side adapted to be aligned with an aperture in the tubular shaft, the spring-latch mounted on the tubular shaft and engaging the said aperture and groove or notch, and the sliding ring or handle T, mounted on the latch, all constructed, arranged, and operated substantially as and for the purpose specified.

2. In a lock, the combination, with the tumbler having a barrel provided with a groove, of the tubular shaft mounted in the said barrel and having a rib M on its side engaging the said groove, the removable knob on the end of the shaft, the knob-shaft O, mounted in the tubular shaft and having a head *o* engaging a shoulder *s* in the tubular shaft, the knob attached to the shaft O, and the spring-latch R, mounted on the tubular shaft and adapted, when in its normal position, to lock the said shafts together, substantially as specified.

405,051. GAS-FURNACE. EDWARD P. REICHELM, Jersey City, N. J. Filed Dec. 8, 1888. Serial No. 292,975. (No model.)



Claim.—1. The combination of a combustion-chamber and a ring-shaped distributing-chamber, said ring-shaped distributing-chamber being constructed in two circular sections, one section of which is provided with burner-tubes extending inwardly through the walls of the combustion-chamber.

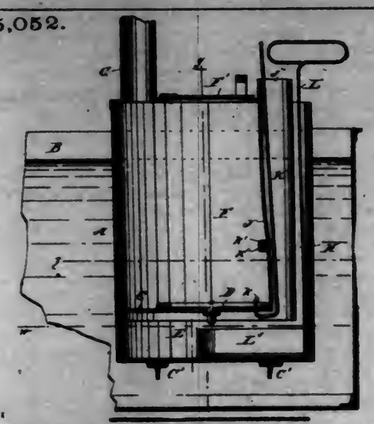
2. The combination of a combustion-chamber, an annular distributing-chamber surrounding the combustion-chamber, and a number of burner-tubes extending inward from the distributing-chamber through the walls of the combustion-chamber, said burner-tubes being disposed tangentially to a circle within the combustion-chamber and inclined downward from the distributing-chamber.

405,052. TANK-HEATER. HANFORD REYNOLDS, Gifford, Ill. Filed Feb. 13, 1889. Serial No. 299,707. (No model.)

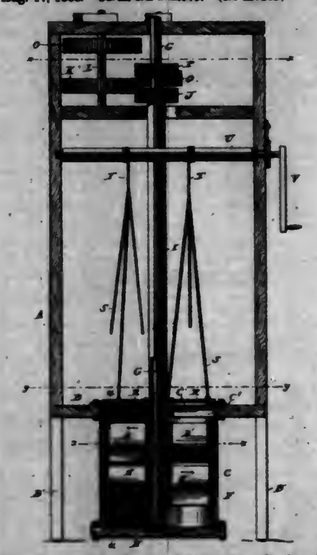
Claim.—1. The casing A, having the flange C, grate D, and vertical partition J, formed with a socket, in combination with the shaker adapted to be fulcrumed at the said socket and engaged at its lower end with the grate, substantially as described.

2. The shaker K, formed with the upwardly-projecting point *k* at its lower end and stud *k'* near its center, in combination with the heater having the vertical partition J, forming a side passage, and having the pivoted grate D near its bottom, the partition being formed with a socket to retain the stud *k'* to fulcrum the shaker, substantially as described.

405,052.



405,053. WATER-WHEEL. JAMES T. ROSS, Locust Grove, Pa. Filed Aug. 17, 1888. Serial No. 282,973. (No model.)



Claim.—The combination, with the water-wheel casing, of the upper horizontal rimless water-wheel D, having inclined buckets D', and the lower horizontal water-wheel E, having oppositely-inclined buckets E' and a surrounding rim extending upwardly and inclosing the rimless wheel, a space being formed between the exterior of the rim and the interior of the casing, substantially as and for the purpose specified.

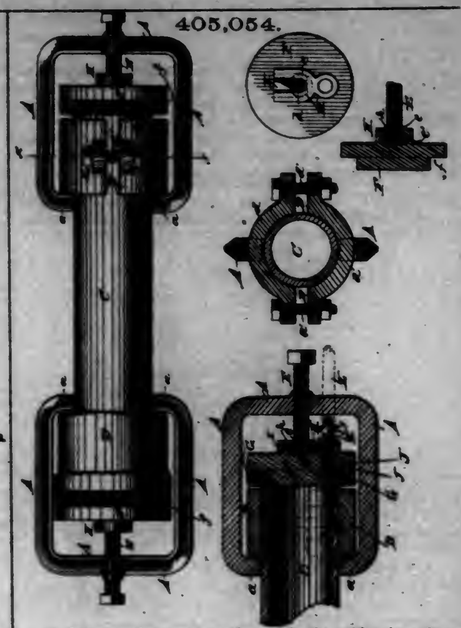
405,054. PIPE-TESTING MACHINE. MICHAEL SEXTON, New York N. Y. Filed Jan. 25, 1889. Serial No. 297,514. (No model.)

Claim.—1. A pipe-testing apparatus consisting of clamping devices comprising open-ended frames adapted to hook onto or grip the pipe or a collar thereon, screws fitted at the outer ends of the clamp-frames, and head-plates swiveled to the screws and adapted to close the ends of the pipe, one of said head-plates having a testing-fluid inlet, substantially as herein set forth.

2. In pipe-testing apparatus, the combination, with a clamp-frame A, having hooks *a a* at its open end, of a screw E, fitted at the opposite end of the clamp-frame, and a head-plate swiveled to the screw and adapted to bear directly or by a packing onto the end of a pipe, substantially as herein set forth.

3. In pipe-testing apparatus, the combination, with a pipe, of a collar clamped thereto, a clamp-frame A, having hooks *a a*, engaging the collar, a screw fitted in the clamp-frame, and a head-plate swiveled to the screw and adapted to bear directly or by a packing onto the end of the pipe, substantially as herein set forth.

405,054.



4. In pipe-testing apparatus, the combination, with a clamp-frame adapted to grip the pipe, and a screw E, fitted in said frame and having a reduced end *e* and washer *e'*, of a head-plate having a T-shaped slot A, into which the parts *e e'* are passed, and a bit or wedge I, inserted in the slot behind the screw, substantially as described, for the purposes set forth.

405,055. SAFETY-HOOK FOR HARNESS. CHARLES SMITH, Rogers, Ark. Filed Jan. 17, 1889. Serial No. 296,586. (No model.)



Claim.—1. The combination, with a hook proper, of a swinging loop B, having its two arms pivoted, respectively, to the back and to the free end of said hook on aligned pivots at right angles to the length of the hook, one of said arms being provided with an extension *b'*, adapted to close the mouth of the hook when in operative position, substantially as described.

2. The combination, with a hook having a curved offset a^3 extending partially over its mouth, of the loop having its arms pivoted respectively, to the back and free end of the hook, and a closing-arm formed by an extension of one arm of the loop and provided with a curved free end to fit beneath the offset or shoulder a^3, substantially as specified.

3. The combination, with a hook having its back a^3 provided with the lateral ears or extensions D D, of the loop embracing the hook and having its arms pivoted, respectively, to the back and free end of the hook, and the closing-arm connected to one arm of the loop and traveling at its free curved end over the said ears or extensions D D, substantially as and for the purpose specified.

405,056. WASH-BOILER. ASA P. TABB, Rockport, Mass. Filed Oct. 17, 1888. Serial No. 288,316. (No model.)

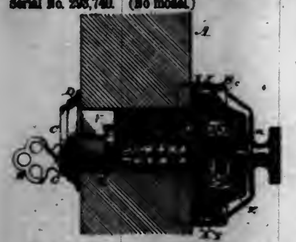


Claim.—1. The combination, with a boiler-body provided with loops, of a cover provided with hooks adapted to engage the said loops, substantially as described.

2. The combination, with a boiler-body provided with loops, of a cover provided with hooks adapted to engage said loops, the hooks being connected to the inside of the cover-flange and extending through the top of the cover, substantially as described.

3. A boiler-cover having suspension-hooks secured to its inner side and projecting at their outer ends through the cover and forming stop projections 16, substantially as set forth.

405,057. LOCK. WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Dec. 15, 1888. Serial No. 293,740. (No model.)



Claim.—1. The combination, with a tumbler-case or escutcheon for a lock, of a key-hub and a connecting-bar for connecting the hub operatively with a door-latch, the hub and connecting-bar being hooked together by means of a pin and pin-hole, substantially as set forth.

2. In a tumbler-case or escutcheon for a lock, a key-hub provided with a slot for receiving a connecting-bar and a lug or pin projecting over or within the lines of the slot and adapted to hook one end of the connecting-bar in place, substantially as set forth.

3. A connecting-bar for an escutcheon-lock provided with a hole in one end for hooking it to a key-hub, substantially as set forth.

4. A connecting-bar for a lock weakened transversely at intervals, so that it can be readily broken off for fitting it to place, substantially as set forth.

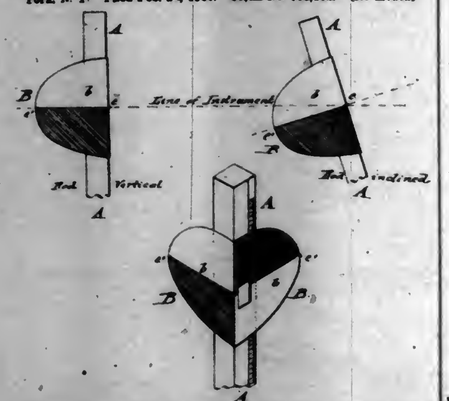
5. In an escutcheon-lock, an improved escutcheon-holding screw weakened at intervals, adapting it to be broken off, substantially as set forth.

6. In a lock, a roll-back I, provided with a slot extending entirely through it for receiving one end of a connecting-bar, substantially as set forth.

7. In a lock, the combination, with the through-slotted roll-back, of the connecting-bar and key-hub, substantially as set forth.

8. In a lock, the combination, with a through-slotted roll-back, a connecting-bar, a key-hub, and two bolt-rods arranged so as to leave a space for the end of the connecting-bar, substantially as set forth.

405,058. SURVEYOR'S TARGET. SAMUEL C. THOMPSON, New York, N. Y. Filed Feb. 20, 1889. Serial No. 301,182. (No model.)

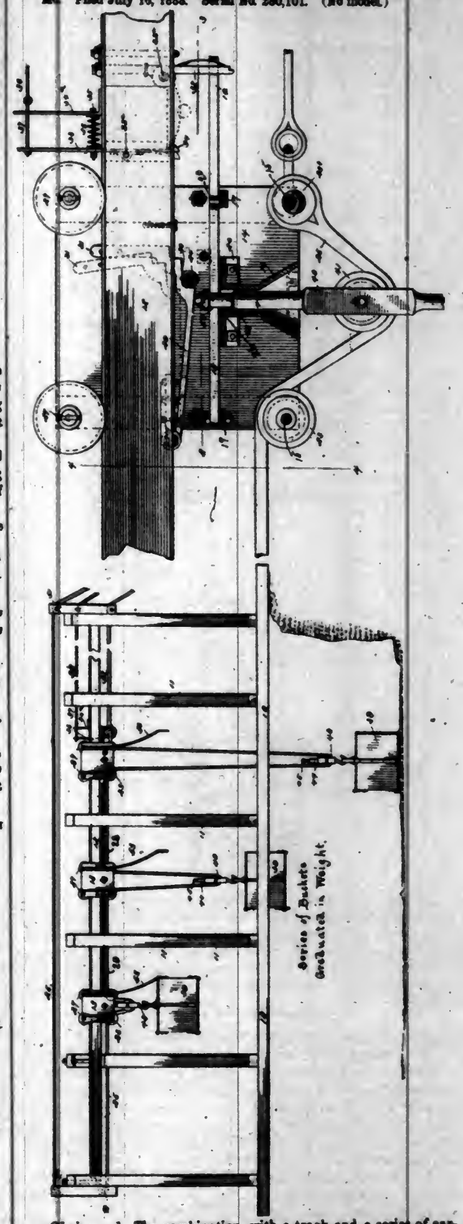


Claim.—1. A surveyor's target formed of two halves arranged at right angles to each other, substantially as set forth.

2. A surveyor's target formed of two halves arranged at right angles to each other and provided with vertical and horizontal intersecting lines, substantially as set forth.

3. A surveyor's target formed of two halves arranged at right angles to each other and provided with vertical and horizontal intersecting lines, and with pins at the intersection of said lines and at the outer ends of the horizontal line, substantially as set forth.

405,059. SUSPENDED RAILWAY. JOHN THOMSON, Kansas City, Mo. Filed July 16, 1888. Serial No. 280,101. (No model.)



Claim.—1. The combination, with a track and a series of carriages adapted to travel thereon and having pulleys journaled in their lower portions, of a corresponding series of buckets of graduated weights, a like series of latch-sheaves adapted for connection with said buckets, and a rope which is secured to the forward carriage of the series and then passes successively through each latch-sheave and over the pulleys of each carriage of the combined series, as shown and described, whereby the said rope serves as the means of hoisting all the said buckets successively, as set forth.

2. The combination, with a track, a series of carriages traveling thereon having pulleys journaled in their lower ends, and a series of buckets of graduated weight, of latch-sheaves adapted to engage said buckets, and a rope secured to the forward carriage, passing alternately over the carriage-pulleys and through the latch-sheaves, substantially as shown and described.

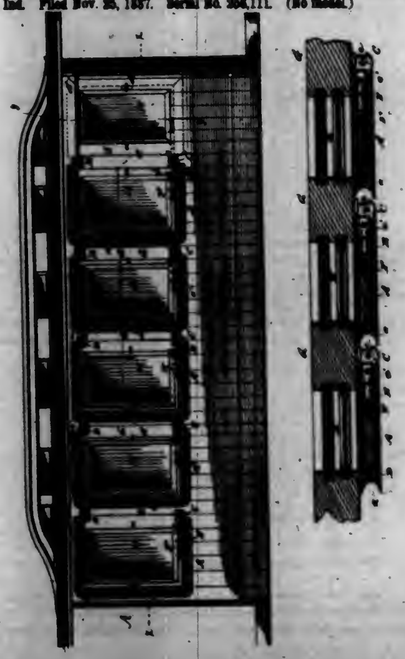
3. The combination, with a track, a series of carriages traveling thereon having pulleys journaled in their lower ends, and a series of buckets graduated in weight from the forward to the rear, the forward bucket being the heaviest, of latch-sheaves adapted to engage said buckets, and a rope secured to the forward carriage, passing alternately over the carriage-pulleys and through the latch-sheaves, as and for the purpose specified.

4. The combination, with a track, a series of carriages traveling thereon having pulleys journaled in their lower ends, a series of buckets graduated in weight from the front to the rear, the heaviest bucket being at the front, and latch-sheaves adapted to carry said buckets, of stay-rods projected downward from the carriage, a rope secured to the forward carriage, passing alternately over the carriage-pulleys and through the latch-sheaves, and means, substantially as shown and described, for locking the latch-sheaves in the carriages and releasing said carriages, as and for the purpose specified.

5. The combination, with a track, a series of carriages traveling thereon having pulleys journaled in their lower ends, coupling-rods uniting said carriages, a series of buckets graduated in weight from front to rear, the rear bucket being the lightest, and latch-sheaves adapted to carry said buckets, of a rope secured to the forward carriage, passing alternately over the carriage-pulleys and through the latch-sheaves, and means, substantially as shown and described, for locking the carriages upon the track and automatically releasing the same, as set forth.

6. The combination, with a track, a train of united carriages traveling upon the same, a transverse stop-bar secured in the said carriages, and pulleys journaled therein, and a gravity-latch pivoted in the track engaging the stop-bar of the forward carriage, of a series of buckets graduated in weight, latch-sheaves attached to said buckets, and a rope secured to the forward carriage, passing alternately over the carriage-pulleys and through the latch-sheaves, substantially in the manner and for the purpose specified, whereby the buckets are raised alternately from the rear and the carriages released when elevated, as set forth

405,060. SMOKE AND DUST FENDER FOR CAR-WINDOWS. ELIJAH F. WALLER, Hanson, Ky., and OTTO A. CARLSTEDT, Evansville, Ind. Filed Nov. 25, 1887. Serial No. 256,111. (No model.)



Claim.—1. A smoke and dust fender for car-windows, consisting of a guard-plate extended around the side, top, and bottom of a window and hinged to the car-body between two windows, substantially as shown and described, whereby the same fender may be used for either of the two windows and will guard either window at the side, top, and bottom, as and for the purposes herein set forth.

2. A smoke and dust fender for car-windows, consisting of a guard-plate extended around the side, top, and bottom of a window and hinged to the car-body between two windows to serve for either of them, and latch devices locking the fender at either window, substantially as herein set forth.

405,061. SPEAKING-TUBE. JOSEPH WALTER, New York, N. Y. Filed Mar. 6, 1889. Serial No. 302,156. (No model.)

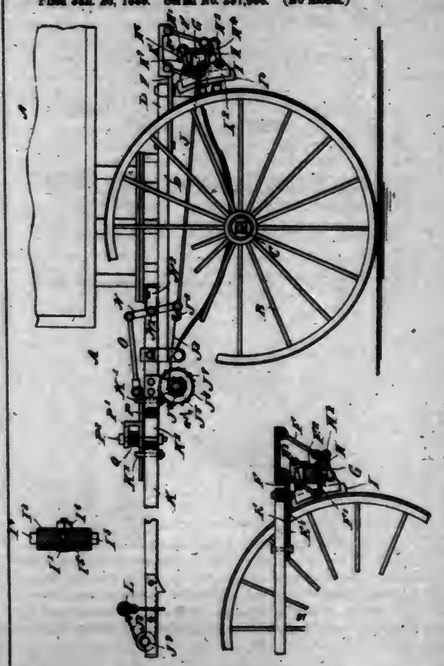


Claim.—1. The combination, with the mouth-piece of a speaking-tube, of a casing back of the mouth-piece, a whistle arranged at an angle of inclination at the upper part of the casing, an inclined plate converging toward the whistle and having an aperture arranged at the lower part of the casing, and a pendent valve hinged back of the apertured plate, substantially as set forth.

2. The combination, with the mouth-piece of a speaking-tube, of a casing back of said mouth-piece, an inclined whistle in said casing, an inclined and apertured plate converging toward the whistle, a pendent valve hinged back of the apertured plate, and an indicator hinged in front of said plate, substantially as set forth.

3. The combination, in a speaking-tube, of a mouth-piece having a ring-shaped flange at its inner end, a casing back of said mouth-piece communicating at the rear end with the speaking-tube, a whistle located in inclined position at the upper part of said casing, an inclined and apertured plate converging toward the whistle, a pendent valve hinged back of said apertured plate, and an indicator hinged in front of the inclined plate and provided with a cup-shaped upper part, substantially as set forth.

405,062. WAGON-BRAKE. LESLIE WETHERBEE, Clayton, Mich. Filed Jan. 26, 1889. Serial No. 297,698. (No model.)



Claim.—1. In a wagon-brake, the combination, with the pole and the neck-yoke held thereon, of a brake-beam connected with the said neck-yoke and mounted to swing, arms held to turn on the said brake-beam, and brake-blocks pivotally connected with the said arms, substantially as shown and described.

2. In a wagon-brake, the combination of a brake-beam suspended from the rear ends of the hounds by means of a pivotal connection, and brake-blocks pivotally connected to the beam, substantially as described.

3. In a wagon-brake, the combination, with a brake-beam mounted to swing, of a set of parallel arms mounted to turn on each end of the said brake-beam, and a brake-block pivotally connected with the outer ends of each set of the said parallel arms, substantially as shown and described.

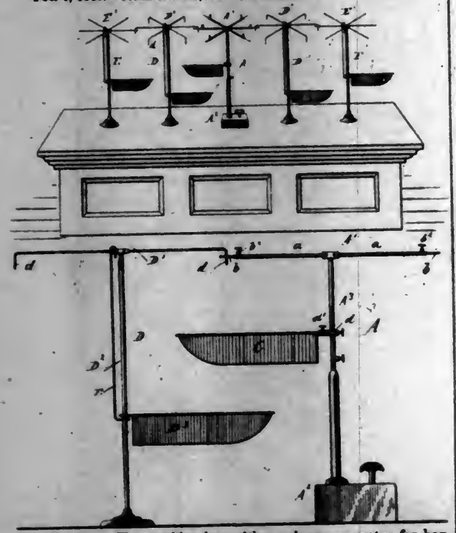
4. In a wagon-brake, the combination, with a brake-beam mounted to swing, of a set of parallel arms mounted to turn on each end of the said brake-beam, a brake-block pivotally connected with the outer ends of each set of the said parallel arms, and a spring held on each set of parallel arms to hold the said brake-blocks out of contact with the wheels when backing up the wagon, substantially as shown and described.

5. In a wagon-brake, the combination, with a brake-beam mounted to swing, of a set of parallel arms mounted to turn on each end of the said brake-beam, a brake-block pivotally connected with the outer ends of each set of the said parallel arms, and a lug secured on each end of the brake-beam and passing over one of the said parallel arms to prevent the brake-blocks from opening too far, substantially as shown and described.

6. In a wagon-brake, the combination, with the pole and the neck-yoke held thereon, of a pulley held in the front end of the said pole, a chain passing over the said pulley and connected with the neck-yoke, a shaft held near the rear end of the said pole and carrying a large pulley, on which winds the said chain, a second smaller pulley held on the said shaft, and a second chain held on the said pulley and connected by a rod with a swinging brake-beam, substantially as shown and described..

7. In a wagon-brake, the combination, with the pole and the neck-yoke held thereon, of a pulley held in the front end of the said pole, a chain passing over the said pulley and connected with the neck-yoke, a shaft held near the rear end of the said pole and carrying a large pulley on which winds the said chain, a second smaller pulley held on the said shaft, a second chain held on the said pulley, a rod connected with the said second chain, and a brake-beam mounted to swing and connected with the said rod, substantially as shown and described.

405,063. FLY-FAN. CHARLES F. WILSON, New York, N. Y. Filed Feb. 6, 1889. Serial No. 298,582. (No model.)

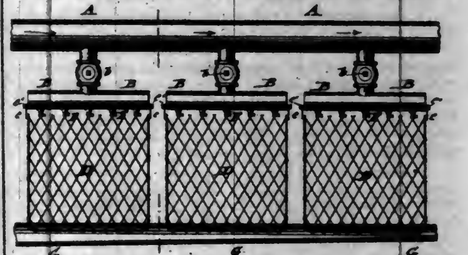


Claim.—1. The combination, with a primary or motor fan having a spider-frame and fan-blade rotated by a prime motor, of a number of secondary fans arranged at both sides of the primary fan and provided with fan-blades, and the spider-frames, the alternating spider-frames having downwardly-bent and straight arms, substantially as set forth.

2. In a system of fly-fans, a primary or motor fan formed of a spider-frame and an adjustable fan-blade applied to the spindle of said spider-frame, a prime motor for rotating said spider-frame and fan-blade, and a number of secondary fans provided with rotary spider-frames, fan-blades rotating with said spider-frames, the alternating spider-frames having downwardly-bent and straight arms, substantially as set forth.

3. In a fly-fan, the combination of a supporting-stand, a spider-frame supported at the upper end of said standard, a suspending hanger-rod connected with the hub of said spider-frame and provided with a guide-eye or sleeve for the upright standard, and a radial fan-blade on said hanger, substantially as set forth.

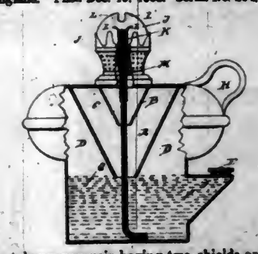
405,064. AIR-COOLING APPARATUS. JOSEPH L. WOOD, New York, N. Y. Filed Jan. 4, 1889. Serial No. 295,422. (No model.)



Claim.—1. The combination of a brine-supply pipe, discharge-heads connected with the same, said heads having rows of openings at the under side, distributing-screens suspended from said heads and provided with wire shanks, and adjustable plugs located on the wire shanks and extending into the openings of the heads, substantially as described.

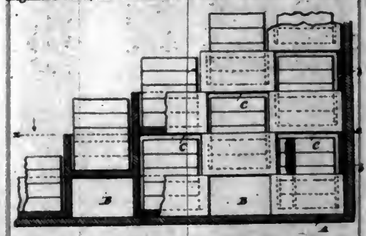
2. The combination, with a valved brine-discharge head having rows of openings at the under side, one row of openings alternating with the adjoining ones, of a number of screens suspended from said head and provided with wire shanks extending into the openings and with adjustable plugs surrounding said shanks and having conically-tapering ends, and clamping-screws, substantially as set forth.

405,065. OIL-LAMP. FREDERICK J. ALLMOT, Plaistow, County of Essex, England. Filed Dec. 19, 1888. Serial No. 294,023. (No model.)



Claim.—A lamp-reservoir having two shields or baffles A and B and a feeding-aperture *f* below the level of the bottom of the shield or baffle B, the capacity of the upper part D of the reservoir being at least one-half that of the entire reservoir, substantially as and for the purpose hereinbefore set forth, and illustrated in Figs. 1 and 2.

405,066. METHOD OF BURNING BRICK. JAMES C. ANDERSON, Highland Park, Ill. Filed June 9, 1888. Serial No. 276,615. (No model.)



Claim.—An improvement in the art of burning brick in seggars, which consists in arranging the seggars in the kiln so as to form open cells between and above the same, filling the seggars and the open cells with the brick to be burned, and finally burning the brick, as set forth.

405,067. PAPER BAG. JAMES ARKELL, Canajoharie, N. Y., assignor to Sarah Hall Arkell, same place. Filed Feb. 27, 1888. Serial No. 301,369. (No model.)



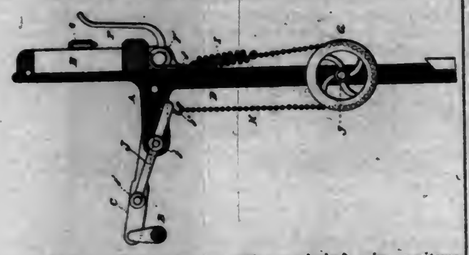
Claim.—A paper bag or sack having throughout its body portion corrugations or indentations which render said body portion more pliable and which make it more stretchable or superficially elastic than the body portion of a bag composed of the same stock, but not so corrugated or indented.

405,068. SOFT-TIE PAPER BAG. JAMES ARKELL, Canajoharie, N. Y., assignor to Sarah Hall Arkell, same place. Filed Feb. 27, 1889. Serial No. 301,370. (No model.)



Claim.—The improved soft-tie paper bag hereinbefore described, the mouth end or portion of which has compressed corrugations or crimps of a depth about equal to the thickness of the paper, whereby said mouth end or portion is softened without detriment to the strength of the fabric, all substantially as hereinbefore set forth.

405,069. SHUTTLE CHECKING AND RELIEVING MECHANISM FOR LOOMS. EDWARD M. BALL, South Berwick, Me., assignor to James Hamilton, Herbert R. Hamilton, and Napoleon Boisvert, all of Salmon Falls, N. H. Filed May 24, 1888. Serial No. 274,900. (No model.)

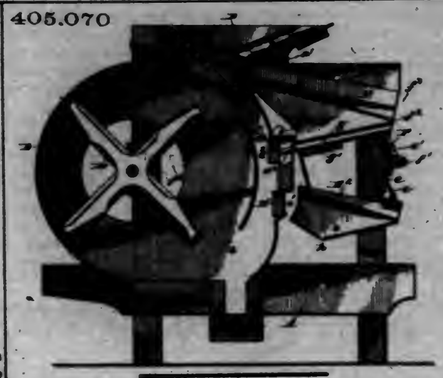


Claim.—The combination, with a crank-shaft, a lay, a pitman connecting the crank-shaft and lay, and a rock-shaft carrying a binder-arm, of a spring connected to the rock-shaft, a guide-pulley journaled on one of the lay-swords below the spring, a lever fulcrumed at an intermediate point of its length on the lay and pivoted at one end to the lay-pitman at a point in juxtaposition to the pivot-connection of said lay-pitman to the crank-shaft, and a chain passing around the guide-pulley and connected at its ends to the other end of said lever and the spring, substantially as and for the purpose described.

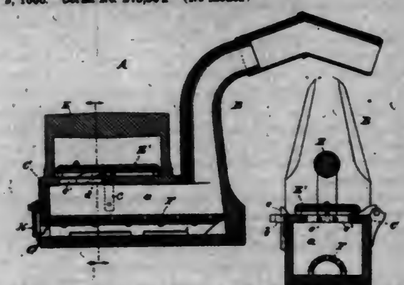
405,070. GRAIN-CLEANER. BENJAMIN P. BARNEY, Harper, Kans. Filed Jan. 23, 1889. Serial No. 297,304. (No model.)

Claim.—The combination of the blast-fan, the fan-case, the blast trunk extending over the fan-case toward the front thereof and having the valved openings, the grain-receiving spout at the bottom of said trunk, the upper shoe having its bottom board arranged to discharge into said trunk and provided with a slide-covered opening and the lower screen-shoe arranged to receive from the upper shoe whereby the grain may at will either be discharged from the upper shoe through the blast or receive a second sifting, substantially as specified.

405,070



405,071. SAD-IRON. WILLARD BELL, Greencastle, Ind. Filed May 9, 1888. Serial No. 273,364. (No model.)

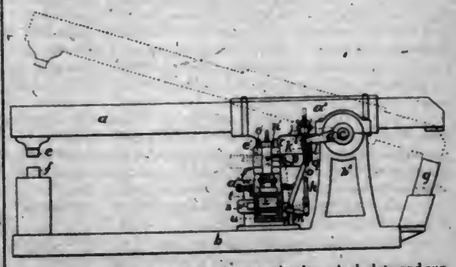


Claim.—1. The sad-iron having in its bottom a serially apertured or perforated plate semicircular in cross-section, a corresponding opening in its rear end, and pivoted skeleton plate, applied to form a rim or flange around said opening at the bottom of and partly covering said opening, substantially as and for the purpose specified.

2. The sad-iron having in its bottom the serially apertured or perforated plate, semicircular in cross-section, a corresponding opening in its rear end or wall, a skeleton or aperture plate forming a flange at the bottom of and partly covering said opening, and a second plate or door applied to the sad-iron upon a common pivot-bolt, substantially as and for the purpose specified.

3. The sad-iron having its cover or top provided with a series of viewing-apertures, said cover or top also having applied thereto a raised shield or deflector provided with a mica-covered viewing-opening in alignment with the aforesaid apertures, substantially as and for the purpose set forth.

405,072. STEAM-HAMMER. JOHN H. BLAKE, Deering, Me. Filed Mar. 9, 1889. Serial No. 302,696. (No model.)

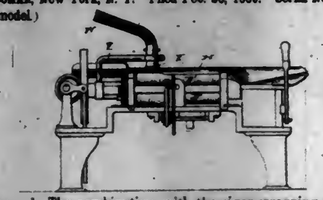


Claim.—1. In a steam belve-hammer having a bed-plate and supporting-standards, a belve-hammer mounted on a trunnion journaled in said standards, a steam-cylinder with piston and piston-rod, a cross-head connecting piston-rod and helve, a steam-chest with ports opening into the cylinder one above the other below the piston, a valve adapted to open and close the ports alternately, and a valve-stem adapted to move up and down in a stem-hole in a fixed block, said stem having a vertical slot therein, the combination, with said stem,

of a horizontal slide moving in said block and passing through the slot in the valve-stem, said slide having a slot therein, as described, to operate the valve, a lever attached to said slide, and a vertical rod attached to an arm on the lever, said rod being operated by an arm rigidly fixed on the trunnion, all substantially as and for the purposes hereinbefore set forth.

2. In a steam-hammer having cylinder, piston, piston-rod, cross-head connecting helve and piston-rod, a steam-chest with ports opening one above the piston the other below, a valve adapted to open and close said ports alternately, a valve-stem running in a fixed block *o*, as described, the combination, with horizontal slide *p*, having slot *r*, lever *o*, attached to slide *p* in slot *q*, rigid arm *m*, attached to lever *o*, vertical rod *h*, attached to arm *m* and having a screw-thread at the top, and arm *g*, rigidly set on trunnion *e* and having the pivoted clasp *i*, of nuts *j* and *k*, the one above the other below the clasp *i*, substantially as and for the purposes hereinbefore set forth.

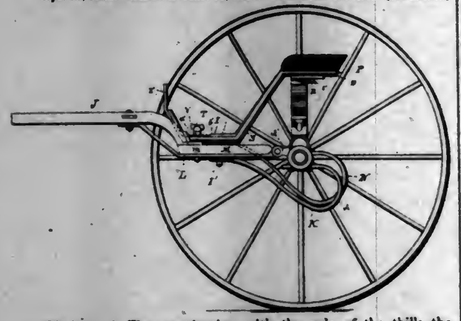
405,073. CIGAR WRAPPING AND ROLLING MACHINE. CLARK W. BOMAN, New York, N. Y. Filed Feb. 28, 1889. Serial No. 301,523. (No model.)



Claim.—1. The combination, with the cigar wrapping or receiving rolls, of a blast-nozzle placed opposite the point where the front end of the wrapper enters, to discharge air at that point upon said portion of the wrapper, substantially as and for the purposes hereinbefore set forth.

2. The combination of the cigar wrapping or receiving rolls, the table over which the wrapper passes to said rolls, and the blast-nozzle for tucking the front end of the wrapper between the rolls, substantially as and for the purposes hereinbefore set forth.

405,074. ROAD-CART. FRANK H. BOSI, Sioux City, Iowa. Filed Apr. 18, 1888. Renewed Mar. 26, 1889. Serial No. 304,921. (No model.)



Claim.—1. The combination, with the axle, of the thills, the angle-braces connecting the thills and axles, the short arms secured upon the rear horizontal portions of the corresponding angle-braces, and the curved side springs having their rear ends secured to the axle by clips or otherwise and their front ends secured to the corresponding short arms, the bolts passing through eyes in the underlying angle-braces, substantially as specified.

2. The combination, with the axle, the head-block, and the transverse elliptic spring, of the body, the slotted metal straps secured to the bottom of the seat and foot-rest, the strong metal strap bolted to the upper section of the elliptic spring and having upturned perforated ends, the curved central longitudinal spring secured to the axle at its rear end and having its front end perforated, and the adjusting bolts and nuts, substantially as specified.

3. The combination, with the axle, head-block, elliptic spring, and body, having its foot-rest slotted longitudinally and centrally, of the slotted metal strap secured to the upper surface of the foot-rest, with the slot coincident with the slot thereon, the curved central longitudinal spring secured to the axle at its rear end and having its front end perforated, the adjusting bolt and nut, the corrugated washer, and the corrugated slotted plate, substantially as specified.

4. The combination, with the axle, head-block, elliptic spring, and the strap secured centrally to the upper section of said spring and provided with upturned perforated ends, of the body supported on a longitudinal spring under its foot-rest, the slotted straps secured under the seat, and the adjusting bolts and nuts, substantially as specified.

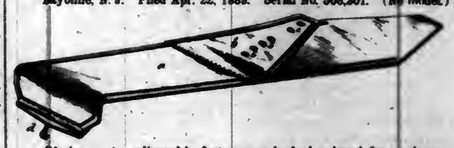
405,075. LIQUID-MEASURE. DAVID BOTHWELL, Hannibal, N. Y. Filed Feb. 20, 1889. Serial No. 300,562. (No model.)



Claim.—1. The combination, with the body A, provided with a faucet 2, and with a strap 11 across the top, of an overflow-tube 4, inserted through the bottom of the body, a rod secured to the tube 4, a gage secured upon the top of the rod and provided with a rack upon its rear face and a graduated scale upon its front face, and a pinion mounted upon a shaft journaled in ears upon the top of the body, and means for rotating the pinion, as set forth.

2. The combination, with the body A, provided with a faucet 2, and with a strap 11 across the top, of an overflow-tube 4, inserted through the bottom of the body, a rod secured to the tube 4, a gage secured upon the top of the rod and provided with a rack upon its rear face and a graduated scale upon its front face, and engaging with a guide-slot in the strap 11, and a pinion mounted upon a shaft journaled in ears upon the top of the body, and means for rotating the pinion, as set forth.

405,076. FASTENER FOR GLOVE-PACKAGES. CHARLES T. BULL, Bayonne, N. J. Filed Apr. 22, 1889. Serial No. 308,201. (No model.)



Claim.—An adjustable fastener or inclosing-band for packages of gloves, comprising a strip of paper, linen cloth, or analogous material adapted to receive the manufacturer's name, trade-mark, or other matter, and a flap secured to said band and provided with a series of devices adapted to engage with and be secured to a device on the other end of said band, whereby the band can be secured around the glove-package and adjusted from time to time, as desired, substantially as set forth.

405,077. SPINDLE FOR WINDING YARN OR THREAD ON CARDS. JOHN J. CLARK, New York, N. Y. Filed Nov. 30, 1888. Serial No. 292,171. (No model.)



Claim.—A spindle for winding yarn upon cards, provided with a catch to hold the free end of said yarn, and adapted to draw the same under the turns of the wound yarn when the card is withdrawn from the spindle, substantially as herein set forth.

405,078. WICK-RAISING SHAFT. WILLIAM H. CLEMES, Cleveland, Ohio, assignor to the Taylor & Boggis Foundry Company, same place. Filed Nov. 14, 1888. Serial No. 290,853. (No model.)

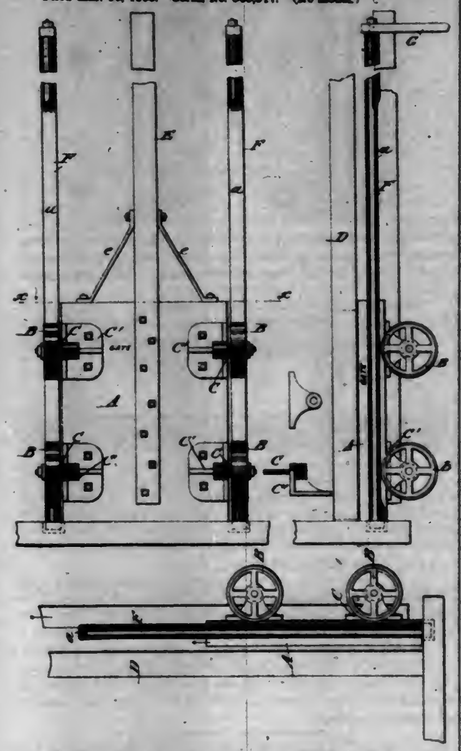


Claim.—1. The wick-raising shaft formed as a series of cranks, substantially as set forth.

2. The wick-raising shaft formed with a series of cranks, constituting distinct wick-engaging points, no two of which are located in the same radial plane of the shaft, substantially as set forth.

3. The wick-raising shaft formed with a series of cranks in spiral sequence, constituting distinct and relatively-disconnected engaging-points respectively located in different lines parallel with the main line of the shaft, substantially as set forth.

405,079. WATER-GATE. CLEVELAND J. CHESSET, Lowell, Mass. Filed Mar. 16, 1889. Serial No. 303,517. (No model.)



Claim.—1. In combination with the water-gate and its wheels, the vertical cam-shafts having flat or oval faces and adapted to operate substantially in the manner and for the purpose described.

2. In a water-gate, the vertically-moving gate provided with suitable wheels, in combination with the vertical shafts having longitudinal flat or oval faces, said shafts being located in contact with the wheels and adapted to be rotated to lift the gate from its seat, substantially as described.

3. The combination of the water-gate provided with suitable wheels and a start attached thereto, the vertical slides which form the seat for the gate, the vertical cam-shafts having longitudinal flat or oval faces *a a*, said shafts being properly held at top and bottom and located in contact with the wheels, as specified, and the devices for rotating said shafts and permitting the gate to be lifted or lowered, substantially as described.

4. The combination of the water-gate A, having the wheels B B B B, the vertical slides on which the gate has a bearing, and the vertical cam-shafts F F, having longitudinal flat or oval faces *a a*, substantially as described.

5. The combination of the water-gate A, the casting C, secured thereto and having journals C, the wheels B, mounted on said journals, and the cam-shafts F F, having flat or oval faces *a a*, all arranged for joint operation, as specified.

6. The combination of the gate A, the casting C, secured thereto, having journals C, the wheels B, mounted on said journals, the start E, secured to the gate, the slides D D, on which the gate has a bearing, and the cam-shafts F F, having flat or oval longitudinal faces *a a*, said shafts being properly held at top and bottom and located in contact with the wheels B, so that by the rotation of said shafts the gate may be lifted from its seat, substantially as described.

405,080. HOOF PARER AND TRIMMER. WILLIAM CORWELL, Neff, Ind., assignor of one-half to Harison H. Clevenger, same place. Filed Aug. 4, 1886. Serial No. 208,082. (No model.)

Claim.—1. The combination, with a handle-bar and main piece secured to said handle-bar, of a paring-knife and trimming-knives formed integrally with said main piece, substantially as described.

2. The combination, with a handle-bar provided with a handle

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and an arm-rest and a main piece secured to said handle-bar, of paring and trimming knives formed integrally with said main piece, substantially as described.

3. The combination, with a handle-bar and main piece secured thereto, of a straight knife formed on the forward end of said main piece and two rearwardly and outwardly extending knives formed on the rear end of said main piece, substantially as described.

4. The combination, with a handle-bar and a handle, of an enlarged portion provided with a bearing formed in said handle-bar, a base-plate provided with a pivot-post adapted to enter and be secured within said bearing, and knives secured to said base-plate, substantially as described.

5. The combination, with a handle and handle-bar provided with a perforation, of a detent, a base-plate provided with a series of perforations secured to said handle-bar, said detent adapted to enter the perforations in the handle-bar and base-plate, and knives secured to said base-plate, substantially as described.

6. The combination, with a handle-bar having an enlarged portion provided with a perforation and a bearing and a handle, of a detent secured to said handle-bar and adapted to enter the said perforation and one of a series of perforations formed in a base-plate, said base-plate provided with a pivot-post which is secured within said bearing, and knives secured to said base-plate, substantially as described.

405,081. ROAD-CART. JOHN W. COOMER, Sturgeon, Mo. Filed Feb. 16, 1889. Serial No. 300,111. (No model.)



Claim.—1. In a road-cart, the combination of the body or seat frame swiveled for lateral movement at its front end to the thills, the springs attached to the thills and provided with supporting-arms extending over the side bars of the body or seat-frame, and the loose links connected at their upper ends to the supporting arms and at their lower ends to the said side bars or straps, substantially as specified.

2. In a road-cart, the combination of the body or seat-frame swiveled at its front end to the cross-bar, the transverse shaft attached at its ends to the thills and extending over the body or seat-frame, the springs coiled on the said shaft and provided with supporting-arms which extend over the body or seat-frame, and the links connecting the free ends of the supporting-arms to the body or seat-frame, substantially as specified.

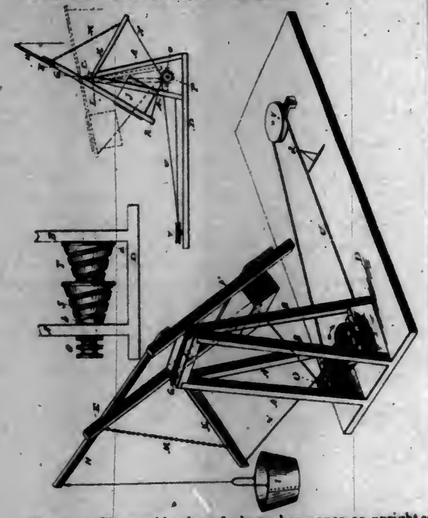
3. In a road-cart, the combination of the body or seat-frame provided with a front bar which is connected to the cross-bar to the thills, the transverse shaft arranged between the thills, the springs coiled on the said shaft and provided with supporting-arms, the series of rings, eyes, or loops on the body or seat-frame beneath the supporting-arms, and the links depending from the extremities of the supporting-arms and provided at their lower ends with hooks to engage the said rings, eyes, or loops, substantially as specified.

4. In a road-cart, the combination, with the thills having a cross-bar C, of the transverse shaft connected to the thills in rear of the cross-bar, the body or seat-frame having the front bar O swiveled at its center to the cross-bar, the U-shaped side bars or straps P, which depend from the extremities of the front bar, pass under the said shaft, and are connected at their rear ends by the seat, the springs coiled on the extremities of the said shaft, attached rigidly at their outer ends to the thills, and provided with the rearwardly-extend-

ing supporting-arms S S, the rings, eyes, or loops V V, arranged in series on the side bars or straps under the free ends of the supporting-arms, and the hooks connecting links T T, depending from the extremities of the supporting-arms and engaging the said rings, eyes, or loops, substantially as and for the purpose specified.

5. In a road-cart, the thills, the cross-bar connecting the thills, the curved brace E, connected at its ends to the thills and arranged at its center in contact with the center of the cross-bar, the U-shaped bolt connecting the centers of the cross-bar and the carved brace, the hook-plate affixed to the upper side of the cross-bar at its center and provided with a hook *i*, and the brace-rods attached at its ends to the thills in rear of the cross-bar and looped at its center over the hook *i*, in combination with the body or seat-frame connected to the cross-bar, substantially as and for the purpose specified.

405,082. **DERRICK.** LEVI S. DEMING, Middletown, Conn. Filed Feb. 18, 1889. Serial No. 300,227. (No model.)



Claim.—1. The combination of a beam hung upon an upright so as to form a projecting arm both sides of the point of hanging, one arm adapted to carry the load, a counter-balance upon the other arm of substantially one-half the load, a third arm projecting from the beam near the pivot at substantially right angles and downward, a pulley and a line connected by one end to the counterbalance-arm of the beam and the other end to the said third arm, the said line passing around said pulley, the said pulley being adapted to be rotated under the application of power thereto, substantially as described.

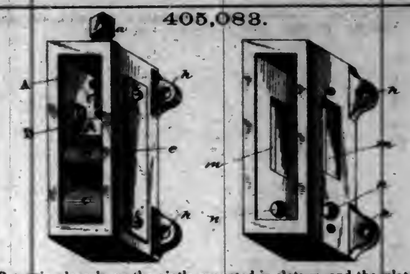
2. The combination of a beam hung upon an upright and so as to swing thereon, the beam extending both sides of the pivot and so as to form two arms, one of said arms adapted to carry the load, a counter-balance on the other arm, the third arm extending from the beam near the hanging point downward, a line connected by one end to the counterbalance-beam and by the other to the said third arm, a pulley around which the said line is run, a pair of drums upon the shaft of said pulley, and a line fixed by one end to one drum and by the other to the other drum, the line extending to a distant point around a stationary pulley, one run of said line adapted for the application of power, substantially as described.

3. The combination of a beam hung upon an upright and so as to form an arm projecting each side of said upright, one arm adapted to carry the load, a counter-balance arranged upon the other arm, a third arm K, hinged to the beam near the hanging point, a connection L between the said arm K and the beam to support said arm K at substantially right angles to the beam, a pulley O, arranged upon a shaft in suitable stationary bearings, a line N, attached by one end to the arm F of the beam and by the other end to the arm K, said line passing around the said pulley O, and means, substantially such as described, for producing the revolution of the said pulley O, substantially as and for the purpose specified.

405,083. **TWINE-TENSION FOR HARVESTERS.** WILLIAM H. DICK, Taylorville, Ill. Filed Sept. 15, 1888. Serial No. 285,061. (No model.)

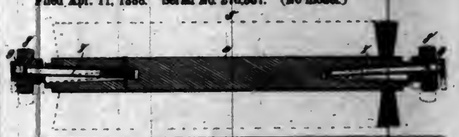
Claim.—In a tension device for twine-binders, the combination of the frame A, having the slots *m* and perforations *n*, the roller C, loosely journaled in a pintle mounted in the perforations *n*, the roller

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B, turning loosely on the pintle, mounted in slots *m*, and the plates *c*, secured to the frame and overlying the slots and perforations, and thereby holding the rollers and pintles in place, substantially as described.

405,084. **CARPET-SWEEPER.** WALTER J. DREW, Grand Rapids, Mich., assignor to the Bissell Carpet Sweeper Company, same place. Filed Apr. 11, 1888. Serial No. 270,337. (No model.)

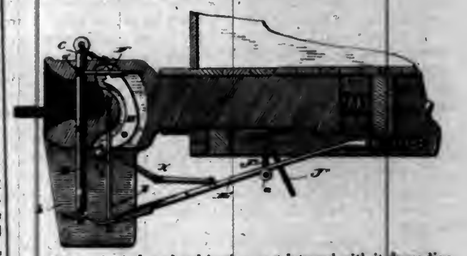


Claim.—1. A brush-carrying shaft for a carpet-sweeper having its driving wheel or pulley loosely or flexibly connected therewith to permit the shaft to rise and fall independent of the said driving wheel or pulley, substantially as described.

2. The combination, with a carpet-sweeper casing having driving mechanism, of a brush-carrying shaft having a loosely or flexibly attached driving wheel or pulley and capable of rising and falling independent of said driving wheel or pulley, substantially as described.

3. The combination, with a sweeper-casing and driving mechanism, of a brush-driving wheel having a bar or rod, and a brush-carrying shaft loosely or flexibly connected with the bar or rod and capable of rising and falling independent of the said driving wheel or pulley, substantially as described.

405,085. **CAR-COUPLING.** RICHARD J. EDWARDS, Galena, Ill. Filed Mar. 14, 1889. Serial No. 303,210. (No model.)



Claim.—1. A draw-head having cast integral with it depending ears *b b*, substantially as described.

2. The combination, with the draw-bar and draw-head, of the coupling and ejecting pins, the pivoted lever E, the crank-shaft provided with a crank-arm J', and an anti-friction roller journaled on this crank-arm, as described.

3. The combination, with the draw-head, of the coupling-pin, the sliding dog F, the lever H, pivoted in a recess back of the mouth of the draw-head, and means for operating this lever H, substantially as described.

4. The combination, with the draw-head, of the coupling and ejecting pins, the pivoted lever E, the dog F, and lever H, and a rod K, pivotally connected to lever E and adapted to operate the said lever H, substantially as described.

5. The combination, with the draw-head, of the coupling and ejecting pins, a pivoted lever E, connected to ejecting-pin, a sliding dog F, and pivoted lever H, the latter being provided with an extension *d*, a jointed rod K, connected to the lever E and adapted to impinge against said extension *d*, and a bracket, substantially as described.

405,086. **THILL-COUPLING.** BENJAMIN FARNEST, Hagerstown, Md. Filed Mar. 6, 1889. Serial No. 302,195. (No model.)

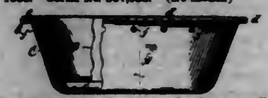
Claim.—The thill-coupling having the spring or buffer contriv-

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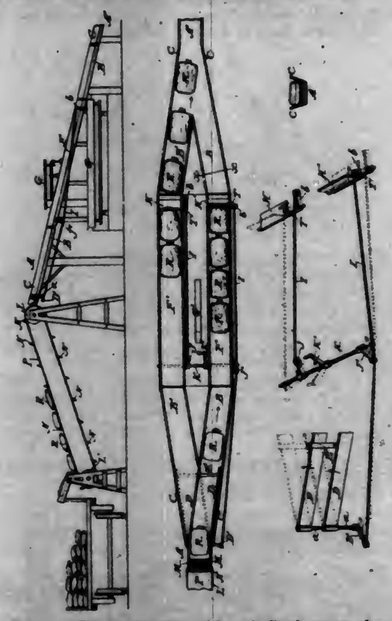
ance, consisting of the spring-metal plate having its upper end coincidently curved with the thill-bolt-receiving eye, and its lower horizontal portion provided with an aperture or slot, the straight plate having its upper end provided at the corner edges with projections or arms resting upon the upper edges of the side portions of the thill-iron, said straight plate having its lower end hooked into the slot or aperture of said horizontal portion of the spring-metal plate and the thumb or tension screw working in the spring-metal plate and bearing against the straight plate, substantially as set forth.

405,087. **COOKING UTENSIL.** FRED H. FERGUSON, Buffalo, N. Y. Filed Oct. 3, 1888. Serial No. 287,322. (No model.)



Claim.—A cooking utensil composed of two similarly-shaped pans or vessels A B, arranged one within the other, with a closed chamber or air-space C formed between the walls and bottoms of the two vessels, both vessels being rigidly secured at their upper edges by the flange of the inner vessel being bent or folded over and under the flange or rim of the outer vessel, the outer vessel being provided with a series of air-escape openings *f*, arranged close to the upper edge of the pan, substantially as set forth.

405,088. **APPARATUS FOR TRANSFERRING, WEIGHING, AND DELIVERING BAGS OF GRAIN.** WILLIAM R. FERGUSON, Montclair, N. J. Filed Feb. 13, 1889. Serial No. 299,735. (No model.)



Claim.—1. The combination, with an inclined way or chute, of an independent vertically-moving section interposed in the length thereof to form a continuous unbroken extension of said inclined way or chute, a weighing-scale upon which said section is mounted, and a movable stop adjusted at the lower end of the section, substantially in the manner and for the purpose herein set forth.

2. The combination, in an apparatus for weighing bagged grain in the course of its delivery or transfer, of two inclined ways converging and merging at each end into a single way, an independent section introduced in each way to form a continuation thereof, an independent weighing-scale upon which said section is mounted, and a switch at the upper intersection of the branch ways, substantially in the manner and for the purpose herein set forth.

3. The combination, in an apparatus for weighing bagged grain in the course of its delivery or transfer, of two inclined ways converging and merging at each end into a single way, an independent section introduced in each way to form a continuation thereof, an independent weighing-scale upon which said section is mounted, a movable stop at the foot of each section, a transverse rock-shaft actuated by a suitable lever, rods connecting each stop device with arms upon said shaft, whereby when one stop is elevated above the level of its way by an oscillation of the shaft the other stop shall be depressed, and vice versa, a pair of switch-plates pivoted at the upper intersection of the double ways with the single way to connect said single way with either of the others, and a coupling-rod connecting the rock-shaft actuating the stops with said switch-plates, whereby the bars are carried automatically into connection with the way whose stop is elevated, substantially in the manner and for the purpose herein set forth.

4. The combination, substantially as set forth, of an endless elevating-chain, an inclined way extending from its upper end and branching into two parallel ways which merge again into one, movable sections interposed in the branch ways to form a portion of the length thereof, weighing-scales supporting each section, a movable stop at the foot of each of said sections, a switch at the upper intersection of the branch ways to divert the articles sliding down the single way into either branch, and devices, substantially as described, controlling the stops and switch, whereby when the stop at the foot of one of the weighing-sections is depressed the stop on the opposite section will be elevated and the switch turned to divert the descending articles upon said section, in the manner and for the purpose herein set forth.

405,089. **ELECTRIC SELF-WINDING CLOCK.** JAMES H. GERRY, Brooklyn, assignor to the Self Winding Clock Company, New York, N.Y. Filed Mar. 21, 1889. Serial No. 304,111. (No model.)



Claim.—1. The combination of a clock-train, a mainspring for actuating the same, an electro-magnet, an armature therefor, said armature being arranged to turn upon an axis parallel with the pivots of the clock-train, a lever attached to said armature and engaging with the wheel connected with said mainspring, the segment or lever m^2, the springs *s* and *s'*, the extra wheel S^2 upon the main shaft of said train, and the lever D, operated by said wheel S^2.

2. The combination, with the clock-train having a mainspring for driving the same, of the electro-magnet M, having curved pole-pieces, the armature *m*, with its face curved to correspond with said pole-pieces, the sector *m'*, the springs *s* and *s'*, having the circuit-closing points s^3, the wheel S^2 upon the main shaft of the clock-train, the lever D engaging therewith, and the dogs D^1 and D^2.

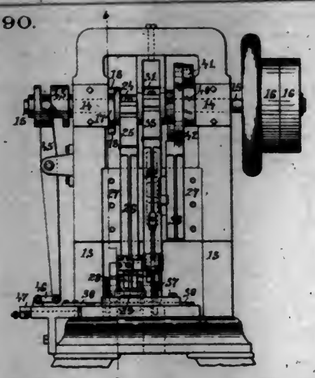
3. The combination, with the clock-train having a mainspring for driving the same, of the electro-magnet M, having curved pole-pieces, the armature *m*, with its face curved to correspond with said pole-pieces, the sector *m'*, the springs *s* and *s'*, insulated from each other and from the train, having the circuit-closing points s^3, the wheel S^2, upon the main shaft of the clock-train, the lever D engaging therewith, the pins *p p*, which control the positions of the springs *s* and *s'*, and the dogs D^1 and D^2.

405,090. **MACHINE FOR MAKING STAPLES.** WILLIAM HALEYARD, Providence, R. I. Filed Oct. 9, 1888. Serial No. 287,656. (No model.)

Claim.—1. In a machine for making staples, the combination, with a main driving-shaft, of a stock-feeding device, a cutting-plunger provided with the convex projection, a swaging-plunger, a discharge-plunger located within the swaging-plunger, a reciprocating carrier provided with a circular hole and constructed to form the lower die for swaging the prongs, and mechanism for driving the same, as described.

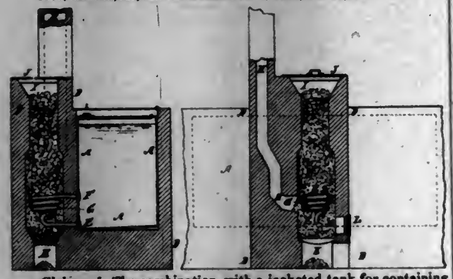
2. In a machine for making staples, the combination, with the plunger 32, of the adjustable swaging-die 34, having the screw-nut 36, for adjusting the die and for receiving the thrust of the plunger, as and for the purpose set forth.

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3. The combination, with the reciprocating plunger 32, of the swaging-die 34, the carrier 30, provided with a hole through which the staple is drawn, and the discharge-plunger 37, constructed to force the staple-blank through the hole in the carrier to bend the prongs, as and for the purpose described.

405,091. APPARATUS FOR STEEPING FLAX. THOMAS L. HEELY, London, England. Filed Jan. 17, 1888. Serial No. 261,000. (No model.) Patented in England Oct. 27, 1885, No. 12,923; in Italy May 7, 1886, XX, 19,982; in Belgium May 15, 1886, No. 72,891; in France Sept. 1, 1886, No. 175,746, and in Canada Feb. 1, 1887, No. 25,899.

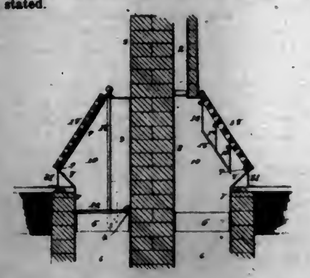


Claim.—1. The combination, with a jacketed tank for containing flax and liquor for steeping the same, of a stove or like heating apparatus, a pipe opening at both ends into the tank and having a portion arranged in the stove, said pipe being wholly inclosed and nowhere exposed to atmospheric air, substantially as specified.

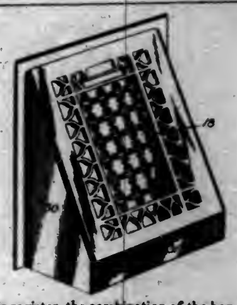
2. The combination, with a jacketed tank for containing flax and liquor for steeping the same, of a stove or like heating apparatus, a pipe opening at both ends into the tank and having a portion arranged in the stove, said pipe being wholly inclosed and nowhere exposed to atmospheric air, and said stove or like apparatus being provided with a flue for conveying away the products of combustion, having an opening approximately on a level with the portion of said pipe within the stove or like apparatus, substantially as specified.

405,092. SIDE-WALL HOT-AIR REGISTER. CYRUS S. HOOD, Corning, N. Y. Filed Nov. 7, 1887. Serial No. 254,506. (No model.)

Claim.—1. A hot-air-register box or casing constructed with a projecting inclined open front 9, terminating in an under inclined flange part 8, joining the flue-neck 7, substantially as described, for the purpose stated.



405,092.



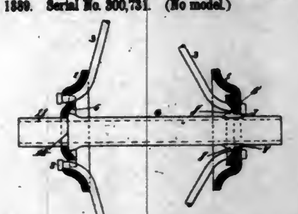
2. In a hot-air register, the combination of the box or casing constructed with a projecting inclined open front 9, terminating in an under inclined flange part 8, joining the flue-neck 7, with a register-face having sides 30 and a front flange part 31, adapted to envelop the said projecting part of the box or casing and to rest upon the floor, substantially as described, for the purpose specified.

3. A register face-plate having an open front 18, terminating in a foot-flange 31, and having closed sides 30, adapted to fit over and envelop a register-box projecting front, substantially as described.

4. In a hot-air register, the box or casing constructed with a projecting inclined open front 9, terminating in an under inclined flange part 8, joining the flue-neck 7, in combination with a register-plate having an inclined face terminating in a closed flange 31 and having closed sides and adapted to envelop the projecting inclined open front of the box or casing, substantially as described.

5. A hot-air-register box consisting of the casing 10, constructed with a projecting inclined open front 9, terminating in an under inclined flange part 8, a bottom neck or flue part 7, and a top neck or flue part 11, combined with a register face-plate having closed sides and a front flange adapted to envelop the projecting inclined open front of the box or casing and to rest upon the floor, substantially as described.

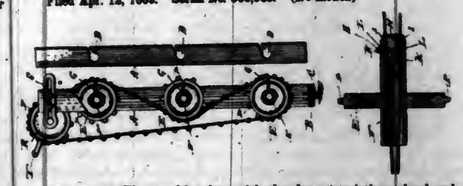
405,093. WHEEL. GEORGE W. HOWELL, Covington, Ky. Filed Feb. 21, 1889. Serial No. 300,731. (No model.)



Claim.—1. The combination, in a vehicle-wheel, of the rim, the spokes, the disks having central orifices, the edge of one of which is provided with notches, the axle, and the sleeve on the axle abutting a disk at one end and having adjacent to its other end the lateral shoulders adapted to pass through the said notches in the other disks, so that when the sleeve is turned the shoulders engage the edge of the opening in the notched disk, substantially as described.

2. A wheel composed of disks 1, having the spokes 3, engaging with the rim 4 at one end and with notches 2 of the disks at the opposite end, the axle 11, and the tube or sleeve 6, provided with lugs 7, having shoulders 8, which seat in the notches 10, substantially as described.

405,094. WIRE-FENCE MACHINE. EZRA HUTSON, Fairport, N.Y. Filed Apr. 12, 1889. Serial No. 306,963. (No model.)



Claim.—1. The combination, with the slotted twisting-wheel and its longitudinally-slotted shaft, of the flanged plug having diametrically-opposite slots in the flange and longitudinal grooves leading from said flange to the end of the plug, the plug being adapted to fit in one end of the hollow shaft and receive the wires for the purpose of twisting the same, substantially as specified.

2. The combination, with the supporting-frame having bearings and lateral slots leading thereto, of the slotted shafts, the slotted sprocket-wheels, their longitudinally-slotted hollow shafts and the longitudinally-grooved plugs, the sprocket-chain, and the adjustable sprocketed driving-wheel, the whole arranged to operate substantially as specified.

3. The combination, with the frame of the machine and the twisting-wheels and plugs, of the lever fulcrumed to the frame and provided with a wheel at one end, which may be brought to bear against one edge of the rail to force the same into the angle of the diverging wires, substantially as specified.

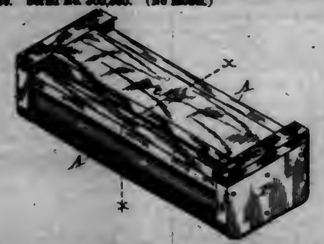
4. The combination of the frame having laterally-slotted side bars, the driver R, adjustable brackets S, and carriage B, with the slotted sprocket twisting-wheels E, their longitudinally-slotted hollow shafts F, the plugs H, and the lever V', all as and for the purpose set forth.

405,095. FASTENER FOR MEETING-RAILS OF SASHES. LOUIS K. JOHNSON, Brooklyn, N. Y. Filed Mar. 18, 1889. Serial No. 303,664. (No model.)



Claim.—In a window-sash lock substantially such as described, the combination of a horizontally-swinging arm C, attached to one sash, the horizontal pin E, attached to the opposite sash, and the vertically-swinging catch D, formed with the hook d' concentric with the pivot d^3, and with cam-surface d^5 eccentric to the said pivot d^3, the whole arranged and operating substantially in the manner and for the purpose set forth.

405,096. BLACKBOARD-ERASER. WALTER F. JOHNS, Parish, assignor of one-half to Charles W. Burdeen, Syracuse, N. Y. Filed Mar. 30, 1889. Serial No. 305,305. (No model.)

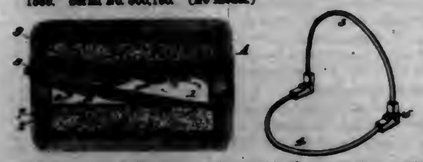


Claim.—1. As an improved article of manufacture, the blackboard-eraser frame consisting of a block of wood composed of a single piece having in its rubber-carrying face dust-collecting grooves extending throughout the length thereof, and plates attached to the ends of said block and closing the ends of the aforesaid grooves, as set forth and shown.

2. The improved blackboard-eraser frame consisting of a block of wood composed of a single piece having in its rubber-carrying face grooves extending throughout the length thereof, and cross-channels cut through the base of the intermediate rib at the ends thereof, and plates attached to the ends of said block and closing the ends of the longitudinal grooves, substantially as described and shown.

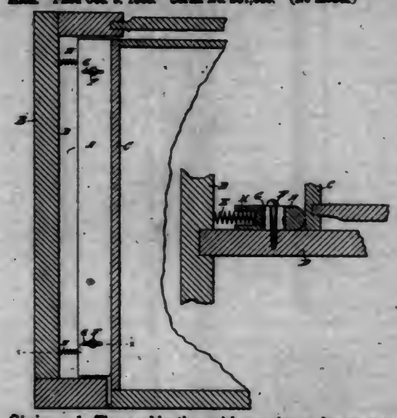
3. A blackboard-eraser frame consisting of an elongated block of wood composed of a single piece having in its rubber-carrying face longitudinal grooves extending throughout the length thereof and undercut at the sides of the intermediate rib, and plates attached to the ends of said block and closing the ends of the longitudinal grooves, substantially as described and shown.

405,097. MUFF. OTTO KAEMLEIN, Philadelphia, Pa. Filed Feb. 16, 1889. Serial No. 300,180. (No model.)



Claim.—A muff having a pocket within the same, the mouth of the pocket being provided with a hinged jaw consisting of the semicircular or carved pieces hinged at their ends within the pocket and extending toward the end of the muff, and having their outer ends at the ends of the opening in the muff, the said outer ends having coverings integral with the coverings of the end of the muff, and the hinge of the said jaws having a spring adapted to retain the jaws in position as desired, said parts being combined substantially as described.

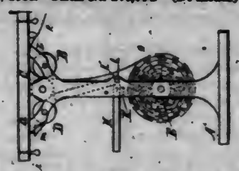
405,098. DRAWER-GUIDE. DAVID W. KENDALL, Grand Rapids, Mich. Filed Oct. 9, 1888. Serial No. 287,662. (No model.)



Claim.—1. The combination, with a casing, a drawer-support, springs, and a drawer, of a drawer-guide formed with transverse slots, and pins or screws passed through said slots and into said drawer-support for regulating the lateral play or pressure of said drawer-guide upon said drawer, substantially as described.

2. The combination, with a casing, a drawer-support, and a drawer, of a yielding drawer-guide formed with annular recesses in its back edge, and also with transverse slots, pins or screws passing through said slots and provided with heads of larger diameter than the same, and spiral springs having their inner ends fitted in said recesses and their outer ends bearing against the side of said casing, substantially as and for the purpose described.

405,099. PRINTING-MACHINE. FRANCIS KIESEL, St. Louis, Mo. Filed June 13, 1888. Serial No. 276,914. (No model.)

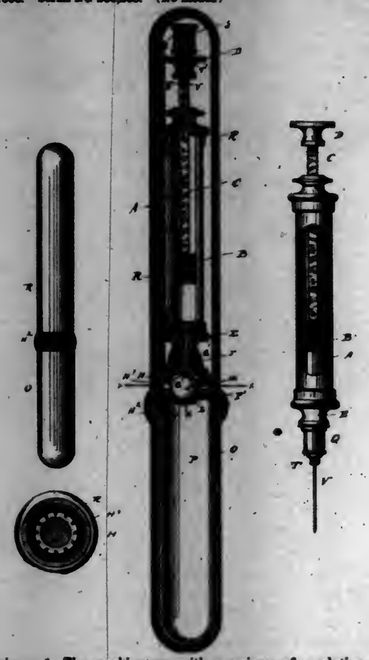


Claim.—1. An automatic printer consisting of a frame having inwardly-projecting shoulders to support in operative position a shelf hinged to said frame, a paper-roller journaled in the frame beneath the said shelf, a cushioned roller, a die-roller, and an inking-roller journaled in the frame above the shelf, a top piece having vertical corner screws, secured to the frame above the rollers, and having on its front edge a horizontal blade, and on its under side a guide near its front edge and an ink-reservoir near its back edge, arranged substantially as herein set forth.

2. In an automatic printer having a frame and a top provided with vertical corner screws, the combination of the ink-reservoir, the rollers B, C, and D, and the guide L, with reference to the shelf H and paper-roller E, attached to said frame, substantially as herein described.

3. A combined automatic printer and table formed of a vertical frame having a supporting-base, two inwardly-projecting shoulders, a top piece covering said frame, provided with vertical corner screws, a knife along the front edge of said top, having a lower cutting-edge and a short upright blade covered by a blunted protector, a horizontal guide beneath the top, back of and parallel to the said knife, an ink-reservoir, a cushioned roller, a die-roller, and an inking-roller journaled in the frame beneath the said top piece, a hinged shelf beneath the said rollers, and a paper-roller journaled in the frame beneath the shelf, substantially as herein described.

405,100. SYRINGE. OTTO KLOPFE, New York, N. Y. Filed Oct. 27, 1888. Serial No. 289,205. (No model.)



Claim.—1. The combination, with a syringe, of a solution-receptacle held on the head of the syringe, and a valve for closing said receptacle when the syringe is disconnected therefrom, substantially as set forth.

2. The combination, with a syringe, of a cap screwed on the head of the same, a solution-receptacle screwed on said cap, and a casing for covering the syringe screwed on said cap, substantially as set forth.

3. The combination, with a cap having a recess or cavity, of a ball-valve in said recess, an elastic diaphragm acting on said ball-valve, and a solution-receptacle screwed on said cap, substantially as set forth.

4. The combination, with a syringe, of a cap screwed on the head of the same, which cap is provided in its under side with a recess, a groove communicating with said recess, and apertures extending from the groove to the under side of the cap, a ball-valve in said recess or cavity, an elastic diaphragm for holding said ball-valve in place, and a solution-receptacle screwed on said cap, substantially as set forth.

5. The combination, with a syringe-cylinder having a screw-threaded head and a piston-rod provided with a longitudinal bore in its outer end, of a handle attached to the end of the piston-rod and provided with a screw-threaded recess, a screw-nozzle having an externally-threaded neck, and a tubular needle secured to the nozzle, said nozzle being adapted to be applied to the head or to the piston-rod of the syringe, substantially as set forth.

405,101. SASH-HOLDER. CHARLES A. KRAFFT, Philadelphia, Pa. Filed June 14, 1888. Serial No. 277,079. (No model.)



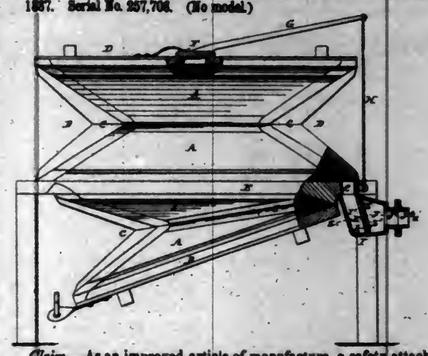
Claim.—A sash-fastener consisting of the face-plate A, with opening *a* therein, the casing *a'*, secured to said face-plate, the plate B, having the opening *b*, and pivoted at one end to the face-plate, the wheel C, journaled in plate B, a screw with its head bearing on the outer side of plate B, and having a securing and adjusting nut thereon, and a coiled spring on said screw between the plate B and the casing, said parts being combined substantially as described.

405,102. PENCIL-TIP. SAMUEL KRAMB, New York, N. Y., assignor to the Eagle Pencil Company, same place. Filed Apr. 2, 1888. Serial No. 269,705. (No model.)



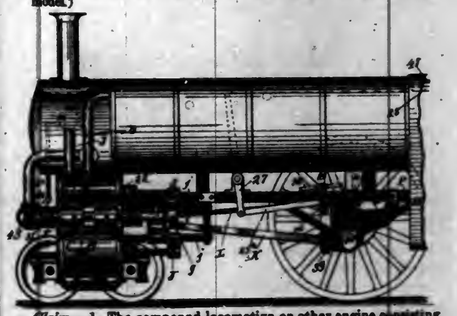
Claim.—A sheet-metal tip for lead-pencils, consisting of a ring or ferrule *b*, which fits upon the end of the pencil, and an ornamented head A, the struck-up halves or sections *a* of which are inserted and secured in the ring.

405,103. BELLOWS. OTTO KELLEOM, Avondale, Ill. Filed Dec. 12, 1887. Serial No. 257,706. (No model.)



Claim.—As an improved article of manufacture, a safety attachment for bellows, consisting of a valve-casing adapted to be attached beneath the fixed partition of the bellows and having a vertical inlet-chamber I, open at top, an inclined valve-seat or partition K, valve L, and outlet-chamber J, having a horizontal outlet-passage J', as described, and for the purpose set forth.

405,104. LOCOMOTIVE OR OTHER ENGINE. JOSEPH LEWIS, South Evanston, Ill. Filed Jan. 30, 1888. Serial No. 262,360. (No model.)



Claim.—1. The compound locomotive or other engine consisting of two high-pressure and two low-pressure cylinders arranged side by side and parallel with each other, the piston of each of the high-pressure cylinders being connected by a cross-head with the piston of one of the low-pressure cylinders, so the two move together, and a rotary valve supplying steam to both ends of all said cylinders, substantially as set forth.

2. The combination, with the two high and two low pressure cylinders, of the valve consisting of four heads or sets of ports and having a supply chamber or passage 20 and a central bore, the two central heads receiving steam at passage 20 and controlling the high-pressure cylinders, and the two end heads receiving exhaust-steam from the high-pressure cylinders through the central bore and controlling the low-pressure cylinders, substantially as set forth.

3. The combination, with the parallel high and low pressure cylinders of a compound engine, of a rotary multiple valve having passages 21, 22, 23, and 24, a central bore, and a feed-passage 20, substantially as set forth.

4. The combination, with the cylinders of a compound engine, of a rotary multiple valve having passages 21, 22, 23, and 24, a central bore, a feed-passage 20, and a final discharge H, substantially as set forth.

5. The combination, with the cylinders of a compound engine, of

a rotary multiple valve feeding and exhausting from both sides of the cylinder-pistons, said valve having a central bore or chamber into which the high-pressure ports of the valve exhaust and from which the low-pressure ports feed, substantially as set forth.

6. In a locomotive or other compound engine having a rotary valve for controlling all the cylinders, the combination, with said valve and the low-pressure cylinders, of a steam-supply duct connected to said valve and supplying said low-pressure cylinders with live steam when desired, substantially as specified.

7. In a locomotive or other compound engine having a rotary valve controlling the cylinders and provided with a central chamber or bore, the combination, with said valve and the low-pressure cylinder or cylinders, of a steam-supply pipe admitting live steam to said central chamber of the valve when desired, substantially as set forth.

8. In a locomotive having a rotating valve driven from the axle, the combination, with such valve, of the bar supporting the valve-shaft, and the brackets supporting the bar, said bar having globular bearings in the brackets, substantially as specified.

405,105. REGISTERING-LOCK. JACOB LOEWENTHAL, Chicago, Ill. Filed Dec. 10, 1888. Serial No. 293,149. (No model.)



Claim.—1. In a register, in combination with a register-case, a shaft fixed rigidly in said case, a plurality of crown-gears constituting register-wheels journaled on said shaft and having the register characters on their peripheries, such crown-gears being continuously cogged upon one edge, and each, except the last, having a single cog upon the opposite edge, a pinion intermediate each two consecutive gears having its axis fixed with respect to the shaft and meshing with the continuously-cogged rim of one gear, and adapted to be engaged by the single cog of the other, a dog associated with each of the crown-gears which have the single tooth, and having its pivot fixed with respect to the shaft, said dog being adapted to engage the pinion, and a cam actuated by the crown-gear and controlling the dog to protrude it into engagement with the pinion, except when the single tooth of the crown-gear engages the pinion, substantially as set forth.

2. In a register, in combination with a register-case, a shaft fixed rigidly in said case, a plurality of crown-gears constituting register-wheels journaled on said shaft and having the register-characters on their peripheries, such crown-gears being continuously cogged upon one edge, and each, except the last, having a single cog upon the opposite edge, a pinion intermediate each two consecutive gears, having its axis fixed with respect to said shaft and meshing with the continuously-cogged rim of one gear, and adapted to be engaged by the single cog of the other, a dog associated with each of the crown-gears which have the single tooth and pivoted upon the shaft, and located between the shaft and the crown-gear with which it is associated, and having one end adapted to engage the pinion, and the cam actuated by the crown-gear and controlling the dog to protrude it into engagement with the pinion, except where the single tooth of the crown-gear engages said pinion, substantially as set forth.

3. In a registering mechanism, in combination with a fixed shaft and crown-gear, registering-wheels journaled thereon, intermediate pinions communicating motion from each crown-gear to the succeeding one, a dog associated with each gear to lock the pinion which such gear actuates, a cam, which controls said dog, located interiorly to the crown-gear and secured thereto, and a groove in the bearing of said crown-gear to receive the cam, whereby such cam serves the double purpose of controlling the pinion and securing the crown-gear in proper position longitudinally with respect to the shaft, substantially as set forth.

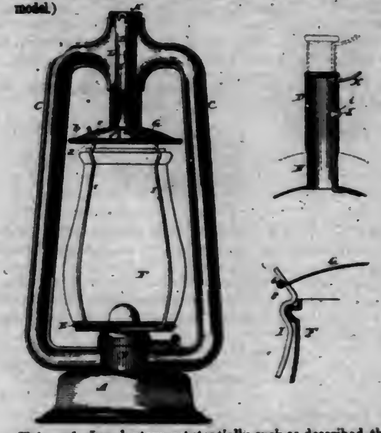
4. In a registering mechanism, in combination with the fixed shaft and the plurality of registering-wheels thereon, an annulus journaled on the shaft forward of the first register-wheel, a pinion journaled on such annulus, and a disk suitably pivoted, having a finger H' adapted to lock the pinion, the annulus having a stop to arrest the pinion-locking finger after it has withdrawn from the pinion, whereby such finger upon being rocked toward the pinion locks the same, and thereafter, by means thereof, rotates the annulus and first register-wheel, and upon being rocked in the reverse direction releases the pinion, and afterward, colliding with the stop, rotates the annulus while the pinion is rotated on its own axis by its engagement with the register-wheel without rotating the latter, substantially as set forth.

5. In a registering mechanism, in combination with the fixed shaft and plurality of registering-wheels thereon, an annulus on the shaft forward of the first register-wheel, a pinion journaled thereon and meshing with the first register-wheel, a stop projecting from the annulus at a short distance from the pinion in one direction, a dog having its pivot fixed with respect to the shaft and adapted to engage the register-wheel, a stop on the annulus to engage the dog and force it into engagement with the register-wheel, and a suitably-pivoted disk having a finger adapted to lock the pinion when rocked in one direction, and to collide with the first-mentioned stop when rocked in the other direction out of engagement with the pinion, the stop which engages said dog being so located as to collide therewith when the finger has been rocked after locking the pinion an angular distance equal to the angular distance between two consecutive teeth on the register-wheel, all substantially as and for the purpose set forth.

6. In combination, substantially as set forth, the fixed shaft, the plurality of register-wheels thereon, the annulus K on the shaft forward of the first register-wheel having the stops k' and k^2 protruding therefrom, the pinion E', journaled on said annulus between said stops and meshing with the register-wheel, the disk H, pivoted on the shaft and having the finger H' protruding between the pinion and the stop k', and adapted to lock the pinion, and having the radial projection H^3, and the dog M, having its pivot fixed with respect to the shaft and adapted at one end to engage the register-wheel and at the other to be engaged by the stud k^2, and having the edge *m* in the plane of the surface of the disk H when the dog is engaged with the register-wheel, the projection M^3 being so located on the disk H that it laps and abuts against the edge *m* when the finger H is against the stop k', and is clear of the dog M when said finger is meshed with the pinion.

7. In combination with a padlock, a registering mechanism comprising a plurality of register-wheels on a common shaft, and mechanism which communicates the rotary motion of each wheel to the next succeeding, such shaft having its axis at right angles to the pivot of said hasp, the disk H, pivoted at the end of the shaft and operating the registering mechanism and having the cam-recess H^3, and the hub of the hasp having the projection k', engaging in said cam-recess, substantially as described, whereby it rocks the disk back and forth as the hasp is opened and closed, substantially as set forth.

405,106. LANTERN. HENRY A. MATTHEWS and DAVID M. IRELAND, Waterbury, Conn. Filed May 31, 1888. Serial No. 275,061. (No model.)

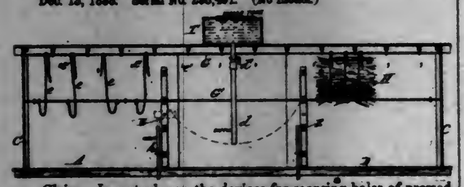


Claim.—1. In a lantern substantially such as described, the combination of the perforated plate E, adapted to rest on the burner below, the cap G above, constructed with a notch *d* in its edge, the edge of the cap adjacent to the said notch made tubular, a bolt arranged in said tubular edge of the cap and adapted to be moved across said notch to open or close the same, the globe F, seated upon the plate E and below the cap G, two or more guard-wires extending from the plate below outside the globe to the cap above and rigidly secured by their respective ends to the said plate and cap, and a guard-wire hinged to the said plate below extending upward, its upper end adapted to enter said notch in the cap and to be engaged therein by the said bolt, substantially as described.

2. In a lantern substantially such as described, the combination of the perforated plate E, adapted to rest on the burner, the cap G above, the globe F, seated upon said plate E and below said cap G, two or more guard-wires extending from the said plate below the globe to the cap above and united by their respective ends to the said plate and cap, the tubes C C, united at their upper ends by a vertical tube D over the cap, said tubes C opening into said vertical tube, the said cap constructed with a central vertical tube H, extending up

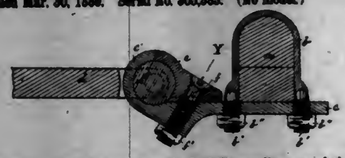
through said vertical tube D, the said vertical tube D forming a guide for said cap-tube H, and within which said cap-tube H is vertically movable, and a spring-latch J within said cap-tube H, attached thereto so as to move with the said cap and tube, the said latch having a handle projecting therefrom above the tube D, said latch constructed with a nose projecting through the said tube H and adapted to engage a corresponding notch in the surrounding tube, substantially as and for the purpose described.

405,107. STOCK-CAR. MARTIN D. MOORE, Wakonda, Dak. Filed Dec. 13, 1888. Serial No. 293,491. (No model.)



Claim.—In a stock-car, the devices for securing bales of pressed hay in place against the car sides, consisting of the longitudinal rods G and G', secured to the roof and sides of the car, the chains or ropes *e*, passing around said rods, and the hooks *d* in the side of the car, to which the free ends of the chains or ropes may be secured, all combined and arranged substantially as and for the purpose set forth.

405,108. THILL-COUPLING. CORTHELL C. MONROE, Boston, Mass. Filed Mar. 30, 1889. Serial No. 305,383. (No model.)



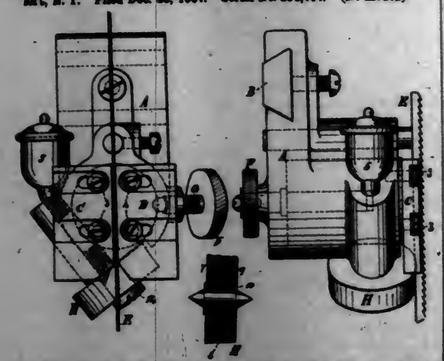
Claim.—The herein-described thill-coupling, consisting of the yoke *c*, secured to the carriage-axle and having the ball-bearing *d* and guide-ribs *c' c''*, as described, combined with the adjustable cap *e*, the inclined fastening-bolt *f*, and the forked shaft-iron having the ball *d''*, substantially as and for the purpose set forth.

405,109. THILL-COUPLING. DANIEL MURRAY, Salem, Mass. Filed Jan. 7, 1889. Serial No. 295,610. (No model.)



Claim.—A thill-coupling consisting of the stationary polygonal pin *A*, the hub *g*, mounted and stationary on the pin, the shaft-iron having the cylindrical eye *d'*, the sleeve *f*, fitted in the eye concentric to and turning with the shaft-iron on the hub, and the set-screw *i*, passing laterally through the eye of the shaft-iron and engaging the sleeve to hold the latter stationary relatively to the said eye, substantially as described.

405,110. GUIDE FOR BAND-SAWS. REUBEN MCCREERY, Frankfort, N. Y. Filed Dec. 23, 1887. Serial No. 258,797. (No model.)



Claim.—The combination, with the adjustable side guides, of the guide-wheel adjacent to the side guides and between the same and the work, such guide-wheel having a slightly-concave surface and placed so that the plane in which the saw moves intersects the axis of the wheel near the middle of the wheel, whereby the pressure of the back of the saw is greatest near the middle portion of the concave surface of the guide-wheel, substantially as specified.

405,111. CASH-REGISTER. WILLIAM G. MCGILL, Washington, D. C. Filed Jan. 31, 1887. Serial No. 226,060. (No model.)

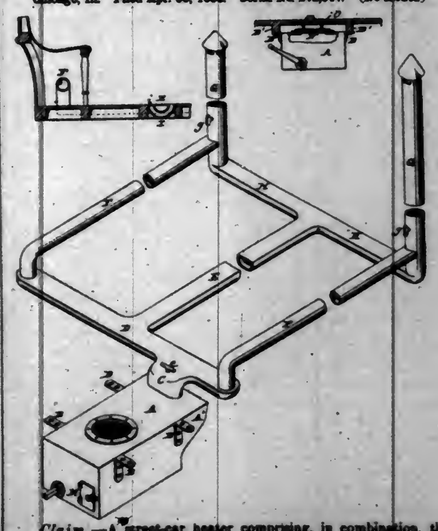


Claim.—1. The combination, with a cash receptacle or casing, of an exterior dial, an indicator-disk having a series of numbers arranged on both its faces corresponding with the numbers on the exterior dial, the shaft upon which said dial and disk are mounted, said shaft carrying a register-drum upon its inner end, and an operating-handle adapted to operate said shaft, and thereby the said dial, disk, and drum, substantially as and for the purpose set forth.

2. The combination, with the spring-actuated drawer, of the exterior dials, the shafts having the indicator-hands, and having the fixed disks formed with the annular series of perforations, and having the spring-pawls, the loosely-mounted gear-wheels, the sliding key having the cog-wheel affixed on its inner end, and the spring-actuated locking-plate centrally secured to it, and the retaining-plate formed with the beveled ends, substantially as and for the purpose described.

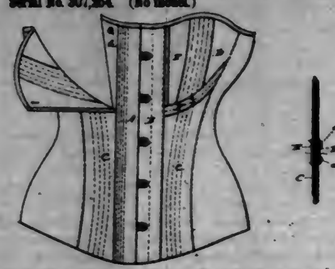
3. The combination, with the spring-actuated drawer, of the exterior dials, the shafts carrying the indicator-hands, the gear-wheels and registering-drums loosely mounted on said shafts, and the indicator-disks rigidly mounted upon the said shafts, having the spring-pawls, and having marked upon them the series of numbers corresponding with those of the exterior dials, and the perforated disks having the spring-pawls, the spring-actuated locking-plate having centrally secured to it the transverse plate formed with the beveled ends, and the sliding key having the cog-wheel affixed to its inner end.

405,112. CAR-HEATING APPARATUS. PATRICK L. MCGOVERN, Chicago, Ill. Filed Apr. 30, 1888. Serial No. 272,367. (No model.)



Claim.—A street-car heater comprising, in combination, the stove A, suspended underneath the car-platform, outlet-flue C, cross-flue D, trough I, extending longitudinally along the center of the car, longitudinal central flue E, located in the trough I, and having its upper surface flush with the floor of the car, side flues F F, located under the car-seats, and uptake-pipes G G, located at the end of the longitudinal flues, opposite to that at which they connect with the stove, essentially as herein described.

405,113. CORSET. ALBERT D. MASON, Springfield, assignor of one-half to Chauncey L. Olmstead, West Brookfield, Mass. Filed Apr. 15, 1889. Serial No. 307,254. (No model.)



Claim.—1. A corset having the swell of the breast portions detached from the clasp portions at the front edge, the stiffening material between the breast portions and the portion of the breast-section below detached on a diagonal line running from the lower end of the detached edge of the said breast portions upward and backward to the rear edge of the said breast portions, and whereby a diagonal hinge is formed between the said breast portions and the portion of the breast-section below, substantially as described.

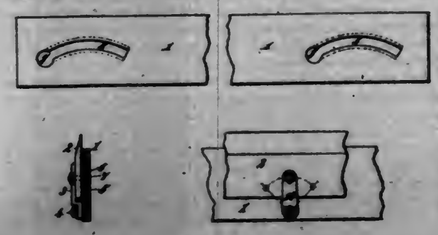
2. A corset having the swell of the breast portions detached from the clasp portions at the front edge, with a re-enforcing strip extending from the lower end of the detached edge of the said breast portions diagonally upward and rearward to the rear edge of the breast-section, the stiffening of the swell portion of the breast and of that portion of the breast-section below detached at the said diagonal line, and whereby a hinge is formed on said diagonal line, upon which the said breast portion may swing downward and backward in opening, substantially as described.

3. A corset having the swell portion of the breast detached from the clasp portions at the front edge, an overlay F extending from the lower end of the detached edge of the breast portion diagonally upward to the rear of the breast portion, the said overlay forming pockets to receive stays on the said diagonal line, the stiffening of the swell portion of the breast and that portion of the breast-section below detached, substantially as described.

405,114. FILE-CUTTING APPARATUS FOR DOUBLE-FILE-FABRIC LOOMS. JAMES OSWALD, Harpurhey, near Manchester, County of Lancaster, England. Filed June 18, 1888. Serial No. 277,457. (No model.) Patented in England May 19, 1887, No. 7,301, and in Germany Jan. 6, 1888. No. 44,569.

Claim.—1. The combination of a rigid support extending from side to side of the loom and having curved dovetailed slots formed in its face, with an enlarged opening at one end of each of said slots, a flat straight-edged knife reciprocating on the rigid support and provided on its back face with studs, on which are journaled friction-rolls that engage the curved slots in the support, brackets for holding the knife to its support, and means for reciprocating the knife, substantially as described.

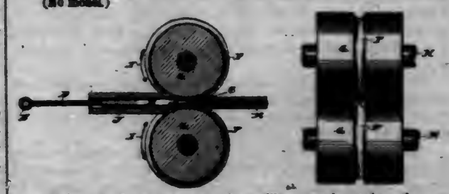
2. The combination, with a rigid supporting-plate having curved dovetailed slots cut in but not through its face and having an enlarged opening at one end of each of said slots, of a knife having friction-rolls journaled on studs projecting from the back face of said knife and running in said slots, brackets mounted on the supporting-plate and holding the knife closely against the same, a pitman for reciprocating said knife in the direction of its length, and a crank for operating the pitman, substantially as described.



405,114.



405,115. APPARATUS FOR MAKING SEAMLESS TUBES. IRVING G. PLATT, Waterbury, Conn. Filed Mar. 1, 1889. Serial No. 301,640. (No model.)



Claim.—1. In an apparatus for rolling seamless tubes, the combination, with two or more grooved rolls, of a mandrel adapted at one end to support an ingot and made smaller at the other end, which is extended between the rolls to the point where they break contact with the work, whereby a drop is formed in that portion of the mandrel over which the ingot is broken down by the rolls, which are rotated away from the larger end of the mandrel.

2. In an apparatus for rolling seamless tubes, the combination, with two or more grooved rolls, of a mandrel having a breaking-down taper or bevel between its ends, such bevel being virtually included between the two points where the rolls make contact with the ingot and break contact with the tube and the rolls being rotated from the larger end of the mandrel.

405,116. STEAM-PUMP. NATHANIEL J. PRITCHARD, Milton, assignor to the Pritchard Brake Company, Roanoke, Va. Filed Sept. 8, 1888. Serial No. 284,718. (No model.)

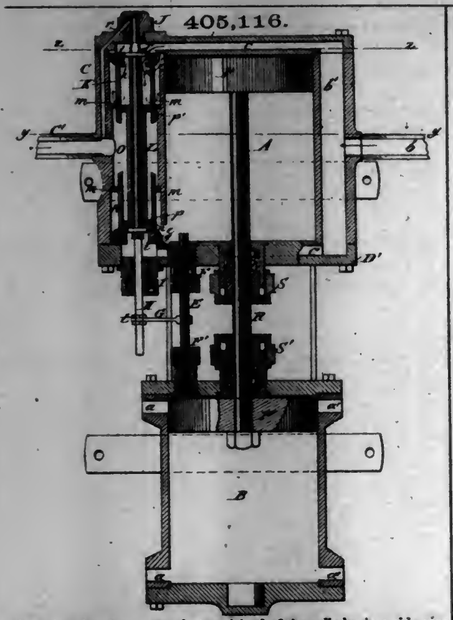
Claim.—1. As an improvement in the valve-operating mechanism of steam pumps or compressors, the combination, with the pistons of the power and pump cylinders, of a valve-actuating rod passing through the heads of said cylinders and moved alternately in opposite directions by contact with the said pistons, the valves secured on said rod, and the valve-chambers having an opening to receive the valves and flanges to guide the same, substantially as set forth.

2. In a valve mechanism for steam pumps or compressors, the valve-actuating mechanism, as described, in combination with the valve-rod, the valves secured thereto, the reciprocating sleeves and pistons mounted upon and guided by said rod, and the valve-chambers having an opening to receive the valves and flanges and to guide the same, substantially as described.

3. As an improvement in valves for steam-engines, the valve-rod provided with valves attached thereto, as described, and the reciprocating sleeve guided by said rod, in combination with the radially-pierced valve-chambers placed at opposite ends of the power-cylinder, as set forth.

4. As an improvement in the valve mechanism of steam-engines,

405,116.

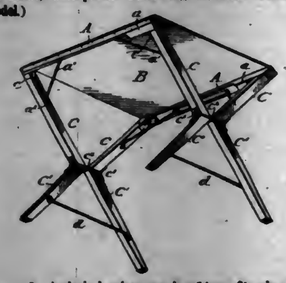


the valve-chambers secured at each end of the cylinder in a side pipe and provided with a valve-opening at one end, a series of perforations surrounding the same for the passage of steam near the opposite end, and a single perforation near the valve-opening to allow the passage of a sufficient amount of steam to cushion the stroke of the piston, as set forth.

5. In a valve mechanism for steam-engines, the combination of the valve-rod and valves secured thereon with the valve-chambers having an opening to receive the valves and flanges to guide the same, substantially as specified.

6. As an improvement in steam-pumps or compressors, the combination of the power-cylinder, the pump-cylinder, the pistons of said cylinder, the rod connecting said pistons, the valve-rod operated by the same, the valves attached to said rod, the sliding sleeve and pistons, the valve-chambers, and the side pipe inclosing said chambers and forming the steam and exhaust chambers, all constructed and arranged for joint operation, substantially as shown and described.

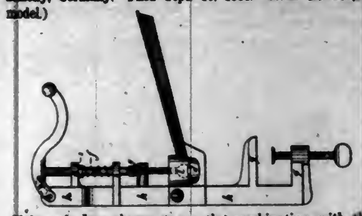
405,117. FOLDING CHAIR. JOHN R. PURDY and DANIEL A. SADEWAR, Washington, D. C., assignors of one-half to James R. Wilder and John J. Goode, same place. Filed Aug. 27, 1888. Serial No. 283,832. (No model.)



Claim.—1. A chair having a pair of bars forming a seat-frame and a flexible seat, a pair of legs hinged to the seat-frame at each end, so as to fold longitudinally up against it, each leg being jointed in the middle, so that the lower half may fold up against the upper half, and the legs being hinged together in the middle, substantially as described.

2. In a folding chair, the combination, with the parallel bars forming a seat-frame and with the flexible seat, of a pair of two-part legs hinged to each end of the seat-frame, so as to fold up against it, each pair of legs forming an X-shaped support connected at the intersection, and hinge-joints, substantially as described, which permit the two parts of each leg to fold together, and the upper parts of the X-shaped supports to fold together in one direction and up against the seat-frame at right angles to said direction, substantially as set forth.

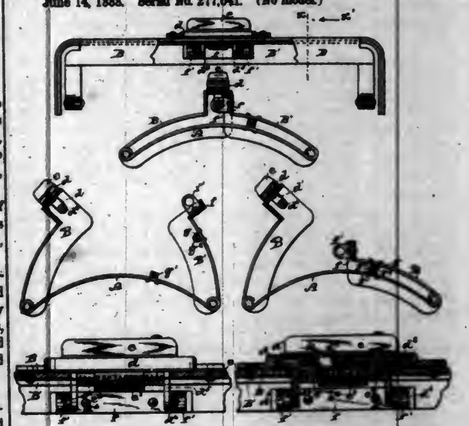
405,118. CHERRY-STONER. PAUL H. REINISCH, Dresden-Plauen, Saxony, Germany. Filed Sept. 18, 1888. Serial No. 285,670. (No model.)



Claim.—1. In a cherry-stoner, the combination, with the reciprocating piston provided with prongs for piercing the cherry, of the apertured support for the cherry, the stripper, the pusher, the outlet-spout arranged opposite to said pusher, and the contracted feed-trough, leading to said apertured support, as set forth.

2. In a cherry-stoner, the combination, with the reciprocating piston provided with prongs for piercing the cherry, and the apertured support R, arranged in the path of said prongs, of the stripper and the pusher, which knocks the stoned cherry off from its support, said pusher consisting of a pivotally-mounted elbow-lever g l, one arm of which is coupled operatively to said piston, as set forth.

405,119. BAG-LOCK. CHARLES REINISCH, Newark, N. J. Filed June 14, 1888. Serial No. 277,041. (No model.)



Claim.—1. A bag-frame consisting of end pieces A, to which are pivoted hinged sections B and B', substantially as shown, having arranged on said end pieces A centering devices g, and on the frame-section B' similar devices g', said devices fitting one within the other when the bag-frame is closed to prevent the side movement of the frame-sections of the bag, substantially as and for the purposes set forth.

2. A bag-frame consisting of end pieces A, to which are pivoted the hinged sections B and B', substantially as shown, having arranged on said end pieces A centering devices g and on the frame-section B' similar devices g', said device g being provided with a concave surface g^3, and the other device g' having a convex surface g^3, said surfaces fitting one upon the other to prevent any side movement of the frame-sections of the bag, as and for the purposes set forth.

3. In a bag-lock, the combination, with a sliding casing c, of a chambered plate d and a fastening device consisting of a pinion and toothed plates, said plates being provided with arms projecting downwardly within the bag through the frame-section and provided with oppositely-projecting bolts which engage with loops on a hasp-plate, for the purposes set forth.

4. In a bag-fastening, the combination, with catching-bolts and catching-loops, of a bolt-operating device consisting of a sliding casing moving reciprocally on a chambered plate, a pinion therein, toothed plates meshing with said pinion, said plates having arms projecting downwardly within the bag through the frame-section and having bolts thereon provided with beveled surfaces which engage with inclined surfaces on the loops on the hasp-plate, and means to cause the return of said bolts to their normal position, substantially as described.

5. In a bag-fastening, the combination, with catching-bolts and catching-loops, of a bolt-operating device consisting of a chambered plate having arranged therein toothed plates to which said bolts are connected, a pinion meshing with said toothed plates, a longitudinally-sliding finger-piece arranged on the top of said chambered plate and connected with one of the toothed plates in said chambered plate and operating in relation to said catching-bolts to cause their disengagement from the catching-loops, and a spring arranged to cause the return of said bolts to their normal positions, for the purposes set forth.

6. A bag-fastening consisting of a chambered plate d, a plate c, having a spring-receiving loop thereon, a pinion d^3, toothed plates d' and d^3, meshing with said pinion, arms d^4 and d^5, projecting downwardly from said toothed plates through said plate c and the bag-frame, oppositely-projecting bolts d^6, provided with beveled ends engaging with catching-loops having surfaces inclining toward each other, a spring arranged between said bolt-arms to cause the return of said bolts to their normal position within the loops, and a sliding piece c, arranged and operating in relation to said chambered plate d to cause the disengagement of said bolts from the catching-loops, for the purposes set forth.

7. A combined bag fastening and lock consisting of a chambered plate d, a sliding casing or finger-piece c, moving reciprocally on said plate, toothed plates d' and d^3, meshing with a pinion, all arranged and moving within the chambered plate, one of said toothed plates being secured to the sliding casing, substantially as indicated, arms d^4 and d^5, projecting downwardly from said toothed plates through slots c' and c^2 in the plate c and through the bag-frame, oppositely-projecting bolts secured to said arms, the inclined ends of which engage with inclined ends projecting toward each other on catching-loops on a loop-plate, a spring arranged within a loop on said plate c, projecting oppositely from each end thereof and engaging with the downwardly-projecting arms d^4 and d^5 to cause the return of said bolts to their normal position when caused to be withdrawn from the loops by the finger-piece, all of said parts being arranged substantially as and for the purposes set forth.

8. The combination, with a locking device, substantially as described, of the frame-sections B' and B, hinged to a rigid end piece A, the section B' being provided with a hasp-plate having loops, the inclined surfaces of which project toward each other, the other of said hinged sections B being provided with a fastening device adapted to engage with said hasp-plate, as and for the purposes set forth.

9. In a bag-fastening, the combination, with catching-bolts and hasp-loops, of a bolt-operating device consisting of toothed plates to which said bolts are connected, a pinion meshing with said toothed plates, and means operating with said plates to cause the same to operate the bolts, for the purposes set forth.

10. In a bag-fastening, the combination, with catching-bolts and catching-loops, of a bolt-operating device consisting of toothed plates provided with arms projecting down within the frame and to which arms said bolts are connected, said toothed plates being arranged within a chambered plate or casing, a pinion meshing with said toothed plates, and means operating with said plate to cause the same to operate the bolts and cause the locking engagement of said bolts with the hasp-loops, for the purposes set forth.

11. In a bag-fastening, the combination, with catching-bolts and catching-loops, of toothed bolt-plates having arms arranged at right angles on said plates, a pinion meshing with said bolt-plates, all of said parts being arranged in a chambered casing, a finger-piece secured to one of said bolt-plates, catching-bolts attached to and projecting at right angles from said projecting arms and moving longitudinally with said toothed plates and the finger-piece within the bag-frame and within the bolt-openings in the catching-loop, and a spring whereby said bolts are held normally within said catching-loops, said finger-piece moving reciprocally on the chambered casing and operating to cause the sliding longitudinal movement of the bolt-plates, for the purposes set forth.

12. In a bag-fastening, the combination, with catching-bolts and catching-loops, of a casing arranged on the top of a bag-frame, provided with means for operating said bolts, said bolts being concealed beneath the frame-section of the bag and moving longitudinally within the bolt-openings in the catching-loops, a spring whereby said bolts are normally held within said openings, and a finger-piece arranged on the casing on the outside of the bag-frame, the catching-loops being beveled and engaging with the beveled ends of the catching-bolts to receive the same in the perforations in said loops, substantially as and for the purposes set forth.

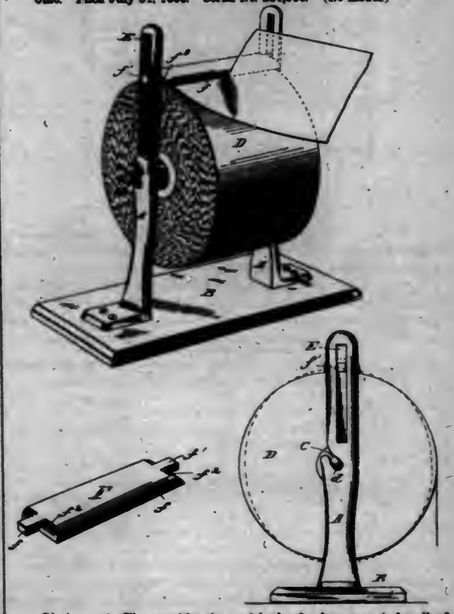
13. The combination, with a locking device, substantially as described, of the frame-sections B' and B, hinged to a rigid end piece A, the section B' being provided with a hasp-plate having loops the inclined surfaces of which project toward each other, the other of said hinged sections B being provided with a fastening device adapted to engage with said hasp-plate, and centering devices g and g', arranged on the end pieces A and the sections B', respectively, fitting one upon the other to prevent the side movement of the frame-sections of the bag when the same is closed, for the purposes set forth.

405,120. FENCE. JAMES D. ROGERS, Georgetown, Ky. Filed Dec. 24, 1888. Serial No. 294,700. (No model.)



Claim.—In a fence, the combination of the longitudinally-inclined converging stake E, the rails A B, arranged between and in contact with said stakes and having their meeting ends lapped and secured, respectively, to alternate stakes E, for the purpose set forth, the stakes C, arranged at right angles to the fence and having their upper ends crossed over the upper rails and secured together, and the riders having their lapped ends resting in the notches of the stakes E and secured thereto, the upper ends of said stake E being secured to the upper ends of the stakes C, substantially as described.

405,121. PAPER-ROLL HOLDER. ABBOTT Q. ROSE, Cincinnati, Ohio. Filed July 31, 1888. Serial No. 281,580. (No model.)



Claim.—1. The combination, with the freely-suspended roll of paper, of a floating weighted cutter-bar held by gravity alone against the periphery of said roll and having a cutting-edge removed from the point of contact between said bar and roll, whereby said cutter-bar is caused to act as a friction-brake to the roll to adapt itself automatically to the size and contour of the roll and to serve as means for severing the free end of the paper when the latter is pulled upward against it, substantially as described.

2. A paper-roll holder embodying supports in which to suspend a roll of paper, a weighted cutter-bar for bearing by gravity alone upon the suspended roll of paper and having a cutting-edge removed from its contact or bearing point, against which the paper is adapted to be separated by an upward draw upon it, and guides in which the cutter-bar works, substantially as described.

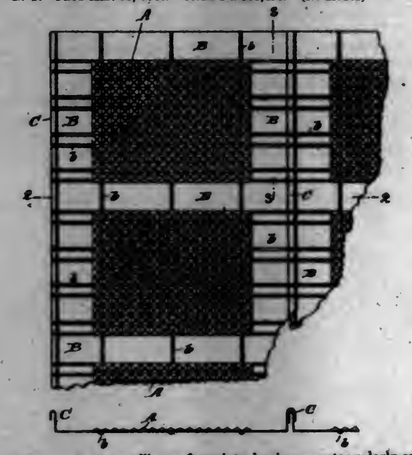
3. The combination of a paper roll, supports in which the same is journaled, a weighted cutter-bar bearing by gravity alone upon the

paper roll and having a cutting-edge at one of its lower corners removed from the bearing-point, and having, also, guiding and projections and slotted guides in which the projections on the end of the cutter-bar are free to play up and down, substantially as described.

4. In a paper-roll holder, the combination, with the slotted supports having bearing for receiving the journals of a paper roll, of the weighted cutter-bar provided with the cutting-edge at one of its lower corners and shouldered ends co-operating with slots in the supports, and having rounded or beveled portions which permit of the free independent vertical movement of its end, substantially as described.

5. The combination, with the slotted supports, of the roll of paper journaled therein and the weighted cutter-bar guided by the slots in the supports and bearing by gravity alone on the roll in a plane or planes substantially parallel to the plane of said guide-slots and having its front side beveled to constitute a tearing-edge that is removed from the bearing-point, substantially as described.

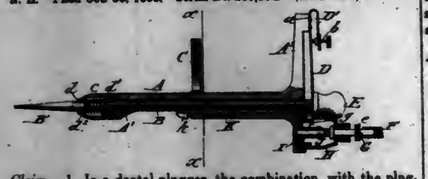
405,122. METALLIC ROOFING-PLATE. LOUDLEY L. SAGENDORPH, Cincinnati, Ohio, assignor of one-half to Charles H. Harder, Philmont, N. Y. Filed Mar. 15, 1889. Serial No. 303,456. (No model.)



Claim.—1. A metallic roofing-plate having a rectangularly-embossed figure at center and surrounded by a border having beaded grooves therein, substantially as set forth.

2. A metallic roofing-plate having the central pyramidically-embossed surface A, surrounded by a border B, having the beaded grooves *b* therein, and side flanges C, the grooves *b* from said side borders extending up and over said flanges, substantially as set forth.

405,123. DENTAL PLUGGER. ANDREW J. SAWYER, New Market N. H. Filed Oct. 30, 1888. Serial No. 289,504. (No model.)



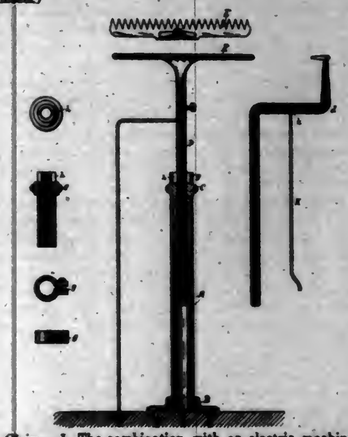
Claim.—1. In a dental plugger, the combination, with the plugging-instrument, of a spring-hammer, the actuating-cam, and the stop device K, having end *k*, for stopping the hammer, substantially as described.

2. The combination of the casing A, cut away at A', the plugging-instrument B, arranged therein, the spring-hammer attached to the case, the thimble H, likewise secured to the case, the spindle G, journaled in the thimble, the cam I, arranged within the case and adapted to act upon the spring-hammer, and clutching mechanism for connecting the cam and the spindle, substantially as described.

3. The combination, with the main casing, the plugging-instrument therein, and the cam for operating the spring-hammer, of said hammer, consisting of the spring D, secured at *a a* to the part A^3 of the case and carrying weight E, said spring D having the part *d'* curved back upon itself and carrying a set-screw *b*, for regulating the force of the blow of the hammer, substantially as described.

4. The combination of the case A, cut away at A', plugging-instrument B within said case, having point B', the spring *d*, arranged within the cap *c*, which is secured on the end of the case, as specified, the spring-hammer and its set-screw *b*, the cam for operating the hammer, the actuating means for the cam-spindle, the clutching mechanism between the spindle and the cam, and a stop device for the hammer, all substantially as described.

405,124. DISCHARGE DEVICE FOR ELECTRICAL MACHINES. ALBERT SCHMID, Allegheny, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Mar. 12, 1889. Serial No. 303,041. (No model.)



Claim.—1. The combination, with an electric machine, its belt-wheel and a belt applied thereto, of an adjustable discharge device consisting of a discharge-plate directed toward the belt-wheel, a support therefor, and means for adjusting the vertical position of such support.

2. The combination, with an electric machine, of a driving belt-wheel and a discharge device consisting of a plate interposed between the body of the machine and the inner side of the belt-wheel.

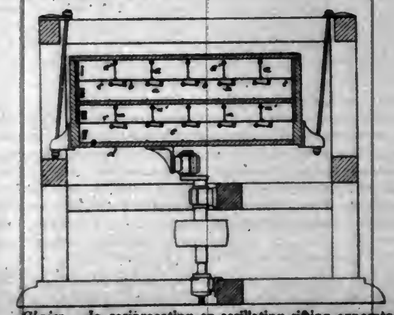
3. The combination, with an electric machine, of a driving belt-wheel and a discharge device consisting of a plate interposed between the body of the machine and the inner side of the belt-wheel, and electrical connections from the discharge device with the earth.

4. A discharge device for belt-wheels, consisting of a stationary support, a discharge-plate placed between the belt-wheel and the body of the machine, and an arm carrying the plate adjustable in said support.

5. An electrical-discharge device consisting of a stationary support, a rod adjustable therein, a discharge-plate carried by the rod, an electrical connection from the plate, and means for holding the rod in any desired vertical position.

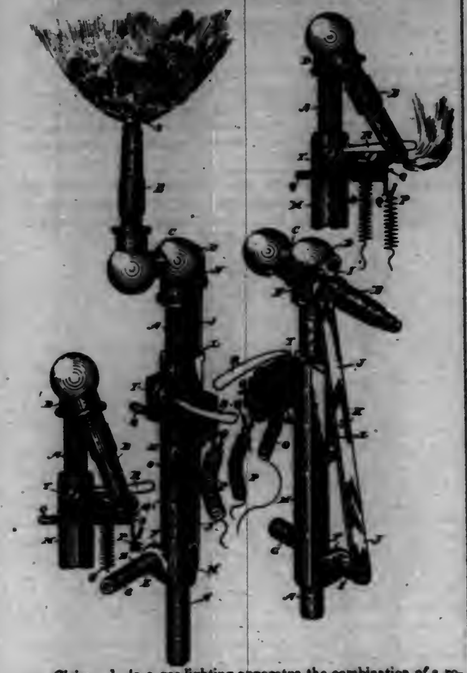
6. In an electrical-discharge device, the combination of the tabular support A, the washer C, carried thereby, having a resilient extension A, the vertically-adjustable rod D, the plate E, carried by the rod, and the collar *g* for compressing said extension.

405,125. MEANS FOR CLEANING SHAKING-SCREENS. HEINRICH SUCK, Dresden, Saxony, Germany. Filed Sept. 25, 1888. Serial No. 286,383. (No model.)



Claim.—In reciprocating or oscillating sifting apparatus, the combination of the frame or case *d* and sieve *c*, with flaps *e* pivoted by rods supported in walls of the frame or case and provided at their free ends with strikers *b*, substantially as and for the purpose set forth.

405,126. AUTOMATIC GAS LIGHTING AND EXTINGUISHING APPARATUS. NATHANIEL H. SHAW, Somerville, Mass., assignor to the American Automatic Gas Lighting Company, Portland, Me. Filed May 14, 1888. Serial No. 273,795. (No model.)



Claim.—1. In a gas-lighting apparatus, the combination of a rotary burner and gas-cock with electrodes adapted for engagement with said burner in its movement, for the purpose set forth.

2. In a gas-lighting apparatus, the combination of a rotary burner and gas-cock with yielding electrodes, said burner adapted in its rotation to make and break electrical connection through said electrodes, for the purpose set forth.

3. The combination of a rotary burner and gas-cock with a time mechanism adapted to automatically actuate them, and with two electrodes brought into circuit by said burner in its rotation, substantially as and for the purpose set forth.

4. The combination of a rotary burner and gas-cock and a time mechanism for actuating them with a rotating shaft connected to the time mechanism and a pivoted pitman uniting said shaft and cock for simultaneous movement, substantially as set forth.

5. The combination of a rotary burner and gas-cock and a time mechanism adapted to actuate them at predetermined times with a rotating shaft located below said cock, a pivoted pitman connecting said shaft and cock, and a movable fulcrum for said pitman working in grooved ways, substantially as set forth.

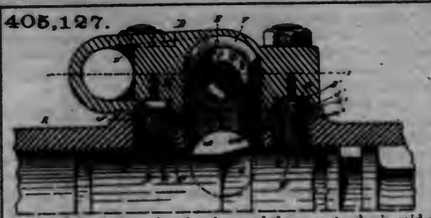
6. The combination of a rotary burner and gas-cock, a rotary shaft parallel to their axes, and a time mechanism for actuating them, with a pivoted pitman having midway of its length a sliding fulcrum and at one end a short connecting-link, for the purpose set forth.

7. The combination of a rotary burner and gas-cock, a rotary shaft in a lower plane, and mechanism for moving them simultaneously, as described, with a sleeve or bar attached to the gas-pipe as a support for said shaft, and with two electrodes, also mounted upon said sleeve or bar, substantially as and for the purpose set forth.

405,127. STEAM ROCK-DRILL. ABRAHAM J. STEPHEN, Iron Mountain, Mo. Filed Mar. 9, 1888. Serial No. 266,771. (No model.)

Claim.—1. In a steam rock-drill, the combination of a main valve, the valve-chamber having inlet and outlet ports, and sub ports or passages at or near each end and extending to the exhaust-port, and a puppet-valve in said sub ports or passages and operated by the piston, substantially as described.

2. In a steam rock-drill, the combination of the valve-chamber B^2, having the supply and exhaust ports b^2, b^4, and b^3, and the sub-ports or passages extending to the exhaust-port, a valve having the collars b^5 b^6 b^7 b^8, the steam-supply port B', having the passages communicating with the valve-chamber, and the puppet-valve in said sub ports or passages *c c'* and operated by the piston, substantially as described.



3. In a steam rock-drill, the combination of the cylinder, the puppet-valves having beveled lower ends and annular grooves, the piston having the inverted inclines to operate said puppet-valves, the chamber inclosing the cones, and passages connecting the cone-chamber with the valve-chamber, and a passage connecting the annular grooves with the exhaust-port, substantially as described.

4. In a steam rock-drill, the combination of the cylinder having the bushings provided with external annular grooves connected by passages with the exhaust-port and the interior of the bushing, the puppet-valves having beveled lower ends and annular grooves and resting upon the bushing, the piston having the inverted inclines to operate said puppet-valves, the chamber inclosing the cone of the puppet-valves, and connected by passages with the ends of the valve-chamber, substantially as described.

405,128. EXERCISING-BAR. SAMUEL P. STOCKBURGER, Canton, Ohio. Filed Jan. 4, 1889. Serial No. 295,257. (No model.)



Claim.—The combination of the bar A, formed of spring material and of such a length to be grasped by both hands, the removable weights B, and means for attaching said weights, substantially as and for the purpose specified.

405,129. GAGE-COCK. JOHN P. STEARNS, Philadelphia, Pa. Filed Sept. 15, 1888. Serial No. 285,496. (No model.)



Claim.—1. A cock consisting of the shell A, provided with inclined ports at one end opening into the bore thereof, a valve having its seat on one end of the shell and provided with a stem having its end portions turning in the bore of the shell, its central portion being of reduced diameter, the said valve having ports coinciding with the ports of the shell, and a nozzle leading from said bore, said parts being combined substantially as described.

2. A cock consisting of a shell provided with inclined ports leading into the bore thereof, a valve with ports coinciding with the ports of the shell and provided with a stem having end portions of greater diameter than its central portion, and a nozzle leading from the bore of the shell between the end portions of the stem, the end portions of the stem turning in the bore of the shell and the ports of the shell leading into the bore between the said ends, the said bore being of substantially uniform diameter, said parts being combined substantially as and for the purpose set forth.

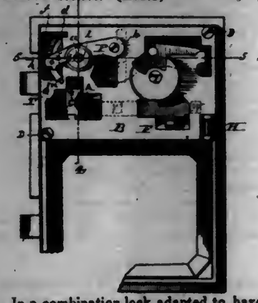
405,130. MOUNT FOR PHOTOGRAPHS. RICHARD H. L. TALCOTT, Boston, Mass. Filed Nov. 14, 1888. Serial No. 290,797. (No model.)



Claim.—1. A mount for photographs, consisting of the glass front *a*, the card or pasteboard back *b*, and the strips *g*, overlapping and secured to said front and back at all but one of their edges to form an envelope, and the sealing-flap *h*, secured at the unbound edge of said envelope, substantially as described.

2. As a new article of manufacture, a mount for photographs, consisting of the glass front *a*, the card or pasteboard back *b*, and the strips *g*, overlapping and secured to said front and back at all but one of their edges, to form an envelope, the overlapping flap *h*, secured at the unbound edge of said envelope, and the sheet *l*, of flexible material, overlying the back *b* and the rear edges of said strips *g* thereon, and secured thereto for the greater area of said back, but unsecured toward the flap end of the envelope, all substantially as shown and described, for the purposes set forth.

405,131. LOCK. WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Dec. 10, 1888. Serial No. 293,093. (Model.)

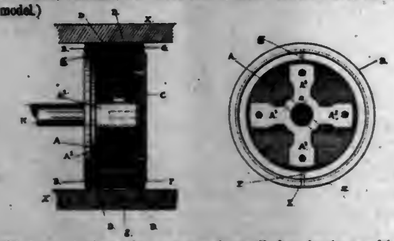


Claim.—1. In a combination-lock adapted to have its combinations changed by the use of a key, the combination of the tumblers in two separable parts, the movable frame carrying the circular parts of the tumblers, and the catch *i*, engaging with the pivot-post *a* to fasten the said parts of the tumblers together, substantially as set forth.

2. The combination of the movable frame, with its pivot-post *a* extending through the cap-plate of the lock, the catch *i*, and the thumb-nut *b*, serving as a handle and as a fastener for the said catch, substantially as set forth.

3. The combination of the movable frame, the circular parts of the tumblers carried thereby and the other parts of the tumblers pivoted to the case, the catch *i*, and the pivoted spring-stop *e*, provided with the stud *h*, substantially as set forth.

405,132. BALANCED PISTON FOR STEAM-ENGINES. WILLIAM J. THOMAS, Sausalito, Cal. Filed Nov. 7, 1888. Serial No. 290,252. (No model.)

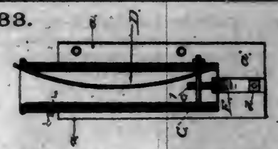


Claim.—A piston for steam-engine cylinders, having packing-rings set obliquely and divergently, as described, and the recess E, formed between them at the part of greatest divergence, in combination with ports or passages, as *g* F, which are adapted to connect the said recess E with the steam-space of the cylinder outside the piston, as set forth.

405,133. COMBINED WHIP-SOCKET AND REIN-HOLDER. ADDISON THOMPSON, Clear Lake, Iowa. Filed Jan. 7, 1889. Serial No. 295,852. (No model.)

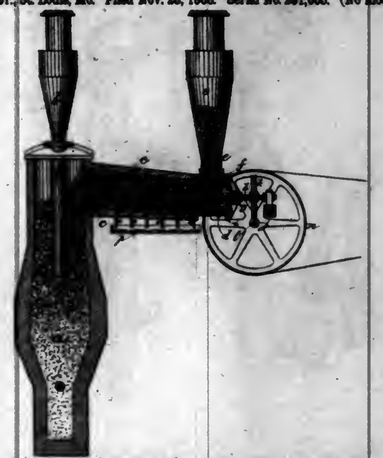
Claim.—An improved whip-socket and rein-holder, consisting of a case or socket having a slot in one side of its lower portion, and provided at the opposite side with a securing-plate having an extension *a'* below the case or socket, a lever B at one side of the case or





socket having a lug projecting through said slot and provided with a short arm or extension *c*, a spring within the socket, a bolt passing through said case or socket, spring, and inwardly-projecting lug, whereby these parts are secured together, and a second spring between the extending portions of the securing-plate and pivoted lever, substantially as herein described.

405,134. APPARATUS FOR CONDENSING ZINC VAPORS AND COLLECTING THE METALLIC ZINC THEREFROM. EDWARD WALSH, Jr., St. Louis, Mo. Filed Nov. 23, 1888. Serial No. 291,665. (No model.)



Claim.—1. A condenser for condensing zinc vapors into molten zinc, said condenser having a vapor-inlet for the admission of zinc vapors, a feed mechanism for feeding a condensing medium—such as solid carbon—through the condenser in the direction of the vapor-inlet, and outlets for the uncondensed gases and the condensed molten zinc, substantially as and for the purposes specified.

2. A condenser for condensing zinc vapors into molten zinc, said condenser having a vapor-inlet, a feed-chute distant from the vapor-inlet, feed mechanism for feeding a condensing medium—such as carbon—through the condenser, and outlets for the condensed molten zinc and uncondensed vapors, substantially as and for the purposes specified.

3. The combination, with a stack or furnace for reducing zinc ore, of a condenser arranged at the upper part thereof and connected therewith, said condenser having outlets for the escape of non-condensed gases and condensed molten zinc, a feed-chute at the distant end of the condenser, and feed mechanism for feeding a carbonaceous material through the condenser into the furnace, substantially as and for the purposes specified.

4. The combination, with a stack or furnace for reducing zinc ores, of a condensing-tunnel connected with the upper part thereof and slightly inclined therefrom, outlets at the bottom of said tunnel for the escape of condensed molten zinc, and feed mechanism for feeding a solid carbon through the tunnel and into the stack, substantially as and for the purposes specified.

5. The combination, with a stack or furnace for reducing zinc ores, said stack having a chute for charging the furnace with mixed ores and fuel, of a condensing-tunnel connected with the top of the stack, said tunnel provided with a chute for introducing carbon, feed device for feeding the carbon through the tunnel into the stack, and outlets for the escape of condensed molten zinc and non-condensed gases, substantially as and for the purposes specified.

405,135. APPARATUS FOR DRAWING EFFERVESCING FLUIDS. JOSEPH H. WALTON, Philadelphia, Pa. Filed Dec. 27, 1886. Serial No. 223,718. (No model.)

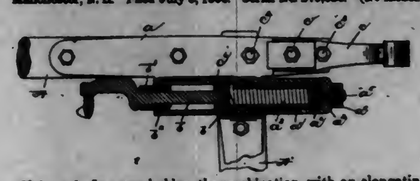
Claim.—In combination with an apparatus for drawing effervescing fluids from casks, the bushing B, the extension B^2, having the smooth-bored portion B^3, the stop-cock G, having the groove G^3, the hollow valve-guide F^3, having apertures F^4, and the valve F, all con-

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structed and adapted to afford an unobstructed central channel, substantially as described and shown.

405,136. TUG-HOLDER FOR VEHICLES. ALBERT B. WEBSTER, Manchester, N. H. Filed July 5, 1888. Serial No. 279,092. (No model.)



Claim.—1. In a tug-holder, the combination, with an elongating spring having one end fastened to a stationary part of the vehicle, of a draw-bar extended through a bearing and connected to the said spring, whereby the said spring is elongated when the draw-bar is drawn upon, substantially as described.

2. The combination, with a tube, of a spring located therein and firmly secured at one end, a draw-bar secured to the opposite end of the spring, and a cylinder-head through which the said draw-bar is extended, the said cylinder-head forming a long bearing for the draw-bar to prevent rattle, substantially as described.

3. The combination, in a tug-holder, of a tube, an elongated spring having one end fixed within the said tube, a cylinder-head, and a draw-bar extended through the said cylinder-head and connected to the said spring, substantially as described.

4. The combination, with a shaft-iron having a tube *a'*, closed at one end and cast integral therewith, an elongated spring located in said tube, and a draw-bar secured to said spring, of a sweep-piece *c*, bolted to the shaft-iron, substantially as described.

5. The combination, with a shaft-iron, a tube cast integral therewith, an elongating spring located therein, a cross-head, to which one end of the said spring is secured, a cylinder-head, and a draw-bar extended through said cylinder-head and secured to the said spring, substantially as described.

405,137. VETERINARY SYRINGE. JOHN W. WHITLOCK, Roanoke, Va. Filed Apr. 29, 1889. Serial No. 309,121. (No model.)



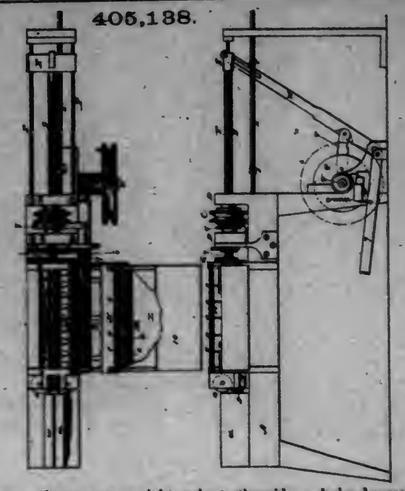
Claim.—An animal-drenching device consisting of a syringe having a curved discharge-tube secured to an enlarged egg-shaped perforated bulb inclosing a wire screen and sponge, substantially as shown and described.

405,138. MACHINE FOR ROLLING PAPER TUBES. HARRY O. WHITNEY, New Haven, Conn., assignor to the Winchester Repeating Arms Company, same place. Filed June 25, 1888. Serial No. 278,194. (No model.)

Claim.—1. In a machine for making paper tubes for cartridge-shells, the combination of the revolving and longitudinally-reciprocating mandrel, several rollers arranged around said mandrel and parallel therewith, mechanism, substantially such as described, to impart longitudinal reciprocating movement to said mandrel, and a pasting and feeding mechanism, substantially such as described, in rear of said mandrel, the combination being substantially as specified, and whereby a sheet of paper is coated with adhesive material upon one side, advanced toward and wound into a tube upon said mandrel between it and the surrounding rollers, and then the mandrel with the tube thereon moved longitudinally out from between the rollers for the discharge of the tube.

2. The combination of the revolving and longitudinally-reciprocating mandrel B, several rollers, as I J K, arranged in stationary bearings around said mandrel and parallel therewith, a pasting and feeding device, substantially such as described, to coat and deliver the sheet of paper to said mandrel and rollers, two or more wheels *n r s*,

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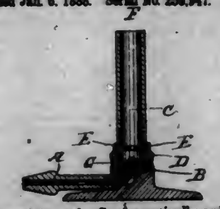
arranged upon axes at right angles to the said mandrel and surrounding the same, the periphery of the said wheels grooved corresponding to the mandrel, and between which wheels the said mandrel passes in its longitudinal reciprocation, substantially as and for the purpose described.

3. The combination of the longitudinally reciprocating and revolving mandrel B, several rollers, as I J K, arranged in stationary bearings around said mandrel and parallel therewith, a pasting and feeding device, substantially such as described, adapted to coat and deliver the paper to said mandrel and its surrounding rollers, a pair of grippers in the path of said mandrel in its longitudinal movement, and adapted to grasp the tube formed upon the mandrel, substantially as specified.

4. The combination of the longitudinally reciprocating and revolving mandrel B, several rollers, as I J K, arranged in stationary bearings around said mandrel and parallel therewith, the said rollers constructed with annular grooves *i*, stationary guard-fingers *l*, lying in said grooves, with a pasting-and feeding mechanism, substantially such as described, adapted to coat and deliver the paper between the said mandrel and its surrounding rollers, substantially as specified.

5. The combination of the longitudinally reciprocating and revolving mandrel B, several rollers, as I J K, supported in stationary bearings around said mandrel and parallel therewith, wheels, as *n r s*, arranged upon axes at right angles to the axis of the mandrel and in the longitudinal path of the mandrel, the said wheels grooved corresponding to the surface of the mandrel, and a pair of grippers *w w*, arranged beyond the said wheels and adapted to grasp the tube which has been formed on the mandrel, substantially as and for the purpose described.

405,139. HEATING-GAS BURNER. S. LLOYD WIEGAND, Philadelphia, Pa. Filed Jan. 6, 1888. Serial No. 259,947. (No model.)

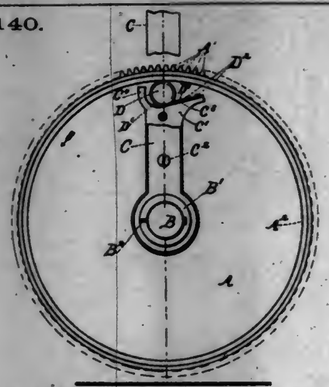


Claim.—The mixing-tube C, of practically uniform diameter and having an inwardly-projecting rim or flange E at its entrance, in combination with the jet-tube B, located in the same axial line therewith and attached thereto, substantially as described and set forth.

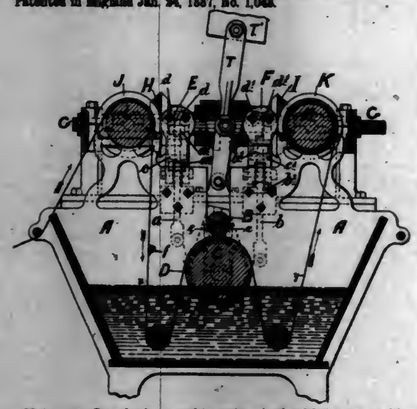
405,140. INTERMITTENT GRIP DEVICE. WILLIAM H. WILD, Valatie, N. Y. Filed Feb. 20, 1888. Serial No. 300,607. (No model.)

Claim.—In an intermittent grip device, a shaft and drive-wheel provided with a roll-engaging flange, in combination with a friction-roll, a roll-carrier having an inclined roll-track, carrier-operating lever fulcrumed upon the shaft, and roll-controlling spring D', having one end fixed to the carrier and the other end coiled around the roll, substantially as described.

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405,141. DYEING APPARATUS. ELIAS WOOD, Leeds, County of York, England. Filed Jan. 24, 1888. Serial No. 261,807. (No model.) Patented in England Jan. 24, 1857, No. 1,048.



Claim.—1. In a dyeing-machine wherein the fabric is passed back and forth between winding-on rollers, the combination, with said rollers, of a shifter for connecting said rollers alternately with the driver, and a controller consisting of a bar or strip borne by the fabric for controlling the shifter automatically at the proper time.

2. In a dyeing-machine wherein the fabric is passed back and forth between winding-on rollers, the combination, with said rollers and their gears and the splined clutch provided with cams, of the two hinged arms provided with anti-friction rollers, against which the cams act, the rods which actuate the said arms connected, respectively, to opposite sides of the friction-strap $D^{\times}$, the said friction-strap, its wheel D, secured to the journal of the lower nipping-roller, the upper lifting-roller mounted as set forth and its journal engaging a fork on the strap $D^{\times}$, and lifters carried by the fabric which passes between the said nipping-rollers, whereby when one of said lifters enters between said rollers and raises the journal of the upper roller out of said fork the friction-strap $D^{\times}$ will be released, as set forth.

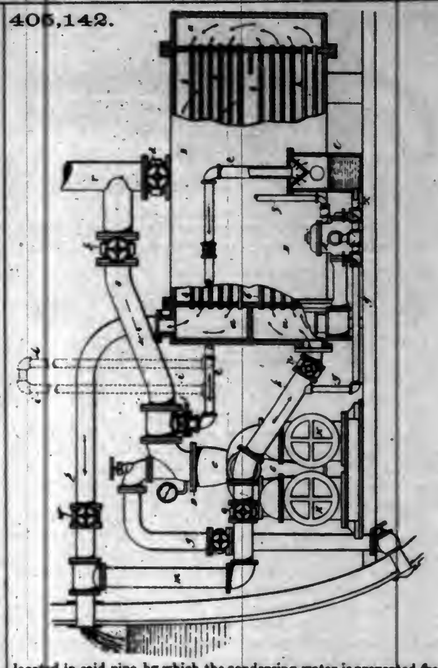
405,142. CONDENSING APPARATUS. CHARLES C. WORTHINGTON, Irvington, N. Y. Filed Dec. 10, 1888. Serial No. 293,129. (No model.)

Claim.—1. The combination, with a surface condenser and an injection or jet condenser, of the pipe *r* and branch *s*, having valves *d f*, for delivering the steam to either condenser; and a pump communicating with the jet condenser to withdraw the condensing-water therefrom, and with the surface condenser to circulate the water therein, substantially as described.

2. The combination, with a surface condenser, of an injection or jet condenser communicating with the surface condenser to withdraw the air and vapor therefrom, and a pump communicating with the injection or jet condenser to withdraw the condensing-water therefrom, and with the surface condenser to circulate the water therein, and the pipe *r* and branch *s*, having the valves *d f*, for delivering the steam to either condenser, substantially as described.

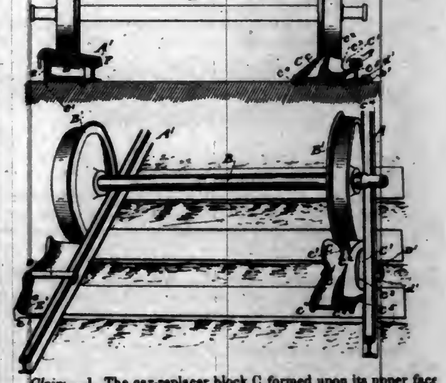
3. The combination, with a surface condenser, of an injection or jet condenser, a pipe connecting the two, by which the air and vapor are exhausted from the former by the latter, and a water-check

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located in said pipe, by which the condensing-water is prevented from entering the surface condenser, substantially as described.

405,143. CAR-REPLACER. ROBERT W. AFRICA, Huntingdon, Pa., assignor of one-half to Orlando Gibson, same place. Filed Mar. 7, 1889. Serial No. 302,275. (No model.)



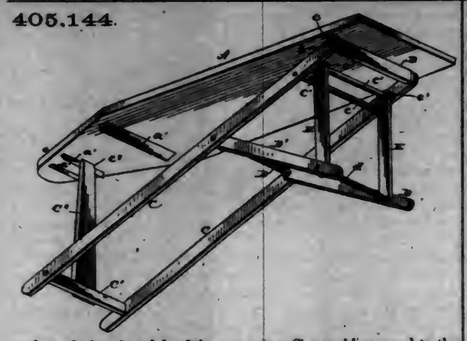
Claim.—1. The car-replacer block C, formed upon its upper face with the inclined grooves *c* and *c'*, extending from opposite ends toward the center, and upon its edge concaved, substantially as shown and described, and for the purpose specified.

2. The combination, with the rails A and A', of the block C, formed with concaved edge, and upon its upper face with the longitudinal grooves *c* and *c'*, and the block D, secured to the outside of the rail A' and formed upon its upper face with the two inclines extending from the ends toward the center and toward the inner edge, substantially as shown and described.

405,144. IRONING-TABLE. WILLIAM I. CARR, Greenwood, Nebr. Filed Jan. 24, 1889. Serial No. 297,366. (No model.)

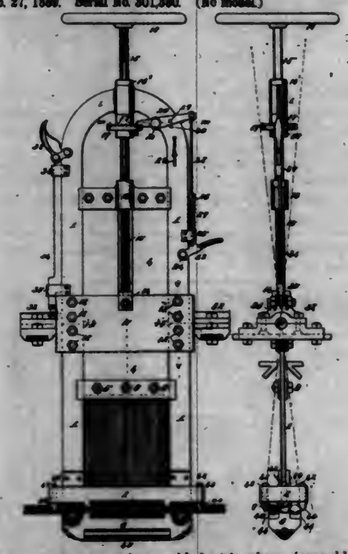
Claim.—In an adjustable ironing-table, the combination of the board A, of the retaining-strips *a' a' a'*, of the cross-piece B, provided with the bearings *b b*, of the legs C C, pivotally secured at their inner

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ends to the bearings *b b*, of the cross-piece C, movably secured to the outer ends of the legs C C, of the tongue $C^{\times}$, secured to said movable cross-piece, of the short legs D' D', movably working upon the middle round D, secured to the legs C C, and having their outer ends secured together by the round *d*, of the notched supporting-pieces E E, movably secured to the round *d* and connected at their outer ends by round *e*, and of the rounds *c' c'*, secured to the legs C C, substantially as herein shown, and for the purpose set forth.

405,145. CABLE-GRIP. GEORGE A. CARRERAS, St. Louis, Mo. Filed Feb. 27, 1889. Serial No. 301,360. (No model.)



Claim.—1. A cable-grip provided with arbors, journal-boxes in which the arbors fit, and a dog and notched plate for holding the grip in a vertical position, but permitting it to be swung on a horizontal plane, substantially as and for the purpose set forth.

2. In a cable-grip, the combination of the frame 1, upper jaw secured to the frame, plates 3 4, and lower jaw secured to the plate 3, the frame 1 being divided and connected by a cross-head and bolts, substantially as and for the purpose set forth.

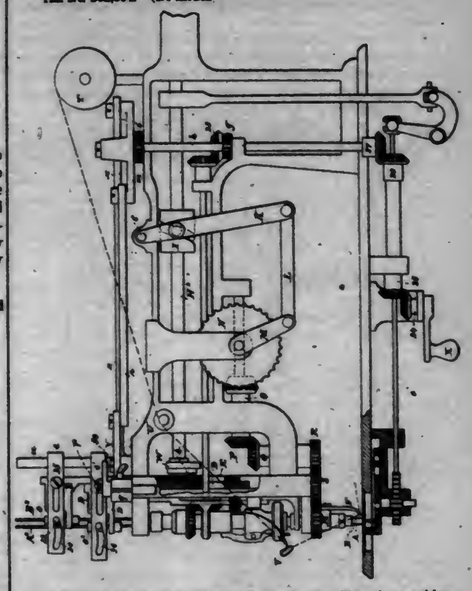
3. In a cable-grip, the combination, with the frame and the upper jaw secured to said frame, of the sliding plates, the lower jaw carried by said plates, a cross-head attached to said plates, and an upright screw stepped in said cross-head for raising and lowering said lower jaw, substantially as set forth.

4. In a cable-grip, the combination of the frame, an upper jaw carried by the frame, sliding plates, lower jaw carried by the plates, a screw for operating the plates, a ratchet secured to the screw, and a spring-pawl for engaging the ratchet, substantially as and for the purpose set forth.

5. In a cable-grip, the combination of the frame, upper jaw secured to the frame, sliding plates, and lower jaw secured to the plates, a screw for raising and lowering the plates, ratchet-wheel secured to the screw, pawl engaging the ratchet-wheel, a rod secured to the pawl, a lever pivoted to the frame and to which the lower end of the rod is secured, a spring 27, for forcing the pawl into engagement with the ratchet, and a pin 28, for holding the pawl out of engagement with the ratchet and against the action of the spring, substantially as and for the purpose set forth.

6. In a cable-grip, the combination of the upper and lower jaws, rollers 40 and 41, secured to the upper jaw, and rollers 44, secured to the lower jaw, substantially as and for the purpose set forth.

405,146. EMBROIDERING AND EDGING MACHINE. ESTIER CORNELY and ROBERT CORNELY, Paris, France. Filed Dec. 1, 1888. Serial No. 292,294. (No model.)



Claim.—1. In an embroidering or edging machine, the combination of two parallel needles supported and actuated independently of each other, a thread-carrier for interlacing a thread between the two needles, and operating mechanism for said parts, substantially as described.

2. The combination of the parallel needles and co-operating stitch-forming mechanism for making separate parallel seams, needle-bars, one for each needle, needle-slides, one for each needle, mechanism for reciprocating said slides, and a thread-carrier, substantially as described.

3. The combination of needles and co-operating stitch-forming mechanism for making separate parallel seams, needle-bars, one for each needle, an oscillatory thread-carrier for laying a thread between said needles, a separate slide for each needle-bar, each slide having a cam, and a moving part acting on said cams for reciprocating said slides, said cams being arranged relatively to each other, as specified, whereby one needle completes its stroke in advance of the other, substantially as described.

4. The combination, with the feed-bar, feed-slide for actuating the same, and the governing-handle of a universal feed, of an adjustable stop arranged in the path of a projection of said slide so as to limit its stroke, said stop and handle being connected together, so that the motion of the latter to change the direction of the feed raises or lowers said stop, substantially as described.

5. The combination, with the feed-slide and governing-handle of a universal feed, of a stop for limiting the stroke of said slide, a cam for changing the position of said stop to vary the stroke of said slide, and connections, as specified, between said cam and handle, the acting face of said cam being disposed, as herein set forth, to move said stop in the direction to lengthen the stroke of the feed-slide when the direction of the feed is changed to work from the center of an arc toward the angle, substantially as described.

6. The combination, with a reciprocatory needle-bar and the universal feed mechanism, including a governing-crank-handle, of a cam and connections for varying the length of stroke of said needle-bar, said cam being connected with and operated by said crank-handle, substantially as described.

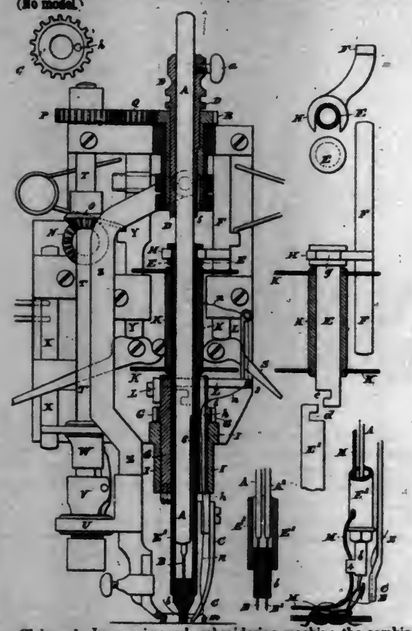
7. The combination of a needle-bar, universal feed mechanism, including a feed-slide and governing crank-handle, and mechanism, as

specified, controlled by said handle for varying the length of feed, said needle-bar being connected with said handle, whereby the stroke of the former is varied in accordance with the variations in the length of stitch, so as to draw more or less thread for the needle, substantially as described.

8. The combination, with variable universal feed mechanism, including a governing-handle for varying the length of feed in changing its direction, of a tension comprising tension-disks, between which the thread passes, and an adjustable stud or pin for regulating the pressure of said disks, said stud or pin being connected with and adjusted by said handle in accordance with the variations of the feed, substantially as described.

9. The combination, with hook-needles and the variable universal feed mechanism, including a governing-handle, of a sliding blade for pushing thread between said needles, said blade being connected by devices, such as herein specified, through which the motions of said handle are transmitted to said blade, substantially as described.

405,147. EMBROIDERING-MACHINE. EMIL CORNELY and ROBERT CORNELY, Paris, France. Filed Dec. 13, 1888. Serial No. 293,479. (No model.)



Claim.—1. In a sewing and embroidering machine, the combination, with stitch-forming devices and a rotating thread-carrier for winding a second thread around the needle-thread, of a spool for said second thread, and a pinion carrying the thread-carrier and having an opening or passage for the thread from said spool to said thread-carrier, substantially as described.

2. In a sewing and embroidering machine of the character described, a nipple-tube in two parts rigidly fastened together by a detachable connection, substantially as set forth.

3. The combination, with stitch-forming devices and means for winding a second thread around the sewing-thread, of a nipple-tube in two detachable parts, and a spool for supplying the winding-thread, said spool surrounding one part of said tube, substantially as described.

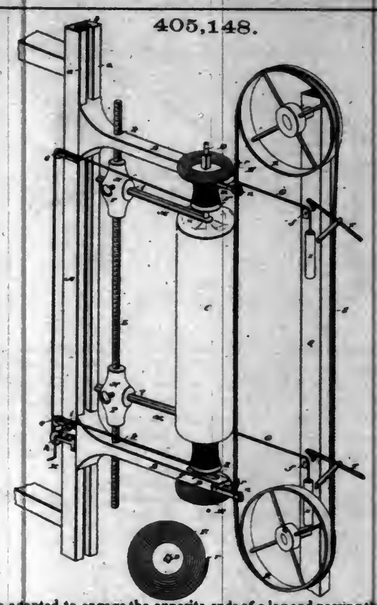
405,148. MACHINE FOR MAKING BARREL-STAVES. MADISON DALLAS, New Orleans, La. Filed Sept. 6, 1888. Serial No. 284,718. (No model.)

Claim.—1. In a machine for sawing logs into a continuous sheet or strip, the combination, with a band-saw, of a rotative log-holder carrying a spool and a spiral gage for the said saw, substantially as specified.

2. In a machine for the purpose described, the combination, with a band-saw, of a rotative log-holder carrying a spiral gage for the said saw, substantially as specified.

3. In a machine for the purpose described, the combination, with a slotted upright, of brackets adjustably supported therein, a threaded rod bearing in the said brackets, threaded nuts or blocks on the said rod, arms adjustably supported in the nuts or bearings, rotative spin-

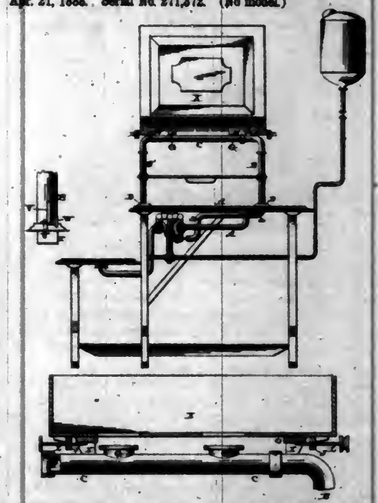
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dles adapted to engage the opposite ends of a log and passing through the brackets and also the adjustable arms, spools fixed to the spindles, weighted cords wound upon the said spools, and a spiral gage also secured to the spindles, substantially as specified.

A. In a machine substantially as described, the combination, with an upright slotted frame, of brackets adjustably supported therein, spindles arranged in the outer ends of the brackets and adapted to engage the opposite ends of a log, spools fixed to the said spindles, and cords or ropes leading from a drum, passing around the said spools, and having weights secured at their opposite ends, substantially as specified.

405,149. VAPOR-STOVE. ZEBULON DAVIS, Cleveland, Ohio. Filed Apr. 21, 1888. Serial No. 271,372. (No model.)



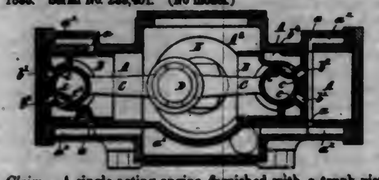
Claim.—1. The combination of a vapor-burner stove-top, with the pipes connected to its top for supporting the oven, the oven, and the cross-pipe provided with burners for heating the oven, the cross-pipe being connected to one of the supporting-pipes and receiving vapor therefrom, substantially as shown.

2. The combination of a vapor-burner stove-top, the pipes connected to the top for supporting the oven, the oven, the burner, and the pipe leading from the burner and making connection with the lower end of one of the supporting-pipes, cross-pipe C, which connects the upper ends of the supporting-pipes together, burners upon the cross-pipe for heating the oven, the supports I, secured to the supporting-pipes, the oven provided with vertical flanges, and the set-screws L, which pass through the flanges and catch against the supports, substantially as described.

3. The combination of a vapor-burner stove-stop, pipes connected to the top for supporting the oven, a burner, a pipe leading from the burner and making connection with one of the supporting-pipes which serves as a conductor for the vapor, a cross-pipe which connects the upper ends of the supporting-pipes together, the burners G, placed upon the cross-pipe for holding the oven, the brackets secured to the upper ends of the pipe, and a movable oven placed upon the brackets, substantially as set forth.

4. The combination of a vapor-burner stove-stop, the supporting-pipes connected thereto, one of which serves as a conductor for the vapor, the cross-pipe which connects the upper ends of the supporting-pipes together, the burners placed upon this cross-pipe, the brackets secured to the tops of the pipes, and the oven which is placed thereon, substantially as specified.

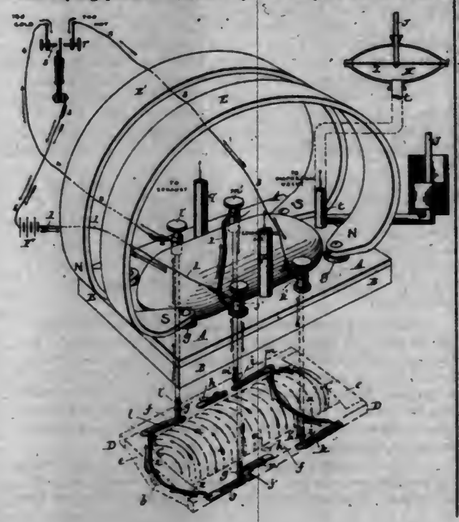
405,150. SINGLE-ACTING STEAM-ENGINE. FRANK W. DODD, Osborne Road, Forest Gate, County of Essex, England. Filed Oct. 17, 1888. Serial No. 288,401. (No model.)



Claim.—A single-acting engine furnished with a trunk-piston in the walls of which are supply and exhaust passages which are opened and closed by the motion of the piston, the one passage receiving steam or other fluid from a port in the cylinder and transmitting the same to the working-face of the piston, and the other conducting the spent steam to the exhaust-port in the wall of the cylinder, such trunk-piston having a seat for the reception of the head of a connecting-rod so formed as to close and open alternately by its oscillation the supply and exhaust passages in the piston, for the purpose above set forth.

405,151. ELECTRIC TEMPERATURE-REGULATOR. LOUIES F. EASTON, La Crosse, Wis. Filed Apr. 18, 1888. Serial No. 271,008. (No model.)

Claim.—1. The herein-described apparatus for regulating temperature, consisting of a chamber containing a diaphragm or piston, the latter connected with a controlling-valve or damper, box A B, provided with air-supply tube *p*, exhaust-tube *q*, and tube *t*, communicating with the chamber containing the diaphragm or piston, permanent magnets E E', having their poles reversed and extended into the box, rocking frame D, composed of core *b*, helix or coil *a*, and side bars *f*, contact-springs *j k* and *l m*, carried by said bars *f*, valves *n* and *o*, also



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carried by said bars, binding-posts *j' k'* and *l' m'*, extending into holes in the side bars *f*, a battery or electric generator, a thermostatic circuit-closer, line, or conductor with the helix 1, connecting the positive pole of the generator with posts *j' m'*, conductor 2, connecting springs *j* and *l* with helix *a*, conductor 3, connecting binding-post *k'* with contact-point *r* of the circuit-closer G, conductor 4, connecting post *l'* with contact-point *s* of said circuit-closer, and conductor 5, connecting said circuit-closer with the negative pole of the battery.

2. In combination with box or chamber A B, provided with tubes *p*, *q*, and *t*, permanent magnets E E', oscillating frame D, consisting of core *b*, coil *a*, and side bars *f f*, contact-springs *j k* and *l m*, carried by said bars, valve plates or strips *n o*, also carried thereby, binding-posts *j' k'* and *l' m'*, a battery or electric generator, a thermostatic circuit-closer, and electric conductors connecting one pole of the battery with posts *j' m'*, and connecting the other pole with the thermostatic circuit-closer, and other conductors connecting the contact-points of the thermostatic closer with the binding-posts *k'* and *l'*, respectively.

3. In a temperature-regulator substantially such as described, the combination of permanent magnets E E', a battery or generator, and an armature for said magnets provided with a helix, and contact-springs movable with said armature and arranged, substantially as described and shown, to reverse the flow of the electric current through the helix.

4. In a temperature-regulator, the combination, with a close chamber containing a diaphragm or piston, of a second close chamber communicating therewith, a valve controlling communication between said chambers, an electro-magnetic armature carrying said valve and having its poles placed opposite the poles of reversed permanent magnets, and contact-springs actuated by the armature and serving to reverse the flow of the electric current through the armature-helix when the armature changes its position.

5. In a temperature-regulator, the combination of a close box or casing, an inlet-pipe communicating with a pressure-tank, an exhaust-pipe communicating with a vacuum-tank, a pipe opening from the box or chamber into a chamber containing a piston or diaphragm, permanent magnets having their poles reversed and extended into the interior of the box or chamber, an oscillating electro-magnetic armature placed within the box and having its poles opposed to those of the permanent magnets, a battery, a thermostatic circuit-closer, and contacts and circuit-connections, substantially such as described and shown, adapted to cause a flow of electricity through the helix of the armature in one or the other direction as the circuit-closer makes contact with one or the other of its two contact-points.

6. In a temperature-regulator, the combination of permanent magnets and an oscillating electro-magnetic armature provided with perforated insulating-bars, contact-springs carried by said bars, and binding-posts connected with the poles of a generator and extending into the perforations of the bars, whereby they are caused to alternately make and break contact with the contact-springs, and thus to change the direction of the current through the helix of the armature.

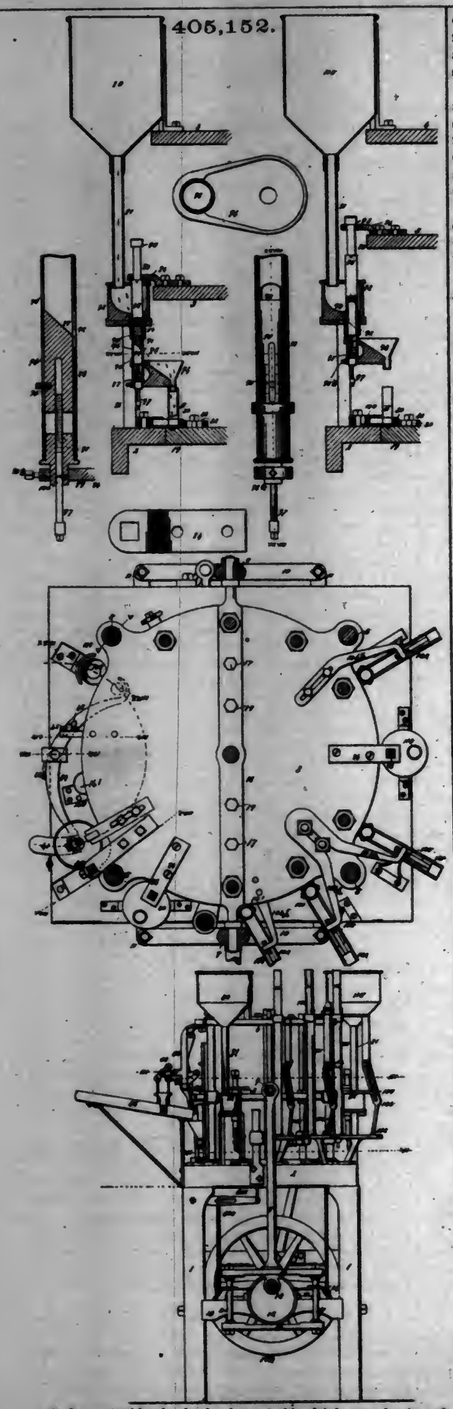
7. In a temperature-regulator, the combination, with permanent magnets, of an oscillating electro-magnetic armature, a perforated bar carried thereby, a valve-plate carried by said bar and overlapping the perforations therein, and a tube or pipe extending into the perforation and adapted to be sealed by the valve when the armature moves toward the tube and to be unsealed thereby when the armature moves in the opposite direction.

405,152. CARTRIDGE-LOADER. ALEXANDER BUSTON, St. Louis, Mo. Filed July 27, 1888. Serial No. 281,211. (No model.)

Claim.—1. In a cartridge-loader, the combination of a table having a fixed portion and a movable portion and mechanism for rotating the movable portion, consisting of a ratchet-wheel 21 secured thereto, a pawl 23, engaging the ratchet-wheel 21, pivoted lever 24, to which the pawl is secured, a vertical pivoted lever 25, having a forked upper end engaging the arm, and a cam 27, engaging the lower end of the lever for moving the same, substantially as and for the purpose set forth.

2. In a cartridge-loader, the combination of a table having a fixed and movable portion, charging devices above the same, adjustable holders secured to the movable portion, a lever operated by suitable mechanism and moving the shells laterally off of the fixed portion onto the movable portion of the table, and guards 150, provided with friction-rollers and mounted on the fixed portion beneath the respective charging devices in proximity to the holders for confining the shell at each stage of the operation, substantially as set forth.

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3. In a cartridge-loader having suitable driving mechanism, the combination of a table, a funnel for delivering the cartridge vertically onto the table, a horizontally-swinging arm 39, moving under said funnel and having the tail 41, and a lever connected with the swinging arm and having working connection with the driving mechanism, substantially as and for the purpose set forth.

4. In an automatic cartridge-loader having suitable driving mechanism, the combination, with a table, of mechanism for delivering the shells onto the table, consisting of a tube or funnel normally distant from the table less than the length of a shell and a vertically-reciprocating arm connected to the funnel and actuated by the driving mechanism for lifting the funnel, substantially as and for the purposes set forth.

5. In a cartridge-loader having suitable driving mechanism, the combination of a supporting-table and a wadding device consisting, essentially, of a plunger, means for moving the wads beneath the plunger, a guard for protecting the mouths of the shells, consisting of an adjustable arm having a cylindrical opening slotted to receive the shells, and means for automatically moving the guard, consisting of a rod, a lever connected to the rod, and a cam carried by said driving mechanism and adapted to lift the lever, all substantially as and for the purpose set forth.

6. In a cartridge-loader, the combination of a table and mechanism for delivering the shells onto the table, consisting of a funnel, an inclined holder for receiving a number of the shells, and two reciprocating gates extending into the passage and operated alternately up and down, substantially as and for the purpose set forth.

7. In a cartridge-loader, the combination of the table and mechanism for moving the shells onto the table, consisting of a funnel, a holder, vertically-reciprocating gates projecting into the holder, bar to which the gates are secured, and means for alternately moving the bar to raise and lower the gates automatically, substantially as and for the purpose set forth.

8. In a cartridge-loader, the combination of the table, a funnel located over the table, and means for delivering the shells into the funnel, consisting of a holder 56, vertically-movable gates 60 61, bar 63, to which the gates are secured, link 70, connected to the bar at one end, pivoted lever 67, to which the link is connected at the other end, and a movable disk 3, for operating said lever, substantially as and for the purpose set forth.

9. In a cartridge-loader, the combination of the table, a funnel located over the table, and mechanism for delivering the shells one at a time into the funnel, consisting of a holder having an inclined end 59 and slide 59¼, for retarding one end, and the opposite inclined depression 58, for dropping the other, substantially as and for the purpose set forth.

10. In a cartridge-loader, the combination of the table and funnel for delivering the shells onto the table, and an oscillating lever having an end for embracing the shell, and a rearwardly-extending ring 41, for closing the funnel-orifice, substantially as and for the purpose set forth.

11. In a cartridge-loader, the combination of a table, a funnel for delivering the shells onto the table normally distant from the table less than the length of the shell, whereby the shell is not wholly released, and a reciprocating disk 3, to which the funnel is connected for lifting it a short distance after each shell has been deposited, substantially as and for the purpose set forth.

12. In a cartridge-loader, the combination of a table for supporting the shells and a powder or shot charging device, the latter consisting, essentially, of a receiver or canister, a cylinder into which the canister discharges, a hollow movable plunger having perforations to receive and discharge the powder or shot, and a funnel for transferring the powder or shot from the plunger to the shells, said funnel being mounted on a vertically-movable rod, whereby it enters and is withdrawn from the shell, substantially as and for the purpose set forth.

13. In a cartridge-loader, the combination of a table and the powder or shot charging device consisting, essentially, of a cylinder into which the powder or shot is deposited, a hollow vertically-movable plunger having perforations to receive and discharge the powder or shot, connection between the plunger and disk 3 for raising and lowering said plunger, and a funnel for transferring the powder or shot from the plunger to the shell, substantially as and for the purpose set forth.

14. In a cartridge-loader, the combination of a table for supporting the shells and a powder or shot charging device consisting, essentially, of a cylinder into which the powder or shot is deposited, a hollow plunger located within the cylinder and having perforations to receive and discharge the powder or shot, and a funnel for transferring the powder or shot from the plunger into the shell, said plunger being connected to and operated by a movable disk 3, substantially as and for the purpose set forth.

15. In a cartridge-loader, the combination of a table for supporting the shells and a powder or shot mechanism consisting, essentially, of a cylinder, a hollow plunger located within the cylinder and having perforations to receive and discharge the powder or shot, a funnel for transferring the powder or shot from the plunger to the shells, and an adjustable bottom in the plunger, consisting of a plug and a screw-threaded rod entering the plug from the bottom and having a projecting end for turning, for raising and lowering the plug, substantially as and for the purpose set forth.

16. In a cartridge-loader, the combination of a table for receiving the shells and a shot or powder charging mechanism consisting, essentially, of a cylinder, a hollow plunger located within the cylinder and having receiving and discharging openings at different elevations, a tube secured to the cylinder and through which the plunger passes, and a funnel for transferring the powder or shot from the plunger to the shells, said plunger passing through an arm 93 on the disk 3, substantially as set forth.

17. In a cartridge-loader, the combination of a table for receiving the shells and a powder or shot charging mechanism consisting, essentially, of a cylinder, a hollow plunger located within the cylinder and having receiving and discharging openings, a movable bottom in said plunger, a longitudinal rod screwing into said bottom for regulating it, and a pin in said bottom fitting in a graduated slot of the plunger for preventing the bottom from turning and for indicating its location, substantially as and for the purpose set forth.

18. In a cartridge-loader, the combination of a table for supporting the shells and a powder or shot charging mechanism consisting, essentially, of a cylinder, a hollow plunger located within the cylinder and having openings for receiving and discharging the powder or shot, a funnel for transferring the powder or shot from the plunger to the shells, and means for raising and lowering the plunger, consisting of a vibrating disk 3 and arms or brackets 84 mounted thereon, substantially as and for the purpose set forth.

19. In a cartridge-loader, the combination of a table for supporting the shells and a powder or shot charging mechanism having a funnel for transferring the powder or shot to the shells, said funnel being normally distant from the table less than the length of the shell and connected to a vertically-vibrating disk 3, whereby it enters the shells while the powder or shot is being transferred, and then rises out of the shells to permit the latter to be moved away, substantially as and for the purpose set forth.

20. In a cartridge-loader, the combination of a table for holding the shells and a powder or shot charging mechanism consisting, essentially, of a supply-cylinder, a vertically-movable charging-plunger moving in said cylinder, and a funnel secured to and beneath the plunger, so as to be raised and lowered thereby, substantially as and for the purpose set forth.

21. In a cartridge-loader, the combination of the intermittently-moving supporting-table and crimping mechanism consisting of reciprocating rods 120 and 124 and the flared dies 121 and 125 on the respective rods by which the shell is successively treated, the former contracting the shell and the latter having a projection 126 for turning in the edge, substantially as and for the purpose set forth.

22. In a cartridge-loader, the combination of the intermittently-moving supporting-table and a crimping device consisting of the rods 120 and 124, vertically-reciprocating disk 3, with which the rods have screw-threaded connection, and dies on the lower ends of the respective rods by which the shell is successively treated, the die on the former having a projection 122 and being formed to contract the shell around said projection, and the latter having a projection 126 of larger diameter than the former projection, whereby it engages the contracted portion and turns it in, substantially as and for the purpose set forth.

23. In a cartridge-loader, the combination of the supporting-table and a printing device consisting, essentially, of a movable rod, a printing-roller, an adjustable inking-pad, and mechanism for moving the printing-roller automatically against the pad and over the face of the printing-die, substantially as and for the purpose set forth.

24. In a cartridge-loader, the combination of the supporting-table and a printing device consisting of a movable adjustable rod, a pivoted lever, a die secured to the lower end of the rod, a roller secured to the lower end of the lever for inking the face of the die, and mechanism for operating the roller, consisting of a stationary slotted arm having an inclined groove in which fits a pin on said lever, substantially as and for the purpose set forth.

25. In a cartridge-loader, the combination of the supporting-table and a printing mechanism consisting of a movable rod, a printing-die on the end of the rod, and an inking mechanism consisting of a pivoted lever, a slotted stationary arm with which the lever is connected by a pin, a roller secured to the lever, and a pad 140, substantially as and for the purpose set forth.

26. In a cartridge-loader, the combination of a rotating supporting-table and mechanism for moving the shells onto and from the table, consisting of a pivoted lever 37, having ends 39 and 50 moving alternately over said table, substantially as and for the purpose set forth.

27. In a cartridge-loader, the combination of the supporting-table 2, a movable disk 3 over the table, and means for moving the shells onto and from the table, consisting of a pivoted lever 37, having shell-engaging ends 39 and 50, a slotted lever 42, pivoted to a fixed part of the machine and engaging the lever 37 with its free end, and an arm 49, carried by the disk 3 and having a pin 48 engaging the slot in lever 42, substantially as and for the purpose set forth.

28. In a cartridge-loader, the combination of a table having a stationary perforated part 2 and a moving center 19, a lever 37, for moving the shells off the moving part, a tube 146, secured to the stationary part beneath the perforation, and a bracket 147 at the perforation and in the path of the lever for stopping the shells in a vertical position and allowing them to pass into the tube, substantially as and for the purpose set forth.

29. In a cartridge-loader, the combination, with a table having a stationary part, a turning center, and suitable loading devices disposed at intervals above said table, of laterally-opening shell-holders 30, secured to the turning center, and adjustable holders 150 opposite to said holders 30 and secured to the stationary part beneath the respective loading devices, substantially as and for the purpose set forth.

30. In a cartridge-loader, the combination of a shell-supporting table having a stationary outer part and a turning center, shell-holders 30, secured to the turning center, clearing-finger 160, secured to the stationary part and extending over the movable part and entering said holders, and a perforation 161 adjacent to the finger, for outlet of the material collected, substantially as and for the purpose set forth.

31. In a cartridge-loader, the combination of a shell-supporting table having a stationary outer part and a turning center, mechanism for moving the center intermittently, and a stop mechanism consisting of a rod fitting in perforations in the two parts of the table, a pivoted lever to which the rod is secured, and means for operating the lever, substantially as and for the purpose set forth.

32. In a cartridge-loader, the combination of a shell-supporting table having a stationary pivoted part and a turning center, mechanism for giving the table an intermittent movement, and mechanism for stopping the table, consisting of a rod 303, fitting in perforations in the table, pivoted lever to which the rod is secured, and which has a depression 307, spring-rod 309, and a movable roller 306, all substantially as and for the purpose set forth.

33. In combination with a suitable table and a reciprocating part above the same in a cartridge-holder, a crimping device consisting of two dies carried by the vibrating part, and to the action of which the shell is successively subjected, the former having a contracted bore with a central core and the latter having a straight bore with a central core, the core of the latter being of greater diameter than the former, whereby the portion of a shell contracted by the former is turned in by the latter, substantially as shown and described.

34. In a cartridge-loader, the combination, with a fixed table and a movable table for substantially the purposes explained, of a brush or sweep secured to the fixed table and projecting over the movable one, substantially as and for the purpose set forth

35. In a cartridge-loader, the combination, with a fixed table and a movable table, of an arm on the fixed table overhanging the movable table in close proximity thereto, said fixed table having an outlet at or near the arm for allowing the material gathered by said arm to pass off, all substantially as shown and described.

405,153. SHEET-DELIVERY APPARATUS FOR PRINTING-MACHINES. GEORGE P. FERRIS, New London, Conn. Filed Sept. 20, 1888. Serial No. 285,878. (No model.)

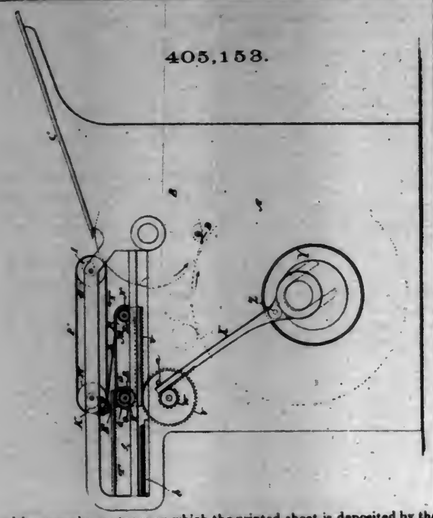
Claim.—1. The combination, with an impression-cylinder, a delivery apparatus, and a receiving-table, of a reciprocating carriage located under and moving independent of the delivery apparatus, and on which the printed sheet is deposited by the delivery apparatus, and mechanism, substantially as described, for positively moving said carriage in both directions, substantially as described.

2. The combination, with an impression-cylinder, a delivery apparatus, and a receiving-table, of a reciprocating carriage located under and moving independent of the delivery apparatus, and on which the printed sheet is deposited by the delivery apparatus, and a cam or its equivalent for actuating said carriage, said cam being arranged to allow the carriage to be at rest while a sheet is being deposited on said carriage, substantially as described.

3. The combination, with an impression-cylinder, a delivery apparatus, and a receiving-table, of a reciprocating carriage provided with a traveler or tapes on which the printed sheet is deposited by the delivery apparatus, said tapes having a progressive movement during the return movement of the carriage, and rack, gear, and cam mechanism, substantially as described, for positively moving the carriage in both directions, substantially as described.

4. The combination, with an impression-cylinder, a delivery apparatus, and a receiving-table, of a reciprocating carriage provided

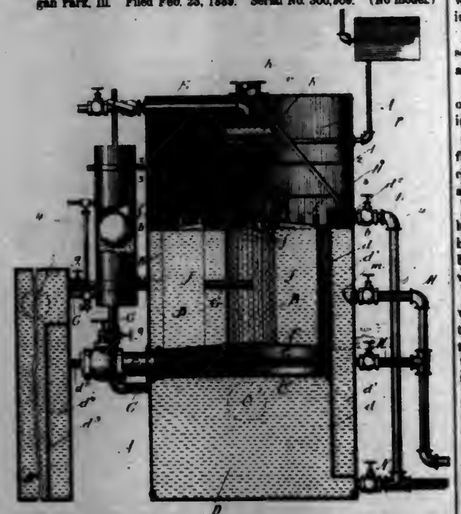
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with a traveler or tapes on which the printed sheet is deposited by the delivery apparatus, a rack and clutch-connection for imparting to the tapes a progressive movement during the return movement of the carriage, and a rack, gear, and cam mechanism, substantially as described, for positively moving the carriage in both directions, substantially as described.

5. The combination, with an impression-cylinder, a delivery apparatus, and a receiving-table, of a reciprocating carriage provided with a traveler or tapes on which the printed sheet is deposited by the delivery apparatus, said tapes having a progressive movement during the return movement of the carriage, but being motionless during the forward movement of the carriage, a rack on the carriage, a gear engaging the rack, a cam, and a connecting rack-bar between the cam and gear, substantially as described, for positively moving the carriage in both directions, substantially as described.

405,154. FEED-WATER HEATER. CHARLES E. FERREIRA, Morgan Park, Ill. Filed Feb. 23, 1889. Serial No. 300,909. (No model.)



Claim.—1. In a feed-water heater, the combination of a water-chamber provided with a water-inlet, a steam-chamber under the water-chamber, provided with a steam-inlet, a hollow chamber communicating with the steam-chamber and integral with its top, extending upwardly in the water-chamber for heating the water, and an outlet for drawing off the water, substantially as described.

2. In a feed-water heater, the combination of a water-chamber provided with a water-inlet, a steam-chamber under the water-chamber, provided with a steam-inlet, a hollow chamber communicating with the steam-chamber forned integral with its top, extending upwardly to a point above the water-level, and having a nozzle at its upper extremity for the escape of steam and an outlet for drawing off the water, substantially as described.

3. In a feed-water heater, the combination of a water-chamber provided with a water-inlet, a steam-chamber under the water-chamber, provided with a steam-inlet, a hollow chamber communicating with the steam-chamber and extending upwardly in the water-chamber for heating the water, a settling-chamber, a pipe communicating between the water-chamber and settling-chambers away from the steam-chamber and from a point above to a point below and under the same, and an outlet for drawing off the water, substantially as described.

4. In a feed-water heater, the combination of a water-chamber provided with a water-inlet, a steam-chamber under the water-chamber, provided with a steam-inlet, a hollow chamber communicating with the steam-chamber and extending upwardly in the water-chamber for heating the water, a settling-chamber at the side of the shell, a pipe communicating between the water-chamber and settling-chamber, and an outlet for drawing off the water, substantially as described.

5. In a feed-water heater, the combination of a water-chamber provided with a water-inlet, a steam-chamber provided with a steam-inlet, a hollow chamber communicating with the steam-chamber integral with its top, extending upwardly to a point above the water-level, and having a nozzle at its upper extremity for the escape of steam, a perforated diaphragm above the water-level and nozzle of the hollow chamber, and an outlet for drawing off the water, substantially as described.

6. In a feed-water heater, the combination of a water-chamber provided with a water-inlet, a steam-chamber provided with a steam-inlet, means for conducting steam through the water-chamber and permitting it to escape above the water-level, a horizontal diaphragm H above the water-level, open in its center, a horizontal diaphragm I above the diaphragm H, closed in its center, and an outlet for drawing off the water, substantially as described.

7. In a feed-water heater, the combination of a water-chamber provided with a water-inlet, a steam-chamber provided with a steam-inlet, means for conducting steam through the water-chamber and permitting it to escape above the water-level, a horizontal diaphragm H above the water-level, open in its center, perforated around its center, and solid in its outer part, a horizontal diaphragm I above the diaphragm H, closed in its center and perforated in its outer part, and an outlet for drawing off the water, substantially as described.

8. In a feed-water heater, a horizontal diaphragm above the water-level, open in its center, perforated around its center, and solid in its outer part, substantially as described.

9. In a feed-water heater, a vapor-chamber above the water-level separated from the steam-dome and an outlet therefrom, substantially as described.

10. In a feed-water heater, a cap or apron in front of the water-outlet extending inwardly and upwardly, over which the water flows in its outward passage, substantially as described.

11. In a feed-water heater, the combination of a cap or apron in front of the water-outlet extending inwardly and upwardly, a vapor-chamber above the water-level separated from the steam-dome, and an outlet from the vapor-chamber, substantially as described.

12. In combination with the water-chamber of a feed-water heater, a pipe for drawing off water extending into the water-chamber horizontally to a central point laterally between the surface and bottom of the water and substantially below the surface, whereby the water may flow from such points sidewise, substantially as described.

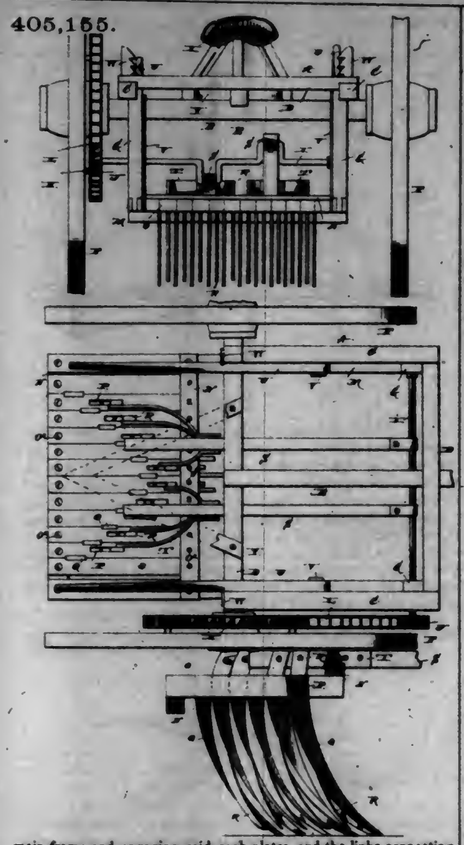
13. In combination with a feed-water heater, a trap for catching water formed by condensation of steam, and a pipe connecting the trap with the steam-dome of the heater, perforated at its end inside the dome under the sprinkler, whereby water formed by condensation of steam may be conducted into the heater for feed purposes, substantially as described.

405,155. POTATO-DIGGER. JOHN H. FIEHLE, Appleton, Wis., assignor of one-half to Elias B. Clark, same place. Filed Jan. 26, 1889. Serial No. 297,612. (No model.)

Claim.—1. The combination of the main frame, the supplemental frame arranged below the main frame and supported thereby, the plows secured to the supplemental frame, the cleaners pivotally mounted on the supplemental frame and each adapted to vibrate between two adjacent plows, and mechanism for vibrating the cleaners, as set forth.

2. The combination of the main frame, the hangers G, depending therefrom, the supplemental frame pivoted at its front end to said hangers, the plows and cleaners carried by the supplemental frame, the rack-plates W on the main frame, the levers fulcrumed on the

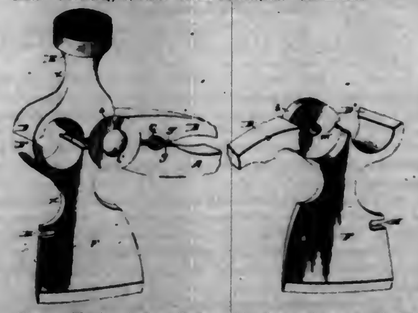
405,155.



main frame and engaging said rack-plates, and the links connecting said levers with the supplemental frame, as set forth.

3. The combination of the main frame, the hangers secured thereto, the supplemental frame pivoted to said hangers, the longitudinally-slotted bars at the rear end of the supplemental frame, the plows secured to said bars, the cleaners pivoted within the slots of said bars, the crank-shaft journaled in the hangers, the pitmen having their front ends mounted on said shaft and their rear ends connected to the cleaners, mechanism for rotating the crank-shaft, and mechanism for raising and lowering the supplemental frame, as set forth.

405,156. COMBINATION-TOOL. AUGUST PRÖHNING, Hanover, Kans. Filed Aug. 8, 1888. Serial No. 282,201. (No model.)



Claim.—The herein-described combination-tool, composed of the levers A and B, having the recessed hubs *a* and *b*, which hubs are pivoted together and have oblique grooves to form a wire-cutting device, the outer ends of the levers being curved to form the jaws D and D′, and the inner portions of the levers bordering on the hubs being brought close together to form the jaws *g* and *g*′, the lever A having the blade F, which is provided with the saw-cut H, and the lever B having the pole or hammer E, substantially as described, for the purpose specified.

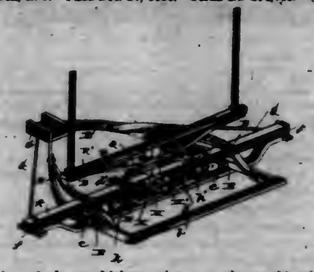
405,157. MOUNTING FOR EAR-RINGS. VALENTINE GEITNER, Jr., Buffalo, N. Y. Filed Sept. 24, 1888. Serial No. 286,260. (No model.)



Claim.—1. The combination, with an ear-mount provided with a curved slot across which is secured a spherical bearing-surface, of a setting having a loop adapted to rest upon the spherical bearing-surface.

2. The ear-mount *a a*′, having the curved slot *a*², across which is secured the ball *b*, which forms a bearing-surface for the loop *c*′ of the setting *c*.

405,158. VEHICLE RUNNING-GEAR. FERDINAND A. GOFFRAY, Sewell, N. J. Filed Dec. 27, 1888. Serial No. 294,736. (No model.)



Claim.—1. In a vehicle running-gear, the combination, with the axle, of the hounds bearing at intermediate points against the under side of the axle and connected together at their front and rear ends, the straps D, connected at their ends to the hounds in front and rear of the axle and bearing at intermediate points on the upper side of the axle, the vertical bolts *e e*, arranged adjacent to the front and rear sides of the axle and engaging registering-perforations in the hounds and straps, and the braces G G, extending from the axle to the front ends of the hounds, substantially as set forth.

2. In a vehicle running-gear, the combination, with the axle A, of the hounds B, extending under the axle and connected at their ends, the straps D, connected at their ends to the hounds, bearing intermediately upon the upper side of the axle and bolted to the hounds at points adjacent to the front and rear faces of the axle, and an axle-brace, as F, clipped at its ends against the lower face of the axle and downwardly bowed between said ends, said hounds being clamped between the lower face of the axle and the upper face of the axle-brace within said downwardly-bowed portion, as and for the purpose set forth.

3. In a vehicle, the combination, with the front axle, of the hounds arranged under the axle, the straps secured to the hounds and extending over the axle, the downwardly-bowed axle-brace secured at its ends to the axle and extending under the hounds, the plate H, arranged under the axle and provided with lateral apertured ears *h*′ and a rearwardly-extending arm H′, to which the perch is pivoted, the downwardly-bowed brace-plate K, connecting the center of the front axle-brace to the axle and provided with lateral apertured ears *k k*, the bearing-plate Q on the upper side of the axle provided with lateral apertured ears *q q*, the vertical bolts S S, engaging the apertures in the ears *h*′ *k q* and passing on opposite sides of the axle, and the bolster mounted on the plate Q, substantially as specified.

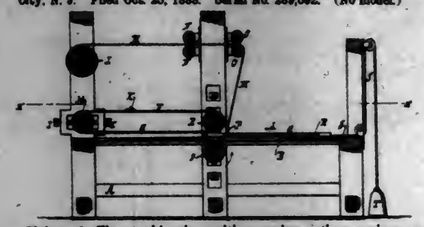
4. In a vehicle, the combination, with the front axle, of the plate H, arranged on its under side and provided with lateral apertured ears *h*′, extending beyond the front and rear sides of the axle, the perch pivoted to the said plate, and bearing-plate Q on the upper side of the axle provided with corresponding apertured ears *q q*, the apertures of which register with the apertures in the ears *h*′, the bolts S S, engaging the said registering-apertures and passing on opposite sides of the axle, and the bolster mounted on the plate Q, substantially as specified.

5. In a vehicle, the combination, with the rear axle, of the downwardly-bowed brace L, provided at its center with the shoulders or ears *l l*, between which the rear end of the perch fits, and provided at its ends with the lateral ears L′ L′, the top bar on the upper side of the said axle having the bolster-standards secured thereto and provided at its ends with lateral ears O′ O′, and the vertical bolts passing

on opposite sides of the axle and engaging registering-apertures in the ears L' and O', substantially as specified.

6. In a vehicle, the combination, with the rear axle, of the downwardly-bowed brace arranged thereunder and provided at its center with shoulders or ears *l l*, the top bar O, arranged on the upper side of the axle, carrying the bolster-standards and bolted to the said brace by bolts passing on opposite sides of the axle, the rear hounds attached at their rear ends to the said brace and connected at their front ends by a box or guide N, the perch fitting in the said box or guide and passing between the shoulders or ears *l l* beneath the axle, and the pin *n*, engaging registering-apertures in the box or guide and perch, substantially as specified.

405,159. PRINTING-MACHINE. FREDERICK H. GROTE, Jersey City, N. J. Filed Oct. 25, 1888. Serial No. 289,092. (No model.)



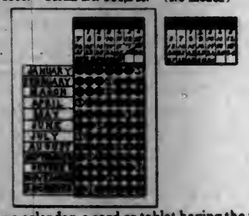
Claim.—1. The combination, with a reciprocating carriage and an endless apron fixed to said carriage, of supporting and presser rollers for said apron and carriage, substantially as described.

2. The combination, with a reciprocating carriage and a reciprocating apron provided with a cutter, of supporting and presser rollers for said apron and carriage, substantially as described.

3. The combination, with a reciprocating apron provided with a cutter, of a reciprocating carriage provided with a bearing-cushion for said cutter, and supporting and presser rollers for said apron and carriage, substantially as described.

4. The combination, with the reciprocating carriage having points or prongs for holding the fabric to be printed, of supporting and presser rollers for said carriage, and smoothing-rollers for said fabric, substantially as described.

405,160. CALENDAR. CHARLES K. HAMILTON, Jr., Brooklyn, N. Y. Filed Feb. 26, 1889. Serial No. 301,240. (No model.)



Claim.—1. In a calendar, a card or tablet having the year or years and month-days printed or otherwise inscribed upon it, in combination with another card or tablet having the months and week-days inscribed thereon, as shown and described.

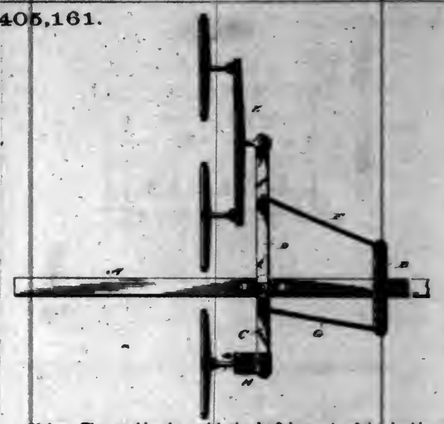
2. A calendar having one portion containing the years and month-days, in combination with another part having the months and week-days, one of said parts being adjustable relatively to the other, as shown and described.

3. The calendar, constructed substantially as hereinbefore described, consisting of one part having the month-days or years on one part and the months and week-days on another part, the parts being relatively adjustable one to the other, or both parts being adjustable in any of the manners and forms herein shown.

4. A calendar which consists of the combination of the following elements, to wit: a table of week-days in seven columns whose initial letter corresponds with the first week-days of each respective month, a column of months to one side of and corresponding to said week-day table, and a pad of which each sheet is inscribed with one or more year-groups that commence with the same week-days, and a table of month-days whose ordinals correspond to the week-days for the inscribed years, as and for the purposes set forth.

5. A calendar having the year or years and month-days associated together and printed thereon in one portion and the months and week-days associated together on another portion, substantially as and for the purposes set forth.

405,161. DRAFT-EQUALIZER. LEWIS C. HARRIS, Catalossa, Iowa. Filed Feb. 26, 1889. Serial No. 301,014. (No model.)



Claim.—The combination, with the draft-beam A, of the doubletree B, pivoted midway of its length directly to the draft-beam and without any intermediate device, the short lever C, pivoted at its inner end to the draft-beam and carrying the swivel H at its outer end for the attachment of the singletree, the rod G, connecting said lever C near its pivotal point with one end of the doubletree, the long lever D, pivoted at its inner end to the draft-beam and carrying at its outer end a clip for the attachment of the whiffletree, and the straight rod F, pivotally connecting one end of the doubletree B with the lever D, and near the outer end of the latter, so that both levers will have unequal arms, substantially as specified.

405,162. DRAFT-SPRING. EDWARD L. HILDEBRAND, HENRY ROST, and CHARLES L. DAVIS, Sullivan, Ind. Filed Apr. 9, 1889. Serial No. 306,586. (No model.)



Claim.—1. The combination, in a draft-evener, of the sleeve designed to be secured to a shaft and provided at its front end with a rectangular opening, a draft-bar rectangular in cross-section, terminating at its front end in a trace-hook which is bent laterally at an angle to the shank, and a spring interposed between the front of the sleeve and the rear end of the shaft, substantially as and for the purpose described.

2. A draft-evener comprising the base-plate, the sleeve secured thereto and provided at its front end with a rectangular opening, the draft-bar rectangular in cross-section, and having a trace-hook *c* at its front end and extending out at right angles to said bar, and provided back of said trace-hook with an annular flange, and a spring interposed between the rear end of the draft-bar and the front of the sleeve, substantially as described.

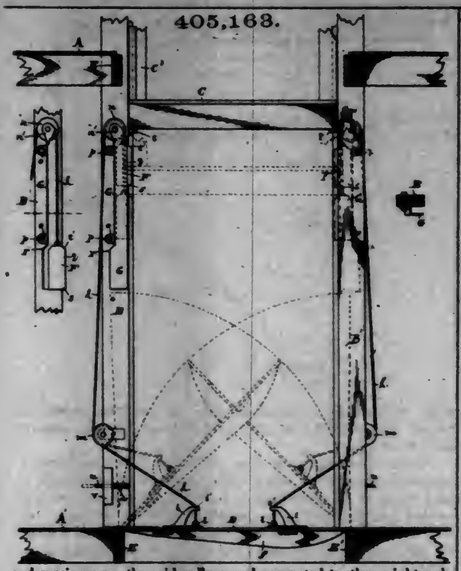
405,163. ELEVATOR-HATCHWAY. FRANCIS X. HOOPER and CHRISTIAN PETERSEN, Baltimore, Md. Filed Aug. 7, 1888. Serial No. 282,140. (No model.)

Claim.—1. The combination, with the cage moving between the vertical guides B B' of an elevator, of the doors having inclined abutting edges hinged to opposite sides of the hatchway, the curved bars *f*, secured to the under side of each door, and the rollers *g* and curved plates *h*, connected to the bar C' of the cage, whereby the said doors are elevated when the cage is elevated, substantially as specified.

2. The combination, with the cage and the guide B, having a vertical box G, with an offset *r*, of the projecting counterbalance-weight F, having a beveled upper portion *f'*, the door D, the pulleys *m n*, and the chain or cord *k*, engaging said pulleys and connected to said door and weight, all arranged to operate in the manner as shown and described.

3. The combination, with the cage and the hinged door provided with a bracket-arm *i*, having a bearing *i'*, of the vertical guide B, having a box G, with an open side and offset *r*, the projecting counterbalance-weight F, with a beveled upper portion *f'*, the pulleys *m n*, mounted in bearings on the box and guide, and the chain or cord *k*, secured at *l* to the door, and engaging the bearing *i'* of the bracket,

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and passing over the said pulleys and connected to the weight, substantially as and for the purpose specified.

405,164. DOMINO. CHARLES M. HYATT, Albany, N. Y., assignor to the Embossing Company, same place. Filed Mar. 6, 1889. Serial No. 302,076. (No model.)



Claim.—1. A domino having formed across its face a raised bar having a continuous unbroken surface throughout its length, but higher at the center than at the other parts, and tapering from the center toward its ends, substantially as shown and described.

2. A domino having formed across its face a raised bar having a continuous unbroken surface throughout its length, but higher at the center than at the other parts, substantially as described.

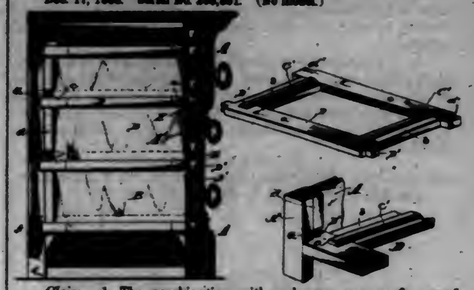
405,165. COMBINED CULTIVATOR AND COTTON-CHOPPER. ANDREW H. JOHNSON, Tryon, Miss. Filed Mar. 15, 1889. Serial No. 303,430. (No model.)



Claim.—1. The combination of the beam having a cultivator or scraper secured thereto with the standards, the wheel journaled thereon, the pitmen operated by the wheel, a gear-wheel provided with cranks and operated by the pitmen, a pinion which meshes with the wheel provided with a crank at one end of its shaft, a pitman N, a beveled gear-wheel provided with a crank upon its shaft, a beveled gear-wheel Q, the partially-rotating shaft R, the pronged support S, secured to the rear end of the shaft, the hoe connected to the support, and an operating-lever for raising the hoe, substantially as shown.

2. The combination, with the beam, an operating mechanism which is operated by or from the wheel E, the partially-rotating shaft R, journaled upon the beam, a pronged support secured to the rear end of the shaft, the handle T of the hoe, pivoted to one prong of the support and passing through a slot in the other, the pivoted lever V, the connecting-rod U, attached to the inner end of the lever, and a hook secured to the outer end of the lever for catching under the hoe-handle, and a lever Y Z, for raising the hoe above the ground, substantially as described.

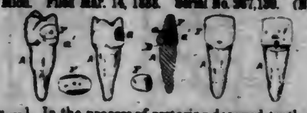
405,166. BUREAU OR SIMILAR ARTICLE OF MANUFACTURE. CHARLES W. KATZENBAH and REUBEN FOLK, Williamsport, Pa. Filed Dec. 17, 1888. Serial No. 293,691. (No model.)



Claim.—1. The combination, with a bureau case or frame, of movable drawer-supports and springs exerting vertical pressure upon the said supports, substantially as described.

2. The combination of a bureau case or frame having recesses formed in the sides thereof, drawer-supports having tongues moving in said recesses, and springs in the recesses for exerting vertical pressure on the said tongues, substantially as described.

405,167. ARTIFICIAL TOOTH-CROWN. CHARLES H. LAND, Detroit, Mich. Filed Mar. 14, 1888. Serial No. 267,130. (No model.)

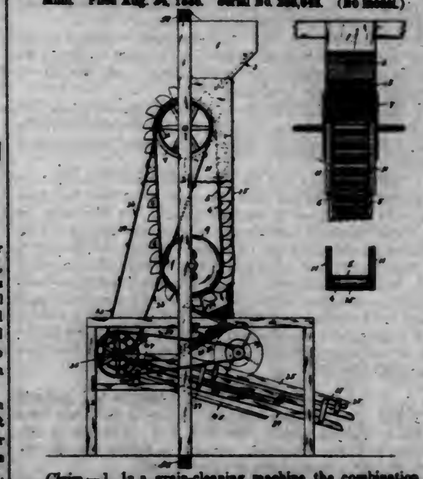


Claim.—1. In the process of restoring decayed teeth, embedding an anchoring-nut in filling material within the tooth-cavity, and engaging a tooth crown or section thereon by means of a screw, and uniting said crown or section with said nut, substantially as set forth.

2. In the process of restoring decayed teeth, embedding an anchoring-nut in filling material within the tooth-cavity, applying to the surface of the filling material a fluid-tight protecting-coat, and engaging a tooth crown or section thereupon by means of a screw uniting said crown or section with said nut, substantially as set forth.

3. In the process of restoring decayed teeth, embedding an anchoring-nut in filling material within the tooth-cavity, applying to the surface of the filling material a fluid-tight protecting-coat, surmounting said coat by a plate, and engaging the tooth crown or section thereupon by means of a screw uniting said crown or section with said nut, substantially as set forth.

405,168. GRAIN-CLEANING MACHINE. JOSEPH LEARNS, Wheaton, Minn. Filed Aug. 24, 1888. Serial No. 283,642. (No model.)



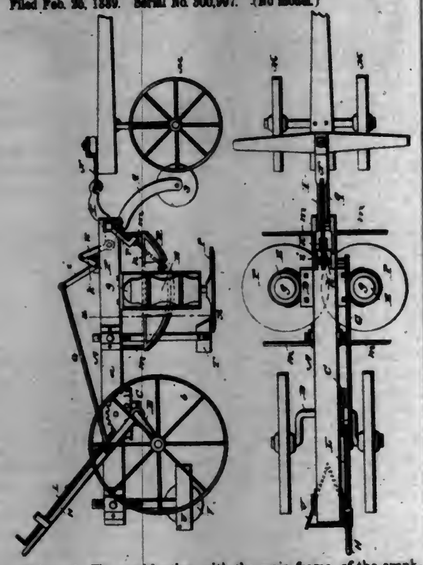
Claim.—1. In a grain-cleaning machine, the combination, with the cleaning mechanism, of the grain delivering and operating mechanism, comprising the tapering spout or passage formed of the sides 11, provided with grooves in their inner surfaces, the flexible apron 15, forming the front of said spout, and the endless belt 5, provided

with a series of buckets 6, arranged in said spout and having its edges guided by the grooves in the sides 11, substantially as described.

2. The combination, in a grain-cleaning machine with a suitable sieve, of the inclined spreading-wheels 21, provided with the series of buckets arranged upon their upper surfaces, as and for the purpose specified.

3. In a grain-cleaning machine, the combination, with a suitable sieve, of the wheels 21, provided with the buckets 19 and arranged to discharge the grain across said sieve, and the endless band provided with a series of buckets adapted to be moved by the falling grain and to deliver the grain to the buckets upon said wheel, substantially as described.

405,169. STUBBLE-SHAVER. JAMES MALLON, New Orleans, La. Filed Feb. 26, 1889. Serial No. 300,997. (No model.)



Claim.—1. The combination, with the main frame, of the crank-axle carrying supporting-wheels, the segmental rack secured to said frame, the crank-axle journaled in the forward end of said frame, the hand-lever fixed to the axle, the link connecting the forward end of the frame with the truck-frame, the rod connecting the hand-lever with the forward crank-axle, and the link connecting the pivoting-link with said crank-axle, substantially as specified.

2. The combination, with the main frame, supported as described, of the lubricating journal-boxes, the brackets supporting the same, and the horizontal cutters having vertical shafts journaled in said boxes, substantially as specified.

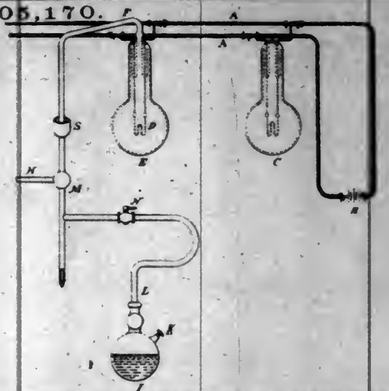
3. The combination with the main frame, of the lubricating journal-boxes constructed as described, the brackets securing said boxes to the main frame, and the shields for the boxes, substantially as specified.

4. The combination, with the main frame, of the truck-frame, the pivoted link connecting the same, the double-crank rock-shaft journaled in the forward end of the main frame, a link connecting one arm of said crank-shaft with the rear end of the connecting-link I, the hand-lever secured to the rear crank-shaft, and the rod connecting an arm of the rock-shaft to the said hand-lever, substantially as specified.

5. The combination, with the main frame adapted to be vertically adjustable, as described, of the horizontal rotary cutters, the scraper adapted to be vertically adjustable, and arranged in rear of said cutters, a rotary trash-cutter arranged in advance of the stubble-cutters, and a vertically adjustable clearer arranged at the rear of the frame, substantially as specified.

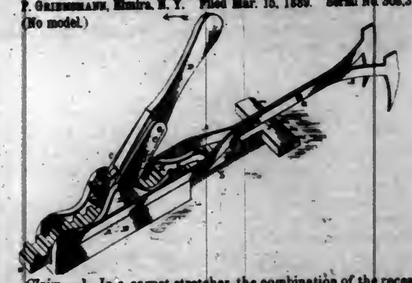
405,170. MANUFACTURE OF FILAMENTS FOR ELECTRIC LAMPS. HIRAM S. MAXIM, Brooklyn, assignor to the United States Electric Lighting Company, New York, N. Y. Filed Jan. 14, 1881. Serial No. 34,001. (No model.) Patented in England Feb. 15, 1881, No. 699, and in Germany Feb. 21, 1881, No. 15,201.

Claim.—1. The above-described improvement in the art of equalizing the illuminating-power of the carbonized conductors of incandescent lamps, which consists in electrically heating the said conductors in the presence of a hydrocarbon or equivalent vapor until their electrical resistance and illuminating-power for a definite intensity of current have been brought to a predetermined standard, substantially as set forth.



2. The above-described mode of heating the carbonized conductors for incandescent lamps, which consists in subjecting them in the presence of a hydrocarbon or equivalent vapor to the action of an electric current until by the decomposition of the said vapor their illuminating-power is brought to the same intensity as that of a standard lamp included in the same circuit or in a branch thereof, as described.

405,171. CARPET-STRETCHER. BRYAN W. MOYLAN and HENRY P. GRIESEMANN, Elmira, N. Y. Filed Mar. 15, 1889. Serial No. 303,371. (No model.)



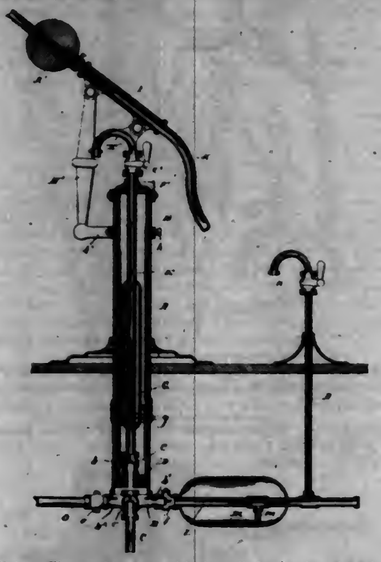
Claim.—1. In a carpet-stretcher, the combination of the recessed base-block, a rack-bar sliding therein, a cog-wheel pivoted in the base-block and engaging the rack-bar, a handle which engages the cog-wheel and causes it to revolve, a holder pivoted to the rear end of the base-block and provided with points which are driven in the floor, and the shaft which passes through the cog-wheel and extends out over the inner ends of the holder A in front of the point at which they are pivoted to the base-block, for the purpose substantially as shown.

2. The combination of the recessed base-block, a holder pivoted thereto at one end and its other end formed into points adapted to be driven into the floor, a cog-wheel pivoted in the base-block, a handle for operating the cog-wheel pivoted between links which have their lower ends pivoted upon the journal of the cog-wheel, a rack-bar sliding in the base-block with which the cog-wheel engages, and provided with teeth at its forward end for catching into the carpet, and a pawl pivoted in the front end of the base-block above the rack-bar for engaging its upper serrated surface, the upper end of the pawl projecting a suitable distance, whereby, when the handle is pressed forward, it is made to engage the upper end of the pawl, and thus disengage its lower end from the rack-bar, for the purpose substantially as described.

3. The combination of the base-block, the holder pivoted thereto, the rack-bar sliding therein, the latch pivoted in the forward end of the base-block above the rack-bar, the cog-wheel pivoted in the base-block which engages the rack-bar, the rack-bar having teeth for catching in the carpet, the links C, pivoted upon the shaft of the cog-wheel, the handle D, pivoted between their outer ends, provided with a slot J at its lower end, and a pin which passes through the links and the slot, whereby the lower end of the handle engages the cog-wheel when forced backward but is disengaged from the cogs when forced forward, substantially as set forth.

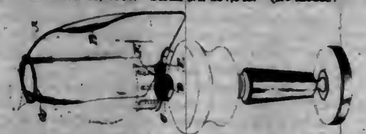
4. The combination of the base-block, the holder, the rack-bar, the cog-wheel pivoted in the base-block, the handle for operating the cog-wheel, the pawl pivoted in the forward end of the base-block which engages the rack-bar, the rack-bar which slides in the recess of the base-block and having teeth at its front end to catch in the carpet, and a spring secured to the forward end of the rack-bar and to the base-block, for the purpose substantially as shown and described.

405,172. PUMP. ELIJAH NEFF, Rochester, Ind., assignor of one-half to Alonzo L. Reynolds, same place. Filed Oct. 10, 1888. Serial No. 287,782. (No model.)



Claim.—The combination, with the cylinder having the tubular piston and piston-rod equipped with a check-valve and a stop-cock at the upper end of the tubular piston-rod, of the cap at the lower end of the cylinder, said cap being provided with a valve-chamber connected with the suction-pipe and having an upwardly-opening valve, and with laterally-extending chambers connected with the interior of the cylinder and with service-pipes having stop-cocks, and in which valves opening outwardly are arranged, substantially as set forth.

405,173. LAMP-REFLECTOR. GEORGE W. PELTON, Muscatine, Iowa. Filed Dec. 10, 1887. Serial No. 257,546. (No model.)

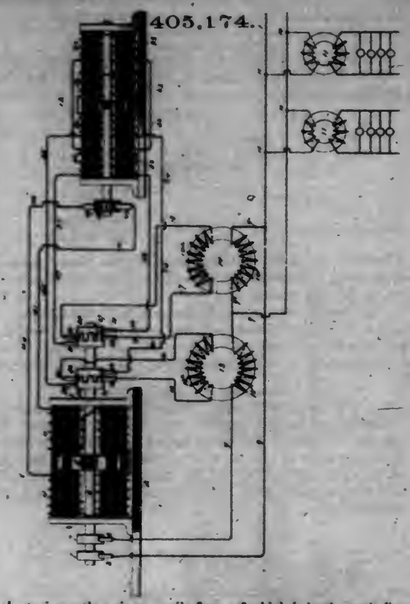


Claim.—The improved reflector herein described and shown, consisting of the flat polished plate A, having its upper corners rounded and bent forward, the flat metal spring-bracket C, comprising the split ring D, and the spring-arms E, formed integral with said ring and extended from the ends of the same and having their extremities secured to the lower edge of the plate A, the split ring being adapted to encircle the collar of a lamp, and the wire loop G, secured to the upper edge of the plate A and projecting forward therefrom and adapted to encircle the upper portion of a lamp-chimney, substantially as specified.

405,174. REGULATION OF ALTERNATING ELECTRICAL CURRENT GENERATORS. GUSTAV PFANHAUSER, Cleveland, Ohio, assignor to the Brush Electric Company, same place. Filed Nov. 30, 1887. Serial No. 256,513. (No model.)

Claim.—1. In a system of electrical distribution, the combination, with an alternating-current dynamo and a separate exciter, including the field-magnet coils of the alternating-current generator and provided with two separate sets of field-magnet coils, of induction apparatus included in the main line of the alternating-current generator and in a branch from the same for energizing the separate sets of coils on the field-magnets of the exciter, substantially as set forth.

2. In a system of electrical distribution, the combination of an alternating-current dynamo and a separate exciting-dynamo for energizing the field of force of the alternating-current dynamo, of two



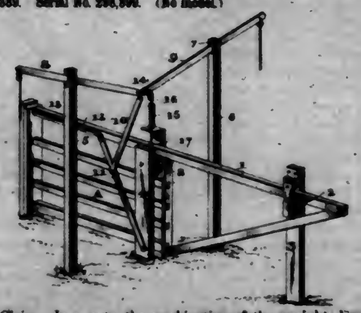
inductoriums, the primary coil of one of which is in the main line and the primary coil of the other in a branch of the main line, said inductoriums being alternately connected with separate sets of coils on the field-magnets of the exciter and adapted to energize the same, substantially as set forth.

3. In a system of electrical distribution, the combination, with an alternating-current generator and a separate exciting-dynamo, the latter having two distinct sets of field-coils, of inductoriums for transforming the current of the alternating-current generator into secondary currents for energizing the two sets of field-coils of the exciter, substantially as set forth.

4. In a system of electrical distribution, the combination, with an alternating-current dynamo and a separate exciting-dynamo provided with separate sets of field-magnet coils, of inductoriums constructed to transform and reduce the tension of the current of the alternating-current dynamo and connections for utilizing such secondary currents for energizing separate sets of field-magnet coils of the exciting-dynamo, substantially as set forth.

5. In a system of electrical distribution, the combination, with an alternating-current dynamo and a separate exciting-dynamo provided with separate sets of field-magnet coils, of inductoriums included in the main line of the alternating-current dynamo and in a branch of the same and commutators whereby separate sets of field-magnet coils of the exciter are energized by the secondary currents of the inductoriums, substantially as set forth.

405,175. GATE. HIRAM H. PHILLIPS, Boulder, Colo. Filed Feb. 6, 1889. Serial No. 298,890. (No model.)



Claim.—In a gate, the combination of the uprights having the rollers journaled therein, the gate mounted on said rollers having an opening 17 in the top rail thereof, the rods 10, 11, and 12, and the operating-levers for sliding the gate, the tube 15, and rod 16, adapted

to enter the opening 17 in the top rail of the gate and retain the same in closed position, substantially as described.

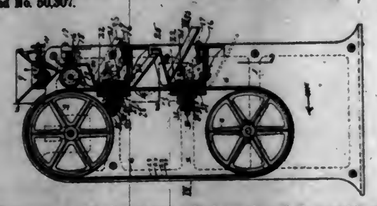
405,176. ELECTRODE FOR ELECTRO-THERAPEUTIC BODY-WEAR. HARRY P. PRATT, Chicago, Ill. Filed Mar. 12, 1889. Serial No. 302,950. (No model.)



Claim.—1. An electrode comprising a metallic plate enveloped in a close-fitting cover of flexible absorbent material, substantially as and for the purpose set forth.

2. An electrode comprising, in combination, a metallic disk *r*, having an eye *q* extending from one side, and a pocket *p*, of soft absorbent material, enveloping the disk and readily removable therefrom and adjustable thereon, substantially as and for the purpose set forth.

405,177. GRINDING-MILL. FRANÇOIS GUINDRON, and ACHILLE VANSTEENKISTE, Brussels, Belgium. Filed May 23, 1887. Serial No. 239,153. (No model.) Patented in Belgium Mar. 18, 1887, No. 76,744; in England June 13, 1887, No. 8,492; in Germany June 16, 1887, No. 42,784; in France June 30, 1887, No. 184,836; in Italy Dec. 31, 1887, XIV, 209, XXI, 22,427, and in Austria-Hungary May 1, 1888, No. 11,104, and No. 50,307.



Claim.—1. A grinding device which consists of the combination of the perpendicularly-arranged series of elements, to wit: the feeding and cracking mechanism containing the hoppers 9, roller 10, and adjustable gate or valve 11, the vertically-descending grinding-band 6, and a series of coacting grinding-plates 22, adjustable toward and from said band and each having a separating-sieve 20, said band having opposite each grinding-plate an elastic and adjustable support or abutment 27, substantially as set forth.

2. The combination, with the vertically-descending grinding-band and coacting grinding-plates in front of same, of the provision in rear of said band of the elastic and adjustable support or abutment 27, having the telescoping cylindrical parts 29 30, the former secured to the plate and the latter fixed on the frame and the two being normally forced asunder by spiral spring 32, as set forth.

405,178. SAW SHARPENING AND GUMMING MACHINE. JOSEPH F. GUIBE, Trousdale, Tenn. Filed Feb. 15, 1889. Serial No. 300,048. (No model.)

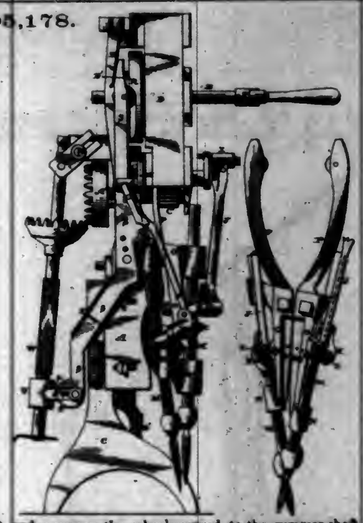
Claim.—1. The combination of the operating-shaft, a cam R, placed thereon, a spring-actuated lever S, which is operated by the cam, the bearing U, secured to its lower end, the gummer-shaft W, which passes through the bearing and is provided with an operating-wheel Z, and a shaft provided with a wheel A', for meshing with the wheel upon the gummer-shaft, and a pinion C', for meshing with the driving-wheel F, substantially as described.

2. The combination of the operating wheel and shaft, a cam secured to the shaft, a spring-actuated lever S, provided with a socket in its lower end, an adjustable block placed in the socket, a bearing connected to the block, the gummer-shaft having the gummer attached to its lower end, an operating-wheel secured to the shaft, and the shaft B', provided with a wheel for operating the gummer-shaft, and a pinion for receiving motion from the driving-wheel, substantially as described.

3. The combination of an operating shaft and wheel, the spring-actuated lever S, jointed below its pivot and its two parts connected together by a spring X, the bearing for the gummer-shaft connected to the lower end of the lever, the gummer-shaft and the gummer attached to its lower end, and a mechanism for causing the gummer to revolve, substantially as set forth.

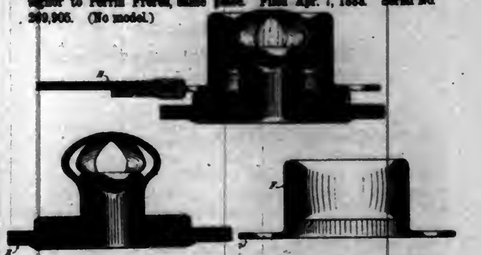
4. The combination of the spring-actuated lever S, a cam for operating it, a sliding block connected to the lower end of the lever, a bearing for the gummer-shaft attached to the block, the gummer-

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shaft and gummer, the wheel secured to the gummer-shaft, and an operating mechanism for causing the shaft to revolve with the swivel Y, and adjustable bearing for the swivel, substantially as specified.

405,179. BUTTON. PIERRE A. RAYBOUD, Grenoble, France, assignor to Perrin Frères, same place. Filed Apr. 7, 1888. Serial No. 269,905. (No model.)



Claim.—1. The combination, with an embracing-button attached to one part of a fabric, of a spring-stud attached to the opposite part and adapted to engage the said button, the stud being composed of a depressed dome or support forming an annular riveting-surface and an exterior engaging-spring, and being fastened to the fabric by an eyelet adapted to enter the back of the dome or support and be riveted over by contact with said depression.

2. A spring-stud adapted to engage with a receiving-button, consisting of a depressed dome or support forming an annular riveting-surface and a spring having a series of radial arms with their extremities attached to the base of the said dome, the stud being attached to the fabric by an eyelet adapted to enter and be riveted over by contact with said depression.

3. A spring-stud for engagement with a receiving button or socket, consisting of a depressed dome or support forming an annular riveting-surface and an exterior engaging spring, combined with a fastening-eyelet, the eyelet being adapted to enter from behind and be riveted over by contact with the said depression, and the dome having a flange extending beyond the spring, by which it is held while the eyelet is forced into position.

4. The combination, with a spring-stud having a rigid dome or support for attachment to the fabric and an external engaging spring, of a receiving-socket therefor, consisting of a sheet-metal cylinder having its upper part turned over to avoid sharp edges and provided with a lateral attaching loop, the whole forming a substantially rigid socket with which the stud has a spring engagement.

405,180. SASH-HOLDER. HUGH REED, St. Louis, Mo., assignor of one-half to Isidore Simon, same place. Filed Mar. 7, 1889. Serial No. 302,285. (Model.)

Claim.—1. In a sash-fastener, the combination of the upper stationary stop-bead sections, the lower adjustable stop-bead sections, and the metal boxing that houses the junction ends of said sections, substantially as described, and for the purpose set forth.

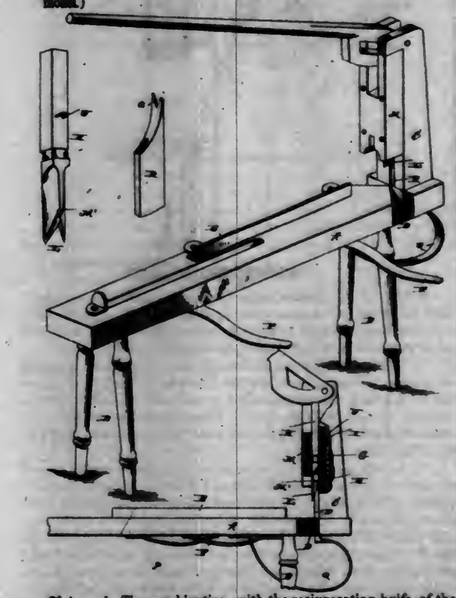
405,180.



2. In a sash-fastener, the combination of the stationary sections of the stop-beads, the adjustable sections of the stop-beads, the pivoted angle-plates 14, the screws 15, by which said plates are secured to the side pieces of the frame in countersunk boxings provided in said frame, and the thumb-screws 19, that pass through perforations in the adjustable sections of the stops and engage in the threaded screw-holes 18 in the pivoted angle-plates 14, to tighten the stop to or relax it from the window-sash, substantially as described, and for the purpose set forth.

3. In a sash-fastener, the combination of the stationary sections of the stop-beads, the adjustable sections of the stop-beads, the tenons 21 on top of said adjustable sections, the metal boxings 10, provided with a recessed chamber 22, that house the lower ends of said stationary sections of the stops, and also house the tenons that surmount the adjustable sections of said stops, the angle-plates 14, the pivot-screws that secure the attached ends of said plates in the countersunk boxings 17, that are provided in the sides of the window-frame, and the thumb-screws 19, that pass through perforations in said stops and engage in the threaded screw-holes 18 in the angle-plates to respectively tighten and loosen the stops to and from the sash, the heads of said thumb-screws being provided with perforations in which rings or their equivalents may be seated, by which to turn the screws, substantially as described, and for the purpose set forth.

405,181. MACHINE FOR POINTING FENCE-PICKETS. CHARLES B. RICE, New Market, Va. Filed Jan. 8, 1889. Serial No. 295,743. (No model.)



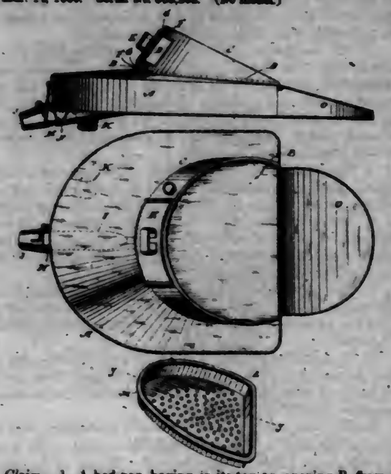
Claim.—1. The combination, with the reciprocating knife, of the vertically-disposed movable guide arranged below the knife and having its upper end adapted to engage the lower end of the knife, the said guide being pressed upward by a spring, as set forth.

2. The combination, with the table and the standard, of the reciprocating knife supported by the standard and having the lip or spur on its rear side at its lower end, the moving guide or stop provided at its upper end with a notch adapted to engage said lip or spur, and mechanism for reciprocating the knife, as set forth.

3. The combination of the table provided in its upper side with the recesses having flared bases, the standard rising from the table adjacent to said recesses, the reciprocating knife supported by the standard, mechanism for reciprocating the knife, and the guide or stop moving through the table, having its upper end engaging the lower end of the knife, and having its lower end formed into a spring, the extremity of which is secured to the under side of the table, as set forth.

4. The combination of the reciprocating knife L and the moving guide or stop P, against which the end of the picket is placed, said guide or stop having its lower end bent to form a leaf-spring Q, the extremity of which is secured to the table, as set forth.

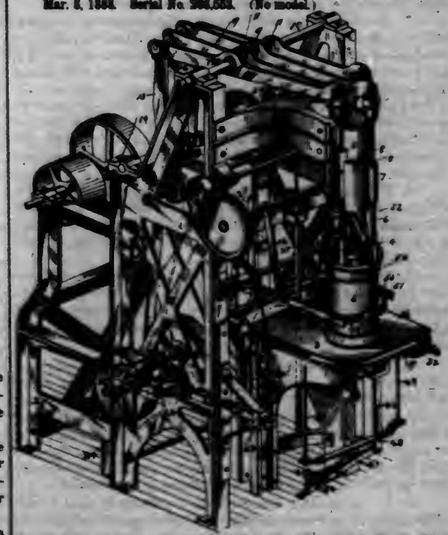
405,182. BED-PAN. MARGARETTA RIEBE, New York, N. Y. Filed Mar. 14, 1888. Serial No. 303,262. (No model.)



Claim.—1. A bed-pan having in its top an opening B, from the edge of which rises a flange C, provided directly in its front with an orifice D, over which is fitted a movable door E, for opening and closing said orifice, substantially as and for the purposes described.

2. A bed-pan provided with the pipe H and at its top with the opening B, and, upwardly-projecting flange C about the opening, in combination with the removable pan I, having a perforated bottom and adapted to set in the top opening of the bed-pan, substantially as and for the purposes described.

405,183. TILE-MACHINE. WILLIS D. SHERMAN, Omaha, Nebr., assignor to the Union Hydraulic Drain Tile Company, same place. Filed Mar. 8, 1888. Serial No. 266,553. (No model.)



Claim.—1. The combination, with the frame of a tile-machine, of a vertically-moving table, a rack for operating the table, a double sheave-wheel journaled at the inside of the frame, one part of which is concentric and the other part eccentric, a counterpoise, and chains secured to the top of the rack and to the counterpoise, substantially as described.

2. The combination, with the frame of a tile-machine, of a verti-

cally-moving table, a cross-bar suspended from the table, a vertically-moving rack at the rear of the table, and an arm secured to the lower end of the rack, the outer end of which is adapted to engage with the cross-bar, substantially as described.

3. The combination, with the frame of a tile-machine, of a vertically-moving table, a rack at the rear of the table, an arm secured to the lower end of the rack, and an upright secured to the arm, the upper end of which is adapted to come in contact with a plate upon the under side of the table, substantially as described.

4. The combination, with the frame of a tile-machine, of a vertically-moving table having a bearing or hole at its rear portion, a vertical-shaft journaled to the frame at its upper end and passed through the hole in the table at its lower end, a rack at the rear of the table, an arm secured to the lower end of the rack having a bent or curved portion registering with the shaft, and a plate secured to the arm, substantially as described.

5. The combination, with the frame of a tile-machine, of a vertically-moving table, a cam-guide, a series of clutch-levers, and a bar connecting with the cam and clutch-levers, substantially as described.

6. The combination, with the frame of a tile-machine, of a vertically-moving table, a slotted support, a cam-guide on the support, a series of clutch-levers, and a bar connecting the cam-guide and clutch-levers, substantially as described.

7. The combination, with the frame of a tile-machine, of a vertically-moving table, a channeled cam-guide, a brace, a bar, and a pin on the bar for engaging the channels in the cam-guide, substantially as described.

8. The combination, with the frame of a tile-machine, of a vertically-moving table, a cam-guide, a series of clutch-levers pivotally secured to the frame, and a bar connecting with the clutch-levers and cam-guide, substantially as described.

9. The combination, with the frame of a tile-machine, of a vertically-moving table, a bent arm adjustably secured to the front of the machine, and a lever pivotally secured to the side of the machine and adapted to be operated by the bent arm, substantially as described.

10. The combination, with the frame of a tile-machine, of a vertically-moving table, a bent arm pivotally secured to the front of the machine, a lever pivotally secured to the side of the frame and adapted to be operated by the bent arm, and a keeper secured to the frame having catches upon its inner edge, substantially as described.

11. The combination, with the frame of a tile-machine, of a vertically-moving table, a bent arm pivotally secured to the front of the frame, an adjusting-screw in the upper end of the arm, a lever pivotally secured to the side of the frame adapted to be operated by the arm, and a keeper secured to the frame having catches upon its inner edge, one of which is beveled, substantially as described.

12. The combination, with the frame of a tile-machine, of a vertically-moving table, a lever pivotally secured to the lower portion of the frame, a rack at the rear of the table, the lower end of which is provided with an arm, said arm being adapted to engage with the end of the lever, a keeper secured to the frame having a hole in its lower end, a push-rod secured to the other end of said lever, having its upper end within the hole in the keeper, and a lever pivotally secured to one side of the machine, having its end within the keeper and adapted to be operated by the end of the push-rod, substantially as described.

13. The combination, with the frame of a tile-machine, of a vertically-moving table, two forwardly-projecting arms above the table, braces secured thereto, a funnel at the ends of the arms, a shell upon the table, and tamping-bars projecting through the funnel, substantially as described.

14. The combination, with the frame of a tile-machine, of a vertically-moving table, two forwardly-projecting arms above the table, a semicircular ring pivotally secured at the end of each arm, a funnel upon said rings, a shell upon the table, and tamping-bars projecting through the funnel, substantially as described.

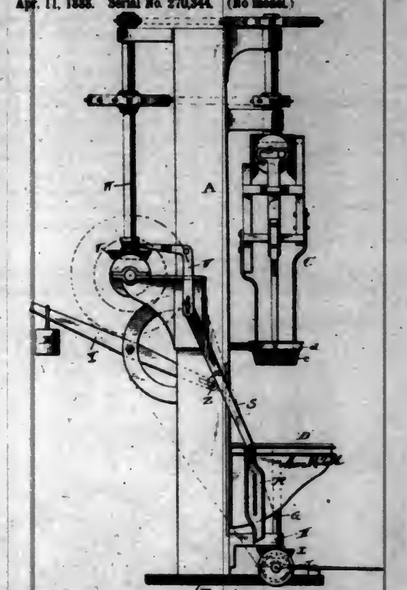
15. The combination, with the frame of a tile-machine, of a vertically-moving table, a rack at the rear of the table, an arm at the lower end of the rack, an upright and a support secured to the arm, a core upon the support, a cross-bar suspended below the table, and a shell upon the table, said upright, support, and cross-bar being so arranged in relation to each other that the table is not moved upward until the core has been placed in position, nor downward by the rack until the core has been withdrawn, substantially as described.

16. The combination, with the frame of a tile-machine, of a vertically-moving table, a block secured to the lower portion of the front of the frame, a lever pivotally secured to said block, a pin in the block above the end of the lever, a rack at the rear of the table, an arm secured to the lower end of the rack adapted to engage with the end of the lever, a keeper secured to the frame having a hole in its lower end, a lever pivotally secured to the side of the machine having one end within the keeper, and a push-rod secured to the outer end of the lever at the bottom of the machine, the upper end of which passes through the hole in the bottom of the keeper and engages with the end of the lever secured to the side of the frame, substantially as described.

17. In a contractible core for tile-machines, the combination of a series of ribs cut in halves, a piece of sheet-steel secured to each of the sets of halves, the edges of which are beveled, a cap, and a tapering support adapted to be forced between the two sets of halves of the ribs, substantially as described.

18. In a tile-machine, the combination of a support, a face-plate secured to the lower portion of the support, a table the sides of which are provided with clips which engage with the plate, a core through the table, and tamping-bars above it.

405,184. TILE-MACHINE. WILLIS D. SHERMAN, Omaha, Nebr., assignor to the Union Hydraulic Drain Tile Company, same place. Filed Apr. 11, 1888. Serial No. 270,344. (No model.)



Claim.—1. In a tile-machine, the combination of a support, a table movably secured to its lower portion, a core through the table, the lower end of which is provided with a divided nut, a vertical screw-threaded shaft, and tamping-bars above the table.

2. In a tile-machine, the combination of a support, a table secured to its lower portion, a core through the table, a plate in the lower end of the core having dovetailed grooves in its upper surface, a divided nut upon the plate having dovetailed flanges upon its lower side, a vertical screw-threaded shaft below the core, and tamping-bars above the table.

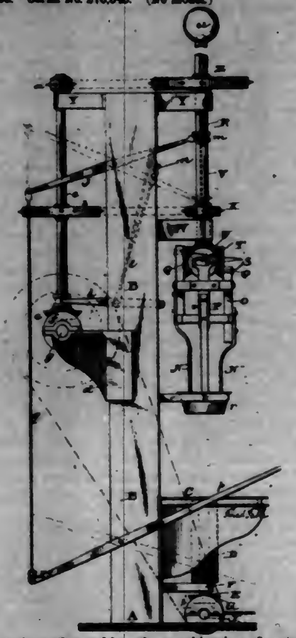
3. In a tile-machine, the combination of a support, a table secured to its lower portion, a core through the table, two plates in the lower portion of the core, one of which is stationary and the other is movable, radial slots in the stationary plate and curved slots in the movable plate, one end of each of the curved slots being nearer the center of the plate than the other end, a bolt in each half of the divided nut passing down through the slots in the two plates, nuts upon the lower ends of the bolts, a vertical shaft below the core, and tamping-bars above the table.

4. In a tile-machine, the combination of a support, a table secured upon the lower portion of the support, a core through the table, a divided nut in the lower portion of the core, a vertical shaft below the core, screw-threaded throughout, except at its lower end, and tamping-bars above the table.

5. In a tile-machine, the combination of a support, a table secured thereto, a cam guide upon one side of the table, a vertical shaft at the rear of the machine, a bevel-wheel upon the lower portion of said shaft, two levers pivotally secured upon the side of the support, one end of one of which engages with the cam-guide, and the opposite end of the other lever engages with the bevel-wheel upon the shaft, and tamping-bars above the table.

6. In a tile-machine, the combination of a support, a table movably secured to its lower portion, a lever pivoted to the support, the inner end of which is slotted, a pin upon the table, which engages with the slotted end of the lever, a weight upon the outer end of the lever, and tamping-bars above the table.

405,185. TILE-MACHINE. WILLIS D. SHERMAN, Omaha, Nebr., assignor to the Union Hydraulic Drain Tile Company, same place. Filed Apr. 11, 1888. Serial No. 270,345. (No model.)



Claim.—1. In a tile-machine, the combination of a stationary table, a vertically-movable shaft, a frame upon the lower end of the shaft, bevel-wheels upon the sides of the frame, a pin upon the outer face of each of the wheels, blocks upon the sides of the frame, the upper end of each of which is provided with a slot, and tamping-bars secured to the blocks.

2. In a tile-machine, the combination of a stationary table, a vertically-movable shaft, a frame upon the lower end of the shaft, bevel-wheels upon the sides of the frame, blocks upon the sides of the shaft, the upper ends of which engage with the wheels, tamping-bars upon the blocks, a sleeve upon the lower end of the shaft, a bevel-wheel upon the lower end of the sleeve and a sprocket-wheel upon the upper end, a sprocket-wheel upon the upper end of the shaft, a vertical operating-shaft and two sprocket-wheels upon the shaft, and chains for operating the sprocket-wheels.

3. In a tile-machine, the combination of a stationary table, a vertically-movable shaft, a weight upon the upper end of the shaft, and tamping-bars upon the lower end.

4. In a tile-machine, the combination of a vertical support, a table secured to its lower portion, and two vertical shafts journaled in bearings at its upper portion, one of said shafts being longitudinally movable, tamping-bars upon the lower end of the movable shaft, a bevel-wheel movably secured upon the lower end of the other shaft, and levers for connecting the movable shaft with the movable wheel.

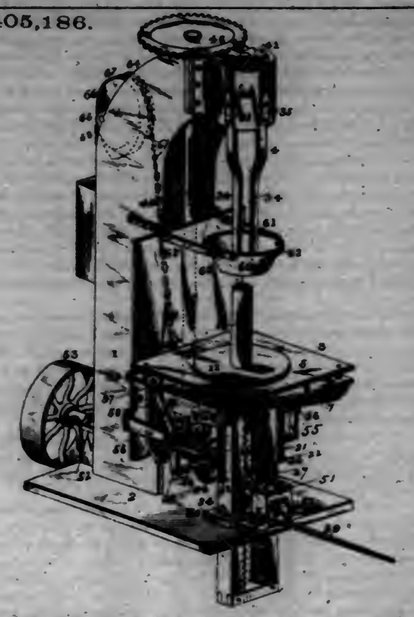
5. In a tile-machine, the combination of a vertical support, a table secured to its lower portion, two shafts journaled in bearings at the upper portion of the support, one of which is movable vertically, tamping-bars upon the lower end of said shaft, a collar rigidly secured upon the upper portion of said shaft, a bevel-wheel movably mounted upon the other shaft, two levers pivotally secured upon the support, the opposite ends of which engage with the collar upon one shaft and the wheel upon the other shaft, and a link secured at its ends to said levers, the upper end of which is provided with a slot.

6. In a tile-machine, the combination of a stationary table, a revolving frame above the table adapted to be moved vertically, and a series of tamping-bars movably secured upon the frame.

405,186. TILE-MACHINE. WILLIS D. SHERMAN, Omaha, Nebr., assignor to the Union Hydraulic Drain Tile Company, same place. Filed Apr. 23, 1888. Serial No. 271,976. (No model.)

Claim.—1. In a tile-machine, the combination of a support, a table secured to its lower portion and a cylinder at its upper portion,

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a drum within the cylinder having a cam-groove or worm, blocks upon the cylinder, pins in the blocks engaging the grooves, and tamping-bars upon the blocks.

2. In a tile-machine, the combination of a support, a table secured to its lower portion and a cylinder to its upper portion, vertical slots in the sides of the cylinder, blocks upon the sides of the cylinder, each of which is provided with a pin, a drum within the cylinder having a cam-groove, and tamping-bars secured to the blocks.

3. In a tile-machine, the combination of a support, a table secured to its lower portion and a cylinder to its upper portion, a spider within the cylinder, a shaft journaled in the spider, a drum upon the lower portion of the shaft within the cylinder and a spur-gear upon its upper portion, blocks upon the sides of the cylinder, pins in the blocks engaging the grooves, and a series of tamping-bars secured to the blocks.

4. In a tile-machine, the combination of a support, a table secured to its lower portion and a cylinder to its upper portion, a drum within the cylinder having a cam-groove around its circumference, blocks upon the sides of the cylinder, a pin upon each block projecting into the cam-groove, a friction-roller upon each pin, and tamping-bars upon the blocks.

5. In a tile-machine, the combination of a support, a table secured to the lower portion of the support, a contractible core through the table, the central piece of which is wedge-shaped and provided with dovetail flanges or ribs, and the outside pieces are provided with dovetail recesses, a slot in the central piece, a pin in the side pieces and through the slot in the central piece, a rack secured to the lower end of the central piece, and tamping-bars above the table.

6. In a tile-machine, the combination of a support, a table secured to the lower portion of the support, a rack below the table, the upper end piece of which is slotted, a core through the table, the lower end of which is swiveled in the slot, and tamping-bars above the table.

7. In a tile-machine, the combination of a support, a table secured to the lower portion of the support, a rack below the table, the side pieces of which are provided with cogs, the cogs at the upper end of one side piece of the rack and at the lower end of the other side piece being only partly cut, a shaft between the side pieces, a cog-wheel upon the shaft, a core secured to the upper end of the rack, and tamping-bars above the table.

8. In a tile-machine, the combination of a support, a table secured to the lower portion of the support, a core through the table, a rack secured to the lower end of the core, a yoke around the rack, a lever pivotally secured in front of the rack, a wheel for operating the rack, and tamping-bars above the table.

9. In a tile-machine, the combination of a support, a table secured to the lower portion of the support, a core through the table, a rack secured to the lower end of the core, a yoke around the rack, a lever

pivotally secured in front of the yoke, catches upon the under side of the lever, a coiled spring upon the top of the lever at its pivotal point, a wheel for operating the rack, and tamping-bars above the table.

10. In a tile-machine, the combination of a support, a table secured to the lower portion of the support, a shaft below the table, a bevel-wheel upon the shaft, a lever in engagement with the wheel, cam-guides upon the sides of the table in engagement with the ends of the lever, a vertical shaft, and tamping-bars above the table.

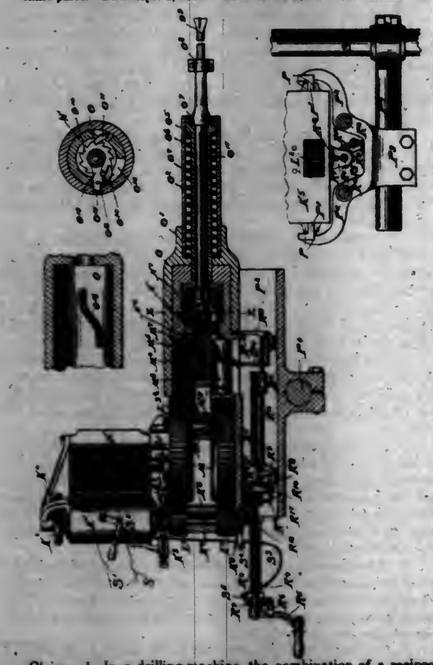
11. In a tile-machine, the combination of a support, a table secured to the lower portion of the support, a shaft below the table, a bevel-wheel movably secured upon the shaft, the hub of which is provided with a groove, brackets secured to the support behind the table, a lever pivoted to the ends of the brackets, the ends of which are provided with pins and the middle portion engages with the groove in the hub of the wheel, cam-guides upon the sides of the table in engagement with the pins, a vertical shaft, and tamping-bars above the table.

12. In a tile-machine, the combination, with a base-piece, of vertical columns secured thereto, a table upon the base, a tamping-frame between the columns, consisting of a hollow cylinder secured to the columns, a spirally-grooved drum, blocks upon the outer side of the hollow cylinder, pins secured to the blocks, the inner ends of which project through the cylinder and engage with the spiral groove, and tamping-bars secured to the blocks.

13. In a tile-machine, the combination of a support, a vertically-movable table secured thereto, a sheave journaled at the top of the support, a counterpoise, means for connecting the table and counterpoise with the sheave, and tamping-bars above the table.

14. In a tile-machine, the combination, with a base-piece, of vertical columns secured to the base, a revolving table upon the base, a tamping-frame between the columns, a drum within the frame, a cam-wheel within the drum, tamping-bars upon the outside of the drum, a cross-piece secured at its ends to the top of the columns, a bearing in the cross-piece through which the shaft of the cam-wheel projects, said shaft being provided with a groove, a cog-wheel upon the shaft above the cross-piece, having a fin, an idle-wheel upon the cross-piece, a vertical shaft, and a cog-wheel upon each end of the shaft, the upper one of which engages with the idle-wheel and the lower one with the table.

405,187. ELECTRIC DRILLING-MACHINE. ELMER A. SPERRY, Chicago, Ill., assignor to the Sperry Electric Mining Machine Company, same place. Filed Apr. 1, 1889. Serial No. 305,584. (No model.)



Claim.—1. In a drilling-machine, the combination of a reciprocating drill with a rotator operating upon said drill in the middle of its retraction only.

2. In a drilling-machine, the combination of a reciprocating drill and a driving-crank therefor, and a rotator for such drill operating only in the middle of the retraction of such drill.

3. In a mining-machine, the combination of a reciprocating drill, driving-crank therefor, and a rotator containing a pin and a cam, the latter so shaped as only to operate upon the drill in the middle of its retraction.

4. In a drilling-machine, the combination of a drill-rod with an inclosing-sleeve, a driving-spring about the same, and a guide-cylinder inclosing the whole with suitable end-bearing surfaces for said spring, so that the driving-spring is inclosed and supported internally and externally.

5. In a drilling-machine, the combination of a fixed frame with a frame movable thereon, a drill, an electric motor therefor supported on said movable frame, a switch to control such motor, said switch connected with such frames so as to affect the operation of the motor at any predetermined point in the excursion of the moving frame.

6. In a drilling-machine, the combination of a fixed frame with a frame movable thereon, a drill, an electric motor therefor on said movable frame, and a switch to control such motor, said switch secured on one frame and its handle connected with the other frame, so that it is operated to affect the motor responsive to the variations in the relative positions of the two frames.

7. In a drilling-machine, the combination of a fixed frame, a movable frame supported thereon and carrying the operative parts, a screw-rod connecting the two frames, a crank thereon, a movable nut on such screw-rod, and a ratchet and dog, said dog connected with the drill, so that the movement of the latter causes the rotation of such nut to move the operative part on such fixed frame.

8. In a drilling-machine, the combination of the fixed frame, a movable frame supported thereon and carrying the operative parts, a screw-rod connecting the two frames, a movable nut on said screw-rod, and a ratchet and dog, said dog connected with the drill, so that the movement of the latter causes the rotation of such nut to move the operative parts on the fixed frame.

9. In a drilling-machine, the combination of a fixed frame, a movable frame supported thereon and carrying the operative parts, a screw-rod connecting the two frames, a crank thereon, a locking device for said crank, a movable nut on such screw-rod, and a ratchet and dog, said dog connected with the drill, so that the movement of the latter causes the rotation of such nut to move the operative parts on the fixed frame.

10. In a drilling-machine, the combination of a fixed frame, a movable frame supported thereon and carrying the operative parts, a screw-rod connecting the two frames and a crank thereon, a locking device for said crank, a movable nut on said screw-rod, a locking device for said nut, and a ratchet and dog, said dog connected with the drill, so that the movement of the latter causes the rotation of such nut to move the operative parts on the fixed frame.

11. In a drilling-machine, the combination of a fixed frame with a moving frame supported thereon and carrying the operative parts, a screw-rod connecting the same, a nut and ratchet-wheel thereon, a dog to operate such ratchet-wheel, and a latch to hold such dog out of operative position.

405,188. ELECTRIC MINING-MACHINE. ELMER A. SPERRY, Chicago, Ill., assignor to the Sperry Electric Mining Machine Company, same place. Filed Apr. 1, 1889. Serial No. 305,585. (No model.)

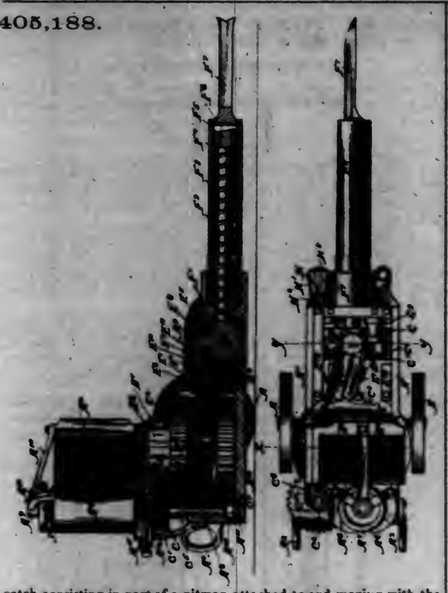
Claim.—1. In a mining-machine, the combination of a suitable supporting-frame with a drill, a driving-motor for said drill, an electric motor to energize said driving-motor, and an intermittently and irregularly operating catch consisting in part of a pitman attached to and moving with the drill or drill-rod, said catch adapted to intermittently connect the two motors, so that their re-engagement is dependent upon the length or duration of the effective stroke of the drill.

2. In a mining-machine, the combination of a suitable supporting-frame with a drill, a driving-motor for said drill, an electric motor to energize said driving-motor, and an intermittently and irregularly operating catch consisting in part of a slotted pitman attached to and moving with the drill or drill-rod, said catch adapted to intermittently connect the two motors, so that their re-engagement is dependent upon the length or duration of the effective stroke of the drill.

3. In a mining-machine, the combination of a suitable supporting-frame with a drill, a driving-spring for said drill, an electric motor to energize said spring, and an intermittently and irregularly operating catch consisting in part of a slotted pitman attached to and moving with the drill or drill-rod, said catch adapted to intermittently connect the spring and motors, so that their re-engagement is dependent upon the length or duration of the effective stroke of the drill.

4. In a mining-machine, the combination of a suitable supporting-frame with a drill, a driving-motor for said drill, a motor to energize said driving-motor, and an intermittently and irregularly operating

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catch consisting in part of a pitman attached to and moving with the drill or drill-rod, said catch adapted to intermittently connect the two motors, so that their re-engagement is dependent upon the length or duration of the effective stroke of the drill.

5. In a drilling-machine, the combination of a drill with a rod to which it is secured, a spring encircling said rod, and a free collar on the end of such rod bearing against the end of the drill proper, said spring bearing at its end, respectively, against such collar and the fixed portion of the machine.

6. In a drilling-machine, the combination of a drill, a rod to which it is secured, a spring encircling such rod, a free collar on the end of such rod bearing against the end of the drill proper, said spring bearing at its end, respectively, against such collar and a fixed portion of the machine, and a spring inclosing and protecting cylinder.

7. In a drilling-machine, the combination of the drill with a rod to which it is secured, a spring encircling such rod, a cylinder inclosing such spring and rod, and a guiding-collar about such rod within such cylinder and bearing on one side against the end of the drill proper and on the other against the end of the spring.

8. In a drilling-machine, the combination of a drill with a reciprocating pitman therefor, two driving gear-wheels on opposite sides of said pitman, a clutch to connect said pitman and gear-wheels, an actuating-motor for said gear-wheels, and a frame to support such parts in operative position.

9. In a drilling-machine, the combination of a drill with a reciprocating pitman therefor, two driving gear-wheels on opposite sides of said pitman, a clutch to connect said pitman and gear-wheels, an actuating electric motor for said gear-wheels, and a frame to support such parts in operative position.

10. In a drilling-machine, the combination of a drill with a reciprocating pitman therefor, two crank-plates connected with said pitman and on opposite sides thereof, a clutch whereby the pitman and plates are connected, an actuating-motor to drive such plates, and a frame to support such parts in operative position.

11. In a drilling-machine, the combination of a drill with a pitman, crank-plates on opposite sides thereof, a clutch to connect the pitman and plates, an actuating electric motor to drive such plates, and a frame to support such parts in operative position.

12. In a drilling-machine, the combination of a drill with a pitman, a crank plate and pin, a driving-wheel, a motor to actuate the same, and a clutch between such crank-plate and driving-wheel on each side of the pin.

13. In a drilling-machine, the combination of a drill with a pitman, a crank plate and pin, a driving-wheel, a motor to actuate the same, and a release between such crank-plate and driving-wheel on each side of the pin.

14. In a drilling-machine, the combination of the drill-actuating mechanism with a frame on which the same is supported, a spring which encircles and drives the drill, an outwardly open-ended inclosing-cylinder therefor secured to such frame, and a removable drill-guide within such cylinder.

15. In a drilling-machine, the combination of a drill with a driving-spring, a pitman connected with such drill at one end and provided with a long slot at the other end, a crank whose pin engages such slot, a driving-shaft to which such crank is attached, and means for driving the same so that the pitman may move independent of the crank during a portion of its stroke.

16. In a drilling-machine, the combination of a drill with a spring adapted to force the drill forward, a pitman connected with such drill at one end and provided with a long slot at the other, a crank whose pin engages such slot, a driving-shaft to which such crank is attached, means for driving the same, and a clutch connecting said crank to said shaft so as to lock them together when one moves faster than the other and release them when their relative speed tendency changes.

17. In a drilling-machine, the combination of a suitable supporting-frame with a drill, means for driving the same, including the shaft, a crank on said shaft connected to other parts of the driving mechanism, and a clutch which locks the shaft and the crank together when one moves faster than the other and releases them when their relative speed tendencies change.

18. In a drilling-machine, the combination of a drill with an electric motor for driving the same, an electric-current indicator consisting of two elements, one adapted to be read in the light and the other in the dark, and a suitable supporting-frame on which the parts are secured.

405,189. STORM-SASH VENTILATOR. FREDERIC STRAUB, Surprise, Nebr. Filed Nov. 3, 1888. Serial No. 289,932. (No model.)



Claim.—1. The combination, with the storm-sash having an opening for ventilation, and the movable sash, as B, of the damper for closing the opening in the storm-sash, and an arm extending from the damper and engaged by and operated from the sash B, substantially as and for the purpose described.

2. The combination, with the frame, the storm-sash having an opening for ventilation, and the damper for closing the said opening, of the movable sash having a bail or keeper, and the arm projecting from the damper and engaged by the said keeper, substantially as described.

3. The combination of the frame, the storm-sash having openings in its rail, the damper pivoted to the rail midway of its ends, the arm projecting from the damper, the movable sash, and the bail or keeper secured to and projecting from the lower edge of the said movable sash and engaged with the said arm to move the damper when the said sash is raised and lowered, substantially as and for the purpose described.

405,190. RACK FOR HAY-WAGONS. ERWIN J. TRACY, Sioux Falls, Dak. Filed Sept. 24, 1888. Serial No. 286,217. (No model.)

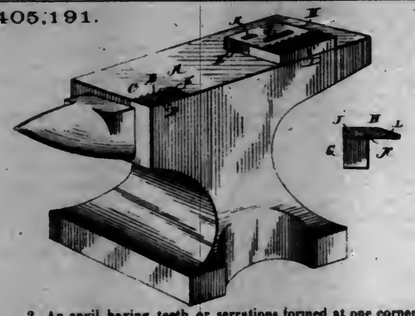


Claim.—In a folding hay-rack, the combination of the cross-pieces, the slotted standards secured thereto, the ends having the uprights d' pivoted in the standards, the hinged and jointed supporting-braces hinged or pivoted to the said uprights and to the wagon-body B, the longitudinal rails secured to the cross-pieces, the slotted standards on the rails, the sides having the uprights c^2 pivoted in the said slotted standards, the standards d on the cross-pieces, and the braces having one end pivoted to the uprights c^2 and the other end provided with a hook to engage an opening in the standards d, all arranged and operated substantially as and for the purpose specified.

405,191. ANVIL AND SWAGE. JOHN H. UHRICH, Norton, Kans. Filed Mar. 16, 1889. Serial No. 303,607. (No model.)

Claim.—1. An anvil having teeth or serrations formed upon a portion of its face, substantially as set forth.

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2. An anvil having teeth or serrations formed at one corner of its face, substantially as set forth.

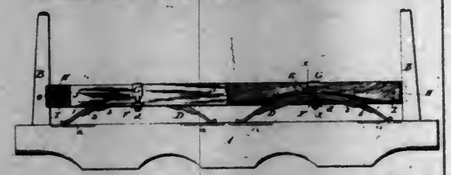
3. An anvil attachment the face of which is provided with teeth or serrations, substantially as and for the purpose set forth.

4. The combination, with an anvil, of a swage provided with teeth or serrations along its outer edge, and having recesses or dies formed in the face thereof adapted to form the heel and toe calks of horseshoes, substantially as set forth.

5. A swage or anvil attachment having a toothed or serrated beveled face, substantially as set forth.

6. A swage or anvil attachment having the toothed or serrated beveled outer edge, and provided on its face with guides or recesses to form the heel and toe calks of horseshoes, substantially as set forth.

405,192. BOLSTER-SPRING. HENRY VAN ARSDALE, Racine, Wis. Filed Mar. 7, 1889. Serial No. 302,311. (No model.)



Claim.—1. In combination with bar C, a semi-elliptic spring D, a socket or recess formed in the under side of the bar and of a width to receive the spring, a U-shaped clip G, applied to the upper side of the bar, and a clip-plate F, extending transversely across the under side of the bar in contact with the spring and adapted to receive the ends of the clip, the socket or recess being provided with side walls to prevent lateral displacement of the spring, all substantially as shown, whereby perforation of the spring is obviated.

2. In combination with bar C, provided with a socket or recess in its under side, spring D, seated in said socket or recess, a staple E, a plate F, bearing upon the body of the staple, and a clip G, applied to the bar, all substantially as shown.

3. In combination with bar C, provided with a socket or recess a spring D, seated in said socket or recess, a staple E, a plate F, provided with a socket *e* to receive the staple, a clip G, and nuts *d*, all substantially as shown.

4. In combination with bar C, provided with a socket or recess, spring D, mounted in said socket and notched on its edges, as shown, staple E, passing into the bar from its under side and engaging with said notches and a clip G, and a plate applied to the bar, substantially as shown, and for the purpose set forth.

5. In combination with bolster A, bar C, and a spring D, applied to said bar, and composed of two or more leaves 1 2 3, normally curved in the same general direction, but having different degrees of curvature, the said leaves being rigidly affixed to the bar in contact with each other.

6. In combination with bolster A, and bar C, spring D, composed of two or more leaves 1 2 3, of different lengths, normally curved in the same general direction, the longer leaf having a greater curvature than the shorter leaf, and the said leaves being clamped together so as to be in contact throughout the greater part of their length.

7. In combination with the bolster A, standards B, and spring-bars C, cap H, provided with guiding webs or flanges *e e*, and clips J, adapted to be applied to one of the webs or flanges *e*, as and for the purpose set forth.

8. In combination with bolster A and standards B, the spring bar C, cap H, provided with guiding webs or flanges *e e*, and clip J, provided with a U-shaped body and with a lug or ear, by which it is attached to the cap of the spring-bar.

405,193. CART-SPRING. LARS E. WALBERG, Hollister, Cal. Filed Apr. 3, 1889. Serial No. 305,836. (No model.)

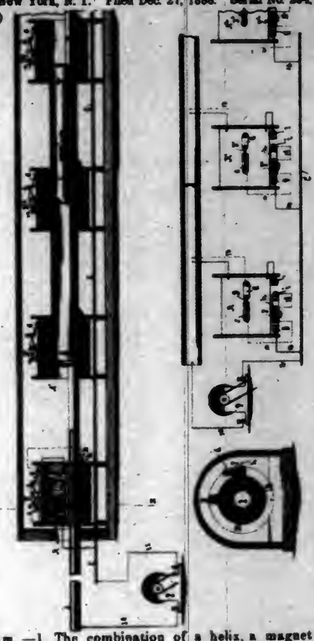


Claim.—1. The combination, with the axle and shaft of a cart, of a spring on the top of the axle, a plate pivoted to the spring and secured to the shaft, and a spring interposed between the said other spring and plate, substantially as described.

2. The combination, with the axle and shaft, of the spring D, having ears extending therefrom, the plate B, pivoted on the ears, the spring C between the said other spring and plate, and a spring below spring D and the axle, having its ends resting against the outer ends of the spring D, substantially as described.

3. The combination of the spring D, having clip F on its under side and ears *d* on its upper side, the plate B, pivoted on the ears, the spring C between the plate and spring D, and the spring G below the axle and secured to said spring D, substantially as described.

405,194. ELECTRO-MAGNETIC TRANSMITTER. JOHN T. WILLIAMS, Mount Vernon, assignor to the International Portelectric Company, New York, N. Y. Filed Dec. 27, 1888. Serial No. 294,761. (No model.)



Claim.—1. The combination of a helix, a magnet arranged lengthwise with said helix and constructed to close the circuit through said helix, and a magnetic carriage constructed to pass through said helix and to actuate said magnet, substantially as shown and described.

2. The combination of a helix, a pivoted magnet arranged lengthwise with said helix and having one of its arms weighted, and a magnetic carriage constructed to pass through said helix and to actuate said magnet to close the circuit, substantially as shown and described.

3. The combination, with a series of helices and a track, of a carriage, a circuit-closer for each helix, a supplementary circuit-closer, and a shunt-circuit, in connection with the primary circuit-closer, operating the supplementary circuit-closer, substantially as shown and described.

4. The combination, with a series of helices and a track, of a carriage, a magnetic circuit-closer for each helix actuated by the magnetic influence of the carriage, and a supplementary circuit-closer containing an electro-magnet which is vitalized by the closing of the shunt-circuit, substantially as shown and described.

5. The combination, with a series of helices and a track, of a magnetic carriage, pivoted magnets arranged lengthwise with the helices and actuated by the carriage to close the circuit, an electro-magnet, a supplementary circuit-closer, and a shunt-circuit passing through the bobbins of the electro-magnet, substantially as shown and described.

6. The combination, with the helices and the track, of contact-pieces *c*, having the carbon contacts *c'*, and the swinging magnets D, having contacts *p*, of metal—such as platinum—to make and break the circuit, substantially as described.

7. The combination, with the helices and a track, of a primary circuit-closer, a shunt-circuit, and a secondary or supplemental circuit-closer for the helices, substantially as described.

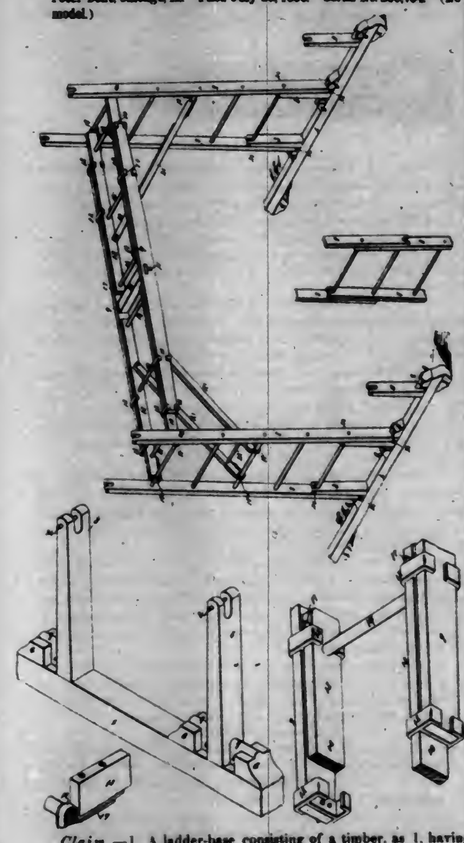
8. The combination, with a helix and a track extending through the same, of a bracket having one part attached to the end of the helix and another part attached to the track, substantially as described.

9. The combination, with a helix and a track extending through said helix, of a bracket attached to the helix and having a slotted portion for the passage of a bolt into the track, substantially as described.

10. The combination, with a helix and a track extending through said helix, of a fastening device for attaching the track to the helix, said device being provided with means for attaching a wire from the helix thereto, substantially as described.

11. The combination, with the helix, the stationary contact I, an electro-magnet, and its armature, of the lever H, having its longer arm provided with a contact and its shorter arm connected with the armature, substantially as described.

405,195. SCAFFOLD. HOBART AYERS, St. Louis, Mo., assignor to Peter Bent, Chicago, Ill. Filed July 23, 1888. Serial No. 280,754. (No model.)



Claim.—1. A ladder-base consisting of a timber, as 1, having notched uprights extending therefrom, and a ladder resting upon said timber, the rung of which is adapted to engage the notches in the uprights.

2. A ladder-base consisting of a timber, as 1, having notched uprights, as 3, 4, and 5, extending therefrom along its length, and a ladder resting upon said timber, the rung of which is adapted to engage the notches in two of the adjacent uprights.

3. The combination of a timber 1, notched uprights 3 4 5, extending therefrom, and blocks 6, having central portions 7 abutting against said uprights in the manner described, and a ladder having the ends of the side rails notched.

4. The combination, to form a scaffolding, of two timbers, as 1 1, notched uprights 3, 4, and 5, extending from each of said timbers, ladders resting upon said timbers, the rungs of which engage the notches in two adjacent uprights on each timber, and a platform between said ladders.

5. The combination, to form a scaffolding, of ladder-bases, as 1 1, each having notched uprights 3, 4, and 5 extending therefrom, ladders resting upon said bases, the rungs of which engage the notches in two adjacent uprights on each ladder-base, and an extensible platform between said ladders, for the purpose described.

6. A ladder-base consisting of a timber, as 1, uprights extending therefrom, and blocks 6, having central portions 7 abutting against said uprights in the manner described, and a ladder having the ends of its side rails notched and adapted to engage the central portions 7 of the blocks 6, as described.

7. The combination of a ladder-base, as 1, the uprights 3 4 5, extending therefrom, having blocks 6, with cut-away portions 7 abutting against said uprights, a ladder having notches in its side rails adapted to engage the uprights 3 4 or 4 5, as the case may be, and an extensible platform adjustably secured to said ladder and to a similar structure at the other side thereof.

8. An extensible platform for ladder-scaffolding, consisting of a fixed section 9, joined together by cross-piece 10, a sliding section at each side of said cross-piece 10, struts extending from said movable sections, and hooks secured to each of said struts and to each rail of the movable sections, adapted to engage the rungs of ladders at each side thereof.

9. The combination, as hereinbefore described, to form a ladder-scaffolding, of a base 1, having uprights 3, 4, and 5 notched at their upper ends, blocks 6, having cut-away portions 7 abutting against said uprights and arranged in the manner described, a ladder 8, having notches and adapted to be secured to said uprights, as described, a similar structure arranged at some distance therefrom, and an extensible platform between the two, consisting of a fixed section 9, having therein two sliding sections 13, adapted to be hooked to the rungs of said ladders, and struts 21, pivoted to said sliding sections, and also adapted to be hooked to the rungs of said ladders, in the manner described.

10. The combination, with a ladder-support, of an extensible platform consisting of a fixed section 9, two or more double T-irons secured to said fixed section in the manner described, two sliding sections, the rails of which are embraced by said T-irons, struts pivoted to the rails of said movable section, and hooks secured to the rails of said sliding sections, adapted to embrace the rungs of the ladder, and a slide or lock to secure said hooks to the rungs of said ladders, as and for the purpose described.

11. The combination of the ladder-base 1, notched uprights 3 4 5, extending therefrom, blocks 6, having cut-away portions 7 abutting against said uprights and arranged in the manner described, a ladder 8, having notches and secured to said uprights, as set forth, a similar structure suitably arranged with reference to the former, and an adjustable platform between the two, consisting of the fixed section 9, joined together by the cross-piece 10, the double T-irons 12 12, fastened to the rails of said fixed section, sections 13, sliding in said double T-irons in the manner described, struts 21, pivoted to the rails of said movable sections, and hooks 18, secured to the rails of said movable sections and to the struts, adapted to embrace the rungs of the ladders and having a slide 19, for locking said hooks to the ladders, substantially as and for the purpose described.

405,196. GALVANIC BATTERY. JOHN A. BARRETT, Brooklyn, N. Y., assignor to the John A. Barrett Battery Company, Baltimore, Md. Filed Apr. 5, 1889. Serial No. 306,109. (No model.)



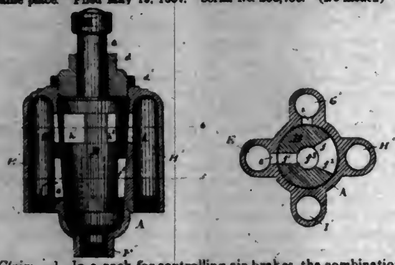
Claim.—1. In a chloride-of-silver battery, substantially such as described, a solution of sulphate of zinc.

2. The electric battery comprising a containing-vessel, electrodes.

respectively, of chloride of silver and metallic zinc, and a solution of zinc sulphate.

3. In a chloride-of-silver battery, zinc and silver elements formed in thin sheets rolled in a close spiral with interposed sheets of textile fabric impregnated with sulphate of zinc in a dry state.

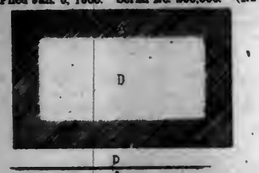
405,197. ENGINEER'S COCK FOR AIR-BRAKES. GEORGE A. BOYDEN, Baltimore, Md., assignor to The Boyden Power Brake Company, same place. Filed May 19, 1887. Serial No. 238,738. (No model.)



Claim.—1. In a cock for controlling air-brakes, the combination, with the barrel A, having a central valve-seat, of a series of vertical passages E' G' H' I', at equal distances around the seat, and ports g, e, i, and k, and the plug-valve B, having side ports k', k^2, and f^3, and a central port f^3, connecting with the port F', leading from the central seat of the valve, substantially as and for the purposes specified.

2. The combination, with the valve-barrel having a central seat, side passages, and connecting-ports, and the plug-valve having corresponding ports arranged as described, of the spring-lever C, attached to the plug-spindle a, adapted to engage the stop-notches c to c^3 on the barrel, whereby the respective ports of the plug and barrel are retained in proper position when the valve is shifted, substantially as specified.

405,198. DIAPHRAGM TO BE USED IN STENCIL-PRINTING. Melos J. D. CARTER, New York, N. Y., assignor to Augustus D. Klaber, same place. Filed Jan. 6, 1888. Serial No. 260,006. (No model.)



Claim.—The combination, with a printing-stencil, of a porous diaphragm having a portion thereof coated with an impermeable substance, substantially as described, and for the purposes set forth.

405,199. WELL-SINKING APPARATUS. THOMAS G. CHAPMAN, Chicago, Ill., assignor to Frederick C. Austin, same place. Filed Apr. 9, 1888. Serial No. 270,119. (No model.)



Claim.—1. In a well-boring device, the strainer-tube having its bore permanently divided into a couple of passages which are within the circumference of the cylindric tube, one of said passages being adapted to direct a downflowing stream of water to a drilling-tool and the other being adapted to constitute the main strainer-passage for an upflowing current of well-water, substantially as set forth.

2. In a well-boring device, the strainer-tube having its bore permanently divided into a plurality of passages which are within the circumference of the cylindric tube, one or more of said passages being adapted to constitute the main strainer passage or passages for an upflowing current or currents of well-water, and the other passage or passages being adapted to direct a dowuflowing current or currents of water to a drilling-tool, substantially as set forth.

3. The combination, substantially as hereinbefore set forth, with a suitable drilling-tool, of the strainer-tube having its bore divided longitudinally by a web or partition, so as to provide the passage through which water is supplied to the drill and the main strainer-passage for the well-water.

4. The combination, substantially as hereinbefore set forth, with a suitable drilling-tool, of the strainer-tube contracted at its lower end and having its bore divided longitudinally to provide a main strainer-passage for the well-water and a passage a', through which water may be supplied to the drill.

5. The combination, substantially as hereinbefore set forth, with the strainer-tube having its bore divided longitudinally into a strainer-passage for the well-water and one or more passages through which water can be supplied to the drill, said passages being arranged within the circumference of the cylindric tube, of a stopper adapted to temporarily close the main strainer-passage, for the purpose set forth.

6. The combination, substantially as hereinbefore set forth, with the strainer-tube containing within its cylindric bore a main strainer-passage for the well-water and one or more passages for conducting water to the drill, of one or more stoppers detachably held in place above the upper entrances to the passage or passages through which water is to be conducted to the drill, for the purpose described.

7. The combination, substantially as hereinbefore set forth, with the strainer-tube containing within its cylindric bore two or more passages, for the purpose described, of the stoppers D and E, adapted for application, substantially as and for the purpose set forth.

8. The combination, substantially as hereinbefore set forth, with a suitable drill, of the strainer-tube containing the main strainer-passage for the well-water and a separate passage adapted for conducting water to the drill and having its discharge end portion divided to provide it with separate outlets, for the purpose described.

405,200. WELL-SINKING APPARATUS. THOMAS G. CHAPMAN, Chicago, Ill., assignor to Frederick C. Austin, same place. Filed Apr. 9, 1888. Serial No. 270,120. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, with the strainer-tube, of a smaller tube arranged within and at its lower end, permanently and rigidly secured to the strainer-tube as a part thereof, and adapted for conducting a supply of water to a drilling-tool below the strainer-tube, and a removable stopper arranged to close the space between said smaller tube and the inner wall of the strainer-tube at a point adjacent to the upper end of the smaller tube, for the purpose described.

2. The strainer-tube provided with an internally and centrally arranged smaller tube detached from the strainer-tube, except at its lowest end, and adapted for conducting a supply of water to a drill below the strainer-tube, substantially as set forth.

3. The combination, substantially as hereinbefore set forth, with the strainer-tube having a contracted lower end portion, of the smaller tube C, arranged within and separated from the inner wall of the strainer-tube, except at its lower end, which said end of said smaller tube opens at the contracted portion of the strainer-tube, for the purpose described.

4. The combination, substantially as hereinbefore set forth, with the strainer-tube, of a smaller tube arranged within and separated from the strainer-tube, and a stopper temporarily suspended within the strainer-tube at a point over the upper end of the said smaller tube, for the purpose described.

5. The combination, substantially as hereinbefore set forth, with the strainer-tube, of an inclosed smaller tube arranged centrally within the strainer-tube, for the purpose described, a stopper temporarily suspended over the upper end of said smaller tube, and a stopper E, adapted to fit within the space between the smaller tube and the inner wall of the strainer-tube.

6. The combination, substantially as hereinbefore described, with the strainer-tube and the smaller tube arranged centrally therein, for the purpose described, of the stopper D, temporarily held over the upper end of the smaller tube by one or more strips d.

405,201. PROCESS OF TREATING ASBESTUS. ROSEVAL E. CHURCH, London, assignor to John Devrance & Co., Lambeth, England. Filed Apr. 1, 1889. Serial No. 305,541. (No specimens.) Patented in England Oct. 23, 1888, No. 15,236.

Claim.—1. The herein-described process of treating asbestus, which consists in mixing broken asbestus with a solution of rubber and naphtha, the particles of which are mechanically distended by water which has been forced thereinto, substantially as specified.

2. The herein-described process of treating asbestus, which consists in first mixing the broken asbestus with a solution of rubber and naphtha which has been mechanically distended by globules of water, then removing the water by pressure, and then forming the mass into the desired shape by heat and pressure, substantially as specified.

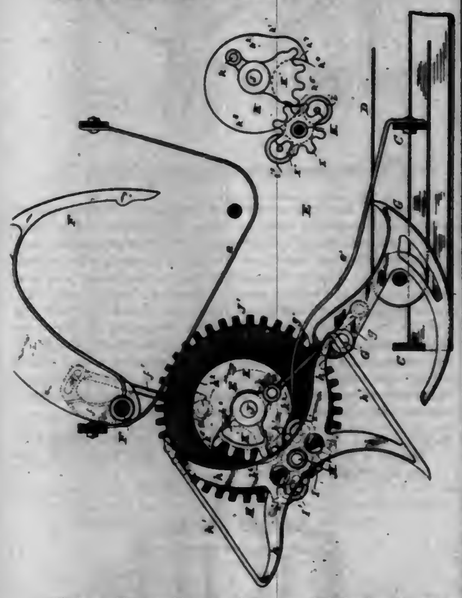
405,202. ROLLER FOR SLIDING DOORS. NORMAN CLARK, Sterling, Ill., assignor to John H. Lawrence and Edwin F. Lawrence, same place. Filed Mar. 19, 1889. Serial No. 303,893. (No model.)



Claim.—1. The combination of the plates A A, provided, respectively, with concavities C and convexities D and the fastenings F, whereby said plates form mutual braces from their point of contact outward and inward, substantially as shown, and for the purpose described.

2. The combination of the plates A, mutually attached at two or more points intermediate their bearing-centers and their peripheries, and the axle E, provided with peripheral enlargements between the bearing-surfaces of said plates on said axle, substantially as shown, and for the purpose described.

405,203. GRAIN-BINDER. JOHN S. DAVIS, Cleveland, Ohio, assignor to the Davis Platform Binder Company, same place. Filed Oct. 19, 1887. Serial No. 252,796. (No model.)

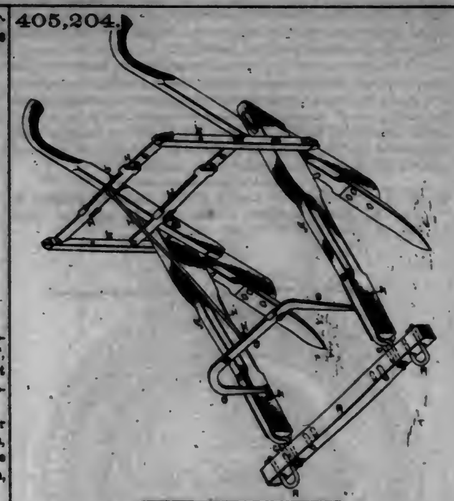


Claim.—The combination of the cam-disk having its surface notched or cut away, as shown, and the rack coincident with the notch in the cam, with the retainer-arm shaft, the pinion I, and the arm I' and its anti-friction rollers, both of which lie in close proximity to the periphery of the disk to insure the proper engagement of the rack and pinion, substantially as hereinbefore set forth.

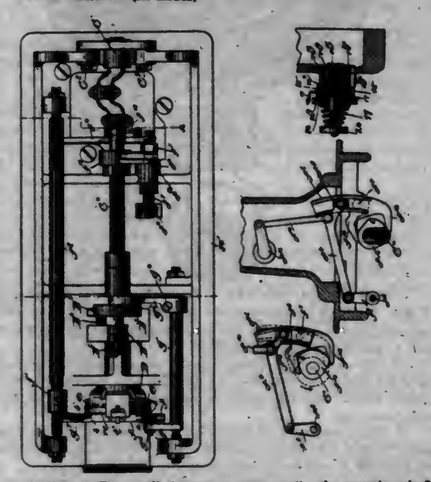
405,204. CULTIVATOR. MARTIN V. DE WITT, Paris, Tex. Filed Feb. 13, 1889. Serial No. 299,772. (No model.)

Claim.—The combination of the two cultivators, a draft-bar to which both of the cultivators are attached, a connecting-rod H, placed between the front ends of the beams, standards secured to the rear ends of the beams, connecting-rods for connecting the upper ends of the standards together, and a connecting-rod I, which extends parallel with the beams and connects the cross-bars together, substantially as shown and described.

405,204.



405,205. SEWING-MACHINE. WILBUR F. DIAL, AURELIUS STEWARD, and GEORGE H. DIMOCK, Bridgeport, Conn., assignors to The Wheeler & Wilson Manufacturing Company, same place. Filed Mar. 9, 1887. Serial No. 230,170. (No model.)



Claim.—1. The needle-bar to carry a needle, the rotating shaft B, provided with quartering-cranks, the rotating shaft C^x located below the bed-plate parallel to the shaft B, an adjustable bearing to enable the centers of the said shafts to be varied with relation to each other, and two connecting-rods embracing the wrists of the said cranks, whereby the shaft B imparts rotation to the shaft C^x, combined with a rotating loop-taker, a short shaft B^x, and means, substantially as described, to rotate the shaft B^x from the shaft C^x, but at a different speed, as and for the purposes set forth.

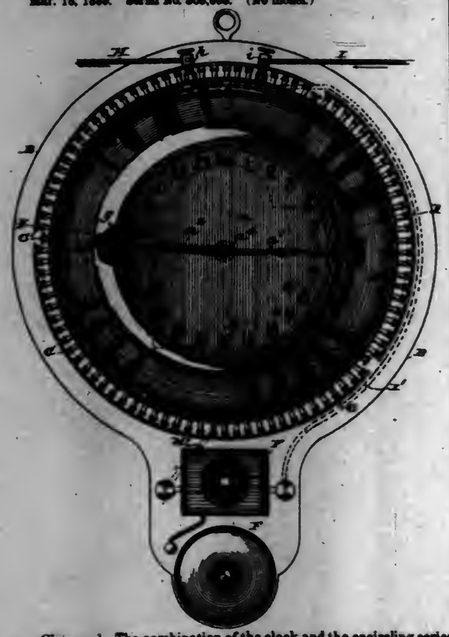
2. The feed-bar, the rock-shaft f^7, to move it forward and backward positively, and the rotating shaft C^x and its attached cam f^{16}, combined with the rock-shaft f^7, having the segmental arm f^{15} and the forked arm provided with toes to embrace the said cam, and with the arm f^{13} and radius-bar f^{14} and stud to engage the said segmental arm, the center of rotation of the said rock-shaft and the shaft C^x being in different planes, whereby the said cam is enabled to move the rock-shaft f^7 at a speed faster while the feed-bar is moving the material forward than when the said feed-bar is moving backward under the said material, substantially as described.

3. The feed-bar, the rock-shaft f^7, having an arm to support the free end of the feed-bar, and the forked arm f^9, having a slotted hub, and clamping-screw f^{10}, to clamp the said arm adjustably to the said rock-shaft, combined with the shaft C^x and cam thereon to raise the

said feed-bar, the adjustment of the arm g^3 on the rock-shaft g' enabling the feed-points of the feed-bar to be raised more or less above the throat-plate, substantially as described.

4. The bed-plate, the face-plate, the stud n^{19}, the presser-foot, the presser-bar, the slack-thread-controlling spring, and the pin or projection 26, made movable vertically with the presser-bar, combined with the notch-gear n^{21}, the segmental gear n^{20} engaged by it, the arm n^{16}, and stop for the controlling-spring, the position of the said stop being changed by the position of the presser-foot resting upon the stock under it and the take-up, substantially as described.

405,206. ELECTRIC ALARM-CLOCK. BENJAMIN DOMINICI, St. Louis, Mo., assignor of one-half to Charles P. Budd, same place. Filed Mar. 18, 1889. Serial No. 303,662. (No model.)



Claim.—1. The combination of the clock and the encircling series of pins, said clock having an arm rotating with its hour-hand shaft, and said pins being adjustable into and out of the path of said rotating arm, as and for the purpose described.

2. The combination of the clock, the arm rotating with its hour-hand, the frame, and the series of adjustable pins, said series being in a plane parallel with the clock-face, substantially as and for the purpose described.

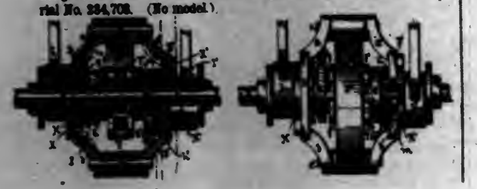
3. The combination of the clock, the arm rotating with its hour-hand, the frame, the series of adjustable pins, the wires, and the alarm, substantially as and for the purpose described.

4. The combination of the frame, the pin C, the pin-bearings, and the spring, said spring bearing upon said pin and also against said frame, substantially as described, and for the purpose set forth.

5. The combination of the clock having its graduation with the frame having its graduation, and the series of pins, substantially as and for the purpose described.

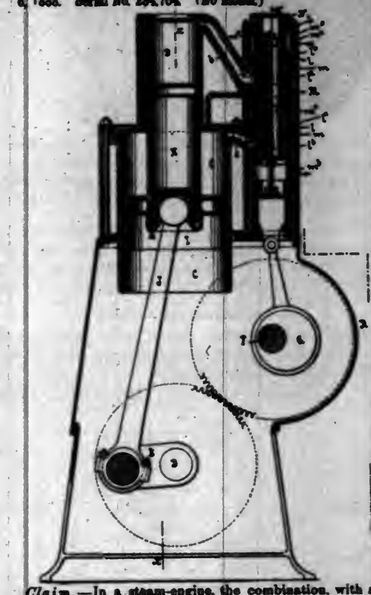
6. The combination of the clock having its graduation, the encircling frame having its graduation, the series of adjustable pins, the arm moving with the shaft a^4, and the electric alarm, substantially as described.

405,207. VALVE-GEAR. FREDERICK A. GARDNER, Catskill, N. Y., assignor to F. A. Gardner & Co., same place. Filed Sept. 6, 1888. Serial No. 284,703. (No model.)



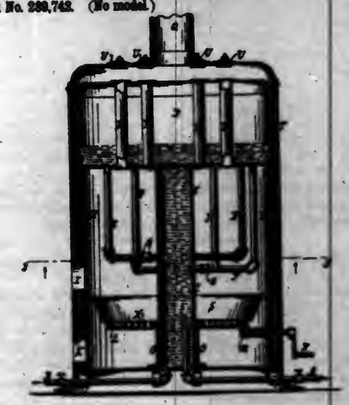
Claim.—The combination, with the shaft A, of two disks B B', pins $c c'$, mounted in said disks, weights D D', mounted on said pins, a transmitting-sleeve E', situated on the inside of the disk B' and connected to the weights by pins $i i'$, an eccentric disk g', formed on the transmitting-sleeve, a ring or strap N', fitted on this eccentric disk, the hollow eccentric H', connected to the disk B' by the pivot l', and the pin l', connecting the ring N' with the hollow eccentric H', substantially as described.

405,208. COMPOUND STEAM-ENGINE. FREDERICK A. GARDNER, Catskill, N. Y., assignor to F. A. Gardner & Co., same place. Filed Sept. 6, 1888. Serial No. 284,704. (No model.)



Claim.—In a steam-engine, the combination, with a series of primary and secondary steam-cylinders, their pistons, and a valve-chamber for each pair of cylinders, said valve-chamber provided with two ports leading one into the primary and the other into the secondary cylinder, of a casing surrounding each valve-chamber and provided with inlet and exhaust ports, a live-steam chamber and a storage-steam chamber formed in each of said casings and communicating with the inclosed valve-chamber, channels connecting the live-steam chambers and the storage-steam chambers of the several valve-chamber casings, and a valve located in the valve-chamber of each pair of primary and secondary cylinders for controlling communication between said cylinders and the live-steam chamber, storage-steam chamber, and exhaust-port, substantially as described.

405,209. STEAM-BOILER. FREDERICK A. GARDNER, Catskill, N. Y., assignor to F. A. Gardner & Co., same place. Filed Nov. 1, 1888. Serial No. 289,742. (No model.)



Claim.—1. In a steam-boiler, the combination, with a stand-pipe C, having a feed-pipe entering its lower end, of the drum D, arranged above and having the stand-pipe entering its bottom, the circulating-pipes of elbow shape, leading from the stand-pipe to said drum, and the flues P traversing said drum, substantially as described.

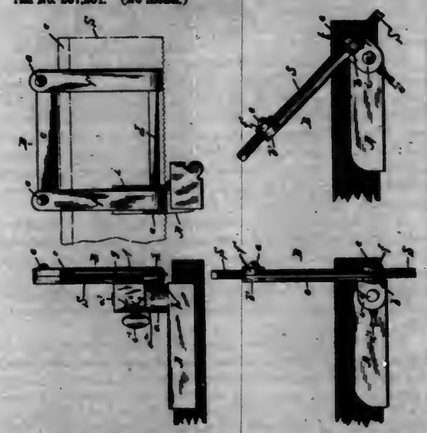
2. In a steam-boiler, the drum D, the stand-pipe entering its bottom, the elbow-shaped circulating-pipes E F, leading from the stand-pipe to the drum, and the flues P traversing the latter, substantially as described.

3. A steam-boiler composed of the shell T, the drum D, arranged above the stand-pipe C, the upper end of which communicates with the drum, the circulating-pipes leading from the stand-pipe into the drum, the fire-place H, the fire-flues P, extending through the drum D, and smoke-stack Q, leading from shell T, substantially as described.

4. The combination, with the shell T, the drum D, and the stand-pipe C, of the grate H, provided with a sleeve which fits the stand-pipe, the fuel-magazine S, and means, substantially as described, for imparting to the grate a revolving motion.

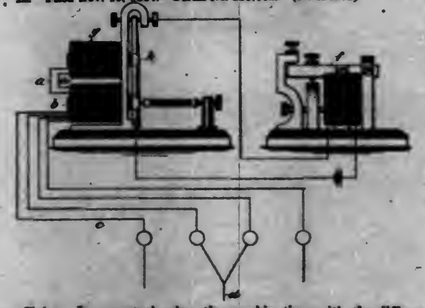
5. A steam-boiler composed of the drum D, arranged above the stand-pipe C, the upper end of which enters the drum D, the circulating-pipes leading from the stand-pipe into the drum, the fire-place H, the fire-flues P, extending through the drum D, the shell T, having hand-holes for the flues, and smoke-stack Q, leading from the shell T, substantially as described.

405,210. SAW-GUIDE. ALFRED GOULDING, Worcester, Mass., assignor of one-half to George C. Taft, same place. Filed Oct. 4, 1888. Serial No. 287,201. (No model.)



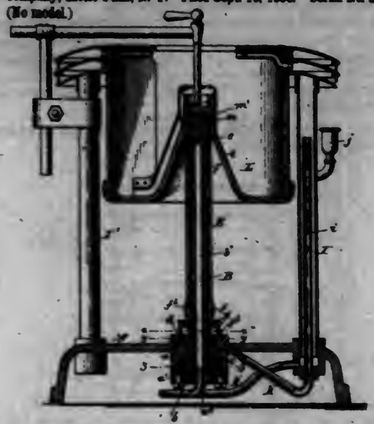
Claim.—In a saw-guide, the combination of a bed-plate having a depending flange with a lug and pin at one end, on which the saw-supporting frame is hinged, said supporting-frame consisting of the plates $b\ b'$ and plates $f\ f'$, the plate b provided with a hub adapted to turn on the pin a', the lug and hub provided, one with angle-marks and the other with a pointer to register with the angle-marks, and secured by a thumb-screw in the position desired, substantially as shown and described, and for the purpose set forth.

405,211. QUADRUPLEX TELEGRAPHY. CHARLES D. HASKINS, Brooklyn, N. Y., assignor to the Western Electric Company, Chicago, Ill. Filed Nov. 19, 1887. Serial No. 255,602. (No model.)



Claim.—In a neutral relay, the combination, with the differentially-wound electro-magnet, of an extra coil upon said electro-magnet and an extra electro-magnet included in circuit with said extra coil, said differentially-wound electro-magnet and said extra electro-magnet each being provided with a separate armature and said armatures being mounted upon the same lever, whereby currents induced in the extra coil energize the electro-magnet included in its circuit to prevent the armature of the said relay from falling away or kicking.

405,212. MEANS FOR LUBRICATING CENTRIFUGAL SEPARATORS. FREDERICK HANT, Poughkeepsie, assignor to D. H. Burrell & Company, Little Falls, N. Y. Filed Sept. 10, 1888. Serial No. 284,978. (No model.)



Claim.—1. The combination, with the drum, of a supporting-standard provided with an ascending oil-duct, a hollow spindle surrounding the standard, and an elevated oil-reservoir connected with the lower end of the oil-duct of the standard, substantially as set forth.

2. The combination, with the drum, of a supporting-standard provided with an ascending oil-duct, a hollow spindle surrounding the standard, a base provided with an oil-receiver below the lower end of the spindle, an elevated oil-reservoir, and pipes connecting said reservoir with the oil-duct of the standard and with the oil-receiver below the spindle, substantially as set forth.

3. The combination, with the base provided with an oil-receiver g, of a hollow supporting-standard B, a hollow spindle E, surrounding said standard, a hollow post I, provided with an upright oil-pipe i, arranged within the post, a pipe k, connecting the receiver g with the lower end of the pipe i, and a pipe k', connecting the lower end of the cavity of the post with the lower end of the hollow standard, substantially as set forth.

4. The combination, with the base provided with an oil-receiver g, of a standard B, provided with an oil-duct, a hollow spindle E, surrounding said standard and provided with an outwardly-projecting flange within the receiver g, an elevated oil-reservoir, and oil-circulating pipes connecting the oil-reservoir with the receiver g and the oil-duct of the standard, substantially as set forth.

5. The combination, with the drum, of a supporting-standard provided with an oil-duct, a hollow spindle surrounding the standard, a base provided with an oil-receiver below the lower end of the spindle and with a receptacle for the surplus oil above said oil-receiver, an elevated oil-reservoir, and circulating-pipes connecting the oil-reservoir with the oil-receiver and the oil-duct of the standard, substantially as set forth

6. The combination, with the drum, of a base provided with an annular oil-receiver g, a standard E, provided with an oil-duct, a hollow spindle surrounding the standard, an elevated oil-reservoir, circulating-pipes connecting said reservoir with the oil-duct of the standard and with the oil-receiver, and an annular receptacle H for the surplus oil, secured to the base above the oil-receiver g, substantially as set forth.

405,218. SECONDARY BATTERY. THOMAS H. HICKS, Detroit, Mich., assignor to the Hicks Induction-Light and Motor Company, of Michigan. Filed Aug. 2, 1888. Serial No. 281,770. (No model.)



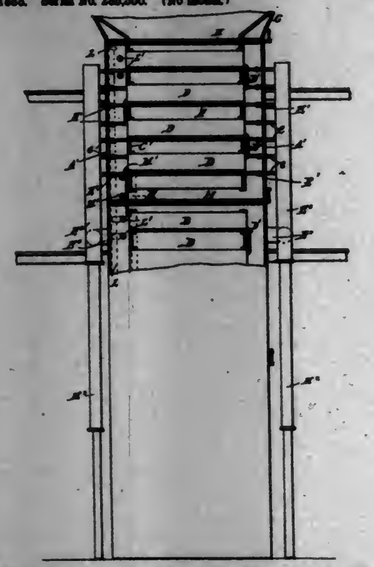
Claim.—1. A storage-battery comprising a containing-vessel, a

series of perforate carbon electrodes in said vessel, and a series of lead electrodes, each consisting of a mass of spongy lead inclosed on one side by a perforate, on the other side by an imperforate, wall, the imperforate wall being placed against one side of a carbon element and the perforate wall opposing the other side of the next carbon element, and a suitable conducting-liquid.

2. A storage-battery consisting of two dissimilar bodies, one consisting of a perforate and an imperforate lead plate inclosing a body of spongy lead between them, and the other consisting of carbon or its described equivalents, substantially as described.

3. A storage-battery comprising a series of like cells arranged in a common vessel, each cell consisting of a lead and carbon element, a conducting-liquid consisting of a mixture of dilute sulphuric acid and sal-ammoniac, said cells being separated from each other by a water-tight packing applied to the edges of one of the elements, substantially as described.

405,214. GRAIN-DRIER. JAMES HILL, Newark, N. J. Filed Aug. 21, 1888. Serial No. 283,350. (No model.)



Claim.—1. The combination, in a grain-drier, of a series of heating-cells extending across a closed drying-chamber and arranged in horizontal rows, a perforated pipe arranged under each heating-cell, and a main exhaust-pipe arranged outside of the drying-chamber and connected to each of the perforated pipes, substantially as described.

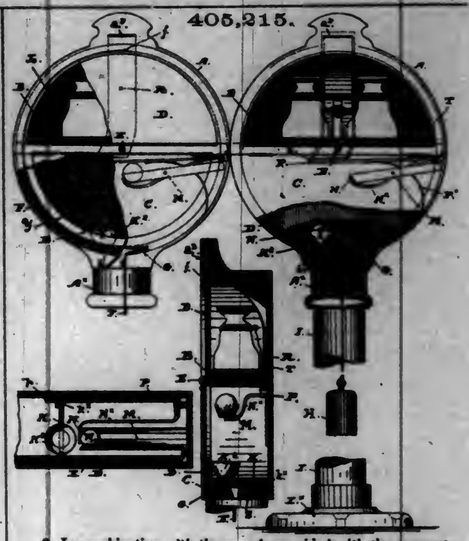
2. The combination, in a grain-drier, of a series of heating-cells extending across a closed drying-chamber and arranged in horizontal rows, the cells of alternate rows being arranged in different vertical planes, a perforated pipe arranged below each cell, a main exhaust-pipe arranged outside of the drying-chamber, and pipes leading from each of the perforated pipes to the exhaust-pipe, substantially as herein shown and described.

3. In a grain-drier, the combination, with a drying-chamber, of a series of heating-cells arranged in horizontal rows across the drying-chamber, each cell being of triangular shape in cross-section, with rounded under sides, and the cells of alternate rows being in different vertical planes and connected together, a perforated pipe arranged below each cell, a main exhaust-pipe outside of the drying-chamber, and pipes connecting each of the perforated pipes with the exhaust-pipe, substantially as herein shown and described.

405,215. COIN-ACTUATED RECEPTACLE. EDWARD C. JONES, San Francisco, Cal., assignor of one-half to William J. Gleason, same place. Filed Mar. 15, 1888. Serial No. 268,468. (No model.)

Claim.—1. The combination of a suitable case having the compartments X Y, the revolving shutter-disk composed of a solid portion, and an aperture in the part that is on the opposite side of the pivot to said solid portion of suitable size to afford access to the compartment X when brought in line therewith, the cord and weight as a means of turning said disk on its pivot to bring said aperture into position, a locking-lever arranged to hold the disk against the action of the weight, and mechanism adapted to be actuated by the weight of a coin of given denomination to move said locking-lever and release the shutter-disk, substantially as described.

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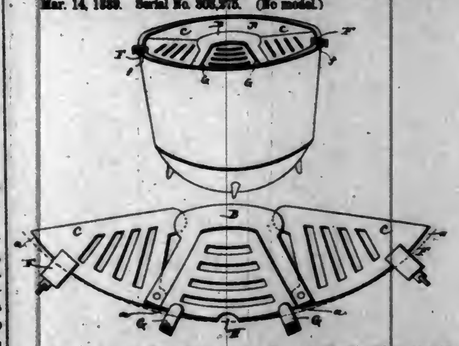


2. In combination with the case A, provided with the compartments X Y, the pivoted shutter-disk having an aperture of semicircular shape on one side of its pivot to correspond with the compartment X and afford access thereto, and a solid portion to close the front of said compartment when turned across such portion of the case, the weight and cord G H, locking-lever K, adapted to engage and hold the shutter-disk, the coin-chute, tripping-lever, ball-trough, gate-lever, and springs P S, applied to return the lever K to position, substantially as herein described, for operation as set forth.

3. The herein-described receptacle for opera-glasses, consisting of the case A, mounted on the pedestal and containing compartment X for the glass and compartment Y for the mechanism, the coin slit and chute delivering into the lower compartment, the revolving shutter-disk D, weight and cord G H, locking-lever K, tripping-lever, ball-holding trough, gate-actuating lever, and springs, substantially as set forth.

4. In combination with a suitable receptacle to receive an opera-glass for use at the chair or seat in a place of amusement and adapted to be fixed in position convenient thereto, a revolving shutter arranged to close the opening in the said receptacle, through which the glass may be removed or by its revolution to uncover said opening, the weight and cord as a means of moving said revolving shutter, a locking-lever holding said shutter closed across the opening, suitable mechanism arranged to be set in motion by the weight of a coin introduced into the receptacle, and through the action thereof to move the locking-lever and release the shutter, and a chain or cord attached to the glass and to the said receptacle, substantially as herein described, for operation as set forth.

405,216. STRAINER FOR KETTLES, &c. WILLIAM P. KENDRICK, Winfield, Iowa, assignor of one-half to H. L. Glass, same place. Filed Mar. 14, 1889. Serial No. 303,275. (No model.)



Claim.—1. An adjustable strainer for pots, kettles, &c., consisting of a series of sector-shaped sections, substantially as specified.

2. In a strainer, the combination of a central section and the side sections pivoted near their peripheries to the central section, the adjacent edges of the said sections overlapping each other, substantially as specified.

3. In a strainer, the combination of the central section provided on its under side with shoulders *b b*, and the side sections pivoted to the central section and sliding at their side edges under the adjacent side edges of the latter, substantially as specified.

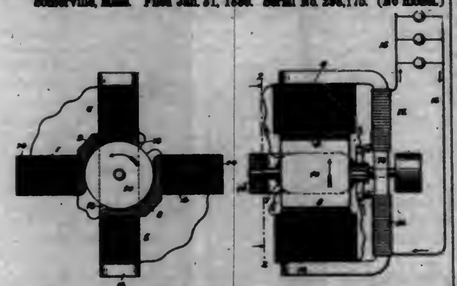
4. In a strainer, the combination of a central section provided with angular supporting-arms G G to bear on the upper edge of a vessel, and the side sections pivoted to the central section and provided with the clamps F F to fit over the edge of the vessel and engage the same, substantially as specified.

405,217. COMBINED RULER AND BLOTTER. RHODES LOCKWOOD, Boston, Mass., assignor to R. & P. C. Lockwood, same place. Filed Apr. 27, 1888. Serial No. 163,600. (No model.)



Claim.—As an improved article of manufacture, the within-described combined ruler and blotter, consisting of the thin sheet or shell of hard rubber or equivalent rigid material, having the bent ruling-edges *b b*, grooves or channels 2 2, the longitudinal depression *a* between the ruling-edges forming a trough for the travel of the user's fingers, and the blotting-paper *c*, substantially as set forth.

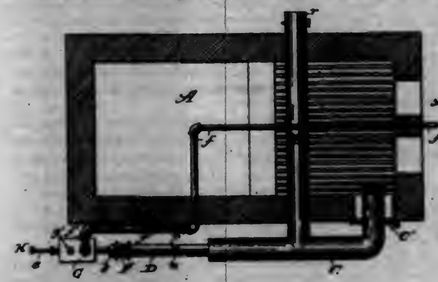
405,218. DYNAMO-ELECTRIC MACHINE. OSCAR P. LOOMIS, Somerville, Mass. Filed Jan. 31, 1889. Serial No. 298,175. (No model.)



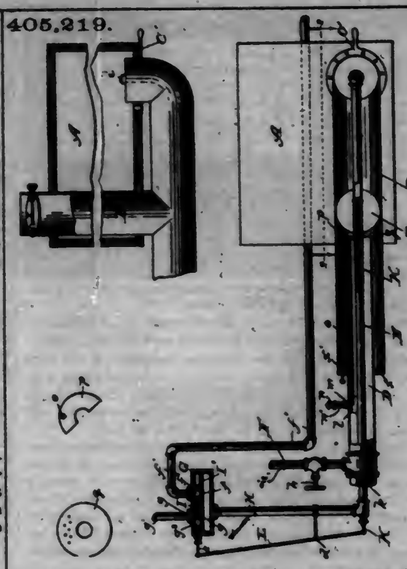
Claim.—1. A dynamo-electric machine consisting of two sets of shunt-magnets diametrically opposite, like poles being connected to a common pole-piece and having the outer ends of the opposite magnets of each set connected together by yokes, and series coils wound upon said yoke or yokes so as to generate a counterbalancing field of force and prevent the polar line from shifting.

2. The combination, in a dynamo-electric machine, of two sets of oppositely-arranged shunt-magnets 4 5 and 6 7, joined, respectively, to common pole-pieces 8 and 9, those of each set being of equal strength, yokes 13 and 14, connecting the outer magnet ends of the magnets 5 6 and 4 7 together, respectively, and serving as bearings for the armature, and series coils 11 and 12, wound upon said yoke or yokes, substantially as set forth, so as to set up a counterbalancing field of force to prevent the shifting of the polar line.

405,219. HYDROCARBON-OIL BURNER. FRANK W. MINSHALL, Marietta, Ohio. Filed Sept. 28, 1888. Serial No. 286,643. (No model.)



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Claim.—1. In a hydrocarbon-oil burner, the combination, with a fire-chamber, of a vaporizing-chamber C, having one end at which it leads into the fire-chamber entirely open, thereby affording an unobstructed discharge-orifice, an oil-pipe D, extending part way through the chamber C longitudinally thereof and opening into the latter, and a steam-pipe E, extending through the oil-pipe and vaporizing-chamber to near the discharge end of the latter, substantially as described.

2. In a hydrocarbon-oil burner, the combination, with a fire-chamber, of a vaporizing-chamber C, communicating with the fire-chamber, an oil-pipe D, extending part way through the chamber C longitudinally thereof and opening into the latter, a hot-air pipe B, leading into the vaporizing-chamber near the discharge end of the oil-pipe, and a steam-pipe E, extending through the oil-pipe and vaporizing-chamber to near the discharge end of the latter, substantially as described.

3. In a hydrocarbon-oil burner, the combination, with a fire-chamber, of a vaporizing-chamber C, an oil-pipe D, leading into the vaporizing-chamber and provided with perforations at its discharge end, a revoluble plate *p*, means for rotating the plate *p*, and a steam-pipe E, extending through the oil-pipe and chamber C and terminating in a jet *i* near the entrance of the fire-chamber, substantially as described.

4. In a hydrocarbon-oil burner, the combination, with a fire-chamber, of a vaporizing-chamber C, an oil-pipe D, leading into the vaporizing-chamber, a steam-pipe E, extending through the oil-pipe and chamber C, a valve I in the steam-passage, and a thermostat connected with the valve, substantially as and for the purpose set forth.

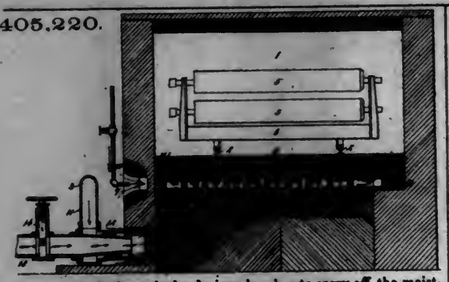
5. In a hydrocarbon-oil burner, the combination, with a fire-chamber, of a vaporizing-chamber C, an oil-pipe D, leading into the vaporizing-chamber, a steam-pipe E, extending through the oil-pipe and chamber C, a metal rod K, supported in the steam-pipe, and a valve I in the steam-passage connected with and actuated by the expansion and contraction of the rod K, substantially as and for the purpose set forth.

6. In a hydrocarbon-oil burner, the combination, with a fire-chamber, of a vaporizing-chamber C, communicating with the fire-chamber, an air-pipe B, leading through the fire-chamber into the vaporizing-chamber, an oil-pipe D, leading into the vaporizing-chamber, a steam-pipe E, extending through the oil-pipe and chamber C and leading into the fire-chamber, a metal rod K, supported in the steam-pipe, a steam-box G, communicating with the pipe E and provided with a valve I, connected with the rod K, a steam-pipe *f'*, passing through the fire-chamber, and a steam-pipe *f*, both steam-pipes *f'* and *f* leading into the box G, substantially as described.

405,220. DRYING-OVEN. PETER MCARTHUR, St. Louis, Mo., assignor to the Stickle, Harrison & Howard Iron Company, same place. Filed June 26, 1888. Serial No. 278,219. (No model.)

Claim.—1. In an oven for drying corn, &c., the combination of a drying-chamber, a combustion-chamber located beneath the drying-chamber with a communication between them, air and gas pipe discharging into the combustion-chamber, and a force-pipe which creates

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an upward draft through the drying-chamber to carry off the moisture from the cores, substantially as set forth.

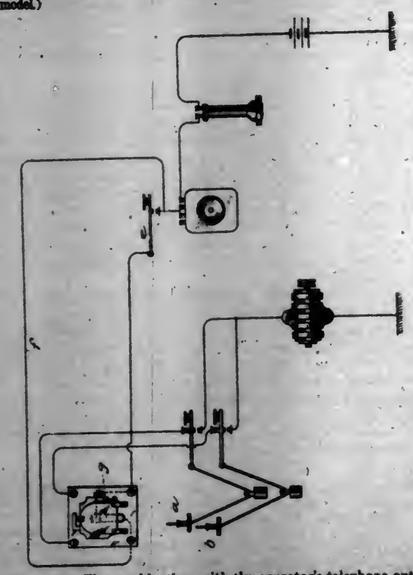
2. In an oven for drying cores, &c., the combination of the drying-chamber, combustion-chamber located beneath the drying-chamber, perforated arch between the chambers, combined air and force pipe arranged within the drying-chamber around the perforated arch, and a gas-pipe having an injector at one end to force a flame into the combustion-chamber, said air and steam pipe having connection with said injector, substantially as and for the purpose set forth.

3. In a drying-oven, the combination of the drying-chamber, combustion-chamber arranged beneath the drying-chamber, perforated arch between the chambers, combined air and steam pipe having a flaring end 9 and arranged at the bottom of the drying-chamber, steam-pipe 10, arranged in the mouth of the combined air and steam pipe, extension 11 on the combined air and steam pipe, injector 12, and gas-pipe 13, provided with a regulating-valve, all substantially as and for the purpose set forth.

4. In a drying-oven for cores, &c., the combination of the drying-chamber, perforated arch, combustion-chamber beneath the arch, combined air and steam pipe surrounding the perforated arch, injector with which the combined air and steam pipe communicates, and a gas-pipe communicating with said injector, substantially as and for the purpose set forth.

5. In a drying-oven for cores, &c., the combination of the drying-chamber, perforated arch, combustion-chamber beneath the arch, combined air and steam pipe surrounding the arch, and the apex of the arch extending up above the pipe, injector with which the combined air and steam pipe communicates, and a gas-pipe communicating with said injector, substantially as and for the purpose set forth.

405,221. TESTING APPARATUS FOR SWITCH-BOARDS. WILLIAM E. MCKINNEY, St. Paul, Minn., assignor to the Western Electric Company, Chicago, Ill. Filed Dec. 18, 1888. Serial No. 293,963. (No model.)



Claim.—1. The combination, with the operator's telephone outfit, of the key *e* in a circuit connecting with a pair of cords, the clearing-out annunciator, and the circuit-closer operated by the shutter of the drop and the branch circuit *f* around the key *e*, whereby the operator may at will connect with the pair of cords, while either of two subscribers connected through the cords may close the circuit of branch *f* at the annunciator, substantially as and for the purpose specified.

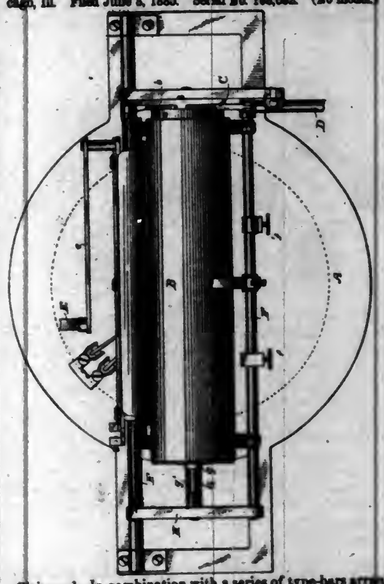
2. The combination, with the pair of cords, including a clearing-out annunciator, of a telephone-circuit, including a battery and a circuit-closer operated by said annunciator-drop to connect together the circuit containing the telephone and the pair of cords.

3. The combination, with the pair of cords, including a clearing-out annunciator, of a telephone-circuit, including a test-battery, a circuit-closer operated by said annunciator-drop to connect together the branch circuit, containing a telephone and battery, and the conductor between the plugs, substantially as and for the purpose specified.

4. The combination, with a normally-open telephone-circuit extending from the clearing-out annunciator to earth and including a battery, of a circuit-closer included in the conductor connecting a pair of plugs and a branch circuit, including a key *e*, said branch being connected with the flexible conducting-cords of said pair of plugs, substantially as and for the purpose specified.

5. The combination, with the annunciator, of a circuit-closer operated by the falling of the annunciator, a pair of cords and their terminal plugs, including the clearing-out annunciator, a telephone and battery included in a ground-circuit branched through the circuit-closer of the clearing-out annunciator, the conductor between the plugs, and the switches upon the switch-board, whereby on connecting either plug with a switch upon the switch-board the battery will be closed through the telephone to said switch, substantially as and for the purpose specified.

405,222. TYPE-WRITING MACHINE. JOSEPH G. PARKINSON, Chicago, Ill. Filed June 3, 1885. Serial No. 168,092. (No model.)

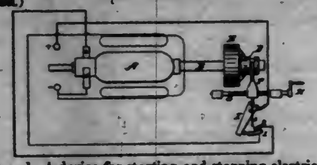


Claim.—1. In combination with a series of type-bars arranged to strike at a common point, a paper-carriage movable relatively to said point, and a feed-roll or roller-platen mounted in said carriage, the carriage being extended or elongated considerably in excess of the length of travel of the carriage, and the excess being mainly at the left-hand end of the carriage, whereby space is afforded between the initial printing-point and the end of the carriage for the blank margin of the sheet to be printed.

2. The combination, substantially as hereinbefore set forth, in a type-writer, of the feed-roll, its carriage having the side bars thereof extended a considerable distance beyond the end of the feed-roll at the left hand, the axle of the feed-roll elongated at the left hand, and the cross-bar uniting said side bars and affording a journal for the axle in such a manner as to leave an uninterrupted space for the passage of the blank margin of the sheet of paper that is being printed.

3. The combination, substantially as hereinbefore set forth, in a type-writer, of the feed-roll and traversing carriage therefor, the side bars of the carriage elongated beyond the left-hand end of the feed-roll, the axle of the feed-roll correspondingly elongated, the cross-bar uniting the side bars and having a bearing for the axle, and the sleeve interposed between the cross-bar and the feed-roll to prevent endwise movement thereof.

405,223. ELECTRIC MOTOR STARTING AND STOPPING DEVICE. FRANK A. PERRET, Brooklyn, N. Y., assignor to the Electron Manufacturing Company, of New York. Filed Feb. 6, 1889. Serial No. 298,845. (No model.)



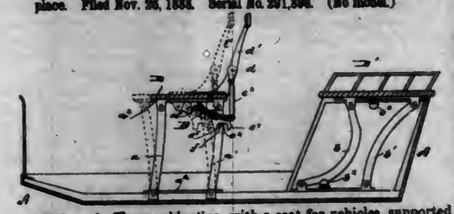
Claim.—1. A device for starting and stopping electric motors, consisting of a movable lever or handle mechanically controlling the power-transmitting mechanism and electrically controlling the admission of current to the armature and field-magnet circuits of the motor, the arrangement being such that the movement of said lever or handle in one direction operates first to admit current to the field and armature circuits and then to gradually throw on the load, and its movement in the opposite direction operates first to throw off the load and then to open the said circuits.

2. The combination of an electric motor, a shaft or pulley driven thereby, and an interposed power-transmitting mechanism—such as a clutch or belt-shifter—adapted to mechanically connect said motor and transmitting mechanism into operative engagement with an electric switch dependent upon the movement of said transmitting mechanism into or out of engagement and arranged to close the motor-circuits before complete engagement of the power-transmitting mechanism.

3. The combination of an electric motor, a shaft or pulley driven thereby, and a power-transmitting mechanism—such as a clutch or belt-shifter—adapted to mechanically connect said motor and transmitting mechanism into operative engagement, with an electric switch dependent upon the movement of said transmitting mechanism into or out of engagement and arranged to close first the field-circuit of the motor and then its armature-circuit before complete engagement of the power-transmitting mechanism.

4. The combination, with an electric motor and its power-transmitting mechanism—such as a shaft or pulley—of an interposed mechanical connection, means for operating said mechanical connection and for opening the motor-circuit, and an electro-magnet in the motor-circuit controlling the said mechanical connection and adapted for operation upon the passage of an abnormal current in the motor-circuit.

405,224. SHIFTING SEAT FOR VEHICLES. FRANK RISSINGER, Springfield, Ohio, assignor of one-half to Charles C. Adelsperger, same place. Filed Nov. 26, 1888. Serial No. 291,894. (No model.)



Claim.—1. The combination, with a seat for vehicles, supported on pivoted legs and adapted to fold, as described, of a pivoted locking-arm connected to one of the moving parts of said seat and a stop projection on one of the other moving parts, a hinged lazy-back on said seat, and a direct connection from the hinged portion of said lazy-back to the pivoted arm, substantially as and for the purpose set forth.

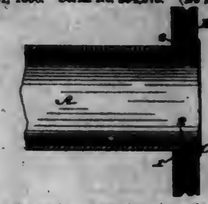
2. The combination, with a folding seat supported on pivoted legs, as described, of a locking-arm pivoted to said seat and provided with a stop projection, a lug or projection on one of the legs adapted to engage with said stop projection, a hinged lazy-back on said seat, and a connecting-arm adapted to form a direct connection between the hinged portion of said lazy-back and the pivoted locking-arm, substantially as described.

3. The combination, with a folding seat supported on pivoted legs, as described, of a pivoted locking-lever having the straight arm *e* and the laterally-curved arm *e'*, a stop projection on the said straight arm adapted to come in contact with a projection on one of the supporting-legs, a hinged lazy-back on the said seat, provided with laterally and downwardly-extending arm, which passes below the pivoted point thereof, and a connecting-rod from the said arm to the curved arm *e'* of said pivoted lever, substantially as specified.

4. The combination, with a folding seat pivoted on supporting-legs, as described, of a pivoted locking-lever connected to said seat and adapted to engage with a stop projection on one of said legs and hold the said seat against movement in one direction, a hinged lazy-back on said seat, a connecting-arm attached to the hinged portion of said lazy-back at a point removed from the pivotal center thereof and at the other end to the pivoted locking-lever, and a positive stop for said seat in the other direction, substantially as specified.

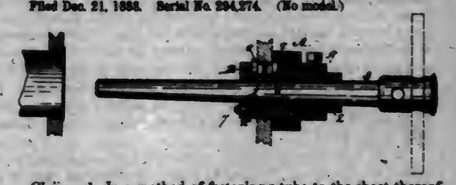
5. The combination, with a folding seat supported on pivoted legs, as described, of a locking-arm D, pivoted to said seat and provided with a projecting arm *e*, having a stop projection e^2, a curved arm *e'*, a connecting-rod e^3, a lazy-back having a hinged portion *d'*, and an extending arm d^2, said connecting-arm being connected to said arm d^2, substantially as and for the purpose set forth.

405,225. BOILER-TUBE FASTENING. HENRY SCHAUBEL, Philadelphia, Pa., assignor of one-half to Henry W. Miller, Jr., same place. Filed Dec. 21, 1888. Serial No. 294,273. (No model.)



Claim.—A tube with a swaged tongue thereon, in combination with a tube-sheet, the opening whereof having in its wall a swaged groove which receives said swaged tongue, forming an improvement in tube-fastenings, as stated.

405,226. FASTENING BOILER-TUBES. HENRY SCHAUBEL, Philadelphia, Pa., assignor of one-half to Henry W. Miller, Jr., same place. Filed Dec. 21, 1888. Serial No. 294,274. (No model.)



Claim.—1. In a method of fastening a tube to the sheet thereof, the herein-described method of forming a groove in the wall of the opening of the tube-sheet, consisting in swaging said wall to form a groove for receiving the tongue on the tube, substantially as described.

2. The herein-described method of fastening a tube to the sheet thereof, consisting in swaging a groove in the wall of the opening of the tube-sheet, inserting a tube into said opening, and then swaging said tube to form an exterior tongue which enters said swaged groove in the tube-sheet, substantially as described.

405,227. BOILER-STAY. HENRY SCHAUBEL, Philadelphia, Pa., assignor of one-half to Henry W. Miller, Jr., same place. Filed Jan. 24, 1889. Serial No. 297,376. (No model.)

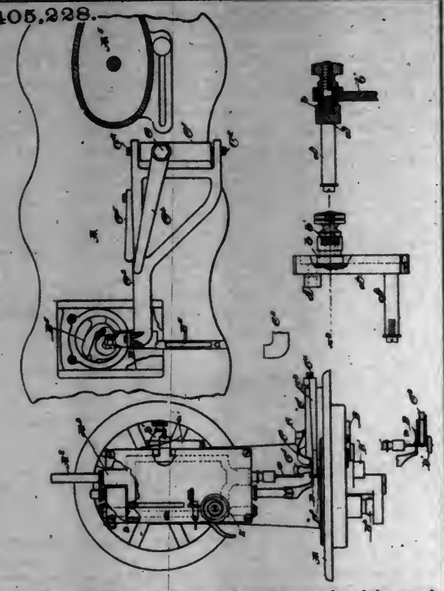


Claim.—1. A boiler-stay consisting of a tube, tube-sheet, bolt, and nut, the tube having a tongue and shoulders on its periphery, and the walls of the openings of the sheet being grooved, said tongue entering the groove in the tube-sheet and said shoulders embracing opposite sides of the sheet, the parts named being combined substantially as described.

2. A boiler-stay consisting of a tube, bolt, and nut, substantially as described, the head of the bolt and the nut having grooves on their inner faces, as stated.

405,228. SEWING-MACHINE FOR SECURING STAY-CORDS AND THRUM ENDS. ALBERT SHEA, Boston, Mass., assignor to John Rosco, same place. Filed Apr. 11, 1888. Serial No. 270,338. (No model.)

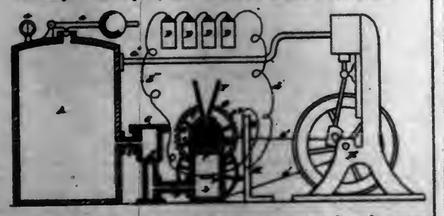
405,228.



Claim.—1. In a machine for stitching stay-cords and thrum ends, stitch-forming mechanism and feeding mechanism to produce an over-seaming-stitch, the feeding-bar having its teeth formed to move the material toward the toe of the presser-foot, combined with a presser D and thrum-gathering surfaces, and with the bar or guide C^2 interposed between the feed and presser-foot and over which the material to be stitched is bent, as described, whereby the needle at one descent is made to enter and emerge from the same side of the material at one side of the stay-cord and thrum ends, and at its next descent to enter and emerge from the same side of the material, but at the opposite side of the said stay-cord and thrum ends, to operate substantially as described.

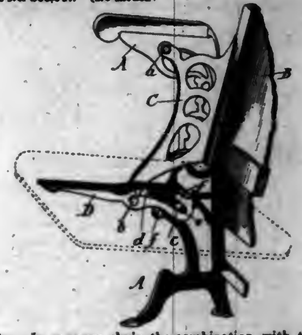
2. In a sewing-machine for securing the stay-cord and thrum ends in the stitching of button-hole pieces, the following instrumentalities, viz: an eye-pointed thread-carrying needle and complemental stitch forming and feeding mechanism to produce an overseaming-stitch as desired, means to collect the thrum ends parallel to and about the stay-cord, a guide or bar having its effective end at right angles to the direction of the feed of the material, the needle in its operation entering the material and emerging therefrom at one and the same side thereof, and at one side of the collected stay-cord and thrum ends, and at its next descent entering said material in like manner, but at the other side of the collected stay-cord and thrum ends, the combination being and operating substantially as described.

405,229. POWDER-GAS BOILER FOR ENGINES. OTTO SCHNEIDER, Louisville, Ky., and HEINRICH SCHNEIDER, Oberstein-on-the-Nahe Germany. Filed Sept. 7, 1888. Serial No. 284,833. (No model.)



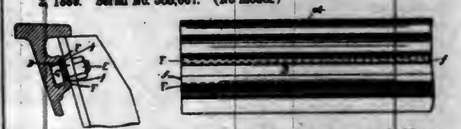
Claim.—A powder-gas boiler for engines, consisting of a strong boiler provided with pressure-gage, safety-valve, and exit-pipe, in combination with a feeder or generator consisting of a strong casting with a circular cell through it, a cylinder with a recess in it fitting closely in the cell, an explosion-chamber in the casting below the cell, a valved passage-way connecting the explosion-chamber with the boiler, a funnel on the casting, a shaft or hole through the casting from the pipe of the funnel to the cell, a shaft or opening from the cell to the explosion-chamber, a wheel turning on the same axle as the cylinder and furnished with a projecting thumb to close the electric circuit, and an electric battery to explode the powder, substantially as described, and for the purpose specified.

405,230. OPERA-CHAIR. DANIEL SCHUSTER, Chicago, Ill., assignor to the A. H. Andrews & Company, same place. Filed July 23, 1888. Serial No. 280,847. (No model.)



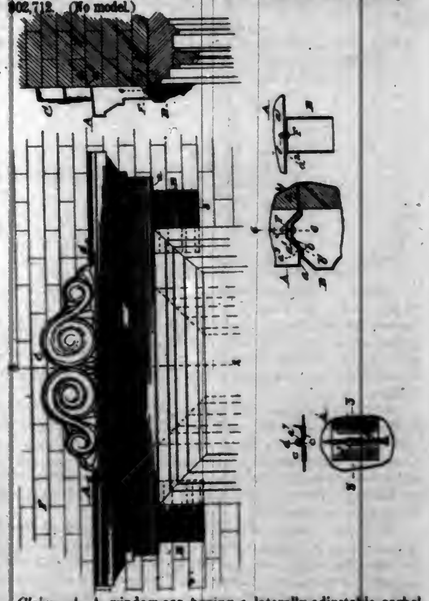
Claim.—In an opera-chair, the combination, with the standards A, each provided with pins *c*, wings C, pivoted at *a* to the standards, and back B, secured to said wings, of the seat-arms D, each provided with a curved slot *d*, which slots extend rearwardly and downwardly and engage the pins *c*, said seat-arms being pivoted to the wings C at a point in front of the slots *d*, substantially as described.

405,231. SLOT-RAIL FOR CABLE ROADS. MAX. M. SUTTER, Johnstown, Pa., assignor to the Johnson Company, of Kentucky. Filed Apr. 2, 1888. Serial No. 305,667. (No model.)



Claim.—A slot-rail provided with a channel adapted to hold bolts by means of which to secure said rail in its roadway.

405,232. WINDOW-CAP. HERBERT SYMONDS, St. Louis, Mo., assignor to Mosher & Bro., same place. Filed Mar. 9, 1889. Serial No. 302,712. (No model.)



Claim.—1. A window-cap having a laterally-adjustable corbel, for the purpose described.

2. A window-cap having the removable top portion C, substantially as and for the purpose described.

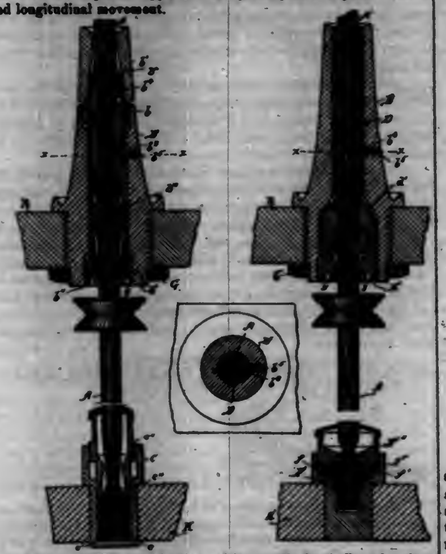
3. The cap grooved at *a'*, in combination with the corbel having the tongue and the bolt F, substantially as described.

4. The combination of the wall, the cap, the corbel, and the bolt, said corbel having the part *b'* and said cap having the part a^3, whereby the corbel as it is drawn upward is tightened against the wall, as described.

5. The combination of the cap having the eyelet, the portion C, having the perforated lug, and the key, as described.

405,233. SUPPORT FOR SPINNING-SPINDLES. ROLLIN WHITE, Lowell, assignor to William F. Draper, Hopedale, Mass. Filed Apr. 26, 1888. Serial No. 271,949. (No model.)

Brief.—The object of the invention is to provide an improved construction of spindle-support, whereby the spindle may have lateral and longitudinal movement.

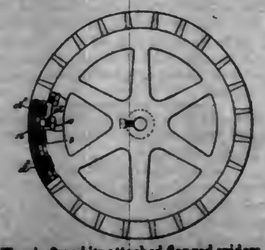


Claim.—1. The combination, with a vertical spindle, a bearing-case, a loose lateral bearing having a tapering exterior surface, and a yielding or flexible packing interposed between the said case and bearing, of a plug having a tapering seat to act upon and more or less compress the said packing between the tapered portions of the plug and bearing, thereby more or less limiting the freedom of motion of the bearing in the said case, substantially as described.

2. A vertical spindle, a bearing-case, a loose lateral bearing therein having a tapering exterior surface, a yielding packing interposed between the said case and bearing, and means to restrain the rotation of the said lateral bearing, combined with a plug having a tapering seat to act on the said packing and compress it to limit the extent of lateral movement of the said bearing, substantially as described.

405,234. CYLINDER FOR CARDING-MACHINES, &c. GEORGE O. WHEELER, Lawrence, assignor to the Davis & Furber Machine Company, North Andover, Mass. Filed July 30, 1888. Serial No. 281,396. (No model.)

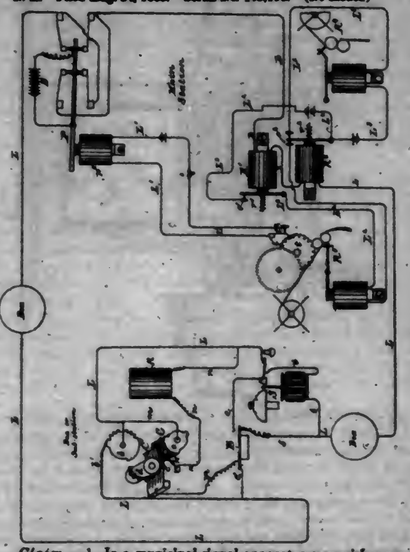
Brief.—The object of the invention is to provide a cylinder of great strength and durability and at the same time to reduce the weight thereof.



Claim.—1. The shaft and its attached flanged spiders, having projections 3 and openings 4, combined with the hollow metallic lags shaped to embrace the said projections, and having pockets, and with bolts to confine the said lags to the said flanges, substantially as described.

2. The spiders, the metallic lags having tapered or beveled sides, and means to connect the lags to the spiders, combined with wedge-shaped nail-holding strips inserted in spaces between the sides of the adjacent lags, and held therein by the said beveled sides of the lags, substantially as described.

405,235. MUNICIPAL SIGNAL APPARATUS. JOHN C. WILSON, Boston, Mass., assignor to the Municipal Signal Company, Portsmouth, N. H. Filed Aug. 24, 1885. Serial No. 175,186. (No model.)



Claim.—1. In a municipal signal apparatus comprising a main station and one or more sub-stations connected by an electric circuit, a multiple signal-transmitting apparatus and a signal-receiving instrument at the sub-station, and a signal-receiving instrument and a signal-transmitting apparatus at the main station, combined with an electro-magnet for effecting the operation of said signal-transmitting apparatus at the main station, a circuit-wheel, as *t*, for changing the condition of the circuit of said electro-magnet, and a circuit-controlling switch also included in said circuit, substantially as described.

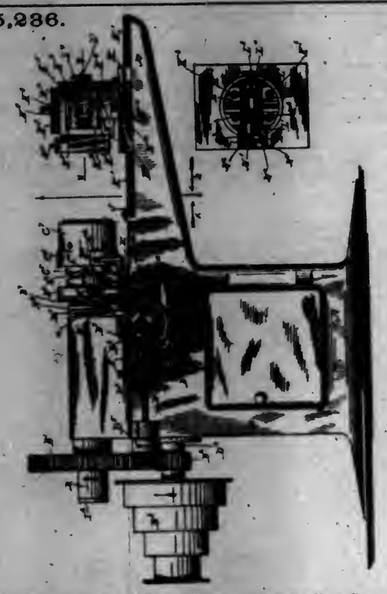
2. In a municipal signal apparatus comprising a main station and one or more sub-stations connected by an electric circuit, a multiple signal-transmitting apparatus and a signal-receiving instrument at the sub-station, and a signal-receiving instrument and a signal-transmitting apparatus at the main station, combined with an electro-magnet for effecting the operation of said signal-transmitting apparatus at the main station, a circuit-wheel, as *t*, for changing the condition of the circuit of said electro-magnet, motor mechanism for revolving said circuit-wheel set in operation by the magnet of the signal-receiving instrument at the main station, and a circuit-controlling switch also included in said circuit, substantially as described.

3. In a municipal signal apparatus comprising a main station and one or more sub-stations connected by an electric circuit, a multiple signal-transmitting apparatus and a polarized signal-receiving instrument at the sub-station, and a signal-receiving instrument as a register, and pole-changing key at the main station, combined with an electro-magnet for operating said pole-changing key, a circuit-wheel, as *t*, for changing the condition of the circuit of said electro-magnet, said circuit-wheel being mounted on one of the shafts of the said signal-receiving instrument at the main station to be rotated thereby, substantially as described.

405,236. BOLT-THREADING MACHINE. ASAHEL WOOD, Worcester, Mass., assignor to Cornelius Gray, same place. Filed Jan. 21, 1886. Serial No. 261,540. (No model.)

Claim.—1. The combination, with a hollow revolving spindle and a die-carrying spindle held concentrically in said hollow spindle, of a rack having a sliding motion, and so connected with said die-carrying spindle as to impart a longitudinal sliding motion thereto, a shaft journaled transversely to said sliding rack, a pinion on said transverse shaft engaging said rack, a rotating driving-shaft and connections and clutching mechanism, substantially as described, whereby the transverse shaft and the rotating driving-shaft are connected and disconnected at will, as and for the purpose set forth.

405,286.



2. The combination, with a hollow revolving spindle, a die-carrying spindle held concentrically within said hollow spindle, a transverse shaft carrying a pinion and a bevel-gear, and a sliding rack engaged by the pinion on said transverse shaft, said rack being so connected with said die-carrying spindle as to impart a sliding motion thereto, of a bevel-gear journaled by its hub and engaging the bevel-gear on said transverse shaft, a shaft passing loosely through the journaled hub of said bevel-gear, and a clutching device by which said shaft is connected or disconnected with the hub of said bevel-gear, substantially as described.

3. The combination, with a sliding plate connected with the die-holding mechanism and provided with a toothed rack, and a transverse shaft having a pinion engaging said toothed rack, of a driving-shaft connected with said transverse shaft through a clutch-connection, a lever pivoted on the frame of the machine, a sliding bar carrying a forked arm and connected with said pivoted lever, and a retractile spring applied to said sliding bar to disengage said clutch-connection, substantially as described.

4. The combination, with a sliding rack connected with the die-holding mechanism, a transverse shaft carrying a pinion engaging said rack and connected with the driving-power through a clutch-connection, and a clutch-operating mechanism consisting of the lever D^{10}, bar D^{11}, forked arm D^{14}, and retractile spring D^{16}, of the bent latch G, arranged to engage said lever D^{10} and hold it against the tension of the retractile spring, spring G', and bent rod H, attached to the sliding rack, whereby the sliding motion of the rack is limited in one direction by disengaging the clutch-connection of the transverse shaft, substantially as described.

5. The combination, with the radially-moving die-blocks C C, wedge-shaped actuating-blocks C^3, bars C^4, carrying cam-rolls C^5, and sleeve B^2, having a cam-slot B^3, of the pockets N, as and for the purpose set forth.

6. The combination, with the radially-moving die-blocks and connected operating mechanism, substantially as described, of the detachable screw-cutting plates *e*, attached to and inserted in the sides of said die-blocks, and attaching-screws *f*, substantially as described.

7. The combination of a hollow revolving spindle, a sliding spindle held concentrically in said hollow spindle and receiving rotary motion therefrom, and a hollow core held concentrically in said sliding spindle and so attached to said outer hollow revolving spindle as to be held from longitudinal movement, substantially as described.

8. The combination of hollow spindle B, sliding spindle B^4, hollow core I, collar I^3, attached to the spindle B, and connecting-tube I^2, as and for the purpose set forth.

9. The combination of screw-cutting dies inclosed within a sleeve C^7, having wing-shaped projections, sleeve B^2, having a cam-slot B^3 and provided with ratchet-shaped teeth B^{11}, said cam-slot actuating said sleeve C^7 to open and close the cutting-dies, substantially as described, spindle F, levers F^2 and F^3, spring F^4, and latch F^5, all arranged and operating as and for the purpose set forth.

10. The combination, with the die-holding mechanism having a longitudinal sliding movement, whereby the cutting-dies are fed to the work, and with mechanism for opening and closing said cutting-dies, substantially as described, of a spring by which said opening and closing mechanism is set in operation, a spring latch for retaining the opening and closing mechanism, and a stop attached to the framework of the machine in the path of said retaining-latch, whereby said opening and closing mechanism is set in operation to open the dies, substantially as described.

11. The combination, with mechanism for rotating the screw-cutting dies and for imparting a longitudinal feeding motion to said dies, substantially as described, of the plate K, adjustably attached to the stand A, rotatable turret mounted on said plate and carrying the three sets of bolt-gripping jaws K^2, K^4, and M M', and a sliding center L, substantially as described.

12. The combination, with mechanism for rotating the screw-cutting dies and for imparting a longitudinal feeding motion to said dies, substantially as described, of a rotatable turret carrying a center and devices for dogging the bolt and preventing its rotation, substantially as described.

13. The combination, with mechanism for rotating the screw-cutting dies and for imparting a longitudinal feeding motion to said dies, substantially as described, of a rotatable turret, a pair of jaws for gripping the bolt, and a center which is adjustable with reference to said cutting-dies, substantially as described.

14. The combination of plate K, rotatable turret K^3, jaws K^2 K^4, spindles having right and left hand screw-threads K^6 K^6, and gears K^7, and intermediate actuating-pinions K^8, substantially as described.

15. The combination, with screw-cutting dies and with the mechanism for rotating the same and imparting a longitudinal feeding motion to said dies, substantially as described, of the plate K, capable of being adjustably attached to the supporting-stand A, rotatable turret K^3, jaws K^2 K^4, spindles having right and left hand screw-threads K^6 K^6, gears K^7, intermediate actuating-pinions K^8, and a spring-actuated bolt K^{10}, by which said turret is held from rotation, substantially as described.

405,287. FODDER-BINDER. HERMAN R. FAIRCHILD, Diller, Nebr. Filed Feb. 13, 1889. Serial No. 299,774. (No model.)



Claim.—1. The combination of the two levers A, provided with cutting-edges or shears, holes through which the binding-wire is passed, and a projection on one of the levers to which one end of the wire is fastened, substantially as shown.

2. A shock-binder composed of the two pivoted levers provided with holes through which the wire is passed, grooves extending from these openings to the ends of the jaws and in which the wire is made to catch, a projection D upon one of the jaws, and cutting-edges or shears for severing the wire or cord after it has been twisted around the shock, substantially as set forth.

3. In a shock-binder, the combination of two pivoted levers provided with shears or cutters, and holes through which the wire is passed, with a spool for holding the binding-wire mounted on one of the levers, and a gravity-dog mounted in the same lever for holding the spool while the wire is being twisted, and adapted to be thrown into an engagement with the spool when the levers are closed, substantially as shown.

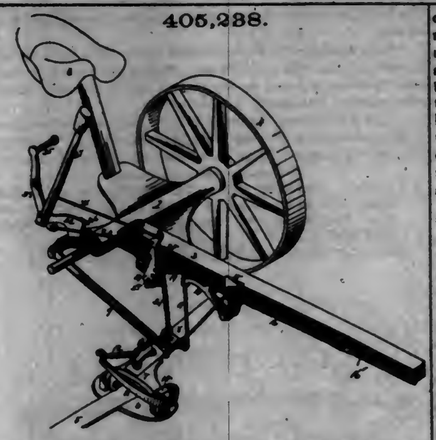
4. The combination of the two pivoted levers provided with holes through which the binding wire or cord is passed, grooves extending from the holes to the ends of the jaws for the wire to catch in, and cutting-edges or shears upon the levers, a spool for holding the wire, and a locking device for holding the spool from revolving while the wire is being tightened around the shock, substantially as described.

5. In a shock-binder, the combination of two pivoted levers provided with holes through which the wire is passed and a projection upon one of the levers and around which the end of the wire is fastened, a spool upon which the wire is wound, and a device for preventing the spool from unwinding while the wire is being twisted, substantially as set forth.

405,288. MOWER. JAMES H. JOHNS, Rockford, Ill., assignor to The Emerson, Talcott & Company, same place. Filed July 7, 1887. Serial No. 243,643. (No model.)

Claim.—1. In a mowing-machine, the combination, with the coupling-bar portion of a cutting apparatus and the finger-bar portion of the cutting apparatus hinged thereto, of a counterbalance spring arm or rod and a link, the free ends of the link and spring arm or rod being connected together, and the said spring arm or rod and link being connected at their opposite ends, the former with the finger-bar portion of the cutting apparatus and the other with the coupling-bar portion of the cutting apparatus, whereby the free end of the finger-bar portion of the cutting apparatus is counterbalanced, substantially as set forth.

405,288.



2. In a mowing-machine, the combination, with the coupling-bar portion of the cutting apparatus and the finger-bar portion of the cutting apparatus hinged thereto, of a curved counterbalance spring arm or rod for the free end of the finger-bar portion of the cutting apparatus, the said spring arm or rod being secured at one end to the finger-bar portion of the cutting apparatus, and a link connecting its other end to the coupling-bar portion of the cutting apparatus, substantially as set forth.

3. The combination, with the coupling-bar portion of the cutting apparatus and the finger-bar portion of the cutting apparatus hinged thereto, of a curved counterbalance spring arm or rod fixed to the finger-bar portion of the cutting apparatus, and a link connecting the free end of the spring arm or rod to the coupling-bar portion of the cutting apparatus, the said link being made adjustable in its connection with the coupling-bar portion of the cutting apparatus, substantially as set forth.

4. The combination, with a coupling-bar portion of the cutting apparatus and a finger-bar portion of the cutting apparatus hinged to the coupling-bar portion of the cutting apparatus, of a support rising from the finger-bar portion of the cutting apparatus, a counterbalance-spring fixed to the support, and a link connecting the free end of the spring with the coupling-bar portion of the cutting apparatus said link made adjustable in its connection with the coupling-bar portion of the cutting apparatus, substantially as set forth.

5. The combination, with the main frame, the finger-bar portion of the cutting apparatus, and the rising and falling coupling-bar portion of the cutting apparatus connecting the finger-bar portion of the cutting apparatus with the main frame, of a compensating counterbalance spring and lever connecting the coupling-bar portion only of the cutting apparatus with the main frame, substantially as set forth.

6. The combination of a main frame, a rising and falling cutting apparatus connected at one end to the main frame, a counterbalance-spring for the free end of the finger-bar portion of the said cutting apparatus, and a compensating counterbalance lever and spring connecting the coupling-bar portion of the cutting apparatus and the main frame, substantially as set forth.

7. The combination, with a main frame, a rising and falling cutting apparatus connected at one end to the main frame, a counterbalance-spring for the free end of the finger-bar portion of the said cutting apparatus, a lever and spring compensating counter-balance connecting the main frame and coupling-bar portion of the cutting apparatus, a hand-lever pivotally secured to the main frame, an intermediate lever pivotally secured to the main frame, a link-connection between the intermediate lever and coupling-bar portion of the cutting apparatus, and a link-connection between the intermediate lever and hand-lever, substantially as set forth.

8. The combination of a main frame, an operating hand-lever pivoted to the main frame, a rising and falling cutting apparatus connected at one end to the main frame, a bracket-support secured to the main frame intermediate of the hand-lever and cutting apparatus, an intermediate lever pivoted to the bracket-support, a stop on the intermediate lever in position to engage the bracket-support to limit the forward throw of said lever, and a link-connection between the hand-lever and intermediate lever and between the intermediate lever and cutting apparatus, substantially as set forth.

9. The combination of a main frame, an operating hand-lever pivoted to the main frame, the rising and falling cutting apparatus connected at one end to the main frame, a bracket-support for the intermediate lever fixed to the main frame intermediate of the hand-lever and the cutting apparatus, the intermediate lever pivoted to the bracket-support, a stop carried by the intermediate lever in position to engage the bracket-support to limit the forward throw of the said lever, said stop being made adjustable in its connection with said intermediate lever to vary the amount of throw of said lever, a link-connection between the operating-lever and intermediate lever and between the intermediate lever and the cutting apparatus, substantially as set forth.

10. The combination, with the main frame and the rising and falling cutting apparatus connected at one end thereto, of a curved spring arm or rod having one of its ends secured to the finger-bar portion of the cutting apparatus and its opposite end link-connected to the coupling-bar portion of the cutting apparatus, the said spring arm or rod forming a counter-balance for the free end of the finger-bar portion of the cutting apparatus, and a counterbalance-spring connecting the main frame and the coupling-bar portion of the cutting apparatus, substantially as set forth.

11. The combination, with the main frame, a foot-lever pivoted to the main frame, and the cutting apparatus, of an intermediate lever pivotally secured to the main frame and located between the foot-lever and the cutting apparatus, a link-connection between the foot-lever and intermediate lever and between the foot-lever and the cutting apparatus, and a detent fixed to the main frame in position to receive the foot-lever and retain it when it is thrown forward, substantially as set forth.

12. The combination, with the main frame, cutting apparatus, and intermediate lever pivotally secured to the main frame, of a hand-lever and a foot-lever, each pivotally secured to the main frame, and each having an independent link-connection with said intermediate lever, and a link-connection between the intermediate lever and the cutting apparatus, substantially as set forth.

13. The combination, with the main frame and with an intermediate lever pivotally secured to the main frame, of a foot-lever and a hand-lever pivoted to the main frame to oscillate on the same axial center, and independent links to connect the foot and hand levers, respectively, with the intermediate lever on the main frame, a cutting apparatus, and a link connection between the intermediate lever and the cutting apparatus, substantially as set forth.

14. The combination of a main frame, a rising and falling cutting apparatus connected at one end to the main frame, a counterbalance-spring to the cutting apparatus as a whole, a foot-lever pivotally secured to the main frame, and a connection between the cutting apparatus and foot-lever, consisting of an intermediate lever pivotally secured to the main frame, and links connecting the intermediate lever with the cutting apparatus and foot-lever, substantially as set forth.

15. The combination of a main frame, a rising and falling cutting apparatus connected at one end to the main frame, a counterbalance-spring to the cutting apparatus as a whole, a foot-lever pivotally secured to the main frame, a hand-lever pivotally secured to the main frame, and connections between the hand and foot levers and the cutting apparatus, consisting, essentially, of an intermediate lever pivotally secured to the main frame, links connecting the intermediate lever with the hand and foot levers, and a link-connection between the intermediate lever and the cutting apparatus, substantially as set forth.

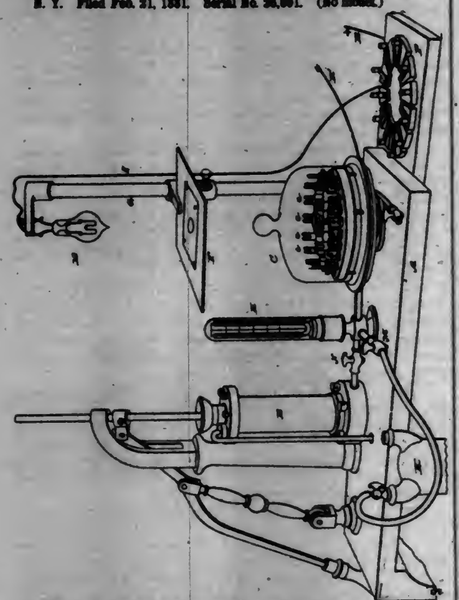
16. The combination of a main frame, a rising and falling cutting apparatus connected at one end to the main frame, a counterbalance-spring for the free end of the finger-bar portion of the cutting apparatus, said spring connecting the finger-bar portion of the cutting apparatus with the coupling-bar portion, a counterbalance-spring for the cutting apparatus as a whole, connecting the main frame and coupling-bar portion of the cutting apparatus, a foot-lever pivotally secured to the main frame, an intermediate lever pivotally secured to the main frame between the foot-lever and the cutting apparatus, and links connecting the intermediate lever with the foot-lever and the cutting apparatus, substantially as set forth.

17. The combination of a main frame, a cutting apparatus, a counterbalance-spring for the free end of the finger-bar portion of the cutting apparatus, a counterbalance-spring for the cutting apparatus as a whole, a hand-lever pivotally secured to the main frame, an intermediate lever pivotally secured to the main frame, and links connecting the intermediate lever with the hand-lever and with the cutting apparatus, substantially as set forth.

18. The combination of a main frame, a cutting apparatus, a counterbalance-spring for the free end of the finger-bar portion of the cutting apparatus, a counterbalance-spring for the cutting apparatus as a whole, a hand-lever and a foot-lever, each pivotally secured to the main frame to oscillate on the same axial center, an intermediate lever pivotally secured to the main frame, and independent links connecting the intermediate lever with the hand and foot levers and the cutting apparatus, substantially as set forth.

19. The combination of the main frame, a rising and falling cutting apparatus connected at one end to the main frame, a hand-lever and a foot-lever, each pivotally secured to the main frame, an intermediate lever pivotally secured to the main frame, links connecting the intermediate lever with the hand and foot levers on opposite sides of their pivotal connection with the main frame, whereby an opposite movement of the hand and foot levers will effect the same movement of the intermediate lever, and a link-connection between the intermediate lever and the cutting apparatus, substantially as set forth.

405,289. APPARATUS FOR THE MANUFACTURE OF FILAMENTS FOR INCANDESCENT LAMPS. HIRAM S. MAXIM, Brooklyn, N. Y. Filed Feb. 21, 1881. Serial No. 26,091. (No model.)



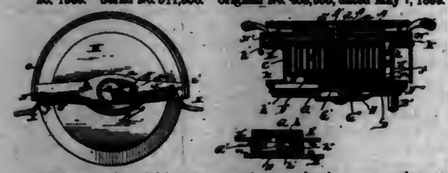
Claim.—1. In combination with an electric circuit and an air-pump, two or more carbon holders or clips arranged under a common receiver suitably supplied with a hydrocarbon or equivalent gas, substantially as and for the purpose set forth.

2. In combination with an electric circuit and an air-pump, a receiver adapted to be supplied with a hydrocarbon or equivalent gas and containing two or more carbon holders or clips, each of which is provided with a switch controlling its connection with the circuit, substantially as and for the purpose set forth.

3. The combination of an electric circuit, a carbon-holder, a receiver for inclosing such holder and arranged to be provided with an atmosphere of hydrocarbon or equivalent gas for building up the carbon and changing its resistance, a standard light, and a photometer, substantially as and for the purpose set forth.

REISSUES.

11,006. FISHING-REEL. FRANK CAREY, Penn Yan, N. Y. Filed May 20, 1889. Serial No. 311,350. Original No. 403,063, dated May 7, 1889.



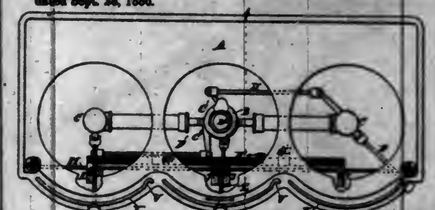
Claim.—1. In a fishing-reel, a spring-case having corrugations on the inner side of the rim, and a coiled spring in said case having its inner end detachably secured to a sleeve upon which said case is journaled and having its outer end curved or hooked to engage with the corrugations in the rim, substantially as described.

2. In a fishing-reel, the double brake consisting of levers I I', connected by the rod J, pivoted at the opposite ends of the arms on the rod-plate, to operate the same above or below the reel, in combination with the exterior surface of the reel-case, substantially as described.

3. In a fishing-reel, the combination of the crank B and reel-case K, each provided with a ratchet and a shifting-pawl H and spring k', whereby either rack may be engaged and held by the pawl and the other released, substantially as described.

4. In a fishing-reel, the combination of the ratchet-wheel d, pawl d', and check-lever m, whereby the shaft D is controlled by holding or releasing the ratchet d on the end thereof, substantially as described.

11,007. GASOLINE-STOVE ATTACHMENT. CHARLES A. STOCKSTROM, St. Louis, Mo., assignor of one-half to Louis Stockstrom, same place. Filed May 23, 1887. Serial No. 238,141. Original No. 370,094, dated Sept. 20, 1886.



Claim.—1. The combination of a gasoline-stove frame, a generator, a side burner having a pipe into which vapor passes from the generator, a main valve controlling the supply of gasoline to the generator, a valve controlling the flow of vapor to the side burner, a lever or its equivalent operating the generator-valve, and a connection between the generator and side-burner valves, permitting the opening of the main or generator valve independently, but preventing the closure thereof while the side-burner valve remains open, as explained.

2. The combination of a gasoline-stove frame, a generator, a side burner having a pipe into which vapor enters from said generator, a main valve controlling the supply of vapor to the generator-burner, a valve controlling the flow of vapor to the side burner, and levers or their equivalents connected to said valves, in combination with a lock and a movable device engaging the main-burner-valve lever or its equivalent, whereby when the main valve is closed the main-burner-valve lever or its equivalent is held in position by the lock, substantially as and for the purpose set forth.

3. The combination of a gasoline-stove frame, a generator having a jet-orifice, a side burner having a pipe into which the vapor enters from said jet-orifice, a main valve controlling the supply of vapor to the generator-burner, a valve controlling the flow of vapor to the side burner, levers or their equivalents connected with said valves, and a device connected to the main-valve lever and engaging the same upon one side, whereby the side-burner valve will be closed when the main valve is closed and the main valve opened without opening the side-burner valve.

4. The combination of a gasoline-stove frame, a generator having a jet-orifice, a side burner having a pipe into which the vapor enters from said jet-orifice, a main valve controlling the supply of vapor to the generator-burner, a valve controlling the flow of vapor to the side burner, levers or their equivalents connected with said valves, a slide-plate having guides, and arms or projections on the slide-plate with which the valve-levers engage.

5. The combination of a gasoline-stove frame, a generator having a jet-orifice, a side burner having a pipe into which the vapor enters from said jet-orifice, a main valve controlling the supply of vapor to the generator-burner, a valve controlling the flow of vapor to the side burner, levers or their equivalents connected with said valves, the sliding plate having arms or projections engaged by the valve-levers, and a guide-rod passing through the arms or projections, substantially as and for the purpose set forth.

6. The combination of a gasoline-stove frame, a generator having a jet-orifice, a side burner having a pipe into which the vapor enters from said jet-orifice, a main valve-controlling the supply of vapor to the generator-burner, a valve controlling the flow of vapor to the side burner, levers or their equivalents connected with said valves, the sliding plate having arms or projections engaged by the valve-levers, guide-brackets secured to the frame, and a guide-rod passing through the arms, substantially as and for the purpose set forth.

7. The combination of a gasoline-stove frame, a generator having a jet-orifice, a side burner having a pipe into which the vapor enters from said jet-orifice, a main valve controlling the supply of vapor to the generator-burner, valve controlling the flow of vapor to the side burner, levers or their equivalents connected with all of said valves, a sliding plate having guides, lugs J J, one on each side of the main-valve lever, and lugs I, engaging the side-burner-valve levers, substantially as and for the purpose set forth.

R. PETERS, Photo-Lithographer, Washington, D. C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Northern District of New York.

J. B. BREWSTER & CO. *v.* SHULER. SAME *v.* D. W. SHULER, W. S. SHULER, AND WATERLOO WAGON WORKS. SAME *v.* CORTLANDT WAGON WORKS *et al.*

Decided February 25, 1889.

1. WOOD—CARRIAGE-SPRINGS—REISSUE VOID.
Reissued Letters Patent No. 6,018, granted to Thomas H. Wood August 18, 1874, for an improvement in carriage-springs, *Held* void, not only because it is for an invention not disclosed or suggested in the original, but also because, as in the case of *Coon et al. v. Wilson*, (30 O. G., 889; 113 U. S., 268,) there was no defective or insufficient specification, and no mistake inadvertently committed in the wording of the claim of the original.

2. PRIOR PUBLIC USE.
The defense of prior public use also established.

Mr. M. L. Stover, Messrs. Witter & Kenyon, and *Mr. Causten Browne* for the defendants.

Mr. Livingston Gifford and *Mr. B. F. Thurston,* for the complainants.

WALLACE, *J.:*

This suit is brought to restrain infringement of reissued Letters Patent granted August 18, 1874, to Thomas H. Wood for an improvement in carriage-springs. The defendants rely upon the invalidity of the patent as a reissue of the original, and upon prior public use by others of the subject of the invention, among other defenses to the suit.

The original patent to Wood was granted May 27, 1873. The invention is described therein as follows:

This invention relates to an improved arrangement of transverse springs on light wagons, and has for its object to combine, in a wagon supported on single transverse springs and side bars, the advantage of elasticity, double elliptic transverse springs, and of the deep setting of the body obtained at present by using the single springs. Light carriages supported on double elliptic springs raise the bodies too high for convenience, and are moreover more expensive than those having single springs. On the other side such carriages as are at present supported on single transverse springs, whose ends connect with side bars rigidly secured to the wagon-bodies, are not sufficiently elastic and yielding to suit the rapid motion to which they are frequently subjected. The invention consists in the improvement of light vehicles, as hereinafter described and pointed out in the claim.

In the accompanying drawing, the letter A represents the body of a light carriage of suitable style. B and C are the axles of the carriage, and D D the wheels. Upon the axles are fastened the middle portions of transverse springs E E, whose ends are secured to side bars F F. These side bars are made of hickory wood or other material, and aid, with whatever elasticity they may possess, in making the support of the body A yielding. To the under side of the carriage-body A are secured transverse springs G G, whose ends connect, by suitable couplings, with the side bars F F, as is clearly shown in the drawing. The springs G G and E E can be made of metal or wood or other material, and are semi-elliptic or flat springs in contradistinction to the full elliptic spring heretofore used as direct supports for carriage-bodies on their axles.

The claim of the original patent is as follows:

A frame, consisting of the longitudinal side bars F F, downwardly-bowed end springs E E, and upwardly-bowed middle springs G G, constructed, arranged, and applied as and for the purpose described.

The description in the reissued patent is as follows:

This invention has for its object to improve the manner of connecting the bodies of light carriages with the side bars, whereby they are supported; and consists in interposing a pair of semi-elliptic springs between said side bars and the wagon-body.

In the accompanying drawing, the letter A represents the body of a light carriage of suitable style. B and C are the axles of the carriage, and D D the wheels. The axles are connected by springs E E or otherwise, with the side bars F F. These side bars are made of hickory wood or other material. To the under side of the carriage-body A are secured transverse springs G G, whose ends connect, by suitable couplings, with the side bars F F, as is clearly shown in the drawing. These springs G G can be made of metal or other material, and are semi-elliptic or flat springs, in contradistinction to the full elliptic springs heretofore used as direct supports for carriage-bodies on their axles.

The claim of the reissue is—

The semi-elliptic springs G G, interposed between the side bars F F and the wagon-body, all combined substantially as specified.

It is obvious that the invention of the patentee, as explained in the original patent, consisted in altering a side-bar buggy having downwardly-curved transverse springs over the axle in which the ends of the side bars rest on the ends of the springs by putting in upwardly-curved springs transversely between the side bars and the body of the buggy. The conception and aim of the patentee was to employ additional half-elliptic springs in a side-bar buggy having half-elliptic springs, so arranged in reference to each other that the body would be practically mounted on full-elliptic springs for purposes of elasticity and on half-elliptic springs for purposes of elevation above the axle. The description fully and clearly, without ambiguity or obscurity, sets forth the exact invention made by the patentee, and the claim fully and precisely specifies it, and from both it is perfectly evident what invention the patentee intended to describe and sought to secure. So ample and exact are the specification and claim that it cannot be doubted he knew accurately the scope and limitations of his invention, and intended to describe and claim it as nothing more or less than an improvement upon a specific type of side-bar buggies, which consisted in interposing supplementary half-elliptic springs between the body and the side bars to re-enforce and co-operate with the half-elliptic springs theretofore employed between the side bars and the axles in the existing buggy. What the patentee did was to put two springs adapted to do that work into a buggy of that type. He might have

put transverse semi-elliptic springs between the body and the side bars of a buggy of a different type; but he did not do it or think of doing it. Apparently he subsequently discovered that it would be desirable to do this, and concluded to get a patent for doing it, and he was probably advised that such a patent would give him a larger monopoly than he had secured originally, and would enable him to hold as infringers all those who should use the transverse semi-elliptic springs between the side bars and the body of a buggy, whether in a buggy with or without semi-elliptic springs, or any springs, between the side bar and the axle.

The reissued patent is for an invention which apparently did not exist in the mind of the patentee when the original was obtained, and which also is of more doubtful inventive novelty than that in the original. The original is for a combination of half-springs with other half-springs in reverse in a side-bar buggy in which the parts co-operate to produce a given result. The reissue is for a combination of which half-springs in reverse are not a part and from which the essential characteristics of the original invention are eliminated. The use of the combination of parts claimed in the reissue would not be an infringement of the original patent.

It must be held that the reissue is void not only because it is for an invention not disclosed or suggested in the original, but also because, as in the case of *Coon v. Wilson*, (113 U. S., 268,) there was no defective or insufficient specification, and no mistake inadvertently committed in the wording of the claim of the original.

The defense of prior public use which rests on the use of the springs in the Roberts-Pierce buggy is fully established and is fatal to the validity of the patent. The fact of the use of semi-elliptic springs in that buggy interposed between the side bars and the body at a date sufficiently early to defeat the patent is not contested; but it is contended for the complainants that these springs were not the semi-elliptic springs of the patent. They were semi-elliptic springs of the class known as scroll-ended springs. This was a well-known class, used in carriages, and sold by dealers as semi-elliptic springs previously to the date of the patent, as sufficiently appears by reference to the patent to George Groot of July 13, 1869, for an improvement in carriage-springs, without reference to the other testimony or exhibits in the case. That patent relates to the fastening of semi-elliptic springs transversely under the body of the carriage to side springs by means of saddle-clips. The drawings show a scroll-ended half-elliptic spring, substantially such as was used in the Roberts-Pierce buggy, and the specification points out that the saddle-clips are to be adjusted according as the ends of the semi-elliptic springs "are made with or without scrolls." Another class of semi-elliptic springs were without scrolls at the ends, and it is contended for the complainants that it is to this class, and this class only, that the claim of the patent relates. The drawings in the patents show springs of this class. It appears by the testimony that the object of scrolling the ends of half-springs is to get a somewhat greater length of spring between bearings a given distance apart, and thereby somewhat more elasticity and motion; and that the use of square-ended or scroll-ended springs is dictated by the degree of elasticity desired in a particular carriage-spring. It is obvious, however, that the degree of elasticity depends largely upon the amount of material used in the spring, and that a scroll-ended spring may be practically as stiff as one without a scroll end and one without a scroll end may be practically as elastic as one with a scroll end. It is probably true that as between springs of the two classes, when each has the same degree of elasticity as the other, the scroll-ended spring would lend a freer lateral movement to a carriage or buggy body than the other; and an ingenious argument has been advanced by counsel and by the experts for the complainants to show that in the class of carriages to which the patent relates it is desirable that there be practically no sidewise movement to the carriage-body. If there were anything in the specification to suggest this, the somewhat shadowy difference of function between the two springs might be apprehended and emphasized to denote that one should not be treated as the equivalent of the other. But it could be urged with equal force that the semi-elliptic spring of the claim is one of either class, and that the use of scroll-ended springs when interposed between the side bars and the wagon-body would be an infringement of the claim. Indeed, in a former suit brought upon this patent the alleged infringing springs were scroll-ended half-elliptic springs, but the ends did not extend appreciably beyond the outside line of the side bars; and the complainant's expert gives it as his opinion that the use of such scroll-ended springs between the side bars of the wagon-body would be an infringement of the patent. In the absence of any language to indicate that a semi-elliptic spring of a special form is an element of the claim it must be held that the claim specifies one of any well-known form adapted to be interposed between the side bars and the wagon-body; consequently such springs as were used in the Roberts-Pierce buggy are the springs of the patent, and the defense of prior public use is established.

The bill is dismissed, with costs.

U. S. Circuit Court—Southern District of New York.

EDISON *et al. v.* KLABER.

Decided April 5, 1889.

1. EDISON—AUTOGRAPHIC PRINTING.

Letters Patent No. 180,857, for an improvement in autographic printing, granted to Thomas A. Edison August 8, 1876, cannot be regarded as a pioneer patent in this art. There could be no broad claim for printing with a paper stencil, semi-liquid ink, and a roller. Neither could there be a broad claim for a puncturing device. Both were old.

2. SAME—CLAIM 2 CONSTRUED AND RESTRICTED.

The prior state of the art and the express language of the specification combine to restrict the claim to the use of a stencil made by the electric pen.

3. INFRINGEMENT.

Thus construed it is not infringed by the defendant's device. The "cyclostyle" of the defendant shows another step in the art. It is as much an improvement on Edison's method as that was an improvement on what preceded it.

Mr. John C. Tomlinson and *Mr. Richard N. Dyer* for the complainants.

Messrs. Price & Steuart for the defendant.

COXE, *J.*:

This is an action of infringement founded upon Letters Patent No. 180,857, dated August 8, 1876, granted to Thomas A. Edison, for an improvement in autographic printing. The inventor states:

> My improvement relates, first, to the instrument employed for puncturing the paper, whereby such instrument can be used by hand in the same manner as a drawing or writing pen; second, to the method of printing by direct transfer in permanent semi-liquid ink from the perforated sheet; and third, to the press for holding such transfer-sheet, and the paper to be impressed.
>
> * * * * * * *
>
> The pen which I make use of consists of a tube, *a*, tapering to a small point, *b*, and a needle, *c*, within that tube, which needle is reciprocated with great rapidity; and when the needle-point *c* is projected it is sufficiently long to reach through the paper upon which the tube of the pen rests, and when retracted the needle is drawn within the tube, so that the small end thereof is free to be moved from place to place.
>
> The great rapidity in the movement of the needle-point produces the punctures in the paper sufficiently close together to form lines when the pen is manipulated in writing or drawing; and, as nothing is removed from the paper, its strength is not materially injured by the punctures or perforations; and it will be apparent that any suitable device may be employed for reciprocating the perforating-needle. * * *
>
> * * * * * * *
>
> The mode of printing from the perforated sheet is to fill the holes with ink by means of a roller applied to the right side of the perforated sheet; and then when said ink is well worked into the holes to place beneath such perforated sheet the paper upon which the impression is to be made, and then pass over the perforated sheet a roller that presses the ink through the perforations to the surface of the sheet below.
>
> * * * * * * *
>
> Various forms of electro-magnetic motors may be employed to revolve the shaft that reciprocates the puncturing-needle, and the movement of a vibrating armature might be transferred directly to the needle, if desired.

The second claim only is involved. It is for—

> 2. The method herein specified of printing in permanent semi-fluid ink by puncturing a sheet of paper, or similar material, with numerous small holes, filling such holes with a semi-liquid ink, and pressing the same upon the surface to be printed, substantially as set forth.

The defenses are lack of novelty and invention and non-infringement.

The prior art shows many structures and methods closely approximating those of the patentee. An Italian named Zuccato discovered in 1874 a method by which an autographic stencil is produced by writing with an ordinary pen and caustic ink upon a varnished paper. The printing is done with a permanent semi-liquid ink by means of pressure. In 1873 a patent was granted to Charles Bordas for a method of transferring embroidery-patterns from a perforated original stencil to sheets of paper by forcing powder or a liquid through the holes. Letters and figures were printed by this method. In 1869 George V. Metzel substituted for the brush previously used a roller covered with plush, velvet, or carpeting, which was impregnated with ink and pressed over the stencil-plate. Henry W. Rudolf, in 1870, received a patent which shows a method of printing by means of a paper stencil and an inked roller similar to the ordinary type-roller. In the same year a patent was granted to Robert Boyd for an improvement in machinery for tracing embroidery-patterns. It describes a pen containing a reciprocating perforating needle or a stabber. So far as the pen proper and the work done by it are concerned, it is almost the exact counterpart of the Edison device. The motor is more cumbersome, the machine is not so readily manipulated; but it would be difficult to distinguish a stencil made by it from one made by the electric pen. A machine similarly constructed was in operation in the establishment of Mrs. McDonald, in New York city, prior to the spring of 1878, and specimens of the work done thereon have been introduced in evidence. Patterns, monograms, figures, and autographic writing can be and have been made by it. Printing from these stencils was done with powder or with ink. In 1866 Samuel Huffman obtained a patent for a new puncturing-machine for making patterns, which is the exact counterpart of the Edison pen, except that it is lighter and less awkward in handling and the reciprocating needle is operated by clock-work instead of an electro-magnet. Other references show stencils made by hand-guided implements in which a small toothed wheel punctures the paper. In others still stencils are made by writing with a pointed stylus on a hard corrugated surface like a file or rasp. Mr. Edison himself recognized the superior advantages in simplicity and cheapness of the latter method, and in 1880 procured a patent in which the stencil is formed by writing with a blunt stylus upon a slab containing numerous fine perforating-points. The electric pen has been superseded by the mimeograph. It will be seen, therefore, that in August, 1876, the field was extensively occupied. A pioneer patent was out of the question in this art. There could be no broad claim for printing with a paper stencil, semi-liquid ink, and a roller. Neither could there be a broad claim for a puncturing device. Both were old. There was room for the invention of a practical instrument which could be used to adapt known methods to the reproduction of autographic writing; but the discovery of this instrument does not enable the inventor to levy tribute upon the entire art. Mr. Edison invented the electric pen. For this, though it is too expensive and complicated to be of great practical utility, he is entitled to credit. The invention was not, however, of such a character as to block all further progress. Other inventors could improve on him, as he had improved on Huffman and Zuccato. The described method was not practiced, because no convenient practical means of making a stencil was at hand. It was not because the world was ignorant of the fact that ink would go through holes in paper when rolled with a printer's type-roller. The patentee made a new stencil and printed from it by the old method. He now seeks to prevent others who also invent new stencils from using the same old method. The prior art and the express language of the specification combine to restrict the claim to the use of a stencil made by the electric pen. Unless so restricted, the claim is invalid; if so restricted, the defendant does not infringe. Eliminate the electric pen and very little is left. There was nothing new in the method of printing considered apart from the ingeniously-formed stencil. Edison could not have had a patent in 1876 for a new method of printing if the stencil used had been made by a Boyd or Huffman pen or a common metallic pin. The words and sentences stabbed out by the McDonald machine might be duplicated by passing an inked roller—Metzel's, for instance—over the paper without infringing the patent. It would have required no exercise of the inventive faculties to do this in 1876. The old method would have been slightly changed to meet the new condi-

tions; but this is all. The process of printing is the same, whether the type used is Old English, German text, brevier, or long primer. If a stencil is used, the process is the same whether the ink goes through holes which represent written letters or holes which represent Roman letters or embroidery-patterns. The method is the same no matter what is copied. But it is said that if the patent is first expanded so as to include any instrument capable of making a stencil, and then narrowed so as to exclude all but autographic stencils, the defendant may be held as an infringer. The claim does not use the word "autographic," and it would seem that the inventor did not intend so to restrict his invention. The construction contended for by the complainants would enable a person to escape infringement by printing Roman characters upon his stencil, instead of writing thereon in his own proper handwriting. Indeed, it would make the apparatus, when used without license, an infringing or non-infringing one, according to the use to which it is put. A person who copied a letter on it would infringe the claim, but if he copied a design he would not infringe. The name of defendant's machine could lawfully be copied in this form, Cyclostyle but not in this, Cyclostyle The words "The method herein specified" and "substantially as set forth" should not be ignored. The only method described by which the sheet of paper is punctured with numerous small holes is by the use of the electric pen. To permit any puncturing method to be substituted in place of the electric pen would be to give the claim a construction which invalidates it and which is not warranted by the proof. The claim, when properly construed, is not infringed by the defendant. His method is as follows: Bamboo-fiber paper prepared with a layer of wax or paraffine is laid upon a zinc plate. On this paper, so placed, autographic writing or any design may be produced, not by an electric pen, for the hard bed would destroy the reciprocating needle, but by a little instrument like a pen-holder, to the end of which is attached a diminutive wheel provided with microscopic corrugations which cut little slits in the paper as it rolls, being forced along by the hand of the writer. For this instrument and for the transfer-paper patents were granted to David Gestetner, dated, respectively, November 28, 1882, and December 22, 1885. The printing from the stencil thus formed is done in the well-known manner. The "Cyclostyle" of the defendant shows another step in the art. It is simple and comparatively inexpensive. It is as much an improvement on Edison's method as that was an improvement on what preceded it.

The bill is dismissed.

U. S. Circuit Court—Eastern District of Pennsylvania.

MARTHA WASHINGTON CREAMERY BUTTERED FLOUR COMPANY OF THE UNITED STATES, (LIMITED,) *v.* MARTIEN.

Decided February 15, 1889.

INJUNCTION—RIGHTS OF PURCHASER OF PATENTED MACHINE.

The purchaser of a patented machine has the right to use the machine until worn out in the manufacture of the product it is designed to make, and sell the same in the market, and to designate it by label or otherwise as the product of the invention.

SUR motion for preliminary injunction.

Mr. Walter D. Edmunds for the complainants.
Mr. Horace Pettit for the defendants.

BUTLER, *J.*:

In disposing of motions for preliminary injunctions it is not usual to assign reasons where the motion is disallowed. To avoid misunderstanding, however, in this case it is proper to say that the unanswered allegation of the respondent, (found in his deposition,) that he purchased machines of the complainant's predecessor, Thorpe, at large expense, designed for the manufacture of the flour referred to in the bill and suited to no other purpose, stands in the way of allowing the motion, without reference to other important questions raised by the record and presented on the argument. It does not appear that the purchase of these machines had any connection with the contract of license referred to in the bill, nor that their use was subject to restriction or revocation. On the contrary, judging by what is before me, the purchase was entirely independent of this contract, and conferred the same rights on the respondent that he would have taken had no such contract existed. These rights are the use of the machines, until worn out, in the manufacture of flour, which they are designed to make, and to sell the same in the market. This flour the respondent may lawfully represent to be the flour described in the bill, by the use of the labels and otherwise. In so doing he imposes on no one and transgresses no one's rights. The privilege of using the label originally adopted by Thorpe, the inventor, extends to every one who acquires his right to manufacture and vend the flour. These labels were not intended to designate the flour manufactured by the inventor personally or any particular individuals to whom he transfers rights, but the especial kind and quality of flour covered by his invention. To allow the motion would, therefore, be improper.

At final hearing the case may present an entirely different aspect. As at present presented, the complainant might possibly be entitled to an injunction so limited and confined as to avoid the difficulty above stated. This, however, I have not felt called upon to consider in disposing of the motion before me. I would suggest the propriety of preparing the case, as well as the two others pending, intimately connected with it, speedily, for final hearing, when the court may enter a decree with the full knowledge of all facts involved.

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[BY AUTHORITY OF CONGRESS.]

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The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1887, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages. In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Publishers' Catalogues.

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Issue of June 18, 1889.

Patents	447	No. 405,340 to No. 405,686, inclusive.
Designs	14	No. 19,157 to No. 19,170, inclusive.
Trade-Marks	12	No. 16,728 to No. 16,739, inclusive.
Labels	6	No. 5,943 to No. 5,948, inclusive.
Reissues	1	No. 11,008.
Total issue	480	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	2	.....	Nebraska	5	.....
Arizona Territory	.....	.....	Nevada	.....	.....
Arkansas	2	.....	New Hampshire	2	.....
California	6	.....	New Jersey	14	.....
Colorado	1	.....	New Mexico Terri'y	.....	.....
Connecticut	12	1	New York	70	9
Dakota Territory	.....	.....	North Carolina	1	1
Delaware	3	.....	Ohio	38	.....
District of Columbia	5	.....	Oregon	2	.....
Florida	1	.....	Pennsylvania	36	2
Georgia	.....	1	Rhode Island	10	.....
Idaho Territory	.....	.....	South Carolina	.....	.....
Illinois	38	.....	Tennessee	.....	1
Indiana	8	.....	Texas	6	.....
Iowa	8	.....	Utah Territory	.....	.....
Kansas	6	.....	Vermont	1	.....
Kentucky	4	.....	Virginia	1	.....
Louisiana	2	.....	Washington Terri'y	1	.....
Maine	5	.....	West Virginia	1	.....
Maryland	9	2	Wisconsin	7	.....
Massachusetts	41	.....	Wyoming Terri'y	.....	.....
Michigan	21	1	U. S. Army	2	.....
Minnesota	15	.....	U. S. Navy	1	.....
Mississippi	2	.....			
Missouri	22	.....	Total to citizens of the United States	422	18
Montana Territory	.....	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Australia	.....	.....	Germany	7	.....
Austria-Hungary	1	.....	Hawaii	.....	.....
Barbadoes	.....	.....	Italy	1	.....
Belgium	1	.....	Mexico	.....	.....
Brazil	.....	.....	New South Wales	.....	.....
Canada	12	.....	Queensland	1	.....
Canary Islands	.....	.....	Scotland	1	.....
Colombia, U. S. of	.....	.....	Sweden	1	.....
Cuba	.....	.....	Switzerland	.....	.....
Denmark	.....	.....	Victoria	.....	.....
Ecuador	.....	.....			
England	13	.....	Total to citizens of foreign countries	39	.....
France	1	.....			

DESIGNS.

19,157.—COLLAR.—*William Barker*, Watervliet, N. Y. Application filed March 18, 1889. Serial No. 303,781. Term of patent 7 years.

19,158.—CLOTH FOR CLOAKING, &c.—*Morris Fatman*, New York, N. Y. Application filed May 24, 1889. Serial No. 312,008. Term of patent 3½ years.

19,159.—CLOTH FOR CLOAKING, &c.—*Morris Fatman*, New York, N. Y. Application filed May 16, 1889. Serial No. 311,075. Term of patent 3½ years.

19,160.—MADE-UP SCARF.—*Thomas J. Flagg*, New York, N. Y. Application filed May 24, 1889. Serial No. 312,004. Term of patent 3½ years.

19,161.—BAG.—*Solomon Henry Howe*, New York, N. Y. Application filed May 9, 1889. Serial No. 310,146. Term of patent 14 years.

19,162.—TUMBLER, &c.—*William C. King*, Pittsburg, Pa. Application filed March 11, 1889. Serial No. 302,904. Term of patent 7 years.

19,163.—COLLAR.—*William H. McFadden*, Green Island, assignor to *George B. Cluett, Bro. & Co.*, Troy, N. Y. Application filed December 29, 1888. Serial No. 294,982. Term of patent 7 years.

19,164.—WATER-CLOSET.—*Frederic G. Moore*, Bergen Point, N. J. Application filed May 17, 1889. Serial No. 311,170. Term of patent 14 years.

19,165.—ORNAMENTATION OF PITCHERS, &c.—*Solon O. Richardson, Jr.*, Toledo, Ohio, assignor to *The W. L. Libbey & Son Company*, same place. Application filed April 6, 1889. Serial No. 306,268. Term of patent 3½ years.

19,166.—EMBROIDERY FOR MITTS, &c.—*Edward Schwalbach, Jr.*, Brooklyn, N. Y., assignor to *A. G. Jennings*, same place. Application filed May 16, 1889. Serial No. 311,074. Term of patent 7 years.

19,167.—FABRIC.—*Emil Stumpf*, Elberfeld, Germany. Application filed May 23, 1889. Serial No. 311,882. Term of patent 3½ years.

19,168.—JAWS OF A PIPE-WRENCH.—*John H. Vinton*, Boston, Mass., assignor to *The Trimont Manufacturing Company*, Portland, Me. Application filed December 26, 1888. Serial No. 294,099. Term of patent 14 years.

19,169.—HAT AND COAT RACK.—*John H. Whissemore*, Youngstown, Ohio. Application filed December 12, 1888. Serial No. 293,413. Term of patent 7 years.

19,170.—SASH HOOK OR LIFT.—*William Alex. Williamson*, Newark, N. J. Application filed May 20, 1889. Serial No. 311,474. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 4,191 and upward are registered under the act of March 3, 1881.]

16,728.—PLUG CHEWING-TOBACCO.—*Arnold, Carlton & McCord*, Atlanta, Ga. Application filed March 8, 1889. Used since January, 1887.
"The words 'RED FOX.'"

16,729.—CHEWING-TOBACCO.—*Billing & Hay*, Winston, N. C. Application filed May 8, 1889. Used since February 6, 1889.
"The words 'FAT POSSUM.'"

16,730.—COCOA AND COCOA-BUTTER.—*J. & C. Blooker*, Amsterdam, Holland, and New York, N. Y. Application filed February 26, 1889. Used since 1877.
"The representation of two hands clasped as in the act of shaking hands, showing cuffs and some of the sleeves, together with the word 'GEDEPONEERD' and the fac-simile signature 'J. & C. BLOOKER.'"

16,731.—EFFERVESCENT POWDER FOR BEVERAGES.—*The Berwick Manufacturing Co.*, New York, N. Y. Application filed April 6, 1889. Used since April 1, 1889.
"The words 'LIME JUICE KALINE.'"

16,732.—TEA.—*George C. Buell & Co.*, Rochester, N. Y. Application filed May 18, 1889. Used since July, 1887.
"The representation of an eagle and the words 'THE EAGLE CHOP.'"

16,733.—CANNED OYSTERS.—*Fait & Winebrenner*, Baltimore, Md. Application filed May 15, 1889. Used since December, 1888.
"The words 'BLACK SWAN,' or a pictorial representation of a black swan."

16,734.—WHISKY.—*John Osborn Son & Co.*, New York, N. Y., and Philadelphia, Pa. Application filed December 19, 1888. Used since 1886.
"The word 'ANTEDILUVIAN.'"

16,735.—WHISKY.—*John Osborn Son & Co.*, New York, N. Y., and Philadelphia, Pa. Application filed December 19, 1888. Used since December, 1888.
"The word 'ANTEMUNDANE.'"

16,736.—COTTON LININGS, SILESIAS, SATEENS, CAMBRICS, AND TWILLS.—*Frank L. St. John*, New York, N. Y. Application filed February 18, 1889. Used since January 2, 1869.
"The word 'DUNDEE.'"

16,737.—ALTERATIVE SIRUPS.—*Fred D. Stevens & Co.*, Detroit, Mich. Application filed March 16, 1889. Used since March 1, 1889.
"The letters 'DRIW' and 'FDS, CO,' and the word 'AND,' forming two monograms."

16,738.—CURATIVE LOTION USED EXTERNALLY FOR SKIN DISEASES.—*Emeline C. Summerhayes*, Somerville, Mass. Application filed April 6, 1889. Used since July, 1888.
"The word 'PSUGMA.'"

16,739.—TOILET-PAPER.—*George W. Thompson*, New York, N. Y. Application filed March 28, 1889. Used since January 1, 1873.
"The word 'BROMO.'"

LABELS.

5,943.—Title: "J & C. BLOOKER'S DUTCH COCOA."—*J. & C. Blooker*, Amsterdam, Holland, and New York, N. Y. Application filed February 26, 1889.

5,944.—Title: "GERSTLE'S FEMALE PANACEA."—*Leopold Gerstle*, Bluff City, Tenn. Application filed May 13, 1889.

5,945.—Title: "LEAVENS' LAXATIVE REMEDY."—*George Leavens*, Danielsonville, Conn. Application filed May 22, 1889.

5,946.—Title: "WERTHER'S DISINFECTANT."—*Francis Oscar Werther*, Pottstown, Pa. Application filed May 21, 1889.

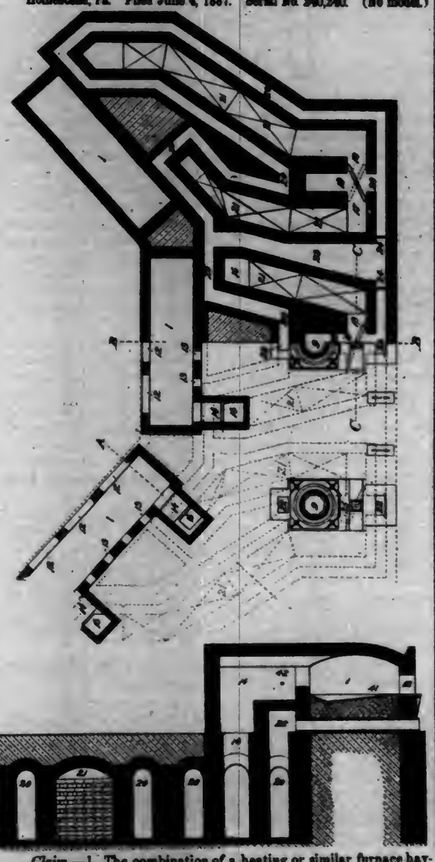
5,947.—Title: "WERTHER'S DISINFECTANT."—*Francis Oscar Werther*, Pottstown, Pa. Application filed May 21, 1889.

5,948.—Title: "LANE'S FAMILY MEDICINE."—*Orator F. Woodward*, Le Roy, N. Y. Application filed May 21, 1889.

PATENTS

GRANTED JUNE 18, 1889.

405,240. REGENERATIVE HEATING-FURNACE. HENRY AIKEN, Homestead, Pa. Filed June 4, 1887. Serial No. 240,240. (No model.)



Claim.—1. The combination of a heating or similar furnace having several doors, with a pulpit having levers mounted thereon for operating the doors separately, and ropes connecting said levers with the doors, substantially as and for the purposes described.

2. The combination of a heating or similar furnace having a wide door, a lever for operating said door, situate at a distance from and at an angle to said door, a rope connecting said door to its operating-lever, said rope being divided and attached to the door at two separate points, and a rod or bar inserted between the branches of the rope at right angles to the rope, and suitable guides over which the rope passes, substantially as and for the purposes described.

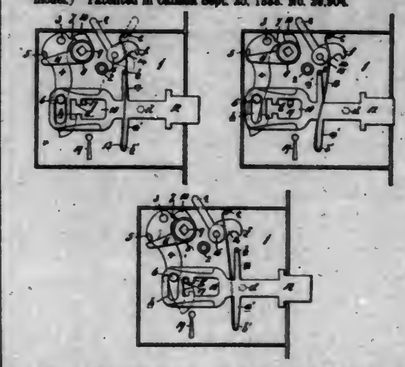
3. A heating-furnace having flues at the rear of each end for the entrance of the burning gases and the exit of the consumed products of combustion, said furnace having its charging and discharging side provided with closely-contiguous doors, whereby, practically, the whole side can be thrown open, substantially as and for the purposes described.

4. A heating-furnace having its charging and discharging side provided with closely-contiguous doors, whereby, practically, the whole side can be thrown open, end slag holes, and an inclined bottom, substantially as and for the purposes described.

5. The combination of several furnaces, each having horizontal regenerators, with a common air-flue extending around all the regenerators, and dampers in the air-flue between the several sets of regenerators, whereby each set can be cut off or connected with the other set or sets, substantially as and for the purposes described.

6. The combination of a heating-furnace with a rear chamber at each end, a reversing-valve, underground flues extending clear of the furnace-walls to the reversing-valve, upright flues connecting the said rear chambers with the underground flues, and regenerators arranged in the underground flues between the rear chambers and the reversing-valve, substantially as and for the purposes described.

405,241. LATCH AND LOCK COMBINED. JOHN AUSTIN, Pension Falls, Ontario, Canada. Filed Oct. 25, 1888. Serial No. 289,159. (No model.) Patented in Canada Sept. 25, 1888. No. 29,904.



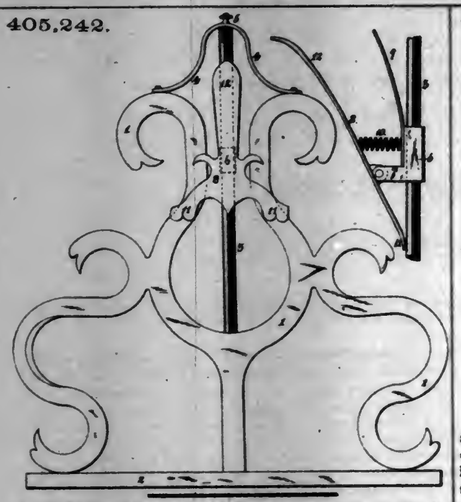
Claim.—The combination, with the lock-case provided with posts 3, 15, and 17, of the pendulum 4, hung to post 3, and having posts 5 6, the spindle-tappet 8, having arms 10 11, engaging with the pendulum, the bolt 12, having a slot *h*, engaging with post 6 of the pendulum, and a slot 18, having a projection *g*, engaging post 17 of the lock-case, and provided with arms *a a'*, the dog 14, sleeved on post 15, and engaging one of said arms, and a spring 13, to move the bolt, substantially as set forth.

405,242. ADJUSTABLE LEAF-HOLDER. CHARLES BARBOUR, Verona, Pa. Filed Jan. 2, 1889. Serial No. 295,119. (No model.)

Claim.—1. The combination, in a leaf-holder, of a frame, a vertical rod carried thereby, a bracket freely sliding upon the rod, a clamp pivoted to the bracket and bearing directly upon the frame, and a spring upon the bracket, adapted to throw the clamp against the frame and at the same time to retain the bracket at any height upon the rod.

2. The combination, in a leaf-holder, of a frame, a rod carried thereby, a bracket sliding upon the rod, an arm or extension rigidly secured to the bracket, a clamp pivoted to the bracket, and a spring upon the bracket adapted to throw the clamp against the frame and at the same time to retain the bracket at any height upon the rod.

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405,243. BLOW-OFF DEVICE. JOHN D. BOWMAN, Altoona, Pa. Filed Nov. 6, 1888. Serial No. 290,076. (No model.)



Claim.—1. In combination with a safety-valve, consisting of a device in the nature of a U-pipe filled with mercury or other fluid, a blow-off chamber secured on the end of one arm of the U, and having secured in it a cup F, with its mouth toward the opening of the U-pipe, and a tube H, extending between the pipe and the cup, substantially as and for the purpose specified.

2. In combination with a safety-valve, consisting of a device in the nature of a U-pipe filled with mercury or other fluid, a blow-off chamber secured on the end of one arm of the U, and having secured in it a cup F, with its mouth toward the opening of the U-pipe, a tube H, extending between the pipe and the cup, and a perforated disk G, arranged across the chamber above the cup, all substantially as and for the purpose specified.

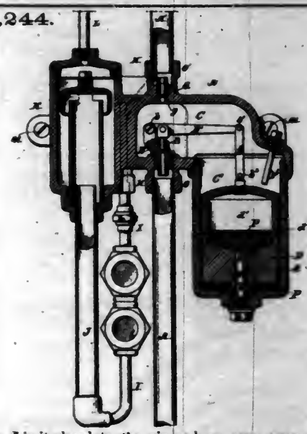
3. In combination with a safety-valve, consisting of a device in the nature of a U-pipe filled with mercury or other fluid, a blow-off chamber secured on the end of one arm of the U, a chamber J, formed between the bottom of the chamber and an extension of the U-pipe entering it, a cup F, secured in the blow-off chamber with its face toward the opening of the U-pipe, and a tube H, secured in the blow-off chamber so that its lower end will surround the extension of the U-pipe and lie in the chamber J and its upper end extend upward into or nearly into the cup F, all substantially as and for the purpose specified.

4. In combination with a safety-valve, consisting of a device in the nature of a U-pipe filled with mercury or other fluid, a blow-off chamber secured on the end of one arm of the U, a chamber J, formed between the bottom of the chamber and an extension of the U-pipe entering it, a cup F, secured in the blow-off chamber with its face toward the opening of the U-pipe, a tube H, secured in the blow-off chamber so that its lower end will surround the extension of the U-pipe and lie in the chamber J and its upper end extend upward into or nearly into the cup F, and a perforated diaphragm G, arranged across the blow-off chamber above the cup, all substantially as and for the purpose specified.

405,244. PRESSURE-REGULATOR FOR GAS-CONDUITS. JOHN D. BOWMAN, Altoona, Pa. Filed Jan. 12, 1889. Serial No. 296,203. (No model.)

Claim.—1. A pressure-regulator for gas-conduits, consisting of a regulating-valve interposed in the conduit, in combination with a chamber C, closed to the air and connected with the gas-conduit only and adapted to contain fluid, a float D, situated in said chamber, having

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a hollow d' in it closed to the air, and an open passage d, leading downward from said hollow into chamber C, and mechanism connecting the valve and float, substantially as specified, and so as to move the valve to or from its seat as the float falls or rises.

2. A pressure-regulator for gas-conduits, consisting of a regulating-valve interposed in the conduit, in combination with a chamber C, closed to the air and connected with the gas-conduit only and adapted to contain fluid, a float D, situated in said chamber, having a hollow d' in it closed to the air, and an open passage d, leading downward from said hollow into chamber C, a guide F, to maintain the float in the center of the chamber, and mechanism connecting the valve and float, substantially as specified, and so as to move the valve to or from its seat as the float falls or rises.

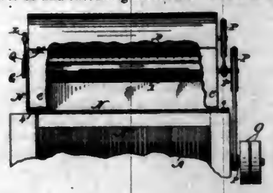
3. A pressure-regulator for gas-conduits, consisting of a regulating-valve interposed in the conduit, in combination with a chamber C, closed to the air and connected with the gas-conduit only and adapted to contain fluid, a float D, situated in said chamber, having a hollow d' in it closed to the air, and an open passage d, leading downward from said hollow into chamber C, an adjustable stop F, arranged to prevent the float from rising above a determined point in the chamber, and mechanism connecting the valve and float, substantially as specified, and so as to move the valve to or from its seat as the float falls or rises.

4. A pressure-regulator for gas-conduits, consisting of a regulating-valve interposed in the conduit, in combination with a chamber C, closed to the air and connected with the gas-conduit only and adapted to contain fluid, a float D, situated in said chamber, having a hollow d' in it closed to the air and with sloping bottom d^3, and an open passage d, leading downward from the lowest point of bottom d^3 into chamber C, and mechanism connecting the valve and float, substantially as specified, and so as to move the valve to or from its seat as the float falls or rises.

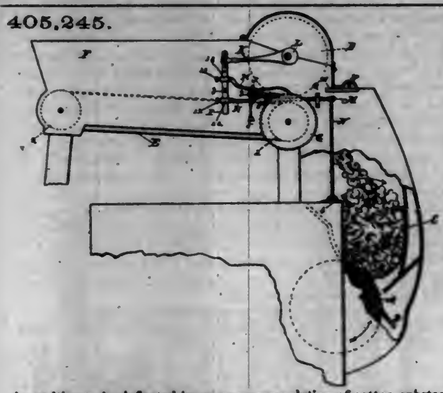
5. The casting N, containing valve-chamber C, blow-off chamber K, openings O O' for conduit-connections, and passage H, in combination with float-chamber C, U-pipe J I, connecting passage H with the blow-off chamber, float D, valve B, mechanism connecting said valve and float, as specified, and diaphragm G, secured in opening O' below the mouth of passage H, all substantially as and for the purpose specified.

405,245. FEED-REGULATOR FOR COTTON-GINS. ROBERT L. BRANDON, near Fort Adams, Miss. Filed Apr. 19, 1888. Serial No. 271,196. (No model.)

Claim.—1. In a cotton-gin, the combination, with a feed-ratchet and its operating pawl or pawls and means for actuating said pawls, of link J and lever M, on which said link is carried, and the cord N and roll-box or saw-chamber, the said cord being connected at one end to the lever M and extending across the roll-box or saw-chamber



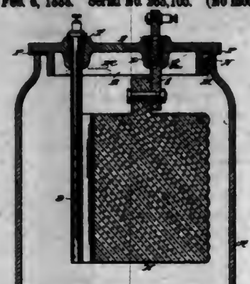
405,245.



in position to be deflected by an overaccumulation of cotton, substantially as shown and described.

2. In a cotton-gin, the combination, with a feed-ratchet and its operating pawl or pawls and means for actuating said pawls, of link J and lever M, on which said link is carried, and a hinged breast-board C, provided with projection 11, whereby, when said breast-board is raised, the lever M is depressed and the feed is cut off, substantially as shown and described.

405,246. GALVANIC BATTERY. WILLIAM A. CHILDS, Englewood, N. J. Filed Feb. 6, 1888. Serial No. 263,105. (No model.)



Claim.—1. The detachable zinc or positive electrode supported in a tapered opening in the top plate of the battery, as and for the purpose described.

2. The detachable zinc or positive electrode supported in the tapered opening in the top plate and provided with an elastic washer adapted to enter said opening, as and for the purpose described.

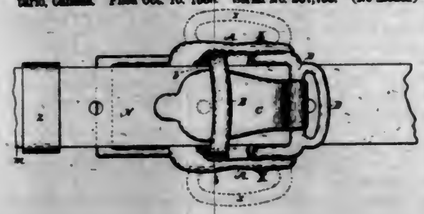
3. The combination, with the tapered supporting-conductor for the negative element, of a correspondingly-tapered opening in the top or cover plate, as and for the purpose described.

4. The combination, with the perforated cover or top plate, of the supporting-conductor having a taper formed at a point below the top edge of the perforation and engaging with a correspondingly-tapered portion of the latter.

5. In a galvanic battery, a carbon plate or rod forming an extension of the active carbon element, provided with a taper at the point where it passes through a perforation in the battery-cover.

6. In a galvanic battery, the carbon plate G, passing through the battery-cover and tapered at the point where it engages with said cover, as and for the purpose described.

405,247. TRACE-BUCKLE. VINCENT A. COLEMAN, Port Hope, Ontario, Canada. Filed Oct. 10, 1888. Serial No. 287,755. (No model.)



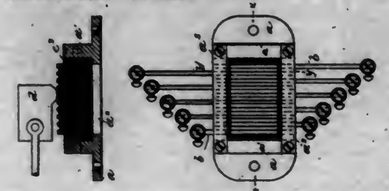
405,247.



Claim.—1. In the herein-described buckle, the tongue-plate C, having its inner surface, which comes in contact with the trace, plane and hinged at its rear end to the bail D, in combination with the bail D, with its hooks or trunnions K K and the draw-links B, substantially as set forth.

2. The combination of the body of the buckle with its three cross-bars F, G, and H, forming a bed for the trace, between which and the tongue-plate C the trace is clamped, and the recesses in the side pieces A A, between the bars G and H, for the reception of the hooks K K of the bail, with the bail D and the draw-link B, substantially as described.

405,248. ELECTRIC SWITCH. OLOF DAHL, Brooklyn, assignor to the Cleveland Motor Company, New York, N. Y. Filed Oct. 10, 1888. Serial No. 287,716. (No model.)



Claim.—1. A skeleton frame of general rectangular shape having an opening at the top and bottom and single openings in two of its sides, in combination with a series of contact-plates located in a parallel position and extending through the openings in the sides, substantially as described.

2. In an electric switch, a series of plates having lateral extensions thereon, in combination with a skeleton frame, the extensions on said plates passing through openings in said frame to the outside thereof, the extensions being arranged alternately on opposite sides of the frame, for the purpose of making circuit-connections therewith.

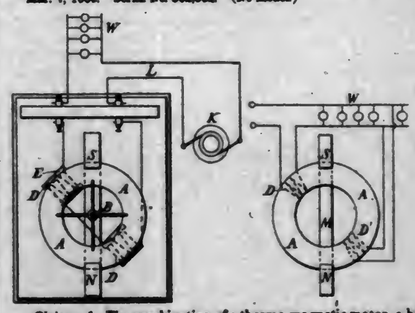
3. An electric switch consisting of a skeleton frame having its top and bottom open, in combination with a series of approximately-rectangular contact-plates suitably mounted on edge within said frame with their flat surfaces parallel to each other and with a space between each plate.

4. In an electric switch, the combination of the skeleton frame, the two movable side strips a^2 a^2, and a series of contact-plates secured within said frame by the said side strips, as described.

5. In an electric switch, a series of contact-plates mounted in parallel position with a space between each, mounted in a skeleton frame, the upper edges of the contact-plates being in the same plane and extending some distance above the frame, in combination with a sliding contact adapted to move into contact with any of said contact-plates.

6. In an electric switch, the combination, with a skeleton metallic frame having openings above and below, of a series of approximately-rectangular contact-plates in a vertical position parallel to each other, with an air-space between every two plates, said plates being insulated from the frame and from each other by strips of insulating material interposed between the frame and the plates, substantially as described.

405,249. ELECTRIC METER. OLOF DAHL, Brooklyn, N. Y. Filed Mar. 7, 1889. Serial No. 302,382. (No model.)



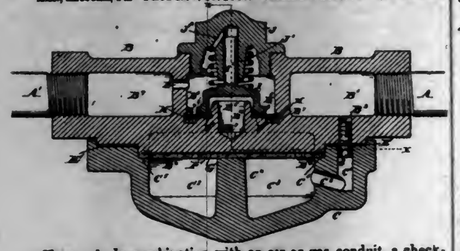
Claim.—1. The combination of a thermo-magnetic motor, a heating-conductor or heating-conductors heating, when traversed by elec-

tric currents, the armature of said motor in proper places to make it revolve, a retarding or loading device applied to the armature of said motor, and a device for counting or registering the revolutions of said armature.

2. The combination of a thermo-magnetic motor, a heating-conductor or heating-conductors heating, when traversed by electric currents, the armature of said motor in proper places to make it revolve, and a device for counting or registering the revolutions of said armature.

3. The combination of a thermo-magnetic motor deriving its source of heat from heating-conductors traversed by electric currents in direct proportions as the electric energy consumed, a retarding device applied to said motor, and a registering or indicating device actuated by the movements of the motor.

405,250. CHECK-VALVE. CHARLES B. DUDLEY and JOHN D. BOWMAN, Altoona, Pa. Filed Nov. 13, 1888. Serial No. 290,689. (No model.)



Claim.—1. In combination with an air or gas conduit, a check-valve chamber having its entrance-passage situated in its bottom and surrounded by an upwardly-extending annular projection, so as to form an annular chamber to contain liquid, a valve-seat formed on the bottom of said chamber around the upwardly-extending flange, a washer of leather or similar material resting on said seat, and a valve shaped to extend over the annular projection and seat itself on the washer aforesaid, all substantially as and for the purpose specified.

2. In combination with an air or gas conduit, a check-valve chamber having its entrance-passage situated in its bottom and surrounded by an upwardly-extending annular projection, so as to form an annular chamber to contain liquid, a valve-seat formed on the bottom of said chamber around the upwardly-extending flange, an annular groove extending around and below the valve-seat, a washer of leather or similar material resting on said seat and extending over the annular depressed groove, and a valve shaped to extend over the annular projection and seat itself on the washer aforesaid, all substantially as and for the purpose specified.

3. In combination with an air or gas conduit, a check-valve chamber having its entrance-passage situated in its bottom and surrounded by an upwardly-extending annular projection, so as to form an annular chamber to contain liquid, a valve-seat formed on the bottom of said chamber around the upwardly-extending flange, a washer of leather or similar material resting on said seat, and a valve shaped to extend over the annular projection and seat itself on the washer aforesaid, said valve having a bearing-face provided with serrations, all substantially as and for the purpose specified.

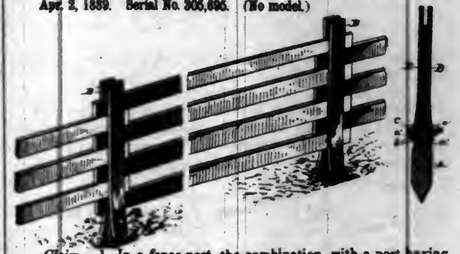
4. In combination with an air or gas conduit, a check-valve chamber having its entrance-passage situated in its bottom and surrounded by an upwardly-extending annular projection, so as to form an annular chamber to contain liquid, a valve-seat formed on the botton of said chamber around the upwardly-extending flange, an annular groove extending around and below the valve-seat, a washer of leather or similar material resting on said seat and extending over the annular depressed grooves, and a valve shaped to extend over the annular projection and seat itself on the washer aforesaid, said valve having a bearing-face provided with serrations, all substantially as and for the purpose specified.

5. In combination with an air or gas conduit, a dust-guard consisting of a disk or washer of felt and a similar disk of perforated metal arranged to support the felt secured across the conduit, and a check-valve situated in the conduit on the exit side of the dust-guard.

6. In combination with an air or gas conduit, a valve-chamber casting B, containing chambers B', B⁵, and B⁸ and having below chamber B⁸ an annular flange B⁴ and webs B⁵, a casting C, containing a chamber C⁸, and having an annular groove C⁹ and a central support C⁴, passages connecting chamber C⁸ with chambers B' and B⁵ and chamber B⁸ with B⁸, a felt washer G and perforated metal supporting-plate F, clamped between the flange and webs B⁴ B⁵ B⁸ and the groove and support C⁹ C⁴, a check-valve situated in chamber B⁸, and a cap J, forming a cover to said chamber B⁸, all substantially as and for the purpose specified.

7. In combination with an air or gas conduit, a valve-chamber casting B, containing chambers B', B⁵, and B⁸ and having below chamber B⁸ an annular flange B⁴ and webs B⁵, a casting C, containing a chamber C⁸ and having an annular groove C⁹ and a central support C⁴, passages connecting chamber C⁸ with chambers B' and B⁵ and chamber B⁸ with B⁸, a felt washer G and perforated metal supporting-plate F, clamped between the flange and webs B⁴ B⁵ B⁸ and the groove and support C⁹ C⁴, an annular projection B⁹, extending around the entrance of the passage connecting chamber C⁸ with chamber B⁸, so as to form a chamber at the bottom of chamber B⁸ to contain liquid, a valve-seat formed around flange B⁹, an annular depressed groove extending around said valve-seat, a washer H, covering the valve-seat and extending over the depressed groove, a valve I, formed to extend over the projection B⁹ and seat itself on washer H, a valve-stem I', extending up from said valve, a cap J, having a hollow internal projection J' to support and guide the stem I', and a passage J² leading from chamber B⁸ to the top of the hollow projection, all substantially as and for the purpose specified.

405,251. FENCE-POST. AARON P. ELSEY, Bardwell, Ky. Filed Apr. 2, 1889. Serial No. 305,695. (No model.)

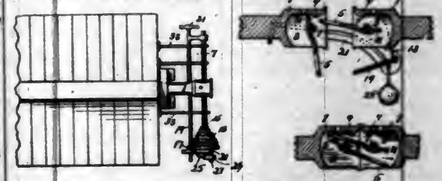


Claim.—1. In a fence-post, the combination, with a post having its inner and outer sides beveled, of the two corresponding strips secured to said beveled sides and forming a clamp adapted to bind the rails when disposed between said strips, substantially as set forth.

2. In a fence-post, the combination, with a post having its inner and outer sides beveled, of two corresponding strips secured to said beveled sides by a bolt, and a nut disposed upon the end of the bolt adapted to clamp the strips against the rails when disposed between the latter, substantially as set forth.

3. The herein-described fence-post, comprising the rigid post having a pointed lower end and beveled inner and outer sides, two corresponding strips disposed one at each of said beveled sides, a bolt passing transversely through the post and strips, and a nut disposed upon the end of the bolt for clamping and securing the strips, substantially as and for the purpose set forth.

405,252. CAR-COUPLING. CLEMENT ENGEL, St. Paul, Minn., assignor of one-half to Ignase Pruneta, same place. Filed Feb. 4, 1889. Serial No. 298,546. (No model.)



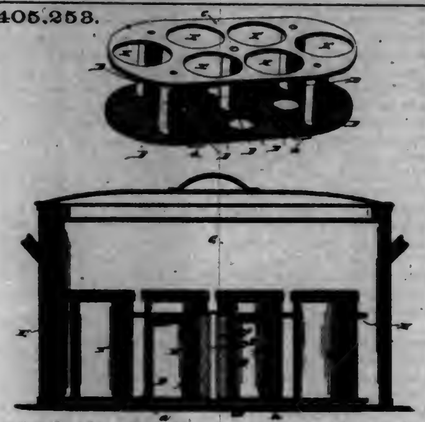
Claim.—1. The combination, with a railway-car, of the coupler-head I, having the recess 3 and the stop 9, the rod 7, turning freely in said coupler-head and provided with the link 5, the helical spring 13, having its inner coil rigidly secured to said rod 7 and its outer coil engaging the rod 19, the slotted bar 21, adapted to slide and to turn on said rod 7 against the tension of said spring and provided with the slidable weight 25 and the spur 27, adapted to engage the stop 29, and the rod 19, joined rigidly at one end to the bar 21 and secured loosely at its other end to the rod 7, substantially as described.

2. In a car-coupler, the combination, with a coupler-head having the stop 9, of the coupling-link 5, having the solid end 11, pivotally secured in said head, and the rod 7, rigidly secured to said link and serving as its pivot, and having suitable handles, by means of which it may be turned in said coupler-head, so as to elevate or depress said link, and the slidable weight 25 to hold the link in such position, substantially as described.

405,253. FRUIT OR VEGETABLE COOKER. FRANKLIN W. GAINES and ELLA GAINES, Colfax, Wash. Filed Oct. 20, 1888. Serial No. 288,691. (No model.)

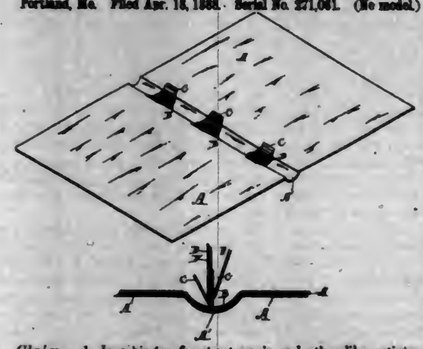
Claim.—The combination, with the bottom plate A, provided with

405,253.



openings B, and upon its under surface with feet *a*, and intermediate its openings B with bolt-holes *d'*, of the superimposed plate C, having can-openings E, and intermediate bolt-holes *c*, registering with the openings *d'* in the lower plate, and the pillars D, longitudinally bored, as at D', to register with the openings *d'* and *c*, and the bolt D², inserted through the openings D', *d'*, and *c*, substantially as specified.

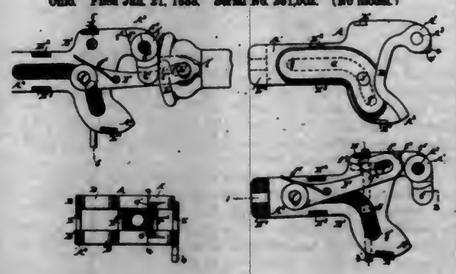
405,254. BINDER FOR SHEET-MUSIC, &c. GEORGE C. GOWEN, Portland, Me. Filed Apr. 18, 1888. Serial No. 271,061. (No model.)



Claim.—1. In a binder for sheet-music and other like articles, the combination of two outer covers united by a back piece of ordinary construction, a flexible strip secured by its ends to the adjacent edges of said cover, and a number of tabs or pieces of cloth or other like material secured to said strip and coated with adhesive material, said tabs being shorter than said back piece, whereby they may be passed through incisions in the edges of the leaves to be bound, substantially as and for the purpose set forth.

2. A book or volume composed of sheets in sets of two or more folded one inside of the other, a pair of covers united by a back piece, one or more flexible strips secured by their ends to the adjacent edges of said cover, tabs shorter than said back piece secured to said strips and to the inner sheet of each set, and apertures in the folded edges of said sheets to admit said tabs, substantially as shown.

405,255. CAR-COUPLING. SAMUEL H. HARRINGTON, Columbus, Ohio. Filed Jan. 21, 1888. Serial No. 261,502. (No model.)



Claim.—1. A coupling-head consisting of plates B B', of suitable form, in combination with stays situated on the outer edges of said plates and between the coupling-head proper and the end of its shank, substantially as and for the purpose specified.

2. A coupling-head consisting of plates B B' and of suitable form and provided with longitudinal corrugations, in combination with stays situated on the outer edges of said plates, securing them together and at a proper distance apart, so that the space between said plates may open freely and without obstruction in front.

3. A coupling-head consisting of plates B B' of suitable form, provided with longitudinal corrugations and with their front edges thickened externally, in combination with stays situated on the outer edges of said plates, securing them together and at a proper distance apart, so that the space between said plates may open freely and without obstruction in front.

4. In combination with a coupling-head consisting of plates B B', united by stays securing them together and at a proper distance apart, while leaving the space between said plates open in front of said head, a coupling nose or knuckle pivoted in one arm of the head, a latch for locking said nose, and a retractible supplemental coupling device secured between the plates B B', as specified, so as to normally lie inside the head and be capable of being drawn forward to engage with another coupler.

5. In combination with a coupling-head consisting of plates B B', secured together and at a suitable distance apart by stays which leave the space between the plates unobstructed in the front, a bifurcated coupling-nose made without vertical perforation pivoted in one arm of the head, a latch for locking said nose, and a retractible supplemental coupling device secured between the plates B B', as specified, so as to normally lie inside the head and be capable of being drawn forward to engage with another coupler.

6. In combination with a coupling-head consisting of plates B B', secured together and at a suitable distance apart by stays which leave the space between the plates unobstructed in the front, a coupling-nose pivoted in one arm of the head, a latch for locking said nose, and a retractible supplemental coupling device having its end formed into a hook secured between the plates B B', as specified, so as to normally lie inside the head and be capable of being drawn forward to engage with another coupler.

7. In combination with a coupling-head consisting of plates B B', united by stays which secure them together at a proper distance apart, while leaving the said space between said plates open in front of the said head, a coupling nose or knuckle pivoted in one arm of the head, a latch for locking said nose, guiding-grooves formed in the plates B B', and a retractible supplemental coupling device having pins *f* at its rear end, which said pins are engaged and slide in the guiding-grooves, whereby the supplemental coupling device is permitted to move forward to engage with another coupler without becoming disengaged from the head.

8. In combination with a coupling-head consisting of plates B B', having guiding-grooves G formed in them by bending the metal of the plates outward, and united by stays which secure them together and at a proper distance apart, while leaving the said space between said plates open in front of the said head, a coupling nose or knuckle pivoted in one arm of the head, a latch for locking said nose, and a retractible supplemental coupling device having pins *f* at its rear end, which said pins are engaged and slide in the grooves G, whereby the supplemental coupling device is permitted to move forward to engage with another coupler without becoming disengaged from the head.

9. In combination with a coupling-head consisting of plates B B', secured together and at a proper distance apart by stays which leave the space between the plates open in front, a coupling nose or knuckle pivoted in one arm of said coupling-head, a latch for locking said nose, a curved guiding-groove formed on the inside of the plates B B' along the center of their shanks and the center of the guard-arm of the coupler opposite to the arm holding the knuckle, and a retractible supplemental coupling device having a hooked end in front and its rear end provided with pins which engage with the guide-slots on the plates B B'.

10. In combination with a coupling-head consisting of plates B B' secured together and at a proper distance apart by stays which leave the space between the plates open in front, a coupling nose or knuckle pivoted in one arm of said coupling-head, a latch for locking said nose, a curved guiding-groove formed on the inside of the plates B B' along the center of their shanks and the center of the guard-arm of the coupler opposite to the arm holding the knuckle, a stop-pin J, adjustable in said guide-slot, and a retractible supplemental coupling device having a hooked and perforated end in front and its rear end provided with pins which engage with the guide-slots on the plates B B'.

11. In combination with a coupling-head consisting of plates B B', secured together and at a proper distance apart by stays which leave the space between the plates open in front, a bifurcated coupling nose

or knuckle pivoted in one arm of said coupling-head, a latch for locking said nose, a curved guiding-groove formed on the inside of the plates B B' along the center of their shanks and the center of the guard-arm of the coupler opposite to the arm holding the knuckle, a stop-pin J, adjustable in said guide-slot, a retractible supplemental coupling device having a hooked and perforated end in front and its rear end provided with pins which engage with the guide-slots on the plates B B', and a spring f^6, secured on the retractible coupling device so as to press against the stop-pin J when said device is drawn forward in the curved guiding-groove, substantially as and for the purpose specified.

12. In combination with a coupling-head A, having arms A' A^2, a coupling nose or knuckle C, pivoted in the arm A' and having a locking-arm extending from it in substantially the opposite direction to that of the knuckle proper, and a latch arranged to engage said arm and lock the nose in its closed position.

13. In combination with a coupling-head A, having arms A' A^2, square projecting corners a, formed on the inside of the ends of the plates composing the arm A', a coupling nose or knuckle pivoted in arm A' and having a locking-arm extending from it in a direction substantially opposite to the knuckle proper, and a latch arranged to engage said arm and lock the knuckle in its closed position.

14. In combination with a coupling head A, having arms A' A^2, a coupling nose or knuckle C, pivoted in the arm A' and having a locking-arm c^6 of less depth than the boss of the knuckle extending from it in substantially the opposite direction to that of the knuckle proper, a stop-lug c^5, and a verticallly-movable latch arranged when in its lowest position to engage said arm and lock the nose in its closed position and when elevated to allow arm c^6 to pass under it until said latch comes in contact with the stop-lug c^5, all substantially as and for the purpose specified.

15. In combination with the coupling-head A, having arms A' A^2, said head being made up of plates B B', secured together and at a proper distance apart by stays uniting their outer edges, so as to leave the space between the plates an unobstructed front opening, a coupling-nose C, pivoted in arm A' and having a locking-arm extending from it in a direction opposite to that of the knuckle proper, a latch adapted to engage said locking-arm, and a retractible supplementary coupling device secured in and extensible from the coupling-head, substantially as and for the purpose specified.

16. In combination with the coupling-head A, having arms A' A^2, said head being made up of plates B B', secured together and at a proper distance apart by stays uniting their outer edges, so as to leave the space between the plates an unobstructed front opening, a bifurcated coupling-nose C, pivoted in arm A' and having a locking-arm extending from it in a direction opposite to that of the knuckle proper, a latch adapted to engage said locking-arm, and a retractible supplemental coupling device having a hooked and perforated outer end secured in and extensible from the coupling-head, substantially as and for the purpose specified.

17. In combination with the coupling-head A, constructed so as to permit the space between its upper and lower plates to open freely in front, a bifurcated coupling-nose C, pivoted in one arm of the coupler and having a locking-arm c^6 extending from it, a latch to engage and lock said arm, guiding-grooves formed on the upper and lower plates of the head, a retractible supplemental coupling device F, having a hooked and perforated end at its front, bearing-pins f engaged in the guide-slots at its rear, and a pin f^5 extending down from the lower edge of its hook.

18. In combination with the coupling-head A, constructed, substantially as specified, so as to leave the space between the upper and lower plates open and unobstructed in front, a coupling-nose C, having locking-arm c^6, extending from its boss in a direction opposite to that of the knuckle proper, said arm being of less thickness than the boss, guiding-grooves formed in the upper and lower plates of the arm, and a retractible supplemental coupling device having pins f at its rear end engaged in the guiding-grooves and its length so proportioned that when in its rearmost position and with its head thrown into the arm of the coupler which carries the knuckle the said head will act as a latch in connection with the arm c^6 of the coupling-knuckle C, all substantially as and for the purpose specified.

19. In combination with the coupling-head A, constructed, substantially as specified, so as to leave the space between the upper and lower plates open and unobstructed in front, a coupling-nose C, having locking-arm c^6, extending from its boss in a direction opposite to that of the knuckle proper, said arm being of less thickness than the boss, guiding-grooves formed in the upper and lower plates of the coupler, a retractible supplemental coupling device having pins f at its rear end engaged in the guiding-grooves, and a hooked and perforated head, its length so proportioned that when in its rearmost position and with its head thrown into the arm of the coupler which carries the knuckle the said head will act as a latch in connection with the arm c^6 of the coupling-knuckle C, all substantially as and for the purpose specified.

20. In combination with the coupling-head A, constructed, substantially as specified, so as to leave the space between the upper and lower plates open and unobstructed in front, a coupling-nose C, having a locking-arm c^6, extending from its boss in a direction opposite to that of the knuckle proper, said arm being of less thickness than the boss, guiding-grooves formed in the upper and lower plates of the coupler, a retractible supplemental coupling device having pins f at its rear end engaged in the guiding-grooves, a hooked and perforated head, a pin f^5, extending from its under side and flush with the edge f^3 of the hook, said pin being of sufficient length to extend through and below a hole b in the lower plate of the coupling-head and its length so proportioned that when in its rearmost position and with its head thrown into the arm of the coupler which carries the knuckle the said head will act as a latch in connection with the arm c^6 of the coupling-knuckle C, and a cam H, secured below the hole b, so that when turned it will press against the pin f^5 and elevate the head of the retractible coupling device to unlatch the arm c^6, all substantially as and for the purpose specified.

21. In combination with the coupling-head A, constructed, substantially as specified, so as to leave the space between the upper and lower plates open and unobstructed in front, a coupling-nose C, having a locking-arm c^6, extending from its boss in a direction opposite to that of the knuckle proper, said arm being of less thickness than the boss, curved guiding-grooves formed in the upper and lower plates of the coupler, so as to extend along the shank and into the guard-arm, a retractible supplemental coupling device having pins f at its rear end engaged in the guiding-grooves, and a hooked and perforated head, its length so proportioned that when in its rearmost position and with its head thrown into the arm of the coupler which carries the knuckle the said head will act as a latch in connection with the arm c^6 of the coupling-knuckle C, all substantially as and for the purpose specified.

22. In combination with the coupling-head A, constructed, substantially as specified, so as to leave the space between the upper and lower plates open and unobstructed in front, a coupling-nose C, having a locking-arm c^6, extending from its boss in a direction opposite to that of the knuckle proper, said arm being of less thickness than the boss, guiding-grooves formed in the upper and lower plates of the coupler, a retractible supplemental coupling device having pins f at its rear end engaged in the guiding-grooves and its length so proportioned that when in its rearmost position and with its head thrown into the arm of the coupler which carries the knuckle the said head will act as a latch in connection with the arm c^6 of the coupling-knuckle C, and a stop-pin J, adjustable in the guiding-slots, all substantially as and for the purpose specified.

23. In combination with the coupling-head A, constructed, substantially as specified, so as to leave the space between the upper and lower plates open and unobstructed in front, a coupling-nose C, having a locking-arm c^6, extending from its boss in a direction opposite to that of the knuckle proper, said arm being of less thickness than the boss, curved guiding-grooves formed in the upper and lower plates of the coupling, so as to extend along the shank and into the guard-arm thereof, a retractible supplemental coupling device having pins f at its rear end engaged in the curved guiding-grooves and hooked and perforated front end, and its length so proportioned that when in its rearmost position and with its head thrown into the arm which carries the coupling-nose said head will act as a latch in connection with the arm c^6 of the knuckle C, a spring f^6, secured to the supplemental coupling device, and a stop-pin J, adjustable in the curved guiding-slot, all substantially as and for the purpose specified.

405,256. CAR-COUPLING. SAMUEL H. HARRINGTON, Columbus, Ohio. Filed Jan. 30, 1888. Renewed Dec. 1, 1888. Serial No. 292,439. (No model.)



Claim.—1. In combination with a coupling-head having a pivot-arm and a guard-arm, a coupling nose or knuckle pivoted in said pivot-arm and having a locking-arm extending from its hub or boss in a direction substantially opposite to the nose proper, a latch arranged to engage the locking-arm, and a spring-arm secured to the coupling-nose, so that it will extend into the space between the pivot and guard arms when said nose is open.

2. In combination with a coupling-head having a pivot-arm and a guard-arm, a coupling nose or knuckle pivoted in said pivot-arm and having a locking-arm extending from its hub or boss in a direction substantially opposite to the nose proper, a reversible double latch having arms of unequal length, either of which can be made to engage the locking-arm of the coupling-nose.

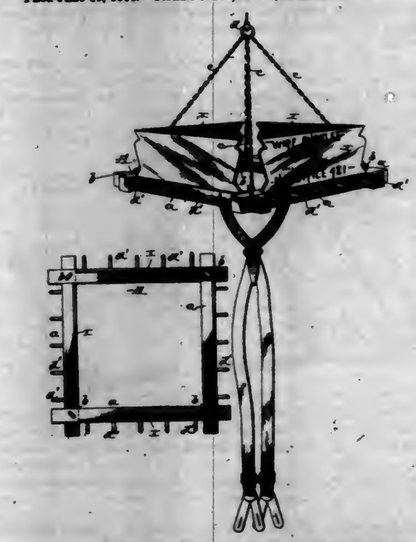
3. In combination with a coupling-head having a pivot-arm and a guard-arm, a coupling nose or knuckle pivoted in said pivot-arm and having a locking-arm extending from its hub or boss in a direction substantially opposite to the nose proper, a reversible double latch having arms of unequal length, either of which can be made to engage the locking-arm of the coupling-nose, and a spring-arm secured to the coupling-nose, so that it will extend into the space between the pivot and guard arms when said nose is open.

4. In combination with a coupling-head having a pivot-arm and a guard-arm, a coupling nose or knuckle pivoted in said pivot-arm and having a locking-arm extending from its hub or boss in a direction substantially opposite to the nose proper, a latch arranged to engage the locking-arm, a spring-arm secured to the coupling-nose, so that it will extend into the space between the pivot and guard arms when said nose is open, and a stop secured in the coupling-head, so as to engage and deflect the spring as the coupling-nose is closed.

5. In combination with a coupling-head having a pivot-arm and a guard-arm and made up of two plates B B', secured together and at a proper distance apart by stays arranged on the outer edges of said plates, so as to leave the space between said plates open and unobstructed in front, a coupling nose or knuckle pivoted in said pivot-arm and having a locking-arm extending from its hub or boss in a direction substantially opposite to that of the nose proper, a latch arranged to engage said locking-arm, a spring secured to said coupling-nose, so as to extend out into the space between the pivot and guard arms when the knuckle is open, and a retractible supplementary coupling device secured in the hollow space between the plates B B', so that it can be drawn out between the arms of the head.

6. In combination with a coupling-head having a pivot-arm and a guard-arm and made up of two plates B B', secured together and at a proper distance apart by stays arranged on the outer edges of said plates, so as to leave the space between said plates open and unobstructed in front, a coupling nose or knuckle pivoted in said pivot-arm and having a locking-arm extending from its hub or boss in a direction substantially opposite to that of the nose proper, a latch arranged to engage said locking-arm, a spring secured to said coupling-nose, so as to extend out into the space between the pivot and guard arms when the knuckle is open, a retractible supplementary coupling device secured in the hollow space between the plates B B', so that it can be drawn out between the arms of the head, and a stop on the front edge of the lower plate.

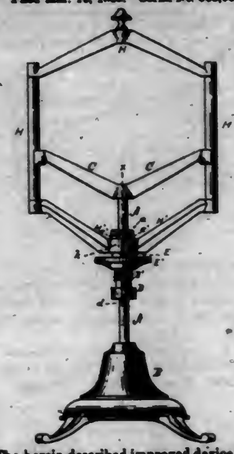
405,257. DISPLAY-RACK. CHARLES R. HARRIS, Williamsport, Pa. Filed June 19, 1888. Serial No. 277,516. (No model.)



Claim.—1. As an improved article of manufacture, an angular frame having display cards or advertisements affixed to the upper face of each side, hooks secured to the side pieces below the cards or advertisements, and chains or flexible devices leading upwardly from the corners and attached to a suspending-ring, substantially as set forth.

2. A display-rack consisting of an angular frame, screw eyes or staples securing the side pieces of the frame together, display cards or advertisements secured to the side pieces of the frame, hooks also attached to said side pieces, and flexible devices attached to the screw eyes or staples for holding the frame suspended, substantially as set forth.

405,258. CLOCK-MOVEMENT HOLDER. JOHN HARWOOD, Somerville, Mass. Filed Mar. 16, 1889. Serial No. 303,609. (No model.)



Claim.—The herein-described improved device for holding clock movements, consisting, essentially, of the standard A, threaded at its upper end and supported by a pedestal, externally-threaded tube D and set-screw d, tubular thumb-piece E, provided with the annular groove e and spring e', cross-head C, and frame H H' A, supported by said thumb-piece, substantially as and for the purpose set forth.

405,259. WRENCH. JOHN S. HENRY, Stonington, Conn., assignor of one-half to George L. Denison, same place. Filed Dec. 29, 1887. Serial No. 259,257. (No model.)



Claim.—1. An attachment for wrenches, comprising the holder D, adapted to bear on the jaw of the wrench, and having the flanges G G embracing the same, the clamping-screw mounted in one of the flanges and engaging the jaw, and the spring-actuated block sliding in the holder, substantially as specified.

2. An attachment for wrenches, comprising the holder D, having side flanges F, the serrated block mounted between the flanges and having inclined guide-slots P in its sides, and the guide-screws O, mounted in the flanges F and engaging the guide-slots P, substantially as specified.

3. An attachment for wrenches, comprising the holder D, adapted to be attached to either jaw of the wrench and having the inclined plate E, the tapered or wedge-shaped block K, mounted on this plate and having its outer face serrated, and the spring attached to the plate and connected to the block, whereby the latter is normally held in the engaging position, substantially as and for the purpose specified.

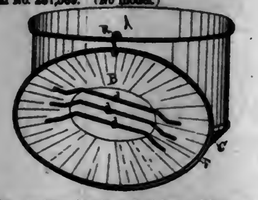
4. The combination, with the wrench having parallel-faced jaws, of the block-holder D, adapted to be clamped on either jaw, and the sliding block mounted on the block-holder and having a free sliding movement, substantially as specified.

5. The attachment for wrenches, comprising the block-holder D, having a plate E, provided with a vertical stud I, the sliding wedge-shaped block K, mounted on the plate and having a groove in its under side engaging the said stud, and the spring M, attached to the stud I and bearing against the end of the said groove, substantially as specified.

6. The attachment for wrenches, comprising the block-holder D, having vertical side flanges F F, provided with threaded apertures N, the vertical stud I, the wedge-shaped serrated block K, sliding between the flanges F, and having grooves P in its sides and the groove L in its lower side, the spring M, attached to the stud I and operating in the groove L, and the guide-screws O, arranged in the apertures N and engaging at their inner ends in the grooves P, substantially as specified.

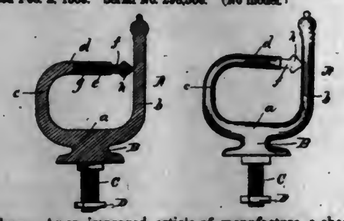
7. As an attachment for wrenches, the holder D, adapted to be attached to either jaw of a wrench, and having the side flanges F, and the serrated block K, fitted between the flanges, and sliding freely outward and inward over the outer face of the holder between the flanges, and the spring housed within and between the block and its holder and connected to said parts, respectively, as set forth.

405,260. FEED-BOX. JOHN W. JACOBS, Fremont, Ohio; John T. Garver administrator of said John W. Jacobs, deceased. Filed Oct. 3, 1888. Serial No. 287,589. (No model.)



Claim.—The combination, in a feed-box with a concaved or dish-shaped bottom, of a follower concaved or dish-shaped on its upper side, having an opening O, with regulating-bars across said opening, flange F, and guide-rod R, all substantially as and for the purpose set forth.

405,261. CHECK-REIN-HOOK. WALTER C. JENKS, Argyle, Wis. Filed Feb. 2, 1889. Serial No. 298,508. (No model.)



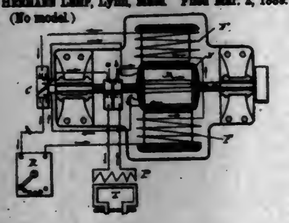
Claim.—As an improved article of manufacture, a check-hook consisting of an upright arm or post *b* and a hook with an upper substantially horizontal bent end with a recess therein, a spring mounted in said recessed end of the hook, and a conical headed pin bearing against said spring and held by the said recessed end of the hook normally against the upright post, substantially as described.

405,262. GARMENT. WILLIAM F. KEMP, Chicago, Ill., assignor to the Hay & Todd Manufacturing Company, of Michigan. Filed Dec. 10, 1888. Serial No. 293,111. (No model.)



Claim.—The improved garment described, having a rear filling-piece for giving fullness in the seat, which filling-piece is provided with two projections at its lower end separated by a notch and united to the front part of the garment along the margins of said notch, and to the rear part of the garment along its outer edges, substantially as described.

405,263. COMPOUND-WOUND ALTERNATING-CURRENT DYNAMO. HERMANN LEMP, Lynn, Mass. Filed Mar. 2, 1889. Serial No. 301,788. (No model.)



Claim.—1. In a dynamo-electric machine, the combination, with the field-magnet coil fed by an armature-coil in circuit with the work, of a separate exciting source feeding the same field-magnet coil in multiple with the said armature-coil.

2. The combination of a transformer whose primary is in the uncommuted portion of the circuit of the armature of a dynamo, a field-magnet coil in a locally-commuted portion of said circuit and in series with the primary, and an exciter armature-coil operated in a field excited by its own currents and also connected to the field-magnet coil, as and for the purpose described.

3. The combination, with a transformer for supplying large-volume electric currents, of a dynamo-machine having a work-circuit armature-coil in series with the primary of the transformer and a separate exciter connected in multiple with the first to the field-magnet exciting-circuit, as and for the purpose described.

4. The combination, with a dynamo-machine having an armature-coil and field-magnet coil in series with variable work, of a separate exciting-coil feeding the field in multiple with the first armature-coil, as and for the purpose described.

5. The combination, with a dynamo-machine having a field-coil in series with an armature-coil and commutator, of a transformer having its primary in a portion of said circuit where the current is uncommuted, and a separate armature-coil supplying commuted current in multiple with the first-named armature-coil to the field coil or circuit.

6. The combination, in a dynamo-machine, of a main-circuit armature-coil in series with the work and field-magnet coil and an exciter source or coil independent thereof feeding the main coil in multiple with the first.

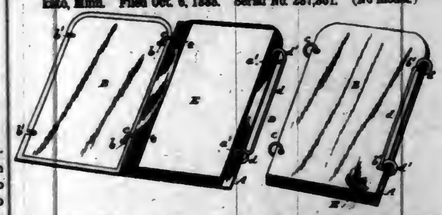
7. In a dynamo-electric machine, the combination, with a work-circuit coil, of an exciter-coil, a commutator between the same and the field-coil, a collector-ring between a terminal of the exciter-coil and the commutator, and a variable resistance between the collector-brush for said ring and the commutator.

8. The combination, with the exciter-coil and the work-circuit coil, of two collector-rings in the circuit of the exciter-coil, a variable resistance in the connection of the collector-brushes therefor, two collector-rings in the circuit of the work-coil, brushes bearing on the same and including the work in circuit between them, and a commutator in the circuit of both coils and between the same and the field-magnet.

9. In a dynamo-electric machine, the combination, with the work-circuit coil connected to the work through a suitable collecting-ring, of an exciting armature-coil connected to a separate collecting-ring and a variable reactive coil in the connection from the brush of said ring to the circuit of the first-named coil, as and for the purpose described.

10. In a dynamo-electric machine, the combination, with two revolving armature-coils, of a field-magnet coil and a commutator to which one terminal of each armature-coil is connected, collector-rings to which the opposite terminals of the coils are connected, and a third ring connected to the opposite side of the commutator, as and for the purpose described.

405,264. SHEET-MUSIC BINDER. CHARLES M. LINDSAY, Mankato, Minn. Filed Oct. 6, 1888. Serial No. 287,361. (No model.)



Claim.—In music-binders, the clamp C, having hooks *c* and shanks *c'*, and the clamp D, consisting of a wire *d*, having two parallel end rings *d' d'*, in combination with the cover A, having holes *a'*, and the cover B, having holes *b b* and open slots *b' b'*, whereby music-sheets may be conveniently bound together and hung on racks, as described.

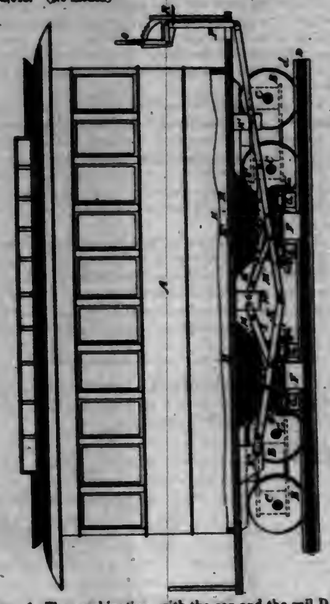
405,265. CHURN-DASHER. WILLIAM S. LINDSLEY, Ada, Ohio. Filed Dec. 31, 1888. Serial No. 295,051. (No model.)

Claim.—The improved churn-dasher herein described and shown, comprising the cross-bar B, secured to the lower end of the dasher-rod, the side bars C C, secured to the ends of the said cross-bar and having their upper corners cut away and provided in their inner faces with the V-shaped recesses D, which are continued above their upper contracted ends to form the inclined shoulders F, the perforated breakers secured to and between the cut-away corners of the side bars, and the perforated leaves pivoted in the upper ends of the recesses D and having their edges playing between the walls of said recesses and their corners adapted to come into contact with the shoulders F, as specified.

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405,266. COMBINED CAR BRAKE AND CLUTCH. LUDWIG MAURER and HEINRICH C. SCHEER, New York, N. Y. Filed Mar. 5, 1889. Serial No. 302,015. (No model.)



Claim.—1. The combination, with the car and the rail D, of the vertically-movable gripper having jaws to engage the flanges of the rail, and the pressure-blocks arranged one at each end of said gripper and adapted to move in a direction opposite to the movement of the gripper and to bear upon the top of the rail, substantially as and for the purpose specified.

2. The combination, with the rail, of the gripper and the inclined scrapers on the ends of the gripper above the top of the rail, substantially as and for the purpose specified.

3. The combination, with the rail D, having flanges *d*, of the gripper having jaws to engage said flanges, and inclined at its ends, as at F', substantially as and for the purpose specified.

4. The combination, with the vertically-adjustable gripper and the vertically-movable pressure-blocks, of the system of levers for moving said blocks and gripper in opposite directions, substantially as shown and described.

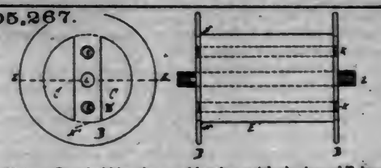
5. The combination, with the car and the vertically-movable gripper and pressure-blocks, of the lever H on the gripper, the levers M, acting on the lever H, and the system of levers for operating the levers M, substantially as shown and described, and for the purpose specified.

6. The combination, with the car, the vertically-movable gripper, and the pressure-blocks movable in the opposite direction to that of the gripper, of the levers H, moving with the gripper, the levers M, connected with the pressure-blocks and acting on the levers H, and the system of levers connected with and arranged to operate the levers M, substantially as and for the purpose specified.

405,267. BOBBIN. CHARLES E. MERRIAM, Paterson, N. J. Filed Apr. 15, 1889. Serial No. 307,266. (No model.)

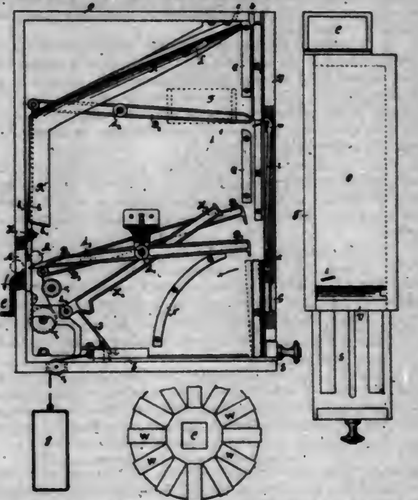
Brief.—The object of the invention is to provide a bobbin of improved construction in which it shall be impossible for the silk to be wound between the head and the end of the barrel.

405,267.



Claim.—In a bobbin, the combination, the barrel E, having the projecting portions C, of the heads B, having the openings C formed therein to receive said projecting portions, and having the central portions B' let into the ends of the barrel between said portions C, and rivets K, substantially as shown and described.

405,268. APPARATUS FOR AUTOMATICALLY CHANGING CIRCULATING-LIBRARY BOOKS. JULIUS MEHLHARDT, Dresden, Germany, assignor of one-half to Anton Brause, same place. Filed July 5, 1888. Serial No. 279,113. (No model.) Patented in Germany Mar. 16, 1888, No. 45,086; in England May 8, 1888, No. 6,878; in Luxemburg May 14, 1888, No. 901; in Belgium May 15, 1888, No. 81,712; in Italy June 19, 1888, No. 23,443; in France July 9, 1888, No. 190,403; in Canada July 24, 1888, No. 20,546; in Austria-Hungary Aug. 16, 1888, No. 19,406 and No. 34,368, and in Spain Aug. 20, 1888, No. 8,291.



Claim.—1. In an apparatus for the automatic exchanging of library-books, the combination, with the receptacle for containing the books, of a lock adapted to be released by the weight of a coin and a lock adapted to be operated by the weight of the book in the act of being replaced, and means for withdrawing said book when both locks are released, substantially as described.

2. In an apparatus for the automatic exchanging of books, the combination, with the receptacle, of locking-levers, one adapted to be operated by the weight of a predetermined coin and the other by the weight of a book in the act of being returned, and two chutes leading to said levers, one adapted to accommodate the book and the other the coin, substantially as described.

3. In an apparatus for the automatic exchange of books, the combination, with the two locking-levers operating independently to retain the book, one adapted to be released by the weight of a predetermined coin and the other by the weight of a book in the act of being returned, of two independent chutes or ways leading, respectively, to said levers and adapted to accommodate a coin and book, respectively, substantially as described.

4. In an apparatus for the automatic exchange of books, the combination of the receptacle having the vertical chute or guide for the introduction of a book into the receptacle, and the level below the chute adapted to engage a book to retain it in a vertical position at a point below the chute and adapted to be operated by the weight of a coin to release the book, substantially as described.

5. In an apparatus for the automatic exchange of books, the combination of the receptacle having the vertical chute or guide for the introduction of a book into the receptacle, and two independent levers below the chute adapted to engage a book to retain it in vertical position at a point below the chute, one of said levers adapted to be

operated by the weight of a predetermined coin and the other by the passage of a book through the chute to release the book within the receptacle, substantially as described.

6. In an apparatus for the automatic exchange of books, the combination, with the chute for the introduction of books within the receptacle and the coin-chute, of locking-levers for retaining the books within the receptacle, one adapted to be operated by the weight of a coin, and a lever projecting into the book-chute and adapted to be operated by the passage of a book through the chute to operate the other locking-lever, whereby the book held by said locking-lever is released, substantially as described.

7. The combination, with the levers for retaining the book within the receptacle, one adapted to be operated by the weight of a coin and the other by the weight of a book to be exchanged, of a retaining lever or gat for retaining the coin in engagement with the coin-operated lever, and a connection between said lever or gate and the lever operated by the book, whereby the coin is released by the book-operated lever, substantially as described.

8. The combination, with the levers for retaining the book within the receptacle, one adapted to be operated by the weight of a coin and a lever adapted to be operated by the book to be exchanged connected to the other to operate the same, of a lever or gate for retaining the coin in engagement with the coin-operated lever, and the connection between the same and the lever operated by the book, whereby the coin-operated lever is depressed until the entrance of a book, substantially as described.

9. In an apparatus for the automatic exchange of books, the combination, with the levers for retaining the book in upright position, adapted to be operated by the entrance of a book to be exchanged and the weight of a predetermined coin, of a lever also adapted to be operated by the book to be exchanged and engaging the book within the receptacle to throw the same on its side, substantially as described.

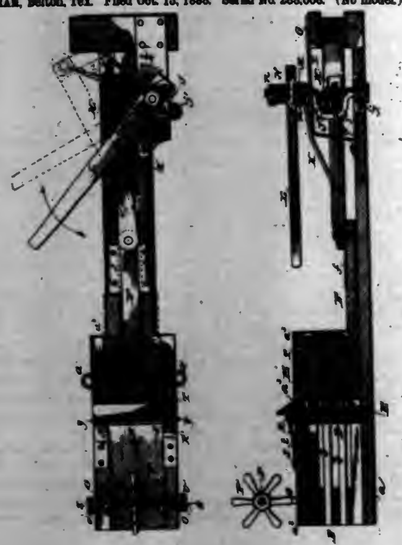
10. In an apparatus for the automatic exchanging of books, the combination, with the receptacle and the drawer for withdrawing a book, of the lever engaging a book to retain it in upright position and operated by the drawer to release the book, substantially as described.

11. The combination, with the drawer and the lever operated thereby to retain the book in upright position, of the lever projecting in the path of the drawer and engaging said first-mentioned lever to release the same when the drawer is closed, substantially as described.

405,269. METHOD OF SIZING PULP. WILLIAM J. MEHRER, St. Helens, County of Lancaster, England. Filed Oct. 20, 1887. Serial No. 252,904. (No specimens.)

Claim.—The method of sizing pulp, which consists in saponifying rosin by treating it with aluminate of soda, adding the solution thus prepared to the pulp in the beating-engine, and then decomposing it by adding a solution of magnesian sulphate or its described equivalent, all substantially as and for the purpose specified.

405,270. BALING-PRESS. JOHN F. PATY and AMBROSE W. BIGHAM, Belton, Tex. Filed Oct. 13, 1888. Serial No. 288,006. (No model.)



Claim.—1. In a baling-press, the combination, with a plunger provided with a spring-actuated face-block, of a crank-shaft connected with said plunger and provided with an operating-lever, and a ratchet-connection between the latter and the crank-shaft, said ratchet, in connection with the spring-actuated face-block of a plunger, being adapted to permit the rebound of the plunger independent of the movement of the operating-lever, substantially as and for the purpose set forth.

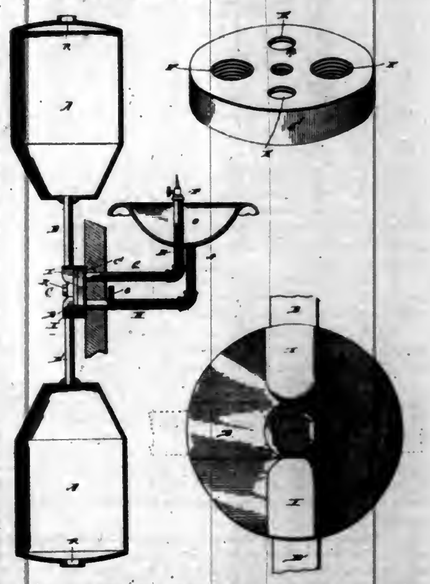
2. In a plunger for baling-presses, the combination, with the body, provided at its sides with longitudinal grooves, of a face-block provided at each of its sides with a rearwardly-extending arm corresponding to and adapted to slide within said grooves, said arms having longitudinal slots engaged by pins in the body adapted to limit the forward movement of the face-block, and springs interposed between the latter and said body, substantially as and for the purpose set forth.

3. In a baling-press, the combination, with the baling-chamber and plunger, of a spring-held tuck-board, and angular arms pivoted to the sides of the press and engaging the bearings of said board, said arms being elevated during the stroke of the plunger by lugs on the latter to elevate the tuck-board, substantially as and for the purpose set forth.

4. In a baling-press, the combination, with the baling-chamber and plunger, of a spring-held tuck-board disposed in a slot in the top of the former, and corresponding oppositely-disposed arms pivoted at their front ends to the sides of the press and provided at their free ends with upwardly-projecting extensions engaging the bearings of said board, said arms being adapted to be elevated during the stroke of the plunger by lugs on the latter, substantially as and for the purpose set forth.

5. The herein-described baling-press, comprising the chamber having yielding sides and tension mechanism for compressing the same, a plunger provided with a spring-actuated face-block, a crank-shaft connected with said plunger and provided with an operating-lever, and a ratchet-connection between the latter and the crank-shaft, all arranged and adapted to operate substantially as and for the purpose set forth.

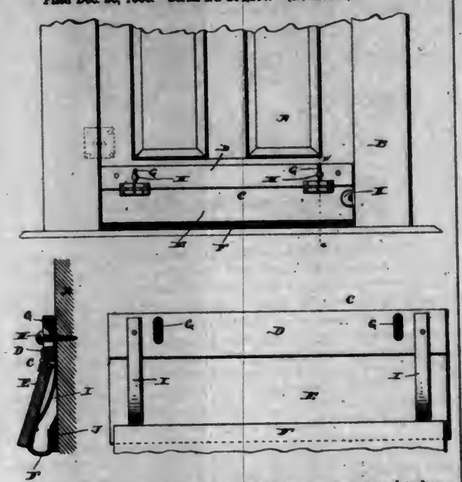
405,271. TANK-FOUNTAIN. JOHN W. PIERSON, St. Aubert, Mo., assignor of one-half to James A. Dickinson, same place. Filed May 28, 1888. Serial No. 275,394. (No model.)



Claim.—1. The combination of a fountain-basin, a flat circular stationary coupling-disk having a central bolt-hole and transverse inlet and discharge openings, the inlet and discharge pipes connecting said openings with the basin, a flat circular revoluble coupling-disk having L-shaped or angular passages connecting its inner face with its rim or periphery and adapted to register with the inlet and outlet passages of the stationary coupling-disk, the pivotal bolt connecting the revoluble with the stationary coupling-disk, the radially-extending pipes connected to the openings in the rim of the revoluble coupling-disk, and the tanks at the outer ends of said pipes, substantially as and for the purpose set forth.

2. The combination of a fountain-basin, an inlet-pipe having a nozzle, an outlet-pipe having a vent-tube, a flat circular stationary coupling-disk having transverse openings to which said pipes are connected, a flat circular revolubie coupling-disk having angular or L-shaped passages adapted to register with said openings, radial pipes connected to said passages and carrying the tanks, and the pivotal connecting-bolt, substantially as set forth.

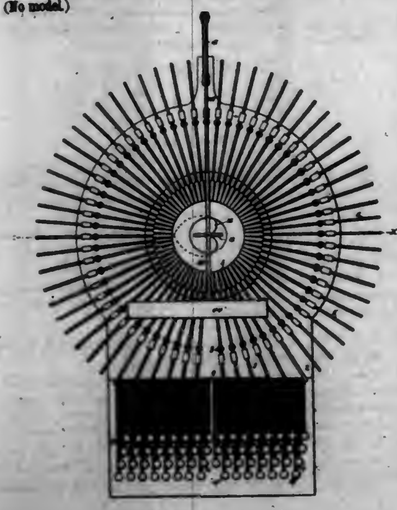
405,272. WEATHER-STRIP. CLARK POLLEY, New Berlin, Pa. Filed Dec. 20, 1888. Serial No. 294,267. (No model.)



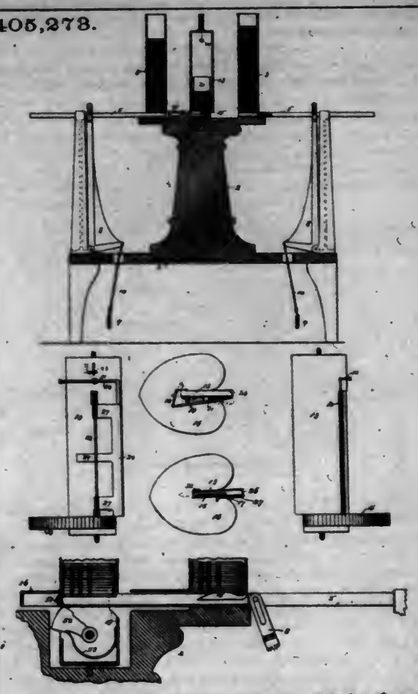
Claim.—1. The combination of the base-strip adapted to be secured to a door, the swinging leaf hinged to the base-strip, the springs secured at their upper ends to the base-strip and having their lower ends bearing on the swinging leaf, and the flexible strip having one edge secured to the swinging leaf and its other edge adapted to be secured to a door, as set forth.

2. The combination of the base-strip adjustably secured to the door, the swinging leaf hinged to the base-strip, the springs having their upper ends secured to the base-strip and their lower ends bearing on the swinging leaf, the strip J, secured to the door, and the flexible strip having its front edge secured to the swinging leaf and its rear edge secured to the strip J, as specified.

405,273. TYPE SETTING AND DISTRIBUTING MACHINE. GEORGE D. ROGERS, Minneapolis, Minn. Filed Sept. 6, 1886. Serial No. 212,817. (No model.)



405,273.



Claim.—1. In a type-setting machine, the combination of a series of type-cases arranged in radial lines around a central point, a series of type-carriers moving in radial lines from said type-cases to said central point, and a type-receiver located at said central point, substantially as described.

2. In a type-setting machine, the combination of a series of type-cases, a series of radially-moving type-carriers, and a pivoted composing-stick having a type-receiving aperture and adapted to be turned in either direction upon its pivots to present said aperture to any one of said carriers, substantially as described.

3. The combination, in a type-setting machine, of the pivoted stick 13, having a type-receiving aperture, a series of type-cases arranged in radial lines around said stick, a series of radially-moving type-carriers, and a cam on the spindle of said stick adapted to be engaged by a moving part of the carrier and turn said spindle on its axis, all substantially as described.

4. The combination, with the sliding carrier 5, having the groove 6 and shoulders 7, of the stick 13, having an aperture adapted to receive the carrier, and the curved tongue 15, arranged opposite the aperture in said stick, substantially as described.

5. In a type-setting machine, the type-carrier 5, having a groove 6 in its end, and shoulders 7 in the walls of the groove at a point below its top, as and for the purpose set forth.

6. In a type-setting machine, a vertical pivoted composing-stick having a type-receiving aperture in its end wall, substantially as and for the purpose set forth.

7. The combination, in a type-setting machine, with the stick 13, frame 35, and pusher 40, of the galley 44, having the hinged door 45, and the spring 46, all substantially as described.

8. In a type-setting machine, the galley having the inwardly-opening door 45, and the spring 46, adapted to hold said door in a closed position, but permitting it to yield inwardly upon the application of pressure against its front, substantially as described.

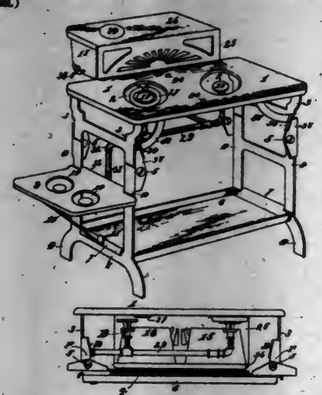
9. In a type-setting machine, the pivoted stick 13, having hinged doors at its front and rear, and means, substantially as described, connecting said doors, whereby both doors are opened and closed simultaneously, substantially as described.

10. In a type-setting machine, the pivoted composing-stick 13, having the inclined front door 26, the rear door 32, the spring 29, pivoted lever 30, and link 33, all substantially as described.

11. In a type-distributing machine, the combination of a central pivoted type-case, a series of type-receivers arranged in radial lines around said central type-case, and a series of type-carriers moving in

radial lines from said central type-case to the type-receivers, all substantially as described.

405,274. GASOLINE-STOVE. MARCUS S. SAGER, Washington Court-House, Ohio. Filed Sept. 26, 1887. Serial No. 250,746. (No model.)



Claim.—1. The combination, with the top plate 1 of a gasoline-stove and the burner-carrying distributing-pipe 29, located beneath and supported by said top plate, of the depending legs 3, secured to the top plate and having flanges 39, and the folding legs 4, hinged to said depending legs at a point below the distributing-pipe to fold inward below the distributing-pipe, and provided with stops 38 to hold them in a vertical position, substantially as described.

2. The combination, with the top plate 1 of a gasoline-stove, of the fixed depending legs secured to the top plate, the folding legs 4, hinged to said fixed legs to fold inward beneath the top plate, and the drip-pan 6, detachably connected with the lower portions of said folding legs to brace and hold the latter, substantially as described.

3. The combination, with the top plate of a gasoline-stove, of the fixed legs 3, secured to the plate and having the flanges 39, and the folding legs 4, pivoted to the fixed legs below said flanges and having the stops 38 above the pivots, substantially as described.

4. The combination, with the top plate of a gasoline-stove, of the fixed legs 3, secured to said plate, the folding legs 4, pivoted to the fixed legs to fold inward beneath the plate and having cross-rails 8, and the drip-pan 6, having hooked edges 7, detachably engaging the cross-rails, substantially as described.

5. The combination, with the top plate of a gasoline-stove, of the fixed legs 3, secured to said plate and having stop-flanges 39, the folding legs 4, pivoted to the fixed legs and having the stops 38 and cross-rails 8, and the drip-pan 6, detachably engaging the cross-rails, substantially as described.

6. The combination, with the top plate 1 of a stove, of the legs 3, fixed to the top plate, the legs 4, pivoted to the fixed legs and having the upper and lower cross-rails 13 and 8, the shelf 9, having the hooked edge 12, detachably engaging the top cross-rail, and the bracket 10, secured at one end to the shelf and having at its other end the hook 11, detachably engaging the lower cross-rail, substantially as described.

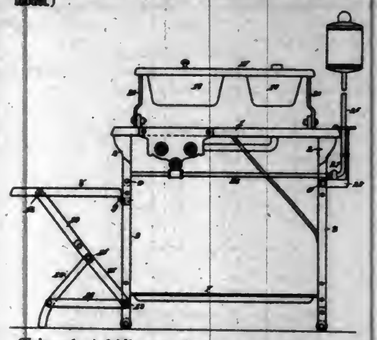
7. The combination, with the top plate of a gasoline-stove, of the burner, the distributing-pipe 29, arranged under the top plate, the tubular water-heater 17, the detachable connecting-pipes 22, 23, and 28, the bracket 25, hinged to the top plate and having the shelf 26, the movable bracket-supporting arm 36, and the gasoline and water tanks secured to the under side of the shelf to swing therewith beneath the top plate, substantially as described.

8. The combination, with the top plate 1, the burner, and the tubular heater 17, of the bracket 25, hinged to the top plate and having the shelf 26, the movable bracket-supporting arm 36, the water-tank 15, secured to the under side of the shelf, and the detachable pipes 22 and 23, connecting the ends of the tubular heater with the tank, substantially as described.

9. The combination, with the top plate 1, of the burner, the distributing-pipe 29, arranged thereunder and supported thereby, the bracket 25, hinged to the top plate and having the shelf 26, the bracket-supporting arm 36, the gasoline-tank 16, secured to the under side of the shelf, and the detachable pipe 28, connecting the tank and distributing-pipe, substantially as described.

10. The top plate of a gasoline-stove provided with fixed legs 3, having hinged inwardly-folding legs 4, in combination with the oil-distributing pipe 29 for the burners, connected with the top plate and located entirely above the hinge-joint connecting the folding legs with the fixed legs, so that the folding legs fold upon and protect the distributing-pipe, substantially as described.

405,275. GASOLINE-STOVE. MARCUS S. SAGER, Washington Court-House, Ohio. Filed Sept. 15, 1888. Serial No. 285,443. (No model.)



Claim.—1. A folding gasoline-stove comprising the top plate 1, having pendent fixed leg-sections 2, the folding leg-sections 3, hinged to the lower ends of the latter, the tank-carrying shelf 17, having supporting-brackets 20, loosely connected with the top plate and capable of swinging around with the shelf and tank to a position under the table between the stationary leg-sections, and the folding shelf 8, pivoted to one of the hinged leg-sections to fold upon the latter and move therewith beneath the top plate, substantially as described.

2. A folding gasoline-stove comprising the top plate 1, having pendent fixed leg-sections 2, the folding leg-sections 3, hinged to the lower ends of the latter, the folding shelf 8, pivoted to one of the hinged leg-sections to fold upon the latter and move therewith beneath the top plate, the braces 10 and 11, jointed together and pivoted, respectively, to the shelf and hinged leg-section, the foot 14, connected to one brace, and the pivoted link 16, connecting the foot with the hinged leg-section, substantially as described.

3. A folding gasoline-stove comprising the top plate 1, having slotted brackets 21 and the pendent fixed leg-sections 2, the folding leg-sections 3, hinged to the latter, and the tank-carrying shelf 17, having supporting-brackets 20, provided with pivot-bolts 22, moving in the slotted brackets to fold the tank-carrying shelf around beneath the top plate between the fixed leg-sections and above the hinges of the folding leg-sections, substantially as described.

4. A folding gasoline-stove comprising a top plate 1, having hinged leg-sections 3, the folding shelf 8, pivoted to one of said leg-sections, the braces 10 and 11, jointed together and pivoted, respectively, to the shelf and hinged leg-section, the foot 14, connected to one brace, and the pivoted link 16, connected to the foot and hinged leg-section, substantially as described.

405,276. BOOK-BINDING. LAURA P. SANFORD, New York, N. Y. Filed Jan. 31, 1887. Serial No. 225,968. (No model.)



Claim.—1. The combination of one or more plates A with the back of the book-cover, said plates being held inclosed under the folded-over edge of said back, substantially as described.

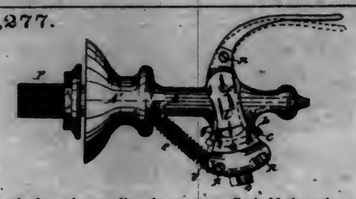
2. The combination of one or more plates A with a book-back cover, the point of said plate being inserted through the slot in the folded-over edge of said back, substantially as described.

3. A series of plates A A, having thicker upper edges and tapering lower edges and of varying widths, united together at the points *a a a*, substantially as described.

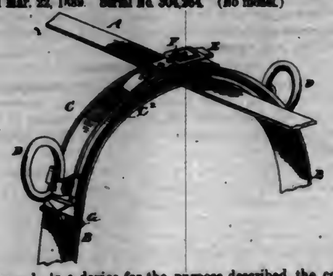
405,277. FAUCET. ELIJAH U. SCOVILLE, Manlius, N. Y. Filed Jan. 21, 1889. Serial No. 296,963. (No model.)

Claim.—The within-described faucet, consisting of the barrel A, having its liquid-channel *a* terminating at the under side of said barrel and provided thereat with a segmental valve-seat *b*, having its curvature in the direction of the length of the barrel, the lever *l*, pivoted to opposite sides of the barrel A and axially at right angles thereto, and the valve *c*, carried on the lower end of the lever and provided with the downwardly-extended duct *d*, and the spring *e*, pressing the lever in one direction to normally hold the valve *c*, with its duct *d*, out of communication with the channel *a*, substantially as described and shown.

405,277.



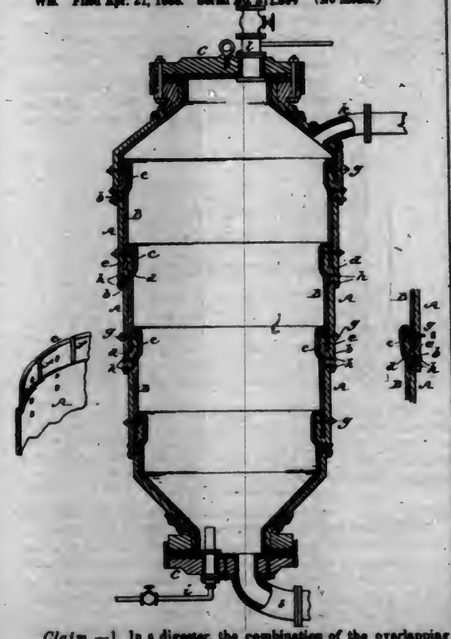
405,278. REIN-SUPPORT. WILLIAM T. SIMS, Yazoo City, Miss. Filed Mar. 22, 1889. Serial No. 304,264. (No model.)



Claim.—1. In a device for the purpose described, the combination, with a strap having rings secured near its free ends and provided at its longitudinal center with means for securing the strap to the back-strap of a harness, of the cords or straps attached to the ends of the straps C for securing the said ends to the hip-straps of the harness, substantially as and for the purpose specified.

2. The combination, with the back and hip straps of a harness, of the strap C, secured at its longitudinal center to the back-strap, the rings D upon said strap, and the cords attached to the free ends of the strap and adapted for use in securing the said ends to the hip-straps of the harness, substantially as described.

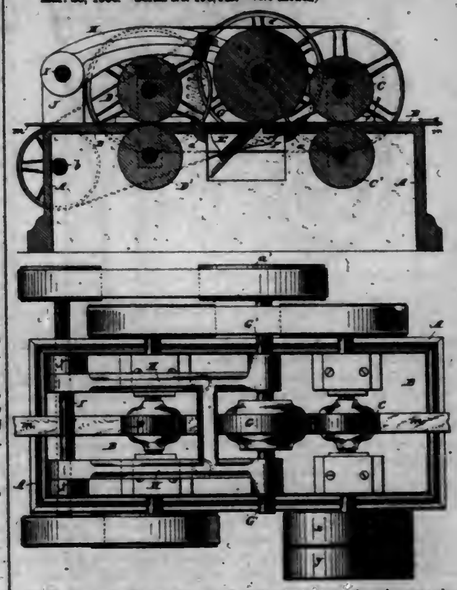
405,279. PAPER-PULP DIGESTER. HENRY W. STERLING, Monico, Wis. Filed Apr. 21, 1888. Serial No. 271,294. (No model.)



Claim.—1. In a digester, the combination of the overlapping hard-metal-shell sections constructed at their upper ends with inwardly-bent annular offsets forming pockets above their overlapping contact portions, and the soft-metal lining arranged to extend over and down within said pockets, substantially as specified.

2. In a digester, the hard-metal-shell sections A A, arranged to overlap one another, as at *b*, and each constructed at their upper ends with inwardly-bent annular offsets *c*, split or divided in the direction of their depth, as at *f*, at suitable distances apart around each section, and forming, in connection with the adjacent section, pockets *d*, in combination with the soft-metal lining B, arranged to extend over and down within said pockets, and the bolts *g*, arranged to pass through the pocket portions of the overlapping shell-sections, essentially as and for the purposes herein set forth.

405,280. PLANING-MACHINE. BENJAMIN D. STEVENS, Burlington, Vt., assignor of one-half to Theodore S. Peck, same place. Filed Mar. 25, 1886. Serial No. 196,445. (No model.)



Claim.—1. The combination of the bed-plate, the plane-stock mounted therein, the front and rear feed-rolls, and the intermediate power-driven presser and feed-roll arranged to bear from above with yielding pressure upon the material at about the point where the plane-bit makes its cut, substantially as and for the purposes hereinbefore set forth.

2. The combination of the bed-plate, the plane-stock mounted in an opening therein so that its upper face shall be flush with that of the bed-plate, and the power-driven yielding presser and feed roll G, arranged to bear from above upon the face of the plane-stock, as and for the purposes hereinbefore set forth.

3. The bed-plate formed with an opening and with transverse ways for reception of the plane-stock and the removable plane-stock mounted therein, in combination with the front and rear feed-rolls and the intermediate power-driven yielding presser and feed roll G, these parts being constructed and arranged together for joint operation, substantially as hereinbefore set forth.

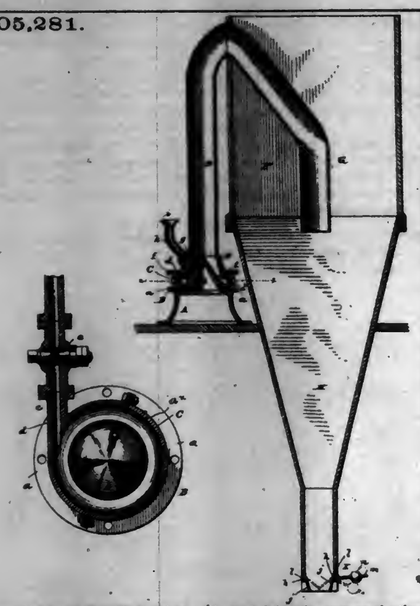
405,281. PULVERIZER. FRANCIS TARGADY, Brooklyn, assignor to Mary A. S. Flostray, New York, N. Y. Filed Feb. 9, 1888. Serial No. 263,522. (No model.)

Claim.—1. In an apparatus for reducing substances, the combination, with the body provided with circular chamber, supply-opening communicating therewith, and suitable discharge leading therefrom, of an air-inlet pipe communicating tangentially with said chamber, substantially as set forth.

2. In an apparatus for reducing substances, the combination, with the body provided with circular chamber, supply-opening communicating therewith, and a suitable discharge leading therefrom, of a central cone located in said chamber, and an air-inlet pipe communicating tangentially with the latter, substantially as set forth.

3. In an apparatus for reducing substances, the combination, with the body provided with circular chamber, supply-opening communicating therewith, and a suitable discharge leading therefrom, of a re-

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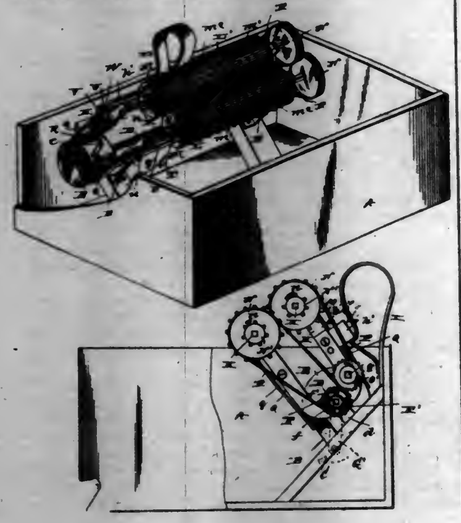


movable lining in said chamber, and an air-inlet pipe communicating tangentially with the latter, substantially as set forth.

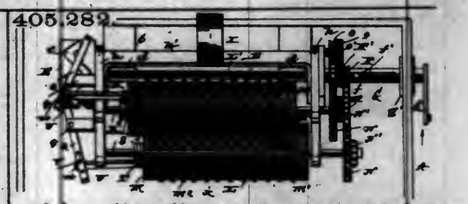
4. In an apparatus for reducing substances, the combination, with the body provided with the circular chamber and supply-opening communicating therewith, of an air-inlet pipe communicating tangentially with the reducing-chamber, a discharge-pipe leading threfrom, and a settling-chamber communicating with said discharge-pipe, substantially as set forth.

405,282. WASHING-MACHINE. AUSTIN F. TRIGGS, Watson, Minn. Filed Mar. 14, 1889. Serial No. 303,300. (Model.)

Claim.—1. In a washing-machine, the combination of the parallel squared shafts, the washing-cylinders mounted on the shafts and adapted to slide longitudinally thereon and provided with grooved collars 8 8, the driving-shaft geared to the squared shafts and carrying a cam-roll having an irregular groove, the levers provided at one end with anti-friction rollers traveling in the said groove, and the strape fitting on the grooved collars and connected by links to the free ends of the said levers, substantially as specified.



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2. In a washing-machine, the combination of the cylinder L, provided with a shaft which is mounted on stationary supporting-arms, the swinging frame carrying a cylinder L' and actuated by a suitable spring to hold the cylinders in contact, the driving-shaft geared to the said cylinders and carrying a cam-roll, and the levers connected to the cylinders and operated by the cam-roll, substantially as specified.

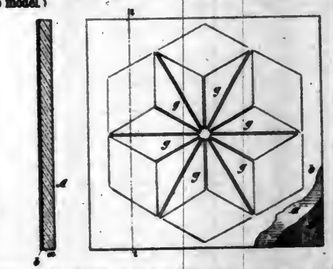
3. In a washing-machine, the combination of the parallel squared shafts provided with sprocket-wheels N N, the cylinders mounted on the said shafts and capable of a sliding movement thereon, the driving-shaft provided with a sprocket-wheel F, the sprocket-wheel O, geared to the sprocket-wheel F, the sprocket-chains connecting the wheels F O to the wheels N N, and the levers connected to the cylinders and operated by a cam-roll on the driving-shaft, substantially as specified.

4. In a washing-machine, the combination of the parallel revoluble shafts carrying washing-cylinders and provided with sprocket-wheels N N, the squared driving-shaft, the sprocket-wheels F O, connected to the driving-shaft and geared to the sprocket-wheels N N by the sprocket-chains P P, and the crank-shaft provided with a square bore to fit on the driving-shaft, substantially as and for the purpose specified.

5. In a washing-machine, the combination, with the suds-box, of the inclined supporting-arms B B, the shaft mounted in bearings at the outer ends of the supporting-arms and carrying a washing-cylinder L, the driving-shaft mounted in bearings near the lower ends of the supporting-arms and geared to the cylinder L, the swinging frame pivoted on the driving-shaft and carrying a washing-cylinder L', which is geared to the driving-shaft, and the crank-shaft mounted in a bearing in the side of the suds-box, passing through a packing-box therein and provided with a squared bore to fit on the squared end of the driving-shaft, substantially as specified.

6. In a washing-machine, the combination of the parallel squared shafts carrying washing-cylinders and provided with sprocket-wheels N N, having sprocket-pinions N' N', the driving-shaft carrying a cam-roll and provided with sprocket-wheels F O, the sprocket-chains passing around the said sprocket-wheels, and the levers connected to the cylinders and operated by the said cam-roll, substantially as specified.

405,283. PROCESS OF CHIPPING OR CRYSTALLIZING GLASS. THOMAS J. THOMPSON, Brooklyn, assignor to the Matthews Decorative Glass Company, New York, N. Y. Filed Jan. 26, 1889. Serial No. 297,597. (No model.)



Claim.—The process of preparing glass for chipping, which consists in covering the glass where the same is not to be chipped with a covering of paint or varnish, in then covering the glass where it is to be chipped with a layer of glue, and in then cutting through the glue along the edge of the pattern to be chipped, as specified.

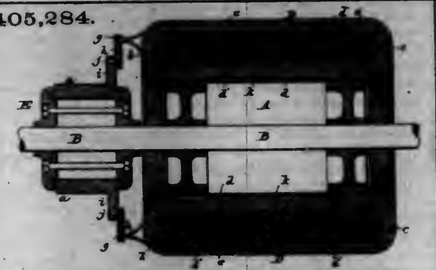
405,284. DYNAMO-ELECTRIC MACHINE. FRANK TRIPP, Oskaloosa, Iowa. Filed Oct. 22, 1888. Serial No. 288,736. (No model.)

Claim.—1. The armature herein described, consisting of a core and longitudinally-wound coils of copper wire encompassing the same, the core consisting of annular heads or end pieces, longitudinal bars connecting said heads, but electrically insulated from one of them, and circumferential windings or wrappings of iron.

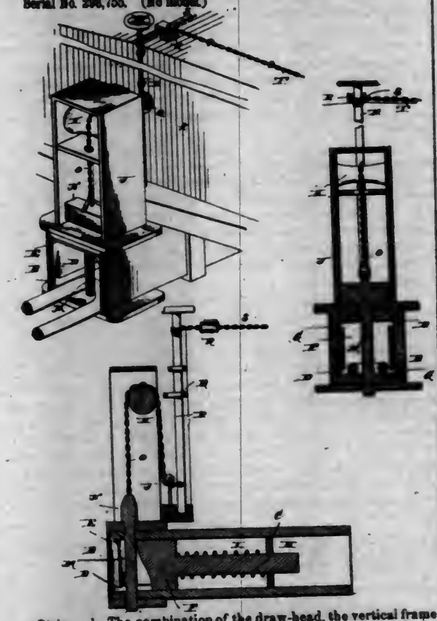
2. The armature-core consisting of heads *b c*, longitudinal bars *d*, connecting said heads and insulated from one of the same, and circumferential windings or wrappings passing about the cylinder formed of the heads and bars, substantially as shown and described.

3. The armature-core consisting of annular heads *b c*, longitudinal bars *d*, connecting the heads, but insulated from one of them, pins *d'*, projecting from said bars, and iron wrappings or windings *e*, passing between the pins and circumferentially about the series of bars *d*.

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405,285. CAR-COUPLING. MARTIN L. UNGER, Nelson, Nebr., assignor of one-half to Jacob Ritterbush, same place. Filed Feb. 5, 1889. Serial No. 298,755. (No model.)



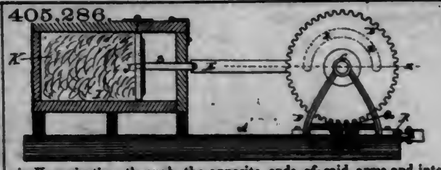
Claim.—1. The combination of the draw-head, the vertical frame erected thereon, the transverse roller in the upper end of the frame, the coupling-pin moving in the vertical frame and having a cross-head N bearing against the sides of the vertical frame, the vertical rotary rod arranged in rear of the vertical frame, and the cable secured to the coupling-pin, passing over the roller and connected to the rotary rod, as set forth.

2. The combination, with the car and the draw-head, of the rotary rod mounted on the car, the spring secured to the car and wrapped around the said rod, the pulley on the upper side of the car, the cable secured to the rod and passing around the pulley, the vertical frame on the draw-head, the coupling-pin moving in said frame, and the cable connecting the pin with the rotary rod, as set forth.

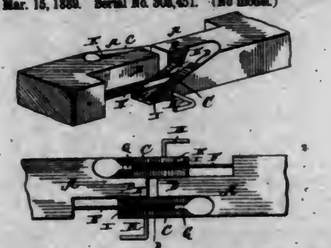
405,286. MECHANISM FOR OPERATING BALING-PRESSES. JOSEPH WADLEIGH, Mills Grove, Ill. Filed Dec. 15, 1888. Serial No. 293,675. (No model.)

Claim.—In mechanism for operating baling-presses, the separate gear-wheels B B, mounted on separate shafts having a common axial line, and provided centrally on their inner sides with pivots H, recesses F, and semicircular recesses Z, in combination with arms G, hung to said pivots and lying in recesses F, a pitman E, provided with a cross-pin Y, projecting through the opposite ends of said arms and into recesses Z, means for connecting the pitman with the plunger of a baling-press, the worm-gear Q, meshing with the gear-wheels, and the shaft of the worm-gear provided with means for connecting it with suitable power, as and for the purpose specified.

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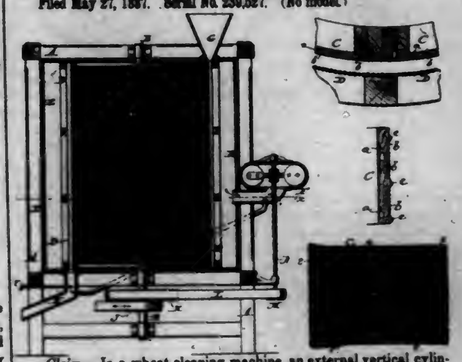


405,287. CAR-COUPLING. WILLIAM G. WALKER, Black Oak, Mo. Filed Mar. 15, 1889. Serial No. 303,451. (No model.)



Claim.—As an improvement in car-couplings, the combination of the draw-head provided with the forwardly-projecting tongues C, having the upwardly and rearwardly inclined groove D in its upper side, the said groove having the ribs E on its opposing sides, the link F, pivoted at its rear end to the draw-head and provided at its front end with a knob G, adapted to engage under the ribs E of the opposing draw-head, and the rock-shaft H, mounted transversely in the lower portion of the tongue C, and provided with a crank-arm I, adapted to act on the link of the opposing draw-head, as set forth.

405,288. WHEAT-CLEANING MACHINE. ROSLA W. WELCH, Baltimore, Md., assignor, by direct and mesne assignments, of three-fourths to William T. Brunswell and Joseph S. Taylor, Jr., both of same place. Filed May 27, 1887. Serial No. 239,527. (No model.)

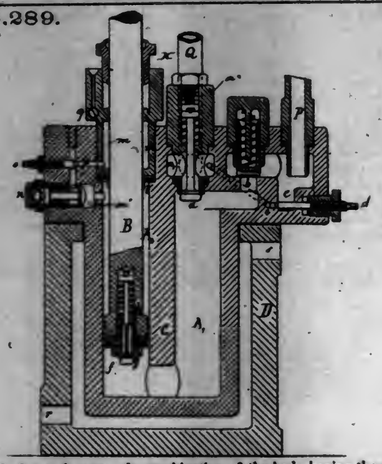


Claim.—In a wheat-cleaning machine, an external vertical cylinder, in combination with an internal vertical cylinder, the latter having its surface composed of the impervious plates having their entire outer surface broken by a series of fine ribs *b*, and provided in addition to said ribs with the two series of larger ribs *c*, extending spirally around the cylinder in reverse directions, as shown.

405,289. APPARATUS FOR COMPRESSING CARBONIC-ACID GAS. FRANZ WINDHAUSEN, Berlin, Germany. Filed Nov. 12, 1888. Serial No. 218,729. (No model.) Patented in Germany Aug. 22, 1885, No. 37,214; in France Dec. 3, 1885, No. 173,692; in Belgium Dec. 15, 1885, No. 71,047, and in Austria-Hungary Dec. 20, 1886, No. 34,528 and No. 63,576.

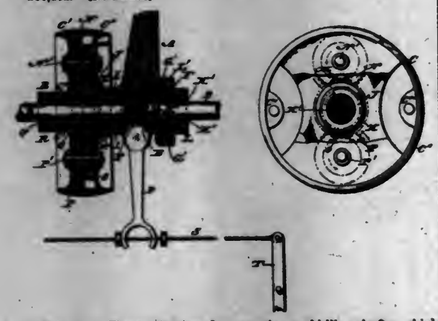
Claim.—1. The combination of the pump-body having the piston-cylinder, the channel *p*, communicating therewith, the valve *n*, the gland K, having the channel *m*, communicating with the channel *p* and having the outlet-channel *q*, the piston-rod in the piston-chamber and extending through the gland, and the packing *i* in the lower end of the gland, substantially as described.

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2. In an air-pump, the combination of the body having the cylinder, the chamber *a'*, communicating therewith, the escape-channel *c*, and the channel *e* between the same and chamber *a'*, with the inlet-pipe communicating with said chamber, the inlet-valve *a*, the outlet-valve *b* in channel *c*, and the compressing-piston, substantially as described.

405,290. FORWARD AND REVERSE MOTION MECHANISM. WILLIAM H. ZELLERS, Philadelphia, Pa. Filed July 17, 1888. Serial No. 280,192. (No model.)

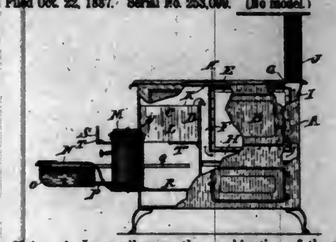


Claim.—1. The mechanism for reversing and idling shafts, which consists of pulley C, having surface K, gear-wheel H, with its sleeve H' surrounding said shaft, stationary hanger formed with bearing G and ridge G', friction-block L, secured to said sleeve H', adapted to impinge against said friction-ridge, loose sleeve F, encompassing sleeve H', shifter D, adapted to move sleeve F, which latter is adapted, substantially as shown, to throw block L against ridge G', or to be reversed to throw wheel H against the bearing-surface K of the pulley, gear-wheels M and N, rigged to turn together and to be operated by wheel H, and gear-wheel Q, secured to the shaft and engaging with gear-wheel N, substantially as described.

2. The mechanism for reversing and idling shafts, which consists of pulley C, having surface K, gear-wheel H, with its sleeve H' surrounding said shaft, stationary hanger formed with bearing G and ridge G', friction-block L, secured to said sleeve H', adapted to impinge against the friction-ridge, loose sleeve F, encompassing sleeve H', shifter D, adapted to move sleeve F, which latter is adapted, substantially as shown, to throw block L against ridge G', or to be reversed to throw wheel H against the bearing-surface K of the pulley, small gear-wheel M, engaging with wheel H, large gear-wheel N, rigged to turn with gear-wheel M, and small gear-wheel Q, engaging with gear-wheel N and secured to the shaft, substantially as described.

3. The mechanism for reversing and idling shafts, which consists of pulley C, having surface K, gear-wheel H, with its sleeve H' surrounding said shaft, stationary hanger formed with bearing G and ridge G', friction-block L, secured to said sleeve H', adapted to impinge against said friction-ridge, loose sleeve F, encompassing sleeve H', shifter D, adapted to move sleeve F, which latter is adapted, substantially as shown, to throw block L against ridge G', or to be reversed to throw wheel H against the bearing-surface K of the pulley, gear-wheels M and N, rigged to turn together and to be operated by wheel H, and gear-wheel Q, secured to the shaft and engaging with gear-wheel N, said gear-wheels M and N being mounted on a shaft or bar in bearings in the pulley, substantially as described.

405,291. OIL-STOVE. ANDREW F. ZIMMERLING, Milwaukee, Wis., assignor of one-half to J. A. Dutcher and P. H. Dutcher, same place. Filed Oct. 22, 1887. Serial No. 253,099. (No model.)

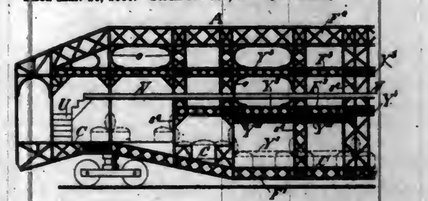


Claim.—1. In an oil-stove, the combination of the exterior wall or body A, combustion-chamber C, located in the front upper corner of said body A, oven B, located in rear of the combustion-chamber C, lamps M M, located beneath the combustion-chamber and surrounded at their upper ends with a separable bottom or partition formed in two parts T T', closing communication between the lamps and the combustion-chamber, downward air-duct F, located between the rear wall of said combustion-chamber and the front wall of said oven, horizontal air-duct H, located beneath the oven, and upward air-duct I, located in rear of the oven, all substantially as and for the purpose specified.

2. In an oil-stove, the combination of the body A, oven B, combustion-chamber C, located in the front upper corner of said body, vertical partition K, subdividing said combustion-chamber C into two separate compartments, lamps M M, separable partition or bottom T and T', surrounding the upper ends of said lamps, downward air-duct F, located between the rear wall of said combustion-chamber and the oven B, horizontal air-duct H, located beneath the oven, and upward air-duct I, located in rear of the oven, all substantially as and for the purpose specified.

3. In an oil-stove, the combination of the body A, oven B, combustion-chamber C, located in the front upper corner of said body, partition K, subdividing said combustion-chamber into two compartments upon the respective sides of the lamps M M, lamps M M, located beneath the combustion-chamber C, separable partition T and T', forming a bottom to said combustion-chamber around the upper ends of said lamps, downward air-duct F, located in front of the oven, horizontal air-duct H, located beneath the oven, upward air-duct I, located in rear of the oven, and air or draft duct J, extending upward above the body of the stove and terminating within the room, said duct J being adapted to produce the required draft by which the hot air from the combustion-chamber is caused to take a downward course around and beneath the oven, substantially as and for the purpose specified.

405,292. RAILWAY-CAR. MAX A. EDGNER, Montreal, Canada. Filed Mar. 16, 1889. Serial No. 303,502. (No model.)



Claim.—1. A railway-car frame statically constructed, having one or more sections each containing two or more sleeping-berths, one above the other, whose fixed frame-work is statically constructed to strengthen and stiffen the car-frame in various directions and integrally connected therewith, in combination with statically-trussed interior horizontal girders rigidly connected to the interior frame-work and forming an overhead passage-way V, substantially as described.

2. A railway-car frame statically constructed, having one or more sections each containing two or more sleeping-berths, one above the other, and having each a fixed frame-work forming girders in a longitudinal as well as transverse direction, all integrally connected together and to the car-frame, substantially as described.

3. A railway-car frame having one or more sections each containing two or more sleeping-berths, one above the other, having hinged folding beds working in a statically-constructed frame or girder work in a longitudinal as well as a transverse direction, this girder-work being integrally connected together and to the car-frame, substantially as described.

4. A railway-car frame forming a statically-constructed body externally and internally, in combination with an overhead passage-way V to permit access to the upper row or rows of berths, said passage-way forming a statically-constructed interior girder to strengthen and stiffen the interior bracing, and also the whole car-body, substantially as described.

5. A railway car-frame externally statically constructed, in combination with an internal statically-constructed berth frame-work, consisting of one or more series of longitudinal interior girders or struts, each series consisting of two or more girders one above the other, and one or more transverse girders, and one or more horizontal longitudinal girders, all integrally connected together and to the exterior frame-work, substantially as described.

6. A sleeping-car berth having suitable mechanism for raising it and lowering it, and additional means for securing it at various altitudes, in combination with statically-constructed frame-work secured to the car-body and having guide-posts d^6 and d^6, forming guideways for the berth, substantially as described.

7. A sleeping-berth for a railway-car having a frame or shell constructed of thin ductile metallic plates, having its bottom raised, furrowed, and paneled to give it increased strength with decreased weight, in combination with vertical guideways for the berth, substantially as described.

8. A railway-car frame having one or more sleeping-berths whose bedding shelves and frames are held in position by vertical guide-posts, in combination with wire ropes *y*, connected to drums and pulleys *p*, and suitable mechanism for elevating and lowering the same, substantially as described.

9. A railway-car having one or more seat-frames statically constructed and integrally connected thereto, each seat-frame consisting of paneled, furrowed, and ductile metallic plates, in combination with horizontal and transverse bracing and trussing, substantially as described.

10. A statically-constructed car-frame divided into sections by transverse girders or frames substantially equal to the length of sleeping-berths, in combination with sleeping-berths adapted to assume various vertical positions in said compartments, and statically-constructed seat-frames integrally connected to the floor and the sides of the car, substantially as described.

11. A railway-car having a series of berths and seats located in fixed compartments on either side of a central aisle, in combination with an overhead passage-way, the whole forming a statically-constructed external and internal frame-work integrally connected together, and having a stairway connecting the lower frame with the overhead passage-way, substantially as described.

12. A railway-car having a series of seats arranged in separate compartments on the floor of the car about either side of an aisle, in combination with a series of berths located in compartments above said seats, an overhead passage-way connected by a stairway to the lower floor of the car, the whole forming a statically-constructed frame-work, substantially as described.

13. In a railway-car, a series of seats located back to back on the floor of the car on opposite sides of a central aisle in separate compartments, in combination with a series of berths arranged in one or more tiers above said seats, and an overhead passage-way connected by a stairway to the lower floor, the whole forming a statically-constructed frame-work and being arranged substantially as described.

14. In a railway-car, a series of seats located on opposite sides of a central aisle on the floor of the car, in combination with a series of berths arranged in tiers above said seats, and an overhead passage-way connected by a stairway to the lower floor, said berths and seats being held in position in a series of compartments having vertical posts attached to the bottom, top, and side walls of a statically-trussed car-frame, substantially as described.

15. A railway-car frame externally and internally statically constructed, containing sleeping-berths, where any or all spaces not necessary for the easy access and exit and for operating same are trussed and knee-braced in any one or various directions to increase the strength and rigidity of the car-body, substantially as described.

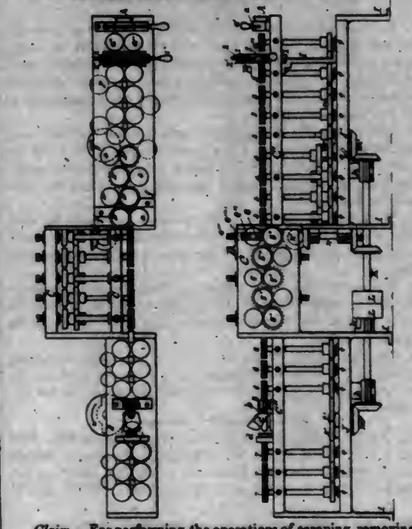
16. A railway-car frame externally statically constructed, in combination with an internal statically-constructed berth frame-work consisting of one or more series of vertical and horizontal longitudinal interior girders or struts, each series consisting of two or more similarly-placed girders one above the other, and one or more transverse girders, all integrally connected together and to the exterior frame-work, substantially as described.

17. A railway-car frame externally statically constructed, in combination with an internal statically-constructed berth frame-work consisting of one or more series of horizontal, vertical, and inclined interior longitudinal girders or struts, each series consisting of two or more similarly-placed girders one above the other, and one or more transverse girders, all integrally connected together and to the exterior frame-work, substantially as described.

18. A railway-car having one or more statically-constructed seat-frames, each having its sides worked into the requisite shape out of thin ductile metallic plates, in combination with trussing or bracing at the back of the seat, and additional bracing or trussing under the seat-cushion adapted to support the latter, substantially as described.

19. A railway-car having one or more statically-constructed seat-frames, each having one or more stands or sides which are formed with trussing and bracing, said trussing and bracing being embodied in the back and bottom of the seat, whereby additional strength is given to the seat, substantially as described.

405,293. RATTAN-MACHINE. FRED B. ALEXANDER, Brooklyn, N. Y. Filed Mar. 28, 1888. Serial No. 269,755. (No model.)



Claim.—For performing the operations of scraping, removing the enamel from and splitting rattan with one handling, the combination, as herein set forth, of the following elements, to wit: a machine comprising three divisions, the first including a scraping device with rollers for feeding cane to the same, and rollers following the scraping device on the same plane with said feeding-rollers, but arranged in a zigzag line for the purpose of removing the enamel from two sides of the cane, the second division consisting of rollers set in a vertical plane but in a zigzag line to complete the removal of enamel from the cane, the third division comprising feeding-rollers and devices for splitting and delivering the cane, as described, and two pairs of standards supporting the whole, the middle pair joining the first and third divisions to the second, so that the path of the cane through the machine is in a direct line, all the rollers being driven by means of gearing from a main driving-shaft supported, substantially as shown, upon the standards of the machine, all substantially as herein shown and described.

405,294. CENTRIFUGAL FORCE-PUMP. JACOB BAKER, Greenville, Ohio. Filed July 24, 1888. Serial No. 280,868. (No model.)

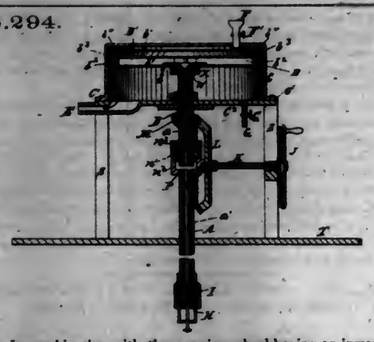
Claim.—1. In a centrifugal force-pump, the pumping-wheel having the compartment or chamber B' and the orifices b^3 and the inwardly-inclined flange b^4, substantially as and for the purposes specified.

2. In a centrifugal force-pump, the pumping-wheel having the compartment or chamber B' and the radial partitions or arms, the chamber B' having the orifices b^3 and the flange b^4, substantially as and for the purposes specified.

3. In a centrifugal force-pump, the pumping-wheel having the chamber B' and the radial partitions or arms, the arms extending not quite to the outer wall of said chamber, substantially as and for the purposes specified.

4. In a centrifugal pump, the combination of the hollow pumping-wheel, a central hub projecting through one wall thereof, the radial arms or partitions located in the chamber of the wheel and fixed to the said hub, and the tightening-nut engaging with the projecting portion of the hub, whereby the said radial arms are secured in the wheel, substantially as described.

405,294.



5. In combination with the pumping-wheel having an inwardly-inclined rim or flange, the chamber C, in which is mounted the pumping-wheel, provided with the priming-pipe F and its regulating-cock, the priming-pipe being located in the chamber C at a point within the circumference of the inner edge of said inclined rim, substantially as and for the purposes specified.

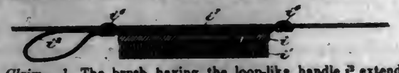
6. The combination of the hollow pumping-wheel, the radial arms mounted within the chamber of the wheel, the hub W, to which the arms are fixed, having the flared upper end opening into the pumping-wheel, and the tightening-nut X, engaging with the said hub, substantially as described.

7. The combination of the pumping-wheel and the radial arms and partitions having hub W and tightening-nut X, and the suction-pipe A, screwed into the hub W, substantially as and for the purposes specified.

8. The combination of chamber C, provided with the delivery-pipe E, and the hollow wheel B, having compartment B', radial arms, orifices b^3, inclined rim b^4, and suction-pipe A, substantially as and for the purposes specified.

9. The combination of chamber C and hollow wheel B, having compartments B', radial arms b^3, inclined rim b^4, suction-pipe a, packing, and suction-pipe a', having valve, substantially as and for the purposes specified.

405,295. BATH-BRUSH. CHARLES J. BAILEY, Newton, Mass. Filed Oct. 3, 1887. Serial No. 251,335. (No model.) Patented in England Oct. 27, 1887, No. 14,630; in France Oct. 27, 1887, No. 186,625; in Canada Nov. 3, 1887, No. 27,929, and in Belgium June 6, 1888, No. 820,074.



Claim.—1. The brush having the loop-like handle i^2 extended through it, combined with the strap i^2, connected to the said handle at each side of the brush-back, substantially as described.

2. The brush having the back i and teeth i', made of soft rubber, the said back having a slot or pocket through it for the reception of the loop-like handle i^2, combined with the strap i^2, detachably connected to the said handle at each side of the brush, substantially as described.

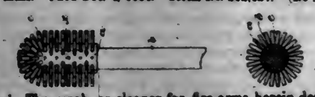
405,296. BRUSH. CHARLES J. BAILEY, Newton, Mass. Filed Mar. 24, 1888. Serial No. 268,366. (No model.) Patented in England Oct. 27, 1887, No. 14,630; in France Oct. 27, 1887, No. 186,625; in Canada Nov. 3, 1887, No. 27,929, and in Belgium June 6, 1888, No. 820,074.



Claim.—1. In a brush, the flexible back a and teeth b, formed integral therewith, combined with the blade c, having the upturned end c', the shank f, and the handle f'', substantially as described.

2. In a brush, the flexible socketed back a, separate teeth b, formed integral therewith, and V-shaped projections within said socket, combined with the blade c, having recesses, as described, to be entered by said V-shaped projections, and the shank f, substantially as described.

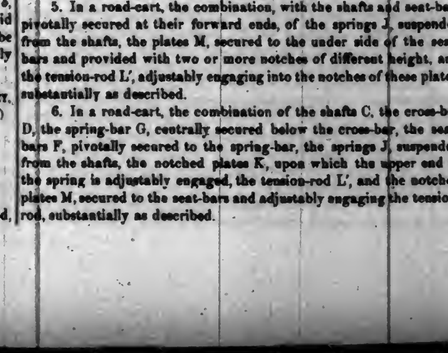
405,297. SWAB OR CLEANER FOR GUNS. CHARLES J. BAILEY, Newton, Mass. Filed Dec. 4, 1888. Serial No. 292,637. (No model.)



Claim.—1. The swab or cleaner for fire-arms herein described, composed of the cylindrical body of rubber or like material having a series of exteriorly-arranged teeth integral therewith, as and for the purposes set forth.

2. The swab or cleaner for fire-arms herein described, composed of the socketed or hollow cylindrical body a, of rubber or like material, having formed within its socket shoulders, and a series of exteriorly-arranged teeth integral with said body a, as and for the purposes set forth.

405,298. SUPPORT FOR DRAWING-MODELS. HENRY T. BAILEY, Scituate, Mass. Filed Mar. 6, 1889. Serial No. 302,109. (No model.)



Claim.—The combination of the table top or platform a, provided with a recess a^3 and socket-piece c, with an upright detachably connected with said platform by said socket-piece and adapted to work in a guide on a school-desk, and a clamp for holding said upright in adjusted position in its guide, substantially as described.

405,299. ROAD-CART. ELIAS W. BEAN, Plymouth, Mich. Filed Dec. 8, 1888. Serial No. 292,990. (No model.)

Claim.—1. In a road-cart, the combination, with the shafts, cross-bar, and seat-bars, of a round spring-bar centrally secured to the cross-bar and supporting with its free ends the front end of the seat-bars, and tapered from its middle toward its ends, substantially as described.

2. The combination, with the shafts and cross-bar of a road-cart, of the round spring-bar G, the bearing-block H, and clips I I, for securing it to the cross-bar, and the seat-bars provided with eyes upon their forward ends pivotally engaged with the free ends of the spring-bar, substantially as described.

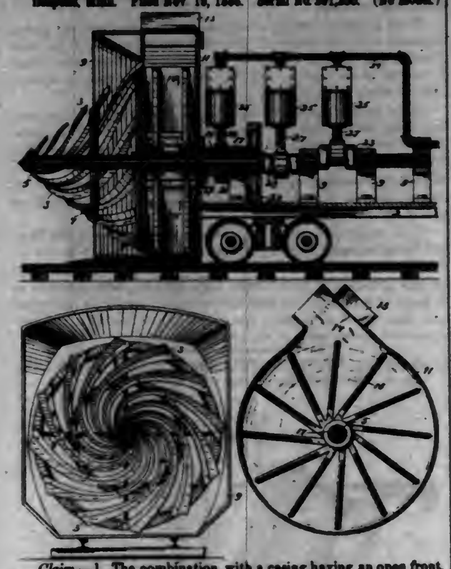
3. The combination, with the shafts, cross-bar, and seat-bars of a road-cart, substantially as described, of the spring-bar G, supporting the free ends of the seat-bars, said spring-bar being centrally secured below the cross-bar and tapering from its middle toward the ends and provided with the upsets a and pivot pins or lugs b, substantially as described.

4. In a road-cart, the combination, with the shafts and seat-bars pivotally secured at their forward ends, of the supporting-springs suspended from the shafts, the notched plates M, secured to the under side of the seat-bars, and the tension-rod L', adjustably engaging with these plates and having their free ends connected to the supporting-springs, substantially as described.

5. In a road-cart, the combination, with the shafts and seat-bars pivotally secured at their forward ends, of the springs J, suspended from the shafts, the plates M, secured to the under side of the seat-bars and provided with two or more notches of different height, and the tension-rod L', adjustably engaging into the notches of these plates, substantially as described.

6. In a road-cart, the combination of the shafts C, the cross-bar D, the spring-bar G, centrally secured below the cross-bar, the seat-bars F, pivotally secured to the spring-bar, the springs J, suspended from the shafts, the notched plates K, upon which the upper end of the spring is adjustably engaged, the tension-rod L', and the notched plates M, secured to the seat-bars and adjustably engaging the tension-rod, substantially as described.

405,300. ROTARY SNOW-PLOW. EDWARD P. CALDWELL, Minneapolis, Minn. Filed Nov. 19, 1888. Serial No. 291,355. (No model.)



Claim.—1. The combination, with a casing having an open front, of a shaft extending through said casing, a conical cutter secured upon said shaft and having an open rear end in front of said casing, and a rotating fan located in said casing in the rear of said cutter, substantially as described.

2. The combination, in a rotary snow-plow, with a casing having an open front, of a conical cutter formed of a series of spirally-arranged knives located in front of said casing, and a revolving fan located in said casing in the rear of said cutter, substantially as described.

3. The combination, in a rotary snow-plow, with a casing having an open front, of a revolving conical cutter formed of a series of spirally-arranged knives located in front of said casing, and an independently-revolving fan located in said casing in the rear of said cutter, substantially as described.

4. The combination of the rotating plow, the shaft 5, upon which said plow is secured, provided with the cranks 23, the steam-cylinders 25, having the piston-rods 27, connected with said cranks, the hollow shaft 17, surrounding said shaft 5, the fan 15, secured upon said shaft 17 and arranged in the rear of said plow, the eccentric 31 upon said shaft 17, and the steam-cylinder 35, having the piston-rod 23, engaging said eccentric 31, all substantially as described.

5. The combination, with the independently-rotating plow, of the rotating fan adapted to be driven in either direction, the double discharge-spout extending in opposite directions, and the pivoted cut-off arranged in said spout, substantially as described.

6. The combination, with the rotating plow, of the independently-rotating fan adapted to be driven in either direction, a fan-casing inclosing said fan, discharge-spouts extending in opposite directions from said casing, and a cut-off whereby either of said spouts may be closed, substantially as described.

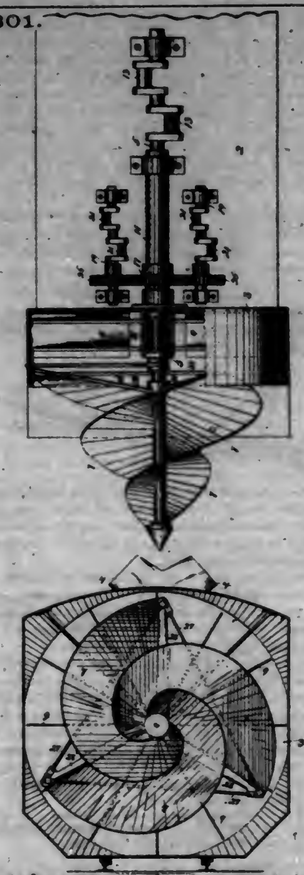
7. The combination, with the rotating plow provided with the spiral knives, of the independently-rotating fan adapted to be driven in either direction, the fan-casing provided with the oppositely-extending discharge-spouts, and the cut-off adapted to close either of said spouts, all substantially as described.

405,301. SNOW-PLOW. EDWARD P. CALDWELL, Minneapolis, Minn. Filed Feb. 11, 1889. Serial No. 299,570. (No model.)

Claim.—1. A snow-plow comprising, in combination, a conical cutter consisting of spirally-arranged knives tapering from the base of the cutter to its apex, and with open spaces between the rear ends of the knives at the base of the cutter, a fan-casing located in the rear of said cutter and having an open front, and a revolving fan located in said casing, substantially as described.

2. The combination, in a snow-plow, of a casing having an open front, a shaft extending through said casing and projecting in front thereof, a conical cutter consisting of a series of spirally-arranged tapering knives secured to said shaft, with open spaces between the knives and between their rear ends, and a revolving fan located in said casing in the rear of said cutter, substantially as described.

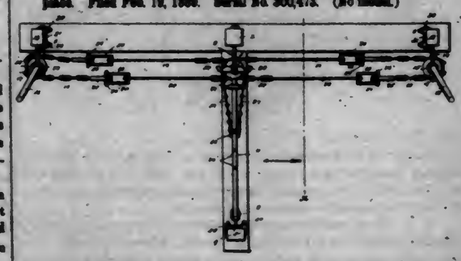
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3. The combination, in a snow-plow, of a casing having an open front, a shaft extending through said casing and projecting in front thereof, a conical cutter consisting of a series of spirally-arranged tapering knives secured to said shaft and having their rear ends extending into said casing, and a revolving fan located in said casing in the rear of said cutter, substantially as described.

4. The combination, with the revolving shaft provided with a cutter at its forward end, of the hollow shaft arranged upon said cutter-shaft and provided with a fan, a gear-wheel upon said hollow shaft, independent shafts located upon opposite sides of said hollow shaft, gear-wheels upon said shafts meshing with the gear-wheel upon said hollow shaft, and independent means for driving said cutter-shaft and said independent shafts, substantially as described.

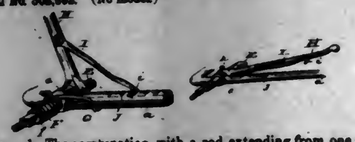
405,802. HAND-OPERATED SWINGING GATE. WESLEY C. CARTER, Galva, Ill., assignor of one-half to THOMAS W. PATTERSON, same place. Filed Feb. 12, 1889. Serial No. 300,473. (No model.)



Claim.—1. In a gate, the combination of a vertical pivot-shaft, having the pulleys at its lower end and a rigid cross-head at its upper end, a gate provided with the elongated hinge-loops, which fit loosely on said vertical pivot-shaft to adapt the gate to have a limited tilting movement and to swing or turn with said shaft, connections 27, intermediate of said gate and opposite ends of said cross-head, the vertical crank-shafts, each having a pulley, a chain passing around and connected to each pulley of the crank and pivot shafts, the connecting-rods, and a swivel connected to the rods and chains, all arranged and combined for service, substantially as herein shown and described.

2. The combination of a vertical pivot-shaft carrying a gate which is capable of a limited tilting movement, a cross-head fixed to said shaft, an adjustable sleeve fixed on one of the bars of said gate, and connections between said adjustable sleeve and the cross-head, substantially as described.

405,303. BUGGY-TOP. SHEPARD W. CATELY, Cortland, N. Y., as signer of one-half to Alice M. Etting, same place. Filed Mar. 9, 1889. Serial No. 302,602. (No model.)

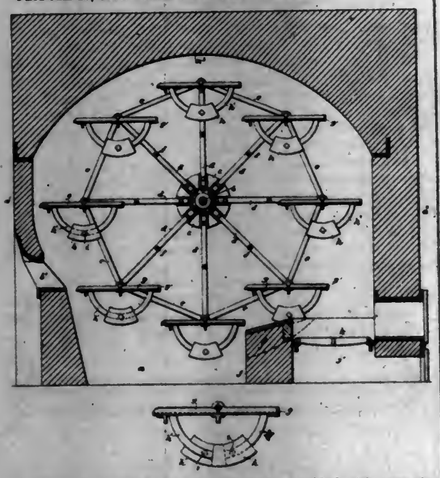


Claim.—1. The combination, with a rod extending from one side of the seat to the other, of a lever-arm secured thereto, one end of a detent pivoted to the outer side of the lever, and the other end held against the lever by frictional contact and adapted to be turned into notches on the seat-rail, as set forth.

2. The combination, with a rod holding the hinged braces of a top, having a lever secured thereto, with one end of a detent pivoted to the side of the lever and the other end resting on the seat-rail, of a spring on the rod with one end locked under the seat-rail having an upward traction, as and for the purpose set forth.

3. The combination, with a rod extending from one side of the seat to the other, having a lever adjustably secured thereto on the inner side of the seat-rail, said lever having one end of a detent pivoted to its side and the other end bent outward and held to the lever by frictional contact and adapted to be turned into notches on the seat-rail, of a coil-spring having its outer end secured on the square portion of the rod on the outer side of the rail, and its inner end locked under the rail in front of the rod, said spring having an upward traction on the top, as set forth.

405,304. BAKING-OVEN. ALEXANDER CRUMBIE, Arlington, N. J. Filed Jan. 29, 1889. Serial No. 297,900. (No model.)



Claim.—1. A baking-pan for reel ovens provided with arms depending therefrom at each end of the pan, both ends of each arm being secured to the pan, and counter-weights adjustably secured to the arms, substantially as shown and described.

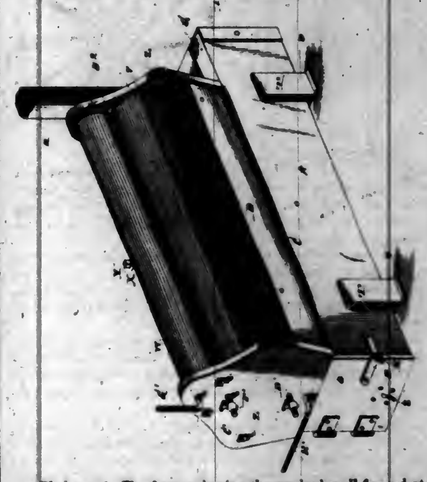
2. A baking-pan for reel ovens provided with the curved arms h', depending therefrom at each end of the pan, both ends of each arm being secured to the pan, and counter-weights h, adapted to be moved along the arms and adjustably secured to the arms, substantially as shown and described.

3. In a baking-oven, in combination, a revolving reel, the pans g, suspended from the reel, each pan being arranged close to its point of suspension, and the adjustable counter-weights h on curved arms h', secured at each end to and depending from the pans g, substantially as shown and described.

4. In a baking-oven, in combination, the oven-walls, the front wall being inclined inward at its lower part, the mouth b' in the inclined lower part thereof, the revolving reel pivoted in the oven-walls, the pans g, suspended from the reel, each pan being arranged close to its point of suspension, and the adjustable counter-weights h on curved arms h', secured to and depending from the pans g, substantially as shown and described.

5. In a baking-oven, in combination, the oven-walls, the front wall being inclined inward at its lower part, the mouth b' in the inclined lower part thereof, the revolving reel pivoted in the side walls, the pans g, suspended from the reel, each pan being arranged close to its point of suspension, the adjustable counter-weights h on curved arms depending from the pans, and the furnace j k, located at the back of the oven, substantially as shown and described.

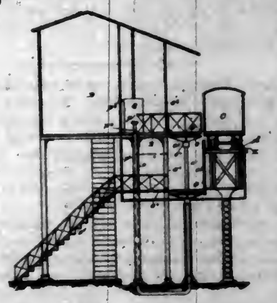
405,305. WATER-HEATER. JOHN H. DULL, Red Key, Ind. Filed Jan. 29, 1889. Serial No. 297,999. (No model.)



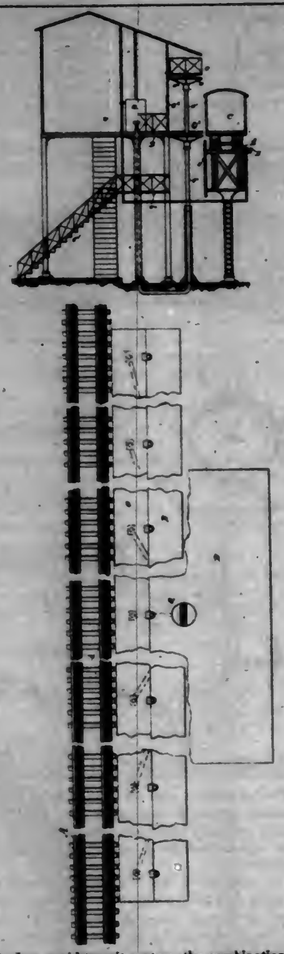
Claim.—1. The furnace having the smoke-box F formed at its rear end, the sides of the smoke-box having their upper edges turned inward to form flanges G, for the purpose set forth, substantially as described.

2. The combination of the furnace having its bottom and sides formed integrally of rolled sheet metal and having the outwardly-curved extensions D at the upper edges of its sides, the transverse curved braces E, connecting said extensions, and the smoke-box provided with the inwardly-turned flanges G, the smoke-stack supported upon said flanges G, and the boiler supported upon the flanges D and braces E, substantially as set forth.

405,306. SYSTEM OF RAPID TRANSIT. HENRY FLAD, St. Louis, Mo. Filed June 16, 1887. Renewed Nov. 23, 1888. Serial No. 291,713. (No model.)



405,306.



Claim.—1. In a rapid-transit system, the combination, with stationary platforms located in different horizontal planes and a track located near the upper platform, of an elevator having upper and lower platforms and located between the stationary platforms and track, substantially as set forth.

2. The combination, with fixed platforms located in different horizontal planes and a track, of an elevator located between the track and fixed platforms and provided with two platforms, the latter when the elevator is in its lowest position registering, respectively, with the fixed platforms, substantially as set forth.

3. The combination, with a fixed platform and an elevator located adjacent thereto and having two platforms, of a series of hydraulic rams located beneath the movable elevator, a series of platform-supporting plungers adapted to slide within the rams, and means for operating the plungers, substantially as set forth.

4. The combination, with two fixed platforms located in different horizontal planes, a stairway to each platform, and a track, of an elevator located between the fixed platforms and track and provided with the platforms adapted when in their lowered positions to register with the fixed platforms, substantially as set forth.

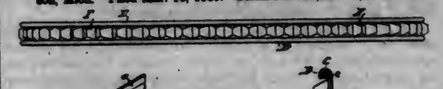
5. The combination, with a fixed platform and an elevator having two platforms located adjacent thereto, of the series of hydraulic rams, the elevator-supporting plungers adapted to work in the rams, a pressure-cylinder, pipes leading from the rams to the pressure-cylinder, and a power-supply in connection with the pressure-cylinder, substantially as set forth.

6. The combination, with the movable platform, the hydraulic rams, and the platform-supporting plungers, of the pressure-cylinder, the pipes leading from the rams to the pressure-cylinder, meters located at the cylinder ends of the pipes, and a power-supply in connection with the cylinder, substantially as set forth.

7. The combination, with the series of hydraulic rams, the platform-supporting plungers adapted to work in the rams, the pressure-cylinder, and the pipes leading from the several rams to the bottoms of the cylinder and terminating in a horizontal line, of a series of meters located in the ends of the pipes within the cylinder and means for communicating pressure to the cylinder, substantially as set forth.

8. The combination, with the hydraulic rams and the pressure-cylinder common to the several rams, of meters located in the conduits leading from the pressure-cylinder to the rams, adapted to regulate the flow of liquid to and from the rams, and mechanism connecting the several meters, whereby they are caused to operate simultaneously, for the purpose substantially as set forth.

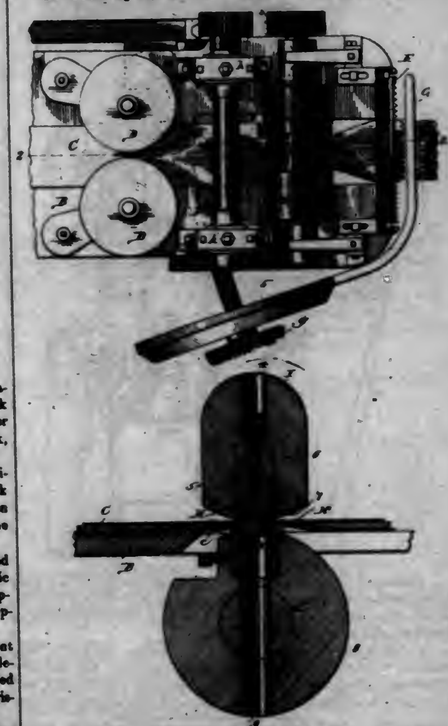
405,307. BROW-BAND FOR BRIDLES. CONRAD B. FLOHR, Jackson, Mich. Filed Mar. 16, 1889. Serial No. 303,516. (No model.)





Claim.—In a brow-band for bridles, the combination of the flexible body having its edges bent over to form the flanges D D, elastic wires passing under said flanges, and ornamental pieces having flanged edges inserted under and held by said wires, substantially as shown and described.

405,308. PAPER-BAG MACHINE. ALBERT C. GETTIS, Chicago, Ill. Filed Aug. 13, 1888. Serial No. 282,549. (No model.)



Claim.—1. In a paper-bag machine, the combination, with suitable rolls for feeding the web of paper, a suitable former for folding the same, and a knife for cutting it into bag-lengths, of a punch for perforating the paper, said punch being located in position to perforate the paper adjacent, but entirely at one side of the line of the top edge of each bag, substantially as described.

2. In a paper-bag machine, the combination, with suitable rolls for feeding the web of paper, a suitable mechanism for folding said

web—such as a former having a cut-away space—and a knife or striker for cutting the web into bag-lengths, of male and female dies located, respectively, on opposite sides of the former adjacent its cut-away space, and located, also, in position to perforate the paper adjacent, but entirely at one side of the top edge of each bag, substantially as described.

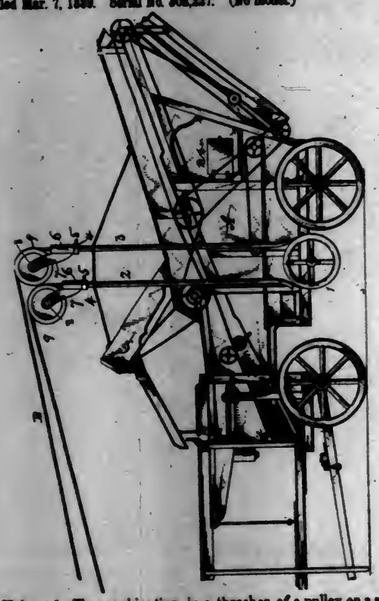
3. In a paper-bag machine, the combination, with suitable mechanism for feeding a web of paper, of a former for folding said web, said former having a cut-away space, a female die located on one side of said former, a male die located on the opposite side of said former, shafts for said dies, and a cutting-blade in gear with said shafts, substantially as described.

4. In a paper-bag machine, the combination, with suitable mechanism for feeding a web of paper, of a suitable former having a cut-away space, and rotary male and female dies, the said dies and said cut-away space being located out of the line of travel of the pasted seam of the web of paper, substantially as described.

5. In a paper-bag machine, the combination, with suitable mechanism for feeding a web of paper, of a suitable former over which said web is folded, and male and female dies located beyond the pasting mechanism, one of said dies being arranged to protrude through the former in the punching operation, whereby the stretching of the pasted seam is avoided, substantially as described.

6. In a paper-bag machine, the combination, with suitable mechanism—such, for example, as rolls, a former, and a knife—for feeding a web of paper and for folding the same and cutting the same into bag-lengths, of rotary male and female dies H and H', and shafts I and I', for carrying said dies, substantially as described.

405,309. DRIVING MEANS FOR THRASHING-MACHINES. HARRISON GILLETT, JAMES H. GILLETT, and ASA D. GILLETT, Lake City, Minn. Filed Mar. 7, 1889. Serial No. 302,237. (No model.)



Claim.—1. The combination, in a thrasher, of a pulley on a shaft of the machine, vertically-arranged guide-tubes, guide-pulleys swiveled to the upper ends of said tubes, and a rope or belt, substantially as described, and for the purpose set forth.

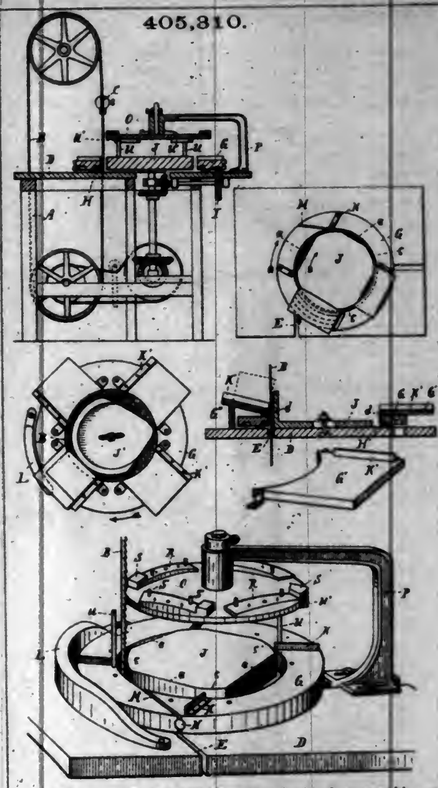
2. The combination, in a thrasher, of a pulley on a shaft of the machine, vertically-arranged guide-tubes, vertically and laterally adjustable guide-pulleys secured to the upper ends of said tubes, and a rope or belt, substantially as described, and for the purpose set forth.

405,310. SAW-TABLE GAGE. JOHN HARLEY, Detroit, Mich. Filed Oct. 31, 1888. Serial No. 290,613. (No model.)

Claim.—1. In a band-saw machine, a rotary annular feed-table adapted to carry the work, and revolving with its inner edge in proximity to the saw, substantially as described.

2. The combination, with the table of a band-saw machine, of a rotary annular feed-table mounted thereon to revolve with its inner edge in proximity to the saw, and a fence within said feed-table, substantially as described.

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3. The combination, with the table of a band-saw machine, of a rotary annular feed-table mounted on said table, revolving with its inner edge in proximity to the saw, and of a saw-slot in said feed-table adapted to register with the saw-slot of the band-saw table, substantially as described.

4. The combination, with the table of a band-saw machine, of a rotary annular feed-table mounted on said table with its inner edge in proximity to the saw, a saw-slot in said feed-table adapted to register with the saw-slot of the band-saw table, and a detachable connection between the severed ends forming the saw-slot in said feed-table, substantially as described.

5. In a band-saw machine, the combination, with the saw-table, of the rotary feed-table mounted thereon to revolve with its inner edge in proximity to the saw, a supplementary table hinged at its inner edge near the inner edge of said rotary feed-table and provided with work-carrying stops, and a guide-rail secured to the saw-table and adapted to lift up the outer edge of the supplementary table, substantially as described.

6. The combination in a band-saw machine, of the band-saw table, a rotary annular feed-table mounted thereon to revolve with its inner edge in proximity to the saw, and a rotary feed-table mounted above the said rotary annular feed-table and revolving with its outer edge in proximity to the saw, substantially as described.

7. The combination, with a band-saw machine provided with a saw-slot E, of the rotary annular feed-table G, the saw-slot M in said feed-table adapted to register with the saw-slot E, and the dowel-pin N, substantially as described.

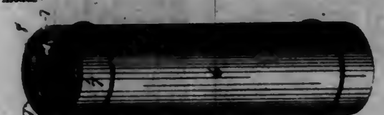
8. The combination, with a band-saw machine, of the annular feed-table G, the supplementary hinged tables G', and the guide-rail L, substantially as described.

9. The combination, with a band-saw machine, of a rotary annular table G, having work-carrying stops K, and a fence secured within said annular table, an upper feed-table adjustably secured above the lower feed-table and provided with work-carrying devices and actuated by the lower feed-table, substantially as described.

10. The combination, with a band-saw machine provided with an annular feed-table G, which is provided with work-carrying stops and a fence secured within said annular feed-table, of the upper feed-table O', provided with an oscillating lever W, and carrying the supplementary bed R', substantially as described.

11. The combination, with a band-saw machine, of a rotary annular feed-table mounted thereon to revolve with its inner edge in proximity to the saw, and a fence secured within said rotary feed-table and provided with a circular outer face of the same radius as the cut of the saw on the work, substantially as described.

405,311. ROOFING-PACKAGE. WILLIAM L. HEMERLING and HENRY HEMERLING, Havana, Ill. Filed Aug. 20, 1888. Serial No. 283,202. (No model.)



Claim.—1. A roll of roofing with an edge of one or more of its inside coils turned in as a retaining device.

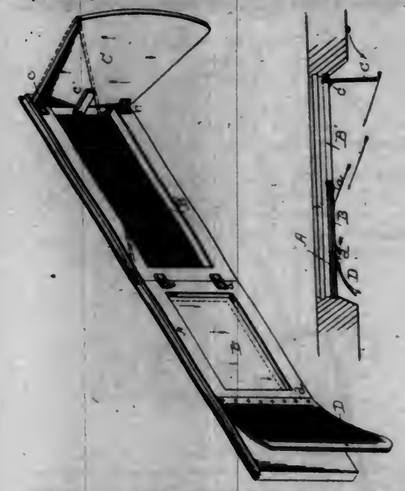
2. A roll of roofing with one or more supporting-heads retained therein by an interned edge on one or more of the inside coils of the roll.

3. A roll of roofing with one or more ends of a storage-chamber retained therein by an interned edge on one or more of the inside coils of the roll.

4. A roll of roofing with one or more end pieces secured within it against a resisting device by an interned edge on one or more of the inside coils of the roll.

5. A roll of roofing with one or more supporting-heads secured against accompaniments stored therein by an interned edge on one or more of the inside coils of the roll.

405,312. CAR-WINDOW VENTILATOR. MILES C. HUYETT, Detroit, Mich., assignor, by mesne assignments, to Cecelia E. Huyett and Adie C. Keller, same place. Filed Aug. 27, 1888. Serial No. 283,969. (No model.)



Claim.—1. A car-ventilator consisting of a frame substantially coextensive in length with a window of the car and provided at one end with a guard arranged at a right angle with the frame and at the other end with a deflector forming a more or less acute angle with the frame, substantially as described.

2. A car-ventilator adapted to be fitted in the window-casing of a car underneath the window, consisting of a frame provided at one end with a guard standing at a right angles to the frame an opening or screen in the frame for the exit of air from the car, and a deflector adapted to throw the air from the side of the car, substantially as and for the purposes described.

3. A portable car-ventilator adapted to be placed underneath a car-window when the latter is raised, consisting of a frame provided with an opening or screen and a guard attached thereto just forward of said opening or screen, substantially as and for the purposes described.

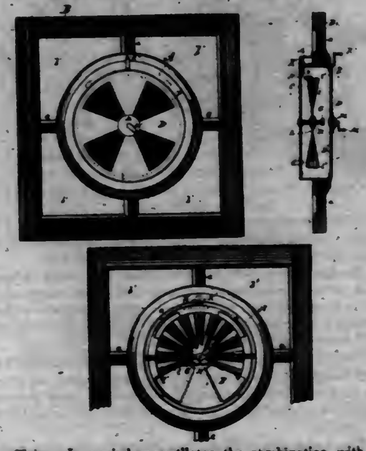
4. A car-ventilator consisting of a frame provided with a hinged guard at its forward end, adapted to prevent air from entering an opening or screen in said frame, and a deflector adapted to throw the air-current from the side of the car, substantially as described.

5. In a car-ventilator, the combination, with frame provided with an opening or screen in the forward half, a deflector at the rear end, and an outstanding guard at the forward end, of a guard adapted to prevent air from passing over the top of the outstanding guard and into the opening or screen, substantially as described.

6. A car-window ventilator consisting of a frame adapted for insertion beneath the sash provided with an exterior outstanding guard at its forward end, said frame imperforate along its rear half and provided with a screen or opening at its forward half, substantially as described.

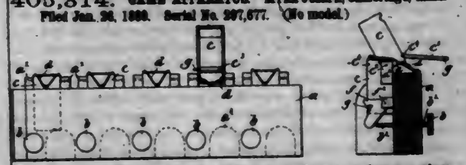
7. A car-window ventilator consisting of a frame adapted for insertion beneath the sash provided with an exterior outstanding guard at its forward end, said frame imperforate along its rear half and provided with a screen or opening in the forward half, and a deflector on the exterior at the rear end, substantially as described.

405,313. WINDOW-VENTILATOR. OLE IVERSEN, Anoka, Minn. Filed May 10, 1888. Serial No. 273,637. (No model.)



Claim.—In a window-ventilator, the combination, with the peripheral rim A, of the outer and inner face-plates C and D, having radial openings, the revolving cut-off plate C', mounted on a suitable support and provided with the rack c, the shaft K, provided with the pinion K', engaging said rack and having the handle K'', the crank-shaft M, provided with the handle M', both of said handles being on the same side of the ventilator, and the revolving cut-off plate D', rigidly attached to the shaft M, substantially as described.

405,314. GAME APPARATUS. MYER JOSEPH, Cambridge, Mass. Filed Jan. 30, 1889. Serial No. 297,677. (No model.)



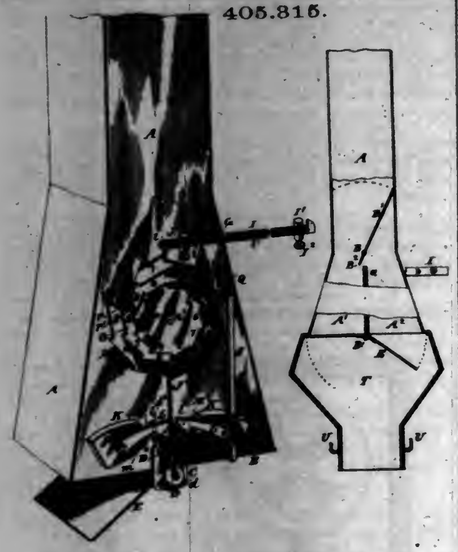
Claim.—1. The combination of a receptacle mounted upon a pivot and movable about the same with a spring tending to turn the said receptacle about its pivot, and a detent that normally holds the said receptacle and prevents it from moving under the action of its spring, and a target co-operating with said detent, as described, whereby when the target is struck the receptacle is released and turned suddenly about its pivot by the spring to discharge the contents of the receptacle, substantially as described.

2. The combination of a pivoted spring-pressed receptacle provided with a side or cover pivoted upon said receptacle, and a detent which engages with said pivoted cover, and a movable target co-operating with said detent, substantially as described.

405,315. GRAIN-METER. WILLIAM W. LOCKWOOD and CHARLES M. BUMFORD, Prospect, Kans. Filed Mar. 6, 1889. Serial No. 302,127. (No model.)

Claim.—1. The combination, with the tube and the partition dividing the same into two compartments, of the hinged trap-doors

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pivoted at the discharge end of said compartments and having a limited vertical movement on their pivots, substantially as shown and described, and for the purpose specified.

2. The combination, with the tube divided into compartments, as described, of the ears secured at the lower ends of said compartments and having elongated slots, the transverse shaft journaled in said ears and working in said slots, and the trap-doors carried by said shaft, substantially as shown and described.

3. The combination, with the tube and the partition *a*, of the pivoted switch-board, the trap-doors having vertical play and one of which is connected with said switch-board, and the scale-beam connected with the shaft of said trap-doors, substantially as and for the purpose specified.

4. The combination, with the tube divided into compartments, as described, and the pivoted switch-board and hinged trap-doors having free vertical play, of the scale-beam, the shaft on which said beam is pivoted, the rod connecting an end of said shaft with the shaft of trap-doors, the rod connecting the short arm of the scale-beam with the other end of said shaft, and the rod connecting switch-board with one of said trap-doors, substantially as and for the purpose specified.

5. The combination, with the tube, the vertical partition dividing the same into two compartments, and the pivoted switch-board above the partition, of the pivoted trap-doors beneath said receptacle, the pivoted scale-beam, the shaft to which beam is pivoted being extended across the tube and bent at right angles to form an arm, the rod connecting the free end of said arm with the shaft of the trap-doors, and the rod loosely connecting the shaft of the switch-board with one of said doors, substantially as described.

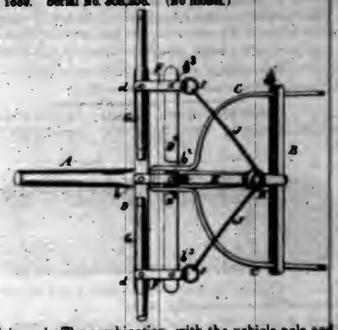
6. The combination, with the pivoted switch-board, the pivoted scale-beam, and the shaft carrying the trap-doors, of the rod connecting the short arm of the scale-beam with one end of said shaft, and the rod connecting the free end of the shaft on which the scale-beam is pivoted with the other end of the shaft carrying the trap-doors, substantially as described.

7. The combination, with the tube and the slotted ears secured thereto, of the transverse shaft working in the slots of said ears, the enlarged heads on the ends of said shaft, the pivoted switch-board, the pivoted scale-beam, and the rods connected at one end with the short arm of the scale-beam and with the shaft of the switch-board and the other end loosely engaging the shaft of the trap-doors between the ears and the enlarged heads, substantially as shown and described.

8. The combination, with the tube and the pivoted latches thereon, of the pivoted trap-doors, and the vertical extension of the shaft of said trap-doors provided at its free end with an anti-friction roller, substantially as shown and described.

9. The combination, with the tube and the pivoted trap-doors, of the blocks on said tube, the registering device, and the rod connected at one end to one of said doors passed through an opening in one of said blocks and at the other end connected with the registering mechanism, substantially as shown and described.

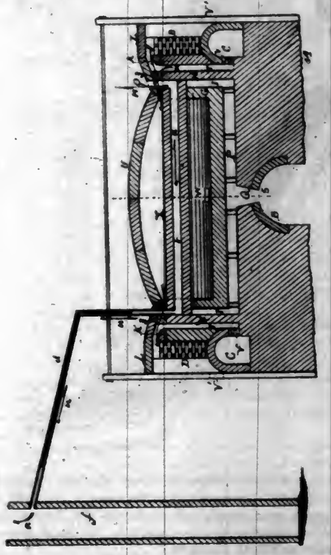
405,316. DOUBLETREE. ANA MINOR, Harper, Kans. Filed Mar. 14, 1889. Serial No. 303,256. (No model.)



Claim.—1. The combination, with the vehicle-pole and two parallel doubletree-bars, each of said bars being independently pivoted to the pole, the clips F, connecting the free ends of said bars, the rings I, secured to the clips, and the cord J, passed around the drum K upon the pole and connecting the said rings I, substantially as described, and for the purpose specified.

2. The combination, with the vehicle-pole having two independent doubletree-bars pivotally connected at their ends, as described, and the rear bar connected by means of a cord or strap passed around a pulley upon the pole, of the metallic strip E, secured at one of its ends to the lower face of the pole, said strip being extended over the end and along the upper face of the pole and terminating directly above the forward doubletree-bar, substantially as and for the purpose specified.

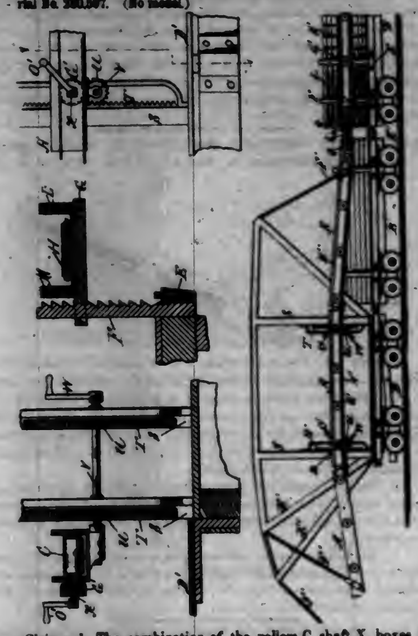
405,317. GLASS-MELTING FURNACE. WILLIAM F. MOORE, Streator, Ill. Filed Dec. 15, 1888. Serial No. 293,673. (No model.)



Claim.—1. In a glass-melting furnace having gas and air supply chambers at each side, the combination, with a melting-tank having an air-cooling chamber surrounding the same, of a bridge-wall partition composed of a perforated lower section W, resting on the bottom of the tank, and a hollow upper section X, projecting through the sides of the tank and united with partition-walls between the air-cooling chamber and gas-channels, substantially as described.

2. In a glass-melting furnace having gas and air supply chambers at each side, the combination, with a melting-tank having an air-cooling chamber surrounding the same, of a bridge-wall partition composed of a perforated lower section W, resting on the bottom of the tank, and a hollow upper section X, projecting through the sides of the tank and united with partition-walls between the air-cooling chamber and gas-channels, said upper section connecting with flues which extend vertically through the arch, and a pipe connected to one of said flues, said pipe leading to a chimney above the level of the flue, substantially as and for the purpose specified.

405,318. RAIL-TRACK-LAYING MACHINE. DAILY S. MOORE and CHRISTOPHER MCLENNAN, Hyde Park, Ill. Filed July 21, 1888. Serial No. 280,807. (No model.)



Claim.—1. The combination of the rollers C, shaft X, boxes A' A', located at each end of and within roller C, and bearings in the sides of tramway.

2. The combination of the rack T, pinion U, shaft Y, crank W, and tramway A, as and for the purpose shown.

405,319. SASH-FASTENER. WILHELM E. HAGBOLM, Detroit, Mich. Filed Dec. 8, 1888. Serial No. 292,964. (No model.)



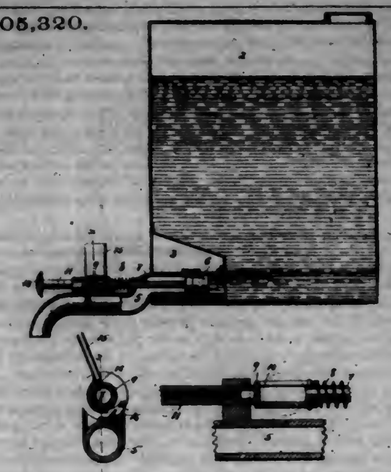
Claim.—1. In a sash-holder, the combination of the stationary wedge A, the movable wedge B, the lever C, pivotally secured in the stationary wedge and engaging into a recess of the movable wedge, the abutments *k l*, formed in the movable and stationary wedges, respectively, and the spring D, interposed between such abutments, substantially as described.

2. In a sash-holder, the combination of the stationary wedge A, the movable wedge B, the lever C, pivotally secured in the stationary wedge and engaging the movable wedge, the laterally-projecting spring-latch G, secured in said casing and adapted to engage into a keeper H, and the arm I on the lever C engaging said spring-latch, all substantially as described.

405,320. FLUID-RELEASING DEVICE. DAVID OLMSTED, Minneapolis, Minn. Filed Mar. 7, 1889. Serial No. 302,223. (No model.)

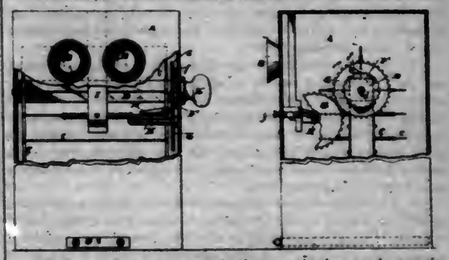
Claim.—1. The combination, with an air-tight tank, of a chamber communicating with the lower part of said tank and open at its top to permit the pressure of the atmosphere upon liquid in said chamber, a valve controlling the passage of liquid from said chamber, and a coin-operated mechanism governing said valve, substantially as described.

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2. The combination, with the air-tight tank 2, of the chamber 3, provided with the opening 4, communicating with said tank, the faucet-tube 5, connecting with said chamber 3, the valve 6, arranged to close said tube, the spring 8, and the tube 9, provided with a coin-receiving slot 10, substantially as described.

405,321. COIN-OPERATED STEREOSCOPE. CLARA E. PATTERSON, New York, N. Y. Filed Feb. 10, 1888. Serial No. 263,607. (No model.)



Claim.—1. A rotating shaft having a projection, a tube or coin-passage, a bolt to normally hold said projection and shaft from rotating, said bolt extending or projecting into the tube in the path of the coin, whereby the coin in passing through the tube moves said bolt and releases the shaft, allowing it to be rotated, a latch to hold said bolt away from the shaft projection, and a second projection carried by the shaft to trip the latch and release the bolt.

2. In a stereoscope, the combination of a picture-holder provided with a series of pictures, a rotating shaft to move the picture-holder, a handle to rotate said shaft and picture-holder to move the pictures successively before the sight-aperture, a projection upon said shaft, a coin-receiver provided with an aperture and terminating in a support, a push-pin to push the coin from one position without turning it over, and a bolt to prevent the rotation of the shaft and picture-holder projecting in the path of the coin and operated by it, when pushed, to release the projection on the shaft and allow the picture-holder to be rotated by the handle to cause the pictures to be moved successively before the sight-apertures.

3. In a stereoscope, the combination of a picture-holder provided with a series of pictures, a handle and shaft to rotate said picture-holder to move the pictures successively before the sight-aperture, a rotating shaft moved by the rotation of the picture-holder, gearing between the two shafts, a bolt to prevent the rotation of said shaft, and through it the picture-holder, a coin-receiver provided with an aperture and terminating in a support, a push-pin to push the coin from one position to another, said bolt being arranged in the path of the coin and operated by it, when pushed, to release the projection on the shaft and allow the gearing and picture-holder to be rotated by the handle to move the pictures successively before the sight-apertures.

4. In a stereoscope, the combination of a picture-holder provided with a series of pictures, a shaft by which said picture-holder is rotated, having a projection, a handle to rotate said shaft, a coin-re-

ceiver provided with an aperture and terminating in a support, a push-pin to push the coin from one position to another, a locking-bolt to prevent the rotation of said shaft and picture-holder arranged in the path of the coin and operated by it, when pushed back, to release the projection on the shaft and allow it and the picture-holder to be rotated by the handle to cause the pictures to be moved successively before the sight-apertures, a latch to hold the locking-bolt open as soon as operated to unlock the picture-holder, and a latch-releasing projection upon the shaft to automatically unlatch the bolt and allow it to reset itself to prevent further rotation of the shaft and the picture-holder after a given number of pictures have been presented to view.

5. In a stereoscope, the combination of a picture-holder provided with a series of pictures, a shaft by which said picture-holder is rotated, having a projection, a handle to rotate said shaft, a coin-guide provided with an aperture to receive the coin, a locking-bolt to prevent the movement of the shaft and picture-holder extending into the path of the coin, and actuated thereby in its passage, whereby the picture-holder may be turned to present the pictures in succession before the sight-apertures during the passage of the coin through the guide into the coin-receptacle within the case of the stereoscope.

6. In a stereoscope, the combination of a picture-holder provided with a series of pictures, a shaft by which said picture-holder is rotated, having a projection, a handle to rotate said shaft, a coin-guide provided with an aperture to receive the coin, a locking-bolt to prevent the movement of the shaft and picture-holder extending into the path of the coin actuated thereby in its passage, whereby the picture-holder may be turned to present the pictures in succession before the sight-apertures during the passage of the coin through the guide into the coin-receptacle within the case of the stereoscope, a latch to hold said locking-bolt open, and a trip controlled by the rotating shaft to operate the latch and reset the bolt for actuation by the next coin deposited.

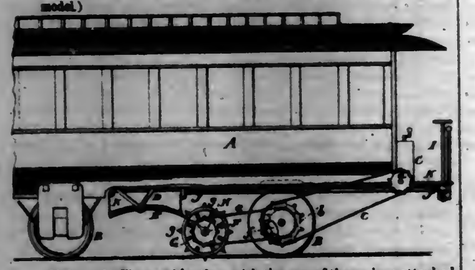
7. The combination of the handle E, shaft H, having projection A, connecting-gearing G, locking-bolts K and K^2, having tapered or beveled ends *k k'*, spring L, or its equivalent, to keep said locking-bolts normally in one position, a coin-guide, and a push-pin J, substantially as and for the purpose specified.

8. The combination of the handle E, shaft H, having projection A and pin N, connecting-gearing G, locking-bolts K and K^2, having tapered or beveled ends *k k'*, spring L, or its equivalent, to keep said locking-bolts normally in one position, a catch M, having arm *m*, for securing the lock out of reach of the projection A, and in which the pin N acts on the arm *m* to unlatch the lock after the shaft H has made a given movement, a coin-guide, and a push-pin J, substantially as and for the purpose specified.

9. The combination of the handle E, shaft H, having projection A, connecting-gearing G, lock K having a tapered or beveled end *k*, spring L, or its equivalent, to keep said lock normally in one position, a coin-guide, a push-pin J, and the pawl and ratchet *f* F, to prevent the shaft H rotating backward.

10. In a stereoscope, the combination of a picture-holder provided with a series of pictures, a rotary shaft to move said picture-holder, a coin-receiving tube provided with an aperture to receive the coin, a bolt to normally lock said rotary shaft against rotation and actuated by the coin in its passage to the receptacle to unlock said rotary shaft and allow its rotation in moving the pictures in succession before the sight-apertures, and an automatic relocking mechanism, substantially as described, controlled by the movement of the picture-holder to relock said rotary shaft after a given number of pictures have been moved before the sight-apertures.

405,322. ATTACHMENT FOR RAILWAY-CARS. GEORGE L. POTTS, Appleton, Wis. Filed Mar. 30, 1888. Serial No. 305,442. (No model.)

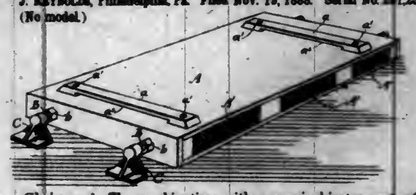


Claim.—1. The combination, with the car, of the springs attached thereto and the spiked wheel journaled in the free ends of said springs and connected with and operated by the driving-wheel of the car, substantially as shown and described.

2. The combination, with the car and the leaf-springs attached thereto and arranged substantially horizontally, as described, of the spiked wheel carried by said springs and the cords attached to said springs, and with a rotary shaft, whereby said cords may be actuated to raise or lower said spiked wheel, substantially as and for the purpose specified.

3. The combination, with the car, the springs attached to the under side thereof and arranged substantially horizontally, and the transverse shaft journaled in bearings at one end of said springs, of the spiked wheel on said shaft, the vertical shaft on the car, the cords attached at one end to said shaft and at the other to one end of said springs, and the cords attached to the other ends of said springs and to the vertical shaft, substantially as shown and described, and for the purpose specified.

405,323. RESONATOR FOR ORGANS OR PIANOS. ANDREW J. REYNOLDS, Philadelphia, Pa. Filed Nov. 19, 1888. Serial No. 291,234. (No model.)



Claim.—1. The combination, with a musical instrument, of a resonator consisting of a hollow box or shell in operative proximity to the instrument, sound-openings in said resonator, means for suspending the same from direct contact with the building in which it is placed, and a conduit for collecting and conveying the sound-vibrations from the instrument directly to the interior of said resonator, substantially as shown and described.

2. The combination of a resonator A, a series of cross-bars arranged therein under tension, and suitable brackets or equivalent supports directly connected with said cross-bars, substantially as shown and described.

3. The combination of the resonator A, a series of hollow cross-bars arranged therein under tension, and means for suspending said insulator from contact with the building in which it is placed, substantially as described.

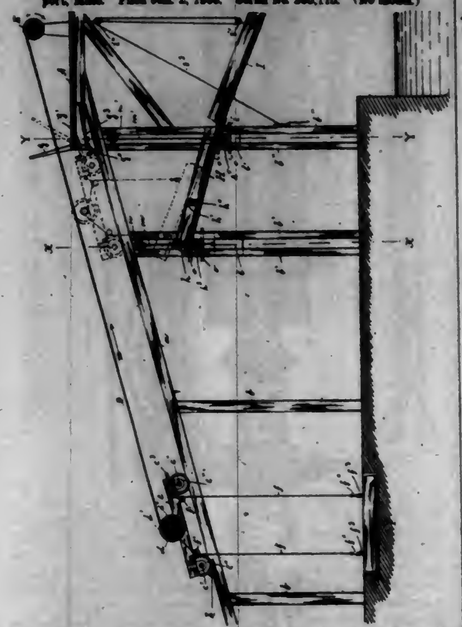
405,324. PISTON FOR CALORIC-ENGINES. THOMAS J. RIDER, New York, N. Y., assignor, by mesne assignments, to William De La-mater and Leander A. Bevin, same place. Filed Feb. 4, 1889. Serial No. 298,557. (No model.)



Claim.—1. In a caloric-engine, a transfer-piston consisting of a shell, diaphragms within the shell and fastened to it, and bars connecting the diaphragms, substantially as shown and described.

2. In a caloric-engine, a transfer-piston consisting of the shell *a*, in a single piece, the diaphragms *b*, the bars *c*, and the ring *d*, all arranged and combined substantially as shown and described.

405,325. ELEVATOR AND CONVEYER. JAMES B. ROGERS, Rockport, Mass. Filed Jan. 2, 1889. Serial No. 295,115. (No model.)



Claim.—1. In an elevator and conveyor, the combination of the frame supporting the track, the adjustable cross-beams in said frame, the chute having counter-weights and supported on said adjustable cross-beams, the platform carrying the spring-catch, the carriage mounted on the track having guide-pulleys journaled therein, a shaft carrying a large and small drums mounted in the carriage, a rope passing around the large drum for rotating the shaft, ropes passing around the small drums and guide-pulleys, and the box connected to said ropes, said parts being arranged and operating substantially in the manner and for the purpose described.

2. In an elevator and conveyor, the combination of the frame supporting a track, the cross-beams adjustable in said frame, the pins for retaining the cross-beams in their adjusted positions, the counter-weighted chute supported on said cross-beams, the platform carrying the spring lever-catch supported on the frame, the carriage carrying the guide-pulleys mounted on the track and having an eye adapted to be engaged by the lever-catch, the shaft mounted in the carriage carrying a large and small drums, a rope passing around the large drum, ropes passing around the small drums and over the guide-pulleys, and a box connected to the said ropes, said parts being arranged and operating substantially as and for the purpose described.

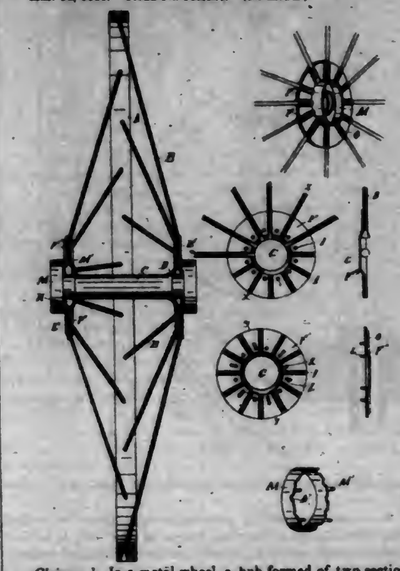
3. In an elevator and conveyer, the combination of the frame supporting a track, a counterweighted chute adjustable in the frame, a carriage having a shaft mounted therein carrying differential drums, guide-pulleys mounted in the corners of the carriage, ropes passing around the drums and guide-pulleys, a box connected to said ropes, a rope for rotating the shaft carrying the drums, and a lever having a hook at one end for engaging the carriage, said parts being arranged and operating substantially as and for the purpose described.

405,326. SASH-FASTENER. THOMAS H. ROSS, Evansville, Ind., assignor to the Ross Sash Lock Company, same place. Filed Dec. 11, 1888. Serial No. 293,317. (No model.)



Claim.—In a sash-fastener, the combination, with a window frame or sash provided with a rack-bar, of a box C, having a slot *c*, a plate D, having a slot *d*, lugs *d' d'' d''' d''''*, stud d^5, and guides *e e'*, a pawl F, having connecting-piece *f* and extension *f'*, adapted to slide, respectively, in the slots *c* and *d* and between the guides *e e'*, and a gear-wheel adapted to revolve upon the stud d^5, as shown and described, and for the purposes set forth.

405,327. METAL WHEEL. JOHN W. SAVAGE, Toledo, Ohio. Filed Mar. 11, 1889. Serial No. 302,936. (No model.)



Claim.—1. In a metal wheel, a hub formed of two sections and a transverse spindle, each section comprising two disks, one of which has a concentric row of perforations, the opposite disk having projections registering with and adapted to pass through a number of perforations and be riveted to hold the disks in engagement with spokes between the same, as and for the purpose set forth.

2. In a metal wheel, hub-sections formed of two disks, between which the spokes are held by means of metal projections integral with a sand-band by the projections being passed through both sections and riveted, as and for the purpose set forth.

405,328. BUTTON-ATTACHING MACHINE. WARREN G. SLATER, Fremont, Mich., assignor to the Peninsular Novelty Company, Boston, Mass. Filed Aug. 25, 1886. Serial No. 211,571. (No model.)

Claim.—1. In a button-fastening machine, the combination, with the hollow pedestal provided with an anvil and guide-extensions, of the spring-actuated plunger-rod having a carved and shouldered upper extension, the two jaw-shanks bearing jaws C C and adapted to be opened and closed, as described, the jaw-shank B, pivoted to the said upper extension of the plunger-rod, and the jaw-shank B', attached to shank B by a lug and slot, both shanks being guided, substantially as described, and the vibrating dog having a pusher *p'*, as specified.

2. The combination, with the anvil and its frame, of the gripping-jaws, vertically movable, the carved guides arranged in the relation shown to said jaws, and the vertically-movable arm to which said guides are secured, and the curved dog K, provided with a button-pusher, substantially as described.

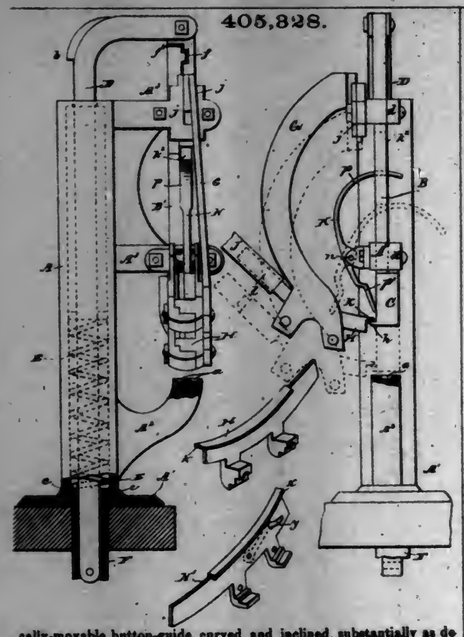
3. The combination, with the vertically-movable gripping-jaws having lifting-offsets on their sides, of the curved guides H, having lipped extensions on their lower ends and applied to a vertically-movable arm, and the curved dog K, provided with a pusher and actuated substantially as described.

4. The combination, with the vertically-movable spring-actuated gripping-jaws, of the vertically-movable arm G, the guides secured rigidly to this arm, the tube or magazine removably attached to it, and the vibrating dog K, provided with a pusher *p'*, substantially as described.

5. The curved guides H, formed of two longitudinal parts rigidly secured to the vertically-movable arm G, in combination with the vertically-movable jaws, a vibrating dog provided with a pusher, and a clinching-anvil, substantially as described.

6. The combination of the vibrating button-placing dog with the vertically-movable gripping-jaws, slotted as described, and the verti-

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cally-movable button-guide curved and inclined, substantially as described.

7. The combination of the gripping-jaws provided with the slot, as shown, with a button-placing dog formed as described, an inclined curved and vertically-movable guide H, and a clinching-anvil, substantially as described.

8. The button-machine herein described, consisting of a tubular pedestal, a spring-actuated plunger-rod having depending from and pivoted to its upper end one of the shanks of a pair of button-grippers, spring-actuated as described, a vertically-movable arm bearing guides H, and having removably attached to it a tube or magazine, a pivoted dog of curved form, having a transferrer *p'*, adapted for placing the buttons between said gripping-jaws, and an anvil on which the fasteners are clinched, substantially as described.

405,329. LOCK-CASE. EUGENE C. SMITH, New York, N. Y., assignor to the Universal Lock Company of New York, same place. Filed Jan. 31, 1889. Serial No. 298,200. (No model.)



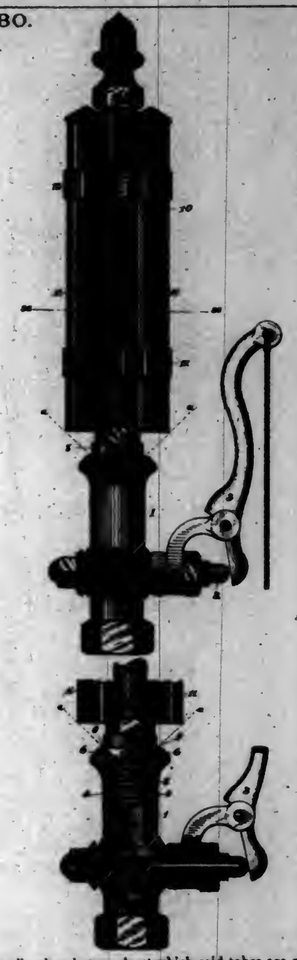
Claim.—1. A lock-case constructed of the following parts: a top adapted to support the locking mechanism and having a circumferential depression around its edge, and a hollow body formed with the bottom and sides in one piece separate from the top and united to the top by its metal entering the aforesaid depression in the top, as herein described.

2. A padlock-case constructed of the following parts: a top having shackle-guiding openings formed in it and a downward-projecting part adapted to enter the lock-case body and support the locking mechanism, the said downward-projecting part having a circumferential depression around its edge, a body formed with the bottom and sides in one piece separate from the top, and the body and top being united together by the metal of the body entering the depression in the edge of the downward-projecting part of the top, as herein described.

405,330. STEAM-WHISTLE. HENRY V. SMITH, Birmingham, assignor, by mesne assignments, of one-half to Edward G. Burnham, Bridgeport, Conn. Filed Sept. 14, 1888. Serial No. 285,401. (No model.)

Claim.—1. The combination, with the group of resonant tubes,

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of the centrally-placed stem about which said tubes are grouped and whereon they are supported, a steamway axial with the stem and eccentric toward each and every one of the said tubes, and a valve whereby the said steamway is controlled, substantially as set forth.

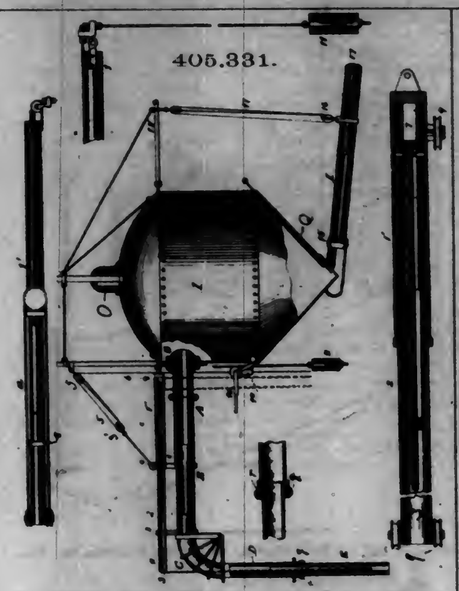
2. In a steam-whistle, the combination, with the central supporting-stem and the steamway concentric with and having its line of throw outwardly from said stem, of the group of resonant tubes, the brackets in which said tubes are supported and whereby they are secured to said stem and are adjustable vertically relative thereto, and the valve for controlling the supply of steam to the way, substantially as set forth.

3. The combination, with the central supporting-stem threaded at its upper end and the steamway axial with the said stem, of the group of resonant tubes, the brackets wherein said tubes are held at the appropriate distances from the stem and whereby said tubes may be vertically adjusted upon said stem, and the check-nut threaded upon the top of the stem and abutting against the upper bracket, substantially as set forth.

4. The combination, with the stem threaded at its upper extremity, of the steamway at the bottom end of the stem, the plurality of resonant tubes, and the two brackets wherein they are supported, the lower bracket being plain and the upper bracket threaded for engagement with the stem, whereby the whistle-tubes may be adjusted, as desired, relative to the stem and held in their adjusted position, substantially as set forth.

405,331. PNEUMATIC GRAIN-CONVEYING APPARATUS. LYMAN SMITH, Kansas City, Mo. Filed Feb. 17, 1888. Serial No. 264,383. (No model.)

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Claim.—1. In a pneumatic grain-conveyer, the combination of a receiving-tank provided with an air exhaust or suction pipe, a receiving-pipe composed of vertical and horizontal sections, an adjustable elbow connecting said sections, a universal joint securing the horizontal section to the tank, and a system of ropes and pulleys for supporting and operating the receiving-pipe, substantially as described.

2. The combination of the receiving-tank and the receiving-pipe consisting of telescopic vertical and horizontal sections, an adjustable elbow connecting the sections, and a universal joint by which the receiving-pipe is connected to said tank, as set forth.

3. The combination of a receiving-tank provided with a suction or air pipe, a receiving-pipe composed of telescopic horizontal and vertical sections, an adjustable support or boom carrying the receiving-pipe and by which the same is longitudinally adjusted, a universal joint securing the horizontal section to the tank, a discharge-pipe for the tank secured to the same by a universal joint, and systems of ropes, pulleys, &c., by which the discharge-pipe and adjustable support are carried and operated, substantially as described.

4. The combination of the receiving-tank, the receiving-pipe composed of telescopic sections, and the telescopic boom supporting said pipe and adapted to adjust the same, as set forth.

5. The combination of a tank, a receiving-pipe composed of horizontal and vertical sections, the horizontal section being secured to the tank by a universal joint and the vertical portion being formed in telescopic sections, and a counterpoise for the vertical section, consisting of a weight located below the universal joint and ropes following the line of the receiving-pipe and secured to the bottom section of the vertical portion, substantially as described.

6. The combination of a receiving-tank, a receiving-pipe composed of horizontal and vertical portions connected by an adjustable elbow and composed of telescopic sections, a counterpoise for the vertical telescopic sections, and a telescopic boom above and parallel with the horizontal portion of the pipe and secured to the same, by which the length of the pipe is increased or diminished.

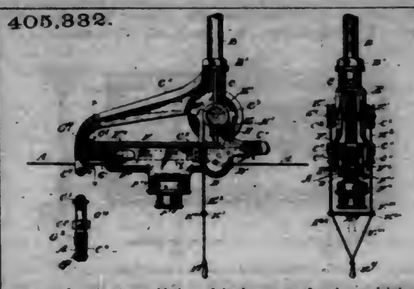
405,332. CASH AND PARCEL CARRIER. EDGAR B. STOCKING, Washington, D. C. Filed Feb. 23, 1889. Serial No. 301,522. (No model.)

Claim.—1. A bracket having a post-socket, bearings for a propelling device, and bearings for bearing-wheels, all arranged in line with each other, in combination with bearing-wheels and with a car having a plate which rests on the bearing-wheels, substantially as specified.

2. A bracket having a brace bored for the longitudinal passage of the track, slitted in intersection of the bore, and provided with a binding-screw, substantially as specified.

3. A bracket having a post-socket and depending legs provided with bearings for a propelling device and for bearing-wheels, and having an integral brace adapted for connection with a track, substantially as specified.

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4. A car having a U-shaped body, a top forming a driving-surface, and a depending integral heavy case, substantially as specified.

5. The combination of a car having a driving-surface, a propelling device arranged to take contact thereon, a bracket having elongated bearings, and a socket and a station-post, the bearings, socket, and post being in line with each other, substantially as specified.

6. The combination of a track, a car adapted to travel thereon and having a driving-surface, a propelling device mounted in a bracket having bearings elongated on lines at right angles to the track, and a pulling-cord depending from the propelling device and in line with the bracket, substantially as specified.

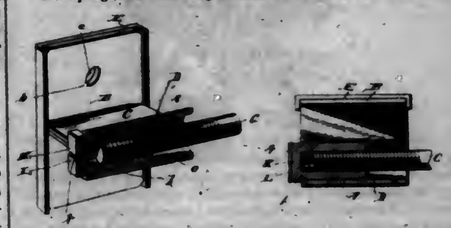
7. The combination of a car having a depending receptacle, pulling-cords depending at the sides of the car and in advance of its receptacle when at rest and merging in a common handle, and a spreader to prevent contact of the cords with the receptacle, substantially as specified.

8. The bracket C, having the socket C', legs C², provided with the bearings C³ D', and the brace C⁴, having socket C⁵ and slitted, as at C⁶, substantially as shown and described.

9. The car consisting of the top F and separate body F', the body F' and the case F⁴ being formed in a single piece and adapted for connection with the top, substantially as specified.

10. The combination, with a car, a propelling device adapted to be put in operative condition by the car, and a spring constructed and arranged to remain quiescent during the greater portion of the operation of the propelling device for preliminarily and partially putting said propelling device into operative position, substantially as specified.

405,333. HANGING SLIDING CURTAINS. THOMAS TRIBE, Colorado Springs, Colo. Filed Aug. 20, 1888. Serial No. 283,242. (No model.)



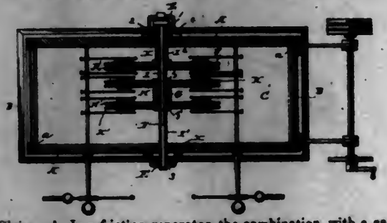
Claim.—1. The brackets provided with sleeves or tubular sockets having smooth interiors, combined with the screw-bolts fitting loosely and adapted to revolve in the sleeves or sockets and provided with threaded bores, and the rod provided with threaded extremities engaging the bores of the screw-bolts, substantially as specified.

2. The brackets provided with sleeves or tubular sockets, combined with the revoluble screw-bolts fitting loosely in the sleeves or sockets, provided with threaded bores and having heads on their outer ends bearing against the outer ends of the sleeves or sockets, and the rod or wire having threaded ends engaging the bores of the screw-bolts, substantially as specified.

3. The combination, with the brackets provided with sleeves or tubular sockets D D, of the revoluble screw-bolts K, fitting snugly in the sleeves or sockets and having angular heads bearing against the outer ends of the sleeves or sockets and provided with transverse grooves, and the rod or wire having threaded ends engaged in the bores of the said screw-bolts, substantially as specified.

4. The herein-described brackets for curtain-hangers, comprising the washer having its edges turned up, the base-plate fitting between the turned-up edges of the washer, and having its center looped up to form a tubular sleeve or socket D, and the revoluble screw-bolts fitting in the said sleeves or sockets and provided with a threaded bore to engage the end of a rod or wire, substantially as specified.

405,334. FRICTION-GENERATOR. HENRY E. WAITE, New York, N. Y. Filed Feb. 25, 1889. Serial No. 301,106. (No model.)

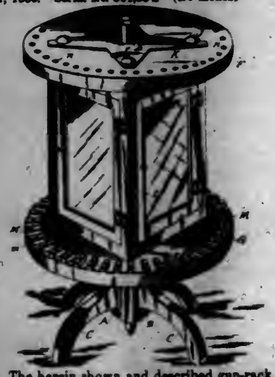


Claim.—1. In a friction-generator, the combination, with a case, of bearings mounted upon the outside of the case, a shaft carrying one or more plates supported in said bearings, and hollow shafts mounted upon the first shaft and carrying other plates, substantially as described.

2. In a friction-generator, the combination, with an air-tight case, of bearings mounted upon the outside of the case, a shaft mounted in said bearings and carrying one or more plates, and also provided with a pulley outside the case, and two or more hollow shafts mounted upon said first shaft and carrying plates, and each provided with a pulley outside of the case, substantially as described.

3. In a friction-generator, the combination, with the rotating plates, of a series of metallic sector-pieces secured thereon, each sector having a projecting center portion, and a brush arranged to contact with said plates throughout the length of the projection portion, substantially as described.

405,335. GUN-RACK. MILES H. AHERNE, Montgomery, Ala. Filed Feb. 27, 1889. Serial No. 301,234. (No model.)



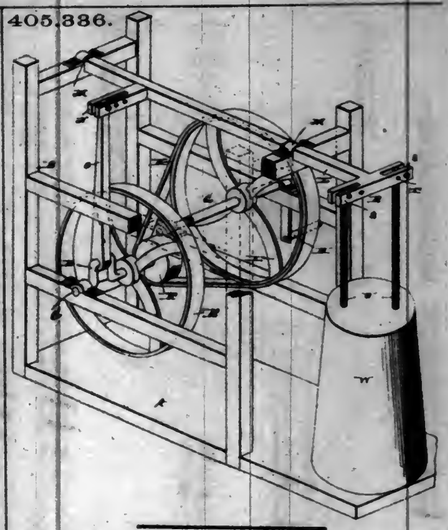
Claim.—1. The herein shown and described gun-rack, composed of the stand, the post rising from the stand, and the rack mounted on the said post, composed of the upper support having a series of openings for the insertion of the muzzles of the guns, and having hooks in the rear of the said openings, the lower support having a corresponding series of notches to receive the ends of the gunstocks, and having hooks on its under side, and the glass case centrally disposed and extending from the lower to the upper support, substantially as and for the purpose described.

2. The herein shown and described gun-rack, composed of the stand, the post rising from the stand, the upper and the lower supports, the upper support having openings and hooks in the rear of the openings, and the lower support having notches and hooks on the under side opposite the notches, the post H, the glass case, the rims or strips secured to the supports for fastening the post H and the glass case in position, the strengthening-plates, and the rods for securing the said supports together, substantially as described.

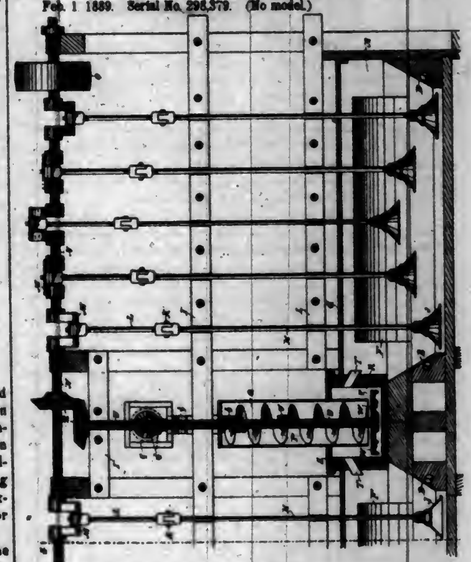
405,336. CHURN-MOTOR. HENRY C. ANDERSON, Whitsborough, Tex., assignor to Charles C. Clemens and John B. Choice, same place. Filed Jan. 25, 1889. Serial No. 297,508. (No model.)

Claim.—The combination of the frame, the rock-shaft arranged longitudinally in the top of the same and having the arm N and the cross-head R, the dasher-rods pivoted to the cross-head, the crank-shaft journaled transversely in the frame below the rock-shaft and having the fly-wheel E and the pulley F, the pitmen connecting the crank-shaft and the arm N, the driving-shaft arranged transversely in the frame, the pulley I thereon, and the belt connecting the pulleys I and F, as set forth.

405,336.



405,337. AMALGAMATOR. JOSEPH BEHR, West Point, Cal. Filed Feb. 1 1889. Serial No. 298,379. (No model.)



Claim.—1. An amalgamator consisting of a containing-tank with amalgamated plates fixed upon the sides, in combination with the series of vertically-moving amalgamated dashers, substantially as described.

2. The containing-tank with amalgamated sides, the inverted conical dashers consisting of amalgamated plates, the vertical stems moving in guides, and the crank and crank-shaft whereby the dashers are moved into and out of the pulp, substantially as and for the purpose herein described.

3. The hollow bell-shaped amalgamated dashers with their vertical stems and operating-cranks, a tank with amalgamated sides within which said dashers reciprocate, in combination with a central distributing-tub, the vertical screw conveyer discharging into the bottom thereof, the stirrers at the bottom of the conveyer-shaft, and discharge-pipes opening outwardly from the sides of the tub, substantially as described.

4. The amalgamating-tank with the vertically-reciprocating dashers, a central distributing-tub with the discharge-pipes, a vertical screw

conveyer, and the stirrers or agitators fixed to the bottom of the conveyer-shaft, in combination with the feed-passages opening one above the other into the conveyer-tube, and the horizontal conveyer discharging into the uppermost of said chutes, substantially as and for the purpose herein described.

5. The tank with the reciprocating dashers, the surrounding amalgamated plates, in combination with the steam-heating pipes extending along the tank sides beneath and in contact with the plates, substantially as described.

405,338. NUT FOR CARRIAGE-AXLES. PEARSON D. BLISS, Bridgeport, Conn. Filed Dec. 26, 1888. Serial No. 294,657. (No model.)



Claim.—The herein-described axle-nut, consisting of an internally and externally screw-threaded part provided with wings and of set-screws passing through said wings, with their ends bearing upon the face of the internally-screw-threaded and adjustable part, in combination with the said internally-screw-threaded and adjustable part, substantially as and for the purpose described.

405,339. POCKET CARD-CASE. CHARLES J. BUFFUM, Boston, Mass. Filed Apr. 26, 1889. Serial No. 308,702. (No model.)



Claim.—1. In a device of the character described, the combination of an outside folding cover A, provided with an interior pocket *a*, a tongue-piece B, having a flap *b*, a re-enforcing piece C, having a folded upper portion *c*, and a pack of cards or sheets D, the tongue-piece, its flap, the re-enforcing piece, and the inner end of the pack being joined together, as described.

2. In a device of the character described, the combination of an outside folding cover A, provided with an interior pocket *a*, a tongue-piece B, having a folded portion or flap *b*, a re-enforcing piece C, having a folded upper portion *c*, and a pack of perforated cards or sheets D, the tongue-piece, its flap, the re-enforcing piece, and the inner end of the pack being joined together by gum and by stitching *d*, as described.

405,340. ROCKING-CHAIR ATTACHMENT. WILLIAM I. BOWKER, La Grange, Ill. Original application filed Sept. 9, 1887, Serial No. 249,270. Divided and this application filed Jan. 12, 1889. Serial No. 296,169. (No model.)



Claim.—1. A platform rocking-chair attachment comprising a compressible spiral spring and two attaching-brackets, secured at their ends to the spring and having said ends farther apart at one side of the spring than at the other, substantially as described.

2. A platform rocking-chair attachment comprising a compressible spiral spring longer at one side than the other and two attaching-brackets adapted to receive and hold the terminal coils of the spring, substantially as described.

405,341. ROCKING-CHAIR ATTACHMENT. WILLIAM I. BOWKER, La Grange, Ill. Original application filed Sept. 9, 1887, Serial No. 249,270. Divided and this application filed Jan. 15, 1889. Serial No. 296,450. (No model.)

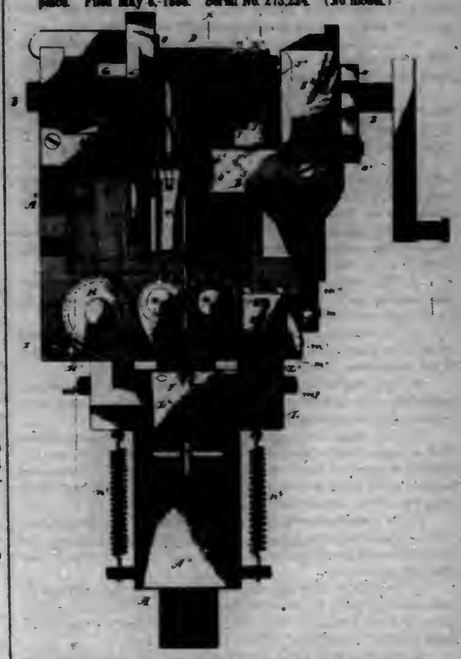


Claim.—1. A platform rocking-chair attachment comprising a compressible spiral spring and two attaching-brackets secured thereto and holding the terminal coils of the spring at opposite sides thereof, substantially as described.

2. A platform rocking-chair attachment comprising a compressible spiral spring and two attaching-brackets secured thereto and holding the terminal coils of the spring at opposite sides thereof, one at the side adjacent to the rocker and base-rail and the other at the side farthest therefrom, substantially as described.

3. A bracket for rocking-chair attachments, comprising a plate to be secured to the rocker or base-rail, an extended portion to pass through the body of the coils, and projections at the end of the extended portion adapted to receive and hold one of the terminal coils of the spring at one side of the body of the coils, substantially as described.

405,342. STAPLE FORMING AND CLINCHING MACHINE. JOHN CRAWFORD, Reading, Pa., assignor of one-half to Edwin R. Wiegand, same place. Filed May 8, 1888. Serial No. 273,224. (No model.)



Claim.—1. In a machine for forming and applying wire staples, the combination, with a wire-feeding device and a cutter for severing the wire into proper lengths for staple-blanks, of grippers and formers constructed and arranged to grip the staple-blanks and form the staples, and then insert them into the material to be fastened, substantially as set forth.

2. In a machine for forming and applying wire staples, the combination, with a wire-feeding device and a cutter for severing the wire into proper lengths for staple-blanks, of grippers and formers constructed and arranged to form the staple-blanks into staples and awls for guiding the staples through the material, substantially as set forth.

3. In a machine for forming and applying wire staples, the combination, with a wire-feeding device and a cutter for severing the wire into proper lengths for staple-blanks, of grippers and formers for forming and inserting the staples and grooved needles for guiding the ends of the staples through the material, substantially as set forth.

4. In a machine for forming and applying wire staples, the combination, with a wire-feeding device and a cutter for severing the wire into proper lengths for staple-blanks, of grippers and formers for forming and inserting the staples, and grooved needles having inclines constructed to bend the free end of the staple after its insertion into the material, substantially as set forth.

5. In a machine for forming and applying wire staples, the combination, with a wire-feeding device and a cutter for severing the wire into proper lengths for staple-blanks, of grippers and formers for forming and inserting the staples, and a support for automatically moving

the material toward the staples as they are being inserted in the material, substantially as set forth.

6. In a machine for forming and applying wire staples, the combination, with a wire-fastening device and a cutter for severing the wire into proper lengths for staple-blanks, of grippers and formers for forming and inserting the staples, and an anvil for clinching the free ends of the staples after they have been inserted in place, substantially as set forth.

7. In a machine for forming and applying wire staples, the combination, with devices for forming and inserting the staples, of a clinching-anvil constructed and arranged to clinch the free ends of the staple while it is held by the inserting devices and to clinch them again after the staple has been released from the inserting devices, substantially as set forth.

8. In a machine for forming and applying wire staples, the combination, with grippers, of staple-forming jaws provided with inserting-awls, substantially as set forth.

9. In a staple forming and clinching machine, a wire-gripping device for inserting the staples, composed of a fixed limb and a pivoted limb having mating jaws, substantially as set forth.

10. In a staple forming and clinching machine, the combination, with a wire-cutter, of a gripping device adapted to grip the staple-blank near its center, substantially as set forth.

11. In a staple forming and clinching machine, a wire-gripping device which is adapted to move vertically and by pivotal movement of one limb grip a staple-blank, then elevate and bend its limbs into staple form, substantially as set forth.

12. In a staple forming and clinching machine, the combination, with a wire-cutter, of two vertically supported and reciprocating gripping-limbs, which are adapted to separate and close to grip a staple-blank between their jaws, substantially as set forth.

13. The combination, with devices for holding a staple, of a vertically-rocking table adapted to support the material into which the staple is to be inserted.

14. The combination, with devices for holding a staple, of a vertically-rocking anvil or clinching-bar adapted to engage the ends of the staple while the latter is held by the holding devices.

15. In a staple and clinching machine, two grooved awls secured to movable blocks and adapted to move toward or from each other in the same plane, substantially as set forth.

16. In a staple forming and clinching machine, two grooved awls supported to lie parallel in the same plane and adapted to move away from each other, substantially as set forth.

17. In a staple forming and clinching device, the combination, with a staple-blank-gripping device supported to reciprocate and adapted to bend the blank on its upward stroke, of a pair of supported grooved awls which receive the staple on its downward passage in the gripping device, substantially as set forth.

18. In a staple forming and clinching machine, the combination, with reciprocating wire-gripping jaws, of a wire-feeding device and means to consecutively move the feeder and close the gripper, substantially as set forth.

19. In a staple forming and clinching machine, the combination, with a wire-gripping device and means to reciprocate this device vertically, of a wire-feeder, a wire-cutter, and mechanism to move the feeder, cutter, and gripper, substantially as set forth.

20. In a staple forming and clinching machine, the combination, with a wire-gripping device having a fixed and a moving jaw and made to reciprocate periodically, and two grooved awls, of a wire-feeder, a wire-cutter, a rocking table, a rocking anvil, and means to support these parts of the machine and move them in harmony with each other, substantially as set forth.

21. In a staple forming and clinching machine, the combination, with a supporting-standard, of a rocking anvil and a rocking table supported on this standard, and mechanism to rock the anvil and table simultaneously as well as consecutively, substantially as set forth.

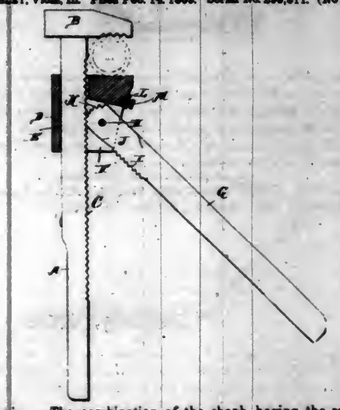
22. In a staple forming and clinching machine, the combination, with a bracket-plate which affords support to staple-forming devices, a cam-shaft, and cam-hubs and cam-disks mounted on and secured to the cam-shaft, of a wire-gripping device composed of one rigid and one movable jaw, the said gripping device having a vertical and also a horizontal reciprocation periodically by the action of the cam-disks and projections thereon, substantially as set forth.

23. In a staple forming and clinching machine, the combination, with a supporting-frame or bracket-plate and a standard, of a cam-shaft revolubly mounted on the frame, cam disks and hubs fixed on this shaft, and a pair of gripping-jaws, one of which is movable, actuated periodically to open, close, and move vertically as well as horizontally by the revolution of the cam-shaft, substantially as set forth.

24. In a staple forming and clinching machine, the combination, with a standard, a bracket frame or plate secured on the standard, a cam-shaft adapted to rotate, and cams affixed upon this shaft, of two gripping-jaws which are given an opening and closing as well as vertically and horizontally reciprocating movements at periodic intervals, a wire-feeding device, two adjustable grooved awls, and a wire-cutter, substantially as set forth.

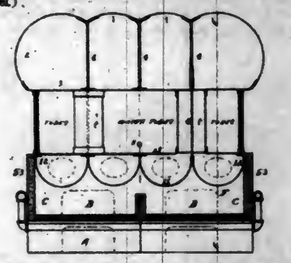
25. In a staple forming and clinching machine, the combination, with a frame or supporting device, a cam-shaft revolubly supported on this frame, and cam disks and hubs affixed upon this shaft, of a pair of gripping-jaws which open, close, and move in a vertical as well as a horizontal plane at proper intervals, two grooved awls adapted to move toward or from each other in the same vertical plane and remain periodically fixed parallel to each other, a wire-feeding device, a wire-cutting device, a rocking table, and a clinching-anvil, substantially as set forth.

405,343. COMBINED NUT AND PIPE WRENCH. WILLIAM T. CHESLEY, Viola, Ill. Filed Feb. 14, 1888. Serial No. 299,811. (No model.)



Claim.—The combination of the shank having the rack-bar formed on its inner side and provided with a fixed jaw at its outer end, the sliding jaw, the operating-lever pivoted in a recess in the latter and having a series of teeth upon its inner side, a series of teeth at its inner end concentric with its pivoting-point, and an intermediate beveled portion, and a spring secured adjustably to the sliding jaw and adapted to bear against the operating-lever, substantially as set forth.

405,344. STEAM-BOILER. NATHAN B. CLARK, U. S. Navy, and FRANK B. KIDD, Baltimore, Md. Filed Dec. 6, 1888. Serial No. 292,854. (No model.)



Claim.—1. In a steam-boiler, the combination of the top and bottom members composed of arches, and downcast conduits overlapping the edges of said arches and forming passages from one arch to another, as well as a connection between top and bottom members.

2. In a steam-boiler, the combination of top and bottom members composed of arches united by conduits overlapping the edges of the adjacent arches, and ties or braces passing through said conduits, uniting the edges of the arches in the two members.

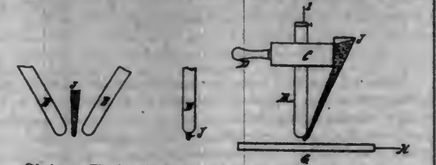
3. In a steam-boiler having top and bottom members composed of arches, as described, and connecting-conduits overlapping the edges of adjacent arches, the combination, with the arches, of ties passing through the conduits and also fastened to the tube-plates of the arches, substantially as described.

4. The combination, with a steam-boiler having top and bottom members and connecting water-tubes, as described, of fixed perforated pipes in proximity to said water-tubes, whereby steam may be thrown on the exterior of the tubes and into the passages between them.

5. The combination, with a steam-boiler having water-tubes, of a fixed pipe in proximity to said tubes, said steam-pipe having perforations leading in many directions, so as to direct a current of steam or air onto and between the water-tubes, substantially as described.

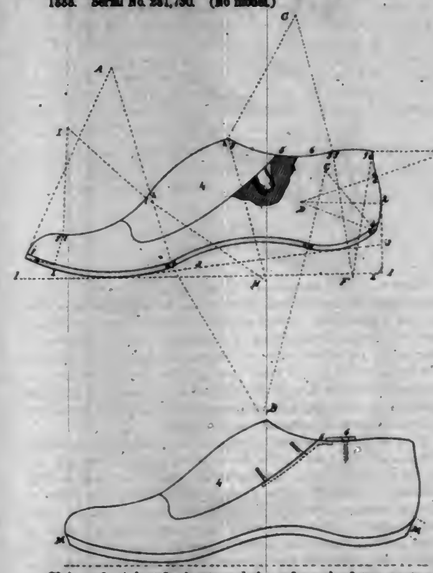
6. A steam-boiler consisting, essentially, of a top member and a bottom member and vertical water-tubes connecting the same, the members being composed of arches of less curvature in the tube-plates than in the outer plates, substantially as described.

405,345. PROCESS OF ELECTRIC WELDING. CHARLES L. COFFIN, Detroit, Mich. Filed Dec. 20, 1888. Serial No. 294,194. (No model.)



Claim.—The herein-described process of electric welding, consisting in feeding metal to the joint through the welding-arc from a supply carried on the welding-tool.

405,346. LAST. JOHN CONDELL, New York, N. Y. Filed Aug. 2, 1888. Serial No. 281,790. (No model.)



Claim.—1. A last for boots and shoes formed of two parts consisting of a last proper and a last-block, the two being united by a vertical ogee joint at the forward end, and a suitable fastening device which locks the last and last-block together, substantially as described.

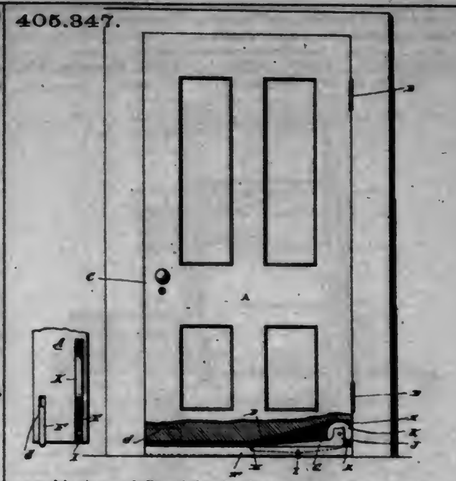
2. A last for boots and shoes consisting of a last proper and a last-block, the two united by a vertical ogee joint at the forward end, and an inclined pin on the block entering an opening in the last, substantially as described.

405,347. WEATHER-STRIP. HARLOW W. COOK, Ottawa, Kans. Filed Sept. 20, 1888. Serial No. 285,871. (No model.)

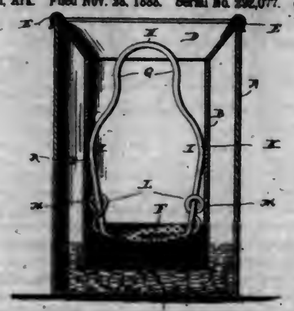
Claim.—As an improvement in weather-strips, the combination, with the door having the recess D in its lower edge and the notches *d d* and E in its side edges, of the strip F, arranged in the recess D and having its ends moving in the notches *d d*, the angle-lever pivoted at one end to the center of the strip F and at about its center to the door, within the recess D, and having an arm at its free end projecting upward in the notch E, and the disk journaled on said arm, substantially as specified.



405,347.

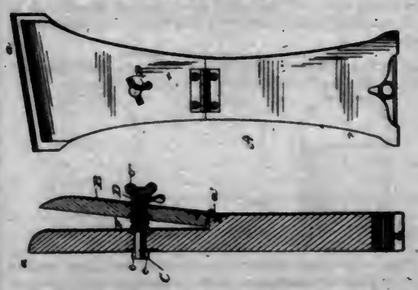


405,348. COMPRESSION-EXTRACTOR. HENRY A. CRANDELL, Harrison, Ark. Filed Nov. 28, 1888. Serial No. 292,077. (No model.)



Claim.—The combination, with a vessel having perforated bottom, of the perforated plate or follower having a handle provided with outwardly-bowed resilient portions adapted to retain the said plate or follower in position by frictional contact with the walls of the vessel and to admit of gradual upward movement of said follower, substantially as and for the purpose set forth.

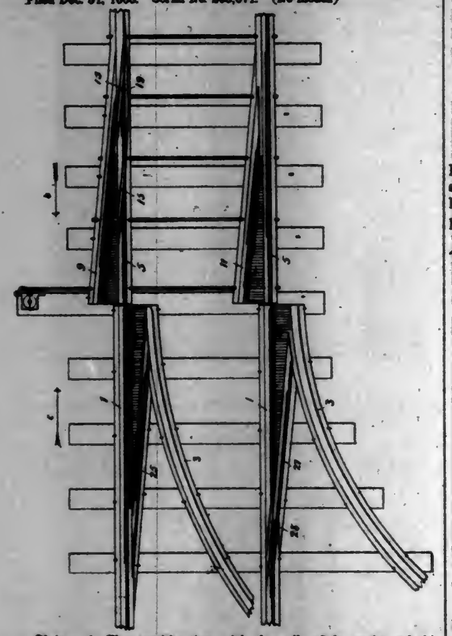
405,349. STITCHING-CLAMP. COLEMAN DOM, Laddonia, Mo. Filed Mar. 9, 1889. Serial No. 302,628. (No model.)



Claim.—In a clamping device, two jaws, one shorter than the other and shaped at their upper ends substantially as described, the shorter one hinged to the longer one, in combination with the screw-threaded bolt C, fitted in holes formed in said jaws and having on its head the lateral arms *c c*, adapted to coincide with slots *d d*, and having thumb-piece *c'*, and nut D, having internal screw-thread located on bolt C between the jaws B and thumb-piece *c'* and adapted to turn

on said bolt to close the jaws, and spring F between the jaws, all as described, and for the purpose named.

405,850. SAFETY-SWITCH. LOUIS DUBE, Minneapolis, Minn. Filed Dec. 31, 1888. Serial No. 295,071. (No model.)



Claim.—1. The combination, with the rails of the main and side tracks and the switch-rails, of the stationary rails 25 and 27, arranged between the rails of the side and main tracks and extending from the rails of the side track toward the rails of the main track, and adapted to guide onto the main track a train passing into the space between the main and side tracks, substantially as described.

2. The combination, with the movable switch-rails, of the rails 3 and 1, with either of which said switch is adapted to connect, of the rail 25, extending from the outer side of one of the rails 3 to the inner side of the corresponding rail 1, and the rail 27, extending from the inner side of the other rail 3 to the outer side of the other rail 1, substantially as described.

3. The combination, with the rails 3 and 1, one of the said rails 1 being provided with the groove 28, of the rails 25 and 27, extending from said rails 3 to said rails 1, as described, and the switch adapted to connect with either said rails 3 or 1, substantially as described.

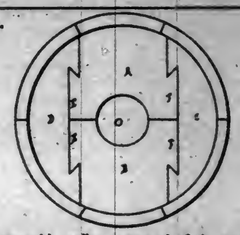
4. The combination, with the switch-rails 5, provided with the branch rails 9 and 11, of the rails 3 and 1, and the branch rails 25 and 27, extending from said rails 3 to said rails 1, all substantially as described.

405,851. POWDER-DUSTING CAN. WARREN DENNIS, Edmeston, N. Y. Filed Apr. 21, 1888. Serial No. 271,414. (No model.)



Claim.—The combination of the cylindrical can 1, the handle 2 thereof, and the semi-spherical or conical perforated bottom 3, secured in the lower portion of the can by the edge of the bottom entering an encircling groove, and solder and strip 5 covering the groove, the bottom being so located in the can that the lowest point thereof shall be above the line of the bottom of the shell of the can, substantially as set forth.

405,852. SEPARABLE PULLEY. HENRY J. GILBERT, Saginaw, Mich. Filed Mar. 7, 1889. Serial No. 302,900. (No model.)



Claim.—A separable pulley composed of the parts A, B, C, and D, the parts A and B divided from each other diametrically by a straight line and divided from the parts C and D on the irregular lines E and F, whereby interlocking joints are formed between the parts A B and the parts C D, substantially as shown and described.

405,853. TOY. JOHN C. HALL, Brooklyn, N. Y. Filed Feb. 23, 1889. Serial No. 300,974. (No model.)



Claim.—1. In a mechanical toy, the figure of a rooster, bird, or similar creature mounted upon a roller with its feet placed astride the same and eccentrically pivoted thereto, whereby a rising-and-falling motion is imparted to the figure, in combination with a push-rod attached to the axle of the roller and passing through the body portion of the figure, and a pair of wings provided with projections upon the shoulders which pass through the sides of the rooster, and an elastic connection between said axle and projections, arranged in the manner and for the purpose substantially as described.

2. In a mechanical toy, a figure of a rooster, bird, or similar creature supported upon a roller, the supports being eccentrically pivoted to the roller, so as to turn therewith, whereby a rising-and-falling motion is imparted to the figure, in combination with wings or their equivalents pivoted in the sides of said creature, and an elastic device attached to the inner ends of the wings in such a manner as to draw said ends down and thereby raise the wings during the rising motion of the rooster, in the manner and for the purpose substantially as described.

3. In a mechanical toy, the combination of a figure of a rooster, bird, or similar creature having its feet eccentrically pivoted upon a roller, a push-rod passing through the body of the figure and attached to the axle of the roller, a pair of wings provided with cleat-shaped projections passing through slots in the sides of the figure, and a spring connected with said projections and the roller-axle, in the manner and for the purpose described.

405,854. APPLIANCE FOR ILLUSTRATING SPHERICAL TRIGONOMETRY. FLETCHER HAWN, Lebanon, Ohio. Filed Nov. 16, 1888. Serial No. 291,048. (No model.)



Claim.—1. In an educational appliance, the combination of the disk A, provided with a slot, and the half-disk mounted in the slot and adapted to assume a position at any desired angle to the disk A, whereby plane and spherical angles may be illustrated, substantially as specified.

2. As an educational appliance, the combination of the disk A, provided with a slot B, the half-disk E, mounted in the said slot, and the half-disk G, swiveled to the edge of the half-disk E, substantially as specified.

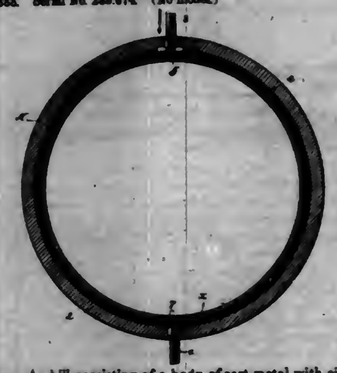
3. In an educational appliance, the combination of the disk A, provided with a radial slot B, the slotted shaft mounted at its ends in bearings at the ends of said slots, the half-disk E, arranged in the slot in said shaft, and the half-disk G, swiveled to the edge of the half-disk E, substantially as specified.

4. In an educational appliance, the combination of the disk A, provided with the radial slot B, the slotted shaft D, mounted in bearings in the said slot, the disk E, arranged in the slot and pivoted at its inner edge to the shaft, and the half-disk G, swiveled at its center to the edge of the disk E, substantially as specified.

5. In an educational appliance, the combination of the disk A, provided with the slot B, the slotted shaft D, mounted in the slot, the half-disk E, arranged in the slot in the shaft, the slotted shaft F, mounted in bearings on the half-disk, and the half-disk G, arranged in the slot in the shaft F, substantially as specified.

6. In an educational appliance, the combination of the disk A, provided with a slot B, the slotted shaft D, mounted in the slot B, the half-disk E, pivoted in the slot in the said shaft, the shaft F, mounted in bearings on the edge of the half-disk E and provided with a slot *f*, terminating a short distance from the inner end of the shaft, and the half-disk G, mounted in the said slot and having the semicircle *g* cut from its center, as and for the purpose specified.

405,855. CAR-WHEEL CHILL. WILLIAM H. HOLLISTER, Ramapo, N. Y., assignor of one-half to William W. Snow, same place. Filed Oct. 31, 1888. Serial No. 289,674. (No model.)



Claim.—A chill consisting of a body of cast metal with circulating-passages formed by wrought-metal pipes embedded in the cast-metal body in immediate proximity to the chilling-face, and provided with inlet and outlet branches, substantially as set forth.

405,856. VEHICLE-AXLE. JOHN M. HUSSELL, Wilkes-Barré, Pa., assignor of one-half to John W. Parmelee, same place. Filed Mar. 25, 1889. Serial No. 304,614. (No model.)



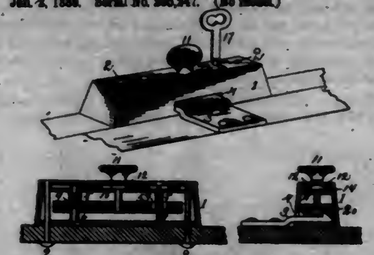
Claim.—1. In a vehicle-axle, an annular flange or collar located at the inner end of the spindle and having an annular undercut recess in its inner side, and a transverse slot communicating with said recess, substantially as set forth.

2. In a vehicle-axle, an annular flange or collar located at the inner end of the spindle and having an annular undercut recess in its inner side, an annular groove, and a slot in the under side of said flange connecting the annular groove with the undercut recess, substantially as set forth.

3. In a vehicle-axle, a flange or collar located at the inner end of the spindle and having an annular undercut recess with a beveled or tapering outer wall, an annular groove, and a slot in the lower side of said flange connecting said groove with the undercut recess, substantially as set forth.

4. In a vehicle-axle, an annular flange or collar located at the inner end of the spindle and provided with an annular undercut recess having beveled or sloping outer wall, and a slot extending through said flange or collar to the undercut recess of the same, substantially as set forth.

405,857. BAG-LOCK. FREDERICK F. INGRAM, Detroit, Mich. Filed Jan. 2, 1888. Serial No. 295,247. (No model.)



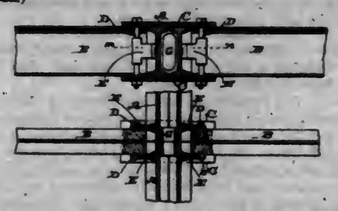
Claim.—1. In a fastening for hand-bags and the like, a catch, a spring-actuated locking-bar for engaging the same, thumb-piece rotatively mounted therein and adapted to lift the same from engagement with said catch, lugs upon the stem of said thumb-piece, and key-actuated sliding tumbler for controlling the turning and lifting of said thumb-piece, substantially as and for the purpose herein specified.

2. In a fastening for hand-bags and the like, a catch, locking-bar mounted upon guides and adapted to be lowered or raised therenpon for engagement with and disengagement from said catch, thumb-piece rotatively mounted in said bar and adapted to lift the same, lugs on the stem of said thumb-piece, key-actuated sliding tumbler or tumblers for controlling the raising and turning of said thumb-piece, plate between which and the top of the case the said tumbler slides, and springs between said plate and locking-bar, substantially as and for the purpose herein specified.

3. In a fastening for hand-bags and the like, a catch 3, spring-actuated locking-bar 5, thumb-piece 11, rotatively mounted therein and by means of which the same is adapted to be lifted from engagement with said catch, lugs 12, carried by the stem of said thumb-piece, key-actuated sliding tumbler for controlling the raising and turning of said thumb-piece, and stop 20, substantially as and for the purpose herein specified.

4. In a fastening for hand-bags and the like, a catch 3, spring-actuated locking-bar 5, thumb-piece 11, rotatively mounted therein and by which the same is adapted to be lifted from engagement with said catch, and lugs 12, carried by the stem of said thumb-piece, in combination with a case having slot 13, adapted to receive said lugs when turned to register therewith, and a key-actuated tumbler 14, having aperture 15 and recess 16, substantially as and for the purpose herein specified.

405,858. SUPPORT FOR BEAMS OR GIRDERS. PETER H. JACKSON, San Francisco, Cal. Filed Feb. 19, 1888. Serial No. 300,453. (No model.)



Claim.—1. A girder composed of two or more metallic beams and an abutting beam or beams, independent metallic plates extending across the girder and above and below the abutting beam or beams, and clamping-bolts or means for securing the end of the abutting beam or beams and the plates together, in combination with wedges or cams whereby pressure is applied laterally to the girder-beams, substantially as described.

2. A girder composed of one or more metallic beams and the abutting beam or beams, independent metallic plates extending across the girder above and below the abutting beam or beams, and clamping-bolts extending through the top and bottom plates upon opposite sides of the girder-beam, in combination with cams or wedges exerting a lateral pressure upon one side of the girder-beam, and a resistant consisting of the clamping-bolts upon the opposite side, substantially as described.

3. A girder composed of a metallic beam or beams and an abutting beam or beams, the independent metallic plates extending above and below the girder and abutting beams, and the clamping-bolts passing through said plates and also through recesses formed in the flanges of the beams, whereby the beams are held in position between the clamping-plates, substantially as described.

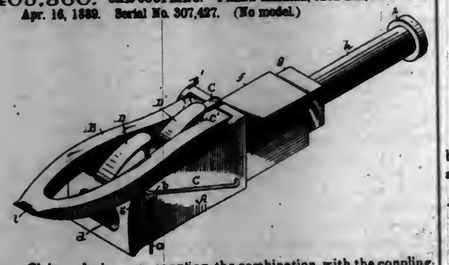
4. A girder consisting of a metallic beam or beams and an abutting beam or beams, the independent metallic plates extending above and below the girder and abutting beams, and the clamping bolts and nuts, in combination with a filling of a plastic material which will set or harden around the ends of the abutting beams and the bolts between the plates, substantially as described.

405,359. METALLIC BINDER FOR BOXES. FRANK G. JOHNSON, New York, N. Y. Filed July 12, 1888. Serial No. 279,793. (Model.)



Claim.—The jointless sheet-metal binder having three sides at right angles to and inclined toward each other, one side being composed of a main portion and a folded portion, as set forth.

405,360. CAR-COUPLING. FRANK KARRER, Rich Hill, Mo. Filed Apr. 16, 1888. Serial No. 307,427. (No model.)



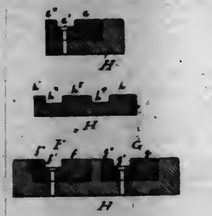
Claim.—1. In a car-coupling, the combination, with the coupling-hook seated and held at its rear or inner end upon the draw-head, of the lever pivoted in said draw-head and having an arm resting upon said draw-head and beneath said link, and means to operate said lever, substantially as set forth.

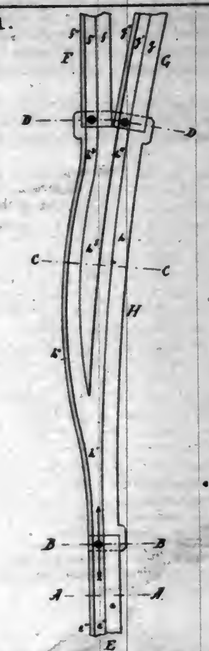
2. The draw-head having upon its upper side at the forward edge a coupling-hook, the coupling-link having the inner or rear rectangular end resting and held in a corresponding seat or socket upon the upper side of the draw-head at its inner or rear end, the hook and button applied to the upper side of said draw-head to coact with said seat or socket to retain the coupling-link in position, and the link pivoted in said draw-head and having an arm resting under said coupling-link and upon the draw-head, together with the chain or rope to operate said lever, substantially as set forth.

405,361. RAILWAY-SWITCH. WILLIAM J. KELLY, Boston, assignor of one-half to Charles H. Arnold, Woburn, Mass. Filed Nov. 3, 1888. Serial No. 289,867. (No model.)

Claim.—1. In a railroad-switch, the combination, with the main rail E and the branching rails F and G, of a diverter interposed between said main and branch rails and consisting of a continuous wheel-bearing to one branch rail, a continuous side guard-lip to the other branch rail, and a central fixed pointed tongue running back and forming a continuous flush edge for the wheel-tread of one rail and for the side guard-lip of the other rail, substantially as described.

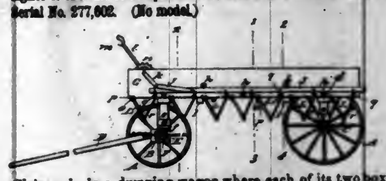
2. A railroad-switch consisting of a wheel-tread, side guard-lip, and central pointed tongue broadened at one end and serving as wheel-tread and side guard-lip, all cast in one integral piece and adapted to





be interposed between a main rail and two branch rails, substantially as described.

405,362. DUMPING-WAGON. BERNARD KILLEEN, Big Rock, assignor of one-half to Joseph H. Flick, Dixon, Iowa. Filed June 19, 1888. Serial No. 277,602. (No model.)



Claim.—1. In a dumping-wagon where each of its two box-sides supports in suitable guides a longitudinal slide-bar, mechanism, substantially as described, for lowering the free edge of the pivoted transverse flaps forming the floor of such box when horizontal to a vertical position, and vice versa, in combination with a transverse shaft journaled through such box-sides, a crank-arm on each end of such shaft outside of said box, a vertical handle rigidly attached to said shaft carrying a catch-lever and bolt to engage with the notches of a segment attached to one of the sides of said box, and each of such longitudinal bars connected to the end of one of such cranks by an intermediate pivoted bar, for the purposes stated, and substantially as described.

2. In a dumping-wagon, the front axle provided with the stirrup F, combined with the king-bolt attached to the upper and lower bolster, the lower part of said king-bolt passing vertically through suitable apertures in the upper and lower arms of said stirrup and at the rear of said axles, substantially as described.

3. In a dumping-wagon where each of its two box-sides supports in suitable guides a longitudinal slide-bar, mechanism, substantially as described, for moving such bars forward and backward, and such box provided with transverse flaps trunnioned thereto, substantially as described, and arranged to swing from a vertical to a horizontal position, and vice versa, in combination with the chains or straps r, running over pulleys q on said box-sides and connecting said transverse flaps with said longitudinal bars, for the purposes stated, and substantially as described.

405,363. VELOCIPEDE. WILLIAM H. KITTO, Plymouth, County of Devon, England. Filed Feb. 6, 1889. Serial No. 298,928. (No model.) Patented in England July 28, 1888, No. 10,816.

Claim.—1. In a velocipede, the combination, with a pivoted brake-lever for bearing against the wheel-tire, of a bracket clamped to the



fork of the machine, a foot-lever pivoted to the said bracket, and a rod pivoted to the foot-lever and operatively connected with the said brake-lever, substantially as and for the purpose set forth.

2. In a velocipede, the combination, with the pivoted brake-lever, of a foot-lever pivoted to the fork of the machine, a hand-lever pivoted to the steering handle-bar, and rods pivoted to the said hand and foot levers, respectively, and operatively connected with each other and with the said brake-lever, substantially as and for the purpose set forth.

405,364. PACKAGE FOR MERCHANDISE. HENRY A. LEE, Glen Ridge, N. J. Filed Feb. 1, 1889. Serial No. 298,571. (No model.)



Claim.—1. As a new article of manufacture, a utility package for merchandise, composed of a tapering cylindrical sheet-metal body *a*, open at the larger end and a perforated bottom at the smaller end, and a cover *b*, having an edge to engage the upper edge of the body, said body and cover having an ornamental surface and being adapted to form a flower-pot and saucer, substantially as set forth.

2. As a new article of manufacture, a utility package for merchandise, composed of a tapering cylindrical body *a*, open at the larger end and closed by a perforated bottom at the smaller end, and a lid or cover *b*, having a scalloped edge, said body and cover being adapted to form a flower-pot and saucer, substantially as set forth.

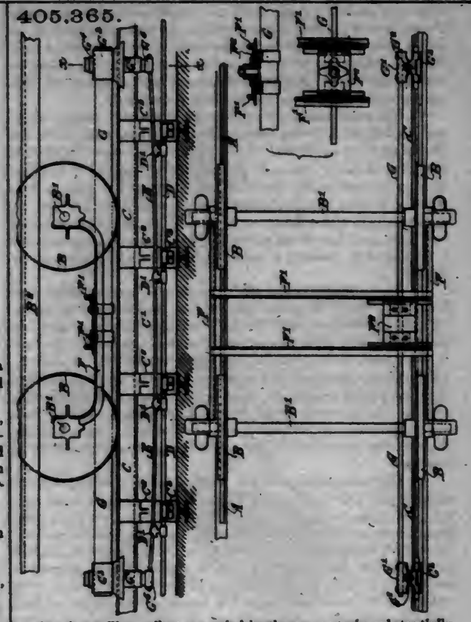
405,365. ELECTRIC RAILWAY. ALEXANDER L. LIMPET, Westminster, assignor of one-half to Edward Hodson Bayley, Eltham, England. Filed July 10, 1888. Serial No. 279,593. (No model.) Patented in England Oct. 4, 1887, No. 13,447; in France Apr. 4, 1888, No. 189,767, and in Belgium Apr. 4, 1888, No. 81,902.

Claim.—1. In an electrical tramway or railway, the combination of a trailing collector of electricity, as E, suitably connected to the car or carriage, with an electrical conductor made up of insulated metallic sections electrically and flexibly connected and provided at convenient distances apart with rubbing-pieces having a cross-section corresponding to the section of the collector, and against the whole rubbing-surface of which the collector rubs as it is dragged along, substantially as described.

2. An electrical conductor for electric tramways or railways, consisting of a main portion composed of insulated metallic sections flexibly connected and provided with rubbing-pieces, a relief-conductor in electrical connection with main portion, and a control-wire consisting of sections of wire terminating in plug-switches in electrical connection with the flexible connections of the main portion, substantially as described, and for the purpose set forth.

3. The combination, in an electrical conductor for electric tramways or railways, of sections or lengths of iron set a short distance apart, flexible connections between the adjacent ends of said sections, and rubbing pieces or surfaces attached to said sections, the whole being insulated from earth, substantially as described.

4. In an electric tramway or railway, the combination, with a continuous electrical conductor, of insulated brackets for carrying the said conductor, said brackets being provided with rubbing-pieces to



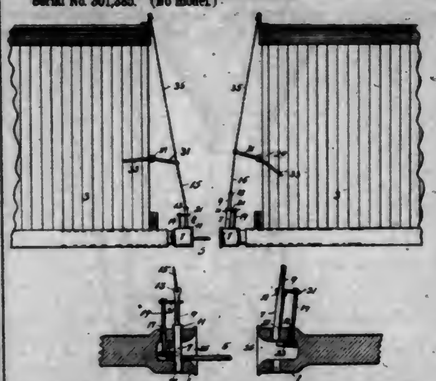
receive the trailing collector carried by the car or train, substantially as specified.

5. A trailing collector for electric tramways or railways, consisting of a length or continuous lengths of wire rope upon which is or are strung short pieces of hard-metal tube to form the rubbing-surface of the collector, substantially as described.

6. In electrical tramways or railways, the combination, with a car, of a trailing collector, a beam secured to a laterally-traveling carriage carried by the car-frame, and swinging attachments for connecting the collector to the beam, substantially as described.

7. In electrical tramways or railways, the combination, with a car, of a trailing collector, spring-supports for the collector, and gripping-clips for securing the free ends of the collector, substantially as described.

405,366. CAR-COUPLING. HENRY L. LOWE, St. Paul, Minn., assignor of one-half to Louis Nickow, same place. Filed Feb. 27, 1889. Serial No. 301,385. (No model.)



Claim.—1. In a car-coupler, the combination of a coupling-pin having a notch for holding it in a raised position, and a link-weight loosely connected to said pin and arranged to be supported by said pin when in its raised position, so as to leave the throat of the draw-head free for a coupling-link to enter, substantially as described.

2. In a car-coupler, the combination of a notched coupling-pin and link-weight loosely connected together in such a manner that the weight of said link-weight and connections will, when the pin is raised,

cause the notch to engage with the coupler-head and thus support the pin in such position, the link-weight also being supported by the pin, so that the throat of the coupler-head is open to receive a coupling-link, and so that when the coupling-pin is down in engagement with the link the link-weight has freedom of vertical movement, while the pin remains stationary, substantially as described.

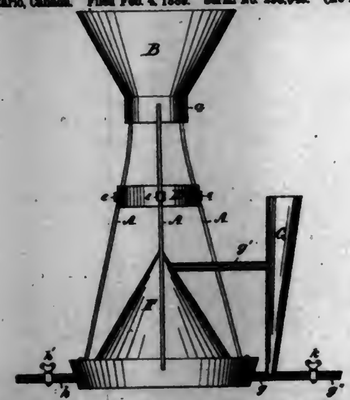
3. The combination, with the coupler-head of a railway-car, of the coupling-pin 7, having the shoulder 11 and the notch 27, the rod 19, sliding freely in the hole 17 and having at its upper end the arm 21, which connects with said pin and slides freely on it from the shoulder 11 upward, the length of said rod 19 and of said pin from shoulder to point being substantially equal, and the link-weight 23, rigidly secured to the lower end of the rod 19, and adapted to rest its weight and that of the rod 19 and arm 21 upon the inner end of a coupling-link inserted in said coupler-head, substantially as described.

4. An automatic car-coupler comprising, in combination, the pin 7, having a notch 27 on one side near its point adapted to engage with the coupler-head when the pin is raised out of the recess of the head and to support it in such raised position, the rod 19, arranged to move freely in the orifice 17 and rigidly secured to the arm 21, which connects loosely with the pin, the weight 23, rigidly secured to the lower end of the rod 19, and adapted to rest upon a link when inserted into the coupler-head, the rod 29, turning in suitable bearings on the car-body and having the arm 31 linked to said coupling-pin, and suitable handles 33 for operating the same, substantially as described.

5. The combination, with the coupler-head of a railway-car, of a coupling-pin 7, having a notch 27 near its point adapted to rest upon the edge of the pin-hole in the top of the head when the pin is withdrawn as far as the notch, and to support the pin in its raised position, the rod 19, fitting loosely in a vertical hole in the head and adapted to slide in the same, having a plate 23 at its lower end adapted to rest upon a coupling-pin in said head, and having the arm 21 at its upper end, by means of which it is loosely secured to the pin, said arm being arranged to slide upon said pin and to be stopped by the shoulder 11, said rod 19 being of such length as to permit the pin to be wholly withdrawn from the recess of the head, but preventing its withdrawal entirely from the head, substantially as described.

6. The combination, with the coupler-head of a railway-car, of the coupling-pin 7, having the notch 27 and the shoulder 11, the rod 19, freely slidable in the hole 17, and having the arm 21 secured to the pin 7 and adapted to rest upon the shoulder 11 and to slide freely upon said pin above said shoulder, the weight 23, secured to the rod 19, and adapted to rest upon a coupling-link inserted in the coupler-head, the length of said rod 19 between the arm 21 and the weight 23 being substantially equal to the length of the coupling-pin from the point to the upper side of the shoulder 11, and suitable link-connections with said pin, by means of which it can be lifted from the top of the car or from either side of the car by the additional means of a suitable rod having an arm joined to said link-connections, substantially as described.

405,867. MILK-PURIFIER. DAVID M. MACPHERSON, Lancaster, Ontario, Canada. Filed Feb. 4, 1889. Serial No. 298,649. (No model.)



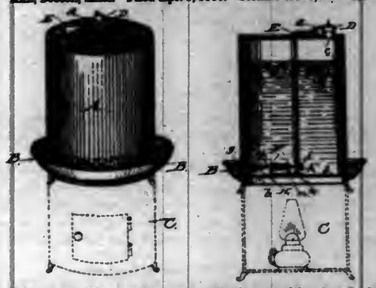
Claim.—1. The combination of the cone-shaped cooler F, provided with a rim *f* and overflow-pipe H, the tripod-stand A, carrying a milk-receiver E, provided with a strainer D and perforated outlet C, the wire sleve E, adjustably attached to the legs of stand A, and the receptacle G, having pipes *g g'*, for inlet and outlet of water to the cooler.

2. The combination, with the stand A, having flexible legs supporting a milk-receiver B, of the wire sleve E, having projections *e* adjustably engaging the legs of said stand, substantially as set forth.

405,868. PROCESS OF MAKING DOUBLE SALTS OF MERCURY. ERNST MERCK, Darmstadt, Germany, assignor to E. Merck, same place. Filed Mar. 29, 1888. Serial No. 268,782. (No specimens.) Patented in England Feb. 29, 1888, No. 3,094.

Claim.—The herein-described process of obtaining double salts of mercury, which consists in treating a uni or multi valent phenol with an acidulated solution of a peroxalt of mercury, substantially as described.

405,869. POULTRY DRINKING-FOUNTAIN. FRANCIS E. MERRIMAN, Boston, Mass. Filed Apr. 3, 1889. Serial No. 305,841. (No model.)



Claim.—1. The combination, with the vessel having the inlet and outlet openings, of a cap closing the inlet-opening and provided with a projection or arm, a horizontally-moving valve closing the outlet, and a rod between the valve-stem and screw-cap provided with means for withdrawing the valve when the cap is fitted in position.

2. The combination, with the vessel having the inlet at its top, a discharge-tube, and a trough into which the tube discharges, of a vertical rod movable on its axis and provided with an upper and lower laterally-projecting arm, a screw-cap fitted over the inlet at the top of the can, having an arm or projection which engages and axially moves the vertical rod when the screw-cap is turned, a horizontally-moving valve-stem actuated by the lower arm of the rod, and a conical valve adapted to be seated in the discharge-tube and to be withdrawn therefrom when the screw-cap is turned, substantially as herein described.

3. The vessel A, having the surrounding trough, the inlet at its top, and the discharge-tube entering into the trough, in combination with the horizontally-moving valve-stem, the valve thereon adapted to be seated in the discharge-tube, a spring surrounding the valve-stem, a vertical rod movable on its axis and having upper and lower lateral arms, and a screw-cap fitted over the inlet to the vessel, having an arm extending outwardly and engaging the upper arm of the vertical rod, whereby said rod is moved on its axis and the valve withdrawn by the lower arm of said rod engaging the valve-stem, substantially as herein described.

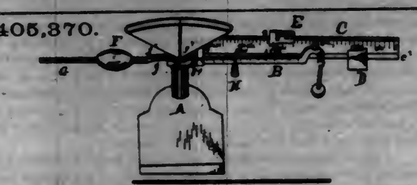
4. The combination, with the vessel having an inlet and outlet and a trough into which the outlet discharges, of a horizontally-moving conical valve for closing said outlet, a screw-cap for closing the inlet and provided with a projection, an axially-moving rod engaged by the projection on the screw-cap to withdraw the valve when the cap is fitted in position, and a spring for returning the valve and closing the outlet when the screw-cap is removed for filling the vessel, substantially as herein described.

5. The vessel having the heating-chamber beneath, the trough surrounding the vessel, the tube discharging into the trough, and the inlet at the top of the vessel, in combination with a screw-cap having the arm or projection, the vertical rod having its upper bent end engaged thereby and having a laterally-projecting arm at its bottom, the standards, the horizontally-moving valve-stem mounted therein, having a conical valve adapted to automatically close the discharge when the screw-cap is removed, and a spring for forcing the valve to its seat, said valve-stem being actuated and the valve withdrawn when the screw-cap is fitted in position, substantially as herein described.

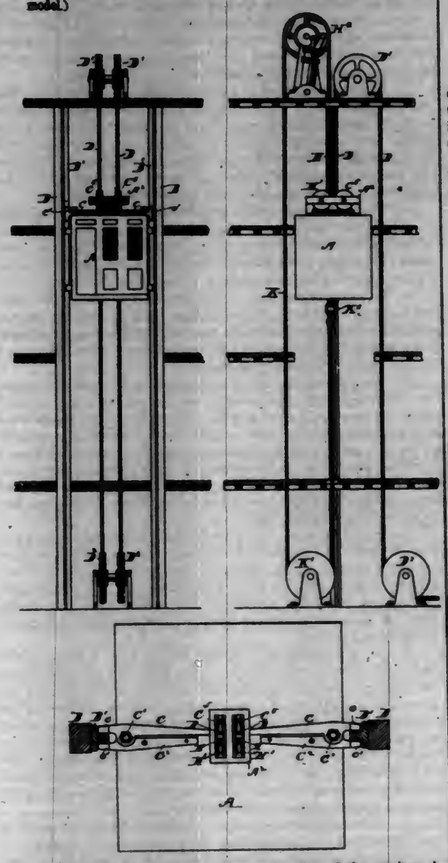
405,870. SCALE-BEAM INDICATING WEIGHT, PRICE, OR NUMBER OF BUSHELS IN A QUANTITY OF GRAIN. WILLIAM G. MCLAUGHLIN, Springfield, Mo. Filed Jan. 14, 1887. Serial No. 224,333. (No model.)

Claim.—In a scale, the combination of the beam B, the removable bar C, having the arms c^2 on its side and denoting-characters on its face, the weights E and D on the upper and lower edge of the bar C, respectively, and a rod G, having weight F thereon and oppositely-diverging arms on its inner end, substantially as described.

405,870.



405,871. SAFETY DEVICE FOR ELEVATORS. WILLIAM R. NICKERSON, Cambridge, Mass. Filed Jan. 17, 1889. Serial No. 296,611. (No model.)



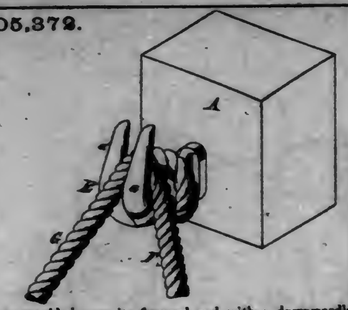
Claim.—1. In an elevator, the combination of the carriage A, hoisting-rope D, retarding-rope H, and its retarder, adapted to resist more strongly as the speed of the descending car increases, with a grip device to which the hoisting-rope D and retarding-rope H are both attached, but pulling in opposite directions, the hoisting-rope D tending to loosen the grip and the retarding-rope H tending to set it, whereby an undue increase in the velocity of the descending carriage will cause the increased resistance of the retarder through the rope H to overcome the tension of the hoisting-rope D and operate the grip, substantially as and for the purpose set forth.

2. In an elevator, the combination of the carriage A, guide B', the gripping device consisting of the fixed arm C^3 and pivoted gripping-arm C, having attached to it and being held inoperative by the hoisting-rope D, with the retarding-rope H, also attached to the arm C, but pulling in the opposite direction from the rope D, and a retarder, all operating together substantially as and for the purpose set forth.

405,872. HITCHING DEVICE FOR ROPES. ISAAC R. PALMER, Middletown, Conn. Filed Mar. 12, 1889. Serial No. 303,009. (No model.)

Claim.—A hitching device consisting of a substantially-straight stem provided near its forward end with a downwardly-extending transverse depression, and a fork extending upwardly from said stem in front of said depression and having its crotch higher than said depression, substantially as specified.

405,872.

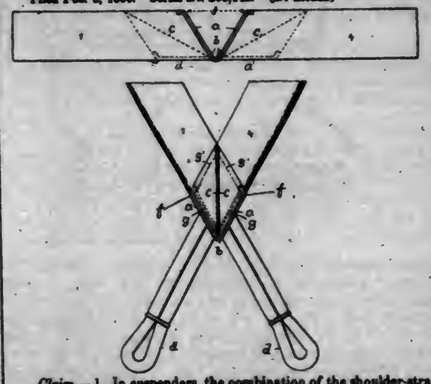


405,873. DETACHABLE STRAINER. PHILIP PFEIL, St. Louis, Mo., assignor of one-half to George Brandon, same place. Filed Jan. 21, 1889. Serial No. 297,076. (Model.)



Claim.—In a detachable strainer, the tin-metal lip or stopper B, having the opening b^2 and wire-cloth strainer proper C, soldered to the under side of said tin-metal lip or stopper B, in combination with the reversible wire fastener D, having crooked wire clamps f^1 f^2 and terminating crook *l*, by means of which the same can be fastened or clamped to the spout A when inserted in the crease *a'* of spout A, and also released from the same, as and for the purpose set forth.

405,874. SUSPENDERS. JAMES B. POLLOCK, Kansas City, Mo. Filed Feb. 8, 1889. Serial No. 299,142. (No model.)



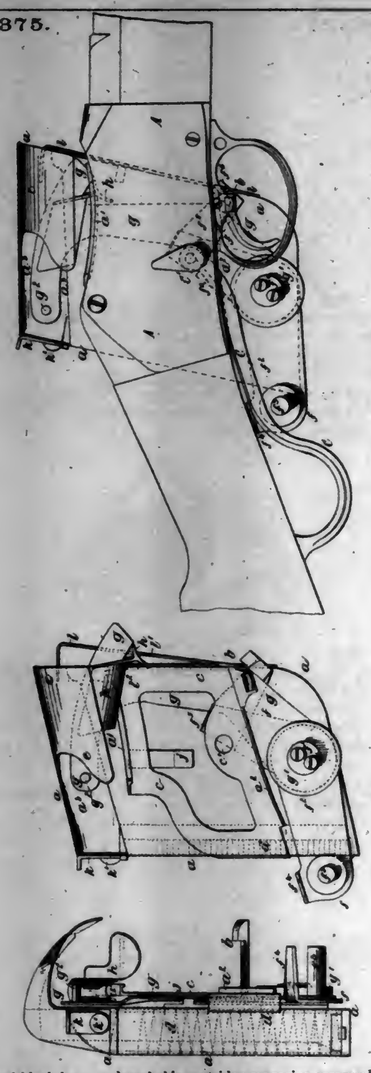
Claim.—1. In suspenders, the combination of the shoulder-straps having their rear ends cut and folded diagonally to form separate pockets, the adjacent sides of which are stitched together vertically, and the loops or button-hole straps secured in said diagonal pockets by stitching, substantially as specified.

2. As an improved article of manufacture, the suspenders, the shoulder-straps of which are cut on a bias, with their cut edges connected by a binding, as at *e*, brought together and folded over the loops or button-hole straps and stitched thereto, as at *g*, said shoulder-straps being stitched together, as at *e*, substantially as and for the purpose specified.

405,875. MAGAZINE FIRE-ARM. LOUIS SILVERMAN, London, England. Filed Sept. 11, 1888. Serial No. 286,102. (No model.)

Claim.—1. The combination, with a breech-loading fire-arm, of

405,875.



a pivoted block-lever, a detachable cartridge-magazine arranged on the fire-arm and having a side discharge-opening at its top, a spring located in the magazine for raising the cartridges, a bent lever pivoted between its ends on the inner side of the magazine and engaged at its lower end by the block-lever, and an elbow-lever pivoted on the inner side of the magazine and engaged and disengaged by the upper end of the bent lever, and having a plate at its upper end to fit a breech-block and advance a cartridge into the gun-barrel, substantially as described.

2. The combination, with a breech-loading fire-arm, of a pivoted block-lever, a cartridge-magazine secured to the fire-arm and having a curved top, a lateral top discharge-opening, and a laterally-projecting curved shield to overhang the shoe of the fire-arm, a spring located in the magazine to elevate the cartridges, a bent lever pivoted between its ends to the inner side of the magazine and engaged at its lower end with the block-lever, and a lever pivoted at its lower end to the inner side of the magazine, engaged and disengaged by the upper end of the bent lever, and having at its upper end a plate to advance a cartridge along a breech-block into the gun-barrel, substantially as described.

3. The combination, with a breech-loading fire-arm, of the pivoted block-lever, a magazine secured to the fire-arm and having a side opening at the top of its inner side, a spring in the magazine for elevating the cartridges, an elbow-lever pivoted to the inner side of the magazine and having at its upper end a laterally-projecting plate to fit the groove in a breech-block and advance a cartridge into the gun-barrel, and a lever pivoted to the inner side of the magazine, connected with and swung by the block-lever, and having a projection to engage and disengage the elbow-lever to swing it rearward when the block-lever is depressed, substantially as described.

4. The combination, with a breech-loading fire-arm having a pivoted block-lever for operating the breech-block, of a magazine having a side opening and a curved upper end for directing the cartridges laterally through the side opening, a spring for moving the cartridges toward said curved end, a pivoted elbow-lever having a plate at its upper end for advancing the cartridges into the barrel, a bent lever connected with the block-lever and having a projection f^4, engaging the elbow-lever, and a catch j, for disengaging the projection from the elbow-lever, substantially as described.

5. The combination, with a breech-loading fire-arm having a shoe A and a block-lever C for moving the breech-block, of the magazine-casing a, having a side opening a^2 and the upper and lower lateral flanges a' a^3, engaging, respectively, the upper and lower edges of the shoe, a spring in the casing for moving the cartridges to the side opening, and a lever actuated by the movement of the block-lever to advance the cartridges into the barrel, substantially as described.

6. The combination, with a breech-loading fire-arm having a shoe A, of a pivoted block-lever C, a magazine-casing a, having upper and lower lateral flanges a' a^3, respectively, engaging the upper and lower edges of the shoe, and a lateral spring-catch b, detachably engaging a part of the fire-arm, a bent lever pivoted between its ends to the side of the magazine-casing and engaged at its lower end by the block-lever, and an elbow-lever pivoted to the side of the magazine-casing, engaged by the upper end of the bent lever, and having at its upper end a lateral plate to advance a cartridge along a breech-block into the gun-barrel, substantially as described.

7. The combination, with a breech-loading fire-arm, of a magazine detachably secured thereto and having a curved top, an inclined portion, a top side opening, and an overhanging curved top shield, a spring d, located wholly in the rear part of the magazine to act only on the rear ends or bases of the cartridges, a pivoted block-lever, a bent lever pivoted on the magazine and engaged by the block-lever, and an elbow-lever pivoted on the magazine, engaged by the bent lever, and having a plate to advance the cartridges into the gun-barrel, substantially as described.

8. The combination, with a breech-loading fire-arm having a pivoted block-lever for operating the breech-block, of a magazine having a side opening and a spring for moving the cartridges to said opening, a spring-impelled elbow-lever g, movable past the said side opening, and a bent lever f, connected with and operated by the block-lever and engaging and disengaging the spring-impelled lever, substantially as described.

9. The combination, with a breech-loading fire-arm having a pivoted block-lever for operating the breech-block, of a cartridge-magazine having a side opening and an upper curved end for directing the cartridges laterally through the opening, a spring for moving the cartridges toward the said curved end, the pivoted elbow-lever swinging past the side opening and serving to hold the cartridges in the magazine when said lever is in the forward position, and a pivoted bent lever loosely connected with the block-lever and engaging the elbow-lever to swing the latter rearward when the block-lever is operated to open the breech, substantially as described.

10. A cartridge-magazine for a breech-loading gun having a block-lever for operating the breech-block, consisting of a casing having a side opening, upper and lower flanges a' a^3, to engage the upper and lower edges of the gun-shoe, and a lateral catch b, to detachably engage a part of the gun, an elbow-lever g, for advancing the cartridges to the gun-barrel, and a bent lever f, engaging the elbow-lever and having studs f^3 f^4 to loosely engage the block-lever, substantially as described.

11. A cartridge-magazine for a breech-loading gun, having a pivoted block-lever for operating the breech-block, consisting of a casing a, having a side opening a^2, a curved upper portion for directing the cartridges laterally through the opening, a spring d, for moving the cartridges upward, the upper and lower flanges a' a^3, for engaging the upper and lower edges of the gun-shoe, a lateral catch b, for detachably engaging a part of the gun, an elbow-lever g, pivoted on the casing and having the bent plate A at its upper end, a bent lever f, mounted on the pivot of the elbow-lever, provided with a projection f^4, and having studs f^3 f^4, for loosely engaging the block-lever, and a catch j on the casing for disengaging the projection on the bent lever from the elbow-lever, substantially as described.

405,876. MACHINE FOR REELING WIRE. HERBERT SMITH, Worcester, Mass. Filed Dec. 17, 1888. Serial No. 293,883. (No model.)

Claim.—1. In a block for reeling wire, the combination of the arms B' thereof, having transverse openings in their outer ends, with the frame b, provided with a central pivot-bolt and having radial arms secured at their outer ends to the arms B', the transverse disk d, pivoted on said central bolt of the frame, and the radial holding-arms a, pivoted to said disk and extending through the transverse openings in the outer ends of arms B', substantially as set forth.

2. In a block for reeling wire, the combination of the arms B' thereof and frame b, secured thereto, with the transverse disk d, pivoted to said frame b, the radial holding-rods a, pivoted to said disk, and whose outer ends fit and are adapted to slide in transverse openings in the arms B', and the spring-rod A, pivoted at one end to the frame b and at its other end to disk d, substantially as set forth.

3. In a block for reeling wire, the combination of the arms B' thereof and the frame b, secured thereto, with the spring-rod A and disk d, substantially as set forth.

4. A block for reeling wire having a series of longitudinal arms, and a transverse frame arranged within the block, having a series of radial arms secured to said longitudinal arms, in combination with a series of radial transverse holding-rods adapted to fit at their outer ends in transverse openings in the outer ends of the aforesaid longitudinal arms, and having means whereby said rods may be held with their outer ends projecting laterally outside of the block, substantially as set forth.

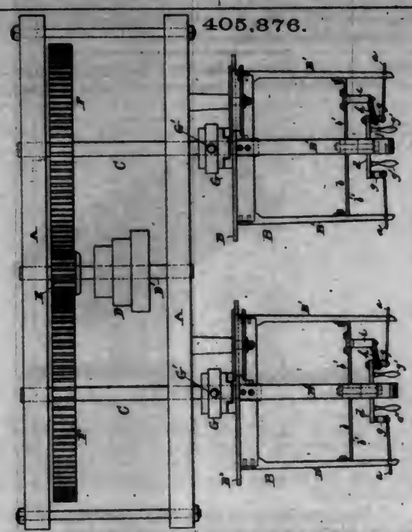
405,877. AUTOMATIC WIPING DEVICE FOR WIRE-GALVANIZING. HERBERT SMITH, Worcester, Mass. Filed Jan. 7, 1889. Serial No. 295,645. (No model.)

Claim.—1. An automatic wiping device for wire-galvanizing and similar apparatus, comprising, in combination, the following elements: a stationary box or receptacle for containing the wiping material, a rotatable star-wheel having socketed arms adapted also to contain the wiping material and to be combined with said stationary wiper at certain stages in the wiping operation, a suitable slide-shaft for supporting said rotatable star-wheel, means for automatically stopping the rotatable wheel and guiding the ends of its arms, one at a time, into engagement with the stationary wiper, means for lifting the wire to keep it in line with the rotatable wheel at one side of its pivot, mechanism for automatically moving the slide-shaft to disengage its rotatable wheel from the stationary wiper by contact of the wire-splice therewith in the forward movement of said splice, means for holding the slide-shaft in its adjusted position for a certain time and then disengaging it by contact with the mechanism set in motion by the wire-splice, and suitable supports for the various parts, substantially as set forth.

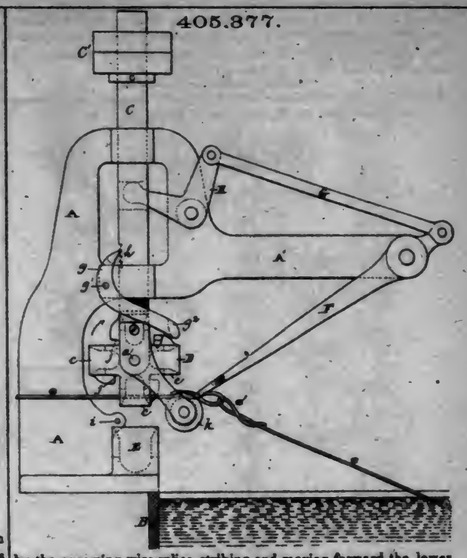
2. In a wiping device for wire-galvanizing and similar apparatus, the combination of a stationary wiper with a rotatable star-wheel having socketed arms adapted to hold suitable wiping material, and whose arms are adapted to engage with the stationary wiper, one at a time, also having suitable supports and means for operating the same toward and from the stationary wiper, substantially as set forth.

3. In an automatic wiper for wire-galvanizing and similar apparatus, the combination of the vertical slide-shaft and its appendages with a swinging lever and mechanism operatively connected therewith adapted to elevate the slide-shaft automatically when operated by the oncoming wire-splice striking and moving forward the lower end of said swinging lever, substantially as set forth.

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4. In an automatic wiper for wire-galvanizing and similar apparatus, the combination of the vertical slide-shaft and its appendages with a latch device for holding the same in an elevated position for a certain time, and adapted to be automatically disengaged therefrom to allow the parts to descend by engagement with mechanism operatively connected with and set in motion by the oncoming wire-splice when the latter arrives in contact therewith, substantially as set forth.

5. In an automatic wiper for wire-galvanizing and similar apparatus, the combination of the slide-shaft and its appendages with lifting mechanism set in motion by contact with the oncoming wire-splice, adapted to elevate the slide-shaft automatically, and a suitable latch device for holding said shaft and its appendages in an elevated position, adapted to be automatically disengaged therefrom to allow said parts to descend by engagement with the mechanism set in motion by said wire-splice, substantially as set forth.

6. The combination of the stationary wiper E and the vertically-operated slide-shaft C with the rotatable star-wheel D, having arms c, provided with sockets at their outer ends to hold the wiping material and with holding-shoulders j, the stationary stop i, and frame A, substantially as set forth.

7. The combination of the stationary wiper E and the vertically-operated shaft C with the rotatable star-wheel D, having arms c, provided with sockets at their outer ends to hold the wiping material, the stationary stop i, and frame A, substantially as set forth.

8. The combination of the slide-shaft C, having the guide-roll k, mounted on its lower end in front of and at one side of the axis of the star-wheel D, with said star-wheel fitted to turn longitudinally in the bottom of said slide-shaft, substantially as set forth.

9. The combination of the slide-shaft C, provided with notches h, also having the guide-roll k, or its equivalent, mounted on its lower end, and the star-wheel D, fitted to turn on said lower end and adapted to be operated by the wire-splice in its passage forward, with the pivoted pawl g and frame A, substantially as set forth.

10. The combination of the slide-shaft C, having the notches h, with the pawl g, pivoted to frame A, adapted to engage at its upper end with said notches and to be automatically disengaged therefrom by connection with the mechanism actuated by the wire-splice in its passage forward, substantially as set forth.

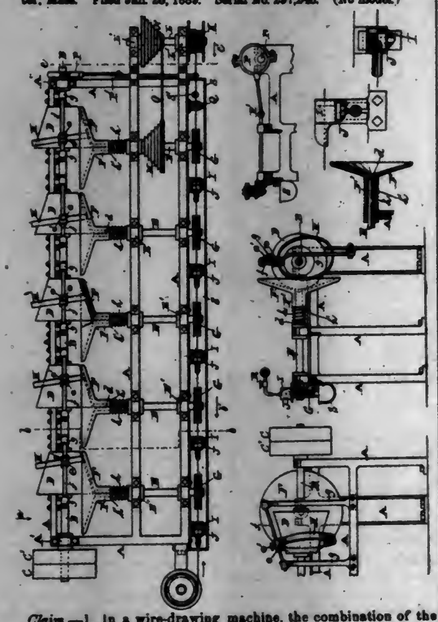
11. The combination of the rotatable star-wheel D, having the holding-shoulders j, with the stationary stop i and stationary wiper E, substantially as set forth.

12. In an automatic wiper for wire-galvanizing and similar apparatus, the combination of the shaft C, fitted to slide in frame A, with the lifting-lever H, connecting rod or link G, swinging lever F, and frame A, said lever F being adapted to engage at its lower end with the wire-splice as the latter moves forward, substantially as set forth, and for the purpose specified.

13. In an automatic wiper for wire-galvanizing and similar apparatus, the combination of the swinging lever F, adapted to engage with the wire-splice as the latter moves forward, the connecting rod

or link G, and lifting-lever H, with shaft C, fitted to slide in frame A and provided with notches *h*, pawl *g*, pivoted to frame A and adapted to engage at its upper end with said notches, and said frame A, substantially as and for the purpose set forth.

405,878. WIRE-DRAWING MACHINE. HERBERT SMITH, Worcester, Mass. Filed Jan. 28, 1889. Serial No. 297,242. (No model.)



Claim.—1. In a wire-drawing machine, the combination of the series of friction driving-cones D, friction-driven disks F, adjustable friction-belts H, arranged between said cones and disks, the drawing-through pulleys, and suitable means for supporting and operating the various parts, substantially as and for the purpose set forth.

2. In a wire-drawing machine, the combination of the series of friction driving-cones D, friction-driven disks F, adjustable friction-belts H, arranged between said cones and disks, the drawing-through pulleys, the reducing-dies, and suitable means for supporting and operating the various parts, substantially as and for the purpose set forth.

3. In a wire-drawing machine, the combination of the series of friction driving-cones D, friction-driven disks F, adjustable friction-belts H, arranged between said cones and disks, the drawing-through pulleys, the reducing-dies, the spool or block upon which the finished product is coiled, and suitable means for supporting and operating the various parts, substantially as and for the purpose set forth.

4. In a wire-drawing machine, the combination of the series of friction driving-cones D, friction-driven disks F, adjustable friction-belts H, arranged between said cones and disks, the drawing-through pulleys, the reducing-dies, the spool upon which the finished product is coiled, a wire-guide for properly distributing the wire over said spool, and suitable means for supporting and operating the various parts, substantially as and for the purpose set forth.

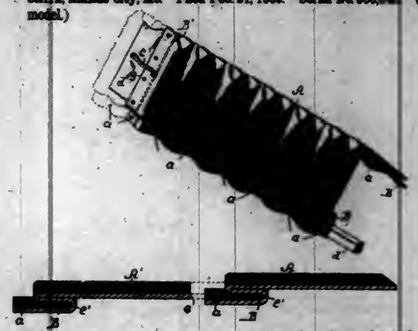
5. In a wire-drawing machine, the combination of the shaft E, driven from the main shaft B through the friction-cone D, friction-belt H, and friction-disk F, and having the cone-pulley M thereon, with the belt O, cone-pulley N, shaft L, spool K, and frame A, substantially as set forth.

6. In a wire-drawing machine, the combination of the shaft E, driven from the main shaft B through the friction-cone D, friction-belt H, and friction-disk F, and having the cone-pulley M thereon, with the belt O, cone-pulley N, shaft L, spool K, a wire-guide operated from the main shaft through suitable connections for guiding the wire laterally from one end to the other of the spool as it is being coiled thereon, and frame A, substantially as set forth.

7. In a wire-drawing machine, the wire-guide operated from the main shaft through an eccentric on said shaft, and a jointed rod or pitman fitted to slide next to the wire in stationary bearings, substantially as set forth.

8. The combination of the shaft E, its bearings E' on frame A, and friction-disk F, having the hub or sleeve F' and fitted to slide longitudinally on said shaft E, with the feather-key *d* and spring *h*, substantially as and for the purpose set forth.

405,879. SLIP OR LOCK JOINT FOR CORRUGATED IRON. JOHN SMITH, Kansas City, Mo. Filed Feb. 21, 1889. Serial No. 300,841. (No model.)



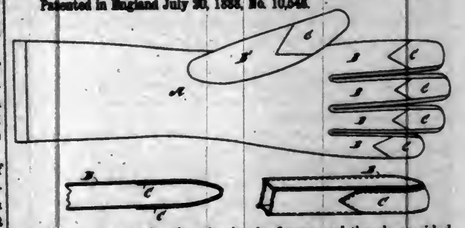
Claim.—1. The corrugated metal plate the edges whereof are bent directly across the corrugations of the plate, whereby inwardly-extending sockets corresponding to a cross-section of the corrugations are formed upon the edges of the plate, substantially as and for the purpose specified.

2. The corrugated metal plates the longitudinal edges whereof are bent directly across the corrugations of the plates, whereby inwardly-extending sockets having the wave-like contour of corrugations are formed along said edges, in combination with duplicate corrugated plates having one of their longitudinal edges entering the said sockets, substantially as and for the purpose specified.

3. The combination, with the layer or layers of tar-paper or cement, of the corrugated metal plates having interconnecting edges, and the end of one overlapping or underlapping the end of the other, and the hooked fastener interposed between said ends of the plates and receiving in its hook the overlapping end of a plate, substantially as specified.

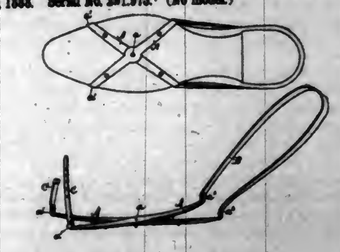
4. The combination of the duplicate corrugated metal plates the longitudinal edges of which are provided at one side with inwardly-extending corrugated sockets arranged underneath the plates and having outwardly-projecting portions formed integrally with the sockets and provided with nail-receiving apertures, substantially as and for the purpose specified.

405,880. GLOVE. CHARLES B. BUALL and EDWARD SCOONES, London, England. Filed Dec. 14, 1888. Serial No. 293,631. (No model.) Patented in England July 30, 1888, No. 10,548.



Claim.—A textile glove having its fingers and thumb provided with a re-enforce piece consisting of a narrow single piece of material forming a front on the palm side and also passing over the end and down the interior of the back for a distance from the end, substantially as specified.

405,881. ICE-CREEPER. MARTIN STEINER, Erie, Pa. Filed Nov 27, 1888. Serial No. 291,973. (No model.)



Claim.—In an ice-creeper, the combination of the cross-bars A A, pivoted together at their point of intersection and having their ends a' a^2 turned up to form jaws, the spikes upon the under surfaces of said bars, the toe-straps adjustably connecting the front ends of said bars, and an elastic heel-strap connecting the rear ends of the same, substantially as and for the purpose described.

405,882. TELEPHONE-SWITCH. ALFRED STROMBERG, Chicago, Ill., assignor to the Western Electric Company, same place. Filed Apr. 4, 1887. Serial No. 233,617. (No model.)



Claim.—1. The combination, with the bell-crank lever, which forms the telephone-support, of the flat beat spring, one end being fixed, the free end of said spring pressing against one of the arms of said support and vibrating between the fixed opposing contacts of the switch to alternatively change the connection of the spring from one side to the other as the telephone is placed upon and removed from the support.

2. The combination, with the pivoted telephone-supporting lever and stops for limiting the movement thereof, the shorter arm of said pivoted support being in engagement with the free end of the spring *c*, of said spring *c*, rigidly secured at one end and beat and adjusted, as described, and the contact-points on opposite sides of spring *c*, upon which said spring closes alternatively as the pivoted arm is operated on taking down and hanging up the telephone.

3. In an electric switch, the combination, with the flat spring *c*, fixed at one end and bent around to come between opposing contact-points, of said contact-points or connections, and the pivoted lever mechanism operating between fixed stops normally held in position by the tension of the said spring with which said mechanism is connected to allow said spring to close upon the connection on one side thereof, said spring being lifted from said connection and forced to close upon the opposing connection when the position of the lever mechanism is changed, whereby the circuits may be changed on the movement of the lever mechanism from one fixed stop to the other, substantially as described.

405,883. CORK-EXTRACTOR. KESSEE TAYLOR, Frankfort, Ky. Filed Mar. 11, 1889. Serial No. 302,773. (No model.)



Claim.—In a cork-extractor, an evenly-curved pointed blade flattened on its concave side and having cutting-edges at the sides tapering toward the point, substantially as shown and described.

405,884. CAR-COUPLING. ALVIN W. VAN DORSTON, Washington, D. C., assignor to the Van Dorston Combined Car Coupling Equipment Company, Portland, Me. Filed May 12, 1888. Serial No. 273,067. (No model.)

Claim.—1. In an automatic car-coupling, the combination, with a pivoted jaw having a recess, of an india-rubber block secured in said recess by means of a buffer acting in contact therewith to receive the shock and prevent damage to the side wall of the draw-head and to the said jaw, substantially as described.

2. In an automatic car-coupling, the jaw having a suitable recess, a rubber cushion therein, a buffer *c*, arranged in said recess, and the rivet *d*, for securing the buffer movably in place, substantially as described.

3. In a car-coupling, the draw-head having a cushion in one side, combined with a jaw pivoted in the draw-head on that side containing the cushion and also having a cushion in itself, the two cushions co-operating in the movement of the jaw to break the force of blows, and thus preserve the draw-head and jaw from damage therefrom, substantially as described.

4. In an automatic car-coupling, the interlocking jaw-arm having the guard A^5, projecting forwardly beyond the plane of a right line drawn from the pivotal center of the jaw-arm to the inner forward end of said arm, substantially as shown, combined with a draw-head of the close-coupler, as distinguished from the free-slack kind, to compel said interlocking arm to rotate and engage with one or more of

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the locking-tumblers without contact or shocks upon the front jaw-faces and walls of the draw-head, substantially as described.

5. In a car-coupling, the draw-head having the pocket a^5 and cushion therein, and the column a^4 on that side of the draw-head in which the jaw is pivoted, combined with said jaw, and a cushioned buffer therein, substantially as described.

6. In a car-coupling, the jaw having a suitable recess containing a cushion *b'*, and a buffer or piston *c*, adapted to move back and forth in said recess, combined with a draw-head against one side wall of which the thus cushioned jaw strikes, substantially as described.

7. In an automatic car-coupling of the twin-jaw class, the combination of the jaw-arm provided with a cushioned piston with the draw-head having a column a^4, against which the buffer or piston *c* of the jaw-arm strikes, to receive the blow on the jaw, substantially as described.

8. In a car-coupling, the socketed guard-arm having a cushion in its bottom, combined with the plain straight headless buffer *c*, substantially as described.

9. In an automatic car-coupling, the draw-head having diverging arms and a connecting bottom wall of undulating outline, combined with a pivoted jaw whose outer face is substantially elliptical, its nose round, and its inner face flattened between two curvilinear surfaces, and terminating in the clearance a^6 to give thickness and increased wearing-body to the knuckle, substantially as described.

10. In an automatic car-coupling, the draw-head having divergent arms with an intervening bottom wall whose surface is a compound or undulating curve with a rise between the axial line of the draw-bar and the guard-arm, combined with a jaw pivoted in said draw-head and having a knuckle whose outer face is substantially elliptical in outline, its nose rounded, and its inner face flattened between two curves, substantially as described.

11. In an automatic car-coupling, the draw-head having divergent arms with an intervening bottom wall whose surface is a compound or undulating curve with a rise between the axial line of the draw-bar and the guard-arm, combined with a jaw pivoted in said draw-head and having a knuckle whose outer face is substantially elliptical in outline, its nose rounded, and its inner face flattened between two curves and having a clearance-cavity at the angle of the jaw, substantially as described.

12. In an automatic car-coupling, the draw-head having divergent arms and a connecting-wall, combined with a jaw pivoted in said draw-head and having a knuckle with a substantially elliptical outer face, the rear of which is depressed or cut away to form a clearance and a buffing surface, substantially as described.

13. In an automatic car-coupling, a draw-head having divergent arms with an intervening connecting-wall having an undulating surface, combined with a jaw pivoted in said draw-head and having a knuckle with a substantially elliptical outer face, a rounded nose, and a flattened inner face bounded on each side by curved surfaces, and one or more cushions interposed between the arm of the jaw and the draw-head, substantially as described.

405,885. CORKSCREW. WILLIAM A. WILLIAMSON, Newark, N. J. Filed Jan. 12, 1888. Serial No. 260,493. (No model.)

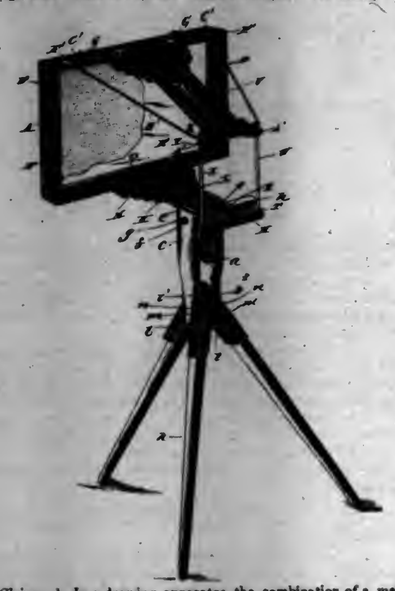
Claim.—A corkscrew consisting of a handle the ends of which are provided with hollow posts formed integrally on said ends, the

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ends of the posts abutting against each other to form a bearing, an inner or supplemental post or rivet arranged within said bearing formed by the abutting posts on the ends of the handle, and a worm or screw provided with an eye or loop encircling said bearing, for the purposes set forth.

405,386. DRAWING APPARATUS. WILLIAM S. WORDEN, Holdrege, Nebr. Filed Oct. 3, 1888. Serial No. 287,035. (No model.)



Claim.—1. In a drawing apparatus, the combination of a main frame, a folding frame hinged to the lower front edge of the same and having a groove to receive a glass plate and a drawing-sheet, and suitable locking-catches, and a head-rest hinged to the upper rear edge of said main frame, substantially as set forth.

2. The combination, in a drawing apparatus, of the frame A, the board or arm K, hinged to the lower side thereof, the board or arm U, hinged to the upper side of the frame, and the frame or bail W, hinged or pivotally connected to the outer end of one said boards or arms and adapted to be secured to the other, for the purpose set forth, substantially as described.

3. The combination, in a drawing apparatus, of the frame A, the arms or boards hinged to the lower and upper sides thereof, one of said arms or boards having a catch or detent, a frame or bail W, hinged or pivoted to the other arm or board and adapted to be engaged by said catch or detent, for the purpose set forth, substantially as described.

4. The combination, in a drawing apparatus, of the frame A, the arm or board K, hinged to the lower side thereof, the arm or board U, hinged to the upper side of said frame, the right-angled plates secured on opposite sides of the free end of arm U, and the frame or bail W, having the spindles or pintles engaging openings in the right-angled plates and in the arm U, substantially as described.

5. The combination, with a drawing apparatus comprising the frames A and W and the connecting-arms between the upper and lower sides thereof, of the bail hinged or pivoted to the frame A and adapted to fold upon the upper arm, for the purpose set forth, substantially as described.

6. The combination, with the drawing apparatus having the base arm or board K, of the tripod or support having the clamping-arms adapted to engage the said board and the screws to compress the said arms or jaws thereon, substantially as described.

7. The combination, with a drawing apparatus having the base board or arm K, of the tripod or support having the clamping-jaws, the latter having their upper ends rounded or convexed and provided with the vertical extensions or flanges, for the purpose set forth, substantially as described.

8. In a drawing apparatus, the combination of the main frame, the clamping-frame hinged thereto, the base-board hinged to said main frame, hinged frames to support the main frame in an upright position, and the tripod or support having the clamping-arms adapted to engage the said base-board, substantially as set forth.

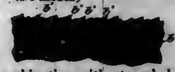
9. The combination, with a drawing-frame, of a head-rest hinged to the upper edge of said drawing-frame and a supporting-frame connected pivotally to the free end of said head-rest, substantially as set forth.

10. In a drawing apparatus, the front frame carrying the glass plate and drawing-sheet, the top arm or board U, bottom arm or board K, and rear end piece W, all of said parts being hinged or pivoted together so as to fold one upon the other, as set forth.

11. The combination, with a drawing-frame, of a hinged head-rest, a supporting-frame connected pivotally to the free end of the latter, and a bail pivoted to the drawing-frame and resting with its free end upon the head-rest, substantially as set forth.

12. The combination of the drawing-frame, the hinged head-rest, the supporting-frame pivoted to the free end of the latter, the hinged base-board, a bail pivoted to the drawing-frame and adapted to rest upon the head-rest, and a tripod having clamping-jaws adapted to engage the base-board, substantially as set forth.

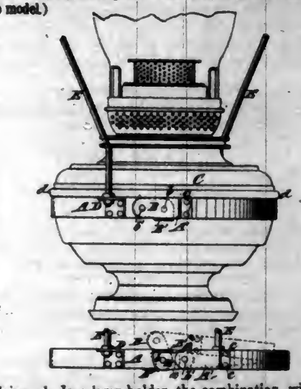
405,387. LOOM-TEMPLE. NICHOLAS I. ALLEN, Boston, assignor to the Dutcher Temple Company, Hopedale, Mass. Filed May 7, 1888. Serial No. 273,115. (No model.)



Claim.—1. The combination, with a temple-head, of a roll covered with fish-skin applied thereto, substantially as described.

2. The herein-described temple-roll, consisting of a body, as *a*, and a covering of fish-skin, having the points of the skin directed toward the end of the roll, to thereby prevent the cloth slipping on the said covering in the line of the axis of rotation of the roll, substantially as described.

405,388. LAMP-HOLDER. LEWIS J. ATWOOD and FREDERICK W. TOBEY, Waterbury, Conn., assignors to the Plume & Atwood Manufacturing Company, same place. Filed July 13, 1888. Serial No. 279,845. (No model.)

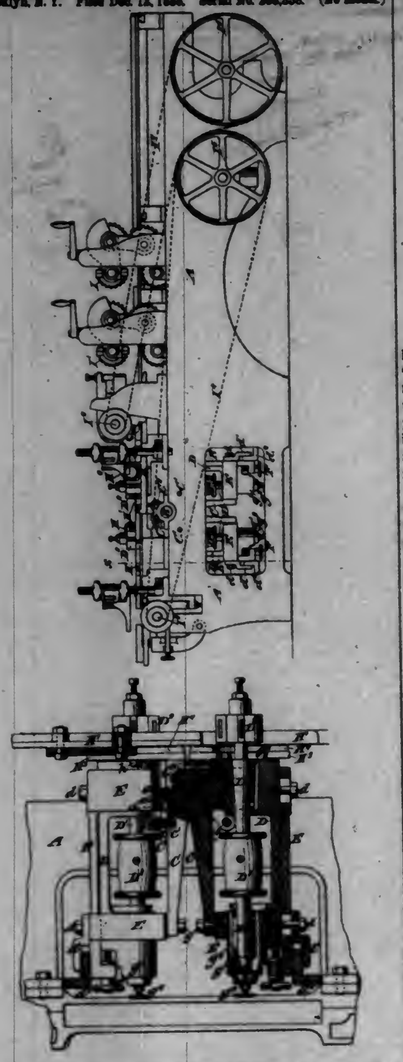


Claim.—1. In a lamp-holder, the combination, with a ring, of a support for said ring, said ring having an opening in one side and a reversible link arranged within said opening, and having a loose connection with both of the adjacent ends of the ring, the ends of the ring when in a normal position lapping past each other, so as to present the upper edge of the ring in an approximately horizontal plane, substantially as specified.

2. The combination, with a ring, of a support for said ring, said ring having an opening in one side, the ends of the ring being capable of overlapping one another, and a reversible link arranged between said overlapping ends and having a loose connection with both of said ends of the ring, the ring when in a normal or closed position presenting its upper edge in an approximately horizontal plane, substantially as specified.

3. The combination, with a ring, of a support for said ring, said ring having an opening in one side, a reversible link arranged within said opening and having a loose connection with both of the adjacent ends of the ring, and a projection constituting a stop upon one of said end portions of the ring, substantially as specified.

405,389. PLANING AND MOLDING MACHINE. HENRY F. AUTENRIETH, New York, assignor to the Glen Cove Machine Company, (Limited,) Brooklyn, N. Y. Filed Dec. 12, 1888. Serial No. 293,338. (No model.)

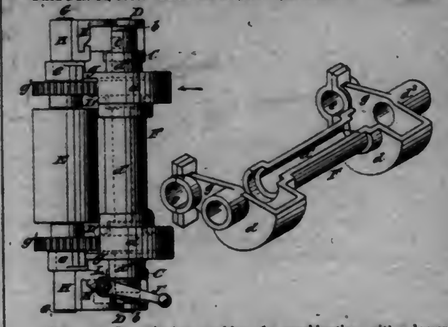


Claim.—1. In a planing and molding machine, the combination, with a main frame, of a side cutter-head, a spindle upon which said side cutter-head is mounted, a spindle-frame in which said spindle is mounted, and another frame separate from said spindle-frame and supported from the main frame, to which the spindle-frame is detachably secured, substantially as specified.

2. In a planing and molding machine, the combination, with a side cutter-head, of a spindle upon which said cutter-head is mounted, a spindle-frame pivotally hung, so that it may be swung to adjust the cutter-head at an angle or incline, a clamping device for securing the same in such angular or inclined position, and an adjusting-screw for imparting a vertical adjustment to the spindle-frame, substantially as specified.

3. In a planing and molding machine, the combination, with a single support, of cutter-legs mounted on said support, clamping-jaws upon said cutter-legs for securing the cutter-legs to the support, screws for operating said jaws, worm-wheels upon said screws, and worms engaging the worm-wheels to rotate the screws, substantially as specified.

405,390. PLANING-MACHINE. HENRY F. AUTENRIETH, New York, assignor to the Glen Cove Machine Company, (Limited,) Brooklyn, N. Y. Filed Dec. 14, 1888. Serial No. 293,867. (No model.)



Claim.—1. In a planing-machine, the combination, with a lower presser-roll, of an upper presser-roll, gearing transmitting motion from one roll to the other, vertically-movable journal-boxes for the upper roll, guides in which said journal-boxes move, a rigid connection between opposite ends of the upper roll made independently of the upper-roll shaft and extending widthwise of the machine in close proximity to the upper roll, and a single screw operating through said rigid connection to cause parallel raising and lowering of the upper roll, substantially as specified.

2. In a planing-machine, the combination, with the shaft B', of the links C, hung upon said shaft and provided with hubs *c*, the shaft D, journaled in the hubs *c*, the roll E, mounted upon the shaft G, and the casting F, engaging the shaft G, substantially as specified.

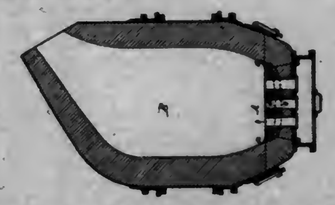
405,391. OIL-BURNER. PHILIP L. BEAR, Hamilton, Ohio. Filed Jan. 21, 1889. Serial No. 297,002. (No model.)



Claim.—1. In an oil-burner, the combination, substantially as set forth, of a steam-tube having a discharge end or nozzle and an oil-tube within the same and having a nozzle end, entirely around which a steam-ajutage is formed between the exterior of the nozzle of the oil-tube and the interior of the nozzle of the steam-tube, the nozzle end of the oil-tube being provided with an oil-ajutage extending around within and close to said steam-ajutage, except at the lower portion, at which portion of the steam-ajutage the oil-ajutage is blank.

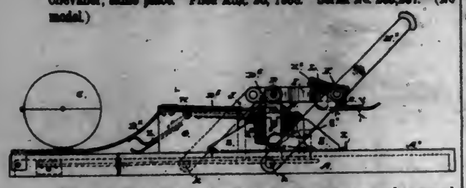
2. In an oil-burner, the combination, substantially as set forth, of a steam-chamber having a nozzle, an oil-tube disposed therein and having a general closure at its end at said steam-nozzle, and having two vertically-disposed oil-ajutages joined at their tops by a horizontal oil-ajutage.

405,392. PROCESS OF REPAIRING CONVERTER-BOTTOMS. ERNST BERTRAND, Kladno, Bohemia, Austria-Hungary, assignor to the Pottstown Iron Company, Pottstown, Pa. Filed July 19, 1888. Serial No. 280,437. (No model.)



Claim.—The mode herein described of prolonging the life of a basic converter-bottom, said mode consisting in alternately blowing a heat and then inserting new tuyeres and rebuilding with basic lining material the partially-burned bottom up to the original surface-level, whereby the bottom is so rebuilt after each heat, all substantially as set forth.

405,393. MACHINE FOR AFFIXING POSTAGE-STAMPS, &c. LOUIS J. BORIE, San Francisco, Cal., assignor of one-half to George P. Chevalier, same place. Filed Aug. 20, 1888. Serial No. 283,267. (No model.)



Claim.—1. In a machine for affixing postage-stamps and gummed labels, the combination of the oscillating presser-plate having devices to seize and attach the stamp or label to its bottom surface, the hinged platen, and a device on the platen for seizing the strip or ribbon of stamps at the first line of perforations, arranged for operation as set forth.

2. In a machine for affixing postage-stamps and gummed labels, the combination, with the oscillating presser-plate having devices to seize and attach the stamp to its bottom surface, of the moistening device arranged for operation, as described, to rise into contact with the stamp on the bottom of the presser-plate in the forward movement thereof and to drop clear of it at the return movement, as set forth.

3. In a machine for affixing postage-stamps and gummed labels, a spool for holding the stamps or labels in the form of a perforated strip or ribbon, the movable platen for holding and presenting the stamps at the end of the ribbon, having a device to engage and hold the ribbon at the first line of perforations, a moistening device arranged in front of said platen, the traveling presser-plate having devices to seize and attach a stamp from the end of the ribbon to the bottom face of the presser-plate when brought in contact with the platen, and means, substantially as described, for elevating the platen to meet the bottom of the presser-plate and remain in contact therewith during the first part of its forward movement, for seizing and pulling off the end stamp presented on the platen, substantially as set forth.

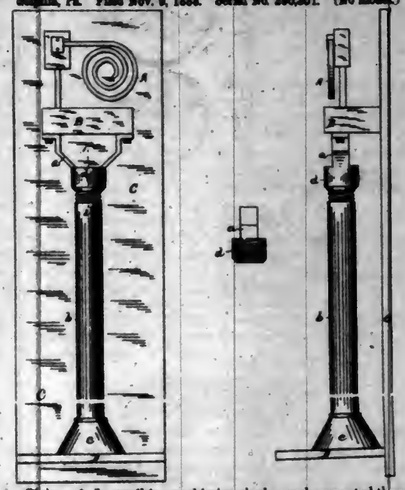
4. In a machine for affixing postage-stamps and gummed labels, the stamp-holding platen D, having a sprig-tongue for holding down the stamp, the tracks or raised sides *d d*, and the longitudinal grooves d^3 d^4 on either side of the tongue, in combination with the oscillating presser-plate E, having yielding points *p*, for seizing and attaching the stamp to its bottom surface, and the oscillating frame H, for operating the presser-plate, substantially as described, to operate as set forth.

5. The combination of the base A, the spool B, mounted thereon at one end, the table or surface $A^\times$ at the opposite end, the hinged and movable platen D and platen-support G, the spring W, adapted to hold down the stamp on the platen, the bar $U^\times$, having pins U, arranged to play through slits in the platen and engage in the line of perforations in the ribbon of stamps, the oscillating presser-plate E, having yielding points *p p*, a moistening device in front of said platen capable of movement, and mechanism, substantially as described, operated by or from the oscillating movements of the presser-plate for bringing the moistening device into action during the forward movement of the presser-plate, when the stamp is on it, and for depressing said device out of contact on the return when the presser-plate is empty, as set forth.

6. In a machine for affixing gummed stamps or labels, a presser-plate having oscillating movement in an arc, as described, between a stamp-holding bed or platen and a table or surface on which the article to be stamped or labeled is laid, and a device, in combination therewith, for seizing and attaching the stamp or label to the bottom of said plate, and adapted to take the stamp or label at the beginning of the upward movement and to carry it forward in contact with suitable moistening devices during said movement, and, finally, withdraw and leave the stamp or label upon the article or surface placed to receive it at the end of the oscillating movement, as set forth.

7. The herein-described machine for separating gummed stamps or labels from a strip or perforated ribbon, moistening the gummed side, and, finally, affixing it by pressure upon the envelope or article to be stamped, consisting, essentially, of a spool for carrying the ribbon, the hinged platen D, for presenting the end portion of the ribbon, a device on said platen for seizing the ribbon at the line of perforations that separate the first stamp, the oscillating presser-plate E, capable of movement in a vertical arc in a forward direction from over the said platen, and of maintaining a horizontal position during such movement, a moistening device arranged in front of the said platen and adapted to be set in the path of the presser-plate in its forward movement, and to be drawn out of contact with it on the return, a device on the presser-plate operating to seize and attach the stamp to the bottom of the plate, consisting of yielding points or pins projecting beyond the bottom of the plate, and the table or surface in front of the moistening device to present the envelope or article to be stamped, substantially as described, for operation as set forth.

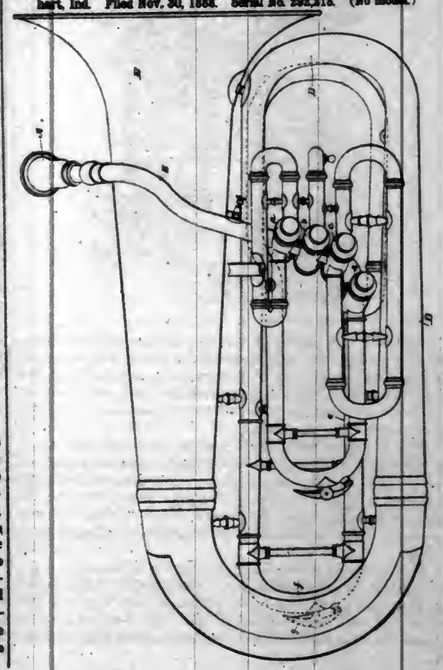
405,394. ATTACHMENT FOR CLOCKS. EDWARD T. CRANE, Philadelphia, Pa. Filed Nov. 9, 1888. Serial No. 290,351. (No model.)



Claim.—1. In a striking or chiming clock, a rod supported thereon, one end of which bears against the bracket carrying the gongs and the other against the bottom of the clock, substantially as and for the purpose set forth.

2. The combination, with the gong-bracket and bottom of a striking or chiming clock, of a bracket having a threaded boss, a rod one end of which is threaded and screwed into said boss, and a support resting upon the bottom of the clock and against which the lower end of said rod bears, substantially as set forth.

405,395. MUSICAL WIND-INSTRUMENT. CHARLES G. CONN, Elkhart, Ind. Filed Nov. 30, 1888. Serial No. 292,218. (No model.)

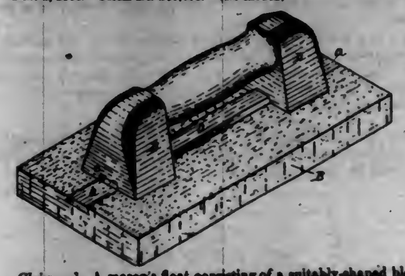


Claim.—1. A musical wind-instrument having valves placed diagonally across the piece, for the purpose set forth.

2. A musical wind-instrument having a direct air-passage from the mouth-piece through the diagonally-arranged valves to the water-key in the tuning-slide, as and for the purpose set forth.

3. The combination of a musical wind-instrument having valves placed diagonally across the piece with a direct air-passage through said valves from the mouth-piece to the water-key in the tuning-slide, substantially as set forth.

405,396. MASON'S FLOAT. ISAAC H. CONRAD and ALFRED W. POUNDER, Elkhart, Ind., assignors, by direct and mesne assignments, of two-thirds to Edwin S. Conrad and Malcolm Pounder, same place. Filed Nov. 2, 1888. Serial No. 289,736. (No model.)



Claim.—1. A mason's float consisting of a suitably-shaped block or strip of cork provided with a handle, substantially as set forth.

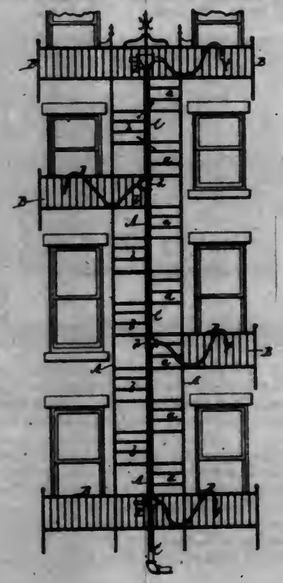
2. A mason's float consisting of a suitably-shaped cork block or strip having a handle and provided with the stiffener to prevent warping, substantially as set forth.

405,397. FIRE-ESCAPE. WILLIAM S. COOK, Rochester, N. Y. Filed Dec. 24, 1888. Serial No. 294,494. (No model.)

Claim.—1. A fire-escape consisting of a series of cages attached to suitable supports and arranged in a vertical line, said cages alternating and forming steps, whereby a person can descend by stepping from one to another, as herein shown and described.

2. A fire-escape consisting of vertical bars or rods attached to the face of a building, and a series of cages attached thereto alternating in position and forming steps, whereby a person can descend by stepping from one to another, as herein shown and described.

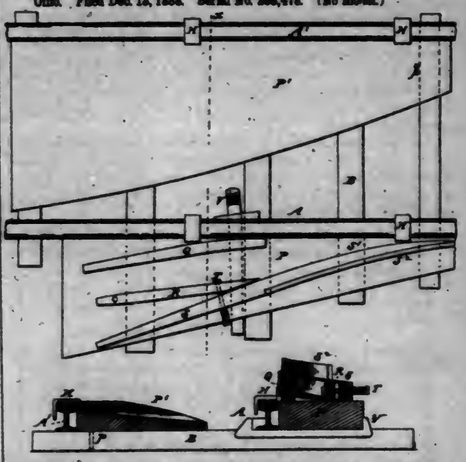
3. In a fire-escape, the combination of vertical bars or rods forming a support, a series of cages attached thereto alternating in position, forming steps, whereby a person can descend by stepping from one to another, and balconies opening into the back of the cages, as shown and described, and for the purpose specified.



405,897.



405,898. CAR-REPLACER. CHARLES H. DAILEY, East Liverpool, Ohio. Filed Dec. 13, 1888. Serial No. 293,473. (No model.)



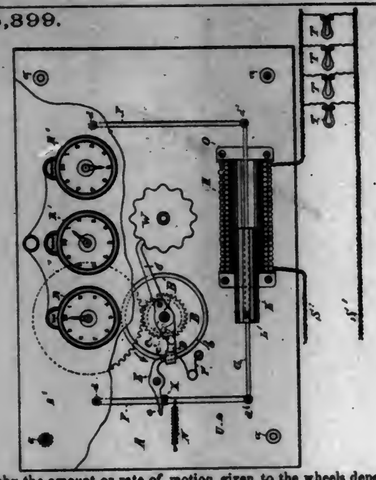
Claim.—A car-replacer consisting of the two plates P P', the former provided with guide-rails Q R S, and extension S', having the vertical guard-flange S^2, the middle guide-rail being rear pivoted and spring held in front to the outer guide-rail, as and for the purpose set forth.

405,899. ELECTRIC METER. RUDOLF DIESEL, New York, N. Y., and PHILIP DIESEL, Elizabeth, N. J. Filed Feb. 21, 1889. Serial No. 300,749. (No model.)

Claim.—1. In an electric meter, the combination of a train of wheels and indicating-dials, a friction-clutch applied to one of said wheels, means, substantially as described, for giving regular impulses to a lever operating upon said friction-clutch, a solenoid in the translating-circuit, a movable core therefor, mechanism connected with said core, which governs the extent of motion of said friction-clutch, whereby variable motion is given to said wheels according to the position of said core.

2. In an electric meter, the combination of a solenoid, a movable core therefor, mechanism connected with said core, a train of wheels with indicating-dials, a friction-clutch applied to one of said wheels, means, substantially as described, for giving regular impulses to said friction-clutch when a current is passing, and a lever operating upon said friction-clutch through the mechanism attached to said core,

405,899.



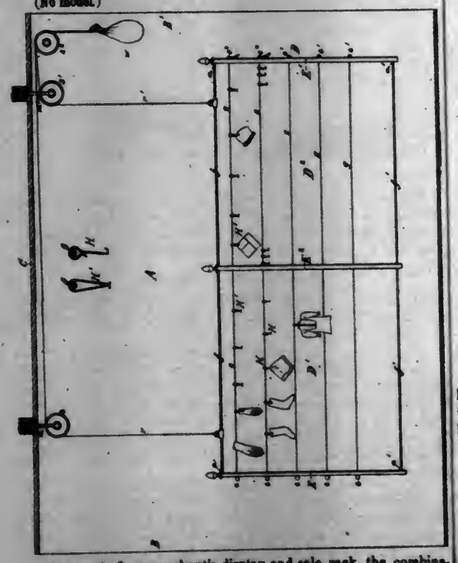
whereby the amount or rate of motion given to the wheels depends upon the position of said core.

3. The combination of the solenoid, its core, the clutch D, means, substantially as described, for operating said clutch at regular intervals when a current is passing, the wheel B, having its rim grasped by said clutch D, the train connected therewith, the lever E, which determines the amount of motion given to the wheel B by the clutch, and the springs P and N.

4. The combination of the solenoid, its core, the clutch D, means, substantially as described, for operating said clutch at regular intervals when a current is passing, the wheel B, having its rim grasped by said clutch, the train connected therewith, and the lever E, having a curve of such form as to compensate the decreased rate of movement of said core on an increase of current by an increased range of movement of said clutch.

5. The combination of an electro-magnetic device operated upon by the current to be measured, an intermittently-operated friction-clutch, substantially as described, and a registering apparatus driven by said friction-clutch at a rate determined by the position or condition of said electro-magnetic device.

405,400. DISPLAY AND SALE RACK FOR MERCHANDISE. SAMUEL R. DUNLAP, Eutaw, Ala. Filed Mar. 1, 1889. Serial No. 302,217. (No model.)



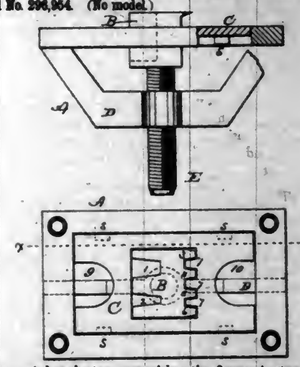
Claim.—1. In a merchant's display and sale rack, the combination of the rack formed of end posts E E' and upper and lower connecting-rods *f f'* and intermediate display-wires *g*, and the balancing and suspending mechanism attached to each end of the rack and to the wall or frame-work of the store-room, substantially as described.

2. In a merchant's display and sale rack, the combination of the end posts E E', intermediate post E², connecting-rods *f f'*, intermediate display-wires *g*, passing transversely through the post E² and serving as adjusting or tension rods, and the balancing and suspending mechanism attached to each end of the rack and to the wall or frame-work of the store-room, substantially as described.

3. In a merchandise display-rack, the combination of the posts E E' E², connecting-rods *f f'*, display-wires *g*, provided with self-retaining hooks or clasps, and means for balancing and elevating and lowering the rack, said means being applied at each end of the rack and to the wall or frame-work of the building, substantially as described.

4. In a rising and descending merchandise display and sale rack, in combination, the side supporting-posts, and horizontally-connecting rods, cords, weight, and pulleys, a cord and pulley being at each end of the rack and both operated by a single weight at one end thereof, substantially as and for the purpose described.

405,401. BENCH-STOP. JOHN C. BOERET, Dayton, Ohio, assignor of one-half to Callender & Patterson, same place. Filed Jan. 21, 1889. Serial No. 296,954. (No model.)



Claim.—A bench-stop comprising the frame A, stop B, with projections on one face and slots in the opposite face, and the binding-plate C, with projections, substantially as shown and described.

405,402. PAPER-CUTTER. LEO EHRLICH, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed June 30, 1888. Serial No. 278,606. (No model.)



Claim.—1. In a paper-cutter, the combination of a suitable support, a roll of paper, a knife located a distance from the roll of paper, and a wire bail located just beneath and adjacent to the knife for supporting the end of the paper, substantially as and for the purpose set forth.

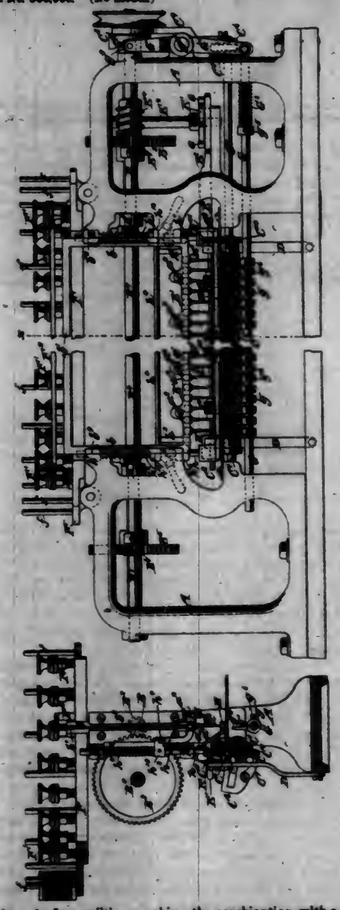
2. In a paper-cutter, the combination of a suitable support, a roll of paper, a suitable knife, and an eccentric cam bearing against the end of the roll of paper to prevent its retrograde movement, substantially as and for the purpose set forth.

3. In a paper-cutter, the combination of a suitable support, a roll of paper, a suitable knife, and a cam pivoted to a suitable support at one end of the roll of paper and bearing against the roll of paper to prevent its retrograde movement, substantially as and for the purpose set forth.

4. In a paper-cutter, the combination of a suitable support, a roll of paper, a suitable knife, and a cam pivoted to a suitable support and provided with an elastic band and a handle and bearing against the roll of paper, substantially as and for the purpose set forth.

5. In a paper-cutter, the combination of a suitable support, a roll of paper, a suitable knife, an eccentric located at and bearing against one end of the roll of paper, and a bracket located at the other end of the roll of paper, substantially as and for the purpose set forth.

405,403. QUILTING-MACHINE. ALFRED FAHLBERG, Brooklyn, assignor to Eli W. Broadbent, New York, N. Y. Filed Feb. 21, 1889. Serial No. 300,660. (No model.)

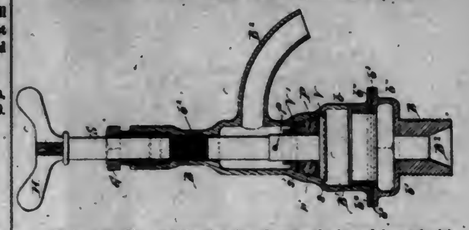


Claim.—1. In a quilting-machine, the combination, with a needle-bar composed of parallel sections, of needles having heads arranged between said sections, said heads being provided with flanges extending beneath the sections of the needle-bar and at right angles to the direction of the length thereof, and clamping devices for securing said sections together, substantially as specified.

2. In a quilting-machine, the combination, with a needle-bar, of a number of needles secured thereon and capable of adjustment in the direction of the length of the bar, a number of loopers, a bar upon which said loopers are adjustably secured, so as to be adjustable in the direction of the length of the bar, and mechanism for imparting a longitudinal reciprocation to said bar, substantially as specified.

3. In a quilting-machine, the combination, with reciprocating needles, of a non-rotary looper-bar, a number of loopers arranged on said bar, all of said loopers having hooks extending approximately parallel with the axis of said bar, and mechanism for imparting a longitudinal movement to said bar, substantially as specified.

405,404. STOP-COCK. MARIA M. FORRESTER, Brussels, Belgium. Filed Feb. 4, 1888. Serial No. 263,001. (No model.) Patented in Belgium Nov. 19, 1887, No. 73,616; in Germany Nov. 20, 1887, No. 43,064; in Spain Dec. 9, 1887, No. 7,006; in France May 14, 1888, No. 190,561; in England May 16, 1888, No. 7,204; in Italy May 19, 1888, No. 23,517, and in Austria-Hungary May 23, 1888, No. 21,676 and No. 9,260.



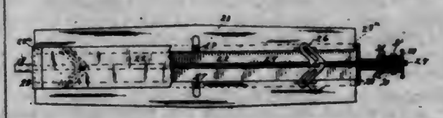
Claim.—1. The combination, in a faucet, of a barrel formed with an interior wall-seat part *p'*, tapering toward the outflow, supplemented by a bevel wall-seat *s'* of less seat area, with a valve-operating stem having a tapering rubber plug-valve P, the taper whereof being of a less angle than the angle of taper of the wall-seat part *p'*, the valve V', corresponding with the valve-seat *s'*, an abutment V, for confining the said rubber valve and the stem-ing part *p*, substantially as described.

2. In a faucet, the barrel formed with interior circular wall-seats *s s'*, of unequal diameter, and an intermediate wall-seat *p'*, tapering from the seat of greatest to the seat of least diameter and having an area greater than the combined area of the said seats *s s'*, in combination with a valve-operating stem having a tapering rubber valve whose greatest diameter is less than the wall-seat of greatest diameter, the unyielding valves V V', corresponding to the said wall-seats of unequal diameter, and an abutment *p*, for the valve of least diameter, substantially as described, for the purpose specified.

3. In a faucet, the valve-stem having a plug-valve composed of a tapering rubber part P, a fixed end part V, and a loose end part V', the two latter having seat-forming faces of greater angle of taper than the angle of taper of the said rubber valve, combined with a barrel having formed on its inner wall joining seats *p'*, *s*, and *s'*, corresponding to the said separate wall-seats, and a stem pin or lug *p*, co-operating with the loose valve part, substantially as described.

4. In a faucet, the barrel formed with a conical wall part between the inflow and the outflow, the taper standing in the direction of the outflow and forming three separate and distinct joining wall-seats *p'*, *s*, and *s'*, the intermediate one standing at a less angle of taper and having the greatest area, in combination with a valve-stem having three co-operating valve parts P, V, and V', the intermediate part being rubber and having an angle of taper less than the angle of taper of the wall-seat *p'*, and the part *p*, for opening the valve parts V' and P, substantially as described.

405,405. LEVELING-BOARD FOR COTTON-GIN FEEDERS. FERDINAND C. GAMMON, GEORGE L. ROLLINS, and HERBERT WADSWORTH, Bridgewater, Mass., assignors to the Eagle Cotton Gin Company, same place. Filed May 1, 1888. Serial No. 272,496. (No model.)



Claim.—1. The leveling-board having fixed sides and adjustable wings, cams for adjusting said wings, and a spindle for adjusting said cams, as set forth.

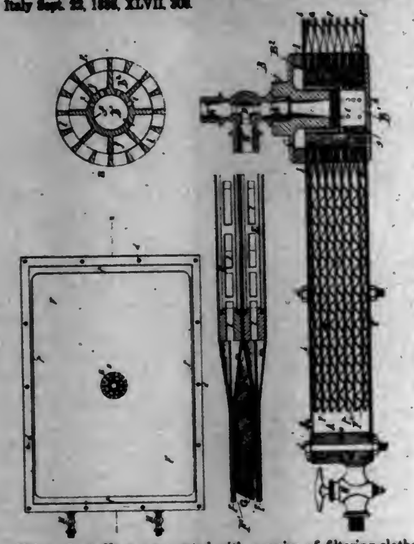
2. The leveling-board having adjustable wings, cams for adjusting said wings, a screw-threaded spindle for adjusting said cams, and a nut for adjusting said spindle, substantially as set forth.

3. The leveling-board having adjustable wings, a longitudinally-movable spindle, arms carried by said spindle having cam-slots, and studs carried by said wings engaging in said slots, as set forth.

4. The rotary leveling-board having radially-adjustable wings, a screw-threaded central spindle, a fixed revolubie nut engaging said spindle, studs on said wings, and cams engaging said studs and attached to the spindle, as set forth.

5. The rotating leveling-board having radially-adjustable wings, a central spindle capable of longitudinal movement, inclined arms on the spindle engaging with studs on the wings, and studs for preventing end motion of the wings, substantially as and for the purpose set forth.

405,406. FILTER. BENJAMIN E. GARSIDE, Castres, France. Filed Mar. 20, 1888. Serial No. 304,015. (No model.) Patented in France Oct. 2, 1886, No. 178,826; in Spain Sept. 17, 1888, No. 8,703; in England Sept. 20, 1888, No. 13,035; in Portugal Sept. 20, 1888, No. 1,269, and in Italy Sept. 22, 1886, XLVII. 308.



Claim.—1. A filter constructed with a series of filtering-cloths, corrugated metallic reticulated plates interposed between said filtering-cloths, a central inlet-chamber having apertures communicating with the pockets formed between the filtering-cloths, and a casing containing said filtering-cloths, plates, and inlet-chamber, all combined substantially as set forth.

2. A filter composed of a casing, a series of filtering-cloths in the same and provided with central apertures, a series of corrugated metallic reticulated plates between the filtering-cloths, a central apertured cylinder composed of rings, between which the inner edges of said cloths are held, and a perforated and winged chamber in said cylinder, all combined substantially as set forth.

3. A filter composed of a casing, a series of filtering-cloths within said casing and having central apertures, corrugated metallic reticulated plates between the filtering-cloths, a central cylinder composed of apertured rings, between which the inner edge of the filtering-cloths are held, a perforated and winged chamber in said cylinder, which chamber has a bottom plate resting against the under side of the bottom of the casing and pressing said bottom of the casing against the bottom of the cylinder formed of the apertured rings, a flanged collar screwed into the chamber, and a cock on the top of said collar, all combined substantially as set forth.

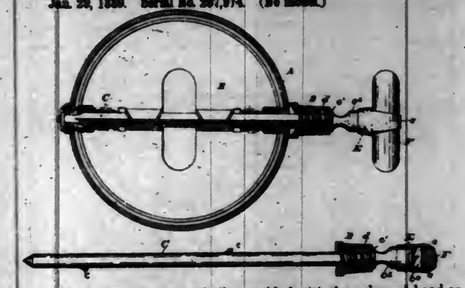
4. In a filter, the combination of a receiver, a distributer disposed therein, a series of textile pockets disposed in said receiver around said distributer, and having their mouths opening into the distributer, and annular corrugated reticulated plates disposed in said receiver between said textile pockets.

405,407. BAKER'S PEEL FOR CRACKERS, &c. SAMUEL S. GOLDMAN, St. Louis, Mo. Filed Jan. 10, 1889. Serial No. 296,012. (No model.)



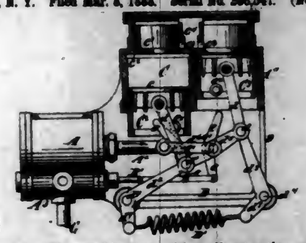
Claim.—In a baker's peel for crackers, &c., the combination of the wooden body of the peel provided with a wide countersink in one side and a narrower one in the other side of its forward end, the sharp metal tip or blade with flanges integral with said tip that fill said countersinks, the attachment-arms 8, and flanges 9 of said arms secured to the flanges 6 and 7 of the metal edge tips and that project rearward at about a right angle from the same, the countersinks 10 in the wooden body of the peel, in which said angle-arms and flanges are inserted, and the rivets 11, that fasten said metal attachment, substantially as described, and for the purpose set forth.

405,408. STOVE-PIPE DAMPER. MATTHEW GRISWOLD and ORIN R. HASCHETT, Erie, Pa.; said Haschett assignor to said Griswold. Filed Jan. 28, 1889. Serial No. 297,914. (No model.)



Claim.—The damper-spindle provided with the enlarged head or end to receive and retain the handle-sleeve and having the transverse rib on its end for engaging the grooved block or handle, in combination with the removable sleeve engaging said enlarged end of the spindle and having the malleable arms or fork for receiving and clamping the block to the spindle, substantially as described.

405,409. DIRECT-ACTING ENGINE. ROBERT HARDIE, Schenectady, N. Y. Filed Mar. 8, 1888. Serial No. 266,547. (No model.)



Claim.—1. The combination, with a direct-acting motor piston and cylinder, of two single-acting pump pistons and cylinders, two pairs of toggle-levers for the pump-pistons, each pair having a fixed fulcrum and connected with the pump-pistons and the two pairs being connected together, so that the levers of one pair straighten into line as those of the other pair deflect from a straight line, and a connection between the rod of the motor-piston and the movable joints of the toggle-levers, substantially as herein described.

2. The combination, with a direct-acting motor piston and cylinder, of two single-acting pump pistons and cylinders, two pairs of toggle-levers, each pair consisting of two members d^3 or d^3 and d, jointed together at d', the former d^3 or d^3 fulcrumed at d^4, and the latter d connected with its pump-piston, the link d^5, connecting the movable joints of the two pairs of levers, and the link connecting said link d^5 at a point between its ends with the motor piston-rod, substantially as herein described.

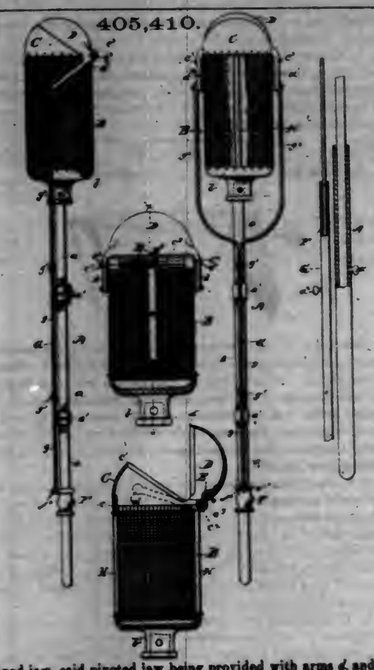
3. The combination, with a direct-acting motor piston and cylinder, of two single-acting pump pistons and cylinders, two pairs of toggles consisting of the levers d^3 d^3, fulcrumed at d^4 and having the toes or arms d^7, connected by the spring D', and the rods d, jointed to said levers and to the pump-pistons, and a connection between the motor piston-rod and the movable joints of the pairs of toggle-levers, substantially as herein described.

4. The combination, with a direct-acting motor piston and cylinder, and a valve for controlling the movements of said piston, of two single-acting pump pistons and cylinders and pairs of toggle-levers through which said pump-pistons are operated by the motor-piston, and levers e, connected with the valve-rod of the motor-cylinder and which are operated on alternately by the pump-pistons in their descending movements to move the valve, substantially as herein described.

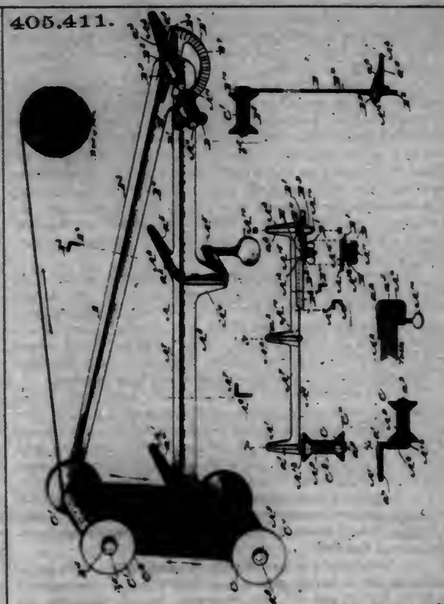
405,410. FRUIT-PICKER. EDGAR S. HARPER, Tyler, Tex. Filed Feb. 7, 1889. Serial No. 299,002. (No model.)

Claim.—1. In a fruit-picker, the combination, with a supporting-rod, of the receptacle supported upon the upper end of said rod, said receptacle being constructed of wire-gauze, and provided at its lower end with the cup-shaped piece b, forming the bottom to said receptacle, and at its upper end with the fixed cutting-jaw C, a second cutting-jaw D, pivoted to said receptacle and adapted to co-operate with said fixed jaw, said pivoted jaw being provided with arms d, and the operating-rod bifurcated at its upper end, the arms whereof are pivoted to said arms d, substantially as described.

405,410.



405,411.



2. In a fruit-picker, the combination, with the supporting-rod A, made in sections and united by screw-threaded ferrules, of the receptacle B, supported upon the upper end of said rod and in line therewith, said receptacle being constructed of wire-gauze and provided at its lower end with the cup-shaped piece b, forming the bottom to said receptacle, and at its upper end with the fixed cutting-jaw C, a second cutting-jaw D, pivoted to said receptacle and adapted to co-operate with said fixed jaw, said pivoted jaw being provided with the arms d, and operating-rod G, made in sections and united by screw-threaded ferrules, said rod being bifurcated at its upper end, the arms whereof are pivoted to said arms d, and pivoted at its lower end to the sleeve or handle F, adapted to slide upon said rod A, substantially as specified.

405,411. SKEIN-HOLDER. ISAAC W. REYNOLDS, Philadelphia, Pa. Filed Apr. 13, 1888. Serial No. 307,152. (No model.)

Claim.—1. As an article of manufacture, a skein-holder consisting of the detachable bar A, having spool C attached to one end and pivot A^{14} to the other end, and a radial arm B, pivoted to A^{14}, having spool C' attached to the free end thereof, and a stop-support forming part of a circle concentric with said pivot, together with an adjustable stop adapted to engage with said arc and secure the said radial arm B in various positions of adjustment and set the spools C and C' at various distances from each other, substantially as described.

2. In combination with the bar A, having supports A' A^6 at the opposite ends thereof above, and thumb-screw A^{10} at the middle thereof beneath, the spool C, projecting laterally from one end of said bar and adapted to rotate freely upon a bearing, and a radial arm B, pivoted at one end to the opposite end of said bar A, and means for retaining the said bar B in various positions of adjustment thereupon, and the spool C', projecting laterally from the free end of said arm B and adapted to rotate freely upon a bearing, the whole constructed to operate substantially as and for the purposes described.

3. In combination with the bar A, having rearwardly-projecting end supports A' A^6 and a middle support A^9 above the horizontal level of the lower surfaces of A' and A^9, and a thumb-screw acting from beneath against said support A^9 and adapted to cause secure engagement of said bar A to the margin of a table at the ends thereof before engagement of A^9 therewith, the spool C, pivoted arm B, means for fixing the same at various positions of adjustment, and spool C', substantially as described.

4. In combination with the bar A and rotating spool C at one end thereof, and arm B, with rotating spool C' at the free end thereof, adapted to operate in connection with said spool C for receiving and holding skeins of yarn and the like, said arm B pivoted to said bar A at the rear end thereof, and having a corrugated arc of a circle B' concentric with said pivoted support, together with set-nut D, adapted to engage against said arc and secure the said arm B to the said bar A in various positions of adjustment, substantially as described.

5. In combination with the spool C, spool-support A^5, attached to bar A, longitudinal bar A, having clamp-supports above and set-screw A^{10} beneath, and journal A^{14}, projecting horizontally to the front from the rear end thereof, and threaded pin A^{11}, and the radial arm B, having spool-support B^5 at the free end thereof, and the spool C' and journal-box B^6 near the opposite end, said journal-box fitted over said pin A^{14} and forming a pivoted bearing for said arm B, and semicircle B', attached to said arm B concentric with journal-box B^6, and having a corrugated outer surface B^7, together with washer E, surrounding pin A^{11}, said pin screw-threaded, and thumb-nut D, having flat under surface D^2, adapted to compress said washer against the corrugations B^7 of said semicircle B' and securely fix the arm B in various radial positions of adjustment, substantially as described.

6. In a skein-holding device, in combination with bar A, spool C, arm B, and spool C', said arm radially pivoted at one end thereof to one end of said bar A and having corrugated semicircle C' B' concentric with said pivot and operating against the front face of said bar A, the raised part A^{15}, having corrugations A^{13}, corresponding to corrugations of the semicircle B', and screw-threaded pin A^{11} adjacent to the free margin of said semicircle, together with the compressing thumb-screw D, and the washer E interposed between the under face of said thumb-screw D^2 and the upper face of the corrugations B^7 of said semicircle B', and the corrugations A^{13} of said raised part A^{15} and adapted to engage simultaneously with the corrugations B^7 and A^{13}, substantially as and for the purposes described.

7. In a skein-holder, the detachable bar A, having spool C supported thereupon and adapted to rotate at one end thereof, and the pivoted arm B, having spool C' supported thereupon and adapted to rotate at the free end thereof opposite and in connection with said spool C, the said arm B overlapping the said bar A when closed upon said pivot, the upper surface of said arm B removed, as shown at B^{11}, in rear of pivoted support B^5 A^{14}, and the semicircle B', and a stop to engage with said semicircle and fix the arm B in various positions of adjustment, said semicircle B' in rear of said support A^{14} B^5 occupying a plane vertical and in front of said bar A adapted to give clearance to said semicircle in adjusting the arm B at various heights, substantially as described.

8. In a skein-holder, the bar A, formed of angle-iron, having flat top A^7 and vertical front A^6, supports A' A^6, and thumb-screw A^{10} beneath, and radial arm B, pivoted to one end of said bar A and adapted to be raised or lowered upon said pivot, together with spool C, supported upon pin A^5 at the free end of said bar A, and spool C', supported upon pin B^5 at the free end of said arm B, said spools

adapted to rotate freely upon said pins A^9 and B^9, and means for fixing the said arm B, with said spools C and C' parallel with each other and at various distances apart upon said pivoted support of said arm B, substantially as described.

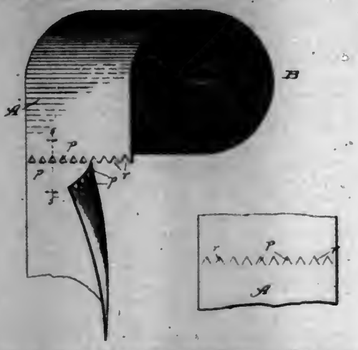
9. In a skein-holder, the arm A, supporting horizontal and forwardly-projecting spool C at one end thereof, and arm B, supporting horizontal and forwardly-projecting spool C' at one end thereof opposite to and parallel with said spool C, said arm B pivoted at its rear end by a horizontal pivot A^{14} B^9 to the rear end of said bar A, and means for retaining the said arm B in various positions of adjustment upon said pivot, said arm B and said bar A having an angular form in cross-section, the horizontal part B^2 of the arm B overlapping the horizontal part A^7 of the bar A when closed and the vertical part B^4 of said arm B adjacent to the vertical part A^6 of said bar A, substantially as described.

10. As an article of manufacture, a skein-holder consisting of the bar A, formed of cast metal having supports A' A^3 A^5, lug A^8, pins A^{14} and A^{11}, formed integral therewith, and radial bar B, formed of cast metal, having journal-box B^9 and semicircle B' formed integral therewith, and the rotating spools C and C', attached to said bar and said arm, said arm pivoted to said bar at A^{14} B^9, and the thumb-nut D, operating against said semicircle, substantially as described.

11. In a skein-holder, in combination with spool C, pin A^9, and bar A, the pivoted arm B, having pin B^9, and spool C', adapted to rotate thereupon and having pivoted attachment A^{14} B^9 to the rear end of said bar A at the rear end of said arm B, and corrugated semicircle B' B^7, concentric with said pivot, said semicircle having raised stop B^8 and thumb-screw D, adapted to engage with said semicircle and fix the same at various points of adjustment, said stop B^8 adapted to engage with said thumb-screw D and arrest the movement of said semicircle prior to disengagement thereof with said thumb-screw, substantially as described.

12. As an article of manufacture, the skein-holder consisting of cast-metal bar A, having spool-support A^6 A^{13}, one or more supports A' A^3 A^5, lug A^8, pins A^{14} and A^{11}, formed integral therewith, and pivoted arm B, having spool-support B^{10}, journal-box B^9, and corrugated semicircle B' B^7, formed integral therewith, and a thumb-nut D, adjustably secured upon the threaded pin A^{11} and overlapping the front face of said semicircle B', adapted, when in place, to prevent the escape of said journal-box B^9 from said pin A^{14} without heading or otherwise securing the same, substantially as described.

405,412. PERFORATED PAPER. OLIVER H. HICKS, Chicago, Ill. Filed May 17, 1888. Serial No. 274,183. (No model.)



Claim.—1. As a new article of manufacture, a sheet or web of paper perforated to form a tearing-line and having the material cut away to produce the perforations only partially severed from the sheet or web, substantially as described.

2. As a new article of manufacture, a sheet or web of paper perforated with angular perforations to form a tearing-line and having the material cut away to produce each perforation unsevered at only one edge from the sheet or web, substantially as described.

3. As a new article of manufacture, a sheet or web of paper provided with triangular perforations forming a tearing-line and having the V-shaped pieces cut away in producing perforations unsevered at their bases only from the sheet or web, substantially as described.

4. As a new article of manufacture, a sheet or web of paper perforated to form a tearing-line and having the material cut away to produce the perforations only partially severed therefrom and folded against the web or sheet, substantially as described.

5. As a new article of manufacture, a sheet or web of paper provided with triangular perforations forming a tearing-line and having V-shaped pieces cut away in producing perforations unsevered at their bases only from the sheet or web and folded against the latter, substantially as described.

6. As a new article of manufacture, a rolled web of paper perforated at intervals to form tearing-lines and having the material cut away to produce the perforations only partially severed from the web and folded against the same in the direction toward the free end of the roll, substantially as described.

405,418. PAPER BOX FOR CIGARS. OLIVER H. HICKS, Chicago, Ill. Filed Apr. 9, 1889. Serial No. 306,510. (No model.)



Claim.—1. A blank formed of paper or analogous material for producing when folded a receptacle B, the blank having beveled edges *p*, extending at corresponding or substantially corresponding angles from near the ends of the blank toward the transverse line of its longitudinal center, and severed short of such center, and at both sides thereof, to produce, when the blank is folded upon itself at or near the said transverse line, a short base *r*, tapering toward its bottom, substantially as described.

2. A blank formed of paper or analogous material for producing when folded a receptacle B, the blank having beveled edges *p*, extending at corresponding or substantially corresponding angles from near the ends of the blank toward the transverse line of its longitudinal center, and cut away short of such center, and at both sides thereof, thereby producing edges *q*, to afford, when the blank is folded upon itself at or near the said transverse line, a short base *r*, tapering toward its bottom, substantially as described.

3. A blank A, for producing when folded a receptacle B, and comprising paper or analogous material having beveled edges *p*, extending at corresponding or substantially corresponding angles from near its ends toward the transverse line of its longitudinal center, and cut away short of such center, and at both sides thereof, thereby producing the beveled edges *q*, to afford, when the blank is folded upon itself at or near the said transverse line, a short base *r*, tapering toward its bottom, and lines or creases *y*, extending from the edges *q*, in the diverging directions of the latter to the ends of the blank, substantially as described.

4. A receptacle B for cigars, formed of paper or analogous material and having a short tapering base *r*, sides flaring from the said base to the mouth of the receptacle at angles more acute with reference to the longitudinal center of the receptacle than the sides of the tapering base, and stiff flaring edge sections *p'* narrower than the adjacent flaring sides, substantially as described.

5. A receptacle B for cigars, formed of paper or analogous material and having a short tapering base *r*, open at its opposite ends, sides flaring from the said base to the mouth of the receptacle at angles more acute with reference to the longitudinal center of the receptacle than the sides of the tapering base, and stiff flaring edge sections *p'* narrower than the adjacent flaring sides and extending from the plane of the top of the base *r* toward the mouth of the receptacle, substantially as described.

405,414. THILL-COUPLING. ARTHUR HOMEWOOD, Wilmington, Del., assignor of one-half to William S. Haines, same place. Filed Mar. 13, 1889. Serial No. 303,099. (No model.)

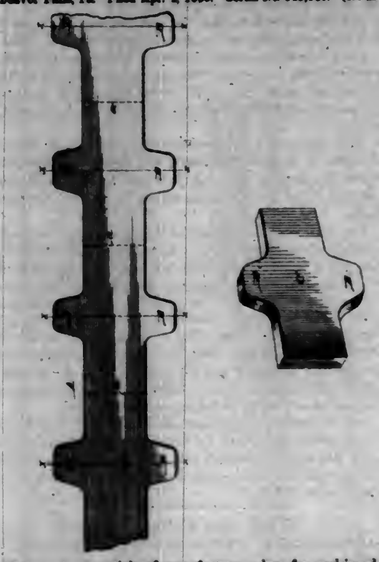


Claim.—1. The combination of the bearing-arms adapted to support the thill-iron, the cap pivoted to said bearing-arms and adapted to engage over the thill-iron, and the locking-levers pivoted to the outer ends of the bearing-arms and engaging the front end of the cap, as set forth.

2. The combination of the bearing-arms having notches in their upper edges, the thill-iron provided with a transverse pin having its ends engaging said notches, the cap pivoted to the bearing-arms and provided with notches engaging the ends of the said transverse pin and having horizontal recesses in its front edges, and the locking-levers pivoted on the front ends of the bearing-arms and engaging the horizontal recesses in the front edges of the cap, as set forth.

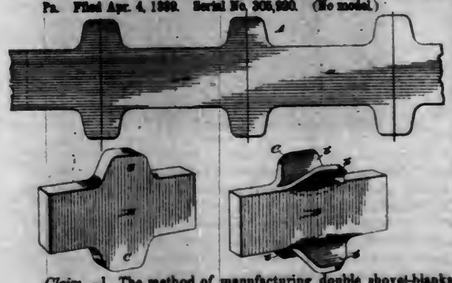
3. The improved thill-coupling consisting of the following elements in combination: the bearing-arms E, having notches F in their upper edges, the thill-iron provided with a transverse pin D, engaging said notches, the cap pivoted to the bearing-arms and having the depending arms I, provided in their lower edges with the notches J, engaging the ends of the pin D, and in their front edges with the recesses N, and the locking-levers pivoted on the upper sides of the bearing-arms at the front ends of the same, engaging the recesses N and passing rearward alongside the arms I, as set forth.

405,415. BAR FOR THE MANUFACTURE OF SHOVEL-BLANKS. JAMES J. JOHNSTON, Columbiana, Ohio, assignor to Henry M. Myers, Beaver Falls, Pa. Filed Apr. 4, 1889. Serial No. 305,919. (No model.)



Claim.—As an article of manufacture, a bar for making double shovel-blanks, said bar having projections on its edges opposite each other, and the distance between the centers or lines *x* of said projections being about equal to the width of a shovel-blade, substantially as described.

405,416. METHOD OF MAKING SHOVEL-BLANKS. JAMES J. JOHNSTON, Columbiana, Ohio, assignor to Henry M. Myers, Beaver Falls, Pa. Filed Apr. 4, 1889. Serial No. 305,920. (No model.)



Claim.—1. The method of manufacturing double shovel-blanks to the shearing-point, which consists in producing a bar with projections on its edges opposite each other, severing the bar between the projections into sections of a length about equal to the width of a shovel-blade, reducing the sections by rolling them into double shovel-blanks, then severing the double blanks transversely, and finally pointing each single blank separately, substantially as described.

2. The method of manufacturing double shovel-blanks, which consists in severing sections from a bar having projections on its edges opposite each other, splitting the projections, reducing the sections by rolling them in the direction of the projections and forming double shovel-blanks, then severing the double blanks transversely, and finally pointing each blank separately, substantially as described.

405,417. METHOD OF MAKING HAT-SWEATS. CHARLES E. KEATOR, Brooklyn, N. Y. Filed Feb. 28, 1889. Serial No. 300,983. (No model.)

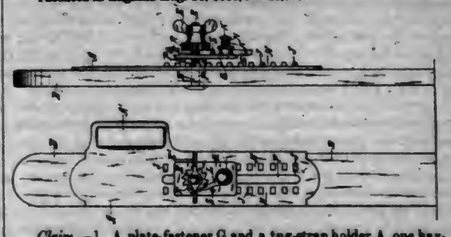


Claim.—1. The mode herein described of making a hat-sweat of the proper size, said mode consisting in laying the sweat around a former of the desired size, with the ends of the sweat lying over each other, and cutting one end of the sweat upon the said former, all substantially as set forth.

2. The mode herein described of making a hat-sweat of the proper size, said mode consisting in laying the sweat around the former of the desired size, with the ends of the sweat overlying each other, and cutting both ends of the sweat upon the said former, all substantially as set forth.

3. The mode herein described of making a hat-sweat of the proper size, said mode consisting in laying the sweat around a former of the desired size, with one end overlying the other, and then cutting both the overlying ends upon a zigzag line upon the said former, all substantially as specified.

405,418. TUG-STRAP HOLDER FOR LOOMS. THOMAS KNUBLEY, Sarnia, Ontario, Canada, assignor of one-half to George H. Matheson, same place. Filed Sept. 27, 1888. Serial No. 286,523. (No model.) Patented in England Aug. 20, 1888, No. 11,990.



Claim.—1. A plate-fastener G and a tug-strap holder A, one having recesses H and the other projections P, fitted loosely to said recesses, in combination with means for clamping them together and to the side of a picking-stick, as and for the purpose set forth.

2. The stud or flange S, in combination with the plate-fastener G, pin or bolt K, having head or shoulder K', spring N, dog L, thumb-nut E', ratchet R, and bolt E, as and for the purpose set forth.

3. A plate-fastener G and a tug-strap holder A, one having recesses H and the other projections P, fitted loosely to said recesses, in combination with a picking-stick and means for clamping them together and to the side of the picking-stick, as and for the purpose set forth.

4. A plate-fastener G and a tug-strap holder A, one having recesses H and the other projections P, fitted loosely to said recesses, in combination with a ratchet R, thumb-nut E', bolt E, picking-stick D, dog L, spring N, pin K, formed with shoulder K', and stud or flange S, as and for the purpose set forth.

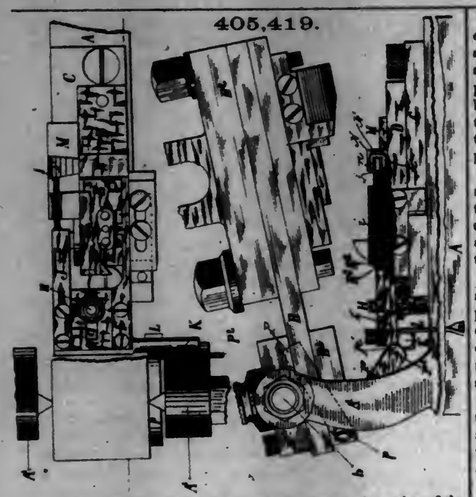
405,419. TYPE-CASTING MOLD. HENRY KLEBS, Chicago, Ill., assignor to Barnhart Bros. & Spindler, same place. Filed Sept. 7, 1888. Serial No. 284,792. (No model.)

Claim.—1. In a mold for casting type, in combination with the fixed member of the mold, and a bar reciprocating therein having its forward end constituting part of the type-body-forming face of the mold, an arm actuated by the arm which carries the oscillating member of the mold and actuating said reciprocating bar, substantially as and for the purpose set forth.

2. In a mold for casting type, in combination with the fixed member of the mold, and a bar reciprocating therein having its forward end constituting part of the type-body-forming face of the mold, an arm actuated by the arm which carries the oscillating member of the mold and actuating said reciprocating bar, and a spring reacting against the bar to resist its forward thrust, substantially as set forth.

3. In a mold for casting type, in combination with the fixed member of the mold, and a bar reciprocating therein having its forward end constituting part of the type-body-forming face of the mold, an arm connected to the arm which carries the oscillating member of the mold and engaging the reciprocating bar, the connection of said

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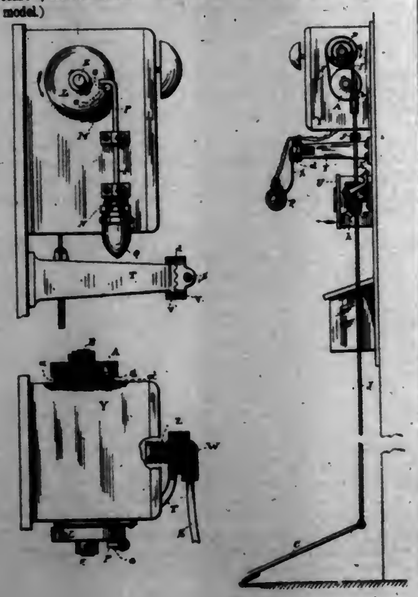


arm to the oscillating member being such as to permit motion of the arm thereat, whereby it may be moved aside at will to prevent its engagement with the reciprocating bar, substantially as set forth.

4. In a mold for casting mortised type, in combination with the carriage and body secured thereon having a fixed core, and a reciprocating bar underneath the core having its forward end constituting part of the type-body-forming face of the mold, an arm actuated by the arm which carries the upper member of the mold and actuating the reciprocating bar, and a spring reacting against the bar to resist its forward thrust, substantially as and for the purpose set forth.

5. In combination with the carriage and the body having the fixed core, the reciprocating bars I and J, the former lying underneath the core, the latter projecting through the vertical wall of the jet-block, said reciprocating bars being rigidly united at the rear end, and a laterally-projecting arm K, rigid with them both, the arm P, actuated by the arm which carries the upper member of the mold and contacting the arm K, and a spring L, reacting against said arm on the opposite side from the contact of the lever P, substantially as and for the purpose set forth.

405,420. ATTACHMENT FOR TELEPHONES. HERMANN KOHLOW, Cleveland, Ohio. Filed Jan. 7, 1889. Serial No. 295,711. (No model.)



Claim.—1. The combination, with a telephone, the pulley A, secured to the shaft of the magneto-bell, the pulley D, and disk L, of a shaft transversing the said bell-casing, a flexible band connecting the said pulleys, a treadle having a rod and flexible attachment with the pulley D, the disk L being arranged to control the movements of the button M and provided with means to lift the lever N, a weight Q to depress said lever, and a spring on the magneto-bell shaft to raise the treadle, constructed and arranged substantially as and for the purpose described.

2. In a telephone apparatus, the combination, with a connecting-rod, of a treadle for turning the shaft of a telephone magneto-bell, the guide *e* for said rod, the hook *h*, hinged to said guide, and the spring *j*, bearing upon said hook, and a collar attached to said rod to arrest the movement of said treadle, constructed and arranged substantially as and for the purpose specified.

3. In telephone attachments, the combination of the pulleys A and D, a band connecting said pulleys, a volute spring G within the pulley A and attached to the shaft thereof, a band I on the extension of the pulley D, for connection with the rod of a treadle, a collar *f* on said rod, the guide *e* for said rod, and the hook *h*, arranged in relation to said collar, for the purpose described, and substantially as shown.

4. With a telephone, the combination of the knob M, rod P, and revoluble disk L, the inner face side of said disk arranged to receive and depress the knob M, the outer face side provided with a lug O to lift the rod P and lever N, in the manner as and for the purpose described.

5. The combination, at the side of the telephone, of the knob M, rod P, and disk L, said disk having a tapering depression in the inner face side, and a lug projecting from the outer face side thereof to operate simultaneously in depressing the knob M and lifting the rod P of the lever N, substantially in the manner as described and shown.

6. With a telephone, the combination of the shaft B, the pulley A, pulley D, and treadle C, the pulley A being secured to the shaft B and the treadle C to an extension H of pulley D, the pulleys A and D connected with a band F and the pulley H with the treadle by means of the band I and rod J, constructed and arranged substantially in the manner as set forth, and for the purpose specified.

7. In combination with the shaft B, the pulleys A D, with bands F and I, connected to a treadle for turning said shaft, and a spring attached to said shaft and the side of a telephone for reverse rotation of said shaft, constructed and arranged substantially as described, and for the purpose set forth.

405,421. WATER-PROOF MATERIAL FOR COATS. JAMES W. LANE, New York, N. Y. Filed Dec. 15, 1888. Serial No. 293,721. (No model.)



Claim.—1. An improved material for articles of clothing, consisting of a textile fabric having raised figures or ribs on one side and a smooth surface on the other side and a coating of rubber on the smooth side, substantially as set forth.

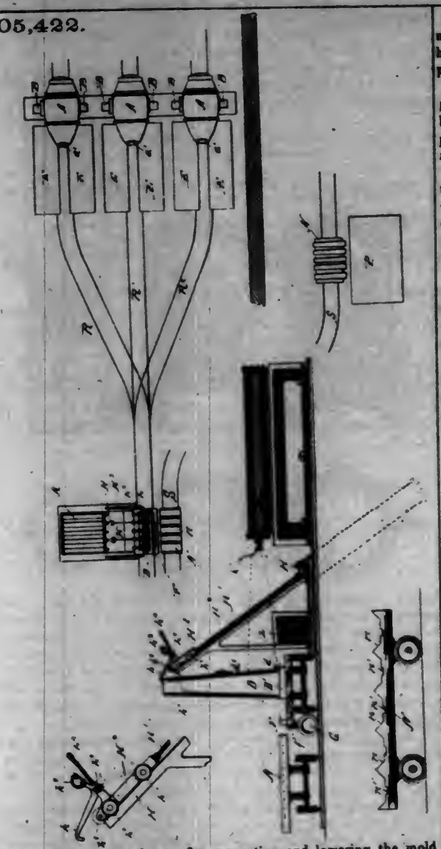
2. An improved material for articles of clothing, consisting of a textile fabric having raised figures or ribs on one side intersecting one another and a smooth surface on the other side and a coating of rubber on the smooth side, substantially as set forth.

405,422. APPARATUS FOR THE MANUFACTURE OF STEEL. CROMLEY LAW and CHARLES R. HOWE, South Chicago, assignors of one-tenth to Enoch Ward, Chicago, Ill. Filed Dec. 18, 1888. Serial No. 293,867. (No model.)

Claim.—1. The combination, with a rotary converter, of fixed or stationary supports upon and between which it swings, a mold-car carrying a series of molds, and a fixed track for said car extending between said supports and under said converter, and a bowl or funnel C, said bowl or funnel being mounted on an adjustable carriage, and a platform upon which said funnel-carriage travels extending above and parallel to said track, substantially as specified.

2. The combination, with a car having a pivoted mold mounted

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thereon, of an inclined ram for supporting and lowering the mold into a horizontal position, a support L for the mold to rest upon, and inclined guides for the piston of said ram, substantially as specified.

3. The combination of a converter, a mold-car having a series of molds mounted thereon, a mold-car track extending from the converter to a stripping-plant, and a stripping-plant consisting of an inclined ram furnished with a grappling device for tilting the molds into a horizontal position and a horizontal ram for pushing the ingots out of the molds, substantially as specified.

4. The combination of a converter, a mold-car having a series of molds mounted thereon, a mold-car track extending from the converter to a stripping-plant, consisting of an inclined ram furnished with a grappling device for tilting the molds into a horizontal position, and a horizontal ram for pushing the ingots out of the molds, said molds being hinged or pivoted to the mold-car, substantially as specified.

5. The combination, with a car having a series of pivoted molds mounted thereon, of a pair of inclined hydraulic rams, a cross-head connecting the same, whereby the whole series of said molds may be simultaneously lowered, and inclined guides for said cross-head to travel on, said cross-head being furnished with grappling devices to engage said molds, substantially as specified.

6. The combination, with a mold-car having a series of molds mounted thereon, of an inclined ram H, having a grappling device, and a horizontal ram K, substantially as specified.

7. The combination, with a mold-car having a series of molds mounted thereon, of an inclined ram H, having a grappling device, a horizontal ram K, and a support L, said molds having holding notches or projections *d* to engage said support, substantially as specified.

8. The combination, with a mold-car having a series of molds mounted thereon, of an inclined ram H, having a grappling device, and a horizontal ram K, a track upon which said mold-car travels, and a second track adjacent thereto for another car, so that the act of pushing the ingots out of the molds will deliver the same upon said car, substantially as specified.

9. The combination, with a car having a series of pivoted molds mounted thereon, of an inclined ram having a piston furnished with a hook or grappling device at its upper end adapted to engage the upper end of the mold, substantially as specified.

10. The combination, with a car having a series of pivoted molds mounted thereon, of an inclined ram having a piston furnished with a hook or grappling device at its upper end adapted to engage the upper end of the mold, and inclined guides for said piston, substantially as specified.

11. The combination, with a car having a pivoted mold mounted thereon, of an inclined ram for supporting and gradually lowering the mold in a horizontal position, and a support L for the mold to rest upon, said mold having a holding notch or projection adapted to engage said support, and a horizontal ingot-extractor ram, substantially as specified.

12. The combination, with a car having a series of pivoted molds mounted thereon, of a pair of inclined hydraulic rams, and a cross-head connecting the same, whereby the whole series of said molds may be simultaneously lowered, said cross-head being furnished with hooks or grappling devices, substantially as specified.

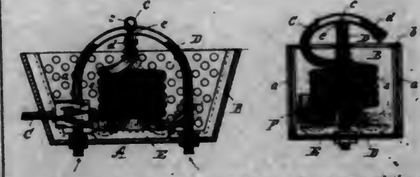
13. The combination, with a car having a series of pivoted molds mounted thereon, of a pair of inclined hydraulic rams, a cross-head connecting the same, whereby the whole series of said molds may be simultaneously lowered, said cross-head being furnished with hooks or grappling devices, and inclined guides for said cross-head to travel on, substantially as specified.

14. The combination of converter A, platform E, bowl or funnel C, its carriage C' and track *c'* on said platform E, mold-car F and molds D mounted thereon, and hydraulic ram G, having piston G' furnished with coupling-head *g*, substantially as specified.

15. The combination of a converter, a mold-car having a series of molds mounted thereon, a mold-car track extending from the converter to a stripping-plant, and a stripping-plant consisting of an inclined ram furnished with a grappling device for tilting the mold into a horizontal position and a horizontal ram for pushing the ingots out of the molds, and a furnace-car and furnace-track adjacent to said stripping-plant, said horizontal ram operating to push the ingot out of the mold and onto the furnace-car, substantially as specified.

16. The combination of a converter, a mold-car having a series of molds mounted thereon, a mold-car track extending from the converter to a stripping-plant consisting of an inclined ram furnished with a grappling device for tilting the molds into a horizontal position and a horizontal ram for pushing the ingots out of the molds, said molds being hinged or pivoted to the mold-car, and a furnace-car and furnace-track adjacent to said stripping-plant, said horizontal ram operating to push the ingot out of the mold and onto the furnace-car, substantially as specified.

405,423. HYDROCARBON-HEATER. LEVI W. LOMBARD, Boston, Mass., assignor to the Petroleum Fuel Company, of Maine. Filed Mar. 12, 1888. Serial No. 303,007. (No model.)



Claim.—1. A hydrocarbon vaporizer and burner consisting of a combustion-chamber, a coiled vaporizing-pipe therein terminating in a curved end portion and provided with a delivery-orifice located some distance from the end of said pipe and in a plane above its termination, and an air-supply pipe, substantially as and for purposes herein specified.

2. A hydrocarbon vaporizer and burner consisting of a perforated combustion-chamber, a coiled vaporizing-pipe with a bent terminal having a fuel-orifice transversely of its bore and located at some distance from the extreme end of said pipe and in a plane above it, an air-supply pipe open at both ends, and with an aperture aligned with the fuel-orifice to permit fuel to pass directly across the bore of the air-pipe, all operating substantially as herein described.

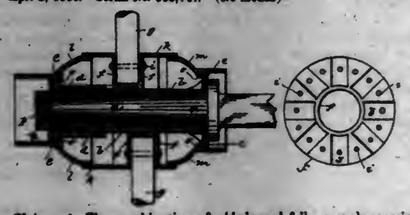
3. In combination with a stove, a removable foraminated chamber B, a liquid-fuel feed-pipe C, terminating in a helix within said chamber, a heater F, and an air-supply pipe D, both within said chamber, said pipes C and D being provided with apertures *b c*, arranged in alignment and the aperture in the liquid-fuel pipe being above the end thereof, substantially as set forth.

4. In combination with a heating or cooking apparatus, a combustion chamber or box B, provided with foraminated removable sides and top, a heater F therein, a fuel-supply pipe C, connected with said

heater, and the coil *a*, terminating in a bend, the supply-orifice *c* in the top of said bend, the air-supply pipe D, with its transverse aperture *e*, the orifice *c* being above the end of pipe C, substantially as described.

5. In combination with a heat or steam generating apparatus, a foraminated combustion-chamber B, a fuel feed-pipe C, terminating in a helix within said chamber, a heater F, and air-supply pipes D, both within said chamber, said pipes terminating at their upper ends at a point adjacent to but to one side of the fuel-pipe C, and the delivery fuel-orifice *c*, transversely of the fuel-pipe and in alignment with the space between the ends of said air-pipes, substantially as herein described.

405,424. VEHICLE-WHEEL. JOHN B. LOTT, Kittanning, Pa. Filed Apr. 2, 1889. Serial No. 305,747. (No model.)



Claim.—1. The combination of a U-shaped felly, a spoke passing through the same, a wedge or cap shaped piece fitted within the felly on a plane below the edges thereof, a rivet which unites the felly, spoke, and cap-shaped piece together, and a tire having the recesses or grooves in its edges which receive the edges of the tire, all arranged and combined substantially as described.

2. The combination of a U-shaped felly, a spoke having a longitudinally-divided end passing through the felly, and a fixed piece fitted between the divided ends of the spoke within the felly, substantially as described.

3. In combination with the felly *r*, the tubular spokes *g*, projecting into the same, the wedge-shaped piece *i*, and divided end *y* of the spoke *g*, and the bolt or rivet *h*, as and for the purpose described.

405,425. BARREL-BUNG. JOHN LOURIN, West Bay City, Mich. Filed Nov. 15, 1888. Serial No. 290,868. (No model.)



Claim.—1. In a barrel-bung, the combination, with the bushing *a*, having the tapering portion *c*, and the flange *d*, provided with the groove *f* and the lug *e*, of the packing-ring *g* within the groove, the cover *m*, secured by the pivot *p* to the lug *e* and provided with the incline *q* and the stop *t*, and the portion *s*, projecting upwardly from the said flange *d* and provided with the hook *r*, engaging with the said incline *q*, substantially as set forth.

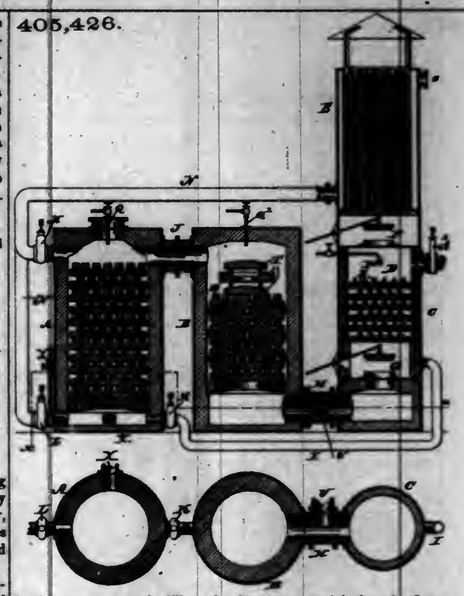
2. The combination, in a barrel-bung, of the bushing *a*, having in its central opening a seat *h* and the lower tapering portion *c*, and provided with a flange *d*, having the groove *f* and packing-ring *g*, the cover *m*, pivotally secured to the upper side of the flange *d*, with the perforated cover *i* upon the said seat *h*, and with one edge hinged to the bushing *a*, substantially as set forth.

405,426. APPARATUS FOR THE MANUFACTURE OF HYDROCARBON GAS. LEWIS P. LOWE, Lynn, Mass. Filed Apr. 4, 1888. Serial No. 269,603. (No model.)

Claim.—1. In an apparatus for manufacturing hydrocarbon gas, the combination of the chambers A B, lined with refractory material each having a filling of open-work refractory material and the chamber A having an outlet *x* in its base, the flue J, connecting said chambers above said refractory filling, the air-blast pipe L, with an injected oil-pipe having the valve Y, said pipe L entering the base of the chamber A, the stack C, with upward continuation E, with interior tubes and an air-opening O, the said stack C connected to chamber B by the tube H below the refractory filling of said stack and chamber, the spray water-pipe P, leading into stack C above the bars Z therein, and the hydrocarbon-pipe Q', leading into chamber B at the top thereof, substantially as and for the purpose set forth.

2. In an apparatus for manufacturing hydrocarbon gas, the combination of the chambers A B, lined with refractory material and each

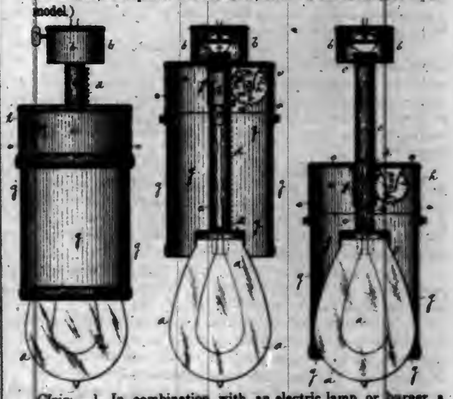
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having an open-work filling of refractory material, the tube J, connecting said chambers above said filling, the stack C, with top and bottom valves F and G and filling-bars Z, the tube H, connecting chamber B and stack C below said fillings and having side outlet U, the water-spray pipe P, leading in stack C above said bars Z, the pipe I, leading from the stack C below said bars Z to the base of said chamber A, and the hydrocarbon-pipes Q', leading into top of said chamber B', substantially as and for the purpose set forth.

3. In an apparatus for manufacturing hydrocarbon gas, the combination of the chambers A and B with refractory linings, coal filling in chamber A and refractory open filling in chamber B, the connecting-tube J, the stack C, with continuation E, having air-opening O, the hot-air-blast pipe N, with valve M, leading into top of chamber A, the air-blast pipe L, with valve at base of chamber A, the tube H, connecting the chamber B and the stack C below their fillings of open-work refractory material and having the outlet U, and the pipe I, leading from stack C to base of chamber A, substantially as and for the purpose set forth.

405,427. SHEATH FOR REGULATING LIGHT FROM ELECTRIC LAMPS. WILLIAM H. MELANEY, Pittsburg, Pa., assignor of one-half to R. C. Totten, same place. Filed Dec. 12, 1887. Serial No. 257,547. (No model.)



Claim.—1. In combination with an electric lamp or burner, a substantially opaque sheath surrounding and longitudinally adjustable over the lamp, substantially as and for the purposes set forth.

2. In combination with an electric lamp or burner, a tubular extension secured thereto, and a substantially opaque sheath mounted

on said extension and surrounding and longitudinally adjustable over said lamp, substantially as and for the purposes set forth.

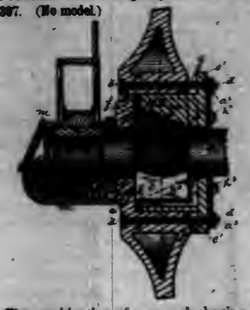
3. In combination with an electric lamp or burner, a tube or extension secured thereto and having a rack-face thereon, a sheath mounted on said extension and surrounding said lamp, and a pinion carried by said sheath and engaging with said rack, substantially as and for the purposes set forth.

4. In combination with an electric lamp or burner, a tube or extension secured thereto, and a sheath mounted on said extension and surrounding the lamp, and having a spring-lip or friction device adapted to hold the sheath in any desired position, substantially as set forth.

5. In combination with an electric lamp or burner, a substantially opaque sheath surrounding and longitudinally adjustable over the lamp, and a shade or reflector carried by and at the base of the sheath, substantially as and for the purposes set forth.

6. In combination with the electric lamp *a*, the tube or extension *e*, having the rack *d*, the sheath mounted on said tube and having the tubular extension *f*, provided with the spring-lip *l*, and the pinion engaging said rack, substantially as and for the purposes set forth.

405,428. CAR-AXLE. WILLIAM H. MELANEY, Pittsburg, assignor of one-half to Robert C. Totten, Allegheny, Pa. Filed July 9, 1888. Serial No. 279,267. (No model.)



Claim.—1. The combination of a car-axle having a bulb or ball journal with a wheel mounted thereon, bearing-chucks corresponding in shape to and fitting around said bulb-journal, and a sleeve or follower secured to the wheel and holding said chucks in position, substantially as and for the purposes set forth.

2. The combination of a car-axle having a bulb or ball journal with a wheel mounted thereon, bearing-chucks corresponding in shape to and fitting around said journal and having wedge-faces on their outer sides, and a sleeve or follower secured to the wheel and holding said chucks in position, and provided with corresponding wedge-faces, whereby said chucks can be adjusted on said bearing, substantially as and for the purposes set forth.

3. The combination of the car-axle having the bulb-journal *a'* and shoulders a^2 at each end thereof, with the wheel mounted thereon, the bearing-chucks corresponding in shape to and fitting around the bulb and having end faces b^2, and the sleeve or follower secured to the wheel and holding said chucks in position, substantially as and for the purposes set forth.

4. The combination of the axle having the bulb-journal *a'*, with a wheel mounted thereon, the chucks *b*, having the wings *b'* and inclined faces b^3, the sleeve or follower *c*, having the seats c^2, and the projecting inclined faces c^3, adapted, respectively, to hold the said wings and press against said inclined faces, substantially as and for the purposes set forth.

5. The combination of the axle, the wheel-body having lugs *i*, the sleeve or follower *c*, having the flange *c'*, provided with seats c^2, the chucks *b*, bolts *d*, and nuts d^2, for tightening said chucks, substantially as and for the purposes set forth.

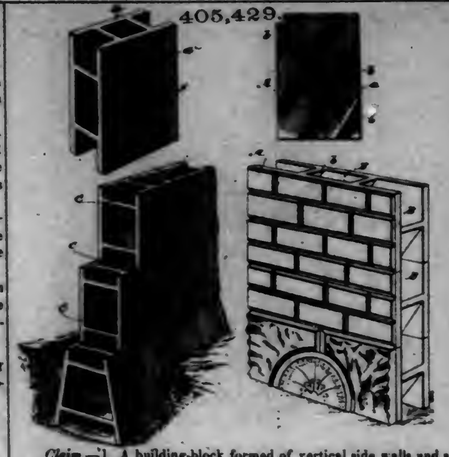
6. The combination, with a wheel having the bearing-chucks *b*, of the oil port or ports *e*, leading into the spaces *c'* between the chucks *b*, substantially as and for the purposes set forth.

7. The combination, with a wheel having the bearing-chucks *b*, of the oil port or ports *e*, leading into the spaces *c'* between the chucks *b*, and the annular oil-space *k*, substantially as and for the purposes set forth.

8. The combination, with an axle having a bulb-journal, a wheel mounted thereon, and the sleeve or follower *c*, of a locking-plate *h*, having projections *h'* and depressions h^2 secured to the flange *c'* by set-screws h^3, fitting in slots h^4 and adapted to move therein, and the nuts d^2, substantially as and for the purposes set forth.

405,429. BUILDING-BLOCK. JOHN A. MIRON, New Orleans, La. Filed Mar. 21, 1889. Serial No. 304,236. (No model.)

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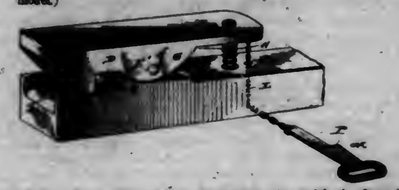


Claim.—1. A building-block formed of vertical side walls and a series of parallel inclined chambers, substantially as shown and described.

2. A building-block formed of parallel side walls and transverse parallel diagonally-arranged partitions made integral with said side walls, and forming inclined parallel chambers, substantially as shown and described.

3. As a new article of manufacture, a building-block constructed of clay, metal, or other desired material, formed of parallel side walls and transverse diagonal partitions cast integral therewith, said partitions forming parallel diagonally-disposed chambers opening in the sides and ends of said block, substantially as and for the purpose specified.

405,430. CAR-COUPLING. J. CEYLON PEARLEE and FRED W. BEAVAN, Hudson, N. Y. Filed Apr. 24, 1889. Serial No. 308,426. (No model.)



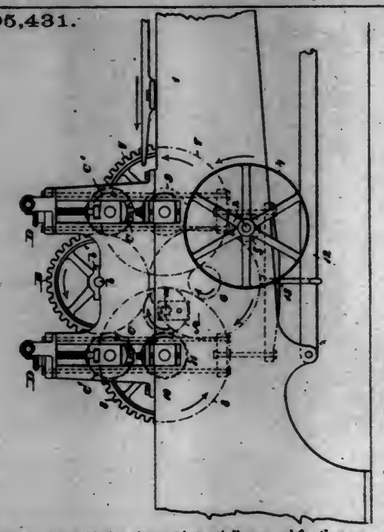
Claim.—In a car-coupling, the combination, with the draw-head having its forward end recessed and shouldered and provided with the fulcrum, of the coupling-jaw pivoted to the draw-head and having its forward end beveled and provided with a shoulder on its under side, the said jaw also having a recess to form depending flanges, which are perforated, the coupling-bolt connecting the jaw to the draw-head, the spring-surrounded rod connecting the rear end of said jaw to the draw-head, the loop-bracket, and the shouldered key passing through said bracket and connected with the rear frame of the pivoted jaw by means of a chain passing through an aperture in the draw-head, substantially as specified.

405,431. PLANING MACHINERY. LAURENCE POWER, Philadelphia, Pa., assignor to L. Power & Co., same place. Filed June 6, 1888. Serial No. 276,236. (No model.)

Claim.—1. In a feeding mechanism for planing machinery, the frame-work, the driving-gear, the train of gearing operated thereby, the lower feed-rolls operated by said gearing, the upper feed-rolls vertically adjustable in the frame, the gear-wheels carried by said upper feed-rolls, and the shaft mounted rigidly in the frame, carrying gear-wheels which mesh with the gear-wheels of the upper feed-rolls and operating the same, all arranged and operating substantially in the manner and for the purpose described.

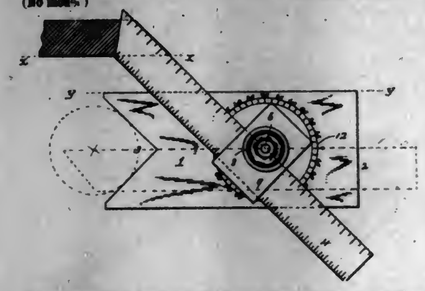
2. The frame-work 1, with driving-shaft journaled therein, in combination with the train of gearing 5, 6, 7, and 8, the lower feed-rolls 9 and 10 on the shafts of said gears 7 and 8, the upper feed-rolls C C, with gear-wheels C C on the shafts thereof, the shaft *b*, with gear-wheels B thereon meshing with gear-wheels C C, said shaft *b* and shafts of lower feed-rolls being journaled in fixed bearings in the frame-work of the device, and the shafts of the upper feed-rolls having

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vertically-adjustable bearings, substantially as and for the purpose set forth.

405,432. CENTER-SQUARE, BEVEL, AND PROTRACTOR. WALLACE R. PRATT, Boston, Mass. Filed Apr. 15, 1889. Serial No. 307,328. (No model.)



Claim.—1. As a new article of manufacture, a try and bevel square composed of a stock formed with an internal right angle at one end, a graduated circle inscribed upon its upper surface having its center coincident with the central longitudinal axis of the stock, a pivotal blade thereon, and the clamping mechanism, as described, the reading-edge of the blade and the locking-bolt coinciding with the center of the graduated circle, substantially as herein set forth.

2. In combination with the stock of a bevel inscribed with a graduated circle centered upon the longitudinal central axis of said stock, the bolt slotted to its center transversely of said stock, the pivotal clamp-plate, and the blade moving axially with said bolt, the center of the bolt, the bottom of the bolt-slot, and the reading-edge of the blade all coinciding with the center of the graduated circle, substantially as and for purposes specified.

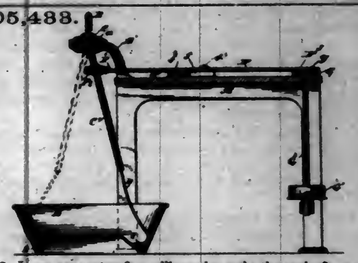
3. In a bevel and try square, the interiorly right-angled stock 1, the graduated circle 12 thereon, the transverse bolt 6, slotted at 7, and the clamp-plate 9 axially thereof, with its slot 10, combined with a blade 4, which engages said slots 7 10, movable axially and transversely through said bolt and held by the thumb-nut 8, substantially as herein stated.

405,438. ROD-COILING APPARATUS. ALFRED REBHAHN, Cleveland, Ohio. Filed Feb. 23, 1889. Serial No. 300,980. (No model.)

Claim.—1. A wire-rod-coiling machine consisting, in combination, of the main frame A, the block *f* on the main frame, the vibrating arm F, in connection with said block *f*, and attached at its front end to the distributer C, provided with the joint C, the opposite end being secured to disk G or its equivalent, the receptacle E, having a slot *h*, and means for operating said machine, substantially as shown.

2. In an apparatus for coiling wire rods, the receptacle E, provided with a slot *h* and having its bottom elevated toward its center, substantially as shown.

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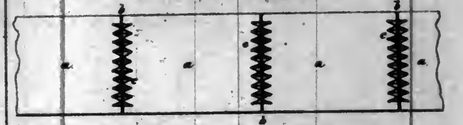
3. In an apparatus for coiling wire rods, the main frame A, provided with the overhanging arm A', having a bearing adapted to support the distributer C, in combination with the pivotal block *f* and the vibrating arm F, and means for operating said arm, substantially as shown.

4. In an apparatus for coiling wire rods, the vibrating arm F, pivoted to the sliding block *f* on the main frame A, substantially as shown.

5. The combination, in a wire-rod-coiling machine, of the distributer C, having a hollow ball-joint C, with the vibrating arm F pivoted to the sliding block *f*, substantially as shown.

6. The combination, in a wire-rod-coiling machine, of the coil-receptacle E, provided with a slot *h* and having its bottom elevated toward its center, with the distributer C and means for rotating said distributer, consisting of the vibrating arm F, pivoted to the sliding block *f*, and the crank-disk G or its equivalent, substantially as shown.

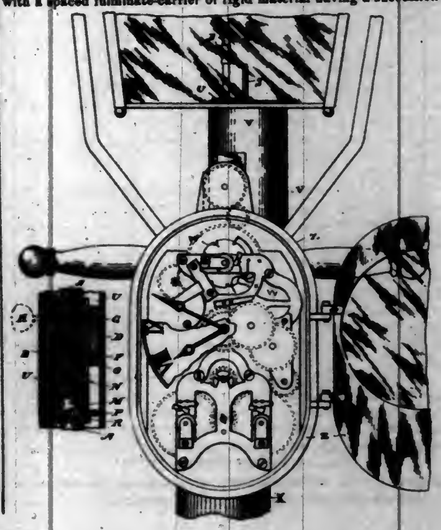
405,434. BELTING. CHARLES A. SCHIEREN, Brooklyn, N. Y. Filed Dec. 10, 1888. Serial No. 293,073. (No model.)



Claim.—The herein-described belt, composed of a series of singly-ply sections of selected leather having abutting ends and transverse continuous wire-stitching uniting said butt joints or ends, whereby longitudinal strains upon the belt are transmitted and equalized transversely throughout the width of the joints, substantially as described.

405,435. AUTOMATIC GAS LIGHTING AND EXTINGUISHING APPARATUS. NATHANIEL H. SHAW, Somerville, and AI R. SHAW, Medford, Mass.; said Nathaniel H. Shaw assignor to the American Automatic Gas Lighting Company, Portland, Me. Filed Aug. 31, 1888. Serial No. 284,249. (No model.)

Claim.—1. The combination of the gas-burner and rotary cock with a spaced fulminate-carrier of rigid material having a succession



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of fulminate charges permanently attached thereto, an igniting device, and a time mechanism for automatically actuating them, substantially as set forth.

2. The combination of the gas-burner, rotary cock, and time mechanism, with a solidly-filled fulminate-carrier having spaced pits, and the explosive compound permanently fixed therein, and an igniting device, substantially as and for the purpose set forth.

3. The combination of the gas-burner, rotary cock, time mechanism, and hammer, with a rotary carrier having in its face a series of accurately-spaced pits or depressions containing fulminate, substantially as and for the purpose set forth.

4. The combination of the gas-burner, rotary cock, time mechanism, and hammer, with a cylindrical rotary fulminate-carrier provided in its periphery with a succession of pits or depressions to localize the explosive material, substantially as set forth.

5. The combination of the gas-burner, rotary cock, time mechanism, and hammer, with a rotary and longitudinally-movable cylinder having at regular intervals peripheral pits containing fulminate, and with a suitable feed mechanism to bring such pits beneath the hammer, substantially as and for the purpose set forth.

6. The combination of gas-burner, rotary cock, hammer, and time mechanism, with a cylindrical fulminate-carrier having peripheral fulminate charges arranged in succession spirally, and with an automatic feed mechanism having a shaft screw-threaded to correspond in pitch with the spirally-arranged fulminate deposits on said cylinder, substantially as set forth.

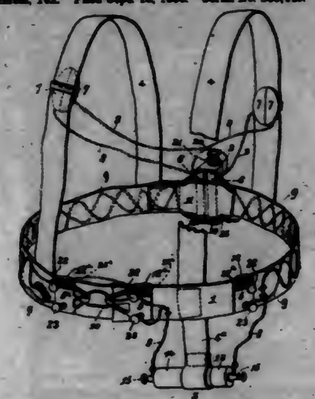
7. In an automatic gas-lighting apparatus, the gas-burner and rotary cock, the spark-forming device consisting of a hammer and rotary cylinder having spirally-arranged peripheral pits containing fulminate, a screw-threaded central shaft of corresponding pitch, a slotted tube interposed between said shaft and cylinder, a ratchet and pawl to actuate said tube, and a pin from said cylinder traversing the tube-slot and engaging with said screw-thread, substantially as set forth.

8. In an automatic gas-lighting apparatus, the combination of a suitable spark-forming device with the burner, a secondary gas-jet arranged to discharge a limited amount of gas beside the burner when the spark is formed, and with a rotary cock having double gas-passages, as described and shown, adapted to supply gas to said secondary jet momentarily and to the burner permanently, for the purpose set forth.

9. In an automatic gas-lighting apparatus, substantially as described, the spark-forming devices, the burner, and the rotary cock having double gas-passages, as described and shown, in combination with a secondary gas-pipe having lateral perforations arranged one above another from the spark-point toward the burner, for the purpose set forth.

10. In an automatic gas-lighting apparatus, substantially as described, the spark-forming devices, the burner, and rotary cock, in combination with a secondary lighting-tube and an inclosing-shell adapted to carry the flame upwardly from such tube, substantially as set forth

405,436. ELECTRO-MEDICAL BELT. WILLIAM J. SEELEYE, Columbia, Tex. Filed Sept. 15, 1888. Serial No. 285,469. (No model.)



Claim.—1. In an electro-medical appliance, the combination, with a belt or other support, adjustable contact-plates 5 7, distributed over said support and having binding-posts, suitable conductors secured to the appliance, an electric battery, an induction-coil carried by the appliance and connected to the conductors, and conductors running from the secondary wire of the induction-coil and adapted to be connected to the different contact-plates at will, substantially as herein set forth.

2. In an electro-medical appliance, substantially as described, the combination, with the support 1 4, battery 2, sling 4', for supporting said battery, induction-coil 3, having contacts 6, forming a clamp for holding the coil to the support, contact-plates 5 7, secured to the support, and conductors 8 9, connecting the battery with the induction-coil and the induction-coil with the contact-plates, respectively, substantially as shown.

3. In an electro-medical appliance, substantially as described, the combination, with a support, a clasp for securing said support, a battery, a device for imparting a current of electricity to the body, and connection between the battery and said device, said connection including in circuit the clasp for securing the support, whereby the connection is broken when said support is removed, substantially as set forth.

4. In an electro-medical appliance, substantially as described, the combination, with the support, battery and induction coil carried by said support, connection between said battery and induction-coil, contact-plates on the support, conductors running from said induction-coil and adapted to be secured to any and all of the plates, and insulating-covers 11, adapted to insulate the contact-plates from the body and fold back from said plates, as and for the purpose explained.

5. The electric battery to be applied to medical belts, substantially as described, consisting of the correspondingly screw-threaded cylindrical cups 13 14, having binding-screws 15, a cup-shaped electrode 16, secured to one of the cups of the cell, and an elongated electrode 26, secured in the other cup by a binding-post, and having the insulating-knob 27, one of said cups also having a vent-hole 18, closed by a screw-plug 19, all substantially as herein described.

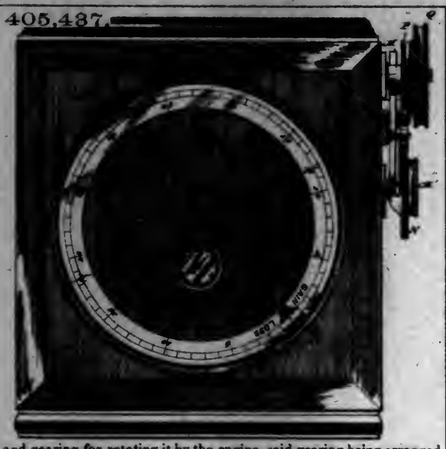
6. In an electro-medical appliance, substantially as herein described, an induction-coil for application to such appliance, consisting of the coil 3, longitudinal insulated contact-plates 6, connected to the secondary wire of the induction-coil and forming a clamp for securing the coil to the appliance, and a movable sleeve 20, having a binding-screw 21, for securing said sleeve at any desirable point, all substantially as hereinbefore described.

7. In an electro-medical appliance, substantially as described, the combination, with suitable generators and conductors running therefrom, of the metallic plates 5, having binding-screws 22 23, one of said binding-screws on each plate being insulated from the plate and the other making electrical connection therewith, substantially as shown, whereby the insulating-screws may be used for a primary conductor, and the secondary screws may be used to connect the plates as contact-plates to the secondary conductor, substantially as described.

405,437. SPEED-INDICATOR. ALBERT R. SHERMAN, Pawtucket, R. I. Filed Dec. 26, 1888. Serial No. 294,701. (No model.)

Claim.—1. A speed-indicator consisting of the combination, with a time-clock having the usual graduated face and moving index-hands, of an additional or supplemental dial or scale having circular graduations marked thereon and arranged to travel around the clock-dial,

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and gearing for rotating it by the engine, said gearing being arranged outside the clock mechanism, substantially as described.

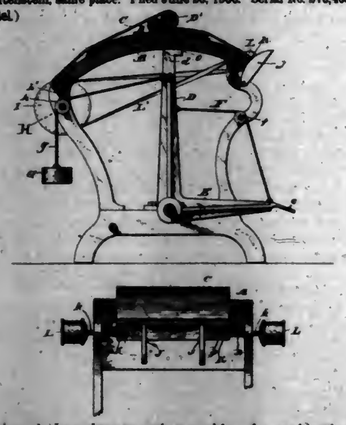
2. A speed-indicator consisting of the combination, with a time-clock, of an annular dial surrounding the clock-dial and graduated, as described, and gearing for connecting the annular dial to the engine, substantially as described.

3. The combination, with a time-clock, of an annular dial surrounding the clock-dial, a toothed disk or wheel arranged behind the clock and having a cuff or flange extending around the clock and adjustably connected to the annular dial, and a gearing connecting the toothed disk to the engine, substantially as described.

4. The combination, with the gears of a speed-indicator, of a ratchet-wheel, oscillating arm hung upon the axis of said wheel and provided with segment M' and a pawl, a detent for the ratchet-wheel, and a weight with cord passing over the said segment and over a pulley, substantially as and for the purpose described.

5. The combination, with the clock-frame and the case, of a bolt C, a flanged sleeve D, surrounding the bolt, the washer E, arranged between the clock-frame and the sleeve, and the disk or toothed wheel F, arranged to rotate between the flange of the sleeve and the washer, substantially as described.

405,438. CIGAR-WRAPPING MACHINE. JAMES E. SMITH, New York, N. Y., assignor of two-thirds to Adolph Moonelis and Benjamin Lichtenstein, same place. Filed June 28, 1888. Serial No. 278,465. (No model.)



Claim.—1. In a cigar-wrapping machine, the combination, with a rolling-table and devices for wrapping the wrapper around the bunch, of a retaining device located at one end of said rolling-table, and a rotary header located laterally of said retaining device for finishing one end of a cigar held in said retaining device, substantially as described.

2. In a cigar-wrapping machine, the combination, with a rolling-table, an apron, and a rocking arm carrying a presser-roll, of a retaining device located at one end of the rolling-table, below the latter, for receiving the cigar directly from the apron, and a rotary header arranged laterally of said retaining device for finishing one end of the cigar while it is held in the retaining device, substantially as described.

3. In a cigar-wrapping machine, the combination, with a rolling-table, an apron, and a rocking arm carrying a presser-roll, of a retaining device located at one end of said table for receiving the cigar from the apron, a rotary header normally held in position laterally of said retaining device to finish one end of a cigar, and means for causing said header to recede from the path of the cigar when it is deposited in the retaining device, substantially as described.

4. In a cigar-wrapping machine, the combination, with a rolling-table, an apron, and a rocking arm carrying a presser-roll, of a retaining device located at one end of said table, a rotary header arranged laterally of said retaining device and adapted to be automatically thrown out of the path of the cigar when the latter is discharged from the apron into the retaining device, and mechanism for returning the header in position to act on the end of the cigar while the latter is in the retaining device, substantially as described.

5. In a cigar-wrapping machine, the combination, with a rolling-table, an apron, and a rocking arm carrying a presser-roll, of a retaining device located at one end of said table for receiving the cigar from the apron, a pair of rotary headers supported in juxtaposition to the retaining device, so as to slide laterally off one another when the cigar is deposited in the retaining device, and springs for returning the headers upon the ends of the cigar, substantially as described.

6. In a cigar-wrapping machine, the combination of rolling-table, an apron, a rocking arm carrying a presser-roll, the rotary shafts mounted in bearings to slide endwise therein and each carrying a hollow cone-shaped header at its inner end, and springs for forcing the headers laterally to adjust one of said headers in position to operate on one end of a cigar when the latter is deposited in a retaining device from the rolling-apron, substantially as described.

7. In a cigar-wrapping machine, the combination, with a rolling-table, an apron, and a rocking arm carrying a presser-roll, of a transverse shaft H, adapted to be rotated when the rocking arm moves through connections with the latter, the reciprocating shafts *k*, arranged at one end of the rolling-table and having hollow headers on their inner approximate ends, connections between said shafts and the shaft H for rotating the headers, and springs for moving the shafts *k* and the headers laterally to adjust one of the headers upon one end of the cigar, substantially as described.

8. In a cigar-wrapping machine, the combination, with a rolling-table, an apron, and a rocking arm carrying a presser-roll, of a rotary shaft H, having the pulleys, the reciprocating shafts *k*, arranged at the opposite end of the table from the shaft H, and having pulleys, which are belted to the pulleys of the shaft H, the hollow cone-shaped headers fixed to the inner ends of the shafts *k*, and springs for moving the shafts and headers toward each other, substantially as described.

9. In a cigar-wrapping machine, the combination, with a rolling-table and an apron, of a retaining device located at one end of said table, a rotary header located laterally of said retaining device to act upon one end of a cigar after it has been deposited in the retaining device, and a rocking arm having a presser-roll and adapted to traverse the rolling-table and provided with suitable devices to move the header laterally of the retaining device when said arm approaches the latter to deposit the cigar therein, substantially as described.

10. In a cigar-wrapping machine, the combination of a cigar-rolling table having its upper surface covered continuously with vertical yielding bristles, which terminate a short distance from the front end of said table, a rocking arm carrying a presser-roll, an apron connected to said table and passing over said presser-roll to form a bight at the front end of the table for the reception of the bunch when the arm is at rest in its normal position at the front of the table, a retaining device located at the opposite end of the table, and a rotary header arranged laterally of said retaining device, substantially as described.

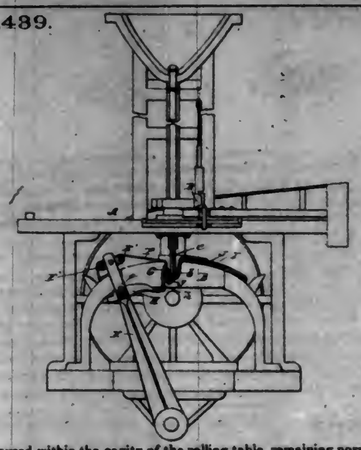
405,439. CIGAR-BUNCHING MACHINE. JAMES E. SMITH, New York, N. Y., assignor of two-thirds to Adolph Moonelis and Benjamin Lichtenstein, same place. Filed June 28, 1888. Serial No. 278,466. (No model.)

Claim.—1. In a cigar-bunching machine of the class described, having a movable grip located within a cavity in which the bight of an apron is formed, said grip pressing automatically against the bight in the apron immediately after the filler is deposited therein, and thereby closing the throat or open space in the bight of said apron, substantially as and for the purpose described.

2. In a cigar-bunching machine, the combination, with a rolling-table having a cavity therein, an apron, and a plunger, of a movable grip housed within the cavity of the rolling-table and adapted to press against the bight in the apron immediately after the filler has been deposited therein, substantially as and for the purpose described.

3. In a cigar-bunching machine, the combination, with a rolling-table having a cavity therein, an apron, and a plunger, of a movable

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grip housed within the cavity of the rolling-table, remaining normally at rest during the descent of the plunger to deposit the filler on the apron, and devices for automatically forcing the grip against the bight in the apron on the upstroke of the plunger, substantially as and for the purpose described.

4. In a cigar-bunching machine, the combination, with a rolling-table having a cavity therein, an apron, a plunger, and a rocking arm carrying the pressing or bunching rolls, of a movable grip arranged in said cavity and remaining at rest while the plunger descends and deposits a filler in a bight in the apron, and devices operated by the rocking arm for positively moving said grip against the bight in the apron on the upstroke of the plunger, substantially as and for the purpose described.

5. In a cigar-bunching machine, the combination, with a rolling-table having a cavity therein, an apron, and a plunger, of a movable grip housed within the cavity in the rolling-table and having its pivot arranged substantially in the vertical line of movement of the plunger and at a point below the lower limit of the downstroke of said plunger, and devices for holding the body of the grip at rest, out of the path of the plunger, and for closing the grip against the bight in the apron immediately after the filler has been deposited therein, substantially as and for the purpose described.

6. In a cigar-bunching machine, the combination, with a rolling-table having a cavity therein, an apron, and a plunger, of a pivoted grip housed within the cavity of the rolling-table, and a gravity-pawl connected to said grip for opening it, substantially as and for the purpose described.

7. In a cigar-bunching machine, the combination, with a rolling-table, an apron, and a plunger, of a movable pivoted grip housed within the cavity of the rolling-table, and a gravity-pawl connected to the grip and arranged in the path of the rocking arm, to be elevated thereby when said arm is at rest at one end of the table, substantially as and for the purpose described.

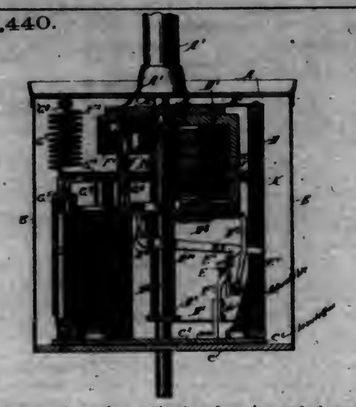
8. In a cigar-bunching machine, the combination, with a rolling-table, an apron, and a plunger, of a transversely-curved and pivoted grip located within the cavity of the rolling-table, a gravity-pawl supported on a depending fulcrum-block and connected with the grip, and a rocking arm adapted to raise the gravity-pawl and close the grip, said pawl being pivoted at an immediate point of its length and having the heavy end thereof arranged in the path of a rocking arm, substantially as described.

9. In a cigar-bunching machine, the combination of a rigid rolling-table having a cavity in its middle, and the upper surface thereof at one side of said cavity entirely covered with a continuous series of vertical yielding bristles or projections which provide a compressible yielding surface for the apron to impinge against, an apron connected to the table, a plunger, and a rocking arm carrying the pressing or bunching devices arranged to swing over the cavity and elevate the bight in the apron and filler upon the yielding surface of the rolling-table, substantially as described.

405,440. ELECTRIC-ARC LAMP. ELMER A. SPERRY, Chicago, Ill. Filed Oct. 22, 1883. Serial No. 208,813. (No model.)

Claim.—1. In an arc lamp, the combination of a main-circuit electro-magnet or solenoid with a moving frame on which it is supported, a carbon-rod-clamping device moved by said electro-magnet or solenoid, and a shunt-magnet or solenoid adapted to move said frame.

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2. In an arc lamp, the combination of a main-circuit electro-magnet or solenoid with a moving frame on which it is supported, a carbon-rod-clamping device moved by said electro-magnet or solenoid, and a shunt-magnet or solenoid adapted to move said frame, said moving frame suspended on spring-bars.

3. In an arc lamp, the combination of a main-circuit electro-magnet or solenoid with a moving frame on which it is supported, a carbon-rod-controlling device moved by said electro-magnet or solenoid, and a derived-circuit electro-magnet or solenoid adapted to move said frame.

4. In an arc lamp, the combination of a moving frame with a main-circuit electro-magnet or solenoid supported on such frame, a carbon-rod clamp actuated thereby, and a lever pivoted at one end and attached toward its other end to an armature of the derived-circuit electro-magnet or solenoid and connected with such frame, so that the movement of the latter is affected by the derived-circuit electro-magnet or solenoid.

5. In an arc lamp, the combination of the moving frame with a main-circuit electro-magnet or solenoid supported thereon, a carbon-rod clamp actuated thereby, and a lever fulcrumed on a rigid support attached to the armature of the derived-circuit electro-magnet or solenoid, and connected with such frame, so that the motion of the frame is affected by the derived-circuit electro-magnet or solenoid.

6. In an arc lamp, the combination of a moving frame with a main-circuit electro-magnet or solenoid supported thereon, a carbon-rod clamp actuated thereby, and a lever fulcrumed at one end and attached toward its other end to the armature of the derived-circuit electro-magnet or solenoid, an elastic support for such lever opposing the derived-circuit electro-magnet or solenoid, said frame resting upon said lever.

7. In an arc lamp, the combination of a moving frame with a main-circuit electro-magnet or solenoid supported thereon, a carbon-rod clamp actuated thereby, and a derived-circuit electro-magnet or solenoid, a lever rigidly supported at one point and elastically supported at another and connected with the frame and the derived-circuit electro-magnet or solenoid, so that the latter affects the movement of the former.

8. In an arc lamp, the combination of a carbon-separating electro-magnet or solenoid with a carbon-clamp connected therewith and operated thereby, a derived-circuit electro-magnet or solenoid, and an armature operated by the latter and connected with the former, so as to move the said carbon-separating magnet or solenoid.

9. In an arc lamp, the combination of a moving carbon-separating device containing a main-circuit electro-magnet or solenoid and a carbon-rod clamp controlled thereby to separate the carbons, with a derived-circuit electro-magnet or solenoid, and an armature connected therewith and operated thereby, and connected also with the moving carbon-separating device.

10. In an arc lamp, the combination of a moving main-circuit carbon-separating electro-magnet or solenoid with a carbon-clamp connected therewith and operated thereby, a derived-circuit electro-magnet or solenoid, and a lever connected with said carbon-separating device and operated by the derived-circuit electro-magnet and solenoid, said lever supported fixedly at one end and elastically at the other.

11. In an arc lamp, the combination of a carbon-separating device, consisting of a parallel moving frame, a main-circuit electro-magnet or solenoid supported thereon, a carbon-rod clamp supported by such electro-magnet or solenoid, with a derived-circuit electro-magnet or solenoid, and an armature extending between the latter magnet and the frame, so that it affects the motion of said frame.

12. In an arc lamp, a moving carbon-separating device containing the main-circuit electro-magnet or solenoid and the carbon-rod clamp, in combination with a double-acting stop for the clamp, both clamp and stop controlled by said magnet.

13. In an arc lamp, an electro-magnet mounted on a movable frame, in combination with a carbon-rod-clamping device and a double-acting stop for such clamp, both carbon-rod clamp and the stop therefor actuated by said electro-magnet.

14. In an arc lamp, an electro-magnet mounted on a moving frame, a carbon-rod clamp, a double-acting stop for such carbon-clamp, and a derived-circuit electro-magnet, an armature therefor connected with the clamp, both clamp and stop being actuated by the first-mentioned magnet or solenoid, and the clamp by the second-mentioned electro-magnet or solenoid.

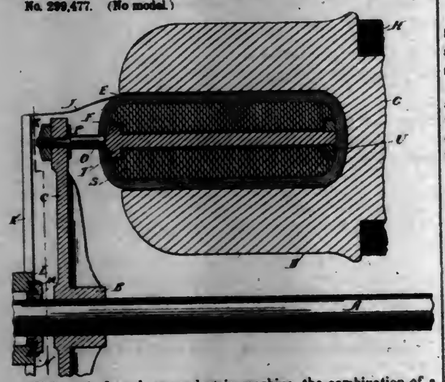
15. In an arc-lamp, an electro-magnet mounted on a movable frame, in combination with a carbon-rod-clamping device, a double-acting stop for such clamp, connections from the electro-magnet or solenoid to the clamp and stop, and a derived-circuit electro-magnet or solenoid, and an armature actuated thereby and connected with the carbon-separating device.

16. In an arc lamp, the combination of a moving elastically-supported carbon-seperating device, which contains a main-circuit electro-magnet or solenoid and a carbon-rod clamp, a double-acting stop for said clamp, a derived-circuit electro-magnet or solenoid, and an armature actuated by the last-mentioned electro-magnet or solenoid and connected with so as to move the carbon-separating device.

17. In a carbon-clamp for arc lamps, the combination of two opposed carbon-clamping pieces, one shaped like a bell-crank lever, an arm on which both are pivoted, the one at its angle, and means for moving said latter piece to control the carbon.

18. In a carbon-clamp for arc lamps, the combination of two opposed carbon-clamping pieces, one shaped like a bell-crank lever, an arm on which both are pivoted, one at its angle, and means for simultaneously moving the pivoted end of said arm and swinging the angular piece on such pivot to cause the pieces to clamp or release the carbon.

405,441. DYNAMO. ELMER A. SPERRY, Chicago, Ill., assignor to the Sperry Electric Company, same place. Filed Feb. 11, 1889. Serial No. 299,477. (No model.)



Claim.—1. In a dynamo-electric machine, the combination of a rotating spider with a series of bolts projecting therefrom and secured thereto and an armature secured on such bolts independently of the spider.

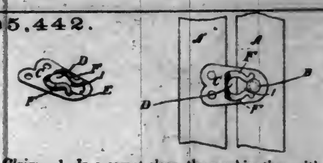
2. In a dynamo-electric machine, the combination of a rotating spider with a series of bolts projecting therefrom and secured thereto by a collar and nut on opposite sides of such spider-arms, with an armature secured to such bolts independently of the spider.

3. In a dynamo-electric machine, the combination of a rotating spider with a series of bolts secured thereto and projecting therefrom, and an armature secured on such bolts between a flange and a nut on each of said bolts.

4. In a dynamo-electric machine, the combination of a rotating spider with a series of bolts projecting from the arms thereof, each secured thereto by a flange and nut on opposite sides of such spider-arm, with an armature secured on such bolts, between a flange and a nut on each of them.

5. In a dynamo-electric machine, the combination of a rotating spider with an annular armature and bolts, which project from and are secured to the spider, and to which in turn is secured the armature independently of the spider.

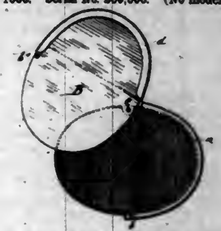
405,442. CORSET-CLASP. CHARLES H. STARR and JOHN W BOOTON, Bridgeport, Conn. Filed Nov. 8, 1888. Serial No. 290,271. (No model.)



Claim.—1. In a corset-clasp, the combination, with a headed pin secured to one section of the busk, of the eye having an enlarged opening terminating in a diminished recess and a pair of spring-fingers sheared and raised from the stock of said eye and forming the sides of said opening, said fingers being integral with the eye at the rear and having their forward ends converged and diverged, substantially as set forth.

2. In a corset-clasp eye, the spring-arms sheared and raised therefrom and integral at their rear with the stock of the eye, and having their forward ends converged to form a channel narrower than the diameter of the pin and then diverged, an opening D being formed in the eye and coinciding with the inner edges of said arms, said opening terminating in a diminished recess E immediately beyond the said channel, substantially as shown, and for the purposes set forth.

405,443. SHEET-METAL BOX. AUGUST STAHR, New York, N. Y. Filed Nov. 3, 1888. Serial No. 289,866. (No model.)

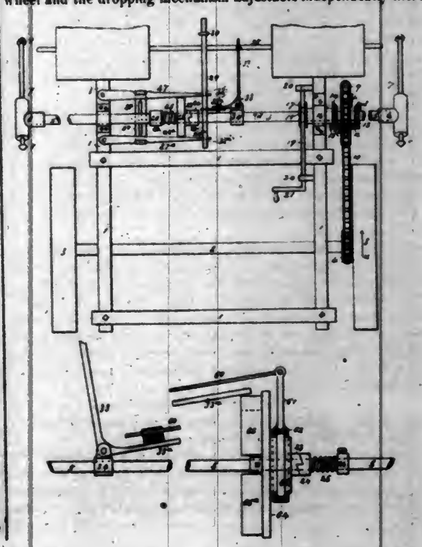


Claim.—1. A sheet-metal box composed of a body having a flanged rim and a lid pivoted at the side of the body and adapted to swing in the plane of the box, said lid being engaged by said rim, substantially as set forth.

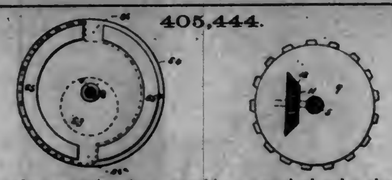
2. A sheet-metal box composed of a body having a flanged rim and a lid pivoted at the side of the body and engaged by said rim, said lid being provided with a box-shaped portion that fits over one end of the body, so as to retain the lid on the box in connection with the flanged rim, substantially as set forth.

405,444. CHECK-ROW CORN-PLANTER. GUSTAV A. TRODE, Holstein, Iowa. Filed Jan. 16, 1889. Serial No. 296,470. (No model.)

Claim.—1. In a corn-planter, the combination, with the ground-wheel and the dropping mechanism adjustable independently thereof,



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of gearing connecting them, comprising a sun-wheel and a planet-wheel, and a handle connected with one of these latter wheels, substantially as set forth.

2. In a corn-planter, the combination, with the ground-wheel, the dropping mechanism adjustable independently thereof, and gearing connecting them, comprising a sun-wheel and a planet-wheel, of means for normally holding one of these latter wheels from turning about its axis, and a handle connected with said wheel, substantially as set forth.

3. In a corn-planter, the combination, with the ground-wheel and the dropping mechanism, of gearing connecting them, comprising a sun-wheel and a planet-wheel, a worm-wheel on the shaft of one of them, and a crank-shaft having a worm engaging said worm-wheel, substantially as set forth.

4. In a corn-planter, the combination, with the ground-wheel and the dropping mechanism, of gearing connecting them, comprising a sun-wheel and a planet-wheel, and a handle having intermediate mechanism connecting it with the sun-wheel, substantially as set forth.

5. In a corn-planter, the combination, with the ground-wheel, the dropping mechanism, and gearing connecting them, comprising a sun-wheel and a planet-wheel, of means for normally holding the sun-wheel from turning about its axis, and a handle having connection with said wheel, substantially as and for the purpose set forth.

6. In a corn-planter, the combination, with the dropping mechanism and the ground-wheel, of the gearing connecting them, comprising the shaft 5, the wheel 9, loosely mounted thereon, the miter-wheel 13, secured to said shaft, the miter-wheel 12, carried by the wheel 9 and gearing with wheel 13, and the miter-wheel 14, concentric with wheel 9 and gearing with wheel 12, substantially as set forth.

7. In a corn-planter, the combination, with the ground-wheel and the dropping mechanism, of the gearing connecting them, comprising the shaft 5, the wheel 9, loosely mounted thereon, the miter-wheel 13, secured to said shaft, the miter-wheel 12, carried by wheel 9 and gearing with wheel 13, the miter-wheel 14, concentric with wheel 9 and gearing with wheel 12, and the hand mechanism for controlling wheel 14, substantially as set forth.

8. In a corn-planter, the combination, with the dropping mechanism and the ground-wheel, of the gearing connecting them, comprising the shaft 5, the wheel 9, mounted loosely thereon, the miter-wheel 13, secured to said shaft, the miter-wheel 12, carried by wheel 9 and gearing with wheel 13, the miter-wheel 14, gearing with wheel 12, the short sleeve 15, surrounding shaft 5, and to which wheel 14 is secured, the worm-wheel 17, secured to sleeve 15, and the hand-shaft having worm 18, engaging worm-wheel 17, substantially as set forth.

9. In a corn-planter, the combination, with the dropping mechanism and the shaft 5, of the wheel 22, secured to the shaft and having the eccentric surface x y and concentric surface y z, the spring-actuated levers 27 and 27^b, bearing upon opposite sides of said wheel, the slide-rod 29, with which said levers engage alternately, and connections between said rod and the dropping mechanism, substantially as set forth.

10. In a corn-planter, the combination, with the dropping mechanism and the shaft 5, of the cam-wheel 22, the spring-actuated levers 27 and 27^b, bearing upon opposite sides of said wheel, the slide-rod 29, having slots 32 and 32^a, with which said levers engage, respectively, and connections between said rod and the dropping mechanism, substantially as set forth.

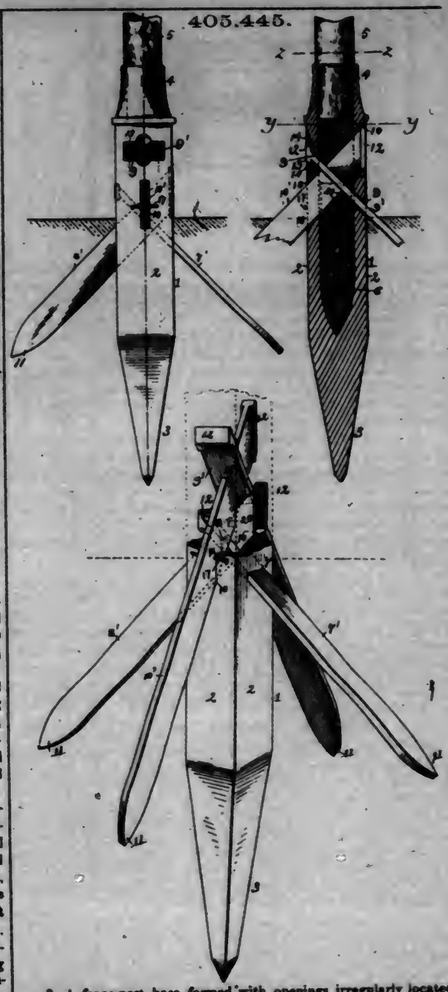
11. In a corn-planter, the combination, with the dropping mechanism and the shaft 5, of the cam-wheel 22, the spring actuated levers 27 and 27^b, bearing upon opposite sides of said wheel, the slide-rod 29, with which said levers have loose connection, and the bell-crank lever 33, engaged at one end by said rod and at the other having connection with the dropping mechanism, substantially as set forth.

405,445. BASE FOR FENCE-POSTS. WILLIAM H. THOMSEN, New York, N. Y. Filed Nov. 30, 1888. Serial No. 292,189. (No model.)

Claim.—1. A fence-post base formed with a point to enter the ground and having detachable interlocking anchor-pins extending crosswise thereto and adapted to enter the ground, substantially as shown and described.

2. A fence-post base formed with openings irregularly located therein, in combination with interlocking anchor-pins which extend through the openings and project laterally from the base, substantially as shown and described.

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3. A fence-post base formed with openings irregularly located therein, in combination with interlocking anchor-pins which extend through the openings and project at an incline downward from the base, the anchor-pins being inserted through the base in regular order to interlock each other, with means for fastening in place the pins last inserted, substantially as shown and described.

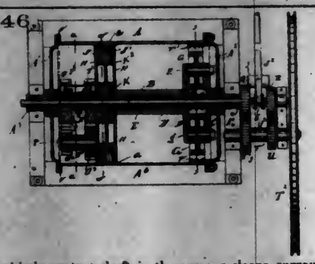
4. In a fence-post base, substantially as described, the base 1, formed with internal chamber 6, the inclined aligning opposite openings 7 8 9 10 in the walls of chamber 6, a fence-post socket 4 at its top, and a tapering lower end 3, substantially as shown and described.

5. A fence-post base 1, formed with internal chamber 6, the inclined aligning opposite openings 7 8 9 10 in the walls of chamber 6, a fence-post socket 4 at its upper end and the tapering point 3 at its lower end, the upper openings 7 8 9 10 having countersunk recesses 13, with notches 14 in their edges, in combination with the interlocking anchor-pins 7′, 8′, 9′, and 10′, having heads 12, fitting recesses 13, and inserted in regular order through openings 7 8 9 10, respectively, to interlock each other, the pins 7′ and 9′ having openings 15 and 16 for the passage of pins 8′ and 10′, and the pins 7′ and 8′ having notches 19 and 20 for the passage of pin 10′, and the pin 10′ having a hole 18, and the pin 17, fitting hole 18, to secure pin 10′ in place, substantially as shown and described.

405,446. WINDLASS. CARL G. TOURNE, Pittsburg, Pa. Filed June 12, 1888. Serial No. 277,000. (No model.)

Claim.—1. In a windlass, the combination, with a cylinder, of a

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longitudinal independent shaft in the same, a sleeve surrounding the shaft and driven from the same, gearing for driving the cylinder from said sleeve, a brake in the drum, and gearing for operating the brake from the shaft in the drum, substantially as herein shown and described.

2. In a windlass, the combination, with a cylinder, of a longitudinal independent shaft in the same, a sleeve surrounding the shaft and driven from the same, gearing for driving the cylinder from the sleeve, a brake in the drum, an arm on the shaft, and gearing for operating the brake, said gearing being operated by the arm on the shaft, substantially as herein shown and described.

3. In a windlass, the combination of a hollow cylinder, bearings on which said cylinder rotates, an independent shaft extending longitudinally through the cylinder and its bearings, gear-wheels supported in part by one of said bearings, an internal gear on the inside of the cylinder meshing with said gear-wheels, a sleeve on said shaft, a pinion on said sleeve, said pinion engaging said gear-wheels, an arm on the shaft, and a cog-wheel on the sleeve, said cog-wheel being driven from said arm, substantially as described.

4. In a windlass, the combination with a cylinder, of an independent longitudinal shaft on the same, a sleeve surrounding the shaft and driven from the same, gearing for driving the cylinder from said sleeve, an arm on the shaft having two opposite pins, a cog-wheel mounted loosely on the shaft and having a segmental slot, a cog-wheel fixed on the sleeve and having a like segmental slot, the above-mentioned pins entering said slots, a brake, and gear-wheels for operating the brake from said fixed and loose cog-wheels, substantially as herein shown and described.

5. In a windlass, the combination, with a cylinder, of an independent longitudinal shaft in the same, a sleeve surrounding the shaft and driven from the same, gearing for driving the cylinder from said sleeve, the arm P^4 on the shaft, provided with the two opposite pins P^2 P^3, the cog-wheel N, mounted on the end of the sleeve and having a segmental slot into which the pin P^4 passes, the cog-wheel O, mounted loosely on the shaft and having a segmental slot into which the pin P^3 passes, the disks H, mounted loosely on the sleeve, the brake-shoes J, pivoted between the disks H, the hub K, having the racks K^2 and cams K^3, and gearing for operating the racks K^2 from the cog-wheel N, substantially as herein shown and described.

6. In a windlass, the combination, with a cylinder, of a longitudinal independent shaft in the same, a sleeve surrounding and driven from said shaft, gearing for driving the cylinder from said sleeve, the cog-wheel N, mounted rigidly on the end of the sleeve and having a segmental slot, a like cog-wheel O, mounted loosely on the shaft and having a segmental slot, the arm P^4 on the shaft, having the opposite pins P^2 P^3 entering the slots in the wheels N and O, the disks H, mounted loosely on the shaft, the brake-shoes J, pivoted between said disks, the hub K, having the racks K^2 and cams K^3, the pinions L on the shafts L', mounted in one of the disks H, the cog-wheels M, mounted on the opposite ends of the shafts L' and engaging the cog-wheel N, the cog-wheels O^2 and O^3 on the same shaft, and the cog-wheel O', engaging the cog-wheels O and O^3, substantially as herein shown and described.

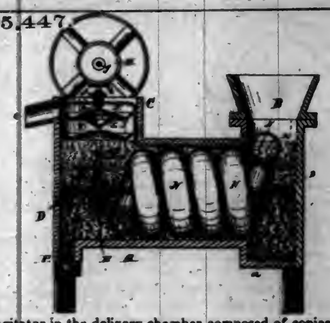
405,447. AMALGAMATOR. MILTON T. VAN DERVEER, Amsterdam, N. Y. Filed Apr. 1, 1889. Serial No. 305,578. (No model.)

Claim.—1. In an amalgamating-machine, the combination of the casing filled with mercury and having a feed-hopper and delivery-chamber, with a revoluble tubular screw conveyer submerged in the mercury and having a mouth to receive the pulp from the hopper and a delivery end below the chamber, and the mechanism for operating said screw, substantially as specified.

2. The combination of the casing having an upstanding feed-hopper and delivery-chamber at its opposite ends, and a tubular body, with a tubular screw conveyer mounted in the tubular body, having a series of internal blades secured to the outer wall thereof, and the mechanism for operating said conveyer, substantially as described.

3. The combination of the casing having a feed-hopper and delivery-chamber at opposite ends, and the revoluble tubular screw conveyer therein adapted to receive and carry the pulp from the hopper to the delivery-chamber through the body of amalgamating fluid, with

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the agitator in the delivery-chamber composed of conical perforated disks, constructed and arranged substantially as set forth.

4. The combination of the casing having a feed-hopper and delivery-chamber, with the agitator mounted in said chamber and composed of the spider and conical disks perforated near their center and having corrugated edges, all substantially as specified.

5. The combination of the casing having a tubular body and a feed-hopper and delivery-chamber at opposite ends thereof, with the shaft D, the tubular screw conveyer mounted thereon, having an internal series of transverse blades and a receiving-mouth *n*, adapted to rise above the level of mercury in the feed-hopper, the agitator in said chamber, and the mechanism, substantially as described, for imparting motion to the screw and agitator, substantially as set forth.

6. The combination of the casing having an inclined tubular body and a feed-hopper and delivery-chamber at opposite ends thereof, with an inclined Archimedean screw conveyer for the pulp mounted on an inclined shaft in the tubular body of the casing, and mechanism for operating the same, substantially as set forth.

7. The combination of casing A, having an inclined tubular body with the inclined tubular screw conveyer N, submerged in mercury, and the blades O in said conveyer, and the shaft and gearing for operating said conveyer, all substantially as specified.

8. The combination of the casing constructed substantially as described and the tubular screw conveyer therein mounted on a central shaft and having a series of internal blades O and mouth *n*, and the shaft and gearing for operating said conveyer, with the oscillating agitator I, composed of spider K and perforated disks J J L, all substantially as and for the purpose described.

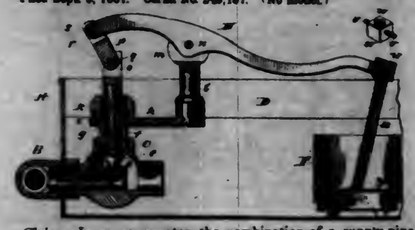
405,448. FEED MECHANISM FOR SEWING-MACHINES. CHAS W. WEISS, Brooklyn, assignor of one-half to Charles Kruse, New York, N. Y. Filed Mar. 21, 1889. Serial No. 304,147. (No model.)



Claim.—1. The combination, in a sewing-machine, with its rotating shaft, its table, a swinging arm dependent from the table, a shaft secured to the free end of said arm, a sleeve upon said shaft, a bar coupling said sleeve with an eccentric on the rotating shaft, and a feed-dog carried by the sleeve to rise and fall and move back and forth with the vibration of said shaft and the oscillation of said sleeve, of an adjustable arm pivoted to the main shaft, an adjustable link pivoted to vibrate upon said arm and made to engage loosely the end of the sleeve-shaft, and a second arm coupled to the link and actuated by an eccentric on the main shaft to produce an oscillation of the link upon its pivotal center, all substantially in the manner and for the purpose herein set forth.

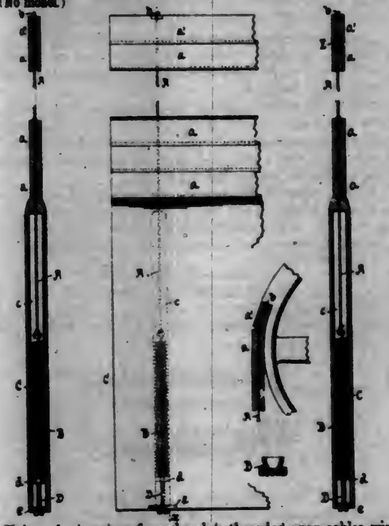
2. The combination, in a sewing-machine, with its rotating main shaft, its table, a swinging arm dependent from the table, a shaft secured to the free end of said arm, a sleeve upon said shaft, a bar coupling said sleeve with an eccentric on the rotating shaft, and a feed-dog carried by the sleeve to partake of its movements, of an arm pivoted to the main shaft, a vibrating link engaging loosely the end of the sleeve-shaft and pivoted to said arm to move with it to and from the axis upon which the swinging arm carrying the sleeve-shaft vibrates, an eccentric on the main shaft, a bar coupling said link with said eccentric, an annular cam dependent from the table to engage the arm to which the link is pivoted, and a thumb-piece fitted on the table and actuating said cam, all substantially in the manner and for the purpose herein set forth.

405,449. AUTOMATIC SUPPLY-VALVE FOR EVAPORATORS. WILLIAM WILCOX and WILLIAM A. WILCOX, Jr., Grand Rapids, Mich. Filed Sept. 8, 1887. Serial No. 249,137. (No model.)



Claim.—In an evaporator, the combination of a supply-pipe, a valve having a stem projecting through the upper end of the valve-case, a sleeve surrounding the stem, provided with a shoulder or seat, a detachable plate supported upon said sleeve and seat and provided with a post at its free end having a fulcrum on its upper end, a nut for clamping said plate upon said sleeve, a float having an externally screw-threaded rod, a lever having a link connecting it to the valve-stem, and a nut pivoted in the opposite end, by which it is connected to the float, substantially as described.

405,450. PARTITION, SHUTTER, AND THE LIKE. JAMES G. WILSON, New York, N. Y. Filed Nov. 24, 1888. Serial No. 291,800. (No model.)



Claim.—1. A series of wooden slats threaded upon cables, wires, or bands, combined with tension-producing springs, substantially as described.

2. A rolling partition or shutter composed of wooden slats threaded upon cables, wires, or bands, combined with tension-producing springs, and means for adjusting the tension of said springs, substantially as described.

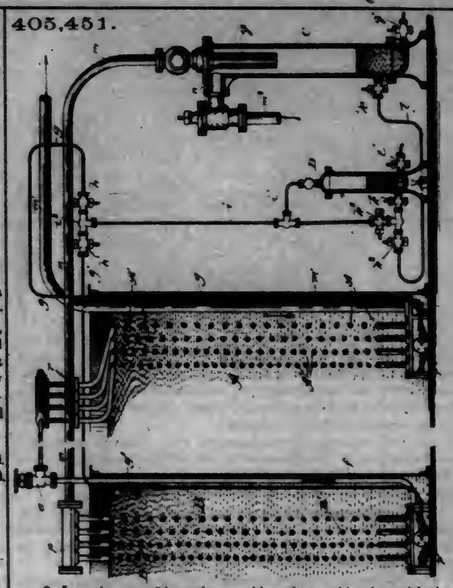
3. The combination, with a series of wooden slats, of springs located in one of the end slats and cables, wires, or bands extending through the slats, the opposite extremities of said cables, wires, or bands being respectively attached to the springs and to the opposite end slat, substantially as described.

4. The combination, with a series of wooden slats threaded upon cables, wires, or bands, of springs attached to the extremities of the cables, and additional springs interposed between two or more of the slats, substantially as described.

405,451. OIL-EXTRACTING AND GAS-SAVING APPARATUS FOR ICE OR REFRIGERATING MACHINES. FREDERICK W. WOLF, Chicago, Ill. Filed Dec. 2, 1887. Serial No. 256,767. (No model.)

Claim.—1. In an ice or refrigerating machine having an oil-trap C, communicating with the compressor and condenser, a gas-saving and oil-extracting apparatus D, controllably communicating directly with the oil-trap C and the condenser and refrigerator, and provided with a suitable cock through which to withdraw out of the machine the accumulated oil, substantially as described.

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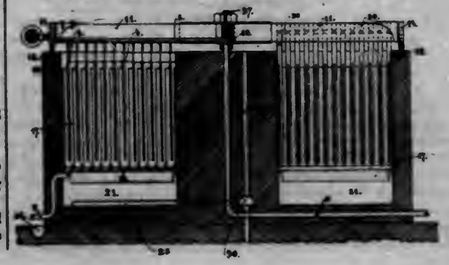


2. In an ice or refrigerating machine, the combination, with the compressor, of an oil-trap C, communicating with the discharge end of the compressor, a condenser B, communicating with the oil-trap, a refrigerator A, communicating with the condenser and with the suction end of the compressor, and a gas-saving and oil-extracting apparatus D, communicating directly and controllably with the oil-trap C and with the condenser and refrigerator, near the lower ends thereof, and provided with a suitable cock through which to withdraw out of the machine the accumulated oil, substantially as described.

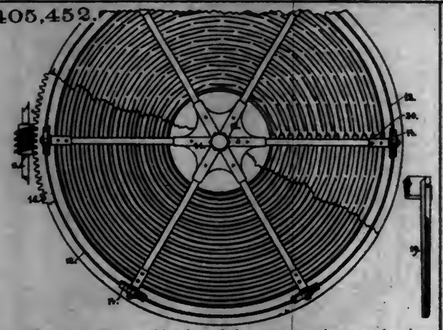
3. In an ice or refrigerating machine, the combination, with the compressor, of an oil-trap C, communicating with the discharge end of the compressor, a condenser B, communicating with the oil-trap and provided at its lower end with a syncline manifold *p'*, a refrigerator A, communicating with the condenser and with the suction end of the compressor, and provided at its lower end with a syncline manifold *r'*, and a gas-saving and oil-extracting apparatus D, communicating directly and controllably with the oil-trap C and with the manifolds *p'* and *r'*, and provided with a suitable cock through which to withdraw out of the machine the accumulated oil, substantially as described.

4. In an ice or refrigerating machine, the combination, with the compressor, of an oil-trap C, communicating with the discharge end of the compressor, a condenser B, communicating with the oil-trap, a refrigerator A, communicating with the condenser and with the suction end of the compressor, a gas-saving and oil-extracting apparatus D, having a discharge-outlet *l'*, pipes *g* and *g'*, leading, respectively, from the lower ends of the refrigerator and condenser, a pipe *i*, communicating at one end, controllably, with the pipes *g* and *g'* and toward its opposite end with the device D, and a pipe *l*, affording communication between the oil-trap C and device D, near their bases, substantially as described.

405,452. APPARATUS FOR THE ELECTROLYSIS OF LEAD. CHARLES O. YALE, Rome, N. Y., assignor of one-half to Moses M. Davis, same place. Filed Mar. 8, 1886. Serial No. 194,453. (No model.)



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Claim.—1. The combination of the conveyer-pipes opening into the bottom of the decomposing-vats, the decomposing-vats arranged upon substantially the same horizontal plane, return-drains, the central core in the decomposing-vats, radial arms mounted on the central core provided with electric conductors, and the cathodes mounted in the vat and electrically connected.

2. The decomposing-vats provided with a central non-electric conductor-core, in combination with the radial arms mounted above the core having electrical conductors on the radial arms, and the circular cathodes mounted in the vats and electrically connected.

3. The decomposing-vats, in combination with the radial arms mounted to be moved above the vat, provided with electric conductors to connect with the anodes, and the circular cathodes mounted in the vats and electrically connected.

4. The conveyer-pipes connecting with the decomposing-vats, the decomposing-vats, the return-conductors, and the conveyer-pipes opening into the vat through radial pipes in the bottom thereof, in combination with radial arms moving above the vat and provided with electrical conductors to connect with the anodes, and the circular cathodes mounted in the vat and electrically connected.

5. The decomposing-vat arranged to receive the solution at the bottom thereof, in combination with radial arms above the vat for suspending the soluble anodes electrically connected, the cathodes mounted in the vat and electrically connected, and the moving scraper on the surface of the cathodes.

6. The decomposing-vat and the radial arms having electric conductors, in combination with the circular cathodes mounted in the vat and electrically connected, and the brushes mounted on the radial arms to be moved therewith, engaging the opposing sides of the cathodes, substantially as set forth.

7. The combination of a decomposing-vat having a central core therein, the radial arms mounted thereon, and means whereby they may be rotated horizontally, the arms carrying movable conductors connecting with the permanent conductor at the core of the vat, the combing or brushing device mounted on the radial arms, each combing or brushing device consisting of a double brush arranged so that the brushing-surfaces are in opposition with the surfaces of the cathodes, and the circular cathode-plates mounted in the vat and electrically connected.

8. The combination of a circular vat with a core therein, the solution-diffusing conveyers located at or near the bottom of the vat, a permanent electrical conductor in the central core, the radial arms carrying radial conductors connecting with the permanent conductor, the cathodes mounted in the vat and electrically connected, and the brushing device arranged so that they move on the opposite surfaces of the circular cathode-plates.

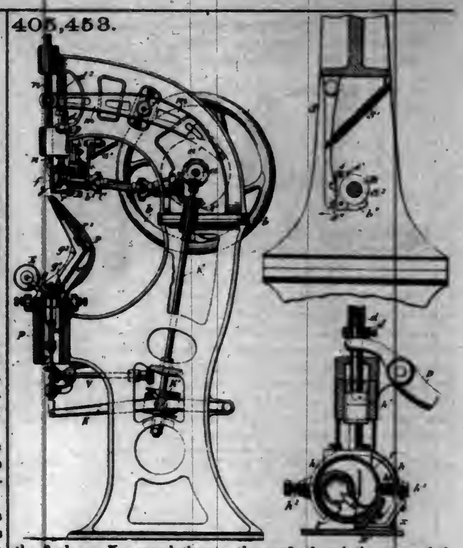
9. In the mechanism used in electrolysis, the succession of circular cathode-plates arranged in the decomposing-vat and electrically connected, and radial arms above the vat electrically connected, substantially as set forth.

405,453. SOLE-SEWING MACHINE. JOHANNES ALBRECHT, Cannstadt, Würtemberg, assignor to Otto Herz, Frankfort, Germany. Filed Aug. 17, 1888. Serial No. 283,063. (No model.) Patented in Germany Oct. 23, 1886, No. 41,153, and in France Nov. 23, 1886, No. 179,537.

Claim.—1. In a sole-sewing machine with a straight vertical needle, a shuttle rotating in its case in a vertical plane behind the said needle above the stuff or material being sewed, in combination with the shuttle-case, the vertically-yielding bar *d*, carrying said case, the bearing B, and the universally-jointed shuttle-driving shaft, whereby an automatic adjustment to the thickness of the stuff is effected, substantially in the manner as described.

2. In a sole-sewing machine, the combination, with the vertically-yielding bar *d*, the shuttle-case *r*, carried thereby, and the presser-foot *x'*, attached to the shuttle-case *r*, of the pivoted presser-ring *h*,

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the feed-arm X, secured thereto, the shaft a^3, and the cams c^2 c^3, formed thereon, all arranged substantially as shown, and for the purpose described.

3. In a sole-sewing machine, the combination, with the shaft a^3 and the cams c^2 and c^3, formed therein, of the pivoted presser-ring *h*, the shuttle-case *r*, screws h^2 and h^3, springs h^4 and h^5, the projection *h*, and the feed-arm carried by the said ring *h*, all arranged substantially as shown, and for the purpose described.

4. In a sole-sewing machine, the locking device consisting of the arm S, spring S', claw *s*, and rack *s'*, in combination with the projections s^3 on the arm S, cam b^3, attached to the shuttle-driving shaft a^3, bearing B, shuttle-case *r*, presser-point *x'*, together with the ring *h* and feed-arm X.

405,454. ROLLER-HOLDER FOR PHOTOGRAPHIC FILMS. LOUIS H. BANNISTER, Rochester, N. Y., assignor to the Eastman Dry Plate and Film Company, same place. Filed Aug. 3, 1885. Serial No. 173,370. (No model.)



Claim.—1. In a roller-holder for photographic films, the combination, with the measuring-roller, of a spring or lever carrying a pricking-point, a pinion on the shaft of the roller, and a gear with which the pinion engages, provided with a device by which the pricking-point is projected at intervals to mark the line of separation between the exposures of the film, as set forth.

2. In a roller-holder for photographic films, the combination, with the measuring-roller, of a spring or lever carrying a pricking-point, a pinion on the shaft of the roller, a gear with which the pinion engages, provided with a device by which the pricking-point is projected at intervals to mark the line of separation between the exposures of the film, and an indicator connected with gear from the outside, whereby each turn of the indicator will indicate an exposure, as set forth.

3. In a roller-holder for photographic films, the combination, with the measuring-roller G, of the spring or lever K, provided with the projecting end *d*, the pinion *g* on the shaft of the roller, and the gear *h*, with which the pinion engages, said gear being provided with a wing *i*, which is intermittingly brought in position to depress the spring-arm and project the pricking-point, as herein shown and described.

4. In a roller-holder for photographic films, the combination, with the measuring-roller, of a spring or lever carrying a pricking-point, a pinion on the roller, a gear with which the pinion engages, provided with a device by which the pricking-point is projected at intervals to mark the line of separation between the exposures of the film, and an indicator connected with the gear from the outside, said indicator having a degree of free end movement and provided with a

key-hole socket at its inner end, and the gear provided with a key-head to engage with said socket, as set forth.

5. In a roller-holder such as described, the combination, with a roller actuated by contact with the film, of a film-marker and devices intermediate the roller and marker for actuating the latter, substantially as described.

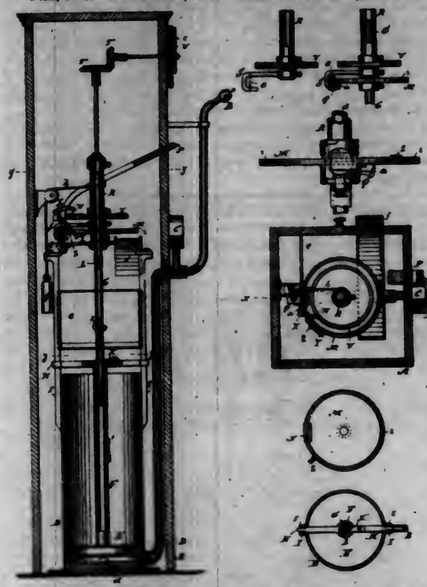
6. In a roller-holder, and in combination with the film supporting and feeding devices and a roller moving in unison with the film as the latter is advanced or fed, a film-marker and actuating mechanism therefor deriving motion from said roller, substantially as described.

7. In a roller-holder such as described, and in combination with the measuring-roller thereof, a film-marker rotating in unison with the measuring-roller and caused to engage the film at regular intervals occurring after two or more rotations of the measuring-roller, substantially as described.

8. In a roller-holder such as described, and in combination with the measuring-roller thereof, a film-marker moving in unison with the measuring-roller and held normally from contact with the film during the rotation of the roller, and devices operating upon said marker to bring it into contact with the film at intervals, substantially as described.

9. In a roller-holder such as described, and in combination with the film actuating and measuring devices, a reciprocating marker held normally removed from the film, and actuating mechanism connected to the measuring devices and operating to project the marker toward the film, substantially as and for the purpose specified.

405,455. COIN-RELEASED SPIROMETER. JOHN F. BLAKE, New York, N. Y. Filed Feb. 26, 1886. Serial No. 193,444. (No model.)



Claim.—1. The combination, with a piston E, a shaft rotated by said piston, and an index, of a rotary coin-carrier adapted to interlock the shaft and index, substantially as described.

2. The combination, with a piston E, a shaft rotated by said piston, and an index, of an arm or disk M, provided with a coin-receiving recess and secured to said shaft, and an arm S for engaging the rim of the coin and also secured to said shaft, substantially as described.

3. The combination, with a rotatable shaft and an index, of a coin-carrier adapted to interlock the shaft and index, and a detent adapted to hold the index stationary during the return movement of the shaft, substantially as described.

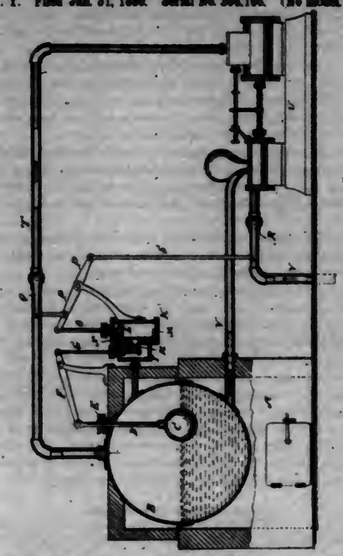
4. The combination, with a piston E, a shaft rotated by said piston, and an index, of a coin-carrier adapted to interlock the shaft and index, a detent adapted to hold the index stationary, and a trip Z for releasing the detent when the piston has returned to its starting-point, substantially as described.

5. The combination of a piston, a shaft rotated by the piston, an index, a coin-carrier adapted to interlock said shaft and index, a closed receptacle *c*, and an accessible receiver *f*, said receptacle and receiver located to receive coins at different points in the movement of the carrier, substantially as described.

6. The combination, with a rotatable shaft and an index, of a coin-carrier adapted to interlock the shaft and index, said coin-carrier consisting of an arm S and disk M, said disk being constructed to support a coin until the disk is in its starting position, substantially as described.

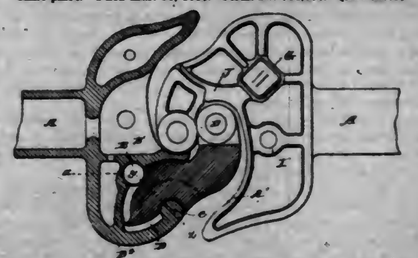
7. The combination, with a rotatable shaft and an index, of a coin-carrier adapted to interlock the shaft and index, said coin-carrier consisting of an arm S and disk M, said disk being provided with a steadying flange or groove, substantially as described.

405,456. BOILER FEED-REGULATOR. PAUL DOHN, New York, N. Y. Filed Jan. 31, 1889. Serial No. 298,196. (No model.)



Claim.—The combination of a boiler, a feed-water pump, a steam-pipe connecting the steam-space of the boiler with the pump for operating the latter, a feed-water pipe connecting the pump with the water-space of the boiler, a valve in the steam-pipe, a valve in the feed-water pipe, a steam-cylinder having a valve-chest connected with the boiler and provided with a movable valve, a float in the boiler having a lever-connection with the valve in the steam-chest, a piston in the cylinder, and a swinging-lever connection between the piston and the valve of the steam-pipe leading to the pump and the valve of the feed-water pipe to simultaneously open and close each valve, substantially as described.

405,457. CAR-COUPLING. WILLIAM P. BRAUN, New York, N. Y., assignor, by mesne assignments, to the Consolidated Coupling Company, same place. Filed Mar. 19, 1888. Serial No. 268,230. (No model.)



Claim.—1. In a car-coupler, the combination, with the draw-head having an arc-shaped slot formed therein, of a movable knuckle provided with an arc-shaped stem and a buffing-face substantially oval in shape, and the crown of the oval at about the center of the buffing-face, substantially as described.

2. In a car-coupler, the combination, with the draw-head having an arc-shaped slot formed therein and the arc-shaped top and bottom bearing-shoulders, of a movable knuckle provided with an arc-shaped

stem, and the bearing-shoulders on the top and bottom of said stem, which register with the shoulders of the slot, substantially as described.

3. In a car-coupler, the combination, with a draw-head having an arc-shaped slot formed therein and a semi-cylindrical vertical opening for the locking-pin, of the movable knuckle provided with horizontal ribs on the arc-shaped face of said knuckle-stem, and a semi-cylindrical vertical opening for the locking-pin in the body of said stem.

4. In a car-coupler, the combination, with the draw-head having an arc-shaped recess formed therein, of a movable knuckle provided with an arc-shaped stem having ribs on the arc-shaped face of said stem, and a locking-pin square at the top and cylindrical at its upper and middle portions and semi-cylindrical between its upper and middle portions and at the lower portions of said pin.

5. As a latch-pin for a car-coupler constructed substantially as specified, pin L, square at the top, cylindrical at N and O, and semi-cylindrical at P and Q.

6. In a car-coupler, substantially as specified, a latch-pin hole square at the top and substantially concentric with the curved inner surface of the recess in the coupler-head, said latch-pin hole contracted at the bottom of the coupler-head to a semi-cylindrical form and lying entirely outside of the path in which the jaw moves.

7. In a car-coupler, the combination, with the draw-head provided with an arc-shaped slot, of the movable knuckle having an arc-shaped stem and oval buffing-face, the crown of the oval at about the center of the buffing-face, and a straight or substantially straight traction-face.

8. In a car-coupler, a draw-head the plane of the curvature of the buffing-face of which is at an angle of seventy-seven degrees with the axis of said coupler, substantially as set forth.

9. In a car-coupler, a knuckle the plane of the curvature of the buffing-face of which is at an angle of seventy-seven degrees with a line drawn through the center of said knuckle, or the point from which the arc which determines the shape of the end of the knuckle is struck, substantially as set forth.

10. In a two-part car-coupler the parts of which are identical in construction, the combination, with the draw-head the angle of the buffing-face of which is seventy-seven degrees to the axis of the draw-head, of the movable knuckle the angle of the buffing-faces of which is seventy-seven degrees with a line drawn through the center of said knuckle, whereby the angle of movement of the couplers relative to each other is one hundred and thirty degrees, substantially as set forth.

405,458. FOUNTAIN-PEN. JOHN D. BRAY, Montreal, Quebec, Canada. Filed Apr. 14, 1888. Serial No. 270,615. (No model.)



Claim.—1. The combination, with a tubular pen-staff having a feeder at its forward extremity, an opening or aperture in rear of the finger-grasping portion, and a pen-holder to receive the pen to be fed by the feeder, of a compressible bulb communicating with the interior of the staff through said rear opening and resting when the pen is in use against the forefinger in rear of its outer joint, substantially as set forth.

2. The combination, with the reservoir-tube A, having a rear aperture *d*, a point *c*, apertured at its extremity only, and an extension *b*, of the bulb C, mounted on the tube and its extension over the aperture *d*, substantially as set forth.

3. The combination, with the reservoir-tube having a point apertured at its extremity only, an extension at the rear end of the tube, and an air-inlet through the rear end of the tube, of the air-bulb upon the tube and its extension and communicating with the interior of the tube through said air-inlet, and the cap D, having a valved end opening, substantially as set forth.

4. In a reservoir-pen, the reservoir-tube having the upwardly-curved point apertured at its extremity, and the longitudinally-extending pen-receiving slot from which the pen extends across the said apertured extremity, substantially as set forth.

5. As an improved article of manufacture, a fountain-pen comprising the reservoir-tube A, having the curved point *c*, threaded and apertured at its extremity only, the solid rearwardly-extending shank *b*, threaded at its rear end, the air-bulb C, secured on the rear end of said tube and on the shank and communicating, as at *d*, with the interior of said reservoir-tube, the cap *f*, and the larger cap D, having an aperture in its closed end provided with a closure, substantially as set forth.

405,459. HARROW. WARREN M. BRINKERHOFF, Auburn, N. Y. Filed July 31, 1888. Serial No. 281,492. (No model.)

Claim.—1. A runner for harrows having a horizontally-disposed flat portion and a vertically-disposed portion of convex form in cross-section, substantially as described.

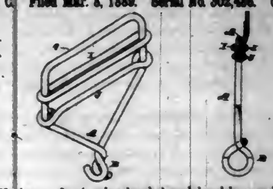
405,459.



2. A runner for harrows having a horizontally-disposed flat portion and a vertically-disposed portion of convex form in cross-section and of increased thickness centrally to sustain wear, substantially as described.

3. A runner for harrows having a horizontally-disposed flat portion and a vertically-disposed portion convex in cross-section and ribbed or corrugated to give it rigidity, substantially as described.

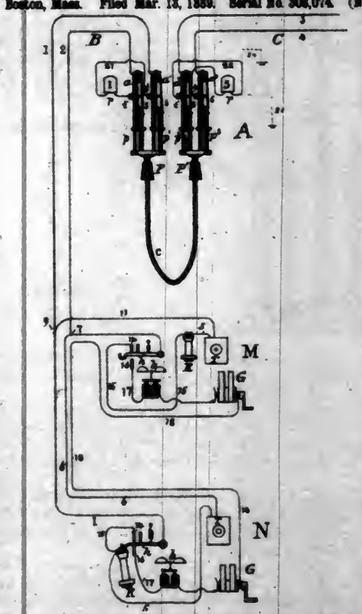
405,460. TRACE-CARRIER. DEMPSEY T. BRYAN, Rocky Mount, N. C. Filed Mar. 8, 1889. Serial No. 302,496. (No model.)



Claim.—1. A wire back-band buckle consisting of a rectangular upper portion, and the ends of the wires being brought together at the lower portion and formed into a hook for the trace, and two bars sliding longitudinally upon the sides of the rectangular portion, between which and the upper end of the frame the back-band is clamped when the bars are drawn upward, substantially as described.

2. The combination, with a back-band buckle made of wire having its upper portion bent into a rectangular form, and the ends of the wires brought together at the lower portion and formed into hooks adapted to be separated for the insertion of the trace, of a loop and a bar sliding longitudinally upon the sides of the rectangular frame, between which and the upper end of the frame the back-band is clamped when the loop and bar are drawn upward, substantially as shown and described.

405,461. METALLIC TELEPHONE-CIRCUIT. HENRY L. BOSBANK, Jersey City, N. J., assignor to the American Bell Telephone Company, Boston, Mass. Filed Mar. 13, 1889. Serial No. 303,074. (No model.)

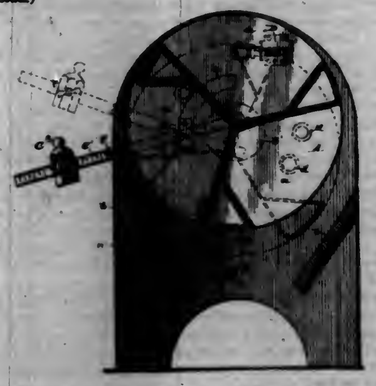


Claim.—1. The combination, with a metallic telephone-circuit having two or more sub-stations connected thereon, of calling appliances at each sub-station, the said calling appliances being normally included in series in the said circuit, a branch circuit from each of the said sub-stations to one of the said main lines, as indicated herein, the said branch being normally open at the said sub-station, telephones included in said branch circuit, and a switch at each sub-station having its movable element permanently in electrical connection with the main line not connected with the telephone branch of its own station, the said switch being adapted to maintain the continuity of the metallic circuit through the call apparatus of both sub-stations when the line is at rest, and through the telephones of its own station breaking the calling-circuit of both stations when the said telephones are being used, substantially as described.

2. The combination, substantially as hereinbefore set forth, in a metallic-circuit system of telephonic communication, of a central station, two sub-stations, each being provided with telephones, calling appliances, and an automatic telephone-switch actuated by the removal and replacement of the receiving-telephone, two main-line wires, one extending from the central station to the switch-lever of the terminal station, forming one side of a metallic electric circuit, and the other extending from the central station to the switch-lever of the intermediate station and forming a portion of the other side of the said metallic circuit, a continuation line extending from the resting or normal switch-contact of the intermediate station through the calling appliances of both stations to the resting-contact of the terminal station, forming the remainder of the second side of the metallic circuit and normally uniting the two switch-levers, (the receiving-telephone being in place,) whereby the calling appliances of both stations are normally included in circuit, and an independent normally-open branch line for each station extending from the working or telephone-switch contact through the telephones of said station to a permanent junction with the main line leading to the switch-lever of the other station, the said branch being in each case adapted to serve as a substitute for that portion of the metallic circuit which includes the several calling appliances of both stations, the removal of the receiving-telephone from its holder at either station being thereby adapted to close the telephone branch of said station, and to open the circuit of the calling apparatus at both stations.

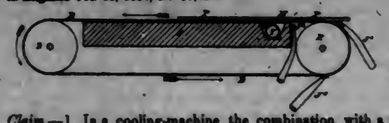
3. The combination, with a main metallic telephone-circuit extending between a main station and a plurality of sub-stations, and normally-closed loops, one for each sub-station, the loops being in series in the said circuit, and each including the calling apparatus of its respective sub-stations, of a series of normally-open loops, one for each sub-station, the said loops being in multiple arc with each other and each including the telephones of its respective sub-station, and an automatic switch at each sub-station connected with one of the main circuit-wires and adapted to form a part of one side of the loops of either class, according to its position, the calling apparatus and telephones in their several loops being uniformly upon the other side, whereby the use of the circuit at either station for telephony is adapted to prevent the other stations from using their calling apparatus, and whereby the several stations are enabled to simultaneously use their telephones for communication with each other, substantially as hereinbefore described.

405,462. GRAIN-WEIGHING APPARATUS. JAMES E. BURKEBARRICK, Robinson, Kans. Filed Feb. 9, 1889. Serial No. 299,285. (No model.)



Claim.—The grain or other measurer having the rotary compartment cylinder or receptacle hung or journaled upon a bail-shaped lever having a weighted graduated arm or extension, a spring-encircled stop disposed in the path of rotation of a series of projections upon the rotary cylinder or receptacle, and the spring stop or snap preventing any reactory movement of said cylinder or receptacle, substantially as described.

405,463. DEVICE FOR SETTING OR COOLING PHOTOGRAPHIC EMULSIONS. JAMES W. T. CADETT, Ashstead, County of Surrey, England. Filed Nov. 20, 1888. Serial No. 291,309. (No model.) Patented in England Oct. 10, 1887, No. 13,726.

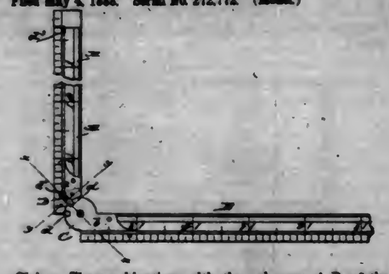


Claim.—1. In a cooling-machine, the combination, with a table having one or more channels in its surface, of the revoluble rollers journaled at the ends of the table, the carrier-belt passing over said table and around the rollers, and one or more pipes delivering water within the said grooves in the table for cooling the under side of the belt, substantially as and for the purpose set forth.

2. In a cooling-machine, the combination, with a table having one or more channels in its surface, of the revoluble rollers journaled at the ends of the table, the carrier-belt passing over said table and around the rollers, one or more pipes adapted to deliver water upon the upper surface of the belt, and one or more pipes delivering water within the said grooves in the table for cooling the under side of the belt, substantially as and for the purpose set forth.

3. In a cooling-machine, the combination, with a table having a transverse groove on its surface near its rear end, of the revoluble rollers journaled at the ends of the table, the carrier-belt passing over said table from rear to front, and a pipe provided with one or more openings for delivering water within the said groove in the table and cooling the under side of the belt, substantially as and for the purpose set forth.

405,464. SCALE-MEASURE. WILLIAM COOK, New York, N. Y. Filed May 4, 1888. Serial No. 272,772. (Model.)



Claim.—The combination, with the rule-arms A B, of the joint face-pieces *a b*, provided with notches in their contiguous curved edges, as specified, and the slide D, arranged in the notch of face-piece *a*, said notch having undercut sides for the purpose of retaining the slide therein, as shown and described.

405,465. TOUCH-REGULATOR FOR PIANOS. CARL P. BLIAS, Chicago, Ill. Filed Dec. 6, 1888. Serial No. 292,779. (No model.)

Claim.—1. A touch-regulator for pianos, comprising a bar fastened on pivoted arms and held in an uppermost position by springs, a lever for pressing the said bar, and springs secured to the action-levers and adapted to be engaged by the said bar, substantially as shown and described.

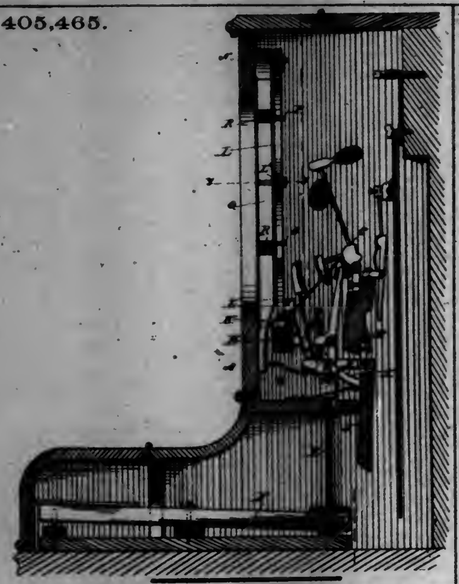
2. The combination, with a piano-action provided with springs, of a bar adapted to engage the said springs and mounted to swing, a spring for holding the said bar in an uppermost position, and a lever for pressing the said bar, substantially as shown and described.

3. The combination, with a piano-action provided with springs, of a bar adapted to engage the said springs and mounted to swing, a spring for holding the said bar in an uppermost position, a lever for pressing the said bar, and a wedge formed on the top of the said bar and engaged by the said lever, substantially as shown and described.

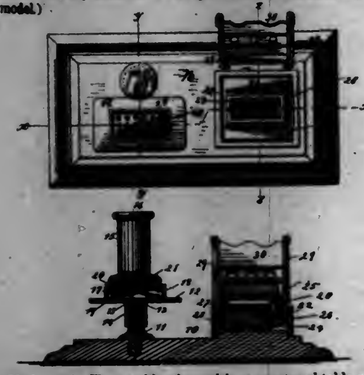
4. The combination, with a piano-action provided with springs, of a bar adapted to engage the said springs and mounted to swing, a spring for holding the said bar in an uppermost position, a lever for pressing the said bar, a wedge formed on the top of the said bar and engaged by the said lever, and stop-pins for limiting the movement of the said lever, substantially as shown and described.



405,465.



405,466. LABELING AND PASTING APPARATUS. ELIAS H. FAGLNER, Deposit, N. Y. Filed Apr. 17, 1888. Serial No. 270,895. (No model.)



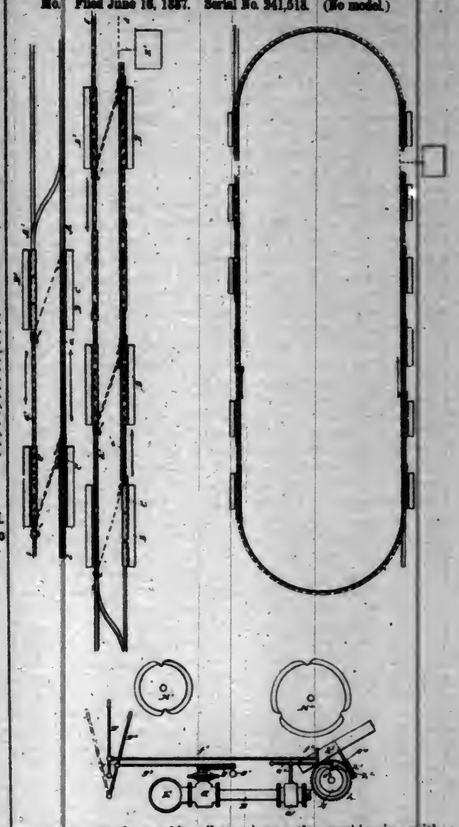
Claim.—1. The combination, with an apertured table provided with a flange upon its upper face surrounding said aperture, and a tubular support for said table, of a cylinder connected with said tubular support, and a spring-actuated pad resting upon the table above the apertures therein, substantially as and for the purpose herein set forth.

2. The combination, with an inclosing flange or casing open at its top, of a spring-seated paste-pad within said casing, a paste-receptacle being formed below the pad to supply paste thereto, substantially as set forth.

3. A label paster, holder, and affixer comprising a pasting-table, a cylinder supplying paste to said table, a spring-actuated pad resting upon said table, a box or casing adjacent to the pasting-table, provided with an upwardly-projecting pad secured centrally to its bottom, a spring-actuated vertically-reciprocating guide-plate provided with an opening adapted to receive the pad, and a flange projecting upward from said guide-plate and surrounding the pad-opening, substantially as and for the purpose specified.

4. A label paster, holder, and affixer consisting in a pasting-table, a cylinder adapted to supply paste to said table, a spring-actuated pad of absorbent material resting upon said table, a box or casing arranged adjacent to the pasting-table, provided with a pad secured centrally to its bottom and projecting upward essentially flush with the upper edges of the box or casing, and springs attached to the bottom of the said box or casing, one at each side of said pad, a the guide-plate resting upon said springs adapted for vertical reciprocation in the box or casing and provided with an opening adapted to receive the pad, and a vertical flange projecting from the upper surface of the guide-plate around the pad-opening a short distance therefrom, substantially as and for the purpose specified.

405,467. SYSTEM OF RAPID TRANSIT. HENRY FLAD, St. Louis, Mo. Filed June 16, 1887. Serial No. 241,513. (No model.)



Claim.—1. In a cable-railway system, the combination, with a series of endless cables arranged in succession, the two strands of each endless cable being located between the stations, of independent motors for actuating each cable, a source of supply common to all the motors and constructed and arranged to supply power to all of said motors, and mechanism combined with each motor, whereby the cable is caused to travel a distance sufficient to propel the cable from one station to another and then to automatically stop both the cable and car, substantially as set forth.

2. In a cable-railway system, the combination, with a double track and a series of endless cables arranged successively along the line of both tracks, one strand of each cable extending from one station to another on one track, and the other strand of the same cable extending from one station to another on the other track, of independent motors for actuating each cable, a source of supply common to all the motors and constructed and arranged to supply power to all of said motors, and mechanism combined with each motor for causing the cable to propel the car from one station to another on each track, and then to automatically stop both the cable and car, substantially as set forth.

3. In a cable-railway system, the combination, with several cables located one after another along the track, independent motors for actuating the cables, and a common power-supply to the several motors, of a power-regulator between the power-supply and the motor, whereby the force of the motor is proportioned to the load, substantially as set forth.

4. In a cable-railway system, the combination, with an endless cable, a motor for driving the cable, and a power-supply to the motor, of a power-regulator located between the supply and the motor, and a regulator-operating device under the control of the train-manager, whereby the force of the motor may be regulated to suit the load, substantially as set forth.

5. In a cable-railway system, the combination, with several endless cables located one after another along the track, independent motors for actuating the cables, and a common supply of compressed air to the several motors, of a pressure-regulating valve located between the supply and the motor, and a valve-operating lever under the control of the train-manager, substantially as set forth.

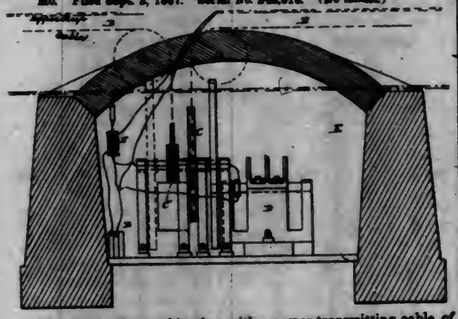
6. In a cable-railway system, the combination, with several endless cables located one after another along a track, motors for actuating the cables, and a common power-supply, of starting mechanism under the control of the train-manager, and mechanism actuated by the motors and adapted to automatically shut off the power from the motor as the train nears the end of the cable-section, substantially as set forth.

7. In a cable-railway system, the combination, with several endless cables located one after another along a track, motors for actuating the cables, and a common supply of compressed air to the several motors, of a valve to admit the compressed air to the motors, a valve-operating lever under the control of the train-manager, and a cam-wheel driven by the motor and adapted to hold the valve open and allow the valve to close at the desired intervals, substantially as set forth.

8. In a cable-railway system, the combination, with the series of endless cables, the independent motors, and the common supply of compressed air to actuate the motors, of the valve to regulate the pressure and the valve to start and stop the motor, the said valves being located between the common supply and the motor, and mechanism for operating the valves, substantially as set forth.

9. In a cable-railway system, the combination, with the series of endless cables, the independent motors, and the common power-supply, of the valve to admit the power to the motor, a cam-wheel, a toothed wheel on the cam-wheel shaft, a worm driven by the motor and adapted to mesh with the toothed wheel, and a valve-operating lever in engagement with the face of the cam-wheel, substantially as set forth.

405,468. STREET CABLE RAILWAY. HENRY FLAD, St. Louis, Mo. Filed Sept. 2, 1887. Serial No. 248,618. (No model.)



Claim.—1. The combination, with a power-transmitting cable, of a motor for driving the same, a permanently-charged electric conductor to supply power to the motor, and an independent electric circuit to control the admission of power to the motor.

2. The combination, with a track and a car carrying a grip, of a power-transmitting cable, a motor for actuating the same, means for admitting power to and cutting it off from the motor, a local electric circuit, and means for opening and closing the same to control the admission of power to the motor, substantially as set forth.

3. The combination, with a track and a car carrying a grip, of a power-transmitting cable, a motor for actuating the same, a local electrical circuit, means for opening and closing the same, an electro-magnet in said circuit, and a device for admitting power to and shutting it off from the motor, said device being connected with the armature of the magnet, substantially as set forth.

4. The combination, with a track and a car carrying a grip, of a power-transmitting cable, a motor, a permanently-charged conductor to supply power to the motor, a pair of insulated conductors located along the track, a local battery having its poles connected with the last-named conductor, a connector carried by the car for electrically uniting said insulated conductors, and devices located in said local circuit for controlling the admission of power to the motor, substantially as set forth.

5. In combination, a car carrying a grip, a track, a power-transmitting cable, a motor, a permanently-charged electric conductor to supply power to the motor, a pair of insulated conductors located along the opposite sides of the path in which the grip travels and having a connection with the poles of a local battery, an electro-magnet in circuit with said local battery to control the admission of power to the motor, and a circuit maker and breaker adapted to be operated by the grip mechanism, substantially as set forth.

6. In combination, a power-transmitting cable, a motor, a permanently-charged electric conductor to supply power to the motor, normally-open connections between the conductor and the poles of the motor, a local circuit, an electro-magnet in the local circuit, and devices for closing the normally-open connections between the main conductor and the motor, said devices being connected with the armature of the electro-magnet, so that when the magnet is energized the said connections will be closed and when the magnet is de-energized the connections will be open, substantially as set forth.

7. In combination, a power-transmitting cable, a motor to drive the cable, a companion motor to drive the cable, a permanently-charged electric conductor to furnish power to the motors, branch connections between the conductor and the motors, switches interposed in the branch connections to throw either motor into electric connection with the conductor at pleasure, and an independent electric circuit to control the admission of power to the motors, substantially as set forth.

8. In combination, a power-transmitting cable, a motor to drive the cable, a main electric conductor permanently charged to supply power to the motor, normally-open connections between the main conductor and the motor, a local electric circuit, an electro-magnet in the local circuit, a pair of short conductors constructed to slide into and out of contact with the ends of the branch connections to make or break the connection between the main conductor and the motor, and mechanism connecting the said sliding conductors with the armature of the magnet, for the purpose substantially as set forth.

9. In combination, a power-transmitting cable, a motor to drive the cable, a power-supply, a grip adapted to engage the cable, a local electric circuit extending for a greater or less distance along the path in which the grip travels, and an electric conductor attached to the grip and adapted to make and break the said local circuit as the grip is manipulated, substantially as set forth.

10. The combination, with several endless power-transmitting cables arranged one after another along a railway-track, independent motors to drive the cables, and a power-supply common to the several motors, of independent electric circuits—one for each cable-section—adapted to control the admission of power to the motors, substantially as set forth.

11. The combination, with several endless power-transmitting cables arranged one after another along a railway-track, independent motors to drive the cables, and a permanently-charged electric conductor extending along the track to supply power to the several motors, of independent electric circuits—one for each cable-section—adapted to control the admission of power to the motors, substantially as set forth.

12. The combination, with the local electric circuit and its conductors located along the path of the grip, of the grip carrying the circuit-closing bar and the clutch mechanism, means for adjusting the clutch and the circuit-closing bar up and down independent of each other, and means for adjusting the grip as a whole, substantially as set forth.

13. The combination, with the main plate of the grip secured to a suitable support on the car, provided with a vertical slot, of a vertically-sliding plate located in said slot and carrying a circuit-closer, a bar seated in vertically-sliding adjustment in a recess or slot formed in the said sliding plate, the said bar having clutch-operating mechanism attached thereto, means for operating the said bar independently of the sliding plate, and means for operating the plate and bar as a whole, substantially as set forth.

14. In a cable railway, the combination, with a power-transmitting cable, a motor to actuate the same, and insulated conductors located along the line of railroad, of the main plate of a grip and its support, a vertically-sliding plate seated in a slot formed in the sliding plate, a cable-guide depending from the sliding plate, a clutch attached to the depending guide, and means for operating the bar and sliding the plate, substantially as set forth.

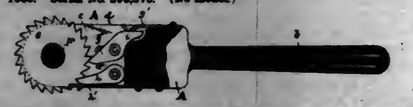
15. The combination, with a power-transmitting cable and a motor of the main plate of the grip and its support, of a vertically-sliding plate seated in the main plate, a vertically-sliding bar seated in the sliding plate, a circuit-closer carried thereby, a cable-guide depending from the sliding plate, a clutch consisting, essentially, of a pair of levers pivoted to the depending cable-guide, a rod or bolt connected with the upper ends of the clutch-levers by links and connected with the said vertically-sliding bar to operate the clutch, and means for operating the bar and the sliding plate, substantially as set forth.

16. The combination, with the grip consisting, essentially, of a vertically-sliding plate carrying a clutch and a vertically-sliding bar, the said vertically-sliding plate being provided with a circuit-closing bar having metallic brushes at its ends, of a pair of copper strips

located along the opposite sides of the path of the grip, the said strips being insulated from the surrounding surfaces and connected with the poles of a local battery, means for actuating the sliding bar to close the clutch, and means for actuating the sliding plate to elevate the clutch and bring the said metallic brushes into contact with the copper strips, whereby the local circuit is closed when the clutch is in position to travel, for the purpose substantially as set forth.

17. In a cable railway, the combination, with the grip and an electric circuit to control the movements of the cable, of circuit-closing bar attached to the grip and provided with brushes to form points of contact to close the circuit and means for throwing the said circuit into and out of contact, substantially as set forth.

405,469. RATCHET-STOCK. GEORGE W. GLENN, Baltimore, Md., assignor of one-half to Wesley C. Thorpe, Jr., same place. Filed Feb. 1 1889. Serial No. 298,373. (No model.)



Claim.—1. In a ratchet-stock tool-holder, the combination, with the bifurcated head A and the shaft with ratchet-wheel *e* mounted in said head, of the pawls *g h*, with springs *g' h'*, the pawl *g* being centrally pivoted to form an arm *i*, substantially as and for the purpose set forth.

2. A ratchet-stock tool-holder consisting of the bifurcated head A, the shaft with ratchet-wheel *e* mounted in said head, and the pawls *g h*, with springs *g' h'*, the pawl *g* being pivoted at its center to form an arm *i*, so as to have a movement at both ends of said pawl, substantially as specified.

405,470. HORSESHOE. MICHAEL GATES, Decatur, Mich. Filed Oct. 23, 1888. Serial No. 288,974. (No model.)



Claim.—A soft-ground shoe consisting of a plate, adjustable hoof-clamps attached to the plate, adjustable heel-clamps C C, also attached to the plate, and beveled eccentric buttons D D, pivoted upon opposite sides of the said plate and adapted to bear upon opposite sides of the hoof and assist in clamping the shoe thereto, substantially as described.

405,471. APPARATUS FOR GENERATING ELECTRICITY. TIMOTHY GLEESON, Brooklyn, N. Y. Filed July 25, 1888. Serial No. 280,964. (No model.)

Claim.—1. An apparatus for generating electricity, consisting of a vibratory magnet and a soft-iron core supported above the magnet and surrounded by an insulated coil, substantially as described.

2. In an apparatus for generating electricity, the combination of a magnet, means for alternately moving the magnet in opposite directions, a soft-iron core supported above the magnet, and an insulated coil surrounding said core, substantially as herein shown and described.

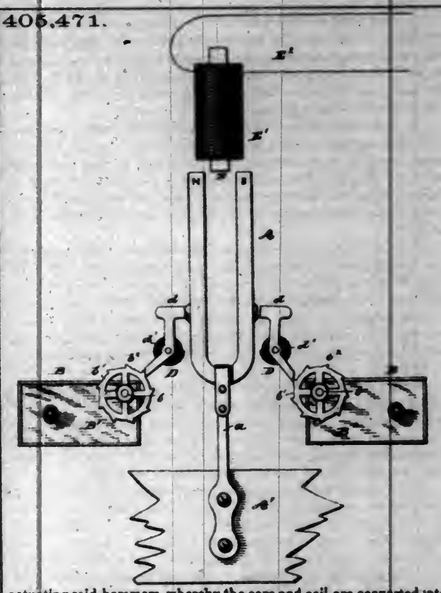
3. In an apparatus for generating electricity, the combination of a vibratory magnet, motors for vibrating said magnet, a soft-iron core supported above the magnet, and an insulated coil surrounding said core, substantially as described.

4. In an apparatus for generating electricity, the combination, with a forked vibrating contact-maker, of spring-actuated hammers engaging opposite sides of the fork, and means, substantially as shown and described, for alternately actuating said hammers, as and for the purpose specified.

5. In a machine for generating electricity, the combination, with a forked vibratory stationary magnet, of spring-actuated hammers engaging opposite faces of the said magnet, and clock mechanism alternately actuating said hammers, substantially as shown and described.

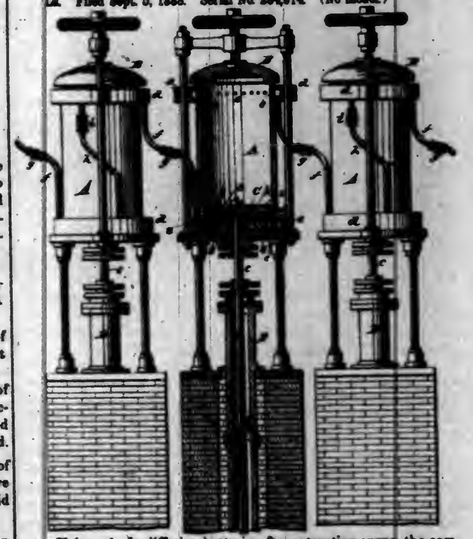
6. In a machine for generating electricity, the combination, with a forked vibratory stationary magnet, a soft-iron core suspended above the poles of the magnet, and an insulated coil surrounding said core, of spring-actuated hammers engaging opposite sides of said magnet, and mechanism, substantially as shown and described, for alternately

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actuating said hammers, whereby the core and coil are converted into an electric magnet, as and for the purposes specified.

405,472. DIFFUSION-BATTERY. WILLIAM GOLDING, New Orleans, La. Filed Sept. 5, 1888. Serial No. 284,814. (No model.)



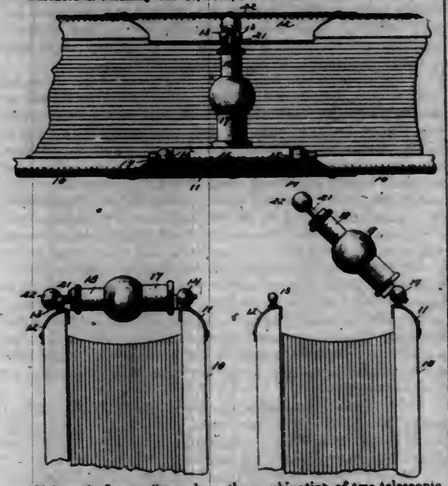
Claim.—1. In diffusion-batteries for extracting sugar, the combination of a series of cells or diffusion-chambers composed of upright cylinders connected the lower end of one cylinder with the upper end of an adjacent cylinder, opening and closing covers applied to the upper ends of the cylinders, perforated pistons fitting said cylinders, provided with one or more valves operating to allow of the passage of fluid through the pistons in their downstroke, and means for operating said pistons, substantially as specified.

2. In a diffusion-battery for extracting sugar, the cylinders A, constructed with hollow belts *d* at their upper and lower ends in circumferential communication with the cylinder by a series of apertures *c*, in combination with the connecting-pipes *f* between the cylinders and a perforated reciprocating piston C in each cylinder having valves *k*, and a perforated shield or distributer *l* over said valves, essentially as described.

3. The passover-pipes *h* and valves *i*, in combination with the cylinders A, having opening and closing covers B at their upper ends, the pipes *f*, connecting said cylinders, and a perforated reciprocating piston C in each cylinder fitted with valves *k*, substantially as specified.

4. In a diffusion-battery for extracting sugar, the combination of the cylinders A A, having opening and closing covers applied to their upper ends, and hollow belts *d* at their opposite ends in communication with each cylinder circumferentially by apertures *c*, the pipes *f*, connecting said cylinders, the perforated piston C in each cylinder having valves *k* and a perforated shield or distributer *l*, and a hydraulic device connected with said piston and operating to raise it, essentially as herein set forth.

405,473. ALBUM-CLASP. HENRY P. HINKEL, Offenbach-on-the-Main, Germany. Filed Feb. 12, 1888. Serial No. 263,616. (No model.) Patented in Germany Oct. 11, 1886, No. 45,772.



Claim.—1. In an album-clasp, the combination of two telescopic sections and a spring secured in one section and adjustably connected to the other section, substantially as described.

2. In an album-clasp, the combination of two telescopic sections, one of the sections being provided with a nose or lug, and a spiral spring secured in one section and receiving the nose or lug of the other section between its spirals, substantially as herein shown and described.

3. In an album-clasp, the combination, with a hinge and keeper plate, of a hinged cylindrical section, a smaller cylindrical section fitting in the hinged section and provided with a nose or lug and adapted to engage the keeper-plate, and a spring secured in the hinged section and having its spirals engaged by the nose of the smaller section, substantially as specified.

4. The combination, with a hinge-plate and a hinge-bar journaled thereon, of a clasp consisting of two tubular telescopic sections, the outer section provided with a longitudinally-disposed spiral or coil spring rigidly secured at one end, and an inner section having a lug or nose projected downward from the inner end, capable of contact with the said spring between the said coils, a locking device integral with the outer end, and a clasp-plate provided with spaced buttons adapted to receive the locking device, all combined for operation, substantially as shown and described.

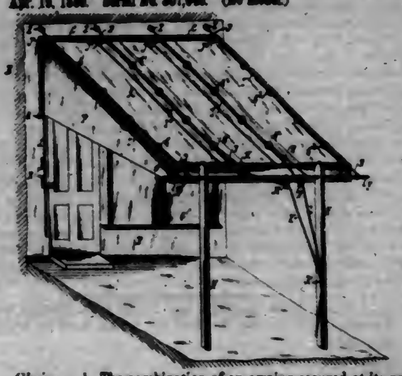
405,474. RUNG-SOCKET PLATE FOR TRUCKS. GEORGE HOEFFNER and HENRY WURST, New York, N. Y. Filed Nov. 15, 1888. Serial No. 290,916. (No model.)



Claim.—1. As an improved article of manufacture, a combined rung plate and socket consisting of a horizontal flat plate having a longitudinal aperture produced therein, and a box-like casing surrounding the said aperture and projecting downward from the under face of the plate, substantially as shown and described.

2. As an improved article of manufacture, a combined rung plate and socket consisting of a metallic horizontal plate having one straight end surface and provided with a longitudinal opening at or near the said straight surface, and a box-like casing constituting a socket integral with the under surface of the plate and surrounding the longitudinal opening therein, substantially as and for the purpose specified.

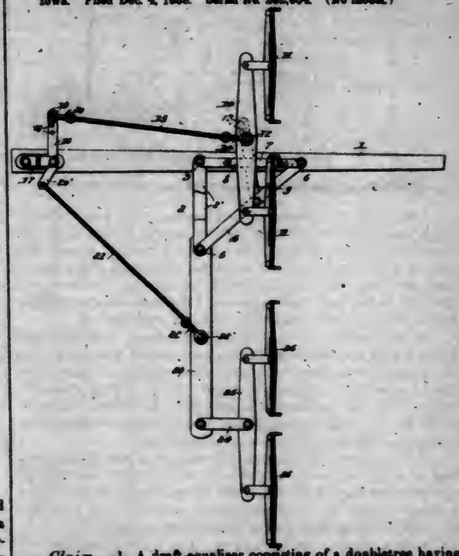
405,475. AWNING. FREDERICK HASSMER, Brooklyn, N. Y. Filed Apr. 19, 1888. Serial No. 307,648. (No model.)



Claim.—1. The combination of an awning secured at its upper edge and provided adjacent thereto with a transverse row of eyebolts, a series of rows of rings secured at intervals along the length of the awning, a series of longitudinal stationary ropes secured at their upper ends, a support for the lower ends of the stationary ropes, and the awning-raising ropes passing through the eyebolts and rings and respectively secured at the lower edge of the awning, substantially as described.

2. The combination of an awning secured at its upper edge and provided adjacent thereto with a transverse row of eyebolts, a series of rows of rings secured at intervals along the length of the awning, a transverse rod supported at the lowest portion of the awning, a series of longitudinal ropes secured at their upper ends and fastened at their lower ends to the transverse rod, the awning-raising ropes passing through the eyebolts and rings and secured at the lower edge of the awning, substantially as set forth, and ropes supported from the transverse rod and secured to the lower end of the awning for extending the latter.

405,476. DRAFT-EQUALIZER. CHARLES F. HOLCK, Laporte City, Iowa. Filed Dec. 4, 1888. Serial No. 292,604. (No model.)



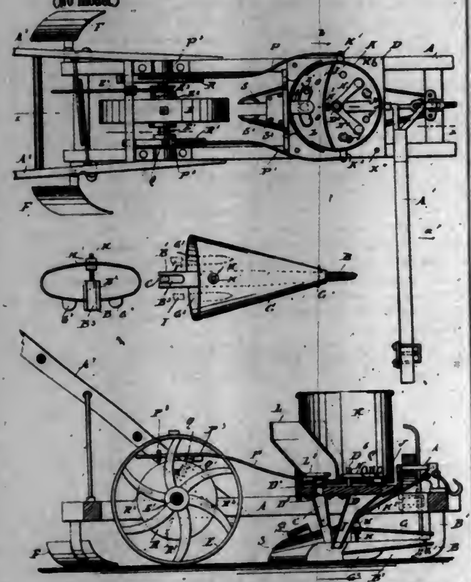
Claim.—1. A draft-equalizer consisting of a doubletree having singletrees, a bar pivoted at one end to a lateral frame on the pole and pivotally connected at its outer end to the doubletree, a cross-bar

pivoted to the rear end of the pole and loosely connected at one end by a rod loosely connected at its other end to the bar pivoted to the lateral frame on the pole, and a doubletree with singletrees on the opposite side of the pole pivoted to the end of a bar extending across the pole and pivoted at its other end to the lateral frame, with a rod loosely connected at one end to the doubletree and at the other to one end of the cross-bar pivoted to the rear of the pole, substantially as shown and described.

2. A draft-equalizer consisting of doubletrees 10 and 25, with singletrees 11 and 26, respectively, on opposite sides of the pole, a triangular frame on one side of the pole consisting of double bars 2' and diagonal brace-bar 4, fastened to the pole, a strap 7, with upwardly-bent portion 8, secured to the pole between the ends of bars 2 and brace-bar 4, a swinging bar 9, pivoted at one end to brace-bar 4, extending beneath strap 7, and having adjustably secured to its other end by holes 13 and bolt 12 the doubletree 10, a bar 23, pivoted at one end to the outer end of bars 2', and pivotally connected by double straps 24 with doubletree 25, and cross-bar 16, adjustably connected at one end by means of holes 18, bolt 19, and clevis 20 with one end of a rod 15, the other end of which connects by a clevis 14 and bolt 12 with doubletree 10, and the other rearwardly-inclined end 20' of bar 16 connected to one end of a rod 21, the other end of which connects by clevis 22 and bolt 23' with doubletree 25, substantially as shown and described.

405,477. SEED-PLANTER AND FERTILIZER-DISTRIBUTER.

WHITSON A. HOLT, Harrison, Mo. Filed Nov. 6, 1888. Serial No. 290,105. (No model.)



Claim.—1. In a planter, the combination, with a frame, of a central plow held on the said frame, side plows held parallel on the said central plow, chutes opening on the rear ends of the said plows, a plate secured to the main frame and supporting said chutes, a disk held to oscillate on the said fixed plate and having openings registering with openings in the said fixed plate, and a fertilizer and a seed-hopper held on the said disk, substantially as shown and described.

2. In a planter, the combination, with a frame, three plows, and a main wheel, of a disk supporting the seed and the fertilizer hoppers and mounted to oscillate, being operated from the said main wheel, a fixed plate held on the said frame and having openings adapted to register with the openings in the said disk, and chutes held on the under side of the said fixed plate and leading to furrows made by the said plows, substantially as shown and described.

3. In a planter, the combination, with a fixed plate having openings, of a disk mounted to oscillate on the said plate and provided with openings adapted to register with the openings in the fixed plate, a hopper carried by the oscillating disk, and fixed arms secured to the pivot of the oscillating plate, substantially as described.

4. In a planter, the combination, with a fixed and apertured plate, of oscillating disk above the plate and provided with openings adapted to register with the openings of the fixed plate, a hopper carried by the oscillating disk, and fixed arms secured to the pivot of the said oscillating disk and provided with rods projecting therefrom, substantially as and for the purpose set forth.

5. In a planter, the combination, with a fixed plate having openings, of a disk held to oscillate on the said plate and having openings adapted to register with the openings in the said plate, a fertilizer-hopper secured on the said disk, and fixed arms held on the said hopper in line with the openings in the said fixed plate, rods secured to the said arms to agitate the fertilizer in the said fertilizer-hopper, and buttons adapted to close one or more of the said openings in the said disk, substantially as shown and described.

6. In a planter, the combination, with a frame and a plate secured to the said frame and having openings, of a disk mounted to oscillate on the said fixed plate and having openings adapted to register with the openings in the said fixed plate, a seed-hopper and a fertilizer-hopper secured on the said disk, rods connected with the said disk and provided with lugs, wheels provided with lugs adapted to engage the lugs on the said rods, a shaft carrying the said wheels and mounted on the said main frame, and a wheel held on the said shaft for rotating the latter on the forward movement of the machine, substantially as shown and described.

7. In a planter, the combination, with a frame and a plate secured to the said frame and having openings, of a disk mounted to oscillate on the said fixed plate and having openings adapted to register with the openings in the said fixed plate, a seed-hopper and a fertilizer-hopper secured on the said disk, rods connected with the said disk and provided with lugs, wheels provided with lugs adapted to engage the lugs on the said rods, a shaft carrying the said wheels and mounted on the said main frame, a wheel held on the said shaft for rotating the latter on the forward movement of the machine, and a clutch mechanism for connecting or disconnecting said main wheel with or from the said shaft, substantially as shown and described.

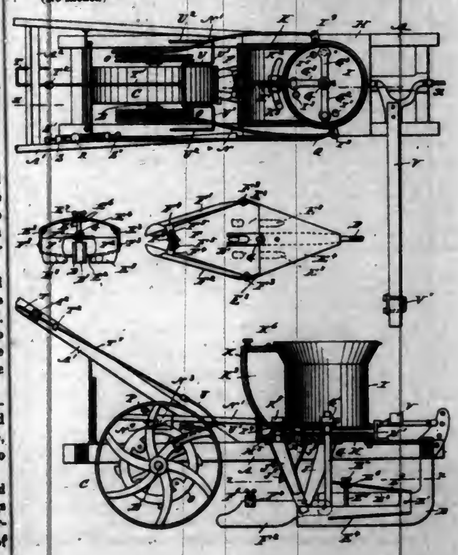
8. In a planter, the combination, with a fixed plate having an aperture, of a disk held to oscillate on the said plate and having a segmental slot, a plate fitting into the said segmental slot and having one or more apertures adapted to register with the openings in the said disk, a seed-hopper secured on the said disk around the said segmental slot, and a brush secured in the said seed-hopper and held directly above the opening in the said fixed plate, substantially as shown and described.

9. In a planter, the combination, with a frame, of a wheel supporting the rear end of the said frame, a plow supporting the front end of the said frame, and a casing mounted to swing on the said plow, substantially as shown and described.

10. In a planter, the combination, with a frame, of a wheel supporting the rear end of the said frame, a plow supporting the front end of the said frame, a casing mounted to swing on the said plow, two plows held on the under side of the said casing parallel with the said central plow, and means for raising and lowering said casing, substantially as shown and described.

405,478. SEED-PLANTER AND FERTILIZER-DISTRIBUTER.

WHITSON A. HOLT, Harrison, Mo. Filed Jan. 22, 1889. Serial No. 297,172. (No model.)



Claim.—1. In a planter, the combination, with a main frame, a plow held on the front end of the said frame, and a main driving-wheel held to turn on the rear end of the said main frame, of a fertilizer-hopper held to turn on the said main frame and actuated by rotation of the main wheel, a seed-box held stationary on the said main frame, and a drop-plate held on the said fertilizer-hopper and operating under the seed-box, substantially as shown and described.

2. In a planter, the combination, with a main frame, a plow held on the front end of the said frame, and a main driving-wheel held to turn on the rear end of the said main frame, of a fertilizer-hopper held to turn on the said main frame and actuated by rotation of the main wheel, a seed-box held stationary on the said main frame, a drop-plate held on the said fertilizer-hopper and operating under the seed-box, and a seat provided with apertures and secured on the main frame under the said drop-plate and fertilizer-hopper, substantially as shown and described.

3. In a planter, the combination, with a main frame, a plow held on the front end of the said frame, and a main driving-wheel held to turn on the rear end of the said main frame, of a fertilizer-hopper held to turn on the said main frame and actuated by rotation of the main wheel, a seed-box held stationary on the said frame, a drop-plate held on the said fertilizer-hopper and operating under the seed-box, a seat provided with apertures and secured on the main frame under the said drop-plate and fertilizer-hopper, and fixed arms held in the fertilizer-hopper to cover up alternately the discharge-openings in the bottom of the hopper, substantially as shown and described.

4. In a planter, the combination, with a main driving-wheel and cam-wheels rotating with the said main wheel, of rods actuated by the said cam-wheels, and a fertilizer-hopper mounted to turn and connected at its sides with the said rods, substantially as shown and described.

5. In a planter, the combination, with a main driving-wheel and cam-wheels rotating with the said main wheel, of rods actuated by the said cam-wheels, and a fertilizer-hopper mounted to turn and connected at its sides with the said rods, the said fertilizer-hopper being provided in its bottom with sets of apertures, and a fixed seat having apertures with which are adapted to register alternately the apertures of the sets of apertures, substantially as shown and described.

6. In a planter, the combination, with a main driving-wheel and cam-wheels rotating with the said main wheels, of rods actuated by the said cam-wheels, and a fertilizer-hopper mounted to turn and connected at its sides with the said rods, the said fertilizer-hopper being provided in its bottom with sets of apertures, a fixed seat having apertures with which are adapted to register alternately the apertures of the sets of apertures, and fixed arms held in the said hopper to cover up alternately the apertures in the sets of apertures, substantially as shown and described.

7. In a planter, the combination, with a fertilizer-hopper mounted to turn and provided with sets of apertures in its bottom, a fixed apertured seat held under the said hopper, and fixed arms held in the said hopper over the sets of apertures, of rods connected with the said hopper on its sides, and sets of cam-wheels, substantially as described, for imparting a forward and backward motion to the said rods, as set forth.

8. In a planter, the combination, with a fertilizer-hopper mounted to turn and provided with sets of apertures in its bottom, a fixed apertured seat held under the said hopper, and fixed arms held in the said hopper over the sets of apertures, of rods connected with the said hopper on its sides, sets of cam-wheels, substantially as described, for imparting a forward and backward motion to the said rods, and a main driving-wheel for imparting a rotary motion to the said cam-wheels, substantially as shown and described.

9. In a planter, the combination, with the sets of cam-wheels O, O', and O^3, each having projections, of rods each having a shoulder adapted to be engaged by the said projections, and a fertilizer-hopper mounted to turn and connected with the said rods, substantially as shown and described.

10. In a planter, the combination, with the sets of cam-wheels O, O', and O^3, each wheel having one or more projections, of rods connected with the fertilizer-hopper at its sides, shoulders formed on the said rods and operated on by the said projections when the cam-wheels are turned, and flanges held on the said rods on the sides of the shoulders to hold the rods on the cam-wheels, substantially as shown and described.

11. In a planter, the combination, with the sets of cam-wheels O, O', and O^3, each wheel having one or more projections, of rods connected with the fertilizer-hopper at its sides, shoulders formed on the said rods and operated on by the said projections when the cam-wheels are turned, flanges held on the said rods on the sides of the shoulders to hold the rods on the cam-wheels, and screws in the said rods to engage the periphery of the cam-wheels, substantially as shown and described.

12. In a planter, the combination, with the sets of cam-wheels O, O', and O^3, each having projections, of rods each having a shoulder adapted to be engaged by the said projections, a fertilizer-hopper mounted to turn and connected with the said rods, and means, substantially as described, for throwing the said rods out of contact with the said cam-wheels, as set forth.

13. In a planter, the combination, with a fertilizer-hopper having apertures in its bottom and mounted to turn, of a fixed apertured seat held under the said hopper, a seed-box secured on the said fixed seat, and a drop-plate held on the said hopper and projecting under the slotted bottom of the said seed-box, substantially as shown and described.

14. In a planter, the combination, with a fertilizer-hopper having apertures in its bottom and mounted to turn, of a fixed apertured seat held under the said hopper, a seed-box secured on the said fixed seat, a drop-plate held on the said hopper and projecting under the slotted bottom of the said seed-box, and a partition held in the said seed-box to divide the latter into two compartments, substantially as shown and described.

15. In a planter, the combination, with a fertilizer-hopper having apertures in its bottom and mounted to turn, of a fixed apertured seat held under the said hopper, a seed-box secured on the said fixed seat, a drop-plate held on the said hopper and projecting under the slotted bottom of the said seed-box, a partition held in the said seed-box dividing the latter into two compartments, rods connected with the said hopper, cam-wheels for operating the said rods, and a main driving-wheel actuating the said cam-wheels, substantially as shown and described.

16. In a planter, the combination, with a fertilizer-hopper having apertures in its bottom and mounted to turn, of a fixed apertured seat held under the said hopper, a seed-box secured on the said fixed seat, a drop-plate held on the said hopper and projecting under the slotted bottom of the said seed-box, a partition held in the said seed-box to divide the latter into two compartments, a rod connected with one side of the said hopper, and a lever pivotally connected with the said rod for turning the said hopper by hand, substantially as shown and described.

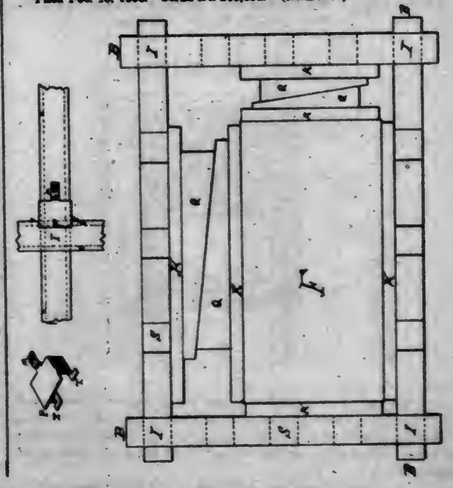
17. In a planter, the combination, with a fertilizer-hopper having apertures in its bottom and mounted to turn, of a fixed apertured seat held under the said hopper, a seed-box secured on the said fixed seat, a drop-plate held on the said hopper and projecting under the slotted bottom of the said seed-box, a partition held in the said seed-box to divide the latter into two compartments, a rod connected with one side of the said hopper, a lever pivotally connected with the said rod for turning the said hopper by hand, and means, substantially as described, for limiting the movement of the said lever, as set forth.

18. In a planter, the combination, with a main plow, of a mold-board pivoted on the said plow, and covering-shovels pivotally connected with the said mold-board at its end, substantially as shown and described.

19. In a planter, the combination, with a main plow, of a mold-board pivoted on the said plow, covering-shovels pivotally connected with the said mold-board at its end, and means for connecting with each other the rear ends of the said shovels, as set forth.

405,479. PRINTER'S CHASE.

PAUL HUSTHER, Allegheny, Pa. Filed Feb. 13, 1888. Serial No. 263,852. (No model.)

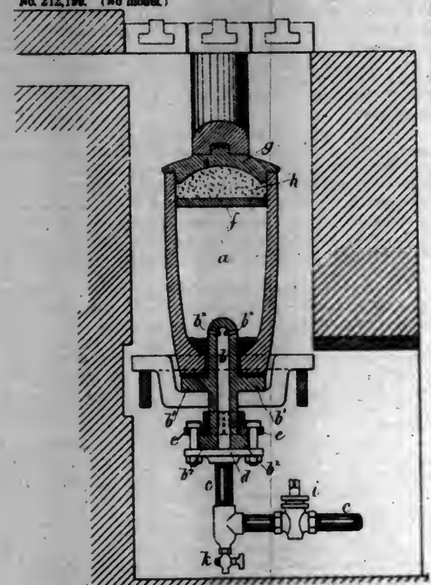


Claim.—1. A printer's chase composed of four similar interlocking bars, each provided with two or more superficial notches, substantially as described.

2. The combination, with a printer's chase composed of four interlocking bars, each provided with two or more superficial notches of sliding clamps which embrace the bars at their intersection, substantially as described.

405,480. MANUFACTURE OF CARBON FILAMENTS.

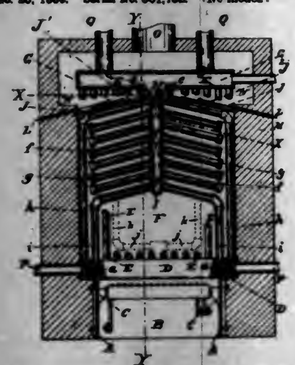
THEOPHILUS V. HUGHES, Holywell, North Wales, and CHARLES E. CHAMBERS, South Kensington, County of Middlesex, England. Filed Aug. 30, 1888. Serial No. 283,190. (No model.)



Claim.—The herein-described process of manufacturing dense homogeneous, resilient, and hair-like carbon filaments for glow-lamps, which process consists in causing a gaseous carbon compound (capable of yielding carbon when decomposed by heat) to undergo decomposition in a heated retort, the gases while undergoing the decomposition having such motions impressed upon them that vertical or gyrating currents of gas are set up through the atmosphere of the retort, from which currents the carbon resulting from the decomposition segregates directly in the form of filaments, as hereinbefore described.

405,481. WATER-HEATER.

CHARLES G. JEWETT, Howell, Mich. Filed Feb. 25, 1889. Serial No. 301,132. (No model.)



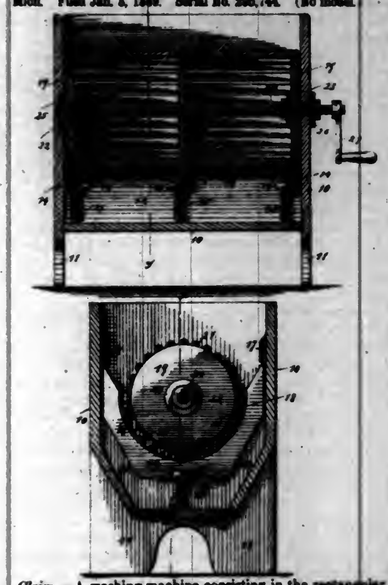
Claim.—1. In a water-heater, the combination of a lower water-ring, an upper water-chamber provided with a depending water-leg dividing the combustion-chamber transversely, and connections between the water-ring and the top and bottom of said water-leg, substantially as described.

2. In a water-heater, the combination of a lower water-ring, an upper chamber provided with a depending central water-leg dividing the combustion-chamber in two, connections between the top and bottom of said water-leg and the water-ring, direct connections between the water-ring and the water-chamber at the edge, and the heating-tubes *f*, attached to said water-leg, substantially as described.

3. In a water-heater, the combination of a lower water-ring, an upper water-chamber provided with a depending water-leg having inclined steps, inclined heating-tubes engaged in suitable screw-threaded apertures therein, and the pipes *h*, *i*, and E, connecting the water-ring with the water-leg and water-chamber, substantially as and for the purpose described.

405,482. WASHING-MACHINE.

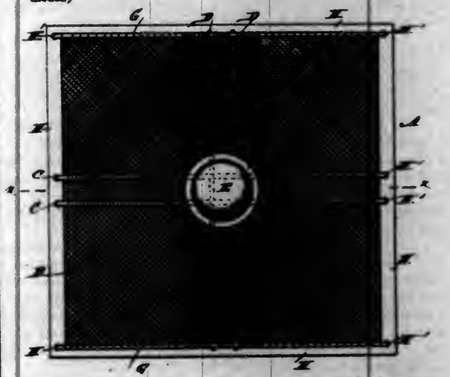
HANS JOHNSEN, Hermansen, Mich. Filed Jan. 8, 1889. Serial No. 295,744. (No model.)



Claim.—A washing-machine consisting in the rectangular tub or box 10, having a dish-shaped bottom 12, the transverse spaced blocks 14, shaped to conform to said bottom and having central transverse projections 16 on their lower sides, the springs 15, on which said projections rest, the semicircular sheet 18 of corrugated zinc extending from end to end of the box and secured to the concave upper faces of said blocks, the rotary rubber formed of centrally-apertured disks 19 20, and spaced bars 21, secured thereto, the shaft 22, the collars 23, and bearings in the ends of box for said shaft, substantially as set forth.

405,483. DIAPHRAGM FOR ACOUSTIC TELEPHONES.

HENRY P. JOHN, New York, N. Y. Filed Apr. 4, 1888. Serial No. 269,534. (No model.)



Claim.—1. As a new article of manufacture, a diaphragm for acoustic telephones, consisting of a piece of fabric having strands or cables of greater strength than the ordinary woof and weft threads of the fabric interwoven in it, the said strands or cables intersecting each other at the center to form a support for the button and line-wire, substantially as set forth.

2. As a new article of manufacture, a diaphragm for acoustic telephones, consisting of a piece of silk and woolen fabric having strands or cables of greater strength than the ordinary warp and weft threads of the fabric interwoven in it, the said strands or cables intersecting each other at the center to form a support for the button and line-wire, as set forth.

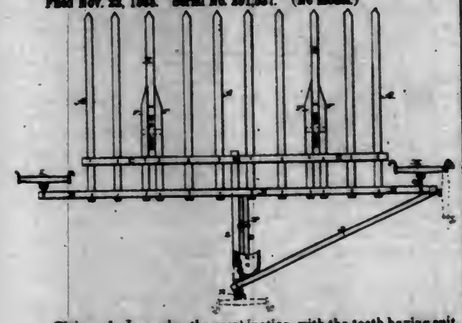
3. A piece of fabric woven of silk and woolen threads, and rods or cables crossing each other and interwoven in the said fabric, in combination with a button secured in the middle of the fabric at the intersection of the crossing rods or cables, and a wire extending from the said button, substantially as shown and described.

4. The combination, with a rectangular frame, of a piece of fabric woven of silk and woolen threads, rods or cables crossing each other and interwoven in the said fabric and also secured to the said rectangular frame, a button secured in the middle of the said fabric at the intersection of the crossing rods or cables, and a wire extending from the said button, substantially as shown and described.

5. The combination, with a frame, of a piece of fabric woven of silk and woolen threads, rods or cables crossing each other in the middle of the fabric and interwoven in the said fabric, being also fastened by their ends to the said frame, rods secured to the opposite ends of the fabric and fastened to the said rectangular frame, a button secured in the middle of the fabric at the intersection of the crossing rods or cables, and a wire leading from the back of the said button, substantially as shown and described.

405,484. HORSE HAY-RAKE.

OREN H. KING, Houghton, Iowa. Filed Nov. 22, 1888. Serial No. 291,857. (No model.)

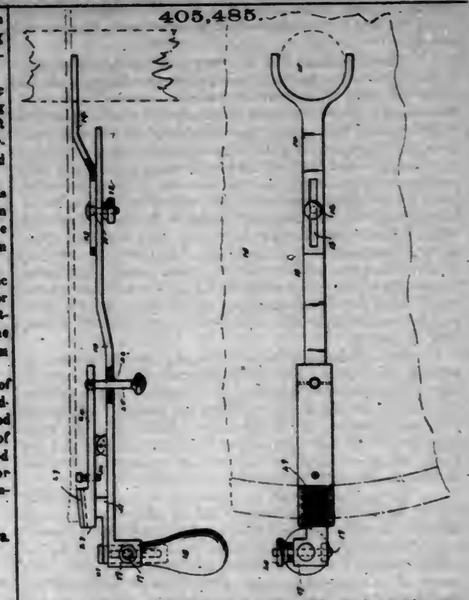


Claim.—1. In a rake, the combination, with the teeth having suitable transverse beams rigidly connecting their rear ends and supporting-wheels journaled in the rake-frame in advance of the transverse beams, of a rearwardly-extending beam having its front end loosely connected to the frame in the rear of the wheels, a supporting-wheel at its rear end, and an operating-bar pivoted upon the said beam having a seat upon its rear end and its front end engaging the rake-frame back of the supporting-wheels, whereby the rake automatically balances itself and the points of the teeth are forced down by the weight of the driver, substantially as shown and described.

2. The combination, with the hay-rake provided with the stringer B, which has its ends to project beyond the sides of the teeth, of the diagonal brace J, a seat-beam L, with the loop, and the singletree H, whereby the draft at one end of the stringer B can be transferred from that end of the stringer B to and along the diagonal brace J, substantially as set forth.

405,485. SAW-DRESSING DEVICE.

WALTER KIRKPATRICK, Marinette, Wis. Filed Mar. 21, 1888. Serial No. 304,108. (No model.)



Claim.—1. An implement for side-dressing saw-teeth, comprising a body having a handle at one end, a guide fork or block detachably secured to the opposite end, and a lever fulcrumed upon the inner face of the body provided with a guide-screw and a detachable file, all combined for operation substantially as shown and described.

2. In an implement for side-dressing the teeth of saws, the combination, with a body provided with a handle at the outer extremity, of an arbor fork or block adjustably secured to the inner side of the said body near the inner end, a lever fulcrumed upon the said inner side of the body forward of the center, having an undercut recess in the outer extremity, a file detachably held in the said undercut recess, and a guide-screw adapted for contact with the face of the saw, substantially as shown and described.

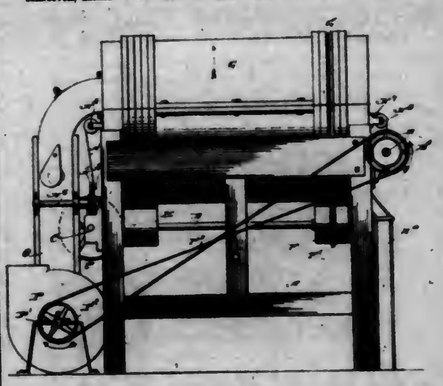
3. In an implement for side-dressing the teeth of saws, the combination, with a body provided with a handle at the outer extremity and an arbor-fork or saw-receiving arm adjustably secured to the inner face of the said body near the inner end, of a lever fulcrumed upon the inner face of the said body forward of the center and provided with a manipulating-pin near one extremity, and an offset or projection having an undercut recess in the opposite extremity, a file detachably held in the said recess of the offset or projection, and a guide-screw passing from the said lever capable of contact with the face of the said saw, substantially as shown and described.

4. The combination, with a body provided with a handle at the outer extremity, of an arbor-fork or saw-receiving block detachably secured to the inner end of said body, a lever fulcrumed upon the body forward of the center, a manipulating-pin attached to the inner end of the said lever and passing through the body, a projection formed upon the inner surface of the lever at the outer end having an undercut recess therein, a file detachably held in the said undercut recess, a guide-screw attached to the lever and capable of contact with the face of the saw, an adjustable clamp attached to the body at the outer end, and a guide-plate held in the said clamp for contact with the outer end of the said lever, all combined for operation substantially as and for the purpose specified.

405,485.

405,486. MIDDLINGS-PURIFIER.

WILLIAM KLOSTERMANN, Young America, Minn. Filed June 20, 1888. Serial No. 278,209. (No model.)

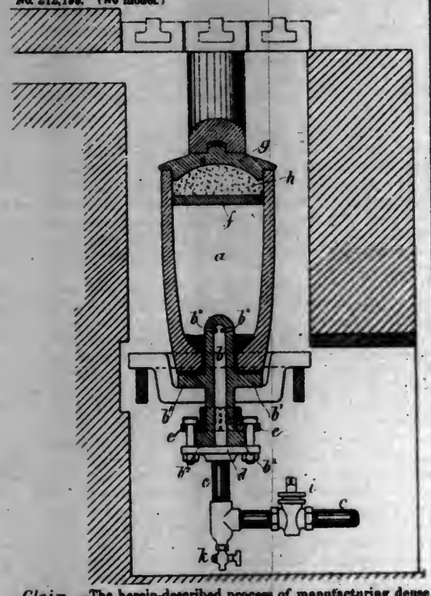


Claim.—1. In a middlings-purifier, the combination, with a rotary drum provided with elevator-strips on its inner surface, of a peaked section held stationary in the said drum, inclined riffles secured to the sides of the said peaked section, a riddling-box held to slide longitudinally below the said peaked section, which discharges into the riddling-box, a feed-spout discharging into one end of the said drum, and

Claim.—1. A printer's chase composed of four similar interlocking bars, each provided with two or more superficial notches, substantially as described.

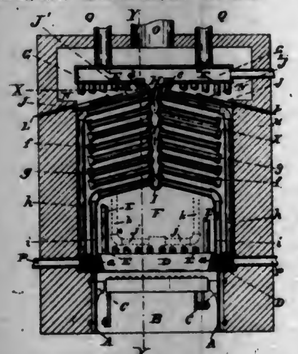
2. The combination, with a printer's chase composed of four interlocking bars, each provided with two or more superficial notches of sliding clamps which embrace the bars at their intersection, substantially as described.

405,480. MANUFACTURE OF CARBON FILAMENTS. THEOPHILUS V. HUGHES, Holywell, North Wales, and CHARLES R. CHAMBERS, South Kensington, County of Middlesex, England. Filed Aug. 30, 1886. Serial No. 212,196. (No model.)



Claim.—The herein-described process of manufacturing dense, homogeneous, resilient, and hair-like carbon filaments for glow-lamps, which process consists in causing a gaseous carbon compound (capable of yielding carbon when decomposed by heat) to undergo decomposition in a heated retort, the gases while undergoing the decomposition having such motions impressed upon them that vertical or gyrating currents of gas are set up through the atmosphere of the retort, from which currents the carbon resulting from the decomposition segregates directly in the form of filaments, as hereinbefore described.

405,481. WATER-HEATER. CHARLES G. JEWETT, Howell, Mich. Filed Feb. 25, 1889. Serial No. 301,132. (No model.)

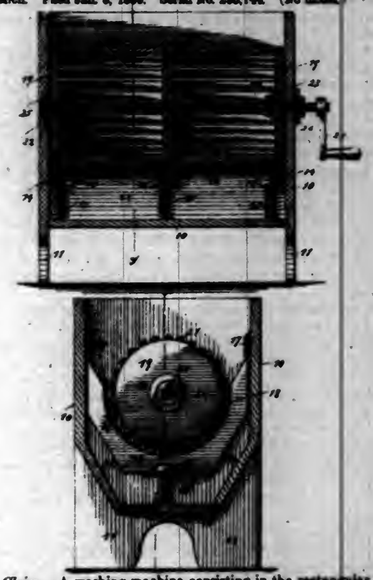


Claim.—1. In a water-heater, the combination of a lower water-ring, an upper water-chamber provided with a depending water-leg dividing the combustion-chamber transversly, and connections between the water-ring and the top and bottom of said water-leg, substantially as described.

2. In a water-heater, the combination of a lower water-ring, an upper chamber provided with a depending central water-leg dividing the combustion-chamber in two, connections between the top and bottom of said water-leg and the water-ring, direct connections between the water-ring and the water-chamber at the edge, and the heating-tubes *f*, attached to said water-leg, substantially as described.

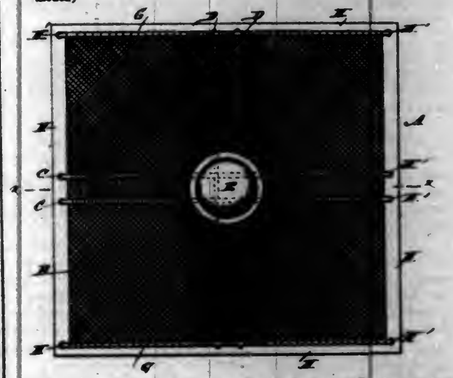
3. In a water-heater, the combination of a lower water-ring, an upper water-chamber provided with a depending water-leg having inclined steps, inclined heating-tubes engaged in suitable screw-threaded apertures therein, and the pipes A, *i*, and E, connecting the water-ring with the water-leg and water-chamber, substantially as and for the purpose described.

405,482. WASHING-MACHINE. HANS JOHNSEN, Menominee, Mich. Filed Jan. 8, 1889. Serial No. 295,744. (No model.)



Claim.—A washing-machine consisting in the rectangular tub or box 10, having a dish-shaped bottom 12, the transverse spaced blocks 14, shaped to conform to said bottom and having central transverse projections 16 on their lower sides, the springs 15, on which said projections rest, the semicircular sheet 18 of corrugated zinc extending from end to end of the box and secured to the concave upper faces of said blocks, the rotary rubber formed of centrally-apertured disks 19 20, and spaced bars 21, secured thereto, the shaft 22, the collars 23, and bearings in the ends of box for said shaft, substantially as set forth.

405,483. DIAPHRAGM FOR ACOUSTIC TELEPHONES. HENRY P. JOHNS, New York, N. Y. Filed Apr. 4, 1888. Serial No. 269,534. (No model.)



Claim.—1. As a new article of manufacture, a diaphragm for acoustic telephones, consisting of a piece of fabric having strands or cables of greater strength than the ordinary woof and weft threads of the fabric interwoven in it, the said strands or cables intersecting each other at the center to form a support for the button and line-wire, substantially as set forth.

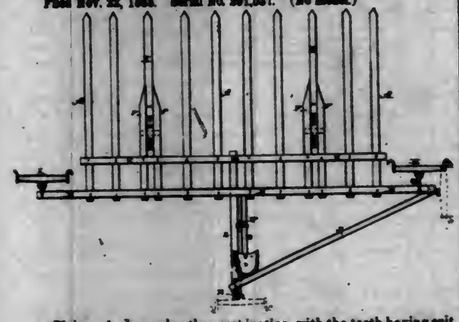
2. As a new article of manufacture, a diaphragm for acoustic telephones, consisting of a piece of silk and woolen fabric having strands or cables of greater strength than the ordinary warp and weft threads of the fabric interwoven in it, the said strands or cables intersecting each other at the center to form a support for the button and line-wire, as set forth.

3. A piece of fabric woven of silk and woolen threads, and rods or cables crossing each other and interwoven in the said fabric, in combination with a button secured in the middle of the fabric at the intersection of the crossing rods or cables, and a wire extending from the said button, substantially as shown and described.

4. The combination, with a rectangular frame, of a piece of fabric woven of silk and woolen threads, rods or cables crossing each other and interwoven in the said fabric and also secured to the said rectangular frame, a button secured in the middle of the said fabric at the intersection of the crossing rods or cables, and a wire extending from the said button, substantially as shown and described.

5. The combination, with a frame, of a piece of fabric woven of silk and woolen threads, rods or cables crossing each other in the middle of the fabric and interwoven in the said fabric, being also fastened by their ends to the said frame, rods secured to the opposite ends of the fabric and fastened to the said rectangular frame, a button secured in the middle of the fabric at the intersection of the crossing rods or cables, and a wire leading from the back of the said button, substantially as shown and described.

405,484. HORSE HAY-RAKE. OREN H. KING, Houghton, Iowa. Filed Nov. 22, 1888. Serial No. 291,887. (No model.)



Claim.—1. In a rake, the combination, with the teeth having suitable transverse beams rigidly connecting their rear ends and supporting-wheels journaled in the rake-frame in advance of the transverse beams, of a rearwardly-extending beam having its front end loosely connected to the frame in the rear of the wheels, a supporting-wheel at its rear end, and an operating-bar pivoted upon the said beam having a seat upon its rear end and its front end engaging the rake-frame back of the supporting-wheels, whereby the rake automatically balances itself and the points of the teeth are forced down by the weight of the driver, substantially as shown and described.

2. The combination, with the hay-rake provided with the stringer B, which has its ends to project beyond the sides of the teeth, of the diagonal brace J, a seat-beam L, with the loop, and the singletree H, whereby the draft at one end of the stringer B can be transferred from that end of the stringer B to and along the diagonal brace J, substantially as set forth.

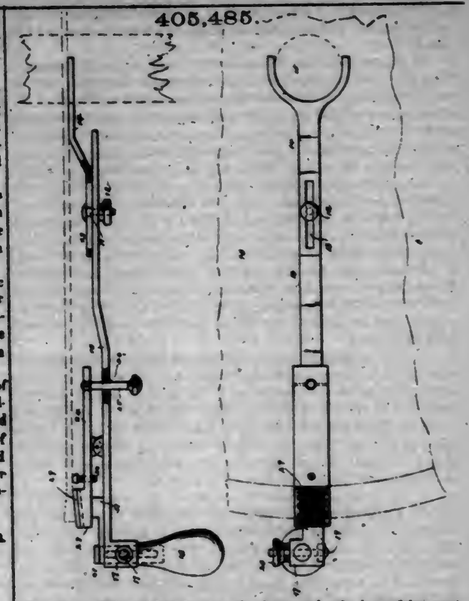
405,485. SAW-DRESSING DEVICE. WALTER KIRKPATRICK, Marinette, Wis. Filed Mar. 21, 1888. Serial No. 304,108. (No model.)

Claim.—1. An implement for side-dressing saw-teeth, comprising a body having a handle at one end, a guide fork or block detachably secured to the opposite end, and a lever fulcrumed upon the inner face of the body provided with a guide-screw and a detachable file, all combined for operation substantially as shown and described.

2. In an implement for side-dressing the teeth of saws, the combination, with a body provided with a handle at the outer extremity, of an arbor fork or block adjustably secured to the inner side of the said body near the inner end, a lever fulcrumed upon the said inner side of the body forward of the center, having an undercut recess in the outer extremity, a file detachably held in the said undercut recess, and a guide-screw adapted for contact with the face of the saw, substantially as shown and described.

3. In an implement for side-dressing the teeth of saws, the combination, with a body provided with a handle at the outer extremity and an arbor-fork or saw-receiving arm adjustably secured to the

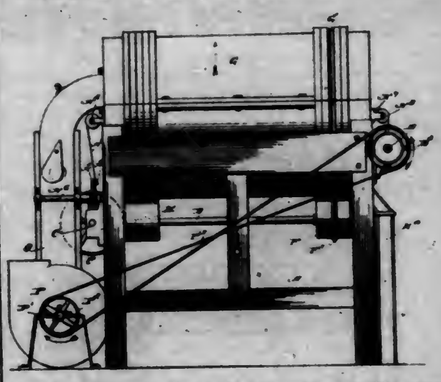
405,485.



inner face of the said body near the inner end, of a lever fulcrumed upon the inner face of the said body forward of the center and provided with a manipulating-pin near one extremity, and an offset or projection having an undercut recess in the opposite extremity, a file detachably held in the said recess of the offset or projection, and a guide-screw passing from the said lever capable of contact with the face of the said saw, substantially as shown and described.

4. The combination, with a body provided with a handle at the outer extremity, of an arbor-fork or saw-receiving block detachably secured to the inner end of said body, a lever fulcrumed upon the body forward of the center, a manipulating-pin attached to the inner end of the said lever and passing through the body, a projection formed upon the inner surface of the lever at the outer end having an undercut recess therein, a file detachably held in the said undercut recess, a guide-screw attached to the lever and capable of contact with the face of the saw, an adjustable clamp attached to the body at the outer end, and a guide-plate held in the said clamp for contact with the outer end of the said lever, all combined for operation substantially as and for the purpose specified.

405,486. MIDDLINGS-PURIFIER. WILLIAM KLOSTERMANN, Young America, Minn. Filed June 26, 1888. Serial No. 278,290. (No model.)



Claim.—1. In a middlings-purifier, the combination, with a rotary drum provided with elevator-strips on its inner surface, of a peaked section held stationary in the said drum, inclined riffles secured to the sides of the said peaked section, a riddling-box held to slide longitudinally below the said peaked section, which discharges into the riddling-box, a feed-spout discharging into one end of the said drum, and

an outlet-chamber at the other end of the said riddling-box and into which the last inclined riffles discharge, substantially as shown and described.

2. The combination, with the rotary drum having longitudinally-extending elevator-stripe and a feed-spout which discharges into one end of the drum, of the relatively stationary inverted-V-shaped distributing-box within the drum, longitudinally-extending depending walls I^2, having ways on their inner sides within the distributing-box, a reciprocating apertured plate N, mounted on said ways, an exhaust-fan opening in the said box at one end above the screen, and a reciprocating riddling-box under the distributer-box having apertured side plates K^2, provided at their upper ends with inclined boards K^3, extending under the lower longitudinal edges of the distributing-box, a vertical series of inclined ribs K^4 on the inner faces of said side plates, and a vertical series of oppositely-inclined boards K^5 under each wall I^2 and discharging upon the ribs K^4, a central passage being formed between the said two series of boards opening into the space between walls I^2 below the reciprocating plate, and the bottom K^2, inclined oppositely from the center of the space between the boards K^5, substantially as set forth.

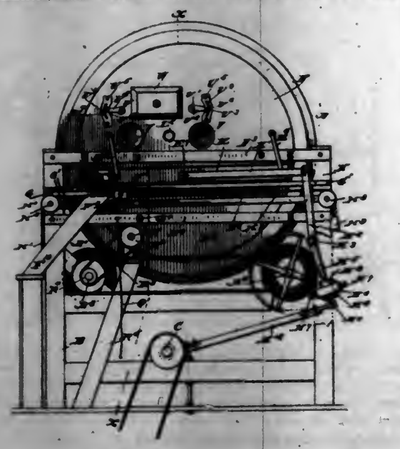
3. The combination, with a rotary elevator-drum, of the relatively stationary inverted-V-shaped distributing-box therein, a longitudinally-reciprocating apertured plate within said box, and an exhaust-opening O in one end of the box above the plate, the riddling-box under the distributing-box having inclined boards K^3 on the upper edges of its sides, and two series of alternating inclined ribs and boards, the space between the series of boards being directly under the reciprocating plate, substantially as set forth.

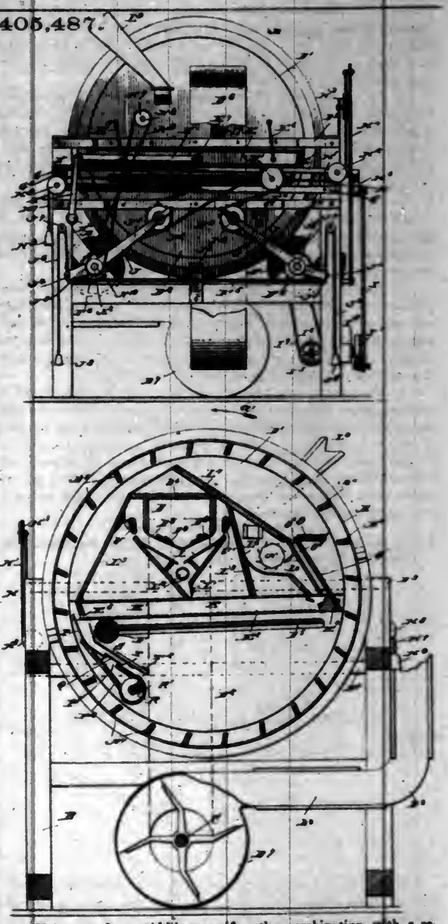
4. The combination, with the elevator-drum, open at both ends and the operating-rollers on which said drum rests, of the relatively stationary inverted-V-shaped distributing-box H, extending longitudinally within the box and having heads H′ H^6 at its ends closing the ends of the drum, a feed-spout leading through the lower part of the front head, an exhaust-fan opening in the rear head leading into the distributing-box, a discharge-outlet in said rear head below the distributing-box, and a perforated longitudinally-reciprocating riddling-box under the distributing-box, substantially as set forth.

5. In a middlings-purifier, the combination, with a rotary drum provided with elevator-stripe on its inner surface, of a middlings-distributing box held stationary in the said drum, a peaked section formed on the said distributing-box, riffles secured to the sides of the said peaked section, a riddling-box held to reciprocate longitudinally below the said peaked section, which discharges on the riddling-box, an exhaust-fan connecting by its exhaust-spout with the interior of the peaked section, and a longitudinally-reciprocating perforated plate directly under the peaked section, the perforations of the reciprocating-plate increasing in size from the front toward the rear end thereof, substantially as shown and described.

6. In a middlings-purifier, the combination, with a distributing-box and a perforated plate held to slide in the said distributing-box, of a weighted rope secured to one end of the said plate, a second rope secured to the other end of said plate, a lever connected with the other end of the said second rope, and a wheel having a rotary motion and provided with a pin acting on the said lever, substantially as shown and described.

405,487. MIDDLINGS-PURIFIER. WILLIAM KLOSTERMANN, Young America, Minn. Filed Nov. 13, 1888. Serial No. 290,659. (No model.)





Claim.—1. In a middlings-purifier, the combination, with a revolving drum provided with elevator-stripe, of a fixed head-section held in the open ends of the said drum, a suction-box held on the said head-sections in the interior of the drum and provided with a perforated bottom, a trough held below the said suction-box, and a vibrating screen-box held in the said drum below the said trough, substantially as shown and described.

2. In a middlings-purifier, the combination, with a revolving drum provided with elevator-stripe, of a fixed head-section held in the open ends of the said drum, a suction-box held on the said head-sections in the interior of the drum and provided with a perforated bottom, a trough held below the said suction-box, a vibrating screen-box held in the said drum below the said trough, and an inclined longitudinal wall held on the said head-sections inside of the said drum and onto which discharge the elevator-stripe, the lower edge of the said wall discharging into the screen-box, substantially as shown and described.

3. In a middlings-purifier, the combination, with a revolving drum provided with elevator-stripe, of a fixed head-section held in the open ends of the said drum, a suction-box held on the said head-sections in the interior of the drum and provided with a perforated bottom, a trough held below the said suction-box, a vibrating screen-box held in the said drum below the said trough, an inclined longitudinal wall held on the said head-sections inside of the said drum and onto which discharge the elevator-stripe, and a channel into which discharges the lower end of the said wall and which opens into the screen-box, and inclined strips held in the said channel to cause a forward and downward motion of the middlings, substantially as shown and described.

4. In a middlings-purifier, the combination, with a revolving drum provided with elevator-stripe, of a fixed head-section held in the open ends of the said drum, a suction-box held on the said head-sections in the interior of the drum and provided with a perforated bottom, a trough held below the said suction-box, a vibrating screen-box held in the said drum below the said trough, an inclined longitudinal wall held on the said head-section inside of the said drum and onto which discharge the elevator-strips, a channel into which discharges the lower end of the said wall and which opens into the screen-box to which it is secured, inclined strips held in the said channel to cause a forward motion of the middlings, and a pan secured on the outer wall of the said channel, and also discharging onto the inclined strips, substantially as shown and described.

5. In a middlings-purifier, the combination, with a revolving drum provided with elevator-strips, of fixed head-sections held in the open ends of the said drum, a suction-box held on the said head-sections in the interior of the drum and provided with a perforated bottom, a trough held below the said suction-box, a vibrating screen-box held in the said drum below the said trough, an inclined longitudinal wall held on the said head-sections inside of the said drum and onto which discharge the elevator-strips, a channel secured on the said screen-box and discharging into the same and receiving its supply partly from the said wall, inclined strips held in the said channel to cause a forward motion of the middlings, and a pan secured to the said channel to vibrate with the screen, and also discharging onto the inclined strips, substantially as shown and described.

6. In a middlings-purifier, the combination, with a revolving drum provided with elevator-strips, of a vibrating screen-box held in the interior of the said drum and provided with a bottom screen and an outlet-spout, a trough held above the said screen-box and provided with a door, and a suction-box held above the said trough and provided with a perforated bottom, substantially as shown and described.

7. In a middlings-purifier, the combination, with a revolving drum provided with elevator-strips, of a vibrating screen-box held in the interior of the said drum and provided with a bottom screen and an outlet-spout, a trough held above the said screen-box and provided with a door, a suction-box held above the said trough and provided with a perforated bottom, and a perforated pipe held in the said trough and extending to the outside, substantially as shown and described.

8. In a middlings-purifier, the combination, with the revolving elevator-drum, the fixed heads at the ends thereof and the vibrating screen therein, of the longitudinally-extending suction-box secured to the heads above the screen and having a perforated bottom, the inclined longitudinal wall secured to said heads within the drum and upon which said drum discharges, a channel discharging upon the screen and receiving from the lower edge of said wall, a trough under the said suction-box and discharging upon the screen, a feed-compartment under said inclined wall between said channel and suction-box and having an inclined bottom discharging upon the screen adjacent to the discharge end of said channel, and the feed-wheel within said compartment, substantially as set forth.

9. In a middlings-purifier, the combination, with a revolving drum, of a vibrating screen-box held in the said drum, and a feed-wheel provided with adjustable plates having lugs for feeding a regular quantity of middlings into the said screen-box, substantially as shown and described.

10. The combination, with the revolving elevator and drum having stationary heads and the horizontal reciprocating screen, of the inclined plate P, extending longitudinally under the discharge edge of the screen and having an opening P′ between its edges, a slide to regulate said opening, the board P^3 under the plate P, a conveyer into which said board P^3 discharges when the slide is open, and the inclined strip S, extending longitudinally from one head to the other above the plate P and discharging at its lower edge into the drum, substantially as set forth.

11. In a middlings-purifier, the combination, with the screen, of separate and independent frames at the ends of the screen, reciprocating bearings mounted thereon, the brush mounted on said bearings, the vibrating lever H^4, pivoted between its ends, the pulleys H^5 H^5, the cords H′, passing over said pulleys and connecting the ends of the lever H^4 with said bearings for sliding them in one direction, and the weighted ropes connected with the bearings for sliding them in the opposite direction, substantially as set forth.

12. In a middlings-purifier, the combination, with the screen, of the frames, the reciprocating bearings mounted thereon, the brush journaled in said bearings and having a sprocket-wheel on one end, an operating sprocket-chain therefor, and counterbalanced self-acting belt-tighteners, substantially as set forth.

13. The combination, with the screen, of the rotary reciprocating brush thereunder having a sprocket-wheel, the sliding bearings for said brush, the centrally-pivoted vibrating lever H^4, the pulleys H^5 H^5, the ropes H′, passing from opposite ends of said lever over said pulleys and secured to said bearings to slide them in one direction, weighted ropes for sliding the bearings in the opposite direction, the operating crank-shaft, the link connecting said lever with said crank-shaft, and the sprocket-chain passing over said sprocket-wheel to rotate the brush while being reciprocated, substantially as set forth.

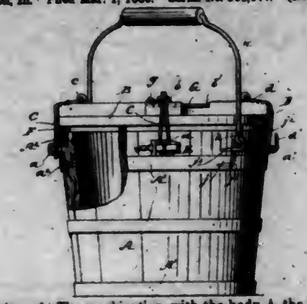
14. In a middlings-purifier, the combination, with a vibrating screen-box, of a brush secured on a shaft, bearings carrying the said shaft, a vertically-adjustable frame carrying the said bearings, the device H, for imparting a sliding motion to the said bearings on the said frame, the device I, for operating the said device H, a sprocket-wheel held on the said shaft, a traveling sprocket-chain passing over the said sprocket-wheel to rotate the said brush, and self-acting belt-tighteners, substantially as described, and operating on the said sprocket-chain, as set forth.

15. In a middlings-purifier, the combination, with the screen-box E, mounted to swing, of the links K′, connected with the said box E, the arms K^9, pivotally connected with the said link, the shaft K^8, carrying the said arms, the arms K^4 K^5, fastened on the said shaft and carrying the frame K^6, the adjustable sphere-segments K^7, held in the said frame, the rubber ball K^8, inclosed in the said segments, and the arm K^{10}, held loosely on the said shaft K^8 and supporting the said rubber ball K^8, substantially as shown and described.

16. In a middlings-purifier, the combination, with the screen-box E, mounted to swing, of the links K′, connected with the said box E, the arms K^9, pivotally connected with the said link, the shaft K^8, carrying the said arms, the arms K^4 K^5, fastened on the said shaft and carrying the frame K^6, the adjustable sphere-segments K^7, held in the said frame, the rubber ball K^8, inclosed in the said segments, the arm K^{10}, held loosely on the said shaft K^8 and supporting the said rubber ball K^8, and an eccentric pivotally connected with the said arm K^{10}, to impart a swinging motion to the same, substantially as shown and described.

17. In a middlings-purifier, the combination, with the suction-box D, provided with the perforated V-shaped bottom D^2, of the strips D^3, held on the said perforated bottom and having the slots D^{10}, and the bolts D^{11}, for securing the said strips to the said bottom, substantially as shown and described.

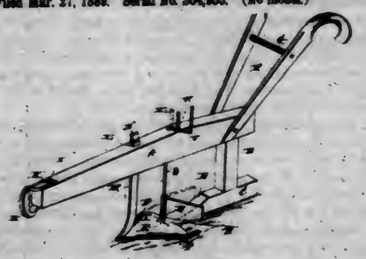
405,488. OYSTER-PAIL. JOHN P. KUHN and JAMES A. REYNOLDS, Alton, Ill. Filed Mar. 1, 1889. Serial No. 301,677. (No model.)



Claim.—1. The combination, with the body A, the hinged cover B, and a hook encircling the former, of the staple *a*, which is arranged in a vertical plane and projects laterally, one of its legs having a shoulder that lies beneath the said hoop, as shown, and the looped hasp hinged to the cover and adapted to pass over said staple, all as shown and described.

2. The combination, with the body of the pail, its cover, the looped and hinged hasp C, and a staple *a*, which receives the same, of the seal, consisting of a sheet-metal piece E, having its wider end underlying the hasp and provided with two parallel slots, the said staple lying in one of said slots and the narrower end of the seal passing over the hasp and through the staple and outer slot of the seal, all as shown and described.

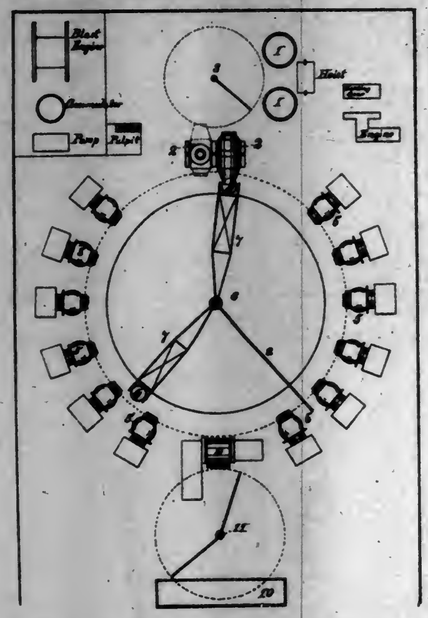
405,489. SIDE-HILL PLOW. FRIEDRICH KUETTEMAN, Troy, Ill. Filed Mar. 27, 1889. Serial No. 304,963. (No model.)



Claim.—1. The beam A, having the depending standard B, provided with the forwardly-projecting arm C, having the share O fitted thereupon, in combination with the crank-rod S, journaled in the beam, and arm C, and provided with the rearwardly-projecting wing U, substantially as specified.

2. A plow-beam A, having the standard B, and arm C, the latter cut away, as at D, and recessed, as at E, and the share O, having keeper R, adapted to receive the cut-away portion D, and having an opening vertically aligning with the recess E, in combination with the crank-rod S, vertically journaled in the beam A, and terminating in the recess E, and having the wing U, substantially as specified.

405,490. PLANT FOR THE MANUFACTURE OF WROUGHT-IRON. GUSTAV LEDEBURSAL, Pittsburg, Pa. Filed July 2, 1887. Serial No. 243,210. (No model.)



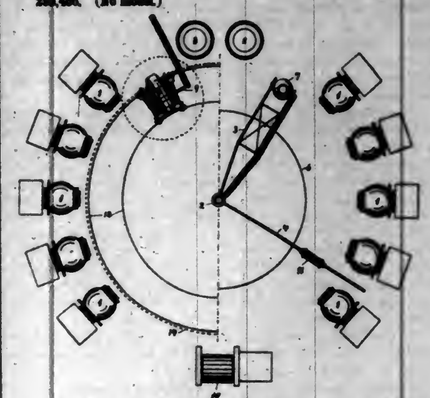
Claim.—1. In a plant for the manufacture of wrought-iron billets or muck-bars, the combination of one or more refining-furnaces, a series of two or more puddling-furnaces arranged on the arc of a circle, a ladle movable from the refining-furnaces to and along the line of the puddling-furnaces, and a crane located in the center of the circle of the puddling-furnaces and provided with a jib adapted to swing around in the line of the puddling-furnaces, substantially as set forth.

2. In a plant for the manufacture of wrought-iron billets or muck-bars, the combination of one or more refining-furnaces, a series of two or more puddling-furnaces arranged on the arc of a circle, a ladle movable from the refining-furnaces to and along the line of the puddling-furnaces, a crane located in the center of the circle of the puddling-furnaces and provided with a jib adapted to swing around in the line of the puddling-furnaces, and a squeezer located within the sweep of the crane-jib, substantially as set forth.

3. In a plant for the manufacture of wrought-iron billets or muck bars, the combination of a crane, one or more melting-furnaces, one or more refining-furnaces, the melting and refining furnaces being located in such relation to each other and to the crane that the metal may be transferred from one to the other by said crane, two or more puddling-furnaces arranged on the arc of a circle passing through the refining-furnaces, a crane located at the center of said circle, and a ladle carried by said crane, substantially as set forth.

4. In a plant for the manufacture of wrought-iron billets or muck-bars, the combination of one or more melting-furnaces, one or more refining-furnaces, a crane so located as to be able to transfer the metal from the melting to the refining-furnaces, a series two or more puddling-furnaces, a squeezer, the puddling-furnaces and squeezer being arranged on the arc of a circle passing through the refining-furnaces, and a centrally-located crane provided with suitable jibs, whereby the metal may be transferred from the refining-furnaces to the puddling-furnaces and thence to the squeezer, substantially as set forth.

405,491. METALLURGICAL PLANT. GUSTAV LEDEBURSAL, Pittsburg, Pa. Filed Sept. 28, 1887. Renewed Jan. 4, 1889. Serial No. 295,466. (No model.)



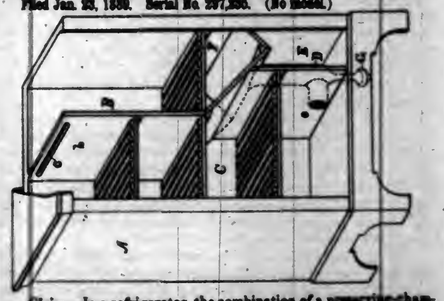
Claim.—1. In a plant for the manufacture of wrought-iron billets or muck-bars, the combination of one or more blast or melting furnaces, a series of two or more puddling-furnaces, the melting and puddling furnaces being arranged on the arc of a circle, and a converter portable along the line of said furnaces, whereby a charge of molten metal may be poured directly into a converter from the melting or blast furnace and after purification therein poured directly into one or more of the puddling-furnaces, substantially as set forth.

2. In a plant for the manufacture of wrought-iron billets or muck-bars, the combination of one or more blast or melting furnaces, a series of two or more puddling-furnaces, the melting and puddling furnaces being arranged on the arc of a circle, and a converter and tongs portable along the line of the melting and puddling furnaces, substantially as set forth.

3. In a plant for the manufacture of wrought-iron billets or muck-bars, the combination of one or more blast or melting furnaces, a series of two or more puddling-furnaces, the melting and puddling furnaces being arranged on the arc of a circle, a converter portable along the line of the melting and puddling furnaces, a squeezer located on the arc of a circle with the furnaces, and tongs portable along the line of the puddling-furnaces and squeezer, substantially as set forth.

4. In a plant for the manufacture of wrought-iron billets or muck-bars, the combination of one or more blast or melting furnaces, a series of two or more puddling-furnaces, a squeezer, said furnaces and squeezer being arranged on the arc of a circle, a crane provided with swinging jibs located in the center of said circle, and a converter and tongs mounted on the jibs of the crane and movable along the line of the furnaces and squeezer, substantially as set forth.

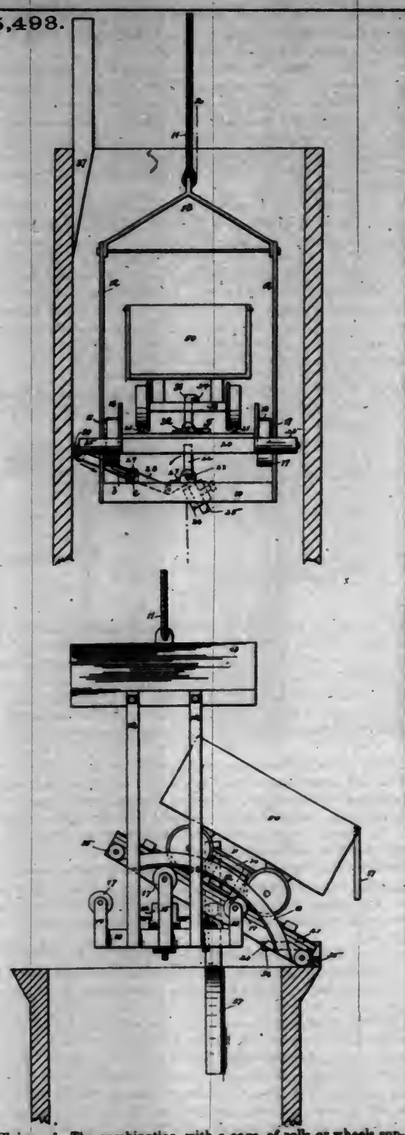
405,492. REFRIGERATOR. WILLIAM R. MONROE, Cleveland, Ohio. Filed Jan. 23, 1889. Serial No. 297,330. (No model.)



Claim.—In a refrigerator, the combination of a preserving-chamber and an ice-box with a permanently-inclosed chamber beneath said ice-box, and a combined drip-pipe and air-duct which connects with the ice-box and passes through said inclosed chamber out through the bottom of the refrigerator, and which has a passage through its side connected with the preserving-chamber, substantially as and for the purpose specified.

405,498. AUTOMATIC DUMPING ATTACHMENT FOR HOISTING-CAGES. HUGH MURRAY, Sparta, Ill. Filed Feb. 26, 1888. Serial No. 301,196. (No model.)

405,498.



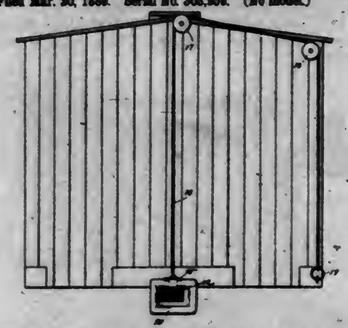
Claim.—1. The combination, with a cage, of rolls or wheels supported at the sides thereof, a platform, segmental irons carried by said platform and arranged to rest upon the cage rolls or wheels, and a means for locking the platform to the cage, substantially as described.

2. The combination, with a cage, of rolls or wheels mounted at the sides thereof, a platform, segmental angle-irons carried by the platform and arranged to rest upon the cage rolls or wheels, a rock-shaft, a latch carried thereby and arranged to enter the space between the platform cross-timbers, and a means, substantially as described, for throwing the latch from engagement with the platform, as and for the purpose stated.

3. The combination, with a cage, of rolls or wheels arranged at the sides thereof, a platform, segmental angle-irons carried by the platform and arranged to rest upon the cage rolls or wheels, a rock-shaft carried by the cage, a latch carried by the shaft, a weight connected to the shaft, a slotted arm mounted upon a standard carried by the cage and connected to a lever that is secured to the rock-shaft, a roller carried by the end of the arm, a cam arranged in the path of the roller, and stops arranged to engage projections at one end of the platform, substantially as described.

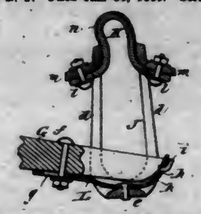
4. The combination, with a hoist-cage, of a shaft 23, mounted thereon, a latch 22, carried by the shaft, a lever 25, connected to the shaft, a weight 26, mounted upon the lever, a second lever 27, also connected to the shaft, an arm 28, pivotally connected to the lever 27 and formed with a slot *b*, a stud *c*, which passes through the slot *b* and engages a standard 29, a roller 30, carried at the end of the arm, a cam-faced projection 37, arranged in the path of the roller, rollers 17, mounted upon standards 14, 15, and 16, a platform 20, segmental angle-irons 18, carried by the platform, rollers 35, also carried by the platform, and stops 36, which extend into the path of the rollers 35, substantially as described.

405,494. CAR-COUPLING. WILLIAM C. MCCORD, Springfield, Ky. Filed Mar. 20, 1889. Serial No. 303,969. (No model.)



Claim.—A car-coupler comprising a draw-head secured to the car and having a longitudinally-extending vertically-swinging catch 12, provided with a hook 14, and top plate 15, pulleys 17 18, secured to the end of the car at its middle and side, a ring 19, secured to the car below pulley 18, and the cord 16, secured to the inner upper corner of the catch, passed over said pulleys and secured at its lower end to the ring, substantially as set forth.

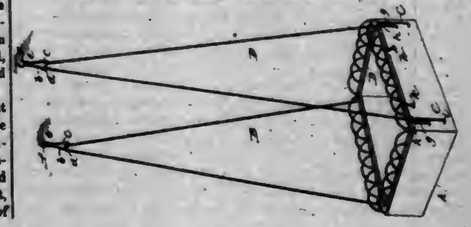
405,495. PICKER-STAFF CONNECTION FOR LOOMS. JOHN MCGINNIS, Valatie, N. Y. Filed Jan. 31, 1889. Serial No. 298,164. (No model.)



Claim.—1. The combination, with the rocker D of the picker-staff and the treadle G, operating the latter, of the metal stirrup J, attached to said treadle, and the flexible strap K, attached to the stirrup and adapted to receive the end of the picker-staff rocker within it, substantially as specified.

2. The combination, with a picker-staff and its rocker D and treadle G, operating said staff, of the metal stirrup J, the adjustable flexible strip of leather L, attached to said treadle and having the stirrup J, in which the treadle rests, secured to it, and the flexible-strap connection K, secured to the upper end of the stirrup and serving to receive the end of the rocker within it, essentially as shown and described.

405,496. CHILD'S SWING. JAMES M. MCCORD, Montgomery, Ind. Filed Oct. 8, 1888. Serial No. 287,536. (No model.)

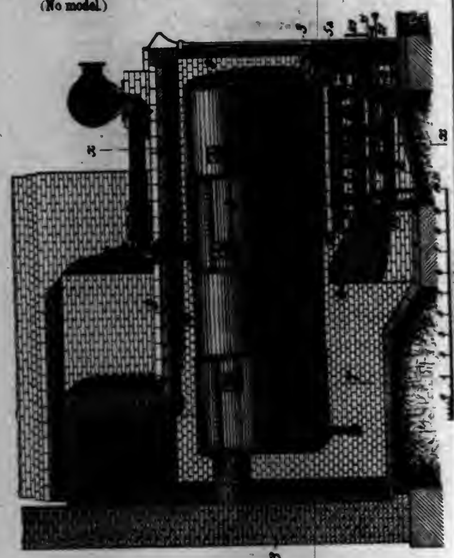


405,496.



Claim.—The combination, with the swing-box A, of the removable raised frame D, the removable seat E, and fastenings securing either said frame or seat to the box, essentially as described.

405,497. GAS-BURNER FOR BOILER-FURNACES. TERRENCE MCSWEENEY, Allegheny, Pa. Filed Mar. 7, 1889. Serial No. 302,325. (No model.)



Claim.—1. The combination, with a boiler-furnace, of two perforated burner-pipes each supported longitudinally within and adjacent to one side of the furnace above the grate-level, mixer-pipes leading through the furnaces from the burner-pipes into the ash-pit and having open lower ends, and gas-jet pipes communicating with a common supply-pipes and leading into the lower ends of the mixer-pipes, substantially as set forth.

2. The combination, with a boiler-furnace, of two perforated burner-pipes each supported longitudinally within and adjacent to one side of the furnace above the grate-level, a series of grate-bars supported in the furnace below said burner-pipes and between the vertical planes thereof, mixer-pipes leading through the furnace from the burner-pipes into the ash-pit and having open lower ends, and gas-jet pipes communicating with a common supply-pipe and leading into the lower ends of the mixer-pipes, substantially as set forth.

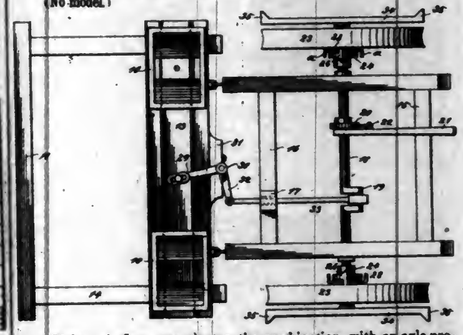
3. The combination, with a boiler-furnace, of two perforated burner-pipes each supported longitudinally within and adjacent to one side of the furnace above the grate-level, mixer-pipes leading through the furnace from the burner-pipes into the ash-pit and having open lower ends, two or more connected gas-distribution pipes supported in the ash-pit, gas-jet pipes leading from said distribution-pipes into the lower ends of the mixer-pipes, and a gas-supply pipe communicating with said distribution-pipes, substantially as set forth.

4. The combination, with a boiler-furnace, of two burner-pipes each supported longitudinally within and adjacent to one side of the furnace above the grate-level and perforated with burner-openings on its side nearest the center of the furnace, a series of grate-bars supported in the furnace below said burner-pipes and between the vertical planes thereof, a brick filling interposed between each of the outer grate-bars and the adjacent side of the furnace, a layer of brick or other refractory material supported on the top of each burner-pipe, mixer-pipes leading through the furnace from the burner-pipes into the ash-pit and having open lower ends, and gas-jet pipes communicating with a common supply-pipe and leading into the lower ends of the mixer-pipes, substantially as set forth.

5. The combination, with a boiler-furnace, of two perforated burner-pipes each supported longitudinally within and adjacent to one side of the furnace above the grate-level, mixer-pipes leading from the burner-pipes into the ash-pit of the furnace and having open lower ends, gas-jet pipes communicating with a common supply-pipe and leading into the lower ends of the mixer-pipes, and steam-jet pipes controlled by regulating-valves and leading into the mixer-pipes, substantially as set forth.

6. The combination, with a boiler-furnace, of two perforated burner-pipes each supported longitudinally within and adjacent to one side of the furnace, mixer-pipes leading from the burner-pipes into the ash-pit of the furnace and having open lower ends, gas-jet pipes communicating with a common supply-pipe and leading into the lower ends of the mixer-pipes, supplemental air-supply pipes leading from the burner-pipes into the ash-pit, regulating doors or valves hinged or pivoted to the lower ends of said supplemental air-supply pipes, and steam-jet pipes controlled by regulating-valves and leading into the supplemental air-supply pipes, substantially as set forth.

405,498. CORN-PLANTER. JAMES R. PATTERSON and MARSHAL T. FOSTER, Madison, Kans. Filed Feb. 19, 1889. Serial No. 300,425. (No model.)



Claim.—1. In a corn-planter, the combination, with an axle provided with a crank-arm, a seed drop-bar, a vertical shaft journaled to the rear of the drop-bar, and connection between the upper end of the said shaft and the drop-bar and the lower end of the shaft and the crank-arm of the axle, of drive-wheels loosely mounted upon the axle, a marker rigidly secured to the ends of the axle outside of the drive-wheels, a ratchet-wheel rigidly secured to the axle near the inner face of each drive-wheel, and spring-actuated pawls pivoted to the drive-wheels and capable of engagement with the said ratchet-wheels, all combined for operation substantially as shown and described.

2. In a corn-planter, the combination, with an axle provided with a crank-arm, a seed drop-bar, a vertical shaft journaled to the rear of the drop-bar, and connection between the upper end of the said shaft and the drop-bar and the lower end of the shaft and the crank-arm of the axle, of drive-wheels loosely mounted upon the axle, a marker rigidly secured to the ends of the axle outside of the drive-wheels, a ratchet-wheel rigidly secured to the axle near the inner face of each drive-wheel, spring-actuated pawls pivoted to the drive-wheels and capable of engagement with the said ratchet-wheels, and a shifting-arm pivoted upon the axle between the ratchet-wheels and the drive-wheels and having curved ends, substantially as shown and described.

3. In a corn-planter, the combination, with a seed drop-bar, an axle provided with a crank-arm, and a connection, substantially as shown and described, between the crank-arm of the axle and the drop-bar, of drive-wheels loosely mounted upon the axle, a ratchet-wheel rigidly secured to the said axle near the inner face of each drive-wheel, and an intermediate ratchet-wheel also secured to the axle, a marker secured to each extremity of the axle outside of the drive-wheels, pawls pivoted to the drive-wheels capable of engagement with the outer ratchet-wheels of the axle, shifting-arms loosely mounted upon the axle and having curved ends, and a lever held to revolve upon the axle adjacent to the intermediate ratchet-wheel and provided with a dog adapted to engage with the said wheel, substantially as and for the purpose specified.

405,499. MACHINE FOR MIXING ASPHALT. GEORGE I. PEABODY, Pittsburg, Pa. Filed Oct. 1, 1888. Serial No. 286,853. (No model.)

Claim.—1. In a machine for mixing asphalt, the combination of a furnace, a mixing-chamber located above said furnace, a steam-boiler, a discharge-flue connecting the furnace with the flue of said boiler, and a shield inclosing the boiler-flue within the water-space of the boiler, substantially as set forth.

2. In a machine for mixing asphalt, the combination of a furnace, a mixing-chamber located above said furnace, a steam-boiler, a discharge-flue leading from the furnace to the fire-chamber of the boiler, and a tilting or dumping grate located in the fire-chamber of the boiler, substantially as set forth.

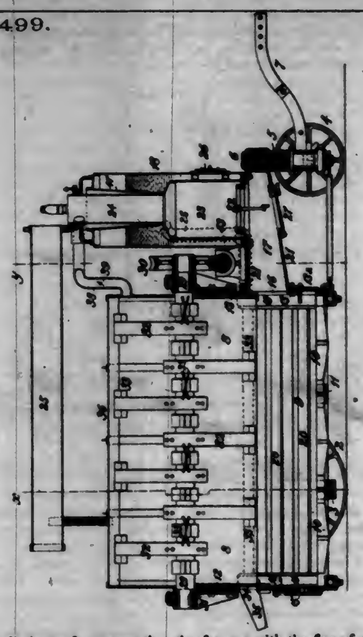
3. In a machine for mixing asphalt, the combination of a mixing-chamber, a furnace located below said chamber, heads closing the ends of the furnace and having water-chambers formed therein, and circulating-tubes within the sides of the furnace and connecting said water-chambers of the furnace, substantially as set forth.

4. In a machine for mixing asphalt, the combination of a mixing-chamber, a mixer-shaft journaled to rotate therein, and a series of stirrer-arms secured radially upon the shaft, each arm carrying adjacent to its outer end a pair of blades which are inclined in respectively opposite directions to the longitudinal plane of the arm, substantially as set forth.

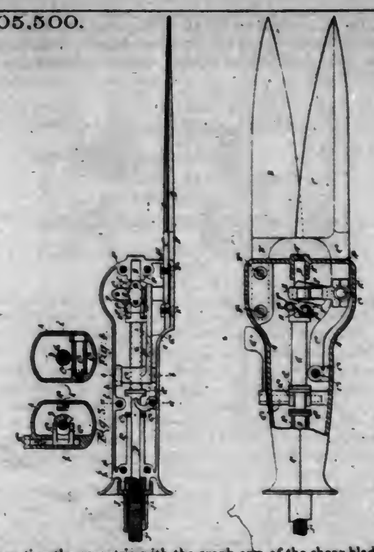
5. In a machine for mixing asphalt, the combination of a furnace, a mixing-chamber located above said furnace, a steam-boiler, and a vapor-discharge pipe leading from the mixing-chamber to the flue of said boiler, substantially as set forth.

6. In a machine for mixing asphalt, the combination of a wheeled supporting-frame, a furnace, a mixing-chamber, a mixer-shaft provided with stirrer-arms and fitted to rotate in said chamber, a steam-engine having a driving-pulley upon its crank-shaft, a boiler supplying steam thereto, a gear fitting loosely upon the crank-shaft of the engine and meshing with a gear fixed upon the mixer-shaft, and a clutch for engaging and disengaging the crank-shaft gear and crank-shaft, substantially as set forth.

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405,500. SHEEP-SHEARS. VERNON PETTERICK, Brisbane, Queensland. Filed Nov. 9, 1887. Serial No. 254,700. (No model.)

Claim.—1. The herein-described animal-shears, consisting, essentially, of a pair of shear-blades, a handle therefor divided in two sections along its axial line, each section having semi-cylindrical bearings in said axial line, and mechanism contained within the handle for reciprocating one of the blades, comprising an eccentric connected with such blade and a driving-shaft mounted in said bearings and adapted to operate the eccentric, substantially as and for the purpose specified.

2. In animal-shears in which the cutters consist of a pair of shear-blades, the herein-described mechanism for imparting a reciprocating motion to such blades, which consists of a driving-shaft, an eccentric mounted on said shaft, a shear-blade provided with a crank-arm pivoted on a fixed pivot, and an eccentric-strap encompassing the spherical bearing-face of the eccentric and provided with a lateral arm for connecting the eccentric with the crank-arm of the shear-blade, substantially as and for the purposes specified.

3. In animal-shears in which the cutters consist of a pair of shear-blades, the herein-described mechanism for imparting a reciprocating motion to such blades and regulating the amplitude of such motion, which consists of a driving-shaft, an eccentric having a spherical bearing-face and provided with an elongated diametral opening or slot through which said shaft passes, a shear-blade provided with a crank-arm pivoted on a fixed pivot, an eccentric-strap encompassing the spherical bearing-face of the eccentric and having a lateral arm for connecting the eccentric with the crank-arm of the shear-blade, and a shifting device for shifting the position of the eccentric on the shaft, substantially as and for the purposes specified.

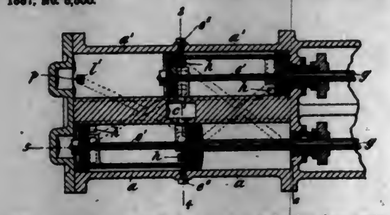
4. In animal-shears, the combination, with a handle, a pair of shear-blades whereof one is fixed to the handle and the other provided with a crank-arm pivoted at its end within said handle, of mechanism for imparting a reciprocating motion to the blade and for regulating the amplitude of such motion contained within the handle and consisting of a driving-shaft, an eccentric hinged to vibrate on said shaft, said eccentric having a spherical bearing-face and a diametral slot, through which the shaft passes, an eccentric-strap encompassing the spherical bearing-face of the eccentric and having a lateral arm for connecting said eccentric to the crank-arm of the shear-blade, and a shifting-rod connecting with the eccentric and operating to shift the position thereof on the shaft, substantially as and for the purposes specified.

5. The combination, substantially as herein described, with the crank-arm C', pivoted at C^2 and having the spherically-headed pin C^3, and the driving-shaft D, of a spherical eccentric mounted on said shaft, and an eccentric-strap provided with a lateral arm, in which is formed a spherical bearing for said pin C^3, for the purposes specified.

6. The combination, substantially as herein described, with the crank-arm C', pivoted at C^2 and having the spherically-headed pin C^3, and the driving-shaft D, provided with a boss projecting radially therefrom, of a spherical eccentric provided with a diametral slot, through which the shaft passes, said eccentric being hinged to the radial boss of said shaft, so as to vibrate thereon, a shifting-rod hinged to the eccentric and adapted to vibrate the same on the shaft, and an eccentric-strap provided with a lateral arm in which is formed a spherical bearing for the corresponding head of the pin C^3, substantially as and for the purposes specified.

7. The combination, substantially as herein described, with the crank-arm C', pivoted at C^2, and having the spherically-headed pin C^3, and the driving-shaft D, provided with a boss projecting radially therefrom, of a spherical eccentric provided with a diametral slot through which the shaft passes, said eccentric being hinged to the radial boss of said shaft, so as to vibrate thereon, an eccentric-strap encompassing the spherical eccentric and provided with a lateral arm having a spherical bearing for the corresponding head of the pin C^3, a tubular shifting-rod mounted on the driving-shaft, a hinged connection between said rod and the eccentric, and a shifting-lever connected with the tubular rod to actuate the same, for the purposes specified.

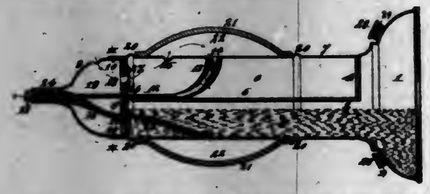
405,501. STEAM OR OTHER PUMP. GEORGE G. PICKING and WILLIAM HOPKINS, Bow, County of Middlesex, England. Filed Mar. 27, 1888. Serial No. 268,720. (No model.) Patented in England June 10, 1887, No. 8,355.



Claim.—1. The twin cylinders *a a'*, each having four ports, two at the middle leading to the opposite ends of the adjacent cylinder and two at the ends leading to the middle of such adjacent cylinder, a steam-inlet at the middle of and common to both cylinders, and a transverse exhaust-passage at the middle of and common to both cylinders, in combination with the hollow pistons forming steam-chests open to the full pressure of steam inside thereof, said pistons having ports *h h i i* and steam-cushioned at each end of the cylinders, as set forth, and a steam-port *p* at each end of each cylinder to supply steam behind the pistons after the steam-cushioning for the return-strokes of the pistons, substantially as described.

2. The twin cylinders *a a'*, having, respectively, the eduction-ports *o o'* at the middle of their length, a transverse passage *d'*, under and common to both said ports, the ports *l l'*, *n n'*, *k k'*, and *m m'*, arranged diagonally, as described and shown, and the steam-pipe *c*, common to both cylinders, in combination with the hollow pistons serving as steam-chests, receiving the full steam-pressure inside thereof direct from the steam-pipe and steam-cushioned at each end of the cylinders, each piston having two end ports *h h*, located at opposite sides of a central longitudinal line, and exhaust-cavities *i i* and a port *p* at each end of each cylinder to admit a small supply of steam behind the pistons after the steam-cushioning thereof for their return-strokes, substantially as described.

405,502. HAIR-SINGER. JOHN E. POINDEXTER, St. Louis, Mo., assignor of one-third to Joseph R. Smith and George M. Randolph, same place. Filed Jan. 31, 1889. Serial No. 298,241. (No model.)

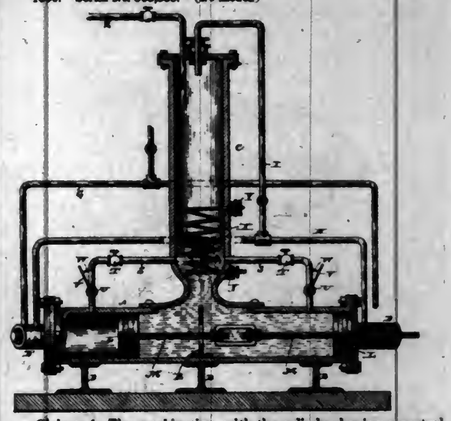


Claim.—1. In a hair-singer, the combination of the tubular burner, the draft-tube that discharges at the nozzle of said burner, the wick that projects from between said tube and tubulous burner, and the operative rubber bulb that enforces the discharge of air through the draft-tube to revivify the blaze at the burner and produce an instantaneous flash, substantially as and for the purpose set forth.

2. In a hair-singer, the combination of the tubular column having corrugations, the transverse and longitudinal partitions, the transverse disk having a wick-slot, the dome-cap having tubulous burner, the draft-tube, and the rubber operative bulb, substantially as and for the purpose set forth.

3. In a hair-singer, the combination of the tubular column, the transverse and longitudinal partitions, and transverse disk 8 within said column that, with the surrounding column, inclose and separate the alcohol-tank and secondary air-chamber, the dome-cap 9, that incloses the initial air-chamber, the bayonet-fastening that secures said dome-cap to the tubular column, the corrugations 20, that project from said column, the rubber operative bulb that is seated between said corrugations around the tubular column and incloses the operative air-chamber, between which and the secondary air-chamber is provided an open port 25, the burner-tube 24, the draft-tube with its flaring mouth, through which the air is discharged from the operative air-chamber to the nozzle of the burner to revivify the blaze, the dome-cap being provided with an open supply air-port, the transverse disk 8 being provided with a flutter-valve port that communicates between the initial and the secondary air-chambers, the flutter-valve that operates to open and close said port, the feed-ports through which the tank is replenished, and the screw-stoppers that close said ports, substantially as described, and for the purpose set forth.

405,503. GAS-PUMP FOR ICE-MAKING MACHINES. THOMAS L. RANKIN, Philadelphia, Pa. Filed Jan. 23, 1883. Renewed Mar. 29, 1889. Serial No. 305,335. (No model.)



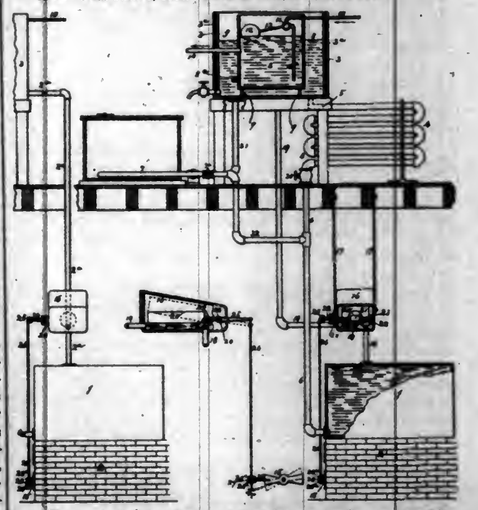
Claim.—1. The combination, with the cylinder having a central opening communicating with a stand-pipe, of the deflecting-plate located therein below the opening leading to the stand-pipe to insure the proper circulation of the oil, substantially as specified.

2. The combination of the cylinder A, the connected pistons L L therein, the stand-pipe communicating therewith, and the valved pipe S, supplying oil to the cylinder between its heads and the piston, with the valved boxes at the cylinder-heads, respectively, having induction and eduction pipes connecting with the same, all constructed and arranged substantially in the manner and for the purpose described.

3. The combination of the cylinder, the stand-pipe centrally connected thereto, and the cooling-coil in said pipe with the deflecting-plate secured centrally in said cylinder and the adjustably-connected pistons, all constructed and arranged substantially as and for the purpose described.

4. The combination of the cylinder, the stand-pipe communicating therewith, and the induction and eduction pipes and valves with the deflecting-plate, the pistons arranged on opposite sides of said plate, and the connections between said pistons for moving them together, all constructed and arranged substantially in the manner and for the purpose described.

405,504. HEATING APPARATUS. ISAAC C. RICHARDSON, Nashua, N. H. Filed June 9, 1887. Serial No. 240,768. (No model.)



Claim.—1. In a heating apparatus, in combination, an open circulation-tank, a smaller open tank arranged within the outer circulation-tank, a pure-water-supply pipe provided with a float-valve for automatically regulating the height of the water, a water-heater, and circulation-pipes connecting the heater and circulation-tank, substantially as and for the purpose described.

2. In a heating apparatus, in combination, an open circulation-tank, a smaller open tank for domestic supply, a pure-water-supply pipe provided with a float-valve for automatically regulating the height of the water, a water-heater, circulation-pipes, and radiating-coils connected with the outer circulation-tank and water-heater, substantially as described.

3. In a heating apparatus, in combination, a circulation-tank, a water-heater, connecting circulating-pipes, a tank arranged within the circulating-tank, a supply-pipe for the inner tank, a discharge service-pipe by which water may be drawn from the inner tank, and an automatic valve through which water may pass from the inner to the outer tank when the water in the outer tank falls below that in the inner tank, substantially as described.

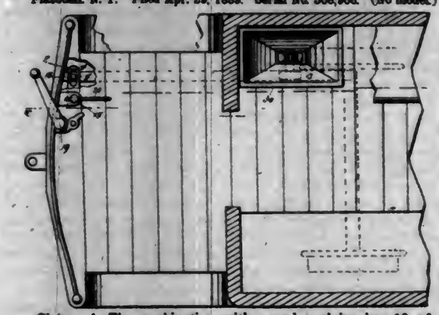
4. In a heating apparatus, in combination, an outer open circulation-tank, a water-heater, an inner tank, connecting and circulation pipes between the outer tank and the heater, a supply-pipe provided with a float-valve for controlling the water-supply to said inner tank, a discharge service-pipe for withdrawing water from said inner tank, and an automatic valve through which water may pass from the inner to the outer tank when the water in the outer is lower than in the inner tank, substantially as described.

5. In a heating apparatus, in combination, a circulation water-tank, a water-heater, connecting circulation-pipes, a water-tank arranged within the circulation-tank, a pure-water-supply pipe provided with a float-valve and entering said inner tank and discharging at or near its bottom, and a discharge service-pipe emerging from the same at a point a little below the normal water-level, substantially as and for the purpose described.

6. In a heating apparatus, in combination, a water-heater, a circulation-tank, pipes connecting the said heater and tank, an automatic draft-regulator consisting of a closed chamber, pipes entering said chamber below its top and connecting said chamber, water-heater, and circulation-tank, a float within said chamber, a draft-damper, and a connection between said float and draft-damper, substantially as and for the purpose described.

7. In a heating apparatus, in combination, a water-heater, a circulation-tank, pipes connecting said heater and tank, an automatic draft-regulator consisting of a closed chamber higher at one end than at the other, circulation-pipes entering below the top of said chamber and connecting the chamber to the upper part of the water-heater and the lower part of the circulation-tank, a float within said chamber, a shaft carrying the float and having one end passed through the wall of the chamber, and a connection between the end of said shaft and a draft-damper, substantially as and for the purpose described.

405,505. SANDING DEVICE FOR STREET-CARS. JAMES RITCHIE, Flatbush, N. Y. Filed Apr. 29, 1889. Serial No. 308,906. (No model.)



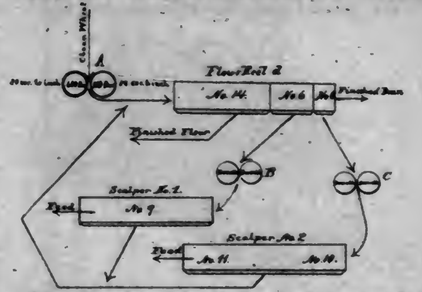
Claim.—1. The combination, with a sand-receiving box 10, of a valve 12, arranged therein, a pinion or gear 13, carried by the valve-shaft, and a rack arranged to engage the pinion, substantially as described.

2. The combination, with a sand-receiving box 10, of a valve 12, arranged therein, a pinion or gear 13, carried by the valve-shaft, and a rack supported by a boss formed upon the sand-receiving box and arranged to engage the valve gear or pinion, substantially as described.

3. In a sand-distributing device, the combination, with the sand-receiving box 10, of a four-armed valve 12, mounted therein, a gear or pinion 13, carried by the valve-shaft, a rack 15, arranged to engage the pinion, a horizontal lever to which the rack is connected, a vertical shaft which supports the lever, and a means for turning the vertical shaft, substantially as described.

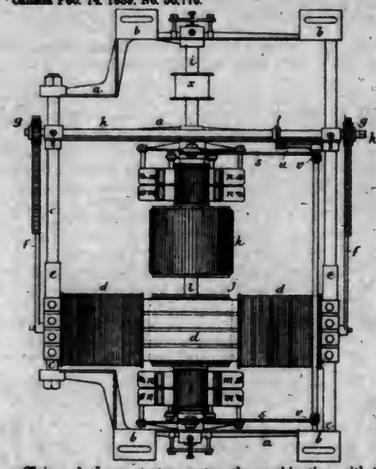
4. In a sand-distributing device, the combination, with the sand-receiving box, of a valve mounted therein and provided with a gear 13, a hopper arranged above the sand-receiving box, an agitator mounted within the hopper, a gear 33, carried by the agitator-shaft and arranged for engagement with the valve-gear 13, a rack mounted to engage the gear 13, and a means, substantially as described, for reciprocating the rack, as and for the purpose stated.

405,506. PROCESS OF MILLING WHEAT. OLIVER C. RITTER, Springfield, Mo. Filed Oct. 23, 1888. Serial No. 288,967. (No model.)



Claim.—The art of manufacturing flour, consisting, essentially, in crushing or grinding the wheat in one operation between two corrugated rolls running at high differential speed, using fine corrugations for slow roll, with coarser for fast, bolting out the finished flour, separating the middlings in two grades and tailing off finished bran, regrinding said grades of middlings on separate machines, rebolting the middlings-chop on separate scalpers to tail off the "fluff" or feed-product contained therein, and rebolting these valuable portions of the middlings with the first-break flour in straight-grade work or on separate reel.

405,507. DYNAMO-ELECTRIC MACHINE. WILLIAM D. SANDWELL, Herne Hill, County of Surrey, England. Filed Feb. 13, 1889. Serial No. 299,744. (No model.) Patented in England Oct. 25, 1887, No. 14,542; in Germany Mar. 14, 1888, No. 45,183; in Belgium Mar. 30, 1888, No. 81,241; in France Mar. 31, 1888, No. 188,706; in Italy June 30, 1888, XXII, 23,317, XLVI, 392; in Spain July 13, 1888, No. 8,158; in Austria-Hungary Aug. 9, 1888, No. 14,830 and No. 31,008, and in Canada Feb. 14, 1889, No. 30,776.



Claim.—1. In an electric motor, the combination, with the field-magnets, of two armatures, the said magnets and armatures being the one movable with respect to the other, substantially as described.

2. In an electric motor, the combination, with the movable field-magnets, of two armatures for the same, substantially as described.

3. In an electric motor, the combination, with the field-magnets, of two armatures, the said magnets being movable longitudinally of the armature-shaft, substantially as described.

4. In an electric motor, the combination, with the field-magnets and two armatures for the same, said magnets being movable longitudinally of the armature-shaft, of a commutator for each armature, each commutator being provided with two sets of brushes, substantially as described.

5. In an electric motor, the combination, with the field-magnets and two armatures for the same, said magnets being movable longi-

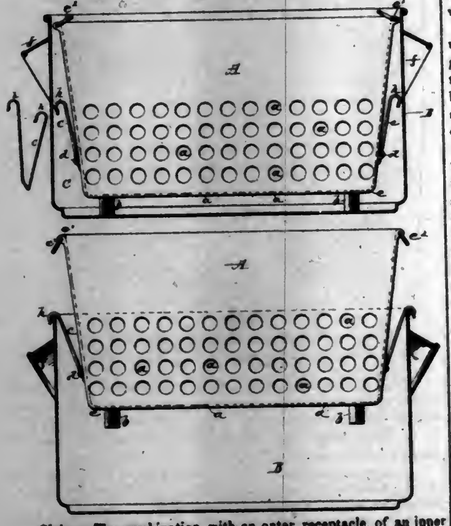
tudinally of the armature-shaft, of a commutator for each armature, each commutator being provided with two sets of pivoted brushes, the brushes of one set being connected to those of the other set, whereby a movement of one set into position withdraws the others, substantially as described.

405,508. TRAVELING-BAG. ALFRED P. W. SEAMAN, New York, N. Y. Filed July 3, 1888. Serial No. 278,932. (No model.)



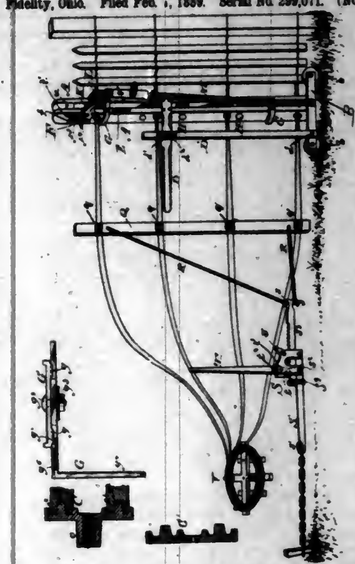
Claim.—In a convertible traveling-bag, the combination, with the frames A B, forming the mouth of the bag, of the supplemental frame D, pivoted to close between the frames A B, and adapted to be swung beneath said frames to support the bottom of the bag when at its normal size and to be closed within the main frames when the size of the bag is reduced, and a fastening device for holding the three frames together, as set forth.

405,509. WASH-BOILER. WILLIAM E. SMITH, Fremont, Nebr. Filed June 30, 1888. Serial No. 278,638. (No model.)



Claim.—The combination, with an outer receptacle, of an inner perforated receptacle and the rods bent into substantially U shape, the free ends of said rods having outwardly-turned ends forming hooks, the said rods being pivoted centrally to the perforated receptacle at points below the upper edge of same, so as to prevent the rods from falling inwardly past a vertical plane, substantially as set forth.

405,510. MACHINE FOR MAKING FENCES. JAMES B. STEEN, Fidelity, Ohio. Filed Feb. 7, 1889. Serial No. 299,071. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the uprights, the truck pivoted thereto, the stationary handle, the link adjustably secured thereto, and the plumb-mounted on the standards.

2. The combination, substantially as hereinbefore set forth, of the uprights having a series of holes or perforations, the brackets J, having central openings tapered, as described, and laterally-projecting arms J', secured to the inner sides of the uprights adjacent to the holes or perforations, the sprocket-wheels having tapered flanges or hubs on each side fitting in the brackets, said hubs being provided with grooves on their periphery communicating with perforations extending through the body of the wheels and through which the wires extend.

3. The combination, substantially as hereinbefore set forth, of the uprights, the wire-twisting devices, and the horizontally-adjustable gages, each consisting of a base-piece G', secured transversely across the edges of the uprights and provided with guide-lugs g, a slotted bar g', through which extends an adjustable securing-bolt, and the arm g^4, extending at right angles from the slotted bar across the face of the uprights.

4. The combination, substantially as hereinbefore set forth, of the uprights made in two parts, the spacing-blocks, the base-piece, the clamping-plates or castings C C' at the lower ends of the uprights, said clamping-plate C being provided with a boss c, extending through the base-piece, and with grooves c', in which the edges of the uprights are seated, and with lugs c^2, engaging with the uprights, and said casting C' being provided with similar grooves and lugs engaging with the opposite edges of the uprights, and a bolt extending through the uprights and the base-piece and securing the castings together, the wire-twisting sprocket-wheels, and the endless chain for operating them.

5. The combination, substantially as hereinbefore set forth, of the uprights, the sprocket-wheels, the chain extending over the sprocket-wheels, the bars having hooked ends secured to the opposite ends of the chain, one of said bars having a slot in its end, as described, the chain-operating handle, and a bolt extending through the bars and the handle, for the purpose specified.

6. The combination, substantially as hereinbefore set forth, of the clamp-carrying post and the wire-clamping devices, each consisting of a base-piece g, having a curved block g', provided with grooves g^3, in which the wires lie, and with guide-lugs g^2, a cap g^3, having grooves g^4, into which the guide-lugs on the base-piece fit, said cap being curved on its inner side to correspond with the curved base-block, and the cam-lever for forcing the cap into engagement with the block.

7. The combination, substantially as hereinbefore set forth, of the curved base-block, the correspondingly-curved cap, the grooves formed in the cap and base-block through which the wires extend, the bolt extending through the base-block and cap, and the cam-lever attached to the bolt.

405,511. GUIDE FOR PISTON-RODS. DANIEL W. UNSTEAD, Burlington, Ky. Filed Sept. 5, 1888. Serial No. 284,653. (No model.)



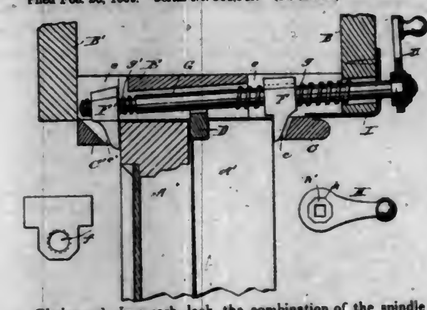
Claim.—1. The combination, with a cylinder and a longitudinal sectional sleeve, of a cylinder-head forming an integral portion of the lower sleeve-section provided with a central aperture, a stuffing-box surrounding said aperture, a gland inserted in said stuffing-box, and a sectional bushing detachably secured in said sleeve at the end opposite to that carrying the cylinder-head, substantially as and for the purpose specified.

2. The combination, with a sleeve adapted for attachment to a cylinder and divided longitudinally in two sections, of a disk integral with one end provided with a central aperture adapted to receive a piston-rod, a stuffing-box surrounding the said aperture, a gland inserted in said stuffing-box, and a bushing detachably held in the opposite end of the sleeve divided into two sections and provided with an essentially diamond-shaped aperture, substantially as and for the purpose specified.

3. The combination, with a cylinder, a sleeve adapted for attachment thereto divided into two sections, and a disk integral with one section at one end forming a cylinder-head, provided with an aperture adapted to receive a piston-rod, of a stuffing-box surrounding the aperture in the disk, a gland inserted in said stuffing-box, a packing intervening the end of the gland and contiguous face of the stuffing-box, and a sectional bushing detachably held in the opposite end of the said sleeve provided with an essentially diamond-shaped aperture, as and for the purpose specified.

4. The combination, with a cylinder, a sleeve adapted for attachment thereto divided into two sections, and a disk integral with one section, at one end forming a cylinder-head, provided with an aperture adapted to receive a piston-rod, of a stuffing-box surrounding the aperture in the disk, a gland inserted in said stuffing-box, a packing intervening the end of the gland and contiguous face of the stuffing-box, a sectional bushing detachably held in the opposite end of the said sleeve provided with an essentially diamond-shaped aperture, and a piston-rod circular in cross-section at one end and essentially diamond-shaped in cross-section at the other end reciprocating in the said sleeve, substantially as and for the purpose specified.

405,512. SASH-HOLDER. RALPH P. WADDELL, Alameda, Cal. Filed Feb. 26, 1889. Serial No. 301,549. (No model.)



Claim.—1. In a sash-lock, the combination of the spindle G, having the right and left hand threads g g', and fitted for rotation in the jamb of a window, and the clamps F F', mounted on the said spindle and adapted to engage the inner and outer sash, respectively, substantially as herein shown and described.

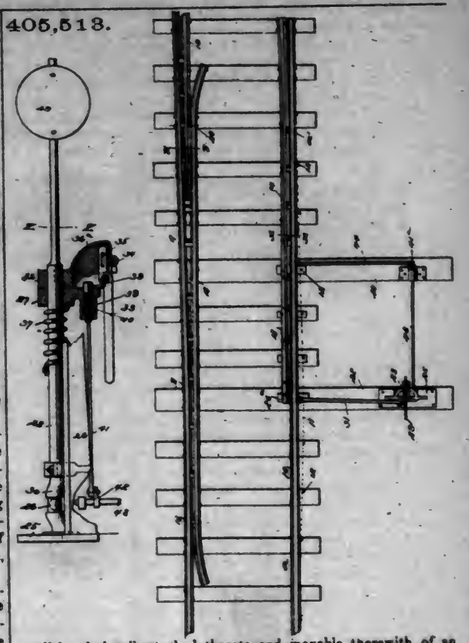
2. The combination, with the clamps F F' and the reversely-threaded spindle G, on which said clamps ride, of the many-sided collar h' on said spindle, the handle H, having hole h, corresponding to collar K, and receiving the collar and the nut A^3 on the spindle, substantially as shown and described.

405,513. AUTOMATIC SAFETY RAILROAD-SWITCH. JOHN H. WAIT, Junction City, Oreg. Filed Nov. 23, 1888. Serial No. 291,677. (No model.)

Claim.—1. The combination, with a main rail laterally movable at a point in its length and a parallel switch-rail attached thereto and movable therewith, of a stationary outwardly-curved main rail, an inner fixed guard-rail, and a rail-point intervening between the guard and fixed main rail at one end, substantially as shown and described.

2. The combination, with a laterally-movable main rail and a parallel switch-rail attached thereto and movable therewith, of an outwardly-curved stationary opposing main rail, an inner guard-rail, a point-rail intervening between the guard and main rail at one end, and spacing-thimbles and bolts uniting the fixed main rail, the guard and point rail, substantially as and for the purpose specified.

405,513. [continued]

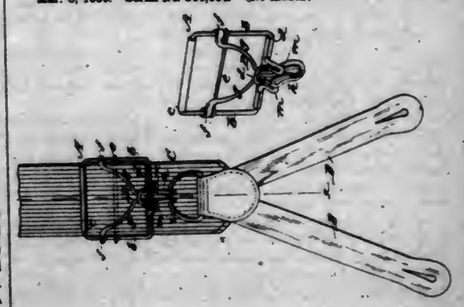


3. The combination, with a laterally-movable main rail and a parallel switch-rail spaced therefrom, attached thereto and movable therewith, of an outwardly-curved stationary opposing main rail, an inner guard-rail, a point-rail intervening between the main and guard rail at one end, spacing-thimbles and bolts connecting the stationary main rail, the point and guard rail, and the movable main rail and switch-rail, and means, substantially as shown and described, for manipulating the movable rails, as and for the purpose specified.

4. In a railroad-switch, the combination, with a curved fixed main rail and a fixed point-rail, of an opposing main rail laterally movable a distance in its length, and a parallel switch-rail movable with the latter main rail, substantially as shown and described.

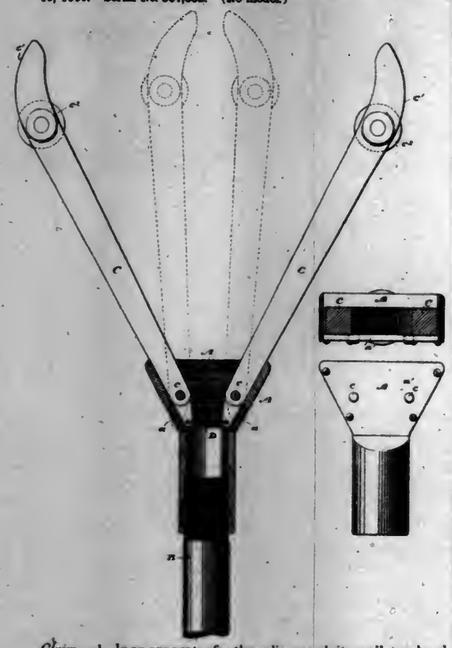
5. In a railroad-switch, the combination, with a curved fixed main rail, a fixed point-rail, and opposing main rail laterally movable a distance in its length, and a switch-rail movable with the latter main rail, of a switch-stand connected with the movable rails, consisting of a spring-actuated signal-shaft, a frame supporting said shaft, a horizontal arm attached to said shaft, a lever fulcrumed upon said arm, a spring-actuated bolt capable of engaging with the horizontal arm, a crank-shaft connected with the bolt and the movable rail, and a direct connection between said movable rails and the signal-shaft, substantially as shown and described.

405,514. BUCKLE. WILLIAM J. WALTERS, Prospect, N. Y. Filed Mar. 5, 1889. Serial No. 301,884. (No model.)



Claim.—The combination, with the suspender-buckle frame A, provided with side bars *b b*, a cross-bar *c*, secured to said side bars, an upper end bar *c*, and a lower end bar *d*, constructed to form downwardly and forwardly projecting separated stops or projections *m m*, of the clamp B, having ends *f f* adapted to slide on the side bars *b b* of the buckle-frame, and having bars *g g* passing over the cross-bar *c* and back of or through the lower end bar *d*, and constructed to form a hook *h* at the lower end of the clamp between the stops or projections *m m*, essentially as and for the purposes herein set forth.

405,515. PILOT OR HEAD FOR SECTIONAL RODS FOR THREADING UNDERGROUND CONDUITS. GEORGE H. WARDE, New York, N. Y., assignor to William Hampden Johnstone, Philadelphia, Pa. Filed Apr. 19, 1889. Serial No. 307,532. (No model.)



Claim.—1. In an apparatus for threading conduits, a pilot or head having spring-actuated jaws normally tending to open, substantially as and for the purpose set forth.

2. In an apparatus for threading conduits, the pilot or head having spring-actuated jaws tending to open and curved or bent inwardly at their forward ends.

3. In an apparatus for threading conduits, the pilot or head having spring-actuated jaws tending to open, curved inwardly upon their exterior faces near their forward ends, and provided with anti-friction rollers.

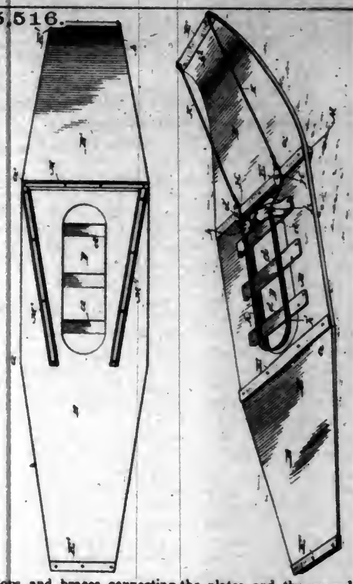
4. In an apparatus for threading conduits, the combination of the head A, the pivoted jaws mounted therein, and the screw-threaded shank of the head for connection with the leading-rod section, substantially as set forth.

405,516. SNOW-SHOE. HENRY WATSON, Donald, British Columbia, Canada. Filed Aug. 23, 1888. Serial No. 283,577. (No model.) Patented in Canada Apr. 26, 1888, No. 29,014.

Claim.—1. In a snow-shoe, the combination, with a wooden body provided with a central longitudinal opening, of flexible foot-supports spanning the opening and an adjustable toe-strap also spanning the said opening, substantially as shown and described.

2. In a snow-shoe, the combination, with a wooden body provided with a central longitudinal opening and flexible supports spanning the opening, of an adjustable toe-strap also spanning the said opening, containing loops, plates secured to the body, and heel-strings passing through said plates, and the loops of the toe-strap, substantially as shown and described.

3. In a snow-shoe, the combination, with a wooden body having an upwardly-curved forward end and provided with a central longitudinal opening, and flexible foot-supports spanning said opening, of an adjustable toe-strap also spanning said opening, containing loops, plates secured to said body, heel-strings passing through said plates



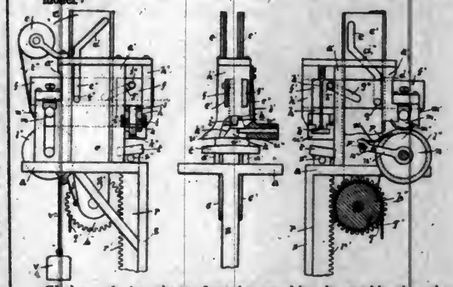
and loops, and braces connecting the plates and the curved end of the body, substantially as shown and described.

4. A snow-shoe having a central longitudinal opening in its body and provided with flexible foot-supports spanning said opening and with foot-securing straps, substantially as described.

5. The combination, with the body of a snow-shoe, of an essentially triangular brake attached to the bottom between the ends, substantially as shown and described.

6. The combination, with the body of a snow-shoe constructed of wood, of an essentially triangular wooden brake attached to the bottom of said body at the center, the members of said brake being polygonal in cross-section, substantially as shown and described.

405,517. HOOP-FASTENING MACHINE. FITZLAND L. WILSON, West Bay City, Mich. Filed May 7, 1888. Serial No. 273,014. (No model.)



Claim.—1. In a hoop-fastening machine, in combination, the supporting frame or standards, the vertical plate *c*, provided with a slot having a diagonal portion *d*, the horizontal plate *f*, provided with a rigid stud projecting into the said slot and with a diagonal slot *g* near its outer end, and the staple-driver *j'*, arranged to slide vertically and provided with a stud *j''*, projecting into the said slot *g*, substantially as and for the purpose set forth.

2. In a hoop-fastening machine, in combination, the supporting-standards, the vertical plate *c'*, provided with a longitudinal slot having a diagonal portion *d'*, the horizontal plate *f'*, provided with a rigid stud *g*, projecting into the said slot, and with a diagonal slot *g''* near its outer end, with a former-head *h*, capable of a vertical movement and provided with a rigid stud *h''*, projecting into the said slot *g''*, and having on its lower end the projecting portions *i'* and *i*, a staple-forming die *k*, and the staple-driver, substantially as set forth.

3. In a hoop-fastening machine, the combination, with the staple forming and driving mechanism, the fixed roll and the opposing roll, and a ratchet-wheel coincident with and secured to the fixed roll, of the lever *n'*, pivotally supported by one end and provided on its free

end with a fork *n''*, a pawl, as *p*, pivoted to the lever and engaging with the ratchet-wheel, and the vertically-sliding plate *c*, provided with a fixed stud engaging with the said fork *n''*, substantially as and for the purpose set forth.

4. In a machine for fastening hoops, the combination, with the supporting-frame, the vertical plate *c'*, capable of a vertical movement and provided with a slot having the diagonal portion *d''* and the vertical portions *d'* and *e*, the horizontal plate *f''*, provided with a stud *g*, projecting into the said slot and having the diagonal slot *g''*, and the head *h*, capable of a reciprocating movement and provided on its lower end with staple-forming devices and upon its front side with a vertical groove *j*, of the plate *c*, capable of a vertical movement, and provided with the slot *c''*, having the diagonal portion *d*, the plate *f*, provided with a stud *f''*, projecting into the said slot *c''*, and having the diagonal slot *g'*, the vertical driver *j'* within the said groove *j*, and provided with the stud *j''*, projecting into the said slot *g'*, the former-die *k*, and the anvil-die *l*, substantially as and for the purpose set forth.

5. In a hoop-fastening machine, the combination, with the plates *c* and *c'*, capable of a vertical movement for actuating the staple forming and driving devices, of the gear-wheel *b''*, journaled between the said plates and provided on its periphery with a line connected to a foot-lever, the vertical rack-bar *r*, provided with teeth engaging with the said gear-wheel, and having the anvil-die *l*, pivotally secured to its upper end, and clamping-supports, as *u'* and *u''*, above the anvil-die, substantially as set forth.

6. The combination, with the staple forming and driving mechanism for fastening hoops, of the fixed roll, the opposing roll, a ratchet-wheel secured to and coincident with one of the said rolls, a lever having a pawl engaging with the said ratchet, and suitable devices for operating the said lever to intermittently revolve the said roll with the rigidly-supported cutter *l*, and the cutter *l'*, secured to the vertically-sliding former-head, substantially as set forth.

7. The combination, in a hoop-fastening machine, with the staple-driver, the former-die *k*, capable of a receding movement horizontally, and a vertically-sliding former-head provided with devices for moving the said former-die horizontally after the staple is formed, and having on its lower end downwardly-projecting portions passing on each side of the said former-die, of the cutter *l*, secured to the side of the former-head, and with its cutting-edge projecting below the said downwardly-projecting portion, and a fixed cutter *l'*, secured to the machine-frame, substantially as and for the purpose set forth.

8. The combination, in a hoop-fastening machine, of the driver, the vertically-reciprocating former-head having on its lower end downwardly-projecting portions *i* and *i'*, and a beveled portion *w*, the former-die *k*, having a projecting beveled end *k''*, and provided with the projections *w''*, engaging with the portion *w* when the former-head is near the end of its downward movement, and a spring *k'*, for retaining the said former-die in position, substantially as set forth.

405,518. BAG-FASTENER. ROBERT WILSON, Grubville, Mo. Filed Feb. 12, 1889. Serial No. 299,588. (No model.)

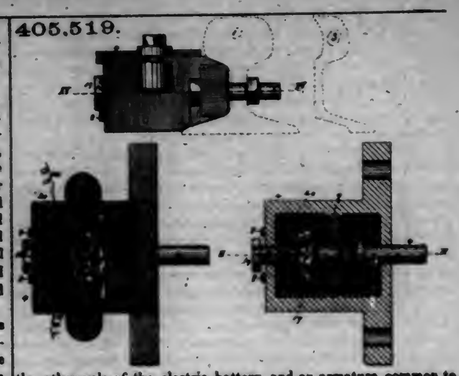


Claim.—The herein-described bag-fastener, comprising two flat members C D, lying in the same plane with their adjacent edges recessed and their inner rear corners rounded, apertures being formed in their rear ends, the rectangular link E, the opposite cross-bars of which extend one through each of said apertures to connect the two members, and a fastening turning on the forward end of one member and locking the front end of the opposite member thereto, substantially as set forth.

405,519. ELECTRIC APPLIANCE FOR RAILWAY-SWITCHES. MORRIS WERNER, St. Louis, Mo. Filed Apr. 30, 1888. Serial No. 272,353. (No model.)

Claim.—1. The combination of the two moving rails of a railroad-switch, a block 7, moved by each rail into contact with another block 12, wires connecting both of the blocks 12 with one pole of a galvanic battery, wires connecting the blocks 7 with the coils of different electro-magnets, both of which have electric connection with

405,519.

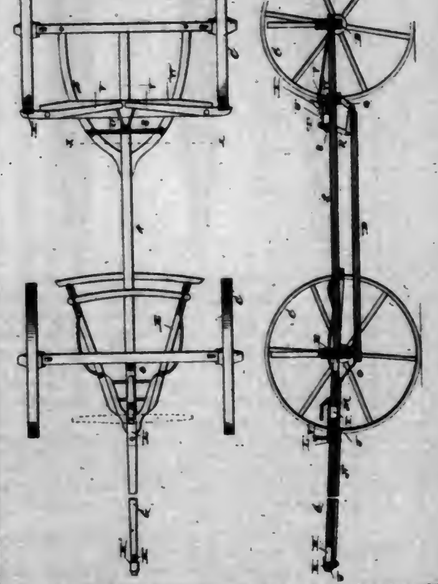


the other pole of the electric battery, and an armature common to both magnets and connected with an indicating-finger, all arranged so that the circuit will be closed whether the switch is open or closed, and thus show by means of an indicating device the position of the switch-rails, substantially as and for the purpose set forth.

2. In a circuit-closer for railway-switches, the combination of the rod 6, carrying at its inner end insulated block 7, having electrical connection with one pole of a galvanic battery and signaling device, a second rod 13, carrying insulated block 12, having electrical connection with the other pole of the galvanic battery, both blocks 7 12 having their contact faces formed with matching teeth or ribs 17 for increasing their contact-surfaces, a movable switch-rail adapted to place the insulated blocks 7 12 into electrical connection, a spring on rod 6 for keeping the blocks normally separated, and a spring on rod 13 for affording a yielding contact, whereby the exact position of the switch-rails is constantly shown by the signaling device, as set forth.

3. In a circuit-closer for railway-switch signals, the combination of a box, the two terminals of the signal-circuit, the blocks 7 12, connected to the respective terminals, the rods 6 13, carrying said blocks and mounted in the box-springs on said rods, and guide-rods 8 on which the blocks slide, said rod 6 protruding for contact with the rail, all substantially as herein set forth.

405,520. AUTOMATIC WAGON-BRAKE. WILLIAM AYLESWORTH, Ist, Hossburg, Pa., assignor of one-third to James H. Mold, same place. Filed Jan. 10, 1889. Serial No. 296,009. (No model.)



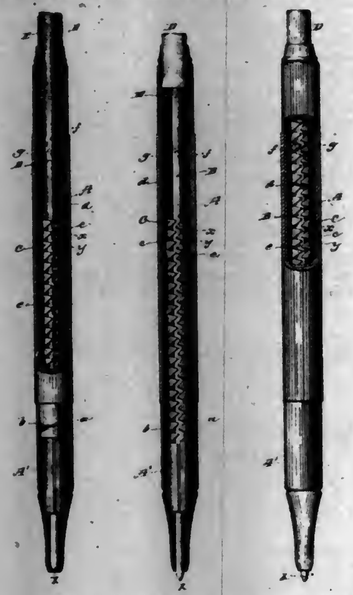
Claim.—1. In an automatic wagon-brake, the combination, with the running-gear, of the tongue having longitudinal slots near its front

and rear ends, the plate arranged to slide in the rear slot, the bracket secured to the upper edge of said plate, the horizontal plate secured to the lower edge of the latter and having a forwardly-extending rod connected with a pin sliding in the front slot of the tongue and carrying the neck-yoke, and the angular link hinged at the rear end of the horizontal sliding plate and connected by intermediate mechanism with the brake-levers, substantially as set forth.

2. The combination, with the tongue having the slot I, of the vertical plate J, sliding longitudinally in said slot, the bracket secured permanently at the upper edge of said plate and adapted to carry the whiffletrees, the horizontal plate M, secured permanently at the lower edge of said plate and having the forwardly-extending rod N, connected with the neck-yoke, a link hinged to the rear end of the horizontal sliding plate M and connected by intermediate mechanism with the brake-levers, and a pin adapted to be inserted detachably through a perforation in the bracket L into the tongue, substantially as set forth.

3. The combination, with the running-gear and the tongue, of the levers mounted on the running-gear and carrying the brake-shoes, the rock-shaft mounted on the running-gear in front of the levers and having an upwardly-projecting arm T, the links connecting said arm with the levers, the parallel arms R, depending from the rock-shaft, the angle-levers pivoted at one end to the running-gear and at the other end to the arms R, the push-bar pivoted between the angle-levers, and devices mounted on the tongue to operate the push-bar, as set forth.

405,521. LEAD OR CRAYON HOLDER. MARCELLUS BAILEY, Washington, D. C., assignor to the Eagle Pencil Company, New York, N. Y. Filed Dec. 14, 1888. Serial No. 293,563. (No model.)



Claim.—1. The combination of the pencil sheath or handle, the straight-slotted tube B, the zigzag slotted tube C, the one rotatable within certain limits with respect to the other, the spring whereby the rotatable tube is caused to move in a direction opposite to that in which it is moved by hand, and the carrier provided with a pin which enters both the straight slot of tube B and the zigzag slot of tube C, substantially as and for the purposes hereinbefore set forth.

2. The combination of the pencil-sheath or handle, the carrier, the straight-slotted tube B, and the zigzag-slotted tube C, the one rotatable with respect to the other, the longitudinally-movable pressure-cap connected to the rotatable tube in such manner that its longitudinal reciprocation shall cause oscillatory movement of the rotatable tube, and the retracting-spring, these elements being combined for joint operation substantially in the manner hereinbefore set forth.

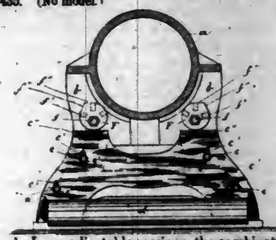
405,522. BIT-HOLDER. HARRY S. BARTHOLOMEW, Bristol, Conn. Filed Feb. 5, 1889. Serial No. 298,706. (No model.)

Claim.—The combination of the transversely-slotted head or socket exteriorly threaded, the holding-jaws resting in the slot of said socket, and the inner and outer sleeves fitted to each other and to said head or socket with differential threads at the exterior and interior of the inner socket, substantially as described, and for the purpose specified.

405,522.



405,523. ADJUSTABLE CARRIAGE FOR JORDAN ENGINES AND OTHER MACHINERY. EDWIN W. BARTON, Lawrence, Mass., assignor of one-half to Edwin Churchill, same place. Filed Jan. 4, 1888. Serial No. 295,435. (No model.)



Claim.—1. In an adjustable carriage, the combination of the legs or supports *b b*, bolts or spindles *f f*, secured thereto, cams or eccentries F F, journaled on the spindles, plates *c c*, having rollers *d d*, and means for adjustably securing the plates to the supports, substantially as and for the purpose set forth.

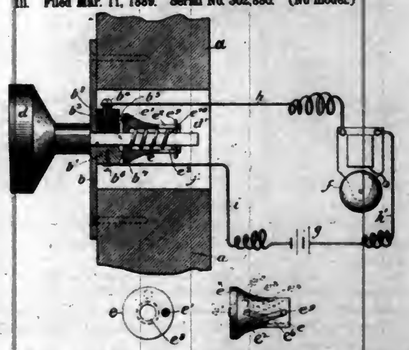
2. In an adjustable carriage, the combination of the legs or supports *b b*, bolts or spindles *f f*, secured thereto, cams or eccentrics F F, journaled on the spindles and having flattened surfaces *f' f'* and peripheral recesses *f'' f''*, as described, plates *c c*, having rollers *d d*, and means for adjustably securing the plates to the supports, substantially as and for the purpose set forth.

405,524. WHIP-SOCKET. FRANCIS E. BENTON, Stoughton, Mass. Filed Nov. 17, 1888. Serial No. 291,124. (No model.)



Claim.—A whip-socket holder consisting of the two parts A A, having jaws *a a* and intermediate rib a^3, the screws E E, and the plates D D, the latter held with respect to each other by the said screws and their nuts F, as shown and described.

405,525. ELECTRICAL BELL-PULL. CHARLES A. BRAUN, Chicago, Ill. Filed Mar. 11, 1889. Serial No. 302,880. (No model.)

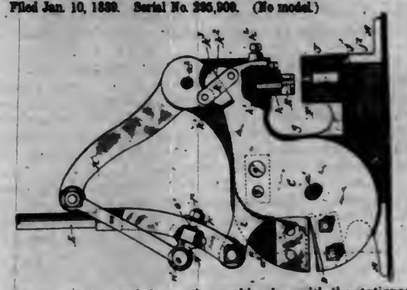


Claim.—1. In combination with an electric circuit, electric bell, bell-pull, and insulated contact-point to one end of said circuit, a transversely-reciprocating spring-chamber provided with an insulating-plug operating with said insulated contact-point, whereby, by operating said bell-pull, the electric circuit may be opened and closed, substantially as specified.

2. In combination with a reciprocating spring-chamber provided with an insulating-plug, spiral slots, and a spring, a bell-pull provided with a pin operating in said slots, an insulated contact-point at one end of an electric circuit operating with said insulating-plug, and an electric bell adapted to operate substantially as specified.

3. In combination with a spring-chamber provided with an insulating-plug, spiral slots, and a spring, all upon the shaft of a bell-pull, a bell-pull shaft provided with a pin adapted to play in said spiral slots, an insulated contact-point at one end of an electric circuit, said circuit provided with an electric bell, and said insulating-plug adapted to operate with said insulated contact-point, substantially as specified.

405,526. METAL-SHEARS. PETER BROADBOOKE, Batavia, N. Y. Filed Jan. 10, 1889. Serial No. 295,900. (No model.)



Claim.—1. In metal-shears, the combination, with the stationary frame provided at one end with an upper stationary cutter or jaw, of an oscillating lever-frame pivoted between its ends to the stationary frame and carrying at one end a lower movable cutter or jaw co-operating with the stationary jaw of the frame and at its opposite end a punch or other cutting-tool, a cam-lever pivoted to the stationary frame, whereby said oscillating frame is swung on its pivot, and an actuating-lever connected with said cam-lever, substantially as set forth.

2. In metal-shears, the combination, with the stationary frame composed of upright parallel side plates and having a punching-die at one end and an upper stationary shearing-jaw at its opposite end, of an oscillating frame pivoted between the stationary side plates of the main frame and carrying at one end a lower movable cutting-jaw arranged opposite said stationary jaw, and at its opposite end a punch arranged above said punching-die, a cam-lever arranged above one end of said oscillating frame for swinging the latter on its pivot, and an actuating-lever connected with said cam-lever, substantially as set forth.

3. In metal-shears, the combination, with the stationary frame composed of upright parallel side plates and having a punching-die at one end and an upper stationary shearing-jaw at its opposite end, of an oscillating frame pivoted between the stationary side plates of the main frame and carrying at one end a lower movable cutting-jaw arranged opposite said stationary jaw, and at its opposite end a punch arranged above said punching-die, a cam-lever pivoted to the stationary frame and connected with one end of said oscillating frame, and an actuating-lever pivoted to the opposite portion of the oscillating frame and connected with said cam-lever, substantially as set forth.

4. In metal-shears, the combination, with the stationary frame composed of upright parallel side plates and having a punching die at one end and an upper stationary shearing-jaw at its opposite end, of an oscillating frame pivoted between the stationary side plates of the main frame and carrying at one end a lower movable cutting-jaw arranged opposite said stationary jaw, and at its opposite end a punch arranged above said punching-die, a cam-lever pivoted to the stationary frame and engaging against one end of said oscillating frame, an actuating-lever, and a connecting link or links attached at one end to said cam-lever and adjustably connected at their opposite ends to the actuating-lever, substantially as set forth.

5. In metal-shears, the combination, with the stationary frame composed of upright parellel side plates and having a punching-die at one end and an upper stationary shearing-jaw at its opposite end, of an oscillating frame pivoted between the stationary side plates of the main frame and carrying at one end a lower movable cutting-jaw arranged opposite said stationary jaw, and at its opposite end a punch arranged above said punching-die, a cam-lever pivoted to the stationary frame and engaging against one end of said oscillating frame, a bifurcated actuating-lever L, links *m*, attached at one end to said cam-lever, and a clamp N, connecting the opposite ends of said links with the actuating-lever, and consisting of a block *n*, having a bearing for receiving the connecting-bolt of said links, and a screw-shank *o*, provided with a clamping-nut *p*, bearing against said actuating-lever, substantially as set forth.

6. In metal-shears, the combination, with the stationary frame composed of side plates $A' A^2$, and having at one end a stationary cutting-jaw B and at its opposite end a punching-die F, of the oscillating frame C, pivoted between said side plates and carrying at one end a jaw D and at its opposite end a punch E, the cam-lever K, a link or links *k*, connecting said cam-lever with the oscillating frame, the actuating-lever L, and the link or links *m*, connecting said actuating-lever with the cam-lever K, substantially as set forth.

7. In metal-shears, the combination, with the stationary frame composed of side plates $A' A^2$, and having at one end a stationary cutting-jaw B and at its opposite end a punching-die F, of the oscillating frame C, pivoted between said side plates and carrying at one end a jaw D and at its opposite end a punch E, the cam lever K, the sliding block J, interposed between said cam-lever and the oscillating frame, links *k*, connecting the cam-lever and oscillating frame, and the actuating-lever L, connected with said cam-lever, substantially as set forth.

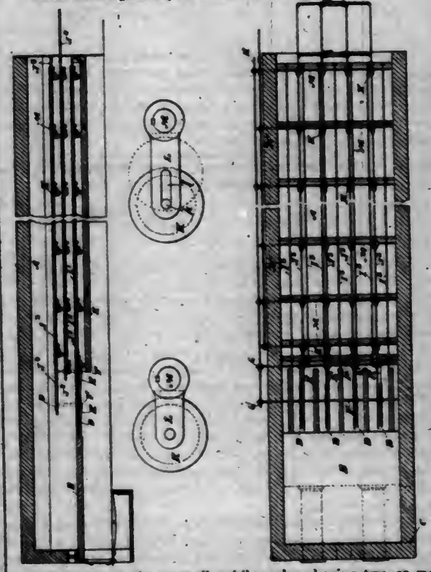
8. In metal-shears, the combination, with the stationary frame having an upper stationary cutting-jaw, of a lower movable jaw and a rest or support arranged underneath the upper stationary jaw and opposite the lower movable jaw, substantially as set forth.

9. In metal-shears, the combination, with the stationary frame having an upper stationary cutting-jaw, of a lower movable jaw and a vertically-adjustable rest or support arranged underneath the upper stationary jaw and opposite the lower movable jaw, substantially as set forth.

10. In metal-shears, the combination, with the stationary frame composed of side plates $A' A^2$, the plate A' being provided at one end with an overhanging portion a^3, carrying an upper stationary jaw B, of the oscillating frame C, carrying a lower movable jaw D, and a rest or support *d*, arranged underneath said overhanging portion of said side plate and opposite the movable jaw, substantially as set forth.

11. In metal shears and punch, the combination, with the base A, divided longitudinally and provided with side plates $A' A^2$, having a dovetailed recess between them, of the die-holder J, provided with a dovetail rib or tenon arranged in said dovetail recess, and a clamping-bolt, whereby said side plates are secured together and the die-holder is clamped between the plates, substantially as set forth.

405,527. ANNEALING-KILN. ANTHONY D. BROGAN and JAMES CRAIG, Firhill, Glasgow, County of Lanark, Scotland, and JOSEPH FERSON, St. Paul, Minn. Filed Mar. 27, 1888. Serial No. 268,618. (No model.) Patented in England Sept. 15, 1887, No. 12,548.



Claim.—1. A glass-annealing kiln or lear having two or more tiers of depositing-surfaces arranged one above another, in combination with means, such as an elevator and traveling or transferring bars, for laying the glass on any of said surfaces, and stops for locking said elevator at any of said tiers, substantially as described.

2. The combination, in a glass-annealing kiln or lear, of two or more tiers of depositing-surfaces, composed of stationary and traveling bars, and an elevator or grid capable of being raised and lowered to the level of any of said depositing-surfaces, substantially as set forth.

3. The combination, in a glass-annealing kiln, of two or more glass-depositing shelves arranged one above the other in the kiln and movable longitudinally independent of each other, an elevator ar-

ranged at the end of said surfaces or shelves to convey the glass to any of said surfaces or shelves, a lever for operating said elevator, and a quadrant having a number of stops equal to the number of shelves or surfaces, substantially as set forth.

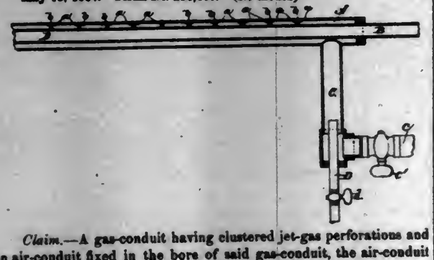
4. In a glass-annealing kiln or lear, the combination of a lifting grid or elevator D, the stationary glass-supporting bars I' I² I³, arranged longitudinally in said kiln, and the traveling bars J' J² J³, arranged parallel with and slightly below said stationary bars and adapted to be projected under said grid, said stationary and traveling bars being arranged in a vertical tier, substantially as set forth.

5. In a glass-annealing kiln or lear having traveling bars, the lever-arms K, formed with slots or long bearings to carry the pulleys supporting said bars, substantially as and for the purpose set forth.

6. In a glass-annealing kiln, the combination, with a tier of shelves, of the rock-shafts F, arranged at the ends and slightly below the level of the bottom shelf, the bars D, arranged in pairs across said shafts, arms G, and the link connecting said arms, lever-arms E on said shafts, pivoted between said bars D, and mechanism, substantially as described, for locking said elevator at the level of any of said shelves, as set forth.

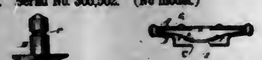
7. In a glass-annealing kiln, the combination, with a tier of shelves, of the rock-shafts arranged at the end and slightly below the bottom shelf, the bars D, arranged in pairs, supported across said rock-shafts, parallel lever-arms E, secured to said rock-shafts and pivoted at their ends between the ends of the said bars D, crank-arms G on said shafts, a link connecting said arms G, and a bell-crank lever H, connected to said link, substantially as set forth.

405,528. BLOW-PIPE. WALTER M. BROWN, Albany, N. Y. Filed May 13, 1887. Serial No. 238,109. (No model.)



Claim.—A gas-conduit having clustered jet-gas perforations and an air-conduit fixed in the bore of said gas-conduit, the air-conduit having hollow nipples leading from the interior of said air-conduit and passing through the shell of the gas-conduit, the exit ends of said hollow nipples terminating within the space formed by said clustered gas-perforations, substantially as described.

405,529. BUTTON. CHARLES A. BRYANT, Wakefield, Mass. Filed Apr. 1, 1889. Serial No. 305,502. (No model.)



Claim.—1. The herein-described button consisting of a front and back united at their edges, but so as to leave a chamber between the two, combined with a pair of springs arranged in the said chamber, secured by their outer ends to said front and back, the said springs extending radially inward and inclined toward the back, their inner or free ends overlapping each other at the center, the said free ends and back constructed with openings corresponding to the shank to be introduced, the said openings in the springs overlapping each other at the center, and whereby as the said free ends are forced toward the front of the button the openings through the springs will be caused to register with each other, and a stud the shank of which is constructed with an annular groove and adapted to enter the back of the button and through the openings in the free ends of the springs, and engaged with said free ends by the reaction of the springs, substantially as described.

2. A button composed of a front A and a back B, the said front and back secured together at their outer edges, and so as to form a chamber between the two, the back constructed with an opening C at its center, combined with springs E F, made from elastic sheet metal and integral with the body G, which said body forms connection between the said two springs, the said springs arranged within the button, with the body G next the front of the button and so that the springs incline rearward toward the back of the button, the free ends of the springs overlapping each other at the center, and the said free ends constructed with openings corresponding to the shank of the stud to be introduced, the said openings overlapping each other in their normal condition, but so that when forced toward the front the said two openings will register the one with the other, and a stud the shank of which is constructed with an annular groove e, adapted to engage said springs, substantially as described.

405,530. ROCKING-CHAIR ATTACHMENT. WILLIAM I. BUNKER, Chicago, Ill. Filed Sept. 9, 1887. Serial No. 249,270. (No model.)



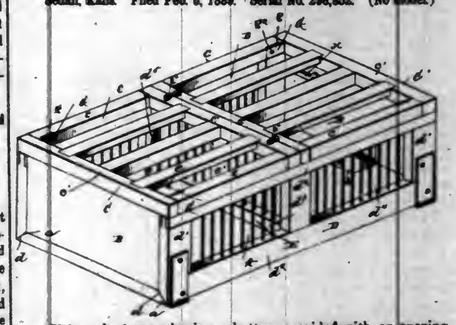
Claim.—1. In combination with the rocker and base-rail of a platform rocking-chair, a coiled spring and two attaching-brackets securing the ends of the spring to the rocker and base-rail, respectively, one of the brackets securing one end of the spring at points away from its diametrical center and the other bracket securing the other end of the spring at a point substantially in the line of its diametrical center, substantially as described.

2. In combination with the rocker and base-rail of a platform rocking-chair, a helical spring and two attaching-brackets securing the ends of the spring to the rocker and base-rail, respectively, one of the brackets securing the larger end of the spring at points away from its diametrical center and the other bracket securing the smaller end of the spring at a point substantially in the line of its diametrical center, substantially as described.

3. In combination with the rocker and base-rail of a platform rocking-chair, a helical spring and two attaching-brackets, one of the brackets securing the broader end of the spring at points away from its diametrical center and the other bracket having an extended portion passing through the body of the spring, attached to its tapering end, and securing the same from a point substantially in the line of its diametrical center, substantially as described.

4. A bracket for rocking-chair attachments, comprising a plate to be secured to the rocker or base-rail, an extended portion to pass through the body of the coils, and means for securing the end of the extended portion to one of the terminal coils of the spring, substantially as described.

405,531. FOLDING COOP. WILLIAM CARR and ALFRED EVANS, Sedan, Kans. Filed Feb. 6, 1889. Serial No. 298,852. (No model.)



Claim.—1. A coop having a bottom provided with an opening, sides hinged to said bottom, ends and top hinged together, a partition carrying a block having shoulders which extend through the opening in the floor, and cleats pivoted to the ends of the shoulders to retain the coop when folded, substantially as described.

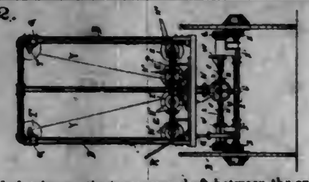
2. A folding coop consisting of a bottom, sides, ends, and top, a partition on said bottom, cleats on the sides in which said partition fits, and a block carried by said partition having cleats for fastening the coop in folded position, substantially in the manner described.

3. In a folding coop, the combination of the bottom, sides, ends, and top, the bottom having an opening therein, the partition on said bottom, the guides on the bottom for said partition, and the block in the partition extending through the bottom and having cleats for securing the coop when folded, substantially in the manner described.

405,532. MODE OF ADVERTISING. JAMES A. CHERNEY, Los Angeles, assignor to James W. Moyle, San Francisco, Cal. Filed Feb. 12, 1889. Serial No. 299,663. (No model.)

Claim.—1. The combination of a running-gear, a frame mounted thereon, apron-carrying rolls mounted at bottom and top of the frame, gears at the front end of the bottom rolls, a shaft geared thereto and extending to the rear axle, a transverse shaft over said axle carrying center gears to which the longitudinal shaft is geared, gears at the ends of said transverse shaft and gears on the rear hubs of the running-gear, and clutches on the transverse shaft between the end gears and the center gears to cause the engagement and disengagement of the center gears, as described.

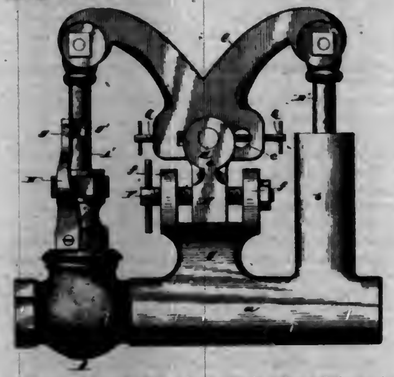
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2. The combination of a running-gear, a frame mounted thereon, a transverse shaft on the forward end of said frame carrying movable bevel-gears, and a shipper for operating said gears, two pairs of rolls mounted in the frame and having bevel-gears on their forward ends, the movable gears being adapted to engage alternately one or the other of each pair of bottom rolls, idler-rolls at the top of the frame, and traveling aprons each running over one pair of bottom rolls and one top roll, as set forth.

3. The combination, with the wheels of a vehicle having gears S S upon them, and a shaft U, having gears G G, and clutches W W, provided with springs X X, and a gear L upon it, of the gear V, meshing in gear Z, yoke H, and bracket U, supporting-gear V, couplings I I, shaft J M, leading from gear V to forward end of vehicle, shaft O, operating from shaft M, and shaft P, operated from shaft O, and rolls for the canvas operated from shaft P, as set forth.

405,533. REDUCTION-VALVE AND PRESSURE-REGULATOR. PETER D. CONNERLY, Horseheads, N. Y. Filed Feb. 9, 1889. Serial No. 299,233. (No model.)



Claim.—1. The reduction-valve having its valve and plunger beam or lever provided with a slot which receives the pivot or fulcrum, and upon which pivot or fulcrum bear handle-screws working in said lever or beam, said pivot or fulcrum being carried by a block or slide, in turn carried by a lever-screw bearing in an extension of the pressure-pipe, substantially as and for the purpose set forth

2. The reduction-valve having applied to its stem a beveled incline-faced projection, in combination with the spring-catch having at the upper end a similar projection engaging with the aforesaid projection, substantially as and for the purpose specified.

405,534. HARROW. JOHN F. CORRELL and RANNER A. A. CORRELL, York, Pa. Filed Oct. 8, 1888. Serial No. 287,473. (No model.)

Claim.—1. The combination, with the rails, of a plate for holding the same intact, the under side of which is provided with two downward-extending shoulders designed to fit around the rail, and a diagonal slot in which the spring-finger fits, substantially as described.

2. The combination, with the plate, the under side of which is provided with two downward-extending flanges designed to fit around the rails, and having a diagonal slot cut therein in which the spring-finger of the rail fits, of two flanges formed on its upper side and having two lugs formed between the flanges which are designed to engage the rails of the harrow to prevent the same from working loose, substantially as described.



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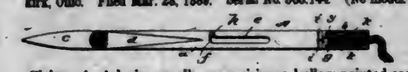


405,535. CAR-STARTER. AMBROSE M. CRADDICK and WINFIELD S. HEADY, Tower Hill, Ill. Filed Mar. 1, 1889. Serial No. 301,673. (No model.)



Claim.—The car-starter consisting of the handle or lever A, having at one end the curved plates or bars A', the serrated roller D, having at one end a ratchet E' integral therewith, the roller B, hung at the forward ends of the plate or bars A, and the pawl E, engaging said ratchet, which pawl and serrated roller, with its ratchet, are hung in the plates or bars A', substantially as set forth.

405,536. BELT-LACING NEEDLE. BENJAMIN F. CURRAN, Dunkirk, Ohio. Filed Mar. 23, 1889. Serial No. 305,144. (No model.)



Claim.—1. A lacing-needle, comprising a hollow-pointed section having a bayonet-slot formed longitudinally therein and its sides reduced in rear of its point portion, and a sliding section composed of two spring clamping-jaws, adapted to move in the hollow section and carrying a stud to move in the bayonet-slot, and having its rear end formed with teeth and adapted to receive between them a lacing-cord, substantially as specified.

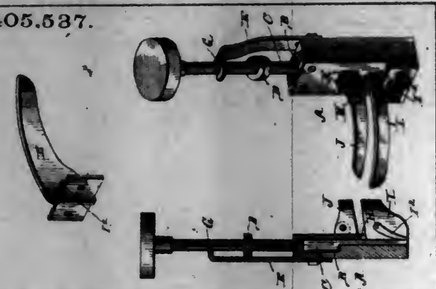
2. In a lacing-needle, the combination, with a pointed hollow section having a bayonet-slot formed therein, of a section formed with two spring-jaws adapted to slide in the hollow section and carrying a stud traveling in the said bayonet-slot, the jaws being adapted to receive a lacing-cord, substantially as specified.

405,537. STAPLE-DRIVER. EMIL M. DEAN, Alta, Cal. Filed Feb. 15, 1888. Serial No. 300,047. (No model.)

Claim.—1. The combination of the body having a longitudinal slot in its lower end, the driving-rod working in the body, the curved rack secured to the body and having its end entering the slot in the body, and the curved staple-holder pivoted to the body adjacent to and above the rack, as set forth.

2. The combination of the body having a longitudinal slot in its lower end, the driving-rod working in the body, and the rack having its end entering the longitudinal slot in the body and provided with

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the curved ribs on its sides and with lateral flanges through which securing-screws are passed into the body, as set forth.

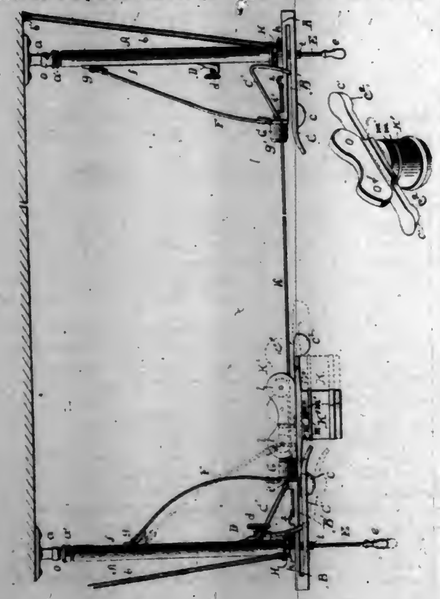
3. The combination of the body, the driving-rod working therein, and the guide-rack secured to the lower end of the body and entering the same and having the downwardly and inwardly curved ribs on its sides at its inner end, as set forth.

405,538. CASH-CARRIER. WILLIAM R. DEAN, Ottawa, Kans. Filed Feb. 27, 1889. Serial No. 301,320. (No model.)

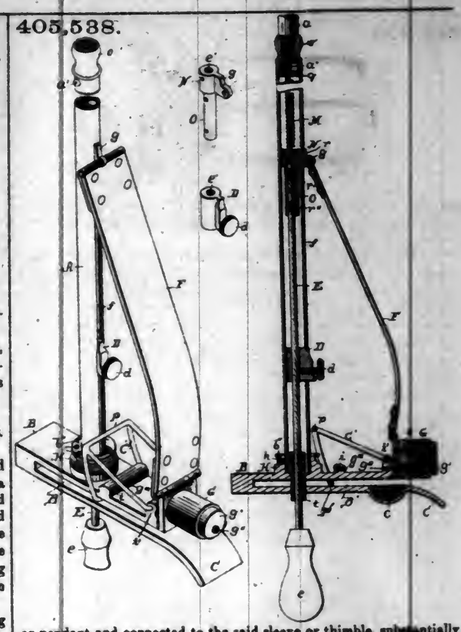
Claim.—1. In a cash-carrier, the combination, with a slotted support or pendant, of a sliding sleeve or thimble suspended from a spring within said support or pendant and having an operating-cord connected thereto, the flat spring pivoted or hinged at its upper end to said sleeve or thimble and carrying a buffer on its lower end, the catcher or retainer provided with a spring-arm, the tripping device having one arm resting on the said spring-arm, and the car having arms provided with projections to engage the cavity or chamber in said spring-arm, substantially as specified.

2. In a cash-carrier, the combination, with the outward flexing or bowing spring, the slotted catcher and retainer having a lower spring-arm, the operating rope or cord carrying a projection or head, and the car having arms engaging and held by said spring-arm of the catcher and retainer, of the compound bail-lever or tripping device having one cross-bar pivoted in the latter, a second cross-bar arranged in the path of the movement of the projection on the operating-cord, and a third cross-bar arranged in the slot of said catcher and retainer and pressing or resting upon said spring-arm, substantially as set forth.

3. In a cash-carrier, the combination, with a tubular longitudinally-slotted support or pendant carrying catching and tripping devices and having one end of the track or rail connected thereto, of a sliding sleeve or thimble suspended from a contractile spring within the support or pendant, the propelling-spring connected to and carried by said sleeve or pendant, and the operating-cord inclosed in the support



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or pendant and connected to the said sleeve or thimble, substantially as specified.

4. In a cash-carrier, the combination, with a tubular slotted support or pendant carrying catching or tripping devices, of the sliding sleeve or thimble suspended from a spring within the support or pendant, the propelling-spring connected to said sleeve or thimble, the guide-tube located concentrically at the lower end of the support or pendant, and the operating-cord passing through said guide-tube and connected to the sleeve or thimble, substantially as specified.

5. In a cash-carrier, the combination, with the support or pendant having the end of the track or rail connected thereto and carrying suitable catching and tripping devices, of the sliding sleeve or thimble mounted in the support or pendant and having an operating-cord connected thereto, and the flat propelling-spring connected at its upper end to said sleeve or thimble and carrying a buffer on its lower end which slides on and is guided by the track or rail, whereby said buffer moves parallel with said track, substantially as specified.

6. In a cash-carrier, the combination, with the track connected to suitable supports or pendants and the sliding sleeve or thimble having an operating-cord connected thereto, of the movable buffer provided with a tube or passage arranged longitudinally therein to slide on the track and guide the buffer, and the flat propelling-spring connected at one end to the sleeve or thimble and at the other end to the buffer, substantially as specified.

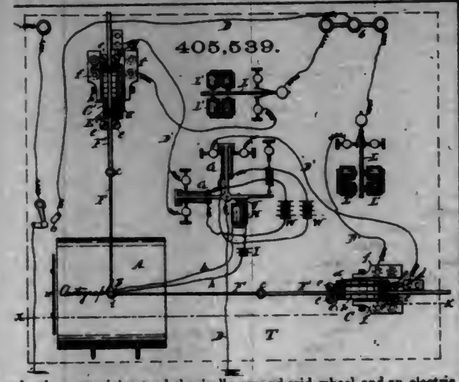
7. In a cash-carrier, the combination of a sliding sleeve or thimble having an operating-cord connected thereto, the track or rail, a suitable car running thereon, the flat propelling-spring hinged or pivoted at its upper end to the sleeve or thimble, and the buffer guided on said track or rail and hinged or articulated to the lower end of the propelling-spring, substantially as specified.

8. In a cash-carrier, the combination of the tubular support or pendant, the longitudinally-slotted catcher or retainer provided with a lower spring-arm and having a sleeve or socket on its upper side to fit on the lower end of the support or pendant, the cable or rail fitting in eyes on the upper side of the catcher or retainer, the sleeve or thimble suspended from a coiled spring within the support or pendant and having an operating-cord connected thereto, and the flat propelling-spring connected at its upper end to the said sleeve or thimble and carrying a buffer on its free end, which slides on the track or rail, substantially as and for the purpose specified.

405,539. AUTOGRAPHIC TELEGRAPHY. MARK W. DEWEY, Syracuse, N. Y., assignor, by direct and mesne assignments, to the Dewey Corporation, same place. Filed Sept. 22, 1888. Serial No. 286,098. (No model.)

Claim.—1. In combination with the manipulative instrument and a rod carrying said instrument, a rotary variable resistance operated by the said rod and consisting of a wheel and a path of semi-conducting material extended spirally around said wheel, and an electric contact riding on said semi-conducting material, as set forth.

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2. In combination with the manipulative instrument and two longitudinally-movable rods disposed at an angle to each other and carrying conjointly at one end the aforesaid instrument, rotary resistances operated, respectively, by the aforesaid rods, and each of said resistances consisting of a wheel, a path of semi-conducting material extending spirally around said wheel, and an electric contact riding on said semi-conducting material, substantially as set forth.

3. In combination with the manipulative instrument, a rotary resistance consisting of a wheel, a path of semi-conducting material extended spirally around said wheel, an electric contact riding on said semi-conducting material, a longitudinally-movable rod turning the said wheel, and a supplemental rod connected at one end to the reciprocating rod by a universal joint and carrying on its opposite end the aforesaid instrument, as set forth.

4. In combination with the manipulative instrument, a rotatable resistance, a pinion moving synchronously with said resistance, a rack engaging the pinion, and a rod connected at one end to said rack by a universal joint and carrying on its opposite end the aforesaid instrument, substantially as specified and shown.

5. In combination with the manipulative instrument, a rheostat or variable resistance consisting of a path of semi-conducting material presenting gradually-increasing in contradistinction of step-by-step resistance to the current of an electric circuit, an electric conductor arranged movably on said path, and two rods coupled together by universal joint and connected at one end to the manipulative instrument and operating by the opposite end the aforesaid rheostat or variable resistance, as described.

6. In combination with the manipulative instrument and two longitudinally-movable rods disposed at right angles to each other and carrying conjointly at one end the aforesaid instrument, racks connected, respectively, to said rods by universal joints, pinions engaging the racks, and rotatable resistances each moving synchronously with one of the pinions, substantially as described and shown.

7. The combination, with the main-line circuit, branches of said circuit, and batteries, of reeds or electrotomes in said branches, the stylus or pen, rods arranged at angles to each other and movable conjointly and universally and carrying conjointly at one end the aforesaid stylus or pen, and variable rotary resistances connected with said rods and controlled by the movement of said rods and included in the aforesaid branches, substantially as set forth.

8. The combination, with an electric circuit and a manipulative instrument, of two reeds or electrotomes, two rheostats each consisting of a path of semi-conducting material presenting an evenly-progressive increasing resistance to the electric current, electric conductors traveling, respectively, on the paths of the two rheostats, and rods disposed at right angles to each other and connected at one end to the manipulative instrument and operating with their opposite ends, respectively, the two rheostats.

9. The combination, with an electric circuit and a manipulative instrument, of a reed or electrotome, a rheostat in said circuit and consisting of a path of semi-conducting material presenting an evenly-progressive increasing resistance to the current in said circuit, an electric conductor traveling on said path, and a rod connected to the manipulative instrument and operating the said rheostat.

10. The combination, with the manipulative instrument, the main-line circuit, and branches of said circuit, of two rheostats in said branches, reeds, or electrotomes, each of said rheostats consisting of a wheel, a path of semi-conducting material extending spirally around said wheel and presenting gradually-increasing resistance to the current in the branch, electric conductors traveling, respectively, on the said paths of the two rheostats, and rods disposed at right angles to each other and carrying conjointly at one end the manipulative instrument and operating with their opposite ends, respectively, the aforesaid rheostats, as set forth.

11. In combination with the main-line circuit and a branch of said circuit, a rheostat in said branch consisting of a path of semi-conducting material presenting gradually-increasing resistance to the electric current, an electric conductor traveling on said path, and a reed or electrotome in the branch with the rheostat, as set forth.

12. In combination with a manipulative instrument, a rheostat included with a reed or electrotome in a branch of the main-line circuit, said rheostat consisting of a path of semi-conducting material presenting gradually-increasing resistance to the current in the branch, an electric conductor to travel on said path, and a rod carrying at one end the manipulative instrument and operating with its opposite end the aforesaid rheostat, as set forth.

13. In combination with a manipulative instrument, two rheostats included with reeds or electrotomes in branches of the main-line circuit, each of said rheostats consisting of a path of semi-conducting material presenting gradually-increasing resistance to the current in the branch, and electric conductors traveling, respectively, on the paths of the rheostats, and rods disposed at right angles to each other and carrying conjointly at one end the aforesaid manipulative instrument and operating with their opposite ends the respective rheostats, as set forth.

14. The combination, with an electric circuit and a branch of said circuit, of a variable rheostat in said branch, a reed or electrotome in the branch with the rheostat, a transmitting-instrument of an autographic telegraph, and a pole-changer in said circuit controlled by the movement of the transmitting-instrument at right angles toward and from the plane of the writing-sheet, as specified.

15. The combination, with an electric circuit and a branch of said circuit, of a variable rheostat in said branch, a reed or electrotome in the branch with the rheostat, a transmitting-instrument of an autographic telegraph, and a pole-changer in said circuit operated by a magnet in a local circuit the current through which is controlled by the movement of the aforesaid transmitting-instrument toward and from the writing-sheet, substantially as described.

16. The combination, with an electric circuit and a branch of said circuit, of a variable rheostat in said branch, a reed or electrotome in the branch with the rheostat, a transmitting-instrument, a rod extended from said instrument and provided with a joint to allow said instrument to be moved toward and from the writing-sheet, a rheostat in the circuit operated by said rod, and a pole-changer also in the circuit operated by the movement of said transmitting-instrument toward and from the writing-sheet, as specified.

17. In combination with the manipulative instrument, a rheostat consisting of a rotatable drum or wheel having semi-conducting material distributed circumferentially thereon, a pinion moving synchronously with said drum or wheel, a rack engaging said pinion, a rod connected at one end to the rack by a universal joint and carrying on the opposite end the aforesaid manipulative instrument, and a pole-changer operated by the raising and lowering of the manipulative instrument.

18. The combination, with the manipulative instrument, a main-line circuit and branches of said circuit, of a variable rheostat in each of said branches, a reed or electrotome in each of said branches with the rheostat, rods connected to said instrument and disposed at right angles to each other to operate the rheostats, and a pole-changer with batteries in said branches to change the polarity of the current in the circuit when the instrument is raised above the writing-surface, as set forth.

19. In combination with the universally-movable manipulative instrument, a local electric circuit controlled by said instrument, a magnet in said circuit, a compound pole-changer operated by said magnet and adapted to change simultaneously the polarities of two electric currents from separate batteries, as set forth.

20. In combination with the main-line circuit and branches of said circuit, the universally-movable manipulative instrument, a separate battery in each of said branches, a local electric circuit controlled by said instrument, a magnet in said circuit, and a compound pole-changer in the branches operated by said magnet and adapted to change the polarity of the current in said circuit and its branches, as set forth.

21. The combination, with the main-line circuit and the stylus of a transmitting-instrument, of a variable resistance in circuit connected with and operated by said instrument, a pole-changer also in said circuit, and means for operating the pole-changer independent of the operation of the said variable resistance.

22. In combination with the stylus or pen connected movably to its handle, electric contacts between said parts, a variable resistance and pole-changer both in the same line-circuit, said pole-changer being operated by the making and breaking of the circuit by the movement of the handle on the stylus or pen, as set forth.

23. In combination with the stylus or pen of an autographic telegraph, a variable resistance consisting of a path of semi-conducting material presenting an evenly-progressive increasing resistance to the electric current, an electric conductor riding on said path, a rod connected at one end with the stylus or pen and operating with its opposite end the aforesaid variable resistance, a reed in circuit, and a pole-changer operated by the said stylus or pen independently of the operation of the resistance, as set forth.

24. In combination with the stylus or pen, variable resistances each consisting of a path of semi-conducting material presenting an evenly-progressive increasing resistance to the electric current, electric conductors riding on the paths, rods disposed at right angles to each other carrying conjointly at one end the stylus or pen and operating with their opposite ends the aforesaid variable resistance, reeds having different rates of vibration in branches of the main-line circuit with the aforesaid variable resistances, pole-changers also in the said branches of the main-line circuit, and means for operating the pole-changers independently of the operation of the resistances, as set forth.

25. In combination with the stylus or pen, variable resistances each consisting of a path of semi-conducting material presenting an evenly-progressive increasing resistance to the electric current, electric conductors riding on the paths, rods disposed at right angles to each other and carrying conjointly at one end the stylus or pen and operating with their opposite ends the aforesaid variable resistances, reeds having different rates of vibration in branches of the main-line circuit with the aforesaid variable resistances, pole-changers also in the said branches of the main-line circuit and operated by the movement of the handle of the stylus or pen, and means for accomplishing the operation of the pole-changers independently of the operation of the said resistances, as set forth.

26. In combination with the stylus or pen, variable resistances each consisting of a path of semi-conducting material presenting gradually-increasing resistance to the electric current, electric conductors riding on the paths, rods disposed at right angles to each other and carrying conjointly at one end the stylus or pen and operating with their opposite ends the aforesaid variable resistances, continuously-vibrating reeds each having a different rate of vibration in branches of the main-line circuit with the aforesaid variable resistances, and pole-changers and batteries, also in the said branches of the main-line circuit, and suitable means for operating the pole-changers through movements of said stylus or pen, but independent of the said resistances, as set forth.

27. In combination with the stylus of a transmitting-instrument controlling a variable resistance in circuit with the receiving-instrument controlling a corresponding stylus, a pole-changer at the transmitting-instrument operated by the movement of the handle of the stylus toward and from the writing-sheet, and a polarized relay at the receiving-instrument responding to the movements of said pole-changer and effecting the movement of the receiving-stylus toward and from the writing-sheet, as set forth.

28. In a receiving-instrument for autographic telegraphs, having a stylus or pen adapted to be moved in all directions, electro-magnets in a line-circuit for controlling the movements of said stylus or pen in a plane parallel with the writing-sheet and corresponding to the movements of the transmitting stylus or pen, a pole-changer operated by the movements of said transmitting stylus or pen at right angles to the plane of the writing-sheet, and a relay in the line-circuit adapted to respond to the changes in the polarity of the current and controlling the movement of the receiving-pen at right angles to the plane of the writing-sheet, substantially as described.

29. In a receiving-instrument of an autographic telegraph, having a pen adapted to be moved in all directions, electro-magnets in a line-circuit for controlling the movements of said pen in a plane parallel with the writing-sheet and corresponding to the movements of the transmitting-pen, a pole-changer operated by the movements of the handle of the transmitting-pen at right angles to the plane of the writing-sheet, a relay in the line-circuit adapted to respond to the changes in the polarity of the current, and a pen-lifter for moving said pen at right angles to the plane of the writing-sheet operated by magnets in local circuit controlled by the movements of said relay, substantially as set forth.

30. In a receiving-instrument of an autographic telegraph, having a stylus or pen, a rod carrying at one end said stylus or pen, and arranged movably thereat toward and from the writing-sheet, a lever having one end adapted to lift said rod, a magnet in a local circuit for operating said lever, and a polarized relay controlling the current in said local circuit operating said lever, as set forth.

31. In a receiving-instrument of an autographic telegraph, having a stylus or pen and a longitudinally-movable rod carrying at one end the said stylus or pen and arranged movably thereat toward and from the writing-sheet, a lever having one end adapted to lift said rod, an anti-friction roller interposed between said lever and its lifting-bearing, a magnet in a local circuit, and a polarized relay controlling the current in said local circuit and operating said lever, as set forth.

32. In a receiving-instrument of an autographic telegraph, a magnet in an electric circuit with a variable resistance, which latter is controlled by the stylus or pen of the transmitting-instrument, a pivoted armature adapted to move various distances, according to the degree of attraction of the aforesaid magnet, a rod moved longitudinally by said armature and provided with a universal joint, and the stylus or pen carried on one end of said rod, as set forth.

33. In a receiving-instrument of an autographic telegraph, a magnet in an electric circuit with a variable resistance, which latter is controlled by the stylus or pen of the transmitting-instrument, a pivoted armature adapted to move various distances, according to the degree of strength of the aforesaid magnet, a rod moved longitudinally by said armature and carrying at one end the stylus or pen and movable vertically thereat, a lever adapted to lift said end of the rod, and a magnet in a local circuit controlled by a polarized relay and operating the said lever, as set forth.

34. In a receiving-instrument of an autographic telegraph, the combination, with the stylus or pen, of rods disposed at right angles to each other and carrying conjointly at one end the aforesaid stylus or pen and provided intermediate of their length with a universal joint, magnets in electric circuits with variable resistances, which latter are controlled by the stylus or pen of the transmitting-instrument, and pivoted armatures adapted to move various distances, according to the degree of attraction of the aforesaid magnets, and operating, respectively, the aforesaid rods, as set forth.

35. In a receiving-instrument of an autographic telegraph, a magnet in an electric circuit with a variable resistance, which latter is controlled by the stylus or pen of the transmitting-instrument, a pivoted armature adapted to move various distances, according to the degree of attraction of the aforesaid magnet, a rack attached to said armature, a pinion connected to said rack, a gear pivoted in common with the said rack, a rack engaging the said gear, and a rod connected at one end to the latter rack by a universal joint and carrying at the opposite end the stylus or pen, substantially as described and shown.

36. In a receiving-instrument of an autographic telegraph, the combination of a magnet in an electric circuit with a variable resistance, which latter is controlled by the stylus or pen of the transmitting-instrument, a pivoted armature adapted to move various distances, according to the degree of attraction of the said magnet, a rack attached to said armature, a pinion engaging said rack, a gear pivoted in common with the said pinion, a rack engaging the said gear, a rod connected at one end of the latter rack by a universal joint carrying on the opposite end the stylus or pen, a lever adapted to lift the said rod, and a magnet in a local circuit controlled by a polarized relay and operating said lever, substantially as set forth.

37. In a receiving-instrument of an autographic telegraph, the combination of a magnet with a variable resistance in a local circuit, magnets in the main-line circuit controlling the variable resistance in the local circuit, a pivoted armature adapted to move various distances, according to the degree of strength of the aforesaid magnet, a rod moved longitudinally by said armature and carrying at one end the stylus or pen and movable vertically thereat, a lever adapted to lift said end of the rod, and a magnet in a local circuit controlled by a polarized relay and operating the said lever, as set forth.

38. In a receiving-instrument of an autographic telegraph, the combination of magnets with variable resistances in the local circuits, magnets in the main-line circuit controlling the variable resistances in the local circuits, armatures adapted to move various distances, according to the degree of attraction of the magnets in the local circuits, rods disposed at right angles to each other and operated, respectively, by the aforesaid armatures and carrying conjointly at one end the stylus or pen, levers adapted to lift said rods, and magnets in a local circuit controlled by a polarized relay, substantially as set forth.

39. In a receiving-instrument of an autographic telegraph, a reed or electrotome vibrated by impulses in a magnet in the main line, a magnet and variable resistance in a local circuit controlled by the amplitude of vibrations of the said reed, a pivoted armature adapted to move various distances, according to the degree of attraction of the magnet in the local circuit, a rod moved longitudinally by said armature and carrying on one end the stylus or pen, a lever adapted to lift the said rod, and a magnet in a local circuit controlled by the movement of the polarized relay operating the said lever, as set forth.

40. In a receiving-instrument of an autographic telegraph, the combination, with the main-line circuit, of magnets in said circuit, reeds operated by impulses in the magnets, variable resistances controlled by the amplitude of said reeds, magnets in local circuits with the variable resistances, pivoted armatures adapted to move various distances, according to the degree of attraction of the magnets in the local circuits, rods disposed at right angles to each other and moved, respectively, by the aforesaid armatures and carrying conjointly at one end the stylus or pen, levers adapted to lift, respectively, the aforesaid rods, and magnets in a local circuit controlled by the movement of the polarized relay in the main circuit and operating the aforesaid levers, as set forth.

41. In a receiving-instrument of an autographic telegraph, a reed vibrated by impulses in a magnet in a line-circuit, a pivoted lever normally in contact with said reed, a path presenting increasing resistance to the current in a circuit, and an electric contact carried on the free end of said lever and traversing the aforesaid path, as set forth.

42. In a receiving-instrument of an autographic telegraph, a reed vibrated by impulses in a magnet in a line-circuit, a pivoted lever normally in contact with said reed, a path presenting increasing resistance to the current in a circuit and disposed in a plane parallel with the movement of the lever, and an electric contact carried on the free end of said lever and traversing the aforesaid path, as set forth.

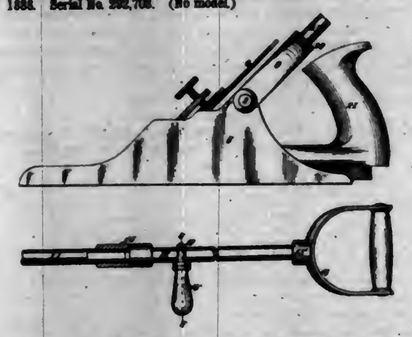
43. In a receiving-instrument of an autographic telegraph, a reed vibrated by impulses in a magnet in a line-circuit, a pivoted lever normally in contact with said reed, a path of semi-conducting material in a plane parallel with the movement of the said lever and presenting increasing resistance to the current in a circuit, and an electric contact carried on the free end of said lever and traversing the aforesaid path, as set forth.

44. In combination with a vibrating reed, a pivoted lever provided with a bearing opposed to the movement of the reed, an adjustable weight on the said lever for adjusting the sensitiveness of the movement of the lever, a path presenting increasing resistance to the current in a circuit and disposed in a plane parallel with the movement of the lever, and an electric contact carried on the free end of the lever traversing said path, as set forth.

45. In combination with a vibrating reed adapted to vibrate with different degrees of amplitude, a vibratory lever provided with a bearing opposed to the movement of the reed, a path presenting increasing resistance to the current in a circuit, and an electric contact carried on the free end of said lever and traversing the aforesaid path, the distance of travel of said contact being governed by the amplitude of vibration of the reed, as set forth.

46. In combination with the stylus or pen, a feed-roller carrying the paper to be imprinted or inscribed, a spring-actuated escapement-wheel attached to said roller, and a detent engaging the said escapement-wheel and arranged in the path of the said stylus or pen to be actuated thereby, as set forth.

405,540. PLANE. JOHN J. DRIVER, St. Louis, Mo. Filed Dec. 5, 1888. Serial No. 292,708. (No model.)

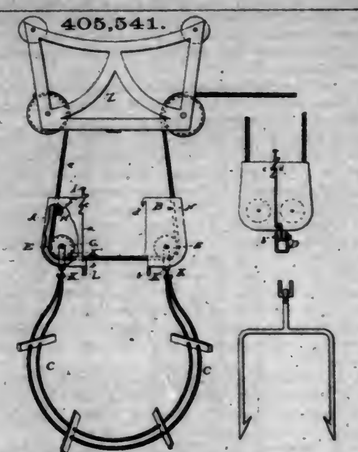


Claim.—1. A handle for planes, consisting of the bow-shaped part 9, having screw-threaded socket 10, one or more screw-threaded rods joined to the same, a handle 14, swiveled to the upper end of said rods, and a handle 15, adjustably secured along said rods, for the purpose described.

2. The combination, with a plane, as herein set forth, of the ears 7, a bow-shaped piece 9, swiveled to said ears 7 by a bolt 8, screw-threaded socket 10 upon said bow-shaped piece, screw-threaded rod 11, adapted to be inserted in said socket 10, a second screw-threaded rod 12, a nut 13, having right and left hand screw-threads thereon for joining the rods 11 and 12 together, a handle 14, swiveled to said rod 12, and a handle 15, adjustable along said rod 12, substantially as and for the purpose described.

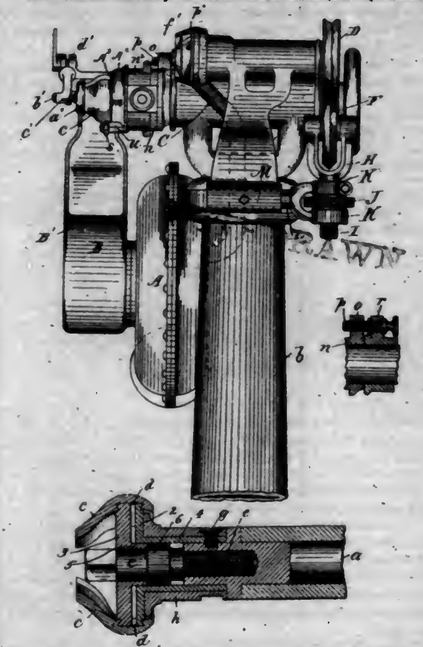
405,541. SECTIONAL LOCKING PULLEY-BLOCK. SAMUEL G. ERKSON, Belleville, Ontario, Canada. Filed Jan. 26, 1889. Serial No. 297,674. (No model.)

Claim.—A sectional locking-block for hoisting purposes, consisting of the block-section A, having the carrier-catch I, the sheave, the depending sling-catch, and the meeting-edge locking-notches and perforated lug, in combination with the section B, having similar sheave



and depending sling-catch and meeting-edge locking-hooks, and a perforated lug, substantially as specified.

405,542. HEEL-TRIMMING MACHINE. FRANK N. STERRIDGE, Lynn, assignor, by mesne assignments, to Isaac P. T. Edmands, trustee, Boston, Mass. Filed Sept. 24, 1888. Serial No. 286,260. (No model.)



Claim.—1. In a heel-trimming machine, the combination, with the cutters c, having grooves on their inner surfaces arranged substantially at right angles with the axis of rotation of the cutter-head, of an expansible two-part holder formed to enter said grooves and composed of a section secured to a shaft and a movable section adapted to be moved or adjusted outward crosswise of said grooves, whereby the holder is enabled to engage the sides of said grooves, substantially as set forth, the minimum conjoint width of said sections being less than that of the said grooves of the cutters, as stated.

2. In a heel-trimming machine, the combination of the shaft a, the holder composed of the stationary section 2, secured to said shaft, and the adjustable section fitted to said former section, said sections having curved dovetailed ends, the screw bearing against the inner end of said adjustable section for forcing the same outward, and the

cutters having in their inner surfaces dovetail grooves or seats formed to receive the ends of said sections, as set forth, the minimum conjoint width of said sections being less than that of the said grooves of the cutters, as stated.

3. In a heel-trimming machine, the combination of the shaft *a*, the holder-section 2, having the sleeve 4 attached to the shaft and provided with the recess 7, the adjustable holder-section 3, formed to enter said recess, the bolt *c* engaged, as described, with the shaft and formed to bear against the inner end of the adjustable section, and the cutters having internal seats or grooves formed to engage the holder-sections, as set forth, the minimum conjoint width of said sections being less than that of the said grooves of the cutters, as stated.

4. In a heel-trimming machine, the combination, with a rotary cutter, of an arm or support arranged in front of the axis of the cutter, a rest pivoted at its inner end to said support and arranged to stand at right angles with the cutter as a support for the side of the heel, said rest being adapted by its pivotal connection to swing out of place, and thereby avoid the shank of a boot or shoe sole, and a spring, whereby said rest is normally held in a position at right angles with the axis of the cutter and permitted to yield and swing from said position, as set forth.

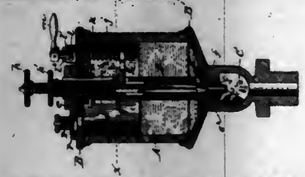
5. The combination, with the cutter-head, of the top-lift rest, the sleeve *n*, supporting said rest and adapted to slide on a fixed bearing, and the screw *p*, journaled in a lug on said bearing and engaged with a tapped socket in a lug on the sleeve *n*, as set forth.

6. In a heel-trimming machine, the combination, with the cutter-head and the rand-trimmer, of the exhaust-fan blower, the trunk or flue connected with the blower and having an enlarged mouth provided with a forwardly-projecting lip and arranged adjacent the cutter-head, the hood *p'*, and the pipe C, connecting said hood with the blower casing, substantially as set forth.

7. In a heel-trimming machine, the combination, with the exhaust-fan blower, of the hood *p'*, having the slotted arm p^3, the screw and clamping devices for said hood, and the flexible tube connecting said hood and blower, substantially as set forth.

8. The rand-trimmer composed of the cylindrical head *h'*, having pins *k'*, the knives having segmental flanges *j'* formed to fit the head and provided with orifices *l'* to receive the pins *k'*, said orifices exceeding the pins in number, the flange *s'*, secured to the head as a means of keeping the knives in engagement with the pins, and the circular guard *m'*, detachably secured to the shaft of the trimmer and serving to hold the rand-trimmer on said shaft, as set forth.

405,543. LUBRICATOR. EDWARD G. FELTHOUSEN, Buffalo, N. Y., assignor of one-half to Charles A. Sherwood, same place. Filed Dec. 26, 1888. Serial No. 294,589. (No model.)



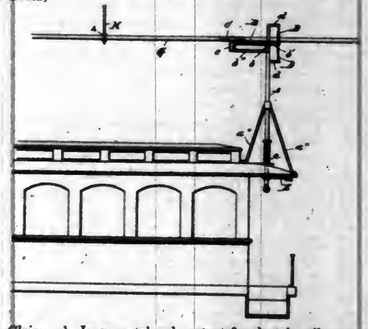
Claim.—1. In a lubricator, the combination, with the oil-chamber provided with a discharge-passage, of a vertically-movable sleeve or support arranged within said oil-chamber, a spring whereby said support is held in a depressed position, and a regulating-valve arranged in said discharge-passage and made vertically adjustable in said sleeve or support, substantially as set forth.

2. In a lubricator, the combination, with the oil-chamber provided with a discharge-passage, of an upright tube arranged within said oil-chamber, a sliding sleeve arranged in said upright tube, a spring whereby said sleeve is pressed downwardly, and a regulating-valve arranged in said discharge-passage and provided with a stem which is made vertically adjustable in said sliding sleeve, substantially as set forth.

3. In a lubricator, the combination, with the oil-chamber provided with a discharge-passage, of a vertically-movable sleeve or support arranged within said oil-chamber, a spring whereby said support is held in a depressed position, an elevating-rod attached to said sleeve and provided with a pin or projection, a cam or incline against which said pin engages, whereby the rod is elevated upon turning the same, and a regulating-valve carried by said stem and capable of being adjusted vertically in the same, substantially as set forth.

4. In a lubricator, the combination, with the oil-chamber provided with a discharge-passage, of an upright tube arranged within said oil-chamber, an internally-threaded sliding sleeve arranged in said upright tube and provided with an arm projecting through a slot in said tube, an elevating-rod attached to said arm, provided with a pin or projection and with a hand-lever, a cam or incline arranged at the top of the lubricator, against which said pin engages, a spring whereby said sliding sleeve and elevating-rod are held in a depressed position, and a regulating-valve arranged in the discharge-passage of the oil-chamber and provided with an externally-screw-threaded stem engaging with the internal thread of the sliding sleeve, substantially as set forth.

405,544. CONTACT DEVICE FOR ELECTRIC RAILWAYS. FRANK R. FISHER, Detroit, Mich. Filed Feb. 15, 1889. Serial No. 300,000. (No model.)



Claim.—1. In an overhead contact for electric railways, a traveling contact device adapted to form a contact against the side of the conductor, said contact device being supported upon a yielding horizontal arm pivotally supported at the top of a suitable standard or post, and in connection therewith mechanism for maintaining contact between the said contact device and the conductor, substantially as described.

2. In an overhead contact for electric railways, the combination, with the conductor supported in suitable hangers adapted to expose the side of said conductor, of a traveling contact device adapted to form a contact with the side of said conductor, said contact device being supported upon a yielding arm pivoted to the top of a suitable standard or post, substantially as described.

3. In an overhead contact device for electric railways, a traveling contact-pulley mounted upon a suitable lateral arm, said arm pivotally connected upon the upper end of a suitable standard and provided with suitable springs for maintaining said lateral arm in a substantially horizontal position and at the same time to permit said arm to yield vertically, and in connection therewith suitable means for permitting the standard to rise and lower upon the car, and suitable means for throwing the contact-pulley into and out of contact with the conducting-wire, substantially as described.

405,545. ROAD-CART. CHARLES H. FORTNEY, Montgomery's Ferry, Pa. Filed Mar. 29, 1889. Serial No. 305,289. (No model.)



Claim.—1. The combination, with a clip-plate provided with an angular recess surrounding one of its bolt-holes, of the bolt, the washer seated in said recess and provided with radial notches in its outer face, and the lock-nut having obliquely-extending springs secured in recesses in its inner face, substantially as herein set forth.

2. The combination of the clip-plate having an angular recess, the bolt, the washer having a series of radial notches in its outer face, and the lock-nut provided in its inner face with a series of oblique notches, in which springs projecting from the inner face of said nut are suitably secured, substantially as herein set forth.

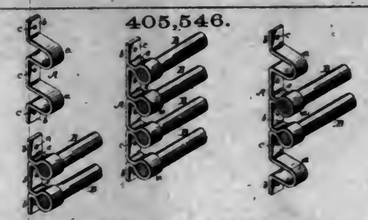
3. The combination, with the shaft and seat-bar of a road-cart, of a U-shaped clip having an angular recess in one of its outer faces, a transverse bolt, an angular washer seated in the recess of the clip-bolt and provided in its outer face with a series of radial notches, and a lock-nut provided with springs extending obliquely from its inner face, substantially as and for the purpose specified.

405,546. INSULATOR. ROBERT P. FRIST, Wilmington, Del. Filed Apr. 13, 1889. Serial No. 307,141. (No model.)

Claim.—1. An insulator for electric wires, consisting of a strip folded to form a wire-receiving loop at the outer end and having fastening-ears at the inner ends, the intermediate portions being pressed together to bind the wire in the loop, substantially as described.

2. An insulator for electric wires, consisting of a strip of insulating material bent to form a series of loops for retaining the wires,

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with spaces between the loops, through which the retaining nails or screws may be passed, substantially as set forth.

3. An insulator for electric wires, consisting of insulating material bent to form a series of wire-receiving loops located side by side, said insulator being flexible throughout its length, substantially as specified.

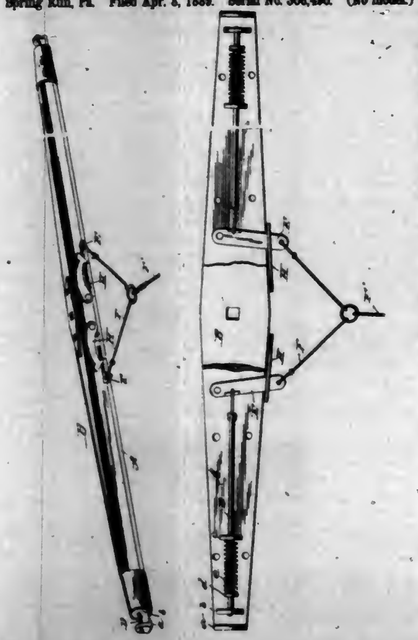
405,547. VEHICLE-SPRING. JOSHUA G. GAY, Ottawa, Ill. Filed Feb. 21, 1889. Serial No. 300,694. (No model.)



Claim.—1. The combination, with the parallel torsion-springs having the squared ends, and the rounded torsional portions provided with arms at right angles thereto, of the vehicle-sills, the boxes having longitudinal channels and the squared seats and rounded bearings, and the square bearings crossing said channels, and round clip-bolts in connection therewith, substantially as specified.

2. The combination, with the bearing-boxes having longitudinal channels and rounded bearings and squared seats crossing said channels, and their clip-bolts, of the parallel torsion-rod springs having squared fixed ends, and arms extending at right angles to their transverse portions and diagonally to the faces of the squared portion, the rabbeted link-connections, and the T-form bolster, substantially as specified.

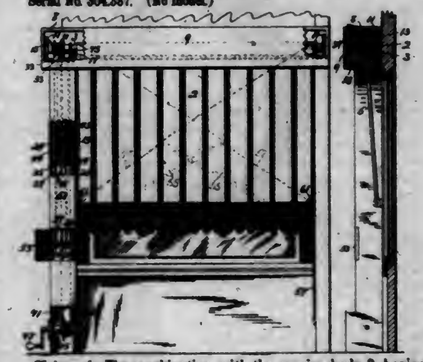
405,548. DETACHABLE WHIFFLETREE. JOSEPH G. GOSNORE, Spring Run, Pa. Filed Apr. 8, 1889. Serial No. 306,490. (No model.)



Claim.—1. In combination with the plate A, carrying spring-bolts and operating-levers for said bolts, a wooden part B, fitting over the plate A and covering the operating parts, substantially as described.

2. In combination with the plate A, carrying spring-bolts and operating-levers therefor, pivoted hooks for engaging said levers to hold the bolts out of engagement, substantially as described.

405,549. AWNING. HERMAN D. GREENWALD, St. Paul, Minn., assignor of one-half to Jehiel W. Jagger, same place. Filed Mar. 22, 1889. Serial No. 304,367. (No model.)



Claim.—1. The combination, with the awning-body 2, having a suitable hinged metallic frame, of the roll 3, secured to the upper edge of the body 2 and turning in suitable bearings, suitable cords secured to said roll for rotating the same in either direction, the windlass 45, having the crank 47, also secured to said cords, which are arranged to wind upon the roll 3 and the windlass in opposite directions, and each to wind alternately upon roll and windlass, combined and operating substantially as described.

2. The combination, with the awning-body 2, the roll 3, secured thereto, the windlass 45, and the cords 41 and 43, secured to and adapted to be wound alternately upon said roll and windlass, of a suitable case inclosing said roll 3, having the flap 9 hinged to the top 8 and provided with the arms 11, and the cords 13 and 29, attached to and adapted to respectively open and close said flap, combined and operating substantially as described.

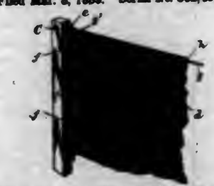
3. The combination of the awning-body 2, having a metallic frame with side bars bent downward into a partial hook at the outer end, the wings 55, provided with the cords 57, by means of which they can be secured to the building when down or flat upon the body 2, a suitable case inclosing said roll, comprising the bottom 7, the top 8, and hinged flap 9, having the arms 11, suitable cords 13 and 29, for opening and closing said flap, the windlass 45, and the raising and lowering cords 41 and 43, one of said cords being provided with the spiral spring 49, combined and operating substantially as described.

4. In a device of the class described, means for protecting the awning when rolled up, comprising a case having a hinged flap, cords secured to said flap, adapted, respectively, when operated to open and to close said flap, a roll mounted in said case, means for turning said roll in either direction, and an awning secured upon said roll.

5. In a device of the class described, the combination of a casing having an open front provided with a hinged flap, a roll mounted in said casing, means for turning said roll in either direction, and an awning secured to said roll and adapted to be wound thereon.

6. In a device of the class described, the combination of a casing having an open front provided with a hinged flap, a roll mounted in said casing, means for turning said roll in either direction, and an awning having its top secured to said roll and the side bars pivoted below said roll and having their outer end secured to the bottom of said awning.

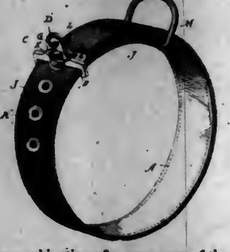
405,550. WINDOW-VENTILATOR. FERDINAND GROSHANS, Baltimore, Md. Filed Mar. 8, 1889. Serial No. 302,408. (No model.)



Claim.—The window ventilator and screen having in combination the vertical parting-strips C on the window-frame, two binding-

strips *c*, each secured to one of the said parting-strips, a cross-wire *g*, having its ends engaged with the binding-strips, and the thin fabric *d*, attached to the binding-strips and also to the said cross-wire, as set forth.

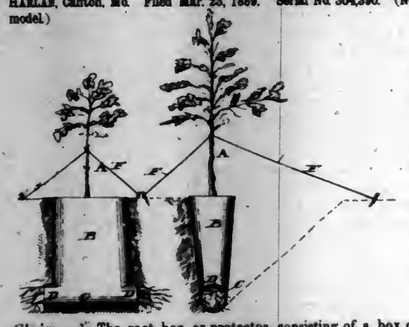
405,551. FASTENING DEVICE FOR DOG-COLLARS. WALTER C. GUNN, Chicago, Ill. Filed Dec. 8, 1888. Serial No. 293,057. (No model.)



Claim.—1. The combination of a strap, one of the ends of which is provided with perforations; a frame, and a locking-bolt on said frame engaging said perforations, said frame being secured to one of said ends and embracing the strap, and provided with an arched guard or stop extending over the outer end of said bolt, substantially as described.

2. The combination of a strap, one of the ends of which is provided with perforations, a fastener device, the frame of which is secured to one of said ends and embraces the other end, a locking-bolt sliding in said frame and engaging the perforations, and a loop or hand-hold secured to the other end, and with said end encircling the body of the strap, whereby the ends of said strap are maintained parallel with and against the body of the strap in all of its adjustments, substantially as described.

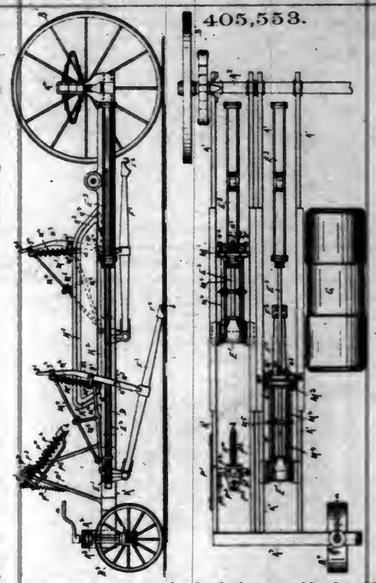
405,552. DEVICE FOR PROTECTING FRUIT-TREES. FRANK HARLAN, Canton, Mo. Filed Mar. 23, 1889. Serial No. 304,390. (No model.)



Claim.—1. The root box or protector, consisting of a box of suitable material adapted to be tilted sidewise on its bottom and having outlets or apertures at opposite ends in a line with the axis of the bottom, substantially as and for the purpose set forth.

2. The root box or protector B, having a rounded bottom C and tubular extensions D D, open at their outer ends, substantially as and for the purpose set forth.

405,553. SELF-PROPELLING MOTOR. HENRY C. HICKS, Minneapolis, Minn. Filed Mar. 8, 1889. Serial No. 302,410. (No model.)



Claim.—1. In a self-propelling motor, a frame mounted upon bearing-wheels or other supports and provided with guides D, one or more cylinders E^3, borne by said frame and having piston-rods connected to cross-heads with their ends running in said guides, push-arms F', pivoted by one end in said cross-heads and free to run upon the ground by their other ends, substantially as and for the purpose set forth.

2. In a self-propelling motor, a frame mounted upon bearing-wheels or other supports and supporting one or more cylinders E^3, having piston-rods and cross-heads, the latter working in guides D in said frame, push-arm F', journaled by one end in said cross-heads, cam-groove H' H^3, having spring-switch H^4, formed in said frame, arch-frame M', with its ends running in said cam-grooves and connected by rods N' N^3 to said push-arm and by braces M^3 M^4 to said cross-head, substantially as and for the purpose set forth.

3. In a self-propelling motor, a frame mounted upon bearing-wheels or other supports and supporting one or more cylinders E^3, having piston-rods and cross-heads, the latter working in guides D in said frame, push-arm F', journaled by one end in said cross-heads, cam-grooves H' H^3, having spring-switch H^4 formed in said frame, arch-frame M', with its ends running in said cam-grooves, cross-plate M^2, embracing the sides of said arch-frame and actuated by springs M^4, rods N' N^3, connecting said cross-plates to said push-arm, and braces M^3 M^4, connecting said arch-frame to said cross-heads, substantially as and for the purpose set forth.

4. In a self-propelling motor, a frame mounted upon bearing-wheels or other supports and supporting one or more cylinders E^3, having piston-rods and cross-heads, the latter working in guides D in said frame, push-arm F', journaled by one end in said cross-heads, cam-grooves H' H^3, having spring-switch H^4 formed in said frame, arch-frame M', with its ends running in said cam-grooves, cross-plate M^2, embracing the sides of said arch-frame and actuated by springs M^4, rods N' N^3, jointed at c^3 and connecting said cross-plate and push-arm, and a lever N^2, pivoted to said cross-plate and said rods, and adapted to be connected to and disconnected from said arch-frame, whereby said push-arm may be elevated and depressed, substantially as and for the purpose set forth.

5. In a self-propelling motor, a frame mounted upon bearing-wheels or other supports and supporting one or more cylinders E^3, having piston-rods and cross-heads, the latter working in guides D in said frame, push-arm F', journaled by one end in said cross-heads, cam-groove H' H^3, having spring-switch H^4 formed in said frame, arch-frame M', with its ends running in said cam-groove and connected by rods N' N^3 to said push-arm and by braces M^3 M^4 to said cross-head, spring trip-rod P^4, pivoted to said frame above and in advance of the line of said cam-grooves, and a stop-rod M^5, connected to said arch-frame and adapted to strike said trip-rod at the end of the return-stroke of the piston, whereby the arch-frame and push-rod are forced downward, substantially as and for the purpose set forth.

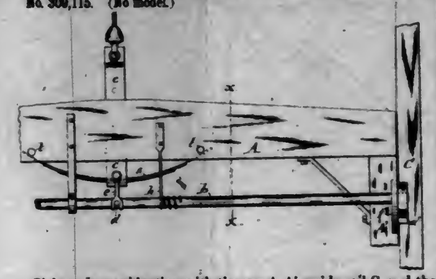
405,554. APPLIANCE FOR HOLDING UMBRELLAS &c. HARRY HOUGH, Peckham, County of Surrey, England. Filed Sept. 15, 1888. Serial No. 285,485. (No model.)



Claim.—1. An umbrella rack or holder consisting of a rigid bracket A, provided with arms B, and revoluble flexible disks D, as herein set forth.

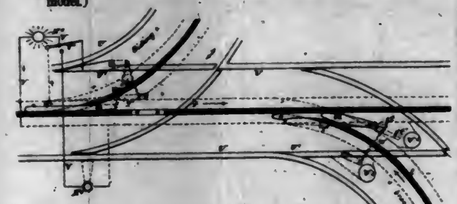
2. An umbrella rack or holder consisting of a rigid bracket A, provided with arms B, and revoluble india-rubber disks D, as and for the purposes herein set forth.

405,555. SAFETY-CLUTCH FOR ELEVATORS. EDGAR W. HOUSER, Syracuse, N. Y. Filed May 14, 1888. Renewed Apr. 29, 1889. Serial No. 309,115. (No model.)



Claim.—In combination with the car A A', guide-rail C, and the strap *c*, supporting the car by a spring, the jaw *a*, fixed to the car at one side of the guide-rail, the shaft *b*, extended across the car, the jaw *a'*, secured to the end of said shaft, crank-connections between the strap *c* and shaft *b*, and the spring *k*, arranged to turn the shaft and hold the jaw *a'* normally out of engagement with the guide-rail, substantially as set forth.

405,556. ELECTRIC RAILWAY. RUDOLPH M. HUNTER, Philadelphia, Pa. Original application filed Apr. 23, 1886, Serial No. 200,400. Divided and application filed Feb. 25, 1889, Serial No. 301,139. Again divided and this application filed Apr. 9, 1889. Serial No. 306,567. (No model.)



Claim.—1. In an electric railway, the slotted main and branch conduits each provided with working-conductors, a pivoted switch or end section for said conductors at the branching point, and a closed passage-way from the surface of the roadway to the hinged part of said switch.

2. In an electric railway, a branching conductor arranged along and parallel to a branching railway, in combination with a movable conductor-switch at said branching point to guide the collector of the motor upon either branch track desired, and an electric signal consisting of an electric lamp, a source of electric supply, a circuit including said supply and lamp, and a switch in said circuit adapted to be operated by the conductor-switch, whereby the signal is automatically displayed upon moving the conductor-switch section to indicate to the driver of the approaching car which branch conductor the switch has opened.

3. In an electric railway, a branching conductor arranged along and parallel to a branching railway, in combination with a movable conductor-switch section at the point of branching to guide the collector of the motor upon either branch track desired, two signals, one for each branch, and connecting devices under the control of the switch-section, whereby a movement of the said switch will display either of said signals, but not both at one time.

4. In an electric railway, a branching conductor arranged along and parallel to a branching railway, in combination with a movable conductor-switch section at the point of branching to guide the collector of the motor upon either branch track desired, two electric-light signals of different colors, one for each branch track, two electric circuits, one for each of said lamps, and circuit-breakers controlled by the movement of the switch-section.

5. In an electric-railway, a branching conductor arranged along and parallel to a branching railway, in combination with a movable conductor-switch section at the point of branching to guide the collector of the motor upon either branch track desired, two electric-light signals of different colors, one for each branch track, two electric circuits derived from the line-conductors, one for each of said lamps, and circuit-breakers controlled by the movement of the switch-section.

6. In an electric railway, the combination of branching tracks having rail-switches at said point of branching with a branching line-conductor arranged parallel to said railway, and an electric signal displayed by the movement of the rail-switch to indicate which branching track is open for the electric motor.

7. In an electric railway, the combination of branching tracks having rail-switches at said point of branching with a branching line-conductor arranged parallel to said railway, an electric signal displayed by the movement of the rail-switch to indicate which branching track is open for the electric motor, an electric circuit including said signal and derived from said line-conductor, a circuit-breaker to break said circuit, and a connection between the circuit-breaker and rail-switch.

8. In an electric railway, the combination of branching tracks having rail-switches at said point of branching with a branching line-conductor arranged parallel to said railway, a movable conductor-switch, a connection between the rail and conductor switches, whereby both shall move simultaneously, an electric signal displayed by the movement of the rail-switch to indicate which branching track is open for the electric motor, an electric circuit including said signal and derived from said line-conductor, a circuit-breaker to break said circuit, and a connection between the circuit-breaker and rail-switch.

9. In an electric railway, a branching slotted conduit, a slot-switch at the point of branching, a branching conductor placed within and insulated from said conduit, and a signal operated by the movement of the slot-switch to indicate to the driver of an approaching motor which branch is open.

10. In an electric railway, the combination of a branching slotted conduit, a slot-switch at the point of branching, a branching conductor placed within and insulated from said conduit, an electric signal, a circuit derived from the line-conductor to actuate said signal, a circuit-breaker to break said circuit, and a connection between said circuit-breaker and slot-switch, whereby the movement of the slot-switch indicates to the driver of an approaching motor which branch is open.

11. In an electric railway, the combination of a branching slotted conduit, a slot-switch at the point of branching, a branching conductor placed within and insulated from said conduit, a movable switch-conductor therefor, an electric signal, a circuit derived from the line-conductor to actuate said signal, a circuit-breaker to break said circuit, and a connection between said circuit-breaker and slot-switch, whereby the movement of the slot-switch indicates to the driver of an approaching motor which branch is open.

12. In an electric railway, the combination of a slotted conduit, hinged or removable doors at one or more places on said conduit and forming part of the sides of the slot, and an electric conductor within said conduit and insulated therefrom.

13. In an electric railway, the combination of a slotted conduit, hinged or removable doors at one or more places on said conduit and forming part of the sides of the slot, cleaning-wells under said doors, and working-conductors supported within said conduit and insulated therefrom.

14. In an electric railway, the combination of a slotted conduit, longitudinal working-conductors supported therein and insulated therefrom, and cleaning-wells arranged at intervals along the conduit and opening from the same and in which the space between the conductors and cleaning-wells is unobstructed.

15. In an electric railway, the combination of a slotted conduit, longitudinal working-conductors supported therein and insulated therefrom, and cleaning-wells arranged at intervals along the conduit and opening from the same, and provided at their bottoms with open grates.

16. In an electric railway, the combination of a slotted conduit, longitudinal working-conductors supported therein, located upon each side of the slot thereof and insulated therefrom, and cleaning-wells arranged at intervals along the conduit and opening from the same, and in which the space between the conductors is unobstructed from the slot to the cleaning-wells.

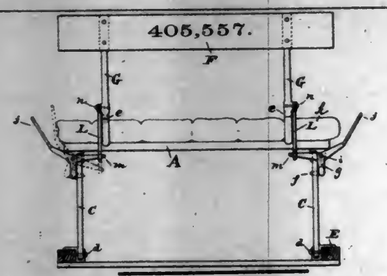
17. In an electric railway, the combination of a conduit having a longitudinal slot, and cleaning-wells arranged at intervals apart and opening from the bottom thereof, and a longitudinal conductor extending along within the conduit and located to one side of the slot thereof, insulated supports therefor connecting the conductor with the conduit structure and to one side of the cleaning-wells, and covered passages to said cleaning-wells from above.

405,557. JUMP-SEAT FOR VEHICLES. GEORGE H. HUTTON, Baltimore, Md. Filed Feb. 12, 1889. Serial No. 299,632. (No model.)

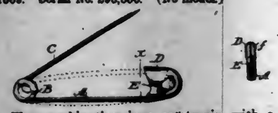
Claim.—1. The combination of the seat A, mounted on pivoted legs, an iron I, pivoted below each end of the seat and provided with a stop-lug *f*, a seat-back F, jointed irons G, each having one end rigidly secured to the seat and the other to the said back, and a rod L, connecting each pivoted stop-lug iron and that part of the jointed iron to which the seat-back is secured.

2. The combination of the seat mounted on pivoted legs, an iron pivoted and provided with a stop-lug *f* to engage with a leg and having a lateral arm *m*, a seat-back supported by jointed irons G, secured to the seat, and a rod L, having one end jointed to the said lateral arm on the lug-iron and the other end jointed to the said seat-back iron.

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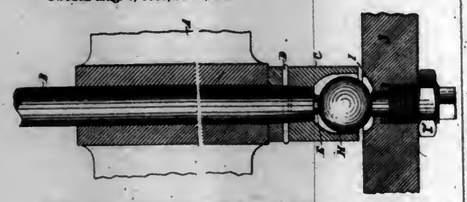


405,558. **SAFETY-PIN.** JOEL JENKINS, Montclair, N. J. Filed Feb. 6, 1889. Serial No. 298,830. (No model.)



Claim.—The combination, in a safety-pin, with a shield whose width but slightly exceeds that of the pin-point, of a single guide-plate secured to the body-bar of the pin and whose free end extends into the concavity of the shield far enough to positively prevent the passage of the pin-point laterally through the shield, but yields laterally to permit said point to enter, lodge within, and leave the shield from either side, substantially in the manner and for the purpose herein set forth.

405,559. **STEP-BEARING FOR SHAFTS.** CARL A. JOHANSSON, Stockholm, Sweden, assignor to the Aktiebolaget Extraktor, same place. Filed Feb. 21, 1889. Serial No. 300,664. (No model.) Patented in Sweden Aug. 7, 1888, No. 1,644.



Claim.—1. The combination of a shaft having a cup fixed on its end and rotating therewith, the mouth of said cup being directed away from the shaft, a bearing-stud aligned with said shaft, and a ball or sphere within said cup and embraced between the end of some part of the shaft within the cup and the said bearing-stud, the diameter of the cavity of the cup being a little greater than that of the ball, which latter is in contact peripherally with the wall of said cup at one side, whereby, when the shaft revolves, said ball is rotated through its lateral contact with the cup, as set forth.

2. The combination, with the shaft B, provided with the projecting plug E, and the cup C, fixed on the end of said shaft and revolving therewith and provided with an oil-retaining flange, of the adjustable bearing-stud I in line with the shaft and the ball or sphere H within said cup and embraced between the plug E and stud I, the diameter of the cup being greater than that of the ball, which latter is in contact peripherally with the wall of said cup at one side, whereby said cup drives said ball, as set forth.

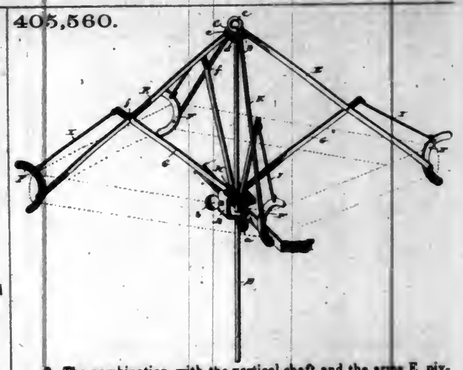
405,560. **YARN-REEL.** JOHN A. KASPAR, Jr., Pomeroy, Ohio. Filed Mar. 23, 1888. Serial No. 304,493. (No model.)

Brief.—The object of the invention is to provide a yarn-reel of simple construction and which may be readily adjusted to accommodate skeins of differing sizes and yet have the yarn near the table to which the reel is attached.

Claim.—1. The combination, with the vertical shaft, of the arms E, pivotally secured to the upper end thereof, the holders pivotally secured to the lower ends of said arms, the arms G, pivoted to the said arms and connected with the holders and also pivotally connected to a disk sliding on said shaft, substantially as shown and described.

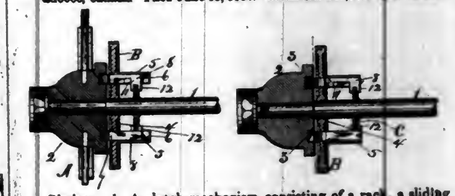
2. The combination, with the vertical shaft and the arms E, pivotally connected to the upper end thereof, of the sliding disk on said shaft, the arms G, pivotally connected at one end to said disk, the holders pivotally secured to the lower ends of the arms E, below their center, and the rods pivotally connecting the upper ends of the arms G with the said holders above their center, substantially as shown and described.

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3. The combination, with the vertical shaft and the arms E, pivotally connected with the upper end thereof, of the sliding disk on the shaft, the holders pivotally connected with the lower ends of the arms E, the arms G, pivotally connected at one end with the said disk and near the other end pivotally connected with the arms E and formed at their connection with said arms with the bends *f*, and the rods pivotally connecting the extended ends of the arms G with the holders, substantially as shown and described.

405,561. **FERTILIZER-DISTRIBUTER.** JOSEPH S. KNEP, Magog, Quebec, Canada. Filed June 15, 1887. Serial No. 241,373. (No model.)



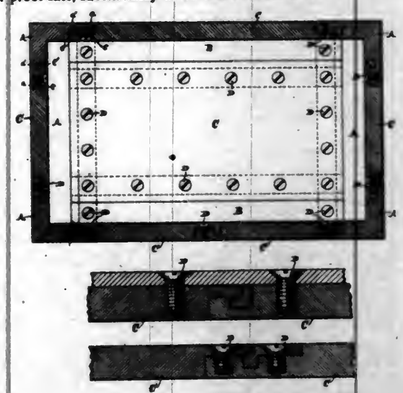
Claim.—1. A clutch mechanism consisting of a rack, a sliding pawl beveled, as shown, and provided with a stud 11, a wedge provided with studs 12, and a ring engaging with the wedge and the pawl, substantially as shown and described.

2. In a clutch, a bipartite pawl consisting of a shank having an inclined edge behind the point, and a point and a wedge fitting against the inclined part of the shank, substantially as described.

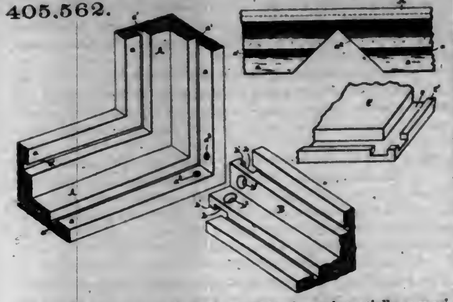
3. In a clutch, a bipartite pawl provided with upright studs, in combination with a ring engaging with the studs upon the pawl-sections, substantially as described, for the purposes set forth.

405,562. **SAFE.** PHINEAS F. KING, Cincinnati, Ohio, assignor to Moses Mosler, same place. Filed Aug. 13, 1888. Serial No. 282,487. (No model.)

Claim.—1. The combination of the bent angle-frames A, grooved and rabbeted at *a a'*, and the straight angle-bars B, similarly grooved upon their inside faces, and transversely rabbeted and grooved at *b b'* to match into the corners of frames A to form the skeleton of a burglar-proof safe, substantially as hereinbefore set forth.



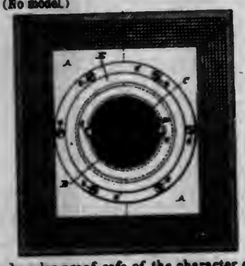
405,562.



2. In a burglar-proof safe, the combination, substantially as specified, of the angle-bar frames tongued and grooved near their edges, as shown, the straight angle-bar pieces similarly tongued and grooved, and also tongued and grooved transversely at each end to match the corners of the frames, and the wall-plates for the body of the safe having their edges formed to interlock with the angle-bar frames and their connecting angle-bars, for the purpose set forth.

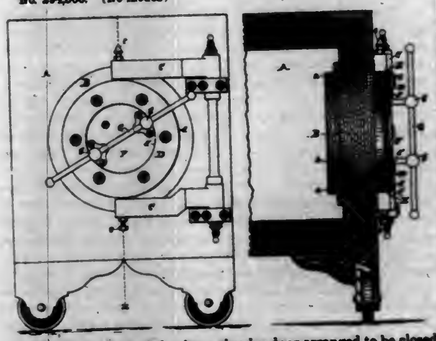
3. The combination, in a burglar-proof safe, of the angle-bar frames, the straight angle-bars connecting two of said frames, and the wall-plates C and interior lap-plates, said frames, angle-bars, and plates C having overlapping and interlocking edges, whereby the parts may be secured together from the inside and wedging or separation of the parts prevented.

405,563. **BURGLAR-PROOF SAFE.** PHINEAS F. KING, Cincinnati, Ohio, assignor to Moses Mosler, same place. Filed Dec. 24, 1888. Serial No. 294,499. (No model.)



Claim.—In a burglar-proof safe of the character described, the combination of the safe-front, having a circular door-opening, the interiorly-screw-threaded ring surrounding said opening, the circular door, the screw-threaded disk secured upon the inner face of the door, the ring D, screwed onto said disk, and the keys for locking the said disk and ring together.

405,564. **BURGLAR-PROOF SAFE.** PHINEAS F. KING, Cincinnati, Ohio, assignor to Moses Mosler, same place. Filed Dec. 24, 1888. Serial No. 294,500. (No model.)

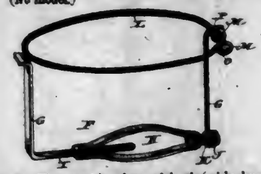


Claim.—1. In a safe having a circular door arranged to be closed by rotating it and secured by a lock preventing its rotation, the combination of a fixed ring secured to the front of the door, a door-carrying ring for connection with the hinge, a circular case within the fixed ring for the reception of a lock and attachment of the handle for rotating the door and having its edge slotted to pass a lock-bolt, a lock within said case so arranged that its bolt will pass through said slot, a coupling-bolt arranged to slide in the fixed ring and to be forced in one direction by the lock-bolt, a spring to force the coupling-bolt in the opposite direction, whereby the door-carrying ring is locked to the door and the handle and lock are disconnected when the bolt of the lock is shot out and the handle coupled to the door, and the door-carrying ring disconnected when the lock-bolt is retracted.

2. A handle connecting and disconnecting device for circular doors for safes, consisting of a ring rigidly connected to the door-front, a loose ring around said rigid ring to connect to the hinge-pivots and support the door, a circular box or lock-case fitted to turn within said ring, a handle connected to said box, a spring-actuated bolt recessed in the rigid ring and arranged to couple either the outer door-carrying ring or the inner lock and handle carrying case, and a lock within said case, substantially as and for the purpose set forth.

3. The combination, substantially as specified, of the safe-body A, having a circular door-opening, the interiorly-screw-threaded ring *a*, secured upon the inner front wall and surrounding the door-opening, the circular door B, having upon its inner end the screw-threaded part *b*, the ring D, having flanges *d d'* secured to the door-front, the ring E, fitted around the ring D and confined by its flange *d*, the circular box F within ring D and confined by its flange *d'* and having the slotted bolt-opening, the lock H, having bolt *h* to protrude through the opening in box F, and the spring-actuated bolt I.

405,565. **STOVE-PIPE AND COLLAR HOLDER.** GERHARD KOEB and JACOB B. KOEB, Springfield, Ohio. Filed Aug. 9, 1888. Serial No. 282,361. (No model.)



Claim.—1. The combination, with the side bars and the collar with which their free ends are constructed to engage and a connecting screw-threaded nut which expansively connects the other ends of said bars, of a band connected to one of them and provided with devices to contract its circumference.

2. The combination, with the side bars having outwardly-turned free ends and a swivel-nut adjustably connecting their inner ends, of a band connected to one of them and having two eyes, and a bolt fitted to said eyes, by which the band may be circumferentially contracted.

3. The combination, with the swivel-nut, of a side bar and a band composed of one piece of wire, with a bend in the body to constitute an eye, and a bend at the free end of the band portion to constitute another eye, a bolt fitted to said eyes and having a nut, and another side bar having one end turned outwardly and the other inwardly and provided with a thread which engages the swivel-nut.

4. The combination, with the swivel-nut, of side bars having their free ends turned outwardly and one of them provided with an inwardly-turned screw-threaded portion which engages said nut, and the other of them pivotally connected with the opposite end of the nut.

5. The combination, with the side bars and a band connected to one end of one of said side bars and provided with devices to contract its circumference, of a connecting screw-threaded nut which expansively connects the other ends of said bars.

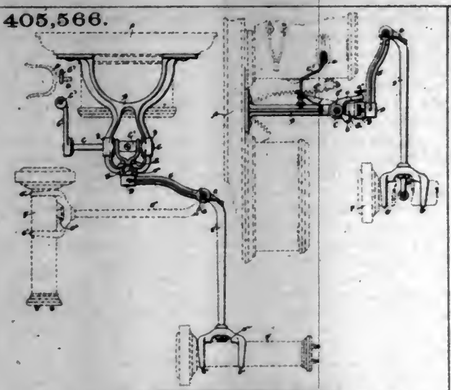
405,566. **TELEPHONE ATTACHMENT.** OTTO KOSMOLOW, Cleveland, Ohio. Filed Oct. 27, 1888. Serial No. 289,963. (No model.)

Claim.—1. The combination of jointed arms of unequal length, a spring for folding the arms, the shorter arm being mounted on a trunnion to turn in a vertical plane, the longer arm having a telephone-receiver attached to the free end thereof, substantially as indicated, whereby the gravity of the receiver, when left free, tends to turn the arm to a vertical position, substantially as set forth.

2. The combination, with jointed arms mounted on a trunnion, a spring, and receiver, substantially as indicated, of a cam mounted on such trunnion and operating between the prongs of a yoke, the latter, by means of suitable connecting mechanism, being made to operate the cut-out lever of the instrument by turning the jointed arms upon their axes, substantially as set forth.

3. The combination, with jointed arms adapted to operate in the same or in parallel plane, said arms having a horizontal axis and having a spring for folding the joints thereof, each arms having attached at the free end thereof a telephone-receiver, of cam, yoke, rock-shaft, rock-arm, and link, substantially as indicated, for connecting such folding-arms of the cut-out lever of the instrument, substantially as set forth.

405,566.



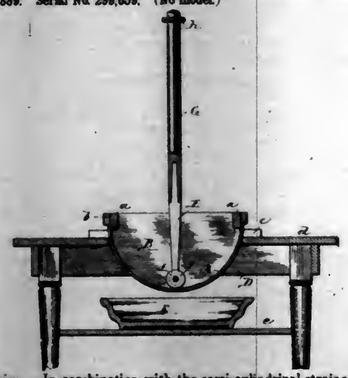
levers loosely connected to said body and cover, each lever being provided at one end with a hook adapted, when its respective section is lowered, to enter a slot in said section and support the same, substantially as set forth.

4. The combination, with a body and levers pivoted to said body, each lever provided at its pivoted ends with a hook, and at a point near its opposite end with an elongated slot, of a bisected cover, a pin attached to each section of said cover and passing through the slot in its lever, each section of the cover having a slot adapted to receive the hook of its lever when lowered to a position alongside of the body.

5. The combination, with a cabinet sewing-machine, of a door for closing the recess wherein the treadle operates, such door being in two sections, the lower section being hinged to the upper section, so as to fold up outside the upper section, the latter being hinged to the cabinet, so as to open inward, substantially as set forth.

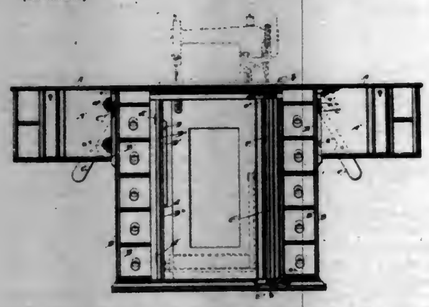
6. The combination, with door and adjacent tier of drawers, of intervening sliding jamb, the latter having a member adapted to overlap and lock the drawers, engaging beveled edges on the door and jamb for moving the jamb toward the drawers, and springs for moving the jamb away from the drawers with the opening of the door, substantially as set forth.

405,567. STRAINER. ALBERT KUMMLE, Chicago, Ill. Filed Feb. 12, 1889. Serial No. 299,659. (No model.)



Claim.—In combination with the semi-cylindrical strainer, the shank F, provided with laterally-projecting studs *f* and rollers *g*, mounted on said studs, handle G, and stud H, having eye *h*, through which the upper end of the handle passes, as set forth.

405,568. COMBINATION-CABINET FOR SEWING-MACHINES. THEODOR KUNDTS, Cleveland, Ohio. Filed Nov. 5, 1888. Serial No. 290,035. (No model.)

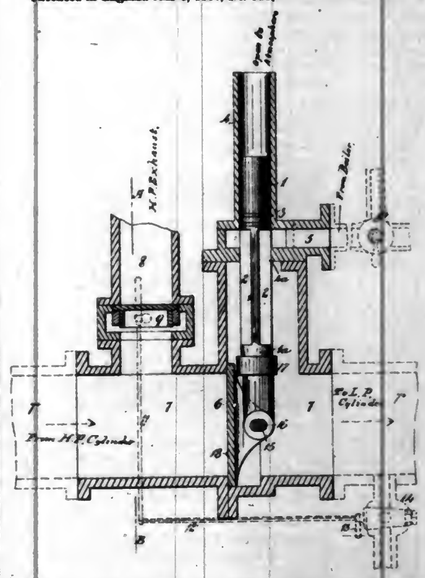


Claim.—1. In a cabinet sewing-machine, the combination, with a cover divided vertically from front to rear, substantially as indicated, of levers pivoted to each section of the cover and to the body of the cabinet in position to unite the cover-sections on top the machine to form a top-table, said levers being in position to fold the cover-sections against the cabinet in prolongation of the table whereon the machine is operated, substantially as set forth.

2. The combination, with the bisected cover, substantially as indicated, of folding front lids for each cover-section, said folding front lids, when lowered, constituting a writing-desk, substantially as set forth.

3. The combination, with bisected cover and a body, of tilting

405,569. COMPOUND ENGINE. RICHARD H. LAPAGE, Westminster, England. Filed Dec. 30, 1887. Serial No. 259,429. (No model.) Patented in England Jan. 8, 1887, No. 310.



Claim.—1. In a compound engine, the combination of a connecting pipe or receiver for conveying exhaust-steam from the high-pressure cylinder to the low-pressure cylinder, a valve-case in said pipe or receiver provided with an inlet-passage for high-pressure steam and an outlet-passage for such steam to the low-pressure cylinder, an intercepting-valve adapted to control the passage through said pipe or receiver, a starting-valve connected to said intercepting-valve subject to the pressure of high-pressure steam and adapted to control the said outlet-passage, an unbalanced plunger connected to said intercepting and starting valves and subjected at one end to the pressure of steam and at the other end to the pressure of the external atmosphere, and a main steam-valve provided with separate supply-communications to said inlet-passage and to said high-pressure cylinder and constructed to simultaneously admit high-pressure steam to said inlet-passage and to said high-pressure cylinder, said intercepting, starting, and main steam-valves being so arranged and constructed that on the opening of the main steam-valve steam from the boiler, aided or not by gravity, will cause the intercepting-valve to close, thereby cutting off communication between the high and low pressure cylinders and simultaneously admitting high-pressure steam to the steam-chests of the high and the low pressure cylinders, substantially as herein described, for the purposes set forth.

2. In a compound engine, the combination of a connecting pipe or receiver for conveying exhaust-steam from the high-pressure cylinder to the low-pressure cylinder, a valve-case in said pipe or receiver

provided with an inlet-passage for high-pressure steam and an outlet-passage for such steam to the low-pressure cylinder, an intercepting-valve adapted to control the passage through said pipe or receiver, a starting-valve connected to said intercepting-valve subject to the pressure of high-pressure steam and adapted to control the said outlet-passage, an unbalanced plunger connected to said intercepting and starting valves and subjected at one end to the pressure of steam and at the other end to the pressure of the external atmosphere, a main steam-valve provided with separate supply-communications to said inlet-passage and to said high-pressure cylinder, and constructed to simultaneously admit high-pressure steam to said inlet-passage and to said high-pressure cylinder, a high-pressure exhaust-pipe communicating with said connecting pipe or receiver on the high-pressure side of said valve-case, and a valve for controlling the communication through said high-pressure exhaust-pipe, said intercepting-valve being adapted to automatically close and open communication between the said high and low pressure cylinders, and said starting-valve being adapted to automatically open and close said inlet and outlet passages, substantially as herein described, for the purposes set forth.

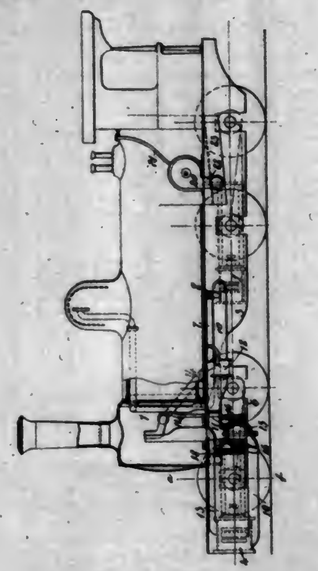
3. In a compound engine, the combination of a connecting pipe or receiver for conveying exhaust-steam from the high-pressure cylinder to the low-pressure cylinder, a valve-case in said pipe or receiver provided with an inlet-passage for high-pressure steam and an outlet-passage for such steam to the low-pressure cylinder, an intercepting-valve adapted to control the passage through said pipe or receiver, a starting-valve connected to said intercepting-valve subject to the pressure of high-pressure steam and adapted to control the said outlet-passage, an unbalanced plunger connected to said intercepting and starting valves and subjected at one end to the pressure of steam and at the other end to the pressure of the external atmosphere, a main steam-valve provided with separate supply-communications to said inlet-passage and to said high-pressure cylinder, and constructed to simultaneously admit high-pressure steam to said inlet-passage and to said high-pressure cylinder, a high-pressure exhaust-pipe communicating with said connecting pipe or receiver on the high-pressure side of said valve-case, a valve for controlling the communication through said high-pressure exhaust-pipe, an auxiliary valve adapted to admit an additional supply of high-pressure steam to said connecting pipe or receiver on the low-pressure side of said valve-casing, and means for connecting said high-pressure exhaust-valve to said auxiliary valve, substantially as herein described, for the purposes set forth.

4. In a compound engine, the combination of a pipe or casing 7, arranged to form part of a pipe or passage for conveying exhaust-steam from a high to a low pressure cylinder, a cylindrical guide 4, in communication at one end with the atmosphere and provided with steam-inlet 5 and outlet opening or port 4^a for high-pressure steam, plunger 1, with part 1^a and with a slot 16, an intercepting-valve 6, and a pin 15, connecting said intercepting-valve to said plunger, and a main steam-valve 5^a, adapted, when opened, to simultaneously admit high-pressure steam both to the steam-chest of the high-pressure cylinder and to said steam-passage 5, said plunger 1 being arranged to work in said guide 4 and subject at one end to the pressure of steam in said casing 7 and at the other end to the pressure of the atmosphere, and said part 1^a being adapted to close said opening or port 4^a when the intercepting-valve is opened, substantially as herein described, for the purposes set forth.

5. In a compound engine, the combination of a pipe or casing 7, arranged to form part of a pipe or passage for conveying exhaust-steam from a high to a low pressure cylinder, a cylindrical guide 4 in communication at one end with the atmosphere, and provided with steam-inlet 5 and opening or port 4^a for high-pressure steam, plunger 1, with part 1^a, adapted to close said opening or port 4^a, and with a slot 16, said plunger 1 being arranged to work in said guide 4 and subject at one end to the pressure of steam in said casing 7 and at the other end to the pressure of the atmosphere, an intercepting-valve 6, pin 15, connecting said intercepting-valve to said plunger, a main steam-valve 5^a, adapted, when opened, to simultaneously admit high-pressure steam both to the steam-chest of the high-pressure cylinder and to said steam-passage 5, a high-pressure exhaust-pipe 8, and high-pressure exhaust-valve 9 for controlling the passage between said pipe 8 and said pipe or casing 7, substantially as herein described, for the purposes set forth.

6. In a compound engine, the combination of a pipe or casing 7, arranged to form part of a pipe or passage for conveying exhaust-steam from a high to a low pressure cylinder, a cylindrical guide 4 in communication at one end with the atmosphere and provided with steam-inlet 5 and opening or port 4^a, plunger 1, arranged to work in said guide 4 and subject at one end to the pressure of steam in said casing 7 and at the other end to the pressure of the atmosphere, and provided with part 1^a, adapted to close said opening or port 4^a, and with a slot 16, an intercepting-valve 6, pin 15, connecting said intercepting-valve to said plunger, a main steam-valve 5^a, adapted, when opened, to simultaneously admit high-pressure steam both to the steam-chest of the high-pressure cylinder and to said steam-passage 5, an auxiliary steam-valve to admit additional high-pressure steam for use in said low-pressure cylinder, high-pressure exhaust-pipe 8, high-pressure exhaust-valve 9, valve-rod 10, with pin 14, forked lever 11, shaft or pin 12, and arm 13, said arm 13 being connected with said auxiliary steam-valve, substantially as herein described, for the purposes set forth.

405,570. COMPOUND LOCOMOTIVE-ENGINE. RICHARD H. LAPAGE, Westminster, England. Filed Dec. 30, 1887. Serial No. 259,430. (No model.)



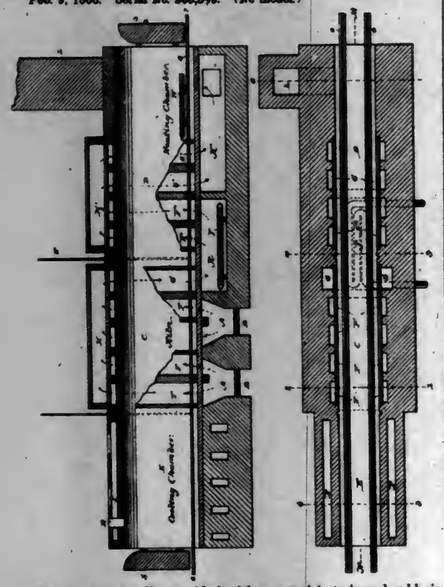
Claim.—1. In a compound locomotive-engine, the combination of a high-pressure cylinder or cylinders mounted upon the locomotive proper, a low-pressure cylinder or cylinders mounted upon a bogie or vehicle connected to said locomotive proper, pipes or passages connecting said high and low pressure cylinders, and a ball-and-socket joint between said pipes, said ball-and-socket joint forming a pivot for said bogie or vehicle and comprising a ball 15 and a socket 16, one of these parts being secured to said locomotive proper and the other to said bogie or vehicle, substantially as herein described.

2. In a compound locomotive-engine, the combination of a high-pressure cylinder or cylinders mounted upon the locomotive proper, a low-pressure cylinder or cylinders mounted upon a bogie or vehicle connected to said locomotive proper, pipes or passages connecting said high and low pressure cylinders, a ball-and-socket joint connecting said pipes or passages, forming a pivot for said bogie or vehicle, and comprising a ball 15 and a socket 16, one of these being connected to said locomotive proper and the other to said bogie or vehicle, and a sliding or telescopic joint 19 between parts of said pipes or passages, substantially as herein described, for the purpose specified.

3. In a compound locomotive-engine, the combination of high-pressure cylinders 1 and 2, mounted upon the main frame 3 of the locomotive, low-pressure cylinders 4 and 5, mounted upon a bogie-truck or swivel-frame 6, pipes or passages 9 and 10, connecting said high and low pressure cylinders, hollow ball 15 and parts 16, forming a ball-and-socket joint between parts of said pipe or passage 10 and an exhaust-pipe, one part of said ball-and-socket joint being carried by the main frame and the other part by the bogie-truck or swivel-frame, substantially as herein described, for the purpose specified.

4. In a compound locomotive-engine, the combination of high-pressure cylinders mounted upon the main frame of the locomotive, low-pressure cylinders mounted upon a bogie-truck or swivel-frame, pipes or passages 9 and 10, connecting said high and low pressure cylinders, a ball-and-socket joint connecting parts of said pipe 10, a telescopic joint 19, arranged between parts of said connecting-pipe 10, and exhaust-pipe constructed in two parts 13 and 13^a, said parts being connected with each other by a working-joint and placed in communication with each other by a pipe 13^b, arranged above the ball-and-socket joint, substantially as described, for the purposes specified.

405,571. MUFFLE FOR GLASS AND EARTHEN WARE. LEWIS LAWTON, FREDERICK SWANN, and WILLIAM R. WHITEHEAD, Chambersburg, N. J.; said Lawton assignor to said Swann and Whitehead. Filed Feb. 9, 1888. Serial No. 263,549. (No model.)



Claim.—1. A muffle provided with external hot-air and cold-air flues encompassing different portions of said muffle, whereby different degrees of heat may be maintained in said portions, substantially as described.

2. A muffle externally heated and provided with cold-air flues encompassing a portion of it, said flues communicating at opposite ends with the external air, substantially as described.

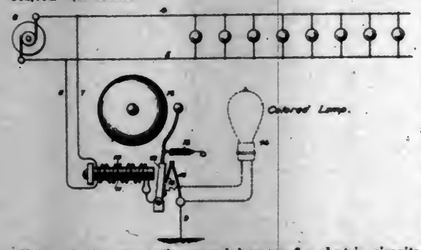
3. A continuous muffle provided at one end with external cold-air flues and at the portion adjacent to said end with external heat-flues, substantially as described.

4. A continuous muffle provided at one end with cold-air flues and at the portion adjacent to said end with heat-flues, said heat-flues extending to the opposite end of the muffle, substantially as described.

5. A continuous muffle provided at one end with cold-air flues and at the portion adjacent to said end with heat-flues extending as up and down draft flues to the opposite end of the muffle and encompassing the muffle, substantially as described.

6. A muffle provided with external hot-air and cold-air flues encompassing different portions of said muffle, and a removable partition between the cooling and heating portions of the muffle, substantially as described.

405,572. GROUND-DETECTOR FOR ELECTRIC CIRCUITS. OSBORN P. LOOMIS, Somerville, Mass., assignor to the Loomis Electric Manufacturing Company, New York, N. Y. Filed Mar. 11, 1889. Serial No. 302,764. (No model.)



Claim.—1. An automatic ground-detector for electric circuits, consisting in the combination, with the main line, of a detector-line having a normal ground thereon and connecting the respective sides of the said main line, a differential electro-magnet included in the said detector-line, an armature for said magnet, and a ground indicating or signaling device controlled by said armature and operated thereby upon accidental grounding of the said main line, substantially as and for the purpose set forth.

2. An automatic ground-detector for electric circuits, consisting in the combination, with the main line, of a detector-line normally grounded and connecting the respective sides of the said main line, a core of magnetic metal about which said detector-line is wound and returned on itself to form a differential winding, an armature for said core, and a ground indicating or signaling device governed by said armature, which causes the device to be operated by a differential action in the magnet consequent upon a ground occurring on the main line, substantially as and for the purpose set forth.

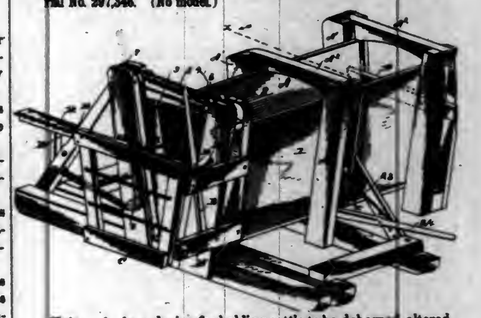
3. In an automatic ground-detector, the combination, with the main line 4 5, of the detector-line 7 8, having a normal ground-connection 9 and connecting the sides of the main 4 5, the differential magnet 10, having armature 12 and included in the said dector-line 7 8, and the ground signaling device 14, controlled by said armature 12 and operated thereby upon a differential action of the said magnet consequent upon an accidental ground on the said main line, substantially as and for the purpose set forth.

405,573. PROCESS OF MANUFACTURING DEXTRINE CORN-MALT. EUGENE M. LOUIS, Havana, Ill. Filed Nov. 15, 1888. Serial No. 290,942. (No specimens.)

Claim.—1. The herein-described process for producing corn-malt, consisting in first soaking and sprouting the grain, then crushing in a moist state to a coarse meal, then steaming, and subsequently drying by heat, cooling, and grinding, and finally drying by exposure to the air, these steps occurring in the order mentioned.

2. In a process for producing corn-malt, the crushing in a moist state of the malted grain and the subsequent steaming thereof in a closed space prior to drying and grinding, substantially as and for the purpose specified.

405,574. DEVICE FOR HOLDING CATTLE TO BE DEHORNED. JESSE F. LOSE and JOHN W. LOSE, Ross, Iowa. Filed Jan. 24, 1889. Serial No. 297,346. (No model.)



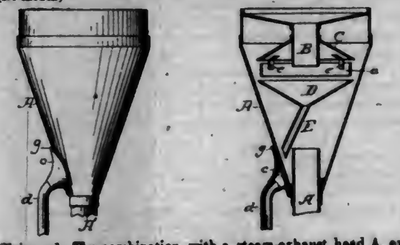
Claim.—1. In a device for holding cattle to be dehorned, altered, or branded, the combination of the chute, the pivoted jaws in front of the same, the ropes connected with the jaws, the lever connected with the ropes, the pawl and rack-plate, a lever pivoted to a projection on the side of the chute, a rope connected with the lever, a hook on the rope, and a clevis on one of the jaws to be engaged by the said hook, substantially as and for the purpose specified.

2. In a device for holding cattle to be dehorned, altered, or branded, the combination of the chute, the pivoted jaws in front of the same, the ropes connected with the jaws, the lever connected with the ropes, the pawl and rack-plate, projections on the side of the chute, a lever pivoted to one of the projections, a rope connected with the lever, a hook on the rope, a clevis on one of the jaws to be engaged by the said hook, and a gate hinged to the said projections, substantially as and for the purpose specified.

3. In a device for holding cattle to be dehorned, altered, or branded, the combination of the chute, the pivoted jaws in front of the same, the ropes connected with the jaws, the lever connected with the ropes, the pawl and rack-plate, projections on the chute, a lever pivoted to one of the said projections, a rope connected with the lever, a hook on the rope, a clevis on one of the jaws to be engaged by the said hook, a gate hinged to the said projections, a belt secured within the chute, and a lever for operating the said belt, substantially as described.

4. In a device for holding cattle to be dehorned, altered, or branded, the combination of the chute, the pivoted jaws in front of the same, the ropes connected with the jaws, the lever connected with the ropes, the pawl and rack-plate, projections on the chute, a lever pivoted to one of the said projections, a rope connected with the lever, a hook on the rope, a clevis on one of the jaws to be engaged by the said hook, a gate hinged to the said projections, a belt secured within the chute, a lever for operating the said belt, and a lever pivoted at the rear end of the chute to prevent the animal escaping, substantially as described.

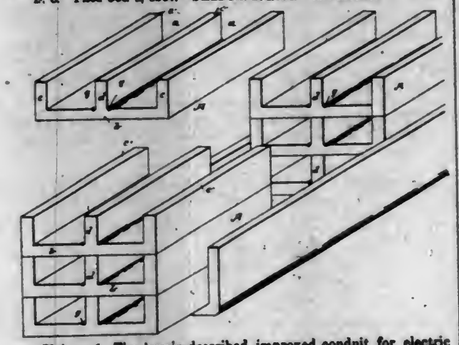
405,575. STEAM-EXHAUST HEAD. EDWARD P. LYMAN and JAMES P. WARREN, Chicago, Ill. Filed Feb. 23, 1889. Serial No. 300,826. (No model.)



Claim.—1. The combination, with a steam-exhaust head A, exhaust-pipe A', exit-pipe B, and drip-pipe *d*, of the upper deflector C, the lower deflector D, having a drain E leading from the inverted apex thereof, and the annulus suspended between the circumferential edges of said deflectors, as set forth.

2. The combination, with an exhaust-head, exhaust-pipe A', and exit-pipe B, of the drip-pipe, bell-shaped connecting-plate thereof, and the rim-plate secured around and bordering the hole in the lower end of said head, through which the products of condensation pass in transit to said drip-pipe and which has its outer surface adjacent to its inner edge rabbeted, as set forth.

405,576. ELECTRIC-WIRE CONDUIT. JOHN LYNCH, Washington, D. C. Filed Oct. 1, 1887. Serial No. 251,161. (No model.)

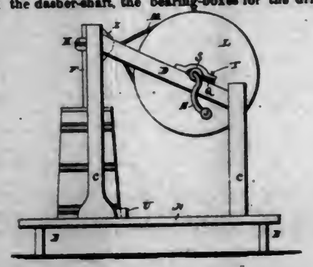


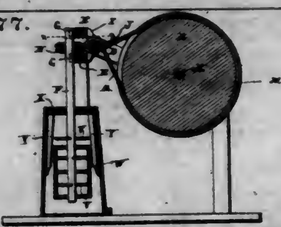
Claim.—1. The herein-described improved conduit for electric wires, comprising a series of superimposed sections consisting each of a base recessed at its corners and side and central vertical ribs, the former having upper curved edges, substantially as set forth.

2. The combination, in a terra-cotta conduit for electric wires, of an inclosing case or tube having a gutter to carry off moisture, a series of superimposed sections built up within said case and having each a central vertical rib, and longitudinal ducts or passages on either side of said rib, substantially as set forth.

405,577. CHURN. HENRY R. LYNES and EZRA T. LYNES, Wichita, Kans. Filed Jan. 25, 1889. Serial No. 297,594. (No model.)

Claim.—1. The combination of the supporting-frame, the dasher-shaft mounted therein, the driving-shaft, the idler between the driving-shaft and the dasher-shaft, the bearing-boxes for the driving-shaft,

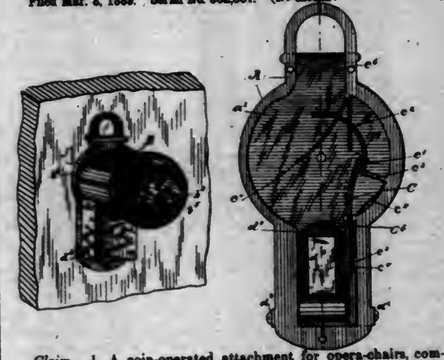




consisting of metallic straps bent to form the bearing-loops for the driving-shaft, and the arms extending from said loops and provided with a series of perforations, the keeper-plates secured on the upper side of the supporting-frame and passing over the bearings for the driving-shaft, and the securing-pins passed through the said keeper-plates and one of the perforations in the arms of the bearings for the driving-shaft, as specified.

2. The combination of the frame, the bearing-boxes thereon, consisting of straps doubled on themselves to form bearing-loops, and arms extending from said loops, the keeper-plates secured to the frame and extending over the bearing-boxes, and the pins passing vertically through the ends of the keeper-plates and through the arms of the bearing-boxes into the frame, substantially as specified.

405,578. COIN-OPERATED RECEPTACLE. WILLIAM MACHAMAR, Indianapolis, Ind., assignor of one-half to Wm. H. Hubbard, same place. Filed Mar. 8, 1889. Serial No. 302,507. (No model.)



Claim.—1. A coin-operated attachment for opera-chairs, comprising a frame, a tubular confection-receptacle fixed thereto, with a pivoted tubular portion telescoping it, and mechanism located at the rear of and within the frame to lock and hold the tubular portions with relation to each other, substantially as and for the purpose described.

2. In a coin-operated attachment for opera-chairs, the frame A, recessed at the back and provided with a pivoted spring-actuated lever C, the confection-receptacle consisting of the telescoping tubes $B' B^2$, one of which is pivoted and has a catch to be engaged by the lever C aforesaid, and the hinged coin-receptacle D, all arranged substantially as described, and for the purpose set forth.

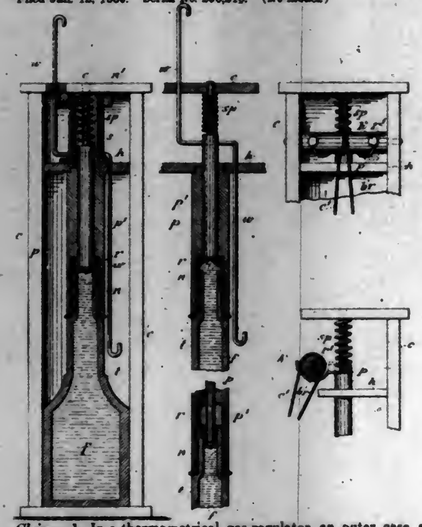
3. In a coin-operated receptacle, the frame A, recessed at the back, as shown, to form a coin-chute, and provided with a slot, as described, the vertical lever C, having the hooked upper end and the enlarged lower end, the confection-receptacle secured to the frame having the moving portion B^2, with the catch c' thereon to extend through the slot in the frame and be engaged by the hooked end of the lever, and the spring c^4, to retain the lever C in normal engagement with the catch, substantially as described.

4. In a coin-operated receptacle, the combination of the frame A, having the recess a' at the rear thereof and the radial slot c^3 through its web, the tubular metal receptacle constructed in two parts, partially telescoping each other, having portions cut away, as described, the projection c' upon one of said portions extended through the slot c^3, there being a gland b^3 secured to the front of one of the portions, and a pivoted spring-operated lever C, to engage the projection c', and a hinged coin-receptacle, arranged substantially in the manner and for the purpose set forth.

5. The combination, with the frame A, having a portion cut away at its lower end and provided with a confection-receptacle, of the pivoted or hinged coin-receptacle having a projection d' to enter the cut-away portion of the frame, and a projecting arm d^3 to overlap said projection at a distance to carry the coin from its resting-place forward as the coin-receptacle is opened, substantially as set forth.

6. In combination, the frame A, the two-part telescopic confection-receptacle having a glass front, a hinged coin-receptacle, and mechanism, substantially as described, to operate by the weight of a coin to lock the two parts of the confection-receptacle with relation to each other, substantially as described.

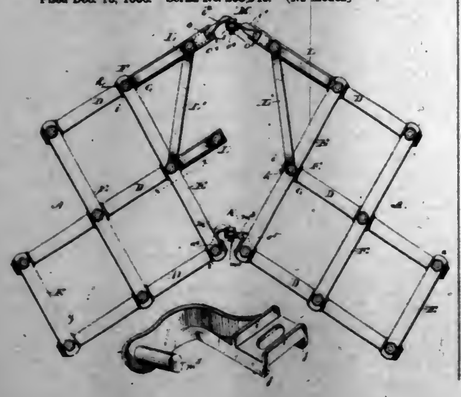
405,579. THERMOSTAT. JOHN H. MALLON, Francesville, Ind. Filed Jan. 12, 1889. Serial No. 296,210. (No model.)



Claim.—1. In a thermometrical gas-regulator, an outer case, a vessel for holding the expansible liquid inclosed therein, an elastic nipple covering the mouth of such vessel and provided with a flange which rests upon a shoulder formed upon the neck of the vessel, a pipe having an opening to receive the mouth of such vessel, the lower end thereof abutting against the flanges of the nipple, the upper end of such pipe held in position by a head movable in the outer case, an adjustable sleeve above such head inclosed in the upper part of such case for adjusting and securing such head in position, a plunger moving in said pipe shouldered above to receive a coiled spring for creating a downward pressure upon such plunger, and a rod connected therewith for attachment to the mechanism to be operated upon, all combined substantially as shown and described.

2. In a thermometrical gas-regulator, an outer case *c*, the vessel *l*, inclosed therein, the elastic nipple *n*, closing the mouth of such vessel, the adjustable pipe *p'*, for holding such nipple in position, the spring-plunger *p*, moving in such pipe, the wire *w*, connected to such plunger and operated thereby, provided with a hook at one or both ends for connecting to the mechanism to be operated upon, and the adjusting-sleeve *s*, threaded to receive the nut *n*, held in place between the top of the case and the movable head *h*, all combined substantially as shown and described.

405,580. HARROW. DEWITT C. MARKHAM, Collinsville, N. Y. Filed Dec. 18, 1888. Serial No. 293,246. (No model.)



Claim.—1. In a harrow-frame, the combination of a draft-bar, a cross-beam mounted on said draft-bar, and a brace, such as L, for connecting the cross-beam and draft-bar to provide against upward and downward strain of the draft-bar, substantially as described.

2. In a harrow-frame, the combination of a draft-bar, a cross-beam mounted on said draft-bar, and a brace, such as L', connecting the cross-beam and draft-bar diagonally to provide against lateral strain of the draft-bar, substantially as described.

3. A folding harrow-frame having its sections held together by front and rear hinges M N, in combination with the draft-bar and the cross-beam mounted on said draft-bar, the said rear hinge N being a saddle connecting the draft and cross bar, substantially as described.

4. In a sectional harrow-frame, in combination with the draft-bars and the cross-beams, the front hinge M, composed of two parts i' i^2, provided with lugs *o o'*, and one of said parts having a post o^2 and the other a slot o^3, substantially as and for the purpose described.

5. In a harrow-frame, the combination, with the draft-bar, the cross-beam mounted on said part, and the rear hinge N, provided with the saddle having the upward and downward projecting lugs, between which the cross-bar and draft-bar are held, and a bolt and nut for securing the parts together, substantially as described.

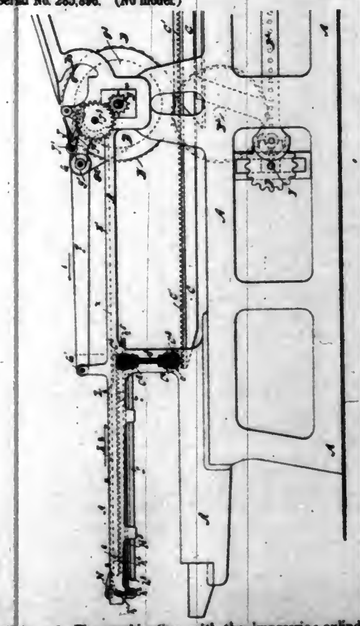
405,581. DOOR-SECURER. BENJAMIN F. MARSHALL, Jr., and DANIEL H. RICKERD, York, Nebr.; said Rickerd assignor, by mesne assignments, to S. F. Wagner, same place. Filed Mar. 14, 1889. Serial No. 303,278. (No model.)



Claim.—1. In a door-lock, the combination of the slotted catch-plate affixed to the casing, and the wedge-shaped or tapered key-plate fitting in the slot of the catch-plate and provided with a swinging button or arm to bear at its free end against the surface of the door, substantially as specified.

2. In a door-lock, the combination, with the catch-plate A, bent to form the tooth C and longitudinally slotted, as at B, of the tapered key-plate D, adapted to enter the slot B of the plate A, having serrations *c* formed upon its outer edge for engagement with the outer edge of the slot B, and provided with the pivoted wedging-button E, as and for the purpose specified.

405,582. SHEET-DELIVERY APPARATUS FOR PRINTING-MACHINES. CHARLES R. MASON, Westerly, R. I. Filed Sept. 20, 1888. Serial No. 285,896. (No model.)



Claim.—1. The combination, with the impression-cylinder of a printing-press, of the traveling tapes F, receiving the printed sheet from the cylinder, the delivery-table E, reciprocating independently of and back and forth below the tapes, and on its forward movement receiving the printed sheet from the forward portion of the tapes, and a receiving-table I, for receiving the sheet from the delivery-table, substantially as described.

2. The combination, with the impression-cylinder of a printing-press, of the traveling tapes receiving the printed sheet from the cylinder, and the delivery-table E, reciprocating independently of and back and forth below the tapes and moving at the same speed as the tapes to receive the printed sheet therefrom as said table moves forward from beneath the tapes, substantially as described.

3. The combination, with the traveling tapes F and stationary receiving-table I, of a delivery-table E, reciprocating independently of and back and forth below the tapes, and on its forward movement receiving the sheet from the tapes, and means, substantially as described, for retaining the sheet and delivering it to the receiving-table when the delivery-table moves backward below the tapes, substantially as described.

4. The combination, with the traveling tapes F and receiving-table I, of a delivery-table E, reciprocating back and forth below and independent of the tapes and receiving the sheet therefrom, and gripper-fingers, one of which is opened and closed positively by the movement of the table, substantially as described.

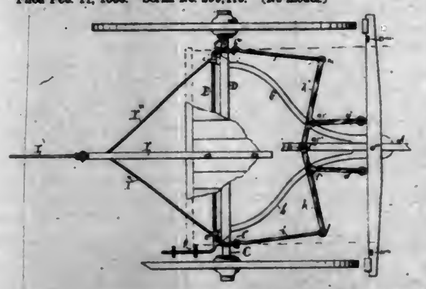
5. The combination, with the traveling tapes F, of a delivery-table E, reciprocating independently of the tapes and grippers H H', one of which is swung to a closed position by the table when at or near the end of its forward movement and to an open position by said table when at or near the end of its backward movement, substantially as described.

6. The combination, with the reciprocating delivery-table E, of the stationary gripper H, the movable gripper H', the lever H^2, the rod H^3, secured thereto, and the dogs h^4 h^5 thereof, adapted to be engaged by the delivery-table, substantially as shown and described.

7. The combination, with the impression-cylinder and type-bed, of the tape-rollers G G', one rotated by a gear-connection with the cylinder, the tapes F, extending around and moved by the rollers, the delivery-table E, reciprocated back and forth independently of the tape and tape-rollers, and grippers H H', one of which is swung to both its open and closed positions by the action of the delivery-table, substantially as described.

8. The combination, with the impression-cylinder and reciprocating type-bed of a printing-press, of traveling tapes driven by gear-connection with the cylinder, a delivery-table reciprocating below and independent of the tapes and operated by a gear-connection with the type-bed, a receiving-table, and grippers for retaining the sheet as the table moves backward, substantially as described.

405,588. WAGON-BRAKE. WILLIAM H. MEARS, Riverton, Iowa. Filed Feb. 11, 1889. Serial No. 299,419. (No model.)



Claim.—1. In a wagon-brake, the combination of a rock-shaft having a lever extending vertically and arms extending downward and supported in bearings located in rear of the rear axle, two levers pivoted in front of the same axle to extend outward and connected with the arms of the rock-shaft, and a brake-bar carrying wheel-rubbing devices on its ends and connected with the outer ends of said levers to operate in the manner set forth, for the purposes stated.

2. A wagon-brake comprising a rock-shaft having two integral arms and an upwardly-extending crank adapted to receive an extension-rod, by means of which said brake is operated, connecting-rods joining said arms to two horizontally-reciprocating brake-levers, and tension-rods connecting said brake-levers to a reciprocating rubber-bar, all substantially as described and set forth.

3. The combination, with a rock-shaft provided with dependent arms, of connecting-rods joining said shaft to two pivoted brake-levers, tension-rods uniting the brake-levers to a suitable rubber-bar, and a detachable support at the rear of the wagon-body adapted to carry an actuating-lever, said lever being connected at its lower end, by means of detachable rods, to the arms of said rock-shaft, all arranged and adapted to work substantially as described, and for the purposes set forth.

405,584. SADDLE FOR TOP ROLLS OF SPINNING-MACHINES. GEORGE A. METCALF, Woonsocket, R. I. Filed Aug. 25, 1888. Serial No. 283,728. (No model.)

Brief.—The invention consists in the improved devices for relieving the pressure of the saddle from the middle roll.



Claim.—1. In a saddle for top rolls, the combination, with a saddle composed of two sections, one overlapping the other, of a lever pivoted to one section and contacting with the other section to raise the inner end of one of the sections from contact with one of the rolls, substantially as described.

2. In a saddle for top rolls, the combination of a saddle composed of two sections, one overlapping the other, a bearing projection on one of the sections contacting with the other section, and a lever pivoted to one section and contacting with the other section to raise the inner end of the lower section from contact with one of the rolls, substantially as described.

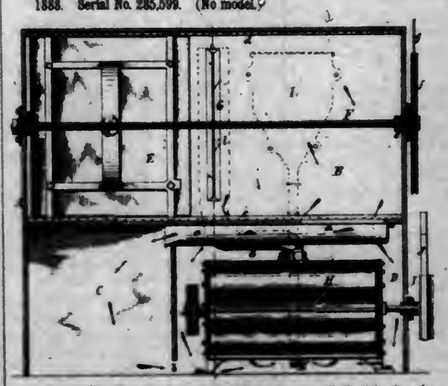
3. The combination of a saddle composed of two sections, one overlapping the other, a bearing projection on the lower section contacting with the overlapping section, a lever pivoted to the outer end of said lower section having a projection for contact with the overlapping section, and a notch in said last-named section, in which the projection may be seated to hold the section in its adjusted position, substantially as described.

4. The combination of the top rolls of a drawing or spinning frame, a clearer for said rolls, a saddle composed of two sections, and a lever pivoted to one of the sections and adapted to contact with the other for simultaneously freeing the middle roll and raising the clearer therefrom, substantially as described.

5. The herein-described saddle for top rolls, composed of two sections, one overlapping the other, the lower one provided with projections extending the lubricating-orifices, and the upper section provided with openings for the passage of the said projections, substantially as set forth.

6. The combination of a saddle composed of two sections, one overlapping the other, the under section provided with projections extending the lubricating-orifices, and the upper section having openings for the passage of said projections, and a lever pivoted to one of the sections and contacting with the other section, whereby the under section is adjusted with respect to the middle roll, substantially as described.

405,585. MACHINE FOR BLACKLEADING THE MOLDS FOR ELECTROTYPES. WARREN MILES, Warnerville, Mass. Filed Sept. 17, 1888. Serial No. 285,599. (No model.)



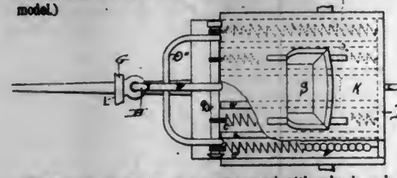
Claim.—1. The combination of the case provided with chambers having passages connecting each with the other, as shown, the carriage supported in guides or ways and connected with mechanism for imparting to it reciprocating rectilinear movements within the case and arranged with a conduit proceeding from a blower, said conduit having a long narrow mouth, as shown, with said conduit and blower, the latter being connected with mechanism for putting it in operation, and the blower-chamber having a pipe to convey the black-lead to

the blower, all being arranged and to operate essentially as set forth and represented.

2. The combination of the case provided with chambers and having arranged and supported therein a carriage connected with mechanism for imparting to said carriage reciprocating rectilinear movements therein for the purpose described, with the blast-blower arranged within said chamber and having a conduit to convey air mingled with black-lead forced by said blower into the conduit and through the slit *l* with sufficient force against the mold as it passes said slit to securely deposit a coating of the lead on the face of the mold, essentially as set forth and represented.

3. The conduit G, provided with the long narrow mouth or slit, as shown, to discharge air mingled with black-lead, forced into said conduit by the blower, into the case and against the mold, as described, in combination with the case having arranged therein the mold-sustaining carriage provided with mechanism for imparting to it reciprocating rectilinear movements in front of said slit, the blower connected with the conduit G, also provided with mechanism for operating it, and the pipe K, opening into the chamber and provided with gates and a hopper, substantially as set forth and represented.

405,586. DRAFT ATTACHMENT FOR VEHICLES. CHARLES E. MILLER, Syracuse, N. Y. Filed Feb. 2, 1889. Serial No. 298,519. (No model.)



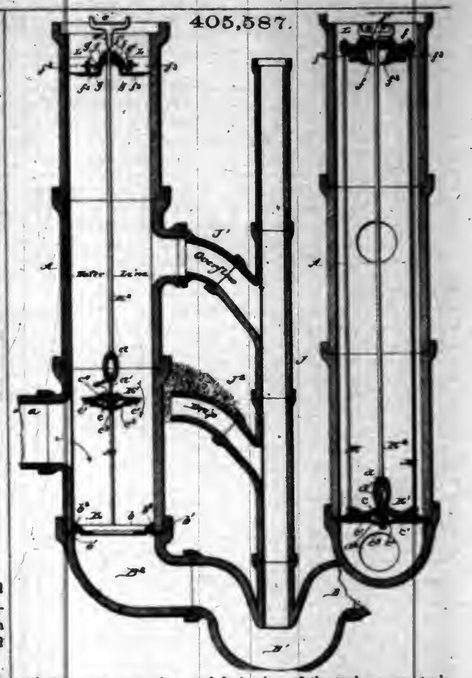
Claim.—1. A towing-cart constructed with wheels, axle, and flooring, upon which are supported springs and safety-chains connected at their ends to the cart and to a draft-bar, in combination with a hook A, secured to the cart for connecting the tow-line, all constructed substantially as described and shown.

2. A towing-cart constructed with wheels, axle, and flooring, springs and safety-chains resting thereon, said springs being connected at their ends to the cart and to the draft-bar D, vertical partitions separating said springs, and a seat for the driver above the same, all constructed substantially as described and shown.

3. A towing-cart provided with a draft-bar D, springs C C, connected thereto and to the cart, safety-chains passing through said springs and connected in like manner, vertical partitions separating said springs, and hooks for the attachment of the whiffletrees and tow-line, all constructed and combined substantially as described and shown.

4. In a draft attachment, the combination of a draft-bar, springs, and safety-chains connected thereto and to a cross-bar to which the tow is connected, all constructed and arranged substantially as described and shown.

405,587. FLUSHING SYSTEM FOR DRAINS AND SEWERS. HIRAM W. MCDONALD and THOMAS W. SEUBE, Bucyrus, Ohio. Filed July 26, 1888. Serial No. 281,144. (No model.)

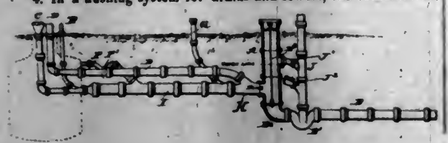


Claim.—1. In a flushing system for drains and sewers, the combination of the waste-water pipes, a tank or receptacle connecting with the drain-pipe, and a relief-pipe, also connecting with the drain-pipe and having an overflow-pipe connection with the tank or receptacle, as also a drip-pipe, substantially as set forth.

2. In a flushing system for drains and sewers, the combination of the tank or receptacle A, the flanged coupling B^3, and the valve-seat K, secured between the lower end of the receptacle and the coupling and provided with the annular conical ridge *b* adjacent to the outer edge or flange *b'* of the valve-seat and of slightly less diameter than the receptacle, substantially as described, whereby a packing-seat is formed between the ridge and the inner surface of the receptacle, as set forth.

3. In a flushing system for drains and sewers, the combination, with the waste-water pipes and drain-pipe, of the tank or receptacle provided with a valve and guide-rods, said guide-rods passing through apertures in said valve and connecting with the valve-seat and a bracket in said tank or receptacle, substantially as set forth.

4. In a flushing system for drains and sewers, the combination,

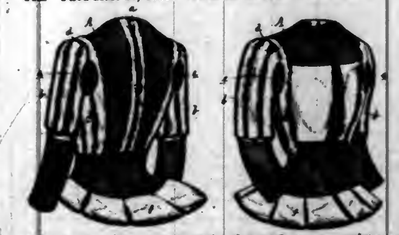


with the waste-water pipes and drain-pipe, of the tank or receptacle provided with a valve having its stem or rod passing through and having a screw-threaded connection with a bracket provided with segmental clamp-blocks adjustable to and from the inner side of the tank or receptacle, substantially as set forth.

5. In a flushing system for drains and sewers, the combination, with the waste-water pipes and drain-pipe, of the tank or receptacle provided with the valve, the stem or rod of which passes through a bracket having a plate provided with stepped portions upon which are supported segmental clamp-blocks, screws having swiveled connection with said blocks and stepped portions of the bracket, and nuts working upon said screws, substantially as described.

6. In a flushing system for drains and sewers, the combination, with the tank or receptacle, of the bracket consisting of a plate provided with a central bushing-like block and with stepped-like portions, segmental clamp-blocks supported upon said stepped portions of the plate, and screws swiveled to said blocks and working in said stepped portions of the plate, and nuts fitted upon said screws, substantially as specified.

405,588. PADDED UNDERWAIST. MARY D. MCDOWELL, Denton, Tex. Filed Mar. 27, 1889. Serial No. 304,925. (No model.)

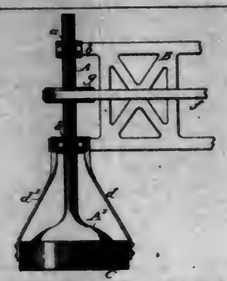


Claim.—As an improved article of manufacture, a waist provided upon its inner surface with pockets extending down the middle of the back, on the breasts, around the lower edge, down the sleeves, and down the sides beneath the arms, the pockets down the sleeves and beneath the arms being united together, and all of said pockets provided with soft padding, substantially as shown and described.

405,589. POLISHING-MACHINE. WILSON MCQUISTON, Fort Wayne, Ind. Filed June 18, 1888. Serial No. 277,494. (No model.)

Claim.—In a polishing-machine, a circular band surrounding the

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polishing-head and connected to the frame holding the polishing-shaft by means of oblique braces rigidly attached to the band, having in the upper ends vertical slots, and attached to said frame by set-bolts through said slots, substantially as described.

405,590. PROCESS OF MAKING PAPER BAGS. ALBERT E. OSBORN, Brooklyn, N. Y. Filed Mar. 23, 1889. Serial No. 304,415. (No model.)



Claim.—The hereinbefore-described method of manufacturing paper bags, which consists in, first, creasing the flat paper blank crosswise or transversely from side to side at distances equal to the desired length of the bag; secondly, forming this creased blank or web into a tube, and, thirdly, severing this tube into sections of proper length, each containing one of the transverse creases, and forming the bags by closing the ends of said sections in the usual manner, substantially as and for the purpose set forth.

405,591. CHURN. JOHN W. PARRISH, Milton, W. Va. Filed Dec. 17, 1888. Serial No. 293,582. (No model.)



Claim.—In a churn, the combination of the body, a flange formed thereon, a hinged frame on the body, the lower end of which is held in place by the said flange, a dasher-shaft having its upper end formed into a spiral, arms carrying a disk provided with a threaded thimble to engage the threaded portion of the dasher-shaft, a dasher on the lower end of the arms, a yoke on the upper end, and a crank-shaft mounted in the hinged frame and engaging the yoke, whereby, when the said yoke is operated, a rotary-reciprocating motion will be imparted to the dasher-shaft and a vertically-reciprocating motion to the dasher, substantially as described.

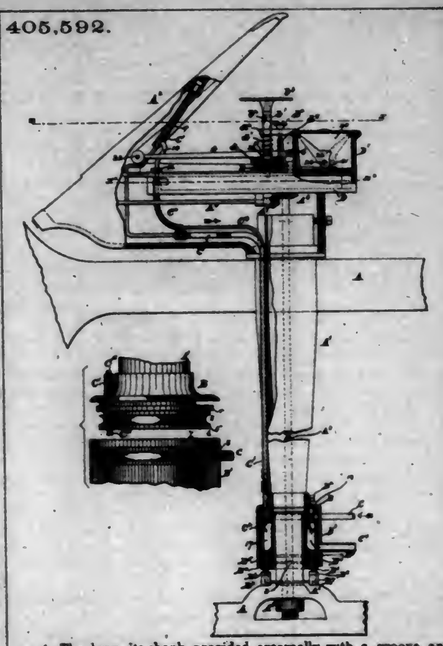
405,592. WAX-HEATING DEVICE FOR SEWING-MACHINES. GEORGE R. PEARE, Lynn, assignor of one-half to Edwin L. Sprague, Boston, Mass. Filed Apr. 24, 1888. Serial No. 271,667. (No model.)

Claim.—1. The rotating horn of a sewing-machine, and a steam-joint surrounding the shank of the said horn, combined with a wax-chamber, and pipes or passages to lead steam from the said steam-joint to the horn, and thence to the said wax-chamber to melt the wax therein, and with return pipes or passages leading therefrom, substantially as described.

2. The horn and the steam-joint consisting of the loosely-supported part B', having internal shoulders 6 and 7, and the part B, rigidly attached to the horn-shank and having shoulders 4 and 5, which are seated on internal shoulders, the said parts having an annular steam-channel 8 between said shoulders, as described, combined with pipes to conduct steam from the said channel into the upper portion of the horn and to return the same more or less condensed into the part B' below said steam-channel, substantially as described.

3. The horn-shank, its rigidly-attached part B, and the tipping part B', surrounding the horn-shank loosely, and having the chamber 17 for reception of water of condensation, the part B being fitted into the said part B' to form a balanced joint, combined with a return-pipe extended through the part B into the said chamber in the part B', and an outlet therefor, substantially as described.

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4. The horn, its shank provided externally with a groove, and the shank-bearing, combined with the part B of the steam-joint and with the direct and return pipes connecting said joint and horn, and extended through the bearing in the said groove, substantially as described.

5. The rotating horn, combined with the wax-chamber and the hollow base carrying the same, and pivoted to the horn eccentric to the center of rotation thereof, to be turned aside therefrom, substantially as described.

6. The horn, the hollow ported base D, pivoted thereon, the wax-chamber, and the take-up lever pivoted on the said base and having a sheave extended into the space in the said horn, whereby by turning the said base the said sheave may be moved out from and into the said horn, substantially as described.

7. The horn, the hollow ported base D, and the wax-chamber thereon provided with a partition having an opening, combined with a valve to open or close the said opening, substantially as described.

8. The horn, and the steam-pipe to lead steam into the upper end of the horn, combined with the pipe portion 9, having its upper end inserted firmly into the metal of the horn, the steam-pipe being extended through the said pipe portion, which is closed at its lower end immediately about the steam-pipe, the pipe portion 9 being in communication with the portion forming part of the return-pipe, substantially as described.

9. The horn, its shank, and steam-pipes, combined with the steam-joint and binnacle-rings to support it, substantially as described.

10. The horn, its shank, and steam-pipes, combined with the steam-joint and binnacle-rings to support it, and elastic ring and adjusting-screws, substantially as described.

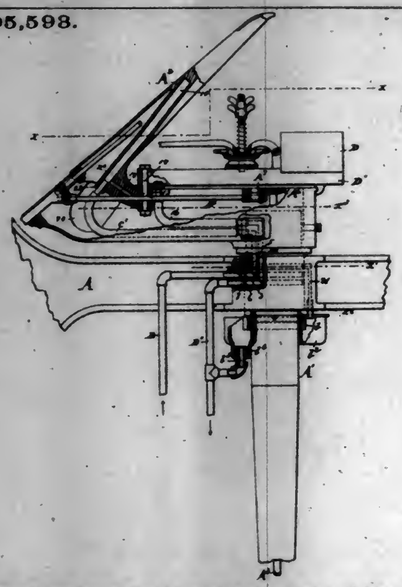
405,593. WAX-HEATING DEVICE FOR SEWING-MACHINES. GEORGE R. PEARE, Lynn, assignor of one-half to Edwin L. Sprague, Boston, Mass. Filed Sept. 10, 1888. Serial No. 285,021. (No model.)

Claim.—1. In a sewing-machine, the combination, with a horn and its spindle provided with annular grooves and connecting-passages therein for direct and return heating-fluid, of a fluid-supply pipe and a fluid-return pipe each communicating at all times with said direct and return grooves, respectively, to operate substantially as described.

2. In a sewing-machine, the combination, with a horn and its spindle provided with peripheral grooves and connecting-passages therein for direct and return heating-fluid, of a fluid-supply pipe and a fluid-return pipe connecting with said direct and return grooves, respectively, and with a drip-collar and drip-cup having a trap therein, substantially as described.

3. In a sewing-machine, the combination, with a horn and its spindle provided with grooves and passages for direct and return heating-fluid, of a fluid-supply pipe and a fluid-return pipe, and with

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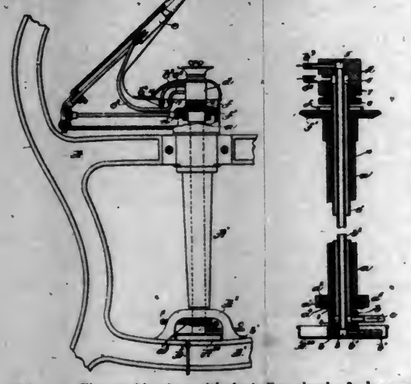


a drip-collar and drip-cup, and connections between the said drip-cup and the said return-pipe, substantially as described.

4. The horn, its spindle provided with the annular groove 20, and the horn-bearing and its discharge-port 21 in communication with said groove 20, combined with the drip-cup b^3, connected with the port 21, substantially as described.

5. The horn having the opening 24 and the passage 10 therein, combined with the pipe c', inserted in said passage, and nut 25 to hold it firmly therein, to operate substantially as described.

405,594. HORN-HEATING DEVICE FOR WAX-THREAD SEWING-MACHINES. GEORGE R. PEARE, Lynn, assignor of one-half to Edwin L. Sprague, Boston, Mass. Filed Dec. 18, 1888. Serial No. 293,941. (No model.)



Claim.—1. The combination, with the hollow shank of a horn, of a system of steam-pipes arranged in the line of the center of rotation of the horn and extended into the arm of the horn, whereby the horn may be heated by steam and yet permit the horn to be revolved freely, substantially as described.

2. The rotating horn having a hollow shank, combined with a hollow shaft, as a, and with a system of pipes extended through the said hollow shaft, and having extensions to lead the heating medium into the arm of the horn and conduct it therefrom back through the said shaft, substantially as described.

3. The combination, with the horn and its hollow shaft a, and its gear a^2 and screw a', to secure it, of the ring a^4, having a notch to engage a projection from the said shaft, and with means to secure the ring to the gear, substantially as described.

405,595. DEVICE FOR PACKING BUTTER, &c. JOHN C. PEPPLER, Bloomingdale, Ontario, Canada. Filed Aug. 4, 1887. Serial No. 246,140. (No model.) Patented in Canada Aug. 13, 1887, No. 27,429.

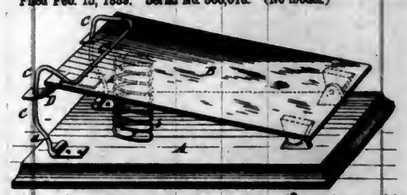


Claim.—1. The combination, with a keg formed with a shoulder on the inside thereof and grooved side pieces attached to the interior thereof, of a prismoidal metal case having its vertical corners seated in the grooves of said side pieces, a close-fitting cover for said case, ribs on the top and bottom of said case, a head for the keg, and an elastic strip on the rim of said head engaging the shoulder of the keg, and clamp-rods for holding the top and bottom of the keg in place, substantially as and for the purpose specified.

2. The combination of the prismoidal metal case B, which incloses the material to be packed, and having cover F, frame-piece A around the top of said case, with a space between the two for the flange of the cover, and upper and lower ribs f, the grooved guides d', fixed inside the keg A, a space for a cooling substance being left between the sides of the metal case B and the inside of the keg A, the head of which is rigidly held in place, so as to form a tight joint, substantially as specified.

3. The combination, with the keg, its top and bottom, and the metal case within said keg, and provided with the ribs f, of the metal strips H, secured to said top of the keg, the rods passed through the top and bottom, and the finger-nuts d on one end of said rods, substantially as and for the purpose specified.

405,596. PAPER-FILE. BERNHARD PETSCHE, Philadelphia, Pa. Filed Feb. 15, 1889. Serial No. 300,018. (No model.)



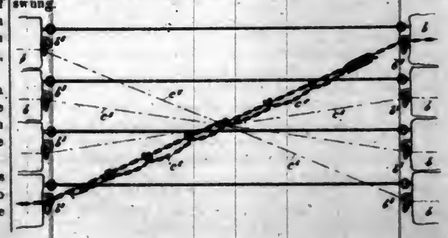
Claim.—1. The combination of a base plate or frame, a hinged and spring-cushioned supporting-plate, a clamping device hinged to the base-frame and bent at its upper part so as to extend over the head of the supporting-plate, and arms attached to the supporting-plate and adapted to engage said clamp, so as to oscillate it when the supporting-plate is depressed, substantially as set forth.

2. The combination of a base plate or frame, a hinged and spring-cushioned supporting-plate applied to said base-plate, a clamping device hinged to the base-plate and provided with a bent upper part extending over the head of the supporting-plate and with shanks having forwardly-bent lower portions, and of arms attached to the supporting-plate and adapted to engage the shanks of the clamping device, substantially as set forth.

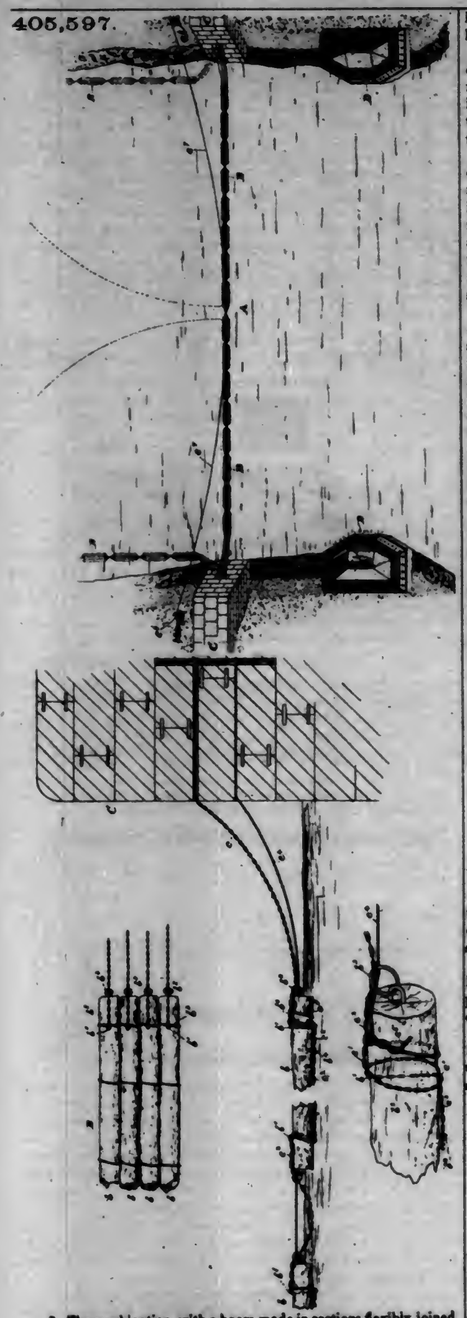
405,597. BOOM. THOMAS RAFFERY, New York, N. Y. Filed Sept. 28, 1888. Serial No. 286,411. (No model.)

Claim.—1. A gate-boom or raft-gate, made in two parts detachably connected, consisting of buoyant sections flexibly joined, both parts capable of being swung to open or close the boom.

2. The combination, with abutments, of a gate-boom or raft-gate, consisting of buoyant sections flexibly connected, the boom being made in two parts detachably joined, each part capable of being swung.



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3. The combination, with a boom made in sections flexibly joined, of a supplemental cable joined to the sections and means for pulling upon the cable, substantially as and for the purpose set forth.

4. The combination, with a boom made in one or more parts, of chains joined by fastening in the nature of a cable bend, substantially as described.

5. The combination, with an end section of a boom, of an abutment and chains and cables, the chains and cables being firmly fixed in the abutment, and each chain being attached to a log by a half-hitch, and each cable by a timber-hitch, substantially as described.

6. In a sectional boom, the combination of an end section formed of one or more logs or bundles of logs, each provided with a perforation, of an abutment and of one or more chains, each chain passing to the upper surface of the log, down through the perforation, then being formed in a half-hitch around the log, and passing on along the under surface of the log, substantially as set forth.

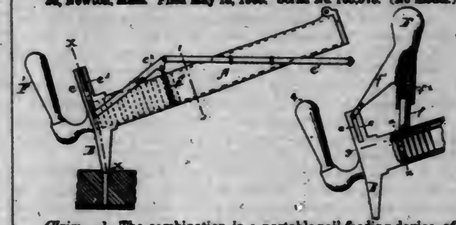
7. In a sectional boom, the combination of an end section formed of one or more logs or bundles of logs, each provided with two perforations, of an abutment and of one or more chains, each chain passing to the upper surface of the log, then down through the first perforation, then formed in a half-hitch around the log, and passing on along the under surface of the log to the second perforation, then up through this perforation, then formed in a half-hitch around the log, and passing on along the upper surface of the log, substantially as described.

8. In a sectional boom, the combination of an end section formed of one or more logs or bundles of logs, the logs of each section being securely lashed or banded together, each log provided with two perforations and with one or more circumferential grooves or collars, of an abutment and of one or more chains, each chain being securely fastened to the abutment and passing to a ring-bolt fixed in the log, then over or under the log to the nearest perforation, then through this perforation and around the log in a half-hitch, then along the log, either guided or not by eye or ring bolts, then through the other perforation to the opposite side of the log, then around the log in a half-hitch, and then along the log to another eye or ring bolt, substantially as described.

9. In a boom formed in sections, the combination, with the sections, of chains and cables, the chains being crossed and the cables being fastened to their respective logs, substantially as set forth.

10. A gate-boom or raft-gate, made in one or more detachable parts formed of buoyant sections flexibly joined by cables and cross-chains, the whole boom or any part capable of being swung to open or close.

405,598. RAIL-FEEDING IMPLEMENT. FREDERICK F. RAYMOND, 2d, Newton, Mass. Filed May 15, 1885. Serial No. 165,573. (No model.)

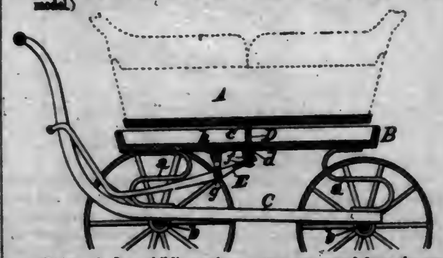


Claim.—1. The combination, in a portable nail-feeding device, of the nail holder or carrier A, having the hole C, the automatic hole-closing device D, and the reciprocating stripper or plunger E, all substantially as and for the purposes described.

2. The combination, in a portable nail-feeding device, of the nail holder or carrier A, the nozzle B, the reciprocating plunger or stripper E, and the handle F, all substantially as and for the purposes described.

3. The combination, in a portable nail-feeding device, of the nail holder or carrier A, the handle F, the nail stripper or plunger E, and the push-button, knob, or pull for operating the plunger or stripper, all substantially as and for the purposes described.

405,599. CHILD'S CARRIAGE. WILLIAM H. RICHARDSON, Baltimore, Md., assignor of two-thirds to John M. McClintock and Henry T. Maloney, same place. Filed Nov. 12, 1888. Serial No. 290,547. (No model.)



Claim.—1. In a child's carriage, a tray supported from the running-gear, combined with a body provided with a king-bolt which

passes through the said tray, and a lever connected to the end of the said king-bolt, whereby the same may be elevated, so as to admit of the body being turned and reversed in position with reference to the running-gear, substantially as and for the purpose specified.

2. In a child's carriage, the body thereof susceptible of a vertical movement from its foundation by means of a king-bolt, which also serves as a pivot of the said body in its reversal with reference to the said running-gear, substantially as and for the purpose specified.

3. As means of elevating the king-bolt D, the lever E, fulcrumed to a pivoted link *g*, and slotted at its end through which the said king-bolt passes, and round-faced collars *f* on the said king-bolt, whereby the change in angular position of the lever in its operation does not deflect the said king-bolt from its vertical position, substantially as and for the purpose specified.

405,600. CHILD'S CARRIAGE. WILLIAM H. RICHARDSON, Baltimore, Md., assignor of two-thirds to John M. McClintock and Henry T. Maloney, same place. Filed Dec. 27, 1888. Serial No. 294,733. (No model.)



Claim.—1. In a child's carriage, the body thereof susceptible of a vertical movement from its foundation, and a rotative motion when in an elevated position, combined with a stop to limit the said rotative motion to less than a full revolution, substantially as and for the purpose specified.

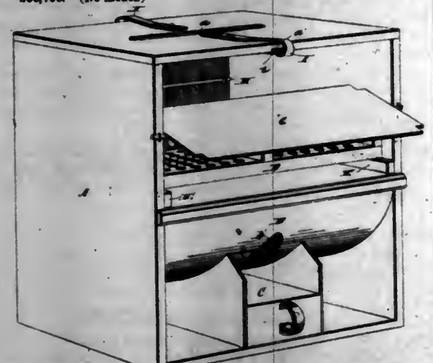
2. In a child's carriage, a platform or tray supported from the running-gear, a body pivoted to the said tray and adapted for elevation within the said tray, combined with a stop to limit its rotation or rotative movement, substantially as and for the purpose specified.

3. The bolt D, having the arms *k*, with the studs *n*, combined with the elevating-lever E, substantially as and for the purpose specified.

4. The bolt D, having the arms *k*, with the studs *n*, the said studs being removed from a diametrical line, combined with the elevating-lever E, substantially as and for the purpose specified.

5. In a child's carriage, the body thereof adapted for elevation within a tray provided with sides formed of rods, and brackets to unite the said rods with the bottom of the said tray, substantially as and for the purpose specified.

405,601. EGG-TESTER. JOHN L. RITTER, Milnes, Va., assignor of one-half to John P. Brown, same place. Filed Oct. 20, 1888. Serial No. 288,706. (No model.)



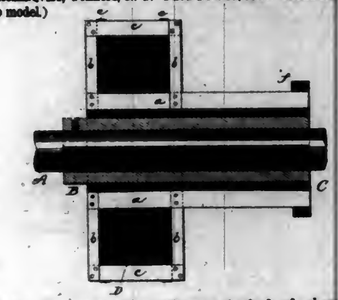
Claim.—1. An egg-tester comprising the rectangular frame provided with supporting-strips adapted to receive a tray, the reflector situated beneath the supporting-strips and having the transverse slot or slots, and the hinged doors closing the frame above the supporting-strips, substantially as described.

2. An egg-tester comprising the rectangular frame provided with an eye-hole and supporting-strips adapted to receive a tray, the reflector situated beneath the supporting-strips and having the transverse slot or slots to allow the light or lights to be placed in the middle of the reflector, the hinged doors closing the frame above the reflector, and spring-catches engaging the doors, substantially as described.

3. An egg-tester comprising the rectangular frame provided with supporting-strips adapted to receive a tray, the reflector situated beneath the supporting-strips and having the transverse slot or slots, and the hinged doors and the spring-catches, said doors being hinged intermediate of their ends and capable of rotation to bring either end into engagement with a catch, substantially as described.

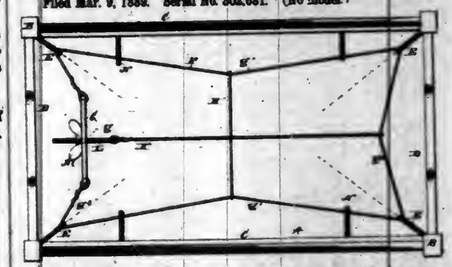
4. An egg-tester comprising the rectangular frame provided with supporting-strips adapted to receive a tray, the reflector situated beneath the supporting-strips, the hinged doors arranged upon each side of the frame and hinged intermediate of their ends and closing the frame above the reflector, and spring-catches consisting of pieces of spring metal carved under the top of the frame and provided with heads adapted to be engaged by either end of the doors, substantially as described.

405,602. DYNAMO-ELECTRIC MACHINE OR MOTOR. CONRAD L. ROSENQVIST, Yonkers, N. Y. Filed Feb. 13, 1889. Serial No. 299,724. (No model.)



Claim.—The combination, with the main shaft, of a sleeve of insulating material thereon, said sleeve being reduced in diameter between its extremities, and an armature made up of coils of copper strips surrounding a core of iron wire, the said wire being wound under tension and bending the copper strips toward the shaft and against the surface of the sleeve, whereby the armature is prevented from slipping off the sleeve.

405,608. BEDSTEAD-BRACE. LEANDER F. ROSS, Searcy, Ark. Filed Mar. 9, 1889. Serial No. 302,681. (No model.)

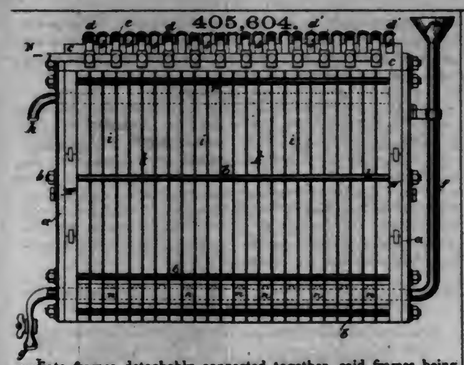


Claim.—As a new article of manufacture, the bedstead-tightener herein described, the same comprising four eyes E, adapted to be screwed into the inner corners of the corner-posts of the bedstead, a single tightening-wire F, rove through said eyes, an apertured plate G, connected at its ends to the ends of said wire and standing adjacent to and parallel with the foot-board D, a cross-wire H, connecting the centers of the side portions *g'* of said wire, a longitudinal wire K, connected at one end to the center of the head portion *g*[a] of said wire, a threaded eyebolt L, connected to the other end of said longitudinal wire, its body passing through the aperture in said plate, and a thumb-nut M, screwed on the outer end of said eyebolt, the whole adapted for use and operation substantially as described.

405,604. PRODUCTION OF COPPER BY ELECTROLYSIS. ALBERTO ROVELLO, Turin, Italy. Filed Apr. 2, 1889. Serial No. 305,681. (No model.) Patented in Italy Sept. 30, 1885, XXXVII, 259, and Mar. 31, 1887, XLI, 386; in France Jan. 27, 1888, No. 173,753, and Sept. 16, 1887, No. 185,873; in Belgium Oct. 5, 1886, No. 74,738, and Sept. 30, 1887, No. 78,910; in Spain Dec. 30, 1887, No. 11,338; in England Aug. 24, 1888, No. 12,206, and in Austria-Hungary Sept. 15, 1888, No. 15,137.

Claim.—1. The herein-described electrolytical apparatus, consisting of a tank or casing formed of two heads and a series of intermediate frames detachably connected together, said frames being provided with porous diaphragms dividing the tank into an equal number of cells, a feed and exhaust duct for each alternate series of cells having its inlet and discharge, respectively, near the bottom of the tank at opposite ends thereof, and an overflow for each of said alternate series of cells, in combination with electrodes for the cells and an electrical circuit including said electrodes.

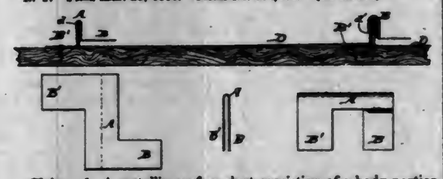
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2. The herein-described electrolytical apparatus, consisting of a tank or casing composed of two heads, whereof one is provided with two feed-ports and the other with two exhaust and two overflow ports, arranged as set forth, a series of intermediate frames, each provided with diaphragms that divide the tank into a plurality of cells, each of said frames having four ports *m m' m'' m'''*, whereof ports *m''* and *m'''* register with said overflow-ports and communicate by ports *n'' n'''* with the interior of the cells, the two other ports *m m'* in the bottom of said frames registering with the feed and exhaust ports in the heads and communicating by ports *n n'* with the interior of said cells, said parts being detachably connected together, for the purpose set forth.

3. The herein-described electrolytical apparatus, consisting of a casing or tank composed of two heads, whereof one is provided with two feed-ports and the other with two exhaust and two overflow ports, arranged as described, a series of intermediate frames provided with porous diaphragms that divide the tank into plurality of cells, a feed and exhaust duct for each alternate series of cells, in communication therewith and with the corresponding ports in the heads of the tank, and an overflow duct for each of said alternate series of cells communicating with the overflow-ports in one of the heads, in combination with electrodes, supporting-rods for the same, provided with conducting-strips *e*[a], electrical conductors, to which the alternate ends of the strips are connected, and an electric circuit including said electrical conductors, for the purpose specified.

405,605. METALLIC ROOFING-CLEAT. LOUDLEY L. SAGENDORPH, Cincinnati, Ohio, assignor of one-half to Charles N. Harder, Fhilmont, N. Y. Filed Mar. 25, 1889. Serial No. 304,707. (No model.)



Claim.—1. A metallic roofing-cleat consisting of a body portion A and tongues B and B', the latter extending out from opposite sides of said body portion and in different planes, substantially as shown and set forth.

2. A metallic roofing-cleat having a body portion A, doubled on itself, and tongues B and B', extending out from opposite sides of said body portion and in different planes, substantially as set forth.

3. In combination with the roofing-plates having the standing flange *d* and overlapping flange *d'*, a cleat having a body portion A and tongues B and B', said body portion of the cleat resting over the flange *d*, and flange *d'* overlapping the body portion of the cleat, the tongue B overlapping and engaging the flange *d'* in a horizontal plane differing from tongue B', substantially as set forth.

405,606. TYPE-WRITING MACHINE. CHARLES E. SARGENT, Utica, N. Y. Filed Mar. 26, 1886. Serial No. 196,720. (No model.)

Claim.—1. In a type-writing machine having a carriage and a platen, the combination, with the platen, of the gravity pivoted paper-holding device pivoted in the carriage back of the platen substantially



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on the same horizontal plane, the lower portion of the paper-holding device falling under the platen, the rear of the paper-holding device forming an extended lever-plate, whereby its lower edge is always held by gravity under uniform pressure against the paper between it and the platen, substantially as set forth, for the purposes stated.

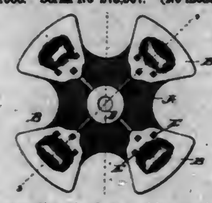
2. The combination, with the platen, of the independently-adjustable stops mounted in front thereof, each stop having a curved end underneath the platen, and the tilting pivoted gravity paper-holding device pivoted back of the platen, the lower edge thereof resting below the platen, substantially as set forth.

3. The combination of the independently-adjustable stops mounted in front of the platen, each stop having a downward-projecting lug, with the pivoted stop for engaging the lug, substantially as set forth, whereby the travel of the carriage may be limited.

4. The combination, with the adjustable stops mounted in front of the platen, each stop having a downward projection, of the slotted pivoted stop pivoted to the frame, with means, substantially as described, for limiting its movement, whereby the travel of the carriage is limited, substantially as set forth.

5. The combination, with the carriage, of the adjustable stops having projections, the pivoted stop pivoted to the frame to engage the projections, the extension-arm carrying a pivoted cam, the pivoted bell-arm for engaging the cam, and the bell, arranged substantially as set forth, for the purposes stated.

405,607. SPROCKET-WHEEL. WILLIAM E. SELLECK, Chicago, Ill. Filed May 9, 1888. Serial No. 273,367. (No model.)



Claim.—In a sprocket-wheel, the spider provided with strengthening-ribs on the legs thereof, constituting shoulders, in combination with sprockets, also provided with shoulders bearing against the ends of said legs, the ends of said sprockets bearing against the shoulders of the strengthening-ribs, and bolts intermediate said shoulders for detachably securing the sprockets to the spider, substantially as described.

405,608. CONVEYER. WILLIAM J. SELLECK, Riverside, Conn., assignor to Hamilton Borden and William E. Selleck, Chicago, Ill. Filed Apr. 28, 1888. Serial No. 272,106. (No model.)



Claim.—1. In a conveyer, the combination of a trough, the carrier-plates, the supporting-links thereof, a series of main links, and a series of connecting-links embracing the main links, the inner longitudinal diameter of said connecting-links corresponding substantially with the diameters of the two opposing end bars of the main links confined therein, substantially as described.

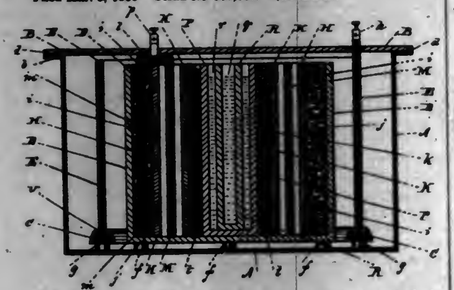
2. In a conveyer, the combination of a trough, the carrier-plates, the supporting-links thereof, the main links, and a series of connecting-links uniting said main links and supporting-links and having an inner diameter corresponding with the diameters of the end bars of the two opposing main links working therein, the sides of said main links and connecting-links being respectively arranged parallel and at a right angle to the sides of the carrier-plates, substantially as described.

3. In a conveyer, the combination of the carrier-plates, the sup-

porting-links thereof, the main links, and a series of connecting-links, the inner longitudinal diameter of which corresponds with the diameters of the two opposing end bars of the main links and the transverse diameter of said connecting-links with the diameter of one of said end end bars, substantially as described.

4. In a conveyer, the combination of a conveyer-trough the bottom of which is V-shaped in cross-section, a series of hexagonal-shaped carrier-plates, the supporting-links thereof, a series of main links and a series of connecting-links, the longitudinal and transverse diameters of which latter correspond, respectively, with the diameters of the two opposing end bars of the main links and the diameter of one of said bars, substantially as described.

405,609. GALVANIC BATTERY. JAMES SERSON, Boston, Mass., assignor to the Potter-Compton Electric Company, New York, N. Y. Filed Mar. 5, 1889. Serial No. 301,847. (No model.)



Claim.—1. In an electric battery of the character described, the combination of a containing-jar, a porous cup supported on legs within said jar, two detachable foraminous cylinders within said cup, and a porous jar within said cylinders, substantially as and for the purpose set forth.

2. In an electric battery, the combination of a containing-jar, a porous cup supported on legs within said jar, a gutter for the zinc pole disposed on legs around said cup, two foraminous cylinders within said cup, a porous cup within the inner cylinder, and a porous cup within said inner cup, all being arranged to operate substantially as described.

3. In an electric battery, the combination of a containing-jar provided with a cover, a porous cup in said jar provided with legs, a gutter surrounding said jar and containing mercury, said gutter having legs, a zinc cylinder in said gutter, an acid solution for said zinc, a perforated cylinder in said cup, broken carbon between said cup and cylinder, a perforated cylinder within said first cylinder, a carbon plate between said perforated cylinders, a porous cup within the inner cylinder surrounded with bichromate of potash and containing sulphuric acid, and a porous cup immersed in said acid and containing nitric acid, substantially as and for the purpose set forth.

4. In an electric battery, the combination of a containing-jar, a porous cup supported on legs within said jar, two perforated cylinders within said cup, and a carbon plate between said cylinders, substantially as described.

5. In an electric battery, the combination of a containing-jar, a porous cup supported on legs within said jar, two perforated cylinders within said cup, an inner porous cup within the inner cylinder, and an innermost porous cup within the inner porous cup.

6. In an electric battery, the combination of a containing-jar, a porous cup therein, two perforated cylinders, one within the other and both within said cup, a carbon plate between said perforated cylinders, broken carbon between the outer perforated cylinder and said cup, and arms extending from the carbon plate into the space between the outer perforated cylinder and porous cup and connecting the carbon plate with the broken carbon.

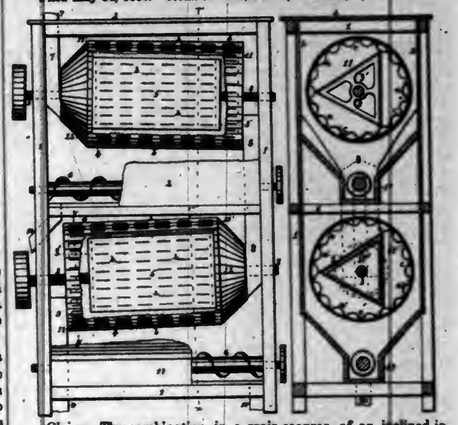
7. In an electric battery, the combination of the jar A, having the cover B, the porous cup D, provided with legs *f*, the gutter C, having legs *g*, and disposed around said cup, the zinc cylinder E in said gutter, the perforated cylinders H K, disposed within said cup, the carbon plate M between said cylinders, provided with an arm extending laterally from the plate and downwardly into the space between the outer perforated cylinder and said porous cup D, the porous cup P within the cylinder K, and the porous cup R within the cup P, substantially as described.

8. In an electric battery, the combination of the jar A, provided with the cover B, the porous cup D, having legs *f*, the gutter C, containing free mercury and having legs *g*, the zinc M in said mercury, an acid solution for said zinc, the cylinders H K in said cup, the carbon plate M between said cylinders, and having an arm extending laterally from said carbon plate and downwardly into the space between the outer perforated cylinder and said porous cup D, broken carbon in said space, the porous cup P, containing sulphuric acid and surrounded by bichromate of potash, and the porous cup R, containing nitric acid, substantially as described.

405,610. PROCESS OF CLEANSING RAW SUGAR, &c. ADOLF SEYFERTH, Auerbach, Hesse, Germany, assignor to Louis Engelbert, New York, N. Y. Filed May 4, 1889. Serial No. 309,589. (No specimens.)

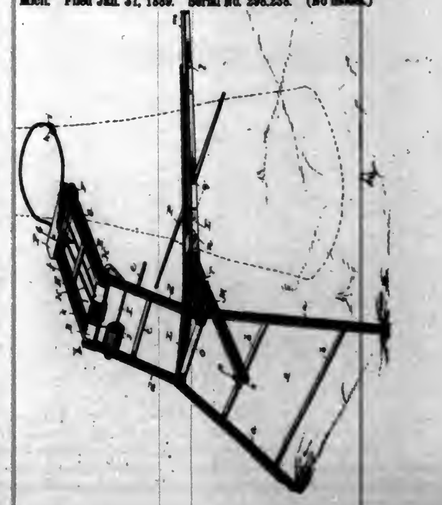
Claim.—The improvement in cleansing raw crystals herein described, which consists in supplying them with sufficient water to form a concentrated solution of the impurities present and in washing away the dissolved impurities by forcing through the resulting magma a washing-fluid—such as paraffine-oil—which is not capable of dissolving the crystals, and is not soluble in water nor in the mother-liquor in which the crystals were formed.

405,611. GRAIN-SCOURER. SILAS S. SHAVER, Clintonville, Wis. Filed May 31, 1887. Serial No. 239,909. (No model.)



Claim.—The combination, in a grain-scourer, of an inclined inwardly-punched cylindrical screen, the inner surface of the screen being composed of elevated and depressed portions arranged alternately and longitudinally with the screen, whereby grain will be carried partially around the screen, feed-openings in the highest end of the screen, discharge-openings in the lowest end of the screen, and a triangular outwardly-punched screen within and shorter than said cylindrical screen, one end thereof attached to the end plate of the cylindrical screen at its highest end, the other supported upon the shaft aforesaid independently of the lowest end of the cylindrical screen, substantially as described.

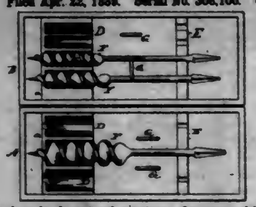
405,612. CORN-SHOCK BINDER. MOSE SPARLOCK, Orleans, Mich. Filed Jan. 31, 1889. Serial No. 298,238. (No model.)



Claim.—1. The combination, with the support A, of the pivoted arms *d*, the pivoted arms E, carried thereby, the arms L, pivoted to the support A, the pole *m*, pivoted to the arms L, and the removable bar P, substantially as and for the purpose specified.

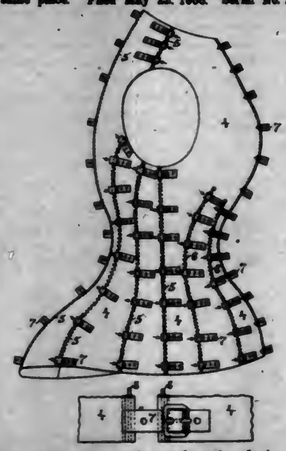
2. The combination, with the support A, of the pivoted arms *d*, the pivoted arms E, carried thereby, the arms L, pivoted to the support A, the pole *m*, pivoted to the arms L, the compressing mechanism, and the brace-arm M, pivoted at one end to said arms L and at the other end detachably engaging the cross-bar of the support, substantially as described.

405,613. PACKAGE FOR AUGER-BITS. NORMAN SPERRY, Seymour, Conn. Filed Apr. 22, 1889. Serial No. 308,100. (No model.)



Claim.—The herein-described package for auger-bits, consisting of a box provided with a grooved rack adapted to receive the twist ends, with a support for the shank ends of the bits, the said grooves for the twist of the bits constructed with an inwardly-projecting flange at their outer ends, with which the lips of the bits may engage, and a clamp to hold the bits in place, substantially as described.

405,614. GARMENT-MEASURING DEVICE AND CUTTING-GUIDE. ELVIRA STEARNS, Providence, R. I., assignor of one-half to Elizabeth A. Sayles, same place. Filed May 22, 1888. Serial No. 274,698. (No model.)



Claim.—A garment measuring and cutting device consisting of sections of inelastic material, the edges of each section strengthened by flexible wires secured to the edges of the inelastic material, and provided with adjusting-straps constructed to form an accurately-fitting garment when secured, and accurate patterns and guides for cutting the material when the sections are separated, as described.

405,615. APPARATUS FOR FEEDING BOILERS OR WATER-TANKS. JOEL W. STEVENS, Chicago, Ill., assignor to himself and Robert Bruce, same place. Filed Jan. 2, 1889. Serial No. 295,244. (No model.)

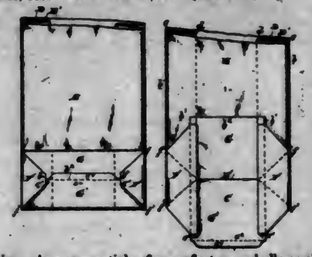


Claim.—1. The combination, with a water-receiving vessel and a supply-pump connected therewith, of a valve-section located in the steam-supply pipe of the pump, normally held open by the steam-pressure and adapted to be automatically closed by the back-pressure from the water-supply pipe of the tank to cut off the steam supply, substantially as described.

2. The combination, with a steam-pump, a water-receiving vessel connected therewith, and a pipe for supplying steam to the pump, of a valve-section located in the steam-supply pipe of the pump and provided with an opening *e*, the plunger *g*, located beneath said opening and carrying a valve *f*, and the back-pressure pipe *j*, substantially as described.

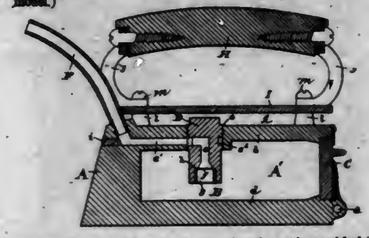
3. The combination of a steam-pump, a boiler, a water-receiving vessel, a pipe for supplying steam to the pump, pipes for conveying water from the pump to the water-receiving vessel and boiler, a valve-section located in the steam-supply pipe of the pump, a back-pressure pipe leading to said valve-section, and a valve normally held open by steam-pressure and automatically closed by the back-pressure of water, substantially as described.

405,616. PAPER BAG. CHARLES B. STILWELL, Philadelphia, Pa., assignor to the Union Paper Bag Machine Company, same place. Filed Jan. 21, 1889. Serial No. 297,063. (No model.)



Claim.—As a new article of manufacture, a bellows-sided satchel-bottomed paper bag having its bottom formed with side folds substantially equal in breadth to one-half the breadth of its tucked-in sides, its final folds formed with parallel-sided flaps of such a breadth that they will overlap the said folds sufficiently to form a strong pasted seam therewith, and a prolongation of one of the flaps sufficient in length to overlap and form a pasted seam with the other flap.

405,617. SAD-IRON. CHARLES A. STOCKWELL and WILLIAM D. ROSSE, Baltimore, Md. Filed Sept. 12, 1888. Serial No. 285,173. (No model.)



Claim.—1. A sad-iron having a chamber A', provided in the top with an opening *c*, and a screw-plug D, closing the opening, and a burner in the chamber having a perforated or wire-gauze disk *f*, confined by a mouth-ring *g*, as set forth.

2. A sad-iron having a chamber A', provided in the top with an opening *c*, and a screw-plug D and a duct *c'* in the iron-body closed by a plug *i*, and a burner within the chamber having a duct with a right-angled bend which connects with the said duct in the iron-body, as described.

3. A sad-iron having a chamber A', provided with a top opening *c*, and a duct *c'* in the iron-body closed by a plug *i*, and a screw-plug D, closing the top opening *c* and having attached a burner whose supply-duct *e* is in communication with the said duct in the iron-body, substantially as described.

4. A sad-iron having a chamber A', provided with a top opening *c* and a duct in the iron-body, and a screw supply-plug D, for closing said opening, and having an exterior annular groove *c²*, and a burner whose supply-duct *e* opens at said annular groove.

405,618. DIE FOR SHAPING SHEET METAL. ORRIN W. SWIFT, New Haven, Conn. Filed Sept. 24, 1888. Serial No. 286,172. (No model.)

Claim.—The herein-described dies for the manufacture of articles from burnished sheet metal, consisting in a pair of dies presenting faces of reverse shape corresponding to the two sides of the article to be produced, the surface corresponding to the burnished surface of

405,618.



the article to be produced being covered with soft non-metallic material, the said non-metallic material being secured directly to the said surface by suitable adhesive material, substantially as described.

405,619. **WOOL-WASHING MACHINE.** STEPHEN C. TAFT, Franklin, Mass., assignor of one-half to Joseph R. Clark, same place. Filed Jan. 17, 1889. Serial No. 296,633. (No model.)



Claim.—1. In a wool-washing machine, the combination of a tank having perforated ends, a heavy roller extending transversely across the same from side to side, mechanism for reciprocating the roller to cause it to travel backward and forward over the wool at the bottom of the tank, and a device for ejecting or spraying water onto the wool while being washed by the action of the roller, all operating substantially in the manner and for the purpose described.

2. In a wool-washing machine, the combination of the tank A, provided with a lining *b*, having its ends *c* curved in the arc of a circle and provided with perforations *f*, as described, the chambers *d*, between the said ends *c* and the ends of the outer casing of the tank, provided with means for discharging water therefrom, and a reciprocating roller B, extending transversely across the tank from one side to the other and adapted to alternately pass over the wool and forcibly expel the water squeezed therefrom through the perforated ends *c* of the tank into the chambers *d*, all constructed and arranged to operate substantially in the manner and for the purpose set forth.

405,620. **HOT-AIR REGISTER.** HORACE K. TALLMADGE, Buffalo, N. Y. Filed Mar. 28, 1889. Serial No. 305,051. (No model.)



Claim.—1. In a hot-air register, the combination, with the register-box and a damper arranged in the lower portion thereof, of a removable top plate arranged at the upper end of the register-box and carrying the damper and its supports, substantially as set forth.

2. In a hot-air register, the combination, with the register-box and a damper arranged in the lower portion of said box, of a removable top plate arranged at the upper end of the register-box and supporting-arms depending from the top plate and carrying the damper, substantially as set forth.

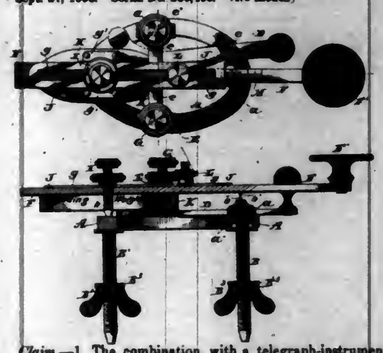
3. In a hot-air register, the combination, with the register-box and a damper arranged in the lower portion of said box, of a removable top plate arranged at the upper end of the register-box, supporting-arms depending from the top plate and carrying the damper, and stops or shoulders arranged on said arms, whereby the tilting movement of the damper is limited, substantially as set forth.

4. In a hot-air register, the combination, with the register-box and a damper arranged in the lower portion of said box, of a removable top plate arranged at the upper end of the register-box, supporting-arms depending from the top plate and carrying the damper, a shifting button or knob arranged on the top plate, and a rod connecting the damper with said shifting button, substantially as set forth.

5. In a hot-air register, the combination, with the register-box, of a top plate arranged at the upper end of said box, a pivoted damper arranged in the lower portion of the register-box, a shifting button sliding in a way in the top plate and provided with friction-springs, and a rod connecting said button with the damper, substantially as set forth.

6. In a hot-air register, the combination, with the register-box having an opening in its bottom, of a recessed collar fitted in said opening, a top plate arranged at the upper end of said box and having depending supporting-arms fitting in the recesses of said collar, and a damper pivoted between said arms, substantially as set forth.

405,621. **KEY.** CLARENCE W. TAYLOR, Janesville, Wis. Filed Sept. 27, 1888. Serial No. 286,488. (No model.)

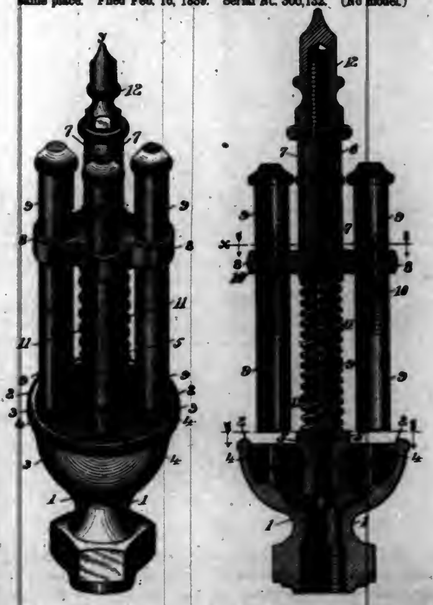


Claim.—1. The combination, with a telegraph-instrument, of a vibrating lever mounted therein, a sliding plate having a longitudinal slot carried on the lever, a weight suspended from the sliding plate and provided with a longitudinal slot, and a set-screw adapted to pass through the slot in the sliding plate and into the lever to retain said plate at any desired adjustment, substantially as set forth.

2. The combination, with a telegraph-instrument, of a vibrating lever mounted therein, a sliding plate carried on said lever, a scale on the lever with which the plate is adapted to register, a weight suspended from the sliding plate, and a set-screw for retaining said sliding plate at any desired adjustment, substantially as set forth.

3. The combination, with a telegraph-instrument, of a vibrating lever having torsional trunnions mounted on the posts of said instrument, a bar fixed to each of said posts and extending inwardly beneath the trunnions, and loops carried by the trunnions and encircling the fixed bars, substantially as set forth.

405,622. **STEAM-WHISTLE.** EDWIN R. TOMLINSON, Bridgeport, Conn., assignor of one-half to the Eaton, Cole & Burnham Company, same place. Filed Feb. 16, 1889. Serial No. 300,132. (No model.)



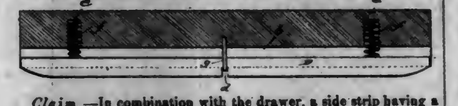
Claim.—1. The combination, with the steam-bowl, the same having in its upper surface a plurality of annular steamways leading outward from said bowl, of the squared vertical stem, the bracket arranged upon said squared portion, the tubes secured in said brackets, one over each steamway, and means, as described, for raising and lowering the bracket and tubes, substantially as set forth.

2. The combination, with the steam-bowl, of the pierced cover at the top thereof, the plugs arranged within said bowl and projecting upward through said holes, whereby annular steam-exits are afforded, the central stem mounted upon said bowl, and the plurality of tubes mounted on said stem and arranged one over each of the annular steam-exits, substantially as set forth.

3. The combination, with the bowl having the plurality of annular steam-exits in the upper face thereof, of the outwardly-projecting stem, squared for a portion of its length, the bracket mounted upon said squared portion, the resonant tubes secured in said bracket, one above each steam-exit, the spring coiled about the stem and pressing upward against the bracket, and the nut screw-threaded upon the top of the stem and adapted to control the position of the bracket, substantially as specified.

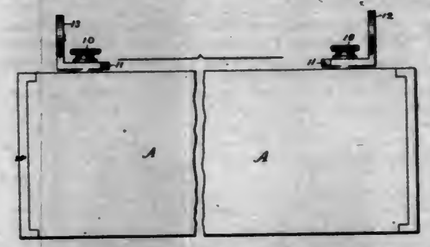
4. The combination, with the bowl having the steam-exits formed therein, of the stem, the plurality of tubes arranged about said stem, each tube interiorly screw-threaded and provided with a movable plug, whereby the tone of the tube may be varied, and the spring and nut for the elevation or depression of the tubes, substantially as set forth.

405,623. **SLIDE FOR DRESSING-CASES.** WILLIAM P. TRACY, Grand Rapids, Mich. Filed Oct. 2, 1888. Serial No. 286,975. (No model.)



Claim.—In combination with the drawer, a side strip having a plain groove, a plain notched bearing-strip therein, springs underneath said strip, and a staple or staples set in the side piece astride the bearing-strip at the notches, all substantially as described.

405,624. **SIGHTING ATTACHMENT FOR SPIRIT-LEVELS.** JUSTUS A. TRAUT, New Britain, Conn., assignor to the Stanley Rule and Level Company, same place. Filed Jan. 22, 1889. Serial No. 297,308. (No model.)



Claim.—1. The combination of a level stock or bar with the bases 6 6, adjustable with reference to a given surface of said stock or bar, the sights adapted to be seated upon the face of said bases, and devices for attaching said sights to and detaching them from said bases, substantially as described, and for the purpose specified.

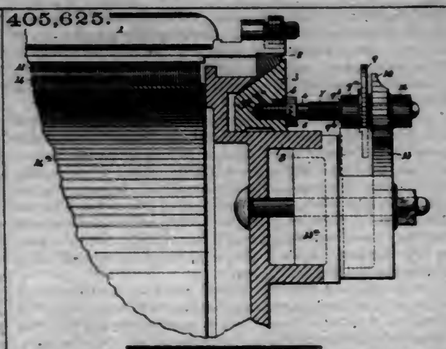
2. The combination of a level stock or bar, the non-projecting bases 6 6, adjustable with reference to a given surface of said bar or stock and provided with a threaded hole, the holding-screws 10, and the sighting attachments having a projecting seat upon the under side of their base-plates for resting upon said bases 6 6, substantially as described, and for the purpose specified.

405,625. **DEVICE FOR ADJUSTING CARD-PLATE.** EDMUND TWEEDALE, Accrington, County of Lancaster, England, assignor to John Bullough, same place. Filed May 28, 1888. Serial No. 275,371. (No model.) Patented in England Sept. 28, 1885, No. 11,514.

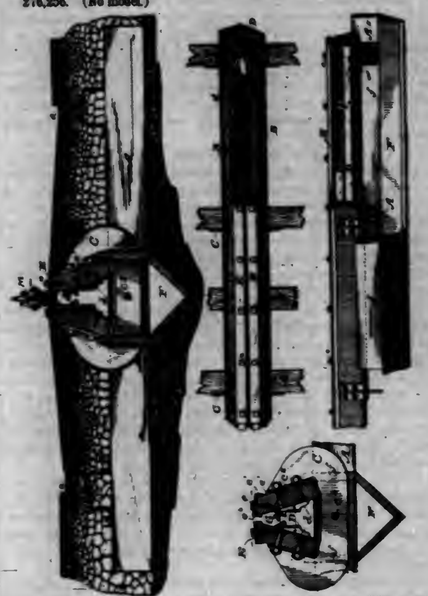
Claim.—1. In combination with the card-flat, the flexible ring 2 and the cone 3, an operating-rod for said cone having a threaded end adapted to the threaded opening in the cone, the jam-nut 5 and locking-pin 6 for holding the rod against rotary movement, the bearing 13 for the rod, the movable dial having the nut 9*, and the nut 12, substantially as described.

2. In combination with the card-flat, flexible ring 2 and cone 3, the longitudinally-movable rod, said rod being threaded, the movable dial having the nut 9* on said rod, the bearing 13, and the nut 12, substantially as described.

405,625.



405,626. **SLOTTED CONDUIT FOR ELECTRICAL CONDUCTORS.** CHARLES J. VAN DEPOELE, Chicago, Ill. Filed June 6, 1888. Serial No. 276,256. (No model.)



Claim.—1. A conduit for electrical conductors, comprising an exterior casing having side walls of insulating material, yokes for supporting and sustaining said side walls, supports arranged within the conduit and attached to the insulating side walls, and conductors secured to said supports, substantially as described.

2. A conduit for electrical conductors, comprising side walls of wood, metallic yokes within which the side walls are secured, conductors mounted between said side walls, and metallic capping-plates resting upon the upper edges of the side walls, substantially as described.

3. A conduit for electrical conductors, comprising metallic yokes located between the rails of a railway-track and sustained upon the cross-ties thereof, said yokes being provided with interior flanges for attachment to the exterior of and constituting seats, and inclined lateral supports for the side walls of the conduit, and side walls secured within said yokes at an angle from the vertical.

4. A conduit for electrical conductors, comprising metallic yokes located between the rails of a railway-track and sustained upon the cross-ties thereof, and having interior flanges at an angle from the vertical, side walls arranged within said yokes and secured against the flanges thereof, and inclined toward each other at their upper edges and provided with metallic capping-plates along their upper edges, substantially as described.

5. The combination, in a conduit for electrical conductors, of one or more electrically-connected conductors secured to insulating-supports arranged within said conduit and representing one side of the

circuit, metallic capping-plates on the exterior edges of the side walls of said conduit and electrically connected to form the other side of the circuit, and a contact-truck comprising metallic wheels arranged to travel upon and in continuous contact with the capping-plates, and contact devices for continuous contact with the conductors within the conduit, substantially as described.

6. A conduit for electrical conductors, comprising side walls of insulating material, metallic yokes within which said sides are supported at the desired distance apart, metallic capping-plates secured upon the upper edges of the side walls and connected to form one side of the circuit, conductors mounted upon insulating-supports attached to the inner sides of the conduit and forming the other side of said circuit, and a contact-truck comprising supporting-wheels moving upon the exposed conductor, and an insulating contact device extending into the conduit and into contact with the interior conductors, substantially as described.

7. A contact device for electrical conduits, comprising one or more spring-actuated contacts engaging the conductors of one side of the circuit, an insulated connection and support extending therefrom and carrying wheels or contacts pivotally connected to the insulating-support and making contact with the other side of the circuit, substantially as described.

8. The combination, with a conduit for electrical conductors provided with main conductors of one polarity upon the interior thereof and conductors of opposite polarity upon the exterior thereof, of a contact device comprising a plurality of spring-supported contacts engaging the main conductors within the conduit, an insulated connection and support extending therefrom, and a carrying-wheel pivotally connected to each end of the insulating-support and making contact with the conductors upon the exterior of the conduit, substantially as described.

9. The combination, with a conduit for electrical conductors comprising a protective casing, insulated conductors of one polarity within the casing, metallic capping or surface-plates upon the exterior of the casing and connected to form the other side of the circuit, a contact device comprising a plurality of spring-supported contacts disposed between the main conductors, an insulated connection and support extending therefrom, and carrying-wheels pivotally connected to each end of the insulating-support and engaging the other side of the circuit, substantially as described.

10. A conduit for electrical conductors, comprising a protective casing, insulated conductors within the casing and representing one side of the circuit, protective metallic plates upon the exterior of the casing, said plates being connected to form the other side of the circuit, a contact device comprising a plurality of spring-actuated contacts engaging the conductors within the conduit, an insulated connection and support extending from said contact, and metallic carrying-wheels formed with a central rib or projection and pivotally connected to each end of the insulating-support and arranged to engage the exterior conductors, substantially as described.

11. The combination, with a contact-truck and a moving vehicle, of elastic draft connections extending between the truck and vehicle, an inelastic connection extending along said elastic connections and arranged to limit the expansion thereof under abnormal strain, and a detachable connection between said connections and the vehicle, substantially as described.

12. A contact-truck for electrical conduits, comprising a wheeled exterior support moving upon the surface of the conduit, insulated contact devices extending from the support into the conduit, and one or more rigid guides extending from the supports of the wheels and entering the slot in advance thereof, substantially as described.

13. A contact-truck for electrical conduits, comprising supporting-wheels moving upon the conduit, contact devices extending into the conduit, and an extension or extensions projecting into the slot in advance of the supporting-wheels for removing obstructions, substantially as described.

14. A conduit for electrical conductors, comprising walls of insulating material, conductors secured to said walls, and inwardly-extending and downwardly-inclined deflecting strips or boards above the conductors, substantially as described.

15. A conduit for electrical conductors, insulating-supports for the conductors therein, and inwardly-extending and downwardly-inclined drip-water deflecting boards or strips above the conductors, substantially as described.

405,627. SWITCH FOR SUSPENDED ELECTRIC CONDUCTORS.

CHARLES J. VAN DEPOELE, Lynn, Mass. Filed Feb. 19, 1889. Serial No. 300,395. (No model.)



Claim.—1. A switch for electric conductors, comprising a rib or member for each conductor, the inner extremities of which are arranged to intersect or lap, and a bridge or body by which said members are connected, substantially as described.

2. A switch for electric conductors, comprising a rib or member for each conductor, and a bridge or body formed integral with said ribs by which they are connected, substantially as described.

3. A switch for electric conductors, comprising a rib or member for each conductor, the inner extremities of the ribs being arranged to intersect or lap, substantially as described.

4. A switch for electric conductors, comprising a rib or member for each conductor, and a bridge or body by which said members are connected, the inner extremities of the several members being arranged to intersect or lap, substantially as described.

5. A switch for electric conductors, comprising a plurality of arms or members, to which the conductors are connected, the inner extremities of the members being arranged to intersect or lap, a block located at the point of intersection of the several members, and ways or channels between the intersecting members, substantially as described.

6. A switch or crossing for electric conductors, comprising arms or members the inner extremities of which are arranged to intersect or lap, said arms being connected to the crossing-conductors, a central block, and passages around the block and between the extremities of the conductors for the passage of the trolley-wheel in the desired direction, substantially as described.

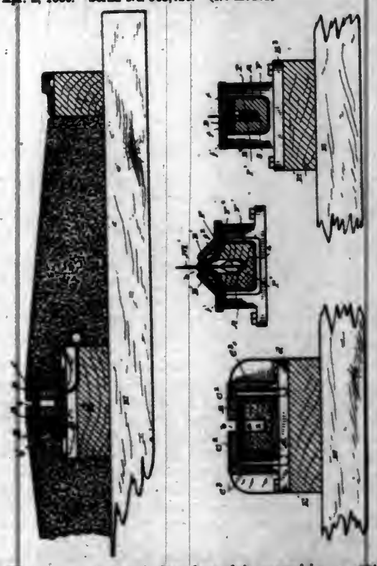
7. A switch for suspended conductors, comprising a rib or member for each conductor, said members being supported and connected at their inner extremities and having said extremities arranged to lap or intersect, so that one flange of the trolly-wheel will engage the leaving rib before the other flange becomes disengaged from the entering rib, substantially as described.

8. A switch for suspended electric conductors, comprising a rib or member for each conductor, each member being formed with an opening or groove to receive the conductor and with a rib or part extending from the openings or grooves to carry the contact device to the point of divergence, substantially as described.

9. A switch for suspended electric conductors, comprising a rib or member for each conductor, each member being formed with an opening to receive the extremity of the conductor, and with a rib or part extending from the said openings, forming continuations of the conductor to carry the contact device to the point of divergence, substantially as described.

405,628. CLOSED SLOTTED CONDUIT FOR ELECTRIC RAILWAYS.

CHARLES J. VAN DEPOELE, Lynn, Mass. Original application filed Jan. 5, 1889, Serial No. 295,806. Divided and this application filed Apr. 2, 1889. Serial No. 305,722. (No model.)



Claim.—1. A closed slotted conduit comprising a protective casing, an insulating-lining therefor, an electric conductor supported within the lining, surface or capping plates forming a part of the conductor-support, flexible fibrous packing-strips adjacent to the edges of the protective casing, and springs behind the strips for holding them in contact to close the slot, substantially as described.

ing, metallic chairs for supporting the capping-plates, and continuous strips of insulating material between the capping-plates and the lining for insulating the said lining from the surface-plates and closing the conduit, substantially as described.

2. A closed slotted conduit for electric conductors, comprising an exterior metallic casing formed with a slot along its upper side, an interior insulating-support, a conductor attached to said interior support, and flexible insulating slot-closing strips interposed between the edges of the metallic casing and acting to close the conductor-containing chamber, substantially as described.

3. A closed slotted conduit comprising a slotted metallic tube or chamber extending along the line of way, an insulating-lining within said chamber, a main supply-conductor secured to and supported by the insulating-lining within the conduit, and flexible insulating-strips on the under side of each side of the slot, said strips being normally in contact and acting to close the slot against the entrance of water, substantially as described.

4. A closed conduit comprising a slotted metallic casing extending along the line of way, a slotted insulating-lining within said chamber, a main supply-conductor supported by said insulating-lining, flexible insulating-strips arranged on the under side of each side of the slot between the metallic casing and the interior insulation, the adjacent edges of said strips being normally in contact to close the same, and a traveling contact device engaging the conductor, and a thin plate or extension connected to the contact and extending upward between the edges of the slot-closing strips, substantially as described.

5. A conduit for electric conductors, comprising sections of metallic casing, a chair for supporting and uniting the same formed in part of greater internal diameter than the ends of the sections to be united, and a yielding water-proof packing filling the space between the interior of the chairs and the ends of the sections to be united, substantially as described.

6. A contact device for slotted conduits, provided with non-conducting slot-closing strips, comprising a plate extending through the slot-closing material and elongated at its lower portion, and formed with upwardly-inclined sloping edges for opening the slot with an upward movement, contact devices attached to the lower portion of and moving with said plate, and connections secured to the plate for propelling the said plate along the conduit, substantially as described.

7. A contact device for closed slotted conduits, comprising a protected conducting-plate extending through the slot of the conduit, connections secured to said plate for propelling the same along the conduit, contact devices attached to and moving with said plate and adapted to engage the conductor within the conduit, and a plow secured to the portion of the plate exterior to the conduit and moving upon the exterior thereof, substantially as described.

8. A contact device for closed slotted conduits, comprising a protected metallic plate, connections secured to said plate for propelling the same along the conduit, contact devices attached to and moving with said plate and adapted to engage the conductor within the conduit, and a plow insulated from and surrounding the portion of the conducting-plate exterior to the conduit and moving upon the exterior thereof, substantially as described.

9. A contact device for slotted conduits, provided with non-conducting slot-closing strips, comprising a protected metallic plate extending through the slot-closing material, a contact device attached to the plate for engaging the conductor within the conduit, and protective metallic plates pressing upwardly against the under sides of the opening into the conduit, substantially as described.

10. A contact device for electric conduits, comprising a protected metallic plate, rubbing-blocks attached to the lower extremity thereof and adapted to engage the conductor within the conduit, springs secured to the plate and pressing the blocks downwardly upon the conductor, protective metallic plates pressing upwardly against the under sides of the slot-closing devices, and a plow of insulating material attached to and surrounding the conducting-plate above the slot-closing devices, substantially as described.

11. In a conduit for electric conductors, the combination, with a solid grooved insulating-support, of a conductor in said groove, said conductor formed of sections, and metallic couplings slipped upon and uniting the ends of the sections, substantially as described.

12. A contact device for closed slotted conduits, comprising contacts adapted to engage the conductor or conductors within the conduits, an extension therefrom consisting of a mechanically and electrically protected conductor adapted to be moved between and to support the slot-closing material, substantially as described.

13. A closed slotted conduit comprising a protective casing formed with a slot along its upper side, an interior insulating conductor-support, flexible non-conducting slot-closing strips adjacent to the edges of the protective casing, and springs behind the strips for holding them in contact to close the slot, substantially as described.

14. A closed slotted conduit comprising a protective casing formed with a slot along its upper side, an interior insulating conductor-support, flexible fibrous packing-strips adjacent to the edges of the protective casing, and springs behind the strips for holding them in contact to close the slot, substantially as described.

15. A closed slotted conduit comprising an exterior protective casing, a flexible insulating-lining within the casing, a conductor or conductors inclosed within the lining, and flexible cushions behind the upper edges of the lining for holding the same in contact, substantially as described.

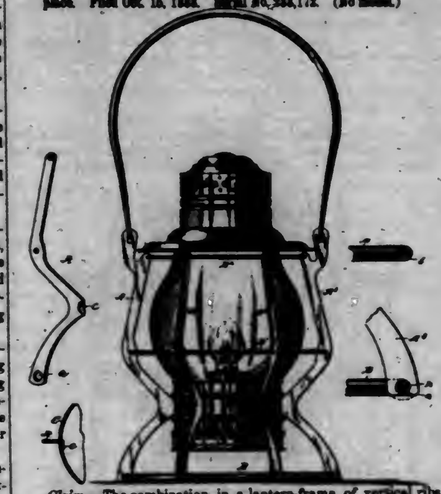
16. A protective casing for slotted conduits, comprising a sheet-metal body or trough, metallic chairs for removably sustaining the body of the conduit, and capping-plates securing the trough in position, said capping-plates being sustained and secured upon the chairs and extending over the said body or trough, substantially as described.

17. A protective casing for slotted conduits, comprising a sheet-metal body or trough formed with lateral flanges, metallic chairs for receiving the body of the conduit, and upon the upper extremities of the arms of which the said flanges rest, and capping-plates resting upon the flanges of the body of the conduit and secured to the chairs, substantially as described.

18. The combination, with the conduit of the class described, of the rail-supporting cross-ties, a continuous longitudinal support also upon said cross-ties, chairs attached to said support at suitable intervals, and the conduit sustained within the chairs, substantially as described.

405,629. LANTERN-FRAME.

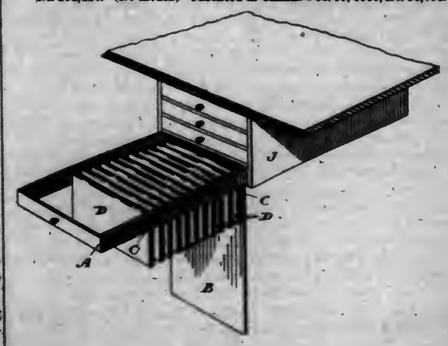
ISAAC VAN HAGEN, Chicago, Ill., assignor, by mesne assignments, to James H. Raymond, trustee, same place. Filed Oct. 15, 1888. Serial No. 288,172. (No model.)



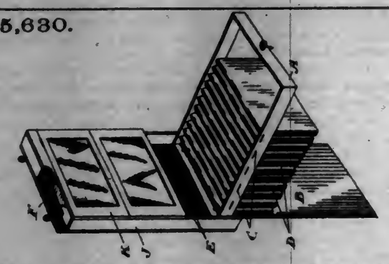
Claim.—The combination, in a lantern-frame, of vertical ribs of rectangular cross-section, horizontal ribs passing through the vertical ribs, an oil-pot holder having slots corresponding to the vertical ribs, and lugs bent at right angles to the body of said ribs and adapted to enter said slots, as described.

405,630. CASE FOR DISPLAYING SHEETS OF PAPER.

MAURICE M. VARDON, Toronto, Ontario, Canada. Filed Jan. 30, 1889. Serial No. 298,127. (No model.) Patented in Canada Feb. 15, 1889, No. 30,706.



405,630.



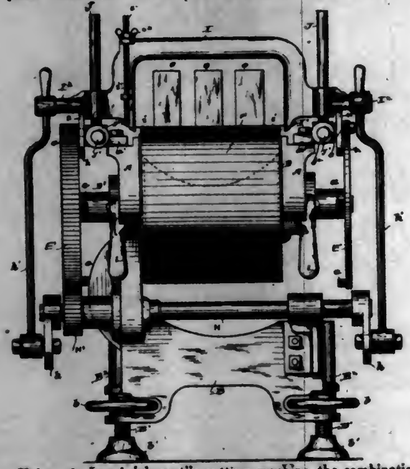
Claim.—1. A frame A, having a series of wires C strung across it to form supports for sheets of paper D, and a back B, hinged to the frame A at one end thereof, in combination with a case J, designed to receive the frame and its contents, substantially as and for the purpose specified.

2. A horizontal frame A, having a series of wires strung across it, each wire being slightly below the other, commencing at the farthest wire from the hinge, in combination with a case J, designed to receive the frame A, substantially as and for the purpose specified.

3. A frame A, having a series of wires strung across it, each wire being slightly below the other, commencing at the farthest wire from the hinge, in combination with a back B, hinged to the frame A, and the case J, designed to receive the frame A, and back B, substantially as and for the purpose specified.

4. A frame A, having a series of wires C strung across it designed to support the sheets of paper D, combined with cords E, attached at one end to said frame, the spring-roller F, having one end of said cords attached thereto, and the case J, substantially as and for the purpose specified.

405,631. BRICK OR TILE CUT-OFF MACHINE. WILLIAM W. WALLACE, Willoughby, Ohio, assignor to J. W. Penfield & Son, same place. Filed Sept. 27, 1888. Serial No. 286,501. (No model.)



Claim.—1. In a brick or tile cutting machine, the combination, with horizontally-moving carrier, of cutter reciprocating on vertical ways, such ways being mounted on horizontally-sliding bars, mechanism, substantially as indicated, for automatically actuating the cutter by the movement of the said carrier, substantially as set forth.

2. The combination, with horizontally-moving carrier, of cutter reciprocating on vertical ways, said ways being mounted on sliding bars, the latter operating in a plane parallel to the movement of the carrier, mechanism, substantially as indicated, for operating the cutter and intermittently moving the cutter in unison with the carrier, substantially as set forth.

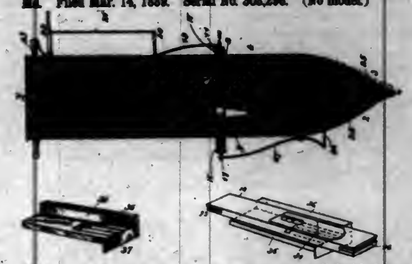
3. The combination, with endless apron and drums for supporting the same, of supporting-frame on which the journal-boxes of the said drums are supported, the said frames being open on the one side, substantially as indicated, whereby the endless apron may be removed from the table intact, substantially as set forth.

405,632. NUT-LOCK. CHARLES H. WARREN, Peterborough, N. H. Filed June 23, 1888. Serial No. 277,955. (No model.)



Claim.—A nut-lock consisting of a washer having portions of the metal surrounding the bolt-opening struck up to form opposed inward-projecting serrated tongues for engaging the threads of the bolt, and having its periphery provided with outward-projecting flexible arms adapted to be turned into engagement with the outer edges of the nut and to extend across the same, substantially as specified.

405,633. HAND-PLANTER. CHARLES G. WATSON, Piney Grove, Md. Filed Mar. 14, 1889. Serial No. 303,296. (No model.)



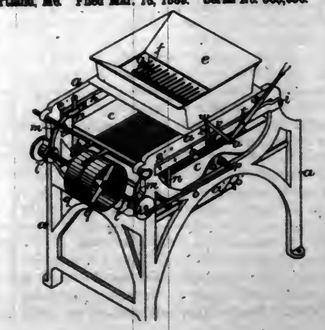
Claim.—1. In a hand corn-planter, a case or shell divided into longitudinal apartments and having a common bottom provided with independent vertical openings or passages, in combination with two slides connected together for simultaneous operation, a hand-lever connected to the slides at one end thereof, a lever arranged within the lower part of the shell or case, below the bottom thereof, and arranged to impinge against a movable spring side of said case, and connections between the opposite end of the slides and the lever, substantially as and for the purpose described.

2. In a hand corn-planter, the combination of a case divided into longitudinal apartments and having a fixed bottom which is provided with vertical passages intersected by horizontal passages, the independent slides fitted in said horizontal passages, the transverse plates detachably connected to the ends of said slides, a hand-lever connected to the slides at one end, a lever arranged within the case, below the bottom thereof, and adapted to impinge against a movable side at the extreme lower end of the case, and connections between said lever and the free end of the slide, all combined and arranged substantially as and for the purpose described.

3. In a hand corn-planter, the combination of a case or shell having the sides or walls thereof converging at its lower extremity and one of said sides of spring metal, in combination with a fixed bottom above the tapered extremity of the case, a reciprocating slide supported by said bottom, a lever carrying a friction-roller which rides against the spring side or wall of the shell, and connections intermediate of the slide and lever, substantially as and for the purpose described.

4. In a hand corn-planter, the combination, with a case or shell having a bottom provided with a transverse passage, of a slotted slide 35, provided at one side of its slot with a raised longitudinal rib, another slide fitted on the slide 35 and detachably secured thereto, and mechanism for reciprocating the slides, substantially as and for the purpose described.

405,634. CORN AND SILK SEPARATOR. JOHN I. WESLEY, Portland, Me. Filed Mar. 18, 1889. Serial No. 303,656. (No model.)



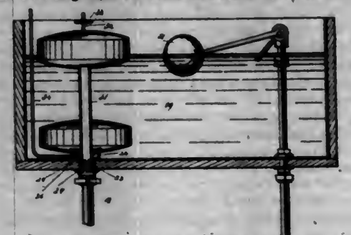
Claim.—1. In a corn and silk separator having a suitable supporting-frame, the combination, with a sieve-pan attached to said frame by pivoted hangers, a power-shaft having band-wheel and crank-disks on its ends, and crank-shaft connecting said pan with said disks, of jolting-bars pivoted to the frame, combs journaled in the jolting-bars, and a hopper, substantially as and for the purposes set forth.

2. In a corn and silk separator having a suitable supporting-frame, the combination, with a sieve-pan attached to the frame by pivoted hangers, a power-shaft with band-wheel and crank-disks, and shaft connecting said disks and said pan, of jolting-bars pivoted to the frame, combs journaled in the jolting-bars over the pan, a hopper, projections on the hangers, and downwardly-curved plates attached to the jolting-bars, substantially as set forth.

3. In a corn and silk separator having a suitable supporting-frame, the combination, with a swinging sieve-pan, as described, jolting-bars pivoted to the frame, combs journaled in the jolting-bars, and a hopper, of levers rigidly attached to the comb-journals, a link connecting the ends of said levers for dumping the combs, as set forth.

4. In combination, a swinging sieve, combs located above said sieve for collecting the silk and capable of being dumped, mechanism for imparting a jolting motion to said combs, and levers for operating the combs to clear the teeth of the accumulated silk, as set forth.

405,635. WATER-CLOSET. ROWLAND WESTON, East Saginaw, Mich. Filed Aug. 18, 1888. Serial No. 283,060. (No model.)



Claim.—1. The combination, with the bowl having a valve normally closing its outlet, of a stand-pipe communicating with the bowl below the water-level and normally filled with water, a tank from which the upper end of the stand-pipe leads, and a float-valve in the tank completely closing the upper end of the stand-pipe against air or water, whereby said valve will be held closed by the suction exerted by the column of water in the stand-pipe, released when the bowl is emptied to again fill the stand-pipe, and be closed by its weight when the water in the tank is insufficient to float it, substantially as set forth.

2. The combination, with the water-closet bowl having a trap-valve normally closing its outlet to hold the water in the bowl and an aperture below the water-line, of a normally-filled stand-pipe communicating with the bowl through said aperture, a tank with the bottom of which the upper end of the stand-pipe communicates, a float-valve normally closing the said upper end of the pipe against the entrance of either air or water and held in its closed position against its tendency to rise by the suction caused by the weight of the water in the stand-pipe, and a supply-pipe leading into the tank and having a float to close it when the water reaches its proper level, the said float-valve being released by the exit of the water from the bowl, floating or held buoyant until the tank has sufficiently discharged, and then closing by its weight to be again held closed by the action of the water in the stand-pipe, substantially as set forth.

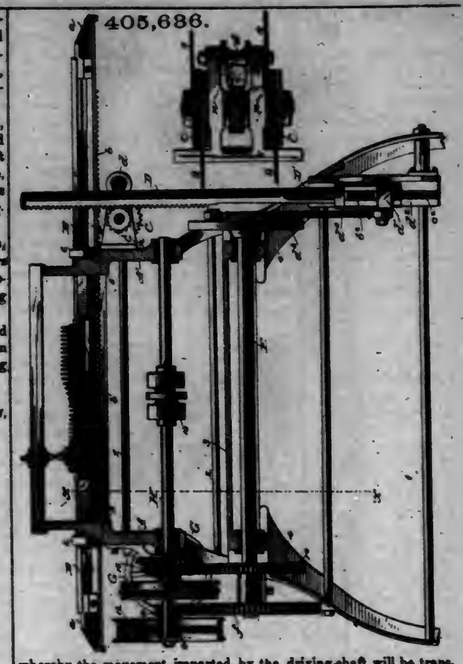
3. In a water-closet, the combination, with a bowl, a vertical extension produced upon the rear of the same, forming a flushing-chamber provided with an outlet at the bottom leading into the bowl, a tank, and a pipe connecting the tank and flushing-chamber, of two connected spaced floats in said tank, a guide attached to the upper float, and a valve secured to the under side of the lower float adapted to close the flushing-tube, substantially as shown and described.

4. In a water-closet, the combination, with a bowl, a vertical extension produced upon the rear of the same, forming a flushing-chamber provided with an outlet in the bottom leading into the bowl, a tank, and a pipe connecting the tank and flushing-chamber, of a cup-shaped valve-seat above the flushing-tube, two spaced connecting-floats, a guide attached to the upper float, a valve secured to the bottom of the lower float, consisting of disks of different diameters, and a central slotted tube adapted to enter the flushing-pipe, substantially as shown and described.

405,636. STRAIGHT-KNITTING MACHINE. FRANK WILCOMB, Providence, R. I., assignor to the Wilcomb Manufacturing Company, San Francisco, Cal. Filed Feb. 29, 1888. Serial No. 265,734. (No model.)

Brief.—The object of the invention is to provide improved means

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whereby the movement imparted by the driving-shaft will be transmitted easily to the slide-bars, and whereby ready access may be had to the operating parts of the machine, and compactness of form is secured.

Claim.—1. In combination, the slide-bars, the horizontal rack-bars, the vertical rack-bars, gear-and-pinion connections to the horizontal rack-bars which move the slide-bars, a cross-head provided with pinions, stationary racks, and guideways, the pinions being in mesh with the vertical rack-bars and stationary racks, a driving-wheel, and a pitman connecting the cross-head to the driving-wheel, all substantially as described.

2. In combination, the slide-bars, a shaft disposed transversely with relation to said slide-bars and having driving connections therewith, a reciprocating operating-bar arranged to move across the plane of the slide-bars and having operating-connections with said transverse shaft, the driving-shaft, and connections whereby said bar is reciprocated from said driving-shaft.

3. In combination, the slide-bars, the vertical reciprocating operating-bar therefor, intermediate connections between the same, the cross-head, and an accelerating connection between the vertical operating-bar and the cross-head for reciprocating the said bar, and means for operating the cross-head, substantially as described.

4. In combination, the slide-bars, the reciprocating operating-bar, connections between the slide-bars and operating-bar, said operating-bar having rack-teeth on its lower end, the cross-head having a channel to receive the end of the reciprocating bar, means for reciprocating the cross-head, a pinion carried by the cross-head and meshing with teeth on the operating-bar, and the rack-teeth on the guide-way, also engaging with the pinion, substantially as described.

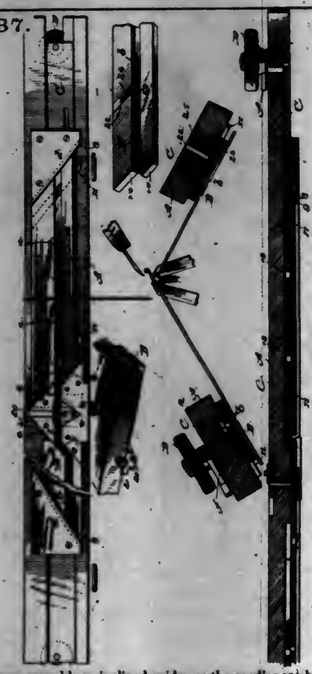
5. In a knitting-machine and in combination, the slide-bars, the driving-shaft, and connections from said shaft to the bars for operating them, the cam-shaft of the machine, the pulley 12 and pinion *e*, the gear *f*, and the gears 14 15, for imparting the movement from the driving-shaft to the cam-shaft, substantially as described.

6. In combination, the slide-bars, the driving-shaft having the large gear thereon, the pinion meshing with said gear for driving it, a reciprocating operating-bar with connections to the slide-bars, the cross-head connection therefrom to the driving-shaft, the multiplying-pinion carried by the cross-head, and the rack-teeth on the guideways and operating-bar, substantially as described.

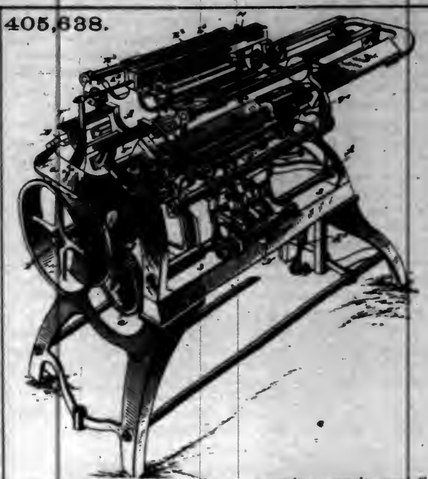
405,637. STRAIGHT-KNITTING MACHINE. FRANK WILCOMB, Providence, R. I., assignor to the Wilcomb Manufacturing Company, San Francisco, Cal. Filed Feb. 29, 1888. Serial No. 265,735. (No model.)

Brief.—The straight parts of the cam-path on each side of the

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stitch-cam are movable on inclined guides, so the needles can be exposed and rendered accessible. The ends of the slides are formed to maintain a groove of uniform width in all positions.

Claim.—1. In combination, the slide-bar, a fixed part of the needle-path having the inclined edge, the inclined guides, the cam movable on the inclined guides having a longitudinal groove and formed with its end adjacent to the fixed part of the needle-path also inclined, and mechanism for moving the movable cam, substantially as described.

2. In combination, the slide-bar, a fixed part of the needle-path having the inclined edge, the inclined guides, the cam movable on the inclined guides having a longitudinal groove and formed with its end adjacent to the fixed part of the needle-path also inclined, the parts of said inclined end above and below the needle-path being in different but parallel planes, and mechanism for moving the movable cam, substantially as described.

3. In combination, the slide-bar, the fixed part of the cam of a knitting-machine having a needle-path 7 7 and inclined edges, the parts of which above and below the needle-path are in different but parallel planes, and cams B B, having longitudinal grooves *b* and inclined ends corresponding to the edges of the fixed part, and means for moving the cams B, all substantially as described.

4. In combination with the slide-bar A and the switch-cam, the slide C, and stud D, a segmental notched plate *f*, fixed to the stud D and projecting over the upper surface of the bar A on one side of its slot, and a spring-detent arranged to hold the slide-plate C and cam in normal position in relation to the slide-bar A, all as set forth.

5. In combination, the slide-bar, a movable cam, inclined guides therefor, and a key located in an inclined groove formed in the movable cam, substantially as described.

405,638. STRAIGHT-KNITTING MACHINE. FRANK WILCOMB, Providence, R. I., assignor to the Wilcomb Manufacturing Company, San Francisco, Cal. Filed Apr. 13, 1888. Serial No. 271,026. (No model.)

Brief.—The invention consists in improvements upon the mechanisms presented in Letters Patent No. 350,791, dated October 12, 1886, whereby great rapidity, accuracy, and ease of movement are secured, and the capacity of the machine enlarged.

Claim.—1. In combination with the slide-bar, a shifting cam-plate for the transfer movement of the needles, a handle for the said cam-plate, a main shaft and operating mechanism therefrom to the cam-plate, and a detachable connection between said mechanism and the cam-plate, whereby said plate may be operated automatically or disconnected for hand operation, substantially as described.

2. In combination with the slide-bar, a shifting cam-plate for the transfer movement of the needles, an eccentric or cam in connection with the shifting plate for giving a varying movement thereto in advancing and retracting, a main shaft, and positively-operating connections independent of the slide-bar to the eccentric or cam for imparting the movement of the shaft thereto, substantially as described.

3. In combination with the slide-bar, a shifting cam-plate, a rotating disk having an eccentric groove, an operating-bar, one end of which is in connection with the shifting cam-plate and the other with the walls of the eccentric groove, a main shaft, mechanism for operating the slide-bar, and mechanism for rotating the disk operated from the main shaft independent of the slide-bar, substantially as described.

4. In combination with the slide-bar, a shifting cam-plate, a main shaft, a revolving shaft 38, operating connections from said shaft to the main shaft, an eccentric disk and operating connections therefrom carried on the slide-bar splined to and operated from the shaft 38, and operating connections between the eccentric and shifting cam-plate, substantially as described.

5. In combination with the slide-bar, a shifting cam-plate, an eccentric or cam for operating the shifting cam-plate carried on the slide-bar, a shaft 38, for operating the eccentric or cam having a splined connection therewith, a rack and pinion in shifting relation to each other, connections therefrom to the shaft 38, a main shaft for operating the rack, and intermediate mechanism between the main shaft and the rack and pinion for shifting them into or out of engagement, and pattern mechanism for controlling said connections, substantially as described.

6. In combination, the needles, the slide-bar, the shifting cam-plate, an eccentric disk and connections therefrom to the said cam-plate, the said disk being supported on the slide-bar, a shaft 38, extending parallel with said slide-bar, connections from the shaft to the disk, a driving-shaft, and operating connections between the shaft 38 and the said driving-shaft, substantially as described.

7. In combination, the needles, the slide-bar, a shifting cam-plate, an eccentric disk carried in the slide-bar, a connection between the disk and shifting cam-plate, consisting of the reciprocating bar i^3 and sliding plate C^{16}, the shaft 38, for rotating the eccentric disk having a sliding connection therewith, a rack and pinion, and an operating-chain therefrom to the shaft 38, substantially as described.

8. In combination, the needles, the slide-bar, a shifting cam-plate, an eccentric disk carried on the slide-bar, and a detachable connection between the disk and shifting cam-plate, consisting of the reciprocating bar i^3, the sliding plate C^{16}, the handle 31, and the locking-catch i^7, the shaft 38, having sliding connection with the eccentric, a main shaft, and operating connections to the shaft 38, substantially as described.

9. In combination, the needles, the slide-bar, a shifting cam-plate, an eccentric disk carried on the slide-bar, connections between said disk and the shifting cam-plate, a shaft 38, extending parallel to the slide-bar, a gear splined on said shaft, and a gear on the opposite face of the eccentric disk meshing with the gear on the shaft 38, a main shaft, and connections to the shaft 38, substantially as described.

10. In combination, the needles, the slide-bar, a shifting cam-plate, a sliding plate for operating the same, an eccentric disk carried on the slide-bar, a reciprocating bar i^3 between the disk and sliding plate, a beveled gear on the opposite face of the disk, a shaft 38, a sleeve splined thereto carrying a beveled gear meshing with the teeth of the gear on the disk, a rack and pinion, and a driving-chain therefrom to the shaft 38, substantially as described.

11. In combination, the slide-bar, a shifting cam-plate, a main shaft, a rack operated directly thereby in the direction of its length, a shifting pinion engaging said rack and operated by the movement thereof, a shaft 38, connections between said shaft and the shifting pinion, and operating devices between said shaft and the shifting cam-plate, a lever 43, connections from said lever to the pinion, a cam on the main shaft, a shifting roller on the lever 43, adapted to be operated by said cam, and pattern mechanism for controlling the movement of the shifting roller, substantially as described.

12. In combination, the slide-bar, a shifting cam-plate, a main shaft, a rack and pinion in shifting relation to each other, a shaft 38, a connection between said shaft and the pinion, and operating devices between said shaft and the shifting cam-plate, a lever 43, a cam on the main shaft for operating said lever, connections between said lever 43 and the pinion, a pattern mechanism for controlling the action of the lever 43, a locking-catch for holding the rack and pinion into or out of engagement, and means for actuating the catch, substantially as described.

13. In combination, the slide-bars, shifting cam-plates, a main shaft, racks operated directly thereby, a pair of shifting pinions engaging said racks, intermediate operating devices between said shifting pinions and the shifting cam-plates, including the shafts 38, levers 43 44, connections from said levers to the shifting pinions, cams on the main shaft for operating said levers, a pattern mechanism for controlling the action of said levers, a locking-catch for holding one pinion out of engagement and the other pinion into engagement with the racks, and means for actuating the catch, substantially as described.

14. In combination, the slide-bar, a shifting cam-plate, a main shaft, a rack operated directly thereby, a shifting pinion for engaging said rack, a shaft 38, and connections from said shaft to the shifting pinion and to the shifting cam-plate, a lever 43, a cam on the main shaft for operating said lever, connections from said lever to the shifting pinion, pattern mechanism for controlling the operation of the lever 43, a locking-catch 67, mounted on the spindle *y'* under spring tension, a projection on the lower end of said spindle, and a cam in the path of the projection for operating the catch, substantially as described.

15. In combination, the slide-bar, the shifting cam-plate, a main shaft, a rack operated directly thereby, a shifting pinion engaging the rack, a shaft 38 and connections from said shaft to the shifting pinion and to the shifting cam-plate, a lever L in connection with the pinion for engaging or disengaging the same with the rack, a lever 43, a cam on the shaft for operating said lever, operating connections between said lever and the shifting-lever L, and pattern mechanism for controlling the operation of the lever 43, substantially as described.

16. In combination, the slide-bar, the shifting cam-plate, a main shaft, a rack operated directly thereby, a shifting pinion engaging the rack, a shaft 38, connections between said shaft and the shifting pinion and between said shaft and the shifting cam-plate, a pivoted lever L for shifting the pinion, a spring in connection with one end of the lever for holding it normally in one position, a lever 43, connections therefrom to the opposite end of the lever L for causing the shifting action, means for operating the lever 43, and pattern mechanism for controlling the operation of the said lever, substantially as described.

17. In combination, the slide-bar, the shifting cam-plate, a main shaft, a rack operated directly thereby, a shifting pinion engaging said rack, connections between the pinion and the shifting cam-plate, a shifting-lever L, a lever 43 for operating lever L, with operating connections between the two, a shifting roller on the lever 43, a cam on the main shaft adapted to operate the lever 43 through its roller when the said roller is shifted into range therewith, a pattern mechanism, and connections between the pattern mechanism and the roller for shifting the same, whereby the lever 43 is depressed and the pinion shifted into engagement with the rack and the needles operated.

18. In combination, the slide-bar, the shifting cam-plate, a main shaft, a rack and pinion in shifting relation to each other, connections between the pinion and shifting cam-plate, a lever L for causing the engagement of the pinion and rack, a lever 43, connections between the levers 43 and L, a shifting roller on the lever 43, a pattern mechanism, a shifting-lever operated by said pattern mechanism for shifting the roller, a shifting cam on the main shaft for operating the lever 43 through its roller, and connections from the pattern mechanism to shift the said cam, substantially as described.

19. In combination, the slide-bar, the shifting cam-plate, a main shaft, a rack and pinion in shifting relation to each other, connections between the pinion and shifting cam-plate, a lever L, a lever 43, connections between the levers 43 and L, a shifting roller on the lever 43, a shifting cam on the main shaft, a cam-piece *m* carried thereby, a pattern mechanism, and connections extending therefrom and operated thereby to the shifting roller and cam for causing the shifting action thereof, substantially as described.

20. In combination, the slide-bar, the shifting cam-plate, a main shaft, a wheel K thereon, a rack on its periphery, a shifting pinion, connections therefrom to the shifting cam-plate, a lever 43, connections between said lever and the shifting pinion, a cam on the main shaft for operating lever 43, a pattern mechanism, and connections therefrom for controlling the operation of the lever 43, substantially as described.

21. In combination, the slide-bar, the shifting cam-plate, the rack and pinion in shifting relation to each other, operating devices between the pinion and shifting cam-plate, the lever 43, connections therefrom to the pinion, a shifting roller on the lever 43, a main shaft, a cam-piece carried thereby for depressing the lever 43 through its roller, a constantly-operating lever N, a lever, as M^2, with connections to the shifting roller, a cylinder N^2, stops thereon for preventing the movement of the lever M^2, means for operating the cylinder, and a pattern mechanism for controlling the action of the same, substantially as described.

22. The slide-bar, the shifting cam-plate, a main shaft, a wheel K thereon, a rack *l* on said wheel, a shifting pinion, connections between said pinion and the shifting cam-plate, means for shifting said pinion into and out of engagement with the rack *l*, a flange on said pinion having a cut-away portion adapted to grooves and plain portions on the wheel K, substantially as described.

23. In combination, the slide-bar, the shifting cam-plate, the eccentric disk, connections therefrom to the shifting cam-plate, a shaft 38 having sliding connection with the disk, a rack, a main shaft, a shifting pinion, a sprocket-chain between the pinion and shaft 38, a shifting-lever L, a lever 43, a band l^2 between the levers 43 and L, a main shaft, a shifting cam thereon, a shifting roller on the lever 43, a constantly-operating lever N, a lever M^2, connections therefrom to the shifting roller, a cylinder N^2, stops thereon for preventing the movement of the lever M^2, devices for operating the cylinder, and a pattern mechanism for controlling the action of said cylinder, substantially as described.

24. In combination, a point-carriage, a threaded shaft for moving said carriage laterally, and a point-block supported on said carriage and having forward and backward movement independent of the movement of the carriage, and means for imparting such movement thereto, substantially as described.

25. In combination, a point-carriage, a point-block thereon, a threaded shaft for moving the carriage laterally, means for moving the threaded shaft, a second shaft R', having splined connection with the carriage, means for actuating said shaft, and a pinion and rack between said shaft and the point-block, substantially as described.

26. In combination with the point-carriage, a point-block thereon, a shaft R^2, threaded to engage said carriage and to move it laterally, the shafts R' R^2, and splined connections between said shafts and the carriage and point-block for imparting to the said point-block forward, backward, and lifting movement, with means for operating said shaft, substantially as described.

27. In combination, a threaded shaft R^2, means for moving the same, a point-carriage movable laterally thereon, a sliding plate Q' on said carriage, a point-block pivoted on said sliding plate, a second shaft R', means for actuating the same, a pinion splined thereon, and a rack on the sliding plate Q', engaging said pinion, substantially as described.

28. In combination, a threaded shaft R^2, a point-carriage movable laterally by the revolution of said shaft, a pivoted point-block supported by said carriage, means for moving said point-block forward and backward, a rock-shaft R^2, and arms r^{21}, supported from said shaft, substantially as described.

29. In combination, a threaded shaft, means for moving the same, a point-carriage mounted thereon, a sliding plate Q', a point-block pivoted on said plate, a second shaft R', means for actuating said shaft a pinion splined thereto engaging a rack on the sliding plate to advance and retract the point-block, a third shaft R^2, arms supported therefrom having inclines, and a spring in connection with the point-block.

30. In combination, a laterally-movable point-carriage, a point-block thereon carrying points, a threaded shaft for imparting lateral movement to said carriage, operating mechanism for said threaded shaft, a main shaft for imparting movement to said mechanism, a pattern mechanism for controlling the action of the threaded shaft, and intermediate mechanism between the pattern mechanism and the main shaft for effecting this controlling action, whereby the rotation of the shaft R^2 is made intermittent, substantially as described.

31. In combination with the point-carriages on opposite sides of the machine, a threaded shaft for each carriage, said shafts being formed with zigzag grooves having cam-faces, a main shaft with operating connections between said main shaft and the threaded shaft on each side of the machine, a pattern mechanism, and operating connections from said pattern mechanism for controlling the action of the

threaded shafts, and stationary pins on the frame engaging with said grooves, the cam-faces of one shaft being set reversely to the other, whereby one threaded shaft is rendered inoperative and the carriage on the other advanced its full distance, substantially as described.

32. In combination with the point-carriages on opposite sides of the machine, a threaded shaft for each carriage, said shaft being formed with zigzag grooves having cam-faces, a main shaft, connections from the said shaft to the two threaded shafts for operating them simultaneously, a pattern mechanism for controlling the action of said operating connection, whereby the movements of the two shafts are intermittent, and a stationary pin in connection with the zigzag grooves, the cam-faces being set reversely to each other, whereby the threaded shaft on one side of the machine is rendered inoperative, while the carriage on the other is advanced its full distance, substantially as described.

33. In combination with the point-carriages on opposite sides of the machine, a threaded shaft for each carriage, said shafts being formed with zigzag grooves having cam-faces, a main shaft, a shaft 91, operating mechanism between the main shaft and shaft 91, a pattern mechanism with connections for controlling said operating connections to make the movements of the threaded shaft intermittent, a connection between said shaft 91 and the two threaded shafts for turning the same simultaneously to partially advance the point-carriages, and stationary pins engaging with said zigzag grooves, the cam-faces of one shaft being set reversely to the other, substantially as described.

34. In combination, a point-carriage, a threaded shaft for moving it laterally, a main shaft, a lever s' operated therefrom, and operating connections between said lever and the threaded shaft, substantially as described.

35. In combination, a point-carriage, a threaded shaft for moving it laterally, a shaft 91, a chain-connection therefrom to the threaded shaft, a main shaft, a cam thereon, a lever s' operated therefrom, a connection between the lever s' and shaft 91, and pattern mechanism for controlling the operation of the lever s', substantially as described.

36. In combination, the point-carriages on opposite sides of the machine, a pair of threaded shafts for moving said carriages laterally, a shaft 91, an operating connection from shaft 91 to both the threaded shafts, a main shaft, the lever s' operated thereby, a ratchet-wheel on the shaft 91, a pair of reversely-operating pawls, and connections from the lever s' to each of said pawls, substantially as described.

37. In combination with the lever s', a threaded shaft, a point-carriage movable laterally thereby, connections from the lever s' to the threaded shafts, a main shaft, and a cam s^4 on the main shaft for operating the lever s', substantially as described.

38. In combination with the lever s', a threaded shaft, a point-carriage movable laterally on the threaded shaft, connections between the lever s' and the threaded shaft, a main shaft, a cam thereon for operating the lever s', a rocking shaft, pattern mechanism, and connections to the rocking shaft for controlling the action of the lever s', substantially as described.

39. In combination, the lever s', the threaded shaft, connections between the lever s' and threaded shaft, a point-carriage on the threaded shaft, a main shaft, a disk on said shaft, a cam-flange s^4 on said disk, a wheel on the lever s', playing normally on the periphery of the disk, the rock-shaft s^5, a liver 93, connected to the rock-shaft, a shifting cam for operating the rock-shaft, pattern mechanism, and connections therefrom to shift the cam, substantially as described.

40. In combination with the point-carriage, a pivoted point-block thereon, arms r^{31} for depressing said points, a lever 85, means for operating said lever, and connections from said lever to the arms r^{31} for rocking the same, substantially as described.

41. In combination with the point-carriage, a pivoted point-block, a rocking shaft R^3, arms r^{31}, carried by said shaft, a lever 85, a rod between said lever and shaft R^3, a main shaft, a cam on said shaft for operating the lever, and a spring for retracting said lever, substantially as described.

42. In combination with the main shaft, a set of shifting cams carried on splines on said shaft, a reciprocating pin U, means to reciprocate said pin, the lever v, the cylinder, controlling-stops on said cylinder for the lever v, a pattern-chain, and a controlling connection between said pattern-chain and cylinder, substantially as described.

43. In combination with the main shaft and shifting cam thereon, the constantly-operating levers M^3 and v', connections between said levers and the shifting cam, the cylinder N^3, controlling-stops thereon for preventing the movement of the levers M^3 and v', the lever N for operating the levers M^3 v', a constantly-operating pawl, a ratchet-wheel on the cylinder N^3, normally inoperative under the movement of said pawl, and a pattern mechanism for causing the pawl to engage with the ratchet-wheel and thereby move the cylinder, substantially as described.

44. In combination with the main shaft and shifting cam thereon, the levers M^3 v', means for operating said levers, connections between said levers and the shifting cam, a controlling-cylinder having stops thereon for preventing the movement of the levers M^3 v', and a pattern mechanism controlling the action of the cylinder, substantially as described.

45. In combination with the needles and points of a knitting-machine, a pattern-chain, a supplemental controlling mechanism, connections between the pattern-chain and controlling mechanism, shifting cams on the main shaft, connections between the controlling mechanism and the said cams, operating-levers moved by the said cams, and connections from said cams to the needles and transfer-points, substantially as described.

46. In combination with the needles and points of a knitting-machine, a pattern mechanism, a main shaft, a supplemental controlling mechanism, intermediate connections therefrom to the main shaft, consisting of a ratchet-wheel having irregular teeth and a constantly-operating lever N' and pawl, connections from the primary pattern-chain to move the ratchet from normal position, cams on the main shaft, operating-levers for the needles and points actuated thereby, and connections between said levers and the points and needles, substantially as described.

47. In combination, the slide-bar, the shifting cam-plate, the point-carriage and points, the operating-lever 43, the shifting cams on the main shaft, the oscillating levers M^3 and v', means to oscillate said levers, devices between lever M^3 and lever 43 and between the lever v' and the shifting cams, the cylinder N^3, the stops thereon for controlling said oscillating levers, and the pattern mechanism for throwing the cylinder N^3 into action, substantially as described.

48. In combination, the slide-bar, the shifting cam-plate, the needles, the lever 43, having shifting roller, and connections from said lever to the shifting cam-plate, the oscillating-lever M^3, connections therefrom for operating said shifting roller, the transfer-points, a main shaft, the shifting cam thereon, the lever operated thereby, with connections to the transfer-points, the oscillating lever v', the switch-pin U, the cylinder having controlling-stops thereon, the pawl and ratchet, the lever N', carrying said pawl, operated by the tappet 52, the supplemental lever N for operating the oscillating levers, the pawl and disk o for moving the cylinder from normal position, pattern mechanism, and connections therefrom to the said pawl for moving the same, substantially as described.

49. In combination, the slide-bar, the shifting cam-plate, the needles, the transfer-points, the shifting cams on the main shaft, levers actuated by said cams when shifted, operating connections from said levers to the shifting cam-plate and to the transfer-points, a controlling-cylinder, means for actuating the same, constantly-operating levers governed by the controlling-cylinder and adapted to be arrested thereby, and a pin operated by one of said levers and adapted to shift the cams on the main shaft, substantially as described.

50. In combination, the needles, the lifting-bar for elevating the empty needles, the screw-shaft for operating the lifting-bar, the main shaft, and positive connections therefrom to the screw-shaft, substantially as described.

51. In combination, the needles, the lifting-bars on each side of the machine for raising the empty needles out of action, a screw-shaft for operating each lifting-bar, cam-grooves in each screw-shaft set reversely to each other, stationary pins engaging said grooves, a main shaft, and connections from said main shaft to the screw-shafts for giving them simultaneous action, substantially as described.

52. In combination with the needles, the lifting-bar on each side of the machine for throwing them out of work, a threaded shaft for operating each bar, a point-carriage, a threaded shaft for operating each point-carriage, a main shaft, and connections from said main shaft to the four threaded shafts of the point-carriages and lifting-bars, substantially as described.

53. In combination with the needles, the lifting-bar for throwing them out of work, a main shaft, a notched disk and pawl, operating connections between said pawl and the main shaft, a screw-shaft for operating the lifting-bar, and connections from the disk to the screw-shaft, substantially as described.

54. In combination, the thread-guide, a reversible spindle therefor, the carriage-frame, the guide-bars, the operating-bar adapted to move up and down, means for actuating said bar, and connections between said bar and the spindle, substantially as described.

55. In combination, the thread-guide and spindle, the raising and lowering operating-bar, connections between said bar and spindle, the guide-bars, the adjustable stops, and operating connections between said stops and the operating-bar, substantially as described.

56. In combination, the thread-guide and spindle, the raising and lowering bar, connections between said bar and spindle, the brackets, connections between said brackets and bar, adjustable stops, and connections to the brackets, substantially as described.

57. In combination, the thread-guide and spindle, the brackets, the raising and lowering operating-bar, connections between said bar and spindle, and connections between said bracket and bar, consisting of the slotted plate A^3, and the studs on the operating-bar fitting said slots, the bar A^4 between the brackets, and the adjustable stops on said bar, substantially as described.

58. In combination with the main shaft and shifting cam thereon, the constantly-operating levers M^3 and v', connections between said levers and the shifting cams, the cylinder N^3, stops thereon for controlling the levers M^3 v', the ratchet on the cylinder, the lever N', the cam constantly operating the same, the lever N, operated by the lever N' for operating the levers M^3 and v', and the pawl carried by the lever N' for operating the cylinder N^3, substantially as described.

405,639. STRAIGHT-KNITTING MACHINE. FRANK WILCOXS, Providence, R. I. Filed Nov. 10, 1888. Serial No. 290,463. (No model.)

Brief.—The object of the invention is to provide improved means for raising the needles out of work in narrowing, and for returning them to work in widening, in the operation of knitting fashioned goods upon a straight-knitting machine.



Claim.—1. In combination with the needles of a knitting-machine, a slotted slide having needle-raising point and bearing-surface, a second slide arranged alongside of the first slide and having a bearing for the needles, means for moving the first slide, and means for moving the second slide after movement of the first, substantially as described.

2. A slide for raising the needles of a knitting-machine out of work, having a needle-raising point and slot and a bearing-surface for the needles, in combination with a series of needle-holding slides having bearing-surfaces to hold down the needles, all the slides being loosely connected, and a fixed bearing-surface on the needle-bed, all substantially as and for the purpose explained.

3. Slides for raising the needles of a knitting-machine out of work—one arranged at each end of the row and each having a needle-raising point and slot—a cap with a bearing for the needles fixed to the needle-bed, and bearings or slides moved by the needle-lifting slides, all substantially as described.

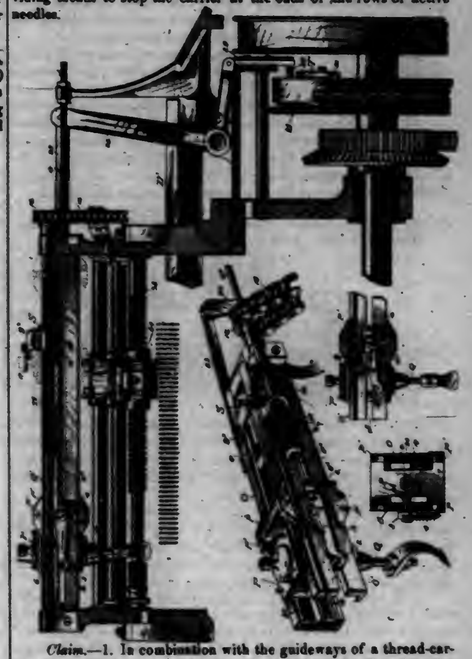
4. In combination with the needle-raising slide of a knitting-machine, a threaded shaft and a nut connected to the slide, substantially as described.

5. In combination with the needles of a knitting-machine, a pair of slides—one arranged at each end of the row and each provided with a needle-raising point—a slot to receive the inactive needles, and a bearing for holding the needles down, and a fixed bearing-surface, substantially as described.

6. In combination with the needles of a knitting-machine, a slide having a needle-raising point and slot and bearing-surface, and a second slide having a bearing for the needles, and a connection between the first and second slides, whereby the former moves the latter and the bearings of both are made to rest on the same needles, substantially as described.

405,640. STRAIGHT-KNITTING MACHINE. FRANK WILCOXS, Providence, R. I. Filed Nov. 14, 1888. Serial No. 290,849. (No model.)

Brief.—The object of the invention is to relieve the yarn take-up devices by preventing the excessive amount of slack usually formed at the ends of the reciprocations of the yarn-carrier, especially when some of the end needles are out of operation in narrowing, by providing means to stop the carrier at the ends of the rows of active needles.



Claim.—1. In combination with the guideways of a thread-carrier of a knitting-machine and the slide-bars thereof, a thread carrier and guide, a detachable connection between said carrier and the slide-bars, an automatically-movable stop arranged to operate upon said detachable connections, and means for moving the stop, substantially as described.

2. In combination with the guideways of the thread-carrier of a knitting-machine and the slide-bars thereof, a thread carrier and guide, a detachable connection between the said carrier and the slide-bars, a stop arranged to operate upon the said detachable connections, a yarn-guide-reversing mechanism on the carrier, a cam-slide in connection therewith, a main driving-shaft, and connections between the cam-slide and the said main driving-shaft, substantially as and for the purpose set forth.

3. In combination with the guideways of the thread-carrier of a knitting-machine and the slide-bars thereof, a thread carrier and guide, a detachable connection between the said carrier and the slide-bars, a movable stop for operating the detachable connection, a point-carrier, mechanism for moving the stop and carrier in unison, a guide-reversing device on the thread-carrier and a cam-slide therefor, a main driving-shaft, and connections between the cam-slide and said shaft, all substantially as and for the purpose set forth.

4. In combination with the guideways of the thread-carrier of a knitting-machine and with the slide-bars thereof, a thread carrier and guide, a detachable connection between said carrier and slide-bars, a threaded shaft, and a stop movable thereon and adapted to operate the detachable connections between the carrier and slide-bars, substantially as described.

5. In combination with the guideways of the thread-carrier of a knitting-machine and the slide-bars thereof, a thread carrier and guide, a detachable connection between the said carrier and the slide-bars, a threaded shaft, a stop movable thereon, a point-carrier, a shaft for moving the same, and connections between the stop-shaft and the point-carrier shaft, substantially as described.

6. In combination with the spindle of the thread carrier and guide, the reversing devices immediately connected therewith, a channeled bar and a slide-bar for vertically moving said bar, a main shaft, and connections between said channeled bar and the main shaft, substantially as and for the purpose set forth.

7. In combination with the reversible thread-guide, driving means

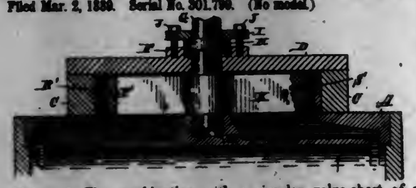
therefor, a movable stop, and detachable connections between said stop and driving means, whereby a variable stroke is imparted to the carrier, a main shaft, and devices connecting the main shaft with the carrier for reversing the said carrier, substantially as described.

8. In combination with the thread-carrier and its reversible guide, reversing mechanism, the slide for operating the reversing mechanism, a bell-crank lever connected therewith, a main shaft, and a pivoted cam moving with the main shaft, and a connection between said cam and bell-crank lever, all substantially as described.

9. In combination with the thread-carrier and its reversible guide, the cam-slide for reversing said guide, a main shaft, a pivoted cam moving with the main shaft, and intermediate connections to the cam-slide controlled by said cam to the cam-slide, substantially as described.

10. In combination with the cross-head and with the thread-carrier, a catch on the cross-head engaging with the thread-carrier, a movable stop arranged to operate the catch, a spring-catch on the movable stop arranged to engage with the carrier, and operating-mechanism for the cross-head and stop, substantially as described.

405,641. STEAM-VALVE. JOHN H. WILLIAMS, Urbana, Ohio. Filed Mar. 2, 1889. Serial No. 301,790. (No model.)



Claim.—1. The combination, with a circular valve-chest, of a valve and its adjustable central arbor, means to adjust said arbor inward and preserve contact between the valve and the face of the chamber, and suitable packing between the ends of the valve and the upper side of the valve and the casing.

2. The combination, with a circular valve-chest, of an oscillating valve fitted therein, and suitable packing interposed between its ends and upper side and the said chamber, and the valve-arbor centrally mounted in said chamber, and devices to adjust it inward to keep the valve in constant contact with the surface of the chamber.

3. The combination, with a steam-cylinder and its circular valve-chest, a bearing in the cylinder, and a central opening in the chamber-cap, of a valve fitted to oscillate within said chamber and having spring-actuated packing-strips between its ends and its upper edge and the valve-chamber, the valve-arbor mounted in said bearing and opening and having a shoulder, a plate fitted on the arbor against said shoulder, and adjusting-screws connecting the plate with the cap.

4. The combination, with a circular valve-chamber, a flanged cap, and a central opening in the cap, and a recess within the flange, of a valve mounted in the chamber, and its arbor fitted to the central opening in the cap and having a shoulder which fits said recess, an adjusting-plate embracing the shaft and fitted against the shoulder, and screws which connect said plate with said flange.

5. The combination, with a circular valve-chest, of a valve mounted therein and recessed on its upper side and at its ends, and extensible packing-strips mounted in said recesses, and springs between said strips and said valve to project the strips upward and outward.

6. The combination, with the valve consisting of an oscillating bar grooved on its upper side and at its ends, of packing-strips fitted in said grooves and composed of overlapping sections, the outer section of which having a vertical part which fits the end recesses, and springs which press the sections upward, and other springs which respectively press the outer sections upward, and the vertical part of such sections outward.

7. The combination, with a circular valve-chest, of a valve mounted therein and recessed on its upper side and at its ends, of packing-strips mounted in said upper and end recesses, and springs between the upper and end sections or portions of the extensible strips, and other springs to project said strips upward and outward.

8. The combination, with a valve, of extensible packing-strips consisting of upper horizontal sections, a grooved vertical part, and the strip divided into two sections and fitted into said groove, and springs between the horizontal sections and the sections in said groove, whereby the parts are distended from each other.

405,642. VETERINARY SURGICAL INSTRUMENT. ISAAC M. WOOSLEY, Albany, Oreg. Filed May 1, 1888. Serial No. 308,219. (No model.)

Claim.—1. The combination of the handles, curved serrated jaw, and cutting-blade, with the spring-controlled and serrated segment, substantially as described.

2. The combination of the shears, constructed substantially as described, with a curved serrated rocking segment mounted on the



cutting-blade of the shears having downwardly and forwardly inclined slotted lugs and engaging serrations in the jaw thereof, substantially as described.

3. The combination of the handles, beveled pins and spring thereon, the serrated jaw and cutting-blade, with the serrated rocking segment mounted on said blade, and the spring secured to said blade and engaging the segment, substantially as and for the purpose described.

4. The combination of the handles, serrated jaw, the curved and serrated cutting-blade attached to one of said handles, the serrated rocking segment and its slotted lugs, the pins attaching said segment to the blade, and the spring engaging said segment, substantially as and for the purpose described.

5. The combination of the handles A B, the beveled pins L *l*, and spring M, the curved serrated jaw C, and the cutting-blade D, with the serrated segment F, having depending slotted lugs G G, the pins engaging said slots and securing the segment to the blade, and the spring J, all substantially as and for the purpose described.

405,643. WHIFFLETREE-HOOK. CHARLES WRIGHT, South Elgin, Ill. Filed Mar. 29, 1888. Serial No. 305,201. (No model.)

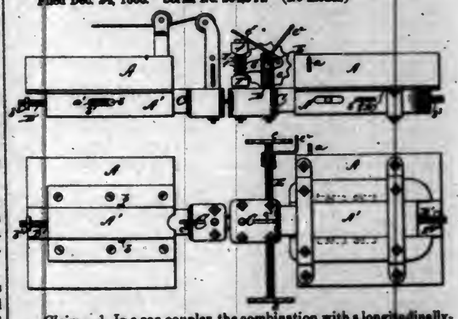


Claim.—1. The combination, with the tip formed with shoulders *e*, of the hook pivoted to said tip and formed with converging arms *c*, substantially as and for the purpose specified.

2. The combination, with the tip formed with longitudinal rib D, provided with recess *d* and tapered from opposite sides of said recess, of the hook pivoted to said tip at right angles to said rib, substantially as shown, and for the purpose described.

3. As an improved article of manufacture, a whiffletree-hook consisting of a tip formed near its outer end with shoulders *e*, and with longitudinal rib D, formed near its center with a recess *d*, and tapered from opposite sides of said recess, and the hook formed with cross-bar and converging arms and pivoted to said tip near the outer end thereof, at right angles to said rib, substantially as herein shown and described.

405,644. CAR-COUPLING. WILLIAM H. WRIGHT, Freeport, Ohio. Filed Dec. 24, 1888. Serial No. 294,544. (No model.)

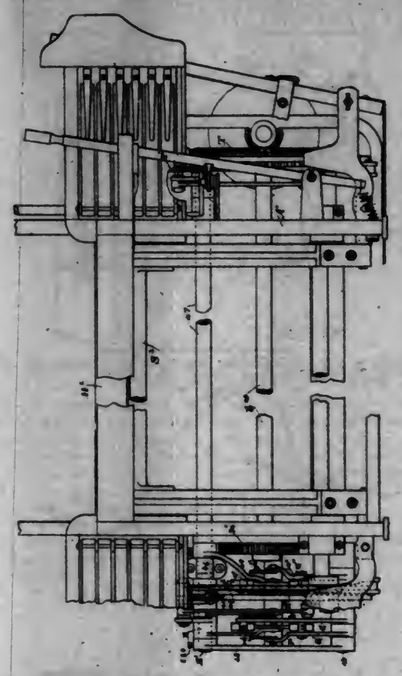


Claim.—1. In a car-coupler, the combination, with a longitudinally-yielding draw-head, of a coupling-pin provided with a collar, posts secured to the draw-head, a spring-pressed stirrup adapted to slide on said posts, a standard secured to the draw-head in rear of said posts, a rock-shaft journaled in bearings on the standard and provided at its ends with hand-wheels, a rock-arm rigidly secured to the center of said shaft, a pivot-pin for connecting the free end of the rock-arm to the coupling-pin, and a spring-pressed follower mounted in the draw-head to support the coupling-pin.

2. In a car-coupler, the combination, with a car having a draw-head adapted to yield longitudinally in both directions, of a coupling-pin provided with a collar, posts secured to the draw-head, a spring-

pressed stirrup adapted to slide on said posts, a standard secured to the draw-head in rear of the posts, a rock-shaft journaled in bearings on the standard and provided near its end with a spring-arm, a hook on the car, with which said arm may be engaged, an arm rigidly secured to the center of the rock-shaft and pivotally connected at its free end to the coupling-pin, and a spring-pressed follower mounted in the draw-head to project normally beneath the end of the coupling-pin.

405,645. SHUTTLE-BOX MECHANISM FOR LOOMS. HORACE WYMAN, Worcester, Mass., assignor to the Crompton Loom Works, same place. Filed Feb. 7, 1883. Serial No. 263,272. (No model.)



Claim.—1. The shuttle-box pattern surface or chain, a shaft A^3, upon which it is mounted, reversing-gearing in operative connection with the said shaft, and the clutch-hub, combined with the cam of the controlling mechanism, means to rotate it intermittingly, and with means, substantially as described, between the said clutching-hub and cam to move the said hub, substantially as described.

2. The shuttle-box pattern surface or chain, a shaft A^3, upon which it is mounted, an actuating-shaft for imparting motion to the shaft A^3, gearing between the said shafts, clutch mechanism and means to rotate the clutch-mechanism gearing, a lever and intermediate connections to move the clutch-hub of the clutch mechanism, and controlling mechanism to actuate the said lever, combined with a pawl to engage the ratchet of the controlling mechanism, means to reciprocate the said pawl, and a pattern mechanism or jacquard, substantially as described, to determine when and for how many reciprocations the said pawl shall engage the said ratchet, as set forth.

3. The crank-shaft, the pin-wheel thereon, the sleeve having the star-wheel and gear D^7, the actuating-shaft D^{14}, the loose gears D^6 and D^9, having clutch-teeth, the clutch-hub splined on the said shaft between the said gears, the pattern surface or chain for the shuttle-box mechanism, its shaft A^3, gearing intermediate the shafts D^{14} and A^3, the lever 64, means to connect it with the said clutch-hub, the controlling mechanism, containing a cam and a ratchet-wheel, a pawl, and means to actuate it to rotate the controlling mechanism, combined with a series of shuttle-boxes and shuttle-box-actuating mechanism, substantially as described, to actuate the said shuttle-boxes under the control of the said pattern surface or chain, as set forth.

4. The rock-shaft 42, extended across the loom, fulcrum-carrying levers attached to the said shaft at opposite sides of the loom, an auxiliary main lever, means to move it, and connections between it and the said rock-shaft, two prime levers at opposite sides of the loom and having their fulcra on studs moving with the fulcrum-carrying levers, two series of shuttle-boxes and means to connect them with the said prime levers, a shaft 47, having arms 48 49, and connections between it and that one of the prime levers most distant from the shuttle-box pattern-surface, combined with the main lever, connections between it and the other prime lever, and means to actuate the said main lever and the said rock-shaft 47 independently, whereby two series of shuttle-boxes may be operated positively in both directions, substantially as described.

5. In combination, the following instrumentalities, viz: a rock-shaft 42, extended across the loom and provided with fulcrum-carrying levers, means to rock the said shaft positively, two prime levers, each mounted upon one of the said fulcrum-carrying levers, a main lever, means to connect it with one of the said prime levers, a rock-shaft 47, having arms, and connections between it and the other prime lever, two series of shuttle-boxes and connections between them and the said prime levers, and means to actuate the said main lever and rock-shaft independently and positively, substantially as described.

6. The rock-shaft 42, extended across the loom, the fulcrum-carrying levers attached thereto at opposite sides of the loom, the two prime levers 20 $20^{\times}$, sustained by the said fulcrum-carrying levers, the rock-shaft 47, means between it and the prime lever $20^{\times}$ to actuate the latter, and two series of shuttle-boxes and connections between them and the said prime levers, combined with means to actuate the said rock-shafts, and with means to move the prime lever 20 independently of the prime lever $20^{\times}$, substantially as described.

7. A pattern surface or chain, its carrying-shaft A^3, a shaft, as D^{14}, its two reversely-moving loose gears, gearing between the said shaft D^{14} and the said carrying-shaft, a gear to actuate the said loose gears, and a clutching-hub co-operating therewith to effect the rotation of the said pattern-shaft in one or the other direction, a controlling mechanism, its ratchet, the actuating-pawl, and means to move the pawl, combined with intermediate parts, substantially as described, between said controlling mechanism and said clutching-hub, whereby said hub may be caused to engage either of the reversely-moving gears, as determined by the controlling mechanism, substantially as described.

8. The main pattern surface or chain and means to rotate it intermittingly both in a forward and in a reverse direction, as described, combined with the controlling mechanism, its ratchet and pawl, means to move the pawl to turn the ratchet, and with means to control the time of engagement of the pawl with the ratchet, whereby through the controlling mechanism and the said means for rotating the main pattern-surface the said main pattern-surface may be oscillated, when desired, substantially as described.

9. The shaft A^3, the main pattern surface or chain, means to rotate the said shaft in one and then in the opposite direction, the controlling mechanism and devices, substantially as described, and means to actuate the cam of the controlling mechanism, combined with a supplementary pattern-surface, and means between it and the pawl for moving the cam of the controlling mechanism, whereby the controlling mechanism may be moved or left at rest, substantially as described.

10. The vibrators having their outer or free ends beveled in opposite directions, the toothed gears carried by the said vibrators, and gears to engage and move the same as desired, the lever 76, having the doubly or reversely inclined projection to act upon the said vibrators, and the sliding link 75, connected to the said lever and slotted at its other end and provided with a stud, combined with the cam $73^{\times}$, and a stud to guide the said link, the combination being in operation, substantially as shown and described.

11. The rock-shaft 42, extended across the loom, an auxiliary main lever E^2, means to move it, connections between the said lever and the said rock-shaft, a fulcrum-carrying lever attached to the opposite end of the said rock-shaft, a prime lever pivoted thereon, a series of shuttle-boxes and connections between it and one end of the said prime lever, a shaft 47, having arms 48 and 49, connection between it and the other end of the said prime lever, and means to actuate the said shaft 47 independently of the rock-shaft 42, substantially as described.

12. The auxiliary main lever, means to move it, and connections between it and the rock-shaft 42, combined with the said rock-shaft, the fulcrum-carrying lever $22^{\times}$, mounted upon a stud attached to the opposite end of the said rock-shaft, the prime lever $20^{\times}$, pivoted upon the said fulcrum-carrying lever, a series of shuttle-boxes, connections between it and the said prime lever, and means to actuate the prime lever, substantially as described.

13. The rock-shaft 47, its arms 48 and 49, fast thereon and constituting a main lever, means to actuate the said rock-shaft, the rod $f^{\times}$, and the prime lever $20^{\times}$, and a fulcrum for the said prime lever, combined with the series of shuttle-boxes and with connections between the said prime lever and the series of shuttle-boxes, to operate substantially as described.

14. A shaft, as D^{14}, two reversely-moving gears loose thereon and having clutching-teeth, a gear to rotate the said loose gears in

nemon, a clutching-hub splined on the said shaft between the said loose gears and having teeth to be engaged by the clutch-teeth of one or the other of the said loose gears according to the direction it is desired to rotate the said shaft D^{14}, combined with a controlling mechanism, its ratchet and actuating-pawl, and means to move said pawl, and with intermediate parts, substantially as described, between said controlling mechanism and said clutching-hub, whereby said hub may be caused to engage either of the reversely-moving gears, as determined by the controlling mechanism, substantially as described.

405,646. ELECTRICAL PRIMER. EDMUND L. ZALINSKI, U. S. Army, and HENRY J. SMITH, Pompton, N. J. Filed Nov. 13, 1888. Serial No. 290,682. (No model.)



Claim.—1. An electrical primer consisting of the conducting-wires and a bridge, an explosive surrounding the bridge, and a solid non-explosive piece inclosing and supporting said bridge and its attached priming, substantially as described.

2. In an electrical primer, the combination of the conducting-wires, the bridge, an explodent surrounding the bridge, a solid surrounding and supporting piece of non-explosive material adapted to fit the commercial detonator, and an adherent covering therefor, substantially as described.

3. The conducting-wires having a non-conducting textile covering connected by stitches passing through the textile covering between the wires near the bridge, combined with the platinum bridge connecting the terminals of said wires, all combined substantially as described.

4. In an electrical primer, the conducting-wires, bridge surrounded by explosive material, a water-proof covering for said bridge and coating, and an incasing-piece of non-explosive material cast or molded thereon and shaped to fit the commercial detonator, substantially as set forth.

5. In an electrical primer, the combination of the conducting-wires, the bridge and its igniting-priming, the inclosing solid supporting-piece of non-explosive material, and a waterproofing and adherent covering for the exterior of the said piece, substantially as described.

405,647. DELAY-ACTION PRIMER. EDMUND L. ZALINSKI, U. S. Army, and HENRY J. SMITH, Pompton, N. J. Filed Nov. 23, 1888. Serial No. 291,679. (No model.)



Claim.—1. The combination, with an electric igniter and a detonator of the character described, of an interposed delay-action primer or time-fuse, substantially as described.

2. A delay-action primer consisting of a charge-holder chambered to receive an electrical igniter and shaped to fit a commercial detonator and having a slow-burning or time charge contained in said holder, substantially as stated.

3. A delay-action primer consisting of a charge-holder having vents, a time-charge contained in said holder, a chamber to receive an electrical igniter in proximity to said charge, and being shaped to fit the commercial detonator, substantially as described.

4. The combination, with the charge-holder of a shape to fit the detonator and having a chamber for the igniter, of a time-charge contained in said holder with a water-proof coating covering said burning charge.

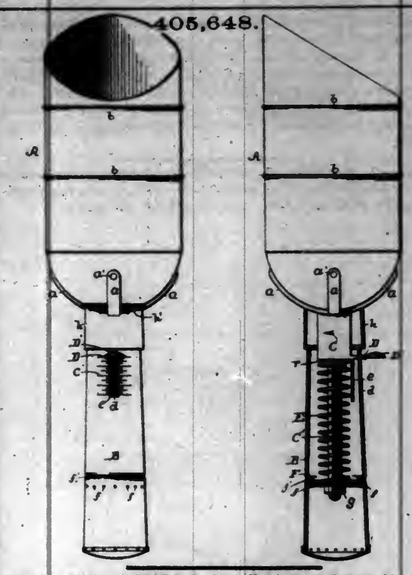
5. The combination, with an electric igniter and a detonator, of a separate delay-action charge-holder shaped to connect both.

6. The delay-action charge-holder described chambered to receive the igniter, shaped to fit the commercial detonator, and covered with a coating of water-proof material, substantially as described.

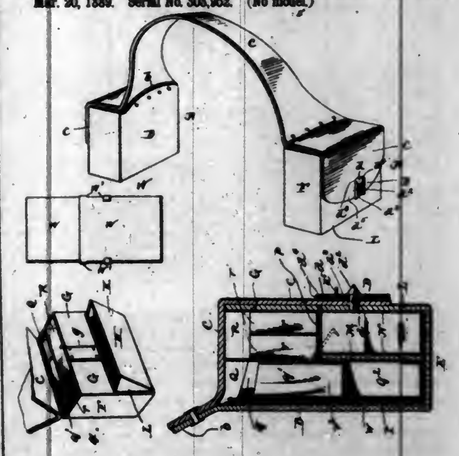
405,648. WEIGHING AND MEASURING SCOOP. LOUIS ZWINGLER, Kansas City, Mo., assignor of one-half to Joseph Moncion, same place. Filed Feb. 13, 1888. Serial No. 263,716. (No model.)

Claim.—In a weighing-scoop, the combination of a bowl, a spring-encircled rod having its upper end connected to said bowl, the hollow handle having a slot in one side, a partition or diaphragm located in the handle, a nut fitted upon the inner end of said rod in contact with said partition or diaphragm, a series of graduations formed upon said handle at the sides of said slot, and the combined index and thumb-piece D', projecting through said slot in the handle, substantially as and for the purpose specified.

405,648.



405,649. SADDLE-BAG. JESSE N. ANDERSON, Conway, Mo. Filed Mar. 20, 1889. Serial No. 303,952. (No model.)



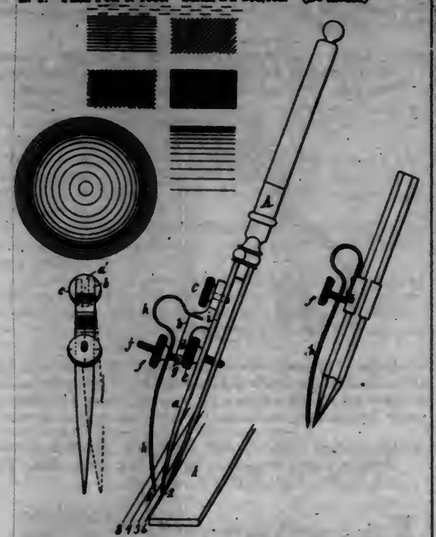
Claim.—1. A saddle-bag provided with a pocket and having a removable folding board consisting of overlapping sections, as *w*, provided with opposite slides *w'*, substantially as specified.

2. In saddle-bags, the pocket having a pivoted box fitting in an opening in its front side, the hooks to limit the outward swing of the box, the covering-flap extending over the upper and front sides of the pockets, and the catch on the free end of the said flap, consisting of a plate which is provided with a perforation to fit over a shoulder-stud on the front side of the swinging box, and the slide mounted on the said plate and provided with a slot to engage the stud, substantially as and for the purpose specified.

3. In saddle-bags, the pocket formed from a single piece of leather, consisting of the back fold B, the bottom fold E, the side folds F F, provided with ears *f f*, which are secured to the bottom fold, the front flaps G G, connected at their free edges, the fold K, which forms the front of a swinging box, and the folds L L and M M, which form the sides and rear of the said box, substantially as specified.

4. The pocket G, herein described, provided with an opening in its front wall, having a pivoted metal-lined pocket mounted therein, and a metal lining mounted in the pocket G, which pocket is longitudinally subdivided and provided with metal compartment-forming transverse partitions, substantially as specified.

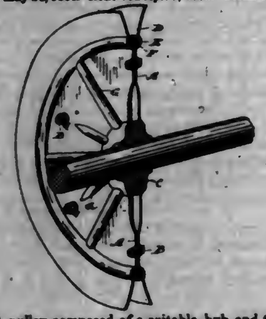
405,650. DRAWING PEN AND PENCIL. RUFUS ANDERSON, Ithaca, N. Y. Filed Feb. 8, 1889. Serial No. 299,092. (No model.)



Claim.—1. A spacer for a drawing-pen, consisting of a spring secured to a block, and an adjusting-screw attached to the block and extending through the spring, having an adjusting-nut on its outer end, the said block being slotted to admit of its being inserted under the pen-adjusting nut, substantially as shown and described.

2. The combination, with the adjusting-screw and top bow of a drawing-pen, of a slotted block *d*, a spring *h*, and adjusting-screw *e*, whereby the spring may be adjusted longitudinally and laterally with the points of the pen, substantially as shown and described.

405,651. GROOVED PULLEY. WALTER H. AVIS, York, Ontario, Canada. Filed May 21, 1888. Renewed Apr. 5, 1889. Serial No. 306,146. (No model.)



Claim.—1. A pulley composed of a suitable hub and two metal sheets formed with a peripheral groove, combined with a rubber ring seated in a recess at the bottom of said groove and a core of compressible material in said ring, substantially as described.

2. A pulley provided with a groove formed of two sheets of metal flaring in opposite directions and having a recess in the bottom of the groove and a core of compressible material in said recess, substantially as described.

405,652. MOLD FOR MAKING SEWERS. JOHN RAABE, Waco, Tex. Filed Dec. 14, 1888. Serial No. 293,573. (No model.)

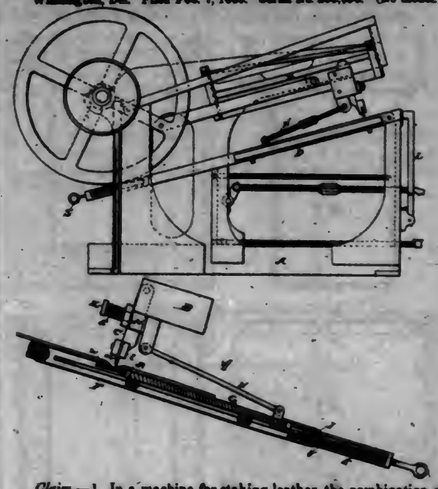


Claim.—1. An expansible and contractible reversible mold for sewers, in form in cross-section of either a semicircle, semi-ellipse, or semi-ovate, formed of segmental or quadrantal portions hinged together and stayed by swinging braces, substantially as described.

2. An expansible and contractible reversible mold for sewers, in form in cross-section of either a semicircle, semi-ellipse, or semi-ovate, formed of segmental portions hinged together and provided with stay-braces and thrusting tie-rods, substantially as described.

3. An expansible and contractible reversible mold for sewers, in form in cross-section of either a semicircle or semi-ovate, formed of segmental portions hinged together and provided with swinging braces and adjustable props, substantially as described.

405,653. LEATHER-DRESSING MACHINE. GEORGE W. BAKER, Wilmington, Del. Filed Feb. 7, 1889. Serial No. 299,096. (No model.)



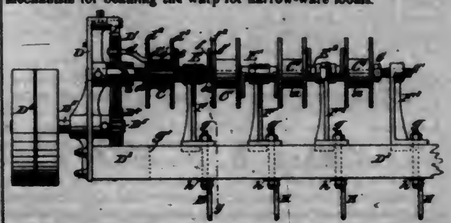
Claim.—1. In a machine for staking leather, the combination of the reciprocating slotted slide, the reciprocating staking-tool carrier having a pivoted spring-controlled knife, and the hard-roller bearing carried by said slide, the working-edge of the knife being arranged in close proximity to said roller-bearing, substantially as set forth.

2. In a machine for staking leather, the combination, with a reciprocating slotted slide, of a hard roller forming the back wall of the slot of said slide, and a tension-governed reciprocating staking-knife having its working-edge in close proximity to the said roller, substantially as specified.

3. In a machine for staking leather, the combination, with a reciprocating slotted slide and with a reciprocating tool-carrier moving in unison therewith, of the pivoted knife-shank, its tension-spring, and the adjustable bearing of said spring, substantially as specified.

405,654. WARP-BEAMING MACHINE. WALTER BAMFORD, Paterson, N. J. Filed Apr. 5, 1889. Serial No. 306,343. (No model.)

Brief.—The invention has for its object to provide an improved mechanism for beaming the warp for narrow-ware looms.



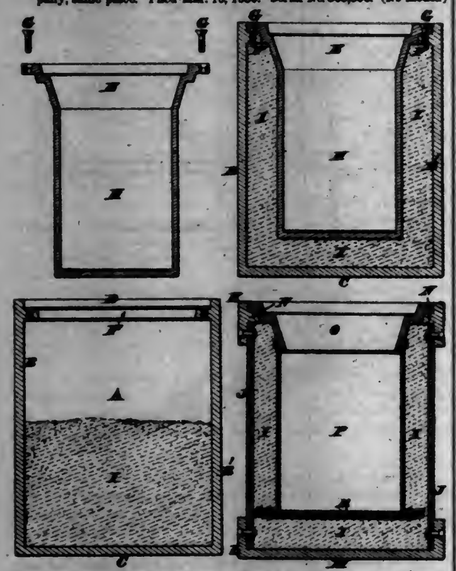
Claim.—1. In a warping attachment, the combination, with driving mechanism, of a number of narrow beams upon which warp to be beamed is delivered, separate shafts in which said beams are loosely journaled, loose connections between said shafts and the beams, whereby motion is transmitted throughout the series, and movable brackets in which said shafts are journaled, substantially as specified.

2. In a warping attachment, the combination, with driving mechanism comprising a gear-wheel provided with an arm, of a number of narrow beams upon which warp to be beamed is delivered and with one of which said arm has a loose connection, separate shafts in which said beams are loosely journaled, loose connections between said shafts and the beams, whereby motion is transmitted throughout the series, and movable brackets in which said shafts are journaled, substantially as specified.

3. In a warping attachment, the combination, with driving mechanism, of a number of narrow beams, separate shafts in which said beams are loosely journaled, loose connections between said shafts and beams, brackets in which said shafts are journaled, a stretcher provided with a longitudinally-extending slot, bolts secured to said brackets and extending through said slots, and cam-levers pivotally connected to said bolts below the stretcher, substantially as and for the purpose specified.

405,655. PROCESS OF MANUFACTURING FIRE-PROOF SAFES.

JACOB RAUH, Cincinnati, Ohio, assignor to the Victor Safe and Lock Company, same place. Filed Mar. 16, 1889. Serial No. 303,550. (No model.)



Claim.—1. The within-described process of manufacturing safes, which process consists in charging the outer shell with a plastic fire-proof filling, and then forcing the inner box down into the latter, whereby said filling is gradually displaced and caused to ascend around the sides of said box, so as to enter every corner and crevice of the safe, the surplus material escaping at the joint between the door-frame and its seat within the shell, and said box being secured in place, substantially as herein described.

2. The within-described process of manufacturing safes, which process consists in charging the outer shell with a plastic fire-proof filling, and then forcing the inner box down into the latter, whereby said filling is gradually displaced and caused to ascend around the sides of said box, so as to enter every corner and crevice of the safe, the surplus material escaping at the joint between the door-frame and its seat within the shell, and said box being secured in place by anchoring it in said filling, substantially as herein described.

405,656. GAS-REGULATING BURNER.

ORSON W. BENNETT, Washington, D. C. Filed Oct. 18, 1888. Serial No. 288,426. (No model.)



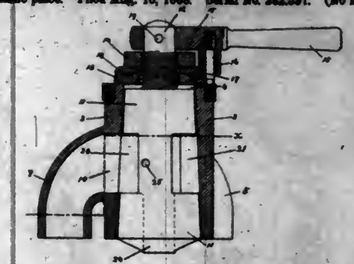
Claim.—1. The combination, with a pillar and a tip adapted to engage therewith, of a regulating-plug having opposing gas-passages leading from its periphery toward its axis and a passage leading from the opposing gas-passages to the end of the plug, the said regulating-plug being independent of the pillar and adjustably attached to the tip, substantially as set forth.

2. The combination, with a pillar and a tip adapted to engage therewith, of a regulating-plug having opposing gas-passages leading from its periphery toward its axis, and a passage leading from the opposing gas-passages to the end of the plug, the said tip being independent of the pillar, and a tubular part connecting the said plug with the tip, substantially as set forth.

3. The combination, with a pillar and a tip adapted to engage therewith, of a regulating-plug having opposing gas-passages leading from its periphery toward its axis, and a passage leading from the opposing gas-passages to the exterior of the plug, the said tip being independent of the pillar, and a tubular part, one end of which fits within the base of the tip and the opposite end of which forms a seat for the said plug, and a cut-off to the entrance of the gas, substantially as set forth.

405,657. LOCOMOTIVE-VALVE FOR AIR-BRAKES.

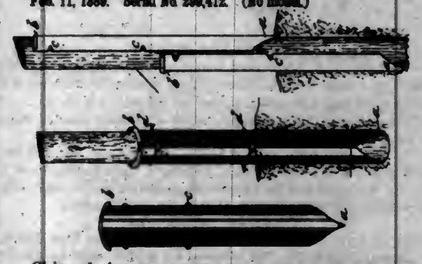
GEORGE A. BOYDEN, Baltimore, Md., assignor to The Boyden Power Brake Company, same place. Filed Aug. 10, 1888. Serial No. 282,397. (No model.)



Claim.—The combination of the casing 3, the ports 8, 9, and 10, communicating with suitable pipes, the plug 11, provided with recesses 20 and 21, the port 25, and the exhaust-port 24, arranged to discharge the air from the plug, substantially as and for the purpose set forth.

405,658. POLE OR POST PROTECTOR.

MILTON R. CAMPANY, Hamilton, assignor of one-half to Horace B. Peck, Allegan, Mich. Filed Feb. 11, 1889. Serial No. 299,412. (No model.)



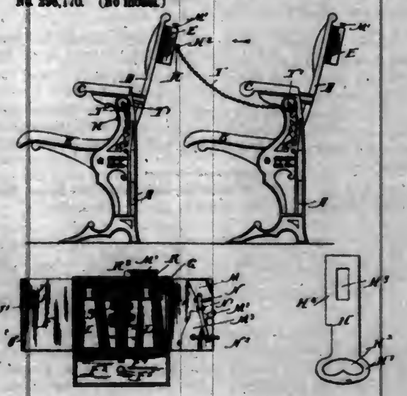
Claim.—1. As a pole or post protector, the semi-tubular metallic sheets pointed at one end, and provided with a flange at the other, adapted to be driven into the earth beside a pole or post and act as a protector and support for the same, as shown and described.

2. The pole or post protector consisting of the semi-tubular sheets having their lower ends pointed and turned inward, their upper ends provided with an outwardly-projecting flange, and the projection *c* along their edges to prevent the slipping downward of clamps by which they are secured in place, substantially as set forth.

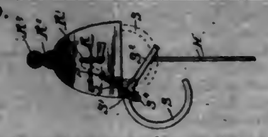
3. The combination, with the pole or post A, of the semi-tubular metallic protectors B, having flanges *b* and projections *c*, and clamps *d*, surrounding said protectors and retaining them in position, as specified.

405,659. COIN-CONTROLLED OPERA-GLASS CASE.

EDWARD J. COLBY, Chicago, Ill., assignor to Ferdinand Siegel, Joseph S. Baer, and Abraham M. Rothschild, all of same place. Filed Jan. 31, 1889. Serial No. 298,170. (No model.)



405,659.



Claim.—1. The combination of a coin-controlled opera-glass case, a lock on the opera-glass, and a key adapted to unlock the case and to be itself locked to the opera-glass.

2. The combination of a coin-controlled opera-glass case, a lock on the opera-glass, and a key adapted to unlock the case and to be itself locked to the opera-glass, and a chain fastened to the opera-chair and the key.

3. The combination of a coin-controlled case, a removable article therein, and a key adapted to unlock the case and to be itself locked to such article.

4. The combination of a coin-controlled case, a removable article therein, and a key adapted to unlock the case and to be itself locked to such article, and a chain secured at one end and at the other fastened to the key, so that by such key the article is released from the case but secured to the chain.

5. The combination of a coin-controlled opera-glass case, a lock on the opera-glass, and a key adapted to unlock the case and to be itself locked to the opera-glass, and a chain fastened to an opera-chair and the key, said opera-glass case secured to one chair and the chain to the next chair in the rear.

6. The combination of a case, a coin-controlled lock therefor, an article provided with a lock to be contained in such case, and a key adapted to unlock the case and to be at the same time automatically engaged by the lock on the article, so as when the case is opened to leave the key secured to the lock on the article.

7. The combination of a case having a lock, said case being provided with a slotted swiveled portion in the edge of one of its folding doors, and a key adapted to enter such slot and when turned toward the edge of such door to permit said door to open and pass from such slot.

8. The combination of an opera-glass having a spring-lock secured thereto with a case therefor, a coin-controlled lock thereon, and a key and a chain, said key adapted to unlock the case and to be itself engaged while so doing by the spring-lock on the article.

405,660. SIEVE.

JOHN R. CORNWALL, Moline, Ill., assignor to the Barnard & Leas Manufacturing Company, same place. Filed May 9, 1888. Serial No. 273,316. (No model.)



Claim.—The combination of the shoe and the inclined frame having shouldered side bars secured therein with the sieve composed of strips C, arranged in a stepped tier on said bars, overlapping but not touching each other and having their rear edges curved upward and forward and provided with slots in their outer edges having outwardly-diverging sides, all substantially as and for the purpose specified.

405,661. METHOD OF MAKING RAKES.

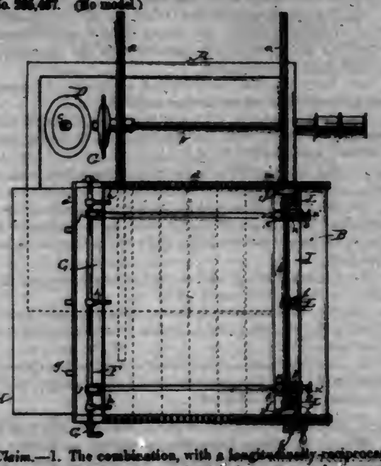
WARREN H. COWDERY, Ashtabula, Ohio, assignor of one-half to Samuel R. Harris, same place. Filed Mar. 14, 1889. Serial No. 303,270. (No model.)



Claim.—An improvement in the method of making rakes, consisting of the following steps: first, making an angular cut at each end of the blank, said angular cut consisting of the transverse cut *a'*, extending from the lower edge of the blank transversely toward its upper edge, and of the longitudinal cut *b*, extending from the upper end of said transverse cut longitudinally toward the center of the blank, forming the cut end portions *c*, and, second, turning outward said cut end portions *c* and drawing them into tangs, substantially as set forth.

405,662. STEREOTYPER'S SAWING, TRIMMING, AND GROOVING MACHINE.

JOHN R. CUMMINS, New York, N. Y., and GEORGE R. LLOYD, Chicago, Ill. Filed Jan. 3, 1888. Renewed Jan. 4, 1889. Serial No. 295,667. (No model.)



Claim.—1. The combination, with a longitudinally-reciprocating bed, of a combined separating and trimming cutter and a grooving-saw inclined toward said cutter, as set forth.

2. In a stereotyper's sawing, trimming, and grooving machine, the combination of a revolving cutter adapted to saw stereotype-plates and to trim the sides of the kerf so made, and a grooving-saw inclined toward said cutter at a suitable angle, so that the uppermost point of its periphery is removed from said cutter a suitable distance and is on a plane slightly below that of the uppermost part of the periphery of said cutter.

3. The combination, with a longitudinally-reciprocating bed and a laterally-movable longitudinal feed-plate thereon, of a combined separating and trimming cutter and a grooving-saw inclined toward said cutter, as set forth.

4. The combination, with a longitudinally-reciprocating bed having racks secured to its transverse edges, feed-plate I, and shaft *i*, journaled on said plate and having pinions on it meshing with said racks, of a combined separating and trimming cutter and an inclined grooving-saw, as set forth.

5. The combination, in a combined stereotyper's sawing, trimming, and grooving machine, with a longitudinally-reciprocating bed having transverse racks along its front and rear edges, of the feed-plate I, having guide-frames near its ends, shaft *i*, journaled in bearing-blocks movable laterally in said guide-frames and provided with offsets or eccentrics at suitable intervals, and the oscillating bars journaled on said offsets and pivotally connected at their opposite ends to plate I, as described.

6. In a stereotyper's sawing, trimming, and grooving machine, the combination, with the bed and the longitudinal feed-plate thereon, of the transverse adjusting-plates *n n*, having the arms depending from one end thereof, clamp-plates *s s*, and thumb-screws *t t*, as set forth.

7. In a stereotyper's sawing, trimming, and grooving machine, the combination, with the bed having racks on the transverse edge thereof and the feed-plate I thereon, of shaft *i*, journaled on said plate I, and having pinions thereon engaging with said racks, and the adjusting-plates *n n*, clamp-plates *s s*, and thumb-screws *t t*, as set forth.

8. In a stereotyper's sawing, trimming, and grooving machine, the combination, with the bed and the laterally-moving feed-plate I thereon, of the adjusting-plates *n n* and screws *n' n'*, as set forth.

9. In a stereotyper's sawing, trimming, and grooving machine, the combination, with the bed and the laterally-moving feed-plate I thereon, of the adjusting-plate and gage-screws *n' n'*, clamping-plates *o o*, and thumb-screws *t t*, as set forth.

10. In a stereotyper's sawing, trimming, and grooving machine, the combination, with the bed and the laterally-moving feed-plate I thereon, of the rock-shaft G and oscillating presser-plate F, substantially as set forth.

11. In a stereotyper's sawing, trimming, and grooving machine, the combination, with the laterally-movable feed-plate I thereon, of the adjusting-plate and the clamping-plate F, as set forth.

12. In a stereotyper's sawing, trimming, and grooving machine, the combination, with the longitudinally-reciprocating bed, rack *d d*, secured thereto over the lateral edges thereof, and gage-bar *d'*, of the laterally-movable feed-plate I, as set forth.

13. In a stereotyper's sawing, trimming, and grooving machine, the combination, with the longitudinally-reciprocating bed and gage-bar *d'*, of the clamping-plate F and feed-plate I, as set forth.

14. In a stereotyper's sawing, trimming, and grooving machine, the combination, with the bed having racks *d* on the lateral edges thereof, the guard-strip *e*, and gage-bar *d'*, of the clamping-plate F and feed-plate I, as specified.

15. The combination, with the bed, of the plate F, rock-shaft G, having eccentrics or offsets thereon, and links *f f*.

16. The combination, with the bed, of the plate F, having its bearing-surface faced with leather, rock-shaft G, having eccentrics or offsets *g g*, and links *f f*.

17. The combination, with the bed, of the plate F, rock-shaft G, links connecting said plate and shaft, and the arms *h h*.

18. The combination, with the bed, the cutters C, and saw D, of the inclined plane H, placed parallel with the side edges of the bed, adjacent to the said cutter and saw and near the front of the machine, as set forth.

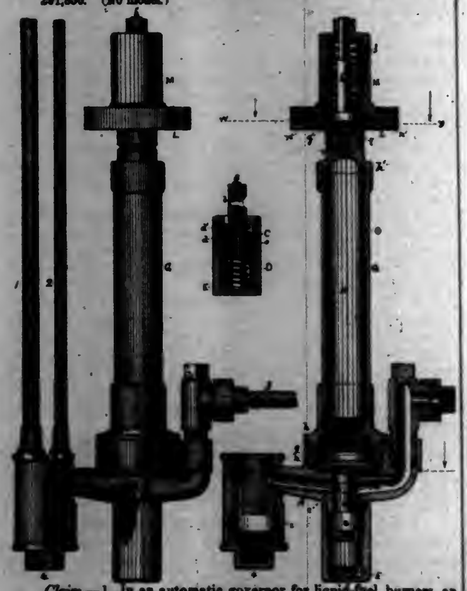
19. The combination, with the bed and inclined plane H, as described, of rock-shaft G and the arms *h h*.

20. The combination, with the bed and the inclined plane, as described, of the oscillating clamping-plate F and the tipping-arms *g g*, as set forth.

21. The combination, with the bed and the inclined plane, as described, of the oscillating clamping-plate F, the tipping-arms *g g*, the rock-shaft G, and the arms *h h*.

405,663. AUTOMATIC GOVERNOR FOR LIQUID-FUEL BURNERS.

WILLIAM H. EASTMAN, Boston, Mass., assignor to the Eastman Freight Car Heater Company, Portland, Me. Filed Nov. 26, 1888. Serial No. 291,836. (No model.)



Claim.—1. In an automatic governor for liquid-fuel burners, an unequal expansion pair or combination, an elastic diaphragm, and stiff metallic segments that prevent bulging of the said diaphragm and transmit its pressure in whole or in part to a valve.

2. In an automatic governor for liquid-fuel burners, a hermetically-sealed chamber containing an expansible liquid, and provided at one point with an elastic diaphragm for operating a governing-valve and at another point with an elastic diaphragm for relieving pressure from excessive expansion.

3. In an automatic governor for liquid-fuel burners, a hermetically-sealed chamber containing an expansible liquid, and provided at one point with an elastic diaphragm for operating a governing-valve and at another point with an elastic diaphragm for relieving pressure from excessive expansion, in combination with an indicator which shows that such excessive expansion is operating.

4. In an automatic governor for liquid-fuel burners, a valve operated by an unequal-expansion combination, in combination with an elastic diaphragm and stiff metallic segments which transmit pressure from parts of the said diaphragm remote from the part that is in contact with the valve.

5. In an automatic governor for liquid-fuel burners, the combination of the puppet-indicator, the relief-diaphragm, and the spring *j*.

6. In an automatic governor for liquid-fuel burners, the puppet-indicator *k*, actuated through an elastic diaphragm and supporting-segments by expansion in excess of that required to operate the governing-valve, in combination with said elastic diaphragm and supporting-segments.

7. In an automatic governor for liquid-fuel burners, the combination of a valve operated by expansion in opposition to the pressure of a comparatively weak spring, and a puppet-indicator operated by increase of expansion against the pressure of a stronger spring, in combination with said comparatively weak spring and said stronger spring.

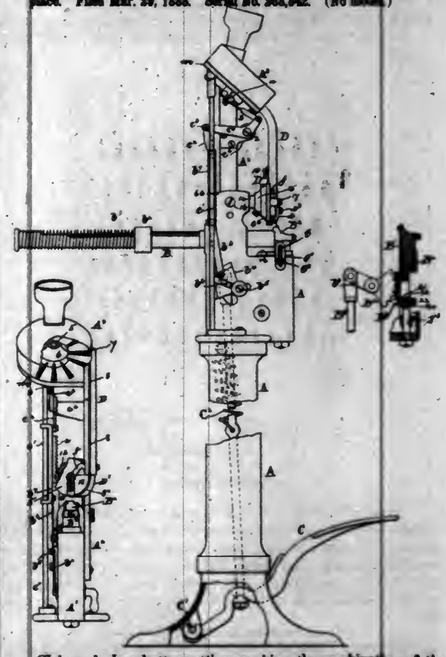
8. The combination of the chamber H and liquid contents, the diaphragm *g'*, supporting-segments *n'*, puppet *k*, and spring *j*.

9. The combination of the valve-case *a*, piston B, adjusting-nuts *d d'*, the spring E, with the diaphragm *g*, and supporting-segments *n*.

10. The combination of the valve-case *a*, piston B, adjusting-nuts *d d'*, spring E, diaphragm *g*, supporting-segments *n*, the chamber H, and its expansible liquid contents, with the diaphragm *g'*, supporting-segments *n'*, the indicating-puppet *k*, and the spring *j*.

405,664. BUTTON-SETTING MACHINE.

LOZIER C. BERRIDGE, North Grafton, Mass., assignor of one-half to Charles H. Holden, same place. Filed Mar. 29, 1888. Serial No. 268,942. (No model.)



Claim.—1. In a button-setting machine, the combination of the following instrumentalities, viz: a raceway for the buttons, a raceway to guide fasteners, an anvil, a driver, a detent for the buttons in the button-raceway, a button-guideway in extension of the raceway and located between the latter and the anvil, as described, and an independent reciprocating segmental transferer to take the said buttons singly from the raceway to the anvil and driver into position to have a fastener driven through the button-eye, substantially as described.

2. In a button-setting machine, the combination, with a raceway, anvil, and driver, of a circularly-moving reciprocating segmental transferrer and intermediate button-guide, the said transferrer transferring the buttons from the end of the raceway to the driver, substantially as described.

3. The slotted raceway, the anvil, the driver, the button-supporting spring located near the said driver, and the guideway interposed between the button-raceway and the anvil, combined with a circularly-moving reciprocating segmental transferrer adapted to transfer the button from the raceway to the anvil, and to also act as a stop for the endmost button of the column of buttons in the button-raceway, substantially as described.

4. In a button-setting machine, an anvil and a driver, combined with a vertically-movable work-support actuated by the said driver and with a stop to limit the upward movement of the work-support toward the anvil, substantially as described.

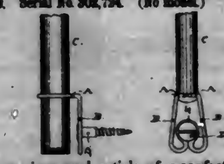
5. In a button-setting machine, a button-receiving hopper, a slotted raceway in connection therewith, an anvil, a slotted button-guideway interposed between the said anvil and raceway, and a work-support and driver, combined with a segmental transferrer to transfer the button from the end of the raceway to the driver, the slots in the raceway and in the guideway being constructed, substantially as described, to enable the eye of the button to be presented toward the operator, in order that the latter may unerringly see whether or not the material and the eye of the button are in proper position to be entered by the prong of the fastener, substantially as described.

6. In a button-setting machine, the hopper, the button-raceway slotted at its front side, and the button-guideway, also slotted at its front side, for the extension through the said slots of the shanks of the buttons, combined with the anvil and driver and with a segmental transferrer to take the buttons from the button-guideway with their shanks toward the operator, in which condition the open eye of the button is readily visible, substantially as described.

7. The button-raceway, the button-guide, the transferrer, its shaft 13, and the driver, combined with the connecting devices between the said rod and driver and between the rod and shaft 13, to actuate the transferrer, substantially as described.

405,665. BLIND-STOP.

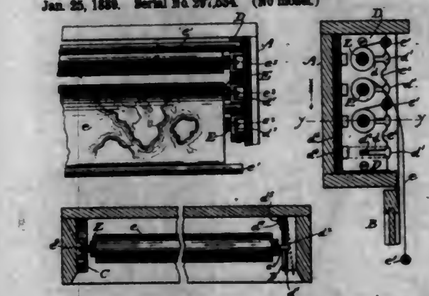
MARQUIS L. HALL, Omaha, Nebr. Filed Feb. 16, 1889. Serial No. 300,734. (No model.)



Claim.—As an improved article of manufacture, a device for holding the connecting bar or rod of the blind-slats, consisting of a single piece of wire bent midway of its length to form an eye and having upwardly-directed branches B, and a horizontally-disposed clamping portion formed from the branches A, which are bent in a curvilinear manner, the whole being adapted to be secured to a window-blind by a screw, substantially as specified.

405,666. MAP-CASE.

GEORGE B. HECKEL and GEORGE JAMES, Chicago, Ill., assignors to Rand, McNally & Company, same place. Filed Jan. 25, 1889. Serial No. 297,534. (No model.)

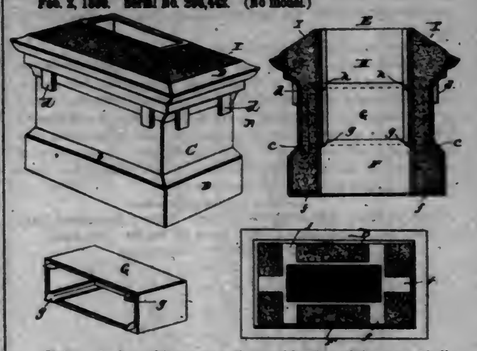


Claim.—1. The combination, with a map-case, of the roll-holding plates C D, having perforations and slots *c d*, respectively, suitable rolls, spindles c^3 c^4, and springs in operative connection with said slots for normally locking said spindles c^3 in place, substantially as shown and described.

2. The combination, with a map-case, of the roll-holding plates C, having perforations *c*, plates D, having slots *d*, and beads d^3, spindles c^3 c^4, and springs c^7, having bent portions d^5, to conform to said beads, substantially as shown and described.

405,667. CHIMNEY-TOP.

MONTGOMERY HINKLEY, Mercer, Pa. Filed Feb. 2, 1888. Serial No. 298,442. (No model.)



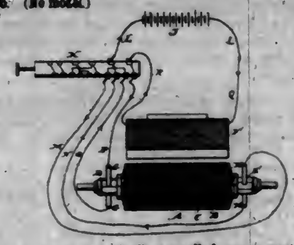
Claim.—1. In a chimney-top, the combination of the outer shell, the inner shell projecting above the upper end of the outer shell, and the interposed filling, which forms a wash between the upper ends of the said shells, substantially as specified.

2. In a chimney-top, the combination of the outer shell, consisting of a base, a cap, and intermediate section, the inner shell containing a lower section F, provided with lateral projections *f f*, which bear at their ends against the inner surface of the base, and the intermediate and upper sections G and H, provided with depending points or lugs *g* and *h*, to engage the corners of the next lower section, and the filling interposed between the sides of the said shells, substantially as specified.

3. In a chimney-top, the combination of the inner shell, the outer shell consisting of a base B, adapted to rest on the upper end of the chimney, the intermediate section C, provided with depending points or lugs at its corners to engage the inner corners of the base, and the cap resting on the upper edge of the intermediate section and provided with the outer depending ears, which bear against the sides of the section C, and the interposed filling, substantially as and for the purpose specified.

405,668. ELECTRIC MOTOR OR DYNAMO-ELECTRIC MACHINE.

RUDOLPH M. HUNTER, Philadelphia, Pa. Filed Jan. 23, 1889. Serial No. 297,795. (No model.)



Claim.—1. In an electrically-propelled car, a motor geared to the axle and having field-magnets and a rotating armature-core, in combination with two sets of coils of insulated wire wrapped about said core and substantially uniformly distributed and independently insulated, a commutator at each end of the armature, each having its contact segments connected to alternate coils, two pairs of brushes, one pair for each commutator, a source of electric supply and connecting-circuits between its field-magnets, commutator-brushes and source of electric supply, whereby the field-magnets are permanently in series with the armature and source of electric supply.

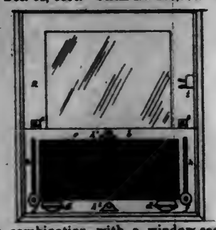
2. The combination of an electrically-propelled vehicle, an electric motor mechanically connected to drive the axle formed of field-magnets and two sets of armature-coils having a commutator for each set of coils, a battery carried by the vehicle, a regulator also carried by the vehicle for coupling up the two sets of armature-coils in series or multiple and maintain them when energized in series with the field-magnets, and separate connecting-circuits between the battery, field-magnets, the two sets of armature-coils, and the regulator.

3. The combination of an electrically-propelled vehicle, and electric motor mechanically connected to drive the axle and formed of

field-magnets and two sets of armature-coils having a commutator for each set of coils, a battery carried by the vehicle, having its cells connected in series, a regulator also carried by the vehicle for coupling up the two sets of armature-coils in series or multiple and maintain them in series with the field-magnets, and separate connecting-circuits between the battery, field-magnets, the two sets of armature-coils, and the regulator, whereby the battery-cells are always in series with the motor.

4. An electrically-propelled vehicle having an electric motor mechanically connected to its axle and formed of field-magnets, two sets of armature-coils in one structure and in which the field-magnet coils are in series with the armature-coils, a commutator for each set of coils, and a pair of brushes for each commutator, in combination with a source of electric supply, separate circuits for connecting the field-magnet coils and each set of armature-coils with the source of electric supply, and a regulator to couple the armature-coils in series or multiple with the source of electric supply.

405,669. CAR-WINDOW SCREEN. EMILY S. HUTCHINSON, Peekskill, N. Y. Filed Dec. 11, 1888. Serial No. 293,308. (No model.)

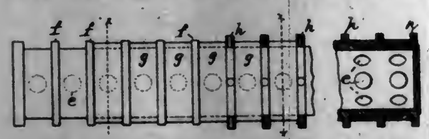


Claim.—1. The combination, with a window-sash, of a sliding screen attached thereto by means of guiding-studs placed on the lower part of the window-sash and operating in slots provided in the screen-frame, substantially as described, the handles for raising the window placed on the screen-frame, whereby the sash and screen are raised together, the screen, when released by the hands, dropping below the sash, substantially as herein described.

2. In a window-screen, the combination, with the window-sash, of a screen-frame attached to the sash by means of guiding-studs on the lower part of the sash, projecting through slots provided in the screen-frame, the studs having knobs on their outer ends to keep the screen against the sash, the handles for raising the window placed on the screen-frame, and the window-sash being provided with stops to limit the upward movement of the screen, substantially as herein shown and described.

3. In combination with a sliding screen attached to a window-sash, substantially as described, stops *c*, located on the window-sash the height of the screen above the bottom of the window-sash, the stops having beveled overhanging lips, substantially as shown, for the purpose of securing the screen-frame from rattling when both sash and screen are lowered.

405,670. CHECK-VALVE FOR FILTER CONSTRUCTIONS. JOHN W. HYATT, Newark, N. J., assignor to The Hyatt Pure Water Company, of New Jersey. Filed Feb. 23, 1888. Serial No. 265,558. (No model.)

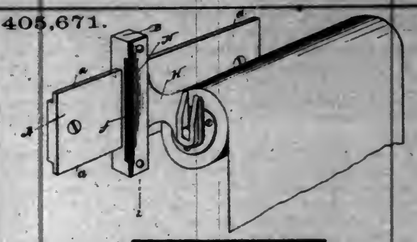


Claim.—The combination, with a filter containing loose granular material, of an inlet-pipe buried in such granular material and provided at intervals with rows of holes extending transversely around the pipe, and a separate rubber band of suitable width to cover a single row of holes applied over each row and arranged to yield freely at the opposite sides of such holes to form a passage for the fluid at both edges of the band, the whole arranged and operated as and for the purpose set forth.

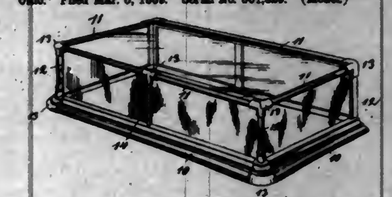
405,671. CURTAIN-POLE-SUPPORTING FIXTURE. THOMAS H. KELLEY, Salem, Mass. Filed July 10, 1888. Serial No. 279,568. (No model.)

Claim.—A support for a curtain-fixture, consisting of a fixed supporting-bar A, a block B, adjustably supported thereon, a recess in said block covered by a spring-plate, and a supporting-bracket H, having a flange fitting the recess in the block and detachably held by the spring-plate, substantially as described.

405,671.



405,672. JOINT FOR SHOW-CASES. HENRY KRUSE, Cincinnati, Ohio. Filed Mar. 5, 1889. Serial No. 301,829. (Model.)



Claim.—1. In combination with a show-case, the metallic socket-joints 13, wooden parts provided with metallic foundations 15, entering said sockets and the former soldered to the latter, as shown and described.

2. In a show-case, the combination of the angle-iron 17, connecting two rails, the metallic corner socket-joint 13, connected to angle-iron 17, and the third rail or post soldered to the corner socket-joint, as shown and explained.

405,673. TENSION-REGULATING DEVICE FOR LOOM-SHUTTLES. MATHIAS MERCIER, Biddeford, Me., assignor to Harold Kelly, same place, and John P. Kelly, Saco, Me. Filed Jan. 12, 1889. Serial No. 296,150. (No model.)

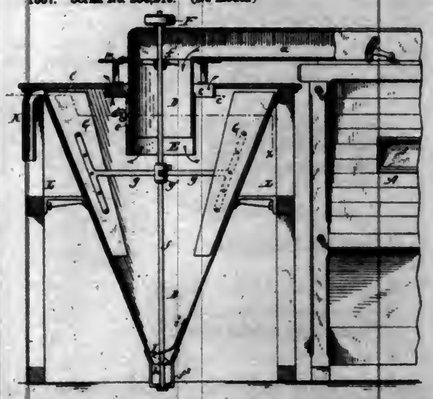
Brief.—The object of the invention is to secure uniform tension and to permit automatic threading of the tension device.



Claim.—1. The combination, with a shuttle-body, of a tension-weight pivoted at one end within the shuttle-body, and having its free end beveled, substantially as set forth.

2. The combination, with a shuttle-body, of a tension-weight having one end free and beveled and the other loosely held in a case, and said case attached to the shuttle-body, substantially as set forth.

405,674. DUST-COLLECTOR. ORVILLE M. MOSER, Jackson, Mich., assignor to the Knickerbocker Company, same place. Filed Nov. 26, 1887. Serial No. 256,219. (No model.)



Claim.—1. The combination, with the separating-chamber having an imperforate peripheral wall, an outlet for the purified air located inwardly from the peripheral wall, and a dust-outlet, of an inlet-pipe for the dust-laden air entering the separating-chamber at or

near its axis, a rotating fan arranged within said chamber, whereby the dust-laden air is caused to whirl therein and the dust is massed against the imperforate peripheral wall, while the purified air moves toward the axis of the separating-chamber, and power mechanism whereby the fan is rotated, substantially as set forth.

2. The combination, with a tapering separating-chamber having an imperforate peripheral wall, a dust-discharge opening at its small end, and an outlet for the purified air, of an air-inlet pipe entering said chamber centrally, a rotating fan arranged within said chamber, and power mechanism whereby the fan is rotated, substantially as set forth.

3. The combination, with the separating-chamber having an imperforate peripheral wall, a dust-discharge opening at its end, and a central air-escape opening, of an air-inlet pipe entering the separating-chamber through said air-escape opening and made of smaller size than said opening, substantially as set forth.

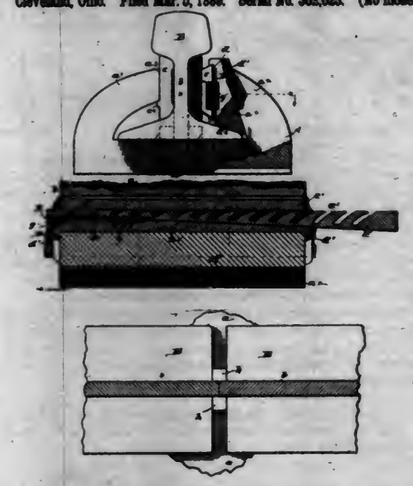
4. The combination, with the tapering separating-chamber provided with a dust-discharge opening at its small end and an air-escape opening at its large end, of an air-inlet pipe entering the separating-chamber through said air-escape opening and made of smaller size than said opening, substantially as set forth.

5. The combination, with the separating-chamber having an imperforate peripheral wall and a dust-discharge opening and an air-outlet at its end, of a lengthwise-adjustable air-inlet pipe entering said case centrally, a fan arranged within said case, and power mechanism whereby the fan is rotated, substantially as set forth.

6. The combination, with the tapering separating-chamber having an imperforate peripheral wall, a discharge-opening for the light particles at its small end, a discharge-opening for the heavy particles at its large end, and an air-outlet at its end, of an air-inlet pipe entering said case centrally, a fan arranged within said case, and power mechanism whereby the fan is rotated, substantially as set forth.

7. The combination, with the separating-case having an imperforate peripheral wall, a dust-discharge opening at its end, a central air-outlet, and a power-fan arranged within the separating-case, of a central air-inlet pipe entering the separating-case through the air-outlet opening, and a deflector arranged around the air-inlet pipe opposite the air-outlet opening, substantially as set forth.

405,675. JOINT FOR RAILWAY-RAILS. OBERLIN L. OLDS, Cleveland, Ohio. Filed Mar. 5, 1889. Serial No. 302,063. (No model.)

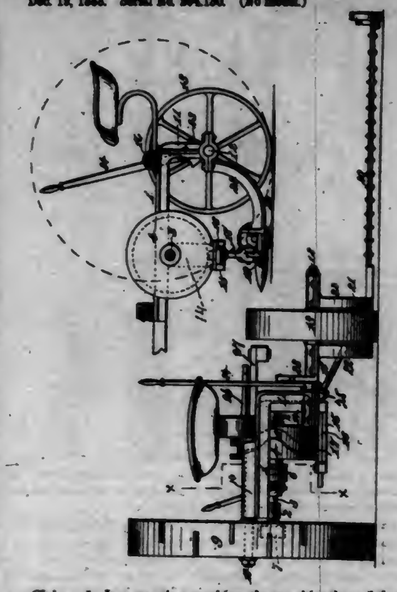


Claim.—1. In a rail-joint, a chair having a laterally-inclined face opposite the web of the rail, in combination with a longitudinally-tapered gib adapted to said inclined face on one side and its opposite face parallel in vertical lines to the web of the rail with a wedge and fish-bars, substantially as set forth.

2. In a rail-joint, a gib wedge-shaped longitudinally and having a longitudinal groove on its inner side and its outer side inclined outwardly from its top to its bottom edge, in combination with a chair correspondingly inclined to the gib, and a wedge and fish-bar, substantially as set forth.

3. In a rail-joint, a chair with one vertical and one inclined side, and a rail, in combination with a gib having an inclined side resting against the side of the chair and its lower edge bearing on the rail, the said gib tapered and grooved longitudinally, and a wedge set in said groove and bearing against the fish-bar, substantially as set forth.

405,676. MOWER. JOHN A. PEER, Brooklyn, assignor, by direct and mesne assignments, to Richard K. Owens, James Owens, and Theodore W. Bryant, New York, Alfred G. Ely, Owego, and Charles C. Ely and Frederick Ely, New York, N. Y. Filed Sept. 5, 1887. Renewed Dec. 19, 1888. Serial No. 294,120. (No model.)



Claim.—1. In a mowing-machine, the combination of the frame 1, having short axles 10 and 12 at different heights, the drive-wheel 9, mounted on the upper short axle 10, a cam 4, actuated from said drive-wheel, the small traveling wheel 13, mounted on the lower short axle 12, the adjustable bifurcated shoe 22, sleeved and wholly supported on the axle 12 on both sides of the traveling wheel, a cutting apparatus horizontally hinged to the lower front portion of the shoe, the pitman 18, for actuating the cutting apparatus, and the slide-bar 16, connected to the pitman by a ball-and-socket joint 25, and having a roller 17, engaged with the cam 4, substantially as described.

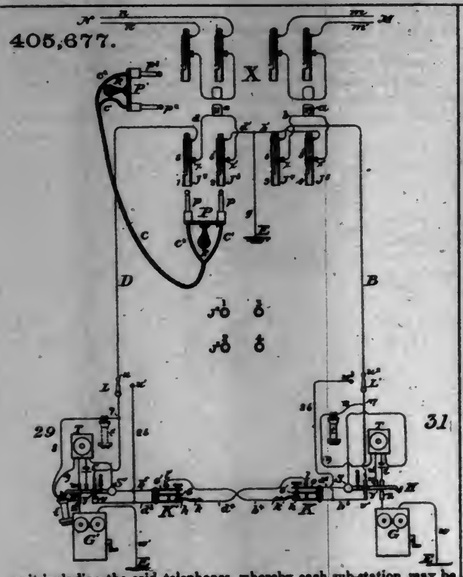
2. The herein-described mowing-machine, consisting of the frame 1, having axles 10 and 12 at different heights, the cam-shaft 3, having a loose cam 4, clutch mechanism 6, and pinion 7, the drive-wheel 9, having gear 8, the small traveling wheel 13, the adjustable bifurcated shoe 22, sleeved and wholly supported on the axle of the small traveling wheel, the finger-bar 20, horizontally hinged to the lower front portion of the shoe, the reciprocating cutter-bar 19, located in line with the cam-shaft, the pitman 18, the slide-bar 16, connected to the pitman and located in line with the cam-shaft beneath the center of the cam and having a roller 17 engaged with said cam, and the bracket 14 and guide-bar 15 for supporting said slide-bar, substantially as described.

405,677. TELEPHONE COMBINATION-CIRCUIT. FRANK A. PICKERNELL, East Orange, N. J., assignor to the American Telephone and Telegraph Company, New York, N. Y. Filed Mar. 13, 1888. Serial No. 303,063. (No model.)

Claim.—1. In a telephone-exchange system, two single-line or earth-return circuits, each extending from a central to a sub station and each normally grounded through signaling apparatus at its own sub-station, combined with automatic switches at each sub-station controlling the earth terminals of both lines and operated by the removal and replacement of the receiving-telephones, whereby when the said receiving-telephone at either sub-station is removed from its position of rest it is connected in a metallic circuit formed of the said two lines, and whereby the normal earth terminals of both lines are automatically disconnected by the operation of the switch at either station.

2. In a telephone-exchange system, the combination, substantially as hereinbefore described, of two single-line or earth-return main circuits, each extending from a central station to an earth terminal at an independent sub-station, and signal sending and receiving appliances at each sub-station included in said circuit, with telephones at each sub-station, and means also at each sub-station for disconnecting the earth terminals and signaling appliances of both circuits, and for automatically uniting the said two single lines to establish a metallic cir-

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cuit including the said telephones, whereby each sub-station may be provided with an individual ringing-line, and with an exclusive metallic talking-circuit, for the purposes specified.

3. In a telephone system, two single-line or earth-return circuits, each extending from a central station to a sub-station, where it normally terminates in the earth, each line constituting a distinct and independent signaling-circuit, automatic devices at each sub-station operated by the removal and replacement of the telephone, whereby the said two distinct lines may be united through the telephones of said sub-station in metallic circuit, and spring-jacks at the central station arranged in pairs, as shown and described herein, the terminals of both lines at said central station being in close proximity to each other, whereby both terminals may by the same movement be connected with the terminals of any other line, substantially as described.

4. The combination, substantially as hereinbefore described, of two single-line or earth-return circuits, each extending from a central station to its own sub-station, and there normally grounded after passing through signaling devices, but each passing first through a circuit-breaker or movable contact controlled by the automatic switch of the other sub-station, for the purposes specified.

5. In a telephone-exchange system, the combination of two lines, each extending from a central station through the sub-station of the other to a normal earth terminal at its own sub-station, a normally-open branch circuit at each sub-station, including the telephones of the said sub-station, the said branch being in permanent connection at one end with the line of the other sub-station, as described, and automatically-operated means at each station for disconnecting the earth terminals of both lines, and for connecting the disconnected terminal of its own line with the normally-open end of the telephone branch, whereby a metallic circuit including the telephone is established, substantially as hereinbefore described.

6. In combination with two telephone-lines, each extending, as described herein, through the station of the other to earth at its own station, signaling appliances and telephones at each sub-station, and an automatic telephone-switch at each sub-station adapted to transfer the main line of said station from its signaling-instruments to the telephones, and vice versa, and to disconnect the earth terminals of both lines, of circuit-changing keys or switches at each station controlling contacts in both lines, as described, whereby the said two sub-stations are enabled to signal and converse with each other without the intermediation of the central station, substantially as specified.

405,678. CABINET FOR PRESERVING AND DISPLAYING GAME. EBENEZER L. RAND, Worcester, Mass., assignor of one-half to Charles K. Reed, same place. Filed Jan. 5, 1889. Serial No. 295,512. (No model.)

Claim.—1. The herein-described cabinet, consisting of a glass made with a concave-convex projection or bulge and a flange and a back, between which and the inner surface of the bulge are arranged specimens of the taxidermist's art, and a frame inclosing the glass and back, substantially as described.

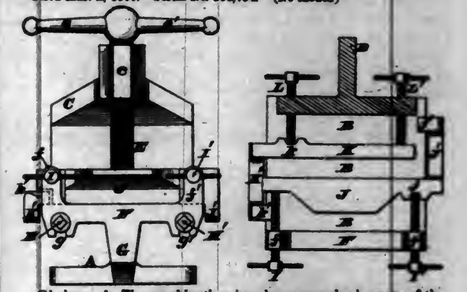
2. The combination of the glass made with a concave-convex

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projection or bulge provided with a flange and a frame and a back, substantially as shown and set forth.

405,679. HARNESS-MAKER'S PRESS. SILAS H. RANDALL, Wyoming, Ohio, assignor of one-half to James D. Randall, same place. Filed Mar. 2, 1889. Serial No. 301,754. (No model.)

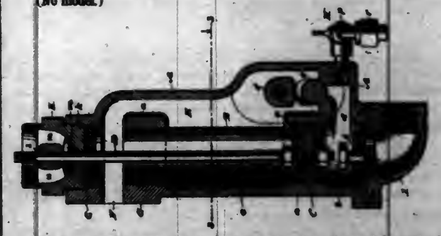


Claim.—1. The combination, in a harness-maker's press, of the main screw E, adjusting-screws I I', bed-plate B, and a jaw J, sliding upon it, which jaw has a lateral extension J' below the upper surface of said plate and a lip bearing against it, as herein described, and for the purpose stated.

2. The combination, in a harness-maker's press, of the jaw J and its adjusting-screws I I', one of which, as I', bears within the vertical groove *j* of said jaw, while the other screw I bears against an ungrooved surface of the jaw, for the purpose described.

3. The combination, in a harness-maker's press, of the bed-plate B, jaw J, sliding upon it, and fastened to said bed-plate the detachable plate F, having upwardly-projecting lugs *f f'*, to admit the adjusting-screws I I', that operate said jaw, as herein described, and for the purpose set forth.

405,680. PUMP. THOMAS J. RIDER, New York, N. Y., assignor to C. H. De Lamater, same place. Filed Dec. 15, 1888. Serial No. 293,726. (No model.)



Claim.—1. The combination of a body-piece formed in a single casting and provided with a chamber to receive a barrel and with a collar at each end of the chamber to support the barrel, the collar

being integral with the body-piece, and with a discharge-passage on one side connecting the two ends of the chamber and with a discharge-opening at its upper end, a separate barrel fitted and supported in the collars, a valveless piston, a piston-rod passing through the head of the pump, a suction-valve opening into the lower end of the body-piece, and a discharge-valve in the discharge-passage, substantially as shown and described.

2. The combination of a body-piece formed in a single casting, a separate cylinder in said body-piece, a valveless piston working in the cylinder, a piston-rod passing through a stuffing-box, a bottom section secured to the lower end of the body-piece, a suction-valve seated on the bottom section, a discharge-passage in one side of the body-piece connecting the two ends of the body-piece, a discharge-valve in the discharge-passage, a discharge-opening at the upper end of the body-piece, an air-cock connected with the lower end of the body-piece, and a second cock provided with an inlet check-valve at its outer end and connected with the lower end of the body-piece between the suction and discharge valves of the pump, substantially as shown and described.

3. In a pump, an air-cock provided with an inlet check-valve at its outer end and connected with the cylinder of the pump below the discharge-valve, substantially as shown and described.

4. The combination of a body-piece formed in a single casting, a separate barrel supported in the body-piece, a valveless piston working in the barrel, a piston-rod, a bonnet in the top of the body-piece composed of a stuffing-box and an extra guide for the piston-rod, and an oil-receiver between the stuffing-box and the guide, a bottom section secured to the lower end of the body-piece, a suction-valve seated on the bottom section, a suction-valve chamber in the lower end of the body-piece, a discharge-passage in one side of the body-piece opening into the upper end of the barrel, a port connecting the lower end of the discharge-passage with the suction-valve chamber, a rolling cylindric valve at the opening between the discharge-passage and the port, an air-cock connected with the port, a second air-cock also connected with the port and provided with an inlet check-valve at its outer end, a discharge-opening at the upper end of the body-piece on the side opposite the discharge-passage, and a flange around the discharge-opening for attachment to the engine, all substantially as shown and described.

405,681. NAIL, BOLT, &c. CHARLES D. ROGERS, Providence, R. I., assignor to the American Screw Company, same place. Filed Nov. 9, 1888. Serial No. 290,375. (No model.)



Claim.—1. As an improved article of manufacture, the nail, bolt, or other headed blank hereinbefore described, having two or more narrow grooves formed in the surface of the under side of the headed portion, said grooves commencing at or near the junction of the shank and head and extending longitudinally therefrom substantially in line with the shank and terminating at the edge or periphery of the head, substantially as set forth.

2. The headed nail or blank hereinbefore described, having the surface of the under side of the head provided with a series of longitudinally-arranged grooves, the bottoms of which form a continuation of the shank's surface and terminate in well-rounded curves, substantially as set forth.

3. The improved nail or blank *a* hereinbefore described, having a series of grooves *c*, rectangular in cross-section, formed in the surface of the under side of the head *h* and terminating at the edge or periphery of the head, substantially as shown and set forth.

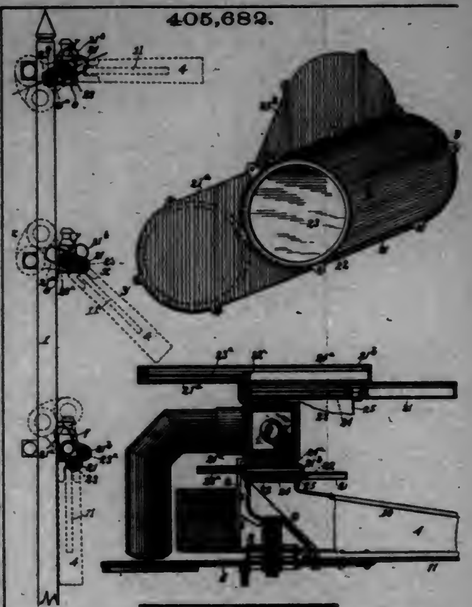
405,682. SEMAPHORE-SIGNAL. JOHN G. BURKHOLDER, Pittsburg, Pa., assignor to George Westinghouse, Jr., same place. Filed Dec. 13, 1888. Serial No. 293,404. (No model.)

Claim.—1. In a semaphore-signal, the combination of a swinging blade, a lamp for illuminating said blade, and a disk formed of translucent material movable into and out of the path of the rays of light from the lamp in accordance with the changes of position of said blades, substantially as set forth.

2. In a semaphore-signal, the combination of a swinging blade, a lamp for illuminating said blade, a tube or case moving with the blade and arranged at an angle thereto, and a disk of translucent material mounted in the tube or case, substantially as set forth.

3. In a semaphore-signal, the combination of a swinging blade, a lamp for illuminating said blade, a straight tube or case arranged at an angle to the blade, an angular tube or case arranged in proper relation to the blade, and colored disks of translucent material mounted in said tubes, substantially as set forth.

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405,683. MACHINE FOR MIXING BEVERAGES. FRANKE H. SHEPHERD and JOHN W. MEYER, Davenport, Iowa. Filed Apr. 11, 1888. Serial No. 270,358. (No model.)

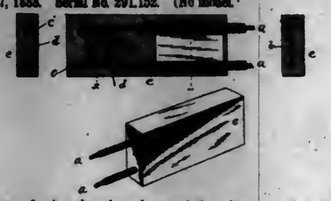


Claim.—1. The combination of the cup-support having the threaded central tube, the rotating rod having its lower end engaging the threads of said tube and provided with a rigidly-fastened crank-handle, and the cross-head mounted loosely on the rotating rod below the crank-handle, as set forth.

2. In a drink-mixer, the combination of the bifurcated standard A, the standard B, having its upper end secured at an intermediate point of the standard A, an open space being left between the standards A and B, the cross-bar I, near the lower end and connecting the legs of the standard A, the hanger secured to said cross-bar, the shaft L, mounted in said cross-bar and hanger, the pulley K on said shaft, the drive-wheel at the upper end of the standard A, the belt T, connecting said drive-wheel and pulley K, the crank-wheel on said shaft L, the guides W on the side of the standard A, the reciprocating rod V, working in said guides and carrying the glass-support-

ing devices on its upper end, and the pitman passing through the space between the standards A B and having its upper end connected to the reciprocating rod, as set forth.

405,684. ELECTRIC PRIMER. HENRY J. SMITH, Pompton, N. J., and EDMUND L. ZALINSKI, U. S. Army. Filed Nov. 4, 1887. Renewed Nov. 17, 1888. Serial No. 291,152. (No model.)



Claim.—1. An electric primer of the character described, in which the bridge is inclosed in and rigidly supported by a cake of compressed powder.

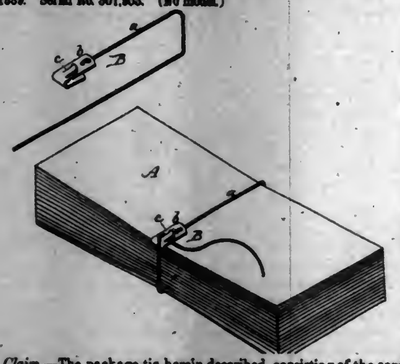
2. The combination, in an electric primer, of the terminals of two insulated wires, a bridge connecting the two, a supporting-clamp for the wires, and a cake of compressed powder inclosing the bridge and clamp.

3. The combination, in an electric primer, of two insulated wires, a platinum bridge connecting the wires, a film of easily-ignited material in contact with the bridge, and a cake of compressed powder inclosing the whole.

4. The combination, in an electric primer, of the electric wires, a platinum bridge connecting the same, a cake of compressed powder inclosing the wires and bridge, and a film of varnish covering the powder-cake.

5. The combination, in an electric primer, of the electric wires, a platinum bridge connecting said wires, a cake of compressed powder supporting said bridge, and combustible ferrules surrounding said powder, as set forth.

405,685. PACKAGE-FASTENER. CHARLES F. SPENCER, Rochester, N. Y., assignor to HENRY S. HANFORD, same place. Filed Mar. 5, 1889. Serial No. 301,903. (No model.)



Claim.—The package-tie herein described, consisting of the cord a and hook b, the hook provided with a tongue turned out from its body and standing away from the bend and in the direction of the shank, said hook arranged to catch the papers and the tongue to catch and hold the return end of the cord, as shown and described, and for the purpose specified.

405,686. ROPE-CLAMP. ADAM VOLK, Lockport, N. Y., assignor of one-half to Uriah Lerch, same place. Filed May 14, 1888. Serial No. 273,334. (No model.)

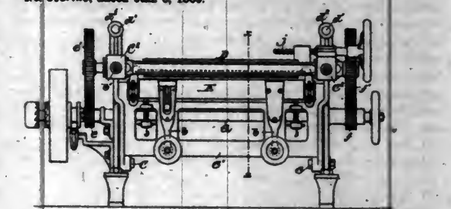


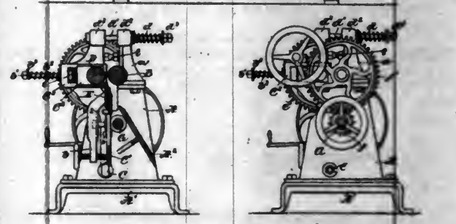
Claim.—1. A rope-clamp consisting of a sectional head having an eccentric groove or grooves and a handle or handles having each a collar, substantially as set forth.

2. A rope-clamp consisting of a sectional head having eccentric grooves, handles having collars formed with eccentric openings, and attaching-lugs on the head, substantially as set forth.

REISSUES.

11,008. LEATHER-SPLITTING MACHINE. FRANK F. STANLEY, Swampscott, Mass. Filed Apr. 10, 1889. Serial No. 306,734. Original No. 396,759, dated Jan. 8, 1889.





Claim.—1. In a leather-splitting machine, the combination, with the positively-rotated feed or pressure roll B, of the movable yoke or frame and the knife, and the gage-roll carried thereby and made movable in unison toward and from the said feed or pressure roll, substantially as described.

2. In a leather-splitting machine, the pivoted yoke or frame C, the knife carried thereby, the gage-roll mounted in movable boxes sustained in the said yoke, and wedge-bar to adjust the said boxes, combined with the feed-roll having rigid bearings, and rods *d*, and springs, as *d*, to enable the said yoke and the parts carried by it to yield toward and from the said feed-roll, substantially as described.

3. In a leather-splitting machine, the combination, with the feed or pressure roll B, of the movable yoke or frame, and the knife, and the gage-roll carried thereby and made movable in unison toward and from the said feed or pressure roll, and with the stop-screws, substantially as described.

PHOTO-LITH. NORRIS PETERS WASHINGTON D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

GREEN *v.* HALL *v.* SIEMENS *v.* FIELD.

Decided June 10, 1889.

1. Manifest error in law, being ground for new trial, is also ground for a rehearing under Rule 144.
2. In the decision complained of (46 O. G., 1515) it was held that a working model designed and intended as such is not a reduction to practice, *held* no error. A model or drawing, although a sufficient foundation for a claim to priority, as was held in *Loom Co.* v. *Higgins*, must be followed up with reasonable diligence in order to establish full title to priority.
3. Where it was alleged as error that the Commissioner erroneously decided that one of the parties did not intend at the time he constructed the apparatus upon which his claim to priority was based to use it practically upon an electric railway, and it appeared that the Commissioner did not decide what was the ultimate intention of such party with reference to his invention, but simply decided that certain models were designed and intended as models, *held* no error.
4. Where it was alleged as error that the Commissioner held that priority of invention was to be determined by the intent of the inventor as to the use to which his apparatus should be put, and it appeared that the actual finding of the Commissioner upon that subject was limited to the intent with which certain models were made and used, *held* no error.
5. The allegation that the fact of an application being put in interference determines that the invention has been reduced to practice, overruled. The Office possesses no machinery for ascertaining such fact, but assumes for the purposes of the interference that the invention of each applicant is within the issue, although the subsequent history of the rival inventions may develop the fact that while one of them is in a form capable of commercial use the other may be incapable of any practical use whatever.

MOTION for rehearing.

ELECTRIC RAILWAYS.

Application of George F. Green filed May 15, 1886, No. 202,287. Application of Thomas Hall filed July 22, 1885, No. 172,325. Application of Ernst W. Siemens filed October 25, 1884, No. 146,473. Application of Stephen D. Field filed March 10, 1880, No. 4,752.

Mr. Benjamin Butterworth for Green.

Mr. E. N. Dickerson and *Messrs. Foster & Freeman* for Hall.

Mr. C. S. Whitman for Siemens.

Mr. F. L. Pope, *Mr. F. W. Whitridge*, and *Messrs. Marble & Mason* for Field.

MITCHELL, *Commissioner:*

This case was originally decided by my predecessor. (46 O. G., 1515.) Motions for rehearing on behalf of Green and Siemens were heard by him and denied. The present motion is filed by Hall, alleging certain errors of law and fact, and prays for a rehearing on his behalf.

In a recent case it was decided that the Commissioner of Patents has jurisdiction to reconsider his predecessor's decision in a proper case, and that such cases were not limited to fraud, miscalculation, and newly-discovered evidence, or, in other words, that Rule 144, authorizing reconsideration upon the principles governing new trials, is a lawful rule. (*Daniels* v. *Morgan*, 47 O. G., 811.)

It is now claimed on behalf of Hall that palpable errors entered into the original decision, and that the correction of those errors would result in a reversal of the decree awarding priority to Field.

That rehearings may be granted for manifest errors of law is unquestionable, and that such rehearings are within the principles governing the granting of new trials is equally clear. Perhaps as satisfactory a statement of the law upon that subject as can be found is contained in the case of *The Giant Powder Co.* v. *The California Vigorite Powder Co.*, (6 Sawyer, 508,) where Mr. Justice FIELD says, (p. 531:)

Rehearings are then granted, except when the judge acts of his own motion, only upon such grounds as would authorize a new trial in an action at law—that is, for newly-discovered evidence or errors of law apparent upon the record.

If there is a better statement I think it is to be found in the decision of my predecessor in the case of *Atha* v. *Wheeler*, (MS. Dec., vol. 34, 188,) declaring that—

A new trial will not be granted, except where the verdict is unsupported by evidence, or is manifestly the result of prejudice, bias, or passion, or where, the facts being conceded, there has been a clear error or mistake in the application of the rules of law to them.

Before considering the special errors alleged it is desirable to ascertain definitely what was decided by my predecessor as to the invention of Hall. Field's application was filed March 10, 1880; the application of Hall was filed July 22, 1885, or more than five years afterward. Hall's claim to a patent was wholly based upon what he did a full generation prior to the date of his application in connection with certain working models, with reference to which my predecessor found as matter of fact that they were in design and purpose illustrative like drawings, and were intended to exemplify his theories and not to carry them into effect.

The following passage contains substantially all of the former opinion which need be considered in determining whether the present motion should be granted:

In reference to the various models it must be said that they were not reductions to practice in any proper sense of that expression. It is not merely a question of size, as counsel for Hall ingeniously put it, but a question of design and purpose. Hall's models were illustrative, like drawings. They were intended to exemplify his theories and not carry them into effect. It is alleged by counsel for Hall that these models could be made practically useful for carrying parcels, letters, and the like, and were of a size sufficient to be used upon a railway in a cash-carrier system; but the point is that there is not sufficient evidence that they were intended at the time they were constructed to accom-

plish these ends. The purposes for which they were sold and the uses to which they were put with Hall's knowledge are not such as would carry out his counsel's theory. Philosophical laboratories and learned professors rather than commercial houses and business men received and employed them. It is well-settled law that a working model, designed and intended as such, is not a reduction to practice. Hall's devices manifestly were mere working models and nothing more. After more than a score of years had passed the efforts of others called to Hall's mind his former experience, and he then concluded to file his application and claim the invention as his own.

The principal ground of error alleges that it is not law that a working model may not anticipate a patent.

On inspection of the decision it will be found that the only language to which this allegation of error can apply is the statement that—

it is well-settled law that a working model designed and intended as such is not a reduction to practice.

Is it, then, error to hold that a working model designed and intended as such is not a reduction to practice? In support of the affirmative of this proposition is cited the language of the Supreme Court in *Loom Co.* v. *Higgins*, (105 U. S., 580:)

An invention relating to machinery may be exhibited either in a drawing or in a model, so as to lay the foundation of a claim to priority, if it be sufficiently plain to enable those skilled in the art to understand it. (Page 594.)

It is to be observed, however, that Commissioner Hall did not hold that a drawing or a model might not "lay the *foundation* of a claim to priority," and it is quite clear that the foundation to such a claim might be established by a model which would not in and of itself constitute a reduction to practice. A drawing illustrative of an invention may lay the foundation of a claim to priority; but no decision has ever held that a drawing constitutes reduction to practice. So, too, a model "designed and intended as such" (I quote Commissioner Hall's exact language) may lay the foundation for a claim of priority; but I am unaware of any decision which has ever held that such a model constitutes reduction to practice. Indeed, it will be noted that in *Loom Co.* v. *Higgins*, *supra*, the Court classed a drawing and model together in stating what effect they would have as proof, and the inference that the Court intended to hold that a model is reduction to practice would be no more legitimate than would be the imputation to it of a purpose to say that a drawing constitutes reduction to practice. This view is not without warrant in judicial decisions, for in *Odell et al.* v. *Stout*, (29 O. G., 862,) in which the passage from *Loom Co.* v. *Higgins* was cited, it was expressly held that a model or drawing, although a sufficient *foundation* for a claim to priority, must be followed up with reasonable diligence in order to establish full title to priority.

It is unquestionably true, as claimed by counsel for Hall, that mere enlargement of a machine or device does not constitute invention. (*Phillips* v. *Page*, 24 How., 164; *Planing Machine Co.* v. *Keith*, 101 U. S., 490.) But I find no indication in the decision complained of that any other view of the law was taken upon this point. On the contrary, the Commissioner says:

It is not merely a question of size, as counsel for Hall ingeniously put it, but a question of design and purpose. Hall's models were illustrative, like drawings.

The implication here is quite strong that if the proof had been looked upon as establishing the reduction to practice of the matter in issue, even on a scale adapted to a cash-carrier system, it would have been regarded as establishing priority on the part of Hall. I find nothing in the opinion which indicates that my predecessor entertained the view that patentability can reside in the mere enlargement of a machine. He held that as matter of fact the diminutive exhibits of Hall were simply working models, intended and designed as working models only; and that as matter of law such working models, so intended and designed, do not constitute reduction to practice. If there be error in any part of the decision, there certainly is no error in holding that a working model, designed and intended as such, is not reduction to practice.

Again, it is alleged that Commissioner Hall erred in that he decided, in effect—

That said Hall did not intend at the time he constructed his apparatus, the subject-matter of the present interference, that it should be employed practically on electric railways, whereas the proof is to the effect that the said Hall intended so to employ his invention.

I have examined the decision carefully, and I am unable to find any statements warranting this allegation of error. The Commissioner did not decide what was Hall's ultimate intention with reference to his invention; he simply decided that certain models were designed and intended as models. The intention to use the models for illustrative purposes, "like drawings," and for no other purpose, is entirely consistent with the intention ultimately to construct a railway upon the same principle, if it should be found capable of practical application upon trial, upon a commercial scale of operations. All that is decided with reference to intent relates to the present intention to use the models as models, and not to the ultimate intention which Hall had in mind and which he used his models to illustrate. If the finding had included the express statement that all along during the period of the making and use of these illustrative models Hall intended that his invention should be ultimately employed practically on electric railways, it could have made no difference whatever with the conclusion reached. It has already been seen that the working models were not reduction to practice, and hence it follows that in an utter absence of diligence for more than a quarter of a century there is no possible ground for an award of priority as against a subsequent inventor who displayed diligence in filing his caveat, diligence in applying for a patent, which application itself constitutes constructive reduction to practice, and diligence in introducing his invention into public use.

It is also alleged as error that the question of priority of invention is not determined, and cannot be determined, by a question of intention on the part of an alleged inventor, and, admitting it to be true, for the sake of argument, that Hall never intended to apply his apparatus as made to practical purposes, yet, if such apparatus were so applicable, he was the first inventor, whether he believed the fact to be as indicated or not. In proof of this allegation are cited *Harmet* v. *Reese*, (21 O. G., 1875,) *Read* v. *Cutter*, (1 Story, 590,) and a number of other cases.

It is unquestionably true that the capacity of an apparatus, or what may be designated its embodied intent, determines its patentable character rather than the intention which resides in the mind of the inventor; or, as it is sometimes phrased, an invention patented for one purpose is protected for all the purposes which it is adapted to subserve. The trouble with this claim is that I find nothing in the decision which is contrary to it. It is expressly decided that Hall's devices were mere working models and nothing more, and it is too much to assume that because such models did perform their illustrative function therefore a practical railway could be operated by a simple enlargement of all the parts of the apparatus thus employed. The allegation of error assumes that the apparatus as made was adapted to practical purposes by mere enlargement, an inference which is utterly inconsistent with the subsequent history—or rather want of history—of the development of Hall's ideas.

Again, it is claimed that the very fact of an application being put in interference necessarily determines that the apparatus therein described is an apparatus which has been reduced to practice, if it has been used at all. This argument seems to imply that the Patent Office, before placing two applications in interference, not only decides that both parties claim the invention in controversy, but also that they claim it in a form which is capable of commercial use. Such, however, is not the case. The Office possesses no machinery by which such facts are ascertained, and assumes, for the purpose of declaring the interference, that the inventions are substantially within the issue, although the subsequent history of the rival inventions may show that one of them is in a form which is afterward demonstrated to be of great commercial value, while the other is incapable of any practical use whatever. Experience is the only test by which such questions can be determined.

I have thus considered, I think, the several grounds of error alleged, although not in the order pursued in the motion for a rehearing. It results that I find no error in the decision complained of, and the motion is therefore denied.

GREEN *v.* HALL *v.* SIEMENS *v.* FIELD.

Decided June 10, 1889.

After a final award of priority there is no more reason for permitting the defeated party to the interference to be heard upon the relation of the prevailing party to the prior art than there would have been for permitting the same privilege before the institution of the interference.

ON motion.

ELECTRIC RAILWAYS.

Application of George F. Green filed May 15, 1886, No. 202,287. Application of Thomas Hall filed July 22, 1885, No. 172,325. Application of Ernst W. Siemens filed October 25, 1884, No. 146,473. Application of Stephen D. Field filed March 10, 1880, No. 4,752.

Mr. Benjamin Butterworth for Green.

Mr. E. N. Dickerson and *Messrs. Foster & Freeman* for Hall.

Mr. C. S. Whitman for Siemens.

Mr. F. L. Pope, *Mr. F. W. Whitridge*, and *Messrs. Marble & Mason* for Field.

MITCHELL, *Commissioner:*

This motion was filed on the 19th day of April, 1889. Prior to that time the interference to which it relates had been adjudicated in favor of Field; motions for rehearings on behalf of Siemens and Green had been denied, and the interference having terminated, steps were taken to determine whether the application of Field, considered as an *ex parte* application, contained patentable subject-matter, in view of British patent to Clark, No. 1,386 of 1864, taken in connection with the state of the art. This is therefore a motion made on behalf of Siemens to permit the defeated parties in an interference proceeding to be heard upon the question whether the invention of the prevailing party is met by the prior art, including a particular patent specified.

As I understand the practice, the conclusion of an interference restores the application of the prevailing party to the same status which it occupied prior to the institution of the interference, so that there is no more reason for permitting the defeated parties to the interference to be heard upon the relation of the prevailing party to the prior art than there would have been for permitting the same persons to exercise the same privilege before the institution of the interference. Perhaps it is within the power of the Commissioner to grant such a motion as this; but it is manifestly contrary to the generally-accepted rights of an *ex parte* applicant in this Office, and I see no reason why the motion should be granted in this case which does not apply to all cases similarly situated.

The motion must be denied.

EX PARTE ANDERSON.

Decided June 12, 1889.

ON petition.

ROCK-CRUSHERS, &C.

Application of David H. Anderson filed September 17, 1888, No. 285,567.

Mr. W. A. Bartlett for applicant.

MITCHELL, *Commissioner:*

This application, although coming before me as if it were a petition, is, in fact, a complaint made against the examiner, reciting the several actions taken in the case which are claimed to constitute improper and oppressive practice.

Without minutely inspecting the several items of the charge, I cannot resist the impression—and it is a very decided impression—that there is ground for the complaint, and it is a matter of regret that after my predecessor had been called upon to act in this case and had made a decision which, to my mind, indicates that he was clearly of the same opinion that I am compelled to entertain, the examiner should not have taken steps to hasten rather than to protract the examination and proceedings in the application. I am not satisfied with the examiner's explanation. Making due allowance for all obstacles, I have no doubt whatever that this case could have been in condition for allowance or for appeal to the Examiners-in-Chief if it had been the aim of the examiner to afford every facility to the applicant consistent with the rights of others.

Steps will be taken at once—if they have not been already taken—to put this application into condition for allowance or appeal.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Eastern District of Missouri, Eastern Division.

HEINE SAFETY BOILER COMPANY *v.* SMITH FEED WATER HEATER AND PURIFIER COMPANY.

Decided February 16, 1889.

1. CONSTRUCTION OF PATENTS—COMBINATIONS.
In cases where none of the elements of a combination are new or are claimed separately and there are other similar kindred combinations in use the evident tendency of late decisions is to limit the patentee to the particular form of the various elements composing the combination shown by his drawings.

2. HEINE—PURIFIERS FOR FEED-WATER FOR STEAM-BOILERS.
Applying this rule to Letters Patent No. 304,195, granted August 26, 1884, to Hermann Heine, for purifiers for the feed-water of steam-boilers, the patent is not infringed by a device differing essentially therefrom in construction.

3. SAME—VALIDITY.
If the claim were to receive a broader construction, it is by no means certain that it is valid and ought to be sustained, in view of the state of the art when the patent issued.

ON motion for preliminary injunction.

Patent No. 304,195, granted August 26, 1884, to Hermann Heine, for purifiers for the feed-water of steam-boilers.

Mr. Paul Bakewell for the complainant.

Messrs. Lee & Ellis and *Messrs. Fowler & Fowler* for the defendants.

THAYER, *J.:*

From the affidavits and other moving papers on file in support of the motion, the following facts appear and are substantially admitted, or at least are not denied, to wit: First, that defendant has been publicly manufacturing the alleged infringing device for heating and purifying feed-water introduced into steam-boilers, for the space of 2½ years, at St. Louis, Mo., or in its immediate vicinity; second, that complainant's chief office and place of business in the meantime has been located in said city; third, that defendant's device is now in use on at least 16 different railroads throughout the United States, which companies are of course guilty of infringement if defendant is guilty; fourth, that the published directions for the use of its device, heretofore issued by the defendant, show that its purifier is located below the normal water-line, and its location in that position seems to be the chief matter complained of by the complainant; fifth, that complainant had been aware of the alleged acts of infringement for at least 6 months prior to the filing of its complaint, if not longer; sixth, that defendant's sole business consists in manufacturing its device merely as an attachment to steam-boilers, and that it has a large number of men employed, and many outstanding contracts upon which it is liable to a large amount, while complainant's chief business is the manufacture and sale of the Heine patent steam-boiler, of which the mud-drum or water-purifier that is said to be infringed is only a secondary feature; seventh, that an injunction if awarded would arrest the defendant's entire business, and would work great, if not irreparable, mischief if it turns out that the rights asserted by it (the defendant) are valid; eighth, that defendant's water-purifier is itself a patented device, and that several patents have heretofore been granted for various mud-drums or purifiers located in the interior of steam-boilers of a kindred character to those involved in this controversy, some of which antedate complainant's patent; ninth, that thus far there has not been a single adjudication upholding the validity of the second claim of complainant's patent, on which this application is based, nor a single adjudication determining, if valid, the scope of the claim, or whether it will bear the broad construction contended for and that must be conceded to it if the defendant's device is held to be a violation of the same.

I may further add that it is not even suggested that defendant is irresponsible or liable to become so, and that it will not be able to respond for the probable amount of damage inflicted if complainant is successful on final hearing. Nor does it seem at all likely that the acts complained of will seriously affect complainant's business in the meantime, inasmuch as the Heine steam-boilers that it makes have primary merits, which probably create the chief demand for the same, other than the particular mud-drum attachment that is said to have been infringed.

That complainant is engaged in putting its mud-drum or purifier in other boilers than the Heine boiler, and that defendant comes into direct competition with it in that line of business, is not pretended. Under the circumstances, therefore, I apprehend that even complainant's counsel will concede that an injunction at this time or other equivalent preliminary order would not be warranted unless the infringement complained of is palpable.

The claim of complainant's patent that is said to have been infringed in this instance is what is known as a combination claim.

I claim [says the patentee] the combination, with the upper shell or circulating drum of a water-tube steam-generator, of a mud-drum mounted within said circulating-drum, below the normal water-line, the feed and outlet passages being at the same end of the mud-drum, so that the current is opposed to the feed-current, and is deflected backward by the upward current in the water-leg.

Neither element of the combination, not even the mud-drum itself, is claimed separately as being novel and patentable. In cases where none of the elements of a combination are new or are claimed separately, and there are other similar or kindred combinations in use, the evident tendency of late decisions is to limit the patentee to the particular form of the various elements composing the combination shown by his drawings. If such a rule is applied in the present case, defendant's purifier does not infringe, because it differs very essentially in construction from complainant's mud-drum, having a diaphragm dividing it into an upper and lower section, which compels the feed-water to flow through its entire length and then backward before entering the boiler proper, whereas complainant's mud-drum is not so divided; and it may be questionable whether it (complainant's mud-drum) compels such a perfect circulation of water within the purifier and consequent deposit of sediment.

It is only by giving the second claim of complainant's patent a construction that would make it cover all possible forms of mud-drums mounted inside of steam-boilers below the normal water-line, and that receive and discharge feed-water at the same end, that defendant's purifier can be said to be an infringement of the claim.

It does not appear to me to be clear that the claim in question should receive such a broad construction, or if that is the necessary construction of the claim it is by no means certain that the claim is valid and ought to be sustained in view of the state of the art when the patent was issued. I shall reserve both of these questions for more thorough investigation on final hearing. It is sufficient to say now that complainant's right is not so palpable as to warrant an injunction or an order to give bond. I will enter an order requiring the defendant to file in this court quarterly, until final hearing, a report of the number of purifiers by it manufactured and placed in steam-boilers under the Smith patent. That is as far as I think it necessary or proper to go at this time.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

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Withdrawal of Photolithographs, &c.

(ORDER No. 530.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., June 8, 1889.

From and after this date the withdrawal of the photolithographs, and in process and composition patents the copies of specifications and claims, from the classified sets in the Draftsman's Division, for any purpose whatever, by examiners, attorneys, or others, is prohibited. These classified sets will be retained intact and held accessible to the public from 9 o'clock a. m. to 4 o'clock p. m. daily. Such copies as may be desired for use by examiners will be promptly furnished from the unclassified sets upon application to the Draftsman's Division.

The Chief of the Draftsman's Division will cause all classes and sub-classes embraced in these sets to be made complete, and be put in order, and kept so.

C. E. MITCHELL,
Commissioner.

The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Publishers' Catalogues.

This Office would be pleased to receive from manufacturers and publishers such catalogues, circulars, price-lists, or other advertisements relating to the sciences and mechanical arts as are published by them for gratuitous distribution; but notice is hereby given such manufacturers or dealers who feel disposed to send their publications that not less than three copies should be forwarded in order that the subjects may be properly indexed, classified, and subclassified in the Scientific Library for convenient and ready reference.

Issue of June 25, 1889.

Patents	331	No. 405,687 to No. 406,017, inclusive.
Designs	15	No. 19,171 to No. 19,185, inclusive.
Trade-Marks	20	No. 16,740 to No. 16,759, inclusive.
Labels	6	No. 5,949 to No. 5,954, inclusive.
Reissues	None.	
Total issue	372	

TO CITIZENS OF THE UNITED STATES.

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Arkansas			New Hampshire	5	
California	9		New Jersey	16	1
Colorado	2		New Mexico Territory		
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Dakota Territory	1		North Carolina		1
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Idaho Territory	1		South Carolina	1	
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Iowa	4		Vermont	4	
Kansas	7		Virginia	2	
Kentucky	2		Washington Territory		
Louisiana	4		West Virginia	2	
Maine	2		Wisconsin	4	
Maryland	7		Wyoming Territory		
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Michigan	3		United States Navy		
Minnesota	2				
Mississippi	1		Total to citizens of the United States	310	22
Missouri	12				
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TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic			Germany	9	2
Australia			Ireland	1	
Austria-Hungary	1		Mexico		
Belgium	1		Netherlands	1	
Bermuda			New Zealand		
Brazil			Peru		
Canada	3		Russia		
Chili			Scotland		
Costa Rica			Spain		
Curaçoa			Switzerland	3	
Denmark			Victoria	1	
England	13	2			
Finland			Total to citizens of foreign countries	36	4
France	3				

DESIGNS.

19,171.—SHIRT-BOSOM.—*Albert Borchardt*, Hoboken, N. J., assignor to *Victor Henry Rothschild*, same place. Application filed May 13, 1889. Serial No. 310,644. Term of patent 3½ years.

19,172.—DESK-CURTAIN.—*Francis A. Coffin*, Indianapolis, Ind. Application filed January 24, 1889. Serial No. 297,442. Term of patent 7 years.

19,173.—BACKS OF PLAYING-CARDS.—*Stanley A. Cohen*, New York, N. Y. Application filed April 8, 1889. Serial No. 306,445. Term of patent 14 years.

19,174 to 19,176, inclusive.—SURFACE ORNAMENTATION OF GLOVE-BUTTONS.—*Louis A. Doutllet*, New York, N. Y. Applications filed April 19, 1889. Serial Nos. 308,899 to 308,901, inclusive. Term of patents 14 years.

19,177.—MATCH-BOX.—*Harry P. Fairchild*, New York, N. Y. Application filed May 27, 1889. Serial No. 312,301. Term of patent 3½ years.

19,178.—CLOTH FOR CLOAKING.—*Morris Fatman*, New York, N. Y. Application filed June 1, 1889. Serial No. 312,932. Term of patent 3½ years.

19,179.—MEAT-RACK.—*Charles A. Gloekler*, Pittsburg, Pa. Application filed May 22, 1889. Serial No. 311,732. Term of patent 14 years.

19,180.—MITT.—*Leander C. Hall, Jr.*, Philadelphia, Pa. Application filed January 5, 1889. Serial No. 295,567. Term of patent 7 years.

19,181.—FONT OF PRINTING-TYPE.—*Charles E. Heyer*, Chicago, Ill. Application filed May 31, 1889. Serial No. 312,794. Term of patent 14 years.

19,182.—BOTTLE.—*William W. Lowrey*, Baltimore, Md. Application filed May 9, 1889. Serial No. 310,145. Term of patent 14 years.

19,183.—BASE FOR FARINA-BOILERS.—*Alexander Stewart*, Philadelphia, Pa. Application filed May 13, 1889. Serial No. 310,645. Term of patent 7 years.

19,184.—SPOON, &c.—*George P. Tilton*, Newburyport, Mass., assignor to *The Towle Manufacturing Company*, same place. Application filed May 27, 1889. Serial No. 312,302. Term of patent 7 years.

19,185.—FINGER-NAIL POLISHER.—*J. Parker Pray*, New York, N. Y. Application filed January 24, 1889. Serial No. 297,434. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,740.—PLUG CHEWING-TOBACCO.—*Bitting & Hay*, Winston, N. C. Application filed May 8, 1889. Used since February 6, 1889.

"The words 'HUMMING BIRD.'"

16,741.—CUT SOLES, TAPS, INSOLES, AND HEEL-LIFTS OF LEATHER. *Forest Delaney & Son*, New York, N. Y. Application filed April 29, 1889. Used since February 1, 1880.

"The representation of a shoemaker sitting at his bench with right hand upraised holding a hammer, the other hand holding a sole in position for hammering on a lapstone, while at one side are piles of cut soles, and at the other side are similar soles in a tub, as for soaking or tempering, and beneath the whole is the title 'ST. CRISPIN.'"

16,742.—CIGARS.—*Benedict Finn*, Newark, N. J. Application filed May 21, 1889. Used since May 1, 1889.

"The words 'ANNIE OAKLEY.'"

16,743.—VELVETS AND PLUSHES.—*Goldschmidt, Bachrach & Co.*, New York, N. Y. Application filed April 20, 1889. Used since January 1, 1889.

"The words, letters, and character 'J. G & Co' and 'GERMANIA BRAND.'"

16,744.—BOILER COMPOUND TO PREVENT INCRUSTATION.—*James F. Hotchkiss*, New York, N. Y. Application filed October 1, 1888. Used since September 26, 1888.

"The word 'TRIPSA.'"

16,745.—GALVANIZED IRON.—*Morewood & Company's Successors*, (*Limited*,) Birmingham, England. Application filed April 26, 1889. Used since the year 1864.

"The representation of a lion."

16,746.—SARDINES.—*Frederic Reisel*, New York, N. Y. Application filed November 6, 1888. Used since February 3, 1886.

"The words 'YACHT CLUB.'"

16,747.—ENAMEL PAINT.—*Frank Smith*, New York, N. Y. Application filed May 21, 1889. Used since September 15, 1888.

"The word 'GLASSINE.'"

16,748.—PAINT COMPOUND IN THE FORM OF PASTE.—*Frank Smith*, New York, N. Y. Application filed May 21, 1889. Used since September 15, 1888.

"The word AQUOL.'"

16,749.—POMADE FOR THE SKIN.—*Mary Sedley Smith*, New York, N. Y. Application filed April 6, 1889. Used since January 10, 1889.

"The words 'ELMA CREAM.'"

16,750.—LAGER-BEER.—*Joseph Wagner*, Munich, Germany. Application filed May 24, 1889. Used since July 1, 1888.

"The word 'AUGUSTINER.'"

16,751.—PERFUMERY.—*Richard D. Young*, New York, N. Y. Application filed May 8, 1889. Used since August 6, 1888.

"The representation of a quarterfoil and the letter 'Y' on the same."

16,752.—PERFUMERY.—*Richard D. Young*, New York, N. Y. Application filed May 8, 1889. Used since August 6, 1888.

"The words 'PRAIRIE WILD.'"

16,753.—PERFUMERY.—*Richard D. Young*, New York, N. Y. Application filed May 8, 1889. Used since August 6, 1888.

"The words 'BOUQUET ARABY.'"

16,754.—PERFUMERY.—*Richard D. Young*, New York, N. Y. Application filed May 8, 1889. Used since August 7, 1888.

"The word 'MELAURA.'"

16,755.—PERFUMERY.—*Richard D. Young*, New York, N. Y. Application filed May 8, 1889. Used since August 7, 1888.

"The words 'LILY BELLS.'"

16,756.—BISCUITS, WAFERS, AND CRACKERS.—*Holmes & Coutts*, New York, N. Y. Application filed May 31, 1889. Used since April 2, 1889.

"The words 'SOCIAL TEA.'"

16,757.—FACE-POWDER.—*Lorenzo Tomaselli*, Washington, D. C. Application filed May 27, 1889. Used since the year 1870.

"The word "ROSINA.'"

16,758.—MILK-PUNCH.—*Aloysius E. Offutt*, New York, N. Y. Application filed May 29, 1889. Used since May 1, 1889.

"The word 'IMPERIAL.'"

16,759.—NON-ALCOHOLIC HERB-BEER.—*Newball & Mason*, Nottingham, county of Nottingham, England. Application filed May 29, 1889. Used since January 1, 1875.

"The representation of a pump."

LABELS.

5,949.—Title: "ROCK CANDY."—*Dryden & Palmer*, New York, N. Y. Application filed May 28, 1889.

5,950.—Title: "NOTICE" (FOR CASKETS INCLOSING BOXES OF CIGARS.)—*John Sidney Goldsmith*, New York, N. Y. Application filed May 17, 1889.

5,951.—Title: "ROCK CANDY."—*William Lang & Son*, Philadelphia, Pa. Application filed May 27, 1889.

5,952.—Title: "VENN'S WONDERFUL ASTHMA CURE."—*Thomas Venn*, Shamokin, Pa. Application filed June 4, 1889.

5,953.—Title: "WILHELMS-QUELLE" (FOR MINERAL WATERS.)—*Ernst von Eckardstein*, Protzel, Germany. Application filed May 23, 1889. (Trade-Mark Registered.)

5,954.—Title: "THE LENOX SUIT" (FOR LADIES, MISSES AND CHILDREN'S SUITS.)—*Wightman & Co.*, New York, N. Y. Application filed April 12, 1889.

PATENTS

GRANTED JUNE 25, 1889.

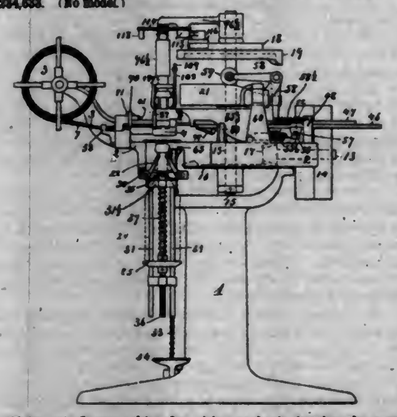
405,687. CUFF-HOLDER. GEORGE B. ADAMS, Irvington, N. J. Filed Nov. 23, 1888. Serial No. 291,656. (No model.)



Claim.—1. In a cuff-holder, the combination, with an arm provided with means for attaching the same to a cuff or other article, of a head or button secured to said arm by means of a stem extending up from said arm and projecting up into the upper clamping-head, which consists of a casing, as set forth, and engaging with a spring arranged within said casing and operating to cause the holding-contact of the head and arm, for the purposes set forth.

2. As an improved article of manufacture, the herein-described cuff-holder consisting of a head or button *d*, pivotally secured to a stem *d'* and provided with teeth and a spring *d²*, and the jaw *c*, provided with teeth *c²*, said jaw being secured to an arm *a*, for securing the same to a cuff, substantially as described.

405,688. MACHINE FOR WIRING CORKS IN BOTTLES. BENJAMIN ADRIANCE, Brooklyn, N. Y. Filed Sept. 5, 1888. Serial No. 284,633. (No model.)



Claim.—1. In a machine for wiring corks in bottles, the combination, with feeding mechanism arranged to draw two wires across the neck of the bottle, of mechanism for twisting the wires near the middle of their length, a pad movable to and from the bottle-neck to press the wires thereon, back-twist nippers with two hooks extended along the opposite sides of the bottle-neck to draw two of the wire ends behind the neck, and rotary to twist the same together, top-twist nippers reciprocatory to and from the top of the bottle and having hooks adapted to grasp the wires and draw them together upon the top of the cork, a rotary sleeve and cutter to grasp the wires and twist the same, and connected mechanism for operating the several mechanisms in due order, as and for the purpose set forth.

2. In a machine for wiring corks in bottles, the combination, with wire-cutting dies arranged to hold a wire therein, of wire-feeding nippers, the nippers and cutting-dies being movable in relation to one another and arranged to draw the wire across the bottle-neck, twisting mechanism movable to and from the path of the wires, a pad and cutters movable to and from the bottle-neck, and mechanism for operating the pad and cutters to simultaneously sever the wires at the cutting-dies and to press the twisted portion of the wires upon the bottle, as and for the purpose set forth.

3. In a machine for wiring corks in bottles, the combination of a yielding cutting-die with a wire guide or guides held stationary in relation to such movable die, the cutting-die being sustained upon the guide, pressed away from the same by a spring, and its stroke limited by a stop 45, as and for the purpose set forth.

4. In a machine for wiring corks in bottles, the combination, with two wire-guides and two yielding wire-dies, of two nippers reciprocated to and from the dies, one of the nippers being projected beyond the other, and connected mechanism operating to open the nippers, when pressed against the dies, to admit the wire projected therefrom, and to close the nippers, when retracted from the die, to grasp and draw the wire therefrom, as and for the purpose set forth.

5. In a machine for wiring corks in bottles, the combination, with suitable devices for stretching the wires across the neck of the bottle, of back-twist nippers provided with two hooks movable to and from the path of such stretched wires, and connected mechanism for pressing the hooks toward the neck of the bottle while retracted to draw the wires together behind the same, and for rotating the hooks to twist the wires together, as and for the purpose set forth.

6. In a machine for wiring corks in bottles, the combination, with suitable devices for stretching two wires across the neck of the bottle, for twisting them together, and for twisting two of the wire ends behind the neck of the bottle, of top-twist nippers provided with three hooks and reciprocatory to and from the path of the wires, rotary cutters adapted to receive the wires from the three hooks, and connected mechanism for reciprocating the hooks to and from the path of the wires for pressing the hooks together while drawing the wires above the top of the bottles, and for rotating the cutters to twist the ends of the wires, as and for the purpose set forth.

7. In a machine for wiring corks in bottles, the combination, with suitable devices for applying and twisting the wires upon the bottle-head, of lifters fitted to the under side of the bottle-head and adapted to grasp the neck of the bottle, and connected mechanism operating to elevate the lifters and raise the lower side of the bottle-head to a fixed point, as and for the purpose set forth.

8. In a machine for wiring corks in bottles, the combination, with devices for holding the wires transversely to the bottle-neck, of a combined bottle lifter and gage having jaws fitted to the neck of the bottle and sustaining the weight of the same by contact with the under side of the head, and connected mechanism operating to reciprocate the lifter to and from the wires, as and for the purpose set forth.

9. In a machine for wiring corks in bottles, the combination, with two reciprocatory feed-bars having different strokes and carrying nippers, of two yielding wire-dies adjusted at different heights in relation to the bottle, dogs carried by the feed-bars, and connected mechanism for operating the dogs to close the nippers upon the wires and for reciprocating the feed-bars to draw simultaneously from the dies two wires of different lengths, as and for the purpose set forth.

10. In a machine for wiring corks in bottles, the combination, with two feed-bars, one provided with a projection fitted to play in a recess in the other, of nippers provided with dogs and rods for closing the nippers, two yielding wire-dies opposed to the nippers, and connected mechanism for reciprocating one of the bars and for actuating the dogs to close the nippers, the whole being adapted to draw simultaneously from the dies two wires of different lengths, as and for the purpose set forth.

11. In a machine for wiring corks in bottles, the combination, with the movable head 30, having the lifters 28 pivoted thereon and provided with arms 35, of the stationary guide 31½, a rod with a spring operating beneath the guide to press the lifters normally together, a shoulder upon the spring-rod to open the lifters when lowered, and a treadle arranged and operated to lift the head 30, as and for the purpose set forth.

12. In a machine for wiring corks in bottles, the combination, with the movable head 30, having the bottle-lifters pivoted thereon, of the wheel 32, the treadle, the chains for rotating the wheel and raising the head 30, the lug upon the wheel 32, the hook 70, driving mechanism and a clutch connecting the same with the bottle-wiring devices, and a lever actuated by the lug for disengaging the clutch to start the machine when the treadle is depressed, as and for the purpose set forth.

13. In a machine for wiring corks in bottles, the combination, with the bottle-lifters pivoted in the movable head 30, and the devices for wiring the cork in the bottle, of driving mechanism, a clutch connecting the same with the bottle-wiring devices, the wheel 32, lug 65, hook 70, and clutch-lever 66, the cam 67, rotated with the clutch, the lever 68, and the inclined arm 69, for lifting the hook 70, the whole arranged and operated substantially as herein set forth.

14. In a machine for wiring corks in bottles, the combination, with lifters arranged to grasp the neck of the bottle and appliances for drawing the wire across the neck of the bottle, of means for raising the lifters into a line with the wire, substantially as herein set forth.

15. In a machine for wiring corks in bottles, the combination, with bottle-lifters pivoted upon the movable head 30, of devices for securing the wires upon the bottle-neck and cork, appliances for drawing the wire across the neck of the bottle, driving mechanism and a clutch connecting the same with the wiring devices, the wheel 32, a treadle and chains operated as described, clutch-starting mechanism actuated by a lug upon the wheel, and a hook for engaging the lug and retaining the ends of the lifters upon a level with the wire, as and for the purpose set forth.

16. In a machine for wiring corks in bottles, the combination, with wire-cutting dies and nippers for drawing the wire from the same, of a rotary wheel notched at one side and applied to the wire near the middle of its length, and connected mechanism for rotating the notched wheel to twist the wire, as and for the purpose set forth.

17. In a machine for wiring corks in bottles, the combination, with wire-cutting dies and nippers for drawing the wire from the same, of a rotary wheel notched at one side, mechanism for rotating the notched wheel to twist the wire, as set forth, a cutter for severing the wire at the wire-die, and a pad for pressing the wire upon the bottle-neck, substantially as described.

18. In a machine for wiring corks in bottles, the combination, with wire-cutting dies and nippers for drawing the wire from the same, of a rotary twister, mechanism for rotating the twister to twist the wire, as set forth, a cutter for severing the wire at the wire-dies, a pad for pressing the wire upon the bottle-neck, rotary back-twist nippers, and mechanism for operating the said nippers to draw the wire ends behind the bottle-neck and to twist them together, substantially as described.

19. In a bottle-wiring machine, the combination, with wire-dies and nippers for drawing the wire from the same, of a rotary wheel notched at one side to twist the wire, as set forth, a cutter for severing the wire at the wire-die, a pad for pressing the wire upon the bottle-neck, back-twist nippers to draw the wire ends behind the bottle-neck and to twist them together, top nippers for drawing the wire ends above the top of the bottle, a notched top twister to receive the ends of the wires and twist them upon the cork, and connected mechanism for operating the several mechanisms in due order, substantially as described.

20. In a bottle-wiring machine, the combination, with wire-dies and nippers for drawing the wire from the same, of a rotary wheel notched at one side to twist the wire, as set forth, a cutter for severing the wire at the wire-die, a pad for pressing the wire upon the bottle-neck, back-twist nippers to draw the wire ends behind the bottle-neck and to twist them together, two nippers for drawing the wire ends above the top of the bottle, a notched top twister to receive the ends of the wire and twist them upon the cork, cutters for severing the ends when twisted, and connected mechanism for operating the several mechanisms in due order, as and for the purpose set forth.

21. In a bottle-wiring machine, the combination, with wire-dies and nippers for drawing the wires therefrom, of the notched wheel 169, the cutters 81, a vibrating arm carrying the said wheel and cutters, and connected mechanism for vibrating the arm and reciprocating the wheel and cutters to and from the wires, as and for the purpose set forth.

22. In a bottle-wiring machine, the combination, with wire-dies and nippers for drawing the wires therefrom, of the arm 85½, the notched wheel 169, carried thereby, a pinion connected with the notched wheel, a rack movable transverse to the arm 85½, and connected mechanism operating to vibrate the arm to and from the wires and to reciprocate the rack in the arm, as and for the purpose set forth.

23. In a bottle-wiring machine, the combination, with wire-dies and nippers for drawing the wires therefrom, the arm 85½, the notched wheel 169, carried thereby, a pinion connected with the notched wheel, a spring to rotate the pinion, a rack movable transverse to the arm 85½ to rotate the pinion, a latch to hold the pinion when rotated in opposition to the spring, and connected mechanism operating to vibrate the arm, as and for the purpose set forth.

24. In a bottle-wiring machine, the combination, with wire-dies and nippers for drawing the wires therefrom, of the arm 85½, the notched wheel 169, carried thereby, a pinion connected with the notched wheel, a spring to rotate the pinion, a rack movable transverse to the arm 85½ to rotate the pinion, a latch to hold the pinion when rotated in opposition to the spring, a trip to disengage the latch, a stationary dog, and connected mechanism operating to vibrate the arm, as and for the purpose set forth.

25. In a bottle-wiring machine, the combination, with wire-dies and nippers for drawing the wires therefrom, of the notched wheel 169 and the cutters 81, mounted upon the swinging arm 85½, a pinion connected with the notched wheel, a rack movable transverse to the arm 85½, a stop to restrict the movement of the arm, and a lever linked to the arm 85½ and movable independently to reciprocate the rack, and connected mechanism operating to vibrate the lever, as and for the purpose set forth.

26. In a bottle-wiring machine, the combination, with wire-dies and nippers for drawing the wires therefrom, of the arm 85½, the notched wheel 169, carried thereby, a pinion connected with the notched wheel, a rack movable transverse to the arm 85½, a carrier pivoted upon the arm, a pad and wire-cutters fixed upon the carrier, a connection with the notched pinion to raise the pad and cutters into line with the wire, and connected mechanism operating to vibrate the arm 85½, as and for the purpose set forth.

27. In a bottle-wiring machine, the means for forming right and left hand twists adjacent to one another in the two wires, consisting in the bearings 173, provided each with pins 174, and the rotary pinion 169, provided with notch 171 and pins 172, and connected mechanism operating to rotate the pinion a complete revolution when engaged with the wires, as and for the purpose set forth.

28. In a bottle-wiring machine, the back-twist nippers consisting in the hooks 175, formed with bent arms, as described, and hinged upon the rod 176, a friction-clamp for such rod, the fork 177, fixed upon the sleeve 178, and connected mechanism to reciprocate the fork over the rod 176, as and for the purpose set forth.

29. In a bottle-wiring machine, the back-twist nippers consisting in the hooks 175, pivoted upon the rod 176, and the fork 177, fixed upon the sleeve 178, the cam-lever 179, for reciprocating the sleeve over the rod, the pinion 180 upon the sleeve, and a cam-lever 181, for rotating the pinion, as and for the purpose set forth.

30. In a bottle-wiring machine, the combination, with top nippers having hooks to draw the wires above the top of the cork, of the thimble 182, provided with notches 183 to receive the wires, and the cutter-head 184, notched to match the thimble and rotary within the same, and connected mechanism for operating the said parts in due order, as and for the purpose set forth.

31. In a bottle-wiring machine, the combination, with the notched thimble-sleeve formed with shoulder 186, of the collar 187, carrying the nipper-hooks 188, provided with inclined shoulders 191, the tubes 189, the pressers 190, carried upon the same to actuate the hooks, and mechanism operated to reciprocate the tube and raise the collar into contact with the shoulder 186 to lift the thimble from the cork, as and for the purpose set forth.

32. In a bottle-wiring machine, the combination, with a sleeve carrying a collar fitted to feather 119 upon the sleeve and provided with the top-twist nipper-hooks 188, of the notched thimble attached to the sleeve, a notched cutter and cutter-shaft rotary within the same, a slot and pin movably connecting the cutter-shaft and sleeve, a pinion upon the cutter-shaft, a rack or segment 114, and a cam and lever for actuating the rack to rotate the pinion, as and for the purpose set forth.

33. In a bottle-wiring machine, the combination, with a sleeve carrying a collar fitted to feather 119 upon the sleeve and provided with the top-twist nipper-hooks 188, of the notched thimble attached to the sleeve, a notched cutter and cutter-shaft rotary within the same, a slot and pin movably connecting the cutter-shaft and sleeve, a pinion upon the cutter-shaft, a cam-lever provided with a toothed segment to drive the pinion, a stop near one end of the segment, an arm projected from the sleeve to meet such stop, and a cam to vibrate the cam-lever, as and for the purpose set forth.

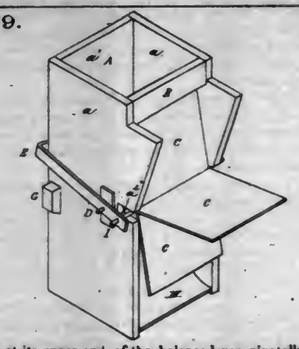
405,689. ROTATING GRAIN-METER.

HENRY APPLER, Saratoga, Ill. Filed Dec. 16, 1886. Renewed May 24, 1889. Serial No. 311,914. (No model.)

Claim.—1. The combination, with the hopper, of the balance-lever pivotally secured to the sides thereof, and the revolving cut-offs having a common shaft journaled in the balance-lever, one of said cut-offs serving as a bottom for the hopper, while the next one is in contact with a stop, substantially as set forth.

2. The combination, with the hopper having the stop B across its front side at its upper end, of the balance-lever pivotally secured to the sides of the hopper, and the revolving cut-offs adapted to impinge against the stop B and mounted on a shaft journaled in the balance-lever, substantially as set forth.

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3. The combination, with the hopper having the stop B and the notches a^3, of the balance-lever pivotally secured to the sides of the hopper, and the revolving cut-offs adapted to impinge on the stop B and having their shaft journaled in the balance-lever and playing in the notches a^3, substantially as specified.

4. In combination with the hopper, the series of cut-offs, one of which is extended across the width of the hopper, so as to serve as a bottom therefor, while the next one is in contact with a stop, thereby preventing the rotation of the cut-offs, as set forth.

405,690. COMBINED PROJECTILE AND GAS-CHECK.

ALBERT BALL, Claremont, N. H. Filed Feb. 21, 1887. Renewed May 3, 1889. Serial No. 309,546. (No model.)



Claim.—1. A projectile having a pyramidal base provided with a sabot of homogeneous composition and simple structure applied closely to the whole area of its base, and secured to it by a temporary fibrous covering that closely fits both the sabot and the projectile, substantially as specified, whereby motion in a forward direction will be simultaneously imparted to them by the explosion.

2. A projectile having a pyramidal base provided with a sabot of homogeneous composition and simple structure applied closely to the whole area of its base, and secured to it by a temporary fibrous covering that closely fits the sides of them both, and is secured at the rear of the sabot in a recess formed therein, substantially as set forth.

3. A projectile having a sabot of homogeneous composition and simple structure applied to the whole area of its base, a film to prevent adhesion interposed between the sabot and projectile and normally in contact with the whole transverse area of each, and a covering closely embracing the sabot, projectile, and interposed film, whereby the parts, being of substantially uniform diameter, are held in close relation to each other until the covering is torn, when the projectile issues from the barrel, substantially as specified.

4. A projectile having a base angular in cross-section, and having a sabot of homogeneous composition and simple structure fitting the whole area of the base, and a covering tightly embracing both with an interposed film to prevent adhesion, substantially as set forth, whereby the main body of the projectile is adapted to be rotated with the sabot in a gun-barrel and separated from it as soon as it leaves the barrel.

405,691. TRUCK FOR CABLE-RAILWAY CARS.

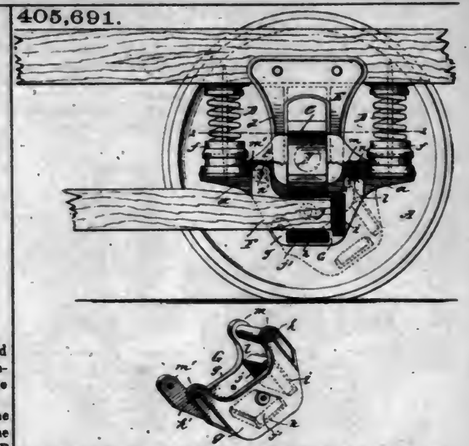
SUMNER A. BEMIS, Springfield, Mass. Filed Apr. 22, 1889. Serial No. 308,063. (No model.)

Claim.—1. The combination, with a suitable part of a railway-car truck, of a pocket-frame for carrying a grip-beam, consisting of opposing cheek-pieces having intermediate horizontal and vertical walls *h i*, and by one end pivotally hung on and by its other adapted to be detachably connected with the truck, substantially as described.

2. The combination, with a suitable part of a railway-car truck, of a pocket-frame for carrying a grip-beam, consisting of opposing cheek-pieces having intermediate horizontal and vertical walls *h i*, provided with cushions, and by one end pivotally hung on and by its other adapted to be detachably connected with the truck, substantially as described.

3. The combination, with the journal-box provided with forwardly and rearwardly projecting steps having vertical openings therein, of the pocket-frame for carrying the grip-beam, consisting of opposing

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cheek-pieces having upwardly-extended projections *m m'*, and provided with the intermediate cushioned horizontal and vertical walls *h i*, and said frame, by one of its opposing pairs of extensions, being pivotally hung within the walls of one of said steps and by its other pair of extensions adapted to be detachably supported within the walls of the other of said steps, substantially as described.

4. A grip-beam-carrying pocket-frame consisting of vertical opposing cheek-pieces provided with vertical and horizontal intermediate transverse walls provided with cushions, substantially as described.

5. A grip-beam-carrying pocket-frame consisting of vertical opposing cheek-pieces, each provided with forward and rearward upward projections *m m'* and united by the transverse vertical and horizontal walls provided with cushions, substantially as described.

405,692. INHALER.

JAMES R. BRUNKER and PATRICK W. MAXWELL, Dublin, Ireland. Filed Dec. 6, 1888. Serial No. 292,807. (No model.) Patented in England July 30, 1888, No. 10,977.



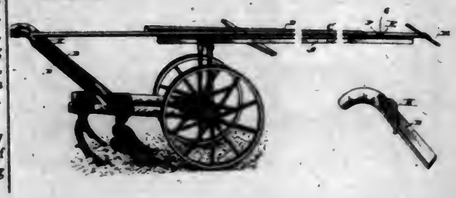
Claim.—1. In an inhaler, the bed A, folding support or standard B, lamp D, and retort C, in combination with each other and with the flexible tube E, as herein specified.

2. In an inhaler, in combination with a heating-lamp D and an inhaling-tube E, the retort C, with its open end partially closed by a porous stopper and adapted to receive medicaments to be volatilized in its interior, and to allow the induction of air through the end to be inhaled through the retort, as herein specified.

3. In an inhaler, the retort C and proper supports therefor, in combination with heating means D, flexible tube E, removable porous plug or loose cotton wool for inducting air gradually without circulation thereof, and porous filled bulb F, arranged to serve substantially as herein specified.

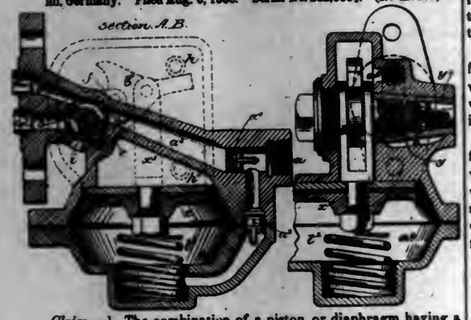
405,693. ATTACHMENT FOR PLOWS OR CULTIVATORS.

JOHN M. BURFORD, Winfield, Kans. Filed Apr. 11, 1888. Serial No. 270,808. (No model.)



Claim.—The combination, with the tongue of a plow or cultivator, of a guiding device consisting of the lever D, pivoted upon the tongue, a bar E, pivotally secured to the lever D, a cross-piece H, and hooks K, secured upon the handles of the plow or cultivator, substantially as set forth.

405,694. **AUTOMATIC VALVE-COCK.** JAMES F. CARPENTER, Berlin, Germany. Filed Aug. 6, 1888. Serial No. 282,080. (No model.)

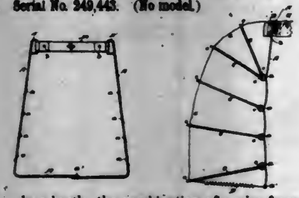


Claim.—1. The combination of a piston or diaphragm having a stem, a lever pivoted to said stem and movable by the piston or diaphragm, fixed projections which become the fulcrums for said lever at opposite ends of the throw of the piston or diaphragm, and a plug and lever extended therefrom and connected to the first-named lever, all arranged to operate substantially as and for the purposes described.

2. The plug *y* and the plug *y'*, loosely connected to and operated by the first-named plug, combined with a piston or diaphragm and a compound lever connected therewith and with the plug *y* and attaining its fulcrums at opposite ends of the throw of the piston or diaphragm, substantially as and for the purposes described.

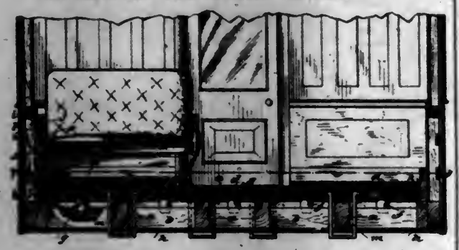
3. The combination, with an automatic valve, of substantially the character described, for railroad-brake systems and other purposes, of a compound lever, a piston or diaphragm having a stem connecting the lever and piston or diaphragm, fixed projections for shifting the lever as thrown by the piston or diaphragm, and a connection between the valve and lever, substantially as described.

405,695. **BUSTLE.** ALONZO CATHAN, Cleveland, Ohio. Filed Sept. 12, 1887. Serial No. 249,443. (No model.)



Claim.—In a bustle, the combination of a wire frame comprising parallel side bars, a lower cross-bar connecting the lower ends of said parallel side bars at right angles thereto and an upper cross-bar connecting said side bars near their upper ends and extending at right angles to said side bars, said frame having eyes at intervals along the side bars integral therewith, a series of spring-bows hinged to said eyes, the pivotal points of the lowermost spring-bow being above the plane of the lower cross-bar, a flexible strip connected at its upper end to the upper cross-bar and at intervals along its length to said hinged spring-bows, and a contractile spring connected at one end to the lower spring-bow and at the other end to the lower cross-bar of said frame.

405,696. **RAILWAY-CAR.** JEHIEL M. DAVIS, Northampton, Mass. Filed Jan. 21, 1889. Serial No. 296,999. (No model.)



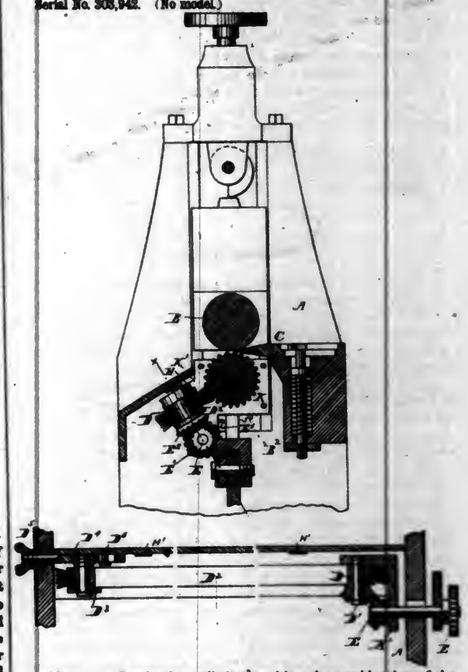
Claim.—1. In a car, the combination, with the body having the lower frame rigidly constructed thereon, of a floor spring-supported therefrom and vertically movable, and cushions between the edges of said floor and the side walls of the car-body, substantially as and for the purpose described.

2. In a car, the combination, with the body having the lower frame rigidly constructed thereon, of a floor spring-supported therefrom and vertically movable, and devices, substantially as described, to limit the upward movement of said floor, substantially as and for the purpose set forth.

3. In a car, the combination, with the body having the lower frame rigidly constructed thereon and provided in its side walls with vertical slots, of a floor spring-supported from said lower frame and vertically movable thereon, and the car-seats resting on said floor having studs at their ends playing in said slots, substantially as set forth.

4. In a car, the combination, with the body having the lower frame rigidly constructed thereon and provided in its side walls with vertical slots, of a floor spring-supported from said lower frame and vertically movable thereon, the car-seats resting on said floor having studs at their ends playing in said slots, and cushions between the ends of the seat-frames and the side walls of the car, substantially as and for the purpose described.

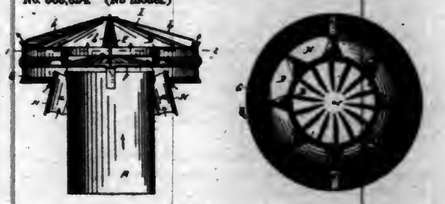
405,697. **LEATHER-SPLITTING MACHINE.** EUGENE M. DUNPHE and CHARLES BLOCKHOUR, East Bridgewater, Mass. Filed Mar. 18, 1889. Serial No. 303,942. (No model.)



Claim.—1. In a leather-splitting machine, the combination of the feed-roll B' and the brush-belt D^2, adapted to operate substantially as described, and for the purpose set forth.

2. In a leather-splitting machine, the combination of the feed-roll B' and brush-belt D^2 with the adjustable box K and bracket K', substantially as and for the purpose set forth.

405,698. **CHIMNEY CAP AND VENTILATOR.** WILLIAM EARLE, Philadelphia, Pa. Filed May 1, 1888. Renewed Mar. 16, 1889. Serial No. 303,824. (No model.)



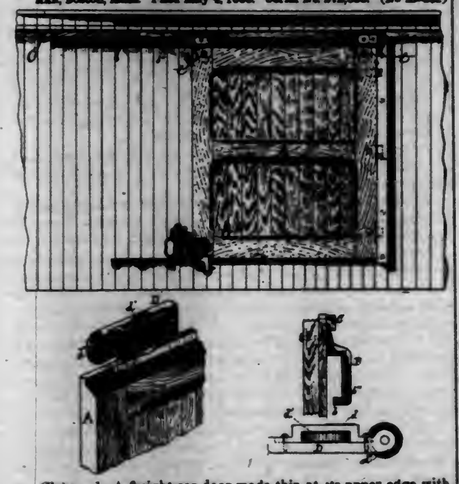
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Claim.—1. In combination with the pipe A, band G, wheel B, and top I, the corrugated flange H, adapted to deflect air both along its inside and outside to the top of pipe A, substantially as set forth.

2. The combination of pipe A, wheel B, carried on a pivot E, cylinder D, band G, corrugated flange H, and corrugated top I, all arranged and operating substantially as and for the purposes set forth.

405,699. **FREIGHT-CAR DOOR AND HANGER.** WILLIAM R. EASTMAN, Boston, Mass. Filed May 4, 1888. Serial No. 272,336. (No model.)



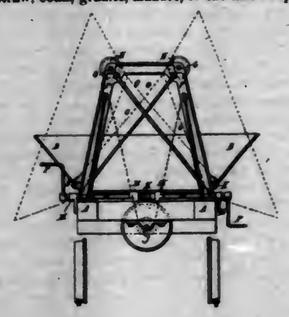
Claim.—1. A freight-car door made thin at its upper edge with a beveled portion below to shed rain, &c., in combination with a housing whose projection is no greater than the main body of the door.

2. The combination of a truck-frame carrying a roller with horizontal axis and another with vertical axis, with a door made thin at its upper edge with a beveled portion below to shed rain and the like, and a housing which furnishes a track both above and below for the roller with horizontal axis, and a bearing-surface on one side for the roller with vertical axis and whose projection is no greater than the main body of the door.

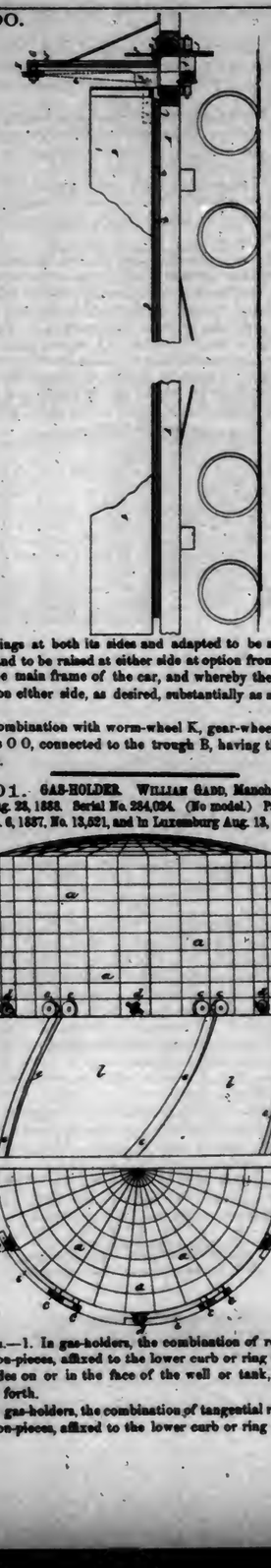
405,700. **DUMPING-CAR.** PERCIVAL EVERITT and WILLIAM C. PAGE, New York, N. Y. Filed Mar. 28, 1889. Serial No. 305,137. (No model.)

Claim.—1. A frame of a car provided with pivotal bearings at each of its sides or edges, combined with a trough having corresponding side bearings, substantially as set forth, and with means for tipping the tray.

2. A car or carriage body suitable for conveying merchandise—such as hay, straw, coals, granite, manure, or the like—supported on



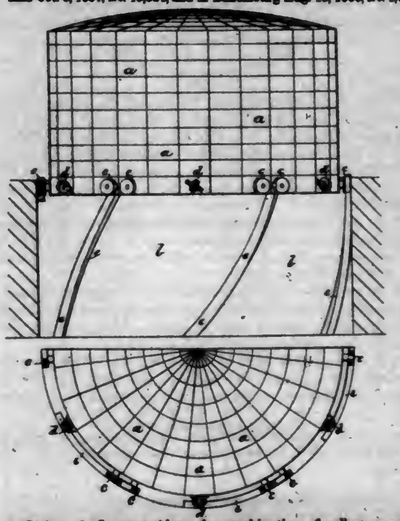
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pivotal bearings at both its sides and adapted to be actuated from either side and to be raised at either side at option from a frame connected to the main frame of the car, and whereby the load may be discharged on either side, as desired, substantially as shown and described.

3. In combination with worm-wheel K, gear-wheel J, and drum I, the chains O O, connected to the trough B, having the pivots C C, as described.

405,701. **GAS-HOLDER.** WILLIAM GADD, Manchester, England. Filed Aug. 25, 1888. Serial No. 284,094. (No model.) Patented in England Oct. 6, 1887, No. 13,521, and in Luxemburg Aug. 13, 1888, No. 1,017.



Claim.—1. In gas-holders, the combination of rollers or equivalent friction-pieces, affixed to the lower curb or ring of the bell, with spiral guides on or in the face of the well or tank, substantially as herein set forth.

2. In gas-holders, the combination of tangential rollers or equivalent friction-pieces, affixed to the lower curb or ring of the bell, with

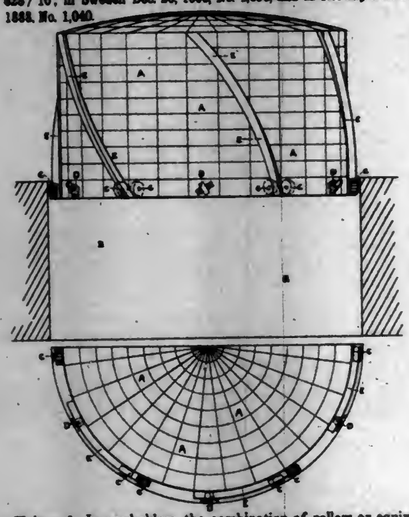
spiral guides on or in the face of the well or tank, substantially as herein set forth.

3. In gas-holders, the combination of angled radial rollers or equivalent friction-pieces, affixed to the lower curb or ring of the bell, with spiral guides on or in the face of the well or tank, substantially as herein set forth.

4. In gas-holders, the combination of both angled radial rollers and tangential rollers, or their equivalent friction-pieces, affixed to the lower curb or ring of the bell, with spiral guides on or in the face of the well or tank, substantially as herein set forth.

5. In telescopic gas-holders, the combination of rollers or equivalent friction-pieces, affixed to the lower curb or ring of an inner lift with spiral guides on the inner face of an outer lift, substantially as herein set forth.

405,702. GAS-HOLDER. WILLIAM GADD, Manchester, England. Filed Feb. 16, 1889. Serial No. 300,384. (No model.) Patented in England Oct. 6, 1887, No. 13,521; in Luxemburg Aug. 13, 1888, No. 1,017; in Belgium Aug. 16, 1888, No. 82,738; in Turkey Aug. 24, 1888; in Canada Aug. 28, 1888, No. 30,001; in Spain Sept. 27, 1888, No. 8,584; in France Oct. 6, 1888, No. 192,229; in New South Wales Oct. 9, 1888, No. 968; in Cape of Good Hope Oct. 11, 1888, No. 477; in Italy Oct. 13, 1888, No. 23,942; in Natal Oct. 17, 1888; in Tasmania Oct. 20, 1888, No. 6,278; in Brazil Oct. 31, 1888, No. 636; in Victoria Nov. 13, 1888, No. 628/10; in Sweden Dec. 20, 1888, No. 1,851, and in Norway Dec. 29, 1888, No. 1,040.



Claim.—1. In gas-holders, the combination of rollers or equivalent friction-pieces, affixed to the edge or wall of the tank or well, with spiral guides on the outer face of the bell, substantially as set forth.

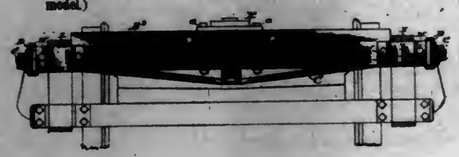
2. In gas-holders, the combination of tangential rollers or equivalent friction-pieces, affixed to the edge or wall of the tank or well, with spiral guides on or in the outer face of the bell, substantially as herein set forth.

3. In gas-holders, the combination of angled radial rollers or equivalent friction-pieces, affixed to the edge or wall of the tank or well, with spiral guides on or in the outer face of the bell, substantially as herein set forth.

4. In gas-holders, the combination of both angled radial rollers and tangential rollers or their equivalent friction-pieces, affixed to the edge or wall of the tank or well, with spiral guides on or in the outer face of the bell, substantially as herein set forth.

5. In telescopic gas-holders, the combination of rollers or equivalent friction-pieces, affixed to the inner face of an outer lift, with spiral guides on the outer face of an inner lift, substantially as herein set forth.

405,708. CAR-TRUCK BOLSTER. JOHN HIGGINSON, St. Louis, Mo. Filed Feb. 6, 1888. Renewed May 10, 1889. Serial No. 310,258. (No model.)

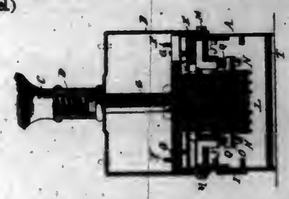


Claim.—1. A car-truck top bolster consisting of the arched metallic bars, the metallic tension-rod, the wooden bars, the center plate, and the bolster truss-seat, combined substantially as described.

2. A car-truck top bolster having embodied within it an arched metallic truss, the center plate of the bolster resting directly upon the truss, substantially as described.

3. A car-truck top bolster having embodied within it an arched metallic truss, the center plate of the bolster resting directly upon the truss, and the truss extending beyond the vertical bearings of the bolster, substantially as described.

405,704. SELF-INKING BAND HAND-STAMP. BENJAMIN B. HILL, Philadelphia, Pa. Filed Feb. 27, 1888. Serial No. 265,357. (No model.)



Claim.—1. The combination, in a hand-stamp and with the yoke B and oscillating plate E therefor, of a regulating device, as the screws F, substantially as and for the purpose specified.

2. The combination, in a hand-stamp and with the frame A and the oscillating plate E therefor, of the screws G G, substantially as and for the purpose specified.

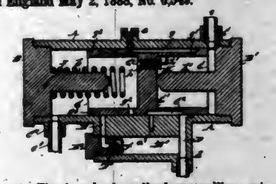
3. The combination, in a hand-stamp, of the oscillating plate E and the yoke B thereof with the frame A, having screws F G in its top, substantially as and for the purpose specified.

4. The combination, in a hand-stamp and with the band-drums thereof, of a plate E, pins N, rigidly connected with said plate, a shaft O, for supporting the drums, having holes to receive the pins, and springs around said pins N, acting against the shaft O, substantially as and for the purpose specified.

5. The combination, in a hand-stamp and with the yoke, the type-bands, and the drums therefor, of a plate E, castings J, attached thereto, provided with holes for the pivots of the yoke, and pins projecting at right angles to the plate to support the drums and their attachments, substantially as described.

6. The combination, in a hand-stamp, with a type-band, drum, and the shaft thereof, of a spring inserted in said drum and acting as a friction-surface between the drum and shaft, substantially as described.

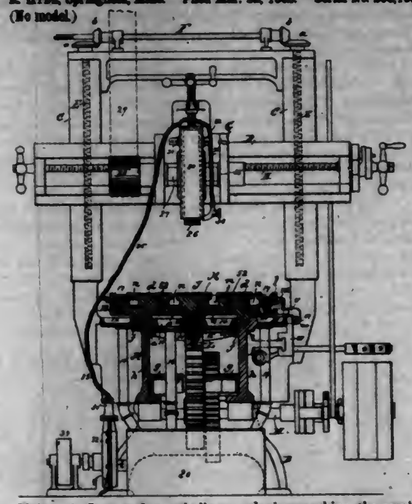
405,705. AIR-BRAKE. FREDERIK A. HOLLEMAN, Oisterwyk, Netherlands. Filed Jan. 10, 1889. Serial No. 296,968. (No model.) Patented in England May 2, 1888, No. 6,549.



Claim.—1. The herein-described controlling-valve for air-brakes, comprising a cylinder A, having its ends closed with end pieces B B', formed upon their inner surfaces with inwardly-projecting abutments *b b'*, a pipe *c'*, in connection with the main supply-pipe, a pipe *c*, in connection with the auxiliary reservoir, an air-port D, a pipe *d*, in connection with the brake-cylinder, the air channel or passage E', communicating with the air-port E, a ball-valve F, closing this air-port, the channel *g*, formed in the upper part of the valve G, the exhaust-port *c'*, in the lower part of the casing, and the screw-pin projecting from the inner surface of the casing A, all substantially as and for the purposes hereinbefore set forth.

2. The combination, with the casing A and its connections, of the valve G, adapted to reciprocate within said valve-casing A, and consisting of a cylinder having a division G', a packing-ring g^2, encircling the periphery of said valve, a groove *g*, in which is adapted to slide the screw-pin *a*, the air-channel G^3, and the air-port g^2 in its under side, the air-port *g'* in its upper side, the air-port G^2 in the division G', said port G^2 being closed by the valve H, which is held open by the spring *h* and limited in its opening by the pin *h'*, and the spring I, fitted around the abutment *b*, all substantially as and for the purposes hereinbefore specified, and illustrated in the drawings hereunto annexed.

405,706. SURFACE GRINDING OR PLANING MACHINE. ELWIN R. HYDE, Springfield, Mass. Filed Mar. 22, 1888. Serial No. 268,160. (No model.)



Claim.—1. In a surface grinding or planing machine, the combination, with a bed having the uprights C, the horizontal slide-bar D, and the adjustable slide-block G, and a table adapted to be reciprocated on said bed, of a rotatable grinding-wheel journaled on said block, and a hood 30, supported on said block and nearly surrounding said grinding-wheel, substantially as described.

2. In a surface grinding or planing machine, the combination, with the stationary bed A, provided with the longitudinal side gutters 12 12, of the carriage movable on said bed provided with water-conducting passages therein and therethrough discharging into said side gutters of the bed, substantially as described.

3. A surface grinding or planing machine bed provided between its side walls with the longitudinal pan, substantially as described.

4. A planer-table comprising the intermediate platen portion *k* and the end pockets *p*, the said platen portion provided with the T-slots *n*, leading to said pockets, and the passages 18, leading downwardly from said T-slots through the table, substantially as described.

5. A planer-table comprising the intermediate platen portion *k* and the end pockets *p*, said platen portion having the T-slots *n*, leading to said pockets and the side gutters 17, and the passages 18, leading downwardly from said T-slots through the table, substantially as described.

6. A planer-table comprising the intermediate platen portion *k* and the end pockets *p*, said platen portion having the longitudinal side gutters 17, and a chute or gutter 50, leading laterally from said longitudinal gutters, substantially as described.

7. In a surface grinding or planing machine, the combination, with the bed thereof provided with the side troughs 12 12 and intermediate pan 14 and the slide-block G, of the rotatable grinding-wheel 26, the surrounding hood supported from said slide-block, the reciprocating table provided with the intermediate platen portion *k* and the end pockets *p*, said platen portion being provided with the T-slots *n*, in communication with said pockets, and having the passages 18, the tank 20, and pipes 19, leading from said troughs and pan thereto, a supplemental tank 23, and a conduit leading from the upper part of said tank 20 to said tank 23, a pump in communication with said tank 23, and a conduit extending from said pump to the grinding-wheel, substantially as and for the purpose set forth.

8. In a surface grinding or planing machine, the combination, with the bed thereof provided with the side troughs 12 12 and intermediate pan 14 and the slide-block G, of the rotatable grinding-wheel 26, the surrounding hood supported from said slide-block, the reciprocating table provided with the intermediate platen portion *k* and the end pockets *p*, said platen portion being provided with the side gutters 17 and the T-slots *n*, in communication with said pockets, and having the passages 18, the tank 20, and pipes 19, leading from said troughs and pan thereto, a supplemental tank 23, and a conduit leading from the upper part of said tank 20 to said tank 23, a pump in communication with said tank 23, and a conduit extending from said pump to the grinding-wheel, substantially as and for the purpose described.

9. In a surface grinding or planing machine, the combination, with the bed thereof provided with the side troughs 12 12 and intermediate pan 14, provided with the lip-surrounded aperture 15, the driving-gear journaled in bearings of the bed and projecting through said aperture 15, and the slide-block G, of the rotatable grinding-wheel 26, the surrounding hood supported from said slide-block, the reciprocating table provided with the intermediate solid platen portion *k* and the end pockets *p*, said solid portion being provided with the T-slots *n*, in communication with said pockets, and having the passages 18, the tank 20, and pipes 19, leading from said troughs and pan thereto, a supplemental tank 23, and a conduit leading from the upper part of said tank 20 to said tank 23, and a conduit extending from said pump to the grinding-wheel, substantially as and for the purpose described.

10. In a planing-machine, the combination, with the reciprocating table having the adjustable dogs *m m*, of the slide *w*, provided with the notch 42, the stud 40 screwing therein having the ear-pieces 44, and the abutment *v*, comprising the angularly-arranged arms 38 and 41, the former pivotally hung in the ear-pieces of said stud, and the latter adapted to be swung to rest in said notch 42, and to project into the line of travel of said dogs, and also to be swung out of such line of travel, substantially as shown and described.

405,707. FIRE-PLACE HEATER. THOMAS B. JACKSON, Belmont, Ohio. Filed June 8, 1888. Serial No. 276,450. (No model.)

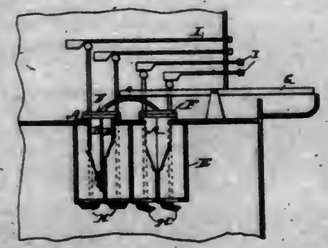


Claim.—1. In a fire-place heater, the combination, with the hot-air chambers K^2, K^3, K', and K, arranged to inclose a fire-chamber, the hot-air chamber K being directly above the fire-chamber and closed in on every side and communicating with the hot-air chamber K', of the cold-air pipe leading directly to the hot-air chamber K, substantially as and for the purpose described.

2. The herein-described fire-place heater composed of the front, the end, and the rear hot-air chambers K^2 and K', respectively, inclosing the fire-chamber, the hot-air chamber K, arranged directly over the top of the fire-chamber and communicating with the rear hot-air chamber, the cold-air pipe passing through the rear chamber K' and extending into the chamber K, and the cold-air register communicating with the said cold-air pipe, substantially as and for the purpose described.

3. In a fire-place heater having end, rear, and top hot-air chambers arranged to form walls and inclose the fire-chamber, the combination of the hot-air chamber K, arranged in the top hot-air chamber, the metal end plates O O, and the metal top plate P, extending over the fire-chamber and part way down in the rear of the fire-chamber, substantially as and for the purpose described.

405,708. REED-ORGAN. HENRY JAHN, Waterbury, Vt. Filed Aug. 16, 1888. Serial No. 283,577. (No model.)



Claim.—1. A reed-tube B, formed from a sheet-metal blank B', open at one end and flanged, closed at the other end and having an escallot in one side, and the single vibrating reed D, secured to the tube and operating over the escallot, substantially as set forth.

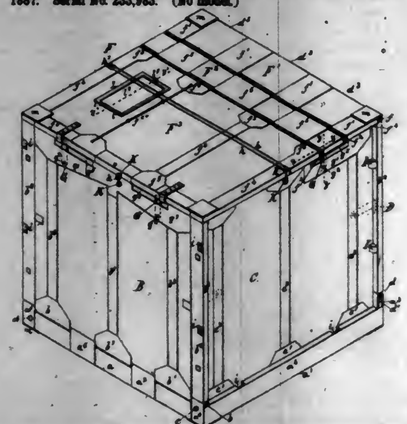
2. The combination, with a wind-chest, of reed-tubes secured in the said wind-chest and provided with vibrating reeds operating over escallots in the said tubes, and a valve operated by keys and held

on the open end of each of the said tubes, substantially as shown and described.

3. The combination, with a wind-chest and a resonating-channel, of reed-tubes secured in the said wind-chest and provided with vibrating reeds operating over eschallots in the said tubes, said tubes opening into the said resonating-channel, substantially as shown and described.

4. The combination, with a wind-chest and a resonating-channel, of reeds or reed-tubes secured in the said wind-chest and provided with vibrating reeds operating over eschallots in the said tubes, said tubes opening into the said resonating-channel, and a valve operated by keys and held over a wind-vent in the said resonating-channel, substantially as shown and described.

405,709. FOLDING PACKING-BOX. HENRY JOHNSON, Washington, D. C., assignor to Bendeen J. Behrend, same place. Filed Apr. 7, 1887. Serial No. 233,983. (No model.)



Claim.—1. In the described folding packing-receptacle, the combination, with the sides and ends B C D E, of the lugs I and notches *i*, substantially as and for the purpose described.

2. The packing-receptacle comprising folding-sections A B C D E F, hooks G, hook-holding plates, slotted strengthening plates, and lugs I, said hooks being applied on the sides and ends of the receptacle and accessible at points near its top, substantially as and for the purpose described.

3. The packing-receptacle comprising folding sections A B C D E F, hooks G, hook-holding plates, slotted strengthening-plates, lugs I, and pins J, substantially as described.

4. The packing-receptacle comprising folding sections A B C D E F, hooks G, hook-holding plates, slotted strengthening-plates, fastening K *k'*, and wire *k*, substantially as described.

5. In the described folding packing-receptacle, the combination, with the front board B and top portion F^3, of hooks G, pin J, and a fastening K *k'* for a wire *k*, substantially as and for the purpose described.

405,710. CAR-WHEEL. WILLIAM JOSLIN, Cleveland, Ohio. Filed Sept. 7, 1888. Serial No. 284,844. (No model.)

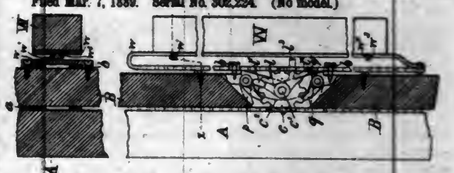


Claim.—1. A wheel having a tire and center parts or body with double opposing angular surfaces or bearings projecting outward from an approximately central internal flange of the tire secured by means of bolts, the opposing angular surfaces or bearing parts of the wheel-body being constructed with greater diameters in the plane of the surfaces or bearings on both sides of the central inner projecting flange of the tire, said difference of said diameters normally creating open spaces between said parts of said wheel-body and both sides of said inner projecting flange *o* of said tire, the joining faces *a a'* and *c d'* of said tire and wheel-body being counterpart inclines to each other, said parts being adapted to permit the drawing of said parts of the wheel-body together by said bolts in wedge movement toward said internal flange of said tire, by which operation the tire and wheel-body are drawn firmly together and any looseness of the wheel is remedied, substantially as set forth.

2. The combination, with the tire having an inner projecting flange, the tire and flange having corresponding oppositely-inclined bearing-faces, of the central portion composed of two parts, each having two sets of bearing-faces which correspond with and fit against the bearing-faces on one-half of the tire, and having spaces between the opposing sides of the said parts and the sides of the said flange, and the bolts for drawing the said parts together, substantially as set forth.

3. The combination, with the tire having grooves in its sides, and having an inner projecting flange, the tire and the flange having oppositely-inclined bearing-faces, of the central portion composed of two parts, each having bearing-faces to correspond with and fit against the bearing-faces on half of the tire, and having a flange to fit in the groove in the side of the tire, spaces being left between the opposing sides of the said parts, flange, and tire, substantially as shown, and the bolts for securing the parts together, substantially as described.

405,711. SASH-BALANCE. WILLIAM KADOW, Jr., Newark, N. J. Filed Mar. 7, 1889. Serial No. 302,224. (No model.)



Claim.—1. The combination, with the window-sash provided with a rack upon one edge extending over its entire length, a similar rack arranged to slide within the casing on the side adjacent to the window-sash and supporting a counter-balance of greater weight than the sash, and a pinion mounted upon the window-frame intermediate to the said racks, of a pawl pivoted upon the window-frame above the pinion, a bell-crank pivoted upon the axle of the pinion having one of its arms adapted to engage the pawl to lift it out of engagement with the pinion, and a lever pivoted upon and operated from without the window-frame to lift the other arm of the bell-crank, substantially as shown and described.

2. In a sash-lifting device comprising racks *a* and *w*, applied to the edges of the sash A, and the counter-balance W, and an intermediate pinion *c*, mounted upon the window-frame, the combination, with the pinion, of the pawls *p* and *q*, arranged to engage with the same, the pawl *q* being provided with a toe *q'* projecting therefrom, as described, a bell-crank having arms l', l^3, and l^3, and a lever *n*, pivoted upon the window-frame, one of its ends projecting without the said frame and the other end engaging with the arm l^3, substantially as shown and described.

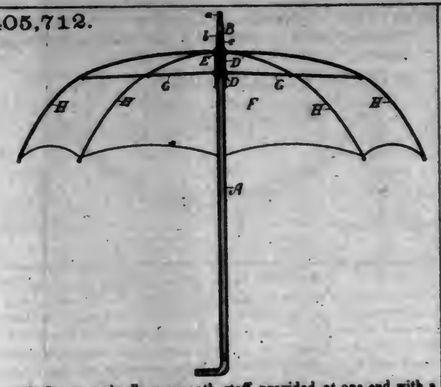
3. In a sash-lifting device comprising racks *a* and *w*, applied to the edges of the sash A, and the counter-balance W, and an intermediate pinion *c*, mounted upon the window-frame, the combination, with the pinion, of the pawls *p* and *q*, arranged to engage with the same, the pawl *q* being provided with a toe *q'* projecting therefrom, as described, arms l', l^3, and l^3, a lever *n*, pivoted upon the window-frame, one of its ends projecting without the said frame and the other end engaging with the arm l^3, and a plate *r*, pivoted at one end upon the frame and provided with slots *s* and *s'* open at one side of the said plate, the whole arranged and operated as and for the purpose set forth.

4. In a sash-lifting device, the combination, with the sash provided on one edge with a rack extending over its entire length, and a pinion pivoted upon the window-frame and engaging therewith, of a rack-bar secured to slide within the casing to engage with the pinion and supporting a counter-balance of greater weight than the sash, the said rack-bar consisting in a strip of sheet metal provided with a series of transverse slots upon one end to form the rack portion, and its other portion being bent parallel thereto and provided with means for attaching the counter-balance thereto, substantially as shown and described.

405,712. UMBRELLA. GEORGE A. KITTREDGE and WATSON P. KILBOURNE, Chicago, Ill. Filed Sept. 27, 1888. Serial No. 286,556. (No model.)

Claim.—1. In a combination cane-umbrella, a plain staff provided with a single one-piece fastening-screw at one end, in combination with an umbrella-head centrally tapped to engage with said screw, and a ferrule provided with an internal screw-thread, whereby the said ferrule may be held on the said fastening-screw either with or without the said head, substantially as described.

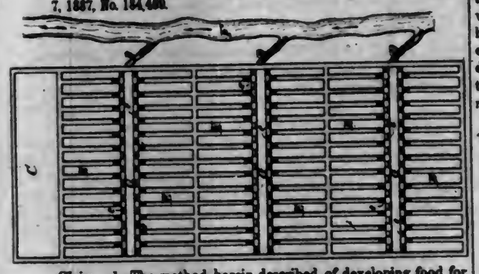
405,712.



2. In an umbrella, a smooth staff provided at one end with a single one-piece fastening-screw having an enlarged threaded central portion *c'*, in combination with a head centrally tapped to engage with the part *c'*, the umbrella-frame pivotally secured to said head, and a ferrule provided with a screw-thread, whereby the said ferrule may be held on the said fastening-screw either with or without the umbrella-head, substantially as and for the purposes described.

3. In an umbrella, a smooth staff A, provided with the single one-piece fastening-screw c^3 *c' c*, in combination with the head E, having the frame of the umbrella pivotally secured thereto, and the ferrule B, provided with the centrally-tapped interior plug *b*, constructed and arranged substantially as and for the purposes described.

405,713. METHOD OF PRODUCING FOOD FOR FISH. FRANÇOIS LUSERN and EDOUARD DU ROVERAY, Geneva, Switzerland. Filed Feb. 10, 1888. Serial No. 263,614. (No model.) Patented in France Nov. 7, 1887, No. 184,499.



Claim.—1. The method herein described of developing food for fish and feeding the same, consisting in providing two or more ponds, passing the fish from the first pond to the second, allowing the excrement to remain and develop animalculæ, and returning the fish to the first pond to feed on the animalculæ while the animalculæ are developed in the second pond, and then repeating the operation, substantially as specified.

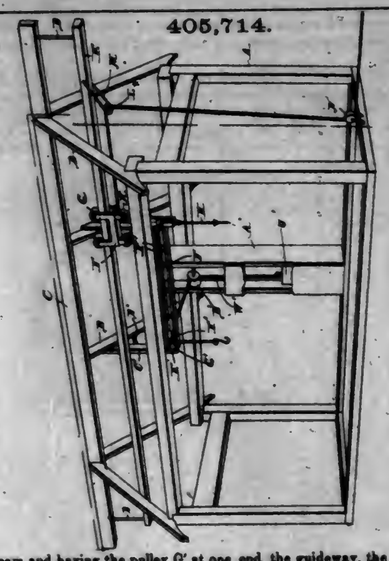
2. The method herein specified of developing food for fish and feeding and caring for such fish, consisting in separating the fish into groups according to their approximate size and keeping the same in sets of small communicating ponds or pools, passing the fish periodically from one set of pools to another and allowing the empty set of pools to remain for the development of animalculæ from the excrement contained therein, and feeding the fishes thereon in one set of pools while the animalculæ are developed in the other set of pools, substantially as specified.

3. The method herein described of developing food for fish and feeding the same, consisting in providing two or more tanks or ponds, passing the fish from the first to the second, removing the excrement from the first tank, heating said excrement to promote decomposition and returning it to the first tank, darkening the tank and allowing the excrement to remain and develop animalculæ, returning the fish to said first tank to feed on the animalculæ, then treating the excrement of the second tank, as described, with reference to the first tank, and then returning the fish to feed on the animalculæ developed in the second tank, substantially as specified.

405,714. HAY-CARRIER. THEODORE MILAR and HENRY PEYTON-ARD, Atkinson, Ill. Filed Oct. 4, 1888. Serial No. 287,148. (No model.)

Claim.—1. The combination of the track-beam, the carrier thereon, the pulley L at one end of the beam, the frame C below the beam and having the pulley G' at one end, the guideway, the pulley B' at the upper end thereof, the weight in said guideway, and the rope attached thereto, passed around pulleys B' and G', and attached to the carrier, substantially as described.

405,714.



2. The combination of the track-beam, the carrier thereon, the pulley L, and link to attach the same to either end of the track-beam, the frame C, adapted to be suspended from the barn-roof and provided with the pairs of openings F' at opposite ends, the pulley G', having the bolt H', adapted to be secured in said openings at either end of the frame, the vertical guideway A', the pulley B' at the upper end thereof, the rope passed over said pulley, around pulley G', attached to the carrier, and the weight in the guiding-trough secured to said rope, substantially as described.

405,715. MUSIC STAND AND PORTFOLIO. VIOLA MOORE, San Francisco, Cal. Filed Nov. 6, 1888. Serial No. 290,128. (No model.)



Claim.—1. A music-receptacle comprising the box or drawer having laterally-projecting arms and a rod designed to be secured beneath a piano, said box or drawer being vertically adjustable on the rod and adapted to be swung around the same, the outer end of the box being hinged, substantially as described.

2. A music-receptacle comprising the box or drawer having laterally-projecting arms, a plate designed to be secured to a piano, and a rod swiveled to the plate and depending therefrom, said box or drawer being vertically adjustable on the depending rod, substantially as described.

3. A music-receptacle comprising a box or drawer having laterally-extending arms provided with eyes or openings, a plate designed to be secured to a piano, and a rod depending from said plate and passing through the eyes or openings of the lateral arms, said rod being threaded and provided with an adjusting-nut, substantially as described.

405,716. METHOD OF CLEANING METAL CASTINGS. JOSEPH H. POPE, Philadelphia, Pa. Filed Mar. 15, 1888. Serial No. 267,260. (No specimens.)

Claim.—1. The method of removing sand and other foreign matter from metal castings without injury to their original or chilled surfaces, which consists in subjecting the castings to a bath of hydrofluoric acid and cold water and then to a bath of water, substantially as set forth.

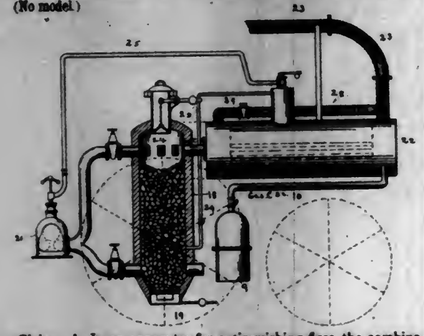
2. The method of removing sand and other foreign matter from metal castings without destroying their original or chilled surfaces,

which consists in subjecting the castings to a weak solution or bath of hydrofluoric acid and then to a bath of hot water, substantially as set forth.

3. The method of preparing the surfaces of metal castings for electro or other plating or coating, consisting in first subjecting the casting to a weak solution or bath of hydrofluoric acid and cold water to remove sand and foreign matter from the surfaces of the castings, and then subjecting them to a bath of hot water, substantially as set forth.

405,717. PORTABLE APPARATUS FOR EXTINGUISHING FIRES.

HENRY C. REW, Chicago, Ill. Filed Sept. 25, 1888. Serial No. 286,377. (No model.)



Claim.—1. In an apparatus for extinguishing fires, the combination of the furnace provided with means, such as a blower, for producing a regulable blast at the base of the fuel and also above the same in a combustion-chamber, with a steam-generator and a flexible delivery-pipe having a non-conducting covering to conduct the products of combustion to a fire, substantially as specified.

2. In an apparatus for extinguishing fires, the combination of the furnace provided with means, such as a blower, for producing a regulable blast at the base of the fuel and also above the same in a combustion-chamber, with a steam-generator and a flexible delivery-pipe having a non-conducting covering to conduct the products of combustion to a fire, substantially as specified.

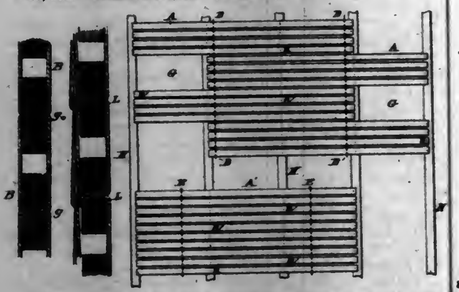
3. In an apparatus for extinguishing fires, the combination of the furnace with the steam-boiler, the blower, a pipe to conduct steam to the base of the fuel-chamber, and a pipe to conduct extinguishing-gases from the boiler-flues to a fire, substantially as specified.

4. In an apparatus for extinguishing fires, the combination of the furnace with the blower, the steam-boiler having flues for products of combustion, a flue to conduct a portion of the products by the boiler, and a covered pipe to conduct the extinguishing-gases to a fire, substantially as specified.

5. In an apparatus for extinguishing fires, the combination of the furnace with the blower, the steam-boiler having flues for products of combustion, a flue to conduct a portion of the products by the boiler, a distinct gas-generator to supply additional extinguishing-gas, and a covered pipe to conduct the extinguishing-gases to a fire, substantially as specified.

405,718. LATHING.

LAUREN S. SCOTT, Bristol, Vt. Filed Feb. 23, 1888. Serial No. 265,005. (No model.)

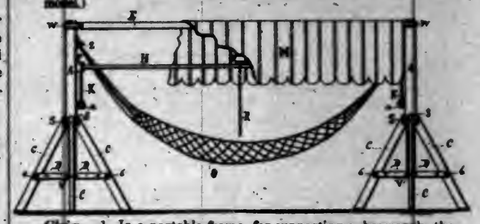


Claim.—1. A lathing fabric composed of parallel wooden strips arranged in proper position to be nailed in place and sewed together with twine or thread, the stitches passing through the bodies of the strips, as specified.

2. A lathing fabric composed of lathing-strips of any suitable material stitched together, substantially as specified.

405,719. HAMMOCK AND CANOPY SUPPORT.

HERVEY SIGLER, New York, N. Y. Filed Dec. 12, 1888. Serial No. 292,559. (No model.)

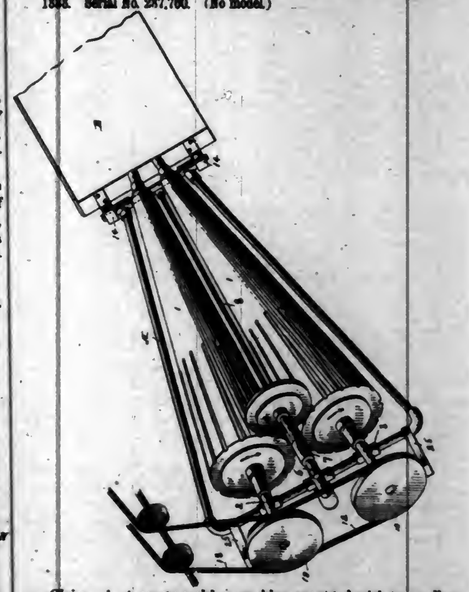


Claim.—1. In a portable frame for supporting a hammock, the combination, with the standards A, provided with shoulders at 3, 4, and 5, of the rings S, bearing against the shoulders 3, the legs C, pivotally connected to said rings S, the rings V, bearing against the shoulders 4, and the braces D, having one of their ends pivotally connected to the rings V and their other ends removably connected to the legs C, the connecting-pole E, passing from the top of one standard to the other, and the straps or loops W, pivoted to the connecting-pole near each end, by which the pole E is secured to the standards, substantially as set forth.

2. The combination, with the standards A, provided with shoulders at 3, 4, and 5, of the legs C and rings S, the upper ends of such legs being pivotally connected to such rings S and said rings S bearing against the shoulder 3, the braces D, each having one end bifurcated to receive the legs C and removably connected to such legs C, and the rings V around the standards and resting against the shoulder 4 near the lower ends of such standards, such rings V having projections forming sockets on their outer surfaces, into which sockets one end of each of the braces D is pivotally secured, the pole E, having bifurcated ends resting upon the shoulders 5 on the standards A, near the top of such standards, and the loops or straps W, pivotally fastened to the pole E near each end and adapted to be passed over the top of the standards to hold the pole E to the standards, substantially as specified.

405,720. MACHINE FOR MAKING STICK-CANDY.

JOHN SMITH, Norristown, assignor to Croft & Allen, Philadelphia, Pa. Filed Oct. 10, 1888. Serial No. 287,760. (No model.)



Claim.—1. A candy-making machine provided with two rollers arranged side by side, geared to revolve in the same direction, and inclined from a horizontal line, and an end bearing arranged above the rolls at their lower ends, substantially as and for the purpose set forth.

2. The combination of the inclined revolving rolls and a bearing consisting of a revolving plate arranged above and between the rolls adjacent to their lower ends, substantially as set forth.

3. The combination of a pair of tapering inclined rolls geared to revolve in the same direction, with their smaller ends elevated, and a bearing-plate in the form of a disk supported above the lower ends of the rolls, substantially as set forth.

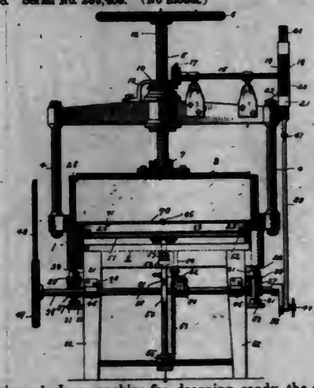
4. The combination of a pair of separated revolving rolls, a bearing above the same at their lower ends, and a burner arranged below the space between the rolls, substantially as set forth.

5. The combination, with a table, of a frame hung to the table and supporting in an inclined position a pair of revolving rolls and a bearing above the rolls, substantially as set forth.

6. The combination of the frame supporting a pair of inclined revolving rolls and bearing above the rolls, a burner below the rolls, and a detachable table C, substantially as and for the purpose set forth.

405,721. MACHINE FOR MAKING DROP-CANDY.

JOHN SMITH, Norristown, assignor to Croft & Allen, Philadelphia, Pa. Filed Oct. 29, 1888. Serial No. 289,408. (No model.)



Claim.—1. In a machine for dropping candy, the combination, with the stationary frame, of a movable receptacle having a perforated bottom, a movable receiving-plate below the receptacle, an adjustable follower in the receptacle, an intermittingly-operated driver for the follower, and a shaft connected to intermittingly operate the receptacle and the plate, substantially as set forth.

2. The combination, in a machine for dropping candy, of a vertically-movable receptacle having a perforated bottom, a follower within the receptacle, a plate below the receptacle, vertically movable toward and from the receptacle, a driver for intermittingly moving the follower, and a shaft connected with the receptacle and with the plate for raising and lowering them independently of the follower, substantially as set forth.

3. The combination, with the receptacle 26, of a follower, a slotted feeding-screw and driving-pinion, a fixed nut adapted to said screw, a shaft gearing with said pinion and provided with a ratchet engaging with a pawl carried by a toothed wheel upon said shaft, and a reciprocating rack engaging with said toothed wheel, a crank-shaft connected with said rack and provided with cams and connections for elevating and lowering the receptacle, substantially as set forth.

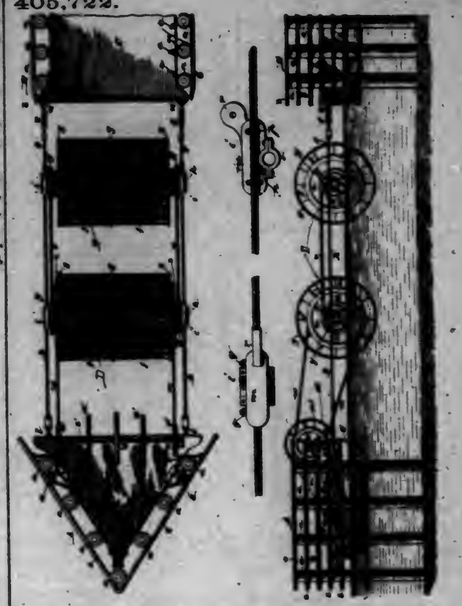
4. The combination, with the receptacle 26, having a perforated bottom, of a plate 53, a supporting-rod 49, connected with the plate, a lever connected with said rod through the medium of a spring, and a revolving cam bearing upon said lever, substantially as set forth.

5. The combination of a reciprocating receptacle having a perforated bottom, a reciprocating receiving-plate having a movement greater than the movement of the receptacle, a stop for the plate carried by the receptacle, a lifting-bar connected with the receiving-plate, a driving-shaft, and yielding connections between the driving-shaft and the said bar, substantially as and for the purpose set forth.

6. The combination of the vertically-movable receptacle, the plate 51, supporting-bar 49, a lever connected to said bar by a spring, and a shaft provided with a cam arranged to engage with said lever, substantially as set forth.

405,722. SURFACE-CURRENT OR TIDE MOTOR.

EDMUND SOULOW, Buffalo, N. Y. Filed Jan. 2, 1888. Serial No. 295,173. (No model.)



Claim.—1. A current or tide motor consisting of two open piers, movable platforms in said piers, and a floating wheel or wheels interposed between the piers, in combination with suitable means for transmitting the power of the motor, substantially as described.

2. A current or tide motor consisting of an open pier, a movable platform secured and guided in the pier by wheels bearing against the pier, and a floating wheel secured to the pier, in combination with suitable means for transmitting power from the motor, substantially as described.

3. A current or tide motor consisting of an open triangular pier, an open parallel pier, platforms in said piers, and a floating wheel between the piers supported on cables attached to the platforms, substantially as described.

4. A current or tide motor consisting of piers and a floating wheel suspended upon cables by means of sliding journal-bearings secured to the cables, substantially as described.

5. A current or tide motor consisting of open piers, vertically-adjustable platforms, and a floating wheel secured to the piers by means of a flexible connection, in combination with suitable means for transmitting power from the motor, substantially as described.

6. A current or tide motor consisting of open piers, platforms secured to the piers, and a floating wheel, in combination with cables for supporting the wheel, and a device for stretching the cables, substantially as described.

7. In a current or tide motor, a floating wheel supported upon cables, in combination with sliding journal-bearings provided with a clamping device for securing the wheel in position upon the cables, substantially as described.

405,723. CARRIAGE.

CHAUNCEY THOMAS, Boston, Mass. Filed Feb. 13, 1889. Serial No. 299,706. (No model.)

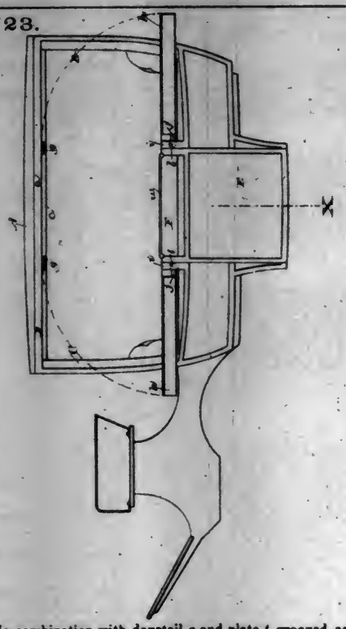
Claim.—1. In a carriage of the general class described, the combination of a top having permanent supports at the ends thereof, falling pillars hinged to the body and arranged to be secured to said top when raised, and removable side glasses arranged to close the space between the permanent lower portion of the body and said top, substantially as specified.

2. As an improvement in coach-tops, the top rail thereof formed with the outer and inner portions *a b* of wood, and the thin metallic bar *c*, interposed therein and arranged to serve as the partition or stop of the glasses, substantially as specified.

3. In combination with the falling pillars and top, the dovetail *g*, having both transverse and lineal oblique faces, and plate *i*, having a groove to receive said dovetail, substantially as specified.

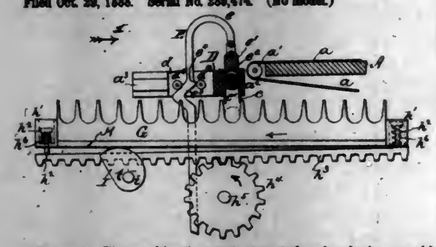


405,723.



4. In combination with dovetail *g* and plate *f*, grooved, as specified, the locking-screw *i*, combined and arranged as specified.

405,724. CIGAR-MACHINE. JOHN THOMPSON, Philadelphia, Pa. Filed Oct. 29, 1888. Serial No. 289,474. (No model.)



Claim.—1. The combination of the bunch-forming device, a mold-block, feed mechanism therefor, conveyer-flights, the ends of which enter the molds in said block to deliver the bunch, and mechanism for alternately separating and joining the molds and conveyer-flights, substantially as set forth.

2. In a cigar-making machine, the combination of a bunch-forming device, a mold-block, feeding mechanism therefor, conveyer-flights comprising a fixed and a movable flight between the bunch-forming device and the mold-block, the ends of the conveyer-flights entering the molds in said block to deliver the bunch, a plunger passing between said conveyer-flights, and mechanism for actuating said plunger and for alternately separating and joining the molds and conveyer-flights, substantially as set forth.

3. In combination with a cigar-bunch-forming device, the fixed and movable conveyer flights or sides *c c'*, a plunger passing between said flights and actuating said movable flight, a receiver or mold-block for the bunches, and actuating devices for engaging the ends of the flights or sides *c c'* with the molds in the receiver or block, substantially as set forth.

4. In a cigar-machine, the combination of fixed and movable conveyer-flights *c c'* and plunger-bars E, in engagement with and actuating the movable conveyer-flight *c'*, substantially as set forth.

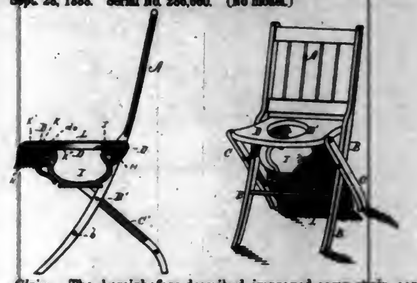
5. In a cigar-machine, the combination of a mold-block, fixed and movable conveyer-flights *c c'*, the ends of which enter the molds in said block to deliver the bunch, a plunger passing between said flights, actuating mechanism for said plunger, and mechanism for feeding the mold-block and for alternately separating and joining the molds in said block and the conveyer-flights, substantially as set forth.

6. In a cigar-machine, the combination, with a bunch-forming device, of the fixed and movable conveyer-flights *c c'*, plunger-bars E, engaging with and controlling the movements of said movable conveyer-flights, a plate H, a rack-bar A^2, having spring-supports on said plate, a mold-block loosely supported on said plate, feeding mechanism for the plate, and actuating devices for raising said mold-block, substantially as set forth.

7. In a cigar-making machine, the combination of a bunch-forming device, the fixed conveyer-flight *c*, the movable conveyer-flight *c'*, having rollers d^{11} d^{12}, the plunger-rods E E, having cams e^3 and recesses e^4, and actuating mechanism for said plunger-rods, substantially as set forth.

8. In a cigar-making machine, the combination of plate H, having end lugs A, mold-block G, loose on said plate, guides or ways for said plate, rack-bar A^2, spring supported on plate H, and actuating mechanism in engagement with said rack-bar, and lifting-cams I in engagement with plate H, substantially as set forth.

405,725. CAMP-CHAIR. LUCIUS R. TRUMBELL, Bristol, N. H. Filed Sept. 28, 1888. Serial No. 286,660. (No model.)



Claim.—The hereinbefore-described improved camp-chair, consisting, essentially, of the back A, hinged legs B B C C, hinged seat D, provided with the opening *D'*, and flexible seat-cover L, secured at its rear corners to the legs C, and provided on its under side with the front piece N, whereby a pocket is formed, into which the front edge of the seat slips when it is lowered, substantially as and for the purpose set forth.

405,726. SPOOL OF THREAD FOR SEWING-MACHINES. GEORGE H. WILKINS, Shelburne Falls, Mass. Filed July 2, 1888. Serial No. 306,949. (No model.)

Brief.—The object of the invention is to form a spool of thread so that the thread will draw off easily, and so that each layer of thread will be entirely covered by each succeeding outer layer, so that there will be but one layer exposed at a time.



Claim.—1. A conical spool of thread or silk the courses or layers of which increase successively in length from the inner portion thereof outward throughout the entire body of thread, whereby each course or layer is entirely covered by each succeeding outer course or layer, substantially as and for the purpose set forth.

2. A conically-wound spool of thread consisting of a spool proper having a stem or body and a flanged base and of thread or silk in substantially close coils on the spool-body, the courses or layers of thread or silk increasing successively in length from the inner portion of the spool outward throughout the entire body of thread, substantially as and for the purpose set forth.

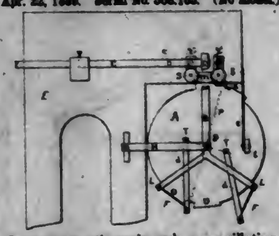
3. The spool consisting of the stem *a*, the flanged base *b*, the thread in close coils on the spool, the first or foundation course consisting of a few coils on the spool at the junction of the stem *a* with the base *b*, and each succeeding course extending a short distance beyond the preceding course toward the base and a greater distance beyond each preceding course toward the tip or end, whereby a spool of thread having substantially the form of a frustum of a cone is formed, as set forth.

405,727. SHOE-NAIL. LLOYD W. AUSTIN, Milwaukee, Wis. Filed May 26, 1888. Serial No. 275,092. (No model.)



Claim.—A nail consisting of a head, a shank of uniform diameter throughout its length, a long conical point tapering with uniform pitch from the surface of the shank to the extremity of the nail, and three or more re-enforcing ribs of equal size integral therewith on the conical point, extending from the shank downwardly upon and along the surface of the point a portion of its length, each rib terminating in a vanishing point a distance from the point of the nail, leaving a plain clinching-point below said ribs, substantially as and for the purpose set forth.

405,728. AUTOMATIC GRAIN-SCALE. JOHN H. FORSTER, Fargo, Dak. Filed Apr. 22, 1889. Serial No. 308,163. (No model.)



Claim.—1. In an automatic grain-scale, an oscillating weighing-box pivotally supported between hanger-arms suspended from the arm of a scale-beam and provided with oppositely-arranged compartments intended to alternately receive and discharge the grain, and also provided with a wheel K, pivoted thereto, in combination with two separate wheels S S on the frame, adapted to alternately engage the wheel K, and a block or projection M, located between the wheels S S, to prevent the wheel K from being accidentally caught between them, substantially as herein described.

2. In an automatic grain-scale, the double-compartment box A, pivotally supported between hanger-arms suspended from a scale-beam and provided with an automatic detent, in combination with discharge-port covers having their outer edges hinged or pivotally connected with the lower ends of the hanger-arms, or the rods connecting the same, and their inner edges supported by links pivoted to the oscillating box in such a manner that said covers will swing and operate concurrently with the oscillation of the box, substantially as herein described.

3. In an automatic grain-scale, the oscillating box A, pivoted in hanger-arms B B, suspended from a scale-beam and provided with a detent, in combination with swinging port-covers pivotally connected with the hanger-arms and supported by links *d d*, suspending from the box, said links being so adjusted that the covers will swing simultaneously with the oscillating of the box, substantially as herein described.

4. In an automatic grain-scale, a double-compartment oscillating box pivotally suspended between hanger-arms connected at their upper ends with a scale-beam, in combination with discharge-port covers connected at their outer edges directly or indirectly with the hanger-arms and having the inner edges suspended and supported by links pivotally connected with the weighing-box, substantially as herein described.

5. In an automatic grain-scale, a double-compartment oscillating weighing-box suspended between hanger-arms connected at their upper ends to a scale-beam fulcrumed on the head of an elevator, in combination with guide-bars H H, pivotally connecting the elevator with the hanger-arms below the scale-beam, and the guard-rollers *l l*, pivoted to brackets extending from the elevator, said guard-rollers being so adjusted that the tendency of their motion will coincide with the oscillating and vertical motion of the box, substantially as herein described.

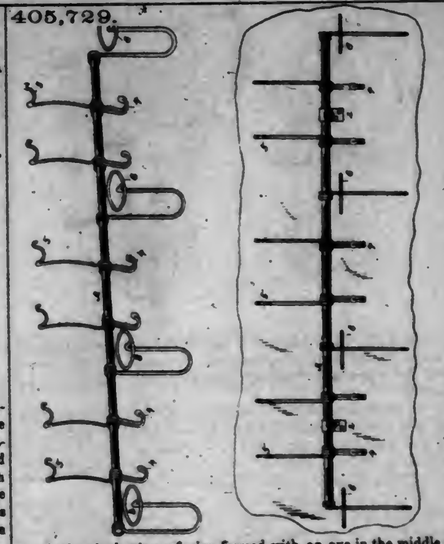
6. In an automatic grain-scale, the combination of an oscillating double-compartment box A, pivoted in hanger-arms B B, suspended from a scale-beam, discharge-port covers pivotally connected at their outer edges with the hanger-arms and suspended at their inner edges by links pivoted to the box, the guide-bars H H, and guard-rollers *l l*, substantially as herein described.

405,729. HAT AND COAT RACK. CHARLES T. GARDNER, Oswego, N. Y., assignor to Frances Emily Gardner, same place. Filed Sept. 22, 1887. Serial No. 250,388. (No model.)

Claim.—1. As an improved article of manufacture, the herein-described hat and coat rack, consisting of a straight supporting-rod A, the garment-supporting hooks 4, formed of a single wire having one end wrapped about the supporting-rod, then formed into a hook, and the free end then wrapped about the supporting-rod and the strand carried up and formed into an umbrella-support 5, and the hat-supports 6, consisting of a wire having one end wrapped about the supporting-rod and the strand carried down and up and the free end formed into a ring or seat, substantially as and for the purpose specified.

2. The garment-hook and umbrella-support herein described, composed of a single piece of wire formed with an eye in the middle to take a horizontally-arranged supporting-rod, and having a depending garment-hook and a vertically-arranged umbrella-support, substantially as described.

405,729.



405,730. SEAL. CHARLES A. GILDEMEYER, Haddonfield, N. J., assignor to himself, and Madison Rush, Philadelphia, Pa. Filed Apr. 6, 1889. Serial No. 306,150. (No model.)



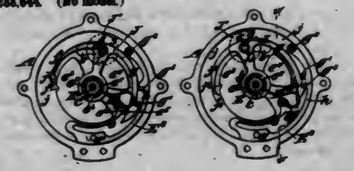
Claim.—1. A seal consisting of a plate A, having a projecting rim *a'* cut away at a^3, in combination with a face-plate B, of less thickness than the rim *a'*, and a wire B, having a looped end *b* and legs *b'*, with enlarged ends, all substantially as and for the purpose specified.

2. A seal consisting of a plate A, having a projecting rim *a'* cut away at a^3, one or more longitudinal grooves a^3, and an opening in the rim at the end of said grooves, in combination with face-plate B, of less thickness than the rim *a'*, and a wire B, having a looped end *b* and legs *b'*, with enlarged ends, all substantially as and for the purpose specified.

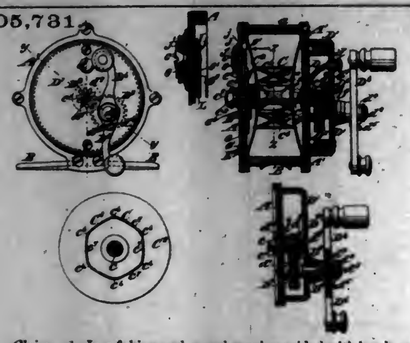
3. A seal consisting of a plate A, having a projecting rim *a'* cut away at a^3, in combination with a face-plate B, having a turned-up rim *c'* of less thickness than the rim *a'*, and a wire B, having a looped end *b* and legs *b'*, with enlarged ends, all substantially as and for the purpose specified.

4. A seal consisting of a plate A, having a projecting rim *a'* cut away at a^3, one or more longitudinal grooves a^3, and an opening in the rim at the end of said grooves, in combination with face-plate B, having a turned-up rim *c'* of less thickness than the rim *a'*, and a wire B, having a looped end *b* and legs *b'*, with enlarged ends, all substantially as and for the purpose specified.

405,731. FISHING-REEL. PETER G. GIBSON, New York, N. Y., assignor to Thomas R. Mills, same place. Filed Oct. 20, 1888. Serial No. 288,644. (No model.)



405,731.



Claim.—1. In a fishing-reel, a reel-spool provided with heads and a barrel, the said barrel being composed of substantially parallel crossbars and intermediate diagonally-extending braces, substantially as specified.

2. In a fishing-reel, the combination, with a reel-spool, of a spindle upon which said spool is mounted, heads for the reel, a box secured to one of said heads, and a tube extending to the exterior of said box and in close proximity to one of the journals of said spindle for supplying oil to said journal, substantially as specified.

3. In a fishing-reel, the combination, with a spool, of a spindle upon which said spool is mounted, a pinion on said spindle, a shaft, a second pinion on said shaft engaging the pinion first named, and a washer on the spool-spindle operating to maintain the first-named pinion in position and to overlap the pinion last named, substantially as specified.

4. In a fishing-reel, the combination, with a hollow shaft, of a pinion on said shaft, a stud about which said shaft may turn, a handle, and a cap securing said handle in position on the shaft and inclosing the outer ends of the shaft and studs, substantially as specified.

5. In a fishing-reel, the combination, with a shaft and a handle, of a cap inclosing the outer end of the shaft, and a lock on the handle adapted to engage said cap to prevent its removal, substantially as specified.

6. In a fishing-reel, the combination, with a spool, of a click-wheel, a click-spring, a resilient arm upon which said click-spring is mounted, a drag-arm, and a single cam adjacent to the drag and the click-spring and adapted to be rotated so as to alternately operate the click and the drag, substantially as specified.

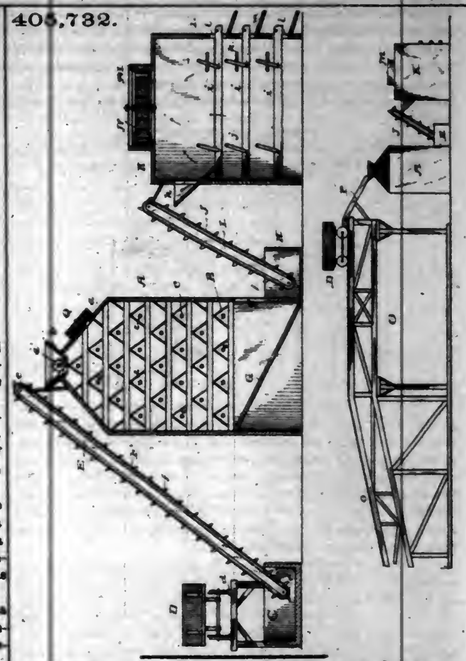
7. In a fishing-reel, the combination, with a spool, of a click-wheel, a click-spring, a resilient arm upon which said click-spring is mounted, a resilient drag-arm and a cam adjacent to said click-spring and drag adapted when rotated to contact alternately with said resilient arms to render the click-spring and drag alternately operative, and when rotated still further to be removed from contact with both said resilient arms in order to render inoperative both the click-spring and the drag, substantially as specified.

8. In a fishing-reel, the combination, with a spool, of a click-wheel, a click-spring, a resilient arm upon which said click-spring is mounted, and a drag-arm, the said arm upon which the click-spring is mounted and the drag-arm being made in one integral piece, substantially as specified.

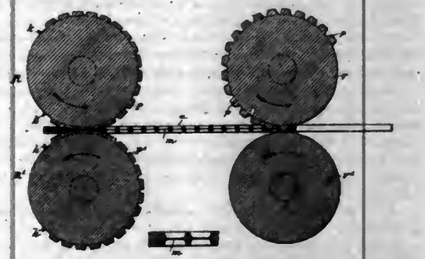
9. In a fishing-reel, the combination, with a spool, of a reel-head provided with a recess upon its inner side, as c^5 a click-wheel within said recess, a click-spring operating in conjunction with the click-wheel, a cam for operating the click-spring, and a hub on said cam composed of resilient jaws or arms arranged in said recess and maintaining the cam by friction, substantially as specified.

10. In a fishing-reel, the combination, with a head provided with an arc-shaped slot and having a recess upon its inner side, of a cam within said recess, a shank upon said cam extending to the exterior of said head, and a button secured upon said shank, said shank being of such length that it will extend beyond the exterior surface of the head, substantially as and for the purpose specified.

405,732.



405,733. ART OF PREPARING ELEMENTS FOR SECONDARY BATTERIES. WILLIAM W. GIBBON, Haverford College, Pa., assignor to The Electrical Accumulator Company, of New York. Filed Sept. 23, 1887. Serial No. 250,470. (No model.)



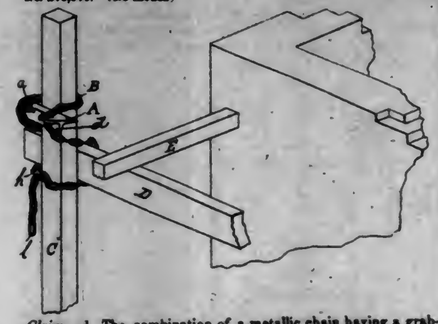
Claim.—1. The herein-described improvement in the art of preparing elements for secondary batteries, consisting in passing a suitable plate, slab, or ingot of conducting material—such as lead—between suitable dies, whereby the plate, slab, or ingot is compressed into the form of a plate or support having cells, grooves, or receptacles separated by partitions or walls, and then applying an active or absorptive material, substantially as described.

2. The herein-described improvement in the art of preparing elements for secondary batteries, consisting in passing a suitable plate, slab, or ingot of conducting material—such as lead—between suitable dies, whereby the plate, slab, or ingot is compressed into the form of a plate or support having cells, grooves, or receptacles separated by partitions or walls having remnant webs, fins, or scales, removing such webs or scales, and then applying an active or absorptive material, substantially as described.

3. The herein-described improvement in the art of preparing elements for secondary batteries, consisting in passing a suitable plate, slab, or ingot of conducting material—such as lead—between suitable dies, whereby the plate, slab, or ingot is compressed into the form of a plate or support having cells, grooves, or receptacles separated by partitions or walls having remnant fins, webs, or scales, then punching or breaking away such remnant fins, webs, or scales and applying an active material, substantially as described.

4. The herein-described improvement in the art of preparing elements for secondary batteries, consisting in passing a suitable plate, slab, or ingot of lead under a suitable die, whereby the plate, slab, or ingot is compressed into the form of a plate or support having cells, grooves, or receptacles separated by partitions or walls having remnant fins, webs, or scales, then removing the said webs or scales and applying an active or absorptive material, substantially as described.

405,734. SCAFFOLD-FASTENING. CURRAN W. HEISKLE and ADA C. HEISKLE, Washington Court-House, Ohio. Filed Apr. 13, 1888. Serial No. 270,570. (No model.)



Claim.—1. The combination of a metallic chain having a grab-hook at one end of a size to grab any link of said chain, with a metallic clamping-plate fastened by one end to a link of said chain intermediate between the ends of same and having a slot at its other end, said plate having also two biting-edges, one in front and one underneath, both of said edges being parallel to the longer axis of said plate, substantially as described.

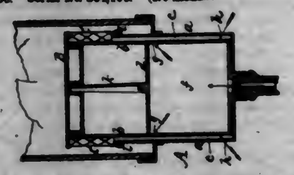
2. The combination, with the ledger D and the upright C, of the metallic chain having a grab-hook at one end and a metallic clamping-plate with two biting-edges fastened intermediate of its length, said plate being fastened to said chain at one end and having a slot in the other end, the construction being such that the upright may be firmly embraced by the middle portion of said chain and the ledger afterward firmly held against the upright by the adjustment of the ends of said chain, substantially as and for the purpose described.

3. The combination of a metallic chain having a grab-hook at one end with a metallic clamping-plate fastened at one end to said chain intermediate between the ends of same and provided at the other end with a slot, substantially as and for the purpose described.

4. The combination of the plate A, having the front edge *c* and under edge *d* and the staple *a* and the slot *b*, with the chain B, provided with the hook A, substantially as and for the purpose described

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405,735. GAS-BURNER. LEONARD HEISKLE, Rochester, N. Y. Filed Aug. 30, 1888. Serial No. 284,196. (No model.)



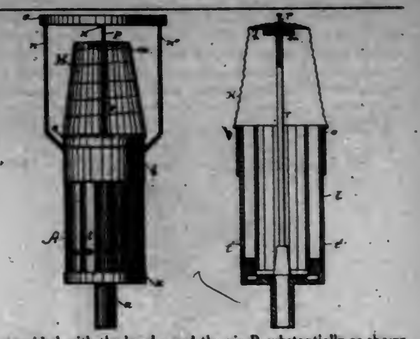
Claim.—1. The combination, with a gas-burner consisting of two cylindrical shells joined at the bottom to form a mixing-chamber, said chamber being provided with inlets for gas and air, the inner shell projecting above the top of the outer one, of a cap projecting over the top of the inner shell, and a platinum cylinder or basket inclosing the space around the inner shell and beneath the cap, as and for the purpose set forth.

2. The combination, with a gas-burner consisting of inner and outer cylindrical shells joined at the bottom and having a space between them, forming a mixing-chamber, said chamber being provided with air and gas inlets, and the inner shell extending above the top of the outer one, of a platinum cylinder or covering which extends upward from the outer shell, substantially as shown and described.

3. A gas-burner consisting of two annular shells, as *a* and *b*, having a space between them, forming a mixing-chamber closed at the bottom, a gas-chamber, as *f*, within the inner shell, the outer shell being provided with air-inlets *b* and the inner shell with gas-outlets *g*, substantially as and for the purposes set forth.

405,736. INCANDESCENT GAS-BURNER. LEONARD HEISKLE, Rochester, N. Y. Filed Mar. 1, 1888. Serial No. 201,602. (No model.)

Claim.—1. The combination, with an Argand gas-burner, of the platinum cone or thimble and the central rod *r*, the cone or thimble being provided with the band *c* and the pin P, substantially as shown and described.



2. The combination, with an Argand gas-burner, of a platinum cone or thimble and a chimney-holder provided with the band *c*, and three or more straight equidistant supporting-arms, the arms and band inclosing the cone or thimble, substantially as shown and described.

3. The combination, with a gas-burner, of the chimney-holder provided with the band *b* and the platinum cone provided with the band *c*, supported by the band *b*, substantially as shown and described.

4. The combination of an Argand gas-burner, a platinum cone having a top, a rod extending centrally within the cone, and the supporting button or plate on said rod holding the top of the cone at a determined elevation, substantially as shown and described.

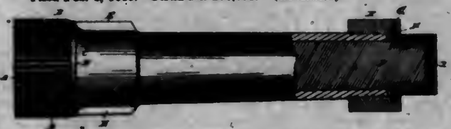
5. The combination, with an Argand gas-burner, of the platinum cone or thimble having a top, a rod extending centrally within the cone, a plate *m* of less extent than the top of the cone on said rod, and a plate of greater extent than plate *m*, supported on plate *m* within the cone and holding the top of the cone at a determined elevation, substantially as shown and described.

6. The combination, with an Argand gas-burner, of the central rod *r* and the platinum cone or basket, said rod and cone being provided at their tops one with a socket or cavity and the other with an attachment having a pin or projection which enters said socket or cavity, substantially as and for the purpose set forth.

7. The combination, with an Argand gas-burner, of a rod extending centrally above said burner and a platinum cone or thimble resting removably on the top of said rod and pivotally connected therewith, substantially as shown and described.

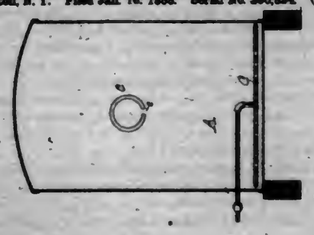
8. The combination, with an Argand gas-burner, of a rod extending centrally above the same, and a platinum cone or thimble the base of which surrounds the top of the burner and the upper end of which rests removably on the top of the said rod, substantially as described.

405,737. AXLE-BOX. BENJAMIN T. HENRY, New Haven, Conn. Filed Feb. 6, 1889. Serial No. 299,793. (No model.)



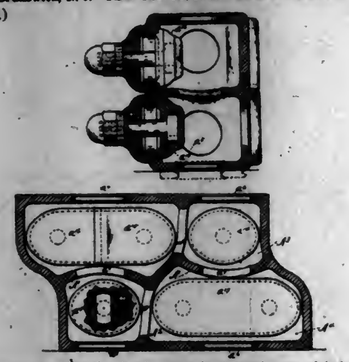
Claim.—The combination, with an axle-box having its outer end exteriorly threaded and its extreme inner end provided with outwardly-projecting retaining-points, of a friction-tight extension-nut mounted upon its outer end for adjustment thereon to vary its virtual length, the said retaining-point sinking into the hub and firmly holding the box against turning therein under the severe twisting strain imposed upon the box by turning its friction-tight nut, substantially as set forth.

405,738. EVAPORATING APPARATUS. ROSS J. HOFFMAN, Binghamton, N. Y. Filed Jan. 16, 1888. Serial No. 260,894. (No model.)



Claim.—In combination with the still for treating hydrocarbon oils, a steam-pipe within said still arranged to substantially cover the surface exposed to the heat, the said pipe being placed close to said surface and being provided with discharge-orifices opening directly against the said surface, whereby the jets of steam are caused to impinge directly on the surface to be protected, as and for the purpose set forth.

405,739. **HEADER FOR STEAM-BOILERS.** WILLIAM E. KELLY, New Brunswick, N. J. Filed Feb. 23, 1889. Serial No. 300,901. (No model.)



Claim.—1. A header having two horizontal rows of holes for tubes with a partition extending horizontally between the holes for the two rows of tubes, substantially as specified.

2. A header having a substantially triangular space within it and provided with holes for two horizontal rows of tubes, and having a partition extending horizontally between the holes for the two rows of tubes, substantially as specified.

3. A header having two substantially triangular spaces within it and provided with holes for two horizontal rows of tubes, substantially as specified.

4. A header having two substantially triangular spaces within it and provided with holes for two horizontal rows of tubes, and having a partition extending horizontally between the holes for the two rows of tubes, substantially as specified.

5. A header having a substantially triangular space within it and provided with holes for two horizontal rows of tubes, and having at the front of said substantially triangular space a small ellipsoidal opening opposite one tube and a large oblong opening opposite two tubes in a row, said openings being fitted with removable covers, substantially as specified.

6. A header having two substantially triangular spaces within it and provided at the back with openings for two horizontal rows of tubes and provided in the front with two oblong or elongated openings obliquely opposite each other and two small openings obliquely opposite each other, and one above one of the elongated openings and the other below the other elongated opening, substantially as specified.

7. A header having inclined sides, holes in the back for two horizontal rows of tubes, a partition extending horizontally between the holes for the two rows of tubes, oblong or elongated openings in the front, arranged obliquely opposite one another, and small openings obliquely opposite to one another, substantially as specified.

8. A header having parallel top and bottom and parallel inclined sides and provided with a partition extending horizontally between the top and bottom, and said partition being provided with openings through it at intervals, substantially as specified.

9. A header having parallel top and bottom and parallel inclined sides, a partition extending horizontally through it, and elongated openings arranged obliquely opposite to each other in the front and two small openings arranged obliquely opposite to each other in the front, substantially as specified.

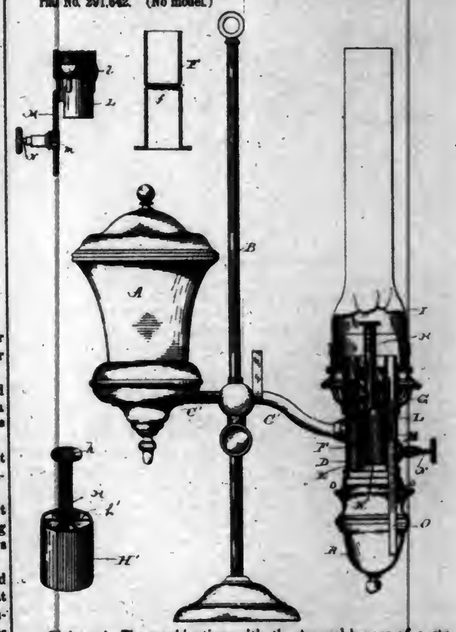
10. The combination, with a header having an opening in the front, of a plate fitted to the rear of said opening and provided with a pocket consisting of an opening, as 6, a cavity 7 at right angles to and at one end of the opening 6, a cavity 8, extending the full length of the opening 6, a bolt fitted in said pocket, and a cover through which said bolt passes, substantially as specified.

11. The combination, with a header having an opening in the front, of two plates overlapping each other and provided with pockets, bolts engaging with the pockets, and a cover through which the bolts pass, substantially as specified.

12. A header having a substantially triangular space within it and provided with holes for two horizontal rows of tubes and a horizontal partition between the rows of tubes, and having at the front of said substantially triangular space a small opening opposite one tube and a large opening opposite two tubes in a row, and removable covers for said openings, substantially as specified.

13. In combination with a header having an opening in the front, a plate fitted to the rear of said opening and provided with a pocket comprising a main opening, a cavity at right angles thereto, providing a corner 9 and another cavity at the opposite side of the opening, a bolt fitted in said pocket, and a cover through which the bolt passes substantially as specified.

405,740. **STUDENT-LAMP.** ADOLPH KLEEMANN, Erfurt, Germany, assignor to Hinrichs & Co., New York, N. Y. Filed Nov. 23, 1888. Serial No. 291,642. (No model.)



Claim.—1. The combination, with the Argand burner of a student-lamp, of a cup R, a tube or socket O, extending upward into the wick-chamber and downward into said cup, a wick-raiser consisting of a band L, provided with a rack-bar M and with a recess which fits over the top of said tube when the wick-raiser is drawn down, and a pinion and shaft for operating said wick-raiser, substantially as shown and described.

2. The combination, with an Argand lamp, of a tube or socket O, extending up into the wick-chamber, a wick-raiser consisting of a band L, provided with a rack-bar M, which moves in said tube or socket, said band L being also provided with a recess which fits over the top of the tube or socket O when the wick-raiser is drawn down, and a shaft and pinion for operating the wick-raiser, substantially as shown and described.

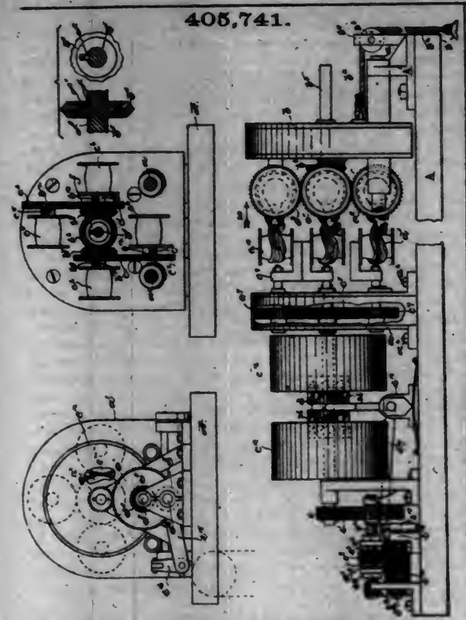
405,741. **MACHINE FOR TWISTING FIBER IN HANKS.** ROBERT M. MACINTOSH, Boston, Mass. Filed Sept. 7, 1888. Serial No. 284,794. (No model.)

Brief.—The object of the invention is to provide an improved machine by which a predetermined number of twists may be given to each hank of thread, whereby a more uniform and better product is obtained.

Claim.—1. In a machine for twisting fiber in hanks, the combination, with a stationary head and a bobbin carried thereby and about which one end of a hank is placed, of a horizontally-movable head and a bobbin carried by it and about which the other end of the hank is placed, gears to produce rotation of said bobbins, a main shaft, a clutch mechanism to operate it, a pulley adapted to be engaged by said clutch mechanism to produce rotation of the main shaft in one direction to twist the hank, a second pulley on the main shaft to be engaged by the clutch mechanism to rotate the main shaft in the opposite direction to untwist the hank, and means, substantially as described, to withdraw the movable head from the stationary head as the hank is being untwisted, substantially as set forth.

2. In a machine for twisting fiber in hanks, a stationary head and a bobbin carried thereby and about which one end of a hank is placed, combined with a movable head and a bobbin carried by it and about which the other end of the hank is placed, a main shaft provided with pulleys, gears to produce rotation of said bobbins, a clutch mechanism to engage said pulleys, and a reversing mechanism connected to said clutch mechanism, and consisting of a threaded rod c^4, collars fixed thereon and provided with lugs c^6, and a pinion or collar c^5, traveling on said rod, and provided with lugs to engage the lugs on the said collars to automatically engage said clutch with one pulley to twist the hank a predetermined number of times, and with the other pulley to untwist the hank, and with means, substantially as described, to withdraw the movable head from the stationary head as the hank is being untwisted, substantially as described.

405,741.

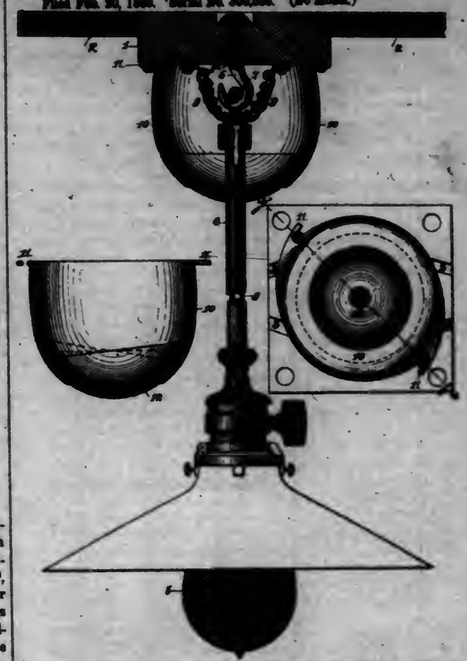


3. In a machine for twisting fiber in hanks, the combination, with a stationary head and a bobbin carried thereby and about which one end of a hank is placed, of a movable head and a bobbin carried by it and about which the other end of the hank is placed, gears to produce rotation of the said bobbins, a main shaft provided with pulleys, a clutch mechanism to engage said pulleys, and a reversing mechanism connected to said clutch mechanism and adapted to engage said clutch with one pulley to twist the hank and with the other pulley to untwist the hank, and with means, substantially as described, to withdraw the movable head from the stationary head as the hank is being untwisted, and a stopping device actuated by the reversing mechanism to center the said clutch mechanism, and thereby automatically stop the machine when the hank has been twisted a predetermined number of times, substantially as described.

4. In a machine for twisting fiber in hanks, a stationary head, a main shaft provided with a gear, a bobbin about which one end of the hank is placed, and a gear to rotate said bobbin, combined with a movable head through which the main shaft is extended, a gear mounted on the main shaft and carried by the movable head, and a bobbin carried by the movable head and provided with a gear in mesh with the gear on the main shaft, pulleys on the main shaft, and a clutch mechanism to engage said pulleys to produce opposite rotation of the main shaft, and means, substantially as described, to produce rotation of the gears carried by the movable head to move the hank longitudinally, substantially as described.

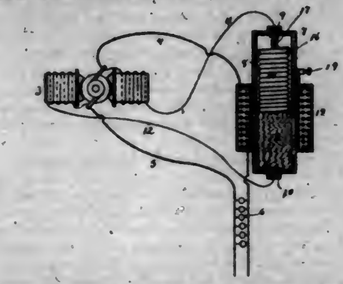
5. In a machine for twisting fiber in hanks, two heads and bobbins carried by them and about which the hank is placed, one of the said heads being movable with relation to the other, and gears to produce rotation of the bobbins, as described, combined with a main shaft and a clutch mechanism to produce opposite rotations of the said shaft, and with a controlling mechanism, substantially as described, driven by the main shaft and connected to and operating the clutch mechanism to control or govern the direction and duration of rotation of the said main shaft, the said controlling mechanism automatically operating the said clutch mechanism to produce rotation of the main shaft in one direction to give to the hank a predetermined number of twists, and to thereafter rotate the said shaft in the opposite direction to untwist the hanks the same or predetermined number of times, and means, substantially as described, to produce longitudinal movement of the hank when slack or untwisted, substantially as and for the purpose specified.

405,742. **ELECTROLIER.** JOHN M. CORWIN, Bridgeport, Conn. Filed Feb. 20, 1889. Serial No. 300,866. (No model.)



Claim.—In an electrolier, the combination, with the ceiling-block and the hanger hinged thereto, of a canopy adapted to fit against the block and open as to its lower end, a cover-plate arranged around the hanger and conformed to the contour of the canopy, and means, as a ring and binder-screw, arranged upon the hanger, whereby the cover-plate is retained against the canopy and the latter against the ceiling-block, substantially as and for the purpose set forth.

405,748. **REGULATOR FOR DYNAMO-ELECTRIC MACHINES.** JAMES H. ROBERTSON, Rutherford, N. J., assignor of three-fifths to Theron A. Richards and John Robertson, Brooklyn, N. Y. Filed May 17, 1888. Serial No. 274,226. (No model.)



Claim.—1. In a regulator for dynamo-electric machines, the combination, with a helix arranged apart from the dynamo in the main line of a circuit, of a core capable of magnetic induction and controlled by said helix, and a conductor placed on said core and in shunt with the main line, whereby the resistance of the shunt is decreased in proportion to the decrease of resistance in the main line, substantially as set forth.

2. In a regulator for dynamo-electric machines, the combination of a helix arranged apart from the dynamo in the main line of a circuit, with a vessel upon which the helix is supported, said vessel inclosing a quantity of mercury or other suitable liquid, and an iron

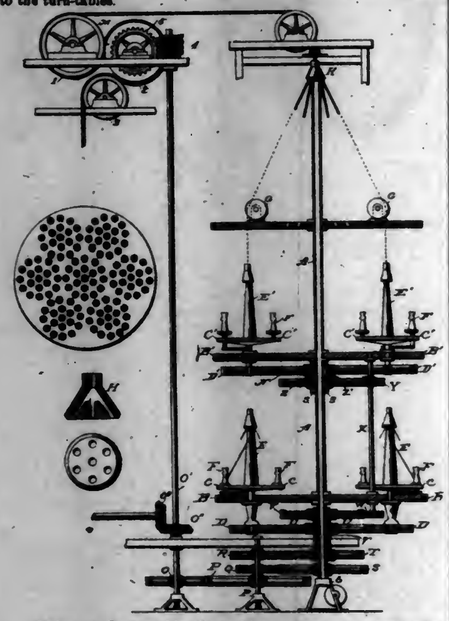
core and a shunt-circuit connected to said core, substantially as set forth.

3. An electric regulator consisting of a vessel of non-conducting material, in which is inclosed a quantity of mercury or other suitable liquid, an iron core which floats in said liquid and which is connected to one of the wire-attaching devices in the respective ends of said vessel, and a hollow coil or helix arranged upon the vessel, substantially as set forth.

4. A dynamo-regulator consisting of a vessel of non-conducting material, provided with wire-attaching screws at its respective ends and containing a quantity of mercury or other suitable liquid, an insulated iron core having screw-threads cut thereupon, a wire wrapped within said screw-threads and connected electrically with the attaching-screw in the top of said vessel, and a hollow coil or helix adjustably supported around said vessel, substantially as set forth.

405,744. MACHINE FOR MAKING WIRE ROPE. HENRY ROOT, San Francisco, Cal. Filed May 6, 1881. Serial No. 32,589. (No model.)

Brief.—The invention consists in the novel power-transmitting mechanism for rotating the central shaft and imparting rotary motion to the turn-tables.



Claim.—1. In a machine for making wire rope, the combination of a central rotary shaft, a platform carried thereby, independent spool-carrying turn-tables on the platform, the shaft *p*, having gears Q and R, a gear on the central shaft meshing with gear Q, a sleeve on said central shaft having a gear T, meshing with the gear R, said sleeve having also a gear U, and gears on the axes of the turn-tables arranged about and meshing with the gear U on the sleeve, substantially as herein described.

2. In a machine for making wire rope, the combination of a central rotary shaft, a lower platform and an upper platform carried by said shaft, independent spool-carrying turn-tables on each of said platforms, a jack-shaft located to one side of the center shaft of the machine, an independently-revolubie sleeve mounted on the central shaft, gears connecting said sleeve with the lower end of the jack-shaft, whereby it is rotated, gears connecting said sleeve with the turn-tables of the lower platform, whereby they are axially rotated, an independently-revolubie sleeve on the central shaft above, and gears connecting said sleeve with the upper end of the jack-shaft and with the turn-tables of the upper platform, whereby they are axially rotated, substantially as described.

3. In a machine for making wire rope, the combination of the central rotary shaft, the lower platform and the upper platform carried thereby, independent spool-carrying turn-tables on each platform, the rotary sleeve *r* on the central shaft, a transmitting-gear U on said sleeve, and gears on the axes of the turn-tables of the lower platform arranged about and meshing with the transmitting-gear U of the sleeve, a second transmitting-gear V on said sleeve, a second sleeve *s*, mounted on the central shaft above and having a receiving-gear Z and a transmitting-gear N, a jack-shaft to one side of the center of the machine, said jack-shaft having a gear meshing with the second transmitting-gear V of the lower sleeve and a gear meshing with the receiving-gear Z of the upper sleeve, and gears on the axes of the turn-tables on the upper platform arranged about and meshing with the transmitting-gear N on the upper sleeve, substantially as herein described.

4. In a machine for making wire rope, the combination of the central rotary shaft, a lower platform and an upper platform carried thereby, independent spool-carrying turn-tables on each platform, a shaft *p*, having gears Q and R, a gear on the central shaft meshing with the gear Q, a sleeve *r* on the central shaft having the gear T meshing with the gear R, said sleeve having also a lower transmitting-gear U and an upper transmitting-gear V, gears on the axes of the turn-tables of the lower platform arranged about and meshing with the lower transmitting-gear U of said sleeve, a second sleeve *s* on the central shaft above and having a receiving-gear Z and a transmitting-gear N, a jack-shaft to one side of the center of the machine, said jack-shaft having a gear meshing with the upper transmitting-gear V of the lower sleeve and a gear meshing with the receiving-gear Z of the upper sleeve, and gears on the axes of the turn-tables on the upper platform arranged about and meshing with the transmitting-gear N of the upper sleeve, substantially as herein described.

5. The means for laying up series of wires around central cores, then laying other series of wires around the strand-cores thus formed, and finally laying the completed strands around a main core to form a rope, consisting of the core-reel J, turn-tables C C, supporting-platforms B B', and a hollow main shaft provided with a perforated cone-shaped head H, in combination with the gear-wheels secured to said turn-tables, sleeves surrounding the main shaft, and gears carried by said sleeves, an auxiliary shaft mounted in the supporting-platforms and provided with gears meshing with the gears upon the sleeves, and means for operating the main shaft and the lowermost sleeve, substantially as herein described.

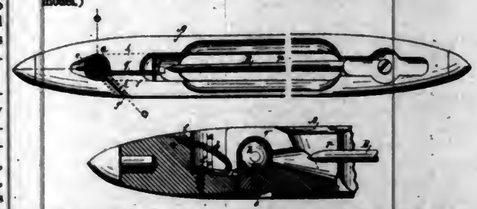
6. The turn-tables or frames C C and the shaft A, and means for supporting said turn-tables and operating the same and the shaft, in combination with the spool-frames F, having cup-shaped tops and provided with cones fitting therein, substantially as herein described.

405,745. PIPE-COUPLING. HENRY S. ROSS, New York, N. Y. Filed Oct. 9, 1888. Serial No. 287,633. (No model.)



Claim.—A pipe-coupling which consists of an internally-threaded outer sleeve reamed out to receive the enlarged ends of the pipes and provided with a shoulder for said enlarged ends to bear against, an inner sleeve externally threaded at a different pitch from said outer sleeve, and an intermediate sleeve threaded internally and externally to fit the threads on said inner and outer sleeves, and projecting beyond the space between said sleeves and adapted to be held stationary while said sleeves are turned, substantially as and for the purpose described.

405,746. SELF-THREADING LOOM-SHUTTLE. EDWIN A. SCHOFIELD, Westerly, R. I. Filed Jan. 24, 1888. Serial No. 261,773. (No model.)

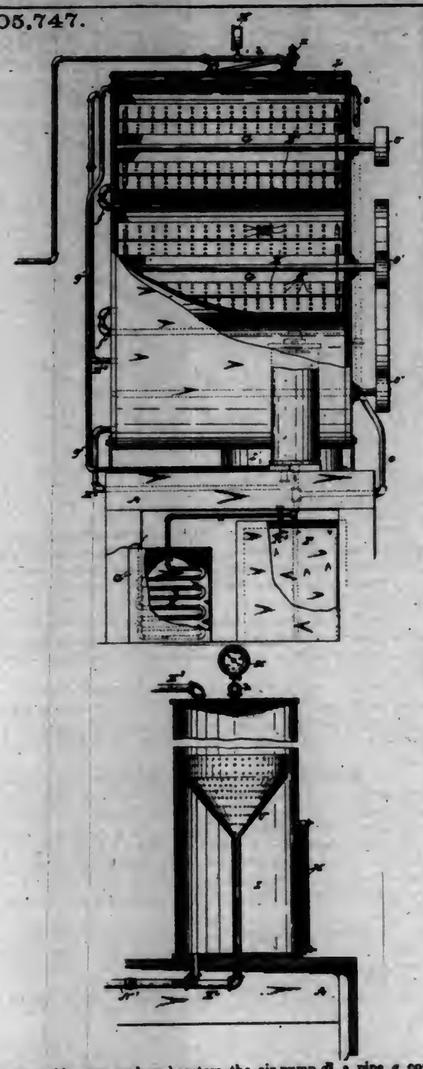


Claim.—The combination, with the tension-ball, the hollowed plug, and the forwardly-projecting hook, of the shuttle-body provided with a slit for guiding the thread between the tension-ball and its seat, and with the oblique slit which guides the thread to the delivering-eye of the shuttle, substantially as described.

405,747. APPARATUS FOR CARBURETING AIR OR GAS. DANIEL J. SNYDER and JAMES STEPHENSON, Scio, Ohio. Filed Jan. 14, 1889. Serial No. 296,354. (No model.)

Claim.—1. In a carbureting apparatus, the combination of the oil-tank F, a series of carburetors G, the perforated pipes *f f'*, located in and connecting said carburetors, the oil-pump *d'*, the pipe *e*, connecting said pump and carburetors, the air-pump d^3, a pipe *g*, connecting the air-pump and carburetors, the separating-chamber I, the pipes H^2 and H^3, leading from the carburetors to the separating-chamber, a return-pipe N', leading from the separating-chamber to the oil-tank, the receiving-tank K, and a pipe *h*, leading from the separating-chamber to said tank, substantially as described.

405,747.



2. In a carbureting apparatus, the combination of the steam-jacket L, a series of carburetors G, located one above another in said jacket and provided with rotary dashers H', and perforated oil-conveying pipes above said dashers, the oil-tank F, oil-pump *d'*, air-pump d^3, hot-air jacket G', coiled pipe H, located in said jacket and communicating with the air-pump, the separating-chamber I, to which oil and carbureted air are delivered from the carburetors, and the tank K, for receiving carbureted air from the separator, substantially as described.

3. In a carbureting apparatus, the combination of a series of carburetors G, a tank K, for receiving carbureted air, an intermediate separating-chamber I, the pipe H^3, for conveying oil and carbureted air from the carburetors to the separating-chamber, a perforated funnel located in the separating-chamber on the upper end of said pipe, the pipe H^3, for conveying carbureted air from the carburetors into the upper part of the separating-chamber, and a pipe *h*, connecting said chamber with the receiving-tank K, substantially as described.

405,748. HOSE-COUPLING. PHILO H. STEVENS, Toledo, Ohio. Filed Mar. 16, 1889. Serial No. 303,563. (No model.)



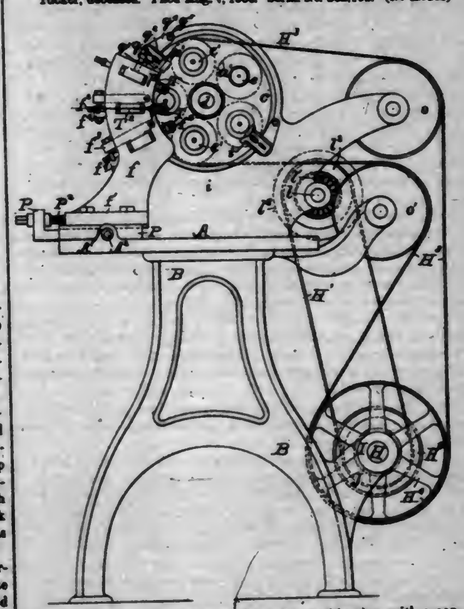
Claim.—1. In a coupling, the combination, with an outer shell, of a cylinder screwed within the same and formed with a forward semi-cylindrical portion having an internal transverse groove and external cam-surface, a second cylinder sliding within said cylinder and having a projection at its forward end, and a cam-faced ring turning on the rigid cylinder, substantially as shown and described.

2. In a coupling, oppositely-arranged cylindrical shells, cylinders arranged within the same having projecting semicircular channeled end portions, with telescoping cylinders moving within the same having projections to fit within the shell, and the cam-faced rings turning upon the rigid cylinders and adapted to lock the coupling, substantially as shown and described, as and for the purpose set forth.

3. In a coupling, the combination, with an outer shell, of a cylinder rigidly screwed within the same and having its forward end cut away to form a semi-cylindrical portion, said portion having a transverse groove upon its interior surface near its forward end and having its exterior surface formed with a cam-surface, a second cylinder sliding within the rigid one and the outer shell, its inner or rear end having a packing-ring adapted to bear upon the interior of the shell and form a tight joint, the forward end of said movable cylinder having a semicircular projection adapted to engage with the groove in the rigid cylinder, and a cam-ring turning on the said cylinder to lock two abutting couplings in place, substantially as shown and described.

4. In a coupling having an outer shell E, a cylinder F, rigidly secured thereto, and a sliding cylinder I within the same, an adjustable ring J, secured to the inner end of the cylinder I and grooved to receive the packing-ring J', whereby a tight joint is made with the sides of the outer shell E, substantially as and for the purpose set forth.

405,749. TURNING-MACHINE. HENRY TUCKER and CHARLES TUCKER, Newark, N. J., for themselves and as administrators of Joseph Tucker, deceased. Filed Aug. 7, 1888. Serial No. 282,192. (No model.)



Claim.—1. In a turning-machine, the combination, with a continuously-rotating central arbor, of a series of spindles mounted thereon to rotate about the same and driven at a greater speed than the said arbor, substantially as and for the purpose set forth.

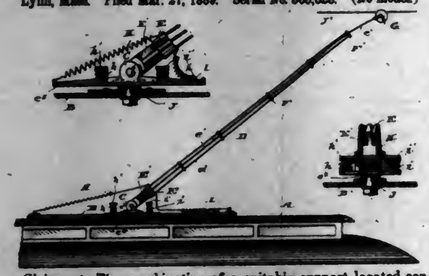
2. In a turning-machine, the combination, with a central arbor,

of a series of parallel spindles mounted thereon to rotate about the same and driven at a greater speed than the said arbor, each of said spindles being provided with a chuck for holding the articles to be turned, a pressing-tool for pressing the articles upon the chucks, a tool-support, and a series of tools secured upon the said tool-support with their cutting-edges adjacent to the path of the chucks about the arbor, substantially as shown and described.

3. In a turning-machine, the combination, with a central arbor, of a series of parallel spindles mounted thereon to rotate about the same and driven at a greater speed than the said arbor, each of said spindles being provided with a chuck for holding the articles to be turned, a pressing-tool for pressing the articles upon the chucks, a tool-support, a series of tools secured upon the said tool-support with their cutting-edges adjacent to the path of the chucks about the arbor, and a stripping-tool for removing the articles from the chucks, substantially as shown and described.

4. In a turning-machine, the combination, with a central arbor, of a series of parallel spindles mounted thereon to rotate about the same and driven at a greater speed than the said arbor, each of such spindles being provided with a chuck for holding the articles to be turned, a pressing-tool for pressing the articles upon the chucks, an adjustable tool-support, a series of tools secured upon the said tool-support with their cutting-edges adjacent to the path of the chucks about the arbor, and a stripping-tool for removing the articles from the chucks, substantially as described.

405,750. STANDING CONTACT-ARM. CHARLES J. VAN DEPOELE, Lynn, Mass. Filed Mar. 27, 1889. Serial No. 305,023. (No model.)



Claim.—1. The combination of a suitable support located centrally upon the top of an electric-railway car, and a contact-carrying arm mounted at its lower extremity in a hinge in said support, said hinge having a limited rotary movement thereon, whereby said arm is rendered movable in an arc including either end of the car, substantially as described.

2. The combination of a suitable support mounted upon an electric-railway car, a contact-carrying arm mounted at its lower extremity in a hinge having a limited rotary movement upon its support, said arm being thereby rendered movable in an arc including either end of the car, and tension-springs engaging the lower part of the arm for imparting an upward tendency to its free end, substantially as described.

3. The combination, with an electric-railway car, of a contact-arm and support therefor, a universal joint mounted upon the support and connected with the lower end of the contact-arm, and lateral stops adapted to engage a projection upon the universal joint for limiting the lateral swinging movement of the contact-arm, substantially as described.

4. The combination, with an electric-railway car, of a contact-arm and hinged support therefor, and buffer-springs mounted upon the support near the hinge of the contact-arm for supporting and raising the same from an approximately horizontal position, substantially as described.

5. The combination, with an electric-railway car, of a contact-arm having a removable end section and a contact device carried thereby.

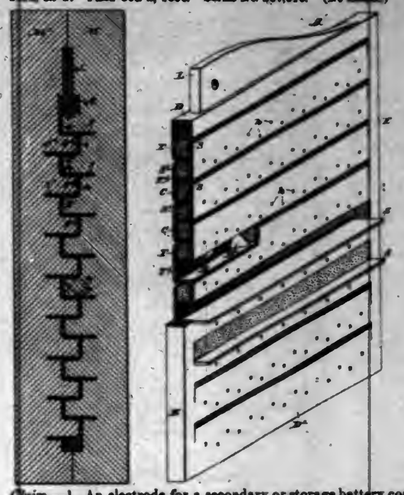
6. A contact-arm for electric-railway vehicles, having a removable flexible contact-carrying end section, substantially as described.

7. A contact-arm composed of a number of metallic rods rigidly connected to and united by suitable supporting or stay plates, one of said rods being movable in the outer end plate, and a contact device secured to said last-mentioned rod, substantially as described.

8. A contact-arm composed of rigid metallic rods, and a flexible central rod movable in the end thereof and carrying a contact device at its outer extremity.

9. The combination of a suitable support mounted upon an electric-railway car, a contact-arm mounted at its lower extremity in a hinge rotatably mounted upon said support, and tension-springs engaging the lower part of the arm for imparting an upward tendency to its free end, substantially as described.

405,751. SECONDARY BATTERY. JEAN T. VAN GEETEL, New York, N. Y. Filed Oct. 2, 1888. Serial No. 287,016. (No model.)



Claim.—1. An electrode for a secondary or storage battery composed of a single piece of lead or analogous material, having troughs in its opposite faces, said troughs being integral with a common back wall and braced from above and below by brackets, substantially as described.

2. An electrode for a secondary or storage battery composed of lead or analogous material, having struck-up shelves extending across its face, said shelves being braced at intervals with brackets, substantially as described.

3. An electrode for a secondary or storage battery made of a single piece of conducting material, having troughs or shelves on its opposite faces for retaining the active material, said troughs being provided with intermediate bracing-brackets, substantially as described.

4. An electrode for a secondary or storage battery composed of a lead or analogous plate, having shelves for retaining the active material located at different levels on its opposite faces and in the same vertical plane, substantially as described.

5. An electrode for a secondary or storage battery made of a single piece of lead or analogous metal, having shelves or troughs on its opposite sides which encompass the active material when put in place, said shelves being braced by intervening brackets, substantially as described.

6. An electrode for a secondary or storage battery composed of a single piece of lead or analogous material, having perforated shelves on its opposite sides which encompass the active material when in place, said shelves being located at different levels on the opposite sides of the electrode and braced by intermediate brackets, substantially as described.

7. An electrode for a secondary or storage battery composed of lead or analogous material, having a series of retaining-shelves for the active material located on its opposite faces and all in the same vertical plane, in combination with active material held firmly in place by said shelves, substantially as described.

8. An electrode for a secondary or storage battery composed of a single piece of conducting metal, having shelves for the active material, said shelves being located on the opposite faces of the electrode in alternate succession and all in the same vertical plane, substantially as described.

9. An electrode for a secondary or storage battery composed of a single piece of lead or analogous conducting material, having a series of shelves or ledges for the active material located on its opposite faces, the backs and bottoms of the several shelves constituting the supports and tops of the shelves in sequence, substantially as described.

10. An electrode for a secondary or storage battery consisting of a supporting-plate having a series of retaining shelves or ledges on its opposite faces, the backs of which are perforated, in combination with active material held in place by the front edges or lips of said shelves or ledges, substantially as described.

11. An electrode for a secondary or storage battery composed of a single piece of lead or analogous material, having horizontally-disposed perforated shelves on opposite sides which encompass the active material, said shelves being located at different levels on the opposite side of the electrode and having sustaining-brackets located at intervals, the whole being so arranged that when the active material is in place it is encompassed by bent-up edges of the shelves, substantially as described.

405,752. WITHDRAWN.

405,753. LAWN-MOWER. ALEXANDER G. WILKINS, Meadville, Pa. Filed Aug. 17, 1888. Serial No. 282,009. (No model.)



Claim.—1. In a mowing-machine, the combination, with a frame, a ground-wheel mounted therein, and a cam-grooved drum located in front of the ground-wheel and geared therewith, of arms extending forwardly from the frame and provided with downwardly and forwardly projecting lips, a fixed cutter-bar secured to said arms under said lips, a reciprocating cutter-bar working on said fixed bar, the rear edge of which rests under and in contact with the downwardly and forwardly projecting lips, and a vibrating lever for moving the reciprocating cutter, substantially as set forth.

2. In a mowing-machine, the combination, with a frame, a ground-wheel, and a drum having a cam-groove therein mounted in said frame, of arms having forwardly and downwardly projecting lips, a rigid cutter secured to said arms, a reciprocating cutter supported on the fixed cutter with the upper surface of its rear edge in contact with the downwardly and forwardly projecting lips, and a screw adjustably secured to the rear edge of the reciprocating cutter and bearing against the rear edge of the fixed cutter, substantially as set forth.

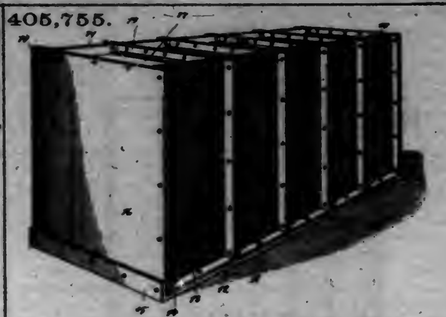
3. In a mowing-machine, the combination, with a frame and cutter-driving mechanism, of a fixed cutter-bar secured to the frame, a reciprocating cutter-bar mounted on the rigid cutter-bar and connected with the driving mechanism, a lug on the reciprocating bar and having a screw-threaded perforation, a screw passing through said perforation and bearing on the rigid cutter-bar, and a nut on said screw, substantially as set forth.

4. In a mowing-machine, the combination, with a frame and cutter-driving mechanism, of a fixed cutter-bar secured to the frame and having its rear edge bent downwardly, a reciprocating cutter-bar mounted on the rigid cutter-bar and connecting with the driving mechanism, said reciprocating cutter-bar being bent upwardly at its rear edge, and an adjusting-screw passing through the rear edge of the reciprocating bar and bearing on the rear edge of the rigid cutter-bar, substantially as set forth.

405,754. RECOVERING SODA. SEBASTIAN WOLF, Stahlhammer, Upper Hesse, Germany. Filed Dec. 22, 1887. Serial No. 258,747. (No specimens.)

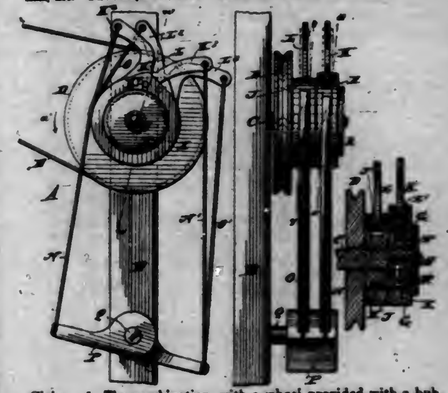
Claim.—In the so-called "sulphate cellulose process," the herein-described improvement, consisting in adding to the brown lye of the process acid sulphate of soda which has previously been treated with the lime-mud of the said process, as and for the purpose set forth.

405,755. ANNEALING-BOX. WILLIAM H. BAILEY, Pittsburg, Pa. Filed Feb. 19, 1889. Serial No. 300,486. (No model.)



Claim.—An annealing-box consisting in the two side plates 11, end plates 16, having outward-extending flanges at their ends riveted at their vertical edges to the flanges of the side plates, a series of vertical outwardly-projecting angle or T irons 12, riveted to the outer faces of the side plates between their ends, the bottom plate 14, projecting at its longitudinal edges beyond the lower edges of the side plates and having upward-projecting ends 15, riveted to the lower edges of the end plates, angle-irons 13, riveted to the lower edges of the sides between angle-irons 12 and to the projecting side edges of the bottom plate, the top plate 17 within the top of the box below its upper edges and provided with upwardly-projecting angle or T irons 17 on its upper side, and supports in the upper end of the box for said cover, substantially as set forth.

405,756. MECHANICAL MOVEMENT. JAMES H. BAKER, Savannah, Mo. Filed Sept. 15, 1888. Serial No. 285,514. (No model.)



Claim.—1. The combination, with a wheel provided with a hub having two sets of ratchet-teeth standing in opposite directions, of collars fitted loosely on the said hub over the said ratchet-teeth, pawls fulcrumed on the said collars and adapted to engage the said ratchet-teeth, arms formed on the said pawls and extending outward, and a lever connected with the said arms, substantially as shown and described.

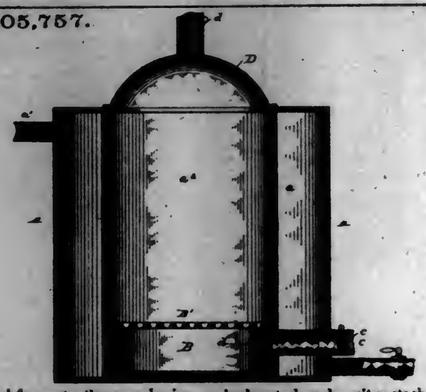
2. The combination, with a wheel provided with a hub having two sets of ratchet-teeth standing in opposite directions, of collars mounted to turn on the said hub and fitting over the said ratchet-teeth, a pawl fulcrumed on each of the said collars and engaging the respective ratchet-teeth, two arms formed on each of the said pawls and extending outward in opposite directions, belts connecting with the outer end of each of the said arms, and a lever connected at its ends with the said belts, substantially as shown and described.

405,757. BOILER. JAMES RAGER, York, Nebr. Filed Feb. 1, 1888. Serial No. 263,515. (No model.)

Claim.—The water-heater having the outer annular water-chamber, the central or inner combustion-chamber, the combined ash-pan

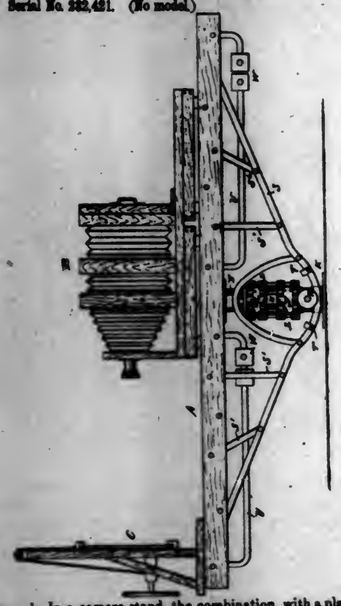


405,757.



and fire-grate, the cover having a valved central smoke exit or stack, and a valved air-inlet pipe arranged in alignment with and having its inner end opposite a draft-opening in the ash-pan, substantially as set forth.

405,758. CAMERA-STAND. FRANK G. BERRETT, New York, N. Y., assignor of one-third to Jacob Kissinger, same place. Filed Aug. 10, 1888. Serial No. 282,421. (No model.)



Claim.—1. In a camera-stand, the combination, with a platform, of a support composed of two parts, cushions interposed between the two parts of said support, and a ball-and-socket joint by which said platform is connected with the support, substantially as set forth.

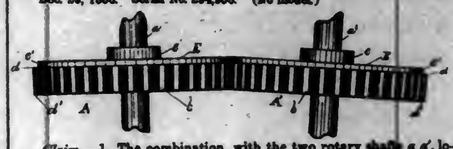
2. In a camera-stand, the combination, with a support, of a platform connected with the support by a ball-and-socket joint, a ring surrounding the support, and rails on the platform connected with said ring, substantially as set forth.

3. In a camera-stand, the combination, with a platform, of a support, a ball-and-socket joint connecting the support and platform, a loose ring surrounding the support, rollers pivoted on said ring, and stretchers or rails secured to the platform and resting against the rims of said rollers, substantially as set forth.

4. In a camera-stand, the combination, with a support, of a platform, a ball-and-socket joint connecting the support and platform, a collar mounted to turn on the support, grooved rollers pivoted on said collar, rails or stretchers secured to the platform and resting on the rim of said rollers, and adjustable check-pieces on said rails, substantially as set forth.

5. The combination, with a support, of a platform mounted to turn and swing on said support, rails on the under side of the platform, and adjustable balancing-weights on said rails, substantially as described.

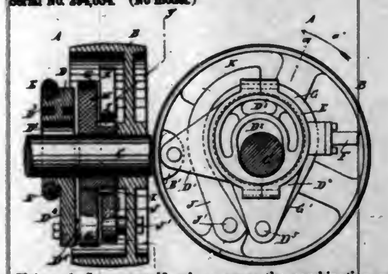
405,759. GEARING. ABEL M. BENNER, Cleveland, Ohio. Filed Dec. 29, 1888. Serial No. 294,963. (No model.)



Claim.—1. The combination, with the two rotary shafts *a a'*, located angularly to each other, and the two gears A A', each of greater diameter at one peripheral edge than at the other, and having hubs *c' c'*, of the two plate-disks E E, mounted on said hubs next to the sides of the gears which are of greatest diameter, each said plate-disk having its periphery in lateral engagement with the ends of the teeth of its respective gear, while its portion intermediate of its center and periphery is free from said gear, substantially as set forth.

2. The combination, with two rotary shafts *a a'*, located angularly to each other, and the two gears A A', each of greater diameter at one peripheral edge than at the other, and formed with a web located nearer the larger diametrical side, and having hubs *c' c'*, projecting only from said larger diametrical side of the gears, of the two plate-disks E E, respectively, having hubs *e e*, mounted on said gear-hubs *c' c'*, next to the sides of the gears which are of greatest diameter, and the fastening device *f*, each said plate-disk being secured by said hub and fastening means and having its periphery in lateral contact with the ends of the teeth of its respective gear, while its body portion is free from the gear-web, substantially as set forth.

405,760. CENTRIFUGAL GOVERNOR. HENRY L. BENOIT, Vermilion Parish, and EDOUARD NOEL, Abbeville, La. Filed Dec. 19, 1888. Serial No. 294,034. (No model.)



Claim.—1. In a centrifugal governor, the combination, with a pulley secured on the main shaft, of a valve-eccentric pivotally connected with the said pulley and having a slot through which said main shaft passes, a second eccentric pivotally connected with the said first-named eccentric and mounted loosely on the main shaft, and a weighted arm pivoted on the said pulley and controlling the action of the said second eccentric, substantially as shown and described.

2. In a centrifugal governor, the combination, with a pulley secured on the main shaft, of a valve-eccentric pivoted on the said pulley, a second eccentric pivotally connected with the first-named eccentric, a gear-wheel formed on the said second eccentric concentric with the said pulley, a segmental arm geared with the said gear-wheel and fulcrumed on the said pulley, and a weighted arm formed on the said segmental arm, substantially as shown and described.

3. In a centrifugal governor, the combination, with a pulley secured on the main shaft, of a valve-eccentric pivoted on the said pulley, a second eccentric pivotally connected with the first-named eccentric, a gear-wheel formed on the said second eccentric concentric with the said pulley, a segmental arm geared with the said gear-wheel and fulcrumed on the said pulley, and a weighted arm formed on the said segmental arm, and a spring connected at one end with the said segmental arm and at its other arm with the said pulley, substantially as shown and described.

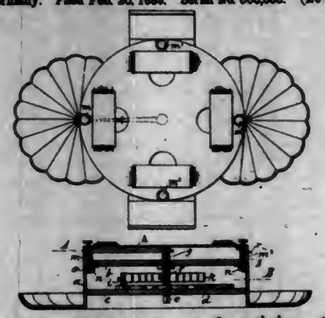
405,761. HIP-BELT. WILLIAM H. BEVINGER, Middletown, Ohio. Filed Jan. 23, 1889. Serial No. 297,306. (No model.)



Claim.—1. In a hip-belt for trousers, the combination, with an inner strip of material provided with a series of button-holes produced therein, of an outer cover-strip of equal length with the inner strip and attached to the inner strip between the button-holes to form a series of pockets, and clamps secured to the outer ends of both strips and adapted to slide upon the body of the belt, substantially as described, whereby the belt may be lengthened or shortened to terminate at the forward suspender-buttons of the waistband, as set forth.

2. In a hip-belt for trousers, the combination, with an inner strip of material provided with a series of button-holes produced therein, of an outer cover-strip of equal length with the inner strip and attached to the inner strip between the button-holes to form a series of pockets, a guide-strip rigidly secured to the center of the belt transversely of the same, a cord attached to the belt near its ends, and a clip attached to the said cord, and clamps secured to the outer ends of both strips and adapted to slide upon the body of the belt, substantially as shown and described, whereby the belt may be lengthened or shortened, as set forth.

405,762. INDICATOR FOR CARD-PLAYERS. LUDWIG BING, Berlin, Germany. Filed Feb. 20, 1889. Serial No. 300,553. (No model.)



Claim.—1. In an indicating apparatus for card-players, the combination, with a suitable stand or support, of a pivoted spring-actuated pointer and a series of movable arresting pins or studs adapted to arrest or permit the passage of the pointer, substantially as set forth.

2. In an indicating apparatus for card-players, the combination, with a suitable stand or support, of a pivoted spring-actuated pointer, a ratchet and pawl for compressing and holding said spring, and a series of movable arresting pins or studs adapted to arrest or permit the passage of the pointer, substantially as set forth.

3. In an indicating apparatus for card-players, the combination, with a suitable stand or support, of a pivoted spring-actuated pointer, a ratchet and pawl for compressing and holding said spring, and a series of movable arresting pins or studs having enlarged and reduced portions and adapted to arrest or permit the passage of the pointer, substantially as set forth.

405,763. BLACKING FOR BOOTS OR SHOES. GEORGE H. BUNNO, Revere, Mass. Filed July 2, 1888. Serial No. 278,945. (Specimens.)

Claim.—The herein-described boot or shoe blacking, consisting of alcohol, shellac, glycerine, lamp-black, castor-oil, linseed-oil, glucose, and copperas, in the proportions and compounded substantially as described.

405,764. LAMP-EXTINGUISHER. ANDREW H. BIXLER, North Topeka, Kans. Filed Dec. 20, 1888. Serial No. 294,222. (No model.)



Claim.—1. In a lamp-extinguisher, the combination of the horizontal base-plate having a longitudinal opening formed therein fitting over the wick-tube and being secured to the chimney-base, the wings, located on either side of the wick-tube, pivotally secured to the metallic base-plate and provided with laterally-extending apertured arms, and the spring-lever, the diverging ends of which pass through the apertured extending arms of the pivotal wings, and adapted, when said lever is moved inward or outward, to close or open the wings, substantially as herein shown and described.

2. In a lamp-extinguisher, the combination of the perforated wings secured to either side of the wick-tube, laterally-extending arms secured to the front edges of the pivotal wings, slightly below the center thereof, said wings being provided with the lower upwardly-turned ends, so as to form a tubular bearing, the horizontal base-plate having a longitudinal opening formed therein fitting over the wick-tube and secured to the chimney-base at the lower end of the wick-tube, the rods or wires, located upon each side of the wick-tube, passing through the tubular bearing of the pivotal wings and secured at each end to the metallic base-plate, and the operating spring-lever having the inner diverging ends thereof adapted to pass through the perforations in the laterally-extending arms of the pivotal wings, substantially as herein shown and described.

3. The combination, with a lamp-burner, of the herein-described flame-extinguisher, consisting of wings situated on either side of the wick-tube and provided with suitable openings for the inlet of air, the upper ends of the wings being bent inward and then upward, so as to entirely cover the wick-tube when in a closed position, the metallic base-plate having a longitudinal opening formed therein adapted to fit over the wick-tube and be secured to the chimney-support or base and having the wings pivotally secured thereto, the laterally-extending apertured arms, and the spring-lever, the diverging ends of which pass through the apertured laterally-extending arms, and adapted, when said lever is moved inward or outward, to close or open the wings, substantially as herein shown and described.

405,765. MATCH-LIGHTING DEVICE FOR CIGARS. ADOLF BLOCK, New York, N. Y. Filed Sept. 18, 1888. Serial No. 285,715. (No model.)

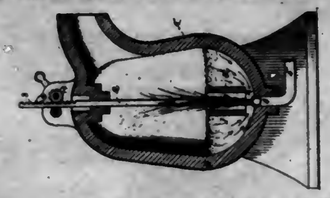


Claim.—1. A cigar having a longitudinal draft-hole in its tip and provided with a detachable tube inserted in said hole, said tube having on its interior a rough frictional surface, substantially as described.

2. A cigar having a longitudinal draft-hole in its tip and provided with a detachable tube inserted in said hole, and a friction-match within said tube, said tube having on its interior a rough frictional surface, substantially as described.

3. A match-lighter for a cigar, consisting of a tube of about the diameter of a match and adapted for insertion in the draft-hole of a cigar-tip, said tube being provided on its interior with a rough frictional surface, substantially as described.

405,766. APPARATUS FOR CONVERTING CRUDE METAL INTO MALLEABLE IRON OR STEEL. JOHN W. BOOKWALTER, Springfield, Ohio. Filed Oct. 18, 1888. Serial No. 288,486. (No model.)



Claim.—1. A converter having at the bottom two chambers, one for holding the body of metal, the other communicating with the first at a point below the normal surface of the metal and constituting a conversion-chamber, and a blast-pipe communicating with the conversion-chamber and arranged to direct the blast upon the inflowing current and upward from the conversion-chamber, substantially as set forth.

2. A converter having its main chamber divided near the bottom by a transverse partition into two chambers of different sizes, said partition having one or more channels connecting the chambers, in combination with a nozzle or tuyere arranged to direct a blast into and from the smaller chamber near the top thereof, substantially as set forth.

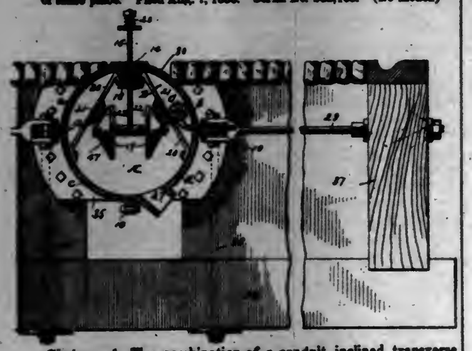
3. The combination, with a converter, of a partition dividing the lower portion of the converter into two chambers, a channel connecting the said chambers, means for varying the size of said channel, and a nozzle or tuyere extending into one of the chambers, substantially as set forth.

4. The combination, with a converter, of a partition separating the lower portion of the converter into two chambers, a channel connecting the chambers at a point adjacent to the bottom of the converter, a valve regulating the flow through said channel, and a nozzle or tuyere communicating with one of the chambers, substantially as set forth.

5. The combination, with a converter, of a partition dividing the lower portion of the converter into two chambers of different sizes and having a rounded or curved side adjacent to the larger chamber,

a channel connecting the two chambers near the bottom of the converter, and a nozzle or tuyere extending to the smaller chamber, substantially as set forth.

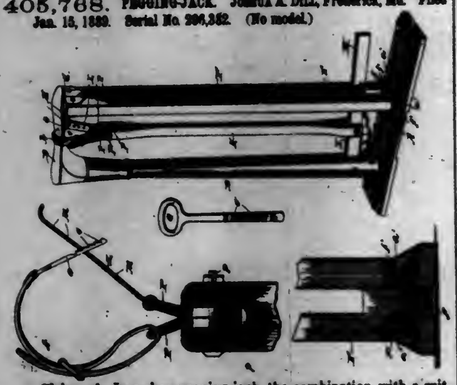
405,767. CONDUIT FOR CABLE OR ELECTRIC RAILWAYS. WILLIAM J. BRENNER, New York, N. Y., assignor of three-fifths to Thomas W. Rae, Frederick H. Reed, Walter Thompson, and George H. McGibbin, all of same place. Filed Aug. 7, 1888. Serial No. 282,163. (No model.)



Claim.—1. The combination of a conduit, inclined transverse braces, an inclined longitudinal strip supported by said braces, a conductor secured to said strip, and a beveled contact wheel or brush, substantially as described.

2. The combination of a conduit composed of detachable sections in cross-section, transverse braces for sustaining the upper sections, a longitudinally-extending insulator-strip, and connections between the strip and the braces to permit the strip to move longitudinally with respect thereto, substantially as described.

405,768. PEGGING-JACK. JOSHUA A. DILL, Frederick, Md. Filed Jan. 15, 1889. Serial No. 296,352. (No model.)



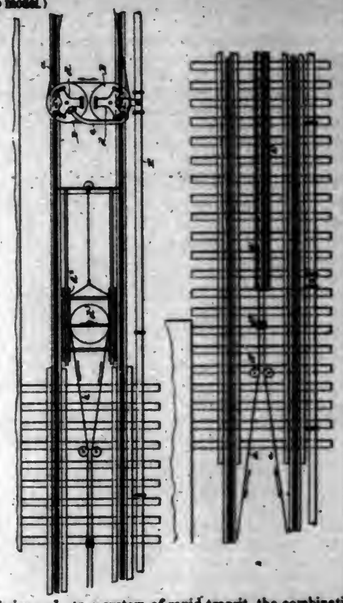
Claim.—1. In a shoe-pegging jack, the combination, with a suitable base, of a rigid standard having a shoe-last swiveled on its upper end, the toe-support pivoted to the base and adapted to be inserted at its upper end under the toe of the last, the operating-lever pivoted to said standard, and the pitman pivoted at its lower end to said lever and connected by a strap at its upper end to the last, substantially as and in the manner described.

2. In a pegging-jack, the combination, with the heel and toe supports having a last bearing thereon and the lever pivoted to the heel-support, of the pitman connected to the lever and the latch secured to the upper end of the pitman, said latch comprising a rigid perforated strap, and a flexible strap provided with a notched or serrated pin engaging the perforations of the rigid strap, substantially as specified.

3. In a pegging-jack, the combination, with the heel and toe supports having the shoe-last arranged thereon, of the foot-lever, the pitman connected to the lever, the loops carried by the upper end of said pitman, a rigid perforated strap L, connected to one of said loops, and a flexible and extensible strap N, connected to the other of said loops and carrying at its free end a serrated pin O, adapted to engage the perforations in said strap L, as and for the purpose set forth.

4. In a pegging-jack, the combination of the base, the stationary heel-support having a shoe-last attached to its upper end, the swinging toe-support pivoted at its lower end to the base and provided with a vertical slot, the foot-lever pivoted to the heel-support and operating at its free end in the slot of the toe-support, the rigid pitman connected at its lower end to the said lever and provided at its upper end with a latch to embrace the last, and the spring bearing against the under side of the foot-lever to normally hold the same elevated, substantially as specified.

405,769. SYSTEM OF RAPID TRANSIT. HENRY FLAD, St. Louis, Mo. Filed June 16, 1887. Renewed May 28, 1889. Serial No. 312,545. (No model.)



Claim.—1. In a system of rapid transit, the combination, with several independent cables located along a single track and motors for actuating the cables, the idle and working portions of said cables passing in the same horizontal plane in opposite directions, the idle portion being covered with a housing, of a common power-supply located along the track and having connection with the several motors, substantially as set forth.

2. In a rapid-transit system, the combination, with several endless cables located one after another along a single track, the idle and working portion of said cables passing in opposite directions in the same horizontal plane, the idle portion being covered by a suitable housing, and independent motors for actuating the cables, of a centrally-located supply-reservoir, and power-supply conduits leading in opposite directions from the central supply-reservoir to the several motors.

3. In a rapid-transit system, the combination, with a series of independent endless cables located one after another along the track, the said cables passing over the ties of the track and provided with housings for covering the idle portion of the cables, of engines for actuating the cables, and a power-supply conduit located along both the outbound and return tracks in proximity thereto, adapted to supply motive power to the engines, substantially as set forth.

405,770. DUMPING-CART. SAMUEL GAFFT, Hagerstown, Md. Filed Apr. 15, 1889. Serial No. 307,877. (No model.)



Claim.—1. In a dumping-cart, the combination of a cart-body hinged to the rear ends of the shafts, an axle having the crank-arms, the connecting-rods, and the lever, substantially as set forth.

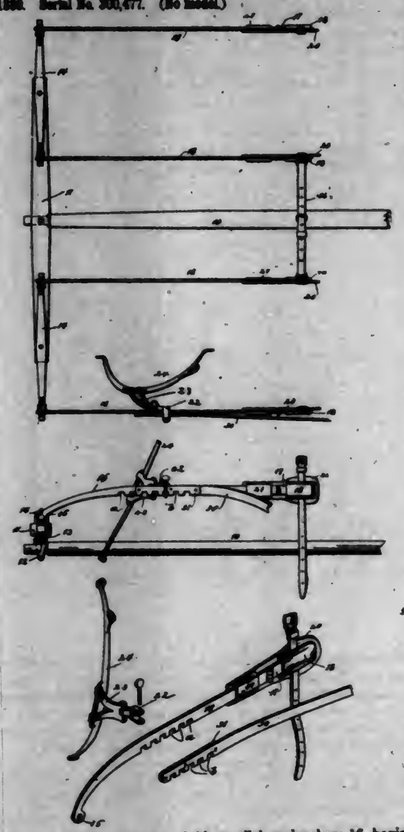
2. The combination of a cart-body hinged to the rear ends of the shafts, an axle having the crank-arms, the connecting-rods, the loose collars, and the lever, substantially as set forth.

3. The combination of a cart-body hinged to the rear ends of the shafts, an axle having the crank-arms, the connecting-rods, the stirrups, and the lever, substantially as set forth.

4. The combination of a cart-body hinged to the rear ends of the shafts and having the stirrups, an axle having the crank-arms, the loose collars, the connecting-rods, and the lever, substantially as set forth.

5. The combination of a cart-body hinged to the rear ends of the shafts and having the stirrups, an axle having the crank-arms, the connecting-rods, the loose collars, the lever, and the cross-bar having the stop-plates at its projecting ends, substantially as set forth.

405,771. HARNESS. ISAAC J. GRAY, Beloit, Wis. Filed Feb. 19, 1889. Serial No. 300,477. (No model.)



Claim.—1. In a harness, rigid parallel pusher-bars 16, having singletree-connections at their front ends, straps at their rear ends to pass around the body of the animal, and means for connecting the bars between their ends to a collar, substantially as set forth.

2. The combination, with two pairs of rigid pusher-bars 16, adapted for connection at their front ends with singletrees and of a length sufficient to extend along the sides of the animal, and a connection, as 36, between the rear ends of the inner bars, of a pair of hames between each pair of bars, one member of each pair having a hinged connection with one of said bars between its ends, substantially as set forth.

3. The combination, with two parallel rigid pusher-bars between which the animal is held, adapted at their front ends for connection with a singletree, of hames having opposite rearwardly-extending hinged arms 23 detachably connected to said bars between their ends, substantially as set forth.

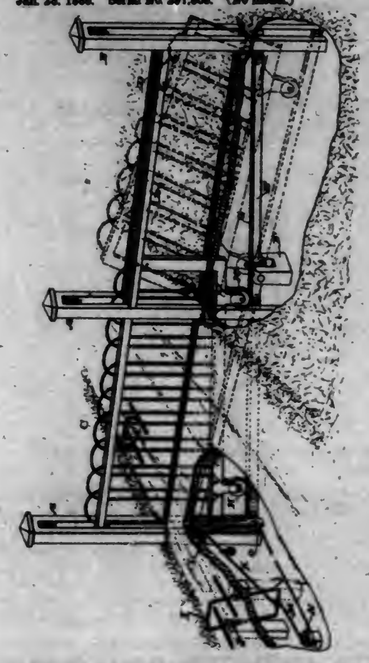
4. The combination, with the parallel pusher-bars having notched edges in rear of their front ends, said ends being adapted for connection with a singletree, of hames having rearward-extending hinged arms provided with hinged connections engaging the notches of the bars, substantially as set forth.

5. The combination, with the hames, of the hinged arms 23, tongues 33, hinged to the outer ends thereof and provided with lugs 34, and bows 32, hinged to the tongues to swing over said lugs, substantially as set forth.

6. In a harness, a rigid pusher-bar adapted for connection with a singletree at its front end, provided with notches 23, a hinged section 17 at it rear end, and a pad having housing 18 21, substantially as set forth.

7. The combination, with the notched pusher-bars 16, adapted for connection with a singletree at their front ends and notched in rear thereof, and the tugs 30, having a notched plate 31 at their front ends, the notches of which register with those of the pusher-bars, of hames having hinged connections connecting them with the notched bars and the notched plates, substantially as set forth.

405,772. GATE. GOTTARDO GUERRINI, Point Reyes, Cal. Filed Jan. 23, 1888. Serial No. 297,302. (No model.)



Claim.—1. A centrally-pivoted straight beam beneath the surface of the ground in the line of the fence, a standard to which the beam is pivoted, a gate and gate-posts with guides between which the gate travels endwise, and rollers upon the bottom of the gate fitting upon a track on the top of the tilting beam, in combination with the hoop-levers having their lower ends extended and fulcrumed in the roadway, and the cords attached to said ends and passing over pulleys and connecting the lower ends of said levers with the tilting beam at points above and below, respectively, substantially as described.

2. The tilting beam fulcrumed in the line of travel of the gate, pivoted levers in the roadway having connections with the tilting beam at points above and below it, whereby said beam is tilted so as to raise either end, a gate having rollers fitted to a track upon the top of the tilting beam, and guides between which it travels, so as to close or unclose the gate-opening, said gate being made deeper at one end than at the other, substantially as described.

3. The combination, with a tilting beam fulcrumed in the line of travel of the gate, of a gate having its top and bottom diverging from the rear end post toward the front post, substantially as described.

405,773. NUT-LOCK. ANDREW J. GUSS, Valley Falls, Kans. Filed Oct. 3, 1888. Serial No. 287,036. (No model.)

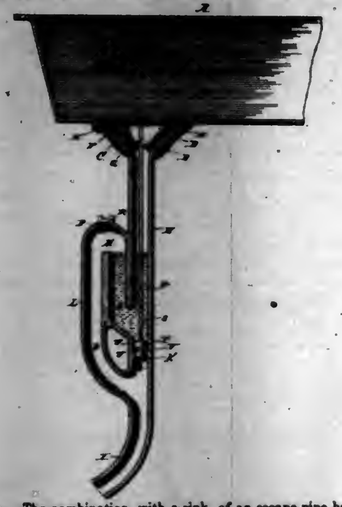
Claim.—In a nut-lock, the combination, with a bolt and nut of ordinary construction, of the beam A, having the shallow recess *a* and the pin-recess *a'* therein, the locking-plate D, having the notch E in its edge registering with the recess *a'* and the detent edge F adjoin-

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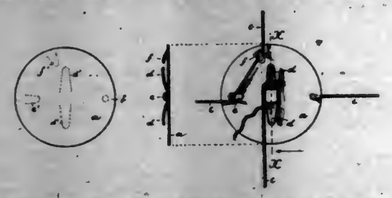
ing said notch, and the pin G, inserted in the notch E and recess *d* and standing against the side of the nut, substantially as specified.

405,774. SEWER-TRAP. GEORGE C. HAGER, Danbury, Conn. Filed Jan. 29, 1889. Serial No. 297,964. (No model.)



Claim.—The combination, with a sink, of an escape-pipe having a chamber formed on one side thereof with its upper end below the level of the sink, a vertical partition in said chamber terminating at a distance from the upper end of the latter, openings connecting the lower ends of the compartments of said casing with the said pipe, a valve seated in the latter between the said openings, and a jointed operating-rod extending from said valve upwardly through the strainer-plate of the sink, substantially as and for the purpose herein set forth.

405,775. PACKAGE-FASTENER. THOMAS T. H. HARWOOD, Rockport, Mass. Filed Mar. 11, 1889. Serial No. 302,811. (No model.)

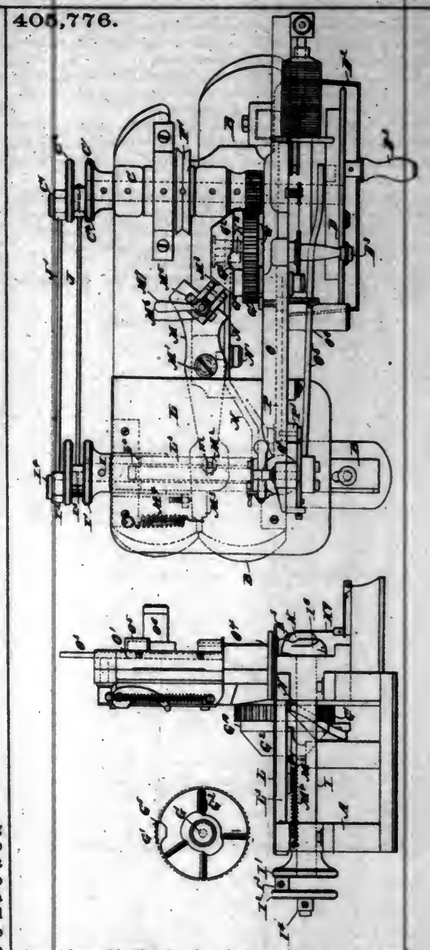


Claim.—The improved fastening device, as described, consisting of the plate *a*, having made in one piece with it the cleats or projections *d d*, combined with the cord *c*, secured to said plate, substantially in a manner and for the purpose set forth.

405,776. SEWING-MACHINE. JAMES HOGAN, Perth Amboy, N. J., assignor to S. M. Schwab, Jr., & Co., New York, N. Y. Filed June 28, 1888. Serial No. 278,405. (No model.) Patented in England Mar. 14, 1887, No. 3,836.

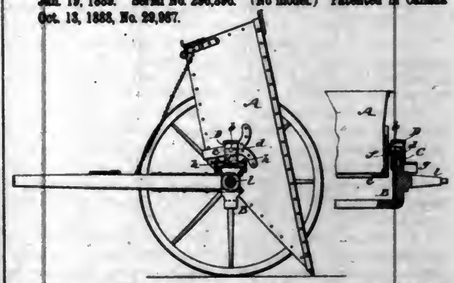
Claim.—In a sewing-machine of the character hereinbefore described, the combination, with the pivotally-mounted vibrating head, the needle-bar carrying the needle and sliding in said head, the looper-shaft, and means for operating these parts, as specified, of the reciprocating feed-plate and sliding arm L^2, to which it is attached, the

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pivoted lever M, vibrating in a horizontal plane and engaging said arm, the pivoted lever N, which vibrates vertically for raising the feed-plate, and the cam G^3, actuating both the aforesaid levers M N, as shown and described, whereby the needle is caused to make three strokes and the feed-plate one forward and two rearward movements in the same space of time, as and for the purpose set forth.

405,777. DUMPING-CART. THOMAS HILL, Jersey City, N. J. Filed Jan. 19, 1889. Serial No. 296,896. (No model.) Patented in Canada Oct. 13, 1888, No. 29,987.



Claim.—1. In a dumping-cart or other vehicle having its body carried by side pivots or projections, an elastic rubber pedestal for said pivots or projections composed of an upright body part and an extended yielding base or foot flange, substantially as specified.

2. In a vehicle, the elastic rubber pedestal C, having an extended base or foot flange *c*, in combination with the metal bearing *d*, having a socketed fit within said pedestal, essentially as described.

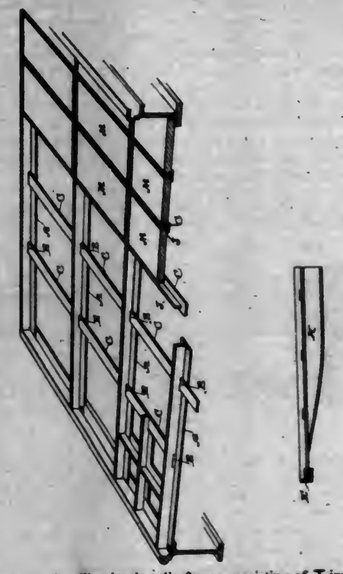
3. In vehicles having pivots on their bodies and spring supports or pedestals carrying the same, the metal box or upright D, constructed with a hollow body part closed on top but open below, essentially as described, whereby the spring support or pedestal may be inserted from the bottom, as set forth.

4. In vehicles having side pivots on their bodies, the combination of the elastic rubber pedestal C, having a base-flange *c*, and the open-bottom metal box or upright D, having an extended base and adapted to receive within it from below and inclose said pedestal, substantially as specified.

5. In a spring-support for vehicles, the metal box D, adapted to contain the spring, and consisting of an upright body part open below but closed on top, and extended recessed flange-like base, and a mud-guard *g*, all integral with one another, essentially as shown and described.

6. The combination, with the body of the vehicle having side pivots or supports *b*, of the metal box D, open at its bottom, also having an opening *f* in its inner face or side and a flange-like base, the rubber pedestal C, having an upright body part and extended base or foot flange *c*, the socketed metal bearing *d*, and the axle B or support carrying the metal box and contained pedestal, substantially as specified.

405,778. FRAME FOR ILLUMINATING-TILES. PETER H. JACKSON, San Francisco, Cal. Filed Mar. 25, 1889. Serial No. 304,729. (No model.)



Claim.—1. An illuminating-tile frame consisting of T-iron supporting-bars, slotted, as shown, and transverse flat bars passing through said slots and forming supports for the tiles, substantially as herein described.

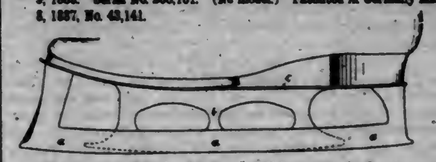
2. An illuminating-tile consisting of a frame-work having the slotted T-iron bars, with flat bars passing transversely through the slots, with glass blocks fitting into the spaces and supported by the frames beneath, with a cementing and filling material beneath and between the glass, substantially as herein described.

3. An illuminating-tile consisting of the frame-work formed of T-iron bars having slot-holes, with transverse flat bars passing through said slots, forming rectangular spaces for the reception of glass, outside bars of angle-iron, and the flanges of which the T-bars are secured, substantially as herein described.

4. An illuminating-tile consisting of the frame-work composed of T-iron bars having slot-holes, and flat bars passing transversely through said slot-holes, angle-iron end pieces fitted and bolted to the ends of the T-iron bars and forming a frame with regular spaces, glass plates fitting said spaces and supported upon the horizontal surfaces of the bars, and a support and filling of cement beneath and around the glass, substantially as herein described.

5. An illuminating-tile consisting of a frame-work of slotted T-iron bars, with flat bars passing through said slots, and angle or equivalent iron end pieces to which the T-iron bars are secured, and a filling of cement or metal strips upon which the glass is supported, vertical strips of iron between the glass, and a surrounding filling of cementing material whereby the whole is secured together, substantially as herein described.

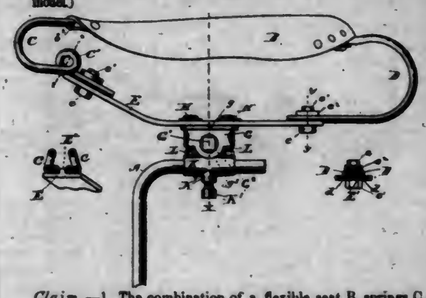
405,779. SKATE. LOUIS KEMER, Worms, Germany. Filed Jan. 9, 1888. Serial No. 260,181. (No model.) Patented in Germany Mar. 8, 1887, No. 43,141.



Claim.—1. A skate having two parallel runners, the inner runner being shorter than the outer runner, substantially as set forth.

2. A skate having two parallel runners, the inner runner being shorter than the outer runner and both runners having the middle parts of the bottom edges made straight and on the same plane, the bottom edges of both runners being inclined or curved upward toward the ends, substantially as set forth.

405,780. VELOCIPEDE-SADDLE AND SUPPORTING DEVICE. JOHN KNOX, Hartford, Conn., assignor to the Pope Manufacturing Company, Portland, Me. Filed Oct. 20, 1888. Serial No. 288,652. (No model.)

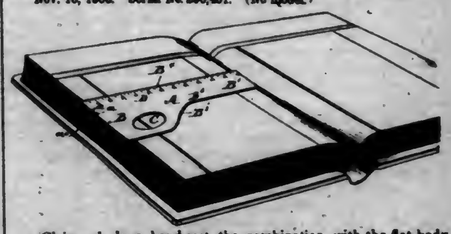


Claim.—1. The combination of a flexible seat B, springs C D, under plate E, stops $E' E^2$, bolts *e e*, and grips e^3 e^3, constructed to operate essentially as set forth.

2. The combination of clip-base K, a longitudinal mortise k^2, a threaded seat K^3, a set-screw K^4, ear K', a transverse perforation *k'*, a screw-abutment k^2 k^2, a tilt-block G, plate-seat *g*, ear G^3, a transverse perforation *g'*, vertical tip-screws L L, a saddle under plate E, and a screws H H, constructed to operate essentially as set forth.

3. The combination of the flexible seat B, the front and rear springs C D and their connecting devices, substantially as set forth, the longitudinal under plate E, and the devices, substantially as set forth, for adjusting and securing the springs upon the under plate longitudinally and laterally.

405,781. HAND-REST. HENRY F. KRETTER, St. Louis, Mo. Filed Nov. 10, 1888. Serial No. 290,431. (No model.)



Claim.—1. In a hand-rest, the combination, with the flat body portion having notches produced in one end, of a latch pivoted beneath the notched end, provided with a recess adapted to register with the surface of the body between the notches, substantially as shown and described.

2. In a hand-rest, the combination, with a flat body portion, of an angular rib attached to the under side of the body portion a short distance from its longitudinal edge and parallel with the same, substantially as shown and described.

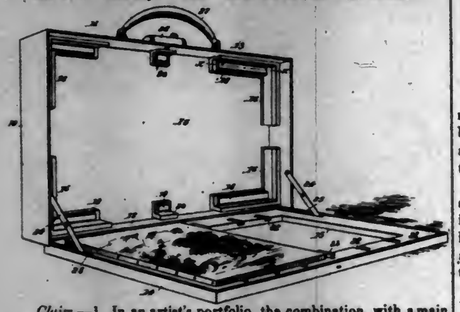
3. In a hand-rest, the combination, with a flat body portion of greater width at one end than at the other and provided with one

straight longitudinal edge beveled upon the under side, and notches produced in one end, the surface between which notches is convexed, of a latch pivoted beneath the notched end, provided with a semicircular recess adapted to register with the convex surface of the body, substantially as shown and described.

4. In a hand-rest, the combination, with a flat body portion of greater width at one end than at the other and provided with one straight edge beveled upon the under side and a thumb-opening, of a rib-like projection upon the under side of the body parallel with the straight edge, substantially as shown and described.

5. As an improved article of manufacture, a hand-rest consisting of a flat body portion of greater width at one end than at the other, having one straight edge beveled upon the under side and spaced notches produced in one end, the surface between which notches is convexed and provided with a scale upon the upper body-surface near the straight edge, and a thumb-opening, a projection formed upon the under face of the body parallel with the straight edge, and a latch provided with a circular recess registering with the notches in the body, substantially as shown and described.

405,782. ARTIST'S PORTFOLIO. FLORA M. LA BRUCE, Annandale, S. C. Filed Sept. 8, 1888. Serial No. 284,899. (No model.)



Claim.—1. In an artist's portfolio, the combination, with a main or body frame and an auxiliary frame hinged thereto adapted to fold therein, of a marginal frame held within the auxiliary frame, essentially L-shaped corner-pieces attached to the inner side of the main or body frame, and spring-actuated cushions attached to the said corner-pieces, all combined to operate substantially as and for the purpose specified.

2. The combination, with a main or body frame and an auxiliary frame hinged thereto adapted to fold therein, of a marginal frame secured within the auxiliary frame, provided with a series of transverse grooves, pins adapted to slide in said grooves, essentially L-shaped corner-pieces attached within the main frame, having a longitudinal recess in the horizontal member, and spring-actuated cushions secured within the recess of the corner-pieces, substantially as shown and described.

3. The combination, with a main frame and an auxiliary frame attached thereto adapted to fold therein, of a marginal frame within the auxiliary frame and spring-actuated cushions attached to the inner side of the main frame at or near the corners, substantially as shown and described.

4. The combination, with a main frame and an auxiliary frame attached thereto adapted to fold therein, of a marginal frame within the auxiliary frame, spring-actuated cushions attached to the inner side of the main frame at or near the corners, and a small cushion intervening the corner cushions, substantially as and for the purpose specified.

5. The combination, with a main or body frame and an auxiliary frame attached thereto adapted to fold therein, of a marginal frame secured within the auxiliary frame, having dovetail transverse grooves produced therein, dovetail pins adapted to enter said grooves, essentially L-shaped corner-pieces secured to the inner side of the main frame, having a longitudinal recess in the horizontal member, spring-actuated cushions of a light material held within the recess of the corner-pieces, and spring-actuated cushions secured to the said body-frame intermediate of the corner cushions at top and bottom, substantially as and for the purpose specified.

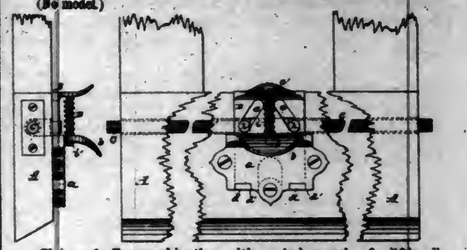
405,783. SCARF-PIN. JOSEPH C. LEIBEL, Colorado Springs, Colo., assignor of one-half to D. Ashby, same place. Filed June 22, 1888. Serial No. 277,992. (Model.)



Claim.—1. A scarf-pin provided back of the ornamental head with a bend the lower leg of which is inclined downward, whereby the pin may be inserted in a scarf, the ornamental head being caused to lie flat upon said scarf, substantially as described.

2. A scarf-pin having the portion of the pin opposite the ornamental head bent back out of the plane of the portion below it, but parallel thereto, and connected therewith by the inclined part *g*, whereby the rear face of the ornamental head will lie approximately in the plane of the portion of the pin below it, substantially as specified.

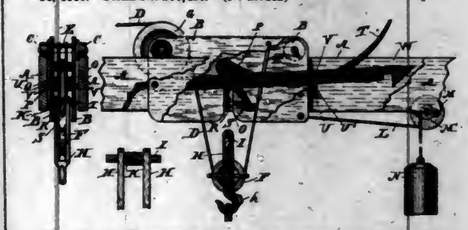
405,784. SASH-FASTENER. WILLIAM LIVINGSTONE, Jersey City, N. J. Filed Aug. 4, 1888. Renewed May 28, 1889. Serial No. 312,435. (No model.)



Claim.—1. The combination, with a window-sash, of a lifting-lip rigidly secured to said sash, a plate having two inclined slots, and two bolts provided with pins or lugs resting in said slots, the said bolts adapted to be moved longitudinally by contact of the pins or lugs with the inclined walls of the slots, substantially as set forth.

2. The combination, with a window-sash, of a bracket rigidly secured thereto and provided with a lifting-lip, a sliding plate mounted in said bracket and having oblique slots, a spring to maintain the sliding plate in a normal upward position, two bolts mounted in the sash, and lugs or pins projecting from said bolts into the oblique slots of the sliding plate, substantially as set forth.

405,785. CARRIER. TIMOTHY LOUD, Milwaukee, Wis. Filed Feb. 11, 1889. Serial No. 299,426. (No model.)



Claim.—1. The combination, in a carrier provided with wheels and traveling on a track, of the frame which has a recess for the reception and travel therein of the sheave-frame, a bent lever pivoted in the carrier, which lever has a hook and a beveled outer end on one arm and a curved edge on the other arm, a swinging arm provided with a front beveled end and a recess, and a pin inserted in the track and adapted to impinge with the lever and with the arm of the carrier, substantially as described.

2. The combination, in a carrier, of a bent lever, having a hook on one arm and a curved edge on the other arm, pivoted therein, a straight horizontal arm, having a beveled end and a recess therein, pivoted at one end of the carrier-frame, and extending past a sheave-frame-receiving recess in the carrier and projecting beyond the carrier, a sheave-frame having a bar adapted to impinge against the straight arm and to engage with the hook on the bent lever, and a pin fixed in the rails of the track adapted to impinge against the lever and the arm and to engage with the arm, substantially as described.

405,786. BURNER FOR NIGHT-LIGHTS. RIARD LUDOR, Mapath, N. Y. Filed Jan. 22, 1889. Serial No. 297,132. (No model.)

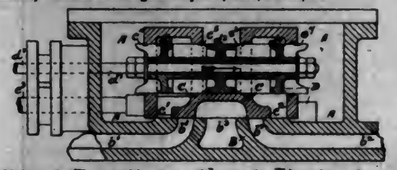


Claim.—1. A burner for night-lights composed of a ring-shaped float, a top plate having a recess forming prongs, and a bottom plate provided with raised projections or teats below said prongs for holding the taper or wick in upright position, substantially as set forth.

2. In a burner for night-lights, the combination, with a ring-shaped float, of a top plate having a recess forming prongs and a handle integral therewith, and a bottom plate provided with raised projections or teats below said prongs for holding the taper or wick in connection with the prongs of the top plate, substantially as set forth.

3. The combination, with a ring-shaped float, of a top plate provided with a recess forming prongs, and with a handle made integral therewith, and a bottom plate having raised projections or teats below said prongs, said top and bottom plates being retained on the float by bent prongs of the top plate passing through slots of the bottom plate, substantially as set forth.

405,787. STEAM-VALVE. JOHN W. MELLING, Wigan, County of Lancaster, England. Filed Sept. 26, 1888. Serial No. 286,643. (No model.) Patented in England Sept. 28, 1887, No. 13,178.

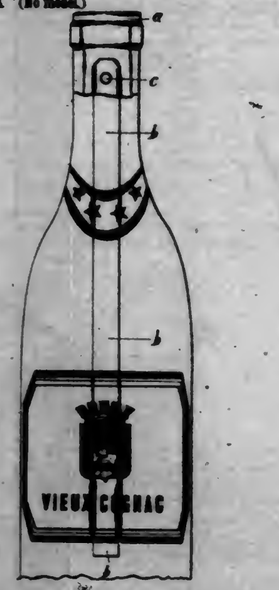


Claim.—1. The combination, with a main slide-valve, of a compound expansion-valve made up of disks of equal areas mounted in pairs connected together and arranged to slide in rings or seatings, said main valve having a steam-admission opening to the expansion-valve on each side of each cut-off disk, all substantially as herein set forth, for the purposes specified.

2. The combination, with a main slide-valve, of an expansion-valve D, consisting of three disks of equal areas connected together and fitted and working in rings formed by the bored sides of the ports in the main valve, the latter having a steam-admission opening to the expansion-valve at each end, and an intermediate opening controlled by the middle disk, all arranged and operating substantially as herein described.

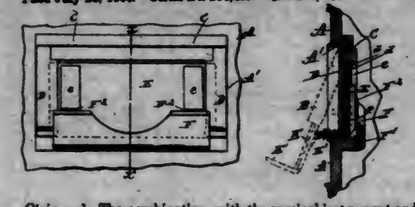
3. The combination, with a pair of single slide-valves, of a pair of expansion-valves D, consisting of a pair of disks and an intermediate disk fitted in rings and connected together by the feathers d^3, all arranged and operating substantially as herein described and shown.

405,788. SAFETY APPLIANCE FOR BOTTLES. LÉON L. METTEREAU, Bordeaux, France. Filed July 14, 1886. Renewed May 24, 1889. Serial No. 311,994. (No model.)



Claim.—The combination, with a bottle, of a safety appliance consisting of a band of tin-foil secured to a capsule of the same material and under a gummed label on the bottle, substantially as herein shown and described.

405,789. MUSIC-HOLDER. HARTWELL B. MOORE, Norwalk, Ohio. Filed July 20, 1888. Serial No. 280,625. (No model.)



Claim.—1. The combination, with the musical instrument and its outward-swinging panel hinged at its upper edge thereto, of a music-holder adjustable vertically on the rear face of the panel and adapted to move downward when the panel is swung outward, substantially as set forth.

2. The combination, with the musical instrument and its outward-swinging panel hinged at its upper edge thereto, of a music-holder adjustable vertically on the rear face of the panel, and a hinged connection between the instrument-casing and the said holder, substantially as set forth.

3. The combination, with the musical instrument having a panel hinged thereto at its upper edge to swing outwardly, and having a vertical guide on its rear face, of a vertically-sliding music-holder connected with the said guide, and a hinged connection between the sliding holder and the instrument-casing, substantially as set forth.

4. The combination, with a musical instrument of the character described, on a hinged panel provided with grooved blocks, the grooves being provided with felt, and a music-holder held to slide in said grooves, substantially as described.

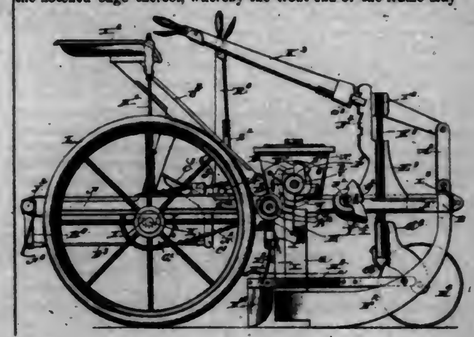
5. In a music-holder for pianos and organs, the combination, with the casing, of a grooved panel hinged thereto, a music-holder having a foot-piece, said holder being adjustably engaged in the panel-grooves aforesaid, and a block having one side hinged to the music-holder and the other side hinged to the casing, substantially as shown and described.

6. The combination, in a music-holder, of the panel B, vertically grooved at the back thereof and hinged at its top to the piano-case, the music-holder E, held to slide in the grooves of the panel, and the block F, hinged to the rear of the holder E and to the piano-case, to limit the outward movement of said holder, substantially as described.

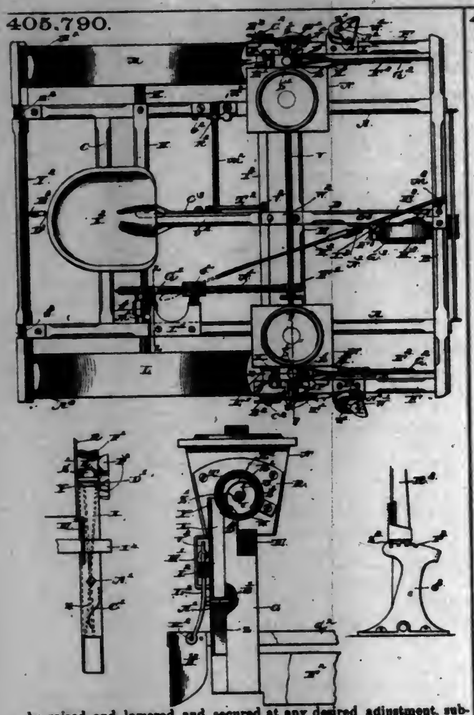
7. The combination, with the musical instrument, of a panel hinged thereto at its upper edge to swing outwardly, and a music-holder sliding in guides on the back of said panel and provided with a fixed foot or ledge along its lower edge projecting beyond the front of the panel when the latter is in its closed or opened position, substantially as set forth.

405,790. CORN-PLANTER. JOHN MORAN, Adair, Mo. Filed Mar. 8, 1889. Serial No. 302,425. (No model.)

Claim.—1. The combination, with a corn-planter, of the standard E^3, secured to the front part of the frame and having the tubular bearing and the notched arm N^3, the shaft F^6, journaled in the tubular bearing, the supporting wheel or roller journaled in a bearing at the lower end of said shaft, the swiveled sleeve at the upper end of said shaft, and the lever attached to said swiveled sleeve connected to the frame operating on the arm N^3 and having the devices to engage the notched edge thereof, whereby the front end of the frame may



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be raised and lowered and secured at any desired adjustment, substantially as described.

2. The combination, in a corn-planter, of the hoppers having the discharge-openings in their sides and provided with the curved flanges T W above and below said openings, respectively, and the seed-wheels having the flanges concentric with and operating between said curved flanges T W, the said seed-wheels being further provided with the seed cups or openings in their said flanges, substantially as described.

3. The combination, in a planter, of the hoppers having the discharge-openings in their sides, the plates R, bolted to the sides of the hoppers and having the openings S registering with the discharge-openings, and provided, further, with flanges T, the spring-pressed brushes hinged to the rear lower sides of said flanges, and the flange-plates W, attached to the plates R and below the discharge-openings and concentric with the flanges T, the revolving shaft and the seed-wheels secured thereon and having the flanges bearing against the flanges T W and provided with the seed cups or openings, substantially as described.

4. The plates W', having the arms X' and guard-plates Y', the same being struck up from a single piece of plate metal, and the guiding-pulley arranged between the parallel sides of the plate and the arm and journaled on a transverse bolt connecting the same, substantially as described.

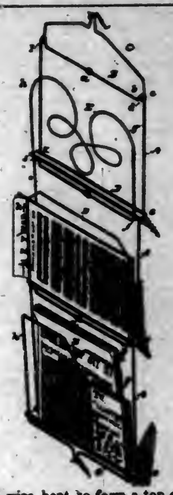
5. The combination of the seed-boxes having openings in their outer sides, the plates secured thereto and having openings registering therewith, depending arms or brackets, and curved concentric plates or flanges or cut-offs, the transverse shaft journaled in the arms or brackets, the seed-wheels mounted on said shaft and having annular perforated flanges bearing against the concentric flanges or cut-offs, and the check-row wheels mounted on said shafts adjacent to the seed-wheels, substantially as set forth.

6. The combination, with the seed boxes or hoppers having openings in their outer sides and the transverse shaft extending through said hoppers, of the exteriorly-arranged seed-wheels having annular flanges provided with perforations or seed-cups bearing against curved concentric flanges or cut-offs attached to the seed-boxes, said seed-wheels being constructed with cams adapted to operate the drop-valves or cut-offs arranged in the seed-tubes, substantially as set forth

405,791. MUSIC OR PAPER HOLDER. LOUIS F. MOURNEY, Canton, Ohio. Filed Feb. 2, 1889. Serial No. 298,542. (No model.)

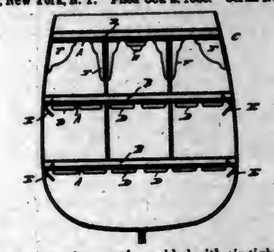
Claim.—As a new article of manufacture, a music or paper holder consisting of a series of frames hinged together, each frame constructed

405,791.



of a single piece of wire bent to form a top cross-piece, side pieces, and the front section *h g* of the pocket, substantially as set forth.

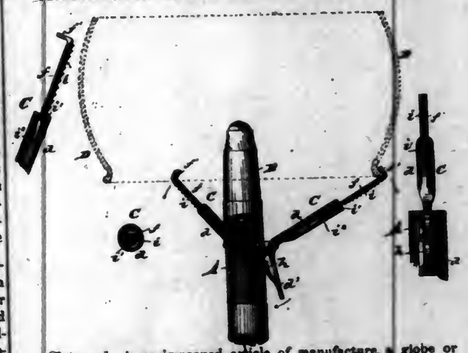
405,792. AIR-TIGHT CHAMBER IN VESSELS. FRIEDRICH D. F. MÖLLER, New York, N. Y. Filed Oct. 2, 1888. Serial No. 286,922. (No model.)



Claim.—1. A marine vessel provided with air-tight tanks located at the corners and ceilings of the cabins and saloons and shaped to form cornices and center-pieces, substantially as set forth.

2. The combination, with a marine vessel, of flat air-tight tanks secured to the under sides of the decks and V-shaped deflecting-plates secured to the hull of the vessel along the edges of the decks and partially covering said tanks, substantially as set forth.

405,793. GLOBE-HOLDER. JOHN J. MCGLONE, New York, N. Y. Filed Dec. 26, 1888. Serial No. 294,664. (No model.)



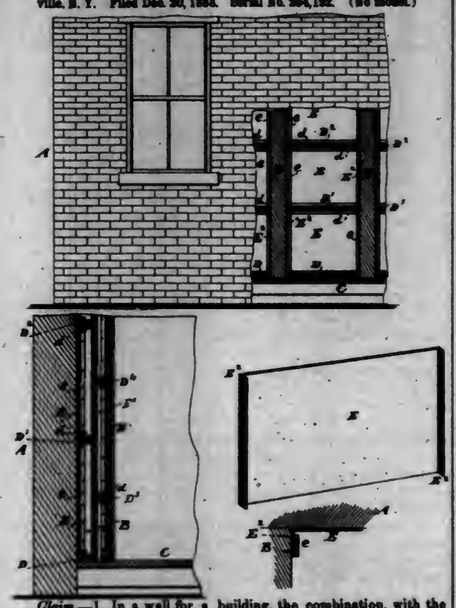
Claim.—1. As an improved article of manufacture, a globe or shade holder comprising a tube or sleeve, hollow spring-actuated arms pivoted thereto, and adjustable sections fitted in said pivoted arms, substantially as described.

2. The tube or sleeve A and the bent sections C, pivoted to the said tube A, the lower portion of said sections being acted upon by a spring, the upper portion being made hollow, in combination with

the adjustable section *f*, fitted in the hollow section, substantially as described.

3. The tube A and the bent sections C, pivoted thereto and acted upon by springs A, in combination with the adjustable sections *f*, having a spring *d* and fitted in the bent sections, and formed with notches *i* to engage with the lip *i'* at the outer end of the bent sections, substantially as described.

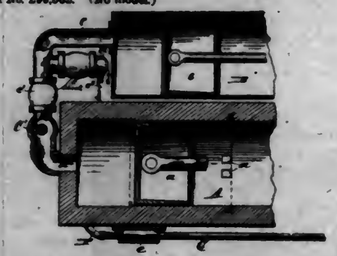
405,794. CONSTRUCTION OF BUILDINGS. JOHN O'DONNELL, Lowville, N. Y. Filed Dec. 20, 1888. Serial No. 294,192. (No model.)



Claim.—1. In a wall for a building, the combination, with the outer wall A, the studs, and a series of strips between the studs, of a layer of paper between each two strips and a second series of strips and paper alternating with said strips, substantially as and for the purpose specified.

2. A wall for a frame building, composed of an outer and an inner wall and studs, cross-pieces between the studs, fitting close to the inside of the outer wall, thereby making an air-tight joint, alternating cross-pieces fitting closely with the inside face of the plaster or other material of the inside wall, thereby making an air-tight joint, paper having flanges, as shown, and strips of wood for holding said paper nailed to the studs, said strips being placed about one-fourth of an inch (more or less) from the inner corner of the angle of the paper or other equivalent material used, said flanged material and strips forming an air-tight joint between the cross-pieces and making complete dead-air cells, and giving the paper or other material used free play between the edges of the cross-pieces, thereby providing for the expansion or contraction of the material used or of the shrinkage of the studs.

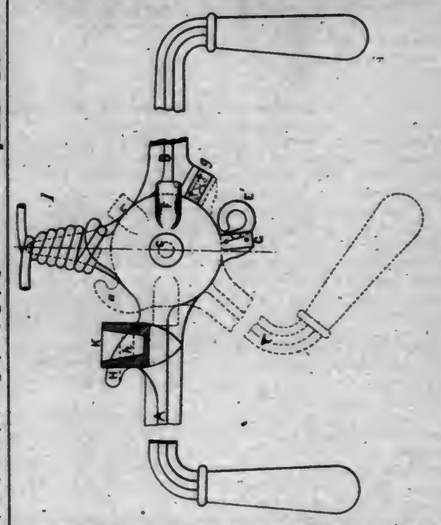
405,795. GAS OR HYDROCARBON-VAPOR ENGINE. LEWIS C. PARKER and BEAUMONT PARKER, Kansas City, Mo. Filed Feb. 11, 1889. Serial No. 299,382. (No model.)



Claim.—1. In a gas or hydrocarbon-vapor engine, the combination, with the power-cylinder, the charging-cylinder, and their pistons, of the pipe or tube connection between them having an arm provided with an air-inlet and a gas-inlet and an automatic check-valve, said pipe or tube connection itself having a check-valve, the ignition-chamber provided with a valve seated in the lower open end of the heating-tube of said chamber, all arranged in the said tube or pipe connection, and means for operating said valve, substantially as and for the purpose specified.

2. In a gas or hydrocarbon-vapor engine, the combination of the power-cylinder, the charging-cylinder, and their pistons, the pipe or tube connection between said cylinders, said pipe or tube connection having an arm provided with an automatic check-valve and a gas-inlet and air-inlet, the additional check-valve also supplied to said pipe or tube connection, and the ignition-chamber having a heating-tube and a valve seating in the lower open end of said tube and having its stem extending through a guide-tube and provided inward from said valves with an enlargement or packing adapted to seat itself gas-tight around the inner end of the valve-stem guide-passage, the angle-lever having one arm acting upon the stem of the ignition-valve and its other arm acted upon by a cam-actuated rod, and the spring acting upon said angled lever to normally hold the ignition-valve closed, substantially as described.

405,796. IMPLEMENT FOR STRAINING WIRE. HENRY PERRIMAN, Essendon, and CHARLES F. ALDER, Melbourne, Victoria. Filed June 21, 1888. Serial No. 277,851. (No model.) Patented in Victoria Apr. 24, 1888, No. 5,781; in New Zealand Apr. 25, 1888, No. 2,946; in Queensland Apr. 27, 1888; in South Australia May 1, 1888, No. 1,014; in Tasmania May 19, 1888, No. 576, and in England June 7, 1888, No. 8,358.



Claim.—1. In a wire-stretcher, the combination, with parts A and B, the former provided with claw *a* and the latter with a tapering finger *b*, of screw-bolt C, serving as a pivot for said parts A and B, substantially as set forth.

2. In a wire-stretcher, the combination, with parts A and B, the former provided with claw *a* and the latter with tapering finger *b*, of screw-bolt C, serving as a pivot for said parts A and B, and spring-washer *d*, substantially as set forth.

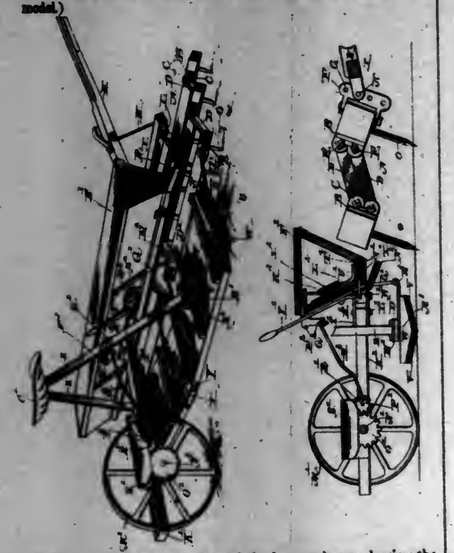
3. In a wire-stretcher, the part A, provided with claw *a* and cutter G, and part B, provided with tapering finger *b* and cutter *g*, in combination with pivot-screw C, upon which said parts A and B turn, substantially as set forth.

4. In a wire-stretcher, the parts A and B, the former recessed on the inside and provided with a hub which operates within a central opening in part B, in combination with spring E, arranged within the recess of part A, around its hub, and provided with a handle exterior of said parts A and B, substantially as set forth.

5. In a wire-stretcher, the part A, provided with claw *a*, and part B, provided with tapering finger *b*, the said part A also provided with a perforated lug H, in combination with pivot-bolt C, substantially as set forth.

6. The wire-stretcher consisting of parts A and B, having the hook *a* and finger *b*, and bolt C, upon which said parts revolve, the said part A provided with a lug K, having a socket to receive an auger-bit therein, substantially as set forth.

405,797. HARROW, SEEDER, AND PLANTER. JAMES M. POORE, Spring Valley, Minn. Filed Nov. 30, 1888. Serial No. 292,302. (No model.)



Claim.—1. The combination of the harrow-beams having the ears C attached to and extending from their front and rear sides, near the ends, in pairs one above the other, with the links D, having their ends pivoted to the said ears, said links being arranged in parallel pairs, connecting the upper and lower ends of the beams, substantially as set forth.

2. The combination, with the harrow-beams and the links arranged in pairs, as described, and coupling or connecting said beams flexibly together, of the longitudinally-arranged rigid stiffening-bars and the keepers secured on the harrow-beams and receiving said stiffening-bars, substantially as set forth.

3. The combination of the smoother having forwardly-extending arms D', provided with eyes E', the hopper having the seed-stirring mechanism and provided with depending arms G', having inturned ends engaging the eyes E', the bar K', bolted between plates H', extending rearwardly from the hopper, the trailing wheel journaled in said bar, and mechanism for transmitting motion from said trailing wheel to the seed mechanism, substantially as set forth.

4. The combination of the harrow, the smoother connected to the rear end of the same and having plates D', provided with eyes E', the hopper having downwardly-extending arms provided with inturned ends engaging the eyes E', and a bar extending rearwardly from the hopper, and the trailing wheel journaled to said bar, substantially as and for the purpose set forth.

5. The combination of the smoother having the arms D', with eyes E', the hopper having the seed-stirring mechanism and the depending arms G', provided with hooks at their lower ends, the bar K', extending rearward from the hopper, the supporting-wheel journaled in said bar, and the gears and devices, substantially as set forth, connecting said wheels to the seed-stirring mechanism, the harrow arranged in advance of the smoother, and the hooked rods connecting the latter with the rear harrow-beam, substantially as described.

6. The hopper having the discharge-openings and the cut-off plate with openings X' and arm W', in combination with a cam B', forming a stop for said arm, and devices to secure the cam at any desired adjustment, substantially as described.

7. The hopper having the discharge-openings and the cut-off plate with openings X' and arm W', in combination with the cam or eccentric forming a stop for the said arm and provided with the hand or pointer, and the graduated scale, substantially as described.

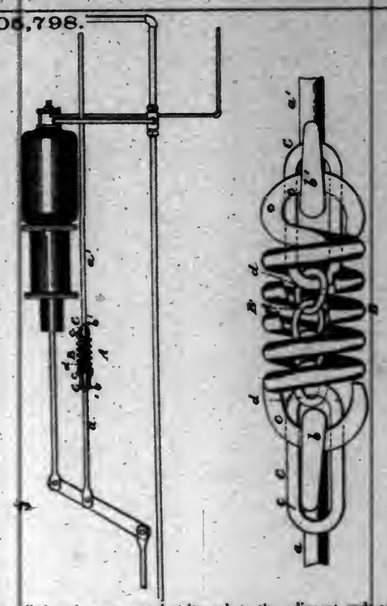
8. The smoother-sections composed of a pair of boards V, arranged at an obtuse angle, and transverse cleats bolted on the said boards and serving to hold them together, as set forth.

9. The smoother composed of sections U, having their inner meeting ends rabbeted, and thereby caused to overlap, and the links X, connecting these sections at the point where they overlap, as set forth.

405,798. ATTACHMENT FOR BRAKE-RODS. NOAH C. PRICE, Pocatello, Idaho. Filed Apr. 4, 1888. Serial No. 305,974. (No model.)

Claim.—1. The combination, with the two parts of the rod, of

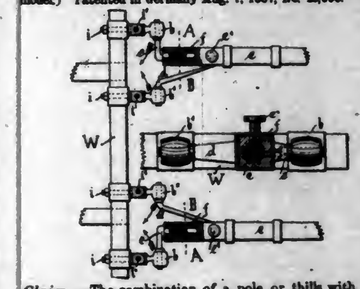
405,798.



the coiled spring connected at its ends to the adjacent ends of said two parts, and the safety-chain arranged within the spring independent of and disconnected from said spring and having at each end elongated loops loosely held in the hooks of the two parts of the rod, substantially as shown and described.

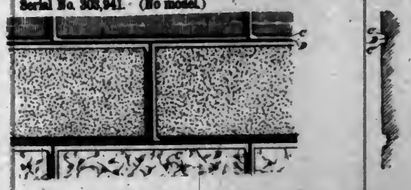
2. The combination, with the two parts of the rod having hooked ends, and the coiled spring connecting the same, and the normally-inactive safety-chain and links independent of the rod and spring and arranged within the coils of said spring and disconnected therefrom, with the end links loosely engaging the hooks of the rods, substantially as shown and described, and for the purpose specified.

405,799. MECHANISM FOR DETACHING THILLS. ALBERT RAMMOSER, Berlin, Germany. Filed Mar. 22, 1889. Serial No. 304,429. (No model.) Patented in Germany Aug. 7, 1887, No. 42,666.



Claim.—The combination of a pole or thills with two lateral pivots *c* and *d*, one of which *c* has a rotary motion in its place in the thills, which pivots are inserted into two sockets *b b'*, attached by means of swivel-shanks to the front beam of the vehicle and revolving at the same time on a vertical axle, substantially as and for the purpose herein shown and described.

405,800. FINISHING CONCRETE AND ARTIFICIAL-STONE SURFACES. ERNEST L. RAMSOME, San Francisco, Cal. Filed Mar. 19, 1889. Serial No. 303,941. (No model.)



Claim.—1. A concrete or artificial-stone surface having a superficial joint line or border, and having the intermediate surface cut or broken, substantially as herein described.

2. The improvement in artificial-stone walls or surfaces consisting of the superficial joint or border formed by projections in the mold and the intermediate faces of the subdivisions subsequently broken or dressed by a tool, substantially as herein described.

3. A concrete or artificial-stone surface having superficial finished joint lines or borders, with the intermediate surface cut or broken, substantially as described.

405,801. MERCHANDISE-BOX. GEORGE E. RAYMOND, Chicago, Ill. Filed Feb. 9, 1889. Serial No. 299,283. (No model.)



Claim.—1. The packing or merchandise box or case having the sliding spout or chute, combined with the pivoted or hinged flap or cover, the same being connected by a spring, substantially as specified.

2. The packing or merchandise box or case having the sliding or movable chute or spout, combined with a flap or cover hinged or pivoted to the box or case and connected to the spout or chute through the medium of a spring-wire, and a slide arranged upon the inside of the box or case and having connection with said spout or chute by a stud passed through a slot in the casing or box, substantially as specified.

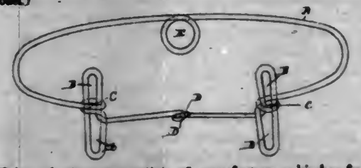
405,802. SAD-IRON. AUGUST REINER, Cleveland, Ohio. Filed July 9, 1888. Serial No. 279,366. (No model.)



Claim.—1. A sad-iron provided with an imperforated hood covering the iron and rising gradually in respect to the base of the iron from the point to the wheel and having an extension, as *b*, at its rear, in combination with a shoe within the hood closed down upon the base at its sides and provided with perforations about its inner end, and a gas-conveying tube extending within the shoe and perforated at its bottom, substantially as set forth.

2. In a sad-iron, a hood over the iron substantially convex in cross-section and closed against the escape of heat except at the heel of the iron, a shoe set in the hood apart from the same to leave an air-draft between said parts, said shoe having perforations at its inner end opening into said air-space, and openings at its rear for the admission of air, in combination with a gas-tube extending into the said shoe and supported thereby, said tube having perforations on its bottom, substantially as set forth.

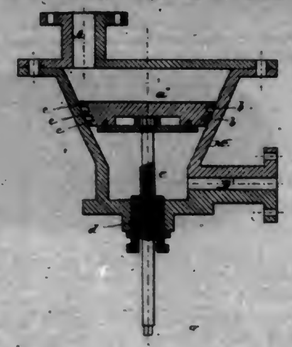
405,803. BINDER FOR CORN-FODDER. SAMUEL T. RENNEKAR, New Cumberland, Ohio. Filed Dec. 18, 1888. Serial No. 294,019. (No model.)



Claim.—1. As a new article of manufacture, a binder for corn-fodder, the same being made of wire bent at its ends to form hooks adapted to engage with each other, and intermediate its ends to form hand-holds consisting of lateral loops projecting at substantially right angles from the wire, substantially as described.

2. As a new article of manufacture, a wire binder provided at its ends with hooks and at a suitable distance from each end bent to form loops B, projecting in opposite directions and at right angles to the wire, and also bent to form the rings C, encircling said loops, substantially as described.

405,804. STEAM-TRAP. CHARLES RICHARD, Paris, France. Filed Nov. 26, 1888. Serial No. 291,946. (No model.) Patented in France Feb. 13, 1885, No. 167,914; in England Sept. 8, 1885, No. 10,630, and Feb. 17, 1887, No. 2,500, and in Belgium Jan. 11, 1888, No. 71,571.



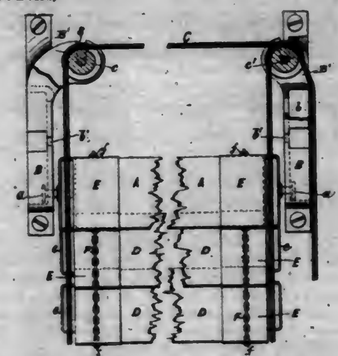
Claim.—1. In a self-acting steam-trap, the combination, with a conical or tapered casing, of a series of connected plates or disks situated at different points in said casing, of correspondingly-different diameters, and adapted to form, in conjunction with the casing, successive discharge-openings for the steam, substantially as set forth.

2. In a self-acting steam-trap, the combination, with a conical or tapered casing, of a series of connected plates or disks of a material more extensible by heat than is the material of the casing, situated at different points in said casing, of correspondingly-different diameters, and adapted to form, in conjunction with the casing, successive discharge-openings for the steam, substantially as set forth.

3. In a self-acting steam-trap, the combination, with a conical or tapered casing, of a series of connected plates or disks situated at different points in said casing, of correspondingly-different diameters, and adapted to form, in conjunction with the casing, successive discharge-openings for the steam, and a chamber in which the steam expands before acting upon said disks, substantially as set forth.

4. The combination, with the tapered casing, of the series of connected disks or plates having the edges *c* adapted to fit the casing and form successive discharge-openings for the steam, as described, bushing *d*, threaded externally and internally, and the threaded stem *e*, connected with the disks and engaging the bushing, substantially as set forth.

405,805. VENETIAN BLIND. ANDREW SMITH, East Dulwich, County of Surrey, England. Filed Jan. 16, 1889. Serial No. 296,532. (No model.)

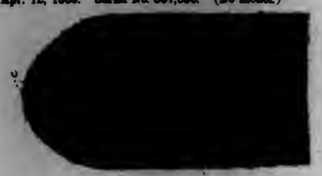


Claim.—1. The combination, with a Venetian blind, of brackets disposed at opposite sides of the window-casing, both of said brackets being provided with elongated vertical slots in which the gudgeons of the top slat of said blind are vertically movable, and with bearings above said slots, pulleys supported in said bearings, and lifting-cords passing over said pulleys and connected with said blind at opposite ends of the slats thereof, whereby the blind may be vertically adjusted bodily.

2. The combination, with a Venetian blind, of brackets disposed at opposite sides of the window-casing, both of said brackets being provided with elongated vertical slots in which the gudgeons of the

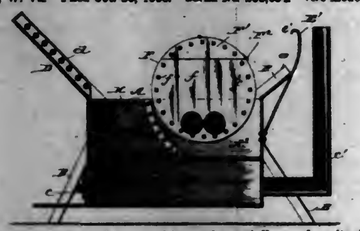
top slat of said blind are vertically movable, and with slotted bearings above said slots, detachable pulleys supported in said slotted bearings, and lifting-cords passing over said pulleys and connected with said blind at opposite ends of the slats thereof, whereby the blind may be vertically adjusted bodily.

405,806. BATHING-MITTEN. JUDSON S. SNYDER, Brooklyn, N. Y. Filed Apr. 12, 1889. Serial No. 307,090. (No model.)



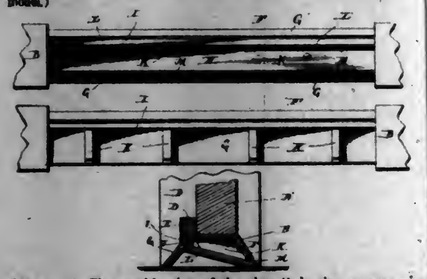
Claim.—A bathing-mitten formed of an unsplit and seamless luffa-fruit having its core and pulp removed, and having one of its ends drawn together, substantially as specified.

405,807. WASHING-MACHINE. ROBERT P. STARBUCK, Harrisville, W. Va. Filed Oct. 20, 1888. Serial No. 288,654. (No model.)



Claim.—In a washing-machine, substantially as described, the combination, with the suds-box having a cylinder-compartment and an open compartment, and an upright E', having a hook *e'*, and arranged at the end of such suds-box opposite the open compartment, of the cylinder operating in the cylinder-compartment and having a door-section arranged when open to be supported by upright E' and be engaged by the hook *e'* thereof, whereby the cylinder will be held from turning forward toward the open compartment by the dragging of clothes out of such cylinder into such open compartment, substantially as set forth.

405,808. WEATHER-STRIP AND DOOR-SILL COMBINED. HENRY W. STELLER, Easton, Pa. Filed Oct. 31, 1888. Serial No. 289,584. (No model.)



Claim.—1. The combination of the plate G, having an upper inclined surface, a strip I, secured on the upper side of the said plate G, and the plate H removably secured upon the plate G on a level with the strip I, and having its upper inner edge arranged a slight distance from the strip I and its lower outer edge arranged a slight distance above the upper side of the plate G, as set forth.

2. The combination of the plate G, having an upper inclined side, and the lugs K on said side, the strip I, secured upon the plate G, and the plate H, removably supported above the plate G on a level with the strip I and resting upon the lugs K, and having its lower outer edge terminating above the plate G and its inner upper edge arranged a slight distance from the strip I, as set forth.

3. As an improvement in weather-strips, the combination of the plate G, having an upper inclined side and provided with the lugs K, the vertical strip I, secured to the plate G, thereby forming the shoulder J, the flexible strip secured to the door and fitting against the shoulder J, and the plate H, resting on the lugs K and having its lower outer edge arranged a slight distance above the plate G and its upper inner edge arranged a slight distance from the strip I, as specified.

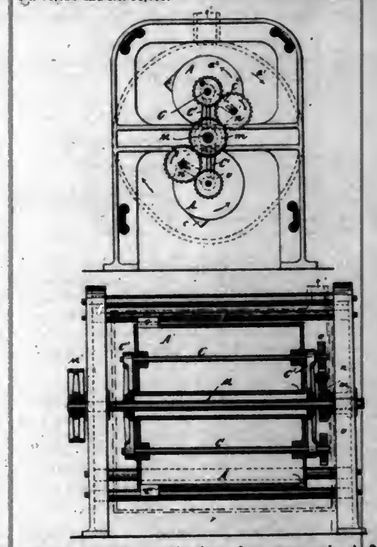
405,809. INSCRIPTION AND MOTTO PLATE. CHARLES M. UNDERWOOD, Hamilton, Ontario, Canada. Filed Mar. 7, 1889. Serial No. 302,254. (No model.)



Claim.—1. An inscription or motto plate consisting of a main frame having a depressed panel-plate between two perpendicular slits, a letter-case to fit in said panel, having its side walls bent upward and inward for the reception of letter-blocks, and having bent prongs at each end, and letter-blocks and blank-blocks to place in said letter-case, all substantially as set forth.

2. A letter-case adapted to be inserted within a frame having its side walls bent upward and inward, forming grooves or channels to hold blocks with letters or designs on their face-surface, also having a bent prong at each end for the purpose of fastening itself to a plate or frame, substantially as set forth.

405,810. HULLING OR GRINDING MACHINE. FRIEDRICH WEGMANN, Zurich, Switzerland. Filed Aug. 18, 1887. Serial No. 247,359. (No model.) Patented in Germany July 20, 1887, No. 44,396; in France July 25, 1887, No. 184,981; in Belgium July 26, 1887, No. 78,347; in England July 27, 1887, No. 10,456; in Italy Sept. 20, 1887, No. 22,105; in Spain Nov. 20, 1887, No. 11,744, and in Austria-Hungary June 2, 1888, No. 18,622 and No. 38,755.



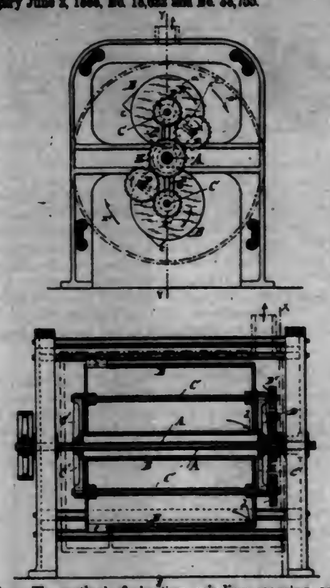
Claim.—1. The combination of a rotary main shaft, a drum or drums mounted eccentrically to said shaft, so as to revolve around the same, and transmitting mechanism between the main shaft and the drum or drums, whereby the drum or drums are rotated on their own axes in a direction opposite to their revolving motion around the main shaft, substantially as set forth.

2. The combination of a rotary main shaft, a drum or drums mounted eccentrically to said shaft, so as to revolve around the same, and planetary gearing for rotating the drum or drums axially in opposite direction to their revolving motion around the main shaft, substantially as herein shown and described.

3. The combination of a supporting-frame, a rotary main shaft journaled in the same, a drum or drums mounted eccentrically to said shaft, so as to revolve around the same, a stationary gear-wheel mounted on the frame, and planetary gear-wheels meshing with said stationary gear-wheel for imparting rotary motion to the drum or drums axially in a direction opposite to their revolving motion around the main shaft, substantially as herein shown and described.

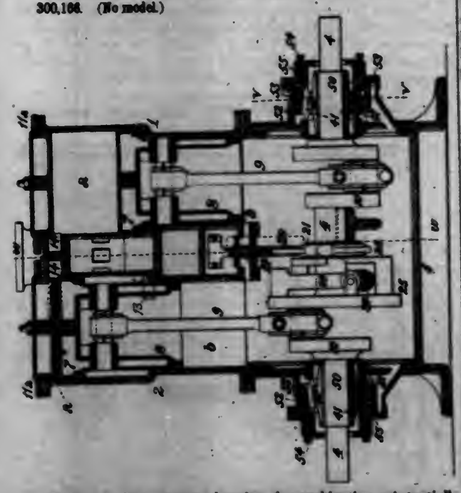
4. The combination, with a supporting-frame, of a rotary main shaft journaled in the same, arms fixed on said shaft, drums journaled on the arms, a stationary gear-wheel mounted on the frame, a cog-wheel on each drum-shaft, and intermediate cog-wheels journaled in the arms and meshing with the stationary gear-wheel and the cog-wheels on the drum-shafts, substantially as herein shown and described.

405,811. METHOD OF GRINDING AND SCOURING GRAIN. FRIEDRICH WEGMANN, Zurich, Switzerland. Filed May 26, 1888. Serial No. 275,316. (No model.) Patented in Germany July 20, 1887, No. 44,396; in France July 25, 1887, No. 184,981; in Belgium July 26, 1887, No. 78,347; in England July 27, 1887, No. 10,456; in Italy Sept. 20, 1887, No. 22,105; in Spain Nov. 20, 1887, No. 11,744, and in Austria-Hungary June 2, 1888, No. 18,622 and No. 38,755.



Claim.—The method of cleaning, grinding, scouring, or decorticating grain or similar material, which consists in subjecting a mass of such material while in contact with an abrading-surface simultaneously to the action of two centrifugal forces generated in opposite directions from different centers, whereby said mass is held in contact with the abrading-surface and the particles thereof shifted relatively to each other, substantially as set forth.

405,812. COMPOUND ENGINE. GEORGE WESTINGHOUSE, Jr., and FRANCIS M. RITER, Pittsburg, Pa. Filed Feb. 16, 1889. Serial No. 300,166. (No model.)



Claim.—1. In a compound engine, the combination, substantially as set forth, of two cylinders each bored out to a larger and a smaller diameter in the upper and lower portions, respectively, of its length, trunk-pistons fitting said cylinders, a crank-shaft journaled in bearings below the cylinders and provided with oppositely-set cranks, connecting-rods coupling the pistons to the pins of said cranks, and two distribution-valves which are reciprocated in respectively opposite directions by connections from the crank-shaft, each of said valves controlling the supply and exhaust ports of one of the cylinders.

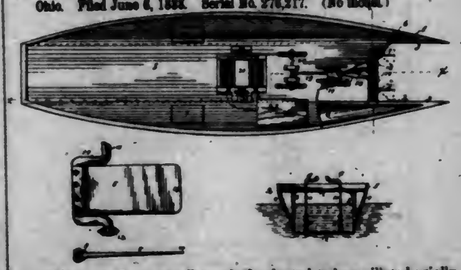
2. In a compound engine, the combination, substantially as set forth, of two cylinders each bored out to a larger and a smaller diameter in the upper and lower portions, respectively, of its length, trunk-pistons fitting said cylinders, a crank-shaft journaled in bearings below the cylinders and provided with oppositely-set cranks, connecting-rods coupling the pistons to the pins of said cranks, two distribution-valves each controlling the supply and exhaust ports of one of the cylinders, and a single automatic cut-off mechanism coupled to and actuating said distribution-valves.

3. In a compound engine, the combination, substantially as set forth, of two cylinders, each bored out to a larger and a smaller diameter in the upper and lower portions, respectively, of its length, trunk-pistons fitting said cylinders, a crank-shaft journaled in bearings below the cylinders and provided with oppositely-set cranks, connecting-rods coupling the pistons to the pins of said cranks, two distribution-valves each controlling the supply and exhaust ports of one of the cylinders, a centrifugal governor or regulator fixed upon the crank, an adjustable eccentric which is coupled to and varied in position by the governor, and an oscillating rocker having its arms coupled to the strap of said eccentric and to the stems of the distribution-valves.

4. In a compound engine, the combination, substantially as set forth, of two cylinders, each bored out to a larger and a smaller diameter in the upper and lower portions, respectively, of its length, trunk-pistons fitting said cylinders, a crank-shaft journaled in bearings below the cylinders and provided with oppositely-set cranks, connecting-rods coupling the pistons to the pins of said cranks, two distribution-valves which are reciprocated in respectively opposite directions by connections from the crank-shaft, each controlling the supply and exhaust ports of one of the cylinders, and an inertia balance composed of two pistons each working in a cylinder containing expansive fluid, said pistons being coupled one to the other and to the stems of the distribution-valves, so as to be reciprocated coincidently with said valves and to effect alternate expansion and compression of the fluid in the cylinders.

5. In a compound engine, the combination, substantially as set forth, of two cylinders each bored out to a larger and a smaller diameter in the upper and lower portions, respectively, of its length, trunk-pistons fitting said cylinders, a crank-shaft journaled in bearings below the cylinders and provided with oppositely-set cranks, connecting-rods coupling the pistons to the pins of said cranks, two valve-chests communicating by ports one with the other and with a common supply-pipe and communicating independently with a common exhaust-pipe, ports leading from each valve-chest into one of the cylinders adjacent to opposite ends of its larger bore, and a pair of distribution-valves reciprocating in the valve-chests, each of said valves having a tubular body, a pair of end pistons, and a series of ports interposed between the body and the end pistons, said valves being adapted to supply steam to the lower cylinder-ports from the spaces around their bodies to transfer steam through their ports and bodies from the lower to the upper cylinder-ports and to exhaust steam from the upper cylinder-ports by their upper end pistons.

405,813. VIBRATING PROPELLER. FRANK D. WHIPP, Cleveland, Ohio. Filed June 6, 1888. Serial No. 276,217. (No model.)



Claim.—1. In a propeller, a shaft adapted to be oscillated axially and having a crank formed therein, with a flexible propeller-blade attached to the crank, substantially as set forth.

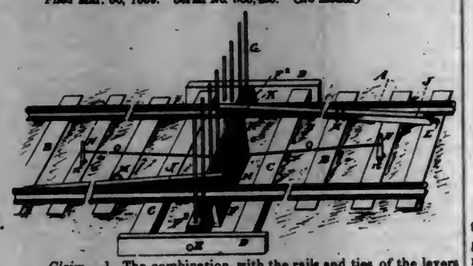
2. In a propeller, a shaft to operate the blade, having a crank formed to extend forward of the axis of the shaft, and a blade rigidly attached to said crank, substantially as set forth.

3. The combination of two floats having straight inner sides opposite each other, with a propelling-blade between the floats, and a

shaft for operating the blade, having a crank to which the blade is attached, substantially as set forth.

4. The combination of two floats, a shaft set vertically between the floats, and a flexible blade attached rigidly to a crank on said shaft, which extends forward of the axis of the shaft, substantially as set forth.

405,814. RAILWAY-GATE. ISAAC WESHAM, Stover's Shops, Va. Filed Mar. 30, 1889. Serial No. 305,425. (No model.)

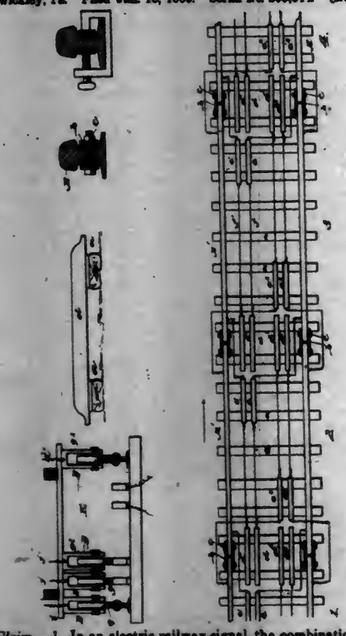


Claim.—1. The combination, with the rails and ties, of the levers J J, pivoted at one end to the ties, the gate pivoted, as described, and the rollers journaled on the gate with the free ends of the levers resting thereon, substantially as shown and described.

2. The combination, with the rails and ties, of the levers J J, pivoted at one end to the ties, the gate pivoted, as described, the rollers journaled on the gate with the free ends of the levers resting thereon, and the wire guides for the levers secured to the ties, substantially as described.

3. The combination, with the rails, ties, and transverse gate pivoted, as described, of the rollers journaled on said gate, the guides M on the ties, and the levers J J, pivoted at one end and enlarged at the other with the enlarged ends bearing on the said rollers, substantially as shown and described, and for the purpose specified.

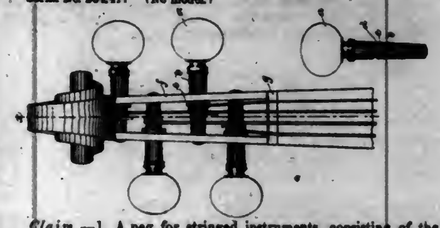
405,815. ELECTRICAL RAILWAY-SIGNAL. JAMES C. WHITE, Sewickley, Pa. Filed Jan. 10, 1889. Serial No. 296,914. (No model.)



Claim.—1. In an electric railway-signal, the combination, with a railroad-track divided into sections insulated from each other, of four contact-rails arranged in pairs in each section and connected together and to the track-rails of the next section, one pair of the contact-rails being opposite the joints of the sections, hangers suspended from the locomotive, contact-wheels journaled in the hangers, a bell and battery on the locomotive, and wires extending from the said hangers to the bell and battery, substantially as herein shown and described.

2. In an electric railway-signal, the combination of the track-rails A A', contact-rails $d d' c c'$, the hangers D, contact-wheels $g f g^3 g^4$, battery F, electric bell G, and the electric connections, substantially as specified.

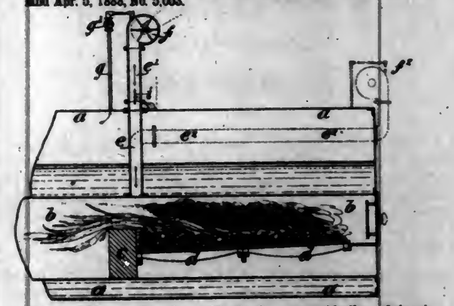
405,816. PEG FOR VIOLINS. MAURICE W. WHITE, Boston, Mass., assignor of one-half to George W. Ross, same place. Filed Sept. 3, 1888. Serial No. 284,411. (No model.)



Claim.—1. A peg for stringed instruments, consisting of the thumb-piece *a* and shank *b*, having the string-receiving hole *c* and the groove *d*, substantially in line with and to partially include the string-receiving hole, substantially as and for the purposes specified.

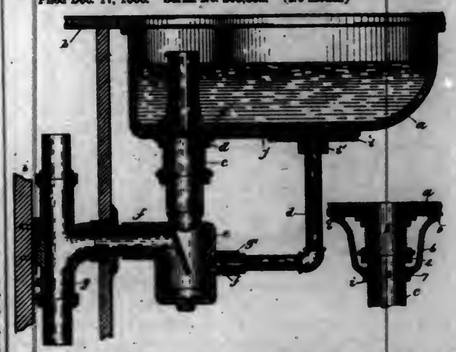
2. A peg for stringed instruments, comprising the thumb-piece *a* and tapering shank *b*, combined with the independent washer *e*, mounted loosely on the shank, one side of which bears against the inner wall of the cheek-piece *f* and the opposite side of which is acted upon by the string, substantially as and for the purposes specified.

405,817. PROMOTING COMBUSTION IN FURNACES. WILLIAM P. WHITE, Manchester, and ROBERT WALLBANK, Bolton-le-Moors, County of Lancaster, assignors to James Henry Heap, Accrington, England. Filed Dec. 20, 1888. Serial No. 294,221. (No model.) Patented in England Apr. 5, 1888, No. 5,053.



Claim.—The combination, with the furnace and boiler, of the air-pipe leading through the boiler and delivering into the furnace-flue, as described, the fan *f* and its casing situated at the outer end of said pipe, and the steam-pipe *g*, extending from the boiler and delivering a steam-jet for actuating said fan, substantially as described.

405,818. SET BOWL OR BASIN. JAMES BARRETT, Boston, Mass. Filed Dec. 17, 1888. Serial No. 293,532. (No model.)



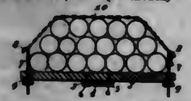
Claim.—1. A set bowl or basin adapted to be applied to and beneath a slab, combined with waste fixtures, substantially such as set forth, and an interposed nut bearing against the bottom of the bowl or basin and adjustable relatively thereto to force the bowl or basin into intimate contact with the slab and hold it in such position, substantially as shown and described.

2. A set bowl or basin adapted to be applied to and beneath a slab, the waste-pipe, and a trap in said waste-pipe, combined with a brace connected to said trap, and a nut arranged on the upper end of said brace and in intimate contact with the bottom of the bowl or basin and adjustable on said brace and relatively to the bowl or basin to force the bowl or basin into contact with the slab and hold it in such position, substantially as shown and described.

3. A set bowl or basin adapted to be applied to and beneath a slab, the waste-pipe, and a trap in said waste-pipe provided with a screw-threaded boss, combined with a brace coupled to said boss, and a nut arranged on the upper end of said brace and in intimate contact with the bottom of the bowl or basin and adjustable on said brace and relatively to the bowl or basin to force the bowl or basin into contact with the slab and hold it in such position, substantially as shown and described.

4. A set bowl or basin adapted to be applied to and beneath a slab and provided with a flat seat *j* on its under side, combined with a waste-pipe, a trap therein, a brace connected to the said trap, and a nut arranged upon said brace and adjustable thereupon and fitted to or against the said flat seat of the bowl or basin to force the said bowl or basin into intimate contact with the superposed slab, substantially as shown and described.

405,819. WAGON-GEAR. GEORGE S. BILLINGS, Lyons, Colo. Filed July 17, 1888. Serial No. 280,227. (No model.)



Claim.—1. The combination, with the running-gear of a wagon and the ordinary bolsters thereof, of an additional or intermediate or binding bolster provided with hooked and threaded standards, substantially as set forth.

2. An additional or intermediate or binding bolster for use with a wagon-gear, consisting of a bolster or bar 5 and standards 7 7, each of the latter having a hook 8, a threaded portion, and a nut 9, substantially as set forth.

405,820. CASH-FARE TICKET. ALLEN I. BLANCHARD, Chicago, Ill. Filed June 18, 1887. Serial No. 241,701. (No model.)

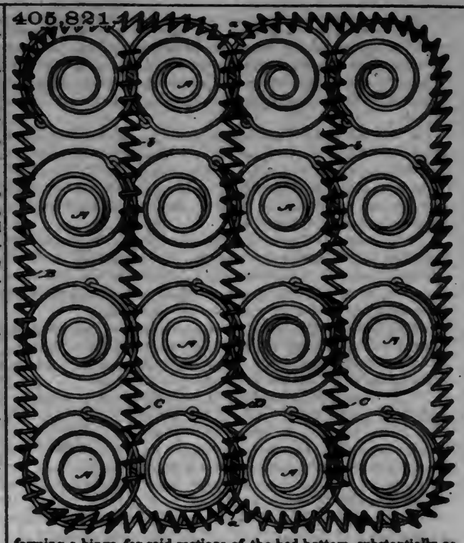


Claim.—A cash-fare ticket provided with a division-line of perforations, having on one side of said line words or characters indicating dollars, dimes, and cents, and on the other side of said line a complete set of numerals opposite each of said designations, whereby, when any of said figures are punched out and the ticket separated on the perforated line, the punched figures will adhere to one part and all of the rest of the figures to the other part of the ticket, substantially as and for the purpose set forth.

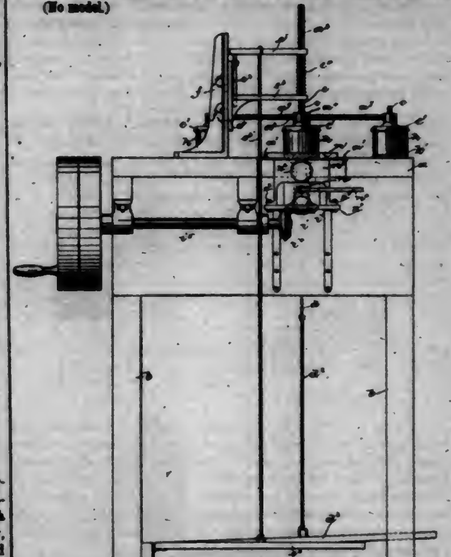
405,821. BED-SPRING. ELLIOTT M. ROSSELL and JOHN S. LARIMER, Corry, Pa. Filed Jan. 10, 1888. Serial No. 260,978. (No model.)

Claim.—1. A bed-bottom consisting of helical or other springs, a spiral marginal wire wrapped loosely around the outer portion of the top and bottom whirls of each spring, intermediate spiral parallel wires C, uniting the adjacent portions of the top and bottom whirls, and a similar spiral wire on but one side of the bed-bottom, serving the twofold function of connecting the sections of the springs and forming a hinge for said sections of the bed-bottom, substantially as specified.

2. A spring bed-bottom formed in sections and having the top whirls of springs at the adjacent ends of the sections united by a spiral wire wound loosely around them, so as to allow the sections to fold and yet afford a yielding connection, substantially as specified.



405,822. MACHINE FOR SOLDERING END PIECES ON CANS. JAMES A. BOOTH, Boston, Mass. Filed Dec. 10, 1888. Serial No. 293,033. (No model.)



Claim.—1. In a machine for securing end pieces to cans, the recessed can-holder to receive and hold one end of the can-body, combined with the live and dead spindles separated and independent of each other, to receive between them the said can-holder and the can held by it, with the bottom of the can resting on the top of said live-spindle, substantially as described.

2. In a machine for securing end pieces to cans, the recessed can-holder and the bearing in which it freely turns, combined with the live and dead spindles, one of which is movable in the direction of its length, whereby the said can-holder and can held by it may be received between the spindles and rotated, substantially as described.

3. In a machine for securing end pieces to cans, the recessed rotatable independent and removable can-holder, combined with the live-spindle, the normally-raised dead-spindle and its spring, the arm carrying it, and means, substantially as described, for lowering said dead-spindle against the action of said spring, substantially as described.

4. In a machine for securing end pieces to cans, the independent rotatable vertically-movable can-holder and the live-spindle, combined with the dead-spindle, the arm carrying it, and the vertically-movable frame for said dead-spindle, whereby said dead-spindle may be pressed upon the said can-holder to retain the can between it and the live-spindle, substantially as described.

5. In a machine for securing end pieces to cans, the independent removable and rotatable can-holder and the dead-spindle, combined with the live-spindle, independent thereof and having the disk *i* upon its upper end, in which the can-body is placed, and the rotatable shaft for revolving said live-spindle, substantially as described.

6. In a machine for securing end pieces to cans, the independent recessed and rotatable can-holder and live and dead spindles, combined with the heated solder-plate *n*, placed adjacent to and partially surrounding one of the spindles, substantially as described.

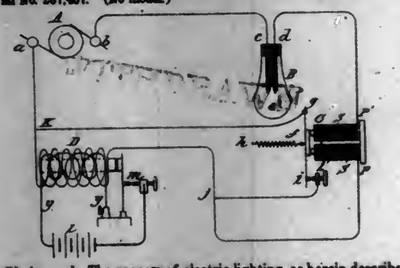
7. In a machine for securing end pieces to cans, the recessed can-holder and spindles by which it and the can held by it are rotated when placed between the same, combined with the solder-plate *n*, having the semicircular can-receiving recess, the annular groove therein, and the solder-delivery recess leading from the top of the plate *n* to the can-receiving recess just above the annular groove therein, substantially as described.

8. In a machine for securing end pieces to cans, the horizontally-movable block a^3, the upright rod, the hub a^4 on said rod, and a plurality of arms radiating therefrom, combined with a rotatable can-holder carried by each arm, and the plate *n*, having a curved recess therein, substantially as described.

9. In a machine for securing end pieces to cans, the block a^3, the rod a^2 and hub a^4 thereon, and a plurality of arms radiating from said hub, combined with recessed disks *c'*, having shanks *c*, which serve as can-holders, and the plate *n*, having a curved recess therein, substantially as described.

10. In a machine for securing end pieces to cans, the horizontally-movable block a^3, rod a^2, hub a^4 thereon, and a plurality of arms radiating from said hub, combined with the can-holders carried by said arms and the spindles between which the can-holders successively enter, and the plate *n*, having a curved recess concentric with and partly surrounding one of said spindles, substantially as described.

405,828. ELECTRIC CANDLE. TURNER D. BOTTOME, Hoosick, N. Y., assignor to John B. Tibbits, same place. Filed Oct. 6, 1888. Serial No. 287,407. (No model.)

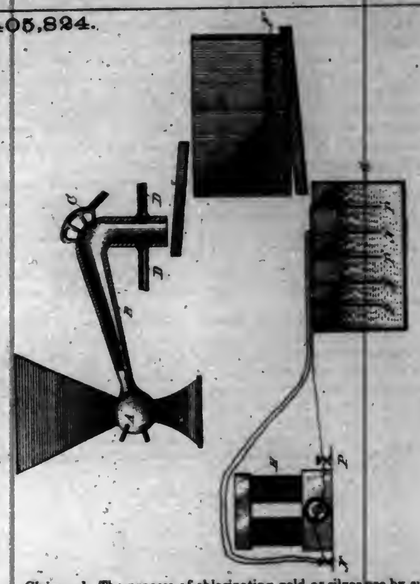


Claim.—1. The process of electric lighting, as herein described, which consists in electrically connecting the terminals of an electric candle with two sources of electric energy, one of high electro-motive force, the other of low electro-motive force, the latter comprising the working-circuit, whereby the resistance caused by the separation of the carbons or electrodes is overcome by the first-named current, thus forming a path or circuit by which the low electro-motive-force current can follow and produce the light.

2. The process of electric lighting, consisting in subjecting the terminals of an electric candle to the action of a high electro-motive-force current while in circuit with a low electro-motive-force current, which follows the path formed by the first-named current, it having caused the resistance to be overcome, as herein described.

3. The process of forming an electric arc, which consists in causing a low-voltage, large-quantity current to pass between the terminals of an electric candle by first causing the resistance between such terminals to be lowered by the sparking action of a high electro-motive-force current, substantially as described.

405,824. PROCESS OF CHLORIDIZING GOLD ORES. TURNER D. BOTTOME, Hoosick, N. Y., assignor to John B. Tibbits, same place. Filed Dec. 28, 1888. Serial No. 294,853. (No specimens.)



Claim.—1. The process of chlorinating gold or silver ore by submitting the comminuted and dissociated ore to the action of dampened chlorine gas, dissolving the chlorides formed thereby in a solution of sodium thiosulphate, and reducing the metallic thiosulphates by electrolysis, substantially as described.

2. The process of recovering precious metals from their ores, consisting in pulverizing the ores to an impalpable powder with superheated steam, treating the warm disseminated floating ore with sprays of dampened chlorine, wetting the chlorinated ore with a solution of a thiosulphate, and subjecting the filtered liquor to the action of electrolysis, substantially as described.

3. The process of effecting a thorough and continuous chlorination of gold and silver bearing ores by submitting the finely-pulverized floating disseminated ore to the action of dampened chlorine gas, substantially for the purpose as herein described.

4. The process of treating ores of the precious metals, consisting in pulverizing the ores to an impalpable powder by superheated steam, forcing the powdered ore through a spacious chamber while subjecting the disseminated ore to the action of dampened chlorine, which is forced into the said chamber by means of atomizers, dissolving out the metallic chlorides formed thereby by submitting the powdered chlorinated ore to a bath of a strong thiosulphate-liquor, filtering the resulting metallic thiosulphate solution and subjecting it to electrolysis, substantially as herein described.

405,825. APPLE PARER, CORER, AND SLICER. WILLIAM H BOUTELL, Antrim, N. H., assignor to Charles W. Kalmes, same place. Filed Mar. 31, 1888. Serial No. 269,058. (Model.)

Claim.—1. The combination of the rod I with the paring device, lever H, spring H", arm *f*, rod F", supported in a suitable bracket, and adjustable rest 7, adapted to be moved vertically on said rod, substantially as and for the purpose described.

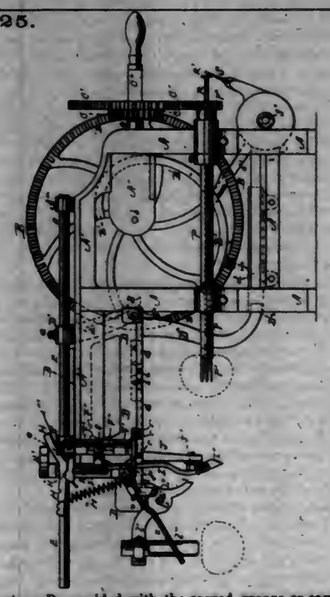
2. The combination of the rod I with the paring device, lever H, pivotally supported by a suitable bracket, said bracket being rigidly secured to a sliding carriage, and the bar K, provided with the horizontal projection K', secured to the frame of the machine, substantially as and for the purpose set forth.

3. The combination of the frame A with the rack-bar G, having teeth 6, and the carriage D, provided with the bracket F F' and rod F", to which is rigidly secured the bifurcated arm *f* and slotted arm *f'*, said slotted arm being provided with the sprockets 5, the lever H, spring H", rod I, and the paring device, substantially as and for the purpose described.

4. The combination, with the frame or stationary portion of the machine, to which is rigidly secured the stud or pin N, of the carriage D, provided with the bracket 9, and the support L, pivotally secured to said bracket for engagement with said stud, the arms *l l*, adapted to slide under the rack G, and the arm *l'*, to which is secured the corer, substantially as and for the purpose described.

5. The combination of the frame A A', the gear-wheel B, provided with the stud B", the cam B', rigid with said gear-wheel, the

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sliding carriage D, provided with the curved groove or cam-groove *d'*, the leg D", and the stud 2, rigidly secured to said carriage, substantially as and for the purpose set forth.

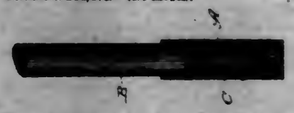
405,826. ROAD-CART. JOHN W. BROWN, Rock Falls, Ill. Filed Mar. 30, 1888. Renewed Apr. 19, 1889. Serial No. 307,571. (No model.)



Claim.—1. The combination of the axle B, shaft D, rigidly seated thereon, body A, torsional springs E, box 5, and flexible link 7, substantially as shown, and for the purpose described.

2. In a two-wheeled vehicle, the springs E, composed of three parts 1, 2, and 3, the part 2 being substantially perpendicular to the parts 1 and 3 and integral therewith, the parts 1 being rigidly attached to the bottom of the box A, the part 2 being journaled in the box 5, attached to the bottom of said box A, and the downward and outwardly extending part 3 furnished at its extremities with hook 6, adapted to be engaged and supported by link 7, suitably suspended from the shaft D or other suitable part of the frame, substantially as shown, and for the purpose described.

405,827. PROCESS OF TEMPERING TOOLS. GUSTUS A. BOTTOM, Austin, assignor of one-half to M. R. Campbell, Moreland, Ill. Filed July 30, 1888. Serial No. 281,471. (No model.)

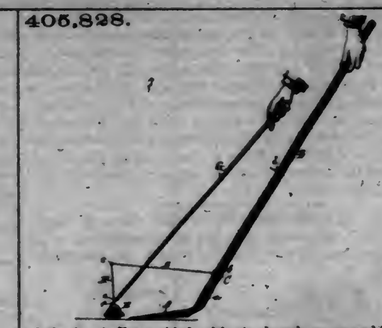


Claim.—The process of tempering tools, which consists in covering the working parts thereof, then heating and finally cooling the same while still covered, so as to prevent direct contact with cooling fluid, substantially as described.

405,828. CARPET-SWEEPER. EDWARD CARD, Pawtucket, R. I. Filed July 5, 1888. Serial No. 278,066. (No model.)

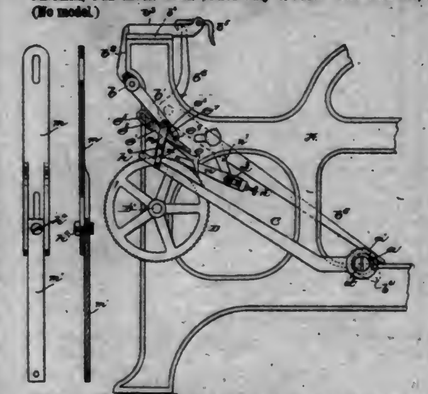
Claim.—The combination, with the dust-pan A and its handle B,

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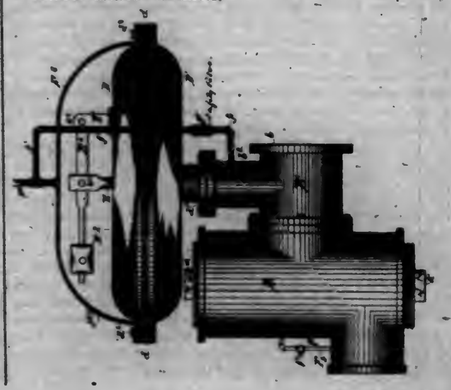
of the brush E, provided with the loosely-connected handle G and with the arms F F and the pivoted links D D, which serve to connect the arms F F with the handle B for operation, substantially as described.

405,829. TAKE-UP MECHANISM FOR LOOMS. DANIEL CUSHMAN, Fall River, Mass. Filed July 3, 1887. Serial No. 243,736. (No model.)



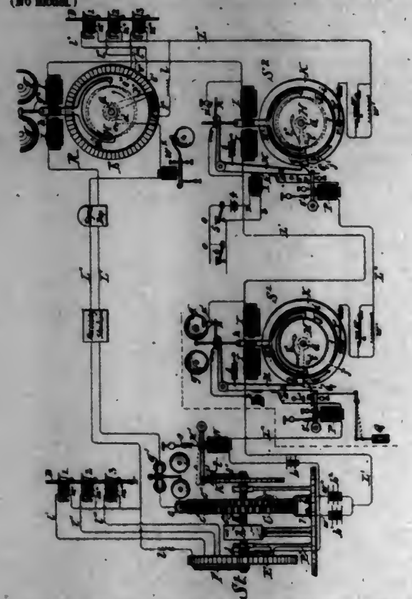
Claim.—The ratchet-wheel, a pawl to move it, means to move the pawl, a detent consisting of the parts *e e'*, the part *e* being slotted and pivoted to the loom side, the two parts being adjustably connected by the screw e^3, a disengaging device for the pawl and detent, the two-part link *m m'*, adjustable by the screw A^4, to connect the pawl with the said disengaging device, the pawl and detent being moved simultaneously and automatically from engagement with the said ratchet-wheel, combined with a measuring-pawl, the said measuring-pawl being provided with an adjusting device n^4 to determine the extent of retrograde or backward movement of the ratchet-wheel, substantially as described.

405,830. AUTOMATIC CUT-OFF AND GAS-REGULATOR. CHAS. A. DAILY and HARRY K. RICHARDSON, Pittsburg, Pa. Filed Oct. 8, 1888. Serial No. 287,577. (No model.)



Claim.—In an automatic pressure-regulator and cut-off, the combination of the isolated high and low pressure chambers, a vertically-movable valve-stem operating in the low-pressure chamber and having the valves c c^2, adapted to open and close the ports between said chambers, an outlet-chamber communicating with the low-pressure chamber, a diaphragm-chamber communicating with the exit-chamber, a diaphragm, connections intermediate of the valve-rod and diaphragm, a hood F^2, fixed to the diaphragm-chamber, an escape-pipe F', leading from said hood, and a pipe f, communicating with the outlet-chamber and the escape-pipe and having an automatic valve F, substantially as described.

405,831. **ELECTRIC SIGNALING SYSTEM.** MARK W. DEWEY, Syracuse, N. Y., assignor, by direct and mesne assignments, to the Dewey Corporation, same place. Filed Mar. 15, 1889. Serial No. 303,401. (No model.)



Claim.—1. An electric signal-transmitting instrument composed of a rotatable shaft, a wheel mounted on said shaft and having circuit making and breaking points in its periphery, an electric contact bearing on said periphery, a stop-disk connected to the aforesaid shaft, and a detent adapted to engage and release said stop-disk, all in one and the same circuit, and a motor in another circuit rotating the aforesaid wheel and disk, as set forth.

2. In an electric signaling system, the combination of a plurality of transmitting-stations in circuit, each adapted to transmit a predetermined signal, one or more receiving-stations also in circuit, a suitable electric generator, a pulsator in said circuit therewith, a motor operating said pulsator, a motor at a receiving-station propelled by the pulsating currents in the circuit, an annulus of contacts, a trailing finger in another circuit rotated by the latter motor and traversing successively said contacts, a suitable annunciator at the receiving-station in circuit and having independent magnetic devices in branches of the circuit connected with the contacts on the annulus, a motor at the transmitting-station operated by the pulsating currents, and means at each of the transmitting-stations for sending an electric impulse at a predetermined moment operated by said motor.

3. In an electric signaling system, the combination of a plurality of transmitting-stations and one or more receiving-stations in a line-circuit, a suitable source of electricity and pulsator therefor in said circuit, a motor operating said pulsator, a motor at the receiving-station operated by the pulsating current, an annulus of contacts at said station, a trailing finger in circuit rotated by the latter motor and traversing successively said contacts, a suitable annunciator at the receiving-station having independent electro-magnetic devices in branches of a circuit connected with the contacts on the said annulus, and a magnet in the latter circuit to operate the detent for releasing and stopping the said pulsator and controlled by the circuit makers and breakers at the transmitting-stations, and means at each of the transmitting-stations for transmitting an electric impulse at a predetermined moment to actuate the said annunciator.

4. In an electric signaling system, the combination of a plurality of transmitting-stations and a plurality of receiving-stations in a line-circuit, a suitable source of electricity, a pulsator therefor at a station in said circuit, a motor operating said pulsator, a motor at each of the receiving-stations actuated synchronously by the pulsating current, an annulus of insulated contacts at each of said stations, and trailing fingers in circuit traversing successively the said contacts and rotated by the motors thereat, a suitable annunciator at each receiving-station operated by electro-magnets in branches of a circuit connected with the contacts on the annulus, a magnet in the circuit to operate a detent for releasing and stopping the said pulsator and controlled at the respective transmitting-stations, and means at each of the latter stations for transmitting an electric impulse at a predetermined time during the movement of the trailing fingers to actuate a particular magnet of the annunciator.

5. An electric signaling system consisting of two line-circuits, a pulsator in the first of said circuits, a motor operating the pulsator, circuit-controlling wheels at the respective transmitting-stations in the second of said circuits, electric contacts in said second circuit bearing on the aforesaid wheels, an annulus of electric contacts at the receiving-station in the same circuit, a trailing finger also in said circuit traversing the annulus, an annunciator operated by magnets in branches of said circuit connected with the respective contacts of the annulus, motors at the respective transmitting-stations in the pulsator-circuit and operating the circuit-controlling wheels at said stations, a motor at the receiving-station in the pulsator-circuit and operating the trailing finger, and means for locking and unlocking the circuit-controlling wheels at the transmitting-stations.

6. In an electric signaling system, the combination of two line-circuits, a pulsator in the first of said circuits, a motor operating the pulsator, circuit-controlling wheels at the respective transmitting-stations and in the second of said circuits, electric contacts in the latter circuit bearing on said wheels, stop-disks rotating, respectively, with said wheels and in circuit therewith, detents adapted to engage and release the stop-disks, motors in the first circuit operating the aforesaid stop-disks and circuit-controlling wheels, shunts around said motors controlled by the aforesaid detents, an annulus of electric contacts at the receiving-station in the second circuit, a metallic trailing finger traversing the contacts of the annulus and in circuit therewith, an annunciator operated by magnets in branches of said circuit connected with the respective contacts of the annulus, and a motor in the first circuit operating the trailing finger, substantially as set forth.

7. In an electric signaling system, the combination of two line-circuits, a pulsator in the first circuit, a motor operating said pulsator, circuit-controlling wheels at the respective transmitting-stations and in the second circuit, electric contacts in the latter circuit bearing on said wheels, stop-disks rotating, respectively, with said wheels and in circuit therewith, detents adapted to engage and release the stop-disks, motors in the first circuit at the transmitting-stations for operating the stop-disks and circuit-controlling wheels, levers adapted to lock the detents in their engagement with the stop-disks, springs drawing the levers into their locking positions, a stop-disk attached to the pulsator-shaft, a detent adapted to engage the latter stop-disk, a spring holding said detent out of engagement, and magnets in the second circuit, and when energized moving the latter detent and aforesaid levers in opposition to their respective springs, substantially as set forth and shown.

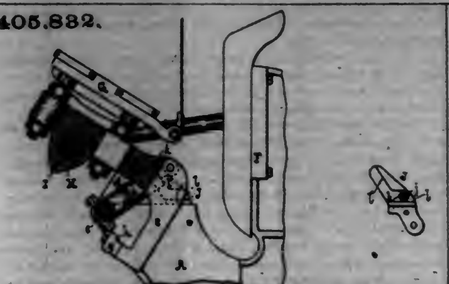
8. In combination with rotary circuit making and breaking wheel and stop-disk rotating therewith, and the detent adapted to engage and release said stop-disk, a lever adapted to lock the detent in its engagement, a spring holding the detent in its locking position, an electro-magnet in circuit adapted when energized to throw the lever out of its locking position, and a dash-pot connected with the lever to retard its action under the influence of the magnet, as set forth.

9. In combination with rotary stop-disk and circuit making and breaking wheel rotating with said disk and in one and the same circuit, a motor in another circuit operating said disk and wheel, and a detent adapted to engage and release the stop-disk and in circuit with the latter, an armature attached to the detent, an electro-magnet in a local electric circuit opposed to said armature, and operating-keys in said local circuit, as and for the purpose set forth.

405,832. **PRINTING-PRESS.** JOHN P. W. DORMAN, Baltimore, Md. Filed Oct. 20, 1887. Serial No. 253,696. (No model.)

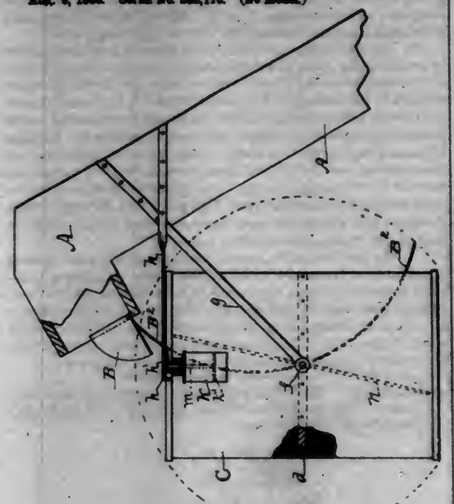
Claim.—1. In a printing-press, the frame thereof having lugs provided on their inner sides with grooves and inclined straight faces leading therefrom, as shown, combined with the bridge having rockers which rest on the said frame, and pins carrying rollers which rest in the said lugs, and, as the bridge carrying the platen is drawn toward the bed of the press, follow the said inclined straight faces to the said grooves, which they enter, and thereby bring the bridge and platen into a vertical position and hold them in said position while the impression is being made, substantially as and for the purpose specified.

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2. The bridge H, having the extensions c, provided with the removable cap-pieces g, having the lips h, substantially as and for the purpose specified.

405,833. **GRAIN-METER.** LEE ELLIOTT, Stuart, Iowa. Filed Aug. 6, 1888. Serial No. 282,116. (No model.)

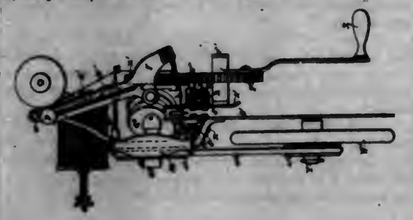


Claim.—1. The pockets K, fixed to the measure C, the movable bottoms k', having fixed rods m, extended through fixed guides m', and the springs m'', in combination with the fixed bar A and spring-latch k', substantially as shown and described, for the purposes stated.

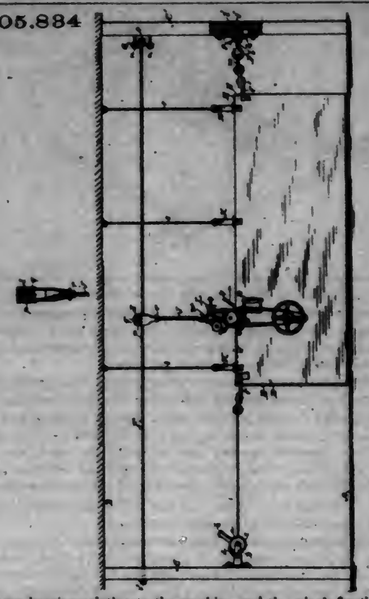
2. The open-ended measure C, having a fixed partition or diaphragm d, a fixed shaft f, fixed pockets K, and fixed guides m', the rods m, having fixed bottoms k', the springs m'', the arms n and g, and the conveyer A, having a hinged chute B, provided with a curved arm B^2, arranged and combined to operate in the manner set forth, for the purposes stated.

405,834. **APPARATUS FOR SEWING INGRAIN CARPETS.** HENRY S. FLINT, Providence, R. I. Filed Mar. 9, 1887. Serial No. 230,300. (No model.)

Claim.—1. In combination, the elevated track, the pendulous support adapted for movement along the elevated track, the hand-operated carpet-sewing machine connected to the pendulous support and having an intermittent feed mechanism adapted to act upon the carpet, the pendulous clamps for supporting the edge of the carpet in



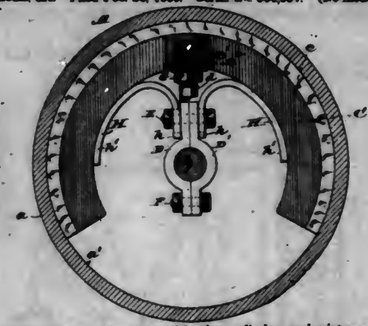
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proper bearing relation to the machine, and the winch for tightening the juxtaposed edges of the carpet, substantially as described.

2. The combination of an elevated track, the depending support adapted to move along said track, the manually-operated carpet-sewing machine carried by the depending support and having feed mechanism adapted to act upon the carpet, the swinging clamps for supporting the edge of the carpet in suitable relation to the sewing-machine, and means for tightening the contiguous edges of the carpet, substantially as described.

405,835. **LUBRICATOR FOR CYLINDERS.** JAMES G. GRAGEY, St. Louis, Mo. Filed Feb. 20, 1888. Serial No. 300,567. (No model.)



Claim.—In combination with the cylinder and piston-rod, the herein-described lubricating device, consisting of the lubricator, the clamp; and the arms, said clamp having a threaded extension and nut, said arms being slotted, and said lubricator having a perforation to receive said extension, as set forth.

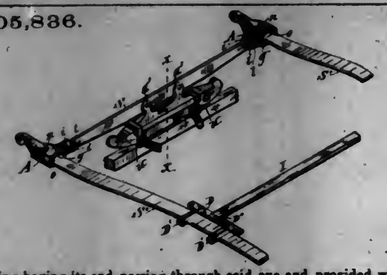
405,836. **SPRING-VEHICLE.** JOHN R. HADDEN and DAVID HARRY, Tyberg, N. Y. Filed Apr. 4, 1888. Serial No. 305,915. (No model.)

Claim.—1. The combination of the cross-spring, placed edgewise vertically and provided with eyes transversely through its ends, and the side springs having their ends passing through said eyes and secured therein, as set forth.

2. The combination of the cross-spring, placed edgewise vertically and provided with eyes transversely through its ends, the side springs having their ends passing through said eyes, shoes embracing the ends of said springs, and bolts or rivets passing vertically through the shoes and through the ends of the side springs protruding through the cross-spring, substantially as described and shown.

3. The combination of the cross-spring, placed edgewise vertically and formed with an eye transversely through its end, the side

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spring having its end passing through said eye and provided with a vertical perforation in the protruding end of the side spring, a shoe embracing the ends of the two springs, a bolt or rivet passing vertically through the shoe and aforesaid perforation of the side spring, and a shoulder on the side spring abutting against the receiving end of the shoe, substantially as described and shown.

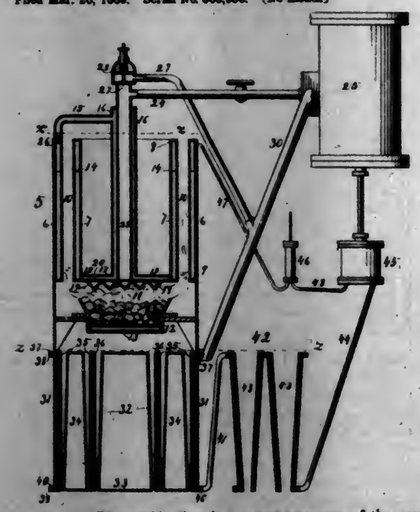
4. In combination with the cross-spring, formed with an eye transversely through its end, and the side spring having its end passing through the said eye and provided with a vertical perforation in its protruding end, a shoe embracing said ends of the two springs and formed with laterally-projecting ears embracing the cross-spring, a bolt or rivet passing vertically through the shoe and aforesaid perforation of the side spring, and a bolt or rivet passing transversely through the aforesaid ears of the shoe and intervening portion of the cross-spring, substantially as described and shown.

5. The combination of the saddle *a*, formed with the horns *a' a'*, slotted in a direction lengthwise of the saddle and perforated transversely, and the cross-spring S, placed edgewise in the slots of the said horns and secured thereto by bolts or rivets passing through the perforations of the horns and through the spring, substantially as described and shown.

6. In combination with the head-block and the cross-spring, disposed edgewise vertically over the head-block, the saddle *a*, riding on the head-block and provided with the downward-projecting abutting lip *p*, and formed with the horns *a' a'*, slotted to receive the central portion of said cross-spring, and bolts or rivets passing through said horns and spring, substantially as described and shown.

7. In combination with the axle, head-block, and king-bolt having its fastening-nut on top of the head-block, the saddle *a*, rigidly secured to the head-block and provided with the square or polygonal socket *t* for holding the nut of the king-bolt, substantially as described and shown.

405,837. STEAM-GENERATOR. ALFRED HASBROUCK, Ithaca, N. Y. Filed Mar. 20, 1889. Serial No. 303,956. (No model.)



Claim.—1. The combination, in a steam-generator, of the annular vertical boiler 5, provided with the flues 10, the steam-pipes 15 and 16, and the check-valve 26 in the steam-pipe, the furnace 11, the superheater 19, located directly over the furnace, and the annular steam-compartment 17, located on the top of the superheater and communicating between the latter and the central pipe 23, substantially as shown and described.

2. The combination of an annular steam-boiler, a furnace located beneath its central opening, and a superheater located directly over the furnace and connected with the boiler by a pipe or pipes, and provided with a discharge-pipe, substantially as shown and described.

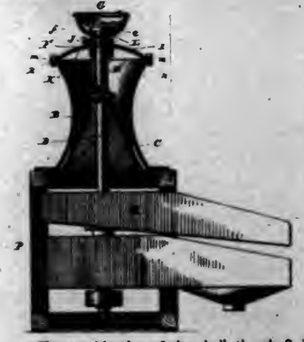
3. The combination of a vertical annular steam-boiler provided with flues passing through its annular portion, a furnace located beneath its central opening and communicating remotely with the said flues, a superheater located directly over the said furnace and beneath the said central opening of the boiler, a vertical pipe passing centrally down the said opening, and a steam-pipe between the boiler and the said vertical pipe, a check-valve in the last-named pipe, and another vertical pipe passing from the center of the superheater through the first-named vertical pipe, and a steam-pipe adapted to connect the latter vertical pipe with an engine, substantially as shown and described.

4. The combination of a vertical steam-boiler, a furnace below it, a steam-condenser directly below the furnace and provided with passages for air through it to the furnace, a steam-pipe between the boiler and the superheater, a steam-pipe adapted to lead from the superheater to an engine-cylinder, a safety-valve in the last-named conductor, and a steam-pipe from the outlet of the said safety-valve to the said condenser, substantially as shown and described.

5. The combination of a vertical steam-boiler, a furnace beneath it, a superheater directly over the furnace, an engine-cylinder, steam-conductors between the boiler and superheater, and between the superheater and the steam-ports of the said cylinder, a condenser beneath the furnace having openings or flues through which the draft to the furnace is admitted, an exhaust-pump and a force-pump, and pipes connecting the exhaust-ports of the cylinder and the condenser between the condenser and the exhaust-pump, between the two pumps, and between the force-pump and the boiler, whereby suction may be exerted on the exhaust-ports of the cylinder through the intermediate condenser, and whereby the water condensed from the exhaust-steam may be continually returned to the boiler.

6. The combination, in a steam-generator, of a furnace, a series of coils of pipe located one within another above the furnace, a partition across each pipe, a series of apertures communicating between adjacent pipes near the said partition, whereby a continuous passage for steam is obtained from the circumference to the center of the series of pipes, and an inlet near the circumference thereof and an outlet near the center, substantially as shown and described.

405,838. CORN-SHELLER. CHARLES L. HEISLER, Dunkirk, N. Y., assignor of one-half to Edward Nichols, same place. Filed Jan. 21, 1889. Serial No. 297,027. (No model.)



Claim.—1. The combination of the shell, the shaft in two sections, and the cone turning with and sliding on the lower section and adjustable vertically with the upper section, substantially as set forth.

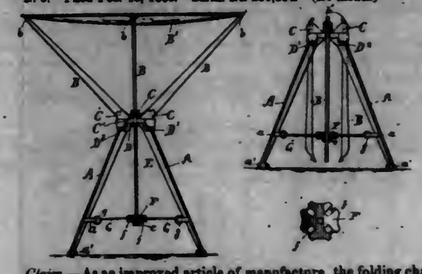
2. The combination, with the shell and the cone, of the shaft in two sections, the upper section suspending the cone, and a stationary adjustable bearing for the upper section of the shaft in which it turns, substantially as set forth.

3. The combination of the shell, the shaft in two sections, the cone turning with and sliding on the lower section and adjustable with the upper section, the yoke K, and an adjusting-screw for the upper section of the shaft mounted in the said yoke, substantially as set forth.

4. The combination, with the cone and the shell, of the shaft in two sections, the upper section E being headed and supporting the cone, the stationary adjustable bearing provided with a sleeve in which the section E of the shaft turns, and above the upper face of which the head of the said section bears, substantially as set forth.

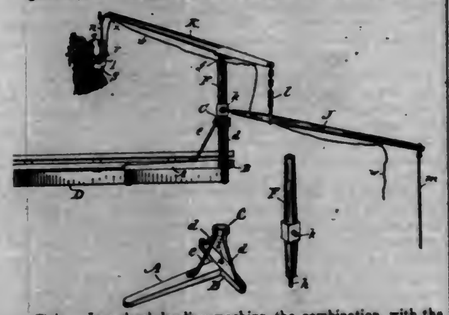
5. The combination of the driving-shaft, the shelling-cone mounted thereon and provided with a socket or aperture at its upper end, the walls of which socket or aperture are cut, a shaft fitting into the said socket or aperture, and a clamping-bolt for securing the shaft in the socket or aperture, substantially as set forth.

405,839. FOLDING CHAIR. KELLOGG T. HUELBERT, Lakewood, N. J. Filed Feb. 13, 1888. Serial No. 299,804. (No model.)



Claim.—As an improved article of manufacture, the folding chair herein described, consisting of the octagonal central plate C', whose upper face has four slotted blocks C, provided with cross-bars *c c' c²*, and from whose lower surface project four blocks D' in different vertical directions from the blocks C, provided with perforations D^2, the legs A, whose upper ends abut in said plate C', the rods G, maintaining the legs in position, the rods E, wherefrom said rods radiate, the annulus F, whereto said rods are attached, the rods B, whose lower termini abut in the blocks C, and the seat B', the whole co-operating as herein shown and described.

405,840. SHOCK-LOADING MACHINE. WILLIAM J. JACOBS, Bargersville, Ind. Filed Feb. 4, 1889. Serial No. 298,662. (No model.)

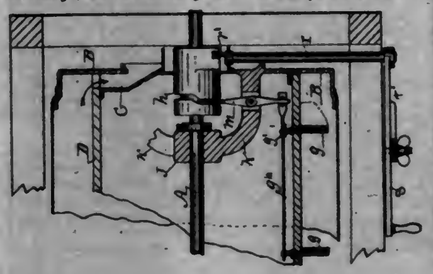


Claim.—In a shock-loading machine, the combination, with the mast and the lifting-levers mounted thereon, of the trip-hook consisting of the bar suspended from the free end of the lifting-lever, the disk pivoted to the bar and having notches *t* and *u*, the pawl pivoted to the bar and arranged to engage one of said notches, and the trip-cord attached to said pawl, all arranged to co-operate substantially as and for the purpose specified.

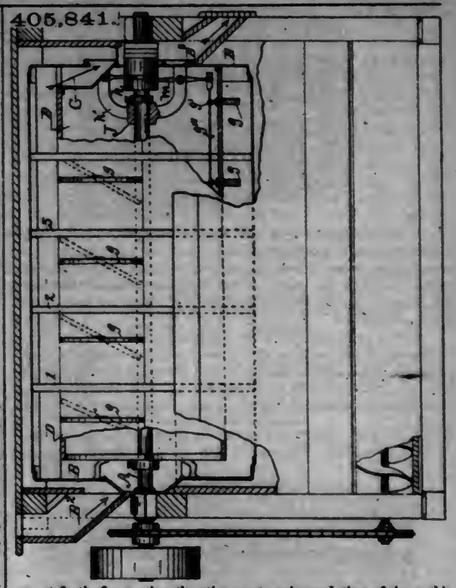
405,841. ADJUSTABLE AUTOMATIC CONVEYER AND BOLTING-REEL. GEORGE I. JARRETT, Des Moines, Iowa. Filed Oct. 30, 1888. Serial No. 289,530. (No model.)

Claim.—1. The stirrers *g*, having arms on the ends of their shafts, in combination with the cylinder D and reciprocating rods *g''*, for the purpose stated.

2. The combination of the grooved cam *h*, the shaft A, the levers *m*, the rods *g''*, and the stirrers *g*, and a reel to operate in the manner set forth, for the purposes stated.



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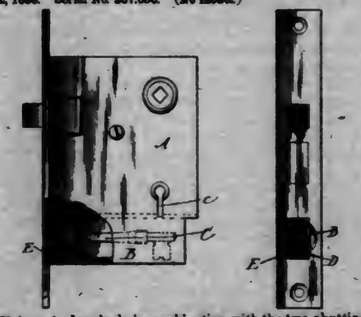


ner set forth, for moving the stirrers at each revolution of the reel in the manner set forth, for the purposes stated.

3. The shaft *r*, having a crank-pin *r'*, in combination with the grooved cam *h*, for the purpose of operating the cam on the shaft A in the manner set forth, for the purposes stated.

4. A reel having integral open-ended pockets on one of its ends, a cylinder fixed in the reel and provided with series of pivoted deflectors *g* on its surface, arms on the ends of the deflector-shafts, and reciprocating rods connected with said arms and with a cam-wheel on the reel-shaft, arranged and combined with a case to operate in the manner set forth, for the purposes stated

405,842. LOCK. THOMAS R. JEFFERY, Ravenswood, Ill. Filed Mar. 12, 1888. Serial No. 267,050. (No model.)



Claim.—1. In a lock, in combination with the two abutting parts, which are secured together by it, the lock-case having a key-receptacle formed within it, such receptacle having its entrance at the plane of the abutting edges of the locked parts, substantially as set forth.

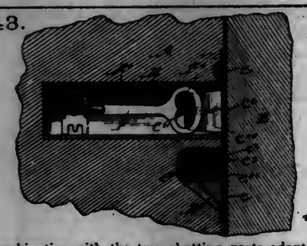
2 In combination with the case containing a key-receptacle, a spring located in such receptacle and operating upon the key to retain it therein, substantially as set forth.

405,843. KEY-RECEPTACLE. THOMAS R. JEFFERY, Ravenswood, Ill. Filed Nov. 23, 1888. Serial No. 292,084. (No model.)

Claim.—1. In combination with the two abutting parts adapted to be locked together, a key-receptacle in one of said parts having its entrance at the plane of their abutting edges, and a cover adapted to close said entrance, substantially as set forth.

2. In combination with the two abutting parts adapted to be locked together, a key-receptacle in one of said parts having its entrance at the plane of their abutting edges, and a spring-actuated cover pivoted to such part and adapted to close said entrance, substantially as set forth.

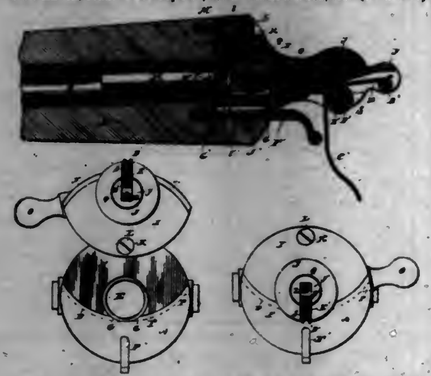
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3. In combination with the two abutting parts adapted to be locked together, a key-receptacle in one of said parts having its entrance at the plane of their abutting edges, and a key-withdrawing device jointed to the abutting part which contains said receptacle, and entering said receptacle and adapted to engage the key, substantially as set forth.

4. In a key-receptacle, in combination with a face-plate having an opening which serves as the entrance to said receptacle, a lever pivoted to the face-plate and adapted to close said opening, and having a projection adapted to engage the key and enter the opening when the lever is rocked toward the plate, substantially as set forth.

405,844. BREECH-LOADING ORDNANCE. JOSEPH P. LAVIGNE, New Haven, Conn. Filed Sept. 10, 1888. Serial No. 285,020. (No model.)



Claim.—1. A cannon having a transverse mortise in its breech, and a breech-piece combining a breech-block and a breech-knob and pivoted in such mortise on a pivot located in the vertical line through the axis of the bore of the gun, whereby the said breech-piece is virtually balanced in the mortise, substantially as set forth.

2. A cannon having in its breech a transverse mortise provided with a low outer wall and with a curved floor extending at its lowest point just below the bore of the gun and rising at its ends, and a breech-piece combining the breech-piece and breech-knob and pivoted in such mortise in the vertical line through the axis of the bore of the gun, the block having its lower edge cut away to form a wide shoulder adapted to fit between such low wall and the inner wall of the mortise, substantially as set forth.

3. A cannon having in its breech a transverse mortise provided with a low outer wall and with a curved floor extending at its lowest point just below the bore of the gun and rising at its ends, and a breech-piece combining the breech-block and breech-knob and pivoted in such mortise in the vertical line through the axis of the bore of the gun, the block having its lower edge cut away to form a wide shoulder to fit between such low wall and the inner wall of the mortise, and the adjacent faces of the said low wall and the shoulder being undercut to form a dovetail joint, substantially as set forth.

4. A cannon having a breech-block and a breech-knob and a firing-hammer combined with such block and knob and adapted to be operated directly in its effective stroke, substantially as set forth.

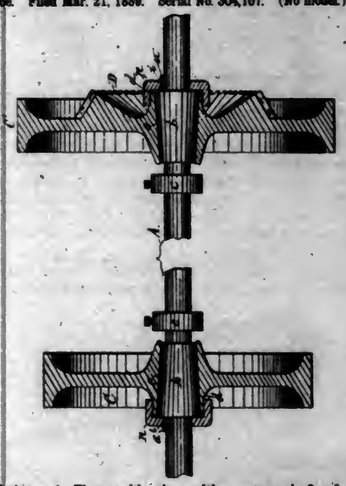
5. A cannon having a breech-block and a breech-knob, a firing-hammer mounted in such block and knob so as to move endwise therein, a lanyard attached to the rear end of the hammer and passed over a point of purchase located in front of the point of its attachment to the hammer, and a rebounding spring located in front of the hammer, the lanyard constituting the sole means of giving the hammer its effective stroke, substantially as set forth.

6. A cannon having a breech-piece combining a breech-block and a breech-knob provided with a longitudinal chamber, and with a slot located in the central lower edge of the knob and intersecting such chamber, a firing-hammer located in such chamber and having its lower face slotted, an anti-friction roll located in the slot in the knob and extending upward into the slot in the hammer, and a lanyard secured to the rear end of the hammer and passing forward over the said roll, substantially as set forth.

7. A cannon having a breech-knob, a firing-hammer having a slot, the forward end whereof forms a stop, and a movable stop mounted in the knob and extending into the slot in the hammer for coupling the same with the knob, substantially as set forth.

8. A cannon having a slotted breech-knob, a firing-hammer having a slot, the forward end whereof is curved to form a stop, an anti-friction roll mounted in the slot in the knob on a removable pin and extending up into the slot of the hammer, which it holds in place by the engagement of the said stop thereof with it, substantially as set forth.

405,845. AUTOMATIC SAFETY-CLUTCH. GEORGE LE CLAIR, Oswego, N. Y., assignor to the Le Clair Manufacturing Company, same place. Filed Mar. 21, 1888. Serial No. 304,107. (No model.)



Claim.—1. The combination, with a rotary shaft, of a conical bearing rigidly secured to said shaft, a wheel mounted movably longitudinally on said bearing and provided with screw-threads on the exterior of the hub over the large end of the conical bearing, and a binding-nut sliding longitudinally on the shaft and confined circumferentially thereon and adapted to engage and release the aforesaid screw-threaded hub, the screw-threads running from the wheel in opposite direction from the rotation of said wheel, substantially as and for the purpose shown and set forth.

2. The combination, with the shaft A, of the rigid conical bearing *b*, spline *a* at one end of said bearing, collar *c*, near the opposite end thereof, the wheel C, provided with the conical eye *e* and with the screw-threaded hub portion *d*, and the nut *n*, sliding on the shaft and provided with the slot *i* and adapted to engage and release the aforesaid screw-threaded hub, substantially as described and shown, for the purpose set forth.

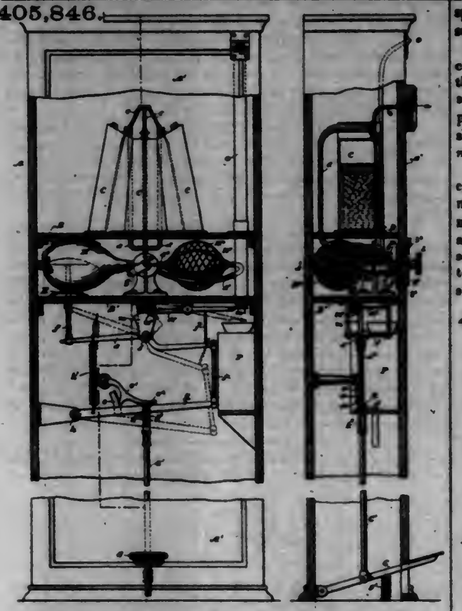
405,846. APPARATUS FOR DISPENSING LIQUIDS. JOSEPH C. MATERNOFER, New York, N. Y., assignor, by direct and mesne assignments, to the American Automatic Spray Perfume Company, of New York. Filed Oct. 23, 1888. Serial No. 288,910. (No model.)

Claim.—1. The vending apparatus comprising the receptacles C, atomizer-tips *c*, tubes *d*, connected to the tips and to the casing D, the air-compressor E, flexible reservoir E', the hollow cock D', having openings *e*, to which the reservoir is connected, the levers J K, the treadle G, and a locking counterbalanced pawl N for locking the levers, and the tube O to receive the coin, substantially as described.

2. The vending apparatus comprising the chute O, to receive a coin or token, in combination with the locking counterbalanced pawl N, lever J, provided with the locking-segment, the air-compressor, the cock, the tubes *d*, and the receptacles C and atomizer-tips, and means for operating the lever J, substantially as described.

3. The vending apparatus comprising the lever J, having a locking-segment, the lever K, and the treadle and connecting-rod G G', in combination with the counterbalanced pawl N, plate H', and bulb E, one or more liquid receptacles, atomizer-tips attached thereto, and tubes connecting the atomizer-tips with the bulb E, substantially as described.

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4. In a vending apparatus, the combination of a lever J, having a locking-segment and a pawl-stop, a counterbalanced pawl, a coin-plate attached to the pawl, and a coin-tube, substantially as shown and described.

5. In an apparatus for vending liquids, in combination with a liquid-receptacle, an atomizer-tip connected with the receptacle, and an air-compressor connected with the atomizer-tip, a device for operating the air-compressor, consisting of a plate bearing against the air-compressor, a pivoted lever having one end connected with the plate in any suitable way, a dog to engage with the lever, a treadle, a treadle-rod having a sliding connection with the lever, and a spring to raise the treadle, whereby the treadle-rod, after sliding upon the lever, will disengage the dog from the lever and permit the lever to return to its initial position, substantially as shown and described.

6. In an apparatus for vending liquids, in combination with a liquid-receptacle, an atomizer-tip connected with the receptacle, and an air-compressor connected with the atomizer-tip, a device for operating the air-compressor, consisting of a plate bearing against the air-compressor, a rod attached to said plate, a pivoted lever connected at one end with the rod and provided with a notched segment and a pawl-stop, a counterbalanced pawl to engage with the notched segment and lock the lever, a plate on the end of the pawl, a coin-tube, a second pivoted lever attached by suitable means to the other end of the first lever, a dog to engage with the second lever, a treadle, a treadle-rod having a sliding connection with the second lever, and a spring to raise the treadle, whereby the treadle-rod, after sliding upon the second lever, will disengage the dog from that lever and permit the lever to return to its initial position, substantially as shown and described.

7. In an apparatus for vending liquids, in combination with a liquid-receptacle, an atomizer-tip connected with the receptacle, and an air-compressor connected with the atomizer-tip, a device for operating the air-compressor, consisting of a plate bearing against the air-compressor, a rod attached to said plate, a pivoted lever connected at one end with the rod, a treadle connected with the other end of the pivoted lever, a shoulder on the pivoted lever, a counterbalanced pawl engaging with said shoulder, a pawl-stop on the lever, a coin-tube, and a plate below the end of the coin-tube and connected with the pawl, onto which the coin drops, thereby raising the pawl and unlocking the pivoted lever, substantially as shown and described.

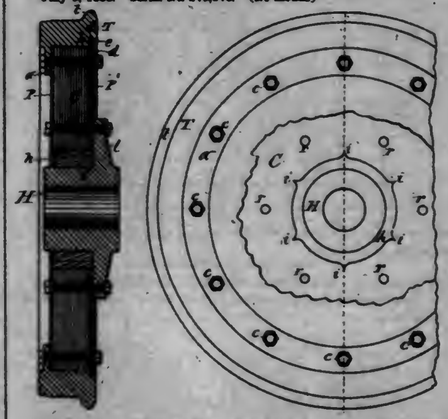
8. In an apparatus for vending liquids, in connection with an air-compressor, a device for operating the air-compressor, consisting of the plate H, the rod *j'*, the pivoted lever J, provided with the notched segment *m*, the rod *j*^{3}, the lever K, the treadle G, the rod G', connecting the treadle and the lever K, and the spring *g'*, substantially as shown and described.

9. The lever K, having segment *o*, in combination with the pawl *o'*, having projection *o*^{3}, and the connecting-rod G', treadle G, and spring *g'*, the connecting-rod being attached to the lever K by slot *k*^{3}, substantially as described.

10. In a device for vending liquids, in combination with an air-compressor, a device for operating the air-compressor, consisting of the plate H, the rod *j'*, the pivoted lever J, provided with the notched segment *m*, the rod *j*^{3}, the lever K, the spring *k'*, the segment *o*, the pawl *o'*, having projection *o*^{3}, the pin *k*^{3}, the rod G', provided with the slot *k*^{3}, the treadle G, the spring *g'*, the pawl N, the pawl-stop *j*^{3}, plate *m*^{3}, and the coin-tube O, substantially as shown and described.

11. A vending apparatus comprising receptacles C, atomizer-tips *c*, tubes *d*, casing D, hollow cock D', having apertures *e*, knob *b*, connected with the cock, disk *b*^{3}, pointer *b*^{4}, reservoir E', tubes *d'* and *d*^{3}, netting E^3, air compressor E, connected with the reservoir-plates H and H', rod *j'*, lever J, notched segment *m*, rod *j*^{3}, lever K, spring *k'*, segment *o*, pawl *o'*, having projection *o*^{3}, pin *k*^{3}, rod G', having slot *k*^{3}, treadle G, spring *g'*, pawl N, pawl-stop *j*^{3}, plate *m*^{3}, and coin-tube O, substantially as shown and described.

405,847. CAR-WHEEL. EDGAR PECKHAM, New York, N. Y. Filed July 9, 1888. Serial No. 278,378. (No model.)



Claim.—1. In combination with the hub and the non-metallic core C, the bushing *h*, formed on its outer peripheral face with projections embedded in the sides of the aperture of the core, and the web-plate P', provided with a central eye of the same shape and diameter as the exterior of the bushing and receiving the end of the latter through it, substantially as described and shown.

2. The combination, with the tire formed at one side of its inner peripheral face with the inward-projecting flange *a*, and provided at the opposite side with the circumferential groove *b*, of the wheel-body composed of the non-metallic core C and web-plates P P', all extending to the periphery of said body and seated on the tire at the inner side of the aforesaid flange, the retaining-ring *d*, applied to the plate P', and formed with the flange *d'*, entering the groove *b*, and bolts or rivets *e*, uniting said parts, substantially as described and shown.

3. The combination, with the tire formed at one side of its inner peripheral face with the flange *a*, and provided at the opposite side with the rabbet *c* and groove *b* in said rabbet, the wheel-body composed of the core C, and web-plates P P' at opposite sides of said core, and all extending to the periphery of the body and seated on the tire, with the face of the plate P' flush with the rabbet *c*, the retaining-ring *d*, applied to the latter plate and projecting into the said rabbet and formed with the flange *d'*, entering the groove *b*, and bolts or rivets *e*, uniting said parts, substantially as described and shown.

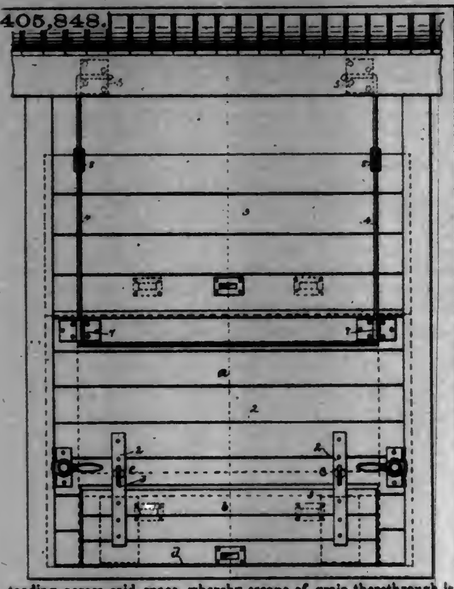
405,848. FREIGHT-CAR DOOR. JOSEPH S. PORTER, Sandusky, Ohio, assignor of two-thirds to Frank G. Scofield and John L. Moore, same place. Filed Dec. 10, 1888. Serial No. 293,114. (No model.)

Claim.—1. A car-door having an opening in its lower portion and an outwardly-swinging auxiliary door hinged thereto, said auxiliary door having an independent vertical movement, as set forth.

2. A car-door having an opening in its lower portion and an outwardly-swinging auxiliary door hinged thereto, said auxiliary door having an independent vertical movement, combined with a fixed stop for the lower edge of the auxiliary door, as set forth.

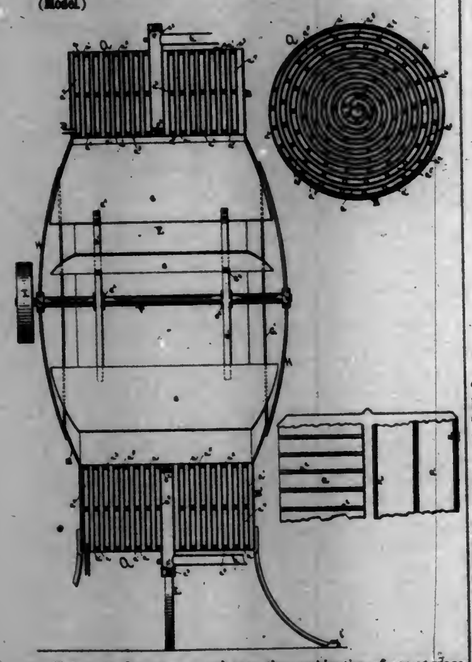
3. A car-door having an opening in its lower portion, an auxiliary door hinged, as described, thereto and fitted in said opening, but made narrower than the height thereof, whereby, when the auxiliary door is in place, a space is formed between its upper edge and the upper edge of said opening, said space permitting a limited independent upward movement of the auxiliary door, and a cleat or strip ex-

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teading across said space, whereby escape of grain therethrough is prevented, as set forth.

405,849. CONDENSER FOR EXHAUST-STEAM. BENTLEY L. RINEHART, Camden, N. J. Filed Jan. 16, 1889. Serial No. 296,548. (Model.)



Claim.—1. In a steam-condenser, the combination of one or more coiled steam-passages connected with a steam-supply pipe, provided with a water-outlet and encircled by transverse cold-air flues receiving air from a suitable fan, as and for the purpose set forth.

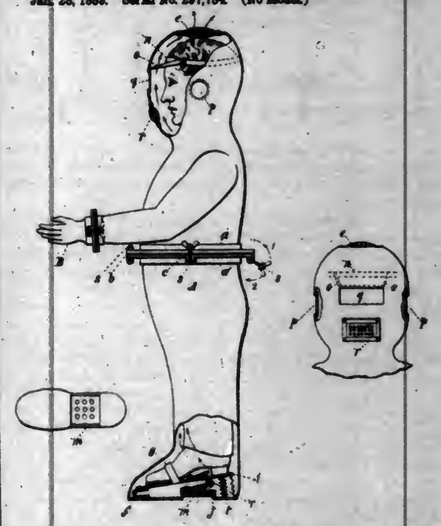
2. In a steam-condenser, the combination of two stripe of sheet metal in concentric coils and secured at their inner ends to a steam-supply pipe, having in the alternate spaces between their convolutions transverse and longitudinal partitions forming cold-air flues and steam-passages, the latter being provided with a water-outlet with a suitable fan, as and for the purpose set forth.

3. In a steam-condenser, the combination of two or more steam-coils encircled by transverse cold-air flues and provided with steam-inlets and water-outlets, the casings of said coils being secured to the casing of a single rotary fan, said fan supplying cold air to the flues of all the coils, as and for the purpose set forth.

4. In a steam-condenser, the combination of coils A A', composed of stripe *a a'*, and having the longitudinal and transverse steam and air spaces a^3 and a^2, formed by the wire sections a^4 and a^5, all contained within the casings B B', said steam-spaces being connected with steam-supply pipe C, valves c' and c^2, and provided with water-outlet D, as set forth.

5. In a steam-condenser, the combination, with coils A A' composed of stripe *a a'*, having longitudinal and transverse steam and air spaces a^3 a^2, formed by wire sections a^4 a^5, said steam-spaces being provided with steam-inlet pipe C, valves c' c^2, and water-outlet D, of a fan G supported on a shaft F, and having the arms e' on collars e^2 encircling said shaft, said arms having offsets e^3, in which rest the blades *e*, and screws e^4 for securing said blades thereto, shaft F being journaled in bosses *h* on spider-legs H, secured to casing G by screws *g*, and provided with pulley I, receiving motion through belt *i*, fan-casing G, having openings G', coils A and A' being connected to arms *k* of the exhaust-pipe K, and casing A' being provided with legs L, secured thereto by screws *l*, as and for the purpose set forth.

405,850. ASEPTIC SUIT. JARROT L. ROLLINS, Greenfield, Ill. Filed Jan. 28, 1889. Serial No. 297,734. (No model.)



Claim.—1. An aseptic suit or dress consisting, chiefly, of rubber or other air-proof material adapted to entirely cover the wearer and provided with germ-proof inlets and outlets for atmospheric air, all constructed and adapted to operate substantially as and for the purpose set forth.

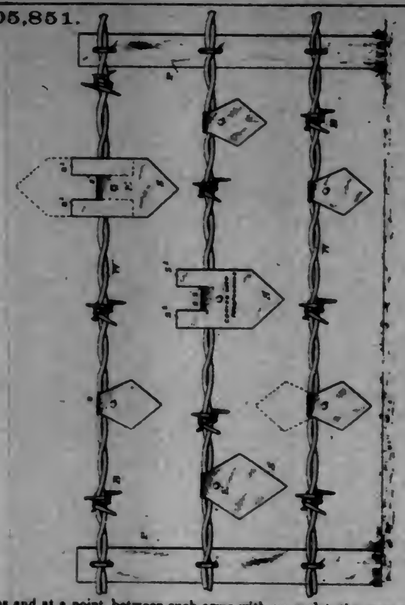
2. The combination, with an aseptic suit or dress consisting, chiefly, of air-proof material adapted to entirely cover the wearer and provided with germ-proof inlets and outlets for atmospheric air, of bellows adapted to be actuated by the feet of the wearer for the purpose of supplying the interior of the dress or suit with a current of filtered air drawn through the germ-proof inlet in the foot part thereof, and to expel it as it becomes vitiated through the germ-proof disks in the crown and in front of the head part of the dress, all constructed and adapted to operate substantially as and for the purpose set forth.

3. The combination, with an aseptic suit or dress adapted to entirely cover the wearer, of germ-proof disks located in close proximity to the ears and adapted to admit the use of the stethoscope, said disks being constructed substantially as and for the purpose set forth.

405,851. FENCE-SIGNAL. JOHN SCHLYER, Hays City, Kans. Filed May 1, 1888. Serial No. 272,515. (No model.)

Claim.—As an article of manufacture, a fence-signal formed of a single strip provided at its upper corners with upwardly-projecting

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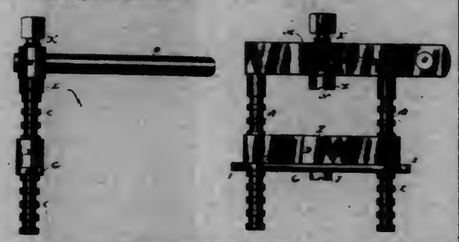


arms and at a point between such arms with an eyelet, the arms extending a short distance above the wire, as set forth.

405,852. PROCESS OF REFINING COTTON-SEED OIL. GEORGE W. SCOLLAY, New York, N. Y. Filed Jan. 12, 1889. Serial No. 296,170. (No specimens.)

Claim.—In the manufacture of refined cotton-seed and other analogous oils, the process, substantially as described, of treating crude oil with suitable alkali—such as caustic-soda lye or caustic-potassa lye—until the grosser impurities are removed and the oil only partially brought to the condition of yellow oil of commerce, and of subsequently treating said partially-refined oil with ocher or fuller's-earth to complete the refining.

405,853. LATHE-DOG. THOMAS C. SMITH, Bridgeport, assignor to Reuben H. Brown & Co., New Haven, Conn. Filed Apr. 7, 1888. Serial No. 269,914. (No model.)



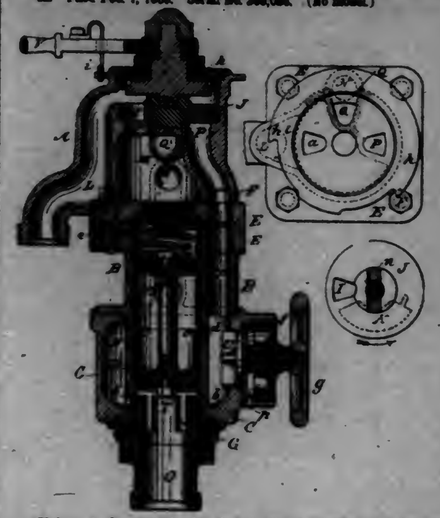
Claim.—1. A lathe dog having two parallel arms, each provided with corresponding retaining-points, a cross-bar adapted to slide freely over such arms, and a locking-button carried by the said cross-bar and adapted to engage with the arms to lock the said bar thereto, substantially as set forth.

2. A lathe-dog having two parallel arms, each provided with corresponding retaining-points, a bar adapted to slide freely over such arms, a locking-button carried by such bar and adapted to engage with the arms to lock the said cross-bar thereto, and a clamping-screw mounted in the main frame-piece of the tool and midway between the two arms, substantially as set forth.

3. A lathe-dog having two parallel arms, each having its surface divided into corresponding retaining-points formed by alternate spaces and collars, a bar adapted to slide freely upon such arms, and a locking-button carried by the said bar and adapted to be engaged with the arms to lock the bar thereto, substantially as set forth.

4. A lathe-dog having two parallel arms, each provided with corresponding retaining-points, a cross-bar adapted to slide freely over such arms, and a locking-button pivoted to the said bar and having its opposite ends slotted from their opposite edges to adapt it to engage with the arms for locking the bar thereto, substantially as set forth.

405,854. AIR-BRAKE OPERATING AND REDUCING VALVE. REINALDO SOLARI, Brooklyn, N. Y., assignor of three-fourths to John W. Howard and David R. Morse, same place, and Lucius G. Fisher, Chicago, Ill. Filed Feb. 7, 1889. Serial No. 299,088. (No model.)



Claim.—1. In an air-brake, the combination, with a supply-pipe, a train-pipe, and an operating-valve intercepting the same, of a double-piston pressure-reducing valve, ports communicating between the operating-valve and train-pipe through the piston-valve cylinder at points intermediate to the pistons, whereby such communication is controlled by the reciprocative movement of the pistons, the one exterior surface of the pistons receiving pressure from the train-pipe and the opposite exterior surface thereof being free from pressure, and a resisting-spring for opposing the movement of the pistons caused by the train-pipe pressure, so as to normally maintain the opening of the said ports communicating between the operating-valve and the train-pipe.

2. In an air-brake, the combination, with the charging and exhaust ports of an operating-valve, of a reducing-valve-containing cylinder, the intermediate portion whereof communicates with the said charging-port, an annular chamber terminal to the said exhaust-port surrounding a portion of the cylinder and permanently communicating through ports adjacent the end of the same with the train-pipe to which said end connects, double pistons embracing the portion of the interior of the cylinder communicating with the charging-port, and ports extending from such portion into the said annular chamber, being subject to control by the reciprocative movements of one of said pistons over them, and a resisting-spring acting upon the pistons in opposition to the pressure received thereon from the train-pipe, as specified.

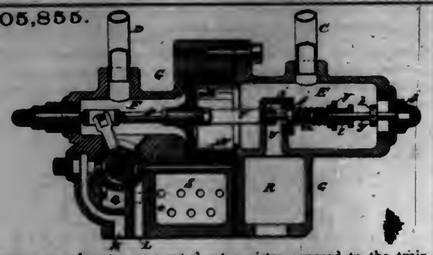
3. In an air-brake, the combination, with a main reservoir, a train-pipe, and an engineer's operating-valve controlling the admission of fluid at will from said reservoir to said train-pipe, of a pressure-reducing valve, arranged between the engineer's valve and the train-pipe, automatically controlling the pressure of the fluid admitted by said operating-valve to the train-pipe, substantially as described.

405,855. AUTOMATIC AIR-BRAKE. REINALDO SOLARI, Brooklyn, N. Y., assignor of three-fourths to John W. Howard and David R. Morse, same place, and Lucius G. Fisher, Chicago, Ill. Filed Feb. 7, 1889. Serial No. 299,089. (No model.)

Claim.—1. In an air-brake, the combination of a double-acting brake-cylinder, a brake-cylinder valve for connecting opposite sides of the brake-cylinder alternately with pressure or exhaust, a connected valve-piston or its equivalent permanently exposed to the train-pipe and auxiliary-reservoir pressures on opposite sides thereof, an expanding chamber connective by means of the said brake-cylinder valve with the releasing side of the brake-cylinder, and a normally-closed relief-valve controlling communication between the expanding chamber and the train-pipe, said relief-valve being opened by the valve-piston when communication between the expanding chamber and the brake-cylinder is closed, for the purposes set forth.

2. The combination, with a double-acting brake-cylinder, of a valve capable of connecting opposite sides of the brake-cylinder with

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pressure or exhaust, a connected valve-piston exposed to the train-pipe and auxiliary-reservoir pressures on opposite sides thereof, an expanding chamber connective with the releasing side of the brake-cylinder through said valve, a puppet-valve operative in line with the valve-piston to open toward the train-pipe pressure and control communication of the expanding chamber therewith, a shouldered stem provided to said puppet-valve, and a yoke upon the valve-piston that engages with said shouldered stem to trip the puppet-valve to an open position when the brake-cylinder valve is moved to a position to disconnect the expanding chamber with the brake-cylinder.

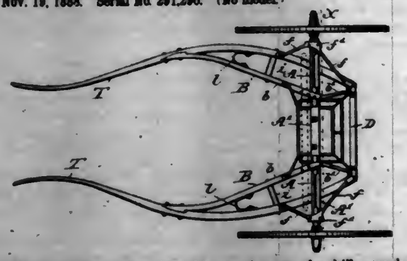
3. The combination, with the brake-cylinder valve capable of closing all the cylinder-ports at a mid-position, the connected piston or its equivalent, the puppet relief-valve in line therewith, the retarding-spring upon the stem thereof adapted to retard the return movement of the valve-piston at mid-stroke, as described, and a piston-yoke straddling the puppet-valve seat and traversing the spring-bearing stem to afford an abutment of the piston upon said spring, and the shouldered sliding collar, as *l*, whereby the spring and valve-stem shoulder are kept in proper relation with one another and with the said yoke.

4. In an air-brake, the combination of a brake-cylinder, valve controlling the passage of air to and from the cylinder, a valve-operating piston or its equivalent movable between two chambers, one E in communication with the train-pipe and the other F with the reservoir, an expanding chamber communicating with the chamber E through a port closed by a relief-valve, and connections between the relief-valve and valve-piston arranged to open the relief-valve when the communication between the expanding chamber and brake-cylinder is closed, substantially as set forth.

5. The combination, with the valve controlling the flow of air between the brake-cylinder, reservoir, and external air, and a valve controlling the flow of exhaust-air from the train-pipe to a receiving-chamber, of a single valve-operating piston connected to operate both valves, substantially as set forth.

6. The combination, with the relief-valve and its operating-piston, of a spring bearing on the valve and a bearing V, carried with the piston and having a limited movement between the end of the spring and a stop *k* on the valve-rod, substantially as and for the purpose set forth.

405,856. SULKY. STEPHEN P. SOUTHARD, Geneva, N. Y., assignor to C. C. Post, same place, and Hannah Southard, Waterloo, N. Y. Filed Nov. 19, 1888. Serial No. 291,290. (No model.)

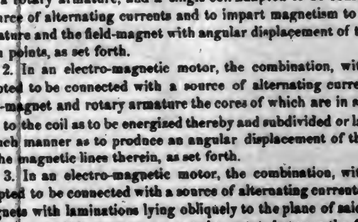


Claim.—1. In combination with an axle-truss, the thills attached directly thereto and extending rearward therefrom, a cross-bar uniting the rear ends of the thills, braces attached to the axle-truss and having their front ends extending from each other and along the inner sides of the thills and secured with their front ends to the thills and at the rear ends with the aforesaid cross-bar, and stirrups secured to the inner sides of the thills and outer sides of the aforesaid braces, substantially as described and shown.

2. In combination with the axle-truss, the thills mounted thereon and extending rearward therefrom, the cross-bar D, uniting the rear ends of the thills, and the braces B B, each composed of the wooden rail *b*, secured at its front end to the inner side of one of the thills and abutting with its rear end against the axle-truss, and the metallic extension *b'*, secured to the axle-truss and having its front end lapping onto and rigidly attached to the aforesaid wooden rail, and the rear end of said metallic extension secured to the cross-bar D, substantially as described and shown.

3. In combination with the axle-truss, the thills mounted thereon and extending rearward therefrom, the cross-bar D, uniting the rear ends of the thills, the metallic axle A, provided with the mortise *a*, and the brace B, having the metallic extension *b'*, provided with the mortise *c* and seated with the mortised portion in the mortise *a* and firmly secured to the axle-truss, substantially as set forth and shown.

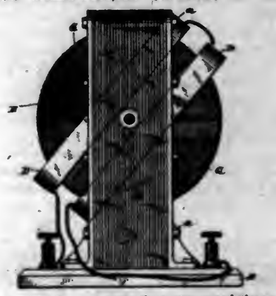
405,857. SPRING-VEHICLE. JOSEPH H. TALMADGE, Cortland, N. Y. Filed Dec. 13, 1888. Serial No. 293,501. (No model.)



Claim.—1. In combination with the two running-gears and side bars D D, the plates *a a*, fastened to the under side of the side bars between the front and rear running-gears and formed with the inner projections *a' a'*, the side springs C C, secured at their central portions to the aforesaid projections and having their end portions vibratory vertically, and the body B, carried between the springs and by the end portions thereof, substantially as described and shown.

2. In combination with the front and rear running-gears and side bars D D, the side springs C C, supported at their central portions on said side bars and having their front end portions deflected downward and forward and the rear ends curved upward and forward, and the body carried on the ends of said springs, substantially as described and shown.

405,858. ELECTRO-MAGNETIC MOTOR. NIKOLA TESLA, New York, N. Y., assignor to the Tesla Electric Company, same place. Filed Jan. 8, 1889. Serial No. 296,745. (No model.)



Claim.—1. An electro-magnetic motor consisting of a field-magnet, a rotary armature, and a single coil adapted to be connected to a source of alternating currents and to impart magnetism to both the armature and the field-magnet with angular displacement of the maximum points, as set forth.

2. In an electro-magnetic motor, the combination, with a coil adapted to be connected with a source of alternating currents, of a field-magnet and rotary armature the cores of which are in such relation to the coil as to be energized thereby and subdivided or laminated in such manner as to produce an angular displacement of their poles or the magnetic lines therein, as set forth.

3. In an electro-magnetic motor, the combination, with a coil adapted to be connected with a source of alternating currents, of field-magnets with laminations lying obliquely to the plane of said coil and a circular or disk armature mounted to rotate between the field-magnets, both field and armature being under the magnetizing influence of the coil, as set forth.

4. In an electro-magnetic motor, the combination, with a coil adapted to be connected with a source of alternating currents, of field-magnets with laminations lying obliquely to the plane of the coil and a circular or disk armature with spiral or concentric laminations mounted between the field-magnets, both field and armature being under the magnetizing influence of the coil, as set forth.

5. In an electro-magnetic motor, the combination, with a coil adapted to be connected to a source of alternating currents, of a field-magnet and a rotary armature with closed coils thereon, both the field and the armature being under the magnetizing influence of said coil and laminated to produce an angular displacement of the poles of the two cores.

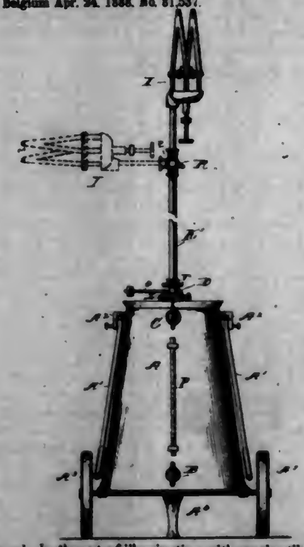
405,859. METHOD OF ELECTRICAL POWER TRANSMISSION. NIKOLA TESLA, New York, N. Y., assignor to the Tesla Electric Company, same place. Filed Mar. 14, 1888. Serial No. 302,251. (No model.)



Claim.—1. The method of operating synchronizing motors herein described, which consists in electrically connecting intermediate points of the inducing-circuit of the generator and the energizing-circuit of the motor until the motor has reached a desired speed and then interrupting such connection, as set forth.

2. The method herein described of starting or operating synchronizing motors, which consists in electrically connecting intermediate points of the inducing-circuit of the generator and the energizing-circuit of the motor to earth until the motor has reached the desired speed and then interrupting either or both of the ground-connections, as set forth.

405,860. APPARATUS FOR SUPPLYING COMBUSTIBLE LIQUIDS TO BURNERS. ROUSDEDGE WALLWORK and ARTHUR C. WELLS, Manchester, County of Lancaster, England. Filed Sept. 14, 1888. Serial No. 285,381. (No model.) Patented in England Mar. 8, 1887, No. 3,543, and in Belgium Apr. 24, 1888, No. 81,537.

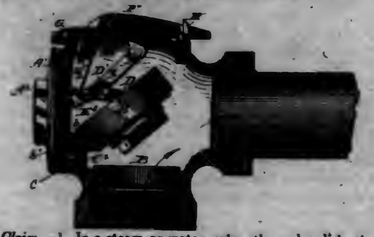


Claim.—1. In the art of illuminating with combustible liquids, a portable reservoir, a fluid-delivery pipe having its inlet near the bottom of said reservoir, a burner or burners connected with the supply-pipe, and a force-pump having its suction or inlet open to the atmosphere and its discharge in proximity to the bottom of the reservoir, said parts constituting a portable illuminating apparatus, substantially as described.

2. In the art of illuminating with combustible liquids, a reservoir mounted on wheels, a fluid-delivery pipe having its inlet near the bottom of said reservoir, a burner or burners connected with the supply-pipe, and a force-pump having its suction or inlet open to the atmosphere and its discharge in proximity to the bottom of the reservoir, said parts constituting a portable illuminating apparatus, substantially as described.

3. In the art of illuminating with combustible liquids, a portable reservoir, a fluid-supply pipe having its inlet near the bottom of the reservoir, a burner or burners connected with said pipe, a pressure-regulating valve interposed in the supply-pipe between the burner and reservoir, and a pressure-indicator for said reservoir, in combination with a force-pump having its suction-port open to the atmosphere and its discharge-port in proximity to the bottom of the reservoir, said parts constituting a portable illuminating apparatus, substantially as described.

405,861. RADIATOR-VALVE. WILLIAM E. WOOD, Utica, N. Y. Filed Feb. 2, 1889. Serial No. 298,441. (No model.)



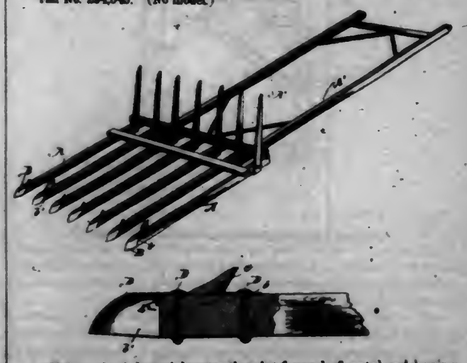
Claim.—1. In a steam or water valve, the valve-disk, the operating toggle-lever connected therewith, a rocking arm or foot-piece connected with the toggle-lever for forcing the valve open, a spring to act on the foot-piece to force the valve to its seat, and means for automatically engaging said rocking arm or foot-piece to hold the valve open to its full capacity, substantially as described.

2. In a steam or water valve, the combination of the valve-disk, the rocking arm or foot-piece, the toggle-levers connected to the valve, and the rocking arm or lever connected to the toggle-lever through a link-connection, substantially as described.

3. In a steam or water valve, the combination of the valve-disk, a toggle-lever connected to the valve-disk and to the casing to operate within the valve-body, and a spring for acting on the toggle-lever located outside the body or casing, substantially as described.

4. In a steam and water valve, the combination of the valve-disk, a toggle-lever connected to the valve-disk, a rock-shaft having a rocking arm connected thereto within the valve-body, a link connecting the rocking arm with the toggle-lever, and a spring located outside the valve-body to act on the rock-shaft to force the valve-disk to its seat, substantially as described.

405,862. METAL POINT FOR THE TEETH OF HAY-RICKERS, &c. HORACE A. ALDEN and JOHN R. KIRK, Peoria, Ill., assignors to the Acme Hay Harvester Company, same place. Filed Dec. 24, 1888. Serial No. 294,545. (No model.)

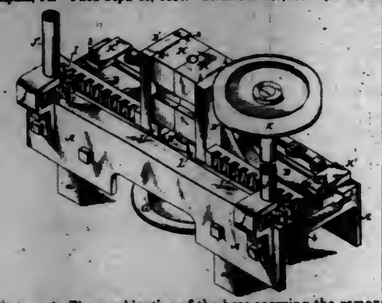


Claim.—1. A hay-ricker-tooth point formed of metal and having its forward end inclined and beveled, and having projecting above its upper face and at a distance from its forward end an inclined nook or extension C, substantially as described.

2. The combination, with a tooth having a blunt end, of a metal point rigidly affixed thereto and having a socket the interior of which is provided with a suitable stop or rib for the end of the tooth, and having one side extending backward, whereby the point may be bolted to the tooth, substantially as described.

3. A tooth-point having its rear portion formed with suitable sides *b* and *b'* and with one side open, and having a socket to receive the squared end of the tooth, the interior of said socket being provided with a suitable stop or rib against which the end of the tooth will abut, substantially as described.

405,868. MOLD FOR GLASSWARE. RICHARD M. ATWATER and EMIL HERCHNER, Millville, N. J., assignors to Whitall, Tatum & Co., Philadelphia, Pa. Filed Sept. 10, 1887. Serial No. 249,344. (No model.)



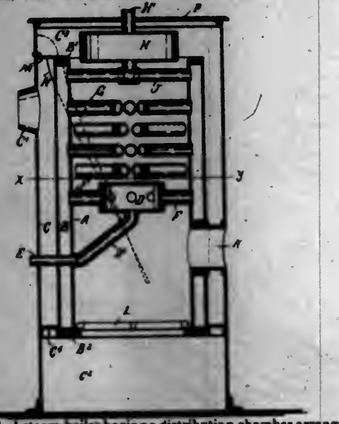
Claim.—1. The combination of the base carrying the removable lower die with sliding frames carrying removable side dies, said frames being movable from and toward each other in a straight line, substantially as described.

2. The combination of the base and two frames adapted to slide thereon with racks on each frame, and shafts J', carrying pinions controlling the racks and having a handle within convenient reach of the attendant, substantially as specified.

3. The combination of the sliding frames having die-supporting brackets L secured thereto, with dies H, resting upon said brackets, and securing devices by which the dies are attached to the sliding frames, substantially as described.

4. The combination of the sliding frames carrying dies, each frame being provided with pins *k*, with adjustable stops K' on the base, against which the pins strike when the dies are at the limit of their inward movement, substantially as set forth.

405,864. STEAM-BOILER. MIFFLIN W. BAILY, Pottstown, Pa. Filed Mar. 11, 1889. Serial No. 302,909. (No model.)



Claim.—1. A steam-boiler having a distributing-chamber arranged above the fire-box, said chamber being connected by tubes with the water-space of the boiler and also with a water-supply tube passing through said water-space, substantially as set forth.

2. A cylindrical steam-boiler having a distributing-chamber arranged above the fire-box, said chamber being connected by tubes with the water-space of the boiler and having a water-supply tube extending below said chamber and connecting with an inlet-tube passing through the annular water-space of the boiler, substantially as set forth.

3. A cylindrical steam-boiler having a distributing-chamber arranged above the fire-box, said chamber being connected by tubes with the water-space of the boiler and having a water-supply tube extending below the chamber and connected with said water-space, the lower end of said supply-tube inclosing the end of a tube secured to the outer shell of the boiler and passing through said water-space, substantially as set forth.

4. The combination, with a cylindrical steam-boiler having an interior fire-box, of a casing forming an annular smoke-circulating chamber surrounding the outer boiler-shell and communicating with the fire-box, said chamber being provided with a smoke-outlet, a check-plate above said outlet, and partitions extending from said check-plate toward the lower end of the chamber, all arranged substantially as and for the purpose set forth.

5. A cylindrical boiler having an interior fire-box, an annular water-space, an annular smoke-circulating chamber, a water-distributing chamber connected with said water-space and also with a supply-tube passing through said water-space and smoke-chamber, and water-tubes and steam-drum arranged above said distributing-chamber, all substantially as set forth.

405,865. ARTIFICIAL FUEL. ISIDORE C. BANDMAN, Atlanta, Ga. Filed Aug. 30, 1888. Serial No. 284,191. (No specimens.)

Claim.—As a new article of manufacture, a hardened cake of fuel composed of a core or interior of one or more large lumps of coal and a surrounding igniting composition consisting, essentially, of a mixture of rosin, sawdust, pine-needles, and powdered coal, the pine-needles and rosin firmly uniting the composition surrounding the coal and preventing the cake from crumbling and breaking, the surrounding composition first igniting and generating sufficient heat to ignite the lump coal.

405,866. FLUX-CARRIER. JAMES C. BAYLES, East Orange, N. J. Filed May 22, 1889. Serial No. 311,689. (No model.)

a [redacted]

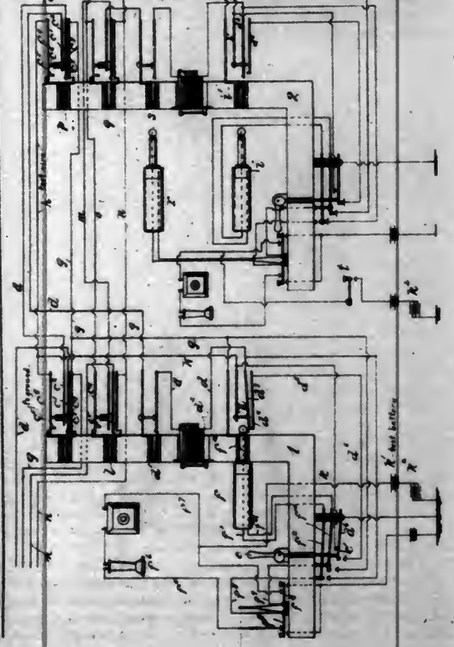
Claim.—1. The combination of the welding-flux with a fibrous material adapted to hold the flux in the joint to be united, substantially as herein set forth.

2. The combination, with the welding-flux, of fine wire net, as and for the purpose set forth.

3. Iron wire-gauze coated with melted borax, as and for the purpose set forth.

4. A continuous ribbon of iron wire-gauze coated with fluxing material, as and for the purpose set forth.

405,867. TELEPHONE-EXCHANGE APPARATUS. FRANKLIN G. BEACH, Chicago, Ill. Filed Dec. 3, 1887. Serial No. 257,309. (No model.)



Claim.—1. A spring-jack switch consisting in the combination, with the tube, of two springs, which are interchangeably connected and disconnected therefrom upon the insertion and withdrawal of the plug, and the line-terminal spring and its normal contact, substantially as described.

2. The combination, with the tube or test-piece of a spring-jack switch, of the line-spring resting upon its contact and two springs on opposite sides of said line-spring, and insulating material on opposite sides of said line-spring, separating said line-spring from said other springs, respectively, and a loop-plug, which, on being inserted, separates the line-spring from its normal contact, at the same time permitting one of the two outer springs to fall away from its connection with the tube while the other outer spring is closed thereto, substantially as described.

3. The combination, with the tube *a'*, of the insulated springs c', c^2, and c^4, the contact-point c^3, against which spring c' normally rests, the loose pin between springs c' and c^4, the ground-connection c^5 for spring c^4, the spring c^2 being insulated from spring c' and adjusted to move therewith, and a plug which on being inserted separates spring c' from its normal contact and permits spring c^4 to separate from the tube and close upon its ground-contact c^5, while at the same time spring c^2 is forced into connection with said tube.

4. A strip of spring-jacks, each consisting of a socket with which two different springs are alternately connected and disconnected on the insertion of a plug, the portion of the strip containing said sockets being removable, substantially as described.

5. The socket *a'*, provided with contact-points a^3 and a^4, said contacts being extended to inclose springs on opposite sides of a spring-jack, in combination with said springs, and means for alternately connecting and disconnecting said springs from said contacts.

6. A spring-jack switch provided with a line-terminal, the normal contact of said line-terminal, a test-spring insulated from said line-terminal, and a connection for the return portion of a circuit, in combination with the loop-plug inserted in said switch, whereby the line-spring is separated from its normal contact and closed to the tip of the plug, while at the same time the return-connection of the switch is closed to the sleeve of the plug.

7. A ground spring-jack switch consisting of the lever d^3, permanently insulated from the connection *k'* of said switch, a ground-connection d^4, and the insulated socket or frame, in combination with a loop-plug, which on being inserted separates ground-connection d^4 from connection *k'* and closes connection d^3 to said ground-connection d^4 while connection is made between the tip of the plug and spring d^3, and at the same time the sleeve of the loop-plug connected with the socket, substantially as described.

8. The loop-plug *f* and its terminals connected with springs f^3 f^{10}, respectively, said springs including in their circuit a telephone and a branch ground-connection *k*, including a test-battery, substantially as described.

9. Two metallic-circuit telephone-lines, each connected through different spring-jack switches on two or more multiple switch-boards and each provided with a loop-plug terminal and test-circuits, one for each line, each of said test-circuits being normally open, in combination with independent ground-connections for each of said test-circuits, with which ground-connections said test-circuits are closed automatically on the insertion of the loop-plug terminal of one line into a spring-jack switch of the other line.

10. A telephone-line connected through the line-terminal and contact of two or more switches on different switch-boards and thence through an annunciator, and thence normally through a grounding-switch to ground, in combination with a return-wire connected with a spring of each of the spring-jack switches of said line, and with the grounding-switch, an independent test-wire for said line connected with another spring of each of the spring-jack switches of the line and with a contact of the grounding-switch, and direct ground-connections, one for the test-wire spring of each of the spring-jack switches and one for the grounding-switch, whereby a signal may be sent over the line to throw down the annunciator and a test-circuit provided, the circuit of which is provided with a direct ground-connection when the telephone-line is connected with another line.

11. The combination, with two telephone-lines connected together, of separate local test-wires, one for each of said lines, said telephone-lines being each connected with spring-jack switches on different multiple switch-boards, and the test-wires being connected with each of the spring-jack switches of their lines, respectively, and a direct ground-connection c^5 for each of the spring-jack switches, whereby each of said test-wires is provided with a different direct ground-connection independent of any portion of said telephone-lines when the two lines are connected, substantially as described.

12. In a multiple-switch-board system, a test-wire normally connected with a test-piece of each of the switches of a telephone-line, in combination with a special direct ground-contact on each of the spring-jack switches, whereby on making connection with said line at either switch said test-wire is disconnected from said test-piece and closed to the special direct ground-contact of the spring-jack switch at which the connection is made.

13. In a multiple-switch-board system of telephone-exchange, two telephone-line circuits provided with spring-jack switches, a separate spring-jack switch being provided for each line on each board, in combination with the test-circuits, a separate test-circuit being provided for each telephone-line, the test-circuit of each line being connected with a special test piece or spring of each of the switches of its line and a direct ground-connection near each special test-connection, said direct ground-connections being independent of any portion of the telephone-lines, and plugs at the different switch-boards, whereby on inserting a plug in any switch the special test-connection of the switch will be closed directly to ground without closing or connecting the test-wire with the main-circuit line.

405,868. TOY. ALFRED L. BERNARDIN, Evansville, Ind. Filed Feb. 15, 1889. Serial No. 300,082. (No model.)



Claim.—The toy consisting of the tubular whistle having its deflecting-piece at the air-outlet, the yoke having the pivot-bearings and reflected ends, and the bladed wheel circumferentially tangent to the barrel of the whistle and pivoted in the yoke, substantially as specified.

405,869. DUST-COLLECTOR. EUGENE BARTHEL, Indianapolis, Ind., assignor to the Cookie Separator Manufacturing Company, Milwaukee, Wis. Filed May 21, 1888. Serial No. 274,463. (No model.)



Claim.—1. In a dust-collector, the combination of the casing provided with an inlet, a dust-discharge opening, and an air-outlet, and formed with its interior contracted in size in the direction of said dust-discharge opening, and a deflector adjustable toward and from the discharge-opening, arranged within said casing below said inlet and above said dust-discharge opening, substantially as set forth.

2. The combination, in a dust-collector, of the cone-shaped casing B, the tubular guard C, and the vertically-adjustable deflector D, arranged below the air-inlet of said casing and above its dust-discharge opening, substantially as set forth.

405,870. STOCK-CAR. JOHN M. BURTON and CHARLES C. CREWSON, Wichita, Kans. Filed Oct. 29, 1888. Serial No. 289,457. (No model.)



Claim.—1. The combination, in a stock-car provided with the side posts P and the sheathing N, extending down at the car sides a distance from the top and forming the outer wall of the hay-receptacle, and the slats G, secured to the inner sides of said posts, extending up a distance from the car-floor, and forming the lower portion of the side walls of the car, of the troughs C, pivotally secured to the inner sides of said posts above said slatting G by means of their connected bearings, adapting them to turn between said posts, the folding racks R, hinged to said posts at their lower part and forming the inner wall of said hay-receptacle, the side sections B, having the arms *a a'*, hinged to the side of said posts at the base of said sheathing, wherein arms *a* are arranged, extending into the car adjacent said

racks, the links L, connecting the lower portion of sections B with troughs C, and the mechanism consisting of rods J J', crank-arms $z' z''$, shaft S, and lever z, connected with arms a of said side sections through the medium of said rods, whereby the said side sections and troughs can be turned and the racks unfolded into position for use, substantially as specified.

2. The combination, in a stock-car provided with the side posts P and the sheathing N, secured to the outer upper part of said posts and forming the outer wall of the hay-receptacle, and the slats G, secured to the lower inner portion of said posts and forming the lower portion of the side walls of the car, of the troughs C, pivotally secured to the inner side of said posts above said slatting by means of their connected bearings adapting them to turn between said posts, sections B, having arms $a a'$, hinged to the side of said posts at the base of said sheathing, which arms a are arranged extending into the car within said sheathing, the links L, connecting the lower portion of said sections B with said troughs, and the mechanism consisting of rods J J', cranks $z' z''$, shaft S, and lever z, connected with arms a of said sections through the medium of said rods, whereby the said side sections and troughs can be turned into or out of position for use, substantially as set forth.

3. The combination, in the stock-car described, provided with the side posts P and the sheathing N, secured to the outer upper part of said posts and forming the outer wall of the hay-receptacle, of the racks R, hinged to the upper inner part of said posts at their lower portion and forming the inner wall of the hay-receptacle, the side wall-sections B, having arms a, hinged to the side of said posts at the base of the hay-receptacle and extending upward into the said receptacle adjacent said racks, and the mechanism consisting of the rods J J', cranks $z' z''$, shaft S, and lever z, connected with arms a of said sections through the medium of said rods, whereby the said sections are turned and the said racks are unfolded into position for use, substantially as specified.

4. The combination, in the stock-car described, provided with the side posts P and the sheathing N, secured to the outer upper part of said posts and forming the outer wall of the hay-receptacle, of the folding racks R, hinged at their lower portion to the inner upper part of said posts and forming the inner wall of the hay-receptacle, the spring-arms F, or their equivalent, arranged to bear against said racks to yieldingly hold them folded, the side wall-sections B, having the arms a, hinged to the side of said posts at the base of said hay-receptacle and extending upward into said receptacle adjacent said racks, and the mechanism consisting of the rods J J', cranks $z' z''$, shaft S, and lever z, connecting said arms a by means of said rods, whereby the said wall-sections are turned and the racks unfolded into position for use and the racks automatically folded when hay in the receptacle is consumed or removed, substantially as specified.

5. The combination, in a stock-car provided with hay-receptacles in the upper part of its side walls, of the racks R, hinged at their lower part and forming the inner wall of said receptacle, the spring-arms F, or their equivalent, arranged to bear against said racks to yieldingly hold them folded, and the mechanism consisting of arms a of the side wall-sections B, shaft S, boxed longitudinally in the upper part of the car, lever z, and cranks $z' z''$, secured on said shaft, and rods J J', connecting said cranks with said arms, whereby said arms are operated to unfold said racks into position for use, substantially as specified.

6. The combination, in a stock-car provided with the side posts P and the sheathing N, secured to the outer upper part of said posts and forming the outer wall of the hay-receptacle, of the folding racks R, hinged at their lower part to the inner upper part of said posts and forming the inner wall of the hay-receptacle, the side wall-sections B, having the arms a, hinged to said posts at the base of said receptacle and extending into said receptacle adjacent said racks, the canvas ends or folds e, arranged to protect said arms from contact with hay in the receptacle, and the mechanism consisting of shaft S, cranks $z' z''$, and lever z, secured thereon, and rods J J', connecting said cranks with said arms, whereby the said sections and arms are turned and said racks unfolded into position for use, substantially as specified.

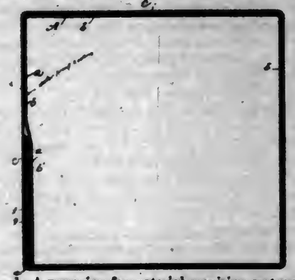
7. The combination, in a stock-car provided with the side posts P, of the troughs C, arranged between and pivotally secured to the inner side of said posts by means of their connected bearings g, the side wall-sections B, having arms a, hinged to the side of said posts and extending into the car, links L, connecting the lower portion of said sections with said troughs, and the shaft S, longitudinally arranged in the upper part of the car, the lever z, secured on said shaft and arranged extending through a slot in the car-roof, catches $v v'$, for holding said lever, the cranks $z' z''$, secured on said shaft, and the rods J J', connecting said cranks with said arms a, whereby the said side-wall sections and troughs are turned into or out of position for use by means of said lever from the car-roof, substantially as specified.

8. The combination, in a stock-car, of the pivoted side sections B, having arms $a a'$, rods B', connecting-rods J J', crank-arms $z' z''$, shaft S, and lever z, substantially as and for the purpose set forth.

9. The combination, in a stock-car, of the pivoted side sections B, having arms $a a'$, rods B', pivoting said sections, links L, pivoted watering-troughs C, folding hay-racks R, connecting-rods J J', crank-arms $z' z''$, shaft S, and lever z, substantially as and for the purpose set forth.

10. The combination, in a stock-car, of the pivoted side sections B, having arms $a a'$, rods B', pivoting said sections, watering-troughs C, pivotally arranged below said sections, links L, for connecting said sections and troughs, connecting-rods J J', crank-arms $z' z''$, shaft S, and lever z, and catches for holding said lever, substantially as and for the purpose specified.

405,871. WATER-PROOF PACKAGE. MELVIN R. CHASE, Grand Rapids, Mich. Filed Dec. 31, 1887. Serial No. 259,456. (No model.)

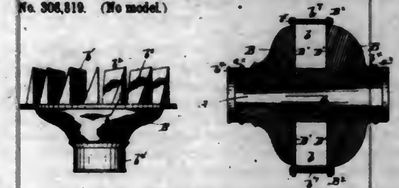


Claim.—1. A wrapping for material requiring water-proof packing, consisting of an inner wrapper having a water-proof interior, a non-drying adhesive and water-proof material between its folds to hold them together, an outer non-water-proof wrapper inclosing the inner, one lap of said outer package being secured to the inner package, and the other or over lap being pasted over the first or under lap, the ends of said inner and outer package being folded down and secured by adhesive material, substantially as described.

2. A wrapping for material requiring water-proof packing, consisting of an inner wrapper having a water-proof interior, a non-drying adhesive and water-proof material between its folds, an outer non-water-proof wrapper inclosing the inner, one lap of said outer package being secured to the inner package at its joint and covering the same, and the other or over lap being pasted over the first or under lap, substantially as described.

3. A wrapping for material requiring to be packed water-proof, consisting of an inner wrapper having a waterproofed surface, a non-drying adhesive material between its folds, and an outer non-water-proofed wrapper having its folds secured by ordinary paste, substantially as described.

405,872. HUB FOR VEHICLE-WHEELS. EDWARD D. CLARK and SIMMON C. CLARK, Evergreen, Tex. Filed Apr. 27, 1889. Serial No. 308,819. (No model.)



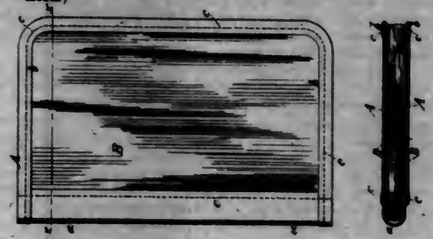
Claim.—A hub consisting of a cylindrical box having a central collar or enlargement and enlongated depressions in the ends, the body portions having the wedge-shaped lugs upon their faces, and the extended flanges for receiving the holding bolts and the screws in the diminished ends thereof, as set forth.

405,873. ICE-CREEPER. FREDERICK W. COE, Vergennes, Vt. Filed Mar. 20, 1889. Serial No. 304,000. (No model.)



Claim.—The ice-creeper consisting of the heel-plate having the rear clamp-lugs and the corrugated middle channel, the slotted adjustable serrated bar, its fastening-screw, and the cam-lever catch connected to the front end of said bar, substantially as specified.

405,874. CELLULOID OR ANALOGOUS BINDING. KATE J. COLLIER, New York, N. Y. Filed May 12, 1888. Serial No. 273,696. (No model.)



Claim.—1. The combination of a sheet of celluloid, a sheet of leather or like material, and a sewed seam uniting the two sheets, substantially as herein set forth.

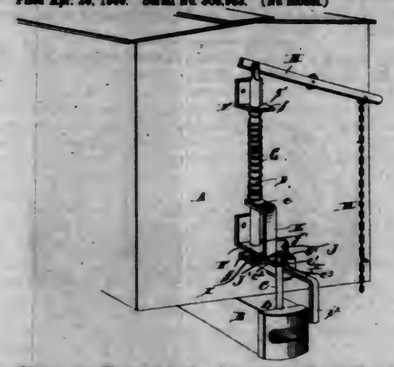
2. The combination, with a sheet of celluloid, of layers of leather or like material placed on opposite sides of its edges, and a sewed seam passing through both of said layers and the celluloid between them, substantially as and for the purpose herein set forth.

3. The combination of a sheet of paper with the sheet of celluloid, the layers of leather or like material placed on opposite sides of the edge of the celluloid sheet, and a sewed seam passing through said layers, paper, and celluloid sheet, substantially as and for the purpose herein set forth.

4. The combination, with the back B of a book or volume, of sheets of celluloid, layers of leather or like material placed on opposite sides of the edges of said celluloid sheets and connected with the back B, and a sewed seam passing through both of the said layers and the celluloid between them, substantially as and for the purpose herein set forth.

5. The combination, with the back B, of sheets of celluloid, layers of leather or like material placed on opposite sides of the edges of said celluloid sheets, paper placed upon the inner surfaces of said celluloid sheets and extended under the adjacent layer of leather or like material, and sewed seams passing through said layers, paper, and celluloid sheet, substantially as and for the purpose herein set forth.

405,875. CAR-COUPLING. WILEY G. COLLIER, Shamrock, Va. Filed Apr. 20, 1889. Serial No. 308,263. (No model.)



Claim.—1. The combination, in a car-coupling, with a draw-head, of a coupling-pin, a rod sliding in suitable brackets and provided with an arm connected to said pin, and a spring to hold the rod normally depressed, substantially as specified.

2. The combination, in a car-coupling, with a draw-head, of a coupling-pin, the rod pivoted with an arm extending forward and downward and connected to said pin, the brackets provided with aligned openings in which said rod works, and a spring interposed between said arm and one of the brackets, substantially as specified.

3. The combination, in a coupling, with a draw-head, of a coupling-pin, the rod sliding in suitable brackets and provided with an arm connected to said pin, and a spring-actuated sliding support having its front end extending forward and downward in front of the draw-head, substantially as described.

4. The combination, in a car-coupling, with a draw-head, of the coupling-pin, the rod sliding in suitable brackets and provided with an arm connected to the coupling-pin, the frame secured to the front of the car and provided with a recess, and the spring-actuated sliding support in said recess and having its front end extending down in front of the draw-head, substantially as described.

405,876. CORSET-CLASP. WILLIAM O. CORNISH, Bridgeport, Conn., assignor of one-half to Solon Bryant, Worcester, Mass. Filed Apr. 6, 1889. Serial No. 306,320. (No model.)

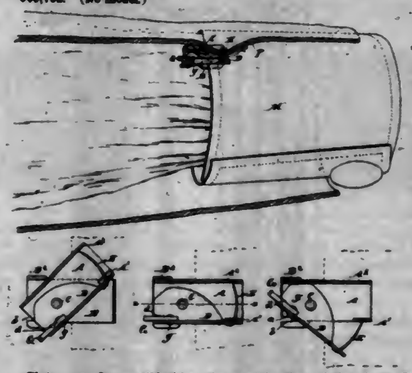


Claim.—1. A corset-clasp consisting of the eye C, fixed to one busk, and the corresponding stud D, secured to the other busk, the combination therewith of a pair of spring-arms $e f$, secured by one end to the busk, their free ends extending toward the rear edge of the busk and terminating in bearings g, a disk-cap i, having a shank l projecting therefrom, the said projection constructed with trunnions $m m$, corresponding to the said bearings g in the said spring-arms, and so as to work therein, the projection extending beyond the pivots to form a cam n to work upon a corresponding surface, substantially as described.

2. The combination of the plate a, slit to form spring-arms $e f$, and an intermediate tongue d, with an opening through it corresponding to the shank of the clasp-stud, the said arms $e f$ terminating at their outer ends in bearings g, combined with a disk i, constructed with a shank l projecting radially therefrom, the said shank constructed with trunnions $m m$, corresponding to the said bearings g, and so as to rest therein, the said shank extending beyond the pivots to form a cam n adapted to work upon the surface under the busk, substantially as and for the purpose described.

3. The combination of the plate a, slit from one end to form spring-arms $e f$, and an intermediate tongue d, the said intermediate tongue d adapted to receive the stud by which the said plate may be secured to the busk, a concavo-convex disk i, constructed with a shank l, the said shank constructed with trunnions $m m$, resting in the said bearings $g g$, and so as to work therein, the said projection extending beyond the pivots to form a cam n, the said concave surface of the disk toward the plate when in the closed position, substantially as and for the purpose described.

405,877. CUFF-HOLDER. NATHAN D. DARGIL, New York, and JOSEPH L. FOLLETT, Brooklyn, N. Y. Filed Apr. 2, 1889. Serial No. 305,762. (No model.)



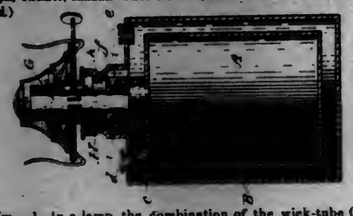
Claim.—1. In a cuff-holder, the combination of the clamp B for engaging the device with the cuff, the body A, having eyes $A' A^2$, and a pin E, carried by lever D, arranged to be moved endwise through the eyes and to engage a portion of a garment P depressed in the space between the eyes, as herein specified.

2. In a cuff-holder, the body A, having eyes $A' A^2$, and means, as the spring-clamp B, for engaging with the cuff M, in combination with the lever D, turning on a pivot C and extending each side thereof, and with a pin E, carried by said lever and playing through said eyes, as herein specified.

3. In a cuff-holder, the body A, clamp B, and lever and pin D E, in combination with each other and with a dog G, adapted to secure the parts in a locked position and to be engaged and released by

pressure imparted through the flexible material of a garment, as herein specified.

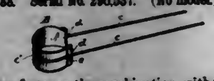
405,878. SAFETY-LAMP. JOHN DAVIDSON and JOHN TAYLOR, Guelph, Ontario, Canada. Filed Nov. 19, 1887. Serial No. 255,569. (No model.)



Claim.—1. In a lamp, the combination of the wick-tube G, the jacket surrounding the same and open at the top, the vessel A, connected to the lower end of the wick-tube, and the vessel B, surrounding the vessel A and connected to the jacket above the former, the said jacket being provided between the exterior of the vessel A and the interior of the vessel B with openings *i*, as shown.

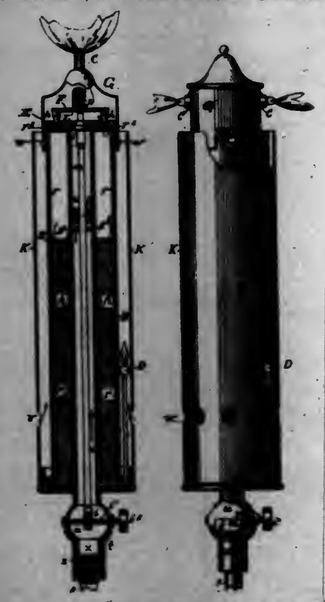
2. In a lamp, the vessel B, having the contracted top opening, the vessel A, located therein and provided with the neck, in combination with the wick-tube, the jacket surrounding the same and open at its top, said jacket having the projecting surface A, formed to fit the opening in the vessel B, the neck *f*, constructed to fit within the neck on the vessel A, and the perforations *i* between the vessels.

405,879. VINE-FASTENER. SAMUEL J. DICKSON, Chicago, Ill. Filed Nov. 12, 1888. Serial No. 290,537. (No model.)



Claim.—In a vine-fastener, the combination, with the open circular band or collar B, provided near its ends with openings *d*, and having its end portions bent or doubled on a line with said openings, of a fastening-wire c, composed of a single length of wire encircling said band and secured thereto by passing its ends through the openings *d* of the band, substantially as set forth.

405,880. CARBURETING-LAMP. LEO DOMS, Vienna, Austria-Hungary. Filed Oct. 2, 1888. Serial No. 286,969. (No model.)



Claim.—1. In a carbureting-lamp, the combination of a receptacle for naphthaline or other hydrocarbon, a gas-burner supported by said receptacle, a gas-pipe extended centrally through the naphthaline-receptacle and supporting the same, said gas-pipe being provided with perforations leading into said receptacle, a plate located at the upper end of the naphthaline-receptacle and provided with openings communicating with said receptacle and with the gas-pipe, a gas-burner adapted for heating the naphthaline-receptacle, a vertically-movable rod supported centrally in the gas-pipe, a perforated piston-valve carried by said rod to control the passage of gas into the naphthaline-receptacle, and valves carried by the upper portion of said rod and adapted to control the passage of gas and mixed gas and vapor through the perforated plate to the burner, substantially as described.

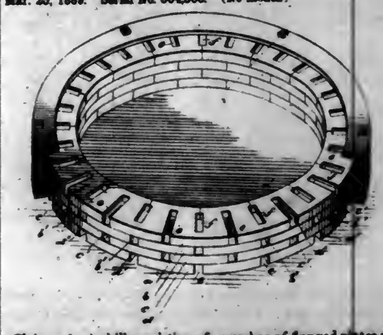
2. In a carbureting-lamp, the combination of a receptacle for naphthaline or other hydrocarbon, an illuminating-gas burner supported by said receptacle, a gas-pipe extended centrally through the naphthaline-receptacle and provided with perforations leading into said receptacle, a gas-burner adapted for heating the naphthaline-receptacle, a jacket surrounding said heating-burner, a plate located at the upper end of the naphthaline-receptacle and provided with openings through which the said receptacle and gas-pipe communicate with the illuminating-burner, a vertically-movable rod supported centrally in the gas-pipe, a perforated piston-valve carried by said rod and adapted to control the passage of gas into the naphthaline-receptacle, and valves carried by the upper portion of said rod to control the passage of gas and mixed vapor and gas to the illuminating-burner, substantially as described.

405,881. LIQUID-FUEL BURNER. WILLIAM R. EASTMAN, Boston, Mass., assignor to the Eastman Freight Car Heater Company, Portland, Me. Filed Dec. 5, 1888. Serial No. 292,738. (No model.)



Claim.—The liquid-fuel burner consisting of three concentric cylinders, the intermediate cylinder being slightly smaller in diameter than the outer cylinder, whereby an annular chamber is formed, the latter cylinder provided near the bottom with an inlet-passage for oil and communicating with said annular passage, and near the top provided externally with an annular fuel-pan, in combination with the air-deflector consisting of three concentric deflector-plates forming annular air-passages, the inner plate supporting the outer plate, and provided with a collar or tube secured within the inner cylinder, and the deflecting-plate secured to the upper margin of the intermediate cylinder and located below the middle plate, whereby a series of concentric air-passages are formed for the discharge of air to the fuel-pan, substantially as described.

405,882. CHILL. WILLIAM FAWCETT, Rochester, N. Y. Filed Mar. 26, 1889. Serial No. 304,580. (No model.)



Claim.—1. A chill consisting of a number of flanged plates resting one upon another, and each provided with slots to connect the air-spaces between the several plates, substantially as described.

2. A chill consisting of a number of plates provided on each edge with a flange, and having openings *f* between the flanges, slots *e* extending through the outer flange, and kerfs or slits extending through the inner flanges to the openings *f*, substantially as described.

3. A chill consisting of a number of superposed plates having flanges effecting air-spaces between them, and a ring embracing the periphery of the assembled plates, substantially as described.

4. A chill for wheels, consisting of a number of plates secured together, each provided in its inner edge with slits arranged to break joints with those of the adjoining plate, substantially as described.

5. A chill for wheels, consisting of a number of superposed plates having air-spaces between them, and each provided with slits in its inner edge arranged to break joints with those of the adjoining plate, substantially as described.

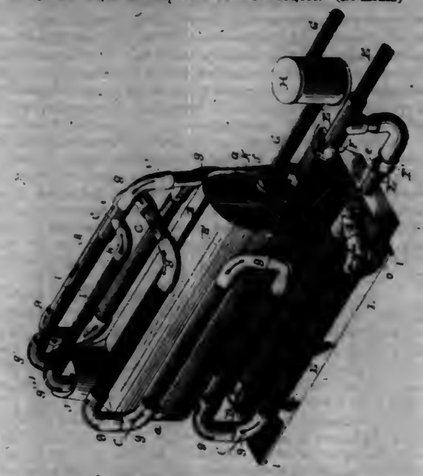
405,883. INHALER. WILLIAM R. GARR, Meriden, Conn. Filed Mar. 20, 1889. Serial No. 303,903. (No model.)



Claim.—1. A pan for administering face vapor-baths, provided with holes in the sides for the admission of atmospheric air, and hoods secured to the outside over said holes, whereby the pan is provided with handles and the escape of vapor from the pan is retarded, as set forth.

2. A pan for administering face vapor-baths, having holes in the sides for the admission of air and provided with flexible tubes for connecting said holes with the nostrils of the patient, as set forth.

405,884. HYDROCARBON-BURNER. THOMAS R. HALL, Kansas City, Mo. Filed Mar. 30, 1889. Serial No. 304,008. (No model.)



Claim.—1. In a retort vaporizer and burner, the combination, with the independent retorts for water and hydrocarbons and a burner arranged thereunder, of a single continuous superheating-pipe connected to both retorts and to the burner and doubled on itself back and forth on opposite sides of the retorts and over the burner, whereby it is heated by the combustion at the said burner, substantially as specified.

2. In a retort vaporizer and burner, the combination, with a horizontal oil-pan having a burner located therein, of their dependent retorts provided with water and hydrocarbon-supply pipes and located centrally over said pan, and the single continuous superheating-pipe connected at one end to both retorts and at the other end to the burner and doubled back and forth parallel with and on opposite sides of the retorts and above the oil-pan, whereby said pipe is heated by the combustion in the pan, substantially as specified, for the purpose set forth.

3. In a retort vaporizer and burner, the combination of an oil-pan provided at opposite sides with horizontal plates having flanges, and also provided with a central longitudinal burner, the two independent retorts arranged side by side over the center of the oil-pan, and the single continuous superheating-pipe, connecting both retorts with the burner, extending back and forth in a zigzag direction at opposite sides of the retorts and bearing on and supported in said position by the flanged side plates of the oil-pan, substantially as specified.

405,885. LUBRICATOR. THOMAS J. HART, Buffalo, N. Y., assignor to Pelthousen & Sherwood, same place. Filed Oct. 20, 1888. Serial No. 288,641. (No model.)

Claim.—1. In a lubricator, the combination, with the oil-chamber provided with a central discharge-passage c' in its bottom, and a lateral discharge-passage c^2, forming a communication between the oil-chamber and the central discharge-passage, of a regulating-valve arranged in the central discharge-passage and provided with a valve-stem extending through the top of the oil-chamber, whereby the flow of oil from the lateral discharge-passage into the central discharge-passage is regulated, and a cut-off valve arranged in the lateral discharge-passage and provided with a valve-stem extending through the top of the oil-chamber on one side of the stem of the regulating-valve, whereby the communication between the central discharge-passage and the oil-chamber can be closed without disturbing the position of the regulating-valve, substantially as set forth.

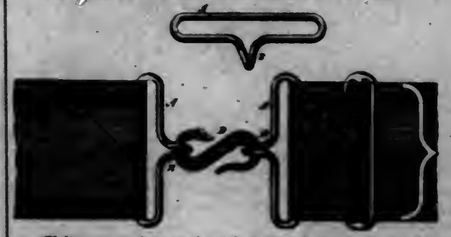
2. The combination, in a lubricator provided with a discharge-passage c', and a lateral passage c^2, communicating with said discharge-passage, of an upright tube d, arranged within the lubricator above the passage c', and provided with an internal screw-thread, a regulating-valve e', arranged within said tube and provided with an external screw-thread, and a cut-off valve arranged within the lubricator, controlling the lateral passage c^2, and having a stem extending through the cap of the lubricator, substantially as set forth.

3. The combination, with the oil-chamber of the lubricator provided with a discharge-passage c', and a lateral passage c^2, communicating with the same, of a regulating-valve arranged in said discharge-passage, a cut-off valve arranged in the lateral passage c^2, and provided with a stem extending through the top of the oil-chamber, a spring whereby said valve is depressed, an incline arranged at the top of the lubricator, and a pin or projection arranged on said valve-stem and adapted to bear against said incline, substantially as set forth.

4. The combination, in a lubricator provided in its top with a feed-opening l, of a laterally-swinging arm M, pivoted to the top of the lubricator and provided on its under side with a recess arranged above the opening l, and a cap n', arranged above said recess, a valve n, arranged in said recess and inclosed by the arm M, and a spiral spring n^3, inclosed by said cap and bearing upon the valve, whereby the latter is depressed in its seat, substantially as set forth.

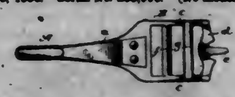
5. The combination, with the cylinder A and the cap B, provided with a depending sleeve h^3, having notches h', of the head B', and the tube d, provided with pins h, engaging in said notches, whereby the cap is held against turning on the cylinder A, substantially as set forth.

405,886. WAIST-BELT LOOP. FRANK J. HERRICK, New Britain, Conn. Filed Dec. 20, 1888. Serial No. 294,195. (No model.)



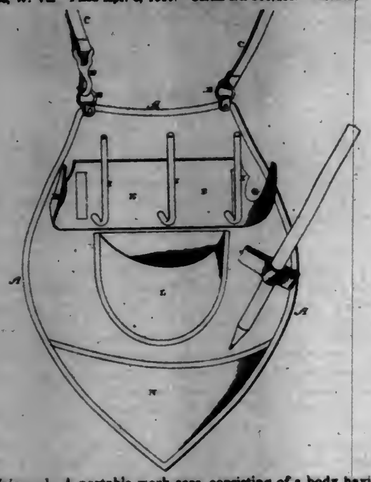
Claim.—As an improved article of manufacture, a waist-belt loop comprising an elongated oval loop with the eye B formed on a side bar thereof and disposed spirally with relation thereto, leaving a substantially U-shaped opening in the portion of the eye which intersects the elongated opening of the loop, all the parts of the device being of comparatively uniform size throughout.

405,887. COMBINED SNAP-HOOK AND LOOP. LESLIE HEWITT, Buffalo, N. Y., assignor of one-half to Pratt & Letchworth, same place. Filed Dec. 18, 1888. Serial No. 293,906. (No model.)



Claim.—As an improved article of manufacture, the combined snap-hook and loop herein described, consisting of the hook A and the loop B, having side bars c c, extending rearwardly from the shank of the hook, a rear cross-bar d, connecting the rear ends of the side bars, a curved tongue e, formed on the upper side of said cross-bar and projecting rearwardly therefrom, a front cross-bar f, and a raised cross-bar g, arranged between the front and rear cross-bars f and d, substantially as set forth.

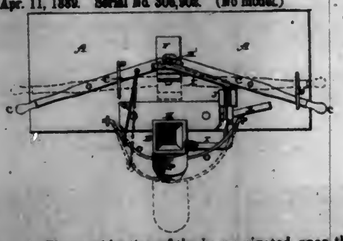
405,888. PORTABLE WORK-CASE. JAMES H. JEFFERSON, Moundsville, W. Va. Filed Apr. 8, 1889. Serial No. 306,410. (Model.)



Claim.—1. A portable work-case consisting of a body having a supporting-band secured thereto, a plate secured thereto horizontally, having one end turned upward and sharpened to form a thread-cutter, and wires secured to the plate upon which the spools are placed, substantially as specified.

2. A portable work-case consisting of a body having a supporting-band connected thereto, a plate secured to the body horizontally, and having its ends turned outward from the body and formed into hooks, one of the hooks being sharpened, for the purpose substantially as specified.

405,889. CAR-COUPLING. ANDREW H. JOHNSON, Tryus, Miss. Filed Apr. 11, 1889. Serial No. 306,908. (No model.)



Claim.—1. The combination of the levers pivoted upon the end of the car having their ends loosely connected together, the lifter provided with a catch, and the partially-revolving spring-actuated support which has its upper end to engage with the catch on the lifter and its lower bent end to project beyond the front of the draw-head, substantially as shown.

2. The combination of the pivoted levers upon the end of the car, the slotted lifter provided with a catch, the partially-revolving spring-actuated support pivoted upon the end of the car and having its upper end to engage with the catch, while its lower end projects beyond the draw-head, the rod O, the guiding-plate P, secured thereto, and the chain Q, for connecting the rod to one of the levers, substantially as shown and described.

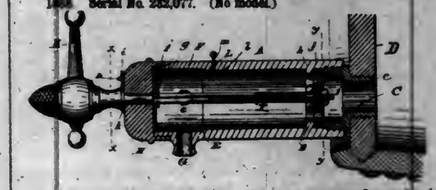
405,890. MACHINE FOR BUILDING WIRE-AND-PICKET FENCES. JESSE M. KEITH, Albany, Oreg. Filed Mar. 5, 1889. Serial No. 301,905. (No model.)



Claim.—1. In a fence-machine, the combination of the uprights carrying the twisters, the cups or sockets fitting on the upper and lower ends of the uprights, the plate or lug secured to the side of the uprights having an opening therein, an angular step having the vertical limb thereof fitting in the opening of the lug and having a series of perforations in said limb, and the screw passing through the lug and adapted to engage one of the perforations of the step, substantially as described.

2. In a fence-machine, the combination, with the uprights, of the lug or guide having a slot or opening therein, the angular step having a series of openings in the vertical limb thereof, and the screw in the guide adapted to engage one of the perforations of the step to adjust the same to different heights, substantially as described

405,891. MEASURING-FAUCET. JAMES H. KELL, Washington, D. C., assignor of one-half to Frank Aldrich, same place. Filed Aug. 6, 1888. Serial No. 282,077. (No model.)



Claim.—1. The combination, with a measuring-faucet having a perforated diaphragm near one end extending across its inner chamber, of a valve of the same size and form as the diaphragm, having openings registering with the perforations, said valve being adapted to turn to open and close the perforations, and a rod connected therewith and extending to the opposite end of the faucet and attached to a key-plug operating within the faucet and screw-cap for opening and closing an exit-port, as set forth.

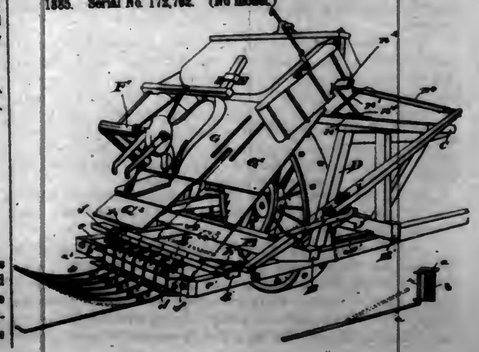
2. The combination, with a diaphragm across one end of the chamber having holes or perforations around its center, of a valve of the same form as the diaphragm on a rod extending through the diaphragm, provided with openings registering with those in the diaphragm, and a hollow key-plug at the opposite end having a hole in its side secured to the rod and its inner surface smooth with the inner surface of the faucet, said rod being adapted to turn the valve on the diaphragm and the key-plug over an exit-opening in the shell of the faucet, as set forth.

3. The combination, with a measuring-faucet having means at one end of the shell for opening and closing its reservoir-orifices, and a recess in the inner opposite end of the shell, of a hollow key-plug within said recess having its inner wall flush with the surrounding inner wall of the shell, said plug having a hole in its side adapted to alternately register with an exit-port as the reservoir-orifice is opened and closed, as set forth.

4. The combination, with a measuring-faucet having a perforated diaphragm across its chamber at one end integral with the shell, a turning-valve on the side of the diaphragm, and a hollow key-plug in a recess on the inner wall of the shell at the opposite end, of a screw-cap on the end of the shell in contact with the head of the key-plug, and a rod journaled in the screw-cap and diaphragm and passing through and having secured thereto the valve and hollow key-plug, as set forth.

5. The combination, with a shell having a perforated diaphragm in one end, with a valve opening and closing the same, and a key-plug in a recess in the opposite end of the shell registering with an exit-port, of a screw-cap on the end of the shell having stop-lugs, and a rod journaled in the cap and diaphragm carrying the valve and key-plug and having an indicating-arm thereon working between the stop-lugs, as set forth.

405,892. SHEAF-CARRIER FOR SELF-BINDING HARVESTERS. BURR A. KENNEDY and JOHN P. STEWARD, Chicago, Ill. Filed July 27, 1885. Serial No. 172,762. (No model.)



Claim.—1. A sheaf-carrier composed of a series of fingers journaled in a supporting-bar upon journals or axes normally vertical, the bearings for the journals being constructed substantially as described, whereby, when the fingers are swung to the rear to discharge the load, by being turned on their vertical journals, said journals may assume an inclined position to drop the ends of the fingers to the ground.

2. In a sheaf-carrier, a series of sheaf-carrying fingers, each having at the inner end an upright pivot or journal rigid thereon, in combination with a sustaining-bar provided with journal-bearings elongated at one end in a fore and aft direction, substantially as shown, to permit the journals to assume an inclined position and lower the outer ends of the fingers when the latter are turned to the rear.

3. In a sheaf-carrier, the sustaining-bar with the bearings elongated at one end in a fore and aft direction, in combination with the fingers having the upright pivots or journals and the crank-arms, the connection between said crank-arms, and controlling mechanism extending to a point adjacent to the driver's seat, whereby the driver is enabled to control the horizontal motion of the fingers and thereby their vertical motion.

4. The combination, with a dumping sheaf-carrier, of mean for holding the same in position to hold the sheaves, and a trip-arm outreaching from the carrier and adapted to strike the sheaves deposited by the carrier on the preceding round of the machine, whereby the automatic dumping action of the carrier is secured.

5. In a sheaf-carrier, a series of outreaching sheaf-receiving fingers individually pivoted to swing rearward in dumping, one of said fingers extended stubbleward beyond the remainder to encounter the previously-deposited sheaves, in combination with the connection between the fingers to compel their movement in unison, whereby the extended finger or trip is caused to move the others on encountering the fallen sheaves.

6. In combination with a dumping sheaf-carrier and means for locking the same in its receiving position, an elastic outreaching trip-finger adapted to encounter the previously-deposited sheaves, whereby the finger is enabled to automatically trip the carrier or to yield and pass the fallen sheaves when the carrier is prevented from moving.

405,893. HAND-CAR. ALBERT F. KUHL, Van Wert, Ohio. Filed Apr. 4, 1889. Serial No. 305,985. (No model.)



Claim.—1. In a car provided with hand propelling mechanism, substantially as shown, brake-levers B B', one located to one side of the propelling mechanism and the other to the rear thereof, the lower ends of said brake-levers being connected by a bar, and a link for connecting one of the levers to a crank-rod carrying brake-shoes, substantially as shown, and for the purpose set forth.

2. In a hand-car, a superstructure or housing therefor, consisting of a top connected to a frame for supporting and bracing the same, side strips D and F, having grooves *f f* for supporting side sections, substantially as shown, and for the purpose set forth.

3. In a car, a roof having front and rear portions which extend beyond the frame thereof, angular depending end pieces, the supporting corner-posts, and end doors hung to the corner-posts and provided with angular bottom plates, the parts being organized substantially as shown.

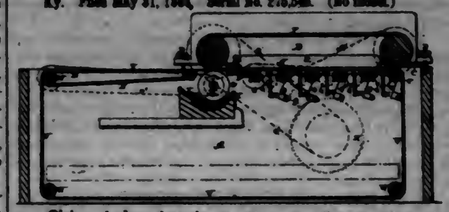
4. In a car, a removable superstructure supported upon corner-posts, said corner-posts being provided with eyebolts, and doors hinged thereto, said doors being adapted to meet in front of the car, substantially as shown.

5. In a car, end doors constructed substantially as shown and provided with angular extensions which, when the doors are closed, form a continuation of the floor-boards, for the purpose set forth.

6. In combination with a car, the end doors supported upon hinges and provided at their lower ends with inwardly-extended pieces, which are adapted to meet when the doors are closed, said doors having windows supported in angular frames, substantially as shown, and for the purpose set forth.

7. In combination with a housing for hand-cars, end doors hinged to the side frames so as to meet beyond the car-body, the doors being at an angle, as shown, with the sides of the car.

405,894. BRONZING-MACHINE. CHRISTIAN LANDOLT, Louisville, Ky. Filed May 31, 1888. Serial No. 275,549. (No model.)

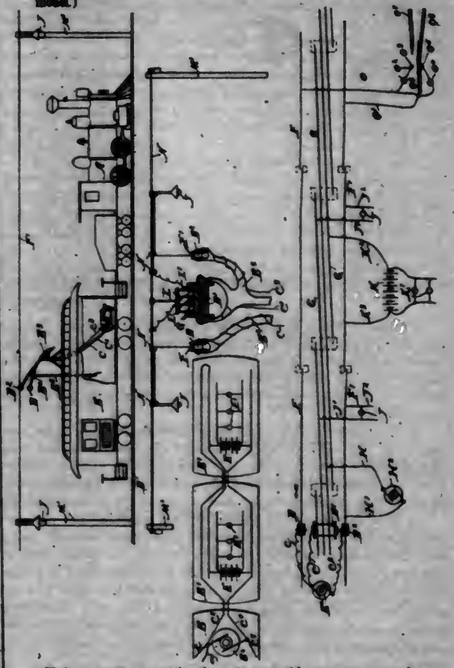


Claim.—1. In a bronzing-machine, an endless stencil provided with suitable perforations, in combination with the endless belt F, which serves to carry the printed matter through the machine, and mechanism for operating the stencil and the belt, substantially as shown.

2. The combination, with an endless stencil provided with perforations, of the bronzing-roller, the endless belt F, the rollers for brushing and cleaning the bronze through the openings in the stencil, and suitable operating mechanism for the endless belt, stencil, and rollers, substantially as described.

3. The combination of the upper frame, the pulleys placed therein, the endless belt which passes around the pulleys, and the boards placed inside of the frame for pressing the belt down upon the cleaning and polishing rollers, substantially as described.

405,895. COMBINED TRACK AND TRAIN LIGHTING. HARRY W. LEONARD, Chicago, Ill. Filed Feb. 7, 1889. Serial No. 299,012. (No model.)



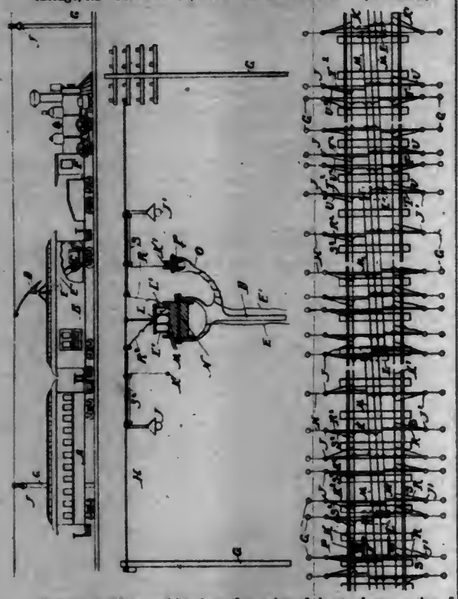
Claim.—1. The combination of a movable generator, conductors, and translating devices connected thereto, energized therefrom, and moving therewith, a series of fixed conductors and translating devices connected therewith, and a movable connection from the generator to the fixed conductors to complete the circuit therethrough, and thus energize the fixed translating devices from the movable generator, some of such fixed translating devices being normally always energized.

2. The combination of a movable generator, conductors, and translating devices connected thereto, energized therefrom, and moving therewith, a series of fixed conductors and translating devices connected therewith, and a movable connection from the generator to the fixed conductors to complete the circuit therethrough, and thus energize the fixed translating devices from the movable generator, some of such fixed translating devices being normally always energized, said

fixed conductors overlapping, so as to be in contact with the movable connection in such manner as to keep one of them normally always in contact with such conductors.

3. The combination of a movable generator, conductors, and translating devices connected thereto, energized therefrom, and moving therewith, a series of fixed conductors and translating devices connected therewith, and a movable connection from the generator to the fixed conductors to complete the circuit therethrough, and thus energize the fixed translating devices from the movable generator, some of such fixed translating devices being normally always energized, said local or fixed translating devices consisting in part of local systems containing converters, such as storage-batteries.

405,896. ELECTRIC-LIGHTING SYSTEM. HARRY W. LEONARD, Chicago, Ill. Filed Jan. 19, 1889. Serial No. 296,862. (No model.)



Claim.—1. The combination of a series of short wires, a series of long wires, a generator of electricity, a branched connector leading therefrom to the short wires and either one of the long wires, as the case may be, and series of lamps connected some with the short wires and one of the long wires and others with the short wires and another of the long wires.

2. The combination of a series of short overlapping wires, two long wires, two series of lamps connected one series from one long wire, the other series from the other long wire, and both to the short wires, and a generator movable along such wires and a branched connector leading therefrom to the short wires and one of the long wires.

3. The combination of a series of fixed conductors, a series of translating devices connected therewith, a generator movable along such conductors, a movable connector normally in contact with at least one of such conductors and one pole of the generator, and connectors between the other pole of the generator and some of such conductors, the circuit being thus completed through a translating device, so as to successively energize such translating devices from the moving generator and normally to keep some of them constantly energized.

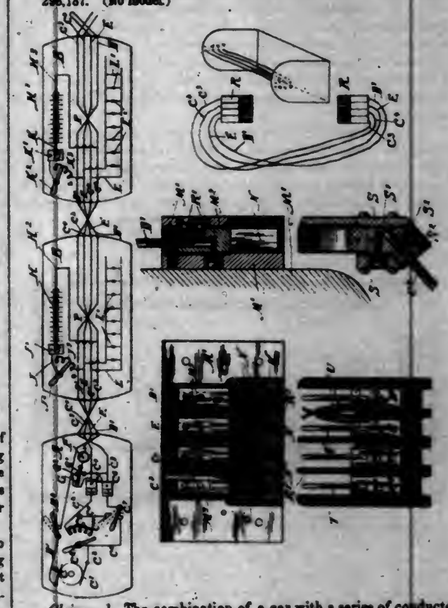
4. The combination of a series of fixed conductors, a series of electric lamps connected therewith, a generator movable along such conductors, a movable connector normally in contact with at least one of such conductors and one pole of the generator, and connectors between the other pole of the generator and some of such conductors, the circuit being thus completed through a translating device, so as to successively energize such electric lamps from the moving generator and normally to keep some of them constantly energized.

5. The combination of a series of fixed overlapping conductors, a series of translating devices connected therewith, a generator movable along such conductors, a movable connector normally in contact with at least one of such conductors and one pole of the generator, and connectors between the other pole of the generator and some of such conductors, the circuit being thus completed through a translating device, so as to successively energize such translating devices from the moving generator and normally to keep some of them constantly energized.

6. The combination of a series of fixed conductors along a railroad-track, a series of translating devices connected therewith, a movable generator adapted to be carried along the track, a movable connector from one pole of the generator and normally in contact with at least one of such conductors, and connections from the other pole of the generator to some of such conductors, the circuit being thus completed through a translating device, so that the translating devices are successively energized from the generator moving on the track and some of them always energized when in operation.

7. The combination of a series of fixed conductors, a series of incandescent lamps connected therewith, a generator movable along such conductors, a movable connector normally in contact with at least one of such conductors and one pole of the generator, and connectors between the other pole of the generator and some of such conductors, the circuit being thus completed through a translating device, so as to successively energize such incandescent lamps from the moving generator and normally to keep some of them constantly energized.

405,897. SYSTEM OF ELECTRIC LIGHTING FOR RAILWAY-CARS. HARRY W. LEONARD and AUGUSTUS HANSON, Chicago, Ill.; said Hanson assignor to said Leonard. Filed Jan. 31, 1889. Serial No. 298,187. (No model.)



Claim.—1. The combination of a car with a series of conductors thereslong so arranged that the terminal of each is on opposite sides of each of the other terminals at the two ends of the car.

2. The combination of a car with a series of conductors thereslong, two of which together constitute, when in action, a return-loop, said conductors so arranged that the terminals of the two conductors forming the loop have opposite relative position with reference to the remaining conductor-terminals at each end of the car.

3. The combination of a series of cars with a series of conductors in each car and connectors between such conductors, said connectors containing wires so arranged that the conductor-terminals in one car are connected each with oppositely-located conductor-terminals on the adjacent car.

4. The combination of a series of cars with a series of conductors thereslong so arranged that the terminal of each is on opposite sides of each of the other terminals at the two ends of the car, and a connector provided with wires so arranged that the conductors of one car are connected each with the oppositely-arranged conductors on the adjacent car.

5. In a system of electric lighting for cars, a connector to couple adjacent cars, consisting of two similar coupling-pieces, having a series of terminals and crossed wires leading from one to the other, and coupling-blocks having each a series of terminals.

6. In an electric-lighting system for cars, the combination of cars and conductors with coupling-blocks at each end of each car containing two terminals normally in contact, so as with their conductors to make a return-loop closed at such coupling-block, and two terminals normally not in contact with a coupler adapted to open such loop and connect all the terminals with the terminals of the coupler.

7. In an electric-lighting system for cars, a coupler provided with two similar coupling-pieces and connecting-wires, each piece having two terminals normally in contact and two normally not in contact, in combination with a coupling-block containing the terminals of the car-conductors, said closed terminals on the coupler adapted to be opened and connected with terminals in the coupling-block when the two are brought together.

8. In an electric-lighting system for cars, a coupler provided with two similar coupling-pieces and connecting-wires, each piece having two terminals normally in contact and two normally not in contact, in combination with a coupling-block containing the terminals of the car-conductors, two of which are normally in contact, and contact-breaking plates on the block and the coupling-piece, so that when interlocked such connected terminals are separated.

9. In an electric-lighting system for cars, the combination of the cars, conductors, and coupling-blocks which contain the terminals of such conductors, two of said terminals normally in contact and two normally not in contact, with a coupler consisting of coupling-pieces and connecting-wires, said pieces containing the terminals of said wires, and two of such terminals normally in contact and two normally not in contact, and contact-breakers, one on the block and one on each coupling-piece, so that when the block and pieces are interlocked all of such closed terminals are opened and each car-conductor is connected with its respective coupler-wire.

10. In an electric-lighting system for cars, the combination cars and their conductors with coupling-blocks, one at each end of each car, containing the terminals of such conductors, two of such terminals normally in contact and two normally not in contact, with a coupler consisting of two coupling-pieces and connecting-wires, the terminals of such wires in such coupling-pieces, and two at each end normally in contact and two normally not in contact, and one contact-breaker on each block and each piece.

11. In an electric-lighting system for cars, the combination of a generator with a main conductor leading from one pole, a compound conductor leading from the other, storage-batteries, and lamps, as required for the cars, said batteries coupled between the main and one branch of the compound conductor, and the lamps between the main and the other branch of the compound conductor.

12. In an electric-lighting system for cars, the combination of a generator with a main conductor leading from one pole, a compound conductor leading from the other, storage-batteries having a variable resistance in series with each set, should more than one set be used, and lamps, as required for the cars, said batteries coupled between the main and one branch of the compound conductor, and the lamps between the main and the other branch of the compound conductor.

13. In an electric-lighting system for cars, the combination of a generator with a main conductor leading therefrom and a return-conductor connected therewith so as to form a loop, and a compound conductor leading from the other pole, the storage-batteries, and lamps, as required for the cars, said storage-batteries coupled between the return-conductor and one branch of the compound conductor, and said lamps between the return-conductor and the other branch of the compound conductor.

14. In an electric-lighting system for cars, the combination of a generator with a main conductor leading from one pole and a compound conductor leading from the other, consisting of two branch conductors, one of which contains a variable resistance, and a voltmeter and connections from the main conductor to either of the branch conductors, so as to test the difference of voltage between the main and either of the branch conductors.

15. In an electric-lighting system for cars, the combination of a generator with a main conductor leading from one pole and a compound conductor leading from the other, and consisting of two branch conductors, one of which contains a variable resistance, storage-batteries, and lamps, as required for the cars, the lights coupled between the main conductor and that branch of the compound conductor containing the variable resistance, and the storage-batteries between the main conductor and the other branch of the compound conductor.

16. In an electric-lighting system for cars, the combination of a generator with a main conductor leading therefrom, a return-wire connected with such main conductor so as to form a loop, a compound conductor leading from the other pole of the generator having two branches, and a voltmeter and connections, so that such return or main wire may be connected through such voltmeter with either branch of the compound conductor.

17. In an electric-lighting system for cars, the combination of a generator with a main conductor leading therefrom, a return-wire connected with such main conductor so as to form a loop, a compound conductor leading from the other pole of the generator having two branches, and a voltmeter and connections, so that such return or main wire may be connected through such voltmeter with either branch of the compound conductor, and an ampere-meter in each branch of said compound conductor.

18. In an electric-lighting system for cars, the combination of a generator with a main conductor leading therefrom, a return-wire connected with such main conductor so as to form a loop, a compound conductor leading from the other pole of the generator and having two branches, and an ampere-meter in each branch of said compound conductor.

19. In an electric-lighting system for cars, the combination of a generator with a main conductor leading therefrom, a compound conductor leading from the other pole of the generator having two branches, an ampere-meter in each of said branches, means for connecting the two branches when the generator is disconnected, and storage-batteries and lights coupled between the main and such branch conductors, respectively, so that when the generator is out of circuit and the branch conductors connected the two ampère-meters will be coupled in series with the batteries and lights.

20. In an electric-lighting system for cars, the combination of a generator with a main conductor leading therefrom, a return-wire connected with such main conductor so as to form a loop, a compound conductor leading from the other pole of the generator having two branches, and a voltmeter and connections, so that such return or main wire may be connected through such voltmeter with either branch of the compound conductor, and an ampere-meter in each branch of said compound conductor, and a variable resistance in one branch thereof.

21. In an electric-lighting system for cars, the combination of a generator with a main conductor leading therefrom, a return-wire connected with such main conductor so as to form a loop, a compound conductor leading from the other pole of the generator having two branches, and an ampere-meter in each branch of such conductor, and a variable resistance in one branch of such compound conductor.

22. In an electric-lighting system for cars, the combination of a generator with a main conductor leading therefrom, a compound conductor consisting of two branches leading from the other pole, and switches in the main conductor and both branches of the compound conductor.

23. In an electric-lighting system for cars, the combination of the generator with a main conductor leading from one pole thereof, a compound conductor leading from the other pole thereof and composed of two conductors running through the train, a resistance in such compound conductor, so as to secure a difference of potential on the two wires of the compound conductor, and lamps coupled between the main conductor and one branch of the compound, and batteries between the main conductor and the other branch of the compound conductor.

24. In an electric-lighting system for cars, the combination of the cars with a series of car-conductors leading therealong and having their terminals at each end of each car so arranged as always to occupy the same relative positions to each other when considered as series, as from right to left in a horizontal line, from top to bottom in a vertical line, and the like, and viewed from without the car.

25. In an electric-lighting system for cars, the combination of a car with a series of conductors therealong, said conductors so arranged that the terminals of some of them have opposite relative positions with reference to the remaining conductor-terminals at each end of the car.

26. In an electric-lighting system for cars, the combination of a generator with a main conductor leading therefrom and a compound conductor leading from the other pole and consisting of two branches, each of which contains an ampere-meter.

27. The combination of a generator with conductors leading therefrom, two or more sets of storage-batteries, and also lamps in multiple arc across such conductors, each set of storage-batteries having each of its cells at all times in series with and therefore subjected to the same current as every other cell in that set, and each set of storage-batteries having a variable resistance in series with it.

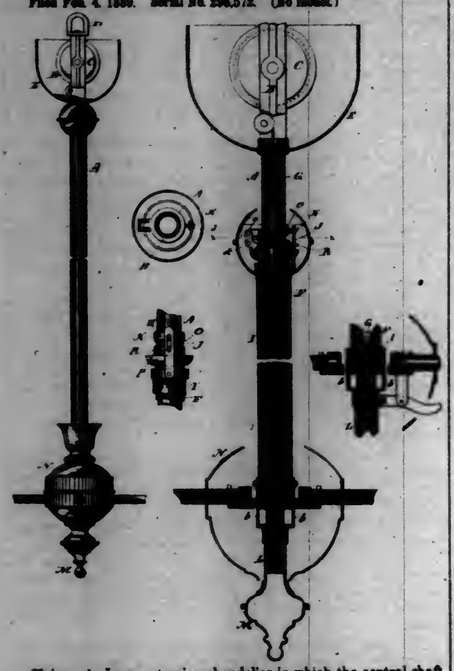
405,898. TOOL-HANDLE. NEWTON LEMLEY, Prospect, Ill. Filed Dec. 19, 1888. Serial No. 294,144. (No model.)



Claim.—The combination, with a handle having a cylindrical socket whose outer portion is of greater diameter than its inner portion, of a tool-shank equal in diameter to said outer portion, and having a prismatic end adapted to readily enter said outer portion, but requiring pressure to force it into said inner portion, substantially as set forth.

405,899. EXTENSION-CHANDELIER. CHARLES MASONEYER, Meriden, Conn., assignor to the Edward Miller & Company, same place.

Filed Feb. 4, 1889. Serial No. 298,572. (No model.)

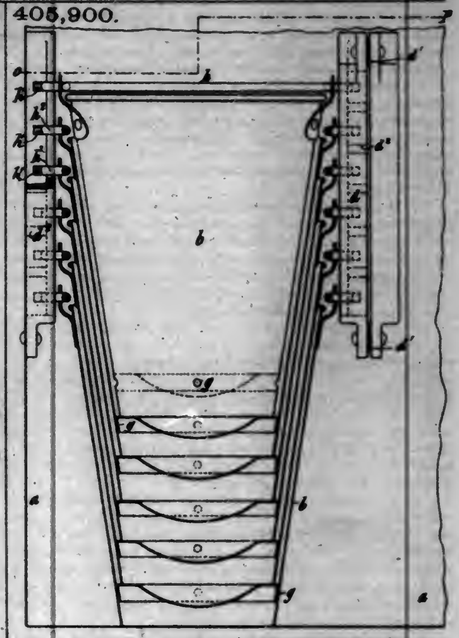


Claim.—1. In an extension-chandelier in which the central shaft is composed of telescopic tubes, the one part being stationary from the ceiling, the other part vertically adjustable thereon and carrying the lamps, the combination therewith of an engaging device between the said tubes, a tube outside of and surrounding the adjustable tube as a jacket, the said jacket arranged for vertical movement independent of the tube it surrounds, its upper end in connection with the said engaging device, and the said jacket-tube extending downward with a connection from its lower end downward through the arm-supporting collar, with the tip of the chandelier below the said supporting-collar attached to said connection, so as to serve as the handle by which the said jacket-tube may be moved, substantially as described.

2. In an extension device substantially such as described, in which the central shaft is composed of telescopic tubes, the one part being stationary and the other vertically adjustable thereon and carrying the lamps, the combination therewith of two cramps H P, hung to the adjustable tube one above the other, both surrounding the stationary tube, the opening through the two cramps being of greater diameter than the diameter of the stationary tube, with a spring between the two, the tendency of which is to force the two cramps into oppositely-inclined positions, a tube I outside the adjustable tube, but movable vertically thereon, an arm extending from the said tube I into connection with the said two cramps, and so that the vertical movement of the said tube I in one direction will turn one of the cramps and in the opposite direction will turn the other cramp, the said tube I extending to a convenient point and terminating in means for imparting vertical movement thereto, substantially as described.

3. In an extension device substantially such as described, in which the central shaft is composed of telescopic tubes, the one part being stationary and the other vertically adjustable thereon and carrying the lamps, the combination therewith of two cramps H P, hung to the adjustable tube one above the other, both surrounding the stationary tube, the opening through the two cramps of greater diameter than the diameter of the stationary tube, with a spring between the two, the tendency of which is to force the two cramps into oppositely-inclined positions, and a connection extending from the said cramps and through which the said cramps may be operated, substantially as described.

405,900. APPARATUS FOR STORING PAILS WITH WATER OR OTHER LIQUIDS. FREDERICK A. MEEKEN and WALTER F. THORPE, London, England. Filed Apr. 2, 1889. Serial No. 305,730. (No model.) Patented in England June 23, 1886, No. 9,308.



Claim.—1. The combination of a fluid-containing tank and a series of pails telescoped one within the other and wholly submerged in the fluid in the tank and adapted to be individually removed filled with the fluid, substantially as described.

2. The combination of a fluid-containing tank and a series of tapering pails of gradually-reduced diameter arranged one within the other and all submerged in the fluid in the tank and capable of being successively removed filled with the fluid, substantially as described.

3. The combination of a fluid-containing tank having attached fittings *d*, provided with the stops d^3, and a series of submerged pails having swinging handles A, provided with trunnions A^3, having projections A' to engage the stops, substantially as described.

4. The combination of a fluid-containing tank having attached vertically-slotted fittings *d*, provided with lateral stops d^3, and a series of submerged pails telescoped one within the other and provided with swinging handles A, having trunnions A^3 extending through the slots of the fittings and provided with projections A', which engage the stops, substantially as described.

5. The combination of a fluid-containing tank, a series of pails telescoped one within the other and submerged in the tank, and means, substantially as described, for holding the pails in their telescoped position.

6. The combination of a fluid-containing tank, a series of submerged pails telescoped one within the other and provided with handles having projections A', and devices engaging the projections to hold the pails submerged, substantially as described.

405,901. HYDROCARBON-OIL BURNER. WILLIAM B. MYERS, Springfield, Ohio, assignor of one-half to John P. Bartley, same place.

Filed Apr. 7, 1888. Serial No. 269,967. (No model.)



Claim.—1. In an oil-burner, the combination, with a retort having a cylindrical extension, of burners in the vertical walls of the extension, an oil-supply tube leading into the retort, and a deflector below the extension having openings or spaces formed in its outer edge, substantially as described.

2. In an oil-burner, the combination, with a retort having a cylindrical extension and a valved oil-supply tube leading into the retort, of a curved diaphragm or spreader having serrated edges located within the retort, substantially as described.

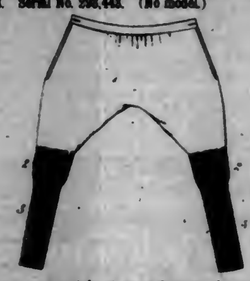
3. In an oil-burner, the combination, with a retort having a cylindrical extension from its under side and a burner at its upper side and burners in the walls of the extension, of an oil-tube leading into the retort through the extension, a diaphragm or spreader secured on the end of the tube within the retort, and a deflector below the extension, substantially as described.

405,902. JAR. EDWARD C. HAPGOOD, Philadelphia, Pa. Filed Apr. 11, 1889. Serial No. 306,890. (No model.)



Claim.—The combination, with a jar and its cover, of a bail or handle composed of a piece of wire bent to form a loop or handle, and having its ends passed through suitable openings upon opposite sides of the cap or cover, said ends being screw-threaded and provided with rubber washers *b* on the inside of the cover, substantially as described, and for the purpose specified.

405,903. DRAWERS, &c. CHARLES F. NORTH, Cohoes, N. Y. Filed Dec. 13, 1888. Serial No. 293,443. (No model.)



Claim.—As a new article of manufacture, the pantalets herein described and shown, consisting of the upper portion 1, extending from above the knee to the waist, of the ordinary fullness and dimensions to render the same loose and easy around the waist, hips, seat, and thighs, the contracted knitted tuck-stitch knee-sections 2, to closely fit and form braces for the entire knees and stitched to the loosely-fitting upper portion, and the knitted calf and ankle sections 3, contracted from the knee-sections downward to closely fit the calves and ankles and forming continuations of the tuck-stitch knee-sections, substantially as set forth.

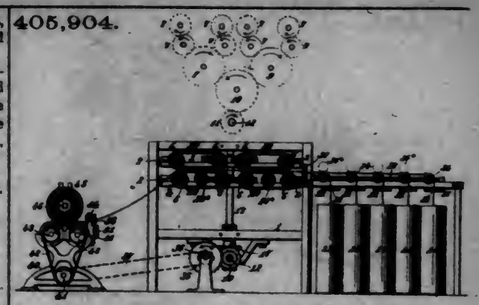
405,904. METHOD OF CARDING COTTON. JESSE V. PALMER, Greenwich, N. Y. Filed Dec. 27, 1888. Serial No. 294,757. (No model.)

Brief.—The method is designed for use in the production of yarn for hosiery and knit underwear, and avoids the objections incidental to the use of first and second breaker-cards.

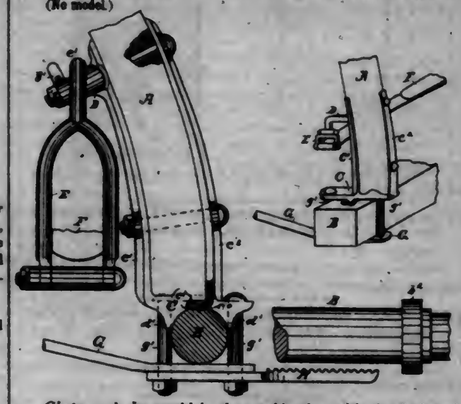
Claim.—1. The method of preparing cotton for spinning, which consists in carding and doubling the same, as usual, and delivering the slivers from the can of the doubler, railway-head, or drawing-frame to a wool-finishing card, substantially as described.

2. The method of preparing cotton for spinning, which consists in carding and doubling the same, as usual, then rubbing the slivers separately, and then subjecting them to the action of a wool-finishing card, substantially as described.

3. The method of preparing cotton for spinning, which consists in carding on cotton cards, doubling the slivers, as usual, rubbing the double slivers separately previous to the last carding operation, and then subjecting the fibers to a final carding operation, substantially as described.



405,905. VEHICLE ATTACHMENT. DAVID M. PARRY and THOMAS H. PARRY, Indianapolis, Ind. Filed Feb. 16, 1889. Serial No. 300,360. (No model.)



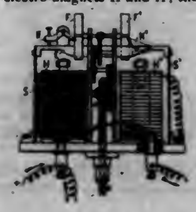
Claim.—1. In a vehicle, the combination, with the shaft and axle, of a shaft-clip having upwardly-extended arms to embrace the shaft, and having the outwardly-projected headed arm D at its upper end, and a link having an eye to embrace said headed arm, substantially as shown and described.

2. In combination, the axle B, with detents c^4, the clips c^4, having projections to enter said detents, arms to embrace the shaft and flanges to embrace the axle, and having an outward headed projection D at the upper end of its inner arm, and the spring-supporting link or shackle pivotally supported by said arm, substantially as shown and described.

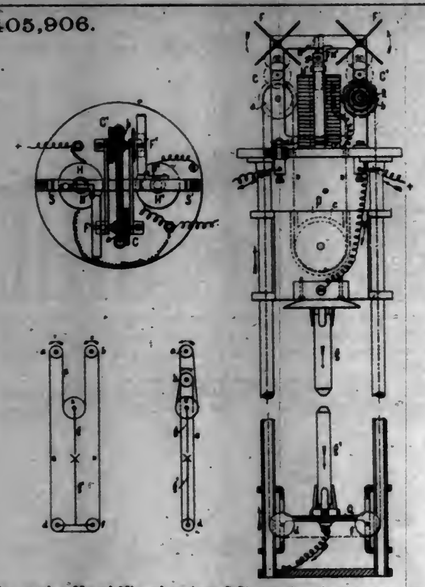
3. In a vehicle, the axle-clip having a spring-supporting link or shackle pivotally connected to its upper end, and having axle-embracing flanges at its lower end, and projections c^4 to enter detents in the axle, in combination with the axle B, having detents, as described, a strap or brace-rod, and a rearwardly-projecting step secured to the clip by bolts below the axle, substantially as shown and described.

405,906. ELECTRIC-ARC LAMP. HENRI PIEPER, Flis, Liege, Belgium. Filed Feb. 4, 1888. Serial No. 298,627. (No model.) Patented in Belgium Feb. 5, 1888, No. 80,508.

Claim.—In an electric lamp, the combination of the carbon-holders P and Q, pulleys pivoted to the said holders, the motor C, having the pulley *a* and fly-pinion F, the motor C', having the pulley *b* and fly-pinion F', spring R, chain *c*, a shunt-circuit branched off from the main circuit, the electro-magnets H and H', the armature E, having



405,906.



the catches N and N', and springs S S', carrying the armature, substantially as set forth.

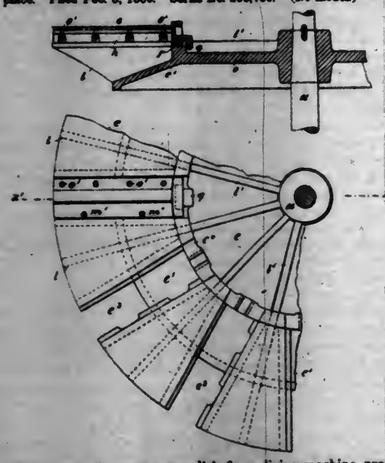
405,907. WOOD-PRESERVING COMPOUND. JOSEPH W. PUTNAM, New Orleans, La. Filed May 13, 1889. Serial No. 310,629. (No specimens.)

Claim.—A wood-preserving compound containing rosin, petroleum, and pine-wood oil, substantially as described.

405,908. WOOD-PRESERVING COMPOUND. JOSEPH W. PUTNAM, New Orleans, La. Filed May 13, 1889. Serial No. 310,630. (No specimens.)

Claim.—A wood-preserving compound containing rosin, creosote, and pine-wood oil, substantially as described.

405,909. SUGAR-CANE-SLICING MACHINE. CARL RABE, Sangerhäuser, Prussia, Germany, assignor to the Sangerhäuser Actien-Maschinen-Fabrik and Eisengiesserei, vormals Hornung & Rabe, same place. Filed Feb. 5, 1889. Serial No. 298,769. (No model.)



Claim.—1. A rotary cutter-disk for a slicing-machine, provided with a cutter and an inclined peripheral portion located below the cutter and receiving the severed slices therefrom, substantially as described.

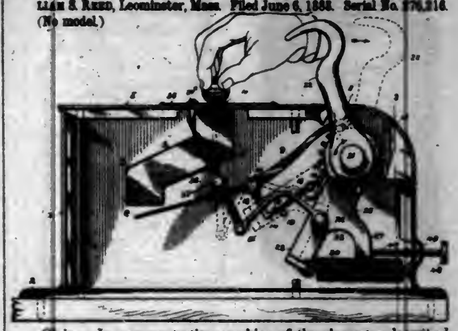
2. A rotary cutter-disk for a slicing-machine, comprising an upper horizontal peripheral portion and a lower inclined peripheral portion having radial ribs carrying the cutters and supporting the upper horizontal peripheral portion, substantially as described.

3. In a slicing-machine, a cutter-disk having an inclined peripheral lower portion and a horizontal upper peripheral portion supported by ribs on the said inclined portion and divided by radial openings c^3, intersecting the periphery of the said upper portion, substantially as and for the purpose specified.

4. In a slicing-machine, the combination, with a cutter-disk having its periphery intersected by radial openings, of a cutter-box laterally open on one side and a cutter carried by the cutter-box, substantially as and for the purpose specified.

5. In a slicing-machine, the combination, with a cutter-disk having its periphery intersected by radial openings c^3 and provided with dovetailed grooves in its annular re-enforcing rib c^4, of the cutter-box *h*, open at its outer end and provided with the downwardly-projecting dovetail *r* and the hook-like tail-piece *q*, and a cutter carried by the cutter-box, substantially as and for the purpose specified.

405,910. COIN-CONTROLLED POWER-TESTING MACHINE. WILLIAM S. REED, Leominster, Mass. Filed June 6, 1888. Serial No. 276,216. (No model.)



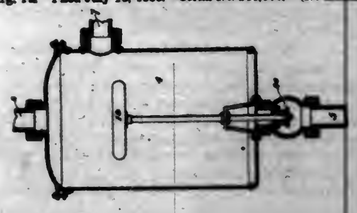
Claim.—In a power-testing machine of the character described, the combination, with an oscillatory power-testing handle, of a coin-operated mechanism controlling the movement of said power-testing handle and comprising a pawl and ratchet-wheel normally locking the said power-testing handle against movement in one direction, and so constructed as to permit the free movement of said testing-handle in the other direction; a fulcrumed pawl-lever 9, controlling the action of the locking-pawl and arranged to release the latter from the ratchet when tripped by the weight of a coin, a lever 15, normally in such position as to limit the movement of the pawl-lever when the latter is tripped by the weight of the coin, a pawl-dog carried by said lever 15 and arranged to slide in both directions over the ratchet and to displace the normal limiting position of the lever at the moment of rotation of the ratchet in a direction similar to that in which the locking-pawl permits said ratchet to rotate.

405,911. GAS-GENERATOR. WILLIAM RENNYSON, Norristown, Pa. Filed Jan. 30, 1888. Serial No. 262,406. (No model.)

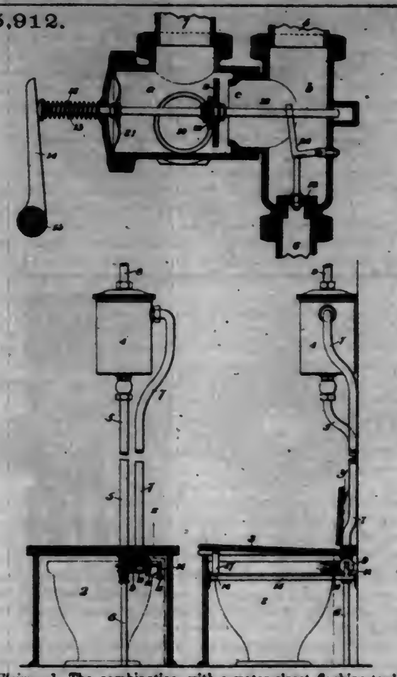


Claim.—The combination of a horizontal retort A, provided with the vertical transverse passages B, extending entirely through the retort, the said passages being for the passage of the products of combustion from the furnace, the deflectors or concentrators on the interior of the retort arranged intermediate the said passages, and a steam and hydrocarbon injector projecting into one end of the retort, whereby the gas-producing materials are projected forcibly against the front wall of each successive passage on their way through the retort, substantially as herein set forth.

405,912. FLUSHING APPARATUS. JAMES J. RICKETTS, Pittsburg, Pa. Filed July 16, 1888. Serial No. 280,077. (No model.)



405,912.



Claim.—1. The combination, with a water-closet flushing-tank, of a combined vent and overflow pipe leading from the tank to the closet, and a vent-pipe leading from the tank, substantially as and for the purposes described.

2. The combination, with a water-closet bowl and its flushing-tank, of a valve-shell and valve, a main supply-pipe leading to the valve, a tank supply-pipe leading from the valve to the flushing-tank, and a combined overflow and vent pipe which connects the flushing-tank with the valve-chamber in advance or on the opposite side of said valve and is in free communication with the bowl, substantially as and for the purposes described.

3. The combination, with a water-closet bowl and its flushing-tank closed at the top, of a valve-shell, a main supply-pipe leading to the valve-shell, a tank supply-pipe leading from the valve-shell to the flushing-tank, a branch leading from the valve-shell to the bowl, valve mechanism adapted to simultaneously close the main and open the branch pipe, a ventilating-pipe leading from the closed flushing-tank, and an overflow-pipe leading from the flushing-tank to the valve-shell and in free communication with the bowl, substantially as and for the purposes described.

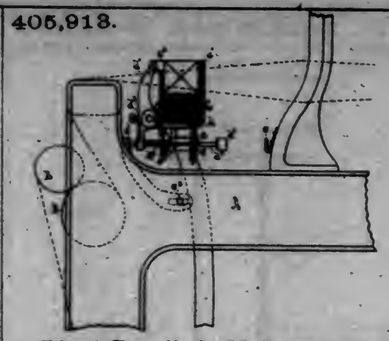
4. The combination, with a bowl and its supply-tank, of an interposed triple-ported T-valve shell, a supply-pipe leading from one port thereof to the supply-tank, and two valves which control the ports of the main pipe and the port leading to the bowl, the valve of the main pipe arranged to seat against the end of the said pipe, whereby it is held on its seat by the return-flow from the tank and its supply-pipe, substantially as and for the purposes described.

5. The combination, with a bowl and its supply-tank, of an interposed triple-ported T-valve shell, a supply-pipe leading from one port thereof to the supply-tank, and two valves which control the ports of the main pipe and the port leading to the bowl, the valve of the main pipe arranged to seat against the end of the said pipe, whereby it is held on its seat by the return-flow from the tank and its supply-pipe, and valves for closing two of said ports connected by stems, substantially as and for the purposes described.

6. The combination, with a water-closet bowl and its flushing-tank, of a supply-pipe leading to the flushing-tank, a branch therefrom leading to the bowl, valve mechanism adapted to simultaneously open the main and close the branch pipe, said branch-pipe valve having perforation therein for the escape of water to the bowl, and an overflow-pipe leading from the flushing-tank to the bowl, substantially as and for the purposes described.

405,913. SHUTTLE CHECKING AND RELIEVING MECHANISM FOR LOOMS. ORREN A. SAWYER and MOSES M. LABUE, Lowell, Mass. Filed Mar. 26, 1889. Serial No. 304,667. (No model.)

405,913.



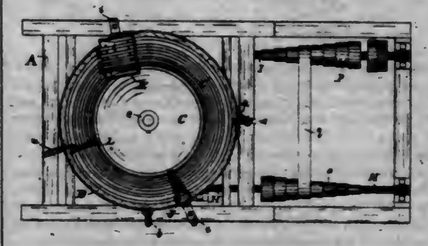
Claim.—1. The combination of the lay-beam C, arranged to move to and fro, the shuttle-box mounted thereon, having the shuttle-binder c^2 pivoted upon one side thereof, the finger d' and rod d^3, mounted upon the lay-beam, stops *b b'*, attached to the frame and arranged to be alternately brought in contact with said rod at each end of its path, and a compressing-clamp adapted to hold them in position against the shuttle-binder when moved to the same by one of said stops, substantially as described.

2. The combination of the lay-beam C, arranged to move to and fro, the shuttle-box mounted thereon, having the shuttle-binder c^2 pivoted upon one side thereof, the finger d' and its rod d^3, mounted upon the lay-beam, stops *o o'*, attached to the same and arranged to be alternately brought into contact therewith at each end of its path, and the compressing semi-cinders *e e'*, arranged to grip said rod and hold it in the position to which it is moved, substantially as described.

3. The combination of the lay-beam C, arranged to move to and fro, the shuttle-box mounted thereon and provided with the shuttle-binder c^2, pivoted upon one side thereof, the finger d' and its rod d^3, mounted upon the lay-beam, stops *o o'*, attached to the frame and arranged to be alternately brought into contact with said rod at each end of its path, the compressing semi-cylinders *e e'*, arranged to grip said rod, and a spring e^3, arranged to compress them upon the rod, substantially as described.

4. The combination of the lay-beam C, arranged to move to and fro, the shuttle-box mounted thereon, having the shuttle-binder c^2 pivoted upon one side thereof, the finger d' and its rod d^3, mounted upon the lay-beam, stops *o o'*, attached to the frame and arranged to be alternately brought into contact with the rod at each end of its path, a compression clamp adapted to hold said rod in the position to which it is moved, and the spring d^7, carried by said rod and arranged to press said finger against the shuttle-binder, substantially as described.

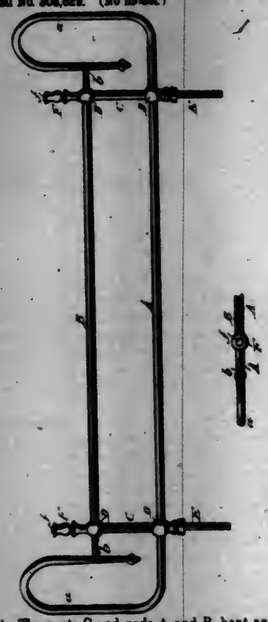
405,914. WIRE-SOLDER MACHINE. FREDERICK W. SCHULTZ, Baltimore, Md. Filed May 9, 1889. Serial No. 310,130. (No model.)



Claim.—1. A wire-solder machine having, in combination, a wheel C to revolve in a horizontal plane, and having a depending rim *f*, which forms on the lower side an open central cavity *g*, and provided with a horizontal annular plate C', a stationary water-receptacle B, having the bottom, a circular inside wall *c'*, which takes up into the said open central cavity of the wheel and forms an open center *c* and an outside wall *d*, and a vertical shaft D, extending up through the said open center of the water-receptacle and supporting the wheel C and annular plate C', whereby the revolving annular plate sets down the stationary water-receptacle.

2. A wire-solder machine having, in combination, the frame, a horizontal annular plate provided with concentric grooves of various sizes, a vertical shaft D, supporting said plate, and a tapered roller J, having grooves of various sizes spaced apart to correspond with the said concentric grooves.

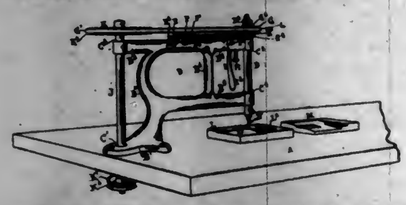
405,915. DASH-RAIL FOR VEHICLES. AARON SEARLS, Newark, N. J., assignor to the Searls-Randall Company, same place. Filed Apr. 9, 1889. Serial No. 306,629. (No model.)



Claim.—1. The posts O and rods A and B, bent and joined to form a double rail and handle *a*, as and for the purpose set forth.

2. The posts O and rods A and B, in combination with holder F, as and for the purpose set forth.

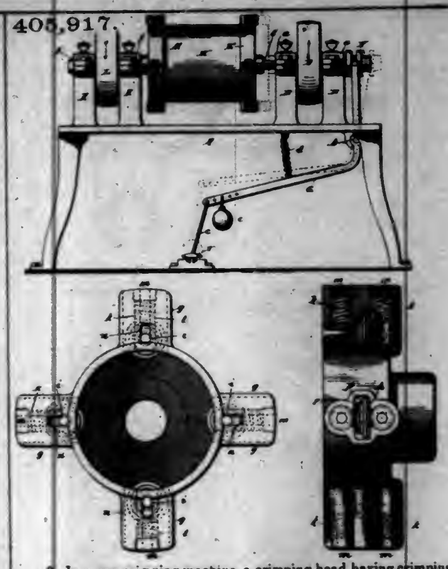
405,916. ROUTING-MACHINE. DELOS A. SEARS, Rockford, Ill. Filed June 19, 1888. Serial No. 277,608. (No model.)



Claim.—1. In combination, a suitable machine-frame, a vertical shaft mounted in bearings in said frame and capable of endwise motion and adjustment, the adjusting-springs secured to said frame and connected with said shaft in such a manner as to press the same downward, and a lever-cam mounted in said frame engaging with said springs, and adapted to raise and lower them and the shaft connected with the same, substantially as described, and for the purpose specified.

2. In a routing-machine, the combination, with a frame B, of a vertical shaft D, mounted in bearings in said frame and being capable of endwise motion and adjustment, the adjusting-springs E E', secured to the frame B and connected with the shaft D in such a manner as to press it downward, a lever-cam I, mounted in said frame engaging with the springs E E', and adapted to raise and lower the same and the shaft D, the set-screw H, for regulating the said springs and the parts supported by the same, and suitable accessory mechanism for operating said machine, substantially as set forth.

405,917. CAN-CRIMPING MACHINE. ALEXANDER SLAYMAN, Jr., Baltimore, Md., assignor of one-half to John S. Hull, same place. Filed Apr. 5, 1889. Serial No. 306,056. (No model.)



Claim.—1. In a can-crimping machine, the combination of two revolubie crimping-heads connected to revolve in opposite directions, one of said heads being constructed to reciprocate in its bearings, substantially as described.

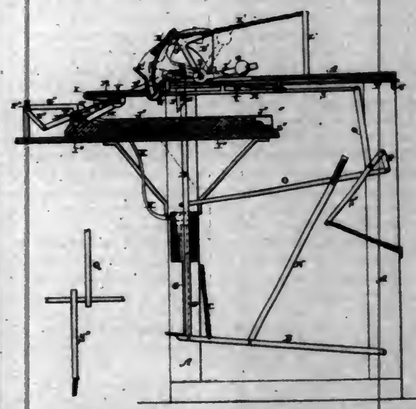
2. In a can-crimping machine, a crimping-head supporting crimping-wheels provided with springs inclosed in the head for regulating the pressure of the wheels upon the can, substantially as described.

3. In a can-crimping machine, a crimping-head having crimping-wheels supported in elongated bearings, in combination with a spring and a screw-plug for adjusting the tension of the spring, substantially as described.

4. In a can-crimping machine, a can-crimping head having crimping-wheels within the head provided with a bead, a groove, and an inclined surface on the side of the groove opposite the bead, in combination with automatic tension devices inclosed in the head for regulating the pressure of the wheels upon a can, substantially as described.

5. In a can-crimping machine, a crimping-head having a recess to receive the end of a can, and a series of crimping-wheels supported in radial arms on the head and projecting through the walls into said recess, in combination with a tension device inclosed in each of said arms for regulating the pressure of the wheels upon the can, substantially as described.

405,918. CIGAR-BUNCHING MACHINE. FREDRICK C. SMALSTIG, Allegheny, Pa. Filed Jan. 12, 1889. Serial No. 296,185. (No model.)



Claim.—1. In a cigar-bunching machine, the combination of the spring-actuated treadle, an air-forcing mechanism connected thereto, a movable mold, a table for supporting the mold, and an operating mechanism for moving the mold forward, whereby each pocket of the mold is cleansed before the bunch is deposited therein, substantially as shown.

2. The combination of the spring-actuated treadle, a piston-rod connected thereto, an oscillating valved cylinder, a tube extending therefrom, a movable mold, and a mechanism for moving it and carrying the outer end of said tube, substantially as described.

3. The combination of the spring-actuated treadle, an air-forcing mechanism connected thereto, and a tube or pipe for conducting the air therefrom, with the carriage and its mechanism, a dog connected to the carriage and provided with an opening through which the air is forced by the tube into the pockets of the mold, and the movable mold, which is moved forward by the dog, substantially as set forth.

4. The combination of the movable mold, a ratchet connected therewith, a dog for engaging with the ratchet and moving the mold, the reciprocating carriage, to which the dog is connected, and a cover for the mold, substantially as specified.

5. The combination of a movable mold, a ratchet connected thereto, a dog for feeding the mold forward, the reciprocating carriage, to which the dog is secured, and a cover which extends over both ratchet and mold and protects the ratchet from the pawl, substantially as shown.

6. The combination of the reciprocating carriage, the apron, and the tapering formation-roller, with the two tapering compensators X Y, placed upon opposite sides of the roller, substantially as described.

7. The combination of the reciprocating carriage having pivoted arms connected thereto, a vertically-moving receiver journaled in the arms, a stationary rack, and a pinion on the journal of the receiver for causing the receiver to partially revolve, a reciprocating plunger or discharger in the receiver for forcing out the bunch, a hammer and its operating mechanism for striking the discharger, and a movable mold operated by a dog on the carriage for receiving the bunch from the receiver, substantially as set forth.

8. The combination of the reciprocating carriage, pivoted arms connected thereto, a partially-revolving receiver pivoted in the arms, a pinion secured to the receiver, a stationary rack engaging the pinion, a bent rod carried by one of the pivoted arms for raising the receiver, and a stationary cam-surface against which the bent rod engages, substantially as specified.

9. The combination of the partially-revolving receiver, a pinion secured thereto, an adjustable stop, pivoted arms attached to the carriage, a stationary rack, a bent rod for raising the receiver, and a cam for the bent rod to strike against, substantially as shown.

10. The combination of the reciprocating carriage, pivoted arms connected thereto, a partially-revolving receiver journaled in the arms, a pinion on the end of the receiver, a stationary rack, a bent rod for raising the receiver, a cam-surface against which the bent rod strikes, a plunger placed in the receiver, a hammer for operating the plunger, the shaft to which the hammer is secured, the arm E", the rod D", and the crank which is operated in one direction by the spring K' and in the other by the treadle, substantially as described.

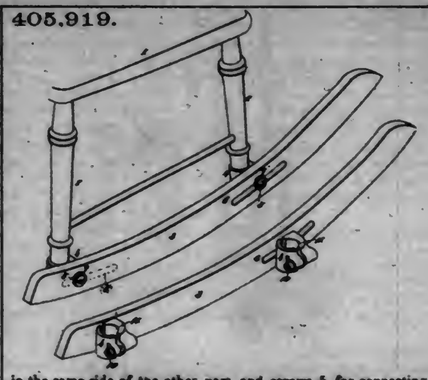
11. The combination of a reciprocating carriage, a vertically-moving and partially-revolving receiver, means for causing the receiver to partially revolve, a plunger placed in the receiver, a hammer for operating the plunger, and a movable mold operated by the movement of the carriage, substantially as set forth.

12. The combination of the treadle mechanism, the cranked shaft, the cleanser connected to and operated thereby, a retracting-spring, the pivoted conductor, a spring-actuated dog for operating the conductor, and a stop for operating the dog, substantially as described.

13. The combination of the treadle, the slotted operating-rod D, the shaft Z, provided with a crank, a latch for engaging with the projection on the rod D, a stop for operating the latch, the conductor, the cleanser, the spring-actuated dog for operating the conductor, and the retracting-spring K', substantially as set forth.

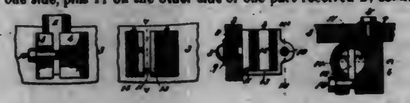
14. The combination of the shaft Z, provided with a crank, and a treadle-operating mechanism, with the conductor provided with a projection G', the cleanser secured to the shaft, the spring-actuated dog D', provided with the shoulders E' F', and the retracting-spring, substantially as specified.

405,919. CHAIR ATTACHMENT. AARON STRAUS and MAX B JACOBY, St. Louis, Mo.; said Jacoby assignor to said Straus. Filed Nov. 2, 1888. Serial No. 289,805. (No model.)

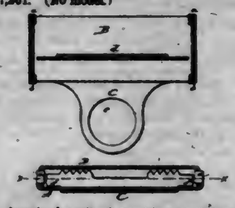


Claim.—1. In an attachment for chairs, the combination of the clips, consisting of two parts each fixed to one side of each rocker, connecting bolts or screws for securing the clips to the rockers, one part of each clip being substantially fixed and the other part adjustable, the latter having guide-pins on one side and the former having sockets to receive the pins, and a fastening securing the outer edges of the parts together, substantially as set forth.

2. In an attachment for chairs, the clips consisting each of two parts having bottom flanges 13, set-screws 10, connecting said parts on one side, pins 11 on the other side of one part received by sockets in the same side of the other part, and screws 5, for connecting the clips to the rockers, substantially as and for the purpose set forth.



405,920. BUCKLE. DWIGHT L. SMITH, Waterbury, Conn., assignor to the Waterbury Buckle Company, same place. Filed Apr. 15, 1889. Serial No. 307,261. (No model.)



Claim.—The herein-described buckle, consisting of the plate A, its ends turned at right angles and constructed with ears *a a b b*, a second plate B, corresponding to the plate A, its ends turned upward into U shape, the ears on the plate A turned into the U-shaped ends of the plate B, one of said plates constructed with the slot *d*, combined with a lever, the jaw of which rests between said plates and which extends through the slot *d*, substantially as described.

405,921. INK-WELL. ALBERTS R. SPRAGUE, Racine, Wis. Filed Mar. 14, 1889. Serial No. 303,295. (No model.)



Claim.—1. In combination with a desk having an ink-well, a flat spring-arm E, pivoted to the desk, and a cover secured to the arm, all substantially as shown, the arm being adapted to swing laterally with reference to the ink-well and to exert a downward pressure thereon.

2. In combination with a desk provided with an ink-well B, a laterally-swinging cover C, adapted to fit upon the top of the ink-well, and a flat spring E, secured at one end to the cover and at the opposite end to the desk and adapted to exert a downward pressure upon the cover.

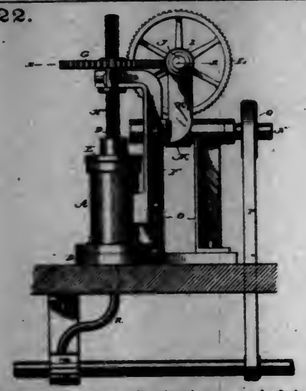
3. In combination with a desk provided with an ink-well, a laterally-swinging cover C and a flat spring E, secured at one end to the desk and pivotally connected at its other end with the cover, substantially as shown.

4. In combination with a desk provided with an ink-well having its upper surface below the top of the desk, and provided also with a recess *c*, a spring E, seated in said recess, and a cap or cover C, pivotally connected with the free end of said spring, all substantially as shown.

405,922. OILER. JOHN F. W. STAIRS, Halifax, Nova Scotia, Canada. Filed Dec. 14, 1888. Serial No. 293,052. (No model.)

Claim.—1. The cylinder provided with the detachable head, the piston having the grooved rod threaded through said head, in combination with the wheel through which the rod slides and by which it is turned, and the rigid wheel-sustaining arm overhanging the cyl

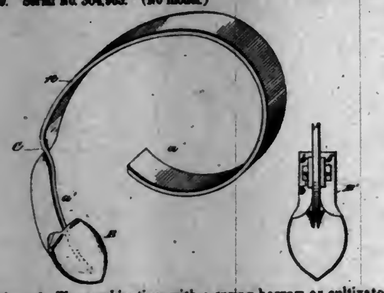
405,922.



inder at a distance therefrom, whereby the removal of the cylinder-head and the withdrawal of the piston are permitted without disturbance of the wheel or its support.

2. In a lubricator, the stationary cylinder and its piston having the grooved and threaded rod, in combination with the arm overhanging the cylinder, the wheel G, journaled in said arm and encircling and engaging the piston-rod, the shaft J, with its worm and worm-wheel, and the shaft N, with its worm and driving-pulley.

405,923. SPRING HARROW-TOOTH. ABRAM W. STEVENS, LE ROY W. STEVENS, WARREN M. BRINKERHOFF, and LESTER D. SWART, Auburn, N. Y., assignors to A. W. Stevens & Son, same place. Filed Mar. 27, 1889. Serial No. 304,963. (No model.)



Claim.—1. The combination, with a spring harrow or cultivator tooth, having at its lower end a portion with a narrower face to the line of draft than the main body of the same, of an earth-engaging point or blade, having at its rear portions extending inwardly from an edge of the blade and secured to the narrower portion of the tooth, substantially as described.

2. The combination, with a spring harrow or cultivator tooth, having at its lower end a portion edgewise to the line of draft, of an earth-engaging point or blade having at the rear bent portions extending inwardly from an edge of the blade and secured to the edgewise portion of the tooth, substantially as described.

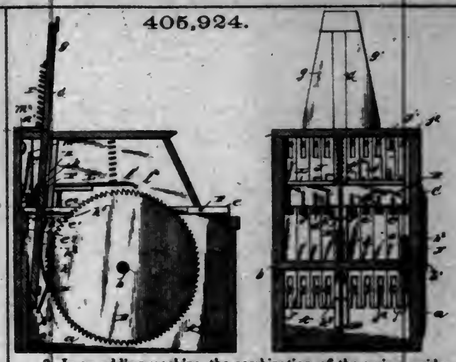
3. The combination, with the main portion of a spring harrow or cultivator tooth, having at its lower end a portion edgewise to the line of draft, of an earth-engaging blade or point having at its rear portions extending inwardly from an edge of the blade, and secured to the edgewise portion of the tooth by a non-adjustable connection, substantially as described.

4. An earth-engaging point or blade for a harrow-tooth, having a broad flat lower extremity, and having a V-shaped portion the forwardly-projecting apex of which extends downwardly and vanishes in the upper part of the broader portion, substantially as described.

405,924. ADDING-MACHINE. JAMES C. STINSON, Paris, Tex., assignor of one-third to Joseph K. Bywaters, same place. Filed July 10, 1888. Serial No. 279,691. (No model.)

Claim.—1. In an adding-machine, the combination of a series of keys pivoted upon a common bearing, a number of stops, and means for separately adjusting each stop to regulate the stroke of the keys, an upright, and guides secured to the casing, in which the said upright moves, a universal bar secured to the upright and resting upon the shanks of the keys, a ratchet-wheel, and a spring-pawl secured to the upright and engaging the teeth on the ratchet-wheel to operate the same, substantially as described.

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2. In an adding-machine, the combination of the casing, guides secured thereto, an upright working in the guides, a universal bar secured to the upright, a number of keys pivoted within the casing, upon the shanks of which the universal bar rests, a ratchet-wheel, and a spring-pawl secured to the upright, the lower end of which spring-pawl is provided with a longitudinal slot through which a portion of the periphery of the ratchet-wheel moves, substantially as and for the purpose specified.

3. In an adding-machine, the combination of the casing, guides secured thereto, an upright working in the guides, a universal bar secured to the upright, a number of keys pivoted within the casing, upon the shanks of which the universal bar rests, a ratchet-wheel, and a spring-pawl secured to the upright, the lower end of which spring is provided with a longitudinal slot through which a portion of the periphery of the ratchet-wheel moves, and a spring secured to the upright and the casing to cause the universal bar to resume its normal position after being operated by the keys, substantially as and for the purpose specified.

4. In an adding-machine, the combination of the casing, a series of keys pivoted upon a common bearing within the same, an upright and guides secured to the casing, in which the upright moves, a universal bar secured to the upright and resting upon the shanks of the keys, and arms secured to the said shanks, the upper ends of which arms are provided with hooks to engage the universal bar, substantially as and for the purpose specified.

405,925. NECKTIE-FASTENER. CHARLES E. STUBBS, Fairfield, Iowa. Filed Sept. 11, 1888. Serial No. 285,163. (No model.)



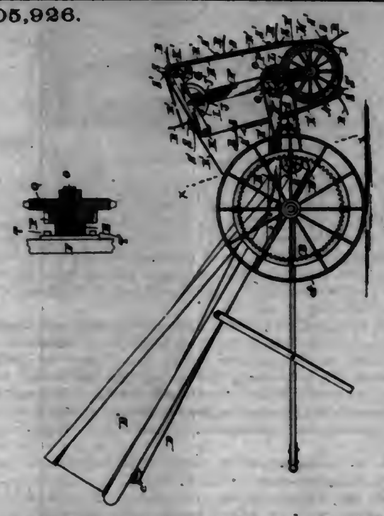
Claim.—1. A fastening device consisting of a metallic plate having the shoulder *c* and a central spring-section separated by slits from said plate at its side edges and integral therewith at its ends, said section having an opening near one end, and the side edges of said plate being struck up at about their centers, a lever having a central opening and a handle or thumb-piece, and a tongue projecting therefrom at opposite sides or edges and at right angles to each other, said lever being adapted to be inserted in or passed through the slits formed in the plate, with its body portion above the spring section, substantially as described.

2. The combination, in a necktie-fastener, of the metallic plate having perforations round its edges, a central spring portion separated from said plates at its sides, said central portion having an opening at one end and teeth or prongs formed at one end of said opening, and a lever pivotally mounted between the spring-section and the plate-sides, said lever being formed of a single piece of metal having an oblong or elliptical central opening, a curved handle or thumb-piece projecting from the upper edge of said lever, and a tongue projecting from the opposite edge of and at right angles to said lever, whereby the strap of the necktie may be inserted in the oblong opening and clamped between the tongue and the teeth or prongs, substantially as described.

405,926. HAY GATHERER AND ELEVATOR. DAVID B. TAPPAN, Bellefontaine, Ohio. Filed Mar. 12, 1888. Serial No. 267,046. (No model.)

Claim.—1. The combination, in a hay-loader, of a frame pivoted at the rear thereof upon a horizontal axis to oscillate freely, a hay-gatherer mechanism carried by said frame, the preponderance of weight thereof being below the pivot of the frame, driving mechanism consisting of wheels or pinions mounted coincidently to the axis of the said pivoted frame, and intermediate devices connecting

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one of said wheels or pinions with one of the supporting-wheels and the other with the gatherer mechanism.

2. The combination, with a hay-loader having rearwardly-extending supports, of a frame pivoted thereon on trunnions, so as to oscillate, a roller and a shaft having pulleys, both supported by the upper end of said frame in different vertical planes, a shaft supported by said frame below the trunnions and having pulleys, endless belts carried by said roller and pulleys, gatherer-teeth and stripping and discharging fingers carried by said belts, the former at about a right angle to the belts and the latter normally lengthwise with the belts, whereby the fingers are moved at their free ends in the direction of the length of the teeth by the bends of the belts as they travel over the roller, and driving mechanism connecting one of said shafts with one of the supporting-wheels of the loader.

3. The combination, in a hay-loader, of a frame pivoted at the rear thereof upon a horizontal axis, so as to oscillate freely, hay-gatherer mechanism carried by said frame, the preponderance of the weight thereof being below the pivot of the frame, and driving-gearing, the prime pinion of which has its axis of rotation coincident to the axis of the frame, whereby upon a lock of the gearing, occasioned by an obstruction to the teeth, the driving-power is transferred to elevate the teeth.

4. The combination, in a hay-loader having rearwardly-extending supports, of a frame carried by said supports and upon trunnions and free to oscillate, a roller and shafts having pulleys carried by said frame, the roller and one of the shafts by the upper end and the other shaft by the lower end, endless belts carried by said roller and shafts, gatherer-teeth and stripping and discharging fingers carried by said belts, the former at about a right angle to the belts and the latter normally lengthwise to the belts, whereby the fingers are moved lengthwise of the teeth at their free ends by the bends in the belts as they go over the roller, a gear-wheel mounted on one of said shafts, a meshing-pinion and a sprocket-pinion mounted on one of said trunnions, and a sprocket-chain on the latter pinion driven by a gear rim and pinion actuated by one of the supporting-wheels.

5. In a hay-loader, the combination, with the rearwardly-extending supports, of a frame mounted therein upon trunnions and free to rock on said trunnions, a roller, and a shaft having pulleys carried by the upper ends of said frame, a shaft having pulleys carried by the lower ends of said frame, belts carrying teeth, and stripping and discharging fingers mounted upon said belts, the preponderance of the weight of the lower shaft, its pulleys, and the lower end of the frame being below the trunnions.

6. The combination, in a hay-loader having rearwardly-extending supports and a frame mounted thereon to rock freely upon trunnions, of a roller, and shafts having pulleys carried by said frame, belts carrying teeth and stripping and discharging fingers, said devices being arranged with the preponderance of weight below the trunnions, a gear-wheel on the lower of said shafts, and a driving-pinion on one of said trunnions, whereby the roller and pulleys are rotated, and whereby, when the teeth are obstructed and the revolution of the gear-wheel and belts is stopped, the power applied to them is transferred, through the pinion and gear-wheel, to the lower end of the frame to move it upward and rearward on the trunnions.

7. In a hay-loader, the combination, with the rearwardly-extending supports, of a frame mounted thereon and upon trunnions and consisting of side bars, a cross-bar pivoted to the upper end of each side bar, a roller mounted in one end of the cross-bars, and a shaft carrying pulleys mounted in the other end, and a shaft mounted in the lower ends of said side bars and carrying larger pulleys, belts fitted to said rollers and pulleys, teeth projecting at about right angles to said belts, and stripping and discharging fingers lying along and secured at one end on said belts, the other and free ends of the fingers being adjacent to the teeth, whereby as the fixed ends of the fingers pass over the roller and the angle of the belts is changed the fingers are actuated away from the teeth.

8. The combination, with the frame of a hay-loader, of a gatherer-frame consisting of side bars, cross-bars pivoted thereto at one end and having segments and fastening devices to lock them in different positions, a roller, and a shaft having pulleys mounted in said cross-bars, a shaft having pulleys mounted in said side bars, and belts carried by said roller and pulleys and having teeth and stripping and discharging fingers.

9. The combination, with a hay-gatherer belt, of teeth carried thereby, and stripping and discharging fingers lying along and lengthwise the belts and secured to a bar, which is fastened to the belt by an inclined rivet, so that the tension of the belts tends to draw the free ends of the fingers toward the belts.

405,927. CHECKREIN-HOOK. JAMES S. TAYLOR, Wichita, Kans. Filed Mar. 16, 1889. Serial No. 303,471. (No model.)



Claim.—In a check-hook, the combination, with the base portion, curved as shown and formed with upwardly-extended lug *g*, of the combined lever-arm and hook, pivoted to the upper end of said base portion, the hook being curved to correspond with the curvature of the base portion and fitting against the inner side thereof, and the arm formed with a downwardly-extended lug adapted to engage said lug on the base portion, substantially as shown and described.

405,928. RUBBER BUCKET FOR CHAIN-PUMPS. MORRIS D. TEMPLE, Chicago, Ill. Filed May 2, 1887. Serial No. 236,776. (No model.)



Claim.—1. In an expansion rubber bucket for chain-pumps, the combination, with the screw-bolt and the expansion nut or washer, of a rubber having a narrow upper portion encircling the bolt and having a lower portion of greater diameter than the upper portion, and having an open cavity the diameter of which is at all points less than the diameter of the nut and is gradually diminished from top to bottom when the nut is in position at the top of the cavity, substantially as described.

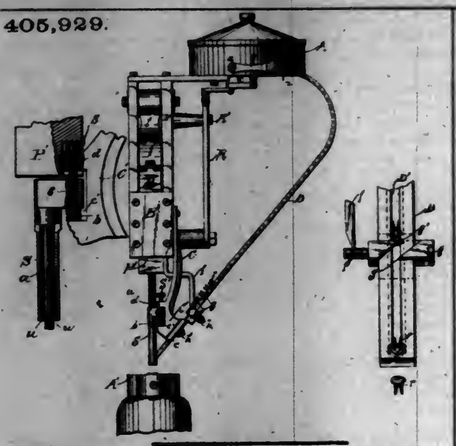
2. In an expansion rubber bucket for chain-pumps, the combination, with a screw-bolt and the expansion nut or washer, of a rubber having a narrow upper portion encircling the bolt and having a lower portion of greater diameter than the upper portion, and having an open cavity the surrounding wall of which is of increased thickness from top to bottom of the cavity, the diameter of said cavity being gradually and continuously diminished from top to bottom, substantially as described.

405,929. RIVETING-MACHINE. JACOB J. UEBELHOR, Syracuse, N. Y., assignor to Judson L. Thomson & Co., same place. Filed June 3, 1887. Serial No. 240,586. (No model.)

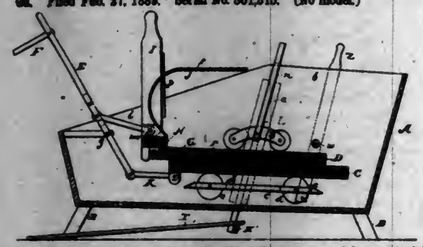
Claim.—1. In a rivet-inserting machine, the combination, with the reciprocating plunger and a hollow barrel-like rivet-guide always surrounding said plunger and having its lower end split and formed with internal shoulders, of an offset on the hollow guide, a headed screw in said offset, a supporting-bracket through which the screw slides, and a spiral spring to return the guide to position after the descending plunger has pressed it down and forced the rivet out of its split end, substantially as and for the purpose set forth.

2. The upright B', bracket C C', having cut-out *c'*, and shoulder *d*, the screw S', passing through said shoulder and through lug *s* on valve S, the discharge-valve S, and spiral *b*, substantially as and for the purpose set forth.

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405,930. WASHING-MACHINE. MARTIN B. WALLACE, Dalton, Ga. Filed Feb. 27, 1889. Serial No. 301,315. (No model.)



Claim.—A washing-machine having the upper and lower reciprocating wash-boards connected by pitmen to an operating-lever, the side spring and its under beveled projection extending through the side wall, the pressure-bar, its side arms engaging slideways of the side walls of the body of the machine, and having extensions extending downward inside of said body and carrying the double-roller bearings pivoted to their lower ends, substantially as specified.

405,931. SPRING-HINGE. GEORGE W. WARNER, Freeport, Ill. Filed Nov. 20, 1888. Serial No. 291,353. (No model.)



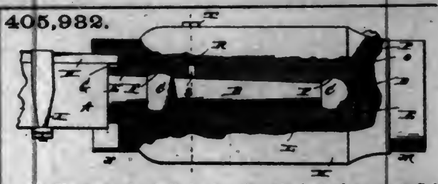
Claim.—1. The spring-hinge comprising two leaves hinged together at their ends, a hollow tube or barrel secured to one of said leaves, a spring located within said barrel, and a movable yoke pivoted to the other of said leaves and adapted to compress said spring within the barrel when the leaves are first moved from their closed or outstretched position.

2. The spring-hinge comprising the leaves A A', pivoted together at a^3, the hollow barrel C, secured to the leaf A' and provided with longitudinal slots c', the spring D, located within said barrel, the yoke E, pivoted at $e\,e$ to the movable leaf A and adapted to move within said slots c' to engage said spring D, substantially as described.

405,932. VEHICLE HUB AND AXLE. ISAAC M. WARNER, Bethel, Mich. Filed Feb. 7, 1888. Serial No. 263,967. (No model.)

Claim.—1. The combination of the axle having the spindle and the tree with its end projecting over the shoulder of the inner ends of the spindle, with the wheel having the box bearing on the spindle, and having the annular recess at its inner end, into which the projecting end of the tree extends, and the sand-band at the inner end of the hub extending over the projecting end of the tree, substantially as specified.

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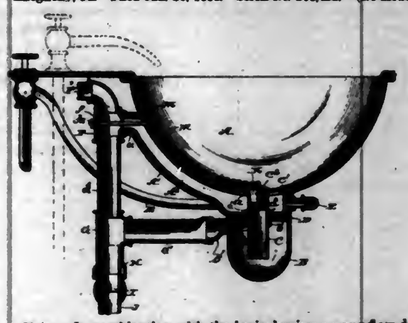
2. The tapered spindle having the spherical enlargements C, in combination with the box having the tapered bore adapted to engage the spindle and provided with countersunk recesses corresponding in form to the enlargements C, said box being formed of longitudinally-separable sections, the hub, and the transverse screw P, entering through and engaging aligned openings in the hub and in the separable sections of the axle-box, whereby the latter is held firmly in the hub, substantially as described.

3. The combination of the spindle having enlargements formed thereon, the longitudinally-divided axle-box having recesses to accommodate said enlargements, the hub secured upon the axle-box by means of a screw passing through said hub and through outer ends of the parts or sections of which said axle-box is composed, and a lubricating-tube extending transversely through one side of the hub and registering with a perforation in the axle-box, substantially as set forth.

4. The combination of the spindle having enlargements formed thereon, the longitudinally-divided axle-box having recesses to accommodate said enlargements, the non-perforate hub made solid at its outer end and having a recess in its inner end to receive the axle-box, and a fastening-screw passing transversely through one side of the hub and through the sections composing the axle-box, which are thereby secured in the recess of the hub, substantially as set forth.

5. The combination of the spindle having enlargements formed thereon, the longitudinally-divided axle-box having recesses to accommodate said enlargements, the non-perforate hub made solid at its outer end and having a recess in its inner end to receive the axle-box, a fastening-screw passing transversely through one side of the hub and through the sections composing the axle-box, which are thereby secured in the recess of the hub, and a lubricating-tube extending through one side of the hub and registering with a perforation in the axle-box, substantially as set forth.

405,933. COMBINED SUPPLY, OVERFLOW, AND WASTE FITTINGS FOR SLOP-SINKS, BASINS, AND BATHS. FRANK A. WELLS, Allegheny, Pa. Filed Jan. 30, 1888. Serial No. 261,432. (No model.)

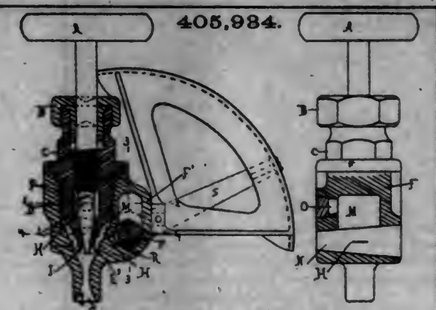


Claim.—In combination with the basin having an overflow-duct formed integrally with it and communicating with the outlet of the basin, a cup having an eduction-orifice communicating with the waste-pipe, and a tubular plug which opens at its upper end in the basin and at its lower end in the cup, and which penetrates the top of the cup and the bottom of the overflow-duct and forms a sealed passage through such duct from the basin into the cup, the supply-pipe connected into the integral overflow-duct, the T F connected to the upper end of said duct, the tubular parts G' and G^2 connected, respectively, with the T F and the nipple B' of the cup B, and the T G, connecting said tubes G' and G^2, and having its third mouth leading to the waste-pipe, substantially as set forth.

405,934. FLUID-FEEDER. WALTER B. WRIGHT, Chicago, Ill., assignor to Williams & Wright, same place. Filed Oct. 16, 1888. Serial No. 288,542. (No model.) Patented in England Apr. 24, 1889.

Claim.—1. In an injector fluid-fuel feeder, the combination of an oil-supply reservoir, with a nozzle containing a plug-valve cavity, having an aperture leading to said reservoir on one side and a discharge-aperture leading to the injector proper on the other side, and

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a plug seated within said cavity and provided with a spiral groove upon its surface for regulating the supply of fluid to the discharge-aperture.

2. In an injector fluid-fuel feeder, the combination of an oil-supply reservoir, with a nozzle containing a plug-valve cavity, having an aperture leading to said reservoir on one side and a discharge-aperture leading to the injector proper on the other side, a plug seated within said cavity and provided with a spiral groove upon its surface for regulating the supply of fluid to the discharge-aperture, a handle for such plug, and a graduated quadrant over which such handle passes, whereby the effective area of the fluid-passage way may be correctly indicated.

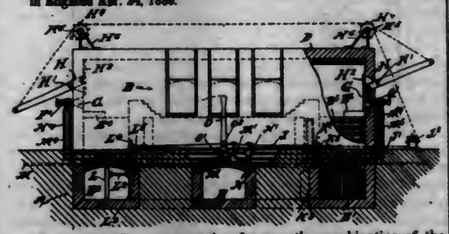
405,935. BRICK-KILN. WALTER B. WRIGHT, Chicago, Ill., assignor to the International Gas and Fuel Company, same place. Filed Feb. 6, 1889. Serial No. 298,813. (No model.)



Claim.—1. The combination of a kiln with an auxiliary furnace, pipes for supplying a drying-fluid, which said pipes pass through such furnace and open into the kiln, and pipes for supplying fluid fuel, which open directly into the kiln, and which also open into such auxiliary furnace and thus heat the fluid passing therethrough.

2. The combination of a kiln with fluid-fuel pipes leading thereto, an auxiliary furnace, drying-fluid pipes which pass through such furnace, a burner-nozzle which opens from such fluid-fuel pipe into the furnace, and a series of compound valves with discharge-nozzles about such kiln and connected both with the fluid-fuel pipes and the drying-fluid pipes, so as to serve either as discharge-nozzles for the drying-fluid or burner-nozzles for the fluid fuel.

405,936. REGENERATIVE FURNACE. WALTER B. WRIGHT, Chicago, Ill., assignor to the International Gas and Fuel Company, same place. Filed Mar. 7, 1889. Serial No. 302,378. (No model.) Patented in England Apr. 24, 1889.

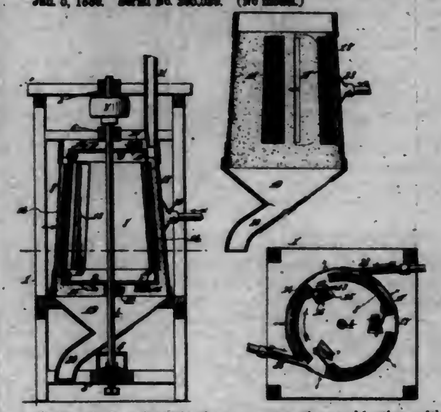


Claim.—1. In a regenerative furnace, the combination of the hearth with a chamber on each side thereof containing regenerating checker-work through which the air may pass into the furnace, a series of apertures above such checker-work through which the fluid fuel passes, and sliding protector-plates in front of such apertures, as shown, adapted to cover the same when fluid fuel is not being discharged therethrough, as and for the purpose described.

2. In a regenerative furnace, the combination of the hearth with air and fluid-fuel passages or pipes which open therein at opposite sides thereof and a fluid-fuel-supply reservoir connected therewith, and valves in the several connections, a lever operatively connected with and controlling all of such valves, and protector-plates in front of such apertures connected with such lever.

3. In a regenerative furnace, a steam-supply pipe having a three-way valve therein and branches therefrom leading to the opposite ends of the furnace, a fluid-fuel-supply pipe having a three-way valve and pipes leading therefrom through the opposite ends of the furnace, discharge-valves or burners into which said pipes open, and apertures opening into the furnace at the opposite ends through which such valves project, air-supply passages opening into the space beneath the regenerating checker-work of the furnace, and valves therein which alternately connect such passages with the open air and with the flue, a lever operatively connected with and controlling all of such valves, and protector-plates in front of said fluid-fuel discharge valves or burners, the same suspended and connected with said operating-lever.

405,937. GRAIN-SCOURER. WILSON AGER, Bloomsburg, Pa. Filed Jan. 5, 1889. Serial No. 295,599. (No model.)



Claim.—1. In a decorticating apparatus, the combination, with an outer drum and an inner revolving cylinder, both provided with suitable abrading-surfaces, of air-blast conductors entering the wall of the outer drum for delivering air-currents in a direction opposite to the revolution of the inner cylinder, substantially at a tangent to said cylinder, substantially as described.

2. In a decorticating apparatus, the combination, with an outer drum and an inner revolving cylinder, both provided with abrading-surfaces, of means for inducing an air-current within the cylinder, which is provided with openings in its cylindrical wall, and air-blast conductors entering the wall of the outer drum in a direction substantially tangential to the cylinder and opposite to the direction of its revolution, substantially as described.

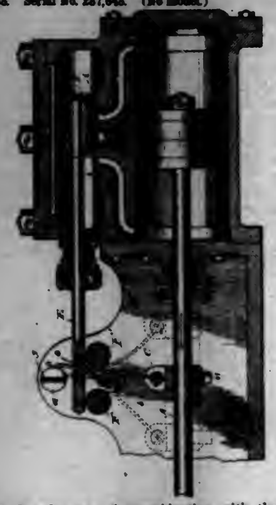
3. In a grain-decorticating apparatus, the combination, with an outer drum having an inner imperforate abrading-surface provided at intervals with foraminous openings, of an inner revolving cylinder having blast-openings in its walls, and provided with means for inducing an air-current within the cylinder, and air-blast conductors passing through the outer drum for delivering air-blasts in a direction substantially tangential to the cylinder and opposite to its direction of revolution, substantially as described.

4. In a grain-decorticating apparatus, the combination, with an outer drum having an inner abrading-surface provided with foraminous openings at intervals, of an inner revolving cylinder having blast-openings in its wall and provided at its ends with hooded air-forcing openings, and air-blast conductors entering the outer drum in a direction contrary to the direction of revolution of the inner cylinder, substantially as described.

405,938. MANUFACTURE OF A NEW ALPHA-NAPHTHOL-DISULPHONIC ACID. MOSES ANDRESEN, Berlin, Germany, assignor to the Action-Gesellschaft für Anilin Fabrikation, same place. Filed Apr. 27, 1888. Serial No. 272,047. (Specimens.) Patented in Germany Mar. 16, 1888, No. 45,776; in England Mar. 26, 1888, No. 4,625, and in France Mar. 31, 1888, No. 189,712.

Claim.—The new alpha-naphthol-disulphonic acid obtained by first forming naphthalene-disulphonic acid by treating naphthalene with sulphuric acid and monochlorhydrin, or with fuming sulphuric acid, then treating the naphthalene-disulphonic acid so formed with nitric acid, reducing the resulting alpha-nitronaphthalene-disulphonic acid to alpha-amidonaphthalene-disulphonic acid, separating and converting into the corresponding alpha-naphthol-disulphonic acid, substantially as described.

405,939. VALVE-GEAR. JOHN T. ARNOLD, Hyde Park, Ill. Filed Oct. 9, 1888. Serial No. 287,648. (No model.)

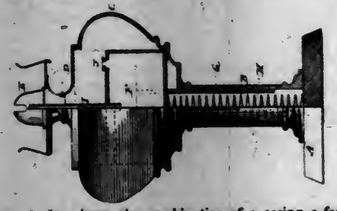


Claim.—1. In valve-gear, the combination, with the piston-rod and valve-rod, of a spring-arm having one end pivotally connected to the piston-rod and its opposite end projecting into the path of and engaging the valve-rod and the fixed stops, substantially as described.

2. In valve-gear, the combination, with the piston-rod and valve-rod, of a spring-arm having one end pivotally secured to the piston-rod and the other end projected through a slot in the valve-rod and the fixed stops, substantially as described.

3. In valve-gear, the combination, with the piston-rod having a head-block, a spring-arm pivotally secured thereto and projected through a slotted valve-rod, and the stops F, F', and G, substantially as described.

405,940. LAMP. RICHARD T. BARTON, New Haven, Conn., assignor of one-half to Michael Sonnenberg, same place. Filed Dec. 14, 1888. Serial No. 293,620. (No model.)



Claim.—1. In a lamp, the combination of a casing, a fount arranged within said casing for vertical movement, a spring upon which said fount rests, a burner stationary above the fount, and a wick-tube stationary in the burner and extending downward through a corresponding opening in the top of the fount and so as to fit loosely therein, thereby serving as a guide for the vertical movement of the fount, substantially as described.

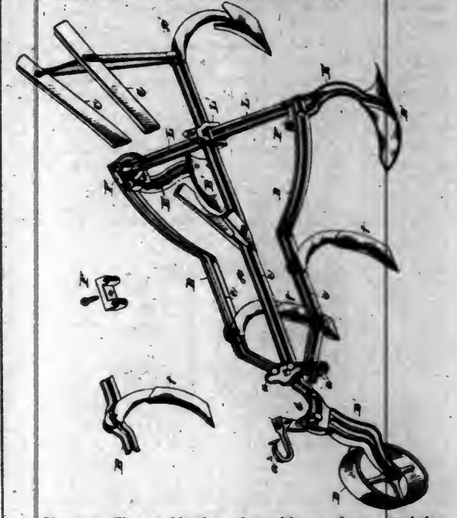
2. The combination, in a lamp, of a tubular standard, a casing upon the upper end of said standard open at its top, a cap adapted to close the said opening in the casing, a burner upon said cap, a fount arranged within said casing, with a downward projection from its bottom into said tubular standard as a guide for the vertical movement of the fount, and a spring within said standard upon which said fount rests, substantially as described, and whereby said fount is automatically adjustable with relation to the burner and the oil in the fount.

405,941. HORSE-TAIL HOLDER. ROBERT L. BEYS, Brunswick, N. Y. Filed June 27, 1888. Renewed May 20, 1889. Serial No. 312,054. (No model.)

Claim.—In a horse-tail holder, the combination, with the strap S, threaded through a buckle-eye and folded back on itself for connection and for attachment to the buckle-eye, of the prongs P, made with heads *h* and downturned ends *e*, with the prongs passed through said strap S, and having their heads secured between the latter and the connected strap part S^3, substantially as shown and described.



405,942. CULTIVATOR. WARREN M. BRINKERHOFF, Auburn, N.Y. Filed Mar. 23, 1889. Serial No. 304,403. (No model.)



Claim.—1. The combination of a cultivator-frame consisting of corrugated metallic bars having vertically-curved portions, and standards provided with curved portions adapted to engage the curved corrugated portions of said frame, and attaching-bolts, substantially as described.

2. A cultivator-frame and a perforated block F, in combination with a blade-supporting arm having a laterally-projecting flange at its upper end provided with a series of openings and an L-shaped securing-bolt, substantially as described.

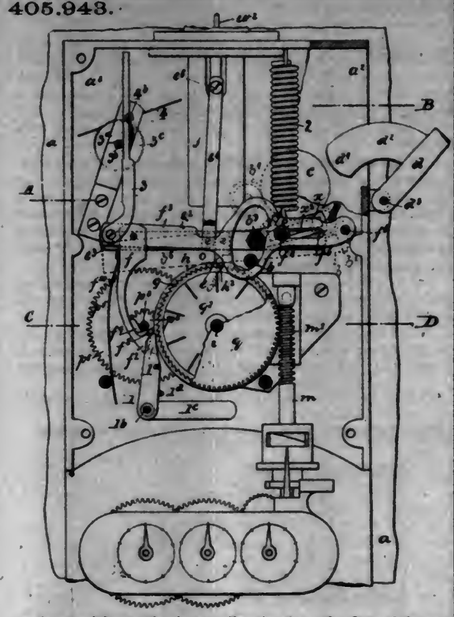
3. The within-described reversible blade curved throughout its length, having an inclined end and a curved end merging into the lower edge of the blade, said curved end being connected to the upper edge by a short straight edge at an angle to the upper edge, substantially as described.

4. The within-described reversible blade curved throughout its length, having an inclined end and a curved end, the latter being merged into the lower edge of the blade, the upper edge having an upper curve and such curved edge connected with the curved end by a short straight edge, substantially as described.

5. The combination, with a cultivator-bar and a blade-arm having a laterally-projecting flange at its upper end provided with a series of openings, of the devices for securing said arm to the said bar, consisting of a block, a bolt pivotally securing said arm to the block, and an L-shaped bolt, polygonal in cross-section, fitting a like opening in said block, and having a projection for engaging the openings in the lateral flange of the blade-arm, substantially as described.

405,943. APPARATUS FOR VENDING GAS. ROWLAND W. BROWNHILL, Aston New Town, Birmingham, County of Warwick, England. Filed June 12, 1888. Serial No. 276,846. (No model.) Patented in England May 13, 1887, No. 7,012; in France Mar. 5, 1888, No. 176,142, and Mar. 8, 1888, No. 176,230, and in Germany Mar. 12, 1888, Nos. 22,737 and 22,738, and Mar. 20, 1888, No. 23,262.

Claim.—1. The combination, with a gas-supply pipe, a valve therein, and a meter, of a vending apparatus comprising a train of gearing adapted to receive motion from the flow of gas through said meter and in connection with said valve, and a series of levers one of which carries a pawl and constructed and arranged to give backward motion to said gearing, according to the amount of movement of said levers, and a fixed bearing between which and the free end of one of said levers a coin may be pushed to communicate motion to the levers, all being constructed, arranged, and adapted to operate substantially as described.



2. The combination, with a gas-supply pipe, a valve therein, and a meter, of a vending apparatus comprising a train of gearing adapted to receive motion from the flow of gas through said meter and in connection with said valve, and a series of levers one of which carries a pawl and constructed and arranged to give backward motion to said gearing, according to the amount of movement of said levers, and a fixed bearing between which and the free end of one of said levers a coin may be pushed to communicate motion to the levers, all being constructed, arranged, and adapted to operate substantially as described.

3. The combination of a meter, a gas-supply pipe, a valve therein, and coin-released vending mechanism comprising a train of gearing connected to and adapted to govern the opening and closing of said valve and constructed and arranged, substantially as described, so as to open said valve for a length of time dependent upon the coin by means of which said mechanism is brought into action, substantially as described.

4. The combination of the meter, a gas-supply pipe, a valve therein, and vending mechanism comprising a train of gearing and appurtenant parts located between the meter and valve and constructed and arranged substantially as described, and connected to said meter and valve, as set forth, so as to allow the meter to act and to open the valve for a determined length of time dependent upon a coin of certain size being pushed into the governing mechanism, as set forth.

5. The combination, with a meter and vending mechanism comprising a train of gearing connected with and receiving motion from the meter, and mechanism consisting of a lever and detent for releasing said train of gearing upon the insertion of a coin, of a valve connected to said gearing and interposed in a gas-supply pipe, substantially as described.

6. The combination of a gas-supply pipe, a valve therein, and a vending apparatus comprising a rod carrying a detent and connected to said valve, a disk mounted on an arbor and having a notch to receive said detent, a ratchet-wheel on said arbor, a pawl engaging with said ratchet-wheel, a pivoted lever carrying said pawl, a fixed bearing in proximity to the free end of said lever, a meter connected to said arbor, and a clutch arranged upon said arbor, all constructed and arranged substantially as described, whereby, when a coin is pressed through between said fixed bearing and said lever, the detent is thrown out of engagement with the notched lever, turned back, and then released and moved forward until the detent again engages with the notch, as set forth.

7. The combination, with a meter, gas-vending mechanism connected therewith through the medium of a clutch and comprising a train of gearing, a gas-valve receiving motion from said mechanism, and levers and pawls constructed and adapted to alternately engage with and release a ratchet-wheel arranged in said train of gearing, of a fly and intermediate gearing connecting the same with said levers, substantially as described.

8. The combination, with a coin-lever *b* and main lever f^3, of a slotted arm $x\,x^2$ and the pin or stud f^4, whereby the said main lever is worked on a coin being forcibly pressed home, as set forth.

9. The combination, with a coin-lever *b* and main lever f^3 and penny and shilling disks h *o*, provided with notches h^3 o^3, of a lever c^2, having tooth *c*, as set forth.

10. The combination, with the main lever f^3, pivotally connected at its inner end to a fixed support, a swiveled pawl $f\,f^2$, and a ratchet-wheel *g*, of disk *h*, receiving motion from a gas-meter and communicating motion to a valve arranged in a gas-supply pipe, as set forth.

11. The combination, with the pawls $f\,f^2\,f^3$ and ratchet-wheel *g*, of a lever $1\,1^a\,1^b$, joined at 1^b, as set forth.

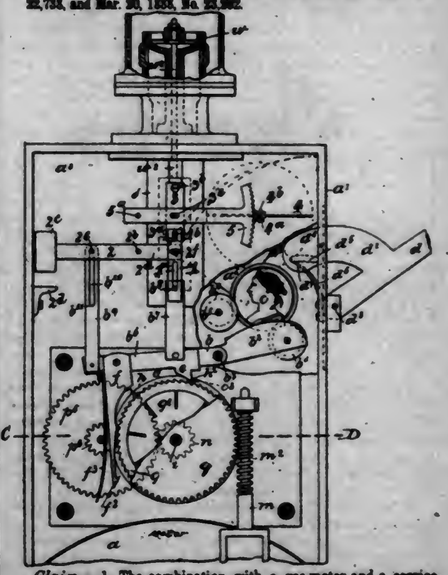
12. The combination, with the clutch g^2 and meter-driving wheel *q*, of a penny-disk *h*, having a notch h^3, intermediate gearing between said driving-wheel and disk *h*, and a gas-valve receiving motion from said measuring-wheel, as set forth.

13. In a gas-vending apparatus, the combination, with a casing containing gas-vending mechanism and provided with a coin-slit a^2, of lever fulcrumed at d^2 and carrying a pusher-arm d^5, the upper part of the lever being normally located over the coin-slit a^2, as set forth.

14. In a gas-vending apparatus, the combination of a lever carrying an arm d^3, to which is attached rack d^9, having incline d^{10}, and spring-pawl d^4, adapted to engage with said rack when the arm is moved in one direction and to pass under the same on the return movement for preventing the return of the lever until the coin has been fully pushed home, substantially as set forth.

15. The combination, with the delivery mechanism and its main lever f^3, of rack-bar 3, attached to said lever, gearing 3^a 3^b 4^b, and fly receiving motion from said lever and gearing, substantially as described.

405,944. APPARATUS FOR VENDING GAS. ROWLAND W. BROWNHILL, Aston New Town, Birmingham, County of Warwick, England. Filed June 20, 1888. Serial No. 278,065. (No model.) Patented in England May 13, 1887, No. 7,012; in France Mar. 5, 1888, No. 176,142, and Mar. 8, 1888, No. 176,230, and in Germany Mar. 12, 1888, Nos. 22,737 and 22,738, and Mar. 20, 1888, No. 23,262.



Claim.—1. The combination, with a gas-meter and a service-pipe containing a valve, of vending mechanism connected with said meter and valve and comprising releasing devices operated by the forcing inward and releasing of a coin, substantially as described and set forth.

2. The combination, with a gas-supply pipe, of vending mechanism provided with a detent normally holding the said mechanism from operation, and adapted to be released by the insertion of a coin within the apparatus, as described and set forth.

3. The combination, with a coin-lever b b' b^2 b^4, pivoted at b^2, and having a tooth or catch c, of disks A o, having notches A^3 o^3, as set forth.

4. The combination, with mechanism for controlling the gas delivery and registration, of the coin-operated lever b, provided with the roller b', and having the tooth c engaging with the wheels h o, substantially as set forth.

5. In a gas-vending apparatus, the combination, with the gearing-train receiving motion from the meter-drum and the valve w, of the forked upright b^7, slides 1 and 3, weighted lever 2, lever b b^2 b^4, and arm b^3, substantially as described.

6. In a gas-vending apparatus comprising mechanism for insuring the delivery of a measured quantity of gas and a coin-operated lever by which said mechanism is restrained and released, the combination, with said lever, of the lever d, provided with a coin-pusher d^3, substantially as described.

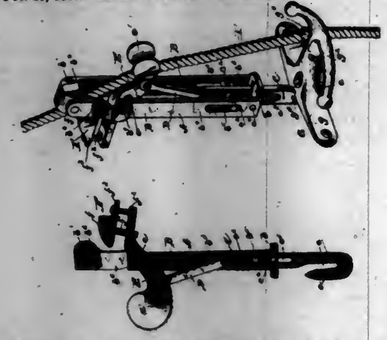
7. In a gas-vending apparatus, the combination of the coin-pushing-home arm or lever d d^3, carrying a rack d^4, the spring-pawl d^6 d^7, and the pawl located upon the fixed framing and adapted for preventing the lever from being withdrawn until the coin has been fully pushed home, thus preventing fraud, as set forth.

8. The combination, with the valve w w^2 and its casing and coin-lever b, with tooth c, and pawl f, of slides, arms, and levers b^7, 1, 2, 3, and b^3, and their cognate parts, as set forth.

9. The combination, with the meter-wheel q and clutch q^3, of the penny and shilling disks A o, provided, respectively, with the notches A^3 o^3, as set forth.

10. The combination, with the penny and shilling disks A o, provided, respectively, with notches A^3 o^3, of transmitting and reduction gear n and the attendant transmitting and reduction gear and cognate parts i i^2 i^3 i^4 i^5 p' p^2 p^3 p^4 p^5 p^6 n o^3, as set forth.

405,945. FIRE-ESCAPE. William Bruce, Wellsville, N. Y. Filed Feb. 23, 1889. Serial No. 300,869. (No model.)



Claim.—1. In a fire-escape, the combination of the frame having the head-block grooved in its lower side and forming the top of a rope-brake, the brake-shoe grooved in its upper side and attached to the rear arm of a double-armed lever pivoted to and between the side bars of the main frame, the link-rod pivoted at its upper end to the front arm of said lever, and the hooked bar pivoted to the lower end of the link-rod, sliding longitudinally in the frame and adapted to be attached to a proper support for a person's body, substantially as specified.

2. In a fire-escape, the combination of the longitudinal frame having the head-block forming the upper part of a rope-brake, the latch-bar pivoted to the head-block and notched on its edge near its lower end to engage a pin on the shorter side bar of the said frame, the double-armed lever pivoted to and between the side bars of the frame and operated by means substantially as described, and the brake-shoe connected to the rear arm of said lever and forming the lower part of the rope-brake, as specified.

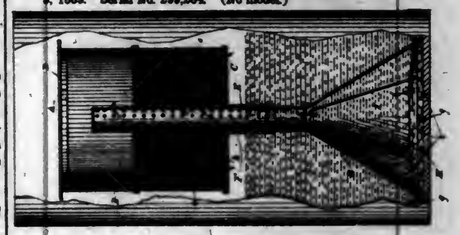
3. In a fire-escape, the combination, with the frame B, having the perforated base-plate, the side bars b^3 b^4, and the head-block b', provided with the rope-groove b^5, and the pivoted latch-bar b^6, of the bar C, having the hook on its lower end for the attachment of a support, with its journals sliding in the slots b^3 of the frame B and provided with the slot c^3, straddling the bar c^4 of the frame B, the link-rod D, the double-armed lever E, pivoted in the frame B and having the end of its front arm enlarged and provided with the notch e', the adjustable brake-shoe F, provided with the rope-groove f, and the screws f' f^2, by means of which the brake-shoe is adjusted and set on the rear arm of the said lever E, substantially as specified.

4. In a fire-escape, the combination, with the upper longitudinal section comprising the rope-brake, the brake-operating lever and link, and the sliding bar C, having the hook c on its lower end, of the lower transverse section provided with the hand-bar having the septum to engage the hook c between its arms, and the strap engaged by snap-hooks at its end to openings in the ends of the hand-bar, substantially as specified.

5. The herein-described fire-escape composed of the upper longitudinal section comprising the frame, the rope-brake, the link and lever, and the bar C, having the hook c on its lower end, the lower transverse section comprising the hand-bar g, the shank g', the curved bar g^2, projection g^4, and the septum g^5, and the strap H, provided at its ends with snap-hooks h to engage openings in the ends of the hand-bar, substantially as specified.

6. In a fire-escape, the combination of the upper longitudinal section comprising the rope-brake, the brake-operating lever and link, and the sliding bar having a hook on its lower end, the turn-button Z, and the lower detachable transverse section provided with the hand-bar having the septum adapted to engage the hook below the turn-button and provided with a detachable strap, substantially as specified.

405,946. COFFEE-BOILER. Paul Bulow, Cain, Kans. Filed Feb. 9, 1889. Serial No. 299,284. (No model.)



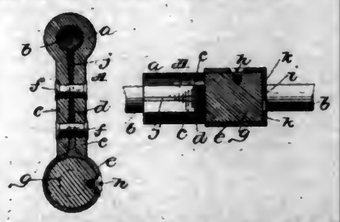
Claim.—1. The combination, with the cup having a cover and perforated sides, of a tube entering the body of the cup and adjustable therein, said tube being partially perforated, and the conical base supporting the lower end of the tube, and the cone secured within said base and opening into the tube, substantially as and for the purpose specified.

2. The combination of the boiler with a cup therein having a cover and perforated sides and an opening in its bottom surrounded by a depending sleeve, an adjustable tube having a perforated end extending through said sleeve and entering the cup, and a conical base supporting said tube, and a cone secured within said base and open at its upper end below the tube, all substantially as described.

3. The combination of the cup A, consisting of top ring B and bottom b, connected by legs c, a perforated ring C, and the cover D, with the adjustable tube supporting said cup and perforated, as described, the conical base supporting said tube, and the cone within said base, all substantially as set forth.

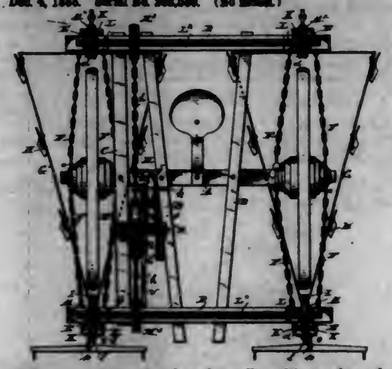
4. The herein-described utensil, consisting of a perforated tube F, a conical base G, having feet g, supporting said tube, a cone I, supported in said base by stays i, with the cup A, formed of a top ring B, a lower perforated ring C, a bottom b, having a central opening, a sleeve E, surrounding said opening and through which the upper end of tube F passes, and the cover D thereof, all substantially as and for the purpose described.

405,947. LOOM-PICKER. Patrick H. Connor, Amesbury, Mass. Filed Aug. 24, 1888. Serial No. 283,618. (No model.)



Claim.—A loom-picker having tube c, fin d, and the perforated end k, formed of metal as an integral casting, the tube c and cheeks e, formed from one piece of green hide or other suitable non-metallic material, said cheeks terminating at the junction of fin d and tube c and secured to said fin by rivets, and a suitable packing g, inserted in tube c and abutted against end k, all substantially as specified.

405,948. CULTIVATOR. James Cossum, Greenfield, Mass. Filed Dec. 4, 1888. Serial No. 292,580. (No model.)



Claim.—1. A triangular-shaped metallic cultivator-frame having teeth arranged upon its sides and the acute angle, and provided front and rear with irons I, terminating in hooks l, by which the said frame may be lifted from the ground, as set forth.

2. The cultivator-frame G, bars I secured thereto, provided with hooks l and anti-friction wheels K, in combination with the vehicle-frame, slotted legs E secured thereto, the pulley Q', ratchet Q, pulleys M^2 M^3 on shafts L' L^2, the chains A, secured to pulleys M^2 and pulley Q', pulley M M' on shafts L' L^2, the lever S, and spring-bolt T, whereby the cultivators may be lifted from the ground and so held, as and for the purpose specified.

3. The combination, with a cultivator-vehicle axle, plates or washers c and clips b secured thereto, of chains F, secured between the vehicle-axle and the slotted legs, and connected forward by links to the singletree, as and for the purpose set forth.

405,949. POT LID OR COVER. Elizabeth G. Copelin, Washington, D. C. Filed Dec. 10, 1888. Serial No. 294,061. (No model.)



Claim.—As a new article of manufacture, the pot lid or cover made of glass and having the rim edge or flange 2 and the metallic rim-band 3, bent around the said rim-flange, the said metallic rim-band being split and having its ends overlapped, as at 4, and being thereby adapted to conform to the expansion and contraction of the glass cover or lid, substantially as described.

405,950. BILLIARD-CUE-TIP FASTENER. Alexander H. Darrow, Chicago, Ill. Filed Mar. 12, 1888. Serial No. 302,950. (No model.)

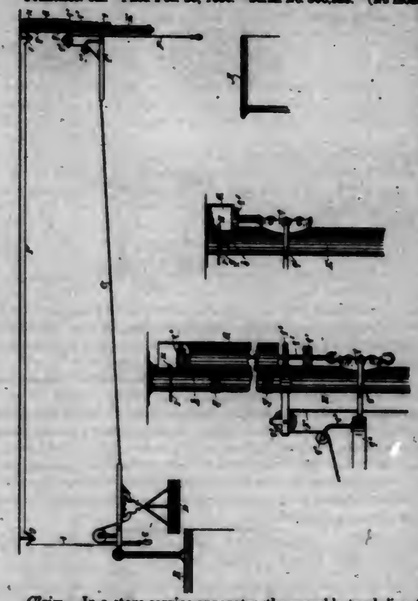


Claim.—1. In a device for use in securing the tips on billiard-cues, the combination of a block provided with a socket to receive the reduced end of a cue, a spring within the socket compressed by the insertion of the cue, and a clamp to hold the cue against the resilience of the spring, comprising a lever having a cam p at one end and fulcrumed upon the block, substantially as and for the purpose set forth.

2. In a device for use in securing the tips on billiard-cues, the combination of a block A, provided with a slotted socket A^3 to receive the reduced end of a cue, a spring C, confined within the socket and having a head c, and a clamp B, comprising a lever having a cam p at one end and fulcrumed upon the block, substantially as described.

3. A device for securing the tips on billiard-cues, comprising, in combination, a block A, provided with a slotted socket A^3 to receive the reduced end of a cue, a spring C, confined within the socket and having a head c, ears A^2 at opposite sides of the slot in the socket, a clamp B, comprising a lever having a cam p at one end pivotally supported between the ears A^2, and faced with rubber p', and an eye l in the block, at which to suspend the device, substantially as described.

405,951. STORE-SERVICE APPARATUS. Perry L. Davis, San Francisco, Cal. Filed Feb. 23, 1889. Serial No. 300,893. (No model.)



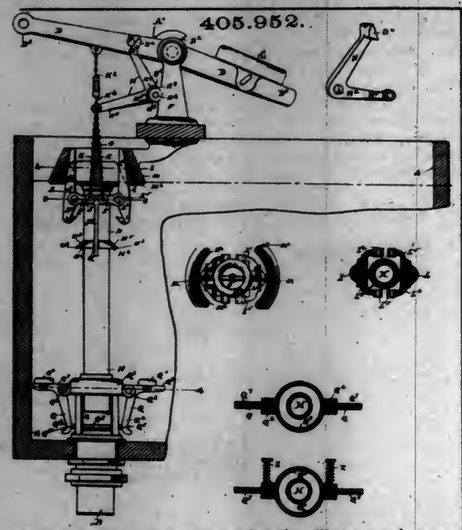
Claim.—In a store-service apparatus, the movable track-line, the guide-connections of said line having a spindle with a collar or flange c^2, and the elevating-cord for raising said connections and line, in combination with the rod or support for the track-line connections and upon which they move up and down, the sleeve G, secured to said rod or support and in which the spindle, with its collar or flange, moves, the spring-controlled catch H in said sleeve, and adapted to engage and hold the collar or flange c^2, so as to keep the track-line elevated, and a releasing cord or line connected with said catch for withdrawing it to allow the track-line to descend, substantially as described.

405,952. OPERATING MECHANISM FOR VALVES OF WATER-CLOSET AND OTHER TANKS. Patrick W. Doherty, Boston, Mass. Filed Aug. 22, 1888. Serial No. 283,471. (No model.)

Claim.—1. The combination, with a tank for liquid, an outlet-pipe for the liquid, and an opening and closing valve to the outlet-pipe, of mechanism to secure an opening of the valve and to release the valve to close, consisting of a vertical lever or levers L, adapted at their lower ends to grip the valve or part connected therewith, a yoke J movable up and down, on which said levers L, intermediate of their length, are fulcrumed, a line K, suspending each of said levers L, a reciprocating operating-lever D, from which said line or lines K are suspended, and a stationary abutment M^3 for the upper end portions of levers L, substantially as described, for the purpose specified.

2. The combination, with a tank for liquid, an outlet-pipe for the liquid, and an opening and closing valve to the outlet-pipe, of mechanism to secure an opening of the valve and to release the valve to close in one portion, consisting of a vertical lever or levers L, adapted at their lower ends to grip the valve or part connected therewith, a yoke J movable up and down, and on which said levers L, intermediate of their length, are fulcrumed, a line K, suspending each of said levers L, a reciprocating operating-lever D, from which said line or lines K are suspended, and a stationary abutment M^3, for the upper end portions of levers L, and in its other portion consisting of an abutment P of said operating-lever D, an angular lever N, fulcrumed at

405,952.



its angle, and having on one arm a foot-piece D^4 to rest and work on said abutment P, and a line O—such as a chain, rod, &c.—connected to valve, or part connected therewith, and to arm N^2 of angular lever N, substantially as described, for the purpose specified.

3. The combination, with a tank for liquid, an outlet-pipe for the liquid, an opening and closing valve to the outlet-pipe, and mechanism adapted to secure an opening and closing of the valve, of a lever or levers Q, fulcrumed on a stationary support, and at one side of its fulcrum having a bearing on the valve, or some part connected therewith, and at the other side of its fulcrum having an applied resistant—such as a weight—whereby to exert pressure by the lever on the valve or some part connected therewith, substantially as described, for the purpose specified.

405,953. CAR-COUPLING. WARREN DORR, Gardiner, Me. Filed Oct. 4, 1888. Serial No. 287,144. (No model.)



Claim.—1. In a car-coupler, a draw-head A, having a series of projecting plates with rounded ends, the upper projecting plate having an open-ended circular slot, the opening in said slot being of sufficient size to permit the coupling-pin to pass through the same, substantially as shown, and for the purpose set forth.

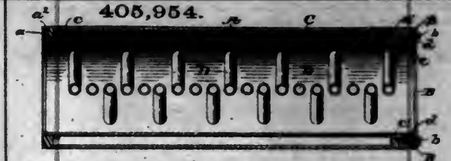
2. In a car-coupler, the combination of a draw-head A, having outwardly-projecting plates *b*, *b'*, and *b²*, perforations *c c* formed therein, the upper plate having an open-ended slot C, a recess *d* in the rear of said slot, and a pin-guide D, having an inclined groove within which the pin rests, the upper portion of said guide being rounded, substantially as shown, and for the purpose set forth.

3. The combination, in a car-coupler constructed substantially as shown, provided with a recess *d*, of a pin-guide having a groove the rear wall of which is inclined, the upper edge of the walls forming the groove being rounded, said pin-guide being secured to the car-body above the draw-head and rear of the perforations through which the pin passes for connecting the draw-heads, substantially as shown, and for the purpose set forth.

405,954. STEAM-GENERATOR. DANIEL DOUGHERTY, Washington, D. C. Filed Mar. 26, 1888. Serial No. 304,772. (No model.)

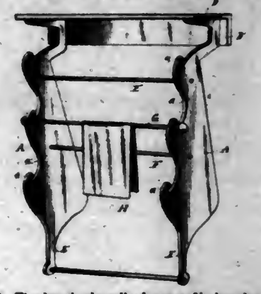
Claim.—1. A sectional boiler consisting of a shell A, provided with internal annular heads *a a'*, and packing-gland B, in combination with an interior longitudinal tube C, having collars *c c'*, as set forth.

405,954.



2. A sectional boiler consisting of a series of shells A, having internal annular heads *a a'*, and gland B, in combination with a series of interior longitudinal tubes C, having collars *c c'*, and a series of smaller tubes connecting said shells, as set forth.

405,955. BRACKET FOR PAPERS. LOUIS P. FRIEDMAN, Rochester, N. H. Filed Mar. 6, 1889. Serial No. 302,006. (No model.)

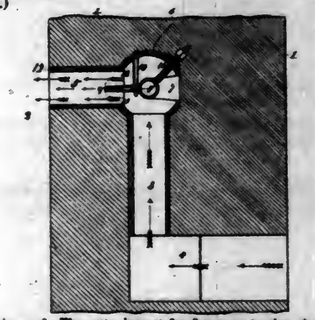


Claim.—1. The herein-described paper-file bracket, composed of side supports having corresponding supporting-arms, the edges of the supports sloping rearwardly from the said arms, and the cross-bars uniting the said supports and arranged below and a little in the rear of the supporting-arms, substantially as and for the purpose described.

2. The combination, with the support having portions of its edge sloping rearwardly, as shown, of the yielding arms secured to the support below the sloping edge, and having their upper ends extending above and adapted to set in opposition to the said sloping edge to retain a paper-file, substantially as and for the purpose described.

3. The herein shown and described paper-file bracket, composed of side supports having right-angled heads at their upper ends and depending extensions at their lower ends, and having supporting-arms, the edge of the supports sloping opposite the said arms, and the cross-bars uniting the supports and arranged below and in the rear of the said arms, substantially as described, for the purpose set forth.

405,956. JET ATTACHMENT FOR FURNACES. MICHAEL A. FOSTER, St. Louis, Mo. Filed Feb. 26, 1889. Serial No. 301,357. (No model.)



Claim.—1. The attachment for furnaces having the induction and eduction passages 3 and 5, and a central head 6 with slot 7, adapted to receive a jet-pipe 8, having a jet 9, substantially as and for the purpose set forth.

2. The combination, with the induction and eduction passages 3 5, and the central head 6, having an opening therethrough, of a jet-pipe passing through said opening and having the jet 9, and a set-screw adapted to impinge said pipe, whereby the jet 9 may be held in the proper position, substantially as set forth.

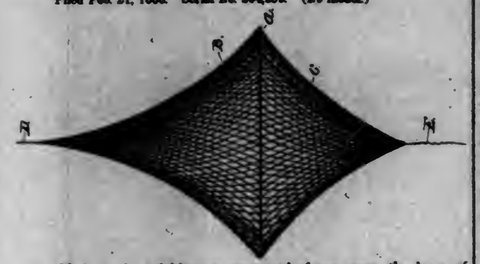
3. The attachment for furnaces having the induction and eduction passages 3 and 5, the central head 6, having the slot 7, a jet-pipe 8, projecting through said slot and having a jet 9 projecting therefrom, and the pins 10, substantially as and for the purpose set forth.

4. The combination, in an attachment for furnaces, of a device adapted to be inserted in the wall of the furnace, of an induction-passage 3 in communication with the outer air, an eduction-passage 5, discharging into the fire-chamber, a central head 6, adapted for the passage of a jet-pipe and having the slot 7, pins 10, and set-screw 11, all substantially as and for the purpose set forth.

5. The attachment for furnaces having the induction-tube with passage 3, discharging into the chamber of a head 6, adapted for the passage of a jet-pipe 8 with a jet 9, and an eduction-tube 12, movable on a joint 13 and secured in position by the set-screws 14, substantially as set forth.

6. The attachment for furnaces having the induction-tube with passage 3, discharging into the chamber of a head 6, adapted for the passage of a jet-pipe 8 with jet 9, and an eduction-tube 12, movable at its base 13, for the purpose set forth.

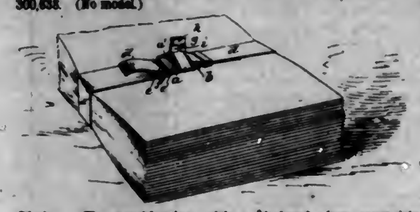
405,957. FISHING-NET. HENRY R. FRETSCHLAR, San José, Cal. Filed Feb. 21, 1888. Serial No. 264,859. (No model.)



Claim.—1. A fishing-net composed of two cones, the bases of which are united to a ring which serves as a weight and as an extender for the said bases, substantially as described.

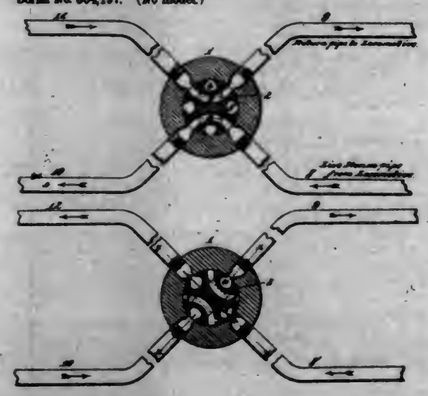
2. The combination of inner net C, of similar shape and form with outer net B, and metallic base-ring A, the same working within and upon net B, being controlled by the cord E, attached to its center and apex and passing up inside and through center of net B.

405,958. CLASP FOR FILE-BANDS. EDWARD J. HALL and HARRISON I. MORTON, Bennington, Vt. Filed Feb. 20, 1889. Serial No. 300,638. (No model.)

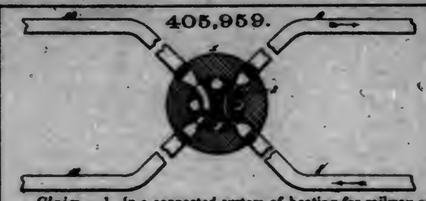


Claim.—The combination, with a file-band clasp comprising upper and lower frames *a a'*, adapted by their rear portions to be secured to one end of a file-band, of a lifter or handle attached to said upper frame, substantially as and for the purpose described.

405,959. VALVE FOR THE STEAM-HEATING PIPES OF RAILWAY-CARS. ROBERT I. HAMPTON, Athens, Ga. Filed Mar. 21, 1889. Serial No. 304,197. (No model.)



405,959.



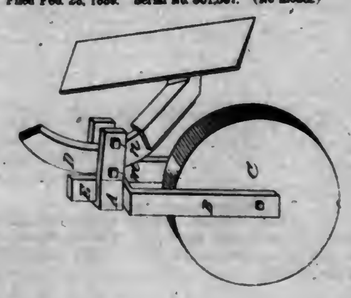
Claim.—1. In a connected system of heating for railway-cars, the combination, with a series of independent radiating-circuits each consisting of a direct and a return branch, of a valve-casing having communication therewith and also with pipe-sections communicating with the direct and return branches of the connected car, said valve-casing having a valve-core provided with two curved steamways capable of registering with all four pipe-openings simultaneously and having also two crossing steamways by which the direct and return branches may be brought into communication at the same time, substantially as described.

2. In a connected system of railway-heating, an independent or local radiating-circuit composed of a direct or live-steam branch and a return branch, a valve-casing at each end of the independent radiating-circuit with which said branches have communication at stated intervals, pipe-sections entering said valve-casing at like intervals and coupled to the connected independent radiating-circuit, and a cylindrical valve-core in each valve-casing having two curved steamways opening at such points that they may communicate with the connected direct and return branches, or with the local direct and return branches, and provided also with two crossing steamways, one carried over and the other below the curved steamways, and having their openings intermediate of those of the curved steamways, whereby the direct and return connected branches may be brought into communication, substantially as as described.

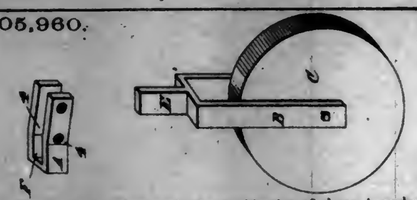
3. In system of steam-heating for railway-cars, the combination, with a direct and return branch, one receiving steam from and the other returning it to a source of steam-supply, of a cylindrical valve-casing with which said branches communicate at intervals of ninety degrees, a valve-core seated in said casing and having two steamways emerging at intervals of ninety degrees and provided with two crossing steam-passages, both emerging on the cylindrical face of the core half-way between the openings of the curved steamways, and two pipe sections adapted to connect with the adjacent independent radiating-circuit, said pipe-sections entering the valve-casing at intervals of ninety degrees, whereby a turn of the core may connect the direct branches, the direct and return branches of the independent circuit or of the same and a connected circuit, or cut off the steam entirely, the turn of the core being guided by an index on one part and a guide or graduate on the other part, substantially as described.

4. In a system of steam-heating for railway-cars, the combination, with a local or independent radiating-circuit composed of a direct or live-steam branch 8 and a return branch 9, of a valve-casing 1, having a valve-core 2, provided with curved steamways 3, and with crossing diametrical steam-passages 4 and 5, the curved steamways opening at intervals of ninety degrees, and the cross-passages opening between the ends of the steamways 3, and pipe-sections 10 and 12 at each end of the local radiating-circuit and entering the valve-casing 1 at intervals of ninety degrees, whereby the curved steamways 3 may be turned to connect the direct branches 8 and 10 of the connected independent circuits, or the cross-passages 4 and 5 be brought to connect the direct and return branches of the connected circuits, or one of the steamways 3 be thrown into communication with the direct and return branch of the local circuit, or the steam wholly cut off, substantially as described.

405,960. GOPHER-TRUCK. SAMUEL R. HARRY, Chatsworth, Ill. Filed Feb. 23, 1889. Serial No. 301,587. (No model.)

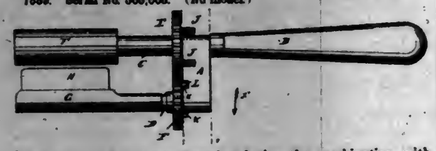


405,960.



Claim.—In a gopher-truck, the combination of clamp A, socket F, wheel-frame E B, and wheel C, as set forth.

405,961. RAZOR-STROPPING DEVICE. FREDERICK KAMPFE, RICHARD KAMPFE, and OTTO KAMPFE, Brooklyn, N. Y. Filed Mar. 12, 1889. Serial No. 303,003. (No model.)

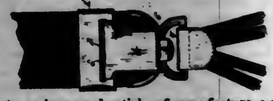


Claim.—1. In a razor-stropping device, the combination, with the blade-holder, of a spindle adjacent to the blade-holder and carrying a friction-roller, and gearing for transmitting motion from the spindle carrying the friction-roller to the blade-holder, substantially as set forth.

2. In a razor-stropping device, the combination, with a block, of two parallel spindles, one carrying a blade-holder and the other a friction-roller, gearing for transmitting motion from the spindle carrying the friction-roller to the spindle carrying the blade-holder, and check-pins on the gear-wheel on the roller-spindle, substantially as set forth.

3. In a razor-stropping device, the combination, with the block, of two parallel spindles on the same, a friction-roller on one spindle, a blade-holder on the other spindle, cog-wheels on said spindle, check-pins on the cog-wheel of the roller-spindle, pins on the cog-wheel of the blade-holder spindle, and a spring against which the pins on the cog-wheel of the blade-holder spindle can press, substantially as set forth.

405,962. SUSPENDER-BUCKLE. JOHN KENNEDY, Birmingham, assignor to the Osborne & Cheesman Company, Ansonia, Conn. Filed Mar. 22, 1889. Serial No. 304,236. (No model.)



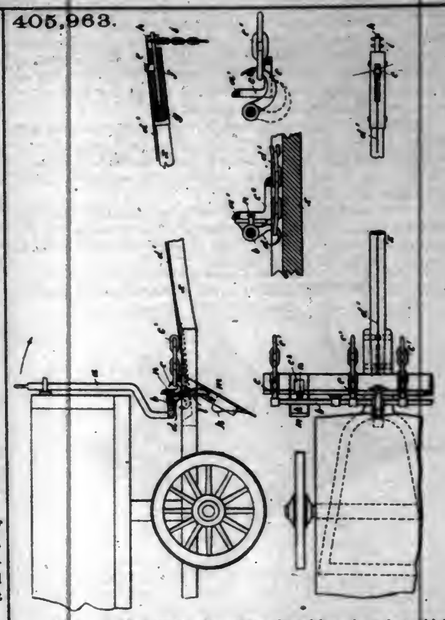
Claim.—1. As an improved article of manufacture, a suspender-buckle comprising a frame having a swinging clamp-lever for clamping the suspender on the frame, and a pendent tubular frame having a portion bent inward to form lugs, and a suspender-end-carrying cast-off provided with a diverging spring-plate having a tang passing between the inwardly-bent lugs, and provided with shoulders to engage the lugs, substantially as described.

2. A suspender-buckle having a central depending tubular frame formed of a plate of metal having integral lateral extensions bent rearwardly and then toward each other, in combination with a clasp-plate having a spring-plate provided with a tang adapted to pass between rearwardly-turned lugs on the lower end of said tubular frame, which lugs engage square shoulders on each side of said tang, said plate carrying the suspender-end, substantially as described.

3. A suspender-buckle composed of a tubular frame having a slot in which is mounted a claw-plate provided with a depending tubular frame integral with the claw-plate, and a clasp-plate having an eye or loop carrying the suspender-ends, and provided with a diverging spring-plate having shoulders engaging inwardly-turned lugs on the tubular frame, and a tang passing between said shoulders, substantially as described.

4. The combination, with a buckle-frame 1, of a claw-plate 2, pivotally mounted thereon, and provided with a depending tubular frame 4, having lugs 5, and a clasp-plate 6, having an eye or loop 7, and a spring-plate 8, provided with a tang 9 and having shoulders 10 on each side thereof, said tang having an extremity serving as a finger-piece, substantially as described.

405,963. HORSE-DETACHER. GOTTLIEB KIRNICH, Oberesslingen, Würtemberg, Germany. Filed Mar. 6, 1888. Serial No. 302,093. (No model.) Patented in Germany Dec. 2, 1887, No. 43,834, and in England Jan. 17, 1888, No. 751.



Claim.—1. The combination of the slotted bar *a'*, against which the traces rest, with the shaft *b*, having the hitching-hooks movable in the slots of the bar to release the traces, and a lever for rotating the shaft, said slotted bar serving to support the traces while the hooks are being disengaged therefrom, substantially as described.

2. The combination of the axially-rotating shaft *b*, provided with the hand-lever *a*, and having the curved hitching-hooks *c*, and the central hook *d*, with the bar *a'*, having slots in which said hooks are movable, the spring-bar *f*, and the draw-rod *d'*, connected with the central hook on the rotating shaft, substantially as described.

3. The combination, with the oscillating shaft *b* and hand-lever *a*, of the pins *n*, the chain *l*, brake-block *k*, and the slotted singletree-bar *a'*, substantially as and for the purpose specified.

4. The combination, with the oscillating shaft *b* and hand-lever *a*, of the pins *n*, the chain *l*, brake-block *k*, the hooks *c*, and the slotted singletree-bar *a'*, substantially as and for the purposes specified.

5. The combination, with the oscillating shaft *b* and hand-lever *a*, of the pins *n*, the chain *l*, brake-block *k*, the hooks *c*, the hook *d*, and the slotted singletree-bar *a'*, substantially as and for the purposes specified.

6. The combination, with the oscillating shaft *b* and the hand-lever *a*, of the pins *n*, the chain *l*, brake-block *k*, the hooks *c*, the hook *d*, the slotted singletree-bar *a'*, the drawing-rod *d'*, the bolt *e*, the spring *g*, and the sliding bar *f*, arranged and operating substantially as and for the purposes specified.

7. The combination, with the oscillating shaft *b* and the hand-lever *a*, of the pins *n*, the chain *l*, brake-block *k*, guide *m*, and slotted singletree-bar *a'*, substantially as and for the purpose specified.

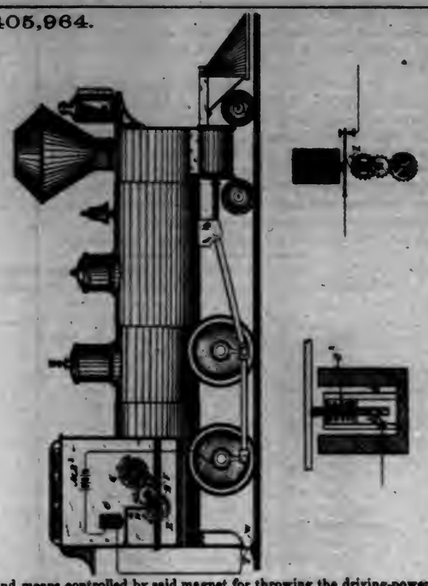
405,964. AUTOMATIC ELECTRIC CONTROLLER FOR RAILROAD-TRAINS. FRANK R. KINSMAN, New York, N. Y. Filed Aug. 17, 1886. Renewed May 1, 1888. Again renewed Dec. 13, 1888. Serial No. 293,533. (No model.)

Claim.—1. The combination, with the controlling device for a railway-brake, of a governing electro-magnet on the locomotive or other vehicle, a relay electro-magnet whose circuit includes the rails of a section of track, and a relayed circuit governed by said magnet and formed through devices on the road-bed, and a section of conductor located on the vehicle and containing the controlling-magnet of the brake mechanism.

2. The combination, with a railway-brake, of a controlling-cock, a driving mechanism, a reducing-gear between said driving mechanism and the cock, and a governing electro-magnet whereby, when the magnet throws the driving mechanism into operation, a gradual application of the brakes may be produced.

3. The combination, with a railway-brake mechanism, of a controlling-cock, a driving-power, an intermediate reducing-gear, a governing electro-magnet on the locomotive or other portion of the train,

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and means controlled by said magnet for throwing the driving-power into operation.

4. The combination, with a railway-brake, of a controlling-cock, a driving-power, means connected with the same for giving a graduated movement to the cock under the operation of the driving-power, and a governing electro-magnet whereby, through the operation of the magnet, a gradual application of the brakes may be secured.

5. The combination, with a relay whose coils include the rails of a section of track, of a relayed circuit completed through the back contact of the armature, and means for periodically lifting the armature away from its circuit-closing stop.

6. The combination, with a railway-brake mechanism and a controlling-magnet therefor, of a circuit for said magnet, including the back contacts of a relay, and means for periodically lifting the relay from its back-contact stop.

7. The combination of a cock on a railway-vehicle, a magnet controlling the operation of the same, a circuit for said magnet including the back contacts of a relay, a circuit for said relay governed by the passage of a train over a section of track, and means for periodically restoring the armature of the relay to normal position, as and for the purpose described.

8. The combination of a relay in a normally-closed circuit, including circuit-breakers operated by the passage of a train, and means for periodically lifting the armature of the relay from its back contact.

9. The combination, with a railway-gate, of a circuit-controller therefor, a railway-brake mechanism, an electro-magnet governing the same and placed on the locomotive, and circuit-closing devices on the road-bed for completing the circuit of said magnet on the vehicle or locomotive when the gate is open.

10. The combination, with a railway-bridge, of an electric circuit passing over the same and including one or more thermostats, a cock on the locomotive or railway-train, and a controlling-magnet for the same governed by the condition of the circuit upon the bridge, whereby on the action of the thermostat device a cock may be turned through the controlling agency of the electro-magnet, as and for the purpose described.

11. The combination, with a railway-bridge, of a thermostat-circuit passing over the same, a locomotive or railway-vehicle carrying an electro-magnet whose circuit is governed by the condition of the thermostat-circuit, a railway-brake mechanism, and a controlling-cock therefor governed by said electro-magnet.

12. The combination, with a railway-bridge, of a thermostat-circuit, a railway-brake mechanism, a controlling-cock for the same, the governing electro-magnet on the locomotive or other vehicle, and a circuit for said magnet governed by the condition of the thermostat-circuit and the position of the locomotive with regard to circuit-closing devices on the road-bed.

13. The combination, with the controlling mechanism for a locomotive-whistle, of operating devices for actuating the same according to a signal-code, and a controller-magnet, as and for the purpose described.

14. The combination, with the controlling devices for a steam-whistle on a locomotive, of a driving-wheel carrying operating projections disposed and constructed in accordance with a signal-code, and an electro-magnet governing the operations of said wheel, as and for the purpose described.

15. The combination, on a locomotive, of a steam-whistle, governing devices therefor, a wheel H^3, carrying projections whose length and intervals correspond to a signal-code, a detent mechanism governing the rotation of the wheel, and a controlling electro-magnet on the vehicle having a circuit completed through devices on the road-bed.

16. The combination, with a locomotive-whistle and a controlling-magnet therefor, of a relay governing the action of said magnet, and a circuit for the relay including the rails of a railway-track.

17. The combination, with a relay R and a section of track *b b*, the rails of which are included in a circuit with the relay, of one or more track-circuit breakers normally closed, but arranged in the circuit and in position to be operated by a passing train.

18. The combination, with a line of rails *b*, included in the circuit of the relay R, of one or more circuit-breaking devices interposed in said circuit for interrupting the relay-circuit on the passage of a train over the section of track.

19. The combination, with the cock D, and its driving electro-motor, of a controlling-magnet and a catch for holding the circuit of the motor closed, as and for the purpose described.

20. The combination, with a railway-car brake, of a controlling-cock, an electric motor geared to the same, a governing-magnet, a relay-armature for the same normally retracted, and a catch for holding the armature up and in position to close the circuit of the motor, as and for the purpose described.

405,965. AUTOMATIC RAILROAD-FROG. MICHAEL LEARY, Utica, N. Y., assignor of one-half to James F. Mann, same place. Filed Jan. 7, 1889. Serial No. 295,600. (No model.)



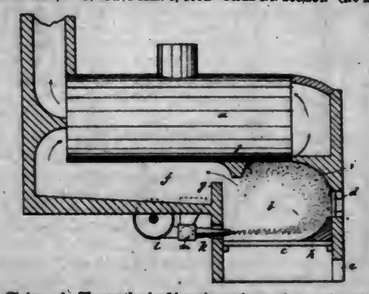
Claim.—1. In a railroad-frog, the combination of two stationary converging rails terminating in a V-shaped point, a movable rail having the point of the angle between the body line and tapering point of the rail at or before the V-shaped point, and a movable rail having the angle between the body line and tapering point at the side of and behind the V-shaped point, substantially as described.

2. In a railway-frog, the combination of the two converging stationary rails terminating in a V-shaped point, a movable rail terminating in a tapering point, which taper is parallel with one side of the V-shaped point, and a movable rail terminating in a tapering point which converges with a side of a V-shaped point from the stationary rail toward the point, substantially as set forth.

3. In a railway-frog, the combination of the converging stationary rails terminating in a V-shaped point 2, a movable rail 3^a, having the point 4 thereof at or before the point 2, and a movable rail 3, having point 8 thereof at the side of the V-shaped point, substantially as described.

4. In a railway-frog, the combination of two stationary converging rails terminating in a V-shaped point 2, a movable rail 3^a, having a tapering point 11 removed from the side of the V-shaped point 2, and the point 4 of the rail 3^a at or in advance of the V-shaped point 2, and movable rail 3, having tapering point 9 adjacent to the side of V-shaped point 2, substantially as described.

405,966. PROCESS OF BURNING CULM OR PULVERIZED COAL. ALLAN MASON, Brooklyn, assignor to Herbert H. Sanderson, trustee, New York, N. Y. Filed Mar. 5, 1888. Serial No. 266,281. (No model.)

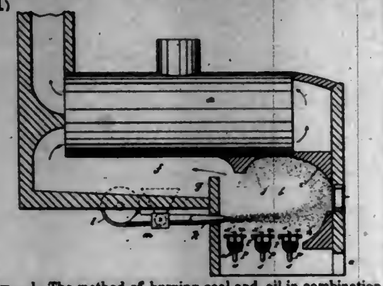


Claim.—1. The method of burning culm or fine coal, which consists of injecting it into the furnace-chamber and deflecting the injected

stream backward over and into the incoming jet or jets in continuous suspension during combustion over a still air-space in which the ashes collect separately from the burning coal and maintaining therewith an igniting and renewing fire, substantially as described.

2. The method of burning culm or pulverized coal and lump coal in combination by injecting the pulverized coal into and for a time maintaining it in suspension in the furnace-chamber by the injecting forces and at the same time burning the lump coal below the injected fine fuel in independent or separate burners between which the coal-ashes are precipitated, substantially as described.

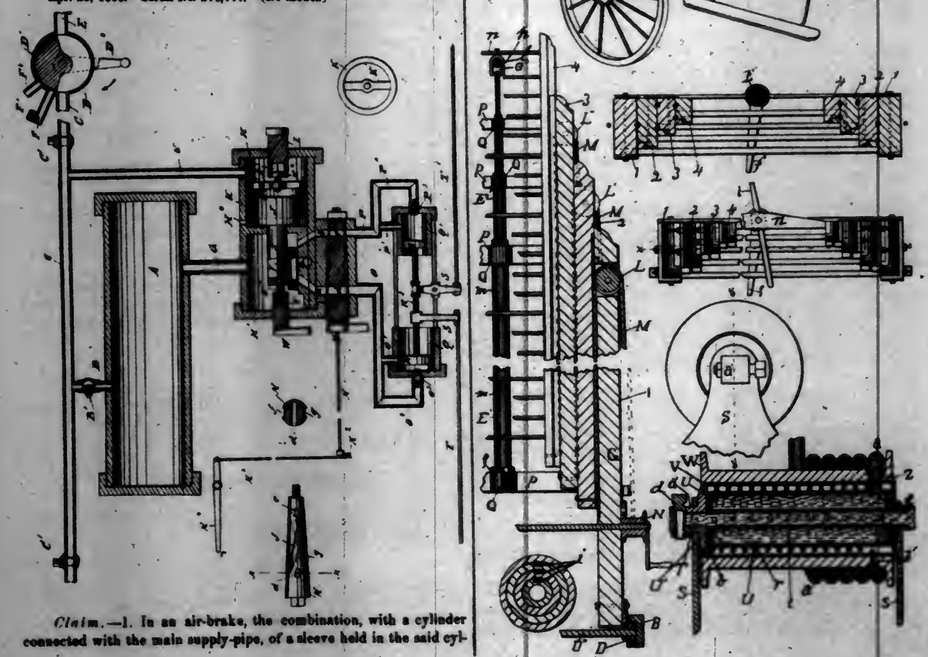
405,967. PROCESS OF BURNING COAL AND HYDROCARBON FUEL. ALLAN MASON, Brooklyn, assignor to Herbert H. Sanderson, trustee, New York, N. Y. Filed Mar. 5, 1888. Serial No. 266,282. (No model.)



Claim.—1. The method of burning coal and oil in combination, which consists in maintaining independently-supplied separate and locally distributed oil-fires in the lower portion of the furnace-chamber, producing an essential portion of the heat generated, and at the same time separately injecting fine coal into the furnace above the oil-fires, and for a time maintaining it in suspension over and about the oil-fires, substantially as described.

2. The method of burning coal and liquid hydrocarbon fuel in combination by injecting the pulverized coal into and for a time maintaining it in suspension in the furnace-chamber by the injecting forces, and at the same time burning liquid hydrocarbon fuel below the injected fine fuel in independent or separate burners, between which the coal-ashes are precipitated, substantially as described.

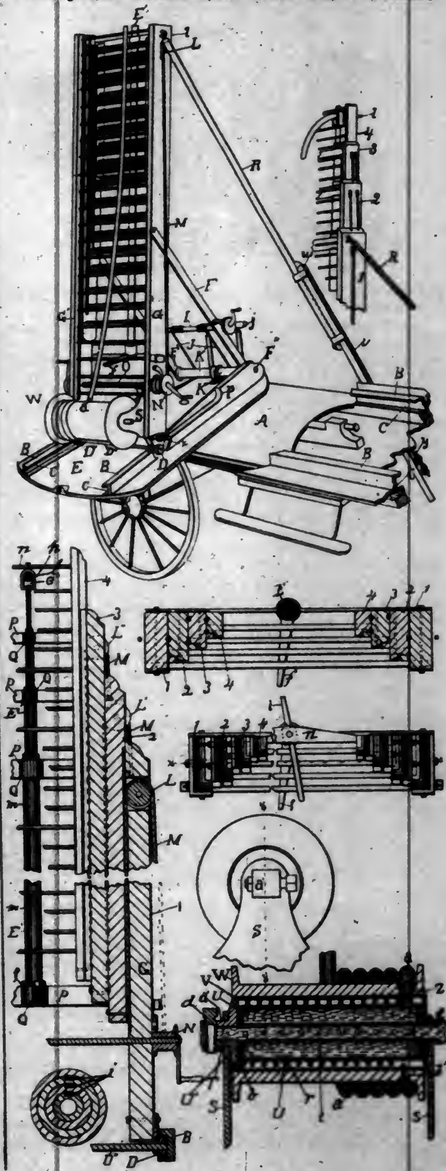
405,968. AIR-BRAKE. JAMES M. MAXWELL, Pittsburg, Pa., assignor to himself, and Michael M. Comerford, Fairmont, W. Va. Filed Apr. 25, 1888. Serial No. 271,777. (No model.)



Claim.—1. In an air-brake, the combination, with a cylinder connected with the main supply-pipe, of a sleeve held in the said cylinder, a screw for regulating the throw of the said sleeve, and a piston connected with a slide-valve for operating the brakes, the said piston being held to slide in the said sleeve, substantially as shown and described.

2. In an air-brake, a cylinder connected with the main air-pipe, an air-chest held on the said cylinder, and an auxiliary reservoir connected by a pipe having a check-valve with the main air-pipe, and also with the said air-chest, in combination with a piston held to slide in the said cylinder, a slide-valve operating over ports in the said chest and actuated by the piston-rod of the said piston, two cylinders connected with the inlet-ports, and pistons held in the said cylinders and connected with each other and operating the brakes, and a reversing-valve for changing the connection between the air-chest and the said two cylinders, substantially as shown and described.

405,969. PORTABLE EXTENSION-LADDER. WINFIELD S. OGLE, Los Angeles, Cal. Filed Jan. 14, 1889. Serial No. 296,870. (No model.)



Claim.—1. A set of extension-ladders mounted upon a carriage and provided with ropes and windlass N for extending them, seated at the foot of the outer ladder in lateral grooves or runways extending along in side pieces B of platform A to and upon turn-table E, in which ways supporting and carrying wheels D, attached to the rails of the outer ladder G G', run, in combination with hinged braces F, provided with ropes J, and windlass-shaft I for moving the ladders rearward, substantially as described.

2. A set of extension-ladders organized as described, in combination with a windlass or equivalent power mechanism, a hose and hose-reel, a water-receiver, and a hose supporter or bridle for elevating the hose, substantially as set forth.

3. A set of extension-ladders organized as described, in combination with an extensible and axially-adjustable sectional brace connected by cross-ties and collars with the ladders and working uniformly with said ladders, substantially as described.

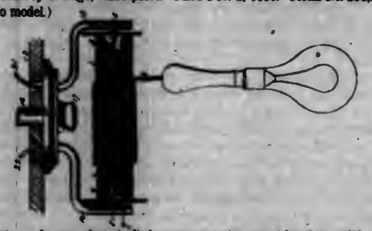
4. The axially-adjustable sectional extension-ladder brace having a hand-lever attached thereto at the bottom, in combination with a water-hose and nozzle held by a yoke or bridle rigidly fastened to the top thereof and swiveled to the upper broad rung of the topmost ladder, substantially as and for the purpose specified.

5. The hose-reel, in combination with a rotary water-receiver and fixed perforated axle and a retracting-spring, substantially as described.

6. The combination of the hose-reel, the retracting-spring located between the hose-reel and the water-receiver, and the perforated fixed axle provided with ingress-orifices at one end and the faucet at the opposite end, substantially as and for the purpose specified.

7. The set of extension-ladders organized as described, movable in runways connecting platform A with turn-table E, provided with stops *p p*, in combination with windlass-shaft I on braces F, and ropes J, connected to the foot of the ladders and passing around spools K K aligned horizontally with the runways and foot of the ladders, substantially as described.

405,970. ADJUSTABLE SUPPORT FOR INCANDESCENT ELECTRIC LIGHTS. JOHN T. PEARSON, St. Louis, Mo., assignor of one-half to Harvey S. Page, same place. Filed Feb. 2, 1889. Serial No. 298,530. (No model.)



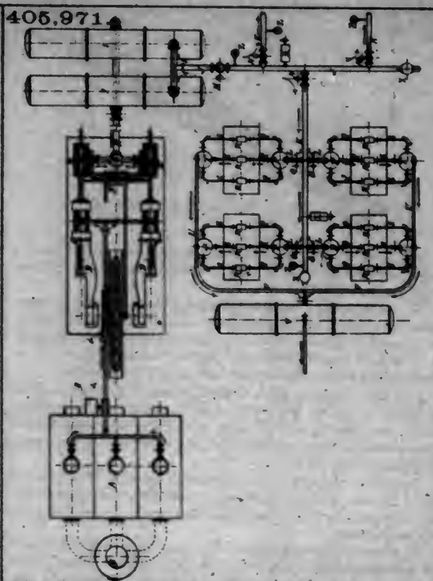
Claim.—In an electric-light support, the combination, with the hanger-frame having tubular hangers 13 14, through which the conducting-wires 21 22 pass, of the spring-roller 1, bearing in the hanger-tubes and having metallic caps 6 9, and pins 5 7, which form electrical connection with the conducting-wires, and a flexible electro-conductor 3, having electrical connection with the metallic caps 6 9, and carrying at its outer end an incandescent light, substantially as set forth.

405,971. MEANS OR APPARATUS FOR THE PRODUCTION AND DISTRIBUTION OF COMPRESSED AIR. VICTOR POPP, Paris, France, assignor to the Popp Compressed Air and Electric Power Company, (Limited.) Filed Sept. 29, 1886. Serial No. 214,846. (No model.) Patented in France Nov. 27, 1885, No. 172,574, and in England Dec. 15, 1885, No. 15,420.

Claim.—1. In a system of compressed-air distribution, the combination, with a central compressor, of a conduit and branches leading therefrom, an automatic pressure-regulator maintaining in said conduit a pressure greater than that at which the air is to be utilized, and two or more utilizing-stations connected with said conduit and each provided with distinctively-adjusted pressure-reducing apparatus, substantially as described.

2. In a system of compressed-air distribution, the combination, with a compressor at the distributing-station, of a main conduit, connected therewith and extending throughout the district to be supplied, a regulator maintaining a constant pressure in said conduit, a series of branch conduits adapted for a lower pressure, each leading from the main through an automatic pressure-reducer and air-utilizing apparatus at consumers' stations connected to each of said branches, whereby the varying local demands of the system may be automatically supplied.

3. In a system of compressed-air distribution, the combination, with a compressor at the distributing-station, of a main conduit connected therewith and extending throughout the district to be supplied, a regulator maintaining a constant pressure in said conduit, a series



of branch conduits adapted to a lower pressure, each leading from the main through an automatic pressure-reducer, and utilizing apparatus at the consuming-station connected to each branch conduit and automatic pressure-regulator at each station, whereby the varying demand of any locality may be supplied and the apparatus adjusted at each consumer's station.

4. In a system of compressed-air distribution, the combination, with a main compressor, of main and branch pipes leading therefrom and two or more consumers' stations, each provided with a local reservoir, and an automatic pressure-regulator placed at an intermediate point between the reservoir and the supply-pipe.

5. In a system of compressed-air distribution, the combination, with the main-supply compressor, of main and branch conduits, two or more consumers' stations with apparatus for utilizing air-pressure, a pipe connecting said stations and leading to a reservoir, a connection between said pipe and the exhaust of the said apparatus at the stations, and secondary apparatus connected with the said reservoir for utilizing the reduced air-pressure.

6. In a system of compressed-air distribution, the combination, with conduit conducting the air, of a strainer extended transversely across the conduit, the conduit being provided with an opening in front of the strainer for removing the accumulation of dirt.

7. In a system of compressed-air distribution, the combination of the screen M, Fig. 8, the pipe G, with a downward opening, and the outlet-pipe A, leading from the opposite side of the screen.

8. The combination, with the reservoir A, Fig. 8, placed at the lowest point of a distribution-pipe for collecting the moisture from the fluid in the pipes, of a screen M in its upper part extending across the circuit of the fluid.

9. The combination, with moisture-reservoir A, placed in a distribution system of compressed air at a low point, so as to receive the drainage by gravity, of screen M and inlet and outlet pipes G and H, with their openings upon opposite sides of screen M, respectively.

10. A moisture-reservoir for a system of compressed-air distribution, having a screen above the water extending across the circuit of the air and a perforated partition below the said screen for catching the dirt therefrom, while allowing the moisture to pass through an opening being made above the said partition for removing the accumulation.

405,972. NAIL. WILLIAM TAYLOR, Allegheny, Pa. Filed Apr. 9, 1888. Serial No. 270,182. (No model.)

Claim.—1. A nail having a shank of greater breadth than thickness and uniform throughout in breadth and thickness, and having a head at one end and a point at the other end tapered from the shank to a cutting-edge, substantially as described.

2. A wire nail having a flattened laterally-projecting head, a flat shank uniform throughout in breadth and thickness and of greater breadth than thickness, and having a point tapering from the thickness of the shank to a cutting-edge, substantially as set forth.

3. A nail having a flattened head which projects laterally over

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all sides of the shank, a point, and an intermediate shank which is flat from end to end—that is to say, uniform in breadth and thickness throughout, as set forth.

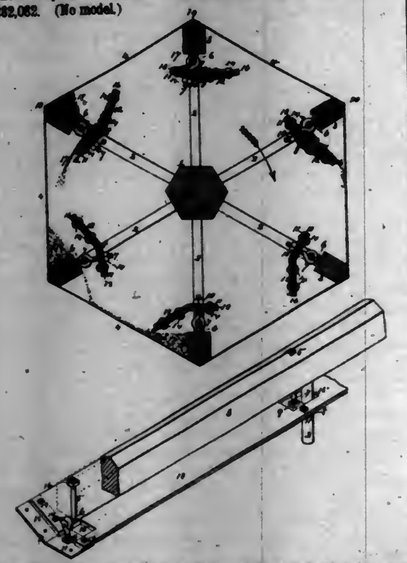
4. A nail having a flattened laterally-projecting head, a wedge-shaped point, and an intermediate shank which is flat from end to end—that is to say, of greater breath than thickness and uniform throughout in breadth and thickness, and having rounded or curved edges between the broader sides or faces, substantially as set forth.

5. A nail having a head, a shank which is flat and uniform throughout in breadth and thickness, and has round or carved edges between the wider faces, and a point having flat faces converging to a cutting-edge which is parallel to the said wider faces of the shank, substantially as set forth.

6. A wire nail having a head formed of laterally bent or stayed fiber of the wire, a shank of greater breadth than thickness and uniform throughout in both breadth and thickness, and a point, substantially as described.

7. A wire nail having a head of laterally bent or stayed fibers of wire, a wedge-shaped point, and a shank of greater breadth than thickness and uniform throughout in breadth and thickness and having curved or rounded edges provided with nicks or notches, substantially as set forth.

405,973. BOLTING-REEL. JAMES R. WELCH, Petersburg, Ill., assignor, by direct and mesne assignments, of one-third to Dedrich Fisher and Thompson W. McNeely, same place. Filed Aug. 6, 1888. Serial No. 282,082. (No model.)



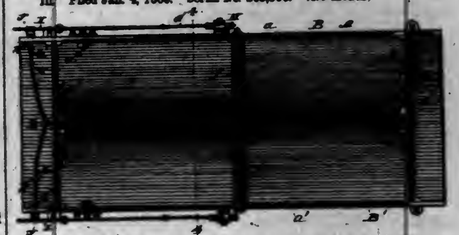
Claim.—1. The combination, with a bolting-reel, of a shoe composed of strips parallel with the ribs and hinged thereto and set angularly to each other, so as to form a trough with its concave side toward the reel, and having apertures for the passages of the arms of the reel longer transversely than the diameter of the arms, substantially as and for the purpose set forth.

2. The combination of the eyebolts 5, adapted for attachment to the rib of a bolting-reel, eyebolts 7, hung to eyebolts 5 and carrying adjustable nuts 9 and 10, angular bracket-plates 8, through which the bolts 7 pass, and strips 13 and 16, secured to the brackets, substantially as and for the purpose set forth.

3. The combination of the eyebolts 5, adapted for attachment to the ribs of a bolting-reel, eyebolts 7, hung to eyebolts 5 and carrying nuts 9 10 for adjustable attachment, bracket-plates 8, through which the bolts 7 pass, and strips 13 and 16, secured to the bracket-plates and having apertures for the passage of the reel-arms, substantially as and for the purpose set forth.

4. The combination, in a bolting-reel, of eyebolts 5, attached to the ribs 3, eyebolts 7, hung upon the bolts 5, bracket-plates 8, attached to the bolts 7 by nuts 9 10, bearing against the opposite sides of the bracket-plates, and strips 13 16, attached to the bracket-plates, forming a trough with apertures 15 for the passage of the arms and of greater transverse length than the diameter of the arms, substantially as and for the purpose set forth.

405,974. DUMPING-WAGON. GEORGE WORTHINGTON, Plainfield, Ill. Filed Jan. 4, 1889. Serial No. 295,390. (No model.)



Claim.—1. A dumping-wagon whose bottom is made in two sections arranged longitudinally in the bed and hinged centrally therein to enable the sections to drop away from the sides, respectively, of the bed, said bottom sections at the line of their hinges being supported from a cross-truss, substantially as described.

2. The combination, in a wagon-bed, of a dumping-bottom and a truss, said truss arranged crosswise in said wagon-bed between the ends thereof, and having a connection leading downward to said bottom, substantially as described.

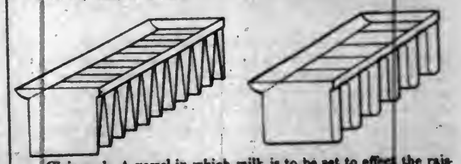
3. The combination, in a wagon-bed, of the hinged sections B B', the cross-bars and the cross-truss, said bottom sections at the line of their hinges being supported from a cross-truss, substantially as described.

4. The combination, in a wagon-bed, of the dumping-sections B B', the cross-bars D D', the cross-truss, and means for raising and lowering the cross-bars and sections, and a connection leading from said cross-truss to said dumping-sections, substantially as described.

5. A dumping-wagon bed whose bottom is in sections working independently of each other and each section having its own cross-bar for raising and lowering it and said sections being upheld along the central line of the bed-bottom by means of a connection leading to a cross-truss overhead, substantially as described.

6. A dumping-wagon bed whose bottom is in sections working independently of each other and each section having its own means for raising and lowering it and said sections being upheld along the central line of the bed-bottom by means of a connection leading to a cross-truss overhead, substantially as described.

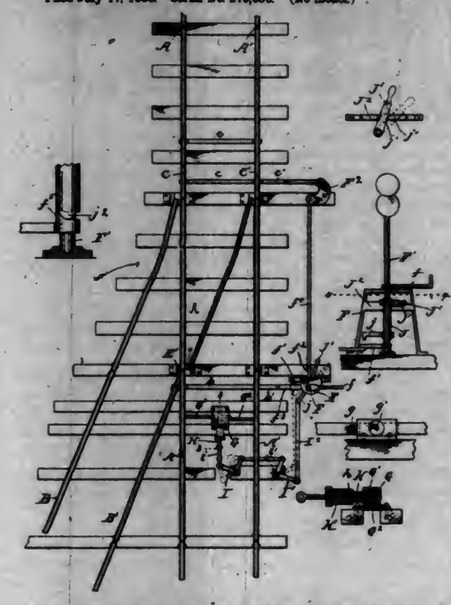
405,975. DEVICE FOR RAISING CREAM FROM MILK. WILLIAM H. WELLS, Evershot, County of Dorset, England. Filed Nov. 5, 1888. Serial No. 290,014. (No model.) Patented in England Sept. 12, 1888, No. 13,216; in France Oct. 29, 1888, No. 195,797; in Belgium Oct. 30, 1888, No. 83,776; in Canada Dec. 26, 1888, No. 30,485, and in Italy Dec. 31, 1888, No. 24,387.



Claim.—1. A vessel in which milk is to be set to effect the raising of cream, formed with narrow parallel cells all opening at the top into one shallow cream reservoir or receptacle, two ends of which are vertical and parallel with each other, and one or both sides of which are curved or inclined outwardly from one end piece to the other to allow of a skimmer being inserted at the curved side and passed across the bottom of the cream reservoir or receptacle to remove at one operation all the cream from the milk below it.

2. The combination, substantially as hereinbefore set forth, of a narrow vertical cell and a shallow horizontal cream reservoir or receptacle above the cell, said cream-receptacle having vertical parallel end pieces, and having one or both of its sides curved outwardly and extending from one end piece to the other, for the purpose specified

405,976. RAILWAY-SWITCH. AARON A. ACKERLY, Chicago, Ill. Filed July 11, 1888. Serial No. 279,636. (No model.)



Claim.—1. The combination, with the crossing-rails A and B', one pair of which is laterally movable, of the saddle or chair E, provided with projections E', located one on each side of the crossing and each having a height substantially equal to that of the rails, whereby a bearing for the tread of the wheels is formed in both positions of the movable rails, substantially as and for the purposes specified.

2. The combination, with the crossing-rails A and B', one pair of which is laterally movable, of the saddle E, having a bearing-surface for the said rails, a central projection *e* to fit between the fixed rails, and lateral projections E', these latter being both of a height substantially equal to that of the rails, substantially as and for the purposes specified.

3. The combination, with the crossing-rails arranged in pairs, one of which pairs is movable, of an arm attached to said movable pair, a locking device arranged immediately adjacent thereto to positively engage said arm and lock the movable rails, the switch-stand provided with a lever and connecting devices to move the said crossing-rails laterally, and a separate lever and separate connecting devices, whereby said locking device may be operated from the switch-stand, substantially as and for the purposes specified.

4. The combination, with the movable crossing-rail, of an apertured bar secured thereto, a keeper through which said bar slides, a spring-controlled locking-bolt for actuating said apertured bar, and operating mechanism for actuating said bolt, substantially as and for the purposes specified.

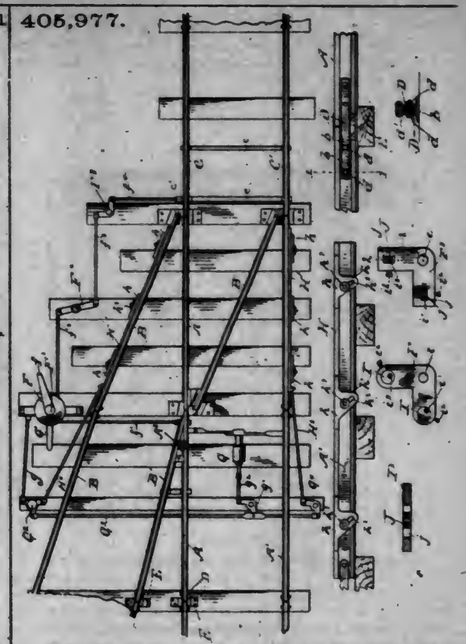
5. The combination, with the movable rail A, having apertured bar G', of the fixed rail A', having apertured bar G^3, the box or keeper G, to receive said bars, and the locking-bolt H, substantially as and for the purposes specified.

6. The combination, with the laterally-movable crossing-rails and the rock-shaft F', for operating the same, said rock-shaft being provided with a cam, of the sleeve J, mounted on said rock-shaft and free to move vertically on and around the same, the handle-lever and its bar provided with seats for locking the same, and the spring locking-bolt connected to said sleeve and operated thereby, whereby the rotation of the rock-shaft will free the locking-bolt, substantially as and for the purposes specified.

405,977. RAILWAY-SWITCH. AARON A. ACKERLY, Chicago, Ill. Filed Oct. 17, 1888. Serial No. 288,306. (No model.)

Claim.—1. The combination, with the laterally-movable main rail A, of the laterally-movable siding-rail B', rigidly connected to said rail A at its front end, the fixed siding-rail B, the fish-plates D, and the bolts *d*, connecting said fish-plates and provided with sleeves or thimbles *d'*, said plates passing through suitable slots *b* in the movable rail B', substantially as and for the purposes specified.

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2. The combination, with the laterally-movable crossing-rails A and B', rigidly connected at their meeting ends, of the filling A^3, of wood or other suitable material, secured in the angle between said rails, substantially as and for the purposes specified.

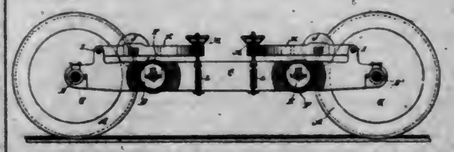
3. The combination, with the laterally-movable switch and crossing rails and their operating mechanism, of locking mechanism for securing the same in position, and guard-slides connected to the fixed main and siding rails between the switch and crossing rails and controlled by the locking mechanism, substantially as and for the purposes specified.

4. The combination, with the lock G, link g^2, and bell-crank g', of the hand-lever G', connecting-rod g, three-armed lever G^2, transverse rod G^3, bell-crank lever G^4, and the slides H and H', connected, respectively, to the three-armed lever G^2 and bell-crank lever G^4, substantially as and for the purposes specified.

5. The combination, with the laterally-movable switch and crossing rails, of the switch-stand and its operating-lever, and suitable connecting-rods and intermediate levers, the pivots whereby the connecting-rods are connected to said levers being adjustable toward and from the fulcrum of the lever, substantially as and for the purposes specified.

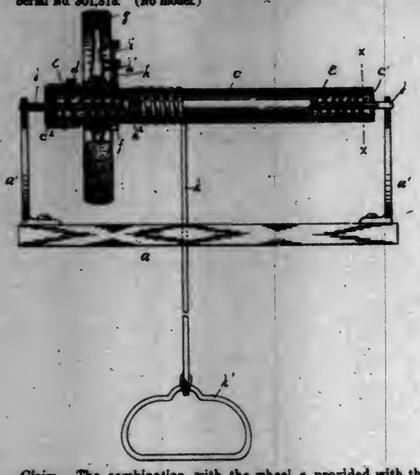
6. The combination, with the laterally-movable switch-rails C and their operating-lever, of the connecting-rods, the intermediate lever F, provided with slots *j*, the blocks J, mounted in said slots and adjustable therein, securing devices for said blocks, and the pivots j' and j^3, mounted in said blocks, substantially as and for the purposes specified.

405,978. ELECTRICALLY-PROPELLED VEHICLE. RICHARD H. ALLEN, Cleveland, Ohio. Filed Mar. 11, 1889. Serial No. 302,794. (No model.)



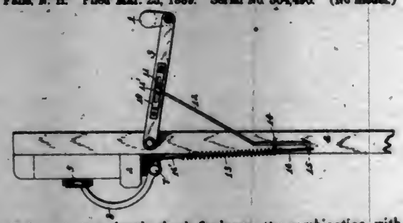
Claim.—The combination, with the motor-shaft and car-axle, both provided with friction pulleys or drums, of a pivoted lever or frame, friction-wheels carried thereby and adapted to be brought by the frame into contact with both pulleys or drums, and an adjustable spring-connection between the frame and a fixed support, the tension of which acts to force the friction-wheels against the pulleys and drums, as set forth.

405,979. APPARATUS FOR REVOLVING EMERY OR OTHER WHEELS. AUGUSTUS ALTENBURG, Buffalo, N. Y., assignor of two-thirds to Donald C. Sweet and Henry Ganson, same place. Filed Mar. 5, 1889. Serial No. 301,818. (No model.)



Claim.—The combination, with the wheel *g*, provided with the spring-pressed pawl *h*, of the hollow sleeve or cylinder *c*, loosely mounted upon the fixed axle *b* and having the ratchet-wheel *f* rigidly secured thereto, the spiral spring *e*, secured at its ends to the fixed axle *b* and to the sleeve *c*, the strap *k*, and its stirrup *k'*, substantially as and for the purpose stated.

405,980. SHUTTLE-CHECK FOR LOOMS. NAPOLEON BOIVERT, Salmon Falls, N. H., assignor of three-fourths to James Hamilton and Herbert E. Hamilton, both of same place, and Edward M. Ball, Great Falls, N. H. Filed Mar. 23, 1889. Serial No. 304,490. (No model.)



Claim.—1. In a shuttle-check for looms, the combination, with a lay, a crank-shaft, a lay-pitman, a swell, a rock-shaft carrying a binder arm or finger arranged to impinge against the swell, and a spring connected to said rock-shaft, of a vertically-reciprocating rod pivotally connected to the lay-pitman at an intermediate point of its length and at its opposite end to the spring, and a fixed guide on the lay-sword in which said rod is fitted, all arranged and combined for operation in the manner and for the purpose specified.

2. The combination, with a lay, a crank-shaft, a lay-pitman, a swell, a rock-shaft carrying a binder arm or finger, and a spring connected to said rock-shaft, of a vertically-reciprocating rod connected at its lower end to said spring, and adjustably connected by means, substantially as described, to the lay-pitman to vary its vertical movement or play, and a guide in which said reciprocating rod is fitted, combined and arranged for operation substantially as and for the purpose described.

3. The combination, with a lay, a crank-shaft, a lay-pitman, a swell, a rock-shaft carrying a binder-arm, and a spring connected to the rock-shaft, of a slotted bracket applied laterally to the lay-pitman, a vertically-reciprocating rod connected at its lower end to the spring and having a laterally-bent portion pivoted on a bolt which is adjustably secured in the slotted bracket, and a fixed guide in which the lower straight end of said rod is fitted, substantially as and for the purpose described.

405,981. PRESSURE-REGULATING VALVE. GEORGE A. BOYDEN, Baltimore, Md., assignor to the Boyden Power Brake Company, same place. Filed Jan. 7, 1889. Serial No. 295,626. (No model.)

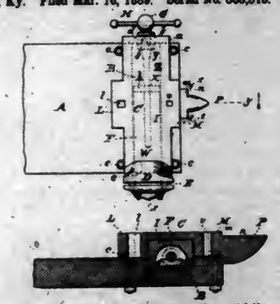


Claim.—1. A pressure-regulating valve having a casing with two chambers, the chambers having a communicating passage within the casing, a piston in one of said chambers having one end of its rod passing into the other chamber, a valve secured to the end of said rod and having a seat on the wall of the opening of an inlet-pipe to said last-mentioned chamber, a hollow cap with points on the end of the casing, and a spring in the piston-chamber, substantially as and for the purpose set forth.

2. In a pressure-regulating valve, the casing 3, having the chambers 4 and 5, and the communicating passage 7, the piston 8 in said chamber 4, having its stem projecting into chamber 5, the valve 18 on the end of said piston-rod, the cap 15, secured in one of the chambers and forming a seat for the valve 18, the spring 10, bearing against the piston 8, the nut 11, secured to said spring, and the abutting cap 12, the said parts being combined and arranged to operate substantially as specified.

3. In a pressure-regulating valve having a chamber with a piston therein, a hollow cap secured to the wall of the chamber and having inwardly-projecting points, and an inlet-passage communicating with the hollow cap above the piston, the said points of the cap adapted to limit the play of the piston, substantially as specified.

405,982. COMBINED ANVIL AND VISE. HENRY H. BRANDES, Corydon, Ky. Filed Mar. 16, 1889. Serial No. 303,515. (No model.)



Claim.—1. The anvil-casting having the middle anvil-offsets L and M, the fixed jaw D at its end, and below the same the loop-offset E, and the slideway, in combination with the movable jaw J, its slide, and the operating-screw, substantially as specified.

2. The anvil-casting having the middle anvil-offsets L and M, the wings W and Z in front and rear thereof, the fixed jaw D at the end of the front wing, and the front offset E, the rear offset *d*, and the middle offset *n*, respectively adapted to engage the front, rear, and end of the bench, substantially as specified.

3. The combination, with the main anvil-plate having the slideway in its under surface, the lateral offsets at its middle portion, the end offset, and the fixed jaw, of the movable jaw beyond the fixed jaw, its slide and operating-screw, and the recessed bench, substantially as specified.

405,983. APPARATUS FOR VENDING GAS. ROWLAND W. BROWNHILL, Birmingham, County of Warwick, England. Filed June 12, 1888. Serial No. 276,847. (No model.) Patented in England May 13, 1887, No. 7,012; in France Mar. 5, 1888, No. 176,142, and Mar. 6, 1888, No. 176,220, and in Germany Mar. 12, 1888, Nos. 22,737 and 22,738, and Mar. 20, 1888, No. 23,292.

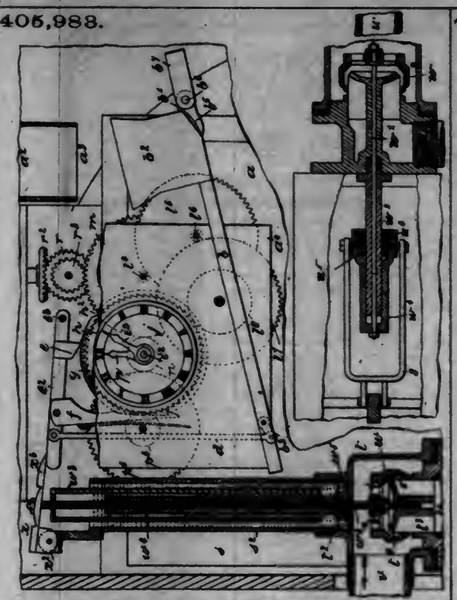
Claim.—1. The combination, with a gas-meter, of a valve located in the supply-pipe, and vending mechanism which is released and operated by the gravitating effect of a coin inserted within the apparatus or inclosing-casing, substantially as set forth.

2. The combination, with a gas-meter, a valve located in the supply-pipe, and vending mechanism, of a detent normally holding the vending mechanism from operation and adapted to be released by the insertion of a coin within the apparatus, as described and set forth.

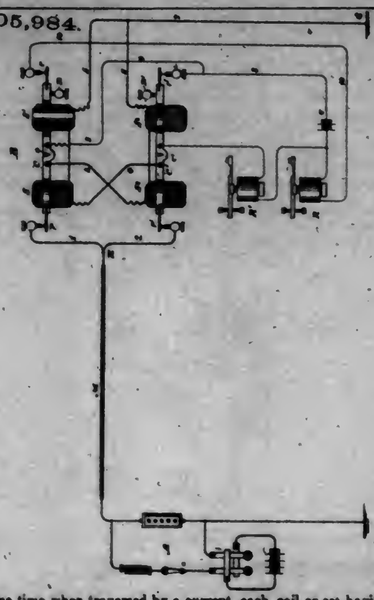
3. The combination, with automatic vending mechanism located between a gas-meter and a supply-pipe containing a valve, of a detent normally holding the said mechanism from operation, and adapted, when released after the insertion of a coin or coins within the apparatus, to allow a predetermined measured quantity of gas to be supplied equivalent in value to the said coin or coins inserted, as set forth.

4. The combination, in a gas-vending apparatus, of disks *A o*,

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having notches h^3 b^3, and the lever c^4, having a tooth or catch *c*, as set forth.

5. In gas-vending apparatus, the combination, with the disks *A* and *o*, spindle *i* i^3, finger i^3, ratchet-wheel *g*, and pinion *n*, of the coin-operated lever *b*, and the intermediate mechanism, whereby, when the lever moves, the disks are operated, as set forth.

6. In gas-vending apparatus, the combination, with the disks *o A*, of the transmitting and reduction gear and means i^3 *n* p^2 p^3 p^4 p^5 p^6, adapted for transmitting motion to the said disk and finger *p*, as set forth.

7. In gas-vending apparatus, the combination, with the disks *A* h^3 and arbor *i*, of wheels *q* q^2 and transmitting and reduction gear *m* *p* *p* *p* *p* *p* *p*, as set forth.

8. In gas-vending apparatus, the combination, with the arbor *i* and disk and ratchet-wheel *h g*, of a toothed wheel *q*, with annulus q^3, and the wheels g^3 g^2, bracket g^4, and counterpoise-weight g^5, designed for making and breaking connection between the said arbor and gear, as set forth.

9. In gas-vending apparatus mechanism, the combination of the measuring-out disks *A* A^2, having notches *o* o^3, lever c^3, having tooth or catch *c*, and wheel *l*, adapted for stopping the gas-flow, as set forth.

10. In gas-vending apparatus, the combination, with the wheel *q* and its annulus q^3, and arbor *i*, disk *A*, and ratchet-wheel *g*, of a sun-and-planet pinion g^2 and its cognate parts g^3, g^4, g^5, g^6, and g^7, adapted for making and breaking connection between the driving-gear and disks, as set forth.

11. The combination, with a gas-meter, of gas-vending mechanism comprising a counterpoise-lever *b* b^2 b^4, with coin-box b^3, adapted for controlling the operation of the vending mechanism through the gravitating effect of a coin, as set forth.

12. The combination, with the balanced coin-operated lever, of connecting-rod *d*, catch-arm c^2, having catch *c*, pawl *f*, and ratchet-wheel *g*, as set forth.

13. The combination, with a meter and mechanism, substantially as described, for controlling the flow of gas and registering the value thereof, of a coin-operated lever connected to said mechanism and provided with a coin-receptacle having a hinged and wedged bottom, substantially as described.

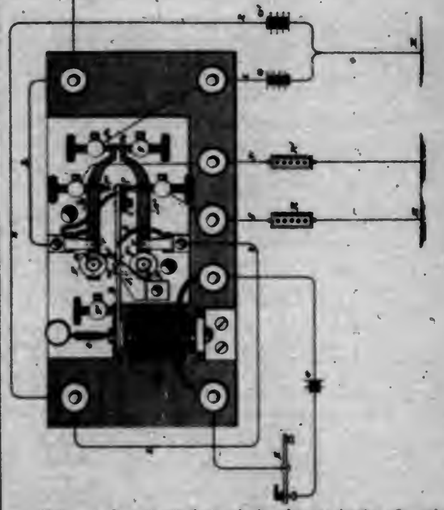
14. The combination, with a meter and service-pipe, of gas measuring and registering mechanism, substantially as described, and a delivery and cutting-off valve *w*, connected to and controlled by said mechanism, as set forth.

405,984. TELEGRAPHY. CHARLES G. BURKE, Richmond Hill, assignor to Frederick Wolfe, trustee, New York, N. Y. Filed Aug. 4, 1888. Serial No. 281,954. (No model.)

Claim.—1. The combination of a telegraphic circuit, means for transmitting thereon currents of opposite polarities, two independent coils or sets of coils normally in said circuit, fields of force for said coils, and stops permitting the motion of but one coil or set at the same time when traversed by a current, each coil or set having contact-points through which the line-connection of the other is made.

2. The combination of a telegraphic circuit, means for transmitting thereon currents of opposite polarity, two independent relays normally in said circuit, stops permitting the operation of but one relay at the same time, each relay having contact-points through which the line-connection of the other is made, and a local circuit having two recorders therein, operated, respectively, by said relays.

405,985. TELEGRAPH-INSTRUMENT. CHARLES G. BURKE, Richmond Hill, assignor to Frederick Wolfe, trustee, New York, N. Y. Filed Sept. 8, 1888. Serial No. 284,502. (No model.)



Claim.—1. In a circuit-closing device, the combination of a main arm and two auxiliary arms frictionally attached thereto, said auxiliary arms carrying circuit-closing points which are caused to simultaneously approach or separate from each other by the motion of the main arm.

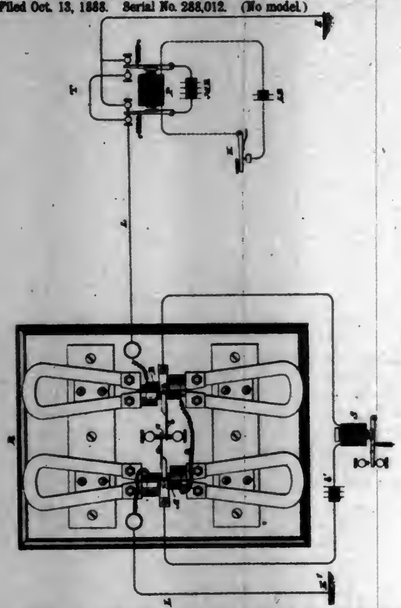
2. The combination of a local battery, a Morse key, an electro-

magnet, an armature-lever, and two auxiliary arms frictionally connected therewith and carrying circuit-closing points which are caused to simultaneously approach or separate from each other according to the motion of the armature-lever.

3. The combination of a local battery, a make-and-break key, an electro-magnet, an armature-lever, and two auxiliary arms frictionally attached to such armature-lever and carrying circuit-closing points which are made to simultaneously approach or separate from each other by the movement of the armature-lever, the range of motion of the armature-lever being greater than that of the auxiliary arms.

405,986. TELEGRAPHIC INSTRUMENT.

CHARLES G. BURKE, Richmond Hill, assignor to Frederick Wolfle, trustee, New York, N. Y. Filed Oct. 13, 1888. Serial No. 288,012. (No model.)



Claim.—1. A compound telegraphic receiving-instrument having two coils upon independent centers, movable simultaneously in fields of force, each coil carrying an arm, said arms being attached to the axes upon which the coils turn, and which are caused to simultaneously approach or separate from each other by the motion of said coils.

2. In a telegraphic instrument, the combination of a field of force, two coils having simultaneous motion upon independent centers, an arm attached to the axis of each coil and carrying contact-points, and a local circuit of which both said arms are a part.

3. In a telegraphic instrument, the combination of two coils, each moving independently upon its center and forming part of the main-line circuit, magnets supplying a field of force to each coil, an arm carrying a contact-point attached frictionally to each solenoid, and a local battery having its circuit common to both of said arms, the said parts being so adjusted that the movements of the coils under the influence of a current passing through them shall cause the said arms to approach each other.

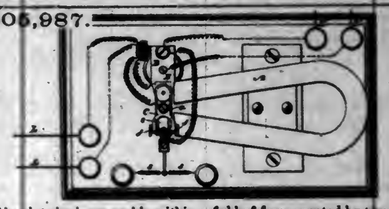
4. The combination of a main line, a battery therefor, a device for transmitting impulses thereon, two coils independently and simultaneously movable and forming part of said main line, fields of force for said coils, and independent contact-arms attached to the axes of said coils, substantially as described, for opening and closing a local circuit of which both said contact-arms are a part.

405,987. TELEGRAPHIC INSTRUMENT.

CHARLES G. BURKE, Richmond Hill, assignor to Frederick Wolfle, trustee, New York, N. Y. Filed Jan. 17, 1889. Serial No. 296,630. (No model.)

Claim.—1. In a telegraphic instrument, the combination of a coreless coil of insulated wire in the main circuit arranged to turn upon one of its diameters within a field of force created by opposite magnetic poles, both of said poles being presented to one of the faces of said coil, the section of the coil presented to one pole having its windings in a direction opposite to those of the section presented to the other pole.

2. In a telegraphic instrument, the combination of a coreless coil



of insulated wire movable within a field of force created by two magnets, one located on each side of said coil, each presenting both its poles to one of the respective faces of said coil, the section of the coil presented to one pole of each magnet having its windings in a direction opposite to those of the section presented to the other pole of the same magnet.

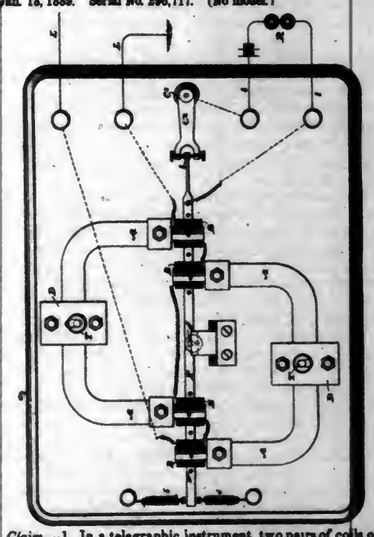
3. In a telegraphic instrument, a coreless compound coil composed of two parts movable in a field of force created by two magnets, opposite poles being presented to the same face of each one of said parts, the section of the coil presented to one pole of each magnet having its windings in a direction opposite to those of the section presented to the other pole of the same magnet.

4. In a telegraphic instrument, a coreless coil of insulated wire arranged to turn upon one of its diameters within a field of force created by two magnets, each presenting opposite poles to the respective faces of said coil, the angular position of the poles of said magnets with reference to the coil being adjustable, the section of the coil presented to one pole of each magnet having its windings in a direction opposite to those of the section presented to the other pole of the same magnet.

5. In a telegraphic instrument, a flat coil of insulated wire wound in two parts separated from each other and fixed on each side of a common center movable in a field of force created by two magnets, each magnet presenting its opposite poles to the outer face of one of the parts of said coil, said magnets being fixed so that the faces of the poles of one magnet are not parallel to the faces of the poles of the other.

405,988. TELEGRAPH-INSTRUMENT.

CHARLES G. BURKE, Richmond Hill, assignor to Frederick Wolfle, trustee, New York, N. Y. Filed Jan. 18, 1889. Serial No. 296,717. (No model.)



Claim.—1. In a telegraphic instrument, two pairs of coils or solenoids connected in the line, said coils being affixed to a pivoted bar, one pair upon each side of the pivot, and two magnets having their poles on each side of the pivot and extending within said coils, as described.

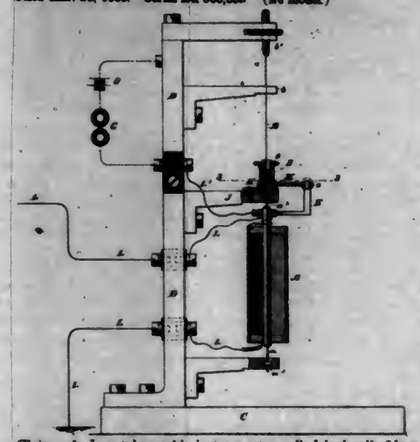
2. In a telegraphic instrument, two pairs of solenoids affixed to a pivoted bar, one pair upon each side of the point of support, and two magnets each spanning said pivot or point of support, with their pole-pieces entering said solenoids.

3. The combination of the pivoted bar F, carrying the coils B, which are in the circuit of the main line, the magnets A A, each having one of its poles entering a coil on one side of the point of support of said arm F, the arm C^2, and contact-points *b*, which are in the local circuit.

4. In a telegraphic instrument, two pairs of solenoids affixed to a pivoted bar, one pair upon each side of the point of support, two magnets each spanning said pivot or point of support, with their pole-pieces entering said solenoids, and means, substantially as described, for adjusting the position of said magnets.

405,989. TELEGRAPHIC INSTRUMENT.

CHARLES G. BURKE, Richmond Hill, assignor to Frederick Wolfle, trustee, New York, N. Y. Filed Mar. 23, 1889. Serial No. 305,052. (No model.)



Claim.—1. In a telegraphic instrument, a cylindrical coil of insulated wire forming part of the main circuit and suspended within a field of force formed by one or more magnets, both poles of the same magnet being presented to the same side of the coil.

2. In a telegraphic instrument, a cylindrical coil of insulated wire forming part of the main circuit, suspended upon an axis coincident with the axis of the cylinder within a field of force created by one or more magnets, both poles of each magnet being presented to the same side of the coil.

3. In a telegraphic instrument, a coil of insulated wire forming part of the main circuit, suspended within a field of force formed by one or more magnets, and a local-circuit-closing device consisting of an arm attached to the axis of the coil moving with said coil between stops carried by a second arm turning upon an axis coincident with the axis of the coil.

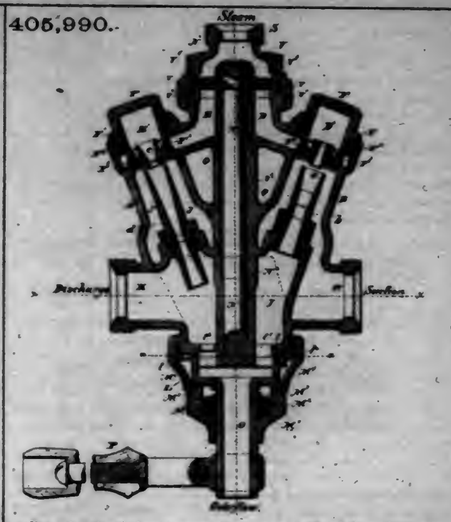
4. A telegraphic instrument consisting of the combination of a coil of wire forming part of the main circuit, suspended within a field of force formed by one or more magnets, an arm attached to said coil, a second arm turning upon a center coincident with the axis of motion of said coil, carrying stops between which said first arm plays, and a frictional support for said second arm, whereby it may follow the movements of said first arm, both of said arms forming part of the local circuit.

5. In a telegraphic receiving-instrument, a circuit-closing device consisting of two independent movable parts insulated from each other, both forming parts of a common local circuit, one having an independent motion upon its axis and the other a free motion around the axis of the other, both being equal radii of a given circle, the part turning on its axis having a suitable contact-point playing freely between an insulated stop and a contact-point carried by and forming a portion of the other part, said insulated stop and contact-point being adjustable, the movement of the part turning on its axis being effected by electrical impulses over the main line, the motion of the other being wholly dependent upon the pressure exercised against its stops by the part moved by said main-line currents, the local circuit being made at any point within the entire range of motion of said parts whenever the two contact-points are brought together by the movement of the part turning on its axis, and broken whenever the same are separated by a contrary motion of said part.

405,990. INJECTOR.

CHARLES B. CHURCH, Boston, Mass., assignor to the Hancock Inspirator Company, same place. Filed July 17, 1888. Serial No. 280,196. (Model.)

Claim.—1. In an injector, a steam-chamber containing a valve to control the admission of steam, and an overflow-chamber containing a valve to control the overflow to the atmosphere, the two chambers being connected by an intermediate chamber N^3, communication between the steam-chamber and the overflow-chamber through the intermediate chamber being prevented by one or both of the valves, substantially as described.



2. In an injector, a steam-chamber and an overflow-chamber, a valve in the former to control the admission of steam and a valve in the latter to control the overflow to the atmosphere, the two valves being connected to and operated by a single stem, substantially as described.

3. In an injector, a steam-chamber containing a valve to control the admission of steam, and an overflow-chamber containing a valve to control the overflow to the atmosphere, the two valves being connected to and operated by a stem extending through the valve-seats, leakage around which is prevented by the valves, substantially as described.

4. In an injector containing two sets of jet apparatus, a steam-chamber and an overflow-chamber, a valve in the former to control the admission of steam to each apparatus and a valve in the latter to control the overflow to the atmosphere from each, the two valves being connected to and operated by a single stem, substantially as described.

5. In an injector, a steam-chamber and an overflow-chamber, and an intermediate chamber N^3, connecting the two, the steam-chamber being provided with a valve to control the admission of steam, the overflow-chamber with a valve to control the overflow to the atmosphere, the two valves being joined by a connection in the intermediate chamber, whereby the movement of one of the valves operates the other, substantially as described.

6. In an injector containing two sets of jet apparatus, the combining-tubes of which converge in the direction of the flow of the fluid through them, an outlet or overflow passage to the atmosphere, located substantially in line with the respective axial lines of the two combining-tubes, whereby the fluid issuing from each combining-tube is discharged into the free air by a direct passage, substantially as and for the purpose described.

7. In an injector, a valve controlling the admission of steam and a valve controlling the overflow to the atmosphere, the two valves being connected to each other and operated the one by the other, the discharge-outlet from the overflow-valve being formed within a prolongation of that valve, substantially as described.

8. In an injector, an overflow-valve located in a chamber the interior of which is provided with a shoulder, between which and the valve-seat there is space enough to permit the valve to be rotated freely on its seat, but not enough to allow more than a slight movement away from its seat, substantially as and for the purpose described.

9. In an injector, an overflow-valve having a discharge-outlet to the atmosphere formed in its prolongation and located in a chamber, in combination with a spring whereby the valve is held against its seat, substantially as and for the purpose described.

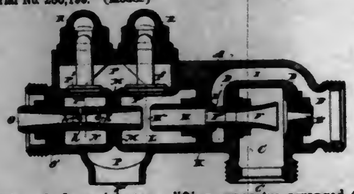
10. In an injector, an overflow-valve having a discharge-outlet to the atmosphere formed in its prolongation and located in a chamber, a passage from the delivery-chamber of the injector extending into the overflow-valve chamber and beneath the exterior of the valve, whereby, when the injector is in operation, the valve is held against its seat by water under pressure, substantially as described.

11. In an injector, an overflow-valve having a discharge-outlet

to the atmosphere formed in its prolongation and located in a chamber provided with elastic packing about the exterior of the prolongation, a passage from the delivery-chamber of the injector extending into the overflow-valve chamber, whereby, when the injector is in operation, the valve is held against its seat and the packing about its prolongation is compressed by pressure of the fluid thus admitted to the overflow-valve chamber, substantially as described.

12. In an injector, a cap-nut F, provided with a shoulder F', a screw-thread F^2, and one or more projections F^3, in combination with the casing of the injector and the steam-jet tube, whereby, when the cap-nut is screwed to its seat, the steam-chamber is closed and the steam-jet tube is held firmly in position, substantially as and for the purpose described.

405,991. INJECTOR. CHARLES E. CHURCH, Boston, Mass., assignor to the Hancock Inspirator Company, same place. Filed July 17, 1888. Serial No. 280,190. (Model.)



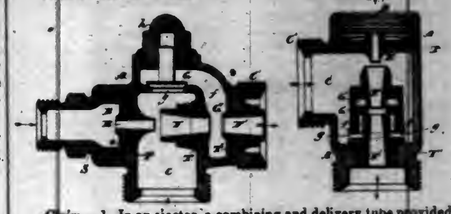
Claim.—1. In an injector, a lifting apparatus arranged to continuously deliver water to a forcing apparatus, the latter being provided with a waste opening or openings to the atmosphere at or near the throat of its combining-tube, and a waste-opening to the atmosphere between the mouth of its combining-tube and the throat, where the area of the bore of the tube in cross-section is greater than the combined area of the lifter and forcer steam-jet passages, the latter waste-opening being controlled by an automatic outwardly-opening valve to prevent indraft of air or the reflux of fluid at that opening from the waste opening or openings at or near the throat without interfering with the flow of fluid to the atmosphere from the latter opening, substantially as described.

2. In an injector, a lifting apparatus arranged to continuously deliver water to a forcing apparatus, the latter being provided with a waste-opening to the atmosphere at or near the throat of its combining-tube and a waste-opening to the atmosphere between the mouth of its combining-tube and the throat, where the area of the bore of the tube in cross-section is greater than the combined area of the lifter and forcer steam-jet passages, and with another waste-opening to the atmosphere in its combining-tube located between the other two openings, the opening nearest the mouth of the tube being controlled by an automatic outwardly-opening valve to prevent indraft of air or the reflux of fluid at that opening from the other waste-openings without interfering with the flow of fluid to the atmosphere from the other waste-openings, substantially as and for the purpose described.

3. In an injector, a lifting apparatus arranged to continuously deliver water to a forcing apparatus, the latter being provided with a waste-opening to the atmosphere at or near the throat of its combining-tube, and a waste-opening to the atmosphere between the mouth of its combining-tube and the throat, where the area of the bore of the tube in cross-section is greater than the combined area of the lifter and forcer steam-jet passages, and with another waste-opening to the atmosphere in its combining-tube located between the other two openings, the opening nearest the mouth of the tube being controlled by an automatic outwardly-opening valve to prevent indraft of air, or the reflux of fluid at that opening from the other waste-openings without interfering with the flow of fluid to the atmosphere from the other waste-openings, the other two waste-openings being controlled also by an automatic outwardly-opening valve, substantially as and for the purpose described.

4. In an injector, a lifting apparatus the combining-tube of which is provided at its mouth with the usual inlet for the admission of fluid from the suction-chamber and with a supplemental inlet formed by one or more ports communicating with the interior of said tube through one or more openings therein, and with the suction-chamber, and a valve to close the supplemental inlet, such lifting apparatus being arranged to continuously deliver water to a forcing apparatus, the latter being provided with a waste-opening to the atmosphere at or near the throat of its combining-tube, and a waste-opening to the atmosphere between the mouth of its combining-tube and the throat where the area of the bore of the tube in cross-section is greater than the combined area of the lifter and forcer steam-jet passages, the latter waste-opening being controlled by an automatic outwardly-opening valve to prevent indraft of air or the reflux of fluid at that opening from the waste opening or openings at or near the throat without interfering with the flow of fluid to the atmosphere from the latter opening, substantially as described.

405,992. EJECTOR. CHARLES E. CHURCH, Boston, Mass., assignor to the Hancock Inspirator Company, same place. Filed July 17, 1888. Serial No. 280,200. (Model.)



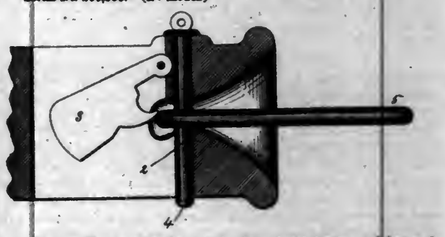
Claim.—1. In an ejector, a combining and delivery tube provided at its mouth with the usual inlet for the admission of fluid from the suction-chamber, and provided also with a supplementary inlet formed by one or more ports communicating with the interior of said tube through one or more openings therein and with the suction-chamber, and a valve to automatically close the said supplementary inlet whenever the pressure within the tube at said openings is greater than the pressure in the suction-chamber, substantially as set forth.

2. In an ejector, a combining and delivery tube provided at its mouth with the usual inlet for the admission of fluid from the suction-chamber, and provided also with a supplementary inlet formed by one or more ports communicating with the interior of said tube through one or more openings therein and with the suction-chamber, and a valve to close the said supplementary inlet, substantially as set forth.

3. In an ejector, a combining and delivery tube the bore of the combining portion of which converges from its mouth in the direction of the flow of the fluid through it, provided at its mouth with the usual inlet for the admission of fluid from the suction-chamber, and provided also with a supplementary inlet formed by one or more ports communicating with the interior of said tube through one or more openings therein at or near its throat and with the suction-chamber, and a valve to automatically close the said supplementary inlet whenever the pressure within the tube at said openings is greater than the pressure in the suction-chamber, substantially as set forth.

4. In an ejector, a combining and delivery tube the bore of the combining portion of which converges from its mouth in the direction of the flow of the fluid through it, provided at its mouth with the usual inlet for the admission of fluid from the suction-chamber, and provided also with a supplementary inlet formed by one or more ports communicating with the interior of said tube through one or more openings therein at or near its throat and with the suction-chamber, and a valve to close the said supplementary inlet, substantially as set forth.

405,993. CAR-COUPLING. ELISHA W. CADY, Chicago, Ill., assignor of one-half to Daniel C. Cooper, same place. Filed Feb. 11, 1889. Serial No. 299,535. (No model.)

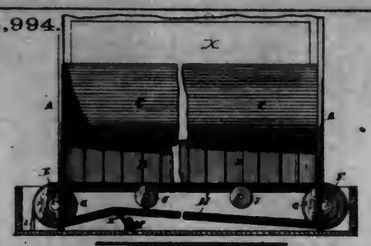


Claim.—The combination of the draw-head having a fulcrum 2 and a pallet 3, provided with a cup-shaped or concave seat, all substantially as described.

405,994. CONVEYER FOR FLOUR, &c. CHARLES [illegible], Hastings, Minn., assignor to himself and Otto J. A. Doebler, same place. Filed Feb. 28, 1889. Serial No. 301,516. (No model.)

Claim.—The apparatus comprising the main frame A, having trunks B B, chute-boards C, and shunt-boards D, and the drums G G, having concave peripheries and mounted on horizontal shafts at the ends of said trunks B, the endless flexible belt H, the supporting-rollers J J, convex tightener-pulley K, and brush I, all substantially as described.

405,994.

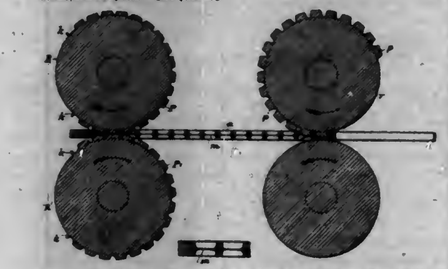


405,995. LUBRICATOR. JAMES GRACEY and GEORGE W. KERCH, St. Louis, Mo., assignors, by mesne assignments, to said Gracey and Aaron Straus, same place. Filed Mar. 16, 1888. Serial No. 267,369. (No model.)



Claim.—In combination with a cylinder and piston-rod, a series of spokes d', extending outward from the latter and screw-threaded at their outer ends, a curved rim in two parts, nuts d^3 on said rods at the inner and outer faces of said rim, the bolt d^3, for holding the plates together, and a brush d^5, held between the parts of said rim and in contact with the inner face of said cylinder, for the purpose set forth.

405,996. MACHINE FOR MAKING BATTERY-PLATES. WILLIAM W. GIBSON, Haverford College, Pa., assignor to the Electrical Accumulator Company, of New York. Original application filed Sept. 23, 1887, Serial No. 250,470. Divided and this application filed Oct. 24, 1888. Serial No. 289,060. (No model.)



Claim.—1. The combination, in a machine for pressing battery-plates, of two die-sections, each section composed of a series of parallel rows of teeth or projections, each tooth or projection having the form or outline of a truncated pyramid, the teeth of one section registering with the teeth of the second section, and a knife or cutter for imparting the desired form or outline to such plate, substantially as described.

2. The combination, in an apparatus for pressing perforated metal plates, of two rolls or cylinders, each provided with a series of registering teeth or projections, and two rolls or cylinders, one of which has a series of teeth or projections so formed and arranged as to enter the perforations made by the first rollers to a point beyond the meeting-point of the teeth of such rollers.

3. The combination, in an apparatus for pressing perforated metal plates, of two dies, each provided with a series of registering teeth or projections, and a punch or die having a series of teeth or projections so formed and arranged as to enter the perforations made by the first-named dies to a point beyond the meeting-point of the first-named dies, all co-operating substantially as described.

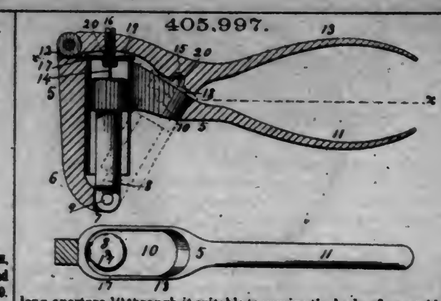
4. The die-plate R, having teeth P and outline-cutter k.

5. The combination of a pair of power-operated rollers having die-plates R R', teeth or projections P, and cutting-edge k.

405,997. CARTRIDGE CAPPER AND DECAPPER. WILLIE W. HARRIS, Sioux City, Iowa, assignor to Henry A. Lyon, same place. Filed Mar. 5, 1889. Serial No. 301,834. (No model.)

Claim.—1. The combination of a body portion 5, having an ob-

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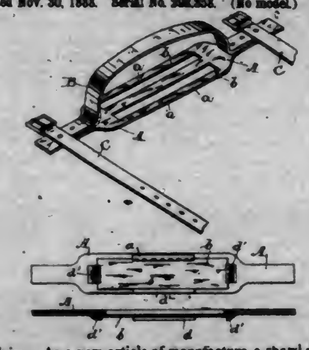


long aperture 10 through it suitable to receive the body of a cartridge-shell, while the side walls of the aperture serve as a rest to the flange portion of the said shell, a ramrod 8, shaped at one end to pass through the head of the said shell, and pivoted near its other end to a portion of the said body to swing freely in the said aperture, a lever pivoted to the said body and provided with a cap-seat opposite one end of the said aperture and with a cap-receptacle and cartridge-head presser opposite the other end, the walls of the said aperture being higher from the pivot of the ramrod at that end of the aperture opposite the said cap-seat than at the end opposite the cap-receptacle, substantially as shown and described.

2. The combination of a body portion 5, a ramrod 8, and a lever 13, pivoted thereto, the said lever being provided with a cap-seat in one place and a cap-receptacle and cartridge-head presser in another place, the ramrod being adapted to swing to positions opposite the two places, and the body portion being provided with a seat for the flange of a cartridge opposite each of the said places, one of the said cartridge-seats being farther than the other from the pivot of the ramrod, substantially as shown and described, whereby a cartridge-shell placed upon the said ramrod may be first seated opposite the cap-receptacle and have a cap rammed out of it, and then be moved to the seat opposite the cap-seat and have a new cap pressed into it without intermediate removal from the ramrod.

3. The combination of a body portion 5, having two seats for the flange of a cartridge, a ramrod pivoted to the body portion to swing from one seat to the other, and a lever pivoted to the body portion and provided with a cap-seat opposite to one of the said cartridge-seats and with a cap-receptacle and cartridge-presser opposite the other, the pivot of the ramrod being nearer to one of the cartridge-seats than to the other, substantially as shown and described, whereby the tip of the ramrod, when swung to one seat, will project beyond the plane thereof, and when swung to the other seat it will fall to reach the plane of the latter, as and for the purpose specified.

405,998. SHAWL-STRAP. WILLIAM F. HARVEY, Lewiston, Me. Filed Nov. 30, 1888. Serial No. 292,252. (No model.)



Claim.—As a new article of manufacture, a shawl-strap having a flat metal bar the central portion of which is widened and formed into three bars, and two longitudinal spaces between said bars, lips or flanges on the under side of said central portion to retain a name-card, and a handle and binding-straps attached to said bar, substantially as described.

405,999. METHOD OR PROCESS OF MAKING FOOT-BALLS. WILLIAM HOWARD, London, County of Surrey, England. Filed Sept. 4, 1886. Serial No. 212,766. (No model.) Patented in England Sept. 18, 1885, No. 11,099, and Dec. 1, 1885, No. 14,732.

Claim.—1. The hereinabefore-described method or process of making foot-ball covers, consisting in, first, stretching wet leather gussets

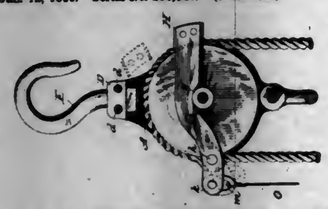
406,999.



upon a flat surface and leaving them thereon till they are dry; second, concaving them by again wetting them and stretching them upon a convex block; third, preparing leather lining-bands, one for each half-cover, shaping them to the contour of the said half-covers by wetting and stretching them upon a convex block, leaving them till they are dry, and then tacking a band to the inside of each half-cover along the edge; fourth, sewing the two half-covers together, as set forth.

2. The hereinbefore-described method or process of making foot balls, consisting in, first, stretching wet leather gussets upon a flat surface and leaving them thereon till they are dry; second, concaving them by again wetting them and stretching them upon a convex block; third, preparing leather lining-bands, one for each half-cover, shaping them to the contour of the said half-covers by wetting and stretching them upon a convex block, leaving them till they are dry, and then tacking a band to the inside of each half-cover along the edge; fourth, sewing the two half-covers together, and, fifth, lining the cover produced by the junction of the two half-covers with a rubber bladder, inflating the latter, tying its mouth, and finally sewing or lacing up the mouth of the cover, as set forth.

406,000. TACKLE-BLOCK. WILLIAM J. LAMB, Poughkeepsie, N. Y. Filed Jan. 12, 1889. Serial No. 296,147. (No model.)



Claim.—1. The combination, in a tackle-block, of a sheave, a gripping-block support, a gripping-block fixed or non-pivoted on said support and arranged to move in proximity to the sheave, the said support for the gripping-block being pivoted on the tackle-block at a point opposite the gripping-block, whereby the path described by the gripping-surface will be entirely outside of the bearing-surface on the sheave, the parts being constructed and arranged to operate substantially as described.

2. In combination with a tackle-block and a sheave, a lever pivoted upon one edge of the sheave-frame and carrying a gripping-block fixed to its free end and opposite the periphery of the sheave, the lever being arranged to come into contact with the hub of the sheave when the grip is engaged with the rope, substantially as described.

3. A gripping-lever, combined with a block and its sheave, said lever being pivoted upon one edge of the block and arranged across the same on one side of and above a diametrical line on the block, and having also its pivoted end extended to form a short arm of the lever, and the holding-cord o, substantially as described.

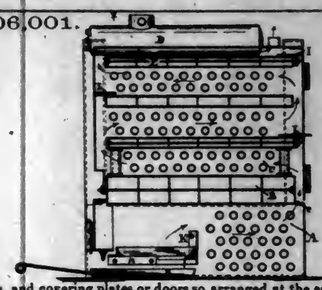
4. Combined with a block and its sheave, a pivoted gripping-arm having an extension at its pivoted end adapted to be acted upon by the lifting-rope when said rope is moved out of line, substantially as described.

5. Combined with a block and its sheave, a pivoted gripping-lever having an extension on its pivoted end arranged in the described relation to the rope, and a detachable weight on said end, said weighted end being adapted to be acted upon by the lifting-rope when said rope is drawn out of line to cause the grip to act, substantially as described.

406,001. STEAM-BOILER. WILLIAM MCDONALD, Providence, R. I., assignor of one-half to Charlotte M. Hacker, same place. Filed Dec. 11, 1888. Serial No. 293,281. (No model.)

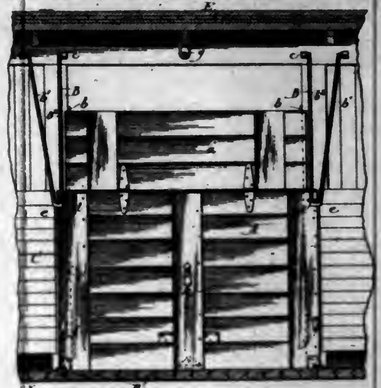
Claim.—In a sectional boiler, the combination of tubular sections and plain tank-sections, one above another, with their pipe-connec-

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tions, and covering plates or doors so arranged at the ends of the sections in forming rearward and forward passages for the circulation of heat, substantially as described and illustrated in the drawings, and for the purpose specified.

406,002. GRAIN-CAR DOOR. WILLIAM A. MCGUIRE, Chicago, Ill., assignor to the McGuire Manufacturing Company, same place. Filed Nov. 7, 1888. Serial No. 290,238. (No model.)



Claim.—1. The door A, provided with the hooks *f* and having the flaps *a* hinged to its upper edge, in combination with the bent rods B B, connected to the door A, each rod B consisting of an inclined portion b', and a vertical portion b^2, both of said portions b' b^2 being pivotally connected at their upper ends to the frame-work of a car, whereby, when the door A is swung up and caught against the roof of the car, the rods B B will aid in holding the door and the flap in such position, substantially as specified.

2. A grain-car door A, in combination with two bent rods B B, which are connected to the door A, each rod consisting of an inclined portion b' and a vertical portion b^2, and eyes or sockets *c c*, into which the ends of the rods B B are placed, substantially as and for the purpose specified.

3. A grain-car door A, in combination with two bent rods B B, connected to the door A, each rod consisting of an inclined bracing portion b', a vertical portion b^2, and a flattened portion *e*, and eyes or sockets *c c*, connected to the frame-work of the car and into which the ends of the rods B B are placed, substantially as and for the purpose specified.

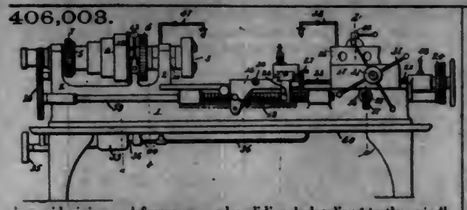
4. A grain-car door A, in combination with two bent rods B B, connected to the door A, each rod consisting of an inclined bracing portion b', a vertical portion b^2, and a flattened portion *e*, eyes or sockets *c c*, secured to the frame-work of the car and into which the ends of the rods B B are placed, and hooks *f f* on the door A, with which hooks the flattened portions *e e* of the rods B B engage when the door is raised, substantially as specified.

5. A rod for grain-car doors, bent, as shown, to have an inclined bracing portion b' and a vertical portion b^2 and a flattened portion *e*, and having its ends adapted to be hinged to the frame-work of a car, substantially as and for the purpose specified.

406,003. TURRET-LATHE. GEORGE T. REISS, Hamilton, Ohio, assignor to the Niles Tool Works, same place. Filed Feb. 2, 1889. Serial No. 298,440. (No model.)

Claim.—1. The combination, substantially as set forth, of a spindle, a cone-pulley free to revolve thereon and having a frictional clutch-surface, a pinion fast on the cone-pulley, a face-gear free to revolve on the spindle and having a toothed clutch, a back gear engag-

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ing said pinion and face-gear, and a sliding hub splined to the spindle between the cone-pulley and face-gear and provided with a frictional clutch-surface to engage the frictional clutch-surface of the cone-pulley and with a toothed clutch to engage the toothed clutch of the face-gear.

2. The combination, substantially as set forth, of a spindle, a cone-pulley loose thereon, a pinion fast on the cone-pulley, a back gear, a box for the spindle provided with a collar-groove, a face-gear loose on the spindle between the cone-pulley and box and having a hub-collar engaging said collar-groove, and a sliding hub splined to the spindle between the cone-pulley and face-gear and provided with clutches for engagement with suitable clutches on the cone-pulley and face-gear.

3. In a lathe, the combination, substantially as set forth, of a lead-screw mounted at one side of the lathe-bed and geared to the lathe-spindle, an open-and-shut nut on the lathe-carriage and adapted to engage the lead-screw, a feed-screw mounted on the opposite side of the lathe-bed and geared to the lathe-spindle, an open-and-shut nut on the lathe-carriage adapted to engage the feed-screw, turret-screw mounted at the tail end of the lathe-bed and geared to the feed-screw, and a turret-slide engaging the turret-screw.

4. In a lathe, the combination, substantially as set forth, of a feed-screw mounted at the back of the lathe, an open-and-shut nut on the lathe-carriage, arranged to slide horizontally and adapted to engage such screw, a sliding rod connected with such nut and reaching across the lathe bed and carriage to the front of the carriage, and a handle on said rod at the front of the carriage.

5. In a turret-lathe, the combination, substantially as set forth, of a turret-slide having a downwardly-projecting hub with a pivot-hole for the turret, a turret having a hub fitting and projecting downwardly through said pivot-hole and below said first-mentioned hub and mortised horizontally at such projection, a ratchet-disk secured to the lower end of said turret-hub below said mortise, a turret-clamping-bolt axially disposed in the turret and its hub, and a T-head on the lower end of said bolt with its ears projecting through said mortise and engaging the downwardly-presenting surface of said first-mentioned hub.

6. In a turret-lathe, the combination, substantially as set forth, of a turret-slide, a turret mounted thereon and having ratchet-teeth, a dowel in the turret-slide, adapted to engage dowel-holes in the turret, a pawl to engage said ratchet-teeth, inclines to engage said dowel, and a pawl-block carrying said pawl and inclines and fitted for longitudinal adjustment along the lathe-bed, and devices for adjusting and securing said pawl-block.

7. In a turret-lathe, the combination, substantially as set forth, of a turret-dowel having a T-shaped foot and inclines attached to the lathe-bed and adapted to be engaged by said foot.

8. In a turret-lathe, the combination, substantially as set forth, of a pawl-block arranged to be adjusted along the lathe-bed and provided with a rack, a pinion-shaft journaled in the lathe-bed and fitted with a head for turning it, a pinion thereon engaging said rack, a graduated disk on said shaft, and a clamp engaging said disk.

406,004. WHIP-SOCKET. AMOS SEARLS, Newark, N. J., assignor to the Searls Manufacturing Company, same place. Filed June 4, 1888. Serial No. 276,169. (No model.)

Claim.—1. The combination of a whip-socket barrel provided with an internal mouth piece or lining turned over and attached to the top of the barrel, and one or more springs interposed between said lining and barrel and held thereby, said lining being free and unattached at the lower end and held down by said springs, substantially as set forth.

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2. The combination of a whip-socket barrel with an internal mouth piece or lining B, provided with a hem turned over the outside of the top of the barrel and held thereon by a cord or wire *c*, and one or more springs C, secured to said lining, substantially as and for the purpose set forth.

3. A whip-socket fastener consisting of a band D, that embraces the socket and forms a bearing for a dash-rail between the socket and the rail, in combination with a screw *n*, attaching the ends through holes *t* and *s* to a dash-rail, and a screw *m*, interposing between the rail and the socket and holding and adjusting the band by holes *u* and P between the dash-rail and the socket, and tightening the band D around the socket and dash-rail by the screw *m*, substantially as set forth.

4. A whip-socket fastener consisting of a band provided with holes P and *s*, placed on opposite sides of a longitudinal line through the band, combined with screws *m* and *n*, substantially as and for the purpose set forth.

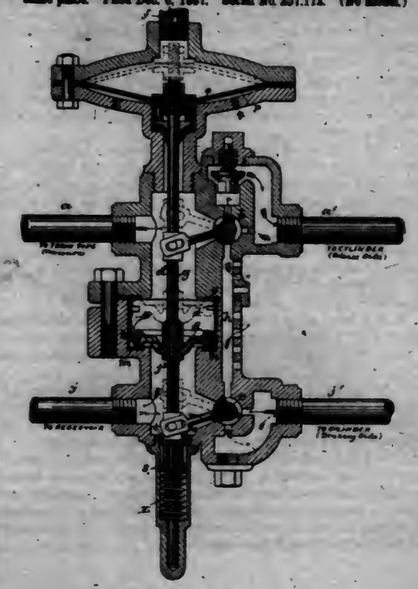
406,005. BOTTLE-STOPPER. WILLIAM SHEPHERD, London, England, assignor to Arthur George Pead Allt, same place. Filed Aug. 10, 1888. Serial No. 282,490. (No model.) Patented in England Oct. 11, 1884, No. 13,425, and Oct. 9, 1886, No. 12,897.



Claim.—1. A bottle-stopper comprising a stopper proper provided with a flange on its body and with an annular groove near its top, a screw-threaded ring provided with an annular recess in its top, and an elastic band inserted in said recess and groove and uniting said stopper and ring.

2. A bottle-stopper comprising a stopper proper provided with a flange on its body and with an annular groove near its top, a screw-threaded ring provided with an annular recess in its top, and with an outwardly-projecting downturned flange, and an elastic band inserted in said recess and groove and uniting said stopper and ring.

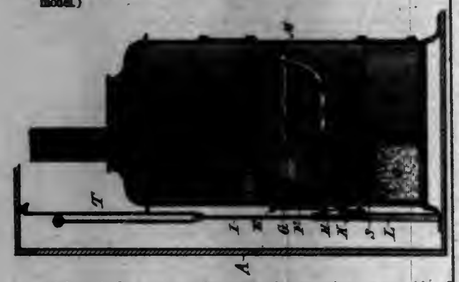
406,006. AUTOMATIC AIR-BRAKE. REINALDO SOLARI, Brooklyn, N. Y., assignor of two-thirds to John W. Howard and David R. Morse, same place. Filed Dec. 6, 1887. Serial No. 257,112. (No model.)



Claim.—1. In the automatic fluid-brake apparatus herein described, the combination of the double-acting brake-cylinder and piston, a valve-piston, or its equivalent, permanently exposed to the train-pipe, and auxiliary storage-reservoir pressures connected with oscillating valves which turn through different degrees of a circle by means of the variations of pressure induced on opposite sides of said valve-piston, a retarding-spring to limit the return movement of said valve-piston, and a check-valve interposed between the charging-passage of the oscillating valve and brake-cylinder port, whereby a predominating train-pipe pressure will actuate the valve-piston to simultaneously admit the pressure to the release side and exhaust the pressure from the braking side of said brake-cylinder, and a predominating auxiliary storage-reservoir pressure will actuate said valve-piston to simultaneously admit pressure to the braking side and exhaust the pressure at the release side of said cylinder, and whereby said pressure, when balanced on the valve-piston in conjunction with said retarding-spring, will retain and hold the same and sever all the ports, as and for the purpose specified.

2. In an automatic brake system, the combination of an oscillating valve, substantially as described, for controlling the charging and exhaust cylinder passages, and with a reciprocating piston or its equivalent connected to impart a rocking movement to said valve through different degrees of a circle by means of the variations of pressure induced on opposite sides of said piston or its equivalent, as specified.

406,007. STOVE FOR RAILWAY-COACHES. ALMON M. SPAULDING, Grand Rapids, Mich. Filed Mar. 9, 1888. Serial No. 266,778. (No model.)



Claim.—1. In a stove, a fire-pot having trunnions at one side of its center of gravity, arms attached to the outer ends of said trunnions, fastenings engaging with said arms and retaining said fire-pot in position, and a cord connected with and adapted to release said fastenings, said cord being continuous throughout the train, substantially as described.

2. In a stove, a fire-pot having one end sustained by trunnions and the other end sustained by detachable fastenings, the latter end being open, in combination with a stationary plate attached to the stove and closing said end when the fire-pot is in a horizontal position, substantially as described.

3. In a stove, a fire-pot having an open end supported upon trunnions, said open end closed by a fixed plate, and a tank, adapted to contain water, located beneath said open end, into which the contents of said fire-pot are discharged when it turns upon said trunnions, substantially as described.

4. In a stove, an ash-pan and water-tank located side by side upon substantially the same level, a fire-pot above the same having trunnions upon which it turns to discharge its contents at one side into said water-tank, and a grated bottom through which the ashes escape into said ash-pan, substantially as described.

5. In a stove, a fire-pot adapted to turn upon trunnions and discharge its contents, a tank adapted to contain water and receive the contents of said fire-pot, and a cover to said tank supported in place by a chain attached to said fire-pot and adapted to open when said fire-pot turns upon its trunnions, substantially as described.

6. In a stove, a fire-pot having trunnions at one side of its center of gravity, arms attached to said trunnions, and sliding rods supporting said arms and attached to a disk having a rod attached to hold and rotate said disk, substantially as described.

7. In a stove, a disk to which are pivoted rods passing through loops, and supporting-arms attached to a pivoted fire-pot, said disk provided with a stop-pin engaging with a rod pivoted to said disk and resting against the end of the coach, substantially as described.

8. In a stove, a fire-pot having trunnions at one side of its center of gravity, arms attached to the outer ends of said trunnions, fastenings engaging with said arms to sustain said fire-pot in position, and the prop L, attached to the floor or other distant part of the coach and adapted to release said fastenings when said floor or part is crushed inward, substantially as described.

406,008. TIE-BAR CLIP FOR SPLIT SWITCHES. AXEL A. STROM, Austin, assignor to the Strom Manufacturing Company, Chicago, Ill. Filed Feb. 19, 1889. Serial No. 300,397. (No model.)



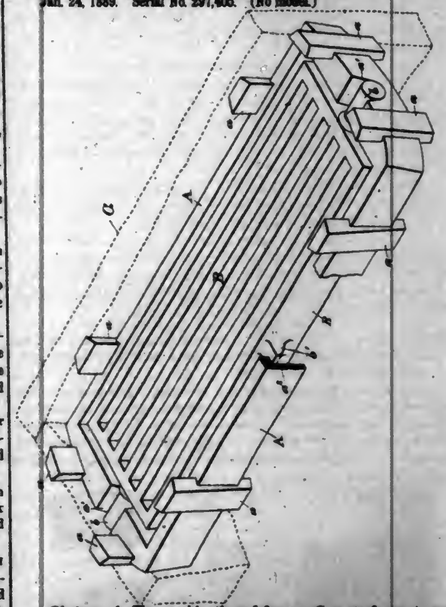
Claim.—1. In combination with a tie-bar C, a clip A, having arms *q*, to be secured at one end of the device to a switch-rail and extend, when so secured, beyond and below the flange of the rail, a base *p*, connecting the arms, and a fixed stud *o*, for pivotally securing the tie-bar C in the clip against removal therefrom when the clip is fastened to and the tie-bar extends underneath the rail, substantially as described.

2. In combination with a tie-bar C, a clip A, having arms *q*, to be secured at one end of the device to a switch-rail and extend, when so secured, beyond and below the flange of the rail, a base *p*, connecting the arms, and a stud *o*, fixed in the clip, and upon which to pivot the tie-bar, whereby, when the tie-bar is adjusted in the clip fastened to a switch-rail and extends underneath the said rail, it is confined against removal by the stud and between the clip and switch-rail, substantially as described.

3. In a clip A, the combination of arms *q*, to be secured at one end of the device to a switch-rail and extend, when so secured, beyond and below the flange of the rail, a base *p*, connecting the arms, and a stud *o*, extending into the clip from and fixed upon the base, substantially as and for the purpose set forth.

4. In combination with a tie-bar C, a clip A, comprising arms *q*, having perforated ears *r*, at which to secure the clip to the web of a switch-rail, and extending from the ears obliquely to conform to the flange of the rail and beyond the latter downward with reference to the rail-flange and below the latter, a base *p*, connecting the arms, and a stud *o*, extending from and fixed upon the base, whereby, when the tie-bar is adjusted in the clip fastened to a switch-rail and extends underneath the said rail, it is confined against removal by the stud and between the clip and switch-rail, substantially as described.

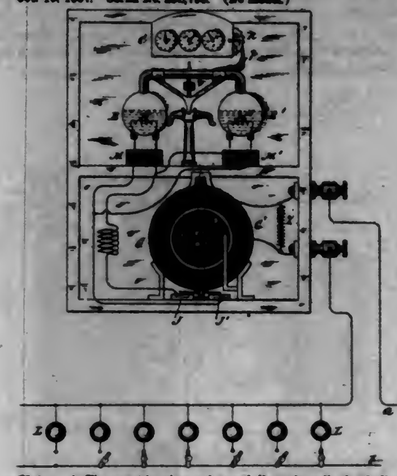
406,009. FIRE-GRATE. HAMLET SUTCLIFFE, Oakland, Cal. Filed Jan. 24, 1889. Serial No. 297,605. (No model.)



Claim.—1. The combination of fire-box C, grate-frame A, and wedges *a*, fitted into grate-frame and resting against the fire-box, substantially as described.

2. The combination of fire-box C, grate-frame A, and wedges *a*, fitted into the grate-frame and resting against the fire-box, and a grate pivoted in and supported by the grate-frame A, substantially as described.

406,010. ELECTRIC METER. ELIHU THOMSON, Lynn, Mass. Filed Oct. 19, 1887. Serial No. 252,793. (No model.)



Claim.—1. The combination, substantially as described, of a liquid-containing receptacle holding a vaporizable liquid, a heating-conductor forming a portion of an electric circuit, and a chamber or tube connected with the space above the liquid for collecting the condensed vapor evolved by the heating action of the current.

2. The combination, substantially as described, in an electric meter, of a receptacle containing a vaporizable liquid, a heating-conductor forming a portion of an electric circuit, and means for indicating or measuring the amount of vaporization.

3. The combination, substantially as described, of a liquid-containing receptacle holding a vaporizable liquid, an electric conductor forming a portion of an electric circuit and immersed in the liquid, and an independent condensing and collecting chamber connected with the space above the liquid, as and for the purpose described.

4. A balanced or pivoted liquid-containing receptacle holding a vaporizable liquid and having two liquid-holding chambers connected by a tube above the level of the liquid, in combination with a heating electric conductor.

5. A closed receptacle containing a vaporizable liquid, in combination with a heating electric conductor and an independent vapor condensing and collecting chamber connected with said vapor-space of said receptacle.

6. The combination, with a translating device operated by the heating effects of an electric current, of a transformer, the secondary of which is connected with the translating device, while the two members of the transformer are movable one with relation to the other under the action of the exciting-current.

7. The combination, with an electric meter, of a transformer whose two members are movable with relation to one another for the purpose of changing their inductive relations, one of the coils of said transformer being connected with the meter, while the other connects with the circuit of the current to be measured, as and for the purpose described.

8. The combination, in an electric meter, of a current-governing device operated or controlled by the current to be measured, a heating conductor or coil supplied with the current governed, a receptacle containing a volatile liquid acted upon by the heat developed in said conductor, and means for indicating the amount of vaporization of said liquid, as and for the purpose described.

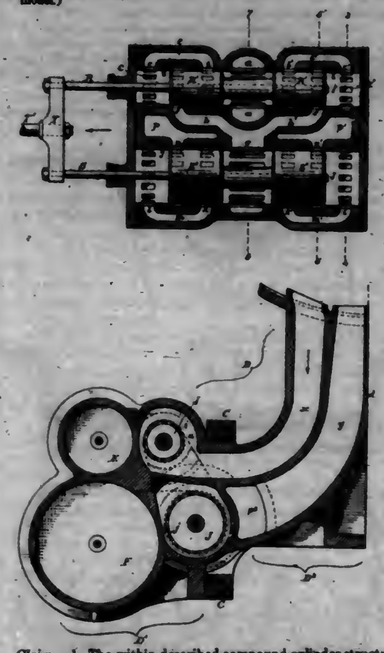
9. The combination, with a closed receptacle containing a vaporizable liquid, of a heating electric conductor acting on the liquid, and a register or indicating device for showing the amount of liquid evaporated.

10. The combination, substantially as described, of two liquid-containing receptacles connected together and mounted upon a suitable pivot or fulcrum, two heating coils or conductors for said receptacles, and an electric switch operated by said pivoted receptacles, as and for the purpose described.

11. The combination, with a bulb or receptacle sealed and containing alcohol in vapor, of a heating electric conductor, and a second bulb or receptacle connected to the first by a tube opening into the same above the level of the liquid.

12. The combination of an inducing and induced conductor movable with relation to one another under the influence of alternating currents and having a retractor adjusted as described, to permit the movable member to assume positions where the induced current will be proportional to the square root of the inducing-current, as and for the purpose described.

406,011. COMPOUND LOCOMOTIVE-ENGINE. SAMUEL M. VAUCLAIN, Philadelphia, Pa. Filed Feb. 21, 1888. Serial No. 300,672. (No model.)



Claim.—1. The within-described compound cylinder structure for locomotives, said compound structure comprising a portion on the outer side of the engine-frame and a portion on the inner side of said frame, the portion on the outer side containing the high and low pressure cylinders, situated side by side, and the valve-chest structure for said cylinders, and the portion on the inner side containing the inlet and exhaust passages, which extend up to the smoke-box, so that the structure is capable of being substituted for the usual single-cylinder structure of a locomotive without change of the adjacent structure, substantially as specified.

2. The combination of the valve-stems, each having a valve, with the high and low pressure valve-chests, each having central inlet-chamber, opposite end ports communicating with the cylinder, and two sets of intermediate ports, the induction-ports communicating with the end ports, the eduction-ports of the high-pressure chest communicating with the inlet-chamber of the low-pressure chest, and the eduction-ports of the latter communicating with the exhaust-passage, substantially as specified.

406,012. VALVE FOR COMPOUND ENGINES. SAMUEL M. VAUCLAIN, Philadelphia, Pa. Filed Mar. 22, 1889. Serial No. 304,322. (No model.)

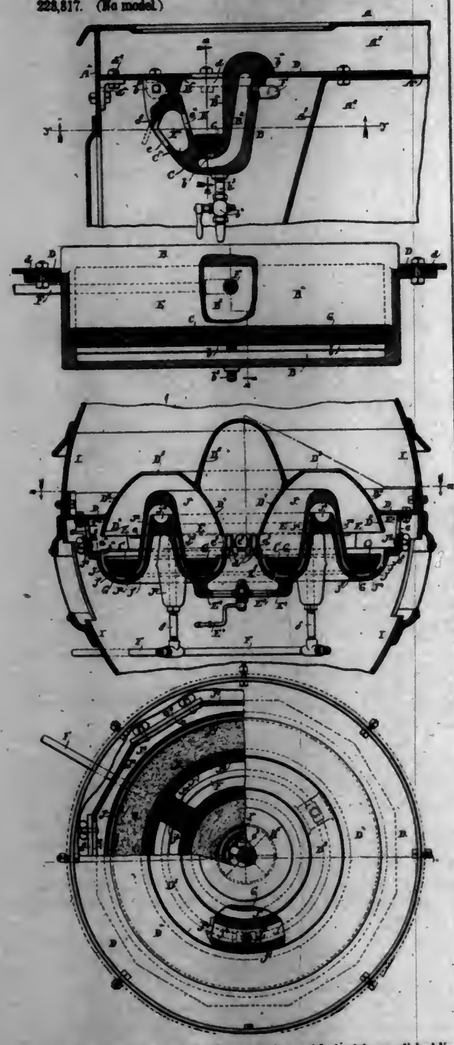


Claim.—1. The combination, in a valve structure for compound engines, of the valve-chest having supply-ports, high-pressure induction and eduction ports, low-pressure induction and eduction ports, and final exhaust-port, with a hollow valve having an internal pas-

sage providing communication between the high-pressure ports and the opposite low-pressure ports, and a passage between the latter and the exhaust-port, substantially as described.

2. The combination, in a compound engine, of the high and low pressure cylinders situated side by side, the valve-chest common to both cylinders and situated at the side thereof, said chest having supply-ports at the ends, a final exhaust-port at the center, high-pressure induction and eduction ports adjoining the steam-supply ports, and low-pressure induction and eduction ports adjoining the final exhaust-port, with a hollow valve having an internal passage connecting opposite high and low pressure ports, and a passage connecting the latter ports and the exhaust-port, substantially as described.

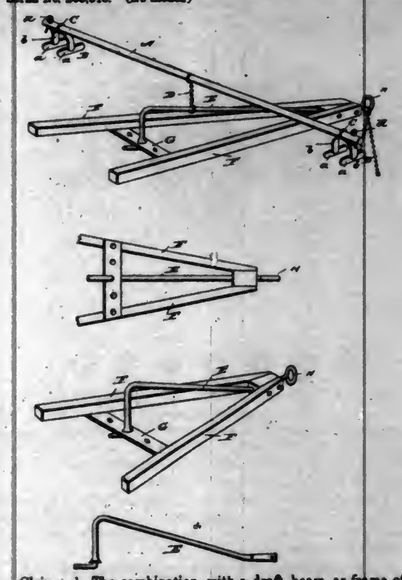
406,013. **BURNER FOR LIQUID FUEL.** WILLIAM VOGEL, Chicago, Ill., assignor, by direct and mesne assignments, to the Vogel Petroleum Heating Company, same place. Filed Feb. 25, 1887. Serial No. 228,817. (No model.)



Claim.—1. A burner for liquid fuel provided with an oil-holding trough or receptacle, the side walls of the burner forming a combustion-chamber above the said oil-holding trough, and a closed passage within the side wall of the said combustion-chamber, said passage communicating at its upper end with an oil-supply pipe and at its lower end with the oil-holding trough, all substantially as described.

2. A burner for liquid fuel provided with an oil-holding trough or receptacle, a casing forming a combustion-chamber above said oil-holding trough, a closed passage in the side wall of said combustion-chamber, connected at one end with an oil-supply and at the other end with the oil-holding trough, and a chamber in the wall of the casing forming a trough for the overflow, said chamber being provided with openings for supplying air to the combustion-chamber, substantially as described.

406,014. **RACK-POLE, &c.** WILLIAM Y. WEST, New Orleans, La., assignor to the A. Baldwin Co., (Limited,) same place. Filed Jan. 8, 1889. Serial No. 296,815. (No model.)



Claim.—1. The combination, with a draft beam or frame of an agricultural implement, of a transverse bar connected therewith and carrying at opposite ends saddles adapted to be applied to the backs of draft-animals, substantially as specified.

2. The combination, with a draft beam or frame, of a bar or rod secured thereto and having a pitch forwardly, and a transverse bar connected with said frame-bar and carrying saddles to be applied to the backs of draft-animals, substantially as specified.

3. The combination, with the draft-frame of an agricultural machine, of a transverse bar connected therewith and saddles connected to the opposite ends of said bar by swivel-joints, substantially as specified.

4. The combination, with a draft-frame, of the bar E, the saddle-bar A, the chain D, connecting them, and the saddles B, connected to said bar A on opposite sides of the draft-frame, substantially as specified.

406,015. **DYNAMO-ELECTRIC MACHINE.** THOMAS J. WILLSON, Brooklyn, assignor of one-third to Grosvenor P. Lowrey, New York, N. Y. Filed Jan. 9, 1888. Serial No. 260,256. (No model.)

Claim.—1. The combination of the field-magnet, a commutating-armature, and brushes bearing upon the periphery of the armature within the polar gaps.

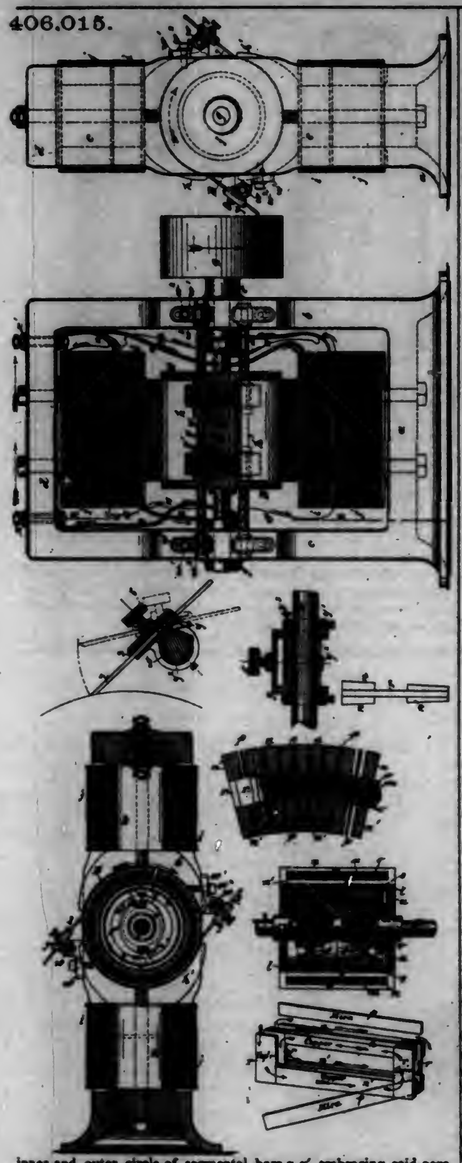
2. The combination, with *d* commutating-armature, of a field-magnet having two pole-pieces embracing the armature on opposite sides, and commutator-brushes bearing upon the portion of the periphery of the armature exposed in the gaps between the pole-pieces.

3. A dynamo-electric machine having a commutating-armature and a field-magnet constructed to leave the entire length of the exterior of the armature exposed on opposite sides between the pole-pieces, and brushes arranged to bear against the exposed periphery of the armature in the polar gaps.

4. The combination, with a commutating-armature consisting of segmental bars arranged spirally around a core, and field-magnets having polar ends radially approaching the exterior circumference of said armature on opposite sides, of brushes bearing directly on the external peripheral segments of said commutating-armature at the exposed portions between the radially-approaching magnet-poles, substantially as herein set forth.

5. In a Gramme armature, the combination, with a core, of an

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inner and outer circle of segmental bars *a a'*, embracing said core, with their ends recessed or scarfed, and with cross connecting-pieces *r* let into said recesses and soldered or secured therein, substantially as shown and described.

6. A Gramme armature constructed with an annular core, exterior and interior metal strips extending longitudinally of the axis of the armature, plates of insulating material alternated with said strips, and radial metal strips connected at their inner ends to the inner strips and at their outer ends to the outer strips, the respective strips being coupled in spiral order, and the radial strips being of less width than the longitudinal strips, whereby they are held out of contact with and insulated from one another, substantially as set forth.

7. In a dynamo-electric machine, field-magnets made in the form of a rectangle or frame cast in one integral piece, with the polar limbs made separate and bolted on the ends of the integral frame and directed inward, with the armature-shaft extending transversely and centrally through the sides of the frame, and the armature mounted on the middle thereof in the center of the integral frame between the attached polar limbs, substantially as herein shown and described.

8. In a dynamo, the combination, with a field-magnet, of a commutating-armature arranged with its axis coincident with the plane of the field-magnet, whereby the portions of the periphery of the armature exposed within the gaps between the pole-pieces are on opposite sides of the plane of the field-magnet, and commutator-brushes bearing upon the periphery of the armature within the polar gaps, whereby the brushes are conveniently accessible upon the exterior of the machine.

9. The combination, with an annular armature, of an expansible clutching-sleeve within the same, an armature-driving shaft concentric to said sleeve, a wedging-screw connection between said shaft and expansible sleeve, acting to tighten or expand said sleeve by the forward rotation of the shaft within the armature, and a friction-clutch between the shaft and the sleeve acting to slip in the direction of said forward rotation of the shaft and to catch in the reverse direction, substantially as and for the purpose set forth.

10. In a dynamo-electric machine, the combination, with an armature and its driving-shaft, and a wedging-screw connection between the shaft and armature, constructed to tighten by a forward rotation of the shaft within the armature, of the disk *v*, secured to the shaft, and the frictional pawls *u*, pivoted thereon and engaging the armature in the reverse direction, substantially as shown and described.

11. In a dynamo-electric machine, the combination of brush-holding bars arranged parallel with the armature-shaft, with brushes mounted thereon to bear upon the commutating peripheral surface of the armature, and adjustable supports for said bars, substantially as shown and described.

12. In a dynamo-electric machine, a brush-carrier extending parallel to the shaft of the armature and adjacent and exterior to the periphery of the armature, with a brush mounted on said carrier and bearing upon the periphery of said armature, substantially as shown and described.

13. The combination, with the supporting-frame, of the brush-holding bars *w*, brushes mounted on said bars, and brackets *w'*, adjustably supporting each end of the bar on the frame, substantially as shown and described.

14. The combination of the brush-carrier extending parallel with the armature-shaft and external to the periphery of the armature, with angularly-adjustable brushes mounted on said carriers and bearing directly on the armature, substantially as set forth.

15. The combination, with the fixed frame *a b c d*, of the bars *w*, extending entirely across the frame and secured thereto at each end and disposed parallel with the armature, with brushes mounted thereon and bearing on the commutating-surface, substantially as shown and described.

16. The combination, with a commutating-armature, of brush-holding bars on opposite sides of the armature and extending parallel with its axis, and brushes mounted thereon bearing upon the periphery of the armature and adjustable longitudinally on said bars, in order to bear upon different portions of the length of the armature, substantially as set forth.

17. In a dynamo-machine, the combination of a brush-supporting bar extending parallel with the armature-shaft external to the armature and in electrical connection with the brushes and attached to the frame, with the circuit-wires of the field-magnets extending to and from said bar, substantially as shown and described.

18. In commutator-brush adjusters, the combination, with a brush-carrier adjustable tangentially in relation to the commutating-surface, of a brush mounted on said carrier, and having a radial adjustment to and from the commutating-surface, substantially as set forth.

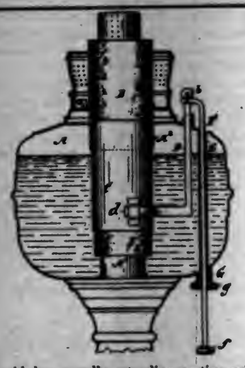
19. In commutator-brush adjusters, the combination, with an axial bar adjustable tangentially in relation to the commutating-surface, of a movable brush mounted on said axial bar and rotatively adjustable thereon to and from the commutating-surface, substantially as herein shown and described.

406,016. **WICK-RAISER FOR LAMPS.** GEORGE W. WOODWARD, Brooklyn, N. Y. Filed Aug. 16, 1888. Serial No. 282,862. (No model.)

Claim.—1. In a central-draft lamp, the combination, with a wick-tube, of a wick-holder secured to a wick, a sliding rod detachably secured to the wick-holder and extended upwardly above the reservoir, a sliding rod secured to the upper end of the first-named rod by means of a thread and nut and extended downwardly through the reservoir below the same, and a tube through the reservoir, through which said downwardly-extending portion extends, substantially as specified.

2. In a central-draft lamp, the combination, with a wick-tube, of a wick-holder secured to the wick, a sliding rod detachably secured to the wick-holder and extending above the lamp-reservoir, a sliding rod secured to the upper end of the first-named rod and extended downward through the reservoir, and a finger-piece below the reser-

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voir surrounding said downwardly-extending portion, substantially as specified.

406,017. LABEL ATTACHMENT FOR BOTTLES. HARLOW E. WOODWARD, Boston, and SAMUEL R. KING, Cambridge, Mass. Filed Jan. 24, 1889. Serial No. 297,830. (No model.)

Claim.—1. The herein-described label-containing attachment for druggists' dispensing-bottles, &c., consisting of a casing adapted to be secured permanently to the outside of a bottle or receptacle for the purpose of containing a number of labels, and having the upper portion of its front side left open to form an aperture *g*, through which said labels are introduced and withdrawn, in combination with a guard or flange *m*, placed over the opening *g* and adapted to prevent the labels from falling out when the bottle is tipped up and protect them from any liquid flowing down from the mouth of the bottle, substantially as set forth.

406,017.



2. A label-containing casing B, adapted to be secured permanently to the outside of a bottle or other receptacle and having the upper portion of its front side left open to form an aperture *g*, for the introduction and withdrawal of the labels, in combination with the guard or flange *m*, placed over said aperture *g*, and the vertical slot *h* in the front side *f*, all operating substantially in the manner and for the purpose described.

3. The label-containing casing B, permanently secured to the bottle, having the upper portion of its front side left open to form an aperture *g*, for the introduction and withdrawal of the labels, in combination with the guard or flange *m*, placed over said aperture *g*, the slot *h* in the front side *f*, and the pusher-plate or ejector *i*, placed within the casing B and provided with a projection or handle *l*, extending outward through the slot *h*, all operating substantially in the manner and for the purpose set forth.

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DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE WEST.

Decided June 14, 1889.

1. INVENTION—MECHANICAL SKILL.

Where it appears that plackets in drawers have been bound in substantially the same manner as the applicant's alleged invention, it is not invention to extend that idea and make the binding include the opening for the wrist or neck or body in a shirt or other garment, or to slightly or obviously modify the manner in which the binding is turned, or to omit a cord from the binding which is simply a strengthener, or to merely prolong the binding itself.

2. SAME—FORMER DECISIONS FOLLOWED.

The cases of *Smith* v. *Nichols* (21 Wall., 112) and *Hollister* v. *Benedict Manufacturing Co.* (113 U. S., 59) followed in this respect.

APPEAL from Examiners-in-Chief.

SHIRTS.

Application of Marshall O. West filed November 30, 1888, No. 292,322.

Mr. W. X. Stevens for the applicant.

MITCHELL, *Commissioner:*

The claims appealed are as follows:

1. The combination of a garment having an opening and a placket at one side thereof, and a binding secured continuously around the said opening and placket and joined end to end by a continuous line of stitches, substantially as shown and described.

2. The combination of a garment having an opening and a placket at one side thereof, and further having a band comprising two or more thicknesses of cloth secured at one edge around the said mouth of the garment and ending at the placket, and a binding secured continuously around the outer edges of the band and placket by a continuous line of stitches.

The references cited are patents to Taylor, September 23, 1873, No. 143,198; Lubin, July 4, 1882, No. 260,694; Neustadter, May 24, 1881, No. 242,023; Hall, January 16, 1883, No. 270,663; McDonald, June 26, 1883, No. 280,056, and Smith and Paul, August 25, 1885, No. 325,126.

The Examiners-in-Chief held that the references cited in bar were pertinent, and that applicant's alleged invention indicated nothing but a double use of what was there shown, and involved only a well-known and obvious expedient.

Applicant shows and claims a *continuous* binding for a shirt or other garment, extending in one instance across the side placket or slit and around the front and back flaps, in another across the neck-placket and around the neck, and in a third across the wrist-placket and around the wrist. An "all-around" binding, which includes the placket, seems to be the thing contemplated. The patent to McDonald shows drawers stayed by the binding in precisely this way, so far as the placket is concerned, and the other references show, as the Examiners-in-Chief say—

that it is common to use binding where it will do the most good, although it is not shown that shirts have been finished with all-around binding.

Applicant insists that McDonald's binding is not an anticipation of his invention, inasmuch as that binding—

is turned under at its edges in a manner that would be bungling and totally impracticable in a shirt, and it is not a simple binding, but is a box to contain a cord.

He contends, furthermore, that it ends at the waist-band and does not extend around the mouth of the opening, and that the other references cited are equally inapplicable to his case. In view of the fact, however, that the gist of applicant's alleged invention is simply the "all-around" binding, I am unable to see the force of his objections to the relevancy of the patents cited. A slight and obvious modification of the manner in which the McDonald binding is turned, an omission of the cord, which is simply a strengthener, and a mere prolongation of the binding itself would constitute the identical invention claimed. These changes are such as would naturally occur to any seamstress who desired to accomplish the object sought by applicant—a continuous all-around binding—and do not involve invention. Applicant only accomplishes to a greater extent what has before been accomplished by those who have preceded him. In so far as it goes, the McDonald patent, for instance, shows that plackets have been bound in substantially the same manner. To extend that idea and make the binding include the opening for the wrist or neck or body cannot be said to call for anything more than the mere exercise of the will in adapting a well-known means to a proposed end, or the display of the expected skill of the calling.

Says the court in *Smith* v. *Nichols*, (21 Wall., 112:)

But a mere carrying forward or new or more extended application of the original thought, a change only in form, proportions, or degree, the substitution of equivalents, doing substantially the same thing in the same way by substantially the same means with better results, is not such invention as will sustain a patent.

The idea in this case—as in the case of *Hollister* v. *Benedict Manufacturing Co.* (113 U. S., 59)—

seems not to spring from that intuitive faculty of the mind put forth in the search for new results or new methods, creating what had not before existed or bringing to light what lay hidden from vision; but, on the other hand, to be the suggestion of that common experience which arose spontaneously and by a necessity of human reasoning in the minds of those who had become acquainted with the circumstances with which they had to deal. * * * It is but the display of the expected skill of the calling, and involves only the exercise of the ordinary faculties of reasoning upon the materials supplied by a special knowledge and the facility of manipulation which results from its habitual and intelligent practice, and is in no sense the creative work of that inventive faculty which it is the purpose of the Constitution and the patent laws to encourage and reward.

In view of these considerations, the decision of the Examiners-in-Chief is affirmed and the appeal denied.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Eastern District of Missouri, Eastern Division.

HUBER *et al. v.* N. O. NELSON MANUFACTURING COMPANY.

Decided May 25, 1889.

1. LIMIT OF POWER OF COMMISSIONER OF PATENTS UNDER SECTION 4887 REVISED STATUTES OF THE UNITED STATES TO ISSUE LETTERS PATENT FOR AN INVENTION PREVIOUSLY PATENTED IN A FOREIGN COUNTRY.

Section 4887 of the Revised Statutes of the United States so limits the power of the Commissioner of Patents that where an invention has been patented in a foreign country he cannot lawfully issue an American patent for the same invention for a term to extend beyond the actual duration of the life of the foreign patent.

2. SAME—AN AMERICAN PATENT CANNOT BE LAWFULLY ISSUED AFTER THE LAPSE OF A FOREIGN PATENT FOR THE SAME INVENTION.

Letters Patent of the United States granted after a foreign patent for the same invention had lapsed and become null and void by reason of the non-payment of a stamp duty, *Held*, granted without authority of law and void.

3. LIMITATION OF A UNITED STATES PATENT UNDER SECTION 4887.

The termination of a foreign patent prior to the time specified on the face of the grant by the failure of the patentee to comply with some requirement of the foreign law has the effect of terminating a subsequently-issued American patent for the same invention.

4. REISSUED LETTERS PATENT—INADVERTENCE, ACCIDENT, AND MISTAKE—SECTION 4916 REVISED STATUTES OF THE UNITED STATES.

A patent for an invention cannot be reissued for the mere purpose of enlarging the claim, unless there has been a clear mistake inadvertently committed in wording the claim.

5. SAME—DECISION OF COMMISSIONER OF PATENTS NOT FINAL.

A finding of the Commissioner of Patents as to an original patent being inoperative by reason of inadvertence, accident, or mistake may be reviewed in a suit for infringement, at least to the extent of determining whether as a matter of law what was described and alleged to be a mistake was such a mistake as will warrant a reissue.

6. SAME.

Where an applicant, desiring to secure a patent on a combination of old mechanical devices, included a certain element in each claim because he thought it necessary to the usefulness of the machine as a whole, and after the grant of his patent another patent for a similar machine was granted with claims which he thought broader than his own, and in order to invalidate said second patent the first patentee applied for and obtained a reissue with claims so broad that they substantially claimed as a separate device one of the original elements which was old, *Held* that there had been no such inadvertence, accident, or mistake as to warrant a reissue and that said broadened claims were void.

STATEMENT OF THE CASE.

This was a bill filed to restrain the infringement of Letters Patent No. 260,232, issued June 2, 1882, to Henry Huber, assignee of Peters and Donald, as well as to restrain the infringement of Reissued Letters Patent No. 10,826, issued April 19, 1887, to James E. Boyle. Both patents are for improvements in sanitary water-closets.

Huber is owner of Patent No. 260,232, and sole licensee under Reissued Letters Patent No. 10,826.

Mr. Paul Bakewell and *Mr. Arthur S. Brown* for the complainants.

Messrs. Taylor & Pollard and *Mr. Benjamin F. Rex* for the defendants.

THAYER, *J.:*

This case has been elaborately argued. Following the course that was pursued by counsel in the argument, the first question for consideration is whether Letters Patent No. 260,232, issued to Henry Huber as assignee of Peters and Donald, are valid.

The facts in the light of which that question must be determined are not disputed. Peters and Donald are residents of Great Britain. They secured a patent in England on April 7, 1874, for the same invention covered by American Letters Patent No. 260,232. On April 7, 1881, the English patent, by virtue of English laws, became null and void on account of the failure of the patentees to pay the stamp duty of £100 which became due on the patent on that day. On November 29, 1881, they filed an application for a patent for the same invention in the United States, and a patent was subsequently granted to Henry Huber as their assignee on June 27, 1882. Peters and Donald appear to have assigned all their interest in the invention for a nominal consideration to J. E. Boyle on the 27th of October, 1881, some (6) months after the English patent had lapsed and become void, and Boyle in turn assigned his interest to Huber, November 26, 1881. Can a patent issued under such circumstances be sustained as a valid grant?

The precise question, so far as I am aware, has never been decided in a case arising under the twenty-fifth section of the act of July 8, 1870, now section 4887 Revised Statutes of the United States. In several cases, however, where a foreign patent had been issued for a given term expressed on the face of the grant, but with a privilege under the foreign law of being extended for a further period, the question has arisen whether the life of the subsequent American patent was limited by the term expressed on the face of the foreign patent in force when the American patent was issued, or whether the American patent continued during the actual existence of the foreign patent, the same having been extended or renewed. (*Reissner* v. *Sharp*, 16 O. G., 355; *Bate Refrigerating Co.* v. *Gillett*, 22 O. G., 1205; 13 Fed. Rep., 553; *Gramme Electrical Co.* v. *Arron & Hochhausen Electrical Co.*, 25 O. G., 193, 17 Fed. Rep., 838.)

In another class of cases the question has arisen whether the termination of a foreign patent prior to the time specified on the face of the grant by the failure of the patentee to comply with some requirement of the foreign law has the effect of terminating a subsequently-issued American patent for the same invention. (*Paillard* v. *Bruno*, 38 O. G., 900, 29 Fed. Rep., 864: *Bate Refrigerating Co.* v. *Gillett*, 40 O. G., 1029, 31 Fed. Rep., 809; *Holmes Electrical Protective Co.* v. *Metropolitan Burglar Alarm Co.*, 28 O. G., 1189, 21 Fed. Rep., 468.)

The decisions of all the circuit courts in the cases above mentioned proceeded consistently upon the theory first outlined by Mr. Justice CLIFFORD in *Henry* v. *Providence Tool Co.*, (14 O. G., 855, 3 Barn. & Ald., 501,) a case in which the Court was dealing with an American patent granted after an English patent that had been extended for 4 years after its expiration by special order of the crown. The theory thus outlined was, in substance, that every American patent ought to run for a definite period that may be ascertained as soon as the patent issues, and that Congress did not intend by section 4887 of the Revised Statutes that patents should be granted for an uncertain period. In accordance with that view it was held, in substance, in *Henry* v. *Providence Tool Co.*, and in the subsequent decisions, that the life of an American patent, subject to the provisions of section 4887, is limited by the term expressed on the face of the prior foreign patent having the shortest term, and that the existence of the domestic patent when issued is not affected by any events that subsequently shorten or prolong the life of the foreign patent.

Three of the cases above cited were expressly overruled by the United States Supreme Court in *Bate Refrigerating Co.* v. *Hammond et al.*, (46 O. G., 689, 129 U. S., 151,) and, in my judgment, the decision in that case overturns as well the principle on which the other circuit court decisions were predicated.

The Supreme Court has clearly discarded the doctrine that an American patent must necessarily have a fixed term which may be definitely ascertained at the time Letters Patent are granted by holding (as in the cases cited) that the duration of an American patent is dependent upon circumstances that affect the duration of the foreign monopoly. Thus the Court say:

> Under section 4887, although * * * the United States patent may on its face run for 17 years from its date, it is to be so limited by the courts as matter to be adjudicated on evidence *in pais* as to expire at the same time with the foreign patent.

And again:

> Under this view the time of the expiration of the foreign patent may be shown by evidence *in pais* whether the record of the foreign patent itself shows its duration, or other proper evidence, and it is no more objectionable to show the time of the expiration of the foreign patent by giving evidence of extensions such as these in the present case, and thus show the time when by virtue of such extensions the United States patent will expire.

In accordance with such views the court held that although an American patent had been granted subsequently to the issuance of a Canadian patent, which on its face purported to be a grant for the period of 5 years, yet that the American patent did not expire at the end of 5 years limited, inasmuch as the patentee, in compliance with Canadian law, obtained an extension of the foreign patent for two additional terms of 5 years each after the grant of the American patent. The arguments used in the course of that decision lead logically to the conclusion that United States Letters Patent issued subject to the provisions of section 4887 remain in force no longer than the foreign patent having the shortest term; that the life of the domestic patent is measured by the actual duration of the foreign patent, and may be abridged as well as lengthened by circumstances which operate under the foreign law to abridge or lengthen the foreign monopoly.

When it is conceded that it is not essential that the life of an American patent shall be absolutely fixed at its inception, as by the term expressed on the face of the foreign grant having the shortest term, but may extend beyond that period in consequence of the extension of the foreign patent by acts *in pais* done by the patentee in compliance with the foreign patent law, that is a concession that the duration of the domestic patent is dependent in one respect on the life of the foreign patent, and if dependent upon it in one respect it ought to be regarded as dependent upon it in all respects. At all events, if acts done by the patentee in conformity with the foreign law operate to extend the foreign patent beyond the term specified on the face of the original grant, and thereby to prolong the American patent, by parity of reasoning an omission to do acts required by the foreign law which works an absolute forfeiture of the foreign grant ought to extinguish the domestic patent.

No valid reason can be assigned, I apprehend, why the omission of acts required to be done by the foreign law in order to preserve the life of the foreign patent should have no effect on the duration of an American patent issued under section 4887 so long as acts done by the patentee in compliance with the foreign law are allowed to give the American patent a duration that it would not otherwise have. The whole controversy seems to hinge on the question whether the term of the domestic patent is fixed at its inception by the term expressed on the face of the shortest foreign patent, or whether the life of the American patent may be to an extent uncertain and is subject to contingencies affecting the life of the foreign patent. The Supreme Court of the United States appears to have adopted the latter view. It follows, of course, that if the true construction of section 4887 is that a patent subject to its provisions becomes void when the foreign patent lapses—in other words, if the life of the domestic patent is dependent upon that of the foreign patent—then the Commissioner of Patents has no authority under section 4887 to issue American letters after the foreign patent has ceased or determined.

It would hardly be contended, I suppose, that the Commissioner of Patents would be authorized to grant a monopoly of an invention after an event has occurred that in law determines the duration of the monopoly, and which event, if it had occurred after the grant was made instead of before, would at once have rendered the same void.

Commissioner Fisher in the case of *Mushet*, (2 Com. Dec., 106,) shortly after the passage of the act of July 8, 1870, held that section 4887 was intended to allow foreign inventors to secure a monopoly of their inventions in this country after they had been patented abroad, *but only for so long a period as the foreign monopoly continued*, and that to a casual reader would seem to be the obvious purpose of the statute. The last clause of the section—

> but every patent granted for an invention which has been previously patented in a foreign country shall be so limited as to expire at the same time with the foreign patent, &c.—

presupposes, as I think, that there is a foreign patent *in force when the American patent issues*, the actual existence of which foreign patent is to determine the duration of the domestic patent. If there is no such foreign patent in force when the American patent issues, but a foreign patent has been theretofore granted for the invention and it has lapsed and become void, there is no authority in law, in my opinion, for the American grant.

The result is that the Peters and Donald patent is adjudged to be void.

Second. The next question concerns the validity of reissued Letters Patent No. 10,826, issued to James E. Boyle, April 19, 1881, and the facts on which that controversy depends are substantially undisputed. The original patent on which the reissue was obtained was numbered 291,139, and was dated January 1, 1884. In the construction of the flushing apparatus or water-closet covered by the original letters Boyle, the inventor, employed what is commonly called an "injector" to exhaust the air confined between two traps

located beneath the bowl or seat of the "flushing apparatus." The apparatus was so arranged that when in use water falling through a pipe from the water tanks or reservoir into the bowl passed by the mouth of the "injector," which was connected by a pipe with the confined air-chamber between the traps, and by the operation of a well-known principle tended to exhaust the air and to create a vacuum in such chamber, the purpose of creating a vacuum being to induce a more powerful outflow of water from the bowl through the traps and into the soil-pipe by the aid of atmospheric pressure on the surface of the water in the bowl.

The idea of constructing a water-closet or flushing apparatus with double traps underneath the seat and a confined air-chamber between the same, from which the air might be withdrawn when the closet was used, so as to induce a more powerful outflow, was not novel. The same method of construction was shown in the Peters and Donald patent before mentioned; but Peters and Donald employed a different device to exhaust the air between the traps. Although injectors and the principle upon which they operate were well known, and although they were in use for various purposes, it may be conceded that Boyle was the first to employ them in the construction of a flushing apparatus or water-closet. Being an old device, he could not claim the injector, independently or otherwise, than in connection with other devices forming a part of his improved sanitary water-closet. The first and most important claim in the original Letters Patent was for—

> A flushing apparatus consisting of a reservoir-tank, a flushing-chamber adapted to be filled therefrom, a valve controlling the admission of water from said tank to said chamber, a suction-injector arranged beneath the outlet from said chamber, a flushing-pipe leading from said injector, and a suction or air pipe communicating with said injector, all combined * * * substantially as set forth, whereby the water in escaping from said chamber into the flushing-pipe traverses said injector and sucks air from said suction-pipe.

It will thus be seen that the injector was 1 of 6 elements in the combination covered by the first claim of the original Letters Patent, No. 291,139.

On January 21, 1885, Boyle made application for a reissue, stating in substance in his application therefor that his patent was "inoperative to protect the invention intended to be covered by it," because the principal claims in said patent were defective or insufficient, in that they appear to be limited to combinations embodying the flushing-chamber as an essential element, whereas that chamber was not essential to his invention in its generic features; that he believed he had introduced a new principle for operating double-trapped siphon-closets—namely, that of producing a vacuum by causing falling flushing-water to act as an injector; but "that, through inadvertence or mistake of judgment, his claims were drawn with less breadth than his specifications, and did not, as they should, cover broadly the application of such principle;" that "such inadvertence or mistake arose by, and in consequence of, a misunderstanding between the inventor and his patent solicitor," and by reason of the inventor's want of familiarity with the technical meaning of the language used in patent claims.

It is admitted that the idea of obtaining a reissue was suggested by the granting of Letters Patent No. 308,358, to Frank B. Hanson, under date of November 25, 1884, for an improvement in water-closets, which latter patent by one of its claims covered a flushing apparatus, the same substantially as that described in the first claim of the Boyle patent above set forth, omitting only the "flushing-chamber."

Boyle's sole purpose in asking for a reissue was confessedly to eliminate the "flushing-chamber" as a constituent element of the combination covered by certain claims of his original patent, particularly the first claim. In other words, he desired to recast his claims, so as to obtain a patent for a flushing apparatus like that described above in the first claim, *minus the flushing-chamber*.

A reissue was eventually granted in accordance with such desire. A claim was allowed in the reissued letters for—

> A flushing apparatus * * * consisting of the combination of a reservoir-tank, a flushing-valve controlling the outlet thereof, a flushing-pipe for conveying water therefrom to the bowl of the closet, a suction-injector arranged in connection with said pipe, and to be traversed by the descending flushing-water, and a suction-pipe in connection with said injector, whereby the water in flowing from said tank downward through the flushing-pipe traverses said injector and sucks the air from said suction-pipe.

The effect was clearly to expand the claims of the original patent by as much as the addition of the flushing-chamber to the combinations claimed in the original patent had served to limit them. (*Pattee Plow Co.* v. *Kingman*, 129 U. S., 294.)

Notwithstanding the expansion of the claims in the reissue, it is strenuously insisted that the main feature of Boyle's flushing apparatus (that which was essentially novel) consisted in the use of an injector operated by falling flushing-water to pump air from between the two traps; that such fact was clearly shown and commented upon in the original specification; that the flushing-chamber was not essential to the operation of that device, a single-reservoir tank being sufficient for that purpose; that by inadvertence or mistake a non-essential limitation was put upon the claims of the original patent that covered the injector device; that in consequence thereof the original patent was inoperative to fully secure the invention intended to be claimed, and that the patent was for such reasons properly reissued, it being a case where the claims have simply been altered to cover more accurately the invention described in the original specification.

Some of these propositions require careful consideration; and in the first place it will be well to understand clearly what is meant by the assertion that the original patent was "*inoperative to protect the invention intended to be covered* by it."

The original patent certainly protects the flushing apparatus that was claimed as a whole in the first claim and carefully described in the drawings. It also protects all the combinations claimed in the several claims of the original patent. It was not necessary to change a word in the specification or alter a line in the drawing to fully secure the apparatus so claimed, and it appears that that was the identical flushing apparatus or water-closet which the patentee intended to manufacture and that his licensee is now manufacturing. It cannot be said, therefore, that the original patent was "*inoperative and invalid*" in the sense that what the patentee claimed and intended to manufacture he cannot hold in consequence of the original specifications being either "defective or insufficient." In the light of these facts, when the patentee asserts that the original patent was "inoperative," no more is meant than that a particular combination of parts might have been claimed originally (and possibly would have been allowed) that was not claimed, and that the original patent was inoperative to protect that *particular combination* because no right to protection was asserted.

Now, even conceding for the purpose of the decision that the original patent was "inoperative" in the sense in which that word is used in section 4916 of the Revised Statutes, which authorizes a reissue, the question remains whether the failure of the inventor to claim what the original patent does not protect, because it was not claimed, was due "to inadvertence, accident, or mistake" in the sense of the statute.

All of the evidence that was before the Commissioner tending to show inadvertence or mistake (such as the affidavit of the inventor and his solicitor and other documents) was offered by the complainants in the present case, and was supplemented by some additional testimony.

Under such circumstances I understand the law to be that the court may review the finding of the Commissioner on the point that the original patent was inoperative by reason of inadvertence and mistake, at least to the extent of determining whether, as a matter of law, what was described and alleged to be a mistake is such a mistake as will warrant a reissue. (*Miller* v. *Brass Co.*, 104 U. S., 355; *Leggett* v. *Avery*, 101 U. S., 256; *Mahn* v. *Harwood*, 112 U. S., 359; *Coon* v. *Wilson*, 113 U. S., 277; *Turner & Seymour Co.* v. *Davis Co.*, 111 U. S., 319.)

In his affidavit filed with the Commissioner, Mr. Frazer, the solicitor who obtained Boyle's original patent as well as the reissue, describes the mistake alleged to have been committed by him and the patentee as tersely, perhaps, as it is anywhere described. He says:

> Deponent clearly understood that the invention in question introduced a new principle in water-closet flushing apparatus—that of exhausting the air by means of an injector—and so described the invention in the specification; but that in drawing the claims he inadvertently incorporated the flushing apparatus as an element therein, *being at the time under the impression the said flushing-chamber was essential to the operation of the invention, whereas, in fact, the said chamber is essential only to the operativeness of the device for producing the afterwash for refilling the bowl, which devices are claimed specifically in claim 4 of said patent.*

It will be observed that the mistake thus described by Mr. Frazer consisted in his being under the impression when he drew the claims of the original patent that—

> The flushing-chamber was essential to the operation of the invention, whereas it was essential only to the operativeness of the devices for producing the afterwash.

This statement is a little obscure, because he does not explain whether by the use of the word "invention" in the paragraph quoted he means the injector device only, or the flushing apparatus considered as a whole. I take it for granted, however, that Mr. Frazer did not use the word "invention" in the restricted sense first mentioned, and would not be so understood.

He is evidently an expert of too much experience to assert that he ever acted for a moment under the mistaken impression that it was necessary to employ a flushing-chamber as well as a "water-tank" in order that the falling flushing-water traversing the injector might operate to suck air from between the two traps, and that was the sole function of the injector device. Drawing No. 6 attached to the original patent, and Mr. Frazer's explanation of the purpose of that drawing, contained in the original specification, shows that he clearly understood that the falling flushing-water traversing the injector would perform its function of pumping air from between the traps equally well whether the water proceeded from a reservoir having one compartment or a dozen, and that fact was obvious to an ordinary observer who had any knowledge of the principle upon which an injector acts. Therefore, in the paragraph quoted Frazer must be understood as asserting merely that he incorporated the flushing-chamber as an element in the several combinations claimed in the original patent, because he desired and intended to describe and claim an operative flushing apparatus or water-closet—that is to say, one that would do the work required of such an apparatus and prove a marketable invention.

It is manifest from other statements made by Mr. Frazer in the course of his testimony that, in his opinion, a flushing apparatus minus the "flushing-chamber," with its attendant devices for securing an afterwash, would be practically useless; that some provisions for refilling the bowl after the injector had ceased to act, thereby sealing the upper trap, was essential to the successful operation of the flushing apparatus or water-closet, considered as a whole; and that in drafting the several claims of the original patent he intentionally (and with great care, as it would seem) included the flushing-chamber for the reason that it was one of the essential parts of the flushing apparatus, without which the apparatus would not be serviceable.

Boyle's affidavit filed with the Commissioner describes no mistake, inadvertence, or accident. He contents himself with the general statement that a misunderstanding existed between himself and his solicitor, but what the misunderstanding was does not appear. From his testimony on the trial of this case it is made manifest, however, that he as well as Frazer was of the opinion when the original patent was granted that a flushing apparatus constructed according to his design, but without the flushing-chamber to secure an afterwash, would be practically valueless, because it would command no sale. He admits that he made a flushing apparatus such as is last indicated, (that is, an apparatus minus the flushing-chamber;) that it was not satisfactory; that it was not intended to be operative, and (as I understand him) was never intended as a design for a water-closet that he expected to manufacture or sell. The result is that if Boyle and Frazer made any mistake, or labored under any misapprehension when the original patent was taken out, it consisted in the assumption that the omission of the flushing-chamber, on which the afterwash devices depended, and without which there was no means of securing an afterwash automatically, so far as the patentee had then discovered, would leave a practically valueless combination, and hence that there was no need of claiming such a combination. When the statements of Mr. Boyle and his patent solicitor are carefully and fairly analyzed, that

appears to be all that can reasonably be said in support of the contention that the claims of the original patent were due to inadvertence and mistake. But, conceding that the parties named acted on the assumption last stated, it does not appear that even that assumption was erroneous. On the contrary, the testimony shows to my entire satisfaction that Frazer was right in supposing that Boyle's flushing apparatus without the flushing-chamber would be incomplete and, for that reason, practically valueless. Mr. Hanson, who, subsequently to the date of Boyle's invention, secured a patent on a water-closet having a single water-reservoir and an injector, but no flushing-chamber or provision for an afterwash, and who by so doing caused Boyle to apply for a reissue that would invalidate Hanson's patent, is compelled to admit that a water-closet constructed according to the specification of his patent is defective and unsalable, and for that reason has never been put upon the market.

Boyle, Hanson, and Frazer substantially agree that some mechanism to secure an afterwash automatically (that is to say, some mechanism to flush the closet and refill the bowl at the end of the flush by a single pull at the lever) is essential to the successful operation of a flushing apparatus; that without such mechanism an apparatus constructed with double traps, and an injector to exhaust the air between the traps, would be useless in the sense that there would be no demand for such an apparatus. It would seem, indeed, that Boyle displayed quite as much (if not more) ingenuity in devising the mechanism to produce an afterwash, as in employing an injector, which was an old device to pump the air from between the traps. Now, in the case of *Mahn* v. *Harwood* (112 U. S., 359 and 360) it was said that:

> A patent for an invention cannot lawfully be reissued for the mere purpose of enlarging the claim, unless there has been a clear mistake inadvertently committed in wording the claim.

And the same remark is repeated in *Conn* v. *Wilson* (117 U. S., 277.) In *Miller* v. *Brass Co.* (104 U. S., 355) the court said:

> While * * * we do not deny that a claim may be enlarged in a reissued patent, we are of the opinion that this can only be done when an actual mistake has occurred, not from mere error of judgment, * * * but a real *bona fide* mistake inadvertently committed, such as a court of chancery in cases within its ordinary jurisdiction would correct.

So far as I can see the testimony in the case does not tend to establish that either Boyle or Frazer acted so inadvertently or labored under such misapprehension, either of matters of law or fact, when the claims of the original patent were formulated as justified a reissue of the patent under the law as declared in these cases. It was obvious to them, as it is to any one, that the injector would perform its function as well with a single water-tank as with a tank and flushing-chamber combined. They both believed that a water-closet constructed according to Boyle's design, but without provision for an afterwash, would be valueless in the market, and in that they were right. The patentee had discovered no method of producing an afterwash automatically by using a single water-tank, and hence both he and his solicitor regarded the flushing-chamber as one of the essential features of the flushing apparatus intended to be manufactured, and accordingly claimed it industriously in all of the important claims. Conceding that they claimed the "injector" in combination with a part that was non-essential to its operation, and thereby limited the claim, yet they did so in pursuance of a well-defined purpose that was not based upon misconception of matters of fact or ignorance of the law, so far as the records before the Commissioner or the proof in this case shows.

It is an important fact that must be kept in mind in the consideration of this case, that the injector was an old device when Boyle adopted it, and that it could only be claimed in combination with other parts which would together produce a new result or effect or constitute a new machine. (*Reckendorfer* v. *Faber*, 91 U. S., 357.) Boyle placed it in combination with certain other old parts or devices that he deemed necessary to employ to make a new flushing apparatus that would be operative and useful, and by so doing made each element of the combination material, and was undoubtedly entitled to be protected in the use of the combination so formed and claimed. (*Water Metre Co.* v. *Desper*, 101 U. S., 337.) His sole purpose in asking for a reissue, however, appears to have been to slough off one element of the combination, and to so reduce the parts embraced in the claim that it would be impossible for any other person to use an "injector" in the construction of a double-trapped water-closet without paying tribute to his patent. As the claims are stated and enlarged in the reissue, it would be unlawful for a mechanic to use the injector in the construction of a flushing apparatus, even if he should succeed in doing what Boyle failed to accomplish—that is to say, in producing an afterwash automatically by the use of a single tank—because the parts with which the injector has been combined in the claims of the reissue are so few that they must necessarily all be used to work the injector. In other words, the claims in the reissued letters, or some of them at least, are now so broad as to practically cover the injector as a thing susceptible of being separately claimed. If it was new and had not been claimed in the original patent, it might be proper to interpret the law liberally in favor of the inventor to enable him to realize the full benefit of his invention. The fact is, however, that an injector is an old device, and that Boyle merely adopted it and applied it to a new use, and should be limited to that combination in which, as it appears, he deliberately placed it and claimed it. (*Prouty & Mears* v. *Douglass*, 16 Peters, 341. *Eames* v. *Godfrey*, 1 Wall., 79.)

I am forced to the conclusion that the reissued letters, granted under the circumstances and for the purposes hereinafter stated—that is, merely to enlarge the claims—cannot be sustained as a valid grant. (*Burr* v. *Dury*, 22 Wall., 531; *Gill* v. *Wells*, 22 Wall., 1, and cases heretofore cited.) In the first place, although the original patent was inoperative to protect a particular combination not claimed therein to which the inventor now conceives himself to be entitled, yet the failure to claim it was not due to any such inadvertence or mistake as will now entitle him to claim it, the inevitable result being to expand the old claims; and, secondly, the failure to claim such combination originally, even if it was one that ought to have been allowed if claimed, occurred under such circumstances, and was accompanied with such full knowledge of all material facts, as amounted to an abandonment of that particular combination to the public.

The bill is accordingly dismissed.

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IN THE MATTER OF

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DIGEST OF DECISIONS

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COMMISSIONER OF PATENTS

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AMENDMENTS.

(See Construction of Specifications and Patents, 1; Infringement, 5; Limitations Imposed by the Patent Office.)

ANTICIPATION.

(See Particular Patents, 13, 16, 21, 22.)

APPEALS.

(See Commissioner of Patents; Examiners.)

ASSIGNEES.

(See Validity of Patents.)

ASSIGNMENTS.

(See Assignment by Attorney Under Power of Attorney.)

ASSIGNMENT BY ATTORNEY UNDER POWER OF ATTORNEY.

CONVEYANCE OF PATENT UNDER A POWER OF ATTORNEY.

A conveyance executed by an attorney under a power of attorney to sell for the patentees, for them and in their names, all their right, title, and interest in a patent, is in law their conveyance and not his.

[*H. Tibbe & Son Manufacturing Company v. Heineken, 1221.

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(See Assignment by Attorney Under Power of Attorney.)

BAR TO PATENT.

(See Rehearing, 4.)

BILL OF REVIEW.

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(See Infringement, 4, 6, 7, 8, 11; Invention, 1, 2.)

CIRCUIT COURTS.

(See Jurisdiction.)

CLAIMS.

(See Reissues, 2.)

COMBINATIONS.

(See Infringement; Invention, 2; Reissues, 4.)

1. CONSTRUCTION OF PATENTS—COMBINATIONS.

In cases where none of the elements of a combination are new or are claimed separately and there are other similar kindred combinations in use the evident tendency of late decisions is to limit the patentee to the particular form of the various elements composing the combination shown by his drawings.

[*Heine Safety Boiler Company v. Smith Feed Water Heater and Purifier Company, 1634.

2. SAME—VALIDITY.

If the claim in Letters Patent No. 304,195, granted August 26, 1884, to Hermann Heine were to receive a broader construction, it is by no means certain that it is valid and ought to be sustained, in view of the state of the art when the patent issued.

[*Id.

COMMISSIONER OF PATENTS.

(See Limitation of United States Patent by Foreign Patent Previously Granted, 1; Practice in the Patent Office, 1, 2; Priority of Invention, 2, 3; Rehearings, 1, 2, 5; Reissues, 3.)

DUTIES OF THE COMMISSIONER DEFINED—WHICH ARE SUBJECT TO REVIEW.

The duties of the Commissioner of Patents are in part administrative and in part of a judicial nature. In the discharge of the latter duties he acts as the direct representative and agent of the law, subject to no appeal excepting to the tribunals expressly designated by statute. The rule limiting the right of an administrative officer to review his predecessor's decision to the three cases specified may be applicable to the Commissioner in his capacity as an administrative officer; but it is clear that it is not binding upon the Commissioner in the discharge of his judicial duties.

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CONSTRUCTION OF CLAIMS.

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The prior state of the art and the express language of the specification in Letters Patent No. 180,857 combine to restrict the second claim to the use of a stencil made by the electric pen.

[*Edison *et al. v.* Klaber, 1486.

CONSTRUCTION OF RULES.

(See Rehearing, 1, 6.)

CONSTRUCTION OF SPECIFICATIONS AND PATENTS.

(See Combination; Construction of Claims; Disclaimers; Infringement; Invention; Invention Described but not Claimed; Limitation Imposed by the Patent Office; Particular Patents; Reissues, 1.)

1. LIMITATION IMPOSED BY PATENT OFFICE.

The intimation in *Sargeant* v. *Hall* (114 U. S., 38) that the limitations introduced into an application after it was persistently rejected must be strictly construed against the inventor and in favor of the public, and looked upon as in the nature of disclaimers, means no more than that when under the state of the art and the action of the Office a patentee of a combination has modified and limited his claim he shall be held strictly to the combination as he has described it. It does not debar the patentee from the benefit of the doctrine of equivalents.

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[*Huribut *v.* Schillinger *et al.*, 1067.

3. SAME—INVENTION CONSTRUED.
Thus sustained and construed the invention is held to consist in dividing the pavement into blocks, so that one block can be removed and repaired without injury to the rest of the pavement, the division being effected by either a permanent or a temporary interposition of something between the blocks.
[*Id.

4. INFRINGEMENT.
The use of a bottom layer of coarse cement, and placing on it a course of fine cement, and dividing the upper course into blocks by a trowel run partially or wholly through the upper course while it is plastic, in a line coincident with the joints between the sections in the lower layer, accomplishes the substantial results of Schillinger's invention, in substantially the way devised by him, and is within the patent as it stands after the disclaimer. [*Id.

5. DISCLAIMER—INFRINGEMENT.
The patent might be held to be invalid on account of its covering the product, of which the patentee is not the inventor, and which is a material and substantial part of the thing patented, (R. S., 4920;) but regarding this as claimed through inadvertence, accident, or mistake, without any willful default or intent to defraud or mislead the public, the patentee may file a disclaimer to the second claim now, and thereupon have a decree for the infringement of the first claim, without costs.
[*Hake *v.* Brown *et al.*, 1071.

6. DESCRIPTION.
The description in the specification of the patent, which, it should be remembered, is addressed to persons skilled in the particular art to which the invention relates, is sufficiently explicit to enable a person skilled in the art to practice the invention.
[*Am Ende *v.* Seabury & Johnson, 1354.

CONSTRUCTION OF STATUTES.

(See Copyrights; Suits in Equity for a Patent under Section 4915 Revised Statutes, 1; Limitation of United States Patent by Foreign Patent Previously Granted, 1, 3.)

COPYRIGHTS.

(See Jurisdiction.)

1. COPYRIGHT—SECTION 4963 CONSTRUED—PENALTY.
The language of section 4963 Revised Statutes, providing a penalty for falsely marking articles "Copyrighted," is not "for each copy," and while it may be true that if upon different days, under different circumstances, separate copies are printed, each transaction thus separate would constitute a separate offense, yet when the printing of many copies is a single continuous act only one offense is committed thereby.
[*Taft *v.* The Stephens Lithographing and Engraving Company, 1355.

2. SAME—SAME—ARTICLES NOT COPYRIGHTABLE.
The law is clear that no offense is committed when the word "Copyrighted" is placed upon an article that is not the subject-matter of copyright—that cannot be copyrighted.
[*Id.

3. DEMURRER.
It being alleged in the petition that the print is not the subject of copyright, the demurrer sustained. [*Id.

DAMAGES AND PROFITS.

(Licenses; Measure of Damages; Use of Patented Articles.)

1. MEASURE OF DAMAGES.
It is a general rule in patent causes that established license-fees are the best measure of damages that can be used. In this case the master excluded certain license-fees as the basis of computing damages on the ground that they were practically settlements of pending litigations between the complainants and the parties taking said licenses, made with one exception after the commencement and during the pendency of this suit. *Held* that those licenses were in full operation when the defendants elected to resume their infringing manufacture; that they are competent evidence as bearing upon the fair market value of the privilege which the infringers have wrongfully undertaken to exercise, and that the defendants took the risk of being compelled to pay damages on the basis of the rate of license thus established.
[*Cary *et al. v.* The Lovell Manufacturing Company, (Limited,) 525.

2. INFRINGEMENT—ESTIMATING DAMAGES.
The basis for estimating damages for infringement should be the amount of profit or savings made by the use of the infringing device over what could have been made by the use of devices free and open to the public.
[*McMurray *et al. v.* Emerson, 815.

DECREE.

PRACTICE IN THE COURTS.
The facts are set forth in the statement. The Court held that the whole basis and foundation of the present suit had disappeared by reason of its decree in a former case, and that the cause should be remanded to the circuit court with instructions to allow the appellant, defendant below, to file such supplemental bill as he may be advised, in the nature of a bill of review, or for the purpose of suspending or avoiding the decree, upon the new matter arising from the reversal of the decree in the former case.
[*Ballard *v.* Searles, 655.

DEFECTIVE SPECIFICATION.

(See Particular Patents, 25.)

DEFENSE.

(See Suits for Infringement.)

DEMURRER.

(See Copyrights, 3.)

DESCRIPTION.

(See Construction of Specifications and Patents, 6; Particular Patents, 3; Rehearing, 4.)

DESIGN PATENTS.

1. LETTERS PATENT AS PRIMA FACIE EVIDENCE.
The rule is well settled that the production of Letters Patent for a Design establishes a *prima facie* right in the patentee which can only be defeated by proofs which are of convincing force.
[*Untermeyer *v.* Freund *et al.*, 527.

2. DESIGN PATENTS AS DISTINGUISHED FROM PATENTS FOR INVENTIONS.
The validity of a patent for a Design does not depend upon the exercise of the "inventive faculty of the mind" in the sense in which that expression is used in connection with inventions which relate strictly to the useful arts. [*Id.

3. DESIGNS ANALOGOUS TO COPYRIGHTS.
The policy which protects a Design is akin to that which protects the works of an artist by copyright. If the Design produce a different impression upon the eye, even though it be simple, and does not show wide departure from other designs, its use will be protected. [*Id.

DILIGENCE.

(See Priority of Invention, 1.)

DISCLAIMERS.

(See Construction of Specifications and Patents, 1, 2, 3, 5; Infringement, 6, 7; Particular Patents, 23.)

DISCLAIMER NO REMEDY.
To disclaim the skein except for use in the process of dyeing would not change the patent into one for the process. The patent for the skein would still be void and the process of using it be still free from the patent.
[*Grant *v.* Walter, 1220.

DIVISION OF APPLICATION.

1. DIVISION—PROCESS AND PRODUCT—RE-EXAMINATION OF EX PARTE BLYTHE, (C. D., 1885, p. 82.)
While there is no express provision of the statute limiting or controlling the discretion of the Commissioner in embracing more than one invention in the same Letters Patent, and the courts would not for that reason declare such a patent void, the statute does prohibit the introduction into reissue patents of new matter or other invention than that covered by the original patent. The Supreme Court has held that under this prohibition no new matter could be introduced; that process and apparatus are separate and distinct inventions, and that when a patent for one has issued, although the other was distinctly shown, a reissue for both could not be maintained. (*Burt* v. *Duryee*, 1 Wall., 531; *James* v. *Campbell*, 104 U. S., 356; *Powder Co.* v. *Powder Works*, 98 U. S., 126; *Heald* v. *Rice*, 104 U. S., 737.)
[*Ex parte* Tainter, 135.

2. SAME.
The opposite conclusion has been reached in regard to process and product when both were new and the process could produce no other product and the product could be made by no other process. This conclusion is based upon the premise that such process and product contribute one single invention. It must be deemed settled by the highest authority that such processes and products are not separate and distinct but unitary inventions, and that the process and product may be regarded and claimed as parts of such invention, much as different elements in a combination may be separately claimed. This conclusion finds satisfactory support in the nature of the invention itself, as well as in the character of legal property residing in it.
[Id.

3. SAME.
This conclusion excludes all other cases of process and product, such as when either process or product is not new, or when the product can be made by some other process or the process will produce some other product. [Id.

4. SAME.
The novelty of the tablet in the present case doubted, but not determined; but the novelty and patentability of the process denied. The question of division in such case, being a preliminary one, must be settled first, and consequently the action of the examiner in requiring division is affirmed for this reason, and not upon the general proposition. [Id.

DRAWINGS.

(See Combinations, 1; Priority of Invention, 1.)

DUTY OF COMMISSIONER OF PATENTS.

(See Commissioner of Patents.)

ENLARGEMENT OF CLAIMS.

(See Reissues, 1, 2, 4.)

EQUIVALENTS.

(See Construction of Specifications and Patents, 1; Infringement, 1, 3, 5, 6, 7; Invention, 1.)

ERROR.

(See Priority of Invention.)

ESTOPPEL.

(See Suits for Infringement.)

EVIDENCE.

(See Damages and Profits, 1; Design Patents, 1.)

EXAMINATION OF APPLICATIONS.

(See Construction of Specifications and Patents, 1.)

EXAMINERS.

EXAMINERS.
Complaints against examiners.
[*Ex parte* Anderson, 1633.

FOREIGN PATENT.

(See Limitation of United States Patent by Foreign Patent Previously Granted.)

FOREIGN PUBLICATION.

(See Rehearing, 4.)

FORMER DECISIONS AFFIRMED.

(See Invention, 5; Particular Patents, 12.)

FORMER DECISIONS CONSTRUED.

(See Division of Application, 1, 2, 3, 4; Priority of Invention, 2, 3.)

IMPROPERLY MARKING GOODS "PATENTED."

(See Copyrights.)

IMPROVEMENTS.

(See Infringement, 2.)

INFRINGEMENT.

(See Construction of Specifications and Patents, 5; Damages and Profits, 2; Injunction; Licensees; Measure of Damages, 1; Particular Patents, 4, 5, 10, 15, 17; Suits for Infringement; Suits in Equity to Obtain Patent Under Section 4915 Revised Statutes, 1; Use of Patented Inventions.)

1. EQUIVALENTS.
The mechanical devices used by the defendant are known substitutes or equivalents for those employed in the Morley machine to effect the same results, and this is the proper meaning of the term "known equivalents," in reference to a pioneer machine, such as that of Morley.
[*Morley Sewing Machine Company *et al. v.* Lancaster, 267.

2. IMPROVEMENT ON PIONEER MACHINES.
Where an invention is one of a primary character and the mechanical functions performed by the machines are as a whole entirely new all subsequent machines which employ substantially the same means to accomplish the same results are infringements, although the subsequent machines may contain improvements in the separate mechanisms which go to make up the machine. [*Id.

3. MECHANICAL EQUIVALENT.
In such a case, where an infringer has attempted to avoid the patent by the use of a well-recognized mechanical equivalent, the court is bound to look to the state of the art at the time the patent was applied for to determine the limitations of the claim.
[*Rodebaugh *et al. v.* Jackson *et al.*, 658.

4. SAME—NON-INFRINGEMENT.
Where the claim is limited to a lever locking in vertical position, and defendants' lever, like a prior patented lever, locked in a horizontal position, *Held* that the claim is either anticipated or not infringed. [*Id.

5. NON-INFRINGEMENT.
Where after official rejection a patentee's claim was limited to the specific device described, in which the lever for operating the dog-bar locked when in vertical position, and the defendant's lever was so arranged as not to lock in that position, *Held* to be no infringement.
[*Rodebaugh *et al. v.* Jackson *et al.*, 660.

6. SCHILLINGER—REISSUE 4,364—FIRST CLAIM.
The first claim of the reissue, as it stands after the disclaimer, is infringed, because the defendant's pavement is a concrete pavement, laid in detached blocks or sections, substantially in the manner shown and described in the specification of the reissue, the detached blocks in the upper course being the equivalent of the detached blocks or sections of the Schillinger pavement.
[*Huribut *v.* Schillinger *et al.*, 1067.

7. SAME—SECOND CLAIM.
The second claim of the reissue is infringed, because the temporary use of the trowel or cutting-instrument, to divide the upper course into blocks, is the equivalent of the tar-paper of the Schillinger patent, the cutting making a division which controls the cracking, and facilitates the taking up and relaying of the blocks or sections in the upper course "without disturbing the adjoining sections," and the trowel being interposed to effect its object during the process of forming the pavement on the spot where it is to remain. [*Id.

8. INFRINGEMENT—RIGHT TO USE AND IMPROVE A PATENTED MACHINE.
A machine purchased of the complainant, the patentee, by the employer of the defendant was repaired and its construction somewhat changed by the defendant in his capacity as an employé of the purchaser. *Held* that the purchaser was at liberty to repair and improve it within the limits of his contract, and that so long as the identity of the machine was not destroyed its owner had the right to discard useless parts and add new ones which might improve its action.
[*Young *et al. v.* Foerster, 1353.

9. SAME—PARTIAL USE.
One who has a license to use the whole of a machine does not become an infringer by the use of a part only. [*Id.

10. EDISON—PATENT NO. 180,857 NOT INFRINGED.
As claim 2 is construed it is not infringed by the defendant's device. The "cyclostyle" of the defendant shows another step in the art. It is as much an improvement on Edison's method as that was an improvement on what preceded it.
[*Edison *et al. v.* Klaber, 1486.

11. COMBINATIONS.
Applying the rule that where none of the elements of a combination are new or are claimed separately and there are other similar kindred combinations in use, the patentee is limited to the particular form of the various elements composing the combination shown by his drawings to Letters Patent No. 304,195, granted August 26, 1884, to Hermann Heine, for purifiers for the feed-water of steam-boilers, the patent is not infringed by a device differing essentially therefrom in construction.
[*Heine Safety Boiler Co. *v.* Smith Feed Water Heater and Purifier Co., 1634.

INJUNCTION.

(See Trade-Marks.)

INJUNCTION.
Motion for injunction to enjoin defendants from manufacturing wash-boards which infringe the patent to Gorham (No. 223,838, dated January 8, 1880) granted. (Sargent *et al. v.* Burgess, 46 O. G., 693, referred to.)
[*Sargent *et al.* v. Jenkins *et al.*, 404.

INOPERATIVE PATENTS.

(See Reissues, 2, 3.)

INTERFERENCE.

(See Practice in the Patent Office, 2; Reduction to Practice; Rehearing, 2, 3, 5, 7.)

INTERNATIONAL CONVENTION FOR THE PROTECTION OF INDUSTRIAL PROPERTY.

(See Treaty for the Protection of Industrial Property.)

INVENTION.

See Construction of Specifications of Patents, 1, 2, 3, 4; Disclaimers; Particular Patents, 2, 6, 18, 19, 20, 24.)

1. ANTICIPATION—EQUIVALENT.
When a T-lever had already been used for operating a sawmill dog, there was no invention in the substitution of an eccentric-lever which was used to perform the same function in a no more effectual manner.
[*Rodebaugh *et al. v.* Jackson *et al.*, 658.

2. SAME—REARRANGEMENT.
The rearrangement of an old combination, where each element of the combination operates practically as before, is not patentable unless a new or greatly-improved result is gained.
[*Id.

3. MECHANICAL SKILL.
There was no invention in providing a bearing-surface (covered by claim 4) upon the frame of a dash, to which the foot of a brace was to be attached to support the brace and dash, either by an increase in the quantity of metal or otherwise, so as to strengthen the proper part, in a proper way, for its proper duty.
[*Peters *v.* Hanson *et al.*, 945.

4. INVENTION—MECHANICAL SKILL.
Where it appears that plackets in drawers have been bound in substantially the same manner as the applicant's alleged invention, it is not invention to extend that idea and make the binding include the opening for the wrist or neck or body in a shirt or other garment, or to slightly or obviously modify the manner in which the binding is turned, or to omit a cord from the binding which is simply a strengthener, or to merely prolong the binding itself.
[*Ex parte* West, 1731.

5. SAME—FORMER DECISIONS FOLLOWED.
The cases of *Smith* v. *Nichols* (21 Wall., 112) and *Hollister* v. *Benedict Manufacturing Co.* (113 U. S., 59) followed in this respect.
[Id.

INVENTION DESCRIBED BUT NOT CLAIMED.

(See Disclaimer.)

INVENTION DESCRIBED BUT NOT CLAIMED.
While the specification makes many references to the use of the skein in the process of dyeing, which process of using might be patentable, it is not covered by the claims, and they rigidly control.
[*Grant *v.* Walter, 1220.

JURISDICTION.

(See Practice in the Patent Office, 1; Rehearing, 1.)

JURISDICTION.
The circuit courts have jurisdiction of suits brought to recover penalties imposed by the copyright laws of the United States.
[*Taft *v.* Stephens Lithographing and Engraving Company, 142.

JURISDICTION OF THE SECRETARY OF THE INTERIOR OVER THE COMMISSIONER OF PATENTS.

(See Commissioner of Patents.)

LABELS.

(See Use of Patented Articles.)

LETTERS PATENTS AND PRIMA FACIE EVIDENCE.

(See Design Patents, 1.)

LICENSEES.

LICENSE—INFRINGEMENT.
The defendant is a licensee of the Detroit Lubricating Company under a license which is limited upon its face to patents owned by that company. The Detroit Lubricating Company is the licensee of the complainant under a contract which does not grant an exclusive license for the manufacture or use of the Gates patent owned by the complainant, and which is infringed; *Held* that the defendant was not protected by its license in the manufacture of articles under the Gates patent.
[*The Seibert Cylinder Oil Cup Company *v.* The William Powell Company, 1072.

LICENSE.

(See Infringement, 9; Suits for Infringement.)

LICENSE FEES.

(See Damages and Profits, 1.)

LIMITATION IMPOSED BY THE PATENT OFFICE.

(See Construction of Specifications and Patents, 1; Infringement, 5.)

LIMITATION IMPOSED BY PATENT OFFICE.
Where a claim in complainants' application broad enough to cover the machine used by defendants was rejected on reference to a prior patent, and the applicant was compelled to present a new claim having a limitation not found in the claim first presented, the new claim cannot be enlarged to cover what was first rejected.
[*Rodebaugh *et al. v.* Jackson *et al.*, 660.

LIMITATION OF UNITED STATES PATENT BY FOREIGN PATENT PREVIOUSLY GRANTED.

1. LIMIT OF POWER OF COMMISSIONER OF PATENTS UNDER SECTION 4887 REVISED STATUTES OF THE UNITED STATES TO ISSUE LETTERS PATENT FOR AN INVENTION PREVIOUSLY PATENTED IN A FOREIGN COUNTRY.
Section 4887 of the Revised Statutes of the United States so limits the power of the Commissioner of Patents that where an invention has been patented in a foreign country he cannot lawfully issue an American patent for the same invention for a term to extend beyond the actual duration of the life of the foreign patent.
[*Huber *et al. v.* N. O. Nelson Manufacturing Company, 1732.

2. SAME—AN AMERICAN PATENT CANNOT BE LAWFULLY ISSUED AFTER THE LAPSE OF A FOREIGN PATENT FOR THE SAME INVENTION.
Letters Patent of the United States granted after a foreign patent for the same invention had lapsed and become null and void by reason of the non-payment of a stamp duty, *Held*, granted without authority of law and void.
[*Id.

3. LIMITATION OF A UNITED STATES PATENT UNDER SECTION 4887.
The termination of a foreign patent prior to the time specified on the face of the grant by the failure of the patentee to comply with some requirement of the foreign law has the effect of terminating a subsequently-issued American patent for the same invention.
[*Id.

MACHINE AND PRODUCT.

(See Use of Patented Articles.)

MEASURE OF DAMAGES.

(See Damages and Profits.)

1. MEASURE OF DAMAGES.
The rule that "when the entire profit of a business or undertaking results from the use of the invention, the patentee will be entitled to recover the entire profits, if he elects that remedy," applied.
[*Huribut *v.* Schillinger *et al.* 1067.

2. SAME.
The payment of a sum in settlement of a claim for an alleged infringement of a patent cannot be taken as a standard to measure the value of the improvements patented in determining the damages sustained by the owner of the patent in other cases of infringement.
[*Cornely *v.* Marckwald, 1353.

MECHANICAL SKILL.

(See Invention, 1, 3, 4.)

MISTAKE.

(See Particular Patents, 25; Reissues, 2, 3, 4.)

MODEL.

(See Priority of Invention.)

MODIFICATIONS OF PATENTED INVENTIONS.

(See Infringement, 8.)

MOTION FOR REHEARING.

(See Rehearing, 3, 4, 5.)

NEW USE.

(See Use of Patented Inventions.)

OLD DEVICE.

(See Invention, 2; Particular Patents, 7, 18, 19.)

PARTIAL USE.

(See Infringement, 9.)

PARTICULAR PATENTS.

1. AM ENDE—COMPOSITION OF BORATED COTTON.
Letters Patent No. 181,024, granted August 15, 1876, to Charles G. Am Ende, for an improvement in borated cotton, *Held* valid and not anticipated by such preparations as "lint steeped in a hot saturated solution of boracic acid" or "wadding saturated with a certain quantity of glycerine" or boracic acid dissolved in glycerine.
[*Am Ende *v.* Seabury & Johnson, 1354.

2. BALLARD AND WADDELL—STREET-PAVEMENTS.
Letters Patent No. 94,062, granted August 24, 1869, to Ballard and Waddell, for an improvement in street-pavements, and Letters Patent No. 94,063, granted same date to the same parties, for an improved mode of cutting blocks for street-pavement, *Held* void for want of patentable novelty.
[*Brown *v.* The District of Columbia, 398.

3. BÉNÉ—PROCESS OF REFINING AND BLEACHING HAIR.
Reissued Letters Patent No. 8,637, granted March 25, 1879, to John Béné, for an improvement in the process of refining and bleaching hair, *Held*, except as to the second claim, not full and clear enough to give one skilled in chemistry such an idea of the particular kinds and character of the chemicals or combination of chemicals, with the relative proportions of each, as would enable him to use the invention without having to resort to experiments of his own to discover the ingredients.
[*Béné *et al. v.* Jeantet, 402.

4. SAME—CONSTRUCTION AND LIMITATION OF PATENT.
The patent limited to the second claim is to be construed as one for a process of refining hair by treating it in a bath composed of a solution of chlorine salt dissolved in an excess of muriatic acid, and the claims are to be limited accordingly.
[*Id.

5. SAME—INFRINGEMENT.
Thus limited and construed the patent is not infringed, and the allegation that the product cannot be produced except by treating the hair in a bath composed of chlorine salt dissolved in an excess of muriatic acid, or a solution of their (chemical) equivalents, is not established.
[*Id.

6. COWING—STREET PAVEMENTS.
Letters Patent No. 101,590, granted to Turner Cowing April 5, 1870, for a new mode of constructing wood pavement for streets, cannot be regarded as possessing patentable novelty.
[*Brown *v.* The District of Columbia, 396.

7. EDISON—AUTOGRAPHIC PRINTING.
Letters Patent No. 180,857, for an improvement in autographic printing, granted to Thomas A. Edison August 8, 1876, cannot be regarded as a pioneer patent in this art. There could be no broad claim for printing with a paper stencil, semi-liquid ink, and a roller. Neither could there be a broad claim for a puncturing device. Both were old.
[*Edison *et al. v.* Klaber, 1486.

8. GRANT—REELING AND WINDING SILK AND THREAD.
The claims of Letters Patent No. 267,192, granted November 7, 1882, to James M. Grant, for improvements in the art of reeling and winding silk and other thread, are for the skein merely as a product, and are void for want of novelty.
[*Grant *v.* Walter, 1220.

9. HAKE—VISITING-CARDS.
Letters Patent No. 219,464, granted September 9, 1879, to Philip Hake, for an improvement in visiting-cards, *Held* valid as to the first claim, which covers the process of arranging cards in oblique packs and beveling and ornamenting and finishing the sides and ends of the whole pack as though it were one card, but invalid as to the second claim, covering the product, which is old in the sense of the patent law.
[*Hake *v.* Brown *et al.*, 1071.

10. HEINE—PURIFIERS FOR FEED-WATER FOR STEAM-BOILERS.
Applying the rule that when none of the elements of a combination are new or are claimed separately, and there are other similar kindred combinations in use, the patentee is limited to the particular form of the various elements composing the combination shown by his drawings to Letters Patent No. 304,195, granted August 26, 1884, to Hermann Heine, for purifiers for the feed-water of steam-boilers, the patent is not infringed by a device differing essentially therefrom in construction.
[*Heine Safety Boiler Company *v.* Smith Feed Water Heater and Purifier Company, 1644.

11. SAME—VALIDITY.
If the claim were to receive a broader construction, it is by no means certain that it is valid and ought to be sustained, in view of the state of the art when the patent issued.
[*Id.

12. JOHNSON—CUTTING-PLIERS.
The conclusion of the circuit court (38 O. G., 1140) that Moses C. Johnson was not the first and original inventor of the improvements claimed in Letters Patent No. 232,975, granted October 5, 1880, to Henry G. Thompson, as assignee of said Moses C. Johnson, for cutting-pliers, sustained and decree affirmed.
[*Thompson *v.* Hall *et al.*, 636.

13. JORDAN AND SMITH—WRENCHES.
Reissued Letters Patent No. 5,291, to Lucius Jordan and Leander E. Smith February 25, 1873, for an improvement in wrenches, *Held* to be anticipated by the patent to Loring Coes April 16, 1841, and by the wrenches known as the "Hewitt" wrenches, manufactured in 1851-4, and to be void for want of patentable novelty.
[*Collins Company *v.* Coes *et al.*, 623.

14. MORLEY—MACHINES FOR SEWING BUTTONS ON FABRICS, &c.
Letters Patent No. 236,350, granted January 4, 1881, to Joseph H. Morley, for a machine for sewing buttons on fabrics, &c., is entitled to receive a liberal construction in view of the fact that the inventor was a pioneer in the construction of an automatic button-sewing machine, and is not to be limited to the particular devices or instrumentalities described by him, used in the three main elements of his machine, which combine together to make it up.
[*Morley Sewing Machine Company *et al. v.* Lancaster, 267.

15. SAME—INFRINGEMENT.
As thus construed the patent is infringed by defendant's machine manufactured under Letters Patent No. 268,309, granted November 28, 1882, to Joseph Mathison, for a machine for sewing on buttons, the means employed in which are substantially equivalents of those used in the Morley machine.
[*Id.

16. PETERS—TOOLS FOR ATTACHING SHEET-METAL MOLDINGS.
Claims 1 and 2 of Letters Patent No. 178,463, granted June 6, 1876, to George M. Peters, for an improvement in tools for attaching sheet-metal moldings, *Held* to be anticipated by a machine used by Joseph P. Noyes, Binghamton, N. Y., as early as September, 1867.
[*Peters *v.* The Active Manufacturing Company, 948.

17. SAME—SAME—INFRINGEMENT.
Claim 3 not infringed by defendant's apparatus, in which no washers are used for adjustment. [*Id.

18. PETERS—VEHICLE-DASHES.
Claims 1, 2, and 3 of Letters Patent No. 213,539, granted March 25, 1879, to George M. Peters, for an improvement in vehicle-dashes, cover merely applications of old devices to new uses, not involving invention.
[*Peters v. Hanson *et al.*, 945.

19. SAME—VEHICLE-DASH FRAMES.
Reissue Letters Patent No. 9,891, granted October 11, 1881, to George M. Peters, for an improvement in vehicle-dash frames, does not involve invention. The process was old in the state of the art of working metals. [*Id.

20. PETERS—DIE FOR MAKING DASH-FRAMES.
Letters Patent No. 281,553, granted July 17, 1883, to George M. Peters, for an improvement in dies for making dash-frames for carriages, *Held* void for want of invention.
[*Peters v. The Active Manufacturing Company, 1219.

21. RODEBAUGH—SAW-MILL DOG—INVALID PATENT.
The first claim of Letters Patent No. 196,102, granted October 16, 1877, to George W. Rodebaugh, for an improvement in saw-mill dogs, is anticipated by the patent of Craney, No. 150,534, dated May 5, 1874.
[*Rodebaugh *et al.* v. Jackson *et al.*, 660.

22. RODEBAUGH—SAW-MILL DOG—INVALID PATENT.
The first claim of Letters Patent No. 196,102, granted October 16, 1877, to George W. Rodebaugh, for an improvement in saw-mill dogs, is anticipated both by the patent of Craney, No. 150,534, dated May 5, 1874, and the patent of Ely, No. 163,300, dated May 18, 1875.
[*Rodebaugh *et al.* v. Jackson *et al.*, 658.

23. SCHILLINGER—CONCRETE PAVEMENTS—REISSUE.
Reissued Letters Patent No. 4,364, granted May 2, 1871, to John J. Schillinger, for an improvement in concrete pavements, as it stood after the filing of the disclaimer, (March 1, 1875,) was not open to the objection that it was not for the same invention as that of the original Patent No. 105,599, dated July 19, 1870.
[*Hurlbut v. Schillinger *et al.*, 1067.

24. TIBBE—PIPES.
Letters Patent No. 205,816, granted July 9, 1878, to Henry Tibbe, for an improvement in pipes, *Held*, in view of the state of the art, void for want of patentable novelty.
[*H. Tibbe & Son Manufacturing Company *v.* Heineken, 1221.

25. WOOD—CARRIAGE-SPRINGS—REISSUE VOID.
Reissued Letters Patent No. 6,018, granted to Thomas H. Wood August 18, 1874, for an improvement in carriage-springs, *Held* void, not only because it is for an invention not disclosed or suggested in the original, but also because, as in the case of *Coon et al.* v. *Wilson*, (30 O. G., 889; 113 U. S., 268,) there was no defective or insufficient specification, and no mistake inadvertently committed in the wording of the claim of the original.
[*J. B. Brewster & Co. *v.* Shuler, 1485.

26. SAME—PRIOR PUBLIC USE.
The defense of prior public use also established. [*Id.

PARTIES TO SUITS.

(See Rehearing, 7.)

PATENTABILITY.

(See Invention, 1, 2, 3, 4.)

PATENTEES.

(See Validity of Patents.)

PATENTS.

(See Limitation of United States Patent by Foreign Patent Previously Granted, 1, 2, 3; Validity of Patents.)

PENALTIES UNDER SECTION 4963 REVISED STATUTES.

(See Copyrights.)

PIONEER INVENTIONS.

(See Infringement, 2.)

POWER OF ATTORNEY.

(See Assignment by Attorney under Power of Attorney.)

PRACTICE IN THE COURTS.

(See Assignments by Attorney under Power of Attorney; Decree; Design Patents, 1; Infringement, 3; Measure of Damages, 2; Reissues, 3; Suits for Infringement; Suits in Equity for a Patent under Section 4915 Revised Statutes, 1; Validity of Patents.)

PRACTICE IN THE PATENT OFFICE.

(See Division of Application; Examiners; Priority of Invention; Reduction to Practice; Rehearing, 1, 3, 5, 6, 7.)

1. RIGHT OF THE COMMISSIONER OF PATENTS TO REHEAR THE DECISIONS OF HIS PREDECESSOR IN OFFICE—HISTORY AND REVISIONS OF RULE 144 OF THE RULES OF PRACTICE DISCUSSED AND DECISIONS THEREUNDER REVIEWED.
Rule 144 had its origin in an executive order, was transformed into a judicial rule when the Commissioner of Patents was, by act of July 1, 1870, substituted for the Supreme Court of the District of Columbia as the tribunal having final jurisdiction, and at a later date the office of Commissioner was recognized as a continuing one, placed upon the same footing as a court, and given the power of granting new trials.
[*Daniels *v.* Morgan, 811.

2. IN DISCHARGE OF OFFICIAL DUTIES, REASONABLE RULES AND REGULATIONS ARE VALID.
Since the Commissioner of Patents in the discharge of his judicial duties in determining the question of priority between interfering parties exercises the function of a court, reasonable rules and regulations, based upon analogies derived from the procedure in courts of law, are valid rules and regulations when prescribed by the competent authority. [*Id.

PRIMA FACIE EVIDENCE.

(See Design Patents, 1.)

PRIORITY OF INVENTION.

(See Rehearing, 7.)

1. WORKING MODEL NOT REDUCTION TO PRACTICE.
In the decision complained of (46 O. G., 1515) it was held that a working model designed and intended as such is not a reduction to practice, *held* no error. A model or drawing, although a sufficient foundation for a claim to priority, as was held in *Loom Co.* v. *Higgins*, must be followed up with reasonable diligence in order to establish full title to priority.
[Green *v.* Hall *v.* Siemens *v.* Field, 1631.

2. INTENT OF INVENTOR.
Where it was alleged as error that the Commissioner erroneously decided that one of the parties did not intend at the time he constructed the apparatus upon which his claim to priority was based to use it practically upon an electric railway, and it appeared that the Commissioner did not decide what was the ultimate intention of such party with reference to his invention, but simply decided that certain models were designed and intended as models, *held* no error. [Id.

3. SAME.
Where it was alleged as error that the Commissioner held that priority of invention was to be determined by the intent of the inventor as to the use to which his apparatus should be put, and it appeared that the actual finding of the Commissioner upon that subject was limited to the intent with which certain models were made and used, *held* no error. [Id.

PROCESS.

(See Disclaimers; Use of Patented Inventions.)

PROCESS AND PRODUCT.

(See Construction of Specifications and Patents, 5; Division of Application, 1, 2, 3, 4.)

PRODUCTS.

(See Use of Patented Articles.)

PUBLIC USE.

(See Particular Patents, 25, 26.)

REDUCTION TO PRACTICE.

(See Priority of Invention, 1.)

PUTTING IN INTERFERENCE DOES NOT DETERMINE THE QUESTION OF REDUCTION TO PRACTICE.
The allegation that the fact of an application being put in interference determines that the invention has been reduced to practice, overruled. The Office possesses no machinery for ascertaining such fact, but assumes for the purposes of the interference that the invention of each applicant is within the issue, although the subsequent history of the rival inventions may develop the fact that while one of them is in a form capable of commercial use the other may be incapable of any practical use whatever.
[Green *v.* Hall *v.* Siemens *v.* Field, 1631.

REHEARING.

(See Commissioner of Patents; Practice in the Patent Office, 2; Priority of Invention; Reduction to Practice.)

1. JURISDICTION OF THE COMMISSIONER TO REHEAR.
Rule 144, based upon the procedure in courts of law, does in terms confer, and was intended to confer, upon the Commissioner jurisdiction to rehear the decisions of his predecessor when grounds other than those based on fraud, error in computation, or newly-discovered evidence are alleged and set forth in motions filed for the rehearing of such decisions.
[*Daniels *v.* Morgan, 811.

2. IN INTERFERENCE PROCEEDINGS A REHEARING OTHERWISE ALLOWABLE SHOULD NOT BE BARRED BECAUSE OF A CHANGE IN COMMISSIONER.
It certainly would be a hardship if in an interference proceeding, when the Commissioner who rendered the decision would on sufficient showing have been swift to afford a rehearing, the defeated applicant should be without remedy because of the succession to office of a new Commissioner, and a rule adapted to prevent such a result certainly commends itself as a part of a system of procedure designed to do justice between parties who are asking the Patent Office to determine which of them is the prior inventor of an invention which can be patented to but one of them. [*Id.

3. PRACTICE IN THE PATENT OFFICE—MOTIONS FOR REHEARINGS.
The practice of splitting up cases and allowing separate parties to file separate motions and present them at different times condemned. In interference proceedings motions for rehearings presented by the parties thereto ought to be heard at the same time, in order that the entire case may be disposed of at once.
[Green *v.* Hall *v.* Siemens *v.* Field, 813.

4. MOTION FOR REHEARING OVERRULED—SIEMENS.
Siemens's motion for rehearing overruled, and *Held*, *first*, that while the law does not require that a caveat shall give a complete and accurate description of the construction and details of an invention, the caveat filed by Field is a full and complete disclosure of the subject-matter in controversy. *Second*, that knowledge of foreign invention, although of an earlier date than an original invention in this country, is not necessarily a bar to a domestic patent. [Id.

5. SAME—GREEN.
Green's motion for rehearing overruled because (*first*) it involves a question of merits which is *res adjudicata* by reason of the previous decision of the Commissioner and also that of his predecessor, and (*second*) because it shows no error in the former decision which Green seeks to have set aside.
[Id.

6. GROUND FOR REHEARING.
Manifest error in law, being ground for new trial, is also ground for a rehearing under Rule 144.
[Green *v.* Hall *v.* Siemens *v.* Field, 1631.

7. STATUS OF PARTIES AT CONCLUSION OF INTERFERENCE IN RELATION TO PRIOR ART.
After a final award of priority there is no more reason for permitting the defeated party to the interference to be heard upon the relation of the prevailing party to the prior art than there would have been for permitting the same privilege before the institution of the interference.
[Green *v.* Hall *v.* Siemens *v.* Field, 1633.

REISSUES.

(See Division of Application, 1; Infringement, 6, 7; Particular Patents, 3, 23, 25.)

1. WOOD—CARRIAGE-SPRINGS—REISSUE VOID.
Reissued Letters Patent No. 6,018, granted to Thomas H. Wood August 18, 1874, for an improvement in carriage-springs, *Held* void, not only because it is for an invention not disclosed or suggested in the original, but also because, as in the case of *Coon et al.* v. *Wilson*, (30 O. G., 889; 113 U. S., 268,) there was no defective or insufficient specification, and no mistake inadvertently committed in the wording of the claim of the original.
[*J. B. Brewster & Co. *v.* Shuler, 1485.

2. REISSUED LETTERS PATENT—INADVERTENCE, ACCIDENT, AND MISTAKE—SECTION 4916 REVISED STATUTES OF THE UNITED STATES.
A patent for an invention cannot be reissued for the mere purpose of enlarging the claim, unless there has been a clear mistake inadvertently committed in wording the claim. [*Id.

3. SAME—DECISION OF COMMISSIONER OF PATENTS NOT FINAL.
A finding of the Commissioner of Patents as to an original patent being inoperative by reason of inadvertence, accident, or mistake may be reviewed in a suit for infringement, at least to the extent of determining whether as a matter of law what was described and alleged to be a mistake was such a mistake as will warrant a reissue. [*Id.

4. SAME.
Where an applicant, desiring to secure a patent on a combination of old mechanical devices, included a certain element in each claim because he thought it necessary to the usefulness of the machine as a whole, and after the grant of his patent another patent for a similar machine was granted with claims which he thought broader than his own, and in order to invalidate said second patent the first patentee applied for and obtained a reissue with claims so broad that they substantially claimed as a separate device one of the original elements which was old, *Held* that there had been no such inadvertence, accident, or mistake as to warrant a reissue and that said broadened claims were void. [*Id.

REJECTED CASES.

(See Infringement, 5; Limitation Imposed by the Patent Office.)

RES ADJUDICATA.

(See Rehearing, 5.)

REVIEW BY THE COMMISSIONER OF PATENTS OF THE DECISIONS OF HIS PREDECESSORS.

(See Commissioner of Patents; Priority of Invention, 2, 3; Rehearing, 2, 5.)

RULES OF PRACTICE.

(See Practice in the Patent Office; Rehearing, 6.)

SECRETARY OF THE INTERIOR.

(See Commissioner of Patents.)

SEPARATE INVENTION.

(See Division of Application, 1, 2, 3, 4.)

SPECIFICATIONS.

(See Construction of Specifications and Patents, 6.)

STATE OF THE ART.

(See Combination, 2; Construction of Claims; Infringement, 3; Particular Patents, 10, 19, 24.)

SUBSTITUTION OF DEVICE.

(See Invention, 1.)

SUIT IN EQUITY FOR A PATENT UNDER SECTION 4915 REVISED STATUTES.

1. PRACTICE—CROSS-BILL—SECTION 4915 REVISED STATUTES.
Leave to file cross-bill in proceeding under section 4915 Revised Statutes denied, the object of the cross-bill being to enjoin the complainant from infringing a patent for the same invention already issued to defendant.
[*McCormick Harvesting Machine Company *v.* Deering, 1222.

2. SAME.
The original bill not necessarily involving the question of infringement of the defendant's patent, such a cross-bill is not germane thereto. [*Id.

SUITS FOR INFRINGEMENT.

(See Assignment by Attorney Under Power of Attorney; Jurisdiction; Suit in Equity to Obtain a Patent Under Section 4915 Revised Statutes, 1.)

DEFENSE—ESTOPPEL.

A former licensee is not estopped from questioning the validity of a patent after his license has expired in vindication of acts done subsequent to its termination.

[*H. Tibbe & Son Manufacturing Company *v.* Heineken, 1221.

SUPREME COURT DISTRICT OF COLUMBIA.

(See Practice in the Patent Office, 1.)

TECHNICAL TERMS.

(See Infringement, 1.)

TERM OF PATENT.

(See Limitation of United States Patent by Foreign Patent Previously Granted.)

TRADE-MARKS.

INJUNCTION.

Injunction under Trade-Mark No. 16,473, registered April 9, 1889, by Moses Lyman, for a game, "Pigs in Clover."

[*Lyman *v.* Burns, 660.

TREATY FOR THE PROTECTION OF INDUSTRIAL PROPERTY.

LEGISLATION FOR THE ENFORCEMENT OF THE TREATY NECESSARY.

This treaty is a reciprocal one. Each party to it covenants to grant in the future to the subjects and citizens of the other parties certain special rights in consideration of the granting of like special rights to its subjects and citizens. It is a contract operative in the future infraterritorially. It is therefore not self-executing, but requires legislation to render it effective for the modification of existing laws.

[†Opinion of the Attorney General of the United States, 397.

USE OF PATENTED ARTICLES.

INJUNCTION—RIGHTS OF PURCHASER OF PATENTED MACHINE.

The purchaser of a patented machine has the right to use the machine until worn out in the manufacture of the product it is designed to make, and sell the same in the market, and to designate it by label or otherwise as the product of the invention.

[*Martha Washington Creamery Buttered Flour Company of the United States (Limited) *v.* Martien, 1[illegible].

USE OF PATENTED INVENTIONS.

(See Infringement, 8.)

USE OF PATENTED PROCESSES BY A SUBSEQUENT INVENTOR.

A person who subsequently discovers a new mode of carrying out a patented process is not entitled to use the process without the consent of the patentee.

[*Morley Sewing Machine Company *et al.* *v.* Lancaster, 267.

VALIDITY OF PATENTS.

(See Combinations, 2; Construction of Specifications and Patents, 5.)

NULLIFICATION OF PATENTS—PATENTEE—ASSIGNEE.

A patentee may not, as against the assignees of his entire interest, so restrict and qualify the claims of his patent as to make them void for want of novelty.

[*Adee *et al.* *v.* Thomas, 528.

VALID PATENTS.

(See Construction of Specifications and Patents, 2, 3, 4; Particular Patents, 1, 9, 14, 23.)

VOID CLAIMS.

(See Particular Patents, 9; Reissues, 4.)

VOID PATENTS.

(See Limitation of United States Patent by Foreign Patent Previously Granted, 2; Particular Patents, 2, 3, 6, 8, 12, 13, 16, 18, 19, 20, 21, 22, 24, 25; Reissues, 2.)

ALPHABETICAL LIST OF PATENTEES

FOR

THE QUARTER ENDING JUNE 30, 1889.

[Claims and drawings of Designs do not appear in the Monthly Volumes or the Gazette. Separate Indexes for Designs, Trade-Marks, Labels, and Disclaimers follow this.]

Name, residence, and invention.	No.	Date.	Monthly volume. Specification.	Monthly volume. Drawing.	Official Gazette. Volume.	Official Gazette. Page.
Abbott, Alonzo M., Lockland, Ohio. Camp-stool	402,709	May 7	230	60	47	707
Abbott, David S., Olean, N. Y. Lath-sawing machine	400,991	Apr. 9	854	229	47	172
Abbott, Edwin O., assignor to Abbott Machine Company, Chicago, Ill. Check-protector	401,871	Apr. 23	2192	573, 574	47	445
Abbott, Francis M., assignor of one-half to C. W. Rodgers, Jeffersonville, Ind. Velocipede	403,406	May 14	1310	342	47	918
Abbott, Hiram, Wakeman, Ohio. Car-seal	402,125	Apr. 30	2599	673	47	531
Abbott, Joseph, Rumney, N. H. Sash-fastener	404,145	May 28	2411	632	47	1150
Abbott Machine Company. (See Abbott, Edwin O., assignor.)						
Abbott Machine Company, N. B. (See Campbell, Andrew, assignor.)						
Abbott, William L., and V. C. Killin, Chicago, Ill. Car-brake	404,373	June 4	1	1	47	1225
Abell, Robert T., assignor of two-thirds to W. Royce and J. H. Francis, Cleveland, Ohio. Steam-engine	403,714	May 21	1753	461	47	1013
Abercrombie, James H. (See Ames and Abercrombie.)						
Abernethy, William. (See Dyer, Phillip, assignor.)						
Abrahams, John W., assignor to J. Davis, Allegheny, Pa. Sheet-metal roofing	403,899	May 28	2031	535	47	1075
Achard, Julia A., Lodi, Cal. Liniment	400,992	Apr. 9	855	.....	47	173
Ackerly, Aaron A., Chicago, Ill. Railway-switch	405,976	June 25	2421	634	47	1717
Ackerly, Aaron A., Chicago, Ill. Railway-switch	405,977	June 25	2424	634	47	1717
Ackerman, Jasper L., Lowell, Ind. Pen	403,021	May 7	677	178	47	791
Ackerman, Washington V., assignor to F. W. Devoe & Co., New York, N. Y. Easel	404,146	May 28	2413	632	47	1151
Ackerman, William. (See Sweet, Stephen R., assignor.)						
Acklen, Aron A., Armistead, La. Whiffletree-iron	404,147	May 28	2414	632	47	1151
Acme Hay Harvester Company. (See Alden and Kirk, assignors.)						
Actien-Gesellschaft für Anilin Fabrikation. (See Andresen, Momme, assignor.)						
Adams, Gale W., assignor of one-half to F. J. Norton, Candor, N. Y. Coffee or tea pot	401,919	Apr. 23	2274	590	47	460
Adams, George B., Irvington, N. J. Cuff-holder	405,687	June 25	1985	521	47	1637
Adams, Isaac J. W., Laurel, Del. Machine for making baskets	401,403	Apr. 16	1477	390, 391	47	301
Adams, Isaac J. W., Laurel, Del. Package-head	405,000	June 11	919	243	47	1413
Adams, J. M. (See Daniels, Samuel, assignor.)						
Adams, J. McGregor. (See Daniels, Samuel, assignor.)						
Adams, John, Nashville, Tenn. Hydro-carbon-burner	404,148	May 28	2415	633	47	1151
Adams, Richard O., Louisville, Nebr. Timing apparatus for race-courses	402,291	Apr. 30	2632	733	47	575
Adams, Samuel J., assignor of three-fourths to M. Rosenfield, J. and A. Brown, Detroit, Mich. Device for holding telephones	403,316	May 14	1167	300	47	892
Adams, Stephen G., and C. L. Leonori, St. Louis, Mo. Printing device	403,062	May 14	785	209	47	849
Adams, William B., Greenfield, Ohio. Rein-holder	402,791	May 7	360	93	47	730
Adams, William H., assignor of one-half to I. Alpha, Franklin, La. Anvil-shears for cutting metal	403,980	May 28	2143	560	47	1097
Adamson, Charles E., Muncie, Ind. Apparatus for printing in imitation of type-writing	402,792	May 7	361	94	47	731
Adee & Co., Fred. (See Smith, Benjamin C., assignor.)						
Adelsperger, Charles C. (See Rightmyer, Frank, assignor.)						
Adler, Max, assignor to Mayer, Strouse & Co., New Haven, Conn. Corset-clasp	402,880	May 7	483	126	47	753
Adriance, Benjamin, Brooklyn, N. Y. Machine for wiring corks in bottles	405,688	June 25	1986	521, 522, 523	47	1637
Adt, John B., Baltimore, Md. Tobacco-cutter	400,723	Apr. 2	428	116	47	85
Africa, Robert W., assignor of one-half to O. Gibson, Huntingdon, Pa. Car-replacer	405,143	June 11	1115	297	47	1452
Ager, Wilson, Bloomsburg, Pa. Grain-scourer	405,937	June 25	2355	618	47	1705
Agerskov, Christian, Copenhagen, Denmark. Alarm	401,531	Apr. 16	1670	441	47	337
Aiken, Henry. (See Kennedy and Aiken.)						
Aiken, Henry, Homestead, Pa. Mill appliance	401,325	Apr. 16	1349	361	47	277
Aiken, Henry, Homestead, Pa. Shear-knife	402,381	Apr. 30	2973	771, 772	47	602
Aiken, Henry, Homestead, Pa. Regenerative heating-furnace	405,240	June 18	1281	339, 340	47	1491
Ainslie, David A., Richmond, Va. Trolley for electrical railways	400,724	Apr. 2	430	116	47	85
Ainslie, David A., Richmond, Va. Trolley for electric railways	400,725	Apr. 2	431	117	47	85
Ainslie, David A., Richmond, Va. Trolley for electrical railways	404,149	May 28	2416	633	47	1151
Aken, James. (See Traver, Adelbert L., assignor.)						
Akerson, George, Weston, Mo. Straw-carrier	404,460	June 4	135	32	47	1251

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Akin, James, Dayton, Ohio. Hydrocarbon-burner	400,889	Apr. 9	697	189	47	145
Aktiebolaget, Extraktor. (See Johansson, Carl A., assignor.)						
Albany Steam Trap Company. (See Felthousen, Barrent W., assignor.)						
Albee, Honestus M., Newark, N. J. Routing and wood-working machine	404,945	June 11	837	217, 218	47	1397
Alberger, John L. (See Williams and Alberger.)						
Alberger, Louis R. (See Williams and Alberger.)						
Albert, Charles, Cincinnati, Ohio. Fire-truck ladder	401,623	Apr. 16	1833	478, 479	47	367
Albertson, Joseph, Chicago, Ill. Disk cultivator	400,422	Apr. 2	1	1	47	3
Albrecht, Hermann, Philadelphia, Pa. Machine for cutting meat	403,022	May 7	678	179	47	791
Albrecht, Johannes, Cannstadt, Würtemberg, assignor to O. Herz, Frankfort, Germany. Sole-sewing machine	405,453	June 18	1600	421, 422	47	1556
Alcock, John, Cheadle, county of Stafford, England. Safety-pin	402,051	Apr. 23	2472	644	47	497
Alden, Horace A., and J. E. Kirk, assignors to Acme Hay Harvester Company, Peoria, Ill. Metal point for the teeth of hay-rickers, &c.	405,802	June 25	2235	588	47	1685
Aldrich, Frank (See Keil, James H., assignor.)						
Aldrich, Jonas H., Butler, Ind. Windmill	402,552	May 7	1	1	47	663
Aldrich, Lorin, Indian Orchard, Mass. Steam-pipe coupling for railway-cars	401,920	Apr. 23	2274	591	47	460
Alexander, Fred B., Brooklyn, N. Y. Rattan-machine	405,293	June 18	1359	358	47	1567
Alfred, James W., Wall, Pa. Dumping-car	403,571	May 21	1550	408, 409	47	972
Alger, Charles F. (See Perriman and Alger.)						
Alkins, Charles, assignor to H. Alkins, Muskegon, Mich. Railway-switch stand	400,816	Apr. 2	583	159, 160	47	111
Alkins, Charles, assignor to H. Alkins, Muskegon, Mich. Railway-switch stand	401,671	Apr. 16	1897	494	47	378
Alkins, Henrietta. (See Alkins, Charles, assignor.)						
Allbright, Harry C., *et al.* (See Horsey, George F., assignor.)						
Allderige, John W., Waterbury, Conn. Photograph-print mounter	404,814	June 11	643	167	47	1361
Alleigh, Edward W., Minneapolis, Minn. Machine for ornamenting wood	400,423	Apr. 2	2	1	47	3
Alleigh, Edward W., Minneapolis, Minn. Machine for ornamenting wood, &c.	400,625	Apr. 2	283	80	47	59
Alleigh, Edward W., Minneapolis, Minn. Two-part cylinder and die for ornamenting wood, &c.	400,626	Apr. 2	284	80	47	59
Allen, Alexander, assignor to J. Sale, Toronto, Ontario, Canada. Card or ticket case	404,515	June 4	225	53	47	1267
Allen, Charles A., Chicago, Ill. Bustle	400,424	Apr. 2	3	2	47	3
Allen, David H., and W. H. Gamble, Miamisburg, Ohio. Folding boat	403,171	May 14	918	241, 242	47	844
Allen, Edward M., assignor to S. E. Allen, Stafford, Md. Axle	400,817	Apr. 2	586	160	47	112
Allen, Emma, Freeport, Ill. Whip-socket	404,668	June 4	441	111	47	1311
Allen, Francis, Kansas City, Kans. Railway danger-signal	403,981	May 28	2144	560	47	1097
Allen, George H., Greenbush, N. Y. Furniture-polish	403,715	May 21	1754	.....	47	1013
Allen, James A., Adams, Mass. Grate-bar	402,126	Apr. 30	2600	673	47	531
Allen, John J., Halifax, county of York, England. Machine for gumming paper	403,633	May 21	1636	433	47	990
Allen, John R. (See Castle, Oliver H., assignor.)						
Allen, Nicholas I., Boston, assignor to Dutcher Temple Company, Hopedale, Mass. Loom-temple	405,387	June 18	1492	395	47	1534
Allen, Richard N., Cleveland, Ohio. Electrically-propelled vehicle	405,978	June 25	2426	635	47	1717
Allen, Sallie E. (See Allen, Edward M., assignor.)						
Allfree, James B., Indianapolis, Ind., assignor of one-half to R. Shriver and H. Swartz-welder, Cumberland, Md. Grinding-mill	401,872	Apr. 23	2197	574, 575	47	446
Allis, Edward P. (See Birkholz, Hans, assignor.)						
Allison, Charles M. (See Painter, Jacob A., assignor.)						
Allison, Frederick J., Plaistow, county of Essex, England. Oil-lamp	405,065	June 11	1015	271	47	1434
Allt, Arthur G. P. (See Shepherd, William, assignor.)						
Alpha, Independence. (See Adams, William H., assignor.)						
Altenburg, Augustus, assignor of two-thirds to D. C. Sweet and H. Ganson, Buffalo, N. Y. Apparatus for revolving emery or other wheels	405,979	June 25	2427	635	47	1718
Althoff, Frederick C. (See Hironimus, John, assignor.)						
Altice, Samuel H., H. P. Roberts, and C. Reed, Jamestown, N. Y.; said Roberts assignor to said Altice and Reed. Heater for stoves and other purposes	401,096	Apr. 9	1003	268	47	199
Altman, Frederick, San José, Cal. Fruit-drier	400,993	Apr. 9	856	229	47	173
Alvord, Seymour L., and E. E. Brown, West Winsted, Conn.; said Brown assignor to said Alvord. Corkscrew	401,672	Apr. 16	1898	494	47	378
American Automatic Gas Lighting Company. (See Shaw, Nathaniel H., assignor.)						
American Automatic Gas Lighting Company. (See Shaw, Nathaniel H. and A. B., assignors.)						
American Automatic Spray Perfume Company. (See Mayrhofer, Joseph C., assignor.)						
American Bell Telephone Company. (See Burbank, Henry L., assignor.)						
American Button Fastener Company. (See Richards, Francis H., assignor.)						
American Fire Proof Steel Car Company. (See Green and Murison, assignors.)						
American Heel Protector Company. (See Richards, Francis H., assignor.)						
American Patent Safety Heater Manufacturing Company. (See Schreiner, Henry, assignor.)						
American Private Line Telephone Company. (See Nichols, William W., assignor.)						
American Ring Company. (See Nobbs, Edward P., assignor.)						
American Roll Paper Company. (See Ehrlich, Leo, assignor.)						
American Roll Paper Company. (See Tivy and Ehrlich, assignors.)						
American Screw Company. (See Rogers, Charles D., assignor.)						
American Spring Company. (See Sedgwick, Frederick, assignor.)						
American Steam Paving Company. (See Carter, Frederic W., assignor.)						
American Telephone and Telegraph Company. (See Pickernell, Frank A., assignor.)						
American Wire Company. (See Day, Patrick L., assignor.)						
American Writing Machine Company. (See Yost, George W. N., assignor.)						
Amerine, Miles H., Montgomery, Ala. Gun-rack	405,335	June 18	1420	374	47	1520
Ames, Leonard, *et al.* (See Ames and Abercrombie, assignors.)						
Ames, Leonard, Jr., and J. H. Abercrombie, assignors to said Leonard Ames, Jr., L. Ames, and A. L. Merriam, Oswego, N. Y. Gearing for traction-engines	402,881	May 7	484	127	47	753
Ammen, Daniel, Ammendale, Md. Balse or life-boat	404,150	May 28	2418	633	47	1152
Ammon, Jacob S. (See Guss, Samuel M., assignor.)						
Ame, Max, New York, N. Y. Metal can	402,882	May 7	486	127	47	754
Amstutz, Noah S., Cleveland, Ohio. Bank-vault	402,883	May 7	486	127, 128	47	754
Andersen, Peter, assignor to H. G. Olds, Fort Wayne, Ind. Corner-iron for wagon-boxes	401,100	Apr. 9	1009	269, 270	47	200

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Anderson, Fred W., Maple Plain, Minn. Baling-press	404,815	June 11	644	167	47	1361
Anderson, Henry C., assignor to C. C. Clemens and J. B. Choice, Whitesborough, Tex. Churn-motor	405,336	June 18	1421	274	47	1520
Anderson, James C., Highland Park, Ill. Bricks, &c., incrusted with metal	401,097	Apr. 9	1005	.....	47	199
Anderson, James C., Highland Park, Ill. Incrusting brick	401,098	Apr. 9	1006	.....	47	199
Anderson, James C., Highland Park, Ill. Burning brick	405,666	June 11	1016	271	47	1434
Anderson, Jesse N., Conway, Mo. Saddle-bag	405,649	June 18	1929	507	47	1620
Anderson, John W., Lancaster, Pa. Wash-boiler tank	400,425	Apr. 2	3	2	47	3
Anderson, Joseph, assignor to O'Hara Glass Company, (limited,) Pittsburg, Pa. Apparatus for shaping glassware	401,099	Apr. 9	1007	268, 269	47	199
Anderson, Joseph K., assignor of two-thirds to F. B. and C. H. Reeves, Philadelphia, Pa. Hanger for mirrors of bureaus	401,921	Apr. 23	2278	591	47	460
Anderson, Josiah B., Boston, Mass. Paper waxing and cutting machine	404,151	May 28	2419	634	47	1152
Anderson, Rufus, Ithaca, N. Y. Drawing pen and pencil	405,650	June 18	1930	508	47	1621
Andersson, Carl E. K., New York, N. Y. Fly-catcher	404,946	June 11	838	218	47	1397
Andre, Emil, assignor to F. Heuser & Co., Hanover, Germany. Pressure regulating or reducing valve	404,586	June 4	334	80	47	1228
André, Reuben. (See Oriatt, Solomon E., assignor.)						
Andresen, Blatt & Co. (See Müller, Frederick E., assignor.)						
Andresen, Momme, assignor to Actien-Gesellschaft für Anilin Fabrikation, Berlin, Germany. Manufacture of a new alpha-naphthol-disulphonic acid	405,938	June 25	2356	.....	47	1705
Andrew, Moses L., Delhi, Ohio. Drill-chuck	403,063	May 14	786	209	47	819
Andrews, Benjamin, New Orleans, La. Well-borer	401,404	Apr. 16	1478	391	47	301
Andrews & Company, A. H. (See Schustek, Daniel, assignor.)						
Andrews Manufacturing Company. (See Old, Anaborn F., assignor.)						
Andrews, Marion A. (See Grant, David G., assignor.)						
Angell, Edward F., Chicago, Ill. Book-leaf or paper holder	400,627	Apr. 2	285	80	47	59
Angerer, Victor. (See Herbert and Angerer.)						
Angevine, Lewis, Sweden Valley, Pa. Handle for dust-pans	402,292	Apr. 30	2833	734	47	576
Annin, Joseph, Brooklyn, N. Y. Metallic wheelbarrow	400,534	Apr. 2	158	41	47	33
Anson, William, Birmingham, county of Warwick, England. Breech-loading fire-arm	401,101	Apr. 9	1010	270, 271	47	200
Ansonia Clock Company. (See Davies, Walter D., assignor.)						
Anthony & Company, E. & H. T. (See Decker, Jacob P., assignor.)						
Anthony & Company, E. & H. T. (See Lewis, William H., assignor.)						
Applen, Henry, Saratoga, Ill. Rotating grain-meter	405,689	June 25	1996	524	47	1638
Arch, John H., Jackson, Iowa. Motor	403,317	May 14	1168	310	47	892
Arenberg, Herman, assignor of one-half to G. J. Clark, Edgwood, Cal. Vehicle	404,461	June 4	1 6	32	47	1251
Arents, Albert, Alameda, Cal. Fly-catcher	402,382	Apr. 30	2774	771	47	602
Arkell, James, assignor to S. H. Arkell, Canajoharie, N. Y. Paper bag	405,067	June 11	1017	272	47	1435
Arkell, James, assignor to S. H. Arkell, Canajoharie, N. Y. Soft-tie paper bag	405,068	June 11	1019	272	47	1435
Arkell, Sarah H. (See Arkell, James, assignor.)						
Armour, Michael C., Chicago, Ill. Steam-generator	401,102	Apr. 9	1012	271	47	200
Armour, Michael C., assignor to G. M. Clark & Company, Chicago, Ill. Broiler	403,407	May 14	1311	342	47	918
Armstrong, Charles E., assignor to J. A. King, Nevada, Iowa. Device for converting motion	401,103	Apr. 9	1014	271	47	201
Armstrong, Frederick. (See Lewis and Armstrong.)						
Armstrong, George D., Belleville, Ontario, Canada. Shingle or sheet-metal painting machine	400,426	Apr. 2	4	2	47	4
Armstrong, John J., and A. S. Lowrey, Weimar, Tex. Corn or cotton planter	401,798	Apr. 23	1867	521	47	407
Armstrong, Lewis D., Lock Haven, Pa. Apparatus for reclaiming soda-ash	402,642	May 7	131	32	47	689
Armstrong, Samuel F., Adamsville, assignor to C. Rogers, Edwardsburg, Mich. Crank for motors	402,052	Apr. 23	2473	645	47	497
Arndt, Henry, and F. Stutzman, Williamsport, Pa. Treadle saw-feeder	402,383	Apr. 30	2675	772	47	602
Arndt, Theophilus, Florin, Pa. Vegetable-slicer	404,883	June 11	751	191	47	1379
Arnett, Calvin W. (See Arnett, William E. and C. W.)						
Arnett, William E. and C. W., Fairmont, W. Va. Fence	404,026	May 28	2208	580	47	1109
Arnold, Charles H. (See Kelly, William J., assignor.)						
Arnold, Don J., assignor of one-half to H. B. Coryell, Omaha, Nebr. Galvanic battery	403,868	May 21	1981	580	47	1057
Arnold, Eliphaz W., and G. W. Osgood, Weymouth, Mass. Last	403,962	May 28	2146	561	47	1097
Arnold, Horace L., Hartford, Conn., assignor to R. S. Woodruff, trustee, Trenton, N. J. Book-stitching	401,673	Apr. 16	1900	495	47	378
Arnold, Horace L., Hartford, Conn., assignor to R. S. Woodruff, trustee, Trenton, N. J. Stitching books	401,674	Apr. 16	1900	495	47	379
Arnold, Horace L., Hartford, Conn., assignor to R. S. Woodruff, trustee, Trenton, N. J. Stitching books	401,675	Apr. 16	1902	496	47	379
Arnold, Horace L., Hartford, Conn., assignor to R. S. Woodruff, trustee, Trenton, N. J. Stitching books	401,676	Apr. 16	1903	496	47	379
Arnold, Horace L., Hartford, Conn., assignor to R. S. Woodruff, trustee, Trenton, N. J. Book-stitching	402,218	Apr. 30	2731	708	47	557
Arnold, James. (See Seely, Horace C., assignor.)						
Arnold, John T., Hyde Park, Ill. Valve-gear	405,939	June 25	2358	618	47	1706
Arnold, Rollin H., Honeoye, N. Y. Reclining-chair	403,318	May 14	1169	310	47	893
Arnold, William H., Troy, N. Y. Device for indicating the measure of retardation applied to arrest the momentum of a train	404,947	June 11	839	219	47	1398
Arnold, William R. (See Greaves, James W., assignor.)						
Arrington, Arthur. (See Newell, George W., assignor.)						
Arzt, Edward, Chicago, Ill. Box-making machine	403,821	May 21	1913	503	47	1045
Aschenbach, Bruno, assignor of one-half to G. L. H. Mueche, St. Joseph, Mo. Window	400,427	Apr. 2	5	3	47	4
Aschenbach, Henry, South Orange, and J. W. Theobald, Newark, N. J. Harness-saddle	404,609	June 4	442	111	47	1311
Aschener, Friedrich, assignor to Electric Cutlery Company, New York, N. Y. Razor	404,763	June 4	565	144	47	1337
Ash, William H., Brooklyn, N. Y. Book-holder	400,628	Apr. 2	285	81	47	59
Ashby, Charles M., De Smet, Dak. Ter. Awning-frame	401,104	Apr. 9	1016	272	47	201
Ashby, D. (See Leibel, Joseph C., assignor.)						
Ashley, Howard M., Ferrybridge, county of York, England. Manufacture of glass bottles, &c.	403,023	May 7	681	179	47	792
Ashley, Howard M., Ferrybridge, county of York, England. Machinery for making glass bottles, &c.	403,024	May 7	684	180	47	792
Ashley, Howard M., Ferrybridge, county of York, England. Machinery for making glass bottles, &c.	403,025	May 7	686	180	47	793
Ashley, Howard M., Ferrybridge, county of York, England. Manufacture of bottles, &c.	403,026	May 7	689	.....	47	793
Ashley, Howard M., Ferrybridge, county of York, England. Machinery for making glass bottles, &c.	403,027	May 7	690	181	47	794
Ashley, Howard M., Ferrybridge, county of York, England. Machinery for making glass bottles, &c.	403,716	May 21	1735	461, 462	47	1013

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Ashley, Howard M., Ferrybridge, county of York, England. Machinery for making glass bottles, &c.	403,717	May 21	1757	462, 463	47	1014
Ashley, Howard M., Ferrybridge, county of York, England. Machinery for making glass bottles, &c.	403,718	May 21	1761	463	47	1015
Ashley, Howard M., Ferrybridge, county of York, England. Machine for making glass bottles	403,719	May 21	1765	464	47	1015
Ashworth, Elijah. (See Ashworth, George and E.)						
Ashworth, Elijah, Manchester, county of Lancaster, England. Machine for securing clothing to carding-engines	404,587	June 4	336	20, 21	47	1289
Ashworth, George and E., Manchester, county of Lancaster, England. Making card-teeth	401,991	Apr. 23	2377	618	47	480
Ashworth, George and E., Manchester, county of Lancaster, England. Driving mechanism for carding-engines	403,720	May 21	1766	464	47	1015
Ashworth, George and E., Manchester, county of Lancaster, England. Driving mechanism for carding-engines	403,721	May 21	1767	464, 465	47	1016
Athey, Isaac H., Marion, Ark. Fire-escape	402,053	Apr. 23	2474	645	47	497
Atkinson, Charles W. (See Murphy and Atkinson.)						
Atkinson, Dwight R., Albany, assignor of one-half to J. E. Dodge, Waterford, N. Y. Rail-joint	404,764	June 4	565	145	47	1337
Atkinson, F. M. (See Kerr, John W., assignor.)						
Atteaux, Frederick E., trustee. (See Wilder, Charles H., assignor.)						
Atwater, Richard, Meriden, Conn. Rule-working machine	400,818	Apr. 2	587	160	47	112
Atwater, Richard M., and E. Hereckner, Millville, N. J., assignors to Whitall, Tatum & Co., Philadelphia, Pa. Mold for glassware	405,863	June 25	2236	588	47	1686
Atwood, John W., Wauregan, Conn. Sash-fastener	400,535	Apr. 2	161	41	47	34
Atwood, La Motte C., assignor of one-half to F. T. Robinson, St. Louis, Mo. Arc lamp	404,244	May 28	2575	671	47	1180
Atwood, La Motte C., assignor of three-fourths to F. and L. Skrainka and E. B. Roth, St. Louis, Mo. Electric-arc lamp	404,245	May 28	2578	671, 672	47	1180
Atwood, Leonard, Philadelphia, Pa. Valve	401,240	Apr. 9	1225	326, 327	47	240
Atwood, Lewis J., assignor to Plume & Atwood Manufacturing Company, Waterbury, Conn. Argand lamp	400,819	Apr. 2	589	161	47	112
Atwood, Lewis J., and F. W. Tobey, assignors to Plume & Atwood Manufacturing Company, Waterbury, Conn. Lamp-holder	405,368	June 18	1493	396	47	1534
Austin, David R. (See Smallwood and Austin.)						
Austin, Frederick C. (See Bunnell, Morton G., assignor.)						
Austin, Frederick C. (See Chapman, Thomas G., assignor.)						
Austin, Frederick C. (See Crollard, Jules, assignor.)						
Austin, Frederick C. (See Hunt, James W., assignor.)						
Austin, Frederick C. (See Miller, George N., assignor.)						
Austin, Frederick C. (See Monts, Ortus E., assignor.)						
Austin, John, Fenelon Falls, Ontario, Canada. Latch and lock combined	405,241	June 18	1283	340	47	1491
Austin, Lloyd W., Milwaukee, Wis. Shoe-nail	405,737	June 25	2050	538	47	1648
Austin, Robert A., Sandusky, Ohio. Hose-coupler	402,219	Apr. 30	2732	708	47	557
Austin, Samuel E., Fort Valley, Ga. Adding-machine	403,900	May 28	2031	535, 536	47	1075
Autenrieth, Ernst F. (See Welch and Autenrieth.)						
Autenrieth, Ernst F., New York, assignor to Glen Cove Machine Company, (limited,) Brooklyn, N. Y. Belt-tightener for planing-machines	401,677	Apr. 16	1904	496	47	379
Autenrieth, Ernst F., New York, assignor to Glen Cove Machine Company, (limited,) Brooklyn, N. Y. Planing-machine	404,948	June 11	840	219	47	1398
Autenrieth, Ernst F., New York, assignor to Glen Cove Machine Company, (limited,) Brooklyn, N. Y. Planing and molding machine	405,389	June 18	1495	396, 397	47	1535
Autenrieth, Ernst F., New York, assignor to Glen Cove Machine Company, (limited,) Brooklyn, N. Y. Planing-machine	405,390	June 18	1496	397	47	1535
Automatic Perfume Fountain Company. (See Everitt, Percival, assignor.)						
Automatic Selling Machine Company. (See Bailey, Henry, assignor.)						
Automatic Vending Box Company. (See O'Kelly, James M., assignor.)						
Autrobus, John H., Ottumwa, Iowa. Door or window screen wiring machine	402,884	May 7	489	129	47	755
Avedyk, Octave, Louvain, Belgium. Manufacturing and bottling aerated water	404,462	June 4	137	32	47	1251
Avery, George H., East Hampton, Mass. Making leather washer-coils	404,949	June 11	841	219	47	1398
Avis, Walter H., York, Ontario, Canada. Grooved pulley	405,651	June 18	1931	508	47	1621
Axtell, Henry A., Montagne, Mass. Grindstone and mechanism for the same	404,670	June 4	443	111	47	1311
Ayer, Alfred, Lake Weir, Fla. Orange-grader	401,241	Apr. 9	1227	327	47	241
Aylesworth, William, 1st, assignor of one-third to J. H. Mold, Blossburg, Pa. Automatic wagon-brake	405,320	June 18	1710	451, 452	47	1579
Ayres, Hobart, St. Louis, Mo., assignor to P. Bent, Chicago, Ill. Scaffold	405,195	June 11	1208	321	47	1471
Baade, John, Waco, Tex. Mold for making sewers	405,652	June 18	1932	508	47	1621
Babbs, Frank H., *et al.* (See Taylor, Elbert C., assignor.)						
Babcock, Edward G., New Britain, Conn. Display-rack	402,885	May 7	490	129	47	755
Babcock, Isaac B., Newport Centre, Vt. Roller for leveling snow or roads	404,671	June 4	445	112	47	1311
Babcock, Stephen E., Little Falls, N. Y. Drinking-fountain	402,553	May 7	2	1	47	663
Babcock, William A., South Coventry, Conn. Valve	404,885	June 11	754	192	47	1380
Babé, Désiré A., Paris, France. Bicycle	401,105	Apr. 9	1017	272	47	201
Back, John R., Worcester, Mass. Metal-turning lathe	400,829	Apr. 2	591	161	47	113
Backer, Charles R., Evansville, Ind. Guide for band-saws	403,172	May 14	930	242, 243	47	844
Backman, Per G., Paris, France. Safety device for elevators	401,106	Apr. 9	1018	273	47	201
Backstrom, Charles A., New York, N. Y. Incandescent lamp	404,816	June 11	646	168	47	1302
Backus Water Motor Company. (See Cissel, Robert B., assignor.)						
Bacot, Richard D., Columbia, S. C. Rail	401,107	Apr. 9	1019	273	47	202
Badische Anilin and Soda Fabrik. (See Bohn, René, assignor.)						
Baechtold, Christian. (See Bosworth, Percy B., assignor.)						
Baer, Joseph S., *et al.* (See Colby, Edward J., assignor.)						
Bagby, William H., Waco, Tex. Combination railway cross-tie	403,634	May 21	1637	433	47	900
Bagley, Charles, Mechanicsville, Iowa. Pump	400,428	Apr. 2	6	3	47	4
Bailey, Charles J., Newton, Mass. Brush	404,588	June 4	339	81	47	1289
Bailey, Charles J., Newton, Mass. Bath-brush	405,295	June 18	1364	359	47	1508
Bailey, Charles J., Newton, Mass. Brush	405,296	June 18	1365	359	47	1508
Bailey, Charles J., Newton, Mass. Swab or cleaner for guns	405,297	June 18	1366	360	47	1508
Bailey, Farrell & Co. (See Wichelhaus, Friedrick, assignor.)						
Bailey, Frank M., assignor to Stanley Rule and Level Company, New Britain, Conn. Bench-plane	401,532	Apr. 16	1671	441	47	337
Bailey, Frank M., assignor to Stanley Rule and Level Company, New Britain, Conn. Bench-plane	402,886	May 7	491	129	47	755

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Bailey, George W. (See Leibersperger and Bailey.)						
Bailey, Henry, assignor, by mesne assignments, to Automatic Selling Machine Company, New York, N. Y. Vending apparatus	402,644	May 7	132	32	47	689
Bailey, Henry C., Edinburg, Ind. Adjustable split pulley	403,901	May 28	2038	536	47	1076
Bailey, Henry C., Edinburg, Ind. Adjustable split pulley	403,902	May 28	2039	536	47	1076
Bailey, Henry T., Scituate, Mass. Support for drawing models	405,298	June 18	1366	360	47	1508
Bailey, John S., Buckingham, Pa. Highway-sign	403,722	May 21	1769	465	47	1016
Bailey, Marcellus, Washington, D. C., assignor to Eagle Pencil Company, New York, N. Y. Lead or crayon holder	405,521	June 18	1711	451, 452	47	1580
Bailey, William H., Salford, county of Lancaster, England. Apparatus for the delivery of prepaid goods	400,536	Apr. 2	162	42	47	34
Bailey, William H., Pittsburg, Pa. Annealing-box	405,755	June 25	2093	548	47	1657
Bailley, Ferdinand, Schenectady, N. Y. Fitting commutator-bars	400,994	Apr. 9	858	230	47	173
Baily, Mifflin W., Pottstown, Pa. Steam-boiler	405,864	June 25	2237	589	47	1686
Bain, Forée, assignor, by mesne assignments, to Electric Cutting Machine Company, Chicago, Ill. Regulation of electric motors	400,890	Apr. 9	698	189	47	145
Bain, Robert E. M., St. Louis, Mo. Apparatus for coating photographic plates with emulsion	401,771	Apr. 23	2046	535, 536	47	418
Bain, Robert E. M., St. Louis, Mo. Shutter for photographic cameras	404,375	June 4	5	1	47	1225
Baines, Hugh, Brooklyn, N. Y. Car for live stock	401,678	Apr. 16	1906	497	47	380
Baird, Edward A. (See Jameson and Baird.)						
Baird, John, New York, N. Y. Steam-boiler	402,127	Apr. 30	2691	673, 674	47	531
Baird, John, New York, N. Y. Steam-boiler	402,887	May 7	492	130	47	755
Baird, Robert H. (See Morgan and Baird.)						
Bairstow, John. (See Shaffer and Bairstow.)						
Baker, Charles E. (See Baker, Thomas J. and C. E.)						
Baker, Daniel B., Rising Sun, Ohio. Buckle	400,891	Apr. 9	700	189	47	145
Baker, Eugene. (See Stone and Colman, assignors.)						
Baker, Frank C., Blue Island, Ill. Switch-stand	402,293	Apr. 30	2834	734	47	576
Baker, George W., Cleveland, Ohio. Sewing-machine take-up	403,723	May 21	1770	465	47	1016
Baker, George W., Wilmington, Del. Leather-dressing machine	405,653	June 18	1933	508, 509	47	1621
Baker, Henry C. (See Smith, Henry W., assignor.)						
Baker, Jacob, Greenville, Ohio. Centrifugal force-pump	405,294	June 18	1361	358, 359	47	1507
Baker, James H., Savannah, Mo. Mechanical movement	405,756	June 25	2093	549	47	1657
Baker, Nathan H., Providence, R. I. Blank-book	404,817	June 11	647	168	47	1302
Baker, Thomas J. and C. E., Findlay, Ohio. Combined wrench and piston-lubricator	403,408	May 14	1342	343	47	918
Baker, William. (See Rider, Charles M., assignor.)						
Baker, William H., assignor of one-half to S. W. Smith, Pontiac, Mich. Lap-ring	402,384	Apr. 30	2976	772	47	602
Baker, William J., Tiffin, Ohio. Screw-cutting die-head	401,108	Apr. 9	1021	273, 274	47	202
Baker, William R., Pasadena, Cal. Preserving fruit	401,109	Apr. 9	1022	.....	47	202
Baker, Wilson M., Urbana, Ohio. Knockdown case for eggs, &c	401,873	Apr. 23	2199	575	47	446
Balch, Samuel W., Yonkers, N. Y. Calendar	401,624	Apr. 16	1636	479	47	368
Baldwin Co., A. (See West, William Y., assignor.)						
Baldwin, George H., Grand Summit, Kans. Broom-making machine	402,385	Apr. 30	2976	773	47	602
Baldwin, George W., assignor of one-half to G. H. Stevenson, Schaghticoke, N. Y. Penholder	404,027	May 28	2209	580	47	1109
Baldwin, Hiram, and J. J. Smith, Toledo, Iowa. Ink-eraser	402,710	May 7	231	60	47	707
Baldwin, James S., Newark, N. J. Air-engine	404,818	June 11	649	168, 169	47	1302
Baldwin, John, Chicago, Ill. Making white lead	401,533	Apr. 16	1672	441	47	337
Baldwin, Judson A., Winooski, Vt. Latch	403,173	May 14	922	243	47	845
Baldwin, Luther C., Manchester, N. H. Spinning-bobbin, &c. (Reissue)	10,996	Apr. 23	2395	672	47	592
Baldwin, Stephen G., Marion, Ind. Ink-well	404,246	May 28	2580	672	47	1181
Baldwin, Stephen G., Marion, Ind. Ink-well	404,247	May 28	2581	672	47	1181
Baldwin, William J., Brooklyn, N. Y. Apparatus for heating and ventilating buildings	402,386	Apr. 30	2978	773, 774	47	603
Balet, Joseph W., assignor of one-half to R. Dunlap and L. F. Cozans, New York, N. Y. Regulating electric currents	400,726	Apr. 2	432	117	47	86
Ball, Albert, Claremont, N. H. Combined projectile and gas-check	405,690	June 25	1997	524	47	1639
Ball, Clinton M., Troy, and S. Norton, assignors of one-third to A. T. Porter, West Troy, N. Y. Separating ores by magnetism	404,332	May 28	2711	703	47	1305
Ball, Clinton M., Troy, and S. Norton, assignors of one-third to A. T. Porter, West Troy, N. Y. Magnetic ore-separator	404,333	May 28	2712	703, 704	47	1305
Ball, Clinton M., and S. Norton, assignors of one-third to A. T. Porter, West Troy, N. Y. Separating ores	404,334	May 28	2714	704	47	1305
Ball, Edward M., *et al.* (See Boisvert, Napoléon, assignor.)						
Ball, Edward M., South Berwick, Me., assignor to J. and H. E. Hamilton and N. Boisvert, Salmon Falls, N. H. Shuttle checking and relieving mechanism for looms	405,069	June 11	1020	272	47	1435
Ball, Jacob. (See Hohmeier and Ball.)						
Ball, Phinehas, assignor to Union Water Meter Company, Worcester, Mass. Rotary meter	404,374	June 4	2	1	47	1225
Ball, Thomas H., *et al.* (See Gardner, Marshall, assignor.)						
Ball, William, Lynchburg, Ohio. Gate	402,501	Apr. 30	3168	821	47	638
Ballantyne, James L., Newton, Mass., assignor to Nonantum Worsted Company, of Massachusetts. Dabbing-brush apparatus for combing-machines	404,376	June 4	6	2	47	1226
Ballinger, Levi G., East Liberty, Ohio. Carpet-stretcher	402,220	Apr. 30	2733	709	47	557
Ballou, Hiram P., assignor to L. Jones, Bristol, Pa. Circular rib-knitting machine	402,793	May 7	302	94, 95	47	731
Baltzley, Edwin, assignor to Keystone Manufacturing Company, Philadelphia, Pa. Motor for culinary beaters, mixers, &c.	403,502	May 21	1451	381	47	953
Bamford, Walter, Paterson, N. J. Warp-beaming machine	405,654	June 18	1934	509	47	1621
Bancroft, John. (See Bloede, Victor G., assignor.)						
Bandman, Isidore C., Atlanta, Ga. Artificial fuel	405,865	June 25	2239	.....	47	1686
Bang, Ivar A. F., and M. C. A. Rnffu, Paris, France. Purifying acetic acid	401,992	Apr. 23	2378	618	47	480
Banigan, Joseph. (See Donghty, Henry J., assignor.)						
Banker, George W., Brooklyn, N. Y. Packing-case	403,503	May 21	1453	381	47	953
Bannister, Louis H., assignor to Eastman Dry Plate and Film Company, Rochester, N. Y. Roller-holder for photographic films	405,454	June 18	1602	422	47	1556
Baptist, William, New Orleans, La. Device for handling logs and timber	400,728	Apr. 2	439	118	47	87
Baragwanath, Henry D., Chicago, Ill. Feed-water heater and purifier	402,645	May 7	134	32	47	689
Barber, Francis M., Washington, D. C. Car for transporting fruit	403,724	May 21	1771	465, 466	47	1016

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Barbig, Fernando, New York, N. Y. Lantern	402,794	May 7	365	95	47	731
Barbour, Charles, Verona, Pa. Adjustable leaf-holder	405,242	June 18	1284	340	47	1491
Barclay, Harry H. (See Jerrold and Barclay.)						
Barclay, Robert L., Brooklyn, N. Y. Machine for manufacturing turn-buckles	404,152	May 28	2421	634	47	1153
Bardeen, Charles W. (See Jones, Walter F., assignor.)						
Bardsley, William, Kearney, N. J. Table or stand for exhibiting cloaks, &c	401,110	Apr. 9	1023	274	47	202
Barker, Cassius M. (See Dicer and Barker.)						
Barker, David, Canton, Ohio. Mold for making glass pads for horse-collars	404,766	June 4	568	145	47	1337
Barker, David, assignor to Canton Glass Company, Canton, Ohio. Mold for vault-lights	404,765	June 4	567	145	47	1337
Barker, Erastus B., Newark, N. J. Photographic camera	402,711	May 7	232	61	47	707
Barker, John R., Chicago, Ill. Air-heating furnace	402,795	May 7	366	96	47	731
Barkley, John F. (See Myers, William H., assignor.)						
Barlow, Chloe H., executrix. (See Barlow, Warren S.)						
Barlow, Warren S., deceased, Paterson, N. J.; C. H. Barlow executrix. Door-check	401,534	Apr. 16	1673	441	47	337
Barnard, Edward, Rome, N. Y. Halter	401,922	Apr. 23	2279	591	47	460
Barnard, George, Chicago, Ill. Pocket for cartridges	401,923	Apr. 23	2281	592	47	461
Barnard, Heman A., assignor to Barnard & Leas Manufacturing Company, Moline, Ill. Middlings-purifier	401,942	Apr. 9	1229	327 / 328	47	241
Barnard, Heman A., assignor to Barnard & Leas Manufacturing Company, Moline, Ill. Roller-mill	401,943	Apr. 9	1231	328 / 329	47	241
Barnard & Leas Manufacturing Company. (See Barnard, Heman A., assignor.)						
Barnard & Leas Manufacturing Company. (See Cornwall, John B., assignor.)						
Barnes, Elbridge F., New Haven, Conn. Convertible machine for grooving and sawing wood	404,377	June 4	8	2	47	1226
Barnes, George A., New Haven, Conn. Friction-clutch	404,153	May 28	2422	634	47	1153
Barnes, George W., Philippi, W. Va. Brake-lever	403,983	May 28	2147	561	47	1097
Barnes, Joseph, Fall River, assignor to Dutcher Temple Company, Hopedale, Mass. Loom-temple	403,028	May 7	692	181	47	794
Barnes, Joshua, Brooklyn, N. Y. Medicine-dispenser	404,950	June 11	841	220	47	1398
Barnes, Joshua B., Springfield, Ill. Door for cinder-boxes	403,504	May 21	1454	382	47	953
Barnes, Joshua B., Springfield, Ill. Spark-arrester	403,984	May 28	2149	561	47	1098
Barnes, Monroe, Bloomington, Ill. Road-cart	404,672	June 4	446	112	47	1311
Barnes, Norman E., Bay Shore, N. Y. Picking-thimble for musical instruments	401,476	Apr. 16	1585	419	47	322
Barnes, William E., Florence, Mass. Plume	403,084	May 14	788	209	47	819
Barnet, Henry C., *et al.* (See Seibel, Frederick H., assignor.)						
Barnett, Barnard B., Woodruff, S. C. Machine for boring and drilling	403,240	May 14	1040	275	47	868
Barnett, William H., *et al.* (See Piggott, Henry E., assignor.)						
Barney, Benjamin P., Harper, Kans. Grain-cleaner	405,070	June 11	1021	272 / 273	47	1435
Barney, Frank L., Prairie du Chien, and H. E. Taylor, Bloomington, Wis. Dental plugger	402,294	Apr. 30	2835	734	47	576
Barney, Rufus L., Swanton, assignor of one-half to J. N. Baxter, Rutland, Vt. Stone-sawing machine	404,335	May 28	2715	704	47	1206
Barnhart Bros. & Spindler. (See Klemm, Henry, assignor.)						
Barnhart, Harvey P. and S. L., Potsdam, N. Y. Liquid transporting and measuring vessel	404,819	June 11	655	169	47	1363
Barnhart, Henry M. (See King and Barnhart.)						
Barnhart, Samuel L. (See Barnhart, Harvey P. and S. L.)						
Barnum, Alexander M., Buffalo, N. Y. Cylinder relief-valve	401,477	Apr. 16	1585	419	47	322
Baroutidis, George M., San Francisco, Cal. Teredo-proof covering for piles	403,409	May 14	1313	343	47	919
Barr, Nicholas, Cayuta, N. Y. Car-coupling	402,287	Apr. 30	2980	774	47	603
Barr, William C., Jr. (See Daly, Michael J., assignor.)						
Barreiras, Enrique S., Kirkwood, assignor to Buxton & Skinner Stationery Company, St. Louis, Mo. Currency-package	403,085	May 14	789	210	47	820
Barrett Battery Company, John A. (See Barrett, John A., assignor.)						
Barrett, Charles H., assignor of one-half to O. E. Curtis, Decatur, Ill. Adjustable window screen and frame	402,295	Apr. 30	2837	734	47	577
Barrett, Edward, Fall River, Mass. Boiler-furnace	404,378	June 4	9	3	47	1226
Barrett, Henry, and J. J. Varley, London, England. Means for facilitating the opening of internally-stoppered bottles	400,892	Apr. 9	701	180	47	145
Barrett, James, Boston, Mass. Set bowl or basin	405,818	June 25	2170	571	47	1672
Barrett, John A., Brooklyn, N. Y., assignor to J. A. Barrett Battery Company, Baltimore, Md. Catch for boxes, &c	403,029	May 7	693	181 / 182	47	794
Barrett, John A., Brooklyn, N. Y., assignor to J. A. Barrett Battery Company, Baltimore, Md. Electric battery	403,451	May 14	1371	360	47	929
Barrett, John A., Brooklyn, N. Y., assignor to J. A. Barrett Battery Company, Baltimore, Md. Galvanic battery	405,196	June 11	1210	321	47	1471
Barrett, William H., Fort Worth, Tex. Anti-freezing tank-valve	404,820	June 11	657	170	47	1363
Barrows, Charles H., Willimantic, Conn. System of rapid transportation	403,505	May 21	1455	383	47	954
Barrus, George H., Reading, Mass. Steam-calorimeter	401,111	Apr. 9	1025	274	47	203
Barry, Bernard, Schenectady, N. Y. Cheese-cutter	400,537	Apr. 2	163	42	47	34
Barry, David. (See Hadden and Barry.)						
Barry, James, assignor of part to W. H. H. and D. W. Tainter, Kansas City, Mo. Car-coupling	402,646	May 7	135	33	47	690
Barth, Gustav A., assignor to P. Chouteau, St. Louis, Mo. Valve for steam-engines	401,924	Apr. 23	2283	594	47	461
Bartholomew, George E., New Haven, Conn., assignor of one-third to E. R. Edwards, Cincinnati, Ohio. Vehicle-spring	402,888	May 7	493	131	47	756
Bartholomew, Harry S., Bristol, Conn. Bit-holder	405,522	June 18	1712	452	47	1580
Bartholomew, Thomas, Newark, Ohio. Hand printing apparatus	403,822	May 21	1915	503	47	1045
Bartlau, August R., assignor to W. Scott, Plainfield, N. J. Sheet-delivery apparatus for printing-machines	404,951	June 11	843	220	47	1398
Bartlett, Charles L., *et al.* (See Horsey, George F., assignor.)						
Bartlett, Edward L., *et al.* (See Fisher, Charles H., assignor.)						
Bartlett, Elbridge G. W. (See Venn, Isaac H., assignor.)						
Bartlett, Frederic. (See Schofield, Silas C., assignor.)						
Bartlett, James F., Chicago, Ill. Cash and package carrier	402,128	Apr. 30	2603	674	47	531
Bartlett, John S., assignor of one-half to S. H. Pitkin, Akron, Ohio. Direct-acting engine	404,248	May 28	2582	672	47	1181
Bartlett, John W., assignor of one-fourth to G. W. Walker, Moline, Ill. Type-writing machine	403,823	May 21	1917	503 / 504	47	1045
Bartlett, Jonathan. (See Wiggin and Bartlett.)						
Bartlett, Jonathan, Epping, and G. B. Wiggin, South New Market, N. H., assignors of one-half to J. W. Hoard, Providence, R. I. Presser-foot-lifting device for sewing-machines	403,725	May 21	1773	466	47	1016
Barton, David R., Centreville, Md. Fence-building	400,429	Apr. 2	9	3	47	5
Barton, Edward F., assignor of one-half to A. Coy, Ravenna, Ohio. Tongs	405,001	June 11	919	242	47	1414
Barton, Edwin W., assignor of one-half to E. Churchill, Lawrence, Mass. Adjustable carriage for Jordan engines and other machinery	405,523	June 18	1713	452	47	1580

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Barton, Richard T., assignor of one-half to M. Sonnenberg, New Haven, Conn. Lamp	405,940	June 25	2358	618	47	1706
Basel, John C., Galveston, Tex. Splicing device	401,244	Apr. 9	1236	329	47	242
Bashaw, Julian S. (See Whiddon and Bashaw.)						
Bassett, Joseph M. (See Gaunt, James, assignor.)						
Bassett, Milton H., New Britain, Conn. Door-check	401,535	Apr. 16	1674	442	47	338
Bassi, Alexander A. (See Orsi, Romeo, assignor.)						
Batchelor, Charles, New York, N. Y. Phonograph	400,629	Apr. 2	286	81	47	60
Batchelor, Telford C., 8 Barons Court Road, West Kensington, county of Middlesex, and A. Latch, Biddick Hall, South Shields, county of Durham, England. Wire cable	401,112	Apr. 9	1027	274 / 275	47	203
Batchelor, Telford C., West Kensington, county of Middlesex, and A. Latch, South Shields, county of Durham, England. Wire cable	403,319	May 14	1170	310	47	893
Bate, William T., Conshohocken, Pa. Steam-boiler	400,729	Apr. 2	440	118	47	87
Bates, Edward T., assignor of one-half to M. Lindsay, Brightwood, D. C. Muffler for signal-bells	400,821	Apr. 2	592	161	47	113
Batt, Charles F., Brooklyn, N. Y. Folding chair for steamers, &c	404,569	June 4	339	81	47	1229
Batter, Frank, Slide, Cal., assignor of one-half to W. S. Vanderburg, Marshfield, Oreg. Hydrostatic weighing-scale	403,452	May 14	1372	360	47	929
Baudreau, Leon, Chicopee Falls, Mass. Spring-fork for bicycles	400,787	Apr. 2	437	117	47	86
Bauer, Charles A., Springfield, Ohio. Water-tank of grinding-machines	403,030	May 7	695	182	47	794
Bauer, James, York, Nebr. Boiler	405,757	June 25	2004	549	47	1657
Bauer, Max, Brooklyn, N. Y. Ground-glass attachment for cameras	402,712	May 7	234	61	47	707
Baum, Jacob, assignor to Victor Safe and Lock Company, Cincinnati, Ohio. Manufacturing fire-proof safes	405,655	June 18	1936	509	47	1622
Baumeister, Leopold, Bridgeport, Conn., assignor of one-half to D. F. and G. H. Crofut. Nail-extractor	401,113	Apr. 9	1028	275	47	203
Baule, Henry, Benton Harbor, Mich. Split pulley	402,221	Apr. 30	2734	709	47	557
Baxter, John N. (See Barney, Rufus L., assignor.)						
Bay, Axel V., Nakskov, Denmark. Device for operating dampers for fire-places, &c	401,625	Apr. 16	1838	479	47	368
Bay, Joseph L., Little Rock, Ark. Nut-lock	402,054	Apr. 23	2476	645	47	498
Bayaud, Theodore W., *et al.* (See Peer, John A., assignor.)						
Bayles, James C., East Orange, N. J. Flux-carrier	405,866	June 25	2240	589	47	1686
Bayles, James E., New York, N. Y., assignor to Safety Car Heating and Lighting Company, of New Jersey. Pipe-coupling	400,822	Apr. 2	593	162	47	113
Bayless, William C., Mossy Creek, Tenn. Straw-cutter	404,379	June 4	10	3	47	1226
Bayley, Edward H. (See Lineff, Alexander L., assignor.)						
Bayley, George W., Brooklyn, N. Y. Extension light-fixture	401,925	Apr. 23	2285	592	47	461
Baynes, James B., and C. A. Hennicke, Buffalo, N. Y. Wagon-clip	401,478	Apr. 16	1587	419	47	322
Beach, Franklin G., Chicago, Ill. Telephone-exchange apparatus	405,867	June 25	2241	590	47	1686
Beach, Henry L., Hartford, Conn. Boiler front and setting	404,821	June 11	658	170	47	1363
Beacham, Frederick L., *et al.* (See Reams, John V., assignor.)						
Bealmear, James A., *et al.* (See Lumley, Edwin J., assignor.)						
Beals, Augustus, North Weymouth, Mass. Hammock	403,320	May 14	1171	311	47	893
Beam, Elias W., Plymouth, Mich. Road-cart	405,299	June 18	1368	360	47	1508
Beam, John C. (See Rudasill, Eli A., assignor.)						
Bean, John, Los Gatos, Cal. Spray-nozzle	400,730	Apr. 2	441	118	47	87
Bear, Philip L., Hamilton, Ohio. Oil-burner	405,391	June 18	1497	397	47	1535
Beason, Albert E., Audubon, Iowa. End-gate for wagons	403,241	May 14	1041	275	47	868
Beavan, Fred W. (See Peaslee and Beavan.)						
Bebb, George, assignor to G. and W. Merritt, Indianapolis, Ind. Doffer-cleaner for carding-machines	401,811	Apr. 23	2118	552	47	429
Becker, Henry L. (See Gallinowsky, Hugo, assignor.)						
Beckert, William, Allegheny, Pa. Bed	402,129	Apr. 30	2604	674 / 675	47	532
Beckfeld, J. Charles. (See Schmid and Beckfeld.)						
Beckfeld, John C. (See Schmid, Siegfried, and Beckfeld.)						
Beckwith, Eugene K., Niantic, assignor of one-half to F. B. Wright, Meriden, Conn. Combination-tool	403,031	May 7	696	182	47	795
Bedford, George P., assignor of one-half to W. L. Savage, New York, N. Y. Adjustable foot-rest	402,130	Apr. 30	2605	675	47	532
Bedford, William G., Philadelphia, Pa. Apparatus for generating gas	404,856	June 11	755	192	47	1380
Beebe, Edgar C., and R. Stoner, Glen Elder, Kans. Windmill	400,995	Apr. 9	860	220 / 221	47	173
Beerbower, George M., Cherry Vale, Kans. Poultry-carrier	401,812	Apr. 23	2139	552	47	430
Beeson, Volney W., and W. B. Bonine, Perry, Iowa. Steam-engine	402,689	May 7	494	131	47	756
Behlen, Charles A., Cincinnati, Ohio. Vehicle-spring	403,506	May 21	1460	383	47	955
Behm, Joseph, West Point, Cal. Amalgamator	405,337	June 18	1421	374	47	1520
Behrend, Bendeza J. (See Johnson, Henry, assignor.)						
Beichling, Henry, Wilkeson, Wash. Ter. Pen	404,249	May 28	2583	673	47	1181
Belches, Richard, Haymarket, Va. Spring-hinge	402,388	Apr. 30	2982	774	47	604
Belches, Richard, Haymarket, Va. Fire-escape	402,389	Apr. 30	2983	775	47	604
Beldam, Aeplan, London, county of Middlesex, England. Pump-valve	402,647	May 7	137	33, 34	47	690
Belden, Benjamin W., assignor of one-half to G. J. Meyer, St. Louis, Mo. Frame for building-blocks or paving-tiles	400,996	Apr. 9	862	221	47	174
Belden, Russell A., New Haven, Conn. Power-hammer	403,453	May 14	1374	360	47	930
Belding Motor and Manufacturing Company. (See Belding, Warren S., assignor.)						
Belding Motor and Manufacturing Company. (See Slater, Henry B., assignor.)						
Belding, Warren S., assignor to Belding Motor and Manufacturing Company, Chicago, Ill. Electric motor	404,067	May 28	2293	600	47	1127
Belding, Warren S., assignor to Belding Motor and Manufacturing Company, Chicago, Ill. Dynamo	404,068	May 28	2296	601 / 602	47	1127
Belding, Warren S., assignor to Belding Motor and Manufacturing Company, Chicago, Ill. Clamp for electric motors	404,069	May 28	2299	602	47	1128
Belfield, Reginald, assignor to Westinghouse Electric Company, Pittsburg, Pa. Lightning-arrester	404,154	May 28	2424	634	47	1153
Bell, Charles C. (See Rogers, Frederick H., assignor.)						
Bell, George W., River Falls, Wis. Middlings-purifier	400,538	Apr. 2	163	42, 43	47	34
Bell, Harold J., Gloucester City, N. J., assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Gas-governor	401,626	Apr. 16	1839	480	47	368
Bell, Harold J., Gloucester City, N. J., assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Gas-governor	401,627	Apr. 16	1840	480	47	369
Bell, Harold J., Gloucester City, N. J., assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Gas-governor	401,628	Apr. 16	1842	480	47	369
Bell, Henry O. (See Newhouse, Casey, assignor.)						
Bell, John A., Naperville, Ill. Commode	401,629	Apr. 16	1843	480	47	369

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Bell Telephone Company of Canada. (See Brown, Charles W., assignor.)						
Bell, Willard, Greencastle, Ind. Sad-iron	405,071	June 11	1022	273	47	1435
Bell, William. (See Conley, Michael R., assignor.)						
Bell, William R., New York, N. Y. Motor	402,713	May 7	235	62	47	708
Bellah, Thomas S. (See Holly, Birdsill, assignor.)						
Beller, Albert E., Ogden City, Utah Ter. Crystallizing-frame	400,539	Apr. 2	165	43	47	35
Bellingham, Albert H. (See Stuart, William G., assignor.)						
Bellows, Stephen H., Athol, Mass. Micrometer-gage	403,726	May 21	1774	467	47	1017
Belton, Jesse C., administrator. (See Belton, William F.)						
Belton, William F., deceased, Greenville, Pa.; J. C. Belton administrator. Washing-machine	401,630	Apr. 16	1845	481	47	369
Bement, Frank G., assignor of one-third to J. Kissinger, New York, N. Y. Camera-stand	405,758	June 25	2085	549	47	1658
Bemis, Sumner A. (See Pfingst and Bemis.)						
Bemis, Sumner A., Springfield, Mass. Truck for cable-railway cars	405,691	June 25	1999	524	47	1639
Bemis, Sumner A., Springfield, and L. Pfingst, Boston, Mass. Electric or cable railway car	402,890	May 7	496	131	47	756
Benardos, Nicholas, St. Petersburg, Russia. Rheostat	401,405	Apr. 16	1479	391, 392	47	302
Bender, Ann J. (See Bender, Julius, assignor.)						
Bender, Julius, assignor to A. J. Bender, Manlius, N. Y. Fertilizer-distributer	400,731	Apr. 2	442	119	47	87
Benedict, Francis D. (See Smith, Albert W., assignor.)						
Benedict, Gilbert H., Ellenville, and P. M. Furlong, Troy, N. Y. Forming curved electrotypes	401,631	Apr. 16	1846	481	47	370
Benedict, Gilbert H., Ellenville, and P. M. Furlong, Albany, N. Y. Matrix-plate for curved electrotypes	401,729	Apr. 23	1988	521	47	407
Benedict, Milton E., Perry, N. Y. Gearing	401,993	Apr. 23	2379	619	47	480
Beneke, Charles L. (See Douglas, William M., assignor.)						
Benham, Elijah B., Providence, R. I. Valve-gear	401,730	Apr. 23	1991	521	47	407
Benigar, Ellis E. (See Ellis and Benigar.)						
Benjamin, Dana H., assignor to E. Hurlburt, Utica, N. Y. Washing-machine	402,222	Apr. 30	2735	709	47	558
Benjamin, Edwin, South Evanston, Ill., assignor to Benjamin Machine Company, of Illinois. Belt-guide wheel	402,554	May 7	3	1	47	663
Benjamin, Edwin, South Evanston, Ill., assignor to Benjamin Machine Company, of Illinois. Belt-tightener	403,454	May 14	1376	360	47	930
Benjamin, George H., New York, N. Y., assignor, by mesne assignments, to Safety Car Heating and Lighting Company, of New Jersey. Apparatus for heating railway-cars	401,945	Apr. 9	1237	329	47	243
Benjamin Machine Company. (See Benjamin, Edwin, assignor.)						
Bennett, George H., Brooklyn, N. Y. Core for casting	404,673	June 4	448	112	47	1312
Bennett, Holland C., Raymond, Ill. End-gate	402,891	May 7	497	132	47	756
Bennett, Orson W., Washington, D. C. Gas-regulating burner	405,656	June 18	1937	509, 510	47	1622
Benson, Arza M., Cleveland, Ohio. Machine for jointing staves	401,874	Apr. 23	2200	575, 576	47	446
Benson, Arza M., Cleveland, Ohio. Gearing	405,759	June 25	2096	550	47	1658
Benson, Benjamin S., Baltimore, Md. Air-purifier	402,714	May 7	236	62	47	708
Benson, George, Belfast, Ireland. Apparel-cuff	402,223	Apr. 30	2736	709	47	558
Bent, Peter. See Ayres, Hobart, assignor.)						
Benton, Francis E., Stoughton, Mass. Whip-socket	405,524	June 18	1714	453	47	1580
Bergendahl, Lewis J., Pendleton, Oreg. Pipe-wrench	401,926	Apr. 23	2286	593	47	462
Berger, Benjamin F., South Bend, Ind. Cultivator	401,114	Apr. 9	1031	276	47	204
Berger, Henry L., Vermilion Parish, and E. Noël, Abbeville, La. Centrifugal governor	405,760	June 25	2097	550	47	1658
Berger, William H., Philadelphia, Pa. Handle for saucepans	402,131	Apr. 30	2606	675	47	532
Bergman, Solomon, *et al.* (See Lovejoy, De Soto, assignor.)						
Bergmann & Company. (See Bergmann, Sigmund, assignor.)						
Bergmann, Ignaz, Fort Madison, Iowa. Pen guide or rest	402,796	May 7	367	97	47	732
Bergmann, Sigmund, New York, N. Y., assignor to Bergmann & Company, of New York. Electric switch	400,732	Apr. 2	443	119	47	88
Bergmann, Sigmund, New York, N. Y., assignor to Bergmann & Company, of New York. Switch for electric circuits	400,733	Apr. 2	444	119	47	88
Berliner Maschinenbau-Actien-Gesellschaft, vormals L. Schwartzkopff. (See Kaselowsky, Emil, assignor.)						
Bernardin, Alfred L., Evansville, Ind. Toy	405,868	June 25	2246	590	47	1687
Bernd, Adolph, *et al.* (See Levy, William M., assignor.)						
Berrang, Jacob C., Asbury Park, N. J. Insulator	403,727	May 21	1776	467	47	1017
Berrie, Robert B., Lexington, Mo. Paving-block	400,997	Apr. 9	864	232	47	174
Berry, Albert G., Washington, D. C. Rod-coupler	402,132	Apr. 30	2607	675	47	532
Berry, Charles E. (See King, William T., assignor.)						
Berry, Eugene, and H. Lambert, assignors of one-third to J. Marhoffer, Crescent City, Cal. Bundle-binder	404,155	May 28	2425	635	47	1153
Berry, John, assignor to National Needle Company, Springfield, Mass. Needle-grooving machine	404,336	May 28	2716	704, 705	47	1206
Berry, John, assignor to National Needle Company, Springfield, Mass. Needle-machine	404,337	May 28	2718	705	47	1206
Berry, Marcellus F., Brooklyn, N. Y. Memorandum-book	401,115	Apr. 9	1033	276	47	204
Bertrand, Ernst, Kladno, Bohemia, Austria-Hungary, assignor to Pottstown Iron Company, Pottstown, Pa. Repairing converter-bottoms	403,392	June 18	1499	398	47	1535
Berwick, William, Fall River, Mass. Governor for steam-engines	402,892	May 7	498	132	47	756
Besemer, Andrew A., Tecumseh, Mich. Water-motor	402,655	Apr. 23	2476	645, 646	47	498
Bessemer Steel Company. (See Reese, Jacob, assignor.)						
Beasler, George J., *et al.* (See McFarlane, John, assignor.)						
Best, Ezra. (See Butler, James C., assignor.)						
Best, F. J. (See Campbell, John A., assignor.)						
Betts, Lewis F., New York, N. Y. Machine for finishing metal tubes	402,133	Apr. 30	2609	676	47	532
Betts, Lewis F., assignor of two-thirds to R. E. Deits Company, New York, and Steam Gauge and Lantern Company, Rochester, N. Y. Tubular lantern	401,116	Apr. 9	1034	276	47	204
Betts, Rodney L., Brunswick, N. Y. Horse-tail holder	405,941	June 25	2360	618	47	1706
Bevens, John, Marine Mills, Minn. Draft-equalizer	403,635	May 21	1638	434	47	990
Bevier, B. S. (See Middleton, John A., assignor.)						
Bevin, Leander A., *et al.* (See Rider, Thomas J., assignor.)						
Bevinger, William H., Middletown, Ohio. Hip-belt	405,761	June 25	2098	550	47	1658
Beyett, John, *et al.* (See Black, William J., assignor.)						
Bianchi, Francis, assignor of one-half to L. Boyer, New Orleans, La. Diffusion apparatus	402,656	Apr. 23	2478	646, 647	47	498
Bibb, Peyton B. (See Woodward and Bibb.)						
Bickford, Chancla M. (See Lockwood and Bickford.)						
Bickford, Charles, Boston, Mass. Time-piece dial	400,734	Apr. 2	446	119	47	88

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Bickford, Erskine F., assignor to Boston Rubber Shoe Company, Malden, Mass. Rubber boot or shoe	401,246	Apr. 9	1238	330	47	243
Bickford, Erskine F., assignor to Boston Rubber Shoe Company, Malden, Mass. Rubber boot	404,674	June 4	449	113	47	1312
Bidwell, Charles H., Albion, N. Y. Bean-thrashing machine	402,803	May 7	500	132	47	757
Bigelow, James A., Melbourne, Victoria, assignor to J. H. Nathan, Sidney, New South Wales. Construction of beer-engines	401,406	Apr. 16	1481	392, 393	47	302
Bigham, Ambrose W. (See Paty and Bigham.)						
Bill, Charles H., Waltham, Mass. Scuffle-hoe	404,156	May 28	2426	635	47	1154
Bill, Jeremiah C., Willimantic, Conn. Automatic clutch and tension machine	400,998	Apr. 9	864	232	47	174
Billberg, Carl O. C., Philadelphia, assignor to T. H. and G. A. Dallett, Thornbury, Pa. Dynamo-armature	401,632	Apr. 16	1847	481	47	370
Billing, William H., assignor of two-thirds to A. Callie and E. A. Owen, East Saginaw, Mich. Cash-carrier	404,887	June 11	757	193	47	1381
Billings, George S., Lyons, Colo. Wagon-gear	405,819	June 25	2171	571	47	1673
Billups, Cealy, Norfolk, Va. Plow	402,390	Apr. 30	2986	775	47	604
Binns, Robert. (See Stevens, Joel W., assignor.)						
Bing, Ludwig, Berlin, Germany. Indicator for card-players	405,762	June 25	2100	550	47	1659
Bingham, Solon, Conklingville, assignor to A. A. Sumner, Albany, N. Y. Wash-board	400,823	Apr. 2	596	162	47	114
Binsfeldt, Louis, and J. Chateau, Detroit, Mich. Combined door lock and hinge	404,590	June 4	340	82	47	1289
Birch, George A., East Greenbush, N. Y. Snow-scraper	404,952	June 11	844	220	47	1309
Birch, James H., Plattsburg, Mo. Double-pointed pin	404,675	June 4	449	113	47	1312
Birckhead, Lennox, Toledo, Ohio. Steam-pipe joint for excavating-machines	402,555	May 7	3	2	47	664
Bird, James P. (See Rounds, Benjamin F., assignor.)						
Bird, Richard C. (See Page and Bird.)						
Bird, William E., Boston, Mass. Sand-molding machine	400,893	Apr. 9	702	190	47	145
Birdsall, Edgar M., assignor to M. Birdsall, Buffalo, N. Y. Traction-wheel	403,321	May 14	1179	311	47	893
Birdsall, Edgar M., assignor to M. Birdsall, Buffalo, N. Y. Valve-gear	403,435	May 14	1377	361	47	930
Birdsall, Edgar M., assignor to M. Birdsall, Buffalo, N. Y. Traction-engine	404,157	May 28	2427	635, 636	47	1154
Birdsall, Mary. (See Birdsall, Edgar M., assignor.)						
Birely, James G., Oshkosh, Wis. Flat-roofed building	400,431	Apr. 2	11	4	47	5
Birkholz, Hans, assignor to E. P. Allis, Milwaukee, Wis. Apparatus for casting chill-rings	404,888	June 11	758	193	47	1381
Birkholz, Hans, assignor to E. P. Allis, Milwaukee, Wis. Apparatus for casting chilled corrugated rollers	404,889	June 11	759	193	47	1381
Bischoff, Hugo. (See Mieg and Bischoff.)						
Bishop, George H., Revere, Mass. Blacking for boots or shoes	405,763	June 25	2101	.....	47	1659
Bishop, George W. (See Cooper, Milliken, and Bishop.)						
Bishop, Ira, San Francisco, Cal. Cable-railway-conduit mold	403,728	May 21	1777	467	47	1017
Bishop, Walter S., New Haven, Conn. Brush-holder for dynamos	405,002	June 11	920	243	47	1414
Bissell Carpet Sweeper Company. (See Drew, Walter J., assignor.)						
Bitterly, Adolph, Ottawa, Ill. Scaffolding	403,636	May 21	1639	434	47	990
Bixler, Andrew H., North Topeka, Kans. Lamp-extinguisher	405,764	June 25	2101	551	47	1659
Black, Benjamin N., Paterson, N. J. Pencil-sharpener	402,715	May 7	239	63	47	709
Black, William F., Cleveland, Ohio. Axle-box	400,735	Apr. 2	449	120	47	89
Black, William J., assignor of two-thirds to J. Beyett and C. K. Thomas, Alvord, Tex. Whiffletree	403,903	May 28	2040	536	47	1077
Black, William J., assignor of two-thirds to J. Beyett and C. K. Thomas, Alvord, Tex. Whiffletree	403,904	May 28	2041	537	47	1077
Blacker, Joseph S., *et al.* (See Treharn, Joseph L., assignor.)						
Blackledge, John W., Indianapolis, Ind. Show-case	405,003	June 11	921	243	47	1414
Blades, Harry H., assignor to Detroit Motor Company, Detroit, Mich. Commutator	403,905	May 28	2042	537	47	1077
Blaine, George E., Dayton, Ohio. Car-truck	404,676	June 4	450	113, 114	47	1312
Blair, John A., Philadelphia, Pa. Harvester-cutter	401,117	Apr. 9	1035	277	47	204
Blake, Eben W., *et al.* (See Grinnell, Eugene S., assignor.)						
Blake, George F., Belmont, assignor to G. F. Blake Manufacturing Company, Boston, Mass. Compensating device for engines	404,338	May 28	2730	705, 706	47	1207
Blake, James V., and F. C. Wilson, Chicago, Ill.; said Blake assignor to said Wilson. Water-filter	400,736	Apr. 2	449	120	47	89
Blake, John F., New York, N. Y. Coin-released spirometer	405,455	June 18	1604	423	47	1557
Blake, John H., Deering, Me. Steam-hammer	405,072	June 11	1023	273	47	1435
Blake Manufacturing Company, George F. (See Blake, George F., assignor.)						
Blakemore, William F., Davenport, Iowa. Device for tightening ropes	404,158	May 28	2429	636	47	1155
Blanchard, Allen I., Chicago, Ill. Cash-fare ticket	405,820	June 25	2172	571	47	1673
Blankart, John, assignor of one-half to S. C. Karrer, Detroit Mich. Runner for wheeled vehicles	403,322	May 14	1173	311	47	893
Blankman, John S., Washington, D. C. Sight for fire-arms	403,242	May 14	1042	276	47	868
Blasius, Levin W., Philadelphia, Pa. Indicator for pianos or organs	403,906	May 28	2043	537	47	1077
Blau, John G., Philadelphia, Pa. Safety-guide for railway-cars	403,907	May 28	2044	538	47	1078
Blazier, Oscar V., Gillette, N. J. Trace-loop for vehicles	400,630	Apr. 2	288	81	47	60
Blessing, James H., Albany, N. Y. Apparatus for purifying water	402,224	Apr. 30	2737	710	47	558
Blessley, William H., Harrogate, county of York, England. Drive-pulley	403,086	May 14	791	210	47	890
Bliss Company, E. W. (See Hart, Charles L., assignor.)						
Bliss Company, E. W. (See Leavitt, Frank M., assignor.)						
Bliss, Francis D., Bridgeport, Conn. Nut for carriage-axles	405,338	June 18	1423	375	47	1521
Blix, Anthony J., Anaconda, Mont. Ter. Cartridge-belt	404,677	June 4	452	114	47	1313
Block, Adolf, New York, N. Y. Match-lighting device for cigars	405,765	June 25	2103	551	47	1659
Block, Hyman I., Chicago, assignor of one-third to H. Lebowich, Cook County, Ill. Culinary grater	402,651	May 7	143	35	47	691
Blockhous, Charles. (See Danphe and Blockhous.)						
Bloede, Victor G., Baltimore, Md., assignor of one-half to J. Bancroft, Wilmington, Del. Recovering spent alkali	403,869	May 21	1982	.....	47	1057
Bloede, Victor G., Baltimore, Md., assignor of one-half to J. Bancroft, Wilmington, Del. Recovering alkali	403,870	May 21	1983	.....	47	1057
Blood, Erastus R., and S. F. Wenstran, assignors to M. P. Blood, Ludlow, Pa. Lamp-black machine	403,174	May 14	923	243	47	845
Blood, Martha P. (See Blood and Wenstran, assignors.)						
Blood, William I., Franklin Falls, N. H. Recorder for cash-drawers	402,797	May 7	368	97	47	732
Bloom, Eddy M. (See Bloom, Samuel L. and E. M.)						
Bloom, Samuel L. and E. M., Findlay, Ohio. Shutter	401,813	Apr. 23	2121	553	47	430
Bloomqvist, Frank, Two Harbors, Minn. Meat-chopping machine	400,999	Apr. 9	865	232	47	175

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Blossom, Lewis G. (See Coddie, Michael, assignor.)						
Blount, Fred P. (See Wall, Alexander B., assignor.)						
Blount, John G., Boston, Mass. Water-gage	401,326	Apr. 16	1351	361	47	277
Blum, Christian G., and P. Listeman, Collinsville, Ill. Roofing-tongs	404,678	June 4	453	114, 115	47	1313
Blunt, Edmund, Brooklyn, N. Y. Block-signal system for railways	402,556	May 7	4	2	47	664
Blunt, Edward. (See Stouffer, Hiram C., assignor.)						
Blydenburgh, Charles M., Riverhead, N. Y. Vehicle-spring	403,243	May 14	1044	276	47	869
Blydenburgh, Charles M., Riverhead, N. Y. Vehicle-spring	403,323	May 14	1174	312	47	894
Blyth, James F. (See Newall and Blyth.)						
Boardman, George B., Chicago, Ill. Covering for boilers	402,798	May 7	370	98	47	732
Bobrick, Gabriel A., Boston, Mass. Desk and chair for schools	404,250	May 28	2583	673	47	1181
Bobrick, Gabriel A., Boston, Mass. Dissolving gum-copal, &c	404,251	May 28	2585	.....	47	1722
Bock, Martin, Hazleton, Pa. Key for time-pieces	405,004	June 11	922	244	47	1414
Boda, William J., Dayton, Ohio. Door-hanging	403,572	May 21	1552	409	47	973
Boda, William J., Dayton, Ohio. Finishing of house interiors	403,573	May 21	1554	409, 410	47	973
Boddiker, Henry, Chicago, Ill. Danger-gate	402,799	May 7	371	98	47	732
Bode, Peter J., Belleville, Ill. Pump	403,507	May 21	1462	383	47	955
Bodefeld, Meinolph, St. Louis, Mo. Pneumatic railway	403,729	May 21	1778	467, 468	47	1018
Bodine Roofing Company. (See Jameson, Charles B., assignor.)						
Boekel, Julius. (See Boekel, William and J.)						
Boekel, William and J., Philadelphia, Pa. Gas or lamp bracket	403,508	May 21	1463	383, 384	47	955
Boekelman, Bernard, New York, N. Y. Musical notation	402,225	Apr. 30	2740	710	47	558
Boelling, Wilhelm, Berlin, Germany. Flooring-block	401,479	Apr. 16	1588	420	47	322
Boenker, Henry H., St. Charles, Mo. Automatic grain-weighing machine	401,118	Apr. 9	1036	277	47	205
Boettner, Charles W., and H. H. Gilchrist, Little River, Ark. Cloth-cutting apparatus	402,652	May 7	144	35	47	691
Bogardus, Charles A. (See Saltmarsh and Bogardus.)						
Boggs, Henry H., assignor to Hemingway Manufacturing Company, Syracuse, N. Y. Cooking apparatus	401,480	Apr. 16	1589	420	47	323
Bogge, William H., Covington, Ohio. Land-marker	401,679	Apr. 16	1908	497	47	380
Bogle, Walter S., Chicago, Ill. Loading and hoisting bucket	402,134	Apr. 30	2610	676	47	533
Bogler, Philip, Stewart, Minn. Car-coupling	402,391	Apr. 30	2988	774	47	604
Bohmann, Joseph, Chicago, Ill. Arm-rest for musical instruments	401,814	Apr. 23	2122	553	47	430
Bohn, René, Ludwigshafen-on-the-Rhine, Bavaria, assignor to Badische Anilin and Soda Fabrik, Mannheim, Germany. Alizarine-blue green	401,633	Apr. 16	1848	.....	47	370
Bohn, René, Ludwigshafen-on-the-Rhine, Bavaria, assignor to Badische Anilin and Soda Fabrik, Mannheim, Germany. Carbazol-yellow	401,634	Apr. 16	1849	.....	47	370
Bohn, René, Ludwigshafen-on-the-Rhine, Bavaria, assignor to Badische Anilin and Soda Fabrik, Mannheim, Germany. Alizarine-green sulpho-acid	401,635	Apr. 16	1851	.....	47	370
Bohnenstiel, Casper, Newport, Ky. Stem winding and setting watch	401,815	Apr. 23	2123	553	47	430
Boice, Alvin S., New Richland, Minn. Lock	404,516	June 4	226	54	47	1267
Boice, James A., Nevada, Mo. Lifting-jack	401,119	Apr. 9	1038	277	47	205
Bolleau, Etienne, assignor to L. J. Peck, St. Louis, Mo. Grate-bar for furnaces	403,730	May 21	1781	468, 469	47	1018
Boisvert, Napoleon, *et al.* (See Ball, Clinton M., assignor.)						
Boisvert, Napoléon, assignor of three-fourths to J. and H. E. Hamilton, Salmon Falls, and E. M. Ball, Great Falls, N. H. Shuttle-check for looms	405,980	June 25	2427	635	47	1718
Boland, Claude M., New York, N. Y. Glove-sewing machine	400,432	Apr. 2	12	4	47	5
Bolen, Arthur O., *et al.* (See Kaylor, John, assignor.)						
Bolick, Jerome, Conover, N. C. Wheel	403,908	May 28	2045	538	47	1078
Boman, Clara W., New York, N. Y. Cigar wrapping and rolling machine	405,073	June 11	1025	274	47	1436
Bomm, Theodor, Mühlhausen, Germany. Transmission apparatus	403,637	May 21	1640	434, 435	47	991
Bonehill, Christopher G., Belmont Row, Birmingham, county of Warwick, England. Breech-loading fire-arm	404,380	June 4	13	3	47	1227
Boni, Frank H., Sioux City, Iowa. Road-cart	405,074	June 11	1026	274	47	1436
Bonine, Walter B. (See Beeson and Bonine.)						
Bonnell, Elliott M., and J. S. Lambing, Corry, Pa. Bed-spring	405,821	June 25	2173	571, 572	47	1673
Bonsall, Arthur C. (See Cowburn and Tentschert, assignors.)						
Book Metal Company. (See Schonacker, John E., assignor.)						
Bookwalter, John W., Springfield, Ohio. Apparatus for converting crude iron into malleable iron or steel	404,159	May 28	2430	636, 637	47	1155
Bookwalter, John W., Springfield, Ohio. Apparatus for converting crude metal into malleable iron or steel	405,766	June 25	2104	551	47	1659
Boorman, Joseph A., Leeds, county of York, England. Apparatus for plotting angles for bevel-gear	400,737	Apr. 2	451	120, 121	47	89
Booth, Ebenezer H., Kirkwood, N. Y. Vehicle-spring	402,894	May 7	501	133	47	757
Booth, George T., Christchurch, New Zealand. Disk harrow	405,005	June 11	924	244, 245	47	1414
Booth, James A., Boston, Mass. Machine for soldering end pieces on cans	405,822	June 25	2174	572	47	1673
Borden, Hamilton, *et al.* (See Selleck, William J., assignor.)						
Borgfeldt, Nicholas H., Brooklyn, and A. Lewyn, assignors to National Progress Bunching Machine Company, New York, N. Y. Cigar-bunching machine	403,410	May 14	1314	343	47	919
Borie, Louis J., assignor of one-half to G. F. Chevalier, San Francisco, Cal. Machine for affixing postage-stamps, &c	405,393	June 18	1500	398	47	1536
Borland, Lewis, San Francisco, Cal. Grain-drier	403,411	May 14	1315	344	47	919
Borland, Lewis, San Francisco, Cal. Grain-drier	403,412	May 14	1316	344	47	919
Born, Paul, New York, N. Y. Boiler-feed regulator	405,456	June 18	1605	423	47	1537
Boston and Lockport Block Company. (See Ferrall, Thomas R., assignor.)						
Boston Feed Basket Company. (See Williams, John H., assignor.)						
Boston Rubber Shoe Company. (See Bickford, Erskine F., assignor.)						
Boswell, Arthur C. (See Owen, Boswell, and Carlock.)						
Boswell, George G. F., assignor of two-fifths to J. E. and J. F. Boswell, Indianapolis, Ind. Drive-chain	403,909	May 28	2047	538	47	1078
Boswell, James F., *et al.* (See Boswell, George G. F., assignor.)						
Boswell, Joseph E., *et al.* (See Boswell, George G. F., assignor.)						
Bosworth, Charles B. (See Meady and Bosworth.)						
Bosworth, Percy B., assignor of one-half to C. Baechtold, Brooklyn, N. Y. Automatic vending apparatus	402,800	May 7	373	98	47	733

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Bothwell, David, Hannibal, N. Y. Liquid-measure	405,075	June 11	1027	274	47	1436
Botkin, Abram, Wilmington, Del., assignor of one-tenth to C. Udelewitz, Washington, D.C. Convertible chair	404,767	June 4	569	146	47	1338
Bottom, Turner D., New York, N. Y. Filament for incandescent electric lamps	404,463	June 4	138	.....	47	1251
Bottome, Turner D., Newark, N. J., assignor to J. B. Tibbits, Hoosick, N. Y. Manufacture of incandescent-lamp filaments	401,120	Apr. 9	1039	.....	47	205
Bottome, Turner D., assignor to J. B. Tibbits, Hoosick, N. Y. Chloridizing gold ores	405,824	June 25	2177	573	47	1674
Boughn, Benjamin F., Randolph, Nebr., and W. Cashner, Pleasant Hill, assignors of one-third to L. Gates, Garden City, Mo. Lock-hinge	400,540	Apr. 2	165	43	47	35
Boulay, Charles, St. Pie, Quebec, Canada. Sulky-plow	400,433	Apr. 2	13	4	47	6
Bourne, William S., Alton, Iowa. Wagon-body raiser	404,464	June 4	140	33	47	1252
Bousfield, Edward T. (See Howard and Bousfield.)						
Bontell, William H., assignor to C. W. Kelsea, Antrim, N. H. Apple parer, corer, and slicer	405,825	June 25	2178	573, 574	47	1674
Bouton, John W. (See Stahl and Bouton.)						
Bouzard, Gustave, Paris, France. Covered corset-steel	404,252	May 28	2585	673	47	1182
Bové, Hubert. Philadelphia, Pa. Candle-guard	403,509	May 21	1464	384	47	956
Bovee, David W., Tama, Iowa. Hay-stacker	402,895	May 7	502	133	47	757
Bowden, Joseph B., Brooklyn, N. Y. Forming rings	400,541	Apr. 2	167	44	47	35
Bowdish, Frank C. (See Burk, Morris E., assignor.)						
Bower, Byron B., Bainbridge, Ga. Water-motor	403,731	May 21	1782	469	47	1018
Bowers, Marcus M., assignor to Roland Plow Works, Baltimore, Md. Plow	403,032	May 7	697	182	47	795
Bowles, Zachary T., Hillsborough, Tex. Bridle-bit	403,510	May 21	1465	384	47	956
Bowling, Enoch C., *et al.* (See Morgan, Benjamin B., assignor.)						
Bowman, Henry L. (See Bowman and Sharp.)						
Bowman, Ira W. and H. L., and S. Sharp, East Liverpool, Ohio. Hame-fastener	403,732	May 21	1783	469	47	1019
Bowman, James W., College Corner, Ohio. Hand garden-cultivator	403,413	May 14	1317	344	47	919
Bowman, John. (See Steiale, William M., assignor.)						
Bowman, John D. (See Dudley and Bowman.)						
Bowman, John D., Altoona, Pa. Pressure-regulator	402,392	Apr. 30	2969	776	47	605
Bowman, John D., Altoona, Pa. Blow-off device	405,942	June 18	1285	340	47	1492
Bowman, John D., Altoona, Pa. Pressure-regulator for gas-conduits	405,944	June 18	1286	341	47	1492
Box, William W., Crayford, county of Kent, assignor to E. Weidlich, Holloway, England. Umbrella-frame	401,536	Apr. 16	1677	442	47	338
Boyce, Thomas, New York, N. Y. Percolator	404,591	June 4	342	82	47	1290
Boyd, John, assignor of one-eighth to W. G. White, Baltimore, Md. Centrifugal machine for treating grain, &c	403,910	May 28	2047	539	47	1078
Boyd, Robert, *et al.* (See Culberson, John L., assignor.)						
Boyden, George A., assignor of one-half to C. B. Mann, Baltimore, Md. Fluid-pressure brake. (Reissue)	10,993	Apr. 2	698	187, 188	47	133
Boyden, George A., assignor to Boyden Power Brake Company, Baltimore, Md. Locomotive-driver brake	403,871	May 21	1984	521	47	1057
Boyden, George A., assignor to Boyden Power Brake Company, Baltimore, Md. Locomotive-driver brake	404,339	May 28	2721	706	47	1207
Boyden, George A., assignor to Boyden Power Brake Company, Baltimore, Md. Release-valve for air-brakes	404,768	June 4	573	147	47	1338
Boyden, George A., assignor to Boyden Power Brake Company, Baltimore, Md. Engineer's cock for air-brakes	405,197	June 11	1211	321, 322	47	1472
Boyden, George A., assignor to Boyden Power Brake Company, Baltimore, Md. Locomotive-valve for air-brakes	405,657	June 18	1939	510	47	1622
Boyden, George A., assignor to Boyden Power Brake Company, Baltimore, Md. Pressure-regulating valve	405,981	June 25	2429	635	47	1718
Boyden Power Brake Company. (See Boyden, George A., assignor.)						
Boyer, Bassler, Lebanon, Pa. Car-brake	400,542	Apr. 2	168	44	47	35
Boyer, Edward C., Dayton, Ohio. Disk harrow and cultivator	401,994	Apr. 23	2380	619	47	480
Boyer, Leon. (See Bianchi, Francis, assignor.)						
Boyle, Homer L., Grand Rapids, assignor of one-half to H. B. Peck, Allegan, Mich. Mail-bag	403,872	May 21	1986	521	47	1058
Boyle, Peter J., Boston, and G. S. Gates, Athol, Mass. Garment-supporter	401,121	Apr. 9	1040	278	47	205
Boynton, Edward S., assignor to Campbell Printing Press and Manufacturing Company, New York, N. Y. Valve for pneumatic pipes or tubes	401,680	Apr. 16	1909	497	47	380
Boynton, Edward S., assignor to Campbell Printing Press and Manufacturing Company, New York, N. Y. Wrench	404,769	June 4	575	147	47	1338
Boynton, Edward S., assignor to Campbell Printing Press and Manufacturing Company, New York, N. Y. Pipe-wrench	404,770	June 4	576	147	47	1338
Boynton, John W. (See Ostrom and Boynton.)						
Bozell, Stephen A. D., Atlanta, Ind. Gate	403,911	May 28	2050	539	47	1079
Brace, Everett A., Moberly, Mo. Scaffold-bracket	401,636	Apr. 16	1852	481	47	370
Bracher, Philip H., Wincanton, county of Somerset, England. Distilling apparatus	403,638	May 21	1641	435	47	991
Bradburn, Joseph A., Northwich, county of Chester, England. Manufacturing caustic soda	402,296	Apr. 30	2741	.....	47	559
Braddock, James S. (See Strickler and Braddock.)						
Bradford, Charles K., Lynnfield, assignor to W. F. Kakas, Boston, Mass. Fishing-reel	403,733	May 21	1784	469	47	1019
Bradley, Arthur C. (See Bradley, Stephen R. and A. C.)						
Bradley, Arthur C. and S. R., Brooklyn, N. Y. Apparatus for the manufacture of white lead	404,253	May 28	2587	674	47	1182
Bradley, Charles S., Yonkers, N. Y. Electric motor	404,465	June 4	141	33	47	1252
Bradley, Charles S., Yonkers, N. Y. Alternating-current electric motor	404,466	June 4	143	33, 34	47	1252
Bradley & Hubbard Manufacturing Company. (See Evarts, Charles A., assignor.)						
Bradley, Jeremiah W., Marshall, N. C. Expectorant	402,296	Apr. 30	2838	.....	47	577
Bradley, Patrick P., Harrisburg, Pa. Hydrant-casing	403,639	May 21	1642	435	47	992
Bradley, Stephen R. (See Bradley, Arthur C. and S. R.)						
Bradley, Stephen R. and A. C., Brooklyn, N. Y. Manufacturing oxides	404,254	May 28	2588	674	47	1182
Bradley, William W., assignor to J. C. Dueber, Newport, Ky. Engraving and chasing machine	402,135	Apr. 30	2612	676, 677	47	533
Bradley, William W., assignor to J. C. Dueber, Newport, Ky. Watch-case pendant	403,511	May 21	1466	384	47	956
Bradsby, William B., assignor of one-half to C. Stewart, Greenville, Ill. Thill-coupling	402,502	Apr. 30	3169	821	47	639
Bradt, Charles E., *et al.* (See Mandrill, George W., assignor.)						
Bradwell, Thomas, Chicago, Ill. Cable-railway mechanism	403,512	May 21	1467	385	47	956
Brady, Charles N. (See Semple and Brady.)						
Brady, Farley, Waxahachie, Tex. Machine for packing cotton	403,734	May 21	1785	470	47	1019
Braggins, Seth, Rochester, N. Y. Means for controlling the flow of oil to injector-burners for steam-boiler furnaces	402,896	May 7	503	133	47	757
Brain, Robert D., Springfield, Ohio. Preventing the fraudulent return of periodicals	402,136	Apr. 30	2616	677	47	533
Brainard, Adelbert M., Chicago, Ill. Bolt and nut	404,953	June 11	846	221	47	1309
Braithwaite, Charles H., Ardmore, Pa. Grass-receptacle for lawn-mowers	402,237	Apr. 30	2742	710	47	559

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Braithwaite, Davies. (See Buxton, Braithwaite, and Smith.)						
Brambel, Grant, Lake Park, Minn. Padlock	401,407	Apr 16	1483	393	47	302
Brandenburg, Isaac S., Peoria, Ill. Steam-cooker	404,255	May 28	2590	674	47	1182
Brandes, Henry H., Corydon, Ky. Combined anvil and vise	405,992	June 25	2430	636	47	1718
Brandon, George. (See Pfeil, Philip, assignor.)						
Brandon, Robert L., near Fort Adams, Miss. Feed-regulator for cotton-gins	405,245	June 18	1288	341	47	1492
Brandt, Henry, Brooklyn, N. Y. Coal and wood cabinet	403,456	May 14	1379	361	47	931
Brandtner, Carl, Reading, Pa. Washing-machine	401,000	Apr. 9	867	232	47	175
Braun, Carl W. (See Gusten and Braun.)						
Braun, Charles A., Chicago, Ill. Electrical bell-pull	405,525	June 18	1715	453	47	1580
Braun, William F., assignor, by mesne assignments, to Consolidated Coupling Company, New York, N. Y. Car-coupling	405,457	June 18	1606	423, 424	47	1557
Braune, Anton. (See Mehlhardt, Julius, assignor.)						
Brawn, Augustus, assignor of one-half to J. H. Douge, Pleasant Hill, Nebr. Animal-trap	405,006	June 11	925	245	47	1415
Bray, John D., Montreal, Quebec, Canada. Fountain-pen	405,458	June 18	1609	424	47	1558
Bray, John P., and O. S. Pierce, Pawtucket, R. I. Machine for dying yarn on the skein	402,649	May 7	139	34	47	690
Bray, Mellen, Newton, Mass. Rivet	402,650	May 7	141	35	47	690
Bray, Mellen, Newton, Mass. Manufacturing pronged rivets	402,651	May 7	142	35	47	691
Bray, Morris P., Ansonia, Conn., assignor of one-half to C. L. Olmstead, West Brookfield, and A. D. Nason, Springfield, Mass. Making button-hole stripe	401,995	Apr. 23	2382	619	47	490
Breadin, Anna M., Philadelphia, Pa. School-desk	400,738	Apr. 2	454	121	47	89
Breden, Adalmar. (See Siemang, Stefan, assignor.)						
Breed, Albert H. (See Currier, Herbert L., assignor.)						
Breed, James L., Syracuse, N. Y. Paving-block	402,897	May 7	505	133	47	758
Breeden, William M., Bennettsville, S. C. Stalk-cutter	404,256	May 28	2591	674	47	1183
Breese, William. (See Race, George, assignor.)						
Brelaz, George L. (See Pictet, Raoul P., assignor.)						
Breth, Robert L., New Washington, Pa. Car-coupling	403,640	May 21	1644	436	47	992
Bretney, Eugene, Indianapolis, Ind., assignor to Cockle Separator Manufacturing Company, Milwaukee, Wis. Dust-collector	405,869	June 25	2247	591	47	1687
Bronx, Joseph F., Vineland, assignor of one-half to W. H. Grosscup, Camden, N. J. Bicycle	404,771	June 4	576	148	47	1339
Brewer, Adolph F., San Francisco, Cal. Gage for grinding twist or flat drills	403,175	May 14	924	244	47	845
Brewer, William J., assignor of three-fifths to T. W. Rae, F. H. Reed, W. Thompson, and G. N. McKibbin, New York, N. Y. Conduit for cable or electric railways	405,767	June 25	2106	558	47	1660
Brewington, Henry S., Baltimore, Md. Household sifter	403,087	May 14	792	211	47	820
Brewington, Henry S., Baltimore, Md. Fly-fan	404,890	June 11	760	194	47	1381
Brewster & Company, J. B. (See Wood, Thomas H., assignor.) (Reissue.)						
Brewster, Lewis W., and R. Swift, Palmyra, Tenn. Car-coupling	404,070	May 28	2300	602, 603	47	1128
Bride, Cotter T. (See Donnelly and Bride.)						
Bridgeport Brass Company. (See Somers, George E., assignor.)						
Bridgman, Edward H., Pittsfield, Mass. Adjustable box for shafts	401,408	Apr. 16	1484	393	47	303
Brierley, John H., Brooklyn, N. Y. Hair-plucking machine	400,794	Apr. 9	703	181	47	146
Briggs, John S., and W. E. Leach, San Buenaventura, Cal. Fruit-stoning machine	404,517	June 4	228	58	47	1267
Briggs, Joseph H. (See Kester, Jesse F., assignor.)						
Briggs, Lucina, Glasgo, Conn. Thread	400,739	Apr. 2	455	121	47	90
Brigham, Charles F., Boston, Mass. Steam-trap	401,772	Apr. 23	2048	530	47	418
Brillié, Lucien, Paris, France. Apparatus for registering the consumption of electric energy	403,244	May 14	1045	276, 277	47	869
Brinkerhoff, Warren M. (See Stevens, Brinkerhoff, and Swart.)						
Brinkerhoff, Warren M., Auburn, N. Y. Harrow	405,459	June 18	1610	424	47	1558
Brinkerhoff, Warren M., Auburn, N. Y. Cultivator	405,942	June 25	2360	619	47	1706
Brinkmann, Henry, Philadelphia, Pa. Ratchet-drill	404,592	June 4	343	88	47	1290
Brissard, Henri A., Paris, France. Paper-ruling machine	402,057	Apr. 23	2179	647, 648, 649	47	499
Bristol Brass and Clock Company. (See Taplin, Alvin, assignor.)						
Brizzolari, Davis, Madisonville, Tex. Whitewash	401,122	Apr. 9	1041	.....	47	206
Broad, Alphonzo H. (See Robbins and Broad.)						
Broadbent, Eli W. (See Faulkner, Alfred, assignor.)						
Broadbooks, Peter, Batavia, N. Y. Metal-shears	405,526	June 18	1716	453, 454	47	1581
Broadwell, Henry, Blue Mound, Kans. Washing-machine	401,731	Apr. 23	1992	522	47	408
Broadwell, John B., Alpharetta, Ga. Corn-planter and fertilizer-distributer	400,740	Apr. 2	455	121	47	90
Brobst, Benjamin, Columbus, Ohio. Washing-machine	400,741	Apr. 2	457	122	47	90
Brock, Matthias, Boston, Mass., assignor to McKay & Copeland Lasting Machine Company, Portland, Me. Machine for making tack-strips	402,058	Apr. 23	2483	649	47	499
Brock, Matthias, Boston, Mass., assignor to McKay & Copeland Lasting Machine Company, Portland, Me. Machine for setting tack-strips	402,059	Apr. 23	2484	649	47	500
Brock, Matthias, Boston, Mass., assignor to McKay & Copeland Lasting Machine Company, Portland, Me. Machine for making tack-strips	402,060	Apr. 23	2486	649	47	500
Brock, Matthias, Boston, Mass., assignor to McKay & Copeland Lasting Machine Company, Portland, Me. Machine for making tack-strips	402,061	Apr. 23	2488	650	47	500
Brock, Matthias, Boston, Mass., assignor to McKay & Copeland Lasting Machine Company, Portland, Me. Machine for making tack-strips	402,062	Apr. 23	2491	650	47	501
Brockett, William E., Berlin, Wis. Stuffing-box	400,543	Apr. 2	169	44	47	36
Brodt, Tilden E., Brodtville, Wis. Swinging gate	400,631	Apr. 2	289	82	47	60
Brogan, Anthony D., J. Craig, Firhill, Glasgow, county of Lanark, Scotland, and J. French, St. Paul, Minn. Annealing-kiln	405,527	June 18	1719	454	47	1581
Brogden, George W. H., London, England. Coupling for pipes or tubes	401,996	Apr. 23	2383	620	47	491
Bromwell, Charles E., Helena, Ark. Hand-motor	401,637	Apr. 16	1852	482	47	370
Bromwell, William T., *et al.* (See Welch, Rosia W., assignor.)						
Bronson, Levi, assignor of one-half to Pitts Agricultural Works, Buffalo, N. Y. Thrashing-machine	402,801	May 7	375	98, 99	47	733
Brook, Joseph L., Simcoe, Ontario, Canada. Shuttle-motion for looms	400,742	Apr. 2	458	122	47	90
Brooke, William M., assignor of one-half to J. J. Ebert, New York, N. Y. Feed-bag	401,001	Apr. 9	868	233	47	175
Brooks, David, Jr., assignor to Electric Cable Construction and Maintenance Company, Philadelphia, Pa. Box for the distribution of electric wires	401,927	Apr. 23	2286	503	47	462
Brooks, James A. (See Parrish, Elmer A., assignor.)						
Brooks, James W., trustee. (See Gildden, Charles W., assignor.)						
Brooks, James W., trustee. (See Phelan, Merton D., assignor.)						
Brooks, James W., trustee. (See Winter, Henry W., assignor.)						
Brooks, James W., *et al.*, trustees. (See Goddu, Louis, assignor.)						
Brooks, John, Plainfield, N. J. Rotary printing-machine	403,513	May 21	1468	325, 326	47	956

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Brooks, John B., Birmingham, England. Velocipede-saddle	401,128	Apr. 9	1041	278	47	206
Brooks, S. O. (See McDonald, Peter E., assignor.)						
Broomell, Thomas W., assignor of one-half to F. C. Burton, Erie, Pa. Machine for cutting key-seats	404,679	June 4	457	115	47	1314
Brotherton, Willard L., *et al.* (See Pickett, Chancy J., assignor.)						
Broughton, Charles A., Conway, N. H. Machine for forming spool-blanks	401,997	Apr. 23	2384	620	47	491
Broughton, Milton, Syracuse, N. Y. Machine for mixing mineral compounds	402,393	Apr. 30	2992	776, 777	47	605
Brown, Aaron L., Chicago, Ill. Filing-receptacle	404,772	June 4	577	148	47	1339
Brown, Alexander E., Cleveland, Ohio. Drilling-tool	401,537	Apr. 16	1678	442	47	338
Brown, Alexander E., Cleveland, Ohio. Boring-tool	402,394	Apr. 30	2994	777	47	605
Brown, Alfred G., Egan, Dak. Ter. Draft-equalizer	403,873	May 21	1987	521	47	1058
Brown, Andrew H., New York, N. Y. Leak-detector for pipes	401,409	Apr. 16	1485	393	47	303
Brown, Arthur, *et al.* (See Adams, Samuel J., assignor.)						
Brown, Arthur, and P. C. Payette, Detroit, Mich. Ruler	404,593	June 4	343	88	47	1290
Brown, Carver C. (See Cullen and Brown.)						
Brown, Charles M., Chicago, Ill. Lamp-extinguisher	400,743	Apr. 2	459	122	47	90
Brown, Charles T., assignor to F. L. Brown, Chicago, Ill. Lock-hook	404,160	May 28	2430	637	47	1155
Brown, Charles T., assignor to F. L. Brown, Chicago, Ill. Lock-hook	404,161	May 28	2433	637	47	1155
Brown, Charles W., assignor to Bell Telephone Company of Canada, Montreal, Quebec, Canada. Telephone-support	404,680	June 4	459	115	47	1314
Brown & Co., Reuben H. (See Smith, Thomas C., assignor.)						
Brown, Edward E. (See Alvord and Brown.)						
Brown, Flora L. (See Brown, Charles T., assignor.)						
Brown, Frank. (See Day, Milton, assignor.)						
Brown, Frank A., Angelica, N. Y. Bag-holder	403,641	May 21	1644	436	47	992
Brown, Fred. H., Fort Worth, Tex., assignor to Magneto Telegraph Company, of New York. Induction-coil	404,822	June 11	659	170	47	1364
Brown, Gay W., Los Angeles, Cal. Railway and railway-vehicle	400,544	Apr. 2	170	44, 45	47	36
Brown, George H., St. Louis, Mo. Apparatus for the manufacture of gas	402,395	Apr. 30	2997	777	47	606
Brown, George J. (See McCusker, Bernard, assignor.)						
Brown, George S., Atlanta, Ga. Appliance for sick-beds	404,681	June 4	460	115	47	1314
Brown, Horace S., Quincy, Ill. Dredging-machine	404,891	June 11	762	194, 195	47	1381
Brown, Israel F., New London, Conn. Brush-cylinder for cotton-gins	401,124	Apr. 9	1043	278	47	206
Brown, Jacob, *et al.* (See Adams, Samuel J., assignor.)						
Brown, James, deceased; K. Brown, Chicago, Ill., administratrix, and assignor to herself. Can-soldering machine	401,125	Apr. 9	1043	279	47	206
Brown, Jay W. (See Tubbs, Henry C., assignor.)						
Brown, John C. (See Meeks and Brown.)						
Brown, John P. (See Ritter, John L., assignor.)						
Brown, John W., Rock Falls, Ill. Road-cart	405,926	June 25	2180	578	47	1675
Brown, Justus H., Pittsburg, Pa. Overalls, &c	403,457	May 14	1361	362	47	931
Brown, Katie, administratrix. (See Brown, James.)						
Brown, Oscar J., Black River Falls, Wis. Flexible power-shaft	401,681	Apr. 16	1910	497	47	380
Brown, Philip C., Brooklyn, N. Y. Combined sink shovel and cleaner	401,126	Apr. 9	1043	279	47	207
Brown, Randolph H., Coleman, Ga. Mole-trap	403,912	May 28	2051	539	47	1079
Brown, Robert, assignor to Hoover & Gamble, Miamisburg, Ohio. Harvester-frame	401,127	Apr. 9	1049	280	47	207
Brown, Samuel, Seaford Hundred, Del., assignor to C. G. Emery, Brooklyn, N. Y. Machine for making cigarette mouth-pieces	403,324	May 14	1175	312, 313	47	894
Brown, Seth A., Buffalo, N. Y. Net-cutting attachment for torpedoes	401,773	Apr. 23	2049	536	47	418
Brown & Sharpe Manufacturing Company. (See Gay, Francis J., assignor.)						
Brown & Sharpe Manufacturing Company. (See Waterman, John S., assignor.)						
Brown, Walter B., Bordentown, N. J. Necktie-fastener	403,913	May 28	2052	540	47	1079
Brown, Walter F., Providence, R. I. Cut-off-valve gear	402,557	May 7	5	2, 3	47	664
Brown, Walter F., Providence, R. I. Steam-engine cylinder	403,642	May 21	1645	436	47	992
Brown, Walter F., Providence, R. I. Dash-pot	403,643	May 21	1647	437	47	992
Brown, Walter F., Providence, R. I. Steam-jacketed receiver	403,644	May 21	1648	437	47	993
Brown, Walter M., Albany, N. Y. Blow-pipe	405,528	June 18	1721	454, 455	47	1582
Brown, William M., Ingram Station, Pa. Awning-clevis	400,895	Apr. 9	705	191	47	146
Brown, William M., Johnstown, Pa., assignor to Johnson Steel Street Rail Company, of Kentucky. Cast-metal brace-chair for girder-rails	401,538	Apr. 16	1681	442	47	339
Brown, William M., Jr., Sacramento, Cal. Apparatus for operating safety-gates of railway-cars	403,176	May 14	925	244, 245	47	846
Browne, Aldis D. (See Evans, French S., assignor.)						
Browne, Arthur W. (See Casey and Browne.)						
Brownhill, Rowland W., Aston New Town, Birmingham, county of Warwick, England. Apparatus for vending gas	405,943	June 25	2363	619, 620	47	1706
Brownhill, Rowland W., Aston New Town, Birmingham, county of Warwick, England. Apparatus for vending gas	405,944	June 25	2368	621	47	1707
Brownhill, Rowland W., Birmingham, county of Warwick, England. Apparatus for vending gas	405,963	June 25	2431	636, 637	47	1718
Bruce, William, Wellsville, N. Y. Fire-escape	405,945	June 25	2372	622	47	1708
Brücker, Ewald, Sieglar, near Troisdorf, Germany. Sewing-machine	400,744	Apr. 2	461	123	47	91
Bruner, Preston M., St. Louis, Mo. Concrete pavement and floor	401,539	Apr. 16	1681	.....	47	339
Brunker, James E., and P. W. Maxwell, Dublin, Ireland. Inhaler	405,692	June 25	2009	534	47	1639
Brunne, Alfred O., Meriden, Conn. Lamp	404,162	May 28	2435	638	47	1156
Brunner, Marie, Brooklyn, N. Y. Skirt-belt	404,163	May 28	2437	638	47	1156
Brush Electric Company. (See Pfannkuche, Gustav, assignor.)						
Brust, Caspar, Schlossgasse No. 6/2, Haidhausen, Munich, Germany. Electro-therapeutic spectacles	401,622	Apr. 16	1911	498	47	380
Bryan, Dempsey T., Rocky Mount, N. C. Trace-carrier	405,460	June 18	1611	424	47	1588
Bryan, Henry, Modesto, Cal. Header attachment for harvesters	404,954	June 11	849	221, 222	47	1309
Bryant, Andrew J., Winton Place, assignor of one-half to T. S. Spivey, Cincinnati, Ohio. Combination-tool	401,327	Apr. 16	1353	361	47	277
Bryant, Charles A., Wakefield, Mass. Button	405,529	June 18	1723	455	47	1582
Bryant, Edmund A., Ellicottsville, N. Y. Boot-drier	402,137	Apr. 30	2617	677	47	534
Bryant, James N., *et al.* (See Bryant, John C., assignor.)						
Bryant, John C., assignor of two-thirds to J. N. Bryant, Charity, and J. N. Sullivan, Flat Creek, Tenn. Car-coupling	401,726	Apr. 16	1981	519	47	395
Bryant, Solon (See Corning, William O., assignor.)						
Bryce, Alexander F. (See Bryce, Peter F. and A. F.)						
Bryce, Peter F. and A. F., Indianapolis, Ind. Bread-making machine	402,396	Apr. 30	2998	778, 779	47	606

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Bryson, Andrew, Jr. (See Pendleton and Bryson.)						
Bryson, Andrew, Jr. (See Pendleton, Bryson, Tiers, and Moss.)						
Bryson, Andrew, Jr. (See Pendleton, Tiers, Bryson, and Moss.)						
Bryson, Andrew, Jr. (See Tiers, Pendleton, and Bryson.)						
Buchanan, Bolt & Co. (See Flood, Joseph T., assignor.)						
Buchanan, Judson. (See Sanders and Buchanan.)						
Buchanan, Laughlin M., Elmira, Ill. Automatic grain-weighing machine	404,257	May 28	2592	675	47	1183
Buchanan, Robert J., Pittsburg, Pa. Sash-fastener	404,467	June 4	146	34	47	1252
Buck Company, D. A. A. (See Buck, Daniel A. A., assignor.)						
Buck, Daniel A. A., assignor to D. A. A. Buck Company, Cheshire, Conn. Spoon-holder	402,716	May 7	240	63	47	709
Buckeye Iron and Brass Works. (See Krutzsch, William, assignor.)						
Buckingham, Hiram, Hartford, Conn. Grinding and sharpening machinery	401,875	Apr. 23	2203	576	47	447
Buckley, Robert C., Peoria, Ill. Wheel-cultivator	403,414	May 14	1318	345	47	920
Buckman, Samuel Y., Philadelphia, Pa. Machine for bending sheet metal	404,164	May 28	2437	{638 639	47	1156
Budd, Charles P. (See Dubinski, Benjamin, assignor.)						
Budd, Joseph W., and G. D. Carroll, New York, N. Y.; said Budd assignor to E. Thistle, West Hoboken, N. J. Apparatus for burning petroleum	403,033	May 7	698	183	47	795
Budding, Joseph B. (See Lindsey, George W., assignor.)						
Buechner, Carl G. Webster, Dak. Ter. Plow	404,823	June 11	660	170	47	1364
Buell, Charles E., New Haven, Conn. Time-switch for secondary batteries	403,177	May 14	927	{245 246	47	846
Buell, Charles O., New Haven, Conn. Hook	401,683	Apr. 16	1912	498	47	381
Buettner, John H., Cincinnati, Ohio. Sash-fastener	403,645	May 21	1649	437	47	993
Buffum, Charles J., Boston, Mass. Pocket card-case	405,339	June 18	1424	375	47	1521
Buford, Marcellus A., Thompson's Station, Tenn. Rotary engine	401,816	Apr. 23	2124	{553 554	47	430
Bühler, Adolph, Reichenhall, Bavaria, Germany. Papeterie	404,594	June 4	344	83	47	1290
Bühler, Otto. (See Müller, Carl A., assignor.)						
Buice, Luther G., Little Rock, Ark. Mold for casting window-weights	402,558	May 7	8	3	47	664
Bull, Charles T., Bayonne, N. J. Fastener for glove-packages	405,076	June 11	1028	275	47	1436
Bull, James E., Tracy City, Tenn. Car-coupling	404,468	June 4	147	34	47	1253
Bullard, James H., Springfield, Mass. Hydrocarbon-burner	404,955	June 11	850	222	47	1400
Bullough, John. (See Tweedale, Edmund, assignor.)						
Bulow, Paul, Cain, Kans. Coffee-boiler	405,946	June 25	2374	622	47	1708
Bunce, William H., Jersey City, N. J., D. Slate and J. Rodda, Hartford, Conn., assignors to C. C. Woolworth and J. S. Graham, New York, N. Y. Machine for packaging postal-cards	404,773	June 4	579	{148 149 150	47	1339
Bunch, W. P., *et al.* (See Loveland, Philander C., assignor.)						
Bunker, William I., Chicago, Ill. Spring attachmen for rocking-chairs	401,684	Apr. 16	1913	498	47	381
Bunker, William I., Chicago, Ill. Rocking-chair attachment	402,802	May 7	377	99	47	733
Bunker, William I., Chicago, Ill. Rocking-chair attachment	405,330	June 18	1725	455	47	1582
Bunker, William I., Chicago, Ill. Rocking-chair attachment	403,325	May 14	1182	313	47	895
Bunker, William I., La Grange, Ill. Attachment for rocking-chairs	405,340	June 18	1425	375	47	1521
Bunker, William I., La Grange, Ill. Rocking-chair attachment	405,341	June 18	1426	375	47	1521
Bunker, William I., La Grange, Ill. Rocking-chair attachment	400,434	Apr. 2	14	3	47	6
Bunnell, Marcellus J., Taylor, Tex. Hillside-plow	403,034	May 7	700	183	47	795
Bunnell, Morton G., assignor to F. C. Austin, Chicago, Ill. Grading and ditching machine	403,035	May 7	701	{183 184	47	796
Bunnell, Morton G., assignor to F. C. Austin, Chicago, Ill. Grading and ditching machine	404,774	June 4	584	{150 151	47	1340
Bunnell, Morton G., assignor to F. C. Austin, Chicago, Ill. Road-scraping machine	402,297	Apr. 30	2839	736	47	577
Bunting, Thomas C., East Manch Chunk, Pa. Bottle-stopper cover	401,328	Apr. 16	1354	360	47	278
Burbank, Abner J., and E. L. Church, Harvard, Ill. Pulley-changing device	405,461	June 18	1611	425	47	1558
Burbank, Henry L., Jersey City, N. J., assignor to American Bell Telephone Company, Boston, Mass. Metallic telephone-circuit	402,898	May 7	506	134	47	758
Burdick, Charles L., Kansas City, Mo. Paint-distributer	404,956	June 11	852	222	47	1400
Burdon, Levi L., Providence, R. I. Finger-ring	405,693	June 25	2001	525	47	1639
Burford, John M., Winfield, Kans. Attachment for plows or cultivators	401,247	Apr. 9	1239	330	47	243
Burgess, Charles M., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Manufacture of key-blanks	404,892	June 11	763	199	47	1382
Burgess, Charles M., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Latch-case						
Burgess, Robert, *et al* (See Grinnell, Eugene S., assignor.)						
Burk, Morris E., assignor of two-fifths to F. C. Bowdish, Lowville, N. Y. Holdback for vehicles	403,036	May 7	703	184	47	796
Burke, Charles G., Richmond Hill, N. Y. Telegraph-instrument	402,717	May 7	241	63	47	709
Burke, Charles G., Richmond Hill, assignor to F. Wolffe, trustee, New York, N. Y. Telegraphy	405,984	June 25	2436	{637 638	47	1719
Burke, Charles G., Richmond Hill, assignor to F. Wolffe, trustee, New York, N. Y. Telegraph-instrument	405,985	June 25	2437	638	47	1719
Burke, Charles G., Richmond Hill, assignor to F. Wolffe, trustee, New York, N. Y. Telegraphic instrument	405,986	June 25	2439	638	47	1720
Burke, Charles G., Richmond Hill, assignor to F. Wolffe, trustee, New York, N. Y. Telegraphic instrument	405,987	June 25	2440	639	47	1720
Burke, Charles G., Richmond Hill, assignor to F. Wolffe, trustee, New York, N. Y. Telegraph-instrument	405,988	June 25	2443	639	47	1720
Burke, Charles G., Richmond Hill, assignor to F. Wolffe, trustee, New York, N. Y. Telegraphic instrument	405,989	June 25	2444	{639 640	47	1721
Burke, John, assignor of one-half to P. H. Gunckel, Minneapolis, Minn. Valve	402,228	Apr. 30	2743	711	47	559
Burke, Stephen E., Edon, Ohio. Furnace-grate for portable engines	400,224	Apr. 2	597	163	47	114
Burkellow, Thomas A., Washington, Pa. Oil-well bailer	400,696	Apr. 9	706	191	47	146
Burkhard, Thomas, Jr., Brooklyn, N. Y. Trap for exhaust-steam pipes	401,248	Apr. 9	1240	330	47	243
Burlingame, Charles E., Boston, Mass. Photographic camera	403,574	May 21	1554	410	47	974
Burnap, George S., Marietta, Ga. Bolting-cloth cleaner	403,068	May 14	793	211	47	c20
Burnes, Samuel A. (See Wright, Berton L., assignor.)						
Burnett, Charles N., assignor of one-half to H. G. Higinbotham, Clay Centre, Kans. Hose-coupling for railway-cars	402,718	May 7	242	64	47	709
Burnett, Elisha C., Wilkes, Va. Double-shovel plow	405,007	June 11	927	246	47	1415
Burnham & Duggan Railway Appliance Company. (See Duggan, John A., assignor.)						
Burnham, Edward G. (See Smith, Henry V., assignor.)						
Burnham, Walter W., Boston, Mass. Calk for running-shoes	402,138	Apr. 30	2618	678	47	534
Burnham, Zimri W., Grand Rapids, Mich. Turbine wheel	404,340	May 28	2723	706	47	1207
Burnley, William, North East, assignor of two-thirds to C. A. Hitchcock and S. A. Davenport, Erie, Pa. Combined telephone and telegraph system	402,298	Apr. 30	2840	{735 736	47	577

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Burns, Frank, assignor of one-half to E. W. Holt, Westfield, N. Y. Fruit-basket-cover fastening	401,002	Apr. 9	809	233	47	175
Burns, H. A., *et al.* (See Stiles, Frederick, assignor.)						
Burns, John, Rochester, N. Y., assignor of one-half to R. W. Fredericks, Lock Haven, Pa. Smoke and gas consuming furnace	403,874	May 21	1988	522	47	1058
Burns, John B, Indianapolis, Ind., assignor of one-half to E. D. Eames, Watertown, N. Y. Automatic brake-adjuster	402,503	Apr. 30	3170	821	47	639
Burns, Samuel A., Bridgeport, Conn. Brake-handle	401,003	Apr. 9	870	233	47	175
Burns, Walter E., Rising Sun, Md. Road-cart	403,514	May 21	1473	386	47	957
Burr, Ellis M., Champaign, Ill., assignor to J. W. Penfield & Son, Willoughby, Ohio. Brick or tile cutting machine	403,646	May 21	1651	437	47	993
Burr, Theodore B., Harlan, Iowa. End-gate for vehicles	404,071	May 28	2302	603	47	1128
Burrall, William D., *et al.* (See De Zeng, Henry L., assignor.)						
Burrell & Company, D. H. (See Hart, Frederick, assignor.)						
Burrell, George S., Kalamazoo, Mich., assignor to F. E. Marsh, Indianapolis, Ind. Carpet-protector	402,504	Apr. 30	3171	821	47	639
Burridge, Thomas H., deceased; T. J. Burridge administrator, St. Louis, Mo. Sheaf or pulley for cable railways	403,326	May 14	1183	314	47	895
Burridge, Thomas J., administrator. (See Burridge, Thomas H.)						
Burrowes, Albert, Hemlock, Ontario, Canada. Propeller for canal-boats, &c	404,072	May 28	2303	603	47	1128
Burry, John, assignor of two-thirds to J. E. Munson and A. Wirsching, New York, N. Y., Telegraph	404,165	May 28	2439	{639 640 641	47	1156
Burt, James H., and S. E. Holman, West Randolph, Vt. Extension window-screen	400,825	Apr. 2	599	163	47	114
Burt, Townsend W., Mineola, N. Y. Setting apparatus for signals and gates	402,299	Apr. 30	2845	{736 737	47	578
Burtch, William C., and E. M. Gurnee, Kansas City, Mo. Nail-driver	404,166	May 28	2446	641	47	1157
Burtis, Edward F., Sacramento, Cal. Carriage-jack	404,167	May 28	2447	641	47	1158
Burton, Frank C. (See Broomell, Thomas W., assignor.)						
Burton, George D., Boston, Mass. Feed-trough	401,249	Apr. 9	1241	330	47	243
Burton, John M., and C. C. Crewson, Wichita, Kans. Stock-car	405,870	June 25	2248	591	47	1687
Burton, William, Lake Village, Ind. Ditching-plow	401,998	Apr. 23	2386	621	47	481
Buschmann, Friedrich, assignor to Salzwerk Heilbronn, Heilbronn, Germany. Rock-drill	402,229	Apr. 30	2744	711	47	559
Busenbarrick, James E., Robinson, Kans. Grain-weighing apparatus	405,462	June 18	1615	425	47	1559
Busiel, Charles A., *et al.* (See Busiel, Frank. E., assignor.)						
Busiel, Frank. E., assignor of two-thirds to J. T. and C. A. Busiel, Laconia, N. H. Sinker-bar for straight-knitting machines	403,985	May 28	2150	561	47	1098
Busiel, John T., *et al.* (See Busiel. Frank. E., assignor.)						
Busse, Leopold, San Francisco, Cal. Dumping-wagon	404,957	June 11	854	223	47	1400
Butler, James C., assignor of one-half to E. Best, Quincy, Ill. Smoke-consumer	404,775	June 4	587	151	47	1341
Butler, Nathan C., and F. D. Rosenberger, Leipsic, Ohio. Automatic heat-regulating device	400,826	Apr. 2	600	163	47	114
Butler, William H. (See Smith and Gill, assignors.)						
Butterick, Ebenezer, Brooklyn, N. Y. Hen's nest	404,073	May 28	2304	603	47	1129
Butterick, Ebenezer, Brooklyn, N. Y. Hen-coop	405,008	June 11	928	246	47	1416
Butterworth, R. E., *et al.* (See Grzybowski, Julian T., assignor.)						
Button, Quincy A., Austin, assignor of one-half to M. B. Campbell, Moreland, Ill. Tempering tools	405,827	June 25	2182	{578 579	47	1675
Butz, Albert M., and O. Pederson, assignors to Butz Drinking Fountain Company, Chicago, Ill. Liquid-vending apparatus	401,250	Apr. 9	1242	331	47	244
Butz Drinking Fountain Company. (See Butz and Pederson, assignors.)						
Buxton, John H., D. Braithwaite, and M. Smith Manchester, county of Lancaster, England, Printing machinery	405,009	June 11	929	{246 247	47	1416
Buxton & Skinner Stationery Company. (See Barreiras, Enrique S., assignor.)						
Buzzini, Salvatore J., New York, N. Y. Grate for ranges, stoves, and furnaces	404,595	June 4	347	83	47	1291
Byrne, James E., Brooklyn, N. Y. Elevating-machine	404,893	June 11	764	195	47	1382
Byrne, James E., Brooklyn, N. Y. Electrically-controlled engine	404,894	June 11	767	196	47	1383
Byrne, James E., Brooklyn, N. Y. Electric elevating-machine	404,895	June 11	768	{196 197	47	1383
Byrne, James E., Brooklyn, N. Y. Electrically-controlled engine	405,010	June 11	931	{247 248	47	1416
Byrne, Peter, *et al.* (See Greene, Patrick R., assignor.)						
Byrnes, Iles E., *et al.* (See Whitlock, Ephraim J., assignor.)						
Byron, Michelle E., Pepperell, Mass., assignor of one-half to A. Provencher, Manchester, N. H. Machine for stamping soles of boots or shoes	402,803	May 7	377	99	47	734
Bywaters, Joseph K. (See Stinson, James C., assignor.)						
Cabell, Samuel G., Washington, D. C., assignor to Liquid Purifying Company, of West Virginia. Apparatus for purifying and aging liquors	404,682	June 4	461	116	47	1315
Cadett, James W. T., Ashstead, county of Surrey, England. Device for setting or cooling photographic emulsions	405,463	June 18	1616	426	47	1559
Cady, Elisha W., assignor of one-half to D. C. Cooper, Chicago, Ill. Car-coupling	405,993	June 25	2455	642	47	1722
Cahoone, Nellie M., Newark, N. J. Harness-pad	402,719	May 7	244	64	47	710
Caille, Adolph A., *et al.* (See Zerbe, Emil P., assignor.)						
Caille, Adolph A., *et al.* (See Zerbe and Church, assignors.)						
Caille, Arthur, *et al.* (See Billing, William H., assignor.)						
Caille, Arthur, *et al.* (See Zerbe, Emil P., assignor.)						
Caille, Arthur, *et al.* (See Zerbe and Church, assignors.)						
Caird, David, Ansonia, and G. Larkins, Seymour, Conn. Machine for tinning metals	402,899	May 7	508	134	47	758
Caldwell, Edward P. (See Roberts and Caldwell.)						
Caldwell, Edward P., Minneapolis, Minn. Rotary snow-plow	405,300	June 18	1369	360	47	1509
Caldwell, Edward P., Minneapolis, Minn. Snow-plow	405,301	June 18	1370	361	47	1509
Caldwell, Frank G., Wheeling, W. Va. Sheet-metal roofing	403,415	May 14	1319	345	47	920
Caldwell, Frank G., Wheeling, W. Va. Sheet-metal package	404,506	June 4	349	84	47	1291
Calef, Joseph W., North Easton, assignor, by mesne assignments, to A. G. Lovell, trustee, Boston, Mass. Seeder	401,128	Apr. 9	1051	280	47	907
Calhoon, John W. and J. W. A., Kansas City, Kans. Washing-machine	403,986	May 28	2151	562	47	1098
Calhoon, John W. A. (See Calhoon, John W. and J. W. A.)						
Callaway, Andrew J., Chestnut Hill, Ind. Corn-planter and drill combined	400,897	Apr. 9	707	192	47	146
Callender & Patterson. (See Eckert, John C., assignor.)						
Calumet Shade Cloth Company. (See Page and Bird, assignors.)						
Cambria Iron Company. (See Coffin, John, assignor.)						
Cameron, Henry F. D., and T. Harris, assignors of one-third to A. Woodward, Detroit, Mich. Secondary battery	404,168	May 28	2449	641	47	1158
Campany, Milton E., Hamilton, Mich. Holdback for vehicle-thills	400,435	Apr. 2	16	5	47	6

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Campany, Milton E., Hamilton, assignor of one-half to H. B. Peck, Allegan, Mich. Pole or post protector	405,658	June 18	1940	519	47	1622
Campbell, Andrew, Brooklyn, assignor, by mesne assignments, to N. B. Abbott Machine Company, New York, N. Y. Bottle-wiring machine	404,028	May 28	2210	580 581 582	47	1109
Campbell, George P., Cincinnati, Ohio, assignor to Friction Car Brake Company, East St. Louis, Ill. Brake-pipe coupling	402,300	Apr. 30	2851	737	47	579
Campbell, George W., assignor of one-tenth to J. P. Pryor, El Paso, Tex. Car-coupling	401,251	Apr. 9	1244	331 335	47	244
Campbell, Hardy W., Racine, Wis. Wire-tightener	401,004	Apr. 9	872	233	47	176
Campbell, Henry H., assignor of one-half to N. W. Taylor, Cleveland, Ohio. Inclined grate	403,416	May 14	1320	343	47	920
Campbell, Hiram M., Bridgeport, Conn. Hose-carrying strap	402,900	May 7	509	134	47	758
Campbell, John A., assignor to himself and F. J. Best, Ellis, Kans. Latch and lock combined	401,540	Apr. 16	1682	443	47	339
Campbell, M. B. (See Button, Quincy A., assignor.)						
Campbell Printing Press and Manufacturing Company. (See Boynton, Edward S., assignor.)						
Campbell, Robert C., *et al.* (See Taylor, Francis C., assignor.)						
Campbell, William A., Portland, Oreg. Saw-mill set-works	401,876	Apr. 23	2204	578	47	447
Candee, Willard L., Brooklyn, N. Y. Mouth-piece guard for phonographs or telephones	401,732	Apr. 23	1994	522	47	408
Canfield, William W., assignor, by mesne assignments, to National Heating Company, New York, N. Y. Heating system	401,685	Apr. 16	1915	498 499	47	381
Cannell, William, Cleveland, Ohio. Electric railway	404,469	June 4	148	38	47	1253
Canny, Charles C. (See Cook, George W., assignor.)						
Canton Glass Company. (See Barker, David, assignor.)						
Canton Glass Company. (See Henderson, Charles H., assignor.)						
Capen, Thomas W., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Friction clutch and brake	404,776	June 4	588	152	47	1341
Caplinger, Joseph E., Smithfield, Ky. Water-gate	402,139	Apr. 30	2619	672	47	534
Card, Edward, Pawtucket, R. I. Carpet-sweeper	405,828	June 25	2182	570	47	1675
Carey, Frank, Penn Yan, N. Y. Fishing-reel	402,653	May 7	145	36	47	691
Carey, Frank, Penn Yan, N. Y. Fishing-reel. (Reissue)	11,006	June 11	1277	332	47	1484
Carey, Philip, Cincinnati, Ohio. Roofing material	402,559	May 7	10	.....	47	665
Carey, Wilson W., Lowell, Mass. Wood-rim pulley	403,924	May 21	1919	504	47	1045
Carlisle, George, Attleborough, Mass. Tool-handle	401,481	Apr. 16	1590	420	47	323
Carlock, John J. (See Owen, Boswell, and Carlock.)						
Carlsen, Gustav, Uleaborg, Finland, assignor to Holst & Fleischer, Christiania, Norway, Saw-sharpening machine	402,560	May 7	10	3	47	665
Carlson, Frank A., Dallas, Tex. Axle-box for locomotives	403,735	May 21	1786	470	47	1019
Carlstedt, Otto A. (See Waller and Carlstedt.)						
Carmichael, John, Brooklyn, N. Y. Safety-scaffold	401,410	Apr. 16	1487	394	47	303
Carmody, John, Osborn, Ohio. Swing	403,914	May 28	2052	540	47	1079
Carmona y Valle, Manuel M., Mexico, Mexico. Car-coupling	401,005	Apr. 9	872	234	47	176
Carnegie, Phipps & Company. (See Simpson, James H., assignor.)						
Carpenter, Amos H., Waterford, Vt. Mowing-machine	402,301	Apr. 30	2852	737	47	579
Carpenter, Charles W., *et al.* (See Crowell, Luther C., assignor.)						
Carpenter, Daniel A. (See Pickhardt and Carpenter.)						
Carpenter, James W. (See Shawhan, Jabez F., assignor.)						
Carpenter, Jesse F., Berlin, Germany. Automatic valve-cock	405,694	June 25	2001	505	47	1640
Carpenter, Stephen D., Carthage, Mo. Combined printing and addressing machinery	402,561	May 7	11	4	47	665
Carr, George, Charles City, Iowa. Hay and grain rack	401,733	Apr. 23	1994	522	47	408
Carr, George W., assignor of one-half to E. W. Grafton, Richmond, Va. Ironing-board	402,397	Apr. 30	3001	779	47	606
Carr, James A., Woodbury, N. J. Machine for shaping sheet-metal pipes	402,140	Apr. 30	2620	678	47	534
Carr, Thomas W. (See Wilson, James F., assignor.)						
Carr, William, and A. Evans, Sedan, Kans. Folding coop	405,531	June 18	1726	455 456	47	1582
Carr, William I. Greenwood, Nebr. Ironing-table	405,144	June 11	1116	277	47	1452
Carraher, John V., *et al.* (See Fletcher, Archibald F., assignor.)						
Carranza, Manuel, Guatemala, Guatemala, and J. M. Tinoco, San Francisco, Cal. Electric self-winding time-piece	401,006	Apr. 9	873	234	47	176
Carreras, George A., St. Louis, Mo. Cable-grip	405,145	June 11	1117	277	47	1453
Carroll, Edgar J., Worcester, assignor to G. Draper & Sons, Hopedale, Mass. Support for spinning-spindles	401,686	Apr. 16	1917	499	47	381
Carroll, George D. (See Budd and Carroll.)						
Carroll, Ralph W., *et al.* (See Guest, Joseph, assignor.)						
Carter, Benjamin L. (See Harrington and Carter.)						
Carter, Frederic W., Camden, N. J., assignor to American Steam Paving Company, of New Jersey. Steam road-rammer	402,063	Apr. 23	2492	651	47	501
Carter, Henry C., New York, N. Y. Cover for butter-tubs, &c	404,597	June 4	350	94	47	1291
Carter, Jacob V., *et al.* (See Reimer, Robert J., assignor.)						
Carter, John T., assignor of one-half to F. J. Hilbert, Baltimore, Md. Automatic railway-signal	402,398	Apr. 30	3002	779	47	606
Carter, John T., assignor of one-half to F. J. Hilbert, Baltimore, Md. Tripping device for railway-signals	402,505	Apr. 30	3172	822	47	639
Carter, John T., assignor of one-half to F. J. Hilbert, Baltimore, Md. Electric signal	402,506	Apr. 30	3173	822	47	639
Carter, McIon J. D., assignor to A. D. Klaber, New York, N. Y. Diaphragm to be used in stencil-printing	405,198	June 11	1214	322	47	1472
Carter, Wesley C., assignor of one-half to T. W. Patterson, Galva, Ill. Hand-operated swinging gate	405,302	June 18	1371	361	47	1509
Cartwright, Robert, Rochester, assignor of one-half to W. A. Sweet, Syracuse, N. Y. Gas-furnace	400,827	Apr. 2	601	164	47	115
Cartwright, Robert, Rochester, assignor of one-half to W. A. Sweet, Syracuse, N. Y. Welding-roll	400,828	Apr. 2	602	164	47	115
Cartwright, Robert, Rochester, assignor of one-half to W. A. Sweet, Syracuse, N. Y. Machine for welding pipes	400,829	Apr. 2	603	164 165	47	115
Carty, Alton B., Frederick, Md. Printing-press	401,541	Apr. 16	1684	443 444 445	47	339
Carty, Alton B., Frederick, Md. Ink-fountain for printing-presses	401,542	Apr. 16	1688	445	47	340
Carty, John J., New York, N. Y., assignor to Western Electric Company, Chicago, Ill. Multiple switch-board-testing apparatus	403,458	May 14	1381	362	47	931
Carver Cotton Gin Company. (See Strong, Frederick S., assignor.)						
Carver, Henry I., Ludlow, Mass. Butter-worker	401,129	Apr. 9	1052	281	47	208
Carver, Henry I., Ludlow, Mass. Butter-mold	401,130	Apr. 9	1053	281	47	208

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Carver, James W., Lynn, Mass., assignor to National Heeling Machine Company, Portland, Me. Heel-burnishing machine	401,131	Apr. 9	1055	281 282 283	47	208
Carver, James W., Pawlet, Vt., assignor of two-thirds to G. L. Kelty, Brooklyn, N. Y. Sight for fire-arms	404,598	June 4	351	84	47	1291
Carver, James W., Pawlet, Vt., assignor of two-thirds to G. L. Kelty, Brooklyn, N. Y. Sight for fire-arms	404,599	June 4	352	84	47	1292
Cary Manufacturing Company. (See Cary, Spencer C., assignor.)						
Cary, Spencer C., Baldwin, N. Y. Box-strap	403,247	May 14	1052	277	47	870
Cary, Spencer C., Baldwin, N. Y., assignor, by mesne assignments, to Cary Manufacturing Company, of New York. Box-strap	403,178	May 14	931	246	47	846
Cary, Spencer C., Baldwin, N. Y., assignor, by mesne assignments, to Cary Manufacturing Company, of New York. Metal strap for boxes	403,245	May 14	1049	277	47	869
Cary, Spencer C., Baldwin, assignor to W. H. Vanderbilt, Brooklyn, N. Y. Box-strap	403,246	May 14	1050	277	47	870
Case, F. L. & H. J. (See Case, Frank J., assignor.)						
Case, Frank J., assignor of two-thirds to F. L. & H. J. Case, Arrington, Kans. Broom	404,258	May 28	2594	675	47	1183
Case, Frank J., and J. F. Preston, Arrington, Kans. Car-coupling	401,329	Apr. 16	1355	302	47	278
Case, Whitney G., Buffalo, N. Y. Machine for beating and polishing sheet-metal tubing	403,736	May 21	1787	470	47	1019
Casey, A. H., *et al.* (See Green, William W., assignor.)						
Casey, John E., Tottenville, and A. W. Browne, Prince's Bay, N. Y., assignors to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Apparatus for administering enema of oxygen	402,302	Apr. 30	2853	738	47	580
Casey, John E., Tottenville, and A. W. Browne, Prince's Bay, N. Y., assignors to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Oxygen-inhaler	402,303	Apr. 30	2855	738	47	580
Casey, Thomas A., New York, assignor, by mesne assignments, to W. Wallace and G. A. Porter, Syracuse, N. Y. Railway-signal	403,515	May 21	1475	387	47	958
Cashner, William. (See Boughn and Cashner.)						
Caspary, Paul, Chicago, Ill. Shoe	400,672	Apr. 2	290	82	47	60
Caspary, Paul, Chicago, Ill. Fastening for shoes	401,007	Apr. 9	875	234	47	176
Casper, Leopold, Berlin, Germany. Collapsible box	403,089	May 14	796	211	47	821
Caspersson, Carl A., Forsbacka, Marretchill, Sweden. Determining the temper of iron or steel	404,600	June 4	354	.....	47	1292
Castle, James, Toronto, Ontario, Canada. Advertising device	403,037	May 7	704	184	47	796
Castle, Oliver H., assignor of one-half to J. R. Allen, Indianapolis, Ind. Crank-wrist and boxing	404,341	May 28	2724	707	47	1208
Caswell, William A., Chicago, Ill. Tool for forming bottle-necks	400,698	Apr. 9	709	192	47	147
Cately, Shepard W., assignor of one-half to A. M. Ettling, Cortland, N. Y. Buggy-top	405,303	June 18	1373	361	47	1510
Cathan, Alonzo, Cleveland, Ohio. Bustle	405,695	June 25	2003	525	47	1640
Cathey, Thomas J., Hubbard, Tex. Corn and cotton planter	401,132	Apr. 9	1058	283	47	209
Catlin, Robert H. (See Dreda, John B., assignor.)						
Catterall, Albert B. (See Smith and Catterall.)						
Caughy, Samuel H., Baltimore, Md. Ticket-box for street-railway cars	401,638	Apr. 16	1853	482	47	371
Cautius, Arthur, Tilsit, Prussia, Germany. Oil-lamp with annular burner	401,543	Apr. 16	1689	445	47	340
Cave, Robert W. and T. J., Priceville, Ky. Vehicle-wheel	403,915	May 28	2054	540	47	1080
Cave, Thomas J. (See Cave, Robert W. and T. J.)						
Cazin, Francis M. F., New York, N. Y. Refining and deodorizing coal-oil or petroleum	400,633	Apr. 2	291	82	47	61
Cazin, Francis M. F., New York, N. Y. Apparatus for refining petroleum	400,634	Apr. 2	293	83	47	61
Cazin, Francis M. F., West Fairlee, Vt. Producing matrices	402,720	May 7	245	65	47	710
Chadeayne, George H., Buffalo, N. Y. Toboggan	401,734	Apr. 23	1995	523	47	408
Chambers, Charles R. (See Hughes and Chambers.)						
Chambers, Cyrus, Jr. (See Lasor, Sanford W., assignor.)						
Chambers, Louis D. (See Stewart and Chambers.)						
Chambers, William B., Newark, Ohio. Bottle-stopper	400,436	Apr. 2	17	5	47	6
Champlin, Benjamin, Cortland, Ill. Veterinary instrument	404,074	May 28	2306	604	47	1129
Chance, Alexander M. and J. F., Oldbury, county of Worcester, England. Apparatus for obtaining sulphureted hydrogen from alkali	403,248	May 14	1053	278	47	870
Chance, Alexander M. and J. F., Oldbury, county of Worcester, England. Obtaining hydrogen sulphide from alkali waste	403,249	May 14	1056	.....	47	870
Chance, James F. (See Chance, Alexander M. and J. F.)						
Chandler, Freeman D., Friendship, N. Y. Fire-escape	404,029	May 28	2221	582	47	1111
Chantrell, John, assignor of one-half to E. B. Wiegand, Reading, Pa. Staple forming and clinching machine	405,342	June 18	1427	376 377 378	47	1521
Chapin, Horatio P., Chicopee, Mass. Bicycle-step	402,304	Apr. 30	2857	738	47	580
Chapman, Charles A., No. 8 Stock Orchard Street, Caledonian Road, London, county of Middlesex, England, assignor to Sardy, Coles & Co., New York, N. Y. Catheter	402,902	May 7	511	135	47	759
Chapman, Charles S., Kansas City, Mo. Cable-grip	402,305	Apr. 30	2858	738 739	47	580
Chapman, Charles S., Kansas City, Mo. Cable-grip	404,601	June 4	355	85	47	1292
Chapman, Frank L. G., Stevens Point, Wis. Axle	404,342	May 28	2725	707	47	1208
Chapman, John G. (See Cockcroft, Thomas S., assignor.)						
Chapman, Thomas G., assignor to F. C. Austin, Chicago, Ill. Well-sinking apparatus	405,199	June 11	1215	322	47	1472
Chapman, Thomas G., assignor to F. C. Austin, Chicago, Ill. Well-sinking apparatus	405,200	June 11	1218	323	47	1472
Chappell, Florance J. D., assignor of forty-nine one-hundredths to Riddle & Williams, Baltimore, Md. Baby-carriage	403,417	May 14	1321	346	47	920
Chappell, Merritt B., Battle Creek, Iowa. Guard for barbed-wire fences	401,133	Apr. 9	1060	283	47	209
Charles, Albert, Blue Mound, Kans. Planter	403,516	May 21	1478	387 388	47	958
Charlton, James, Houston, Tex. Car-door	404,259	May 28	2594	675	47	1183
Chase, Addison K., assignor to himself, J. B. McGuire, J. J. Flood, and J. O'Neil, Nashua, N. H. Last	405,011	June 11	934	248	47	1417
Chase, Edward T., Philadelphia, Pa. Attachment for clocks	405,394	June 18	1503	398	47	1536
Chase, Ernest E. (See Chase, George W. and E. E.)						
Chase, George W. and E. E., St. Joseph, Mo. Caramel-holder	401,774	Apr. 23	2050	536	47	418
Chase, Ransford T., Houston, Tex. Axle-box for locomotives	400,545	Apr. 2	172	45	47	36
Chase, Sidney A., assignor of one-half to W. R. Mapes, Evart, Mich. Duplex fire-alarm telegraph	402,507	Apr. 30	3175	822 823	47	640
Chase, Sidney A., assignor of one-half to W. R. Mapes, Evart, Mich. Fire-alarm telegraph	404,518	June 4	232	55	47	1208
Chase, Sidney A., assignor of one-half to W. R. Mapes, Evart, Mich. Duplex fire-telegraph	404,519	June 4	235	55	47	1208
Chase, William M. (See Goodwin and Chase.)						
Chateau, John. (See Blasfeldt and Chateau.)						
Chávez, Emigdio. (See Hunstock and Chávez.)						
Cheever, John D., New York, N. Y. Reducing and separating magnetic ores	403,250	May 14	1057	.....	47	870

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Cheney, Cleveland J., Lowell, Mass. Water-gate	405,079	June 11	1030	275 / 276	47	1437
Cherry, Robert N., Jersey City, N. J. Door-check	402,804	May 7	379	100	47	734
Chesebrough, Robert A. (See Willcox, Oliver, assignor.)						
Chesley, William T., Viola, Ill. Combined nut and pipe wrench	405,343	June 18	1433	378	47	1522
Chevalier, George F. (See Borie, Louis J., assignor.)						
Chicago Gas Stove Company. (See Reed, Philip H., assignor.)						
Chicago Safe and Lock Company. (See Gross, Henry, assignor.)						
Chicago Sash Pulley Company. (See Phillips, Francis V., assignor.)						
Chiddister, Clark, Decatur, Ind. Gate	401,008	Apr. 9	876	225	47	177
Child, Brainard W. (See Wemple, George W., assignor.)						
Childs, Heman W. (See Denehy and Childs.)						
Childs, William A., Englewood, N. J. Galvanic battery	405,246	June 18	1290	361	47	1493
Chisholm, William. (See Dow, Joseph H. and H. H., assignors.)						
Choice, John B., *et al.* (See Anderson, Henry C., assignor.)						
Chorlton, Isaac, and G. L. Scott, Manchester, county of Lancaster, England. Bed-frame and bedstead	402,903	May 7	511	135	47	759
Chouteau, Pierre. (See Barth, Gustav A., assignor.)						
Chrisman, Joseph C., assignor of two-thirds to B. H. Myles and W. H. Taylor, Sewell Depot, W. Va. Car-pusher	405,012	June 11	935	248	47	1417
Christopher, John M., Clifton, Md. Track-clearer	402,405	Apr. 30	3011	792	47	608
Christy, James, Jr. (See Christy, Will, assignor.)						
Christy, James A., Los Angeles, assignor to J. W. Moyle, San Francisco, Cal. Advertising	405,532	June 18	1728	456	47	1582
Christy, Will, assignor of one-half to J. Christy, Jr., Akron, Ohio. Switch for electric-motor trolleys	402,064	Apr. 23	2494	651	47	501
Church, Bonneval E., London, assignor to J. Dewrance & Co., Lambeth, England. Treating asbestus	405,201	June 11	1220	.....	47	1472
Church, Charles E., assignor to Hancock Inspirator Company, Boston, Mass. Injector	405,990	June 25	2445	640	47	1721
Church, Charles E., assignor to Hancock Inspirator Company, Boston, Mass. Injector	405,991	June 25	2449	641	47	1722
Church, Charles E., assignor to Hancock Inspirator Company, Boston, Mass. Injector	405,992	June 25	2453	641	47	1722
Church, Eugene L. (See Burbank and Church.)						
Church, Frank S. (See Zerbe and Church.)						
Church, Frank S., Ovid, assignor to Union Store Service Company, East Saginaw, Mich. Adjustable curve for cash-carriers	404,896	June 11	771	197	47	1388
Church, Melvin B., Grand Rapids, Mich. Insecticide	401,998	Apr. 23	2267	.....	47	462
Church, Melvin B., Grand Rapids, Mich. Water-proof package	405,871	June 25	2252	592	47	1688
Churchill, Edwin. (See Barton, Edwin W., assignor.)						
Cincinnati Cooperage Company. (See Kane, Frank H., assignor.)						
Cissel, Robert B., Elizabeth, assignor to Backus Water Motor Company, Newark, N. J. Hanger for rotary fan-shafts	402,306	Apr. 30	2859	739	47	581
Claffy, John, *et al.* (See Greene, Patrick R., assignor.)						
Clapp Automatic Fire Extinguisher Company. (See Clapp, Joseph, assignor.)						
Clapp, Joseph, Evanston, assignor to Clapp Automatic Fire Extinguisher Company, Chicago, Ill. Automatic sprinkler	404,897	June 11	772	197	47	1384
Clarenbach, Eugen, Berlin, Germany. Disinfecting apparatus	400,437	Apr. 2	17	6, 7	47	6
Clark, Charles D., assignor to W. Deering & Company, Chicago, Ill. Nipper for spinning-machines	404,898	June 11	774	197	47	1384
Clark, Chester W., Mishawaka, Ind. Key for pulleys	402,065	Apr. 23	2495	651	47	501
Clark, Chester W., and T. D. Keasey, assignors to Keasey Pulley Company, Mishawaka, Ind. Pulley	403,987	May 28	2152	562	47	1098
Clark, Chester W., and T. D. Keasey, assignors to Keasey Pulley Company, Mishawaka, Ind. Bushing for pulleys	404,824	June 11	661	171	47	1364
Clark & Company, George M. (See Armour, Michael C., assignor.)						
Clark & Company, George M. (See Wallace, Jacob B., assignor.)						
Clark, Daniel T., Leslie, Mich. Wire-twisting machine	401,411	Apr. 16	1488	394	47	304
Clark, Dwight S., Cambridge, assignor to W. H. Forbes, Boston, Mass. Paper box	401,009	Apr. 9	877	225	47	177
Clark, Edward, New York, N. Y. Shaft-support	401,412	Apr. 16	1489	394	47	304
Clark, Edward D. and S. C., Evergreen, Tex. Hub for vehicle-wheels	405,872	June 25	2253	592	47	1688
Clark, Edward L., Pittsburg, Pa. Ingot-mold	404,381	June 4	14	4	47	1228
Clark, Edward L., Pittsburg, Pa. Casting steel ingots	404,382	June 4	15	4	47	1228
Clark, Edward L., Pittsburg, Pa. Bale-tie buckle	404,383	June 4	17	4	47	1228
Clark Electric Company. (See Clark, Ernest P., assignor.)						
Clark, Elias B. (See Finkle, John H., assignor.)						
Clark, Ernest P., assignor to Clark Electric Company, New York, N. Y. Regulator for dynamo-electric machines	404,602	June 4	356	85	47	1292
Clark, Frank M., Tilton, N. H., and F. R. Low, Chelsea, Mass. Power-meter	401,929	Apr. 23	2288	568 / 569	47	462
Clark, George D., Plainville, Conn. Caster	400,899	Apr. 9	710	192	47	147
Clark, George J. (See Arenberg, Herman, assignor.)						
Clark, James M., Louisville, Ky. Measuring-siphon	401,413	Apr. 16	1490	395	47	304
Clark, James T., deceased, Milwaukee, Wis.; M. F. Clark administratrix. Railway splice-bar	403,251	May 14	1057	278	47	871
Clark, John J., New York, N. Y. Spindle for winding yarn or thread on cards	405,077	June 11	1029	275	47	1436
Clark, John W., assignor of one-half to L. H. Kirkland, Jackson, Miss. Harness-saddle	401,124	Apr. 9	1060	284	47	909
Clark, Joseph E. (See Taft, Stephen C., assignor.)						
Clark, Leander R., Albia, Iowa. Automatic brake for vehicles	404,075	May 28	2306	604	47	1129
Clark, Mary F., administratrix. (See Clark, James T.)						
Clark, Morgan S., Toronto, Kans. Combined shears, button-hole cutter, and ripper	404,169	May 28	2450	642	47	1158
Clark, Nathan B., Washington, D. C., and F. B. King, Baltimore, Md. Steam-boiler	404,825	June 11	662	171	47	1364
Clark, Nathan B., U. S. Navy, and F. B. King, Baltimore, Md. Steam-boiler	405,344	June 18	1434	378	47	1522
Clark, Norman, assignor to J. H. and E. F. Lawrence, Sterling, Ill. Roller for sliding doors	405,202	June 11	1221	323	47	1473
Clark, Simmon C. (See Clark, Edward and S. C.)						
Clark, T. Emory, Brookline, Mass. Rotary brush	403,328	May 14	1185	314	47	896
Clark, Walton, assignor to United Gas Improvement Company, Philadelphia, Pa. Apparatus for manufacturing gas	404,520	June 4	237	56, 57	47	1209
Clark, William S., Philadelphia, Pa. Testing and disinfecting drain and soil pipes	404,343	May 28	2726	707 / 708	47	1208
Clarke, Charles M., *et al.* (See Gearing, Charles M., assignor.)						
Clarke, Samuel, Childs Hill, county of Middlesex, England. Lamp holder or frame	403,327	May 14	1184	314	47	895
Clarson, Augustus E., *et al.* (See Slaysman, Alexander, assignor.)						
Clason, Roger W., *et al.* (See Reams, John V., assignor.)						
Claussen, Edward E. (See Kimmel and Claussen.)						
Claussen, Edward E., Hartford, Conn. Paper bag	401,687	Apr. 16	1918	499 / 500	47	382
Clay, Henry P. (See Hartman and Clay.)						
Clayton, Herbert F. (See Cooper, Clayton, and Holdroyd.)						
Clayton, John, Fridley, Minn. Plow	403,329	May 14	1186	315	47	896
Clayton, Reginald B. B., London, England. Fork-guard	404,777	June 4	589	152	47	1341
Clayton, William H., and C. A. Loring, Atlanta, Ga. Sewing-machine motor	402,805	May 7	380	100	47	734
Clemens, Charles C., *et al.* (See Anderson, Henry C., assignor.)						
Clemens, Henry E. (See Hays and Clemens.)						
Clementa, Samuel A. (See Walter, William, assignor.)						
Clemes, William H., assignor to Taylor & Boggis Foundry Company, Cleveland, Ohio. Wick-raising shaft	405,078	June 11	1029	275	47	1436
Clemons, George F., Springfield, Mass. Differential hoisting mechanism	404,958	June 11	856	223 / 224	47	1401
Cleveland, Moses L., Delhi, N. Y. Road-cart	401,735	Apr. 23	1997	523	47	408
Cleveland Motor Company. (See Dahl, Olof, assignor.)						
Cleveland, Ralph D., and C. A. Hoffman, Minneapolis, Minn. Shutter for photographic cameras	402,806	May 7	381	100	47	734
Clevenger, Harison E. (See Conwell, William, assignor.)						
Clever, Henry H., Cleversburg, Pa. Lifting-jack	402,141	Apr. 30	2021	678	47	534
Clickener, Garret V. (See Van Nest, George, assignor.)						
Cliff, Edward, Nyack, N. Y. Vehicle-spring	401,135	Apr. 9	1061	284	47	909
Clifford, Elizabeth, Boston, Mass. Drying-frame for coated candles	402,406	Apr. 30	3012	792	47	609
Clinch, Charles, Leeds, county of York, England. Apparatus for brewing	403,252	May 14	1058	278	47	871
Clinton Wire Cloth Company. (See Scarles, Benjamin, assignor.)						
Close, Philipp C., Augusta, Ga. Mower	401,817	Apr. 23	2125	554 / 555	47	431
Clotworthy, William P., Baltimore, Md. Dessert-food compound	405,013	June 11	937	.....	47	1417
Cloyd, Henry C., Union City, Ind. Post-hole auger	401,999	Apr. 23	2387	621	47	481
Clute, Nicholas, Schenectady, N. Y. Feed-water heater and regulator	404,683	June 4	462	116 / 117	47	1315
Coats, Chandler C., Newark, N. J. Magnetic ore-separator	401,688	Apr. 16	1922	500	47	382
Coats, Charles E., Chicago, Ill. Tea-kettle	400,635	Apr. 2	295	83	47	61
Cockcroft, Thomas S., Liverpool, county of Lancaster, assignor to J. G. Chapman, Birkenhead, England. Measuring-vessel	404,603	June 4	358	86	47	1293
Cockfield, Joseph, and C. D. Higgins, Boone, Iowa. Rod-packing	400,438	Apr. 2	22	7	47	7
Cockle Separator Manufacturing Company. (See Bretney, Eugene, assignor.)						
Codde, Michael, Lake, assignor of one-half to L. G. Blossom, Chicago, Ill. Snap-hook	403,038	May 7	705	184	47	797
Coe, Frederick W., Vergennes, Vt. Ice-creeper	405,873	June 25	2254	592	47	1688
Coerper, Carl, assignor to Helios Actien-Gesellschaft für Elektrisches Licht und Telegraphenbau, Ehrenfeld, near Cologne-on-the-Rhine, Prussia, Germany. Dynamo-electric machine	402,066	Apr. 23	2496	652	47	501
Coffee, Henry M., Bunker Hill, Ill. Straw-stacker	402,707	May 7	383	101	47	735
Coffin, Charles L., Detroit, Mich. Electric welding	401,639	Apr. 16	1854	482	47	371
Coffin, Charles L., Detroit, Mich. Electric welding	405,345	June 18	1435	378	47	1523
Coffin, Ellery F., Muirkirk, Md. Car-coupling	402,808	May 7	387	102	47	736
Coffin, Harry N., Pittsburg, Pa. Car-brake	401,252	Apr. 9	1245	332	47	944
Coffin, John, assignor to Cambria Iron Company, Johnstown, Pa. Toughening forged articles of steel	401,010	Apr. 9	879	.....	47	177
Coggshall, H. F. (See Gates, Eugene N., assignor.)						
Cohn, Abram E., and G. A. Merrill, San Francisco, Cal. Sewer-trap	403,459	May 14	1383	369	47	932
Colborne, Benjamin. (See Perrin, William H., assignor.)						
Colby, Edward J., Chicago, Ill. Thread-protector	400,636	Apr. 2	296	83	47	62
Colby, Edward J., assignor to F. Siegel, J. S. Baer, and A. M. Rothschild, Chicago, Ill. Coin-controlled opera-glass case	405,659	June 18	1941	510	47	1522
Cole, Charles B., assignor to Cole Conduit Company, Detroit, Mich. Underground conduit for electrical conductors	403,925	May 21	1919	504	47	1046
Cole Conduit Company. (See Cole, Charles B., assignor.)						
Cole, Frederick W., assignor of one-half to M. G. Crane, Newton, Mass. Electro-magnet and armature	403,517	May 21	1480	388	47	958
Cole, Jonah R., New York, N. Y. Vehicle hub and axle	401,689	Apr. 16	1923	501	47	382
Cole, Louis, Chicago, Ill. Neckscarf	401,690	Apr. 16	1925	501	47	382
Cole, Sherman M., Anamosa, Iowa. Washing-machine	400,637	Apr. 2	297	83	47	62
Coleman Hardware Company. (See Holt, Daniel M., assignor.)						
Coleman Hardware Company. (See Zattau, Charles, assignor.)						
Coleman, John P., Swissvale, Pa. Electric signaling apparatus	402,562	May 7	19	6	47	666
Coleman, John P., Swissvale, Pa. Electrical signaling apparatus	404,170	May 28	2451	642 / 643	47	1158
Coleman, Vincent A., Port Hope, Ontario, Canada. Trace-buckle	405,247	June 18	1291	341	47	1403
Coles, David H. (See Coles, John L. and D. H.)						
Coles, John L. and D. H., Brooklyn, assignors to Empire State Manufacturing Company, New York, N. Y. Game apparatus	402,230	Apr. 30	2746	711	47	559
Coles, John L. and D. H., Brooklyn, assignors to Empire State Manufacturing Company, New York, N. Y. Sinker for fishing-lines	402,231	Apr. 30	2747	712	47	559
Colgate, Arthur E., New York, N. Y., assignor to Western Electric Company, Chicago, Ill. Treating underground electrical conduits with chemical substances	402,563	May 7	20	6	47	666
Colgate, Arthur E., New York, N. Y., assignor to Western Electric Company, Chicago, Ill. Protecting the lead pipe of telegraph-cables from corrosion	403,418	May 14	1322	346	47	920
Collé, Charles, assignor to H. Lahousse & Co., Lille, France. Galvanic battery	403,253	May 14	1059	279	47	871
Collett, Austin B., Chelsea, Mass., assignor to Collett Car Brake Company, Portland, Me. Brake-handle	402,142	Apr. 30	2023	679	47	535
Collett Car Brake Company. (See Collett, Austin B., assignor.)						
Colley, Frederick, Johnstown, Pa., assignor to Johnson Steel Street Rail Company, of Kentucky. Rolls for rolling three-flanged slot-rails	401,691	Apr. 16	1925	501	47	383
Colley, Frederick, Johnstown, Pa., assignor to Johnson Steel Street Rail Company, of Kentucky. Rolls for rolling bulb-webbed slot-rails	401,692	Apr. 16	1926	502	47	383
Colley, Frederick, Johnstown, Pa., assignor to Johnson Steel Street Rail Company, of Kentucky. Rolls for rolling Z-shaped slot-rails	401,693	Apr. 16	1927	502	47	383
Collier, Robert B., Columbus, Ohio. Sectional fly-wheel	402,564	May 7	21	6	47	667
Colling, Charles J., Cincinnati, Ohio. Handle-bar for bicycles	402,143	Apr. 30	2024	679	47	535
Collingwood, John G. (See Welles, Howard W., assignor.)						
Collins, Allen B., Burlington, Iowa. Air-brake signal	400,638	Apr. 2	298	84	47	62
Collins, Allen B., Burlington, Iowa. Air-brake signal	400,639	Apr. 2	300	84	47	62
Collins, Cyrus F. (See Robinson and Collins.)						
Collins, George, Detroit, Mich. Car-brake	403,090	May 14	797	212	47	921

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Collins, Horatio E., Detroit, Mich. Hammock-support	402,307	Apr. 30	2860	739	47	581
Collins, James I., Amsterdam, N. Y. Pipe-coupling	403,916	May 28	2054	540	47	1060
Collins, John, assignor of one-fourth to H. H. Lynch, San Francisco, Cal. Splicing cables	400,748	Apr. 2	464	125	47	91
Collins, Joseph, New Orleans, La. Back-band trace-carrier	402,399	Apr. 30	3004	780	47	607
Collins, Kate J., New York, N. Y. Celluloid or analogous binding	405,874	June 25	2255	592	47	1689
Collins, Matthias, Freeport, Pa. Double-acting swivel	400,749	Apr. 2	466	125	47	92
Collins, Wiley G., Shamrock, Va. Car-coupling	405,875	June 25	2256	593	47	1689
Collyer, Robert H., assignor to G. M. Harrison, New Orleans, La. Machine for delinting cotton-seed	402,232	Apr. 30	2748	712	47	560
Colman, Albert. (See Stone and Colman.)						
Colt's Patent Fire Arms Manufacturing Company. (See Ehbets, Carl J., assignor.)						
Colven, James M., New York, N. Y. Safety-valve	404,684	June 4	466	117	47	1316
Comerford, Michael M. (See Maxwell, James M., assignor.)						
Comey, Willard, Westborough, Mass. Boot or shoe sewing machine	400,439	Apr. 2	23	8	47	8
Comins, Irving E., Worcester, Mass. Device for holding cylinders while attaching card-clothing thereto	404,685	June 4	467	118	47	1316
Comstock, Asa M. (See Spruce and Comstock.)						
Conant, Albert F., Boston, Mass. Pocket memorandum-book	404,260	May 28	2595	{675 / 676}	47	1183
Conant, Hiram E., Stonington, Conn. Machine for spinning and winding silk	404,171	May 28	2456	643	47	1159
Condell, John, New York, N. Y. Last	405,346	June 18	1436	{379 / 380}	47	1523
Condict, George H., and V. Angerer, assignors to Electric Car Company of America, Philadelphia, Pa. Electric car	400,830	Apr. 2	605	165	47	115
Condict, Nathan W., Jr., Jersey City, N. J. Refrigerating apparatus	402,809	May 7	388	102	47	736
Condit, George M. (See Day, George C., assignor.)						
Conkle, H. C. (See Wilson, Stephen, Jr., assignor.)						
Conklin, Nathaniel A., Brooklyn, N. Y. Apparatus for elevating water	404,030	May 28	2223	583	47	1111
Conklin, Stephen W., Yonkers, N. Y. Clamp for clothes-lines, tent-ropes, &c	400,546	Apr. 2	172	45	47	36
Conkling, Gurdon, Glens Falls, N. Y. Magnetic separator	400,746	Apr. 2	462	{123 / 124}	47	91
Conkling, Gurdon, Glens Falls, N. Y. Magnetic separator	400,747	Apr. 2	463	124	47	91
Conkling, Gurdon, Glens Falls, N. Y. Treating magnetic iron ore	401,414	Apr. 16	1491	395	47	304
Conkling, Gurdon, Glens Falls, N. Y. Magnetic separator	401,415	Apr. 16	1492	395	47	304
Conkling, Gurdon, Glens Falls, N. Y. Magnetic separator	402,904	May 7	512	135	47	759
Conkling, Gurdon, Glens Falls, N. Y. Machine for separating iron from ores	403,575	May 21	1556	410	47	974
Conkling, Gurdon, Glens Falls, N. Y. Magnetic separator	403,576	May 21	1558	411	47	974
Conley, Michael R., Brooklyn, assignor to W. Bell, New York, N. Y. Apparatus for deoxidizing iron ores	404,344	May 28	2727	708	47	1208
Conn, Charles G., Elkhart, Ind. Cornet	402,721	May 7	240	65	47	710
Conn, Charles G., Elkhart, Ind. Musical wind-instrument	405,395	June 18	1504	399	47	1536
Conneely, Peter D., Horseheads, N. Y. Reduction-valve and pressure-regulator	405,533	June 18	1729	{456 / 457}	47	1583
Connell, John, Rochester, N. Y. Chip-breaker for planing-machines	405,014	June 11	937	249	47	1417
Conner, Joseph, assignor to J. Matthews, New York, N. Y. Soda-water apparatus	404,172	May 28	2458	643	47	1159
Connolly, Patrick, assignor to M. Dease, Brooklyn, N. Y. Tank for water-closets	401,640	Apr. 16	1855	{493 / 494}	47	371
Connor, Patrick H., Amesbury, Mass. Loom-picker	405,947	June 25	2376	622	47	1708
Conner, William. (See Lombard and Connor.)						
Conover, Edwin K. (See Fitzpatrick, Hugh F., assignor.)						
Conrad, Edwin S., *et al.* (See Conrad and Pounder, assignors.)						
Conrad, Isaac N., and A. W. Pounder, assignors of two-thirds to E. S. Conrad and M. Pounder, Elkhart, Ind. Mason's float	405,396	June 18	1505	399	47	1537
Conrader, Rudolph, Erie, Pa. Grinding-machine	404,686	June 4	460	118	47	1316
Conroy, James C., Pittsburg, Pa., assignor of one-half to Union Water Meter Company, Worcester, Mass. Liquid safety-valve for gas-distributing pipes	401,136	Apr. 9	1062	284	47	210
Considine, Thomas A., Chicago, Ill. Molding-machine	402,508	Apr. 30	3178	820	47	641
Consolidated Coupling Company. (See Braun, William F., assignor.)						
Consolidated Coupling Company. (See Michaelis, Otho E., assignor.)						
Constantine, George B. (See Foulon, Peter J., assignor.)						
Continental Motor and Electrical Company. (See Gartner, Alfred, assignor.)						
Continental Oxygen Company. (See Valon, William A. M., assignor.)						
Conwell, William, assignor of one-half to H. E. Clevenger, Neff, Ind. Hoof parer and trimmer	405,080	June 11	1031	276	47	1437
Cook, Albert E., assignor to G. W. Vancor, Knowlton, Quebec, Canada. Vehicle-spring	401,818	Apr. 23	2127	555	47	431
Cook, Frederick W., assignor of one-half to H. P. Gregory & Co., San Francisco, Cal. Tool for manipulating saw-teeth	402,400	Apr. 30	3005	780	47	607
Cook, George W., assignor of one-third to C. C. Canny, Detroit, Mich. Conduit for electric wires	402,565	May 7	22	6	47	667
Cook, Harlow W., Ottawa, Kans. Weather-strip	405,347	June 18	1437	380	47	1523
Cook, Jonas, Mount Pleasant, N. C. Transplanting-pot	402,722	May 7	246	65	47	710
Cook, M. C. (See Gillingham, Henry R., assignor.)						
Cook, Sidney, assignor of one-half to E. F. Sperry, Orlando, Fla. Wrench	401,819	Apr. 23	2128	555	47	431
Cook, William, New York, N. Y. Scale-measure	405,464	June 18	1617	426	47	1559
Cook, William, assignor of one-fourth to P. D. Reed, New York, N. Y. Last-block fastener	402,509	Apr. 30	3179	823	47	641
Cook, Winfield S. (See Westbrook and Cook.)						
Cooke, Charles S. (See Cooke, William A., Jr., and C. S.)						
Cooke, Edwin M., Brooklyn, assignor of one-half to N. C. Wooster, New York, N. Y. Rail-joint	402,308	Apr. 30	2861	739	47	581
Cooke, Edwin M., Brooklyn, assignor of one-half to N. C. Wooster, New York, N. Y. Rail-joint	402,402	Apr. 30	3007	781	47	607
Cooke, George A., Philadelphia, Pa. Photographing-instrument	401,330	Apr. 16	1335	362	47	278
Cooke, William A., Jr., Brooklyn, N. Y. Paper-filing index	402,401	Apr. 30	3006	780	47	607
Cooke, William A., Jr., and C. S., Brooklyn, N. Y. Transferring paper file and binder	403,826	May 21	1921	505	47	1046
Cooley, Charles A., Montreal, Quebec, Canada. Combined lamp shade or reflector and guard	401,416	Apr. 16	1493	396	47	305
Cooley, Charles H., assignor to Pratt & Whitney Company, Hartford, Conn. Valve-operating mechanism for grain-scales	402,510	Apr. 30	3179	823	47	641
Cooley, Charles H., assignor to Pratt & Whitney Company, Hartford, Conn. Automatic grain-scales	403,988	May 28	2154	{562 / 563 / 564}	47	1099
Coombe, John W., Sturgeon, Mo. Road-cart	405,081	June 11	1033	276	47	1437
Coombes, Joseph, Portland, Me., assignor to Coombes Mining and Dry Mineral Separator Company, Boston, Mass. Ore-separator	400,440	Apr. 2	24	8	47	8

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Coombes Mining and Dry Mineral Separator Company. (See Coombes, Joseph, assignor.)						
Coombs, Jesse, Greenfield, Mass. Cultivator	405,948	June 25	2376	623	47	1709
Coon, William S., Rochester, N. Y. Fire-escape	405,397	June 18	1505	{399 / 400}	47	1537
Cooper, Charles. (See Cooper, George, assignor.)						
Cooper, Charles W., Brooklyn, N. Y. Agitating hides or leather scraps	400,441	Apr. 2	25	9	47	9
Cooper, Charles W., Brooklyn, N. Y. Agitating hides or leather scraps	400,442	Apr. 2	28	9	47	9
Cooper, Charles W., Brooklyn, N. Y. Apparatus for treating hides or skins	400,443	Apr. 2	29	10	47	9
Cooper, Daniel C. (See Cady, Elisha W., assignor.)						
Cooper, George, assignor of one-half to C. Cooper, Bennington, Vt. Shirt-stretcher	403,737	May 21	1788	470	47	1020
Cooper, Robert, H. F. Clayton, and G. H. Holdroyd, Huddersfield, England. Filtering apparatus	401,930	Apr. 23	2291	594	47	463
Cooper, William, A. Milliken, and G. W. Bishop, assignors to Northwestern Tool and Implement Company, Minneapolis, Minn. Hinge-mortiser	403,518	May 21	1482	368	47	950
Cooper, William H., assignor of one-half to C. A. Fox, San José, Cal. Lubricator	402,404	Apr. 30	3009	781	47	608
Copeland, Lucius D., Camden, N. J. Casing for marine engines	402,403	Apr. 30	3008	781	47	608
Copelin, Elizabeth G., Washington, D. C. Pot lid or cover	405,949	June 25	2378	623	47	1709
Copper, Aaron F., Rochester, N. Y. Combined hoe and scraper	403,330	May 14	1167	315	47	896
Copperthite, Henry. (See Smith, Thomas S., assignor.)						
Corbett, Joseph, New York, assignor, by mesne assignments, to C. H. Otis, Brooklyn, N. Y. Snow-plow	404,173	May 28	2459	644	47	1160
Corbin Cabinet Lock Company. (See Doremus, Willard D., assignor.)						
Corcoran, Andrew J., Jersey City, N. J. Windmill	404,604	June 4	359	86, 87	47	1293
Corcoran, Daniel J., Dedham, assignor to L. M. A. Corcoran, Boston, Mass. Bottle-stopper	402,124	Apr. 23	2593	672	47	521
Corcoran, Lawrence M. A. (See Corcoran, Daniel J., assignor.)						
Corey, George D., assignor to H. W. Coburn, Lowell, Mass. Toy racket	404,899	June 11	777	196	47	1384
Corey, James N., Conneautville, Pa. Vehicle-seat lock	400,640	Apr. 2	302	85	47	63
Cornely, Emil and R., Paris, France. Embroidering and edging machine	405,146	June 11	1119	{297 / 298}	47	1453
Cornely, Emil and R., Paris, France. Embroidering-machine	405,147	June 11	1122	299	47	1454
Cornely, Robert. (See Cornely, Emil and R.)						
Corning, Thomas J., San José, Cal. Baling-press	403,738	May 21	1790	471	47	1020
Corning, William O., Bridgeport, Conn., assignor of one-half to S. Bryant, Worcester, Mass. Corset-clasp	405,876	June 25	2257	593	47	1689
Cornish, John, Boston, Mass. Photograph-cabinet	403,647	May 21	1652	438	47	993
Cornish, Joseph B., *et al.* (See Reimer, Robert J., assignor.)						
Cornwall, John B., assignor to Barnard & Leas Manufacturing Company, Moline, Ill. Rotary bolt	404,345	May 28	2729	708	47	1209
Cornwall, John B., assignor to Barnard & Leas Manufacturing Company, Moline, Ill. Sieve	405,660	June 18	1943	511	47	1623
Correll, Banner A. A. (See Correll, John F. and B. A. A.)						
Correll, John F. and B. A. A., York, Pa. Harrow	405,534	June 18	1730	457	47	1583
Corwin, Theodore L. (See Hilt, James W., assignor.)						
Coryell, Harlan B. (See Arnold, Don J., assignor.)						
Coryell, Miers, New York, N. Y. Compound steam-engine	400,641	Apr. 2	302	85	47	63
Cosh, William M., Baltimore, Md. Manufacturing gas	402,146	Apr. 30	2627	680	47	536
Coss, James C., Cleveland, Ohio. Carriage-bow	403,091	May 14	799	212	47	821
Costello, James J. (See Higgins, Daniel, assignor.)						
Costley, Emma. (See Daniels and Costley.)						
Cottingham, John C., *et al.* (See Naves, Benjamin H., assignor.)						
Coulas, James W., Clinton, Ill. Book-support	401,011	Apr. 9	880	{235 / 236}	47	177
Coup, John, New Haven, Conn. Car-coupling	401,775	Apr. 23	2051	537	47	418
Coup, John, New York, N. Y. Truck-beam for railway-cars	404,031	May 28	2224	563	47	1111
Coupland, Charles. (See Mitchell, John S., assignor.)						
Conrsen, George H., Baltimore, Md. Razor-strop	403,648	May 21	1653	438	47	994
Courtenay, William, New York, N. Y. Cogged gearing	404,296	June 11	664	172	47	1364
Couse, John T., Cochran, Ga. Coffee-roaster	403,419	May 14	1323	346	47	921
Cowburn, Thomas, Mödling, and F. Tentschert, Vienna, Austria-Hungary, assignors of one-half to A. C. Bonsall, Wyldewoods, England. Brake apparatus for railway-vehicles	401,694	Apr. 16	1927	{502 / 503 / 504}	47	383
Cowdery, Warren H., assignor of one-half to S. R. Harris, Ashtabula, Ohio. Making rakes	405,661	June 18	1944	511	47	1623
Cowell, Edward R. E., *et al.* (See Morgan, Benjamin B., assignor.)						
Cowles, George C., assignor of one-half to E. Germain, East Saginaw, Mich. Drive-pulley	403,460	May 14	1384	{362 / 363}	47	932
Cowley, James T., New York, N. Y., assignor to Lamson Consolidated Store Service Company, of New Jersey. Store-service apparatus	402,567	May 7	25	7	47	668
Cowley, James T., New York, N. Y., assignor to Lamson Consolidated Store Service Company, of New Jersey. Store-service apparatus	402,568	May 7	27	7, 8	47	668
Cowley, James T., New York, N. Y., assignor, by mesne assignments, to Lamson Consolidated Store Service Company, of New Jersey. Store-service apparatus	403,917	May 28	2055	541	47	1080
Cox, Charles A. and J. F., Louisville, Ky. Alarm system	400,750	Apr. 2	466	{125 / 126}	47	92
Cox, Charles W., and T. E. Van Dyke, Philadelphia, Pa. Electric lantern	401,417	Apr. 16	1494	396	47	305
Cox, George, La Delle, Dak. Ter. Harvester	404,261	May 28	2596	676	47	1183
Cox, Joseph F. (See Cox, Charles A. and J. F.)						
Cox, Michael D., Knoxville, assignor of one-half to J. R. McCallum, Knox County, Tenn. Car-coupling	403,461	May 14	1386	363	47	932
Coxe, Eckley B. (See Richards, Francis H., assignor.)						
Coxe, Eckley B. (See Salmon, Samuel, assignor.)						
Coxe, Eckley B., and S. Salmon, Drifton, Pa.; said Salmon assignor to said Coxe. Screening mechanism	403,989	May 28	2159	{564 / 565 / 566}	47	999
Coxe, Eckley B., and S. Salmon, Drifton, Pa.; said Salmon assignor to said Coxe. Screening mechanism	403,990	May 28	2161	{566 / 567}	47	1100
Coy, Adaline. (See Barton, Edward F., assignor.)						
Cozans, Luke F., *et al.* (See Balet, Joseph W., assignor.)						
Crabb, William, Percy, Iowa. Fence-post	403,991	May 28	2162	568	47	1100
Craddick, Ambrose M., and W. S. Heady, Tower Hill, Ill. Car-starter	405,535	June 18	1732	458	47	1583
Crafton, Charles B., assignor to O. S. King and W. Y. McLemore, Mason City, Ill. Beverage-mixer	400,547	Apr. 2	173	46	47	37
Crafts, Francis H., Buffalo, N. Y. Combined scroll and resawing machine	402,067	Apr. 23	2498	652	47	502
Crager, Samuel E., Wichita, Tex. Adjustable barrel-cover	402,144	Apr. 30	2625	679	47	535

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Cragin, Patrick H., assignor to Seneca Screen Company, Penn Yan, N. Y. Paper-pulp screen	403,577	May 21	1559	411, 412	47	974
Craig, Isaac E., Camden, Ohio. Die for hammering sheet metal	403,918	May 28	2058	.....	47	1081
Craig, James. (See Brogan, Craig, and French.)						
Craig, William P., Holden, Mo. Fruit-picker	403,331	May 14	1188	315	47	896
Craighead & Kintz Manufacturing Company. (See Kintz, Joseph, assignor.)						
Cram, William H., North Windham, Me. Mechanism for the manufacture of barrels	401,931	Apr. 23	2292	594	47	463
Crance, Granville D., Valatie, N. Y. Spray-cylinder cleaner for paper-machines	405,015	June 11	938	249	47	1418
Crandal, George L., Binghamton, N. Y. Carriage-bow	404,900	June 11	777	198	47	1395
Crandell, Henry A., Harrison, Ark. Compression-extractor	405,348	June 18	1437	380	47	1523
Crane Elevator Company. (See Heermans, Thaddeus W., assignor.)						
Crane, Jonathan T., Brooklyn, N. Y. Clothes-line support	401,253	Apr. 9	1246	332	47	244
Crane, Lockwood L., and W. H. Prince, Cleveland, Ohio; said Crane assignor to said Prince. Surface blow-off	403,919	May 28	2059	541	47	1081
Crane, Moses G. (See Cole, Frederick W., assignor.)						
Crane, Thomas R., Heathsville, Va. Spring-toothed harrow	402,000	Apr. 23	2388	621	47	482
Crannell, Charles W., assignor of one-half to T. Scott, Oberlin, Kans. Drenching-bit	402,068	Apr. 23	2409	652, 653	47	502
Crary, Thomas F., Middleport, Ohio. Flour bin and sifter	401,254	Apr. 9	1247	333	47	245
Craven, Fred., Brighouse, county of York, England. Machine for tentering and drying fabrics	401,932	Apr. 23	2293	594, 595	47	463
Crawford, Alice A., Austin, Tex. Tuck creasing and marking attachment for sewing-machines	400,751	Apr. 2	469	126	47	92
Crawford, James G., Boston, Mass. Automatic reversing mechanism	402,654	May 7	146	36	47	692
Crawford, James G., Boston, Mass. Reversing mechanism for washing-machines	403,649	May 21	1654	438	47	994
Creamer, Henry, New York, N. Y. Steam-trap	404,174	May 28	2460	644	47	1160
Crecelius, Louis J., assignor to A. Warren, St. Louis, Mo. Lifting-jack	402,407	Apr. 30	3013	782	47	609
Creighton, James R., Altoona, Dak. Ter. Grain-weighing apparatus	403,519	May 21	1484	389	47	959
Creasmann & Yeakel. (See Yeakel, Abraham M., assignor.)						
Creter, George. (See Thomas and Creter.)						
Crewson, Charles C. (See Burton and Crewson.)						
Crissey, William G., East Orange, N. J., assignor to Seabury & Johnson, New York, N. Y. Sulphur candle	400,444	Apr. 2	31	10	47	10
Critchfield, William H., and E. J. Emmons, Wirt, Iowa. Combined trough and rack	402,145	Apr. 30	2696	679	47	535
Croft & Allen. (See Smith, ohn, assignor.)						
Crofut, David F., *et al.* (See Banmeister, Leopold, assignor.)						
Crofut, George H., *et al.* (See Banmeister, Leopold, assignor.)						
Crollard, Jules, assignor to F. C. Austin, Chicago, Ill. Boiler-feeder	404,346	May 28	2730	709	47	1209
Crompton, George, deceased, (M. C. Crompton administratrix,) and H. Wyman; said M. C. Crompton and said Wyman assignors to Crompton Loom Works, Worcester, Mass. Stop mechanism for looms	402,001	Apr. 23	2389	621, 622	47	482
Crompton Loom Works. (See Crompton and Wyman, assignors.)						
Crompton Loom Works. (See Wyman, Horace, assignor.)						
Crompton, Mary C., administratrix. (See Crompton and Wyman.)						
Cronise, Adelbert. (See Jennings, Walter S., assignor.)						
Crosbie, John A., Methuen, Mass., assignor to McKay & Copeland Lasting Machine Company, Portland, Me. Machine for making tack-stripe	402,069	Apr. 23	2500	653	47	502
Crosby, Edward H., Boston, Mass. Galvanic battery	400,430	Apr. 2	10	3	47	5
Crosby Steam Gage and Valve Company. (See Meady and Bosworth, assignors.)						
Crossley, Arthur W. (See Harris, Lonie J., assignor.)						
Crossley, Edward, and H. N. Mellor, Halifax, county of York, England. Jacquard mechanism for looms	402,309	Apr. 30	2862	740, 741	47	582
Crossley, Harry A., Cleveland, Ohio. Tool for constructing vault-lights	401,331	Apr. 16	1358	362	47	279
Crossley, Harry A., Cleveland, Ohio. Machine for setting vault-light packing-rings	403,578	May 21	1560	412	47	974
Crossman, Perry L., Granby, Mo. Dinner-pail	400,752	Apr. 2	471	126	47	92
Crotzer, Frank P., *et al.* (See Moharter, Frank, assignor.)						
Crouch, Frank J., Oakland, assignor of one-half to C. P. Houston, Junction City, Oreg. Railway-telegraph	402,408	Apr. 30	3015	783	47	609
Crowe, Bennington V., Pittsburg, Pa. Miter-machine	403,462	May 14	1386	363	47	932
Crowell, Hiles C., Erie, Pa. Friction-clutch	403,739	May 21	174	471	47	1020
Crowell, Luther C., Brooklyn, assignor to R. Hoe & Co., New York, N. Y. Web printing and delivery mechanism	400,548	Apr. 2	1792	46, 47, 48	47	37
Crowell, Luther C., Brooklyn, assignor to R. Hoe & Co., New York, N. Y. Stop mechanism for web-printing machines	404,959	June 11	858	224, 225, 226, 227, 228	47	1401
Crowell, Luther C., Brooklyn, assignor to R. Hoe & Co., New York, N. Y. Stop mechanism.	404,960	June 11	863	225, 226, 227, 228	47	1402
Crowell, Luther C., Brooklyn, assignor to R. and P. S. Hoe, S. D. Tucker, T. H. Mead, and C. W. Carpenter, New York, N. Y. Printing and delivery mechanism	405,016	June 11	939	249, 250, 251	47	1418
Crumbie, Alexander, Arlington, N. J. Baking-oven	405,304	June 18	1375	362	47	1510
Crutchfield, George E., English, Ark. Wheel	402,723	May 7	247	65	47	710
Culberson, John L., assignor of two-thirds to R. Boyd and A. Pryor, Hendrysburg, Ohio. Corn-husking implement	401,012	Apr. 9	881	236	47	178
Cullen, Simon, and C. C. Brown, Alexandria, La. Ladder and guard for sleeping-car berths	401,418	Apr. 16	1494	396	47	305
Cullen, Walter S., Kearney, N. J. Rack for washing and drying photographic plates	404,605	June 4	362	87	47	1294
Culver, Edgar A., Cleveland, Ohio. Advertising-panel for delivery-wagons	400,831	Apr. 2	607	165	47	116
Culver, Ira, Cleveland, Ohio. Drill-gage	403,740	May 21	1793	471	47	1021
Culver, John P., Los Angeles, Cal. Asphalt-coated sheet-metal pipe	400,832	Apr. 2	608	166	47	116
Cumberland Manufacturing Company. (See Warren, John E., assignor.)						
Cumming, James, Buffalo, N. Y. Device for welding the ends of boiler-flues	403,520	May 21	1485	389	47	959
Cummings, George K., Philadelphia, Pa., assignor, by mesne assignments, to United States Gas and Fuel Company. Apparatus for the manufacture of gas	403,920	May 28	2060	542	47	1081
Cummings, George K., Philadelphia, Pa., assignor, by mesne assignments, to United States Gas and Fuel Company. Manufacturing gas	403,921	May 28	2062	542	47	1081
Cummings, John R., New York, N. Y., and G. E. Lloyd, Chicago, Ill. Stereotyper's sawing, trimming, and grooving machine	405,662	June 18	1945	511	47	1623
Cummings, Uriah, New Haven, Conn. Cement	402,511	Apr. 30	3180	.....	47	641
Cunningham, Daniel, Fall River, Mass. Take-up mechanism for looms	405,829	June 25	2183	575	47	1675
Cunningham, William F., assignor of one-half to E. Rutzler, Brooklyn, N. Y. Safety-valve	402,070	Apr. 23	2502	633	47	502
Cunningham, William F., assignor of one-half to E. Rutzler, Brooklyn, N. Y. Safety apparatus for steam-boilers	404,175	May 28	2463	645	47	1160
Cunnyngham, Victor L., Pittsburg, Pa. Station-indicator	404,384	June 4	18	5	47	1228
Curley, Mark, *et al.* (See Murray, John P., assignor.)						
Curlin Marine Velocipede Company, Seth. (See Curlin, Seth, assignor.)						
Curlin, Seth, assignor to S. Curlin Marine Velocipede Company, Union City, Tenn. Marine velocipede	401,736	Apr. 23	1998	523, 524	47	409
Curran, Benjamin F., Dunkirk, Ohio. Belt-lacing needle	405,536	June 18	1732	458	47	1583
Currie, Stanley C. C., Philadelphia, Pa., assignor to United Electric Improvement Company, Gloucester City, N. J. System of transmitting and distributing electricity	401,255	Apr. 9	1249	333	47	245
Currie, Stanley C. C., Philadelphia, Pa., assignor to United Electric Improvement Company, Gloucester City, N. J. Automatic cut-out for secondary batteries	401,332	Apr. 16	1359	363	47	279
Currier, Herbert L., Lynn, Mass. Device for indicating and recording the speed, &c., of railway-trains	404,032	May 28	2225	583, 584	47	1112
Currier, Herbert L., assignor to himself and A. H. Breed, Lynn, Mass. Push-button	404,033	May 28	2230	585	47	1112
Curry, Mary E. (See Levering and Curry.)						
Curtin Anti-Friction Roller Bearing Company. (See Curtin, John, assignor.)						
Curtin, Henry, Little Falls, N. Y. Stopping mechanism for knitting-machines	402,905	May 7	513	136	47	759
Curtin, Henry, Little Falls, N. Y. Circular-knitting machine	402,906	May 7	516	136	47	760
Curtin, John, assignor to Curtin Anti-Friction Roller Bearing Company, Denver, Colo. Journal-box	403,992	May 28	2163	568, 569	47	1100
Curtis, Charles H., Astor, Fla. Fruit-gatherer	405,017	June 11	945	252	47	1419
Curtis, Otis E. (See Barrett, Charles H., assignor.)						
Cushman, Henry D., Three Rivers, Mich. Apparatus for making menthol crystals	402,907	May 7	517	137	47	760
Cushman, Holbrook. (See Denison, Sylvester P., assignor.)						
Cuthbert, Charles R. (See Stoffel and Cuthbert.)						
Cutlan, Ellis, London, England. Tool for spiral turning	403,521	May 21	1486	390	47	960
D'Hinny, Paul R. D., Clapham Rise, county of Surrey, England. Globe or shade for lamps or lanterns	401,934	Apr. 23	2296	596	47	464
Daboll, Nathan D., New York, and J. L. Follett, Brooklyn, N. Y. Cuff-holder	405,877	June 25	2258	593	47	1689
Daelen, Reiner. (See Schumacher, Daelen, and Rothe.)						
Daft, Leo, Plainfield, N. J. Connector for electric railways	403,092	May 14	800	212	47	822
Daft, Leo, Plainfield, N. J. Voltmeter	404,470	June 4	150	35	47	1253
Daft, Leo, Plainfield, N. J. Electric railway	404,687	June 4	470	118	47	1317
Dagwell, Frank. (See Leroy and Dagwell.)						
Dahl, Olof, Brooklyn, N. Y. Electric meter	405,249	June 18	1294	342	47	1493
Dahl, Olof, Brooklyn, assignor to Cleveland Motor Company, New York, N. Y. Electric switch	405,248	June 18	1293	349	47	1493
Dahlstrom, Andrew, Ashton, Mich. Advertising or display device	400,549	Apr. 2	177	48	47	37
Dahlstrom, Andrew, Ashton, Mich. Self-waiting table	401,820	Apr. 23	2129	556, 557	47	432
Dailey, Charles E., East Liverpool, Ohio. Car-replacer	405,398	June 18	1507	400	47	1537
Dailey, Joseph A., Toledo, Ohio. Gas-burner for grates and stoves	402,655	May 7	148	36, 37	47	692
Daine, Richard, Halifax, Nova Scotia, Canada. Cutlery	404,395	June 4	20	5	47	1220
Dainty, Elijah, Coal Bluff, Pa. Gripper for cables	403,650	May 21	1656	439	47	994
Dake, Francis A. (See Quillian and Dake.)						
Dallas, Alexander, Bayonne, N. J. Truss	401,877	Apr. 23	2295	577	47	448
Dallas, Madison, New Orleans, La. Machine for making barrel-staves	405,148	June 11	1123	299	47	1454
Dallett, George A., *et al.* (See Billberg, Carl O. C., assignor.)						
Dallett, Thomas H., *et al.* (See Billberg, Carl O. C., assignor.)						
Dally, Charles A., and H. K. Richardson, Pittsburg, Pa. Automatic cut-off and gas-regulator	405,830	June 25	2184	575	47	1675
Daly, Michael J., assignor to W. C. Barr, Jr., Pittsburg, Pa. Elevator-hatchway	403,875	May 21	1989	522, 523	47	1059
Dalzell, Gilmore & Leighton Company. (See Leighton, George W., assignor.)						
Dana, Woodbury K. (See Watt, John, assignor.)						
Dangler Stove and Manufacturing Company. (See Ruppel, Henry, assignor.)						
Daniels, Samuel, assignor to J. M. Adams, Chicago, Ill. Vapor-stove	402,409	Apr. 30	3017	783	47	610
Daniels, Samuel, assignor to J. M. Adams, Chicago, Ill. Vapor-stove	404,961	June 11	866	226	47	1403
Daniels, William H., and E. Costley, St. Louis, assignors to C. D. Moody, Webster Grove, Mo. Car-axle lubricator	403,876	May 21	1991	523	47	1059
Dansinger, Robert, Albany, N. Y. Street-railway track	403,741	May 21	1794	472	47	1021
Danzenbaker, Francis, Claymont, Del. Bee-hive	402,002	Apr. 23	2392	632, 633	47	488
Darling, Robert F., Seneca Falls, N. Y. Turning-lathe	400,550	Apr. 2	180	49	47	38
Darnell, William N., Worthington, Ind. Shingle-machine	403,420	May 14	1324	346	47	921
Darragh, Albert C., Allegheny, Pa. Oil-filter	401,544	Apr. 16	1690	446	47	340
Darrow, Alexander H., Chicago, Ill. Billiard-cue-tip fastener	405,850	June 25	2378	623	47	1709
Dane, Herman, Woodland, Wis. Water-reservoir	404,386	June 4	20	5	47	1220
Davenport, Samuel A., *et al.* (See Burnley, William, assignor.)						
Davey, Henry, Westminster, county of Middlesex, England. Steam-boiler	404,176	May 28	2463	645	47	1161
Davidson, John, and J. Taylor, Guelph, Ontario, Canada. Safety-lamp	405,878	June 25	2259	593	47	1690
Davidson, Otis E., assignor to W. W. Martin, Nashville, Tenn. Seal-lock	400,445	Apr. 2	32	10	47	10
Davies, Charles G. (See Robilliard and Davies.)						
Davies, Thomas A., New York, N. Y. Railway-rail fish-plate	402,724	May 7	249	66	47	711
Davies, Thomas A., New York, N. Y. Railway fish-plate	402,725	May 7	250	66	47	711
Davies, Walter D., Brooklyn, N. Y., assignor to Ansonia Clock Company, Ansonia, Conn. Clock	400,753	Apr. 2	471	127	47	93
Davis, Albert T. L. (See Pepper and Davis.)						
Davis, Asa, and J. H. W. Marriott; said Davis assignor to W. H. Sadler, Baltimore, Md. Fraction-key for type-writing machines	403,179	May 14	983	247	47	847
Davis, Charles, assignor of two-thirds to C. Marder and C. W. Marlin, Kansas City, Mo. Grip-slot closer for cable railways	403,651	May 21	1657	439	47	994
Davis, Charles L. (See Hilderbrand, Rost, and Davis.)						
Davis, Chester B., and E. H. Riddell, Chicago, Ill. Water-filter	404,962	June 11	868	227	47	1403
Davis, Delamore L., Salem, Ohio. Electric meter for alternating currents	402,410	Apr. 30	3018	783	47	610
Davis, E. Page, *et al.* (See Serrocs, Courtney S., assignor.)						
Davis, Etna H., and R. Westervelt, Elmira, N. Y. Automatic sprinkler	402,569	May 7	30	8	47	689
Davis & Furber Machine Company. (See Wickers, George O., assignor.)						
Davis, G. R. (See McConnell, Robert B., assignor.)						
Davis, George H., Washington, D. C., assignor to A. D. Klaber, New York, N. Y. Duplicating apparatus	404,778	June 4	560	153	47	1341
Davis, George J., Mill Ray, assignor of one-half to W. D. Davis, Statesborough, Ga. Machine for sawing shingles	404,827	June 11	664	172	47	1365
Davis, George M., Chicago, Ill. Air-valve	404,963	June 11	872	227	47	1404
Davis, Isaac N., and G. Tweedy, West Elizabeth, Pa. Combined cooking-stove and grate	404,177	May 28	2464	645	47	1161
Davis, James L., Kimberton, Pa. Dray	404,688	June 4	471	119	47	1317

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Davis, James M., assignor of one-half to S. Taylor, Hudnut, Ind. Table	404,689	June 4	473	119	47	1317
Davis, Jehiel M., Northampton, Mass. Railway-car	405,696	June 25	2004	500	47	1640
Davis, Jehu W., assignor of two-thirds to E. B. Foster and J. W. Leedy, Le Roy, Kans. Door-spring	403,922	May 28	2064	542	47	1081
Davis, John. (See Abrahams, John W., assignor.)						
Davis, John, Allegheny, Pa. Support for water-conductors	402,003	Apr. 23	2395	623	47	483
Davis, John, Allegheny, Pa. Filter	402,656	May 7	145	37, 38	47	692
Davis, John, Allegheny, Pa. Filter	402,657	May 7	151	38, 39	47	692
Davis, John, Allegheny, Pa. Filter	402,658	May 7	154	39, 40	47	693
Davis, John, Allegheny, Pa. Filter	402,659	May 7	159	40	47	694
Davis, John, Allegheny, Pa. Water-purifier	402,660	May 7	160	40	47	694
Davis, John, Allegheny, Pa. Filter	402,661	May 7	161	41	47	694
Davis, John, New Bedford, Mass. Machine for drilling rails for fish-bolts	402,310	Apr. 30	2866	742	47	582
Davis, John S., Cleveland, assignor to Davis Platform Binder Company, Rockport, Ohio. Band-securing mechanism for grain-binders	401,013	Apr. 9	882	{226 / 227}	47	178
Davis, John S., assignor to Davis Platform Binder Company, Cleveland, Ohio. Grain-binder	405,203	June 11	1222	303	47	1473
Davis, Julius M., Columbia, Tenn. Spring bed-bottom	400,900	Apr. 9	711	{192 / 193}	47	147
Davis, Milton G. (See Sturtevant and Davis.)						
Davis, Moses M. (See Yale, Charles O., assignor.)						
Davis, Orion L., Rochester, N. Y. Mechanism for operating the gates or doors of elevator-wells	402,411	Apr. 30	3020	784	47	610
Davis, Orion L., Rochester, N. Y. Elevator-gate	402,412	Apr. 30	3023	785	47	611
Davis, Percy L., San Francisco, Cal. Store-service apparatus	405,951	June 25	2379	624	47	1709
Davis Platform Binder Company. (See Davis, John S., assignor.)						
Davis, Robert, *et al.* (See Murray, John P., assignor.)						
Davis, Stillman C., Cambridge, Mass. Blackboard-eraser	402,570	May 7	31	8	47	669
Davis, William D. (See Davis, George J., assignor.)						
Davis, Zebulon, Cleveland, Ohio. Vapor-stove	405,149	June 11	1125	299	47	1454
Davy, John W., Kingston, Ontario, Canada. Pole or tower	401,333	Apr. 16	1361	363	47	280
Dawes, Edward L., and W. A. Myler, New Brighton, Pa. Cooking-vessel	403,093	May 14	801	213	47	822
Dawson, William. (See Williams, Frost, and Dawson.)						
Day, George C., assignor of one-half to G. M. Condit, Nineveh, Pa. Alarm-lock	402,413	Apr. 30	3023	785	47	611
Day, Jeremiah E., assignor of one-half to J. Pracy, San Francisco, Cal. Well boring or drilling apparatus	403,877	May 21	1992	523	47	1059
Day, Milton, Berrett, assignor of one-half to F. Brown, Baltimore, Md. Cultivating-plow	403,463	May 14	1387	364	47	933
Day, Moses H., Brookline, Mass. Reel for machines for forming and reeling ropes or strands	402,004	Apr. 23	2395	624	47	483
Day, Patrick L., assignor to American Wire Company, Cleveland, Ohio. Guide-box	404,178	May 28	2465	645	47	1161
De Beaumont, Henry B., Geneva, Switzerland. Map	400,642	Apr. 2	304	85	47	63
De Brouwer, Joseph, Bruges, Belgium. Gas-washer	404,606	June 4	363	87	47	1294
De Camp, William H., Grand Rapids, Mich. Fracture apparatus	401,933	Apr. 23	2295	596	47	464
De Caux, William, Philadelphia, Pa. Light-holder for hot-beds	401,137	Apr. 9	1064	285	47	210
De Ferranti, Sebastian Z., Hampstead, county of Middlesex, England. Electro locomotive-engine	402,311	Apr. 30	2867	742	47	582
De Figanière, Affonso, Philadelphia, Pa.; G. Peacock, committee of said De Figanière, lunatic. Insulating and coating compound	401,014	Apr. 9	885	.....	47	178
De Lamater, C. H. (See Rider, Thomas J., assignor.)						
De Lamater, William, *et al.* (See Rider, Thomas J., assigner.)						
De Mier, John R., Las Cruces, N. Mex. Ter. Electrical float-signaling apparatus	403,180	May 14	935	{247 / 248}	47	847
De Owens, Griff, Loyalton, Dak. Ter. Bag-holder	400,551	Apr. 2	183	49, 50	47	39
De Souchet, Augustus M., *et al.* (See Railsback, Lafayette D., assignor.)						
De Vol, Ambrose L., Binghamton, N. Y. Hammer	404,388	June 4	22	5	47	1229
De Witt, James M., Rutherford, N. J. Car-check	404,901	June 11	778	198	47	1385
De Witt, Martin V., Paris, Tex. Cultivator	405,204	June 11	1224	324	47	1473
De Zeng, Henry L., Geneva, assignor to himself, A. G. Lucas, Utica, and W. D. Burrall, Waterloo, N. Y. Metallic railway tie and fastening	400,643	Apr. 2	304	86	47	63
Dean, Emil M., Alta, Cal. Staple-driver	405,537	June 18	1733	{458 / 459}	47	1583
Dean, William R., Ottawa, Kans. Cash-carrier	405,538	June 18	1734	{458 / 459}	47	1584
Dear, Somerville. (See Lawson and Dear.)						
Dease, Martin. (See Connolly, Patrick, assignor.)						
Debontteville, Edouard D., and L. P. C. Malandin, Fontaine-le-Bourg, France. Motive-power engine	400,754	Apr. 2	473	{127 / 128}	47	93
Decatur Coffin Company. (See Olson, Christopher H., assignor.)						
Decker, Jacob P., assignor to E. & H. T. Anthony & Company, New York, N. Y. Photographic-plate-holding apparatus	402,512	Apr. 30	3181	824	47	641
Decker, Wilhelm, Mittweida, Saxony, Germany. Machine for converting wire into a continuous row of clamps	403,923	May 28	2065	543	47	1082
Decker, Wilhelm, Mittweida, Saxony, Germany. Machine for fastening card-clothing to flats	403,924	May 28	2067	543	47	1082
Deeds, John B., assignor to R. H. Catlin, Terre Haute, Ind. Asbestus packing	400,755	Apr. 2	475	.....	47	93
Deeds, John B., assignor to R. H. Catlin, Terre Haute, Ind. Treating asbestus	400,756	Apr. 2	475	.....	47	93
Deere & Company. (See Moore, Gilpin, assignor.)						
Deere, Mansur & Co. (See Tebbetts, Pope, and Stewart, assignors.)						
Deering & Company, William. (See Clark, Charles D., assignor.)						
Deering & Company, William. (See Ellis, Lucien W., assignor.)						
Deering & Company, William. (See Olin, William F., assignor.)						
Deering & Company, William. (See Simpson, Josiah M., assignor.)						
Deering, James E., Evanston, Ill. Harvester elevator-frame	403,094	May 14	803	213	47	822
Deets, James. (See Snyder and Deets.)						
Degood, Alexander K., Millsborough, Pa. Nest-box for fowls	402,571	May 7	32	8	47	669
Deichmann, Louis, Cassel, Germany. Tellurian	402,005	Apr. 23	2397	{324 / 325}	47	483
Deitz Company, R. E., *et al.* (See Betts, Lewis F., assignor.)						
Delainey, W. F., *et al.* (See Peterson, Henry, assignor.)						
Deland, Frank A., Memphis, Mich. Attachment for lawn-mowers	404,690	June 4	474	120	47	1317
Deland, Frank A., Memphis, Mich. Attachment for lawn-mowers	404,691	June 4	475	120	47	1318
Delany, Patrick B., New York, N. Y. Telegraphy	401,334	Apr. 16	1363	364	47	280
Delanrier, Emile J., Paris, France. Apparatus for utilizing the power of waves	403,579	May 21	1561	412	47	975
Delisle, Joseph D., Lowell, Mass. Bitter tonic	402,312	Apr. 30	2868	.....	47	583
Dell, John C., Philadelphia, Pa. Runner for grinding-mills	404,607	June 4	365	88	47	1294
Deming, Levi S., Middletown, Conn. Derrick	405,082	June 11	1034	276	47	1438
Deming, Warren, Edmeston, N. Y. Powder-dusting can	405,351	June 18	1441	381	47	1524
Denehy, Denis M., and H. W. Childs, Acampo, Cal. Earth-leveling scraper	403,095	May 14	803	213	47	822

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Denise, Martha, Burlington, Iowa. Clothes-line attachment	403,332	May 14	1188	315	47	897
Denison, Charles H., Springfield, Mass. Filtering apparatus	402,147	Apr. 30	2628	680	47	536
Denison, George L. (See Henry, John S., assignor.)						
Denison, Sylvester P., Brooklyn, assignor of one-half to H. Cushman, New York, N. Y. Dropper-spout	401,256	Apr. 9	1251	333	47	245
Dennis, John F. (See Measmore, Rienzi W., assignor.)						
Densmore, Edwin, Coronado, Cal. Manufacture of wooden boxes	403,333	May 14	1189	316	47	897
Densmore, James. (See Travis, William H., assignor.)						
Denver, William J., Boston, Mass. Supporting and cross-connecting electric wires	402,810	May 7	389	102	47	736
Denzel, Fannie E., Glen Ullin, Dak. Ter. Corset	401,015	Apr. 9	886	237	47	178
Derbec, Etienne, San Francisco, Cal. Grinding-mill	403,421	May 14	1325	347	47	921
Deshazo, Albert G., Cypress Ridge, Ark. Car-coupling	402,572	May 7	33	9	47	669
Desmasures, Camille, deceased; J. L. Norris, administrator and assignor to M. A. Desmasures, Paris, France. Secondary battery	402,006	Apr. 23	2399	625	47	484
Desmasures, Marie A. (See Desmasures, Camille, assignor.)						
Desmond, John, assignor to Garfield Injector Company, Wadsworth, Ohio. Steam-injector	402,513	Apr. 30	3184	824	47	642
Desmond, John, assignor to Hayden & Derby Manufacturing Company, Brooklyn, N. Y. Steam-injector	404,262	May 28	2598	676	47	1184
Despain, Joseph H., assignor of one-half to D. O. Wallace, Kansas City, Mo. Cleansing and polishing compound	404,387	June 4	21	.....	47	1229
Detroit Motor Company. (See Blades, Harry H., assignor.)						
Detweiler, Joshua B., Goshen, Ind. Lawn-rake	401,822	Apr. 23	2133	557	47	433
Devens, Elijah J., Coldwater, assignor to W. W. Petherick, Detroit, Mich. Railway	403,464	May 14	1389	364	47	933
Devoe, Benjamin G., and T. A. Dull, Lima, Ohio. Gas or oil stove	401,641	Apr. 16	1358	483	47	371
Devoe & Co., F. W. (See Ackerman, Washington V., assignor.)						
Devore, Levi M., Freeport, Ill. Handle	401,419	Apr. 16	1495	396	47	305
Dewees, John W., Philadelphia, Pa., assignor to Union Special Sewing Machine Company, Chicago, Ill. Feed mechanism for sewing-machines	400,833	Apr. 2	609	166	47	117
Dewees, John W., Philadelphia, Pa., assignor to Union Special Sewing Machine Company, New York, N. Y. Sewing-machine	401,776	Apr. 23	2052	537	47	419
Dewees, Thomas J., Palmyra, N. J., assignor to Electric Cable Construction and Maintenance Company, of Pennsylvania. Splice-box for electric cables	402,007	Apr. 23	2401	625	47	484
Dewey Corporation. (See Dewey, Mark W., assignor.)						
Dewey, Mark W., assignor of two-thirds to E. Lass and C. H. Duell, Syracuse, N. Y. Electric-heating apparatus for railway systems	401,482	Apr. 16	1501	{420 / 421}	47	323
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Telegraphy	402,414	Apr. 30	3025	785	47	611
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Telegraphy	402,415	Apr. 30	3028	785	47	612
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Expanding hoops or tires	402,416	Apr. 30	3030	786	47	613
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Autographic telegraphy	405,539	June 18	1736	459	47	1584
Dewey, Mark W., assignor to Dewey Corporation, Syracuse, N. Y. Electric signaling system	405,831	June 25	2186	576	47	1676
Dewrance & Co., John. (See Church, Bonneval E., assignor.)						
Dexter, Talbot C., Des Moines, Iowa. Paper-folding attachment for printing-presses	401,737	Apr. 23	2002	524	47	409
Dial, Wilbur F., A. Steward, and G. H. Dimond, assignors to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Sewing-machine	405,205	June 11	1225	{324 / 325}	47	1473
Diamond, William H. (See Taylor and Diamond.)						
Dias, Simeon D., New York, N. Y. Fountain-pen	402,417	Apr. 30	3032	786	47	613
Dicer, William, and C. M. Barker, Albion, Mich. Breech-loading fire-arm	404,779	June 4	591	{153 / 154}	47	1341
Dick, Albert B., Chicago, Ill. Arm-rest	403,652	May 21	1658	439	47	995
Dick, Albert B., Chicago, Ill. Frame for holding copying-plates	404,034	May 28	2231	585	47	1113
Dick, Joseph, Canton, Ohio. Driving mechanism for endless carriers	401,777	Apr. 23	2053	537	47	419
Dick, Robert, Greenhead, Glasgow, county of Lanark, Scotland. Belting	401,642	Apr. 16	1860	{483 / 484}	47	371
Dick, Robert, Greenhead, Glasgow, county of Lanark, Scotland. Making flat belts	401,643	Apr. 16	1862	484	47	371
Dick, William N., Taylorville, Ill. Twine-tension for harvesters	405,063	June 11	1036	276	47	1438
Dickerson, William H. (See Wilson, William M., assignor.)						
Dickinson, Austin R., Syracuse, N. Y. Clasp-plate	403,580	May 21	1562	412	47	975
Dickinson, James A. (See Pierson, John W., assignor.)						
Dickson, J. H. (See Wadsworth, Homer N., assignor.)						
Dickson, Jonathan, Agosta, Ohio. Nut-lock	403,334	May 14	1190	316	47	897
Dickson, Samuel J., Chicago, Ill. Vine-fastener	405,879	June 25	2260	594	47	1600
Diebel, William, Philadelphia, Pa. Instrument for cutting or grinding emery-wheels	401,823	Apr. 23	2134	557	47	433
Diedel, Gustav A., New York, N. Y. Brake-shoe attachment for railway-cars	401,257	Apr. 9	1252	334	47	245
Diehl, Philip. (See Diehl, Rudolf and P.)						
Diehl, Rudolf, New York, N. Y., and P. Diehl, Elizabeth, N. J. Electric meter	405,399	June 18	1507	{400 / 401}	47	1537
Diehl, Theodor, assignor to G. C. Zimmer, Mannheim, Germany. Crimson dye	401,483	Apr. 16	1504	.....	47	324
Dietrich, Engelbert, assignor of one-half to J. Fois, Cincinnati, Ohio. Car-coupling	403,039	May 7	706	185	47	797
Dilday, James H. (See Paris and Dilday.)						
Dill, Joshua A., Frederick, Md. Pegging-jack	405,768	June 25	2108	552	47	1660
Dilts, Frank, Fulton, N. Y. Wood-pulp machine	403,653	May 21	1659	440	47	995
Dimmick, Albert M., and E. Z. Smith, assignors to F. C. Sturges, trustee, Wilkes-Barré, Pa. Steam-boiler	403,878	May 21	1993	524	47	1059
Dimon, William B., Philadelphia, Pa. Umbrella or parasol	403,993	May 28	2165	569	47	1100
Dimond, George H. (See Dial, Steward and Dimond.)						
Dinkel, George, Jersey City, N. J. Steam-trap	401,545	Apr. 16	1691	446	47	341
Disston & Sons, Henry. (See Paul, Samuel T., assignor.)						
Disston, Thomas S., Philadelphia, Pa. Apparatus for hardening saw or other steel blades	401,138	Apr. 9	1064	285	47	210
Ditty, John J., *et al.* (See Moharter, Frank, assignor.)						
Dixey, Robert H., New Orleans, La. Burden-carrier	400,757	Apr. 2	476	128	47	93
Dixon, James A., *et al.* (See Foster, Robert, assignor.)						
Dixon, Theron S. E., Chicago, Ill. Mouth-piece for cigars	400,446	Apr. 2	33	11	47	10
Dixon, Theron S. E., Hyde Park, Ill. Air-brake	402,418	Apr. 30	3033	{786 / 787}	47	613
Doan, Nelson R., Stoughton, Wis. Vehicle-pole tip	403,925	May 28	2068	543	47	1082
Doan, William E., Jr. (See Jenkins, Sylvester, assignor.)						
Dobson, Benjamin A., Bolton, county of Lancaster, England. Apparatus for testing the accuracy of the adjustment of a rotating shaft	402,726	May 7	251	66	47	711
Dodd, Frank W., Osborne Road, Forest Gate, county of Essex, England. Single-acting steam-engine	405,150	June 11	1126	{299 / 300}	47	1455
Dodd, Willis G., San Francisco, Cal. Water-wheel	401,484	Apr. 16	1595	421	47	324

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Dodd, Wily K., Marengo, Iowa. Adjustable sieve attachment for thrashing-machines	405,018	June 11	946	252	47	1419
Doddridge, Loyal M., assignor of one-half to E. Eply, Stanton, Mich. Buckle	403,254	May 14	1060	279	47	871
Dodge Coal Storage Company. (See Dodge, James M., assignor.)						
Dodge, Frances A. and I. A., Brady, Tex. Milk-cooler	400,834	Apr. 2	610	166	47	117
Dodge, Israel A. (See Dodge, Frances A. and I. A.)						
Dodge, J. Edward. (See Atkinson, Dwight R., assignor.)						
Dodge, James M., Philadelphia, Pa. Conveyer contrivance for handling coal	403,742	May 21	1795	472	47	1021
Dodge, James M., assignor to Dodge Coal Storage Company, Philadelphia, Pa. Apparatus for unloading boats	402,419	Apr. 30	3044	787	47	615
Dodge, James M., Philadelphia, Pa., assignor to Dodge Coal Storage Company, Naugatuck, Conn. Reversable loading and unloading conveyer	402,611	May 7	392	{102 / 103}	47	736
Dodge, James M., Philadelphia, Pa., assignor to Dodge Coal Storage Company, Naugatuck, Conn. Conveyer for piling coal	404,263	May 28	2600	677	47	1184
Dodge, Josiah, Appleton City, Mo. Cultivator	401,778	Apr. 23	2054	538	47	419
Dodge, Miles B., assignor to Parke & Lacey, San Francisco, Cal. Rotary pulverizer	401,878	Apr. 23	2207	577	47	448
Dodge, Philip T., trustee. (See Smith, William E., assignor.)						
Dodson, Darien W. (See Richards, Francis H., assignor.)						
Dodson, Darien W., Wilkes-Barré, Pa. Carriage-driving mechanism	402,233	Apr. 30	2749	{712 / 713}	47	560
Dodson, Darien W., Wilkes-Barré, Pa. Mechanical movement	402,234	Apr. 30	2750	713	47	560
Dodson, Isaac B., Danville, Va. Hand-stamp	401,335	Apr. 16	1366	364	47	281
Doebler, Otto J. A. (See Espenschied, Charles, assignor.)						
Doherty, Patrick W., Boston, Mass. Operating mechanism for valves of water-closet and other tanks	403,926	May 28	2069	543	47	1082
Doherty, Patrick W., Boston, Mass. Operating mechanism for valves of water-closet and other tanks	405,952	June 25	2380	624	47	1709
Dolan, Robert P., assignor of one-half to A. B. Dunkle, Steelton, Pa. Feed and transfer mechanism for rolling-mill plants	402,148	Apr. 30	2630	681	47	536
Dolge, Alfred. (See Millet, John W., assignor.)						
Dollar, Joseph A. (See Sawyer, Uriah P., assignor.)						
Dollner, Gustav J., assignor to J. Steindecker, Hamburg, Germany. Window	404,179	May 28	2467	646	47	1162
Dollinger, Gustav J., assignor to J. Steindecker, Hamburg, Germany. Vending-machine	402,008	Apr. 23	2402	{625 / 626 / 627}	47	484
Doma, Leo, Vienna, Austria-Hungary. Carbureting-lamp	405,880	June 25	2261	594	47	1690
Donaldson, Richard A., *et al.* (See Hipperling, William, assignor.)						
Donaldson, Robert S., Wilkinsburg, Pa. Telegraph-wire carrier	400,552	Apr. 2	184	50	47	39
Donelson, Emory V., Baltimore, Md. Treating rice	400,835	Apr. 2	612	.....	47	117
Donmoyer, Rudolph W., South Bend, Ind. Wheel-tire	404,692	June 4	476	126	47	1318
Donnell, John O., Lowville, N. Y. Envelope	403,604	May 21	1593	422	47	981
Donnelly, John, Parliament Street, W. McLaren, Moorfields, county of Middlesex, and A. Trask, Brockley, county of Kent, England. Manufacturing axle-boxes for railway-carriages	403,422	May 14	1326	{347 / 348}	47	921
Donnelly, Owen, and C. T. Bride, Washington, D. C. Cleaning pipe-sewers	402,662	May 7	162	41	47	694
Donnelly, Owen, and C. T. Bride, Washington, D. C. Apparatus for cleaning sewers	402,908	May 7	519	137	47	761
Donoghue, Jeremiah G. (See Grau, Philip J., assignor.)						
Donohoe, Hugh, New York, N. Y. Brake for dumb-waiters	404,076	May 28	2207	604	47	1129
Doran, James C., and H. A. Hall, Pawtucket, R. I. Lobe car-ring	402,071	Apr. 23	2503	654	47	503
Doremus, Charles A., New York, N. Y. Purifying water	404,180	May 28	2468	.....	47	1162
Doremus, Joseph L., *et al.* (See Turton, Benjamin, assignor.)						
Doremus, Willard D., Washington, D. C. Letter-box	404,828	June 11	666	172	47	1365
Doremus, Willard D., Washington, D. C., assignor to Corbin Cabinet Lock Company, New Britain, Conn. Padlock	402,663	May 7	163	42	47	694
Dorion, George E., *et al.* (See Reichels, Otto, assignor.)						
Dorman, John F. W., Baltimore, Md. Printing-press	405,832	June 25	2190	{576 / 577}	47	1676
Dorr, Warren, Gardiner, Me. Car-coupling	405,953	June 25	2383	624	47	1710
Dorrance, Charles J., Chicago, Ill. Rocking or shaking grate-bar	403,255	May 14	1062	269	47	871
Doss, Coleman, Laddonia, Mo. Stitching-clamp	405,349	June 18	1438	369	47	1523
Dotterrer, Alvin Z. (See Hyde and Dotterrer.)						
Doubleday, Harry M. and R., Pittsburg, Pa. Insulating cut-out joint	402,420	Apr. 30	3046	788	47	615
Doubleday, Russell. (See Doubleday, Harry M. and R.)						
Douge, John H. (See Brawn, Augustus, assignor.)						
Dougherty, Daniel, Washington, D. C. Steam-generator	405,954	June 25	2385	625	47	1710
Doughty, Charles W., Augusta, Ga. Fireproofing compound	402,235	Apr. 30	2753	.....	47	561
Doughty, Henry J., Malden, Mass., assignor to J. Banigan, Providence, R. I. Rubber shoe	404,264	May 28	2602	677	47	1185
Doughty, Henry J., Malden, Mass., assignor to J. Banigan, Providence, R. I. Mechanism for the manufacture of rubber shoes	404,265	May 28	2603	{677 / 678}	47	1185
Douglas, William M., assignor of one-third to C. L. Beneke, Galveston, Tex. Jetty	401,695	Apr. 16	1929	504	47	384
Douglass, Adelbert J., Ilion, N. Y. Crayon-rack for blackboards	404,389	June 4	23	6	47	1229
Dow, Herbert H. (See Dow, Joseph H. and H. H.)						
Dow, Joseph H. and H. H., said H. H. Dow assignor to W. Chisholm, Cleveland, Ohio. Rotary steam-engine	403,335	May 14	1192	316	47	897
Dowd, Frank D., Cortland, N. Y. Water-conveyer	404,760	June 4	595	156	47	1342
Dowling, John, Wilkes-Barré, Pa., assignor of one-half to Wilkes-Barré Self Closing Hydrant Company, (limited.) Water-bib	404,206	May 28	2606	678	47	1185
Dowling, John W., New York, N. Y. Tobacco-pipe	403,581	May 21	1563	413	47	975
Downing, Wellington, Erie, Pa. Paper-folding machine	401,336	Apr. 16	1368	364	47	281
Dowst, Charles O. Waukegan, Ill. Tag	401,485	Apr. 16	1596	421	47	324
Doyle, John, and J. Williamson, Ionia, Mich. Rail-drill	403,040	May 7	707	185	47	797
Drake, Charles S., San Rafael, Cal. Vapor-stove	401,258	Apr. 9	1254	334	47	246
Drake, Edwin S., Cambridge, Mass. Telephone-transmitter	404,471	June 4	151	35	47	1258
Drake, John I. (See Russell and Drake.)						
Draper, John, Whitby, Ontario, Canada. Hand-propelled vehicle	402,812	May 7	394	103	47	737
Draper, John, Whitby, Ontario, Canada. Trousers-stretcher	402,813	May 7	395	103	47	737
Draper, John, Whitby, Ontario, Canada. Child's slate-cleaner and pencil holder and sharpener	402,814	May 7	395	103	47	737
Draper & Sons, George. (See Carroll, Edgar J., assignor.)						
Draper & Sons, George. (See Kimmel and Claussen, assignors.)						
Draper & Sons, George. (See Northrop, James H., assignor.)						
Draper & Sons, George. (See Richardson, John S., assignor.)						
Draper & Sons, George. (See Wheat, Franklin H., assignor.)						
Draper, William F. (See White, Rollin, assignor.)						
Dresser, Charles E., *et al.* (See Gilman, Willard H., assignor.)						
Dresser, Solomon R., Bradford, Pa. Pipe-coupling	400,644	Apr. 2	306	86	47	64

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Drew, Walter J., assignor to Bissell Carpet Sweeper Company, Grand Rapids, Mich. Carpet-sweeper	405,084	June 11	1037	277	47	1438
Dreyfoos, Albert W. (See Mitchell, Jack, assignor.)						
Driver, John J., St. Louis, Mo. Plane	405,540	June 18	1743	460	47	1587
Dromgold, Walker A. (See Hench and Dromgold.)						
Dronsfield, Joseph S., Oldham, county of Lancaster, England. Card-grinding roller	404,606	June 4	367	88	47	1295
Drude, Louis, New York, N. Y. Coffee-mill	405,019	June 11	948	252	47	1419
Du Bulsson, George H., Flushing, N. Y. Scraper or cleaner	403,522	May 21	1487	390	47	960
Du Roveray, Edouard. (See Lugrin and Du Roveray.)						
Du Shane, James, South Bend, Ind. School record-book	402,072	Apr. 23	2504	654	47	503
Dubinski, Benjamin, assignor of one-half to C. P. Budd, St. Louis, Mo. Electric alarm-clock	405,206	June 11	1229	325	47	1474
Dubois, Charles, Leadville, Colo. Pressure-regulator	400,553	Apr. 2	185	50	47	39
Dudley, Charles B., and J. D. Bowman, Altoona, Pa. Check-valve	405,250	June 18	1295	342	47	1494
Dueber, John C. (See Bradley, William W., assignor.)						
Duell, Charles H., *et al.* (See Dewey, Mark W., assignor.)						
Duffy, Joseph, Passaic, N. J. Support for spinning-spindles	404,609	June 4	368	88	47	1295
Dugdale, James K., and C. E. Mastin, Richmond, Ind. Last and stand	403,927	May 28	2071	544	47	1083
Duggan, John A., Quincy, Mass., assignor to Burnham & Duggan Railway Appliance Company, Portland, Me. Railway-switch	405,020	June 11	949	{253 / 254}	47	1439
Dulany, Roland F., Waynesburg, Pa. Holdback for vehicles	404,035	May 28	2233	585	47	1113
Dulin, James C., Jr., Washington, D. C. Necktie-fastener	403,336	May 14	1198	317	47	898
Dull, Casper M., *et al.* (See Kendall, Francis B., assignor.)						
Dull, John H., Redkey, Ind. Water-heater	405,305	June 18	1376	362	47	1510
Dull, Thompson A. (See Devoe and Dull.)						
Dunagan, Patrick H., Denver, Colo. Slime-separator	404,521	June 4	241	57	47	1270
Dunaway, Wilson M., Delphos, Kans. Combination coupon-ticket stamp and punch	401,490	Apr. 16	1496	397	47	305
Dunbar, William, Larrabee, Pa., assignor of one-half to J. J. Newman, Buffalo, N. Y. Lumber-trimmer	404,267	May 28	2008	678	47	1185
Duncan, John W., assignor of one-fourth to R. G. West, Butler, Mo. Desk	402,909	May 7	521	{137 / 138}	47	761
Duncan, Stephen. (See Ketteringham, John P., assignor.)						
Dundy, Elmer S., Jr. (See Pulliam, Phillip R., assignor.)						
Duneka, Frederick A., *et al.* (See Van Zile, Edward S., assignor.)						
Dunham, Charles L., Union City, Pa., assignor to W. F. Rupp, Chicago, Ill. Pipe-wrench	404,781	June 4	506	154	47	1342
Dunham, Clarkson C. (See Mallory, Frank B., assignor.)						
Dunham, George H., *et al.* (See Smith, Roswell T., assignor.)						
Dunham, Sylvester C., assignor of one-half to G. W. Lambert, Willow Springs, Nebr. Paint	403,522	May 21	1488	.....	47	960
Dunham, William P., Belleville, Kans. Gasoline-stove	401,616	Apr. 9	886	237	47	178
Dunkle, A. B. (See Dolan, Robert P., assignor.)						
Dunlap, Robert, *et al.* (See Balet, Joseph W., assignor.)						
Dunlap, Samuel R., Eutaw, Ala. Display and sale rack for merchandise	405,400	June 18	1509	401	47	1538
Dunn, Ambrose C., assignor to Pneumatic Steering Gear and Manufacturing Company, New York, N. Y. Steering apparatus	404,472	June 4	152	35, 36	47	1254
Dunn, Franklin M., *et al.* (See Price, George W., assignor.)						
Dunn, James, Brockport, N. Y. Halter	401,017	Apr. 9	887	237	47	178
Dunn, James L. (See Sargent, Ransom H., assignor.)						
Dunn, Louis, Minneapolis, Minn. Safety-switch	405,350	June 18	1439	381	47	1594
Dunn, Sola B., *et al.* (See Haussmann, Hermann, assignor.)						
Dunphe, Eugene M., and C. Blockhous, East Bridgewater, Mass. Leather-splitting machine	405,697	June 25	2005	526	47	1640
Durand, Lockwood, Huntington, Conn. Revolving marine battery	400,686	Apr. 2	612	166	47	117
Duren, Charles A., Boston, Mass., and R. M. Smith, Providence, R. I. Center-board	402,573	May 7	34	9	47	669
Durfee, Benjamin B. (See Gash, Edgar, assignor.)						
Durham, John F., assignor of one-half to G. Edens, Detroit, Mich. Hydrant	402,421	Apr. 30	3048	788	47	616
Durham, John F., assignor of one-half to G. Edens, Detroit, Mich. Hydrant	403,743	May 21	1798	472	47	1021
Durick, Martin, Buffalo, N. Y. Bridge for stringed instruments	402,313	Apr. 30	2869	{743 / 744}	47	583
Duryea, Charles G., Washington, D. C. Velocipede	401,421	Apr. 16	1498	398	47	306
Dus, Louis J., Milwaukee, Wis. Knife for printer's use						
Dutcher, J. A., *et al.* (See Zimmerling, August F., assignor.)						
Dutcher, P. E., *et al.* (See Zimmerling, August F., assignor.)						
Dutcher Temple Company. (See Allen, Nicholas I., assignor.)						
Dutcher Temple Company. (See Barnes, Joseph, assignor.)						
Dutton, Andrew L., assignor to himself, W. B. Dutton, Racine, Wis., and M. M. Dutton, Chicago, Ill. Submarine search-light	404,390	June 4	24	6	47	1229
Dutton, Chauncey N., assignor to Fuel Gas and Electric Engineering Company, (limited,) Pittsburg, Pa. Fluid seal-valve for meters	404,347	May 28	2731	709	47	1209
Dutton, Marshall M., *et al.* (See Dutton, Andrew L., assignor.)						
Dutton, Walter B., *et al.* (See Dutton, Andrew L., assignor.)						
Duval, Claude. (See Harsha and Duval.)						
Dyer, Cornelius S., *et al.* (See Irving, Mark E., assignor.)						
Dyer, Phillip, assignor of one-half to W. Abernethy, Mooretown, Ontario, Canada. Gate-latch	404,391	June 4	26	6	47	1230
Dzondi, Arthur. (See Werner, Joseph, assignor.)						
Eagen, James, Wyoming, Pa. Drill-bit	404,829	June 11	668	173	47	1365
Eagle Cotton Gin Company. See Gammons, Rollins, and Wadsworth, assignors.)						
Eagle Lock Company. (See Plumb, Henry B., assignor.)						
Eagle Manufacturing Company. (See Miller and Kanouse, assignors.)						
Eagle Pencil Company. (See Bailey, Marcellus, assignor.)						
Eagle Pencil Company. (See Fischer, Frederick J. W., assignor.)						
Eagle Pencil Company. (See Kraus, Samuel, assignor.)						
Eames, Charles J., New York, N. Y. Reduction of iron ore	404,181	May 28	2471	646	47	1162
Eames, Charles J., New York, N. Y. Reducing iron ore	404,182	May 28	2472	646	47	1162
Eames, Charles J., New York, N. Y. Reducing iron ore	404,183	May 28	2474	646	47	1162
Eames, Charles J., New York, N. Y. Reducing ore	404,184	May 28	2475	.....	47	1163
Eames, Charles J., New York, N. Y. Reducing iron direct from its ores	404,473	June 4	157	36	47	1254
Eames, Elisha D. (See Burns, John B., assignor.)						
Eames, Henry H., Baltimore, Md. Device for collecting metallic ores	403,256	May 14	1063	280	47	872
Eames Vacuum Brake Company. (See Massey and Normand, assignors.)						
Earhart, John F., assignor of one-half to J. E. Richardson, Cincinnati, Ohio. Device for forming circles, curves, and geometrical forms	403,827	May 21	1923	506	47	1046

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Earle, William, Philadelphia, Pa. Chimney-cap and ventilator	405,698	June 25	2006	526	47	1640
Early, William R. (See Schaff, Amos J., assignor.)						
Earty, Joseph P. M., Polk, Ohio. Pump	402,149	Apr. 30	2633	682	47	537
Easthope, Alfred, Wolverhampton, county of Stafford, England, assignor to A. H. Overman, Boston, Mass. Velocipede	404,693	June 4	476	120	47	1318
Eastman Dry Plate and Film Company. (See Bannister, Louis H., assignor.)						
Eastman Freight Car Heater Company. (See Eastman, William E., assignor.)						
Eastman, Walter W., and H. E. Potter, Milford, Iowa. Grain-binder	401,644	Apr. 16	1866	484 / 485	47	372
Eastman, William E., Boston, Mass. Freight-car door and hanger	405,699	June 25	2006	527	47	1641
Eastman, William E., Boston, Mass., assignor to Eastman Freight Car Heater Company, Portland, Me. Automatic governor for liquid-fuel burners	405,663	June 18	1948	512	47	1624
Eastman, William E., Boston, Mass., assignor to Eastman Freight Car Heater Company, Portland, Me. Liquid-fuel burner	405,881	June 25	2262	504 / 505	47	1690
Easton, Lucien F., La Crosse, Wis. Temperature-regulator	400,758	Apr. 2	477	128	47	93
Easton, Lucien F., La Crosse, Wis. Electric temperature-regulator	405,151	June 11	1128	300	47	1455
Eastwood, George, Kingston-upon-Hull, county of York, England. Matrix for stereotype-plates	401,738	Apr. 23	2005	525	47	410
Eaton, Cole & Burnham Company. (See Tomlinson, Edwin R., assignor.)						
Eaton, Fred, Conway, N. H. Poison-distributer	404,077	May 28	2308	603	47	1130
Eaton, William S., assignor to Fabya Watch Case Company, Sag Harbor, N. Y. Engraving	402,314	Apr. 30	2873	744	47	583
Eberhardt, Henry E. (See Eberhardt, Ulrich and H. E.)						
Eberhardt, Ulrich, Newark, N. J. Shaping-machine	402,574	May 7	35	9	47	670
Eberhardt, Ulrich and H. E., Newark, N. J. Automatic machine for cutting rack-teeth	400,645	Apr. 2	307	86, 87	47	64
Eberhardt, Ulrich and H. E., Newark, N. J. Plate-printing machine	403,181	May 14	937	244 / 245	47	847
Eberhart, Henry. (See Ormsby and Eberhart.)						
Eberhart, Lloyd, and I. D. Stevens, Joliet, Ill. Broadcast seed-sower	402,150	Apr. 30	2635	682 / 683	47	537
Ebert, James J. (See Brooke, William M., assignor.)						
Ebner, Josef F., London, county of Middlesex, England. Parquet or other flooring	405,021	June 11	951	254	47	1420
Ecanbert, Frederic, Brooklyn, N. Y. Making ring-dies	404,522	June 4	242	57	47	1270
Ecker, William, Newark, N. J. Wind-wheel	401,139	Apr. 9	1666	263	47	210
Eckert, John C., assignor of one-half to Callender & Patterson, Dayton, Ohio. Bench-stop	405,401	June 18	1511	401	47	1538
Eddy, Albert. (See Lewis, Russell H., assignor.)						
Eddy, Charles F. A., Greenfield, Mass. Egg-carrier	401,645	Apr. 16	1867	485	47	372
Edens, George. (See Durham, John F., assignor.)						
Edgar, Ellis F., New York, N. Y. Burning carbonaceous material	402,422	Apr. 30	3049	788 / 789	47	616
Edgar, Ellis F., Woodbridge, N. J. Furnace	402,514	Apr. 30	3186	824 / 825	47	642
Edge, James S., and F. W. Ticehurst, Birmingham, county of Warwick, England. Automatic and instantaneous gas-lamp extinguisher	403,654	May 21	1660	440 / 441	47	995
Edge, William C., Newark, N. J. Belting for machinery	401,779	Apr. 23	2056	530	47	419
Edge, William C., Newark, N. J. Chain	401,935	Apr. 23	2297	594	47	464
Edison Electric Light Company. (See Edison, Thomas A., assignor.)						
Edison Phonograph Company. (See Edison, Thomas A., assignor.)						
Edison Phonograph Toy Manufacturing Company. (See Jacques, William W., assignor.)						
Edison, Thomas A. (See Entz, Justus B., assignor.)						
Edison, Thomas A., Llewellyn Park, N. J. Phonogram-blank	400,648	Apr. 2	314	[illegible]	47	65
Edison, Thomas A., Llewellyn Park, N. J. Making phonogram-blanks	400,649	Apr. 2	314	86	47	65
Edison, Thomas A., Llewellyn Park, N. J. Making phonogram-blanks	400,650	Apr. 2	315	86	47	65
Edison, Thomas A., Menlo Park, N. J. Electrical-distribution system	404,902	June 11	779	199	47	1385
Edison, Thomas A., Llewellyn Park, N. J., assignor to Edison Phonograph Company, of New Jersey. Phonograph recorder and reproducer	400,646	Apr. 2	311	87	47	64
Edison, Thomas A., Llewellyn Park, N. J., assignor to Edison Phonograph Company, of New Jersey. Phonograph	400,647	Apr. 2	312	88	47	65
Edison, Thomas A., Menlo Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. System of electric lighting	401,486	Apr. 16	1597	422	47	324
Edison, Thomas A., Menlo Park, N. J., assignor to Edison Electric Light Company, New York, N. Y. Incandescing electric lamp	401,646	Apr. 16	1868	485	47	372
Edwards, E. R. (See Bartholomew, George E., assignor.)						
Edwards, Richard J., Galena, Ill. Pipe-coupling	400,759	Apr. 2	478	128	47	94
Edwards, Richard J., Galena, Ill. Car-coupling	405,085	June 11	1038	277	47	1438
Edwards, William J., Chicago, Ill. Colter attachment for plows	401,337	Apr. 16	1369	364 / 365	47	281
Ege, Alexander H. (See Richardson, John T., assignor.)						
Egler, Jacob D., Pittsburg, Pa. Spring-gun	403,096	May 14	804	214	47	822
Egleston, Thomas, New York, N. Y., assignor to Plume & Atwood Manufacturing Company, Waterbury, Conn. Electric conductor	401,936	Apr. 23	2298	597	47	464
Egner, Frederic. (See Harrison and Egner.)						
Egner, Frederic, and J. W. Harrison, St. Louis, Mo. Valve	404,392	June 4	27	6, 7	47	1230
Ehbets, Carl J., assignor to Colt's Patent Fire Arms Manufacturing Company, Hartford, Conn. Lock for fire-arms	402,423	Apr. 30	3051	789	47	617
Ehbets, Carl J., assignor to Colt's Patent Fire Arms Manufacturing Company, Hartford, Conn. Cartridge-feed pack for revolvers	402,424	Apr. 30	3053	789	47	617
Ehrlich, A. (See Sommerfeld, Heinrich, assignor.)						
Ehrlich, Leo. (See Tivy and Ehrlich.)						
Ehrlich, Leo, assignor to American Roll-Paper Company, St. Louis, Mo. Paper-cutter	405,402	June 18	1511	402	47	1538
Eichbaum, Henry, Mount Vernon, N. Y., assignor to W. S. Lamson, Lowell, Mass. Store-service apparatus	402,575	May 7	36	9	47	670
Eichbaum, Henry, Mount Vernon, N. Y., assignor to W. S. Lamson, Lowell, Mass. Store-service apparatus	402,576	May 7	39	10	47	671
Eilers, Bernerd, Jr., Rochester, N. Y. Wood-grinder for pulp-making	402,425	Apr. 30	3055	790	47	617
Eilers, Bernerd, Jr., Rochester, N. Y. Paper-pulp screen	402,426	Apr. 30	3058	790	47	618
Eisenhuth, John W., San Francisco, Cal. Hair-cutter	402,727	May 7	252	66, 67	47	711
Eishon, Catherine, *et al.* (See McCarty, William F. M., assignor.)						
Elcoate, Thomas, Norton, Stockton-on-Tees, county of Durham, England. Can-opening device	400,760	Apr. 2	479	129	47	94
Elder, Joseph, Peoria, Ill. Coal-chute indicator	401,140	Apr. 9	1668	266	47	211

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Electric Cable Construction and Maintenance Company. (See Brooks, David, Jr., assignor.)						
Electric Cable Construction and Maintenance Company. (See Dewees, Thomas J., assignor.)						
Electric Car Company of America. (See Herbert and Angerer, assignors.)						
Electric Cutlery Company. (See Ascheuer, Friedrich, assignor.)						
Electric Cutting Machine Company. (See Rain, Force, assignor.)						
Electrical Accumulator Company. (See Griscom, William W., assignor.)						
Electrical Accumulator Company. (See Pfatischer, Matthias, assignor.)						
Electrical Accumulator Company. (See Prescott, George B., Jr., assignor.)						
Electrical Accumulator Company. (See Price, John B., assignor.)						
Electrical Accumulator Company. (See Sellon, John S., assignor.)						
Electrical Supply Company. (See Phalan, James H., assignor.)						
Electro Dynamic Company. (See Griscom, William W., assignor.)						
Electro-Hydraulic Company. (See McFeely, Ronald F., assignor.)						
Elektron Manufacturing Company. (See Perret, Frank A., assignor.)						
Elias, Abraham J., Buffalo, N. Y. Envelope and stamp moistener	401,141	Apr. 9	1009	286	47	211
Elias, Carl R., Chicago, Ill. Touch-regulator for pianos	405,465	June 18	1618	426 / 427	47	1559
Elkins, William F., assignor of one-half to J. R. Thomas, Comanche, Tex. Sash-fastener	400,554	Apr. 2	186	50	47	40
Ellicott, Charles L., Baltimore County, Md. Lamp-holder for vehicles	401,422	Apr. 16	1499	398	47	306
Elliot, William H., Brooklyn, N. Y. Window-fixture	402,911	May 7	524	138	47	761
Elliott, Charles W., Boston, Mass. Lid for receptacles	400,901	Apr. 9	712	193	47	147
Elliott, Lee, Stuart, Iowa. Grain-meter	405,833	June 25	2192	577	47	1677
Elliott, Robert C., Prairie Creek, Ind. Hame-connection	402,910	May 7	523	138	47	761
Elliott, Walter P., *et al.* (See Hearne, John, assignor.)						
Elliott, Walter S., Hartford, Conn. Sewing-machine fan attachment	404,964	June 11	873	227	47	1404
Elliott, William E., Chicago, Ill. Bearing for journals	402,009	Apr. 23	2404	627	47	485
Ellis, Charles L. (See Phelps and Ellis.)						
Ellis, Cyrenius, and E. E. Benigar, New Martinsburg, Ohio. Lifting device	403,524	May 21	1488	391	47	960
Ellis, Lucien W., Anamosa, Iowa, assignor to W. Deering & Company, of Illinois. Sheaf-carrier for harvesters	401,250	Apr. 9	1255	335	47	246
Ellis, Mollie, Bardstown, Ky. Jar-holding-funnel apparatus	401,487	Apr. 16	1508	422	47	324
Ellis, William O. (See Glover, Charles B., assignor.)						
Elmendorf, Albert, assignor of one-half to S. A. Gardner and C. Prentis, New London, Conn. Water-closet	404,393	June 4	27	7	47	1230
Elmes, Charles F., Chicago, Ill. Hydraulic cylinder for controlling steam-cylinders	404,523	June 4	243	58	47	1270
Elsey, Aaron F., Bardwell, Ky. Fence-post	405,251	June 18	1298	343	47	1494
Elson, Julius. (See Jonson, Julius, assignor.)						
Elwell, Herbert. (See Hovey, Frank A., assignor.)						
Ely, Alfred G., *et al.* (See Peer, John A., assignor.)						
Ely, Charles C., *et al.* (See Peer, John A., assignor.)						
Ely, Edward O. (See Thompson, John B., assignor.)						
Ely, Frederick, *et al.* (See Peer, John A., assignor.)						
Ely, George B., deceased; H. G. Ely, St. Johnsbury, Vt., executor. Hoe-blank	400,902	Apr. 9	713	193	47	147
Ely, Henry G., executor. (See Ely, George B.)						
Embossing Company. (See Hyatt, Charles M., assignor.)						
Emeric, Frank, San Francisco, Cal. Collapsible hand bag or sack	403,928	May 28	2072	544	47	1063
Emerson, Horace G., assignor to H. H. and S. D. Palmer, Rockford, Ill. Cultivator	400,837	Apr. 2	613	167	47	117
Emerson, Loender C., assignor of one-half to C. H. Nelson, North Grafton, Mass. Button-setting machine	405,664	June 18	1951	512	47	1624
Emerson, Samuel G., Belleville, Ontario, Canada. Sectional locking pulley-block	405,541	June 18	1744	460	47	1567
Emerson, Talcott & Company. (See Jones, James H., assignor.)						
Emery, Charles G. (See Brown, Samuel, assignor.)						
Emmens, Stephen H., London, England. High-explosive shell	400,903	Apr. 9	714	193	47	147
Emmons, Enos J. (See Critchfield and Emmons.)						
Empire Hydro Carbon Company. (See Seery, James F., assignor.)						
Empire State Manufacturing Company. (See Coles, John L. and D. H., assignors.)						
Endemann, Hermann, Brooklyn, assignor to L. Wallach, New York, N. Y. Making fertilizers	404,348	May 28	2735	710	47	1209
Engebretsen, Lars, Kampen, Christiania, Norway. Portable chair	404,610	June 4	369	88	47	1295
Engel, Clement, assignor of one-half to I. Prunets, St. Paul, Minn. Car-coupling	405,252	June 18	1299	343	47	1494
Engelhorn, Louis. (See Seyferth, August, assignor.)						
Engle, Peter H., *et al.* (See McClellan, Oscar D., assignor.)						
Englehard, William H., Espey, Pa. Miter-box	401,423	Apr. 16	1501	398	47	306
Ennes, John D., Norfolk, Va. Rubber-dam clamp	402,315	Apr. 30	2874	744	47	583
Eno, Joseph A., Newark, N. J. Steam-generator	404,524	June 4	246	58, 59	47	1270
Enos, Frank, Jr., Norwich, Conn. Lawn-mower	401,606	Apr. 16	1930	504	47	384
Ensign, Frank H., Toledo, Ohio. Metallic wheel	404,611	June 4	370	89	47	1295
Ensor, William D. (See Stockwell and Ensor.)						
Entrikin, Joseph B., Des Moines, Iowa. Rheostat	402,912	May 7	525	130	47	762
Entwistle, Thomas C., *et al.* (See Wilder, Charles W., assignor.)						
Entz, Justus B., New York, N. Y., assignor to T. A. Edison, Llewellyn Park, N. J. Dynamo-electric machine	400,838	Apr. 2	614	167	47	118
Eply, Eliab. (See Doddridge, Loyal M., assignor.)						
Epp, Cornelius C., Bradshaw, Nebr. Gate	402,728	May 7	254	67	47	712
Eppley, Adam L., Springfield, Ohio. Feed-mill	400,447	Apr. 2	34	11	47	10
Erbe, Jacob W., Eisenach, Saxony, Germany. Combined piano and harmonium	402,427	Apr. 30	3050	791 / 792	47	618
Ertel, George, Quincy, Ill. Power mechanism for baling-presses	401,424	Apr. 16	1502	399	47	307
Esbrayat, Emmanuel, Lyons, France. Machine for making wire heddles	403,679	May 21	1994	524	47	1060
Espenschied, Charles, assignor to himself and O. J. A. Doebler, Hastings, Minn. Conveyer for flour, &c	405,994	June 25	2435	642	47	1722
Estes, Nathan C., Smithfield, R. I., assignor of one-half to J. & J. Murdock, Leicester, Mass. Card-setting-machine rest	404,036	May 28	2233	585	47	1113
Ethridge, Martin V. B., Boston, Mass., assignor of two-thirds to J. Swann, New York, N. Y., and H. E. Waite, West Newton, Mass. Time-piece dial	401,697	Apr. 16	1931	504	47	384
Ethridge, Martin V. B., Boston, Mass., assignor of two-thirds to J. Swann, New York, N. Y., and H. E. Waite, West Newton, Mass. Time-piece dial	403,525	May 21	1489	391	47	961
Ettling, Alice M. (See Cately, Shepard W., assignor.)						
Eulner & Lorenz. (See Zabel, Franz A. C., assignor.)						
Eustis, John P., New York, N. Y. Holder for vessels	404,268	May 28	2009	678	47	1186
Eustis, John P., New York, N. Y. Holder for vessels	404,694	June 4	478	121	47	1318
Euston, Alexander, St. Louis, Mo. Cartridge-loader	405,152	June 11	1131	301 / 302 / 303	47	1455

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Evans, Alfred. (See Carr and Evans.)						
Evans, Charles W., Old Compton Street, county of Middlesex, England. Machinery for the manufacture of boot and shoe lasts	404,185	May 28	2477	647, 648, 649	47	1163
Evans, Clarence A. (See Tappey and Evans.)						
Evans, David T., *et al.* (See Strader, Julius G., assignor.)						
Evans, French S., assignor of one-fourth to A. D. Browne, Washington, D. C. Umbrella or parasol	404,695	June 4	478	121	47	1318
Evans, George F., Somerville, Mass. Frictional gearing	401,018	Apr. 9	889	238	47	179
Evans, James W., Kearney, Mo. Composite truss for barns	404,612	June 4	372	89	47	1296
Evans, Joseph A., Philadelphia, Pa. Shuttle-box-operating lever for looms	405,022	June 11	952	254	47	1420
Evans, Lewis W., Upper Tygart, Ky. Nut-lock	401,019	Apr. 9	891	238	47	179
Evans, Philip E., London, England. Shirt and shirt-bosom supporter	403,182	May 14	941	249	47	848
Evans, Richard K., Whiston Grange, Rotherham, county of York, England. Low-pressure steam-motor	401,020	Apr. 9	891	238	47	179
Evans, W. A., *et al.* (See Kelly, John, assignor.)						
Evarts, Charles A., assignor to Bradley & Hubbard Manufacturing Company, Meriden, Conn. Wick-raiser for central-draft lamps	404,186	May 28	2481	649	47	1163
Everett, Edward H., Newark, Ohio. Machine for shaping bottle-necks	400,555	Apr. 2	187	51	47	40
Everett, Edward H., Newark, Ohio. Machine for shaping bottle-necks	400,556	Apr. 2	191	52	47	40
Everitt, Percival, London, England. Coin-operated grip-testing machine	400,839	Apr. 2	616	167	47	118
Everitt, Percival, London, England, assignor to Automatic Perfume Fountain Company, of New Jersey. Vending-machine	402,515	Apr. 30	3188	825, 826	47	642
Everitt, Percival, and W. C. Page, New York, N. Y. Dumping-car	405,700	June 25	2007	527	47	1641
Ewart, John, Lawrence, Mass. Railway-gate operative mechanism	403,929	May 28	2072	544	47	1063
Ewing, Calvin, San Francisco, Cal. Collar-stuffing machine	405,023	June 11	955	255	47	1421
Eysaman, Adam H., Mohawk, N. Y. Whiffletree-hook	403,930	May 28	2074	544	47	1063
Fahrney, Benjamin, Hagerstown, Md. Thill-coupling	405,086	June 11	1039	277	47	1438
Fahys Watch Case Company. (See Eaton, William S., assignor.)						
Faifer, Tony, Denver, Colo. Temporary binder	400,557	Apr. 2	193	52	47	40
Fain, Emmet C., and G. C. Poston, Granbury, Tex. Show-case	402,151	Apr. 30	2639	683	47	538
Fairchild, Ben L., *et al.* (See Newsom, Philip E., assignor.)						
Fairchild, Herman E., Diller, Nebr. Fodder-binder	405,237	June 11	1271	336	47	1462
Falck, Lawrence W., New York, N. Y. Gaff-topsail for vessels	403,257	May 14	1065	280	47	872
Falconnier, Gustave, Nyon, Vaud, Switzerland. Glass building-block	402,073	Apr. 23	2505	654, 655	47	503
Fales, Edward, Cleveland, Ohio. Device for starting cars	403,582	May 21	1563	413	47	975
Falls, Alonzo, Lowell, Mass. Stripping mechanism for carding-engines	403,931	May 28	2074	545	47	1064
Fanning, Eugene, Newton, Mass. Pocket-check and form book	401,324	Apr. 9	1346	359	47	266
Farbenfabriken, vormals Fr. Bayer & Co. (See Frank, Engen, assignor.)						
Faries, Robert, Decatur, Ill. Spring-motor	404,526	June 4	249	59, 60	47	1271
Farkacs, Rudolf. (See Gamper and Farkacs.)						
Farmer, Edward H., Gilroy, Cal. Gang-plow attachment	401,937	Apr. 23	2299	597	47	464
Farmer, James S., Salford, county of Lancaster, England. Apparatus for washing textile fabrics	404,078	May 28	2309	605, 606	47	1130
Farr, Eugene A. Galesburg, Ill. Thill-coupling	402,913	May 7	526	139	47	762
Farr, Hiram G., Boston, Mass. Making battery-zincs	401,338	Apr. 16	1372	.....	47	282
Farrell, John, Hnntsville, N. J. Hay-carrier	404,525	June 4	247	59	47	1271
Farwell, Frederic E., Fitchburg, assignor of one-half to H. A. Hawley, Waltham, Mass. Circular sawing machine	403,890	May 21	1996	594	47	1060
Faught, Luther R., Philadelphia, Pa. Chill for car-wheels	402,664	May 7	165	42	47	695
Faulkner, Alfred, Jersey City, N. J., assignor to E. W. Broadbent, New York, N. Y. Sewing-machine	404,965	June 11	874	228	47	1404
Faulkner, Alfred, Jersey City, N. J., assignor to E. W. Broadbent, New York, N. Y. Sewing-machine	404,966	June 11	876	228	47	1404
Faulkner, Alfred, Brooklyn, assignor to E. W. Broadbent, New York, N. Y. Quilting-machine	405,403	June 18	1512	402, 403	47	1539
Faulkner, Eliab H., Depost, N. Y. Labeling and pasting apparatus	405,466	June 18	1619	427	47	1560
Faust, Ferdinand, Brooklyn, N. Y. Hair-curler	400,904	Apr. 9	715	194	47	148
Faut, Parker. (See Yates, Silas W., assignor.)						
Fawcett, William, Rochester, N. Y. Chill	405,882	June 25	2263	595	47	1690
Fay & Company, J. A. (See Passel, George W., assignor.)						
Feager, John T., St. Louis, Mo. Egg-basket	404,349	May 28	2737	710	47	1210
Fealy, Timothy J., Boston, Mass. Illuminating composition	400,651	Apr. 2	316	.....	47	65
Feary, Frederick T. (See Speicher, John, assignor.)						
Fee, William R., Cincinnati, Ohio, assignor to National Cotton Seed Oil and Huller Company, Memphis, Tenn. Concave for hulling-cylinders	404,037	May 28	2235	586	47	1113
Fee, William R., Cincinnati, and J. S. Zerbe, Hartwell, Ohio, assignors, by mesne assignments, to National Cotton Seed Oil and Huller Company, Memphis, Tenn. Cotton-seed huller	404,696	June 4	479	121, 122	47	1319
Feicker, Fredrick C., Northampton, Mass. Table-cutlery	401,739	Apr. 23	2006	525	47	410
Feicker, Fredrick C., Northampton, Mass. Saw-set	401,740	Apr. 23	2007	525	47	410
Feineman, Louis P., Rochester, N. H. Bracket for papers	405,955	June 25	2385	625	47	1710
Feister, Henry P., Philadelphia, Pa. Paper-cutting machine	400,652	Apr. 2	316	88, 89	47	65
Feister, Henry P., Philadelphia, Pa. Mechanism for cushioning traversing beds of reciprocating machinery	404,394	June 4	20	8	47	1231
Fell, Christopher E. G., Savannah, Ga. Horse-rake	404,269	May 28	2609	679	47	1186
Fellows, Ernest T. (See Fellows, Ernest W., assignor.)						
Fellows, Ernest W., South Chicago, Ill., assignor to E. T. Fellows, New York, N. Y. Hydrocarbon-burner	401,021	Apr. 9	893	239	47	179
	402,729	May 7	255	67	47	712
Fellows, John M., Burlington, Ind. Fence	405,024	June 11	956	255, 256	47	1421
Felt, Dorr E., assignor to Felt & Tarrant Manufacturing Company, Chicago, Ill. Adding-machine						
Felt & Tarrant Manufacturing Company. (See Felt, Dorr E., assignor.)						
Felthousen, Barrent W., Milwaukee, Wis., assignor to Albany Steam Trap Company, of New York. Steam-trap	402,516	Apr. 30	3190	826	47	643
Felthousen, Edward G., assignor of one-half to C. A. Sherwood, Buffalo, N. Y. Lubricator	405,543	June 18	1748	462	47	1586
Felthousen & Sherwood. (See Hart, Thomas J., assignor.)						
Fendel, Charles J., Butte City, Mont. Ter. Grain-drill	401,022	Apr. 9	894	239, 240	47	180
Fendel, Charles J., Anaconda, Mont. Ter. Ore-roaster	401,023	Apr. 9	897	240	47	180
Fenner, George P., New London, Conn. Sheet-delivery apparatus for printing-machines	404,350	May 28	2738	710, 711	47	1210
Fenner, George P., New London, Conn. Sheet-delivery apparatus for printing-machines	405,153	June 11	1140	304	47	1457

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Fenton, Ephraim H., Kansas City, Mo. Grinding-machine for mower and reaper knives	402,152	Apr. 30	2640	684	47	538
Ferguson, Fred H., Buffalo, N. Y. Cooking utensil	405,067	June 11	1040	278	47	1439
Ferguson, Robert, St. Paul, Minn. Compound hydrocarbon-gas generator	404,527	June 4	250	60	47	1271
Ferguson, William E., Montclair, N. J. Apparatus for transferring, weighing, and delivering bags of grain	405,088	June 11	1040	278	47	1439
Ferrall, Thomas R., Boston, Mass., assignor to Boston and Lockport Block Company, of New Jersey. Pulley-block	403,922	May 28	2076	545	47	1064
Ferreira, Charles E., Morgan Park, Ill. Feed-water heater	405,154	June 11	1141	304	47	1458
Ferrenburg, John W., Hege, Ind. Churn	403,337	May 14	1195	317	47	890
Fessenden, Edward H., *et al.* (See Langston, Thomas, assignor.)						
Feust, Sigmund, New York, N. Y. Drawer-pull	402,236	Apr. 30	2753	713	47	561
Fiedler, William, North Adams, Mass. Wax-thread sewing-machine	404,079	May 28	2311	606	47	1130
Field, Charles H., Providence, R. I. Engraving-machine	402,316	Apr. 30	2675	745	47	584
Field, Stephen D., Stockbridge, Mass. Vibratory telegraphy	403,258	May 14	1066	280, 281	47	872
Field, Wallace L. (See Lawson and Field.)						
Fiers, James W., Red Key, Ind. Balanced swinging gate	404,370	May 28	2611	679	47	1186
Fillmore, Adan L., Cincinnati, Ohio. Cylinder-lubricator	400,653	Apr. 2	318	89	47	66
Filstrup, Larsen, Chicago, Ill. Capodastro	402,577	May 7	41	10	47	671
Finch, James B., Newark, N. J., assignor, by mesne assignments, of one-half to T. W. Harris, H. E. Killaly, and H. S. Mack. Combination alarm-lock for windows	401,148	Apr. 9	1067	289	47	213
Fink & Feldhaus. (See Fink, John M., assignor.)						
Fink, John M., assignor to Fink & Feldhaus, Louisville, Ky. Forming flexible saddle-trees	401,938	Apr. 23	2300	597	47	465
Fink, Millard F., Middletown, Md. Apparatus for making wood-and-wire fence	402,815	May 7	396	104	47	737
Finkle, John H., assignor of one-half to E. B. Clark, Appleton, Wis. Potato-digger	405,155	June 11	1144	305	47	1458
Finks, John H. (See Marshall, John F., assignor.)						
Firth, John P., Titusville, Pa. Apparatus for removing gummy matter from oil-wells	403,183	May 14	942	249	47	848
Fischer, August, assignor of one-half to J. F. Potts, White Hall, Ill. Time-piece dial	403,336	May 14	1196	317, 318	47	898
Fischer, Frederick J. W., assignor to Eagle Pencil Company, New York, N. Y. Spring holder or clasp for pens or pencils	404,697	June 4	482	122	47	1319
Fischer, Jonas, Williamsport, Pa. Machine for bundling kindling-wood	402,428	Apr. 30	3002	792	47	619
Fisher, Alva J., Chicago, Ill. Chaplet for sand cores	404,187	May 28	2482	649	47	1163
Fisher, Charles H., assignor of one-half to E. L. Bartlett and L. A. Hughes, Santa Fé, N. Mex. Ter. Paper-holder	402,237	Apr. 30	2754	714	47	561
Fisher, Dedrich, *et al.* (See Welch, James E., assignor.)						
Fisher, Frank E., Detroit, Mich. Contact device for electric railways	405,544	June 18	1750	462	47	1586
Fisher, Lucius G., *et al.* (See Solano, Renaldo, assignor.)						
Fisher Oil Burner Company. (See Fisher, William L., assignor.)						
Fisher, William F., Buffalo, N. Y. Self-acting unlocking-link	404,903	June 11	780	199	47	1385
Fisher, William L., assignor to Fisher Oil Burner Company, Flint, Mich. Hydrocarbon-burner	401,149	Apr. 9	1068	289	47	213
Fitch, Horace A. (See Moore and Fitch.)						
Fitz Gerald, Augustine F., Brooklyn, assignor to Van Derveer & Holmes Biscuit Company, New York, N. Y. Cracker-stacking machine	403,526	May 21	1492	391, 392	47	961
Fitzpatrick, Annie M. (See Fitzpatrick, Michael, assignor.)						
Fitzpatrick, Hugh F., New York, N. Y., assignor to E. K. Conover, Newark, N. J. Air-compressor	402,517	Apr. 30	3192	826, 827	47	643
Fitzpatrick, Michael, assignor to A. M. Fitzpatrick, St. Louis, Mo. Shutter-fastener	403,259	May 14	1072	281	47	873
Fitzpatrick, William J., South Boston, Mass. Gearing for bicycles	401,425	Apr. 16	1504	399	47	307
Fitzsimmons, George T., West Chester, Pa. Pipe-trimming device	403,928	May 21	1925	506	47	1046
Flad, Henry, St. Louis, Mo. System of rapid transit	405,306	June 18	1377	363	47	1510
Flad, Henry, St. Louis, Mo. System of rapid transit	405,467	June 18	1621	427, 428	47	1560
Flad, Henry, St. Louis, Mo. Street cable railway	405,468	June 18	1625	428, 429, 430	47	1561
Flad, Henry, St. Louis, Mo. System of rapid transit	405,709	June 25	2109	552, 553	47	1660
Flad, John F., Philadelphia, Pa. Folding carriage	401,939	Apr. 23	2301	598	47	465
Flagg, Margaret R. (See Winegardner, William H., assignor.)						
Flagler, John H., New York, N. Y. Making metal tubing	401,142	Apr. 9	1070	286	47	211
Flagler, John H., New York, N. Y. Apparatus for the manufacture of metal tubing	401,143	Apr. 9	1072	286, 287	47	211
Flagler, John H., New York, N. Y. Apparatus for the manufacture of metal tubing	401,144	Apr. 9	1075	287	47	212
Flagler, John H., New York, N. Y. Forming seamless tubing	401,145	Apr. 9	1078	287, 288	47	212
Flagler, John H., New York, N. Y. Apparatus for welding tubing	401,146	Apr. 9	1081	288	47	212
Flake, Gideon, assignor to T. I. Rushton, Centre Valley, Ind. Gate	402,578	May 7	42	10	47	671
Flannery, Joseph, *et al.* (See Hearne, John, assignor.)						
Flatow, Simon J., assignor of one-half to L. Sieber, New York, N. Y. Machine for wrapping cigars	401,147	Apr. 9	1084	288, 289	47	213
Fleetwood, Caleb V., Cleves, Ohio. Petroleum-burner	401,741	Apr. 23	2009	525	47	410
Fleischhauer, Louis, assignor of one-third to J. Wohlert, Perry, Tex. Washing-machine	403,929	May 21	1926	506, 507	47	1047
Fleischmann, Lawrence M., Wichita, Kans. Lubricator	400,761	Apr. 2	490	129	47	94
Fleming, Jefferson, Kansas City, Mo. Ground-auger	404,188	May 28	2483	649	47	1163
Fletcher, Archibald F., Brooklyn, assignor of two-thirds to V. Gleason, New York, N. Y., and J. V. Carraher, Washington, D. C. Hydrocarbon-burner	400,905	Apr. 9	716	194	47	148
Fletcher, Horatio, Newcastle-upon-Tyne, county of Northumberland, England. Combined drum and gripper	401,727	Apr. 16	1962	519	47	305
Fletcher, Richard H., Socorro, N. Mex. Ter. Bicycle	401,339	Apr. 16	1373	365, 366	47	282
Flick, Joseph H. (See Killeen, Bernard, assignor.)						
Flint, Henry B., Bethel, Me. Heating apparatus	402,153	Apr. 30	2642	684	47	539
Flint, Henry S., Providence, R. I. Apparatus for sewing ingrain carpets	405,834	June 25	2193	577, 578	47	1677
Flood, George W., assignor of two-thirds to E. G. Maxwell and W. B. O. Sands, Pentwater, Mich. Chute for feeding sawdust to steam-boilers	403,830	May 21	1927	507	47	1047
Flood, John J., *et al.* (See Chase, Addison K., assignor.)						
Flood, Joseph T., assignor to Buchanan, Bolt & Co., Holyoke, Mass. Machine for making paper	403,744	May 21	1796	473	47	1021
Florsheim, Simon, *et al.* (See Gardner, Marshall, assignor.)						
Flostrey, Mary A. S. (See Taggart, Francis, assignor.)						
Flues, Conrad B., Jackson, Mich. Brow-band for bridles	405,307	June 18	1360	363	47	1511

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Flynn, James, Boston, Mass. Fire-escape	400,656	Apr. 2	319	90	47	66
Foerster, Emanuel, New York, N. Y. Pipe-cutter	402,730	May 7	256	67	47	712
Folk, Reuben. (See Katherman and Folk.)						
Follansbee, George S., Boston, Mass. Sealing device for water-meters	404,395	June 4	31	8	47	1231
Follansbee, Lambert T., Washington, D. C. Trap	404,271	May 28	2612	679	47	1186
Follett, Joseph L. (See Daboll and Follett.)						
Follett, Joseph L., Brooklyn, N. Y. Oscillating loop taker and spreader for sewing-machines	402,429	Apr. 30	3065	793	47	619
Follett, Joseph L., Brooklyn, N. Y. Mechanical movement	402,430	Apr. 30	3067	793	47	619
Folmer, William F., assignor of one-half to W. E. Schwing, New York, N. Y. Gas-burner	404,830	June 11	669	173	47	1366
Folz, Joseph. (See Dietrich, Engelbert, assignor.)						
Foote, James B., assignor of one-half to G. E. Maxwell, Delancey, N. Y. Ladder-hook	401,742	Apr. 23	2010	526	47	410
Forbes, William H. (See Clark, Dwight S., assignor.)						
Forbes, William H. (See Osborne, John W., assignor.)						
Forbes, William H., and J. Gibson, Boston, Mass. Fluid-measuring apparatus	403,933	May 28	2077	545	47	1084
Force, Jacob F. (See Langenbach, Charles J., assignor.)						
Ford, George A., Cleveland, Ohio. Tackle-block	401,150	Apr. 9	1090	290	47	214
Ford, James H., New York, N. Y., and M. Jurwick, Jersey City, N. J.; said Jurwick assignor to said Ford. Photographic camera	403,994	May 28	2166	569	47	1100
Ford, John C., Beverly, Mo., assignor to W. Rees & Co., Keokuk, Iowa. Form-cylinder for printing-machines	403,423	May 14	1328	348	47	922
Ford, William W., Elmira, N. Y. Wash-boiler	401,879	Apr. 23	2209	578	47	448
Forestier, Maria M., Brussels, Belgium. Stop-cock	405,404	June 18	1514	403	47	1539
Forman, Jonathan C., Cleveland, Ohio. Paper-ruling machine	401,151	Apr. 9	1091	290	47	214
Forrest, Robert W., *et al.* (See MacArthur, John S., assignor.)						
Forrest, William, *et al.* (See MacArthur, John S., assignor.)						
Forrester, Peter C, Wilkeson, Wash. Ter. Pinch-bar	403,184	May 14	943	250	47	848
Forsaith, Thomas, Adelaide, South Australia. Saw for cutting tenons	400,906	Apr. 9	718	194	47	148
Forster, Thomas V. (See Woodhouse and Forster.)						
Forsyth, John H., Fargo, Dak. Ter. Automatic grain-scale	405,728	June 25	2050	539	47	1649
Fort Wayne Electric Light Company. (See Slattery, Marmaduke M. M., assignor.)						
Fortney, Charles H., Montgomery's Ferry, Pa. Road-cart	405,545	June 18	1751	463	47	1588
Fosdick, Charles, Fitchburg, Mass. Crank-shaft	402,010	Apr. 23	2406	627	47	485
Fosati, Jasper, Inez, Tex. Bed drier and warmer	403,339	May 14	1198	318	47	898
Foster, Charles E., Washington, D. C., assignor to Hydraulic Elevator Company, Chicago, Ill. Hydraulic engine	404,528	June 4	251	60	47	1272
Foster, Charles H., Alameda, Cal. Sash-fastener	402,816	May 7	397	104	47	738
Foster, Edwin B., *et al.* (See Davis, John W., assignor.)						
Foster, Horace F., and E. L. Webster, Milo, Mo. Car-coupling	402,579	May 7	44	11	47	672
Foster, John W., Pawtucket, R. I., assignor of one-half to G. E. Manning, Taunton, Mass. Spooling-machine	404,831	June 11	671	{173 174}	47	1366
Foster, Jonas R., Stoneham, Mass. Pencil-sharpener	402,914	May 7	527	139	47	762
Foster, Marshal T. (See Patterson and Foster.)						
Foster, Michael A., St. Louis, Mo. Furnace	401,546	Apr. 16	1693	{446 447}	47	341
Foster, Michael A., St. Louis, Mo. Jet attachment for furnaces	405,956	June 25	2386	625	47	1710
Foster, Robert, assignor to F. R. Jennings, W. B. Harris, and J. A. Dixon, Indianapolis, Ind. Valve	401,647	Apr. 16	1669	485	47	372
Foster, Robert F., Baltimore, Md., assignor of one-half to A. J. Leith, New York, N. Y. Playing-card	404,782	June 4	597	155	47	1343
Foster, William J., Hoboken, N. J. Machine for lettering the covers of books	404,189	May 28	2484	650	47	1164
Foulon, Peter J., New York, assignor of one-half to G. B. Constantine, Brooklyn, N. Y. Argand lamp-burner	404,474	June 4	158	37	47	1254
Foust, James W., Sterling, Ill. Hay-loader	403,041	May 7	708	{185 186}	47	797
Fowler, Elbert W., Chicago, Ill., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Device for operating safe bolt-work	403,527	May 21	1495	{392 393}	47	962
Fowler, George H., Taughannock Falls, N. Y. Road-cart	403,745	May 21	1800	473	47	1022
Fowler, Joseph C., and E. A. Henkle, Washington, D. C. Paper-folding machine	400,762	Apr. 2	481	129	47	94
Fowler, Nathaniel C., Jr., Winthrop, Mass., assignor to Pope Manufacturing Company, Portland, Me. Copy-holder or easel for use with type-writing machines	402,518	Apr. 30	3194	827	47	644
Fowler, William H., Newton, Mass. Shoe-shank machine	402,431	Apr. 30	3068	794	47	620
Fox, Charles B. (See Wales, Sigourney, assignor.)						
Fox, Christian A. (See Cooper, William H., assignor.)						
Fox, John R., Fort Wayne, Ind. Electric-arc lamp	404,351	May 28	2739	711	47	1210
Foy, Edward A., Cincinnati, Ohio. Glass knob	403,340	May 14	1199	318	47	898
Fraenkel, Max, New Orleans, La. Trousers, &c	403,746	May 21	1801	473	47	1022
Francis, John H., *et al.* (See Abell, Robert T., assignor.)						
Francken, Victor, and J. Pirnay, Liege, Belgium. Turf-fiber surgical dressing	401,547	Apr. 16	1694	447	47	341
Frank, Eugen, assignor to Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Prussia, Germany. Yellow dye	401,924	Apr. 9	899		47	181
Frantzen, Paul, Chicago, Ill. Clasp	401,880	Apr. 23	2210	578	47	448
Fraser, Daniel D., Boston, Mass. Attaching device for whip-sockets	403,360	May 14	1073	281	47	873
Fraunfelter, Frank, *et al.* (See Selbel, Frederick H., assignor.)						
Frayer, Charles A., Keithsburg, Ill. Oil-can	403,042	May 7	709	186	47	798
Frazer, Daniel A., Mancelona, Mich., assignor of two-thirds to O. S. and L. N. Rodenbaugh. Reversing-gear for steam-engines	403,881	May 21	1997	525	47	1060
Frazer, Robert S., *et al.* (See Gearing, Charles M., assignor.)						
Frederick, Augustus, Essex, N. Y. Fire-escape ladder and truck	401,488	Apr. 16	1600	422	47	325
Fredericks, John H., Lock Haven, Pa. Sifter	401,548	Apr. 16	1695	447	47	341
Fredericks, Rowland W. (See Burns, John, assignor.)						
Freed, Moses, New York, N. Y. Finger-ring	402,011	Apr. 23	2408	627	47	485
Freeman, David H., Brazil, Tenn. Car-coupling apparatus	403,341	May 14	1199	{318 319}	47	898
Freeman, Henry, assignor to Thorne Machine Company, Hartford, Conn. Type-case	402,317	Apr. 30	2877	745	47	584
Freeman, Michael, assignor to S. Freeman & Sons Manufacturing Company, Racine, Wis. Seed-sower	403,882	May 21	1999	525	47	1060
Freeman & Sons Manufacturing Company, S. (See Freeman, Michael, assignor.)						
Freeman, Stephen, Racine, Wis. Grain-separator	402,012	Apr. 23	2409	328	47	485
Frees, Chancy A., New York, N. Y. Artificial leg	401,426	Apr. 16	1506	399	47	307
Freese, John S., Brooklyn, N. Y. Button-hole sewing-machine	403,342	May 14	1201	{319 320}	47	899
Freese, John S., Brooklyn, N. Y. Button-hole sewing-machine	403,434	May 14	1329	{348 349}	47	922

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Fremont Cultivator Company. (See Schofield, James D., assignor.)						
French, John M., *et al.* (See McKenney, Joel, assignor.)						
French, Joseph. (See Brogan, Craig, and French.)						
Frenier, Joseph, La Porte, Ind. Wheel	400,907	Apr. 9	718	195	47	148
Frese, Bernard, Chicago, Ill. Time-lock	404,272	May 28	2613	{679 680}	47	1186
Frey, Gustave. (See Heidel and Frey.)						
Frey, Jakob, Bruggen, near St. Galle, assignor to J. J. Ricter & Company, Winterthur, Switzerland. Frame for embroidering-machines	401,260	Apr. 9	1257	335	47	247
Freyschlag, Henry E., San José, Cal. Fishing-net	405,957	June 25	2387	626	47	1711
Frick, Louis C. S., Buffalo, N. Y. Stuffing-box	404,529	June 4	253	61	47	1272
Fricker, Henry, London, England. Portable cooking apparatus	401,261	Apr. 9	1258	335	47	247
Friction Car Brake Company. (See Campbell, George P., assignor.)						
Frid, Edward, New Hamburg, assignor to himself and H. Jones, New York, N. Y. Compound for restoring the color of brown leather	402,731	May 7	257		47	713
Friedländer, Albert, Berlin, Germany. Portable galvanic battery	402,915	May 7	528	130	47	762
Friedman, Isidor, St. Louis, Mo. Glass cigar-box with metal or other frame	400,840	Apr. 2	617	168	47	118
Friedrich, C. W., *et al.* (See McClellan, James A., assignor.)						
Frik, Louis. (See Maier, Karl, assignor.)						
Frisbie, Dennis. (See Mallett, Francis W., assignor.)						
Frisbie, Henry E., Mansfield, Ohio. Renewable packing-ring	401,262	Apr. 9	1260	336	47	247
Frishmuth, William, Philadelphia, Pa. Portable electric lantern	404,698	June 4	482	122	47	1319
Frishmuth, William, Philadelphia, Pa. Galvanic battery	404,699	June 4	485	122	47	1319
Frist, Robert P., Wilmington, Del. Insulator	405,546	June 18	1752	463	47	1588
Fritsch, Anton H., assignor, by means assignments, of one-half to G. E. Langer, Chicago, Ill. Guiding attachment for sewing-machines	403,831	May 21	1998	507	47	1047
Fritsch, Anton H., assignor of one-half to V. Mueller, Chicago, Ill. Hat	403,834	May 28	2079	545	47	1084
Frömming, August, Hanover, Kans. Combination-tool	405,156	June 11	1145	305	47	1459
Frost, Edward J. (See Williams, Frost, and Dawson.)						
Frost, Haller C., Farmington, Cal. Lock	404,080	May 28	2313	606	47	1131
Frost, John. (See Greening, Frederick, assignor.)						
Fruen, William H., Minneapolis, Minn. Water-cooler	401,263	Apr. 9	1261	336	47	247
Frysinger, Jacob, Milan, Ill. Railway-rail tie and fastening	400,558	Apr. 2	194	52	47	41
Fuchs, Gustav, New York, N. Y. Pail-cover	400,908	Apr. 9	719	195	47	148
Fuchs, Henry, Jersey City, N. J. Windlass for clothes-lines	401,824	Apr. 23	2136	556	47	433
Fuel Gas and Electric Engineering Company. (See Dutton, Chauncey N., assignor.)						
Fuller, Charles D., Minneapolis, Minn. Clothes-drier	401,264	Apr. 9	1262	336	47	247
Fuller, Charles D., Minneapolis, Minn. Tool-handle	403,832	May 21	1999	526	47	1047
Fuller, Druzillia M., Terryville, Conn. Device for holding head-gear	404,081	May 28	2214	607	47	1131
Fuller, George P., Kalamazoo, Mich. Wash-board	401,265	Apr. 9	1263	336	47	248
Fuller, George P., Minneapolis, Minn. Nut-lock	404,530	June 4	255	61	47	1272
Fuller, Jacob, Florence, and J. Morrison, Easthampton, Mass. Thill-jack	402,519	Apr. 30	3195	827	47	644
Fuller, Robert S. C., New York, N. Y. Platform for railway-cars	405,025	June 11	960	{256 257}	47	1422
Fuller, Theodore C., Pawtucket, R. I. Alterative tonic	403,185	May 14	944		47	849
Fuller, Willard H., Passaic, N. J., assignor to Scovill Manufacturing Company, New York, N. Y. Photographic-printing frame	402,154	Apr. 30	2643	684	47	539
Fuller, Willard H., Passaic, N. J., assignor to Scovill Manufacturing Company, New York, N. Y. Camera-stand	404,396	June 4	32	8	47	1231
Funck, John W., Stapleton, N. Y. Air-ejector for casks	403,261	May 14	1074	282	47	873
Funk, Frank, Decatur, Ill. Tank-heater	401,698	Apr. 16	1933	505	47	384
Furlong, Patrick M. (See Benedict and Furlong.)						
Furney, Elliott E., assignor to N. C. Furney, St. Louis, Mo. Automatically-closing faucet	402,075	Apr. 23	2506	656	47	504
Furney, Nellie C. (See Furney, Elliott E., assignor.)						
Fyler, Silas B., East Syracuse, N. Y. Combined car starter and brake	401,340	Apr. 16	1575	386	47	283
Gable, William, Shamokin, Pa. Umbrella or cane rack	402,013	Apr. 23	2409	628	47	485
Gabriel, Charles. (See Olsen and Gabriel.)						
Gabrielsky, Richard. (See Wiechert and Gabrielsky.)						
Gadd, William, Manchester, England. Gas-holder	405,701	June 25	2009	528	47	1641
Gadd, William, Manchester, England. Gas-holder	405,702	June 25	2010	528	47	1642
Gade, Henry. (See Manahan and Gade.)						
Gage, George F., Huntingdon, Pa. Railway-switch stand	400,657	Apr. 2	320	90	47	66
Gage, Herbert E., Lowell, Mass. Holder for paper bags	401,825	Apr. 23	2137	558	47	433
Gaillard, Ella N., New York, N. Y. Combined paper-weight, calendar, and musical watch	402,916	May 7	530	140	47	763
Gaines, Ella. (See Gaines, Franklin W. and E.)						
Gaines, Franklin W. and E., Colfax, Wash. Ter. Fruit or vegetable cooker	405,253	June 18	1300	343	47	1494
Gale, Andrew, and E. Tremblay, Chicopee, Mass. Swivel-plow	404,531	June 4	256	61	47	1273
Gale, Daniel J., Forestville, Conn. Clock striking mechanism	402,917	May 7	531	140	47	763
Gall, John S., assignor to Steam Gauge and Lantern Company, Rochester, N. Y. Lens-fastening for lamps	400,763	Apr. 2	483	130	47	95
Galland, Berthold, Scranton, Pa. Shirt	404,475	June 4	160	37	47	1255
Gallardo, Augusto, San José, Costa Rica. Machine for peeling, polishing, and cleaning coffee	402,318	Apr. 30	2879	{745 746}	47	584
Gallinowsky, Hugo, assignor of one-half to H. L. Becker, Rochester, N. Y. Composition of matter for the production of artificial school slates, &c	401,427	Apr. 16	1507		47	306
Gamble, William H. (See Allen and Gamble.)						
Gammon, William D. (See Robertson and Gammon.)						
Gammons, Ferdinand C., G. L. Rollins, and H. Wadsworth, assignors to Eagle Cotton Gin Company, Bridgewater, Mass. Leveling-board for cotton-gin feeders	405,405	June 18	1516	403	47	1539
Gamper, Konrad, Sielce, near Sosnowice, and R. Farkacz, Warsaw, Russia. Boiler	403,343	May 14	1204	320	47	899
Gandy, Frank, Freeport, Ohio. Thill-coupling	401,826	Apr. 23	2139	558	47	434
Ganson, Henry, *et al.* (See Altenburg, Augustus, assignor.)						
Gants, Samuel, Hagerstown, Md. Dumping-cart	405,770	June 25	2111	553	47	1660
Garber, Joseph A., Hatton, Kans. Sulky-plow	404,476	June 4	161	37	47	1255
Garber, Samuel, *et al.* (See Wilson, George T., assignor.)						
Garbrance, George C., Watervliet, N. Y. Basket-cover	403,528	May 21	1500	393	47	963
Gard, William E., Meriden, Conn. Inhaler	405,883	June 25	2264	595	47	1691
Gardiner, Charles S., Chicago, Ill. Machine for well boring and drilling	403,097	May 14	906	214	47	823
Gardner, Charles T., assignor to F. E. Gardner, Oswego, N. Y. Hat and coat rack	405,729	June 25	2052	539	47	1649
Gardner & Co., F. A. (See Gardner, Frederick A., assignor.)						
Gardner, Frances E. (See Gardner Charles T., assignor.)						
Gardner, Frederick A., assignor to F. A. Gardner & Co., Catskill, N. Y. Valve-gear	405,907	June 11	1230	326	47	1474
Gardner, Frederick A., assignor to F. A. Gardner & Co., Catskill, N. Y. Compound steam-engine	405,908	June 11	1231	{326 327}	47	1474

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Gardner, Frederick A., assignor to F. A. Gardner & Co., Catskill, N. Y. Steam-boiler	405,209	June 11	1232	287	47	1474
Garduer, Harison B., *et al.* (See Randel, Zadock, assignor.)						
Gardner, Marshall, assignor to T. H. Ball and J. Stone, Aurora, and S. Florsheim, Chicago, Ill. Sewing-machine	402,432	Apr. 30	3009	784, 795	47	620
Gardner, Stephen A., *et al.* (See Elmendorf, Albert, assignor.)						
Gare, Thomas, Stockport, county of Chester, England. Flexible shaft	401,881	Apr. 23	2212	570	47	449
Garfield Injector Company. (See Desmond, John, assignor.)						
Garich, Robert, Chicago, Ill. Mash-machine	404,552	June 4	257	61	47	1273
Garland, Eben F., Lynn, assignor of one-half to S. H. Holbrook, Salem, Mass. Covering for electric cables	403,202	May 14	1075	269	47	873
Garretson, Oliver S. (See Shipe, Walter S., assignor.) (Reissue.)						
Garrett, Lebbeus G., Bissell, Pa. Type-writing machine	401,789	Apr. 23	2056	538, 539	47	420
Garsed, Robert P., Norristown, Pa. Pneumatic bell	401,341	Apr. 16	1377	365	47	283
Gartner, Alfred, Newark, N. J. Regulator for electric motors	404,783	June 4	599	155	47	1343
Gartner, Alfred, assignor, by mesne assignments, to Continental Motor and Electrical Company, Newark, N. J. Electric motor and regulator	404,533	June 4	259	62	47	1273
Garton, John. (See Garton, Peter, R., and J.)						
Garton, Peter, R., and J., Newton-le-Willows, county of Lancaster, England. Binder or file for documents	405,026	June 11	965	237	47	1423
Garton, Robert. (See Garton, Peter, R., and J.)						
Gartside, Robert A., and D. Genese, Baltimore, Md. Heating-stove	404,273	May 28	2619	680, 681	47	1187
Garver, John T., administrator. (See Jacobs, John W.)						
Gash, Edgar, Macomb, assignor of one-half to B. B. Durfee, Peoria, Ill. Stove-pipe lock	403,425	May 14	1332	330	47	922
Gasquet, Benjamin E., Castres, France. Filter	405,406	June 18	1517	403	47	1540
Gates, Alfonso D., Cleveland, Ohio. Elevated railway	402,319	Apr. 30	2880	746, 747	47	584
Gates, Elnathan J., Oronoco, Minn. Hoe	403,655	May 21	1663	441	47	926
Gates, Eugene N., Fitchburg, Mass. Automatic heat-regulator for hot-water-heating apparatus	402,076	Apr. 23	2509	650	47	504
Gates, Eugene N., Fitchburg, Mass. Water-heater	404,784	June 4	601	155	47	1343
Gates, Eugene N., assignor of one-half to H. F. Coggshall, Fitchburg, Mass. Heating apparatus	401,940	Apr. 23	2302	598	47	405
Gates, George S. (See Boyle and Gates.)						
Gates, Lewis. (See Boughn and Cashner, assignors.)						
Gates, Michael, Decatur, Mich. Horseshoe	405,470	June 18	1630	430	47	1502
Gaume, Charles J. B., Brooklyn, N. Y. Motor for operating swinging devices	404,613	June 4	373	89	47	1206
Gaunt, James, assignor to J. M. Bassett, Worcester, Mass. Band-tension regulator for spinning-machines	403,833	May 21	1930	508	47	1047
Gay, Francis J., assignor to Brown & Sharpe Manufacturing Company, Providence, R. I. Expansible mandrel	403,529	May 21	1502	394	47	963
Gay, Joshua G., Ottawa, Ill. Vehicle-spring	405,547	June 18	1753	463	47	1589
Gay, Lodowick W., Wardner, Idaho Ter. Trigger-setting mechanism for fire-arms	402,918	May 7	533	141	47	763
Gaybart, Aaron W., Washington, Pa. Curtain-fixture	403,344	May 14	1205	321	47	899
Gearing, Charles M., assignor to T. Liggett, C. M. Clarke, R. S. Frazer, and A. M. Neeper, Pittsburg, Pa. Apparatus for the manufacture of gas	401,342	Apr. 16	1378	366	47	283
Geary, John, assignor to J. E. Shaw, Philadelphia, Pa. Armature for electro-magnets	401,152	Apr. 9	1095	290, 291	47	214
Geary, John, assignor to J. E. Shaw, Philadelphia, Pa. Electric gas-lighting burner	401,153	Apr. 9	1096	291	47	214
Gedge, Burton H., Covington, Ky. Metallic strap for boxes	403,530	May 21	1503	394	47	963
Gelb, William, Kalamazoo, Mich. Steam-engine	404,190	May 28	2485	650	47	1164
Geiser, William, Salina, Pa. Device for ejecting oil from oil-wells	404,397	June 4	34	9	47	1232
Geisler, Ernest H., Deshler, Nebr., and M. Simpson, Munden, Kans. Calf-weaner	403,186	May 14	944	250	47	849
Gemrig, Henry E., Philadelphia, Pa. Surgeon's knife	401,549	Apr. 16	1696	448	47	342
Genese, David. (See Gartside and Genese.)						
Genet, Albert, assignor to J. Michaud, Paris, France. Damping apparatus for lithographic and zincographic presses	401,025	Apr. 9	900	241	47	181
Geneva Optical Company. (See Smith, Andrew L., assignor.)						
Gennert, Emil F., Brooklyn, N. Y., assignor to E. P. Gleason Manufacturing Company, of New York. Electric-lamp attachment for gas-fixtures	400,658	Apr. 2	321	90	47	67
Gentner, Valentine, Jr., Buffalo, N. Y. Mounting for ear-rings	405,157	June 11	1146	305	47	1459
Geraghty, John J., Streator, Ill. Ventilating apparatus for vehicles	400,559	Apr. 2	195	53	47	41
Gerard, Frank C., Seymour, Conn. Auger	400,659	Apr. 2	322	90	47	67
Gercke, Rudolf O., Augusta, Ga. Car-starter	400,560	Apr. 2	196	53	47	41
Gerhard, George L., Reading, Pa. Friction-clutch	403,098	May 14	809	215	47	823
Germain, Edward. (See Cowles, George C., assignor.)						
Gerry, James H., Brooklyn, assignor to Self Winding Clock Company, New York, N. Y. Electric self-winding clock	405,089	June 11	1042	278	47	1439
Gerson, George D., Hamburg, Germany. Apparatus for filtering water	402,433	Apr. 30	3072	795	47	620
Gerstle, Gustave, *et al.* (See Treharn, Joseph L., assignor.)						
Gerstle, Jacob, Portland, Oreg. Hinged handle	403,656	May 21	1664	442	47	996
Getten, Albert C., Chicago, Ill. Paper-bag machine	405,308	June 18	1380	364	47	1511
Gets, Reubin J. (See Hoover, De Witt C., assignor.)						
Gheen, John W., Astoria, Oreg. Steam-actuated valve	403,187	May 14	945	250	47	849
Gibbon, Thomas H., Albany, N. Y. Construction of railway-tracks	403,465	May 14	1390	364	47	933
Gibbons, John. (See Meneely and Gibbons.)						
Gibbs, Lewis, Canton, Ohio. Gang-plow	402,155	Apr. 30	2644	685	47	539
Gibbs, Pierre L. (See Young and Gibbs.)						
Gibson, James. (See Forbes and Gibson.)						
Gibson, Orlando. (See Africa, Robert W., assignor.)						
Gibson, Thomas B., Glasgow, county of Lanark, Scotland. Ornamental vessel or article	404,785	June 4	603	156	47	1343
Gibson, William, and R. Ray, Philadelphia, Pa. Apparatus for shaving barrels, &c.	401,550	Apr. 16	1697	448	47	342
Gifford, John, Watertown, N. Y. Combined hammock and canopy-support	404,614	June 4	374	90	47	1206
Gifford, John Z., New Bedford, Mass. Core for casting S-traps	401,036	Apr. 9	901	241	47	181
Gilbert & Bennett Manufacturing Company. (See Gilbert, Edwin, assignor.)						
Gilbert, Edwin, assignor to Gilbert & Bennett Manufacturing Company, Georgetown, Conn. Fence	402,732	May 7	257	68	47	713
Gilbert, Edwin, assignor to Gilbert & Bennett Manufacturing Company, Georgetown, Conn. Fence	402,817	May 7	398	104	47	738
Gilbert, Frank M., New York, N. Y. Platform-gate for railway-cars	402,919	May 7	533	141	47	763
Gilbert, George W., Kendallville, Ind. Soda-water apparatus	405,027	June 11	966	257	47	1423
Gilbert, Henry J., Saginaw, Mich. Pulley	401,489	Apr. 16	1601	423	47	325
Gilbert, Henry J., Saginaw, Mich. Separable pulley	405,352	June 18	1441	382	47	1524

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Gilbert, Hiram C., Burlington, Vt. Machine for grinding shimer molding-bits, &c	400,660	Apr. 2	325	91	47	67
Gilbert, John W., assignor to S. S. White Dental Manufacturing Company, Philadelphia, Pa. Dental plugger	402,156	Apr. 30	2646	685	47	540
Gilchrist, Howard H. (See Boettner and Gilchrist.)						
Gildemeyer, Charles A., Haddonfield, N. J. Temporary binder	403,043	May 7	711	186	47	798
Gildemeyer, Charles A., Haddonfield, N. J., assignor of one-half to M. Rush, Philadelphia, Pa. Electric-wire nail	401,343	Apr. 16	1383	367	47	285
Gildemeyer, Charles A., Haddonfield, N. J., assignor to himself and M. Rush, Philadelphia, Pa. Seal	405,730	June 25	2053	539	47	1649
Gill, John L., Jr., Philadelphia, Pa. Steam-boiler	400,448	Apr. 2	35	11, 12	47	10
Gill, Richard. (See Smith and Gill.)						
Gillett, Asa D. (See Gillett, Harrison, J. H., and A. D.)						
Gillett, Harrison, J. H., and A. D., Lake City, Minn. Driving means for thrashing-machines	405,309	June 18	1383	364	47	1512
Gillett, James H. (See Gillett, Harrison, J. H., and A. D.)						
Gillett, Webster, assignor to J. Straton, St. John, New Brunswick, Canada. Telephone-transmitter	401,743	Apr. 23	2010	526	47	411
Gillette, George H. and K. C., New York, N. Y. Tube or conduit	401,154	Apr. 9	1098	291	47	215
Gillette, George H. and K. C., New York, N. Y. Conduit for electrical conductors	401,155	Apr. 9	1100	292	47	215
Gillette, King C. (See Gillette, George H. and K. C.)						
Gillies, Alexander, West Toronto Junction, Ontario, Canada. Wheel	403,551	Apr. 16	1698	448	47	342
Gillingham, Henry R., assignor to M. C. Cook, Baltimore, Md. Packing for metallic boxes	404,700	June 4	486	123	47	1320
Gilman, Charles C., Eldora, Iowa. Safety railway-car	402,157	Apr. 30	2648	685, 686	47	540
Gilman, Charles C., Eldora, Iowa. Earthenware	405,098	June 11	967	.....	47	1424
Gilman Confectionery Company. (See Gilman, Willard H., assignor.)						
Gilman, Willard H., assignor to Gilman Confectionery Company, Boston, Mass. Coin-operated merchandise-holder	402,920	May 7	535	141, 142	47	764
Gilman, Willard H., Boston, assignor to C. E. Dresser and W. S. Reed, Leominster, Mass. Mechanical musical instrument	403,834	May 21	1931	508	47	1048
Gilman, Willard H., Boston, assignor to W. S. Reed, Leominster, Mass. Coin-operated finger-pull	403,995	May 28	2168	569	47	1161
Ginna, Stephen A., *et al.* (See Hipperling, William, assignor.)						
Gipperich, Adolphus, Richmond, Va. Apparatus for determining electric or magnetic forces	400,661	Apr. 2	324	91, 92	47	67
Gipperich, Adolphus, Richmond, Va. Determining the value of electric magnetic or electro-magnetic forces by weight	400,662	Apr. 2	326	92	47	68
Gipperich, Adolphus, Richmond, Va. Apparatus for determining the value of electro-magnetic forces by weight	400,663	Apr. 2	339	92, 93	47	68
Gipperich, Adolphus, Richmond, Va. Determining the center of attraction in polarized bodies	401,428	Apr. 16	1508	400	47	308
Giroud, Peter G., assignor to T. B. Mills, New York, N. Y. Fishing-reel	405,731	June 25	2054	540	47	1649
Giroux, Joseph E., Alpena, Mich. Grab-link for trace-chains	404,615	June 4	375	90	47	1207
Girvan, Thomas, New York, N. Y. Apparatus for cleaning and assorting sand	405,732	June 25	2057	540	47	1650
Girvin, Laura O., and J. Loff, Chicago, Ill. Photographer's retouching-machine	404,534	June 4	260	62	47	1273
Gish, John L., Jackson, Mich. Rheostat	403,345	May 14	1206	321	47	900
Gitt, Calvin M., Stanberry, Mo. Farm-gate	401,648	Apr. 16	1670	426	47	372
Gjestvang, Alexander M., Christiania, Norway. Iron chair	401,552	Apr. 16	1698	448	47	342
Gjestvang, Alexander M., Christiania, Norway. Furniture-spring	402,434	Apr. 30	3073	795	47	620
Glaser, Hermann, Vienna, Austria-Hungary. Static-induction machine	401,156	Apr. 9	1101	292	47	216
Glass, H. L. (See Kendrick, William F., assignor.)						
Glasscock, James H., Sherman, Tex., assignor of one-half to J. C. May, Lexington, Ky. Syringe	401,157	Apr. 9	1102	293	47	216
Glazier, Elias C., assignor to Steam Guage and Lantern Company, Rochester, N. Y. Tubular lantern	401,490	Apr. 16	1603	423	47	325
Gleason Manufacturing Company, E. P. (See Gennert, Emil F., assignor.)						
Gleason, Valentine, *et al.* (See Fletcher, Archibald F., assignor.)						
Gleason, William J. (See Jones, Edmund C., assignor.)						
Gleeson, Timothy, Brooklyn, N. Y. Apparatus for generating electricity	405,471	June 18	1631	431	47	1502
Glen Cove Machine Company. (See Autenrieth, Ernst F., assignor.)						
Glen Cove Machine Company. (See Hutchinson, Alfred B., assignor.)						
Glen Cove Machine Company. (See Welch, James F., assignor.)						
Glen Cove Machine Company. (See Welch and Autenrieth, assignors.)						
Glenn, George W., assignor of one-half to W. C. Thorpe, Jr., Baltimore, Md. Ratchet-stock	405,469	June 18	1629	430	47	1502
Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Cambridge, Mass. Rotary trimming-tool for boots or shoes	402,435	Apr. 30	3074	796	47	621
Glidden, Charles W., Lynn, assignor to J. W. Brooks, trustee, Cambridge, Mass. Heel-trimming machine	403,747	May 21	1809	474	47	1022
Glines, Horace, and W. W. Holmes, Bridgeport, Conn. Securing blades to metal handles	402,320	Apr. 30	2682	747	47	585
Glines, Humphrey M., Boston, Mass. Ratchet-drill	401,344	Apr. 16	1384	367	47	285
Glines, William H., Boston, Mass. Necktie-fastener	401,491	Apr. 16	1604	423	47	325
Globe Iron Works Company. (See Miller, Walter, assignor.)						
Glocker, Carl F., assignor to H. Lang, Albany, N. Y. Sectional camp-stool	400,841	Apr. 2	618	168	47	118
Glockler, Charles A., Pittsburg, Pa. Meat-rack	403,996	May 28	2170	570	47	1161
Glover, Charles B., assignor of one-half to W. O. Ellis, Houston, Tex. Insect-powder duster	401,941	Apr. 23	2304	599	47	465
Glover, Henry P., *et al.* (See Morgan, Benjamin B., assignor.)						
Glover, John B., Dubuque, Iowa. Lubricating device	403,657	May 21	1665	442	47	996
Glover, Sterling, assignor of one-half to F. H. Moyer, Buffalo, N. Y. Bottle-stopper	403,466	May 14	1391	364	47	933
Glynn, Patrick J., Highland, N. Y. Wick-raising attachment	404,274	May 28	2620	681	47	1187
Gmehlin, Paul, New York, N. Y. Piano-plate	403,583	May 21	1565	413, 414	47	975
Gnehm, Robert, assignor to Society of Chemical Industry of Basle, Basle, Switzerland. Red carbon color	402,436	Apr. 30	3075	.....	47	621
Gocht, Karl L., Chemnitz, Saxony, Germany. Securing rails to iron sleepers with iron cramps	402,818	May 7	399	104	47	738
Goddard, Curtis, Alliance, Ohio. Corn-sheller	402,238	Apr. 30	2756	714	47	561
Goddard, Curtis, Alliance, Ohio. Revolving book-case	403,089	May 14	810	215	47	824
Goddard, Nate W., *et al.* (See Smith, Roswell T., assignor.)						
Goddu, Louis, Winchester, assignor to J. W. Brooks, Cambridge, and F. F. Stanley, Swampscott, Mass., trustees. Clutch	402,614	Apr. 23	2410	628	47	486
Goddu, Louis, Winchester, assignor to J. W. Brooks, Cambridge, and F. F. Stanley, Boston, Mass., trustees. Machine for uniting soles to uppers	403,835	May 21	1933	509, 510	47	1048
Godfrey, Ernest F., Southington, Conn. Wood-working clamp	401,553	Apr. 16	1699	449	47	342

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Godwin, John C., assignor to himself and W. C. Godwin, Lloyd, Tex. Cleaner for cotton-gin saws	404,616	June 4	377	90, 91	47	1297
Godwin, W. C. (See Godwin, John C., assignor.)						
Goelet, Edward B., Fort Worth, Tex. Car-seat	400,561	Apr. 2	197	53, 54	47	42
Goelet, Edward B., Fort Worth, Tex. Car-door	400,562	Apr. 2	199	54	47	42
Goertz, August, Newark, N. J. Belt-buckle	403,263	May 14	1076	282	47	873
Goffray, Ferdinand A., Sewell, N. J. Vehicle running-gear	405,158	June 11	1147	306	47	1459
Gohmann, Romanus H., New Albany, Ind., assignor to Terstegge, Gohmann & Co., Louisville, Ky. Stove	402,123	Apr. 23	2592	672	47	521
Gohn, William J., Oakwood, Ill. Corn-cultivator	403,426	May 14	1333	350	47	922
Goldberg, Samuel W., and E. M. Tillmann, Dallas, Tex. Account-book	403,658	May 21	1665	442	47	996
Golding, William, New Orleans, La. Diffusion-battery	405,472	June 18	1632	431	47	1562
Goldman, Samuel S., St. Louis, Mo. Baker's peel for crackers, &c	405,407	June 18	1519	404	47	1540
Goldmann, Philipp, New York, N. Y. Fire-escape	402,437	Apr. 30	3076	796	47	621
Goldsmith, Nathaniel O. (See Weir and Goldsmith.)						
Good, Henry H. (See Humphrey and Good.)						
Good, William, Houston, Tex. Axle-lubricator	403,659	May 21	1666	442	47	996
Goode, John J., *et al.* (See Purdy and Sadgwar, assignors.)						
Goode, William H. C. (See Kilborn, Wilber E., assignor.)						
Goodenough, Alvin D. (See James and Goodenough.)						
Goodfellow, James T., Huntingdon, Pa., assignor to Iron Car Company, of Connecticut. Car-body	404,535	June 4	262	62, 63	47	1274
Gooding, Charles S., Brookline, and S. W. Ladd, Somerville, Mass. Assorting-machine	404,904	June 11	781	199, 200	47	1386
Goodman, Burkard, New York, N. Y. Suspenders	402,580	May 7	45	11	47	672
Goodwin, Charles D., and W. M. Chase, New Haven, Conn. Advertising device	401,158	Apr. 9	1103	293	47	216
Goodwin, John M., Sharpsville, Pa. Dumping-car	403,584	May 21	1560	414	47	976
Gordon, Edward C., Chetopa, Kans. Wire barrel-hoop	405,029	June 11	968	257	47	1494
Gordon, Edwin, Hyde Park, Mass. Railway-switch	401,345	Apr. 16	1386	367	47	285
Gordon, Francis L., Buffalo, N. Y. Toy pistol	404,275	May 28	2622	681	47	1188
Gordon, Frank P., Robinsonville, Pa. Axle box and spindle	402,819	May 7	400	105	47	738
Gordon, John H. (See Storie, Ole O., assignor.)						
Gordon, Noel R., Springfield, Ill. Atomizer	402,921	May 7	536	142	47	764
Gore, Henry A., and H. W. Ru Ton, Goshen, Ind. Carpet-sweeper	402,158	Apr. 30	2652	686	47	540
Gorton, Charles, New York, N. Y. Sectional steam-boiler	402,667	May 7	169	43	47	695
Gorton, Robert, Plainfield, N. J. Wire hook	402,438	Apr. 30	3077	797	47	621
Gorton, William E., Moline, Ill. Bolting-reel	402,733	May 7	258	69, 69	47	713
Gorton, William E., Moline, Ill. Bolting-reel	402,734	May 7	268	69, 70	47	714
Goshorn, Joseph G., Spring Run, Pa. Detachable whiffletree	405,548	June 18	1754	463	47	1589
Goss, Joseph, *et al.* (See Smith, Wilson R., assignor.)						
Gossage, Frederick H., assignor of one-half to T. T. Mathiesen, Widnes, county of Lancaster, England. Making soda	401,699	Apr. 16	1934	.....	47	384
Gottfried, Mathew, Chicago, Ill. Apparatus for counting packages	402,820	May 7	401	105	47	738
Gould, Herbert T. (See Lee, George W., assignor.)						
Goulden, Samuel, Newark, N. J. Combined door-fastener and alarm	404,617	June 4	378	91	47	1297
Goulden, William, No. 1 Donegal Place, Clapton, London, county of Middlesex, England. Velocipede	404,832	June 11	677	174	47	1367
Goulding, Alfred, assignor of one-half to G. C. Taft, Worcester, Mass. Saw-guide	405,210	June 11	1233	327	47	1475
Goullioud, Louis, Montreal, Quebec, Canada, assignor to Union Bearing and Lubricator Company, Portland, Me. Dust-guard for car-axle boxes	404,701	June 4	486	123	47	1320
Gowen, George C., Portland, Me. Binder for sheet-music, &c	405,254	June 18	1301	343	47	1495
Gowen, William, Wausau, Wis. Offset mechanism for saw-mill carriages	401,942	Apr. 23	2307	599	47	466
Gowen, William, Wausau, Wis. Garment-hanger	401,943	Apr. 23	2308	600	47	466
Gowen, William, Wausau, Wis. Offsetting device for saw-mill carriages	401,944	Apr. 23	2309	600	47	466
Gowen, William, Wausau, Wis. Offsetting device for saw-mill carriages	401,945	Apr. 23	2310	600	47	467
Grabau, Ludwig, Hanover, Germany. Manufacturing aluminium	400,449	Apr. 2	37	12	47	11
Grabill, Pharez R., Millersburg, Pa. Grain-weighing scales	403,748	May 21	1803	474	47	1022
Gracey, James, and G. W. Keech, assignors, by mesne assignments, to said Gracey and A. Straus, St. Louis, Mo. Lubricator	405,905	June 25	2456	642	47	1723
Gracey, James G., St. Louis, Mo. Lubricator for cylinders	405,835	June 25	2195	578	47	1677
Grady, Thomas H., Brooklyn, N. Y. Electric alarm-clock	403,100	May 14	811	215	47	824
Graf, Martin T., Buffalo, N. Y. Gear-wheel	403,101	May 14	813	215, 216	47	824
Graf, Robert R., assignor to H. C. Turnbull, Jr., trustee, Baltimore, Md. Refrigerating apparatus	402,520	Apr. 30	3196	828	47	644
Grafton, Edwin W. (See Carr, George W., assignor.)						
Graham, George M., Cleveland, Ohio. Paving-block	401,492	Apr. 16	1604	423, 424	47	336
Graham, George M., Cleveland, Ohio. Adjustable frame for building sewers, &c	402,665	May 7	167	42, 43	47	695
Graham, James A., Fort Wayne, Ind. Draft-rigging for railway-cars	402,581	May 7	45	11	47	672
Graham, John S., *et al.* (See Bunce, Slate, and Rodda, assignors.)						
Graham, Robert C., Philadelphia, Pa. Bedstead	402,239	Apr. 30	2757	714	47	561
Graham, William, Cleveland, Ohio. Name and letter-drop plate	401,700	Apr. 16	1935	505	47	384
Granger, James B., Delhi, N. Y. Runner for wheeled vehicles	401,429	Apr. 16	1510	400	47	308
Grannis, Hial S., assignor to Peck, Stow & Wilcox Company, Southington, Conn. Stove-pipe former	402,582	May 7	47	11	47	672
Grannis, Hial S., assignor to Peck, Stow & Wilcox Company, Southington, Conn. Adjustable box for stove-pipe formers	402,583	May 7	48	12	47	673
Grant, Alexander H., Hobart, N. Y. Car-coupling	403,531	May 21	1505	394	47	963
Grant, David G., assignor of one-half to M. A. Andrews, Syracuse, N. Y. Bearing for street-cars	401,159	Apr. 9	1104	293, 294	47	216
Grant, George B., Malden, Mass. Machine for cutting spur and worm gears	405,030	June 11	969	258	47	1424
Grant, Hiram B., Cleveland, Ohio. Fence-post	402,666	May 7	169	43	47	695
Gran, Philip J., assignor to J. G. Donoghue, Philadelphia, Pa. Low-water indicator for steam-boilers	401,701	Apr. 16	1936	505	47	385
Graveline, David U., Chicago, Ill. Car-coupling	401,430	Apr. 16	1512	401	47	308
Gravier, Alphonse L., Paris, France. Dynamo-electric machine	403,836	May 21	1940	510	47	1049
Gray, Albert W., Masonanie, Wis. Baby-jumper	401,966	Apr. 9	1264	337	47	248
Gray Automatic Steam Governor Company. (See Gray, William H. and J. D., assignors.)						
Gray Company, G. A. (See Gray, George A., assignor.)						
Gray, Cornelius. (See Wood, Amrin, assignor.)						
Gray, George A., Covington, Ky., assignor to G. A. Gray Company, Cincinnati, Ohio. Metal-planing machine	401,267	Apr. 9	1266	337	47	248
Gray, Isaac J., Beloit, Wis. Harness	405,771	June 25	2112	553	47	1661

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Gray, James D. (See Gray, William H. and J. D.)						
Gray, Thomas J., Chicago, Ill. Machine for picking cotton	401,268	Apr. 9	1267	337, 338, 339	47	248
Gray, William H. and J. D., West Falls, Md., assignors to Gray Automatic Steam Governor Company, Alexandria, Va. Hydraulic governor for engines	402,015	Apr. 23	2411	028, 029	47	486
Greaves, James W., assignor of one-half to W. R. Arnold, Providence, R. I. Dyeing-vat	401,027	Apr. 9	902	241	47	181
Greely & Company, E. S. (See Smith, Thomas J., assignor.)						
Green, Casper, Dublin, Ind. Corpse-dressing table	401,554	Apr. 16	1700	449	47	342
Green, John, St. Louis, Mo. Panel-raising machine	401,555	Apr. 16	1702	449, 450	47	343
Green, Nelson E., Minneapolis, Minn. Loading and unloading mechanism for sewer-excavators	402,016	Apr. 23	2414	029, 030	47	486
Green, William W., assignor of two-thirds to A. H. Casey and C. D. Lane, Chicago, Ill. Dumping-wagon	404,352	May 28	2741	711, 712	47	1210
Green, William W., and J. Murison, Chicago, Ill., assignors to American Fire Proof Steel Car Company, of Illinois. Railway-car frame	404,276	May 28	2623	681	47	1188
Green, William W., and J. Murison, Chicago, Ill., assignors to American Fire Proof Steel Car Company, of Illinois. Bed-frame for railway-cars	404,277	May 28	2625	682	47	1188
Greenalch, John. (See Loftus, John, assignor.)						
Greene, Jacob W., Chillicothe, Mo. Bosom-form	401,028	Apr. 9	902	242	47	181
Greene, Jeremiah D., and J. C. Treman, assignors to J. Lucey, Troy, N. Y. Fuel-magazine	400,909	Apr. 9	790	195	47	148
Greene, Patrick R., Brooklyn, N. Y., assignor of two-thirds to P. Byrne, Jersey City, N. J., and J. Claffy, Brooklyn, N. Y. Underground conduit	400,764	Apr. 2	484	130	47	95
Greenfield, Edwin T. (See Johnson and Greenfield.)						
Greening, Frederick, assignor to himself and J. Frost, Uxbridge, county of Middlesex, England. Production of material as substitute for india-rubber, &c	401,269	Apr. 9	1271	.....	47	249
Greenleaf, Charles H., Boston, Mass., assignor of one-half to W. A. Tracy, Nashua, N. H. Hotel room-register	404,398	June 4	33	9	47	1232
Greenlee, Arthur C., Fergus Falls, Minn. Fuel-saving device	401,702	June 4	487	123	47	1320
Greenwald, Herman D., assignor of one-half to J. W. Jagger, St. Paul, Minn. Awning	405,549	June 18	1755	464	47	1560
Greenway, William, and J. Strickland, Hastings, Nebr. Car-coupling	404,967	June 11	877	228	47	1405
Greer, Howard, Lake View, Ill. Finishing railway-spikes	401,346	Apr. 16	1386	.....	47	285
Greer, Howard, Lake View, Ill. Spike-machine	404,191	May 28	2466	650, 651	47	1164
Gregory & Co., H. P. (See Cook, Frederick W., assignor.)						
Grenon, Sam, assignor of one-half to C. F. La Clair, Hurley, Wis. Potato-planter	403,264	May 14	1077	282, 283	47	874
Greville-Williams, Rupert, Albany, N. Y. Compound orcin dye	404,331	May 28	2710	.....	47	1205
Gridley, Frank J., New York, assignor to Underwriters Hatch Door Company, Brooklyn, N. Y. Self-closing hatchway	404,618	June 4	379	91	47	1297
Griemsmann, Henry P. (See Moylan and Griemsmann.)						
Griest, John M., Bergen Point, N. J., assignor to Singer Manufacturing Company of New Jersey. Tuck creaser or marker for sewing-machines	401,029	Apr. 9	904	242	47	182
Griest, John M., Chicago, Ill., assignor to Singer Manufacturing Company of New Jersey. Attachment-holder for sewing-machines	402,584	May 7	50	12	47	673
Griffin, Edwin C., Brooklyn, assignor to Griffin Manufacturing Company, New York, N. Y. Crushing or grinding mill	403,997	May 28	2171	570	47	1101
Griffin, James M., *et al.* (See Willis, Don F., assignor.)						
Griffin, John S., *et al.* (See Willis, Don F., assignor.)						
Griffin Manufacturing Company. (See Griffin, Edwin C., assignor.)						
Griffin, Patrick H., Buffalo, N. Y. Expansible mandrel	404,477	June 4	163	38	47	1255
Griffin, Theophilus, assignor of two-thirds to J. M. Nall and W. W. Wilkeson, Sheridan, Ark. Trap	402,585	May 7	51	12	47	673
Griffin, Thomas A., Chicago, Ill. Foot-guard	403,998	May 28	2174	570	47	1102
Griffin, William S., Atlanta, Tex. Wagon-brake	402,821	May 7	402	106	47	739
Griffith, Graves, and T. L. Miller, Blanchard, Iowa. Hydrocarbon-burner for furnaces	401,431	Apr. 16	1513	401	47	308
Griffith, Thomas J. (See Roads and Griffith.)						
Grigg, Alexander T. (See Valentine and Grigg.)						
Grimes, Charles D. (See Lores and Grimes.)						
Grimley, Charles H., New York, N. Y. Electric belt	401,822	Apr. 23	2212	578	47	449
Grinnell, Eugene S., assignor of two-thirds to E. W. Blake and R. Burgess, Waltham, Mass. Loom-picker	404,478	June 4	164	38	47	1255
Griscom, William W., Haverford College, Pa., assignor to Electrical Accumulator Company, of New York. Secondary battery	400,842	Apr. 2	630	168	47	119
Griscom, William W., Haverford College, Pa., assignor to Electrical Accumulator Company, of New York. Secondary battery	401,744	Apr. 23	2011	526	47	411
Griscom, William W., Haverford College, Pa., assignor to Electrical Accumulator Company, of New York. Preparing elements for secondary batteries	405,733	June 25	2058	540	47	1650
Griscom, William W., Haverford College, Pa., assignor to Electrical Accumulator Company, of New York. Machine for making battery-plates	405,996	June 25	2457	642, 643	47	1723
Griscom, William W., Haverford College, assignor to Electro Dynamic Company, Philadelphia, Pa. Distribution of electricity by secondary batteries	400,843	Apr. 2	632	169	47	119
Griscom, William W., Haverford College, assignor to Electro Dynamic Company, Philadelphia, Pa. Switch or circuit changer	401,270	Apr. 9	1272	339	47	249
Griscom, William W., Haverford College, assignor to Electro Dynamic Company, Philadelphia, Pa. Distribution of electricity by secondary batteries	402 586	May 7	53	13	47	674
Griscom, William W., Haverford College, assignor to Electro Dynamic Company, Philadelphia, Pa. Distributing electricity by secondary batteries	404,968	June 11	878	229	47	1405
Grisham, Wiley M., Winchester, Ill. Car-coupling	400,563	Apr. 2	200	54	47	43
Griswold, Elias H., Baker City, Oreg. Bottle-tap	401,432	Apr. 16	1515	401	47	309
Griswold, George M., New Haven, Conn. Sash-fastener	403,102	May 14	814	216	47	824
Griswold, George M., New Haven, Conn., R. W. Thurman, and K. H. Wright, assignors to Lone Jack Cigarette Company, Lynchburg, Va. Machine for making cigarette mouth-pieces or paper tubes	400,765	Apr. 2	485	131, 132, 133	47	95
Griswold, Lewis F., assignor to C. Parker Company, Meriden, Conn. Extension-fixture for lamps, &c	401,347	Apr. 16	1387	367, 368	47	285
Griswold, Lewis F., assignor to C. Parker Company, Meriden, Conn. Chandelier	402,077	Apr. 23	2511	656	47	505
Griswold, Matthew, and O. R. Hanchett, Erie, Pa.; said Hanchett assignor to said Griswold. Stove-pipe damper	405,408	June 18	1521	404	47	1540
Groark, Richard, assignor of one-fourth to W. H. Hepinstall, Greenbush, N. Y. Oscillating pipe-joint	403,883	May 21	2001	525	47	1061
Groark, Richard, assignor of one-fourth to W. H. Hipinstall, Greenbush, N. Y. Pipe-coupling	403,884	May 21	2003	526	47	1062

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Groshans, Ferdinand, Baltimore, Md. Window-ventilator	405,550	June 18	1756	461	47	1589
Gross, August. (See Klinik, Pinkowski, and Gross.)						
Gross, Elam A., Camden, N. J. Tobacco-pipe	403,935	May 28	2080	546	47	1084
Gross, Henry, assignor to Chicago Safe and Lock Company, Chicago, Ill. Means for connecting spindles to the walls or doors of safes	402,587	May 7	56	13	47	674
Grosscup, William H. (See Breux, Joseph F., assignor.)						
Grossenbach & Company, A. (See Oberhaeusser, Leonhard, assignor.)						
Grossiord, Samuel, les Moussières, near les Bouchoux, assignor to R. A. Kipling, Paris, France. Imitation gem	400,450	Apr. 2	39	12	47	11
Grote, Frederick H., Jersey City, N. J. Printing-machine	405,159	June 11	1148	306	47	1460
Grozier, Edwin A., *et al.* (See Van Zile, Edward S., assignor.)						
Grube, Charles H., Robinson, Ill. Lamp	403,660	May 21	1668	443	47	997
Grundy, Arthur, Whitestone, N. Y. Type-writing machine	404,833	June 11	678	175	47	1367
Gruver, George W., *et al.* (See Moharter, Frank, assignor.)						
Grzybowski, Julian T., assignor of one-half to R. E. Butterworth and J. Lowe, Grand Rapids, Mich. Machine for grooving lumber	402,521	Apr. 30	3199	{823 829	47	644
Guarantee Trust and Safe Deposit Company, trustees. (See Lowe, Thaddeus S. C., assignor.)						
Guckert, William, *et al.* (See Snee, William, assignor.)						
Gude, Louis C., *et al.* (See Kieser, Charles, assignor.)						
Guest, Joseph, assignor of one-half to F. Protzman, Sr., S. M. and F. E. Youngs, and R. W. Carroll, Pittsburg, Pa. Rolling-mill	400,844	Apr. 2	624	169	47	120
Guest, Joseph, assignor of one-half to F. Protzman, Sr., S. M. and F. E. Youngs, and R. W. Carroll, Pittsburg, Pa. Rolls for rolling metal	400,845	Apr. 2	625	169	47	120
Guibbini, Gottardo, Point Reyes, Cal. Gate	405,772	June 25	2113	554	47	1601
Gnignard, Louis P., Fluntern, near Zurich, and J. Schweizer, Unterstrass, near Zurich, Switzerland. Apparatus for burning petroleum or similar substances	404,389	June 4	36	10	47	1232
Guile, Delbert, Fillmore, Ill. Vehicle rub-iron	400,451	Apr. 2	40	12	47	11
Guinery, Samuel. (See Herbert and Guinery.)						
Gunckel, Patrick H. (See Burke, John, assignor.)						
Gunckel, Winfield O., Terre Haute, Ind. Boiler feed-regulator	404,400	June 4	38	10	47	1233
Gundelach, Ludwig, Leipsic, Saxony, Germany. Feeding device for sewing-machines	401,271	Apr. 9	1273	340	47	249
Gunderlach, Ludwig, Leipsic, Saxony, Germany. Feeding device for sewing-machines	401,493	Apr. 16	1606	424	47	326
Gundermann, Philip H., Chicago, Ill. Stop-cock box	403,999	May 28	2174	571	47	1103
Gundorph, Ferdinand, Portland, Oreg. Gravity clock-escapement						
Gunn, Alexander H. (See McCray, Thomas H., assignor.)						
Gunn, Andrew J., Valley Falls, Kans. Nut-lock	405,773	June 25	2114	554	47	1661
Gunn, Lewis C., San Diego, Cal. Rocking-chair	400,564	Apr. 2	201	54 55	47	43
Gunn, Walter C., Chicago, Ill. Fastening device for dog-collars	405,551	June 18	1757	464	47	1590
Gurnee, Elbert M. (See Burtch and Gurnee.)						
Gurnee, Palmer J., Rondout, N. Y. Drying attachment for brick-kilns	402,321	Apr. 30	2883	747	47	595
Gurney, Edward, Toronto, Ontario, Canada. Sectional furnace-joint	401,827	Apr. 23	2140	558	47	434
Guseman, William D., Morgantown, W. Va. Broadcast seed-sower	402,822	May 7	403	106	47	739
Guss, Samuel M., Pottstown, assignor of one-half to J. S. Ammon, Reading, Pa. Peel for heating-furnaces	402,568	May 7	57	13	47	674
Gusten, John E., and C. W. Braun, Denver, Colo. Roofing-tile	403,837	May 21	1942	510	47	1050
Guthridge, Elijah, Fayette, Mo. Wire-stretcher	404,336	June 4	263	63	47	1274
Gutskow, Frederick, San Francisco, Cal. Preparing sulphate of silver	401,828	Apr. 23	2140		47	434
Haab, Henry, assignor of one-half to J. R. Holley, Bristol, Conn. Rotary engine	404,834	June 11	680	{175 176	47	1367
Haab, Henry, assignor of one-half to E. S. Hollister, Bristol, Conn. Low-pressure engine	404,905	June 11	783	200	47	1386
Haas, Edwin, Philadelphia, Pa. Sirup-faucet	404,192	May 28	2489	651	47	1105
Haas, Samuel H., Philadelphia, Pa. Vehicle-coupling	403,427	May 14	1333	350	47	922
Haas, William L., Charles City, Iowa. Gate	402,439	Apr. 30	3078	797	47	622
Hacker, Charlotte M. (See McDonald, William, assignor.)						
Hackett, George H., South Royalton, Vt. Boot-jack	403,585	May 21	1571	415	47	976
Hackett, John L., Rochester, N. Y. Holder for the hair	401,649	Apr. 16	1871	486	47	373
Hackett, John L., Rochester, N. Y. Holder for the hair	401,946	Apr. 23	2312	601	47	467
Hackh, Engen, New York, N. Y. Photographic camera	405,836	June 25	2196	578	47	1677
Hadden, John E., and D. Barry, Taberg, N. Y. Spring-vehicle	404,906	June 11	785	200	47	1386
Hadlock, William E., Wenham, Mass. Electric alarm-clock	11,003	May 21	2027		47	1046
Hafely, Alfred C., New York, N. Y. Embossed metallic plate. (Reissue)						
Hager, George C., Danbury, Conn. Sewer-trap	405,774	June 25	2115	{554 555	47	1662
Haggenmacher, Carl, Buda Pesth, Austria-Hungary. Chop-grader	402,440	Apr. 30	3079	797	47	622
Hahlo, Charles, C. E. Liebreich, and T. Hanson, Bradford, county of York, England. Shedding mechanism for looms	401,947	Apr. 23	2313	{601 602	47	467
Hahn, Jacob, New York, N. Y. Dissolving aniline colors	404,193	May 28	2491		47	1165
Haight, Henry J., New York, N. Y. Attachment for electro-magnetic thermoscopes	401,348	Apr. 16	1389	368	47	286
Haines, Abel C., Columbus, Ohio. Truss	400,910	Apr. 9	722	196	47	148
Haines, William S. (See Homewood, Arthur, assignor.)						
Hais, Jacob, De Kalb, Ill. Railway-track	404,401	June 4	39	11	47	1233
Halbmayr, Joseph A., Vienna, Austria-Hungary. Manufacturing explosives	403,749	May 21	1804	475	47	1023
Haley, Amos A., *et al.* (See Haley, Charles C., assignor.)						
Haley, Charles C., assignor to H. A. Hanssling and A. A. Haley, Newark, N. J. Bottle-stopper	402,078	Apr. 23	2513	656	47	505
Halkyard, William, Providence, R. I. Machine for making staples	405,090	June 11	1043	279	47	1439
Hall, Albert, Brooklyn, N. Y. Whip-holder	400,452	Apr. 2	41	13	47	11
Hall, Charles J. (See Lowrie and Hall.)						
Hall, Charles K., New Orleans, La. Bottle-stand	401,829	Apr. 23	2141	559	47	434
Hall, Charles M., Oberlin, Ohio. Reducing aluminium from its fluoride salts by electrolysis	400,664	Apr. 2	342	93	47	69
Hall, Charles M., Oberlin, Ohio. Manufacture of aluminium	400,665	Apr. 2	343	93	47	69
Hall, Charles M., Oberlin, Ohio. Electrolyzing crude salts of aluminium	400,666	Apr. 2	344	94	47	69
Hall, Charles M., Oberlin, Ohio. Electrolyzing fused salts of aluminium	400,667	Apr. 2	346		47	69
Hall, Charles M., Oberlin, Ohio. Reducing aluminium by electrolysis	400,766	Apr. 2	490	133	47	96
Hall, Edward C., *et al.*, executors and trustees. (See Hall, Joseph L.)						
Hall, Edward J., and H. I. Norton, Bennington, Vt. Clasp for file-bands	405,958	June 25	2388	626	47	1711
Hall, Horace A. (See Doran and Hall.)						
Hall, James T., St. Louis, Mich. Cattle-guard	403,532	May 21	1506	394	47	964
Hall, John, Creston, Iowa. Ice-elevator	402,589	May 7	58	14	47	675
Hall, John C., Brooklyn, N. Y. Toy	405,353	June 18	1442	382	47	1524
Hall, Joseph L., deceased, Cincinnati, Ohio; S. J. and E. C. Hall and R. T. Pullen executors and trustees. Safe	402,590	May 7	59	14	47	675
Hall, Marquis L., Omaha, Nebr. Blind-stop	405,665	June 18	1953	513	47	1625
Hall, Philo E., Detroit, Mich. Telephone-support	400,911	Apr. 9	724	196	47	149
Hall, Sarah J., *et al.*, executors and trustees. (See Hall, Joseph L.)						
Hall, Sylvester W., Elmira, N. Y. Earth-scooper	403,661	May 21	1669	443	47	997

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Hall, Thomas E., Kansas City, Mo. Hydrocarbon-burner	405,884	June 25	2365	{595 596	47	1691
Hall, William R., Philadelphia, Pa. Mold for the manufacture of artificial teeth	404,703	June 4	488	121	47	1380
Hallam, Leigh H., Belton, Tex. Baling-press	403,602	May 21	1671	{443 444	47	997
Hallenbeck, Joseph P. (See Osterhout and Hallenbeck.)						
Hallett, Charles, Chicago, Ill., assignor to F. C. Hallett, River Head, N. Y. Separator	401,556	Apr. 16	1704	450	47	343
Hallett, Charles, assignor to F. C. Hallett, Riverhead, N. Y. Boiler	402,441	Apr. 30	3060	798	47	622
Hallett, Francis C. (See Hallett, Charles, assignor.)						
Halliday Bros. (See Howes, Otis S., assignor.)						
Hallwood, Henry S., Columbus, Ohio. Street-pavement	400,767	Apr. 2	492	133	47	96
Halsey, James T., Paterson, N. J. Valve for engines	402,922	May 7	538	{142 143	47	764
Halsey, James T., Paterson, N. J. Valve-gear	402,923	May 7	541	143	47	765
Halsey, James T., Paterson, N. J. Portable drilling-machine	402,924	May 7	544	144	47	765
Halsey, Leroy, Battle Creek, Mich. Steam-radiator	403,936	May 28	2081	546	47	1085
Hambay, James T., Pittsburg, Pa. Vacuum-pump	400,668	Apr. 2	346	94	47	69
Hamer, James A., Reading, Pa. Forging-machine	403,586	May 21	1572	415	47	977
Hamilton, Charles K., Jr., Brooklyn, N. Y. Calendar	405,160	June 11	1149	307	47	1460
Hamilton, Cornelius J., assignor to J. H. Wilson, Philadelphia, Pa. Gas-governor	402,443	Apr. 30	3061	798	47	622
Hamilton, Herbert E., *et al.* (See Ball, Clinton M., assignor.)						
Hamilton, Herbert E., *et al.* (See Boisvert, Napoléon, assignor.)						
Hamilton, James, *et al.* (See Ball, Clinton M., assignor.)						
Hamilton, James, *et al.* (See Boisvert, Napoléon, assignor.)						
Hamlin, George B., Providence, R. I. Side spring for vehicles	401,272	Apr. 9	1274	340	47	250
Hammarlund, Oscar P., and E. Larson, Chicago, Ill. Sash-holder	404,537	June 4	264	63	47	1274
Hammer, Emil G., Brooklyn, N. Y. Electric clock	402,823	May 7	404	{106 107	47	739
Hammer, Frank, Seneca Falls, N. Y. Blackboard-eraser	402,925	May 7	546	144	47	766
Hammer, William J., Boston, Mass. Safety device for electric circuits	400,608	Apr. 2	330	93	47	70
Hammond, Henry, New Haven, Conn. Forging-machine	400,670	Apr. 2	351	95, 96	47	70
Hammond, Isaac B., Chicago, Ill. Ore-roasting furnace	404,000	May 28	2176	571	47	1103
Hammond, Wilberforce B., Boston, Mass. Gasometer	400,671	Apr. 2	353	96, 97	47	70
Hammond, William E., and J. G. Merriam, assignors to E. Miller & Company, Meriden, Conn. Suspension device for lamps	401,557	Apr. 16	1706	450	47	343
Hampe, Albert, St. Louis, Mo. Friction-clutch	403,663	May 21	1673	444	47	998
Hampton, Charles G. (See Lewis, James H., assignor.)						
Hampton, Robert L., Athens, Ga. Car-coupling	401,160	Apr. 9	1106	294	47	217
Hampton, Robert L., Athens, Ga. Valve for the steam-heating pipes of railway-cars	405,959	June 25	2381	626	47	1711
Hamsley, Millard F., Nashville, Tenn. Metallic roofing	403,750	May 21	1805	475	47	1023
Hanan, James, Jr., New York, N. Y. Shoe or slipper	401,830	Apr. 23	2142	559	47	434
Hanauer Electrische Uhren Fabrik Steinbener Rabe. (See Rabe, Heinrich, assignor.)						
Hance, William A., Freeport, Ill. Stove-pipe damper	403,468	May 14	1393	365	47	934
Hance, William A., Freeport, Ill., assignor to Warner Manufacturing Company, of Illinois. Damper	403,467	May 14	1392	365	47	933
Hanchett, Oren R. (See Griswold and Hanchett.)						
Hancock Inspirator Company. (See Church, Charles E., assignor.)						
Hand Stitch Broom Sewing Machine Company. (See Lipe, Charles E., assignor.)						
Hand, Thomas A. (See Hull and Hand.)						
Handy, Bethuel G. and G. H., Monroe, N. Y. Anti-friction bearing	405,031	June 11	972	258	47	1494
Handy, George H. (See Handy, Bethuel G. and G. H.)						
Haney, Enoch G. (See Haney, William A. and E. G.)						
Haney, William, New Haven, Conn. Draw-bridge gate	400,672	Apr. 2	355	97	47	71
Haney, William A. and E. G., Media, Kans. Wagon-brake lever	400,565	Apr. 2	203	55	47	43
Hanford, Henry S. (See Spencer, Charles F., assignor.)						
Hank, Caleb, Jackson, Ohio. Cutter-bar	402,159	Apr. 30	2953	686	47	541
Hansberry, Thomas K., Norton, Kans. Door-check	404,038	May 28	2236	586	47	1113
Hansèn, Florian E., assignor to M. C. Hansèn, Minneapolis, Minn., and O. P. Hansèn, St. Louis, Mo. Artificial tooth-plug	403,428	May 14	1334	350	47	923
Hansèn, Mary C., *et al.* (See Hansèn, Florian E., assignor.)						
Hansèn, Olivia P., *et al.* (See Hansèn, Florian E., assignor.)						
Hanshaw, Elias, Russell, Ky. Tongue-support	402,443	Apr. 30	3062	799	47	623
Hansing, Siegfried, New York, N. Y. Piano-action	404,704	June 4	489	124	47	1320
Hansing, Siegfried, assignor to Wessell, Nickel & Gross, New York, N. Y. Piano-forte action	402,735	May 7	273	70	47	714
Hanson, Augustus. (See Leonard and Hanson.)						
Hanson, Freeman, Hollis, assignor of one-half to C. B. Harmon Biddeford, Me. Steam-pipe coupling	404,786	June 4	604	156	47	1344
Hanson, James P. (See Pratt and Hanson.)						
Hanson, Paul, St. Paul, Minn. Harvesting-machine	402,924	May 7	409	{107 108	47	740
Hanson, Theophilus. (See Hahlo, Liebreich, and Hanson.)						
Harder, Charles N. (See Sagendorph, Longley L., assignor.)						
Hardie, Robert, Schenectady, N. Y. Direct-acting engine	405,409	June 18	1521	404	47	1540
Hardie, Robert W., Albany, N. Y. Disk harrow	401,745	Apr. 23	2013	527	47	411
Hardwicke, James K., Marshall, N. C. Brake for railway-trains	403,188	May 14	947	{350 351	47	849
Hardy, Emery E., Newark, N. J. Turret with separable shank	404,403	June 4	42	12	47	1234
Hardy, Peter J., Tom's River, N. J. Cutter-head for molding-machines	400,673	Apr. 2	357	97, 98	47	71
Hardy, Thomas, Toronto, Ontario, Canada. Cart	404,402	June 4	41	11	47	1233
Harger, David, Des Moines, Iowa. Pavement and paving-brick	401,030	Apr. 9	905	242	47	183
Hargreaves, James, Farnworth, county of Lancaster, England. Internal-combustion thermo-dynamic motor	401,161	Apr. 9	1107	294	47	217
Hargreaves, James, Farnworth, county of Lancaster, England. Obtaining motion from heat produced by liquid or gaseous fuel	401,162	Apr. 9	1110	295	47	218
Hargus, Milton, New Edinburg, Ark. Log-puller	403,536	May 21	1943	510	47	1050
Haring, Peter P., Brenham, Tex. Beverage shaking and mixing machine	400,674	Apr. 2	358	98	47	71
Harkinson, John L., Mason City, Iowa. Hay-elevator	403,103	May 14	816	{216 217	47	825
Harlan, Frank, Canton, Mo. Device for protecting fruit-trees	405,552	June 18	1759	464	47	1590
Harlan, Samuel C., Lake City, Minn. Lock	404,835	June 11	982	176	47	1368
Harley, John, Detroit, Mich. Saw-table gage	405,310	June 18	1384	365	47	1512
Harley, Joseph L., Baltimore, Md. Fare-register	402,445	Apr. 30	3064	{799 800	47	623

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Harmon, Charles B. (See Hanson, Freeman, assignor.)						
Harmon, Orlin E., Bloomingdale, Mich. Culinary vessel	402,444	Apr. 30	3083	799	47	623
Harper, Frank, Auburn, assignor to D. M. Osborne & Company, of New York. Grain-binding machine	404,479	June 4	164	38	47	1255
Harpst, Edgar S., Tyler, Tex. Fruit-picker	405,410	June 18	1523	404	47	1540
Harrell, John H., Washington, D. C. Buckle	403,469	May 14	1394	365	47	934
Harrell, R. L., *et al.* (See Stiles, Frederick, assignor.)						
Harrell, Robert L., *et al.* (See McBride, Abram B., assignor.)						
Harrell, W. F., *et al.* (See McBride, Abram B., assignor.)						
Harrelson, William H., Kansas City, Mo. Construction of water-tanks	402,446	Apr. 30	3087	800	47	623
Harriman, Thomas J., New Paris, Ind. Drive apparatus for piles, &c	401,031	Apr. 9	908	243	47	182
Harrington, Frederic, and B. L. Carter, Cleveland, Ohio. Umbrella-exhibitor	404,480	June 4	166	39	47	1256
Harrington, Samuel H., Columbus, Ohio. Device for extinguishing fires in passenger-cars	401,494	Apr. 16	1608	424	47	326
Harrington, Samuel H., Columbus, Ohio. Car coupling	405,255	June 18	1302	344	47	1495
Harrington, Samuel H., Columbus, Ohio. Car-coupling	405,256	June 18	1307	345	47	1496
Harris, Charles R., Williamsport, Pa. Display-rack	405,257	June 18	1310	345	47	1497
Harris, Charles W., Hartford, Conn. Umbrella	404,039	May 28	2237	589	47	1113
Harris, Frank H., Auburndale, Ohio. Vehicle-wheel	403,346	May 14	1207	321	47	900
Harris, Frank H., Auburndale, Ohio. Machine for trimming wire spokes	403,347	May 14	1208	321	47	900
Harris, Frank H., Auburndale, Ohio. Hand riveting-machine	403,348	May 14	1209	322	47	900
Harris, Frank H., Auburndale, Ohio. Wheelbarrow	404,807	June 11	767	201	47	1387
Harris, Frank W., Napa, Cal. Device for oiling wheels	404,481	June 4	167	39	47	1256
Harris, George E., Lawrenceville, Pa. Vehicle-spring	401,495	Apr. 16	1610	425	47	327
Harris, John W., Shippensburg, Pa., assignor to E. W. Herendeen, Geneva, N. Y. Tooth-holder	401,883	Apr. 23	2214	579	47	449
Harris, Levi, Kalamazoo, Mich. Fire-ladder	401,733	Apr. 16	1516	402	47	309
Harris, Liscus C., Oskaloosa, Iowa. Draft-equalizer	405,161	June 11	1151	305	47	1460
Harris, Louis J., assignor of one-fourth to A. W. Crossley, Boston, Mass. Railway-car	403,265	May 14	1079	284 285 286 287	47	874
Harris, Nathan, Boston, Mass. Implement for marking cloth	404,482	June 4	168	39	47	1256
Harris, Samuel R. (See Cowdery, Warren H., assignor.)						
Harris, Thomas. (See Cameron and Harris.)						
Harris, Thomas W., *et al.* (See Finch, James B., assignor.)						
Harris, Walter B., *et al.* (See Foster, Robert, assignor.)						
Harris, Willie W., assignor to H. A. Lyon, Sioux City, Iowa. Cartridge capper and decapper	405,997	June 25	2459	643	47	1723
Harrison, Andrew L., Wilmington, N. C. Cut-off-valve gear	401,831	Apr. 23	2143	570	47	434
Harrison, Edgar, New Bond Street, county of Middlesex, England. Breech-loading fire-arm	404,062	May 28	2315	607	47	1131
Harrison, George M. (See Collyer, Robert H., assignor.)						
Harrison, James R. (See Weber and Harrison.)						
Harrison, John W. (See Egner and Harrison.)						
Harrison, John W., and F. Egner, St. Louis, Mo. Apparatus for the manufacture of fuel and illuminating-gas	404,404	June 4	43	12	47	1234
Harrison, William. (See Temple, Henry, assignor.)						
Harry, Hugh W., Dallas, Tex. Tank	400,566	Apr. 2	204	55	47	43
Harry, Samuel R., Chatsworth, Ill. Gopher-truck	405,960	June 25	2392	627	47	1711
Harsh, Samuel E., assignor of one-half to J. M. Harter, Wabash, Ind. Overdraw check-spreader	401,558	Apr. 16	1708	451	47	344
Harsha, John P., and C. Duval, Hutchinson, Kans. Combined record and sales book	401,948	Apr. 23	2315	602	47	468
Hart, Charles L., assignor to E. W. Bliss Company, Brooklyn, N. Y. Stamping-press	402,668	May 7	172	44	47	696
Hart, Delos. (See Souders, Addison J., assignor.)						
Hart, Frederick, Poughkeepsie, assignor to D. H. Burrell & Company, Little Falls, N. Y. Means for lubricating centrifugal separators	405,212	June 11	1235	328	47	1475
Hart, Lewis B., Plaquemine, La. Implement for boring wells	403,751	May 21	1806	475	47	1023
Hart, Stacy B., Peoria, Ill. Elevator for grain-separators	402,522	Apr. 30	3202	820	47	645
Hart, Thomas J., assignor to Felthousen & Sherwood, Buffalo, N. Y. Lubricator	405,895	June 25	2267	596	47	1691
Harter, Adam, Apple Creek, Ohio. Car-coupling	404,063	May 28	2315	607	47	1131
Harter, John M. (See Harsh, Samuel E., assignor.)						
Hartford, Arthur J., New York, N. Y., assignor to A. J. Hartford Steel Railway Tie Manufacturing Company, of West Virginia. Metallic railway-tie	401,949	Apr. 23	2316	602	47	468
Hartford Compressed Air Pump Company. (See Merrill, Amos B., assignor.)						
Hartford Compressed Air Pump Company. (See Merrill, Frank H., assignor.)						
Hartford Steel Railway Tie Manufacturing Company, A. J. (See Hartford, Arthur J., assignor.)						
Hartman, Charles R., Vincennes, Ind. Cultivator	404,084	May 28	2316	607 608	47	1132
Hartman, Charles R., Vincennes, Ind. Cultivator	404,085	May 28	2320	608	47	1132
Hartman, Jacob B., Wooster, Ohio. Handle	401,832	Apr. 23	2144	569	47	435
Hartman, John W., Mapleton, and H. P. Clay, Prescott, Kans. Wagon-brake	400,675	Apr. 2	350	98	47	72
Hartung, Lewis B., Canton, Ohio. Heating apparatus	400,453	Apr. 2	41	13	47	12
Harvey, Edmund A., Wilmington, Del., assignor to McDaniel & Harvey Company, Philadelphia, Pa. Apparatus for coating or galvanizing sheet metal	403,044	May 7	712	186 187	47	798
Harvey, George H., Pittsburg, Pa. Furnace and apparatus for producing and burning gaseous vapors	403,839	May 21	1944	511	47	1050
Harvey, Hayward A. (See Quimby, Edward E., assignor.)						
Harvey, William F., Lewiston, Me. Shawl-strap	405,998	June 25	2460	643	47	1723
Harwood, Herbert J., Littleton, assignor to Harwood Manufacturing Company, Boston, Mass. Folding chair or settee	404,836	June 11	683	176	47	1368
Harwood, John, Somerville, Mass. Clock-movement holder	405,258	June 18	1311	345	47	1497
Harwood Manufacturing Company. (See Harwood, Herbert J., assignor.)						
Harwood, Thomas T. H., Rockport, Mass. Package-fastener	405,775	June 25	2116	555	47	1662
Hasbrouck, Alfred, Ithaca, N. Y. Driving-gear for locomotives	402,322	Apr. 30	2884	748	47	585
Hasbrouck, Alfred, Ithaca, N. Y. Steam-generator	405,837	June 25	2198	578 579	47	1678
Haskell, Henry L., Ludington, Mich. Cutter-head	400,567	Apr. 2	205	55	47	44
Haskins, Charles D., Brooklyn, N. Y., assignor to Western Electric Company, Chicago, Ill. Quadruplex telegraphy	405,211	June 11	1234	327	47	1475
Hassel, Richard, Burlington, Iowa. Buckle	402,591	May 7	61	14	47	675
Hastings, Charles R., Buffalo, N. Y. Manner of jointing railway-rails	404,278	May 28	2026	532	47	1189
Hastings, George W., Grafton, assignor to E. M. Wood, Natick, Mass. Polishing compound	404,483	June 4	169	.....	47	1256
Hatch, Adin A., assignor to B. F. Jones, E. L. Martin, and A. W. Jones, Kansas City, Mo. Electrical signaling apparatus	403,104	May 14	817	217	47	825

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hatch, Albert T., South Elgin, Ill. Whiffletree and hook	403,664	May 21	1674	444	47	998
Hatch, Walter P., Pullman, Ill. Shears	401,168	Apr. 9	1112	295	47	218
Hathaway, George H., Boston, assignor of one-half to W. A. Perry, Winchester, Mass. Sand-box for street-cars	402,523	Apr. 30	3204	830	47	645
Hathaway, George M., New York, N. Y., and E. B. Stocking, Washington, D. C. Cupola or blast furnace	404,908	June 11	788	201	47	1387
Hattersley, Alfred, Fort Wayne, Ind. Safety-cushion for water-pipes	404,980	June 11	879	229	47	1405
Haug, John, Philadelphia, Pa. Quadruple-expansion engine	403,206	May 14	1085	286 287	47	875
Haughawout, John W., Omaha, Nebr. Snow-plow	403,665	May 21	1676	445	47	998
Haughey, Michael, St. Louis, Mo. Carriage	404,405	June 4	45	12	47	1234
Hausmann, McComb & Dunn. (See Scheffer, David M., assignor.)						
Hauseling, Henry A., *et al.* (See Haley, Charles C., assignor.)						
Hausemann, Hermann, Chicago, Ill. Veterinary incisor-cutter	403,105	May 14	823	218	47	826
Hausemann, Hermann, Chicago, assignor of two-thirds to S. B. Dunn and J. C. McComb, Cook County, Ill. Hypodermic syringe	401,950	Apr. 23	2316	602	47	468
Havens, William R., and S. E. Reaugh, Denver, Colo. Manufacturing artificial stone	404,040	May 28	2238	580	47	1113
Haviland, Joseph H., assignor to W. F. McGee, Jackson, Mich. Corset-clasp	401,650	Apr. 16	1572	406	47	373
Hawes, William L., assignor of one-half to Standard Wagon Company, Cincinnati, Ohio. Hub-band	404,837	June 11	684	176	47	1368
Hawes, William L., assignor of one-half to Standard Wagon Company, Cincinnati, Ohio. Vehicle-wheel hub	404,838	June 11	684	177	47	1368
Hawes, William L., assignor of one-half to Standard Wagon Company, Cincinnati, Ohio. Point-band for vehicle-hubs	404,839	June 11	685	177	47	1368
Hawk, Fletcher, Lebanon, Ohio. Appliance for illustrating spherical trigonometry	405,354	June 18	1443	362	47	1524
Hawkins, John T., Taunton, Mass. Inking apparatus for printing-presses	402,447	Apr. 30	3088	800 801	47	623
Hawkins, John T., Taunton, Mass. Pipe-wrench	404,619	June 4	380	92	47	1298
Hawley, Henry A. (See Farwell, Frederic E., assignor.)						
Hawley, James M., Odin, Ill. Gate	404,086	May 28	2322	608	47	1133
Haworth, George D., Decatur, Ill. Seed-planter	402,669	May 7	174	44	47	696
Hawthorne, Samuel R., Middlebury, Vt. Snow and ice guard	401,559	Apr. 16	1710	451	47	344
Hay & Todd Manufacturing Company. (See Kneip, William F., assignor.)						
Hayden & Derby Manufacturing Company. (See Desmond, John, assignor.)						
Hayden, Hiram W., assignor to Holmes, Booth & Haydens, Waterbury, Conn. Lamp	405,032	June 11	972	258	47	1425
Hayden, Jeremiah, Raymond, Me. Truss	400,454	Apr. 2	42	13	47	12
Hayes, Caldwell, Oskaloosa, Kans. Ironing device	403,045	May 7	714	187	47	799
Hayes, George, New York, N. Y. Machine for making metallic lathing	402,240	Apr. 30	2757	714 715	47	561
Haynes, Gideon, Jr., Hingham, assignor to Springfield Bicycle Manufacturing Company, Boston, Mass. Treadle for bicycles	402,926	May 7	547	145	47	766
Haya, James P., and H. E. Clemens, Wellsville, Kans. Combined wire stretcher, tightener, and splicer	400,676	Apr. 2	360	98	47	72
Hazelton, Milton W., Chicago, Ill. Feed-water heater and purifier	400,677	Apr. 2	361	99	47	72
Heacock, Elmer E., Strawn, Kans. Combination-tool	404,001	May 28	2177	571	47	1103
Heacock, Howard P., Missoula, Mont. Ter. Saw-mill feed-works	404,002	May 28	2178	572	47	1103
Head, Frederick A., Rock Island, Ill. Cultivator	403,587	May 21	1574	415	47	977
Heady, Winfield S. (See Craddick and Heady.)						
Healy, Byron J., Kalamazoo, Mich. Vehicle-spring	403,666	May 21	1677	445	47	999
Heap, James H. (See White and Wallbank, assignors.)						
Heard, Lucas A. (See Lathrop and Heard.)						
Hearne, John, assignor to J. Flannery and W. P. Elliott, New York, N. Y. Slide-valve for gas-meters	404,970	June 11	880	229	47	1405
Heath, Amasa C., and F. H. White, South Easton, Mass. Rotary cutter	403,667	May 21	1678	445	47	999
Heath, Mark A., assignor to himself and J. S. Lynch, Providence, R. I. Bale-covering	403,046	May 7	714	187	47	799
Heaviside, Arthur W., Newcastle-upon-Tyne, England. Electric-wire insulator	402,592	May 7	62	15	47	675
Hebden, Frank, Philadelphia, Pa. Shuttle-box-pattern mechanism for looms for weaving fabrics having end borders	401,702	Apr. 16	1938	505	47	385
Hebden, William, Boston, Mass. Machine for sponging cloth	404,620	June 4	381	92	47	1298
Heberling, Henry. (See Heberling, William L. and H.)						
Heberling, William L. and H., Havana, Ill. Roofing-package	405,311	June 18	1386	365	47	1513
Heckel, George B., and G. James, assignors to Rand, McNally & Company, Chicago, Ill. Map-case	405,666	June 18	1954	513	47	1625
Heckmann, Fred, Philothea, Ohio. Bundle-carrier	401,032	Apr. 9	910	242	47	182
Hedges, Samuel P., Greenport, N. Y. Steam-boiler	400,568	Apr. 2	205	58	47	44
Heermans, Thaddeus W., Chicago, Ill., assignor to Crane Elevator Company, of Illinois. Safety device for elevators	403,668	May 21	1679	446	47	999
Heffley, William H., Osage Mission, Kans. Baling-press	400,912	Apr. 9	725	196 197	47	149
Heffron, John, *et al.* (See Irving, Mark E., assignor.)						
Heggan, James, Perth Amboy, N. J., assignor to S. M. Schwab, Jr., & Co., New York, N. Y. Sewing-machine	405,776	June 25	2116	555 556	47	1662
Heggem, Charles O., assignor to Russell & Company, Massillon, Ohio. Traction-engine	400,846	Apr. 2	626	170	47	120
Heggem, Charles O., assignor to Russell & Company, Massillon, Ohio. Steam-engine	400,847	Apr. 2	627	170 171	47	121
Heidel, Gustavos, assignor to National Self Heating Sad Iron Company, St. Louis, Mo. Ironing-machine	400,678	Apr. 2	363	99	47	72
Heidel, Gustavos, and G. Frey, assignors, by mesne assignments, to National Self Heating Sad Iron Company, St. Louis, Mo. Self-heating soldering-iron	400,455	Apr. 2	43	13	47	12
Helm, Charles J. P., St. Louis, Mo. Hose-bridge	404,970	May 28	2027	582	47	1189
Heim, Hermann, Ober-Döbling, near Vienna, Austria-Hungary. Heating apparatus	401,349	Apr. 16	1390	308	47	226
Heimann, Salomon, New York, assignor of five-twentieths to F. L. Pommer, Stapleton, N. Y. Insulated wire	403,267	May 14	1087	287	47	876
Heine, August. (See Wheatley, John B., assignor.)						
Heinemann, Theodore P., assignor of one-half to F. T. Roots, Connersville, Ind. Preparing designs for advertising-cards	401,164	Apr. 9	1113	295	47	219
Heinemann, Theodore P., assignor of one-half to F. T. Roots, Connersville, Ind. Producing variable signs and advertising-cards	401,165	Apr. 9	1113	295	47	219
Heinold, Samuel L., Anderson, Ind. Combination-tool	401,821	Apr. 23	2133	557	47	432
Heinzmann, William. (See Maeurer, Henry, assignor.)						
Heister, Charles L., assignor of one-half to E. Nichols, Dunkirk, N. Y. Corn-sheller	405,838	June 25	2200	579	47	1678
Heisler, John. (See Rose, Charles O., assignor.)						
Helios, Actien-Gesellschaft für Elektrisches Licht und Telegraphenbau. (See Coerper, Carl, assignor.)						
Helman, George S., *et al.* (See Kelly, John, assignor.)						
Helmer, Nicolas, and C. L. Lietz, New York, N. Y. Hair-crimping device	404,087	May 28	2323	609	47	1133

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Helvey, George H., assignor to Hooven, Owens & Rentschler Company, Hamilton, Ohio. Traveling crane	402,524	Apr. 30	3305	830	47	646
Hemingway Manufacturing Company. (See Boggs, Henry H., assignor.)						
Hempstead, Charles S., Fairchance, Pa. Credit or store order	400,569	Apr. 2	207	56	47	44
Hench, Samuel N., and W. A. Dromgold, York, Pa. Spring-tooth harrow	402,079	Apr. 23	2514	657	47	505
Henderson, Charles, Glasgow, Scotland. Collapsible boat	403,470	May 14	1395	365 366	47	934
Henderson, Charles H., assignor to Canton Glass Company, Canton, Ohio. Grinding-machine	404,787	June 4	606	156	47	1344
Henderson, John G., Keokuk, Iowa. Washing-machine	402,927	May 7	548	145	47	766
Henderson, John W., Philadelphia, Pa. Electric car	402,080	Apr. 23	2515	657	47	505
Henderson, Samuel, Millville, N. J. Guide-tube for spinning-frames, &c	401,350	Apr. 16	1303	360	47	296
Henderson, Thomas, Liverpool, England. Grate for furnaces	403,840	May 21	1946	511	47	1050
Henkle, Asa C. (See Henkle, Curran W. and A. C.)						
Henkle, Curran W. and A. C., Washington Court-House, Ohio. Scaffold-fastening	405,734	June 25	2060	541	47	1651
Henkle, Edward A. (See Fowler and Henkle.)						
Henkle, Leonard, Rochester, N. Y. Gas-burner	405,735	June 25	2061	541	47	1651
Henkle, Leonard, Rochester, N. Y. Incandescent gas-burner	405,736	June 25	2062	541	47	1651
Henly, Thomas G., London, England. Apparatus for steeping flax	405,091	June 11	1045	279	47	1440
Hennicke, Charles A. (See Baynes and Hennicke.)						
Henrard, Dieu D. (See Jensette and Henrard.)						
Henrard, Henri. (See Jensette and Henrard.)						
Henry, Benjamin T., New Haven, Conn. Axle-box	405,737	June 25	2064	542	47	1651
Henry, Dennis B., Indian Bayou, La. Planter and cultivator	403,456	Apr. 2	44	14	47	12
Henry, John, Ardock, Dak. Ter. Automatic grain-weigher	403,189	May 14	949	251	47	850
Henry, John S., assignor of one-half to G. L. Denison, Stonington, Conn. Wrench	405,259	June 18	1311	346	47	1497
Henry, Rene L. (See Henry, Robert G. and R. L.)						
Henry, Robert G., Waterbury, and R. L. Henry, Hamden, Conn. Buckle	404,406	June 4	47	13	47	1234
Hent, Reuben W., San Francisco, Cal. Roller-bearing	401,184	Apr. 23	2215	579	47	449
Hentschel, Augustin, Berlin, Germany. Machine for melting snow and cleaning streets	401,496	Apr. 16	1612	425 426	47	327
Hepburn, Lewis L., New Haven, Conn. Magazine-gun	400,679	Apr. 2	363	99	47	72
Hepinstall, William H. (See Groark, Richard, assignor.)						
Herber, Samuel M., assignor to T. R. Peifer, Lincoln, Ill. Pillow-block	403,471	May 14	1398	366	47	934
Herbert, George W., Birmingham, county of Warwick, and S. Guinery, Epsom, county of Surrey, England; said Guinery assignor to said Herbert. Safety-pin	404,003	May 28	2179	572 573	47	1104
Herbert, Henry G., Chicago, Ill. Hot-air furnace	402,323	Apr. 30	2876	748	47	585
Herbet, David E., Amsterdam, N. Y. Inhaler	402,563	May 7	63	15	47	676
Hereknor, Emil. (See Atwater and Hereknor.)						
Herdman, George A., London, county of Middlesex, England. Felt roofing	403,588	May 21	1575	416	47	977
Herendeen, Edward W. (See Harris, John W., assignor.)						
Herendeen, Edward W., Geneva, N. Y. Spring-tooth harrow	401,833	Apr. 23	2145	560	47	435
Herman, Emil J., assignor to Safety Hatch-Door Company, St. Louis, Mo. Self-closing hatchway	404,705	June 4	490	124	47	1320
Hermance, Robert, Schuylersville, N. Y. Tubular lantern	404,538	June 4	265	61	47	1275
Herrick, Frank J., New Britain, Conn. Waist-belt loop	405,886	June 25	2070	596	47	1651
Herron, William E. E. (See Whittier and Herron.)						
Horsh, John R., and J. M. Staley, Dayton, Ohio. Sprocket-wheel	402,448	Apr. 30	3090	801	47	624
Hertel, Henry, assignor to W. Lang Company, Brooklyn, N. Y. Spring-hinge	402,324	Apr. 30	2887	748	47	585
Herz, Otto. (See Albrecht, Johannes, assignor.)						
Herzig, Edward, West Hoboken, assignor to R. H. Simon, Union, N. J. Stop mechanism for looms	404,407	June 4	48	13	47	1234
Hess, John G., Westminster, Md. Road-cart	401,834	Apr. 23	2146	560	47	435
Hesse, Charles, Danville, Ill. Washing-machine	403,669	May 21	1621	446	47	999
Hester, Henry G., New Orleans, La. Elevator-hatchway	401,273	Apr. 9	1275	340	47	250
Heuser & Co., Franz. (See Andre, Emil, assignor.)						
Heverin, Charles L., Philadelphia, Pa. Hydrocarbon-burner	402,241	Apr. 30	2779	715	47	562
Heverin, Charles L., Philadelphia, Pa. Burning hydrocarbon oil	402,242	Apr. 30	2781	715	47	562
Hewitt, Leslie, assignor of one-half to Pratt & Letchworth, Buffalo, N. Y. Combined snap-hook and loop	405,887	June 25	2270	597	47	1691
Hewitt, William, assignor of one-half to F. B. Pollard, London, Ontario, Canada. Sulky harrow	402,670	May 7	176	45	47	697
Heysinger, Isaac W., Philadelphia, Pa. Self-closing cover for inkstands, &c	404,539	June 4	267	64	47	1275
Heysinger, Isaac W., Philadelphia, Pa. Skein-holder	405,411	June 18	1525	405	47	1541
Hiatt, Elwood E., Noblesville, Ind. Bed-furnace	404,220	May 28	2630	682	47	1189
Hibbert, William, Manchester, county of Lancaster, England. Apparatus for purifying atmospheric air	404,021	June 4	382	92	47	1298
Hibbets, James S., Ludell, Kans. Seeding attachment for plows	402,243	Apr. 30	2762	715 716	47	562
Hicks, John C., Minneapolis, Minn. Chain for stock-car partitions	401,274	Apr. 9	1275	340	47	250
Hicks, Charles E., Somerville, Mass. Writing-case	402,244	Apr. 30	2767	716	47	563
Hicks, Henry C., Minneapolis, Minn. Self-propelling motor	405,553	June 18	1760	465	47	1590
Hicks Induction-Light and Motor Company. (See Hicks, Thomas H., assignor.)						
Hicks, Oliver H., Chicago, Ill. Toilet-paper roll	400,913	Apr. 9	728	197	47	149
Hicks, Oliver H., Chicago, Ill. Package of toilet-paper	404,622	June 4	384	92	47	1298
Hicks, Oliver H., Chicago, Ill. Perforated paper	405,412	June 18	1528	405	47	1542
Hicks, Oliver H., Chicago, Ill. Paper box for cigars	405,413	June 18	1530	405	47	1542
Hicks, Thomas H., Detroit, Mich., assignor to Hinds Induction-Light and Motor Company, of Michigan. System of electrical distribution and conversion	402,671	May 7	178	45	47	697
Hicks, Thomas H., Detroit, Mich., assignor to Hicks Induction-Light and Motor Company, of Michigan. Secondary battery	405,213	June 11	1236	328	47	1475
Hicks, William A., Rankin Station, Pa. Combined hand-cuffs and nippers	403,368	May 14	1088	287	47	876
Hieronymus, Jasper N., Fairbury, Ill. Machine for shocking sheaves of small grain	404,449	Apr. 30	3091	802	47	624
Higgins, Clinton D. (See Cockfield and Higgins.)						
Higgins, Daniel, assignor to himself and J. J. Costello, Boston, Mass. Sewer-trap	403,106	May 14	821	218	47	826
Higgins, Freeman, Manchester, N. H. Lathe-chuck	403,589	May 21	1576	416	47	977
Higgins, George B., North Indianapolis, Ind. Basket	402,825	May 7	412	108	47	710
Higginson, John, St. Louis, Mo. Car-truck bolster	405,703	June 25	2012	529	47	1642
Higgison, Charles W. (See Porter, Andrew C., assignor.)						
Higham, Daniel, assignor to Higham Electric Motor Company, Philadelphia, Pa. Prevention of sparking in electric motors and generators	400,680	Apr. 2	366	99	47	73
Higham Electric Motor Company. (See Higham, Daniel, assignor.)						
Higinbotham, Harry G. (See Burnett, Charles N., assignor.)						
Hilbert, Frank J. (See Carter, John T., assignor.)						
Hilderbrand, Edward L., H. Rost, and C. L. Davis, Sullivan, Ind. Draft-spring	405,162	June 11	1152	[illegible]	47	1460

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Hile, John W., Valley Falls, Kans. Egg-tray for incubators	404,041	May 28	2239	587	47	1114
Hilkier, Christian F., Copenhagen, Denmark. Thermostat	403,937	May 28	2061	546	47	1035
Hill, Benjamin B., Philadelphia, Pa. Time-stamp	401,033	Apr. 9	912	244	47	183
Hill, Benjamin B., Philadelphia, Pa. Self-inking hand hand-stamp	405,704	June 25	2013	529	47	1642
Hill, Chauncy H., Minneapolis, Minn. Band-cutter	404,840	June 11	987	177	47	1360
Hill, George S., Lynn, assignor to J. Reece, Boston, Mass. Sewing-machine for finishing button-hole pieces	400,914	Apr. 9	729	197	47	149
Hill, James, Newark, N. J. Grain-drier	405,214	June 11	1237	328 329	47	1476
Hill, James D., Nashville, Mo. Truck-loader	400,457	Apr. 2	46	14	47	12
Hill, Joseph, and J. F. O'Donnell, London, county of Middlesex, England. Working and interlocking railway signals and points	404,408	June 4	51	13, 14	47	1235
Hill, Mortimer F., Belleville, Ill. Gate-latch	404,971	June 11	981	229	47	1406
Hill, Samuel C., assignor of one-half to A. A. Schmidt, Newark, N. J. Air-motor	402,525	Apr. 30	3206	830	47	646
Hill, Thomas, Jersey City, N. J. Dumping-cart	405,777	June 25	2119	556 557	47	1662
Hill, Wade H. (See Rheutan, Abram A., assignor.)						
Himmelstein, John, Milwaukee, Wis. Collar-fastener	404,409	June 4	52	14	47	1235
Hinds Induction-Light and Motor Company. (See Hicks, Thomas H., assignor.)						
Hinds, John M., near Palmyra, Ind. Napkin-holder table attachment	404,410	June 4	53	14	47	1236
Hines, John F., Sr., San Antonio, Tex. Rotary engine	401,835	Apr. 23	2148	560	47	435
Hinkel, Ernst P., Offenbach-on-the-Main, Germany. Album-clasp	405,473	June 18	1633	431 432	47	1563
Hinkle, Philip, San Francisco, Cal. Grinding-pan	400,681	Apr. 2	367	100	47	73
Hinkley, George F. (See Hoogerzeil and Hinkley.)						
Hinkley, Mortimore, Mercer, Pa. Chimney-top	405,667	June 18	1955	513	47	1625
Hinphy, William J., Montreal, Quebec, Canada. Apparatus for drawing corks	402,245	Apr. 30	2768	716	47	563
Hinrichs & Co. (See Kleemann, Adolph, assignor.)						
Hinsdale, William R., Hoboken, N. J. Ingot-forming apparatus	402,325	Apr. 30	2888	748 749	47	586
Hinsdale, William R., Hoboken, N. J. Ingot-casting machine	404,909	June 11	790	201	47	1387
Hinson, James A., Des Moines, Iowa. Thill-coupling	401,885	Apr. 23	2218	579	47	450
Hipperling, William, New York, N. Y., assignor to S. A. Ginna, Plainfield, N. J., and R. A. Donaldson, Brooklyn, N. Y. Machine for applying heads to tin-can bodies	401,886	Apr. 23	2219	579 580	47	450
Hipperling, William, New York, N. Y., assignor to S. A. Ginna, Plainfield, N. J., and R. A. Donaldson, Brooklyn, N. Y. Machine for soldering tin cans	401,887	Apr. 23	2222	580	47	451
Hipperling, William, New York, N. Y., assignor to S. A. Ginna, Plainfield, N. J., and R. A. Donaldson, Brooklyn, N. Y. Machine for slitting sheets of tin	403,533	May 21	1507	395	47	964
Hironimus, John, Mount Vernon, assignor of one-half to F. C. Althoff, Evansville, Ind. Carriage-spring	403,885	May 21	2004	526	47	1002
Histon, Arthur, Yonkers, assignor of one-half to Otis Brothers & Company, New York, N. Y. Gas-engine	400,458	Apr. 2	47	14	47	13
Hitchcock, Charles A., *et al.* (See Burnley, William, assignor.)						
Hite, Thomas B., Seattle, Wash. Ter. Saw-swaging machine	404,623	June 4	385	93	47	1296
Hitt, James W., Lisle, assignor to T. L. Corwin, Marathon, N. Y. Tanning	401,434	Apr. 16	1518	.....	47	309
Hoag, Marble B., Mecklenburg, N. Y. Crate	402,826	May 7	412	108	47	740
Hoard, John W. (See Bartlett and Wiggin, assignors.)						
Hoard, John W. (See Wiggin and Bartlett, assignors.)						
Hobbe, Charles H., and T. P. Whelan, Slatersville, R. I. Lease-rod for looms	401,351	Apr. 16	1304	309	47	297
Hobbs, John C., Lockport, N. Y. Operating electric furnaces	403,752	May 21	1607	475	47	1023
Hochhausen, William, Brooklyn, N. Y. Dynamo-electric machine	404,484	June 4	169	39, 40	47	1256
Hocking Valley Manufacturing Company. (See Klesner, Leonard, assignor.)						
Hodel, Joseph A., Cumberland, Md. Chimney	401,836	Apr. 23	2149	561	47	436
Hodges, George H., and T. Lonergan; said Lonergan assignor to T. D. Lonergan, Canton, Mass. Lappet-loom	400,915	Apr. 9	730	198	47	150
Hodgkinson, James, Moorhead, Minn. Heating-drum	403,349	May 14	1211	322	47	901
Hodgson, John G. (See Norton and Hodgson.)						
Hoe & Co., R. (See Crowell, Luther C., assignor.)						
Hoe, Peter S., *et al.* (See Crowell, Luther C., assignor.)						
Hoe, Robert, *et al.* (See Crowell, Luther C., assignor.)						
Hoefer, Frederick W., Freeport, Ill. Stove-pipe damper	401,166	Apr. 9	1114	296	47	219
Hoepfner, George, and H. Wnest, New York, N. Y. Rung-socket plate for trucks	405,474	June 18	1635	432	47	1563
Hoerle, John, Brooklyn, N. Y. Shoe-varnish receptacle	402,396	Apr. 30	2892	749	47	586
Hoey, John J., New York, N. Y. Inkstand	405,033	June 11	973	259	47	1425
Hoffman, Charles A. (See Cleveland and Hoffman.)						
Hoffman, Edward T., Summanduwot, Kans. Dirt-loading machine	402,450	Apr. 30	3093	802 803	47	624
Hoffman, Ross J., Binghamton, N. Y. Evaporating apparatus	405,738	June 25	2065	542	47	1651
Hogeland, Alexander, Lincoln, Nebr. Water-elevator	402,160	Apr. 30	2654	687	47	541
Hogg, James, and A. H. Robinson, Lawrence, Mass. Spindle for spinning-machines	401,703	Apr. 16	1939	506	47	385
Hohenstein, Hugo, New York, N. Y. Lamp-shade	404,540	June 4	272	64	47	1276
Hohmeier, Philip, and J. Ball, assignors of one-third to J. Nichol, Waterloo, Ontario, Canada. Refrigerator packing-box	400,768	Apr. 2	483	134	47	97
Holhorst, Frederick, Brooklyn, N. Y. Awning	405,475	June 18	1636	432	47	1563
Holt, Daniel M., Morris, assignor to Coleman Hardware Company, Chicago, Ill. Spring-hinge	403,670	May 21	1663	446	47	1000
Holand, George W., assignor to W. W. Thornton, Shelbyville, Ill. Veterinary instrument	403,534	May 21	1510	395	47	964
Holbrook, Solomon H. (See Garland, Eben F., assignor.)						
Holck, Charles F., Laporte City, Iowa. Draft-equalizer	405,476	June 18	1637	432	47	1563
Holcomb, Fred A., Grand Rapids, Mich. Telephone system	402,928	May 7	548	145	47	766
Holcomb, Fred A., Grand Rapids, Mich. Telephone system	402,929	May 7	552	146	47	767
Holdroyd, George H. (See Cooper, Clayton, and Holdroyd.)						
Holgate, George, Philadelphia, Pa. Curing and preserving meats	402,736	May 7	274	70	47	715
Holland, Franklin, assignor to Stanley Works, New Britain, Conn. Machine for driving glaziers' points	403,886	May 21	2005	526 527	47	1002
Holland, Mary C. (See Holland, Timothy, assignor.)						
Holland, Timothy, assignor to M. C. Holland, St. Paul, Minn. Steam-radiator	404,373	May 28	2242	712	47	1211
Holleman, Frederik A., Oisterwyk, Netherlands. Air-brake	405,705	June 25	2014	529	47	1642
Holley, J. R. (See Haab, Henry, assignor.)						
Hollister, Elisha S. (See Haab, Henry, assignor.)						
Hollister, William H., assignor of one-half to W. W. Snow, Ramapo, N. Y. Car-wheel chill	405,355	June 18	1444	382	47	1525
Holly, Birdsill, Lockport, N. Y., assignor of one-fourth to T. S. Bellah, Wilmington, Del. Vise	403,107	May 14	825	218	47	827
Holly, Carlos, Lockport, N. Y. Compound steam-engine	401,167	Apr. 9	1116	296	47	219

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Holm, Carl A., Chicago, Ill. Odor-preventing device for cooking-stoves	404,194	May 28	2491	651	47	1165
Holman, Selva E. (See Burt and Holman.)						
Holmes, Booth & Haydens. (See Hayden, Hiram W., assignor.)						
Holmes, Britain. (See Holmes, Edward and B.)						
Holmes, Edward and B., Buffalo, N. Y. Coffin-fastener	400,570	Apr. 2	209	56	47	44
Holmes, John F. (See Shepherd and Holmes.)						
Holmes, Thomas J., Chicago, Ill. Safety appliance for stamping or other machines	404,624	June 4	386	93	47	1299
Holmes, William H., Charlotte, Vt. Lifting-jack	402,161	Apr. 30	2656	687	47	541
Holmes, William W. (See Glines and Holmes.)						
Holst & Fleischer. (See Carlsen, Gustav, assignor.)						
Holt, Elijah W. (See Burns, Frank, assignor.)						
Holt, James. (See Holt, Thomas and J.)						
Holt, Thomas and J., Liverpool, county of Lancaster, England. Flushing-cistern for water-closets, &c.	402,248	Apr. 30	2770	717	47	563
Holt, Whitmon A., Harrison, Me. Seed-planter and fertilizer-distributer	405,477	June 18	1637	433	47	1564
Holt, Whitmon A., Harrison, Me. Seed-planter and fertilizer-distributer	405,478	June 18	1640	433, 434	47	1564
Holt, William. (See Thomas, Henry O., assignor.)						
Homan, William C., assignor to E. Miller & Company, Meriden, Conn. Suspension device	401,781	Apr. 23	2064	539	47	421
Homan, William C., assignor to E. Miller & Company, Meriden, Conn. Lamp-standard	403,841	May 21	1948	511	47	1051
Homewood, Arthur, assignor of one-half to W. S. Haines, Wilmington, Del. Thill-coupling	405,414	June 18	1532	405	47	1542
Hood, Cyrus S., Corning, N. Y. Side-wall hot-air register	405,092	June 11	1046	279, 280	47	1440
Hoogerzeil, Peter, Jr., and G. F. Hinkley, Beverly, Mass. Stove-oven	403,938	May 28	2083	546	47	1065
Hook, James P. H., Rome, N. Y. Ferrule for reel-plates	402,594	May 7	64	15	47	676
Hooker, Joseph S., Hastings, county of Sussex, England. Inhaler	400,769	Apr. 2	494	134	47	97
Hooker, William C., Abingdon, Ill. Gate	404,625	June 4	387	93	47	1299
Hooker, William D., St. Louis, Mo. Double-cylinder direct-acting engine	403,108	May 14	827	219	47	827
Hooper, Francis X., and C. Petersen, Baltimore, Md. Elevator-hatchway	405,163	June 11	1153	308	47	1460
Hooton, John A., and G. L. Wiard, assignors to themselves and H. W. Mathews, Atkinson, Nebr. Combined hay-rake and baling-press	405,034	June 11	974	259	47	1425
Hooven, Owens & Rentschler Company. (See Helvey, George H., assignor.)						
Hoover, De Witt C., assignor of one-half to R. J. Getz, Buffalo, N. Y. Package for photographic plates	402,827	May 7	413	106	47	741
Hoover & Gamble. (See Brown, Robert, assignor.)						
Hopcraft, Lewis, Stamford Hill, county of Middlesex, England. Self-feeding furnace-grate	404,706	June 4	490	124	47	1320
Hope, John, Liverpool, county of Lancaster, England. Game-counter	400,770	Apr. 2	495	134, 135	47	97
Hopedale Elastic Fabric Company. (See Lapworth, William, assignor.)						
Hopkins, Albert N., Crookston, Minn. Wagon-tire	401,275	Apr. 9	1276	341	47	250
Hopkins, George I., Manchester, N. H. Circuit-closer for railway-car telegraphs	402,828	May 7	415	109	47	741
Hopkins, George I., Manchester, N. H. Coupler for electric conductors	402,829	May 7	416	109	47	741
Hopkins, Herbert, and J. R. Perry, Wilkes-Barré, Pa. Stove	402,451	Apr. 30	3095	803	47	625
Hopkins, Louis M., Chicago, Ill. Pen-holder	401,435	Apr. 16	1519	402	47	309
Hopkins, William. (See Picking and Hopkins.)						
Horn, George A., Newark, N. Y. Fence	402,595	May 7	65	15	47	676
Horne, John W., Boston, Mass. Ledger or similar account-book	401,497	Apr. 16	1613	426, 427	47	327
Horner, Charles, Halifax, county of York, England. Thimble	404,910	June 11	792	202	47	1388
Horner, Richard C. (See Hyde and Horner.)						
Horrocks, Edwin. (See Horrocks, Joseph and E.)						
Horrocks, Joseph and E., Bradford, county of York, England. Picking mechanism for looms	402,452	Apr. 30	3095	803	47	625
Horrocks, Joseph and E., Bradford, county of York, England. Shuttle-relief mechanism for looms	402,453	Apr. 30	3096	803, 804	47	625
Horsey, George F., assignor to C. L. Bartlett and H. C. Allbright, Utica, N. Y. Adjustable pad for cleansing and polishing teeth	403,350	May 14	1212	322	47	901
Horton, Benjamin S., Vermilion, Ohio. Sea-cock	402,454	Apr. 30	3098	804	47	626
Horton & Mabie. (See Horton, Stephen D., assignor.)						
Horton, Stephen D., assignor to Horton & Mabie, Peekskill, N. Y. Joint for fire-pot linings	400,848	Apr. 2	629	171	47	121
Hosea, Lewis M., Cincinnati, Ohio. Street-railway	401,352	Apr. 16	1395	369	47	287
Hosford, Leonard D., Brooklyn, N. Y. Electroplating lead pipes	403,429	May 14	1335		47	923
Hosford, Rezin, Lebanon, Ind. Dredging-bucket	401,436	Apr. 16	1522	402, 403	47	310
Hotchkiss, Edward, assignor to W. Stromberg, St. Louis, Mo. Waffle-iron	401,560	Apr. 16	1710	451	47	344
Hotchkiss, Zeroy P., assignor of one-fourth to C. J. Ward, Oak Park, Ill. Printing-telegraphy	403,472	May 14	1399	366, 367	47	935
Hough, Harry, Peckham, county of Surrey, England. Appliance for holding umbrellas, &c.	405,554	June 18	1762	465	47	1590
Hough, John D. (See Wilson and Hough.)						
Hough, John D., *et al.* (See Wilson, George T., assignor.)						
Houghton, Darius, Skowhegan, Me. Arc lamp	403,671	May 21	1686	447	47	1000
Houser, Edgar W., Syracuse, N. Y. Belt-shifter for elevators	401,951	Apr. 23	2318	603	47	468
Houser, Edgar W., Syracuse, N. Y. Safety-clutch for elevators	405,555	June 18	1763	465	47	1591
Houston, C. P. (See Crouch, Frank J., assignor.)						
Houston, Lu, Shockey, Kans. Kitchen-cabinet	403,590	May 21	1576	416	47	977
Hovey, Ansel N., Jackson, Mich. Adjustable shelf-bracket	404,004	May 28	2180	573	47	1104
Hovey, Frank A., Farmington Falls, assignor of one-half to H. Elwell, East Wilton, Me. Coffee-pot	404,707	June 4	491	124	47	1321
Hovey, Franklin S. (See Stokes, Hilyard, assignor.)						
Howard, Fred, Hyde Park, Ill. Puzzle	402,017	Apr. 23	2418	630	47	457
Howard, James H. (See Howard and Bousfield.)						
Howard, John H., and J. H. and E. T. Bousfield, Bedford, England. Baling-press	404,972	June 11	882	230	47	1406
Howard, John W., *et al.* (See Solano, Rensaldo, assignor.)						
Howard, Mendel. (See Von Blitzingslöwen and Howard.)						
Howard, Mendel, New York, N. Y. Brooch-pin	402,672	May 7	178	45	47	697
Howard Watch and Clock Company, E. (See Learned and Murray, assignors.)						
Howard, William, London, county of Surrey, England. Making foot-balls	405,999	June 25	2461	643, 644	47	1723
Howe, Charles E. (See Law and Howe.)						
Howe, Thomas B., assignor to Scranton Jar and Stopper Company, Scranton, Pa. Bottle-stopper	405,035	June 11	977	260	47	1425
Howell, George W., Covington, Ky. Wheel	405,093	June 11	1048	280	47	1440
Howes, Albert P., Worcester, Mass. Automatic float tank-cock	402,596	May 7	66	16	47	676
Howes, Otis S., assignor of one-half to Halliday Bros., Cairo, Ill. Apparatus for purifying water	404,485	June 4	173	40	47	1257

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Howland, George B., Pontiac, Ill. Grain-meter	400,849	Apr. 2	630	171	47	121
Howland, George L., Topham, Me. Delivery-wagon	403,842	May 21	1950	512	47	1051
Howlett, John H., Washington, D. C. Surveyor's corner-stake	401,782	Apr. 23	2065	539	47	421
Hoyt, Fred J., assignor, by mesne assignments, to Hoyt Frog and Crossing Company, Chicago, Ill. Sliding railway-frog	402,830	May 7	417	109, 110	47	741
Hoyt Frog and Crossing Company. (See Hoyt, Fred J., assignor.)						
Hoyt, Gabriel. (See Walker, Enos L., assignor.)						
Hoyt, Henry H., *et al.* (See Knudsen, Andrew P., assignor.)						
Hoyt, Lucius P., Aurora, Ill. Feed-roll for planing and surfacing machines	404,486	June 4	174	41	47	1257
Hoyt, Maltbie, *et al.* (See Knudsen, Andrew P., assignor.)						
Hoyt, Matthew L., and H. F. Murray, Ballston Spa, N. Y.; said Murray assignor to said Hoyt. Churn	404,281	May 28	2630	683	47	1190
Hubbard, Nelson E. (See Wolfe, Horace S., assignor.)						
Hubbard, William H. (See Macnamar, William, assignor.)						
Hubbell, Algernon S., Norwich, Conn. Pen-holder	403,100	May 14	951	251	47	850
Hubbell, George L., Bridgeport, Conn. Hand sewing-machine	402,597	May 7	67	16	47	677
Hubbell, John M., assignor of one-half to J. W. Parmelee, Wilkes-Barré, Pa. Vehicle-axle	405,356	June 18	1445	383	47	1526
Huber, Joseph. (See Wolf, Max, assignor.)						
Huber, Katie, assignor of one-half to C. Powell, Milwaukee, Wis. Soap-receptacle	404,354	May 28	2743	712	47	1211
Hubert, Philip G., New York, N. Y. Wash-basin	404,541	June 4	273	65	47	1235
Hubert, Philip G., New York, N. Y. Time-valve	404,542	June 4	275	65	47	1276
Hudson, Charles E., Leominster, Mass. Appliance for uniting and repairing rubber hose	402,673	May 7	180	46	47	698
Hudson, James F. (See Turner and Hudson.)						
Huehn, Frederick A., Chicago, Ill. Combination household-tool	402,327	Apr. 30	2893	749	47	586
Huether, Paul, Allegheny, Pa. Printer's chase	405,479	June 18	1645	434	47	1565
Huewe, George A., Cincinnati, Ohio. Necktie-holder	404,411	June 4	55	14	47	1236
Huffman, Pleasant B., assignor of one-half to G. W. and H. S. Leeper, Chandlerville, Ill. Curtain-fixture	402,508	May 7	69	16	47	677
Huffman, William C., assignor of one-half to J. M. Leavell, Albany, Ind. Washing-machine	403,473	May 14	1406	367	47	936
Hugershoff, William, Brooklyn, N. Y. Atomizer-nozzle	402,831	May 7	418	110	47	741
Hughart, John H. P., *et al.* (See Scott and O'Horn, assignors.)						
Hughes, Frederick J., Watford, Ontario, Canada. Car-coupling. (Reissue)	10,999	Apr. 30	3241	841	47	653
Hughes, George H., *et al.* (See Wicks, Joseph, assignor.)						
Hughes, Henry A., Rio Grande, N. J. Apparatus for removing end sections from stalks	402,081	Apr. 23	2518	657	47	506
Hughes, Henry A., Rio Grande, N. J. Sugar production from sorghum	402,082	Apr. 23	2519	657	47	506
Hughes, Henry A., Rio Grande, N. J. Extracting sugar from sorghum by diffusion	402,083	Apr. 23	2521	658	47	507
Hughes, Henry B., Philadelphia, Pa. Gold-beater's hammer	402,526	Apr. 30	3207	830, 831	47	646
Hughes, L. A., *et al.* (See Fisher, Charles H., assignor.)						
Hughes, Samuel, Charleston, S. C. Piston-packing	403,753	May 21	1808	476	47	1023
Hughes, Theophilus V., Holywell, North Wales, and C. R. Chambers, South Kensington, county of Middlesex, England. Manufacture of carbon filaments	405,480	June 18	1646	434	47	1566
Hughes, Willard C., *et al.* (See Wicks, Joseph, assignor.)						
Hulburd, Thomas. (See Weatherburn, Robert, assignor.)						
Hull, John S. (See Slaysman, Alexander, Jr., assignor.)						
Hull, John S., Baltimore, Md. Can-soldering machine	404,195	May 28	2492	652	47	1165
Hull, John S., and T. A. Hand, Baltimore, Md. Processing apparatus	401,276	Apr. 9	1277	341	47	250
Hull, Wayne J., Alexandria, Dak. Ter. Suppository-machine	401,838	Apr. 23	2150	561	47	436
Humes, John J. R., Camberwell, county of Surrey, England. Hydrocarbureted-air engine	400,850	Apr. 2	632	171, 172	47	121
Humphrey, Charles S., and H. H. Good, Bellefontaine, Ohio. Chill-cove for casting sash-weights	403,191	May 14	952	252	47	850
Humphrey, George C., Delphi, N. Y. Stove-pipe damper	403,672	May 21	1689	447	47	1001
Humphreys, Willis B., *et al.* (See Taylor, Elbert C., assignor.)						
Humphrys, Charles. (See Phillips and Humphrys.)						
Hunstock, Robert H., San Antonio, Tex., and E. Chávez, Guanajuato, Mexico. Clinical thermometer	405,036	June 11	978	260	47	1426
Hunt, Charles R., Redding, assignor of one-half to C. K. McElwee, Auburn, Cal. Steam and water motor	403,430	May 14	1337	351	47	923
Hunt, James W., Paw Paw, assignor to F. C. Austin, Chicago, Ill. Well-sinking apparatus	403,047	May 7	716	187, 188	47	709
Hunt, John, New York, N. Y. Mechanical movement	402,018	Apr. 23	2420	631	47	457
Hunt, Joseph H., West Troy, N. Y. Steering center-board	404,626	June 4	388	94	47	1299
Hunt, Ozello R., Minneapolis, Minn. Feed device for wire-weaving machines	403,169	May 14	831	219	47	838
Hunt, Thomas G. (See Remington, George W., assignor.)						
Hunter, James C., *et al.* (See Tuerk, Frederick W., Jr., assignor.)						
Hunter, John, *et al.* (See Tuerk, Frederick W., Jr., assignor.)						
Hunter, Rudolph M., Philadelphia, Pa. Current-collecting device for electric railways	400,916	Apr. 9	738	199	47	151
Hunter, Rudolph M., Philadelphia, Pa. Incline electric railway	402,084	Apr. 23	2523	656	47	507
Hunter, Rudolph M., Philadelphia, Pa. Electric railway	402,832	May 7	419	110	47	742
Hunter, Rudolph M., Philadelphia, Pa. Electric railway	403,192	May 14	953	252	47	850
Hunter, Rudolph M., Philadelphia, Pa. Means for the electrical propulsion of boats	403,193	May 14	900	252, 253	47	853
Hunter, Rudolph M., Philadelphia, Pa. Electric railway	403,754	May 21	1809	476	47	1024
Hunter, Rudolph M., Philadelphia, Pa. Electric railway	405,556	June 18	1764	466	47	1591
Hunter, Rudolph M., Philadelphia, Pa. Electric motor or dynamo-electric machine	405,668	June 18	1956	513	47	1625
Hunter, Wesley A., Idaho Springs, Colo. Saw-jointer	401,277	Apr. 9	1279	341	47	251
Huston, Stephen W., Wilkinsburg, Pa. Sliding-door lock	404,412	June 4	55	15	47	1236
Hurlburt, Edward. (See Benjamin, Dana H., assignor.)						
Hurlburt, Kellogg T., Lakewood, N. J. Folding chair	405,839	June 25	2201	579	47	1679
Hurley, Robert E., Des Moines, Iowa. Conveyer	403,269	May 14	1089	287, 288	47	876
Hurly, Michael B., Quebec, Canada. Switch-stand signal	402,328	Apr. 30	2994	750	47	586
Hurrel, Cyrus F., Holton, Kans. Pipe-coupling	404,413	June 4	56	15	47	1236
Hursh, Abraham, Philadelphia, Pa. Hot-water reservoir for ranges or stoves	403,270	May 14	1092	289	47	877
Hursh, Abram, Yellow Springs, Ohio. Door-check	404,627	June 4	390	94	47	1299
Husted, Sherman. (See Miller, Charles A., assignor.)						
Hutchinson, Alfred B., assignor to Glen Cove Machine Company, (limited,) Brooklyn, N. Y. Wood-planing machine	404,068	May 28	2324	609, 610	47	1133
Hutchinson, Edward, New York, N. Y. Head-block for vehicles	402,737	May 7	275	71	47	715
Hutchinson, Edward, New York, N. Y. Vehicle-spring	402,833	May 7	421	110	47	742
Hutchinson, Emily S., Peekskill, N. Y. Car-window screen	405,669	June 18	1957	514	47	1626
Hutchinson, Jesse L., Baltimore, Md. Ventilating apparatus for water-closets	404,196	May 28	2494	652	47	1166

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hutchinson, Mary E. (See Hutchinson, William F., assignor.)						
Hutchinson, William F., assignor to M. E. Hutchinson, Lynn, Mass. Toothpick-machine	404,282	May 28	2632	683	47	1190
Hutchinson, William N., Silverdale, Eastbourne, county of Sussex, England. Rotary engine	402,834	May 7	422	111	47	742
Hutchison, Andrew C., *et al.* (See Smith, Wilson R., assignor.)						
Hutson, Ezra, Fairport, N. Y. Wire-fence machine	405,094	June 11	1049	280	47	1440
Hutton, George H., Baltimore, Md. Thill-coupling	402,527	Apr. 30	3209	831	47	646
Hutton, George H., Baltimore, Md. Jump-seat for vehicles	405,557	June 18	1767	466	47	1591
Huyett, Cecelia E., *et al.* (See Huyett, Miles C., assignor.)						
Huyett, Miles C., assignor, by mesne assignments, to C. E. Huyett and A. C. Roller, Detroit, Mich. Car-window ventilator	405,312	June 18	1387	365	47	1513
Hyams, Rachel B. (See Marks, Solomon, assignor.)						
Hyatt, Charles M., assignor to Embossing Company, Albany, N. Y. Domino	405,164	June 11	1155	308	47	1461
Hyatt, Henry A. (See Kuhn, Henry, assignor.)						
Hyatt, John W., Newark, N. J. Valve mechanism for washing filter-beds	402,738	May 7	276	71	47	715
Hyatt, John W., Newark, N. J. Apparatus for filtering	404,708	June 4	492	125	47	1321
Hyatt, John W., Newark, N. J. Strainer for granular filter-beds	404,911	June 11	793	{202 203	47	1388
Hyatt, John W., Newark, N. J., assignor to Hyatt Pure Water Company, of New Jersey. Check-valve for filter constructions	405,670	June 18	1959	514	47	1626
Hyatt Pure Water Company. (See Hyatt, John W., assignor.)						
Hyde, Elwin R., Springfield, Mass. Driving and belt-shifting mechanism	404,709	June 4	494	126	47	1321
Hyde, Elwin R., Springfield, Mass. Surface grinding or planing machine	405,706	June 25	2016	{529 530	47	1643
Hyde, Elwin R., and R. C. Horner, Springfield, Mass. Surface-grinding machine	401,278	Apr. 9	1280	{341 342	47	251
Hyde, Fred W., and A. Z. Dotterer, Davisville, Cal. Gate	404,973	June 11	884	231	47	1406
Hydraulic Elevator Company. (See Foster, Charles E., assignor.)						
Ide, Albert L., Springfield, Ill. Lubricating device for steam-engines	400,682	Apr. 2	369	100	47	73
Ide, Samuel, Medina, N. Y. Lathe-chuck	400,459	Apr. 2	48	15	47	13
Illingsworth, James B., Monroe, La. Machine for setting car-springs	404,069	May 28	2396	610	47	1134
Illingworth, George C., Raritan, N. J. Nut-lock	402,739	May 7	279	72	47	716
Illingworth, John, Newark, N. J. Apparatus for casting ingots	403,755	May 21	1812	476	47	1024
Imandt, Christian, New York, N. Y. Refinishing curtains	404,543	June 4	276	.....	47	1277
India Rubber Comb Company. (See Schlesinger, Augustus D., assignor.)						
Ingersoll, Mary, Erie, Pa. Check-hook for harness	403,351	May 14	1214	322	47	901
Ingersoll-Sergeant Rock Drill Company. (See Sergeant, Henry C., assignor.)						
Ingram, Frederick F., Detroit, Mich. Bag-lock	405,357	June 18	1446	383	47	1525
Ingram, James, Lawrence, Mass. Chain	403,591	May 21	1577	417	47	978
Inman, Charles B., Leeds, county of York, England. Bottle washing and brushing machine	401,561	Apr. 16	1713	{451 452	47	344
Insley, Robert, Bateham, Kans. Cultivator	402,247	Apr. 30	2772	717	47	564
International Gas and Fuel Company. (See Wright, Walter B., assignor.)						
International Portelectric Company. (See Williams, John T., assignor.)						
Interstate Fire Alarm Company. (See Ruddick, John J., assignor.)						
Ireland, David M. (See Matthews and Ireland.)						
Iron Car Company. (See Goodfellow, James T., assignor.)						
Ironmonger, Henry W., *et al.* (See Kieser, Charles, assignor.)						
Irvine, Samuel. (See Palm and Smith, assignors.)						
Irving, Mark E., assignor of two-thirds to C. S. Dyer and J. Heffron, Detroit, Mich. Boiler	404,912	June 11	796	{203 204	47	1388
Irwin, Charles H., Wilmington, Ohio. Auger-bit	404,197	May 28	2495	652	47	1166
Irwin, George M. (See Rhoads, Jonathan A., assignor.)						
Iten, John J., Davenport, Iowa. Machine for imparting motion	401,168	Apr. 9	1118	296	47	220
Iusti, Johann A. W., assignor to himself and C. Kerrison, Jr., Charleston, S. C. Vegetable-cutter	402,740	May 7	280	73	47	716
Ivans, Thomas J., New York, N. Y. Pump	402,835	May 7	423	{111 112	47	742
Iversen, Ole, Anoka, Minn. Window-ventilator	405,373	June 18	1388	366	47	1513
Ives & Co., Hobart B. (See Smith, Thomas S., assignor.)						
Ivory, James W., Philadelphia, Pa. Dental rubber-dam clamp	400,771	Apr. 2	497	135	47	97
Ivory, James W., Philadelphia, Pa. Dredge-box	401,651	Apr. 16	1573	486	47	373
Iwanowski, Armand C., Moscow, Russia. Thermal circuit-closer for fire-alarms	400,917	Apr. 9	739	199	47	151
Jachmann, William, New York, N. Y. Dumping-wagon	401,437	Apr. 16	1523	403	47	311
Jackson, Peter H., San Francisco, Cal. Support for beams or girders	405,358	June 18	1448	383	47	1525
Jackson, Peter H., San Francisco, Cal. Frame for illuminating-tiles	405,778	June 25	2120	557	47	1663
Jackson, Thomas B., Belmont, Ohio. Fire-place heater	405,707	June 25	2019	530	47	1643
Jackson, Walter M., New York, N. Y. Forming gas-outlets	400,683	Apr. 2	372	101	47	74
Jackson, Walter M., New York, N. Y. Burner tip or pillar	403,592	May 21	1578	417	47	978
Jacob, Bertha, New York, N. Y. Window-chair	404,355	May 28	2744	712	47	1211
Jacobs, Jacob, New York, N. Y. Illuminating-tile	402,930	May 7	557	{146 147	47	767
Jacobs, Jacob, New York, N. Y. Illuminating-tile	402,931	May 7	558	147	47	768
Jacobs, John W., deceased, Fremont, Ohio; J. T. Garver administrator. Feed-box	405,260	June 18	1313	346	47	1498
Jacobs, William J., Bargersville, Ind. Shock-loading machine	405,840	June 25	2202	579	47	1679
Jacobson, Kate E., *et al.* (See Langston, Thomas, assignor.)						
Jacoby, Max B. (See Straus and Jacoby.)						
Jacques, William W., Newton, Mass., assignor to Edison Phonograph Toy Manufacturing Company, of Maine. Phonograph-doll	400,851	Apr. 2	635	172	47	122
Jaffray, David S., Chicago, Ill. Horseshoe	400,684	Apr. 2	373	101	47	74
Jagger, Jehiel W. (See Greenwald, Herman D., assignor.)						
Jagger, Joseph, Glenham, N. Y. Loom	403,194	May 14	964	{253 254	47	854
James, George. (See Heckel and James.)						
James, John, and A. D. Goodenough, Henrietta, Tex. Shackle	404,544	June 4	276	66	47	1277
James, Lucy J., Pomona, Cal. Corset	405,037	June 11	979	260	47	1426
James, William P., Lincolnton, N. C. Spring-back for stools or chairs	404,628	June 4	392	94	47	1300
Jameson, Charles B., assignor to Bodine Roofing Company, Mansfield, Ohio. Wood-pulp-board-bending machine	401,353	Apr. 16	1396	370	47	287
Jameson, Samuel G., and E. A. Baird, Washington Court-House, Ohio. Gate	404,283	May 28	2633	683	47	1190
Jamieson, Augustus, Elizabeth, N. J. Secondary battery	403,593	May 21	1579	{417 418	47	978
Janes, Henry, Waterbury, Vt. Reed-organ	405,708	June 25	2020	530	47	1643
Janke, Henry S., Dayton, Ohio. Folded paper bucket	403,504	May 21	1580	418	47	978

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Jansen, Alphonse M. J. and V. J. A. M., San Willibrordo, Curaçoa. Electric striking and repeating clock	402,329	Apr. 30	2895	750	47	587
Jansen, Vincent J. A. M. (See Jansen, Alphonse M. J. and V. J. A. M.)						
Janzon, August, Iron Mountain, Mich. Mirror attachment for telescopic glasses	400,571	Apr. 2	210	57	47	44
Jarrett, George L., Des Moines, Iowa. Adjustable automatic conveyer and bolting-reel	405,841	June 25	2203	580	47	1679
Jefferson, James N., Moundsville, W. Va. Portable work-case	405,888	June 25	2271	597	47	1692
Jeffery, Thomas B., Ravenswood, Ill. Lock	405,842	June 25	2204	580	47	1679
Jeffery, Thomas B., Ravenswood, Ill. Key-receptacle	405,843	June 25	2205	581	47	1679
Jencks, Walter C., Argyle, Wis. Checkrein-hook	405,261	June 18	1314	346	47	1498
Jencks, William H., Clinton, Iowa. Decoy	403,595	May 21	1581	418	47	978
Jenison, Orien A., Lansing, Mich. Latch	401,169	Apr. 9	1120	{296 297	47	220
Jenkins, Charles S., Lansdale, Pa. Exhibiting apparatus	403,673	May 21	1690	447	47	1001
Jenkins, Edward W., Norristown, Pa. Running-gear for vehicles	400,772	Apr. 2	498	135	47	98
Jenkins, Joel, Montclair, N. J. Safety-pin	405,558	June 18	1768	466	47	1592
Jenkins, Sylvester, assignor of one-half to W. E. Doan, Jr., Lansdale, Pa. Apparatus for delivering liquids	401,704	Apr. 16	1941	506	47	385
Jenks Railway Car Signal Company. (See Jenks, Thomas M., assignor.)						
Jenks, Thomas M., assignor to Jenks Railway Car Signal Company, Chicago, Ill. Steam-tight coupler	404,710	June 4	498	{126 127	47	1322
Jennings, Byron, San José, Cal. Insulator and holder for electric railways	402,836	May 7	424	112	47	743
Jennings, Charles G., Detroit, Mich. Insect-trap	400,460	Apr. 2	49	15	47	13
Jennings, Frank R., *et al.* (See Foster, Robert, assignor.)						
Jennings, Simeon H. (See Shaler, Henry L., assignor.)						
Jennings & Sons, A. G. (See Weyand, Charles E., assignor.)						
Jennings, Walter S., assignor, by mesne assignments, to A. Cronise, Rochester, N. Y. Spring sash-balance	400,918	Apr. 9	741	199	47	151
Jensen, Heinrich J. E., *et al.* (See Rabitz, Carl W., assignor.)						
Jenson, Andrew. (See Ollestad, Erik, assignor.)						
Jernberg, August. (See Lindeström, Hjalmar, assignor.)						
Jernberg, August. (See Lindeström and Jernberg.)						
Jerrold, John E., Sr., Erie, Pa., and H. H. Barclay, Cleveland, Ohio. Tube-cutter	401,279	Apr. 9	1282	342	47	251
Jervey, Eugene P., Charleston, S. C. Railway-rail joint	404,467	June 4	177	41	47	1257
Jeter, John J., Campbellsville, Ky. Car-coupling	402,985	Apr. 23	2527	658	47	508
Jeter, John J., Campbellsville, Ky. Horse-detacher	404,000	May 28	2328	{610 611	47	1134
Jetter, Julius, Elizabeth, N. J. Mechanism for imparting slow or fast motion	403,756	May 21	1815	{476 477	47	1025
Jeusette, Louis, D. D. and H. Henrard, Herstal, Belgium. Barrel-lock for breakdown guns	402,330	Apr. 30	2897	751	47	587
Jewett, Charles G., Howell, Mich. Water-heater	405,481	June 18	1648	{434 435	47	1566
Jewett, Edwin H., Medford, assignor to himself and G. F. Jewett, Boston, Mass. Heater	402,162	Apr. 30	2657	687	47	541
Jewett, George F. (See Jewett, Edwin H., assignor.						
Jewett, Luther K., Boston, Mass. Car-truck	401,354	Apr. 16	1400	370	47	288
Jewett, Luther K., Boston, Mass. Car-truck	402,163	Apr. 30	2657	688	47	542
Jochum, Paul, Ottweiler, Prussia, Germany. Brick-kiln	404,198	May 28	2496	633	47	1166
Jochum, Paul, Ottweiler, Prussia, Germany. Making artificial stone	404,199	May 28	2498	.....	47	1167
Joel, Rosa, New York, N. Y. Washing-machine	404,545	June 4	277	66	47	1277
Johansson, Carl A., assignor to Aktiebolaget Extraktor, Stockholm, Sweden. Step-bearing for shafts	405,559	June 18	1769	467	47	1592
Johns, Henry W., Jr., New York, N. Y. Insulated electrical wire	404,913	June 11	797	204	47	1389
Johnsen, Hans, Menominee, Mich. Washing-machine	405,492	June 18	1640	435	47	1566
Johnson, Andrew H., Tryus, Miss. Combined cultivator and cotton-chopper	405,165	June 11	1156	309	47	1461
Johnson, Andrew H., Tryus, Miss. Car-coupling	405,889	June 25	2272	597	47	1692
Johnson, Arthur H., Jersey City, N. J. Apparatus for operating railway-switches	403,195	May 14	964	254	47	855
Johnson, Bernard, New York, N. Y. Basin-faucet	401,952	Apr. 23	2320	603	47	469
Johnson, Charles R. (See Johnson, Henry and C. R.)						
Johnson Company. (See Marshall, Charles A., assignor.)						
Johnson Company. (See Suppes, Max. M., assignor.)						
Johnson, Cuthbert G., Oakwood Croft, near Darlington, England. Manufacturing ensilage	402,248	Apr. 30	2773	717	47	564
Johnson, Edward H., and E. T. Greenfield, New York, N. Y. Wiring structures for electric lighting	401,498	Apr. 16	1614	{427 428	47	327
Johnson, Frank G., New York, N. Y. Spring-washer	404,284	May 28	2634	684	47	1190
Johnson, Frank G., New York, N. Y. Water-current motor	404,468	June 4	178	41, 42	47	1258
Johnson, Frank G., New York, N. Y. Curtain-pole	404,841	June 11	689	178	47	1369
Johnson, Frank G., New York, N. Y. Metallic box-binder	404,842	June 11	690	178	47	1369
Johnson, Frank G., New York, N. Y. Metallic binder for boxes	405,309	June 18	1449	381	47	1526
Johnson, Frederick C., Minneapolis, Minn. Indexed shipping-book. (Reissue)	11,004	May 21	3028	531	47	1066
Johnson, Frederick L., Wallingford, Conn. Top spinner	404,042	May 28	2241	587	47	1114
Johnson, Gail B. and M., Elgin, Ill. Electrically-heated vacuum-pan	403,110	May 14	832	230	47	838
Johnson, Harley M., Chicago, Ill. Anti-friction journal-bearing	402,509	May 7	71	17	47	677
Johnson, Henry, assignor to B. J. Behrend, Washington, D. C. Folding packing-box	405,709	June 25	2021	531	47	1644
Johnson, Henry and C. R., Pittsburg, Pa. Railway switch and signal operating and interlocking device	403,271	May 14	1092	{289 290	47	877
Johnson, James W., Ladue, Mo. Cultivator	404,711	June 4	499	127	47	1322
Johnson, Jennie G. F., Mount Vernon, N. Y. Insect-trap	400,572	Apr. 2	211	57	47	45
Johnson, John, Brooklyn, N. Y. Filter-press	402,455	Apr. 30	3099	804	47	626
Johnson, John A., Madison, Wis. Axle-skein	400,685	Apr. 2	374	101	47	74
Johnson, John B., St. Louis, Mo. Conduit-yoke for cable-ways	402,741	May 7	281	72	47	716
Johnson, John R., *et al.* (See Price, George W., assignor.)						
Johnson, Jonathan, assignor to himself and E. H. Packer, Lowell, Mass. Heating apparatus	403,474	May 14	1407	368	47	936
Johnson, Laura H. (See Pearce, Annie W., assignor.)						
Johnson, Louis K., Brooklyn, N. Y. Sash-fastener	405,095	June 11	1050	280	47	1441
Johnson, Milbank. (See Johnson, Gail B. and M.)						
Johnson, Robert W., New Brunswick, N. J. Flexible receptacle for ligatures	404,843	June 11	690	178	47	1369
Johnson Steel Street Rail Company. (See Brown, William M., assignor.)						
Johnson Steel Street Rail Company. (See Colley, Frederick, assignor.)						
Johnson, Victor D., Mount Pleasant, Iowa. Sled	402,019	Apr. 23	2423	631	47	488
Johnson, William D., Seymour, Ind. Wooden dish	403,111	May 14	833	230	47	838
Johnson, William W., Palmyra, Nebr. Sample-holder and box-pull	403,535	May 21	1510	396	47	964
Johnston, Charles W., Louisville, Ky. Ink-eraser	403,674	May 21	1683	448	47	1002
Johnston, George, San Francisco, Cal. Ore-feeder	401,634	Apr. 9	913	244	47	183

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Dr'g.	Official Gazette. Vol.	Page.
Johnston, James J., Columbiana, Ohio, assignor to H. M. Myers, Beaver Falls, Pa. Bar for the manufacture of shovel-blanks	405,415	June 18	1533	406	47	1543
Johnston, James J., Columbiana, Ohio, assignor to H. M. Myers, Beaver Falls, Pa. Making shovel-blanks	405,416	June 18	1533	406	47	1543
Johnston, John, Neenah, Wis. Flour-bolt	403,675	May 21	1693	441	47	1002
Johnston, John, Neenah, Wis. Flour-bolt	403,757	May 21	1816	477	47	1025
Johnston, William J. (See McCalmont, Hiram R., assignor.)						
Johnstone, Alice, Avondale, N. J. Combined button-hook and bracelet	401,746	Apr. 23	2016	527	47	412
Johnstone, William H. (See Warde, George H., assignor.)						
Jolly, Thomas J., Ulysses, Nebr. Device for opening trap-doors	402,932	May 7	559	147	47	768
Joly Stopper Company. (See Lloyd, Edwin L., assignor.)						
Joly Stopper Company. (See Rehfuss, George, J G., and M. O., assignors.)						
Jones, Albert F., Salem, Mass. Boiler-feeder	404,629	June 4	393	95	47	1300
Jones, Alfred W., *et al.* (See Hatch, Adin A., assignor.)						
Jones, Augustus H., Meriden, Conn. Drawer-pull	400,852	Apr. 2	636	179	47	122
Jones, Benjamin F., *et al.* (See Hatch, Adin A., assignor.)						
Jones, Charles R., Hatley, Quebec, Canada. Thill-coupling	401,170	Apr. 9	1122	297	47	220
Jones, Charles W., London, Ontario, Canada. Belt-tightener	403,048	May 7	720	188	47	799
Jones, Edmund C., assignor of one-half to W. J. Gleason, San Francisco, Cal. Coin-actuated receptacle	405,215	June 11	1238	329	47	1476
Jones, Edward L., Dover, Del. Machine for applying heads to tin cans	400,853	Apr. 2	637	173	47	122
Jones, George R. G., Louisville, Ky. Inkstand	402,817	May 7	425	112	47	743
Jones, George W., Philadelphia, Pa. Car-wheel axle	401,280	Apr. 9	1223	342	47	251
Jones, Harry. (See Frid, Edward, assignor.)						
Jones, Henry M., Denver, Colo. Combined sleeping and day car	401,438	Apr. 16	1525	403, 404	47	311
Jones, Henry P., New York, N. Y. Diaphragm for acoustic telephones	405,483	June 18	1651	435	47	1566
Jones, Henry R., *et al.* (See Randel, Zadock, assignors.)						
Jones, James H., assignor to Emerson, Talcott & Company, Rockford, Ill. Mower	405,238	June 11	1272	336	47	1462
Jones, John T. (See Schinneller and Jones.)						
Jones, John T., Iron Mountain, Mich. Spike-blank bar	403,049	May 7	721	188	47	800
Jones, Lewis. (See Ballou, Hiram P., assignor.)						
Jones, Richard B. (See Wetherell and Jones.)						
Jones, Richard W., Syracuse, N. Y. Overdraw or checkrein attachment	402,456	Apr. 30	3100	804	47	626
Jones, Walter F., Parish, assignor of one-half to C. W. Bardeen, Syracuse, N. Y. Blackboard-eraser	405,006	June 11	1051	281	47	1441
Jones, William R., Braddock, Pa. Mixing molten pig metal	404,414	June 4	57	15	47	1247
Jones, William R., Braddock, Pa. Apparatus for mixing molten pig metal	404,415	June 4	60	16	47	1247
Jones, Willis C. (See Rogers and Jones.)						
Jonson, Julius, assignor of one-half to J. Elson, New York, N. Y. Engine	402,086	Apr. 23	2528	659	47	508
Jorgensen, Axel, Des Moines, Iowa. Compressed-air motor	402,838	May 7	426	112, 113	47	743
Joseph, Isidora. (See Rohrer and Joseph.)						
Joseph, Myer, Cambridge, Mass. Game apparatus	405,314	June 18	1389	366	47	1513
Joslin, Isaac R., and G. T. Lawrence, New York, N. Y. Wood-working tool	404,489	June 4	180	42	47	1252
Joslin, William, Cleveland, Ohio. Car-wheel	405,710	June 25	2023	532	47	1644
Joyce, Joseph L., New Haven, Conn. Rubber boot or shoe	404,416	June 4	62	16	47	1237
Judd, James L. (See Wiard and Judd.)						
Judkins, Mark D., Osakis, Minn. Monument	402,528	Apr. 30	3210	831, 832	47	646
Judson Pneumatic Railway Company. (See Judson, Whitcomb L., assignor.)						
Judson, Whitcomb L., assignor to Judson Pneumatic Railway Company, Minneapolis, Minn. Mechanical movement	402,674	May 7	181	46	47	698
Judson, Whitcomb L., assignor to Judson Pneumatic Railway Company, Minneapolis, Minn. Conduit for driving mechanism of street-railways	402,839	May 7	428	113	47	743
Judson, Whitcomb L., assignor to Judson Pneumatic Railway Company, Minneapolis, Minn. Street-railway	402,933	May 7	560	148	47	768
Judson, Whitcomb L., assignor to Judson Pneumatic Railway Company, Minneapolis, Minn. Street-railway	402,934	May 7	563	148, 149	47	769
Julier, Camilla, and J. O. Robinson, assignors of one-third to H. D. Miller, Hanging Rock, Ohio. Oven-thermometer	400,573	Apr. 2	211	57	47	45
Jump, Samuel, San Francisco, Cal. Tensile-strain-testing machine	404,200	May 28	2499	653	47	1167
Junghans, Arthur, Schramberg, Würtemberg, Germany. Clock	401,499	Apr. 16	1616	428	47	329
Junkins, Leander D., Somerville, Mass. Tack-feeding machine	403,843	May 21	1950	512	47	1051
Juruick, Max. (See Ford and Juruick.)						
Kadow, William, Jr., Newark, N. J. Sash-balance	405,711	June 25	2025	532	47	1644
Kaehler, Otto, Philadelphia, Pa. Muff	405,097	June 11	1052	281	47	1441
Kaffeman, Frederick, New York, N. Y. Ring	401,112	May 14	833	220	47	898
Kahn, Lazard, Hamilton, Ohio. Burner for gas-stoves	401,783	Apr. 23	2066	540	47	422
Kaiser, John, Seneca Falls, N. Y. Hydrant	401,652	Apr. 16	1873	487	47	373
Kakas, William F. (See Bradford, Charles K., assignor.)						
Kampf, Ferdinand, Chemnitz, Germany. Receptacle for pulverized substances	400,686	Apr 2	375	101	47	74
Kampfe, Frederick, R., and O., Brooklyn, N. Y. Razor-stropping device	405,961	June 25	2392	627	47	1712
Kampfe, Otto. (See Kampfe, Frederick, R., and O.)						
Kampfe, Richard. (See Kampfe, Frederick, R., and O.)						
Kane, Frank H., Riverside, assignor to Cincinnati Cooperage Company, Cincinnati, Ohio. Stave-dressing machine	403,596	May 21	1582	419	47	979
Kanitzer, William, *et al.* (See Murphy, William H., assignor.)						
Kannenberg, Alvin C., Canton, Ohio. Sheet-metal roofing	403,844	May 21	1951	512	47	1051
Kanonse, John G. (See Miller and Kanonse.)						
Kappe, William J. H., Quincy, Ill. Baling-press	401,171	Apr. 9	1124	297, 298	47	221
Karo, King L., Washington, D C. Follower for trunks or packing-boxes	401,439	Apr. 16	1528	404	47	311
Karrer, Frank, Rich Hill, Mo. Car-coupling	405,360	June 18	1450	384	47	1526
Karrer, Simon C. (See Blankart, John, assignor.)						
Kaselowsky, Emil, assignor to Berliner Maschinenbau-Actien-Gesellschaft, vormals L. Schwartzkopff, Berlin, Germany. Electrical night-signaling apparatus	401,035	Apr. 9	914	244	47	183
Kaspar, John A., Jr., Pomeroy, Ohio. Yarn-reel	405,560	June 18	1770	467	47	1592
Katherman, Charles W., and R. Folk, Williamsport, Pa. Bureau or similar article of manufacture	405,166	June 11	1157	309	47	1461
	401,562	Apr. 16	1715	452	47	345
Kauble, Stephen, Clay City, Ill. Plow	402,331	Apr. 30	2898	751	47	588
Kaufmann, Michael, Greenwich, county of Kent, England. Revolving fire-arm	401,653	Apr. 16	1875	487	47	373
Kaufmann, Robert, Cincinnati, Ohio. Display-rack	402,840	May 7	429	113	47	744
Kaylor, John, assignor to G. W. Lehman and A. O. Bolen, Decatur, Ill. Can-opener						

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Kayser, William J., Milwaukee, Wis. Ash-sifter	403,272	May 14	1098	290	47	878
Keasey Pulley Company. (See Clark and Keasey, assignors.)						
Keasey, Theron D. (See Clark and Keasey.)						
Keator, Charles E., Brooklyn, N. Y. Making hat-sweats	405,417	June 18	1534	406	47	1543
Keator, Charles E., assignor to Paland Hat Machine Company, Brooklyn, N. Y. Bottom board for hats	400,773	Apr. 2	500	135, 136	47	98
Keech, George W. (See Gracey and Keech.)						
Keen & Hagerty. (See Wagandt, Charles L., assignor.)						
Keep, Charles M., Erie, Pa. Furnace for brick-kilns	401,172	Apr. 9	1126	298	47	221
Keep, William J., Detroit, Mich. Impact-testing machine	403,676	May 21	1695	448, 449	47	1002
Kehler, Amos, Warsaw, Ind. Split band-pulley	400,574	Apr. 2	212	57, 58	47	45
Kein, Arthur W. M., Melbourne, Victoria. Saddle	403,050	May 7	722	188	47	800
Keith, Alpheus, Toledo, Ohio. Metal wheel	401,563	Apr. 16	1716	452	47	345
Keith, Henry L., Stockton, Cal. Combined writing-desk, drawing-board, and easel	401,440	Apr. 16	1529	404	47	312
Keith, Jesse M., Albany, Oreg. Machine for building wire-and-picket fences	405,890	June 25	2273	597, 598	47	1692
Keith, John M., Corsicana, Tex. Means for propelling railway-cars	403,758	May 21	1818	477	47	1025
Kell, James H., assignor of one-half to F. Aldrich, Washington, D. C. Measuring-faucet	405,891	June 25	2274	598	47	1692
Keller, John, New York, N. Y. Ticket	403,113	May 14	834	220	47	898
Keller, John, New York, N. Y. Combined cabinet and cutter's size-ticket	403,939	May 28	2084	547	47	1085
Kelley, George W., Goshen, Ind. Carpet-sweeper	403,845	May 21	1952	512	47	1051
Kelley, Harry E. (See Sears and Kelley.)						
Kelley, Harry E., Niagara Falls, assignor to Oneida Community, (limited,) Community, N. Y. Chain-fastener	404,631	June 4	396	95	47	1301
Kelley, Harry E., Niagara Falls, assignor to Oneida Community, (limited,) Community, N. Y. Swivel	404,632	June 4	397	96	47	1301
Kelley, Thomas H., Salem, Mass. Curtain-pole-supporting fixture	405,671	June 18	1960	514	47	1626
Kellogg, Warren T., Lansingburg, N. Y. Straight-way valve	401,784	Apr. 23	2068	540	47	422
Kelly, George C., *et al.* (See Kelly, John, assignor.)						
Kelly, Harold, *et al.* (See Mercier, Mathias, assignor.)						
Kelly, James J. (See Preston, William, assignor.)						
Kelly, James P., Louisville, Ky. Die for making axes	402,935	May 7	567	149	47	771
Kelly, John, assignor to himself, G. C. and O. Kelly, G. S. Helman, and W. A. Evans, Troy, Ohio. Fence-post	404,788	June 4	608	157	47	1344
Kelly, John F., assignor to United States Electric Lighting Company, Hoboken, N. J. Induction-coil	404,630	June 4	395	95	47	1301
Kelly, John P., *et al.* (See Mercier, Mathias, assignor.)						
Kelly, Orrin, *et al.* (See Kelly, John, assignor.)						
Kelly, Thomas, Elmvale, Ontario, Canada. Cork-extractor	402,742	May 7	283	72	47	716
Kelly, William C., Louisville, Ky. Ax	402,936	May 7	569	149	47	771
Kelly, William C., Louisville, Ky. Die for making axes	402,937	May 7	570	150	47	771
Kelly, William E., New Brunswick, N. J. Header for steam-boilers	405,739	June 25	2066	542	47	1652
Kelly, William J., Boston, assignor of one-half to C. H. Arnold, Woburn, Mass. Railway-switch	405,361	June 18	1451	384	47	1526
Kelsea, Charles W. (See Boutell, William H., assignor.)						
Kelsey, William W., Cortland, N. Y. Boiler	404,201	May 28	2500	654	47	1167
Kelty, Gibbons L. (See Carver, James W., assignor.)						
Kemp, Clarence M., Baltimore, Md. Expanding plug for closing pipes, &c	402,600	May 7	72	17	47	678
Kemp, Joseph S., Magog, Quebec, Canada. Fertilizer-distributer	405,561	June 18	1771	467, 468	47	1592
Kempster, Daniel E., Boston, Mass. Hook for harness	401,173	Apr. 9	1128	299	47	221
Kendall, Amos M., Sioux City, Iowa. Car-brake	404,005	May 28	2181	573	47	1104
Kendall, David W., Grand Rapids, Mich. Drawer-guide	405,098	June 11	1053	281	47	1441
Kendall, Festus W., Swartwood, N. Y. Liquid-distributer	402,841	May 7	430	113, 114	47	744
Kendall, Francis B., assignor of two-thirds to C. M. Dull and M. M. Lucy, Monmouth, Ill. Combined pulverizer, seeder, and harrow	404,285	May 28	2635	684	47	1191
Kendray, Thomas, assignor of one-half to G. N. Matheson, Sarnia, Ontario, Canada. Tug-strap holder for looms	403,418	June 18	1535	406	47	1543
Kendrick, William F., assignor of one-half to H. L. Glass, Winfield, Iowa. Strainer for kettles, &c	405,216	June 11	1240	329	47	1476
Kennedy, Burr A., and J. F. Steward, Chicago, Ill. Sheaf-carrier for self-binding harvesters	405,892	June 25	2276	598	47	1692
Kennedy, Daniel, Brooklyn, N. Y. Valve-indicator	404,844	June 11	692	178	47	1309
Kennedy, Jacob, *et al.* (See McClellan, Oscar D., assignor.)						
Kennedy, John, Birmingham, assignor to Osborne & Cheesman Company, Ansonia, Conn. Suspender-buckle	405,962	June 25	2393	627	47	1712
Kennedy, John H., assignor to J. L. Spencer & Co., Oneida, N. Y. Spring-vehicle	402,938	May 7	571	150	47	771
Kennedy, Julian, Latrobe, Pa. Hydraulic shears	402,457	Apr. 30	3101	805	47	626
Kennedy, Julian, Latrobe, Pa. Hydraulic machine	402,458	Apr. 30	3104	805, 806	47	627
Kennedy, Julian, Latrobe, Pa. Tire-rolling machine	403,431	May 14	1338	351	47	923
Kennedy, Julian, and H. Aiken, Homestead, Pa. Universal rolling-mill	403,273	May 14	1098	290, 291, 292	47	878
Kennedy, Martin, Hegewisch, Ill. Car-truck	402,459	Apr. 30	3106	806	47	627
Kennedy, William M., *et al.* (See Lovejoy, De Soto, assignor.)						
Kenney, Patrick L., assignor of one-half to L. C. Werner, Pittsfield, Mass. Tension-regulator for spindle-driving bands	401,281	Apr. 9	1284	343	47	252
Kenney, William J., Chicago, Ill. Railway	402,164	Apr. 30	2650	688	47	542
Kennish, William, Brooklyn, N. Y. Fuse or igniting device for projectiles	400,687	Apr. 2	375	102	47	74
Kenworthy, John T., Flushing, N. Y. Drift and drill catch	404,546	June 4	278	66	47	1277
Keplinger, Samuel M., Franklin, Pa. Valve for steam-engines	400,919	Apr. 9	741	199, 200	47	151
Kern, Phillip, Yonkers, N. Y. Cigar cutter and support	401,174	Apr. 9	1129	299	47	221
Kerr, John W., assignor of one-half to F. M. Atkinson, Chicago, Ill. Machine for coiling spiral springs	403,940	May 28	2085	547	47	1085
Kerrison, Charles, Jr. (See Insti, Johann A. W., assignor.)						
Kershaw, Charles E., Jr., *et al.* (See Swett, Charles F., assignor.)						
Kersteter, Charles W., assignor of one-half to W. E. Smith, Chicago, Ill. Automatic fire-extinguisher	400,688	Apr. 2	377	102	47	74
Kerstine, Henry C., Cleveland, Ohio. Grate	402,842	May 7	431	114	47	744

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Kester, Jesse F., assignor of three-fourths to J. H. Briggs, Terre Haute, Ind. Detachable brush-holder for dynamos	404,712	June 4	500	122	47	1323
Kester, Jesse F., assignor of three-fourths to J. H. Briggs, Terre Haute, Ind. Armature-core for dynamos	404,713	June 4	501	122	47	1323
Kester, Jesse F., assignor of three-fourths to J. H. Briggs, Terre Haute, Ind. Regulator for dynamo-electric machines or motors	404,714	June 4	502	122	47	1323
Kester, Jesse F., assignor of three-fourths to J. H. Briggs, Terre Haute, Ind. Brush-spring for dynamos	404,715	June 4	504	122	47	1324
Ketchum, Everett H., Jamestown, N. Y. Saw-set	401,785	Apr. 23	2069	540	47	422
Ketteringham, John P., assignor of one-half to S. Duncan, Natchez, Miss. Hatchway	403,196	May 14	967	229 / 225	47	854
Keyser, John H., New York, N. Y. Recess summer-piece for stoves	400,689	Apr. 2	378	102	47	75
Keyser, John H., New York, N. Y. Single-cylinder stove	401,888	Apr. 23	2223	540	47	451
Keyser, John H., New York, N. Y. Stove	401,889	Apr. 23	2225	540	47	451
Keystone Manufacturing Company. (See Baltzley, Edwin, assignor.)						
Kibbe, George, Amsterdam, N. Y. Bicycle	402,460	Apr. 30	3108	805 / 807	47	627
Kieley, Timothy. (See Mueller, Frederick, assignor.)						
Kieser, Charles, assignor of one-half to H. W. Ironmonger and L. C. Gude, Baltimore, Md. Draft-equalizer	403,051	May 7	723	189	47	800
Kilborn, Wilber E., assignor of one-half to W. H. C. Goode, Sidney, Ohio. Wheelbarrow	404,789	June 4	609	137	47	1344
Kilbourne, Watson P. (See Kittredge and Kilbourne.)						
Kilburn, Cheney, Philadelphia, Pa. Apparatus for extinguishing fires	403,759	May 21	1819	478	47	1026
Killaly, Henry R., *et al.* (See Finch, James B., assignor.)						
Killeen, Bernard, Big Rock, assignor of one-half to J. H. Flick, Dixon, Iowa. Dumping-wagon	405,362	June 18	1452	344	47	1596
Killey, Joseph H., Hamilton, Ontario, assignor to himself and T. Worswick, Toronto, Canada. Low-pressure injector	404,091	May 28	2329	611	47	1134
Killick, Richard J., *et al.* (See Scharnweber, William, assignor.)						
Killin, Virgil C. (See Abbott and Killin.)						
Kimball, Arden D., Miles, Iowa. Combination-tool	400,690	Apr. 2	380	103	47	75
Kimball, George, Lawrence, Kans. Wheel-plow	404,716	June 4	506	128 / 129	47	1324
Kimball, James L., and H. C. Wirt, Boston, Mass. Electric cut-out	402,240	Apr. 30	2774	718	47	564
Kimball, Jason A., Grand Ledge, Mich. Ironing-table	401,766	Apr. 23	2071	541	47	423
Kimball, William W., Leetonia, Ohio. Faucet	400,691	Apr. 2	381	103	47	75
Kimmel, Ernest, Temesvar, Austria-Hungary, and E. E. Claussen, Hartford, Conn., assignors to G. Draper & Sons, Hopedale, Mass. Spinning, doubling, and twisting machine	401,282	Apr. 9	1285	341	47	252
Kimmich, Gottlieb, Oberesslingen, Würtemberg, Germany. Horse-detacher	405,963	June 25	2395	625	47	1712
Kincaid, Henry L., Stella, Wash. Ter. Combination-tool	402,939	May 7	572	150	47	771
Kindl, Fred H., Chicago, Ill. Machine for shaping metal strips for ornamental metal lattice or fence work	402,087	Apr. 23	2530	660 / 661	47	509
King, Charles A., Meriden, Conn. Breech-loading fire-arm	402,675	May 7	183	48	47	698
King, Charles L., Madison, Wis. Lathe-turret	401,564	Apr. 16	1717	453	47	345
King, Frank B. (See Clark and King.)						
King, George, East Haddon, county of Northampton, assignor of two-thirds to W. A. Smith, Weedon, and G. King, Jr., East Haddon, England. Wine-bin	401,175	Apr. 9	1130	299	47	222
King, George W., and H. M. Barnhart, Marion, Ohio. Friction-clutch	401,176	Apr. 9	1131	300	47	222
King, Harin B., Jackson, Kans. Cultivator for listed corn	401,177	Apr. 9	1132	300	47	222
King, Homer A., Springfield, Mass. Velocipede	404,490	June 4	181	42	47	1258
King, James R. (See King, Meta L. and J. R.)						
King, Jay A. (See Armstrong, Charles E., assignor.)						
King, John D. (See Shafer and King.)						
King, Jonathan H., and B. F. Reed, Swan Creek, Ill. Car-coupling	404,717	June 4	507	129	47	1324
King, Joseph, Troy, N. Y. Skate	403,052	May 7	724	189	47	800
King, Meta L. and J. R., Atlanta, Ga. Portable balcony	404,286	May 28	2637	694 / 695	47	1191
King, Obed H., Houghton, Iowa. Horse hay-rake	405,484	June 18	1652	435	47	1567
King, Otho S., *et al.* (See Crafton, Charles B., assignor.)						
King, Phineas F., assignor to M. Mosler, Cincinnati, Ohio. Safe	405,562	June 18	1772	468 / 469	47	1592
King, Phineas F., assignor to M. Mosler, Cincinnati, Ohio. Burglar-proof safe	405,563	June 18	1774	469	47	1593
King, Phineas F., assignor to M. Mosler, Cincinnati, Ohio. Burglar-proof safe	405,564	June 18	1774	469	47	1593
King, Samuel R. (See Woodward and King.)						
King, Sidney D., Pittston, Pa. Device for steadying cars	402,676	May 7	184	47	47	698
King, Sidney D., Pittston, Pa. Street-railway car	402,743	May 7	294	73	47	717
King, William, St. James, Minn. Thrashing-machine	401,705	Apr. 16	1942	506	47	386
King, William T., Cambridge, assignor of one-half to C. E. Berry, Watertown, Mass. Shut-off for hose-nozzles	403,053	May 7	725	189	47	800
Kingsbury, Henry M., Middletown, Cal. Combined plow, cultivator, and seeder	403,114	May 14	835	221	47	829
Kingsford, Thomson. (See Tonkin, John J., assignor.)						
Kingsley, John F., Athens, Pa. Die for making eye-bars. (Reissue)	11,001	Apr. 30	3244	842	47	654
Kinney, Israel, Windsor, Ontario, Canada. Metallic lathing	400,774	Apr. 2	502	136	47	98
Kinney, Israel, Windsor, Ontario, Canada. Wire matting	404,417	June 4	63	16	47	1237
Kinsey, Isaac, assignor to Standard Electrical Works, Cincinnati, Ohio. Bell	402,165	Apr. 30	2660	689	47	542
Kinsey, Sanford D., Byron, Mich. Machine for transmitting motion	402,744	May 7	287	73	47	717
Kinsey, Seth L., Graceton, Md. Two-wheeled vehicle	402,020	Apr. 23	2425	631	47	488
Kinsman, Frank E., New York, N. Y. Automatic electric controller for railway-trains	405,964	June 25	2396	628 / 629	47	1712
Kintner, Charles J. (See Paget, Leonard, assignor.)						
Kintner, Charles T., Philadelphia, Pa. Skate-roller	404,547	June 4	279	68	47	1278
Kintz, Joseph, Ballardvale, Mass. Lamp-shade holder	400,854	Apr. 2	640	174	47	122
Kintz, Joseph, Ballardvale, Mass. Lamp-shade support	400,855	Apr. 2	641	174	47	123
Kintz, Joseph, Ballardvale, Mass., assignor to himself and Craighead & Kintz Manufacturing Company, of Massachusetts. Suspension-lamp	400,856	Apr. 2	641	174	47	123
Kintz, Joseph, Ballardvale, Mass., assignor to himself and Craighead & Kintz Manufacturing Company, of Massachusetts. Extension-chandelier	400,857	Apr. 2	642	174	47	123
Kipling, Richard A. (See Groesford, Samuel, assignor.)						
Kirk, John E. (See Alden and Kirk.)						
Kirkbride, Frank W., Stratton, Nebr. Cultivator	401,178	Apr 9	1133	300	47	222
Kirkham, Henry P., Brooklyn, N. Y. Coffer-dam	404,718	June 4	508	129	47	1325
Kirkland, Lynn H. (See Clark, John W., assignor.)						
Kirkpatrick, Walter, Marinette, Wis. Saw-dressing device	405,485	June 18	1653	436	47	1567
Kirks, Albert, Canton, Ohio. Rivet	401,747	Apr. 23	2017	528	47	412
Kirsch, Francis, St. Louis, Mo. Printing-machine	405,099	June 11	1054	281	47	1441

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Kiskadden, Robert A., Allegheny, Pa. Device for operating car-brakes	404,418	June 4	64	17	47	1238
Kissell, Martin L., assignor to P. P. Mast & Company, Springfield, Ohio. Hoe for grain-drills	404,845	June 11	693	179	47	1370
Kissinger, Jacob. (See Bement, Frank G., assignor.)						
Kissner, Leonard, assignor to Hocking Valley Manufacturing Company, Lancaster, Ohio. Horse hay-rake	404,846	June 11	695	179	47	1370
Kister, William, Weimar, Tex. Cotton-sprinkler	403,475	May 14	1409	368	47	936
Kitson, Arthur, Philadelphia, Pa. Machine for blacking and polishing shoes	401,690	Apr. 23	2227	561	47	451
Kitto, William H., Plymouth, county of Devon, England. Velocipede	405,363	June 18	1455	385	47	1595
Kittredge, George A., and W. P. Kilbourne, Chicago, Ill. Umbrella	405,712	June 25	2027	532	47	1644
Klaber, Augustus D. (See Carter, McIon J. D., assignor.)						
Klaber, Augustus D. (See Davis, George H., assignor.)						
Kleemann, Adolph, Erfurt, Germany, assignor to Hinrichs & Co., New York, N. Y. Student-lamp	405,740	June 25	2069	542	47	1652
Klemm, Henry, assignor to Barnhart Bros. & Spindler, Chicago, Ill. Type-casting mold	405,419	June 18	1536	407	47	1543
Kletaker, Albert J., St. Louis, Mo. Holder for blanks	404,287	May 28	2636	685	47	1191
Kline, Winfield S. (See Tinker and Kline.)						
Kling, Peter M., St. Louis, Mo. Car-pedestal	404,288	May 28	2639	685	47	1191
Kling, Peter M., St. Louis, Mo. Track-brake for street-railway cars	404,289	May 28	2639	685 / 686	47	1192
Klinik, Constantine C., F. Pinkowski, and A. Gross, Königshütte, Prussia, Germany. Hydraulic punching-machine	404,633	June 4	398	96	47	1301
Klippert, Charles V., assignor of one-half to L. J. Vogt, Rochester, N. Y. Seat for children's carriages	404,356	May 28	2745	713	47	1211
Kloppe, Otto, New York, N. Y. Syringe	405,100	June 11	1055	282	47	1442
Klostermann, William, Young America, Minn. Middlings-purifier	405,486	June 18	1655	436 / 437	47	1567
Klostermann, William, Young America, Minn. Middlings-purifier	405,487	June 18	1657	437 / 438 / 439	47	1568
Knapp, Edmond B., San Jacinto, Cal. Harness-loop	400,461	Apr. 2	50	15	47	13
Knapp, Edmund B., and H. L. Thompson, San Jacinta, Cal. Table-cover fastener	401,283	Apr. 9	1286	343	47	252
Knapp, Edward J., Syracuse, N. Y. Car-coupling	402,021	Apr. 23	2426	632	47	488
Knapp, Edward J., Syracuse, N. Y. Railway-rail	402,022	Apr. 23	2427	632	47	488
Knapp, Edward Y., Blue Lake, Cal. Spring-gun	403,432	May 14	1342	352	47	924
Knaus, Joseph H., Fayette, Mo. Furniture-drawer	404,790	June 4	610	157	47	1345
Kneip, William F., Chicago, Ill., assignor to Hay & Todd Manufacturing Company, of Michigan. Garment	405,362	June 18	1315	346	47	1498
Knerr, Louis, Worms, Germany. Skate	405,779	June 25	2122	557	47	1663
Kneuper, George, New York, N. Y. Atomizer	401,355	Apr. 16	1402	371	47	288
Knickerbocker Company. (See Morse, Orville M., assignor.)						
Knight, George H., assignor to W. R. Lane & Co., Providence, R. I. Ornamental ring for jewelry	404,092	May 28	2333	611	47	1135
Knight, George H., assignor to W. R. Lane & Co., Providence, R. I. Ornamental ring for jewelry	404,093	May 28	2334	612	47	1135
Knight, George H., assignor to W. R. Lane & Co., Providence, R. I. Ornamental ring for jewelry	404,094	May 28	2334	612	47	1135
Knight, George M., Adrian, Mich. Grate-bar	404,719	June 4	509	130	47	1325
Knight, John, London, England. Metallic reversible covering for the treads of stairs, &c.	402,745	May 7	288	73, 74	47	717
Knight, John M. (See Welch, Rosia W., assignor.)						
Knight, Samuel N., Sutter Creek, Cal. Automatic valve attachment for power mechanisms	404,202	May 28	2501	654	47	1167
Knight Silas P., Brooklyn, N. Y. Apparatus for metallizing electrotype-molds	403,197	May 14	969	255	47	855
Knipp, George D., Stuttgart, Germany. Picture-exhibitor	403,867	May 21	2006	527	47	1002
Knoche, John, Helena, Mont. Ter. Windmill	404,914	June 11	798	204	47	1389
Knoche, John, Helena, Mont. Ter. Water-heating apparatus	404,915	June 11	799	205	47	1389
Knopff, Wilhelm, Berlin, Germany. Incubator	404,634	June 4	399	96, 97	47	1302
Knous, John, Hartford, Conn., assignor to Pope Manufacturing Company, Portland, Me. Velocipede-saddle and supporting device	405,780	June 25	2122	558	47	1663
Knowles, Edward R., Brooklyn, N. Y., assignor to Mutual Electric Manufacturing Company, of New York. Automatic cut-out for electric lamps	403,941	May 28	2069	548	47	1086
Knowles Loom Works. (See Wattie, William, assignor.)						
Knowlton, Daniel C., Boston, Mass. Electrical gas-lighter	402,332	Apr. 30	2900	751	47	588
Knowlton, Mark D., Chicago, Ill. Paper-box-covering machine	403,677	May 21	1698	449	47	1003
Knudsen, Andrew P., assignor of one-half to M. Hoyt, O. Russell, and H. H. Hoyt, Sycamore, Ill. Die for brick or tile machines	402,940	May 7	573	150 / 151	47	772
Knueppel, Hearmen, St. Louis, Mo. Wood-screw	402,333	Apr. 30	2901	751	47	588
Koch, Ferdinand, Hanover, Prussia, Germany. Weighing-scales	404,290	May 28	2640	686	47	1192
Koch, Gebhard, and J. B. Korn, Springfield, Ohio. Stove-pipe and collar holder	405,565	June 18	1776	469	47	1593
Koechling, Charles E., New York, N. Y. Beach-chair	405,038	June 11	960	261	47	1426
Koenen, William, Cleveland, Ohio. Sash-fastener	404,916	June 11	800	205	47	1389
Koepp, Henry, assignor of one-half to F. Z. Nedden, Milwaukee, Wis. Machine for cutting meat	403,846	May 21	1954	513	47	1052
Kogge, Ferdinand H., West Hoboken, N. J. Refinishing rubber blankets	403,942	May 28	2091	.....	47	1086
Kohfahl, Johann J. A., *et al.* (See Rabitz, Carl W., assignor.)						
Kohlsaat, Peter N., Chicago, Ill. Vinegar-generator	402,746	May 7	290	74	47	718
Kohnke, Quitman N., New Orleans, La. Music-holder	402,529	Apr. 30	2811	832	47	647
Kolgraf, Pierre, Brussels, Belgium. Metallic sleeper for railways	404,043	May 28	2042	587 / 588	47	1114
Konigslow, Hermann, Cleveland, Ohio. Attachment for telephones	405,420	June 18	1538	407	47	1544
Konigslow, Otto, Cleveland, Ohio. Telephone attachment	405,566	June 18	1777	470	47	1593
Kookogey Electric Company. (See Kookogey, William P., assignor.)						
Kookogey, William P., Brooklyn, N. Y., assignor to Kookogey Electric Company. Secondary battery	401,953	Apr. 23	2322	603	47	469
Kookogey, William P., Brooklyn, N. Y., assignor to Kookogey Electric Company. Galvanic battery	402,166	Apr. 30	2661	689	47	542
Koon, Joseph, New Haven, Conn., assignor to L. Schiele & Company, New York, N. Y. Corset	403,760	May 21	1821	478	47	1026
Kopmerer, Gerhard J., Milwaukee, Wis. Snow-scraper	400,775	Apr. 2	503	136	47	99
Korn, Jacob B. (See Koeb and Korn.)						
Kosier, Horace M., Ridgeway, Kans. Suspension-bridge	403,433	May 14	1343	352	47	924
Kowalski, August J., *et al.* (See Zalikowski, Jan, assignor.)						
Kraft, Charles A., Philadelphia, Pa. Sash-holder	405,101	June 11	1056	282	47	1442
Kramer, Otto, Unionville, Mich. Fork	403,536	May 21	1511	396	47	985
Kramer, Philip G., Jr., assignor of one-half to C. H. Schulte, Detroit, Mich. Mounting portraits	401,441	Apr. 16	1530	401	47	312

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Krapf, Benjamin G., Leavenworth, Kans. Shade-holder for lamps	404,203	May 28	2503	635	47	1168
Kraus, Samuel, assignor to Eagle Pencil Company, New York, N. Y. Pencil-tip	405,102	June 11	1057	282	47	1442
Krause, William H., Chicago, Ill. Necktie-fastener	403,761	May 21	1622	478	47	1026
Krauser, Cyrus, Leeper, Pa. Frame for the pillows of coffins	401,284	Apr. 9	1287	345	47	253
Krebaum, Charles G., Havana, Ill. Safety attachment for watches	403,943	May 28	2091	549	47	1086
Kretzer, Henry F., St. Louis, Mo. Hand-rest	405,781	June 25	2124	559	47	1663
Kroeschell Brothers. (See Kroeschell, Herman A., assignor.)						
Kroeschell, Herman A., Chicago, Ill. Steam-heating device	404,419	June 4	65	17	47	1238
Kroeschell, Herman A., assignor to Kroeschell Brothers, Chicago, Ill. Steam-boiler	400,462	Apr. 2	51	15	47	13
Krouse, Nathaniel W., Washington, Pa. Cut-off valve for tanks	400,920	Apr. 9	743	200	47	151
Kruedelbach, Frederick, Winfield, N. Y. Couch-bed	402,530	Apr. 30	3212	832	47	647
Krüger, Friedrich, assignor to A. Leonhardt & Co., Mulheim, near Frankfort-on-the-Main, Germany. Medical compound	401,500	Apr. 16	1618	.....	47	328
Krüger, Friedrich, assignor to A. Leonhardt & Co., Mulheim, near Frankfort-on-the-Main, Germany. Medical compound	401,501	Apr. 16	1619	.....	47	328
Krull, Eduard, Güstrow, Mecklenburg-Schwerin, Germany. Inhaling apparatus	401,502	Apr. 16	1619	439	47	328
Krupp, Frank, New Orleans, La. Lock	400,858	Apr. 2	643	175	46	124
Kruse, Charles. (See Weiss, Charles W., assignor.)						
Kruse, Henry, Cincinnati, Ohio. Joint for show-cases	405,672	June 18	1961	515	47	1626
Kruse, Theodore, Indianapolis, Ind. Heating-furnace	404,006	May 28	2182	573	47	1104
Krutzsch, William, assignor to Buckeye Iron and Brass Works, Dayton, Ohio. Tobacco-cutting machine	402,088	Apr. 23	2532	660	47	509
Kuhl, Albert F., Van Wert, Ohio. Hand-car	405,893	June 25	2278	599	47	1693
Kuhn, Henry, St. Louis, assignor to H. A. Hyatt, Kirkwood, Mo. Photographic apparatus	403,476	May 14	1409	368 / 369	47	936
Kuhn, John P., and J. A. Reynolds, Alton, Ill. Oyster-pail	405,488	June 18	1663	439	47	1569
Kuilbom, Otto, Avondale, Ill. Bellows	405,103	June 11	1057	282	47	1442
Kummle, Albert, Chicago, Ill. Strainer	405,567	June 18	1778	470	47	1594
Kunath, Hermann, Dresden, Saxony, Germany. Ball-bearing	401,748	Apr. 23	2018	528	47	412
Kundtz, Theodor, Cleveland, Ohio. Combination-cabinet for sewing-machines	405,568	June 18	1779	470	47	1594
Kunkel, Fred. (See Preuss, Rudolph, assignor.)						
Kuntsman, Friedrich, Troy, Ill. Side-hill plow	405,489	June 18	1664	439	47	1569
Kuntzsch, William J., Syracuse, N. Y. Toy parachute	404,847	June 11	697	179	47	1370
Kunze, Julius, Yonkers, N. Y. Hand printing-press	401,839	Apr. 23	2151	561 / 562	47	436
Kussmaul, Carl, assignor to Society of Chemical Industry, Basle, Switzerland. Metaamidophenol	403,678	May 21	1701	.....	47	1003
La Bruce, Flora M., Annandale, S. C. Artist's portfolio	405,782	June 25	2125	558	47	1664
La Casse, Henry, Syracuse, assignor to S. Wile, Rochester, N. Y. Machine for corking and wiring corks to bottles	400,776	Apr. 2	505	137 / 138 / 139 / 140	47	99
La Clair, Charles F. (See Grenon, Sam, assignor.)						
La Dow, Charles, Albany, N. Y. Pump-bucket	401,954	Apr. 23	2323	604	47	470
La Dow, Charles, Albany, N. Y. Pulverizer	404,291	May 28	2641	686 / 687	47	1192
La Dow, Charles, Albany, N. Y. Pulverizing-harrow	404,791	June 4	610	157	47	1345
La Dow, John, Denver, Colo. Baling-press	400,922	Apr. 9	746	200 / 201	47	152
La Grange, Clinton, Guilderland Centre, N. Y. Mowing-machine	403,679	May 21	1701	450	47	1003
La Mothe, Bernard J., assignor to United States Rolling Stock Company, New York, N. Y. Car-truck	402,167	Apr. 30	2662	689	47	543
La Mothe, Bernard J., assignor to United States Rolling Stock Company, New York, N. Y. Railway-car truck	402,168	Apr. 30	2663	690	47	543
La Mothe, Bernard J., assignor to United States Rolling Stock Company, New York, N. Y. Car-truck	402,169	Apr. 30	2665	690	47	543
La Rue, Roland M., assignor of one-half to W. Newkirk, Connersville, Ind. Railway-car heater	401,749	Apr. 23	2019	528	47	412
Laass, Emil, *et al.* (See Dewey, Mark W., assignor.)						
Lacey, Fred, assignor of one-half to A. B. Mole, Adams, Mass. Loom attachment for weaving center selvages	403,196	May 14	971	255 / 256	47	855
Lacey, John F., Domestic, Ind. Post-hole-boring machine	402,941	May 7	574	151	47	772
Lacroix, Charles. (See Ostermann and Lacroix.)						
Ladd, Daniel E., Schenectady, N. Y. Folding gate	404,007	May 28	2184	574	47	1104
Ladd, Joseph J., Callao, Peru. Replacing-frog	404,095	May 28	2335	612	47	1135
Ladd, Sherman W. (See Gooding and Ladd.)						
Laemmle, David, Fort Wayne, Ind. Brick-kiln	400,575	Apr. 2	213	58	47	45
Lafloe, Edward, Willimantic, Conn., assignor of one-half to T. B. Stowell, Providence, R. I. Top roll for spinning-machines	403,537	May 21	1512	396	47	965
Laguire, William H., Amber, Mich. Die-stock	402,747	May 7	290	74	47	718
Lahey, William, Stoneham, Mass. Belt-tightener for sole-edge-trimming machines	402,250	Apr. 30	2775	718	47	564
Lahman, William H., Chicago, Ill. Grate for furnaces	401,955	Apr. 23	2396	604	47	470
Lahousse & Co., Hector. (See Collé, Charles, assignor.)						
Lahue, Moses M. (See Sawyer and Lahue.)						
Lake, Wilmot, Washington, D. C. Coupling for underground conduits	403,352	May 14	1215	323	47	901
Lalonde, Joseph, Essexville, Mich. Ditching-machine	400,859	Apr. 2	645	175	47	124
Lambert, Albert, Wadsworth, Ohio. Steam-injector	401,565	Apr. 16	1718	453	47	345
Lambert, Clement. (See Weber and Lambert.)						
Lambert, George W. (See Dunham, Sylvester C., assignor.)						
Lambert, Homer. (See Berry and Lambert.)						
Lambing, Isaac P., Ione, Cal. Excavator	403,702	May 21	1823	478 / 479	47	1026
Lambing, John S. (See Bonnell and Lambing.)						
Lamont, John, assignor to Tower & Lamont, Rochester, N. Y. Razor-strop	402,461	Apr. 30	3111	807	47	628
Lamson Consolidated Store Service Company. (See Cowley, James T., assignor.)						
Lamson, William S. (See Eichbaum, Henry, assignor.)						
Lamson, William S. (See Soper, Samuel H., Jr., assignor.)						
Lancaster, Frederick J., assignor to National Weighing Machine Company, New York, N. Y. Coin-controlled weighing-machine	402,748	May 7	291	75	47	718
Lancaster, Hashemann. (See Replogle and Lancaster.)						
Land, Charles H., Detroit, Mich. Artificial tooth	400,921	Apr. 9	744	200	47	152
Land, Charles H., Detroit, Mich. Artificial tooth-crown	403,507	May 21	1583	419	47	979
Land, Charles H., Detroit, Mich. Artificial tooth-crown	405,167	June 11	1158	309	47	1461
Landers, John F. (See Parker and Landers.)						
Landes, Adolph, assignor, by mesne assignments, to S. Landes, New York, N. Y. Neck-scarf	403,538	May 21	1514	396	47	965

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Landes, Sophie. (See Landes, Adolph, assignor.)						
Landis, Frank F., Waynesborough, Pa. Threshing-machine	401,840	Apr. 23	2153	562	47	437
Landis, Frank F., Waynesborough, Pa. Hinge-screw coupling for fishing-net frames	403,680	May 21	1702	450	47	1004
Landman, John G., Brooklyn, N. Y. Hinge-screw coupling for fishing-net frames	405,894	June 25	2280	599	47	1693
Landolt, Christian, Louisville, Ky. Bronzing-machine	403,274	May 14	1103	293	47	879
Lane, Almeron M., Meriden, Conn. Setting mechanism for alarm-clocks	403,275	May 14	1104	293	47	879
Lane, Almeron M., Meriden, Conn. Clock striking mechanism	402,334	Apr. 30	2002	758	47	588
Lane, Arthur E., Chicago, Ill. Guard for infants						
Lane & Co., William R. (See Knight, George H., assignor.)						
Lane, Cyrus D., *et al.* (See Green, William W., assignor.)						
Lane, Frank A., Manchester, N. H. Pipe-joint	402,089	Apr. 23	2333	660	47	509
Lane, Frank A., Asbury Park, N. J. Arc lamp	400,692	Apr. 2	382	103	47	75
Lane, George M., Asbury Park, N. J. Arc lamp	405,421	June 18	1540	408	47	1544
Lane, James W., New York, N. Y. Water-proof material for coats	402,843	May 7	432	114	47	744
Lane, John G., Poughkeepsie, N. Y. Door-hanger track	406,000	June 25	2464	645	47	1734
Lane, William J., Poughkeepsie, N. Y. Tackle-block	401,956	Apr. 23	2327	604	47	470
Laney, William S., Lithopolis, Ohio. Washing-machine						
Lang Company, William. (See Hertel, Henry, assignor.)						
Lang, Henry. (See Glocker, Carl F., assignor.)						
Lang, Louis P., Allegheny, Pa. Boot or shoe sole protector	403,681	May 21	1704	450	47	1004
Lang & Shepard. (See Shepard, Stephen A., assignor.)						
Lang, William, Brooklyn, N. Y. Vending apparatus	401,891	Apr. 23	2298	581	47	452
Langan, John B., Chicago, Ill. Confection-box	402,942	May 7	575	151	47	772
Lange, Christian F., Cleveland, Ohio. Damper	403,353	May 14	1215	323	47	901
Lange, Philip. (See Reinmann and Lange.)						
Langebartels, Henry C., Star, Iowa. Road-scraper	401,356	Apr. 16	1403	371	47	288
Langenbach, Charles J., Dorchester, Iowa, assignor of one-half to J. F. Force, Minneapolis, Minn. Bolt	403,847	May 21	1955	513	47	1032
Langer, Gustav E. (See Fritsch, Anton H., assignor.)						
Langill, Ross B., River John, Nova Scotia, Canada. Tire-shrinker	403,115	May 14	837	221	47	829
Langlands, Daniel G., and O. E. Moulton, assignors to Somersworth Machine Company, Dover, N. H. Machine for tapping elbows and return-bends	403,199	May 14	972	256 / 257	47	855
Langston, Thomas, Meriden, Conn., assignor to E. H. Fessenden and K. E. Jacobson, Brooklyn, N. Y. Wick-tube for lamps	404,848	June 11	698	180	47	1370
Lansell, George, Sandhurst, Victoria. Apparatus for equalizing the strain on winding-gear	404,292	May 28	2645	687 / 688	47	1193
Lapage, Richard H., Westminster, England. Compound engine	405,569	June 18	1780	471	47	1594
Lapage, Richard H., Westminster, England. Compound locomotive-engine	405,570	June 18	1784	472 / 473	47	1595
Lapp, John. (See Locke and Lapp.)						
Lapworth, William, Hopedale, Mass. Boot or shoe	402,943	May 7	576	151	47	772
Lapworth, William, assignor to Hopedale Elastic Fabric Company, Hopedale, Mass. Corded or elastic fabric	402,844	May 7	433	114	47	744
Larimer, William S., Glen Ebon, Ohio. Hinge	401,036	Apr. 9	916	245	47	184
Larkins, George. (See Caird and Larkins.)						
Larson, Adolph, Mapleton, Wis. Device for transmitting power	403,598	May 21	1585	420	47	979
Larson, Emil. (See Hammarlund and Larson.)						
Larson, Henry A., Hawthorne, Iowa. End-gate for wagons	402,944	May 7	576	152	47	772
Lasack, Adolph, Oxford Junction, Iowa. Hay-loader	404,096	May 28	2336	612 / 613	47	1136
Lasor, Elizabeth S., administratrix. (See Lasor, Sanford W.)						
Lasor, Sanford W., deceased; E. S. Lasor administratrix and assignor to C. Chambers, Jr., Philadelphia, Pa. Wire cut-off brick-machine	401,750	Apr. 23	2021	528	47	413
Latch, Arthur. (See Batchelor and Latch.)						
Lathrop, Augustus, and L. A. Heard, Maybell, Colo. Water-elevator	404,849	June 11	699	180	47	1371
Lathrop, William C., Milton Centre, Ohio. Grain-drill attachment	402,677	May 7	185	47	47	699
Lathrop, William C., Milton Centre, Ohio. Fence	402,678	May 7	187	47	47	699
Latill, Louis, Baton Rouge, La. Hame-tug	401,957	Apr. 23	2328	605	47	470
Latschar, Christian, New Brunswick, N. J. Work-box	401,037	Apr. 9	917	245	47	184
Lattan, Louis. (See Tripp and Lattan.)						
Lanfenburg, Michael N., assignor to Stockton Combined Harvester and Agricultural Works, Stockton, Cal. Grain separator and cleaner	402,462	Apr. 30	3112	807 / 808	47	628
Laughlin, John W., Parkville, Ill. Device for handling green tiles	403,276	May 14	1165	293	47	880
Laughlin, Thomas S., Portland, Me. Folding anchor	401,654	Apr. 16	1875	487	47	373
Laven, Matthias, *et al.* (See Murphy, William H., assignor.)						
Lavery, Richard, Boston, Mass. Differential gearing for hoisting-machines	402,601	May 7	73	17	47	678
Lavigne, Joseph P., New Haven, Conn. Breech-loading ordnance	405,844	June 25	2207	581	47	1680
Law, Crossley, and C. E. Howe, South Chicago, assignors of one-tenth to E. Ward, Chicago, Ill. Apparatus for the manufacture of steel	405,422	June 18	1541	408 / 409	47	1544
Law, Myron D., Philadelphia, Pa. Lightning-arrester	400,463	Apr. 2	52	16	47	14
Lawrence, Adelbert G., Motley, Minn. Pulley-support	402,251	Apr. 30	2776	718	47	564
Lawrence, Adelbert G., Motley, Minn. Automatic switch	402,252	Apr. 30	2777	719	47	565
Lawrence, Cyrenius, Clyde, Mich. Crib	400,693	Apr. 2	383	103	47	76
Lawrence, Edwin F., *et al.* (See Clark, Norman, assignor.)						
Lawrence, George T. (See Joslin and Lawrence.)						
Lawrence, James W., New York, N. Y. Buckboard	400,576	Apr. 2	214	58	47	45
Lawrence, John H., *et al.* (See Clark, Norman, assignor.)						
Lawrence, John R. (See Patterson and Lawrence.)						
Lawrence, Louis P., Passaic, N. J., assignor to Lawrence Railway Brake Company, New York, N. Y. Locomotive-brake	403,277	May 14	1107	293 / 294	47	880
Lawrence, Louis P., Passaic, N. J., assignor to Lawrence Railway Brake Company, New York, N. Y. Power-brake	403,539	May 21	1514	397	47	965
Lawrence Railway Brake Company. (See Lawrence, Louis P., assignor.)						
Lawshe, Spencer R., Chicago, Ill. Lightning-rod and coupling	400,464	Apr. 2	54	16	47	14
Lawson, Albert. (See Lawson, Henry and A.)						
Lawson, Arthur T., and S. Dear, Leeds, county of York, England. Tension-regulating device for spindle-driving bands	404,917	June 11	801	205 / 206	47	1390
Lawson, Henry and A., Baltimore, Md. Steering apparatus	404,008	May 28	2185	574	47	1105
Lawson, P. V., and W. L. Field, Menasha, Wis. Pulley	403,116	May 14	838	222	47	829
Lawson, Samuel, assignor to himself and A. T. Welch, New York, N. Y. Gas-engine	402,749	May 7	293	75	47	718
Lawson, Samuel, assignor to himself and A. T. Welch, New York, N. Y. Gas-engine	402,750	May 7	295	76	47	718
Lawson, Samuel, assignor to himself and A. T. Welch, New York, N. Y. Gas-engine	402,751	May 7	297	76	47	719
Lawton, Lewis, F. Swann, and W. R. Whitehead, Chambersburg, N. J.; said Lawton assignor to said Swann and Whitehead. Muffle for glass and earthen ware	405,571	June 18	1786	473	47	1596
Lawton, Lyman T., assignor to Meriden Malleable Iron Company, Meriden, Conn. Lamp-wick lifter	402,945	May 7	577	152	47	773

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g	Official Gazette. Vol.	Official Gazette. Page.
Lay, Abner L., Battle Creek, Mich. Two-wheeled vehicle	403,354	May 14	1216	393	47	901
Laycock, William S., Sheffield, county of York, England. Brake for railway-wagons	403,540	May 21	1515	397	47	985
Layman, Stephen D., Boston, Mass. Perforating-machine	401,038	Apr. 9	919	245	47	184
Le Beau, Frederick, Buffalo, N. Y. Water-wheel	401,751	Apr. 23	2023	529	47	413
Le Clair, George, assignor to Le Clair Manufacturing Company, Oswego, N. Y. Automatic safety-clutch	405,845	June 25	2209	581	47	1689
Le Clair Manufacturing Company. (See Le Clair, George, assignor.)						
Lea, James, Fernleigh, New Road, Bromagrove, county of Worcester, England. Seat for vehicles	401,179	Apr. 9	1134	300	47	222
Leach, Henry B., Boston, Mass. Safety-razor	402,463	Apr. 30	3114	808	47	628
Leach, Henry B., Boston, Mass. Safety-razor	402,946	May 7	578	152	47	773
Leach, Willis E. (See Briggs and Leach.)						
Leak, William W., Montgomery, Ala. Plow	402,253	Apr. 30	2780	719	47	565
Learned, William B., and L. Murray, assignors of one-half to E. Howard Watch and Clock Company, Boston, Mass. Pinion-facing machine	401,180	Apr. 9	1135	301	47	222
Leary, Michael, assignor of one-half to J. P. Mann, Utica, N. Y. Automatic railway-frog	405,965	June 25	2402	629	47	1713
Lesaer, Joseph, Wheaton, Minn. Grain-cleaning machine	405,168	June 11	1160	310	47	1461
Leavell, James M. (See Huffman, William C., assignor.)						
Leavis, Henry T., assignor to Wakefield Rattan Company, Wakefield, Mass. Reed or rattan chair, &c	401,958	Apr. 23	2329	605	47	471
Leavitt, Erasmus D., Jr., Cambridgeport, Mass. Steam-engine	402,254	Apr. 30	2780	720	47	566
Leavitt, Erasmus D., Jr., Cambridgeport, Mass. Device for connecting the cranks of two independently-acting engines	402,255	Apr. 30	2782	721	47	566
Leavitt, Erasmus D., Jr., Cambridgeport, Mass. Steam-cylinder for steam-engines	402,256	Apr. 30	2783	721	47	566
Leavitt, Erasmus D., Jr., Cambridgeport, Mass. Hoisting-engine	402,257	Apr. 30	2784	721, 722	47	566
Leavitt, Frank M., assignor to E. W. Bliss Company, Brooklyn, N. Y. Drop-hammer	401,566	Apr. 16	1719	453, 454	47	346
Leavitt, Frank M., Brooklyn, N. Y., assignor, by mesne assignments, to Opera Glass Supply Company, of New Jersey. Coin-operated lock	403,200	May 14	975	257, 258	47	856
Lebel, Florian, Levis, Quebec, Canada. Carriage-axle	404,635	June 4	400	97	47	1302
Lebowich, Hyman. (See Block, Hyman I., assignor.)						
Leck, John O., Glen Elder, Kans. Vehicle-wheel	403,763	May 21	1826	479	47	1027
Leclercq, Louis P., Lille, France. Merchandise wrapper or envelope	402,335	Apr. 30	2903	752	47	588
Leduc, Nelson, and A. E. Weeks, Lockport, N. Y.; said Weeks assignor to said Leduc. Dust-collector	401,503	Apr. 16	1621	429	47	329
Lee, Charles. (See Whittlesey, Charles E., assignor.)						
Lee, Elmer, St. Louis, Mo. Surgical applicator	401,787	Apr. 23	2072	541	47	423
Lee, George W., Homeworth, Ohio, assignor to himself and H. T. Gould, Perry, N. Y. Thill-coupling	402,531	Apr. 30	3213	832	47	647
Lee, Henry A., Glen Ridge, N. J. Package for merchandise	405,364	June 18	1456	385	47	1527
Lee, Joseph P., Wyalusing, Pa. Hoof-shears	401,892	Apr. 23	2229	581	47	459
Lee, Willard, Los Gatos, Cal. Machine for labeling cans	401,039	Apr. 9	920	246	47	184
Lee, William H. (See Patton, George W., assignor.)						
Lee, William W., Northampton, Mass. Handle for table-cutlery	401,181	Apr. 9	1137	301	47	223
Lee, William W., Northampton, Mass. Welding	402,947	May 7	579	.....	47	773
Leeds, Pulaski, Louisville, assignor to R. T. Miller, Covington, Ky. Drill	402,170	Apr. 30	2666	691	47	544
Leedy, John W., *et al.* (See Davis, Jehu W., assignor.)						
Leeper, Alfred B., Owaneco, Ill. Band-cutter platform for thrashing-machines	402,258	Apr. 30	2789	722	47	567
Leeper, George W., *et al.* (See Huffman, Pleasant B., assignor.)						
Leeper, Henry S., *et al.* (See Huffman, Pleasant B., assignor.)						
Lees, Ralph. (See Stead, Eldred W., assignor.)						
Leesintzer, George W. (See Taylor, William A., assignor.)						
Lefébure, Etienne L., New York, N. Y. Scraper	401,442	Apr. 16	1531	405	47	312
Leffingwell, John Q., Nevada, Iowa. Washing-machine	401,357	Apr. 16	1404	371, 372	47	288
Legat, Désiré M., Paris, France. Flexible piping for air-brakes	401,706	Apr. 16	1943	507	47	386
Leggett, Clinton H., New York, N. Y. Cover for paint-cans	402,679	May 7	188	47, 48	47	699
Lehman, Edwin W., Philadelphia, Pa., assignor of one-half to D. C. Walker, Edgewater, N. J. Hand-stamp	400,860	Apr. 2	647	175	47	124
Lehman, George W., *et al.* (See Kaylor, John, assignor.)						
Lehman, Joseph H., Philadelphia, Pa. Electric gas-lighter	403,944	May 28	2092	548	47	1086
Lehman, Joseph N. and N., Goshen, Ind. Wire fence	401,567	Apr. 16	1725	454	47	347
Lehman, Neal. (See Lehman, Joseph N. and N.)						
Lehmann, Anthony A., Baltimore, Md. Stop-motion for doubling-machines, &c	400,694	Apr. 2	384	104	47	76
Leibel, Joseph C., assignor of one-half to D. Ashby, Colorado Springs, Colo. Scarf-pin	405,783	June 25	2127	553	47	1664
Leibersperger, George R., and G. W. Bailey, Saegerstown, Pa. Fan for rocking-chairs	402,948	May 7	579	152, 153	47	773
Leiby, Isaac F., Baird, Tex. Nut-lock	402,023	Apr. 23	2427	632	47	488
Leighton, George W., assignor to Dalzell, Gilmore & Leighton Company, Findlay, Ohio. Manufacture of glassware	402,090	Apr. 23	2534	.....	47	510
Leighton, John T., Edinburgh, Scotland. Apparatus for manufacturing aerated water	403,117	May 14	839	222	47	829
Leilich, Francis T., Bridgeport, Conn. Feeding mechanism for sewing-machines	401,182	Apr. 9	1137	301, 302	47	223
Leilich, Francis T., Bridgeport, Conn. Feeding mechanism for sewing-machines	402,259	Apr. 30	2790	723	47	568
Leilich, Francis T., Bridgeport, Conn. Take-up mechanism for sewing-machines	404,357	May 28	2746	713	47	1212
Leilich, Francis T., Bridgeport, Conn. Feeding mechanism for sewing-machines	404,358	May 28	2748	713, 714	47	1212
Leinard, Edgar A., and G. W. Sheets, Karle, Ohio. Stirrup	403,945	May 28	2095	548	47	1067
Leiss, Frederick, New York, N. Y. Match	401,443	Apr. 16	1531	405	47	312
Leith, Alexander J. (See Foster, Robert F., assignor.)						
Leland, Edwin A., assignor to L. Richardson, Brooklyn, N. Y. Muffler for steam or other heaters	402,336	Apr. 30	2904	752	47	588
Lemieux, Timothy W., Duluth, Minn. Hoisting-machine	401,841	Apr. 23	2154	562	47	437
Lemieux, Timothy W., Duluth, Minn. Cable-grip	401,842	Apr. 23	2155	563	47	437
Lemman, John, assignor to Wakefield Rattan Company, Wakefield, Mass. Reed chair, &c.	401,959	Apr. 23	2330	605	47	471
Lemp, Hermann, Lynn, Mass. Compound-wound alternating-current dynamo	405,263	June 18	1316	347	47	1498
Lemp, Hermann, Lynn, Mass., assignor to Thomson Electric Welding Company, of Maine. Electrical converter	403,541	May 21	1516	397	47	965
Lemp, Hermann, and M. J. Wightman, Hartford, Conn., assignors to Schuyler Electric Company, of Connecticut. Incandescent lamp	401,444	Apr. 16	1532	405	47	312
Lenhart, Frank, Brazil, Ind. Horse-detacher	404,009	May 28	2187	574	47	1105
Lenman, John T., Washington, D. C. Letter-box	404,293	May 28	2648	686	47	1194
Lenoir, John T., Columbia, Miss. Attachment for well-curbs	401,040	Apr. 9	922	246	47	185

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g	Official Gazette. Vol.	Official Gazette. Page.
Leonard, Harry W., Chicago, Ill. Combined track and train lighting	405,895	June 25	2281	599, 600	47	1693
Leonard, Harry W., Chicago, Ill. Electric-lighting system	405,896	June 25	2284	600	47	1694
Leonard, Harry W., and A. Hanson, Chicago, Ill.; said Hanson assignor to said Leonard. System of electric lighting for railway-cars	405,897	June 25	2286	600	47	1694
Leonhardt & Co., A. (See Krüger, Friedrich, assignor.)						
Leonori, Charles L. (See Adams and Leonori.)						
Lerch, Uriah. (See Volk, Adam, assignor.)						
Leslie, Edward, Orangeville, Ontario, Canada. Ice or snow plow for railway-tracks	405,039	June 11	961	261	47	1426
Leslie, Edward, Orangeville, Ontario, Canada. Car-axle box	405,040	June 11	964	262	47	1427
Lesser, Phillip, Ridgway, Pa. Gas-burner for heating purposes	401,445	Apr. 16	1533	405	47	313
Lester, Robert E. (See Winkler, Friedrich G., assignor.)						
Lester, William M., Springfield, Mass. Indexing books	404,294	May 28	2649	689	47	1194
Leuthold, Ernst. (See Saurer and Leuthold.)						
Levasseur, John E., Monticello, Iowa, assignor to G. W. Simpson, Somerville, Mass. Butter-can	403,054	May 7	726	189	47	801
Lewing, Noah, Los Angeles, Cal., and M. E. Curry, Pacific, Mo. Medical compound	400,577	Apr. 2	215	.....	47	46
Levi, Mordical, Charleston, W. Va. Pavement for streets or roads	401,752	Apr. 23	2024	529	47	413
Levis, O. D. (See Taylor, Charles, assignor.)						
Levoy, Herman, and F. Dagwell, Cincinnati, Ohio. Automatic extinguisher for car-stoves	404,490	June 4	66	17	47	1238
Levy, Isaac, Newport, R. I. Corset-busk	402,260	Apr. 30	2792	723	47	568
Levy, Isaac, Newport, R. I. Brake for baby-carriages	405,041	June 11	985	262	47	1428
Levy, Minnie E. (See Schols, Anton, assignor.)						
Levy, William M., assignor of two-thirds to A. Bernd and Rothschild Brothers, St. Louis, Mo. Holder and packing-frame for hats	404,636	June 4	401	97, 98	47	1302
Lewandowski, Theodore, *et al.* (See Zalikowski, Jan, assignor.)						
Lewin, John J., San Francisco, Cal. Electro-medical apparatus	401,041	Apr. 9	924	247	47	185
Lewis, David, J. H. Williams, and M. Matthews, Anaconda, Mont. Ter. Calcining-furnace	404,720	June 4	509	130	47	1325
Lewis, Evan, and F. Armstrong, Kingston, Pa. Spirit-level	401,843	Apr. 23	2157	563	47	438
Lewis, Frank L., Providence, R. I. Cutting-off machine for jewelers' stock	402,171	Apr. 30	2667	692	47	544
Lewis, James H., assignor of one-half to C. G. Hampton, Detroit, Mich. Potato-digger	403,848	May 21	1856	513, 514	47	1009
Lewis, Joseph, South Evanston, Ill. Locomotive or other engine	405,104	June 11	1058	283	47	1442
Lewis, Orlando E. (See Lombard, Levi W. and N., assignors.)						
Lewis, Russell H., assignor to A. Eddy, Providence, R. I. Button	403,477	May 14	1412	369	47	937
Lewis, William H., Brooklyn, assignor to E. & H. T. Anthony & Company, New York, N. Y. Film-supporting frame for photo-cameras	402,680	May 7	189	48	47	699
Lewton, George W., Eldora, Iowa. Car-coupling	400,695	Apr. 2	386	104	47	76
Lewyn, Adolph. (See Borgfeldt and Lewyn.)						
Libbey, Hosea W., Boston, Mass. Car-wheel	401,504	Apr. 16	1623	429	47	329
Libby, E. D. (See Locke and Richardson, assignors.)						
Lichtenstein, Benjamin, *et al.* (See Smith, James E., assignor.)						
Lieberthal, Hyman, assignor to himself and S. Price, Chicago, Ill. Suspenders	401,183	Apr. 9	1139	302	47	223
Liebmann, Adolf, Manchester, county of Lancaster, England. Production of yellow coloring-matter	404,097	May 28	2340	.....	47	1136
Liebreich, Charles E. (See Hahlo, Liebreich, and Hanson.)						
Lieta, Charles L. (See Helmer and Lieta.)						
Ligett, Irven C., Warnerton, Kans. Stirrer and pulveriser	403,118	May 14	841	222	47	830
Liggett, Thomas, *et al.* (See Gearing, Charles M., assignor.)						
Light, George, Narka, Kans. Water-heating apparatus	402,602	May 7	75	17	47	678
Lightfoot, Benjamin H. (See Wilbur, Alfred, assignor.)						
Lilienthal, John L., San Francisco, Cal. Box-fastener	401,893	Apr. 23	2230	582	47	452
Lindeman, Louis C., Brooklyn, N. Y. Smoking device	402,681	May 7	191	48	47	699
Lindenthal, Gustav, Pittsburg, Pa. Plant for the manufacture of wrought-iron	405,490	June 18	1665	439, 440	47	1570
Lindenthal, Gustav, Pittsburg, Pa. Metallurgical plant	405,491	June 18	1666	440	47	1570
Lindeström, Hjalmar, assignor of one-half to A. Jernberg, Englewood, Ill. Mower	404,549	June 4	282	67	47	1278
Lindeström, Hjalmar, and A. Jernberg, Chicago, Ill. Cutting apparatus	404,548	June 4	280	67	47	1278
Lindgren, August, Moline, Ill., assignor to Moline Plow Company, of Illinois. Corn-planter	403,119	May 14	841	223	47	830
Lindley, Charles P., Bridgeport, Conn. Julep-strainer	404,204	May 28	2504	655	47	1168
Lindner, Robert, Chemnitz, Saxony, Germany. Starting-gear for compound engines	404,295	May 28	2650	689	47	1194
Lindsay, Charles M., Mankato, Minn. Sheet-music binder	405,264	June 18	1320	347	47	1498
Lindsay, Melville. (See Bates, Edward T., assignor.)						
Lindsey, George W., Baltimore, Md., assignor of one-third to J. B. Budding, York, Pa. Barrel-cover	401,707	Apr. 16	1944	507	47	386
Lindsley, William S., Ada, Ohio. Churn-dasher	405,265	June 18	1320	348	47	1498
Lineff, Alexander L., Westminster, assignor of one-half to E. H. Bayley, Eltham, England. Electric railway	405,365	June 18	1457	385, 386	47	1527
Lines, John, assignor to Scovill Manufacturing Company, Waterbury, Conn. Curtain-ring	404,637	June 4	402	98	47	1302
Lines, John, assignor to Scovill Manufacturing Company, Waterbury, Conn. Curtain-ring	404,638	June 4	403	98	47	1302
Linindoll, Charles C., assignor of one-half to H. D. Northrup, Fort Edward, N. Y. Combined cock and coupling for barrels, casks, &c.	404,918	June 11	803	206	47	1390
Linn, Allen D., Grand Rapids, Mich. Egg-crate	402,461	Apr. 30	3115	808	47	628
Linn, Andrew B. (See Linn, Charles and A. B.)						
Linn, Charles and A. B., Sioux City, Iowa. Dumping-wagon	402,532	Apr. 30	3214	833	47	647
Lipe, Charles E., Syracuse, N. Y., assignor to Hand Stitch Broom Sewing Machine Company, Pittsburg, Pa. Broom-sewing machine	402,337	Apr. 30	2905	753, 754	47	589
Lippy, David, Mansfield, Ohio. Cash-carrier	400,696	Apr. 2	387	104	47	77
Lippy, David, Mansfield, Ohio. Cash-carrier	401,568	Apr. 16	1726	455	47	347
Liquid Purifying Company. (See Cabell, Samuel G., assignor.)						
Lisson, Francis D. and W., Merrickville, Ontario, Canada. Bush-hammer	404,350	May 28	2750	714	47	1213
Lisson, William. (See Lisson, Francis D. and W.)						
Listeman, Philip. (See Blum and Listeman.)						
Lister, Alexander A., Camberwell, county of Surrey, England. Apparatus for lighting gas-burners	401,184	Apr. 9	1140	302, 303	47	224
Little, James A., Cartersburg, Ind. Spade or shovel	400,923	Apr. 9	749	201	47	153
Littlefield, George, Burlington, Wis. Wheat-steaming apparatus	401,185	Apr. 9	1141	303	47	224
Littlehales, George W., Pottsville, Pa. Recording and reproducing articulate speech or other sounds	404,850	June 11	700	180	47	1371
Livingstone, William, Jersey City, N. J. Sash-fastener	405,784	June 25	2128	550	47	1664
Lloyd, Edwin L., assignor to Joly Stopper Company, Philadelphia, Pa. Bottle-stopper	402,338	Apr. 30	2911	754	47	590
Lloyd, George E. (See Cummings and Lloyd.)						
Lloyd, Harlan P. (See Sageodorph, Longley L., assignor.)						
Loar, George C., Atchison, Kans. Gate-latch	404,974	June 11	885	231	47	1407

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Locke, Frederick M., Victor, and J. Lapp, Honeoye Falls, N. Y. Insulator	402,752	May 7	299	77	47	719
Locke, Joseph, Glenwood, and S. O. Richardson, Jr., Wakefield, Mass., assignors of one-half to said Richardson and E. D. Libby, Toledo, Ohio. Apparatus for making and burning gaseous fuel	403,434	May 14	1344	352	47	924
Locke, William J., and I. Thayer, San Francisco, Cal. Safety self-extinguishing car-heating stove	401,358	Apr. 16	1405	372	47	289
Lockwood, R. & P. C. (See Lockwood, Rhodes, assignor.)						
Lockwood, Rhodes, Boston, Mass. Nursing-nipple	401,505	Apr. 16	1624	430	47	329
Lockwood, Rhodes, assignor to R. & P. C. Lockwood, Boston, Mass. Combined ruler and blotter	405,217	June 11	1241	329	47	1477
Lockwood, William W., and C. M. Bickford, Freeport, Kans. Grain-meter	405,315	June 18	1390	366	47	1513
Loewenthal, Jacob, Chicago, Ill. Registering-lock	405,105	June 11	1062	283	47	1443
Loff, John. (See Girvin and Loff.)						
Loftus, John, Albany, assignor of one-half to J. Greenalch, East Albany, N. Y. Apparatus for heating railway-cars	400,777	Apr. 2	513	141	47	100
Logan, Jane, *et al.* (See McCarty, William F. M., assignor.)						
Lomas, Thomas, Bridgeport, Conn. Newspaper-file	402,024	Apr. 23	9429	632	47	489
Lombard, Levi W., Boston, Mass., assignor to Petroleum Fuel Company, of Maine. Hydrocarbon-heater	405,423	June 18	1546	410	47	1545
Lombard, Levi W., and W. Connor, Boston, Mass. Injector	401,753	Apr. 23	2094	589	47	413
Lombard, Levi W. and N., assignors of one-half to O. E. Lewis, Boston, Mass. Steam-boiler	402,091	Apr. 23	2535	661	47	510
Lombard, Nathaniel. (See Lombard, Levi W. and N.)						
Londergon, William H., Lake, Ill. Chalk-eraser	400,465	Apr. 2	54	16	47	14
Lone Jack Cigarette Company. (See Griswold, Thurman, and Wright, assignors.)						
Lone Jack Cigarette Company. (See Thurman, Robert W., assignor.)						
Lonergan, Thomas. (See Hodges and Lonergan.)						
Lonergan, Thomas D. (See Hodges and Lonergan, assignors.)						
Long, David N., Williamsville, N. Y. Means for obtaining water-power	404,851	June 11	703	186	47	1371
Long, David N., Williamsville, N. Y. Hydraulic excavating	404,852	June 11	704	181	47	1371
Long, David W., Springfield, Ohio. Toy	401,569	Apr. 16	1727	453	47	347
Long, Henry L., assignor of one-half to L. Nickow, St. Paul, Minn. Car-coupling	405,366	June 18	1460	387	47	1527
Long, James B., assignor to R. B. Long, Rochester, N. Y. Hot-air furnace	402,278	May 14	1108	294	47	880
Long, Moses H., Sabula, Iowa. Draw-bridge signal	405,042	June 11	986	261	47	1428
Long, Rebecca B. (See Long, James B., assignor.)						
Long, Timothy, Milwaukee, Wis. Carrier	405,785	June 25	2129	560	47	1664
Longworth, Henderson F., Jr., Beloit, Kans. Stalk-fodder harvester	404,044	May 28	2243	589	47	1114
Loomis, Burdett, Hartford, Conn. Process of and apparatus for the manufacture of gas	404,205	May 28	2305	{633 634	47	1168
Loomis, Burdett, Hartford, Conn. Process of and apparatus for the manufacture of gas	404,206	May 28	2309	636	47	1169
Loomis, Burdett, Hartford, Conn. Process of and apparatus for the manufacture of gas	404,207	May 28	2313	637	47	1170
Loomis, Burdett, Hartford, Conn. Apparatus for the manufacture of gas	404,208	May 28	2317	{637 638	47	1170
Loomis, Burdett, Hartford, Conn. Manufacturing gas	404,209	May 28	2320	638	47	1171
Loomis Electric Manufacturing Company. (See Loomis, Osborn P., assignor.)						
Loomis, Ernest Y. (See Sleeper, Joseph J., assignor.)						
Loomis, Osborn P., Somerville, Mass. Dynamo-electric machine	405,218	June 11	1242	330	47	1477
Loomis, Osborn P., Somerville, Mass., assignor to Loomis Electric Manufacturing Company, New York, N. Y. Cut-out	402,753	May 7	300	77	47	719
Loomis, Osborn P., Somerville, Mass., assignor to Loomis Electric Manufacturing Company, New York, N. Y. Automatic circuit-controller for electric lights	402,754	May 7	301	78	47	719
Loomis, Osborn P., Somerville, Mass., assignor to Loomis Electric Manufacturing Company, New York, N. Y. Ground-detector for electric circuits	405,572	June 18	1788	474	47	1590
Loonen, Charles, Paris, France. Brush	403,542	May 21	1517	397	47	966
Loree, D. W. (See Loree, John W., assignor.)						
Loree, John W., Fenwick, assignor of one-half to D. W. Loree, Ridgway, Mich. Potato-digger	401,285	Apr. 9	1288	344	47	253
Loree, Manfred U., Miamisburg, assignor to National Cash Register Company, Dayton, Ohio. Cash indicator and register	404,045	May 28	2244	589	47	1114
Loree, Manfred U., Miamisburg, and C. D. Grimes, assignors to National Cash Register Company, Dayton, Ohio. Cash indicator and register	404,046	May 28	2251	{589 590	47	1117
Loring, Charles A. (See Clayton and Loring.)						
Lott, John B., Kittanning, Pa. Vehicle-wheel	405,424	June 18	1548	410	47	1546
Lotze, Ernst, Spokane Falls, Wash. Ter. Current-propeller for vessels	401,446	Apr. 16	1534	409	47	313
Loughran, John D., Neosho Falls, Kans. Gravel-screen	402,845	May 7	435	115	47	744
Louis, Eugene M., Havana, Ill. Manufacturing dextrine corn-malt	405,573	June 18	1789	.....	47	1590
Lonrim, John, West Bay City, Mich. Barrel-bung	405,425	June 18	1549	410	47	1546
Love, John B., Philadelphia, Pa. Water-purifying apparatus	401,186	Apr. 9	1142	302	47	224
Lovejoy, De Soto, Moscow, Tex., assignor of one-half to S. Bergman and W. M. Kennedy. Motor	402,172	Apr. 30	2668	692	47	544
Loveland, Philander C., assignor of one-half to J. A. Moffitt and W. P. Bunch, Fairfield, Ill. Harrow	400,861	Apr. 2	648	175	47	124
Lovell, Allen G., trustee. (See Calef, Joseph W., assignor.)						
Lovering, Richard W., Poplar Grove, Ill. Book-case	400,925	Apr. 9	750	202	47	153
Lovewell, Sewell K., Chelsea, Mass. Ice-tool	402,173	Apr. 30	2669	692	47	544
Low, Frederick R. (See Clark and Low.)						
Lowden, Joseph, Leeds, county of York, England. Cutting designs on the face of fabrics	403,682	May 21	1705	{450 451	47	1004
Lowe, Frank W., and C. F. Sullivan, Boston, Mass. Folding ladder	400,778	Apr. 2	514	141	47	100
Lowe, James, *et al.* (See Grzybowski, Julian T., assignor.)						
Lowe, Leon P., Lynn, Mass. Apparatus for the manufacture of hydrocarbon gas	405,426	June 18	1550	410	47	1546
Lowe, Thaddeus S. C., Norristown, Pa., assignor to Guarantee Trust and Safe Deposit Company, trustees, of Pennsylvania. Apparatus for the manufacture of gas	401,570	Apr. 16	1728	456	47	347
Lowery, Abraham L., and J. N. Wyant, Francis, Nebr. Well-boring apparatus	400,466	Apr. 2	55	16	47	14
Lowrey, Andrew S. (See Armstrong and Lowrey.)						
Lowrey, Grosvenor P. (See Willson, Thomas L., assignor.)						
Lowrie, William, and C. J. Hall, London, county of Middlesex, England. Secondary generator for the conversion of electrical energy by induction	400,862	Apr. 2	649	{176 177	47	124
Lucas, Albert G., *et al.* (See De Zeng, Henry L., assignor.)						
Lucas, Christian E., and A. A. Wood, Atlanta, Ga. Refrigerating and ventilating car	400,863	Apr. 2	652	177	47	125
Lucas, Heman S., Chester, Mass. Grinding-wheel	402,682	May 7	193	48	47	700
Luce, Charles A., Manchester, N. H. Fire-escape	400,779	Apr. 2	515	{141 142	47	100
Lucey, James. (See Greene and Treman, assignors.)						
Lucus, John H. (See Watkins, William D., assignor.)						
Lucy, Mark M., *et al.* (See Kendall, Francis B., assignor.)						
Ludde, Elard, Maspeth, N. Y. Burner for night-lights	405,786	June 25	2131	560	47	1664

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Ludington, Frank J., Waterbury, Conn. Cigarette-machine	400,780	Apr. 2	517	{142 143 144 145	47	101
Ludloff, Friedrich, Martinikenfelde, near Berlin, Germany. Tool for cutting sheet metal, &c.	402,949	May 7	581	153	47	773
Ludlow, Washington L., Cleveland, Ohio. Seal-lock	401,226	Apr. 9	1229	344	47	233
Ludwig, Frederick, Glencoe, Minn. Boiler	403,599	May 21	1536	420	47	979
Lugrin, François, and E. Du Roveray, Geneva, Switzerland. Producing food for fish	405,713	June 25	3028	532	47	1645
Lumley, Edwin J., Washington, D. C., assignor to J. A. Bealmear, Baltimore, Md., and T. A. Mitchell, Washington, D. C. Umbrella-tip ring	403,355	May 14	1216	323	47	902
Lumley, William, Chicago, Ill. Temporary binder	404,210	May 28	2323	658	47	1171
Lund, William, Philadelphia, Pa. Stop-motion device for spinning and twisting machines	400,864	Apr. 2	654	{177 178	47	125
Lundell, Robert, New York, N. Y. Electric railway	400,926	Apr. 9	751	{202 203	47	153
Lundgren, Gustaf, Rockford, Ill. Hand-sled	404,975	June 11	886	231	47	1407
Luscomb, Martin, Bridgeport, Conn. Vacuum or pressure gage	403,543	May 21	1518	398	47	966
Luse, Jesse F. and J. W., Rosa, Iowa. Device for holding cattle to be dehorned	405,574	June 18	1790	474	47	1596
Luse, John W. (See Luse, Jesse F. and J. W.)						
Luther, Benjamin G., Worcester, Mass. Matching-machine	403,301	May 14	977	258	47	856
Luthy, Adolph, assignor to A. Luthy & Co., New York, N. Y. Bracelet	400,578	Apr. 2	216	58	47	46
Luthy & Co., Adolph. (See Luthy, Adolph, assignor.)						
Lyman, Edward F., and J. P. Warren, Chicago, Ill. Steam-exhaust head	405,575	June 18	1791	474	47	1597
Lyman, William W., Meriden, Conn. Fruit-jar clamp	403,055	May 7	727	190	47	801
Lynch, Edward P., Davenport, Iowa. Yielding shovel for cultivators	400,467	Apr. 2	56	17	47	14
Lynch, Edward P., Davenport, Iowa. Plow	400,468	Apr. 2	58	17	47	15
Lynch, H. H. (See Collins, John, assignor.)						
Lynch, John, Washington, D. C. Electric-wire conduit	405,576	June 18	1793	475	47	1597
Lynch, John S. (See Heath, Mark A., assignor.)						
Lynes, Ezra T. (See Lynes, Henry B. and E. T.)						
Lynes, Henry B. and E. T., Wichita, Kans. Churn	405,577	June 18	1794	475	47	1597
Lyon, George H., Bradford, Pa. Expansible frame	402,755	May 7	302	78	47	720
Lyon, Henry A. (See Harris, Willie W., assignor.)						
Lyon, Henry W., Bridgeport, Conn. Button-hole strip	401,359	Apr. 16	1406	372	47	289
Lyon, Henry W., Bridgeport, Conn. Making button-stripe	402,339	Apr. 30	2212	755	47	580
Lyon, Henry W., Bridgeport, Conn. Making button-stripe	404,047	May 28	2255	591	47	1118
Lytle, Andrew J., Hillsborough, Ohio. Spring mattress, pillow, &c	401,287	Apr. 9	1290	344	47	253
MacArthur, John S., Polloksheilds, county of Renfrew, and R. W. and W. Forrest, Glasgow, county of Lanark, Scotland. Obtaining gold and silver from ores	402,202	May 14	979	.....	47	857
MacKnight, John W., New York, N. Y. Laying artificial pavement	401,447	Apr. 16	1535	406	47	313
Macaulay, Thomas A., New York, N. Y. Automatic musical instrument	401,187	Apr. 9	1144	304	47	224
Macaulay, Thomas A., New York, N. Y. Automatic musical instrument	401,188	Apr. 9	1147	{305 306	47	225
Machold, Anthony F., Philadelphia, Pa. Medicated felt	401,189	Apr. 9	1151	.....	47	227
Machtanz, Heinrich, Hanau, Prussia, Germany. Cigar-holder	404,644	June 4	409	100	47	1303
Macintosh, Robert M., Boston, Mass. Machine for twisting fiber in hanks	405,741	June 25	2070	543	47	1652
Mack, Henry L., Summit, Kans. Harrow	400,697	Apr. 2	388	105	47	77
Mack, Hugo S., *et al.* (See Finch, James B., assignor.)						
Mack, James M., Philadelphia, Pa. Guide-bar for lining up the curves of street-surfaces	404,491	June 4	182	43	47	1239
Mack, William A., Norwalk, Ohio. Stand for sewing-machines	405,043	June 11	988	263	47	1428
Mackall, Charles, Baltimore, Md. Freight-car	402,174	Apr. 30	2670	{692 693	47	544
Macnamar, William, assignor of one-half to W. H. Hubbard, Indianapolis, Ind. Coin-operated receptacle	405,578	June 18	1795	475	47	1597
Macomber, Charles E., Atwater, Minn. Butter-package	400,698	Apr. 2	389	105	47	77
Macphail, James, and F. M. Needham, Rockford, Ill. Harrow	404,010	May 28	2188	{574 575	47	1105
Macpherson, David M., Lancaster, Ontario, Canada. Hand-truck	401,506	Apr. 16	1625	430	47	329
Macpherson, David M., Lancaster, Ontario, Canada. Milk-purifier	405,367	June 18	1462	387	47	1528
Maddin, Mary. (See Maddin, Samuel D., assignor.)						
Maddin, Samuel D., assignor to M. Maddin, Sarnia, Ontario, Canada. Harvester	402,025	Apr. 23	2430	{633 634	47	489
Maddin, Samuel D., Miamisburg, Ohio, assignor to M. Maddin, Sarnia, Ontario, Canada. Harvester	403,764	May 21	1827	{479 480 481	47	1027
Maddox, Joshua P., Portland, Me. Fabric for machine-belting, &c	400,579	Apr. 2	217	59	47	46
Maddox, Milton F. (See Moorman, George W., assignor.)						
Maehr, Frank, Brooklyn, N. Y. Combined lamp and toilet-case	404,421	June 4	67	17, 18	47	1238
Maenner, Henry, assignor of one-half to W. Heinzmann, Brooklyn, N. Y. Window	404,792	June 4	612	158	47	1345
Magneto Telegraph Company. (See Brown, Fred. H., assignor.)						
Magruder, John H., Washington, D. C. Candy-pan	403,683	May 21	1706	451	47	1004
Mahan, Frank. M., assignor of one-half to C. H. Morse, Chicago, Ill. Oil-burner	404,098	May 28	2341	613	47	1136
Mahon, William L. (See Weber, Adolph, assignor.)						
Maier, Karl, assignor of one-third to L. Frik, Philadelphia, Pa. Self-closing faucet	401,288	Apr. 9	1292	345	47	253
Main, William, Brooklyn, N. Y., assignor to River and Rail Electric Light Company, of West Virginia. Secondary battery	401,289	Apr. 9	1293	345	47	254
Main, William, Brooklyn, N. Y., assignor to River and Rail Electric Light Company, of West Virginia. Secondary battery	401,290	Apr. 9	1298	346	47	254
Main, William, Brooklyn, N. Y., assignor to River and Rail Electric Light Company, of West Virginia. Preparing electrodes for secondary batteries	401,291	Apr. 9	1302	346	47	255
Maitland, Eardley, London, county of Middlesex, England. Construction of ordnance	403,684	May 21	1707	451	47	1005
Malandin, Leon P. C. (See Debonttéville and Malandin.)						
Mallett, Francis W., assignor to D. Frisbie, New York, N. Y. Belt-shipper and lock	402,603	May 7	76	18	47	678
Mallon, James, New Orleans, La. Stubble-shaver	405,169	June 11	1161	310	47	1462
Mallon, John H., Francesville, Ind. Thermostat	405,579	June 18	1797	476	47	1598
Mallory, Charles M., Albion, N. Y. Carpet-stretcher	402,953	May 7	585	154	47	774
Mallory, Frank B., assignor of one-fourth to C. C. Dunham, Flemington, N. J. Car-ventilator	402,604	May 7	78	18	47	679
Maloy, James W., Marietta, Ga. Stone-sawing machine	401,655	Apr. 16	1676	488	47	374
Maloy, James W., Marietta, Ga. Truck for railway-cars	402,950	May 7	581	153	47	773
Maloy, James W., Marietta, Ga. Truck for railway-cars	402,951	May 7	583	154	47	774
Maloy, James W., Marietta, Ga. Lubricating device for railway-cars	402,952	May 7	584	154	47	774
Maloy, James W., Marietta, Ga. Lathe for turning non-circular forms	403,120	May 14	843	{223 224	47	830

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Manahan, George, and H. Gade, New York, N. Y. Composition for waterproofing and preparing sheathing and building paper	401,042	Apr. 9	925	.....	47	186
Manahan, George, and H. Gade, New York, N. Y. Apparatus for coating paper	405,044	June 11	988	263	47	1428
Mandeville, Charles, Farmer, Tex. Quilting attachment for sewing-machines	400,699	Apr. 2	390	105	47	77
Mandrill, George W., assignor to E. Pringle, Gloversville, N. Y., M. D. Shipman, and C. E. Bradt, De Kalb, Ill. Fastener for gloves	400,865	Apr. 2	655	178	47	125
Mandt, Targe G., Stoughton, Wis. Runner for bob-sleds	402,954	May 7	586	155	47	774
Manion, James J. (See McIntyre, Neil, assignor.)						
Mann, Charles B. (See Boyden, George A., assignor.) (Reissue.)						
Mann, Henry N., *et al.* (See Scharnweber, William, assignor.)						
Mann, James F. (See Leary, Michael, assignor.)						
Mann, Onslow C., assignor of one-half to G. E. Marvine, Delhi, N. Y. Clasp	401,844	Apr. 23	2158	563	47	438
Manning, Abraham L., Philadelphia, Pa. Educational apparatus	401,043	Apr. 9	926	247	47	186
Manning, Bowman & Company. (See Selps, Michael, assignor.)						
Manning, Charles E., Waverly, N. Y. Sign	402,663	May 7	193	49	47	700
Manning, Charles E., Waverly, N. Y. Sign	402,756	May 7	303	78	47	720
Manning, Edwin C., Washington, D. C. Coffin	404,639	June 4	404	98	47	1302
Manning, George E. (See Foster, John W., assignor.)						
Manning, Henry A., New York, N. Y. Cooking-vessel	403,279	May 14	1110	295	47	880
Manning, Samuel D. T., Portsmouth, Va. Cotton-harvester	400,700	Apr. 2	392	{106 107	{47	78
Mantle, Charles. (See Mantle, Solomon, J., and C.)						
Mantle, John. (See Mantle, Solomon, J., and C.)						
Mantle, Solomon, J., and C., Penfield, Ill. Washing-machine	401,190	Apr. 9	1152	306	47	227
Manton, Frank S., Providence, R. I. Locking-gear for ships' windlasses	403,356	May 14	1219	324	47	902
Manwaren, Albert H., Philadelphia, Pa. Electric meter	401,191	Apr. 9	1153	307	47	227
Mapes, William R. (See Chase, Sidney A., assignor.)						
Maranville, Franklin, Clinton, Ohio. Oil-can	403,544	May 21	1519	398	47	966
March, Jacob M., Phœnixville, Pa. Cuff-retainer	403,280	May 14	1111	295	47	881
March, P. G. (See Rogers and Jones, assignors.)						
Marchand, Henry E., Pittsburg, Pa. Machine for making hoes and shovels	401,656	Apr. 16	1877	{466 466	{47	374
Marder, Caroline, *et al.* (See Davis, Charles, assignor.)						
Marhoffer, Jacob. (See Berry and Lambert, assignors.)						
Marion, John, Bayou La Chute, La. Cotton-cultivator	401,507	Apr. 16	1626	430	47	329
Maris, Jared, Columbus, Ohio. Vehicle-hub band	403,357	May 14	1220	324	47	902
Marix, Paul, assignor to Société Industrielle des Glycerine et Acides Gras, Paris, France. Apparatus for distilling fat acids	400,469	Apr. 2	60	17, 18	47	15
Markham, Dewitt C., Collinsville, N. Y. Harrow	405,580	June 18	1798	479	47	1598
Marks, Solomon, assignor to R. B. Hyams, Cincinnati, Ohio. Bottle-stopper	400,927	Apr. 9	757	203	47	154
Marlin, Con. W., *et al.* (See Davis, Charles, assignor.)						
Marrder, Charles A., New York, N. Y. Car-heating apparatus	404,492	June 4	183	49	47	1259
Marriott, James H. W. (See Davis and Marriott.)						
Marschall, Franz, New York, N. Y. Bellows attachment for rocking-chairs	402,026	Apr. 23	2435	635	47	490
Marsh, Fletcher E. (See Burrell, George S., assignor.)						
Marsh, Mattie M., Moscow, Idaho Ter. Folding step for vehicles	401,845	Apr. 23	2159	562	47	438
Marsh, Riverius, New Brunswick, N. J. Detachable faucet	402,261	Apr. 30	2793	730	47	568
Marshall, Benjamin, San Francisco, Cal. Nut-lock	401,044	Apr. 9	927	247	47	186
Marshall, Benjamin F., Jr., and D. H. Rickerd; said Rickerd assignor, by mesne assignments, to S. F. Wagner, York, Nebr. Door-securer	405,581	June 18	1800	478	47	1598
Marshall, Charles A., Johnstown, Pa., assignor to Johnson Company, of Kentucky. Tunnel-yoke for cable railways	402,533	Apr. 30	3215	833	47	648
Marshall, George V., Pittsburg, Pa. Spiral stairway	400,470	Apr. 2	62	18	47	15
Marshall, John F., assignor to J. H. Finks, Waco, Tex. Box for matches, &c	403,685	May 21	1708	451	47	1005
Marshall, William, New York, N. Y. Electric condenser	402,866	Apr. 2	657	173	47	126
Marshall, William, New York, N. Y. Condenser switch-board	402,027	Apr. 23	2436	635	47	490
Marstera, James F., Brooklyn, N. Y. Fisherman's net	401,360	Apr. 16	1407	372	47	289
Marston & Co., I. G. (See Marston, Irving G., assignor.)						
Marston, Irving G., assignor to I. G. Marston & Co., Boston, Mass. Table-top for circular saws	401,894	Apr. 23	2231	592	47	452
Martel, Gaspard, Boston, Mass. Watch-maker's staking-tool	403,849	May 21	1958	514	47	1053
Martin, Christian H., Sioux City, Iowa. Grand-piano truck	402,340	Apr. 30	2913	735	47	590
Martin, Christian H., Sioux City, Iowa. Upright-piano truck	402,341	Apr. 30	2914	{735 736	{47	591
Martin, Edward L., *et al.* (See Hatch, Adin A., assignor.)						
Martin, John W., St. Louis, Mo., assignor to St. Louis Dead Lock Brake Company, of Illinois. Vehicle-brake	401,960	Apr. 23	2331	{605 606	{47	471
Martin, Lewis N., Leavenworth, Kans. Clothes-pounder	401,571	Apr. 16	1730	456	47	348
Martin, Morgan F., Brunswick, Ga. Liniment	403,121	May 14	845	.....	47	830
Martin, W. W. (See Davidson, Otis E., assignor.)						
Marvine, George E. (See Mann, Onslow C., assignor.)						
Maschmeyer, Charles, assignor to E. Miller & Company, Meriden, Conn. Extension-chandelier	405,899	June 25	2291	601	47	1696
Mason, Allan, Brooklyn, assignor to H. H. Sanderson, trustee, New York, N. Y. Burning culm or pulverized coal	405,966	June 25	2403	630	47	1713
Mason, Allan, Brooklyn, assignor to H. H. Sanderson, trustee, New York, N. Y. Burning coal and hydrocarbon fuel	405,967	June 25	2404	630	47	1714
Mason, Henry. (See Mason, Joseph and H.)						
Mason, Joseph and H., New York, N. Y. Safety-burner	402,262	Apr. 30	2794	724	47	568
Massett, John, North Tarrytown, N. Y. Grease-cup	403,358	May 14	1221	324	47	902
Massey, Albert P., and E. Normand, assignors to Eames Vacuum Brake Company, Watertown, N. Y. Brake	402,092	Apr. 23	2536	661	47	510
Massey, Thomas C., Chicago, Ill. Drill-brace	400,928	Apr. 9	758	204	47	154
Mast & Company, P. P. (See Kissell, Martin L., assignor.)						
Mast & Company P. P. (See Mast, Phineas P., assignor.)						
Mast, Phineas P., assignor to P. P. Mast & Company, Springfield, Mass. Grain-drill	404,853	June 11	705	181	47	1372
Mastera, Miles, Bureau, Ill. Reduction roller-mill	400,929	Apr. 9	759	204	47	154
Mastin, Cornelius E. (See Dugdale and Mastin.)						
Mather & Platt. (See Smith, David P., assignor.)						
Mather, William, Salford Iron Works, Manchester, county of Lancaster, England. Apparatus for treating textile fabrics	402,757	May 7	304	78, 79	47	720
Matheson, George N. (See Kendray, Thomas, assignor.)						
Mathews, Harry W. (See Hooton and Wiard, assignors.)						
Mathewson, Nathan F., Providence, R. I. Hay-fork	402,093	Apr. 23	2537	661	47	510
Mathewson, Nathan F., Providence, R. I. Railway-car gate	402,956	May 7	588	155	47	775
Mathewson, Nathan F., Providence, R. I. Car-gate	404,219	June 11	804	206	47	1390
Mathieson, Thomas T. (See Gossage, Frederick H., assignor.)						
Mathieson, John, Glasgow, county of Lanark, Scotland. Shuttle-box mechanism for looms	404,640	June 4	405	99	47	1302
Matlock, John N., Brooklyn, N. Y., assignor to himself, T. H. Williams, and S. D. Tompkins, Jersey City, N. J. Sand-molding machine	400,781	Apr. 2	525	145	47	102
Matteson, Elias L., Randolph, N. Y. Extension-table	400,701	Apr. 2	395	107	47	78
Matthews Decorative Glass Company. (See Thompson, Thomas J., assignor.)						
Matthews, Henry A., and D. M. Ireland, Waterbury, Conn. Lantern	405,106	June 11	1066	284	47	1443
Matthews, John. (See Conner, Joseph, assignor.)						
Matthews, Maggie. (See Lewis, Williams, and Matthews.)						
Matthey, Ferdinand, St. Imier, Switzerland. Fitting for blinds, curtains, &c	404,211	May 28	2586	{658 659	{47	1171
Maul, Hermann, assignor to M. Rost, Dresden, Saxony, Germany. Door-chain and uncoupling device therefor	400,930	Apr. 9	761	204	47	155
Maurer, Ludwig, Lowville, assignor of one-half to C. Scheer, New York, N. Y. Adjustable trestle	402,175	Apr. 30	2671	693	47	544
Maurer, Ludwig, and H. C. Scheer, New York, N. Y. Combined car brake and clutch	405,266	June 18	1321	348	47	1499
Mauser, Paul, assignor to Waffenfabrik Mauser, Oberndorf-on-the-Neckar, Würtemberg, Germany. Cartridge feed-pack for magazine-guns	402,605	May 7	79	19	47	679
Mauser, Paul, assignor to Waffenfabrik Mauser, Oberndorf-on-the-Neckar, Würtemberg, Germany. Magazine for fire-arms	403,765	May 21	1631	481	47	1098
Maxim Gun Company. (See Maxim, Hiram S., assignor.)						
Maxim, Hiram S., London, England. Magnetic separator	402,684	May 7	194	49	47	700
Maxim, Hiram S., Brooklyn, N. Y. Apparatus for the manufacture of filaments for incandescent lamps	405,239	June 11	1275	336	47	1484
Maxim, Hiram S., assignor to Maxim Gun Company, (limited,) London, England. Riveting-machine	401,708	Apr. 16	1945	{507 508	{47	386
Maxim, Hiram S., Brooklyn, assignor to United States Electric Lighting Company, New York, N. Y. Manufacture of filaments for electric lamps	405,170	June 11	1163	311	47	1462
Maxson, Charles B., Westerley, R. I. Sheet-delivery apparatus for printing-machines	405,582	June 18	1800	477	47	1598
Maxwell, Edgar G., *et al.* (See Flood, George W., assignor.)						
Maxwell, Gurdon E. (See Foote, James B., assignor.)						
Maxwell, James M., Pittsburg, Pa., assignor to himself and M. M. Comerford, Fairmont, W. Va. Air-brake	405,968	June 25	2406	630	47	1714
Maxwell, Patrick W. (See Brunker and Maxwell.)						
Maxwell, William A., and O. E. Meddaugh, Lakeport, Cal. Cough-syrup	404,422	June 4	68	.....	47	1239
May, Isaac, Brooklyn, C. and T. Spikins, New York, N. Y. Lock for switches	400,580	Apr. 2	218	59	47	46
May, John C. (See Glasscock, James H., assignor.)						
Mayer, Stronee & Co. (See Adler, Max, assignor.)						
Mayrhofer, Joseph C., New York, N. Y., assignor to American Automatic Spray Perfume Company, of New York. Apparatus for dispensing liquids	405,846	June 25	2210	582	47	1680
McAdams, John, Brooklyn, N. Y. Line-printing machine	403,206	May 14	985	{360 361	{47	858
McAllister, George B., Baltimore, Md. Letter-box for street-cars	402,028	Apr. 23	2438	635	47	490
McAllister, James, Chippewa Lake, Mich. Steam-engine	403,601	May 21	1580	{420 421	{47	980
McAnulty, John W., Concord, N. C. Plow and plow-point	400,581	Apr. 2	219	59	47	46
McArdle, Bernard, Geauga Lake, Ohio. Dumping-car	403,689	May 21	1714	453	47	1006
McArthur, James, assignor to Pullman Sash Balance Company, Rochester, N. Y. Sash-balance	403,479	May 14	1414	370	47	937
McArthur, Peter, assignor to Shickle, Harrison & Howard Iron Company, St. Louis, Mo. Drying-oven	405,220	June 11	1245	330	47	1477
McBlair, Charles R., and A. A. Raff, Washington, D. C. Making iron prints by photography	403,061	May 7	734	.....	47	802
McBoyle, Joseph, Oakland, Cal. Folding vehicle	404,494	June 4	186	44	47	1259
McBride, Abram R., assignor of one-fourth to R. I. and W. F. Harrell, Medina, Tex. Combined cultivator, plow, &c	401,045	Apr. 9	927	{247 248	{47	186
McCallip, William W., Columbus, Ohio. Fence-riveting machine	403,950	May 28	2101	550	47	1088
McCallum, J. R. (See Cox, Michael D., assignor.)						
McCalmont, Hiram R., Warren, Pa., assignor of one-half to W. J. Johnston, Washington, D. C. Device for protecting postage-stamps	401,961	Apr. 23	2333	606	47	471
McCanna, John E., Baltimore, Md. Thread-cutting die	401,962	Apr. 23	2334	606	47	471
McCarter, John G., Boston, Mass. Machine for cutting cloth into strips	404,645	June 4	410	{100 101	{47	1303
McCarthy, Charles A., and J. P. Moran, Sault de Ste. Marie, Mich. Railway snow-plow	400,582	Apr. 2	220	60	47	46
McCarthy, William J., Menominee, Mich. Lock-house for switch-stands	404,646	June 4	411	101	47	1304
McCarty, Alfred L., Des Moines, Iowa. Dental anæsthetic	402,963	Apr. 30	2795	.....	47	569
McCarty, William F. M., assignor of part to J. Logan, Hagerstown, Md., C. Elshon, Philadelphia, Pa., and H. D. Wallbridge. Producing steel direct from ore	404,723	June 4	512	131	47	1325
McCasland, Charles O., Denver, Colo. Cuff-holder	402,176	Apr. 30	2672	693	47	545
McChesney, Reuben, Frankfort, N. Y. Guide for band-saws	405,110	June 11	1070	285	47	1444
McChord, William C., Springfield, Ky. Car-coupling	405,404	June 18	1670	441	47	1571
McClellan, James A., assignor of two-thirds to C. W. Friedrich and J. F. Vangilder, Prairie City, Iowa. End-gate for wagons	403,480	May 14	1415	370	47	937
McClellan, Oscar D., assignor, by mesne assignments, to Sanitary and Fertilizer Company of the United States, Philadelphia, Pa. Feculent-matter receiver	401,709	Apr. 16	1948	{508 509	{47	387
McClellan, Oscar D., assignor to J. Kennedy and P. H. Engle, Philadelphia, Pa. Mechanism for deodorizing refuse matter and converting it into fertilizers	404,360	May 28	2751	714	47	1213
McClenon, Frederick J., Walton, N. Y. Device to facilitate grinding sections of mowing-machines	402,465	Apr. 30	3116	808	47	629
McClintock, John M., *et al.* (See Richardson, William H., assignor.)						
McCleskey, William T., Westport, Pa. Water-gate	401,788	Apr. 23	2073	541	47	423
McCloud, Sidney, Chicago, Ill. Manufacture of bars or rounds of steel or iron	400,931	Apr. 9	762	205	47	155
McCloy, Charles E., Richmond, Va. Multiple switch-board	402,264	Apr. 30	2795	724	47	569
McComb, James C., *et al.* (See Hausemann, Hermann, assignor.)						
McCombe, William M., *et al.* (See Woll, Joseph E., assignor.)						
McConnell, Robert B., assignor to G. R. Davis, Paducah, Ky. Roofing-tongs	401,963	Apr. 23	2335	606	47	472
McCord, James M., Montgomery, Ind. Child's swing	405,496	June 18	1672	442	47	1571
McCormick Harvesting Machine Company. (See Pridmore, Henry E., assignor.)						
McCorry, Henry W. (See McGehee, Abner J., assignor.)						
McCray, Thomas H., assignor of one-half to A. H. Gunn, Chicago, Ill. Drive-chain	403,127	May 14	853	226	47	832
McCray, Thomas H., assignor of one-half to A. H. Gunn, Chicago, Ill. Drive-chain	403,128	May 14	855	226	47	833
McCurdy, William H., York, Pa. Animal-releasing device	402,344	Apr. 30	2918	757	47	591

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
McCusker, Bernard, assignor of one-half to G. J. Brown, Bridgeport, Conn. Hat-wire machine	404,647	June 4	412	101, 102	47	1304
McDaniel & Harvey Company. (See Harvey, Edmund A., assignor.)						
McDermott Walter, Morristown, N. J. Ore-concentrator	404,011	May 28	2189	572	47	1105
McDill, Samuel F., San Francisco, Cal. Cable-grip	401,895	Apr. 23	2232	582	47	452
McDonald, Alexander J., Chicago, Ill. Railway-gate	401,754	Apr. 23	2025	529	47	414
McDonald, Alexander J., Chicago, Ill. Railway-gate	404,724	June 4	514	131	47	1326
McDonald, Donald, Louisville, Ky. Grating	402,847	May 7	436	115	47	745
McDonald, Hiram W., and T. W. Shunk, Bucyrus, Ohio. Flushing system for drains and sewers	405,587	June 18	1808	479	47	1600
McDonald, Peter E., assignor of one-half to S. O. Brooks, Detroit, Mich. Railway-ticket holder	402,762	May 7	313	81	47	722
McDonald, William, assignor of one-half to C. M. Hacker, Providence, R. I. Steam-boiler	406,001	June 25	2466	645	47	1724
McDonnell, Vincent J., Philadelphia, Pa. Wrench	402,265	Apr. 30	2797	724	47	569
McDonough, John J. (See Welch, Michael I., assignor.)						
McDongall, Charles A., Alameda, Cal. Car-coupling	401,046	Apr. 9	930	246	47	186
McDowell, Albert, New York, N. Y. Dress-form	401,192	Apr. 9	1155	306	47	228
McDowell, Mary D., Denton, Tex. Padded underwaist	405,588	June 18	1810	479	47	1600
McElroy Car Heating Company. (See McElroy, James F., assignor.)						
McElroy, James F., Lansing, Mich. Steam-heating system for railway-cars	404,926	June 11	812	209	47	1392
McElroy, James F., Lansing, assignor to McElroy Car Heating Company, Detroit, Mich. Steam-trap	404,925	June 11	811	208	47	1392
McElroy, James F., Lansing, assignor to McElroy Car Heating Company, Detroit, Mich. Car-heating apparatus	404,927	June 11	814	209	47	1392
McElwee, Charles K. (See Hunt, Charles R., assignor.)						
McEwen, Hugh W., Tiverton, Ontario, Canada. Bolting-chest	404,100	May 28	2343	614	47	1137
McFarland, James M., Columbus, Ohio. Slate-cleaner	404,705	June 4	616	159	47	1346
McFarlane, John, assignor of part to G. J. Bessler and H. Wex, Washington, D. C. Hydraulic dredging-machine	401,896	Apr. 23	2234	582, 583	47	453
McFeely, Ronald F., assignor to Electro-Hydraulic Company, Pittsburg, Pa. Electrical apparatus for controlling elevators	404,361	May 28	2753	714, 715	47	1213
McGee, William F. (See Haviland, Joseph H., assignor.)						
McGehee, Abner J., assignor to himself and H. W. McCorry, Jackson, Tenn. Car-coupling	403,282	May 14	1113	295	47	881
McGill, William C., Washington, D. C. Cash-register	405,111	June 11	1071	275, 276	47	1444
McGinnis, John, Valatie, N. Y. Picker-staff connection for looms	405,495	June 18	1671	442	47	1571
McGinnise, Cornelius, Chicago, Ill. Smoke-consumer	401,946	Apr. 23	2160	564	47	438
McGloin, John J., New York, N. Y. Globe-holder	405,793	June 25	2139	562	47	1656
McGovern, Patrick L., Chicago, Ill. Car-heating apparatus	405,112	June 11	1074	286	47	1444
McGovern, Thomas, New York, N. Y. Candelabrum	402,466	Apr. 30	3117	809	47	629
McGregor, Robert, Leigh, county of Lancaster, England. Apparatus for sharpening the cutters and fingers of reaping and mowing machines	404,976	June 11	886	231, 232	47	1407
McGuire, John B., *et al.* (See Chase, Addison K., assignor.)						
McGuire, John C. (See Willson, Thomas L., assignor.)						
McGuire Manufacturing Company. (See McGuire, William A., assignor.)						
McGuire Manufacturing Company. (See Tranell, Johan A., assignor.)						
McGuire, William A., assignor to McGuire Manufacturing Company, Chicago, Ill. Grain-car door	406,062	June 25	2468	646	47	1724
McIlvaine, Catharine. (See McIlvaine, Samuel, assignor.)						
McIlvaine, Samuel, Oakwood, Ontario, assignor to C. McIlvaine, Toronto, Canada. Gas-generator	402,534	Apr. 30	3216	833	47	648
McIndoe, George F. and J. W., Boston, Mass. Machine for impressing letters or marks in cigars	402,467	Apr. 30	3119	809	47	629
McIndoe, James W. (See McIndoe, George F. and J. W.)						
McIntosh Battery and Optical Company. (See Osborn, Chauncey V., assignor.)						
McIntosh, John E. (See Seymour and McIntosh.)						
McIntyre, Neil, Brooklyn, N. Y., assignor to himself and J. J. Manion, East Newark, N. J. Burglar-alarm	402,266	Apr. 30	2799	724	47	569
McKay, Andrew, Philadelphia, Pa. Saddle-tree	403,129	May 14	856	226	47	833
McKay & Copeland Lasting Machine Company. (See Brock, Matthias, assignor.)						
McKay & Copeland Lasting Machine Company. (See Crosbie, John A., assignor.)						
McKean, Hugh S., assignor to E. S. Wright, trustee, Allegheny, Pa. Selvage-shedding device for hand-looms	400,583	Apr. 2	222	60	47	47
	404,725	June 4	515	131, 132	47	1326
McKeand, Sampson S., Ceredo, W. Va. Car-coupling	403,951	May 28	2102	550, 551	47	1089
McKenney, J. Freeman, Baltimore, Md. Sewing-machine take-up	402,608	May 7	84	20	47	680
McKenney, Joel, assignor of one-half to W. O. Robson, Boston, and J. M. French, Chelsea, Mass. Bridle-bit	401,710	Apr. 16	1952	509	47	388
McKenzie, Allen W., Helena, Wis. Car-coupling	401,964	Apr. 23	2246	607	47	472
McKenzie, Joseph, assignor to D. C. Morgan, El Dorado, Cal. Ore-grinding mill	402,345	Apr. 30	2919	757	47	592
McKibben, George N., New York, N. Y. Oil-distributing cartridge and projectile						
McKibbin, George N., *et al.* (See Brewer, William J., assignor.)	401,448	Apr. 16	1536	406	47	313
McKinley, Irving A., Cicero, N. Y. Portable tobacco-press						
McKivitt, William E., St. Paul, Minn., assignor to Western Electric Company, Chicago, Ill. Testing apparatus for switch-boards	405,221	June 11	1246	331	47	1478
	403,952	May 28	2104	551	47	1089
McLane, Hiram H., San Antonio, Tex. Drilling-tool for wells						
McLaren, William. (See Donnelly, McLaren, and Trask.)						
McLaughlin, William G., Springfield, Mo. Scale-beam indicating weight, price, or number of bushels in a quantity of grain	405,370	June 18	1465	388	47	1528
	401,193	Apr. 9	1157	308	47	228
McLean, Joseph, Rockville, Conn. Pot-rest						
McLemore, William Y., *et al.* (See Crafton, Charles B., assignor.)						
McLennan, Christopher. (See Moore and McLennan.)						
McLeod, Alexander E., Hallock, Minn. Lamp-extinguisher	400,584	Apr. 2	224	61	47	47
McMahon, Francis, Somerville, assignor of one-half to J. W. McMahon, West Roxbury, Mass. Hoisting apparatus	403,546	May 21	1522	399	47	966
McMahon, John W. (See McMahon, Francis, assignor.)						
McMaster, Alonzo J., Lockport, N. Y. Camping-vehicle	404,101	May 28	2344	614, 615	47	1137
McNair, David F., Wilkes-Barré, Pa. Trousers-stretcher	404,648	June 4	416	103	47	1304
McNally, Andrew. (See Steele, James W., assignor.)						
McNaughton, Daniel C., Jersey City, N. J. Protecting dental fillings	400,585	Apr. 2	225	61	47	47
McNaughton, Daniel C., Jersey City, N. J. Syringe	400,586	Apr. 2	227	61	47	47

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McNeal, Andrew H., and W. A. Stineruck, Burlington, N. J. Former for pipe-molding apparatus	402,029	Apr. 23	2440	636	47	490
McNeely, Thompson W., *et al.* (See Welch, James E., assignor.)						
McQuiston, Wilson, Fort Wayne, Ind. Polishing-machine	405,589	June 18	1811	479, 480	47	1600
McReynolds, John W. (See McReynolds, William and J. W.)						
McReynolds, William and J. W., Cleveland, Ohio. Paving-block	401,361	Apr. 16	1408	373	47	289
McSherry & Co., D. E. (See McSherry and Swope, assignors.)						
McSherry, Daniel E., and H. G. Swope, assignors to D. E. McSherry & Co., Dayton, Ohio. Wheeled harrow	400,932	Apr. 9	765	205	47	155
McSweeney, Terrence, Allegheny, Pa. Gas-burner for stoves or fire-places	402,177	Apr. 30	3073	803	47	545
McSweeney, Terrence, Allegheny, Pa. Gas-burner for boiler-furnaces	405,497	June 18	1673	442	47	1572
Mead, John T., and J. Thomson, Cleveland, Ohio. Car-heater	401,194	Apr. 9	1159	308, 309	47	228
Mead, Theodore H., *et al.* (See Crowell, Luther C., assignor.)						
Meader, George H., Boston, Mass. Piston-packing	402,267	Apr. 30	2800	725	47	569
Meady, Albert C., Somerville, and C. B. Bosworth, Everett, assignors to Crosby Steam Gage and Valve Company, Boston, Mass. Coin-operated hand-power-testing machine	400,933	Apr. 9	766	205	47	155
Meahl, Adam, Cairo, Ky. Spring-motor	401,047	Apr. 9	931	246, 249	47	187
Means, William H., Riverton, Iowa. Wagon-brake	405,583	June 18	1803	477	47	1599
Mears, Albert F., Wakefield, Mass. Stanchion	403,122	May 14	845	224	47	830
Mears, William, Cleveland, Ohio. Steam water-heater	403,123	May 14	846	224	47	831
Meathe, James, Detroit, Mich. Circulating-water heater	403,545	May 21	1530	398, 399	47	966
Meats, John T., Taunton, Mass. Ring-spinning frame	400,934	Apr. 9	768	206	47	156
Medart, Philip, assignor of one-half to W. Medart, St. Louis, Mo. Belt-shifter	402,758	May 7	305	79	47	720
Medart, William. (See Medart, Philip, assignor.)						
Meddaugh, Oscar E. (See Maxwell and Meddaugh.)						
Medden, Edwin, and J. Urquhart, Sr., assignors of one-half to F. Walter and C. E. Wessel, Seneca Falls, N. Y. Hot-water heater	401,362	Apr. 16	1410	373	47	290
Meding, Charles E., Paterson, N. J. Bobbin	405,367	June 18	1323	348	47	1499
Medrick, Henry D., Port Jervis, N. Y. Feed-water cock	402,957	May 7	500	155	47	775
Meeks, Orian S., Evansville, and J. C. Brown, Eureka, Ind. Plow	403,231	May 14	1119	295	47	881
Meese, Jacob W., Harrisburg, Pa. Printer's press-point	401,195	Apr. 9	1160	309	47	229
Meginness, William H., Denver, Colo. Ore-concentrator	402,094	Apr. 23	2338	601, 602	47	510
Mehlhardt, Julius, assignor of one-half to A. Braune, Dresden, Germany. Apparatus for automatically changing circulating-library books	405,268	June 18	1323	349	47	1499
Meier, John H., Philadelphia, Pa. Baker's oven	401,641	June 4	407	99	47	1303
Meister, Christ. A., Allentown, Pa. Dental matrix	400,587	Apr. 2	228	61	47	48
Melaney, William H., assignor of one-half to R. C. Totten, Pittsburg, Pa. Sheath for regulating light from electric lamps	405,427	June 18	1553	411	47	1546
Melaney, William H., Pittsburg, assignor of one-half to R. C. Totten, Allegheny, Pa. Car-axle	405,428	June 18	1554	411	47	1547
Melburn, Lafayette A., Denver, Colo. Vehicle-body	401,847	Apr. 23	2162	561	47	439
Melchior, George P., Bellevue, Miss. Gin-saw cleaner	403,686	May 21	1710	452	47	1005
Melling, John W., Wigan, county of Lancaster, England. Steam-valve	405,787	June 25	2132	560	47	1665
Mellor, Henry N. (See Crossley and Mellor.)						
Melone, Juliette S., administratrix. (See Melone, Thomas L.)						
Melone, Thomas L., deceased, Chillicothe, Ohio; J. S. Melone administratrix. Plaiting attachment for sewing-machines	403,359	May 14	1222	324, 325	47	903
Meloney, Henry T., *et al.* (See Richardson, William H., assignor.)						
Menclen, Joseph. (See Zwiesler, Louis, assignor.)						
Meneely Bearing Company. (See Meneely and Gibbons, assignors.)						
Meneely, Charles D., Albany, and J. Gibbons, assignors to Meneely Bearing Company, West Troy, N. Y. Roller-bearing	400,471	Apr. 2	64	18, 19	47	16
Mennel, Ernst, assignor to E. Merck, Darmstadt, Germany. Making double salts of mercury	405,308	June 18	1463	.....	47	1528
Menzies, William J., St. Helens, county of Lancaster, England. Sizing pulp	405,269	June 18	1326	.....	47	1500
Mercier, Mathias, assignor to H. Kelly, Biddeford, and J. P. Kelly, Saco, Me. Tension-regulating device for loom-shuttles	405,673	June 18	1902	515	47	1636
Merck, E. (See Mennel, Ernst, assignor.)						
Meriam, Benjamin, Boston, Mass. Ventilator	403,478	May 14	1412	369	47	937
Meriden Bronze Company. (See Miller, John C., assignor.)						
Meriden Bronze Company. (See Peck, Eugene H., assignor.)						
Meriden Malleable Iron Company. (See Lawton, Lyman T., assignor.)						
Merk, Lawrence A., Rochester, N. Y. File for letters	404,920	June 11	805	207	47	1390
Merriam, Arthur L., *et al.* (See Ames and Abercrombie, assignors.)						
Merriam, Joseph G. (See Hammond and Merriam.)						
Merrill, Amos B., Bound Brook, N. J., assignor to Hartford Compressed Air Pump Company, of New Jersey. Apparatus for raising water	403,124	May 14	847	224, 225	47	831
Merrill, Arthur H., Hartford, Conn. Bed-lounge	403,850	May 21	1959	514, 515	47	1053
Merrill, Arthur H., Hartford, Conn. Folding bed	403,851	May 21	1961	515	47	1053
Merrill, Frank H., Bound Brook, N. J., assignor, by mesne assignments, to Hartford Compressed Air Pump Company, of New Jersey. Apparatus for raising water	403,125	May 14	850	225	47	832
Merrill, George A. (See Cohn and Merrill.)						
Merrill, George W. (See Pearce and Merrill.)						
Merrill, Joshua. (See Woodbury, Merrill, Patten, and Woodbury.)						
Merriman, Francis E., Boston, Mass. Poultry drinking-fountain	405,369	June 18	1464	387	47	1528
Merritt, George, *et al.* (See Bebb, George, assignor.)						
Merritt, Worth, *et al.* (See Bebb, George, assignor.)						
Merrow, Joseph M., Merrow, Conn. Forming an ornamental border on fabrics	402,468	Apr. 30	3123	810	47	630
Mertz, George E., Port Chester, N. Y. Lathe	402,938	May 7	501	156	47	773
Meaker & Bro. (See Symonds, Herbert, assignor.)						
Messer, Frederick A., and W. F. Thorpe, London, England. Apparatus for storing pails with water or other liquids	405,900	June 25	2294	601, 602, 603, 604	47	1606
Messer, Horace W., Berlin, Ontario, Canada. Shirt	401,572	Apr. 16	1731	456	47	348
Messer, Louis, New York, N. Y. Frame for pocket-books or other articles	404,721	June 4	510	130	47	1325
Messerer, Stephan, assignor of one-half to J. Tack, Newark, N. J. Watch-maker's lathe	404,099	May 28	2342	614	47	1137
Messmore, Rienzi W., assignor of one-half to J. F. Dennis, Washington Court-House, Ohio. Convertible hammock and chair	402,469	Apr. 30	3125	810	47	631

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Metcalf, George A., Woonsocket, R. I. Saddle for top rolls of spinning-machines	405,584	June 18	1804	478	47	1599
Metcalf, William H., New Haven, Conn. Gas-pressure regulator	401,048	Apr. 9	933	249	47	187
Mette, Felix J., Ruby Hill, Nev. Sleigh	403,766	May 21	1834	481 / 482	47	1028
Metzger, Ludwig. (See Pettge and Metzger.)						
Metzner, William C., Chicago, Ill. Stove-grate	401,508	Apr. 16	1627	430 / 431	47	329
Meyer, Frederick. (See Meyer, Theodore, assignor.)						
Meyer, Gustav J. (See Belden, Benjamin W., assignor.)						
Meyer, John W. (See Shepherd and Meyer.)						
Meyer, Olof E., and C. H. Weck, Milwaukee, Wis. Apparatus for treating sewage	403,946	May 28	2096	549	47	1087
Meyer, Oscar J., Hartford, Conn. Pipe-coupling	403,767	May 21	1836	483	47	1029
Meyer-Sniffen Company. (See Wright, Strethill H., assignor.)						
Meyer, Theodore, assignor of one-half to F. Meyer, Amity, Iowa. Cultivator	402,268	Apr. 30	2801	725	47	570
Meyering, Charles F., and J. A. O'Connor, Rochester, N. Y. Fisherman's pail	400,588	Apr. 2	229	62	47	48
Meyers, George, Sterling Run, Pa. Sole and heel plate for boots or shoes	400,867	Apr. 2	658	178	47	126
Meynieu, Léon L., Bordeaux, France. Safety appliance for bottles	405,788	June 25	2133	561	47	1665
Michaelis, Otho E., United States Army, assignor, by mesne assignments, to Consolidated Coupling Company, New York, N. Y. Car-coupling	404,296	May 28	2651	689	47	1194
Michales, Moses A., Allegheny, assignor of one-half to J. T. Moore, Pittsburg, Pa. Rail-brake	401,755	Apr. 23	2026	530	47	414
Michales, Moses A., Allegheny, assignor of one-half to J. T. Moore, Pittsburg, Pa. Road for rapid transit	403,687	May 21	1710	459	47	1005
Michaud, Jules. (See Genet, Albert, assignor.)						
Michigan Radiator and Iron Manufacturing Company. (See Taylor, Harrison H., assignor.)						
Mickey, Samuel T., Salem, N. C. Plate-lifter	402,606	May 7	81	19	47	679
Middleby, Joseph, Gibson, Kans. Portable oven	401,573	Apr. 16	1731	456 / 457	47	348
Middleton, John A., assignor of one-half to B. S. Bevier, Gordonsville, Ky. Broom	404,212	May 28	2527	659	47	1172
Middleton, Lee, Clarksville, Mo. Water-wheel	404,642	June 4	408	99 / 100	47	1303
Mieg, Armand, Leipsic, Saxony, and H. Bischoff, Berlin, Germany. Magazine fire-arm	400,472	Apr. 2	66	20	47	16
Mihalovitch, M. Morris. (See Praschl, Stephan, assignor.)						
Millar, Theodore, and H. Pritchard, Atkinson, Ill. Hay-carrier	405,714	June 25	2030	533	47	1645
Miles, Warren, Warnerville, Mass. Machine for blackleading the molds for electrotypes	405,585	June 18	1805	479	47	1599
Milliard, Martin S., Kansas City, Mo. Refrigerator	404,854	June 11	706	181	47	1372
Miller, Almeron, Meadville, Pa. Device for skimming milk	402,178	Apr. 30	2675	694	47	545
Miller, Charles A., assignor of one-half to S. Husted, Urbana, Ohio. Automatic feed-regulator	403,056	May 7	727	190	47	801
Miller, Charles E., Syracuse, N. Y. Draft attachment for vehicles	405,586	June 18	1807	479	47	1600
Miller, Charles W., assignor of one-half to C. Royce, Clifton, Ariz. Ter. Mail-pouch	401,196	Apr. 9	1161	309	47	229
Miller & Company, Edward. (See Hammond and Merriam, assignors.)						
Miller & Company, Edward. (See Homan, William C., assignor.)						
Miller & Company, Edward. (See Maschmeyer, Charles, assignor.)						
Miller Company, William P. (See Miller, William P., assignor.)						
Miller, David O. (See Morrison, Wheeler M., assignor.)						
Miller, Eli, Canton, Ohio. Harrow	402,607	May 7	83	19	47	680
Miller, Fredrick C., Newport, Ky. Cigar-mold	400,868	Apr. 2	650	170	47	126
Miller, Fredrick C., Newport, Ky. Screw-threading machine	402,759	May 7	308	80	47	721
Miller, George N., Ashton, assignor to F. C. Austin, Chicago, Ill. Road-scraper	403,888	May 21	2009	527 / 528	47	1063
Miller, George N., Ashton, assignor to F. C. Austin, Chicago, Ill. Road-scraper	403,889	May 21	2011	528	47	1063
Miller, George N., Ashton, assignor to F. C. Austin, Chicago, Ill. Road-scraper	404,798	June 4	614	161	47	1345
Miller, Henry D. (See Julier and Robinson, assignors.)						
Miller, Henry W., Jr. (See Schanbel, Henry, assignor.)						
Miller, John C., assignor to Meriden Bronze Company, Meriden, Conn. Central-draft lamp	403,768	May 21	1837	483	47	1029
Miller, John T., Chicago, Ill. Folding trestle	401,848	Apr. 23	2163	564	47	439
Miller, Lewis, Philadelphia, Pa. Piston for hydraulic presses	402,955	May 7	587	155	47	775
Miller, Martin D., Leavenworth, Kans. Oil-burner	404,297	May 28	2653	690	47	1195
Miller, R. T. (See Leeds, Pulaski, assignor.)						
Miller, Richard, and J. G. Kanouse, assignors to Eagle Manufacturing Company, Appleton, Wis. Door-hanger	402,342	Apr. 30	2915	756	47	591
Miller, Robert, Hebron, Nebr. Fanning-mill	403,852	May 21	1963	515	47	1033
Miller, Theodore L. (See Griffith and Miller.)						
Miller, Walter, assignor to Globe Iron Works Company, Cleveland, Ohio. Steam and capstan windlass	403,435	May 14	1346	353 / 354	47	925
Miller, William H., Enon, Ohio. Automatic gate	400,935	Apr. 9	771	200	47	156
Miller, William P., assignor to W. P. Miller Company, Brooklyn, N. Y. Lubricator for loose pulleys	403,057	May 7	729	190	47	801
Miller, William R., Baltimore, Md. Means for changing the center of gravity of guns	404,921	June 11	806	207	47	1391
Millet, John W., Dolgeville, assignor to A. Dolge, New York, N. Y. Lasting-machine	402,959	May 7	593	154	47	776
Millett, Humphrey D., Maywood, Ill. Machine for making coiled springs	404,213	May 28	2528	659 / 660	47	1172
Milliken, Alonzo. (See Cooper, Milliken, and Bishop.)						
Milliken, William H., Philadelphia, Pa. Elevator	401,449	Apr. 16	1537	407	47	313
Mills, Albert T., Lac Qui Parle, Minn. Milk-skimmer	401,107	Apr. 9	1162	310	47	229
Mills, Joshua, Ottawa, Ill. Metallic shingle	403,203	May 14	980	259	47	857
Mills, Mortimer B., Chicago, Ill. Railway-switch appliance	404,214	May 28	2533	661	47	1172
Mills, Thomas B. (See Giroud, Peter G., assignor.)						
Miner, Eli B., Knoxville, Tenn. Hame-tug	403,947	May 28	2098	549	47	1088
Minnis, Joseph S., Evansville, Ind. Safe-alarm	403,948	May 28	2099	549	47	1088
Mingle, Charles J., Colorado Springs, Colo. Carriage-body	403,688	May 21	1713	452	47	1006
Minor, Abia, Harper, Kans. Doubletree	405,316	June 18	1393	367	47	1514
Minshall, Frank W., Marietta, Ohio. Hydrocarbon-oil burner	405,219	June 11	1243	330	47	1477
Mishler, Phares M., Hagerstown, Md. Hedge	403,949	May 28	2100	550	47	1088
Miseud, John A., New Orleans, La. Building-block	405,429	June 18	1558	411	47	1547
Mitchell, Albert E., Paterson, N. J., and W. N. Stevens, Brooklyn, N. Y. Compensator for railway signal and switch connections	402,690	Apr. 23	2441	636	47	491
Mitchell, Alfred W., *et al.* (See Taylor, Elbert C., assignor.)						
Mitchell, George W., *et al.* (See Railsback, Lafayette D., assignor.)						
Mitchell, Jack, assignor of one-half to A. W. Dreyfoos, Defoe, Ky. Seed-planter	401,897	Apr. 23	2235	583	47	453
Mitchell, John H., Bloomfield, Iowa. Collapsible shipping-cask	403,501	May 14	1448	380	47	944
Mitchell, John J., Birmingham, Ala. Grate attachment	404,423	June 4	68	18	47	1239
Mitchell, John S., Milford, assignor to himself and C. Copland, Seymour, Conn. Machine for bending ribs or frames of ships	401,560	Apr. 16	1629	431	47	330

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Mitchell, Ross. (See Wiseman, Philip S., assignor.)						
Mitchell, Thomas A. (See Webb and Swett, assignors.)						
Mitchell, Thomas A., *et al.* (See Lumley, Edwin J., assignor.)						
Mitchell, William H., Horse Cave, Ky. Wire fence	401,450	Apr. 16	1537	407	47	314
Mix, Frank W., New Britain, Conn. Lock	404,048	May 28	2455	701	47	1148
Moats, Ortus E., assignor to F. C. Austin, Chicago, Ill. Road-scraper	403,890	May 21	2013	529	47	[illegible]
Moats, Ortus E., assignor to F. C. Austin, Chicago, Ill. Road-scraper	403,891	May 21	2017	530	47	1064
Moats, Ortus E., assignor to F. C. Austin, Chicago, Ill. Road-scraper	404,794	June 4	615	158	47	1346
Modes, William F., Streator, Ill. Glass-melting furnace	405,317	June 18	1394	367	47	1514
Moffatt Electric Construction Company. (See Moffatt, Richard R., assignor.)						
Moffatt, Richard R., New York, N. Y., assignor to Moffatt Electric Construction Company, of New York. Electric bell	402,960	May 7	594	157	47	776
Moffett Journal Box Company. (See Moffett, Robert W., assignor.)						
Moffett, Norman C., Clinton, Iowa. Pillow-sham holder	403,360	May 14	1226	325	47	903
Moffett, Robert W., Denver, Colo., assignor to Moffett Journal Box Company, of Colorado. Anti-friction journal-box	403,058	May 7	731	190	47	801
Mofflitt, John A., *et al.* (See Loveland, Philander C., assignor.)						
Moharter, Frank, assignor of four-fifths to F. P. Crotzer, J. J. Ditty, G. W. Gruver, and R. Schwartz, Nanticoke, Pa. Combined head-rest, chin-support, and eye-closer for corpses	402,095	Apr. 23	2540	662	47	510
Molander, Swan B. (See Sundeen and Molander.)						
Mold, James H. (See Aylesworth, William, 1st, assignor.)						
Mole, Alfred B. (See Lacey, Fred, assignor.)						
Molesworth, William, Brooklyn, N. Y. Speculum	400,589	Apr. 2	230	62	47	48
Moliere, George W., Ocean View, Cal. Checkrein-hook	404,643	June 4	409	100	47	1303
Moline Plow Company. (See Lindgren, August, assignor.)						
Moller, Christian E., Hoboken, N. J., and C. Raettig, New York, N. Y. Line-guide for fishing-reels	401,049	Apr. 9	933	249	47	187
Monasmith, Joel L., Formoso, Kans. Car-coupling	401,196	Apr. 9	1164	310	47	229
Monday, Henry P., assignor of one-half to B. F. Tipton, Stoutland, Mo. Car-coupling	403,600	May 21	1587	430	47	979
Monroe, William R., Cleveland, Ohio. Refrigerator	405,492	June 18	1668	440	47	1570
Montgomery, Alpheus W., New York, N. Y. Treating sisal, &c	400,792	Apr. 2	527	[illegible]	47	102
Montgomery, Alpheus W., New York, N. Y. Hackling-machine	404,215	May 28	2235	661 / 662	47	1173
Moody, Charles D. (See Daniels and Costley, assignors.)						
Moody, William K., Boston, Mass. Photographic-plate handle or holder	402,861	May 7	596	157	47	776
Moon, Joseph D., Walnut Grove, Ga. Baling-press	402,269	Apr. 30	2804	736	47	570
Moonelis, Adolph, *et al.* (See Smith, James E., assignor.)						
Moore, Alexander T., Jr., New Bedford, Mass., and H. A. Fitch, Schnectady, N. Y. Device for supporting electric lamps	400,473	Apr. 2	69	20	47	17
Moore, Charles L., Worcester, Mass. Lady's cuff-fastener	402,685	May 7	198	50	47	700
Moore, Daily S., and C. McLennan, Hyde Park, Ill. Rail-track-laying machine	405,318	June 18	1395	367 / 368	47	1515
Moore, Eugene, North Plainfield, N. J. Straight-edge or darby	400,590	Apr. 2	231	63	47	48
Moore, Frank. (See Westinghouse and Moore.)						
Moore, Gilpin, Rock Island, Ill. Wheel-plow	403,892	May 21	2018	531	47	1065
Moore, Gilpin, assignor to Deere & Company, Moline, Ill. Cultivator	404,922	June 11	806	207 / 208	47	1391
Moore, Hartwell R., Norwalk, Ohio. Music-holder	405,789	June 25	2134	561	47	1665
Moore, John L., *et al.* (See Porter, Joseph S., assignor.)						
Moore, John T. (See Michales, Moses A., assignor.)						
Moore, Joseph E., Warwick, Mass. Bed-bottom and means for tightening and supporting the same	404,722	June 4	511	130	47	1325
Moore, Martin D., Wakonda, Dak. Ter., Stock-car	405,107	June 11	1067	274	47	1444
Moore, Thomas W., Plainfield, N. J., assignor to T. W. Moore, Jr., Los Angeles, Cal. Sleeping-car	401,711	Apr. 16	1953	509 / 510	47	388
Moore, Thomas W., Plainfield, N. J., assignor to T. W. Moore, Jr., Los Angeles, Cal. Bicycle	403,659	May 7	732	191	47	802
Moore, Viola, San Francisco, Cal. Music stand and portfolio	405,715	June 25	2031	533 / 534	47	1645
Moores, George W., New Orleans, La. Rack-band pad	404,923	June 11	809	208	47	1391
Moorman, George W., Edinburg, assignor of one-half to M. F. Maddox, Indianapolis, Ind. Burial-casket lid	402,846	May 7	436	115	47	745
Moos, Joseph B., assignor of one-half to E. Vallens, Chicago, Ill. Cigar-cutter	402,760	May 7	310	80	47	721
Moraes, Augusto, Lisbon, Portugal. Narrow-ware loom	403,709	May 21	1820	483	47	1029
Moran, John, Adair, Mo. Corn-planter	405,790	June 25	2135	561	47	1665
Moran, John P. (See McCarthy and Moran.)						
Morck, August, Jr., assignor of one-half to F. Morck, Warren, Pa. Spectacle-lens	400,783	Apr. 2	529	146	47	102
Morck, Fred. (See Morck, August, Jr., assignor.)						
Moreel, Louis A., Jr., Jeanerette, La. Machine for granulating and drying sugar	401,363	Apr. 16	1410	373	47	290
Morgan, Alvah O., and R. H. Baird, Burlingame, Kans. Device for marking bricks	402,982	May 7	597	157	47	777
Morgan, Benjamin B., Ann Arbor, assignor of three-fourths to H. P. Glover, E. C. Bowling, and E. R. E. Cowell, Ypsilanti, Mich. Railway-crossing	403,660	May 7	734	191	47	802
Morgan, De Witt C. (See McKenzie, Joseph, assignor.)						
Morgan, Elisha, Springfield, Mass. Envelope	404,298	May 28	2654	690	47	1195
Morgan, Henry, Oakleigh, Isle of Wight, England. Sash-cord fastener	403,361	May 14	1227	326	47	903
Morgan, James, Pittsburg, Pa. Feed-table for rolling-mills	403,204	May 14	982	259 / 260	47	857
Morgan, William G., St. Louis, Mo. Ratchet-drill	402,696	Apr. 23	2541	662	47	511
Morlet, Charles, Hoboken, N. J., assignor of one-half to P. Nordman, New York, N. Y. Repeating-watch	402,343	Apr. 30	2916	756	47	591
Morris, Charles A., Bloomfield, N. J. Dredging-bucket	400,936	Apr. 9	773	207	47	157
Morris, Henry B., Hornellsville, assignor to Morris Weaving Company, Geneva, N. Y. Machine for inserting diagonal stripe in weaving cane-work, &c	401,050	Apr. 9	935	249 / 250	47	187
Morris, Jonathan E., Hyde Park, Ill. Letter-box	402,535	Apr. 30	3217	834	47	648
Morris, Robert, La Crosse, Wis. Yoke for draw-heads	400,474	Apr. 2	71	20	47	17
Morris Weaving Company. (See Morris, Henry B., assignor.)						
Morrison, James. (See Fuller and Morrison.)						
Morrison, Wheeler M., assignor of one-half to D. O. Miller, Tower Hill, Ill. Horse-detacher	402,097	Apr. 23	2542	662 / 663	47	511
Morse, Charles E., *et al.* (See Swett, Charles F., assignor.)						
Morse, Charles H. (See Mahan, Frank. M., assignor.)						
Morse, David R., *et al.* (See Solano, Renaldo, assignor.)						
Morse, James A., Fort Bowie, Ariz. Ter. Car-coupling	402,761	May 7	312	81	47	722
Morse, Orville M., assignor to Knickerbocker Company, Jackson, Mich. Dust-collector	403,302	May 14	1229	326 / 327	47	904

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf'g.	Official Gazette. Vol.	Official Gazette. Page.
Morse, Orville M., assignor to Knickerbocker Company, Jackson, Mich. Dust-collector	403,363	May 14	1231	327	47	904
Morse, Orville M., assignor to Knickerbocker Company, Jackson, Mich. Dust-collector	403,770	May 21	1840	493	47	1050
Morse, Orville M., assignor to Knickerbocker Company, Jackson, Mich. Dust-collector	404,216	May 28	2538	662	47	1173
Morse, Orville M., assignor to Knickerbocker Company, Jackson, Mich. Dust-collector	404,217	May 28	2539	662	47	1174
Morse, Orville M., assignor to Knickerbocker Company, Jackson, Mich. Dust-collector	405,674	June 18	1962	515	47	1026
Morton, William J., New York, N. Y. Telephone-transmitter	400,591	Apr. 2	292	63	47	48
Mosler, Moses. (See King, Phineas F., assignor.)						
Moss, Lincoln. (See Pendleton and Moss.)						
Moss, Lincoln. (See Pendleton, Bryson, Tiers, and Moss.)						
Moss, Lincoln. (See Pendleton, Tiers, Bryson, and Moss.)						
Motter, George L., Rich Hill, Mo. Colander-steamer	401,712	Apr. 16	1956	510	47	3-0
Mouck, Solomon F. (See Trevitt and Mouck.)						
Moulton, Otis E. (See Langlands and Moulton.)						
Mousbey, Louis F., Canton, Ohio. Music or paper holder	405,791	June 25	2138	562	47	1666
Mowrer, Martin L., Dayton, Ohio. Magnetic machine for removing mineral substances from grain	405,045	June 11	990	263	47	1429
Moxham, Arthur J., Johnstown, Pa. Street-railway crossing	402,470	Apr. 30	3127	810	47	631
Moyer, Frank H. (See Glover, Sterling, assignor.)						
Moyer, Jesse H., Temple, Tex. Scarf-protector	402,031	Apr. 23	2443	637	47	491
Moylan, Bryan W., and H. P. Griemsmann, Elmira, N. Y. Carpet-stretcher	405,171	June 11	1165	311	47	1462
Moyle, James W. (See Christy, James A., assignor.)						
Muehe, George L. H. (See Aschenbach, Bruno, assignor.)						
Mueller, Frederick T., assignor to T. Kieley, New York, N. Y. Relief-valve	402,098	Apr. 23	2543	663	47	511
Mueller, Valentin. (See Fritsch, Anton H., assignor.)						
Mühlhauser, August W., Platteville, Wis. Carpet-stretcher	403,126	May 14	852	225	47	832
Mulhaupt, Otto F., assignor to J. H. Shepherd, Shreveport, La. Axle-lubricator	400,784	Apr. 2	530	146	47	102
Mullennix, George W., Yates Centre, Kans. Combined harrow and drag	400,725	Apr. 2	531	146	47	102
Müller, Carl A., assignor of one-fourth to O. Bühler, New York, N. Y. Translucent film for use in the art of photo-engraving	401,510	Apr. 16	1631	432	47	330
Müller, Friedrich D. F., New York, N. Y. Air-tight chamber in vessels	405,702	June 25	2139	562	47	1666
Müller, Frederick E., assignor to Andresen, Blatt & Co., Brooklyn, N. Y. Folding bed	402,179	Apr. 30	2675	694	47	545
Muller, Henry, New York, N. Y. Oil-can	401,451	Apr. 16	1538	407	47	314
Müller, Josephine, New York, N. Y. Loop-tie for decorative scarfs or similar articles	401,051	Apr. 9	938	250	47	188
Müller, Matthäus, Trenton, Ill. Steam-engine	401,364	Apr. 16	1413	373, 374	47	290
Müller, Paul E., Soran, Prussia, Germany. Car-coupling	403,205	May 14	984	260	47	858
Mumford, Charles M., Springfield, Mass. Extensible measuring-stick	401,292	Apr. 9	1305	346	47	256
Mumford, William B., Kansas City, Mo. Hook and bait safety box	402,270	Apr. 30	2805	726	47	570
Münch, Henry W., Somerville, Mass. Fountain window-cleaner	400,937	Apr. 9	774	207	47	157
Munger, Ennis, Calvert, Tex. Buckle and back-band hook	403,853	May 21	1964	516	47	1054
Municipal Signal Company. (See Wilson, John C., assignor.)						
Munier, Claude J. A., Paris, France. Printing-telegraph system	402,099	Apr. 23	2544	663, 664	47	511
Munroe, Cirthbert C., Boston, Mass. Thill-coupling	405,108	June 11	1069	285	47	1444
Munson, James E., *et al.* (See Burry, John, assignor.)						
Munton, James, Maywood, Ill. Tire-rolling machine	401,713	Apr. 16	1956	510, 511	47	389
Murdock, J. & J. (See Estes, Nathan C., assignor.)						
Murdock, James H., Woodstock, Vt. Invalid-lifter	402,180	Apr. 30	2677	694	47	545
Murison, James. (See Green and Murison.)						
Murphy, Daniel H., Hartford, Conn. Cuspidor	400,938	Apr. 9	775	207	47	157
Murphy, Mike, Birmingham, Ala. Rule-holder	404,924	June 11	809	208	47	1391
Murphy, Peter H., East St. Louis, Ill. Car-door fastening	401,574	Apr. 16	1733	457	47	348
Murphy, Richard, and C. W. Atkinson, Cincinnati, Ohio. Flushing device for urinals	401,575	Apr. 16	1735	457	47	349
Murphy, Richard, and C. W. Atkinson, Cincinnati, Ohio. Flushing device for water-closets, &c	401,576	Apr. 16	1737	457	47	349
Murphy, William H., Lowell, Mich. Whiffletree-hook	403,364	May 14	1232	327	47	904
Murphy, William H., assignor to himself, W. Kanitzer, and M. Laven, Cleveland, Ohio. Sash-fastener	401,293	Apr. 9	1306	347	47	256
Murray, Alexander K. and C. M., Bradford, Pa. Artificial fuel	401,365	Apr. 16	1414	.....	47	290
Murray, Clara M. (See Murray, Alexander K. and C. M.)						
Murray, Daniel, Salem, Mass. Thill-coupling	405,109	June 11	1069	285	47	1444
Murray, Hugh, Sparta, Ill. Automatic dumping attachment for hoisting-cages	405,493	June 18	1669	441	47	1570
Murray, Hugh F. (See Hoyt and Murray.)						
Murray, John I., St. Louis, Mo. Cutter-bar for reapers and mowers	401,714	Apr. 16	1960	511	47	390
Murray, John P., assignor of two-thirds to R. Davis and M. Curley, Jersey City, N. J. Packing for piston-rods	404,493	June 4	185	44	47	1250
Murray, Leonidas. (See Learned and Murray.)						
Musselter, Fleming W., Fostoria, Ohio. Platen printing-press	403,365	May 14	1233	327, 328, 329	47	904
Muther, Lorenz, Chicago, and R. G. Woodward, Waukegan, assignors to Union Special Sewing Machine Company, Chicago, Ill. Needle-vibrating mechanism for sewing-machines	401,294	Apr. 9	1306	347	47	256
Mutimer, Frederick, assignor of one-half to Rockford Bolt Works, Rockford, Ill. Manufacturing set-screw blanks	402,271	Apr. 30	2806	726	47	571
Mutual Electric Manufacturing Company. (See Knowles, Edward R., assignor.)						
Muzzy, Nathan M., Chicago, Ill. Device for uncapping and recapping cartridge-shells	404,855	June 11	708	182	47	1372
Myers, Frederick G., Winthrop, assignor of one-half to W. F. Smart, Boston, Mass. Anti-frictional bearing for shafts	403,854	May 21	1965	516	47	1054
Myers, Henry M. (See Johnston, James J., assignor.)						
Myers, James H., Grand Rapids, Mich. Tug-buckle	402,181	Apr. 30	2678	694	47	546
Myers, John A., Monroe City, Ind. Combined harvester and thrashing-machine	402,536	Apr. 30	3218	834, 835	47	648
Myers, William H., assignor of one-half to J. F. Barkley, Springfield, Ohio. Hydrocarbon-oil burner	405,901	June 25	2298	604	47	1696
Myers, William R., Haddonfield, N. J. Fire-kindler	403,771	May 21	1841	484	47	1050
Myler, William A. (See Dawes and Myler.)						
Myles, B. H., *et al.* (See Chrisman, Joseph C., assignor.)						
Nageborn, Wilhelm E., Detroit, Mich. Sash-fastener	405,319	June 18	1396	368	47	1515
Nahnsen, Martin, Schoenebeck-on-the-Elbe, Prussia, Germany. Precipitating nitrogenous compounds from impure waters	402,848	May 7	437	.....	47	745
Nall, J. M., *et al.* (See Griffin, Theophilus, assignor.)						
Napheys, Edward C., Philadelphia, Pa. Jar	405,902	June 25	2299	605	47	1697

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf'g.	Official Gazette. Vol.	Official Gazette. Page.
Napier, George W., Los Angeles, Cal. Fin for vessels	400,592	Apr. 2	234	63	47	49
Nash, Edward H., assignor to L. Nash and E. N. Sipperley, Westport, Conn. Catch-pin	404,102	May 28	2347	615	47	1381
Nash, Lewis H., Brooklyn, assignor to National Meter Company, New York, N. Y. Fuel-mixing device for gas-engines	401,452	Apr. 16	1539	408	47	314
Nash, Lewis H., South Norwalk, Conn., assignor to National Meter Company, New York, N. Y. Gas-engine	401,453	Apr. 16	1542	408, 409	47	314
Nash, Lloyd, *et al.* (See Nash, Edward H., assignor.)						
Nash, Nathan E., Stonington, Conn. Valve-gear for duplex steam-pumps	402,100	Apr. 23	2551	664	47	513
Nash, Richard, North La Crosse, Wis. Washing-machine	400,702	Apr. 2	396	107	47	78
Nason, Albert D., *et al.* (See Bray, Morris P., assignor.)						
Nason, Albert D., Springfield, assignor of one-half to C. L. Olmstead, West Brookfield, Mass. Corset	405,113	June 11	1075	286	47	1445
Nathan, Frances, New York, N. Y. Trimming-board	401,454	Apr. 16	1546	409	47	315
Nathan, John H. (See Bigelow, James A., assignor.)						
National Cash Register Company. (See Loree, Manfred U., assignor.)						
National Cash Register Company. (See Loree and Grimes, assignors.)						
National Cash Register Company. (See Patterson, John H., assignor.)						
National Cotton Seed Oil and Huller Company. (See Fee, William R., assignor.)						
National Cotton Seed Oil and Huller Company. (See Fee and Zerbe, assignors.)						
National Cotton Seed Oil and Huller Company. (See Zerbe, James S., assignor.)						
National Heat and Power Company. (See Rose, James M., assignor.)						
National Heating Company. (See Canfield, William W., assignor.)						
National Heeling Machine Company. (See Carver, James W., assignor.)						
National Machine Company. (See Osterhout and Hallenbeck, assignor.)						
National Meter Company. (See Nash, Lewis H., assignor.)						
National Needle Company. (See Berry, John, assignor.)						
National Progress Bunching Machine Company. (See Borgfeldt and Lewyn, assignors.)						
National Self Heating Sad Iron Company. (See Heidel, Gustavus, assignor.)						
National Self Heating Sad Iron Company. (See Heidel and Frey, assignors.)						
National Tube Works Company. (See Paterson, Andrew, assignor.)						
National Weighing Machine Company. (See Lancaster, Frederick J., assignor.)						
Naumann, Gustav A., New York, N. Y. Baker's peel	405,046	June 11	991	264	47	1420
Naves, Benjamin H., assignor to F. Shubert and J. C. Cottingham, Philadelphia, Pa. Snatch-block	401,511	Apr. 16	1633	432	47	330
Nayasmith, Robert, assignor of one-half to A. J. Wilkinson, Pittsburg, Pa. Apparatus for the production of gas	403,283	May 14	1114	296	47	881
Nedden, Frederick Z. (See Koepp, Henry, assignor.)						
Needham, Franklin M. (See Macphail and Needham.)						
Needles, Johnson H., Atlantic, Iowa. Shoveling-board for wagons	403,953	May 28	2106	551	47	1089
Neeper, Alex. M., *et al.* (See Gearing, Charles M., assignor.)						
Neese, William J., Seneca, S. C. Tether	403,069	May 7	735	191	47	892
Neff, Elijah, assignor of one-half to A. L. Rannells, Rochester, Ind. Pump	405,172	June 11	1167	311	47	1463
Neider, Fred A., Augusta, Ky. Carriage-curtain knob	404,928	June 11	815	209	47	1392
Neill, John A., East Portland, Oreg. Step-ladder	403,602	May 21	1590	421	47	980
Nelson, Arthur W., Chicago, Ill. Sash-holder	404,977	June 11	887	232	47	1407
Nelson, Charles H. (See Emerson, Leender C., assignor.)						
Nelson Chemical Company. (See Stone, Joseph, assignor.)						
Nelson, Milford A., La Monte, Mo. Tilting gate	401,577	Apr. 16	1738	458	47	349
Nelson, Robert W., assignor to Thorne Machine Company, Hartford, Conn. Type-setting machine	402,537	Apr. 30	3220	835	47	649
Nelson, William O., Baltimore, Md. Hand printing-machine	401,455	Apr. 16	1546	409	47	315
Netter, Charles, New York, N. Y. Railway-rail fastener	404,550	June 4	288	67	47	1278
Neuman, Otto, Denver, Colo. Beer chest or refrigerator	403,130	May 14	857	226	47	833
New Haven Clock Company. (See Noyes, Joseph G., assignor.)						
Newall, George W., Manor Park, county of Essex, and J. F. Blyth, Sydenham, county of Kent, England. Motor-engine	401,578	Apr. 16	1739	458, 459	47	350
Newburgh, Charles, Washington, D. C., assignor to K. E. Newburgh. Stove	403,063	May 7	736	192	47	802
Newburgh, Kate E. (See Newburgh, Charles, assignor.)						
Newcomb, Charles N., Omaha, Nebr. Conveyer	403,603	May 21	1592	421, 422	47	981
Newell, Azariah D., New Brunswick, N. J. Floating life-line carrier	403,307	May 14	988	261	47	858
Newell, George W., Mapleville, assignor of one-half to A. Arrington, Louisburg, N. C. Preparing cotton-seed for planting	400,786	Apr. 2	532	.....	47	102
Newell, William H., Philadelphia, Pa. Basin or bath waste and overflow	401,579	Apr. 16	1741	459	47	350
Newhouse, Casey, assignor of one-half to H. O. Bell, Los Angeles, Cal. Bed-lounge	403,284	May 14	1116	296	47	882
Newkirk, William. (See La Rue, Roland M., assignor.)						
Newman, Judson J. (See Dunbar, William, assignor.)						
Newman, Nelson, assignor of one-half to G. A. Sanders, Springfield, Ill. Post-hole auger	400,939	Apr. 9	776	207	47	157
Newsom, Philip E., Brooklyn, assignor of two-thirds to B. L. Fairchild, New York, and P. B. Reeves, Brooklyn, N. Y. Chalk-holder	402,686	May 7	199	50	47	700
Newsome, Thomas J., Wilmington, N. C. Fluid-separator	405,047	June 11	991	264	47	1429
Nichol, John. (See Hohmeier and Ball, assignors.)						
Nichols, Edward. (See Heisler, Charles L., assignor.)						
Nichols, William W., assignor to American Private Line Telephone Company, New York, N. Y. Mechanical telephone	403,547	May 21	1523	399	47	967
Nicholson, Charles, Philadelphia, Pa., assignor to Nicholson Storage Power and Spring Motor Company, Washington, D. C. Spring-motor	401,052	Apr. 9	939	250	47	188
Nicholson, Edward. (See Pettengill, Frederick B., assignor.)						
Nicholson Storage Power and Spring Motor Company. (See Nicholson, Charles, assignor.)						
Nickerson, William E., Cambridge, Mass. Fluid speed-regulator for elevators	403,436	May 14	1348	354	47	925
Nickerson, William E., Cambridge, Mass. Fluid speed-regulator for elevators	403,437	May 14	1349	354	47	925
Nickerson, William E., Cambridge, Mass. Elevator safety-brake	403,438	May 14	1350	355	47	926
Nickerson, William E., Cambridge, Mass. Electric controlling device for elevator-carriages	403,439	May 14	1351	355	47	926
Nickerson, William E., Cambridge, Mass. Electric controlling device for elevators	403,440	May 14	1353	356	47	926
Nickerson, William E., Cambridge, Mass. Electrically-controlled elevator	403,441	May 14	1355	356	47	927
Nickerson, William E., Cambridge, Mass. Electric controlling mechanism for elevators	403,442	May 14	1357	357	47	927
Nickerson, William E., Cambridge, Mass. Belt-shifting appliance for elevators	403,690	May 21	1715	453	47	1006
Nickerson, William E., Cambridge, Mass. Electrical switch for elevators	403,691	May 21	1716	453, 454	47	1007
Nickerson, William E., Cambridge, Mass. Elevator-controlling mechanism	404,012	May 28	2190	575	47	1105
Nickerson, William E., Cambridge, Mass. Controller for elevators	404,013	May 28	2191	575, 576	47	1106
Nickerson, William E., Cambridge, Mass. Slack-rope stop for elevators	404,014	May 28	2193	576	47	1106

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Nickerson, William E., Cambridge, Mass. Electrical switch for elevators	404,015	May 28	2194	577	47	1106
Nickerson, William E., Cambridge, Mass. Electrical switch for elevators	404,221	May 28	2544	663	47	1174
Nickerson, William E., Cambridge, Mass. Self-regulating hydraulic elevator	404,726	June 4	516	132	47	1336
Nickerson, William E., Cambridge, Mass. Safety device for elevators	405,371	June 18	1466	398	47	1529
Nickow, Louis. (See Long, Henry L., assignor.)						
Nightingale, Charles T., Binghamton, N. Y. Stopper and fastener for bottles, jars, &c.	403,954	May 28	2106	551	47	1089
Niles, Henry G., and P. Van Huffel, Mishawaka, Ind. Plow-clevis	402,609	May 7	85	20	47	680
Niles Tool Works. (See Reiss, George T., assignor.)						
Nimschke, Louis W., New York, N. Y. Manufacture of brushes	400,475	Apr. 2	72	21	47	17
Nipp, John, Jr., New Castle, Ind. Vehicle-wheel	401,965	Apr. 23	2337	607	47	472
Niswonger, Thomas A., Cleveland, Tenn. Water-gate	401,456	Apr. 16	1548	409	47	315
Nixon, Emery, Toronto, Ontario, Canada. Power-indicator	401,199	Apr. 9	1165	310	47	230
Nobbs, Edward P., assignor to American Ring Company, Waterbury, Conn. Drawer-pull	404,495	June 4	188	44	47	1260
Noble, Clarence B., Cleveland, Ohio. Electric-arc lamp. (Reissue)	11,002	May 7	781	207	47	810
Noble, Clarence B., Cleveland, Ohio. Porous cup for batteries	403,955	May 28	2108	552	47	1090
Noble, Nathan B. (See Tainter and Noble.)						
Noël, Edouard. (See Berger and Noël.)						
Nogar, Russell H., Dundee, Mich. Ditching-plow	404,424	June 4	69	18	47	1239
Noice, Joseph, What Cheer, Iowa. Coal-drilling machine	400,593	Apr. 2	235	64	47	49
Noiseux, Samuel J., Somerville, Conn. Shuttle-binder for looms	404,649	June 4	417	103	47	1305
Nolan, John H., Boston, Mass. Weighing apparatus	403,692	May 21	1718	454	47	1007
Nolan, John H., Boston, Mass. Spring-balance	403,693	May 21	1720	454	47	1007
Nonantum Worsted Company. (See Ballantyne, James L., assignor.)						
Noonen, John T., Laramie, Wyo. Ter. Carriage-top	404,650	June 4	418	103	47	1305
Norcross, Edwin R., Fayetteville, Ark. Musical instrument	403,481	May 14	1416	370, 371	47	938
Norcross, Orlando W. (See O'Gara, Thomas, assignor.)						
Norcross, William H. H., Boston, Mass. Surface-gage	402,763	May 7	314	81	47	722
Nordman, Prosper. (See Moriet, Charles, assignor.)						
Nordyke & Marmon Company. (See Warrington, Jesse, assignor.)						
Norlin, Jacob P., Hemker, Mo. Sliding gate	403,694	May 21	1722	454	47	1007
Normand, Elie. (See Massey and Normand.)						
Norris, Henry L., Providence, R. I. Harness-buckle	402,272	Apr. 30	2807	727	47	571
Norris, James L., administrator. (See Desmazures, Camille.)						
Norris, Joseph D., La Porte, Ind. Cutter-bar guide for harvesters	405,048	June 11	993	264	47	1429
Norris, William E., Waterbury, Conn. Electric valve-controller	401,200	Apr. 9	1166	310, 311	47	230
Norris, Wilson, Mount Sterling, Ohio. Combined settee, ironing-board, and clothes-rack	404,978	June 11	888	232	47	1407
North, Caleb C. (See Summers, Benjamin, assignor.)						
North, Charles F., Cohoes, N. Y. Under-vest	404,551	June 4	284	67	47	1278
North, Charles F., Cohoes, N. Y. Drawers, &c	405,903	June 25	2300	605	47	1697
Northrop, James H., assignor to G. Draper & Sons, Hopedale, Mass. Support for spinning-spindles	403,855	May 21	1966	516	47	1054
Northrop, William B., Charleston, S. C. Paper-holding attachment for type-writing machines	404,103	May 28	2348	616	47	1138
Northrup, H. Davis. (See Linindoll, Charles C., assignor.)						
Northwestern Tool and Implement Company. (See Cooper, Milliken, and Bishop, assignors.)						
Norton, Edwin, and J. G. Hodgson, assignors to said E. Norton and O. W. Norton, Chicago, Ill. Combined solder and flux	400,869	Apr. 2	661	179	47	127
Norton, Frank J. (See Adams, Gale W., assignor.)						
Norton, Harrison T. (See Hall and Norton.)						
Norton, John B., Philadelphia, Pa. Belt-fastener	401,201	Apr. 9	1168	311	47	230
Norton, Malcolm A., Hartford, Conn. Velocipede	401,295	Apr. 9	1307	347	47	257
Norton, Oliver W. (See Norton and Hodgson, assignors.)						
Norton, Sheldon. (See Ball and Norton.)						
Noyes, Joseph G., assignor to New Haven Clock Company, New York, N. Y. Electrical call-bell	401,296	Apr. 9	1309	348	47	257
Nugent, Thomas, New York, N. Y. Air-heater	403,064	May 7	738	192	47	803
Nunn, John I., Cleveland, Ohio. Chin and lip adjuster for corpses	402,764	May 7	316	81	47	722
Nusly, Vinzent, Sandusky, Ohio. Car-coupling	404,552	June 4	285	68	47	1279
Nutter, Frank H., Malden, assignor to H. L. Slade, Chelsea, Mass. Burglar-alarm and testing system	401,789	Apr. 23	2073	541	47	422
Nutting Electric Manufacturing Company. (See Nutting, Samuel E., assignor.)						
Nutting, Samuel E., assignor to Nutting Electric Manufacturing Company, Chicago, Ill. Electric-arc lamp	400,476	Apr. 2	73	21	47	17
O'Beirne, William H., Elgin, Ill., assignor to Star Iron Tower Company, Fort Wayne, Ind. Insulating tubular iron posts	403,482	May 14	1418	371	47	938
O'Brien, Michael J., Dushore, Pa. Device for jointing and dressing the teeth of saws	404,218	May 28	2540	663	47	1174
O'Connell, Joseph J., assignor to Western Electric Company, Chicago, Ill. Testing apparatus for multiple switch-boards	403,483	May 14	1419	371, 372	47	938
O'Conner, Charles M., Lock Haven, Pa. Paving tile or brick	400,477	Apr. 2	75	21	47	18
O'Connor, James A. (See Meyering and O'Connor.)						
O'Connor, William P., Milwaukee, Wis. Hat shield and ventilator	402,182	Apr. 30	2680	695	47	546
O'Donnell, John, Lowville, N. Y. Construction of buildings	405,794	June 25	2140	562, 563	47	1667
O'Donnell, John P. (See Hill and O'Donnell.)						
O'Ferrall, John, *et al.* (See Slaysman, Alexander, assignor.)						
O'Gara, Thomas, assignor of one-half to O. W. Norcross, Worcester, Mass. Snow-guard	401,202	Apr. 9	1169	311	47	230
O'Hara Glass Company. (See Anderson, Joseph, assignor.)						
O'Hern, William. (See Scott and O'Hern.)						
O'Kelly, James M., New York, N. Y., assignor to Automatic Vending Box Company, of New York. Cigarette-box for automatic vending apparatus	404,299	May 28	2656	690	47	1195
O'Neil, James, *et al.* (See Chase, Addison K., assignor.)						
O'Rourke, Patrick S., *et al.* (See Scott and O'Hern, assignors.)						
O'Sullivan, Dennis J., Detroit, Mich. Boxing-glove	404,929	June 11	816	209, 210	47	1392
Obenchain, John T., Logansport, Ind. Boiler-cleaning apparatus	404,425	June 4	72	19	47	1240
Oberhaeusser, Leonhard, Wirzburg, Bavaria, Germany, assignor to A. Grossenbach & Company, Milwaukee, Wis. Making soluble bonbons	401,657	Apr. 16	1280	.....	47	374
Oborn, George W., Columbus, Ohio. Door for grain-cars	403,366	May 14	1240	329	47	906
Odle, Winfield S., Los Angeles, Cal. Portable extension-ladder	405,969	June 25	2408	630, 631	47	1714
Oehlmann, Emil H. C., Berlin, Germany. Gearing for pumps	401,512	Apr. 16	1634	432	47	331
Oehmen, George F., New York, N. Y. Unison device	404,426	June 4	73	19	47	1240

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Office Specialty Manufacturing Company. (See Richards, Francis H., assignor.)						
Ogden, Jay F., Buckhannon, W. Va. Window-ventilator	402,785	May 7	316	82	47	722
Ogilvie, James J., Roscoe, Ohio. Folding adjustable fence-panel	404,856	June 11	710	182	47	1372
Old, Ansborn F., Brooklyn, assignor to Andrews Manufacturing Company, New York, N. Y. Joint for folding chairs	403,772	May 21	1842	484	47	1030
Oldenbusch, Ernest, assignor to W. Schimper & Co., New York, N. Y. Frame for pocket-books, &c	404,979	June 11	889	233	47	1408
Oldfield, Leonidas H., Newton, Kans. Stove-pipe anchor and flue-cleaner	404,553	June 4	288	68	47	1279
Olds, Henry G. (See Andersen, Peter, assignor.)						
Olds, Orcellus L., Cleveland, Ohio. Joint for railway-rails	405,675	June 18	1964	516	47	1627
Olin, William F., assignor to W. Deering & Company, Chicago, Ill. Grain-binding harvester	402,346	Apr. 30	2921	757, 758	47	592
Oliver, James C., Bergen Point, N. J. Frame for fanning out writing-paper, envelopes, cards, &c	404,104	May 28	2340	616	47	1138
Ollestad, Erik, assignor of one-half to A. Jensen, St. Paul, Minn. Tanning	401,715	Apr. 16	1961	.....	47	391
Olmstead, Chauncey L. (See Nason, Albert D., assignor.)						
Olmstead, Chauncey L., *et al.* (See Bray, Morris P., assignor.)						
Olmsted, Clarence S., Chicago, Ill. Pipe-punch	402,273	Apr. 30	2808	727	47	571
Olmsted, David, Minneapolis, Minn. Fluid-releasing device	405,320	June 18	1397	366	47	1515
Olsen, Bertel E., and C. Gabriel, Victoria, British Columbia, Canada. Compound for piping, bowls, &c	403,548	May 21	1524	.....	47	967
Olsen, Bertel E., and C. Gabriel, Victoria, British Columbia, Canada. Mold for forming drain-pipes	404,219	May 28	2542	663	47	1174
Olsen, Hans M., Sacramento, Cal. Motor	402,471	Apr. 30	3120	811	47	631
Olsen, Christopher H., assignor to Decatur Coffin Company, Decatur, Ill. Tool-driver	402,538	Apr. 30	3221	835	47	649
Oneida Community. (See Kelley, Harry E., assignor.)						
Oneida Community. (See Sears and Kelley, assignors.)						
Oothout, William N. (See Stettheimer, Jacques R., assignor.)						
Opera Glass Supply Company. (See Leavitt, Frank M., assignor.)						
Oppenheimer, Milton E., New York, N. Y. Lace-pin fastening	401,053	Apr. 9	942	251	47	188
Orford, John M., Bridgeport, Conn. Means for operating draw-bridge spans by electricity	403,549	May 21	1525	399, 400	47	967
Orford, John M., Bridgeport, Conn. Electroliter	405,742	June 25	2073	543	47	1653
Ormsby, Alexander, and H. Eberhart, Buffalo, N. Y. Stop-cock box	404,049	May 28	2257	591	47	1118
Orr, Asbury P. (See Tucker and Orr.)						
Orr, William, Troy, N. Y. System of utilizing water-power	400,940	Apr. 9	777	208	47	157
Orsi, Romeo, Milan, Italy, assignor to A. A. Bassi, New York, N. Y. Clarionet	403,065	May 7	739	193	47	803
Ortmayer, Andrew, assignor to A. Ortmayer & Son, Chicago, Ill. Sewing	401,966	Apr. 23	2388	607	47	472
Ortmayer & Son, A. (See Ortmayer, Andrew, assignor.)						
Osborn, Albert E., Brooklyn, N. Y. Making paper bags	405,590	June 18	1812	480	47	1601
Osborn, Chauncey V., assignor to McIntosh Battery and Optical Company, Chicago, Ill. Therapeutic attachment for galvanic batteries	401,366	Apr. 16	1415	374, 375	47	290
Osborne & Cheesman Company. (See Kennedy, John, assignor.)						
Osborne & Company, D. M. (See Harper, Frank, assignor.)						
Osborne, John W., Washington, D. C., assignor to W. H. Forbes, Boston, Mass. Printing machine	401,790	Apr. 23	2075	542, 543	47	423
Osgood, George W. (See Arnold and Osgood.)						
Osterhout, James A., Troy, and J. P. Hallenbeck, New York, assignors to National Machine Company, Troy, N. Y. Cutting device for button-hole sewing-machines	402,610	May 7	86	20, 21	47	680
Ostermann, Heinrich, and C. Lacroix, assignors to Usine Génevoise de Dégrossissage d'Or, Geneva, Switzerland. Rendering nickel and nickel alloys non-magnetic	404,220	May 28	2543	.....	47	1174
Ostrom, Freeland W., Bridgeport, and J. W. Boynton, Stratford, assignors to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Cutting mechanism for button-hole sewing-machines	404,427	June 4	77	19	47	1241
Oswald, James, Harpurhey, near Manchester, county of Lancaster, England. Pile-cutting apparatus for double-pile-fabric looms	405,114	June 11	1076	286	47	1445
Otis Brothers & Company. (See Histon, Arthur, assignor.)						
Otis, Charles H. (See Corbett, Joseph, assignor.)						
Otis, Marvin E., Rochester, N. Y. Steam-boiler	402,611	May 7	89	21, 22	47	681
Overlach, Martin, Frankfort-on-the-Main, Germany. Syringe	404,105	May 28	2351	617	47	1138
Overman, Albert H. (See Easthope, Alfred, assignor.)						
Overman Wheel Company. (See Woodward, Charles E. W., assignor.)						
Oviatt, Solomon E., Lansing, Mich., assignor of one-half to R. André, Akron, Ohio. Wagon-box	402,183	Apr. 30	2682	695	47	546
Owen, Asa K., Lake Geneva, Wis. Binder	402,849	May 7	438	115	47	745
Owen, Benjamin, Dayton, Ohio. Brick-machine	404,857	June 11	712	182	47	1373
Owen, Edward A., *et al.* (See Billing, William H., assignor.)						
Owen, Edward A., *et al.* (See Zerbe, Emil P., assignor.)						
Owen, Edward A., *et al.* (See Zerbe and Church, assignors.)						
Owen, Robert, Paducah, Ky. Agricultural implement	401,297	Apr. 9	1310	348	47	257
Owen, William H., Onarga, Ill., A. C. Boswell, Fowler, Ind., and J. J. Carlock, Watseka, Ill. Stove	402,539	Apr. 30	3222	835	47	649
Owens, James, *et al.* (See Peer, John A., assignor.)						
Owens, Richard K., *et al.* (See Peer, John A., assignor.)						
Owens, Will E., Springfield, Dak. Ter. Billiard-cue	403,856	May 21	1967	516	47	1054
Oxley, Joshua, 3 Harlesden Cottages, Harlesden Green, county of Middlesex, England. Automatic signal for railways	400,703	Apr. 2	398	108	47	78
Paca, John P. (See Paca, William S., assignor.)						
Paca, William S., assignor of one-half to J. P. Paca, Baltimore, Md. Safety attachment for electric motors	404,651	June 4	419	103	47	1305
Paci, Giuseppe, New York, N. Y. Lace-paper machine	401,054	Apr. 9	943	251	47	188
Packard, James W., New York, N. Y. Exhausting electric-lamp bulbs	401,580	Apr. 16	1742	460	47	350
Packard, James W., New York, N. Y. Mercury air-pump	401,581	Apr. 16	1743	460	47	350
Packard, James W., New York, N. Y. Valve-actuating apparatus	401,582	Apr. 16	1744	460	47	350
Packard, Justin E., Mendocino, Cal. Fly-trap	404,727	June 4	518	132	47	1336
Packer, Edmund H. (See Johnson, Jonathan, assignor.)						
Packham, Frank R. (See Patric and Packham.)						
Paddock, George, Brooklyn, N. Y. Fishing-reel	401,849	Apr. 23	2164	564	47	439
Page, Dustan A., and R. C. Bird, assignors to Calumet Shade Cloth Company, Chicago, Ill. Machine for sizing and painting cloth	402,184	Apr. 30	2683	695	47	547
Page, Harvey S. (See Pearson, John T., assignor.)						
Page, Wilfred, Penn's Grove, Cal. Two-wheeled vehicle	404,498	June 4	188	45	47	1260

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Page, William C. (See Everitt and Page.)						
Page, William H., assignor to W. H. Page Wood Type Company, Norwich, Conn. Die for forming wooden type	402,852	May 7	441	116	47	746
Page, William H., and G. C. Setchell, assignors to W. H. Page Wood Type Company, Norwich, Conn. Die for forming wood type	402,850	May 7	439	116	47	745
Page, William H., and G. C. Setchell, assignors to W. H. Page Wood Type Company, Norwich, Conn. Die for forming wood type	402,851	May 7	440	116	47	745
Page, William N., *et al.* (See Strader, Julius G., assignor.)						
Page Wood Type Company, William H. (See Page, William H., assignor.)						
Page Wood Type Company, William H. (See Page and Setchell, assignors.)						
Page Wood Type Company, William H. (See Setchell, George C., assignor.)						
Paget, Leonard, assignor of one-half to C. J. Kintner, New York, N. Y. Making gas-incandescents	401,898	Apr. 23	2237	.....	47	453
Paget, Leonard, assignor of one-half to C. J. Kintner, New York, N. Y. Gas-incandescent	401,899	Apr. 23	2239	.....	47	454
Pahlow, Arnold, Philadelphia, Pa. Rocking-chair and carriage	403,773	May 21	1844	484	47	1030
Paine, George S., Wyandotte, Mich. Oil-burner	404,428	June 4	80	20	47	1242
Paine, Irving, Hornellsville, N. Y. Stem for cigar and cigarette holders or pipes	403,550	May 21	1596	400	47	967
Paine, William L., Argenta, Ark. Rocking-chair	400,478	Apr. 2	76	22	47	18
Painter, Jacob A., assignor of one-half to C. M. Allison, Decatur, Ill. Centering device	404,858	June 11	713	183	47	1373
Paisley, John W., East Randolph, N. Y. Truss-bridge	400,704	Apr. 2	309	108	47	79
Palm, Gotlieb F., and M. Smith, assignors of one-third to S. Irvine, Coshocton, Ohio. Cigar-bunching machine	402,766	May 7	317	82, 83	47	723
Palm, Theodor H., Sacramento, Cal. Hay-stacker	404,222	May 28	2545	664	47	1175
Palmer Brothers. (See Palmer, William H., Jr., assignor.)						
Palmer, Charles E., New Haven, Conn. Veterinary mouth-speculum	404,652	June 4	420	104	47	1306
Palmer, Henry H., *et al.* (See Emerson, Horace G., assignor.)						
Palmer, Isaac E., Middletown, Conn. Apparatus for delivering material in ropy form	402,274	Apr. 30	2809	727	47	571
Palmer, Isaac E., Middletown, Conn. Apparatus for stringing hammocks	402,275	Apr. 30	2812	728	47	571
Palmer, Isaac E., Middletown, Conn. Hitching device for ropes	405,372	June 18	1467	388	47	1529
Palmer, Jesse V., Greenwich, N. Y. Carding cotton	405,904	June 25	2301	605	47	1697
Palmer, John S., Providence, R. I. Plating stock for jewelry	401,900	Apr. 23	2240	583	47	454
Palmer, Samuel D., *et al.* (See Emerson, Horace G., assignor.)						
Palmer, Theron H., San Bernardino, Cal. Carpenter's chisel	404,554	June 4	289	68	47	1280
Palmer Torpedo Railway Signal Company. (See Treacy, Frank H., assignor.)						
Palmer, William H., Jr., Norwich, assignor to Palmer Brothers, Montville, Conn. Machinery for making lags	404,106	May 28	2352	617	47	1138
Palmer, Winfield S., Glenburn, Pa. Car-coupling	400,594	Apr. 2	237	64	47	50
Palmquist, Peter J. (See Swenson, Alfred, assignor.)						
Palnud Hat Machine Company. (See Kestor, Charles E., assignor.)						
Paradise, Frank D., Chicago, Ill. Car-brake	403,285	May 14	1117	296	47	882
Paris, Alfred J., St. Louis, Mo. Fire-proof plaster-cloth for ceilings and walls	401,967	Apr. 23	2339	608	47	472
Paris, James A., and J. H. Dilday, Gibson, Tenn. Stump-extractor	401,850	Apr. 23	2164	565	47	439
Parke, John Y., Philadelphia, Pa. Electric gas-lighter	400,479	Apr. 2	77	22	47	18
Parke & Lacey. (See Dodge, Miles B., assignor.)						
Parker, Arthur A., and J. F. Landers, Jersey City, N. J. Fence-making machine	401,296	Apr. 9	1311	348, 349, 350	47	257
Parker, Beaumont. (See Parker, Lewis C. and B.)						
Parker Company, Charles. (See Griswold, Lewis F., assignor.)						
Parker Company, Charles. (See Parker, Dexter W., assignor.)						
Parker, Dexter W., assignor to C. Parker Company, Meriden, Conn. Lamp	401,583	Apr. 16	1746	461	47	351
Parker, Eliza J. (See Parker, Samuel J., assignor.)						
Parker, Fred D., Denver, Colo. Shuttle and race mechanism for sewing-machines	404,555	June 4	289	69	47	1220
Parker, James C., Woodston, Kans. Sponge-cup and sealer	400,941	Apr. 9	778	205	47	158
Parker, James H., Utica, N. Y. Rotary pump	401,203	Apr. 9	1171	311	47	231
Parker, Lewis C. and B., Kansas City, Mo. Igniting apparatus for gas-engines	401,204	Apr. 9	1172	312	47	231
Parker, Lewis C. and B., Kansas City, Mo. Gas or gasoline engine	403,367	May 14	1241	329, 330	47	906
Parker, Lewis C. and B., Kansas City, Mo. Gas or hydrocarbon-vapor engine	405,795	June 25	2142	562	47	1667
Parker, Lewis C., and B. Voges, Cincinnati, Ohio. Clothes-wringer	404,653	June 4	421	104	47	1306
Parker, Martin B., Blue Earth City, Minn. Gopher-exterminator	400,705	Apr. 2	400	109	47	79
Parker, Samuel J., assignor to E. J. Parker, Rochester, N. Y. Steam-pump	400,787	Apr. 2	533	146, 147	47	102
Parker, Stearns & Sutton. (See Pfanne, Carl A. G., assignor.)						
Parker, William T. (See Way and Parker.)						
Parkeson, Allen R., Monongahela City, Pa. Cable railway	402,963	May 7	598	157	47	777
Parkinson, Joseph G., Chicago, Ill. Type-writing machine	405,222	June 11	1248	331	47	1478
Parks, William R., Palmer, Mass. Oil-burner	402,853	May 7	443	117	47	746
Parmelee, John W. (See Hubbell, John M., assignor.)						
Parmelee, John W., Wilkes-Barré, Pa. Device for case-hardening axle-boxes	402,964	May 7	600	158	47	777
Parmelee, John W., Wilkes-Barré, Pa. Striping attachment for circular-knitting machines	402,854	May 7	444	117, 118	47	746
Parrish, Elmer A., assignor of one-half to J. A. Brooks, Baltimore, Md. Clothes-horse	403,066	May 7	740	196	47	903
Parrish, John W., Milton, W. Va. Churn	405,591	June 18	1813	480	47	1601
Parry, David M. and T. H., Indianapolis, Ind. Vehicle attachment	405,905	June 25	2304	606	47	1697
Parry, Thomas H. (See Parry, David M. and T. H.)						
Parry, Truman R., Manatee, Fla. Hand-seeder	401,584	Apr. 16	1748	461	47	351
Parsons, Edward A., New Haven, Conn. Calendar	402,965	May 7	601	158	47	777
Parsons, Horace W., Wamego, Kans. Distributor for explosive bombs	401,851	Apr. 23	2165	565	47	440
Passel, George W., Cincinnati, Ohio. Pressure-bar for planing-machines	401,299	Apr. 9	1316	330	47	259
Passel, George W., Cincinnati, Ohio, assignor to J. A. Fay & Company, of Ohio. Wood-worker	403,368	May 14	1243	330	47	906
Paterson, Andrew, McKeesport, Pa., assignor to National Tube Works Company, Boston, Mass. Machine for making axles	402,101	Apr. 23	2553	664	47	513
Paterson, Andrew, McKeesport, Pa., assignor to National Tube Works Company, Boston, Mass. Making axles	402,102	Apr. 23	2555	664	47	513
Patmor, James, Pittsburg, Kans. Finger-shield and fountain attachment	402,185	Apr. 30	2685	698	47	547
Patric, Charles E., assignor to Superior Drill Company, Springfield, Ohio. Hay-fork	404,107	May 28	2356	618	47	1139
Patric, Charles E., and R. H. Rodgers, assignors to Superior Drill Company, Springfield, Ohio. Track for hay-carriers	403,443	May 14	1358	357	47	927
Patric, Charles E., and F. R. Packham, assignors to Superior Drill Company, Springfield, Ohio. Grain-drill	404,108	May 28	2357	618, 619	47	1139

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Patten, George. (See Woodbury, Merrill, Patten, and Woodbury.)						
Patten, George, Clarksville, assignor to himself and M. Patten, Nashville, Tenn. Metallic roofing-plate	403,444	May 14	1353	357	47	998
Patten, John, New York, N. Y. Lasting-machine	403,067	May 7	741	193, 194, 195, 196, 197, 198	47	803
Patten, John, New York, N. Y. Lasting boots or shoes	403,068	May 7	757	198, 199, 200	47	805
Patten, Moultrie. (See Patten, George, assignor.)						
Patterson, Clara E., New York, N. Y. Coin-operated stereoscope	405,321	June 18	1396	368	47	1515
Patterson, James R., and M. T. Foster, Madison, Kans. Corn-planter	405,498	June 18	1675	443	47	1572
Patterson, John H., assignor to National Cash Register Company, Dayton, Ohio. Cash indicator and register	404,650	May 28	2258	591, 592	47	1118
Patterson, John S., and J. R. Lawrence, Cincinnati, Ohio. Grain-door for freight-cars	403,208	May 14	989	261	47	859
Patterson, Thomas L. (See Walker and Patterson.)						
Patterson, Thomas W. (See Carter, Wesley C., assignor.)						
Patterson, William R., assignor to Western Electric Company, Chicago, Ill. Thermometric indicator	402,347	Apr. 30	2927	750	47	592
Patterson, William R., assignor to Western Electric Company, Chicago, Ill. Thermostatic door-closer	403,484	May 14	1423	372	47	930
Pattison, Henry, Windsor, Nova Scotia, Canada. Shears	404,051	May 28	2264	592	47	1120
Patton, George W., assignor of one-half to W. H. Lee, Warrensburg, Mo. Wagon-jack	403,485	May 14	1424	372	47	930
Patton, William H., Pueblo, Colo. Heating street-cars	401,205	Apr. 9	1173	312	47	231
Patton, William H., Pueblo, Colo. Motor	401,756	Apr. 23	2027	530	47	414
Paty, John F., and A. W. Bigham, Belton, Tex. Baling-press	405,270	June 18	1327	349, 350	47	1500
Paul, Robert C., Cumberland, Md. Pulley	400,706	Apr. 2	401	109	47	79
Paul, Robert C., Cumberland, Md. Steam-engine valve and seat	402,472	Apr. 30	3130	811	47	632
Paul, Samuel T., assignor to H. Disston & Sons, (incorporated,) Philadelphia, Pa. Hardening apparatus for saw-blades, &c	401,206	Apr. 9	1173	312	47	231
Paull, Archibald W., Wheeling, W. Va. Manufacture of collars for jug-tops	403,605	May 21	1594	422	47	981
Paulsen, William A., Chicago, Ill. Letter-box	402,855	May 7	449	118	47	747
Payette, Peter C. (See Brown and Payette.)						
Payson, Joseph R., Jr., Chicago, Ill. Spring-hinge	404,556	June 4	290	69	47	1280
Peabody, George L., Pittsburg, Pa. Machine for mixing asphalt	405,499	June 18	1677	443, 444	47	1572
Peacock, Gibson, committee. (See De Figanière, Affonso.)						
Pearce, Annie W., assignor of one-half to L. H. Johnson, Greenwood, S. C. Motor	403,606	May 21	1595	423	47	982
Pearce, Spain E., and G. W. Merrill, Algonac, Mich. Hose-coupling	404,429	June 4	81	20	47	1242
Peare, George R., Lynn, assignor of one-half to E. L. Sprague, Boston, Mass. Wax-heating device for sewing-machines	405,592	June 18	1814	480, 481	47	1601
Peare, George R., Lynn, assignor of one half to E. L. Sprague, Boston, Mass. Wax-heating device for sewing-machines	405,593	June 18	1816	481	47	1601
Peare, George R., Lynn, assignor of one-half to E. L. Sprague, Boston, Mass. Horn-heating device for wax-thread sewing-machines	405,594	June 18	1818	481, 482	47	1602
Pearsall, Charles H., Brooklyn, N. Y. Shoe	401,585	Apr. 16	1749	462	47	351
Pearson, Alfred N., Northcote, Victoria. Wire-netting	403,774	May 21	1844	484, 485	47	1030
Pearson, John T., assignor of one-half to H. S. Page, St. Louis, Mo. Adjustable support for incandescent electric lights	405,970	June 25	2412	631	47	1715
Pease, Henry C., assignor of one-half to L. J. Pease, Worcester, Mass. Leather-splitting machine	403,486	May 14	1424	373	47	930
Pease, Lester J. (See Pease, Henry C., assignor.)						
Peaslee, J. Ceylon, and F. W. Beavan, Hudson, N. Y. Car-coupling	405,430	June 18	1558	412	47	1547
Pechiney, Alfred R., Salindres, France, assignor to Weldon's Chlorine Processes Company, (limited,) Burstow, England. Refrigerating-tower	400,595	Apr. 2	238	64, 65	47	50
Pechiney, Alfred R., Salindres Gard, France, assignor to Weldon's Chlorine Processes Company, (limited,) Westminster, England. Apparatus for making chlorine	403,445	May 14	1360	358	47	928
Peck, Eugene H., assignor to Meriden Bronze Company, Meriden, Conn. Call-bell	403,286	May 14	1118	297	47	882
Peck, Horace B. (See Boyle, Homer L., assignor.)						
Peck, Horace B. (See Campany, Milton E., assignor.)						
Peck, Ira F., Providence, R. I. Wrench	402,186	Apr. 30	2686	698	47	547
Peck, Ira F., Providence, R. I. Mold for casting hollow ingots	402,187	Apr. 30	2687	698	47	547
Peck, Luzerne J. (See Bolleau, Etienne, assignor.)						
Peck, Stow & Wilcox Company. (See Grannis, Hial S., assignor.)						
Peck, Theodore S. (See Stevens, Benjamin D., assignor.)						
Peck, William K., *et al.* (See Taylor, Francis C., assignor.)						
Peckham, Edgar, New York, N. Y. Car-wheel	405,647	June 25	2212	582	47	1681
Pederson, Ole. (See Butz and Pederson.)						
Peer, John A., Brooklyn, assignor to R. K. and J. Owens, T. W. Bayard, New York, A. G. Ely, Owego, and C. C. and F. Ely, New York, N. Y. Mower	405,676	June 18	1965	516	47	1627
Peifer, Theodore R. (See Herber, Samuel M., assignor.)						
Peirce, Charles L., Milwaukee, Wis. Vehicle-runner	401,367	Apr. 16	1419	375	47	291
Peirce, George M., Philadelphia, Pa. Ash-sifter	401,852	Apr. 23	2167	565	47	440
Pell, Henry W., Rome, N. Y. Drop-perch for vehicles	403,909	May 14	990	261, 262	47	859
Pelton, George W., Muscatine, Iowa. Lamp-reflector	405,173	June 11	1168	312	47	1463
Pemberton, John H., Los Angeles, Cal. Ore-concentrator	401,457	Apr. 16	1549	410	47	315
Pemberton, Robert. (See Sternbergh and Pemberton.)						
Pendergast, Daniel. (See Pendergast, John and D.)						
Pendergast, John, Boston, and D. Pendergast, Merrimac; said John Pendergast assignor to W. B. Simmons, Whitinsville, Mass. Cone or former for felt-hardening machines	404,362	May 28	2757	715	47	1214
Pendleton, John H. (See Tiers, Pendleton, and Bryson.)						
Pendleton, John H., Brooklyn, and A. Bryson, Jr., assignors to Rapid Transit Cable Company, New York, N. Y. Means for operating trains upon cable railways	404,497	June 4	189	45, 46	47	1260
Pendleton, John H., Brooklyn, and L. Moss, assignors to Rapid Transit Cable Company, New York, N. Y. Guide-pulley for cable railways	404,498	June 4	193	47	47	1261
Pendleton, John H., Brooklyn, C. Tiers, A. Bryson, Jr., and L. Moss, assignors to Rapid Transit Cable Company, New York, N. Y. Grip for cable railways	404,499	June 4	196	47, 48	47	1261

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Pendleton, John H., Brooklyn, A. Bryson, Jr., C. Tiers, and L. Moss, assignors to Rapid Transit Cable Company, New York, N. Y. Endless belt for grips for cable railways	404,500	June 4	199	48	47	1262
Penfield & Son, J. W. (See Burr, Ellis M., assignor.)						
Penfield & Son, J. W. (See Wallace, William W., assignor.)						
Peninsular Novelty Company. (See Slater, Warren G., assignor.)						
Peninsular Novelty Company. (See Vinton, John H., assignor.)						
Penn, William H. (See Schroyer and Penn.)						
Penrose, Charles L., Chatham, N. Y. Bolt-locking device	403,131	May 14	859	227	47	833
Penrose, Charles L., Chatham, N. Y. Bolt-locking device	403,132	May 14	860	227	47	834
Pentz, David, Shippingport, Pa. Combined bread-raiser and kitchen-safe	401,055	Apr. 9	945	252	47	189
Pepper, William H., and A. T. L. Davis, Lake Village, N. H. Circular-knitting machine	401,791	Apr. 23	2087	544, 545	47	424
Pepper, William H., and A. T. L. Davis, Lake Village, N. H. Circular-knitting machine	404,930	June 11	817	210	47	1393
Peppler, John G., Bloomingdale, Ontario, Canada. Device for packing butter, &c.	405,595	June 18	1820	482	47	1602
Peregrine, Seymour W., Grand Rapids, Mich. Painting apparatus	402,188	Apr. 30	2688	698	47	547
Perino, Josef, Charlottenburg, near Berlin, Germany. Extracting copper from copper pyrites	401,056	Apr. 9	946	.....	47	189
Perkins, Benjamin F., Holyoke, Mass. Filtering apparatus	401,057	Apr. 9	947	252, 253	47	189
Perkins, Frank G., Mishawaka, Ind. Bushing for pulleys	404,300	May 28	2656	690	47	1195
Perkins, Thomas G., Chicago, assignor of one-half to E. C. Read, Blue Island, Ill. Machine for cutting rails	400,707	Apr. 2	402	109, 110	47	80
Perret, Frank A., Brooklyn, N. Y., assignor to Elektron Manufacturing Company, of New York. Dynamo-electric machine	403,487	May 14	1427	373, 374	47	940
Perret, Frank A., Brooklyn, N. Y., assignor to Elektron Manufacturing Company, of New York. Electric-motor starting and stopping device	405,223	June 11	1249	331	47	1479
Perret, Michel, Paris, France. Furnace	402,474	Apr. 30	3132	811, 812	47	632
Perret, Paul, Chaux-de-Fonds, Switzerland. Watch-pendant	402,473	Apr. 30	3131	811	47	632
Perriman, Henry, Essenden, and C. F. Alger, Melbourne, Victoria. Implement for straining wire	405,796	June 25	2143	563	47	1667
Perrin Frères. (See Raymond, Pierre A., assignor.)						
Perrin, William H., assignor of one-half to B. Colborne, Smith's Falls, Ontario, Canada. Tilting colter-holder	403,551	May 21	1527	400	47	967
Perry, Fred H., Montpelier, Vt. Toe-weight	404,109	May 28	2362	619	47	1140
Perry, Joseph R. (See Hopkins and Perry.)						
Perry, William A. (See Hathaway, George H., assignor.)						
Pertin, Léon, Green Point, assignor to Ravenswood Art Glass Works, New York, N. Y. Ornamenting glass	403,552	May 21	1527	400	47	968
Peters, Emil, Merscheid, Germany. Scissors	400,480	Apr. 2	79	22	47	18
Petersen, Christian. (See Hooper and Petersen.)						
Peterson, Alpheus, Horsham, Pa. Gate	402,348	Apr. 30	2928	759	47	593
Peterson, Henry, Berkeley, assignor of two-thirds to J. B. Wilson and W. F. Delaney, Oakland, Cal. Attachment for lawn-mowers	402,189	Apr. 30	2689	699	47	548
Petherick, Vernon, Brisbane, Queensland. Sheep-shears	405,500	June 18	1679	444	47	1573
Petherick, William W. (See Devens, Elijah J., assignor.)						
Petroleum Fuel Company. (See Lombard, Levi W., assignor.)						
Petsche, Bernhard, Philadelphia, Pa. Paper-file	405,596	June 18	1821	482	47	1602
Pettengill, Frederick B., assignor of one-half to E. Nicholson, Roscdale, Kans. Steam-valve governor	404,796	June 4	617	158	47	1347
Petterson, Ludwig, Chicago, Ill. Box-fastener	404,723	June 4	519	133	47	1327
Pettet, Miles. (See Wistar and Pettet.)						
Pettge, Friedrich, and L. Metzger, Dessau, Anhalt, Germany. Bung	403,956	May 28	2109	552	47	1090
Pettigrew, Charles, *et al.* (See Treat, Francis H., assignor.)						
Pfanne, Carl A. G., assignor to Parker, Stearns & Sutton, Brooklyn, N. Y. Hair-curling device	404,501	June 4	201	48	47	1262
Pfannenstiel, Hermann E., Dantzic, Prussia, Germany. Signal-sounding apparatus	404,980	June 11	890	233	47	1408
Pfannkuche, Gustav, assignor to Brush Electric Company, Cleveland, Ohio. Regulation of alternating electric-current generators	404,859	June 11	714	183	47	1373
Pfannkuche, Gustav, assignor to Brush Electric Company, Cleveland, Ohio. Apparatus for indicating the strength of the current in an electric circuit	404,860	June 11	717	183, 184	47	1374
Pfannkuche, Gustav, assignor to Brush Electric Company, Cleveland, Ohio. Indicating the strength of the current in an electric circuit	404,861	June 11	719	184	47	1374
Pfannkuche, Gustav, assignor to Brush Electric Company, Cleveland, Ohio. Regulation of alternating electrical current generators	405,174	June 11	1169	312	47	1463
Pfatischer, Matthias, New York, N. Y., assignor to Electrical Accumulator Company, of New York. Distribution of electricity by secondary batteries	402,349	Apr. 30	2930	759	47	593
Pfau, Christian F., Quincy, Ill. Egg-beater	401,058	Apr. 9	949	253	47	189
Pfeifer, Peter, Durhamville, N. Y. Device for conveying sheets of glass through the annealing-tunnel	400,708	Apr. 2	405	110	47	80
Pfeil, Philip, assignor of one-half to G. Brandon, St. Louis, Mo. Detachable strainer	405,373	June 18	1468	380	47	1529
Pfingst, Louis. (See Bemis and Pfingst.)						
Pfingst, Louis, Boston, and S. A. Bemis, Springfield, Mass. Alarm-signal for cable and electric railway cars	404,981	June 11	891	233	47	1408
Pfouts, Leroy S., Wilmot, Ohio. Wind-wheel	402,475	Apr. 30	3135	813	47	632
Phalan, James H., New Haven, assignor to Electrical Supply Company, Ansonia, Conn. Galvanic battery	401,059	Apr. 9	950	253	47	189
Phelan, Merton D., Wollaston, assignor to J. W. Brooks, trustee, Cambridge, Mass. Rotary cutter for trimming-machines	400,788	Apr. 2	535	147	47	103
Phelps, Andrew S., Chicago, Ill. Heating-stove	400,481	Apr. 2	79	22	47	18
Phelps, Bradley N., New York, N. Y. Draw-bar and hook	403,133	May 14	861	227	47	834
Phelps, Homer L., Athens, Pa. Rotary steam-engine	404,557	June 4	292	69	47	1280
Phelps, Niel S., and C. L. Ellis, Eureka, Cal. Parallel-ruler	400,596	Apr. 2	240	65	47	50
Phelps, Walter S., St. Catalina, Guantanamo, Cuba. Valve for steam-engines	401,853	Apr. 23	2168	565	47	440
Phillips, Allen W., Providence, R. I. Desk-box	401,757	Apr. 23	2028	530	47	414
Phillips, Ambrose A., Toledo, Ohio. Hydrocarbon-burner	403,134	May 14	863	227	47	834
Phillips Economical Cable Grip Construction Company. (See Phillips, Elwood C., assignor.)						
Phillips, Elwood C., Garden City, Kans., assignor to Phillips Economical Cable Grip Construction Company, Chicago, Ill. Conduit for cable railways	400,482	Apr. 2	80	23	47	18
Phillips, Francis V., assignor to Chicago Sash Pulley Company, Chicago, Ill. Machine for grooving window-sash	400,597	Apr. 2	241	65	47	50
Phillips, George H., Geneva, N. Y. Range	404,502	June 4	302	48	47	1262
Phillips, Heman H., Boulder, Colo. Gate	405,175	June 11	1179	312	47	1463

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Phillips, William J., and C. Humphrys, Wauseon, Ohio. Screen	403,553	May 21	1528	401	47	968
Phono Multiplex Telegraph Company. (See Van Rysselberghe, François, assignor.)						
Pickering, Washington P., Boston, Mass. Wagon-jack	404,223	May 28	2546	664	47	1175
Pickernell, Frank A., East Orange, N. J., assignor to American Telephone and Telegraph Company, New York, N. Y. Telephone combination-circuit	405,677	June 18	1907	576	47	1627
Pickert, Augustus F., Atlanta, Ga. Compensation watch-balance	402,032	Apr. 23	2445	637	47	492
Pickett, Chancy J., assignor of two-thirds to W. I. Brotherton and H. N. Watrous, Bay City, Mich. Coffee-cleaning machine	404,430	June 4	82	20	47	1242
Pickett, Lyman B., Montrose, Pa. Sled	404,432	June 4	87	21	47	1242
Pickhardt, Emile, Islington, Mass. Button-loop	403,609	May 21	1508	423	47	982
Pickhardt, Emile, Islington, Mass., and D. A. Carpenter, New York, N. Y. Safety-pin	403,607	May 21	1507	423	47	982
Pickhardt, Emile, Islington, Mass., and D. A. Carpenter, New York, N. Y. Safety-pin	403,608	May 21	1507	423	47	982
Picking, George G., and W. Hopkins, Bow, county of Middlesex, England. Steam or other pump	405,501	June 18	1681	444, 445	47	1574
Pictet, Raoul P., Geneva, assignor of one-half to G. L. Breiaz, Lausanne, Switzerland. Disintegrating fibrous materials	404,431	June 4	84	21	47	1242
Pieper, Henri, Fils, Liege, Belgium. Electric-arc lamp	405,906	June 25	2306	606	47	1607
Pierce, Charles W., Oak Hill, N. Y. Wardrobe-hook	402,966	May 7	602	158	47	778
Pierce, Frank L., Clay Centre, Kans. Latch	403,554	May 21	1529	401	47	968
Pierce, Otis S. (See Bray and Pierce.)						
Pierson, John W., assignor of one-half to J. A. Dickinson, St. Aubert, Mo. Tank-fountain	405,271	June 18	1329	350	47	1500
Piggott, Henry E., assignor of part to E. B. Roth and W. H. Barnett, St. Louis, Mo. Smoke-preventer for furnaces	400,709	Apr. 2	407	110, 111	47	81
Pike, William H., London, England. Gas-stove	404,652	May 28	2366	592	47	1190
Pillow, Benjamin A., Richmond, Va. Boot or shoe	401,060	Apr. 9	951	253	47	190
Pilon, Paul, and J. Ploudre, West Quincy, Mass. Walking-stick	401,061	Apr. 9	952	254	47	190
Pilon, Philip, Hinesburg, Vt. Wagon-brake	400,942	Apr. 9	779	208	47	158
Pilson, James H., Washington, D. C. Folding bracket	403,775	May 21	1846	465	47	1031
Pincus, Henry, Rockaway, N. J. Portable shaving-stand	404,110	May 28	2362	620	47	1140
Pinder, Joseph L. (See White, Albert, assignor.)						
Pinder, Joseph L. (See Young, Harlan P., assignor.)						
Pine, John T., New York, N. Y. Steam-heating apparatus	403,287	May 14	1119	297	47	882
Pinkowski, Friedrich. (See Klinik, Pinkowski, and Gross.)						
Piper, William M., Allegheny, Pa. Lifting-jack	401,368	Apr. 16	1490	375	47	291
Pirnay, Joseph. (See Francken and Pirnay.)						
Pirotte, Andrew J., Manton, R. I. Stop-motion for looms	402,767	May 7	390	83	47	723
Pitkin, Stephen H. (See Bartlett, John S., assignor.)						
Pitts Agricultural Works. (See Bronson, Levi, assignor.)						
Platt, Irving G., Waterbury, Conn. Apparatus for making seamless tubes	405,115	June 11	1077	287	47	1445
Ploudre, Joseph. (See Pilon and Ploudre.)						
Plumb, Henry B., assignor to Eagle Lock Company, Terryville, Conn. Trunk-lock	401,062	Apr. 9	953	254	47	190
Plume & Atwood Manufacturing Company. (See Atwood, Lewis J., assignor.)						
Plume & Atwood Manufacturing Company. (See Atwood and Tobey, assignors.)						
Plume & Atwood Manufacturing Company. (See Egleston, Thomas, assignor.)						
Plumer, William E., Sioux City, Iowa. Draft-equalizer	403,135	May 14	864	228	47	834
Plummer, Frank J., Philadelphia, Pa. Wood-planing machine	404,433	June 4	87	21, 22	47	1242
Pneumatic Steering Gear and Manufacturing Company. (See Dunn, Ambrose C., assignor.)						
Poe, Isaac N., assignor to Union Manufacturing Company, Toledo, Ohio. Wash-board	404,729	June 4	590	133	47	1327
Poffenbarger, Josias, York, Nebr. Car-coupling	401,854	Apr. 23	2169	566	47	440
Poindexter, John E., assignor of one-third to J. E. Smith and G. M. Randolph, St. Louis, Mo. Hair-singer	405,502	June 18	1683	445	47	1574
Pole, Benjamin C., Camden, N. J. Motor for street-railways	401,855	Apr. 23	2171	567	47	441
Polk, Liberty B., Wilmington, Ohio. Paper-hanging machine	402,612	May 7	90	22	47	681
Pollard, Edward, East Cambridge, Mass. Burner	402,476	Apr. 30	3136	812	47	633
Pollard, Frank B. (See Hewitt, William, assignor.)						
Pollard, James M., Washington, D. C. Split pulley	401,586	Apr. 16	1749	462	47	351
Polley, Clark, New Berlin, Fla. Weather-strip	405,272	June 18	1330	350	47	1501
Pollock, James R., Kansas City, Mo. Suspenders	405,374	June 18	1460	380	47	1529
Pomeroy, Charles, New York, N. Y., assignor, by mesne assignments, to Vulcan Manufacturing Company. Wrench	401,513	Apr. 16	1635	432	47	321
Pomeroy, Jerome L., New Haven, Conn. Flexible razor-strop	402,033	Apr. 23	2447	637	47	492
Pommer, Frank L. (See Heimann, Salomon, assignor.)						
Pontious, Marshal E., Cleveland, Ohio. Machine for making bird-targets	400,870	Apr. 2	602	160	47	127
Pooley, Henry, Liverpool, county of Lancaster, England. Steelyard for weighing-machines	403,136	May 14	865	228, 229	47	834
Poor, George H., St. Louis, Mo., assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Brake-head and lever for operating the same	402,276	Apr. 30	2814	728	47	572
Poore, James M., Spring Valley, Minn. Harrow, seeder, and planter	405,797	June 25	2145	564	47	1668
Poorman, Emanuel W., Canton, Ohio. Boiler	401,369	Apr. 16	1421	376	47	291
Poorman, Emanuel W., Canton, Ohio. Rock and earth drilling machine	403,555	May 21	1530	401, 402	47	968
Pope, Charles H. (See Tebbetts, Pope, and Stewart.)						
Pope, Edwin, Quebec, Quebec, Canada. Individual call and switch	403,776	May 21	1847	485, 486	47	1031
Pope Manufacturing Company. (See Fowler, Nathaniel C., Jr., assignor.)						
Pope Manufacturing Company. (See Knous, John, assignor.)						
Popp Compressed Air and Electric Power Company. (See Popp, Victor, assignor.)						
Popp, Victor, Paris, France, assignor to Popp Compressed Air and Electric Power Company, (limited.) Means or apparatus for the production and distribution of compressed air	405,971	June 25	2413	631, 632, 633	47	1715
Porter, Alexander T. (See Ball and Norton, assignors.)						
Porter, Andrew C., assignor of one-half to C. W. Higgison, Utica, N. Y. Holder for umbrellas or analogous articles	400,598	Apr. 2	243	66	47	51
Porter, Edward E., Cincinnati, Ohio. Self-locking press for bundle-wrapping	401,587	Apr. 16	1752	463	47	352
Porter, George A., *et al.* (See Casey, Thomas A., assignor.)						
Porter, George W., Allegheny, Pa. Elevator-car-operating device	402,277	Apr. 30	2816	728, 729	47	572
Porter, James B., Yarmouth, Nova Scotia, Canada. Trunk-fixture	404,111	May 28	2363	620	47	1141
Porter, John B., New York, N. Y., assignor to Sewall Safety Heating Company, Portland, Me. Car-heating apparatus	402,540	Apr. 30	3223	836	47	649
Porter, John B., New York, N. Y., assignor to Sewall Safety Heating Company, Portland, Me. Car-heating apparatus	402,541	Apr. 30	3224	836	47	649
Porter, Joseph S., assignor of two-thirds to F. G. Scofield and J. L. Moore, Sandusky, Ohio. Freight-car door	405,848	June 25	2214	583	47	1681

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Porter, William H., Washington, D. C. Top for desks	400,871	Apr. 2	664	180	47	127
Post, C. C., *et al.* (See Southard, Stephen P., assignor.)						
Post, Henry H., Oswego, N. Y. Machine for manufacturing cylindrical rods	404,654	June 4	422	104 105	47	1306
Postlethwaite, Charles E., South Hackney, England. Lamp-extinguisher	400,789	Apr. 2	537	147 148	47	103
Poston, George C. (See Fain and Poston.)						
Potter-Compton Electric Company. (See Serson, James, assignor.)						
Potter, Herbert E. (See Eastman and Potter.)						
Potter, Hobert B., Hillburn, N. Y. Interlocking device for railway-switches	400,943	Apr. 9	780	206	47	158
Potts, George L., Appleton, Wis. Attachment for railway-cars	405,322	June 18	1400	368	47	1516
Potts, Isaac B., Columbus, Ohio. Boiler for heating purposes	401,300	Apr. 9	1316	350	47	259
Potts, James F. (See Fischer, August, assignor.)						
Potts, Joseph H., Philadelphia, Pa. Cleaning metal castings	405,716	June 25	2032	.....	47	1645
Potts, Robert, St. Thomas, Ontario, Canada. Registering-gage for railway-car brakes	403,210	May 14	992	261	47	859
Pottstown Iron Company. (See Bertrand, Ernst, assignor.)						
Poulson, Niels, Brooklyn, N. Y. Metallic grill or guard	404,982	June 11	892	233 234	47	1408
Pounder, Alfred W. (See Conrad and Pounder.)						
Pounder, Malcolm, *et al.* (See Conrad and Pounder, assignors.)						
Powell, Charlotte. (See Huber, Katie, assignor.)						
Powell, James, Cincinnati, Ohio. Floor-key for cocks	400,944	Apr. 9	783	206	47	150
Powell, James, Cincinnati, Ohio. Lubricator	403,695	May 21	1726	455	47	1008
Powell, James, Cincinnati, Ohio. Die for compressing valve-blanks	403,696	May 21	1727	455	47	1008
Power & Co., L. (See Power, Laurence, assignor.)						
Power, Laurence, assignor to L. Power & Co., Philadelphia, Pa. Planing machinery	405,431	June 18	1559	412	47	1547
Powers, David J., Chicago, Ill. Ditching-machine	404,301	May 28	2657	691 692	47	1195
Powers, James J., New York, N. Y. Sewage-purifier	401,458	Apr. 16	1550	410	47	315
Pracy, Joseph. (See Day, Jeremiah E., assignor.)						
Praschl, Stephan, Paris, France, assignor to M. M. Mihalovitch, Cincinnati, Ohio. Vending apparatus	403,069	May 7	761	200	47	806
Pratt, George W., and J. P. Hanson, Oshkosh, Wis. Log-loading machine	400,790	Apr. 2	530	148 149	47	103
Pratt, Harry P., Chicago, Ill. Magnetic shield for watches	403,211	May 14	994	257	47	860
Pratt, Harry P., Chicago, Ill. Electrode for electro-therapeutic body-wear	405,176	June 11	1173	310	47	1464
Pratt & Letchworth. (See Hewitt, Leslie, assignor.)						
Pratt, Nathaniel A., Atlanta, Ga., assignor to Pratt Steel Company, Birmingham, Ala. Flux-feeding apparatus for blast-furnaces	401,063	Apr. 9	954	254	47	190
Pratt, Nathaniel A., Atlanta, Ga., assignor to Pratt Steel Company, Birmingham, Ala. Flux-feeder for blast-furnaces	402,103	Apr. 23	2557	665	47	513
Pratt, Robert J., Greenbush Heights, N. Y., assignor to Water Primary Battery Company, Jersey City, N. J. Galvanic battery	402,104	Apr. 23	2559	665	47	514
Pratt, Smith, Granville, Ohio. Table-slide	402,967	May 7	602	159	47	778
Pratt Steel Company. (See Pratt, Nathaniel A., assignor.)						
Pratt, Wallace E., Boston, Mass. Center-square, bevel, and protractor	405,432	June 18	1561	412	47	1548
Pratt & Whitney Company. (See Cooley, Charles H., assignor.)						
Pratt & Whitney Company. (See Richards, Francis H., assignor.)						
Pratt & Whitney Company. (See Whitney, Amos, assignor.)						
Pray, Lewis, Portland, Me. Piano lamp-holder	401,064	Apr. 9	955	254	47	191
Predmore, William H., Walworth, Nebr. Calf-weaner	404,931	June 11	819	210	47	1393
Prentis, Charles, *et al.* (See Elmendorf, Albert, assignor.)						
Prescott, George B., Jr., Newark, N. J., assignor to Electrical Accumulator Company, of New York. Distribution of electricity by secondary batteries	402,190	Apr. 30	2690	699	47	548
Prescott, George B., Jr., Newark, N. J., assignor to Electrical Accumulator Company, of New York. System of distribution by secondary batteries	402,191	Apr. 30	2691	699	47	548
Prescott, George B., Jr., Newark, N. J., assignor to Electrical Accumulator Company, of New York. Distribution of electricity by secondary batteries	402,192	Apr. 30	2693	699	47	549
Prest, John E., Northbridge, Mass. Drop-wire stop mechanism for warping-machines	402,278	Apr. 30	2817	729	47	573
Preston, Clarissa, Pittsburg, Pa. Pan for baking and roasting	404,558	June 4	293	69	47	1280
Preston, James F. (See Case and Preston.)						
Preston, William, assignor of one-half to J. J. Kelly, Brooklyn, N. Y. Grain-press	404,655	June 4	424	106	47	1306
Preuss, Rudolph, assignor of one-half to F. Kunkel, Milwaukee, Wis. Woven-wire mattress	401,301	Apr. 9	1317	330	47	259
Price, George W., assignor to J. R. Johnson, F. M. Dunn, and J. F. Walters, Baltimore, Md. Store-service apparatus	403,070	May 7	762	201	47	806
Price, John B., Wollaston Heights, Mass., assignor to Electrical Accumulator Company, of New York. Secondary battery	403,957	May 28	2110	532	47	1090
Price, Noah C., Pocatello, Idaho Ter. Attachment for brake-rods	405,798	June 25	2147	544	47	1668
Price, Solomon. (See Lieberthal, Hyman, assignor.)						
Price, Walter, Lyons, Nebr. Corn-planter attachment	403,369	May 14	1244	330	47	906
Pridmore, Henry E., assignor to McCormick Harvesting Machine Company, Chicago, Ill. Harvester-binder	401,901	Apr. 23	2241	584	47	454
Pridmore, Henry E., assignor to McCormick Harvesting Machine Company, Chicago, Ill. Sheaf-carrier	401,902	Apr. 23	2245	585	47	455
Priebe, Herman C., Englewood, Ill. Clothes-line reel	402,477	Apr. 30	3137	812	47	633
Priest, Edward D., Lynn, Mass. Track-moistening apparatus for electric railways	404,559	June 4	294	70	47	1280
Prince, William H. (See Crane and Prince.)						
Pringle, Eugene, *et al.* (See Mandrill, George W., assignor.)						
Pritchard Brake Company. (See Pritchard, Nathaniel J., assignor.)						
Pritchard, Henry. (See Millar and Pritchard.)						
Pritchard, Nathaniel J., Milnes, assignor to Pritchard Brake Company, Roanoke, Va., Steam-pump	405,116	June 11	1078	287 288	47	1445
Protzman, Ferdinand, Sr., *et al.* (See Gnest, Joseph, assignor.)						
Proudfit, David L. (See Stanley, Lucius T., assignor.)						
Provencher, Alcide. (See Byron, Michelle E., assignor.)						
Provost, Gustave, San Francisco, Cal. Automatic signal for railways	403,370	May 14	1245	330	47	907
Pruet, John C., El Dorado Springs, Mo. Horse power	403,371	May 14	1246	331	47	907
Pruet, John C., El Dorado Springs, Mo. Horse-power	403,372	May 14	1248	331	47	907
Pruneta, Ignase. (See Engel, Clement, assignor.)						
Pryor, Alexander, *et al.* (See Culberson, John L., assignor.)						
Pryor, John P. (See Campbell, George W., assignor.)						
Pugh, Cortes V., Vandalia, Mo. Buggy-top spring	404,434	June 4	89	22	47	1243
Pullen, Richard T., *et al.*, executors and trustees. (See Hall, Joseph L.)						
Pulliam Phillip R., assignor to E. S. Dundy, Jr., Omaha, Nebr. Pitman	402,105	Apr. 23	2560	665	47	514

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Pullman, George M. (See Rapp, August, assignor.)						
Pullman, George M., Chicago, Ill. Vestibule-connection for railway-cars	403,137	May 14	868	229	47	835
Pullman Sash Balance Company. (See McArthur, James, assignor.)						
Pullman's Palace Car Company. (See Sessions, Henry H., assignor.)						
Pungs, William A., Detroit, Mich. Brake-beam	401,716	Apr. 16	1902	511	47	391
Purdy, Edward G., Michigan City, Ind. Hunter's portable stool	401,302	Apr. 9	1319	351	47	260
Purdy, James E., New York, N. Y. Neck-yoke	402,193	Apr. 30	2695	700	47	549
Purdy, James E., New York, N. Y. Horse-collar	403,610	May 21	1600	424	47	982
Purdy, John E., and D. A. Sadgwar, assignors of one-half to J. R. Wilder and J. J. Goode, Washington, D. C. Folding chair	405,117	June 11	1031	288	47	1446
Purnell, Richard H., Rosedale, assignor of one-half to W. E. Ringo, Mound Landing, Miss. Cotton-harvester	405,049	June 11	994	264 265	47	1430
Pursel, Frank P. (See Pursel, William W. and F. P.)						
Pursel, William W. and F. P., Berwick, Pa. Latch and lock combined	405,050	June 11	996	265	47	1430
Pursell, Harry D., Washington Court-House, Ohio. Type-writer case	402,106	Apr. 23	2561	665	47	514
Pursley, John J., Hubbell, Nebr. Churn	402,542	Apr. 30	3225	836	47	650
Purvis, Alfred J., Utica, N. Y. Account-book	403,958	May 28	2111	532	47	1090
Püschner, Moritz, Görlitz, Prussia, Germany. Saw-setting machine	403,212	May 14	995	262 263	47	860
Putnam, John P., Boston, Mass. Sink	403,777	May 21	1849	486	47	1032
Putnam, Joseph W., New Orleans, La. Compound for preserving timber	404,302	May 28	2064	.....	47	1197
Putnam, Joseph W., New Orleans, La. Wood-preserving compound	405,907	June 25	2307	.....	47	1696
Putnam, Joseph W., New Orleans, La. Wood-preserving compound	405,908	June 25	2308	.....	47	1696
Putnam, William W., Bloomer, assignor of two-thirds to G. W. Spngle and J. H. Raney, Auburn, Ark. Car-coupling	403,071	May 7	763	201	47	806
Pyatt, Runyon, Jr., assignor to Rogers & Pyatt, New York, N. Y. Waterproofing straw goods	403,697	May 21	1728	.....	47	1009
Pye, Alonzo E., Kingston, N. Y. Cigar-bundling machine	401,514	Apr. 16	1636	438	47	331
Pyle, George W., Geneva, Ind. Retail-case and support for stores	400,945	Apr. 9	784	209	47	159
Quackenbush, Henry M., Herkimer, N. Y. Nut-cracker	404,016	May 28	2196	577	47	1106
Quay, Alvinza. (See Saddlemyre, Ambrose L., assignor.)						
Queitsch, Louis W., Baltimore, Md. Track-switch shifter	402,856	May 7	451	118	47	747
Quénéhen, François, and A. Vansteenkiste, Brussels, Belgium. Grinding-mill	405,177	June 11	1173	313	47	1464
Quick, George, Chipping-Camden, county of Gloucester, England. Cartridge for ordnance	404,053	May 28	2267	593	47	1121
Quigg, George B., Thornton, assignor to himself and J. N. Young, Chicago, Ill. Car-brake	404,054	May 28	2269	593 594	47	1121
Quillan, William, and F. A. Dake, Almena, Kans. Corn-plow	400,710	Apr. 2	408	111	47	81
Quimby, Edward E., assignor to H. A. Harvey, Orange, N. J. Screw-swaging machine	403,072	May 7	764	201 202	47	806
Quinn, Joseph F., Trezevant, Tenn. Saw sharpening and gumming machine	405,178	June 11	1175	313	47	1464
Quitman, Philip, Chicago, Ill. Device for administering medicine to animals	403,213	May 14	996	263	47	860
Raab, Peter, near Indianapolis, Ind. Road-scraper	400,483	Apr. 2	81	23	47	19
Raap, John H. (See Sweutitsch, Josef, assignor.)						
Rabbeth, Francis J., Boston, Mass. Powder-flask	404,932	June 11	880	211	47	1393
Rabe, Carl, assignor to Sangerhäuser Actien-Maschinen-Fabrik and Eisengiesserei, vormals Hornung & Rabe, Sangerhäusen, Prussia, Germany. Sugar-cane-slicing machine	405,909	June 25	2306	606 607	47	1696
Rabe, Heinrich, assignor to Hanauer Electrische Uhren Fabrik Steinbeuer Rabe, Hanau, Germany. Electric winding for torsion-pendulum clocks	401,065	Apr. 9	956	255	47	191
Rabitte, John M., Roesville, N. Y. Stocking-supporter	404,802	June 11	721	184	47	1374
Rabitz, Carl W., assignor to H. J. E. Jensen and J. J. A. Kohtahl, Hamburg, Germany. Filtering apparatus	403,073	May 7	768	203	47	807
Race, George, assignor of one-half to W. Bresse, Norwich, N. Y. Hitch for the ends of cord or rope	403,074	May 7	769	203	47	807
Rae, Julio H., Milford, Del. Boiler-feed	404,730	June 4	521	133	47	1327
Rae, Thomas W., *et al.* (See Brewer, William J., assignor.)						
Raettig, Charles. (See Moller and Raettig.)						
Raff, Alexander A. (See McBlair and Raff.)						
Raftery, Thomas, New York, N. Y. Boom	405,597	June 18	1822	483	47	1602
Railsback, Lafayette D., assignor of three-fourths to A. M. De Souchet, Indianapolis, Ind., W. I. Williamson and G. W. Mitchell, Bowling Green, Mo. Machine for making ice	402,968	May 7	603	159	47	778
Rainey, William K., New Orleans, La. Electric bell	402,613	May 7	92	23	47	621
Rakestraw, Roland, Wyoming, Ill. Rotary harrow	403,776	May 21	1850	486	47	1032
Rammoser, Albert, Berlin, Germany. Mechanism for detaching thills	405,799	June 25	2148	564	47	1668
Ramsay, Robert, Mount Pleasant, Pa. Apparatus for shifting cars	404,656	June 4	426	106 107	47	1307
Rand, Herbert L., assignor of one-half to C. K. Reed, Worcester, Mass. Cabinet for preserving and displaying game	405,678	June 18	1971	517	47	1628
Rand, McNally & Company. (See Heckel and James, assignors.)						
Randall, Charles A., London, England. Combined mechanical and electro-magnetic motor	401,207	Apr. 9	1175	312 313	47	231
Randall, James D. (See Randall, Silas H., assignor.)						
Randall, Silas H., assignor of one-half to J. D. Randall, Wyoming, Ohio. Harness-maker's press	405,679	June 18	1971	517	47	1628
Randel, Zadock, assignor of two-thirds to H. B. Gardner and H. E. Jones, De Kalb, Mo. Washing-machine	404,731	June 4	522	134	47	1327
Randolph, George M., *et al.* (See Poindexter, John E., assignor.)						
Raney, J. H., *et al.* (See Putnam, William W., assignor.)						
Rankin, Thomas L., Philadelphia, Pa. Gas-pump for ice-making machines	405,503	June 18	1684	446	47	1574
Rankin, William H., *et al.* (See Wilder, Charles W., assignor.)						
Rann, Frank, Chicago, Ill. Submarine apparatus for soldering pipe-joints	400,484	Apr. 2	83	23	47	19
Rannells, Alonzo L. (See Neff, Elijah, assignor.)						
Ransom, Ezra, assignor of two-thirds to O. Stone, Flint, Mich. Picket-fence machine	404,933	June 11	893	211	47	1394
Ransome, Ernest L., San Francisco, Cal. Finishing concrete and artificial-stone surfaces	405,800	June 25	2149	565	47	1668
Rapid Transit Cable Company. (See Pendleton and Bryson, assignors.)						
Rapid Transit Cable Company. (See Pendleton, Bryson, Tiers, and Moss, assignors.)						
Rapid Transit Cable Company. (See Pendleton and Moss, assignors.)						
Rapid Transit Cable Company. (See Pendleton, Tiers, Bryson, and Moss, assignors.)						
Rapid Transit Cable Company. (See Tiers, Pendleton, and Bryson, assignors.)						
Rapp, August, Pullman, assignor to G. M. Pullman, Chicago, Ill. Street-car	403,214	May 14	997	263	47	860
Rapp, Joseph, Akron, Ohio. Die for drawing shafting	401,908	Apr. 9	1177	313	47	232
Rathbun, Frank A., Beloit, assignor to Rathbun Manufacturing Company, Milwaukee, Wis. Wheeled scraper	401,658	Apr. 16	1681	489 490	47	374
Rathbun Manufacturing Company. (See Rathbun, Frank A., assignor.)						
Ravenswood Art Glass Works. (See Perlin, Léon, assignor.)						
Ray, Frank B., Kansas City, Mo. Cock or faucet	401,588	Apr. 16	1754	463	47	358

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Ray, Harvey, Mobile, Ala. Inking-ribbon spool for type-writing machines	401,856	Apr. 23	2174	568	47	441
Ray, Robert. (See Gibson and Ray.)						
Raymond, Albert. (See Raymond, George and A.)						
Raymond & Co., George E. (See Raymond, Silas H., assignor.)						
Raymond, Freeborn F., 2d, Newton, Mass. Nail-feeding implement	405,598	June 18	1825	483, 484	47	1603
Raymond, George and A., Chicago, Ill. Attrition-mill	403,215	May 14	998	264	47	860
Raymond, George E., Chicago, Ill. Coffee or tea pot	402,969	May 7	604	159	47	778
Raymond, George E., Chicago, Ill. Merchandise-box	405,601	June 25	2150	565	47	1609
Raymond, James H., trustee. (See Van Hagen, Isaac, assignor.)						
Raymond, Pierre A., assignor to Perrin Frères, Grenoble, France. Button	405,179	June 11	1177	314	47	1464
Raymond, Silas H., assignor to G. E. Raymond & Co., Grand Rapids, Mich. Vehicle-spring	404,560	June 4	295	70	47	1281
Read, E. C. (See Perkins, Thomas G., assignor.)						
Read, Sarah F. (See Read, William, Jr., assignor.)						
Read, William, Jr., assignor, by mesne assignments, to S. F. Read, Boston, Mass. Transparent picture	401,303	Apr. 9	1320	351	47	260
Reado, Charles A., Chicago, Ill. Cab	401,758	Apr. 23	2028	530, 531	47	414
Reagan, Harry C., Philadelphia, Pa. Slide-valve	401,209	Apr. 9	1178	313	47	232
Reams, John V., assignor of two-thirds to F. L. Beacham and R. W. Clason, Midland, Mich. Automatic guard for railways	404,435	June 4	89	22	47	1243
Reaser, Warren T., Fairmont, Nebr., assignor to Round Valve Company, Chicago, Ill. Rolling support for slide-valves	404,363	May 28	2758	715	47	1214
Reaugh, Samuel E. (See Havens and Reaugh.)						
Rebholz, Timothy, assignor of one-half to W. G. Rebholz, Troy, Ohio. Wheel-scraper	400,791	Apr. 2	541	149	47	104
Rebholz, William G. (See Rebholz, Timothy, assignor.)						
Rector, Charles E., Jersey City, N. J. Window-ventilator	404,224	May 28	2547	664	47	1175
Rector, Henry C., Lincoln, Nebr. Transparency	403,698	May 21	1729	455	47	1009
Redfield, John H. and S. H., Linkville, Oreg. Breech-loading fire-arm	403,959	May 28	2112	553	47	1091
Redfield, Samuel H. (See Redfield, John H. and S. H.)						
Reece, John. (See Hill, George S., assignor.)						
Reece, John. (See Shea, Albert, assignor.)						
Reece, John, Boston, Mass. Button-hole piece for boots or shoes	400,485	Apr. 2	85	23	47	19
Reece, John, Boston, Mass. Sewing-machine for finishing button-hole pieces	404,863	June 11	722	185	47	1374
Reed, Benjamin F. (See King and Reed.)						
Reed, Charles K. (See Rand, Herbert L., assignor.)						
Reed, Cunningham. (See Altice, Roberts, and Reed.)						
Reed, Eden, assignor of one-half to I. Simon, St. Louis, Mo. Sash-holder	405,180	June 11	1178	314	47	1464
Reed, Fred. H., Jersey City, N. J. Underground conduit for electrical railways	401,515	Apr. 16	1638	433	47	331
Reed, Frederick H., *et al.* (See Brewer, William J., assignor.)						
Reed, Isabella, New York, N. Y. Book and book-cover	401,210	Apr. 9	1179	313, 314	47	232
Reed, Paul D. (See Cook, William, assignor.)						
Reed, Philip H., assignor to Chicago Gas Stove Company, Chicago, Ill. Water-heater	403,138	May 14	871	229, 230	47	835
Reed, William S. (See Gilman, Willard H., assignor.)						
Reed, William S., Leominster, Mass. Coin-controlled power-testing machine	405,910	June 25	2310	607, 608	47	1698
Rees & Co., William. (See Ford, John C., assignor.)						
Reese, Jacob, Pittsburg, assignor to Bessemer Steel Company, (limited,) Philadelphia, Pa. Manufacturing iron and steel	401,903	Apr. 23	2247	.....	47	455
Reeson, John, Gladstone Terrace, Wellingborough Road, Rushden, Higham Ferrers, county of Northampton, England. Last	400,946	Apr. 9	785	209	47	159
Reeves, Abbett M., Indianapolis, Ind. Metallic mat	401,066	Apr. 9	958	256	47	191
Reeves, Alvin C., Palouse, Wash. Ter. Strap-loop	402,194	Apr. 30	2696	700	47	550
Reeves, Charles H., *et al.* (See Anderson, Joseph R., assignor.)						
Reeves, Franklin B., *et al.* (See Anderson, Joseph R., assignor.)						
Reeves, Marshal T. (See Reeves, Milton O. and M. T.)						
Reeves, Marshal T. and M. O., assignors to Reeves Pulley Company, Columbus, Ind. Split pulley	403,857	May 21	1968	517	47	1054
Reeves, Marshal T. and M. O., assignors to Reeves Pulley Company, Columbus, Ind. Hub of split pulleys	403,858	May 21	1969	517	47	1055
Reeves, Milton O. (See Reeves, Marshal T. and M. O.)						
Reeves, Milton O., assignor to Reeves Pulley Company, Columbus, Ind. Temporary covering for pulleys	403,861	May 21	1972	518	47	1055
Reeves, Milton O. and M. T., assignors to Reeves Pulley Company, Columbus, Ind. Split pulley	403,859	May 21	1970	517	47	1055
Reeves, Milton O. and M. T., assignors to Reeves Pulley Company, Columbus, Ind. Hub-plate for wooden pulleys	403,860	May 21	1972	518	47	1055
Reeves, Peter B., *et al.* (See Newsom, Philip E., assignor.)						
Reeves, Phineas K., Bridgeton, N. J. Cover for cans or jars	402,614	May 7	93	22	47	681
Reeves Pulley Company. (See Reeves, Marshal T. and M. O., assignors.)						
Reeves Pulley Company. (See Reeves, Milton O., assignor.)						
Reeves Pulley Company. (See Reeves, Milton O. and M. T., assignors.)						
Reeves, Siron L., Atlanta, Ga. Car-coupling	402,615	May 7	94	23	47	682
Regan, Dennis J., Agawam, Mass. Harness-trimming	402,478	Apr. 30	3138	813	47	633
Regan, Timothy, New York, assignor of one-half to W. V. Russ, Brooklyn, N. Y. Protective sole for rubber foot-wear	401,372	Apr. 16	1428	377	47	292
Rehfuss, George, J. G., and M. O., assignors to Joly Stopper Company, Philadelphia, Pa. Bottle-stopper	402,350	Apr. 30	2931	750	47	593
Rehfuss, George, J. G., and M. O., assignors to Joly Stopper Company, Philadelphia, Pa. Bottle-stopper	404,797	June 4	621	159	47	1347
Rehfuss, John G. (See Rehfuss, George, J. G., and M. O.)						
Rehfuss, Martin O. (See Rehfuss, George, J. G., and M. O.)						
Reibisch, Paul H., Dresden-Plauen, Saxony, Germany. Cherry-stoner	405,118	June 11	1062	288	47	1446
Reichels, Otto, assignor to G. E. Dorion and F. A. Wittich, Memphis, Tenn. Lamp-extinguisher	404,055	May 28	2271	594	47	1121
Reichheim, Edward P., Jersey City, N. J. Gas-furnace	405,051	June 11	997	266	47	1370
Reid, George M. (See Reid, William and G. M.)						
Reid, William, West Hebron, N. Y., and G. M. Reid, Rutland, Vt., assignors to W. Reid, West Hebron, N. Y. Self-feeding machine for shaping irregular forms	401,459	Apr. 16	1552	411	47	316
Reidl, Joseph, Lewiston, Idaho Ter. Necktie-fastener	404,436	June 4	90	22	47	1243
Reiffer, Ulrich, Kansas City, Mo. Refrigerator ice-holder and water-escape	401,589	Apr. 16	1755	463	47	353
Reilly, John C., Brooklyn, N. Y. Circuit-connecting device	401,067	Apr. 9	959	256	47	191

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Reimer, Robert J., assignor of one-fourth to J. V. Carter, Belvidere, and J. B. Cornish, Washington, N. J. Fence	400,711	Apr. 2	400	111	47	81
Reinisch, Charles, Newark, N. J. Bag-lock	402,768	May 7	322	83, 84	47	723
Reinisch, Charles, Newark, N. J. Bag-lock	402,769	May 7	334	84	47	724
Reinisch, Charles, Newark, N. J. Bag-lock	405,119	June 11	1063	288, 289	47	1446
Reinke, August, Cleveland, Ohio. Sad-iron	405,802	June 25	2151	565	47	1609
Reinmann, Albert L., and P. Lange, assignors to Westinghouse Electric Company, Pittsburg, Pa. Automatic circuit-interrupter for electric circuits	404,112	May 28	2364	620	47	1141
Reisinger, James W. H., Meadville, Pa. Addressing-machine	404,732	June 4	523	134	47	1327
Reiss, George T., assignor to Niles Tool Works, Hamilton, Ohio. Turret-lathe	406,003	June 25	2459	646	47	1784
Reisse, Richard A., St. Louis, Mo. Sash fastener	401,460	Apr. 16	1556	411	47	317
Reitlhoffer, Rudolf, Rudolfsheim, near Vienna, Austria-Hungary. Egg-boiler	403,446	May 14	1364	358	47	928
Remillard, Louis H., Northampton, Mass. Crutch	404,303	May 28	2665	692	47	1197
Remington, De La Fayette, San Leandro, Cal. Variable eccentric	402,479	Apr. 30	3139	813	47	633
Remington, Frank L., New Bedford, Mass. Coupling-pin	401,659	Apr. 16	1862	490	47	375
Remington, George W., assignor of one-half to T. G. Hunt, Exeter, R. I. Safety-guard for railway-cars	401,668	Apr. 9	961	256	47	192
Remus, Carl T., assignor to J. Scherbel, Dresden, Saxony, Germany. Machine for making joint-fastenings	400,792	Apr. 2	543	149, 150	47	104
Remus, Carl T., assignor to J. Scherbel, Dresden, Saxony, Germany. Joint for straps	400,872	Apr. 2	664	181	47	127
Rennockar, Samuel T., New Cumberland, Ohio. Binder for corn-fodder	405,803	June 25	2152	565	47	1609
Rennyson, William, Norristown, Pa. Type-writing and matrix-making machine	403,075	May 7	770	203, 204	47	807
Rennyson, William, Norristown, Pa. Gas-generator	405,911	June 25	2315	608	47	1696
Renshaw, Frank D., Long Pine, Nebr. Flannel-shirt	401,717	Apr. 16	1964	518	47	391
Rentz, Barnum, Waco, Nebr. Tongue-support	401,461	Apr. 16	1556	411	47	317
Replogle, Mark A., and H. Lancaster, Cedar Falls, Iowa. Mowing and reaping machine	403,699	May 21	1730	455, 456	47	1009
Resser, Philip, Quincy, Ill. Plow	404,304	May 28	2666	692	47	1197
Reubel, Henry, New York, N. Y. Curtain-pole socket	401,590	Apr. 16	1756	464	47	353
Rew, Henry C., Chicago, Ill. Portable apparatus for extinguishing fires	405,717	June 25	2034	534	47	1646
Rex, Alfred C., Philadelphia, Pa. Coin-operated toy bar	402,351	Apr. 30	2932	760	47	593
Reymond, August. (See Winterdorf and Reymond.)						
Reynolds, Andrew J., Philadelphia, Pa. Resonator for organs or pianos	405,323	June 18	1401	369	47	1516
Reynolds, Benjamin F., Chicago, Ill. Warm-air furnace	404,561	June 4	296	70	47	1281
Reynolds, Earl H., Prophetstown, Ill. Automatic grain-meter	404,225	May 28	2548	664, 665	47	1175
Reynolds, Hanford, Gifford, Ill. Tank-heater	405,052	June 11	998	266	47	1430
Reynolds, Henry S., Brooklyn, N. Y. Sheet-metal vessel	401,211	Apr. 9	1180	314	47	232
Reynolds, James A. (See Kuhn and Reynolds.)						
Reynolds, Stephen D., Nevada, Mo. Bicycle	404,562	June 4	298	71	47	1281
Reynolds, Walter S. (See Shipman and Reynolds.)						
Rheubottom, Homer E., assignor to Rheubottom & Teall Manufacturing Company, Weedsport, N. Y. Bustle	404,798	June 4	622	159, 160	47	1347
Rheubottom & Teall Manufacturing Company. (See Rheubottom, Homer E., assignor.)						
Rheutan, Abram A., assignor to W. H. Hill, Worcester, Mass. Envelope-machine	401,462	Apr. 16	1557	412, 413, 414	47	317
Rhoads, Jonathan A., East Liverpool, Ohio, assignor of one-half to G. M. Irwin, Pittsburg, Pa. File-box	402,195	Apr. 30	2697	700	47	550
Rhodes, James B., Grand Rapids, Mich. Saw-tooth-swaging device	402,770	May 7	325	84	47	724
Rhodes, John W., Havana, Ill. Grain-drill	400,957	Apr. 9	786	210	47	159
Rice, Charles B., New Market, Va. Machine for pointing fence-pickets	405,181	June 11	1180	314	47	1465
Rice, Edwin W., Jr., Lynn, Mass. Transfer system of electric distribution	400,486	Apr. 2	85	24	47	20
Rice, Thomas C., Worcester, Mass. Fire-extinguisher	402,970	May 7	605	159	47	778
Rich, Edwin. (See Rich, Harrison, assignor.)						
Rich, Harrison, assignor of one-half to E. Rich, Muskegon, Mich. Device for launching lumber-piles	401,370	Apr. 16	1423	376	47	292
Richard, Charles, Paris, France. Steam-trap	405,804	June 25	2152	566	47	1609
Richards, Francis H., Hartford, Conn., assignor to American Heel Protector Company, Newark, N. J. Heel-protector	401,069	Apr. 9	962	256	47	192
Richards, Francis H., Hartford, Conn., assignor to Office Specialty Manufacturing Company, of New York. Mechanical movement	403,373	May 14	1249	331	47	907
Richards, Francis H., Hartford, assignor to American Button Fastener Company, New Britain, Conn. Button-setting machine	403,611	May 21	1601	424, 425	47	983
Richards, Francis H., Hartford, Conn., assignor to E. B. Coxe, Drifton, Pa. Drilling-machine	404,364	May 28	2759	716	47	1214
Richards, Francis H., Hartford, Conn., assignor to E. B. Coxe, Drifton, Pa. Feed mechanism	404,365	May 28	2762	716	47	1215
Richards, Francis H., Springfield, Mass., assignor of one-half to Pratt & Whitney Company, Hartford, Conn. Envelope-machine	401,718	Apr. 16	1964	512, 513, 514	47	391
Richards, Francis H., Springfield, Mass., assignor to D. W. Dodson, Wilkes-Barré, Pa. Mechanical movement	401,371	Apr. 16	1424	376, 377	47	292
Richards, Francis H., Springfield, Mass., assignor to D. W. Dodson, Wilkes-Barré, Pa. Mechanical movement	401,904	Apr. 23	2249	585, 586	47	455
Richards, Francis H., Springfield, Mass., assignor to D. W. Dodson, Wilkes-Barré, Pa. Type-writing machine	403,216	May 14	1000	264, 265, 266	47	861
Richards, Francis H., Springfield, Mass., assignor to D. W. Dodson, Wilkes-Barré, Pa. Mechanical movement	403,217	May 14	1005	266	47	861
Richards, Francis H., Springfield, Mass., assignor to D. W. Dodson, Wilkes-Barré, Pa. Mechanical movement	403,288	May 14	1120	297	47	882
Richards, Francis H., Springfield, Mass., assignor to D. W. Dodson, Wilkes-Barré, Pa. Mechanical movement	403,289	May 14	1121	297, 298	47	883
Richards, John, San Francisco, Cal. Micrometer-gage	404,305	May 28	2667	692, 693	47	1197
Richards, John, San Francisco, Cal., and J. Walker, Cleveland, Ohio. Machine for driving mandrels, keys, &c.	401,968	Apr. 23	2342	608	47	473
Richards, Ransom. (See Wetherell and Jones, assignors.)						
Richards, Theron A., *et al.* (See Robertson, James H., assignor.)						
Richardson, Harry K. (See Daily and Richardson.)						
Richardson, Isaac C., Nashua, N. H. Heating apparatus	405,504	June 18	1686	446	47	1574

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Richardson, John E. (See Earhart, John F., assignor.)						
Richardson, John S., Lowell, assignor of one-half to G. Draper & Sons, Hopedale, Mass. Support for spinning-spindles	403,862	May 21	1973	518	47	1055
Richardson, John T., Harrisburg, assignor of one-half to A. H. Ege, Mechanicsburg, Pa. Railway-switch	404,864	June 11	725	183	47	1375
Richardson, John T., Harrisburg, assignor of one-half to A. H. Ege, Mechanicsburg, Pa. Binding-bar	404,865	June 11	726	183	47	1375
Richardson, Leonard. (See Leland, Edwin A., assignor.)						
Richardson, Marcus F. (See Wisner, Andrew J., assignor.)						
Richardson, Solon O., Jr. (See Locke and Richardson.)						
Richardson, William H., assignor of two-thirds to J. M. McClintock and H. T. Meloney, Baltimore, Md. Child's carriage	405,599	June 18	1827	484	47	1603
Richardson, William H., assignor of two-thirds to J. M. McClintock and H. T. Meloney, Baltimore, Md. Child's carriage	405,600	June 18	1827	485	47	1604
Richardson, William S, Boston, Mass. Fastening for gloves	400,948	Apr. 9	787	210	47	160
Richardson, William S., Boston, Mass. Glove-fastening	401,070	Apr. 9	963	257	47	192
Richmond Locomotive and Machine Works. (See Simpkin, William, assignor.)						
Rickerd, Daniel H. (See Marshall and Rickerd.)						
Ricketson, James C., Milwaukee, Wis. Electric signal for engine-shafts	404,866	June 11	727	183	47	1375
Ricketson, James C., Milwaukee, Wis. Electric indicator for engine-shafts	404,867	June 11	729	183	47	1375
Ricketts, James J., Pittsburg, Pa. Flushing apparatus	405,912	June 25	2317	603	47	1698
Ricter & Company, John J. (See Frey, Jakob, assignor.)						
Riddell, Edward H. (See Davis and Riddell.)						
Riddle & Williams. (See Chappell, Florance J. D., assignor.)						
Rider, Charles M., assignor of one-half to W. Baker, Newark, Ohio. Breech-loading fire-arm	400,712	Apr. 2	410	119	47	81
Rider, Charles M., assignor of one-half to W. Baker, Newark, N. J. Device for automatically operating the stop-cock of a gas-burner	404,733	June 4	524	134	47	1398
Rider, Thomas J., assignor, by mesne assignments, to W. De Lamater and L. A. Bevin, New York, N. Y. Piston for caloric-engines	405,324	June 18	1403	369	47	1516
Rider, Thomas J., assignor to C. H. De Lamater, New York, N. Y. Pump	405,680	June 18	1979	517	47	1628
Rieger, Jean J., Lure, France. Cylinder for carding-machines, &c	402,616	May 7	95	22	47	689
Ries, Elias E., Baltimore, Md. Electric riveting apparatus	403,374	May 14	1251	324	47	907
Ries, Elias E., Baltimore, Md. Electric riveting	404,306	May 28	2669	693	47	1198
Ries, Elias E., Baltimore, Md., assignor to Ries & Henderson. Welding together sections of pipe by electricity	402,107	Apr. 23	2562	665	47	514
Ries, Elias E., Baltimore, Md., assignor to Ries & Henderson. Welding together sections of pipe by electricity	402,108	Apr. 23	2565	666	47	515
Ries, Elias E., Baltimore, Md., assignor to Ries & Henderson. System of linear transformers	402,971	May 7	606	159	47	778
Ries & Henderson. (See Ries, Elias E., assignor.)						
Riesenberg, Harry, St. Louis, Mo. Electric-alarm advance car	401,591	Apr. 16	1757	464	47	353
Rightmyer, Frank, assignor of one-half to C. C. Adelsperger, Springfield, Ohio. Shifting seat for vehicles	405,224	June 11	1251	332	47	1479
Riker, Margaretta, New York, N. Y. Bed-pan	405,152	June 11	1181	314	47	1465
Riley, George N., Braddock, Pa. Pipe-coupling	400,949	Apr. 9	788	210	47	160
Riley, George N., Braddock, Pa. Tube-coupling. (Reissue)	10,994	Apr. 16	1983	519	47	305
Riley, John, Troy, N. Y. Non-conducting jacket	403,700	May 21	1732	456	47	1009
Rime, Hugues, assignor to Société Armand Schwab et Frère, Paris, France. Time-piece	402,972	May 7	606	160	47	779
Rinehart, Bentley L., Camden, N. J. Condenser for exhaust-steam	405,849	June 25	2215	583	47	1682
Ringo, William E. (See Purnell, Richard H., assignor.)						
Ringwood, Thomas R., Scipio, N. Y. Cultivator	402,196	Apr. 30	2698	709	47	550
Ripley, Charles W. E., Washington, D. C. Kitchen table and dresser	403,139	May 14	873	230	47	836
Ritchie, James, Flatbush, N. Y. Sanding device for street-cars	405,565	June 18	1689	446	47	1575
Ritchie, Lizzie, Portland Place, county of Middlesex, England. Musical skipping-rope	403,556	May 21	1532	402	47	969
Ritea, Francis M. (See Westinghouse and Ritea.)						
Ritter, John L., assignor of one-half to J. P. Brown, Milnes, Va. Egg-tester	405,601	June 18	1828	485	47	1604
Ritter, Oliver C., Springfield, Mo. Milling wheat	405,506	June 18	1690	447	47	1575
Ritterbush, Jacob. (See Unger, Martin L., assignor.)						
River and Rail Electric Light Company. (See Maln, William, assignor.)						
Rivers, David H., Stoneham, Mass., assignor of one-half to N. Smith, San Francisco, Cal. Ship's windlass indicator	404,983	June 11	893	234	47	1409
Roach, Robert N., Monroe, Iowa. Lift-pump	400,467	Apr. 2	87	24	47	20
Roads, Joseph W., and T. J. Griffith, Marion, Ohio. Burglar-alarm	404,734	June 4	525	135	47	1328
Robb, James A., San José, Cal. Chimney or stack propeller and governor	401,516	Apr. 16	1639	433	47	331
Robbin, Frederick, Rochester, N. Y. Sled-propeller	403,960	May 28	2115	553	47	1091
Robbins, Arthur C., Brooklyn, N. Y. Fire and police signaling apparatus	404,226	May 28	2532	665	47	1176
Robbins, Roldin S., and A. H. Broad, Berkley, Cal. Wall-protector	402,857	May 7	453	119	47	747
Robbins, William G., Bromfield, Nebr. Harness-pad	403,480	Apr. 30	3140	813	47	633
Robbins, William S., New Bedford, Mass. Grinding-machine	401,212	Apr. 9	1181	314	47	232
Roberts, Andre, Pattonville, Tex. Medical compound	400,793	Apr. 2	545	.....	47	105
Roberts, Cyrus, Three Rivers, Mich. Potato-digger	403,375	May 14	1253	332	47	906
Roberts, Edward C., Abingdon, Va. Wheel-hub	401,213	Apr. 9	1181	314	47	233
Roberts, Fabian J., assignor to F. J. Roberts R. R. Dust Guard Manufacturing Company, Detroit, Mich. Dust-guard for car-axle boxes	402,858	May 7	453	119	47	748
Roberts, George A., Paducah, Ky. Car-roof	404,735	June 4	526	135	47	1328
Roberts, George R., Panora, Iowa. Washing-machine	402,667	May 7	199	50	47	701
Roberts, Henry P. (See Altice, Roberts, and Reed.)						
Roberts, John, Boston, Mass. Slip's sail	401,373	Apr. 16	1429	378	47	293
Roberts R. R. Dust Guard Manufacturing Company, F. J. (See Roberts, Fabian J., assignor.)						
Roberts, Solomon W., and E. P. Caldwell, Minneapolis, Minn. Track-layer	400,950	Apr. 9	790	211	47	160
Roberts, Solomon W., and E. P. Caldwell, Minneapolis, Minn. Rail-spiking machine	401,374	Apr. 16	1430	378	47	293
Robertson, George F., and W. D. Gammon, Morristown, Tenn. Churn	403,140	May 14	874	230	47	836
Robertson, Gideon. (See Russell, William H., assignor.)						
Robertson, James, Birmingham, county of Warwick, England. Rolling-mill	403,290	May 14	1123	298	47	883
Robertson, James H., Rutherford, N. J. Exchange system for telegraphs	403,291	May 14	1126	298	47	883
Robertson, James H., Rutherford, N. J. Combined telephony and telegraphy	403,292	May 14	1127	299	47	883
Robertson, James H., Rutherford, N. J., assignor of three-fifths to T. A. Richards and J. Robertson, Brooklyn, N. Y. Regulator for dynamo-electric machines	405,743	June 25	2074	544	47	1653
Robertson, John, *et al.* (See Robertson, James H., assignor.)						
Robertson, Touro, New York, N. Y. Numbering attachment for printing-presses	400,599	Apr. 2	244	66	47	51
Robilliard, Daniel S., and C. G. Davies, Quebec, Quebec, Canada. Gas burner and heater	403,612	May 21	1604	425	47	963
Robinson, Albert, Grand Rapids, Mich. Filling teeth	402,358	Apr. 30	2604	760	47	594

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Robinson, Albert G., Brooklyn, N. Y. Wash-tub	404,984	June 11	894	234	47	1409
Robinson, Alfred H. (See Hogg and Robinson.)						
Robinson, Frank T. (See Atwood, La Motte C., assignor.)						
Robinson, James O. (See Julier and Robinson.)						
Robinson, John K., Chicago, Ill. Match-safe	400,488	Apr. 2	88	24	47	20
Robinson, Miner, Newton, Mass. Electric-circuit-testing device	400,951	Apr. 9	793	212	47	161
Robinson, Robert J., and C. F. Collins, Linneus, Mo. Cutting apparatus for harvesters	400,489	Apr. 2	89	24	47	20
Robinson, Stillman W., Columbus, Ohio. Substructure for elevated railways	404,017	May 28	2196	577	47	1107
Robinson, Sylvanus E., Newark, N. J. Oven and flat-iron heater	401,909	Apr. 23	2343	608	47	473
Robinson, William, Chardan, Iowa. Shears for cutting metal bolts	403,961	May 28	2117	554	47	1092
Robson, W. O., *et al.* (See McKenney, Joel, assignor.)						
Rocheleau, John C., Worcester, Mass. Watch-maker's staking-tool	401,759	Apr. 23	2032	531	47	415
Rock, John C., near West Liberty, Ohio. Automatic gate	400,952	Apr. 9	794	212	47	161
Rockford Bolt Works. (See Mutimer, Frederick, assignor.)						
Rockwell, Frederick C., Hartford, Conn. Insulating pipe-coupling	400,600	Apr. 2	245	67	47	52
Rockwell, Frederick C., Hartford, Conn. Incandescent-lamp socket	402,481	Apr. 30	3141	813	47	633
Rodda, James. (See Bunce, Slate, and Rodda.)						
Rodenbaugh, Isaac N., *et al.* (See Frazer, Daniel A., assignor.)						
Rodenbaugh, Oscar S., *et al.* (See Frazer, Daniel A., assignor.)						
Rodenhausen, Leonard, Philadelphia, Pa. Dumping-wagon	402,034	Apr. 23	2448	637	47	492
Rodermond, Jacob, New York, N. Y. Ore-crusher	400,601	Apr. 2	246	67	47	52
Rodgers, Charles W. (See Abbott, Francis M., assignor.)						
Rodgers, James D., Georgetown, Ky. Fence	405,120	June 11	1086	289	47	1447
Rodgers, Richard H. (See Patric and Rodgers.)						
Röell, Cornelis F. A., London, England. Plaiting apparatus	401,214	Apr. 9	1182	315	47	233
Roelofs, Anthony, Philadelphia, Pa. Candlestick	401,592	Apr. 16	1762	464	47	354
Roeske, Henry, Philadelphia, Pa. Filter	402,543	Apr. 30	3227	836	47	650
Rogers, Asa L., *et al.* (See Servoss, Courtney S., assignor.)						
Rogers Car Axle Box Company. (See Rogers, Hamilton, assignor.)						
Rogers, Charles. (See Armstrong, Samuel, assignor.)						
Rogers, Charles D., assignor to American Screw Company, Providence, R. I. Blank-heading die	400,794	Apr. 2	546	150	47	105
Rogers, Charles D., assignor to American Screw Company, Providence, R. I. Nail, bolt, &c	405,681	June 18	1975	518	47	1629
Rogers, Frederick H., Los Angeles, Cal., assignor of one-half to C. C. Bell, Minneapolis, Minn. Photographic paper	402,279	Apr. 30	2818	729	47	573
Rogers, Freemon T., Linton, Ky. Car-coupling	400,490	Apr. 2	90	25	47	21
Rogers, George D., Minneapolis, Minn. Type setting and distributing machine	405,273	June 18	1331	351	47	1501
Rogers, Hamilton, assignor to Rogers Car Axle Box Company, Toledo, Ohio. Metal packing for car-axle boxes	403,141	May 14	875	231	47	836
Rogers, James S., Rockport, Mass. Elevator and conveyer	405,225	June 18	1404	370	47	1517
Rogers, Newton, and J. A. Wharry, Terre Haute, Ind. Dynamo-speeder for gas-engines	403,376	May 14	1257	332	47	906
Rogers, Newton, and J. A. Wharry, Terre Haute, Ind. Carburetor for gas-engines	403,377	May 14	1258	332	47	909
Rogers, Newton, and J. A. Wharry, Terre Haute, Ind. Governor for gas-engines	403,378	May 14	1261	333	47	909
Rogers, Newton, and J. A. Wharry, Terre Haute, Ind. Gas-engine	403,379	May 14	1262	333	47	910
Rogers, Newton, and J. A. Wharry, Terre Haute, Ind. Igniter for gas-engines	403,380	May 14	1264	333	47	910
Rogers & Pyatt. (See Pyatt, Runyon, Jr., assignor.)						
Rogers, Thomas A., Bloomdale, Ohio. Lead-binder	401,857	Apr. 23	2175	568	47	441
Rogers, Thomas J., Chicago, Ill. Oiling device for locomotive-axles	401,517	Apr. 16	1640	434	47	332
Rogers, William W., Clarksville, Ark. Car-coupling	402,973	May 7	609	160	47	779
Rogers, Wilson, Barboursville, W. Va. Machine for turning tenons	404,113	May 28	2366	620	47	1141
Rogers, Winfield S., and W. C. Jones, assignors to P. G. March, Cincinnati, Ohio. Ratchet-drill	401,375	Apr. 16	1433	378	47	293
Roggy, Josef, Saar Louis, Prussia, Germany. Coin-assorter	401,593	Apr. 16	1763	464	47	354
Rohm, James T., Locust Grove, Pa. Water-wheel	405,053	June 11	999	266	47	1431
Rohrer, Edmond C., and I. Joseph, Waco, Tex. Watch-case pendant	403,779	May 21	1852	486	47	1032
Roland Plow Works. (See Bowers, Marcus M., assignor.)						
Roller, Adie C., *et al.* (See Huyett, Miles C., assignor.)						
Rollins, George L. (See Gammons, Rollins, and Wadsworth.)						
Rollins, Jarrot L., Greenfield, Ill. Aseptic suit	405,850	June 25	2217	584	47	1692
Romain, Arnold, New Orleans, La. Passenger-register	402,035	Apr. 23	2149	638	47	492
Rood, John, assignor to Rood & Vaughan, Salem, Mass. Machinery for shaving or dressing green hides or skins	401,905	Apr. 23	2251	586	47	455
Rood & Vaughan. (See Rood, John, assignor.)						
Root Electric Gas Lighting Company. (See Root, Francis H., assignor.)						
Root, Francis H., Chicago, Ill., assignor to Root Electric Gas Lighting Company, of Illinois. Spark-coil	400,795	Apr. 2	547	151	47	105
Root, Henry, San Francisco, Cal. Machine for making wire rope	405,744	June 25	2076	544	47	1654
Root, Miles C., Toledo, Ohio. Wheel	404,657	June 4	427	107	47	1306
Roots, Francis T. (See Heinemann, Theodore P., assignor.)						
Roovers, Alfred W. (See Williams and Roovers.)						
Rorick, John C., Wauseon, Ohio. Truss	404,307	May 28	2673	693	47	1198
Rosa, Albert, assignor to J. A. Zinn, Milwaukee, Wis. Sad-iron	400,796	Apr. 2	549	151	47	105
Rose, Charles O., assignor of one-half to J. Heisler, Rochester, N. Y. Fire-escape	400,873	Apr. 2	665	181	47	127
Rose, Frank H., Syracuse, assignor to Valentine & Company, New York, N. Y. Sample of paints, &c	402,859	May 7	454	119	47	748
Rose, Henry C., Leadville, Colo. Fountain window-cleaner	403,218	May 14	1006	266	47	862
Rose, Israel M., Philadelphia, Pa. Lighting device	402,617	May 7	96	23	47	682
Rose, James M., Allegheny, Pa., assignor, by mesne assignments, to National Heat and Power Company, of New Jersey. Manufacturing gas	403,381	May 14	1266	333	47	910
Rose, James M., Allegheny, Pa., assignor, by mesne assignments, to National Heat and Power Company, of New Jersey. Manufacturing gas	403,382	May 14	1270	334	47	911
Rose, James M., Allegheny, Pa., assignor, by mesne assignments, to National Heat and Power Company, of New Jersey. Manufacturing gas	403,383	May 14	1273	334	47	911
Rose, James M., Allegheny, Pa., assignor, by mesne assignments, to National Heat and Power Company, of New Jersey. Apparatus for the manufacture of gas	403,384	May 14	1277	335	47	912

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Rose, Leonard M., Elgin, Ill. Receptacle for bundles	401,071	Apr. 9	964	257	47	192
Rosebrooks, John M., Hoosick Falls, N. Y. Bundle-carrier	403,557	May 21	1533	402	47	969
Rosenberger, Frank D. (See Butler and Rosenberger.)						
Rosenfield, Monroe, *et al.* (See Adams, Samuel J., assignor.)						
Rosenqvist, Conrad L., Yonkers, N. Y. Dynamo-electric machine or motor	405,602	June 18	1830	485	47	1604
Rosensteel, William W., Pittsburg, Pa. Ore-washer	403,488	May 14	1430	374	47	940
Rosenthal, August, Milwaukee, Wis. Combined feed-cutter and corn-husker	401,719	Apr. 16	1069	514 515	47	392
Rosenthal, Charles H., Cincinnati, Ohio, assignor of one-third to L. W. Wyler. Tool for removing shell-crowns from teeth	403,293	May 14	1128	299	47	883
Rosenthal, Eugene M., San José, Cal. Calculating-machine	401,463	Apr. 16	1567	414	47	318
Roshong, Isaiah. (See Roshong, Joseph and I.)						
Roshong, John J. (See Roshong, Joseph and I., assignors.)						
Roshong, Joseph and I., assignors of one-third to J. J. Roshong, Canton, Ohio. Eccentric oiler	401,072	Apr. 9	965	257	47	192
Ross, Abbott Q., Cincinnati, Ohio. Paper-roll holder	405,121	June 11	1086	289	47	1447
Ross, George B., Buffalo, N. Y. Combined syringe and medicine-case	400,491	Apr. 2	91	25	47	21
Ross, George W. (See White, Maurice W., assignor.)						
Ross, Henry S., New York, N. Y. Register	401,518	Apr. 16	1641	434	47	332
Ross, Henry S., New York, N. Y. Pipe-coupling	405,745	June 25	2078	545	47	1654
Ross, Leander F., Searcy, Ark. Bedstead-brace	405,603	June 18	1830	486	47	1604
Ross Sash Lock Company. (See Ross, Thomas B., assignor.)						
Ross, Simon, Jr., Linwood, Ohio. Sand-paper device	401,215	Apr. 9	1184	316	47	233
Ross, Thomas B., assignor to Ross Sash Lock Company, Evansville, Ind. Sash-fastener	405,396	June 18	1406	370	47	1517
Ross, Walter T., Quebec, Quebec, Canada. Thill-coupling	402,974	May 7	611	160	47	779
Rose, William, Troy, N. Y. Fluid-pressure regulator	404,503	June 4	203	49	47	1263
Rose, William, Troy, N. Y. Fluid-pressure regulator	404,504	June 4	206	49	47	1263
Rost, Henry. (See Hilderbrand, Rost, and Davis.)						
Rost, Max. (See Maul, Hermann, assignor.)						
Roth, Edward B., *et al.* (See Atwood, La Motte C., assignor.)						
Roth, Edward B., *et al.* (See Piggott, Henry E., assignor.)						
Roth, James D., Nazareth, Pa. Hub for vehicle-wheels	403,613	May 21	1606	422	47	983
Rothe, Morits. (See Schumacher, Daelen, and Rothe.)						
Rothschild, Abraham M., *et al.* (See Colby, Edward J., assignor.)						
Rothschild Brothers *et al.* (See Levy, William M., assignor.)						
Rotton, Otto, Brooklyn, N. Y. Gas or vapor burner for heating	400,602	Apr. 2	248	67	47	52
Round Valve Company. (See Reaser, Warren T., assignor.)						
Rounds, Alford A., Yankton, Dak. Ter. Washing-machine	403,614	May 21	1607	426	47	984
Rounds, Benjamin F., assignor of one-half to J. P. Bird, Kansas City, Mo. Artificial leg	403,142	May 14	876	231	47	836
Rounds, Benjamin F., assignor of one-half to J. P. Bird, Kansas City, Mo. Artificial leg	402,975	May 7	611	160	47	780
Rouse, Casper M., Le Roy, Kans. Combined riding harrow and roller	404,985	June 11	895	234	47	1409
Rousse, Auguste L., Fontenay-le-Comte, France. Lactometer	400,492	Apr. 2	92	25	47	21
Rousseau, David, New York, N. Y. Electric gas-lighting device	405,604	June 18	1831	486	47	1604
Rovello, Alberto, Turin, Italy. Production of copper by electrolysis	402,618	May 7	96	24	47	683
Rowell, Guilford D., Appleton, Wis. Feed-mill						
Royce, Charles. (See Miller, Charles W., assignor.)						
Royce, Wesley, *et al.* (See Abell, Robert T., assignor.)						
Royer, Charles L., Halifax, England. Machine for stretching leather	402,860	May 7	455	119 120	47	748
Royer, David H., Millmont, Pa. Car-coupling	400,797	Apr. 2	550	151	47	105
Roys, Fred. G., Morrice, Mich. Shipping-tag	403,780	May 21	1853	487	47	1032
Ru Ton, Hiram W. (See Gore and Ru Ton.)						
Rubin, Max, New York, N. Y. Shawl-strap	401,073	Apr. 9	966	257	47	193
Rudasill, Eli A., assignor of one-half to J. C. Beam, Shelby, N. C. Churn	402,976	May 7	613	161	47	780
Ruddell, Charles H., Terrell, Tex. Cultivator	404,437	June 4	91	23	47	1243
Ruddick, John J., Richmond, Ind., assignor, by mesne assignments, to Interstate Fire Alarm Company, Omaha, Nebr. Non-interfering fire-alarm signal-box	404,438	June 4	92	23	47	1243
Rudolfy, Josef, Szegedin, Austria-Hungary. Inhaler	404,986	June 11	896	235	47	1409
Ruffin, Mario C. A. (See Bang and Ruffin.)						
Rumsey, Arthur W., Kiowa, Kans. Clevis	400,493	Apr. 2	93	25	47	21
Rumsey, Charles B., assignor to Wire Fabric Company, Homer, N. Y. Positive shuttle-motion for looms	404,987	June 11	898	235 236	47	1410
Runyon, Edwin E., Mountain Spring, Tex. Needle-beam for bridges	400,874	Apr. 2	666	181	47	128
Runyon, Edwin E., Mountain Spring, Tex. Device for twisting wire cables of suspension-bridges	404,984	June 11	895	212	47	1394
Rupp, William F. (See Dunham, Charles L., assignor.)						
Ruppel, Henry, assignor to Dangler Stove and Manufacturing Company, Cleveland, Ohio. Safety oil-can attachment for vapor-stoves	404,439	June 4	95	24	47	1244
Rusbatch, Alfred, Cleveland, Ohio. Rod-coiling apparatus	405,433	June 18	1562	419	47	1548
Rush, James H., Boston, Mass. Speaking tube, pipe, &c	404,868	June 11	731	187	47	1376
Rush, Madison. (See Gildemeyer, Charles A., assignor.)						
Rushton, Thomas I. (See Flake, Gideon, assignor.)						
Russ, William V. (See Regan, Timothy, assignor.)						
Russell, Allen A., Indianapolis, Ind., assignor to Russell & Company, Massillon, Ohio. Straw-stacker	400,798	Apr. 2	551	131 132	47	105
Russell, Charles T., *et al.* (See Snee, William, assignor.)						
Russell, Charles W., and J. I. Drake, Providence, R. I. Device for supporting and operating electric lights	401,304	Apr. 9	1321	351	47	260
Russell & Company. (See Heggem, Charles O., assignor.)						
Russell & Company. (See Russell, Allen A., assignor.)						
Russell, Edward H., assignor to Russell Process Company, New Haven, Conn. Leaching ores with hyposulphite solutions	403,615	May 21	1608	.....	47	984
Russell, Edward H., assignor to Russell Process Company, New Haven, Conn. Leaching ores with hyposulphite solutions	403,616	May 21	1610	.....	47	984
Russell & Erwin Manufacturing Company. (See Burgess, Charles M., assignor.)						
Russell, George W., Mobeetie, Tex. Fly-trap	402,977	May 7	615	161	47	780
Russell, Oscar, *et al.* (See Knudsen, Andrew P., assignor.)						
Russell Process Company. (See Russell, Edward H., assignor.)						
Russell, Samuel T., Springfield, Ohio. Pump	403,962	May 28	2118	564	47	1092
Russell, William H., Vancouver, British Columbia, Canada, assignor of one-third to G. Robertson. Freight elevating and transporting apparatus	404,658	June 4	428	107	47	1308
Ruth, August, St. Louis, Mo. Manufacturing corn-cob pipes	401,464	Apr. 16	1569	415	47	318
Rutzler, Enoch. (See Cunningham, William F., assignor.)						
Ryan, James B., New York, N. Y. Woven-wire bed-bottom	403,143	May 14	877	231	47	836
Ryan, James R., Sault Ste. Marie, Mich. Snap-hook	401,305	Apr. 9	1322	351	47	260

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Ryan, John J., Midland, Mich. Horse-boot	402,109	Apr. 23	2568	666	47	515
Rymer, William, Detroit, Mich. Automatic railway-alarm apparatus	401,376	Apr. 16	1434	378 379	47	294
Rymer, William, Detroit, Mich. Whistle-actuating mechanism	401,377	Apr. 16	1438	380	47	294
Saarbach, Ludwig, New York, N. Y. Purifying tannic extracts	404,440	June 4	97	.....	47	1244
Saddlemyre, Ambrose L., assignor of one-half to A. Quay, Knox, N. Y. Weeding-machine	401,378	Apr. 16	1440	381	47	295
Sadgwar, Daniel A. (See Purdy and Sadgwar.)						
Sadler, Warren H. (See Davis and Marriott, assignors.)						
Safety Car Heating and Lighting Company. (See Bayles, James C., assignor.)						
Safety Car Heating and Lighting Company. (See Benjamin, George H., assignor.)						
Safety Hatch-Door Company. (See Herman, Emil J., assignor.)						
Sagendorph, Longley L., Cincinnati, Ohio. Lathing	404,227	May 28	2553	665 666	47	1176
Sagendorph, Longley L., assignor of one-half to H. P. Lloyd, Cincinnati, Ohio. Roller-die for stamping sheet metal	401,216	Apr. 9	1185	317	47	234
Sagendorph, Longley L., Cincinnati, Ohio, assignor of one-half to C. N. Harder, Philmont, N. Y. Metallic ceiling	401,906	Apr. 23	2253	586	47	456
Sagendorph, Longley L., Cincinnati, Ohio, assignor of one-half to C. N. Harder, Philmont, N. Y. Metallic roofing-plate	405,122	June 11	1088	290	47	1448
Sagendorph, Longley L., Cincinnati, Ohio, assignor of one-half to C. N. Harder, Philmont, N. Y. Metallic roofing-cleat	405,605	June 18	1834	486	47	1605
Sager, Marcus S., Washington Court-House, Ohio. Knockdown oven	402,978	May 7	615	161 162	47	780
Sager, Marcus S., Washington Court-House, Ohio. Gasoline-stove	405,274	June 18	1334	352	47	1502
Sager, Marcus S., Washington Court-House, Ohio. Gasoline-stove	405,275	June 18	1336	353	47	1502
Sale, Julian. (See Allen, Alexander, assignor.)						
Salmon, Joshua S. (See Stoops, William H., assignor.)						
Salmon, Samuel. (See Coxe and Salmon.)						
Salmon, Samuel, assignor to E. B. Coxe, Drifton, Pa. Hoisting apparatus for mines	404,935	June 11	825	212 213 214	47	1394
Saltmarsh, William H., and C. A. Bogardus, Chicopee Falls, Mass. Ring-spinning frame	401,217	Apr. 9	1187	317	47	234
Salzman, Christian H., Chicago, Ill. Grain-binder	403,385	May 14	1281	335 336	47	912
Salzwerk, Heilbronn. (See Buschmann, Friedrich, assignor.)						
Sammons, Jacob S., New York, N. Y. Store stool or chair	401,379	Apr. 16	1442	381	47	295
Sammons, Jacob S., New York, N. Y. Store-stool	401,380	Apr. 16	1444	381	47	295
Sampson, Clara E. (See Wright, Pliny J., assignor.)						
Sampson, Thomas H., New Orleans, La. Preserving lumber	403,144	May 14	877	231 232	47	837
Sampson, Truman M., Burlington, Iowa. Barbed-wire-fence gate	403,219	May 14	1008	266	47	862
Sanders, Eliza. (See Sanders, Louis, assignor.)						
Sanders, George A. (See Newman, Nelson, assignor.)						
Sanders, Louis, assignor, by mesne assignments, to E. Sanders, Brooklyn, N. Y. Supporter for belts	403,220	May 14	1009	267	47	862
Sanders, Newell, and J. Buchanan, Chattanooga, Tenn. Feed-regulator	402,979	May 7	617	162	47	780
Sanderson, Herbert H., trustee. (See Mason, Allan, assignor.)						
Sands, Josias J., Merton, Wis. Bottle-stopper holder	403,076	May 7	773	204	47	808
Sands, Josias J., Merton, Wis. Bottle-stopper	404,799	June 4	623	160	47	1347
Sands, William B. O., *et al.* (See Flood, George W., assignor.)						
Sandwell, William D., London, England. Electric motor for tramway-vehicles	401,970	Apr. 23	2344	609 610	47	474
Sandwell, William D., Herne Hill, county of Surrey, England. Dynamo-electric machine	405,507	June 18	1691	447	47	1575
Sanford, John L., assignor of one-half to J. F. Stephenson, Albany, N. Y. Wick-trimmer	404,736	June 4	527	135	47	1338
Sanford, Laura P., New York, N. Y. Book-binding	405,276	June 18	1337	353	47	1502
Sanford, Perry T., New Haven, Conn. Turbine water-motor	404,869	June 11	733	187	47	1376
Sangerhäuser Actien-Maschinen-Fabrik and Eisengiesserei, vormals Hornung & Rabe. (See Rabe, Carl, assignor.)						
Sangston, Allan T., Philadelphia, Pa. Nut-lock	403,386	May 14	1283	336	47	912
Sanitary and Fertilizer Company of the United States. (See McClellan, Oscar D., assignor.)						
Sardy, Coles & Co. (See Chapman, Charles A., assignor.)						
Sardy, John L., New York, N. Y. Head-band for surgical mirrors	402,619	May 7	99	24	47	683
Sargent, Charles E., Utica, N. Y. Type-writing machine	405,606	June 18	1835	487	47	1605
Sargent & Company. (See Wright, Granville W., assignor.)						
Sargent, Frederick G., Graniteville, Mass. Cone-duster for fibrous substances	400,953	Apr. 9	795	212 213	47	102
Sargent, Ransom H., assignor of one-fourth to J. L. Dunn, Titusville, Pa. Oil and gas burner	403,447	May 14	1366	359	47	928
Saunders Car Axle Lubricator Company. (See Saunders, Theodore, assignor.)						
Saunders, Theodore, assignor to Saunders Car Axle Lubricator Company, Danbury, Conn. Car-axle lubricator	403,448	May 14	1367	359	47	929
Saurer, Adolph, and E. Leuthold, St. Gallo, Switzerland. Embroidering-machine	403,221	May 14	1010	267 268	47	863
Savage, Watson L. (See Bedford, George P., assignor.)						
Savene, John W., Toledo, Ohio. Metal wheel	405,327	June 18	1407	371	47	1517
Sawyer, Andrew J., New Market, N. H. Dental plugger	405,123	June 11	1089	290	47	1448
Sawyer, Charles H., assignor of one-half to H. A. Smith, Minneapolis, Minn. Wheeled scraper	401,907	Apr. 23	2254	587	47	456
Sawyer, Orren A., and M. M. Lahue, Lowell, Mass. Shuttle checking and relieving mechanism for looms	405,913	June 25	2318	609	47	1609
Sawyer, Uriah P., assignor of one-half to J. A. Dollar, Camilla, Ga. Pump	403,077	May 7	774	205	47	808
Sayles, Elizabeth A. (See Stearns, Elvira, assignor.)						
Scanland, Albert T., Dunn Loring, Va. Ironing-board	401,858	Apr. 23	2176	568	47	441
Scarles, Benjamin, assignor to Clinton Wire Cloth Company, Clinton, Mass. Wire-fence fabric	400,954	Apr. 9	797	213	47	102
Schaff, Amos J., assignor of one-half to W. R. Early, Marion, Pa. Rail-joint	404,308	May 28	2674	693	47	1198
Scharnweber, William, assignor of two-thirds to H. N. Mann and R. J. Killick, Chicago, Ill. Box-cover	401,660	Apr. 16	1883	490	47	375
Schaubel, Henry, assignor of one-half to H. W. Miller, Jr., Philadelphia, Pa. Boiler-tube fastening	405,225	June 11	1253	332	47	1479
Schaubel, Henry, assignor of one-half to H. W. Miller, Jr., Philadelphia, Pa. Fastening boiler-tubes	405,226	June 11	1253	332	47	1479
Schaubel, Henry, assignor of one-half to H. W. Miller, Jr., Philadelphia, Pa. Boiler-stay	405,227	June 11	1254	333	47	1479

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Scheer, Christian. (See Maurer, Ludwig, assignor.)						
Scheer, Heinrich C. (See Manrer and Scheer.)						
Scheffer, David M., New Castle, Ind., assignor to Hansmann, McComb & Dunn, Chicago, Ill. Veterinary-file holder	403,145	May 14	879	232	47	837
Scheffler, Julius, Milwaukee, Wis. Dental impression-cup	401,792	Apr. 23	2090	543	47	425
Schelp, Fred., Jr., and G. H., St. Louis, Mo. Vehicle-brake	404,228	May 28	2554	604	47	1176
Schelp, George H. (See Schelp, Fred., Jr., and G. H.)						
Schenck, John C. F., Moline, Ill. Pocket-knife	404,870	June 11	734	187	47	1376
Scher, Axel T., Salem, Mass. Stopper-receiver for bottles	401,760	Apr. 23	2033	531	47	415
Scherbel, Jean. (See Remus, Carl T., assignor.)						
Schiele & Company, Lewis. (See Koon, Joseph, assignor.)						
Schieren, Charles A., Brooklyn, N. Y. Belting	405,434	June 18	1563	412	47	1548
Schildknecht, Edwin W., Boston, Mass. Hand-propeller for small boats	402,482	Apr. 30	3141	814	47	633
Schimper & Co., William. (See Oldenbusch, Ernest, assignor.)						
Schinneller, Jacob, Pittsburg, Pa., and J. T. Jones, Iron Mountain, Mich. Car-coupling link	403,147	May 14	882	232	47	838
Schlechter, Gustavus A., Reading, Pa. Separable button	401,908	Apr. 23	2256	587	47	456
Schlesinger, Augustus D., College Point, assignor to India Rubber Comb Company, New York, N. Y. Securing rigid sockets in rubber pipes	400,955	Apr. 9	798	210	47	162
Schleyer, John, Hays City, Kans. Fence-signal	405,851	June 25	2218	584	47	1692
Schmaus, Simon, Buffalo, N. Y. Knob attachment	403,222	May 14	1014	268	47	863
Schmaus, Simon, Buffalo, N. Y. Knob attachment	403,223	May 14	1015	268	47	863
Schmelzer, Conrad, Pueblo, Colo. Windmill	402,353	Apr. 30	2935	760	47	594
Schmid, Albert, Allegheny, assignor to Westinghouse Electric Company, Pittsburg, Pa. Electric-converter box	404,114	May 28	2368	621	47	1142
Schmid, Albert, Allegheny, assignor to Westinghouse Electric Company, Pittsburg, Pa. Discharge device for electrical machines	405,124	June 11	1091	280	47	1448
Schmid, Albert, and J. C. Beckfeld, Allegheny, Pa. Air and gas engine	403,294	May 14	1129	299	47	863
Schmid, Albert, and R. Siegfried, Allegheny, Pa. Feeding lubricants	403,146	May 14	881	232	47	837
Schmid, Albert, R. Siegfried, and J. C. Beckfeld, Allegheny, Pa.; said Siegfried assignor to said Schmid. Air and gas locomotive	401,218	Apr. 9	1190	318	47	234
Schmid, Jakob, assignor to Society of Chemical Industry, Basle, Switzerland. Azo dye	402,980	May 7	618	.....	47	781
Schmid, Jakob, assignor to Society of Chemical Industry, Basle, Switzerland. Blue azo dye	404,309	May 28	2675	.....	47	1199
Schmidt, Albert A. (See Hill, Samuel C., assignor.)	404,988	June 11	901	236	47	1410
Schmidt, Erich, Marysville, Cal. Stretcher-bar						
Schmidt, Friedrich H., Schindler's Werk, near Bockau, Saxony, Germany. Apparatus for grinding wood	401,971	Apr. 23	2346	610	47	474
Schmidt, Gustav, Rheine, Prussia, Germany. Car-starter	404,563	June 4	300	71	47	1281
Schmirk, Franz, Grossenhain, Saxony, Germany. Positive shuttle-motion for looms	402,354	Apr. 30	2936	761	47	594
Schmitt, Anselm, Buffalo, N. Y. Smoothing and sad iron heater	402,197	Apr. 30	2698	701	47	550
Schneider, Heinrich. (See Schneider, Otto and H.)	402,981	May 7	619	162	47	781
Schneider, John, Peotone, Ill. Bridle						
Schneider, Otto, Louisville, Ky., and H. Schneider, Oberstein-on-the-Nahe, Germany. Powder-gas boiler for engines	405,229	June 11	1257	333	47	1480
Schnopp, Ernst, East New York, assignor to Weil & Livingston, New York, N. Y. Pocket-book	401,219	Apr. 9	1192	319	47	235
Schock, George W., and W. H. Wansbrough, South Bend, Ind. Paint-mixer	401,306	Apr. 9	1323	352	47	260
Schoen, Charles T., Philadelphia, Pa. Car-spring	403,558	May 21	1534	403	47	969
Schoen, Charles T., Philadelphia, Pa. Stake-pocket for cars	403,559	May 21	1535	403	47	969
Schoen, Charles T., Philadelphia, Pa. Center bearing-plate for railway-cars	403,560	May 21	1536	403	47	970
Schofield, James, Petosky, Mich. Combined punch, shears, and saw-gummer	401,594	Apr. 16	1765	465	47	354
Schofield, James D., Rogers, Tex., assignor to Fremont Cultivator Company, Bellevue, Ohio. Combined cotton, corn, and sorghum planter	404,056	May 28	2272	594 595	47	1122
Schofield, Richard, Paris, Ontario, Canada. Machine for cutting cloth	400,603	Apr. 2	248	68	47	52
Schofield, Silas C., assignor to F. Bartlett, Freeport, Ill. Stove-pipe damper	403,489	May 14	1431	374	47	941
Schofield, William, Philadelphia, Pa. Yarn-reeling machine	400,494	Apr. 2	94	26	47	22
Scholder, Edward F., Fort Scott, Kans. Post-hole digger or earth-auger	404,115	May 28	2368	621	47	1142
Scholfield, Edwin A., Westerly, R. I. Self-threading loom-shuttle	405,746	June 25	2079	545	47	1654
Scholfield, Henry, New York, N. Y. Rice-huller	400,604	Apr. 2	249	68	47	52
Scholfield, Joseph J., Providence, R. I. Temple for guiding the edges of fabrics	401,972	Apr. 23	2347	611	47	475
Scholfield, Joseph J., Providence, R. I. Device for guiding the edges of fabrics	402,483	Apr. 30	3142	814	47	634
Scholfield, Joseph J., Providence, R. I. Removable bay-window	400,605	Apr. 2	251	69	47	53
Scholfield, Socrates, Providence, R. I.						
Scholz, Anton, Brooklyn, assignor to himself and M. E. Levy, New York, N. Y. Button-machine	402,280	Apr. 30	2819	729	47	573
Schonacker, John E., assignor to Book Metal Company, Springfield, Ohio. Pad-book	401,909	Apr. 23	2257	588	47	457
Schoonmaker, Myron C., Bethel, Conn. Hat-packing support	403,561	May 21	1537	404	47	970
Schoop, Paul, Zurich, Switzerland. Containing-cell for secondary batteries	402,484	Apr. 30	3145	814	47	634
Schopf, Frank, New York, N. Y. Hand-warmer	402,982	May 7	620	162 163	47	781
Schott, Arnold. (See Schreiner and Schott.)						
Schreiner, Friedrich, and A. Schott, Philadelphia, Pa. Matrix for stereotyping	404,564	June 4	301	71	47	1282
Schreiner, Henry, assignor to American Patent Safety Heater Manufacturing Company, Philadelphia, Pa. Oil-burner for stoves	401,793	Apr. 23	2091	545	47	425
Schreiner, Henry, assignor to American Patent Safety Heater Manufacturing Company, Philadelphia, Pa. Car-heater	401,794	Apr. 23	2091	545	47	425
Schreiner, William. (See Sobold, John M., assignor.)						
Schrender, Jens G., assignor to G. Westinghouse, Jr., Pittsburg, Pa. Semaphore-signal	405,682	June 18	1976	518	47	1629
Schröder, Heinrich L. H., 17 Althorp Road, Upper Tooting, assignor to J. Stuart, Clapham, county of Surrey, England: Aplanatic lens	404,506	June 4	210	50	47	1264
Schroeder, Gottlieb W., Huntington, Ind. Stock-pump	404,737	June 4	328	135	47	1328
Schroyer, Charles O., Dawson, and W. H. Penn, Waynesburg, Pa. Steam-cooker	404,871	June 11	736	188	47	1376
Schubert, August, Oneida, N. Y. Hand-cart	401,381	Apr. 16	1441	382	47	295
Schubert, Carl F. (See Schubert, Fritz E., assignor.)						
Schubert, Fritz E., assignor to C. F. Schubert, Zurich, Switzerland. Spring-back for books	402,485	Apr. 30	3146	814	47	634
Schue, John, Rochester, N. Y. Drinking-cup	402,620	May 7	100	24	47	663
Schulte, Caspar H. (See Kramer, Philip G., Jr., assignor.)						
Schulte, John C., Little Rock, Ark. Tree-sawing machine	402,036	Apr. 23	2449	638	47	493
Schultz, Andrew, *et al.* (See Zalikowski, Jan, assignor.)						
Schultz, Frederick W., Baltimore, Md. Wire-solder machine	405,914	June 25	2320	609 610	47	1609
Schultz, John F., New York, N. Y. Hoisting attachment for ash and garbage carts	403,617	May 21	1611	426 427	47	984
Schulz, Richard, Tegel, near Berlin, Germany. Rope-winding drum	402,688	May 7	200	51	47	701

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Schumacher, Caspar, R. Daelen, and M. Rothe, Kalk, Prussia, Germany. Punching, shearing, and such like machine	401,795	Apr. 23	2083	546	47	425
Schunck, Adam, Celina, Ohio. Harness	401,973	Apr. 23	2348	611	47	475
Schustek, Daniel, assignor to A. H. Andrews & Company, Chicago, Ill. Opera-chair	405,230	June 11	1258	334	47	1480
Schutt, Martin E., Chesaning, Mich. Convertible suspending chair	402,110	Apr. 23	2568	666	47	515
Schuyler, Albert S., Pennington, N. J. Fly-trap	404,565	June 4	301	72	47	1282
Schuyler Electric Company. (See Lemp and Wightman, assignors.)						
Schwab & Co., S. M., Jr. (See Heggan, James, assignor.)						
Schwartz, Robert, *et al.* (See Moharter, Frank, assignor.)						
Schwartz, Simon, Joplin, Mo. Umbrella	402,486	Apr. 30	3147	815	47	634
Schwarz, Max, Alexandria, Va. Milk-can	403,387	May 14	1284	336	47	913
Schweizer, Jakob. (See Guignard and Schweizer.)						
Schwerin, Morris, Newark, N. J. Traveling-bag	402,961	May 7	456	120	47	748
Schwing, Walter E. (See Folmer, William F., assignor.)						
Scobie, David W., Cambridge, Wis. Bob-sleigh	402,963	May 7	490	163	47	781
Scofield, Frank G., *et al.* (See Porter, Joseph S., assignor.)						
Scofield, Silas A., Morenci, Mich. Coffin-fastener	404,672	June 11	737	188	47	1377
Scollay, George W., New York, N. Y. Refining cotton-seed oil	405,852	June 25	2219	.....	47	1083
Scoones, Edward. (See Spall and Scoones.)						
Scotford, Louis K., Chicago, Ill. Dating device for hand-stamps	401,519	Apr. 16	1643	435	47	372
Scotford, Louis K., Chicago, Ill. Hand-stamp	402,771	May 7	326	85	47	724
Scott, Dwight H., Flora, Dak. Ter. Tension device for wire fences	400,606	Apr. 2	254	69	47	53
Scott, George L. (See Chorlton and Scott.)						
Scott, John R., Chicago, Ill. Latch	404,231	May 28	2557	667	47	1177
Scott, Lauren S., Bristol, Vt. Lathing	405,718	June 25	2036	534	47	1646
Scott, Robert D., Pontiac, Mich. Road-cart	403,148	May 14	884	233	47	838
Scott, Robert W., Philadelphia, Pa. Knitted shirt	404,229	May 28	2555	666	47	1176
Scott, Robert W., and L. N. D. Williams, Philadelphia, Pa. Straight-knitting machine	404,230	May 28	2556	666	47	1177
Scott, Samuel P., assignor to Star Manufacturing Company, Hillsborough, Ohio. Carriage-curtain fastener	401,720	Apr 16	1970	515	47	392
Scott, Samuel P., assignor to Star Manufacturing Company, Hillsborough, Ohio. Carriage-curtain fastener	403,388	May 14	1285	337	47	913
Scott, Stephen G., Plainwell, Mich., and W. O'Hern, Fort Wayne, Ind., assignors of one-half to J. H. P. Hughart, Grand Rapids, Mich., and P. S. O'Rourke, Fort Wayne, Ind. Railway-bridge guard	402,487	Apr. 30	3148	815	47	635
Scott, Theodore N., Brooklyn, N. Y. Ratchet-drill	401,465	Apr. 16	1569	415	47	310
Scott, Tully. (See Grannell, Charles W., assignor.)						
Scott, Walter. (See Bartlan, August R., assignor.)						
Scott, Walter, Plainfield, N. J. Sheet-delivery apparatus for printing-machines	400,875	Apr. 2	667	181 182	47	198
Scott, Walter, Plainfield, N. J. Offset mechanism for printing-machines	402,772	May 7	330	85	47	725
Scott, Walter, Plainfield, N. J. Dampening apparatus for rolls of paper	404,505	June 4	208	49, 50	47	1263
Scott, Walter, Hoosick Falls, N. Y. Stanchion	401,307	Apr. 9	1324	352	47	961
Scott, William, Medford, Mass. Siphon water-closet	403,490	May 14	1432	375	47	941
Scovill Manufacturing Company. (See Fuller, Willard H., assignor.)						
Scovill Manufacturing Company. (See Lines, John, assignor.)						
Scoville, Elijah U., Manlius, N. Y. Faucet	405,277	June 18	1338	353	47	1502
Scranton Jar and Stopper Company. (See Howe, Thomas B., assignor.)						
Scriven, Oliver G., Strawberry Point, Iowa. Milking-stool	403,781	May 21	1833	487	47	1032
Scrugga, Lawrence H., Huntsville, Ala. Sweat-pad fastener	401,859	Apr. 23	2177	568	47	442
Scull, Andrew, administrator. (See Scull, John W., assignor.)						
Scull, John W., deceased, assignor of one-half to A. Scull, administrator, Philadelphia, Pa. Book-stapling machine	402,984	May 7	621	163 164 165	47	781
Seabury & Johnson. (See Crissey, William G., assignor.)						
Seaman, Alfred P. W., New York, N. Y. Traveling-bag	405,508	June 18	1602	447	47	1576
Seaman, Henry, Memphis, Mo. Washing-machine	402,355	Apr. 30	2938	761	47	595
Seaman, Joseph S., Pittsburg, Pa. Rolling-mill	400,495	Apr. 2	96	26	47	22
Searing, James E., New York, N. Y. Spectacle or eyeglass frame	400,956	Apr. 9	798	213 214	47	162
Searing, James E., Mount Vernon, N. Y. Spectacle-frame	400,957	Apr. 9	801	214	47	163
Searls, Anson, assignor to Searls-Randall Company, Newark, N. J. Prop-block washer for carriages	404,989	June 11	902	236	47	1410
Searls, Anson, assignor to Searls-Randall Company, Newark, N. J. Dash-rail for vehicles	405,915	June 25	2322	610	47	1700
Searls, Anson, assignor to Searls Manufacturing Company, Newark, N. J. Whip-socket	406,004	June 25	2473	648	47	1725
Searls Manufacturing Company. (See Searls, Anson, assignor.)						
Searls-Randall Company. (See Searls, Anson, assignor.)						
Sears, Delos A., Rockford, Ill. Routing-machine	405,916	June 25	2323	610	47	1700
Sears, John F., Clifton, Ontario, Canada, and H. E. Kelley, Niagara Falls, assignors to Oneida Community, (limited,) Community, N. Y. Swivel	404,659	June 4	430	107	47	1308
Sebold, John M., assignor of one-half to W. Schreiner, Philadelphia, Pa. Ironing-board	400,799	Apr. 2	555	152	47	106
Seck, Heinrich, Dresden, Saxony, Germany. Grain-scourer	403,389	May 14	1287	337	47	913
Seck, Heinrich, Dresden, Saxony, Germany. Dust-collector	403,701	May 21	1735	456 457	47	1010
Seck, Heinrich, Dresden, Saxony, Germany. Sifting apparatus	403,863	May 21	1974	518	47	1056
Seck, Heinrich, Dresden, Saxony, Germany. Means for cleaning shaking-screens	405,125	June 11	1092	291	47	1448
Seddens, M. L. (See Smith, Henry, assignor.)						
Sedgwick, Frederick, Chicago, Ill., assignor to American Spring Company, of Illinois. Tempering spiral springs	401,721	Apr. 16	1971	515	47	392
Seely, Horace C., Philadelphia, Pa. Carbon-paper attachment for receipt or note books	401,362	Apr. 16	1446	382	47	296
Seely, Horace C., assignor of one-half to J. Arnold, Philadelphia, Pa. Record	401,661	Apr. 16	1884	491	47	375
Seely, John A., Brooklyn, N. Y. Leading-in apparatus for conduits	400,958	Apr. 9	802	214	47	163
Seery, James F., New York, N. Y., assignor to Empire Hydro Carbon Company, of New York. Hydrocarbon apparatus	400,959	Apr. 9	804	214 215	47	163
Segal, Adolph, Camden, N. J. Machine for coating or impregnating bags with wax	403,295	May 14	1131	299	47	884
Selbel, Frederick H., assignor of one-half to H. C. Barnet and F. Fraunfelter, Easton, Pa. Punch	401,220	Apr. 9	1192	319	47	235
Selpe, Michael, assignor to Manning, Bowman & Company, Meriden, Conn. Handle for tea or coffee pots	403,782	May 21	1854	487	47	1033
Selts, Edward, Peoria, Ill. Stem winding and setting watch	401,074	Apr. 9	967	258	47	193
Self Winding Clock Company. (See Gerry, James H., assignor.)						
Selleck, Silas E., Cold Spring, N. Y. Nippers	401,308	Apr. 9	1325	352	47	961
Selleck, William E., *et al.* (See Selleck, William J., assignor.)						
Selleck, William E., Chicago, Ill. Sprocket-wheel	405,607	June 18	1538	487	47	1605

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Selleck, William J., Riverside, Conn., assignor to H. Borden and W. E. Selleck, Chicago, Ill. Conveyer	405,608	June 18	1839	484	47	1605
Sellers, William, Haverhill, Mass. Campaign-horn	403,702	May 21	1736	457	47	1011
Sellon, John S., Hatton Gardens, county of Middlesex, England, assignor to Electrial Accumulator Company, of New York. Secondary battery	401,466	Apr. 16	1570	413	47	319
Sellon, Robert P., Lambeth, county of Surrey, England. Electric meter	404,310	May 28	2075	694	47	1199
Seltzer, John G., Boston, Mass. Attachment and oil-filler for lamps	401,075	Apr. 9	969	250	47	193
Semple, Harry, Steubenville, Ohio, and C. N. Brady, Washington, Pa. Machine for finishing the necks of bottles, jars, &c	404,311	May 28	2077	694	47	1199
Seneca Screen Company. (See Cragin, Patrick H., assignor.)						
Sergeant, Henry C., assignor to Ingersoll-Sergeant Rock Drill Company, New York, N. Y. Channeling-machine	402,862	May 7	457	120 / 121	47	748
Sergeant, Henry C., assignor to Ingersoll-Sergeant Rock Drill Company, New York, N. Y. Valve for engines	402,965	May 7	625	102 / 103	47	782
Serson, James, Boston, Mass., assignor to Potter-Compton Electric Company, New York, N. Y. Galvanic battery	405,609	June 18	1841	483	47	1606
Servoss, Courtney S., assignor to E. P. Davis, Brooklyn, and A. L. Rogers, New York. Heating-furnace for steam-boilers	404,116	May 28	2369	693	47	1142
Sessions, Henry H., Pullman, assignor to Pullman's Palace Car Company, Chicago, Ill. Bellows-fold coupling	403,224	May 14	1016	269	47	863
Setchell, George C. (See Page and Setchell.)						
Setchell, George C., assignor to W. H. Page Wood Type Company, Norwich, Conn. Die for forming wood type	402,863	May 7	461	121	47	749
Sewall, James H., Portland, Me. Car-heating apparatus	402,621	May 7	101	24	47	683
Sewall Safety Heating Company. (See Porter, John B., assignor.)						
Sexton, Michael, New York, N. Y. Pipe-testing machine	405,054	June 11	1000	267	47	1431
Seyferth, August, Auerbach, Hesse, Germany, assignor to L. Engelhorn, New York, N. Y. Cleansing raw sugar, &c	405,610	June 18	1842	.....	47	1606
Seymour, Charles J., Brookline, Mass. Shutter-fastener	401,860	Apr. 23	2178	569	47	442
Seymour, Charles J., Brookline, Mass. Elevator and conveyer	404,660	June 4	431	108	47	1309
Seymour, James A., and J. E. McIntosh, Auburn, N. Y. Steam-engine	402,622	May 7	103	25	47	684
Shackleton Car Heating and Ventilating Company. (See Shackleton, Joseph, assignor.)						
Shackleton, Joseph, New York, N. Y. Radiator for heating buildings	402,357	Apr. 30	2941	762	47	595
Shackleton, Joseph, assignor to Shackleton Car Heating and Ventilating Company, New York, N. Y. Steam-boiler	402,356	Apr. 30	2939	761 / 762	47	595
Shafer, Ebenezer B., New York, N. Y. Electric system of communication	402,986	May 7	627	166	47	792
Shafer, Ebenezer B., New York, N. Y. Telegraph apparatus	404,507	June 4	211	50	47	1264
Shafer, Edwin N., and J. D. King, Kiowa, Kans. Motor for operating churns	401,861	Apr. 23	2179	569	47	442
Shaffer, George H., and J. Bairstow, Kent, Ohio. Lifting-jack	404,800	June 4	624	160	47	1348
Shaffer, John W., Philadelphia, Pa. Machine for pulverizing clay and extracting stone	401,862	Apr. 23	2180	569 / 570	47	442
Shaler, Henry L., assignor of one-half to S. H. Jennings, Deep River, Conn. Die for forming auger-heads	403,296	May 14	1132	300	47	884
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. Distribution by alternating electric currents	404,566	June 4	302	72	47	1289
Shallenberger, Oliver B., Rochester, assignor to Westinghouse Electric Company, Pittsburg, Pa. System of generators for alternating electric currents	404,567	June 4	304	72	47	1289
Shallow, Edward, Philadelphia, Pa., assignor, by mesne assignments, to United States Gas and Fuel Company. Hydrocarbon-burner and combined superheater	403,963	May 28	2119	554 / 555	47	1092
Shank, William H., Huntington, Ind. Forge-tuyere	403,149	May 14	885	233	47	838
Sharp, Edward A., Epworth, county of Lincoln, England. Letter-box	402,623	May 7	104	25	47	684
Sharp, Sampson. (See Bowman and Sharp.)						
Sharples, Philip M., West Chester, Pa. Centrifugal liquid-separator	402,624	May 7	104	25	47	684
Sharples, William E., Fall River, Mass., assignor of one-half to G. W. Stafford Manufacturing Company, Providence, R. I. Belt-hole cover	403,300	May 14	1288	337	47	913
Sharpneck, William S., Chicago, Ill. Anti-friction journal-box	402,987	May 7	629	166	47	792
Sharpneck, William S., Chicago, Ill. Anti-friction journal-box	402,988	May 7	629	166	47	792
Shatsick, Arthur O. (See Shatsick, John F. and A. O.)						
Shatsick, John F. and A. O., St. Louis, Mo. Shutter-worker	400,496	Apr. 2	99	27	47	22
Shattuck, Laforest A., Bloomsburg, Pa. Fountain-pen	402,864	May 7	462	121 / 122	47	749
Shattuck, Laforest A., Bloomsburg, Pa. Fountain-pen	403,225	May 14	1017	269	47	864
Shaul, Albert J., Long Pine, Nebr. Prescription-file	402,488	Apr. 30	3149	815	47	635
Shaver, Silas S., Clintonville, Wis. Grain-scourer	403,611	June 18	1843	488	47	1606
Shaw, Al B. (See Shaw, Nathaniel H. and A. B.)						
Shaw, George F. (See Shaw, Henry F. and G. F.)						
Shaw, Henry F., Boston, and G. F. Shaw, Dedham, Mass. Motive mechanism for railway-cars	404,441	June 4	98	24	47	1244
Shaw, Irvin A., Kinsley, Kans. Combination-lock	404,568	June 4	305	73	47	1293
Shaw, J. Elliott. (See Geary, John, assignor.)						
Shaw, Nathaniel H., Somerville, Mass., assignor to American Automatic Gas Lighting Company, Portland, Me. Automatic gas lighting and extinguishing apparatus	405,126	June 11	1092	291	47	1449
Shaw, Nathaniel H., Somerville, and A. B. Shaw, Medford, Mass.; said Nathaniel H. Shaw assignor to American Automatic Gas Lighting Company, Portland, Me. Automatic gas lighting and extinguishing apparatus	405,435	June 18	1564	413	47	1548
Shawhan, Jabez F., assignor of one-half to J. W. Carpenter, Dayton, Ohio. Combined motor and electric generator	401,761	Apr. 23	2034	532	47	415
Shawhan, Jabez F., assignor of one-half to J. W. Carpenter, Dayton, Ohio. Engine	403,150	May 14	886	234	47	838
Shea, Albert, assignor to J. Reece, Boston, Mass. Sewing-machine for securing stay-cords and thrum ends	405,228	June 11	1255	333	47	1479
Shear, John B., Auburn, N. Y. Horse-power	402,198	Apr. 30	2700	701	47	550
Sheets, George W. (See Leinard and Sheets.)						
Sheldrick, David J., Columbus, Ohio. Drive-chain	403,893	May 21	2020	531	47	1065
Shellaberger, Edward F., Beaver Falls, Pa. Gate	404,936	June 11	998	214	47	1395
Shelton, William J., Columbia, Tex. Electro-medical belt	405,436	June 18	1566	414	47	1549
Shepard, Stephen A., Allegheny, assignor to Lang & Shepard, Pittsburg, Pa. Cigar-bunching machine	401,076	Apr. 9	970	258 / 259	47	193
Shepard, Edward B., Greenfield, Mass. Combined square, center-square, and bevel	404,312	May 28	2080	694	47	1199
Shepardson, Francis H., and J. W. Meyer, Davenport, Iowa. Machine for mixing beverages	405,683	June 18	1978	518	47	1629
Shepherd, Frank P., South Elgin, Ill. Milk-can	404,117	May 28	2370	622	47	1142
Shepherd, J. Henry. (See Muhlaupt, Otto F., assignor.)						
Shepherd, Oliver, and J. F. Holmes; said Shepherd assignor to W. S. Story, Ballston, N. Y. Wheel-wrench	402,989	May 7	631	167	47	783
Shepherd, William, assignor to A. G. P. Allt, London, England. Bottle-stopper	406,005	June 25	2474	647	47	1725

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Sherman, Albert R., Pawtucket, R. I. Speed-indicator	405,437	June 18	1566	414 / 415	47	1549
Sherman, Jeremiah G. (See Sherman, Samuel S. and J. G.)						
Sherman, Samuel S. and J. G., West McHenry, Ill. Farm-gate	402,489	Apr. 30	3150	815	47	635
Sherman, Willis D., assignor to Union Hydraulic Drain Tile Company, Omaha, Nebr. Tile-machine	405,183	June 11	1188	315	47	1465
Sherman, Willis D., assignor to Union Hydraulic Drain Tile Company, Omaha, Nebr. Tile-machine	405,184	June 11	1188	316	47	1466
Sherman, Willis D., assignor to Union Hydraulic Drain Tile Company, Omaha, Nebr. Tile-machine	405,185	June 11	1188	316 / 317	47	1467
Sherman, Willis D., assignor to Union Hydraulic Drain Tile Company, Omaha, Nebr. Tile-machine	405,186	June 11	1190	317 / 318	47	1467
Sherwood, Charles A. (See Felthousen, Edward C., assignor.)						
Sherwood, John B., Chicago, Ill. Fastening for school-desks	402,987	Apr. 23	2450	639	47	493
Shickle, Harrison & Howard Iron Company. (See McArthur, Peter, assignor.)						
Shields, Andrew, Grand Rapids, Mich. Combination folding secretary and dresser	400,607	Apr. 2	255	69, 70	47	53
Shinn, John E., Bridgman, Mich. Hay rake and loader	401,467	Apr. 16	1571	415 / 416	47	319
Shipe, Walter S., Minerva, Ohio, assignor to O. S. Garretson, Buffalo, N. Y. Stove-pipe. (Reissue)	11,005	May 28	2772	719	47	1218
Shipman, Madison D., *et al.* (See Mandrill, George W., assignor.)						
Shipman, Madison D., and W. S. Reynolds, De Kalb, Ill. Live-stock wagon	404,618	May 28	2196	577	47	1107
Shira, William M., Butler, Pa. Churn	404,569	June 4	307	73	47	1293
Sholder, Louis H., Cleveland, Ohio. Pruning-knife	400,800	Apr. 2	555	153	47	106
Shoolbred, James, Eastover, S. C. Cultivator	401,595	Apr. 16	1766	465	47	335
Shore, Anthony L., Minneapolis, Minn. Hydrocarbon-burner	404,442	June 4	99	24	47	1245
Short, Sidney H., Columbus, Ohio. Electric-railway system	401,796	Apr. 23	2005	545 / 547	47	496
Short, Sidney H., Columbus, Ohio. System of elevated conductors for electric railways	401,797	Apr. 23	2006	547 / 548	47	496
Short, Sidney H., assignor to United States Electric Company, Denver, Colo. Electric railway	401,221	Apr. 9	1194	319	47	235
Short, Sidney H., assignor to United States Electric Company, Denver, Colo. Electric railway	404,673	June 11	738	188	47	1277
Shreve, Charles E., Chicago, Ill. Car-track sweeper	400,497	Apr. 2	101	27	47	23
Shriver, Robert, *et al.* (See Allfree, James B., assignor.)						
Shubert, Francis, *et al.* (See Navea, Benjamin H., assignor.)						
Shultz, Charles H., St. Joseph, Mo. Vapor-burner	400,498	Apr. 2	103	28	47	23
Shultz, Charles H., St. Joseph, Mo. Vapor-burner	401,383	Apr. 16	1447	382	47	296
Shunk, Thomas W. (See McDonald and Shunk.)						
Sieber, Louis. (See Flatow, Simon J., assignor.)						
Siegel, Ferdinand, *et al.* (See Colby, Edward J., assignor.)						
Siegfried, Robert. (See Schmid and Siegfried.)						
Siegfried, Robert. (See Schmid, Siegfried, and Beckfeld.)						
Siemang, Stefan, assignor of one-half to A. Breden, Vienna, Austria-Hungary. Hydrocarbon-lamp	403,151	May 14	888	234	47	838
Sierstorfer, Michael, Louisville, Ky. Safe or vault	400,499	Apr. 2	104	28	47	24
Sigourney Bros. (See Wright, Wilbur L., assignor.)						
Silverman, Louis, London, England. Magazine fire-arm	405,375	June 18	1470	389 / 390	47	1329
Silvey, William L., Lima, Ohio. Commutator-brush controller for electric motors	402,990	May 7	631	167	47	783
Silvey, William L., Cincinnati, Ohio. Arc lamp	403,964	May 28	2122	555	47	1093
Simkins, George, Camden, N. J. Preserve-jar fastening	402,358	Apr. 30	2942	762	47	595
Simmons, William B. (See Pendergast, John and D., assignors.)						
Simon, Isidore. (See Reed, Eden, assignor.)						
Simon, Rand H. (See Herzig, Eduard, assignor.)						
Simonds, Daniel, Fitchburg, Mass. Apparatus for straightening saws	404,738	June 4	589	136	47	1328
Simonds, George W., deceased, Boston, Mass.; M. E. Simonds administratrix. Combined claw-hammer and hatchet	404,900	June 11	902	230	47	1410
Simonds, Melissa E., administratrix. (See Simonds, George W.)						
Simons, Paul, Darmstadt, Germany. Apparatus for the automatic sale of flexible articles	402,773	May 7	332	86	47	725
Simpkin, William, assignor to Richmond Locomotive and Machine Works, Richmond, Va. Balanced slide and cut-off valve	401,384	Apr. 16	1448	382	47	296
Simpson, Greenlief W. (See Levrasseur, John E., assignor.)						
Simpson, James, McKeesport, Pa. Pipe-welding bell	402,689	May 7	202	51	47	701
Simpson, James H., assignor to Carnegie, Phipps & Company, (limited,) Pittsburg, Pa. Manufacture of turn-buckles	402,690	May 7	203	51, 52	47	702
Simpson, James H., assignor to Carnegie, Phipps & Company, (limited,) Pittsburg, Pa. Blank for turn-buckles	402,691	May 7	205	52	47	702
Simpson, James H., assignor to Carnegie, Phipps & Company, (limited,) Pittsburg, Pa. Making turn-buckles	402,692	May 7	205	52, 53	47	702
Simpson, James H., assignor to Carnegie, Phipps & Company, (limited,) Pittsburg, Pa. Die for making turn-buckles	402,693	May 7	207	53, 54	47	702
Simpson, James H., assignor to Carnegie, Phipps & Company, (limited,) Pittsburg, Pa. Making turn-buckles	402,694	May 7	209	54	47	703
Simpson, James H., assignor to Carnegie, Phipps & Company, (limited,) Pittsburg, Pa. Machine for making turn-buckles	402,695	May 7	211	55	47	703
Simpson, James H., assignor to Carnegie, Phipps & Company, (limited,) Pittsburg, Pa. Making turn-buckles	403,965	May 28	2124	555 / 556	47	1093
Simpson, John F., Foster Park, Fla. Box end	403,226	May 14	1022	270	47	865
Simpson, Joseph H. (See Thomas, George, assignor.)						
Simpson, Josiah M., assignor to W. Deering & Company, Chicago, Ill. Machine for cutting the screw-threads on bolts	401,506	Apr. 16	1767	465 / 466 / 467	47	355
Simpson, Moses. (See Geisler and Simpson.)						
Sims, Joseph W., Cincinnati, Ohio. Chock-block for tram-cars	403,894	May 21	2021	531	47	1065
Sims, William T., Yazoo City, Miss. Rein-support	405,278	June 18	1339	254	47	1503
Sinclair, Hector, New York, N. Y. Hammock and canopy support	405,719	June 25	2037	534 / 535	47	1646
Singer & Co., A. L. (See Wheeler, Edward W., assignor.)						
Singer Manufacturing Company of New Jersey. (See Griest, John M., assignor.)						
Sipperley, Elbert N., *et al.* (See Nash, Edward H., assignor.)						
Sisum, William H. H., Brooklyn, N. Y. Refrigerator-car	401,385	Apr. 16	1440	382	47	296

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Skrainka, Frederick, *et al.* (See Atwood, La Motte C., assignor.)						
Skrainka, Louis, *et al.* (See Atwood, La Motte C., assignor.)						
Slack, Willie F., and G. A. Smith, Lawrence, Mass. Dental articulator	400,713	Apr. 2	413	112	47	82
Slade, Herbert L. (See Nutter, Frank H., assignor.)						
Slate, Dwight. (See Bunce, Slate, and Rodda.)						
Slater, Henry B., Detroit, Mich., assignor to Belding Motor and Manufacturing Company, Chicago, Ill. Electric motor	404,661	June 4	433	108	47	1309
Slater, Warren G., Fremont, Mich., assignor to Peninsular Novelty Company, Boston, Mass. Button-attaching machine	405,328	June 18	1408	371	47	1517
Slattery, Marmaduke M. M., assignor to Fort Wayne Electric Light Company, Fort Wayne, Ind. Electric meter for alternate currents	404,801	June 4	625	160 161	47	1348
Slaysman, Alexander, assignor to himself, A. E. Clarson, and J. O'Farrall, Baltimore, Md. Mechanism for forming and sizing sheet-metal vessels	401,597	Apr. 16	1779	468	47	357
Slayman, Alexander, Jr., assignor of one-half to J. S. Hull, Baltimore, Md. Can-crimping machine	405,917	June 25	2324	610	47	1700
Sleeper, Charles W., Island Pond, Vt. Device for forming tin cans	402,774	May 7	333	86	47	725
Sleeper, Charles W., Island Pond, and R. M. Woodard, Norton, Vt.; said Sleeper assignor to said Woodard. Saw-guide	400,801	Apr. 2	556	153	47	107
Sleeper, Joseph J., Camden, N. J., assignor to E. Y. Loomis, New York, N. Y. Exercising-machine	404,802	June 4	627	161	47	1348
Sleicher, William, Jr., Troy, N. Y. Furnace-cover	403,152	May 14	890	234 235	47	839
Small, Lewis F., Boston, Mass. Gymnastic apparatus	403,703	May 21	1737	457	47	1011
Smallwood, John W., and D. R. Austin, Nevada, Mo. Rotary engine	402,625	May 7	105	25, 26	47	681
Smaltig, Fredrick C., Allegheny, Pa. Cigar-bunching machine	405,918	June 25	2325	611	47	1700
Smart, Carlos L., Los Angeles, Cal. Compositor's bracelet wrist-protector	403,783	May 21	1855	487	47	1033
Smart, Wellington F. (See Myers, Frederick G., assignor.)						
Smead, Benjamin, Chicago, Ill. Electrical annunciator	402,626	May 7	106	26	47	684
Smedes, Levi K., New York, N. Y. Hinge	404,313	May 28	2661	695	47	1200
Smillie, George W., Newark, N. J. Car-coupling	402,775	May 7	335	87	47	726
Smith, Agnes W. H., Beaver Dam, Wis. Milk-can	401,863	Apr. 23	2182	570	47	442
Smith, Albert W., assignor of one-half to F. D. Benedict, Haverhill, Mass. Stencil	402,281	Apr. 30	2890	730	47	573
Smith, Andrew, East Dulwich, county of Surrey, England. Venetian blind	405,805	June 25	2153	566	47	1669
Smith, Andrew L., assignor to Geneva Optical Company, Geneva, N. Y. Trial-frame for oculists and opticians	404,803	June 4	628	161	47	1349
Smith, Asa F., Brooklyn, N. Y. Tide and lock power engine	400,500	Apr. 2	106	28, 29	47	24
Smith, Benjamin C., Brooklyn, assignor to F. Adee & Co., New York, N. Y. Floor-flange for water-closets, &c.	404,874	June 11	740	188	47	1377
Smith, Benton. (See Wilhelm, Henry, assignor.)						
Smith, Charles, Rogers, Ark. Hook	400,501	Apr. 2	108	29	47	27
Smith, Charles, Rogers, Ark. Safety-hook for harness	405,035	June 11	1001	267	47	1431
Smith, Charles A., Dresden, N. Y. Steam-engine	401,386	Apr. 16	1451	383	47	297
Smith, Charles H., Atlanta, Ga. Key-leveling device for pianos	401,309	Apr. 9	1326	350	47	261
Smith, Clarence H., Detroit, Mich. Luggage-carrier	402,991	May 7	633	166	47	783
Smith, Daniel W., assignor of one-half to E. E. Wilson, St. Louis, Mo. Cable-lifter for railway-cars	402,544	Apr. 30	3229	837	47	650
Smith, David P., assignor to Mather & Platt, Salford Iron Works, near Manchester, county of Lancaster, England. Clip or holder for cloth-stretching machines	404,314	May 28	2682	695 696	47	1200
Smith, Dwight L., assignor to Waterbury Buckle Company, Waterbury, Conn. Buckle	405,920	June 25	2330	612	47	1701
Smith, Elmer Z. (See Dimmick and Smith.)						
Smith, Eugene C., New York, N. Y., assignor to Universal Lock Company of New York. Making locks	402,627	May 7	108	26, 27	47	685
Smith, Eugene C., New York, N. Y., assignor to Universal Lock Company of New York. Lock-case	405,329	June 18	1410	371	47	1518
Smith Feed Water Heater and Purifier Company. (See Smith, William J., assignor.)						
Smith, Frank S., assignor to Westinghouse Electric Company, Pittsburg, Pa. Apparatus for treating filaments	404,118	May 28	2372	622	47	1143
Smith, Fred A. (See Smith, Harrison D. and F. A.)						
Smith, George A. (See Slack and Smith.)						
Smith, George H., London, county of Middlesex, England. Copying apparatus	401,762	Apr. 23	2036	532	47	416
Smith, George W. (See Smith, John G. and G. W.)						
Smith, H. A. (See Sawyer, Charles H., assignor.)						
Smith, Hamilton E., New York, N. Y. Washing-machine	402,865	May 7	468	122	47	750
Smith, Harrison D. and F. A., Cincinnati, Ohio. Display-box	401,974	Apr. 23	2349	611	47	475
Smith, Henry, assignor of one-half to M. L. Seddons, Columbus, Ohio. Respirator	403,966	May 28	2125	556	47	1093
Smith, Henry J. (See Zalinski and Smith.)						
Smith, Henry J., Pompton, N. J., and E. L. Zalinski, U. S. Army. Electric primer	405,684	June 18	1980	519	47	1630
Smith, Henry L., Brooklyn, N. Y. Game apparatus	401,222	Apr. 9	1196	319	47	236
Smith, Henry V., Birmingham, assignor, by mesne assignments, of one-half to E. G. Buruham, Bridgeport, Conn. Steam-whistle	405,330	June 18	1411	372	47	1518
Smith, Henry W., St. Louis, assignor of one-half to H. C. Baker, Kansas City, Mo. Watchman's time-register	402,359	Apr. 30	2942	763	47	596
Smith, Herbert, Worcester, Mass. Machine for reeling wire	405,376	June 18	1473	390	47	1530
Smith, Herbert, Worcester, Mass. Automatic wiping device for wire-galvanizing	405,377	June 18	1475	391	47	1531
Smith, Herbert, Worcester, Mass. Wire-drawing machine	405,378	June 18	1478	391 392	47	1532
Smith, Horace S., *et al.* (See Treat, Francis H., assignor.)						
Smith, Hugh, Glasgow, county of Lanark, Scotland. Hydraulic machine for riveting	401,975	Apr. 23	2350	611 612	47	475
Smith, James, Centreville, Md. Brick-layer's plumb-level, &c	402,360	Apr. 30	2943	763	47	596
Smith, James E., assignor of two-thirds to A. Moonelis and B. Lichtenstein, New York, N. Y. Cigar-making machine	401,077	Apr. 9	971	239 240	47	194
Smith, James E., assignor of two-thirds to A. Moonelis and B. Lichtenstein, New York, N. Y. Cigar-bunching machine	402,038	Apr. 23	2451	639 640	47	493
Smith, James E., assignor of two-thirds to A. Moonelis and B. Lichtenstein, New York, N. Y. Cigar-bunching machine	402,039	Apr. 23	2454	639 640	47	494
Smith, James E., assignor of two-thirds to A. Moonelis and B. Lichtenstein, New York, N. Y. Cigar-wrapping machine	405,438	June 18	1569	415	47	1550
Smith, James E., assignor of two-thirds to A. Moonelis and B. Lichtenstein, New York, N. Y. Cigar-bunching machine	405,439	June 18	1573	416	47	1550
Smith, John, Kansas City, Mo. Slip or lock joint for corrugated iron	405,379	June 18	1480	392	47	1532
Smith, John, Norristown, assignor to Croft & Allen, Philadelphia, Pa. Machine for making stick-candy	405,720	June 25	2038	535	47	1646

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Smith, John, Norristown, assignor to Croft & Allen, Philadelphia, Pa. Machine for making drop-candy	405,721	June 25	2039	535 536	47	1647
Smith, John D., Murfreesborough, Tenn. Exhaust mechanism	404,739	June 4	531	136	47	1329
Smith, John G. and G. W., Albany, Mo. Adding-machine	400,714	Apr. 2	415	112 113	47	83
Smith, John N., Dublin, Ga. Skylight	403,227	May 14	1023	270	47	805
Smith, Joseph E., *et al.* (See Poindexter, John E., assignor.)						
Smith, Joseph H., Kaufman, Tex. Brace for back and legs	401,223	Apr. 9	1197	320	47	236
Smith, Justin J. (See Baldwin and Smith.)						
Smith, Lyman, Kansas City, Mo. Pneumatic grain-conveying apparatus	405,331	June 18	1413	373 373	47	1518
Smith, Mark. (See Buxton, Braithwaite, and Smith.)						
Smith, Marc. (See Palm and Smith.)						
Smith, Morris F., New Haven, Conn. Micrometer-calipers	404,057	May 28	2677	596	47	1123
Smith, Nicholas. (See Rivers, David H., assignor.)						
Smith, Oscar, Winona, Minn. Curry-comb	401,864	Apr. 23	2183	570	47	443
Smith, Richard M. (See Duren and Smith.)						
Smith, Robert T., Kaufman, Tex. Cotton-carrier	404,991	June 11	903	237	47	1410
Smith, Roswell T., assignor to himself, N. W. Goddard, Nashua, N. H., and G. H. Dunham, New York, N. Y. Safety extinguishing attachment for heating and illuminating apparatus for railway-cars	404,875	June 11	741	189	47	1377
Smith, Samuel, Lawrence, and R. Gill, Methuen, assignors to themselves and W. H. Butler, Lawrence, Mass. Spinning-spindle	400,502	Apr. 2	109	29	47	25
Smith, Samuel W. (See Baker, William H., assignor.)						
Smith, Stephen G., Hannibal, Mo. Thill-coupling	402,545	Apr. 30	3231	837	*47	651
Smith, Thomas C., Bridgeport, assignor to R. H. Brown & Co., New Haven, Conn. Lathe-dog	405,853	June 25	2221	584	47	1663
Smith, Thomas J., Brooklyn, N. Y., assignor to E. S. Greely & Company, of Connecticut. Insulating device for line-wires	403,491	May 14	1433	375	47	941
Smith, Thomas J., Brooklyn, N. Y., assignor to E. S. Greely & Company, of Connecticut. Electro-medical apparatus	403,492	May 14	1435	375	47	941
Smith, Thomas S., assignor of one-half to H. Copperthite, Washington, D. C. Brake for vehicles	401,224	Apr. 9	1197	320	47	236
Smith, Thomas S., Washington, D. C., assignor to H. B. Ives & Co., New Haven, Conn. Sash-fastener	403,391	May 14	1289	337 338	47	913
Smith, Walter F., Philadelphia, Pa., assignor to United Electric Improvement Company, Gloucester City, N. J. Apparatus for laying electrical conductors	401,225	Apr. 9	1199	320	47	236
Smith, Walter F., Philadelphia, Pa., assignor to United Electric Improvement Company, Gloucester City, N. J. Electric meter	401,226	Apr. 9	1200	321	47	236
Smith, Wilber W., Grand Rapids, Mich. Door-hanger	403,228	May 14	1041	270	47	805
Smith, William, *et al.* (See Snee, William, assignor.)						
Smith, William A., *et al.* (See King, George, assignor.)						
Smith, William A., Butte City, Mont. Ter. Piano lamp-bracket	404,570	June 4	308	73	47	1289
Smith, William B., San Francisco, Cal. Plug for sinks, tube, &c	401,876	Apr. 23	2252	612	47	475
Smith, William E. (See Kersteter, Charles W., assignor.)						
Smith, William E., Fremont, Nebr. Wash-boiler	405,509	June 18	1393	448	47	1576
Smith, William E., assignor, by mesne assignments, to P. T. Dodge, trustee, Washington, D. C. Bicycle	403,153	May 14	893	235	47	839
Smith, William F., and A. B. Catterall, Syracuse, N. Y. Skirt-protector	401,052	Apr. 9	974	260	47	191
Smith, William H., Hickman, Tenn. Heating and steaming grain	404,571	June 4	308	73	47	1289
Smith, William J., Chicago, Ill., assignor to Smith Feed Water Heater and Purifier Company, St. Louis, Mo. Feed-water purifier	402,199	Apr. 30	2701	701 702	47	551
Smith, Wilson R., assignor of two-thirds to J. Goss and A. C. Hutchison, Beloit, Wis. Wrench	403,895	May 21	2022	532	47	1065
Smyth, David M., Hartford, Conn. Machine for gathering signatures	404,119	May 28	2374	622 623	47	1143
Smyth, William H., Berkeley, Cal. Machine for heading cans	403,784	May 21	1856	488 489 490	47	1033
Snavely, Benjamin F., Harrisburg, Pa. Water-proof air-mattress	402,992	May 7	634	168	47	783
Snead, Udolpho, Louisville, Ky. Pole for electric wires	401,532	May 28	2658	667	47	1177
Snedeker, Charles T., New York, N. Y. Grip-car	402,361	Apr. 30	2944	763	47	596
Snee, William, assignor of part to W. Smith, Pittsburg, C. T. Russell, Allegheny, and W. Guckert, Pittsburg, Pa. Steam-generator	404,740	June 4	532	136	47	1329
Snee, William, Pittsburg, assignor to C. T. Russell, Allegheny, W. Guckert, and W. Smith, Pittsburg, Pa. Hydrocarbon-burner	404,804	June 4	629	161	47	1349
Snow, Everett J., Penobscot, Me. Sheet-music support for piano-fortes	401,662	Apr. 16	1885	481	47	376
Snow, Harry L., Reseaville, Wis. Printing-machine	404,058	May 28	2370	596 597	47	1123
Snow, William W. (See Hollister, William H., assignor.)						
Snyder, Daniel J., and J. Stephenson, Scio, Ohio. Apparatus for carbureting air or gas	405,747	June 25	2060	545 546	47	1654
Snyder, Frederick, Lancaster, Pa. Letter-box alarm	402,282	Apr. 30	2932	730	47	573
Snyder, John R., and J. Deets, Agency, Mo. Reverse-link for steam-engines	400,960	Apr. 9	806	215	47	164
Snyder, Judson S., Brooklyn, N. Y. Bathing-mitten	405,896	June 25	2155	566	47	1670
Société Armand Schwab et Frère. (See Rime, Hugues, assignor.)						
Société Industrielle des Glycerine et Acides Gras. (See Marix, Paul, assignor.)						
Society of Chemical Industry. (See Kussmaul, Carl, assignor.)						
Society of Chemical Industry. (See Schmid, Jakob, assignor.)						
Society of Chemical Industry of Basle. (See Gnehm, Robert, assignor.)						
Sohst, Henry F. W., San Francisco, Cal. Feathering paddle-wheel	403,392	May 14	1292	338	47	914
Solano, Renaldo, assignor of three-fourths to J. W. Howard, D. R. Morse, Brooklyn, N. Y., and L. G. Fisher, Chicago, Ill. Air-brake operating and reducing valve	405,854	June 25	2222	585	47	1663
Solano, Renaldo, assignor of three-fourths to J. W. Howard, D. R. Morse, Brooklyn, N. Y., and L. G. Fisher, Chicago, Ill. Automatic air-brake	405,855	June 25	2223	585	47	1663
Solano, Renaldo, assignor of two-thirds to J. W. Howard and D. R. Morse, Brooklyn, N. Y. Automatic air-brake	406,006	June 25	2475	647	47	1725
Soltmann, Edward G., New York, N. Y. Tape-measure	400,961	Apr. 9	808	215	47	164
Somers, George E., Bridgeport, Conn., assignor to Bridgeport Brass Company, of Connecticut. Shade-holder	401,910	Apr. 23	2250	588	47	457
Somersworth Machine Company. (See Langlands and Moulton, assignors.)						
Sommerfeld, Heinrich, Canton, assignor to A. Ehrlich, Lehigh, Kans. Churn	404,443	June 4	100	25	47	1245
Sonnenberg, Michael. (See Barton, Richard T., assignor.)						
Soper, Samuel H., Jr., Brighton, county of Sussex, England, assignor to W. S. Lamson, Windham, N. H. Cash-carrier	403,967	May 28	2126	556	47	1093

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Souders, Addison J., Brimfield, assignor to D. Hart, Springfield, Ohio. Lifting-jack	401,865	Apr. 23	2184	570	47	443
Southard, Hannah, *et al.* (See Southard, Stephen P., assignor.)						
Southard, Stephen P., assignor to C. C. Post, Geneva, and H. Southard, Waterloo, N. Y. Sulky	405,856	June 25	2226	586	47	1684
Southworth, Horatio W., Springfield, Mass. Stationery-packet	403,185	May 21	1864	490	47	1035
Spall, Charles R., and E. Scoones, London, England. Glove	405,380	June 18	1481	[illegible]	47	1532
Spangler, Franklin P., Goshen, Ind. Broadcast seeder	402,993	May 7	635	166	47	784
Sparks, Charles, Sacramento, Cal. Strap fastener and tightener for trunks, &c	402,776	May 7	337	87	47	736
Sparks, William A., assignor to Stein Manufacturing Company, Rochester, N. Y. Coffin-fastener	401,663	Apr. 16	1886	491	47	370
Spaulding, Almon M., Grand Rapids, Mich. Stove for railway-coaches	406,007	June 25	2457	647	47	1726
Spaulding, Mont, Orleans, Mich. Corn-shock binder	405,612	June 18	1845	488	47	1606
Spear, Murray H., London, England. Ruling device	404,315	May 28	2684	[illegible]	47	1200
Speed, Francis M., San Francisco, Cal. Electric railway	403,160	May 21	1865	490	47	1035
Speed, Joseph J., Waltham Cross, England. Sight for fire-arms	400,715	Apr. 2	418	113	47	83
Speicher, John, Jersey City, assignor to F. T. Feary, Newark, N. J. Railway-joint	402,777	May 7	338	87	47	736
Spence, James H., Milwaukee, Wis. Water-back	402,994	May 7	636	166	47	784
Spencer, Charles F., assignor to H. S. Hanford, Rochester, N. Y. Package-fastener	405,685	June 18	1961	513	47	1630
Spencer & Co., J. L. (See Kennedy, John H., assignor.)						
Spencer, Frederick, Sterling, Ill. Seesaw	401,798	Apr. 23	2098	548	47	426
Spencer, William L., Clinton, Iowa. Calf-feeder	400,902	Apr. 9	800	210	47	164
Sperry, Alfred W., Hartford, Conn. Pessary	404,019	May 28	2200	577	47	1107
Sperry Electric Company. (See Sperry, Elmer A., assignor.)						
Sperry Electric Mining Machine Company. (See Sperry, Elmer A., assignor.)						
Sperry, Elmer A., Chicago, Ill. Electric-arc lamp	405,440	June 18	1576	[illegible]	47	1551
Sperry, Elmer A., assignor to Sperry Electric Mining Machine Company, Chicago, Ill. Electric drilling-machine	405,187	June 11	1194	319	47	1468
Sperry, Elmer A., assignor to Sperry Electric Mining Machine Company, Chicago, Ill. Electric mining-machine	405,188	June 11	1197	319	47	1468
Sperry, Elmer A., assignor to Sperry Electric Company, Chicago, Ill. Dynamo	405,441	June 18	1579	417	47	1552
Sperry, Ezra F. (See Cook, Sidney, assignor.)	405,613	June 18	1846	489	47	1607
Sperry, Norman, Seymour, Conn. Package for auger-bits	400,963	Apr. 9	810	215	47	165
Spicer, John H., Harrisburg, Pa. Coffin-plate	400,608	Apr. 2	256	70	47	54
Spielman, George D., Cincinnati, Ohio. Button-hole attachment for sewing-machines						
Spikins, Charles, *et al.* (See May, Isaac, assignor.)						
Spikins, Thomas, *et al.* (See May, Isaac, assignor.)	400,716	Apr. 2	418	[illegible]	47	83
Spiro, Charles, New York, N. Y. Type-writing machine	404,572	June 4	310	79	47	1284
Spiro, Simon, Birmingham, Ala. Water-heater						
Spivey, Thomas S. (See Bryant, Andrew J., assignor.)						
Spooner, Frederick B., Brooklyn, N. Y. Clasp. (Reissue)	10,995	Apr. 16	1985	510	47	396
Spooner, Frederick B., Brooklyn, N. Y. Clasp	401,977	Apr. 23	2353	602	47	475
Sprague, Almerin R., Racine, Wis. Ink-well	405,921	June 25	2331	612	47	1701
Sprague, Edwin L. (See Peare, George R., assignor.)						
Sprague, James K., Chicago, Ill. Transom-lifter	404,020	May 28	2201	578	47	1107
Sprague, Samuel H., Beloit, Kans. Fire-escape	401,508	Apr. 16	1783	468	47	357
Spratt, Charles, New Cross Gate, county of Kent, England. Speed-indicator	404,992	June 11	904	[illegible]	47	1411
Spring, Charles A. (See Springer and Spring.)						
Springer, David, and C. A. Spring, Royer's Ford, Pa. Heater for railway-cars	404,316	May 28	2684	696	47	1200
Springfield Bicycle Manufacturing Company. (See Haynes, Gideon, Jr., assignor.)						
Springstead, Abram B., Kalamazoo, Mich. Work-feeder for band-saws	403,618	May 21	1614	427	47	985
Spruce, James, and A. M. Comstock, Waterbury, Conn. Spring-hinge	401,978	Apr. 23	2355	613	47	476
Spugie, G. W., *et al.* (See Putnam, William W., assignor.)						
St. John, Roswell H., Cleveland, Ohio. Case for carrying phonograms and graphograms, &c	402,997	May 7	641	169	47	785
St. John, Spencer H., Chicago, Ill. Pinch-bar	400,964	Apr. 9	811	216	47	165
St. Louis Dead Lock Company. (See Martin, John W., assignor.)						
St. Pierre, Charles D., Brooklyn, N. Y. Shoe-blacking	401,390	Apr. 16	1457	[illegible]	47	298
Stafford, George W., Postville, Iowa. Pump	401,979	Apr. 23	2356	613	47	476
Stafford Manufacturing Company, George W. (See Sharples, William E., assignor.)						
Stagg, Harrison, near Valencia, Kans. Cultivator	401,468	Apr. 16	1574	416	47	319
Stahl, Charles H., and J. W. Bonton, Bridgeport, Conn. Corset-clasp	405,442	June 18	1579	417	47	1552
Stahlhuth, Ernst H. W. and H. W., Cincinnati, Ohio. Extension-table	401,310	Apr. 9	1327	353	47	361
Stahlhuth, Henry W. (See Stahlhuth, Ernst H. W. and H. W.)						
Staib, Gustav, Tompkinsville, N. Y. Cover for fruit-jars	404,059	May 28	2280	597	47	1124
Stairs, John F. W., Halifax, Nova Scotia, Canada. Oiler	405,922	June 25	2332	612	47	1701
Staley, James M. (See Hersh and Staley.)						
Stamm, August, New York, N. Y. Sheet-metal box	405,443	June 18	1580	417	47	1552
Standard Electrical Works. (See Kinsley, Isaac, assignor.)						
Standard Wagon Company. (See Hawes, William L., assignor.)						
Stanley, Frank F., *et al.*, trustees. (See Geddu, Louis, assignor.)						
Stanley, Frank F., Swampscott, Mass. Leather-splitting machine. (Reissue)	11,008	June 18	1982	519	47	1630
Stanley, Frank P., Spencer, Iowa. Clothes-line	400,563	Apr. 2	111	30	47	25
Stanley, Lucius T., Brooklyn, assignor to D. L. Proudfit, New York, N. Y. Device for testing color-blindness	404,366	May 28	2765	716	47	1216
Stanley, Reginald, Nuneaton, county of Warwick, England. Brick-kiln	402,628	May 7	110	27	47	685
Stanley Rule and Level Company. (See Bailey, Frank M., assignor.)						
Stanley Rule and Level Company. (See Trant, Justus A., assignor.)						
Stanley, William, Jr., Great Barrington, Mass., assignor to Westinghouse Electric Company, Pittsburg, Pa. Regulating self-exciting alternate-current electric generators	404,120	May 28	2377	623	47	1144
Stanley, William F., South Norwood, county of Surrey, England. Machine for measuring the height of human bodies automatically	404,317	May 28	2685	[illegible]	47	1200
Stanley Works. (See Holland, Franklin, assignor.)						
Stansbrough, Wilson Y., Brooklyn, N. Y. Gas-meter	403,297	May 14	1133	300	47	884
Stanton, Edmund C. (See Stewart, James, assignor.)						
Stanynought, Harry, Elizabeth, N. J. Door-check	403,393	May 14	1294	338	47	914
Stapleton, James, St. Louis, Mo. Smoke-consuming boiler-furnace	402,302	Apr. 30	2946	764	47	506
Star Iron Tower Company. (See O'Beirne, William H., assignor.)						
Star Manufacturing Company. (See Scott, Samuel P., assignor.)						
Starbuck, Robert P., Harrisville, W. Va. Washing-machine	405,807	June 25	2155	567	47	1670

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Stark, Abraham H., Belleville, Kans. End-gate	402,111	Apr. 23	2369	667	47	518
Starks, Nils O., Madison, Wis. Corn-planter	404,318	May 28	2698	[illegible]	47	1201
Stasser, Virgil A., Haines City, Fla. Hand-car	401,469	Apr. 16	1577	417	47	320
Statter, John G., London, county of Middlesex, England. Pole-piece for dynamo-electric machines	402,200	Apr. 30	2703	[illegible]	47	551
Staub, Alexander, Fort Wayne, Ind. Stove-pipe thimble	402,778	May 7	339	87	47	736
Stead, Eldred W., Stoke Newington, county of Middlesex, assignor to R. Leca, Crewe, county of Chester, England. Last	400,876	Apr. 2	669	169	47	128
Steam Gauge and Lantern Company *et al.* (See Betts, Lewis F., assignor.)						
Steam Gauge and Lantern Company. (See Gall, John S., assignor.)						
Steam Gauge and Lantern Company. (See Glasier, Elias C., assignor.)						
Steam Gauge and Lantern Company. (See Wright, Frederick K., assignor.)						
Stearns & Co., Edward C. (See Stearns, Edward C., assignor.)						
Stearns, Edward C., assignor to E. C. Stearns & Co., Syracuse, N. Y. Drill-press	404,367	May 28	2706	717	47	1216
Stearns, Edward C., assignor to E. C. Stearns & Co., Syracuse, N. Y. Clamp	404,368	May 28	2707	717	47	1216
Stearns, Elvira, assignor of one-half to E. A. Sayles, Providence, R. I. Garment-measuring device and cutting-guide	405,614	June 18	1846	489	47	1607
Stearns, Otis W., Johnson, Vt. Combined block barbing and splitting machine	401,868	Apr. 23	2125	571	47	443
Stebbins, Henry W., Monico, Wis. Paper-pulp digester	405,279	June 18	1740	354	47	1503
Steddom, Henry, Jr., Oaksloosa, Iowa. Wire-weaving apparatus	404,444	June 4	100	25	47	1245
Stedman, Oscar F., Ravenna, Ohio. Stem winding and setting watch	403,787	May 21	1866	490	47	1035
Steele, Edwin B., Adrian, Mich. Adjustable derrick	402,201	Apr. 30	2708	703	47	552
Steele, James W., Topeka, Kans., assignor of one-half to A. McNally, Chicago, Ill. Danger-signal for railway-bridges	401,763	Apr. 23	2037	[illegible]	47	416
Steele, James W., Topeka, Kans., assignor of one-half to A. McNally, Chicago, Ill. Danger-signal for railway-bridges	401,764	Apr. 23	2039	533	47	416
Steele, James W., Topeka, Kans., assignor of one-half to A. McNally, Chicago, Ill. Danger-signal for railway-bridges	401,799	Apr. 23	2099	548	47	426
Steele, James W., Topeka, Kans., assignor of one-half to A. McNally, Chicago, Ill. Danger-signal for railway-bridges	401,800	Apr. 23	2100	549	47	427
Steele, Wilbur F., Steele, Dak. Ter. Water-gas burner	402,995	May 7	637	169	47	784
Steele, Wilbur F., Steele, Dak. Ter. Vapor-burner	402,996	May 7	639	169	47	784
Steele, William D., assignor of one-half to J. E. Ward, Huron, Dak. Ter. Corn-harvester	402,040	Apr. 23	2461	641	47	495
Steen, James B., Fidelity, Ohio. Machine for making fences	405,510	June 18	1694	448	47	1576
Steenbergh, George C., Syracuse, N. Y. Railway-track instrument	401,664	Apr. 16	1897	492	47	376
Steenbergh, George C., Syracuse, N. Y. Switch-instrument for railway-signals	403,619	May 21	1016	422	47	986
Steffen, Carl, Vienna, Austria-Hungary. Lixiviating-battery for raw sugar	403,788	May 21	1867	491	47	1036
Stein Manufacturing Company. (See Sparks, William A., assignor.)						
Steinbach, Gustav H., Lichtenstein, Saxony, Germany. Apparatus for coupling vessels	404,993	June 11	908	240	47	1411
Steindecker, Josef. (See Dollinger, Gustav J., assignor.)						
Steinecke, Reinhold, New York, N. Y. Nested boxes	402,856	May 7	460	122	47	750
Steiner, Henry W., Easton, Pa. Weather-strip and door-sill combined	405,808	June 25	2156	567	47	1670
Steiner, Martin, Erie, Pa. Ice-creeper	405,381	June 18	1483	393	47	1532
Steinhoff, Alexander, Briesnitz, near Dresden, Saxony, Germany. Electrically-controlled apparatus for treating emphysema	402,779	May 7	340	88	47	736
Steinle, William M., Pittsburg, assignor of one-half to J. Bowman, Allegheny, Pa. Cigar-making machine	401,599	Apr. 16	1784	[illegible]	47	358
Steinmann, Frank, St. Louis, Mo. Steam pumping-engine	400,877	Apr. 2	670	[illegible]	47	128
Stephenson, James. (See Snyder and Stephenson.)						
Stephenson, John, New York, N. Y. Brake-shoe for car-tracks	403,229	May 14	1025	270	47	885
Stephenson, John, New York, N. Y. Car-truck brake	403,298	May 14	1135	300	47	885
Stephenson, John, New York, N. Y. Track-brake for cars	403,299	May 14	1136	301	47	885
Stephenson, John, New York, N. Y. Car-track-brake housing	403,300	May 14	1137	301	47	886
Stephenson, John, New York, N. Y. Draw-gear for cable cars	403,301	May 14	1139	301	47	886
Stephenson, John, New York, N. Y. Car-truck guard	403,302	May 14	1140	302	47	886
Stephenson, John, New York, N. Y. Cable-grip carrier	403,303	May 14	1141	[illegible]	47	887
Stephenson, John, New York, N. Y. Cable-car truck	403,304	May 14	1294	339	47	915
Stephenson, John, New York, N. Y. Cable-grip car	403,305	May 14	1297	339	47	915
Stephenson, John F. (See Sanford, John L., assignor.)						
Sterick, Sylvester T. F., Gaithersburg, Md., assignor of two-thirds to M. V. Tierney and L. C. Wood, Washington, D. C. Game-board	402,112	Apr. 23	2570	667	47	516
Sternbergh, James H., Reading, Pa. Screw-cutting machine	401,600	Apr. 16	1791	470	47	359
Sternbergh, James H., and R. Pemberton, Reading, Pa.; said Pemberton assignor to said Sternbergh. Screw-cutting machine	401,601	Apr. 16	1794	470	47	360
Stettheimer, Jacques R., assignor of one-half to W. N. Oothout, Rochester, N. Y. Fan attachment	402,283	Apr. 30	2824	730	47	574
Stewart, William F., Blackbanks, St. Simon's Island, Ga. Oyster-opener	402,867	May 7	470	123	47	750
Stevens, Abram W. and L. W., W. M. Brinkerhoff, and L. D. Swart, assignors to A. W. Stevens & Son, Auburn, N. Y. Spring harrow-tooth	405,923	June 25	2333	613	47	1702
Stevens, Benjamin D., Burlington, Vt. Lamp-extinguisher	401,896	May 21	2022	532	47	1065
Stevens, Benjamin D., assignor of one-half to T. S. Peck, Burlington, Vt. Planing-machine	405,280	June 18	1342	354	47	1503
Stevens, Irving D. (See Eberhart and Stevens.)						
Stevens, Joel W., assignor to himself and R. Bines, Chicago, Ill. Apparatus for feeding boilers or water-tanks	405,615	June 18	1848	489	47	1607
Stevens, Le Roy W. (See Stevens, Brinkerhoff, and Swart.)						
Stevens, Philo M., Toledo, Ohio. Hose-coupling	405,748	June 25	2081	546	47	1655
Stevens & Son, A. W. (See Stevens, Brinkerhoff, and Swart, assignors.)						
Stevens, Vernon R., Bridgeport, Conn. Pipe-cutter	401,387	Apr. 16	1452	383	47	297
Stevens, William N. (See Mitchell and Stevens.)						
Stevens, William X., Washington, D. C. Automatic switch	400,802	Apr. 2	558	153	47	107
Stevenson, George H. (See Baldwin, George W., assignor.)						
Steward, Aurelius. (See Dial, Steward, and Dimond.)						
Steward, John F. (See Kennedy and Steward.)						
Steward, John F., Chicago, Ill. Corn-harvesting machine	401,388	Apr. 16	1453	384	47	297
Steward, John F., Chicago, Ill. Harvester-reel	401,665	Apr. 16	1888	492	47	376
Stewart, Archibald, Keota, Iowa. Scraper	401,911	Apr. 23	2260	588	47	457
Stewart, Archibald, Keota, Iowa. Grain-meter	403,396	May 14	1298	340	47	916
Stewart, Charles. (See Bradsby, William B., assignor.)						
Stewart, James, assignor of one-half to E. C. Stanton, New York, N. Y. Incandescent lamp	403,397	May 14	1300	340	47	916
Stewart, John A. (See Tebbetts, Pope, and Stewart.)						
Stewart, R. Hays, and L. D. Chambers, Island, Pa. Stop-plate for buggies	401,692	Apr. 16	1796	471	47	360

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Stewart, Sylvester N., Philadelphia, Pa. Ponton bridge	401,765	Apr. 23	2040	533	47	416
Stickney, Allison M., Medford, Mass. Lever-clutch	403,562	May 21	1538	404	47	970
Stiles, Frederick, assignor of two-thirds to R. L. Harrell and H. A. Burns, Burnet, Tex. Wire-stretcher	403,020	May 21	1618	428	47	986
Stillwell, Charles B., assignor to Union Paper Bag Machine Company, Philadelphia, Pa. Paper bag	405,616	June 18	1849	490	47	1607
Stimpson, Edwin B., Brooklyn, N. Y. Suspenders	403,230	May 14	1026	271	47	865
Stimpson, Edwin B., 2d, and E. B. Stimpson, 1st, deceased, (E. B. Stimpson, 2d, executor,) Brooklyn, N. Y. Foot-measuring machine	404,994	June 11	909	240, 241	47	1411
Stine, Jacob, Martinsburg, W. Va. Washing-machine	402,041	Apr. 23	2461	641	47	495
Stinernck, William A. (See McNeal and Stinernck.)						
Stinson, James C., assignor of one-third to J. K. Bywaters, Paris, Tex. Adding-machine	405,924	June 25	2334	613	47	1702
Stockburger, Samuel E., Canton, Ohio. Exercising-bar	405,128	June 11	1095	292	47	1449
Stocking, Edgar B. (See Hathaway and Stocking.)						
Stocking, Edgar B., Washington, D. C. Cash and parcel carrier	405,332	June 18	1415	373	47	1519
Stockman, Teresa I., Council Bluffs, Iowa. Dress-cutter's rule	400,504	Apr. 2	112	30	47	25
Stockstrom, Charles A., assignor of one-half to L. Stockstrom, St. Louis, Mo. Gasoline-stove attachment. (Reissue)	11,007	June 11	1278	337	47	1484
Stockstrom, Louis. (See Stockstrom, Charles A., assignor.) (Reissue.)						
Stockton Combined Harvester and Agricultural Works. (See Lanfenburg, Michael N., assignor.)						
Stockwell, Charles A., and W. D. Ensor, Baltimore, Md. Sad-iron	405,617	June 18	1851	490	47	1607
Stockwell, Emory, assignor to Yale & Towne Manufacturing Company, Stamford, Conn.) Bolt-work mechanism	403,563	May 21	1539	404, 405, 406	47	970
Stodard, Andrew M., Eureka, Kans. Weather-strip	404,445	June 4	101	23	47	1245
Stoddard, Oscar, Detroit, Mich. Combined easel and sheet-music cabinet	401,389	Apr. 16	1456	384, 385	47	998
Stofel, Ira B., Natrona, and C. R. Cuthbert, Pittsburg, Pa. Shoe-lace fastener	402,546	Apr. 30	3232	630	47	651
Stogsdill, Benjamin R., and W. A. Worley, Carl Junction, Mo. Coupling-pole for lumber-wagons	403,021	May 21	1619	428	47	986
Stoker, Herman, Potosi, Wis. Grain-separator	400,965	Apr. 9	811	216, 217	47	165
Stokes, Hilyard, assignor to F. S. Hovey, Beverly, N. J. Composition for preserving wood	403,449	May 14	1369	.....	47	929
Stollwerck, Gebr. (See Stollwerck, Heinrich, assignor.)						
Stollwerck, Heinrich, assignor to Gebr. Stollwerck, Cologne-on-the-Rhine, Prussia, Germany. Preparing soluble cocoa	401,311	Apr. 9	1328	.....	47	261
Stoltze, Henry, Sr., Manitowoc, Wis. Apparatus for raising quicksand	404,741	June 4	533	137	47	1329
Stone, David K., assignor of one-half to A. Taylor, Bloomingdale, Mich. Thill-coupling	400,578	Apr. 2	672	183	47	129
Stone, George W., Jr., Waukesha, Wis. Locomotive-cab seat	404,662	June 4	434	109	47	1309
Stone, Jabez, Waterford, N. Y. Adjustable multiple-cutter boring-bar	403,154	May 14	894	236	47	840
Stone, James, *et al.* (See Gardner, Marshall, assignor.)						
Stone, John W., and A. Colman, assignors of one-third to E. Baker, St. Lawrence, Dak. Ter. Kitchen-cabinet and flour-chest	402,113	Apr. 23	2572	667	47	516
Stone, Joseph, Boston, assignor to Nelson Chemical Company, Newton, Mass. Bottle	402,042	Apr. 23	2461	642	47	495
Stone, Maynard L. (See Stone, Roscoe G., assignor.)						
Stone, Oron. (See Ransom, Ezra, assignor.)						
Stone, Roscoe G., assignor of one-half to M. L. Stone, Warwick, R. I. Wagon-seat	401,079	Apr. 9	975	259	47	194
Stoner, Riley. (See Beebe and Stoner.)						
Stong, John N., Woodbridge, Ontario, Canada. Mechanism for opening gates	402,998	May 7	642	170	47	785
Stoops, William H., assignor to J. S. Salmon, Boonton, N. J. Sealed lock for cans	400,505	Apr. 2	112	30	47	26
Storie, James D., Oshawa, Ontario, Canada. Feed mechanism for chain-link machine	404,742	June 4	534	137	47	1330
Storie, Ole O., Milwaukee, Wis., assignor of one-half to J. H. Gordon, Rochester, N. Y. Grain-binder	404,508	June 4	212	50, 51	47	1264
Story, William S. (See Shepherd and Holmes, assignors.)						
Stouffer, Hiram C., assignor of one-half to E. Blunt, Mineral Ridge, Ohio. Pick	400,803	Apr. 2	560	153	47	107
Stouffer, Joseph W. (Stouffer, Luther, assignor.)						
Stouffer, Luther, assignor of two-fifths to J. W. Stouffer, St. Joseph, Mo. Vehicle-spring	400,506	Apr. 2	114	30	47	26
Stout, Isaac, Mackinaw, Ill. Car-coupling	404,743	June 4	539	138	47	1331
Stover, Cochran C., Bradford, Pa. Well-pumping rig	404,744	June 4	540	139	47	1331
Stowell, Theodore B. (See Lafloe, Edward, assignor.)						
Strachan, Joseph, Brooklyn, N. Y. Combined tobacco-tamp and pipe-stem cleaner	400,966	Apr. 9	813	216	47	165
Strader, Julius G., assignor of two-thirds to W. N. Page and D. T. Evans, Powellton, W. Va. Nut-lock	403,968	May 28	2127	557	47	1094
Stranahan, Henry B., Cleveland, Ohio. Stamping-press	402,929	May 7	643	170	47	785
Strange, Edwin F., assignor of one-half to E. W. Strange, Taunton, Mass. Truck	401,470	Apr. 16	1577	417	47	320
Strange, Elias W. (See Strange, Edwin F., assignor.)						
Strasser, John, assignor of one-half to D. C. Taylor, Manchester, Mo. Current-wheel	403,493	May 14	1437	378	47	942
Strater, Francis A., Boston, Mass. Drain for sinks, wash-bowls, &c.	404,060	May 28	2281	597	47	1121
Straton, James. (See Gillett, Webster, assignor.)						
Straub, Alfred H. F., Los Angeles, Cal. Steam-engine	404,573	June 4	311	78	47	1294
Straub, Ambrose W., Philadelphia, Pa. Sub-river tunnel	400,804	Apr. 2	561	153	47	107
Straub, Frederic, Surprise, Nebr. Storm-sash ventilator	405,189	June 11	1200	319	47	1469
Stranch, Albert T., New York, N. Y. Repeating-action for grand pianos	404,856	June 11	741	189	47	1378
Straumann, Charles, Jersey City, N. J. Operating mechanism for the cloth-beams of looms	400,879	Apr. 2	672	184	47	129
Strans, Aaron. (See Gracey and Keech, assignors.)						
Straus, Aaron, and M. B. Jacoby, St. Louis, Mo.; said Jacoby assignor to said Straus. Chair attachment	405,919	June 25	2329	612	47	1701
Strauss, Carl, New York, N. Y. Scarf-fastener	402,868	May 7	471	123	47	750
Street, Thomas, assignor to himself and E. Whitlock, Richmond, Va. Trolley for electric railways	403,969	May 28	2128	557	47	1094
Strebig, John P., Philadelphia, Pa. Gage-cock	405,129	June 11	1096	292	47	1449
Street, Samuel T., Deposit, N. Y. Railway-signal	400,580	Apr. 2	674	184	47	129
Streeter, Daniel A., Waterbury, Conn. Pipe-laying apparatus	400,881	Apr. 2	675	184	47	129
Streeter, Sumner F., Greenfield, Mass. Spring-hinge	403,494	May 14	1438	378	47	942
Strickland, James. (See Greenway and Strickland.)						
Strickler, William H., and J. S. Braddock, Mount Pleasant, Pa. Motor for churns	400,507	Apr. 2	115	30	47	26
Stringer, John W., Marion, Ohio. Reversing mechanism for engines	400,865	Apr. 2	565	155	47	108
Stringer, John W., Marion, Ohio. Gearing for road-engines	403,000	May 7	644	170	47	785
Strom, Axel A., Austin, assignor to Strom Manufacturing Company, Chicago, Ill. Switch-rail chair	401,312	Apr. 9	1329	253	47	262
Strom, Axel A., Austin, assignor to Strom Manufacturing Company, Chicago, Ill. Lifting-jack	401,722	Apr. 16	1973	516	47	393

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Strom, Axel O., Austin, assignor to Strom Manufacturing Company, Chicago, Ill. Tie-bar clip for split switches	403,897	May 21	2024	532	47	1066
Strom, Axel A., Austin, assignor to Strom Manufacturing Company, Chicago, Ill. Tie-bar clip for split switches	406,008	June 25	2479	648	47	1798
Strom Manufacturing Company. (See Strom, Axel A., assignor.)						
Stromberg, Alfred, assignor to Western Electric Company, Chicago, Ill. Telephone-switch	405,382	June 18	1483	393	47	1533
Stromberg, William. (See Hotchkiss, Edward, assignor.)						
Strong, Frederick S., assignor to Carver Cotton Gin Company, East Bridgewater, Mass. Sole-leveling machine	403,495	May 14	1439	377	47	942
Strong, George S., New York, N. Y. Making car-wheels	402,696	May 7	212	55	47	730
Strong, John A., Caln, Kans. Box-fastener	403,398	May 14	1301	340	47	916
Strother, Rolland G., Findlay, Ohio. Grain-drill	402,697	May 7	213	56	47	703
Stroud, Wiley N., Waxahachie, Tex. Wheel	401,060	Apr. 9	976	260	47	195
Stuart, John. (See Schröder, Heinrich L. H., assignor.)						
Stuart, John M., Boston, Mass. Annunciator-drop	402,043	Apr. 23	2463	642	47	495
Stuart, Sinclair, Plainfield, N. J. Separator	403,704	May 21	1739	457	47	1011
Stuart, William G., Numhead, county of Surrey, assignor of one-half to A. H. Bellingham, Peckham, England. Car-coupling	400,508	Apr. 2	116	31	47	27
Stubbers, Joseph, Cincinnati, Ohio. Oven for vapor or gas stoves	401,721	Apr. 16	1974	516	47	393
Stubblebine Patent Company. (See Stubblebine, William, assignor.)						
Stubblebine, William, Bethlehem, assignor to Stubblebine Patent Company, Philadelphia, Pa. Metallurgical furnace	404,369	May 28	2768	718	47	1216
Stubbs, Charles E., Fairfield, Iowa. Necktie-fastener	405,925	June 25	2337	614	47	1702
Stuck, Levi, Hart, Mich. Regulating-valve for dental vulcanizers	401,391	Apr. 16	1458	385	47	298
Studstill, John L. (See Welch, Michael L., assignor.)						
Stuebner, Gustavus L., Long Island City, N. Y. Coal-conveyer	402,284	Apr. 30	2825	730, 731	47	574
Sturges, F. C., trustee. (See Dimmick and Smith, assignors.)						
Sturm, Christian, Buffalo, N. Y. Hopper-valve	401,081	Apr. 9	976	261	47	195
Sturtevant, Thomas L., Framingham, Mass. Steam-generator	403,971	May 28	2131	558	47	1094
Sturtevant, Thomas L., Framingham, Mass. Apparatus for automatically regulating temperature of steam-generating tubes	403,972	May 28	2133	558	47	1095
Sturtevant, Thomas L., Framingham, and M. G. Davis, Somerville, Mass. Attrition-mill	403,970	May 28	2130	557	47	1094
Stut, John C. H., San Francisco, Cal. Valve-gear for compound engines	404,509	June 4	216	51, 52	47	1264
Stutzman, Frank. (See Arndt and Stutzman.)						
Suckow, Edmund, Buffalo, N. Y. Surface-current or tide motor	405,722	June 25	2041	536	47	1647
Sullivan, Cornelius P. (See Lowe and Sullivan.)						
Sullivan, Hugh J., Milwaukee, Wis. Pipe-supporting device	403,564	May 21	1543	406	47	971
Sullivan, John N., *et al.* (See Bryant, John C., assignor.)						
Sullivan, Philip B., Tuscarora, Nev. Safety device for elevators	402,780	May 7	342	88	47	727
Sully, Osborne E., Spencer, Iowa. Ribbon-holder	403,155	May 14	896	236	47	840
Summers, Benjamin, Petersburg, assignor of one-half to C. C. North, Huntingdon, Pa. Stamp-canceler	404,574	June 4	313	75	47	1284
Sumner, Alanson A. (See Bingham, Solon, assignor.)						
Sundeen, Alfred, and S. B. Molander, Mora, Minn. Soldering-iron	400,569	Apr. 2	117	32	47	27
Superior Drill Company. (See Patrie, Charles E., assignor.)						
Superior Drill Company. (See Patrie and Packham, assignors.)						
Superior Drill Company. (See Patrie and Rodgers, assignors.)						
Suppes, Max. M., Johnstown, Pa., assignor to Johnson Company, of Kentucky. Slot-rail for cable roads	405,231	June 11	1259	334	47	1480
Sutcliffe, Ely and G. E., Halifax, county of York, England. Sliver-coiling can for carding-engines	403,304	May 14	1142	303	47	887
Sutcliffe, Ely and G. E., Halifax, county of York, England. Apparatus for washing, bleaching, and dyeing	403,305	May 14	1143	303, 304	47	887
Sutcliffe, George E. (See Sutcliffe, Ely and G. E.)						
Sutcliffe, Hamlet, Oakland, Cal. Fire-grate	406,009	June 25	2480	648	47	1726
Sutcliffe, William W., New Orleans, La. Steam-boiler	401,683	Apr. 16	1797	471	47	360
Sutherland, Caroline V., Lathrop, Cal. Ointment	400,967	Apr. 9	814	.....	47	166
Sutherland, James, Philadelphia, Pa. Calico-printing machine	403,001	May 7	646	171	47	786
Sutterley, Gilbert T., Philadelphia, Pa. Brace	401,604	Apr. 16	1799	471	47	361
Sutton, Benjamin F., Brooklyn, N. Y. Tube-rest for syringes	402,925	Apr. 30	2826	731	47	574
Sutton, Simon T., Chicago, Ill. Full tights	402,202	Apr. 30	2709	703	47	552
Swain, Charles F., Methuen, Mass. Circular-knitting machine	400,510	Apr. 2	118	32	47	27
Swan, Henry C., Oshkosh, Wis. Vehicle-spring	403,022	May 21	1620	429	47	986
Swann, Fredrick. (See Lawton, Swann, and Whitehead.)						
Swann, John, *et al.* (See Ethridge, Martin V. B., assignor.)						
Swann, Richard T. (See Swann, Warner M. and R. T.)						
Swann, Warner M. and R. T., Dallas, Tex. Cotton-gin brush	403,973	May 28	2135	558	47	1095
Swanson, Martin, Crookston, Minn. Grading and ditching machine	402,781	May 7	343	88, 89	47	727
Swart, Lester D. (See Stevens, Brinkerhoff, and Swart.)						
Swartzwelder, Harrison, *et al.* (See Allfree, James B., assignor.)						
Sweet, Donald C., *et al.* (See Altenburg, Augustus, assignor.)						
Sweet, George, Dansville, N. Y. Harrow	402,029	May 7	113	27, 28	47	685
Sweet, Stephen R., assignor of two-thirds to W. Ackerman, Lima, Ohio. Bow-facing oar	402,114	Apr. 23	2573	667	47	516
Sweet, William A. (See Cartwright, Robert, assignor.)						
Swem, James M., Denver, Colo. Mechanism for operating switch-points	404,446	June 4	102	25	47	1245
Swenson, Alfred, Greenview, assignor to P. J. Palmquist, Menard, Ill. Car-coupling	404,575	June 4	314	75	47	1284
Swetitsch, Josef, assignor of one-half to J. H. Raap, Chicago, Ill. Refrigerator	403,789	May 21	1868	491	47	1036
Swett, Charles F., assignor of two-thirds to C. E. Morse and C. E. Kershaw, Jr., Auburn, Me. Saddle for velocipedes	403,078	May 7	776	205	47	808
Swett, Sullivan C. (See Webb and Swett.)						
Swift, Orrin W., New Haven, Conn. Die for shaping sheet metal	405,618	June 18	1852	490	47	1607
Swift, Robert. (See Brewster and Swift.)						
Swindell, William, Allegheny, Pa. Open-hearth melting-furnace	402,762	May 7	345	89, 90	47	727
Swope, Horace G. (See McSherry and Swope.)						
Symonds, Herbert, assignor to Mosler & Bro., St. Louis, Mo. Window-cap	405,232	June 11	1260	334	47	1480
Sypher, Abraham J., Iron Mountain, Mo. Rock-drill	403,496	May 14	1441	377, 378	47	942
Sypher, Abraham J., Iron Mountain, Mo. Steam rock-drill	405,127	June 11	1094	291	47	1449
Tack, Jean. (See Messerer, Stephan, assignor.)						
Taft, George C. (See Goulding, Alfred, assignor.)						
Taft, Stephen C., assignor of one-half to J. E. Clark, Franklin, Mass. Wool-washing machine	405,619	June 18	1853	491	47	1608

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Taggart, Francis, Brooklyn, assignor to M. A. S. Flostroy, New York, N. Y. Pulverizer	405,281	June 18	1343	354	47	1503
Taglialue, Charles J., Brooklyn, N. Y. Thermometer-case	400,717	Apr. 2	422	114	47	84
Tailleur, Georges E., Schenectady, N. Y. Underground conductor	404,877	June 11	744	189	47	1378
Tainter, Daniel W., *et al.* (See Barry, James, assignor.)						
Tainter, Jeremiah B., Menomonee, and N. B. Noble, Rice Lake, Wis. Snap-hook	400,511	Apr. 2	120	36	47	27
Tainter, William H. H., *et al.* (See Barry, James, assignor.)						
Talcott, Richard H. L., Boston, Mass. Mount for photographs	405,130	June 11	1097	309	47	1449
Talley, James, Denver, Colo. Ore washer	402,698	May 7	214	58	47	704
Tallmadge, Hiram P., Boston, Mass. Grate	403,002	May 7	647	171	47	786
Tallmage, Horace K., Buffalo, N. Y. Hot-air register	405,620	June 18	1855	491	47	1608
Talmadge, Joseph H., Cortland, N. Y. Spring-vehicle	405,857	June 25	2227	585	47	1684
Tanaka, Shohé, Awaji, Japan. Transposing key-board	403,304	May 14	1146	304	47	888
Tanger, David B., Bellefontaine, Ohio. Hay gatherer and elevator	405,926	June 25	2338	614	47	1702
Taplin, Alvin, assignor to Bristol Brass and Clock Company, Forestville, Conn. Wick-raiser for lamps	404,121	May 28	2378	623	47	1144
Tappey, Leopold C., Jr., New York, N. Y., and C. A. Evans, Philadelphia, Pa. Car-ventilator	402,044	Apr. 23	2464	642	47	496
Tarr, Asa F., Rockport, Mass. Wash-boiler	405,056	June 11	1002	267	47	1431
Tatum, Alonzo J., Finch, Ark. Colter-band	403,399	May 14	1302	340	47	916
Tatum, Charles A., assignor to Whitall, Tatum & Co., New York, N. Y. Bottle-stopper and faucet	404,122	May 28	2379	624	47	1144
Taylor, Albert. (See Stone, David K., assignor.)						
Taylor, Alfred, deceased, Bridgeport, Conn.; T. P. Taylor administrator. Apparatus for making garment-stays	404,124	May 28	2381	624	47	1144
Taylor, Alfred, deceased, Bridgeport, Conn.; T. P. Taylor administrator. Apparatus for making garment-stays	404,125	May 28	2383	625	47	1145
Taylor & Boggis Foundry Company. (See Clemes, William H., assignor.)						
Taylor Brothers. (See Taylor, Walter A., assignor.)						
Taylor, Charles, Elizabeth, assignor of one-half to O. D. Levis, Pittsburg, Pa. Journal-bearing for vehicle-wheels	402,286	Apr. 30	2927	752	47	574
Taylor, Clarence W., Janesville, Wis. Portable scrap-file	400,968	Apr. 9	815	218	47	166
Taylor, Clarence W., Janesville, Wis. Key	405,621	June 18	1856	491	47	1608
Taylor, De Witt C. (See Straszer, John, assignor.)						
Taylor, Elbert C., Humanaville, assignor of three-fourths to W. B. Humphreys, F. H. Babbs, Stockton, and A. W. Mitchell, Humanaville, Mo. Filling teeth	404,745	June 4	540	138	47	1331
Taylor, Fannie T., Mamaroneck, N. Y. Letter-box	403,790	May 21	1870	492	47	1036
Taylor, Francis C., New York, N. Y., assignor of two-thirds to R. C. Campbell, Philadelphia, Pa., and W. K. Peck, Grand Rapids, Mich. Detergent	401,766	Apr. 23	2041	.....	47	417
Taylor, Frederick W., Philadelphia, Pa. Lawn-tennis net	401,092	Apr. 9	978	261	47	195
Taylor, Frederick W., Philadelphia, Pa. Car-wheel	404,126	May 28	2384	625	47	1145
Taylor, George J., Salt Lake City, Utah Ter. Velocipede	404,123	May 28	2380	624	47	1144
Taylor, George R., Louisville, Ky. Elevated and suspended cable railway	402,490	Apr. 30	3151	816	47	635
Taylor, Harrison H., assignor to Michigan Radiator and Iron Manufacturing Company, Detroit, Mich. Machine for cutting right and left threads on nipples	403,791	May 21	1871	492	47	1037
Taylor, Harrison H., assignor to Michigan Radiator and Iron Manufacturing Company, Detroit, Mich. Machine for assembling radiator-loops	404,746	June 4	541	138 / 139	47	1331
Taylor, Harvey D., Keeseville, N. Y. Pliers for applying couplings of wire	400,512	Apr. 2	123	33	47	27
Taylor, Hilbert E. (See Barney and Taylor.)						
Taylor, James S., Wichita, Kans. Checkrein-hook	405,927	June 25	2341	615	47	1703
Taylor, John. (See Davidson and Taylor.)						
Taylor, Joseph, Shingle Springs, Cal. Swaging device	402,045	Apr. 23	2465	642	47	496
Taylor, Joseph S., Jr., *et al.* (See Welch, Rosia W., assignor.)						
Taylor, Kenner, Frankfort, Ky. Cork-extractor	405,383	June 18	1484	393	47	1533
Taylor, Nathan W. (See Campbell, Henry H., assignor.)						
Taylor, Silas. (See Davis, James M., assignor.)						
Taylor, Theodore, Cedarville, Cal. Pneumatic alarm for railways	401,471	Apr. 16	1578	417	47	320
Taylor, Theodore, Cedarville, Cal. Electric railway-track alarm	401,472	Apr. 16	1579	418	47	321
Taylor, Theodore A., and W. H. Diamond, Poughkeepsie, N. Y. Rack-box for bottles	402,203	Apr. 30	2712	703	47	552
Taylor, Thomas P., administrator. (See Taylor, Alfred.)						
Taylor, Walter A., assignor to Taylor Brothers, New Orleans, La. Steam-trap	400,718	Apr. 2	423	114 / 115	47	84
Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Lock	403,705	May 21	1740	458	47	1011
Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Lock	403,706	May 21	1742	458	47	1011
Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Lock	405,057	June 11	1003	268	47	1432
Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Lock	405,131	June 11	1098	292 / 293	47	1450
Taylor, William, Allegheny, Pa. Gripping-die	401,912	Apr. 23	2361	588 / 589	47	457
Taylor, William, Allegheny, Pa. Drawing wire of one sectional form into wire of another sectional form	404,319	May 28	2090	699	47	1201
Taylor, William, Allegheny, Pa. Nail	405,972	June 25	2416	633	47	1715
Taylor, William A., assignor of one-half to G. W. Leesintzer, Washington, D. C. Map-exhibitor	404,805	June 4	631	162	47	1349
Taylor, William H., *et al.* (See Chrisman, Joseph C., assignor.)						
Tebbetts, Lewis B., C. H. Pope, St. Louis, Mo., and J. A. Stewart, Houston, Tex., assignors to Deere, Mansur & Co., St. Louis, Mo. Plow	404,320	May 28	2092	699	47	1202
Teed, Charles W., Elmira, N. Y. Fish-hook guard	404,747	June 4	544	139	47	1332
Teed, Charles W., Elmira, N. Y. Fish-hook guard	404,233	May 28	2559	667	47	1177
Teeguarden, Freeman M., Colfax, Ind. Saw-table gage	402,630	May 7	114	28	47	686
Tector, Martin V., Sodus, N. Y. Support for endless clothes-lines	400,513	Apr. 2	123	33	47	28
Teetzel, John W., Ottawa, Ill. Locking device for tube or pipe sections	404,748	June 4	544	139	47	1332
Tefft, Charles B., Utica, N. Y. Attachment for stoves or ranges	403,307	May 14	1148	304	47	888
Teichmann, Richard, Brooklyn, N. Y. Mechanical toy	405,282	June 18	1344	355	47	1504
Teigen, Austin F., Watson, Minn. Washing-machine	401,767	Apr. 23	2041	534	47	417
Temple, Charles E., Terre Haute, Ind. Coffin-fastener	404,806	June 4	632	162	47	1350
Temple, Henry, assignor of one-half to W. Harrison, Grand Rapids, Mich. Stilt	405,928	June 25	2342	615	47	1703
Temple, Morris D., Chicago, Ill. Rubber bucket for chain-pumps	403,003	May 7	648	171	47	786
Toner, Commodore P., Hillsborough, Ohio. Device for trimming and filing finger-nails	402,363	Apr. 30	2948	764	47	597
Tenting, Henri, Paris, France. Gas-engine						
Tentschert, Florian. (See Cowburn and Tentschert.)						
Terriff, William W., Moorefield, Ontario, Canada. Washing-machine	402,783	May 7	346	90	47	728
Terry, Le Grand, Horseheads, N. Y. Soap-holder	403,623	May 21	1021	429	47	967

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Terstegge, Gohmann & Co. (See Gohmann, Romanus C., assignor.)						
Tesla Electric Company. (See Tesla, Nikola, assignor.)						
Tesla, Nikola, New York, N. Y. Operating electro-magnetic motors	401,520	Apr. 16	1646	435	47	333
Tesla, Nikola, assignor to Tesla Electric Company, New York, N. Y. Electro-magnetic motor	405,858	June 25	2228	586	47	1684
Tesla, Nikola, assignor to Tesla Electric Company, New York, N. Y. Electrical power transmission	405,859	June 25	2229	586	47	1685
Tetley, Thomas W., Sheffield, county of York, England. Music-leaf turner	403,792	May 21	1873	492 / 493	47	1037
Tewksbury, Joseph R., Fort Madison, Iowa. Vignetting attachment for photographic printing frames	401,083	Apr. 9	980	261 / 262	47	195
Thake, John, *et al.* (See Whitlock, Ephraim J., assignor.)						
Thatcher, Walter R., Oskaloosa, Iowa. Hay-cap	404,577	June 4	322	77	47	1286
Thayer, Albert F., Maple Hill, Kans. Car-dumping apparatus	404,447	June 4	105	26	47	1246
Thayer, Harry B., New York, N. Y., assignor to Western Electric Company, Chicago, Ill. Spring-jack switch	400,909	Apr. 9	817	218	47	166
Thayer, Isaac. (See Locke and Thayer.)						
Thayer, William H., Melrose, Mass. Reservoir for holding liquids under pressure	401,880	Apr. 23	2357	613	47	476
Thayer, William S., Owego, N. Y. Harness-girth	403,604	May 7	649	172	47	786
Theobald, John W. (See Aschenbach and Theobald.)						
Thistle, Edward. (See Budd and Carroll, assignors.)						
Thode, Gustav A., Holstein, Iowa. Check-row corn-planter	405,444	June 18	1581	418	47	1552
Thoma, Henry J., *et al.* (See Woll, Joseph E., assignor.)						
Thomas, Benjamin F., Denver, Colo. Magnetic pocket-book	402,491	Apr. 30	3154	816	47	636
Thomas, C. K., *et al.* (See Black, William J., assignor.)						
Thomas, Charles D., *et al.* (See Tyrrell, William M., assignor.)						
Thomas, Charles H., Hancock, Wis. Pipe-gripping attachment for wrenches	401,605	Apr. 16	1601	472	47	361
Thomas, Chauncey, Boston, Mass. Carriage	405,723	June 25	2043	536 / 537	47	1647
Thomas, Earl G., *et al.* (See Tyrrell, William M., assignor.)						
Thomas, Frederick A., Chicago, Ill. Cover for fruit-baskets	403,156	May 14	897	237	47	840
Thomas, George, assignor of one-third to J. H. Simpson, New York, N. Y. Mechanical telephone	401,227	Apr. 9	1201	321	47	237
Thomas, George H., Chicopee Falls, Mass. Button	401,084	Apr. 9	981	262	47	195
Thomas, Henry O., Cheyenne County, Nebr., assignor to W. Holt, Denver, Colo. Vegetable-parer	403,793	May 21	1874	493	47	1037
Thomas, J. R. (See Elkins, William F., assignor.)						
Thomas, John C., Jamestown, N. Y. Washing-machine	404,061	May 28	2282	597 / 598	47	1124
Thomas, Joseph, and G. Creter, New York, N. Y. Shuttle-carrier for quilting-machines	401,981	Apr. 23	2359	614	47	477
Thomas, Joseph H., Alliance, Ohio. Flour bin and sifter	403,974	May 28	2136	559	47	1095
Thomas, Joseph W., Sargent, Nebr. Side curtain for buggies	400,660	Apr. 2	258	70	47	54
Thomas, Levi H., Chicago, Ill. Lamp	403,400	May 14	1393	341	47	917
Thomas, Thomas C. J., Finsbury Park, county of Middlesex, England. Gas-lamp	402,204	Apr. 30	2713	704	47	553
Thomas, William. (See Xander and Thomas.)						
Thomas, William H., Jenkintown, Pa. Attachment for bolts	402,492	Apr. 30	3155	817	47	636
Thomas, William H., Jenkintown, Pa. Latch for sliding doors	402,493	Apr. 30	3156	817	47	636
Thomas, William J., Sancelito, Cal. Balanced piston for steam-engines	405,132	June 11	1100	293	47	1450
Thomas, William R., Catasauqua, Pa. Magnetic ore-separator	403,624	May 21	1022	429	47	987
Thompson, Addison, Clear Lake, Iowa. Combined whip-socket and rein-holder	405,133	June 11	1100	293	47	1450
Thompson, Albert F., Adel, Iowa. Watch-maker's tool	404,837	June 11	928	244	47	1305
Thompson, Caleb M., Greenville, Pa. Sand-reel	402,631	May 7	115	28	47	686
Thompson, Colin M., Brooklyn, N. Y. Rope or cable	400,970	Apr. 9	818	219	47	166
Thompson, David W., Englewood, Ill. Commutating device	401,801	Apr. 23	2102	549	47	427
Thompson, Edward P., Elizabeth, N. J. Manufacture of carbon filaments	401,606	Apr. 16	1602	472	47	362
Thompson, Edward P., Elizabeth, N. J. Manufacture of incandescing carbon filaments	401,607	Apr. 16	1604	472	47	362
Thompson, Edward P., Elizabeth, N. J. System of electrical distribution	403,308	May 14	1148	305	47	888
Thompson, Frank H., and G. P. Torney, Philadelphia, Pa. Device for securing tools to handles	404,663	June 4	435	109	47	1309
Thompson, George D., Lockland, Ohio. Attachment for photographic cameras	401,802	Apr. 23	2105	549	47	427
Thompson, George L., Chicago, Ill. Curling-iron	404,127	May 28	2386	625	47	1145
Thompson, George L., Chicago, Ill. Curling-iron	404,128	May 28	2387	626	47	1146
Thompson, George L., Chicago, Ill. Combined comb and curling-iron	404,129	May 28	2388	626	47	1146
Thompson, Henry L. (See Knapp and Thompson.)						
Thompson, John, Philadelphia, Pa. Cigar-machine	405,724	June 25	2044	537	47	1648
Thompson, John B., assignor of one-half to E. O. Ely, Boston, Mass. Nasal irrigator	403,794	May 21	1876	494	47	1038
Thompson, Robert J., Grandin, Mo. Dog attachment for log-cars	403,898	May 21	2025	532 / 533	47	1066
Thompson, Robert P. (See Thompson, William P. and R. P.)						
Thompson, Samuel, Chicago, Ill. Horseshoe and pad	400,514	Apr. 2	124	33	47	28
Thompson, Samuel, Englewood, Ill. Scraper	403,625	May 21	1022	430	47	987
Thompson, Samuel C., New York, N. Y. Surveyor's target	405,058	June 11	1005	268	47	1432
Thompson, Thomas J., Brooklyn, assignor to Matthews Decorative Glass Company, New York, N. Y. Chipping or crystallizing glass	405,283	June 18	1346	355	47	1504
Thompson, Walter, *et al.* (See Brewer, William J., assignor.)						
Thompson, William P. and R. P., Philadelphia, Pa. Valve for reducing and regulating pressure of fluids	401,962	Apr. 23	2361	614	47	477
Thomson & Co., Judson L. (See Unbehend, Jacob J., assignor.)						
Thomson Electric Welding Company. (See Lemp, Hermann, assignor.)						
Thomson Electric Welding Company. (See Thomson, Elihu, assignor.)						
Thomson, Elihu, Lynn, Mass. Apparatus for regulating current or potential in secondary of transformers	400,515	Apr. 2	125	33, 34	47	28
Thomson, Elihu, Lynn, Mass. Regulating current or potential in secondary of transformers	400,516	Apr. 2	129	34	47	29
Thomson, Elihu, Lynn, Mass. Alternating-current electric motor	400,971	Apr. 9	819	219	47	166
Thomson, Elihu, Lynn, Mass. Induction-coil and self-inductive apparatus	400,972	Apr. 9	821	219	47	167
Thomson, Elihu, Lynn, Mass. Armature for dynamo-electric machines	400,973	Apr. 9	824	220	47	167
Thomson, Elihu, Lynn, Mass. Lightning-arrester	401,005	Apr. 9	962	262	47	196
Thomson, Elihu, Lynn, Mass. Distribution of electric currents	401,608	Apr. 16	1605	472	47	362
Thomson, Elihu, Lynn, Mass. Electric meter	401,803	Apr. 23	2107	550	47	428
Thomson, Elihu, Lynn, Mass. Electric welding and shaping of metals	403,157	May 14	897	237	47	840
Thomson, Elihu, Lynn, Mass. Electric welding and brazing	403,708	May 21	1747	459	47	1012
Thomson, Elihu, Lynn, Mass. Electric meter	406,010	June 25	2480	648 / 649	47	1727

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Thomson, Elihu, Lynn, assignor to Thomson Electric Welding Company, Boston, Mass. Electric soldering, brazing, and welding	403,707	May 21	1744	429	47	1012
Thomson, John. (See Mead and Thomson.)						
Thomson, John, Kansas City, Mo. Suspended railway	405,059	June 11	1906	283	47	1432
Thomson, William, Glasgow, county of Lanark, Scotland. Azimuth-instrument	402,361	Apr. 30	2950	704	47	597
Thomson, William H., New York, N. Y. Base for fence-posts	405,445	June 18	1584	418	47	1553
Thone, Frank, Oskaloosa, Iowa. Dynamo-electric machine	405,224	June 18	1347	359	47	1504
Thorn, Theodore, St. Clair, Pa. Brick	400,974	Apr. 9	826	229	47	167
Thorne Machine Company. (See Freeman, Henry, assignor.)						
Thorne Machine Company. (See Nelson, Robert W., assignor.)						
Thornton, William W. (See Holand, George W., assignor.)						
Thorpe, Walter F. (See Messer and Thorpe.)						
Thorpe, Wesley C., Jr. (See Glenn, George W., assignor.)						
Thum, Hugo, Grand Rapids, Mich. Moistening press-copying leaves	402,205	Apr. 30	2716	705	47	553
Thum, Otto and W., Grand Rapids, Mich. Combined sticky fly-paper holder and trap. (Reissue)	11,000	Apr. 30	3242	841	47	653
Thum, William. (See Thum, Otto and W.) (Reissue.)						
Thurman, Robert W. (See Griswold, Thurman, and Wright.)						
Thurman, Robert W., assignor to Lone Jack Cigarette Company, Lynchburg, Va. Machine for making mouth-pieces or holders for cigars, cigarettes, &c	400,806	Apr. 2	566	135 156	47	108
Thurston, George P., San Francisco, Cal. Windmill	401,867	Apr. 23	2186	573	47	443
Tibbits, John B. (See Bottome, Turner D., assignor.)						
Tibbs, Charles, Vandalia, Ill. Gate	403,401	May 14	1305	341	47	917
Tice, Edwin A., London, county of Middlesex, England. Dental mirror	404,021	May 28	2201	578	47	1108
Ticehurst, Francis W. (See Edge and Ticehurst.)						
Tidball, Wellar A., Independence, and W. B. Von Stein, Fort Dodge, Iowa. Twine-holder	402,206	Apr. 30	2717	705	47	554
Tiemann, Fredrich W., Fort Wayne, Ind. Washing-machine	401,228	Apr. 9	1202	321	47	237
Tierney, Michael V., *et al.* (See Sterick, Sylvester T. F., assignor.)						
Tiers, Cornelius. (See Pendleton, Bryson, Tiers, and Moss.)						
Tiers, Cornelius. (See Pendleton, Tiers, Bryson, and Moss.)						
Tiers, Cornelius, New York, J. H. Pendleton, Brooklyn, and A. Bryson, Jr., assignors to Rapid Transit Cable Company, New York, N. Y. Grip for cable railways	404,576	June 4	315	75 76 77	47	1285
Tigner, James A., Gordon, La. Manure-distributer	401,768	Apr. 23	2043	534	47	417
Tillmann, Emanuel M. (See Goldberg and Tillmann.)						
Tillson, Isaiah N., Whitman, Mass. Mechanism for extinguishing the lights in railway-cars	404,749	June 4	545	140	47	1332
Timmons, Samuel H., Evansville, Ind. System of applying power to steam-vessels	404,578	June 11	745	190	47	1378
Tinker, George L., New Philadelphia, and W. S. Kline, Bolivar, Ohio. Bee-hive	400,517	Apr. 2	134	34, 35	47	29
Tinoco, José M. (See Carranza and Tinoco.)						
Tipton, Benjamin F. (See Monday and Tipton.)						
Titus, George B., Irondequoit, N. Y. Poisonous-powder duster	401,313	Apr. 9	1330	354	47	292
Tivy, William H., and L. Ehrlich, assignors to American Roll Paper Company, St. Louis, Mo. Paper-cutter	401,321	May 28	2094	599	47	1292
Tobey, Frederick W. (See Atwood and Tobey.)						
Toense, Carl G., Pittsburg, Pa. Windlass	405,446	June 18	1586	419	47	1553
Toepfer, Peter G., Milwaukee, Wis. Apparatus for malting grain	400,807	Apr. 2	568	136	47	109
Tomlinson, Edwin R., assignor of one-half to Eaton, Cole & Burnham Company, Bridgeport, Conn. Steam-whistle	405,622	June 18	1858	491 492	47	1608
Tompkins, Alfred S., Holmwood, Caterham, county of Surrey, England. Portable cooking-stove and utensils	404,578	June 4	321	77	47	1286
Tompkins, John D., Brainard, assignor to Tompkins Paper Stock Company, Albany, N. Y. Apparatus for treating vegetable substances	401,609	Apr. 16	1807	473	47	302
Tompkins, John D., Brainard, assignor to Tompkins Paper Stock Company, Albany, N. Y. Apparatus for treating vegetable substances	401,610	Apr. 16	1808	473	47	303
Tompkins Paper Stock Company. (See Tompkins, John D., assignor.)						
Tompkins, Samuel D., *et al.* (See Matlock, John N., assignor.)						
Tompkins, Samuel D., and T. H. Williams, Jersey City, N. J. Radiator	402,547	Apr. 30	3233	838	47	651
Tonkin, John J., assignor to T. Kingsford, Oswego, N. Y. Cut-off valve	401,983	Apr. 23	2362	614 615	47	477
Toohey, Matthew D., Galveston, Tex. Push-bar for locomotives	400,518	Apr. 2	136	35	47	29
Toomey, Samuel, Canal Dover, Ohio. Thill for sulkies	403,079	May 7	776	205	47	868
Töpfer, John, Brooklyn, N. Y. Straw-cutter	403,130	May 28	2290	624	47	1146
Toquet, Benjamin L., Westport, Conn. Hair-curling implement	404,664	June 4	436	109	47	1310
Toraya, José F., Havana, Cuba, assignor to Toraya Patent Gas Company, Philadelphia, Pa. Apparatus for the manufacture of gas	404,730	June 4	547	140	47	1333
Toraya Patent Gas Company. (See Toraya, José F., assignor.)						
Torney, George P. (See Thompson and Torney.)						
Totten, R. C. (See Melaney, William H., assignor.)						
Totten, Robert C. (See Melaney, William H., assignor.)						
Tower, George W., Boston, Mass. Machine for cutting screw-tape	400,882	Apr. 2	677	124 125	47	130
Tower & Lamont. (See Lamont, John, assignor.)						
Towle, Charles B., San Francisco, Cal. School-desk	403,795	May 21	1877	494	47	1038
Towle, Charles B., San Francisco, Cal. School-desk	403,796	May 21	1879	494	47	1038
Towne, Charles H., Chippewa Falls, Wis. Rack for newspaper-files	403,797	May 21	1880	494	47	1039
Townsend, Herman F., Plainfield, Vt., and C. T. Winslow, Woodsville, N. H. Flooring-jack	401,868	Apr. 23	2188	572	47	444
Tracy, Erwin J., Sioux Falls, Dak. Ter. Rack for hay-wagons	405,190	June 11	1260	310	47	1469
Tracy, Milton S., Glastonbury, Conn. Frying-pan	404,131	May 28	2391	626	47	1146
Tracy, William A. (See Greenleaf, Charles H., assignor.)						
Tracy, William P., Grand Rapids, Mich. Slide for dressing-cases	405,623	June 18	1859	492	47	1609
Tranell, Johan A., Chicago, Ill., assignor to McGuire Manufacturing Company, of Illinois. Forming rail-braces	403,450	May 14	1370	350	47	929
Trapp, Edward A., Brooklyn, N. Y. Optical device for the observation of localities by reflection	401,229	Apr. 9	1203	321	47	237
Trapp, Edward A., Brooklyn, N. Y. Drip-pan for elevated railways	404,751	June 4	549	140	47	1333
Traak, Ambrose. (See Donnelly, McLaren, and Traak.)						
Trant, Justus A., assignor to Stanley Rule and Level Company, New Britain, Conn. Sighting attachment for levels	402,869	May 7	471	123	47	751
Trant, Justus A., assignor to Stanley Rule and Level Company, New Britain, Conn. Sighting attachment for spirit-levels	405,624	June 18	1860	492	47	1609

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Trautmann, Wilhelm, Berlin, Germany. Dust-collector	403,798	May 21	1881	495	47	1039
Traver, Adelbert L., assignor of one-half to J. Aken, Piltmont, N. Y. Button-hole cutter for sewing-machines	400,975	Apr. 9	826	220 221	47	167
Traves, Charles E. (See Traves, Webester F. and C. E.)						
Traves, Webester F. and C. E., Los Angeles, Cal. Offer	402,632	May 7	116	28	47	686
Travis, William D. T., Burlington, N. J. Fire-extinguisher for ships	404,132	May 28	2392	627	47	1146
Travis, William H., Philadelphia, Pa., assignor to J. Densmore, Brooklyn, N. Y. Desk or cabinet	401,314	Apr. 9	1331	354	47	292
Treacy, Frank H., Poughkeepsie, N. Y., assignor to Palmer Torpedo Railway Signal Company, Plainfield, N. J. Interlocking signal apparatus for railway-switches	401,666	Apr. 16	1890	492	47	377
Treanor, James J., Hastings-upon-Hudson, N. Y. Railway-car	403,309	May 14	1150	306	47	889
Treat, Francis H., assignor of two-thirds to H. S. Smith and C. Pettigrew, Joliet, Ill. Rolling-mill	402,781	May 7	347	90 91 92	47	728
Treat, Francis H., assignor of two-thirds to H. S. Smith and C. Pettigrew, Joliet, Ill. Dust-catcher for blast-furnaces	404,807	June 4	633	162 163	47	1350
Treharn, Joseph L., assignor of two-thirds to J. S. Blacker and G. Gerstle, Cincinnati, Ohio. Shoe-sewing machine	404,448	June 4	106	26	47	1246
Treman, James C. (See Greene and Treman.)						
Tremblay, Eucher. (See Gale and Tremblay.)						
Trenner, Alfred B., Cincinnati, Ohio. Preparing fly-paper	402,870	May 7	472	123	47	751
Trethewey, Samuel, Pittsburg, Pa. Valve-gear for steam-hammers	400,519	Apr. 2	137	35	47	30
Trevitt, Constant S., and S. F. Monck, Lincoln, Nebr. Barbed fence	404,879	June 11	746	190	47	1378
Treweek, Joseph, Lead City, Dak. Ter. Tool-car for mines	404,510	June 4	219	52	47	1305
Tribe, Thomas, Colorado Springs, Colo. Hanging sliding curtains	405,331	June 18	1417	373	47	1519
Tripp, Charles H., Boston, Mass. Machine for spinning hemp, &c	402,785	May 7	351	92	47	729
Tripp, Herman, and L. Lattan, Chicago, Ill. Hasp-lock	402,987	Apr. 30	2718	705	47	554
Trost, Henry C., Chicago, Ill., and F. A. Weston, Dodge City, Kans. Sash-fastener	402,074	Apr. 23	2507	655	47	504
Trott, Charles F. (See Whiting, William S., assignor.)						
Trout, Hiram B., Terre Haute, Ind. Attachment for mining-machines	403,607	May 7	655	173	47	787
Truesdale, Charles, Cincinnati, Ohio. Molder's ladle or crucible	402,871	May 7	473	124	47	751
Truesdell, Lucius E., Bristol, N. H. Camp-chair	405,725	June 25	2047	538	47	1648
Tryon, Clarence E. (See Tryon, Le Roy C., assignor.)						
Tryon, Le Roy C., Marseilles, assignor of one-half to C. E. Tryon, Ottawa, Ill. Grain-weighing machine	402,872	May 7	474	124	47	751
Tschumy, Robert, Chattanooga, Tenn. Handle attachment for shovels, &c	404,310	May 14	1151	306	47	889
Tubbs, Henry C., assignor of one-half to J. W. Brown, Bangor, Mich. Hand-cultivator	404,995	June 11	912	241	47	1412
Tuch, Morris, Elmira, N. Y. Combination garment-pattern	402,046	Apr. 23	2466	643	47	496
Tucker, Charles. (See Tucker, Henry, C., and J.)						
Tucker, Edwin W., San Francisco, Cal. Surface-condenser	403,799	May 21	1882	495	47	1039
Tucker, Elias W., and A. P. Orr, Arcadia, Ind. Clothes-pounder	401,234	May 28	2360	607	47	1477
Tucker, Henry, C., and J. Tucker, deceased, (said H. and C. Tucker administrators,) Newark, N. J. Turning-machine	405,749	June 25	2083	546 547	47	1655
Tucker, Joseph. (See Tucker, Henry, C., and J.)						
Tucker, Stephen D., *et al.* (See Crowell, Luther C., assignor.)						
Tucker, Stephen D., New York, N. Y. Stop mechanism for cylinder printing-machines	401,473	Apr. 16	1580	418	47	321
Tuerk, Frederick W., Jr., assignor of two-thirds to J. C. Hunter, Syracuse, and J. Hunter, Sterling Valley, N. Y. Water-motor	400,976	Apr. 9	828	221	47	167
Tuerk, Frederick W., Jr., assignor of two-thirds to J. C. Hunter, Syracuse, and J. Hunter, Sterling Valley, N. Y. Water-motor	400,310	Apr. 2	259	71, 72	47	54
Tully, James W., San Francisco, Cal. Adjustable attachment and extension for fire-ladders	400,883	Apr. 2	679	185	47	130
Turman, William F., Weatherford, Tex. Rein-holder	404,511	June 4	220	52	47	1305
Turnbull, Henry C., Jr., trustee. (See Graf, Robert R., assignor.)	404,579	June 4	324	78	47	1286
Turner, Charles E. (See Turner, Joseph A., assignor.)						
Turner, Isaac J., Princeton, N. J. Chimney-cowl	402,365	Apr. 30	2951	765	47	597
Turner, James A., Evanston, Ill. Hinge	401,086	Apr. 9	984	262	47	196
Turner, Joseph A., assignor to C. E. Turner, St. Louis, Mo. Switch device for electric currents	400,808	Apr. 2	569	157	47	109
Turner, Robert R., Columbus, Ohio. Apparatus for producing gas	404,222	May 28	2694	700	47	1302
Turner, William E., and J. F. Hudson, Benkelman, Nebr. Axle-lubricator	403,008	May 7	656	173	47	787
Turton, Benjamin, assignor of three-fourths to J. L. Doremus, J. and H. Turton, Newark, N. J. Spring-motor	402,548	Apr. 30	3233	838 839	47	651
Turton, Harry, *et al.* (See Turton, Benjamin, assignor.)						
Turton, John, *et al.* (See Turton, Benjamin, assignor.)						
Tuttle, Clarence R., Chicago, Ill. Arm-support for telephones	400,590	Apr. 2	140	36	47	30
Tweedale, Edmund, assignor to J. Bullough, Accrington, county of Lancaster, England. Device for adjusting card-flats	405,625	June 18	1861	492 493	47	1609
Tweedale, Samuel, Accrington, county of Lancaster, England. Machine for opening and scutching cotton	404,133	May 28	2393	627	47	1146
Tweedy, George. (See Davis and Tweedy.)						
Twichell, Jerome, Kansas City, Mo. Furring-strip for walls or ceilings	400,521	Apr. 2	141	37	47	30
Tyler, Aaron J., Albion, N. Y. Hydrant	402,115	Apr. 23	2573	668	47	517
Tyler, Aaron J., Albion, N. Y. Pump-brake	402,116	Apr. 23	2578	668	47	518
Tyler, Joseph J., London, England. Rotary water-meter	402,786	May 7	352	92	47	729
Tynan, Joseph E., Paterson, N. J. Spindle for spinning and support therefor	402,699	May 7	216	57	47	704
Tyrrell, Charles D., *et al.* (See Tyrrell, William M., assignor.)	404,134	May 28	2396	628	47	1147
Tyrrell, Gordon M., New Haven, Conn. Buckle	404,323	May 28	2690	700	47	1303
Tyrrell, William M., assignor to E. G. and C. D. Thomas, Gloversville, N. Y. Glove or mitten	402,287	Apr. 30	2928	732	47	575
Tyson, Thomas, Mound City, Mo. Gate	400,611	Apr. 2	262	72	47	55
Tyson, Thomas, Mound City, Mo. Gate	401,315	Apr. 9	1332	334 335	47	293
Udelewitz, Carpel. (See Botkin, Abram, assignor.)						
Udstad, Sivert, Aurora, Ill. Rod-packing	401,984	Apr. 23	2364	615	47	477
Uhlinger, William P., Philadelphia, Pa. Double-lift open-shed dobby	403,565	May 21	1543	406 407	47	971
Ullman, Sabbati E., New York, N. Y. Serum-albumen peptone	402,494	Apr. 30	3157	.....	47	636
Ulrich, John. (See Wiesendanger and Ulrich.)						
Umstead, Daniel W., Earlington, Ky. Guide for piston-rods	405,511	June 18	1697	448	47	1577
Unbehend, Jacob J., assignor to J. L. Thomson & Co., Syracuse, N. Y. Riveting-machine	405,929	June 25	2343	615	47	1703
Underwood, Charles M., Hamilton, Ontario, Canada. Inscription and motto plate	405,830	June 25	2157	567	47	1670
Underwood, Walter H., Yonkers, N. Y. Reservoir-brush	403,566	May 21	1545	407	47	972

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Underwriters Hatch Door Company. (See Gridley, Frank J., assignor.)						
Unger, Martin L., assignor of one-half to J. Ritterbush, Nelson, Nebr. Car-coupling	405,285	June 18	1348	356	47	1505
Union Bearing and Lubricator Company. (See Goullioud, Louis, assignor.)						
Union Hydraulic Drain Tile Company. (See Sherman, Willis D., assignor.)						
Union Manufacturing Company. (See Poe, Isaac N., assignor.)						
Union Manufacturing Company. (See Van Horn, Nathaniel R., assignor.)						
Union Metallic Fastening Company. (See Welsh, Morries, assignor.)						
Union Paper Bag Machine Company. (See Stilwell, Charles B., assignor.)						
Union Special Sewing Machine Company. (See Dewees, John W., assignor.)						
Union Special Sewing Machine Company. (See Muther and Woodward, assignors.)						
Union Store Service Company. (See Church, Frank S., assignor.)						
Union Water Meter Company. (See Ball, Phinehas, assignor.)						
Union Water Meter Company. (See Conroy, James C., assignor.)						
United Electric Improvement Company. (See Currie, Stanley C. C., assignor.)						
United Electric Improvement Company. (See Smith, Walter F., assignor.)						
United Gas Improvement Company. (See Clark, Walton, assignor.)						
United States Electric Company. (See Short, Sidney H., assignor.)						
United States Electric Lighting Company. (See Kelly, John F., assignor.)						
United States Electric Lighting Company. (See Maxim, Hiram S., assignor.)						
United States Electric Lighting Company. (See Weston, Edward, assignor.)						
United States Gas and Fuel Company. (See Cummings, George K., assignor.)						
United States Gas and Fuel Company. (See Shallow, Edward, assignor.)						
United States Rolling Stock Company. (See La Mothe, Bernard J., assignor.)						
Universal Lock Company. (See Smith, Eugene C., assignor.)						
Universal Lock Company of New York. (See Smith, Eugene C., assignor.)						
Upham, Andrew J., Sycamore, Ill. Tank-heater	402,631	May 7	118	29	47	686
Upson, Edwin L., Hartford, Conn. Carriage-body joint	403,709	May 21	1748	449	47	1012
Uren, Andrew, Seattle, Wash. Ter. Snatch-block	402,208	Apr. 30	2719	705	47	554
Uren, Stephen, Sacramento, Cal. Slot-making attachment for bolt-heading machines	404,235	May 28	2561	668	47	1178
Uren, Stephen, Sacramento, Cal. Slot-making attachment for bolt-heading machines	404,580	June 4	325	78	47	1267
Urquhart, John, Sr. (See Medden and Urquhart.)						
Urrutia, Francisco P., Madrid, Spain. Heel for boots or shoes	402,366	Apr. 30	2952	765	47	598
Urschel, John H., Norton, Kans. Anvil and swage	405,191	June 11	1201	310	47	1469
Usine Génevoise de Dégrossissage d'Or. (See Ostermann and Lacroix, assignors.)						
Vaidis, Louise A., Chicago, Ill. Revolving trapeze	402,495	Apr. 30	3158	817, 818	47	636
Vail, Joseph, Garden Grove, Iowa. Felt boot	404,449	June 4	113	27	47	1247
Vail, Jonathan H., New York, N. Y. Feed-water heater	404,512	June 4	221	53	47	1265
Valentine & Company. (See Rose, Frank H., assignor.)						
Valentine & Grigg Motor Company. (See Valentine and Grigg, assignors.)						
Valentine, Joseph R., and A. T. Grigg, assignors to Valentine & Grigg Motor Company, Pueblo, Colo. Railway-motor	400,522	Apr. 2	142	37	47	30
Vallens, Eugene. (See Moos, Joseph B., assignor.)						
Valon, William A. M., Ramsgate, assignor of one-half to Continental Oxygen Company, (limited,) Westminster, England. Purifying gas	402,787	May 7	353	.....	47	729
Van Arsdale, Henry, Racine, Wis. Bolster-spring	405,192	June 11	1202	310	47	1470
Van Demark, William, Phelps, N. Y. Fountain-pen	401,985	Apr. 23	2365	615	47	478
Van Depoele, Charles J., Lynn, Mass. Alternating-current electric reciprocating engine	400,809	Apr. 2	571	137	47	109
Van Depoele, Charles J., Lynn, Mass. Reciprocating electric-engine system	401,231	Apr. 9	1208	342, 343	47	238
Van Depoele, Charles J., Lynn, Mass. Universal upward-pressure contact-arm	402,117	Apr. 23	2579	669	47	518
Van Depoele, Charles J., Lynn, Mass. Electric railway	403,201	May 21	1887	496	47	1040
Van Depoele, Charles J., Lynn, Mass. Electro-dynamic motor	404,394	May 28	2696	700, 701	47	1203
Van Depoele, Charles J., Lynn, Mass. Closed slotted conduit	404,325	May 28	2700	701	47	1203
Van Depoele, Charles J., Lynn, Mass. Switch for suspended electric conductors	405,627	June 18	1866	494	47	1610
Van Depoele, Charles J., Lynn, Mass. Closed slotted conduit for electric railways	405,628	June 18	1869	494, 495	47	1610
Van Depoele, Charles J., Lynn, Mass. Standing contact-arm	405,750	June 25	2085	547	47	1656
Van Depoele, Charles J., Chicago, Ill. Regulator for dynamo-electric machines	401,230	Apr. 9	1205	342	47	237
Van Depoele, Charles J., Chicago, Ill. Slotted conduit for electric conductors	403,609	May 7	656	173, 174	47	787
Van Depoele, Charles J., Chicago, Ill. Electric connection for railway-rails	403,610	May 7	660	174	47	788
Van Depoele, Charles J., Chicago, Ill. Electric locomotive	403,611	May 7	661	174, 175	47	788
Van Depoele, Charles J., Chicago, Ill. Slotted conduit for electric conductors	403,800	May 21	1885	496	47	1040
Van Depoele, Charles J., Chicago, Ill. Slotted conduit for electrical conductors	405,626	June 18	1862	493, 494	47	1609
Van Derveer & Holmes Biscuit Company. (See Fitz Gerald, Augustine F., assignor.)						
Van Derveer, Milton T., Amsterdam, N. Y. Amalgamator	405,447	June 18	1589	419	47	1554
Van Dorn, William L., Brooklyn, N. Y. Electric belt	402,367	Apr. 30	2953	766	47	598
Van Dorston, Alvin W., Washington, D. C., assignor to Van Dorston Cushioned Car Coupling Equipment Company, Portland, Me. Car-coupling	405,384	June 18	1485	394	47	1533
Van Dorston Cushioned Car Coupling Equipment Company. (See Van Dorston, Alvin W., assignor.)						
Van Dyke, Thomas E. (See Cox and Van Dyke.)						
Van Epps, Frank L., Hudson, Mich. Telegraph-sounder	403,626	May 21	1624	430	47	987
Van Gestel, Jean T., New York, N. Y. Secondary battery	405,751	June 25	2087	547	47	1656
Van Hagen, Isaac, assignor, by mesne assignments, to J. H. Raymond, trustee, Chicago, Ill. Lantern-frame	405,629	June 18	1875	496	47	1611
Van Horn, Nathaniel R., assignor to Union Manufacturing Company, Toledo, Ohio. Cover for sewing-machines	404,752	June 4	550	141	47	1333
Van Huffel, Peter. (See Niles and Van Huffel.)						
Van Nest, George, assignor of one-half to G. V. Clickener, Raritan, N. J. Nut-lock	404,370	May 28	2770	718	47	1217
Van Rysselberghe, François, Brussels, Belgium, assignor to himself, and Phono-Multiplex Telegraph Company, Baltimore County, Md. Harmonic telegraphy	400,523	Apr. 2	143	38	47	31
Van Woert, George S., Catskill, N. Y. Sample-envelope	400,524	Apr. 2	146	38	47	31
Van Zile, Edward S., assignor to E. A. Grozier and F. A. Duneka, New York, N. Y. Bulletin-board and base-ball indicator	402,700	May 7	217	57	47	704
Vancor, George W. (See Cook, Albert E., assignor.)						
Vanderbilt, William H. (See Cary, Spencer C., assignor.)						
Vanderburg, W. S. (See Batter, Frank, assignor.)						
Vangilder, J. F., *et al.* (See McClellan, James A., assignor.)						
Vanasteenkiste, Achille. (See Quénéhen and Vanasteenkiste.)						
Vardon, Maurice M., Toronto, Ontario, Canada. Case for displaying sheets of paper	405,630	June 18	1876	496	47	1611

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Vare, Thomas W., Trenton, N. J. Anvil-mold	402,368	Apr. 30	2954	706	47	598
Varley, John J. (See Barrett and Varley.)						
Vauclain, Samuel M., Philadelphia, Pa. Compound locomotive-engine	406,011	June 25	2484	649	47	1727
Vauclain, Samuel M., Philadelphia, Pa. Valve for compound engines	406,012	June 25	2486	650	47	1727
Vaughn, James M., Water Valley, Ky. Hand-power saw	404,753	June 4	551	141	47	1334
Vaughn, John W., Jersey City, N. J. Automatic ticket-selling machine	404,450	June 4	114	27	47	1247
Vehon, Abraham, New York, N. Y. Ornamenting cloth	404,002	May 28	2683	.....	47	1124
Veil, Fredrick, Allegheny, Pa. Stove	400,612	Apr. 2	263	72	47	55
Venu, Isaac H., assignor of one-half to E. G. W. Bartlett, Yonkers, N. Y. Elevator	400,613	Apr. 2	264	73	47	55
Ventzki, August J., Graudenz, Prussia, Germany. Adjusting device for wheel-plows	400,977	Apr. 9	829	221, 222	47	168
Vermehren, Nicolai, Copenhagen, Denmark. Ruler	401,392	Apr. 16	1450	385	47	298
Vetter, Joseph C., New York, N. Y. Galvanic battery	403,802	May 21	1891	497	47	1041
Vezie, Charles, Denison, Tex. Foot for sand-levers	401,611	Apr. 16	1811	474	47	363
Victor Safe and Lock Company. (See Baum, Jacob, assignor.)						
Vinton, John H., Boston, Mass., assignor to Peninsular Novelty Company, Grand Rapids, Mich. Button-setting machine	401,393	Apr. 16	1450	385	47	298
Vinton, John H., Boston, Mass., assignor to Peninsular Novelty Company, Grand Rapids, Mich. Button-setting machine	402,047	Apr. 23	2467	643	47	496
Vinyard, Charles O., Navajo Springs, Ariz. Ter. Nut-lock	404,326	May 28	2703	702	47	1204
Vitalis, Baptiste, Pittsburg, Pa. Smoke-stack	402,873	May 7	476	124	47	751
Vogel, Gustav F. (See Wilson, Arthur H., assignor.)						
Vogel Petroleum Heating Company. (See Vogel, William, assignor.)						
Vogel, William, assignor to Vogel Petroleum Heating Company, Chicago, Ill. Burner for liquid fuel	406,013	June 25	2487	650, 651	47	1728
Vogelsang, Alexander, assignor to Vogelsang Screw Propeller Company, Brooklyn, N. Y. Screw-propeller. (Reissue)	10,997	Apr. 23	2596	672	47	532
Vogelsang Screw Propeller Company. (See Vogelsang, Alexander, assignor.) (Reissue.)						
Voges, Bernhard. (See Parker and Voges.)						
Vogt, Louis J. (See Klippert, Charles V., assignor.)						
Voigt, Ferdinand F., Chicago, Ill. Track-laying machine	404,996	June 11	913	241, 242	47	1412
Volk, Adam, assignor of one-half to U. Lerch, Lockport, N. Y. Rope-clamp	405,686	June 18	1982	519	47	1630
Von Blitzingslöwen, Bruno, and M. Howard, New York, N. Y.; said Von Blitzingslöwen assignor to said Howard. Brooch-pin	402,701	May 7	218	57	47	705
Von Oven, Ernest, Naperville, Ill. Brick-kiln	402,369	Apr. 30	2955	766	47	598
Von Stein, William B. (See Tidball and Von Stein.)						
Von Welsbach, Carl A., Vienna, Austria-Hungary, assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Gas-incandescent	403,603	May 21	1892	.....	47	1041
Von Welsbach, Carl A., Vienna, Austria-Hungary, assignor to Welsbach Incandescent Gas Light Company, of New Jersey. Gas-incandescent	403,604	May 21	1893	.....	47	1041
Vose, Clifton, Brooklyn, N. Y. Screw-propeller for vessels	402,674	May 7	477	124, 125	47	752
Voss, Adolph, Gloucester, Mass. Windlass	401,316	Apr. 9	1333	335	47	263
Voss, John C., El Paso, Tex. Oven-thermometer	403,710	May 21	1749	400	47	1012
Vulcan Manufacturing Company. (See Pomeroy, Charles, assignor.)						
Waddell, Ralph P., Alameda, Cal. Sash-holder	405,512	June 18	1698	449	47	1577
Waddell, William H., Lexington, Va. Electrical railway-signaling	400,522	Apr. 2	146	38	47	31
Wade, Bryant E., Rockford, Ill. Thill-coupling	400,526	Apr. 2	148	39	47	32
Wade, Kirtland H., Chicago, Ill. Switch-signal	401,869	Apr. 23	2189	572	47	444
Wadleigh, Joseph, Milks Grove, Ill. Mechanism for operating baling-presses	405,286	June 18	1349	356	47	1505
Wadsworth, Herbert. (See Gammons, Rollins, and Wadsworth.)						
Wadsworth, Homer N., assignor of one-half to J. H. Dickson, Wellington, Ohio. Wood-rack	404,327	May 28	2704	702	47	1204
Waeber, Gustavus A., New York, N. Y. Metal can, box, or other receptacle	401,913	Apr. 23	2363	589	47	458
Waffenfabrik Mauser. (See Mauser, Paul, assignor.)						
Wagandt, Charles L., assignor of one-half to Keen & Hagerty, Baltimore, Md. Soldering-tool	402,634	May 7	120	29	47	687
Wagandt, Charles L., assignor to Keen & Hagerty, Baltimore, Md. Child's tray	402,788	May 7	354	93	47	729
Waggoner, Edward P., Syracuse, N. Y. Steam-heater	402,635	May 7	121	29	47	6-7
Waggoner, George H., Leslie, Mich. Bevel	404,451	June 4	116	27	47	1247
Wagner, S. F. (See Marshall and Rickerd, assignors.)						
Wait, John H., Junction City, Oreg. Automatic safety railway-switch	405,513	June 18	1699	449	47	1577
Waite, Henry E., *et al.* (See Ethridge, Martin V. B., assignor.)						
Waite, Henry E., New York, N. Y. Friction-generator	405,334	June 18	1418	373	47	1520
Wakefield, Charles H., Sherbrooke, Quebec, Canada. Foot-guard for frogs, switches, &c.	402,209	Apr. 30	2719	706	47	554
Wakefield Rattan Company. (See Leavis, Henry T., assignor.)						
Wakefield Rattan Company. (See Lemman, John, assignor.)						
Wakeman, Wilbur F., Kansas City, Mo. Temporary binder	404,513	June 4	222	53	47	1266
Walberg, Lars E., Hollister, Cal. Cart-spring	405,193	June 11	1204	320	47	1470
Walch, Paul O., Paris, France. Wire fastening for bottle-stoppers	402,370	Apr. 30	2957	767	47	598
Wilder, Paul, Buda-Pesth, Austria-Hungary. Leather-thong cutter	403,805	May 21	1894	497	47	1041
Waldron, Thomas, Sheldon, Mo. Washing-machine	401,709	Apr. 23	2044	534	47	417
Wales, Sigourney, Terre Haute, Ind., assignor to C. B. Fox, Boston, Mass. Pencil-holder	403,567	May 21	1546	407	47	972
Walker, David C. (See Lehman, Edwin W., assignor.)						
Walker, Enos L., St. Louis, Mo., assignor of one-half to G. Hoyt, Brooklyn, N. Y. Folding bottle-case	404,809	June 4	636	163, 164	47	1351
Walker, George W. (See Bartlett, John W., assignor.)						
Walker, Hugh W., and T. L. Patterson, Greenock, county of Renfrew, Scotland. Apparatus for molding and refining sugar	401,612	Apr. 16	1812	474	47	363
Walker, John. (See Richards and Walker.)						
Walker, John, Cleveland, Ohio. Traveling crane	401,613	Apr. 16	1815	474, 475	47	364
Walker, John, Cleveland, Ohio. Sheaf-supporting frame for cable railways	401,986	Apr. 23	2366	615	47	478
Walker, Joseph, near Manchester, Va. Gate	404,754	June 4	553	141	47	1334
Walker, William G., Black Oak, Mo. Car-coupling	405,287	June 18	1350	356	47	1505
Wall, Alexander B., assignor of one-half to F. P. Blount, Colchester, Ill. Elevator	404,808	June 4	635	163	47	1351
Wallace, Dwight O. (See Despain, Joseph H., assignor.)						
Wallace, Jacob B., assignor to G. M. Clark & Company, Chicago, Ill. Vapor-stove	403,568	May 21	1547	407, 408	47	972
Wallace, Martin B., Dalton, Ga. Washing-machine	405,930	June 25	2345	616	47	1704
Wallace, William, *et al.* (See Casey, Thomas A., assignor.)						
Wallace, William W., assignor to J. W. Penfield & Son, Willoughby, Ohio. Brick or tile cut-off machine	405,631	June 18	1877	496, 497	47	1612

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Wallach, Leopold. (See Endemann, Hermann, assignor.)						
Wallbank, Rovert. (See White and Wallbank.)						
Wallbridge, Heman D., *et al.* (See McCarty, William F. M., assignor.)						
Waller, Elijah F., Hanson, Ky., and O. A. Carlstedt, Evansville, Ind. Smoke and dust fender for car-windows	405,060	June 11	1009	269 / 270	47	1433
Wallwork, Roughsedge, and A. C. Wells, Manchester, county of Lancaster, England. Regenerative burner	404,063	May 28	2284	598	47	1124
Wallwork, Roughsedge, and A. C. Wells, Manchester, county of Lancaster, England. Regenerative burner	404,064	May 28	2288	599	47	1125
Wallwork, Roughsedge, and A. C. Wells, Manchester, county of Lancaster, England. Apparatus for supplying combustible liquids to burners	405,860	June 25	2230	567	47	1685
Walrath, Jesse, Racine, Wis. Wheel	403,861	May 21	1976	518	47	1056
Walsh, Edward, Jr., St. Louis, Mo. Charging apparatus for blast-furnaces	401,304	Apr. 16	1461	382	47	298
Walsh, Edward, Jr., St. Louis, Mo. Blast-furnace	401,305	Apr. 16	1462	382	47	299
Walsh, Edward, Jr., St. Louis, Mo. Indicating device for charging furnaces	401,521	Apr. 16	1649	433	47	333
Walsh, Edward, Jr., St. Louis, Mo. Condensing zinc vapors and collecting the metallic zinc therefrom	402,210	Apr. 30	2720	706	47	555
Walsh, Edward, Jr., St. Louis, Mo. Apparatus for condensing zinc vapors and collecting the metallic zinc therefrom	405,134	June 11	1101	293 / 294	47	1450
Walsh, John H., Boston, Mass. Composition for pipes	400,527	Apr. 2	149	.....	47	32
Walter, Frank, *et al.* (See Medden and Urquhart, assignors.)						
Walter, Henry E., Schenectady, N. Y. Dynamo-electric machine	403,158	May 14	999	237	47	841
Walter, Joseph, New York, N. Y. Speaking-tube	405,061	June 11	1010	270	47	1433
Walter, William, Philadelphia, Pa. Underground conduit	400,810	Apr. 2	576	150	47	110
Walter, William, assignor of one-fourth to S. A. Clements, Greensburg, Pa. Coupler for mining-cars	403,159	May 14	902	237	47	841
Walters, John F., *et al.* (See Price, George W., assignor.)						
Walters, William J., Prospect, N. Y. Buckle	405,514	June 18	1701	449	47	1577
Walther, Henry, Brooklyn, N. Y. Piano-stool	400,528	Apr. 2	150	38	47	32
Walton, Joseph H., Philadelphia, Pa. Apparatus for drawing effervescing fluids	405,135	June 11	1103	294	47	1450
Wansbrough, William H. (See Schock and Wansbrough.)						
Ward, Carlos J. (See Hotchkiss, Zeroy P., assignor.)						
Ward, Charles L., Cavendish, Vt. Car-door	404,755	June 4	554	141	47	1334
Ward, Enoch. (See Law and Howe, assignors.)						
Ward, John E. (See Sterle, William D., assignor.)						
Ward, John F., Jersey City, N. J. Ship's ram	403,806	May 21	1894	497	47	1041
Ward, John F., Jersey City, N. J. Apparatus for laying pipe	403,865	May 21	1977	518	47	1056
Ward, Randolph G., Baltimore, Md. Machine for scraping the pulp, &c., from fibrous plants	404,756	June 4	555	142	47	1335
Warde, George H., New York, N. Y., assignor to W. H. Johnstone, Philadelphia, Pa. Pilot or head for sectional rods for threading underground conduits	405,515	June 18	1702	450	47	1578
Ware, Edward M., assignor to I. D. Ware, Philadelphia, Pa. Rack attachment for bedsteads	402,211	Apr. 30	2722	706	47	555
Ware, I. D. (See Ware, Edward M., assignor.)						
Warner, De Ver H., Bridgeport, Conn. Corset-clasp	404,135	May 28	2397	629	47	1147
Warner, Ebenezer, Tomah, Wis. Wire-fence tightener	404,938	June 11	829	215	47	1395
Warner, George W., Freeport, Ill. Spring-hinge	405,931	June 25	2346	616	47	1704
Warner, Ira D., Bridgeport, Conn. Manufacture of dress-stiffeners	403,160	May 14	902	238	47	841
Warner, Ira D., Bridgeport, Conn. Corset-stiffener	403,161	May 14	904	238	47	841
Warner, Isaac M., Bethel, Mich. Vehicle hub and axle	405,932	June 25	2348	616	47	1704
Warner Manufacturing Company. (See Hance, William A., assignor.)						
Warren, Andrew. (See Crecelius, Louis J., assignor.)						
Warren, Charles H., Peterborough, N. H. Nut-lock	405,632	June 18	1678	497	47	1612
Warren, Edward, Ligonier, Ind. Thill for vehicles	403,497	May 14	1444	378	47	943
Warren, James P. (See Lyman and Warren.)						
Warren, John E., Cumberland Mills, assignor to Cumberland Manufacturing Company, Portland, Me. Filter	404,236	May 28	2562	664	47	1178
Warren, Marion, Rochester, N. Y. Safety-valve	402,702	May 7	219	57	47	705
Warren, Marion, Rochester, N. Y. Detachable pressure-gage	402,703	May 7	221	58	47	705
Warrington, Jesse, assignor to Nordyke & Marmon Company, Indianapolis, Ind. Bolting-reel	404,810	June 4	638	164	47	1351
Washburn, Nathan, Boston, Mass. Metallic mold	401,804	Apr. 23	2110	550	47	428
Washburn, Robert M., Burlington, Iowa. Game	403,012	May 7	664	175	47	789
Washburn, William E., Kansas City, Mo. Caster-frame for tubs, &c	404,022	May 28	2302	598	47	1108
Water Primary Battery Company. (See Pratt, Robert J., assignor.)						
Waterbury Buckle Company. (See Smith, Dwight L., assignor.)						
Waterhouse, Charles N., St. Louis, Mo. Torsion-spring for vehicles	402,729	May 7	335	93	47	729
Waterhouse, Gilbert A., Quincy, Mass. Animal-releasing device	401,914	Apr. 23	2264	589	47	458
Waterhouse, John, New York, N. Y. Railway-bumper	402,790	May 7	358	93	47	730
Waterman, John S., assignor to Brown & Sharpe Manufacturing Company, Providence, R. I. Machine for cutting gears	401,987	Apr. 23	2367	616	47	478
Waterous, Frederick L., South St. Paul, Minn. Boiler	400,529	Apr. 2	151	39	47	32
Watkins, Lemuel B., Washington, La. Mechanical power	404,136	May 28	2399	623	47	1148
Watkins, William D., El Dorado Springs, assignor of one-half to J. H. Lucas, Osceola, Mo. Hay rake and stacker	400,530	Apr. 2	152	39, 40	47	32
Watres, Effie J., Scranton, Pa. Bedclothes-fastener	403,807	May 21	1895	498	47	1041
Watrous, Henry N., *et al.* (See Pickett, Chauncy J., assignor.)						
Watson, Alexander, Brookline, Mass. Adjustable work-rest for benches	403,627	May 21	1625	430	47	988
Watson, Charles G., Piney Grove, Md. Hand-planter	403,633	June 18	1679	447	47	1612
Watson, Emma H., Elizabeth, N. J. Columnar closet	400,614	Apr. 2	266	73	47	56
Watson, Henry, Donald, British Columbia, Canada. Snow-shoe	403,516	June 18	1703	450	47	1578
Watson, Jeremiah M., Boston, Mass. Shank-stiffener	403,569	May 21	1548	408	47	972
Watson, William, Jr., Ilion, N. Y. Wardrobe-hook	403,231	May 14	1027	271	47	866
Watt, John, assignor to W. K. Dana, Saccarappa, Me. Slasher	404,939	June 11	830	215	47	1396
Watt, William R., Somerville, Tenn. End-gate for wagons	403,628	May 21	1627	430 / 431	47	988
Watt, William R., Somerville, Tenn. Wagon-bed	403,629	May 21	1628	431	47	988
Wattie, William, assignor to Knowles Loom Works, Worcester, Mass. Shedding mechanism for looms	403,080	May 7	777	205	47	809
Watts, Henry F., Sandusky, Ohio. Electric heating apparatus	400,978	Apr. 9	830	222	47	168
Way, Frank K., Dayton, and W. T. Parker, Springfield, Ohio. Toy	403,232	May 14	1028	271	47	866
Wragly, William G., Galion, Ohio. Folding clip-board	403,233	May 14	1029	271	47	866
Weatherburn, Robert, assignor to T. Hulburd, London, England. Metallic packing	403,808	May 21	1896	498	47	1042
Weathers, James, Indianapolis, Ind. Sash-holder	403,013	May 7	665	175	47	789
Webb, John G., Rye, N. Y. Ticket-holder	403,234	May 14	1030	272	47	866

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Webb, Samuel D., and S. C. Swett, assignors to said Swett and T. A. Mitchell, Washington, D. C. Printer's quoin	402,402	May 14	1305	341	47	917
Webb, Samuel J., Minden, La. Bale-compress	402,636	May 7	123	30	47	687
Webber, Charles L., Neenah, Wis. Car-coupling	402,212	Apr. 30	2722	706	47	555
Webber, Hiram L., Stafford, Kans. Tree-protector	404,757	June 4	558	143	47	1335
Weber, Adolph, assignor of one-half to W. L. Mahon, Detroit, Mich. Steam-trap and regulator	403,162	May 14	905	238	47	841
Weber, Anton, and C. Lambert, Elizabeth, N. J. Cordage-spinning machine	404,137	May 28	2399	628 / 629	47	1148
Weber, Caroline C. (See Weber, George A., assignor.)						
Weber, Charles S., San José, Cal. Tensional sound-board	402,496	Apr. 30	3160	818	47	637
Weber, George A., assignor to C. C. Weber, New York, N. Y. Fish-plate and chair	402,371	Apr. 30	2958	767	47	599
Weber, George A., assignor to C. C. Weber, New York, N. Y. Rail-joint	402,372	Apr. 30	2958	767	47	599
Weber, Paul, New York, N. Y. Window	401,614	Apr. 16	1817	475	47	364
Weber, Valentin, and J. R. Harrison, Princeville, Ill. Grain-meter	400,615	Apr. 2	266	74	47	56
Webster, Albert B., Manchester, N. H. Tug-holder for vehicles	405,136	June 11	1104	294	47	1451
Webster, Ernest L. (See Foster and Webster.)						
Webster, Fred L., Danvers, Mass. Machine for paring squashes	404,432	June 4	117	28	47	1248
Webster, Joseph W., Little Rock, S. C. Plow	401,615	Apr. 16	1818	473	47	365
Webster, William, Armley, Leeds, county of York, England. Overedge sewing-machine	402,497	Apr. 30	3161	818 / 819	47	637
Webster, William R., Philadelphia, Pa. Die for upsetting eye-bars	400,979	Apr. 9	831	222	47	168
Weck, Charles H. (See Meyer and Weck.)						
Weeber, William, Philadelphia, Pa. Brick-machine	403,235	May 14	1031	272 / 273 / 274	47	866
Weekes, John W., Fort Worth, Tex. Brick-truck	401,306	Apr. 16	1464	386 / 387	47	299
Weeks, Albert E. (See Ledue and Weeks.)						
Wegmann, Friedrich, Zurich, Switzerland. Hulling or grinding machine	405,810	June 25	2158	567 / 568	47	1670
Wegmann, Friedrich, Zurich, Switzerland. Grinding and scouring grain	405,811	June 25	2160	568	47	1671
Weichhart, John, San Francisco, Cal. Machine for forming sheet-metal lathing	401,592	Apr. 16	1650	435 / 436	47	333
Weichhart, John, San Francisco, Cal. Machine for forming sheet-metal lathing	401,593	Apr. 16	1652	436	47	334
Weidemeyer, John P., Ashland, Ky. Rivet-holding device	402,288	Apr. 30	2829	732	47	575
Weidlich, Emil. (See Box, William W., assignor.)						
Weightman, Mary, Newcastle-upon-Tyne, county of Northumberland, England. Bedstead	402,704	May 7	222	58	47	705
Weil & Livingston. (See Schnopp, Ernst, assignor.)						
Weiler, Charles, Philadelphia, Pa. Street-sweeping machine	401,232	Apr. 9	1212	323	47	238
Weir, Fredric C., and N. O. Goldsmith, assignors to Weir Frog Company, Cincinnati, Ohio. Cable and railway crossing	402,875	May 7	478	125	47	752
Weir Frog Company. (See Weir and Goldsmith, assignors.)						
Weir, James W., Princeton, Ind. Harrow attachment for land-rollers	400,616	Apr. 2	269	74	47	56
Weirich, Jules, Béziers, Hérault France. Separating precious metals from ores	404,328	May 28	2705	.....	47	1204
Weiss, Charles W., Brooklyn, N. Y. Sewing-machine	403,163	May 14	906	238 / 239	47	842
Weiss, Charles W., Brooklyn, assignor of one-half to C. Kruse, New York, N. Y. Feed mechanism for sewing-machines	405,448	June 18	1501	420	47	1554
Weissbrod, Emil, Greenfield, Mass. Pocket or note book	404,758	June 4	559	143	47	1336
Welch, Alonzo T. (See Lawson, Samuel, assignor.)						
Welch, James E., assignor of one-third to D. Fisher and T. W. McNeely, Petersburg, Ill. Bolting-reel	405,973	June 25	2417	633	47	1716
Welch, James F., assignor to Glen Cove Machine Company, (limited,) Brooklyn, N. Y. Planing-machine	404,138	May 28	2401	629 / 630	47	1148
Welch, James F., Brooklyn, and E. F. Antenrieth, New York, assignors to Glen Cove Machine Company, (limited,) Green Point, Brooklyn, N. Y. Feeding device for planing-machines	401,524	Apr. 16	1654	436 / 437	47	324
Welch, Michael L., assignor of one-half to J. L. Studstill, Adel, Ga. Saw sharpener and gummer	404,329	May 28	2707	702	47	1204
Welch, Michael L., Valdosta, assignor of one-half to J. J. McDonough, Savannah, Ga. Valve-gear	404,453	June 4	118	28	47	1248
Welch, Rosia W., assignor of one-half to J. M. Knight, Baltimore, Md. Grain-clipping machine	401,607	Apr. 16	1801	493	47	377
Welch, Rosia W., assignor of three-fourths to W. T. Bromwell and J. S. Taylor, Jr., Baltimore, Md. Wheat-cleaning machine	405,268	June 18	1350	356	47	1505
Weld, George A., Winchester, Mass. Shoe-clasp	404,023	May 28	2203	579	47	1108
Weldon's Chlorine Processes Company. (See Pechiney, Alfred R., assignor.)						
Welles, Fred A., Milwaukee, Wis. Calipers or dividers	402,876	May 7	479	125	47	752
Welles, Howard W., assignor of one-half to J. G. Collingwood, Poughkeepsie, N. Y. Medicine-spoon register	400,719	Apr. 2	424	115	47	84
Wellington, Henry, Brooklyn, N. Y. Torch	401,805	Apr. 23	2111	550	47	428
Wells, Arthur C. (See Wallwork and Wells.)						
Wells, Frank A., Allegheny, Pa. Combined supply, overflow, and waste fittings for slop-sinks, basins, and baths	405,933	June 25	2349	616 / 617	47	1704
Wells, John T., Scottsville, N. Y. Truss for buildings or bridges	401,870	Apr. 23	2191	573	47	445
Wells, William H., Evershot, county of Dorset, England. Device for raising cream from milk	405,975	June 25	2420	634	47	1716
Welsbach Incandescent Gas Light Company. (See Bell, Harold J., assignor.)						
Welsbach Incandescent Gas Light Company. (See Von Welsbach, Carl A., assignor.)						
Welsh, Hamilton E., Harrisburg, Pa. Foot-stove	403,014	May 7	666	175	47	789
Welsh, Morries, Quincy, Mass., assignor to Union Metallic Fastening Company, of New Jersey. Boot or shoe nailing machine	403,081	May 7	778	206	47	809
Wemple, George W., assignor of nine-twentieths to B. W. Child, Boston, Mass. Device for removing calks from horseshoes	400,531	Apr. 2	154	40	47	33
Wendell, Menzo E., Troy, and T. S. Wiles, Albany, N. Y. Dampening-machine	401,770	Apr. 23	2045	535	47	417
Wenigmann, Ernest, New York, N. Y. Railway-car	401,525	Apr. 16	1655	437	47	334
Wenstran, Swan P. (See Blood and Wenstran.)						
Werner, Louis C. (See Kenney, Patrick L., assignor.)						
Werner, Joseph, assignor to A. Dzondi, Dresden, Saxony, Germany. Clock-pendulum	404,997	June 11	916	242	47	1413
Wesley, John L., Portland, Me. Corn and silk separator	405,634	June 18	1682	497	47	1612
Wessell, Charles E., *et al.* (See Medden and Urquhart, assignors.)						
Wessell, Nickel & Gross. (See Handing, Siegfried, assignor.)						
Wesselmann, Bruno, Hamburg, Germany. Vending apparatus	403,015	May 7	667	176	47	789

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Weason, Daniel B., Springfield, Mass. Revolving fire-arm	401,087	Apr. 9	986	262	47	196
Weason, Miley B., Fort Worth, Tex. Blind-stop	404,998	June 11	917	240	47	1413
West, Mary E., Binghamton, N. Y. Thread holder and cutter	402,498	Apr. 30	3163	819	47	637
West, Robert G. (See Duncan, John W., assignor.)						
West, William Y., assignor to A. Baldwin Co., (limited,) New Orleans, La. Back-pole, &c	406,014	June 25	2490	654	47	1728
Westbrook, Frank A., Port Jervis, and W. S. Cook, Middletown, N. Y. Car-coupling	402,877	May 7	4-0	139	47	752
Westbrook, Frank A., Port Jervis, and W. S. Cook, Middletown, N. Y. Car-coupling	403,016	May 7	668	176	47	789
Westerholm, Otto, Chicago, Ill. Door-mat	402,705	May 7	323	90	47	706
Western Electric Company. (See Carty, John J., assignor.)						
Western Electric Company. (See Colgate, Arthur E., assignor.)						
Western Electric Company. (See Haskins, Charles D., assignor.)						
Western Electric Company. (See McKivitt, William A., assignor.)						
Western Electric Company. (See O'Connell, Joseph J., assignor.)						
Western Electric Company. (See Patterson, William R., assignor.)						
Western Electric Company. (See Stromberg, Alfred, assignor.)						
Western Electric Company. (See Thayer, Harry B., assignor.)						
Western Electric Company. (See Widdicombe, Robert H., assignor.)						
Western Electric Company. (See Young, John, assignor.)						
Westervelt, Edmund C., South Bend, Ind. Sulky-plow	403,866	May 21	1978	529	47	1056
Westervelt, Reuben. (See Davis and Westervelt.)						
Westinghouse Air Brake Company. (See Poor, George H., assignor.)						
Westinghouse Electric Company. (See Belfield, Reginald, assignor.)						
Westinghouse Electric Company. (See Reinmann and Lange, assignors.)						
Westinghouse Electric Company. (See Schmid, Albert, assignor.)						
Westinghouse Electric Company. (See Shallenberger, Oliver B., assignor.)						
Westinghouse Electric Company. (See Smith, Frank S., assignor.)						
Westinghouse Electric Company. (See Stanley, William, Jr., assignor.)						
Westinghouse, George, Jr. (See Schrender, Jens G., assignor.)						
Westinghouse, George, Jr., Pittsburg, Pa. Service-pipe connection for gas-mains	400,532	Apr. 2	156	40	47	33
Westinghouse, George, Jr., Pittsburg, Pa. Automatic pump-governor for brake mechanisms	401,915	Apr. 23	2266	589	47	458
Westinghouse, George, Jr., Pittsburg, Pa. System of electrical distribution	404,130	May 28	2403	630	47	1149
Westinghouse, George, Jr., and F. Moore, Pittsburg, Pa. Engineer's brake-valve	401,916	Apr. 23	2262	590	47	458
Westinghouse, George, Jr., and F. M. Rites, Pittsburg, Pa. Compound engine	405,812	June 25	2161	548 / 549	47	1671
Westman, Gustaf M., New York, N. Y. Zinc-furnace	401,088	Apr. 9	987	263	47	196
Weston, Edward, Newark, N. J. Standard tangent-galvanometer	400,980	Apr. 9	832	221	47	168
Weston, Edward, Newark, N. J. Electrical measuring-instrument	403,311	May 14	1153	307	47	889
Weston, Edward, Newark, N. J. Portable tangent galvanometer	403,312	May 14	1154	307	47	889
Weston, Edward, Newark, N. J., assignor to United States Electric Lighting Company, New York, N. Y. Dynamo or magneto electric machine	401,317	Apr. 9	1334	335	47	263
Weston, Edward, Newark, N. J., assignor to United States Electric Lighting Company, New York, N. Y. Dynamo-electric machine	401,318	Apr. 9	1336	336	47	263
Weston, Edward, Newark, N. J., assignor to United States Electric Lighting Company, New York, N. Y. Dynamo-electric machine	401,668	Apr. 16	1892	493	47	377
Weston, Edward, Newark, N. J., assignor to United States Electric Lighting Company, New York, N. Y. Dynamo-electric machine	401,669	Apr. 16	1893	493	47	377
Weston, Frank A. (See Trost and Weston.)						
Weston, Rowland, East Saginaw, Mich. Water-closet	405,635	June 18	1883	499	47	1613
Weston, Thomas A., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Hoisting mechanism	402,878	May 7	481	120	47	753
Wetherbee, Leslie, Clayton, Mich. Wagon-brake	405,062	June 11	1011	270	47	1433
Wetherell, George F., and R. B. Jones, assignors of one-third to R. Richards, Chicago, Ill. Wood-planing machine	401,397	Apr. 16	1465	387	47	299
Wetzel, Michael, Sidney, Nebr. Compressed-air water-elevator	404,330	May 28	2709	703	47	1204
Wex, Henry, *et al.* (See McFarlane, John, assignor.)						
Weyand, Charles E., assignor to A. G. Jennings & Sons, Brooklyn, N. Y. Glove-embroidering attachment for sewing-machines	402,213	Apr. 30	2724	707	47	555
Wharry, James A. (See Rogers and Wharry.)						
Wheat, Franklin H., Lowell, assignor to G. Draper & Sons, Hopedale, Mass. Support for spinning-spindles	401,988	Apr. 23	2369	616	47	478
Wheat, Vanburen, Orleans, N. Y. Fruit-box	404,880	June 11	747	190	47	1379
Wheatley, John B., Detroit, Mich., assignor to A. Heine, Silver Creek, N. Y. Feed-regulator	400,720	Apr. 2	425	115	47	84
Wheeler, Edward W., assignor to A. L. Singer & Co., Chicago, Ill. Shirt-waist	400,721	Apr. 2	426	115	47	84
Wheeler, Frank, Meriden, Conn. System of electric locomotion	401,616	Apr. 16	1820	476	47	365
Wheeler, Roscoe B., Detroit, Mich. Garment-stay	403,809	May 21	1897	498	47	1042
Wheeler, Schuyler S., New York, N. Y. Automatic governor for electric motors or dynamo-electric machines	403,017	May 7	669	176 / 177	47	790
Wheeler, Schuyler S., New York, N. Y. Field-magnet for dynamos	403,018	May 7	673	177 / 178	47	790
Wheeler, Seth, Albany, N. Y. Toilet or wrapping paper roll	401,233	Apr. 9	1213	323	47	238
Wheeler, Seth, Albany, N. Y. Making perforations in paper	404,581	June 4	327	78, 79	47	1287
Wheeler, Seth, Albany, N. Y. Machine for making perforations in paper	404,582	June 4	329	79	47	1287
Wheeler, Seth, Albany, N. Y. Bosom-pad	404,881	June 11	748	191	47	1379
Wheeler & Wilson Manufacturing Company. (See Dial, Steward, and Dimond, assignors.)						
Wheeler & Wilson Manufacturing Company. (See Ostrom and Boynton, assignors.)						
Whelan, Timothy P. (See Hobbs and Whelan.)						
Whem, Joseph R., Denver, Colo. Sash-fastener	403,810	May 21	1898	498	47	1042
Whiddon, Isaac L., and J. S. Bashaw, Chipley, Fla. Car-coupling	400,617	Apr. 2	270	74	47	56
Whipp, Frank D., Cleveland, Ohio. Vibrating propeller	405,813	June 25	2164	569	47	1671
Whipple, Charles A., Galesburg, Ill. Store-service apparatus	404,882	June 11	749	191	47	1379
Whipple, Frank B., Erie, Pa. Paper-weight	402,048	Apr. 23	2469	644	47	496
Whisman, Isaac, Stover's Shops, Va. Railway-gate	405,814	June 25	2165	569	47	1672
Whitall, Tatum & Co. (See Atwater and Herckner, assignors.)						
Whitall, Tatum & Co. (See Tatum, Charles A., assignor.)						
White, Albert, assignor to J. L. Pinder, Lowell, Mass. Spring-hanger	401,398	Apr. 16	1467	387	47	300
White, Allert A., Vassar, Mich. Animal-shears	401,806	Apr. 23	2112	551	47	428
White, Anthony C., Boston, Mass. Electrical measurement apparatus	401,617	Apr. 16	1821	476	47	365
White, David S., Minneapolis, Minn. Hoisting and loading machine	401,618	Apr. 16	1826	476	47	365
White Dental Manufacturing Company, S. S. (See Casey and Browne, assignors.)						
White Dental Manufacturing Company, S. S. (See Gilbert, John W., assignor.)						
White, Fred H. (See Heath and White.)						
White, Hawley C., North Bennington, Vt. Stereoscope	401,807	Apr. 23	2113	551	47	428

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
White, James C., Sewickley, Pa. Electrical railway-signal	405,815	June 25	2167	570	47	1672
White, John C., Swatara, Pa. Anchoring device for portable machines	403,811	May 21	1899	499	47	1042
White, John S., Cleveland, Ohio. Former for restoring bent wick-tubes	401,234	Apr. 9	1214	323	47	239
White, John S., Portland, Me. Window-screen	404,454	June 4	120	29	47	1248
White, Maurice W., assignor of one-half to G. W. Ross, Boston, Mass. Tail-piece fastener for violins	402,118	Apr. 23	2584	660	47	519
White, Maurice W., assignor of one-half to G. W. Ross, Boston, Mass. Peg for violins	405,816	June 25	2168	570	47	1672
White, Rollin, Lowell, assignor to W. F. Draper, Hopedale, Mass. Support for spinning-spindles	405,233	June 11	1961	334	47	1481
White, William A., Stantsburg, N. Y. Water-heater	402,499	Apr. 30	3163	820	47	637
White, William G. (See Boyd, John, assignor.)						
White, William P., Cincinnati, Ohio. Carpet-cleaner	403,313	May 14	1157	308	47	890
White, William P., Manchester, and R. Wallbank, Bolton-le-Moors, county of Lancaster, assignors to J. H. Heap, Accrington, England. Promoting combustion in furnaces	405,817	June 25	2169	570	47	1672
White, William R., Neoga, Ill. Gate	403,975	May 28	2137	559	47	1095
Whitehead, William R. (See Lawton, Swann, and Whitehead.)						
Whitehill, David B., North Clarendon, Pa. Gage-cock	402,373	Apr. 30	2959	767	47	599
Whiteley Company, William N. (See Whiteley, William N., assignor.)						
Whiteley, William N., assignor to W. N. Whiteley Company, Springfield, Ohio. Making chain-links	402,637	May 7	125	30	47	688
Whitelock, John W., Roanoke, Va. Veterinary syringe	405,137	June 11	1105	294	47	1451
Whittemore, William A., Hartman, Ark. Combined show and shot case	402,119	Apr. 23	2585	670	47	519
Whitford, John C., Stockton, Cal. Driving-gearing	400,981	Apr. 9	836	224	47	169
Whiting, William S., assignor to C. F. Trott, Waterbury, Conn. Smoker's set	404,665	June 4	437	109 / 110	47	1310
Whitlock, Edward. (See Streat, Thomas, assignor.)						
Whitlock, Ephraim J., assignor of two-thirds to L. E. Byrnes and J. Thake, Brooklyn, N. Y. Water-seal overflow-trap	404,759	June 4	560	143	47	1336
Whitmore, Daniel, Bellevue, Iowa. Offset mechanism for saw-mill carriages	402,706	May 7	224	59	47	706
Whitmore, William H., Cleveland, Ohio. Ratchet-wrench	400,722	Apr. 2	427	116	47	85
Whitner, William C., Rock Hill, S. C. Suspension fly-fan	401,526	Apr. 16	1656	437 / 438	47	335
Whitney, Amos, assignor to Pratt & Whitney Company, Hartford, Conn. Milling-cutter	404,940	June 11	831	215	47	1396
Whitney Coupling Company. (See Whitney, Daniel D., assignor.)						
Whitney, Daniel D., Cornwall, N. Y., assignor to Whitney Coupling Company, Whitinsville, Mass. Whiffletree-connection	404,371	May 28	2770	718	47	1217
Whitney, Edwin R., St. Johnsbury, Vt. Cut-out for incandescent electric lamps	401,527	Apr. 16	1657	438	47	335
Whitney, Harry O., assignor to Winchester Repeating Arms Company, New Haven, Conn. Machine for rolling paper tubes	405,138	June 11	1106	295	47	1451
Whitney, Orison C., Cleveland, Ohio. Organ	401,474	Apr. 16	1592	418	47	321
Whittier, Joseph G., and W. E. E. Herron, Attica, Ind. Shoe-fastening	401,808	Apr. 23	2115	551	47	429
Whittlesey, Charles E., New Haven, assignor of one-half to C. Lee, Bridgeport, Conn. Oscillating chair	401,089	Apr. 9	990	264	47	196
Wiant, David A., New Bethlehem, Pa. Clock-frame	403,812	May 21	1900	499	57	1042
Wiard, Gilbert L. (See Hooton and Wiard.)						
Wiard, Harry, Syracuse, N. Y. Spring-toothed harrow	403,976	May 28	2139	559	47	1096
Wiard, Harry, and J. L. Judd, Syracuse, N. Y. Horse hay-fork	403,019	May 7	675	178	47	791
Wichelhaus, Friedrick, Newark, N. J., assignor to Bailey, Farrell & Co., Pittsburg, Pa. Cartridge-crimping tool	404,811	June 4	639	164	47	1352
Wickears, Barney C. (See Wickers and Wickears.)						
Wickers, George O., Lawrence, assignor to Davis & Furber Machine Company, North Andover, Mass. Cylinder for carding or other machines	404,812	June 4	640	165	47	1352
Wickers, George O., Lawrence, assignor to Davis & Furber Machine Company, North Andover, Mass. Cylinder for carding-machines, &c.	405,234	June 11	1262	335	47	1481
Wickers, Lewis F., and B. C. Wickears, Lebanon, Ind. Fence	403,977	May 28	2140	559	47	1096
Wickham, Thomas, Hub City, Wis. Device for catching animals	404,563	June 4	331	79	47	1288
Wicks, Joseph, assignor of two-thirds to G. H. and W. C. Hughes, Utica, N. Y. Cistern-valve for water-closets	400,982	Apr. 9	837	224	47	170
Widdicombe, Robert H., assignor to Western Electric Company, Chicago, Ill. Electric-cable terminal	404,813	June 4	640	165	47	1352
Wiechert, Charles A., deceased, (L. F. Wiechert administratrix,) and R. Gabrielsky, Brooklyn, N. Y. Machine for making vials	401,670	Apr. 16	1894	493 / 494	47	377
Wiechert, Lizzie F., administratrix. (See Wiechert and Gabrielsky.)						
Wiegand, Edwin B. (See Chantrell, John, assignor.)						
Wiegand, S. Lloyd, Philadelphia, Pa. Heating gas-burner	405,139	June 11	1110	295	47	1451
Wiesendanger, John K., and J. Ulrich, La Crosse, Wis. Screen and storm-door	404,999	June 11	918	242	47	1413
Wiest, John, York, Pa. Hoist	403,164	May 14	908	239	47	842
Wiggin, George B. (See Bartlett and Wiggin.)						
Wiggin, George B., South Newmarket, and J. Bartlett, Epping, N. H., assignors of one-half to J. W. Hoard, Providence, R. I. Channeled shoe-sole	401,235	Apr. 9	1215	324	47	239
Wiggin, George B., South New Market, and J. Bartlett, Epping, N. H., assignors of one-half to J. W. Hoard, Providence, R. I. Shoe-sole-channeling machine	403,813	May 21	1901	499	47	1043
Wightman, Merle J. (See Lemp and Wightman.)						
Wilbur, Alfred, Allegheny, assignor of one-half to B. H. Lightfoot, Pittsburg, Pa. Filter	400,884	Apr. 2	682	186	47	131
Wilcomb, Frank, Providence, R. I. Straight-knitting machine	405,639	June 18	1908	503	47	1617
Wilcomb, Frank, Providence, R. I. Straight-knitting machine	405,640	June 18	1911	503 / 504	47	1617
Wilcomb, Frank, Providence, R. I., assignor to Wilcomb Manufacturing Company, San Francisco, Cal. Straight-knitting machine	405,636	June 18	1885	498	47	1613
Wilcomb, Frank, Providence, R. I., assignor to Wilcomb Manufacturing Company, San Francisco, Cal. Straight-knitting machine	405,637	June 18	1887	499	47	1613
Wilcomb, Frank, Providence, R. I., assignor to Wilcomb Manufacturing Company, San Francisco, Cal. Straight-knitting machine	405,638	June 18	1889	499 / 500 / 501 / 502	47	1614
Wilcomb Manufacturing Company. (See Wilcomb, Frank, assignor.)						
Wilcox, Charles F., Ipswich, Mass. Thread-cutting mechanism for sewing-machines	401,399	Apr. 16	1468	387	47	300
Wilcox, Ralph, Milwaukee, Wis. Feeder for roller-mills	402,049	Apr. 23	2470	644	47	497
Wilcox, Stephen, Brooklyn, N. Y. Gas or air engine	402,540	Apr. 30	3235	839 / 840	47	652
Wilcox, William and W. A., Jr., Grand Rapids, Mich. Automatic supply-valve for evaporators	405,449	June 18	1592	420	47	1555
Wilcox, William A., Jr. (See Wilcox, William and W. A., Jr.)						
Wild, William H., Valatie, N. Y. Intermittent-grip device	405,140	June 11	1110	296	47	1451

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Wilder, Charles H., Natick, Mass. Molding material	404,238	May 28	2569	.....	47	1179
Wilder, Charles H., Natick, Mass., assignor to F. E. Atteaux, trustee. Core for casting ordnance	404,239	May 28	2570	669	47	1179
Wilder, Charles H., Natick, assignor, by mesne assignments, to F. E. Atteaux, trustee, Boston, Mass. Mold	404,372	May 28	2771	719	47	1218
Wilder, Charles W., Fitchburg, assignor to T. C. Entwistle, Lowell, and W. H. Rankin, Lawrence, Mass. Lubricator for loose pulleys	400,885	Apr. 2	683	186	47	131
Wilder, James R., *et al.* (See Purdy and Sadgwar, assignors.)						
Wile, Sol. (See La Casse, Henry, assignor.)						
Wiles, Thomas S. (See Wendell and Wiles.)						
Wiles, Thomas S., Albany, N. Y. Photographic-plate-developing tray	402,214	Apr. 30	2726	707	47	556
Wilhelm, Henry, Oneida Mills, assignor of one-half to B. Smith, near Minerva, Ohio. Grain-scourer	403,090	May 7	676	178	47	791
Wilkening, Gottlieb, Dayton, Ohio. Musical game-wheel	404,140	May 28	2405	631	47	1149
Wilkes-Barré Self Closing Hydrant Company. (See Dowling, John, assignor.)						
Wilkes, Peter, Trenton, N. J. Pottery-jigger	404,941	June 11	832	216	47	1396
Wilkeson, W. W., *et al.* (See Griffin, Theophilus, assignor.)						
Wilkins, Alexander G., Meadville, Pa. Lawn-mower	405,753	June 25	2089	548	47	1657
Wilkins, George H., Shelburne Falls, Mass. Spool of thread for sewing-machines	405,726	June 25	2048	538	47	1648
Wilkins, James S., Jr., Keene, N. H. Toy railway-car	403,165	May 14	910	239	47	842
Wilkinson, Arthur J. (See Naysmith, Robert, assignor.)						
Wilkinson, Thomas P., Milford, Mass. Machine for molding hats	401,809	Apr. 23	2116	551	47	429
Willbrandt, Emil, Indianapolis, Ind. Surgical-needle case	402,550	Apr. 30	3239	840	47	652
Willcox, Oliver, Brooklyn, assignor of one-half to R. A. Chesebrough, New York, N. Y. Bottle-washing machine	404,141	May 28	2406	631	47	1149
Willey, John H., Manchester, N. H. Whiffletree	402,638	May 7	126	30	47	688
Williams, Alfred, Philadelphia, Pa. Hot-air furnace	400,886	Apr. 2	684	186, 187	47	131
Williams, Charles R., Newark, N. Y. Step-ladder	402,215	Apr. 30	2727	707	47	556
Williams Company, John R. (See Williams, John R., assignor.)						
Williams, Edward T., Carrollton, Ky. Grinding-mill	400,583	Apr. 2	157	41	47	33
Williams, Herbert F., Brooklyn, N. Y. Vaporizer	404,240	May 28	2570	670	47	1179
Williams, Horace, J. L. and L. R. Alberger, Buffalo, N. Y. Apparatus for the manufacture of salt	400,983	Apr. 9	838	224, 225	47	170
Williams, John, Jersey City, N. J., E. J. Frost and W. Dawson, Philadelphia, Pa. Lamp fixture and ventilator for railway-cars	400,984	Apr. 9	842	225, 226	47	170
Williams, John A., Kansas City, Mo. Vending apparatus	402,374	Apr. 30	2960	768	47	599
Williams, John F., Grand Forks, Dak. Ter. Harrow attachment for plows	404,142	May 28	2408	631	47	1150
Williams, John H. (See Lewis, Williams, and Matthews.)						
Williams, John H., Waterloo, Iowa. Door-spring	401,319	Apr. 9	1337	356	47	263
Williams, John H., Urbana, Ohio. Valve for engines	401,400	Apr. 16	1469	388	47	300
Williams, John H., Urbana, Ohio. Steam-valve	405,641	June 18	1914	504	47	1618
Williams, John R., Boston, Mass., assignor to Boston Feed Basket Company, of New Hampshire. Feed-bag	403,867	May 21	1980	520	47	1057
Williams, John R., Newark, N. J., assignor to J. R. Williams Company, New York, N. Y. Cigar-bunching machine	401,090	Apr. 9	992	264, 265	47	197
Williams, John T., Mount Vernon, assignor to International Portelectric Company, New York, N. Y. Electro-magnetic transmitter	405,194	June 11	1205	320	47	1470
Williams, Louis N. D. (See Scott and Williams.)						
Williams, Malcolm B., Kalamazoo, Mich. Harrow-tooth holder	404,024	May 28	2504	679	47	1108
Williams, Nathaniel B., Bridgeport, Conn. Corset-fastening	403,166	May 14	911	239	47	843
Williams, Percy G., and A. W. Roovers, Brooklyn, N. Y.; said Roovers assignor to said Williams. Coin-released spirometer	403,978	May 28	2141	560	47	1096
Williams, Robert S., Merchantville, N. J. Device for agitating liquids	401,724	Apr. 16	1976	517	47	393
Williams, Thomas H. (See Tompkins and Williams.)						
Williams, Thomas H., *et al.* (See Matlock, John N., assignor.)						
Williams, Virgil L., Cartersville, Ga. Baling-press	403,498	May 14	1444	378, 379	47	943
Williams, Wilbur M., Holden, Mo. Check-row corn-planter	404,025	May 28	2205	579	47	1106
Williams & Wright. (See Wright, Walter B., assignor.)						
Williamson, Alfred, Concord, N. H. Ticket and stamp holder	404,584	June 4	333	80	47	1288
Williamson, John. (See Doyle and Williamson.)						
Williamson, John J., Boston, Mass. Money-order blank	403,499	May 14	1446	379	47	944
Williamson, W. Irving, *et al.* (See Railsback, Lafayette D., assignor.)						
Williamson, William A., Newark, N. J. Sash-lift	404,666	June 4	439	110	47	1310
Williamson, William A., Newark, N. J. Corkscrew	405,385	June 18	1488	395	47	1533
Willis, Don F., assignor of one-half to J. M. and J. S. Griffin, Lynn, Mass. Lasting boots and shoes	404,455	June 4	121	29	47	1248
Willis, James B., Portsmouth, county of Hants, England. Telegraph apparatus for ships	400,985	Apr. 9	844	226, 227	47	171
Willson, Thomas L., assignor to J. C. McGuire, Brooklyn, N. Y. Dynamo-electric machine	403,630	May 21	1628	431, 432	47	989
Willson, Thomas L., Brooklyn, assignor of one-third to G. P. Lowrey, New York, N. Y. Dynamo-electric machine	406,015	June 25	2491	651, 652	47	1726
Wilmot, Samuel, Lockport, Ill. Paper-making machinery	401,917	Apr. 23	2271	600	47	459
Wilson, Adèle, Chicago, Ill. Baby-jumper	404,241	May 28	2572	670	47	1179
Wilson, Arthur H., assignor of one-half to G. F. Vogel, St. Louis, Mo. Vehicle-brake	400,887	Apr. 2	690	187	47	133
Wilson, Eliza E. (See Smith, Daniel W., assignor.)						
Wilson, F. Cortez. (See Blake and Wilson.)						
Wilson, Fitzland L., West Bay City, Mich. Hoop-fastening machine	405,517	June 18	1704	450	47	1578
Wilson, Fred, Decatur, Ill. Hair-curler	403,711	May 21	1750	460	47	1012
Wilson, George T., assignor to J. D. Hough and S. Garber, Lowville, N. Y. Vehicle-pole tip	403,236	May 14	1035	274	47	867
Wilson, George T., and J. D. Hough, Lowville, N. Y. Holdback	400,811	Apr. 2	577	158	47	111
Wilson, Homer T., Harrodsburg, Ky. Paper-reel	402,050	Apr. 23	2471	644	47	497
Wilson, Homer T., Harrodsburg, Ky. Paper-reel	403,814	May 21	1904	500	47	1043
Wilson, J. B., *et al.* (See Peterson, Henry, assignor.)						
Wilson, James F., Orange, assignor to T. W. Carr, Marrickville, New South Wales. Grain-cleaning machine	404,456	June 4	122	29	47	1249
Wilson, James G., New York, N. Y. Partition, shutter, and the like	405,450	June 18	1563	420	47	1555
Wilson, James H. (See Hamilton, Cornelius J., assignor.)						
Wilson, John C., Boston, Mass. Message and time recorder	402,120	Apr. 23	2586	670	47	519
Wilson, John C., Boston, Mass. Polarized relay	402,639	May 7	126	30	47	688
Wilson, John C., Boston, Mass., assignor to Municipal Signal Company, Portsmouth, N. H. Municipal signal apparatus	405,235	June 11	1263	335	47	1481

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Wilson, John R., Farmville, Va. Stock-car	401,091	Apr. 9	997	266	47	197
Wilson, Joseph W., Brookville, Kans. Feed-regulator for roller-mills	400,986	Apr. 9	848	227	47	171
Wilson, Newton R., Socorro, N. Mex. Ter. Detached crucible for lead-furnaces	403,815	May 21	1904	500	47	1043
Wilson, Robert, Grubville, Mo. Bag-fastener	405,518	June 18	1708	451	47	1579
Wilson, Stephen, Jr., assignor of one-half to H. C. Conkle, Philadelphia, Pa. Shoe-fastening	400,812	Apr. 2	578	158	47	111
Wilson, William M., assignor of one-half to W. H. Dickerson, Friar's Point, Miss. Seed-cotton cleaner	401,092	Apr. 9	998	266, 267	47	198
Wiltfong, James D., Hyde, Colo. Track-lifter	401,236	Apr. 9	1216	324	47	230
Wilzin, Arthur, New York, N. Y. Pocket-knife	400,987	Apr. 9	849	228	47	171
Wilzin, Arthur, New York, N. Y. Pocket-knife	401,093	Apr. 9	1000	267	47	198
Winchester Repeating Arms Company. (See Whitney, Harry O., assignor.)						
Windhausen, Franz, Berlin, Germany. Apparatus for compressing carbonic-acid gas	405,289	June 18	1332	357	47	1505
Winegardner, William H., assignor to M. R. Flagg, Chicago, Ill. Device for burning fluids	400,618	Apr. 2	272	75	47	57
Wingenroth, Wayne J., Wilkinsburg, Pa. Fruit-gatherer	403,500	May 14	1447	380	47	944
Winger, John, Harrison, Ark. Saw	404,242	May 28	2573	670	47	1179
Winkler, Friedrich G., Zschoppau, Saxony, Germany, assignor to R. E. Lester, New York, N. Y. Sifting granular material	400,619	Apr. 2	273	75, 76, 77	47	57
Winkler, Friedrich G., Zschoppau, Saxony, Germany, assignor to R. E. Lester, New York, N. Y. Rotating wave-generating sifter	400,620	Apr. 2	276	77, 78	47	57
Winkler, Friedrich G., Zschoppau, Saxony, Germany, assignor to R. E. Lester, New York, N. Y. Sifting-machine	400,621	Apr. 2	279	79	47	58
Winn, David J., Sumter, S. C. Machine for winding bagging, &c., in pieces	402,551	Apr. 30	3240	841	47	653
Winslow, Charles T. (See Townsend and Winslow.)						
Winter, Henry W., Boston, assignor to J. W. Brooks, trustee, Cambridge, Mass. Top-lift carrier for heeling-machines	401,619	Apr. 16	1828	477	47	366
Winter, Henry W., Boston, assignor to J. W. Brooks, trustee, Cambridge, Mass. Top-lift holder for heeling-machines	401,620	Apr. 16	1830	477	47	366
Winter, Henry W., Boston, assignor to J. W. Brooks, trustee, Cambridge, Mass. Top-lift holder for heeling-machines	401,621	Apr. 16	1831	477	47	367
Winter, Henry W., Boston, assignor to J. W. Brooks, trustee, Cambridge, Mass. Leather-cutting tool	402,375	Apr. 30	2963	768	47	600
Winter, Henry W., Boston, assignor to J. W. Brooks, trustee, Cambridge, Mass. Trimming-tool for boots or shoes	402,376	Apr. 30	2964	768	47	600
Winter, Otto A., Buxtehude, Prussia, Germany. Machine for grinding the cutters of wood-cutting machines	403,712	May 21	1751	461	47	1013
Winterdorf, Léon, and A. Reymond, New York, N. Y. Campaign-button	401,094	Apr. 9	1001	267	47	198
Wire Fabric Company. (See Ramsey, Charles B., assignor.)						
Wirsching, Aloys, *et al.* (See Burry, John, assignor.)						
Wirt, Herbert C. (See Kimball and Wirt.)						
Wirts, William J., Newark, N. J. Beer-steaming apparatus	404,143	May 28	2409	631	47	1150
Wiseman, Philip S., assignor of one-half to R. Mitchell, Springfield, Ohio. Singletree attachment	403,816	May 21	1906	501	47	1043
Wisloh, Charles F., New York, N. Y. Fly-fan	405,063	June 11	1013	271	47	1434
Wisner, A. Jackson, Philadelphia, Pa. Railway-signal	404,457	June 4	124	30	47	1249
Wisner, Andrew J., assignor of one-half to M. F. Richardson, Philadelphia, Pa. Coupler for air-brake mechanism on railway-cars	404,760	June 4	561	143, 144	47	1336
Wistar, Bartholomew, and M. Pettet, Wellington, Ontario, Canada. Car-starter	403,167	May 14	913	240	47	843
Wiswell Electric Mining Machinery Company. (See Wiswell, Jacob C., assignor.)						
Wiswell, Jacob C., Medford, Mass., assignor to Wiswell Electric Mining Machinery Company, Portland, Me. Ore-crusher and metal-separator	400,988	Apr. 9	850	228	47	172
Witherbe, Thomas F., Port Henry, N. Y. Dephosphorizing iron ore	400,622	Apr. 2	281	.....	47	59
Wittich, Frederick A., *et al.* (See Reichels, Otto, assignor.)						
Woelk, Edward A., Belleville, Ill. Telephone	402,121	Apr. 23	2587	670	47	520
Woglom, William H., Brooklyn, N. Y. Punch	401,918	Apr. 23	2272	590	47	459
Wohlert, Johannes. (See Fleischhauer, Louis, assignor.)						
Wolber, Gustave J., Newark, N. J. Seat	400,623	Apr. 2	281	79	47	59
Wolf, Frederick W., Chicago, Ill. Oil-extracting and gas-saving apparatus for ice or refrigerating machines	405,451	June 18	1594	420	47	1555
Wolf, Josef, Newark, N. J. Lock-hinge	403,570	May 21	1549	408	47	972
Wolf, Max, assignor of one-half to J. Huber, Cincinnati, Ohio. Barrel-heater	402,879	May 7	482	126	47	753
Wolf, Sebastian, Stahlhammer, Upper Silesia, Germany. Recovering soda	405,754	June 25	2091	.....	47	1657
Wolfe, George C., Chippewa Falls, Wis. Overshoe	403,817	May 21	1907	501	47	1043
Wolfe, Horace S., assignor of one-half to N. E. Hubbard, Battle Creek, Mich. Kitchen-cabinet	402,707	May 7	226	59	47	706
Wolfe, Frederick, trustee. (See Burke, Charles G., assignor.)						
Wolfinger, Francis R., Chicago, Ill. Folding bed	404,243	May 28	2573	670	47	1180
Woll, Joseph E., assignor of one-half to H. J. Thoma and W. M. McCombs, Pittsburg, Pa. Machine for grinding shovel-blanks	403,818	May 21	1908	501, 502	47	1044
Wood, Albert A. (See Lucas and Wood.)						
Wood, Aurin, assignor to C. Gray, Worcester, Mass. Bolt-threading machine	405,236	June 11	1267	335, 336	47	1481
Wood, Edmund M. (See Hastings, George W., assignor.)						
Wood, Ellis, Leeds, county of York, England. Dyeing apparatus	405,141	June 11	1111	296	47	1452
Wood, Fremont E., Yucca, Ariz. Ter. Lightning-conductor for wire fences	401,095	Apr. 9	1002	267, 268	47	199
Wood, James F. and J. J., Wilmington, Del. Extensible car-step	403,237	May 14	1036	274	47	867
Wood, John F. (See Wood, James F. and J. F.)						
Wood, Joseph L., New York, N. Y. Air-cooling apparatus	405,064	June 11	1014	271	47	1434
Wood, Leonard C., *et al.* (See Sterick, Sylvester T. F., assignor.)						
Wood, Thomas H., deceased, assignor to J. B. Brewster & Company, New York, N. Y. Light carriage. (Reissue)	10,998	Apr. 30	3241	841	47	653
Wood, William E., Utica, N. Y. Radiator-valve	405,861	June 25	2233	587, 588	47	1685
Wood, William T., Washington, D. C. File case or cabinet	402,377	Apr. 30	2961	769	47	600
Wood, William T., Washington, D. C. File case or cabinet	403,168	May 14	914	240	47	843
Woodard, Russell M. (See Sleeper and Woodard.)						
Woodbury, Amasa O., Pennington, Tex. Cotton-chopper	403,403	May 14	1306	341	47	917
Woodbury, Edward F. (See Woodbury, Merrill, Patten, and Woodbury.)						
Woodbury, James A., Winchester, J. Merrill, G. Patten, and E. F. Woodbury, Boston, Mass. Air-engine	404,237	May 28	2564	668, 669	47	1178
Woodhouse, Daniel A., Elizabeth, N. J., and T. V. Forster, Brooklyn, N. Y. Fireman's electric-wire cutter	404,667	June 4	440	110, 111	47	1310

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Woodle, Isaac N., Albany, Oreg. Veterinary surgical instrument	405,642	June 18	1916	504	47	1618
Woodmansee, Alvin D., Natick, R. I. Cam	401,330	Apr. 9	1337	356	47	962
Woodmansee, Alvin D., Natick, R. I. Adjustable cam	403,169	May 14	915	241	47	843
Woodruff, Edmund W., Washington, D. C. Document or letter file	404,458	June 4	127	31	47	1249
Woodruff, Robert S., trustee. (See Arnold, Horace L., assignor.)						
Woods, John B., Mineola, Tex. Miller-exterminator	404,942	June 11	834	216	47	1306
Woodward, Alfred. (See Cameron and Harris, assignors.)						
Woodward, Arthur T., Boston, Mass. Plastic compound for use in various arts	403,631	May 21	1634	.....	47	989
Woodward, Charles E. W., Chicopee Falls, assignor to Overman Wheel Company, Boston, Mass. Velocipede	401,237	Apr. 9	1217	328	47	239
Woodward, George W., Brooklyn, N. Y. Wick-raiser for lamps	406,016	June 25	2496	652	47	1729
Woodward, Harlow E., Boston, and S. R. King, Cambridge, Mass. Label attachment for bottles	406,017	June 25	2497	652	47	1730
Woodward, John J., and P. B. Bibb, Montgomery, Ala. Cotton-seed crusher	402,289	Apr. 30	2830	732 738	47	575
Woodward, Russel G. (See Muther and Woodward.)						
Woodward, William, Chicago, Ill. Sight-feed lubricator	402,640	May 7	127	31	47	688
Woodworth, Albert L., Norfolk, Va. Wear-plate for buoy-eyes	400,848	Apr. 2	692	187	47	133
Wooldridge, William H., Birmingham, Ala. Stove-top	404,065	May 28	2291	599	47	1126
Woolsey, Charles A. and W. W., Ohio, Tex. Car-coupling	403,632	May 21	1635	432	47	989
Woolsey, William W. (See Woolsey, Charles A. and W. W.)						
Woolworth, Calvin C., *et al.* (See Bunce, Slate, and Rodda, assignors.)						
Wooster, Noyes C. (See Cooke, Edwin M., assignor.)						
Wootton, William S., Scottsburg, Va. Tobacco-hanger	403,819	May 21	1909	502	47	1044
Worden, George W., Lewiston, N. Y. Fire-escape	404,514	June 4	223	59	47	1266
Worden, William S., Holdrege, Nebr. Drawing apparatus	405,386	June 18	1489	395	47	1534
Worley, William A. (See Stogsdill and Worley.)						
Worswick, Thomas. (See Killey, Joseph H., assignor.)						
Worth, George L., and J. B. Wyatt, Wymore, Nebr. Three-throw open split switch	403,238	May 14	1037	274 275	47	867
Worthington, Charles C., Irvington, N. Y. Direct-acting duplex engine	401,401	Apr. 16	1471	388 389 390	47	300
Worthington, Charles C., Irvington, N. Y. Condensing apparatus	405,142	June 11	1113	296	47	1452
Worthington, George, Pittsfield, Ill. Dumping-wagon	405,974	June 25	2419	633	47	1716
Woy, Henry O., Green City, Mo. Weather-strip	400,813	Apr. 2	579	138	47	111
Wright, Belton L., assignor to S. A. Barnes, Bridgeport, Conn. Latch	400,814	Apr. 2	580	139	47	111
Wright, Charles, South Elgin, Ill. Whiffletree-hook	405,643	June 18	1917	504	47	1618
Wright, Charles E., Waterbury, Conn. Machine for filing, setting, and straightening saws	403,314	May 14	1159	308 309	47	890
Wright, Edward S., trustee. (See McKean, Hugh S., assignor.)						
Wright, Franklin B. (See Beckwith, Eugene K., assignor.)						
Wright, Frederick K., assignor to Steam Gauge and Lantern Company, Rochester, N. Y. Loom-shuttle	403,979	May 28	2142	560	47	1097
Wright, Granville W., assignor to Sargent & Company, New Haven, Conn. Door-check	400,815	Apr. 2	581	139	47	111
Wright, Henry A., Spring Garden, Mo. Flood-gate	404,761	June 4	562	141	47	1336
Wright, John, Cleveland, Ohio. Pattern-board	404,144	May 28	2410	632	47	1150
Wright, Josiah C., Cochran, Ind. Vertically-movable kitchen-safe	403,170	May 14	916	241	47	844
Wright, Pliny J., assignor of one-half to C. E. Sampson, Minneapolis, Minn. Valve-reseating tool	400,989	Apr. 9	852	228	47	172
Wright, Richard H. (See Griswold, Thurman, and Wright.)						
Wright, Strethill H., Birkenhead, county of Chester, England, assignor to Meyer-Sniffen Company, (limited,) New York, N. Y. Apparatus for flushing urinals, &c.	401,321	Apr. 9	1339	356 357	47	264
Wright, Walter B., assignor to Williams & Wright, Chicago, Ill. Fluid-feeder	405,934	June 25	2351	617	47	1704
Wright, Walter B., assignor to International Gas and Fuel Company, Chicago, Ill. Brick-kiln	405,935	June 25	2352	617	47	1705
Wright, Walter B., assignor to International Gas and Fuel Company, Chicago, Ill. Regenerative furnace	405,936	June 25	2353	617	47	1705
Wright, Wilbur L., assignor of one-half to Sigourney Bros., Bristol, Conn. Combined pot and protector for seedlings, &c	404,585	June 4	334	90	47	1228
Wright, William, Willink, N. Y. Chimney-protector	402,641	May 7	129	31	47	688
Wright, William H., Buffalo, N. Y. Maching for making steel balls	400,990	Apr. 9	853	228 229	47	172
Wright, William N., Freeport, Ohio. Car-coupling	405,644	June 18	1918	505	47	1618
Wuerpel, Morris, St. Louis, Mo. Wrecking-car	402,378	Apr. 30	2967	709 710	47	601
Wuerpel, Morris, St. Louis, Mo. Electric appliance for railway-switches	405,519	June 18	1709	461	47	1579
Wuest, Henry. (See Hoepfner and Wuest.)						
Wyant, Jasper N. (See Lowery and Wyant.)						
Wyatt, John B. (See Worth and Wyatt.)						
Wyler, Louis W. (See Rosenthal, Charles H., assignor.)						
Wyman, Horace. (See Crompton and Wyman.)						
Wyman, Horace, assignor to Crompton Loom Works, Worcester, Mass. Loom	402,122	Apr. 23	2589	670 671	47	520
Wyman, Horace, assignor to Crompton Loom Works, Worcester, Mass. Shuttle-box mechanism for looms	405,645	June 18	1919	505 506	47	1619
Wynne, Frank, Westminster, county of Middlesex, England. Apparatus for the application of electricity to propel vehicles	401,322	Apr. 9	1341	357 358	47	265
Wythe, William W., Chautauqua, N. Y. Cash indicator and register	401,725	Apr. 16	1976	517 518	47	393
Xander, Christian, and W. Thomas, Washington, D. C. Funnel	402,379	Apr. 30	2969	710	47	601
Xander, George A., Hamburg, and J. G. Xander, Reading, Pa. Sewing-machine	401,989	Apr. 23	2370	616 617	47	478
Xander, John G. (See Xander, George A. and J. G.)						
Yale, Charles O., assignor of one-half to M. M. Davis, Rome, N. Y. Apparatus for the electrolysis of lead	405,452	June 18	1506	421	47	1555
Yale & Towne Manufacturing Company. (See Capen, Thomas W., assignor.)						
Yale & Towne Manufacturing Company. (See Fowler, Elbert W., assignor.)						
Yale & Towne Manufacturing Company. (See Stockwell, Emory, assignor.)						
Yale & Towne Manufacturing Company. (See Taylor, Warren H., assignor.)						
Yale & Towne Manufacturing Company. (See Weston, Thomas A., assignor.)						
Yarger, John A., New Hampton, Iowa. Satchel attachment	400,824	Apr. 2	283	79	47	59
Yarnell, John H., Somerset, Ohio. Dinner-pail	403,239	May 14	1039	275	47	868
Yarrington, Perry, Boston, Mass. Apparatus for the manufacture of hydrogen gas	402,216	Apr. 30	2729	707	47	556

Alphabetical list of patentees, April to June, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Yates, Silas W., assignor to P. Faut, Wilmington, Ill. Tailor's square	403,404	May 14	1307	342	47	917
Yeakel, Abraham M., assignor to Cressmann & Yeakel, Sellersville, Pa. Stem winding and setting watch	403,820	May 21	1911	502	47	1044
Yeiser, Frederick, Tampa, Fla. Electric motor	402,290	Apr. 30	2831	733	47	575
York, Horace M., Kennebunk, Me. Hammock	403,315	May 14	1106	309	47	892
Yost, George W. N., New York, N. Y., assignor, by mesne assignments, to American Writing Machine Company, of New York. Type-writing machine	401,990	Apr. 23	2374	618	47	479
Young, Alexander, Honolulu, Hawaii. Apparatus for evaporating saccharine or other liquids	401,238	Apr. 9	1219	325	47	240
Young, Alexander, Honolulu, Hawaii. Superheating steam-generator	401,239	Apr. 9	1222	326	47	240
Young, Charles M., and P. L. Gibbs, Clinton, Iowa. Oil-burning stove or furnace	403,405	May 14	1308	342	47	918
Young, Harlan P., assignor of one-half to J. L. Pinder, Lowell, Mass. Torpedo-staff	401,810	Apr. 23	2117	552	47	429
Young, Jacob H., Lancaster, N. Y. Railway-crossing signal	401,323	Apr. 9	1345	358	47	265
Young, John, assignor to Western Electric Company, Chicago, Ill. Testing apparatus for fire-alarms	402,642	May 7	130	31, 32	47	689
Young, John N. (See Quigg, George R., assignor.)						
Youngs, Fred E., *et al.* (See Guest, Joseph, assignor.)						
Youngs, Sidney M., *et al.* (See Guest, Joseph, assignor.)						
Yount, Silas T. (See Zerse and Yount.)						
Yule, Carrie G. (See Yule, George, assignor.)						
Yule, George, assignor to C. G. Yule, Newark, N. J. Hat-forming machine	401,450	June 4	130	31, 32	47	1250
Zabel, Franz A. C., Ingolstadt, assignor to Enlner & Lorenz, Halle-on-the-Saale, Prussia, Germany. Apparatus for copying writings	401,402	Apr. 16	1474	390	47	301
Zalikowski, Jan, assignor of three-fourths to A. J. Kowalski, T. Lewandowski, and A. Schultz, Chicago, Ill. Window casing and sash	402,708	May 7	227	60	47	707
Zalinski, Edmund L. (See Smith and Zalinski.)						
Zalinski, Edmund L., U. S. Army, and H. J. Smith, Pompton, N. J. Electrical primer	405,646	June 18	1925	507	47	1620
Zalinski, Edmund L., U. S. Army, and H. J. Smith, Pompton, N. J. Delay-action primer	405,647	June 18	1927	507	47	1620
Zattan, Charles, Morris, assignor to Coleman Hardware Company, Chicago, Ill. Spring-hinge	403,713	May 21	1754	461	47	1013
Zellers, William H., Philadelphia, Pa. Forward and reverse motion mechanism	405,290	June 18	1353	357	47	1506
Zerbe, Emil P., Detroit, assignor to E. A. Owen, A. A. and A. Cailie, East Saginaw, Mich. Cash-carrier	404,943	June 11	835	217	47	1397
Zerbe, Emil P., and F. S. Church, Detroit, assignors to E. A. Owen, A. A. and A. Caille, East Saginaw, Mich. Cash-carrier	404,944	June 11	836	217	47	1397
Zerbe, James S. (See Fee and Zerbe.)						
Zerbe, James S., Hartwell, Ohio, assignor, by mesne assignments, to National Cotton Seed Oil and Huller Company, Memphis, Tenn. Cotton-seed separator	404,066	May 28	2292	599	47	1126
Zerse, Otto G., and S. T. Yount, Lafayette, Ind. Vaginal syringe	404,702	June 4	564	144	47	1336
Ziegler, William S., Butler, Pa. Heating and ventilating apparatus	402,217	Apr. 30	2730	708	47	556
Zimmer, G. C. (See Diehl, Theodor, assignor.)						
Zimmerling, August F., assignor of one-half to J. A. and P. E Dutcher, Milwaukee, Wis. Oil-stove	405,291	June 18	1355	357	47	1506
Zinn, Jennie A. (See Rose, Albert, assignor.)						
Zinn, John W., Hawthorne, Fla. Heating attachment for lamps	401,475	Apr. 16	1584	419	47	322
Zitschke, Frederick L., New York, N. Y. Insect-destroying syringe	401,622	Apr. 16	1832	477	47	367
Zuahlen, Ami, Philadelphia, Pa. Machine for engraving watch or other cases	402,380	Apr. 30	2970	771	47	601
Zürcher, Max A., Phœnixville, Pa. Railway-car	401,528	Apr. 16	1659	438 439	47	335
Zürcher, Max A., Phœnixville, Pa. Railway-car frame	401,529	Apr. 16	1662	439 440	47	336
Zürcher, Max A., Phœnixville, Pa. Railway-car	401,530	Apr. 16	1665	440	47	336
Zürcher, Max A., Montreal, Canada. Railway-car	405,292	June 18	1356	357 358	47	1506
Zwiesler, Louis, assignor of one-half to J. Menclen, Kansas City, Mo. Weighing and measuring scoop	405,648	June 18	1928	507	47	1620
Zwietusch, Otto, Milwaukee, Wis. Beer-filter	402,500	Apr. 30	3165	820	47	638

ALPHABETICAL LIST OF PATENTEES OF DESIGNS.

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Anderson, William C., assignor to W. L. Libbey & Son Company, Toledo, Ohio. Ornamentation of glassware	19,053	Apr. 23	47	405
Anderson, William C., assignor to W. L. Libbey & Son Company, Toledo, Ohio. Ornamentation of glassware	19,076	May 7	47	662
Australian Knitting Company. (See Kinsey, George D., assignor.)				
Australian Knitting Company. (See Kinsey, Peter S., assignor.)				
Baker, William, Jr., Baltimore County, Md. Bottle	19,125	June 4	47	1223
Barkentin, George S., assignor to P. & F. Corbin, New Britain, Conn. Ornamentation of builders' hardware	19,077	May 7	47	662
Barker, William, Watervliet, N. Y. Cellar	19,157	June 18	47	1490
Barnes, Henry, New Haven, Conn. Laundry-wagon	19,104	May 21	47	951
Bascom, Henry C., Lansingburg, N. Y. Box-stove	19,005	Apr. 9	47	144
Bawden, John, *et al.* (See Calely, Edward L., assignor.)				
Bawden, John, *et al.* (See Calely and Read, assignors.)				
Bawden, John H., *et al.* (See Calely, Edward L., assignor.)				
Bawden, John H., *et al.* (See Calely and Read, assignors.)				
Bell, Thomas A., Trenton, N. J. Seggar	19,126	June 4	47	1223
Benas, Magnus, New York, N. Y. Wall-pocket	19,146	June 11	47	1358
Benton, Thomas K., Summit, N. J., assignor to Courvoisier, Wilcox Manufacturing Company, New York, N. Y. Watch-case	19,061	Apr. 30	47	530
Berry, Henry, assignor to Derby Silver Company, Shelton, Conn. Brush or mirror back	19,062	Apr. 30	47	530
Bettmann, William, assignor to Restorff & Bettmann, New York, N. Y. Bottle-case	19,088	May 14	47	818
Bigelow Carpet Company. (See Clémencet, Louis, assignor.)				
Bleischwitz, Joseph, Boston, Mass., assignor to Cheney Brothers, South Manchester, Conn. Textile fabric	18,977	Apr. 2	47	2
Borchardt, Albert, assignor to V. H. Rothschild, Hoboken, N. J. Shirt-bosom	19,171	June 25	47	1636
Briggs, Richard, Boston, Mass. Ornamentation of glassware	19,105 to 19,106	May 21	47	951
Broadbent, Eli W. (See Faulkner, Alfred, assignor.)				
Buttler Art Glass Company. (See Buttler, William, assignor.)				
Buttler, William, assignor to Buttler Art Glass Company, Fostoria, Ohio. Window-glass	19,054	Apr. 23	47	405
Calely, Edward L., Philadelphia, Pa., assignor to G. Combs, J. and J. H. Bawden, Freehold, N. J. Fire-place grate	19,112	May 28	47	1073
Calely, Edward L., Philadelphia, Pa., assignor to G. Combs, J. and J. H. Bawden, Freehold, N. J. Fire-place lining	19,127	June 4	47	1223
Calely, Edward L., Philadelphia, Pa., assignor to G. Combs, J. and J. H. Bawden, Freehold, N. J. Portable fire-place grate	19,147	June 11	47	1358
Calely, Edward L., Philadelphia, Pa., assignor to G. Combs, J. and J. H. Bawden, Freehold, N. J. Portable fire-place grate	19,150	June 11	47	1358
Calely, Edward L., and J. A. Read, Philadelphia, Pa., assignors to G. Combs, J. and J. H. Bawden, Freehold, N. J. Portable fire-place grate	19,148 to 19,149	June 11	47	1358
Cheney Brothers. (See Bleischwitz, Joseph, assignor.)				
Chesebro, James F., Knoxville, Tenn. Inhaler-tube	19,128	June 4	47	1223
Christesen, Rodolphe W. E., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Latch-case	19,129	June 4	47	1223
Clark & Bro., George A. (See Wilson, William, assignor.)				
Clémencet, Louis, West Hoboken, N. J., assignor to Bigelow Carpet Company, Clinton, Mass. Carpet	19,089	May 14	47	818
Cluett, Bro. & Co., George B. (See McFadden, William H., assignor.)				
Coffin, Francis A., Indianapolis, Ind. Drawer-pull	18,978	Apr. 2	47	2
Coffin, Francis A., Indianapolis, Ind. Desk-curtain	19,172	June 25	47	1636
Cohen, Stanley A., New York, N. Y. Back of playing-cards	19,173	June 25	47	1636
Coiffe, Jean B. G. E., assignor to G. Vogt, Limoges, France. Dish	18,979	Apr. 2	47	2
Collins & Co., T. J. (See Collins, Timothy J., assignor.)				
Collins, Timothy J., assignor to T. J. Collins & Co., Toledo, Ohio. Dressing-case	19,130	June 4	47	1223
Combs, Gilbert, *et al.* (See Calely, Edward L., assignor.)				
Combs, Gilbert, *et al.* (See Calely and Read, assignors.)				
Condé, Swita, Oswego, N. Y. Knitted garment	19,063	Apr. 30	47	530
Condé, Swita, Oswego, N. Y. Knitted garment	19,078 to 19,079	May 7	47	662
Corbin, P. & F. (See Barkentin, George S., assignor.)				
Courvoisier, Wilcox Manufacturing Company. (See Benton, Thomas K., assignor.)				
Cubley, Edwin J., Ravenswood, Ill. Banjo	19,060	May 7	47	662
Dalton, Joseph E., Brooklyn, N. Y. Ash-receiver, &c	19,047	Apr. 16	47	276
Davis, Charles A., Washington, D. C. Racket	19,048	Apr. 16	47	276
Derby Silver Company. (See Berry, Henry, assignor.)				
Dittenhoefer, Meyer. (See Wallace, Abijah, assignor.)				
Donillet, Louis A., New York, N. Y. Surface ornamentation of glove-buttons	19,174 to 19,176	June 25	47	1636
Eberhard, George F., Cleveland, Ohio. Bridle-bit	19,064	Apr. 30	47	530
Eberhard Manufacturing Company. (See Howe, Eugene L., assignor.)				
Fairchild, Harry P., New York, N. Y. Match-box	19,177	June 25	47	1636
Fatman, Morris, New York, N. Y. Cloth for cloaking, &c	19,158 to 19,159	June 18	47	1490
Fatman, Morris, New York, N. Y. Cloth for cloaking	19,178	June 25	47	1636
Faulkner, Alfred, Jersey City, N. J., assignor to E. W. Broadbent, New York, N. Y. Sewing-machine frame	18,982	Apr. 2	47	2
Fish, William H., Columbus, Ohio. Building-brick	19,055	Apr. 23	47	406
Flagg, Thomas J., New York, N. Y. Made-up scarf	19,160	June 18	47	1490
Flanagen, James L., Philadelphia, Pa. Pipe-collar and fine-stopper	19,006	Apr. 9	47	144
Folsom, James L., Brooklyn, N. Y., assignor to Hartford Carpet Company, Hartford, Conn. Carpet	19,007 to 19,015	Apr. 9	47	144
Folsom, James L., Brooklyn, N. Y., assignor to Hartford Carpet Company, Hartford, Conn. Carpet	19,065	Apr. 30	47	530

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Fries, John W., Salem, N. C. Woven fabric	19,113	May 28	47	1073
Gager & Company, O. A. (See Morel, Emile, assignor.)				
Gager, Oliver A. (See Gérard, Emile, assignor.)				
Gérard, Emile, Limoges, France, assignor to O. A. Gager, Brooklyn, N. Y. Ornamentation of dishes	19,066	Apr. 30	47	530
Gloekler, Charles A., Pittsburg, Pa. Meat-rack	19,179	June 25	47	1636
Gnichwitz, Rudolph, Ashbourne, Pa. Type	19,081	May 7	47	662
Goldman, Henry J., Troy, N. Y. Horseshoe	18,980	Apr. 2	47	2
Graham, William H., St. Louis, Mo. Sewer-trap	18,981	Apr. 2	47	2
Gulden, Jacob, New York, N. Y. Bottle	19,107	May 21	47	951
Hall, Leander C., Jr., Philadelphia, Pa. Mitt	19,180	June 25	47	1636
Hall, Zachary T., Philadelphia, Pa. Pipe-collar and flue-stopper	19,016	Apr. 9	47	144
Hancock, Becker & Co. (See Lawson, James W., assignor.)				
Harrington, Gilbert H., and W. A. Richardson, Worcester, Mass. Ornamentation of pistol-handles	19,090	May 14	47	818
Hartford Carpet Company. (See Folsom, James L., assignor.)				
Hartford Carpet Company. (See Hunt, Henry, assignor.)				
Hartford Carpet Company. (See Sayers, William E., assignor.)				
Haslam, Lewis, Ravenswood, near Bolton, county of Lancaster, England. Textile fabric	19,131	June 4	47	1223
Hawkes, Thomas G., Corning, N. Y. Ornamentation of glassware	19,114	May 28	47	1073
Hawthorne Woolen Mills. (See House, Frank T., assignor.)				
Herbert, Peter, Cincinnati, Ohio. Table	19,115	May 28	47	1073
Heyer, Charles E., Chicago, Ill. Font of printing-type	19,181	June 25	47	1636
Horan, Henry, East Orange, N. J., assignor to Lowell Manufacturing Company, Lowell, Mass. Carpet	19,017 to 19,025	Apr. 9	47	144
House, Edward O., Troy, N. Y. Collar or cuff	18,983	Apr. 2	47	2
House, Frank T., Port Chester, N. Y., assignor to Hawthorne Woolen Mills, Glenville, Conn. Fabric for cloaks, &c	19,091 to 19,094	May 14	47	818
Howard, Henry H., New York, N. Y. Scissors	19,029	Apr. 9	47	144
Howe, Eugene L., assignor to Eberhard Manufacturing Company, Cleveland, Ohio. Harness-terret	19,151	June 11	47	1358
Howe, Solomon H., New York, N. Y. Bag	19,161	June 18	47	1490
Hunt, Henry, Greenville, N. J., assignor to Hartford Carpet Company, Hartford, Conn. Carpet	19,026 to 19,028	Apr. 9	47	144
Hunt, Henry, Greenville, N. J., assignor to Hartford Carpet Company, Hartford, Conn. Carpet	19,067	Apr. 30	47	530
Ihlenburg, Herman, assignor to MacKellar, Smiths & Jordan Company, Philadelphia, Pa. Font of ornamental type	19,109	May 21	47	952
Jacobs, Winthrop L., East Orange, N. J., assignor to Lowell Manufacturing Company, Lowell, Mass. Carpet	18,984 18,985	Apr. 2	47	2
Jefferson, William J. (See Neiswanger, Joseph E., assignor.)				
Jennings, A. G. (See Schwalbach, Edward, Jr., assignor.)				
Kelly, William C., Louisville, Ky. Ax	19,056	Apr. 23	47	406
King, William C., Pittsburg, Pa. Tumbler, &c	19,162	June 18	47	1490
Kinsey, George D., Brooklyn, N. Y., assignor to Australian Knitting Company, Paterson, N. J. Knitted fabric	19,057 19,058	Apr. 23	47	406
Kinsey, George D., Brooklyn, N. Y., assignor to Australian Knitting Company, Paterson, N. J. Knitted fabric	19,095 to 19,097	May 14	47	818
Kinsey, Peter S., Newark, assignor to Australian Knitting Company, Paterson, N. J. Knitted fabric	19,098	May 14	47	818
Koster, Charles H., assignor to Unexcelled Fireworks Company, Brooklyn, N. Y. Decorative fabric	19,152	June 11	47	1358
Kunze, Charles, Newark, N. J., assignor to P. Wiederer & Brother, New York, N. Y. Mirror or brush back	19,049	Apr. 16	47	276
Langerfeld, Arthur, New York, N. Y., assignor to J. A. and R. B. Miller, Chicago, Ill. Sheet-metal elbow	18,986	Apr. 2	47	2
Lawson, James W., East Providence, assignor to Hancock, Becker & Co., Providence, R. I. Gem-setting	19,153	June 11	47	1358
Ledig, Charles W., Philadelphia, Pa. Canteen	19,050	Apr. 16	47	276
Lee Company, J. Ellwood. (See Lee, John E., assignor.)				
Lee, John E., assignor to J. Elwood Lee Company, Conshohocken, Pa. Coupling for electrical conductors	19,030	Apr. 9	47	144
Libbey & Son Company, W. L. (See Anderson, William C., assignor.)				
Libbey & Son Company, W. L. (See Locke, Joseph, assignor.)				
Libbey & Son Company, W. L. (See Richardson, Solon O., Jr., assignor.)				
Lloyd, Harlan P. (See Sagendorph, Longley L., assignor.)				
Locke, Joseph, assignor to W. L. Libbey & Son Company, Toledo, Ohio. Plaque	19,116	May 28	47	1073
Lowell Manufacturing Company. (See Horan, Henry, assignor.)				
Lowell Manufacturing Company. (See Jacobs, Winthrop L., assignor.)				
Lowell Manufacturing Company. (See McMann, John, assignor.)				
Lowell Manufacturing Company. (See Poole, Edward, assignor.)				
Lowell Manufacturing Company. (See Valentine, Lucy W., assignor.)				
Lowell Manufacturing Company. (See Wright, George C., assignor.)				
Lowrey, William W., Baltimore, Md. Bottle	19,182	June 25	47	1636
MacKellar, Smiths & Jordan Company. (See Ihlenburg, Herman, assignor.)				
Marston, Louis H., Chicago, Ill. Organ-case top	18,987	Apr. 2	47	2
Marston, Louis H., Chicago, Ill. Organ-case top	19,068	Apr. 30	47	530
Marston, Louis H., Chicago, Ill. Organ-case	19,099	May 14	47	818
McFadden, William H., Green Island, assignor to G. B. Cluett, Bro. & Co., Troy, N. Y. Collar	19,163	June 18	47	1490
McMann, John, Boston, Mass., assignor to Lowell Manufacturing Company, Lowell, Mass. Carpet	18,988	Apr. 2	47	2
Meagher, Thomas E., Philadelphia, Pa. Rug	19,051	Apr. 16	47	276
Meyer, Charles T. and V. E., Bergen, N. J., assignors to E. C. Sampson, New York, N. Y. Oil-cloth	19,031 to 19,039	Apr. 9	47	144
Meyer, Charles T. and V. E., Bergen, N. J., assignors to E. C. Sampson, New York, N. Y. Oil-cloth	19,132 to 19,138	June 4	47	1223
Meyer, Victor E. (See Meyer, Charles T. and V. E.)				
Miller, Charles B., Philadelphia, Pa. Bottle	19,108	May 21	47	951
Miller, James A., *et al.* (See Langerfeld, Arthur, assignor.)				
Miller, Robert B., *et al.* (See Langerfeld, Arthur, assignor.)				
Moore, Frederic G., Bergen Point, N. J. Water-closet	19,164	June 18	47	1490
Morel, Emile, Limoges, Haute-Vienne, France, assignor to O. A. Gager & Company, New York, N. Y. Ornamentation of plates	18,989	Apr. 2	47	2
Mount Penn Stove Works. (See Orr, James A., assignor.)				
Neiswanger, Joseph E., assignor to W. J. Jefferson, Chicago, Ill. Opera-glass receptacle	19,100	May 14	47	818

Alphabetical list of patentees of designs, April to June, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Newlands, Andrew M., Galt, Ontario, Canada. Carriage rug or robe	19,117	May 28	47	1073
Orr, James A., assignor to Mount Penn Stove Works, Reading, Pa. Heating-stove	18,990	Apr. 2	47	2
Palmer, Isaac E., Middletown, Conn. Hammock	19,110	May 21	47	952
Poole, Edward, Brooklyn, N. Y., assignor to Lowell Manufacturing Company, Lowell, Mass. Carpet	18,991 to 18,994	Apr. 2	47	2
Poole, Edward, Brooklyn, N. Y., assignor to Lowell Manufacturing Company, Lowell, Mass. Carpet	19,040 to 19,042	Apr. 9	47	144
Powell, William H., assignor to J. E. Shaw, Philadelphia, Pa. Frame for electric bells	19,118	May 28	47	1073
Pray, J. Parker, New York, N. Y. Finger-nail polisher	19,185	June 25	47	1636
Read, Joseph A. (See Calely and Read.)				
Restorff & Bettmann. (See Bettmann, William, assignor.)				
Richardson, Solon O., Jr., assignor to W. L. Libbey & Son Company, Toledo, Ohio. Ornamentation of pitchers, &c	19,165	June 18	47	1490
Richardson, William A. (See Harrington and Richardson.)				
Rohrman, Joseph B., Philadelphia, Pa. Pipe-collar and flue-stopper	19,043	Apr. 9	47	144
Rothschild, Victor H. (See Borchardt, Albert, assignor.)				
Rothschild, Victor H., New York, N. Y. Shirt-bosom	19,154	June 11	47	1358
Rowe, Garvin, Bridgeport, Conn. Pencil	19,119	May 28	47	1073
Russell & Erwin Manufacturing Company. (See Christesen, Rodolphe W. E., assignor.)				
Sagendorpb, Longley L., Cincinnati, Ohio. Metallic roofing-plate	19,139	June 4	47	1223
Sagendorph, Longley L., assignor of one-half to H. P. Lloyd, Cincinnati, Ohio. Metallic ceiling	19,155	June 11	47	1358
Sampson, Edward C. (See Meyer, Charles T. and V. E., assignors.)				
Sandt, Eugene H., Allentown, Pa. Bretzel or cracker	19,059	Apr. 23	47	406
Sandt, Eugene H., Allentown, Pa. Bretzel or cracker	19,069	Apr. 30	47	530
Sayers, William E., New York, N. Y., assignor to Hartford Carpet Company, Hartford, Conn. Carpet	19,070	Apr. 30	47	530
Schedler, Herman, Jersey City, N. J. Toy money-safe	19,140	June 4	47	1223
Scheppers Brothers. (See Topham, Henry, assignor.)				
Schiess, Catharine, New York, N. Y. Initial letter for handkerchiefs	19,082	May 7	47	662
Schmidt, Frederick, assignor to F. M. Whiting & Co., North Attleborough, Mass. Spoon or fork handle	19,071	Apr. 30	47	530
Schofield, Mason & Co. (See Stroheim, Julius, assignor.)				
Schwalbach, Edward, Jr., assignor to A. G. Jennings, Brooklyn, N. Y. Embroidery for mitts, &c	19,166	June 18	47	1490
Scott, George A., New York, N. Y. Curling and crimping comb	18,995	Apr. 2	47	2
Shaw, J. Elliott. (See Powell, William H., assignor.)				
Simons, John F., Philadelphia, Pa. Thimble	19,121	May 28	47	1073
Sly, William W., Cleveland, Ohio. Handle for stove-lid lifters, &c	19,156	June 11	47	1358
Smith & Egge Manufacturing Company. (See St. John, John, assignor.)				
Soeding, Gustav, Philadelphia, Pa. Strength-tester casing	19,060	Apr. 23	47	406
Soltmann, Edward G., New York, N. Y. T-square	19,044	Apr. 9	47	144
Spencer, Sarah P., Jr., Elizabeth, N. J. Book-mark	19,072	Apr. 30	47	530
St. John, John, assignor to Smith & Egge Manufacturing Company, Bridgeport, Conn. Broom-holder	19,101	May 14	47	818
Staudinger, Rudolph, Brooklyn, N. Y. Canister	19,141	June 4	47	1223
Stayner, Theodore B., Providence, R. I. Watch charm or pendant	19,102	May 14	47	818
Steffin, Albert, New Bedford, Mass. Salt-box or condiment-holder	19,120	May 28	47	1073
Stewart, Alexander, Philadelphia, Pa. Base for farina-boilers	19,183	June 25	47	1636
Stroheim, Julius, New York, N. Y., assignor to Schofield, Mason & Co., Philadelphia, Pa. Rug	18,996	Apr. 2	47	2
Stumpf, Emil, Elberfeld, Germany. Fabric	19,167	June 18	47	1490
Tilton, George P., assignor to Towle Manufacturing Company, Newburyport, Mass. Spoon, &c	19,184	June 25	47	1636
Topham, Henry, assignor to Scheppers Brothers, Philadelphia, Pa. Fabric for cloaking, &c	19,073	Apr. 30	47	530
Topham, Henry, assignor to Scheppers Brothers, Philadelphia, Pa. Fabric for cloaking, &c	19,083 19,084	May 7	47	662
Towle Manufacturing Company. (See Tilton, George P., assignor.)				
Trimont Manufacturing Company. (See Vinton, John H., assignor.)				
Trott, Charles F. (See Whiting, William S., assignor.)				
Underhill, Francis M., Brooklyn, assignor to Whitall, Tatum & Co., New York, N. Y. Bottle	18,997	Apr. 2	47	2
Unexcelled Fireworks Company. (See Koster, Charles H., assignor.)				
Valentine, Lucy W., Boston, Mass., assignor to Lowell Manufacturing Company, Lowell, Mass. Carpet	18,998	Apr. 2	47	2
Van Houten, Erskine J. S., Nyack, N. Y. Bottle	19,052	Apr. 16	47	276
Vinton, John H., Boston, Mass., assignor to Trimont Manufacturing Company, Portland, Me. Jaws of a pipe-wrench	19,168	June 18	47	1490
Vogt, Gustav. (See Colfle, Jean B. G. E., assignor.)				
Wallace, Abijah, Stroudsburg, Pa., assignor of two-thirds to M. Dittenhoefer, New York, N. Y. Comb	19,123	May 28	47	1073
Wallace, Abijah, Stroudsburg, Pa., assignor of two-thirds to M. Dittenhoefer, New York, N. Y. Back of a comb	19,124	May 28	47	1073
Warren, James G., Providence, R. I. Table-service	19,122	May 28	47	1073
Weir Stove Company. (See Wilbur, George E., assignor.)				
Welling, William M., New York, N. Y. Brush or mirror back and handle	19,045	Apr. 9	47	144
Wheeler, Candace, New York, N. Y. Curtain fabric	18,999	Apr. 2	47	2
Wheeler, Candace, New York, N. Y. Curtain, drapery, &c	19,074	Apr. 30	47	530
Wheeler, Orrin A., Chicago, Ill. Toy cap-exploder	19,142	June 4	47	1223
Whissemore, John H., Youngstown, Ohio. Hat and coat rack	19,169	June 18	47	1490
Whitall, Tatum & Co. (See Underhill, Francis M., assignor.)				
Whitford, Darius, Providence, R. I. Watch-chain bar	19,085	May 7	47	662
Whiting & Co., F. M. (See Schmidt, Frederick, assignor.)				
Whiting, William S., assignor to C. F. Trott, Waterbury, Conn. Smoker's set	19,103	May 14	47	818
Whitman, Horace F., Philadelphia, Pa. Box	19,143	June 4	47	1223
Wiederer & Brother, P. (See Kunze, Charles, assignor.)				
Wilbur, George E., assignor to Weir Stove Company, Taunton, Mass. Stove-shelf	19,075	Apr. 30	47	530
Wilcox, William P., Cicero, N. Y. Cigar-box	19,144	June 4	47	1223
Wilkinson, George, Aurora, Ontario, Canada. Plow-head	19,111	May 21	47	952
Williamson, William A., Newark, N. J. Picture-hook	19,046	Apr. 9	47	144
Williamson, William A., Newark, N. J. Sash hook or lift	19,170	June 18	47	1490
Wilson, William, Brooklyn, assignor to G. A. Clark & Bro., New York, N. Y. Spool-thread cabinet	19,086	May 7	47	662
Winslow, Francis A., Chicago, Ill. Lattice or mesh work	19,145	June 4	47	1223
Woods, Joseph W., Boston, Mass. Textile fabric	19,087	May 7	47	662
Wright, George C., New York, N. Y., assignor to Lowell Manufacturing Company, Lowell, Mass. Carpet	19,000 to 19,004	Apr. 2	47	2

ALPHABETICAL LIST OF REGISTRANTS OF TRADE-MARKS.

Name, residence, and title.	No.	Date.	Official Gazette. Volume.	Page.
Acme Staple and Machine Company, Philadelphia, Pa. Boots, shoes, gaiters, and slippers	16,703	June 11	47	1358
American Enamel Company, Providence, R. I. Razor-strops	16,629	May 28	47	1074
American Waltham Watch Company, Waltham, Mass. Watch-movements	16,679	June 4	47	1224
Angelo, Theodore, New York, N. Y. Medicinal lotion	16,503	Apr. 23	47	406
Arcadian Mineral Spring Company, Waukesha, Wis. Mineral-waters, ginger-ale, lemonade, tonic drinks, and similar liquids	16,680	June 4	47	1224
Armour Packing Co., Kansas City, Kans. Compressed cooked beef	16,704	June 11	47	1358
Arnold, Carlton & McCord, Atlanta, Ga. Plug chewing-tobacco	16,728	June 18	47	1490
Arnold & Co., Lancaster, Pa. Cork and cork articles	16,630	May 28	47	1074
Ashmead, Carrie E., Jersey City, N. J. Remedy for piles	16,681	June 4	47	1224
Austin, Emma J., Carthage, N. Y. Cleaning and polishing compound	16,442	Apr. 2	47	2
Ballou & Co., I. H., Boston, Mass. Butter	16,682	June 4	47	1224
Baltimore Copper Smelting and Rolling Company, Baltimore, Md. Ingot-copper	16,591	May 21	47	952
Beer, Carl, Chicago, Ill. Statuary	16,532	Apr. 30	47	530
Behrens & Sons, Louis, New York, N. Y. Velveteens	16,547	May 7	47	662
Belknap & McCann, Newburg, N. Y. Laundry and toilet soap	16,592	May 21	47	952
Belmont Distillery Company, Louisville, Ky. Whisky	16,504	Apr. 23	47	406
Berwick Manufacturing Co., New York, N. Y. Effervescent powder for beverages	16,731	June 18	47	1490
Bevington & Morris, London and Bermondsey, county of Surrey, England. Skins dressed with the fur or wool on	16,548	May 7	47	662
Binford, Bettie L., Topeka, Kans. Complexion-powder	16,576	May 14	47	818
Bird, Joseph W., Millville, Ind. Medical compound for all nervous and inflammatory diseases	16,577	May 14	47	818
Bitting & Hay, Winston, N. C. Chewing-tobacco	16,729	June 18	47	1490
Bitting & Hay, Winston, N. C. Plug chewing-tobacco	16,740	June 25	47	1636
Black, Henry M., Pittsburg, Pa. Pure white ball solid naphthaline	16,705	June 11	47	1358
Blondeau & Cie, London, England. Toilet and medicinal soap and a toilet cream	16,443	Apr. 2	47	2
Blooker, J. & C., Amsterdam, Holland, and New York, N. Y. Cocoa and cocoa-butter	16,730	June 18	47	1490
Boehringer & Soehne, C. F., Waldhof, near Mannheim, Germany. Alkaloids made from the calabar-bean	16,578	May 14	47	818
Boker & Co., Hermann, New York, N. Y. Revolvers, shotguns, and rifles	16,706	June 11	47	1358
Boston Belting Company, Boston, Mass. Belting, hose, packing, and other rubber goods forming parts of machinery	16,463	Apr. 9	47	144
Boston Belting Company, Boston, Mass. Belting, hose, packing, and other rubber goods forming parts of machinery	16,464	Apr. 9	47	144
Boston Rubber Company, Boston, Mass. India-rubber boots and shoes	16,632	May 28	47	1074
Boulenger, Charles, Paris, France. Dress-shields	16,465	Apr. 9	47	144
Bourne, Graham & Fell, London, England, and New York, N. Y. Flour	16,579	May 14	47	818
Brewer, William N., Cleveland, Ohio. Chewing-gum	16,593	May 21	47	952
Brooke & Company, Benjamin, Philadelphia, Pa. Soap	16,634	May 28	47	1074
Brooke & Company, Benjamin, Philadelphia, Pa. Soap	16,635	May 28	47	1074
Brookmire & Co., James H., St. Louis, Mo. Coffee	16,594	May 21	47	952
Brown Paper Company, L. L., Adams, Mass. Paper for ledgers	16,683	June 4	47	1224
Brünler, Erich, New York, N. Y. Natural mineral waters	16,633	May 28	47	1074
Buckeye Publishing Company, Minneapolis, Minn. Semi-monthly magazine	16,444	Apr. 2	47	2
Buckingham, Swope & Co., Baltimore, Md. Cigars	16,684	June 4	47	1224
Buck's Stove and Range Company, St. Louis, Mo. Stoves and ranges	16,595	May 21	47	952
Buell & Co., George C., Rochester, N. Y. Tea	16,732	June 18	47	1490
Burdon Seamless Filled Wire Company, Providence, R. I. Plated seamless filled wire and articles made therefrom	16,636	May 28	47	1074
Burns, Peter C., St. Louis, Mo. Galvanic batteries	16,445	Apr. 2	47	2
Caldwell & Peterson Manufacturing Company, Wheeling, W. Va. Sheet-metal roofing	16,580	May 14	47	818
Carter, John F., Beverly, Mass. Oil or water-proof clothing	16,427	Apr. 2	47	2
Chard, John A., Jersey City, N. J. Cream for the acceleration of the mammary growth	16,466	Apr. 9	47	144
Chichester Chemical Co., Philadelphia, Pa. Emmenagogue	16,488	Apr. 16	47	276
Clotworthy, William P., Baltimore, Md. Vanilla pudding	16,597	May 21	47	952
Condé, Swits, Oswego, N. Y. Knitted shirts, drawers, overshirts, blouses, and jackets	16,505	Apr. 23	47	406
Conklin & Merserean, Binghamton, N. Y. Timothy-seeds	16,506	Apr. 23	47	406
Consolidated Cigarette Company, New York, N. Y. Cigarettes or cheroots	16,489	Apr. 16	47	276
Cooper & Son, Joseph P., Philadelphia, Pa. Underwear for men and women, and aprons	16,467	Apr. 9	47	144
Cornibé, Joseph, New Orleans, La. Whisky	16,507	Apr. 23	47	406
Cosack & Co., Buffalo, N. Y. Small cards, banners, panels, hangers, fans, calendars, and the like	16,561	May 14	47	818
Cotton Oil Product Company, New York, N. Y. Cotton-seed lard	16,549	May 7	47	662
Crescent Medical Co., Rockland, Me. Compounds for coughs, colds, and diseases of the throat and lungs	16,446	Apr. 2	47	2
Crescent Watch Case Company, Brooklyn, N. Y. Watches and watch-cases	16,533	Apr. 30	47	530
Cushman, Henry S., Milford, Mass. Whips	16,508	Apr. 23	47	406
Cyclone Wrought Iron Slag Paint Company, Boonton, N. J., and New York, N. Y. Paints	16,598	May 21	47	952
Davis & Co., Curtis, Boston, Mass. Soap	16,490	Apr. 16	47	276
Davis, James E., Detroit, Mich. Wine, gin, rum, and brandy	16,637	May 28	47	1074
De Grauw, Aymar & Co., New York, N. Y. Oars, handspikes, and capstan-bars	16,428	Apr. 8	47	2
Dean & Son, William G., New York, N. Y. Mustard	16,638	May 28	47	1074
Dean & Son, William G., New York, N. Y. Mustard	16,639	May 28	47	1074
Deering & Company, William, Chicago, Ill. Twine for self-binding harvesters	16,596	May 21	47	952
Delaney & Son, Forest, New York, N. Y. Cut soles, tape, insoles, and heel-lifts of leather	16,741	June 25	47	1636
Demorest Fashion and Sewing Machine Company, New York, N. Y. Sewing-machines and their parts and attachments	16,562	May 14	47	818
Dessart, Charles H., New York, N. Y. Mask-fasteners	16,685	June 4	47	1224
Dittenhoefer, Haas & Co., Portland, Oreg. Men's overalls	16,492	Apr. 16	47	276
Dousaan French Perfumery Company, New Orleans, La. Toilet perfumes, waters, powders, and soaps	16,493	Apr. 16	47	276
Dryden & Palmer, Baltimore, Md. Syrups and rock-candy	16,509	Apr. 23	47	406
Emerson, Isaac E., Baltimore, Md. Granular effervescent salt	16,599	May 21	47	952
Erlanger Brothers, Baltimore, Md., and New York, N. Y. Trousers, overalls, and coats	16,600	May 21	47	952
Fait & Winebrenner, Baltimore, Md. Canned oysters	16,733	June 18	47	1490
Falke, Julius, St. Louis, Mo. Hair-restorative	16,510	Apr. 23	47	406
Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Prussia, Germany. Soporific preparation	16,468	Apr. 9	47	144

Alphabetical list of registrants of trade-marks, April to June, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Farmers Fertilizer Company, Syracuse, N. Y. Fertilizers composed of phosphoric acid, potash, and ammonia	16,429	Apr. 2	47	2
Fenton, James, Buffalo, N. Y. Game in which marbles are employed	16,550	May 7	47	662
Finn, Benedict, Newark, N. J. Cigars	16,742	June 25	47	1636
Fishburne Bros., Roanoke, Va. Smoking-tobacco	16,563	May 14	47	818
Fitch & Co., Benj., New York, N. Y. Spring-mattresses and springs for the same	16,686	June 4	47	1224
Floto's Sons, George, Brooklyn, N. Y. Coffee substitute	16,601	May 21	47	952
Forestine Medicine Company, (limited,) Gloversville, N. Y. Certain named medicines	16,534	Apr. 30	47	530
Gale & Blocki, Chicago, Ill. Complexion-powders	16,602	May 21	47	952
Gallet & Co., Julien, New York, N. Y. Watches	16,494	Apr. 16	47	276
Gerard, Henri, New York, N. Y. Newspaper	16,687	June 4	47	1224
Giant Chemical Co., Philadelphia, Pa. Corn-salve	16,535	Apr. 30	47	530
Gies, Frank, Baltimore, Md. Medicines for coughs, colds, and pulmonary diseases	16,430	Apr. 2	47	2
Gillespie, Patrick F., Chicago, Ill. Sauces and condiments	16,603	May 21	47	952
Gillespie, Patrick F., Chicago, Ill. Preserved and canned fruits and vegetables	16,640	May 28	47	1074
Gilmor & Co., J. D., New York, N. Y. Biscuits, crackers, wafers, and similar articles	16,688	June 4	47	1224
Goldschmidt, Bachrach & Co., New York, N. Y. Velvet and plush	16,551	May 7	47	662
Goldschmidt, Bachrach & Co., New York, N. Y. Velvets and plushes	16,743	June 25	47	1636
Goodall, Samuel I., Philadelphia, Pa. Saws	16,431	Apr. 2	47	2
Gottstein, M. & K., Seattle, Wash. Ter. Whisky	16,661	June 4	47	1224
Grosscup, Manias G., Milwaukee, Wis. Hay elevators or carriers	16,511	Apr. 23	47	406
Guillaume, Pierre P., Fils Aîné, Paris, France. Dress shields and protectors	16,469	Apr. 9	47	144
Hakoumoff, Mnatzakan, London, county of Middlesex, England. Tonics and lotions for the hair and scalp	16,432	Apr. 2	47	2
Hancock & Son, London, England. Ceramic colors	16,604	May 21	47	952
Hanes & Co., P. H., Winston, N. C. Plug, twist, and fancy tobacco	16,552	May 7	47	662
Hart, Jerome A., San Francisco, Cal. Newspaper	16,692	June 4	47	1224
Hasell, Lewis C., New York, N. Y. Denims	16,536	Apr. 30	47	530
Hay, Hamilton, Stoneham, Mass. Shoes	16,641	May 28	47	1074
Heath, Robert F. S., Camden, N. J. Soap	16,605	May 21	47	952
Herbert & Rapp Company, Boston, Mass. Shoe-elastic, boots, and shoes	16,642	May 28	47	1074
Hercules Manufacturing Company, Cardington, Ohio. Coffee scourers and polishers	16,691	June 4	47	1224
Herold, Julius, Monzingen, Prussia, Germany. Glue	16,689	June 4	47	1224
Hesslein Bros., Chicago, Ill. Cigars	16,447	Apr. 2	47	2
Hesslein Bros., Chicago, Ill. Cigars	16,448	Apr. 2	47	2
Hetherington, John E., New York, N. Y. Electric belts or bands	16,690	June 4	47	1224
Hinchman, James B., Denver, Colo. Cements or compositions for roofing and paving	16,692	June 4	47	1224
Hochstadter Company, New York, N. Y. Bitters	16,564	May 14	47	818
Holmes & Coutts, New York, N. Y. Biscuits, wafers, and crackers	16,756	June 25	47	1636
Holzapfel & Co., M., Newcastle-upon-Tyne, England. Composition for ships' bottoms	16,643	May 28	47	1074
Hotchkiss, James F., New York, N. Y. Boiler compound to prevent incrustation	16,744	June 25	47	1636
Houghton, William H., Long Island City, N. Y. Varnishes, paints, oils, and japans	16,606	May 21	47	952
Howard Furnace Company, Syracuse, N. Y. Heating apparatus	16,449	Apr. 2	47	2
Hoyt's Sons, Stephen, New Canaan, Conn. Grape-vine slips	16,433	Apr. 2	47	2
Hubbuck & Son, Thomas, London, England. Paints and painters' supplies	16,450	Apr. 2	47	2
Hubbuck & Son, Thomas, London, England. Paints and painters' supplies	16,451	Apr. 2	47	2
Hubbuck & Son, Thomas, London, England. Paints and painters' supplies	16,452	Apr. 2	47	2
Humphrey, Alfred F., Canton, Conn. Salve	16,470	Apr. 9	47	144
Humphreys Homeopathic Medicine Company, New York, N. Y. Veterinary medicines or specifics	16,708	June 11	47	1358
Hunting, Sinclair T., New York, N. Y. Leather gloves	16,496	Apr. 16	47	276
Hurt & Son, S. C., Lynchburg, Va. Wheat-flour	16,648	May 28	47	1074
Hutchinson & Co., A., Paris, France. Dress-shields	16,709	June 11	47	1358
Ichthyol-Gesellschaft Cordes, Hermanni & Company, Hamburg, Germany. Medicated articles for toilet and veterinary purposes	16,553	May 7	47	662
Ihlee, Henry F., Battersea, county of Surrey, England. Cereal products, such as flour and meal	16,607	May 21	47	952
Indian River Orange Growers' Association, City Point, Fla. Oranges and other citrus fruits	16,537	Apr. 30	47	530
Jackson, Thomas, Manchester, county of Lancaster, England. Cachous	16,581	May 14	47	818
Jaques, Francis M., New London, Conn. Cough-mixture	16,693	June 4	47	1224
Jewett Manufacturing Company, John C., Buffalo, N. Y. Refrigerators and beer, water, and wine coolers	16,538	Apr. 30	47	530
Jewett Manufacturing Company, John C., Buffalo, N. Y. Water-coolers and combined water cooler and filter	16,649	May 28	47	1074
Johnston, John L., London, England. Extracts and essences of meats	16,568	May 14	47	818
Joyce, John F., De Soto, Mo. Pile-salve	16,608	May 21	47	952
Kahner & Co., L., New York, N. Y. Cigars, cigarettes, and cheroots	16,513	Apr. 23	47	406
Kahner & Co., L., New York, N. Y. Cigars, cigarettes, and cheroots	16,582	May 14	47	818
Kane & Son, Edward, Brooklyn, N. Y. Brandy	16,583	May 14	47	818
Kelly, Evelina D., New Brighton, N. Y. Medical compounds for external application	16,707	June 11	47	1358
Kelly Mercantile Company, P. H., St. Paul, Minn. Tea	16,663	June 4	47	1224
Kerfall Drug and Chemical Co., Detroit, Mich. Medical tonic	16,434	Apr. 2	47	2
Khasan, Naum, New York, N. Y. Anti-sudorific powder	16,514	Apr. 23	47	406
King, Charles R., Lampasas, Tex. Medical compound for purifying the blood	16,471	Apr. 9	47	144
Kitz, August, New York, N. Y. Socks and stockings	16,565	May 14	47	818
Kitz, August, New York, N. Y. Black socks and stockings	16,566	May 14	47	818
Kitz, August, New York, N. Y. Socks and stockings	16,567	May 14	47	818
Kitz, August, New York, N. Y. Socks and stockings	16,609	May 21	47	952
Kitz, August, New York, N. Y. Socks and stockings	16,610	May 21	47	952
Klein, Max, Allegheny, Pa. Whisky	16,497	Apr. 16	47	276
Koch & Co., H. C. F., New York, N. Y. Corsets	16,515	Apr. 23	47	406
Ladd & Coffin, New York, N. Y. Perfumery	16,516	Apr. 23	47	406
Ladd & Coffin, New York, N. Y. Perfumery	16,580	May 14	47	818
Ladd & Coffin, New York, N. Y. Perfumed articles, such as soap, sachet-powders, and the like	16,664	June 4	47	1224
Ladd & Coffin, New York, N. Y. Perfumed soap, satchet-powder, and the like	16,710	June 11	47	1358
Lehn & Fink, New York, N. Y. Petroleum-jelly for medicinal and toilet purposes	16,472	Apr. 9	47	144
Lewis Bros. & Co., New York, N. Y. Shirtings, sheetings, ginghams, tickings, cheviots, and prints	16,517	Apr. 23	47	406
Little, Frank E., St. Louis, Mo. Feather pillows	16,694	June 4	47	1224
Little, Frank E., St. Louis, Mo. Feather pillows	16,695	June 4	47	1224
Little, Frank E., St. Louis, Mo. Feather pillows	16,696	June 4	47	1224
Lloyd, Andrew J., Boston, Mass. Optical goods of all kinds	16,665	June 4	47	1224
Lloyd, Curtis G. (See Lloyd, Nelson A. and C. G.)				
Lloyd, John, Wyoming, Pa. Rheumatic remedies	16,584	May 14	47	818
Lloyd, Nelson A. and C. G., Cincinnati, Ohio. Antiseptic powder	16,518	Apr. 23	47	406
Loeb & Co., Herman, New York, N. Y. Perfumes	16,611	May 21	47	952
Lopez & Co., Manuel, Havana, Cuba. Cigars	16,666	June 4	47	1224
Lopez & Co., Manuel, Havana, Cuba. Cigars	16,667	June 4	47	1224

Alphabetical list of registrants of trade-marks, April to June, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Lopez & Co., Manuel, Havana, Cuba. Cigars	16,668	June 4	47	1224
Lopez & Co., Manuel, Havana, Cuba. Cigars	16,669	June 4	47	1224
Low Moor Company, (limited,) Low Moor, near Bradford, county of York, England. Metals and manufactures therefrom	16,711	June 11	47	1358
Luckenbach, D. & A., Bethlehem, Pa. Wheat-flour	16,670	June 4	47	1224
Lyman, Moses, Waverly, N. Y. Game	16,473	Apr. 9	47	144
Lyons, Frederick W., and E. Ziegler, Jersey City, N. J. Remedy for roughness of the skin and for burns and chafing	16,650	May 28	47	1074
MacFarland, Renaulier, Genoa, Ohio. Pills	16,671	June 4	47	1224
Manahan, Margaret E., New York, N. Y. Sheathing-paper	16,498	Apr. 16	47	276
Manhattan Therapeutic Company, New York, N. Y. Preparation for diseases of the liver and kidneys, for constipation, and nervous affections	16,435	Apr. 2	47	2
Mason & Co., Perry, Boston, Mass. Weekly periodicals	16,499	Apr. 16	47	276
Massasoit Whip Company, Westfield, Mass. Whips and lashes	16,651	May 28	47	1074
Matthews, Elias E., Indianapolis, Ind. Semi-solid medicinal compound in the form of pills	16,612	May 21	47	952
May, S. Elwood, Nyack, N. Y. Condensed puddings	16,585	May 14	47	818
McCarthy & Sons, D., Syracuse, N. Y. Shirts	16,474	Apr. 9	47	144
McClain Manufacturing Co., E. L., Greenfield, Ohio. Sweat-collars	16,539	Apr. 30	47	530
McCreery & Co., James, New York, N. Y. Waists made from knitted goods	16,712	June 11	47	1358
McCreery & Co., James, New York, N. Y. Ladies' and children's suits	16,713	June 11	47	1358
McGill, James P., South Bend, Ind. Face-wash	16,672	June 4	47	1224
McGuire, Thomas, Brooklyn, N. Y. Eye-healing water	16,475	Apr. 9	47	144
McLean & Company, (limited,) London, England. Cement	16,613	May 21	47	952
McLean & Company, (limited,) London, England. Manufactures from mineral and other substances for building and decorating, including cement	16,632	May 28	47	1074
McShane & Co., Henry, Brooklyn, N. Y. Stoneware laundry tubs and sinks	16,586	May 14	47	818
Meyer, Joseph, London, England. Tobacco of all kinds, including cigarettes	16,570	May 14	47	818
Miller & Co., H. S., Newark, N. J., and Baltimore, Md. Bone fertilizers	16,520	Apr. 23	47	406
Miller, Kaster & Co., New York, N. Y. Bleached, colored, and printed cotton fabrics	16,519	Apr. 23	47	406
Monks, George H., Boston, Mass. Certain gaming set and board	16,555	May 7	47	662
Morehead & Co., J. Turner, Leaksville, N. C. Knitting-cotton	16,697	June 4	47	1224
Morewood & Company's Successors, (limited,) Birmingham, England. Galvanized iron	16,745	June 25	47	1636
Mosier, John W. (See Murphy and Mosier.)				
Muchmore, William F., Morristown, N. J. Remedies for chicken diseases	16,571	May 14	47	818
Muhr's Sons, H., Philadelphia, Pa. Watch-cases	16,540	Apr. 30	47	530
Murphy, Joseph J., and J. W. Mosier, Louisville, Ky., and Chicago, Ill. Rubbing-stones for cleaning and polishing	16,521	Apr. 23	47	406
Nash, Whiton & Co., New York, N. Y. Salt	16,556	May 7	47	662
New Jersey Car Spring and Rubber Company, Jersey City, N. J. Hydraulic hose	16,714	June 11	47	1358
New York Paper Clothing Manufacturing Company, New York, N. Y. Paper clothing	16,653	May 28	47	1074
Newball & Mason, Nottingham, county of Nottingham, England. Non-alcoholic herb-beer	16,715	June 25	47	1636
Non-Corrosive Boiler Compound Company, Dallas, Tex. Metal-decrustating compound	16,453	Apr. 2	47	2
Nushagak Canning Company, San Francisco, Cal. Canned salmon	16,541	Apr. 30	47	530
Offutt, Aloysius E., New York, N. Y. Milk-punch	16,758	June 25	47	1636
Ongerth Grafting Compound Company, San Francisco, Cal. Grafting compounds and preparations for destroying insects	16,715	June 11	47	1358
Osborn Son & Co., John, New York, N. Y., and Philadelphia, Pa. Whisky	16,734	June 18	47	1490
Osborn Son & Co., John, New York, N. Y., and Philadelphia, Pa. Whisky	16,735	June 18	47	1490
Ott, Emile, Paris, France. Gloves	16,653	May 28	47	1074
Pacific Packing Company, San Francisco, Cal. Canned salmon	16,655	May 28	47	1074
Packard & Field, Brockton, Mass. Boots, shoes, and slippers of all kinds	16,436	Apr. 2	47	2
Packard & Field, Brockton, Mass. Boots, shoes, and slippers	16,557	May 7	47	662
Palmer, Charles M., Minneapolis, Minn. Newspaper	16,717	June 11	47	1358
Paton, William, Johnstone, county of Renfrew, Scotland. Cotton laces for boots and shoes	16,437	Apr. 2	47	2
Pearson & Co., C. H., Baltimore, Md. Canned oysters, fruits, and vegetables	16,614	May 21	47	952
Perrin, Philibert F., Columbus, Ga. Liniments and blood-purifiers	16,718	June 11	47	1358
Philadelphia Watch Case Co., Philadelphia, Pa. Watch-cases	16,615	May 21	47	952
Philadelphia Watch Case Co., Philadelphia, Pa. Watch-cases	16,616	May 21	47	952
Philadelphia Watch Case Co., Philadelphia, Pa. Watch-cases	16,617	May 21	47	952
Philadelphia Watch Case Co., Philadelphia, Pa. Watch-cases	16,618	May 21	47	952
Phonopore Syndicate, (limited,) London, England. Electrical, telegraphic, and telephonic apparatus or instruments	16,477	Apr. 9	47	144
Pickard, Clara, Philadelphia, Pa. Bitters	16,674	June 4	47	1224
Pine Needle Cigar Company, Freehold, N. J. Cigars, smoking-tobacco, and cigarettes	16,673	June 4	47	1224
Pingree & Smith, Detroit, Mich. Boots and shoes	16,476	Apr. 9	47	144
Piper Packing Co., Rockport and Union, Me. Canned fruits, vegetables, and shell-fish	16,716	June 11	47	1358
Piperine Medicine Co., Racine, Wis. Cough-medicine	16,587	May 14	47	818
Poirrier, Alcide F., Paris, France. Coloring-matter	16,455	Apr. 2	47	2
Porpoisine Manufacturing Company, Hurffville, N. J., and Philadelphia, Pa. Dressing and lubricating compound for leather	16,454	Apr. 2	47	2
Prentice, Charles F., New York, N. Y. Optical instruments	16,698	June 4	47	1224
Price Baking Powder Company, Chicago, Ill. Baking-powder	16,438	Apr. 2	47	2
Pupat, Léon, Romans, France. Liquid coating for iron, stone, cement, wood, and the like	16,456	Apr. 2	47	2
Purton, Stearns & McIntyre, Philadelphia, Pa. Half-tone engraved relief-plates for illustrative purposes	16,619	May 21	47	952
Quentin & Co., Paris, France. Pipes, cigar and cigarette holders, and cigarette-paper	16,522	Apr. 23	47	406
Rab, Gustavus. (See Rab, Harry and G.)				
Rab, Harry and G., Denver, Colo. Alcoholic liquors	16,523	Apr. 23	47	406
Reddaway & Co., F., Hamburg, Germany. Impregnated canvas, linen, and cloth for roofing	16,524	Apr. 23	47	406
Reiset, Frederic, New York, N. Y. Sardines	16,746	June 25	47	1636
Richmond, Samuel A., Camargo, Ill. Remedy for rheumatism	16,439	Apr. 2	47	2
Robertson, F. O., Janesville, Wis. Medical remedies for external use	16,500	Apr. 16	47	276
Rodgers & Sons, Joseph, (limited,) Sheffield, England. Cutlery and plate	16,478	Apr. 9	47	144
Roeckl, J., Munich, Germany. Kid gloves	16,699	June 4	47	1224
Rogers, Henry R., Boston, Mass. Medical compounds for the cure of diseases of the nerves, liver, and stomach	16,457	Apr. 2	47	2
Ropes, George, Boston, Mass. Coffee	16,656	May 28	47	1074
Royal Packing Company, San Francisco, Cal. Canned salmon	16,657	May 28	47	1074
Rumalto Manufacturing Co., Cleveland, Ohio. Remedies for rheumatism	16,588	May 14	47	818
Rundle, George H., Piqua, Ohio. Medical compound for external and internal use	16,458	Apr. 2	47	2
Rutherford & Barnes, Brooklyn, N. Y. Soap-powder	16,572	May 14	47	818
Sandvikens Jernverks Aktie Bolag, Sandviken, Sweden. Iron and steel and manufactures of iron and steel	16,719	June 11	47	1358
Sandvikens Jernverks Aktie Bolag, Sandviken, Sweden. Articles of iron and steel	16,720	June 11	47	1358
Sanford, Henry S., Sanford, Fla. Oranges, lemons, and products of the citrus family	16,525	Apr. 23	47	406

Alphabetical list of registrants of trade-marks, April to June, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Sayre, William H., Newark, N. J. Insect-powders and like preparations	16,700	June 4	47	1224
Schindhelm, Herman, Philadelphia, Pa. Medicine for the liver, stomach, and kidneys, and liniment, worm-remover, and salve	16,479	Apr. 9	47	144
Schmidt, Clara H., and W. B. Starbird, Stockton, Cal. Aerated tonic beverage	16,526	Apr. 23	47	406
Schultz & Co., Zanesville, Ohio. Laundry and toilet soap	16,527	Apr. 23	47	406
Seymour Cutlery Company, Henry, Holyoke, Mass. Shears	16,459	Apr. 2	47	2
Sipe & Co., James B., Allegheny, Pa. Painting and graining oil	16,543	Apr. 30	47	530
Slauson & Co., A., New York, N. Y. Lozenges	16,573	May 14	47	818
Smith, Frank, New York, N. Y. Enamel paint	16,747	June 25	47	1636
Smith, Frank, New York, N. Y. Paint compound in the form of paste	16,748	June 25	47	1636
Smith, Mary S., New York, N. Y. Pomade for the skin	16,749	June 25	47	1636
Société Anonyme du Filtre Chamberland, Système Pasteur, Paris, France. Filters made according to the Pasteur system	16,620	May 21	47	952
Société Anonyme pour la Fabrication D'Appareils D'Eclairage, Liege, Belgium. Lamp-chimneys	16,543	Apr. 30	47	530
Sommer, Adolph, San Francisco, Cal. Leather-grease	16,460	Apr. 2	47	2
Southard, William H., Leadville, Colo. Remedies for rheumatism	16,659	May 28	47	1074
Spiro, Charles, New York, N. Y. Appliances for taking photographs	16,701	June 4	47	1224
St. Jacob Mill Company, St. Jacob, Ill. Wheat-flour	16,558	May 7	47	662
St. John, Frank L., New York, N. Y. Cotton linings	16,656	May 28	47	1074
St. John, Frank L., New York, N. Y. Cotton linings, sateens, cambrics, and twills	16,721	June 11	47	1358
St. John, Frank L., New York, N. Y. Cotton linings, silesias, sateens, cambrics, and twills	16,736	June 18	47	1490
Starbird, Walter B. (See Schmidt and Starbird.)				
Starley Brothers, Coventry, England. Bicycles, tricycles, and kindred vehicles, and their parts and attachments	16,702	June 4	47	1224
Sterick, Sylvester T. F., Washington, D. C. Game-board	16,675	June 4	47	1224
Stevens & Co., Fred D., Detroit, Mich. Alterative sirups	16,737	June 18	47	1490
Stewart, Samuel S., Philadelphia, Pa. Banjos	16,480	Apr. 9	47	144
Strange, Howell M., Beaver Valley, Ala. Medical compound for the cure of snake-bites	16,589	May 14	47	818
Suarez & Son, F., New Orleans, La. Cigars	16,676	June 4	47	1224
Sulz-Bacher, Mirum, New York, N. Y. Veterinary liniment	16,631	May 28	47	1074
Summerhayes, Emeline C., Somerville, Mass. Curative lotion used externally for skin diseases	16,738	June 18	47	1490
Supreme Sitting of the Order of the Iron Hall, Indianapolis, Ind. Society books and printed matter	16,544	Apr. 30	47	530
Suydam, Samuel A., New York, N. Y. Portable stoves, heaters, ranges, and furnaces	16,722	June 11	47	1358
Tebbetts, Forrest F., Providence, R. I. Outer garments	16,528	Apr. 23	47	406
Thompson, George W., New York, N. Y. Toilet-paper	16,739	June 18	47	1490
Thompson, Moore & Co., New York, N. Y. Plug and cut tobacco for smoking and chewing	16,677	June 4	47	1224
Titsworth, Josephine E., New York, N. Y. Baking-powder	16,481	Apr. 9	47	144
Tomaselli, Lorenzo, Washington, D. C. Face-powder	16,757	June 25	47	1636
Tootal Broadhurst Lee Company, (limited,) Manchester and London, England. Spool cotton and thread	16,482	Apr. 9	47	144
Turner & Sons, Hammond, Snow Hill, Birmingham, county of Warwick, England. Articles of jewelry and ornamentation for personal wear	16,495	Apr. 16	47	276
Two Rivers Manufacturing Company, Two Rivers and Milwaukee, Wis. Pails, tubs, and analogous wooden ware	16,621	May 21	47	952
Urner Bros., Baltimore, Md. Boots and shoes	16,440	Apr. 2	47	2
Vacuum Oil Company, Rochester, N. Y. Petroleum lubricating-oil	16,529	Apr. 23	47	406
Van Ness & Co., J. Newton, New York, N. Y. Harness and horse-blankets	16,530	Apr. 23	47	406
Von der Lühe, Henry C., Brooklyn, N. Y. Liquid for healing burns and flesh wounds	16,574	May 14	47	818
Wadsworth Paint and Oil Manufacturing Company, Brooklyn, N. Y. Paint prepared for immediate use	16,622	May 21	47	952
Wadsworth Paint and Oil Manufacturing Company, Brooklyn, N. Y. Mixed paints	16,724	June 11	47	1358
Wagner, Joseph, Munich, Germany. Lager-beer	16,750	June 25	47	1636
Wagner, William C., Brooklyn, N. Y. Infants' prepared food	16,723	June 11	47	1358
Walter, Horning & Co., Pittsburg, Pa. Wheat-flour	16,644	May 28	47	1074
Walter, Horning & Co., Pittsburg, Pa. Wheat-flour	16,645	May 28	47	1074
Walter, Horning & Co., Pittsburg, Pa. Wheat-flour	16,646	May 28	47	1074
Walter, Horning & Co., Pittsburg, Pa. Wheat-flour	16,647	May 28	47	1074
Walter, Horning & Co., Pittsburg, Pa. Wheat-flour	16,725	June 11	47	1358
Walton, Moses, Jr., Spring Valley, Ohio. Sugar-cured hams	16,501	Apr. 16	47	276
Wampole & Co., Henry K., Philadelphia, Pa. Granular effervescent medicine				
Wanamaker, John, Philadelphia, Pa. Perfumes, perfomed waters, and bay-rum, also soaps, powders, and cosmetics	16,531	Apr. 23	47	406
Wanamaker, John, Philadelphia, Pa. Liquid and powdered perfumeries and soaps	16,545	Apr. 30	47	530
Wanamaker Manufacturing Company, Dr. J. G., Orangeburg, S. C. Rheumatic remedies	16,590	May 14	47	818
Ward, Goldthwaite & Co., Chicago, Ill. Men's and boys' hats	16,483	Apr. 9	47	144
Waukenphast & Co., London, England. Boots and shoes	16,502	Apr. 16	47	276
Well, Samuel, New York, N. Y. Trimmings for dresses and cloaks	16,736	June 11	47	1358
Weiss, William H., San Antonio, Tex. Patent flour	16,622	May 21	47	952
Welling, William M., New York, N. Y. Toilet brushes, mirrors, and ornamental boxes	16,441	Apr. 2	47	2
Wengler & Mandell, Chicago, Ill. Cigars	16,461	Apr. 2	47	2
Westcott Chuck Company, Oneida, N. Y. Chucks	16,546	Apr. 30	47	530
Western Alaska Packing Company, San Francisco, Cal. Canned salmon	16,484	Apr. 9	47	144
Weston, Edward P., New York, N. Y. Preparation for treatment of the feet	16,485	Apr. 9	47	144
White & Co., Henry, London, England. Rum	16,486	Apr. 9	47	144
White Mountain Freezer Company, Nashua, N. H. Ice-cream freezers	16,487	Apr. 9	47	144
White Rock Mineral Spring Company, Waukesha, Wis., and Chicago, Ill. Carbonated ginger	16,678	June 4	47	1224
Wilcox & White Organ Company, Meriden, Conn. Reed-organs	16,624	May 21	47	952
Wilcox & White Organ Company, Meriden, Conn. Reed-organs	16,625	May 21	47	952
Williamson, Ingram & Grigg, Detroit, Mich. Remedy for nerve, brain, and stomach disorders	16,626	May 21	47	952
Willman Cosecnas Company, New York, N. Y. Hungarian wines	16,491	Apr. 16	47	276
Wilson-Cass Company, Philadelphia, Pa. Biscuit	16,660	May 28	47	1074
Wood, Annie M., Westminster, England. Elastic and flexible compound and articles made therefrom	16,462	Apr. 2	47	2
Wood, Thomas, Boston, Mass. Tea	16,627	May 21	47	952
Woodbury, Frank H., Kansas City, Mo. Plug and fine-cut chewing-tobacco, cigars, cigarettes, and snuff	16,559	May 7	47	662
Wooldridge & Co., R. A., Baltimore, Md. Guano	16,727	June 11	47	1358
Woolsey, Charles A., Jersey City, N. J. Copper paint	16,628	May 21	47	952
Young, Richard D., New York, N. Y. Perfumery	16,751	June 25	47	1636
Young, Richard D., New York, N. Y. Perfumery	16,752	June 25	47	1636
Young, Richard D., New York, N. Y. Perfumery	16,753	June 25	47	1636
Young, Richard D., New York, N. Y. Perfumery	16,754	June 25	47	1636
Young, Richard D., New York, N. Y. Perfumery	16,755	June 25	47	1636
Ziegel & Co., L., Newark, N. J. Leather	16,560	May 7	47	662
Ziegler, Edward. (See Lyons and Ziegler.)				

ALPHABETICAL LIST OF REGISTRANTS OF LABELS.

Name, residence, and title.	No.	Date.	Official Gazette. Volume.	Page.
Abbey, Green. (See Mayes and Abbey.)				
Abbott's Menthol Plaster Co., Worcester, Mass. "Abbott's Menthol Snuff"	5,912	May 28	47	1074
Abbott's Menthol Plaster Co., Worcester, Mass. "Abbott's Menthol Cream"	5,913	May 28	47	1074
Albany Paris Green Manufacturing Company, Albany, N. Y. "Liquid Paris Green." (for a Vermin Exterminator)	5,914	May 28	47	1074
Angier Chemical Company, Newton and Boston, Mass. "Angier's Petroleum Pastilles" (for a Medicine)	5,876	Apr. 23	47	406
Arcadian Mineral Springs Company, Waukesha, Wis. "The Arcadian Anti-Malarial Tonic"	5,915	May 28	47	1074
Barnett & Jones, Atlantic, Iowa. "Irwin's Poke Root Powders"	5,905	May 14	47	818
Beaupré, Keogh & Davis, St. Paul, Minn. "Warsaw Salt"	5,916	May 28	47	1074
Bird, Samuel M., Philadelphia, Pa. "Bird's Infallible Oriental Lotion"	5,868	Apr. 16	47	276
Blair, John, New York, N. Y. "Blair's Stenographic Gold Fountain Pen"	5,908	May 21	47	952
Blocker, J. & C., Amsterdam, Holland, and New York, N. Y. "J. & C. Blocker's Dutch Cocoa"	5,943	June 18	47	1490
Boeddike & Walter, New York, N. Y. "Emulsion of Cod Liver Oil with Peptonate of Iron and Quinine"	5,932	June 11	47	1358
Camp, Missouri, Pittsburg, Pa. "Liquid French Soap"	5,917	May 28	47	1074
Center, Granville, New York, N. Y. "Center's Permanent Cure for Malaria and Fever and Ague"	5,899	May 7	47	662
Chase & Co., L. C., Boston, Mass. "Chase" (for Carriage Robes, Lap Robes, &c.)	5,926	June 4	47	1224
Cohn & Co., M., New York, N. Y. "Can't Rust 'Em." (for Dress Stays)	5,909	May 21	47	952
Cole & Son, Drs. P. C., South Solon, Ohio. "Dr. Cole's Tonic and Blood Purifier"	5,864	Apr. 9	47	144
Cole & Son, Drs. P. C., South Solon, Ohio. "Dr. Cole's Pills"	5,865	Apr. 9	47	144
Cole & Son, Drs. P. C., South Solon, Ohio. "Dr. Cole's Nerve Pills"	5,869	Apr. 16	47	276
Cole & Son, Drs. P. C., South Solon, Ohio. "Dr. Cole's Kidney Pills"	5,870	Apr. 16	47	276
Conger, Walter M., Jr., Newark, N. J. "Conger's Newark Tray"	5,927	June 4	47	1224
Consolidated Cigarette Company, New York, N. Y. "Consols" (for Cigars and Cigarettes)	5,888	Apr. 23	47	406
Consolidated Coffee Company, Omaha, Nebr. "German Fresh Roasted Coffee"	5,877	Apr. 23	47	406
Consolidated Coffee Company, Omaha, Nebr. "German Mills—Singapore Pepper"	5,900	May 7	47	662
Consolidated Coffee Company, Omaha, Nebr. "German Dry Hop Yeast"	5,901	May 7	47	662
Cotton Oil Product Company, New York, N. Y. "The Cotton Oil Product Co's Cotton Seed Lard—a Vegetable Lard"	5,878	Apr. 23	47	406
Crow, J. F., Jefferson, Tex. "Alligator Oil" (for a Medicine)	5,933	June 11	47	1358
Distin, Henry J., Philadelphia, Pa. "Vibrating" (for Wind Musical Instruments)	5,879	Apr. 23	47	406
Distin, Henry J., Philadelphia, Pa. "Silver Steel" (for Brass Band Instruments)	5,894	Apr. 30	47	530
Dryden & Palmer, New York, N. Y. "Rock Candy"	5,940	June 25	47	1636
Ellerd, J. M., Lindale, Tex. "Hog Cholera Cure and Preventive and Insect Destroyer"	5,880	Apr. 23	47	406
Field, Thomas H., Chicago, Ill. "Melilotus Lotion"	5,871	Apr. 16	47	276
Flint, James G., Fort Scott, Kans. "Acacine The Perfect Emulsifier" (for Medicines)	5,881	Apr. 23	47	406
French, Richards & Co., Philadelphia, Pa. "French's Essence of Crushed Violets" (for Soda Water Sirup)	5,934	June 11	47	1358
Gerstle, Leopold, Bluff City, Tenn. "Gerstle's Female Panacea"	5,944	June 18	47	1490
Gilmore, W. T., and C. White, St. Paul, Minn. "Quinine Wine Tonic Bitters"	5,918	May 28	47	1074
Goldsmith, John S., New York, N. Y. "Notice" (for Caskets inclosing Boxes of Cigars)	5,950	June 25	47	1636
Gosser, J. J., Emlenton, Pa. "Gosser's Cream Glycerine"	5,935	June 11	47	1358
Grunewald & Busher, Chicago, Ill. "Semi-Glaze Color"	5,919	May 28	47	1074
Grunewald & Busher, Chicago, Ill. "Matt Wax Color"	5,920	May 28	47	1074
Harris, Green B., Mooreville, Tex. "Syphilis & Gonorrhœa Preventive"	5,910	May 21	47	952
Hellner, Abraham M., New York, N. Y. "Hellner's Sure Cure for Malaria"	5,882	Apr. 23	47	406
Hooper & Co., F. L., Baltimore, Md. "Superiore Baking Powder"	5,872	Apr. 16	47	276
Jackson, Henry L., Buffalo, N. Y. "The Russian Preventive of Contagious Diseases"	5,896	Apr. 9	47	144
Jaques, Francis M., New London, Conn. "Rock Polypode Syrup"	5,928	June 4	47	1224
Johnston, Joseph B., Providence, R. I. "Johnston's Celebrated East Indian Malaria Cure"	5,936	June 11	47	1358
Kane & Son, Edward, Brooklyn, N. Y. "E. Mercier & Co." (for Brandy)	5,921	May 28	47	1074
Ketcham, Samuel J., Chicago, Ill. "East India Pile Remedy"	5,929	June 4	47	1224
Khasan, Naum, New York, N. Y. "Khasan's Santin," (for Anti-Sudorific Powders)	5,924	May 28	47	1074
Killick, R. J., Chicago, Ill. "Yucatan Plug Tobacco"	5,922	May 28	47	1074
Kints, Henry J., Alexandria, Va. "Animating Gum." (for Medicated Chewing Gum)	5,923	May 28	47	1074
Kirtley, William F., Quincy, Ill. "Kirtley's Fire Ball" (for a Fire Extinguisher)	5,883	Apr. 23	47	406
Kish, Charles A., Chester, Pa. "Hungarian Ointment"	5,906	May 14	47	818
Lang & Son, William, Philadelphia, Pa. "Rock Candy"	5,951	June 25	47	1636
Langlée, Justin J., New Orleans, La. "Cocoanut Taffy" (for Biscuits)	5,884	Apr. 23	47	406
Langlée, Justin J., New Orleans, La. "Peoples Mixed" (for Biscuit)	5,885	Apr. 23	47	406
Langlée, Justin J., New Orleans, La. "Rich Lunch" (for Biscuits)	5,886	Apr. 23	47	406
Langlée, Justin J., New Orleans, La. "Dessert Mixed" (for Biscuits)	5,887	Apr. 23	47	406
Langlée, Justin J., New Orleans, La. "Cakes and Jumbles"	5,930	June 4	47	1224
Langlée, Justin J., New Orleans, La. "Ginger Snaps"	5,931	June 4	47	1224
Lauer & Routson, Baltimore, Md. "Professor Zimmerman's Remarkable Oil," (For a Medicinal Preparation)	5,902	May 7	47	662
Leavens, George, Danielsonville, Conn. "Leavens' Laxative Remedy"	5,945	June 18	47	1490
Libby, Frank H., Saco, Me. "Compound Vegetable Panacea"	5,925	May 28	47	1074
Lichty, Norman, Des Moines, Iowa. "Krause's Headache Capsules"	5,937	June 11	47	1358
Lines, Theodore T., Philadelphia, Pa. "White Wainscoting" (for a Varnish)	5,889	Apr. 23	47	406
May, Eugene, New Orleans, La. "May's Mexican Fruit Sherbet"	5,911	May 21	47	952
Mayes, F. P., and G. Abbey, Weatherford, Tex. "Indian Blood Cure." (for a Medical Compound)	5,873	Apr. 16	47	276
Micajah & Co., Warren, Pa. "Micajah's Medicated Uterine Wafers"	5,862	Apr. 2	47	2
Morgan Medicine Co., Bridgeton, N. J. "Meadow Mint Balsam"	5,903	May 7	47	662
Newby, Frank S., Indianapolis, Ind. "Catarrh and Asthma Ball" (for a Catarrh Remedy)	5,867	Apr. 9	47	144
Owen, J. H., and R. H. Wilhoyte, Sheffield, Ala. "Owen's Pink Mixture" (for Medical Compound)	5,890	Apr. 23	47	406
Parrish & Co., F. M., Cumberland, Md. "Parrish's Granulated Yeast Pellets"	5,860	Apr. 2	47	2
Phippe, George, Green Bay, Wis. "Prussian Spavin Cure"	5,904	May 7	47	662
Pomeroy & Sons, Newark, N. J. "Mucilage"	5,938	June 11	47	1358

Alphabetical list of registrants of labels, April to June, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Porpoisine Manufacturing Company, Hurffville, N. J., and Philadelphia, Pa. "Porpoisine" (For a Dressing and Lubricating Compound for Leather)	5,861	Apr. 2	47	2
Richards & Sons, S., Mobile, Ala. "Pure Fruit Peach Juice"	5,939	June 11	47	1358
Riley, Albert, New York, N. Y. "Light Weight Steel Frame Piano"	5,907	May 14	47	818
Robinson, William L., East Somerville, Mass. "Pain Exterminator" (for a Liniment)	5,891	Apr. 23	47	406
Robinson, William L., East Somerville, Mass. "All Healing Salve"	5,892	Apr. 23	47	406
Royal Remedy and Extract Company, Dayton, Ohio. "Sweet Wheat Chewing Gum"	5,863	Apr. 2	47	2
Saxe, A. W., South Omaha, Nebr. "Saxe's Tasteless Castor Oil"	5,895	Apr. 30	47	530
Schmidt & Co., New York, N. Y. "Calculation" (for Cigars)	5,896	Apr. 30	47	530
Schuyler, Ackley C., New York, N. Y. "Delatour" (for Soda Water)	5,940	June 11	47	1358
Shepard, A. P., Lapeer, Mich. "Shepard's Compound" (for a Medicine)	5,874	Apr. 16	47	276
Shumaker, Jesse B., Bridgewater, Pa. "The Great Kentucky Tonic Bourbon Bitters"	5,875	Apr. 16	47	276
Strassman, Mrs. Dr., San Francisco, Cal. "Dr. Strassman's Emmenagogue"	5,941	June 11	47	1358
Thomas, Francis M., Paris, Tex. "F. M. Thomas' Sure Cure for Rheumatism"	5,897	Apr. 30	47	530
Venn, Thomas, Shamokin, Pa. "Venn's Wonderful Asthma Cure"	5,952	June 25	47	1636
Von Eckardstein, Ernst, Protzel, Germany. "Wilhelms-Quelle" (for Mineral Waters)	5,953	June 25	47	1636
Wagner, William C., Brooklyn, N. Y. "Wagner's Infant Food"	5,942	June 11	47	1358
Walker, John, New York, N. Y. "Walker's Cold Belt Cement"	5,898	Apr. 30	47	530
Werther, Francis O., Pottstown, Pa. "Werther's Disinfectant"	5,946	June 18	47	1490
Werther, Francis O., Pottstown, Pa. "Werther's Disinfectant"	5,947	June 18	47	1490
White, Christopher. (See Gilmore and White.)				
Whittaker, James, Silver City, Utah Ter. "Whittaker's Cough Syrup"	5,893	Apr. 23	47	406
Wightman & Co., New York, N. Y. "The Lenox Suit" (For Ladies, Misses and Children's Suits)	5,954	June 25	47	1636
Wilhoyte, R. H. (See Owen and Wilhoyte.)				
Woodward, Orator F., Le Roy, N. Y. "Lane's Family Medicine"	5,948	June 18	47	1490

DISCLAIMERS.

Name, residence, and invention.	No.	Filed.	Official Gazette. Vol.	Page.
Allen, Marshall J., New York, N. Y., and William E. Bradley, Frankfort, Ky.; disclaimer filed by assignee. Process of making whisky	263,087	Apr. 5, 1889	47	276
Day, Augustus, Detroit, Mich.; disclaimer to first and second claims filed by patentee. Track-clearers. (Reissue)	8,388	Mar. 22, 1889	47	2
Faure, Camille A., Paris, France; disclaimer filed by assignee. Polarization of secondary electric batteries	252,002	Apr. 9, 1889	47	276
Grant, James M., Hartford, Conn.; disclaimer filed by patentee. Art of reeling and winding silk and other thread	267,192	May 27, 1889	47	1224
Henis, Charles F., Philadelphia, Pa.; disclaimer filed by executor of said Henis, deceased. Disintegrator and strainer	248,930	May 9, 1889	47	818

ALPHABETICAL LIST OF INVENTIONS.

Invention.	Name.	No.	Date.	Monthly volume. Specification.	Monthly volume. Drawing.	Official Gazette. Volume.	Official Gazette. Page.
Acid. Alizarine-green sulpho-	R. Bohn	401,635	Apr. 16	1851	.....	47	370
Acid. Manufacture of a new alpha-naphthol-disulphonic	M. Andresen	405,938	June 25	2356	.....	47	1705
Acid. Purifying acetic	I. A. F. Bang and M. C. A. Ruffin	401,992	Apr. 23	2378	618	47	480
Adding-machine	S. E. Austin	403,900	May 28	3031	536	47	1075
Adding-machine	D. E. Felt	405,024	June 11	956	255 256	47	1421
Adding-machine	J. G. and G. W. Smith	400,714	Apr. 2	415	112 113	47	83
Adding-machine	J. C. Stinson	405,924	June 25	2334	613	47	1702
Addressing-machine	J. W. H. Reisinger	404,732	June 4	523	134	47	1327
Advertising	J. A Christy	405,532	June 18	1728	456	47	1582
Advertising-cards. Preparing designs for	T. P. Heinemann	401,164	Apr. 9	1113	295	47	219
Advertising device	J. Castle	403,037	May 7	704	184	47	796
Advertising device	C. D. Goodwin and W. M. Chase	401,158	Apr. 9	1103	293	47	216
Advertising or display device	A. Dahlstrom	400,549	Apr. 2	177	48	47	37
Aerated water. Apparatus for manufacturing	J. T. Leighton	403,117	May 14	839	222	47	829
Aerated water. Manufacturing and bottling	O. Avedyk	404,402	June 4	137	32	47	1251
Agricultural implement	R. Owen	401,297	Apr. 9	1310	348	47	257
Air and gas engine	A. Schmid and J. C. Beckfeld	403,294	May 14	1129	299	47	883
Air. Apparatus for purifying atmospheric	W. Hibbert	404,021	June 4	382	92	47	1296
Air-brake	T. S. E. Dixon	402,418	Apr. 30	3033	786 787	47	613
Air-brake	F. A. Holleman	405,705	June 25	2044	529	47	1642
Air-brake	J. M. Maxwell	405,968	June 25	2406	630	47	1714
Air-brake. Automatic	R. Solano	405,755	June 25	2222	585	47	1663
Air-brake. Automatic	R. Solano	406,006	June 25	2475	647	47	1725
Air-brake signal	A. B. Collins	400,638	Apr. 2	298	84	47	62
Air-brake signal	A. B. Collins	400,639	Apr. 2	300	84	47	62
Air-brakes. Flexible piping for	D. M. Legat	401,706	Apr. 16	1943	507	47	386
Air-compressor	H. F. Fitzpatrick	402,517	Apr. 30	3192	826 827	47	643
Air-cooling apparatus	J. L. Wood	405,064	June 11	1014	271	47	1434
Air-engine	J. S. Baldwin	404,818	June 11	649	168 169	47	1362
Air-engine	J. A. Woodbury, J. Merrill, G. Patten, and E. F. Woodbury.	404,237	May 28	2564	668 669	47	1178
Air engine. Hydrocarbureted	J. J. R. Humes	400,850	Apr. 2	632	171 172	47	121
Air-heater	T. Nugent	403,064	May 7	738	192	47	803
Air-heating furnace	J. R. Barker	402,795	May 7	366	96	47	731
Air. Means or apparatus for the production and distribution of compressed	V. Popp	405,971	June 25	2413	631 632 633	47	1715
Air-motor	S. C. Hill	402,525	Apr. 30	3206	830	47	646
Air motor. Compressed	A. Jorgensen	402,838	May 7	496	112 113	47	743
Air-purifier	B. S. Benson	402,714	May 7	226	62	47	708
Alarm: *See* Burglar-alarm. Railway-track alarm. Letter-box alarm. Safe-alarm.							
Alarm	C. Agerskov	401,531	Apr. 16	1670	441	47	337
Alarm-lock	G. C. Day	402,413	Apr. 30	3023	785	47	611
Alarm system	C. A. and J. F. Cox	400,750	Apr. 2	466	125 126	47	92
Album-clasp	E. P. Hinkel	405,473	June 18	1633	431 432	47	1563
Alizarine-blue green	R. Bohn	401,633	Apr. 16	1848	.....	47	370
Alkali. Recovering	V. G. Bloede	403,870	May 21	1983	.....	47	1057
Alkali. Recovering spent	V. G. Bloede	403,869	May 21	1982	.....	47	1057
Aluminium by electrolysis. Reducing	C. M. Hall	400,766	Apr. 2	490	133	47	96
Aluminium. Electrolyzing crude salts of	C. M. Hall	400,666	Apr. 2	344	94	47	69
Aluminium. Electrolyzing fused salts of	C. M. Hall	400,667	Apr. 2	346	.....	47	69
Aluminium from its fluoride salts by electrolysis. Reducing	C. M. Hall	400,664	Apr. 2	342	93	47	69
Aluminium. Manufacture of	C. M. Hall	400,665	Apr. 2	343	93	47	69
Aluminium. Manufacturing	L. Grabau	400,449	Apr. 2	37	12	47	11
Amalgamator	J. Behm	405,337	June 18	1421	374	47	1520
Amalgamator	M. T. Van Derveer	405,447	June 18	1580	419	47	1554
Anchor. Folding	T. S. Laughlin	401,654	Apr. 16	1875	487	47	373
Anchoring device for portable machines	J. C. White	403,811	May 21	1899	499	47	1042
Angles for bevel-gear. Apparatus for plotting	J. A. Boorman	400,737	Apr. 2	451	120 121	47	89
Animal-catching device	T. Wickham	404,583	June 4	331	79	47	1288
Animal-releasing device	W. H. McCurdy	402,344	Apr. 30	2918	757	47	591
Animal-releasing device	G. A. Waterhouse	401,914	Apr. 23	2264	589	47	458
Animal-shears	A. A. White	401,806	Apr. 23	2112	551	47	428

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Dr's.	Official Gazette. Vol.	Page.
Animal-trap	A. Brawn	405,006	June 11	925	245	47	1415
Animals. Device for administering medicine to	P. Quitman	403,213	May 14	996	263	47	860
Annealing-box	W. H. Bailey	405,755	June 25	2093	548	47	1657
Annealing-kiln	A. D. Brogan, J. Craig, and J. French	405,527	June 18	1719	454	47	1581
Annunciator-drop	J. M. Stuart	402,043	Apr. 23	2463	642	47	495
Annunciator. Electrical	B. Smead	402,026	May 7	106	26	47	484
Anvil and swage	J. H. Urschel	405,191	June 11	1201	319	47	1469
Anvil and vise. Combined	H. H. Brandes	405,982	June 25	2430	636	47	1718
Anvil-mold	T. W. Vare	402,368	Apr. 30	2954	766	47	598
Arm-rest	A. B. Dick	403,652	May 21	1658	439	47	995
Armature-core for dynamos	J. F. Kester	404,713	June 4	501	128	47	1323
Armature. Dynamo	C. O. C. Billberg	401,632	Apr. 16	1247	487	47	370
Armature for dynamo-electric machines	E. Thomson	400,973	Apr. 9	824	220	47	167
Armature for electro-magnets	J. Geary	401,152	Apr. 9	1095	290 / 291	47	214
Artist's portfolio	F. M. La Bruce	405,782	June 25	2125	558	47	1664
Asbestus packing	J. B. Deeds	400,755	Apr. 2	475	.....	47	93
Asbestus. Treating	B. E. Church	405,201	June 11	1230	.....	47	1472
Asbestus. Treating	J. B. Deeds	400,756	Apr. 2	475	.....	47	93
Aseptic suit	J. L. Rollins	405,850	June 25	2217	584	47	1682
Asphalt-coated sheet-metal pipe	J. P. Culver	400,532	Apr. 2	608	166	47	116
Asphalt. Machine for mixing	G. L. Peabody	405,499	June 18	1677	443 / 444 / 199 / 200	47	1572
Assorting-machine	C. S. Gooding and S. W. Ladd	404,904	June 11	781	199 / 200	47	1386
Atomizer	N. R. Gordon	402,921	May 7	536	142	47	764
Atomizer	G. Kneuper	401,355	Apr. 16	1462	371	47	288
Atomizer-nozzle	W. Hugershoff	402,831	May 7	418	110	47	741
Attrition-mill	G. and A. Raymond	403,215	May 14	998	264	47	860
Attrition-mill	T. L. Sturtevant and M. G. Davis	403,970	May 28	2130	557	47	1094
Auger	F. C. Gerard	400,659	Apr. 2	322	90	47	67
Auger-bit	C. H. Irwin	404,197	May 28	2455	652	47	1166
Auger-bits. Package for	N. Sperry	405,613	June 18	1846	489	47	1607
Auger. Ground	J. Fleming	404,188	May 28	2483	649	47	1163
Auger-heads. Die for forming	H. L. Shaler	403,296	May 14	1132	300	47	884
Auger. Post-hole	H. C. Cloyd	401,999	Apr. 23	2387	621	47	481
Auger. Post-hole	N. Newman	400,939	Apr. 9	776	207	47	157
Automatic gate	W. H. Miller	400,935	Apr. 9	771	206	47	156
Automatic gate	J. C. Rock	400,952	Apr. 9	794	212	47	161
Automatic sprinkler	J. Clapp	404,897	June 11	772	197	47	1384
Automatic sprinkler	E. H. Davis and R. Westervelt	402,569	May 7	30	8	47	669
Automatic switch	A. G. Lawrence	402,252	Apr. 30	2777	719	47	565
Automatic switch	W. X. Stevens	400,802	Apr. 2	558	153	47	107
Awning	H. D. Greenwald	405,549	June 18	1755	464	47	1589
Awning	F. Hohorst	405,475	June 18	1636	432	47	1563
Awning-frame	C. M. Ashby	401,104	Apr. 9	1016	272	47	201
Ax	W. C. Kelly	402,936	May 7	569	149	47	771
Axes. Die for making	J. P. Kelly	402,935	May 7	567	149	47	771
Axes. Die for making	W. C. Kelly	402,937	May 7	570	150	47	771
Axle	E. M. Allen	400,817	Apr. 2	586	160	47	112
Axle	F. L. G. Chapman	404,342	May 28	2795	707	47	1208
Axle-box	W. F. Black	405,735	Apr. 2	449	120	47	89
Axle-box	B. T. Henry	405,737	June 25	2064	542	47	1651
Axle box and spindle	F. P. Gordon	402,819	May 7	400	105	47	738
Axle box. Car	E. Leslie	405,040	June 11	984	262	47	1427
Axle-box for locomotives	F. A. Carlson	403,735	May 21	1786	470	47	1019
Axle-box for locomotives	R. T. Chase	400,545	Apr. 2	172	45	47	36
Axle-boxes. Device for case-hardening	J. W. Parmelee	402,964	May 7	600	158	47	777
Axle boxes. Dust-guard for car	L. Goulliaud	404,701	June 4	486	123	47	1320
Axle boxes. Dust-guard for car	F. J. Roberts	402,858	May 7	453	119	47	748
Axle-boxes for railway-carriages. Manufacturing	J. Donnelly, W. McLaren, and A. Trask.	403,422	May 14	1326	345	47	921
Axle boxes. Metal packing for car	H. Rogers	403,141	May 14	875	231	47	836
Axle. Car	W. H. Melaney	405,428	June 18	1554	411	47	1547
Axle. Car-wheel	G. W. Jones	401,280	Apr. 9	1283	342	47	251
Axle. Carriage	F. Lebel	404,635	June 4	400	97	47	1302
Axle-lubricator	W. Good	403,659	May 21	1666	442	47	996
Axle-lubricator	O. F. Mulhaupt	400,784	Apr. 2	510	140	47	102
Axle-lubricator	W. E. Turner and J. F. Hudson	403,008	May 7	650	173	47	787
Axle lubricator. Car	W. H. Daniels and E. Costley	403,876	May 21	1991	528	47	1059
Axle lubricator. Car	T. Saunders	403,448	May 14	1367	359	47	929
Axle-making machine	A. Paterson	402,101	Apr. 23	2553	664	47	513
Axle nut. Carriage	F. D. Bliss	405,338	June 18	1423	375	47	1521
Axle-oiling device. Locomotive	T. J. Rogers	401,517	Apr. 16	1640	434	47	338
Axle-skein	J. A. Johnson	400,685	Apr. 2	374	101	47	74
Axle. Vehicle	J. M. Hubbell	405,356	June 18	1445	383	47	1525
Axles. Making	A. Paterson	402,102	Apr. 23	2555	664	47	513
Azimuth-instrument	W. Thomson	402,364	Apr. 30	2950	764 / 765	47	597
Baby-jumper	A. W. Gray	401,266	Apr. 9	1264	337	47	248
Baby-jumper	A. Wilson	404,241	May 28	2572	670	47	1179
Back and leg brace	J. H. Smith	401,223	Apr. 9	1197	320	47	236
Back-band pad	G. W. Moores	404,923	June 11	809	208	47	1391
Back-band trace-carrier	J. Collins	402,360	Apr. 30	3004	780	47	607
Back-pole, &c	W. Y. West	406,014	June 25	2490	651	47	1728
Bag: *See* Feed-bag. Hand-bag. Mail-bag. Paper bag. Saddle-bag. Traveling-bag.							
Bag-fastener	R. Wilson	405,518	June 18	1708	451	47	1579
Bag-holder	F. A. Brown	403,641	May 21	1644	436	47	992
Bag-holder	G. De Owens	400,551	Apr. 2	183	49, 50	47	39
Bag-lock	F. F. Ingram	405,357	June 18	1446	382	47	1525
Bag-lock	C. Reinisch	402,768	May 7	322	83, 84	47	723

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Dr's.	Official Gazette. Vol.	Page.
Bag-lock	C. Reinisch	402,769	May 7	324	84	47	724
Bag-lock	C. Reinisch	405,119	June 11	1063	288 / 289	47	1446
Bagging, &c., in pieces. Machine for winding	D. J. Winn	402,551	Apr. 30	3240	841	47	653
Baker's peel	G. A. Naumann	405,046	June 11	991	264	47	1429
Baker's peel for crackers, &c	S. S. Goldman	405,407	June 18	1519	404	47	1540
Baking and roasting pan	C. Preston	404,558	June 4	293	69	47	1280
Balance. Spring	J. H. Nolan	403,693	May 21	1720	454	47	1007
Balcony. Portable	M. L. and J. R. King	404,296	May 28	2637	685	47	1191
Bale-compress	S. J. Webb	402,636	May 7	123	30	47	687
Bale-covering	M. A. Heath	403,046	May 7	714	187	47	799
Baling-press	F. W. Anderson	404,815	June 11	644	167	47	1361
Baling-press	T. J. Corning	403,738	May 21	1790	471	47	1020
Baling-press	L. H. Hallam	403,662	May 21	1671	443 / 444	47	997
Baling-press	W. H. Heffley	400,912	Apr. 9	725	196 / 197	47	149
Baling-press	J. H. and J. H. Howard and E. T. Bousfield.	404,972	June 11	892	230	47	1406
Baling-press	W. J. H. Kappe	401,171	Apr. 9	1124	297 / 298	47	221
Baling-press	J. Le Dow	400,922	Apr. 9	746	200 / 201	47	152
Baling-press	J. D. Moon	402,209	Apr. 30	2804	726	47	570
Baling-press	J. F. Paty and A. W. Bigham	405,270	June 18	1327	349 / 350	47	1500
Baling-press	V. L. Williams	403,496	May 14	1444	378 / 379	47	943
Baling-press-operating mechanism	J. Wadleigh	405,286	June 18	1349	356	47	1505
Baling-presses. Power mechanism for	G. Ertel	401,494	Apr. 16	1502	399	47	307
Balls. Making foot	W. Howard	405,909	June 25	2461	643 / 644	47	1723
Balsa or life-boat	D. Ammen	404,150	May 28	2418	633	47	1152
Band-cutter	C. H. Hill	404,840	June 11	687	177	47	1369
Bar: *See* Binding-bar. Boring-bar. Cutter-bar. Draw-bar. Exercising-bar. Furnace-grate bar. Grate-bar. Pinch-bar. Railway splice-bar. Spike-blank bar. Stretcher-bar.							
Bars or rounds of steel or iron. Manufacture of	S. McCloud	400,931	Apr. 9	762	205	47	155
Barns. Composite truss for	J. W. Evans	404,612	June 4	372	89	47	1296
Barrel-cover	G. W. Lindsey	401,707	Apr. 16	1944	507	47	386
Barrel-cover. Adjustable	S. E. Crager	402,144	Apr. 30	2925	679	47	535
Barrel-beater	M. Wolf	402,879	May 7	482	126	47	753
Barrels, &c. Apparatus for shaving	W. Gibson and R. Ray	401,550	Apr. 16	1697	448	47	342
Barrels. Mechanism for the manufacture of	W. H. Cram	401,931	Apr. 23	2292	594	47	463
Basin or bath waste and overflow	W. H. Newell	401,579	Apr. 16	1741	459	47	350
Basket	G. B. Higgins	402,925	May 7	412	108	47	740
Basket-cover	G. C. Garbrance	403,528	May 21	1500	393	47	963
Basket-cover fastening. Fruit	F. Burne	401,002	Apr. 9	869	223	47	175
Basket cover. Fruit	F. A. Thomas	403,156	May 14	897	237	47	849
Baskets. Machine for making	I. J. W. Adams	401,403	Apr. 16	1477	390 / 391	47	301
Bathing-mitten	J. S. Snyder	405,506	June 25	2155	566	47	1670
Batteries. Automatic cut-out for secondary	S. C. C. Currie	401,332	Apr. 16	1359	363	47	279
Batteries. Containing-cell for secondary	P. Schoop	402,484	Apr. 30	3145	814	47	634
Batteries. Porous cup for	C. B. Noble	403,955	May 28	2108	552	47	1000
Batteries. Preparing elements for secondary	W. W. Griscom	405,733	June 25	2058	540	47	1650
Batteries. System of distribution by secondary	G. B. Prescott, Jr	402,191	Apr. 30	2691	699	47	548
Batteries. Therapeutic attachment for galvanic	C. V. Osborn	401,366	Apr. 16	1415	374 / 375	47	290
Batteries. Time-switch for secondary	C. E. Buell	403,177	May 14	927	245 / 246	47	846
Battery: *See* Diffusion-battery. Electric battery. Galvanic battery. Marine battery. Secondary battery.							
Battery-plates. Machine for making	W. W. Griscom	405,998	June 25	2457	642 / 643	47	1723
Battery-zincs. Making	H. G. Farr	401,338	Apr. 16	1372	.....	47	282
Beach-chair	C. E. Koechling	405,038	June 11	980	261	47	1426
Beams or girders. Support for	P. H. Jackson	405,358	June 18	1448	383	47	1525
Bearing. Anti-friction	B. G. and G. H. Handy	405,031	June 11	972	256	47	1424
Bearing. Ball	H. Kuneth	401,748	Apr. 23	2018	528	47	412
Bearing. Roller	R. W. Hent	401,864	Apr. 23	2215	579	47	449
Bearing. Roller	C. D. Meneely and J. Gibbons	400,471	Apr. 2	64	18, 19	47	16
Bed	W. Beckert	402,129	Apr. 30	2604	674 / 675	47	532
Bed-bottom and means for tightening and supporting the same	J. E. Moore	404,722	June 4	511	130	47	1325
Bed-bottom. Spring	J. M. Davis	400,900	Apr. 9	711	192 / 193	47	147
Bed-bottom. Woven-wire	J. B. Ryan	403,143	May 14	877	231	47	836
Bed. Couch	F. Kruedelbach	402,530	Apr. 30	3212	832	47	647
Bed drier and warmer	J. Fossati	403,339	May 14	1196	318	47	896
Bed. Folding	A. H. Merrill	403,851	May 21	1961	515	47	1053
Bed. Folding	F. E. Müller	402,179	Apr. 30	2675	694	47	545
Bed. Folding	F. R. Wolfinger	404,243	May 28	2573	670	47	1189
Bed-frame and bedstead	I. Chorlton and G. L. Scott	402,903	May 7	511	136	47	759
Bed-furnace	E. E. Hiatt	404,280	May 28	2630	682	47	1189
Bed-lounge	A. H. Merrill	403,850	May 21	1959	514 / 515	47	1053

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Bed-lounge	C. Newhouse	403,284	May 14	1116	226	47	882
Bed-pan	M. Riker	405,182	June 11	1181	314	47	1465
Bed-spring	E. M. Bonnell and J. S. Lambing	405,821	June 25	2173	571 572	47	1673
Beds. Appliance for sick	G. S. Brown	404,681	June 4	460	115	47	1314
Bedclothes-fastener	E. J. Watres	403,807	May 21	1895	498	47	1041
Bedstead	R. C. Graham	402,239	Apr. 30	2757	714	47	561
Bedstead	M. Weightman	402,704	May 7	222	58	47	705
Bedstead-brace	L. F. Ross	405,603	June 18	1830	446	47	1604
Bedsteads. Rack attachment for	E. M. Ware	402,211	Apr. 30	2722	706	47	555
Bee-hive	F. Danzenbaker	402,002	Apr. 23	2392	622 623	47	402
Bee-hive	G. L. Tinker and W. S. Kline	400,517	Apr. 2	134	34, 35	47	29
Beer chest or refrigerator	O. Neuman	403,130	May 14	857	226	47	833
Beer-engines. Construction of	J. A. Bigelow	401,406	Apr. 16	1481	392 393	47	202
Beer-steaming apparatus	W. J. Wirtz	404,143	May 28	2409	631	47	1150
Bell	I. Kinsey	402,165	Apr. 30	2660	689	47	542
Bell. Call	E. H. Peck	403,296	May 14	1118	297	47	883
Bell. Electric	R. R. Moffatt	402,960	May 7	594	157	47	776
Bell. Electric	W. K. Rainey	402,613	May 7	92	22	47	661
Bell. Electrical call	J. G. Noyes	401,296	Apr. 9	1309	348	47	257
Bell. Pneumatic	R. P. Garsed	401,341	Apr. 16	1377	366	47	283
Bell-pull. Electrical	C. A. Braun	405,525	June 18	1715	453	47	1580
Bells. Muffler for signal	E. T. Bates	400,821	Apr. 2	592	161	47	113
Bellows	O. Kullbom	405,103	June 11	1057	282	47	1442
Bellows-fold coupling	H. H. Sessions	403,224	May 14	1016	269	47	863
Belt. Electric	C. H. Grimley	401,882	Apr. 23	2212	578	47	449
Belt. Electric	W. L. Van Dorn	402,367	Apr. 30	2953	766	47	598
Belt. Electro-medical	W. J. Shelton	405,436	June 18	1566	414	47	1549
Belt-fastener	J. B. Norton	401,201	Apr. 9	1168	311	47	230
Belt-guide wheel	E. Benjamin	402,554	May 7	3	1	47	663
Belt. Hip	W. H. Bevinger	405,761	June 25	2098	550	47	1658
Belt-hole cover	W. E. Sharples	403,390	May 14	1288	337	47	913
Belt loop. Waist	F. J. Herrick	405,886	June 25	2270	596	47	1691
Belt-shifter	P. Medart	402,758	May 7	305	79	47	720
Belt-shipper and lock	F. W. Mallett	402,603	May 7	76	18	47	678
Belt. Skirt	M. Brunner	404,163	May 28	2437	638	47	1156
Belt-supporter	L. Sanders	403,220	May 14	1009	267	47	862
Belt-tightener	E. Benjamin	403,454	May 14	1376	360	47	930
Belt-tightener	C. W. Jones	403,048	May 7	720	188	47	799
Belts. Making flat	R. Dick	401,643	Apr. 16	1862	484	47	371
Belting	R. Dick	401,642	Apr. 16	1860	483 484	47	371
Belting	C. A. Schieren	405,434	June 18	1563	413	47	1548
Belting, &c. Fabric for machine	J. P. Maddox	400,579	Apr. 2	217	59	47	46
Belting for machinery	W. C. Edge	401,779	Apr. 23	2056	538	47	419
Bench-stop	J. C. Eckert	405,401	June 18	1511	401	47	1538
Bevel	G. H. Waggoner	404,451	June 4	116	27	47	1247
Beverage-mixer	C. B. Crafton	400,547	Apr. 2	173	46	47	37
Beverage shaking and mixing machine	P. P. Haring	400,674	Apr. 2	358	98	47	71
Beverages. Machine for mixing	F. H. Shepherd and J. W. Meyer	405,683	June 18	1978	518	47	1629
Bicycle	D. A. Babé	401,105	Apr. 9	1017	272	47	201
Bicycle	J. F. Brenx	404,771	June 4	576	148	47	1339
Bicycle	R. H. Fletcher	401,339	Apr. 16	1373	365 366	47	282
Bicycle	G. Kibbe	402,460	Apr. 30	3108	806 807	47	627
Bicycle	T. W. Moore	403,059	May 7	732	191	47	602
Bicycle	S. D. Reynolds	404,562	June 4	298	71	47	1281
Bicycle	W. E. Smith	403,153	May 14	893	235	47	839
Bicycle-gearing	W. J. Fitzpatrick	401,425	Apr. 16	1504	399	47	307
Bicycle-step	H. P. Chapin	402,304	Apr. 30	2857	738	47	560
Bicycle-treadle	G. Haynes, Jr	402,926	May 7	547	145	47	766
Bicycles. Handle-bar for	C. J. Colling	402,143	Apr. 30	2624	679	47	535
Bicycles. Spring-fork for	L. Baudreau	400,727	Apr. 2	437	117	47	86
Billiard-cue	W. E. Owens	403,856	May 21	1967	516	47	1054
Billiard-cue-tip fastener	A. H. Darrow	405,950	June 25	2178	623	47	1709
Bin: *See* Flour-bin. Wine-bin.							
Binder	A. K. Owen	402,849	May 7	438	115	47	745
Binder. Bundle	E. Berry and H. Lambert	404,155	May 28	2425	635	47	1153
Binder for corn-fodder	S. T. Renneckar	405,803	June 25	2152	565	47	1669
Binder for sheet-music, &c	G. C. Gowen	405,254	June 18	1301	343	47	1495
Binder. Load	T. A. Rogers	401,857	Apr. 23	2175	568	47	441
Binder or file for documents	P., R., and J. Garton	405,026	June 11	965	257	47	1423
Binder. Sheet-music	C. M. Lindsay	405,364	June 18	1320	347	47	1498
Binder. Temporary	T. Faifer	400,557	Apr. 2	193	52	47	40
Binder. Temporary	C. A. Gildemeyer	403,043	May 7	711	186	47	798
Binder. Temporary	W. Lumley	404,210	May 28	2523	658	47	1171
Binder. Temporary	W. F. Wakeman	404,513	June 4	222	53	47	1266
Binding-bar	J. T. Richardson	404,865	June 11	726	186	47	1375
Bit: *See* Auger-bit. Drenching-bit. Bridle-bit. Drill-bit.							
Bit-holder	H. S. Bartholomew	405,522	June 18	1712	452	47	1580
Blackboards. Crayon-rack for	A. J. Douglass	404,389	June 4	23	6	47	1229
Blacking and polishing shoes. Machine for	A. Kitson	401,890	Apr. 23	2227	581	47	451
Blacking for boots and shoes	G. H. Bishop	405,763	June 25	2101	.....	47	1659
Blacking. Shoe	C. D. St. Pierre	401,390	Apr. 16	1457	.....	47	298
Blades to metal handles. Securing	H. Glines and W. W. Holmes	402,320	Apr. 30	2882	747	47	585
Blank-heading die	C. D. Rogers	400,794	Apr. 2	546	150	47	105
Blank-holder	A. J. Kletzker	404,287	May 28	2638	685	47	1191
Blast-furnace	E. Walsh, Jr	401,395	Apr. 16	1462	386	47	299

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Blast-furnaces. Charging apparatus for	E. Walsh, Jr	401,394	Apr. 16	1461	396	47	299
Blast-furnaces. Dust-catcher for	F. H. Treat	404,807	June 4	633	162 163	47	1350
Blast-furnaces. Flux-feeder for	N. A. Pratt	402,103	Apr. 23	2357	605	47	513
Blast-furnaces. Flux-feeding apparatus for	N. A. Pratt	401,063	Apr. 9	954	254	47	150
Blind-stop	M. L. Hall	405,685	June 18	1933	513	47	1625
Blind-stop	M. B. Wesson	404,996	June 11	917	240	47	1413
Blind-stop	A. Smith	405,805	June 25	2153	566	47	1689
Blind. Venetian	F. Matthey	404,211	May 28	2726	658 659	47	1171
Blinds, curtains, &c. Fitting for							
Block: *See* Building-block. Pillow-block. Flooring-block. Pulley-block. Glass building-block. Snatch-block. Paving-block. Tackle-block.							
Block barking and splitting machine. Combined	O. W. Stearns	401,866	Apr. 23	2185	571	47	443
Blow-off device	J. D. Bowman	405,243	June 18	1285	340	47	1492
Blow-off. Surface	L. L. Crane and W. H. Prince	403,919	May 28	2059	541	47	1081
Blow-pipe	W. M. Brown	405,528	June 18	1721	454 455	47	1582
Board: *See* Bulletin-board. Key-board. Center-board. Multiple switch-board. Clip-board Pattern-board. Condenser switch-board. Sound-board. Trimming-board. Game-board. Wash-board. Ironing-board.							
Boat: *See* Collapsible boat. Folding boat.							
Boats. Apparatus for unloading	J. M. Dodge	402,419	Apr. 30	3044	787	47	615
Boats. Means for the electrical propulsion of	R. M. Hunter	403,193	May 14	960	252 253	47	853
Bobbin	C. E. Meding	405,267	June 18	1323	348	47	1499
Boiler: *See* Coffee-boiler. Steam-boiler. Egg-boiler. Wash-boiler.							
Boiler	J. Baner	405,757	June 25	2094	549	47	1657
Boiler	K. Gamper and R. Farkacs	403,343	May 14	1204	320	47	899
Boiler	C. Hallett	402,441	Apr. 30	3060	798	47	622
Boiler	M. E. Irving	404,912	June 11	796	203 204	47	1368
Boiler	W. W. Kelsey	404,201	May 28	2500	654	47	1167
Boiler	F. Ludwig	402,589	May 21	1586	420	47	979
Boiler	E. W. Poorman	401,369	Apr. 16	1421	376	47	291
Boiler	E. L. Waterous	400,529	Apr. 2	151	39	47	32
Boiler	J. T. Obenchain	404,425	June 4	72	19	47	1240
Boiler-cleaning apparatus	G. B. Boardman	402,796	May 7	370	98	47	732
Boiler-covering	J. H. Rae	404,730	June 4	521	133	47	1327
Boiler-feed	P. Born	405,456	June 18	1605	423	47	1557
Boiler-feed regulator	W. O. Ganckel	404,400	June 4	38	10	47	1233
Boiler-feed regulator	J. Crollard	404,346	May 28	2730	709	47	1209
Boiler-feeder	A. F. Jones	404,629	June 4	393	95	47	1300
Boiler-feeder	L. B. Potts	401,300	Apr. 9	1316	350	47	250
Boiler for heating purposes	H. L. Beach	404,821	June 11	658	170	47	1363
Boiler front and setting	E. Barrett	404,378	June 4	9	2	47	1226
Boiler-furnace	J. Stapleton	402,302	Apr. 30	2946	764	47	596
Boiler-furnace. Smoke-consuming	H. Schaubel	405,227	June 11	1254	333	47	1479
Boiler-stay	H. Schaubel	405,225	June 11	1253	332	47	1479
Boiler-tube fastening	H. Schaubel	405,226	June 11	1253	332	47	1479
Boiler-tubes. Fastening	W. E. Kelly	405,739	June 25	2096	542	47	1652
Boilers. Header for steam	P. J. Grau	401,701	Apr. 16	1936	505	47	385
Boilers. Low-water indicator for steam	J. W. Stevens	405,615	June 18	1848	489	47	1607
Boilers or water-tanks. Apparatus for feeding	W. F. Cunningham	404,175	May 28	2463	645	47	1160
Boilers. Safety apparatus for steam	H. Van Arsdale	405,192	June 11	1202	319	47	1470
Bolster-spring							
Bolt: *See* Flour-bolt. Rotary bolt.							
Bolt	C. J. Langenbach	403,847	May 21	1955	513	47	1052
Bolt and nut	A. M. Brainard	404,953	June 11	846	221	47	1399
Bolt attachment	W. H. Thomas	402,492	Apr. 30	3155	817	47	636
Bolt-heading machines. Slot-making attachment for	S. Uren	404,235	May 28	2561	668	47	1178
Bolt-heading machines. Slot-making attachment for	S. Uren	404,580	June 4	325	78	47	1287
Bolt-locking device	C. I. Penrose	403,131	May 14	859	227	47	833
Bolt-locking device	C. I. Penrose	403,132	May 14	860	227	47	834
Bolt-threading machine	A. Wood	405,236	June 11	1267	335 336	47	1461
Bolt-work mechanism	E. Stockwell	403,563	May 21	1539	404 405 406	47	970
Bolts. Machine for cutting the screw-threads on	J. M. Simpson	401,596	Apr. 16	1767	465 466 467	47	355
Bolting-chest	H. W. McEwen	404,100	May 28	2343	614	47	1137
Bolting-cloth cleaner	G. S. Burnap	403,088	May 14	793	211	47	820
Bolting-reel	W. E. Gorton	402,733	May 7	258	68, 69	47	713
Bolting-reel	W. E. Gorton	402,734	May 7	365	69, 70	47	714
Bolting-reel	J. Warrington	404,810	June 4	638	164	47	1351
Bolting-reel	J. E. Welch	405,973	June 25	2417	633	47	1716
Bolting-reel	H. W. Parsons	401,851	Apr. 23	2165	585	47	440
Bombs. Distributer for explosive	L. Oberhaeusser	401,657	Apr. 16	1880	.....	47	374
Bonbons. Making soluble	S. W. Goldberg and E. M. Tillmann	403,658	May 21	1665	442	47	996
Book. Account	A. J. Purvis	403,958	May 28	2111	552	47	1090
Book. Account							
Book and book-cover	I. Reed	401,210	Apr. 9	1179	314	47	232

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Book-binding	L. P. Sanford	405,276	June 18	1337	333	47	1502
Book. Blank	N. H. Baker	404,817	June 11	647	166	47	1362
Book-case	R. W. Lovering	400,925	Apr. 9	750	204	47	153
Book-case. Revolving	C. Goddard	403,099	May 14	810	215	47	824
Book. Combined record and sales	J. P. Harsha and C. Duval	401,948	Apr. 23	2315	602	47	468
Book-holder	W. H. Ash	400,628	Apr. 2	285	81	47	59
Book. Indexed shipping	F. C. Johnson. (Reissue)	11,004	May 21	2028	533	47	1066
Book-leaf or paper holder	E. F. Angell	400,627	Apr. 2	285	80	47	59
Book. Memorandum	M. F. Berry	401,115	Apr. 9	1033	276	47	204
Book. Pad	J. E. Schonacker	401,909	Apr. 23	2257	588	47	457
Book. Pocket check and form	E. Fanning	401,324	Apr. 9	1346	356	47	266
Book. Pocket memorandum	A. F. Conant	404,260	May 28	2595	675 / 676	47	1183
Book. School record	J. Du Shane	402,072	Apr. 23	2504	654	47	503
Book-stapling machine	J. W. Scull	402,984	May 7	621	162 / 164 / 163	47	781
Book-support	J. W. Coultas	401,011	Apr. 9	880	235 / 236	47	177
Books. Carbon-paper attachment for receipt or note	H. C. Seely	401,382	Apr. 16	1446	382	47	296
Books. Machine for lettering the covers of	W. J. Foster	404,189	May 28	2484	650	47	1164
Books. Spring-back for	F. E. Schubert	402,485	Apr. 30	3146	814	47	634
Boom	T. Raftery	405,597	June 18	1822	483	47	1602
Boot and shoe lasts. Machinery for the manufacture of	C. W. Evans	404,185	May 28	2477	647 / 648 / 649	47	1163
Boot-drier	E. A. Bryant	402,137	Apr. 30	2617	677	47	534
Boot-jack	G. H. Hackett	403,585	May 21	1571	415	47	976
Boot or shoe	W. Lapworth	402,943	May 7	576	151	47	772
Boot or shoe	B. A. Pillow	401,060	Apr. 9	951	253	47	190
Boot or shoe heel	F. P. Urruela	402,366	Apr. 30	2952	783	47	598
Boot or shoe nailing machine	M. Welsh	403,681	May 7	778	200	47	804
Boot or shoe. Rubber	E. F. Bickford	401,246	Apr. 9	1258	330	47	243
Boot or shoe sole and heel plate	G. Meyers	400,867	Apr. 2	658	170	47	126
Boot or shoe sole protector	L. P. Lang	403,621	May 21	1704	450	47	1009
Boots and shoes. Lasting	D. F. Willis	404,455	June 4	121	29	47	1248
Boots or shoes. Button-hole piece for	J. Reece	400,485	Apr. 2	85	23	47	19
Boots or shoes. Lasting	J. Patten	403,068	May 7	757	198 / 199 / 200	47	805
Boots or shoes. Machine for stamping soles of	M. E. Byron	402,803	May 7	377	99	47	734
Boots or shoes. Rotary trimming-tool for	C. W. Glidden	402,435	Apr. 30	3074	796	47	621
Boots or shoes. Trimming-tool for	H. W. Winter	402,376	Apr. 30	2964	768	47	600
Boring and drilling machine	B. B. Barnett	403,940	May 14	1040	275	47	868
Boring-bar. Adjustable multiple-cutter	J. Stone	403,154	May 14	894	236	47	840
Boring-tool	A. E. Brown	402,394	Apr. 30	2994	777	47	605
Bosom-form	J. W. Greene	401,028	Apr. 9	902	242	47	181
Bosom-pad	S. Wheeler	404,881	June 11	748	191	47	1379
Bottle	J. Stone	402,042	Apr. 23	2463	642	47	495
Bottle-case. Folding	E. L. Walker	404,809	June 4	636	163 / 164	47	1351
Bottle-necks. Machine for shaping	E. H. Everett	400,555	Apr. 2	187	51	47	40
Bottle-necks. Machine for shaping	E. H. Everett	400,556	Apr. 2	191	52	47	40
Bottle-necks. Tool for forming	W. A. Caswell	400,898	Apr. 9	709	192	47	147
Bottle-stand	C. K. Hall	401,229	Apr. 23	2141	559	47	434
Bottle-stopper	W. B. Chambers	400,436	Apr. 2	17	4	47	6
Bottle-stopper	D. J. Corcoran	405,194	Apr. 23	2593	672	47	521
Bottle-stopper	S. Glover	403,466	May 14	1391	364	47	933
Bottle-stopper	C. C. Haley	402,078	Apr. 23	2513	656	47	505
Bottle-stopper	T. B. Howe	405,035	June 11	977	260	47	1425
Bottle-stopper	E. L. Lloyd	402,238	Apr. 30	2911	754	47	590
Bottle-stopper	S. Marks	400,927	Apr. 9	757	203	47	154
Bottle-stopper	G., J. G., and M. O. Rehfuss	402,350	Apr. 30	2931	759	47	593
Bottle-stopper	G., J. G., and M. O. Rehfuss	404,797	June 4	621	159	47	1347
Bottle-stopper	J. J. Sands	404,799	June 4	623	160	47	1347
Bottle-stopper	W. Shepherd	406,005	June 25	2474	647	47	1725
Bottle-stopper and faucet	C. A. Tatum	404,122	May 28	2379	624	47	1144
Bottle-stopper cover	T. C. Bunting	402,297	Apr. 30	2839	735	47	577
Bottle-stopper holder	J. J. Sands	403,676	May 7	773	204	47	808
Bottle-stoppers. Wire fastening for	P. O. Walch	402,370	Apr. 30	2957	767	47	598
Bottle washing and brushing machine	C. B. Inman	401,561	Apr. 16	1713	451 / 452	47	344
Bottle-washing machine	O. Willcox	404,141	May 28	2406	631	47	1149
Bottle-wiring machine	A. Campbell	404,028	May 28	2210	580 / 581 / 582	47	1109
Bottles, jars, &c. Machine for finishing the necks of	H. Semple and C. N. Brady	404,311	May 28	2677	694	47	1199
Bottles, jars, &c. Stopper and fastener for	C. T. Nightingale	403,954	May 28	2106	551	47	1089
Bottles. Label attachment for	H. E. Woodward and S. R. King	406,017	June 25	2497	652	47	1730
Bottles. Machine for corking and wiring corks to	H. La Casse	400,776	Apr. 2	505	137 / 138 / 139 / 140	47	99
Bottles. Machine for wiring corks in	B. Adriance	405,688	June 25	1986	521 / 522 / 523	47	1637
Bottles, &c. Manufacture of	H. M. Ashley	403,096	May 7	689	.....	47	793
Bottles. Means for facilitating the opening of internally-stoppered	H. Barrett and J. J. Varley	400,892	Apr. 9	701	190	47	145
Bottles. Rack-box for	T. A. Taylor and W. H. Diamond	402,203	Apr. 30	2712	703	47	552
Bottles. Safety appliance for	L. L. Meynieu	405,788	June 25	2133	561	47	1665
Bottles. Stopper-receiver for	A. T. Scher	401,760	Apr. 23	2033	531	47	415
Bowl or basin. Set	J. Barrett	405,818	June 25	2170	571	47	1673

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Box:							
See Annealing-box. Axle-box. Cigar-box. Cigarette-box. Cock-box. Collapsible box. Confection-box. Desk-box. Display-box. Dredge-box. Electric-converter box. Feed-box. File-box. Fire-alarm signal-box. Fruit-box. Guide-box. Hook and bait safety-box. Journal-box. Letter-box. Merchandise-box. Miter-box. Nest-box. Packing-box. Paper box. Refrigerator packing-box. Sheet-metal box. Stuffing-box. Wagon-box. Work-box.							
Box-binder. Metallic	F. G. Johnson	404,842	June 11	690	178	47	1369
Box-cover	W. Scharnweber	401,660	Apr. 16	1888	490	47	375
Box end	J. F. Simpson	403,226	May 14	1022	270	47	865
Box-fastener	J. L. Lilienthal	401,883	Apr. 23	2230	582	47	452
Box-fastener	L. Pettersen	404,728	June 4	519	133	47	1327
Box-fastener	J. A. Strong	403,398	May 14	1301	340	47	916
Box for matches, &c	J. F. Marshall	403,685	May 21	1708	451	47	1005
Box-making machine	E. Arst	403,821	May 21	1913	503	47	1045
Box-strap	S. C. Cary	403,178	May 14	931	246	47	848
Box-strap	S. C. Cary	403,246	May 14	1050	277	47	870
Box-strap	S. C. Cary	403,247	May 14	1052	277	47	870
Box-strap. Metal	S. C. Cary	403,245	May 14	1049	277	47	869
Boxes, &c. Catch for	J. A. Barrett	403,029	May 7	693	181 / 182	47	794
Boxes. Manufacture of wooden	E. Densmore	403,333	May 14	1189	316	47	897
Boxes. Metallic binder for	F. G. Jonneson	405,359	June 18	1449	384	47	1596
Boxes. Nested	R. Steinecke	402,866	May 7	469	122	47	750
Brace:							
See Back and leg brace. Drill-brace. Bedstead-brace.							
Brace	G. T. Sutterley	401,604	Apr. 16	1799	471	47	361
Bracelet	A. Luthy	400,578	Apr. 2	216	58	47	46
Bracket:							
See Folding bracket. Gas or lamp bracket. Lamp-bracket. Scaffold-bracket. Shelf-bracket.							
Bracket for papers	L. P. Feineman	405,955	June 25	2385	625	47	1710
Brake:							
See Air-brake. Car-brake. Carriage-brake. Dumb-waiter brake. Elevator safety-brake. Fluid-pressure brake. Locomotive-brake. Locomotive-driver brake. Power-brake. Pump-brake. Rail-brake. Railway-train brake. Railway-wagon brake. Truck-brake. Vehicle-brake. Wagon-brake.							
Brake	A. P. Massey and E. Normand	402,092	Apr. 23	2536	661	47	510
Brake-adjuster. Automatic	J. B. Burns	403,503	Apr. 30	3170	821	47	639
Brake-beam	W. A. Pumps	401,716	Apr. 16	1902	511	47	391
Brake-handle	S. A. Barns	401,003	Apr. 9	870	233	47	175
Brake-handle	A. B. Collett	402,142	Apr. 30	3023	679	47	535
Brake-head and lever for operating the same	G. H. Poor	402,276	Apr. 30	2814	728	47	572
Brake mechanisms. Automatic pump-governor for	G. Westinghouse, Jr	401,915	Apr. 23	2266	589	47	458
Brake-pipe coupling	G. P. Campbell	402,300	Apr. 30	2851	737	47	579
Brake-rods. Attachment for	N. C. Price	405,798	June 25	2147	564	47	1668
Brakes. Engineer's cock for air	G. A. Boyden	405,197	June 11	1211	321 / 322	47	1472
Bread-making machine	P. F. and A. F. Bryce	402,396	Apr. 30	2998	778 / 779	47	606
Bread-raiser and kitchen-safe. Combined	D. Pentz	401,053	Apr. 9	945	252	47	189
Brewing. Apparatus for	C. Clinch	403,232	May 14	1058	278	47	871
Brick	T. Thorn	400,974	Apr. 9	826	220	47	167
Brick. Burning	J. C. Anderson	405,066	June 11	1016	271	47	1434
Brick. Incrusting	J. C. Anderson	401,098	Apr. 9	1006	.....	47	199
Brick-kiln	P. Jochum	404,196	May 28	2496	653	47	1166
Brick-kiln	D. Laemmle	400,575	Apr. 2	213	56	47	45
Brick-kiln	R. Stanley	402,628	May 7	110	27	47	685
Brick-kiln	E. Von Oven	402,360	Apr. 30	2955	766	47	598
Brick-kiln	W. B. Wright	405,935	June 25	2152	617	47	1705
Brick-kiln furnace	C. M. Keep	401,172	Apr. 9	1196	296	47	221
Brick-kilns. Drying attachment for	P. J. Gurnee	402,321	Apr. 30	2883	747	47	585
Brick-machine	W. Weeber	403,235	May 14	1031	273 / 273 / 274	47	866
Brick-machine	B. Owen	404,857	June 11	712	182	47	1373
Brick-machine. Wire cut-off	S. W. Lasor	401,750	Apr. 23	2021	528	47	413
Brick-marking device	A. O. Morgan and R. H. Baird	402,982	May 7	597	157	47	777
Brick or tile cut-off machine	W. W. Wallace	405,631	June 18	1877	496 / 497	47	1612
Brick or tile cutting machine	E. M. Burr	403,646	May 21	1651	437	47	993
Brick or tile machines. Die for	A. P. Knudsen	402,940	May 7	573	150 / 151	47	772
Bricks, &c., incrusted with metal	J. C. Anderson	401,097	Apr. 9	1005	.....	47	199
Bridge gate. Draw	W. Haney	400,672	Apr. 2	335	97	47	71
Bridge. Ponton	S. N. Stewart	401,765	Apr. 23	2040	533	47	416
Bridge signal. Draw	M. H. Long	405,042	June 11	986	262	47	1428

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf'g.	Official Gazette. Vol.	Official Gazette. Page.
Bridge spans by electricity. Means for operating draw.	J. M. Orford	403,549	May 21	1525	399	47	967
Bridge. Suspension	H. M. Kosier	403,433	May 14	1343	353	47	924
Bridge. Truss	J. W. Paisley	400,704	Apr. 2	399	106	47	79
Bridges. Needle-beam for	E. E. Runyon	400,674	Apr. 2	606	187	47	128
Bridle	J. Schneider	402,981	May 7	619	168	47	781
Bridle-bit	Z. T. Bowles	403,510	May 21	1465	384	47	956
Bridle-bit	J. McKenney	402,608	May 7	84	20	47	680
Bridles. Brow-band for	C. B. Flues	405,307	June 18	1380	363	47	1511
Broiler	M. C. Armour	403,407	May 14	1311	342	47	918
Bronzing-machine	C. Landolt	405,894	June 25	2280	599	47	1663
Brooch-pin	M. Howard	402,672	May 7	178	45	47	697
Brooch-pin	B. von Bültzingslöwen and M. Howard.	402,701	May 7	218	57	47	705
Broom	F. J. Case	404,258	May 28	2594	675	47	1183
Broom	J. A. Middleton	404,212	May 28	2527	659	47	1172
Broom-making machine	G. H. Baldwin	402,385	Apr. 30	2976	773	47	602
Brush	C. J. Bailey	404,588	June 4	339	81	47	1249
Brush	C. J. Bailey	405,296	June 18	1365	358	47	1508
Brush	C. Loonen	403,542	May 21	1517	397	47	966
Brush	C. J. Bailey	405,295	June 18	1364	359	47	1508
Brush. Bath	W. M. and R. T. Swann	403,973	May 28	2135	558	47	1095
Brush. Cotton-gin	W. H. Underwood	403,566	May 21	1545	407	47	972
Brush. Reservoir	T. E. Clark	403,328	May 14	1185	314	47	896
Brush. Rotary	L. W. Nimschke	400,475	Apr. 2	72	21	47	17
Brushes. Manufacture of	J. W. Lawrence	400,576	Apr. 2	214	58	47	45
Buckboard	D. B. Baker	400,891	Apr. 9	700	189	47	145
Buckle	L. M. Doddridge	403,254	May 14	1060	279	47	871
Buckle	J. H. Harrell	403,469	May 14	1394	365	47	934
Buckle	R. Hassel	402,591	May 7	61	14	47	675
Buckle	R. G. and R. L. Henry	404,406	June 4	47	13	47	1234
Buckle	D. L. Smith	405,920	June 25	2330	612	47	1701
Buckle	G. M. Tyrrell	404,323	May 28	2696	700	47	1203
Buckle	W. J. Walters	405,514	June 18	1701	449	47	1577
Buckle and back-band hook	E. Munger	403,853	May 21	1964	516	47	1054
Buckle. Bale-tie	E. L. Clark	404,383	June 4	17	5	47	1228
Buckle. Belt	A. Goertz	403,263	May 14	1076	282	47	873
Buckle. Harness	H. L. Norris	402,272	Apr. 30	2807	727	47	571
Buckle. Suspender	J. Kennedy	405,902	June 25	2293	602	47	1712
Buckle. Trace	V. A. Coleman	405,247	June 18	1291	341	47	1493
Buckle. Tug	J. H. Myers	402,181	Apr. 30	2678	694	47	546
Buggies. Side curtain for	J. W. Thomas	400,609	Apr. 2	258	70	47	54
Buggies. Step-plate for	R. H. Stewart and L. D. Chambers	401,602	Apr. 16	1796	471	47	360
Buggy-top	S. W. Cately	405,303	June 18	1373	361	47	1510
Buggy-top spring	C. V. Pugh	404,434	June 4	89	23	47	1243
Building-block	J. A. Misaud	405,429	June 18	1558	411	47	1547
Building-blocks or paving-tiles. Frame for	B. W. Belden	400,996	Apr. 9	862	228	47	174
Building. Flat-roofed	J. G. Birely	400,431	Apr. 2	11	4	47	5
Buildings. Construction of	J. O'Donnell	405,794	June 25	2140	562	47	1667
Buildings or bridges. Truss for	J. T. Wells	401,870	Apr. 23	2191	573	47	445
Bulletin-board and base-ball indicator	E. S. Van Zile	402,700	May 7	217	57	47	704
Bundle-carrier	F. Hickmann	401,032	Apr. 9	910	243	47	182
Bundle-carrier	J. M. Rosebrooks	403,557	May 21	1533	402	47	969
Bung	F. Pettge and L. Metzger	403,956	May 28	2109	532	47	1090
Bung. Barrel	J. Lourim	405,425	June 18	1549	410	47	1546
Buoy-eyes. Wear-plate for	A. L. Woodworth	400,888	Apr. 2	692	187	47	133
Burden-carrier	R. H. Dixey	400,757	Apr. 2	476	128	47	93
Bureau or similar article of manufacture	C. W. Katherman and R. Folk	405,166	June 11	1157	309	47	1461
Bureaus. Hanger for mirrors of	J. R. Anderson	401,921	Apr. 23	2278	591	47	460
Burglar-alarm	N. McIntyre	402,266	Apr. 30	2709	704	47	549
Burglar-alarm	J. W. Roads and T. J. Griffith	404,734	June 4	595	135	47	1328
Burglar-alarm and testing system	F. H. Nutter	401,789	Apr. 23	2073	541	47	423
Burial-casket lid	G. W. Moorman	402,846	May 7	436	115	47	745
Burner: *See* Gas-burner. Gas and vapor burner. Gas-lighting burner. Gas-regulating burner. Hydrocarbon-burner. Lamp-burner. Liquid-fuel burner. Oil-burner. Oil and gas burner. Petroleum-burner. Regenerative burner. Safety-burner. Stove-burner. Vapor-burner.							
Burner	E. Pollard	402,476	Apr. 30	3136	812	47	633
Burner for night-lights	E. Ludde	405,786	June 25	2131	560	47	1664
Burner tip or pillar	W. M. Jackson	403,592	May 21	1578	417	47	978
Burners. Apparatus for supplying combustible liquids to	R. Wallwork and A. C. Wells	405,860	June 25	2230	587	47	1685
Burners. Automatic governor for liquid-fuel	W. E. Eastman	405,663	June 18	1948	512	47	1624
Burning carbonaceous material	E. F. Edgar	402,422	Apr. 30	3049	788	47	616
Burning coal and hydrocarbon fuel	A. Mason	405,967	June 25	2404	630	47	1714
Burning culm or pulverized coal	A. Mason	405,966	June 25	2403	630	47	1713
Burning fluids. Device for	W. H. Winegardner	400,618	Apr. 2	273	75	47	57
Bustle	C. A. Allen	400,494	Apr. 2	3	2	47	3
Bustle	A. Cathan	405,695	June 25	2003	525	47	1640
Bustle	H. E. Rheubottom	404,798	June 4	622	159	47	1347
Butter-can	J. E. Levasseur	403,054	May 7	796	189	47	801
Butter, &c. Device for packing	J. G. Peppler	405,595	June 18	1820	482	47	1602
Butter-mold	H. I. Carver	401,130	Apr. 9	1053	281	47	208
Butter-package	C. E. Macomber	400,698	Apr. 2	389	105	47	77
Butter-worker	H. I. Carver	401,129	Apr. 9	1052	281	47	208

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf'g.	Official Gazette. Vol.	Official Gazette. Page.
Button	C. A. Bryant	405,529	June 18	1723	455	47	1582
Button	R. H. Lewis	403,477	May 14	1412	369	47	937
Button	P. A. Raymond	405,179	June 11	1177	314	47	1464
Button	G. H. Thomas	401,064	Apr. 9	981	262	47	195
Button-attaching machine	W. G. Slater	405,328	June 18	1408	371	47	1517
Button. Campaign	L. Winterdorf and A. Reymond	401,094	Apr. 9	1001	267	47	198
Button-hole strip	H. W. Lyon	401,359	Apr. 16	1406	372	47	289
Button-hole strips. Making	M. P. Bray	401,985	Apr. 23	2382	619	47	480
Button-hook and bracelet. Combined	A. Johnstone	401,746	Apr. 23	2016	527	47	412
Button-loop	E. Pickhardt	403,609	May 21	1596	423	47	982
Button-machine	A. Scholz	402,250	Apr. 30	2610	720	47	573
Button. Separable	G. A. Schlechter	401,908	Apr. 23	2256	587	47	456
Button-setting machine	L. C. Emerson	405,664	June 18	1951	518	47	1624
Button-setting machine	F. H. Richards	403,611	May 21	1601	424 425	47	983
Button-setting machine	J. H. Vinton	401,393	Apr. 16	1450	385	47	298
Button-setting machine	J. H. Vinton	402,047	Apr. 23	2467	643	47	496
Button-strips. Making	H. W. Lyon	402,339	Apr. 30	2912	755	47	590
Button-strips. Making	H. W. Lyon	404,047	May 28	2255	591	47	1118
Cab	C. A. Reade	401,758	Apr. 23	2028	530 531	47	414
Cabinet and cutter's size-ticket. Combined	J. Keller	403,939	May 28	2084	547	47	1085
Cable and railway crossing	F. C. Weir and N. O. Goldsmith	402,875	May 7	478	125	47	752
Cable-grip	G. A. Carreras	405,145	June 11	1117	297	47	1453
Cable-grip	C. S. Chapman	402,305	Apr. 30	2838	738 739	47	580
Cable-grip	C. S. Chapman	404,601	June 4	355	85	47	1292
Cable-grip	T. W. Lemieux	401,842	Apr. 23	2155	563	47	437
Cable-grip	S. F. McDill	401,895	Apr. 23	2232	582	47	452
Cable-grip carrier	J. Stephenson	403,303	May 14	1141	302 303	47	887
Cable-gripper	E. Dainty	403,680	May 21	1656	439	47	994
Cable roads. Slot-rail for	M. M. Suppes	405,231	June 11	1250	334	47	1480
Cable-ways. Conduit-yoke for	J. B. Johnson	402,741	May 7	281	73	47	716
Cable. Wire	T. C. Batchelor and A. Latch	401,112	Apr. 9	1027	274 275	47	903
Cable. Wire	T. C. Batchelor and A. Latch	403,319	May 14	1170	310	47	893
Cables. Splicing	J. Collins	400,748	Apr. 2	464	125	47	91
Calcining-furnace	D. Lewis, J. H. Williams, and M. Matthews.	404,720	June 4	509	130	47	1325
Calculating-machine	E. M. Rosenthal	401,463	Apr. 16	1567	414	47	316
Calendar	S. W. Balch	401,624	Apr. 16	1836	479	47	368
Calendar	C. K. Hamilton, Jr	405,160	June 11	1149	307	47	1460
Calendar	E. A. Parsons	402,965	May 7	601	158	47	777
Calipers. Micrometer	M. F. Smith	404,057	May 28	2277	596	47	1193
Calipers or dividers	F. A. Welles	402,876	May 7	479	125	47	752
Calk for running-shoes	W. W. Burnham	402,138	Apr. 30	2618	678	47	534
Call and switch. Individual	E. Pope	403,776	May 21	1847	485 486	47	1031
Calorimeter. Steam	G. H. Barrus	401,111	Apr. 9	1025	274	47	903
Cam	A. D. Woodmansee	401,390	Apr. 9	1337	356	47	963
Cam. Adjustable	A. D. Woodmansee	403,169	May 14	915	241	47	843
Camera: *See* Photographic camera.							
Camera-stand	F. G. Bement	405,758	June 25	2095	549	47	1658
Camera-stand	W. H. Fuller	404,396	June 4	32	8	47	1231
Cameras. Ground-glass attachment for	M. Bauer	402,712	May 7	234	61	47	707
Camp-chair	L. E. Truesdell	405,725	June 25	2047	538	47	1648
Can: *See* Butter-can. Metal can. Milk-can. Oil-can. Powder-dusting can.							
Can bodies. Machine for applying heads to tin	W. Hipperling	401,886	Apr. 23	2219	579 580	47	450
Can cover. Paint	C. H. Leggett	402,679	May 7	188	47, 48	47	699
Can-crimping machine	A. Slaysman, Jr	405,917	June 25	2324	610	47	1700
Can-forming device. Tin	C. W. Sleeper	402,774	May 7	333	86	47	725
Can-heading machine	W. H. Smyth	403,784	May 21	1856	488 489 490	47	1033
Can-opener	J. Kaylor	402,840	May 7	429	113	47	744
Can-opening device	T. Elcoate	400,590	Apr. 2	479	129	47	94
Can or jar cover	P. K. Reeves	402,614	May 7	93	22	47	681
Cans. Machine for applying heads to tin	E. L. Jones	400,853	Apr. 2	637	173	47	122
Cans. Sealed lock for	W. H. Stoops	400,505	Apr. 2	112	30	47	98
Candelabrum	T. McGovern	402,466	Apr. 30	3117	809	47	629
Candles. Drying-frame for coated	E. Clifford	402,406	Apr. 30	3012	782	47	609
Candle-guard	H. Bové	403,500	May 21	1464	384	47	956
Candle. Sulphur	W. G. Crissey	400,444	Apr. 2	31	10	47	10
Candlestick	A. Roelofs	401,592	Apr. 16	1762	464	47	354
Candy. Machine for making drop	J. Smith	405,721	June 25	2039	535 536	47	1647
Candy. Machine for making stick	J. Smith	405,720	June 25	2038	535	47	1646
Candy-pan	J. H. Magruder	403,663	May 21	1706	451	47	1004
Cane-slicing machine. Sugar	C. Rabe	405,909	June 25	2308	606 607	47	1698
Capodastro	L. Filstrup	402,577	May 7	41	10	47	671
Car attachment. Railway	G. L. Potts	405,323	June 18	1400	369	47	1516
Car berths. Ladder and guard for sleeping	S. Cullen and C. C. Brown	401,418	Apr. 16	1494	396	47	305
Car-body	J. T. Goodfellow	404,535	June 4	262	62, 63	47	1274
Car-brake	W. L. Abbott and V. C. Killin	404,373	June 4	1	1	47	1225
Car-brake	B. Boyer	400,542	Apr. 2	168	44	47	35
Car-brake	H. N. Coffin	401,253	Apr. 9	1245	332	47	244
Car-brake	G. Collins	403,090	May 14	797	212	47	821

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Car-brake	A. M. Kendall	404,005	May 28	2181	572	47	1104
Car-brake	F. D. Paradise	403,285	May 14	1117	206	47	862
Car-brake	G. B. Quigg	404,054	May 28	2269	593 / 594	47	1121
Car brake and clutch. Combined	L. Maurer and H. C. Scheer	405,266	June 18	1321	348	47	1490
Car-brakes. Device for operating	R. A. Kiskadden	404,418	June 4	64	17	47	1238
Car brakes. Registering-gage for railway	R. Potts	403,210	May 14	992	263	47	859
Car. Cable-grip	J. Stephenson	403,395	May 14	1297	336	47	915
Car-check	J. M. De Witt	404,901	June 11	778	196	47	1385
Car. Combined sleeping and day	H. M. Jones	401,438	Apr. 16	1525	403 / 404	47	311
Car coupler. Mining	W. Walter	403,159	May 14	902	237	47	841
Car-coupling	N. Barr	402,387	Apr. 30	2980	776	47	603
Car-coupling	J. Barry	402,646	May 7	135	33	47	690
Car-coupling	P. Bogler	402,391	Apr. 30	2988	776	47	604
Car-coupling	W. F. Braun	405,457	June 18	1606	423 / 424	47	1557
Car-coupling	R. L. Breth	403,640	May 21	1644	436	47	992
Car-coupling	L. W. Brewster and R. Swift	404,070	May 28	2300	602 / 603	47	1126
Car-coupling	J. C. Bryant	401,726	Apr. 16	1981	519	47	395
Car-coupling	J. E. Bull	404,468	June 4	147	34	47	1253
Car-coupling	E. W. Cady	405,993	June 25	2455	642	47	1722
Car-coupling	G. W. Campbell	401,251	Apr. 9	1244	231 / 232	47	944
Car-coupling	M. M. Carmona y Valle	400,005	Apr. 9	872	234	47	176
Car-coupling	F. J. Case and J. F. Preston	401,329	Apr. 16	1355	362	47	278
Car-coupling	E. F. Coffin	402,908	May 7	387	102	47	736
Car-coupling	W. G. Collins	405,876	June 25	2256	589	47	1689
Car-coupling	J. Coup	401,775	Apr. 23	2051	537	47	419
Car-coupling	M. D. Cox	403,461	May 14	1386	368	47	932
Car-coupling	A. G. Deshazo	402,572	May 7	33	9	47	669
Car-coupling	E. Dietrich	403,039	May 7	706	185	47	797
Car-coupling	W. Dorr	405,953	June 25	2383	624	47	1710
Car-coupling	R. J. Edwards	405,085	June 11	1038	277	47	1438
Car-coupling	C. Engel	405,252	June 18	1299	343	47	1494
Car-coupling	H. F. Foster and E. L. Webster	402,579	May 7	44	11	47	672
Car-coupling	A. H. Grant	403,531	May 21	1505	394	47	963
Car-coupling	D. U. Graveline	401,430	Apr. 16	1512	401	47	308
Car-coupling	W. Greenway and J. Strickland	404,967	June 11	877	228	47	1405
Car-coupling	W. M. Grisham	400,563	Apr. 2	200	54	47	43
Car-coupling	R. I. Hampton	401,160	Apr. 9	1106	294	47	217
Car-coupling	S. H. Harrington	405,255	June 18	1302	344	47	1495
Car-coupling	S. H. Harrington	405,256	June 18	1307	345	47	1496
Car-coupling	A. Harter	404,083	May 28	2315	607	47	1131
Car-coupling	F. J. Hughes. (Reissue)	10,999	Apr. 30	3241	841	47	653
Car-coupling	J. J. Jeter	402,085	Apr. 23	2527	658	47	508
Car-coupling	A. H. Johnson	405,889	June 25	2272	597	47	1692
Car-coupling	F. Karrer	405,360	June 18	1450	384	47	1526
Car-coupling	J. H. King and B. F. Reed	404,717	June 4	507	130	47	1324
Car-coupling	E. J. Knapp	402,021	Apr. 23	2426	632	47	488
Car-coupling	G. W. Lewton	400,695	Apr. 2	386	101	47	76
Car-coupling	H. L. Long	405,366	June 18	1460	387	47	1527
Car-coupling	W. C. McChord	405,494	June 18	1670	441	47	1571
Car-coupling	C. A. McDougall	401,046	Apr. 9	930	248	47	186
Car-coupling	A. J. McGehee	403,282	May 14	1113	295	47	881
Car-coupling	S. S. McKeand	404,725	June 4	515	131 / 132	47	1326
Car-coupling	A. W. McKenzie	401,710	Apr. 16	1952	509	47	388
Car-coupling	O. E. Michaelis	404,296	May 28	2651	689	47	1194
Car-coupling	J. L. Monasmith	401,198	Apr. 9	1164	310	47	229
Car-coupling	H. P. Monday	403,800	May 21	1587	420	47	979
Car-coupling	J. A. Morse	402,761	May 7	312	81	47	723
Car-coupling	P. E. Müller	403,305	May 14	984	260	47	858
Car-coupling	V. Nualy	404,552	June 4	285	68	47	1279
Car-coupling	W. S. Palmer	400,594	Apr. 2	237	64	47	50
Car-coupling	J. C. Peaslee and F. W. Beavan	405,430	June 18	1558	412	47	1547
Car-coupling	J. Poffenbarger	401,854	Apr. 23	2169	566	47	440
Car-coupling	W. W. Putnam	403,071	May 7	763	201	47	806
Car-coupling	S. L. Reeves	402,615	May 7	94	23	47	682
Car-coupling	F. T. Rogers	400,490	Apr. 2	90	25	47	21
Car-coupling	W. W. Rogers	402,973	May 7	609	160	47	779
Car-coupling	D. H. Royer	400,797	Apr. 2	550	151	47	105
Car-coupling	G. W. Smillie	402,775	May 7	335	87	47	736
Car-coupling	I. Stout	404,743	June 4	539	138	47	1331
Car-coupling	W. G. Stuart	400,508	Apr. 2	116	31	47	27
Car-coupling	A. Swenson	404,575	June 4	314	75	47	1284
Car-coupling	M. L. Unger	405,285	June 18	1348	356	47	1505
Car-coupling	A. W. Van Dorston	405,384	June 18	1485	394	47	1533
Car-coupling	W. G. Walker	405,287	June 18	1350	356	47	1505
Car-coupling	C. L. Webber	402,212	Apr. 30	2723	706	47	555
Car-coupling	F. A. Westbrook and W. S. Cook	402,877	May 7	480	125	47	752
Car-coupling	F. A. Westbrook and W. S. Cook	403,016	May 7	608	176	47	789
Car-coupling	I. L. Whidden and J. S. Bashaw	400,617	Apr. 2	270	74	47	56
Car-coupling	C. A. and W. W. Woolsey	403,632	May 21	1635	432	47	989
Car-coupling	W. N. Wright	405,644	June 18	1918	505	47	1618
Car-coupling apparatus	D. H. Freeman	403,241	May 14	1199	319 / 319	47	898
Car-coupling link	J. Schinneller and J. T. Jones	403,147	May 14	862	233	47	838
Car-door	J. Charlton	404,259	May 28	2594	675	47	1183
Car-door	E. B. Goelet	400,562	Apr. 2	199	54	47	42
Car-door	C. L. Ward	404,755	June 4	554	141	47	1334
Car door and banger. Freight	W. E. Eastman	405,699	June 25	2006	527	47	1641
Car-door fastening	P. H. Murphy	401,574	Apr. 16	1733	457	47	348

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Car door. Freight	J. S. Porter	405,848	June 25	2214	583	47	1681
Car door. Grain	W. A. McGuire	406,003	June 25	2468	646	47	1724
Car door. Grain	G. W. Oborn	403,366	May 14	1240	329	47	906
Car. Dumping	J. W. Alfred	403,571	May 21	1550	408 / 409	47	972
Car. Dumping	P. Everitt and W. C. Page	405,700	June 25	2007	527	47	1641
Car. Dumping	J. M. Goodwin	403,584	May 21	1566	414	47	976
Car. Dumping	B. McArdle	403,689	May 21	1714	453	47	1006
Car-dumping apparatus	A. F. Thayer	404,447	June 4	105	26	47	1246
Car. Electric	G. H. Condict and V. Angerer	402,830	Apr. 2	605	165	47	118
Car. Electric	J. W. Henderson	402,080	Apr. 23	2515	657	47	505
Car. Electric-alarm advance	H. Riesenberg	401,591	Apr. 16	1757	464	47	353
Car. Electric or cable railway	S. A. Bemis and L. Pfingst	402,890	May 7	496	131	47	756
Car for live stock	H. Baines	401,678	Apr. 16	1906	497	47	380
Car for mines. Tool	J. Treweek	404,510	June 4	219	52	47	1265
Car for transporting fruit	F. M. Barber	403,724	May 21	1771	465 / 466	47	1016
Car frame. Railway	W. W. Green and J. Murison	404,276	May 28	2623	681	47	1188
Car frame. Railway	M. A. Zürcher	401,529	Apr. 16	1662	439 / 440 / 692 / 693	47	336
Car. Freight	C. Mackall	403,174	Apr. 30	2670	693	47	544
Car-gate	N. F. Mathewson	404,819	June 11	804	206	47	1390
Car gate. Railway	N. F. Mathewson	402,956	May 7	588	155	47	775
Car. Grip	C. F. Snedeker	402,861	Apr. 30	2944	763	47	596
Car. Hand	A. F. Kuhl	405,893	June 25	2278	599	47	1693
Car. Hand	F. A. Staser	401,499	Apr. 16	1577	417	47	320
Car-heater	J. T. Mead and J. Thomson	401,194	Apr. 9	1159	308 / 309	47	228
Car-heater	H. Schreiner	401,794	Apr. 23	2091	545	47	425
Car heater. Railway	R. M. La Rue	401,749	Apr. 23	3019	524	47	412
Car heater. Railway	D. Springer and C. A. Spring	404,316	May 28	2654	696	47	1200
Car-heating apparatus	C. A. Marrder	404,402	June 4	193	43	47	1250
Car-heating apparatus	J. F. McElroy	404,927	June 11	814	209	47	1392
Car-heating apparatus	P. L. McGovern	405,112	June 11	1074	286	47	1444
Car-heating apparatus	J. B. Porter	402,540	Apr. 30	3023	836	47	649
Car-heating apparatus	J. B. Porter	402,541	Apr. 30	3024	836	47	649
Car-heating apparatus	J. H. Sewall	402,021	May 7	101	24	47	663
Car-lubricating device. Railway	J. W. Maloy	402,958	May 7	584	154	47	774
Car partitions. Chain for stock	B. C. Hicks	401,274	Apr. 9	1275	340	47	250
Car-pedestal	P. M. Kling	404,288	May 28	2630	685	47	1191
Car platform. Railway	R. S. C. Fuller	405,025	June 11	960	256 / 257	47	1422
Car-pusher	J. C. Chrisman	405,012	June 11	935	248	47	1417
Car. Railway	J. M. Davis	405,696	June 25	2004	526	47	1640
Car. Railway	L. J. Harris	403,965	May 14	1079	283 / 284 / 285 / 286	47	874
Car. Railway	J. J. Treanor	403,309	May 14	1150	306	47	869
Car. Railway	E. Wenigmann	401,525	Apr. 16	1655	437	47	334
Car. Railway	M. A. Zürcher	401,528	Apr. 16	1659	438 / 439	47	335
Car. Railway	M. A. Zürcher	401,530	Apr. 16	1663	440	47	336
Car. Railway	M. A. Zürcher	405,202	June 18	1336	357 / 358	47	1506
Car-replacer	R. W. Africa	405,143	June 11	1115	297	47	1459
Car-replacer	C. E. Dailey	405,398	June 18	1507	400	47	1537
Car-roof	G. A. Roberts	404,735	June 4	526	135	47	1326
Car. Safety railway	C. C. Gilman	402,157	Apr. 30	2648	685 / 686	47	540
Car-seal	H. Abbott	402,125	Apr. 30	2599	673	47	531
Car-seat	E. B. Goelet	400,561	Apr. 2	197	53, 54	47	42
Car. Sleeping	T. W. Moore	401,711	Apr. 16	1953	509 / 510	47	388
Car-spring	C. T. Schoen	403,558	May 21	1534	403	47	969
Car-springs. Machine for setting	J. B. Illingsworth	404,089	May 28	2326	610	47	1134
Car-starter	A. M. Craddick and W. S. Heady	405,535	June 18	1732	454	47	1583
Car-starter	R. O. Gercke	400,560	Apr. 2	196	53	47	41
Car-starter	G. Schmidt	404,563	June 4	300	71	47	1281
Car-starter	B. Wistar and M. Pettet	403,167	May 14	913	240	47	843
Car starter and brake. Combined	S. B. Fyler	401,340	Apr. 16	1375	360	47	283
Car-starting device	E. Fales	403,582	May 21	1563	413	47	975
Car-step. Extensible	J. F. and J. F. Wood	403,237	May 14	1036	274	47	867
Car. Stock	J. M. Burton and C. C. Crowson	405,670	June 25	2248	591	47	1687
Car. Stock	M. D. Moore	405,107	June 11	1067	284	47	1444
Car. Stock	J. R. Wilson	401,091	Apr. 9	997	266	47	197
Car. Street	A. Rapp	403,214	May 14	997	263	47	860
Car. Street-railway	S. D. King	402,743	May 7	284	73	47	717
Car-track-brake housing	J. Stephenson	403,300	May 14	1137	301	47	868
Car-track guard	J. Stephenson	403,302	May 14	1140	302	47	868
Car-track sweeper	C. E. Shreve	400,497	Apr. 2	101	27	47	23
Car-tracks. Brake-shoe for	J. Stephenson	403,220	May 14	1025	270	47	865
Car-ventilator	F. B. Mallory	402,604	May 7	78	18	47	679
Car-ventilator	L. C. Tappey, Jr., and C. A. Evans	402,044	Apr. 23	2464	642	47	496
Car-wheel	W. Joslin	405,710	June 25	2023	532	47	1644
Car-wheel	H. W. Libbey	401,504	Apr. 16	1623	429	47	329
Car-wheel	E. Peckham	405,847	June 25	2219	588	47	1681
Car-wheel	F. W. Taylor	404,126	May 28	2384	625	47	1145
Car-wheel chill	L. R. Faught	402,664	May 7	165	42	47	695
Car-wheel chill	W. H. Hollister	405,355	June 18	1444	382	47	1525
Car-wheels. Making	G. S. Strong	402,696	May 7	212	55	47	703
Car-window screen	E. S. Hutchinson	405,609	June 18	1957	514	47	1696

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Car-window ventilator	M. C. Huyett	405,312	June 18	1387	365	47	1513
Car-windows. Smoke and dust fender for	E. F. Waller and O. A. Carlstedt	405,060	June 11	1009	369	47	1433
					370		
Car. Wrecking	M. Wuerpel	402,378	Apr. 30	2967	768	47	601
					770		
Cars. Alarm-signal for cable and electric railway	L. Pfingst and S. A. Bemis	404,981	June 11	891	233	47	1408
Cars. Apparatus for heating railway	G. H. Benjamin	401,245	Apr. 9	1237	332	47	243
Cars. Apparatus for heating railway	J. Loftus	400,777	Apr. 2	513	141	47	100
Cars. Apparatus for operating safety-gates of railway	W. M. Brown, Jr.	403,176	May 14	925	344	47	846
					345		
Cars. Apparatus for shifting	R. Ramsay	404,656	June 4	426	106	47	1307
					107		
Cars. Bearing for street	D. G. Grant	401,159	Apr. 9	1104	293	47	216
					294		
Cars. Bed-frame for railway	W. W. Green and J. Murison	404,277	May 28	2025	689	47	1188
Cars. Brake-shoe attachment for railway	G. A. Diedel	401,257	Apr. 9	1252	334	47	245
Cars. Cable-lifter for railway	D. W. Smith	402,544	Apr. 30	3209	857	47	650
Cars. Center-bearing plate for railway	C. T. Schoen	403,560	May 21	1536	403	47	970
Cars. Chock-block for tram	J. W. Sims	403,894	May 21	2021	531	47	1065
Cars. Coupler for air-brake mechanism on railway	A. J. Wiener	404,760	June 4	561	143	47	1336
					144		
Cars. Device for steadying	S. D. King	402,676	May 7	184	47	47	698
Cars. Dog attachment for log	R. J. Thompson	403,898	May 21	2025	532	47	1066
					533		
Cars. Draft-rigging for railway	J. A. Graham	402,581	May 7	45	11	47	672
Cars. Draw-gear for cable	J. Stephenson	403,301	May 14	1139	301	47	886
Cars. Grain-door for freight	J. S. Patterson and J. R. Lawrence	403,208	May 14	980	261	47	859
Cars. Heating street	W. H. Patton	401,205	Apr. 9	1173	312	47	231
Cars. Hose-coupling for railway	C. N. Burnett	402,718	May 7	242	64	47	709
Cars. Lamp-fixture and ventilator for railway	J. Williams, E. J. Frost, and W. Dawson.	400,984	Apr. 9	842	225	47	170
					226		
Cars. Letter-box for street	G. B. McAllister	402,026	Apr. 23	2438	635	47	490
Cars. Means for propelling railway	J. M. Keith	403,758	May 21	1818	477	47	1025
Cars. Mechanism for extinguishing the lights in railway	I. N. Tillson	404,749	June 4	545	140	47	1332
Cars. Motive mechanism for railway	H. F. and G. F. Shaw	404,441	June 4	98	24	47	1244
Cars. Platform-gate for railway	F. M. Gilbert	402,919	May 7	533	141	47	763
Cars. Safety extinguishing attachment for heating and illuminating apparatus for railway	R. T. Smith	404,675	June 11	741	189	47	1377
Cars. Safety-guard for railway	G. W. Remington	401,068	Apr. 9	961	256	47	192
Cars. Safety-guide for railway	J. G. Blau	403,907	May 28	2044	538	47	1078
Cars. Sand-box for street	G. H. Hathaway	402,523	Apr. 30	3204	830	47	645
Cars. Sanding device for street	J. Ritchie	405,505	June 18	1689	446	47	1575
Cars. Stake-pocket for	C. T. Schoen	403,559	May 21	1535	403	47	969
Cars. Steam-heating system for railway	J. F. McElroy	404,926	June 11	812	209	47	1392
Cars. Steam-pipe coupling for railway	L. Aldrich	401,920	Apr. 23	2274	581	47	460
Cars. System of electric lighting for railway	H. W. Leonard and A. Hanson	405,897	June 25	2286	600	47	1604
Cars. Ticket-box for street-railway	S. H. Caughy	401,638	Apr. 16	1853	482	47	371
Cars. Track-brake for	J. Stephenson	403,299	May 14	1136	301	47	885
Cars. Track-brake for street-railway	P. M. Kling	404,289	May 28	2639	685	47	1192
					686		
Cars. Vestibule connection for railway	G. M. Pullman	403,137	May 14	868	229	47	835
Caramel-holder	G. W. and E. E. Chase	401,774	Apr. 23	2050	536	47	418
Carbazol-yellow	R. Bohn	401,634	Apr. 16	1849	.....	47	370
Carbon filaments. Manufacture of	T. V. Hughes and C. R. Chambers	405,480	June 18	1646	434	47	1506
Carbon filaments. Manufacture of	E. P. Thompson	401,606	Apr. 16	1802	472	47	362
Carbon filaments. Manufacture of incandescing	E. P. Thompson	401,607	Apr. 16	1804	472	47	362
Carbureting air or gas. Apparatus for	D. J. Snyder and J. Stephenson	405,747	June 25	2080	545	47	1654
					546		
Card-case. Pocket	C. J. Buffum	405,339	June 18	1424	375	47	1521
Card-clothing thereto. Device for holding cylinders while attaching	I. E. Comins	404,685	June 4	467	118	47	1316
Card-clothing to flats. Machine for fastening	W. Decker	403,924	May 28	2067	543	47	1082
Card-flats. Device for adjusting	E. Tweedale	405,625	June 18	1861	492	47	1609
					493		
Card-grinding roller	J. S. Dronsfield	404,608	June 4	367	93	47	1295
Card or ticket case	A. Allen	404,515	June 4	225	53	47	1267
Card-player's indicator	L. Bing	405,762	June 25	2100	550	47	1650
Card. Playing	R. F. Foster	404,722	June 4	597	155	47	1343
Card-setting-machine rest	N. C. Estes	404,036	May 28	2223	585	47	1113
Card-teeth. Making	G. and E. Ashworth	401,991	Apr. 23	2377	618	47	460
Carding cotton	J. V. Palmer	405,904	June 25	2301	605	47	1697
Carding-engines. Driving mechanism for	G. and E. Ashworth	403,720	May 21	1766	464	47	1015
Carding-engines. Driving mechanism for	G. and E. Ashworth	403,721	May 21	1767	464	47	1016
					465		
Carding-engines. Machine for securing clothing to	E. Ashworth	404,587	June 4	336	80, 81	47	1289
Carding-engines. Stripping mechanism for	A. Falls	403,931	May 28	2074	545	47	1084
Carding-machines, &c. Cylinder for	J. J. Rieger	402,616	May 7	95	23	47	682
Carding-machines, &c. Cylinder for	G. O. Wickers	405,234	June 11	1262	335	47	1481
Carding-machines. Doffer-cleaner for	G. Bebb	401,811	Apr. 23	2118	552	47	429
Carding-machines. Sliver-coiling can for	E. and G. E. Sutcliffe	403,304	May 14	1142	303	47	887
Carding or other machines. Cylinder for	G. O. Wickers	404,812	June 4	640	165	47	1352
Carpet-cleaner	W. P. White	403,313	May 14	1157	306	47	890
Carpet-protector	G. S. Burrell	402,504	Apr. 30	3171	821	47	639
Carpet-stretcher	L. G. Ballinger	402,220	Apr. 30	2733	709	47	557
Carpet-stretcher	C. M. Mallory	402,853	May 7	585	154	47	774
Carpet-stretcher	B. W. Moylan and H. P. Griemsmann.	405,171	June 11	1165	311	47	1462
Carpet-stretcher	A. W. Mühlhauser	403,126	May 14	852	225	47	832
Carpet-sweeper	E. Card	405,828	June 25	2182	574	47	1675
Carpet-sweeper	W. J. Drew	405,064	June 11	1037	277	47	1438
Carpet-sweeper	H. A. Gore and H. W. Ra Ton	402,158	Apr. 30	2692	696	47	540
Carpet-sweeper	G. W. Kelley	403,845	May 21	1952	512	47	1051

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Carriage	M. Haughey	404,405	June 4	45	12	47	1234
Carriage	C. Thomas	405,723	June 25	2043	536	47	1647
					537		
Carriage. Baby	F. J. D. Chappell	403,417	May 14	1321	346	47	920
Carriage-body	C. J. Mingle	403,948	May 28	2060	549	47	1068
Carriage-body joint	E. L. Upson	403,709	May 21	1748	460	47	1012
Carriage-bow	J. C. Coss	403,001	May 14	799	212	47	821
Carriage-bow	G. L. Crandal	404,900	June 11	777	196	47	1385
Carriage brake. Baby	I. Levy	405,041	June 11	985	262	47	1426
Carriage. Child's	W. H. Richardson	405,599	June 18	1827	484	47	1603
Carriage. Child's	W. H. Richardson	405,600	June 18	1827	484	47	1604
					485		
Carriage-curtain fastener	S. P. Scott	401,720	Apr. 16	1970	515	47	392
Carriage-curtain fastener	S. P. Scott	403,388	May 14	1285	337	47	913
Carriage-curtain knob	F. A. Neider	404,928	June 11	815	209	47	1392
Carriage-driving mechanism	D. W. Dodson	402,353	Apr. 30	2749	712	47	560
					713		
Carriage. Folding	J. F. Flad	401,939	Apr. 23	2301	598	47	465
Carriage-jack	E. F. Burtis	404,167	May 28	2447	641	47	1158
Carriage. Light	T. H. Wood. (Reissue)	10,998	Apr. 30	3241	841	47	653
Carriage seat. Child's	C. V. Klippert	404,356	May 28	2745	713	47	1211
Carriage-spring	J. Hironimus	403,885	May 21	2004	526	47	1062
Carriage-top	J. T. Noonen	404,650	June 4	418	103	47	1305
Carriages. Prop-block washer for	A. Searls	404,989	June 11	902	236	47	1410
Carrier:							
See Back-band trace-carrier.	Flux-carrier.						
	Harvester sheaf-carrier.						
Bundle-carrier.	Hay-carrier.						
Burden-carrier.	Life-line carrier.						
Cable-grip carrier.	Luggage-carrier.						
Cash-carrier.	Poultry-carrier.						
Cash and package carrier.	Quilting-machine shuttle-carrier.						
Cash and parcel carrier.	Sheaf-carrier.						
	Straw-carrier.						
Cotton-carrier.	Telegraph-wire carrier.						
Egg-carrier.	Trace-carrier.						
Carrier	T. Long	405,785	June 25	2129	500	47	1664
Carriers. Driving mechanism for endless	J. Dick	401,777	Apr. 23	2053	527	47	419
Cart	T. Hardy	404,402	June 4	41	11	47	1233
Cart. Dumping	S. Gantz	405,770	June 25	2111	553	47	1660
Cart. Dumping	T. Hill	405,777	June 25	2119	556	47	1662
					557		
Cart. Hand	A. Schubert	401,381	Apr. 16	1444	382	47	295
Cart. Road	M. Barnes	404,672	June 4	446	112	47	1311
Cart. Road	E. W. Beam	405,299	June 18	1368	360	47	1508
Cart. Road	F. H. Boni	405,074	June 11	1098	274	47	1436
Cart. Road	J. W. Brown	405,826	June 25	2189	574	47	1675
Cart. Road	W. E. Burns	403,514	May 21	1473	388	47	957
Cart. Road	M. L. Cleveland	401,735	Apr. 23	1997	523	47	408
Cart. Road	J. W. Coombe	405,081	June 11	1033	276	47	1437
Cart. Road	C. H. Fortney	405,545	June 18	1751	463	47	1588
Cart. Road	G. H. Fowler	403,745	May 21	1800	473	47	1022
Cart. Road	J. G. Hess	401,834	Apr. 23	2146	560	47	435
Cart. Road	R. D. Scott	403,148	May 14	884	233	47	838
Cart. Road	L. E. Walberg	405,193	June 11	1204	320	47	1470
Cart-spring	A. J. Blix	404,677	June 4	452	114	47	1313
Cartridge-belt	W. W. Harris	405,997	June 25	2459	643	47	1723
Cartridge-crimping tool	F. Wichelhaus	404,811	June 4	639	164	47	1352
Cartridge for ordnance	G. Quick	404,053	May 28	2267	593	47	1121
Cartridge-loader	A. Euston	405,152	June 11	1131	301	47	1455
					302		
					303		
Cartridge-shells. Device for uncapping and recapping	N. M. Muzzy	404,835	June 11	708	182	47	1372
Cartridges. Pocket for	G. Barnard	401,923	Apr. 23	2281	592	47	461
Case:							
See Book-case.	Show-case.						
Bottle-case.	Show and shot case.						
Card-case.	Surgical-needle case.						
Card or ticket case.	Syringe and medicine case.						
File-case.	Thermometer-case.						
Knockdown case.	Type-case.						
Latch-case.	Type-writer case.						
Lock-case.	Work-case.						
Map-case.	Writing-case.						
Opera-glass case.							
Packing-case.							
Cash and package carrier	J. F. Bartlett	402,128	Apr. 30	2603	674	47	531
Cash and parcel carrier	E. B. Stocking	405,332	June 18	1415	373	47	1519
Cash-carrier	W. H. Billing	404,887	June 11	757	193	47	1381
Cash-carrier	W. R. Dean	405,538	June 18	1734	458	47	1584
					459		
Cash-carrier	D. Lippy	400,696	Apr. 2	387	104	47	77
Cash-carrier	D. Lippy	401,568	Apr. 16	1726	455	47	347
Cash-carrier	S. H. Soper, Jr	403,967	May 28	2126	556	47	1093
Cash-carrier	E. P. Zerbe	404,943	June 11	835	217	47	1397
Cash-carrier	E. P. Zerbe and F. S. Church	404,944	June 11	836	217	47	1397
Cash-carriers. Adjustable curve for	F. S. Church	404,806	June 11	771	197	47	1383
Cash-drawers. Recorder for	W. I. Blood	402,797	May 7	368	97	47	732
Cash indicator and register	M. U. Loree	404,045	May 28	2244	589	47	1114
Cash indicator and register	M. U. Loree and C. D. Grimes	404,046	May 28	2251	590	47	1117
					591		
					592		
Cash indicator and register	J. H. Patterson	404,050	May 28	2258	592	47	1118

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Pages.
Cash indicator and register	W. W. Wythe	401,725	Apr. 16	1976	517 518	47	393
Cash-register	W. C. McGill	405,111	June 11	1071	285 386	47	1444
Cask. Collapsible shipping	J. H. Mitchell	403,501	May 14	1448	380	47	944
Casks. Air-ejector for	J. W. Funck	403,261	May 14	1074	262	47	873
Caster	G. D. Clark	400,899	Apr. 9	710	192	47	147
Caster-frame for tube, &c	W. E. Washburn	404,022	May 28	2202	578	47	1108
Casting chill-rings. Apparatus for	H. Birkhols	404,888	June 11	758	193	47	1361
Casting chilled corrugated rollers. Apparatus for	H. Birkhols	404,889	June 11	759	193	47	1361
Casting. Core for	G. H. Bennett	404,673	June 4	448	112	47	1312
Casting hollow ingots. Mold for	I. F. Peck	402,157	Apr. 30	2687	696	47	547
Casting ingots. Apparatus for	J. Illingworth	403,755	May 21	1819	476	47	1024
Casting machine. Ingot	W. R. Hinsdale	404,909	June 11	790	201	47	1367
Casting mold. Type	H. Klemm	405,419	June 18	1536	407	47	1543
Casting ordnance. Core for	C. H. Wilder	404,239	May 28	2570	669	47	1179
Casting S-traps. Core for	J. Z. Gifford	401,026	Apr. 9	901	241	47	191
Casting sash-weights. Chill-core for	C. S. Humphrey and H. H. Good	403,191	May 14	952	252	47	850
Casting steel ingots	E. L. Clark	404,382	June 4	15	4	47	1298
Casting window-weights. Mold for	L. G. Buice	402,556	May 7	8	3	47	664
Castings. Cleaning metal	J. H. Potts	405,716	June 25	2032	.....	47	1645
Catch-pin	E. H. Nash	404,102	May 28	2347	615	47	1138
Catcher	C. A. Chapman	402,902	May 7	511	135	47	750
Cattle-guard	J. T. Hall	403,532	May 21	1506	394	47	964
Cattle to be dehorned. Device for holding	J. F. and J. W. Luse	405,574	June 18	1790	474	47	1506
Ceiling. Metallic	L. L. Sagendorph	401,906	Apr. 23	2253	586	47	456
Celluloid or analogous binding	K. J. Collins	405,874	June 25	2255	593	47	1689
Cement	U. Cummings	402,511	Apr. 30	3180	.....	47	641
Center-board	C. A. Duren and R. M. Smith	402,573	May 7	34	9	47	669
Center-board. Steering	J. H. Hunt	404,626	June 4	388	94	47	1299
Center of attraction in polarized bodies. Determining the	A. Gipperich	401,428	Apr. 16	1508	400	47	308
Centering device	J. A. Painter	404,858	June 11	713	183	47	1373
Centrifugal machine for treating grain, &c	J. Boyd	403,910	May 28	2047	538	47	1078
Centrifugal separators. Means for lubricating	F. Hart	405,212	June 11	1235	328	47	1475
Chain	W. C. Edge	401,935	Apr. 23	2297	596	47	464
Chain	J. Ingram	403,591	May 21	1577	417	47	978
Chain and uncoupling device therefor. Door	H. Maul	400,930	Apr. 9	761	204	47	155
Chain. Drive	G. G. F. Boswell	403,909	May 28	2047	538	47	1078
Chain. Drive	T. H. McCray	403,127	May 14	853	226	47	832
Chain. Drive	T. H. McCray	403,128	May 14	855	226	47	833
Chain. Drive	D. J. Sheldrick	403,893	May 21	2020	531	47	1065
Chain-fastener	H. E. Kelley	404,631	June 4	396	93	47	1301
Chain-link machines. Feed mechanism for	J. D. Storie	404,742	June 4	534	137	47	1330
Chain-links. Making	C. W. Whiteley	402,637	May 7	125	30	47	688
Chains. Grab-link for trace	J. E. Giroux	404,615	June 4	375	90	47	1297
Chair: *See* Beach-chair, Camp-chair, Convertible chair, Convertible suspending-chair, Folding chair, Iron chair, Opera-chair, Oscillating chair, Portable chair, Reclining-chair, Reed chair, Reed or rattan chair, Rocking-chair, Switch-rail chair, Window-chair.							
Chair attachment	A. Strane and M. B. Jacoby	405,919	June 25	2329	612	47	1701
Chair attachment. Rocking	W. I. Bunker	402,802	May 7	377	99	47	733
Chair attachment. Rocking	W. I. Bunker	403,325	May 14	1182	313	47	895
Chair attachment. Rocking	W. I. Bunker	405,340	June 18	1425	376	47	1521
Chair attachment. Rocking	W. I. Bunker	405,341	June 18	1426	376	47	1521
Chair attachment. Rocking	W. I. Bunker	405,530	June 18	1725	455	47	1582
Chair joint. Folding	A. F. Old	403,772	May 21	1842	484	47	1030
Chairs. Bellows attachment for rocking	F. Marschall	402,026	Apr. 23	2435	635	47	490
Chairs. Fan for rocking	G. R. Leibensperger and G. W. Bailey	402,948	May 7	579	152 153	47	773
Chairs. Spring attachment for rocking	W. I. Bunker	401,684	Apr. 16	1913	496	47	381
Chalk-holder	P. E. Newsom	402,686	May 7	199	50	47	700
Chandelier	L. F. Griswold	402,077	Apr. 23	2511	658	47	505
Chandelier. Extension	J. Kintz	400,857	Apr. 2	642	170	47	123
Chandelier. Extension	C. Maschmeyer	405,899	June 25	2201	601	47	1696
Channeling-machine	H. C. Sergeant	402,862	May 7	457	120 121	47	749
Check-hook. Harness	M. Ingersoll	403,351	May 14	1214	322	47	901
Check-protector	E. O. Abbott	401,871	Apr. 23	2192	572 574	47	445
Check-spreader. Overdraw	S. E. Harsh	401,558	Apr. 16	1708	451	47	344
Checkrein-hook	W. C. Jencks	405,261	June 18	1314	346	47	1498
Checkrein-hook	G. W. Meliere	404,643	June 4	409	109	47	1303
Checkrein-hook	J. S. Taylor	405,927	June 25	2344	615	47	1703
Cheese-cutter	B. Barry	400,537	Apr. 2	163	42	47	34
Cherry-stoner	P. H. Reibisch	405,118	June 11	1069	283	47	1446
Chest: *See* Beer-chest, Bolting-chest.							
Chill	W. Fawcett	405,882	June 25	2263	595	47	1690
Chimney	J. A. Hodel	401,836	Apr. 23	2149	561	47	436
Chimney cap and ventilator	W. Earle	405,698	June 25	2006	528	47	1640
Chimney-cowl	I. J. Turner	402,365	Apr. 30	2951	765	47	597
Chimney-protector	W. Wright	402,641	May 7	128	31	47	688
Chimney-top	M. Hinkley	405,667	June 18	1955	513	47	1695
Chin and lip adjuster for corpses	J. I. Nunn	402,764	May 7	316	81	47	722
Chisel. Carpenter's	T. H. Palmer	404,554	June 4	329	86	47	1290
Chlorine. Apparatus for making	A. B. Pechiney	403,445	May 14	1360	352	47	926
Chop-grader	C. Haggenmacher	402,440	Apr. 30	3079	797	47	622

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Pages.
Chopper: *See* Cotton-chopper.							
Chuck. Drill	M. L. Andrew	403,063	May 14	786	209	47	819
Chuck. Lathe	F. Higgins	403,589	May 21	1576	416	47	977
Chuck. Lathe	S. Ide	400,459	Apr. 2	48	15	47	13
Churn	J. W. Ferrenburg	403,337	May 14	1195	317	47	898
Churn	M. L. Hoyt and H. F. Murray	404,281	May 28	2030	683	47	1190
Churn	H. B. and E. T. Lynes	405,577	June 18	1794	475	47	1507
Churn	J. W. Parrish	405,591	June 18	1813	480	47	1601
Churn	J. J. Pursley	402,542	Apr. 30	3225	856	47	650
Churn	G. F. Robertson and W. D. Gammon	403,140	May 14	874	230	47	836
Churn	E. A. Rudasill	402,976	May 7	613	161	47	780
Churn	W. M. Shira	404,569	June 4	307	73	47	1281
Churn	H. Sommerfeld	404,443	June 4	100	25	47	1215
Churn-dasher	W. S. Lindsley	405,265	June 18	1320	348	47	1498
Churn-motor	H. C. Andersen	405,336	June 18	1421	374	47	1520
Churn-motor	W. H. Strickler and J. S. Braddock	400,507	Apr. 2	115	31	47	26
Churns. Motor for operating	E. N. Shafer and J. D. King	401,861	Apr. 23	2179	569	47	442
Chute for feeding sawdust to steam-boilers	G. W. Flood	403,830	May 21	1927	507	47	1047
Chute indicator. Coal	J. Elder	401,140	Apr. 9	1068	286	47	211
Cigar and cigarette holders or pipes. Stem for	I. Paine	403,550	May 21	1596	400	47	967
Cigar-box with metal or other frame. Glass	I. Friedman	400,840	Apr. 2	617	168	47	118
Cigar-bunching machine	N. H. Borgfeldt and A. Lewyn	403,410	May 14	1314	343	47	919
Cigar-bunching machine	G. F. Palm and M. Smith	402,766	May 7	317	82, 83	47	723
Cigar-bunching machine	S. A. Shepard	401,076	Apr. 9	970	258 259	47	193
Cigar-bunching machine	F. C. Smalstig	405,918	June 25	2325	611	47	1700
Cigar-bunching machine	J. E. Smith	402,038	Apr. 23	2451	639 640	47	493
Cigar-bunching machine	J. E. Smith	402,039	Apr. 23	2454	640 641	47	494
Cigar-bunching machine	J. E. Smith	405,439	June 18	1573	416	47	1550
Cigar-bunching machine	J. R. Williams	401,080	Apr. 9	992	264 265	47	197
Cigar-bundling machine	A. E. Pye	401,514	Apr. 16	1636	433	47	331
Cigar-cutter	J. B. Moos	402,760	May 7	310	80	47	721
Cigar cutter and support	P. Kern	401,174	Apr. 9	1129	299	47	221
Cigar-holder	H. Machtanz	404,644	June 4	409	109	47	1303
Cigar-machine	J. Thompson	405,724	June 25	2044	537	47	1648
Cigar-making machine	J. E. Smith	401,077	Apr. 9	971	259 260	47	194
Cigar-making machine	W. M. Steinle	401,599	Apr. 16	1784	468 469	47	358
Cigar-mold	F. C. Miller	400,868	Apr. 2	659	179	47	126
Cigar wrapping and rolling machine	C. W. Boman	405,073	June 11	1025	274	47	1436
Cigar-wrapping machine	S. J. Flatow	401,147	Apr. 9	1084	288 289	47	213
Cigar-wrapping machine	J. E. Smith	405,438	June 18	1569	415	47	1550
Cigars, cigarettes, &c. Machine for making mouth-pieces or holders for	R. W. Thurman	400,806	Apr. 2	566	155 156	47	108
Cigars. Machine for impressing letters or marks in	G. F. and J. W. McIndoe	402,467	Apr. 30	3149	809	47	629
Cigars. Match-lighting device for	A. Block	405,765	June 25	2103	551	47	1659
Cigars. Mouth-piece for	T. S. E. Dixon	400,446	Apr. 2	33	10	47	10
Cigarette-box for automatic vending apparatus	J. M. O'Kelly	404,299	May 28	2056	690	47	1195
Cigarette-machine	F. J. Ludington	400,780	Apr. 2	517	142 143 144 145	47	101
Cigarette mouth-pieces. Machine for making	S. Brown	403,324	May 14	1175	312 313	47	894
Cigarette mouth-pieces or paper tubes. Machine for making	G. M. Griswold, R. W. Thurman, and R. H. Wright.	400,765	Apr. 2	485	131 132 133	47	95
Cinder-boxes. Door for	J. B. Barnes	403,504	May 21	1454	382	47	953
Circles, curves, and geometrical forms. Device for forming	J. F. Earhart	403,827	May 21	1923	506	47	1046
Circuit-connecting device	J. C. Reilly	401,067	Apr. 9	959	256	47	191
Clamp: *See* Dental rubber-dam clamp, Electric-motor clamp, Jar-clamp, Rope-clamp, Rubber-dam clamp, Stitching-clamp, Wood-working clamp.							
Clamp	E. C. Stearns	404,368	May 28	2767	717	47	1216
Clamp for clothes-lines, tent-ropes, &c	S. W. Conklin	400,546	Apr. 2	172	45	47	36
Clarionet	R. Orsi	403,065	May 7	750	193	47	863
Clasp: *See* Album-clasp, Corset-clasp, File-hand clasp, Shoe clasp.							
Clasp	P. Frantzen	401,880	Apr. 23	2210	578	47	448
Clasp	O. C. Mann	401,844	Apr. 23	2158	563	47	438
Clasp	F. B. Spooner. (Reissue)	10,995	Apr. 16	1965	519	47	396
Clasp	F. B. Spooner	401,977	Apr. 23	2353	612	47	475
Clasp-plate	A. R. Dickinson	403,560	May 21	1562	412	47	975
Cleaner: *See* Bolting-cloth cleaner, Carpet-cleaner, Cotton-cleaner, Grain-cleaner, Saw-cleaner, Slate-cleaner, Window-cleaner.							
Cleansing and polishing compound	J. H. Despain	404,387	June 4	21	.....	47	1220
Clevis	A. W. Rumsey	400,493	Apr. 2	93	25	47	21
Clevis. Awning	W. M. Brown	400,895	Apr. 9	705	191	47	146
Clevis. Plow	H. G. Niles and P. Van Huffel	402,609	May 7	85	20	47	680

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Clip:							
See Wagon-clip.							
Clip-board. Folding	W. G. Weagly	403,233	May 14	1029	271	47	866
Clock	W. D. Davies	400,753	Apr. 2	471	127	47	93
Clock	A. Junghans	401,499	Apr. 16	1516	423	47	328
Clock attachment	E. T. Chase	405,394	June 18	1503	398	47	1536
Clock. Electric	E. G. Hammer	403,823	May 7	404	106 107	47	739
Clock. Electric alarm	B. Dubinski	405,206	June 11	1229	325	47	1474
Clock. Electric alarm	T. H. Grady	403,100	May 14	811	215	47	824
Clock. Electric alarm	W. E. Hadlock	404,906	June 11	785	200	47	1386
Clock. Electric self-winding	J. H. Gerry	405,080	June 11	1042	278	47	1439
Clock. Electric striking and repeating	A. M. J. and V. J. A. M. Jansen	402,329	Apr. 30	2895	750	47	587
Clock-escapement. Gravity	F. Gundorph	403,999	May 28	2174	571	47	1103
Clock-frame	D. A. Wiant	403,812	May 21	1900	499	47	1012
Clock-movement holder	J. Harwood	405,258	June 18	1311	345	47	1497
Clock-pendulum	J. Werner	404,997	June 11	916	242	47	1413
Clock striking mechanism	D. J. Gale	402,917	May 7	531	140	47	763
Clock striking mechanism	A. M. Lane	403,275	May 14	1104	293	47	879
Clocks. Electric winding for torsion-pendulum	H. Rabe	401,065	Apr. 9	256	67	47	191
Clocks. Setting mechanism for alarm	A. M. Lane	403,274	May 14	1103	293	47	879
Closet:							
See Columnar closet. Water-closet.							
Cloth-cutting apparatus	C. W. Boettner and H. H. Gilchrist	402,652	May 7	144	35	47	691
Cloth-cutting machine	R. Schofield	400,603	Apr. 2	248	68	47	52
Cloth into strips. Machine for cutting	J. G. McCarter	404,645	June 4	410	100 101	47	1303
Cloth. Machine for sizing and painting	D. A. Page and R. C. Bird	402,184	Apr. 30	2688	695 696 697	47	547
Cloth-marking implement	N. Harris	404,482	June 4	168	39	47	1256
Cloth. Ornamenting	A. Vehon	404,062	May 28	2283	.....	47	1124
Cloth-sponging machine	W. Hebdon	404,620	June 4	381	92	47	1298
Cloth-stretching machine. Clip or holder for	D. P. Smith	404,314	May 28	2682	695 696	47	1200
Clothes-drier	C. D. Fuller	401,264	Apr. 9	1262	336	47	247
Clothes-horse	E. A. Parrish	403,066	May 7	740	193	47	803
Clothes-line	F. P. Stanley	400,503	Apr. 2	111	30	47	25
Clothes-line attachment	M. Denise	403,332	May 14	1188	315	47	897
Clothes-line reel	H. C. Priebe	402,477	Apr. 30	3137	812	47	633
Clothes-line support	J. T. Crane	401,253	Apr. 9	1246	332	47	244
Clothes-lines. Support for endless	M. V. Teetor	402,630	May 7	114	28	47	686
Clothes-pounder	E. W. Tucker and A. P. Orr	404,234	May 28	2560	667	47	1177
Clothes-pounder	L. N. Martin	401,571	Apr. 16	1730	456	47	348
Clothes-wringer	L. C. Parker and B. Voges	404,653	June 4	421	104	47	1306
Clutch	L. Goddu	402,014	Apr. 23	2410	628	47	486
Clutch and brake. Friction	T. W. Capen	404,776	June 4	588	152	47	1341
Clutch and tension machine. Automatic	J. C. Bill	400,998	Apr. 9	864	222	47	174
Clutch, Automatic safety	G. Le Clair	405,845	June 25	2269	584	47	1680
Clutch for elevators. Safety	E. W. Houser	405,535	June 18	1763	465	47	1591
Clutch. Friction	G. A. Barnes	404,153	May 28	2422	634	47	1153
Clutch. Friction	H. C. Crowell	403,739	May 21	1792	471	47	1030
Clutch. Friction	G. L. Gerhard	403,098	May 14	809	215	47	823
Clutch. Friction	A. Hampe	403,663	May 21	1673	444	47	998
Clutch. Friction	G. W. King and H. M. Burnhart	401,170	Apr. 9	1131	300	47	222
Clutch. Lever	A. M. Stickney	403,562	May 21	1538	404	47	970
Coal and wood cabinet	H. Brandt	403,456	May 14	1379	361	47	931
Coal-conveyer	G. L. Stuebner	402,284	Apr. 30	2825	730 731	47	574
Coal. Conveyer contrivance for handling	J. M. Dodge	403,742	May 21	1795	472	47	1021
Coal. Conveyer for piling	J. M. Dodge	404,263	May 28	2600	677	47	1184
Coal-drilling machine	J. Noice	400,593	Apr. 2	235	64	47	49
Cock and coupling for barrels, casks, &c. Combined	C. C. Linindoll	404,918	June 11	803	206	47	1390
Cock. Automatic float tank	A. P. Howes	402,596	May 7	66	16	47	676
Cock. Automatic valve	J. F. Carpenter	405,694	June 25	2001	525	47	1640
Cock box. Stop	P. H. Gundermann	401,493	Apr. 16	1606	424	47	326
Cock box. Stop	A. Ormsby and H. Eberhart	404,049	May 28	2257	591	47	1118
Cock. Feed-water	H. D. Medrick	402,957	May 7	590	155	47	775
Cock. Gage	J. P. Strebig	405,129	June 11	1096	292	47	1449
Cock. Gage	D. B. Whitehill	402,373	Apr. 30	2939	767	47	599
Cock or faucet	F. B. Ray	401,568	Apr. 16	1754	463	47	352
Cock. Sea	B. S. Horton	402,454	Apr. 30	3098	804	47	626
Cock. Stop	M. M. Forestier	405,404	June 18	1514	403	47	1539
Cocks. Floor-key for	J. Powell	400,944	Apr. 9	783	209	47	159
Cocoa. Preparing soluble	H. Stollwerck	401,311	Apr. 9	1326	.....	47	261
Coffee-boiler	P. Bulow	405,946	June 25	2374	622	47	1708
Coffee-cleaning machine	C. J. Pickett	404,430	June 4	82	20	47	1242
Coffee. Machine for peeling, polishing, and cleaning	A. Gallardo	402,318	Apr. 30	2879	745 746	47	584
Coffee-mill	L. Drude	405,019	June 11	948	252	47	1419
Coffee or tea pot	G. W. Adams	401,919	Apr. 23	2274	600	47	460
Coffee or tea pot	G. E. Raymond	402,989	May 7	604	159	47	778
Coffee-pot	F. A. Hovey	404,707	June 4	491	124	47	1321
Coffee-roaster	J. T. Couse	403,419	May 14	1323	346	47	921
Coffer-dam	H. P. Kirkham	404,718	June 4	508	129	47	1325
Coffin	E. C. Manning	404,639	June 4	404	98	47	1302
Coffin-fastener	E. and B. Holmes	400,570	Apr. 2	209	56	47	44
Coffin-fastener	S. A. Scofield	404,872	June 11	737	188	47	1377
Coffin-fastener	W. A. Sparks	401,663	Apr. 16	1886	491	47	376
Coffin-fastener	C. E. Temple	401,767	Apr. 23	2041	534	47	417
Coffin-plate	J. H. Spicer	400,963	Apr. 9	810	216	47	165
Coffins. Frame for the pillows of	C. Krauser	401,284	Apr. 9	1287	343	47	253
Coin-actuated receptacle	E. C. Jones	405,215	June 11	1238	329	47	1476

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Coin-assorter	J. Roggy	401,593	Apr. 16	1763	464 465	47	354
Coin-operated lock	F. M. Leavitt	403,200	May 14	975	257 258	47	856
Coin-operated receptacle	W. Macnamar	405,578	June 18	1795	475	47	1597
Collapsible boat	C. Henderson	403,470	May 14	1395	365 366	47	934
Collapsible box	L. Casper	403,089	May 14	796	211	47	821
Collar-fastener	J. Himmelstein	404,403	June 4	52	14	47	1235
Collar. Horse	J. E. Purdy	403,610	May 21	1600	424	47	982
Collar-stuffing machine	C. Ewing	405,021	June 11	955	255	47	1421
Collars. Fastening device for dog	W. C. Gunn	405,551	June 18	1757	464	47	1590
Collars. Mold for making glass pads for horse	D. Barker	404,766	June 4	568	145	47	1337
Color-blindness. Device for testing	L. T. Stanley	404,386	May 28	2765	716	47	1216
Color. Red carbon	R. Gnehm	402,436	Apr. 30	3075	.....	47	621
Colors. Dissolving aniline	J. Hahn	404,193	May 28	2491	.....	47	1165
Coloring-matter. Production of yellow	A. Liebmann	404,097	May 28	2340	.....	47	1136
Colter attachment for plows	W. J. Edwards	401,337	Apr. 16	1369	364 365	47	231
Colter-band	A. J. Tatum	403,399	May 14	1302	340	47	916
Colter-holder. Tilting	W. H. Perrin	403,531	May 21	1527	400	47	967
Columnar closet	E. H. Watson	400,614	Apr. 2	266	73	47	58
Comb:							
See Curry-comb.							
Comb and curling-iron. Combined	G. L. Thompson	404,120	May 28	2388	626	47	1146
Combing machines. Dabbing-brush apparatus for	J. L. Ballantyne	404,376	June 4	6	2	47	1226
Combination-lock	I. A. Shaw	404,568	June 4	305	73	47	1263
Commode	J. A. Bell	401,629	Apr. 16	1843	480	47	369
Commutating device	D. W. Thompson	401,801	Apr. 23	2102	548	47	427
Commutator	H. H. Blades	403,905	May 28	2042	537	47	1077
Commutator-bars. Fitting	F. Bailey	400,994	Apr. 9	858	230	47	173
Compositor's bracelet wrist-protector	C. L. Smart	403,783	May 21	1855	487	47	1033
Compound engine	R. H. Lapage	405,569	June 18	1780	471	47	1594
Compound engine	G. Westinghouse, Jr., and F. M. Rites.	405,812	June 25	2161	568 569	47	1671
Compression-extractor	H. A. Crandell	405,348	June 18	1437	380	47	1523
Concrete and artificial-stone surfaces. Finishing	E. L. Ransome	405,800	June 25	2149	565	47	1668
Concrete pavement and floor	P. M. Bruner	401,539	Apr. 16	1661	.....	47	339
Condenser. Electric	W. Marshall	400,666	Apr. 2	657	178	47	196
Condenser for exhaust-steam	B. L. Rinehart	405,849	June 25	2215	583	47	1682
Condenser. Surface	E. W. Tucker	403,799	May 21	1862	495	47	1039
Condenser switch-board	W. Marshall	402,027	Apr. 23	2436	635	47	490
Condensing apparatus	C. C. Worthington	405,142	June 11	1113	296	47	1452
Conductor. Underground	E. E. Taillieur	404,877	June 11	744	189	47	1378
Conduit. Closed slotted	C. J. Van Depoele	401,325	May 28	2700	701	47	1203
Conduit. Underground	P. R. Greene	400,764	Apr. 2	484	130	47	95
Conduit. Underground	W. Walter	400,810	Apr. 2	576	158	47	110
Conduits. Coupling for underground	W. Lake	403,352	May 14	1215	323	47	901
Conduits. Leading-in apparatus for	J. A. Seely	400,958	Apr. 9	802	214	47	163
Cone-duster for fibrous substances	F. G. Sargent	400,953	Apr. 9	795	212 213	47	162
Confection-box	J. B. Langan	402,942	May 7	575	151	47	772
Contact-arm. Standing	C. J. Van Depoele	405,750	June 25	2085	547	47	1656
Converter-bottoms. Repairing	E. Bertrand	405,392	June 18	1409	398	47	1535
Convertible chair	A. Botkin	404,767	June 4	569	146	47	1338
Convertible suspending-chair	M. E. Schutt	402,170	Apr. 23	2568	666	47	515
Conveyer	R. E. Hurley	403,269	May 14	1089	287 288	47	876
Conveyer	C. N. Newcomb	403,603	May 21	1592	421 422	47	981
Conveyer	W. J. Selleck	405,608	June 18	1639	488	47	1605
Conveyer and belting-reel. Adjustable automatic	G. L. Jarrett	405,841	June 25	2203	580	47	1679
Conveyer for flour, &c	C. Espenschied	405,994	June 25	2455	648	47	1722
Conveyer. Reversible loading and unloading	J. M. Dodge	402,811	May 7	392	102 103	47	736
Cooker. Fruit or vegetable	F. W. and E. Gaines	405,253	June 18	1300	343	47	1494
Cooker. Steam	L. S. Brandenburg	404,255	May 28	2090	674	47	1182
Cooker. Steam	C. O. Schreyer and W. H. Penn	404,871	June 11	736	188	47	1376
Cooking apparatus	H. H. Boggs	401,480	Apr. 16	1569	420	47	323
Cooking apparatus. Portable	H. Fricker	401,261	Apr. 9	1258	333	47	247
Cooking utensil	F. H. Ferguson	405,087	June 11	1040	278	47	1439
Cooking-vessel	E. L. Dawes and W. A. Myler	403,093	May 14	801	213	47	822
Cooking-vessel	H. A. Manning	403,279	May 14	1110	295	47	880
Cooler:							
See Milk-cooler. Water-cooler.							
Coop. Folding	W. Carr and A. Evans	405,531	June 18	1736	455 456	47	1582
Coop. Hen	E. Butterick	405,008	June 11	928	246	47	1416
Copal, &c. Dissolving gum	G. A. Bobrick	404,251	May 28	2585	.....	47	1182
Copper by electrolysis. Production of	A. Rovello	405,604	June 18	1631	486	47	1604
Copper from copper pyrites. Extracting	J. Perino	401,056	Apr. 9	946	.....	47	189
Copying apparatus	G. H. Smith	401,762	Apr. 23	2036	532	47	416
Copying leaves. Moistening press	H. Thum	402,205	Apr. 30	2716	705	47	553
Copying-plates. Frame for holding	A. B. Dick	404,034	May 28	2231	585	47	1113
Copying writings. Apparatus for	F. A. C. Zabel	401,402	Apr. 16	1474	390	47	301
Cord-fastener	T. J. Tyler	402,786	May 7	352	92	47	729
Corded or elastic fabric	W. Lapworth	402,844	May 7	433	114	47	744
Cores. Chaplet for sand	A. J. Fisher	404,187	May 28	2462	649	47	1163
Cork-extractor	T. Kelly	402,742	May 7	283	72	47	716
Cork-extractor	K. Taylor	405,383	June 18	1484	393	47	1533
Corks. Apparatus for drawing	W. J. Himphy	402,945	Apr. 30	2768	716	47	563
Corkscrew	S. L. Alvord and E. E. Brown	401,672	Apr. 16	1898	494	47	378
Corkscrew	W. A. Williamson	405,385	June 18	1488	395	47	1533
Corn and silk separator	J. L. Wesley	405,634	June 18	1682	497	47	1612

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Corn-cob pipes. Manufacturing	A. Ruth	401,464	Apr. 16	1569	415	47	318
Corn-husking implement	J. L. Culberson	401,012	Apr. 9	881	220	47	178
Corn-sheller	C. Goddard	402,238	Apr. 30	2756	714	47	561
Corn-sheller	C. L. Heisler	405,838	June 25	2900	579	47	1678
Corn-shock binder	M. Spaulding	405,612	June 18	1845	488	47	1606
Cornet	C. G. Conn	402,721	May 7	246	65	47	710
Corpse-dressing table	C. Green	401,554	Apr. 16	1700	443	47	342
Corset	F. E. Denzel	401,015	Apr. 9	886	237	47	178
Corset	L. J. James	405,037	June 11	979	260	47	1426
Corset	J. Koon	403,760	May 21	1821	478	47	1026
Corset	A. D. Nason	405,113	June 11	1075	286	47	1445
Corset-busk	I. Levy	402,260	Apr. 30	2792	722	47	568
Corset-clasp	M. Adler	402,880	May 7	483	104	47	753
Corset-clasp	W. O. Corning	405,876	June 25	2957	593	47	1680
Corset-clasp	J. H. Haviland	401,650	Apr. 16	1672	436	47	373
Corset-clasp	C. H. Stahl and J. W. Bonton	405,442	June 18	1579	417	47	1552
Corset-clasp	D. H. Warner	404,135	May 28	2397	628	47	1147
Corset-clasp	N. B. Williams	403,166	May 14	911	239	47	843
Corset-fastening	G. Bouzard	404,252	May 28	2585	673	47	1162
Corset-steel. Covered	I. D. Warner	403,161	May 14	904	238	47	841
Corset-stiffener	R. T. Smith	404,991	June 11	903	237	47	1410
Cotton-carrier	A. O. Woodbury	403,403	May 14	1306	341	47	917
Cotton-chopper	W. M. Wilson	401,092	Apr. 9	998	266 / 267	47	198
Cotton cleaner. Seed	F. C. Gammons, G. L. Rollins, and H. Wadsworth	405,405	June 18	1516	403	47	1539
Cotton-gins. Brush-cylinder	I. F. Brown	401,124	Apr. 9	1043	278	47	206
Cotton-gins. Feed-regulator for	R. L. Brandon	405,245	June 18	1288	341	47	1492
Cotton. Machine for opening and scutching	S. Tweedale	404,133	May 28	2393	627	47	1146
Cotton-packing machine	F. Brady	403,734	May 21	1785	470	47	1019
Cotton-picking machine	T. J. Gray	401,268	Apr. 9	1267	337 / 338 / 339	47	248
Cotton-sprinkler	W. Kister	403,475	May 14	1409	368	47	936
Counting packages. Apparatus for	M. Gottfried	402,820	May 7	401	105	47	738
Coupler. Steam-tight	T. M. Jenks	404,710	June 4	498	126 / 127	47	1322
Coupling: *See* Bellows-fold coupling. Brake-pipe coupling. Car-coupling. Hose-coupling. Insulating pipe-coupling. Pipe-coupling. Pipe or tube coupling. Thill-coupling. Tube-coupling. Vehicle-coupling.							
Coupling-pin	F. L. Remington	401,659	Apr. 16	1882	490	47	375
Cracker-stacking machine	A. F. Fitz Gerald	403,526	May 21	1492	391 / 392	47	961
Crane. Traveling	G. H. Helvey	402,524	Apr. 30	3205	830	47	646
Crane. Traveling	J. Walker	401,613	Apr. 16	1815	474 / 475	47	364
Crank for motors	S. F. Armstrong	402,052	Apr. 23	2473	645	47	497
Crank-wrist and boxing	O. H. Castle	404,341	May 28	2724	707	47	1208
Crate	M. B. Hoag	402,896	May 7	412	108	47	740
Crib	C. Lawrence	400,693	Apr. 2	383	103	47	76
Crucible for lead surfaces. Detached	N. R. Wilson	403,815	May 21	1904	509	47	1043
Crusher: *See* Ore-crusher. Seed-crusher.							
Crushing or grinding mill	E. C. Griffin	403,997	May 28	2171	570	47	1101
Crutch	L. H. Remillard	404,303	May 28	2665	692	47	1197
Crystallizing-frame	A. E. Beller	400,539	Apr. 2	165	43	47	35
Cuff. Apparel	G. Benson	402,223	Apr. 30	2736	709	47	558
Cuff-fastener. Lady's	C. L. Moore	402,685	May 7	198	50	47	700
Cuff-holder	G. B. Adams	405,687	June 25	1985	521	47	1637
Cuff-holder	N. D. Daboll and J. L. Follett	405,877	June 25	2258	583	47	1089
Cuff-holder	C. O. McCasland	402,176	Apr. 30	2672	693	47	545
Cuff-retainer	J. M. March	403,280	May 14	1111	295	47	881
Culinary beaters, mixers, &c. Motor for	E. Baltzley	403,502	May 21	1451	381	47	953
Culinary vessel	O. E. Harmon	402,444	Apr. 30	3063	799	47	623
Cultivator	B. F. Berger	401,114	Apr. 9	1031	276	47	204
Cultivator	W. M. Brinkerhoff	405,942	June 25	2360	619	47	1706
Cultivator	J. Coomba	405,948	June 25	2376	623	47	1709
Cultivator	M. V. De Witt	405,204	June 11	1224	334	47	1473
Cultivator	J. Dodge	401,778	Apr. 23	2054	538	47	419
Cultivator	H. G. Emerson	400,837	Apr. 2	613	167	47	117
Cultivator	C. R. Hartman	404,084	May 28	2316	607 / 608	47	1132
Cultivator	C. R. Hartman	404,085	May 28	2320	608	47	1132
Cultivator	F. A. Head	403,587	May 21	1574	415	47	977
Cultivator	R. Insley	402,247	Apr. 30	2772	717	47	564
Cultivator	J. W. Johnson	404,711	June 4	499	127	47	1322
Cultivator	F. W. Kirkbride	401,178	Apr. 9	1133	300	47	222
Cultivator	T. Meyer	402,268	Apr. 30	2801	725	47	570
Cultivator	G. Moore	404,922	June 11	806	207 / 208	47	1301
Cultivator	T. R. Ringwood	402,196	Apr. 30	2698	700	47	550
Cultivator	C. H. Ruddell	404,437	June 4	91	23	47	1243
Cultivator	J. Shoolbred	401,585	Apr. 16	1766	465	47	355
Cultivator	H. Staggs	401,468	Apr. 16	1574	416	47	319
Cultivator and cotton-chopper. Combined	A. H. Johnson	405,165	June 11	1156	309	47	1461
Cultivator. Corn	W. J. Gohn	403,496	May 14	1333	350	47	922
Cultivator. Cotton	J. Marion	401,507	Apr. 16	1696	450	47	329
Cultivator. Disk	J. Albertson	400,422	Apr. 2	1	1	47	3
Cultivator for listed corn	H. B. King	401,177	Apr. 9	1132	300	47	222

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Cultivator. Hand	H. C. Tubbs	404,995	June 11	912	241	47	1412
Cultivator. Hand garden	J. W. Bowman	403,413	May 14	1317	344	47	919
Cultivator, plow, &c. Combined	A. B. McBride	401,045	Apr. 9	927	247 / 248	47	186
Cultivator. Wheel	R. C. Buckley	403,414	May 14	1318	345	47	920
Cultivators. Yielding shovel for	E. P. Lynch	400,467	Apr. 2	56	17	47	14
Cup: *See* Dental Impression-cup. Drinking-cup. Grease-cup. Sponge-cup.							
Cupola or blast furnace	G. M. Hathaway and E. B. Stocking	404,008	June 11	788	201	47	1387
Curling-iron	G. L. Thompson	404,127	May 28	2386	625	47	1145
Curling-iron	G. L. Thompson	404,128	May 28	2387	626	47	1146
Currency-package	E. S. Barreiras	403,065	May 14	780	210	47	820
Current or tide motor. Surface	E. Speckow	405,722	June 25	2041	536	47	1647
Current-wheel	J. Strasser	403,493	May 14	1437	376	47	948
Curry-comb	O. Smith	401,864	Apr. 23	2163	570	47	443
Curtain-fixture	A. W. Gayhart	403,344	May 14	1205	321	47	909
Curtain-fixture	P. B. Huffman	402,508	May 7	69	16	47	677
Curtain-pole	F. G. Johnson	404,841	June 11	689	178	47	1369
Curtain-pole socket	H. Reubel	401,590	Apr. 16	1750	464	47	353
Curtain-pole-supporting fixture	T. H. Kelley	405,671	June 18	1980	514	47	1626
Curtain-ring	J. Lines	404,637	June 4	402	98	47	1302
Curtain-ring	J. Lines	404,638	June 4	403	98	47	1302
Curtains. Hanging sliding	T. Tribe	405,333	June 18	1417	373	47	1519
Curtains. Refinishing	C. Imandt	404,543	June 4	276	.....	47	1277
Cuspidor	D. H. Murphy	400,938	Apr. 9	775	207	47	157
Cut-off and gas-regulator. Automatic	C. A. Dally and H. K. Richardson	405,830	June 25	2184	575	47	1675
Cut-out	O. P. Loomis	402,753	May 7	300	77	47	719
Cutlery	R. Daine	404,385	June 4	20	5	47	1229
Cutlery handle. Table	W. W. Lee	401,181	Apr. 9	1137	301	47	223
Cutlery. Table	F. C. Feicker	401,730	Apr. 23	2006	525	47	410
Cutter: *See* Band-cutter. Cheese-cutter. Cigar-cutter. Feed-cutter. Fireman's electric-wire cutter. Hair-cutter. Harvester-cutter. Leather-thong cutter. Milling-cutter. Paper-cutter. Pipe-cutter. Rotary cutter. Stalk-cutter. Straw-cutter. Tobacco-cutter. Tube-cutter. Vegetable-cutter. Veterinary incisor-cutter.							
Cutter-bar	C. Hank	402,150	Apr. 30	2653	686	47	541
Cutter-head	H. L. Haskell	400,567	Apr. 2	205	55	47	44
Cutting apparatus	H. Lindeström and A. Jernberg	404,548	June 4	289	67	47	1278
Cylinder-lubricator	A. L. Fillmore	400,653	Apr. 2	348	89	47	66
Cylinder-lubricator	J. G. Oracey	405,935	June 25	2195	578	47	1677
Dampening-machine	M. E. Wendell and T. S. Wiles	401,770	Apr. 23	2045	535	47	417
Damper	W. A. Hance	401,467	May 14	1392	365	47	933
Damper	C. F. Lange	403,333	May 14	1215	323	47	901
Damper. Stove-pipe	M. Griswold and O. R. Hanchett	405,408	June 18	1521	404	47	1540
Damper. Stove-pipe	W. A. Hance	403,468	May 14	1393	365	47	934
Damper. Stove-pipe	F. W. Hoefer	401,166	Apr. 9	1114	296	47	219
Damper. Stove-pipe	G. C. Humphrey	401,672	May 21	1689	447	47	1001
Damper. Stove-pipe	S. C. Schofield	403,489	May 14	1431	374	47	941
Dampers for fire-places, &c. Device for operating	A. V. Bay	401,025	Apr. 16	1838	479	47	368
Danger-gate	H. Boddiker	402,799	May 7	371	98	47	732
Dash-pot	W. F. Brown	403,643	May 21	1647	437	47	992
Decoy	W. H. Jencks	403,595	May 21	1581	418	47	978
Dental anæsthetic	A. L. McCarty	402,203	Apr. 30	2795	.....	47	569
Dental articulator	W. F. Slack and G. A. Smith	400,713	Apr. 2	413	112	47	82
Dental fillings. Protecting	D. C. McNaughton	400,585	Apr. 2	225	61	47	47
Dental impression-cup	J. Scheffler	401,792	Apr. 23	2090	545	47	425
Dental matrix	C. A. Meister	400,567	Apr. 2	228	61	47	48
Dental mirror	R. A. Tice	404,021	May 28	2201	578	47	1108
Dental plugger	F. L. Barney and H. E. Taylor	402,294	Apr. 30	2835	734	47	576
Dental plugger	J. W. Gilbert	402,156	Apr. 30	2646	685	47	540
Dental plugger	A. J. Sawyer	405,123	June 11	1089	290	47	1448
Dental rubber-dam clamp	J. W. Ivory	400,771	Apr. 2	497	135	47	97
Dental vulcanizers. Regulating-valve for	L. Stack	401,391	Apr. 16	1458	385	47	298
Derrick	L. S. Deming	405,082	June 11	1034	276	47	1438
Derrick. Adjustable	E. B. Steele	402,201	Apr. 30	2708	703	47	552
Designs on the face of fabrics. Cutting	J. Lowden	403,682	May 21	1705	450 / 451	47	1004
Desk	J. W. Duncan	402,909	May 7	521	137 / 138	47	761
Desk and chair for schools	G. A. Bobrick	404,250	May 28	2583	673	47	1181
Desk-box	A. W. Phillips	401,757	Apr. 23	2028	530	47	414
Desk, drawing-board, and easel. Combined writing-	H. L. Keith	401,440	Apr. 16	1529	404	47	312
Desk fastening. School	J. B. Sherwood	402,037	Apr. 23	2450	639	47	493
Desk or cabinet	W. H. Travis	401,314	Apr. 9	1231	354	47	262
Desk. School	A. M. Breadin	400,738	Apr. 2	454	121	47	89
Desk. School	C. B. Towle	403,795	May 21	1677	494	47	1036
Desk. School	C. B. Towle	403,796	May 21	1679	494	47	1038
Desk-top	W. H. Porter	400,871	Apr. 2	664	160	47	127
Detergent	F. C. Taylor	401,766	Apr. 23	2041	.....	47	417
Dial. Time-piece	C. Bickford	400,734	Apr. 2	446	119	47	88
Dial. Time-piece	M. V. B. Ethridge	401,687	Apr. 16	1931	504	47	364
Dial. Time-piece	M. V. B. Ethridge	403,525	May 21	1489	391	47	961
Dial. Time-piece	A. Fischer	403,338	May 14	1196	317 / 318	47	896

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Die: *See* Blank-heading die. Thread-cutting die. Gripping-die.							
Die-stock	W. H. Laguire	402,747	May 7	290	74	47	718
Diffusion apparatus	F. Bianchi	402,056	Apr. 23	2478	646 647	47	498
Diffusion-battery	W. Golding	405,472	June 18	1632	431	47	1562
Digger: *See* Post-hole digger. Potato-digger.							
Direct-acting engine	J. S. Bartlett	404,248	May 28	2582	672	47	1181
Direct-acting engine	R. Hardie	405,409	June 18	1521	404	47	1540
Direct-acting engine. Double-cylinder	W. D. Hooker	403,108	May 14	827	219	47	827
Dirt-loading machine	E. T. Hoffman	402,450	Apr. 30	3093	802 803	47	624
Dish. Wooden	W. D. Johnson	403,111	May 14	833	220	47	828
Disinfecting apparatus	E. Clarenbach	400,437	Apr. 2	17	6, 7	47	6
Display and sale rack for merchandise	S. R. Dunlap	405,400	June 18	1509	401	47	1538
Display-box	H. D. and F. A. Smith	401,974	Apr. 23	2349	611	47	475
Display-rack	E. G. Babcock	402,685	May 7	490	129	47	755
Display-rack	C. R. Harris	405,257	June 18	1310	345	47	1497
Display-rack	R. Kaufmann	401,653	Apr. 16	1875	487	47	373
Distilling apparatus	P. H. Bracher	403,638	May 21	1641	435	47	991
Distilling fat acids. Apparatus for	P. Marix	400,469	Apr. 2	60	17, 18	47	15
Ditching-machine	J. Lalonde	400,859	Apr. 2	645	175	47	124
Ditching-machine	D. J. Powers	404,301	May 28	2657	691 692	47	1195
Dobby. Double-lift open-shed	W. P. Uhlinger	403,565	May 21	1543	406 407	47	971
Domino	C. M. Hyatt	405,164	June 11	1155	308	47	1461
Door-check	W. S. Barlow	401,534	Apr. 16	1673	441	47	337
Door-check	M. H. Bassett	401,535	Apr. 16	1674	442	47	338
Door-check	R. N. Cherry	402,804	May 7	379	100	47	734
Door-check	T. K. Hansberry	404,038	May 28	2236	586	47	1113
Door-check	A. Hursh	404,627	June 4	390	94	47	1299
Door-check	H. Stanynought	403,393	May 14	1294	338	47	914
Door-check	G. W. Wright	400,815	Apr. 2	581	159	47	111
Door-closer. Thermostatic	W. R. Patterson	403,484	May 14	1423	372	47	939
Door-fastener and alarm. Combined	S. Goulden	404,617	June 4	378	91	47	1297
Door-hanger	R. Miller and J. G. Kanouse	402,342	Apr. 30	2015	756	47	591
Door-hanger	W. W. Smith	403,228	May 14	1024	270	47	885
Door-hanger track	J. G. Lane	402,843	May 7	432	114	47	744
Door-hanging	W. J. Boda	403,572	May 21	1552	409	47	973
Door lock and hinge. Combined	L. Binsfeldt and J. Chateau	404,590	June 4	340	82	47	1289
Door lock. Sliding	S. W. Hunton	404,412	June 4	55	15	47	1236
Door-mat	O. Westerholm	402,705	May 7	223	58	47	706
Door. Screen and storm	J. K. Wiesendanger and J. Ulrich	404,999	June 11	918	242	47	1413
Door-securer	B. F. Marshall, Jr., and D. H. Rickerd.	405,581	June 18	1800	476	47	1598
Door-spring	J. W. Davis	403,922	May 28	2064	542	47	1061
Door-spring	J. H. Williams	401,319	Apr. 9	1337	356	47	263
Doors. Roller for sliding	N. Clark	405,202	June 11	1221	323	47	1473
Double-pointed pin	J. H. Birch	404,675	June 4	449	113	47	1312
Doubletree	A. Minor	405,316	June 18	1393	367	47	1514
Doubling-machines, &c. Stop-motion for	A. A. Lehmann	400,604	Apr. 2	384	104	47	76
Draft attachment for vehicles	C. E. Miller	405,586	June 18	1807	478	47	1600
Draft-equalizer	J. Bevens	403,635	May 21	1638	434	47	990
Draft-equalizer	A. G. Brown	403,873	May 21	1967	521	47	1058
Draft-equalizer	L. C. Harris	405,161	June 11	1151	307	47	1460
Draft-equalizer	C. F. Holck	405,476	June 18	1637	433	47	1543
Draft-equalizer	C. Kieser	403,651	May 7	723	189	47	800
Draft-equalizer	W. E. Plumer	403,135	May 14	864	228	47	834
Draft-spring	E. L. Hilderbrand, H. Rost, and C. L. Daris.	405,102	June 11	1152	308	47	1460
Drain for sinks, wash-bowls, &c	F. A. Strater	404,060	May 28	2281	597	47	1124
Drains and sewers. Flushing system for	H. W. McDonald and T. W. Shunk	405,587	June 18	1808	479	47	1600
Draw-bar and hook	B. N. Phelps	403,133	May 14	861	227	47	834
Drawer. Furniture	J. H. Knaus	404,790	June 4	610	157	47	1345
Drawer-guide	D. W. Kendall	405,098	June 11	1053	281	47	1441
Drawer-pull	S. Feust	402,236	Apr. 30	2753	718	47	561
Drawer-pull	A. H. Jones	400,852	Apr. 2	636	173	47	122
Drawer-pull	E. P. Nobbs	404,405	June 4	188	46	47	1260
Drawers, &c	C. F. North	405,903	June 25	2300	603	47	1697
Drawing apparatus	W. S. Worden	405,386	June 18	1489	395	47	1534
Dray	J. L. Davis	404,688	June 4	471	119	47	1317
Dredge-box	J. W. Ivory	401,651	Apr. 16	1873	488	47	373
Dredging-bucket	R. Hosford	401,436	Apr. 16	1522	402 403	47	310
Dredging-bucket	C. A. Morris	400,936	Apr. 9	773	207	47	157
Dredging-machine	H. S. Brown	404,891	June 11	762	194 195	47	1381
Dredging-machine. Hydraulic	J. McFarlane	401,896	Apr. 23	2234	582 586	47	453
Drenching-bit	C. W. Crannell	402,068	Apr. 23	2499	652 653	47	502
Dress-form	A. McDowell	401,192	Apr. 9	1155	309	47	228
Dress-stiffeners. Manufacture of	I. D. Warner	403,169	May 14	902	238	47	841
Dressing-case slide	W. P. Tracy	405,623	June 18	1859	492	47	1609
Drier: *See* Bed-drier. Boot-drier. Clothes-drier. Fruit-drier. Grain-drier.							
Drift and drill catch	J. T. Kenworthy	404,546	June 4	278	66	47	1277

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Drill: *See* Grain-drill. Ratchet-drill. Rail-drill. Rock-drill.							
Drill	P. Leeds	402,170	Apr. 30	2666	691	47	544
Drill-bit	J. Eagen	404,829	June 11	968	173	47	1365
Drill-brace	T. C. Massey	400,928	Apr. 9	758	204	47	154
Drill-gage	I. Culver	403,740	May 21	1793	471	47	1021
Drill-press	E. C. Stearns	404,367	May 28	2766	717	47	1216
Drilling-machine	F. H. Richards	404,364	May 28	2759	716	47	1214
Drilling-machine. Electric	E. A. Sperry	405,187	June 11	1194	318	47	1468
Drilling-machine. Portable	J. T. Halsey	402,924	May 7	544	144	47	765
Drilling machine. Rock and earth	E. W. Pogrman	403,535	May 21	1530	401 402	47	968
Drilling rails for fish-bolts. Machine for	J. Davis	402,310	Apr. 30	2806	742	47	582
Drilling-tool	A. E. Brown	401,537	Apr. 16	1678	442	47	338
Drinking-cup	J. Schue	402,620	May 7	100	24	47	683
Drinking-fountain	S. E. Babcock	402,553	May 7	2	1	47	663
Driving and belt-shifting mechanism	E. R. Hyde	404,709	June 4	494	126	47	1321
Dropper-spout	S. P. Denison	401,256	Apr. 9	1251	333	47	245
Drum and gripper. Combined	H. Fletcher	401,727	Apr. 16	1982	519	47	395
Drum. Heating	J. Hodgkinson	403,349	May 14	1211	322	47	901
Dumb-waiter brake	H. Donohoe	404,076	May 28	2307	604	47	1129
Duplex-engine. Direct-acting	C. C. Worthington	401,401	Apr. 16	1471	388 389 390	47	300
Duplicating apparatus	G. H Davis	404,778	June 4	590	153	47	1341
Dust-collector	E. Bretney	405,869	June 25	2247	591	47	1687
Dust-collector	N. Ledue and A. E. Weeks	401,503	Apr. 16	1621	429	47	329
Dust-collector	O. M. Morse	403,362	May 14	1229	326 327	47	904
Dust-collector	O. M. Morse	403,363	May 14	1231	327	47	904
Dust-collector	O. M. Morse	403,770	May 21	1840	483	47	1030
Dust-collector	O. M. Morse	404,216	May 28	2538	662	47	1173
Dust-collector	O. M. Morse	404,217	May 28	2539	662	47	1174
Dust-collector	O. M. Morse	405,674	June 18	1902	515	47	1636
Dust-collector	H. Seck	403,701	May 21	1735	456 457	47	1010
Dust-collector	W. Trautmann	403,798	May 21	1842	495	47	1030
Dust-pan handle	L. Angevine	402,292	Apr. 30	2833	734	47	576
Dye. Azo	J. Schmid	402,980	May 7	618	.....	47	781
Dye. Blue azo	J. Schmid	404,309	May 28	2675	.....	47	1199
Dye. Compound orcin	R. Greville-Williams	404,331	May 28	2710	.....	47	1205
Dye. Crimson	T. Diehl	401,483	Apr. 16	1594	.....	47	324
Dye. Yellow	E. Frank	401,024	Apr. 9	899	.....	47	181
Dyeing apparatus	E. Wood	405,141	June 11	1111	296	47	1452
Dyeing-vat	J. W. Greaves	401,027	Apr. 9	902	241	47	181
Dyeing yarn on the skein. Machine for	J. P. Bray and O. S. Pierce	402,648	May 7	139	34	47	690
Dynamo	W. S. Belding	404,068	May 28	2296	601 602	47	1127
Dynamo	E. A. Sperry	405,441	June 18	1579	417	47	1552
Dynamo. Compound-wound alternating-current	H. Lemp	405,263	June 18	1316	347	47	1498
Dynamos. Brush-holder for	W. S. Bishop	405,002	June 11	920	243	47	1414
Dynamos. Brush-spring for	J. F. Kester	404,715	June 4	504	128	47	1324
Dynamos. Detachable brush-holder for	J. F. Kester	404,712	June 4	500	127	47	1322
Ear-ring. Lobe	J. C. Doran and H. A. Hall	402,071	Apr. 23	2503	654	47	503
Ear-rings. Mounting for	V. Gentner, Jr.	405,157	June 11	1146	305	47	1459
Earthenware	C. C. Gilman	405,028	June 11	967	.....	47	1424
Easel	W. V. Ackerman	404,146	May 28	2413	632	47	1151
Easel and sheet-music cabinet. Combined	O. Stoddard	401,389	Apr. 16	1456	384 385	47	298
Eccentric. Variable	D. Remington	402,479	Apr. 30	3139	813	47	633
Educational apparatus	A. L. Manning	401,043	Apr. 9	926	247	47	186
Egg-basket	J. T. Feager	404,340	May 28	2737	710	47	1210
Egg-beater	C. F. Pfau	401,058	Apr. 9	949	253	47	189
Egg-boiler	R. Reitheffer	403,446	May 14	1364	358	47	928
Egg-carrier	C. F. A. Eddy	401,645	Apr. 16	1867	485	47	372
Egg-crate	A. D. Linn	402,464	Apr. 30	3115	808	47	630
Egg-tester	J. L. Ritter	405,501	June 18	1828	485	47	1604
Elector	C. E. Church	405,992	June 25	2453	641	47	1722
Electric battery	J. A. Barrett	403,451	May 14	1371	360	47	920
Electric-cable terminal	R. H. Widdicombe	404,813	June 4	640	165	47	1352
Electric cables. Covering for	E. F. Garland	403,202	May 14	1075	282	47	873
Electric cables. Splice-box for	T. J. Dewees	402,007	Apr. 23	2401	625	47	484
Electric circuit. Apparatus for indicating the strength of the current in an	G. Pfannkuche	404,860	June 11	717	183 184	47	1374
Electric circuit. Indicating the strength of the current in an	G. Pfannkuche	404,861	June 11	719	184	47	1374
Electric-circuit switch	S. Bergmann	400,733	Apr. 2	444	119	47	88
Electric-circuit-testing device	M. Robinson	400,951	Apr. 9	793	212	47	161
Electric circuits. Automatic circuit-interrupter for	A. L. Reinmann and P. Lange	404,112	May 28	2364	620	47	1141
Electric circuits. Ground-detector for	O. P. Loomis	405,572	June 18	1788	474	47	1596
Electric circuits. Safety device for	W. J. Hammer	400,669	Apr. 2	350	95	47	70
Electric conductor	T. Egleston	401,936	Apr. 23	2298	567	47	464
Electric conductors. Coupler for	G. I. Hopkins	402,829	May 7	416	109 110	47	741
Electric conductors. Slotted conduit for	C. J. Van Depoele	403,009	May 7	656	173 174	47	787
Electric conductors. Slotted conduit for	C. J. Van Depoele	403,800	May 21	1585	406	47	1040
Electric conductors. Switch for suspended	C. J. Van Depoele	405,627	June 18	1866	494	47	1610
Electric-converter box	A. Schmid	404,114	May 28	2368	621	47	1142
Electric-current generators. Regulation of alternating	G. Pfannkuche	404,859	June 11	714	183	47	1373
Electric currents. Distribution by alternating	O. B. Shallenberger	404,566	June 4	302	72	47	1282
Electric currents. Distribution of	E. Thomson	401,608	Apr. 16	1805	472	47	362

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Electric currents. Regulating	J. W. Balet	400,726	Apr. 2	432	117	47	86
Electric currents. Switch device for	J. A. Turner	400,808	Apr. 2	509	157	47	109
Electric currents. System of generators for alternating	O. B. Shallenberger	404,567	June 4	304	72	47	1222
Electric cut-out	J. M. Kimball and H. C. Wirt	402,249	Apr. 30	2774	718	47	564
Electric distribution. Transfer system of	E. W. Rice, Jr.	400,486	Apr. 2	85	24	47	20
Electric energy. Apparatus for registering the consumption of	L. Brillié	403,244	May 14	1045	276 / 277	47	869
Electric-engine system. Reciprocating	C. J. Van Depoele	401,231	Apr. 9	1208	322 / 323	47	238
Electric generators. Regulating self-exciting alternate-current	W. Stanley, Jr	404,120	May 28	2377	623	47	1144
Electric lighting. System of	T. A. Edison	401,486	Apr. 16	1597	422	47	324
Electric lighting. Wiring structures for	E. H. Johnson and E. T. Greenfield	401,498	Apr. 16	1614	427 / 428	47	327
Electric lights. Adjustable support for incandescent	J. T. Pearson	405,970	June 25	2412	631	47	1715
Electric lights. Automatic circuit-controller for	O. P. Loomis	402,754	May 7	301	78	47	719
Electric lights. Device for supporting and operating	C. W. Russell and J. I. Drake	401,304	Apr. 9	1321	351	47	260
Electric locomotion. System of	F. Wheeler	401,616	Apr. 16	1820	476	47	365
Electric machine. Dynamo-	C. Coerper	402,066	Apr. 23	2496	652	47	501
Electric machine. Dynamo-	J. B. Entz	400,838	Apr. 2	614	167	47	118
Electric machine. Dynamo-	A. I. Gravier	403,836	May 21	1940	510	47	1049
Electric machine. Dynamo-	W. Hochhausen	404,484	June 4	169	39, 40	47	1256
Electric machine. Dynamo-	O. P. Loomis	405,218	June 11	1242	330	47	1477
Eleciric machine. Dynamo-	F. A. Perret	403,487	May 14	1427	573 / 574	47	940
Electric machine. Dynamo-	W. D. Sandwell	405,507	June 18	1691	447	47	1575
Electric machine. Dynamo-	F. Thone	405,284	June 18	1347	363	47	1504
Electric machine. Dynamo-	H. E. Walter	403,158	May 14	899	237	47	841
Electric machine. Dynamo-	E. Weston	401,318	Apr. 9	1336	356	47	263
Electric machine. Dynamo-	E. Weston	401,668	Apr. 16	1892	493	47	377
Electric machine. Dynamo-	E. Weston	401,669	Apr. 16	1893	492	47	377
Electric machine. Dynamo-	T. L. Willson	403,630	May 21	1628	431 / 432	47	929
Electric machine. Dynamo-	T. L. Willson	406,015	June 25	2491	651 / 652	47	1728
Electric machine. Dynamo or magneto	E. Weston	401,317	Apr. 9	1334	355	47	263
Electric machine or motor. Dynamo-	C. L. Rosenqvist	405,602	June 18	1830	485	47	1604
Electric machine or motor regulator	J. F. Kester	404,714	June 4	502	134	47	1323
Electric-machine regulator. Dynamo-	E. P. Clark	404,602	June 4	356	83	47	1292
Electric-machine regulator. Dynamo-	J. H. Robertson	405,743	June 25	2074	544	47	1653
Electric-machine regulator. Dynamo-	C. J. Van Depoele	401,230	Apr. 9	1205	321	47	237
Electric machines. Pole-piece for dynamo-	J. G. Statter	402,260	Apr. 30	2703	702 / 703	47	551
Electric, magnetic, or electro-magnetic forces by weight. Determining the value of	A. Gipperich	400,662	Apr. 2	336	92	47	68
Electric meter	O. Dahl	405,249	June 18	1294	342	47	1493
Electric meter	R. and P. Diehl	405,399	June 18	1507	400 / 401	47	1537
Electric meter	A. H. Manwaren	401,191	Apr. 9	1153	307	47	227
Electric meter	R. P. Sellon	404,310	May 28	2675	694	47	1199
Electric meter	W. F. Smith	401,226	Apr. 9	1200	321	47	236
Electric meter	E. Thomson	401,803	Apr. 23	2107	559	47	428
Electric meter	E. Thomson	406,010	June 25	2480	644 / 649	47	1727
Electric meter for alternate currents	M. M. M. Slattery	404,801	June 4	625	159 / 161	47	1348
Electric meter for alternating currents	D. L. Davis	402,410	Apr. 30	3012	783	47	610
Electric motor	W. S. Belding	404,067	May 28	2293	600	47	1127
Electric motor	C. S. Bradley	404,465	June 4	141	33	47	1252
Electric motor	H. B. Slater	404,661	June 4	433	106	47	1309
Electric motor	F. Yeiser	402,290	Apr. 30	2731	735	47	575
Electric motor. Alternating-current	C. S. Bradley	404,466	June 4	143	33, 34	47	1252
Electric motor. Alternating-current	E. Thomson	400,971	Apr. 9	819	219	47	166
Electric motor and regulator	A. Gartner	404,533	June 4	259	69	47	1273
Electric-motor clamp	W. S. Belding	404,069	May 28	2299	602	47	1128
Electric motor for tramway-vehicles	W. D. Sandwell	401,970	Apr. 23	2344	609 / 610	47	474
Electric motor or dynamo-electric machine	R. M. Hunter	405,668	June 18	1956	512	47	1625
Electric-motor regulator	A. Gartner	404,783	June 4	569	155	47	1343
Electric motor starting and stopping device	F. A. Perret	405,223	June 11	1249	331	47	1479
Electric-motor-trolley switch	W. Christy	402,064	Apr. 23	2494	651	47	501
Electric motors and generators. Prevention of sparking in	D. Higham	400,680	Apr. 2	366	99	47	73
Electric motors. Commutator-brush controller for	W. L. Silvey	402,990	May 7	631	167	47	783
Electric motors or dynamo-electric machines. Automatic governor for	S. S. Wheeler	403,017	May 7	669	176 / 177	47	790
Electric motors. Regulation of	F. Bain	400,890	Apr. 9	698	189	47	145
Electric motors. Safety attachment for	W. S. Paca	404,651	June 4	419	103	47	1305
Electric or magnetic forces. Apparatus for determining	A. Gipperich	400,661	Apr. 2	324	91, 92	47	67
Electric reciprocating engine. Alternating-current	C. J. Van Depoele	400,809	Apr. 2	571	137	47	109
Electric signal	J. T. Carter	402,506	Apr. 30	3173	822	47	639
Electric switch	L. Bergmann	400,732	Apr. 2	443	119	47	88
Electric switch	O. Dahl	405,248	June 18	1293	342	47	1493
Electric system of communication	E. B. Shafer	402,986	May 7	627	166	47	782
Electric-wire conduit	G. W. Cook	402,565	May 7	22	6	47	667
Electric-wire conduit	J. Lynch	405,576	June 18	1793	475	47	1597
Electric-wire nail	C. A. Gildemeyer	401,343	Apr. 16	1383	367	47	285
Electric wires. Box for the distribution of	D. Brooks, Jr.	401,927	Apr. 23	2286	593	47	462
Electric wires. Pole for	U. Snead	404,232	May 28	2558	667	47	1177
Electric wires. Supporting and cross-connecting	W. J. Denver	402,810	May 7	389	102	47	736
Electrical conductors. Apparatus for laying	W. F. Smith	401,225	Apr. 9	1199	320	47	236
Electrical conductors. Conduit for	G. H. and K. C. Gillette	401,155	Apr. 9	1100	292	47	215

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Electrical conductors. Slotted conduit for	C. J. Van Depoele	405,626	June 18	1862	483 / 494	47	1609
Electrical conductors. Underground conduit for	C. H. Cole	403,825	May 21	1919	504	47	1046
Electrical conduits with chemical substances. Treating underground	A. E. Colgate	402,563	May 7	20	6	47	666
Electrical converter	H. Lemp	403,541	May 21	1516	397	47	965
Electrical current generators. Regulation of alternating	G. Pfannkuche	405,174	June 11	1169	312	47	1463
Electrical distribution and conversion. System of	T. H. Hicks	402,671	May 7	178	45	47	687
Electrical-distribution system	T. A. Edison	401,902	June 11	779	198	47	1385
Electrical distribution. System of	E. P. Thompson	403,308	May 14	1148	305	47	888
Electrical distribution. System of	G. Westinghouse, Jr.	404,139	May 28	2403	630	47	1149
Electrical energy by induction. Secondary generator for the conversion of	W. Lowrie and C. J. Hall	400,802	Apr. 2	649	176 / 177	47	124
Electrical machines. Discharge device for	A. Schmid	405,124	June 11	1091	290	47	1448
Electrically-controlled engine	J. E. Byrne	404,894	June 11	767	196	47	1383
Electrically-controlled engine	J. E. Byrne	405,010	June 11	931	247 / 278	47	1416
Electricity. Apparatus for generating	T. Gleeson	405,471	June 18	1631	431	47	1562
Electricity by secondary batteries. Distributing	W. W. Griscom	404,968	June 11	875	220	47	1405
Electricity by secondary batteries. Distribution of	W. W. Griscom	400,843	Apr. 2	622	169	47	119
Electricity by secondary batteries. Distribution of	W. W. Griscom	402,566	May 7	53	13	47	674
Electricity by secondary batteries. Distribution of	M. Pfatischer	402,349	Apr. 30	2930	750	47	593
Electricity by secondary batteries. Distribution of	G. B. Prescott, Jr	402,190	Apr. 30	2690	690	47	548
Electricity by secondary batteries. Distribution of	G. B. Prescott, Jr	402,192	Apr. 30	2693	690	47	549
Electricity. System of transmitting and distributing	S. C. C. Currie	401,255	Apr. 9	1240	333	47	245
Electricity to propel vehicles. Apparatus for the application of	F. Wynne	404,322	Apr. 9	1341	357 / 358	47	965
Electro-dynamic motor	C. J. Van Depoele	404,324	May 28	2696	700 / 701	47	1203
Electro locomotive-engine	S. Z. De Ferranti	402,311	Apr. 30	2867	742	47	582
Electro-magnetic forces by weight. Apparatus for determining the value of	A. Gipperich	400,663	Apr. 2	339	92, 93	47	68
Electro-magnetic motor	N. Tesla	405,858	June 25	2228	586	47	1684
Electro magnetic motors. Operating	N. Tesla	401,520	Apr. 16	1646	435	47	333
Electro-magnetic transmitter	J. T. Williams	403,194	June 11	1205	320	47	1470
Electrode for electro-therapeutic body-wear	H. P. Pratt	405,176	June 11	1173	312	47	1464
Electrodes for secondary batteries. Preparing	W. Main	401,291	Apr. 9	1302	346	47	255
Electroller	J. M. Orford	405,742	June 25	2073	549	47	1653
Electroplating lead pipes	L. D. Hosford	403,429	May 14	1335	.....	47	923
Electrotype-molds. Apparatus for metallizing	S. P. Knight	403,197	May 14	969	255	47	855
Electrotypes. Forming curved	G. H. Benedict and P. M. Furlong	401,631	Apr. 16	1846	481	47	370
Electrotypes. Machine for blackleading the molds for	W. Miles	405,585	June 18	1605	478	47	1599
Electrotypes. Matrix-plate for curved	G. H. Benedict and P. M. Furlong	401,729	Apr. 23	1968	521	47	407
Elevating-machine	J. E. Byrne	404,893	June 11	764	195	47	1382
Elevating-machine. Electric	J. E. Byrne	404,895	June 11	768	199 / 197	47	1383
Elevator: *See* Hay-elevator. Ice-elevator. Hydraulic elevator. Water-elevator.							
Elevator	W. H. Milliken	401,449	Apr. 16	1537	407	47	313
Elevator	I. H. Venn	400,613	Apr. 2	264	73	47	35
Elevator	A. B. Wall	404,808	June 4	635	163	47	1351
Elevator and conveyer	J. S. Rogers	405,325	June 18	1404	370	47	1517
Elevator and conveyer	C. J. Seymour	404,660	June 4	431	108	47	1309
Elevator-belt shifter	E. W. Houser	401,951	Apr. 23	2318	603	47	468
Elevator-belt-shifting appliance	W. E. Nickerson	403,690	May 21	1715	453	47	1006
Elevator-car-operating device	G. W. Porter	402,277	Apr. 30	2810	728 / 729	47	572
Elevator-carriages. Electric controlling device for	W. E. Nickerson	403,439	May 14	1351	353	47	926
Elevator-controller	W. E. Nickerson	404,013	May 28	2191	575 / 576	47	1106
Elevator-controlling mechanism	W. E. Nickerson	404,012	May 28	2190	575	47	1105
Elevator. Electrically-controlled	W. E. Nickerson	403,441	May 14	1355	356	47	927
Elevator-gate	O. L. Davis	402,412	Apr. 30	3023	785	47	611
Elevator safety-brake	W. E. Nickerson	403,438	May 14	1350	353	47	926
Elevator safety device	P. G. Backman	401,106	Apr. 9	1018	273	47	201
Elevator safety device	T. W. Heermans	403,682	May 21	1679	446	47	999
Elevator safety device	W. E. Nickerson	405,371	June 18	1466	388	47	1529
Elevator safety device	P. B. Sullivan	402,760	May 7	342	88	47	727
Elevator slack-rope stop	W. E. Nickerson	404,014	May 28	2193	570	47	1106
Elevator-wells. Mechanism for operating the gates or doors of	O. L. Davis	402,411	Apr. 30	3020	784	47	610
Elevators. Electric controlling device for	W. E. Nickerson	403,440	May 14	1353	356	47	926
Elevators. Electric controlling mechanism for	W. E. Nickerson	403,442	May 14	1357	357	47	927
Elevators. Electrical apparatus for controlling	R. F. McFeely	404,361	May 28	2753	714 / 715	47	1213
Elevators. Electrical switch for	W. E. Nickerson	403,691	May 21	1716	453 / 454	47	1007
Elevators. Electrical switch for	W. E. Nickerson	404,015	May 28	2194	576	47	1106
Elevators. Electrical switch for	W. E. Nickerson	404,221	May 28	2544	663	47	1174
Elevators. Fluid speed-regulator for	W. E. Nickerson	403,436	May 14	1348	354	47	925
Elevators. Fluid speed-regulator for	W. E. Nickerson	403,437	May 14	1349	354	47	925
Embossed metallic plate	A. C. Hafely. (Reissue)	11,003	May 21	2027	.....	47	1066
Embroidering and edging machine	E. and R. Cornely	405,146	June 11	1119	297 / 298	47	1453
Embroidering-machine	E. and R. Cornely	405,147	June 11	1122	299	47	1454
Embroidering-machine	A. Saurer and E. Leuthold	403,221	May 14	1010	267 / 268	47	863
Embroidering-machine frame	J. Frey	401,260	Apr. 9	1257	335	47	247
Emery or other wheels. Apparatus for revolving	A. Altenburg	405,979	June 25	2427	635	47	1718
Emery-wheels. Instrument for cutting or grinding	W. Diebel	401,823	Apr. 23	2134	557	47	433
Emphysema. Electrically-controlled apparatus for treating	A. Steinhoff	402,779	May 7	340	88	47	736

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
End-gate	H. C. Bennett	402,891	May 7	497	139	47	756
End-gate	A. H. Stark	402,111	Apr. 23	2569	667	47	516
End-gate. Vehicle	T. B. Burr	404,071	May 28	2302	603	47	1128
End-gate. Wagon	A. E. Beason	403,241	May 14	1041	275	47	868
End-gate. Wagon	H. A. Larson	402,944	May 7	576	156	47	772
End-gate. Wagon	J. A. McClellan	403,480	May 14	1415	379	47	937
End-gate. Wagon	W. R. Watt	403,628	May 21	1627	430 / 431	47	988
Enema of oxygen. Apparatus for administering	J. E. Casey and A. W. Browne	402,302	Apr. 30	2853	739	47	580
Engine: *See* Air-engine. Air and gas engine. Compound engine. Direct-acting engine. Duplex engine. Electric reciprocating engine. Electrically-controlled engine. Electro locomotive-engine. Expansion-engine. Gas-engine. Gas or air engine. Gas or gasoline engine. Gas or hydrocarbon-vapor engine. Hoisting-engine. Hydraulic engine. Locomotive-engine. Low-pressure engine. Motive-power engine. Motor-engine. Pumping-engine. Rotary engine. Rotary steam-engine. Steam-engine. Tide and lock power engine. Traction-engine.								
Engine	J. Jonson	402,086	Apr. 23	2528	659	47	508
Engine	J. F. Shawhan	403,150	May 14	886	224	47	838
Engine compensating device	G. F. Blake	404,338	May 28	2720	705 / 706	47	1207
Engine-lubricating device. Steam-	A. L. Ide	400,682	Apr. 2	369	100	47	73
Engine reversing-gear. Steam-	D. A. Frazer	403,881	May 21	1997	525	47	1060
Engine-shafts. Electric indicator for	J. C. Ricketson	404,867	June 11	729	186	47	1375
Engine-shafts. Electric signal for	J. C. Ricketson	404,866	June 11	727	186	47	1375
Engines and other machinery. Adjustable carriage for Jordan	E. W. Barton	405,523	June 18	1713	453	47	1580
Engines. Balanced piston for steam-	W. J. Thomas	405,132	June 11	1100	293	47	1450
Engines. Casing for marine	J. D. Copeland	402,403	Apr. 30	3008	781	47	608
Engines. Device for connecting the cranks of two independently-acting	E. D. Leavitt, Jr	402,255	Apr. 30	2782	721	47	566
Engines. Gearing for road-	J. W. Stringer	403,000	May 7	644	170	47	785
Engines. Gearing for traction-	L. Ames, Jr., and J. H. Abercrombie	402,881	May 7	484	127	47	753
Engines. Powder-gas boiler for	O. and H. Schneider	405,229	June 11	1257	333	47	1480
Engines. Reverse-link for steam-	J. R. Snyder and J. Deets	400,960	Apr. 9	806	215	47	164
Engines. Reversing mechanism for	J. W. Stringer	400,805	Apr. 2	565	155	47	108
Engines. Starting-gear for compound	R. Lindner	404,295	May 28	2650	689	47	1194
Engines. Steam-cylinder for steam-	E. D. Leavitt, Jr	402,256	Apr. 30	2783	731	47	566
Engraving	W. S. Eaton	402,314	Apr. 30	2873	744	47	583
Engraving and chasing machine	W. W. Bradley	402,135	Apr. 30	2612	676 / 677	47	533
Engraving-machine	C. H. Field	402,316	Apr. 30	2875	745	47	584
Ensilage. Manufacturing	C. G. Johnson	402,248	Apr. 30	2773	717	47	564
Envelope	J. O. Donnell	403,604	May 21	1593	422	47	981
Envelope	E. Morgan	404,296	May 28	2654	690	47	1195
Envelope and stamp moistener	A. J. Elias	401,141	Apr. 9	1069	286	47	211
Envelope-machine	A. A. Rheutan	401,462	Apr. 16	1557	412 / 413 / 414	47	317
Envelope-machine	F. H. Richards	401,718	Apr. 16	1964	512 / 513 / 514	47	391
Envelope. Sample-	G. S. Van Woert	400,584	Apr. 2	146	38	47	31
Eraser. Blackboard-	S. C. Davis	402,570	May 7	31	8	47	669
Eraser. Blackboard-	F. Hammer	402,925	May 7	546	144	47	766
Eraser. Blackboard-	W. F. Jones	405,096	June 11	1051	281	47	1441
Eraser. Chalk-	W. H. Londerzon	400,465	Apr. 2	54	16	47	14
Eraser. Ink-	H. Baldwin and J. J. Smith	402,710	May 7	231	60	47	707
Eraser. Ink-	C. W. Johnston	403,674	May 21	1603	448	47	1002
Evaporating apparatus	R. J. Hoffman	405,738	June 25	2065	542	47	1651
Evaporating saccharine or other liquids. Apparatus for	A. Young	401,238	Apr. 9	1219	325	47	240
Excavating. Hydraulic	D. N. Long	404,852	June 11	704	181	47	1371
Excavating-machines. Steam-pipe joint for	L. Birckhead	402,555	May 7	3	2	47	664
Excavator	I. P. Lambing	403,762	May 21	1823	478 / 479	47	1026
Excavators. Loading and unloading mechanism for sewer-	N. E. Green	402,016	Apr. 23	2414	629 / 630	47	486
Exercising-bar	S. B. Stockburger	405,128	June 11	1095	292	47	1449
Exercising-machine	J. J. Sleeper	404,802	June 4	627	161	47	1348
Exhaust mechanism	J. D. Smith	404,739	June 4	531	136	47	1329
Exhibiting apparatus	C. S. Jenkins	403,673	May 21	1690	447	47	1001
Expansible frame	G. H. Lyon	402,755	May 7	302	78	47	730
Expansion-engine. Quadruple	J. Hang	403,266	May 14	1085	286 / 287	47	875
Expectorant	J. W. Bradley	402,296	Apr. 30	2838	.....	47	577
Explosives. Manufacturing	J. A. Halbmayr	403,749	May 21	1804	475	47	1023
Extension-table	E. L. Matteson	400,701	Apr. 2	395	107	47	78
Extension-table	E. H. W. and H. W. Stahlhuth	401,310	Apr. 9	1327	353	47	261
Extractor: *See* Compression-extractor. Cork-extractor. Nail-extractor. Stump-extractor.							
Eye-bars. Die for making	J. F. Kingsley. (Reissue)	11,001	Apr. 30	3244	842	47	654
Eye-bars. Die for upsetting	W. R. Webster	400,979	Apr. 9	831	222	47	168

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Fabric: *See* Corded or elastic Fence fabric.							
Fabrics. Device for guiding the edges of	J. J. Scholfield	402,483	Apr. 30	3142	814	47	634
Fabrics. Forming an ornamental border on	J. M. Merrow	402,468	Apr. 30	3123	810	47	630
Fabrics. Machine for tentering and drying	F. Craven	401,932	Apr. 23	2293	594 / 595	47	463
Fan attachment	J. R. Stettheimer	402,283	Apr. 30	2824	730	47	574
Fan-shafts. Hanger for rotary	R. B. Cissel	402,306	Apr. 30	2859	739	47	581
Fan. Suspension fly-	W. C. Whitner	401,586	Apr. 16	1656	437 / 438	47	335
Fanning-mill	R. Miller	403,852	May 21	1963	515	47	1053
Fare-register	J. L. Harley	402,445	Apr. 30	3084	799 / 800	47	623
Farm-gate	C. M. Gitt	401,648	Apr. 16	1870	486	47	372
Farm-gate	S. S. and J. G. Sherman	402,489	Apr. 30	3150	815	47	635
Faucet	W. W. Kimball	400,691	Apr. 2	381	103	47	75
Faucet	E. U. Scoville	405,277	June 18	1738	353	47	1502
Faucet. Automatically-closing	E. E. Furney	402,075	Apr. 23	2508	656	47	504
Faucet. Basin-	B. Johnson	401,952	Apr. 23	2320	603	47	469
Faucet. Detachable	R. Marsh	402,961	Apr. 30	2793	723	47	568
Faucet. Measuring-	J. H. Kell	405,891	June 25	2274	598	47	1622
Faucet. Self-closing	K. Maier	401,288	Apr. 9	1292	345	47	253
Faucet. Sirup-	E. Haas	404,192	May 28	2489	651	47	1165
Feculent-matter receiver	O. D. McClellan	401,709	Apr. 16	1948	508 / 509	47	387
Feed-bag	W. M. Brooke	401,001	Apr. 9	868	233	47	175
Feed-bag	J. H. Williams	403,867	May 21	1990	520	47	1037
Feed-box	J. W. Jacobs	405,260	June 18	1313	346	47	1496
Feed-cutter and corn-husker. Combined	A. Rosenthal	401,719	Apr. 16	1969	514 / 515	47	392
Feed mechanism	F. H. Richards	404,365	May 28	2762	718	47	1215
Feed-mill	A. L. Eppley	400,447	Apr. 2	34	11	47	10
Feed-mill	G. D. Rowell	402,618	May 7	98	24	47	693
Feed-regulator	N. Sanders and J. Buchanan	402,979	May 7	617	162	47	780
Feed-regulator	J. B. Wheatley	400,720	Apr. 2	425	115	47	84
Feed-regulator. Automatic	C. A. Miller	403,056	May 7	727	190	47	801
Feed-regulator for roller-mills	J. W. Wilson	400,990	Apr. 9	848	227	47	171
Feed-trough	G. D. Burton	401,249	Apr. 9	1241	330	47	243
Feed-water heater	C. E. Ferreira	405,154	June 11	1141	304	47	1458
Feed-water heater	J. H. Vail	404,512	June 4	221	58	47	1265
Feed-water heater and purifier	H. D. Baragwanath	402,645	May 7	134	32	47	689
Feed-water heater and purifier	M. W. Hazelton	400,677	Apr. 2	361	99	47	73
Feed-water heater and regulator	N. Clute	404,683	June 4	462	116 / 117	47	1315
Feed-water purifier	W. J. Smith	402,199	Apr. 30	2701	701 / 702	47	551
Feeder. Calf-	W. L. Spencer	400,962	Apr. 9	809	216	47	164
Feeder. Fluid-	W. B. Wright	405,934	June 25	2351	617	47	1704
Felt boot	J. Vail	404,449	June 4	113	27	47	1247
Felt-hardening machines. Cone or former for	J. and D. Pendergast	404,362	May 28	2757	715	47	1214
Fence	W. E. and C. W. Arnett	404,026	May 28	2208	580	47	1109
Fence	J. M. Fellows	402,720	May 7	255	67	47	712
Fence	E. Gilbert	402,732	May 7	257	68	47	713
Fence	E. Gilbert	402,817	May 7	308	104	47	736
Fence	G. A. Horn	402,595	May 7	65	15	47	676
Fence	W. C. Lathrop	402,678	May 7	187	47	47	699
Fence	R. J. Reimer	400,711	Apr. 2	400	111	47	81
Fence	J. D. Rodgers	405,120	June 11	1086	289	47	1447
Fence	L. F. Wickers and B. C. Wickears	403,977	May 28	2140	550	47	1096
Fence. Apparatus for making wood-and-wire	M. F. Fink	402,815	May 7	306	104	47	737
Fence. Barbed	C. S. Trevitt and S. F. Monck	404,879	June 11	746	190	47	1378
Fence-building	D. R. Barton	400,429	Apr. 2	9	3	47	5
Fence fabric. Wire-	B. Scarles	400,954	Apr. 9	797	213	47	162
Fence gate. Barbed-wire-	T. M. Sampson	403,249	May 14	1068	266	47	862
Fence machine. Picket-	E. Ransom	404,933	June 11	823	211	47	1304
Fence machine. Wire-	E. Hutson	405,094	June 11	1049	280	47	1440
Fence-making machine	A. A. Parker and J. F. Landers	401,298	Apr. 9	1311	348 / 349 / 350	47	257
Fence-making machine	J. B. Steen	405,510	June 18	1694	448	47	1576
Fence-panel. Folding adjustable	J. J. Ogilvie	404,856	June 11	710	182	47	1372
Fence-pickets. Machine for pointing	C. B. Rice	405,181	June 11	1180	314	47	1465
Fence-post	W. Crabb	403,991	May 28	2162	568	47	1100
Fence-post	A. F. Elsey	405,251	June 18	1298	343	47	1494
Fence-post	H. B. Grant	402,666	May 7	169	43	47	695
Fence-post	J. Kelly	404,788	June 4	508	157	47	1344
Fence-post base	W. H. Thomson	405,445	June 18	1584	418	47	1532
Fence-riveting machine	W. W. McCallip	403,950	May 28	2101	550	47	1088
Fence-signal	J. Schlyer	405,851	June 25	2218	584	47	1662
Fence tightener. Wire-	E. Warner	404,938	June 11	829	215	47	1395
Fence. Wire	J. N. and N. Lehman	401,567	Apr. 16	1725	454	47	347
Fence. Wire	W. H. Mitchell	401,450	Apr. 16	1537	407	47	314
Fences. Guard for barbed-wire	M. B. Chappell	401,133	Apr. 9	1060	283	47	209
Fences. Machine for building wire-and-picket	J. M. Keith	405,800	June 25	2273	597 / 598	47	1692
Fences. Tension device for wire	D. H. Scott	400,606	Apr. 2	254	69	47	53
Ferrule for reel-plates	J. P. H. Hook	402,594	May 7	64	15	47	676
Fertilizer-distributer	J. Bender	400,731	Apr. 2	442	119	47	87
Fertilizer-distributer	J. S. Kemp	405,561	June 18	1771	467 / 468	47	1592
Fertilizers. Making	H. Endemann	404,348	May 28	2735	710	47	1209
Fertilizers. Mechanism for deodorizing refuse matter and converting it into	O. D. McClellan	404,360	May 28	2751	714	47	1213

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Fibrous materials. Disintegrating	R. P. Pictet	404,431	June 4	84	21	47	1242
Filaments. Apparatus for treating	F. S. Smith	404,118	May 28	2372	622	47	1143
File and binder. Transferring paper	W. A., Jr., and C. S. Cooke	403,826	May 21	1921	504	47	1046
File-band clasp	E. J. Hall and H. I. Norton	405,958	June 25	2388	630	47	1711
File-box	J. A. Rhoads	402,195	Apr. 30	2697	704	47	550
File case or cabinet	W. T. Wood	402,377	Apr. 30	2964	765	47	600
File case or cabinet	W. T. Wood	403,168	May 14	914	240	47	843
File. Document or letter	E. W. Woodruff	404,438	June 4	127	31	47	1249
File. Letter	L. A. Merk	404,920	June 11	805	207	47	1390
File. Newspaper	T. Lomas	402,024	Apr. 23	2429	632	47	489
File. Paper	B. Petsche	405,596	June 18	1821	472	47	1602
File. Portable scrap	C. W. Taylor	400,968	Apr. 9	815	210	47	166
File. Prescription	A. J. Shaul	402,488	Apr. 30	3149	815	47	635
File rack. Newspaper	C. H. Towne	403,797	May 21	1880	494	47	1039
Filing index. Paper	W. A. Cooke, Jr.	402,401	Apr. 30	3006	780	47	607
Filing-receptacle	A. L. Brown	404,772	June 4	577	148	47	1339
Filter	J. Davis	402,656	May 7	149	37, 38	47	692
Filter	J. Davis	402,657	May 7	151	38, 39	47	692
Filter	J. Davis	402,658	May 7	154	39, 40	47	693
Filter	J. Davis	402,659	May 7	159	40	47	693
Filter	J. Davis	402,661	May 7	161	41	47	694
Filter	H. E. Gasquet	405,406	June 18	1517	403	47	1540
Filter	H. Roeske	402,543	Apr. 30	3227	{836 837}	47	650
Filter	J. E. Warren	404,236	May 28	2502	668	47	1178
Filter	A. Wilbur	400,864	Apr. 2	682	185	47	131
Filter-beds. Strainer for granular	J. W. Hyatt	404,911	June 11	793	{202 203}	47	1388
Filter-beds. Valve mechanism for washing	J. W. Hyatt	402,738	May 7	276	71	47	715
Filter. Beer	O. Zwietusch	402,500	Apr. 30	3165	820	47	638
Filter. Oil	A. C. Darragh	401,544	Apr. 16	1690	446	47	340
Filter-press	J. Johnson	402,455	Apr. 30	3099	804	47	626
Filter. Water	J. V. Blake and F. C. Wilson	400,736	Apr. 2	449	120	47	89
Filter. Water	C. B. Davis and E. H. Riddell	404,962	June 11	868	227	47	1403
Filtering apparatus	R. Cooper, H. F. Clayton, and G. H. Holdroyd.	401,930	Apr. 23	2291	594	47	463
Filtering apparatus	C. H. Denison	402,147	Apr. 30	2928	680	47	536
Filtering apparatus	J. W. Hyatt	404,708	June 4	492	125	47	1321
Filtering apparatus	B. F. Perkins	401,057	Apr. 9	947	{232 233}	47	189
Filtering apparatus	C. W. Rabitz	403,073	May 7	768	200	47	807
Filtering water. Apparatus for	G. D. Gerson	402,433	Apr. 30	3072	795	47	620
Fin for vessels	G. W. Napier	400,592	Apr. 2	234	63	47	49
Finger-nails. Device for trimming and filing	C. P. Tener	403,003	May 7	648	171	47	786
Finger-pull. Coin-operated	W. H. Gilman	403,995	May 28	2168	560	47	1101
Finger-ring	L. L. Burdon	404,956	June 11	852	222	47	1400
Finger-ring	M. Freed	402,011	Apr. 23	2408	627	47	485
Finger-shield and fountain attachment	J. Patmor	402,185	Apr. 30	2685	698	47	547
Fire-alarm signal-box. Non-interfering	J. J. Ruddick	404,438	June 4	92	23	47	1243
Fire-alarm-testing apparatus	J. Young	402,642	May 7	129	31, 32	47	689
Fire-alarms. Thermal circuit-closer for	A. C. Iwanowski	400,917	Apr. 9	739	190	47	151
Fire-arm. Breech-loading	W. Anson	401,101	Apr. 9	1010	{270 271}	47	200
Fire-arm. Breech-loading	C. G. Bonehill	404,380	June 4	13	3	47	1227
Fire-arm. Breech-loading	W. Dicer and C. M. Barker	404,779	June 4	591	{153 154}	47	1341
Fire-arm. Breech-loading	E. Harrison	404,082	May 28	2315	597	47	1131
Fire arm. Breech-loading	C. A. King	402,675	May 7	183	46	47	698
Fire-arm. Breech-loading	J. H. and S. H. Redfield	403,959	May 28	2112	533	47	1091
Fire-arm. Breech-loading	C. M. Rider	400,712	Apr. 2	410	112	47	91
Fire-arm lock	C. J. Ehbets	402,423	Apr. 30	3051	769	47	617
Fire-arm. Magazine	A. Mieg and H. Bischoff	400,472	Apr. 2	66	20	47	16
Fire-arm. Magazine	L. Silverman	405,375	June 18	1470	{369 370}	47	1529
Fire-arm. Revolving	M. Kaufmann	402,331	Apr. 30	2898	731	47	588
Fire-arm. Revolving	D. B. Wesson	401,067	Apr. 9	966	263	47	196
Fire-arm sight	J. S. Blankman	403,242	May 14	1042	276	47	868
Fire-arm sight	J. W. Carver	404,598	June 4	351	94	47	1291
Fire-arm sight	J. W. Carver	404,599	June 4	352	94	47	1292
Fire-arm sight	J. J. Speed	400,715	Apr. 2	418	113	47	83
Fire-arms. Magazine for	P. Mauser	403,765	May 21	1831	491	47	1028
Fire-arms. Trigger-setting mechanism for	L. W. Gay	402,918	May 7	533	141	47	703
Fire-escape	I. H. Athey	402,053	Apr. 23	2474	645	47	497
Fire-escape	R. Belches	402,389	Apr. 30	2963	775	47	604
Fire-escape	W. Bruce	405,945	June 25	2372	622	47	1708
Fire-escape	F. D. Chandler	404,029	May 28	2221	582	47	1111
Fire-escape	W. S. Coon	405,307	June 18	1505	{399 400}	47	1537
Fire-escape	J. Flynn	400,656	Apr. 2	319	90	47	66
Fire-escape	P. Goldmann	402,437	Apr. 30	3076	796	47	621
Fire-escape	C. A. Luce	400,779	Apr. 2	515	{141 142}	47	100
Fire-escape	C. O. Rose	400,873	Apr. 2	665	181	47	127
Fire-escape	S. H. Sprague	401,598	Apr. 16	1763	468	47	357
Fire-escape	G. W. Worden	404,514	June 4	222	53	47	1266
Fire-escape ladder and truck	A. Frederick	401,468	Apr. 16	1600	422	47	325
Fire-extinguisher	T. C. Rice	402,970	May 7	605	159	47	778
Fire-extinguisher. Automatic	C. W. Kersteter	400,688	Apr. 2	377	102	47	74
Fire-extinguisher for ships	W. D. T. Travis	404,132	May 28	2393	627	47	1146
Fire-extinguishing apparatus	C. Kilburn	403,759	May 21	1819	478	47	1026
Fire-kindler	W. R. Myers	403,771	May 21	1841	484	47	1030
Fire-place heater	T. B. Jackson	405,707	June 25	2019	530	47	1643
Fire-pot linings. Joint for	S. D. Horton	400,848	Apr. 2	629	161	47	121

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Fire-proof plaster-cloth for ceilings and walls	A. J. Paris	401,967	Apr. 23	2339	608	47	472
Fires in passenger-cars. Device for extinguishing	S. H. Harrington	401,494	Apr. 16	1608	424	47	326
Fires. Portable apparatus for extinguishing	H. C. Rew	405,717	June 25	2034	584	47	1646
Fireman's electric-wire cutter	D. A. Woodhouse and T. V. Forster	404,667	June 4	440	{110 111}	47	1310
Fireproofing compound	C. W. Doughty	402,235	Apr. 30	2753	.....	47	561
Fish-hook guard	C. W. Teed	404,747	June 4	544	139	47	1332
Fish-plate and chair	G. A. Weber	402,371	Apr. 30	2958	767	47	599
Fishing-lines. Sinker for	J. L. and D. H. Coles	402,231	Apr. 30	2747	712	47	559
Fishing-net frames. Hinge-screw coupling for	J. G. Landman	403,680	May 21	1702	450	47	1004
Fishing-reel	C. K. Bradford	403,733	May 21	1784	469	47	1019
Fishing-reel	F. Carey	402,653	May 7	145	36	47	691
Fishing-reel	F. Carey. (Reissue)	11,006	June 11	1277	337	47	1484
Fishing-reel	P. G. Girond	405,731	June 25	2054	540	47	1649
Fishing-reel	G. Paddock	401,849	Apr. 23	2164	564	47	439
Fishing-reels. Line-guide for	C. E. Mollet and C. Raettig	401,049	Apr. 9	933	249	47	187
Flask: *See* Powder-flask.							
Flax. Apparatus for steeping	T. L. Henly	405,091	June 11	1045	279	47	1440
Flood-gate	H. A. Wright	404,761	June 4	562	144	47	1336
Flooring-block	W. Boelling	401,479	Apr. 16	1588	420	47	322
Flooring-jack	H. F. Townsend and C. T. Winslow	401,868	Apr. 23	2188	572	47	444
Flooring. Parquet or other	J. F. Ebner	405,021	June 11	951	254	47	1420
Flour bin and sifter	T. F. Crary	401,254	Apr. 9	1247	332	47	245
Flour bin and sifter	J. H. Thomas	403,974	May 28	2136	559	47	1095
Flour-bolt	J. Johnston	403,675	May 21	1693	448	47	1009
Flour-bolt	J. Johnston	403,757	May 21	1816	477	47	1025
Fluid-releasing device	D. Olmsted	405,320	June 18	1397	368	47	1515
Fluid-separator	T. J. Newsome	405,017	June 11	991	264	47	1429
Fluids. Apparatus for drawing effervescing	J. H. Walton	405,135	June 11	1103	294	47	1450
Flushing apparatus	J. J. Ricketts	405,912	June 25	2317	608	47	1698
Flushing-cistern for water-closets, &c	T. and J. Holt	402,246	Apr. 30	2770	717	47	563
Flushing device for urinals	R. Murphy and C. W. Atkinson	401,575	Apr. 16	1735	457	47	349
Flushing device for water-closets, &c	R. Murphy and C. W. Atkinson	401,576	Apr. 16	1737	457	47	349
Flushing urinals, &c. Apparatus for	S. H. Wright	401,321	Apr. 9	1339	{356 357}	47	264
Flux-carrier	J. C. Bayles	405,886	June 25	2240	589	47	1686
Fly-catcher	C. E. K. Andersson	401,946	June 11	838	218	47	1397
Fly-catcher	A. Arents	402,382	Apr. 30	2974	772	47	602
Fly-fan	H. S. Brewington	404,860	June 11	760	194	47	1361
Fly-fan	C. F. Wisloh	405,063	June 11	1013	271	47	1434
Fly-paper holder and trap. Combined sticky	O. and W. Thum. (Reissue)	11,000	Apr. 30	3242	841	47	653
Fly-paper. Preparing	A. B. Trenner	402,570	May 7	472	123	47	751
Fly-trap	J. E. Packard	404,727	June 4	518	132	47	1326
Fly-trap	G. W. Russell	402,977	May 7	615	161	47	780
Fly-trap	A. S. Schuyler	404,565	June 4	301	72	47	1282
Fly-wheel. Sectional	R. B. Collier	402,564	May 7	21	6	47	667
Fodder-binder	H. E. Fairchild	405,237	June 11	1271	336	47	14 2
Folding boat	D. H. Allen and W. H. Gamble	403,171	May 14	918	{241 242}	47	844
Folding bracket	J. H. Pilson	403,775	May 21	1846	485	47	1031
Folding chair	K. T. Hurlburt	405,830	June 25	2001	579	47	1679
Folding chair	J. E. Purdy and D. A. Sadgwar	405,117	June 11	1061	288	47	1416
Folding chair for steamers, &c	C. F. Batt	404,589	June 4	339	81	47	1289
Folding chair or settee	H. J. Harwood	404,836	June 11	683	176	47	1368
Folding gate	D. E. Ladd	404,007	May 28	2184	574	47	1104
Food compound. Dessert	W. P. Clotworthy	405,013	June 11	937	.....	47	1417
Food for fish. Producing	F. Lugrin and E. Du Roveray	405,713	June 25	2028	532	47	1645
Foot-guard	T. A. Griffin	403,998	May 28	2174	570	47	1102
Foot-rest. Adjustable	G. P. Bedford	402,130	Apr. 30	2605	675	47	532
Forging-machine	J. A. Hamer	403,586	May 21	1572	415	47	977
Forging-machine	H. Hammond	400,670	Apr. 2	351	95, 96	47	70
Fork: *See* Hay-fork.							
Fork	O. Kramer	403,536	May 21	1511	396	47	965
Fork-guard	R. B. B. Clayton	404,777	June 4	569	152	47	1341
Fountain: *See* Drinking-fountain. Tank-fountain. Poultry drinking-fountain.							
Fracture apparatus	W. H. De Camp	401,933	Apr. 23	2289	596	47	464
Frame: *See* Awning-frame. Bed-frame. Car-frame. Caster-frame. Clock-frame. Crystallizing-frame. Embroidering-machine frame. Expansible frame. Harvester-frame. Harvester elevator-frame. Lantern-frame. Photographic-printing frame. Spectacle-frame. Spectacle or eyeglass frame. Spinning-frame. Tile-frame. Umbrella-frame.							
Freight elevating and transporting apparatus	W. H. Russell	404,658	June 4	428	107	47	1308
Friction-generator	H. E. Waite	405,334	June 18	1418	373	47	1520
Frog. Replacing	J. J. Ladd	404,095	May 28	2335	612	47	1135
Frogs, switches, &c. Foot-guard for	C. H. Wakefield	402,209	Apr. 30	2719	706	47	554
Fruit-box	V. Wheat	404,880	June 11	747	190	47	1379
Fruit-drier	F. Altman	400,993	Apr. 9	856	229	47	173
Fruit-gatherer	C. H. Curtis	405,017	June 11	945	252	47	1419

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Fruit-gatherer	W. J. Wingenroth	403,500	May 14	1447	299	47	944
Fruit-picker	W. P. Craig	403,331	May 14	1188	315	47	896
Fruit-picker	E. S. Harpst	405,410	June 18	1593	404	47	1540
Fruit-stoning machine	J. S. Briggs and W. E. Leach	404,517	June 4	294	55	47	1267
Frying-pan	M. S. Tracy	404,131	May 28	2301	606	47	1146
Fuel. Artificial	I. C. Bandman	405,865	June 25	2239	.....	47	1686
Fuel. Artificial	A. K. and C. M. Murray	401,365	Apr. 16	1414	.....	47	290
Fuel-magazine	J. D. Greene and J. C. Treman	400,909	Apr. 9	720	195	47	148
Fuel-saving device	A. C. Greenlee	404,702	June 4	487	113	47	1320
Funnel	C. Xander and W. Thomas	402,379	Apr. 30	2069	770	47	601
Funnel apparatus. Jar-holding	M. Ellis	401,467	Apr. 16	1598	422	47	324
Furnace: *See* Air-heating furnace. Bed-furnace. Blast-furnace. Boiler-furnace. Brick-kiln furnace. Calcining-furnace. Cupola or blast furnace. Gas-furnace. Glass-melting furnace. Heating-furnace. Hot-air furnace. Melting-furnace. Metallurgical furnace. Ore-roasting furnace. Regenerative furnace. Smoke and gas consuming furnace. Warm-air furnace. Zinc-furnace.							
Furnace	E. F. Edgar	402,514	Apr. 30	3186	824 / 825	47	642
Furnace	M. A. Foster	401,546	Apr. 16	1693	446 / 447	47	341
Furnace	M. Perret	402,474	Apr. 30	3132	811 / 812	47	632
Furnace and apparatus for producing and burning gaseous vapors	G. H. Harvey	403,839	May 21	1944	511	47	1050
Furnace-cover	W. Sleicher, Jr.	403,152	May 14	890	234 / 235	47	839
Furnace-grate	T. Henderson	403,840	May 21	1946	511	47	1050
Furnace-grate	W. H. Lahman	401,955	Apr. 23	2326	604	47	470
Furnace-grate bar	E. Boileau	403,730	May 21	1781	468 / 469	47	1018
Furnace-grate for portable engines	S. E. Burke	400,824	Apr. 2	597	153	47	114
Furnace-grate. Self-feeding	L. Hoperaft	404,706	June 4	490	124	47	1320
Furnace-joint. Sectional	E. Gurney	401,427	Apr. 23	2140	558	47	434
Furnaces. Indicating device for charging	E. Walsh, Jr.	401,521	Apr. 16	1649	435	47	333
Furnaces. Jet attachment for	M. A. Foster	405,956	June 25	2386	625	47	1710
Furnaces. Means for controlling the flow of oil to injector-burners for steam-boiler	S. Braggina	402,896	May 7	503	133	47	757
Furnaces. Operating electric	J. C. Hobbs	403,752	May 21	1807	475	47	1023
Furnaces. Peel for heating	S. M. Guss	402,588	May 7	57	13	47	674
Furnaces. Promoting combustion in	W. P. White and R. Wallbank	405,817	June 25	2169	570	47	1672
Furnaces. Smoke-preventer for	H. E. Piggott	400,709	Apr. 2	407	110 / 111	47	81
Furniture-spring	A. M. Gjestvang	402,434	Apr. 30	3073	795	47	620
Fuse or igniting device for projectiles	W. Kennish	400,687	Apr. 2	375	102	47	74
Gaff-topsail for vessels	L. W. Falck	403,257	May 14	1065	280	47	872
Gage: *See* Drill-gage. Micrometer-gage. Pressure-gage. Saw-table gage. Surface-gage. Vacuum or pressure gage. Water-gage.							
Galvanic battery	D. J. Arnold	403,868	May 21	1981	520	47	1057
Galvanic battery	J. A. Barrett	405,196	June 11	1210	321	47	1471
Galvanic battery	W. A. Childs	405,246	June 18	1290	341	47	1493
Galvanic battery	C. Collé	403,253	May 14	1059	279	47	871
Galvanic battery	E. H. Crosby	400,430	Apr. 2	10	3	47	5
Galvanic battery	W. Frishmuth	404,699	June 4	485	122	47	1319
Galvanic battery	W. P. Kookogey	402,166	Apr. 30	2661	699	47	542
Galvanic battery	J. H. Phalan	401,059	Apr. 9	950	253	47	189
Galvanic battery	R. J. Pratt	402,104	Apr. 23	2550	665	47	514
Galvanic battery	J. Serson	405,609	June 18	1841	488	47	1606
Galvanic battery	J. C. Vetter	403,802	May 21	1891	497	47	1041
Galvanic battery. Portable	A. Friedländer	402,915	May 7	528	139	47	762
Galvanometer. Portable tangent	E. Weston	403,312	May 14	1154	307	47	889
Galvanometer. Standard tangent	E. Weston	400,980	Apr. 9	852	223	47	168
Game	R. M. Washburn	403,012	May 7	661	175	47	789
Game apparatus	J. L. and D. H. Coles	402,230	Apr. 30	2746	711	47	559
Game apparatus	M. Joseph	405,314	June 18	1389	366	47	1513
Game apparatus	H. L. Smith	401,222	Apr. 9	1106	319	47	236
Game-board	S. T. F. Sterick	402,112	Apr. 23	2570	667	47	516
Game. Cabinet for preserving and displaying	H. L. Rand	405,678	June 18	1971	517	47	1628
Game-counter	J. Hope	400,770	Apr. 2	495	134 / 135	47	97
Game-wheel. Musical	G. Wilkening	404,140	May 28	2405	631	47	1149
Garment	W. F. Kneip	405,262	June 18	1315	346	47	1498
Garment-hanger	W. Gowen	401,943	Apr. 23	2308	600	47	466
Garment-pattern. Combination	M. Tuch	402,046	Apr. 23	2466	643	47	496
Garment-stay	R. B. Wheeler	403,809	May 21	1897	498	47	1042
Garment-stays. Apparatus for making	A. Taylor	404,124	May 28	2381	624	47	1144
Garment-stays. Apparatus for making	A. Taylor	404,125	May 28	2383	625	47	1145
Garment-supporter	P. J. Boyle and G. S. Gates	401,121	Apr. 9	1040	278	47	205
Gas. Apparatus for compressing carbonic-acid	F. Windhausen	405,289	June 18	1352	357	47	1505
Gas. Apparatus for manufacturing	W. Clark	404,520	June 4	237	56 57	47	1269
Gas. Apparatus for producing	R. R. Turner	404,322	May 28	2394	700	47	1202
Gas. Apparatus for the manufacture of	G. H. Brown	402,395	Apr. 30	2997	777	47	606
Gas. Apparatus for the manufacture of	G. K. Cummings	403,920	May 28	2060	542	47	1081

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Gas. Apparatus for the manufacture of	C. M. Gearing	401,342	Apr. 16	1378	366	47	283
Gas. Apparatus for the manufacture of	B. Loomis	404,208	May 28	2517	657 / 658	47	1170
Gas. Apparatus for the manufacture of	T. S. C. Lowe	401,570	Apr. 16	1728	455	47	347
Gas. Apparatus for the manufacture of	J. M. Rose	403,384	May 14	1277	335	47	912
Gas. Apparatus for the manufacture of	J. F. Toraya	404,750	June 4	547	140	47	1333
Gas. Apparatus for the manufacture of fuel and illuminating	J. W. Harrison and F. Egnet	404,404	June 4	43	12	47	1234
Gas. Apparatus for the manufacture of hydrocarbon	L. P. Lowe	405,426	June 18	1550	410	47	1546
Gas. Apparatus for the manufacture of hydrogen	P. Yarrington	402,216	Apr. 30	2729	707	47	556
Gas. Apparatus for the production of	R. Nayasmith	403,283	May 14	1114	296	47	881
Gas-burner	W. F. Folmer	404,830	June 11	669	173	47	1366
Gas-burner	L. Henkle	405,735	June 25	2061	541	47	1651
Gas burner and heater	D. S. Robilliard and C. G. Davies	403,612	May 21	1904	425	47	983
Gas-burner. Device for automatically operating the stop-cock of a	C. M. Rider	404,733	June 4	524	134	47	1328
Gas-burner for boiler-furnaces	T. McSweeney	405,497	June 18	1673	442	47	1572
Gas-burner for grates and stoves	J. A. Dailey	402,635	May 7	148	36, 37	47	692
Gas-burner for heating purposes	P. Lesser	401,445	Apr. 16	1539	405	47	313
Gas-burner for stoves or fire-places	T. McSweeney	402,177	Apr. 30	2673	693	47	545
Gas-burner. Heating	S. L. Wiegand	405,139	June 11	1110	295	47	1451
Gas-burner. Incandescent	L. Henkle	405,736	June 25	2062	541	47	1651
Gas burner. Water	W. F. Steele	402,905	May 7	637	169	47	764
Gas-burners. Apparatus for lighting	A. A. Lister	401,184	Apr. 9	1140	302 / 303	47	224
Gas-conduits. Pressure-regulator for	J. D. Bowman	405,244	June 18	1280	341	47	1492
Gas-engine	A. Histon	400,458	Apr. 2	47	14	47	13
Gas-engine	S. Lawson	402,749	May 7	293	75	47	718
Gas-engine	S. Lawson	402,750	May 7	295	76	47	718
Gas-engine	S. Lawson	402,751	May 7	297	76	47	719
Gas-engine	L. H. Nash	401,453	Apr. 16	1542	408 / 409	47	314
Gas-engine	N. Rogers and J. A. Wharry	403,379	May 14	1262	333	47	910
Gas-engine	H. Tenting	402,363	Apr. 30	2948	764	47	597
Gas-engine governor	N. Rogers and J. A. Wharry	403,378	May 14	1260	333	47	909
Gas-engines. Carburetor for	N. Rogers and J. A. Wharry	403,377	May 14	1258	332	47	909
Gas-engines. Dynamo-speeder for	N. Rogers and J. A. Wharry	403,376	May 14	1257	332	47	908
Gas-engines. Fuel-mixing device for	L. H. Nash	401,452	Apr. 16	1539	408	47	314
Gas-engines. Igniting apparatus for	L. C. and B. Parker	401,204	Apr. 9	1172	312	47	231
Gas-engines. Ignitor for	N. Rogers and J. A. Wharry	403,380	May 14	1264	333	47	910
Gas-fixtures. Electric-lamp attachment for	E. F. Gennert	400,658	Apr. 2	321	90	47	67
Gas-furnace	R. Cartwright	400,827	Apr. 2	601	164	47	115
Gas-furnace	E. P. Reichhelm	405,051	June 11	997	266	47	1430
Gas-generating apparatus	W. G. Bedford	404,886	June 11	755	192	47	1380
Gas-generator	S. McIlvaine	402,534	Apr. 30	3216	833	47	648
Gas-generator	W. Rennyson	405,911	June 25	2315	608	47	1696
Gas generator. Compound hydrocarbon	E. Ferguson	404,527	June 4	250	60	47	1271
Gas-governor	H. J. Bell	401,626	Apr. 16	1839	480	47	368
Gas-governor	H. J. Bell	401,627	Apr. 16	1840	480	47	369
Gas-governor	H. J. Bell	401,628	Apr. 16	1842	480	47	369
Gas-governor	C. J. Hamilton	402,442	Apr. 30	3081	798	47	622
Gas-holder	W. Gadd	405,701	June 25	2009	528	47	1641
Gas-holder	W. Gadd	405,702	June 25	2010	528	47	1642
Gas-incandescent	L. Paget	401,890	Apr. 23	2239	.....	47	454
Gas-incandescent	C. A. von Welsbach	403,903	May 21	1892	.....	47	1041
Gas-incandescent	C. A. von Welsbach	403,904	May 21	1893	.....	47	1041
Gas-incandescents. Making	L. Paget	401,898	Apr. 23	2237	.....	47	453
Gas-lighter. Electric	J. H. Lehman	403,944	May 28	2092	548	47	1066
Gas-lighter. Electric	J. Y. Parke	400,479	Apr. 2	77	22	47	18
Gas-lighter. Electrical	D. C. Knowlton	402,332	Apr. 30	2900	751	47	588
Gas lighting and extinguishing apparatus. Automatic	N. H. Shaw	405,126	June 11	1092	291	47	1449
Gas lighting and extinguishing apparatus. Automatic	N. H. and A. B. Shaw	405,435	June 18	1564	413	47	1548
Gas-lighting burner. Electric	J. Geary	401,153	Apr. 9	1096	291	47	214
Gas-lighting device. Electric	D. Itonsseau	400,492	Apr. 2	92	25	47	21
Gas-mains. Service-pipe connection for	G. Westinghouse, Jr	400,532	Apr. 2	156	40	47	33
Gas. Manufacturing	W. M. Cosh	402,146	Apr. 30	2657	690	47	536
Gas. Manufacturing	G. K. Cummings	403,921	May 28	2062	542	47	1081
Gas. Manufacturing	B. Loomis	404,209	May 28	2520	658	47	1171
Gas. Manufacturing	J. M. Rose	403,381	May 14	1266	333 / 334	47	910
Gas. Manufacturing	J. M. Rose	403,382	May 14	1270	334	47	911
Gas. Manufacturing	J. M. Rose	403,383	May 14	1273	334 / 335	47	911
Gas-meter	W. Y. Stansbrough	403,297	May 14	1133	300	47	884
Gas or air engine	S. Wilcox	402,549	Apr. 30	3235	839 / 840	47	652
Gas or gasoline engine	L. C. and B. Parker	403,367	May 14	1241	329 / 330	47	906
Gas or hydrocarbon-vapor engine	L. C. and B. Parker	405,795	June 25	2142	562	47	1667
Gas or lamp bracket	W. and J. Boekel	403,508	May 21	1463	383 / 384	47	955
Gas or vapor burner for heating	O. Rotton	400,602	Apr. 2	248	67	47	52
Gas-outlets. Forming	W. M. Jackson	400,683	Apr. 2	372	101	47	74
Gas-pressure regulator	W. H. Metcalf	401,048	Apr. 9	933	249	47	187
Gas. Process of and apparatus for the manufacture of	B. Loomis	404,205	May 28	2505	635 / 636	47	1168
Gas. Process of and apparatus for the manufacture of	B. Loomis	404,206	May 28	2509	636	47	1169
Gas. Process of and apparatus for the manufacture of	B. Loomis	404,207	May 28	2513	657	47	1170
Gas. Purifying	W. A. M. Valon	402,787	May 7	353	.....	47	729
Gas regulating burner	O. W. Bennett	405,656	June 18	1937	509 / 510	47	1622

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Gas-vending apparatus	R. W. Brownhill	405,943	June 25	2363	619, 620	47	1706
Gas-vending apparatus	R. W. Brownhill	405,944	June 25	2368	621	47	1707
Gas-vending apparatus	R. W. Brownhill	405,983	June 25	2431	636, 637	47	1718
Gas-washer	J. De Brouwer	404,606	June 4	363	87	47	1294
Gaseous fuel. Apparatus for making and burning	J. Locke and S. O. Richardson, Jr	403,434	May 14	1344	356	47	924
Gasometer	W. B. Hammond	400,671	Apr. 2	353	96, 97	47	70
Gate: *See* Automatic gate. Bridge-gate. Car-gate. Danger-gate. Elevator-gate. End-gate. Farm-gate. Fence-gate. Flood-gate. Folding gate. Railway-gate. Sliding gate. Swinging gate. Tilting gate. Water-gate.							
Gate	W. Ball	402,501	Apr. 30	3168	821	47	638
Gate	S. A. D. Bozell	403,911	May 28	2050	539	47	1059
Gate	C. Chiddister	401,008	Apr. 9	876	235	47	177
Gate	C. C. Epp	402,728	May 7	254	67	47	712
Gate	G. Flake	402,578	May 7	42	10	47	671
Gate	G. Guibbini	405,772	June 25	2113	554	47	1661
Gate	W. L. Haas	402,439	Apr. 30	3078	797	47	622
Gate	J. M. Hawley	404,086	May 28	2322	606	47	1133
Gate	W. C. Hooker	404,625	June 4	387	93	47	1299
Gate	F. W. Hyde and A. Z. Dotterrer	404,973	June 11	884	231	47	1406
Gate	S. G. Jameson and E. A. Baird	404,283	May 28	2033	683	47	1190
Gate	A. L. Peterson	402,348	Apr. 30	2928	759	47	593
Gate	H. H. Phillips	405,175	June 11	1172	312	47	1463
Gate	E. F. Shellaberger	404,936	June 11	826	214	47	1395
Gate	C. Tibbs	403,401	May 14	1305	341	47	917
Gate	J. H. Tudor	400 976	Apr. 9	898	221	47	167
Gate	T. Tyson	400,611	Apr. 2	262	73	47	55
Gate	T. Tyson	401,315	Apr. 9	1332	354, 355	47	262
Gate	J. Walker	404,754	June 4	553	141	47	1334
Gate	W. R. White	403,975	May 28	2137	559	47	1095
Gate-opening mechanism	J. N. Stong	402,998	May 7	642	170	47	785
Gear-wheel	M. T. Graf	403,101	May 14	813	215, 216	47	824
Gears. Machine for cutting	J. S. Waterman	401,987	Apr. 23	2367	616	47	478
Gears. Machine for cutting spur and worm	G. B. Grant	405,630	June 11	969	258	47	1424
Gearing	M. E. Benedict	401,993	Apr. 23	2379	619	47	480
Gearing	A. M. Benson	405,759	June 25	2096	550	47	1658
Gearing. Cogged	W. Courtenay	404,826	June 11	964	178	47	1364
Gearing. Driving	J. C. Whitford	400,961	Apr. 9	836	224	47	169
Gearing. Frictional	G. F. Evans	401,018	Apr. 9	889	238	47	179
Gem. Imitation	S. Grossiord	400,450	Apr. 2	39	12	47	11
Generator: *See* Friction-generator. Gas-generator. Steam-generator. Vinegar-generator.							
Glass and earthen ware. Muffle for	L. Lawton, F. Swann, and W. R. Whitehead.	405,571	June 18	1786	473	47	1596
Glass bottles. Machine for making	H. M. Ashley	403,719	May 21	1765	464	47	1015
Glass bottles, &c. Machinery for making	H. M. Ashley	403,024	May 7	684	180	47	792
Glass bottles, &c. Machinery for making	H. M. Ashley	403,025	May 7	686	180	47	793
Glass bottles, &c. Machinery for making	H. M. Ashley	403,027	May 7	690	181	47	794
Glass bottles, &c. Machinery for making	H. M. Ashley	403,716	May 21	1755	461, 462	47	1013
Glass bottles, &c. Machinery for making	H. M. Ashley	403,717	May 21	1757	462, 463	47	1014
Glass bottles, &c. Machinery for making	H. M. Ashley	403,718	May 21	1761	463	47	1015
Glass bottles, &c. Manufacture of	H. M. Ashley	403,023	May 7	681	179	47	792
Glass building-block	G. Falconnier	402,073	Apr. 23	2505	654, 655	47	503
Glass. Chipping or crystallizing	T. J. Thompson	405,283	June 18	1346	355	47	1504
Glass-melting furnace	W. F. Modes	405,317	June 18	1394	367	47	1514
Glass. Ornamenting	L. Pertin	403,552	May 21	1527	400	47	968
Glass through the annealing-tunnel. Device for conveying sheets of	P. Pfeifer	400,708	Apr. 2	405	110	47	80
Glassware. Apparatus for shaping	J. Anderson	401,099	Apr. 9	1007	268, 269	47	199
Glassware. Manufacture of	G. W. Leighton	402,090	Apr. 23	2534	668	47	510
Glassware. Mold for	R. M. Atwater and E. Herckner	405,863	June 25	2236	588	47	1686
Glaziers' points. Machine for driving	F. Holland	403,886	May 21	2005	526, 527	47	1062
Globe-holder	J. J. McGloin	405,793	June 25	2139	562	47	1666
Glove	C. R. Spall and E. Scoones	405,380	June 18	1461	382, 383	47	1532
Glove-fastener	G. W. Mandrill	400,865	Apr. 2	655	178	47	125
Glove-fastening	W. S. Richardson	400,948	Apr. 9	787	210	47	160
Glove-fastening	W. S. Richardson	401,070	Apr. 9	963	257	47	192
Glove or mitten	W. M. Tyrrell	402,287	Apr. 30	2828	732	47	575
Glove-package fastener	C. T. Bull	405,676	June 11	1098	273	47	1436
Gloves. Boxing	D. J. O'Sullivan	404,929	June 11	816	209, 210	47	1392
Gold and silver from ores. Obtaining	J. S. MacArthur, R. W. and W. Forrest.	403,202	May 14	979	.....	47	857
Gold ores. Chloridizing	T. D. Bottome	405,824	June 25	2177	573	47	1674
Goods. Apparatus for the delivery of prepaid	W. H. Bailey	400,536	Apr. 2	162	42	47	34
Gopher-exterminator	M. B. Parker	400,705	Apr. 2	400	109	47	79
Governor. Centrifugal	H. L. Berger and E. Noël	405,760	June 25	2097	550	47	1658

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Governor for engines. Hydraulic	W. H. and J. D. Gray	402,015	Apr. 23	2411	628, 629	47	486
Governor. Steam-engine	W. Berwick	402,899	May 7	498	132	47	756
Governor. Steam-valve	F. B. Pettengill	404,796	June 4	617	150	47	1347
Grading and ditching machine	M. G. Bunnell	403,034	May 7	700	183	47	795
Grading and ditching machine	M. G. Bunnell	403,035	May 7	701	183, 184	47	796
Grain. Apparatus for transferring, weighing, and delivering bags of	M. Swanson	402,781	May 7	343	88, 89	47	727
Grain-binder	W. E. Ferguson	405,088	June 11	1040	278	47	1439
Grain-binder	J. S. Davis	405,203	June 11	1222	323	47	1473
Grain-binder	W. W. Eastman and H. E. Potter	401,644	Apr. 16	1866	484, 485	47	372
Grain-binder	C. H. Salzman	403,365	May 14	1281	335, 336	47	912
Grain-binder	O. O. Storie	404,506	June 4	212	50, 51	47	1264
Grain-binders. Band-securing mechanism for	J. S. Davis	401,013	Apr. 9	892	236, 237	47	178
Grain-binding machine	F. Harper	404,479	June 4	164	38	47	1255
Grain-cleaner	B. P. Barney	405,070	June 11	1021	272, 273	47	1435
Grain-cleaning machine	J. Leaser	405,168	June 11	1160	310	47	1461
Grain-cleaning machine	J. F. Wilson	404,456	June 4	122	29	47	1249
Grain-clipping machine	R. W. Welch	401,667	Apr. 16	1891	493	47	377
Grain-conveying apparatus. Pneumatic	L. Smith	405,331	June 18	1413	372, 373	47	1518
Grain-drier	L. Borland	403,411	May 14	1315	344	47	919
Grain-drier	L. Borland	403,412	May 14	1316	344	47	919
Grain-drier	J. Hill	405,214	June 11	1237	326, 327	47	1476
Grain-drill	C. J. Fendel	401,022	Apr. 9	894	239, 240	47	180
Grain-drill	P. P. Mast	404,853	June 11	705	181	47	1372
Grain-drill	C. E. Patric and F. R. Packham	404,108	May 28	2357	618, 619	47	1130
Grain-drill	J. W. Rhodes	400,947	Apr. 9	786	210	47	159
Grain-drill attachment	R. G. Strother	402,097	May 7	213	56	47	703
Grain-drill hoe	W. C. Lathrop	402,677	May 7	105	47	47	699
Grain. Grinding and scouring	M. L. Kiesell	404,845	June 11	693	179	47	1370
Grain. Heating and steaming	F. Wegmann	405,811	June 25	2160	568	47	1671
Grain. Machine for shocking sheaves of small	W. H. Smith	404,571	June 4	308	73	47	1283
Grain. Magnetic machine for removing mineral substances from	J. N. Hieronymus	402,449	Apr. 30	3091	802	47	624
Grain-meter	M. L. Mowrer	405,045	June 11	990	263	47	1429
Grain-meter	L. Elliott	405,833	June 25	2192	577	47	1677
Grain-meter	G. B. Howland	400,849	Apr. 2	630	171	47	121
Grain-meter	W. W. Lockwood and C. M. Bickford.	405 315	June 18	1390	366	47	1513
Grain-meter	A. Stewart	403,396	May 14	1298	340	47	916
Grain-meter	V. Weber and J. R. Harrison	400,615	Apr. 2	268	74	47	56
Grain-meter. Automatic	E. H. Reynolds	404,225	May 28	2348	664, 665	47	1175
Grain-meter. Rotating	H. Applen	405,689	June 25	1996	524	47	1638
Grain-press	W. Preston	404,655	June 4	424	106	47	1306
Grain-scourer	W. Ager	405,937	June 25	2355	618	47	1705
Grain-scourer	H. Seck	403,389	May 14	1287	337	47	912
Grain-scourer	S. S. Shaver	405,611	June 18	1843	488	47	1606
Grain-separator	H. Wilhelm	402,020	May 7	676	178	47	791
Grain-separator	S. Freeman	402,012	Apr. 23	2409	628	47	485
Grain-separator	H. Stoker	400,965	Apr. 9	811	216, 217	47	165
Grain separator and cleaner	M. N. Laufenburg	402,462	Apr. 30	3112	807, 808	47	628
Grain-separator. Elevator for	S. B. Hart	402,522	Apr. 30	3202	829	47	645
Grate	H. C. Kerstine	402,849	May 7	431	114	47	744
Grate	H. P. Tallmadge	403,002	May 7	647	171	47	786
Grate attachment	J. J. Mitchell	404,423	June 4	68	18	47	1239
Grate-bar	J. A. Allen	402,126	Apr. 30	2900	673	47	531
Grate-bar. Rocking or shaking	G. M. Knight	404,719	June 4	509	130	47	1325
Grate. Fire	C. J. Dorrance	403,255	May 14	1002	269	47	871
Grate for ranges, stoves, or furnaces	H. Sutcliffe	406,009	June 25	2450	646	47	1726
Grate. Inclined	S. J. Buzzini	404,585	June 4	347	83	47	1291
Grater. Culinary	H. H. Campbell	403,416	May 14	1320	345	47	920
Grating	H. I. Block	402,651	May 7	143	35	47	693
Gravel-screen	D. McDonald	402,847	May 7	436	115	47	745
Grease-cup	J. D. Loughran	402,845	May 7	435	115	47	744
Grill or guard. Metallic	J. Massett	403,358	May 14	1221	324	47	902
Grinding and sharpening machinery	N. Poulson	404,993	June 11	892	233, 234	47	1408
Grinding-machine	H. Buckingham	401,875	Apr. 23	2203	576	47	447
Grinding-machine	R. Conrader	404,686	June 4	469	118	47	1316
Grinding-machine	C. H. Henderson	404,787	June 4	606	156	47	1344
Grinding machine. Surface	W. S. Robbins	401,212	Apr. 9	1181	314	47	232
Grinding-machine water-tank	E. R. Hyde and R. C. Horner	401,278	Apr. 9	1280	341, 342	47	251
Grinding-mill	C. A. Bauer	403,030	May 7	695	182	47	794
Grinding-mill	J. B. Allfree	401,872	Apr. 23	2197	574, 575	47	446
Grinding-mill	E. Derbec	403,421	May 14	1325	347	47	921
Grinding-mill	F. Quénéhen and A. Vansteenkiste.	405,177	June 11	1175	313	47	1464
Grinding-mill runner	E. T. Williams	400,533	Apr. 2	157	41	47	33
Grinding or planing machine, Surface	J. C. Dell	404,607	June 4	365	88	47	1294
	E. R. Hyde	405,706	June 25	2016	529, 530	47	1643

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Grinding-pan	P. Hinkle	400,681	Apr. 2	367	100	47	73
Grinding shimer molding-bits, &c. Machine for	H. C. Gilbert	400,660	Apr. 2	323	91	47	67
Grinding shovel-blanks. Machine for	J. E. Woll	403,818	May 21	1908	501, 502	47	1044
Grinding the cutters of wood-cutting machines. Machine for	O. A. Winter	403,712	May 21	1751	461	47	1013
Grinding twist or flat drills. Gage for	A. F. Brewer	403,175	May 14	924	244	47	845
Grinding-wheel	H. S. Lucas	402,682	May 7	192	48	47	700
Grindstone and mechanism for the same	H. A. Axtell	404,670	June 4	443	111	47	1311
Grip device. Intermittent	W. H. Wild	405,140	June 11	1110	296	47	1451
Grip-testing machine. Coin-operated	P. Everitt	400,839	Apr. 2	616	167	47	118
Gripping-die	W. Taylor	401,912	Apr. 23	2261	588, 589	47	457
Guard: *See* Candle-guard. Car-track guard. Cattle-guard. Fish-hook guard. Foot-guard. Fork-guard. Railway-guard. Railway-bridge guard. Snow-guard. Snow and ice guard.							
Guide-box	P. L. Day	404,178	May 28	2465	645	47	1161
Gumming machine. Paper	J. J. Allen	403,633	May 21	1636	433	47	990
Gun. Magazine	L. L. Hepburn	400,679	Apr. 2	363	99	47	72
Gun-rack	M. H. Amerine	405,335	June 18	1420	374	47	1590
Gun. Spring	J. D. Egler	403,096	May 14	904	214	47	832
Gun. Spring	E. Y. Knapp	403,432	May 14	1342	352	47	924
Guns. Barrel-lock for breakdown	L. Jeusette, D. D. and H. Henrard	402,330	Apr. 30	2897	751	47	587
Guns. Cartridge feed-pack for magazine	P. Mauser	402,605	May 7	79	19	47	679
Guns. Means for changing the center of gravity of	W. R. Miller	404,921	June 11	806	207	47	1391
Guns. Swab or cleaner for	C. J. Bailey	405,297	June 18	1366	360	47	1508
Gymnastic apparatus	L. F. Small	403,703	May 21	1737	457	47	1011
Hackling-machine	A. W. Montgomery	404,215	May 28	2335	661, 662	47	1173
Hair-crimping device	N. Helmer and C. L. Lietz	404,087	May 28	2323	609	47	1133
Hair-curler	F. Faust	400,904	Apr. 9	715	194	47	148
Hair-curler	F. Wilson	403,711	May 21	1750	460	47	1012
Hair-curling device	C. A. G. Pfanne	404,501	June 4	201	48	47	1262
Hair-curling implement	B. L. Toquet	404,664	June 4	436	109	47	1310
Hair-cutter	J. W. Eisenhuth	402,727	May 7	252	66, 67	47	711
Hair-holder	J. L. Hackett	401,649	Apr. 16	1871	486	47	373
Hair-plucking machine	J. H. Brierley	400,894	Apr. 9	703	191	47	145
Hair-singer	J. E. Poindexter	405,502	June 18	1683	445	47	1574
Halter	E. Barnard	401,922	Apr. 23	2279	591	47	460
Halter	J. Dunn	401,017	Apr. 9	887	237	47	178
Hame-connection	R. C. Elliott	402,910	May 7	523	138	47	761
Hame-fastener	I. W. and H. L. Bowman and S. Sharp	403,732	May 21	1783	469	47	1019
Hammer	A. L. De Vol	404,388	June 4	93	5	47	1229
Hammer and hatchet. Combined claw	G. W. Simonds	404,990	June 11	902	236	47	1416
Hammer. Bush	F. D. and W. Lisson	404,350	May 28	2750	714	47	1213
Hammer. Drop	F. M. Leavitt	401,566	Apr. 16	1719	453, 454	47	346
Hammer. Gold-beater's	H. B. Hughes	402,326	Apr. 30	3207	830, 831	47	646
Hammer. Power	R. A. Belden	403,453	May 14	1374	360	47	930
Hammer. Steam	J. H. Blake	405,072	June 11	1023	273	47	1435
Hammock	A. Beals	403,320	May 14	1171	314	47	893
Hammock	H. M. York	403,315	May 14	1166	309	47	892
Hammock and canopy support	H. Sinclair	405,719	June 25	2037	534, 535	47	1646
Hammock and canopy support. Combined	J. Gifford	404,614	June 4	374	90	47	1296
Hammock and chair. Convertible	R. W. Meesmore	402,469	Apr. 30	3125	810	47	631
Hammock-support	H. E. Collins	402,307	Apr. 30	2860	739	47	581
Hammocks. Apparatus for stringing	I. E. Palmer	402,275	Apr. 30	2812	728	47	571
Hand bag or sack. Collapsible	F. Emerio	403,928	May 28	2072	544	47	1063
Hand-motor	C. E. Bromwell	401,637	Apr. 16	1852	482	47	370
Hand-rest	H. F. Kretzer	405,781	June 25	2124	55	47	1663
Handcuffs and nippers. Combined	W. A. Hicks	403,268	May 14	1088	287	47	876
Handles: *See* Brake-handle. Cutlery-handle. Dust-pan handle. Hinged handle. Photographic-plate handle. Sancepan-handle. Tea or coffee pot handle. Tool-handle.							
Handle	L. M. Devore	401,419	Apr. 16	1495	396	47	305
Handle	J. B. Hartman	401,832	Apr. 23	2144	559	47	435
Hanger: *See* Door-hanger. Garment-hanger. Spring-hanger. Tobacco-hanger.							
Harness	I. J. Gray	405,771	June 25	2112	553	47	1661
Harness	A. Schunck	401,973	Apr. 23	2348	611	47	475
Harness-girth	W. S. Thayer	403,004	May 7	649	172	47	786
Harness-hook	D. E. Kempster	401,173	Apr. 9	1128	299	47	221
Harness-loop	E. B. Knapp	400,461	Apr. 2	50	15	47	13
Harness-maker's press	S. H. Randall	405,679	June 18	1971	517	47	1638
Harness-pad	N. M. Cahoone	402,719	May 7	244	64	47	710
Harness-pad	W. G. Robbins	402,480	Apr. 30	3140	813	47	633
Harness. Safety-hook for	C. Smith	405,055	June 11	1001	267	47	1431
Harness-trimming	D. J. Regan	402,478	Apr. 30	3138	813	47	633
Harrow	W. M. Brinkerhoff	405,459	June 18	1610	421	47	1558
Harrow	J. F. and B. A. A. Correll	405,534	June 18	1730	457	47	1583
Harrow	P. C. Loveland	400,861	Apr. 2	648	175	47	124
Harrow	H. L. Mack	400,697	Apr. 2	382	105	47	77
Harrow	J. Macphail and F. M. Needham	404,010	May 28	2188	574, 575	47	1105
Harrow	D. C. Markham	405,580	June 18	1796	476	47	1598

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Harrow	E. Miller	402,607	May 7	83	19	47	680
Harrow	G. Sweet	402,629	May 7	113	27, 28	47	685
Harrow and cultivator. Disk	E. C. Boyer	401,994	Apr. 23	2380	619	47	480
Harrow and drag. Combined	G. W. Mullenaux	400,785	Apr. 2	531	146	47	102
Harrow and roller. Combined riding	C. M. Rouse	402,975	May 7	611	160	47	786
Harrow attachment for land-rollers	J. W. Weir	400,616	Apr. 2	260	74	47	56
Harrow. Disk	G. T. Booth	405,005	June 11	994	244, 245	47	1414
Harrow. Disk	R. W. Hardie	401,745	Apr. 23	2013	527	47	411
Harrow. Pulverising	C. La Dow	404,701	June 4	610	157	47	1345
Harrow. Rotary	R. Rakestraw	403,778	May 21	1850	486	47	1039
Harrow, seeder, and planter	J. M. Poore	405,797	June 25	2145	564	47	1666
Harrow. Spring-tooth	S. N. Hench and W. A. Dromgold	402,079	Apr. 23	2514	657	47	505
Harrow. Spring-tooth	E. W. Herendeen	401,833	Apr. 23	2145	560	47	435
Harrow. Spring-toothed	T. R. Crane	402,000	Apr. 23	2288	621	47	492
Harrow. Spring-toothed	H. Wiard	401,976	May 28	2139	559	47	1096
Harrow. Sulky	W. Hewitt	402,670	May 7	176	45	47	697
Harrow-tooth holder	M. B. Williams	404,024	May 28	2304	579	47	1169
Harrow-tooth. Spring	A. W. and L. W. Stevens, W. M. Brinkerhoff, and L. D. Swart	405,923	June 25	2238	613	47	1702
Harrow. Wheeled	D. E. McSherry and H. G. Swope	400,932	Apr. 9	765	205	47	155
Harvester	G. Cox	404,261	May 28	2596	676	47	1183
Harvester	S. D. Maddin	402,025	Apr. 23	2430	633, 634	47	489
Harvester	S. D. Maddin	403,764	May 21	1827	479, 480, 481	47	1027
Harvester and thrashing-machine. Combined	J. A. Myers	402,536	Apr. 30	3218	834, 835	47	648
Harvester-binder	H. E. Pridmore	401,901	Apr. 23	2241	584	47	454
Harvester. Corn	W. D. Steele	402,040	Apr. 23	2461	641	47	495
Harvester. Cotton	S. D. T. Manning	400,700	Apr. 2	302	106, 107	47	78
Harvester. Cotton	R. H. Purnell	405,049	June 11	994	264, 265	47	1430
Harvester-cutter	J. A. Blair	401,117	Apr. 9	1035	277	47	204
Harvester cutter-bar guide	J. D. Norris	405,646	June 11	993	264	47	1429
Harvester elevator-frame	J. E. Deering	403,084	May 14	803	213	47	822
Harvester-frame	R. Brown	401,127	Apr. 9	1049	280	47	207
Harvester. Grain-binding	W. F. Olin	402,348	Apr. 30	2921	757, 758	47	592
Harvester-reel	J. F. Steward	401,665	Apr. 16	1888	492	47	376
Harvester sheaf-carrier	L. W. Ellis	401,259	Apr. 9	1255	335	47	246
Harvester. Stalk-fodder	H. F. Longworth, Jr.	404,044	May 28	2243	588	47	1114
Harvesters. Cutting apparatus for	R. J. Robinson and C. F. Collins	400,489	Apr. 2	89	24	47	20
Harvesters. Header attachment for	H. Bryan	404,954	June 11	849	221, 222	47	1399
Harvesters. Sheaf-carrier for self-binding	B. A. Kennedy and J. F. Steward	405,892	June 25	2276	598	47	1692
Harvesters. Twine-tension for	W. N. Dick	405,063	June 11	1036	277	47	1438
Harvesting-machine	P. Hanson	402,894	May 7	409	107, 108	47	740
Harvesting machine. Corn	J. F. Steward	401,368	Apr. 16	1453	384	47	297
Hasp-lock	H. Tripp and L. Lattan	402,307	Apr. 30	2718	705	47	554
Hat	A. H. Fritsch	403,334	May 28	2079	545	47	1084
Hat and coat rack	C. T. Gardner	405,729	June 25	2056	539	47	1649
Hat-forming machine	G. Yule	404,430	June 4	130	31, 32	47	1250
Hat-holder and packing-frame	W. M. Levy	404,634	June 4	401	97, 98	47	1302
Hat-molding machine	T. P. Wilkinson	401,800	Apr. 23	2116	551	47	429
Hat-packing support	M. C. Schoonmaker	403,561	May 21	1537	404	47	970
Hat shield and ventilator	W. P. O'Connor	402,122	Apr. 30	2690	695	47	546
Hat-sweats. Making	C. E. Keator	405,417	June 18	1534	406	47	1543
Hat-wire machine	B. McCusker	404,647	June 4	412	101, 102	47	1304
Hats. Bottom-board for	C. E. Keator	400,773	Apr. 2	500	135, 136	47	98
Hatchway	J. P. Ketteringham	403,196	May 14	967	254, 255	47	854
Hatchway. Elevator	M. J. Daly	403,875	May 21	1989	522, 523	47	1059
Hatchway. Elevator	H. G. Hester	401,873	Apr. 9	1275	340	47	250
Hatchway. Elevator	F. X. Hooper and C. Petersen	405,163	June 11	1153	308	47	1460
Hatchway. Self-closing	F. J. Gridley	404,618	June 4	379	91	47	1297
Hatchway. Self-closing	E. J. Herman	404,705	June 4	490	124	47	1350
Hay and grain rack	G. Carr	401,733	Apr. 23	1994	522	47	466
Hay-cap	W. R. Thatcher	404,577	June 4	322	77	47	1286
Hay-carrier	J. Farrell	404,585	June 4	247	59	47	1271
Hay-carrier	T. Milar and H. Pritchard	405,714	June 25	2030	533	47	1645
Hay-carrier track	C. E. Patric and R. H. Rodgers	403,443	May 14	1358	357	47	927
Hay-elevator	J. L. Harkinson	403,103	May 14	916	216, 217	47	825
Hay-fork	N. F. Mathewson	402,693	Apr. 23	2337	601	47	510
Hay-fork	C. E. Patric	404,107	May 28	2056	516	47	1130
Hay-fork. Horse	H. Wiard and J. L. Judd	403,019	May 7	675	178	47	791
Hay gatherer and elevator	D. B. Tanger	405,926	June 25	2238	614	47	1702
Hay-loader	J. W. Foust	403,041	May 7	708	185, 186	47	797
Hay-loader	A. Lasack	404,096	May 28	2336	612, 613	47	1126
Hay-rake and baling-press. Combined	J. A. Hooton and G. L. Wiard	405,034	June 11	974	259	47	1425
Hay rake and loader	J. E. Shinn	401,467	Apr. 16	1571	415, 416	47	319
Hay rake and stacker	W. D. Watkins	400,530	Apr. 2	158	39, 40	47	32
Hay-rake. Horse	O. H. King	405,484	June 18	1652	435	47	1567
Hay-rake. Horse	L. Kissner	404,846	June 11	695	179	47	1370

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Hay-rickers, &c. Metal point for the teeth of	H. A. Alden and J. E. Kirk	405,262	June 25	2235	588	47	1685
Hay-stacker	D. W. Bovee	402,895	May 7	502	133	47	757
Hay-stacker	T. H. Palm	404,222	May 28	2545	664	47	1175
Head-gear. Device for holding	D. M. Fuller	404,061	May 28	2314	607	47	1131
Head-rest, chin-support, and eye-closer for corpses. Combined	F. Moharter	402,095	Apr. 23	2540	662	47	510
Heat-regulating device. Automatic	N. C. Butler and F. D. Rosenberger.	400,826	Apr. 2	600	163	47	114
Heater: *See* Air-heater. Barrel-heater. Car-heater. Feed-water heater. Fire-place heater. Hydrocarbon-heater. Smoothing and sad iron heater. Steam-heater. Tank-heater. Water-heater.							
Heater	E. H. Jewett	402,162	Apr. 30	2657	687	47	541
Heaters. Muffler for steam or other	E. A. Leland	402,336	Apr. 30	2904	752	47	588
Heating and ventilating apparatus	W. S. Ziegler	402,217	Apr. 30	2730	708	47	556
Heating and ventilating buildings. Apparatus for	W. J. Baldwin	402,386	Apr. 30	2978	{773, 774}	47	603
Heating apparatus	H. B. Flint	402,153	Apr. 30	2642	684	47	530
Heating apparatus	E. N. Gates	401,940	Apr. 23	2302	598	47	465
Heating apparatus	L. B. Hartung	400,453	Apr. 2	41	13	47	12
Heating apparatus	H. Heim	401,349	Apr. 16	1390	358	47	286
Heating apparatus	J. Johnson	403,474	May 14	1407	363	47	936
Heating apparatus	I. C. Richardson	405,504	June 18	1686	446	47	1574
Heating apparatus. Automatic heat-regulator for hot-water	E. N. Gates	402,076	Apr. 23	2509	656	47	504
Heating apparatus. Electric	H. F. Watts	400,978	Apr. 9	830	222	47	168
Heating apparatus. Steam	J. T. Pine	403,287	May 14	1119	297	47	882
Heating device. Steam	H. A. Kroeschell	404,419	June 4	65	17	47	1238
Heating-furnace	T. Kruse	404,006	May 28	2122	573	47	1104
Heating-furnace for steam boilers	C. S. Servoss	404,116	May 28	2369	622	47	1142
Heating-furnace. Regenerative	H. Aiken	405,240	June 18	1281	{339, 340}	47	1491
Heating system	W. W. Canfield	401,685	Apr. 16	1915	{498, 499}	47	381
Heddles. Machine for making wire	E. Ebrayat	403,879	May 21	1994	524	47	1060
Hedge	P. M. Mishler	403,949	May 28	2100	550	47	1068
Heel-burnishing machine	J. W. Carver	401,131	Apr. 9	1055	{281, 282, 283}	47	208
Heel-protector	F. H. Richards	401,069	Apr. 9	992	254	47	192
Heel-trimming machine	C. W. Glidden	403,747	May 21	1802	474	47	1022
Heeling-machines. Top-lift carrier for	H. W. Winter	401,619	Apr. 16	1828	477	47	366
Heeling-machines. Top-lift holder for	H. W. Winter	401,620	Apr. 16	1830	477	47	366
Heeling-machines. Top-lift holder for	H. W. Winter	401,621	Apr. 16	1831	477	47	367
Hides or leather scraps. Agitating	C. W. Cooper	400,441	Apr. 2	25	9	47	9
Hides or leather scraps. Agitating	C. W. Cooper	400,442	Apr. 2	28	9	47	9
Hides or skins. Apparatus for treating	C. W. Cooper	400,443	Apr. 2	29	11	47	9
Hides or skins. Machinery for shaving or dressing green	J. Rood	401,905	Apr. 23	2251	586	47	455
Hinge	W. S. Larimer	401,036	Apr. 9	916	245	47	184
Hinge	L. K. Smedes	404,313	May 28	2681	696	47	1200
Hinge	J. A. Turner	401,066	Apr. 9	984	262	47	196
Hinge. Lock	B. F. Boughn and W. Cashner	400,540	Apr. 2	165	43	47	35
Hinge. Lock	J. Wolf	403,570	May 21	1549	406	47	972
Hinge-mortiser	W. Cooper, A. Milliken, and G. W. Bishop.	403,518	May 21	1482	386	47	959
Hinge. Spring	R. Belches	402,388	Apr. 30	2992	774	47	604
Hinge. Spring	H. Hertel	402,394	Apr. 30	2987	748	47	595
Hinge. Spring	D. M. Holt	403,670	May 21	1683	446	47	1000
Hinge. Spring	J. R. Payson, Jr.	404,556	June 4	290	68	47	1229
Hinge. Spring	J. Spruce and A. M. Comstock	401,978	Apr. 23	2355	613	47	476
Hinge. Spring	S. F. Streeter	403,494	May 14	1438	376	47	942
Hinge. Spring	G. W. Warner	405,931	June 25	2346	616	47	1704
Hinge. Spring	C. Zattau	403,713	May 21	1752	461	47	1013
Hinged handle	J. Gerstle	403,656	May 21	1664	443	47	996
Hitch for the ends of cord or rope	G. Race	403,074	May 7	769	203	47	807
Hitching device for ropes	I. E. Palmer	405,372	June 18	1467	388	47	1529
Hoe	E. J. Gates	403,655	May 21	1663	441	47	996
Hoe and scraper. Combined	A. F. Copper	403,330	May 14	1187	313	47	896
Hoe-blank	G. B. Ely	400,902	Apr. 9	713	193	47	147
Hoe. Scuffle	C. H. Bill	404,156	May 28	2426	633	47	1154
Hoes and shovels. Machine for making	H. E. Marchand	401,656	Apr. 16	1877	{498, 499}	47	374
Hoist	J. Wiest	403,164	May 14	908	236	47	842
Hoisting and loading machine	D. S. White	401,618	Apr. 16	1826	476	47	365
Hoisting apparatus	F. McMahon	403,546	May 21	1522	399	47	966
Hoisting apparatus for mines	S. Salmon	404,935	June 11	825	{212, 213, 214}	47	1394
Hoisting attachment for ash and garbage carts	J. F. Schultz	403,617	May 21	1611	{426, 427}	47	984
Hoisting-cages. Automatic dumping attachment for	H. Murray	405,493	June 18	1609	441	47	1570
Hoisting-engine	E. D. Leavitt, Jr.	402,257	Apr. 30	2784	{721, 722}	47	566
Hoisting-machine	T. W. Lemieux	401,841	Apr. 23	2154	562	47	437
Hoisting-machines. Differential gearing for	R. Lavery	402,601	May 7	73	17	47	678
Hoisting mechanism	T. A. Weston	402,878	May 7	481	126	47	753
Hoisting mechanism. Differential	G. F. Clemons	404,958	June 11	856	{223, 224}	47	1401
Holdback	G. T. Wilson and J. D. Hough	400,811	Apr. 2	577	158	47	111
Holdback for vehicle-thills	M. E. Campany	400,435	Apr. 2	16	5	47	6
Holdback. Vehicle	M. E. Burk	403,036	May 7	703	184	47	796

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Holdback. Vehicle	R. F. Dulany	404,935	May 28	2233	585	47	1113
Holder: *See* Bag-holder. Bit-holder. Blank-holder. Book-holder. Book-leaf or paper holder. Bottle-stopper holder. Caramel-holder. Chalk-holder. Cigar-holder. Clock-movement holder. Colter-holder. Cuff-holder. Fly-paper holder. Gas-holder. Globe-holder. Hair-holder. Harrow-tooth holder. Hat-holder. Horse-tail holder. Lamp-holder. Lamp-shade holder. Lead or crayon holder. Leaf-holder. Merchandise-holder. Music-holder. Music or paper holder. Necktie-holder. Paper-holder. Paper-bag holder. Paper-roll holder. Pen-holder. Pencil-holder. Pillow-sham holder. Refrigerator ice-holder. Rein-holder. Ribbon-holder. Rule-holder. Sample-holder. Sash-holder. Shade-holder. Skein-holder. Soap-holder. Spoon-holder. Stamp-holder. Thread-holder. Ticket and stamp holder. Tooth-holder. Tug-holder. Twine-holder. Vessel-holder. Veterinary-file holder. Whip-holder.							
Hoof parer and trimmer	W. Conwell	405,080	June 11	1031	276	47	1437
Hoof-shears	J. P. Lee	401,892	Apr. 23	2229	581	47	458
Hook: *See* Button-hook. Check-hook. Checkrein-hook. Harness-hook. Ladder-hook. Lock-hook. Snap-hook. Wardrobe-hook. Whiffletree-hook. Wire hook.							
Hook	C. O. Buell	401,683	Apr. 16	1912	498	47	381
Hook	C. Smith	400,501	Apr. 2	106	29	47	25
Hook and bait safety-box	W. B. Mumford	402,270	Apr. 30	2805	726	47	576
Hoop-fastening machine	F. L. Wilson	405,517	June 18	1704	450	47	1576
Hoop. Wire barrel	E. C. Gordon	405,049	June 11	968	257	47	1424
Hoops or tires. Expanding	M. W. Dewey	402,416	Apr. 30	3030	786	47	613
Horn. Campaign	W. Sellers	403,702	May 21	1736	457	47	1011
Horse-boot	J. J. Ryan	402,109	Apr. 23	2568	666	47	515
Horse-detacher	J. J. Joter	404,090	May 28	2328	{610, 611}	47	1134
Horse-detacher	G. Kimmich	405,963	June 25	2395	628	47	1712
Horse-detacher	F. Lenhart	404,009	May 28	2187	574	47	1105
Horse-detacher	W. M. Morrison	402,097	Apr. 23	2542	{662, 663}	47	511
Horse-power	J. C. Pruet	403,371	May 14	1246	331	47	907
Horse-power	J. C. Pruet	403,372	May 14	1248	331	47	907
Horse-power	J. R. Shear	402,198	Apr. 30	2700	701	47	550
Horse-rake	C. R. G. Fell	404,969	May 28	2009	679	47	1166
Horse-tail holder	R. L. Betts	405,941	June 25	2360	618	47	1706
Horseshoe	M. Gates	405,470	June 18	1630	430	47	1562
Horseshoe	D. S. Jaffray	400,684	Apr. 2	373	101	47	74
Horseshoe	S. Thompson	400,514	Apr. 2	124	33	47	98
Horseshoe and pad	G. W. Wemple	400,531	Apr. 2	154	40	47	83
Horseshoes. Device for removing calks from	C. E. Hudson	402,673	May 7	180	46	47	698
Hose. Appliance for uniting and reparing rubber	C. J. P. Heim	404,279	May 28	2027	682	47	1169
Hose-bridge	H. M. Campbell	402,900	May 7	509	134	47	758
Hose-carrying strap	R. A. Austin	402,219	Apr. 30	2732	708	47	557
Hose-coupler	S. E. Pearce and G. W. Merrill	404,429	June 4	81	20	47	1242
Hose-coupling	P. M. Stevens	405,748	June 25	2081	546	47	1655
Hose-coupling	W. T. King	403,053	May 7	785	189	47	800
Hose-nozzles. Shut-off for	H. G. Herbert	402,223	Apr. 30	2886	748	47	585
Hot-air furnace	J. B. Long	402,278	May 14	1108	294	47	880
Hot-air furnace	A. Williams	400,886	Apr. 2	684	{186, 187}	47	131
Hot-air register	H. K. Tallmage	405,620	June 18	1855	491	47	1608
Hot-air register. Side-wall	C. S. Hood	405,092	June 11	1046	{279, 280}	47	1440
Hot-beds. Light-holder for	W. De Caux	401,137	Apr. 9	1064	285	47	210
Hotel room-register	C. H. Greculeaf	404,396	June 4	35	9	47	1239
House interiors. Finishing of	W. J. Beda	403,573	May 21	1554	{409, 410}	47	973
Hub and axle. Vehicle	J. R. Cole	401,699	Apr. 16	1923	501	47	382
Hub and axle. Vehicle	I. M. Warner	405,032	June 25	2348	616	47	1704
Hub-band	W. L. Hawes	404,257	June 11	884	176	47	1396
Hub band. Vehicle	J. Maris	403,257	May 14	1220	324	47	902
Hub. Vehicle-wheel	E. D. and S. C. Clark	405,572	June 25	2253	592	47	1688
Hub. Vehicle-wheel	W. L. Hawes	404,238	June 11	884	177	47	1396
Hub. Vehicle-wheel	J. D. Roth	403,613	May 21	1606	426	47	983
Hub. Wheel	E. C. Roberts	401,213	Apr. 9	1181	314	47	223
Hubs. Point-band for vehicle	W. L. Hawes	404,239	June 11	885	177	47	1396
Huller: *See* Rice-huller. Seed-huller.							
Hulling-cylinders. Concave for	W. R. Fee	404,037	May 28	2235	586	47	1113
Hulling or grinding machine	F. Wegmann	405,810	June 25	2158	{567, 568}	47	1670

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Hydrant	J. F. Durham	402,421	Apr. 30	3048	788	47	616
Hydrant	J. Kaiser	401,652	Apr. 16	1873	487	47	373
Hydrant	A. J. Tyler	402,115	Apr. 23	2573	668	47	517
Hydrant-casing	P. P. Bradley	403,699	May 21	1642	435	47	992
Hydraulic cylinder for controlling steam-cylinders	C. F. Elmes	404,523	June 4	243	58	47	1270
Hydraulic elevator. Self-regulating	W. E. Nickerson	404,726	June 4	516	132	47	1336
Hydraulic engine	C. E. Foster	404,528	June 4	251	60	47	1272
Hydraulic machine	J. Kennedy	402,458	Apr. 30	3104	805, 806	47	627
Hydraulic shears	J. Kennedy	402,457	Apr. 30	3101	805	47	626
Hydrocarbon apparatus	J. F. Seery	400,959	Apr. 9	804	214, 215	47	163
Hydrocarbon-burner	J. Adams	404,148	May 28	2115	633	47	1151
Hydrocarbon-burner	J. Akin	400,869	Apr. 9	697	189	47	145
Hydrocarbon-burner	J. H. Bullard	404,955	June 11	850	222	47	1400
Hydrocarbon-burner	E. W. Fellowes	401,021	Apr. 9	893	239	47	179
Hydrocarbon-burner	W. L. Fisher	401,149	Apr. 9	1088	289	47	213
Hydrocarbon-burner	A. F. Fletcher	400,905	Apr. 9	716	194	47	148
Hydrocarbon-burner	T. E. Hall	405,884	June 25	2265	595, 596	47	1691
Hydrocarbon-burner	C. L. Heverin	402,241	Apr. 30	2759	715	47	562
Hydrocarbon-burner	A. A. Phillips	403,134	May 14	863	227	47	834
Hydrocarbon-burner	A. L. Shore	404,442	June 4	99	24	47	1245
Hydrocarbon-burner	W. Snee	404,804	June 4	629	161	47	1349
Hydrocarbon-burner and combined superheater	E. Shallow	403,963	May 28	2119	554, 555	47	1092
Hydrocarbon-burner for furnaces	G. Griffith and T. L. Miller	401,431	Apr. 16	1513	401	47	308
Hydrocarbon-heater	L. W. Lombard	405,422	June 18	1546	410	47	1545
Hydrogen from alkali. Apparatus for obtaining sulphureted	A. M. and J. F. Chance	403,248	May 14	1053	278	47	870
Hydrogen sulphide from alkali waste. Obtaining	A. M. and J. F. Chance	403,249	May 14	1056	.....	47	870
Ice-creeper	F. W. Coe	405,873	June 25	2254	592	47	1688
Ice-creeper	M. Steiner	405,381	June 18	1483	393	47	1532
Ice-elevator	J. Hall	402,589	May 7	58	14	47	675
Ice-making machine	L. D. Railsback	402,968	May 7	603	159	47	778
Ice-making machines. Gas-pump for	T. L. Rankin	405,503	June 18	1684	446	47	1574
Ice or refrigerating machines. Oil-extracting and gas-saving apparatus for	F. W. Wolf	405,451	June 18	1594	420	47	1555
Ice or snow plow for railway-tracks	E. Leslie	405,039	June 11	981	261	47	1426
Ice-tool	S. K. Lovewell	402,173	Apr. 30	2669	692	47	544
Illuminating composition	T. J. Fealy	400,651	Apr. 2	316	.....	47	65
Incubator	W. Knopff	404,634	June 4	399	96, 97	47	1302
Incubators. Egg-tray for	J. W. Hile	404,041	May 28	2239	587	47	1114
Indexing books	W. M. Lester	404,294	May 28	2649	689	47	1194
Indicator: *See* Card-player's indicator. Cash-indicator. Chute-indicator. Power-indicator. Speed-indicator. Station-indicator. Thermometric indicator. Valve-indicator. Windlass-indicator.							
Induction-coil	F. H. Brown	404,822	June 11	659	170	47	1364
Induction-coil	J. F. Kelly	404,630	June 4	395	95	47	1301
Induction-coil and self-inductive apparatus	E. Thomson	400,972	Apr. 9	821	219	47	167
Induction machine. Static-	H. Glässer	401,156	Apr. 9	1101	292	47	216
Infants. Guard for	A. E. Lane	402,334	Apr. 30	2902	752	47	588
Ingot-forming apparatus	W. R. Hinsdale	402,325	Apr. 30	2888	748, 749	47	586
Ingot-mold	E. L. Clark	404,381	June 4	14	4	47	1228
Inhaler	J. E. Brunker and P. W. Maxwell	405,692	June 25	2000	524	47	1639
Inhaler	W. E. Gard	405,883	June 25	2264	595	47	1691
Inhaler	D. E. Herbet	402,593	May 7	63	15	47	676
Inhaler	J. S. Hooker	400,769	Apr. 2	494	134	47	97
Inhaler	J. Rudolfy	404,986	June 11	896	235	47	1409
Inhaler. Oxygen-	J. E. Casey and A. W. Browne	402,303	Apr. 30	2855	738	47	580
Inhaling apparatus	E. Krull	401,502	Apr. 16	1619	429	47	328
Injector	C. E. Church	405,990	June 25	2445	640	47	1721
Injector	C. E. Church	405,991	June 25	2449	641	47	1722
Injector	L. W. Lombard and W. Connor	401,753	Apr. 23	2024	529	47	413
Injector. Low-pressure	J. H. Killey	404,091	May 28	2329	611	47	1134
Injector. Steam-	J. Desmond	402,513	Apr. 30	3184	824	47	642
Injector. Steam-	J. Desmond	404,262	May 28	2598	676	47	1184
Injector. Steam-	A. Lambert	401,565	Apr. 16	1718	453	47	345
Ink-well	S. G. Baldwin	404,246	May 28	2580	672	47	1181
Ink-well	S. G. Baldwin	404,247	May 28	2581	672	47	1181
Ink-well	A. R. Sprague	405,921	June 25	2331	612	47	1701
Inkstand	J. J. Hoey	405,033	June 11	973	259	47	1425
Inkstand	G. R. G. Jones	402,837	May 7	495	119	47	743
Inkstands, &c. Self-closing cover for	I. W. Heysinger	404,539	June 4	267	64	47	1275
Inscription and motto plate	C. M. Underwood	405,809	June 25	2157	567	47	1670
Insect-powder duster	C. B. Glover	401,941	Apr. 23	2304	599	47	485
Insect-trap	C. G. Jennings	400,460	Apr. 2	49	15	47	13
Insect-trap	J. G. F. Johnson	400,572	Apr. 2	211	57	47	45
Insecticide	M. B. Church	401,928	Apr. 23	2287	.....	47	462
Insulated electrical wire	H. W. Johns, Jr.	404,913	June 11	797	204	47	1389
Insulated wire	S. Heimann	403,267	May 14	1067	287	47	876
Insulating and coating compound	A. de Figanière	401,014	Apr. 9	885	.....	47	178
Insulating cut-out joint	H. M. and R. Doubleday	402,420	Apr. 30	3046	788	47	615
Insulating device for line-wires	T. J. Smith	403,491	May 14	1433	375	47	941
Insulating pipe-coupling	F. C. Rockwell	400,600	Apr. 2	245	67	47	52
Insulating tubular iron posts	W. H. O'Beirne	403,482	May 14	1418	371	47	938
Insulator	J. C. Berrang	403,727	May 21	1776	467	47	1017
Insulator	R. P. Frist	405,546	June 18	1752	463	47	1588
Insulator	F. M. Locke and J. Lapp	402,752	May 7	299	77	47	719

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Insulator and holder for electric railways	B. Jennings	402,836	May 7	434	112	47	743
Insulator. Electric-wire	A. W. Heaviside	402,592	May 7	62	15	47	675
Invalid-lifter	J. H. Murdock	402,180	Apr. 30	2677	694	47	545
Iron: *See* Curling-iron. Sad-iron. Soldering-iron. Vehicle rub-iron. Waffle-iron. Wagon-box corner-iron. Whiffletree-iron							
Iron and steel. Manufacturing	J. Reese	401,903	Apr. 23	2247	.....	47	455
Iron chair	A. M. Gjestvang	401,522	Apr. 16	1692	448	47	342
Iron direct from its ores. Reducing	C. J. Eames	404,473	June 4	157	36	47	1254
Iron from ores. Machine for separating	G. Conkling	403,575	May 21	1556	410	47	974
Iron into malleable iron or steel. Apparatus for converting crude	J. W. Bookwalter	404,159	May 28	2430	636, 637	47	1155
Iron or steel. Determining the temper of	C. A. Caspersson	404,600	June 4	354	.....	47	1298
Iron ore. Dephosphorizing	T. F. Witherbee	400,622	Apr. 2	281	.....	47	59
Iron ore. Reducing	C. J. Eames	404,186	May 28	2472	646	47	1162
Iron ore. Reducing	C. J. Eames	404,183	May 28	2474	646	47	1162
Iron ore. Reduction of	C. J. Eames	404,181	May 28	2471	646	47	1162
Iron ore. Treating magnetic	G. Conkling	401,414	Apr. 16	1491	395	47	304
Iron ores. Apparatus for deoxidizing	M. R. Conley	404,344	May 28	2727	708	47	1206
Iron. Plant for the manufacture of wrought	G. Lindenthal	405,490	June 18	1665	439, 440	47	1570
Ironing-board	G. W. Carr	402,397	Apr. 30	3001	779	47	606
Ironing-board	A. T. Scanland	401,858	Apr. 23	2176	568	47	441
Ironing-board	J. M. Sebold	400,799	Apr. 2	555	152	47	106
Ironing device	C. Hayes	403,045	May 7	714	187	47	799
Ironing-machine	G. Heidel	400,678	Apr. 2	363	99	47	73
Ironing-table	W. L. Carr	405,144	June 11	1118	297	47	1452
Ironing-table	J. A. Kimball	401,786	Apr. 23	2071	541	47	423
Jack: *See* Boot-jack. Carriage-jack. Flooring-jack. Lifting-jack. Pegging-jack. Thill-jack. Wagon-jack.							
Jar	E. C. Napheys	405,902	June 25	2299	605	47	1697
Jar clamp, Fruit-	W. W. Lyman	403,035	May 7	727	190	47	801
Jar cover. Fruit-	G. Stalb	404,069	May 28	2290	597	47	1194
Jar fastening. Preserve-	G. Simkins	403,358	Apr. 30	2942	769	47	595
Jetty	W. M. Douglas	401,695	Apr. 16	1920	504	47	384
Jeweler's stock. Cutting-of machine for	F. L. Lewis	403,171	Apr. 30	2967	692	47	544
Jewelry. Ornamental ring for	G. H. Knight	404,082	May 28	2333	611	47	1135
Jewelry. Ornamental ring for	G. H. Knight	404,083	May 28	2334	612	47	1135
Jewelry. Ornamental ring for	G. H. Knight	404,084	May 28	2334	612	47	1135
Jewelry. Plating stock for	J. S. Palmer	401,900	Apr. 23	2240	583	47	454
Joint: *See* Carriage-body joint. Chair-joint. Furnace-joint. Insulating cut-out joint. Pipe-joint. Rail-joint. Railway-joint. Railway-rail joint. Show-case joint. Strap-joint.							
Joint-fastenings. Machine for making	C. T. Remus	400,792	Apr. 2	543	149, 150	47	104
Journal-bearing	W. E. Elliott	402,009	Apr. 23	2404	627	47	485
Journal-bearing. Anti-friction	H. M. Johnson	402,599	May 7	71	17	47	677
Journal-bearing for vehicle-wheels	C. Taylor	402,296	Apr. 30	2827	732	47	574
Journal-box	J. Curtin	403,992	May 28	2163	568, 569	47	1100
Journal-box. Anti-friction	R. W. Moffett	403,058	May 7	731	190	47	801
Journal-box. Anti-friction	W. S. Sharpneck	402,987	May 7	629	166	47	782
Journal-box. Anti-friction	W. S. Sharpneck	402,988	May 7	629	166	47	782
Jug-tops. Manufacture of collars for	A. W. Paull	403,005	May 21	1594	422	47	961
Jump-seat. Vehicle	G. H. Hutton	405,857	June 18	1767	466	47	1591
Key: *See* Pulley-key. Time-piece key.							
Key	C. W. Taylor	405,621	June 18	1856	491	47	1606
Key-blanks. Manufacture of	C. M. Burgess	401,247	Apr. 9	1239	330	47	249
Key-board. Transposing	S. Tanaka	403,306	May 14	1146	304	47	888
Key-receptacle	T. B. Jeffery	405,643	June 25	2205	581	47	1579
Key-seats. Machine for cutting	T. W. Broomell	404,679	June 4	457	115	47	1314
Kiln: *See* Annealing-kiln. Brick-kiln.							
Kitchen-cabinet	L. Houston	403,590	May 21	1576	416	47	977
Kitchen-cabinet	H. S. Wolfe	402,707	May 7	226	59	47	706
Kitchen-cabinet and flour-chest	J. W. Stone and A. Colman	402,113	Apr. 23	2572	667	47	516
Kitchen-safe. Vertically-movable	J. C. Wright	403,170	May 14	916	241	47	844
Kitchen table and dresser	C. W. E. Ripley	403,139	May 14	873	230	47	836
Knife: *See* Pocket-knife. Pruning-knife. Shear-knife. Surgeon's knife.							
Knife for printer's use	L. J. Dus	401,421	Apr. 16	1498	398	47	306
Knitted shirt	R. W. Scott	404,249	May 28	2555	666	47	1176
Knitting machine. Circular-	H. Curtin	402,906	May 7	516	136	47	760
Knitting machine. Circular-	W. H. Pepper and A. T. L. Davis	401,791	Apr. 23	2087	544, 545	47	424
Knitting machine. Circular-	W. H. Pepper and A. T. L. Davis	404,930	June 11	817	210	47	1393
Knitting machine. Circular-	C. F. Swain	400,510	Apr. 2	118	32	47	27
Knitting machine. Circular rib-	H. P. Ballou	402,793	May 7	362	94, 95	47	731
Knitting-machine stopping mechanism	H. Curtin	402,905	May 7	513	136	47	759
Knitting machine. Straight-	R. W. Scott and L. N. D. Williams	404,230	May 28	2556	666	47	1177
Knitting machine. Straight-	F. Wilcomb	405,636	June 18	1885	498	47	1613
Knitting machine. Straight-	F. Wilcomb	405,637	June 18	1887	499	47	1613

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Knitting machine. Straight	F. Wilcomb	405,638	June 18	1889	499, 500, 501, 502	47	1614
Knitting machine. Straight	F. Wilcomb	405,639	June 18	1908	503	47	1617
Knitting machine. Straight	F. Wilcomb	405,640	June 18	1911	503, 504	47	1617
Knitting machines. Sinker-bar for straight	F. E. Busiel	403,985	May 28	2150	561	47	1098
Knitting machines. Striping attachment for circular	J. A. Parr	402,854	May 7	444	117, 118	47	746
Knob attachment	S. Schmaus	403,222	May 14	1014	268	47	863
Knob attachment	S. Schmaus	403,223	May 14	1015	269	47	863
Knob. Glass	E. A. Foy	403,340	May 14	1199	318	47	898
Knockdown case for eggs, &c	W. M. Baker	401,873	Apr. 22	2199	575	47	446
Labeling and pasting apparatus	E. H. Faulkner	405,466	June 18	1619	427	47	1560
Labeling machine. Can	W. Lee	401,039	Apr. 9	920	246	47	184
Lace fastener. Shoe	I. B. Stofiel and C. R. Cuthbert	402,546	Apr. 30	3232	838	47	651
Lace-pin fastening	M. E. Oppenheimer	401,053	Apr. 9	942	251	47	189
Lactometer	A. L. Rousse	404,985	June 11	895	234	47	1409
Ladder. Fire	L. Harris	401,433	Apr. 16	1516	402	47	309
Ladder. Fire-truck	C. Albert	401,623	Apr. 16	1833	469, 470	47	367
Ladder. Folding	F. W. Lowe and C. F. Sullivan	400,778	Apr. 2	514	141	47	100
Ladder-hook	J. B. Foote	401,742	Apr. 23	2010	528	47	410
Ladder. Portable extension	W. S. Odle	405,969	June 25	2408	630, 631	47	1714
Ladder. Step	J. A. Neill	403,602	May 21	1500	421	47	980
Ladder. Step	C. R. Williams	402,215	Apr. 30	2727	707	47	556
Ladders. Adjustable attachment and extension for fire	J. W. Tully	404,511	June 4	220	58	47	1265
Lamp	R. T. Barton	405,940	June 25	2358	618	47	1706
Lamp	A. O. Brunne	404,162	May 28	2435	650	47	1156
Lamp	C. H. Grube	403,669	May 21	1668	443	47	997
Lamp	H. W. Hayden	405,039	June 11	973	253	47	1425
Lamp	D. W. Parker	401,583	Apr. 16	1746	461	47	351
Lamp	L. H. Thomas	403,400	May 14	1303	341	47	917
Lamp and toilet-case. Combined	F. Maehr	404,421	June 4	67	17, 18	47	1228
Lamp. Arc	L. C. Atwood	404,244	May 28	2575	671	47	1160
Lamp. Arc	D. Houghton	403,671	May 21	1686	447	47	1000
Lamp. Arc	G. M. Lane	400,692	Apr. 2	382	100	47	75
Lamp. Arc	W. L. Silvey	403,964	May 28	2122	553	47	1093
Lamp. Argand	L. J. Atwood	400,619	Apr. 2	589	161	47	112
Lamp-black machine	E. R. Blood and S. P. Wenstran	403,174	May 14	923	243	47	845
Lamp-bracket. Piano	W. A. Smith	404,570	June 4	308	72	47	1263
Lamp bulbs. Exhausting electric	J. W. Packard	401,560	Apr. 16	1742	460	47	350
Lamp-burner. Argand	P. J. Fonlon	404,474	June 4	158	37	47	1254
Lamp. Carbureting	L. Doms	405,860	June 25	2261	594	47	1690
Lamp. Central-draft	J. C. Miller	403,762	May 21	1837	483	47	1029
Lamp. Electric-arc	L. C. Atwood	404,245	May 28	2578	672, 673	47	1160
Lamp. Electric-arc	J. R. Fox	404,351	May 28	2739	711	47	1210
Lamp. Electric-arc	C. B. Noble. (Reissue)	11,002	May 7	781	207	47	810
Lamp. Electric-arc	S. E. Nutting	400,476	Apr. 2	73	21	47	17
Lamp. Electric-arc	H. Pieper, Fils	405,906	June 25	2306	606	47	1697
Lamp. Electric-arc	E. A. Sperry	405,440	June 18	1576	416, 417	47	1551
Lamp-extinguisher	A. H. Bixler	405,764	June 25	2101	551	47	1659
Lamp-extinguisher	C. M. Brown	400,743	Apr. 2	459	120	47	90
Lamp-extinguisher	A. E. McLeod	400,584	Apr. 2	294	61	47	47
Lamp-extinguisher	C. E. Postlethwaite	400,789	Apr. 2	537	147, 148	47	103
Lamp-extinguisher	O. Reichels	404,055	May 28	2271	594	47	1121
Lamp-extinguisher	B. D. Stevens	403,896	May 21	2022	533	47	1065
Lamp extinguisher. Automatic and instantaneous gas	J. S. Edge and F. W. Ticehurst	403,654	May 21	1660	440, 441	47	995
Lamp filaments. Manufacture of incandescent	T. D. Bottome	401,120	Apr. 9	1039	----	47	205
Lamp. Gas	T. C. J. Thomas	402,204	Apr. 30	2713	706	47	553
Lamp-holder	L. J. Atwood and F. W. Tobey	405,388	June 18	1493	396	47	1534
Lamp-holder for vehicles	C. L. Ellicott	401,422	Apr. 16	1499	398	47	306
Lamp holder or frame	S. Clarke	403,327	May 14	1184	314	47	895
Lamp-holder. Piano	L. Pray	401,064	Apr. 9	955	254	47	191
Lamp. Hydrocarbon	S. Siemang	403,151	May 14	888	234	47	838
Lamp. Incandescent	C. A. Backstrom	404,816	June 11	646	168	47	1362
Lamp. Incandescent	H. Lemp and M. J. Wightman	401,444	Apr. 16	1532	405	47	312
Lamp. Incandescent	J. Stewart	403,397	May 14	1300	340	47	916
Lamp. Incandescing electric	T. A. Edison	401,646	Apr. 16	1868	485	47	372
Lamp. Oil	F. J. Allison	405,065	June 11	1015	271	47	1434
Lamp. Safety	J. Davidson and J. Taylor	405,878	June 25	2259	593	47	1690
Lamp-shade	H. Hohenstein	404,540	June 4	272	64	47	1276
Lamp-shade holder	J. Klutz	400,854	Apr. 2	640	174	47	122
Lamp-shade holder	B. G. Krapf	404,208	May 28	2502	655	47	1168
Lamp shade or reflector and guard. Combined	C. A. Cooley	401,416	Apr. 16	1493	396	47	305
Lamp-shade support	J. Klutz	400,855	Apr. 2	641	174	47	121
Lamp socket. Incandescent	F. C. Rockwell	402,481	Apr. 30	3141	813	47	633
Lamp-standard	W. C. Homan	403,841	May 21	1948	511	47	1051
Lamp. Student	A. Kiecmann	405,740	June 25	2089	542	47	1652
Lamp. Suspension	J. Klutz	400,856	Apr. 2	641	174	47	123
Lamp-suspension device	W. E. Hammond and J. G. Merriam	401,557	Apr. 16	1706	450	47	343
Lamp-wick tube	T. Langston	404,848	June 11	698	180	47	1370
Lamp with annular burner. Oil	A. Cautius	401,543	Apr. 16	1689	445	47	340
Lamps. Apparatus for the manufacture of filaments for incandescent	H. S. Maxim	405,239	June 11	1275	336	47	1484
Lamps. Attachment and oil-filler for	J. G. Seltzer	401,075	Apr. 9	969	258	47	198
Lamps. Automatic cut-out for electric	E. R. Knowles	403,941	May 28	2089	548	47	1066

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Lamps. Cut-out for incandescent electric	E. R. Whitney	401,527	Apr. 16	1657	438	47	335
Lamps. Device for supporting electric	A. T. Moore, Jr., and H. A. Fitch	400,473	Apr. 2	69	20	47	17
Lamps, &c. Extension-fixture for	L. F. Griswold	401,347	Apr. 16	1387	367, 368	47	285
Lamps. Filament for incandescent electric	T. D. Bottom	404,463	June 4	138	----	47	1251
Lamps. Heating attachment for	J. W. Zinn	401,475	Apr. 16	1584	419	47	322
Lamps. Lens-fastening for	J. S. Gall	400,763	Apr. 2	488	130	47	95
Lamps. Manufacture of filaments for electric	H. S. Maxim	405,170	June 11	1168	311	47	1402
Lamps or lanterns. Globe or shade for	P. R. D. D'Humy	401,934	Apr. 23	2296	596	47	464
Lamps. Sheath for regulating light from electric	W. H. Melaney	405,427	June 18	1553	411	47	1496
Lamps. Wick-raiser for	G. W. Woodward	400,016	June 25	2498	636	47	1720
Lantern	F. Barbig	402,794	May 7	365	95	47	731
Lantern	H. A. Matthews and D. M. Ireland	405,106	June 11	1066	284	47	1443
Lantern. Electric	C. W. Cox and T. E. Van Dyke	401,417	Apr. 16	1494	396	47	305
Lantern-frame	I. Van Hagen	405,628	June 18	1675	496	47	1611
Lantern. Portable electric	W. Frishmuth	404,696	June 4	422	122	47	1319
Lantern. Tubular	L. F. Betts	401,116	Apr. 9	1034	270	47	204
Lantern. Tubular	E. C. Glazier	401,490	Apr. 16	1603	423	47	325
Lantern. Tubular	R. Hermance	404,538	June 4	366	64	47	1275
Lap-ring	W. H. Baker	402,384	Apr. 30	2876	772	47	602
Laps. Machinery for making	W. H. Palmer, Jr	404,106	May 28	2358	617	47	1136
Last	E. W. Arnold and G. W. Osgood	403,982	May 28	2146	561	47	1097
Last	A. K. Chase	405,911	June 11	934	248	47	1417
Last	J. Condell	405,346	June 18	1436	379, 380	47	1523
Last	J. Reeson	400,946	Apr. 9	785	209	47	159
Last	E. W. Stead	400,876	Apr. 2	669	182	47	128
Last and stand	J. K. Dugdale and C. E. Mastin	403,927	May 28	2071	544	47	1063
Last-block fastener	W. Cook	402,500	Apr. 30	3179	823	47	641
Lasting-machine	J. W. Millet	402,959	May 7	583	156	47	776
Lasting-machine	J. Patten	403,067	May 7	741	193, 194, 195, 196, 197, 198	47	869
Latch	J. A. Baldwin	403,173	May 14	922	242	47	845
Latch	O. A. Jenison	401,189	Apr. 9	1120	296, 297	47	290
Latch	F. L. Pierce	403,554	May 21	1529	401	47	988
Latch	J. R. Scott	404,231	May 28	2557	667	47	1177
Latch	B. L. Wright	400,814	Apr. 2	560	159	47	111
Latch and lock combined	J. Austin	405,241	June 18	1263	340	47	1491
Latch and lock combined	J. A. Campbell	401,540	Apr. 16	1682	443	47	339
Latch and lock combined	W. W. and F. P. Pursel	405,050	June 11	996	265	47	1430
Latch-case	C. M. Burgess	404,892	June 11	763	195	47	1382
Latch for sliding doors	W. H. Thomas	402,493	Apr. 30	3156	817	47	636
Latch. Gate	P. Dyer	404,391	June 4	26	6	47	1230
Latch. Gate	M. F. Hill	404,971	June 11	881	229	47	1406
Latch. Gate	G. C. Loar	404,974	June 11	885	231	47	1407
Lath-sawing machine	D. S. Abbott	400,981	Apr. 9	854	229	47	172
Lathing	L. L. Sagendorph	404,227	May 28	2553	665, 666	47	1176
Lathing	L. S. Scott	405,718	June 25	2036	534	47	1646
Lathing. Machine for forming sheet-metal	J. Weichhart	401,522	Apr. 16	1650	435, 436	47	333
Lathing. Machine for forming sheet-metal	J. Weichhart	401,523	Apr. 16	1652	436	47	334
Lathing. Machine for making metallic	G. Hayes	402,940	Apr. 30	2757	714, 715	47	561
Lathing. Metallic	L. Kinney	400,774	Apr. 2	502	136	47	96
Lathe	G. E. Mertz	402,958	May 7	591	156	47	775
Lathe-dog	T. C. Smith	405,853	June 25	2221	584	47	1663
Lathe for turning non-circular forms	J. W. Maloy	403,120	May 14	843	223, 224	47	830
Lathe. Metal-turning	J. R. Back	400,820	Apr. 2	591	161	47	113
Lathe. Turning	R. F. Darling	400,550	Apr. 2	180	49	47	38
Lathe-turret	C. I. King	401,564	Apr. 16	1717	453	47	345
Lathe. Turret	G. T. Reiss	406,008	June 25	2469	646	47	1724
Lawn-rake	J. B. Detweiler	401,822	Apr. 23	2133	557	47	439
Lawn-tennis net	F. W. Taylor	401,062	Apr. 9	978	261	47	195
Lead. Apparatus for the electrolysis of	C. O. Yale	405,452	June 18	1580	421	47	1555
Lead. Apparatus for the manufacture of white	A. C. and S. R. Bradley	404,253	May 28	2567	674	47	1182
Lead. Making white	J. Baldwin	401,533	Apr. 16	1672	441	47	337
Lead or crayon holder	M. Bailey	405,541	June 18	1711	452	47	1580
Leaf-holder. Adjustable	C. Barbour	405,942	June 18	1284	340	47	1491
Leather. Compound for restoring the color of brown	E. Frid	402,731	May 7	257	----	47	713
Leather-cutting tool	H. W. Winter	402,375	Apr. 30	2963	768	47	600
Leather-dressing machine	G. W. Baker	405,653	June 18	1933	508, 509	47	1021
Leather-splitting machine	E. M. Dunphe and C. Blockhous	405,607	June 25	2005	526	47	1640
Leather-splitting machine	H. C. Pease	403,496	May 14	1494	373	47	989
Leather-splitting machine	F. F. Stanley. (Reissue)	11,008	June 18	1982	519	47	1630
Leather-stretching machine	C. L. Royer	402,940	May 7	455	119, 120	47	748
Leather-thong cutter	P. Wilder	403,805	May 21	1894	497	47	1041
Ledger or similar account-book	J. W. Horne	401,497	Apr. 16	1613	426, 427	47	327
Leg. Artificial	C. A. Frees	401,436	Apr. 16	1506	399	47	307
Leg. Artificial	B. F. Rounds	403,142	May 14	876	231	47	836
Lens. Aplanatic	H. L. H. Schröder	404,506	June 4	210	50	47	1264
Letter-box	W. D. Doremus	404,898	June 11	666	173	47	1365
Letter-box	J. T. Lamman	404,293	May 28	2648	688	47	1194
Letter-box	J. E. Morris	402,535	Apr. 30	3217	834	47	648

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Letter-box	W. A. Paulsen	402,855	May 7	449	118	47	747
Letter-box	E. A. Sharp	402,623	May 7	104	25	47	684
Letter-box	F. T. Taylor	403,790	May 21	1870	492	47	1026
Letter-box alarm	F. Snyder	402,382	Apr. 30	2232	730	47	573
Level, &c. Brick-layer's plumb-	J. Smith	402,360	Apr. 30	2243	763	47	596
Level. Spirit-	E. Lewis and F. Armstrong	401,843	Apr. 23	2157	563	47	438
Levels. Sighting attachment for	J. A. Traut	402,869	May 7	471	123	47	751
Levels. Sighting attachment for spirit-	J. A. Traut	405,624	June 18	1860	492	47	1609
Lever. Brake-	G. W. Barnes	403,963	May 28	2147	561	47	1097
Levers. Foot for sand-	C. Vezie	401,611	Apr. 16	1811	474	47	363
Library books. Apparatus for automatically changing circulating-	J. Mehlhardt	405,968	June 18	1323	349	47	1499
Lid for receptacles	C. W. Elliott	400,901	Apr. 9	712	183	47	147
Life-line carrier. Floating	A. D. Newell	403,207	May 14	988	261	47	858
Lifter:							
See Invalid-lifter. Plate-lifter. Track-lifter. Transom-lifter. Wick-lifter.							
Lifting device	C. Ellis and E. E. Benigar	403,594	May 21	1488	391	47	960
Lifting-jack	J. A. Boice	401,119	Apr. 9	1036	277	47	205
Lifting-jack	H. H. Clever	403,141	Apr. 30	2621	678	47	534
Lifting-jack	L. J. Crecelius	403,407	Apr. 30	3013	782	47	609
Lifting-jack	W. H. Holmes	403,181	Apr. 30	2656	687	47	541
Lifting-jack	W. M. Piper	401,368	Apr. 16	1430	375	47	291
Lifting-jack	G. H. Shaffer and J. Bairstow	404,800	June 4	624	160	47	1348
Lifting-jack	A. J. Souders	401,865	Apr. 23	2184	570	47	443
Lifting-jack	A. A. Strom	401,722	Apr. 16	1973	516	47	392
Ligatures. Flexible receptacle for	R. W. Johnson	404,843	June 11	690	178	47	1369
Light:							
See Submarine search-light.							
Light-fixture. Extension	G. W. Bayley	401,925	Apr. 23	2285	592	47	461
Lighting. Combined track and train	H. W. Leonard	405,895	June 25	2981	599; 600	47	1693
Lighting device	I. M. Rose	402,617	May 7	96	23	47	682
Lighting system. Electric-	H. W. Leonard	405,896	June 25	2284	600	47	1694
Lightning-arrester	R. Belfield	404,154	May 28	2424	634	47	1153
Lightning-arrester	M. D. Law	400,463	Apr. 2	52	16	47	14
Lightning-arrester	E. Thomson	401,085	Apr. 9	982	262	47	196
Lightning-conductor for wire fences	F. E. Wood	401,095	Apr. 9	1002	267; 268	47	199
Lightning-rod and coupling	S. R. Lawshe	400,464	Apr. 2	54	16	47	14
Linear transformers. System of	E. E. Rice	402,971	May 7	606	159	47	778
Liniment	J. A. Achard	400,992	Apr. 9	855	.....	47	173
Liniment	M. F. Martin	403,121	May 14	845	.....	47	830
Link. Self-acting unlocking	W. F. Fisher	404,903	June 11	780	199	47	1385
Liquid-distributer	F. W. Kendall	402,841	May 7	430	113; 114	47	744
Liquid-fuel burner	W. E. Eastman	405,881	June 25	2992	594; 595	47	1690
Liquid-fuel burner	W. Vogel	406,013	June 25	2487	650; 651	47	1728
Liquid-separator. Centrifugal	P. M. Sharples	402,624	May 7	104	25	47	684
Liquid transporting and measuring vessel	H. P. and S. L. Barnhart	404,619	June 11	655	169	47	1363
Liquids. Apparatus for delivering	S. Jenkins	401,704	Apr. 16	1941	506	47	385
Liquids. Apparatus for dispensing	J. C. Mayrhofer	405,846	June 25	2210	582	47	1680
Liquids. Device for agitating	R. S. Williams	401,724	Apr. 16	1976	517	47	393
Liquids under pressure. Reservoir for holding	W. H. Thayer	401,960	Apr. 23	2357	613	47	476
Liquors. Apparatus for purifying and aging	S. G. Cabell	404,682	June 4	461	116	47	1315
Lithographic and sincographic presses. Damping apparatus for	A. Genet	401,025	Apr. 9	900	241	47	181
Loading and hoisting bucket	W. S. Bogle	402,134	Apr. 30	2610	676	47	533
Lock:							
See Alarm-lock. Bag-lock. Coin-operated lock. Combination-lock. Door-lock. Fire-arm lock Hasp-lock. Nut-lock. Registering-lock. Seal-lock. Stove-pipe lock. Switch-lock. Time-lock. Trunk-lock. Vehicle-seat lock.							
Lock	A. S. Boice	404,516	June 4	226	54	47	1267
Lock	H. C. Frost	404,080	May 28	2313	606	47	1131
Lock	S. C. Harlan	404,835	June 11	682	176	47	1368
Lock	T. B. Jeffery	405,842	June 25	2204	580	47	1679
Lock	F. Krupp	400,858	Apr. 2	643	175	47	124
Lock	F. W. Mix	404,048	May 28	2255	591	47	1118
Lock	W. H. Taylor	403,705	May 21	1740	458	47	1011
Lock	W. H. Taylor	403,706	May 21	1742	458	47	1011
Lock	W. H. Taylor	405,057	June 11	1003	268	47	1432
Lock	W. H. Taylor	405,131	June 11	1098	292; 293	47	1450
Lock-case	E. C. Smith	405,329	June 18	1410	371	47	1518
Lock-hook	C. T. Brown	404,160	May 28	2430	637	47	1155
Lock-hook	C. T. Brown	404,161	May 28	2433	637	47	1155
Locks. Making	E. C. Smith	402,627	May 7	108	26, 27	47	685
Locomotive. Air and gas	A. Schmid, R. Siegfried, and J. C. Beckfeld.	400,218	Apr. 9	1190	318	47	234
Locomotive-brake	L. P. Lawrence	403,277	May 14	1107	293; 294	47	880
Locomotive-cab seat	G. W. Stone, Jr	404,662	June 4	434	109	47	1309
Locomotive-driver brake	G. A. Boyden	403,871	May 21	1964	521	47	1057
Locomotive-driver brake	G. A. Boyden	404,339	May 28	2721	706	47	1207
Locomotive. Electric	C. J. Van Depoele	403,011	May 7	661	174; 175	47	788

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Locomotive-engine. Compound	R. H. Lapage	405,570	June 18	1784	472; 473	47	1595
Locomotive-engine. Compound	S. M. Vauclain	406,011	June 25	2484	649	47	1727
Locomotive or other engine	J. Lewis	405,104	June 11	1058	283	47	1442
Locomotives. Driving-gear for	A. Haubrouck	402,922	Apr. 30	2884	748	47	585
Locomotives. Push-bar for	M. D. Toohey	400,518	Apr. 2	136	35	47	99
Log-loading machine	G. W. Pratt and J. P. Hanson	400,790	Apr. 2	539	148; 149	47	103
Log-puller	M. Hargus	403,830	May 21	1943	510	47	1050
Logs and timber. Device for handling	W. Baptist	400,728	Apr. 2	439	118	47	87
Loom	J. Jagger	403,194	May 14	964	253; 254	47	854
Loom	H. Wyman	402,122	Apr. 23	2589	670; 671	47	560
Loom attachment for weaving center selvages	F. Lacey	403,198	May 14	971	255; 256	47	855
Loom jacquard mechanism	E. Crossley and H. N. Mellor	402,309	Apr. 30	2962	740; 741	47	582
Loom. Lappet-	G. H. Hodges and T. Lonergan	400,915	Apr. 9	730	198	47	150
Loom lease-rod	C. H. Hobbs and T. P. Whelan	401,351	Apr. 16	1394	360	47	287
Loom. Narrow-ware	A. Morace	403,769	May 21	1830	483	47	1029
Loom-picker	P. H. Connor	405,947	June 25	2376	622	47	1706
Loom-picker	E. S. Grinnell	404,478	June 4	164	38	47	1253
Loom picking mechanism	J. and E. Horrocks	402,452	Apr. 30	3005	803	47	695
Loom positive shuttle-motion	C. B. Rumsey	404,987	June 11	898	235; 236	47	1410
Loom positive shuttle-motion	F. Schmirk	402,354	Apr. 30	2936	761	47	594
Loom shedding mechanism	C. Hahle, C. E. Liebreich, and T. Hanson.	401,947	Apr. 23	2313	601; 602	47	467
Loom shedding mechanism	W. Wattie	403,089	May 7	777	205	47	809
Loom-shuttle	F. K. Wright	403,979	May 28	2142	560	47	1097
Loom-shuttle binder	S. J. Noiseux	404,640	June 4	417	103	47	1305
Loom shuttle-box mechanism	J. Mathieson	404,640	June 4	405	99	47	1309
Loom shuttle-box mechanism	H. Wyman	405,645	June 18	1919	505; 506	47	1619
Loom shuttle-box-operating lever	J. A. Evans	405,022	June 11	952	254	47	1460
Loom-shuttle check	N. Boisvert	405,960	June 25	2427	635	47	1716
Loom-shuttle checking and relieving mechanism	E. M. Ball	405,069	June 11	1040	278	47	1436
Loom-shuttle checking and relieving mechanism	O. A. Sawyer and M. M. Lahue	405,913	June 25	2318	609	47	1699
Loom shuttle-motion	J. L. Brook	400,742	Apr. 2	458	122	47	90
Loom shuttle-relief mechanism	J. and E. Horrocks	402,453	Apr. 30	3006	803; 804	47	695
Loom-shuttle. Self-threading	E. A Scholfield	405,746	June 25	2079	545	47	1654
Loom-shuttles. Tension-regulating device for	M. Mercier	405,673	June 18	1903	515	47	1606
Loom stop mechanism	G. Crompton and H. Wyman	402,001	Apr. 23	2389	621; 622	47	482
Loom stop mechanism	E. Herzig	404,407	June 4	48	13	47	1234
Loom stop-motion	A. J. Pirotte	403,767	May 7	320	83	47	723
Loom take-up mechanism	D. Cunningham	405,859	June 25	2163	575	47	1675
Loom-temple	N. I. Allen	405,267	June 18	1402	395	47	1534
Loom-temple	J. Barnes	403,038	May 7	692	161	47	794
Looms for weaving fabrics having end borders. Shuttle-box-pattern mechanism for	F. Hebden	401,709	Apr. 16	1938	505	47	385
Looms. Operating mechanism for the cloth-beams of	C. Strasmann	400,879	Apr. 2	672	184	47	129
Looms. Picker-staff connection for	J. McGinnis	405,495	June 18	1671	442	47	1571
Looms. Pile-cutting apparatus for double-pile fabric.	J. Oswald	405,114	June 11	1076	286	47	1445
Looms. Selvage-shedding device for hand-	H. S. McKean	400,583	Apr. 2	232	60	47	47
Looms. Tug-strap holder for	T. Kendray	405,418	June 18	1535	406	47	1543
Loop-tie for decorative scarfs or similar articles	J. Müller	401,051	Apr. 9	968	250	47	188
Low-pressure engine	H. Haab	404,905	June 11	783	200	47	1386
Lubricants. Feeding	A. Schmid and R. Siegfried	403,146	May 14	881	228	47	837
Lubricating device	J. B. Glover	403,657	May 21	1665	442	47	996
Lubricator:							
See Axle-lubricator. Cylinder-lubricator. Pulley-lubricator. Sight-feed lubricator.							
Lubricator	W. H. Cooper	402,404	Apr. 30	3009	781	47	606
Lubricator	E. G. Felthousen	403,543	June 18	1748	488	47	1588
Lubricator	L. M. Fleischmann	400,761	Apr. 2	480	120	47	94
Lubricator	J. Gracey and G. W. Keech	405,925	June 25	2456	640	47	1723
Lubricator	T. J. Hart	405,985	June 25	2227	586	47	1691
Lubricator	J. Powell	403,695	May 21	1736	455	47	1006
Luggage-carrier	C. H. Smith	402,991	May 7	633	168	47	783
Lumber. Machine for grooving	J. T. Grzybowski	402,521	Apr. 30	3199	833; 839	47	644
Lumber-piles. Device for launching	H. Rich	401,370	Apr. 16	1423	376	47	302
Lumber. Preserving	T. H. Sampson	403,144	May 14	877	231; 232	47	837
Lumber-trimmer	W. Dunbar	404,267	May 28	2606	678	47	1185
Magnet and armature. Electro-	F. W. Cole	403,517	May 21	1480	388	47	958
Magnet for dynamos. Field-	S. S. Wheeler	403,018	May 7	673	177; 178	47	790
Magnetic separator	G. Conkling	400,766	Apr. 2	463	123; 124	47	91
Magnetic separator	G. Conkling	400,767	Apr. 2	463	124	47	91
Magnetic separator	G. Conkling	401,415	Apr. 16	1492	395	47	304
Magnetic separator	O. Conkling	402,904	May 7	512	135	47	750
Magnetic separator	G. Conkling	403,576	May 21	1556	411	47	974
Magnetic separator	H. S. Maxim	402,684	May 7	194	49	47	709
Mail-bag	H. L. Boyle	403,672	May 21	1966	521	47	1058
Mail-pouch	C. W. Miller	401,196	Apr. 9	1161	309	47	229
Malt. Manufacturing dextrine corn-	E. M. Louis	405,573	June 18	1789	.....	47	1596
Malting grain. Apparatus for	P. G. Toepfer	400,607	Apr. 2	568	156	47	109

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Mandrel. Expansible	F. J. Gay	403,529	May 21	1502	394	47	963
Mandrel. Expansible	P. H. Griffin	404,477	June 4	163	38	47	1255
Mandrels, keys, &c. Machine for driving	J. Richards and J. Walker	401,968	Apr. 23	2342	606	47	473
Manure-distributer	J. A. Tigner	401,768	Apr. 23	2043	534	47	417
Map	H. B. De Beaumont	400,642	Apr. 2	304	85	47	63
Map-case	G. B. Heckel and G. James	405,666	June 18	1954	513	47	1625
Map-exhibitor	W. A. Taylor	404,805	June 4	631	162	47	1249
Marine battery. Revolving	L. Durand	400,636	Apr. 2	612	166	47	117
Marker. Land	W. H. Boggs	401,679	Apr. 16	1906	497	47	380
Mash-machine	R. Garich	404,532	June 4	257	61	47	1273
Mason's float	I. N. Conrad and A. W. Pounder	405,396	June 18	1505	399	47	1557
Mat: *See* Door-mat. Metallic mat.							
Match	F. Leiss	401,443	Apr. 16	1531	405	47	312
Match-safe	J. K. Robinson	400,428	Apr. 2	88	24	47	20
Matching-machine	B. G. Luther	403,201	May 14	977	258	47	856
Matrices. Producing	F. M. F. Cazin	402,720	May 7	245	65	47	710
Mattress, pillow, &c. Spring	A. J. Lytle	401,287	Apr. 9	1200	344	47	253
Mattress. Water-proof air	B. F. Snavely	402,992	May 7	634	168	47	783
Mattress. Woven-wire	R. Preuss	401,301	Apr. 9	1317	350	47	250
Measure. Liquid	D. Bothwell	405,075	June 11	1027	274	47	1436
Measure-scale	W. Cook	405,464	June 18	1617	426	47	1559
Measurement apparatus. Electrical	A. C. White	401,617	Apr. 16	1821	476	47	365
Measuring apparatus. Fluid	W. H. Forbes and J. Gibson	403,333	May 28	2077	545	47	1064
Measuring device and cutting-guide. Garment	E. Stearns	405,614	June 18	1846	499	47	1607
Measuring-instrument. Electrical	E. Weston	403,311	May 14	1159	307	47	889
Measuring machine. Foot	E. B., 2d, and E. B. Stimpson, 1st	404,994	June 11	909	240 241	47	1411
Measuring-siphon	J. M. Clark	401,413	Apr. 16	1490	395	47	304
Measuring-stick. Extensible	C. M. Mumford	401,292	Apr. 9	1305	346	47	256
Measuring the height of human bodies automatically. Machine for	W. F. Stanley	404,317	May 28	2685	696 697 698	47	1200
Measuring-vessel	T. S. Cockcroft	404,603	June 4	358	86	47	1293
Meat-chopping machine	F. Bloomqvist	400,999	Apr. 9	865	232	47	175
Meat-cutting machine	H. Albrecht	403,022	May 7	678	179	47	791
Meat-cutting machine	H. Koepp	403,846	May 21	1954	513	47	1052
Meat-rack	C. A. Gloekler	403,996	May 28	2170	570	47	1101
Meats. Curing and preserving	G. Holgate	402,736	May 7	274	70	47	715
Mechanical and electro-magnetic motor. Combined	C. A. Randall	401,207	Apr. 9	1175	312 313	47	231
Mechanical movement	J. H. Baker	405,756	June 25	2093	549	47	1657
Mechanical movement	D. W. Dodson	402,234	Apr. 30	2750	713	47	560
Mechanical movement	J. L. Follett	402,430	Apr. 30	3067	793	47	619
Mechanical movement	J. Hunt	402,018	Apr. 23	3420	631	47	487
Mechanical movement	W. L. Judson	402,674	May 7	181	46	47	696
Mechanical movement	F. H. Richards	401,371	Apr. 16	1424	376 377	47	292
Mechanical movement	F. H. Richards	401,904	Apr. 23	2349	585 586	47	455
Mechanical movement	F. H. Richards	403,217	May 14	1005	266	47	681
Mechanical movement	F. H. Richards	403,288	May 14	1120	297	47	883
Mechanical movement	F. H. Richards	403,289	May 14	1121	297 298	47	883
Mechanical movement	F. H. Richards	403,373	May 14	1249	331	47	907
Mechanical power	L. B. Watkins	404,136	May 28	2399	628	47	1148
Medical apparatus. Electro	J. J. Lewin	401,041	Apr. 9	924	247	47	185
Medical apparatus. Electro	T. J. Smith	403,492	May 14	1435	375	47	941
Medical compound	F. Krüger	401,500	Apr. 16	1618	.....	47	328
Medical compound	F. Krüger	401,501	Apr. 16	1619	.....	47	328
Medical compound	N. Levering and M. E. Curry	400,577	Apr. 2	215	.....	47	46
Medical compound	A. Roberts	400,793	Apr. 2	545	.....	47	105
Medicated felt	A. F. Machold	401,189	Apr. 9	1151	.....	47	227
(Medicine.) Alterative tonic	T. C. Fuller	403,185	May 14	944	.....	47	849
(Medicine.) Bitter tonic	J. D. Delisle	402,312	Apr. 30	2868	.....	47	583
(Medicine.) Cough-sirup	W. A. Maxwell and O. E. Meddaugh	404,422	June 4	68	.....	47	1239
Medicine-dispenser	J. Barnes	404,950	June 11	841	220	47	1398
Medicine-spoon register	H. W. Welles	400,719	Apr. 2	424	115	47	84
Melting-furnace. Open-hearth	W. Swindell	402,782	May 7	345	89, 90	47	727
Menthol crystals. Apparatus for making	H. D. Cushman	402,907	May 7	517	137	47	760
Merchandise-box	G. E. Raymond	405,801	June 25	2150	565	47	1689
Merchandise-holder. Coin-operated	W. H. Gilman	402,920	May 7	535	141 142	47	764
Mercury. Making double salts of	E. Mennel	405,368	June 18	1463	.....	47	1598
Message and time recorder	J. C. Wilson	402,120	Apr. 23	2586	670	47	519
Metaamidophenol	C. Kusmauli	403,678	May 21	1701	.....	47	1003
Metal. Apparatus for mixing molten pig	W. R. Jones	404,415	June 4	60	16	47	1237
Metal can	M. Ams	402,882	May 7	486	127	47	754
Metal can, box, or other receptacle	G. A. Waeber	401,913	Apr. 23	2363	589	47	458
Metal into malleable iron or steel. Apparatus for converting crude	J. W. Bookwalter	405,706	June 25	2104	551	47	1659
Metal. Mixing molten pig	W. R. Jones	404,414	June 4	57	15	47	1237
Metal shears	P. Broadbooks	405,596	June 18	1716	453 454	47	1581
Metal stripe for ornamental metal lattice or fence work. Machine for shaping	F. H. Kindt	402,087	Apr. 23	2530	659 660	47	509
Metal wheel	A. Keith	401,563	Apr. 16	1716	452	47	345
Metal wheel	J. W. Savene	405,327	June 18	1407	371	47	1517
Metallic mat	A. M. Reeves	401,066	Apr. 9	958	256	47	191
Metallic mold	N. Washburn	401,504	Apr. 23	2110	550	47	428
Metallic strap for boxes	B. H. Gedge	403,530	May 21	1563	394	47	963
Metallic wheel	F. H. Ensign	404,611	June 4	370	89	47	1295
Metallurgical furnace	W. Stubblebine	404,369	May 28	2768	718	47	1216
Metallurgical plant	G. Lindenthal	405,401	June 18	1666	440	47	1570

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Meter: *See* Electric meter. Power-meter. Gas-meter. Rotary meter. Grain-meter. Water-meter.							
Micrometer-gage	S. H. Bellows	403,726	May 21	1774	467	47	1017
Micrometer-gage	J. Richards	404,305	May 28	2667	662 663	47	1197
Middlings-purifier	H. A. Barnard	401,242	Apr. 9	1229	327 328	47	241
Middlings-purifier	G. W. Bell	400,538	Apr. 2	163	42, 43	47	34
Middlings-purifier	W. Klostermann	405,486	June 18	1655	436 437	47	1567
Middlings-purifier	W. Klostermann	405,487	June 18	1657	437 438 439	47	1568
Milk-can	M. Schwarz	403,387	May 14	1284	336	47	913
Milk-can	F. P. Shepherd	404,117	May 28	2370	623	47	1142
Milk-can	A. W. H. Smith	401,803	Apr. 23	2182	570	47	442
Milk-cooler	F. A. and I. A. Dodge	400,834	Apr. 2	610	168	47	171
Milk. Device for raising cream from	W. H. Wells	405,975	June 25	2439	634	47	1718
Milk-purifier	D. M. Macpherson	405,367	June 18	1462	387	47	1598
Milk-skimming device	A. Miller	402,178	Apr. 30	2675	694	47	545
Mill: *See* Attrition-mill. Feed-mill. Coffee-mill. Grinding-mill. Crushing or grinding mill. Ore-grinding mill. Roller-mill. Fanning-mill. Rolling-mill.							
Mill appliance	H. Aiken	401,325	Apr. 16	1349	361	47	277
Miller-exterminator	J. B. Woods	404,942	June 11	834	216	47	1396
Milling-cutter	A. Whitney	404,940	June 11	831	215	47	1396
Mineral compounds. Machine for mixing	M. Broughton	402,393	Apr. 30	2992	776 777	47	605
Mining-machine attachment	H. B. Trout	403,007	May 7	655	173	47	787
Mining-machine. Electric	E. A. Sperry	405,188	June 11	1197	318	47	1468
Miter-box	W. H. Englehard	401,423	Apr. 16	1501	398	47	306
Miter-machine	B. V. Crowe	403,462	May 14	1386	363	47	932
Models. Support for drawing	H. T. Bailey	405,298	June 18	1368	360	47	1508
Mold: *See* Anvil-mold. Ingot-mold. Butter-mold. Metallic mold. Casting-mold. Vault-light mold. Cigar-mold.							
Mold	C. H. Wilder	404,372	May 28	2771	719	47	1218
Molder's ladle or crucible	C. Truesdale	402,871	May 7	473	124	47	751
Molding-machine	T. A. Considine	402,506	Apr. 30	3178	823	47	641
Molding machine. Sand	W. E. Bird	400,893	Apr. 9	702	190	47	145
Molding machine. Sand	J. N. Matlock	400,781	Apr. 2	525	145	47	109
Molding-machines. Cutter-head for	P. J. Hardy	400,673	Apr. 2	357	97, 98	47	71
Molding material	C. H. Wilder	404,208	May 28	2569	.....	47	1179
Mole-trap	R. H. Brown	403,912	May 28	2051	530	47	1079
Momentum of a train. Device for indicating the measure of retardation applied to arrest the	W. H. Arnold	404,947	June 11	839	219	47	1398
Money-order blank	J. J. Williamson	403,499	May 14	1445	379	47	944
Monument	M. D. Judkins	402,398	Apr. 30	3210	831 832	47	646
Motion. Device for converting	C. E. Armstrong	401,103	Apr. 9	1014	271	47	201
Motion from heat produced by liquid or gaseous fuel. Obtaining	J. Hargreaves	401,102	Apr. 9	1110	295	47	218
Motion. Machine for imparting	J. J. Iten	401,168	Apr. 9	1118	296	47	220
Motion. Machine for transmitting	S. D. Kinsey	402,744	May 7	287	73	47	717
Motion. Mechanism for imparting slow or fast	J. Jetter	403,756	May 21	1815	476 477	47	1025
Motion mechanism. Forward and reverse	W. H. Zellers	405,290	June 18	1353	357	47	1506
Motive-power engine	E. D. Debouttéville and L. P. C. Malandin	400,754	Apr. 2	473	127 128	47	93
Motor: *See* Air-motor. Railway-motor. Churn-motor. Self-propelling motor. Current or tide motor. Sewing-machine motor. Spring-motor. Electric motor. Steam-motor. Electro-dynamic motor. Steam and water motor. Thermo-dynamic motor. Electro-magnetic motor. Water-motor. Water-current motor. Hand-motor. Mechanical and electro-magnetic motor.							
Motor	J. H. Arch	403,317	May 14	1168	310	47	892
Motor	W. R. Bell	402,713	May 7	235	62	47	706
Motor	D. Lovejoy	402,172	Apr. 30	2668	692	47	544
Motor	H. M. Olsen	402,471	Apr. 30	3129	811	47	631
Motor	W. H. Patton	401,756	Apr. 23	2027	530	47	414
Motor	A. W. Pearce	403,606	May 21	1585	423	47	982
Motor and electric generator. Combined	J. F. Shawhan	401,761	Apr. 23	2034	532	47	415
Motor-engine	G. W. Newall and J. F. Blyth	401,578	Apr. 16	1739	458 459	47	350
Motor for operating swinging devices	C. J. B. Gaume	404,613	June 4	373	89	47	1296
Mower	P. C. Close	401,817	Apr. 23	2125	554 555	47	431
Mower	J. H. Jones	405,228	June 11	1272	336	47	1492
Mower	H. Lindeström	404,549	June 4	282	67	47	1273
Mower	J. A. Peer	405,676	June 18	1905	516	47	1627
Mower and reaper knives. Grinding-machine for	E. H. Fenton	402,152	Apr. 30	2640	684	47	538

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Mower attachment. Lawn	F. A. Deland	404,690	June 4	474	190	47	1317
Mower attachment. Lawn	F. A. Deland	404,691	June 4	475	190	47	1318
Mower attachment. Lawn	H. Peterson	402,189	Apr. 30	2089	686	47	548
Mower. Lawn	F. Enos, Jr.	401,696	Apr. 16	1930	544	47	384
Mower. Lawn	A. G. Wilkins	405,753	June 25	2089	548	47	1657
Mowers. Grass-receptacle for lawn	C. H. Braithwaite	402,227	Apr. 30	2742	710	47	559
Mowing and reaping machine	M. A. Replogle and H. Lancaster	403,699	May 21	1730	435	47	1009
Mowing-machine	A. H. Carpenter	402,301	Apr. 30	2852	727	47	579
Mowing-machine	C. La Grange	403,679	May 21	1701	440	47	1003
Mowing-machines. Device to facilitate grinding sections of	F. J. McClenon	402,465	Apr. 30	3116	808	47	629
Muff	O. Kaehler	405,097	June 11	1059	281	47	1441
Multiple switch-board	C. E. McCluer	402,264	Apr. 30	2705	704	47	569
Multiple-switch-board testing apparatus	J. J. Carty	403,458	May 14	1361	362	47	931
Multiple-switch-board testing apparatus	J. J. O'Connell	403,483	May 14	1419	371	47	938
Music-leaf turner	T. W. Tetley	403,792	May 21	1873	492	47	1037
Music-holder	O. N. Kohnke	402,529	Apr. 30	3211	832	47	647
Music-holder	H. R. Moore	405,789	June 25	2134	541	47	1665
Music or paper holder	L. F. Mousley	405,791	June 25	2138	542	47	1666
Music stand and portfolio	V. Moore	405,715	June 25	2031	533	47	1645
Musical instrument	E. R. Norcross	403,481	May 14	1416	370	47	938
Musical instrument. Automatic	T. A. Macaulay	401,187	Apr. 9	1144	304	47	224
Musical instrument. Automatic	T. A. Macaulay	401,188	Apr. 9	1147	305	47	225
Musical instrument. Mechanical	W. H. Gilman	403,834	May 21	1931	508	47	1048
Musical instruments. Arm-rest for	J. Bohmann	401,814	Apr. 23	2122	533	47	430
Musical instruments. Picking-thimble for	N. E. Barnes	401,476	Apr. 16	1585	419	47	322
Musical notation	B. Boekelman	402,225	Apr. 30	2740	710	47	558
Musical wind-instrument	C. G. Conn	405,395	June 18	1504	389	47	1536
Nail: *See* Electric-wire nail. Shoe-nail.							
Nail	W. Taylor	405,972	June 25	2416	633	47	1715
Nail, bolt, &c	C. D. Rogers	405,661	June 18	1975	518	47	1629
Nail-driver	W. C. Bartch and E. M. Gurnee	404,166	May 28	2446	641	47	1157
Nail-extractor	L. Baumeister	401,113	Apr. 9	1098	275	47	203
Nail-feeding implement	F. F. Raymond, 2d	405,598	June 18	1825	483	47	1603
Napkin-holder table attachment	J. M. Hinds	404,410	June 4	53	14	47	1236
Nasal irrigator	J. B. Thompson	403,794	May 21	1876	494	47	1038
Neckscarf	L. Cole	401,690	Apr. 16	1925	541	47	382
Neckscarf	A. Landes	403,538	May 21	1514	396	47	965
Necktie-fastener	W. B. Brown	403,913	May 28	2052	540	47	1079
Necktie-fastener	J. C. Dulin, Jr.	403,336	May 14	1193	317	47	898
Necktie-fastener	W. H. Glines	401,491	Apr. 16	1604	423	47	325
Necktie-fastener	W. H. Krause	403,761	May 21	1892	478	47	1026
Necktie-fastener	J. Reidl	404,436	June 4	90	23	47	1243
Necktie-fastener	C. E. Stubbs	405,925	June 25	2337	614	47	1702
Necktie-holder	G. A. Hnewe	404,411	June 4	55	14	47	1236
Needle. Belt-lacing	B. F. Curran	405,536	June 18	1732	458	47	1583
Needle-grooving machine	J. Berry	404,336	May 28	2716	704	47	1206
Needle-machine	J. Berry	404,337	May 28	2718	705	47	1206
Nest-box for fowls	A. K. Degood	402,571	May 7	32	8	47	660
Nest. Hen's	E. Butterick	404,073	May 28	2304	603	47	1149
Net. Fisherman's	J. F. Marsters	401,360	Apr. 16	1407	372	47	289
Net. Fishing	H. E. Freyschlag	405,957	June 25	2387	630	47	1711
Nickel and nickel alloys non-magnetic. Rendering	H. Ostermann and C. Lacroix	404,200	May 28	2543	.....	47	1174
Nippers	S. E. Selleck	401,306	Apr. 9	1325	352	47	261
Nipple. Nursing	R. Lockwood	401,505	Apr. 16	1624	430	47	329
Nipples. Machine for cutting right and left threads on	H. H. Taylor	403,791	May 21	1871	492	47	1037
Nitrogenous compounds from impure waters. Precipitating	M. Nahnsen	402,848	May 7	437	.....	47	745
Non-conducting jacket	J. Riley	403,700	May 21	1732	456	47	1009
Nozzle. Spray	J. Bean	402,730	Apr. 2	441	118	47	87
Nut and pipe wrench. Combined	W. T. Chesley	405,343	June 18	1433	378	47	1522
Nut-cracker	H. M. Quackenbush	404,016	May 28	2196	577	47	1106
Nut-lock	J. L. Bay	402,054	Apr. 23	2476	645	47	498
Nut-lock	J. Dickson	403,334	May 14	1190	316	47	897
Nut-lock	L. W. Evans	401,019	Apr. 9	891	238	47	179
Nut-lock	G. P. Fuller	404,530	June 4	265	61	47	1272
Nut-lock	A. J. Gunn	405,773	June 25	2114	544	47	1661
Nut-lock	G. C. Illingworth	402,739	May 7	279	72	47	716
Nut-lock	I. F. Leiby	402,063	Apr. 23	2487	632	47	488
Nut-lock	B. Marshall	401,044	Apr. 9	927	247	47	186
Nut-lock	A. T. Sangeton	403,386	May 14	1353	336	47	912
Nut-lock	J. G. Strader	403,968	May 28	2127	537	47	1094
Nut-lock	G. Van Nest	404,370	May 28	2770	718	47	1217
Nut-lock	C. O. Vinyard	404,326	May 28	2703	702	47	1204
Nut-lock	C. H. Warren	405,632	June 18	1878	497	47	1612
Oar. Bow-facing	S. R. Sweet	402,114	Apr. 23	2373	607	47	516
Oculists and opticians. Trial-frame for	A. L. Smith	404,903	June 4	698	161	47	1349
Oil and gas burner	E. H. Sargent	403,447	May 14	1366	359	47	928
Oil-burner	P. L. Bear	405,301	June 18	1497	397	47	1535
Oil-burner	F. M. Mahan	404,096	May 28	2241	613	47	1136
Oil-burner	M. D. Miller	404,297	May 28	2653	690	47	1195
Oil-burner	G. S. Paine	404,498	June 4	80	20	47	1242
Oil-burner	W. R. Parke	402,853	May 7	443	117	47	746
Oil burner. Hydrocarbon	F. W. Minshall	405,219	June 11	1243	330	47	1477

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Oil burner. Hydrocarbon	W. H. Myers	405,201	June 25	2288	604	47	1626
Oil. Burning hydrocarbon	C. L. Hevezin	402,243	Apr. 30	2761	715	47	582
Oil-can	C. A. Frayer	403,042	May 7	709	186	47	706
Oil-can	F. Marsaville	403,544	May 21	1519	396	47	966
Oil-can	H. Muller	401,451	Apr. 16	1538	407	47	314
Oil-distributing cartridge and projectile	G. N. McKibbin	402,345	Apr. 30	2910	757	47	593
Oil from oil-wells. Device for ejecting	W. Geiser	404,307	June 4	34	9	47	1232
Oil or petroleum. Refining and deodorizing coal-	F. M. F. Casin	400,683	Apr. 2	201	52	47	61
Oil. Refining cotton-seed	G. W. Scollay	405,852	June 25	2219	.....	47	1683
Oil-well bailer	T. A. Burkellow	400,896	Apr. 9	706	191	47	148
Oiler	J. F. W. Stairs	405,922	June 25	2332	612	47	1701
Oiler	W. F. and C. E. Traves	402,639	May 7	110	28	47	686
Oiler. Eccentric	J. and I. Roabong	401,072	Apr. 9	965	257	47	199
Oiling wheels. Device for	F. W. Harris	404,481	June 4	167	39	47	1256
Ointment	C. V. Sutherland	400,967	Apr. 9	814	.....	47	165
Opera-chair	D. Schnatek	405,220	June 11	1258	334	47	1480
Opera-glass case. Coin-controlled	E. J. Colby	405,659	June 18	1941	510	47	1632
Optical device for the observation of localities by reflection.	E. A. Trapp	401,229	Apr. 9	1203	321	47	237
Orange-grader	A. Ayer	401,241	Apr. 9	1227	327	47	241
Order. Credit or store	C. S. Hempstead	400,589	Apr. 2	207	56	47	44
Ordnance. Breech-loading	J. P. Lavigne	405,644	June 25	2207	581	47	1689
Ordnance. Construction of	E. Maitland	403,694	May 21	1707	451	47	1005
Ore-concentrator	W. McDermott	404,011	May 28	2189	575	47	1105
Ore-concentrator	W. H. Meginness	402,694	Apr. 23	2538	661	47	510
Ore-concentrator	J. H. Pemberton	401,457	Apr. 16	1549	410	47	315
Ore-crusher	J. Rodermond	400,601	Apr. 2	246	67	47	52
Ore-crusher and metal-separator	J. C. Wiswell	400,988	Apr. 9	850	226	47	172
Ore-feeder	G. Johnston	401,034	Apr. 9	913	244	47	183
Ore-grinding mill	J. McKenzie	401,964	Apr. 23	2336	607	47	472
Ore. Reducing	C. J. Eames	404,184	May 28	2475	.....	47	1163
Ore-roaster	C. J. Fendel	401,023	Apr. 9	897	240	47	180
Ore-roasting furnace	I. B. Hammond	404,000	May 28	2176	571	47	1103
Ore-separator	J. Coombes	400,440	Apr. 2	24	8	47	8
Ore-separator. Magnetic	C. M. Ball and S. Norton	404,333	May 28	2712	703	47	1205
Ore-separator. Magnetic	C. C. Coats	401,626	Apr. 16	1928	500	47	382
Ore-separator. Magnetic	W. R. Thomas	403,024	May 21	1623	429	47	967
Ore-washer	W. W. Rosensteel	403,498	May 14	1420	374	47	940
Ore-washer	J. Talley	402,698	May 7	214	56	47	704
Ores by magnetism. Separating	C. M. Ball and S. Norton	404,332	May 28	2711	703	47	1205
Ores. Device for collecting metallic	H. H. Eames	403,256	May 14	1063	280	47	878
Ores. Reducing and separating magnetic	J. D. Cheever	403,250	May 14	1057	.....	47	879
Ores. Separating	C. M. Ball and S. Norton	404,334	May 28	2714	704	47	1205
Ores with hyposulphite solutions. Leaching	E. H. Russell	403,615	May 21	1606	.....	47	964
Ores with hyposulphite solutions. Leaching	E. H. Russell	403,616	May 21	1610	.....	47	964
Organ	O. C. Whitney	401,474	Apr. 16	1583	416	47	321
Organ. Reed	H. Janes	405,708	June 25	2029	531	47	1643
Organs or pianos. Resonator for	A. J. Reynolds	405,393	June 18	1401	780	47	1516
Ornamental vessel or article	T. B. Gibson	404,795	June 4	963	156	47	1343
Oscillating chair	C. E. Whittlesey	401,069	Apr. 9	990	264	47	196
Oven and flat-iron heater	S. E. Robinson	401,969	Apr. 23	2343	606	47	473
Oven. Baker's	J. H. Meier	404,641	June 4	407	99	47	1363
Oven. Baking	A. Crumble	405,304	June 18	1375	368	47	1510
Oven. Drying	P. McArthur	405,220	June 11	1245	330	47	1477
Oven for vapor or gas stoves	J. Stubbers	401,723	Apr. 16	1974	516	47	393
Oven. Knockdown	M. S. Sager	402,978	May 7	615	161	47	780
Oven. Portable	J. Middleby	401,573	Apr. 16	1731	456	47	348
Overalls, &c	J. H. Brown	403,457	May 14	1361	362	47	931
Overdraw or checkrein attachment	R. W. Jones	402,456	Apr. 30	3100	804	47	626
Overflow-trap. Water-seal	E. J. Whitlock	404,750	June 4	560	143	47	1336
Overshoe	G. C. Wolfe	403,817	May 21	1907	501	47	1043
Oxides. Manufacturing	S. R. and A. C. Bradley	404,254	May 28	2588	674	47	1188
Oyster-opener	W. F. Stewart	402,867	May 7	470	123	47	750
Package-fastener	T. T. H. Harwood	405,775	June 25	2116	545	47	1662
Package-fastener	C. F. Spencer	405,685	June 18	1981	519	47	1630
Package for merchandise	H. A. Lee	405,364	June 18	1456	385	47	1527
Package-head	I. J. W. Adams	405,000	June 11	919	243	47	1413
Packing-box. Folding	H. Johnson	405,709	June 25	2021	531	47	1644
Packing-case	G. W. Banker	403,503	May 21	1453	381	47	953
Packing for metallic boxes	H. R. Gillingham	404,709	June 4	486	123	47	1300
Packing for piston-rods	J. P. Murray	404,493	June 4	185	44	47	1259
Packing. Metallic	R. Weatherburn	403,808	May 21	1896	498	47	1042
Packing. Piston	S. Hughes	403,753	May 21	1908	476	47	1023
Packing. Piston	G. H. Meader	402,267	Apr. 30	2800	725	47	569
Packing-ring. Renewable	H. R. Friebie	401,262	Apr. 9	1260	336	47	247
Packing. Rod	J. Cockfield and C. D. Higgins	400,436	Apr. 2	22	7	47	7
Packing. Rod	S. Udstad	401,984	Apr. 23	2364	615	47	477
Pad: *See* Back-band pad. Harness-pad. Bosom-pad.							
Paddle-wheel. Feathering	H. F. W. Sobst	403,392	May 14	1292	336	47	914
Padlock	G. Brambel	401,407	Apr 16	1483	393	47	302
Padlock	W. D. Doremus	402,663	May 7	163	42	47	694
Pail-cover	G. Fuchs	400,998	Apr. 9	719	195	47	162
Pail. Dinner	P. L. Crossman	400,752	Apr. 2	471	126	47	92
Pail. Dinner	J. H. Yarnell	403,239	May 14	1039	275	47	886
Pail. Fisherman's	C. F. Meyering and J. A. O'Connor	400,588	Apr. 2	229	62	47	43
Pail. Oyster	J. P. Kuhn and J. A. Reynolds	405,486	June 18	1663	439	47	1569

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Pails with water and other liquids. Apparatus for storing	F. A. Messer and W. F. Thorpe	405,900	June 25	2294	{582 / 583 / 584}	47	1696
Paint	S. C. Dunham	403,523	May 21	1498	.....	47	960
Paint-distributer	C. L. Burdick	402,398	May 7	506	124	47	758
Paint-mixer	G. W. Schock and W. H. Wanebrough.	401,306	Apr. 9	1323	352	47	200
Paints, &c. Sample of	F. H. Rose	402,859	May 7	454	119	47	748
Painting apparatus	S. W. Peregrine	402,188	Apr. 30	2688	696	47	547
Painting machine. Shingle or sheet-metal	G. D. Armstrong	400,426	Apr. 2	4	2	47	4
Pan: *See* Baking and roasting pan. Bed-pan. Candy-pan. Frying-pan. Grinding-pan. Vacuum-pan.							
Panel-raising machine	J. Green	401,555	Apr. 16	1702	{449 / 450}	47	343
Paper bag	J. Arkell	405,067	June 11	1017	272	47	1435
Paper bag	E. E. Clausen	401,687	Apr. 16	1918	{499 / 500}	47	392
Paper bag	C. B. Stilwell	405,616	June 18	1849	490	47	1607
Paper-bag holder	H. E. Gage	401,825	Apr. 23	2137	558	47	433
Paper-bag machine	A. C. Getten	405,308	June 18	1380	364	47	1511
Paper bag. Soft-tie	J. Arkell	405,068	June 11	1019	272	47	1435
Paper bags. Making	A. E. Osborn	405,590	June 18	1812	480	47	1601
Paper box	D. S. Clark	401,009	Apr. 9	877	235	47	177
Paper-box-covering machine	M. D. Knowlton	403,677	May 21	1698	449	47	1003
Paper box for cigars	O. H. Hicks	405,413	June 18	1330	405	47	1542
Paper bucket. Folded	H. S. Janke	403,594	May 21	1580	418	47	978
Paper. Case for displaying sheets of	M. M. Vardon	405,630	June 18	1876	496	47	1611
Paper-coating apparatus	G. Manahan and H. Gade	405,044	June 11	988	263	47	1428
Paper. Composition for waterproofing and preparing sheathing and building	G. Manahan and H. Gade	401,042	Apr. 9	925	.....	47	186
Paper-cutter	L. Ehrlich	405,402	June 18	1511	402	47	1536
Paper-cutter	W. H. Tivy and L. Ehrlich	404,321	May 28	2094	499	47	1202
Paper-cutting machine	H. P. Feister	400,652	Apr. 2	316	88 89	47	65
Paper. Dampening apparatus for rolls of	W. Scott	404,505	June 4	208	49 50	47	1263
Paper, envelopes, cards, &c. Frame for fanning out writing.	J. C. Oliver	404,104	May 28	2349	616	47	1138
Paper-folding machine	W. Downing	401,336	Apr. 16	1368	364	47	281
Paper-folding machine	J. C. Fowler and E. A. Henkle	400,762	Apr. 2	481	129	47	94
Paper-hanging machine	L. B. Polk	402,612	May 7	90	22	47	681
Paper-holder	C. H. Fisher	402,237	Apr. 30	2754	714	47	561
Paper. Machine for making perforations in	S. Wheeler	404,582	June 4	329	79	47	1287
Paper machine. Lace	G. Paci	401,054	Apr. 9	943	251	47	189
Paper-machines. Spray-cylinder cleaner for	G. D. Crance	405,015	June 11	938	249	47	1418
Paper-making machine	J. T. Flood	403,744	May 21	1798	473	47	1021
Paper-making machinery	S. Wilmot	401,917	Apr. 23	2271	590	47	459
Paper. Making perforations in	S. Wheeler	404,581	June 4	327	79	47	1287
Paper package. Toilet-	O. H. Hicks	404,622	June 4	384	92	47	1298
Paper. Perforated	O. H. Hicks	405,412	June 18	1528	405	47	1542
Paper-pulp digester	H. W. Stebbins	405,279	June 18	1340	354	47	1503
Paper-pulp screen	P. H. Cragin	403,577	May 21	1559	{811 / 812}	47	974
Paper-pulp screen	B. Eilers, Jr.	402,426	Apr. 30	3058	790	47	618
Paper-reel	H. T. Wilson	402,050	Apr. 23	2471	644	47	497
Paper-reel	H. T. Wilson	403,814	May 21	1904	500	47	1043
Paper-roll holder	A. Q. Ross	405,121	June 11	1066	280	47	1447
Paper roll. Toilet-	O. H. Hicks	400,913	Apr. 9	728	197	47	149
Paper roll. Toilet or wrapping	S. Wheeler	401,233	Apr. 9	1213	323	47	238
Paper tubes. Machine for rolling	H. O. Whitney	405,136	June 11	1106	295	47	1451
Paper waxing and cutting machine	J. B. Anderson	404,151	May 28	2419	624	47	1152
Paper-weight	F. B. Whipple	402,048	Apr. 23	2469	644	47	496
Paper-weight, calendar, and musical watch. Combined	E. N. Gaillard	402,916	May 7	530	140	47	763
Papeterie	A. Bühler	404,594	June 4	344	93	47	1290
Parer, corer, and slicer. Apple	W. H. Boutell	405,825	June 25	2178	{573 / 574}	47	1674
Parer. Vegetable	H. O. Thomas	403,793	May 21	1874	493	47	1037
Paring squashes. Machine for	F. L. Webster	404,452	June 4	117	28	47	1249
Partition, shutter, and the like	J. G. Wilson	405,450	June 18	1598	420	47	1555
Passenger-register	A. Romain	402,035	Apr. 23	2449	638	47	492
Pattern-board	J. Wright	404,144	May 28	2110	522	47	1150
Pavement and paving-brick	D. Harger	401,030	Apr. 9	905	242	47	182
Pavement for streets or roads	M. Levi	401,752	Apr. 23	2094	549	47	413
Pavement. Laying artificial	J. W. MacKnight	401,447	Apr. 16	1535	406	47	313
Pavement. Street	H. S. Hallwood	400,767	Apr. 2	492	133	47	96
Paving-block	R. B. Berrie	400,997	Apr. 9	864	229	47	174
Paving-block	J. L. Breed	402,897	May 7	505	133	47	758
Paving-block	G. M. Graham	401,492	Apr. 16	1604	{423 / 424}	47	336
Paving-block	W. and J. W. McReynolds	401,361	Apr. 16	1408	373	47	289
Pegging-jack	J. A. Dill	405,768	June 25	2106	562	47	1660
Pen	J. L. Ackerman	403,021	May 7	677	178	47	791
Pen	H. Belchling	404,249	May 28	2583	673	47	1181
Pen and pencil. Drawing	R. Anderson	405,650	June 18	1930	508	47	1621
Pen. Fountain-	J. D. Bray	405,458	June 18	1609	424	47	1558
Pen. Fountain-	S. D. Dias	402,417	Apr. 30	3032	786	47	613
Pen. Fountain-	L. A. Shattuck	402,864	May 7	462	{121 / 122}	47	749
Pen. Fountain-	L. A. Shattuck	403,225	May 14	1017	269	47	864
Pen. Fountain-	W. Van Demark	401,985	Apr. 23	2365	615	47	478
Pen guide or rest	I. Bergmann	402,796	May 7	367	97	47	732
Pen-holder	G. W. Baldwin	404,027	May 28	2269	590	47	1109

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Pen-holder	L. M. Hopkins	401,435	Apr. 16	1519	402	47	309
Pen-holder	A. S. Hubbell	403,190	May 14	951	251	47	850
Pens or pencils. Spring holder or clasp for	F. J. W. Fischer	404,697	June 4	462	122	47	1319
Pencil-holder	S. Wales	403,567	May 21	1546	407	47	972
Pencil-sharpener	B. N. Black	402,715	May 7	239	63	47	709
Pencil-sharpener	J. R. Foster	402,914	May 7	527	139	47	762
Pencil-tip	S. Kraus	405,102	June 11	1057	282	47	1442
Peptone. Serum-albumen	S. E. Ullman	402,494	Apr. 30	3157	.....	47	636
Percolator	T. Boyce	404,591	June 4	343	82	47	1280
Perforating-machine	S. D. Layman	401,038	Apr. 9	919	245	47	184
Periodicals. Preventing the fraudulent return of	R. D. Brain	402,136	Apr. 30	2616	677	47	533
Pessary	A. W. Sperry	404,019	May 28	2200	577	47	1107
Petroleum. Apparatus for refining	F. M. F. Cazin	400,634	Apr. 2	283	83	47	61
Petroleum-burner	C. V. Fleetwood	401,741	Apr. 23	2009	525	47	410
Petroleum-burning apparatus	J. W. Budd and G. D. Carroll	403,033	May 7	698	183	47	785
Petroleum or similar substances. Apparatus for burning	L. P. Guignard and J. Schweitzer	404,399	June 4	36	10	47	1232
Phonogram-blank	T. A. Edison	400,648	Apr. 2	314	.....	47	65
Phonogram-blanks. Making	T. A. Edison	400,649	Apr. 2	314	88	47	65
Phonogram-blanks. Making	T. A. Edison	400,650	Apr. 2	315	88	47	65
Phonograms and graphograms, &c. Case for carrying	R. H. St. John	402,997	May 7	641	169	47	785
Phonograph	C. Batchelor	400,639	Apr. 2	296	81	47	60
Phonograph	T. A. Edison	400,647	Apr. 2	312	86	47	65
Phonograph-doll	W. W. Jacques	400,851	Apr. 2	635	172	47	122
Phonograph recorder and reproducer	T. A. Edison	400,646	Apr. 2	311	87	47	64
Phonographs or telephones. Mouth-piece guard for	W. L. Candee	401,779	Apr. 23	1994	532	47	408
Photo-cameras. Film-supporting frame for	W. H. Lewis	402,680	May 7	189	48	47	699
Photo-engraving. Translucent film for use in the art of	C. A. Müller	401,510	Apr. 16	1631	432	47	330
Photograph-cabinet	J. Cornish	403,647	May 21	1652	438	47	993
Photograph-print mounter	J. W. Allderige	404,814	June 11	643	167	47	1361
Photographs. Mount for	R. H. L. Talcott	405,130	June 11	1097	292	47	1449
Photographer's retouching-machine	L. O. Girvin and J. Loff	404,534	June 4	260	62	47	1273
Photographic apparatus	H. Kuhn	403,476	May 14	1409	{368 / 369}	47	936
Photographic camera	E. B. Barker	402,711	May 7	232	61	47	707
Photographic camera	C. E. Burlingame	403,574	May 21	1554	410	47	974
Photographic camera	J. H. Ford and M. Jurnick	403,994	May 28	2166	569	47	1100
Photographic camera	E. Hackh	401,946	Apr. 23	2312	601	47	467
Photographic-camera shutter	R. E. M. Bain	404,375	June 4	5	1	47	1225
Photographic-camera shutter	R. D. Cleveland and C. A. Hoffman	402,806	May 7	381	100	47	734
Photographic cameras. Attachment for	G. D. Thompson	401,802	Apr. 23	2105	549	47	427
Photographic emulsions. Device for setting or cooling	J. W. T. Cadett	405,463	June 18	1616	426	47	1559
Photographic films. Roller-holder for	L. H. Bannister	405,454	June 18	1602	422	47	1556
Photographic paper	F. H. Rogers	402,279	Apr. 30	2818	729	47	573
Photographic-plate-developing tray	T. S. Wiles	402,214	Apr. 30	2726	707	47	556
Photographic-plate handle or holder	W. K. Moody	402,861	May 7	596	157	47	776
Photographic-plate holding apparatus	J. P. Decker	402,512	Apr. 30	3181	824	47	641
Photographic plates. Package for	D. C. Hoover	402,927	May 7	413	109	47	741
Photographic plates. Rack for washing and drying	W. S. Cullen	404,605	June 4	302	87	47	1294
Photographic plates with emulsion. Apparatus for coating	R. E. M. Bain	401,771	Apr. 23	2046	{535 / 536}	47	418
Photographic-printing frame	W. H. Fuller	402,154	Apr. 30	2643	684	47	539
Photographic-printing frames. Vignetting attachment for	J. R. Tewksbury	401,083	Apr. 9	980	{261 / 262}	47	195
Photographing-instrument	G. A. Cooke	401,330	Apr. 16	1355	362	47	278
Photography. Making iron prints by	C. R. McBlair and A. A. Raff	403,061	May 7	734	.....	47	802
Piano-action	S. Hansing	404,704	June 4	489	124	47	1330
Piano and harmonium. Combined	J. W. Erbe	402,427	Apr. 30	3059	{791 / 792}	47	618
Piano-forte action	S. Hansing	402,735	May 7	272	70	47	714
Piano-fortes. Sheet-music support for	E. J. Snow	401,662	Apr. 16	1485	491	47	376
Piano-plate	P. Gmehlin	403,583	May 21	1565	{413 / 414}	47	975
Pianos. Key-leveling device for	C. H. Smith	401,309	Apr. 9	1326	352	47	261
Pianos or organs. Indicator for	L. W. Blasius	403,906	May 28	2043	537	47	1677
Pianos. Repeating-action for grand	A. T. Strauch	404,876	June 11	743	189	47	1378
Pianos. Touch-regulator for	C. R. Elias	405,465	June 18	1618	{426 / 427}	47	1559
Pick	H. C. Stouffer	400,903	Apr. 2	560	153	47	107
Picture-exhibitor	G. D. Knipp	403,887	May 21	2008	527	47	1002
Picture. Transparent	W. Read, Jr	401,308	Apr. 9	1320	351	47	260
Piles, &c. Drive apparatus for	T. J. Harriman	401,031	Apr. 9	908	243	47	182
Piles. Teredo-proof covering for	G. M. Baronidis	403,409	May 14	1313	343	47	918
Pillow-block	S. M. Herber	403,471	May 14	1306	366	47	934
Pillow-sham holder	N. C. Moffett	403,300	May 14	1226	325	47	908
Pilot or head for sectional rods for threading underground conduits.	G. H. Warde	405,515	June 18	1702	450	47	1578
Pin: *See* Brooch-pin. Catch-pin. Coupling-pin. Double-pointed pin. Safety-pin. Scarf-pin.							
Pinch-bar	P. C. Forrester	403,184	May 14	943	250	47	848
Pinch-bar	S. H. St. John	400,964	Apr. 9	811	216	47	165
Pinion-facing machine	W. B. Learned and L. Murray	401,180	Apr. 9	1135	301	47	222
Pipe: *See* Blow-pipe. Stove-pipe. Tobacco-pipe.							
Pipe-coupling	J. C. Bayles	400,822	Apr. 2	503	162	47	113
Pipe-coupling	J. I. Collins	403,916	May 28	2054	540	47	1080
Pipe-coupling	S. R. Dresser	400,644	Apr. 2	306	86	47	64
Pipe-coupling	R. J. Edwards	400,750	Apr. 2	478	128	47	94
Pipe-coupling	R. Groark	403,884	May 21	2003	536	47	1002

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Pipe-coupling	C. F. Hurrel	404,413	June 4	56	15	47	1236
Pipe-coupling	O. J. Meyer	403,767	May 21	1836	483	47	1029
Pipe-coupling	G. N. Riley	400,949	Apr. 9	788	210	47	160
Pipe-coupling	H. S. Ross	405,745	June 25	2078	545	47	1654
Pipe coupling. Steam-	F. Hanson	404,786	June 4	604	156	47	1344
Pipe-cutter	E. Foerster	402,730	May 7	236	67	47	712
Pipe-cutter	V. B. Stevens	401,367	Apr. 16	1452	383	47	297
Pipe-joint	F. A. Lane	402,089	Apr. 23	2533	660	47	509
Pipe-joint. Oscillating	R. Groark	403,863	May 21	2001	525	47	1061
Pipe-laying apparatus	D. A. Streeter	400,881	Apr. 2	675	184	47	129
Pipe-laying apparatus	J. F. Ward	403,865	May 21	1977	519	47	1056
Pipe-molding apparatus. Former for	A. H. McNeal and W. A. Stineruck	402,029	Apr. 23	2440	636	47	490
Pipe or tube coupling	G. W. H. Brogden	401,996	Apr. 23	2383	620	47	481
Pipe-punch	C. S. Olmsted	402,273	Apr. 30	2808	737	47	571
Pipe-supporting device	H. J. Sullivan	403,564	May 21	1543	406	47	971
Pipe-testing machine	M. Sexton	405,054	June 11	1000	267	47	1431
Pipe trap. Exhaust-steam-	T. Burkhard, Jr	401,248	Apr. 9	1240	330	47	243
Pipe-trimming device	G. T. Fitzsimmons	403,828	May 21	1925	506	47	1046
Pipe-welding bell	J. Simpson	402,689	May 7	202	51	47	701
Pipe-welding machine	R. Cartwright	400,829	Apr. 2	603	164 163	47	115
Pipe-wrench	L. J. Bergendahl	401,926	Apr. 23	2286	593	47	462
Pipe-wrench	E. S. Boynton	404,770	June 4	576	147	47	1338
Pipe-wrench	C. L. Dunham	404,781	June 4	596	154	47	1342
Pipe-wrench	J. T. Hawkins	404,619	June 4	380	92	47	1298
Pipes. Composition for	J. H. Walsh	400,527	Apr. 2	149	.....	47	32
Pipes. Leak-detector for	A. H. Brown	401,409	Apr. 16	1485	383	47	303
Pipes. Machine for shaping sheet-metal	J. A. Carr	402,140	Apr. 30	2620	678	47	534
Pipes. Mold for forming drain-	R. E. Olsen and C. Gabriel	404,219	May 28	2542	663	47	1174
Pipes. Safety-cushion for water-	A. Hattersley	404,969	June 11	879	228	47	1405
Pipes. Securing rigid sockets in rubber	A. D. Schlesinger	400,955	Apr. 9	798	213	47	162
Pipes. Testing and disinfecting drain and soil	W. S. Clark	404,343	May 28	2736	707 708	47	1208
Piping, bowls, &c. Compound for	B. E. Olsen and C. Gabriel	403,548	May 21	1524	.....	47	967
Piston for caloric-engines	T. J. Rider	405,394	June 18	1403	366 370	47	1516
Piston for hydraulic presses	L. Miller	402,955	May 7	587	153	47	775
Piston-rod guide	D. W. Umstead	405,511	June 18	1697	444	47	1577
Pitman	P. R. Pulliam	402,105	Apr. 23	2560	665	47	514
Plaiting apparatus	C. F. A. Röell	401,214	Apr. 9	1182	315 314	47	233
Plane	J. J. Driver	405,540	June 18	1743	460	47	1587
Plane. Bench-	F. M. Bailey	401,532	Apr. 16	1671	441	47	337
Plane. Bench-	F. M. Bailey	402,896	May 7	491	128	47	755
Planing and molding machine	E. F. Autenrieth	405,389	June 18	1495	398 397	47	1535
Planing and surfacing machines. Feed-roll for	L. P. Hoyt	404,486	June 4	174	44	47	1257
Planing-machine	E. F. Autenrieth	404,948	June 11	840	219	47	1398
Planing-machine	E. F. Autenrieth	405,390	June 18	1496	397	47	1535
Planing-machine	B. D. Stevens	405,280	June 18	1342	354	47	1503
Planing-machine	J. P. Welch	404,138	May 28	2401	627 626	47	1148
Planing-machine feeding device	J. F. Welch and E. F. Autenrieth	401,524	Apr. 16	1654	434 437	47	334
Planing machine. Metal-	G. A. Gray	401,267	Apr. 9	1266	337	47	248
Planing machine. Wood-	A. B. Hutchinson	404,088	May 28	2324	609 614	47	1133
Planing machine. Wood-	F. J. Plummer	404,433	June 4	87	21	47	1242
Planing machine. Wood-	G. F. Wetherell and R. B. Jones	401,397	Apr. 16	1465	387	47	299
Planing-machines. Belt-tightener for	E. F. Autenrieth	401,677	Apr. 16	1904	496	47	379
Planing-machines. Chip-breaker for	J. Connell	405,014	June 11	937	249	47	1417
Planing-machines. Pressure-bar for	G. W. Passel	401,299	Apr. 9	1316	350	47	250
Planing machinery	L. Power	405,431	June 18	1359	412	47	1547
Planter	A. Charles	403,516	May 21	1478	387 388	47	958
Planter and cultivator	D. B. Henry	400,456	Apr. 2	44	14	47	12
Planter and drill combined. Corn-	A. J. Callaway	400,897	Apr. 9	707	192	47	146
Planter and fertilizer-distributer. Corn-	J. B. Broadwell	400,740	Apr. 2	455	121	47	90
Planter and fertilizer-distributer. Seed-	W. A. Holt	405,477	June 18	1637	433	47	1564
Planter and fertilizer-distributer. Seed-	W. A. Holt	405,478	June 18	1640	435 436	47	1564
Planter attachment. Corn-	W. Price	403,369	May 14	1244	330	47	906
Planter. Check-row corn-	G. A. Thode	405,444	June 18	1581	418	47	1552
Planter. Check-row corn-	W. M. Williams	404,025	May 28	2205	579	47	1108
Planter. Combined cotton, corn, and sorghum	J. D. Schofield	404,056	May 28	2272	596 595	47	1122
Planter. Corn-	A. Lindgren	403,119	May 14	841	223	47	890
Planter. Corn-	J. Moran	405,790	June 25	2135	561	47	1665
Planter. Corn-	J. R. Patterson and M. T. Foster	405,496	June 18	1675	443	47	1573
Planter. Corn-	N. O. Starks	404,318	May 28	2688	698 699	47	1201
Planter. Corn and cotton	T. J. Cathey	401,122	Apr. 9	1058	283	47	209
Planter. Corn or cotton	J. J. Armstrong and A. S. Lowrey	401,728	Apr. 23	1967	521	47	407
Planter. Hand-	C. G. Watson	405,633	June 18	1879	497	47	1612
Planter. Potato-	S. Grenon	403,264	May 14	1077	282 283	47	874
Planter. Seed-	G. D. Haworth	402,669	May 7	174	44	47	696
Planter. Seed-	J. Mitchell	401,897	Apr. 23	2235	589	47	453
Plastic compound for use in various arts	A. T. Woodward	403,631	May 21	1634	.....	47	989
Plate-lifter	S. T. Mickey	402,606	May 7	81	19	47	679
Plate. Name and letter-drop	W. Graham	401,700	Apr. 16	1935	505	47	384
Platform: *See* Car-platform.							
Pliers for applying couplings of wire	H. D. Taylor	400,512	Apr. 2	123	33	47	27

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Plow	C. Billups	402,300	Apr. 30	2986	775	47	604
Plow	M. M. Bowers	403,032	May 7	607	182	47	795
Plow	C. G. Buechner	404,823	June 11	660	170	47	1344
Plow	J. Clayton	403,269	May 14	1186	315	47	896
Plow	S. Kauble	401,562	Apr. 16	1715	452	47	345
Plow	W. W. Leak	402,253	Apr. 30	2780	719	47	565
Plow	E. P. Lynch	400,468	Apr. 2	58	17	47	15
Plow	O. S. Meeks and J. C. Brown	403,281	May 14	1112	295	47	881
Plow	P. Reaser	404,304	May 28	2666	692	47	1197
Plow	L. B. Tebbetts, C. H. Pope, and J. A. Stewart.	404,320	May 28	2692	699	47	1202
Plow	J. W. Webster	401,615	Apr. 16	1818	475	47	365
Plow and plow-point	J. W. McAnulty	400,581	Apr. 2	219	59	47	46
Plow attachment. Gang-	E. H. Farmer	401,937	Apr. 23	2299	597	47	464
Plow. Corn-	W. Quillan and F. A. Dake	400,710	Apr. 2	408	111	47	81
Plow. Cultivating-	M. Day	403,463	May 14	1387	364	47	933
Plow, cultivator, and seeder. Combined	H. M. Kingsbury	403,114	May 14	835	221	47	839
Plow. Ditching-	W. Borton	401,998	Apr. 23	2386	621	47	481
Plow. Ditching-	R. H. Nogar	404,424	June 4	99	18	47	1239
Plow. Double-shovel	E. C. Burnett	405,007	June 11	927	246	47	1415
Plow. Gang-	L. Gibbs	402,155	Apr. 30	2644	685	47	539
Plow. Hillside-	M. J. Bunnell	400,434	Apr. 2	14	5	47	6
Plow or cultivator attachment	J. M. Burford	405,693	June 25	2001	525	47	1639
Plow. Side-hill	F. Kuntzman	405,489	June 18	1664	439	47	1569
Plow. Sulky-	C. Boulay	400,433	Apr. 2	13	4	47	6
Plow. Sulky-	J. A. Garber	404,476	June 4	161	37	47	1235
Plow. Sulky-	E. C. Westervelt	403,866	May 21	1978	520	47	1056
Plow. Swivel-	A. Gale and E. Tremblay	404,531	June 4	256	61	47	1273
Plow. Wheel-	G. Kimball	404,716	June 4	506	128 129	47	1324
Plow. Wheel-	G. Moore	403,892	May 21	2018	531	47	1065
Plows. Adjusting device for wheel-	A. J. Ventzki	400,977	Apr. 9	829	221 222	47	168
Plows. Harrow attachment for	J. F. Williams	404,142	May 28	2408	631	47	1150
Plows. Seeding attachment for	J. S. Hibbets	402,843	Apr. 30	2762	715 716	47	582
Plug for closing pipes, &c. Expanding	C. M. Kemp	402,600	May 7	72	17	47	678
Plug for sinks, tubs, &c	W. B. Smith	401,976	Apr. 23	2352	612	47	475
Plume	W. E. Barnes	403,084	May 14	748	209	47	819
Pocket-book	E. Schnopp	401,219	Apr. 9	1192	319	47	235
Pocket-book. Magnetic	B. F. Thomas	402,491	Apr. 30	3154	816	47	636
Pocket-books, &c. Frame for	E. Oldenbusch	404,979	June 11	849	233	47	1408
Pocket-books or other articles. Frame for	L. Messer	404,721	June 4	510	130	47	1325
Pocket-knife	J. C. F. Schenck	404,870	June 11	734	187	47	1376
Pocket-knife	A. Wilzin	400,947	Apr. 9	849	228	47	171
Pocket-knife	A. Wilzin	401,093	Apr. 9	1060	267	47	198
Pocket or note book	E. Weissbrod	404,758	June 4	559	143	47	1336
Poison distributer	F. Eaton	404,077	May 28	2108	605	47	1130
Polarized relay	J. C. Wilson	402,639	May 7	126	30	47	688
Pole for lumber-wagons. Coupling-	B. R. Stogsdill and W. A. Worley	403,621	May 21	1619	498	47	986
Pole or post protector	M. E. Campany	405,658	June 18	1940	510	47	1622
Pole or tower	J. W. Davy	401,313	Apr. 16	1361	363	47	280
Pole tip. Vehicle-	N. R. Doan	403,925	May 28	2068	543	47	1082
Pole tip. Vehicle-	G. T. Wilson	403,236	May 14	1035	274	47	867
Polish. Furniture-	G. H. Allen	403,715	May 21	1754	.....	47	1013
Polishing compound	G. W. Hastings	404,483	June 4	169	.....	47	1256
Polishing-machine	W. McQuiston	405,589	June 18	1811	479 480	47	1600
Portable chair	L. Engebretsen	404,610	June 4	389	88	47	1295
Portraits. Mounting	P. G. Kramer, Jr	401,441	Apr. 16	1530	404	47	312
Post: *See* Fence-post.							
Post-hole-boring machine	J. F. Lacey	402,941	May 7	574	151	47	772
Post-hole digger or earth-auger	E. F. Scholder	404,115	May 28	2368	621	47	1142
Postal-cards. Machine for packaging	W. H. Bunce, D. Slate, and J. Rodda	404,773	June 4	579	148 149 150	47	1339
Pot: *See* Coffee-pot. Dash-pot. Coffee or tea pot. Transplanting-pot.							
Pot and protector for seedlings, &c. Combined	W. L. Wright	404,585	June 4	334	80	47	1288
Pot lid or cover	E. G. Copelin	405,949	June 25	2378	623	47	1709
Pot-rest	J. McLean	401,193	Apr. 9	1157	308	47	228
Potato-digger	J. H. Finkle	405,155	June 11	1144	305	47	1458
Potato-digger	J. H. Lewis	403,846	May 21	1956	513 514	47	1052
Potato-digger	J. W. Loree	401,295	Apr. 9	1288	344	47	253
Potato-digger	C. Roberts	403,375	May 14	1253	332	47	908
Pottery-jigger	P. Wilkes	404,941	June 11	832	216	47	1396
Poultry-carrier	G. M. Beerbower	401,812	Apr. 23	2120	552	47	430
Poultry drinking-fountain	F. E. Merriman	405,369	June 18	1464	387	47	1528
Powder-duster. Poisonous-	G. B. Titus	401,313	Apr. 9	1230	354	47	902
Powder-dusting can	W. Deming	405,351	June 18	1441	381	47	1524
Powder-flask	F. J. Rabbeth	404,932	June 11	820	211	47	1393
Power: *See* Horse-power. Water-power. Mechanical power.							
Power-brake	L. P. Lawrence	403,539	May 21	1514	397	47	965
Power-indicator	E. Nixon	401,199	Apr. 9	1165	310	47	230
Power-meter	F. M. Clark and F. R. Low	401,929	Apr. 23	2288	593 594	47	462

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec	Monthly volume. Dr'g	Official Gazette. Vol.	Official Gazette. Page.
Power-testing machine. Coin-controlled	W. S. Reed	405,910	June 25	2310	607, 608	47	1698
Power-testing machine. Coin-operated hand	A. C. Meady and C. B. Bosworth	400,933	Apr. 9	766	205	47	155
Power to steam-vessels. System of applying	S. H. Timmons	404,878	June 11	745	199	47	1378
Power transmission. Electrical	N. Tesla	405,859	June 25	2229	586	47	1685
Power-transmitting device	A. Larson	403,598	May 21	1585	430	47	979
Precious metals from ores. Separating	J. Welrich	404,328	May 28	2705	.....	47	1204
Preserving fruit	W. R. Baker	401,109	Apr. 9	1023	.....	47	202
Press: *See* Baling-press. Harness-maker's press. Drill-press. Printing-press. Filter-press. Stamping-press. Grain-press. Tobacco-press.							
Press for bundle-wrapping. Self-locking	E. E. Porter	401,587	Apr. 16	1752	462	47	352
Pressure brake. Fluid-	G. A. Boyden. (Reissue)	10,993	Apr. 2	693	187, 188	47	133
Pressure contact-arm. Universal upward	C. J. Van Depoele	402,117	Apr. 23	2579	669	47	518
Pressure-gage. Detachable	M. Warren	402,703	May 7	221	59	47	705
Pressure-regulator	J. D. Bowman	402,392	Apr. 30	2989	775	47	605
Pressure-regulator	C. Dubois	400,553	Apr. 2	185	50	47	39
Pressure regulator. Fluid-	W. Ross	404,503	June 4	203	49	47	1263
Pressure regulator. Fluid-	W. Ross	404,504	June 4	206	49	47	1263
Primer. Delay-action	E. L. Zalinski and H. J. Smith	405,647	June 18	1927	547	47	1620
Primer. Electric	H. J. Smith and E. L. Zalinski	405,684	June 18	1980	519	47	1630
Primer. Electrical	E. L. Zalinski and H. J. Smith	405,646	June 18	1925	547	47	1620
Printer's chase	P. Huether	405,479	June 18	1645	434	47	1565
Printer's press-point	J. W. Meese	401,195	Apr. 9	1160	309	47	229
Printer's quoin	S. D. Webb and S. C. Swett	403,402	May 14	1305	341	47	917
Printing and addressing machinery. Combined	S. D. Carpenter	402,561	May 7	11	4, 5	47	665
Printing and delivering mechanism. Web	L. C. Crowell	400,548	Apr. 2	174	46, 47, 48	47	37
Printing and delivery mechanism	L. C. Crowell	405,016	June 11	939	249, 250, 251	47	1418
Printing apparatus. Hand	T. Bartholomew	403,822	May 21	1915	543	47	1045
Printing device	S. G. Adams and C. L. Leonori	403,062	May 14	785	209	47	819
Printing. Diaphragm to be used in stencil	M. J. D. Carter	405,198	June 11	1214	322	47	1472
Printing in imitation of type-writing. Apparatus for	C. E. Adamson	402,792	May 7	361	94	47	731
Printing-machine	F. H. Grote	405,159	June 11	1148	306	47	1460
Printing-machine	F. Kirsch	405,099	June 11	1054	281	47	1441
Printing-machine	J. W. Osborne	401,790	Apr. 23	2075	542, 543	47	423
Printing-machine	H. L. Snow	404,058	May 28	2279	596, 597	47	1123
Printing machine. Calico-	J. Sutherland	403,001	May 7	646	171	47	786
Printing-machine. Hand	W. O. Nelson	401,455	Apr. 16	1546	409	47	315
Printing machine. Line-	J. McAdams	403,206	May 14	985	260, 261	47	858
Printing-machine offset mechanism	W. Scott	402,772	May 7	330	85	47	725
Printing machine. Plate-	U. and H. E. Eberhardt	403,181	May 14	937	248, 249	47	847
Printing-machine. Rotary	J. Brooks	403,513	May 21	1468	385, 386	47	956
Printing-machine sheet-delivery apparatus	A. R. Bartlau	404,951	June 11	843	220	47	1398
Printing-machine sheet-delivery apparatus	G. P. Fenner	404,350	May 28	2738	710, 711	47	1210
Printing-machine sheet-delivery apparatus	G. P. Fenner	405,153	June 11	1140	304	47	1457
Printing-machine sheet-delivery apparatus	C. B. Maxson	405,582	June 18	1800	477	47	1598
Printing-machine sheet-delivery apparatus	W. Scott	400,875	Apr. 2	667	181, 182	47	128
Printing-machines. Form-cylinder for	J. C. Ford	403,423	May 14	1328	348	47	922
Printing-machines. Stop mechanism for cylinder	S. D. Tucker	401,473	Apr. 16	1580	418	47	391
Printing machines. Stop mechanism for web	L. C. Crowell	404,959	June 11	858	224, 225	47	1401
Printing machinery	J. H. Buxton, D. Braithwaite, and M. Smith.	405,009	June 11	929	246, 247	47	1416
Printing-press	A. B. Carty	401,541	Apr. 16	1684	443, 444, 445	47	339
Printing-press	J. F. W. Dorman	405,832	June 25	2190	576, 577	47	1676
Printing-press. Hand	J. Kunze	401,839	Apr. 23	2151	561, 562	47	436
Printing-press. Platen	F. W. Musetter	403,365	May 14	1233	327, 328, 329	47	904
Printing-presses. Ink-fountain for	A. B. Carty	401,542	Apr. 16	1688	445	47	340
Printing-presses. Inking apparatus for	J. T. Hawkins	402,447	Apr. 30	3088	600, 601	47	623
Printing-presses. Numbering attachment for	T. Robertson	400,599	Apr. 2	244	66, 67	47	51
Printing-presses. Paper-folding attachment for	T. C. Dexter	401,737	Apr. 23	2002	524	47	409
Processing apparatus	J. S. Hull and T. A. Hand	401,276	Apr. 9	1277	341	47	250
Projectile and gas-check. Combined	A. Ball	405,690	June 25	1997	524	47	1639
Propeller and governor. Chimney or stack	J. A. Robb	401,516	Apr. 16	1639	433, 434	47	331
Propeller for canal-boats, &c	A. Burrowes	404,072	May 28	2303	603	47	1128
Propeller for small boats. Hand	E. W. Schildknecht	402,482	Apr. 30	3141	814	47	633
Propeller for vessels. Current	E. Lotze	401,446	Apr. 16	1534	406	47	313
Propeller for vessels. Screw	C. Vose	402,874	May 7	477	124, 125	47	752
Propeller. Screw	A. Vogelsang. (Reissue)	10,997	Apr. 23	2596	672	47	522
Propeller. Vibrating	F. D. Whipp	405,813	June 25	2164	569	47	1671

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Protector: *See* Boot or shoe sole protector. Heel-protector. Pole or post protector. Carpet-protector. Scarf-protector. Check-protector. Skirt-protector. Chimney-protector. Thread-protector. Compositor's brace-let wrist-protector. Tree-protector. Wall-protector.							
Pruning-knife	L. H. Sholder	400,800	Apr. 9	555	153	47	104
Puller: *See* Log-puller.							
Pulley	C. W. Clark and T. D. Keasey	403,987	May 28	2152	562	47	1096
Pulley	H. J. Gilbert	401,499	Apr. 16	1601	423	47	335
Pulley	P. V. Lawson and W. L. Field	403,116	May 14	838	222	47	929
Pulley	R. C. Paul	400,706	Apr. 2	401	109	47	79
Pulley. Adjustable split	H. C. Bailey	403,891	May 28	2038	536	47	1076
Pulley. Adjustable split	H. C. Bailey	403,892	May 28	2039	536	47	1076
Pulley-block	T. R. Ferrall	403,982	May 28	2076	545	47	1084
Pulley-block. Sectional locking	S. G. Emerson	405,541	June 18	1744	460	47	1587
Pulley-bushing	C. W. Clark and T. D. Keasey	404,824	June 11	661	171	47	1364
Pulley-bushing	F. G. Perkins	404,300	May 28	2656	690	47	1195
Pulley-changing device	A. J. Burbank and E. L. Church	401,398	Apr. 16	1354	368	47	278
Pulley. Drive-	W. H. Bleasley	403,060	May 14	791	210	47	820
Pulley. Drive-	G. C. Cowles	403,460	May 14	1386	362, 363	47	932
Pulley. Grooved	W. H. Avis	405,851	June 18	1931	508	47	1621
Pulley-key	C. W. Clark	402,065	Apr. 23	2495	651	47	501
Pulley lubricator. Loose-	W. P. Miller	403,057	May 7	729	190	47	801
Pulley lubricator. Loose-	C. W. Wilder	400,885	Apr. 2	683	188	47	131
Pulley. Separable	H. J. Gilbert	405,352	June 18	1441	382	47	1594
Pulley. Split	H. Baute	402,221	Apr. 30	2734	709	47	537
Pulley. Split	J. M. Pollard	401,580	Apr. 16	1749	462	47	351
Pulley. Split	M. T. and M. O. Reeves	403,857	May 21	1968	517	47	1054
Pulley. Split	M. O. and M. T. Reeves	403,859	May 21	1970	517	47	1055
Pulley. Split band	A. Kehler	400,574	Apr. 2	212	57, 58	47	45
Pulley-support	A. G. Lawrence	402,251	Apr. 30	2776	718	47	564
Pulley. Wood-rim	W. W. Carey	403,824	May 21	1919	504	47	1045
Pulleys. Hub for split	M. O. and M. T. Reeves	403,860	May 21	1972	518	47	1055
Pulleys. Hub-plate for wooden	M. T. and M. O. Reeves	403,858	May 21	1969	517	47	1055
Pulleys. Temporary covering for	M. O. Reeves	403,861	May 21	1972	518	47	1055
Pulp-board-bending machine. Wood-	C. B. Jameson	401,353	Apr. 16	1398	370	47	287
Pulp, &c., from fibrous plants. Machine for scraping the	R. G. Ward	404,756	June 4	555	142	47	1335
Pulp machine. Wood-	F. Dilts	403,653	May 21	1639	440	47	995
Pulp-making. Wood-grinder for	B. Ellers, Jr	402,425	Apr. 30	3055	790	47	617
Pulp. Sizing	W. J. Menzies	405,209	June 18	1398	.....	47	1500
Pulverized substances. Receptacle for	F. Kampf	400,646	Apr. 2	375	101	47	74
Pulverizer	C. La Dow	404,291	May 28	2641	686, 687	47	1192
Pulverizer	F. Taggart	405,281	June 18	1343	354	47	1503
Pulverizer. Rotary	M. B. Dodge	401,678	Apr. 23	2207	577	47	448
Pulverizer, seeder, and harrow. Combined	F. B. Kendall	404,285	May 28	2635	684	47	1191
Pulverizing clay and extracting stone. Machine for	J. W. Shaffer	401,562	Apr. 23	2180	569, 570	47	442
Pump	C. Bagley	400,428	Apr. 2	6	3	47	4
Pump	P. J. Bode	403,507	May 21	1462	383	47	955
Pump	J. P. M. Earty	402,149	Apr. 30	2633	682	47	537
Pump	T. J. Ivans	402,835	May 7	423	111, 112	47	742
Pump	E. Neff	405,172	June 11	1167	311	47	1463
Pump	T. J. Rider	405,680	June 18	1972	517	47	1608
Pump	S. T. Russell	403,902	May 28	2118	554	47	1092
Pump	U. P. Sawyer	403,077	May 7	774	205	47	808
Pump	G. W. Stafford	401,979	Apr. 23	2356	613	47	476
Pump-brake	A. J. Tyler	402,116	Apr. 23	2578	668	47	518
Pump-bucket	C. La Dow	401,954	Apr. 23	2323	604	47	470
Pump. Centrifugal force-	J. Baker	405,294	June 18	1361	358, 359	47	1507
Pump-gearing	E. H. C. Oehlmann	401,512	Apr. 16	1634	432	47	331
Pump. Lift-	R. N. Roach	400,487	Apr. 2	87	24	47	20
Pump. Mercury air-	J. W. Packard	401,581	Apr. 16	1743	460	47	350
Pump. Rotary	J. H. Parker	401,903	Apr. 9	1171	311	47	231
Pump. Steam-	S. J. Parker	400,787	Apr. 2	533	146, 147	47	102
Pump. Steam-	N. J. Pritchard	405,116	June 11	1078	287, 288	47	1445
Pump. Steam or other	G. G. Picking and W. Hopkins	405,501	June 18	1681	444, 445	47	1574
Pump. Stock-	G. W. Schroeder	404,737	June 4	528	135	47	1338
Pump. Vacuum-	J. T. Hambay	400,668	Apr. 2	348	94	47	69
Pump-valve	A. Belcham	402,647	May 7	137	33, 34	47	690
Pumps. Rubber bucket for chain-	M. D. Temple	405,928	June 25	2342	615	47	1703
Pumps. Valve-gear for duplex steam-	N. E. Nash	402,100	Apr. 23	2551	664	47	513
Pumping-engine. Steam	F. Steinmann	400,877	Apr. 2	670	162, 163	47	128
Pumping rig. Well	C. C. Stover	404,744	June 4	540	138	47	1331
Punch	F. H. Seibel	401,220	Apr. 9	1192	319	47	235
Punch	W. H. Woglom	401,918	Apr. 23	2273	590	47	459
Punch, shears, and saw-gummer. Combined	J. Schofield	401,504	Apr. 16	1765	465	47	354
Punching-machine. Hydraulic	C. C. Klinik, F. Pinkowski, and A. Gross.	404,633	June 4	398	96	47	1301
Punching, shearing, and such like machine	C. Schumacher, R. Daelen, and M. Rothe.	401,795	Apr. 23	2093	546	47	425
Push-button	H. L. Currier	404,033	May 28	2280	585	47	1113

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Puzzle	F. Howard	402,017	Apr. 23	2418	630	47	487
Quicksand. Apparatus for raising	H. Stoltze, Sr	404,741	June 4	533	137	47	1329
Quilting-machine	A. Faulkner	405,403	June 18	1512	402	47	1539
Quilting-machine shuttle-carrier	J. Thomas and G. Creter	401,981	Apr. 23	2359	614	47	477
Rack: *See* Display-rack. Display and sale rack. File-rack. Gun-rack. Hat and coat rack. Hay and grain rack. Meat-rack. Umbrella or cane rack. Wagon-rack. Wood-rack.							
Rack-teeth. Automatic machine for cutting	U. and H. E. Eberhardt	400,645	Apr. 2	307	86, 87	47	64
Radiator	S. D. Tompkins and T. H. Williams	402,547	Apr. 30	3233	836	47	651
Radiator for heating buildings	J. Shakleton	402,357	Apr. 30	2941	762	47	595
Radiator-loops. Machine for assembling	H. H. Taylor	404,746	June 4	541	134, 135	47	1331
Radiator. Steam	L. Halsey	403,936	May 28	2981	546	47	1085
Radiator. Steam	T. Holland	404,353	May 28	2742	711	47	1211
Rail	R. D. Bacot	401 107	Apr. 9	1019	271	47	302
Rail-braces. Forming	J. A. Tranell	403,450	May 14	1370	356	47	929
Rail-brake	M. A. Michaler	401,755	Apr. 23	2026	530	47	414
Rail-cutting machine	T. G. Perkins	400,707	Apr. 2	402	109, 110	47	80
Rail-drill	J. Doyle and J. Williamson	403,040	May 7	707	185	47	797
Rail-joint	D. R. Atkinson	404,764	June 4	565	145	47	1337
Rail-joint	E. M. Cooke	402,308	Apr. 30	2861	739	47	581
Rail-joint	E. M. Cooke	402,402	Apr. 30	3007	781	47	607
Rail-joint	A. J. Schaff	404,308	May 28	2674	692	47	1198
Rail-joint	G. A. Weber	402,372	Apr. 30	2958	767	47	599
Rail-spiking machine	S. W. Roberts and E. P. Caldwell	401,374	Apr. 16	1430	378	47	293
Rail-track-laying machine	D. S. Moore and C. McLennan	405,318	June 18	1395	367, 368	47	1515
Rails. Cast-metal brace-chair for girder	W. M. Brown	401,538	Apr. 16	1681	442	47	339
Rails to iron sleepers with iron cramps. Securing	K. L. Gucht	402,818	May 7	399	104	47	738
Railway	E. J. Devens	403,464	May 14	1389	364	47	933
Railway	W. J. Kenney	402,164	Apr. 30	2650	688	47	542
Railway-alarm apparatus. Automatic	W. Rymer	401,376	Apr. 16	1434	378, 379	47	294
Railway and railway-vehicle	G. W. Brown	400,544	Apr. 2	170	44, 45	47	36
Railway-bridge guard	S. G. Scott and W. O'Hern	402,487	Apr. 30	3148	815	47	635
Railway-bridges. Danger-signal for	J. W. Steele	401,763	Apr. 23	2037	533, 534	47	416
Railway-bridges. Danger-signal for	J. W. Steele	401,764	Apr. 23	2039	535	47	416
Railway-bridges. Danger-signal for	J. W. Steele	401,799	Apr. 23	2099	549	47	426
Railway-bridges. Danger-signal for	J. W. Steele	401,800	Apr. 23	2100	549	47	427
Railway-bumper	J. Waterhouse	402,790	May 7	358	93	47	730
Railway. Cable	A. R. Parkeson	402,863	May 7	398	157	47	777
Railway-conduit mold. Cable	I. Bishop	403,728	May 21	1777	467	47	1017
Railway cross-tie. Combination	W. H. Bagby	403,634	May 21	1637	433	47	990
Railway-crossing	B. B. Morgan	403,060	May 7	734	191	47	802
Railway-crossing signal	J. H. Young	401,323	Apr. 9	1345	358	47	265
Railway crossing. Street	A. J. Moxham	402,470	Apr. 30	3127	811	47	631
Railway danger-signal	F. Allen	403,981	May 28	2144	560	47	1097
Railway. Electric	W. Cannell	404,469	June 4	148	38	47	1253
Railway. Electric	L. Daft	404,687	June 4	470	118	47	1317
Railway. Electric	R. M. Hunter	402,802	May 7	419	110	47	742
Railway. Electric	R. M. Hunter	403,192	May 14	953	252	47	850
Railway. Electric	R. M. Hunter	403,754	May 21	1809	476	47	1024
Railway. Electric	R. M. Hunter	405,556	June 18	1764	466	47	1591
Railway. Electric	A. L. Lineff	405,365	June 18	1457	385, 386	47	1527
Railway. Electric	R. Lundell	400,926	Apr. 9	751	202, 203	47	153
Railway. Electric	S. H. Short	401,221	Apr. 9	1194	319	47	235
Railway. Electric	S. H. Short	404,873	June 11	738	188	47	1377
Railway. Electric	F. M. Speed	403,786	May 21	1865	490	47	1035
Railway. Electric	C. J. Van Depoele	403,801	May 21	1887	496	47	1040
Railway. Elevated	A. D. Gates	402,319	Apr. 30	2880	746, 747	47	584
Railway. Elevated and suspended cable	G. R. Taylor	402,490	Apr. 30	3151	816	47	635
Railway fish-plate	T. A. Davies	402,725	May 7	250	68	47	711
Railway-frog. Automatic	M. Leary	405,965	June 25	2402	629	47	1713
Railway-frog. Sliding	F. J. Hoyt	402,830	May 7	417	109, 110	47	741
Railway-gate	A. J. McDonald	401,754	Apr. 23	2035	529	47	414
Railway-gate	A. J. McDonald	404,724	June 4	514	131	47	1326
Railway-gate	I. Whisman	405,814	June 25	2165	569	47	1672
Railway-gate operative mechanism	J. Ewart	403,929	May 28	2072	544	47	1063
Railway grip. Cable	J. H. Pendleton, C. Tiers, A. Bryson, Jr., and L. Moss.	404,499	June 4	196	47, 48	47	1261
Railway grip. Cable	C. Tiers, J. H. Pendleton, and A. Bryson, Jr.	404,576	June 4	315	75, 76, 77	47	1285
Railway-guard. Automatic	J. V. Reams	404,435	June 4	89	22	47	1243
Railway. Incline electric	R. M. Hunter	402,084	Apr. 23	2523	658	47	507
Railway-joint	J. Speicher	402,777	May 7	338	87	47	726
Railway mechanism. Cable	T. Bradwell	403,512	May 21	1467	385	47	956
Railway-motor	J. R. Valentine and A. T. Grigg	400,522	Apr. 2	142	37	47	30
Railway motor. Street	B. C. Pole	401,855	Apr. 23	2171	567	47	441
Railway. Pneumatic	M. Bodefeld	403,729	May 21	1778	467, 468	47	1018
Railway-rail	E. J. Knapp	402,022	Apr. 23	2427	633	47	488
Railway-rail fastener	C. Wetter	404,550	June 4	283	67	47	1278

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Railway-rail fish-plate	T. A. Davies	402,724	May 7	249	66	47	711
Railway-rail joint	E. P. Jervey	404,487	June 4	177	41	47	1257
Railway-rail joint	O. L. Olds	405,675	June 18	1464	516	47	1627
Railway-rail tie and fastening	J. Frysinger	400,558	Apr. 2	104	52	47	41
Railway-rails. Electric connection for	C. J. Van Depoele	403,010	May 7	699	174	47	788
Railway-rails. Manner of jointing	C. R. Hastings	404,578	May 28	2626	682	47	1169
Railway-signal	T. A. Casey	403,515	May 21	1475	387	47	958
Railway-signal	S. T. Street	400,880	Apr. 2	674	164	47	129
Railway signal	A. J. Wisner	404,457	June 4	124	30	47	1249
Railway signal and switch connections. Compensator for	A. E. Mitchell and W. N. Stevens	402,080	Apr. 23	2441	636	47	491
Railway-signal. Automatic	J. T. Carter	402,398	Apr. 30	3002	779	47	606
Railway-signal. Automatic	J. Oxley	400,703	Apr. 2	398	108	47	78
Railway-signal. Electrical	J. C. White	405,815	June 25	2167	570	47	1672
Railway signals and points. Working and interlocking	J. Hill and J. P. O'Donnell	404,408	June 4	51	12, 14	47	1235
Railway-signals. Switch-instrument for	G. C. Steenbergh	403,619	May 21	1616	428	47	986
Railway signals. Tripping device for	J. T. Carter	402,505	Apr. 30	3172	822	47	639
Railway-signaling. Electrical	W. H. Waddell	400,525	Apr. 2	146	38	47	31
Railway-spikes. Finishing	H. Greer	401,346	Apr. 16	1386	.....	47	285
Railway splice-bar	J. T. Clark	403,251	May 14	1057	278	47	871
Railway. Street	L. M. Hosea	401,332	Apr. 16	1395	369	47	287
Railway. Street	W. L. Judson	402,933	May 7	560	148	47	766
Railway. Street	W. L. Judson	402,934	May 7	563	148, 149	47	769
Railway. Street cable	H. Flad	405,468	June 18	1625	428, 429, 430	47	1561
Railway. Suspended	J. Thomson	405,059	June 11	1006	266, 268	47	1432
Railway-switch	A. A. Ackerly	405,976	June 25	2421	634	47	1717
Railway-switch	A. A. Ackerly	405,977	June 25	2424	634	47	1717
Railway-switch	J. A. Duggan	405,020	June 11	949	253, 254	47	1420
Railway-switch	E. Gordon	401,345	Apr. 16	1396	367	47	285
Railway-switch	W. J. Kelly	405,361	June 18	1451	384	47	1526
Railway-switch	J. T. Richardson	404,864	June 11	725	185	47	1375
Railway switch and signal operating and interlocking device	H. and C. R. Johnson	403,271	May 14	1092	289, 290	47	877
Railway-switch appliance	M. B. Mills	404,214	May 28	2533	661	47	1172
Railway-switch. Automatic safety	J. H. Walt	405,513	June 18	1509	449	47	1517
Railway-switch stand	C. Alkins	400,816	Apr. 2	583	159, 160	47	111
Railway-switch stand	C. Alkins	401,671	Apr. 16	1897	494	47	378
Railway-switch stand	G. F. Gage	400,657	Apr. 2	320	90	47	66
Railway-switches. Apparatus for operating	A. H. Johnson	403,195	May 14	966	254	47	854
Railway-switches. Electric appliance for	M. Wuerpel	405,519	June 18	1709	451	47	1579
Railway-switches. Interlocking device for	H. B. Potter	400,943	Apr. 9	780	209	47	158
Railway-switches. Interlocking signal apparatus for	F. H. Treacy	401,666	Apr. 16	1890	492	47	377
Railway system. Electric	S. H. Short	401,796	Apr. 23	2095	546, 547	47	426
Railway systems. Electric-heating apparatus for	M. W. Dewey	401,482	Apr. 16	1591	420, 421	47	323
Railway-tie and fastening. Metallic	H. L. De Zeng	400,643	Apr. 2	304	86	47	63
Railway-tie. Metallic	A. J. Hartford	401,949	Apr. 23	2316	602	47	468
Railway-track	J. Haish	404,401	June 4	39	11	47	1233
Railway-track alarm. Electric	T. Taylor	401,472	Apr. 16	1579	418	47	321
Railway-track instrument	G. C. Steenbergh	401,664	Apr. 16	1887	492	47	376
Railway track. Street	R. Dansinger	403,741	May 21	1794	472	47	1021
Railway-tracks. Construction of	T. H. Gibbon	403,465	May 14	1390	364	47	933
Railway-train brake	J. K. Hardwicke	403,188	May 14	947	250, 251	47	849
Railway-trains. Automatic electric controller for	F. E. Kinsman	405,964	June 25	2396	628, 629	47	1712
Railway-trains. Device for indicating and recording the speed, &c., of	H. L. Currier	404,032	May 28	2225	583, 584, 502	47	1112
Railway-vehicles. Brake apparatus for	T. Cowburn and F. Tentschert	401,694	Apr. 16	1927	503, 504	47	383
Railway-wagon brake	W. S. Laycock	403,540	May 21	1515	397	47	965
Railways. Automatic signal for	G. Provost	403,370	May 14	1245	330	47	907
Railways. Block-signal system for	E. Blunt	402,556	May 7	4	2	47	604
Railways. Closed slotted conduit for electric	C. J. Van Depoele	405,028	June 18	1809	494, 495	47	1610
Railways. Conduit for cable	E. C. Phillips	400,482	Apr. 2	80	23	47	18
Railways. Conduit for cable or electric	W. J. Brewer	405,767	June 25	2106	552	47	1660
Railways. Conduit for driving mechanism of street	W. L. Judson	402,830	May 7	428	113	47	743
Railways. Connector for electric	L. Daft	403,092	May 14	800	212	47	822
Railways. Contact device for electric	F. E. Fisher	405,544	June 18	1750	462	47	1598
Railways. Current-collecting device for electric	R. M. Hunter	400,916	Apr. 9	736	199	47	151
Railways. Drip-pan for elevated	E. A. Trapp	404,751	June 4	549	140	47	1333
Railways. Endless belt for grips for cable	J. H. Pendleton, A. Bryson, Jr., C. Tiers, and L. Moss.	404,500	June 4	199	48	47	1262
Railways. Grip-slot closer for cable	C. Davis	403,651	May 21	1657	439	47	994
Railways. Guide-pulley for cable	J. H. Pendleton and L. Moss	404,498	June 4	193	47	47	1260
Railways. Means for operating trains upon cable	J. H. Pendleton and A. Bryson, Jr.	404,497	June 4	189	45, 46	47	1260
Railways. Metallic sleeper for	P. Kolgraf	404,043	May 28	2242	587, 588	47	1114
Railways. Pneumatic alarm for	T. Taylor	401,471	Apr. 16	1578	417	47	320
Railways. Sheaf-supporting frame for cable	J. Walker	401,966	Apr. 23	2366	615	47	478
Railways. Sheave or pulley for cable	T. H. Burridge	403,396	May 14	1163	314	47	885
Railways. Substructure for elevated	S. W. Robinson	404,017	May 28	2196	577	47	1107
Railways. System of elevated conductors for electric	S. H. Short	401,797	Apr. 23	2096	546, 548	47	426
Railways. Track-moistening apparatus for electric	E. D. Priest	404,559	June 4	294	70	47	1280

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Railways. Trolley for electric	D. A. Ainslie	400,725	Apr. 2	431	117	47	85
Railways. Trolley for electric	T. Streat	403,969	May 28	2128	557	47	1094
Railways. Trolley for electrical	D. A. Ainslie	400,724	Apr. 2	430	116	47	85
Railways. Trolley for electrical	D. A. Ainslie	404,149	May 28	2416	631	47	1151
Railways. Tunnel-yoke for cable	C. A. Marshall	402,533	Apr. 30	3215	833	47	648
Railways. Underground conduit for electrical	F. H. Reed	401,515	Apr. 16	1638	433	47	331
Rake: *See* Hay-rake. Lawn-rake. Horse-rake.							
Rakes. Making	W. H. Cowdery	405,661	June 18	1944	511	47	1623
Ram. Ship's	J. F. Ward	403,806	May 21	1894	497	47	1041
Rammer. Steam road	F. W. Carter	402,063	Apr. 23	2492	651	47	501
Range	G. H. Phillips	404,502	June 4	202	48	47	1262
Ranges or stoves. Hot-water reservoir for	A. Hursh	403,270	May 14	1092	289	47	677
Ratchet-drill	H. Brinkmann	404,592	June 4	343	82	47	1290
Ratchet-drill	H. M. Glines	401,344	Apr. 16	1384	367	47	295
Ratchet-drill	W. G. Morgan	402,096	Apr. 23	2541	669	47	511
Ratchet-drill	W. S. Rogers and W. C. Jones	401,375	Apr. 16	1433	378	47	303
Ratchet-drill	T. N. Scott	401,465	Apr. 16	1569	415	47	319
Ratchet-stock	G. W. Glenn	405,469	June 18	1629	430	47	1562
Ratchet-wrench	W. H. Whitmore	400,729	Apr. 2	427	116	47	85
Rattan-machine	F. B. Alexander	405,226	June 18	1359	358	47	1507
Razor	F. Aschener	404,763	June 4	565	144	47	1337
Razor. Safety	H. B. Leach	402,463	Apr. 30	3114	808	47	628
Razor. Safety	H. B. Leach	402,946	May 7	578	152	47	773
Razor-strop	G. H. Coursen	403,648	May 21	1653	438	47	994
Razor-strop	J. Lamont	402,461	Apr. 30	3111	807	47	628
Razor-strop. Flexible	J. L. Pomeroy	402,033	Apr. 23	2447	637	47	492
Razor-stropping device	F., R., and O. Kampfe	405,961	June 25	2372	627	47	1712
Reapers and mowers. Cutter-bar for	J. I. Murray	401,714	Apr. 16	1960	511	47	390
Reaping and mowing machines. Apparatus for sharpening the cutters and fingers of	R. McGregor	404,976	June 11	886	231, 232	47	1407
Receptacle for bundles	L. M. Rose	401,071	Apr. 9	964	257	47	192
Reciprocating machinery. Mechanism for cushioning traversing beds of	H. P. Feister	404,394	June 4	29	8	47	1231
Reclining-chair	R. H. Arnold	403,318	May 14	1169	310	47	893
Record	H. C. Seely	401,661	Apr. 16	1884	491	47	375
Recorder: *See* Message and time Phonograph-recorder. recorder.							
Reed chair, &c	J. Lemman	401,959	Apr. 23	2330	605	47	471
Reed or rattan chair, &c	H. T. Leavis	401,958	Apr. 23	2329	605	47	471
Reel: *See* Bolting-reel. Paper-reel. Clothes-line reel. Sand-reel. Fishing-reel. Yarn-reel. Harvester-reel.							
Reel for machines for forming and reeling ropes or strands	M. H. Day	402,004	Apr. 23	2395	624	47	483
Reflector. Lamp	G. W. Pelton	405,173	June 11	1168	312	47	1463
Refrigerating and ventilating car	C. E. Lucas and A. A. Wood	400,863	Apr. 2	652	177	47	125
Refrigerating apparatus	N. W. Condict, Jr	402,809	May 7	3?8	102	47	736
Refrigerating apparatus	R. R. Graf	402,520	Apr. 30	3196	828	47	644
Refrigerating-tower	A. R. Pechiney	400,595	Apr. 2	238	64, 65	47	50
Refrigerator	M. S. Millard	404,854	June 11	706	181	47	1372
Refrigerator	W. R. Monroe	405,492	June 18	1668	440	47	1570
Refrigerator	J. Swetlisch	403,789	May 21	1868	491	47	1036
Refrigerator-car	W. H. H. Sisum	401,385	Apr. 16	1449	383	47	296
Refrigerator ice-holder and water-escape	U. Reiffer	401,589	Apr. 16	1755	463	47	353
Refrigerator packing-box	P. Hohmeier and J. Ball	400,768	Apr. 2	493	134	47	97
Regenerative burner	R. Wallwork and A. C. Wells	404,063	May 28	2284	598	47	1124
Regenerative burner	R. Wallwork and A. C. Wells	404,064	May 28	2288	599	47	1125
Regenerative furnace	W. B. Wright	405,936	June 25	2353	617	47	1705
Register: *See* Cash-register. Medicine-spoon register. Fare-register. Passenger-register. Hot-air register. Time-register. Hotel-room register.							
Register	H. S. Ross	401,518	Apr. 16	1641	474	47	332
Registering-lock	J. Loewenthal	405,105	June 11	1062	283	47	1443
Regulator: *See* Boiler-feed regulator. Electric-motor regulator. Feed-regulator. Electric-machine regulator. Gas-pressure regulator. Pressure-regulator. Electric machine or motor regulator. Temperature-regulator.							
Rein-holder	W. B. Adams	402,791	May 7	360	93	47	730
Rein-holder	W. F. Turman	404,579	June 4	324	78	47	1286
Rein-support	W. T. Sime	405,278	June 18	1339	354	47	1503
Respirator	H. Smith	403,966	May 28	2125	556	47	1093
Reversing mechanism. Automatic	J. G. Crawford	402,654	May 7	146	36	47	892
Revolvers. Cartridge-feed pack for	C. J. Ehbets	402,424	Apr. 30	3053	789	47	617
Rheostat	N. Benardos	401,405	Apr. 16	1479	391, 392	47	302
Rheostat	J. B. Entrikin	402,912	May 7	525	139	47	762
Rheostat	J. L. Gish	403,345	May 14	1206	321	47	900
Ribbon-holder	O. E. Sully	403,155	May 14	896	236	47	840
Rice-huller	H. Scholfield	400,604	Apr. 2	249	68	47	52
Rice. Treating	E. V. Donelson	400,835	Apr. 2	612	.....	47	117
Ring: *See* Curtain-ring. Lap-ring. Ear-ring. Packing-ring. Finger-ring. Umbrella-tip ring.							
Ring	F. Kaffeman	403,112	May 14	833	220	47	828

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Ring-dies. Making	F. Ecaubert	404,562	June 4	242	57	47	1270
Rings. Forming	J. B. Bowden	400,541	Apr. 2	167	44	47	35
Rivet	M. Bray	402,649	May 7	141	35	47	690
Rivet	A. Kirks	401,747	Apr. 23	2017	528	47	412
Rivet-holding device	J. P. Weidemeyer	402,288	Apr. 30	2929	738	47	575
Rivets. Manufacturing pronged	M. Bray	402,650	May 7	142	35	47	691
Riveting apparatus. Electric	E. E. Ries	403,374	May 14	1251	331	47	907
Riveting. Electric	E. E. Ries	404,306	May 28	2609	683	47	1196
Riveting. Hydraulic machine for	H. Smith	401,975	Apr. 23	2350	611, 612	47	475
Riveting-machine	H. S. Maxim	401,708	Apr. 16	1945	507, 508	47	386
Riveting-machine	J. J. Unbehend	405,929	June 25	2343	615	47	1703
Riveting-machine. Hand	F. H. Harris	403,348	May 14	1209	322	47	900
Roaster: *See* Coffee-roaster.							
Rock-drill	F. Buschmann	402,229	Apr. 30	2744	711	47	559
Rock-drill	A. J. Sypher	403,496	May 14	1441	377, 378	47	942
Rock-drill. Steam	A. J. Sypher	405,127	June 11	1094	291	47	1449
Rocking-chair	L. C. Gunn	400,564	Apr. 2	201	54, 55	47	43
Rocking-chair	W. L. Paine	400,478	Apr. 2	76	22	47	16
Rocking-chair and carriage	A. Pahlow	403,773	May 21	1844	484	47	1030
Rod: *See* Lightning-rod. Loom lease-rod.							
Rod-coiling apparatus	A. Rusbatch	405,433	June 18	1502	413	47	1548
Rod-coupler	A. G. Berry	402,132	Apr. 30	2607	675	47	532
Rods. Machine for manufacturing cylindrical	H. H. Post	404,654	June 4	422	104, 105	47	1306
Roller: *See* Card-grinding roller.							
Roller for leveling snow and roads	L. B. Babcock	404,671	June 4	445	112	47	1311
Roller-mill	H. A. Barnard	401,243	Apr. 9	1231	328, 329	47	241
Roller-mill feeder	R. Wilcox	402,049	Apr. 23	2470	644	47	497
Roller-mill. Reduction	M. Mastas	400,929	Apr. 9	759	204	47	154
Rolling bulb-webbed slot-rails. Rolls for	F. Colley	401,682	Apr. 16	1926	502	47	383
Rolling machine. Tire	J. Kennedy	403,431	May 14	1338	351	47	923
Rolling machine. Tire	J. Munton	401,713	Apr. 16	1956	510, 511	47	389
Rolling metals. Rolls for	J. Guest	400,845	Apr. 2	625	169	47	120
Rolling-mill	J. Guest	400,844	Apr. 2	624	169	47	120
Rolling-mill	J. Robertson	403,290	May 14	1123	298	47	883
Rolling-mill	J. S. Seaman	400,495	Apr. 2	96	26	47	22
Rolling-mill	F. H. Treat	402,784	May 7	347	90, 91, 92	47	728
Rolling-mill feed-table	J. Morgan	403,304	May 14	982	259, 260	47	857
Rolling-mill plants. Feed and transfer mechanism for	R. P. Dolan	402,146	Apr. 30	2630	681	47	536
Rolling-mill. Universal	J. Kennedy and H. Aiken	403,273	May 14	1098	290, 291, 292	47	878
Rolling three-flanged slot-rails. Rolls for	F. Colley	401,681	Apr. 16	1925	501	47	383
Rolling Z-shaped slot-rails. Rolls for	F. Colley	401,683	Apr. 16	1927	502	47	383
Roofing-cleat. Metallic	L. L. Sagendorph	405,605	June 18	1634	486	47	1605
Roofing. Felt	G. A. Herdman	403,588	May 21	1575	416	47	977
Roofing material	P. Carey	402,559	May 7	10	.....	47	665
Roofing. Metallic	M. F. Hamsley	403,750	May 21	1805	475	47	1023
Roofing-package	W. L. and H. Heberling	405,311	June 18	1386	365	47	1513
Roofing-plate. Metallic	G. Patten	403,444	May 14	1359	357	47	926
Roofing-plate. Metallic	L. L. Sagendorph	405,122	June 11	1088	290	47	1448
Roofing. Sheet-metal	J. W. Abrahams	403,890	May 28	2031	535	47	1075
Roofing. Sheet-metal	F. G. Caldwell	403,415	May 14	1319	345	47	920
Roofing. Sheet-metal	A. C. Kanneberg	403,844	May 21	1951	512	47	1051
Rope-clamp	A. Volk	405,686	June 18	1982	519	47	1630
Rope or cable	C. M. Thompson	400,970	Apr. 9	818	219	47	166
Rope-tightening device	W. F. Blakemore	404,158	May 28	2429	636	47	1155
Ropy form. Apparatus for delivering material in	I. E. Palmer	402,274	Apr. 30	2809	727	47	571
Rotary bolt	J. B. Cornwall	404,345	May 28	2729	708	47	1209
Rotary cutter	A. C. Heath and F. H. White	403,667	May 21	1678	445	47	999
Rotary engine	M. A. Buford	401,616	Apr. 23	2124	553, 554	47	430
Rotary engine	H. Haab	404,834	June 11	690	175, 176	47	1367
Rotary engine	J. F. Hines, Sr.	401,835	Apr. 23	2148	560	47	435
Rotary engine	W. N. Hutchinson	402,834	May 7	422	111	47	762
Rotary engine	J. W. Smallwood and D. R. Austin	402,625	May 7	165	25, 26	47	684
Rotary meter	P. Ball	404,374	June 4	2	1	47	1225
Rotary steam-engine	J. H. and H. H. Dow	403,335	May 14	1192	316	47	897
Rotary steam-engine	H. L. Phelps	404,557	June 4	292	69	47	1280
Routing and wood-working machine	H. M. Albee	404,945	June 11	837	217, 218	47	1297
Routing-machine	D. A. Sears	405,916	June 25	2322	610	47	1700
Rubber blankets. Refinishing	F. H. Kogge	403,942	May 28	2001	.....	47	1066
Rubber boot	E. F. Bickford	404,674	June 4	449	113	47	1312
Rubber boot or shoe	J. L. Joyce	404,416	June 4	68	16	47	1237
Rubber-dam clamp	J. D. Ennes	402,215	Apr. 30	2674	744	47	563
Rubber, &c. Production of material as substitute for India-	F. Greening	401,260	Apr. 9	1271	.....	47	240
Rubber shoe	H. J. Doughty	404,264	May 28	2602	677	47	1185
Rubber shoes. Mechanism for the manufacture of	H. J. Doughty	404,265	May 28	2603	677, 678	47	1185

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Rule. Dress-cutter's	T. I. Stockman	400,504	Apr. 2	112	30	47	25
Rule-holder	M. Murphy	404,924	June 11	809	208	47	1391
Rule-working machine	R. Atwater	400,818	Apr. 2	587	160	47	112
Ruler	A. Brown and P. C. Payette	404,593	June 4	343	82	47	1290
Ruler	N. Vermehren	401,392	Apr. 16	1450	385	47	298
Ruler and blotter. Combined	R. Lockwood	405,217	June 11	1241	320	47	1477
Ruler. Parallel	N. S. Phelps and C. L. Ellis	400,596	Apr. 2	240	62	47	50
Ruling device	M. H. Spear	404,315	May 28	2684	.....	47	1200
Ruling machine. Paper	H. A. Brissard	402,057	Apr. 23	2479	647, 648, 649	47	499
Ruling machine. Paper	J. C. Forman	401,151	Apr. 9	1091	290	47	214
Sad-iron	W. Bell	405,071	June 11	1092	273	47	1435
Sad-iron	A. Reinke	405,802	June 25	2151	563	47	1669
Sad-iron	A. Ross	400,796	Apr. 2	549	151	47	105
Sad-iron	C. A. Stockwell and W. D. Enser	405,617	June 18	1851	496	47	1607
Sad iron	A. W. M. Keen	403,050	May 7	722	188	47	800
Saddle	J. N. Anderson	405,649	June 18	1929	507	47	1620
Saddle-bag	H. Aschenbach and J. W. Theobald	404,669	June 4	442	111	47	1311
Saddle. Harness	J. W. Clark	401,134	Apr. 9	1060	284	47	209
Saddle. Harness	A. McKay	403,129	May 14	856	222	47	833
Saddle-tree	J. M. Fink	401,938	Apr. 23	2300	591	47	465
Saddle-trees. Forming flexible	J. L. Hall	402,590	May 7	59	14	47	675
Safe	P. F. King	405,562	June 18	1772	468, 469	47	1592
Safe-alarm	J. S. Minnis	403,688	May 21	1713	452	47	1006
Safe bolt-work. Device for operating	E. W. Fowler	403,527	May 21	1495	396, 397	47	962
Safe. Burglar-proof	P. F. King	405,563	June 18	1774	469	47	1593
Safe. Burglar-proof	P. F. King	405,564	June 18	1774	469	47	1593
Safe or vault	M. Sieradorfer	400,499	Apr. 2	104	28	47	24
Safes. Manufacturing fire-proof	J. Baum	405,655	June 18	1936	509	47	1622
Safes. Means for connecting spindles to the walls or doors of	H. Gross	402,587	May 7	56	13	47	674
Safety-burner	J. and H. Mason	402,202	Apr. 30	2794	738	47	568
Safety-pin	J. Alcock	402,051	Apr. 23	2472	646	47	497
Safety-pin	G. W. Herbert and S. Guinery	404,003	May 28	2179	573, 574	47	1104
Safety-pin	J. Jenkins	405,558	June 18	1768	466	47	1592
Safety-pin	E. Pickhardt and D. A. Carpenter	403,607	May 21	1597	423	47	982
Safety-pin	E. Pickhardt and D. A. Carpenter	403,608	May 21	1597	423	47	982
Safety-switch	L. Dunn	405,350	June 18	1439	383	47	1524
Sail. Ship's	J. Roberts	401,373	Apr. 16	1429	378	47	293
Sale of flexible articles. Apparatus for the automatic	P. Simons	402,773	May 7	332	86	47	725
Salt. Apparatus for the manufacture of	H. Williams, J. L. and L. R. Alberger	400,983	Apr. 9	838	224, 225	47	170
Sample-holder and box-pull	W. W. Johnson	403,535	May 21	1510	399	47	964
Sand. Apparatus for cleaning and assorting	T. Girvan	405,732	June 25	2057	540	47	1650
Sand-paper device	S. Ross, Jr.	401,215	Apr. 9	1184	316	47	233
Sand-reel	C. M. Thompson	402,631	May 7	115	28	47	686
Sash-balance	W. Kadow, Jr.	405,711	June 25	2025	532	47	1644
Sash-balance	J. McArthur	403,479	May 14	1414	370	47	937
Sash-balance. Spring	W. S. Jennings	400,918	Apr. 9	741	199	47	151
Sash-cord fastener	H. Morgan	403,361	May 14	1227	326	47	903
Sash-fastener	J. Abbott	404,145	May 28	2411	632	47	1150
Sash-fastener	J. W. Atwood	400,535	Apr. 2	161	41	47	34
Sash-fastener	R. J. Buchanan	404,467	June 4	146	34	47	1252
Sash-fastener	J. H. Buettner	403,645	May 21	1640	437	47	993
Sash-fastener	W. F. Elkins	400,554	Apr. 2	186	49	47	40
Sash-fastener	C. H. Foster	402,816	May 7	397	104	47	738
Sash-fastener	G. M. Griswold	403,102	May 14	814	216	47	824
Sash-fastener	L. K. Johnson	405,095	June 11	1050	280	47	1441
Sash-fastener	W. Koenen	404,910	June 11	800	185	47	1389
Sash-fastener	W. Livingstone	405,784	June 25	2128	559	47	1664
Sash-fastener	W. H. Murphy	401,393	Apr. 9	1306	347	47	256
Sash-fastener	W. E. Nageborn	405,319	June 18	1396	368	47	1515
Sash-fastener	R. A. Reisse	401,460	Apr. 16	1556	411	47	317
Sash-fastener	T. B. Ross	405,326	June 18	1406	370	47	1517
Sash-fastener	T. S. Smith	403,391	May 14	1289	337, 338	47	913
Sash-fastener	H. C. Trost and F. A. Weston	402,074	Apr. 23	2507	655	47	504
Sash-fastener	J. R. Whem	403,810	May 21	1898	498	47	1042
Sash-holder	O. P. Hammarlund and E. Larson	404,537	June 4	264	63	47	1274
Sash-holder	C. A. Krafft	405,101	June 11	1056	262	47	1442
Sash-holder	A. W. Nelson	404,977	June 11	887	232	47	1407
Sash-holder	E. Reed	405,180	June 11	1158	314	47	1464
Sash-holder	R. P. Waddell	405,512	June 18	1698	449	47	1577
Sash holder	J. Weathers	403,013	May 7	665	175	47	789
Sash-lift	W. A. Williamson	404,666	June 4	439	110	47	1310
Sash. Machine for grooving window	F. V. Phillips	400,597	Apr. 2	241	65	47	50
Sash ventilator. Storm	F. Straub	405,189	June 11	1200	319	47	1469
Satchel attachment	J. A. Yarger	400,624	Apr. 2	253	70	47	59
Saucepan-handle	W. H. Berger	402,131	Apr. 30	2606	675	47	532
Saw	J. Winger	404,242	May 28	2573	670	47	1179
Saw-blades, &c. Hardening apparatus for	S. T. Paul	401,206	Apr. 9	1173	312	47	231
Saw cleaner. Gin	G. P. Melchior	403,686	May 21	1710	452	47	1005
Saw-dressing device	W. Kirkpatrick	405,495	June 18	1653	436	47	1567
Saw-feeder. Treadle	H. Arndt and F. Stutzman	404,383	Apr. 30	2975	772	47	602
Saw filing, setting, and straightening machine	C. E. Wright	403,314	May 14	1159	308, 309	47	890
Saw for cutting tenons	T. Forsaith	400,906	Apr. 9	718	194	47	148
Saw-guide	A. Goulding	405,210	June 11	1233	327	47	1475
Saw-guide	C. W. Sleeper and R. M. Woodard	400,801	Apr. 2	556	153	47	107

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Saw guide. Band	C. R. Backer	403,172	May 14	990	242, 243	47	844
Saw guide. Band	R. McChesney	405,110	June 11	1070	285	47	1444
Saw. Hand-power	J. M. Vaughn	404,752	June 4	551	141	47	1334
Saw-jointer	W. A. Hunter	401,277	Apr. 9	1279	341	47	251
Saw-mill carriages. Offset mechanism for	W. Gowen	401,942	Apr. 23	2307	599	47	466
Saw-mill carriages. Offset mechanism for	D. Whitmore	402,705	May 7	294	59	47	706
Saw-mill carriages. Offsetting device for	W. Gowen	401,944	Apr. 23	2309	600	47	466
Saw-mill carriages. Offsetting device for	W. Gowen	401,945	Apr. 23	2310	600	47	467
Saw-mill feed-works	H. P. Heacock	404,002	May 28	2178	572	47	1103
Saw-mill set-works	W. A. Campbell	401,876	Apr. 23	2204	576	47	447
Saw or other steel blades. Apparatus for hardening	T. S. Diaston	401,138	Apr. 9	1064	285	47	210
Saw-set	F. C. Fricker	401,740	Apr. 23	2007	525	47	419
Saw-set	E. H. Ketchum	401,785	Apr. 23	2069	540	47	422
Saw-setting machine	M. Püschner	403,212	May 14	995	262, 263	47	860
Saw sharpener and gummer	M. I. Welch	404,329	May 28	2707	702	47	1204
Saw sharpening and gumming machine	J. F. Quinn	405,178	June 11	1175	313	47	1464
Saw-sharpening machine	G. Carlsen	402,560	May 7	10	3	47	665
Saw-swaging machine	T. B. Hite	404,623	June 4	385	93	47	1298
Saw-table gage	J. Harley	405,310	June 18	1384	365	47	1512
Saw-table gage	F. M. Teeguarden	404,231	May 28	2550	667	47	1177
Saw-teeth. Tool for manipulating	F. W. Cook	402,400	Apr. 30	3005	780	47	607
Saw-tooth-swaging device	J. B. Rhodes	402,770	May 7	325	84	47	724
Saws. Apparatus for straightening	D. Simonds	404,738	June 4	529	136	47	1328
Saws. Cleaner for cotton-gin	J. C. Godwin	404,016	June 4	377	90 91	47	1297
Saws. Device for jointing and dressing the teeth of	M. J. O'Brien	404,218	May 28	2540	663	47	1174
Saws. Table-top for circular	I. G. Marston	401,294	Apr. 23	2231	582	47	452
Saws. Work-feeder for band	A. B. Springstead	403,618	May 21	1614	427	47	985
Sawing machine. Circular	F. E. Farwell	403,980	May 21	1906	504	47	1060
Sawing machine. Tree	J. C. Schulte	402,036	Apr. 23	2449	638	47	493
Scaffold	H. Ayres	405,195	June 11	1208	321	47	1471
Scaffold-bracket	E. A. Brace	401,636	Apr. 16	1852	481	47	370
Scaffold fastening	C. W. and A. C. Henkle	405,734	June 25	2060	541	47	1651
Scaffold. Safety	J. Carmichael	401,410	Apr. 16	1487	394	47	303
Scaffolding	A. Bitterly	403,636	May 21	1639	434	47	990
Scale. Automatic grain	J. H. Forsyth	405,728	June 25	2050	539	47	1649
Scale-beam indicating weight, price, or number of bushels in a quantity of grain	W. G. McLaughlin	405,370	June 18	1465	388	47	1528
Scale. Hydrostatic weighing	F. Batter	403,452	May 14	1372	360	47	929
Scales. Automatic grain	C. H. Cooley	403,988	May 28	2154	562, 563, 564	47	1099
Scales. Grain-weighing	P. R. Grabill	403,748	May 21	1803	474	47	1022
Scales. Valve-operating mechanism for grain	C. H. Cooley	402,510	Apr. 30	3179	823	47	641
Scales. Weighing	F. Koch	404,290	May 28	2640	686	47	1192
Scarf-fastener	C. Strauss	402,868	May 7	471	123	47	750
Scarf-pin	J. C. Leibel	405,783	June 25	2127	559	47	1664
Scarf-protector	J. H. Meyer	402,011	Apr. 23	2443	637	47	491
Scissors	E. Peters	400,480	Apr. 2	79	22	47	18
Scoop. Weighing and measuring	L. Zwiesler	405,648	June 18	1928	507	47	1620
Scooper. Earth	S. W. Hall	403,661	May 21	1669	443	47	997
Scourer: *See* Grain-scourer.							
Scraper	E. L. Lefébure	401,442	Apr. 16	1531	405	47	312
Scraper	A. Stewart	401,911	Apr. 23	2260	588	47	457
Scraper	S. Thompson	403,025	May 21	1623	430	47	987
Scraper. Earth-leveling	D. M. Deneby and H. W. Childs	403,095	May 14	903	213	47	822
Scraper or cleaner	G. H. De Buisson	405,522	May 21	1487	390	47	960
Scraper. Road	H. C. Langebartels	401,356	Apr. 16	1403	371	47	288
Scraper. Road	G. N. Miller	403,888	May 21	2009	527, 528	47	1063
Scraper. Road	G. N. Miller	403,889	May 21	2011	528	47	1063
Scraper. Road	G. N. Miller	404,793	June 4	614	158	47	1345
Scraper. Road	O. E. Moats	403,890	May 21	2013	529	47	1063
Scraper. Road	O. E. Moats	403,891	May 21	2017	530	47	1064
Scraper. Road	O. E. Moats	404,794	June 4	615	158	47	1345
Scraper. Road	P. Raab	400,483	Apr. 2	81	23	47	19
Scraper. Wheel	T. Rebhola	400,791	Apr. 2	541	149	47	104
Scraper. Wheeled	F. A. Rathbun	401,658	Apr. 16	1881	489, 490	47	374
Scraper. Wheeled	C. H. Sawyer	401,907	Apr. 23	2254	587	47	456
Scraping machine. Road	M. G. Bunnell	404,774	June 4	584	150, 151	47	1340
Screen: *See* Car-window screen. Paper-pulp screen. Gravel-screen. Window-screen.							
Screen	W. J. Phillips and C. Humphrys	403,553	May 21	1528	401	47	968
Screen wiring machine. Door or window	J. H. Autrobus	402,864	May 7	480	129	47	755
Screens. Means for cleaning shaking	H. Seck	405,125	June 11	1092	291	47	1448
Screening mechanism	E. B. Coxe and S. Salmon	403,989	May 28	2159	565, 566	47	1092
Screening mechanism	E. B. Coxe and S. Salmon	403,990	May 28	2161	566, 567, 568	47	1100
Screw blanks. Manufacturing set	F. Mutimer	402,271	Apr. 30	2806	726	47	571
Screw-cutting die-head	W. J. Baker	401,106	Apr. 9	1021	273, 274	47	202
Screw-cutting machine	J. H. Sternbergh	401,600	Apr. 16	1791	470	47	359
Screw-cutting machine	J. H. Sternbergh and R. Pemberton	401,601	Apr. 16	1794	470	47	360
Screw-swaging machine	E. E. Quimby	403,072	May 7	764	201, 202	47	806

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Screw-tape. Machine for cutting	G. W. Tower	400,892	Apr. 2	677	184, 185	47	130
Screw-threading machine	K. C. Miller	402,759	May 7	308	80	47	721
Screw. Wood	H. Knueppel	402,333	Apr. 30	2901	751	47	588
Scroll and resawing machine. Combined	F. H. Crafts	402,067	Apr. 23	2408	652	47	502
Seal	C. A. Gildemeyer	405,730	June 25	2053	539	47	1649
Seal-lock	O. E. Davidson	400,445	Apr. 2	32	10	47	10
Seal-lock	W. I. Ludlow	401,286	Apr. 9	1289	344	47	253
Seat: *See* Car-seat. Locomotive-cab seat. Carriage-seat. Vehicle-seat. Jump-seat. Wagon-seat.							
Seat	G. J. Wolber	400,623	Apr. 2	281	79	47	59
Secondary battery	H. F. D. Cameron and T. Harris	404,168	May 28	2449	641	47	1158
Secondary battery	C. Desmazures	402,006	Apr. 23	2369	625	47	484
Secondary battery	W. W. Griscom	400,842	Apr. 2	620	168	47	119
Secondary battery	W. W. Griscom	401,744	Apr. 23	2011	536	47	411
Secondary battery	T. H. Hicks	405,213	June 11	1236	323	47	1475
Secondary battery	A. Jamieson	403,593	May 21	1579	417, 418	47	978
Secondary battery	W. P. Kookogey	401,953	Apr. 23	2322	603	47	469
Secondary battery	W. Main	401,280	Apr. 9	1293	345	47	254
Secondary battery	W. Main	401,290	Apr. 9	1298	346	47	254
Secondary battery	J. B. Price	403,957	May 28	2110	552	47	1090
Secondary battery	J. S. Sellon	401,466	Apr. 16	1570	415	47	319
Secondary battery	J. T. Van Gestel	405,751	June 25	2067	547	47	1656
Secretary and dresser. Combination folding	A. Shields	400,607	Apr. 2	255	60, 70	47	53
Seed crusher. Cotton	J. J. Woodward and P. B. Bibb	402,289	Apr. 30	2890	732, 733	47	575
Seed for planting. Preparing cotton	G. W. Newell	400,786	Apr. 2	532	.....	47	102
Seed huller. Cotton	W. R. Fee and J. S. Zerbe	404,696	June 4	479	121, 122	47	1319
Seed. Machine for delinting cotton	R. H. Collyer	402,232	Apr. 30	2748	716	47	560
Seed separator. Cotton	J. S. Zerbe	404,066	May 28	2292	599	47	1126
Seeder	J. W. Calef	401,128	Apr. 9	1051	280	47	207
Seeder. Broadcast	F. P. Spangler	402,993	May 7	635	168	47	784
Seeder. Hand	T. R. Parry	401,584	Apr. 16	1748	461	47	351
Seesaw	F. Spencer	401,798	Apr. 23	2098	548	47	426
Self-propelling motor	H. C. Hicks	405,553	June 18	1760	465	47	1590
Self-waiting table	A. Dahlstrom	401,820	Apr. 23	2129	555, 556	47	432
Semaphore-signal	J. G. Schreuder	405,682	June 18	1976	518	47	1629
Separator: *See* Corn and silk separator. Magnetic separator. Ore-separator. Fluid-separator. Seed-separator. Grain-separator. Slime-separator. Liquid-separator.							
Separator	C. Hallett	401,556	Apr. 16	1704	450	47	343
Separator	S. Stuart	403,704	May 21	1739	457	47	1011
Settee, ironing-board, and clothes-rack. Combined	W. Norriss	404,978	June 11	888	233	47	1407
Sewage. Apparatus for treating	O. E. Meyer and C. H. Weck	403,946	May 28	2096	549	47	1067
Sewage-purifier	J. J. Powers	401,458	Apr. 16	1550	410	47	315
Sewer-trap	A. E. Cohn and G. A. Merrill	403,459	May 14	1383	362	47	932
Sewer-trap	G. C. Hager	405,774	June 25	2115	554, 555	47	1662
Sewer-trap	D. Higgins	403,106	May 14	824	218	47	826
Sewers, &c. Adjustable frame for building	G. M. Graham	402,065	May 7	167	42, 43	47	695
Sewers. Apparatus for cleaning	O. Donnelly and C. T. Bride	402,908	May 7	519	137	47	761
Sewers. Cleaning pipe	O. Donnelly and C. T. Bride	402,662	May 7	162	41	47	694
Sewers. Mold for making	J. Raade	405,652	June 18	1932	508	47	1621
Sewing	A. Ortmayer	401,966	Apr. 23	2338	607	47	472
Sewing ingrain carpets. Apparatus for	H. S. Flint	405,834	June 25	2193	577, 578	47	1677
Sewing-machine	E. Brüncker	400,744	Apr. 2	461	122	47	91
Sewing-machine	J. W. Dewees	401,776	Apr. 23	2052	537	47	419
Sewing-machine	W. F. Dial, A. Steward, and G. H. Dimond.	405,205	June 11	1225	324, 325	47	1473
Sewing-machine	A. Faulkner	404,965	June 11	874	228	47	1404
Sewing-machine	A. Faulkner	404,966	June 11	876	228	47	1404
Sewing-machine	M. Gardner	402,432	Apr. 30	3069	794, 795	47	630
Sewing-machine	J. Heggan	405,776	June 25	2116	535, 536	47	1662
Sewing-machine	C. W. Weiss	403,163	May 14	906	236, 239	47	842
Sewing-machine	G. A. and J. G. Xander	401,989	Apr. 23	2370	615, 617	47	478
Sewing-machine-attachment holder	J. M. Griest	402,584	May 7	50	12	47	673
Sewing-machine. Boot or shoe	W. Comey	400,439	Apr. 2	23	8	47	8
Sewing machine. Broom	C. E. Lipe	402,337	Apr. 30	2905	753, 754	47	589
Sewing-machine. Button-hole	J. S. Freese	403,342	May 14	1201	310, 320	47	899
Sewing-machine. Button-hole	J. S. Freese	403,494	May 14	1329	346, 349	47	922
Sewing-machine button-hole attachment	G. D. Spielman	400,608	Apr. 2	256	70	47	54
Sewing-machine button-hole cutter	A. L. Traver	400,975	Apr. 9	826	220, 221	47	167
Sewing-machine cover	N. R. Van Horn	404,752	June 4	550	141	47	1333
Sewing-machine fan attachment	W. S. Elliott	404,964	June 11	873	227	47	1404
Sewing-machine feed mechanism	J. W. Dewees	400,833	Apr. 2	609	166	47	117
Sewing-machine feed mechanism	C. W. Weiss	405,448	June 18	1591	430	47	1554
Sewing-machine feeding device	L. Gundelach	401,271	Apr. 9	1273	340	47	249

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Sewing-machine feeding mechanism	F. T. Leilich	401,182	Apr. 9	1137	301, 302	47	223
Sewing-machine feeding mechanism	F. T. Leilich	402,230	Apr. 30	2790	723	47	568
Sewing-machine feeding mechanism	F. T. Leilich	404,358	May 28	2748	713, 714	47	1212
Sewing-machine for finishing button-hole pieces	G. S. Hill	400,914	Apr. 9	729	197	47	149
Sewing-machine for finishing button-hole pieces	J. Reece	404,863	June 11	722	185	47	1374
Sewing-machine for securing stay-cords and thrum ends.	A. Shea	405,228	June 11	1955	333	47	1479
Sewing machine. Glove	C. M. Boland	400,432	Apr. 2	12	4	47	5
Sewing-machine. Hand	G. L. Hubbell	402,597	May 7	67	16	47	677
Sewing-machine motor	W. H. Clayton and C. A. Loring	402,805	May 7	380	100	47	734
Sewing-machine needle-vibrating mechanism	L. Muther and R. G. Woodward	401,294	Apr. 9	1306	347	47	256
Sewing-machine. Overedge	W. Webster	402,497	Apr. 30	3161	818, 819	47	637
Sewing-machine plaiting attachment	T. L. Melone	403,359	May 14	1222	324, 325	47	903
Sewing-machine quilting attachment	C. Mandeville	400,699	Apr. 2	300	105	47	77
Sewing machine. Shoe	J. L. Treharn	404,448	June 4	106	26	47	1246
Sewing machine. Sole	J. Albrecht	405,453	June 18	1600	421, 422	47	1556
Sewing-machine stand	W. A. Mack	405,043	June 11	988	262	47	1498
Sewing-machine take-up	G. W. Baker	403,722	May 21	1770	465	47	1016
Sewing-machine take-up	J. F. McKenney	403,951	May 28	2102	550, 551	47	1089
Sewing-machine take-up mechanism	F. T. Leilich	404,357	May 28	2746	713	47	1212
Sewing-machine thread-cutting mechanism	C. F. Wilcox	401,399	Apr. 16	1468	387	47	300
Sewing-machine tuck creaser or marker	J. M. Griest	401,029	Apr. 9	904	242	47	182
Sewing-machine tuck creasing and marking attachment.	A. A. Crawford	400,751	Apr. 2	469	126	47	92
Sewing-machine. Wax-thread	W. Fiedler	404,079	May 28	2311	606	47	1130
Sewing-machines. Combination-cabinet for	T. Knudtz	405,568	June 18	1779	470	47	1584
Sewing-machines. Cutting device for button-hole	J. A. Osterhout and J. P. Hallenbeck.	402,610	May 7	86	20, 21	47	680
Sewing-machines. Cutting mechanism for button-hole	F. W. Ostrom and J. W. Boynton	404,427	June 4	77	19	47	1241
Sewing-machines. Glove-embroidering attachment for	C. E. Weyand	402,213	Apr. 30	2724	707	47	555
Sewing-machines. Guiding attachment for	A. H. Fritsch	403,831	May 21	1928	507	47	1047
Sewing machines. Horn-heating device for wax-thread	G. R. Peare	405,594	June 18	1818	481, 482	47	1602
Sewing-machines. Oscillating loop taker and spreader for	J. L. Follett	402,429	Apr. 30	3065	793	47	619
Sewing-machines. Presser-foot-lifting device for	J. Bartlett and G. B. Wiggin	403,725	May 21	1773	466	47	1016
Sewing-machines. Shuttle and race mechanism for	F. D. Parker	404,555	June 4	289	69	47	1280
Sewing-machines. Spool of thread for	G. H. Wilkins	405,726	June 25	2048	538	47	1648
Sewing-machines. Wax-heating device for	G. R. Peare	405,592	June 18	1814	480, 481	47	1601
Sewing-machines. Wax-heating device for	G. R. Peare	405,593	June 18	1816	481	47	1601
Shackle	J. James and A. D. Goodenough	404,544	June 4	276	66	47	1277
Shade-holder	G. E. Somers	401,910	Apr. 23	2270	588	47	457
Shaft. Apparatus for testing the accuracy of the adjustment of a rotating	B. A. Dobson	402,726	May 7	251	66	47	711
Shaft. Crank	C. Foedick	402,010	Apr. 23	2406	627	47	485
Shaft. Flexible	T. Gare	401,881	Apr. 23	2212	578	47	449
Shaft. Flexible power	O. J. Brown	401,681	Apr. 16	1910	497	47	380
Shaft-support	E. Clark	401,412	Apr. 16	1469	394	47	304
Shafts. Adjustable box for	E. H. Bridgman	401,408	Apr. 16	1484	393	47	303
Shafts. Anti-frictional bearing for	F. G. Myers	403,854	May 21	1965	516	47	1054
Shafts. Step-bearing for	C. A. Johansson	405,550	June 18	1769	467	47	1582
Shafting. Die for drawing	J. Rapp	401,206	Apr. 9	1177	313	47	232
Shank-stiffener	J. M. Watson	403,569	May 21	1548	408	47	972
Shaping irregular forms. Self-feeding machine for	W. and G. M. Reid	401,459	Apr. 16	1532	414	47	316
Shaping-machine	U. Eberhardt	402,574	May 7	35	9	47	670
Shaving-stand. Portable	H. Pincus	404,110	May 28	2362	620	47	1140
Shawl-strap	W. F. Harvey	405,998	June 25	2460	643	47	1723
Shawl-strap	M. Rubin	401,073	Apr. 9	966	257	47	193
Sheaf-carrier	H. E. Pridmore	401,902	Apr. 23	2345	585	47	455
Shear-knife	H. Aiken	402,381	Apr. 30	2973	771, 772	47	602
Shears: *See* Animal-shears. Metal-shears. Hoof-shears. Sheep-shears. Hydraulic shears.							
Shears	W. P. Hatch	401,163	Apr. 9	1112	295	47	218
Shears	H. Pattison	404,051	May 28	2264	592	47	1120
Shears, button-hole cutter, and ripper. Combined	M. S. Clark	404,109	May 28	2450	642	47	1158
Shears for cutting metal. Anvil	W. H. Adams	403,960	May 28	2143	560	47	1097
Shears for cutting metal bolts	W. Robinson	403,961	May 28	2117	554	47	1092
Sheep-shears	V. Petherick	405,500	June 18	1679	444	47	1573
Sheet-metal-bending machine	S. Y. Buckman	404,164	May 28	2437	638, 639	47	1156
Sheet-metal box	A. Stamm	405,443	June 18	1580	417	47	1552
Sheet-metal coating or galvanizing apparatus	E. A. Harvey	403,044	May 7	712	186, 187	47	798
Sheet metal. Die for hammering	I. E. Craig	403,918	May 28	2058	.....	47	1081
Sheet metal. Die for shaping	O. W. Swift	405,618	June 18	1852	490	47	1607
Sheet-metal package	F. G. Caldwell	404,596	June 4	349	84	47	1291
Sheet metal, &c. Tool for cutting	F. Ludloff	402,949	May 7	581	153	47	773
Sheet-metal vessel	H. S. Reynolds	401,211	Apr. 9	1180	314	47	232
Sheet-metal vessels. Mechaniam for forming and sizing	A. Slaysman	401,567	Apr. 16	1779	468	47	357
Shelf-bracket. Adjustable	A. N. Hovey	404,604	May 28	2180	573	47	1104
Shell. High-explosive	S. H. Emmons	400,903	Apr. 9	714	193	47	147

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Sheller:							
See Corn-sheller.							
Shingle-machine	W. N. Darnell	403,420	May 14	1324	346	47	921
Shingle. Metallic	J. Mills	403,203	May 14	980	259	47	857
Shingle-sawing machine	G. J. Davis	404,227	June 11	664	172	47	1365
Ships. Machine for bending ribs or frames of	J. S. Mitchell	403,509	Apr. 16	1629	431	47	330
Shirt	B. Galland	404,475	June 4	160	37	47	1255
Shirt	H. W. Measer	401,572	Apr. 16	1731	456	47	348
Shirt and shirt-bosom supporter	P. E. Evans	403,182	May 14	941	249	47	848
Shirt. Flannel	F. D. Renshaw	401,717	Apr. 16	1964	512	47	391
Shirt-stretcher	G. Cooper	403,737	May 21	1788	470	47	1020
Shirt-waist	E. W. Wheeler	400,721	Apr. 2	426	115	47	84
Shock-loading machine	W. J. Jacobs	405,840	June 25	2202	579	47	1679
Shoe	P. Caspary	400,632	Apr. 2	290	82	47	60
Shoe	C. H. Pearsall	401,585	Apr. 16	1749	462	47	351
Shoe-clasp	G. A. Weld	404,023	May 28	2203	579	47	1108
Shoe-fastening	P. Caspary	401,007	Apr. 9	875	234	47	176
Shoe-fastening	J. G. Whittier and W. E. E. Herron	401,808	Apr. 23	2115	551	47	429
Shoe-fastening	S. Wilson, Jr	400,812	Apr. 2	578	158	47	111
Shoe nail	L. W. Austin	405,727	June 25	2050	538	47	1648
Shoe or slipper	J. Hanan, Jr	401,830	Apr. 23	2142	559	47	434
Shoe-shank machine	W. H. Fowler	402,431	Apr. 30	3068	794	47	629
Shoe-sole. Channeled	G. B. Wiggin and J. Bartlett	401,235	Apr. 9	1215	324	47	279
Shoe-sole-channeling machine	G. B. Wiggin and J. Bartlett	403,813	May 21	1901	499	47	1043
Shovel:							
See Sink-shovel.							
Shovel-blanks. Bar for the manufacture of	J. J. Johnston	405,415	June 18	1533	406	47	1543
Shovel-blanks. Making	J. J. Johnston	405,416	June 18	1533	406	47	1543
Shovels, &c. Handle attachment for	R. Tschumy	403,310	May 14	1151	306	47	889
Show and shot case. Combined	W. A. Whitemore	402,119	Apr. 23	2585	670	47	519
Show-case	J. W. Blackledge	405,003	June 11	921	243	47	1414
Show-case	E. C. Fain and G. C. Poston	402,151	Apr. 30	2639	683	47	538
Show-case joint	H. Kruse	405,672	June 18	1961	515	47	1626
Shutter	S. L. and E. M. Bloom	401,813	Apr. 23	2121	553	47	430
Shutter-fastener	M. Fitzpatrick	403,259	May 14	1072	281	47	873
Shutter-fastener	C. J. Seymour	401,866	Apr. 23	2178	569	47	442
Shutter-worker	J. F. and A. O. Shatsick	400,496	Apr. 2	99	27	47	22
Sieve	J. B. Cornwall	405,640	June 18	1943	511	47	1623
Sifter	J. H. Fredericks	401,548	Apr. 16	1695	447	47	341
Sifter. Ash-	W. J. Kayser	403,272	May 14	1098	290	47	878
Sifter. Ash-	G. M. Pelree	401,852	Apr. 23	2167	565	47	440
Sifter. Household	H. S. Brewington	403,087	May 14	792	211	47	820
Sifter. Rotating wave-generating	F. G. Winkler	400,620	Apr. 2	276	77, 78	47	57
Sifting apparatus	H. Seck	403,863	May 21	1974	518	47	1056
Sifting granular material	F. G. Winkler	400,619	Apr. 2	273	75, 76, 77	47	57
Sifting-machine	F. G. Winkler	400,621	Apr. 2	279	79	47	58
Sight-feed lubricator	W. Woodward	402,640	May 7	127	31	47	688
Sign	C. E. Manning	402,655	May 7	193	49	47	700
Sign	C. E. Manning	402,756	May 7	303	78	47	720
Sign. Highway-	J. S. Bailey	403,722	May 21	1769	465	47	1016
Signs and advertising-cards. Producing variable	T. P. Heinemann	401,165	Apr. 9	1113	295	47	219
Signal:							
See Air-brake signal. Railway-crossing signal. Bridge-signal. Railway danger-signal. Electric signal. Semaphore-signal. Fence-signal. Switch-signal. Railway-signal. Switch-stand signal.							
Signal apparatus. Municipal	J. C. Wilson	405,235	June 11	1263	335	47	1481
Signal-sounding apparatus	H. E. Pfannenstiel	404,980	June 11	890	233	47	1408
Signals and gates. Setting apparatus for	T. W. Burt	402,209	Apr. 30	2845	736, 737	47	578
Signaling apparatus. Electric	J. P. Coleman	402,562	May 7	19	6	47	666
Signaling apparatus. Electrical	J. P. Coleman	404,170	May 28	2451	642, 643	47	1158
Signaling apparatus. Electrical	A. A. Hatch	403,104	May 14	817	247	47	825
Signaling apparatus. Electrical float	J. R. De Mier	403,180	May 14	935	247, 248	47	847
Signaling apparatus. Electrical night	E. Kaselowsky	401,035	Apr. 9	914	244	47	183
Signaling apparatus. Fire and police	A. C. Robbins	404,226	May 28	2552	665	47	1176
Signaling system. Electric	M. W. Dewey	405,831	June 25	2186	576	47	1676
Signatures. Machine for gathering	D. M. Smyth	404,119	May 28	2374	922, 923	47	1143
Singletree attachment	B. S. Wiseman	403,816	May 21	1906	501	47	1043
Sink	J. P. Putnam	403,777	May 21	1849	486	47	1038
Sink shovel and cleaner. Combined	P. C. Brown	401,126	Apr. 9	1048	279	47	207
Sinks, basins, and baths. Combined supply, overflow, and waste fittings for slop-	F. A. Wells	405,933	June 25	2349	616, 617	47	1704
Sisal, &c. Treating	A. W. Montgomery	400,782	Apr. 2	527	.....	47	102
Skate	L. Knerr	405,779	June 25	2122	557	47	1663
Skate	J. King	403,052	May 7	724	189	47	800
Skate-roller	C. J. Klutner	404,547	June 4	279	66	47	1278
Skein-holder	I. W. Hevsinger	405,411	June 18	1525	405	47	1541
Skimmer. Milk-	A. T. Mills	401,197	Apr. 9	1162	310	47	229
Skipping-rope. Musical	L. Ritchie	401,556	May 21	1532	402	47	969
Skirt-protector	W. F. Smith and A. B. Catterall	401,078	Apr. 9	974	260	47	194
Skylight	J. N. Smith	403,227	May 14	1023	270	47	865
Slasher	J. Watt	404,939	June 11	830	215	47	1396
Slate-cleaner	J. M. McFarland	404,795	June 4	616	159	47	1346
Slate-cleaner and pencil holder and sharpener. Child's	J. Draper	402,814	May 7	395	103	47	737
Slates, &c. Composition of matter for the production of artificial school-	H. Gallinowsky	401,427	Apr. 16	1507	.....	47	308
Sled	V. D. Johnson	402,019	Apr. 23	2423	631	47	488

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Sled	L. B. Pickett	404,438	June 4	87	21	47	1242
Sled. Hand-	G. Lundgren	404,975	June 11	896	231	47	1407
Sled-propeller	F. Robbin	402,960	May 28	2115	553	47	1091
Sled runner. Bob-	T. G. Mandt	403,854	May 7	586	155	47	774
Sleigh	F. J. Mette	403,766	May 21	1834	491, 492	47	1028
Sleigh. Bob-	D. W. Scobie	402,963	May 7	690	163	47	781
Slicer. Vegetable-	T. Arndt	404,883	June 11	751	191	47	1379
Sliding gate	J. P. Norlin	403,694	May 21	1722	454	47	1007
Slime-separator	P. H. Dunagan	404,521	June 4	241	57	47	1270
Slip or lock joint for corrugated iron	J. Smith	405,379	June 18	1480	392	47	1538
Smoke and gas consuming furnace	J. Burns	403,874	May 21	1988	522	47	1058
Smoke-consumer	J. C. Butler	404,775	June 4	587	151	47	1341
Smoke-consumer	C. McGinniss	401,846	Apr. 23	2160	564	47	438
Smoke-stack	B. Vitalis	402,873	May 7	476	124	47	751
Smoker's set	W. S. Whiting	404,665	June 4	437	109, 110	47	1310
Smoking device	L. C. Lindeman	402,681	May 7	191	48	47	690
Smoothing and sad iron heater	A. Schmitt	402,197	Apr. 30	2098	701	47	550
Snap-hook	M. Codde	403,038	May 7	705	184	47	797
Snap-hook	J. R. Ryan	401,305	Apr. 9	1322	351	47	260
Snap-hook	J. B. Tainter and N. B. Noble	400,511	Apr. 2	120	32	47	27
Snap-hook and loop. Combined	L. Hewitt	405,887	June 25	2270	597	47	1691
Snatch-block	B. H. Naves	401,511	Apr. 16	1683	432	47	330
Snatch-block	A. Uren	402,208	Apr. 30	2719	705	47	554
Snow and cleaning streets. Machine for melting	A. Hentschel	401,496	Apr. 16	1612	425, 426	47	327
Snow and ice guard	S. R. Hawthorne	401,559	Apr. 16	1710	451	47	344
Snow-guard	T. O'Gara	401,302	Apr. 9	1160	311	47	230
Snow-plow	E. P. Caldwell	405,301	June 18	1370	361	47	1509
Snow-plow	J. Corbett	404,173	May 28	2459	644	47	1160
Snow-plow	J. W. Haughawout	403,665	May 21	1676	445	47	998
Snow-plow. Railway	C. A. McCarthy and J. P. Moran	400,589	Apr. 2	230	60	47	46
Snow-plow. Rotary	E. P. Caldwell	405,300	June 18	1369	360	47	1509
Snow-scraper	G. A. Birch	404,958	June 11	844	220	47	1399
Snow-scraper	G. J. Kopmeier	400,775	Apr. 2	503	130	47	99
Snow-shoe	H. Watson	405,516	June 18	1708	450	47	1578
Soap-holder	L. Terry	403,622	May 21	1621	429	47	987
Soap-receptacle	K. Huber	404,354	May 28	2743	712	47	1211
Soda-ash. Apparatus for reclaiming	L. D. Armstrong	402,643	May 7	131	32	47	689
Soda. Making	F. H. Gossage	401,689	Apr. 16	1934	.....	47	384
Soda. Manufacturing caustic	J. A. Bradburn	402,226	Apr. 30	2711	.....	47	539
Soda. Recovering	S. Wolf	405,754	June 25	2091	.....	47	1657
Soda-water apparatus	J. Conner	404,172	May 28	2458	643	47	1159
Soda-water apparatus	G. W. Gilbert	405,027	June 11	906	257	47	1423
Solder and flux. Combined	E. Norton and J. G. Hodgson	400,800	Apr. 2	661	179	47	127
Solder machine. Wire-	F. W. Schultz	405,914	June 25	2220	609, 610	47	1699
Soldering, brazing, and welding. Electric	E. Thomson	402,707	May 21	1744	459	47	1012
Soldering end pieces on cans. Machine for	J. A. Booth	405,622	June 25	2174	572	47	1673
Soldering-iron	A. Sundeen and S. B. Molander	400,509	Apr. 2	117	34	47	27
Soldering-iron. Self-heating	G. Heidel and G. Frey	400,455	Apr. 2	43	13	47	13
Soldering machine. Can-	J. Brown	401,195	Apr. 9	1043	279	47	205
Soldering machine. Can-	J. S. Hull	404,195	May 28	2462	652	47	1165
Soldering pipe-joints. Submarine apparatus for	F. Rann	400,484	Apr. 2	83	23	47	19
Soldering tin cans. Machine for	W. Hipperling	401,887	Apr. 23	2222	580	47	451
Soldering-tool	C. L. Wagandt	402,634	May 7	130	29	47	687
Sole-edge-trimming machines. Belt-tightener for	W. Lahey	402,250	Apr. 30	2775	718	47	564
Sole for rubber foot-wear. Protective	T. Regan	401,372	Apr. 16	1428	377	47	292
Sole-leveling machine	F. S. Strong	403,495	May 14	1439	377	47	942
Soles to uppers. Machine for uniting	L. Goddu	403,835	May 21	1933	509, 510	47	1048
Sound-board. Tensional	C. S. Weber	402,496	Apr. 30	3160	818	47	637
Sower. Broadcast seed-	L. Eberhart and J. D. Stevens	402,150	Apr. 30	2635	682, 683	47	537
Sower. Broadcast seed-	W. D. Guseman	402,922	May 7	403	106	47	739
Sower. Seed-	M. Freeman	403,882	May 21	1999	525	47	1040
Spade or shovel	J. A. Little	400,923	Apr. 9	749	201	47	153
Spark-arrester	J. B. Barnes	403,964	May 28	2140	561	47	1098
Spark-coil	F. H. Root	400,795	Apr. 2	547	151	47	105
Speaking-tube	J. Walter	405,061	June 11	1010	270	47	1433
Speaking tube, pipe, &c	J. H. Rush	404,868	June 11	731	187	47	1376
Spectacle-frame	J. E. Searing	400,957	Apr. 9	801	214	47	163
Spectacle-lens	A. Morck, Jr	400,783	Apr. 2	529	146	47	102
Spectacle or eyeglass frame	J. E. Searing	400,956	Apr. 9	798	213, 214	47	163
Spectacles. Electro-therapeutic	C. Brust	401,682	Apr. 16	1911	496	47	380
Speculum	W. Molesworth	400,589	Apr. 2	230	62	47	46
Speech or other sounds. Recording and reproducing articulate	G. W. Listlehales	404,850	June 11	700	180	47	1371
Speed-indicator	A. R. Sherman	405,437	June 18	1568	414, 415	47	1549
Speed-indicator	C. Spratt	404,992	June 11	904	237, 238, 239, 240	47	1411
Spherical trigonometry. Appliance for illustrating	F. Hawk	405,354	June 18	1443	382	47	1594
Spike-blank bar	J. T. Jones	403,049	May 7	721	188	47	800
Spike-machine	H. Greer	404,191	May 28	2486	650, 651	47	1164
Spindle-driving bands. Tension-regulating device for	A. T. Lawson and S. Dear	404,917	June 11	881	205, 206	47	1390
Spindle-driving bands. Tension-regulator for	P. L. Kenney	401,381	Apr. 9	1284	343	47	262
Spinning and twisting machines. Stop-motion device for	W. Lund	400,864	Apr. 2	654	177, 178	47	125

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Spinning and winding silk. Machine for	H. E. Conant	404,171	May 28	2456	643	47	1159
Spinning-bobbin, &c	L. C. Baldwin. (Reissue)	10,996	Apr. 23	2595	679	47	592
Spinning, doubling, and twisting machine	E. Kimmel and E. E. Claussen	401,382	Apr. 9	1285	345	47	252
Spinning frame. Ring	J. T. Meats	400,934	Apr. 9	764	200	47	156
Spinning frame. Ring	W. H. Saltmarsh and C. A. Bogardus	401,217	Apr. 9	1187	317	47	234
Spinning-frames, &c. Guide-tube for	S. Henderson	401,350	Apr. 16	1393	369	47	286
Spinning hemp, &c. Machine for	C. H. Tripp	402,785	May 7	351	92	47	729
Spinning machine. Cordage	A. Weber and C. Lambert	404,137	May 28	2399	628, 629	47	1148
Spinning-machine nipper	C. D. Clark	404,898	June 11	774	197	47	1384
Spinning-machine spindle	J. Hogg and A. H. Robinson	401,703	Apr. 16	1939	506	47	385
Spinning-machines. Band-tension regulator for	J. Gaunt	403,833	May 21	1930	508	47	1047
Spinning-machines. Saddle for top rolls of	G. A. Metcalf	405,584	June 18	1804	478	47	1589
Spinning machines. Top roll for	E. Lafloe	403,537	May 21	1512	396	47	965
Spinning-spindle	S. Smith and R. Gill	400,502	Apr. 2	109	29	47	25
Spinning-spindle and support therefor	J. E. Tynan	404,134	May 28	2396	628	47	1147
Spinning-spindle and support therefor	E. J. Carroll	401,686	Apr. 16	1917	499	47	381
Spinning-spindle support	J. Duffy	404,609	June 4	368	88	47	1295
Spinning-spindle support	J. H. Northrop	403,855	May 21	1946	516	47	1054
Spinning-spindle support	J. S. Richardson	403,902	May 21	1973	518	47	1055
Spinning-spindle support	F. H. Wheat	401,988	Apr. 23	2369	616	47	478
Spinning-spindle support	R. White	405,233	June 11	1261	334	47	1481
Spirometer. Coin-released	J. F. Blake	405,455	June 18	1604	423	47	1557
Spirometer. Coin-released	P. G. Williams and A. W. Roovers	403,978	May 28	2141	560	47	1096
Splicing device	J. C. Basel	401,244	Apr. 9	1226	320	47	242
Sponge-cup and sealer	J. C. Parker	400,941	Apr. 9	778	208	47	158
Spool-blanks. Machine for forming	C. A. Broughton	401,997	Apr. 23	2384	620	47	481
Spooling-machine	J. W. Foster	404,831	June 11	671	173, 174	47	1366
Spoon-holder	D. A. A. Buck	402,716	May 7	240	63	47	709
Spring: *See* Bed-spring. Bolster-spring. Buggy-top spring. Car-spring. Carriage-spring. Cart-spring. Door-spring. Draft-spring. Furniture-spring. Vehicle-spring. Vehicle side spring.							
Spring-hanger	A. White	401,398	Apr. 16	1467	382	47	300
Spring-jack switch	H. B. Thayer	400,969	Apr. 9	817	218	47	166
Spring-motor	R. Faries	404,526	June 4	249	59, 60	47	1271
Spring-motor	A. Meahl	401,047	Apr. 9	931	246, 247	47	187
Spring-motor	C. Nicholson	401,052	Apr. 9	939	250	47	188
Spring-motor	B. Turton	402,548	Apr. 30	3233	838, 839	47	651
Spring-washer	F. G. Johnson	404,284	May 28	2634	684	47	1190
Springs. Machine for coiling spiral	J. W. Kerr	403,940	May 28	2065	547	47	1085
Springs. Machine for making coiled	H. D. Millett	404,213	May 28	2528	659, 660	47	1172
Springs. Tempering spiral	F. Sedgwick	401,721	Apr. 16	1971	515	47	392
Sprinkler: *See* Automatic sprinkler. Cotton-sprinkler.							
Sprocket-wheel	J. R. Hersh and J. M. Staley	402,448	Apr. 30	3090	801	47	624
Sprocket-wheel	W. E. Selleck	405,607	June 18	1638	427	47	1605
Sprocket-wheel	W. E. Pratt	405,492	June 18	1561	412	47	1548
Square, bevel, and protractor. Center	E. B. Shepardson	404,312	May 28	2680	694	47	1199
Square, center-square, and bevel. Combined	S. W. Yates	403,404	May 14	1307	342	47	917
Square. Tailor's	J. Knight	402,745	May 7	288	73, 74	47	717
Stairs, &c. Metallic reversible covering for the treads of	G. V. Marshall	400,470	Apr. 2	62	18	47	15
Stairway. Spiral	W. M. Breeden	404,256	May 28	2591	674	47	1183
Stalk-cutter	H. A. Hughes	402,081	Apr. 23	2518	657	47	506
Stalks. Apparatus for removing end sections from	W. M. Dunaway	401,490	Apr. 16	1496	387	47	305
Stamp and punch. Combination coupon-ticket	B. Summers	404,574	June 4	313	75	47	1284
Stamp-canceler	I. B. Dodson	401,335	Apr. 16	1366	364	47	281
Stamp. Hand	E. W. Lehman	400,860	Apr. 2	647	175	47	124
Stamp. Hand	L. K. Scotford	402,771	May 7	306	85	47	724
Stamp. Hand	B. B. Hill	405,704	June 25	2013	529	47	1642
Stamp. Self-inking band hand	B. B. Hill	401,033	Apr. 9	912	244	47	183
Stamp. Time	L. K. Scotford	401,519	Apr. 16	1643	435	47	332
Stamps. Dating device for hand	H. R. McCalmont	401,961	Apr. 23	2333	606	47	471
Stamps. Device for protecting postage	L. J. Borie	405,393	June 18	1500	398	47	1536
Stamps, &c. Machine for affixing postage	T. J. Holmes	404,694	June 4	386	93	47	1299
Stamping or other machines. Safety apparatus for	C. L. Hart	402,668	May 7	172	44	47	696
Stamping-press	H. B. Stranahan	402,999	May 7	643	170	47	785
Stamping-press	L. L. Sagendorph	401,216	Apr. 9	1185	317	47	234
Stamping sheet metal. Roller-die for	A. F. Mears	403,122	May 14	845	224	47	830
Stanchion	W. Scott	401,307	Apr. 9	1394	352	47	261
Stanchion							
Stand: *See* Bottle-stand. Camera-stand. Music-stand. Railway switch-stand. Sewing-machine stand. Shaving-stand. Switch-stand.							
Staple-driver	E. M. Dean	405,537	June 18	1733	458	47	1583
Staple forming and clinching machine	J. Chantrell	405,342	June 18	1427	376, 377, 378	47	1521
Staple-making machine	W. Halkyard	405,090	June 11	1043	279	47	1439
Station-indicator	V. L. Cunningham	404,384	June 4	18	5	47	1228
Stationery-packet	H. W. Southworth	403,785	May 21	1864	490	47	1035
Stave-dressing machine	F. H. Kane	403,506	May 21	1582	419	47	979
Stave-jointing machine	A. M. Benson	401,874	Apr. 23	2200	575, 576	47	446
Staves. Machine for making barrel	M. Dallas	405,148	June 11	1123	299	47	1454
Steam and water motor	C. R. Hunt	403,430	May 14	1337	351	47	923

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Steam-boiler	M. W. Bailey	405,864	June 25	2237	589	47	1636
Steam-boiler	J. Baird	402,127	Apr. 30	2601	613, 614	47	531
Steam-boiler	J. Baird	402,887	May 7	492	130	47	755
Steam-boiler	W. T. Bate	400,720	Apr. 2	440	118	47	87
Steam-boiler	N. B. Clark and F. B. King	404,825	June 11	592	171	47	1364
Steam-boiler	N. B. Clark and F. B. King	405,341	June 18	1434	378	47	1522
Steam-boiler	H. Davey	404,176	May 28	2463	645	47	1161
Steam-boiler	A. M. Dimmick and E. Z. Smith	403,678	May 21	1993	524	47	1030
Steam-boiler	F. A. Gardner	405,209	June 11	1232	327	47	1474
Steam-boiler	J. L. Gill, Jr	400,448	Apr. 2	35	11, 12	47	10
Steam-boiler	S. P. Hedges	400,568	Apr. 2	205	56	47	44
Steam-boiler	H. A. Kroeschell	400,462	Apr. 2	51	15	47	13
Steam-boiler	L. W. and N. Lombard	402,491	Apr. 23	2535	661	47	510
Steam-boiler	W. McDonald	406,001	June 25	2466	645	47	1721
Steam-boiler	M. E. Otis	402,611	May 7	89	21, 22	47	681
Steam-boiler	J. Shackleton	402,350	Apr. 30	2939	761, 762	47	585
Steam-boiler	W. W. Sutcliffe	401,603	Apr. 16	1797	471	47	360
Steam-boiler. Sectional	C. Gorton	402,667	May 7	169	43	47	695
Steam-engine	R. T. Abell	403,714	May 21	1753	461	47	1013
Steam-engine	V. W. Beeson and W. B. Bonine	402,849	May 7	491	131	47	756
Steam-engine	W. Geib	404,190	May 28	2435	650	47	1164
Steam-engine	C. O. Heggem	400,847	Apr. 2	627	170, 171	47	121
Steam-engine	E. D. Leavitt, Jr	402,251	Apr. 30	2780	720	47	566
Steam-engine	J. McAllister	403,601	May 21	1589	490, 491	47	980
Steam-engine	M. Müller	401,364	Apr. 16	1413	373, 374	47	290
Steam-engine	J. A. Seymour and J. E. McIntosh	402,622	May 7	103	25	47	684
Steam-engine	C. A. Smith	401,326	Apr. 16	1451	383	47	297
Steam-engine	A. H. F. Straub	404,573	June 4	311	74	47	1284
Steam-engine. Compound	M. Coryell	400,641	Apr. 2	302	85	47	63
Steam-engine. Compound	F. A. Gardner	405,208	June 11	1231	326, 327	47	1474
Steam-engine. Compound	C. Holly	401,167	Apr. 9	1116	296	47	219
Steam-engine cylinder	W. F. Brown	403,642	May 21	1645	436	47	992
Steam-engine. Single-acting	F. W. Dodd	405,150	June 11	1126	299, 300	47	1455
Steam-exhaust head	E. F. Lyman and J. P. Warren	405,575	June 18	1791	474	47	1597
Steam-generating tubes. Apparatus for automatically regulating temperature of	T. L. Sturtevant	403,972	May 28	2133	558	47	1095
Steam-generator	M. C. Armour	401,102	Apr. 9	1012	271	47	200
Steam-generator	D. Dougherty	405,954	June 25	2365	625	47	1710
Steam-generator	J. A. Eno	404,521	June 4	946	58, 59	47	1270
Steam-generator	A. Hasbrouck	405,837	June 25	2198	578, 579	47	1678
Steam-generator	W. Snee	404,740	June 4	532	136	47	1339
Steam-generator	T. L. Sturtevant	403,971	May 28	2131	558	47	1094
Steam-generator. Superheating	A. Young	401,239	Apr. 9	1222	326	47	240
Steam-heater	E. T. Waggoner	402,635	May 7	121	29	47	687
Steam-jacketed receiver	W. F. Brown	403,644	May 21	1648	437	47	993
Steam-motor. Low-pressure	R. K. Evans	401,020	Apr. 9	891	238	47	179
Steam-trap	C. F. Brigham	401,772	Apr. 23	2048	536	47	418
Steam-trap	H. Creamer	404,174	May 28	2460	644	47	1160
Steam-trap	G. Dinkel	401,545	Apr. 16	1691	446	47	341
Steam-trap	B. W. Feldhousen	402,516	Apr. 30	3190	826	47	643
Steam-trap	J. F. McElroy	404,925	June 11	811	208	47	1392
Steam-trap	C. Richard	405,804	June 25	2152	566	47	1669
Steam-trap	W. A. Taylor	400,718	Apr. 2	423	114, 115	47	84
Steam trap and regulator	A. Weber	403,102	May 14	905	238	47	841
Steamer. Colander	G. L. Motter	401,712	Apr. 16	1956	510	47	389
Steel. Apparatus for the manufacture of	C. Law and C. E. Howe	405,492	June 18	1541	408, 409	47	1544
Steel balls. Machine for making	W. H. Wright	400,990	Apr. 9	853	228, 229	47	172
Steel direct from ore. Producing	W. F. M. McCarty	404,723	June 4	512	131	47	1325
Steel. Toughening forged articles of	J. Coffin	401,010	Apr. 9	879	.....	47	177
Steering apparatus	A. C. Dunn	404,472	June 4	152	35, 36	47	1254
Steering apparatus	H. and A. Lawson	404,008	May 28	2185	574	47	1105
Stencil	A. W. Smith	402,981	Apr. 30	2880	750	47	573
Stereoscope	H. C. White	401,607	Apr. 23	2113	551	47	498
Stereoscope. Coin-operated	C. E. Patterson	405,321	June 18	1338	308	47	1515
Stereotype-plates. Matrix for	G. Eastwood	401,738	Apr. 23	2405	625	47	410
Stereotyper's sawing, trimming, and grooving machine	J. R. Cummings and G. E. Lloyd	405,663	June 18	1945	511	47	1623
Stereotyping. Matrix for	F. Schreiner and A. Schott	404,584	June 4	301	71	47	1292
Stilt	H. Temple	401,806	June 4	639	162	47	1350
Stirrer and pulverizer	I. C. Ligett	403,118	May 14	841	223	47	830
Stirrup	E. A. Leinard and G. W. Sheets	403,945	May 28	2095	548	47	1087
Stitching. Book	H. L. Arnold	401,673	Apr. 16	1900	495	47	378
Stitching. Book	H. L. Arnold	402,218	Apr. 30	2731	706	47	537
Stitching books	H. L. Arnold	401,674	Apr. 16	1900	495	47	379
Stitching books	H. L. Arnold	401,675	Apr. 16	1902	496	47	379
Stitching books	H. L. Arnold	401,676	Apr. 16	1903	496	47	379
Stitching-clamp	C. Dose	405,349	June 18	1438	380	47	1523
Stocking-supporter	J. M. Rabitte	404,862	June 11	721	184	47	1374
Stone. Making artificial	P. Jochum	404,199	May 28	2498	.....	47	1167
Stone. Manufacturing artificial	W. R. Havens and S. E. Keough	404,040	May 28	2236	586	47	1113
Stone-sawing machine	R. L. Barney	404,335	May 28	2715	704	47	1205
Stone-sawing machine	J. W. Maloy	401,655	Apr. 16	1876	488	47	374
Stool. Camp	A. M. Abbott	402,709	May 7	230	60	47	707

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Stool. Hunter's portable	E. G. Purdy	401,302	Apr. 9	1319	351	47	269
Stool. Milking	O. G. Scriven	403,781	May 21	1853	487	47	1032
Stool or chair. Store	J. S. Sammons	401,379	Apr. 16	1442	381	47	295
Stool. Piano	H. Walther	400,528	Apr. 2	150	39	47	32
Stool. Sectional camp	C. F. Glocker	400,841	Apr. 2	618	168	47	118
Stool. Store	J. S. Sammons	401,380	Apr. 16	1444	381	47	295
Stools or chairs. Spring-back for	W. P. James	404,628	June 4	392	94	47	1300
Stop mechanism	L. C. Crowell	404,960	June 11	863	225; 226	47	1402
Stopper: *See* Bottle-stopper.							
Store-service apparatus	J. T. Cowley	402,567	May 7	25	7	47	668
Store-service apparatus	J. T. Cowley	402,568	May 7	27	7, 8	47	668
Store-service apparatus	J. T. Cowley	403,917	May 28	2055	541	47	1060
Store-service apparatus	P. L. Davis	405,351	June 25	2379	624	47	1709
Store-service apparatus	H. Eichbaum	402,575	May 7	36	9	47	670
Store-service apparatus	H. Eichbaum	402,576	May 7	39	10	47	671
Store-service apparatus	G. W. Price	403,070	May 7	762	201	47	806
Store-service apparatus	C. A. Whipple	404,882	June 11	749	191	47	1379
Stores. Retail-case and support for	G. W. Pyle	400,945	Apr. 9	784	209	47	159
Stove	R. H. Guhmann	402,123	Apr. 23	2592	672	47	521
Stove	H. Hopkins and J. R. Perry	402,451	Apr. 30	3095	803	47	625
Stove	J. H. Keyser	401,889	Apr. 23	2225	580	47	451
Stove	C. Newburgh	403,063	May 7	736	192	47	802
Stove	W. H. Owen, A. C. Boswell, and J. J. Carlock.	402,539	Apr. 30	3222	835	47	649
Stove	F. Veil	400,612	Apr. 2	263	72	47	55
Stove and grate. Combined cooking	I. N. Davis and G. Tweedy	404,177	May 28	2464	647	47	1161
Stove and utensils. Portable cooking	A. S. Tomkins	404,578	June 4	323	77	47	1286
Stove attachment. Gasoline	C. A. Stockstrom. (Reissue)	11,007	June 11	1278	337	47	1424
Stove. Foot	H. E. Welsh	403,014	May 7	666	175	47	789
Stove for railway-coaches	A. M. Spaulding	406,007	June 25	2477	647	47	1726
Stove. Gas	W. H. Pike	404,038	May 28	2266	592	47	1120
Stove. Gas or oil	B. G. Devoe and T. A. Dull	401,641	Apr. 16	1858	483	47	371
Stove. Gasoline	W. P. Dunham	401,016	Apr. 9	886	237	47	178
Stove. Gasoline	M. S. Sager	405,274	June 18	1334	359	47	1502
Stove. Gasoline	M. S. Sager	405,275	June 18	1336	353	47	1502
Stove-grate	W. C. Metzner	401,508	Apr. 16	1627	430; 431; 689; 691	47	329
Stove. Heating	R. A. Gartside and D. Gencse	404,273	May 28	2619		47	1187
Stove. Heating	A. S. Phelps	400,481	Apr. 2	79	22	47	18
Stove. Oil	A. F. Zimmerling	405,291	June 18	1355	357	47	1506
Stove or furnace. Oil-burning	C. M. Young and P. L. Gibbs	403,405	May 14	1308	342	47	918
Stove or range attachment	C. B. Tefft	404,748	June 4	544	139	47	1332
Stove-oven	P. Hoogerzeil, Jr., and D. F. Hinkley	403,938	May 28	2063	546	47	1065
Stove-pipe	W. S. Shipe. (Reissue)	11,005	May 28	2772	710	47	1218
Stove-pipe anchor and flue-cleaner	L. H. Oldfield	404,553	June 4	288	68	47	1279
Stove-pipe and collar holder	G. Koch and J. B. Korn	405,565	June 18	1776	469	47	1593
Stove-pipe former	H. S. Grannis	402,562	May 7	47	11	47	672
Stove-pipe formers. Adjustable box for	H. S. Grannis	402,563	May 7	48	12	47	673
Stove-pipe lock	E. Nash	403,425	May 14	1332	350	47	922
Stove-pipe thimble	A. Staub	402,778	May 7	339	87	47	726
Stove. Safety self-extinguishing car-heating	W. J. Locke and I. Thayer	401,358	Apr. 16	1405	372	47	289
Stove. Single-cylinder	J. H. Keyser	401,888	Apr. 23	2223	580	47	451
Stove-top	W. H. Wooldridge	404,065	May 28	2291	599	47	1136
Stove. Vapor	S. Daniels	402,409	Apr. 30	3017	783	47	610
Stove. Vapor	S. Daniels	404,961	June 11	660	230	47	1403
Stove. Vapor	Z. Davis	405,149	June 11	1195	293	47	1454
Stove. Vapor	C. S. Drake	401,258	Apr. 9	1254	334	47	246
Stove. Vapor	J. B. Wallace	403,562	May 21	1547	407; 408	47	972
Stoves and other purposes. Heater for	S. H. Altice, H. P. Roberts, and C. Reed.	401,006	Apr. 9	1003	268	47	199
Stoves. Automatic extinguisher for car	H. Levoy and F. Dagwell	404,420	June 4	66	17	47	1238
Stoves. Burner for gas	L. Kahn	401,783	Apr. 23	2066	540	47	422
Stoves. Oil-burner for	H. Schreiner	401,793	Apr. 23	2091	545	47	425
Stoves. Odor-preventing device for cooking	C. A. Holm	404,194	May 28	2491	651	47	1165
Stoves. Recess summer-piece for	J. H. Keyser	400,689	Apr. 2	378	102	47	75
Stoves. Safety oil-can attachment for vapor	H. Ruppel	404,439	June 4	95	24	47	1244
Straight-edge or darby	E. Moore	400,590	Apr. 2	231	63	47	48
Strainer	A. Kummle	405,567	June 18	1778	470	47	1594
Strainer. Detachable	P. Pfeil	405,373	June 18	1468	389	47	1529
Strainer for kettles, &c	W. F. Kendrick	405,216	June 11	1240	329	47	1476
Strainer. Julep	C. P. Lindley	404,204	May 28	2504	635	47	1168
Strap: *See* Box-strap. Metallic strap. Hose-carrying strap. Shawl-strap.							
Strap fastener and tightener for trunks, &c	C. Sparks	402,776	May 7	337	87	47	726
Strap-joint	C. T. Remus	400,572	Apr. 2	864	181	47	127
Strap-loop	A. C. Reeves	402,104	Apr. 30	2696	700	47	550
Straw-carrier	G. Akerson	404,460	June 4	135	32	47	1251
Straw-cutter	W. C. Bayless	404,379	June 4	10	3	47	1226
Straw-cutter	J. Töpfer	404,130	May 28	2390	626	47	1146
Straw goods. Waterproofing	R. Pratt, Jr	403,697	May 21	1728		47	1009
Straw-stacker	H. M. Coffee	402,807	May 7	383	101	47	735
Straw-stacker	A. A. Russell	400,798	Apr. 2	551	151; 152	47	105
Street-surfaces. Guide-bar for lining up the curves of	J. M. Mack	404,491	June 4	182	43	47	1259
Street-sweeping machine	C. Weiler	401,232	Apr. 9	1212	323	47	238
Stretcher-bar	E. Schmidt	404,988	June 11	901	236	47	1410
Stringed instruments. Bridge for	M. Durick	403,743	May 21	1798	472	47	1021
Stubble-shaver	J. Mallon	405,169	June 11	1161	310	47	1462

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Stuffing-box	W. E. Brockett	400,543	Apr. 2	109	44	47	36
Stuffing-box	L. C. S. Frick	404,599	June 4	283	61	47	1272
Stump-extractor	J. A. Paris and J. H. Dilday	401,850	Apr. 23	2164	565	47	439
Submarine search-light	A. L. Dutton	404,390	June 4	24	6	47	1240
Sugar, &c. Cleansing raw	A. Seyferth	405,610	June 18	1842	.....	47	1606
Sugar from sorghum by diffusion. Extracting	H. A. Hughes	402,083	Apr. 23	2521	658	47	507
Sugar granulating and drying machine	L. A. Morval, Jr.	401,363	Apr. 16	1410	373	47	290
Sugar. Lixiviating-battery for raw	C. Steffen	403,788	May 21	1867	491	47	1036
Sugar molding and refining apparatus	H. W. Walker and T. L. Patterson	401,612	Apr. 16	1812	474	47	363
Sugar production from sorghum	H. A. Hughes	402,082	Apr. 23	2519	657	47	506
Sulky	S. P. Southard	405,856	June 25	2226	586	47	1684
Sulphate of silver. Preparing	F. Gutzkow	401,898	Apr. 23	2140	.....	47	434
Supporter: *See* Belt-supporter. Stocking-supporter. Garment-supporter.							
Suppository-machine	W. J. Hull	401,838	Apr. 23	2150	561	47	436
Surface-gage	W. H. H. Norcross	402,703	May 7	314	81	47	722
Surgeon's knife	H. E. Gemrig	401,549	Apr. 16	1696	448	47	349
Surgical applicator	E. Lee	401,787	Apr. 23	2079	541	47	423
Surgical dressing. Turf-fiber	V. Fraucken and J. Pirnay	401,547	Apr. 16	1694	447	47	341
Surgical mirrors. Head-band for	J. L. Sardy	402,619	May 7	99	24	47	683
Surgical-needle case	E. Willbrandt	402,550	Apr. 30	3239	840	47	652
Surveyor's corner-stake	J. H. Howlett	401,782	Apr. 23	2065	539	47	421
Surveyor's target	S. C. Thompson	405,058	June 11	1005	268	47	1432
Suspenders	B. Goodman	402,580	May 7	45	11	47	672
Suspenders	H. Lisberthal	401,183	Apr. 9	1139	302	47	223
Suspenders	J. R. Pollock	405,374	June 18	1469	389	47	1529
Suspenders	E. B. Stimpson	403,230	May 14	1026	271	47	865
Suspension device	W. C. Homan	401,781	Apr. 23	2064	539	47	421
Swaging device	J. Taylor	402,045	Apr. 23	2465	642	47	496
Sweat-pad fastener	L. H. Scruggs	401,859	Apr. 23	2177	568	47	442
Swing	J. Carmody	403,914	May 28	2052	540	47	1079
Swing. Child's	J. M. McCord	405,496	June 18	1672	442	47	1571
Swinging gate	T. E. Brodt	400,631	Apr. 2	289	82	47	60
Swinging gate. Balanced	J. W. Fiers	404,270	May 28	2611	679	47	1186
Swinging gate. Hand-operated	W. C. Carter	405,302	June 18	1371	361	47	1500
Switch: *See* Automatic switch. Railway-switch. Electric switch. Safety-switch. Electric-current switch. Spring-jack switch. Telephone-switch. Electric-motor-trolley switch. Three-throw open split switch.							
Switch-boards. Testing apparatus for	W. E. McKivitt	405,221	June 11	1246	331	47	1478
Switch-lock	I. May, C. and T. Spikins	400,580	Apr. 2	218	59	47	46
Switch or circuit changer	W. W. Griscom	401,270	Apr. 9	1272	339	47	249
Switch-points. Mechanism for operating	J. M. Swem	404,446	June 4	102	25	47	1245
Switch-rail chair	A. A. Strom	401,312	Apr. 9	1309	353	47	262
Switch-signal	K. H. Wade	401,669	Apr. 23	2169	572	47	444
Switch-stand	F. C. Baker	402,293	Apr. 30	2834	734	47	576
Switch-stand signal	M. B. Hurly	402,328	Apr. 30	2894	750	47	586
Switch-stands. Lock-house for	W. J. McCarthy	404,646	June 4	411	101	47	1304
Switches. Tie-bar clip for split	A. O. Strom	403,497	May 21	2024	532	47	1066
Switches. Tie-bar clip for split	A. A. Strom	406,008	June 25	2479	648	47	1736
Swivel	H. E. Kelley	404,632	June 4	397	96	47	1301
Swivel	J. F. Sears and H. E. Kelley	404,630	June 4	430	107	47	1308
Swivel. Double-acting	M. Collins	400,749	Apr. 2	460	125	47	92
Syringe	J. H. Glascock	401,157	Apr. 9	1102	293	47	216
Syringe	O. Kloppe	405,100	June 11	1055	282	47	1442
Syringe	D. C. McNaughton	400,584	Apr. 2	227	61	47	47
Syringe	M. Overlach	404,105	May 28	2351	617	47	1136
Syringe and medicine-case. Combined	G. B. Ross	400,491	Apr. 2	91	25	47	21
Syringe. Hypodermic	H. Haussmann	401,950	Apr. 23	2316	602	47	468
Syringe. Insect-destroying	F. L. Zitschke	401,622	Apr. 16	1832	477	47	367
Syringe. Vaginal	O. G. Zerse and S. T. Yount	404,702	June 4	564	144	47	1336
Syringes. Tube-rest for	B. F. Sutton	402,285	Apr. 30	2896	731	47	574
Table: *See* Corpse-dressing table. Kitchen-table. Extension-table. Rolling-mill feed-table. Ironing-table. Self-waiting table.							
Table	J. M. Davis	404,689	June 4	473	119	47	1317
Table-cover fastener	E. B. Knapp and H. L. Thompson	401,283	Apr. 9	1286	343	47	252
Table or stand for exhibiting cloaks, &c	W. Bardsley	401,110	Apr. 9	1023	274	47	202
Table-slide	S. Pratt	402,967	May 7	602	158	47	778
Tack-feeding machine	L. D. Junkins	403,843	May 21	1970	512	47	1051
Tack-strips. Machine for making	M. Brock	402,058	Apr. 23	2481	649	47	499
Tack-strips. Machine for making	M. Brock	402,060	Apr. 23	2486	649	47	500
Tack-strips. Machine for making	M. Brock	402,061	Apr. 23	2488	650	47	500
Tack-strips. Machine for making	M. Brock	402,062	Apr. 23	2491	650	47	501
Tack-strips. Machine for making	J. A. Crosble	402,069	Apr. 23	2500	653	47	502
Tack-strips. Machine for setting	M. Brock	402,059	Apr. 23	2484	649	47	500
Tackle-block	G. A. Ford	401,150	Apr. 9	1090	290	47	214
Tackle-block	W. J. Lane	406,000	June 25	2464	645	47	1734
Tag	C. O. Dowst	401,485	Apr. 16	1596	421	47	324
Tag. Shipping	F. G. Roys	403,780	May 21	1853	487	47	1032
Tank: *See* Grinding-machine water-tank. Wash-boiler tank. Water-closet tank.							
Tank	H. W. Harry	400,566	Apr. 2	204	55	47	43
Tank-fountain	J. W. Pierson	405,271	June 18	1329	350	47	1500
Tank-heater	F. Funk	401,698	Apr. 16	1933	503	47	384
Tank-heater	H. Reynolds	405,092	June 11	998	266	47	1430
Tank-heater	A. J. Upham	402,633	May 7	118	29	47	696

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Tannic extracts. Purifying	L. Saarbach	404,440	June 4	97	.....	47	1244
Tanning	J. W. Hitt	401,434	Apr. 16	1518	.....	47	309
Tanning	E. Ollestad	401,715	Apr. 16	1961	.....	47	301
Tap. Bottle	E. H. Griswold	401,432	Apr. 16	1515	401	47	309
Tapping elbows and return-bends. Machine for	D. G. Langlands and O. E Mallion	403,199	May 14	972	256, 257	47	855
Tape-measure	E. G. Soltmann	400,961	Apr. 9	808	215	47	164
Targets. Machine for making bird	M. E. Pontious	400,870	Apr. 2	662	160	47	127
Tea-kettle	C. E. Costa	400,635	Apr. 2	295	83	47	61
Tea or coffee pot handle	M. Seips	403,782	May 21	1854	487	47	1033
Teeth. Adjustable pad for cleansing and polishing	G. F. Horsey	403,350	May 14	1242	322	47	901
Teeth. Filling	A. Robinson	402,352	Apr. 30	2934	760	47	594
Teeth. Filling	E. C. Taylor	404,745	June 4	540	138	47	1331
Teeth. Mold for the manufacture of artificial	W. R. Hall	404,763	June 4	488	123	47	1320
Teeth. Tool for removing shell-crowns from	C. H. Rosenthal	403,293	May 14	1128	299	47	883
Telegraph	J. Burry	404,165	May 28	2439	639, 640, 641	47	1156
Telegraph apparatus	E. B. Shafer	404,507	June 4	211	50	47	1264
Telegraph apparatus for ships	J. B. Willis	400,985	Apr. 9	844	226, 227	47	171
Telegraph cables from corrosion. Protecting the lead pipe of	A. E. Colgate	403,418	May 14	1322	346	47	920
Telegraph. Duplex fire	S. A. Chase	404,519	June 4	235	55	47	1268
Telegraph. Duplex fire-alarm	S. A. Chase	403,507	Apr. 30	3175	822, 823	47	640
Telegraph. Fire-alarm	S. A. Chase	404,518	June 4	232	55	47	1266
Telegraph-instrument	C. G. Burke	402,717	May 7	941	63	47	709
Telegraph-instrument	C. G. Burke	405,985	June 25	2437	638	47	1719
Telegraph-instrument	C. G. Burke	405,988	June 25	2443	639	47	1720
Telegraph. Railway	F. J. Crouch	402,408	Apr. 30	3015	783	47	609
Telegraph-sounder	F. L. Van Epps	403,626	May 21	1624	430	47	987
Telegraph system. Printing	C. J. A. Munier	402,099	Apr. 23	2544	663, 664	47	511
Telegraph-wire carrier	R. S. Donaldson	400,552	Apr. 2	184	50	47	39
Telegraphs. Circuit-closer for railway-car	G. I. Hopkins	402,222	May 7	415	109	47	741
Telegraphs. Exchange system for	J. H. Robertson	403,291	May 14	1126	298	47	883
Telegraphic instrument	C. G. Burke	405,986	June 25	2439	638	47	1720
Telegraphic instrument	C. G. Burke	405,987	June 25	2440	639	47	1720
Telegraphic instrument	C. G. Burke	405,989	June 25	2444	639, 640	47	1721
Telegraphy	C. G. Burke	405,984	June 25	2436	637, 638	47	1719
Telegraphy	P. B. Delany	401,334	Apr. 16	1363	364	47	280
Telegraphy	M. W. Dewey	402,414	Apr. 30	3025	785	47	611
Telegraphy	M. W. Dewey	402,415	Apr. 30	3028	785	47	612
Telegraphy. Autographic	M. W. Dewey	405,539	June 18	1736	450	47	1584
Telegraphy. Harmonic	F. Van Rysselberghe	400,523	Apr. 2	143	38	47	31
Telegraphy. Printing	Z. P. Hotchkiss	403,472	May 14	1399	366, 367	47	935
Telegraphy. Quadruplex	C. D. Haskins	405,211	June 11	1234	327	47	1475
Telegraphy. Vibratory	S. D. Field	403,238	May 14	1066	280, 281	47	872
Telephone	E. A. Woelk	402,121	Apr. 23	2787	670	47	520
Telephone and telegraph system. Combined	W. Burnley	402,298	Apr. 30	2840	735, 736	47	577
Telephone attachment	H. Konigslow	405,420	June 18	1538	407	47	1544
Telephone attachment	O. Konigslow	405,566	June 18	1777	470	47	1593
Telephone-circuit. Metallic	H. L. Burbank	405,461	June 18	1611	425	47	1558
Telephone combination-circuit	F. A. Pickernell	405,677	June 18	1967	516	47	1627
Telephone-exchange apparatus	F. G. Beach	405,967	June 25	2241	590	47	1686
Telephone-holding device	S. J. Adams	403,316	May 14	1167	309	47	892
Telephone. Mechanical	W. W. Nichols	403,547	May 21	1523	399	47	967
Telephone. Mechanical	G. Thomas	401,227	Apr. 9	1201	321	47	237
Telephone-support	C. W. Brown	404,660	June 4	459	115	47	1314
Telephone-support	P. E. Hall	400,911	Apr. 9	724	196	47	149
Telephone-switch	A. Stromberg	405,382	June 18	1483	393	47	1533
Telephone system	F. A. Holcomb	402,928	May 7	548	145	47	766
Telephone system	F. A. Holcomb	402,929	May 7	552	146	47	767
Telephone-transmitter	E. S. Drake	404,471	June 4	151	35	47	1253
Telephone-transmitter	W. Gillett	401,743	Apr. 23	2010	526	47	411
Telephone-transmitter	W. J. Morton	400,591	Apr. 2	232	63	47	48
Telephones. Arm-support for	C. R. Tuttle	400,520	Apr. 2	140	36	47	30
Telephones. Diaphragm for acoustic	H. P. Jones	405,483	June 18	1651	435	47	1566
Telephony and telegraphy. Combined	J. H. Robertson	403,292	May 14	1127	299	47	883
Telescopic glasses. Mirror attachment for	A. Janzon	400,571	Apr. 2	210	57	47	44
Tellurian	L. Deichmann	402,005	Apr. 23	2397	624, 625	47	483
Temperature-regulator	L. F. Easton	400,738	Apr. 2	477	128	47	93
Temperature-regulator. Electric	L. F. Easton	405,151	June 11	1128	300	47	1455
Temple for guiding the edges of fabrics	J. J. Schofield	401,972	Apr. 23	2347	611	47	475
Terret with separable shank	E. E. Hardy	404,403	June 4	42	12	47	1234
Testing-machine. Impact	W. J. Keep	403,676	May 21	1695	448, 449	47	1002
Testing machine. Tensile-strain	S. Jump	404,200	May 28	2499	653	47	1167
Tether	W. J. Neese	403,062	May 7	735	191	47	902
Textile fabrics. Apparatus for treating	W. Mather	402,757	May 7	304	78, 79	47	720
Textile fabrics. Apparatus for washing	J. S. Farmer	404,078	May 28	2309	605, 606	47	1130
Thermo-dynamic motor. Internal combustion	J. Hargreaves	401,161	Apr. 9	1107	294	47	217
Thermometer-case	C. J. Taglabue	400,717	Apr. 2	422	114	47	84
Thermometer. Clinical	R. H. Hunstock and E. Chavez	405,046	June 11	978	260	47	1426
Thermometer. Oven	C. Julier and J. O. Robinson	400,573	Apr. 2	211	57	47	45
Thermometer. Oven	J. C. Voss	403,710	May 21	1749	460	47	1012

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drs.	Official Gazette. Vol.	Official Gazette. Page.
Thermometric indicator	W. R. Patterson	402,347	Apr. 30	2927	739	47	592
Thermoscopes. Attachment for electro-magnetic	H. J. Haight	401,348	Apr. 16	1389	368	47	286
Thermostat	C. F. Hilkier	403,837	May 28	2081	546	47	1085
Thermostat	J. H. Mallon	405,579	June 18	1787	476	47	1598
Thill-coupling	W. B. Bradsby	402,502	Apr. 30	3169	821	47	639
Thill-coupling	B. Fahrney	405,086	June 11	1039	277	47	1438
Thill-coupling	E. A. Farr	402,913	May 7	526	139	47	702
Thill-coupling	F. Gandy	401,896	Apr. 23	2139	558	47	434
Thill-coupling	J. A. Hinson	401,885	Apr. 23	2218	579	47	450
Thill-coupling	A. Homewood	405,414	June 18	1532	405	47	1542
Thill-coupling	G. H. Hutton	402,527	Apr. 30	3209	831	47	646
Thill-coupling	C. R. Jones	401,170	Apr. 9	1122	297	47	229
Thill-coupling	G. W. Lee	402,531	Apr. 30	3213	832	47	647
Thill-coupling	C. C. Munroe	405,108	June 11	1069	285	47	1444
Thill-coupling	D. Murray	405,109	June 11	1069	285	47	1444
Thill-coupling	W. T. Ross	402,974	May 7	611	160	47	779
Thill-coupling	S. G. Smith	402,545	Apr. 30	3231	837	47	651
Thill-coupling	D. K. Stone	400,878	Apr. 2	672	183	47	129
Thill-coupling	B. E. Wade	400,596	Apr. 2	148	39	47	32
Thill-jack	J. Fuller and J. Morrison	402,518	Apr. 30	3195	827	47	644
Thill. Sulky	S. Toomey	403,079	May 7	776	205	47	908
Thill. Vehicle	E. Warren	403,497	May 14	1444	378	47	943
Thills. Mechanism for detaching	A. Rammoser	405,799	June 25	2148	564	47	1608
Thimble	C. Horner	404,910	June 11	792	202	47	1388
Thrashing-machine	L. Bronson	402,801	May 7	375	98, 99	47	733
Thrashing-machine	W. King	401,705	Apr. 16	1942	506	47	396
Thrashing-machine	F. F. Landis	401,840	Apr. 23	2153	562	47	437
Thrashing machine. Bean	C. H. Bidwell	402,893	May 7	500	132	47	757
Thrashing-machines. Adjustable sieve attachment for	W. K. Dodd	405,018	June 11	946	252	47	1419
Thrashing-machines. Band-cutter platform for	A. B. Leeper	402,258	Apr. 30	2789	722	47	567
Thrashing-machines. Driving means for	H., J. H., and A. D. Gillett	405,309	June 18	1383	364	47	1512
Thread	L. Briggs	400,739	Apr. 2	455	121	47	90
Thread-cutting die	J. E. McCanna	401,962	Apr. 23	2324	606	47	471
Thread holder and cutter	M. E. West	402,492	Apr. 30	3163	819	47	637
Thread-protector	E. J. Colby	400,636	Apr. 2	296	83	47	62
Three-throw open split switch	G. L. Worth and J. B. Wyatt	403,238	May 14	1037	274, 275	47	867
Ticket	J. Keller	403,113	May 14	894	220	47	828
Ticket and stamp holder	A. Williamson	404,584	June 4	333	80	47	1268
Ticket. Cash-fare	A. I. Blanchard	405,820	June 25	2172	571	47	1673
Ticket-holder	J. G. Webb	403,234	May 14	1030	272	47	866
Ticket-holder. Railway	P. E. McDonald	402,702	May 7	313	81	47	722
Ticket-selling machine. Automatic	J. W. Vaughn	404,450	June 4	114	27	47	1247
Tide and lock power engine	A. F. Smith	400,500	Apr. 2	106	28, 29	47	24
Tie: *See* Loop-tie. Railway-tie. Railway cross-tie. Railway-rail tie.							
Tights. Full	S. T. Sutton	402,202	Apr. 30	2709	703	47	552
Tile frame. Illuminating	P. H. Jackson	405,778	June 25	2120	557	47	1663
Tile. Illuminating	J. Jacobs	402,830	May 7	557	146, 147	47	767
Tile. Illuminating	J. Jacobs	402,831	May 7	558	147	47	768
Tile-machine	W. D. Sherman	405,183	June 11	1182	315	47	1465
Tile-machine	W. D. Sherman	405,184	June 11	1186	316	47	1466
Tile-machine	W. D. Sherman	405,185	June 11	1188	316, 317	47	1467
Tile-machine	W. D. Sherman	405,186	June 11	1190	317, 318	47	1467
Tile or brick. Paving	C. M. O'Conner	400,477	Apr. 2	75	21	47	18
Tile. Roofing	J. E. Gnaten and C. W. Braun	403,837	May 21	1942	516	47	1050
Tiles. Device for handling green	J. W. Laughlin	403,276	May 14	1105	293	47	880
Tilting gate	M. A. Nelson	401,577	Apr. 16	1738	458	47	349
Timber. Compound for preserving	J. W. Putnam	404,302	May 28	2064	.....	47	1197
Time-lock	B. Free	401,272	May 28	2613	678, 680	47	1186
Time-piece	H. Rime	402,972	May 7	608	160	47	779
Time-piece. Electric self-winding	M. Carranza and J. M. Tinoco	401,606	Apr. 9	873	234	47	176
Time-piece key	M. Bock	405,004	June 11	922	244	47	1414
Time-register. Watchman's	H. W. Smith	402,359	Apr. 30	2942	763	47	596
Timing apparatus for race courses	R. O. Adams	402,291	Apr. 30	2832	733	47	575
Tin. Machine for slitting sheets of	W. Hipperling	403,533	May 21	1507	395	47	964
Tinning metals. Machine for	D. Caird and G. Larkins	402,899	May 7	508	124	47	758
Tire-shrinker	R. B. Langill	403,115	May 14	887	221	47	829
Tire. Wagon	A. N. Hopkins	401,275	Apr. 9	1276	341	47	250
Tire. Wheel	R. W. Dunmoyer	404,092	June 4	476	120	47	1318
Tobacco-cutter	J. B. Adt	400,723	Apr. 2	428	116	47	85
Tobacco-cutting machine	W. Krutzsch	402,088	Apr. 23	2532	660	47	509
Tobacco-hanger	W. S. Wootton	403,819	May 21	1909	502	47	1044
Tobacco-pipe	J. W. Dowling	403,561	May 21	1563	413	47	975
Tobacco-pipe	E. A. Gross	403,935	May 28	2080	546	47	1084
Tobacco-press. Portable	I. A. McKinley	401,448	Apr. 16	1536	400	47	313
Tobacco-tamp and pipe-stem cleaner. Combined	J. Strachan	400,986	Apr. 9	813	218	47	165
Toboggan	G. H. Chateayne	401,734	Apr. 23	1905	502	47	408
Toe-weight	F. H. Perry	404,109	May 28	2302	619	47	1140
Tongs	E. F. Barton	405,001	June 11	919	243	47	1414
Tongs. Roofing	C. G. Blum and P. Listeman	404,678	June 4	453	114, 115	47	1313
Tongs. Roofing	R. B. McConnell	401,963	Apr. 23	2335	606	47	472
Tongue-support	E. Hanshaw	402,443	Apr. 30	3062	799	47	623
Tongue-support	B. Rents	401,461	Apr. 16	1556	411	47	317
Tool. Combination	E. K. Beckwith	403,631	May 7	696	182	47	795
Tool. Combination	A. J. Bryant	401,327	Apr. 16	1353	361	47	277
Tool. Combination	A. Frömming	405,156	June 11	1145	305	47	1459

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Tool. Combination	E. E. Heacock	404,001	May 28	2177	571	47	1103
Tool. Combination	S. L. Heinold	401,821	Apr. 23	2133	557	47	432
Tool. Combination	A. D. Kimball	400,690	Apr. 2	389	103	47	75
Tool. Combination	H. L. Kincaid	402,939	May 7	572	150	47	771
Tool. Combination household	F. A. Huehn	402,327	Apr. 30	2893	749	47	586
Tool driver	C. H. Olson	402,538	Apr. 30	3221	835	47	649
Tool-handle	G. Carlisle	401,461	Apr. 16	1590	409	47	323
Tool-handle	C. D. Fuller	403,832	May 21	1929	506	47	1047
Tools. Tempering	Q. A. Button	405,887	June 25	2182	574	47	1675
Tools to handles. Device for securing	F. H. Thompson and G. P. Turmey	404,663	June 4	435	109	47	1309
Tooth. Artificial	C. H. Land	400,921	Apr. 9	744	200	47	152
Tooth-crown. Artificial	C. H. Land	403,597	May 21	1563	413	47	979
Tooth-crown. Artificial	C. H. Land	405,167	June 11	1158	306	47	1461
Tooth-holder	J. W. Harris	401,883	Apr. 23	2214	573	47	449
Tooth-pick machine	W. F. Hutchinson	404,282	May 28	2632	693	47	1190
Tooth-plug. Artificial	F. E. Hansen	403,428	May 14	1334	350	47	923
Top-spinner	F. L. Johnson	404,042	May 28	2241	587	47	1114
Torch	H. Wellington	401,805	Apr. 23	2111	550	47	428
Torpedo-staff	H. P. Young	401,810	Apr. 23	2117	552	47	429
Torpedoes. Net-cutting attachment for	S. A. Brown	401,773	Apr. 23	2049	536	47	418
Toy	A. L. Bernardin	405,988	June 25	2246	590	47	1687
Toy	J. C. Hall	405,333	June 18	1442	382	47	1524
Toy	D. W. Long	401,569	Apr. 16	1727	453	47	347
Toy	F. K. Way and W. T. Parker	403,232	May 14	1058	271	47	906
Toy car. Coin-operated	A. C. Rex	402,351	Apr. 30	2932	760	47	593
Toy. Mechanical	R. Teichmann	403,307	May 14	1148	304	47	888
Toy parachute	W. J. Kuntzsch	404,847	June 11	697	179	47	1370
Toy pistol	F. L. Gordon	404,275	May 28	2022	681	47	1188
Toy racket	G. D. Corey	404,599	June 11	777	198	47	1384
Toy railway-car	J. S. Wilkins, Jr	403,165	May 14	910	230	47	842
Trace-carrier	D. T. Bryan	405,460	June 18	1611	424	47	1558
Track-clearer	J. M. Christopher	402,405	Apr. 30	3011	782	47	608
Track-layer	S. W. Roberts and E. P. Caldwell	400,950	Apr. 9	790	211	47	160
Track-laying machine	F. F. Voigt	404,996	June 11	913	{241 242}	47	1412
Track-lifter	J. D. Williford	401,236	Apr. 9	1216	324	47	239
Track-switch shifter	L. W. Queitsch	402,856	May 7	451	118	47	747
Traction-engine	E. M. Birdsall	404,157	May 28	2427	{635 636}	47	1154
Traction-engine	C. O. Heggem	400,846	Apr. 2	626	170	47	120
Traction-wheel	E. M. Birdsall	403,321	May 14	1172	313	47	893
Transformers. Apparatus for regulating current or potential in secondary of	E. Thomson	400,515	Apr. 2	125	33, 34	47	28
Transformers. Regulating current or potential in secondary of	E. Thomson	400,516	Apr. 2	129	34	47	29
Transit. Road for rapid	M. A. Michales	403,687	May 21	1710	432	47	1005
Transit. System of rapid	H. Flad	405,306	June 18	1377	363	47	1510
Transit. System of rapid	H. Flad	405,467	June 18	1621	{427 428}	47	1560
Transit. System of rapid	H. Flad	405,769	June 25	2109	{552 553}	47	1660
Transmission apparatus	T. Bomm	403,637	May 21	1641	{434 435}	47	991
Transom-lifter	J. K. Sprague	404,020	May 28	2201	578	47	1107
Transparency	H. C. Rector	403,698	May 21	1729	455	47	1009
Transplanting-pot	J. Cook	402,722	May 7	246	65	47	710
Transportation. System of rapid	C. H. Barrows	403,505	May 21	1455	382	47	954
Trap: *See* Animal-trap. Fly-trap. Insect-trap. Mole-trap. Overflow-trap. Pipe-trap. Sewer-trap. Steam-trap.							
Trap	L. T. Follansbee	404,271	May 28	2612	679	47	1186
Trap	T. Griffin	402,585	May 7	51	12	47	673
Trap-doors. Device for opening	T. J. Jolly	402,932	May 7	559	147	47	768
Trapeze. Revolving	L. A. Valdis	402,495	Apr. 30	3158	{817 818}	47	636
Traveling-bag	M. Schwerin	402,861	May 7	456	120	47	748
Traveling-bag	A. P. W. Seaman	405,508	June 18	1692	447	47	1576
Tray. Child's	C. L. Wagandt	402,788	May 7	354	93	47	729
Tree-protector	H. L. Webber	404,757	June 4	558	143	47	1335
Trees. Device for protecting fruit	F. Harlan	405,552	June 18	1750	464	47	1590
Trestle. Adjustable	L. Maurer	402,175	Apr. 30	2671	693	47	544
Trestle. Folding	J. T. Miller	401,848	Apr. 23	2163	564	47	439
Trimmer: *See* Lumber-trimmer. Wick-trimmer.							
Trimming-board	F. Nathan	401,454	Apr. 16	1546	409	47	315
Trimming-machines. Rotary cutter for	M. D. Phelan	400,788	Apr. 2	535	147	47	103
Trough: *See* Feed-trough.							
Trough and rack. Combined	W. H. Critchfield and E. J. Emmons	402,145	Apr. 30	2626	679	47	535
Trousers, &c.	M. Fraenkel	403,746	May 21	1801	473	47	1022
Trousers-stretcher	J. Draper	402,813	May 7	395	103	47	737
Trousers-stretcher	D. F. McNair	404,648	June 4	416	103	47	1304
Truck	E. F. Strange	401,470	Apr. 16	1577	417	47	390
Truck-beam for railway-cars	J. Comp	404,031	May 28	2224	583	47	1111
Truck bolster. Car	J. Higginson	405,703	June 25	2012	529	47	1642
Truck brake. Car	J. Stephenson	403,298	May 14	1135	300	47	885
Truck. Brick	J. W. Weeks	401,396	Apr. 16	1464	{386 387}	47	299
Truck. Cable-car	J. Stephenson	403,294	May 14	1294	339	47	915
Truck. Car	G. E. Blaine	404,676	June 4	450	{113 114}	47	1312
Truck. Car	L. K. Jewett	401,354	Apr. 16	1400	370	47	288

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Truck. Car	L. K. Jewett	402,163	Apr. 30	2657	688	47	542
Truck. Car	M. Kennedy	402,459	Apr. 30	3106	806	47	627
Truck. Car	H. J. La Mothe	402,167	Apr. 30	2662	689	47	543
Truck. Car	H. J. La Mothe	402,169	Apr. 30	2665	690	47	543
Truck for cable-railway cars	S. A. Bemis	405,691	June 25	1909	504	47	1639
Truck. Gopher	S. R. Harry	405,960	June 25	2392	627	47	1711
Truck. Grand-piano	C. H. Martin	402,340	Apr. 30	2913	755	47	590
Truck. Hand	D. M. Macpherson	401,506	Apr. 16	1625	430	47	329
Truck-loader	J. D. Hill	400,457	Apr. 2	46	14	47	12
Truck. Railway-car	B. J. La Mothe	402,168	Apr. 30	2663	690	47	543
Truck. Railway car	J. W. Maloy	402,950	May 7	581	153	47	773
Truck. Railway-car	J. W. Maloy	402,951	May 7	583	154	47	774
Truck. Upright-piano	C. H. Martin	402,341	Apr. 30	2914	{755 756}	47	591
Trucks. Rung-socket plate for	G. Hoepfner and H. Wuest	405,474	June 18	1635	432	47	1563
Trunk-fixture	J. B. Porter	404,111	May 28	2363	630	47	1141
Trunk-lock	H. B. Plumb	401,062	Apr. 9	953	254	47	190
Trunks or packing-boxes. Follower for	K. L. Karo	401,439	Apr. 16	1528	404	47	311
Truss	A. Dallas	401,877	Apr. 23	2205	577	47	448
Truss	A. C. Haines	400,910	Apr. 9	722	196	47	148
Truss	J. Harden	400,454	Apr. 2	42	13	47	12
Truss	J. C. Borick	404,307	May 28	2673	693	47	1198
Tub: *See* Wash-tub.							
Tubs, &c. Cover for butter	H. C. Carter	404,597	June 4	350	84	47	1291
Tube: *See* Boiler-tube. Lamp-wick tube. Speaking-tube.							
Tube-coupling	G. N. Riley. (Reissue)	10,994	Apr. 16	1983	.....	47	395
Tube-cutter	J. E. Jerrold, Sr., and H. H. Barclay	401,279	Apr. 9	1292	342	47	251
Tube or conduit	G. H. and K. C. Gillette	401,154	Apr. 9	1098	291	47	215
Tube or pipe sections. Locking device for	J. W. Teetzel	400,513	Apr. 2	123	33	47	28
Tubes. Apparatus for making seamless	I. G. Platt	405,115	June 11	1077	287	47	1445
Tubes. Machine for finishing metal	L. F. Betts	402,133	Apr. 30	2609	676	47	532
Tubing. Apparatus for the manufacture of metal	J. H. Flagler	401,143	Apr. 9	1072	{286 287}	47	211
Tubing. Apparatus for the manufacture of metal	J. H. Flagler	401,144	Apr. 9	1075	287	47	212
Tubing. Apparatus for welding	J. H. Flagler	401,146	Apr. 9	1081	288	47	212
Tubing. Forming seamless	J. H. Flagler	401,145	Apr. 9	1078	{287 288}	47	212
Tubing. Machine for beating and polishing sheet-metal	W. G. Case	403,736	May 21	1787	470	47	1019
Tubing. Making metal	J. H. Flagler	401,142	Apr. 9	1070	286	47	211
Tug. Hame	L. Latil	401,957	Apr. 23	2328	605	47	470
Tug. Hame	E. B. Miner	403,947	May 28	2098	549	47	1098
Tug-holder for vehicles	A. B. Webster	405,136	June 11	1104	294	47	1451
Tunnel. Sub-river	A. W. Straub	400,804	Apr. 2	561	154	47	107
Turbine wheel	Z. W. Burnham	404,340	May 28	2733	706	47	1207
Turn-buckles. Blank for	J. H. Simpson	402,691	May 7	205	52	47	702
Turn-buckles. Die for making	J. H. Simpson	402,693	May 7	207	53, 54	47	702
Turn-buckles. Machine for making	J. H. Simpson	402,695	May 7	211	55	47	703
Turn-buckles. Machine for manufacturing	R. L. Barclay	404,152	May 28	2421	634	47	1153
Turn-buckles. Making	J. H. Simpson	402,692	May 7	205	52, 53	47	702
Turn-buckles. Making	J. H. Simpson	402,694	May 7	209	54	47	703
Turn-buckles. Making	J. H. Simpson	403,965	May 28	2124	{555 556}	47	1093
Turn-buckles. Manufacture of	J. H. Simpson	402,690	May 7	203	51, 52	47	702
Turning-machine	H., C., and J. Tucker	403,749	June 25	2083	{546 547 620 621}	47	1635
Turning tenons. Machine for	W. Rogers	404,113	May 28	2366		47	1141
Turning. Tool for spiral	E. Catlan	403,521	May 21	1486	390	47	960
Tuyere. Forge	W. H. Shank	403,149	May 14	885	233	47	818
Twine-holder	W. A. Tibball and W. H. Von Stein	402,206	Apr. 30	2717	705	47	554
Twisting fiber in hanks. Machine for	R. M. Macintosh	405,741	June 25	2070	543	47	1632
Type-case	H. Freeman	402,317	Apr. 30	2877	745	47	584
Type. Die for forming wood	W. H. Page and G. C. Setchell	402,850	May 7	439	116	47	745
Type. Die for forming wood	W. H. Page and G. C. Setchell	402,851	May 7	440	116	47	745
Type. Die for forming wood	G. C. Setchell	402,863	May 7	461	121	47	749
Type. Die for forming wooden	W. H. Page	402,852	May 7	441	116	47	746
Type setting and distributing machine	G. D. Rogers	405,273	June 18	1331	{351 352}	47	1501
Type setting machine	R. W. Nelson	402,537	Apr. 30	3220	835	47	649
Type-writer case	H. D. Pursell	402,106	Apr. 23	2561	665	47	514
Type-writing and matrix-making machine	W. Rennyson	403,075	May 7	770	{203 204}	47	807
Type-writing machine	J. W. Bartlett	403,823	May 21	1917	{503 504}	47	1045
Type-writing machine	L. G. Garrett	401,780	Apr. 23	2056	{538 539}	47	420
Type-writing machine	A. Grundy	404,833	June 11	678	175	47	1367
Type-writing machine	J. G. Parkinson	405,222	June 11	1246	331	47	1478
Type-writing machine	F. H. Richards	403,216	May 14	1000	{264 265 266}	47	861
Type-writing machine	C. E. Sargent	405,606	June 18	1695	467	47	1605
Type-writing machine	C. Spiro	400,716	Apr. 2	418	{113 114}	47	83
Type-writing machine	G. W. N. Yost	401,900	Apr. 23	2274	618	47	479
Type-writing machines. Copy-holder or easel for use with	N. C. Fowler, Jr.	402,518	Apr. 30	3194	827	47	644
Type-writing machines. Fraction-key for	A. Davis and J. H. W. Marriott	403,179	May 14	933	247	47	847
Type-writing machines. Inking-ribbon spool for	H. Ray	401,856	Apr. 23	2174	568	47	441

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Type-writing machines. Paper-holding attachment for	W. B. Northrop	404,103	May 28	2348	616	47	1138
Umbrella	C. W. Harris	404,039	May 28	2237	586	47	1113
Umbrella	G. A. Kittredge and W. P. Kilbourne	405,712	June 25	2027	532	47	1644
Umbrella	S. Schwartz	402,488	Apr. 30	3147	815	47	634
Umbrella-exhibitor	F. Harrington and B. L. Carter	404,480	June 4	166	39	47	1256
Umbrella-frame	W. W. Box	401,536	Apr. 16	1677	442	47	338
Umbrella or cane rack	W. Gable	402,013	Apr. 23	2409	628	47	485
Umbrella or parasol	W. B. Dimon	403,993	May 28	2165	569	47	1100
Umbrella or parasol	F. S. Evans	404,085	June 4	478	121	47	1318
Umbrella-tip ring	E. J. Lumley	403,355	May 14	1218	323	47	902
Umbrellas, &c. Appliance for holding	H. Hough	405,554	June 18	1702	463	47	1590
Umbrellas or analogous articles. Holder for	A. C. Porter	400,598	Apr. 2	943	66	47	51
Under-vest	C. F. North	404,551	June 4	284	67	47	1278
Underwaist. Padded	M. D. McDowell	405,588	June 18	1610	479	47	1600
Unison device	G. F. Oehmen	404,426	June 4	75	19	47	1240
Vacuum or pressure gage	M. Luscomb	403,543	May 21	1518	398	47	966
Vacuum-pan. Electrically-heated	G. B. and M. Johnson	403,110	May 14	892	230	47	828
Valve	L. Atwood	401,240	Apr. 9	1225	326 / 327	47	240
Valve	W. A. Babcock	404,895	June 11	754	192	47	1380
Valve	J. Burke	402,228	Apr. 30	2743	711	47	559
Valve	F. Egner and J. W. Harrison	404,392	June 4	27	6, 7	47	1230
Valve	R. Foster	401,647	Apr. 16	1869	485	47	372
Valve-actuating apparatus	J. W. Packard	401,582	Apr. 16	1744	460	47	350
Valve. Air-	G. M. Davis	404,961	June 11	872	227	47	1404
Valve. Air-brake operating and reducing	R. Solano	405,854	June 25	2222	585	47	1683
Valve and pressure-regulator. Reduction-	F. D. Conncely	405,833	June 18	1729	456 / 457	47	1583
Valve and seat. Steam-engine	R. C. Paul	402,472	Apr. 30	3130	811	47	632
Valve. Anti-freezing tank-	W. H. Barrett	404,420	June 11	657	170	47	1363
Valve attachment for power mechanisms. Automatic	S. N. Knight	401,202	May 28	2501	654	47	1167
Valve. Balanced-slide and cut-off	W. Simpkin	401,384	Apr. 16	1448	382	47	296
Valve-blanks. Die for compressing	J. Powell	403,696	May 21	1727	455	47	1008
Valve. Check-	C. B. Dudley and J. D. Bowman	405,250	June 18	1295	342	47	1494
Valve-controller. Electric	W. E. Norris	401,206	Apr. 9	1166	310 / 311	47	230
Valve. Cut-off	J. J. Tonkin	401,983	Apr. 23	2362	614 / 615	47	477
Valve. Cylinder relief	A. M. Barnum	401,477	Apr. 16	1585	419	47	322
Valve. Engine-	J. T. Halsey	402,922	May 7	538	142 / 143	47	764
Valve. Engine-	H. C. Sergeant	402,985	May 7	625	165 / 166	47	782
Valve. Engine-	J. H. Williams	401,400	Apr. 16	1469	388	47	300
Valve. Engineer's brake-	G. Westinghouse, Jr., and F. Moore	401,916	Apr. 23	2268	590	47	458
Valve for air-brakes. Locomotive-	G. A. Boyden	405,157	June 18	1939	510	47	1622
Valve for air-brakes. Release-	G. A. Boyden	404,768	June 4	573	147	47	1338
Valve for compound engines	S. M. Vauclain	406,012	June 25	2466	650	47	1727
Valve for evaporators. Automatic supply-	W. and W. A. Wilcox, Jr	405,449	June 18	1593	420	47	1555
Valve for filter constructions. Check-	J. W. Hyatt	405,670	June 18	1959	514	47	1630
Valve for gas-distributing pipes. Liquid safety-	J. C. Conroy	401,136	Apr. 9	1062	284	47	210
Valve for gas-meters. Slide-	J. Hearne	404,970	June 11	880	220	47	1405
Valve for meters. Fluid-seal	C. N. Dutton	404,347	May 28	2731	709	47	1249
Valve for pneumatic pipes or tubes	E. S. Boynton	401,660	Apr. 16	1909	497	47	380
Valve for reducing and regulating pressure of fluids	W. P. and R. P. Thompson	401,982	Apr. 23	2361	614	47	477
Valve for tanks. Cut-off	N. W. Krouse	400,920	Apr. 9	743	200	47	151
Valve for the steam-heating pipes of railway-cars	R. I. Hampton	405,959	June 25	2389	626	47	1711
Valve-gear	J. T. Arnold	405,939	June 25	2358	618	47	1706
Valve-gear	E. B. Benham	401,730	Apr. 23	1991	521	47	407
Valve-gear	E. M. Birdsall	403,455	May 14	1377	361	47	930
Valve-gear	F. A. Gardner	405,207	June 11	1230	326	47	1474
Valve-gear	J. T. Halsey	402,923	May 7	541	143	47	765
Valve-gear	M. I. Welch	404,453	June 4	118	28	47	1248
Valve-gear. Cut-off	W. F. Brown	402,557	May 7	5	2, 3	47	664
Valve-gear. Cut-off	A. L. Harrison	401,831	Apr. 23	2143	559	47	434
Valve-gear for compound engines	J. C. H. Stut	404,509	June 4	216	51, 52	47	1264
Valve-gear for steam-hammers	S. Trethewey	400,519	Apr. 2	137	36	47	30
Valve. Hopper-	C. Sturm	401,681	Apr. 9	976	261	47	195
Valve-indicator	D. Kennedy	404,814	June 11	692	178	47	1369
Valve. Pressure-regulating	G. A. Boyden	405,861	June 25	2422	635	47	1718
Valve. Pressure regulating or reducing	E. Andre	404,586	June 4	334	80	47	1288
Valve. Radiator-	W. E. Wood	405,861	June 25	2233	587 / 588	47	1685
Valve. Relief	F. T. Mueller	402,008	Apr. 23	2243	603	47	511
Valve-reseating tool	P. J. Wright	400,969	Apr. 9	852	228	47	172
Valve. Safety-	J. M. Colven	404,684	June 4	466	117	47	1316
Valve. Safety-	W. F. Cunningham	402,070	Apr. 23	2502	653	47	502
Valve. Safety-	M. Warren	402,702	May 7	219	57	47	705
Valve. Slide-	H. C. Reagan	401,309	Apr. 9	1178	313	47	232
Valve. Steam-	J. W. Melling	405,787	June 25	2132	560	47	1665
Valve. Steam-	J. H. Williams	405,641	June 18	1914	504	47	1618
Valve. Steam-actuated	J. W. Gheen	403,187	May 14	945	250	47	849
Valve. Steam engine	G. A. Barth	401,924	Apr. 23	2283	592	47	461
Valve. Steam-engine	S. M. Keplinger	400,919	Apr. 9	741	199 / 200	47	151
Valve. Steam-engine	W. S. Phelps	401,853	Apr. 23	2168	566	47	440
Valve. Straight-way	W. T. Kellogg	401,784	Apr. 23	2068	540	47	422
Valve. Time-	P. G. Hubert	404,542	June 4	275	65	47	1276
Valves. Rolling support for slide-	W. T. Reaser	404,363	May 28	2758	715	47	1214
Vapor-burner	C. H. Shultz	400,498	Apr. 2	103	28	47	23
Vapor-burner	C. H. Shultz	401,303	Apr. 16	1447	382	47	296
Vapor-burner	W. F. Steele	402,996	May 7	639	169	47	784

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Vaporizer	H. F. Williams	404,240	May 28	2570	670	47	1179
Varnish receptacle. Shoe-	J. Hoerle	402,326	Apr. 30	2392	749	47	586
Vat: *See* Dyeing-vat.							
Vault. Bank-	N. S. Amstutz	402,883	May 7	486	127 / 128	47	764
Vault-light mold	D. Barker	404,765	June 4	367	145	47	1337
Vault-light packing-rings. Machine for setting	H. A. Crossley	403,576	May 21	1560	419	47	974
Vault-lights. Tool for constructing	H. A. Crossley	401,331	Apr. 16	1358	360	47	279
Vegetable-cutter	J. A. W. Justi	402,740	May 7	280	72	47	716
Vegetable substances. Apparatus for treating	J. D. Tompkins	401,609	Apr. 16	1807	473	47	362
Vegetable substances. Apparatus for treating	J. D. Tompkins	401,610	Apr. 16	1808	473	47	363
Vehicle	H. Arenberg	404,461	June 4	136	32	47	1251
Vehicle attachment	D. M. and T. H. Parry	405,905	June 25	2304	606	47	1697
Vehicle-body	L. A. Melburn	401,847	Apr. 23	2162	564	47	439
Vehicle-brake	J. W. Martin	401,960	Apr. 23	2331	605 / 606	47	471
Vehicle-brake	F., Jr., and G. H. Schelp	404,238	May 28	2654	686	47	1176
Vehicle-brake	T. S. Smith	401,224	Apr. 9	1197	320	47	236
Vehicle-brake	A. H. Wilson	400,887	Apr. 2	990	267	47	133
Vehicle-brake. Automatic	L. R. Clark	404,075	May 28	2306	604	47	1129
Vehicle. Camping-	A. J. McMaster	404,101	May 28	2344	614 / 615	47	1137
Vehicle-coupling	S. H. Haas	403,427	May 14	1333	350	47	922
Vehicle dash-rail	A. Searle	405,915	June 25	2329	610	47	1700
Vehicle. Electrically-propelled	R. N. Allen	405,976	June 25	2426	635	47	1717
Vehicle. Folding	J. McBoyle	404,494	June 4	186	44	47	1249
Vehicle. Hand-propelled	J. Draper	402,812	May 7	394	103	47	737
Vehicle rub-iron	D. Guile	400,451	Apr. 2	40	12	47	11
Vehicle-runner	C. L. Peirce	401,367	Apr. 16	1419	375	47	291
Vehicle running-gear	F. A. Godfray	405,158	June 11	1147	306	47	1459
Vehicle running-gear	E. W. Jenkins	400,772	Apr. 2	498	135	47	98
Vehicle seat	J. Lea	401,179	Apr. 9	1134	300	47	222
Vehicle-seat lock	J. N. Corey	400,640	Apr. 2	302	85	47	63
Vehicle-seat. Shifting	F. Rightmyer	405,224	June 11	1251	332	47	1479
Vehicle side spring	G. B. Hamlin	401,272	Apr. 9	1274	340	47	250
Vehicle. Spring-	J. E. Balden and D. Barry	405,836	June 25	2196	578	47	1677
Vehicle. Spring-	J. H. Kennedy	402,838	May 7	571	150	47	771
Vehicle. Spring-	J. H. Talmadge	405,857	June 25	2227	586	47	1684
Vehicle-spring	G. E. Bartholomew	402,888	May 7	493	131	47	756
Vehicle-spring	C. A. Beblen	403,506	May 21	1460	383	47	955
Vehicle-spring	C. M. Blydenburgh	403,243	May 14	1044	276	47	809
Vehicle-spring	C. M. Blydenburgh	403,323	May 14	1174	312	47	884
Vehicle-spring	E. H. Booth	402,894	May 7	501	133	47	757
Vehicle-spring	E. Cliff	401,135	Apr. 9	1061	284	47	209
Vehicle-spring	A. E. Cook	401,818	Apr. 23	2127	555	47	431
Vehicle-spring	J. G. Gay	403,547	June 18	1753	463	47	1589
Vehicle-spring	G. E. Harris	401,495	Apr. 16	1610	425	47	327
Vehicle-spring	B. J. Healy	403,666	May 21	1677	443	47	999
Vehicle-spring	E. Hutchinson	402,833	May 7	421	110	47	742
Vehicle spring	S. H. Raymond	404,560	June 4	295	70	47	1291
Vehicle-spring	L. Stouffer	400,506	Apr. 2	114	30	47	26
Vehicle-spring	H. C. Swan	403,622	May 21	1640	429	47	986
Vehicle-spring. Torsion	C. N. Waterhouse	402,789	May 7	355	93	47	720
Vehicle-step. Folding	M. M. Marsh	401,815	Apr. 23	2150	563	47	438
Vehicle trace-loop	O. V. Blazier	400,630	Apr. 2	288	81	47	60
Vehicle. Two-wheeled	S. L. Kinsey	402,020	Apr. 23	2425	631	47	488
Vehicle. Two-wheeled	A. L. Lay	403,354	May 14	1216	323	47	901
Vehicle. Two-wheeled	W. Page	404,496	June 4	188	45	47	1260
Vehicle-wheel	R. W. and T. J. Cave	403,915	May 28	2654	540	47	1040
Vehicle-wheel	F. H. Harris	403,346	May 14	1207	321	47	900
Vehicle-wheel	J. O. Leck	403,763	May 21	1826	479	47	1027
Vehicle-wheel	J. B. Lott	405,424	June 18	1548	410	47	1546
Vehicle-wheel	J. Nipp, Jr	401,965	Apr. 23	2337	607	47	472
Vehicles. Drop-perch for	H. W. Pell	403,209	May 14	990	261 / 262	47	859
Vehicles. Head-block for	E. Hutchinson	402,737	May 7	275	71	47	715
Vehicles. Runner for wheeled	J. Blankart	403,322	May 14	1173	311	47	883
Vehicles. Runner for wheeled	J. B. Granger	401,429	Apr. 16	1510	400	47	308
Velocipede	F. M. Abbott	403,496	May 14	1310	342	47	918
Velocipede	C. E. Duryea	402,313	Apr. 30	2289	743 / 744	47	583
Velocipede	A. Easthope	404,693	June 4	476	120	47	1318
Velocipede	W. Goulden	404,838	June 11	677	174	47	1367
Velocipede	H. A. King	404,490	June 4	181	42	47	1258
Velocipede	W. H. Kitto	405,363	June 18	1455	385	47	1596
Velocipede	M. A. Norton	401,295	Apr. 9	1207	347	47	257
Velocipede	G. J. Taylor	404,123	May 28	2380	624	47	1144
Velocipede	C. E. W. Woodward	401,237	Apr. 9	1217	324	47	230
Velocipede. Marine	S. Curlin	401,736	Apr. 23	1998	523 / 524	47	409
Velocipede-saddle	J. B. Brooks	401,123	Apr. 9	1041	278	47	206
Velocipede-saddle	C. F. Swett	403,078	May 7	776	205	47	808
Velocipede-saddle and supporting device	J. Knoua	405,789	June 25	2152	558	47	1663
Vending apparatus	H. Bailey	402,644	May 7	132	32	47	689
Vending apparatus	W. Lang	401,891	Apr. 23	2228	581	47	452
Vending apparatus	S. Praschl	403,009	May 7	761	200	47	806
Vending apparatus	B. Wesselmann	403,015	May 7	667	176	47	789
Vending apparatus	J. A. Williams	402,374	Apr. 30	2960	768	47	599
Vending apparatus. Automatic	P. B. Bosworth	402,660	May 7	373	98	47	733
Vending apparatus. Liquid-	A. M. Butz and O. Pederson	401,230	Apr. 9	1242	331	47	244
Vending-machine	G. J. Dollinger	402,008	Apr. 23	2402	625 / 626 / 627	47	484

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Vending-machine	P. Everitt	402,515	Apr. 30	3188	{885 886}	{47	642
Ventilating apparatus for vehicles	J. J. Geraghty	400,559	Apr. 2	195	33	47	41
Ventilator: *See* Car-ventilator. Car-window ventilator. Sash-ventilator. Window-ventilator.							
Ventilator	B. Meriam	403,478	May 14	1412	309	47	937
Vessel-holder	J. P. Enstis	404,368	May 28	2669	476	47	1186
Vessel-holder	J. P. Enstis	404,694	June 4	478	121	47	1318
Vessels	F. D. F. Müller	405,792	June 25	2139	502	47	1666
Vessels. Air-tight chamber in	G. H. Steinbath	404,993	June 11	908	240	47	1411
Vessels. Apparatus for coupling	D. M. Scheffer	403,145	May 14	879	222	47	937
Veterinary file-holder	H. Haussmann	403,105	May 14	893	218	47	826
Veterinary incisor-cutter	B. Champlin	404,074	May 28	2306	604	47	1129
Veterinary instrument	G. W. Holand	403,534	May 21	1510	395	47	964
Veterinary instrument	C. E. Palmer	404,652	June 4	420	104	47	1306
Veterinary mouth-speculum	I. N. Woodle	405,642	June 18	1916	504	47	1618
Veterinary surgical instrument	J. W. Whiteleck	405,137	June 11	1105	294	47	1451
Veterinary syringe	C. A. Wiechert and R. Gabrielsky	401,670	Apr. 16	1894	{493 494}	{47	377
Vials. Machine for making	S. J. Dickson	405,879	June 25	2260	594	47	1690
Vine-fastener	P. N. Kohlsaat	402,746	May 7	290	74	47	718
Vinegar-generator	M. W. White	402,118	Apr. 23	2584	669	47	519
Violin-tail-piece fastener	M. W. White	405,816	June 25	2168	570	47	1672
Violins. Peg for	B. Holly	403,107	May 14	825	218	47	827
Vise	L. Daft	404,470	June 4	150	35	47	1253
Voltmeter	E. Hotchkiss	401,560	Apr. 16	1710	451	47	344
Waffle-iron	W. R. Watt	403,629	May 21	1628	431	47	988
Wagon-bed	W. S. Bourne	404,464	June 4	140	33	47	1252
Wagon-body raiser	S. E. Oviatt	402,183	Apr. 30	2682	695	47	546
Wagon-box corner-iron	P. Andersen	401,100	Apr. 9	1009	{268 270}	{47	200
Wagon-brake	W. S. Griffin	402,821	May 7	402	106	47	739
Wagon-brake	J. W. Hartman and H. P. Clay	400,675	Apr. 2	359	98	47	72
Wagon-brake	W. H. Means	405,583	June 18	1803	477	47	1599
Wagon-brake	P. Pilon	400,942	Apr. 9	779	208	47	158
Wagon-brake	L. Wetherbee	405,002	June 11	1011	270	47	1433
Wagon-brake. Automatic	W. Aylesworth, 1st	405,520	June 18	1710	{451 452}	{47	1579
Wagon-brake lever	W. A. and E. G. Haney	400,565	Apr. 2	203	55	47	43
Wagon-clip	J. B. Baynes and C. A. Hennicke	401,478	Apr. 16	1587	419	47	322
Wagon. Delivery	G. L. Howland	403,842	May 21	1950	512	47	1051
Wagon. Dumping	L. Busse	404,957	June 11	854	223	47	1400
Wagon. Dumping	W. W. Green	404,359	May 28	2741	{711 712}	{47	1210
Wagon. Dumping	W. Jachmann	401,437	Apr. 16	1522	403	47	311
Wagon. Dumping	B. Killeen	405,362	June 18	1452	384	47	1526
Wagon. Dumping	C. and A. B. Linn	402,532	Apr. 30	3214	833	47	647
Wagon. Dumping	L. Rodenhausen	402,034	Apr. 23	2448	{637 638}	{47	492
Wagon. Dumping	G. Worthington	405,974	June 25	2419	633	47	1716
Wagon-gear	G. S. Billings	405,819	June 25	2171	571	47	1673
Wagon-jack	G. W. Patton	403,485	May 14	1424	372	47	939
Wagon-jack	W. P. Pickering	404,223	May 28	2546	664	47	1175
Wagon-jack	M. D. Shipman and W. S. Reynolds	404,018	May 28	2108	577	47	1107
Wagon. Live-stock	E. J. Tracy	405,190	June 11	1200	319	47	1469
Wagon-rack, Hay	R. G. Stone	401,079	Apr. 9	975	260	47	194
Wagon-seat	E. A. Culver	400,831	Apr. 2	607	165	47	116
Wagons. Advertising-panel for delivery	J. H. Needles	403,953	May 28	2106	551	47	1049
Wagons. Shoveling-board for	P. Pilon and J. Plondke	401,061	Apr. 9	952	254	47	190
Walking-stick	R. S. Robbins and A. H. Broad	402,857	May 7	453	119	47	747
Wall protector	J. Twichell	400,521	Apr. 2	141	37	47	30
Walls or ceilings. Furring-strip for	C. W. Pierce	402,966	May 7	602	158	47	778
Wardrobe-hook	W. Watson, Jr	403,231	May 14	1027	271	47	866
Wardrobe-hook	B. F. Reynolds	404,561	June 4	296	79	47	1281
Warm-air furnace	F. Schopf	402,982	May 7	620	{162 163}	{47	721
Warmer. Hand	W. Bamford	405,654	June 18	1934	509	47	1621
Warp-beaming machine	J. E. Prest	402,278	Apr. 30	2817	729	47	573
Warping-machines. Drop-wire stop mechanism for	P. G. Hubert	404,541	June 4	273	65	47	1276
Wash-basin	S. Bingham	400,823	Apr. 2	596	162	47	114
Wash-board	G. P. Fuller	401,265	Apr. 9	1263	336	47	248
Wash-board	L. N. Poe	404,729	June 4	520	133	47	1327
Wash-board	W. W. Ford	401,879	Apr. 23	2209	578	47	448
Wash-boiler	W. E. Smith	405,509	June 18	1693	448	47	1576
Wash-boiler	A. F. Tarr	405,056	June 11	1002	267	47	1431
Wash-boiler	J. W. Anderson	400,425	Apr. 2	3	2	47	3
Wash-boiler tank	A. G. Robinson	404,984	June 11	894	234	47	1409
Wash-tub							
Washer: *See* Gas-washer. Ore-washer.							
Washer-coils. Making leather	G. H. Avery	404,949	June 11	841	219	47	1398
Washing, bleaching, and dyeing. Apparatus for	E. and G. E. Sutcliffe	403,305	May 14	1143	{303 304}	{47	887
Washing-machine	W. F. Belton	401,630	Apr. 16	1845	481	47	369
Washing-machine	D. H. Benjamin	402,222	Apr. 30	2735	709	47	558
Washing-machine	C. Brandtner	401,060	Apr. 9	867	232	47	175
Washing-machine	H. Broadwell	401,731	Apr. 23	1992	522	47	408
Washing-machine	B. Brobst	400,741	Apr. 2	457	122	47	90
Washing-machine	J. W and J. W. A. Calhoon	403,986	May 28	2151	562	47	1098
Washing-machine	S. M. Cole	400,637	Apr. 2	297	83	47	62
Washing-machine	L. Fleischhauer	403,829	May 21	1926	{506 507}	{47	1047
Washing machine	J. G. Henderson	402,927	May 7	548	145	47	766

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Washing-machine	C. Hesse	403,669	May 21	1681	446	47	999
Washing-machine	W. C. Huffman	403,473	May 14	1406	367	47	936
Washing-machine	R. Joel	404,545	June 4	277	68	47	1277
Washing-machine	H. Johnson	405,482	June 18	1649	435	47	1566
Washing-machine	W. S. Laney	401,956	Apr. 23	2327	604	47	470
Washing-machine	J. Q. Leffingwell	401,357	Apr. 16	1404	{371 372}	{47	288
Washing-machine	S. J. and C. Mantle	401,190	Apr. 9	1152	306	47	237
Washing-machine	R. Nash	400,702	Apr. 2	396	107	47	78
Washing-machine	Z. Randel	404,731	June 4	522	134	47	1327
Washing-machine	G. R. Roberts	402,687	May 7	199	50	47	701
Washing-machine	A. A. Rondle	403,614	May 21	1607	426	47	984
Washing-machine	H. Seaman	402,355	Apr. 30	2938	761	47	595
Washing-machine	H. E. Smith	402,865	May 7	468	122	47	750
Washing-machine	R. P. Starbuck	405,807	June 25	2155	567	47	1670
Washing-machine	J. Stine	402,041	Apr. 23	2461	641	47	495
Washing-machine	A. F. Telgen	405,292	June 18	1344	355	47	1504
Washing-machine	W. W. Terriff	402,783	May 7	346	90	47	728
Washing-machine	J. C. Thomas	404,061	May 28	2282	{597 598}	{47	1124
Washing-machine	F. W. Tiemann	401,228	Apr. 9	1202	321	47	237
Washing-machine	T. Waldron	401,769	Apr. 23	2044	534	47	417
Washing-machine	M. B. Wallace	405,830	June 25	2245	616	47	1704
Washing-machines. Reversing mechanism for	J. G. Crawford	403,649	May 21	1654	438	47	994
Watch-balance. Compensation	A. F. Pickert	402,032	Apr. 23	2445	637	47	492
Watch-case pendant	W. W. Bradley	403,511	May 21	1466	384	47	956
Watch-case pendant	E. C. Rohrer and I. Joseph	403,779	May 21	1652	436	47	1032
Watch-maker's lathe	S. Messerer	404,099	May 28	2342	614	47	1137
Watch-maker's staking-tool	G. Martel	403,840	May 21	1958	514	47	1053
Watch-maker's staking-tool	J. C. Rochelean	401,759	Apr. 23	2032	531	47	415
Watch-maker's tool	A. F. Thompson	404,837	June 11	828	214	47	1395
Watch or other cases. Machine for engraving	A. Zuahlen	402,380	Apr. 30	2970	771	47	601
Watch-pendant	P. Perret	402,473	Apr. 30	3131	811	47	632
Watch. Repeating	C. Morlet	402,343	Apr. 30	2916	756	47	591
Watch. Stem winding and setting	C. Bohnenstiel	401,815	Apr. 23	2123	553	47	430
Watch. Stem winding and setting	E. Seits	401,074	Apr. 9	967	256	47	193
Watch. Stem winding and setting	O. F. Stedman	403,787	May 21	1866	490	47	1035
Watch. Stem winding and setting	A. M. Yeakel	403,820	May 21	1911	502	47	1044
Watches. Magnetic shield for	H. P. Pratt	403,211	May 14	994	262	47	860
Watches. Safety attachment for	C. G. Krebsnm	403,843	May 28	2091	548	47	1068
Water. Apparatus for purifying	J. H. Blessing	402,224	Apr. 30	2737	710	47	558
Water-back	J. H. Spence	402,994	May 7	656	168	47	784
Water-bib	J. Dowling	404,266	May 28	2606	678	47	11-5
Water-closet	A. Elmendorf	404,393	June 4	27	7	47	1230
Water-closet	R. Weston	405,635	June 18	1883	498	47	1613
Water-closet and other tanks. Operating mechanism for valves of	P. W. Doherty	403,926	May 28	2069	543	47	1092
Water-closet and other tanks. Operating mechanism for valves of	P. W. Doherty	405,952	June 25	2380	624	47	1709
Water-closet. Siphon	W. Scott	403,490	May 14	1432	375	47	941
Water-closet tank	P. Connolly	401,640	Apr. 16	1855	{482 483}	{47	371
Water-closets. Cistern-valve for	J. Wicks	400,982	Apr. 9	837	224	47	170
Water-closets, &c. Floor-flange for	B. C. Smith	404,874	June 11	740	193	47	1377
Water-closets. Ventilating apparatus for	J. L. Hutchinson	404,196	May 28	2494	653	47	1166
Water-conductor support	J. Davis	402,063	Apr. 23	2385	623	47	483
Water-conveyer	F. D. Dowd	404,760	June 4	595	154	47	1342
Water-cooler	W. H. Fruen	401,263	Apr. 9	1261	336	47	247
Water-current motor	F. G. Johnson	404,488	June 4	178	41, 42	47	1258
Water-elevating apparatus	N. A. Conklin	404,030	May 28	2293	593	47	1111
Water-elevator	A. Hogeland	402,160	Apr. 30	2954	687	47	541
Water-elevator	A. Lathrop and L. A. Heard	404,649	June 11	999	260	47	1371
Water-elevator. Compressed-air	M. Wetzel	404,330	May 28	2709	703	47	1204
Water-gage	J. G. Blount	401,396	Apr. 16	1351	361	47	277
Water-gate	J. E. Caplinger	402,139	Apr. 30	2619	678	47	534
Water-gate	C. J. Cheney	405,079	June 11	1030	{275 276}	{47	1437
Water-gate	W. T. McCloskey	401,788	Apr. 23	2073	541	47	423
Water-gate	T. A. Niswonger	401,456	Apr. 16	1548	409	47	315
Water-heater	J. H. Dull	405,305	June 18	1376	362	47	1510
Water-heater	E. N. Gates	404,784	June 4	601	155	47	1343
Water-heater	C. G. Jewett	405,481	June 18	1648	{434 435}	{47	1566
Water-heater	P. H. Reed	403,138	May 14	871	{229 230}	{47	835
Water-heater	S. Spire	404,572	June 4	310	74	47	1224
Water-heater	W. A. White	402,490	Apr. 30	3163	820	47	657
Water heater. Circulating	J. Meathe	403,545	May 21	1590	{396 399}	{47	986
Water heater. Hot	E. Meddon and J. Urquhart, Sr	401,362	Apr. 16	1410	373	47	290
Water-heater. Steam	W. Means	403,124	May 14	846	224	47	831
Water-heating apparatus	J. Knoche	404,915	June 11	799	205	47	1389
Water-heating apparatus	G. Light	402,602	May 7	75	17	47	678
Water-meter. Rotary	J. J. Tyler	402,699	May 7	216	57	47	704
Water-meters. Sealing device for	G. S. Follansbee	404,305	June 4	31	8	47	1231
Water-motor	A. A. Besemer	402,035	Apr. 23	2476	{645 646}	{47	498
Water-motor	B. B. Bower	403,731	May 21	1782	469	47	1018
Water-motor	F. W. Tuerk, Jr	400,610	Apr. 2	259	71, 72	47	54
Water-motor	F. W. Tuerk, Jr	400,883	Apr. 2	679	185	47	130
Water-motor. Turbine	P. T. Sanford	404,869	June 11	733	187	47	1376
Water-power. Means for obtaining	D. N. Long	404,851	June 11	703	180	47	1371
Water-power. System for utilizing	W. Orr	400,940	Apr. 9	777	208	47	157
Water-proof material for coats	J. W. Lane	405,421	June 18	1540	408	47	1544

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Water-proof package	M. B. Church	405,871	June 25	2252	592	47	1688
Water-purifier	J. Davis	402,660	May 7	160	40	47	604
Water. Purifying	C. A. Doremus	404,180	May 28	2468	.....	47	1162
Water-purifying apparatus	O. S. Huwes	404,485	June 4	173	40	47	1257
Water-purifying apparatus	J. B. Love	401,126	Apr. 9	1142	303	47	294
Water-raising apparatus	A. B. Merrill	403,124	May 14	847	{224 / 225}	47	831
Water-raising apparatus	F. H. Merrill	403,125	May 14	850	225	47	832
Water-reservoir	H. Dane	404,386	June 4	30	5	47	1229
Water-tanks. Construction of	W. H. Harrelson	402,446	Apr. 30	3067	800	47	623
Water-wheel	W. G. Dodd	401,464	Apr. 16	1595	401	47	324
Water-wheel	F. Le Bean	401,751	Apr. 23	2023	529	47	413
Water-wheel	L. Middleton	404,642	June 4	408	{99 / 100}	47	1303
Water-wheel	J. T. Rohm	405,053	June 11	999	{266 / 267}	47	1431
Waves. Apparatus for utilizing the power of	E. J. Delaurier	403,579	May 21	1561	412	47	975
Wax. Machine for coating or impregnating bags with	A. Segal	403,295	May 14	1131	299	47	844
Weaner. Calf	E. H. Geisler and M. Simpson	403,186	May 14	944	250	47	849
Weaner. Calf	W. H. Predmore	404,931	June 11	849	218	47	1393
Weather-strip	H. W. Cook	405,347	June 18	1437	380	47	1523
Weather-strip	C. Polley	405,272	June 18	1340	350	47	1501
Weather-strip	A. M. Stodard	404,445	June 4	101	23	47	1245
Weather-strip	H. O. Woy	400,813	Apr. 2	579	136	47	111
Weather-strip and door-sill combined	H. W. Steiner	405,808	June 25	2156	567	47	1670
Weaving cane-work, &c. Machine for inserting diagonal strips in	H. D. Morris	401,050	Apr. 9	935	{249 / 250}	47	187
Weeding-machine	A. L. Saddlemyre	401,378	Apr. 16	1440	381	47	295
Weigher. Automatic grain	J. Henry	403,189	May 14	949	251	47	850
Weighing apparatus	J. H. Nolan	403,692	May 21	1718	454	47	1007
Weighing apparatus. Grain	J. E. Busenbarrick	405,402	June 18	1615	425	47	1559
Weighing apparatus. Grain	J. R. Creighton	403,519	May 21	1484	392	47	969
Weighing machine. Automatic grain	H. H. Benker	401,118	Apr. 9	1036	277	47	205
Weighing machine. Automatic grain	L. M. Buchanan	404,257	May 28	2592	678	47	1183
Weighing-machine. Coin-controlled	F. J. Lancaster	402,748	May 7	291	73	47	718
Weighing machine. Grain	L. C. Tryon	402,672	May 7	474	124	47	751
Weighing-machines. Steelyard for	H. Pooley	403,136	May 14	865	{228 / 229}	47	834
Welding	W. W. Lee	402,947	May 7	570	.....	47	773
Welding and brazing. Electric	E. Thomson	403,708	May 21	1747	458	47	1042
Welding and shaping of metals. Electric	E. Thomson	403,157	May 14	897	237	47	840
Welding. Electric	C. L. Coffin	401,639	Apr. 16	1854	485	47	371
Welding. Electric	C. L. Coffin	405,345	June 18	1435	378	47	1523
Welding-roll	B. Cartwright	400,928	Apr. 2	602	154	47	115
Welding the ends of boiler-flues. Device for	J. Cumming	403,520	May 21	1485	389	47	999
Welding together sections of pipe by electricity	E. E. Ries	402,107	Apr. 23	2562	660	47	514
Welding together sections of pipe by electricity	E. E. Ries	402,108	Apr. 23	2565	660	47	515
Well-borer	B. Andrews	401,404	Apr. 16	1478	391	47	301
Well boring and drilling. Machine for	C. S. Gardiner	403,097	May 14	806	214	47	823
Well-boring apparatus	A. L. Lowery and J. N. Wyant	400,466	Apr. 2	55	16	47	14
Well boring or drilling apparatus	J. E. Day	403,577	May 21	1092	523	47	1050
Well-curb attachment	J. T. Lenoir	401,040	Apr. 9	922	246	47	185
Well-drilling tool	H. H. McLane	403,052	May 28	2104	531	47	1069
Well-sinking apparatus	T. G. Chapman	405,199	June 11	1215	322	47	1472
Well-sinking apparatus	T. G. Chapman	405,200	June 11	1218	323	47	1472
Well-sinking apparatus	J. W. Hunt	403,047	May 7	716	{187 / 188}	47	799
Wells. Apparatus for removing gummy matter from oil-	J. P. Firth	403,183	May 14	943	249	47	848
Wells. Implement for boring	L. B. Hart	403,751	May 21	1806	475	47	1023
Wheat-cleaning machine	R. W. Welch	405,288	June 18	1350	354	47	1505
Wheat. Milling	O. C. Ritter	405,506	June 18	1690	447	47	1575
Wheat steaming apparatus	G. Littlefield	401,185	Apr. 9	1141	303	47	224
Wheel: *See* Belt-guide wheel. Car-wheel. Current-wheel. Fly-wheel. Game-wheel. Gear-wheel. Grinding-wheel. Metal wheel. Metallic wheel. Paddle-wheel. Sprocket-wheel. Traction-wheel. Turbine wheel. Vehicle-wheel. Water-wheel. Wind-wheel.							
Wheel	J. Bolick	403,908	May 28	2045	538	47	1078
Wheel	G. E. Crutchfield	402,723	May 7	247	65	47	710
Wheel	J. Frenier	400,107	Apr. 9	718	196	47	148
Wheel	A. Gillies	401,551	Apr. 16	1698	448	47	342
Wheel	G. W. Howell	405,093	June 11	1048	280	47	1440
Wheel	M. C. Root	404,657	June 4	427	107	47	1308
Wheel	W. N. Stroud	401,060	Apr. 9	976	260	47	195
Wheel	J. Walrath	403,864	May 21	1976	510	47	1056
Wheel-wrench	O. Shepherd and J. F. Holmes	402,989	May 7	631	167	47	783
Wheelbarrow	F. H. Harris	404,907	June 11	787	201	47	1387
Wheelbarrow	W. E. Kilborn	404,789	June 4	609	157	47	1344
Wheelbarrow. Metallic	J. Annin	400,534	Apr. 2	158	41	47	33
Whiffletree	W. J. Black	403,903	May 28	2040	535	47	1077
Whiffletree	W. J. Black	403,904	May 28	2041	537	47	1077
Whiffletree	J. H. Willey	402,638	May 7	126	30	47	688
Whiffletree and hook	A. T. Hatch	403,664	May 21	1674	444	47	996
Whiffletree-connection	D. D. Whitney	404,371	May 28	2770	718	47	1217
Whiffletree. Detachable	J. G. Goshorn	405,548	June 18	1754	463	47	1589
Whiffletree-hook	A. H. Eysaman	403,930	May 28	2074	546	47	1083
Whiffletree-hook	W. H. Murphy	403,364	May 14	1232	327	47	904
Whiffletree-hook	C. Wright	405,643	June 18	1917	504	47	1618
Whiffletree-iron	A. A. Acklen	404,147	May 28	2414	632	47	1151

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Whip-holder	A. Hall	400,452	Apr. 2	41	13	47	11
Whip-socket	E. Allen	404,668	June 4	441	111	47	1311
Whip-socket	F. E. Benton	405,594	June 18	1714	453	47	1580
Whip-socket	A. Searls	406,004	June 25	2473	646	47	1725
Whip-socket and rein-holder. Combined	A. Thompson	405,153	June 11	1100	293	47	1450
Whip-sockets. Attaching device for	D. D. Fraser	403,200	May 14	1073	281	47	873
Whistle-actuating mechanism	W. Eymer	401,377	Apr. 16	1438	380	47	294
Whistle. Steam	H. V. Smith	405,330	June 18	1411	372	47	1518
Whistle. Steam	E. R. Tomlinson	405,022	June 18	1838	{491 / 492}	47	1608
Whitewash	D. Brizzolari	401,192	Apr. 9	1041	.....	47	206
Wick lifter. Lamp	L. T. Lawton	402,945	May 7	577	152	47	773
Wick-raiser for central-draft lamps	C. A. Evarts	404,186	May 28	2481	649	47	1163
Wick-raiser for lamps	A. Tapila	404,121	May 28	2378	623	47	1144
Wick-raising attachment	P. J. Glynn	404,274	May 28	2630	691	47	1187
Wick-raising shaft	W. H. Clemes	405,078	June 11	1029	275	47	1436
Wick-trimmer	J. L. Sanford	404,736	June 4	527	135	47	1328
Wick-tubes. Former for restoring bent	J. S. White	401,234	Apr. 9	1214	323	47	239
Wind-wheel	W. Ecker	401,130	Apr. 9	1066	285	47	210
Wind-wheel	L. S. Ptomis	402,475	Apr. 30	3133	812	47	632
Winding drum. Rope	R. Schuls	402,688	May 7	200	51	47	701
Winding-gear. Apparatus for equalizing the strain on	G. Lansell	404,292	May 28	2645	{687 / 688}	47	1193
Winding yarn or thread on cards. Spindle for	J. J. Clark	405,077	June 11	1029	275	47	1436
Windlass	J. Knoche	401,914	June 11	798	204	47	1380
Windlass	C. G. Toense	405,446	June 18	1586	419	47	1553
Windlass	A. Voss	401,316	Apr. 9	1333	355	47	263
Windlass for clothes-lines	H. Fuchs	401,824	Apr. 23	2136	558	47	433
Windlass indicator. Ship's	D. H. Rivers	404,963	June 11	893	234	47	1409
Windlass. Steam and capstan	W. Miller	403,435	May 14	1346	{353 / 351}	47	925
Windlasses. Locking-gear for ships'	F. S. Manton	403,356	May 14	1219	324	47	902
Windmill	J. H. Aldrich	402,552	May 7	1	1	47	663
Windmill	E. C. Beebe and R. Stoner	400,695	Apr. 9	860	{230 / 231}	47	173
Windmill	A. J. Corcoran	404,604	June 4	359	86, 87	47	1293
Windmill	C. Schmelzer	402,353	Apr. 30	2935	760	47	594
Windmill	G. P. Thurston	401,867	Apr. 23	2186	571	47	443
Window	B. Aschinbach	400,447	Apr. 2	5	2	47	4
Window	G. J. Dollmer	404,179	May 28	2467	646	47	1162
Window	H. Maenrer	404,792	June 4	612	158	47	1345
Window	P. Weber	401,614	Apr. 16	1817	475	47	364
Window-cap	H. Symonds	405,232	June 11	1260	334	47	1480
Window casing and sash	J. Zalikowski	402,708	May 7	227	60	47	707
Window-chair	B. Jacob	404,355	May 28	2744	712	47	1211
Window-cleaner. Fountain	H. W. Münch	400,837	Apr. 9	774	207	47	157
Window-cleaner. Fountain	H. C. Rose	403,218	May 14	1006	266	47	862
Window-fixture	W. H. Elliot	402,911	May 7	524	138	47	761
Window. Removable bay	S. Schofield	400,805	Apr. 2	251	69	47	53
Window-screen	J. S. White	404,454	June 4	190	29	47	1248
Window screen and frame. Adjustable	C. H. Barrett	402,295	Apr. 30	2837	734	47	577
Window-screen. Extension	J. H. Burt and S. E. Holman	400,825	Apr. 2	599	163	47	114
Window-ventilator	J. F. Ogden	402,765	May 7	316	82	47	722
Window-ventilator	C. E. Rector	404,224	May 28	2517	664	47	1175
Window-ventilator	F. Grosbans	405,550	June 18	1756	464	47	1589
Window-ventilator	O. Iversen	405,313	June 18	1388	366	47	1513
Windows. Combination alarm-lock for	J. B. Finch	401,148	Apr. 9	1067	289	47	213
Wine-bin	G. King	401,175	Apr. 9	1130	299	47	222
Wire cables for suspension-bridges. Device for twisting	E. E. Runyon	404,934	June 11	825	212	47	1394
Wire-drawing machine	H. Smith	405,378	June 18	1478	{391 / 392}	47	1532
Wire-galvanizing. Automatic wiping device for	H. Smith	405,377	June 18	1475	391	47	1531
Wire-hook	R. Gorton	402,438	Apr. 30	3077	797	47	621
Wire into a continuous row of clamps. Machine for converting	W. Decker	403,923	May 28	2065	543	47	1068
Wire matting	I. Kinney	404,417	June 4	63	16	47	1237
Wire-netting	A. N. Pearson	403,774	May 21	1844	{484 / 485}	47	1030
Wire of one sectional form into wire of another sectional form. Drawing	W. Taylor	404,319	May 28	2690	699	47	1201
Wire-reeling machine	H. Smith	405,376	June 18	1473	390	47	1530
Wire rope. Machine for making	H. Root	405,744	June 25	2076	544	47	1654
Wire spokes. Machine for trimming	F. H. Harris	403,347	May 14	1208	321	47	900
Wire-straining implement	H. Perriman and C. F. Alger	405,796	June 25	2143	563	47	1667
Wire-stretcher	E. Guthridge	404,536	June 4	263	63	47	1274
Wire-stretcher	F. Stiles	403,620	May 21	1618	428	47	986
Wire stretcher, tightener, and splicer. Combined	J. P. Hays and H. E. Clemens	400,676	Apr. 2	380	98	47	72
Wire-tightener	H. W. Campbell	401,004	Apr. 9	872	233	47	176
Wire-twisting machine	D. T. Clark	401,411	Apr. 16	1488	394	47	304
Wire-weaving apparatus	H. Steedom, Jr	404,444	June 4	100	25	47	1245
Wire-weaving machines. Feed device for	O. R. Hunt	403,109	May 14	831	219	47	828
Wood. Apparatus for grinding	P. H. Schmidt	401,971	Apr. 23	2246	610	47	474
Wood. Convertible machine for grooving and sawing	E. F. Barnes	404,377	June 4	8	2	47	1226
Wood. Machine for bundling kindling	J. Fischer	402,428	Apr. 30	3062	792	47	618
Wood. Machine for ornamenting	E. W. Alleigh	400,423	Apr. 2	2	1	47	3
Wood, &c. Machine for ornamenting	E. W. Alleigh	400,625	Apr. 2	223	80	47	59
Wood-preserving composition	H. Stokes	403,449	May 14	1360	.....	47	929
Wood-preserving compound	J. W. Putnam	405,907	June 25	2307	.....	47	1696
Wood-preserving compound	J. W. Putnam	405,908	June 25	2308	.....	47	1696
Wood-rack	H. N. Wadsworth	404,327	May 28	2704	702	47	1204
Wood, &c. Two-part cylinder and die for ornamenting	E. W. Alleigh	400,626	Apr. 2	224	80	47	59
Wood-worker	G. W. Passel	403,308	May 14	1243	330	47	906

Alphabetical list of inventions, April to June, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Wood-working clamp	E. F. Godfrey	401,553	Apr. 16	1089	449	47	342
Wood-working tool	I. R. Joslin and G. T. Lawrence	404,449	June 4	180	42	47	1256
Wool-washing machine	S. C. Taft	405,619	June 18	1853	491	47	1606
Work-box	C. Latachar	401,637	Apr. 9	917	245	47	184
Work-case, Portable	J. N. Jefferson	405,884	June 25	2271	597	47	1692
Work-rest for benches, Adjustable	A. Watson	403,627	May 21	1625	430	47	968
Wrapper or envelope, Merchandise	L. P. Leclercq	402,335	Apr. 30	2903	752	47	588
Wrench: *See* Pipe-wrench. Wheel-wrench. Ratchet-wrench.							
Wrench	E. S. Boynton	404,709	June 4	575	147	47	1338
Wrench	S. Cook	401,819	Apr. 23	2128	555	47	431
Wrench	J. S. Henry	405,250	June 18	1311	346	47	1497
Wrench	V. J. McDonnell	402,265	Apr. 30	2797	724	47	549
Wrench	I. F. Peck	402,186	Apr. 30	2686	698	47	547
Wrench	C. Pomeroy	401,513	Apr. 16	1635	432	47	331
Wrench	W. R. Smith	404,895	May 21	2022	532	47	1065
Wrench and piston lubricator, Combined	T. J. and C. E. Baker	403,404	May 14	1312	343	47	818
Wrenches, Pipe-gripping attachment for	C. H. Thomas	401,605	Apr. 16	1601	472	47	361
Wringer: *See* Clothes-wringer.							
Writing-case	C. E. Hicks	402,244	Apr. 30	2767	716	47	563
Yarn-reel	J. A. Kaspar, Jr	405,560	June 18	1770	467	47	1502
Yarn-reeling machine	W. Schofield	400,494	Apr. 2	94	26	47	22
Yoke for draw-heads	R. Morris	400,474	Apr. 2	71	20	47	17
Yoke, Neck	J. E. Purdy	402,193	Apr. 30	2695	700	47	549
Zinc-furnace	G. M. Westman	401,988	Apr. 9	987	262	47	196
Zinc vapors and collecting the metallic zinc therefrom, Apparatus for condensing	E. Walsh, Jr	405,134	June 11	1101	294	47	1150
Zinc vapors and collecting the metallic zinc therefrom, Condensing	E. Walsh, Jr	402,210	Apr. 30	2720	706	47	555

ALPHABETICAL LIST OF DESIGNS.

Design.	Name.	No.	Date.	Official Gazette. Volume.	Official Gazette. Page.
Ash-receiver, &c	J. E. Dallon	19,047	Apr. 16	47	276
Ax	W. C. Kelly	19,056	Apr. 23	47	406
Bag	S. H. Howe	19,161	June 18	47	1490
Banjo	E. J. Cubley	19,080	May 7	47	602
Bell frame, Electric	W. H. Powell	19,118	May 28	47	1073
Book-mark	S. P. Spencer, Jr	19,072	Apr. 30	47	530
Bottle	W. Baker, Jr	19,125	June 4	47	1223
Bottle	J. Gulden	19,107	May 21	47	951
Bottle	W. W. Lowrey	19,182	June 25	47	1636
Bottle	C. B. Miller	19,108	May 21	47	951
Bottle	F. M. Underhill	18,997	Apr. 2	47	2
Bottle	E. J. S. Van Houten	19,038	Apr. 16	47	276
Bottle-case	W. Bettmann	19,089	May 14	47	818
Box	H. F. Whitman	19,143	June 4	47	1223
Bretzel or cracker	E. H. Sandt	19,059	Apr. 23	47	406
Bretzel or cracker	E. H. Sandt	19,060	Apr. 30	47	530
Brick, Building	W. H. Fish	19,055	Apr. 23	47	406
Bridle-bit	G. F. Eberhard	19,064	Apr. 30	47	530
Broom-holder	J. St. John	19,101	May 14	47	818
Brush or mirror back	H. Berry	19,062	Apr. 30	47	530
Brush or mirror back and handle	W. M. Welling	19,045	Apr. 9	47	144
Buttons, Surface ornamentation of glove	L. A. Douillet	19,174 to 19,176	June 25	47	1636
Canister	R. Staudinger	19,141	June 4	47	1221
Canteen	C. W. Ledig	19,050	Apr. 16	47	276
Card back, Playing	S. A. Cohen	19,173	June 25	47	1636
Carpet	L. Clémencet	19,089	May 14	47	818
Carpet	J. L. Folsom	19,007 to 19,015	Apr. 9	47	144
Carpet	J. L. Folsom	19,065	Apr. 30	47	530
Carpet	H. Horan	19,017 to 19,025	Apr. 9	47	144
Carpet	H. Hunt	19,026 to 19,028	Apr. 9	47	144
Carpet	H. Hunt	19,067	Apr. 30	47	530
Carpet	W. L. Jacobs	18,984 18,985	Apr. 2	47	2
Carpet	J. McMann	18,988	Apr. 2	47	2
Carpet	E. Poole	18,991 to 18,994	Apr. 2	47	2
Carpet	E. Poole	19,040 to 19,042	Apr. 9	47	144
Carpet	W. E. Sayers	19,070	Apr. 30	47	530
Carpet	L. W. Valentine	18,998	Apr. 2	47	2
Carpet	G. G. Wright	19,000 to 19,004	Apr. 2	47	2
Ceiling, Metallic	L. L. Sagendorph	19,155	June 11	47	1358
Chain bar, Watch	D. Whitford	19,085	May 7	47	602
Cigar-box	W. P. Wilcox	19,144	June 4	47	1223
Cloaking, &c, Fabric for	H. Topham	19,073	Apr. 30	47	530
Cloaking, &c, Fabric for	H. Topham	19,083 19,084	May 7	47	602
Cloaks, &c, Fabric for	F. T. House	19,091 to 19,094	May 14	47	818
Cloth for cloaking	M. Fatmah	19,178	June 25	47	1636
Cloth for cloaking, &c	M. Fatman	19,158 19,159	June 18	47	1490
Collar	W. Barker	19,157	June 18	47	1490
Collar	W. H. McFadden	19,163	June 18	47	1490
Collar or cuff	E. O. House	18,993	Apr. 2	47	2
Comb	A. Wallace	19,123	May 28	47	1073
Comb, Back of a	A. Wallace	19,124	May 28	47	1073
Curling and crimping comb	G. A. Scott	18,995	Apr. 2	47	2
Curtain, drapery, &c	C. Wheeler	19,074	Apr. 30	47	530
Curtain fabric	C. Wheeler	18,999	Apr. 2	47	2
Decorative fabric	C. H. Koster	19,152	June 11	47	1358
Desk-curtain	F. A. Coffin	19,172	June 25	47	1636
Dish	J. B. G. E. Coiffe	18,979	Apr. 2	47	2
Dishes, Ornamentation of	E. Gérard	19,066	Apr. 30	47	530
Drawer-pull	F. A. Coffin	18,978	Apr. 2	47	2
Dressing-case	T. J. Collins	19,120	June 4	47	1223
Electrical conductors, Coupling for	J. E. Lee	19,030	Apr. 9	47	144
Fabric	E. Stumpf	19,167	June 18	47	1490
Farina-boilers, Base for	A. Stewart	19,183	June 25	47	1636
Finger-nail polisher	J. P. Pray	19,185	June 25	47	1636
Fire-place grate	E. L. Calely	19,112	May 28	47	1073
Fire-place lining	E. L. Calely	19,127	June 4	47	1223
Gem-setting	J. W. Lawson	19,153	June 11	47	1358
Glass, Window	W. Battler	19,054	Apr. 23	47	405
Glassware, Ornamentation of	W. C. Anderson	19,053	Apr. 23	47	405
Glassware, Ornamentation of	W. C. Anderson	19,076	May 7	47	602
Glassware, Ornamentation of	R. Briggs	19,105 19,106	May 21	47	951

Alphabetical list of designs, April to June, inclusive—Continued.

Design.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Glassware. Ornamentation of	T. G. Hawkes	19,114	May 28	47	1073
Grate. Portable fire-place	E. L. Calely	19,147	June 11	47	1358
Grate. Portable fire-place	E. L. Calely	19,150	June 11	47	1358
Grate. Portable fire-place	E. L. Calely and J. A. Read	19,148 to 19,149	June 11	47	1358
Hammock	I. E. Palmer	19,110	May 21	47	952
Handkerchiefs. Initial letter for	C. Schiess	19,062	May 7	47	662
Hardware. Ornamentation of builders'	G. S. Barkentin	19,077	May 7	47	662
Hat and coat rack	J. H. Whissemore	19,169	June 18	47	1490
Horseshoe	H. J. Goldman	18,980	Apr. 2	47	2
Inhaler-tube	J. F. Chesebro	19,128	June 4	47	1223
Knitted fabric	G. D. Kinsey	19,057 to 19,058	Apr. 23	47	406
Knitted fabric	G. D. Kinsey	19,095 to 19,097	May 14	47	818
Knitted fabric	P. S. Kinsey	19,098	May 14	47	818
Knitted garment	S. Condé	19,063	Apr. 30	47	530
Knitted garment	S. Condé	19,078 to 19,079	May 7	47	662
Latch-case	R. W. E. Christesen	19,129	June 4	47	1223
Lattice or mesh work	F. A. Winslow	19,145	June 4	47	1223
Match-box	H. P. Fairchild	19,177	June 25	47	1636
Meat-rack	C. A. Gloekler	19,179	June 25	47	1636
Mirror or brush back	C. Kunze	19,049	Apr. 16	47	276
Mitt	L. C. Hall, Jr	19,180	June 25	47	1636
Mitts, &c. Embroidery for	E. Schwalbach, Jr	19,166	June 18	47	1490
Oil-cloth	C. T. and V. E. Meyer	19,031 to 19,039	Apr. 9	47	144
Oil-cloth	C. T. and V. E. Meyer	19,133 to 19,138	June 4	47	1223
Opera-glass receptacle	J. E. Neiswanger	19,100	May 14	47	818
Organ-case	L. H. Marston	19,099	May 14	47	818
Organ-case top	L. H. Marston	18,987	Apr. 2	47	2
Organ-case top	L. H. Marston	19,068	Apr. 30	47	530
Pencil	G. Rowe	19,119	May 28	47	1073
Picture-hook	W. A. Williamson	19,046	Apr. 9	47	144
Pipe-collar and flue-stopper	J. I. Flanagen	19,008	Apr. 2	47	144
Pipe-collar and flue-stopper	Z. T. Hall	19,010	Apr. 2	47	144
Pipe-collar and flue-stopper	J. B. Rohrman	19,043	Apr. 9	47	144
Pistol-handles. Ornamentation of	G. H. Harrington and W. A. Richardson	19,090	May 14	47	818
Pitchers, &c. Ornamentation of	S. O. Richardson, Jr	19,165	June 18	47	1490
Plaque	J. Locke	19,116	May 28	47	1073
Plates. Ornamentation of	E. Morel	18,989	Apr. 2	47	2
Plow-head	G. Wilkinson	19,111	May 21	47	952
Racket	C. A. Davis	19,048	Apr. 16	47	276
Roofing-plate. Metallic	L. L. Sagendorph	19,139	June 4	47	1223
Rug	T. E. Meagher	19,051	Apr. 16	47	276
Rug	J. Strobeim	18,996	Apr. 9	47	2
Rug or robe. Carriage	A. M. Newlands	19,117	May 28	47	1073
Salt-box or condiment-holder	A. Steffin	19,120	May 28	47	1073
Sash hook or lift	W. A. Williamson	19,170	June 18	47	1490
Scarf. Made-up	T. J. Flagg	19,160	June 18	47	1490
Scissors	H. H. Howard	19,029	Apr. 9	47	144
Seggar	T. A. Bell	19,126	June 4	47	1221
Sewer-trap	W. H. Graham	18,991	Apr. 2	47	2
Sewing-machine frame	A. Faulkner	18,982	Apr. 2	47	2
Sheet-metal elbow	A. Langerfeld	18,986	Apr. 2	47	2
Shirt-bosom	A. Borchardt	19,171	June 25	47	1636
Shirt-bosom	V. H. Rothschild	19,154	June 11	47	1358
Smoker's set	W. S. Whiting	19,103	May 14	47	818
Spoon, &c	G. B. Tilton	19,184	June 25	47	1636
Spoon or fork handle	F. Schmidt	19,071	Apr. 30	47	530
Square. T-	E. G. Seltmann	19,044	Apr. 9	47	144
Stove. Box-	H. C. Bascom	19,005	Apr. 9	47	144
Stove. Heating-	J. A. Orr	18,990	Apr. 2	47	2
Stove-lid lifters, &c. Handle for	W. W. Sly	19,156	June 11	47	1358
Stove-shelf	G. B. Wilbur	19,075	Apr. 30	47	530
Strength-tester casing	G. Soeding	19,060	Apr. 23	47	406
Table	P. Herbert	19,115	May 28	47	1073
Table-service	J. G. Warren	19,122	May 28	47	1073
Terret. Harness-	E. L. Howe	19,151	June 11	47	1358
Textile fabric	J. Bleischwitz	18,977	Apr. 2	47	2
Textile fabric	L. Haslam	19,131	June 4	47	1223
Textile fabric	J. W. Woods	19,087	May 7	47	662
Thimble	J. F. Simons	19,121	May 28	47	1073
Thread cabinet. Spool-	W. Wilson	19,066	May 7	47	662
Toy cap-exploder	O. A. Wheeler	19,142	June 4	47	1223
Toy money-safe	H. Schedler	19,140	June 4	47	1223
Tumbler, &c.	W. C. King	19,102	June 18	47	1490
Type	R. Gnichwitz	19,081	May 7	47	662
Type. Font of ornamental	H. Ihlenburg	19,109	May 21	47	952
Type. Font of printing-	C. B. Heyer	19,181	June 25	47	1636
Wagon. Laundry-	H. Barnes	19,104	May 21	47	951
Wall-pocket	M. Benas	19,146	June 11	47	1358
Watch-case	T. K. Benton	19,061	Apr. 30	47	530
Watch charm or pendant	T. B. Stayner	19,102	May 14	47	818
Water-closet	F. G. Moore	19,164	June 18	47	1490
Woven fabric	J. W. Fries	19,113	May 28	47	1073
Wrench. Jaws of a pipe	J. H. Vinton	19,168	June 18	47	1490

ALPHABETICAL LIST OF TRADE-MARKS.

Title.	Name.	No.	Date.	Official Gazette. Volume.	Page.
Alkaloids made from the calabar bean	C. F. Boehringer & Soehne	16,578	May 14	47	818
Alterative strupe	F. D. Stevens & Co	16,737	June 18	47	1490
Anti-sudorific powder	N. Khasan	16,514	Apr. 23	47	406
Antiseptic powder	N. A. and C. G. Lloyd	16,518	Apr. 23	47	406
Baking-powder	Price Baking Powder Company	16,438	Apr. 2	47	2
Baking-powder	J. E. Titsworth	16,481	Apr. 9	47	144
Banjos	S. S. Stewart	16,480	Apr. 9	47	144
Beef. Compressed cooked	Armour Packing Co	16,704	June 11	47	1358
Beer. Non-alcoholic herb-	Newball & Mason	16,759	June 25	47	1636
Belting, hose, packing, and other rubber goods forming parts of machinery.	Boston Belting Company	16,463	Apr. 9	47	144
Belting, hose, packing, and other rubber goods forming parts of machinery.	Boston Belting Company	16,464	Apr. 9	47	144
Belts or bands. Electric	J. E. Hetherington	16,690	June 4	47	1224
Beverages. Effervescent powder for	Berwick Manufacturing Co	16,731	June 18	47	1490
Bicycles, tricycles, and kindred vehicles, and their parts and attachments.	Starley Brothers	16,702	June 4	47	1224
Biscuit	Wilson-Cass Company	16,660	May 28	47	1074
Biscuits, crackers, wafers, and similar articles	J. D. Gilmor & Co	16,688	June 4	47	1224
Biscuits, wafers, and crackers	Holmes & Coutts	16,756	June 25	47	1636
Bitters	Hochstadter Company	16,564	May 14	47	818
Bitters	C. Pickard	16,674	June 4	47	1224
Boiler compound to prevent incrustation	J. F. Hotchkiss	16,744	June 25	47	1636
Books and printed matter. Society	Supreme Sitting of the Order of the Iron Hall.	16,544	Apr. 30	47	530
Boots and shoes	Pingree & Smith	16,476	Apr. 9	47	144
Boots and shoes	Urner Bros	16,440	Apr. 2	47	2
Boots and shoes	Waukenphast & Co	16,502	Apr. 16	47	276
Boots, shoes, and slippers	Packard & Field	16,557	May 7	47	662
Boots, shoes, and slippers of all kinds	Packard & Field	16,436	Apr. 2	47	2
Boots, shoes, gaiters, and slippers	Acme Staple and Machine Company	16,703	June 11	47	1358
Brandy	E. Kane & Son	16,563	May 14	47	818
Brushes, mirrors, and ornamental boxes. Toilet	W. M. Welling	16,441	Apr. 2	47	2
Building and decorating, including cement. Manufactures from mineral and other substances for	McLean & Company	16,692	May 28	47	1074
Burns and flesh wounds. Liquid for healing	H. C. von der Lühe	16,574	May 14	47	818
Butter	I. H. Ballow & Co	16,692	June 4	47	1224
Cachous	T. Jackson	16,581	May 14	47	818
Canned fruits, vegetables, and shell-fish	Piper Packing Co	16,716	June 11	47	1358
Canned oysters	Falt & Winebrenner	16,733	June 18	47	1490
Canned oysters, fruits, and vegetables	C. H. Pearson & Co	16,614	May 21	47	952
Canned salmon	Nushagak Canning Company	16,541	Apr. 30	47	530
Canned salmon	Pacific Packing Company	16,655	May 28	47	1074
Canned salmon	Royal Packing Company	16,657	May 28	47	1074
Canned salmon	Western Alaska Packing Company	16,484	Apr. 9	47	144
Cards, banners, panels, hangers, fans, calendars, and the like. Small	Cusack & Co	16,561	May 14	47	818
Cement	McLean & Company	16,613	May 21	47	952
Cements or compositions for roofing and paving	J. B. Hinchman	16,692	June 4	47	1224
Cereal products, such as flour and meal	H. F. Ihlee	16,607	May 21	47	952
Chucks	Westcott Chuck Company	16,546	Apr. 30	47	530
Cigarettes or cheroots	Consolidated Cigarette Company	16,489	Apr. 16	47	276
Cigars	Buckingham, Swope & Co	16,684	June 4	47	1224
Cigars	B. Fine	16,742	June 25	47	1636
Cigars	Hesslein Bros	16,447	Apr. 2	47	2
Cigars	Hesslein Bros	16,448	Apr. 2	47	2
Cigars	M. Lopez & Co	16,666	June 4	47	1224
Cigars	M. Lopez & Co	16,667	June 4	47	1224
Cigars	M. Lopez & Co	16,668	June 4	47	1224
Cigars	M. Lopez & Co	16,669	June 4	47	1224
Cigars	F. Suarez & Son	16,676	June 4	47	1224
Cigars	Wengler & Mandell	16,461	Apr. 2	47	2
Cigars, cigarettes, and cheroots	L. Kahner & Co	16,513	Apr. 23	47	406
Cigars, cigarettes, and cheroots	L. Kahner & Co	16,582	May 14	47	818
Cigars, smoking-tobacco, and cigarettes	Pine Needle Cigar Company	16,673	June 4	47	1224
Cleaning and polishing compound	E. J. Austin	16,442	Apr. 2	47	2
Clothing. Oil or water-proof	J. F. Carter	16,427	Apr. 2	47	2
Coating for iron, stone, cement, wood, and the like. Liquid	L. Pupst	16,456	Apr. 2	47	2
Cocoa and cocoa-butter	J. & C. Blooker	16,730	June 18	47	1490
Coffee	J. H. Brookmire & Co	16,594	May 21	47	952
Coffee	G. Ropes	16,656	May 28	47	1074
Coffee scourers and polishers	Hercules Manufacturing Company	16,691	June 4	47	1224
Coffee substitute	G. Fiore a Sons	16,601	May 21	47	952
Collars. Sweat-	E. L. McClain Manufacturing Co	16,539	Apr. 30	47	530
Coloring-matter	A. F. Poirrier	16,455	Apr. 2	47	2
Colors. Ceramic	Hancock & Son	16,604	May 21	47	952
Complexion-powder	B. L. Binford	16,576	May 14	47	818
Complexion-powders	Gale & Blochl	16,602	May 21	47	952
Compounds for coughs, colds, and diseases of the throat and lungs.	Crescent Medical Co	16,446	Apr. 2	47	2
Cork and cork articles	Arnold & Co	16,630	May 28	47	1074
Corsets	H. C. F. Koch & Co	16,515	Apr. 23	47	406
Cotton and thread. Spool	Tootal Broadhurst Lee Company	16,482	Apr. 9	47	144
Cotton fabrics. Bleached, colored, and printed	Miller, Kaster & Co	16,519	Apr. 23	47	406

Alphabetical list of trade-marks, April to June, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Cotton linings	F. L. St. John	16,658	May 28	47	1074
Cotton linings, silesias, sateens, cambrics, and twills	F. L. St. John	16,721	June 11	47	1358
Cotton linings, silesias, sateens, cambrics, and twills	F. L. St. John	16,736	June 18	47	1490
Cough-medicine	Piperine Medicine Co	16,567	May 14	47	818
Cough-mixture	F. M. Jaques	16,693	June 4	47	1224
Cream for the acceleration of the mammary growth	J. A. Chard	16,466	Apr. 9	47	144
Cutlery and plate	J. Rodgers & Sons	16,478	Apr. 9	47	144
Denims	L. C. Hasell	16,536	Apr. 30	47	530
Dress-shields	C. Boulenger	16,465	Apr. 9	47	144
Dress-shields	A. Hutchinson & Co	16,709	June 11	47	1358
Dress-shields	P. P. Guillaume, Fils Aîné	16,469	Apr. 9	47	144
Dress shields and protectors	A. M. Wood	16,462	Apr. 2	47	2
Elastic and flexible compound and articles made therefrom	Phonopore Syndicate	16,477	Apr. 9	47	144
Electrical, telegraphic and telephonic apparatus or instruments.					
Emmenagogue	Chichester Chemical Co	16,488	Apr. 16	47	276
Engraved relief-plates for illustrative purposes. Half-tone	Purton, Stearns & McIntyre	16,619	May 21	47	952
Eye-healing water	T. McGuire	16,475	Apr. 9	47	144
Face-powder	L. Tomaselli	16,757	June 25	47	1636
Face-wash	J. P. McGill	16,672	June 4	47	1224
Feather pillows	F. E. Little	16,694	June 4	47	1224
Feather pillows	F. E. Little	16,695	June 4	47	1224
Feather pillows	F. E. Little	16,696	June 4	47	1224
Fertilizers. Bone	H. S. Miller & Co	16,590	Apr. 23	47	406
Fertilizers composed of phosphoric acid, potash, and ammonia.	Farmers Fertilizer Company	16,429	Apr. 2	47	2
Filters made according to the Pasteur system	Société Anonyme du Filtre Chamberland, Système Pasteur.	16,620	May 21	47	952
Flour	Bourne, Graham & Fell	16,579	May 14	47	818
Flour. Patent	W. H. Weiss	16,623	May 21	47	952
Flour. Wheat	S. C. Hurt & Son	16,648	May 28	47	1074
Flour. Wheat	D. & A. Luckenbach	16,670	June 4	47	1224
Flour. Wheat	St. Jacob Mill Company	16,558	May 7	47	662
Flour. Wheat	Walter, Horning & Co	16,644	May 28	47	1074
Flour. Wheat	Walter, Horning & Co	16,645	May 28	47	1074
Flour. Wheat	Walter, Horning & Co	16,646	May 28	47	1074
Flour. Wheat	Walter, Horning & Co	16,647	May 28	47	1074
Food. Infants' prepared	W. C. Wagner	16,723	June 11	47	1358
Galvanic batteries	P. C. Burns	16,445	Apr. 2	47	2
Galvanized iron	Morewood & Company's Successors	16,745	June 25	47	1636
Game	M. Lyman	16,473	Apr. 9	47	144
Game-board	S. T. F. Sterick	16,675	June 4	47	1224
Game in which marbles are employed	J. Fenton	16,550	May 7	47	662
Gaming set and board. Certain	G. H. Monks	16,555	May 7	47	662
Garments. Outer	F. F. Tebbetts	16,528	Apr. 23	47	406
Ginger. Carbonated	White Rock Mineral Springs Company.	16,678	June 4	47	1224
Gloves	E. Ott	16,654	May 28	47	1074
Gloves. Kid	J. Roeckl	16,699	June 4	47	1224
Gloves. Leather	S. T. Hunting	16,496	Apr. 16	47	276
Glues	J. Herold	16,689	June 4	47	1224
Grafting compounds and preparations for destroying insects	Ongerth Grafting Compound Company.	16,715	June 11	47	1358
Grape-vine slips	S. Hort's Sons	16,433	Apr. 2	47	2
Grease. Leather	A. Sommer	16,460	Apr. 2	47	2
Guano	R. A. Wooldridge & Co	16,727	June 11	47	1358
Gum. Chewing	W. N. Brewer	16,593	May 21	47	952
Hair and scalp. Tonics and lotions for the	M. Hakoumoff	16,432	Apr. 2	47	2
Hair-restorative	J. Falke	16,510	Apr. 23	47	406
Hams. Sugar-cured	M. Walton, Jr	16,725	June 11	47	1358
Harness and horse-blankets	J. N. Van Ness & Co	16,530	Apr. 23	47	406
Harvesters. Twine for self-binding	W. Deering & Company	16,596	May 21	47	952
Hats. Men's and boys'	Ward, Goldthwaite & Co	16,483	Apr. 9	47	144
Hay elevators or carriers	M. G. Grosscup	16,511	Apr. 23	47	406
Heating apparatus	Howard Furnace Company	16,449	Apr. 2	47	2
Hose. Hydraulic	New Jersey Car Spring and Rubber Company.	16,714	June 11	47	1358
Ice-cream freezers	White Mountain Freezer Company	16,487	Apr. 9	47	144
India-rubber boots and shoes	Boston Rubber Company	16,632	May 28	47	1074
Ingot-copper	Baltimore Copper Smelting and Rolling Company.	16,591	May 21	47	952
Insect-powders and like preparations	W. H. Sayre	16,700	June 4	47	1224
Iron and steel and manufactures of iron and steel	Sandviksens Jernverks Aktie Bolag	16,719	June 11	47	1358
Iron and steel. Articles of	Sandviksens Jernverks Aktie Bolag	16,720	June 11	47	1358
Jewelry and ornamentation for personal wear. Articles of	H. Turner & Sons	16,495	Apr. 16	47	276
Knitted goods. Waists made from	J. McCreery & Co	16,712	June 11	47	1358
Knitted shirts, drawers, overshirts, blouses, and jackets	S. Condé	16,505	Apr. 23	47	406
Knitting-cotton	J. T. Morehead & Co	16,697	June 4	47	1224
Lace for boots and shoes. Cotton	W. Paton	16,437	Apr. 2	47	2
Lager-beer	J. Wagner	16,750	June 25	47	1636
Lamp-chimneys	Société Anonyme pour la Fabrication D'Apparells D'Eclairage.	16,543	Apr. 30	47	530
Lard. Cotton-seed	Cotton Oil Product Company	16,549	May 7	47	662
Leather	L. Ziegel & Co	16,560	May 7	47	662
Leather. Dressing and lubricating compound for	Perpetsine Manufacturing Company	16,454	Apr. 2	47	2
Liniments and blood-purifiers	P. F. Perrin	16,718	June 11	47	1358
Liquors. Alcoholic	H. and G. Rab	16,523	Apr. 23	47	406
Lotion used externally for skin diseases. Curative	E. C. Summerhayes	16,738	June 18	47	1490
Lozenges	A. Stanson & Co	16,573	May 14	47	818
Magazine. Semi-monthly	Buckeye Publishing Company	16,444	Apr. 2	47	2
Mask-fasteners	C. H. Deseart	16,685	June 4	47	1224
Mattresses and springs for the same. Spring	B. Fitch & Co	16,686	June 4	47	1224
Meats. Extracts and essences of	J. L. Johnston	16,568	May 14	47	818
Medical compound for all nervous and inflammatory diseases	J. W. Bird	16,577	May 14	47	818
Medical compound for external and internal use	G. H. Rundle	16,458	Apr. 2	47	2
Medical compound for purifying the blood	C. R. King	16,471	Apr. 2	47	144

Alphabetical list of trade-marks, April to June, inclusive—Continued.

Title.	Name.	No	Date.	Official Gazette. Vol.	Page.
Medical compound for the cure of snake-bites	H. M. Strange	16,589	May 14	47	818
Medical compounds for external application	E. D. Kelly	16,707	June 11	47	1358
Medical compounds for the cure of diseases of the nerves, liver, and stomach.	H. R. Rogers	16,457	Apr. 2	47	2
Medical remedies for external use	F. O. Robertson	16,500	Apr. 16	47	276
Medical tonic	Kerfall Drug and Chemical Co	16,434	Apr. 2	47	2
Medicated articles for toilet and veterinary purposes	Ichthyol-Gesellschaft Cordes, Hermanni & Company.	16,553	May 7	47	662
Medicinal compound in the form of pills. Semi-solid	E. E. Matthews	16,612	May 21	47	952
Medicinal lotion	T. Angelo	16,503	Apr. 23	47	406
Medicine for the liver, stomach, and kidneys, and liniment, worm remover, and salve.	H. Schindhelm	16,479	Apr. 9	47	144
Medicine. Granular effervescent	H. K. Wampole & Co	16,501	Apr. 16	47	276
Medicines. Certain named	Forestine Medicine Company	16,534	Apr. 30	47	530
Medicines for coughs, colds, and pulmonary diseases	F. Gies	16,430	Apr. 2	47	2
Metal-decrustating compound	Non-Corrosive Boiler Compound Company.	16,453	Apr. 2	47	2
Metals and manufactures therefrom	Low Moor Company	16,711	June 11	47	1358
Milk-punch	A. E. Offutt	16,758	June 25	47	1636
Mineral waters, ginger-ale, lemonade, tonic drinks, and similar liquids.	Arcadian Mineral Spring Company	16,680	June 4	47	1224
Mineral waters. Natural	E. Brünler	16,633	May 28	47	1074
Mustard	W. G. Dean & Son	16,638	May 28	47	1074
Mustard	W. G. Dean & Son	16,639	May 28	47	1074
Naphthaline. Pure white ball solid	H. M. Black	16,705	June 11	47	1358
Newspaper	H. Gerard	16,687	June 4	47	1224
Newspaper	J. A. Hart	16,662	June 4	47	1224
Newspaper	C. M. Palmer	16,717	June 11	47	1358
Oars, handspikes, and capstan-bars	De Grauw, Aymar & Co	16,498	Apr. 2	47	2
Oil. Painting and graining	J. B. Sipe & Co	16,542	Apr. 30	47	530
Oil. Petroleum lubricating	Vacuum Oil Company	16,529	Apr. 23	47	406
Optical goods of all kinds	A. J. Lloyd	16,665	June 4	47	1224
Optical instruments	C. F. Prentice	16,698	June 4	47	1224
Oranges and other citrus fruits	Indian River Orange Growers' Association.	16,537	Apr. 30	47	530
Oranges, lemons, and products of the citrus family	H. S. Sanford	16,595	Apr. 23	47	406
Organs. Reed	Wilcox & White Organ Company	16,624	May 21	47	952
Organs. Reed	Wilcox & White Organ Company	16,625	May 21	47	952
Overalls. Men's	Dittenhoefer, Haas & Co	16,492	Apr. 16	47	276
Pails, tubs, and analogous wooden ware	Two Rivers Manufacturing Company.	16,621	May 21	47	952
Paint compound in the form of paste	F. Smith	16,748	June 25	47	1636
Paint. Copper	C. A. Woolsey	16,628	May 21	47	952
Paint. Enamel	F. Smith	16,747	June 25	47	1636
Paint prepared for immediate use	Wadsworth Paint and Oil Manufacturing Company.	16,622	May 21	47	952
Paints	Cyclone Wrought Iron Slag Paint Company.	16,598	May 21	47	952
Paints and painters' supplies	T. Hubbuck & Son	16,450	Apr. 2	47	2
Paints and painters' supplies	T. Hubbuck & Son	16,451	Apr. 2	47	2
Paints and painters' supplies	T. Hubbuck & Son	16,452	Apr. 2	47	2
Paints. Mixed	Wadsworth Paint and Oil Manufacturing Company.	16,724	June 11	47	1358
Paper clothing	New York Paper Clothing Manufacturing Company.	16,653	May 28	47	1074
Paper for ledgers	L. L. Brown Paper Company	16,683	June 4	47	1224
Paper. Sheathing	M. E. Manahan	16,498	Apr. 16	47	276
Paper. Toilet	G. W. Thompson	16,739	June 18	47	1490
Perfumed articles, such as soap, sachet-powders, and the like	Ladd & Coffin	16,664	June 4	47	1224
Perfumeries and soaps. Liquid and powdered	J. Wanamaker	16,545	Apr. 30	47	530
Perfumery	Ladd & Coffin	16,516	Apr. 23	47	406
Perfumery	Ladd & Coffin	16,569	May 14	47	818
Perfumery	R. D. Young	16,751	June 25	47	1636
Perfumery	R. D. Young	16,752	June 25	47	1636
Perfumery	R. D. Young	16,753	June 25	47	1636
Perfumery	R. D. Young	16,754	June 25	47	1636
Perfumery	R. D. Young	16,755	June 25	47	1636
Perfumes	H. Loeb & Co	16,611	May 21	47	952
Perfumes, perfumed waters, and bay-rum, also soaps, powders, and cosmetics.	J. Wanamaker	16,531	Apr. 23	47	406
Perfumes, waters, powders, and soaps. Toilet	Doussan French Perfumery Company.	16,493	Apr. 16	47	276
Periodicals. Weekly	P. Mason & Co	16,499	Apr. 16	47	276
Petroleum-jelly for medicinal and toilet purposes	Lehn & Fink	16,472	Apr. 9	47	144
Photographs. Appliances for taking	C. Spiro	16,701	June 4	47	1224
Pills	R. MacFarland	16,671	June 4	47	1224
Pipes, cigar and cigarette holders, and cigarette-paper	Quentin & Co	16,522	Apr. 23	47	406
Pomade for the skin	M. S. Smith	16,749	June 25	47	1636
Preparation for diseases of the liver and kidneys, for constipation, and nervous affections.	Manhattan Therapeutic Company	16,435	Apr. 2	47	2
Preparation for treatment of the feet	E. P. Weston	16,485	Apr. 9	47	144
Preserved and canned fruits and vegetables	P. F. Gillespie	16,640	May 28	47	1074
Pudding. Vanilla	W. P. Clotworthy	16,597	May 21	47	952
Puddings. Condensed	S. E. May	16,585	May 14	47	818
Razor-strops	American Enamel Company	16,639	May 28	47	1074
Refrigerators and beer, water, and wine coolers	J. C. Jewett Manufacturing Company.	16,538	Apr. 30	47	530
Remedies for chicken diseases	W. F. Muchmore	16,571	May 14	47	818
Remedies for rheumatism	Rumalte Manufacturing Co	16,588	May 14	47	818
Remedies for rheumatism	W. H. Southard	16,630	May 28	47	1074
Remedies. Rheumatic	J. Lloyd	16,584	May 14	47	818
Remedies. Rheumatic	Dr. J. G. Wanamaker Manufacturing Company.	16,590	May 14	47	818
Remedy for nerve, brain, and stomach disorders	Williamson, Ingram & Griggs	16,626	May 21	47	952
Remedy for piles	C. E. Ashmead	16,681	June 4	47	1224

Alphabetical list of trade-marks, April to June, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Remedy for rheumatism	S. A. Richmond	16,439	Apr. 2	47	2
Remedy for roughness of the skin and for burns and chafing	F. W. Lyons and E. Ziegler	16,650	May 28	47	1074
Revolvers, shotguns, and rifles	H. Boker & Co	16,706	June 11	47	1358
Roofing. Impregnated canvas, linen, and cloth for	F. Reddaway & Co	16,524	Apr. 23	47	406
Roofing. Sheet-metal	Caldwell & Peterson Manufacturing Company.	16,580	May 14	47	818
Rubbing-stones for cleaning and polishing	J. J. Murphy and J. W. Mosier	16,521	Apr. 23	47	406
Rum	H. White & Co	16,486	Apr. 9	47	144
Salt	Nash, Whiton & Co	16,556	May 7	47	662
Salt. Granular effervescent	I. E. Emerson	16,599	May 21	47	952
Salve	A. F. Humphrey	16,470	Apr. 9	47	144
Salve. Corn	Giant Chemical Co	16,535	Apr. 30	47	530
Salve. Pile	J. F. Joyce	16,608	May 21	47	952
Sardines	F. Reiset	16,746	June 25	47	1636
Sauces and condiments	P. F. Gillespie	16,603	May 21	47	952
Saws	S. I. Goodall	16,431	Apr. 2	47	2
Seeds. Timothy	Conklin & Merserean	16,506	Apr. 23	47	406
Sewing-machines and their parts and attachments	Demorest Fashion and Sewing Machine Company.	16,562	May 14	47	818
Shears	H. Seymour Cutlery Company	16,459	Apr. 2	47	2
Ships' bottoms. Composition for	M. Holzapfel & Co	16,643	May 28	47	1074
Shirtings, sheetings, ginghams, tickings, cheviots, and prints	Lewis Bros. & Co	16,517	Apr. 23	47	406
Shirts	D. McCarthy & Sons	16,474	Apr. 9	47	144
Shoe-elastic, boots, and shoes	Herbert & Rapp Company	16,642	May 28	47	1074
Shoes	H. Hay	16,641	May 28	47	1074
Sirups and rock-candy	Dryden & Palmer	16,509	Apr. 23	47	406
Skins dressed with the fur or wool on	Bevington & Morris	16,548	May 7	47	662
Soap	B. Brooke & Company	16,634	May 28	47	1074
Soap	B. Brooke & Company	16,635	May 28	47	1074
Soap	C. Davis & Co	16,490	Apr. 16	47	276
Soap	R. F. S. Heath	16,605	May 21	47	952
Soap and a toilet cream. Toilet and medicinal	Blondeau & Cie	16,443	Apr. 2	47	2
Soap. Laundry and toilet	Belknap & McCann	16,592	May 21	47	952
Soap. Laundry and toilet	Schultz & Co	16,527	Apr. 23	47	406
Soap-powder	Rutherford & Barnes	16,572	May 14	47	818
Soap, satchet-powder, and the like. Perfumed	Ladd & Coffin	16,710	June 11	47	1358
Socks and stockings	A. Kitz	16,565	May 14	47	818
Socks and stockings	A. Kitz	16,567	May 14	47	818
Socks and stockings	A. Kitz	16,609	May 21	47	952
Socks and stockings	A. Kitz	16,610	May 21	47	952
Socks and stockings. Black	A. Kitz	16,566	May 14	47	818
Soles, tape, insoles, and heel-lifts of leather. Cut	F. Delaney & Son	16,741	June 25	47	1636
Soporific preparation	Farbenfabriken, vormals Fr. Bayer & Co	16,468	Apr. 9	47	144
Statuary	C. Beer	16,532	Apr. 30	47	530
Stoneware laundry tubs and sinks	H. McShane & Co	16,586	May 14	47	818
Stoves and ranges	Buck's Stove and Range Company	16,595	May 21	47	952
Stoves, heaters, ranges, and furnaces. Portable	S. A. Saydam	16,722	June 11	47	1358
Suits. Ladies' and children's	J. McCreery & Co	16,713	June 11	47	1358
Tea	G. C. Buell & Co	16,732	June 18	47	1490
Tea	P. H. Kelly Mercantile Company	16,663	June 4	47	1224
Tea	T. Wood	16,627	May 21	47	952
Tobacco. Chewing	Bitting & Hay	16,729	June 18	47	1490
Tobacco, cigars, cigarettes, and snuff. Plug and fine-cut chewing.	F. H. Woodbury	16,559	May 7	47	662
Tobacco for smoking and chewing. Plug and cut	Thompson, Moore & Co	16,677	June 4	47	1224
Tobacco of all kinds, including cigarettes	J. Meyer	16,570	May 14	47	818
Tobacco. Plug chewing	Arnold, Carlton & McCord	16,728	June 18	47	1490
Tobacco. Plug chewing	Bitting & Hay	16,740	June 25	47	1636
Tobacco. Plug, twist, and fancy	P. H. Hanes & Co	16,552	May 7	47	662
Tobacco. Smoking	Fishburne Bros	16,563	May 14	47	818
Tonic beverage. Aerated	C. H. Schmidt and W. B. Starbird	16,526	Apr. 23	47	406
Trimmings for dresses and cloaks	S. Well	16,736	June 11	47	1358
Trousers, overalls, and coats	Erlanger Brothers	16,600	May 21	47	952
Underwear for men and women, and aprons	J. P. Cooper & Son	16,457	Apr. 9	47	144
Varnishes, paints, oils, and japans	W. H. Houghton	16,606	May 21	47	952
Velvet and plush	Goldschmidt, Bachrach & Co	16,551	May 7	47	662
Velvets and plushes	Goldschmidt, Bachrach & Co	16,743	June 25	47	1636
Velveteens	L. Behrens & Sons	16,547	May 7	47	662
Veterinary liniment	M. Suis-Bacher	16,631	May 28	47	1074
Veterinary medicines or specifics	Humphreys Homeopathic Medicine Company.	16,708	June 11	47	1358
Watch-cases	H. Muhr's Sons	16,540	Apr. 30	47	530
Watch-cases	Philadelphia Watch Case Co	16,615	May 21	47	952
Watch-cases	Philadelphia Watch Case Co	16,616	May 21	47	952
Watch-cases	Philadelphia Watch Case Co	16,617	May 21	47	952
Watch-cases	Philadelphia Watch Case Co	16,618	May 21	47	952
Watch-movements	American Waltham Watch Company	16,679	June 4	47	1224
Watches	J. Gallet & Co	16,494	Apr. 16	47	276
Watches and watch-cases	Crescent Watch Case Company	16,533	Apr. 30	47	530
Water-coolers and combined water cooler and filter	J. C. Jewett Manufacturing Company.	16,649	May 28	47	1074
Whips	H. S. Cushman	16,508	Apr. 23	47	406
Whips and lashes	Massasoit Whip Company	16,651	May 28	47	1074
Whisky	Belmont Distillery Company	16,504	Apr. 23	47	406
Whisky	J. Cornibé	16,507	Apr. 23	47	406
Whisky	M. & K. Gottstein	16,661	June 4	47	1224
Whisky	M. Klein	16,497	Apr. 16	47	276
Whisky	J. Osborn Son & Co	16,734	June 18	47	1490
Whisky	J. Osborn Son & Co	16,735	June 18	47	1490
Wine, gin, rum, and brandy	J. E. Davis	16,637	May 28	47	1074
Wines. Hungarian	William Cossenas Company	16,491	Apr. 16	47	276
Wire and articles made therefrom. Plated seamless filled	Burdon Seamless Filled Wire Company.	16,636	May 28	47	1074

ALPHABETICAL LIST OF LABELS.

Title.	Name.	No.	Date.	Official Gazette. Volume.	Page.
"Abbott's Menthol Cream"	Abbott's Menthol Plaster Co	5,913	May 28	47	1074
"Abbott's Menthol Snuff"	Abbott's Menthol Plaster Co	5,912	May 28	47	1074
"Acacine The Perfect Emulsifier" (for Medicines)	J. G. Flint	5,881	Apr. 23	47	406
"All Healing Salve"	W. L. Robinson	5,892	Apr. 23	47	406
"Alligator Oil" (for a Medicine)	J. F. Crow	5,933	June 11	47	1358
"Angler's Petroleum Pastilles" (for a Medicine)	Angler Chemical Company	5,876	Apr. 23	47	406
"Animating Gum." (for Medicated Chewing Gum)	H. J. Kints	5,923	May 28	47	1074
"Bird's Infallible Oriental Lotion"	S. M. Bird	5,868	Apr. 16	47	276
"Blair's Stenographic Gold Fountain Pen"	J. Blair	5,908	May 21	47	952
"Cakes and Jumbles"	J. J. Langlés	5,930	June 4	47	1224
"Calculation" (for Cigars)	Schmidt & Co	5,896	Apr. 30	47	530
"Can't Rust 'Em." (for Dress Stays)	M. Cohn & Co	5,909	May 21	47	952
"Catarrh and Asthma Ball" (for a Catarrh Remedy)	F. S. Newby	5,867	Apr. 9	47	144
"Center's Permanent Cure for Malaria and Fever and Ague"	G. Center	5,899	May 7	47	662
"Chase" (for Carriage Robes, Lap Robes, &c.)	L. C. Chase & Co	5,926	June 4	47	1224
"Cocoanut Taffy" (for Biscuits)	J. J. Langlés	5,884	Apr. 23	47	406
"Compound Vegetable Panacea"	F. H. Libby	5,925	May 28	47	1074
"Conger's Newark Tray"	W. M. Conger, Jr	5,927	June 4	47	1224
"Consols" (for Cigars and Cigarettes)	Consolidated Cigarette Company	5,898	Apr. 23	47	406
"Delatour" (for Soda Water)	A. C. Schuyler	5,940	June 11	47	1358
"Dessert Mixed" (for Biscuits)	J. J. Langlés	5,887	Apr. 23	47	406
"Dr. Cole's Kidney Pills"	Drs. P. C. Cole & Son	5,870	Apr. 16	47	276
"Dr. Cole's Nerve Pills"	Drs. P. C. Cole & Son	5,869	Apr. 16	47	276
"Dr. Cole's Pills"	Drs. P. C. Cole & Son	5,865	Apr. 9	47	144
"Dr. Cole's Tonic and Blood Purifier"	Drs. P. C. Cole & Son	5,864	Apr. 9	47	144
"Dr. Strassman's Emmenagogue"	Mrs. Dr. Strassman	5,941	June 11	47	1358
"E. Mercier & Co." (for Brandy)	E. Kane & Son	5,921	May 28	47	1074
"East India Pile Remedy"	S. J. Ketcham	5,929	June 4	47	1224
"Emulsion of Cod Liver Oil with Peptonate of Iron and Quinine."	Boeddike & Walter	5,932	June 11	47	1358
"F. M. Thomas' Sure Cure for Rheumatism"	F. M. Thomas	5,897	Apr. 30	47	530
"French's Essence of Crushed Violets" (for Soda Water Sirup)	French, Richards & Co	5,934	June 11	47	1358
"German Dry Hop Yeast"	Consolidated Coffee Company	5,901	May 7	47	662
"German Fresh Roasted Coffee"	Consolidated Coffee Company	5,877	Apr. 23	47	406
"German Mills—Singapore Pepper"	Consolidated Coffee Company	5,900	May 7	47	662
"Gerstle's Female Panacea"	L. Gerstle	5,944	June 18	47	1490
"Ginger Snaps"	J. J. Langlés	5,931	June 4	47	1224
"Gosser's Cream Glycerine"	J. J. Gosser	5,935	June 11	47	1358
"Heilner's Sure Cure for Malaria"	A. M. Heilner	5,882	Apr. 23	47	406
"Hog Cholera Cure and Preventive and Insect Destroyer"	J. M. Ellerd	5,880	Apr. 23	47	406
"Hungarian Ointment"	C. A. Kish	5,906	May 14	47	818
"Indian Blood Cure." (for a Medical Compound)	F. P. Mayes and G. Abbey	5,873	Apr. 16	47	276
"Irwin's Poke Root Powders"	Barnett & Jones	5,905	May 14	47	818
"J. & C. Blooker's Dutch Cocoa"	J. & C. Blooker	5,943	June 18	47	1490
"Johnston's Celebrated East Indian Malaria Cure"	J. B. Johnston	5,936	June 11	47	1358
"Khasan's Santin," (for Anti-Sudorific Powders)	N. Khasan	5,924	May 28	47	1074
"Kirtley's Fire Ball" (for a Fire Extinguisher)	W. F. Kirtley	5,883	Apr. 23	47	406
"Krause's Headache Capsules"	N. Lichty	5,937	June 11	47	1358
"Lane's Family Medicine"	O. F. Woodward	5,948	June 18	47	1490
"Leavens' Laxative Remedy"	G. Leavens	5,945	June 18	47	1490
"Light Weight Steel Frame Piano"	A. Riley	5,907	May 14	47	818
"Liquid French Soap"	M. Camp	5,917	May 28	47	1074
"Liquid Paris Green." (for a Vermin Exterminator)	Albany Paris Green Manufacturing Company.	5,914	May 28	47	1074
"Matt Wax Color"	Grunewald & Busher	5,920	May 28	47	1074
"May's Mexican Fruit Sherbet"	E. May	5,911	May 21	47	952
"Meadow Mint Balsam"	Morgan Medicine Co	5,903	May 7	47	662
"Mellotus Lotion"	T. H. Field	5,871	Apr. 16	47	276
"Micajah's Medicated Uterine Wafers"	Micajah & Co	5,862	Apr. 2	47	2
"Mucilage"	Pomeroy & Sons	5,938	June 11	47	1358
"Notice" (for Caskets inclosing Boxes of Cigars)	J. S. Goldsmith	5,950	June 25	47	1636
"Owen's Pink Mixture" (for Medical Compound)	J. H. Owen and R. H. Wilhoyte	5,890	Apr. 23	47	406
"Pain Exterminator" (for a Liniment)	W. L. Robinson	5,891	Apr. 23	47	406
"Parrish's Granulated Yeast Pellets"	F. M. Parrish & Co	5,860	Apr. 2	47	2
"Peoples Mixed" (for Biscuit)	J. J. Langlés	5,885	Apr. 23	47	406
"Porpoisine" (For a Dressing and Lubricating Compound for Leather.)	Porpoisine Manufacturing Company.	5,861	Apr. 2	47	2
"Professor Zimmerman's Remarkable Oil," (For a Medicinal Preparation)	Lauer & Routson	5,902	May 7	47	662
"Prussian Spavin Cure"	G. Phipps	5,904	May 7	47	662
"Pure Fruit Peach Juice"	S. Richards & Sons	5,939	June 11	47	1358
"Quinine Wine Tonic Bitters"	W. T. Gilmore and C. White	5,918	May 28	47	1074
"Rich Lunch" (for Biscuits)	J. J. Langlés	5,886	Apr. 23	47	406
"Rock Candy"	Dryden & Palmer	5,949	June 25	47	1636
"Rock Candy"	W. Lang & Son	5,951	June 25	47	1636
"Rock Polypode Syrup"	F. M. Jaques	5,928	June 4	47	1224
"Saxe's Tasteless Castor Oil"	A. W. Saxe	5,895	Apr. 30	47	530
"Semi-Glaze Color"	Grunewald & Busher	5,919	May 28	47	1074
"Shepard's Compound" (for a Medicine)	A. P. Shepard	5,874	Apr. 16	47	276
"Silver Steel" (for Brass Band Instruments"	H. J. Distin	5,894	Apr. 30	47	530
"Superiore Baking Powder"	F. L. Hooper & Co	5,872	Apr. 16	47	276

Alphabetical list of labels, April to June, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
"Sweet Wheat Chewing Gum"	Royal Remedy and Extract Company.	5,863	Apr. 2	47	2
"Syphilis & Gonorrhœa Preventive"	G. B. Harris	5,910	May 21	47	952
"The Arcadian Anti-Malarial Tonic"	Arcadian Mineral Springs Company.	5,915	May 28	47	1074
"The Cotton Oil Product Co's Cotton Seed Lard—a Vegetable Lard."	Cotton Oil Product Company	5,878	Apr. 23	47	406
"The Great Kentucky Tonic Bourbon Bitters"	J. B. Shumaker	5,875	Apr. 16	47	276
"The Lenox Suit" (For Ladies, Misses and Children's Suits)	Wightman & Co	5,954	June 25	47	1636
"The Russian Preventive of Contagious Diseases"	H. L. Jackson	5,866	Apr. 9	47	144
"Venn's Wonderful Asthma Cure"	T. Venn	5,952	June 25	47	1636
"Vibrating" (for Wind Musical Instruments)	H. J. Distin	5,879	Apr. 23	47	406
"Wagner's Infant Food"	W. C. Wagner	5,942	June 11	47	1358
"Walker's Cold Belt Cement"	J. Walker	5,898	Apr. 30	47	530
"Warsaw Salt"	Beaupré, Keogh & Davis	5,916	May 28	47	1074
"Werther's Disinfectant"	F. O. Werther	5,946	June 18	47	1490
"Werther's Disinfectant"	F. O. Werther	5,947	June 18	47	1490
"White Wainscoting" (for a Varnish)	T. T. Limes	5,889	Apr. 23	47	406
"Whittaker's Cough Syrup"	J. Whittaker	5,893	Apr. 23	47	406
"Wilhelms-Quelle" (for Mineral Waters)	E. Von Eckardstein	5,953	June 25	47	1636
"Yucatan Plug Tobacco"	R. J. Killick	5,922	May 28	47	1074

DISCLAIMERS.

Invention.	Patentee.	No. of patent.	Date of patent.	Disclaimer filed.	Official Gazette. Vol.	Page.
Art of reeling and winding silk and other thread	James M. Grant	267,192	Nov. 7, 1882	May 27, 1889	47	1224
Center-bearing plates for railway-cars	Charles T. Schoen	403,560	May 21, 1889	May 27, 1889	47	1224
Disintegrator and strainer	Charles F. Henis	248,930	Nov. 1, 1881	May 9, 1889	47	818
Polarisation of secondary electric batteries	Camille A. Faure	252,002	Jan. 3, 1882	Apr. 9, 1889	47	276
Process of making whisky	Marshall J. Allen and William E. Bradley.	263,087	Aug. 22, 1882	Apr. 5, 1889	47	276
Track-clearer	Augustus Day. (Reissue)	8,388	Aug. 27, 1878	Mar. 22, 1889	47	2

OFFICIAL GAZETTE

OF THE

UNITED STATES PATENT OFFICE

VOLUME XLVIII.

JULY 2 TO SEPTEMBER 24, INCLUSIVE,

1889.

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1890.

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INDEX OF PATENTS AND PATENTEES FOR THE QUARTER YEAR, JULY TO SEPTEMBER, 1889.

ERRATA.

406,190, page 47, first claim, line 4, for "lathe-cutter" read *latter cutter.*

406,311, page 81, strike out all after number—title, drawings, and claims—and insert WITHDRAWN.

406,767, page 226, in title, name of inventor, for "William J. Ptorney" read *William J. Ptorney.*

406,926, page 282, in title, name of inventor, for "Gains L. Morrell" read *Gaius L. Merrell.*

406,972, page 295, in title, strike out "assignor of one-half to Winfield S. Kline, of Bolivar, Ohio."

407,197, page 362, in title, names of assignees, for "T. Brown Belfield" read *T. Broom Belfield.*

407,299, page 391, in title of invention, for "Sale-Slip" read *Paper-Clip;* and after residence of inventor insert *assignor to Hurlburt, Frink & Co.*

407,835, page 562, in title, strike out "said Mackenzie assignor to said Perry."

407,850, page 567, in title of invention, for "Water-Heater" read *Hot-Water Heating Apparatus.*

408,169, page 657, in title, name of inventor, for "James H. Dunn" read *James H. Drum.*

408,250, page 693, in title, residence of assignee, for "New York, N. Y." read *of New Jersey.*

408,788, page 860, in title, name of inventor, for "Théophile Backlejau" read *Théophile Backeljau.*

408,931, page 902, strike out all after number—title, drawing, and claims—and insert CANCELED.

409,090, page 947, tenth claim, line 5, strike out "one of" and insert the same after "partitions" in line 8, same claim; and, also, line 5, same claim, for "chambers" read *chamber.*

409,621, page 1108, in title, name of assignee, for "Marguret Howard Chase" read *Margaret Howard Chase.*

409,639, page 1113, in title, names of assignees, for "James S. Barrow" read *James S. Barron.*

410,046, page 1233, first claim, line 6, for "shaft" read *shafts.*

410,084, page 1243, in title, after residence of inventor, insert *assignor to the Dominion Tubular Lamp Company, Syracuse, N. Y.*

410,121, page 1257, second claim, line 6, for "pivot" read *point.*

410,724, page 1451, fourth claim, line 5, for the reference-letter "T" read *F.*

410,940, page 1515, claim, lines 1–2, for "sulphioxide" read *sulphinide.*

411,006, page 1545, in title, residence of inventor, for "Cannstad" read *Cannstadt.*

411,570, page 1710, in title, after residence of inventor insert *assignor of one-half to Jacob K. Smith.*

411,582, page 1714, strike out all after number—title, drawings, and claims—and insert WITHDRAWN.

19,203, design, page 120, name of assignee, for "F. M. Whitney & Co." read *F. M. Whiting & Co.*

19,243, design, page 542, after residence of inventor insert *assignor to the Unexcelled Fireworks Company, same place.*

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OFFICIAL GAZETTE

OF THE

UNITED STATES PATENT OFFICE.

JULY–SEPTEMBER, 1889.

THE OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 48—No. 1. TUESDAY, JULY 2, 1889. PRICE—$5 per year.

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The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1887, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 250 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages. In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Notice.

UNITED STATES PATENT OFFICE,
Washington, D. C., April 13, 1888.

To expedite the distribution of the mail in this Office, and to insure the prompt and certain delivery of communications to the divisions and officials having charge of the matters to which they relate, attorneys and correspondents are respectfully requested to enter upon the upper left-hand corner of amendments and other communications, if known to them, the number of the room and the name of the examiner or designation of the division to which the communication should be sent.

BENTON J. HALL,
Commissioner of Patents.

Issue of July 2, 1889.

Patents	396—No. 406,018 to No.	406,413, inclusive.
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Trade-Marks	27—No. 16,760 to No.	16,786, inclusive.
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TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
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Arizona Territory	....	....	Nevada	....	....
Arkansas	1	....	New Hampshire	2	....
California	11	....	New Jersey	17	....
Colorado	....	....	New Mexico Terri'y	....	....
Connecticut	21	....	New York	64	11
Dakota Territory	2	....	North Carolina	1	....
Delaware	1	....	Ohio	28	1
District of Columbia	....	....	Oregon	....	1
Florida	....	....	Pennsylvania	46	1
Georgia	3	....	Rhode Island	4	1
Idaho Territory	....	....	South Carolina	3	....
Illinois	31	....	Tennessee	1	....
Indiana	10	....	Texas	16	....
Iowa	3	....	Utah Territory	1	1
Kansas	5	....	Vermont	1	....
Kentucky	5	2	Virginia	3	....
Louisiana	....	....	Washington Terri'y	....	....
Maine	1	1	West Virginia	3	....
Maryland	7	....	Wisconsin	8	....
Massachusetts	37	1	Wyoming Terri'y	....	....
Michigan	13	3	U. S. Army	....	....
Minnesota	4	1	U. S. Navy	....	....
Mississippi	1	....			
Missouri	15	1	Total to citizens of the United States	373	25
Montana Territory	....	....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Australia	....	....	Germany	6	1
Austria-Hungary	1	....	Hawaii	....	....
Barbadoes	....	....	Italy	....	....
Belgium	....	....	New South Wales	....	....
Brazil	....	....	Queensland	....	....
Canada	3	....	Russia	1	....
Canary Islands	....	....	Scotland	1	....
Colombia, U. S. of	....	....	Sweden	2	....
Cuba	....	....	Switzerland	2	....
Denmark	....	....	Victoria	....	....
Ecuador	....	....			
England	12	4	Total to citizens of foreign countries	32	5
France	4	....			

DESIGNS.

19,186.—HASSOCK.—*Charles H. Bartlett*, Arlington, Mass. Application filed May 13, 1889. Serial No. 310,642. Term of patent 14 years.

19,187.—COMBINATION UNDER-GARMENT FOR LADIES.—*Margaret Virginia Botts*, Philadelphia, Pa. Application filed June 3, 1889. Serial No. 312,990. Term of patent 7 years.

19,188.—LOCK-CASE.—*Rodolphe W. E. Christesen*, New Britain, Conn., assignor to *The Russell & Erwin Manufacturing Company*, same place. Application filed May 31, 1889. Serial No. 312,793. Term of patent 14 years.

19,189.—BADGE.—*Joseph K. Davison*, Philadelphia, Pa. Application filed November 9, 1887. Serial No. 254,731. Term of patent 14 years.

19,190.—BRACKET FOR ELECTRIC WIRES.—*Reinhold Herman*, Crafton, Pa. Application filed June 7, 1889. Serial No. 313,506. Term of patent 14 years.

19,191.—BADGE.—*Charles F. Irons*, Providence, R. I. Application filed June 3, 1889. Serial No. 312,902. Term of patent 3½ years.

19,192.—TEA-POT, &c.—*William Henry Sills*, Chicago, Ill. Application filed May 1, 1889. Serial No. 309,293. Term of patent 7 years.

19,193.—GIMP.—*Charles Weinberg*, New York, N. Y., assignor to *C. Weinberg & Co.*, same place. Application filed May 25, 1889. Serial No. 312,123. Term of patent 7 years.

19,194.—BADGE.—*John C. Underwood*, Columbus, Ohio. Application filed May 31, 1889. Serial No. 312,807. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,760.—GOLD PAINTS AND INKS, COPPER FLUIDS, FURNITURE-POLISHES, AND BRONZE POWDERS.—*American Gold Paint Co.*, East Boston, Mass. Application filed April 17, 1889. Used since February 1, 1889.

"The words 'THE GILDED DOME.'"

16,761.—LEAF-TOBACCO.—*Brand & Bethel*, Louisville, Ky. Application filed April 10, 1889. Used since December 1, 1887.

"A white rectangle on a black ground."

16,762.—CUTLERY AND HARDWARE.—*Brookes & Crookes*, Sheffield, county of York, England. Application filed January 31, 1889. Used since 1859.

"The representation of a bell."

16,763.—GAME-BOARD.—*Frederic B. Denham*, New York, N. Y. Application filed June 1, 1889. Used since May 29, 1889.

"The word 'BRAX.'"

16,764.—SOAP.—*M. L. Edwards*, Philadelphia, Pa. Application filed May 20, 1889. Used since April 3, 1889.

"The word 'HENRIETTA.'"

16,765.—CROUP AND COUGH SYRUP.—*Drs. Farnsworth*, East Saginaw, Mich. Application filed April 1, 1889. Used since 1863.

"The pictorial representation of a pink."

16,766.—PAINTS AND PIGMENTS.—*Thomas Hubbuck & Son*, London, England. Application filed June 5, 1889. Used since 1775.

"The word 'HUBBUCK'S.'"

16,767.—POCKET, PEN, ERASING, AND TABLE KNIVES AND SURGICAL AND OTHER CUTTING INSTRUMENTS CLASSED AS CUTLERY.—*C. Lütters & Co.*, Solingen, Prussia, Germany. Application filed April 25, 1889. Used since 1875.

"The representation of a lion dormant."

16,768.—PLATE-POWDER.—*Overton*, London, England. Application filed June 5, 1889. Used since January, 1868.

"The word 'OVERTON'S.'"

16,769.—DEODORIZED AND CHARGED MINERAL WATER.—*Tubal-Cain Owen*, Ypsilanti, Mich. Application filed August 18, 1888. Used since August 1, 1887.

"The legend 'PARAGON YPSILANTI MINERAL WATER, OWEN MINERAL WELL.'"

16,770.—LINIMENT.—*Elmer Ellsworth Prowell*, Portland, Oreg. Application filed February 19, 1889. Used since January 1, 1888.

"A large red figure '7.'"

16,771.—MEDICAL COMPOUNDS FOR THE TREATMENT OF ASTHMA.—*Rudolph Schiffmann*, St. Paul, Minn. Application filed March 29, 1886. Used since 1874.

"The words 'DR. R. SCHIFFMANN'S ASTHMA CURE,' together with the fac-simile signature of 'R. SCHIFFMANN, M. D.'"

16,772.—COCOA.—*Henry Thorne & Company, (Limited,)* Leeds and London, England. Application filed June 4, 1889. Used since January, 1887.

"The representation of the goddess Hygiea and the words 'HYGIEA' and 'HEALTH COCOA.'"

16,773.—CHILDREN'S SHOES.—*Walden-Parcels-Jordan Shoe Company*, St. Louis, Mo. Application filed April 6, 1889. Used since March 25, 1889.

"The words 'LOG CABIN SCHOOL SHOES.'"

16,774.—ILLUMINATING-OIL.—*Tide Water Oil Company*, New York, N. Y. Application filed April 10, 1889. Used since March 1, 1889.

"The word 'SHOTGUN.'"

16,775.—FLATTING-VARNISH.—*Lawson Valentine Company*, New York and Hunter's Point, N. Y. Application filed June 8, 1889. Used since April 15, 1888.

"The number 'FORTY,' expressed by word or numerals."

16,776.—FLATTING-VARNISH.—*Lawson Valentine Company*, New York and Hunter's Point, N. Y. Application filed June 8, 1889. Used since April 15, 1888.

"The number 'FIFTY,' expressed by word or numerals."

16,777.—FINISHING-VARNISH.—*Lawson Valentine Company*, New York and Hunter's Point, N. Y. Application filed June 8, 1889. Used since April 15, 1888.

"The number 'HUNDRED,' expressed by word or numerals."

16,778.—FINISHING-VARNISH.—*Lawson Valentine Company*, New York and Hunter's Point, N. Y. Application filed June 8, 1889. Used since April 15, 1888.

"The number 'NINETY,' expressed by word or numerals."

16,779.—FINISHING-VARNISH.—*Lawson Valentine Company*, New York and Hunter's Point, N. Y. Application filed June 8, 1889. Used since April 15, 1888.

"The number 'SEVENTY,' expressed by word or numerals."

16,780.—FINISHING-VARNISH.—*Lawson Valentine Company*, New York and Hunter's Point, N. Y. Application filed June 8, 1889. Used since April 15, 1888.

"The number 'EIGHTY,' expressed by word or numerals."

16,781.—PAINT.—*Le Gros Building and Car Roofing Company*, Louisville, Ky. Application filed June 7, 1889. Used since May 15, 1889.

"The representation of a car-roof."

16,782.—LINIMENT.—*Charles W. Nunn*, Salt Lake City, Utah Ter. Application filed May 7, 1889. Used since June, 1884.

"The words 'NUNN'S BLACK OIL.'"

16,783.—LINIMENT.—*David Scott*, Eastport, Me. Application filed May 11, 1889. Used since March 1, 1889.

"The words 'SCOTT'S CURE FOR RHEUMATISM,' the figure of a patient sitting in a chair, and the figure of the registrant standing and holding in his left hand one hand of the patient and in his right hand a bottle of the rheumatic cure."

16,784.—AERATED NON-ALCOHOLIC BEVERAGES.—*Smith & Washburn*, Sing Sing, N. Y. Application filed May 20, 1889. Used since April 17, 1889.

"The word 'FROSTED.'"

16,785.—MEDICINAL PREPARATION FOR CURING DYSPEPSIA AND KINDRED DISEASES.—*Tilden & Co.*, New Lebanon, N. Y. Application filed May 8, 1889. Used since 1879.

"The word 'MALTOPEPSINE.'"

16,786.—DEODORIZERS AND DISINFECTANTS WITH STYPTIC, ANTISEPTIC, AND ALTERATIVE QUALITIES.—*Tilden & Co.*, New Lebanon, N. Y. Application filed May 8, 1889. Used since June 1, 1871.

"The words 'BROMO CHLORALUM.'"

LABELS.

5,935.—Title: "THIS FLUID" (FOR CLEANING FABRICS.)—*E. J. Austin & Co.*, Three Rivers, Mich. Application filed November 20, 1884.

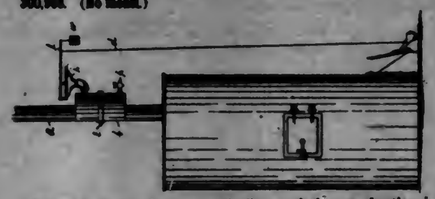
5,936.—Title: "OHMART'S LINIMENT."—*Samuel Ohmart*, Covington, Ohio. Application filed June 10, 1889.

5,937.—Title: "PORTLAND BOOT."—*Potter & Tillinghast*, Providence, R. I. Application filed June 7, 1889.

PATENTS

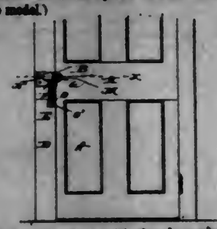
GRANTED JULY 2, 1889.

406,018. DEVICE FOR AUTOMATICALLY REGULATING COMBUSTION IN HOT-WATER AND HOT-AIR HEATING APPARATUS. J. C. F. AMATT, Nantucket, Mass. Filed Feb. 21, 1888. Serial No. 300,008. (No model.)



Claim.—A device for automatically regulating combustion in hot-water and hot-air heating apparatus, consisting of the air-chamber *b*, having one of its sides concaved to conform to the convex surface of the main pipe of said apparatus and adapted to be clamped thereto, and provided with the cock *p*, in combination with the bowl *i*, connected with said air-chamber and provided with flexible diaphragm *k*, and mechanism intermediate between said diaphragm and the damper or draft-opening of said heating apparatus, whereby the expansion and contraction of the air in said air-chamber closes or opens said damper or draft-opening, all as shown and described.

406,019. LATCH. RICHARD H. BARBER, Rich Hill, Mo., assignor of one-third to Robert Innis, same place. Filed Feb. 12, 1889. Serial No. 299,630. (No model.)

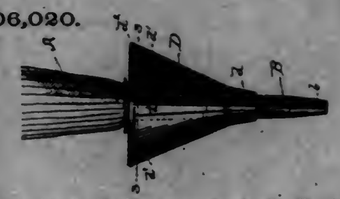


Claim.—1. The combination, with the door-plate B, vertically slotted, as at C, and attached to the edge of a door, of the frame-plate F, secured to the frame of the door, and provided with a flange G, having a slot H, which registers with the slot in the door-plate, and provided with the bearing X, arranged at an angle to the slot, and the rock-shaft mounted in the bearing in the frame-plate and provided with a laterally-projecting swinging tongue to engage the said registering slots, substantially as specified.

2. The combination, with a vertically-slotted door-plate affixed to the edge of a door and the flanged and slotted frame-plate affixed to the frame, of the rock-shaft provided with a tongue to engage the slots in the said plates, and the elongated knob affixed to the outer end of the rock-shaft and having its longer diameter parallel with the length of the tongue, substantially as specified.

3. The combination, with a vertically-slotted door-plate affixed to the edge of the door and the slotted frame-plate, of the rock-shaft provided with a tongue to engage the slotted plate and an elongated knob, and the turn-button O, to engage the said knob, substantially as specified.

406,020. FLEXIBLE DRIP-CUP FOR UMBRELLAS. GEORGE A. DEAN, Chicago, Ill. Filed Aug. 27, 1888. Serial No. 283,258. (No model.)

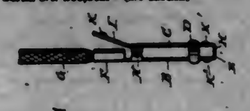


Claim.—1. The flexible funnel-shaped drip D, having longitudinal strengthening-ribs *d'*, substantially as specified.

2. The flexible rubber funnel-shaped drip D, having longitudinal strengthening-ribs *d'* and transverse strengthening rib or bead *d²* at its upper rim, substantially as specified.

3. The flexible funnel-shaped rubber umbrella-drip D, having tapering elastic thimble *d*, adapted to fit over the tip of the umbrella, said funnel D being provided with longitudinal strengthening-ribs, substantially as specified.

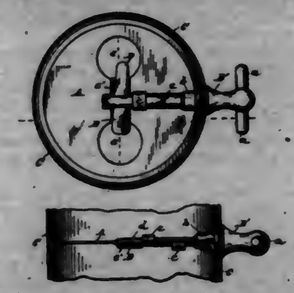
406,021. CLASP. JAMES H. BLEY, New York, N. Y. Filed Oct. 22, 1888. Serial No. 288,962. (No model.)



Claim.—1. In a clasp, the combination, with a tape, of two arms secured on the said tape, of which one is provided with an incline, and a slide fitted over the said arms to open and close the same, substantially as shown and described.

2. In a clasp, the combination, with a tape, of two arms secured on the said tape, of which one is provided with an incline, a slide fitted over the said arms to open and close the same, and stops formed on the said arms to limit the sliding motion of the said slide, substantially as shown and described.

406,022. STOVE-PIPE DAMPER. CLARK D. BENWORTH and JAMES F. FOSTER, Buffalo, N. Y. Filed June 26, 1888. Serial No. 278,269. (Model.)

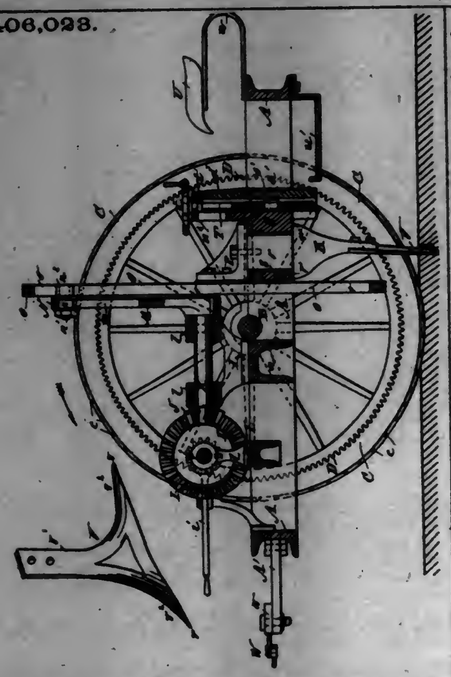


Claim.—The combination of the disk A, having an end socket *b*, holes *c c*, and a depression *c'*, the spindle B, having the wide bearing B' and slots *d d*, and the tapering key or wedge D, adapted to set in depression *c'* and in slot *d*, the end or ends of said wedge bent down through holes *c c* in the damper to lock it in place, as specified.

406,023. PLOW. WILLIAM H. BRADSHAW, Orange, N. J. Filed Oct. 16, 1888. Serial No. 288,202. (No model.)

Claim.—1. The combination, in a plow, of a supporting-frame, a laterally-rotating arm thereon, a vertically-ranging yoke or guide engaged by the arm, a lateral guide or raceway on the frame and to

406,023.



which the yoke is fitted for lateral reciprocation by the arm, and a double-pointed plow connected to the yoke and moving laterally with it a like distance each way from the axis of motion of the rotating arm, substantially as herein set forth.

2. The combination, in a plow, of a frame supported on wheels, a laterally-rotating arm on the frame and geared for operation by or from the wheels, a vertically-ranging yoke or guide engaged by the arm, a lateral guide or raceway on the frame and to which the yoke is fitted for lateral reciprocation by the arm, and a double-pointed plow connected to the yoke and moving laterally with it a like distance each way from the axis of motion of the rotating arm, substantially as herein set forth.

3. The combination, in a plow, of a supporting-frame, a laterally-rotating arm thereon, a vertically-ranging yoke or guide engaged by the arm, a lateral guide or raceway on the frame and to which the yoke is fitted for lateral reciprocation by the arm, and a double-pointed plow having no landside and connected to the yoke and moving with it a like distance each way from the axis of motion of the rotating arm, substantially as herein set forth.

4. The combination, in a plow, of a frame supported on wheels, a laterally-rotating arm on the frame and geared for operation by or from the wheels, a vertically-ranging yoke or guide engaged by the arm, a lateral guide or raceway on the frame and to which the yoke is fitted for lateral reciprocation by the arm, and a double-pointed plow having no landside and connected to the yoke and moving laterally with it a like distance each way from the axis of motion of the rotating arm, substantially as herein set forth.

5. The combination, in a plow, of a main frame, wheels supporting it and provided with gears, a lateral shaft E on the frame and carrying pinions meshing with said gears, a shaft K, ranging about at right angles to the shaft E, and gearing driving it from said shaft, a lateral raceway or guide held to the frame, a plow-stock fitted for lateral reciprocation thereon, a vertical yoke or guide held to the plow-stock, and an arm held to and rotated by the shaft K and having a sliding connection with the vertical yoke or guide on the plow-stock, substantially as herein set forth.

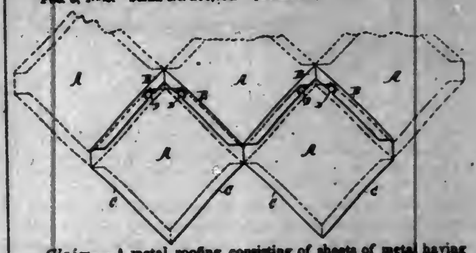
6. The combination, in a plow, of a main frame, wheels supporting it and provided with gears, a lateral shaft E on the frame and carrying pinions meshing with said gears, a shaft K, ranging about at right angles to the shaft E, and gearing driving it from said shaft, a vertically-adjustable raceway or guide held to the frame, a laterally-movable plow-stock fitted to said raceway, devices, substantially as described, for vertically adjusting the raceway, a vertical yoke or guide held to the plow-stock, and an arm held to and rotated by the shaft K and having a sliding connection with the vertical yoke or guide on the plow-stock, substantially as herein set forth.

7. A plow made with a laterally-rotating arm, a lateral raceway or guide, a plow-stock held thereto and provided with a vertical yoke or guide, said arm having a head or block adjustable on the vertical yoke or guide for varying the extent of lateral reciprocation of the plow mold-board or cutter, substantially as herein set forth.

8. A plow made with a laterally-rotating arm, a laterally-extending and vertically-adjustable raceway or guide, a plow-stock held thereto and provided with a vertical yoke or guide, said arm having a head or block connecting it with the vertical yoke or guide of the plow-stock, substantially as described, whereby the depth of working of the plow cutter or mold-board may be regulated by raising or lowering the lateral raceway or guide of the plow-stock, as herein set forth.

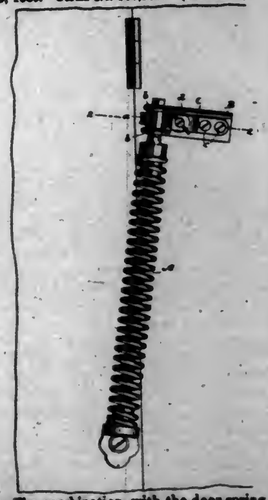
9. The combination, in a plow, of a supporting-frame, a lateral raceway or guide held thereto for vertical movement and provided with a nut d', a vertical guide d on the frame, and a screw T, held to said guide d and engaging the nut d', for adjusting the lateral raceway vertically, a double pointed plow connected to the yoke and moving laterally with it, and a laterally-rotating arm on the main frame engaging the plow-supporting yoke to reciprocate the plow laterally, substantially as herein set forth.

406,024. METAL ROOFING. JOHN D. BURTON, Pittsburg, Pa. Filed Feb. 5, 1889. Serial No. 298,781. (No model.)



Claim.—A metal roofing consisting of sheets of metal having their upper edges turned over upon themselves, forming a parallel fold and meeting in a point, and their lower edges turned under upon themselves, forming a parallel fold and meeting in a point, having the squared corners and the cut-out portions in the metal of the upper turned-over edge to allow the entrance of the fastening devices, substantially as described.

406,025. DOOR-SPRING. EDWARD A. CALAHAN, Brooklyn, N. Y. Filed Apr. 15, 1889. Serial No. 307,307. (No model.)

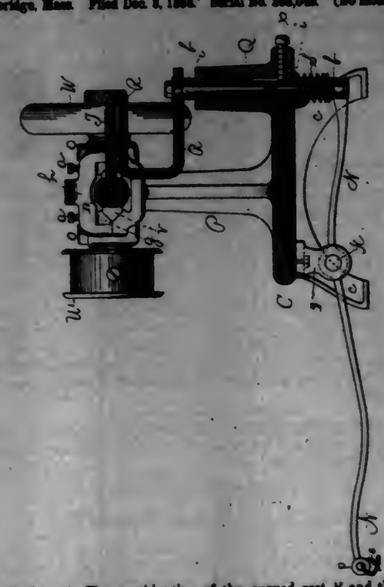


Claim.—1. The combination, with the door-spring, of the worm and wheel adjusting devices for giving a torsion or twist to the spring.

2. The combination of the spring, the plate B, the toothed wheel with which the spring is connected so as to turn with it, and the worm engaging the wheel to turn it in either direction.

3. The combination of the spring, the plate or support B, the wheel, the worm, the bracket in which the worm has its bearing, and the screws c, for securing the bracket in place, whereby upon the removal of the screws the bracket and worm may be turned down to disengage the worm from the wheel.

406,026. BURNISHING-MACHINE. EDWARD H. CARPENTER, Southbridge, Mass. Filed Dec. 8, 1888. Serial No. 292,949. (No model.)

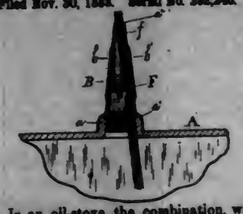


Claim.—1. The combination of the curved rest K and the connected spring-lever N, as and for the purpose set forth.

2. The combination of a reciprocating tool T with a movable spring-actuated rest R, substantially as described.

3. The combination of the tool T and means for rapidly reciprocating it with the movable rest R and the lubricating can and tube H and l, to constitute a burnishing-machine, all substantially as set forth.

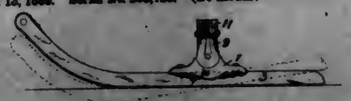
406,027. WICK-TUBE FOR OIL-STOVES. WILLIAM H. GLEESE, Cleveland, Ohio, assignor to the Taylor & Boggis Foundry Company, same place. Filed Nov. 30, 1888. Serial No. 292,246. (No model.)



Claim.—1. In an oil-stove, the combination, with top A, provided with the upwardly-extending flange a, of the wick-tube B, formed in sections, each said section having integral with it at its lower edge the angular burner-plate a', said plate having an outwardly-extending portion formed angularly to the wick-tube, and a downwardly-extending lower extremity formed parallel with the wick-tube, said parallel lower extremity of the said burner-plate fitting over said flange, substantially as set forth.

2. In an oil-stove, the combination, with the top A, provided with the upwardly-exteeding flange a, of wick-tube B, formed of sections $b\,b'$, each said section provided with the plane-faced upper portion c', and provided at its lower portion with the burner-plate section a', of angular formation, integral therewith, and provided intermediate of said upper portion and said burner-plate section with the series of vertical wick-guiding corrugations d, and the wick-raising shaft F, located between the opposite longitudinal walls of the wick-tube and in the same transverse plane with said corrugations, said shaft provided with a series of wick-engaging projections, respectively located opposite corresponding depressions of said corrugations, substantially as set forth.

406,028. BOB-SLEIGH. CHARLES W. CRISAP, Ryota, Miss. Filed Feb. 13, 1889. Serial No. 299,720. (No model.)



Claim.—1. The combination, with the runner of a bob-sleigh, of the saddle 1, provided with the flanges 4 and the tenon, the post 9, secured to the beam 11 and provided with the tapering mortise 7, adapted to receive the tenon 6 and having its bottom of cylindrical form to fit into and turn in the saddle 1, substantially as described.

2. An oscillating bob-sleigh knee comprising, in combination, the post 9, secured to the cross-beam of the sleigh, and the saddle 1, secured to the runner, said post and saddle being connected together by a knuckle-joint and cylindrical bearing at the runner, allowing an oscillating movement of the runner in a substantially vertical plane.

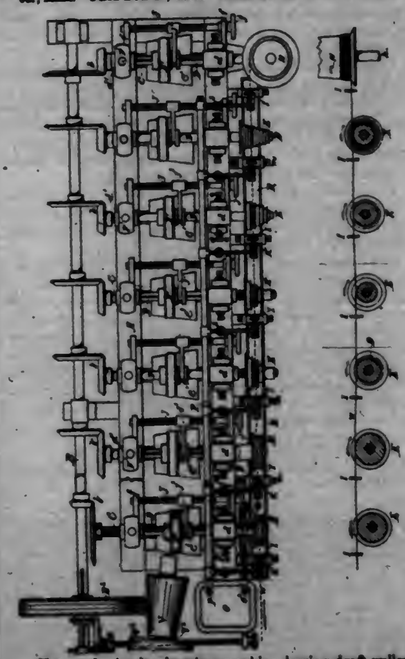
3. In a bob-sleigh, the combination, with the cross-beam 11, of the post 9, secured thereto, the runner 3, the saddle 1, secured to said runner and supporting said post in an open cylindrical bearing at the runner, and the tapering tenon 6, made integral with said saddle and adapted to swing in a mortise in said post, laterally, substantially as described.

406,029. STEAM-PRESSURE REGULATOR. NELSON CURTIS, Boston, Mass. Filed Nov. 7, 1888. Serial No. 290,230. (No model.)



Claim.—In a steam-pressure regulator containing a steam passage-way and a piston-valve therein and provided with a regulating device consisting, essentially, of a compression-spring and screw-rod therefor located in a cap or projection of the shell of said regulator, in combination with said compression-spring and screw-rod, the collar J' on said screw-rod, the ring or shoulder G', projecting from said cap beneath said collar, the laterally-threaded sleeve K on the outside of said ring or shoulder G', provided with a shoulder K' above said collar J', and nut N, substantially as described, for the purpose specified.

406,030. WIRE-DRAWING MACHINE. FRED H. DANIELS, Worcester, Mass. Filed Dec. 17, 1888. Serial No. 293,773. (No model.)



Claim.—1. A wire-drawing machine having draft-pulley arbors provided with movable friction-wheels, in combination with operator-shafts provided with conoidal drums, and in which the revolution of the draft-pulley can be varied by shifting the friction-wheel endwise

on its arbor while in contact with the conoidal drum of the operator-shaft which imparts motion thereto, substantially as set forth.

2. In a wire-drawing machine, the combination, with a conoidal-drum operator, of the draft-arbor for supporting the wire-drawing pulley mounted in a pivoted bearing at one end and in a sliding bearing at the other end, and a spring or equivalent means for forcing said sliding bearing toward the operator-shaft, for the purpose set forth.

3. The combination of the operator-shaft having a conoidal drum, the draft-pulley arbor provided with a friction-wheel that is movable longitudinally on said arbor and peripherally in contact with said drum, supporting-bearings for said arbor which afford a yielding action, and a connection for effecting endwise adjustment of the friction-wheel in relation to the arbor and conoidal drum, substantially as set forth.

4. In a wire-drawing machine, the screw-shaft J and engaging-arm J', combined with the friction-wheel D' and arbor D, for effecting endwise adjustment of said friction-wheel on the arbor, substantially as set forth.

5. In a wire-drawing machine, the combination, with the draft-pulley, draft-arbor, its friction-wheel, the operator shaft and drum, and adjusting-screw shaft and wheel-shifting arm J', of the housings F F' the arbor-bearings d d', supported in the respective housings in the manner shown, the spring G, and set-screw G', for the purposes set forth.

6. In a wire-drawing machine, in combination with the wire-reducing dies, the draft-pulleys having their working-faces formed as cones or steps of offsetting fillets, adapted for arranging the wire thereon at different positions relatively to the coned surface, whereby the speed of draft can be varied without changing the number of revolutions of the drawing-arbors or the draft-pulleys, substantially as set forth.

7. In a machine for drawing wire, the wire-drawing roll or draft-pulley having its face formed as a cone or series of offsetting fillets of different diameters, in combination with the wire-reducing die and a rotatable supporting-arbor, whereon said draft-pulley is adjustable longitudinally, substantially as and for the purpose set forth.

8. In a machine for drawing wire, in combination with the draft-pulley and wire-drawing die, the die-holder consisting of a head-piece having a socket for supporting a wire-drawing die, connected by pivots or trunnions with an adjustable standard, which standard is capable of endwise and rotative adjustment, substantially as set forth.

9. In a wire-drawing machine, the combination of a draft-pulley having its face formed as a cone or offsetting series of fillets, a wire-reducing die, and a rocking die-holder mounted upon a rotatively adjustable supporter.

10. In a machine for drawing wire by continuous operation, a series of wire-drawing rolls or draft-pulleys having faces formed as cones or in offsetting fillets of varying diameter, in combination with a series of wire-reducing dies and adjustable die-holders for supporting said dies, which afford facility for placing the dies at right angles to the direction of the wire, whether running onto the larger or smaller portion of the draft-pulleys, substantially as set forth.

11. In a wire-drawing machine, the combination, with the draw-block, of the rotatable arbor D, provided with an adjustable friction-roll *n*, that engages a surface or disk connected with said draw-block for imparting motion thereto, substantially as set forth.

12. In a continuous wire-drawing machine, the combination of a series of drawing-dies, a series of arbors carrying draft-pulleys, a main shaft with operating mechanism for imparting rotative motion to said series of arbors and draft-pulleys from said main shaft, a driving-shaft provided with a pulley or pulleys for the drive-belt, a friction-drum of varying diameter and an adjustable friction-wheel for transmitting power and motion from said driving-shaft to said main shaft, and a shifter for changing the relative engaging position of the friction-surfaces of said wheel and drum to vary the number of revolutions of said main shaft relatively to the speed of the driving-shaft, for the purpose set forth.

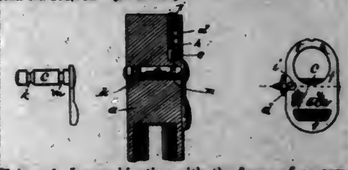
406,081. BREECH-LOADING FIRE-ARM. WILLIAM H. DAVENPORT, Norwich, Conn. Filed Nov. 24, 1888. Serial No. 291,740. (No model.)

Claim.—1. In combination, in and with the frame of an arm, a vertically-movable breech-block carrying a firing-pin, a guard-lever pivoted in said frame, and a link connecting said block and guard-lever, said link being provided with a multiple of holes suitably disposed, as set forth, whereby the position of the firing-pin relative to the cartridge-head may be governed.

2. In combination with the frame of an arm, a barrel fitted therein, a cartridge-ejector longitudinally movable in said barrel, a crank-lever pivoted in said frame, having its ejector-engaging end formed as a spring-pressed pin, as set forth, and mechanism for actuating said crank-lever, all substantially as specified.

3. In combination with the frame of an arm, a barrel fitted therein, a cartridge-ejector longitudinally movable in said barrel, a crank-lever pivoted in said frame, having its ejector-engaging end provided with a spring-pressed pin, as set forth, a breech-block at the rear of the barrel, a guard-lever pivoted in said frame, and a link connecting said breech-block and guard-lever, all substantially as and for the purpose specified.

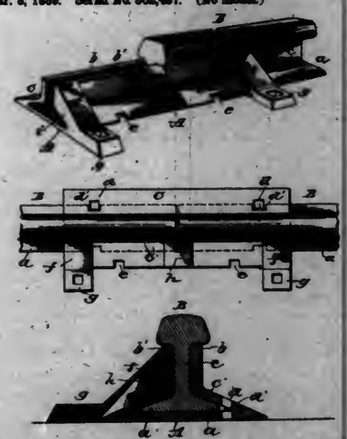
406,082. MECHANISM FOR FASTENING BARRELS TO GUN-STOCKS. WILLIAM H. DAVENPORT, Norwich, Conn. Filed Nov. 24, 1888. Serial No. 291,741. (No model.)



Claim.—1. In combination with the frame of an arm, a barrel fitted therein, an annularly-grooved pin (seated in said frame) passing across said barrel to interlock said frame and barrel, and a spring-pressed plug seated in said frame having its end coincident with and adapted to engage said annular groove, substantially as and for the purpose specified.

2. In combination with the frame and barrel of an arm, a locking-pin passing through the frame and across the barrel and having two annular grooves, as set forth, and a spring-pressed plug seated in said frame having its end bearing against said locking-pin when the parts are assembled, the said annular grooves being located in such relation to each other that said spring-pressed plug enters one of said grooves when said pin is withdrawn and the other when said pin is forced forward into its seat, substantially as and for the objects specified.

406,083. RAIL-JOINT. BENJAMIN F. DAVIS, Trusheart, Tex. Filed Mar. 8, 1888. Serial No. 302,467. (No model.)

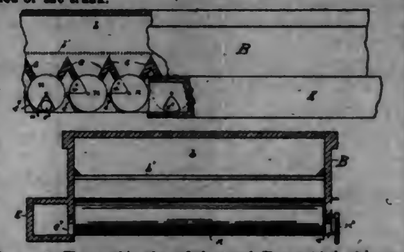


Claim.—1. A fish-plate composed of a single piece of metal adapted to embrace the flange and web of the rail, having perforations in one side to align with notches in the rail-flange and notches on the other side out of line with the rail-flange, ribs on one side of said fish-plate, and perforated lugs extending from said ribs for the reception of spikes, substantially as set forth.

2. The combination, with a railroad-rail having notches in its flange, of a fish-plate composed of a single piece of metal adapted to embrace the flange and web of the rail, said fish-plate being plain on one side and provided on the other side with ribs, perforated lugs projecting from the ribs at the ends of the fish-plate, said fish-plate being provided with perforations on one side to align with notches in the rail-flange, and notches in the other side out of alignment with the rail-flange, substantially as set forth.

406,084. MACHINE FOR OPENING AND CLEANING COTTON. HENRY A. DAVIS and HAVEN C. PINKHAM, Lowell, Mass., assignors to the Kitson Machine Company, same place. Filed Aug. 14, 1888. Serial No. 210,901. (No model.)

Brief.—The object of the invention is to facilitate the cleaning of the dust-chambers in the trunk without being obliged to stop the operation of the trunk.



Claim.—1. The combination of the trunk B, provided with passage *b*, and screen *b'* beneath it, partitions *c c*, forming sides of a chamber beneath the screen, and the movable receptacle *n*, beneath the latter, provided with an opening *n'*, adapted to alternately connect receptacle *n* with the chamber between partitions *c c* above, and to connect said receptacle with the space below after its connection with the chamber between partitions *c c* is fully closed, substantially as described.

2. The combination of trunk B, provided with passage *b*, and screen *b'* beneath it, partitions *c c*, receptacle *n*, constituting a movable bottom beneath said partitions and forming therewith a chamber below said screen, said receptacle being provided with openings, substantially as described, and means whereby one of said openings of receptacle *n* may be connected with said chamber while said receptacle is closed elsewhere, and whereby said connection may be closed fully and said receptacle thereafter may be opened elsewhere outside of said chamber, substantially as described.

3. The combination of trunk B, provided with passage *b*, and screen *b'* beneath it, partitions *c c*, receptacle *n*, constituting a movable bottom beneath said partitions and forming therewith a chamber below said screen, said receptacle being provided with openings, substantially as described, tube E, provided with fan E', and means whereby said receptacle may be connected with said chamber after being closed elsewhere, and may be connected with said tube E after being entirely shut off from said chamber, substantially as described.

4. The combination of trunk B, provided with passage *b*, and screen *b'* beneath it, partitions *c c*, and revolving cylindrical receptacle *n*, provided with opening *n'*, substantially as described.

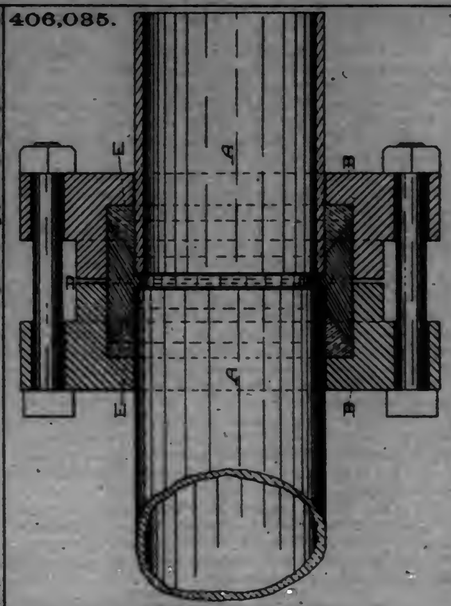
5. The combination of trunk B, provided with passage *b*, and screen *b'* beneath the same, partitions *c c*, revolving receptacle *n*, provided with opening *n'*, and partition c^3, forming a casing or cover upon the exterior of said receptacle, substantially as described.

6. The combination of trunk B, provided with passage *b*, screen *b'* beneath the same, and openings c^3 c^4, partitions *c c*, revolving receptacle *n*, provided with opening *n'* and openings n^2 n^4, and pipe E, provided with fan E', substantially as described.

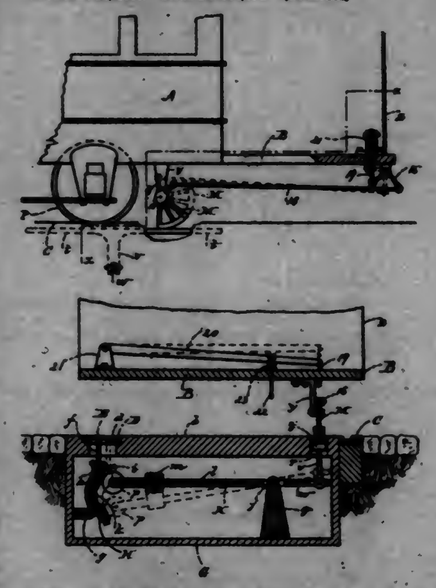
406,085. PIPE-COUPLING. SOLOMON R. DRESSER, Bradford, Pa. Filed Aug. 18, 1887. Serial No. 247,207. (No model.)

Claim.—1. A pipe-coupling formed of two sections and having a compressing-ring with inclined or beveled inner faces, and compressible rings having inclined or beveled outer faces and conforming before compression to the shape of and fitting in the space between the inside of the coupling-sections and the compressing-ring, substantially as described.

2. A pipe-coupling formed of two sections and having a compressing-ring with inclined or beveled inner faces and an inner rim or lugs at or near the center of the inside, and compressible rings having inclined or beveled outer faces and conforming before compression to the shape of and fitting in the space between the inside of the coupling-sections and the compressing-ring, substantially as described.



406,086. RAILWAY-SWITCH. JAMES F. DUGGAN, Quincy, Mass. Filed Mar. 28, 1888. Serial No. 304,304. (No model.)



Claim.—1. In a switch, the combination of a box in the road-bed, a switch-tongue, a rod projecting from said tongue into said box, a vertical cam-lever provided with a groove for said rod, a lever in said box provided with a roll for actuating said cam-lever, and a horizontal bar pivoted to said lever and adapted to be engaged by a projection on the car-body, substantially as described.

2. In a switch, the combination of a switch-box, a switch-tongue and transverse slot in the bed-plate, a rod on said tongue projecting through said slot into said box, a cam-lever in said box provided with a groove in which said rod works, a counterbalanced lever provided with a roll in engagement with said cam-lever, a horizontal bar pivoted to said counterbalanced lever and working in an opening in the top of the switch-box, and a segment pivoted on the car in position

to be projected into said slot and engage said bar, substantially as described.

3. In a device of the character described, the combination of a spring-cushioned foot-lever on the car-platform, a bell-crank lever pivoted below said platform, a pivoted rod connecting said levers, a horizontal rod pivoted to said bell-crank lever, and a segment journaled on the car-body, whereby said wheel may be projected into an opening in the road-bed and actuate a switch mechanism when said foot-lever is depressed, substantially as described.

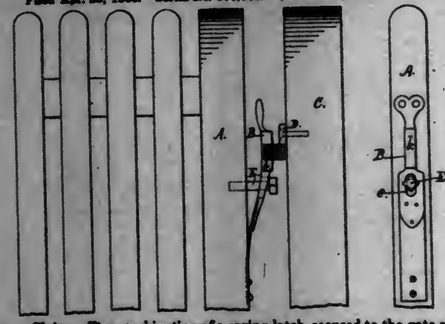
4. In a device of the character described, a horizontal bar working vertically in an opening in the switch-box in position to be engaged by a segment on the car-body, in combination with a roll-bearing counterbalanced lever pivoted to said bar, adapted to actuate a cam-lever connected with the switch-tongue, substantially as described.

5. In a device of the character described, the combination of a switch-box, a switch-tongue disposed thereon, a rod projecting from the switch-tongue into said box, a cam-lever for moving said tongue, a lever pivoted in said box and bearing a roll in engagement with said cam-lever, a horizontal bar working in an opening in said box and pivoted to said lever in position to be engaged by a projection on the car and move the switch-tongue, and a counterbalance-weight on said roll-lever for returning the same when said bar is released, substantially as described.

6. In a switch, the combination of the box G, the switch-plate D, having the tongue E and groove *d*, the rod *f* on said tongue, the cam-lever H, provided with the groove *h*, the lever K, having the weight *m* and roll *p*, and the bar *t*, working in the slot *r* and pivoted to said lever, substantially as described.

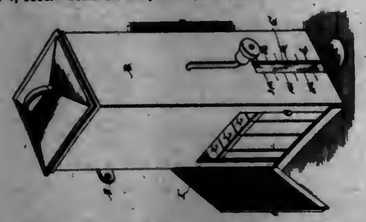
7. In a device of the character described, the combination of the car A, the segmental wheel M, journaled thereon and provided with the arm 17, the spring-cushioned lever 20, pivoted to the car-platform, the rod 19, bell-crank lever 15, and rod 16, all being arranged to operate substantially as described.

406,087. GATE-LATCH. JOHN G. DULEBOHN, Elizabethtown, Pa. Filed Apr. 26, 1888. Serial No. 308,316. (No model.)



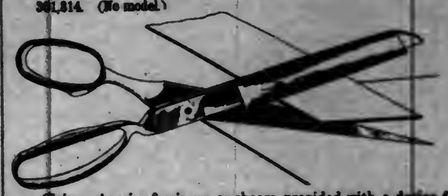
Claim.—The combination of a spring-latch, secured to the gate at the lower end and having a slot cut through it above that end, and a set-screw passing through said slot and engaging the post of the gate, substantially as and for the purpose specified.

406,088. FLOUR-BIN. ELIJAH P. ELLIS, Oak Hall, Kans. Filed July 7, 1888. Serial No. 279,267. (No model.)



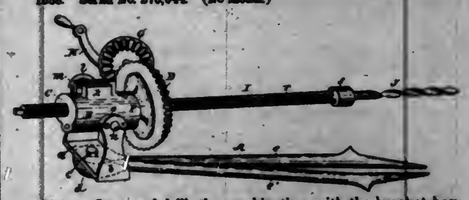
Claim.—The herein-described flour-bin and measuring device, comprising the rectangular body A, having its upper portion forming a flour-bin, the curved sieve and rotary stirrer mounted in said body at the bottom of the bin, and stationary receiver C, arranged beneath the sieve and secured to sides of the said body at the base of the bin and having its bottom provided with a slide, said receiver being narrower than said body, and its sides being formed of vertical walls flaring at their upper ends, where they are secured to the rectangular body, the transparent panel G in the side of said body, and the graduated scale, substantially as described.

406,089. ATTACHMENT FOR SHEARS. JOHN W. [illegible], Eaton Rapids, Mich. Filed July 15, 1887. Renewed Mar. 1, 1889. Serial No. 301,814. (No model.)



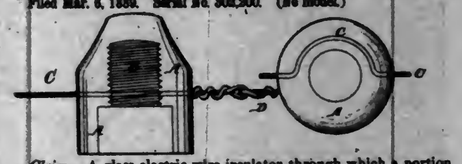
Claim.—A pair of scissors or shears provided with a device for attaching labels, the same consisting of a single strip bent to form the presser-plate C, secured to the blade of the scissors, the securing-flange E, secured to the upper edge of said blade, and the brace D, extending between the free edges of the plate and the flange, the corner formed by the brace and the plate being rounded, substantially as specified.

406,040. COAL-DRILL. DANIEL GIBBS, Peoria, Ill. Filed Apr. 14 1888. Serial No. 270,644. (No model.)



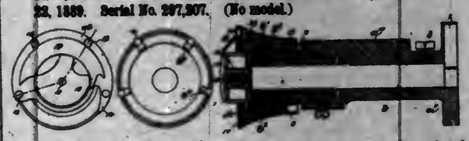
Claim.—In a coal-drill, the combination, with the bracket having a pivot-bolt, of the brace having its members twisted into a loop or eye at their inner ends, which receives said bolt, the outer portions of said members diverging from each other and having laterally-projecting spurs or projections, substantially as and for the purpose set forth.

406,041. INSULATOR FOR ELECTRIC WIRES. JAMES C. GILL, Covington, Ky., assignor to the Hemingray Glass Company, same place. Filed Mar. 6, 1889. Serial No. 302,200. (No model.)



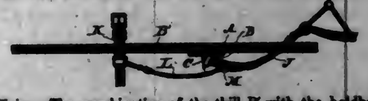
Claim.—A glass electric-wire insulator through which a portion of the line-wire is cast, in combination with the main wires, substantially in the manner and for the purpose described.

406,042. ROTARY SHUTTLE-ACTUATING MECHANISM FOR SEWING-MACHINES. HORACE W. HADLEY, Orange, Mass. Filed Jan. 22, 1889. Serial No. 297,207. (No model.)



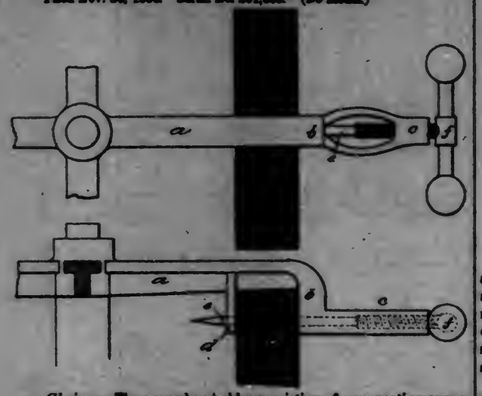
Claim.—The shuttle provided with holes angular to the axis of rotation of the shuttle, the shaft *b*, means to rotate it, and the head, combined with the locking-slides and means to move them in an angular direction with relation to the said shaft *b*, whereby the ends of the slides enter said holes in the shuttle and lock the latter against lateral movement as the latter is being rotated and carried through the loop of needle-thread by the said slides, substantially as described.

406,043. HOLDBACK FOR VEHICLES. JOHN B. HAIR, Edgerton, Wis. Filed Oct. 2, 1888. Serial No. 286,973. (No model.)



Claim.—The combination of the thill B' with the holdback attachment, consisting of the plate A, keeper-retaining springs F, and keeper C, with the holdback-strap J, thill-strap K, and connecting-strap L, said holdback-strap J being connected at its front end with the strap-hook B and at its rear end with the rear part of the harness, said strap L being connected at its rear end with said strap J and at its front end with said holdback-strap K, all substantially as and for the purpose specified.

406,044. PAPER-BAG HOLDER. HENRY T. HARE, Berlin, Conn. Filed Nov. 26, 1888. Serial No. 291,602. (No model.)

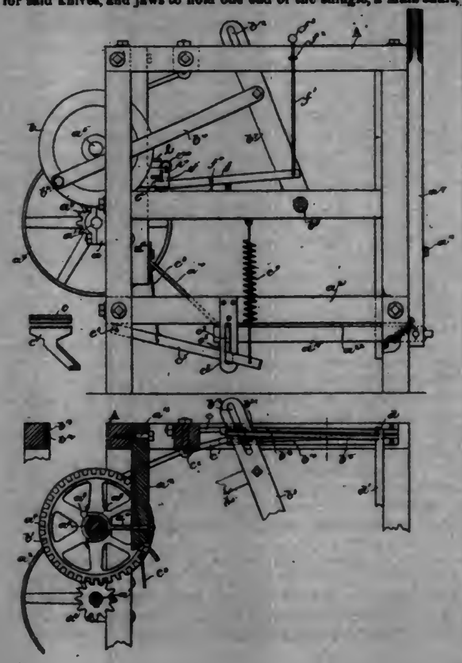


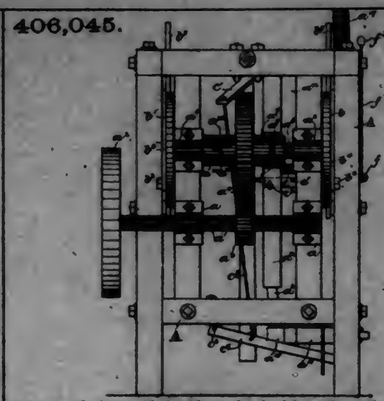
Claim.—The paper-bag holder consisting of a supporting-arm *a*, having means to secure it to a support, and formed with an elbow *b* and threaded extensions *c*, and provided with the perforated shoulder *d*, and the threaded shaft *e*, projected through the threaded extension and the perforated shoulder, substantially as described.

406,045. MACHINE FOR TREATING SHINGLES. WILLIAM H. HEATH, Taunton, Mass. Filed Nov. 1, 1888. Serial No. 289,770. (No model.)

Claim.—1. In a machine for treating shingles, the combination, with a knife, of a guide inclined from one toward the opposite end of the machine and in which the said knife travels, levers on opposite sides of the machine, to which the said knife is secured, and jaws to hold one end of the shingle, a main shaft, a counter-shaft provided with a clutch driven from the main shaft and adapted to rotate the counter-shaft, and a shipper mechanism connected to said clutch, substantially as described.

2. In a machine for finishing shingles, the combination, with knives, of converging guides in which the said knives travel, carriers for said knives, and jaws to hold one end of the shingle, a main shaft,



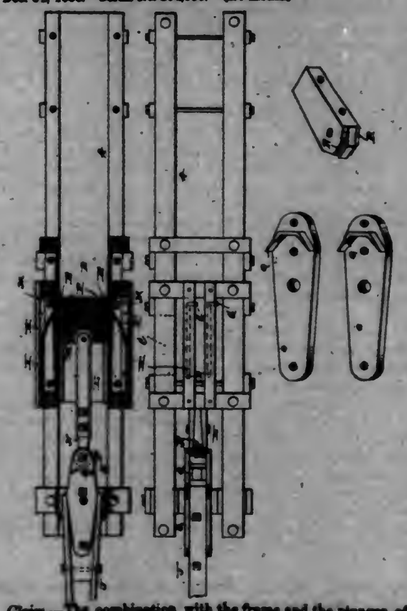


a counter-shaft provided with a clutch driven from the main shaft and adapted to rotate the counter-shaft, a shipping mechanism connected to said clutch, and a stop carried by the counter-shaft to act on the shipping mechanism and automatically disengage the clutch to stop rotation of the counter-shaft, and thereby travel of the knives, substantially as described.

3. In a machine for finishing shingles, the combination, with knives, of converging guides in which the said knives travel, carriers for said knives, and jaws to hold one end of the shingle, a main shaft, a counter-shaft provided with a clutch driven from the main shaft and adapted to rotate the counter-shaft, and a shipping mechanism connected to said clutch, a locking-bar secured to the shipping mechanism, a lever *f* to act on said bar to disengage the shipper mechanism to stop the travel of the knives, substantially as described.

4. In a machine for finishing shingles, the combination, with knives, of converging guides therefor and carriers for said knives, a fixed jaw and a movable jaw to hold the shingles, and a lever, as c^4, connected to the movable jaw, a lock for said lever, a main shaft, a counter-shaft provided with a clutch driven from the main shaft and adapted to rotate the counter-shaft, a shipping mechanism connected to said clutch, a stop carried by the counter-shaft to act on the shipping mechanism and automatically disengage the clutch to stop rotation of the counter-shaft, and a projection on the shipping mechanism to act on the lever connected to the movable jaw and release the said lever, substantially as and for the purpose specified.

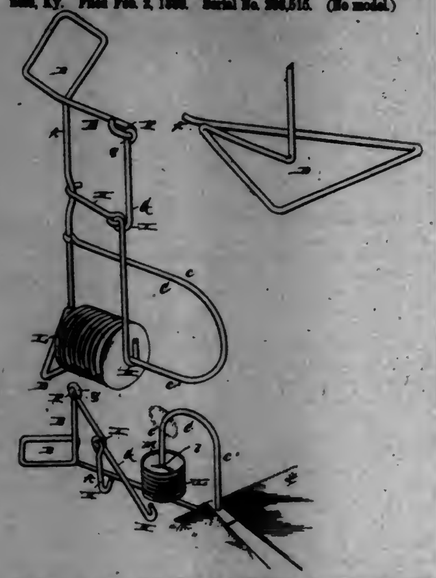
406,046. BALING-PRESS. JOHN W. HEATH, Macon, Miss. Filed Dec. 31, 1888. Serial No. 294,969. (No model.)



Claim.—The combination, with the frame and the plunger, of the

pitman pivoted to the plunger, the casting secured to the end of the pitman, the power-lever, the re-enforcing plates secured to the ends of the lever and having U or V shaped ribs on their opposing faces engaging recesses in the ends of the lever, the pivot-pin passed through the ends of the re-enforcing plates and the casting secured to the pitman, and the king-bolt passed through the front end of the frame and through the re-enforcing plates and the end of the lever, as specified.

406,047. BAG-HOLDER OR BILL-FILE. JAMES S. JOHNS, Crutchfield, Ky. Filed Feb. 2, 1888. Serial No. 262,515. (No model.)



Claim.—1. In a bag-holder or bill-file, the combination, with means for supporting the same, of a horizontal guide-rod having an enlarged base at one end, of disks movably mounted on said guide-rod, and a spring normally pressing said disks against said base, as and for the purpose set forth.

2. In a bag-holder or bill-file, the combination, with a frame comprising a substantially-vertical body A, a U-shaped guide-rod C, its arms standing at right angles to said body, its lowermost extremity being integrally connected therewith and its uppermost extremity being clamped thereto, of the disks L, movably mounted upon the lowermost arm of said guide-rod, and a spring G, connected to the frame and pressing said disks normally against the body A, as and for the purpose set forth.

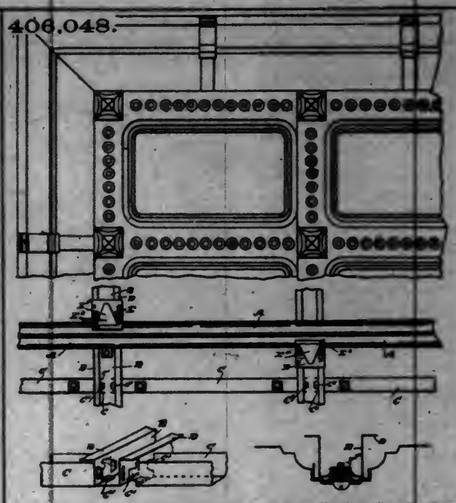
3. In a bag-holder or bill-file, the combination, with a frame comprising a substantially-vertical body A and a U-shaped guide-rod C, its arms standing at right angles to said body, its lowermost extremity being integrally connected therewith and its uppermost extremity being clamped thereto, of the disks L, movably mounted upon the lowermost arm of said guide-rod, the spring-arm G, pivotally connected at its upper end to said body S and its lower end bearing against the outer of said disks, and the hook K, attached to said spring-arm intermediately between its ends and adapted to engage the body A, to deflect the arm G and cause it to exert a yielding pressure upon said disks, as and for the purpose set forth.

4. In a bag-holder or bill-file, the combination, with the guide-rod C, having the integral base D, of the disks L, mounted on said guide-rod and provided with flanged peripheries M, and a spring-arm pressing said disks toward said base to hold them in contact, as and for the purpose set forth.

5. In a bag-holder or bill-file, the combination of the frame A, provided at its upper end with an eye B and a lateral arm E and at its lower end with a curved guide-rod C, all said parts being integral, the loose disks L, mounted on said guide-rod, the spring-arm G, pivoted at its upper end to an eye in said lateral arm E and provided at its lower end with a hook H and at its center with a coil I, and the hook K, pivoted to said coil I and adapted to engage the body of the frame A for causing said hook to bear with yielding pressure against the disks L, as and for the purpose set forth.

406,048. METALLIC CEILING. WILLIAM R. KINNEAR, Columbus, Ohio. Filed Nov. 16, 1888. Serial No. 291,053. (No model.)

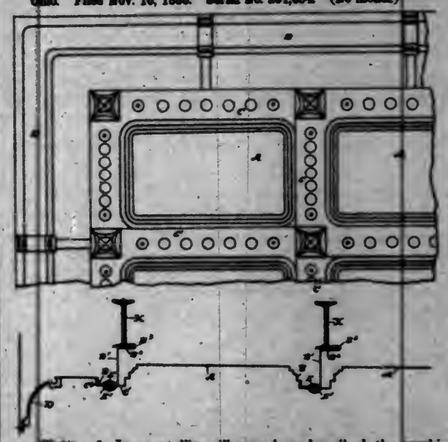
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Claim.—1. In a ceiling such as described, the hanging structure, consisting in the combination of the strips B being suspended from the beams of the building structure, the strips C, extending between the said strips B, and suitable connections for suspending the strips C upon the strips B, substantially as set forth.

2. In a ceiling such as described, the hanging structure, consisting in the combination of the strips B, suspended from the beams of the building structure and provided at predetermined intervals with slots in the sides, and the strips C, extending between the strips B and provided upon their ends with lugs C', for being inserted in the said slots in the sides of the strips B, to support the strips C, substantially as set forth.

406,049. METALLIC CEILING. WILLIAM R. KINNEAR, Columbus, Ohio. Filed Nov. 16, 1888. Serial No. 291,054. (No model.)



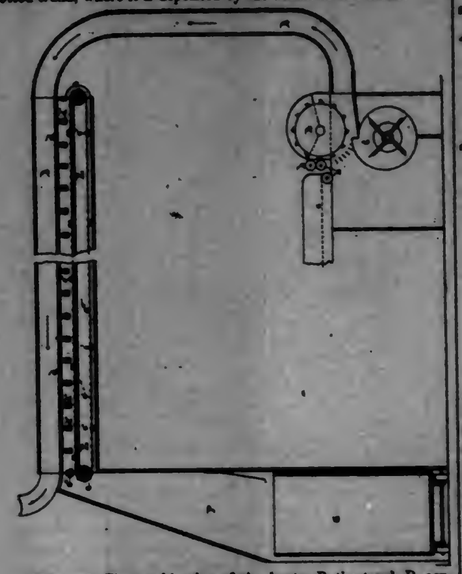
Claim.—1. In a metallic ceiling such as described, the combination of panels provided at the sides with margins adapted to be fitted over the margins of the adjoining panels and having on one or more sides an extension which is secured to the building structure, and fastenings for securing the fitted margins together, the exposed parts of which are incorporated into the design and ornamentation of the said panels, substantially as described.

2. In a metallic ceiling such as described, the combination of panels provided on the sides with the margins B and C, the extensions E', extending from the said margins B and secured to the building structure, and fastenings to hold the said margins together, substantially as described.

3. In a metallic ceiling such as described, the combination of panels provided on the sides with margins B and C, the extensions E', extending up from the said margins B, hooks engaging the beams of the building structure and attached to the said extensions, and fastenings to hold the said margins together, substantially as described.

406,050. MACHINE FOR OPENING COTTON. RICHARD KNOWL, Lowell, Mass., assignor to the Kitson Machine Company, same place. Filed Sept. 11, 1888. Serial No. 284,314. (No model.)

Brief.—The object of the invention is to provide improved means for conveying away the dirt and leaf from the dirt-chambers of the cotton-trunk, where it is deposited by the action of the trunk.



Claim.—1. The combination of the beater B, the trunk D, containing the horizontal air and fiber passage, the screen-bottom d beneath the same, and the transverse partitions d' d', which form with the trunk and screen-bottom d chambers beneath the latter, the dust-passage running longitudinally along said trunk beneath said screen-bottom, connected to said chambers and adapted to receive the dust and impurities discharged therefrom and conduct the same to the dust-chamber F, and the latter adapted to receive the dust and impurities discharged into it from said dust-passage and prevent them from reaching fresh fiber while being fed past the beater, substantially as described.

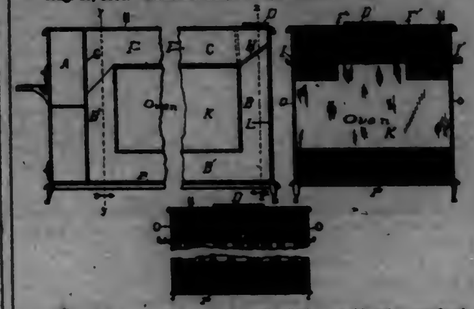
2. The combination of the feed-apron c, feed-rolls b b, the beater B, the trunk D, containing the horizontal air and fiber passage, screen-bottom d beneath the same, and transverse partitions d' d', which form with the trunk and screen-bottom d chambers beneath the latter, and the dust-passage running longitudinally along said trunk beneath said screen-bottom and connected to said chambers and adapted to receive the dust and impurities discharged therefrom and to conduct the same to the dust-chamber F, and the latter adapted to receive the dust and impurities discharged into it from said dust-passage and prevent them from reaching fresh fiber while being fed over said feed-apron and past said beater, substantially as described.

3. The combination of the beater B, the trunk D, containing the horizontal air and fiber passage, the screen-bottom d, and the transverse partitions d' d', which form with the trunk and screen-bottom d chambers beneath the latter, the dust-passage running longitudinally along said trunk beneath said screen-bottom, connected to said chambers and adapted to receive the dust and impurities discharged therefrom and to conduct the same to the dust-chamber F, and means whereby said dust and impurities may be conveyed to said dust-chamber F through and out of said dust-tube, with the chamber adapted to receive said dust and impurities discharged into it from said dust-passage and prevent them from reaching the fiber being fed past the beater, substantially as described.

4. In a cotton-trunk, the combination of the air and fiber passage, the screen-bottom d beneath the same, the partitions d' d', forming with the trunk and screen-bottom chambers below the latter, the dust-passage below said chambers running longitudinally along said trunk beneath said screen-bottom and connected with said chambers and adapted to receive the dust and impurities discharged therefrom, and one or more scrapers d', adapted to traverse said dust-passage and clear out the same, with mechanism for operating said scrapers, substantially as described.

5. In a cotton-trunk, the combination of the air and fiber passage, the screen-bottom b beneath the same, the partitions d' d', forming with the trunk and screen-bottom chambers below the latter, the dust-passage below said chambers running longitudinally along said trunk beneath said screen-bottom and connected with said chambers and adapted to receive the dust and impurities discharged therefrom, the dust-chamber F, connected to said dust-passage, and one or more scrapers d', adapted to traverse said dust-passage and move its contents forward to said dust-chamber, with mechanism for operating said scrapers, substantially as described.

406,051. COOKING-STOVE. WILLIAM LANE, Downey, Cal. Filed Aug. 13, 1888. Serial No. 282,577. (No model.)



Claim.—In a stove such as described, the combination, set forth, of the oven, fire-box, and walls of the stove, the two side flues E E', leading from the fire-box A across the top of the oven, the descending flue B, coextensive with the rear of the oven, the bottom flue B', coextensive with the bottom of the oven, the ascending flue B'', coextensive with the front of the oven, the middle flue C, connecting the ascending flue B'' with the smoke-outlet D and the descending flue B, the smoke-outlet D, arranged above the junction of the flues B and C, the partitions M M', separating the flues E E' from the ascending flue, the partitions F, F', and G, the dampers I I', arranged to close the flues E E', and the damper H, arranged to close the flue C in front of and below the outlet D, as and for the purpose set forth.

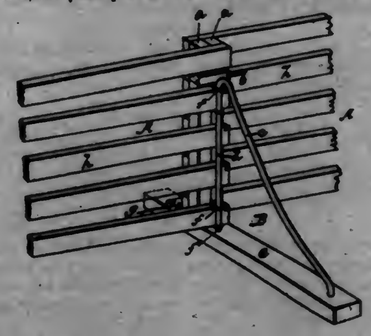
406,052. HOBBLE FOR ANIMALS. VINCENT A. MARSOLETTI, Simonsville, Tex. Filed Sept. 21, 1888. Serial No. 285,960. (No model.)



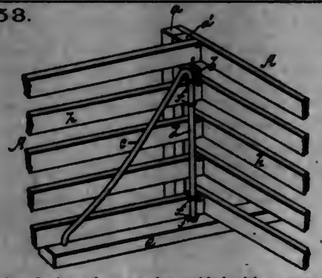
Claim.—The improved hobble herein described and shown, comprising the bars B C, the hinge D, secured to the under sides of said bars and connecting the adjacent ends of the same, the bar B having a slot G at its rear end for the girth the staple I near the front end of the bar B for the neck-strap, the strip K on the bar B, having the points L, the ring E, secured to the free end of the bar C, and the snap-hook carried by said ring and adapted to engage the halter-strap, as set forth.

406,053. PORTABLE FENCE. PEARRE M. MEHLER, Hagerstown, Md. Filed Feb. 7, 1889. Serial No. 299,973. (No model.)

Claim.—The within-described portable fence, comprising the panels A A, one panel provided with a post a, having the angular

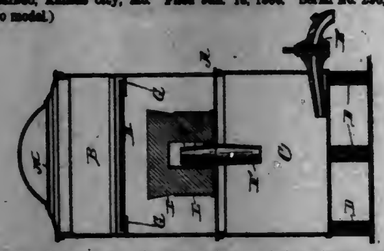


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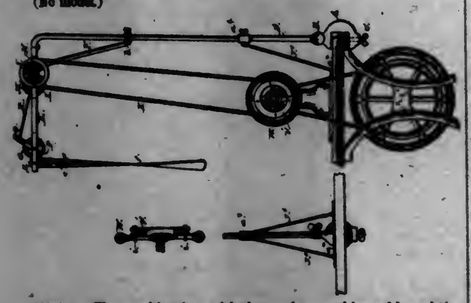
fastening-plate *b*, the other panel provided with a post *a'*, having staples *f f*, the angular brace B, formed of the single vertical portion *d* and the diagonal portion *c*, the sill *e*, and the fixed block *g*, the whole combined and arranged as shown, described, and for the purpose specified.

406,054. COMBINED WATER COOLER AND FILTER. LEWIS W. MOORE, Kansas City, Mo. Filed Jan. 16, 1889. Serial No. 296,689. (No model.)



Claim.—In a water-cooler, the casing consisting of two sections, the outlet-tube F, depending from the upper section, the feed-tube K, registering with the outlet-tube and projecting upward in the upper section, the filtering-block having a recess J fitting over the feed-tube, and the cap L, fitting closely around the lower portion of the filtering-block, all arranged and operating substantially as specified.

406,055. FAN ATTACHMENT. ARTHUR W. MCCOMAS and HENRY A. FITZHUGH, Austin, Tex. Filed May 16, 1887. Serial No. 238,413. (No model.)



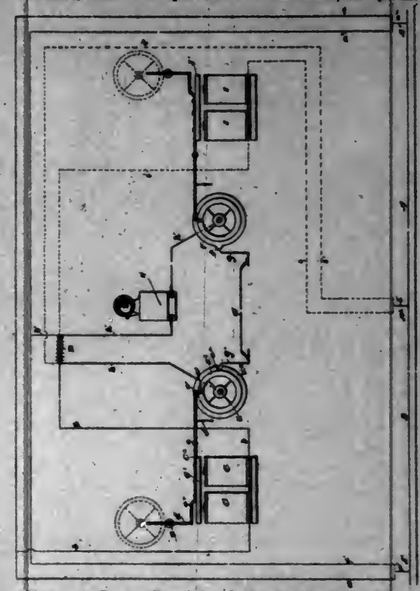
Claim.—The combination, with the sewing-machine table and the upright of the fan-supporting frame, of the triangular brace provided with a rubber-covered base hinged to a sleeve adjustably fitted upon said upright, as and for the purpose set forth.

406,056. SEAL FOR ENVELOPES. HUGH F. MCDERMOTT, Jersey City, N. J. Filed Nov. 23, 1886. Serial No. 202,092. (No model.)



Claim.—The herein-described seal formed of two disks A and C, the first mentioned being provided with projecting spurs tangentially inclined and at an angle to the face of the disk and the last mentioned being provided with inwardly-bent slotted ears and adapted to receive the spurs, as specified.

406,057. ELECTRIC SIGNALING DEVICE. JAMES C. O'NEIL, Cleveland, Ohio. Filed Sept. 20, 1886. Serial No. 214,770. (No model.)



Claim.—1. In a railroad-signal, the combination, with circuit-closers located in proximity to and on opposite sides of a crossing, a metallic circuit including both of said circuit-closers, and a battery of an electro-magnet in circuit with either of said circuit-closers, an armature, a mechanically-driven circuit-closer controlled by said magnet, a mechanically-driven circuit-breaker, an electro-magnet for controlling the same, a circuit including the mechanically-driven circuit closer and breaker, the battery and an alarm, a track circuit-closer at the crossing, and a circuit including the latter-named circuit-closer, the battery and electro-magnet of the mechanically-driven circuit-breaker, substantially as set forth.

2. In a railroad-signal, the combination, with electric circuits adapted to be made and broken by a passing train, electro-magnets, and armature-lever carrying armature, of mechanically-driven motors, a revoluble circuit-closer comprising two disks carried by a shaft of one of said motors, one of said disks being provided with a notch for the reception of one end of an armature-lever, and the other disk having a notch for the accommodation of a contact-spring, a revoluble circuit-breaker carried by a shaft of the other motor and comprising two disks, one of said disks having a notch for the reception of the end of an armature-lever, and a projection on the other disk to engage a contact-spring, and a circuit including both the revoluble circuit closer and breaker, the battery, and a signal, substantially as set forth.

406,058. FEEDER FOR POWER PRINTING-PRESSES. LEVI OSBER, Galveston, Tex. Filed Dec. 20, 1887. Serial No. 258,204. (Model.)

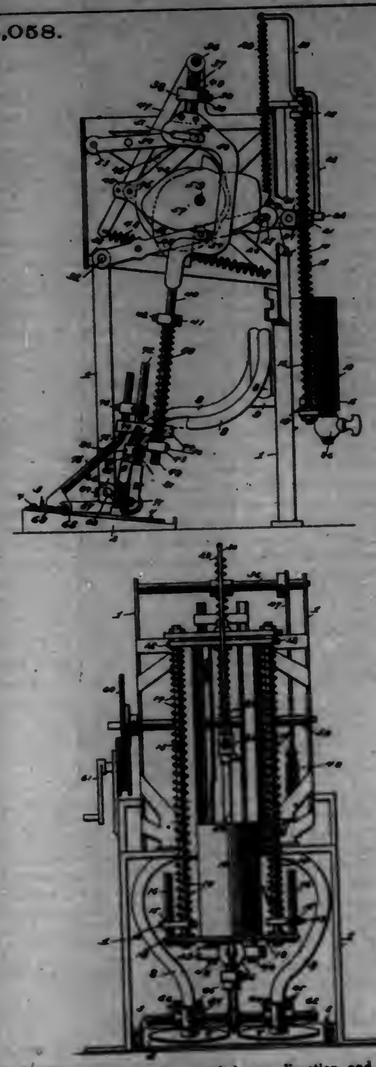
Claim.—1. In a feeding mechanism for power printing-presses, the combination, with a rod or support carrying the paper-holders, of a combined mechanism for raising the holder rod or support, swinging it horizontally, and lowering it, consisting of a horizontally-swinging lever suspended from a rock-shaft, and a reciprocating lever sliding in coupling-sleeves secured to the horizontally-swinging lever, cams for operating said levers in one direction, and reacting springs for moving them in the opposite direction, substantially as described.

2. The combination, with the pneumatic paper-holding tube, of a thin flexible disk on the lower end thereof to establish an air-tight connection between the tube and sheet by atmospheric pressure on its upper side when the suction in the tube begins, substantially as set forth.

3. A suction paper-holding disk for printing-presses, consisting of a disk of flexible material, concave in the center and flat at the edges, and having its connecting-tube projecting therein, substantially as described.

4. In a feeding-machine for power printing-presses, a mechanism for raising and lowering the paper-holders, consisting of a vertically-reciprocating lever connected to a pivoted lever by a sliding-pin connection, a cam moving in a slot and bearing against a friction-roller

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in the reciprocating lever to move it in one direction, and a retracting-spring, substantially as described.

5. In a feeding mechanism for power printing-presses, a mechanism for swinging the paper-holders horizontally and moving them vertically, consisting of a horizontally-swinging vertical lever, a rock-shaft having bearings in which said lever slides, a cam for moving said lever in one direction, and a reacting spring actuating the rock-shaft, substantially as described.

6. In a feeding mechanism for power printing-presses, a mechanism for swinging the paper-holders horizontally, consisting of a horizontally-swinging vertical lever suspended from a rock-shaft having an adjustable reacting spring, and a cam acting on a friction-roller in a slot in said horizontally-swinging lever, substantially as described.

7. In a feeding-machine for power printing-presses, the combination, with pneumatic holders, of a vacuum-producing mechanism consisting of a vacuum-pump, a cam, a lever forced down thereby and having a cam-joint connecting it with a sliding sleeve on the piston-rod, said cam-joint engaging the piston-rod when its lever is forced down, and reacting springs to raise the piston-rod, and a mechanism for raising and lowering the holders, consisting of a horizontally-swinging lever suspended from a rock-shaft, and a vertically-reciprocating lever sliding in sleeves coupling the levers together, cams for operating the levers in one direction, and reacting springs for moving them in the opposite direction, substantially as described.

8. In a feeding-machine for printing-presses, a turner mechanism for turning up the paper-holding disks, consisting of a frame provided with a horizontally-vibrating lever having a foot-piece and a rod carrying the paper-holding disks, and a stop on the frame to limit the upward movement of the forward end of the vibrating lever, substantially as described.

9. In a feeding-machine for printing-presses, a vacuum-producing device, consisting of a vacuum-pump, a cam, a lever having a cam-joint to engage the piston-rod and provided with reacting spring, and a sliding sleeve on the piston-rod and to which the said joint is connected, a projection on said sleeve adapted to strike against a stop, and reacting springs to raise the piston, substantially as described.

10. In a feeding-machine for power printing-presses, the combination, with a vertically-reciprocating lever operated by a cam and reacting spring, of a device for turning up the paper holders or disks, consisting of a vertical rod secured in a sleeve on the vertical reciprocating lever and moving in a sleeve secured to a bent arm pivoted to a foot-piece having a pivoted lever in which the holder-rod is mounted, and connected by a slotted joint with the vertical rod, substantially as described.

11. In a feeding-machine for power printing-presses, the combination, with a vertically-reciprocating lever operated by a cam and reacting spring, of a mechanism, substantially as described, for turning up the paper-holders, substantially as described.

12. In a feeding-machine for power printing-presses, a turner mechanism consisting of rod 62, lever 67, foot-piece 69, arm 76, sleeves 74 77, set-screws 75 78, rod 73, adjusting-sleeve 80, set-screw 81, and arm or rod 79, substantially as described.

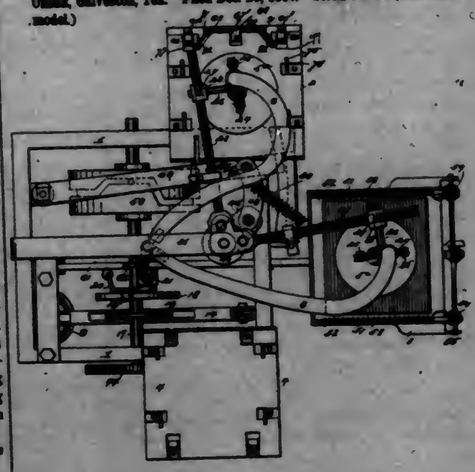
13. In a feeding-machine for printing-presses, the combination, with suction-disks having freely-movable connecting-tubes and mounted on horizontally-swinging vertical levers, one of which reciprocates in sleeves coupling the levers together, of a vacuum-pump, a cam, a lever connected with a sliding sleeve on the piston-rod by a cam-joint to engage the piston-rod, and having a reacting and releasing spring for raising the piston, and a stop for limiting the upward movement of the sleeve, substantially as described.

14. In a feeding-machine for printing-presses, a vacuum-producing and cut-off device consisting of cam 35, lever 28, operated thereby, cam-joint 25, spring 29, sleeve 21, to which the said joint is pivoted, projection 22 on the sleeve, stop 23, piston-rod 20, operated by the cam-joint and on which the sleeve slides, and piston 11, cylinder 10, cross-head 12, rods 13, and springs 14, substantially as described.

15. In a feeding-machine for printing-presses, a horizontally-swinging vertical lever suspended from a rock-shaft provided with a reacting spring adjustable thereon as to tension by means of a sleeve and set-screw, said swinging lever being actuated by a cam, substantially as described.

16. In a feeding-machine for power printing-presses, the combination of the shaft 59, driven by suitable power and having cams 35, 46, and 57, rock-shaft 36, having reacting spring, and arm 37, with sleeve 38, lever 40, secured to sleeves 38 and 41 and sliding in sleeve 43, lever 49, having a slotted connection with lever 54 and sliding in sleeves 38 41, and secured to the sleeve 43, and provided with a reacting spring 58, with a turner mechanism consisting of a rod secured in sleeve 43, carrying a sleeve, and a system of rods and levers, substantially as described, with a foot-piece, all connected to the paper-holder rod, as shown and described.

406,059. FEEDER FOR TREADLE PRINTING-PRESSES. LEVI OSBER, Galveston, Tex. Filed Dec. 20, 1887. Serial No. 258,203. (No model.)



Claim.—1. In a feeding mechanism for printing-presses, the combination, with the feed plate or table, the platen, and a receiver or holder, of two horizontally-oscillating vertically-movable paper-holders simultaneously actuated to respectively transfer a sheet from the platen to the receiver or holder, and from the feed plate or table to the platen, and mechanism, substantially as described, for so actuating the paper-holders, substantially as set forth.

2. The combination, with the feed plate or table, the platen, and the receiving or holding plate or table, of a vertical rock-shaft, two vertically-movable lifter-arms oscillated horizontally by said shaft, and a paper-holder on each lifter-arm, substantially as set forth.

3. The combination, with the feed plate or table, the platen, and the receiving or holding plate, of two horizontally-oscillating lifter-arms, a holder at the outer end of each arm, a vertical rock-shaft for oscillating said arms, and on which the arms move vertically, and a spring connecting said arms, substantially as set forth.

4. The combination, with the feed plate or table, the receiving or holding plate or table, and the platen between the two, of the horizontally-swinging lifter-arms having pneumatic holders at their outer ends, flexible pipes leading from said holders, a valved pipe with which they communicate, an air-exhaust pump for said pipe, levers for operating the pump and valve, and cams for operating said levers, substantially as set forth.

5. In a feeding mechanism for printing-presses, the combination, with a rotating cam and a lever and sliding sleeve operated by a cam, of vertically-reciprocating rods carrying lifter-arms on which paper-holders are mounted, substantially as described.

6. In a feeding mechanism for printing-presses, the combination, with the paper-holders, of a mechanism for swinging said holders laterally, consisting of a slotted cam, a horizontally-vibrating lever actuated thereby, a link, and crank-arm, and a rotating shaft carrying vertically-reciprocating rods on which the holder-arms are mounted, substantially as described.

7. In a feeding mechanism for printing-presses, the combination, with a combined mechanism for raising the paper-holding arms, swinging them laterally, and lowering them, consisting of a cam, a vertically-swinging lever, a sliding sleeve mounted on a rotating shaft, and vertically-sliding rods to which the holder-arms are attached raised by the sliding sleeve and lowered by reacting springs, of a slotted cam, a horizontally-vibrating lever actuated thereby, a pivoted link-connection, a crank-arm, and a rotating shaft on which the crank-arm is mounted, and which carry by means of sleeves the vertically-reciprocating rods and paper-holding arms, substantially as described.

8. The combination, with the platen and the feed and holding plates or tables at opposite sides of the same, and the two vertically-movable paper-holders spaced apart to correspond with the platen and plates, and horizontally-oscillating lifting-arms to which said paper-holders are secured, of paper-clamps at opposite sides of the platen, an operating-lever, connections between the lever and clamps, and a cam acting on said lever to open the clamps and allow the paper-holders to respectively remove and deposit a sheet from or on the platen, substantially as set forth.

9. In a feeding mechanism for printing-presses, a platen having a device to hold down the sheet when being printed, consisting of pivoted clamps, springs which hold the clamps against the paper, pulleys on the axes of the clamps, a cord operated by a cam, and a connecting-lever to open the clamps, substantially as described.

10. In a feeding mechanism for printing-presses, a feed-plate provided with adjustable brushes at its edge, whereby but one sheet may be lifted at a time, substantially as described.

11. In a feeding mechanism for printing-presses, a feed-plate having its edges provided with adjustable brushes and gage-blocks, substantially as described.

12. In a feeding mechanism for printing-presses, a feed-plate having a device for permitting the release of one sheet at a time, consisting of a plate secured to said feed-plate, having brushes projecting over the edge of the feed-plate, substantially as described.

13. In a feeding mechanism for printing-presses, the combination, with the feed-plate 2, having slots 73 and 77, of the plate 63, having slots 64 and 68, blocks 67, elastic blocks 67', bolts 69, nuts 69', rod 70, brushes 72, brush-clamps 71, blocks 65, elastic blocks 65', bolts 66, and nuts 66', substantially as described.

14. In a feeding mechanism for printing-presses, a feed-plate having straight and inclined slots on its edges, in combination with a plate having inclined brushes which fit in the inclined slots in the feed-plate and overlap it, substantially as described.

15. In a feeding mechanism for printing-presses, a feed-plate provided with adjustable brushes inclined to the edges of said feed-plate, substantially as described.

16. In a feeding mechanism for printing-presses, the combination, with suction-disks for holding the paper, of a vacuum and cut-off mechanism consisting of a cylinder and piston, a piston-rod having a cross-head, and reacting springs to move the piston up, a lever and actuating-cam to move the piston down, tubes connecting the suction-disks with a main tube communicating with the cylinder, and a stop-cock in the main tube, and actuating-cam and reacting spring to close and open the vacuum, substantially as described.

17. In a mechanism for raising and swinging laterally and lowering paper-holding clamp-arms in printing-press feeders, a vertical rotating rod, a vertically-sliding sleeve thereon, sleeves or blocks secured to the vertical rotating shaft, and vertically-sliding rods moving in the sleeves or block and resting upon or moved by the sliding sleeve, and carrying sleeves or blocks secured thereto and moving on the rotating shaft, with reacting springs which carry the sliding rods downward, substantially as described.

18. In a feeding mechanism for printing-presses, the combination, with the lifter-arms, of the suction-disks adjustable longitudinally thereon and at an angle thereto, substantially as set forth.

19. In a feeding mechanism for printing-presses, the combination, with the arms for holding the suction-disks, of the disks having a projecting arm, adjusting-block, and set-screw movable on the disk-holding arm, substantially as described.

20. The combination, with the feed-plate having one edge recessed or notched, of a sheet-separating brush projecting into said notch, substantially as set forth.

21. A feeder for printing-presses comprising the frame, the feed-plate, the platen, and the receiving or holding plate, a vertical rock shaft or rod, lifter-arms connected therewith at an angle to each other and movable vertically, suction-disks on said arms, tubes leading therefrom, a valved tube into which said tubes lead, and a piston and cylinder, paper-clamps at opposite sides of the platen, a transverse shaft journaled in the frame and having five fixed cams, levers acted upon by said cams and connected, respectively, with the piston, the clamps, the pipe-valve, the vertical rock shaft or rod, and the vertically-movable lifter-arms, substantially as set forth.

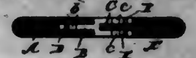
22. The combination, with a vertical rock shaft or rod, of a lifter-arm oscillated horizontally thereby and movable vertically thereon, and a suction paper-holder on said arm, substantially as set forth.

406,060. DETACHABLE PIPE-COUPLING. ISAAC R. POTTS, Columbus, Ohio. Filed Mar. 23, 1889. Serial No. 304,525. (No model.)



Claim.—In a pipe-coupling, the combination, with the part *c*, formed with screw-threaded outer end *d* and tapered inner end *g*, of the coupling-nut *f*, received upon said part *c* and formed with an interior taper or inclined seat *h*, and narrow collar *i*, which collar fits wholly within the nut *f* upon the seat *h* thereof and is split at an angle longitudinally of its length, as at *i'*, and is formed with a cone-shaped exterior corresponding to the taper of the said seat *h* of the nut *f* and an interior taper to correspond with the taper of the end *g* of the part *c*, as described, for the purposes specified.

406,061. NOSE-RING FOR CATTLE. EDMUND K. REA, Cowgill, Mo. Filed Feb. 7, 1889. Serial No. 299,000. (No model.)



Claim.—1. The nose-ring herein described, the same comprising the section A, bifurcated at its free end and provided with the transverse pin D, passing through the section at the base of and being exposed within said bifurcation, and the section A', provided with a tongue C at its free end, said tongue having a notch E in its inner face, adapted to engage said pin, said bifurcated ends and said tongue being beveled on their inner sides and carried into sharp points at the periphery of the ring, as and for the purpose set forth.

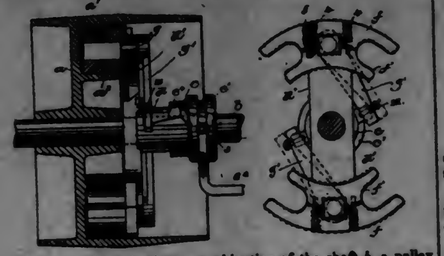
2. A nose-ring comprising the section A, bifurcated at its free end and provided with the notches G G and the transverse pin D, and the section A', provided with a tongue to fit in the bifurcation of the other section and having a notch E to engage the pin D, the section A' being further provided on opposite sides of its tongue with the inclined spurs F F to engage the notches G G in the end of the section A, all constructed and arranged substantially as specified.

406,062. DISINFECTANT. ISAIAH L. ROGERS and HENRY L. ROGERS, Brooklyn, N. Y. Filed Mar. 8, 1889. Serial No. 302,632. (No specimens.)

Claim.—1. As a new article of manufacture, a disinfectant-block composed of plaster-of-paris and permanganate of potash, substantially as described.

2. As a new article of manufacture, a disinfectant composed of plaster-of-paris and asbestus and a permanganate, substantially as described.

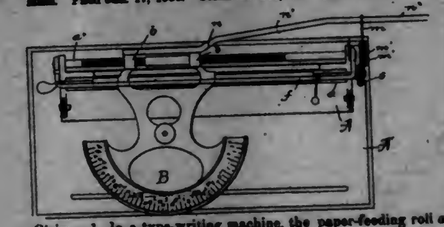
406,063. FRICTION-CLUTCH PULLEY. GEORGE L. ROLLINS, Bridgewater, Mass. Filed Feb. 7, 1888. Serial No. 263,353. (No model.)



Claim.—1. In a clutch, the combination of the shaft *b*, a pulley loosely mounted thereon having a peripheral and a concentric internal flange, a guide-arm, and a pair of normally contiguous friction-plates sliding thereon, combined with an oscillating shaft *g*, interposed between the said friction-plates, one of the diameters of which is greater than another, an arm *g'*, fixed to said shaft *g* at a right angle, and thereby moving in a plane at right angles to the shaft *b*, the longitudinally-sliding sleeve, and the inclined-surfaced block thereon for moving said arm *g'* to oscillate the shaft *g* and thereby separate the friction-plates, all substantially as described.

2. In a clutch, the shaft *b*, the flanged pulley loose thereon, the guide-arms, and friction-plates sliding thereon, and the quadrangular oscillating shafts *g* for moving the said friction-plates, said shaft lying parallel with the shaft *b*, combined with the arms *g'*, fixed at right angles to the shafts *g* and having the adjusting-screws 22, and the longitudinally-sliding sleeve having the inclined-surfaced blocks thereon for moving said arms *g'*, all substantially as and for the purposes specified.

406,064. TYPE-WRITING MACHINE. IRA A. SALMON, Boston, Mass. Filed Jan. 17, 1888. Serial No. 260,972. (No model.)



Claim.—1. In a type-writing machine, the paper-feeding roll *a*, ratchet-wheel 6, fixed thereon, loose disk 5, mounted upon said wheel, the guide-rod *a'*, parallel to said roll, the longitudinally-sliding index-plate mounted thereon, and the inclined rod *n'*, attached to said index-plate, combined with the hooked arm *m*, through which said rod *n'* loosely passes, and guide-plates *m'* for said arm, longitudinal movement of the index-plate and rod *n'* actuating the arm *m* to rotate the paper-feeding roll intermittingly, substantially as described.

2. In a type-writing machine, the paper-feeding roll, ratchet-wheels 6, fixed thereto, and disk 5, mounted loosely on said wheel, and having one or more pins 4 upon one side and a spring-pawl upon its other side to engage the said ratchet-wheel, combined with the arm or pawl *m* to engage the said pins to rotate the roll in one direction, and with means, substantially as described, controlled by the movement of the index-plate, for moving the said arm or pawl *m*, substantially as described.

3. In a type-writing machine, the paper-feeding roll, the disk 5, carried by it, having several pins, as 4, located at different distances from the center, combined with the arm *m* and means, substantially as described, controlled by the index-plate, for moving the said arm *m* to effect the rotation of the said roll, substantially as described.

4. In a type-writing machine, the paper-feeding roll *a*, the disk 5, having several pins 4 at different distances from the center, and arm *m*, adapted to engage the pins upon the disk 5 to rotate the paper-feeding roll *a* different distances, as described, combined with the inclined rod *n*, for moving the said arm, substantially as described.

5. In a type-writing machine, the paper-feeding roll *a*, the plate B, the arm *m*, and inclined rod, combined with the fulcrum-pin 2, upon which the arm may rock when the plate B is tipped back, substantially as and for the purpose set forth.

406,065. TAPE-MEASURE. EDWARD G. SOLTMANN, New York, N. Y. Filed Apr. 22, 1889. Serial No. 308,057. (No model.)

Claim.—1. In a tape-measure, the combination, with the reel-handle, of a movable finger-piece, substantially as described.

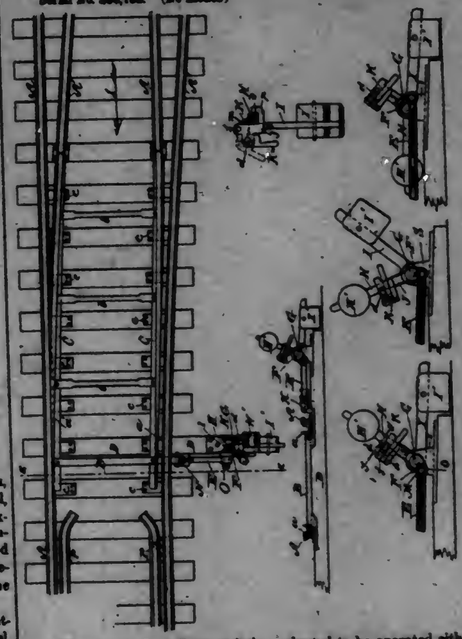


2. In a tape-measure, the combination, with the reel-handle, of an adjustable finger-piece and means for rigidly securing the same to the reel-handle, substantially as described.

3. In a tape-measure, the combination, with the reel-handle, of a finger-piece provided with a longitudinal slot and screws for securing the finger-piece to the reel-handle, substantially as described.

4. In a tape-measure, the combination, with the reel-handle, of a movable finger-piece and means for rigidly securing the same to the reel-handle, substantially as described.

406,066. RAILROAD-SWITCH. WILLIAM SPILMAN, Newark, N. J., assignor to C. Morris Ashworth, same place. Filed Sept. 20, 1888. Serial No. 286,732. (No model.)



Claim.—1. In railway-switches adapted to be operated either automatically by the flange of a car-wheel or by hand, the combination of the switch-rails with a switch-stand, consisting of two weighted levers engaging and disengaging with each other, one of which, acting upon the switch-rails, may be operated by hand, and the other, serving to retain the switch-rails constantly in one position, being operated sufficiently by hand or by the flange of a car-wheel to allow the cars to pass, substantially as herein described.

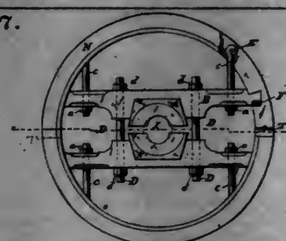
2. In a railroad-switch adapted to be operated automatically by the flange of a car-wheel or by hand, a weighted lever composed of two arms I and J, adapted to be engaged or disengaged with the weighted lever H by means of the catch K, attached to the arm J of the lever I, as and for the purposes set forth.

3. In a railroad-switch adapted to be operated either automatically by the flange of a car-wheel or by hand, the combination of the switch-rails *a a'* and shift-bar B with the connecting-rod E, crank F, rod G, and levers H and I, to the arm J of which lever I is attached the catch K, adapted to be engaged and disengaged with the lever H, and thus connect and disconnect said levers H and I, substantially as and for the purposes set forth.

406,067. WOOD SPLIT PULLEY. DAVID A. SPRINKLE, Pennsborough, W. Va. Filed Jan. 17, 1889. Serial No. 296,693. (Model.)

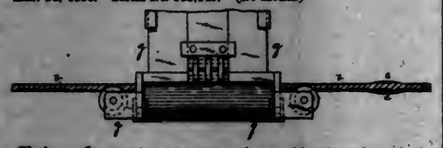
Claim.—The herein shown and described pulley, composed of two rim-sections which are joined at their ends by a horizontal and

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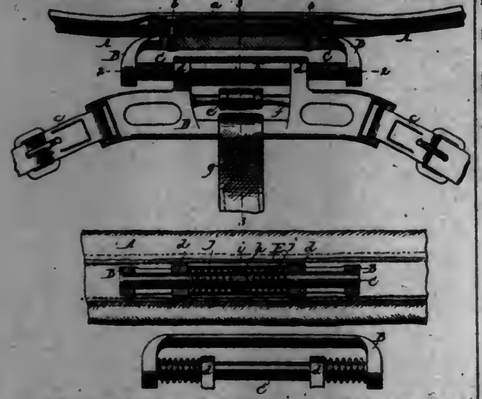
vertical tongue and groove, each rim-section comprising a plurality of rings that are joined at their ends by dowel-blocks, the two arms fastened to the said rim-sections by bolts and dovetail tenons and cavities, said arms having notches midway of their ends with sloping sides, the hub composed of halves, each half fitting in said notches and having sloping sides, and the bolts passing through the said arms for drawing them and the said rim-sections together, substantially as and for the purpose described.

406,068. WIRE CABLE. DAVID TUFTS, Pittsburg, Pa. Filed Mar. 28, 1888. Serial No. 305,149. (No model.)



Claim.—In traction apparatus, the combination of a gripping device and a traction-cable whose diameter is made to enlarge and diminish at recurring intervals in its length, substantially as and for the purposes set forth.

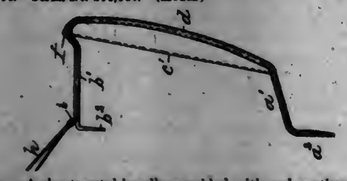
406,069. BREAST-COLLAR IRON. GARRETT VAN WAGENEN, Monroe, Wis. Filed Mar. 25, 1889. Serial No. 304,735. (No model.)



Claim.—1. The yoke B, in combination with a casting D, provided with ears *d*, rod C, and springs on the rod, substantially as and for the purposes specified.

2. The yoke B, in combination with a casting D, provided with ears *d*, rod C, coiled springs *j*, encircling the rod, collar A secured to the rod C, and case E, substantially as and for the purposes specified.

406,070. HANDLE. GEORGE VOGL and JOHN HESS, Newark, assignors of one-third to Andrew H. Fisher, Jersey City, N. J. Filed Mar. 22, 1888. Serial No. 268,067. (Model.)

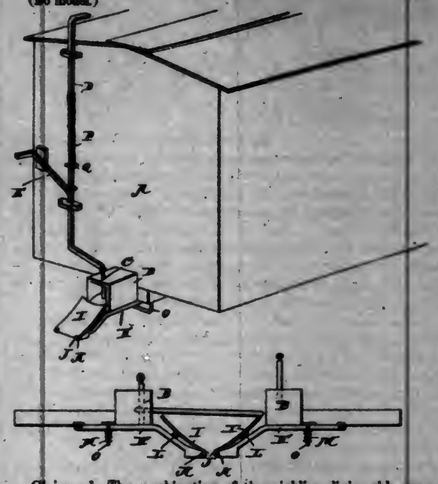


Claim.—A sheet-metal handle provided with end portions *a'* and *b'* and intermediate open-channeled portion *c'*, with the portion *b'* bent acutely toward the end *a'* and outward from the portion *c'* to form the thumb-piece *f*, substantially as shown and described.

406,071. HAIR DYE AND TONIC. EDWARD A. VOGT, Frostburg, Md. Filed Mar. 16, 1889. Serial No. 303,860. (No specimens.)

Claim.—A compound hair dye and invigorator, consisting of the fluid extracts of green or unripe walnuts and fresh burdock-roots mixed with glycerole of Spanish pepper, in about the proportions set forth.

406,072. CAR-COUPLING. THOMAS H. WASH and NATHAN R. H. WASH, Medina County, Tex. Filed Mar. 18, 1889. Serial No. 303,702. (No model.)



Claim.—1. The combination of the yielding link-guide support and the yielding link-guide mounted on the outer end of the same, as set forth.

2. The combination of the link-guide support and the curved link-guide pivoted to the front end of said support, as set forth.

3. The combination of the yielding link-guide support, the link-guide pivoted to the front end of said support, and the spring arranged between the guide and the support, as set forth.

4. The combination of the link-guide support pivoted to the under side of the car, the link-guide pivoted to the front end of the support, the spring arranged between the guide and the support, the yoke secured to the car, and the spring supported by said yoke and bearing against the link-guide support, as specified.

406,073. SAND-BAND. FRANK WERNER and RICHARD OSBORNE, Minneapolis, Minn. Filed Apr. 8, 1889. Serial No. 306,418. (No model.)



Claim.—1. In a wheel-hub, the combination, with the end hub-bands 6 and 7, having their outer surface screw-threaded, of the bands 8 and 9, having their inner surface screw-threaded and adapted to surround and engage with the bands 6 and 7, respectively, the band 8 having a closed end and the band 9 a flaring and open end, and both bands formed with the recesses 15 to form waste-oil receptacles, substantially as described.

2. The combination, with a wheel-hub, of the screw-threaded bands 6 and 7, provided with the spurs 10, of the closed screw-threaded band 8, adapted to fit upon and engage with the band 6 and having the flange 13 and the head 12 inclosed by said band, and the screw-threaded band 9, adapted to fit upon and engage with the band 7 and provided with the shoulder 17 and the slots 16, substantially as described.

3. The combination, with the hub, of the band 7, secured thereto and exteriorly screw-threaded, and the band 9, interiorly threaded to fit the threads of the band 7 and formed with an oil-space 15, and a shoulder 17 between said space and the end of the band, the portion of the band from said shoulder outward being flaring, substantially as and for the purposes set forth.

406,074. NUT-LOCK. SAMUEL WEBBER, WILLIAM G. HOLT, and PALMER B. GILBERT, Cranville, Wis. Filed Sept. 5, 1888. Serial No. 284,677. (No model.)

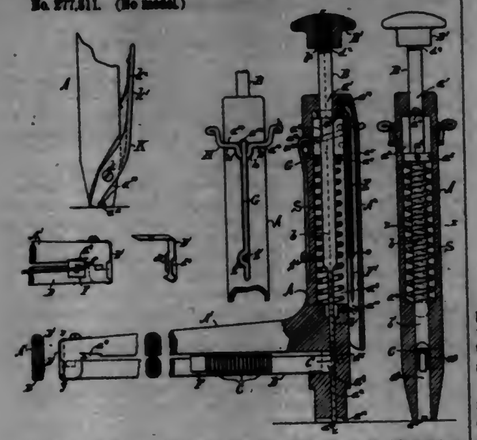
Claim.—1. In a nut-lock, the combination, with the threaded bolt A, provided with a longitudinal groove *a'*, of the nut B, provided upon

406,074.



each of its sides with a groove *b*, the cap C, recessed to adapt the same to fit over the nut, said cap being provided with a central perforation for the passage of the bolt, a tongue or tenon *c'*, adapted to fit within the groove *a'* of the bolt, and two apertures *c²*, which, when said cap is placed over the nut, align with one of the grooves *b*, and the locking pin or key D, adapted to pass through the aligned groove and openings, for the purpose specified.

406,075. STAPLE-DRIVER. ALBERT WHITE, Lowell, Mass., assignor to Frederick Taylor, same place. Filed June 21, 1888. Serial No. 277,511. (No model.)



Claim.—1. The combination of the plunger provided with notches, the spring to return the same, and a spring-pawl engaging said notches to prevent the return of said plunger to its starting-point, as and for the purpose specified.

2. The combination of the frame provided with a staple-guiding groove and with a hole opening laterally into said groove to admit staples, the plunger provided with a collar, a spring surrounding said plunger within a central cavity, with which said frame is provided, and compressed between said collar and a shoulder in said central cavity, said plunger being provided with notches, and a spring-pawl to engage said notches and prevent said plunger when forced downward from rising above said hole and admitting a second staple below said plunger, as and for the purpose specified.

3. The combination of the frame provided with a staple-guiding groove and with a hole opening laterally into said groove to admit staples, the plunger provided with a collar, a spring surrounding said plunger within a central cavity, with which said frame is provided, and compressed between said collar and a shoulder in said central cavity, said plunger being provided with notches, a spring-pawl to engage said notches and prevent said plunger when forced downward from rising above said hole and admitting a second staple below said plunger, and a lever turning on said frame to force said pawl out of said notches to allow said plunger to be raised, as and for the purpose specified.

4. The combination of the frame, the staple-carrying bar removable therefrom, and the spring-impelled follower arranged to travel on said bar, said frame having an arm arranged above said staple-carrying bar and provided with a notch to secure said follower to said frame while said staple-carrying bar is removed therefrom and to hold said follower in a position to receive said staple-carrying bar when said bar is replaced in said frame, as and for the purpose specified.

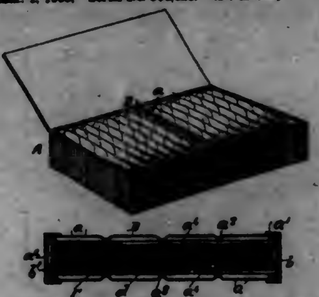
5. The combination of the frame, the plunger movable therein, a spring attached to said frame and provided with a loop, a cord one end of which is attached to said frame and the other end of which is attached to a follower, said follower, and a staple-carrying bar on which said follower travels, said cord passing through said loop to draw said follower on said bar toward said plunger to feed staples on said bar under said plunger, as and for the purpose specified.

6. The combination of the frame provided with a horizontal arm and with a hole, a spring secured to the free end of said arm, and a staple-carrying bar adapted to be engaged by said hole and said spring and to be held in place thereby, as and for the purpose specified.

7. The combination of the frame provided with a horizontal arm and with a vertical staple-guiding groove and with a hole opening into said groove, a staple-carrying bar having the top of its inner end beveled off, said inner end being adapted to enter said hole and to be held centrally therein by staples on said bar, a spring secured to the free end of said horizontal arm to engage the outer end of said staple-carrying bar, and a plunger moving in said frame at right angles to said staple-carrying bar, as and for the purpose specified.

8. In a staple-driver, the combination of the frame provided with a groove to receive the wire to be secured by staples, and a gripping-lever pivoted on said frame within a recess formed in said frame to grasp a wire between said lever and the side of said groove, as and for the purpose specified.

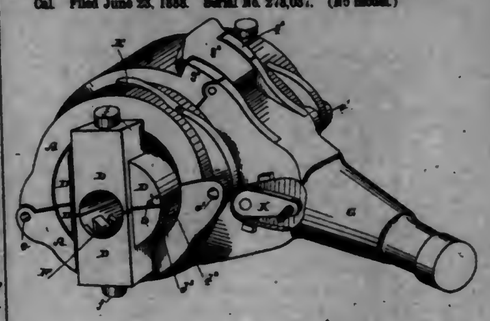
406,076. CIGAR-MOISTENER. CHARLES A. ALLEN, Chicago, Ill. Filed Mar. 1, 1889. Serial No. 301,689. (No model.)



Claim.—1. In a cigar-moistener, the combination, with the outer perforated tube provided interiorly with annular corrugations, of the wire-gauze tube removably inserted in and inclosed by said outer tube, the gauze tube being filled with an absorbent material, substantially as and for the purpose set forth.

2. In a cigar-moistener, the combination, with the outer perforated tube, provided interiorly with annular corrugations and capped or closed at both ends, of the wire-gauze tube capped at one end, as described, and loosely inserted in the outer tube, one end of the gauze tube being rigidly attached to the corresponding cap end of the outer tube, so as to be removable therewith, substantially as and for the purpose set forth.

406,077. PIPE-CUTTER. ADOLPH V. ANDERSON, San Francisco, Cal. Filed June 23, 1888. Serial No. 278,037. (No model.)



Claim.—1. An improved pipe-cutter consisting of the combination of a two-part hinged stock having the groove a^4 formed in one end thereof, the two-part bearing-ring fixed in said grooved part, said bearing-ring having one of its sections or parts provided with a hook *d*, adapted to fit a slot in the adjoining section, and the cutting-bit and opposing guide-jaw in the opposite end of the stock, and the set-screws for adjusting the jaws, as herein described.

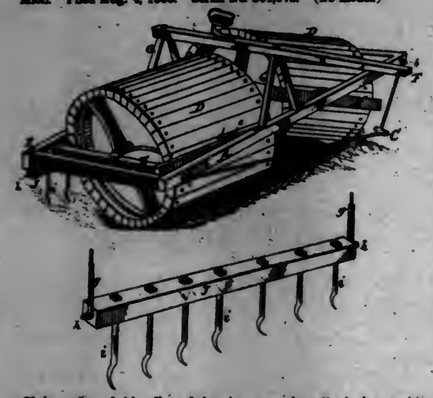
2. An improved pipe-cutter consisting of the combination of a two-part hinged stock, the adjustable jaws seated in one end of the stock, and a groove a^3, formed in the opposite end of the stock, a two-part separable bearing-ring fitted in the grooved end of the stock, the V-shaped jaws adjustably secured in the bearing-ring, and the spring-actuated catches E, bearing against the section of the bearing-ring, as herein described.

3. An improved pipe-cutter consisting of the combination of a two-part hinged stock carrying at one end the adjustable jaws B and C, and having a groove a^3 formed in the opposite end, the two-part separable bearing-ring secured in said groove and provided with adjustable V-shaped jaws F, said ring having one of its sections provided

with the hook *d*, and the opposite section formed with an engaging-slot *d'*, and both sections having the sockets *d²*, and the spring-actuated catches E, secured to the stock and working through slots therein, whereby they engage the sockets *d²*, substantially as herein described.

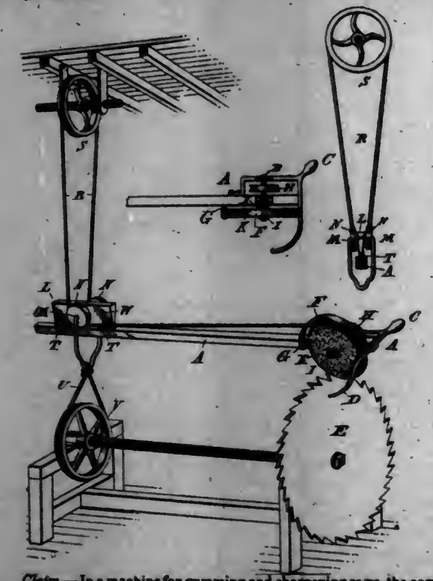
4. An improved pipe-cutter consisting of the combination of a two-part hinged stock having at one end the groove *a²*, a two-part ring D, fitted in said grooves and provided with adjustable jaws F, the adjustable jaws B and C in the opposite end of the stock, the spring-actuated catches bearing against the sections of the ring, the operating-handle with its jointed strap pivoting it to the stock, the pawls in the handle engaging the ratchet-teeth of the stock, and cam for governing the pawls, all constructed and arranged to operate as herein described.

406,078. FIELD-ROLLER. ALBERT G. BARTON, Three Rivers, Mich. Filed Aug. 4, 1888. Serial No. 281,972. (No model.)



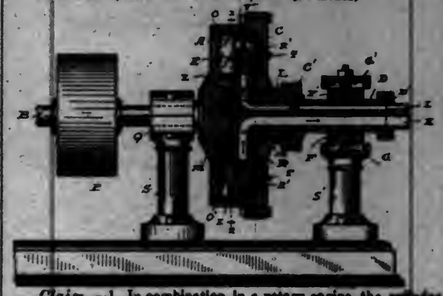
Claim.—In a field-roller of the character described, the combination, with the frame of the machine, of the bar hung therefrom by eyebolts and provided with hook-pointed scratching-teeth, substantially as specified.

406,079. SAW GUMMING AND SHARPENING MACHINE. HENRY T. BAKER, Decaturville, Ohio. Filed Jan. 12, 1889. Serial No. 296,904. (No model.)



Claim.—In a machine for gumming and sharpening saws, the combination, with frame A, having handle C, rod D, fender F, and hinged plate I, attached thereto, of the grinding-disk journaled in said frame, and the pulleys, and endless rope, all arranged and operating substantially as shown and described.

406,080. ROTARY ENGINE. JOSEPH J. BENTLEY, Galena, Ill. Filed Feb. 18, 1889. Serial No. 300,262. (No model.)

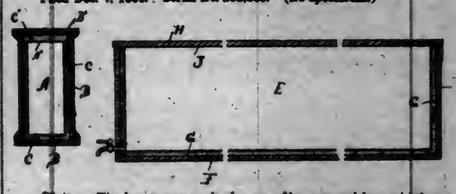


Claim.—1. In combination in a rotary engine, the cylinder, a suitable abutment within the cylinder mounted on a shaft normally in line with the axis of said cylinder, a collar on said shaft at a suitable distance from that end of said shaft which is within the cylinder, and bolts pressing through the abutment and through the aforesaid collar, substantially as described.

2. In combination with the cylinder of a rotary engine, a suitable abutment within said cylinder, the shaft on which said abutment is mounted, and the spring-bearing for said shaft, together with the hinged valve-pistons turning on axes at one end of the cylinder and arranged radially thereto, together with a face-plate at the other end of the cylinder adjustable in the direction of the axis of said cylinder, and at any slight angle to said axis, substantially as described.

3. In a rotary engine, the combination of the cylinder, the spring-pressed face-plate, the abutment within said cylinder, the shaft on which said abutment is mounted, and the bearing for said shaft, within which the shaft is automatically adjustable in the line of its axis, substantially as described.

406,081. ART OF MAKING BUTTER. JOHN BOYD, Elmhurst, Ill. Filed Dec. 7, 1888. Serial No. 292,883. (No specimens.)



Claim.—The improvement in the art of butter-making, which consists, first, in preparing a starter from skimmed milk by inclosing the same at a proper temperature in a vessel with non-conducting walls; secondly, mixing the starter so prepared in small proportion with cream, and inclosing the mixture at a proper temperature, as indicated, in a non-conducting vat, permitting the same to ripen therein, and, lastly, churning the ripened cream into butter, substantially as specified.

406,082. COMBINED STALK-CUTTER AND RAKE. ARCHAMBLE T. BOYKIN, Odee, Tex. Filed Sept. 3, 1888. Serial No. 284,590. (No model.)

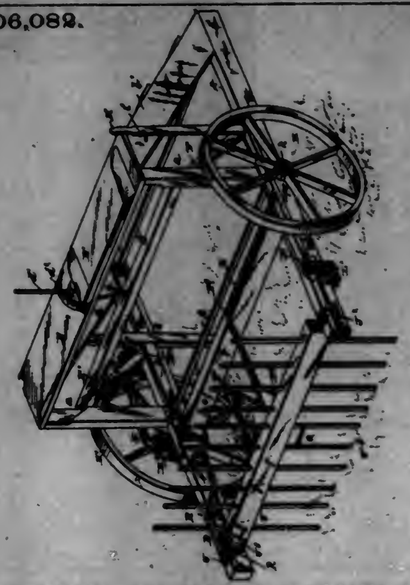
Claim.—1. The combination, with the main frame, the seat, a rotary stalk-cutter, and the frame therefor, of the drum journaled to the seat and provided with a handle, a cord attached at one end to said drum and at the other to the cutter-frame, and a segmental rack on the seat engaging said handle, substantially as shown and described.

2. The combination, with a main frame, of a rotary rake journaled thereto, the outer end of one of the rake-journals being provided with an arm fixed thereto, a sliding bar, and means for moving said bar in and out of the rotary path of the arm aforesaid, substantially as described.

3. The combination, with a main frame, of a rotary rake journaled thereto, the outer end of one of the rake-journals being provided with an arm fixed thereto, a sliding bar, a rock-shaft provided on one end with a crank in engagement with the sliding bar and provided on the other end with a right-angled weighted extension, said weighted extension lying in front of the path of the rake, the sliding bar being movable in and out of the path of the arm aforesaid, substantially as described.

4. The combination, with a main frame, of a rotary rake journaled thereto, the outer end of one of the rake-journals being provided with an arm fixed thereto, a sliding bar having a downwardly-extending front piece on its rear end, as specified, a rock-shaft provided on one end with a crank in engagement with the sliding bar

406,082.



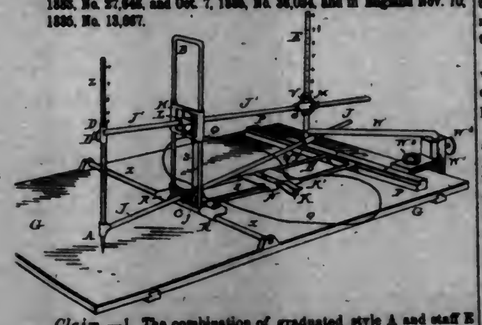
aforesaid, the other end of said shaft being provided with a right-angled rearwardly-extending weighted arm, the sliding bar being movable in and out of the path of the sliding bar aforesaid, substantially as described.

5. The combination, with a main frame, of a rotary rake journaled thereto, the outer end of one of the rake-journals being provided with an arm fixed thereto, a sliding bar having a downwardly-extending front piece on its rear end, as specified, a rock-shaft provided on one end with a crank in engagement with the sliding bar aforesaid, the other end of said shaft being provided with a right-angled rearwardly-extending weighted arm, the sliding bar being movable in and out of the path of the sliding bar aforesaid, the rake being provided with loops, the rotary path of said loops lying in the path of the weighted arm aforesaid, substantially as described.

6. The combination, with the main frame, of a rotary rake, means for alternately retarding the movement of the rake and releasing the same, and a spring-actuated rod R, attached to the inner side of the main frame, with one end bearing on the under side of the rake-beam for supporting the rake, substantially as described, and for the purpose set forth.

7. In a device for the purpose described, a rotary stalk-cutter, consisting of a frame in the form of a double cross, and cross-blades on the outer ends of said crosses, said blades being formed with their ends bent at right angles to the length of the body of the blade, and said ends being in turn bent and screw-threaded and screwed into the face of the arms of the crosses, substantially as described.

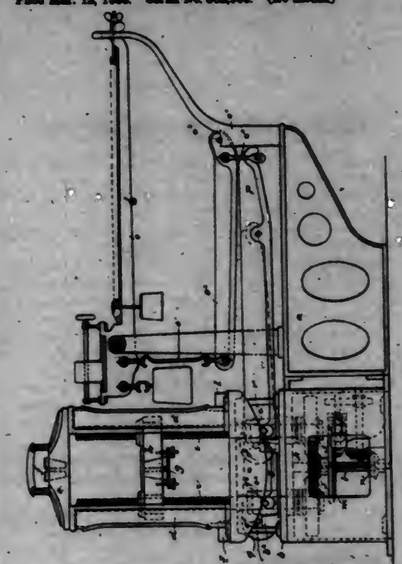
406,083. DEVICE FOR DRAWING IN PERSPECTIVE. ALEXANDER BRIX, Frankfort-on-the-Main, Prussia, Germany. Filed Dec. 31, 1885. Serial No. 187,298. (No model.) Patented in Germany Oct. 12, 1883, No. 27,646, and Oct. 7, 1885, No. 36,034, and in England Nov. 10, 1885, No. 13,067.



Claim.—1. The combination of graduated style A and staff E with laterally-movable frame B B', with plate N, movable backward and forward on said frame, drawing-point K, carried by said plate, slide H, movable up and down on said frame, cord S, connecting said frame to said plate, spring Q, drawing said plate away from style A, rods J and J', and sleeves connecting each of said rods to said style and staff, the latter rod being also double-jointed to said slide, adjustable on said style and freely movable on said staff, substantially as set forth.

2. In a perspectograph, a graduated staff E, which is adjustable vertically and laterally, but held stationary after adjustment, in combination with its adjusting devices, a graduated style A, which is freely movable, a rod J', adjustable at one end on said style and freely movable at the other on said staff, a drawing-point K, and intermediate devices connecting it to an attachment of said rod, a spring Q, drawing said point away from said style, a frame B B', connected to said rod and supporting said point, and a transverse rod on which said frame is movable laterally, substantially as set forth.

406,084. TESTING-MACHINE. CHARLES R. DUDLEY, Philadelphia, Pa., assignor to Henry R. Richie and Frederick A. Richie, same place. Filed Mar. 12, 1888. Serial No. 302,900. (No model.)



Claim.—1. In a testing-machine, the combination, with the screws, the table, lugs on said table, and the bed or frame and lugs thereon, of two levers of equal or substantially equal length arranged one within the other, and having pairs of knife-edges co-operating with lugs on the table and on the bed and arranged on opposite sides of a central longitudinal line relatively to the machine and in planes coincident with the axes of the said screws, substantially as described.

2. In a testing-machine, the combination, with the screws, the table, and the bed or frame, and lugs on said table and bed, of two levers of equal or substantially equal length arranged one within the other, and having pairs of knife-edges arranged in a plane common to all and on opposite sides of a central longitudinal line relatively to the machine and in planes coincident with the axes of the said screws and co-operating with the lugs on the table and on the bed, substantially as described.

3. In a testing-machine, the bed and a movable table, combined with interposed levers of substantially equal length for supporting the said table, one of said levers being fulcrumed within the other and projecting beyond it, substantially as described.

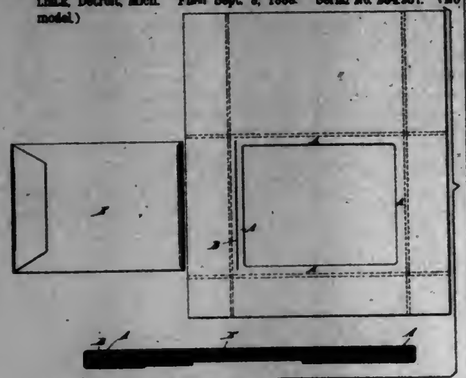
4. In a testing-machine, the bed or frame, screws mounted therein, and a movable table, combined with levers interposed between the bed and the table, and having pivot-edges disposed on opposite sides of a line drawn through the longitudinal center of the machine, and having those pivot-edges which co-operate directly with the table arranged in planes coincident with the axes of the said screws, substantially as described.

5. In a testing-machine, a bed or frame and a movable table, combined with pistons rigidly secured to the bed and rising above the table, and cylinders fitted air-tight to said pistons and loosely placed upon the table, whereby the table is cushioned against recoil under sudden rupture of the specimen, substantially as described.

6. In a testing-machine, a bed or frame and a movable table, combined with pistons rigidly secured to the bed and rising above the

table, and cylinders fitted air-tight to said pistons and loosely placed upon the table and provided with escape-valves, substantially as described.

406,085. PHOTOGRAPHIC-PLATE HOLDER. GEORGE H. CARLILE, Detroit, Mich. Filed Sept. 3, 1888. Serial No. 284,967. (No model.)

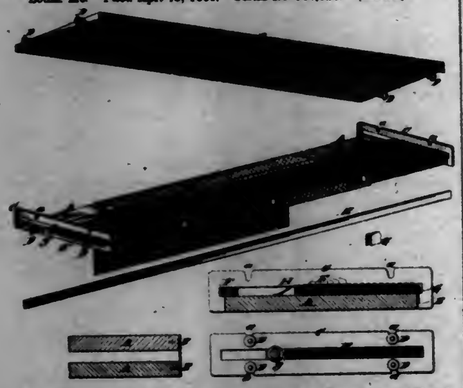


Claim.—1. An envelope for photographic dry plates made of material impervious to actinic rays, having one side cut away to form an opening nearly as large as the plate, and having a slit near one end through the portion of the side remaining of the cut-away side for the introduction of a covering-piece, and combined with said covering-piece, substantially as and for the purposes described.

2. The combination of an envelope made of material impervious to actinic rays, having one side cut away to form an opening through which to make exposure of the inclosed plate, a covering-piece arranged to cover said opening, and a case to hold one or more of said combined envelopes and covering-pieces, the said case having a slide-covered opening in front and a slide-covered opening at the side for the insertion of the combined envelope and covering-piece.

3. The combination of an envelope made of material impervious to actinic rays, having one side cut away to form an opening through which to make exposure of the inclosed plate, a covering-piece arranged to cover said opening, and a case to hold one or more of said combined envelopes and covering-pieces, the said case having a slide-covered opening in front and an opening at the side, substantially as and for the purpose described.

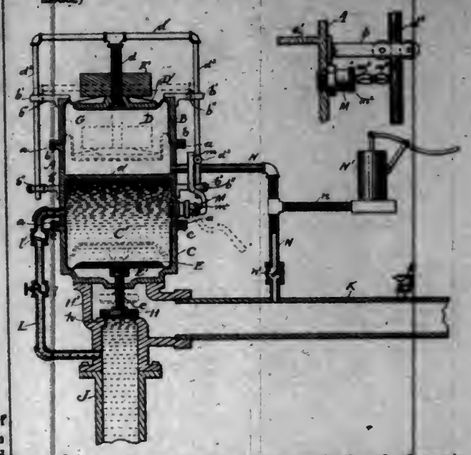
406,086. PLAITING APPARATUS. MATTIE E. CARTWRIGHT, St. Louis, Mo. Filed Apr. 13, 1889. Serial No. 307,126. (Model.)



Claim.—1. In a plaiting-machine, thin metallic plaiting-strips, in combination with a base-board having a binding-strip on one edge, slotted retaining-plates on the ends of the base-board to secure and retain the plaiting-strips, and an adjustable clamp-bar working on and lengthwise of the base-board, all substantially as described.

2. In a plaiting-machine, thin metallic plaiting-strips, in combination with two base-boards of exactly similar size and construction, each with a binding-strip on a corresponding edge, slotted retaining-plates, means of securing the retaining-plates to or releasing them from the ends of both or either base-board whenever desired, and an adjustable clamp-bar working in the slot of the retaining-plates lengthwise of the base-board, all substantially as described, and for the purpose specified.

406,087. AUTOMATIC VALVE. JOSEPH CLAPP, Evanston, Ill., assignor to the Clapp Automatic Fire-Extinguisher Company, of Illinois. Filed Aug. 25, 1888. Renewed May 17, 1889. Serial No. 311,166. (No model.)



Claim.—1. The combination, with a supply-pipe of a fire-extinguishing system, of a water-chamber, a diaphragm therein in operative connection with the valve which governs the flow of water to the supply-pipe and having a larger area than said valve, a branch pipe or lateral way forming direct communication between said water-chamber and supply-pipe independently of the position of said supply-valve, whether closed or open, and means, substantially as described, for releasing the water from said chamber.

2. The combination, with a supply-pipe, of a valve to govern the flow of water therein, a water-chamber, a diaphragm of larger area than and in operative connection with the valve governing the flow of water in the supply-pipe, a branch pipe or lateral way forming direct communication with said water-chamber and supply-pipe, a normally-closed eduction-pipe of a size to permit the water to flow from the chamber faster than it can enter from said branch pipe, and means, substantially as specified, for opening said eduction-pipe upon the opening of a sprinkler-head, substantially as shown and described.

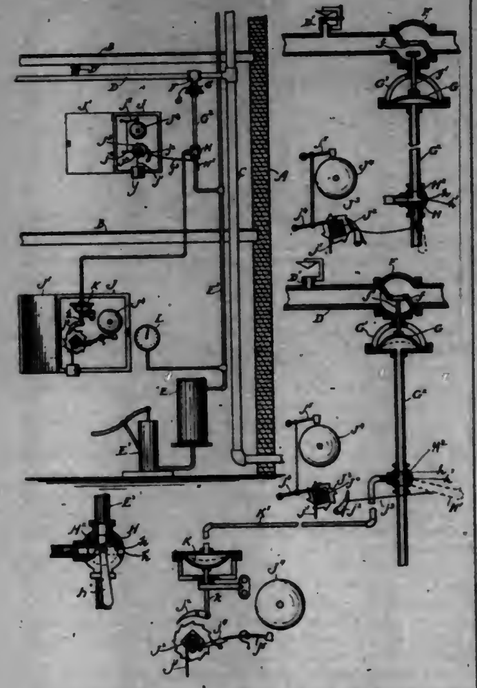
3. The combination, with the supply and distributing pipes of an automatic fire-extinguishing system, of a valve for normally closing said supply-pipe, a water-chamber upon the opposite side of said valve and in direct communication therewith, a diaphragm of larger area than said valve located in said chamber and attached to said valve, a normally-closed outlet larger than the inlet for releasing the water from said chamber, and means, such as described, for permitting the same to open upon the escape of air from the distributing-pipes, substantially as shown and described.

4. The combination, with the supply and distributing pipes of an automatic fire-extinguishing apparatus, of a valve for normally closing the supply-pipe, the chamber C, a flexible diaphragm therein attached to said valve, a pipe connecting the supply-pipe with said chamber and having a check-valve therein for preventing a back flow of water from said chamber, an independent outlet of larger capacity than the pipe L leading from said chamber, and means, such as the lever *m*, and a movable frame held normally in a given position by means of a flexible diaphragm in operative connection therewith and with a chamber of compressed air communicating with the distributing-pipes, whereby upon the escape of air from said pipes said frame may be permitted to fall, thus releasing said lever and opening said outlet, substantially as shown and described.

5. An automatic valve for normally preventing the water from entering the distributing-pipes of an automatic fire-extinguishing system, consisting of a chamber in communication with the supply-pipe, a normally-closed eduction-pipe, a flexible diaphragm in said chamber attached to the supply-pipe valve, an air-chamber communicating with the distributing-pipes, a weighted flexible diaphragm, a movable frame attached to said diaphragm, and means—such as a cap and lever—in operative connection with said frame for closing said eduction-pipe, whereby the movement of said frame upon the escape of air will release said lever, substantially as shown and described.

6. The combination, with the supply and distributing pipes of an automatic fire-extinguishing system, of the chambers C G, the former in direct communication with the supply-pipe and the latter with the distributing-pipes, flexible diaphragms E D, in communication with said chambers respectively, an outlet-pipe connecting with the chamber C, means—such as a cap and lever—for closing the same, a movable frame attached to the diaphragm D, for normally holding said lever in position to close said pipe, and a valve attached to the diaphragm E, for normally closing the supply-pipe, substantially as shown and described.

406,088. AUTOMATIC FIRE-EXTINGUISHING APPARATUS. JOSEPH CLAPP, Evanston, assignor to the Clapp Automatic Fire-Extinguisher Company, Chicago, Ill. Filed Sept. 1, 1888. Renewed May 17, 1889. Serial No. 311,167. (No model.)



Claim.—1. The combination, with the distributing-pipes of a fire-extinguishing apparatus of the class described, of one or more valves of differential area for shutting off the flow of water to the distributing-pipes, a source of compressed air connected therewith by a suitable pipe or pipes, and one or more valves normally closed for admitting said compressed air thereto, substantially as shown and described.

2. The combination, with the distributing-pipes of a fire-extinguishing apparatus of the class described, of one or more valves of differential area for shutting off the flow of water to the distributing-pipes, a source of compressed air connected therewith by a suitable pipe or pipes, one or more valves normally closed for admitting said compressed air thereto, and means, as an escape-valve, for permitting the escape of air from the shut-off valves when it is desirable to open the same, substantially as shown and described.

3. The combination, with the distributing-pipes of a fire-extinguishing apparatus of the class described, of one or more valves of differential area for shutting off the flow of water to the distributing-pipes, a source of compressed air connected therewith by a suitable pipe or pipes, one or more valves normally closed for admitting said compressed air thereto, means for permitting the escape thereof from said shut-off valve when it is desired to open the same, and an alarm mechanism in operative connection with said valve or valves by which the flow of air is regulated, substantially as shown and described.

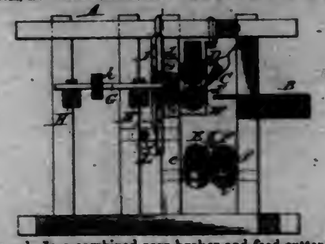
4. The combination, with the distributing-pipes of an automatic fire-extinguishing system, of one or more normally-open differential valves for shutting off the flow of water to the distributing-pipes, a source of compressed air, a pipe or pipes for conducting the same to said differential valves, normally-closed shut-off valves located in said pipe and in operative communication with an automatic alarm mechanism, and means, as described, for inclosing and locking said alarm mechanism, whereby the opening of said shut-off valve may close said differential valves and sound an alarm by means of a mechanism protected from unauthorized interference, substantially as specified.

406,089. COIN-RELEASED SPIROMETER. EDWARD J. CHENY, Chicago, Ill. Filed July 30, 1888. Serial No. 281,466. (No model.)



Claim.—In a coin-controlled lung-tester, the combination of a dial with indicating-hand thereon and coin-slot therein, with a blowing apparatus, a pinion on the shaft which supports the hand, and a rack connected with such blowing apparatus, a spring to restore such rack to its place after operation, and a pivoted dog and cam which locks such pinion from motion, a coin-slide, an arm from such dog in the path of the coin, and a rock-shaft with arm and push-button, so as to force said coin along its slide, and thus trip the dog and permit the parts to operate.

406,090. CORN-HUSKER AND FEED-CUTTER. FRED I. COLLIN, Freedom, Ill. Filed June 30, 1888. Serial No. 278,096. (No model.)



Claim.—1. In a combined corn-husker and feed-cutter, the combination of the husking-rollers having spiral grooves, the cutting devices consisting of the radial knives secured to the rotary horizontal shaft and moving in a vertical plane, and a rigid horizontal cross-piece located in proximity to said knives, all substantially as described.

2. In a combined corn-husker and feed-cutter, the combination, with the husking-rollers, of a depending knife located in front of the same and adapted to cut up any stalks that are presented sidewise to the rollers, substantially as described.

3. In a combined corn-husker and feed-cutter, the combination of the husking-rollers having spiral grooves thereon, the depending knife forward of the husking-rollers, and the fodder-cutting devices consisting of the radial knives I, secured to a rotary shaft, and the rigid cross-piece J, all substantially as described.

4. In a combined corn-husker and feed-cutter, the combination of the husking-rollers D D', having spiral grooves, the cutting mechanism consisting of the radial knives secured to a horizontal shaft and the inclined pair of lower rollers E F, which convey the ears of corn to the elevator, one of said rollers having projecting teeth and the other being spirally grooved, all substantially as described.

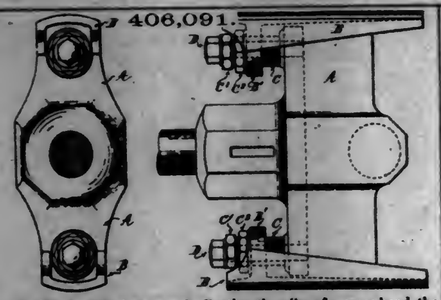
5. In a combined corn-husker and feed-cutter, the combination of the main frame A, feed-table B, located in the front portion thereof, the depending knife C above the feed-table, the husking-rollers D and D', having spiral grooves, the radially-arranged fodder-cutting knives I, secured to a rotary shaft, the horizontal cross-piece J, and the inclined lower rollers E F, for feeding the ears of corn to the elevator, substantially as described.

6. In a combined corn-husker and feed-cutter, the combination of the husking-rollers D D', carried on shafts *d* and *d'*, journaled in yielding bearings, the radially-arranged cutting-knives secured to a rotary shaft, the inclined lower rollers E F, for conveying the ears of corn to the elevator, and suitable connecting-gearing whereby all of the parts just mentioned are simultaneously actuated, substantially as and for the purpose described.

406,091. ADJUSTMENT OF GIBS OF CROSS-HEADS OF STEAM-ENGINES. EMILY A. CORLISS, Providence, R. I., administratrix of George H. Corliss, deceased. Filed July 13, 1888. Serial No. 279,893. (No model.)

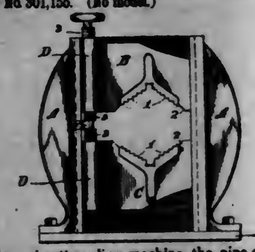
Claim.—1. The hollow externally-threaded sleeve C, bolt D, and a check-nut C', combined with each other and with a gib B, provided with an ear B', said ear being tapped to receive said sleeve, and said check-nut taking its bearing against the outer face of said ear B' and serving, as specified, to rigidly secure said sleeve after adjustment of the latter.

406,091.



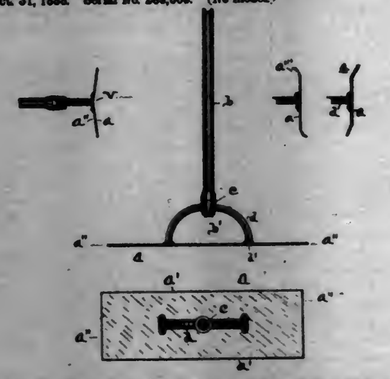
2. The described means of adjusting the gibe of a cross-head, the same consisting of a hollow sleeve C, externally threaded, and the bolt D, threaded at one end, combined with each other and with the gib B and cross-head A, all arranged as shown, and adapted to serve as specified.

406,092. PIPE-THREADING MACHINE. RODERICK P. CURTIS, Southport, assignor to Curtis & Curtis, Bridgeport, Conn. Filed Feb. 25, 1889. Serial No. 301,155. (No model.)



Claim.—In a pipe-threading machine, the pipe-clamping jaws having bearings within the casing, the front bearings being shorter than the rear bearings, and extended a slight distance beyond the grasping-points of the jaws, the heel ends of said jaws having elongated bearings and screw-housings extending the full length of said jaws, substantially as set forth.

406,093. SCRAPER. PETER VAN-ISM HERBERT, Geneva, N. Y. Filed Oct. 31, 1888. Serial No. 289,669. (No model.)



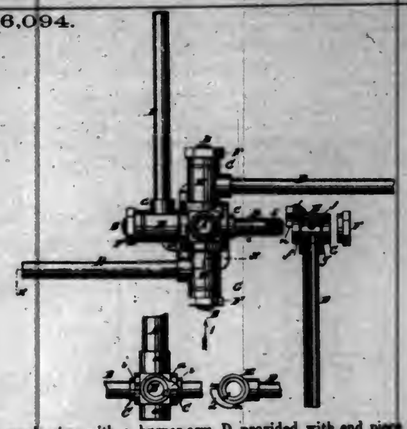
Claim.—The described scraper, consisting of the blade *a*, the forked arms *d*, provided with transverse extensions at their ends by which the arms *d* are fixed to the blade, the arms being united at their junction by the handle-holder *c*, which is provided with the socket *b'*, in which the handle *b* is fixed, as set forth.

406,094. FOLDING JOINT FOR CHANDELIERS. MOSES F. GALE, Brooklyn, N. Y. Filed Mar. 17, 1887. Serial No. 231,226. (No model.)

Claim.—1. In a chandelier, the combination, with a stationary supply-pipe, of a burner branch or arm hinged or pivoted to the said supply-pipe so as to fold upon the same and cut off the supply to the burners and to unfold into position for use and admit supply to the burners, provided with stop-valve K, substantially as and for the purpose set forth.

2. In a chandelier, the combination of the supply-pipe A, having nipple B, with side opening communicating by a channel *c* with the

406,094.



said supply-pipe, with a burner-arm D, provided with end piece E, having bore *e*, fitting the said nipple and placing the said channel *c* in communication with the bore in the said arm D when unfolded, substantially as specified.

3. In a chandelier, the combination of the supply-pipe A, having threaded nipple B, with shoulder C, and side opening communicating by a channel *c* with the said supply-pipe, and with an arm D, provided with an end piece E, having bore *e*, with end rabbets *f* and packing *g*, the ring G, and nut F to make a movable and tight-fitting joint between the said supply-pipe and its arm.

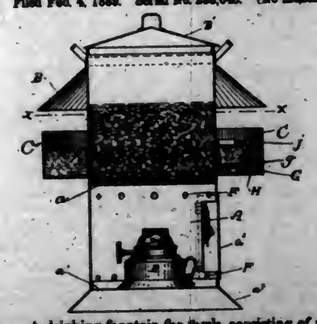
4. In a chandelier, the combination of the supply-pipe A, having threaded nipple B, with shoulder C, and side opening communicating by a channel *c* with the said supply-pipe, with an arm D, provided with an end piece E, having bore *e*, with end rabbets *f* and packing *g*, the ring G and nut F, and the screw H, threaded in an end socket in the nipple B with threads wound reversely to those of the nut F and nipple B and bearing with its head directly upon the end surface of the said nut.

5. In a chandelier, the combination of the supply-pipe A, having stops *i*, nipple B, with side opening communicating by a channel *c* with the said supply-pipe, with an arm D, provided with lugs *m n*, and an end piece E, having bore *e* fitting the said nipple and placing the said channel *c* in communication with the bore in the said arm D when unfolded, substantially as specified.

6. In a chandelier, the combination of the supply-pipe A, having chamber *a*, and four nipples B, having channels *c*, as described, with the four arms D, having T-joints E and pivoted one upon each of the said nipples, the said chamber *a* being provided with stationary stops *i* and each of the said arms being provided with two stops *m n*, substantially as specified.

7. In a chandelier, the combination of the supply-pipe A, having stops *i*, nipple B, with shoulder C, and side opening communicating by a channel *c* with the said supply-pipe, with an arm D, provided with an end piece E, having lugs *m n*, bore *e*, with end rabbets *f* and packing *g*, the collar G, and means for pressing the said collar inward upon the said nipple to make a movable and tight-fitting joint between the said supply-pipe and arm, substantially as specified.

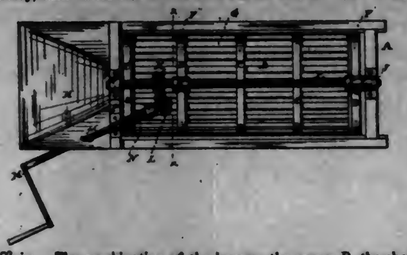
406,095. DRINKING-FOUNTAIN FOR FOWLS. WILLIAM F. HEWES, Shirley, Mass., assignor of one-half to Joseph S. Cherry, same place. Filed Feb. 4, 1889. Serial No. 298,645. (No model.)



Claim.—A drinking-fountain for fowls, consisting of a lower section or base to receive means for heating the water, and provided

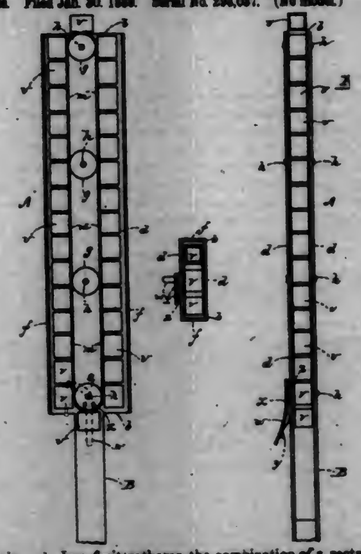
with a door and air-holes to regulate the heat, an upper section or tank to contain water and provided with a cover loosely closing the tank, an annular drinking-trough surrounding the tank and provided with an educt leading from the water-tank to the said trough, and a valve and float for automatically regulating and controlling said educt, substantially as set forth.

406,096. POTATO SCREEN AND SEPARATOR. ISAAC W. HOOVER, Avery, Ohio. Filed Sept. 24, 1888. Serial No. 286,202. (No model.)



Claim.—The combination of the hopper, the screen B, the shaft I, the oblique shaft N, having the crank thereon at the side of the hopper, and the bevel-gear K L, arranged within the screen, whereby the gearing is placed out of the way of the operator and material and the operator is enabled both to feed and to rotate the screen.

406,097. FRUIT-GATHERER. ALVIN C. HOWES, Middleborough, Mass. Filed Jan. 30, 1889. Serial No. 298,087. (No model.)



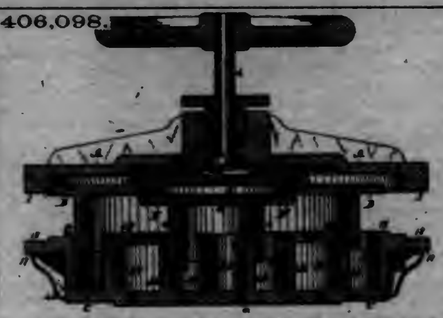
Claim.—1. In a fruit-gatherer, the combination of a rectangular body open at both ends and provided with a handle, wheels journaled centrally in said body, an endless belt traveling in the body on said wheels, a series of cups or holders secured to said belt, and a spring-actuated catch mounted on the body for preventing said belt from traveling on said wheels, substantially as described.

2. In a fruit-gatherer, the combination of the body A, open at *b b* and having the handle B, the wheels *g*, journaled in said body, the endless belt *m*, traveling in the body, disposed on said wheels and provided with the holders *v*, the lever *w*, pivoted on the body and provided with the pin *z*, and the spring *y*, for projecting said pin into the path of said holders, substantially as described.

406,098. STEAM-PUMP. EDWARD C. JOHNSON, Macon, Ga. Filed Aug. 31, 1887. Serial No. 248,208. (No model.)

Claim.—1. A steam-pump consisting, essentially, of a casing having two concentric chambers each divided by a radial partition, and each provided with inlet and outlet ports, and a piston consisting of a disk of greater diameter than the largest chamber, said disk having two concentric flanges extending into the chambers of the casing, as described, the disk extending over the outer and inner walls of the steam and water chamber in all positions of the piston, the parts combined and operating substantially as described.

406,098.



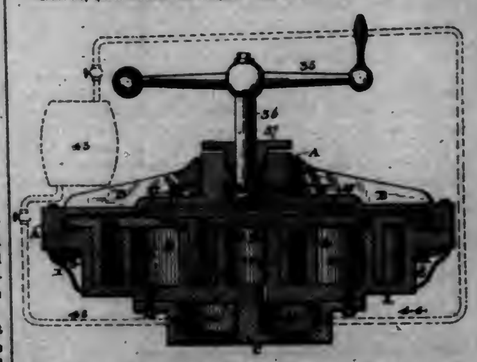
2. A steam-pump consisting, essentially, of a casing having two concentric chambers divided as described, said chambers separated by a non-conducting space, and having separate inlet and exhaust ports, and a piston consisting of a disk of greater diameter than the widest chamber, said disk having concentric flanges extending into each chamber in the casing, all combined substantially as described.

3. In a steam-pump, a cylinder containing concentric steam and water chambers formed by vertical concentric partitions inclosing spaces 24 and 25, ports for the ingress and egress of steam and water, and an orifice connecting the space 25 with the water-reservoir, substantially as described.

4. A steam-pump consisting of the casing having two concentric annular chambers divided as described and having separate inlet and exhaust ports, and a piston having a disk of greater diameter than the largest chamber and extending over the walls thereof in all positions of the piston, and having concentric annular flanges extending into the steam and water spaces, as described, said piston having a passage by which steam is admitted between the outer face of the disk and the casing to balance the pressure, all in combination, substantially as described.

5. In a steam-pump, the combination of a casing having concentric annular steam and water chambers divided by partitions and provided with inlet and outlet ports, as described, and a piston having a disk of greater diameter than the largest chamber extending over the walls thereof in all positions of the piston, said disk having concentric flanges extending into the chambers of the casing, but in eccentric relation thereto, the flange in the steam-chamber having passages *b' d* for steam in proximity to the steam-ports in the chamber, all substantially as described.

406,099. STEAM-PUMP. EDWARD C. JOHNSON, Atlanta, Ga. Filed Nov. 20, 1888. Serial No. 291,416. (No model.)



Claim.—1. In a steam-pump of the character described, the combination of a casing having concentric annular steam and water chambers partitioned and provided with ports, as described, and a compound piston consisting of independent broken rings in said chambers provided with caps and coupled to move together, substantially as described.

2. In a steam-pump, the combination, with the casing having steam and water chambers of the character described and provided with inlet and outlet ports, of the steam-piston ring having a cover extending across the ring from side to side, and the water-piston ring having a similar cover, and a water-passage by which fluid-pressure is admitted between the covers, substantially as described.

3. The combination, with the casing and the gyrating compound piston described, of a projection on the piston and a starting-lever

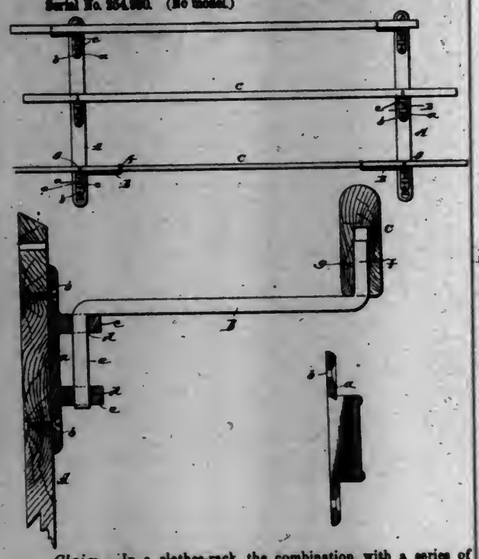
passing through the case and having a bearing-face to engage said projection on the piston.

4. In a steam-pump of the character described, the combination, with the casing and compound piston, of a projection on the piston and a shaft passing through the cover of the casing, said shaft having a shoulder in position to engage the projection on the piston, and an incline by which the starting-shaft may be automatically thrown out of engagement.

5. The combination, with the casing having annular steam and water chambers partitioned, as described, and having ports, as stated, and the balanced compound piston having overhanging covers, of the partitioned space between the walls of the chambers, whereby the balancing-pressure may be adapted to the conditions of the work.

6. In a pump of the character described, the combination of the annular steam and water chambers partitioned, as described, and having inlet and outlet ports, the broken ring-pistons in said chambers having caps covering the chamber-walls, and a passage leading above the water-cap from the delivery side of the pump, substantially as set forth.

406,100. CLOTHES-DRIER. JOSEPH L. JONES, Utica, N. Y., assignor of one-half to Foster Brothers, same place. Filed Nov. 11, 1887. Serial No. 254,990. (No model.)



Claim.—In a clothes-rack, the combination, with a series of plates arranged in two vertical rows and in pairs horizontally, each plate having a socket therein, of the arms having downwardly-turned ends loosely resting in said sockets and upwardly-turned ends, horizontal cross-bars each loosely supported upon the upwardly-turned ends of a pair of arms, the said cross-bars being in different horizontal planes, whereby each bar can be moved toward or away from the wall or other support independently of the other bars, substantially as and for the purpose set forth.

406,101. VEHICLE-AXLE. HERMAN F. KARTOWITZ, Donaldson, Minn. Filed Feb. 6, 1889. Serial No. 298,791. (No model.)



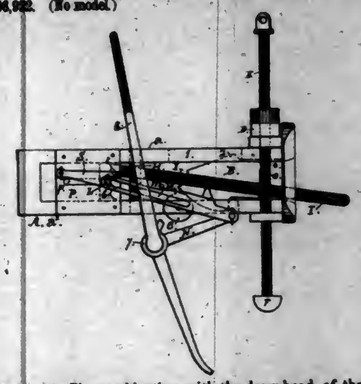
Claim.—1. An axle constructed in two parts A and B, the one entering the other and adapted to move vertically therein, the part A being provided with a tongue G, and the part B being provided with a cap K, in combination with elastic rubber cushions H and I, all constructed and arranged substantially as described.

2. An axle A, having bifurcated ends forming side walls C C, provided with one or more vertical recesses in the inner surfaces of the walls, and a tongue G, in combination with an axle-spindle B, terminating in an end E, having a chamber D, and provided with guides F F, a cap K, secured rigidly to the end E, and elastic cushions H and I, substantially as described.

406,102. LEATHER-POLISH. GUSTAV LANGENHAGEN, Leipsic, Saxony, Germany. Filed Jan. 26, 1887. Serial No. 225,570. (No specimens.)

Claim.—A leather-polish consisting of forty per cent. of carnauba-wax, one per cent. of steatite, thirty per cent. of oil of turpentine, five per cent. of aniline, (nigrosine,) two per cent. of Congo black, eight per cent. of almond-kernel oil, four per cent. of beeswax, and ten per cent. of ozocerite, substantially as described.

406,103. CAR-COUPLING. SIMON S. LEHMAN, Martinsville, and CHRISTIAN K. HERR, West Lampeter, Pa. Filed Feb. 6, 1888. Serial No. 263,922. (No model.)



Claim.—1. The combination, with the draw-head, of the sliding block, a roller pivoted in the bottom of the draw-head and upon which the sliding block rests, the coupling link and pin, a yoke for raising the pin when the coupling is to be engaged, and a lever for operating the yoke, substantially as and for the purpose specified.

2. In a draw-head, the combination, with the coupling-pin and a yoke for raising the same, of a movable plate which forms a bearing for the rear end of the coupling-link and a device whereby the yoke may be raised and the said plate moved backward or forward, substantially as and for the purpose specified.

3. In a draw-head, the combination, with the coupling-pin, the yoke for raising the same, and a movable bearing-plate for the rear end of the link, of the rock-shaft, mechanism for operating the same, and connections between the rock-shaft and the yoke and bearing-plate, whereby the shaft may raise the yoke and move the plate longitudinally in the draw-head, substantially as and for the purpose specified.

4. In a draw-head, the combination, with the yoke for raising the coupling-pin and the movable bearing-plate for the inner end of the coupling-link, of the rock-shaft, a lever for engaging with and raising the yoke, plates M, connected with the rock-shaft and provided with longitudinal slots, and projections from the sides of the said bearing-plate which engage the longitudinal slots in the plates M, all arranged and constructed substantially as and for the purpose specified.

5. In a draw-head, the combination, with the movable plate placed therein as a bearing for the inner end of the coupling-link and the rock-shaft, of slotted plates M, pivotally connected with the rock-shaft, and projections from the sides of the said bearing-plate which engage the longitudinal slots in the plates M, substantially as and for the purpose specified.

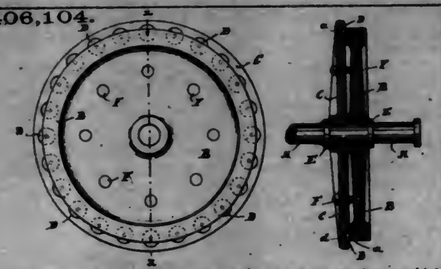
6. In a draw-head, the combination, with the rock-shaft and the bearing-plate for the rear end of the coupling-link, of slotted plates M, connected with the rock-shaft, projections from the sides of the bearing-plate which engage the slots in the plates M, and latches adapted to engage the projections from the sides of the bearing-plate when occupying its most forward position, the upper edges of the plates M being constructed to raise the latches as the said plates are moved backward, substantially as and for the purpose specified.

406,104. CAR-WHEEL. HOSEA W. LIBBEY, Boston, Mass. Filed Oct. 2, 1888. Serial No. 286,956. (No model.)

Claim.—1. A wheel formed of two independent parts B C, bolted together, with a series of disks D arranged around the inner face of the flange portion and projecting below the tread, substantially as and for the purposes set forth.

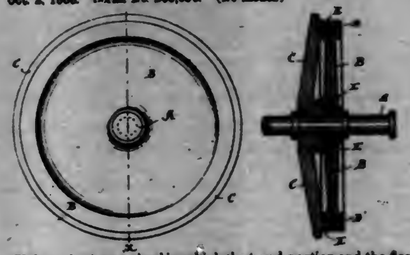
2. In a car-wheel, the tread portion B and flange portion C, provided with a series of circular recesses, in combination with the disks D, substantially as and for the purposes set forth.

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3. A car-wheel provided with a series of disks in the flange, which project below the tread, substantially as and for the purposes set forth.

406,105. CAR-WHEEL. HOSEA W. LIBBEY, Boston, Mass. Filed Oct. 2, 1888. Serial No. 286,956. (No model.)



Claim.—1. A car-wheel in which the tread portion and the flange portion are independent of each other and both mounted upon the axle with anti-friction rollers let into the inner face of one portion and running on the adjacent face of the other portion, substantially as and for the purposes set forth.

2. In a car-wheel, the flange portion C, in combination with the tread portion B, provided with radial recesses, the anti-friction rollers E, and axle A, substantially as shown and described.

3. In a car-wheel, the independent flange portion C and tread portion B, in combination with anti-friction rollers E, substantially as and for the purpose set forth.

406,106. BELT-FASTENER. BENJAMIN LYON, Bridgeport, assignor, by mesne assignments, to George B. Smith, Norwich, Conn. Filed Dec. 19, 1888. Serial No. 294,055. (No model.)



Claim.—A machinery-belt having its meeting edges united by a series of interlocked T-headed flaps and open button-holes and secured by end joints, which consist of T-headed flaps interlocked with opposite closed button-holes, as and for the purposes hereinbefore set forth.

406,107. LAMP-STANDARD. CHARLES MASCHMEYER, Meriden, Conn., assignor to Edward Miller & Company, same place. Filed Dec. 29, 1888. Serial No. 294,967. (No model.)

Claim.—1. In a standard for a lamp or other article, the combination of an outer tube, an inner telescoping tube or rod, a clamp normally engaging with said inner rod, and a sleeve on said inner rod fixed as to rotary motion thereon and supported as to longitudinal motion by said clamp, said sleeve and said clamp being provided one



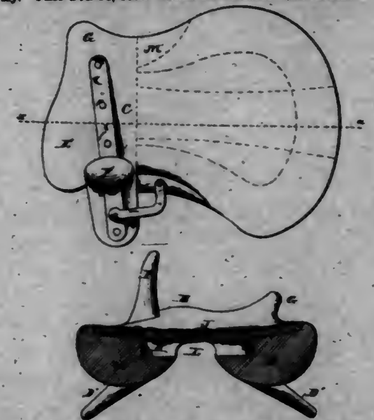
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with a projecting hub, the other with a saddle-shaped portion, whereby under the rotation of said sleeve said clamp may be freed from engagement with said inner rod, substantially as described.

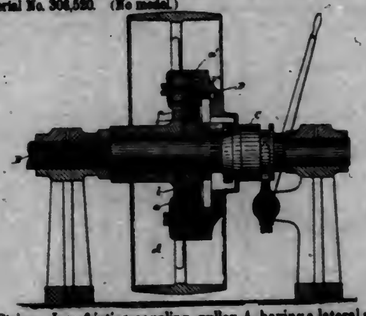
2. In a clamping device adapted to engage an inner telescoping tube or rod, the combination of a clamp adapted to lock said inner rod against longitudinal motion, and a sleeve supported by said clamp and adapted to receive rotary motion from the axial rotation of said inner rod, said clamp and said sleeve being provided one with a projecting hub, the other with a saddle-shaped portion, whereby under the rotation of said sleeve said clamp may be freed from engagement with said inner rod, substantially as described.

406,108. SIDE-SADDLE TREE. MICHAEL J. MORAN, Covington, Ky. Filed Dec. 26, 1888. Serial No. 294,899. (No model.)



Claim.—The herein-described improved side-saddle, composed of the side bars A, having recesses K, cut or rabbeted into their upper adjacent faces, thereby affording a free and extended ventilating-space below the seat, the cantle B, connecting the rear ends of said side bars, the front cross-bar C, connecting the forward ends of said bars provided with the horns F and G, and the front bow E and the veneer seat J, secured to said side bars, cantle, and front bar, affording a broad continuous seat, substantially as shown and described.

406,109. FRICTION-CLUTCH. ANTHONY NELSON, Boston, Mass., assignor to James Bennett Forsyth, same place. Filed Apr. 26, 1889. Serial No. 308,520. (No model.)

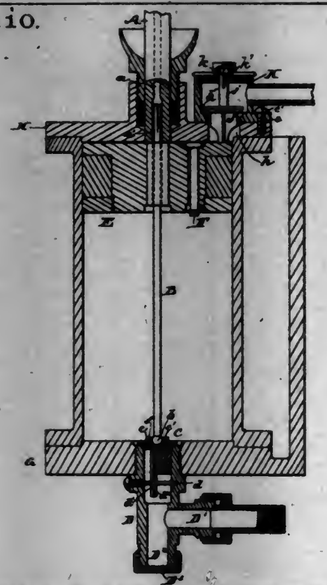


Claim.—In a friction-coupling, pulley A, having a lateral annular threaded flange *d*, combined with a screw-cap F and a locking device *f f*, the flange and cap forming a chamber, all substantially as and for the purpose set forth.

406,110. VACUUM-PUMP. JAMES W. PACKARD, Brooklyn, N. Y., assignor of one-half to Norman Hubbard, same place. Filed Sept. 28, 1887. Serial No. 250,932. (No model.)

Claim.—1. In a mechanical air-pump, the combination of the cylinder, the piston, the valve in the piston, and the projecting valve-

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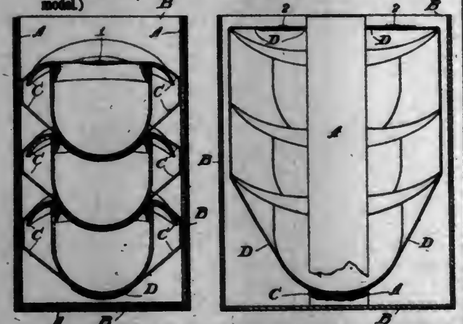
stem, which strikes the cylinder-head as the piston approaches one extremity of its travel, substantially as described.

2. In a mechanical air-pump, the combination of the cylinder, the piston, the positively-operated induction-valve at one end of the cylinder, the valve in the piston, together with its projecting valve-stem, which strikes the cylinder-head, and the eduction-valve at the other end of the cylinder, together with its projecting valve-stem, which is struck by the piston, substantially as described.

3. In a mechanical air-pump, the combination of the cylinder, the piston with its hollow piston-rod bored to different diameters at different points in its length, the valve in the cylinder-head, the valve-stem, which extends into the hollow piston-rod and has frictional contact therewith, and the universal joint between said valve-stem and valve, whereby said valve is positively operated in both directions, substantially as described.

4. In a mechanical air-pump, the combination of the cylinder, the piston with its hollow piston-rod, the valve in the cylinder-head, the valve-stem, which extends into the hollow piston-rod and has frictional contact therewith by means of the split and expanded end of said valve-stem, and the universal joint between said valve-stem and valve, substantially as described.

406,111. HAT-PACKING SUPPORT. COLA G. PECK and EDWARD S. DAVIS, Danbury, Conn. Filed Mar. 25, 1889. Serial No. 304,741. (No model.)

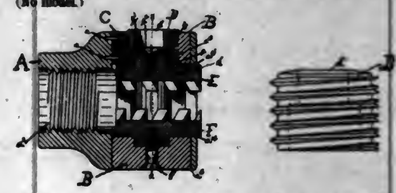


Claim.—1. A hat-packing support comprising a frame snugly fitting within a band-box and removable therefrom, and a series of flexible rings secured one above the other to opposite sides of said frame, substantially as set forth.

2. A hat-packing support comprising a frame snugly fitting within a band-box and removable therefrom, a series of flexible rings secured one above the other to opposite sides of said frame, and a single strip of paper or other flexible material extending beneath the lower ring and at right angles thereto and adapted to be drawn up snugly against the front and rear edges of the brims, substantially as shown and described.

3. A hat-packing support comprising a frame, a series of flexible rings secured within said frame one above the other, and a single flexible ring extending around said series in a plane at right angles thereto, substantially as shown and set forth.

406,112. DRILL-CHUCK. LOUIS REDER, Baltimore, Md., assignor to Clarence M. Kemp, same place. Filed Apr. 23, 1888. Serial No. 308,382. (No model.)



Claim.—1. A screw-body having two threads, both inclined to the right or both inclined to the left, one of the threads being of double pitch to the other thread, in combination with two threaded bodies, one of which has thread of double pitch to the other, with both of which the screw-body has threaded engagement at the same time.

2. A chuck having its operating-screw threaded with two right-hand threads or two left-hand threads, one of the threads having double the pitch of the other.

3. A chuck having two jaws and but one operating-screw, which has its threads inclined only in one direction, the operating-screw being placed directly over the line of strain, whereby its power is applied in the straightest and most direct manner to the work.

4. The combination of a chuck-body with a sleeve in which the jaws are placed, the sleeve having a movement in the chuck-body at right angles to its axis.

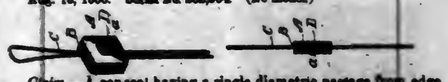
5. The combination of chuck-body A with dog C, sleeve B, and screw D.

6. The combination of chuck-body A with dog C, sleeve B, screw D, and jaws E and F.

7. The combination of screw D with jaw E, having surface K, shoulder *c*, and ring c^3, washer c^4, and screw c^5.

8. Interlocking jaws of a chuck having their projections and recesses obliquely disposed across the face of the jaws, as described, producing the fullest distribution of the frictional surfaces, as and for the purpose described.

406,113. CAR-SEAL. THEODORE SAUNDERS, Danbury, Conn. Filed Aug. 16, 1888. Serial No. 282,904. (No model.)



Claim.—A car-seal having a single diametric passage from edge to edge for the reception of both ends of the sealing-wire, and a central opening at which both portions of the wire may be crimped, bent, or upset, substantially as described, said single passage facilitating the wiring of the seal and enabling the two portions of the wire to be twisted together, either above or below the central opening, or both above and below the point at which the wire is upset.

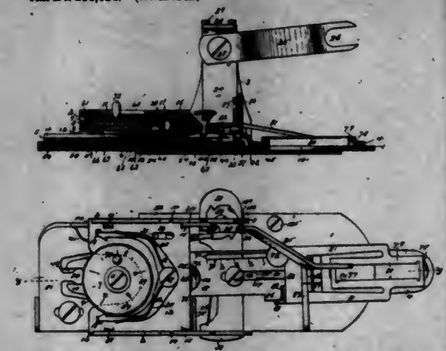
406,114. PRESS FOR CAR-SEALS. THEODORE SAUNDERS, Danbury, Conn. Filed Aug. 16, 1888. Serial No. 282,905. (No model.)



Claim.—1. In an implement of the character described, the stationary lever provided with two arms, in combination with a presser-lever pivoted to the lower of said arms and carrying a punch capable of sliding in said presser-lever independent thereof, and an actuating-lever pivoted to said lower arm of said stationary lever and provided with cam-surfaces adapted to first operate the punch and then the presser-lever, as specified.

2. In an implement of the character described, the stationary lever terminating in two arms, one adapted to imprint a seal, the other forming bearings for the movable parts of the device, in combination with the lever D, pivoted to the latter arm, the punch carried by said lever, the actuating-lever adapted to operate the lever D and punch, a spring for disteeding the actuating-lever, and a strap connected to the lever D and embracing said actuating-lever, as and for the purpose specified.

406,115. BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES. CARL J. A. SJOBERG, Bridgeport, Conn., assignor to the Smith & Egge Manufacturing Company, same place. Filed Mar. 12, 1887. Serial No. 230,621. (No model.)



Claim.—1. In a button-hole-sewing attachment for sewing-machines, the combination, with a pivoted work-carrier provided with a single rack, and means for vibrating said carrier to produce the over-edge stitch, of a laterally-shifting plate, a feed-wheel and pinion journaled within and carried by said plate, and means controlled by the work-carrier and operated by the primary oscillating lever for shifting said plate and carrier when the latter has reached the respective limits of its forward and backward movements, whereby the bar-ring is effected and the opposite rows of overedge stitches are sewed, substantially as set forth.

2. In a button-hole attachment, the combination, with a pivoted work-carrier provided with a rack, and means for vibrating said work-carrier to produce overedge stitches, of a pinion and feed-wheel for feeding said work-carrier lengthwise, operating mechanism for said feed-wheel, a reversing-plate by which said pinion and feed-wheel are carried, and automatically-operating appliances for moving said reversing-plate laterally when the end of a button-hole is reached to effect the shipper movements of the said work-carrier.

3. In a button-hole attachment, the combination, with a work-carrier having a rack, of a pinion engaging said rack, a feed-wheel connected with said pinion and having reverse sets of teeth, a feed-plate having alternately-operating pawls to actuate said feed-wheel, a feed-slide to operate said feed-plate, a feed-lever engaging said feed-slide, and an operating-lever having an adjustable connection with said feed-lever.

4. In a button-hole attachment, the combination, with a work-carrier having a rack, of a pinion engaging said rack, a feed-wheel connected with said pinion and having reverse sets of teeth, a feed-plate having alternately-operating pawls to actuate said feed-wheel, a feed-slide to operate said feed-plate, a feed-lever engaging said feed-slide and provided with adjusting or set screws, and an operating-lever for the said feed-lever.

5. In a button-hole attachment, the combination, with a work-carrier provided with a rack and with stumps or projections, a pinion for engaging said rack, and means for intermittingly rotating said pinion in opposite directions, of a reversing-plate on which the said pinion is mounted and which is provided with separated sets of reversely-arranged teeth, a double-pointed reversible pawl in position to be engaged by said stumps or projections, a moving part, as lever 42, to which the said pawl is pivoted, and means for actuating said moving part to operate said pawl.

6. In a button-hole attachment, the combination, with a work-carrier provided with a rack and with stumps or projections 63 65, a pinion engaging said rack, and means for operating said pinion, of a reversing-plate by which the said pinion is carried, and which is provided with two separate and reversely-arranged sets of teeth, a double-pointed reversible pawl 43 in position to be engaged by said stumps or projections, a lever 42, by which said pawl is carried, the cross-slide 33, connected with said lever, and means for reciprocating said cross-slide.

7. In a button-hole attachment, the combination, with a work-carrier provided with a rack and with stumps or projections 63 65, a pinion engaging said rack, and means for operating said pinion, of the pivoted reversing-plate 10, by which the said pinion is carried, and which is provided with the separated sets of teeth 55 56, the lever 42, the cross-slide 33, connected with said lever, means for operating said cross-slide, the reversible double-pointed pawl 43, carried by said lever and having the lug 64 and the V-shaped projection 57, and the spring 58, to engage the opposite sides of said projection.

8. In a button-hole attachment, the combination, with a work-carrier provided with a rack and with the stumps or projections 63 65, one of which is adjustable, of a pinion engaging said rack, means for intermittingly rotating said pinion in opposite directions, a pivoted reversing-plate by which said pinion is carried, and which is provided with reverse sets of ratchet-teeth, a reversible double-pointed pawl in position to be engaged by said stumps or projections, the lever 42, by which said pawl is carried, and means for operating said lever.

9. In a button-hole attachment, the combination, with a work-carrier provided with a rack and stumps or projections 63 65, of a pinion engaging said rack, means for operating said pinion, the pivoted reversing-plate 10, having two reverse sets of ratchet-teeth and slot 53, the bed-plate having the pin 54, a reversible double-pointed pawl in position to be engaged by said stumps or projections, a movable part by which said pawl is carried, and means for operating said movable part.

10. In a button-hole attachment, the combination, with a work-carrier 4, having the rack 5, of the pinion 6, the feed-wheel 7, having the reverse sets of teeth 8 9, the pivoted reversing-plate 10, by which the said pinion and feed-wheel are carried, means for shifting said reversing-plate laterally, the feed-plate 12, having the slot 32, the spring-pressed pawls 16, carried by said plate, the feed-slide 21, having teeth 22 and pin 31, the feed-lever having teeth 23, and the operating-lever 25.

11. In a button-hole attachment, the combination, with a work-carrier 4, having the rack 5 and the stumps or projections 63 65, of the pinion 6, the feed-wheel 7, having reverse sets of teeth 8 9, the pivoted reversing-plate having the reverse sets of teeth 55 56, separated from each other, the feed-plate 12, having the slot 32 and the spring-pressed pawls 16, the feed-slide 21, having the pin 31, means for reciprocating said slide, the double-pointed reversible pawl 43, the lever 42, by which said pawl is carried, the cross-slide 33, connected with said lever, and means for reciprocating said cross-slide.

12. In a button-hole attachment, the combination, with a work-carrier provided with a rack and with stumps or projections, a pinion engaging said rack, and means for rotating said pinion in opposite directions, of a reversing-plate by which said pinion is carried, and which is provided with two sets of teeth, a reversible pawl in position to be engaged by said stumps or projections, a moving part, as lever 42, by which said pawl is carried, means for operating said moving part, and spring 52, pressing against said reversing-plate and serving to hold it in the different positions to which it may be moved by said pawl.

13. In a button-hole attachment, the combination, with the work-carrier 4, having the rack 5 and the stumps or projections 63 65, of the pinion 6, the feed-wheel 7, having reverse sets of teeth 8 9, the feed-plate 12, having slot 32 and pawls 16, the feed-slide 21, having pin 31 and the pawl 40, means for reciprocating said feed-slide, the reversing-plate 10, having sets of teeth 55 56, the spring 52, the cross-slide 33, having a yoke or opening, the cam 36, and the ratchet-wheel 37, with which the said cam rotates.

14. The combination, with a button-hole attachment, of a cutting-blade of proper length to cut an entire button-hole at a single stroke, a removable cutter-holding plate by which the said blade is carried, and supports on said attachment for removably holding said plate in place on the attachment, with the cutting-blade in cutting position beneath the needle-bar of the sewing-machine.

15. The combination, with a button-hole attachment, a cutter-holding plate 91, and means for removably supporting the same on the attachment, said plate being provided with a cutter-retaining flange 97, of the blade or cutter 96, having the slot 99, and the set-screw 98, for detachably securing said blade to said flange.

16. In a button-hole attachment, the combination, with the bed-plate 1, having the slot 101, of the cap having the loop or upturned projection 95, the work-carrier having the standard 86, and the removable cutter consisting of the plate 91, having an opening or slot to receive said standard, the arm or shank 94, to engage said loop or projection, and the needle-holes 98, and a cutting-blade or cutter proper 96.

17. In a button-hole attachment, the combination, with the work-carrier, its rack and pinion, and operating mechanism for the latter, of the pivoted reversing-plate by which said pinion is carried, an adjustable fulcrum for said plate, and means for swinging said plate laterally on its fulcrum when the end of a button-hole has been reached.

18. In a button-hole attachment, the combination, with a work-carrier provided with a rack, of a pinion engaging said rack, means for operating said pinion, a pivoted reversing-plate by which said pinion is carried, and which is provided with the slot 49, the adjustable plate 51, having the stump or projection 50 extending into the

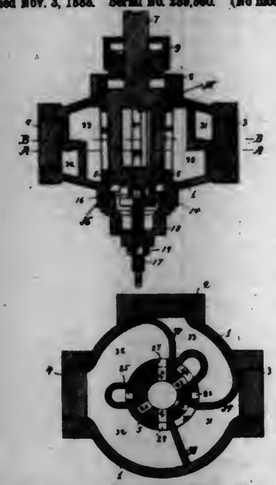
said slot 49 and serving as a fulcrum for said reversing-plate, and means for swinging the said reversing-plate laterally on its fulcrum stump or projection when the end of a button-hole has been reached.

19. In a button-hole attachment, the combination, with the work-carrier having a rack, of a pinion engaging said rack, a feed-wheel connected with said pinion and having reverse sets of teeth, operating mechanism for said feed-wheel, a reversing-plate by which said pinion and feed-wheel are carried, means for operating said reversing-plate, a feed-plate provided with openings 19, and two spring-pressed pawls having lugs extending into said openings, and thereby having their movements limited.

20. In a button-hole attachment, the combination, with a gage 70 and a work-carrier having a rack, of a pinion engaging said rack, a feed-wheel connected with said pinion and having a gage 69, mechanism for operating said feed-wheel and for reversing the direction of its rotation, and the cap or housing having an opening 60, and a point 74, to serve as an indicator in connection with the said gage 69.

21. In a button-hole attachment, the combination, with a work-carrier provided with a rack and with the reversing stumps or projections 63 65, and having also a slot 71, in which stump 65 is adjustable, and a gage 70, adjacent to said slot, of a pinion engaging said rack, a feed-wheel connected with said pinion and provided with a gage 69, a reversing-plate by which said feed-wheel and pinion are carried, means for operating said feed-wheel and reversing-plate, and a cap having a point 74, to serve as an indicator for the said feeding-wheel gage.

406,116. **BALANCE-VALVE.** CHARLES A. SOUTHWICK, Peabody, Mass. Filed Nov. 3, 1888. Serial No. 289,860. (No model.)

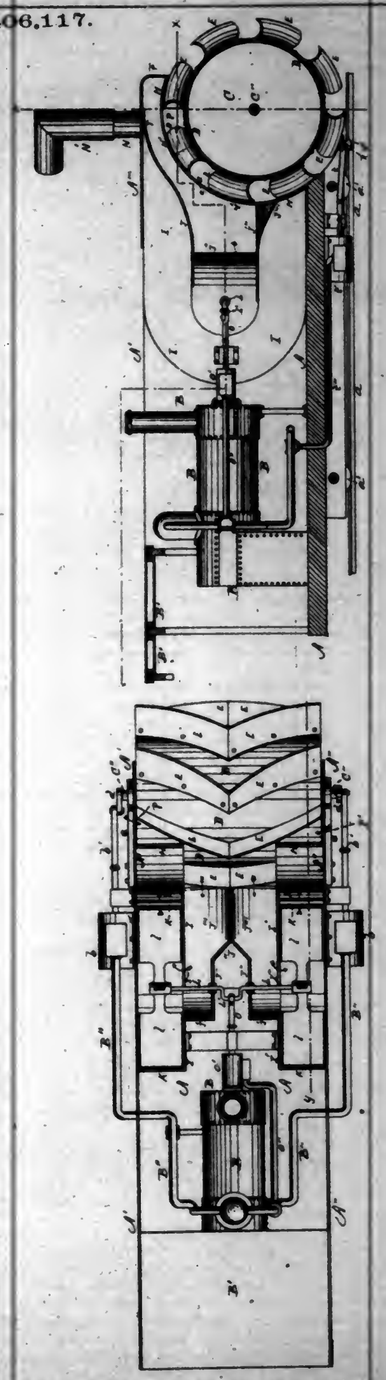


Claim.—1. The balance-valve herein described, consisting of the valve-case, having inlet and outlet branches 2, 3, and 4, a central annulus 5, provided with diametrically-opposed ports 25 26 and 27 28, the diaphragms or partitions 37 38 39, extending from the exterior of the annulus to the interior of the valve-case and forming three separate chambers 31, 32, and 33, intervening between said annulus and valve-case, and the rotary valve-plug 6, having imperforate upper and lower ends, a hollow center 34, and diametrically opposed ports 20 23 and 21 24, all of which open into the hollow center of the valve-plug, substantially as described.

2. A balance-valve consisting of a valve-case having inlet and outlet branches, a central annulus, comprising a central cylindrical shell, separated from the interior of the case and having a series of lateral ports through its side wall, a series of diaphragms or partitions extending from the exterior surface of the annulus to the interior surface of the case and forming a series of separated chambers intervening between the annulus and case, and a rotary valve-plug having imperforate upper and lower ends, a hollow center, and a series of lateral ports opening through its side wall, and all of which open into the hollow center of the valve-plug, substantially as described.

406,117. **RAILWAY SNOW-PLOW.** LOUIS E. TEISSONNI, Bristol R. I. Filed Sept. 28, 1888. Serial No. 286,061. (No model.)

406,117.



Claim.—1. The trough-shaped clearers E, of the inverted-V shape shown, in combination with the cylinder D and wheels C C, substantially as and for the purpose set forth.

2. The combination, with the clearers E, cylinder D, and wheels C C, of the partition H, extending from the front piece F rearward outside the path of the clearers and provided with the central opening H', substantially as and for the purpose described.

3. The combination, with the carriage, of the partition H, provided with the opening H', the roof portion J, floor J'', V-shaped vertical portion J' J'', and partitions I I', substantially as and for the purpose set forth.

4. The combination, with the carriage whose sides A' A'' are provided with the openings P P', of the partitions I I', provided with the openings I'', fans *l*, provided with means whereby they may be rotated, partitions K K'', of the shape shown, partition H, and pipes N N', substantially as and for the purpose described.

5. In a railway snow-plow, the combination, with rotary clearers and a fan apparatus for driving the snow into passages leading from the outside, of the sides A' A'', provided with the openings P P' next the path of the revolving clearers, but non-coincident or not opposite each other, substantially as and for the purpose set forth.

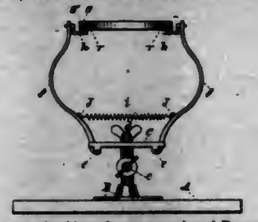
6. The combination of the carriage whose sides are provided with the openings P P', the cylinder D, wheels C C, and clearers E, the partition H, provided with the opening H', centrally-depressed floor J'', V-shaped partition J' J'', roof J, partitions I I', provided with the openings I'', fans *l*, partitions K K'', and pipes N N', substantially as and for the purpose described.

406,118. **INHALER.** HENRY T. WELCH, San Jose, Cal. Filed Mar. 7, 1889. Serial No. 302,310. (No model.)



Claim.—An inhaler consisting of a covering or casing fitted to the nose, the movable drawer seated in the base of the covering or casing below the nostrils and containing the medicinal preparation, and the breathing-apertures in the front and sides of the covering or casing above the drawer, whereby the air drawn in through said apertures is impregnated with the rising fumes from the medicinal preparation, substantially as described.

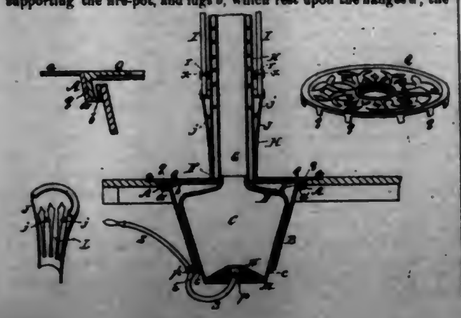
406,119. **EMBROIDERY-FRAME.** JOHN H. WHITE, Greene County, Ill. Filed Apr. 6, 1889. Serial No. 306,454. (No model.)



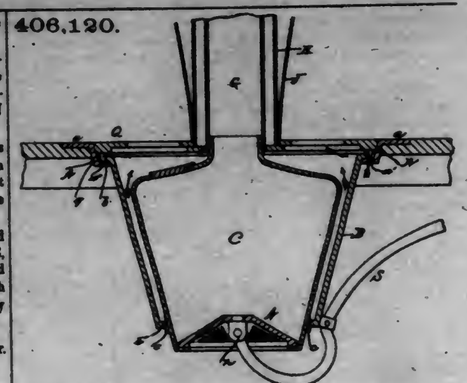
Claim.—In an embroidery-frame, a pedestal B, secured to the central part of a lap-board A and provided with a joint *c*, as described, a cross-bar C, centrally pivoted thereon, so as to revolve or vibrate in a plane at right angles to the axis of the inclinable part of said pedestal, arms *f f*, pivotally secured, as shown, to the ends of the cross-bar C, a spring *i*, adapted to draw the arms *f f* toward each other, and a distender or stretcher supported by removable trunnions journaled in the upper extremities of the arms *f f*, all of said parts constructed, combined, and adapted to operate substantially as and for the purpose set forth.

406,120. **CAR-HEATER.** JOHN ZIMMERMAN, Cincinnati, Ohio, assignor to the Zimmerman Machine Company, same place. Filed Aug. 13, 1888. Serial No. 282,536. (No model.)

Claim.—1. In a car-heater, the combination of a ring A, provided with flanges *a* and *a'*, the former adapted to rest upon the car-floor, and the latter provided with perforations *a''*, casing B, with legs *e* for supporting the fire-pot, and lugs *b*, which rest upon the flanges *a'*, the



406,120.



fire-pot C, resting in casing B, with an air-space between said fire-pot and casing, and a grating or register Q, provided with legs *q*, substantially as described.

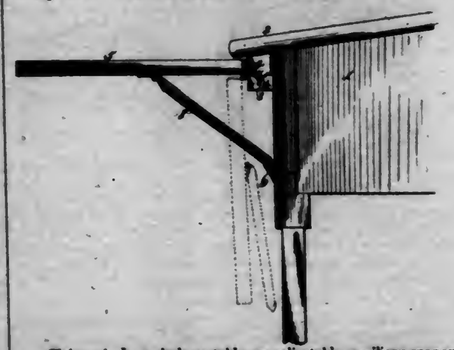
2. In a car-heater, the combination of a fire-pot, a casing supporting the same, and a ring supporting the casing constructed to rest upon the car-floor and provided with openings intermediate of the casing and the car-floor, whereby the outside air may pass therethrough to cool the parts adjacent the floor, as set forth.

3. In a car-heater, the combination of a fire-pot, ring A, for supporting the said fire-pot, provided with flanges *a* and *a'*, the former adapted to rest on the car-floor, and the latter provided with perforations *a''*, through which cold air outside the casing is admitted, and the grating or register Q, supported in said ring A above the perforations, substantially as shown and described.

4. In a car-heater, the combination of a ring A for supporting the casing of a fire-pot, provided with flanges *a* and *a'*, the former adapted to rest on the car-floor, and the latter provided with perforations *a''*, through which cold air outside the casing is admitted, and the grating or register Q, having its outer edge made solid and fitting snugly in the ring, whereby cold air is directed inwardly to be mixed with heated air, substantially as described.

5. In a car-heater, the combination, with a smoke-pipe and a protecting-pipe H, and slats I, of a truncated-cone-shaped bracket J, surrounding the lower part of said pipes, flanged horizontally at its upper end to support the slats I and provided with lug *j* at its interior to rest against the pipe H, substantially as described

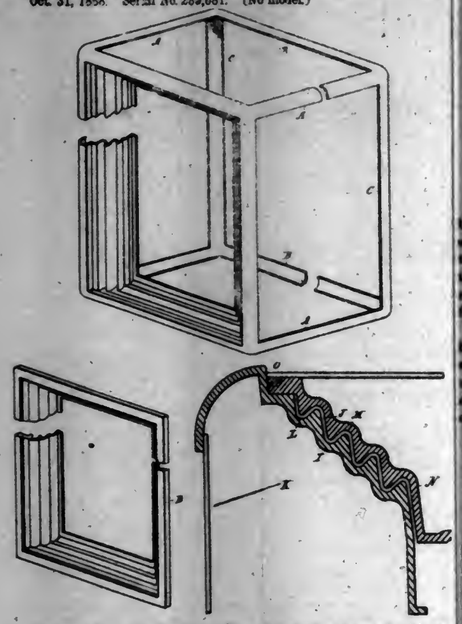
406,121. **ATTACHMENT FOR DESKS.** HARRY R. ADAMS, Wheeling, W. Va. Filed Nov. 28, 1888. Serial No. 292,074. (No model.)



Claim.—1. In a desk or table, an adjustable auxiliary support consisting of a shelf having a ribbed strip hinged to one edge and inserted between a grooved rail fastened upon the front of the desk or table beneath the projecting edge of the top, said support being provided with a brace or arm engaging with a bracket-rail mounted on the desk-front beneath the grooved rail, substantially as described.

2. In a desk or table having a top 2, the edge of which projects over the front of the desk and provided with a grooved rail 3, fastened to the body of the desk below said projecting edge, a support or shelf 5, having a ribbed strip 6 hinged to its edge and engaging in the space between the grooved rail and the projecting edge of the desk, and an arm 8 hinged at one end to the under face of the shelf, its other end engaging a bracket-rail 9, substantially as described.

406,122. SAFE. JOHN J. BROWN, West Covington, Ky. Filed Oct. 31, 1888. Serial No. 289,681. (No model.)

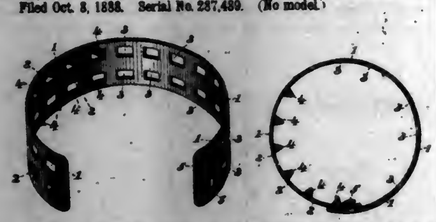


Claim.—1. A safe having a fluted jamb cast integral with the entire safe-skeleton, substantially as herein set forth.

2. A safe having a fluted jamb cast integral with the entire safe-skeleton, in combination with a door-frame having fluted meeting faces, substantially as herein set forth.

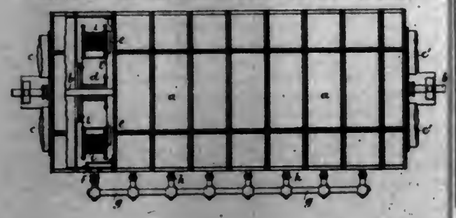
3. A safe having a fluted jamb cast integral with the entire safe-skeleton, in combination with a door frame or skeleton having fluted meeting faces cast integral with the door-frame, substantially as herein set forth.

406,123. HORSE-TAIL BAND. ARTHUR W. CASE, Bridgeport, Conn. Filed Oct. 8, 1888. Serial No. 287,489. (No model.)

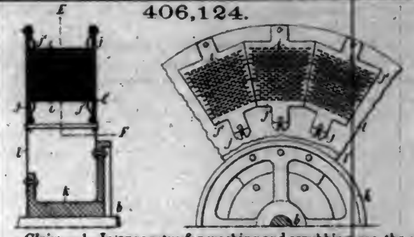


Claim.—A horse-tail band, the same consisting of a single strip of resilient metal having therein at regular intervals and throughout its entire length a series of perforations, whereby the resiliency of the band is equalized, a series of teeth projecting inward from the surface of the band for a portion of its length, and hooks for the securing of the band about the tail, substantially as set forth.

406,124. APPARATUS FOR WASHING AND SCRUBBING GAS. SAMUEL CHANDLER, Sr., SAMUEL CHANDLER, Jr., and JOSIAH CHANDLER, London, England, assignors to Kirkham, Hulett & Chandler, (Limited,) same place. Filed Feb. 6, 1889. Serial No. 298,841. (No model.)



406,124.



Claim.—1. In apparatus for washing and scrubbing gas, the combination of one or more buckets secured to the side of a revolving scrubber, with a trough on the inner side of the casing, and into which the said bucket or buckets is or are adapted to discharge, the said trough being suitably connected by a pipe or channel with one or more of the bays or chambers of the apparatus, substantially as and for the purpose hereinbefore described.

2. In apparatus for washing and scrubbing gas, comprising a number of bays or chambers, as set forth, a series of scrubbing devices, each of which is essentially constructed of a number of sections built up of bars or laths carried between suitable side plates and disks, or disks alone, the bars of one layer being disposed opposite the spaces of the next adjacent layer, and whereby, as the scrubbing devices rotate, a large area of wetted surface is provided, and whereby a very zigzag course is given to the gas in passing through the apparatus, the gas being thereby thoroughly broken or split up and brought into very intimate contact with the said wetted surfaces, substantially as described.

3. Scrubbing devices for machines for washing and scrubbing gas, adapted to be mounted on a rotary wheel and severally composed of a series of laths or bars disposed with those of one layer opposite the spaces of the next adjacent layer, as shown and described, and secured to and carried between segmental side plates slotted to receive them.

4. The combination, with the casing having a series of chambers, of revolving scrubbers having segmental sections and having buckets secured to their sides, a trough on the inner side of the casing, a pipe extending from said trough to the several chambers, and cocks adapted for shutting off the liquid from any one of the chambers, the bars of the scrubber being slotted side plates, and those of one layer being placed opposite the spaces existing between the bars of the next adjacent layer, all substantially as set forth.

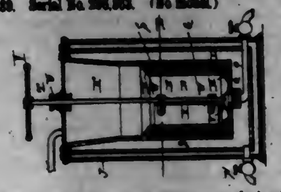
406,125. CRADLE. ANDREW M. CHRISTENSEN, Provo, Utah. Filed Dec. 13, 1888. Serial No. 293,458. (No model.)



Claim.—1. The combination, with a cradle provided with heads having circular guide-grooves F in their inner sides, of the folding screen formed in sections, which comprise the frames composed of the arc-shaped side bars $e\ e$ and top and bottom bars $e'\ e^2$, and the wire screen or gauze within the frame, the side bars of the frame fitting and sliding in the grooves F, and the catch comprising the upright perforated ears $g\ g$, affixed to the centers of the upper bars of the frames and the spring-tongue fitting in and engaging the said ears, substantially as specified.

2. In a cradle, the heads B, having circular guide-grooves F in their inner faces, the stops H at the upper central points of said grooves, and the stops I at the lower central points thereof, in combination with the screen D, comprising the curved side bars $e\ e$, each constituting one-quarter of a circle and sliding in said grooves, the top and bottom bars $e'\ e^2$, and the netting e^3, and with the catch G, comprising upright perforated ears g, one carried by each top bar e', and the spring-tongue g', secured to one of said top bars, projecting through the perforation in the ear thereon and adapted to engage the perforation in the other ear, as and for the purpose set forth.

406,126. WATER-FILTER. JOHN J. CORBAN, Toledo, Ohio. Filed Jan. 19, 1889. Serial No. 296,953. (No model.)

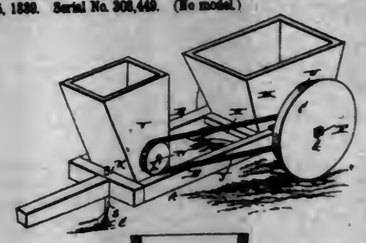


Claim.—1. In a water-filter, an inner receptacle having perforations near its lower extremity and carrying within its walls an outwardly-discharging porous filter, in combination with an outer case, the said outer case and the said inner receptacle being removably connected at their upper extremities and the said inner receptacle being adapted to be screwed into position by means of a central screw and nut at its lower extremity and connecting with the said outer case, substantially as shown and described.

2. In a water-filter, an inner water-receptacle having perforations near its lower extremity and carrying within its walls an outwardly-discharging porous filter, between which and the said water-receptacle is an open space sealed above and below against the passage of water, except in a filtered state, in combination with an outer storage-reservoir, substantially as shown and described.

3. The inner water-receptacle F, having perforations near its lower end, the porous filter E, and the perforated jacket surrounding and tightly fitting said filter, said jacket and its contained filter being located within said receptacle F, with the annular space G between them, in combination with an outer casing J, surrounding said inner receptacle and forming a reservoir M, substantially as described.

406,127. COMBINED SEED-PLANTER AND FERTILIZER-DISTRIBUTER. HENRY J. DAVIS, Jr., Central Institute, Ala. Filed Mar. 15, 1889. Serial No. 303,449. (No model.)





Claim.—1. In a cotton-seed planter, the combination of the frame, the hopper mounted upon the same, and the wheels, the hubs of which are provided with cylindrical sleeves or extensions journaled in suitable boxes or bearings in the frame, and provided within the hopper with stirrers or agitating-fingers, and the shaft or axle extending through the hubs and sleeves of the wheels and provided with nuts at each end, substantially as set forth.

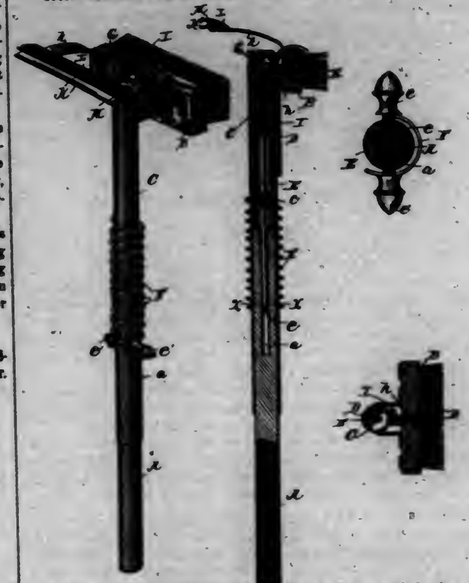
2. In a cotton-seed planter, the combination, with a frame and hopper, of the independently-revoluble wheels having cylindrical sleeves extending into the hopper, and provided with the stirrers or agitating-fingers, substantially as set forth.

3. In a cotton-seed planter, the combination, with the frame and hopper, of the guard-plates extending downwardly from the frame on either side of the hopper, the transverse shaft having cranks at either end, the tongue or cut-off plate mounted upon the said shaft, and the radially-ribbed cam-plates mounted upon the inner sides of the wheels and adapted to engage the said crank-shaft, substantially as set forth.

4. In a cotton-seed planter, the combination, with the frame and hopper, of the independently-revoluble wheels mounted in the frame and having cylindrical sleeves extending into the hopper and provided with stirrers or agitating-fingers, the guard-plates extending downwardly on either side of the hopper, the crank-shaft journaled transversely in said guard-plates and having the vibrating tongue or cut-off plate secured thereto, and the cams secured to the inner sides of the wheels and adapted to engage the crank-shafts, substantially as set forth.

5. In a planter, the combination, with the frame and hopper, of the independently-revoluble wheels, each operating a separate seeding mechanism, and said wheels having broad inclined rims or treads to cover and compress the soil about the seeds, substantially as set forth.

406,128. BRUSH FOR WASHING WINDOWS. HENRY DIXON, JOHN W. DIXON, and HENRY S. KOPP, Dayton, Ohio. Filed Sept. 30, 1888. Serial No. 286,747. (No model.)

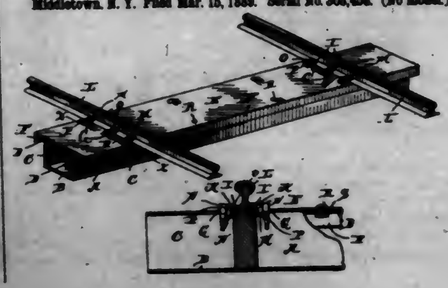


Claim.—1. The combination, with the brush provided with a suitable handle, of the cylinder communicating at one end with a perforated tube in the brush and the plunger operating in the cylinder and provided with a spring to gradually force it upward to expel the contents of the cylinder into the brush, substantially as specified.

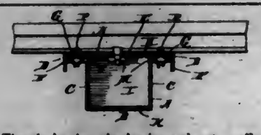
2. In a window-brush, the combination of the perforated supply-tube arranged in the brush, the cylinder connected at its upper end to the supply-tube and provided with a removable screw-cap, the plunger operating in the cylinder and provided with a suitable rod, the vent-tube communicating with the lower end of the cylinder and discharging into the brush, and the contractile spring connected to the plunger-rod, substantially as and for the purpose specified.

3. In a window-brush, the combination, with the brush and handle attached thereto, of the perforated supply-tube arranged in the brush, the cylinder connected to the supply-tube, the plunger operating in the cylinder and provided with a plunger-rod, the cross-bar attached to the rod and operating in a slot in the handle, and the contractile spring connected to the said cross-bar, all constructed and arranged substantially as specified.

406,129. METALLIC RAILWAY-TIE. THEODORE R. DURNING, Middletown, N. Y. Filed Mar. 15, 1889. Serial No. 303,458. (No model.)



406,129.

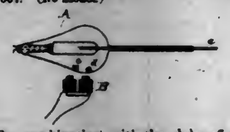


Claim.—1. The tie having the horizontal outwardly-extending flanges D at its sides and the removable top plate or cover adapted to fit on the tie, and having the depending flanges F engaging the flanges D, substantially as described.

2. The tie made of metal and having its upper side open, in combination with the top plate or cover on the upper side of the tie, and the supporting-blocks arranged transversely in the tie and bearing on the cover at points below the track-rails, substantially as described.

3. The combination, with the hollow metallic tie and the removable cover or top plate, of the supporting-blocks arranged in the tie and having the studs engaging openings in the ties and top plates, substantially as described.

406,130. MANUFACTURE OF INCANDESCENT ELECTRIC LAMPS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Aug. 11, 1886. Serial No. 210,607. (No model.)



Claim.—1. The combination, with the globe of an incandescent electric lamp and the filament inclosed thereby, of a transparent conducting-film on the interior of said globe, substantially as set forth.

2. The combination, with an incandescent electric-lamp globe and the filament inclosed thereby, of a transparent adhesive conducting-film on the interior of said globe, substantially as set forth.

3. The combination, with an incandescent electric-lamp globe and the filament inclosed thereby, of a film of adhesive phosphoric anhydride on the interior of said globe, substantially as set forth.

4. The method of producing a coating on the interior of an incandescent electric-lamp globe, consisting in placing an adhesive semi-liquid substance within said globe and moving a magnetic body into and out of said substance by external magnetic attraction, substantially as set forth.

406,131. RACK FOR DISPLAYING DRY GOODS. ERNEST C. FAIR, Granbury, Tex. Filed Jan. 3, 1889. Serial No. 295,279. (No model.)



Claim.—1. The combination, in a rack for displaying dry goods of the supporting-rods G, arranged in pairs, the arms H, adapted to bear on the said rods and having the hooks I at the inner ends to engage the same, and provided, further, with the sockets or bearings K in their outer ends, and the trunnions N, having the clamps or arms adapted to engage the ends of a bolt of cloth, said trunnions being adapted to engage the bearings of the supporting-arms, for the purpose set forth, substantially as described.

2. In a rack for displaying dry goods, the trunnions having the arms or clamps at its inner end to engage the bolt of cloth, for the purpose set forth, substantially as described.

3. In a rack for displaying dry goods, the trunnions having the spring-arms at their inner ends, for the purpose set forth, substantially as described.

4. In a display-rack for dry goods, the combination, with the arms R, having the notches S, of the guide T, supported in said notches and having the parallel proximate sides between which the cloth may be passed, substantially as described.

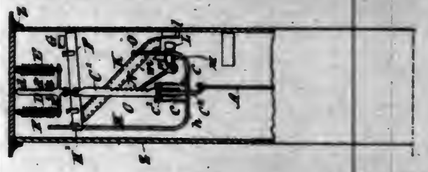
5. The rack or frame for displaying dry goods, having the supporting-arms for the bolts of cloth, the studs X on the ends of the frame, and the yoke V, with arms bearing on and having the hooks W to engage said studs, for the purpose set forth, substantially as described.

6. In a rack for displaying dry goods, the case, cabinet, or frame having the longitudinal rods G, with the supporting-arms attached to and adjustable on said rods, for the purpose set forth, substantially as described.

7. The case, cabinet, or frame having the longitudinal rods G, the supporting-arms attached to said rods, and the trunnions adapted to be attached to the ends of bolts of cloth and to be journaled in the supporting-arms, substantially as described.

8. In a rack for displaying dry goods, the detachable trunnion for a bolt of cloth, in combination with a rack, frame, or cabinet having arms provided with bearings for said trunnions, substantially as described.

406,132. COIN-CONTROLLED WEIGHING-MACHINE. JEAN C. J. C. FAVRE, Montreal, Quebec, Canada, assignor, by mesne assignments, to the American Automaton Weighing Machine Company, of New York. Filed Sept. 29, 1886. Serial No. 214,880. (No model.) Patented in Canada Oct. 16, 1886, No. 25,147.



Claim.—1. In a coin-controlled weighing-machine, the combination, with a weighing mechanism, of a locking device normally engaging said mechanism to hold it from operation, and adapted to be moved by the gravity of a coin inserted into the machine, so as to release said mechanism, substantially as described.

2. In a weighing-machine, the combination, with weighing mechanism, of a pivoted lever normally engaging said mechanism to hold it from operation, and adapted to be moved by the gravity of a coin inserted in the machine, whereby said mechanism is released, substantially as set forth.

3. In a weighing-machine, the combination, with weighing mechanism, of a pivoted lever normally engaging said mechanism to hold it from operation and situated in the path of a coin inserted in the machine, whereby such coin will move said lever to release such mechanism, substantially as set forth.

4. In a weighing-machine, the combination, with weighing mechanism, of a weighted lever normally engaging said mechanism to hold it from operation, and adapted to be moved by the force of a coin inserted in the machine, so as to release said mechanism and thereafter to return to its normal position, substantially as set forth.

5. In a weighing-machine, the combination, with weighing mechanism, of a coin-passage, a lever normally closing such passage and engaging with said mechanism to hold it from operation, and adapted to be moved by the gravity of the coin, so as to release such mechanism and also to permit the passage of the coin, substantially as set forth.

6. In a weighing-machine, the combination, with weighing mechanism, of a locking device normally holding such mechanism from operation, and adapted to release the same when a coin is inserted in the machine, and means for moving the locking device to lock the weighing mechanism, substantially as and for the purpose set forth.

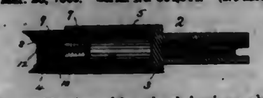
7. In a weighing-machine, the combination, with the actuating-rod made in two parts joined by springs, one of which parts is normally locked from movement, of the coin-conduit and the discharging-arm carried by the normally-movable portion of said rod for removing any foreign body from said conduit, substantially as set forth.

8. In a weighing-machine, the combination, with the actuating-rod, of a three-armed lever, one arm of which normally engages said rod to hold it from movement, a rack moving with said rod and

adapted to engage another arm of said lever, and the third arm being in the path of a coin inserted in the machine, substantially as set forth.

9. In a coin-controlled weighing-machine, the combination, with an inclined coin-conduit having separable sides, connected together, of a separating device lying between said sides, and a lever for depressing said device to spread the sides of the conduit apart, substantially as described

406,133. EDGE-BURNISHING TOOL. JOHN R. FOSS, Weymouth, Mass. Filed Mar. 23, 1889. Serial No. 304,511. (No model.)



Claim.—1. In combination with a shank having a chamber 5 to contain wax, an iron filling the end of said chamber and having a passage from its outer face to said chamber, and a valve for closing said passage, substantially as set forth.

2. In combination with a shank having a chamber in its end for containing wax, an iron screwed into said end and having a passage from its working-face to the said chamber, a valve closing said passage, and a valve-spring for holding said valve in a closed position until released, for the purpose set forth.

3. The tool-shank 3, provided with chamber 5 and burnishing-iron 4, combined with a spring-actuated valve 10, longitudinally of said head and provided with a stem 12, which projects beyond the active surface of the tool and rests against the material in the act of burnishing the latter, substantially as herein specified.

406,134. AWNING-BLIND. JAMES C. GITTINGS, WILLIAM J. POHLMAN and GEORGE YAKEL, Baltimore, Md.; said Pohlman and Yakel assignors to said James C. Gittings. Filed June 23, 1888. Serial No. 278,027. (No model.)



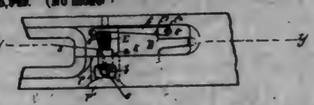
Claim.—1. In an awning-blind, the combination, with a series of parallel slats, flexible chain-connections therefor, the individual slats being pivotally suspended at their ends only in said chain-connections and provided near their upper edges with rings and fasteners, and pulleys p p' to support the lifting and adjusting cords of the blind, of a stretcher-bar pivoted to the window-frame and loosely connected to the lowermost slat, lifting cords or chains attached to said slat and passed loosely through guide-rings of the slats above it to raise the lower end of the blind, and the attached stretcher-bar and adjusting-cords r r', attached to the upper ends of the flexible connection and passed through the said pulleys to raise and lower the blind from the top, substantially as described.

2. In an awning-blind, a head-block and sheaves thereon, a pivoted stretcher-bar, an intermediate series of slats and flexible connections therefor, consisting of chains, each slat being provided at its ends only with projecting fasteners, each extended through and having bearings in one of the links of the said chain-connections to form horizontal pivots for each slat, the links forming bearings for the pivots, and intermediate guide-rings for the slats, combined with the lifting-cords r^2 r^3, attached to the lowermost slat and passed loosely through the guide-rings of the slats above it and around sheaves on the head-block to convert the blind into an awning, substantially as described.

3. The combination, with the slat of a blind and a chain, of a fastener consisting of a metallic strip or wire bent at each end to form a prong to enter the slat, and also bent to form an eye and leave a projecting neck beyond the slat to enter a link of the chain, the said link forming a bearing for the neck to operate, substantially as described.

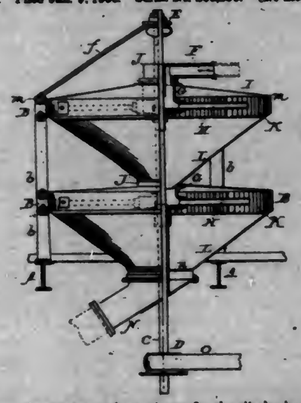
4. The combination, with the slat of a blind and a chain, of a fastener consisting of a metallic strip or wire bent at each end to form a prong to enter the slat, and bent to form an eye and leave a projecting neck to enter a link of the chain and rotate therein, and with a retaining device in the said eye to retain the neck in the link, substantially as described.

406,135. TENSION-REGULATING DEVICE FOR LOOM-SHUTTLES. GEORGE GOODLINE, Paterson, N. J. Filed Mar. 20, 1889. Serial No. 303,949. (No model.)



Claim.—The combination, with the shuttle-body having the race F and recess G formed therein, of the eyes a and b, the tuft E in said eye a, the lever C, having eye C' in its free end, and having said free end arranged to play in the race F between the eyes a and b, and spring D, part of which enters the recess G, all substantially as described.

406,136. PULP-ENGINE. ADOLPH HEMPEL, Cöslin, Prussia, Germany. Filed Jan. 9, 1888. Serial No. 260,250. (No model.)



Claim.—In a paper-pulp engine, a fixed cylinder having corrugations on its inner surface and a funnel extending downward therefrom and open at the bottom, in combination with a vertically-rotary shaft extending through said cylinder and funnel, a hollow hub mounted on said shaft within said cylinder, tubular radial arms extending from said hub nearly to said corrugations, and a feed-pipe supplying said hub with the material to be acted upon, substantially as set forth.

406,137. PUMP ATTACHMENT. ANDREW HOLLMAN, Elwood, Nebr. Filed Oct. 31, 1888. Serial No. 290,643. (No model.)



Claim.—1. The combination, with the pump-rod and a fixed stop, of the threaded tube adjustable on said pump-rod, a nut adjustable on said tube, and a spring arranged between the said stop and the nut, substantially as and for the purpose described.

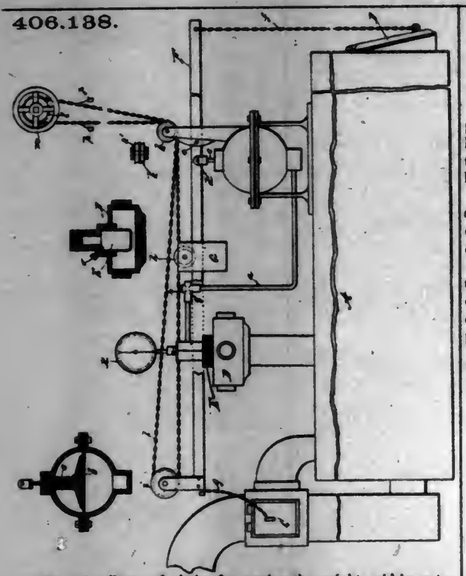
2. The combination, with the pump-rod having a threaded tube connected therewith, of a nut adjustable on said threaded tube, and a spring having connection with and placed between said nut and a stop, as G, substantially as and for the purpose described.

406,138. DRAFT-REGULATOR. JOHN HOPSON, Jr., New London, Conn. Filed May 22, 1888. Serial No. 274,721. (No model.)

Claim.—1. In a draft-regulator, a vessel containing liquid vaporizing at a lower degree of heat than water, a movable imperforate diaphragm actuated by said liquid and preventing escape thereof, a lever or arm moved by said diaphragm, a traveling weight mounted on said lever, pulleys also mounted on the lever, and chains or lines for adjusting the weight, and a draft-door connected with one end of the lever, these parts being combined and arranged to operate substantially as explained.

2. In a draft-regulator, the lever or arm carrying an adjustable

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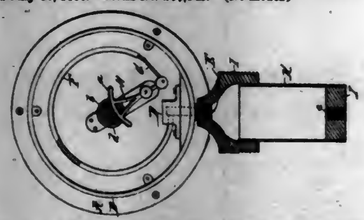


weight, and pulleys and chains for moving the weight, said lever being operated by the pressure of vapor from an easily-vaporizing medium—such as alcohol, &c.—confined by a movable imperforate diaphragm, said lever being connected on one side of its hinge-point with a draft-door and on the other side of its hinge-point with a check-draft door, these parts being combined and arranged substantially as explained.

3. In a draft-regulator, the closed vessel for containing alcohol or other easily-vaporizing material, the gage communicating with the interior thereof and operated by the pressure therein, an imperforate diaphragm, a lever connected with said diaphragm, the adjustable weight and pulleys and chains for moving said weight upon the lever, and the draft-door, combined and arranged substantially as shown and described.

4. In a draft-regulator, the combination, with the operating lever or arm and its actuating-diaphragm, of the adjustable weight mounted upon said lever or arm, the adjusting-chains connected with said weight, and the pulleys located one near the end of the lever and the other near the hinge-point, substantially as and for the purposes set forth.

406,189. THERMOMETER. JOHN HOPSON, Jr., New London, Conn. Filed July 16, 1888. Serial No. 280,143. (No model.)



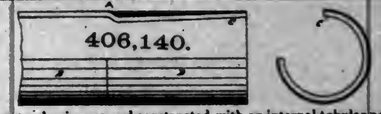
Claim.—1. In a thermometer, the Bourdon tube, the large externally-screw-threaded nut, the cylinder fitted to the interior of the externally-screw-threaded end of the nut, provided with a plug having an opening adapted to be sealed, substantially as specified.

2. In a thermometer, the combination of the tube, block, nipple, and externally-screw-threaded nut with a vessel having a correspondingly-threaded opening and with the enlarged cylinder having at its outer end a plug provided with a filling-orifice adapted to be sealed, all as set forth, whereby the instrument can be conveniently filled and plugged and sealed after the expulsion of air and then connected directly to the vessel.

406,140. TUBE FOR BOILERS, &c. SAMUEL E. HOWELL, Sheffield, County of York, England. Filed Dec. 10, 1888. Serial No. 293,076. (No model.)

Claim.—1. A metallic tube for steam-boilers and other like apparatus, having an end constructed with an internal tubular portion of hard metal and an external drawn tubular portion of ductile metal, the latter fast upon and consolidated with the metal of the former, as hereinbefore specified, for the purposes set forth.

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2. A metallic tube for steam-boilers and other like apparatus, constructed with a reduced end, and provided with a drawn sleeve of ductile metal fast on said reduced end and consolidated with the metal of the tube, substantially as hereinbefore specified.

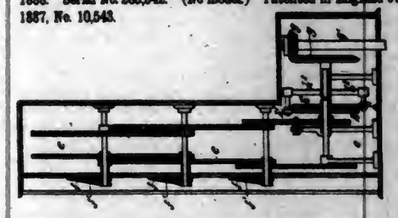
3. A metallic tube for steam-boilers and other like apparatus, constructed with a non-cylindrical reduced end, and provided with a drawn sleeve of ductile metal fast on said reduced end and consolidated with the metal of the tube, as hereinbefore specified, for the purpose set forth.

406,141. THREE-WAY VALVE. CHARLES W. JOHNSON, Holyoke, Mass. Filed Apr. 2, 1888. Serial No. 269,227. (No model.)



Claim.—The three-way valve herein described, consisting of shell A, having the tubular extension A', and having the chamber A^3, terminating at its inner end in the annular beveled seat *a*, pipes D E, having their ends suitably connected with said shell, and having their interiors connected with said seat *a* by means of ducts *d e*, pipe F, communicating with chamber A^3, near the outer end thereof, flattened disk C, having the stem B, and having its periphery beveled to correspond with seat *a*, said disk being provided with port *c*, extending between two points in the periphery thereof, and with port *c'*, extending from the outer side to the periphery thereof, cap H, closing the outer end of the shell, and spring H', bearing at one end against said cap and at its opposite end against disk C, at the center of the latter, combined and operating substantially as set forth.

406,142. PASSENGER-REGISTER. HENRY KERSHAW and THOMAS SUTCLIFFE, Rochdale, County of Lancaster, England. Filed Aug. 23, 1888. Serial No. 283,542. (No model.) Patented in England July 30, 1887, No. 10,543.



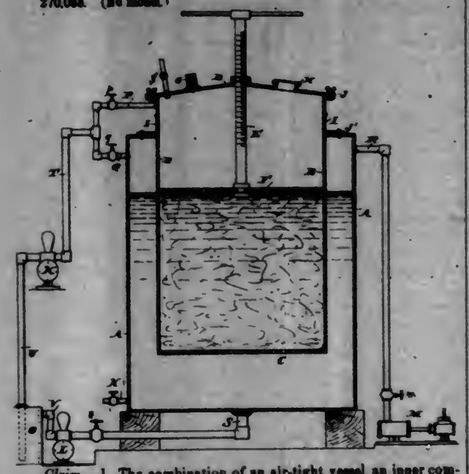
Claim.—1. The combination, with the dials, the vertical shafts *g'*, having bevel-wheels *h* h^3, and connecting-gearing, of the revolving shaft *i*, the sliding and revolving bevel-wheels *p r*, the pivoted levers *n*, connected by intermediate devices with the sliding bevel-wheels, the rotary screw *j*, and the screw-nut *l* on the screw for operating the levers, substantially as described.

2. The combination, with the dials and the vertical shafts *g'*, having bevel-wheels *h* h^3, of the shaft *i*, having sliding and revolving bevel-wheels *p* and *r*, the screw *j*, having the traveling screw-nut *l*, and lever mechanism operated by the nut to successively throw the sliding bevel-wheels out of gear with the bevel-wheels on the vertical shaft, substantially as described.

3. The combination, with the dials and the vertical shafts *g*, having bevel-wheels *h* h^3, of the shaft *i*, having sliding and revolving bevel-wheels *p r*, the screw *j*, having a screw-nut *l*, lever mechanism operated by the nut to successively shift the sliding bevel-wheels, the vertical shaft geared to the screw and driven by an axle, and the turnstile geared to the shaft carrying the sliding bevel-wheels, substantially as described.

4. The combination, with the dials and the vertical shafts *g'*, having bevel-wheels *h* h^3, of the horizontal shaft *i*, having sliding and revolving bevel-wheels *p r*, the screw *j*, driven from an axle and having the screw-nut *l*, provided with studs *m*, the forked levers *n*, the connecting-rods *o*, the parallel levers *o'*, the forked levers *o*^{3}, engaging the sliding bevel-wheels, and the turnstile *d*, geared to the shaft carrying the sliding bevel-wheels, substantially as described.

406,143. APPARATUS FOR TREATING TEXTILE FABRICS. JOHN H. LORIMER, Philadelphia, Pa. Filed Apr. 9, 1883. Serial No. 270,088. (No model.)



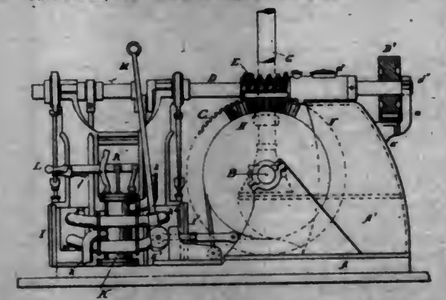
Claim.—1. The combination of an air-tight vessel, an inner compartment within said vessel having a perforated bottom, a vacuum-pump connected with said vessel and adapted to exhaust the air therein, and pipes opening, respectively, into the upper part of said inner compartment and the lower part of said vessel, and a pump connected with said pipes and adapted to circulate liquid through said pipes and inner compartment.

2. The combination of an air-tight vessel, an inner compartment within said vessel having a perforated bottom, a movable diaphragm in said compartment, a vacuum-pump connected with said vessel and adapted to exhaust the air therein, and pipes opening, respectively, into the upper part of said inner compartment and the lower part of said vessel, and a pump connected with said pipes and adapted to circulate liquid through said pipes and inner compartment.

3. The combination of an air-tight vessel, an inner compartment within said vessel having a perforated bottom, a vacuum-pump connected with said vessel and adapted to exhaust the air therein, and pipes opening, respectively, into the upper part of said inner compartment and the lower part of said vessel, a pump connected with said pipes and adapted to circulate liquid through said pipes and inner compartment, and a reservoir connected with the pipe from the vessel into which the liquor may be run off from said vessel.

4. The combination of an air-tight vessel having a compartment with an adjustable portion for holding materials to be treated against disturbance, pipes leading to and from said vessel for supplying a gas to the material in the compartment, a vacuum-pump to extract the air and assist the flow of the gases, and a liquid passage or conduit connecting with the two opposite ends of the vessel, and a pump to force the liquid through the material in the vessel prior to admitting the gases.

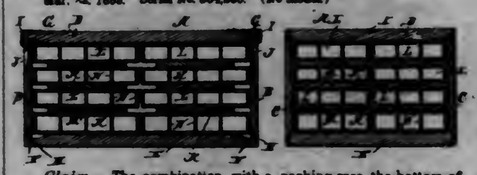
406,144. SHIP-WINDLASS. FRANK S. MASTON, Providence, R. I. Filed Dec. 22, 1888. Serial No. 294,440. (No model.)



Claim.—1. In a steam-windlass, the combination, substantially as hereinbefore described, of the bed-plate, the ship's windlass mounted crosswise on said plate, the driving-shaft lengthwise of said plate and coupled to the windlass by a worm and gear, a pair of vertical engines mounted closely side by side on said plate in a line at right angles to the windlass and coupled to cranks on said driving-shaft, and a reversing-valve mounted on said plate at the one side of and connected with the cylinders of both engines and in close proximity thereto, as and for the purposes specified.

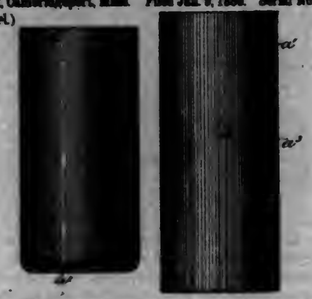
2. The combination, substantially as hereinbefore described, of a ship-windlass having its shaft athwart ship, a vertical capstan-shaft geared thereto, hand brake-levers for controlling the wild-cats of the windlass, a pair of vertical engines side by side on a line at right angles to the windlass-shaft and coupled thereto by means of a crank-shaft, worm, and gear, and a reversing-valve mounted at one side of and connected with the cylinders of both engines, and having a hand-lever located adjacent to the brake-lever, whereby one person, while controlling one wild-cat, may maintain constant control of the other wild-cat or the capstan, or both, and cause them to be rotated in either direction or to stand at rest, as and for the purposes specified.

406,145. PACKING-CASE. HENRY A. MOSS, Seguin, Tex. Filed Mar. 22, 1889. Serial No. 304,260. (No model.)



Claim.—The combination, with a packing-case the bottom of which is provided with transverse grooves near the ends and the ends of the top of which are rabbeted on their under sides, of the removable ends shouldered at their lower edges, and the spring-catches attached to the upper side of the top of the case, substantially as set forth.

406,146. METHOD OF MAKING LEAD TRAPS. ALPHEUS A. ROBINSON, Cambridgeport, Mass. Filed Jan. 9, 1889. Serial No. 296,574. (No model.)



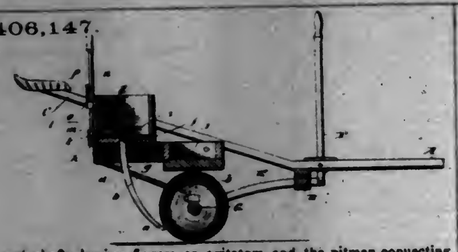
Claim.—1. The improved method of forming the bottoms of lead traps, consisting in taking a tube or cylinder of a sufficient length and in spinning an end section of the cylinder or tube of sufficient length to or beyond the center of the tube or cylinder and under a pressure or friction sufficient to cause the metal to flow and unite and form a homogeneous seamless and complete bottom, as and for the purposes specified.

2. The improved method of forming lead-trap bodies, comprising the taking of a cylinder or tube of sufficient length to form the wall of proper height and a continuous homogeneous bottom and forming the homogeneous bottom by spinning in under heat produced by pressure or friction of the spinning-tool during the spinning operation an end section of the tube or cylinder sufficiently large to form the homogeneous bottom, and continuing said spinning operation under said heat past or beyond the center of the bottom, whereby all the metal of the spun-in section forms a part of the bottom of the trap, and subsequent melting or soldering of the bottom of the trap to close a hole dispensed with, substantially as described.

406,147. SEEDING ATTACHMENT FOR DISK HARROWS. JONATHAN J. ROGERS and OLIVER S. KENNEDY, Fort Worth, Tex. Filed Nov. 13, 1888. Serial No. 290,718. (No model.)

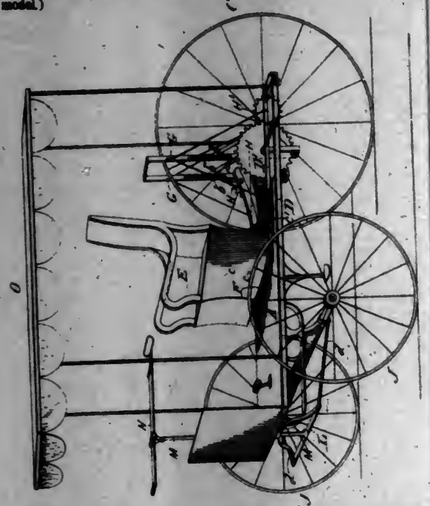
Claim.—The combination of the axles having their outer ends journaled in stationary and their inner ends in longitudinally-adjustable bearings and provided with the harrow-disks, the weight-boxes I, mounted on vertical standards above said axles and having rearward-extending arms or braces, the seed-boxes mounted upon said braces above and in rear of the weight-boxes and having downwardly-extending forwardly-curved drill-tubes, the adjustable seed-slides, the

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rock-shafts having fingers or agitators, and the pitman connecting cranks upon the rock-shafts with cranks upon the axles, substantially as set forth.

406,148. VELOCIPEDE. JOHN D. RULLMANN and GEORGE BOKENROTH, San Antonio, Tex.; said Rullmann assignor to said Bokenroth. Filed Mar. 13, 1886. Renewed Jan. 13, 1889. Serial No. 296,792. (No model.)



Claim.—1. As an improvement in velocipedes, the combination, with a rocking-chair mounted upon a platform of the vehicle and retained in position by the slotted curved guides F and pins *c'*, of the rods *b*, pivoted to the rockers of said chair and to a cross-head moving in vertical guides, the rods *b'*, connecting said cross-head with the crank-pin of a gear-wheel H, the pinion H', and propelling-wheel C, all constructed and arranged substantially as and for the purpose shown and described.

2. As an improvement in velocipedes, the platform A and frame B, in combination with the steel band D, encircling three sides of said frame and platform and extending in rear thereof to form the supports for the propelling-wheel and its gearing, as set forth.

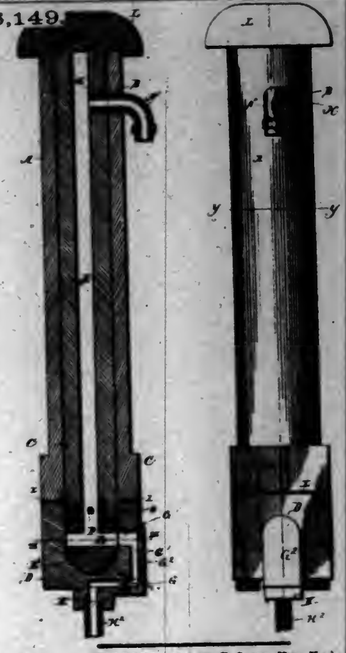
3. As an improvement in steering-gear for velocipedes, the combination, with the front axle, of the lever L, its connections with said axle, the standard M, provided with a loop at its upper end, and the sliding handled lever N, all arranged and operated as shown and described.

406,149. HYDRANT. JACOB SCHUSTER, St. Clair, Pa. Filed June 8, 1888. Serial No. 276,109. (No model.)

Claim.—The combination, with the valve having the transverse channel and vertical opening, of the valve seat or block having the laterally-extending channels F G and the extension G' of the latter formed by recesses in the side and bottom of the seat or block, the angular covering-plate G^2, having collar H, and the supply-pipe coupled to said collar, substantially as and for the purpose set forth.



406,149.

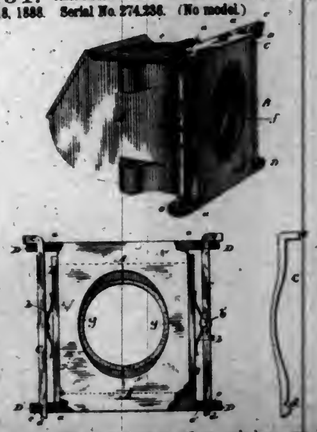


406,150. NUT-LOCK. NELSON T. SCOTT, New York, N. Y. Filed July 29, 1886. Renewed Dec. 11, 1888. Serial No. 293,325. (No model.)



Claim.—The combination, with a screw-threaded bolt, of a nut having a shouldered recess in its inner face and a conical washer projecting originally beyond the face of the nut and having a toothed inner edge and a flange at its base fitting the recess in the nut, whereby, when the nut is screwed home, the washer is forced into the recess, so as to become practically integral with the nut and bolt, substantially as shown and described.

406,151. CAR-AXLE BOX. DAVID S. STINSON, Kittery, Me. Filed May 18, 1888. Serial No. 274,336. (No model.)



Claim.—1. The combination of an axle-box provided with a dust-guard chamber having vertical slots in its opposite sides and with lateral slotted ears adjacent to said chamber, a sectional dust-guard adapted to be inserted or withdrawn in sections through the vertical slots in the sides of the chamber, and spring-holders engaging the slots of said ears and pressing upon the flanges or outer ends of the dust-guard sections.

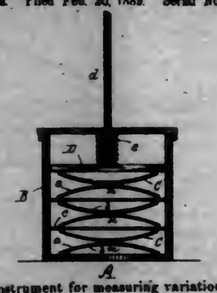
2. The combination of an axle-box provided with a dust-guard chamber having vertical slots in its opposite sides and with lateral slotted ears adjacent to said chamber, a sectional dust-guard adapted to be inserted or withdrawn in sections through the vertical slots in the sides of the chamber, and spring-holders engaging the slots of said ears and pressing upon the flanges or outer ends of the dust-guard sections, each of said holders being provided with a hook at its upper end and with a notch at its lower end for engaging the slotted ears.

3. The combination of an axle-box provided with a dust-guard chamber and with laterally-projecting slotted ears adjacent to said chamber, a sectional dust-guard, bars engaging said slotted ears, and springs interposed between said bars and the outer ends of the sections of the dust-guard.

4. The combination of an axle-box provided with a dust-guard chamber and with laterally-projecting slotted ears adjacent to said chamber, a sectional dust-guard, bars provided with hooks engaging the upper slotted ears and with notches engaging the lower slotted ears, and springs interposed between said bars and the ends of the dust-guard.

5. The combination of an axle-box provided with a dust-guard chamber and with laterally-projecting slotted ears adjacent to said chamber at the top and bottom of the box, the ears at the bottom being provided with ribs at the outer ends of their slots, a sectional dust-guard, and spring-holders for retaining the dust-guard sections, said holders being provided at their upper ends with hooks, which engage the ears at the top of the box, and at their lower ends with notches which engage the ribs of the ears at the bottom of the box.

406,152. METALLIC THERMOMETER. THOMAS L. STURTEVANT, Framingham, Mass. Filed Feb. 20, 1889. Serial No. 300,526. (No model.)

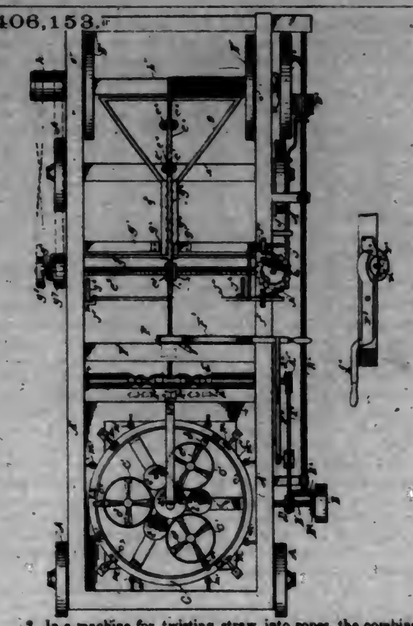


Claim.—1. An instrument for measuring variations of temperature, consisting of a series of co-operating elements, each element formed of two metallic plates with unequal coefficients of expansion, said plates having initial curvature, arranged oppositely in couples and capable of multiplication, in combination with a piston resting on said elements, an indicating-rod attached to said piston and movable therewith, and a returning-spring bearing on said piston, substantially as and for the purposes herein described.

2. An apparatus for indicating variations of temperature, as herein described, consisting of a series of confined metallic plates formed of two metals having unequal expansion, a series of flat plates alternating with said bimetallic plates, and a piston and indicator-rod actuated by the expansion and contraction of said bimetallic plates, substantially as specified.

3. The combination, with the box B, its piston D, the rod *d*, and its spring *c*, of a series of elements C, composed of two metals *a b*, with unequal expansion, united together, and the intervening flat plates *c*, between which a single bimetallic plate or pair of plates may be disposed, substantially as herein set forth.

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406,153. MACHINE FOR TWISTING STRAW, &c., FOR FUEL. LAWRENCE SULLIVAN, Stillwater, Minn. Filed Dec. 10, 1885. Serial No. 185,214. (No model.)

Brief.—The object of the invention is to provide an improved machine for twisting straw, &c., into rope and winding the same upon spools, to be cut up as desired for fuel.

Claim.—1. In a hay or straw twisting machine, the combination of the main frame, a revolving platform placed thereon and provided with a gear-wheel, a driving-shaft provided with a gear-wheel engaging the gear-wheel upon the revolving platform, funnels journaled in the platform, gear-wheels secured to their lower ends, and a stationary gear-wheel placed at the center of the circle described by the lower ends of the funnels, and with which the said gear-wheels secured to the funnels engage, whereby a rotary motion is imparted to the platform and funnels through the medium of the driving-shaft, substantially as shown and described.

2. In a machine for twisting straw into ropes, the combination of the main frame, the platform, one or more funnels journaled thereto, gear-wheels secured to their lower ends, a gear-wheel journaled at the center of the platform which engages the gear-wheels on the ends of the funnels, a driving-shaft journaled in the frame, and a gear-wheel secured to the inner end of the shaft which engages the said gear-wheel at the center of the platform, whereby the platform remains stationary and the funnels revolve for producing single ropes, substantially as shown and described.

3. The combination of the frame, a revolving circular platform journaled thereon, a number of funnels in which the straw is placed, journaled in the revolving platform, gear-wheels secured to the lower ends of the funnels, a driving-shaft journaled in the frame, a gear-wheel secured to the inner end of the shaft, a gear-wheel secured to the circular platform engaging the said gear-wheel upon the shaft, and a stationary gear-wheel engaging the gear-wheels upon the lower ends of the funnels, an inverted conical guide or funnel secured to the frame approximately to the center of the circle described by the funnels for the purpose of bringing the several ropes from the funnels to a common point and twisting them together, and guiding-pulleys for supporting the twisted rope, substantially as set forth.

4. The combination of the frame, the revolving platform journaled thereon, a gear-wheel secured to it, the funnels journaled in the platform, gear-wheels secured to lower ends of the funnels, a stationary gear-wheel engaging the said gear-wheels, a driving-shaft journaled in the frame, a gear-wheel upon its inner end engaging the platform gear-wheel, an inverted cone placed below the revolving platform, guiding-pulleys d', the rollers d^3, between which the rope passes, pulley d^7 upon the driving-shaft, the pulley d^8, secured to one end of one of the rollers, and the belt d^9, whereby the rope is automatically drawn from the funnels as rapidly as finished, substantially as specified.

5. The combination of the frame, the revolving platform, a gear-wheel secured thereto, a driving-shaft provided with a gear-wheel upon its inner end engaging the platform gear-wheel, a number of funnels journaled in the platform, gear-wheels upon their lower ends, a stationary gear-wheel placed at the center of the circle described by the funnels and engaging the gear-wheels secured thereto, the inverted cone placed below the funnels, the guiding-pulleys d' and rollers d^3, between which the rope passes, the pulleys d^7 d^8, belt d^9, the stationary knife F^3, and pivoted knife F^4, and the arms f^4, pivoted to the frame A', tightening-pulley secured to its free end for engaging the belt and having its opposite end engaged by the pivoted handle of the knife F^4, whereby when the knife-blade is forced downward to sever the rope by raising the handle upward the belt d^9 is loosened and the rollers d^3 stopped, for the purpose described.

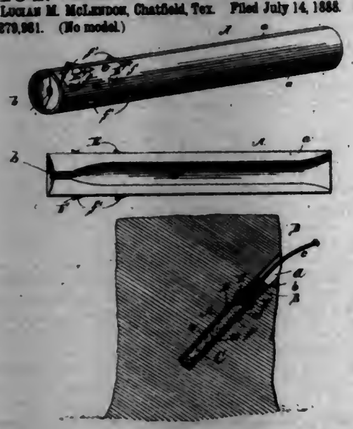
6. In a machine for twisting hay and straw into ropes, the combination, with revolving funnels for twisting the material into ropes, of a winding mechanism consisting of a receiving spool or shaft, a friction-disk secured thereto, a counter-shaft driven by the main shaft,

a sliding friction-pulley upon said shaft engaging the said friction-disk, a pivoted guiding-lever, through which the rope passes, a ratchet-wheel, a sliding bar carrying ratchets which engage and revolve the ratchet-wheel, a revolving screw-shaft, a screw-block thereon which engages the sliding bar and moves it back and forth, and also the inner end of the guiding-lever, a shifter having one end to engage the rope upon the spool, and which is moved endwise by the accumulation of rope thereon, a sliding bar engaging the opposite end of the said shifter, and clutches upon the end of the screw-shaft, whereby the revolution of the shaft is reversed alternately by the movement of the shifter, a gear-wheel secured to the ratchet-wheel, and a fork engaging the said gear-wheel, and the sliding friction-pulley for moving it along its shaft and across the face of the friction-disk, for the purpose substantially as shown and described.

7. The combination, in a machine for twisting straw into ropes, of the frame, the revolving platform, the funnels journaled therein, the driving-shaft for revolving the platform by means of gear-wheels, the counter-shaft driven by the driving-shaft, guiding-rollers for the rope, the spool upon which the twisted rope is wound, the guiding-lever pivoted to the frame and through which the rope passes, a screw-shaft, a screw-block placed upon the shaft and engaging the inner end of the guiding-lever, the coupling-shifter g^4, clutch-pulleys g^7 g^8, and coupling g^6, placed upon one end of the screw-shaft, the shifter g, having shoulders g^5, which engage the projections g^6 upon the coupling-shifter g^4 as it is forced inward, the ratchet-wheel f, carrying a gear-wheel, the shifting-fork j, having one end to engage the pulley B^3 and its opposite end formed into a rack and engaging the gear-wheel, and the sliding bar j^3, provided with pawls for operating the ratchet-wheel, and with projections at each end, with which the screw-block engages at each end of its movement upon the screw-rod, the pulley B^3, and friction disk B^4, all combined to operate in the manner substantially as shown and described.

8. In a hay or straw twisting machine, the combination of the main frame, a revolving platform placed thereon and provided with a gear-wheel, a driving-shaft provided with a gear-wheel engaging the gear-wheel upon the revolving platform, a suitable number of funnels journaled in the platform, gear-wheels secured to their lower ends, and a stationary gear-wheel placed at the center of the platform, and with which the said gear-wheels secured to the funnels engage, and radial arms within the funnels for preventing the straw from turning with them, for the purpose substantially as specified.

406,154. BLASTING-CARTRIDGE. JAMES P. TODD, JOHN S. WELCH, and LUCIAN M. MCLENDON, Chatfield, Tex. Filed July 14, 1888. Serial No. 279,961. (No model.)

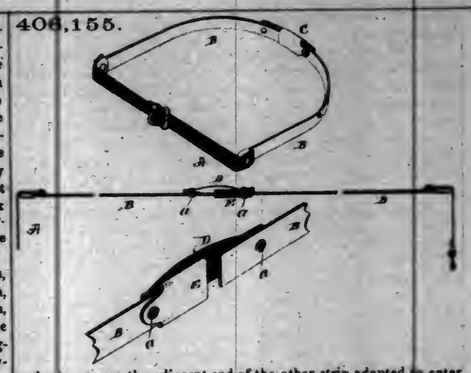


Claim.—A blasting-cartridge composed of two similar semi-cylindrical sections having flat smooth faces their entire length, adapted to rest or bear against each other and grooved to form the cylindrical fuse-opening, and the bore tapering from said fuse-opening to the bottom or inner end of the shell, said semi-shells being provided on their outer sides and at their front ends for a portion of their lengths only with sharp-pointed spurs or projections having vertical front walls and sharp inclined rear edges, substantially as and for the purpose set forth.

406,155. FOLDING DRESS-EXTENDER. JACOB W. WEEKS and LULU A. WEEKS, Detroit, Mich.; said Jacob W. Weeks assignor to said Lulu A. Weeks. Filed Feb. 23, 1888. Serial No. 300,956. (No model.)

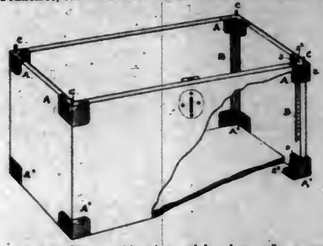
Claim.—As an improved article of manufacture, the folding dress-extender consisting of two spring-strips B B, an elastic connection D, a sheath E, rigidly secured to the end of one of said strips,

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and a tongue on the adjacent end of the other strip adapted to enter said sheath, all as specified.

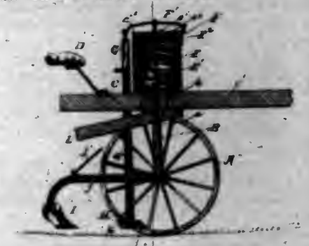
406,156. METAL CORNER-PIECE FOR BOXES. JAMES C. WEIR, San Francisco, Cal. Filed Oct. 16, 1888. Serial No. 288,275. (No model.)



Claim.—1. The combination, with a box, of a corner-piece for the upper corner, consisting of two parallel angle-plates and a connecting-web, an angle-piece for the lower corner, consisting of two parallel angle-plates, a connecting-web, and a projecting flange extending inward on a line with the web, and a corner angle-iron B, connecting the inside angle-plates of the upper and lower corner-pieces, as and for the purpose set forth.

2. A metal corner-piece for boxes and trunks, consisting of two parallel angle-plates a a, a connecting-web a^3, uniting the angle-plates on one side, and a projecting flange a^2, extending inward on a line with the web a^3, as set forth.

406,157. COTTON-CHOPPER. JOSEPH S. ARNELL, Fulton, Ark., assignor of one-half to Adolphus B. Galloway, same place. Filed Mar. 1, 1889. Serial No. 301,600. (No model.)



Claim.—1. In a cotton chopper and cultivator, the combination, with the axle and supporting-beam, of the box on the same, the spring-actuated rod in the box, the lever resting on the rod, the swinging frame on the lever having teeth on its lower end, and a handle on the frame, substantially as described.

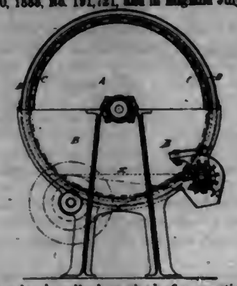
2. The combination of the axle, the box E, the spiral spring in the box, the rod connected with the movable top of the box, the lever resting on the rod, and the frame G on the lever having teeth on its lower end and a handle and stirrups by which it is operated, substantially as described.

3. The combination of the axle, the box, the spring-actuated rod passing through the box, the lever resting on the rod, the frame, as G, suspended from the lever in the rear of the box, the seat in the rear of the lever, the plows below the seat attached to the axle, and the lever K, for moving the plows up or down, substantially as described.

4. The combination, with the frame and the spring-actuated rack G, of the ring on its lower end, teeth on the ring, and feeders, as N, on the ring outside the teeth, substantially as described.

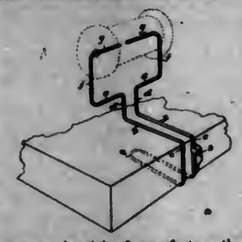
5. The combination of the axle, as B, the supporting-beam C, the box E, the spring in the box, the movable top of the box, the rod extending through the box and secured to the top, the clip F, the lever F', the frame G on the lever, the ring on the bottom of the frame, the handle and stirrups on the frame, the two plows, the arch J', connecting the plows, and the lever K, substantially as described

406,158. PROCESS OF PURIFYING FATTY ACIDS. CHARLES BARDY, Paris, assignor to Marie Victoire Brisset, Petit, St. Denis, France. Filed Aug. 10, 1888. Serial No. 282,430. (No specimens.) Patented in France July 10, 1888, No. 191,731, and in England July 16, 1888, No. 10,296.



Claim.—The herein-described method of separating solid from liquid fatty acids, which consists in dissolving the mixed acids in a solvent soluble in water, as alcohol or wood-spirit, for example, under the influence of heat and then cooling the solution until the solid acid crystallizes, then removing the crystals, then adding water to the mother-liquor, whereby it is diluted and the liquid acids are thus caused to separate from the solvent, and then removing said liquid acids, substantially as set forth.

406,159. SPOOL-HOLDER. JOHN BLAKEATE, Cleveland, Ohio. Filed Apr. 13, 1889. Serial No. 306,970. (No model.)



Claim.—As an improved article of manufacture, the spool-holder herein described, consisting, essentially, of a single piece of wire bent and forming the tongue a, shoulders c c at right angles to the tongue portion a, central stems b b, at right angles to the shoulders c, and substantially parallel to the tongue portion, to fasten the holder to a table or the like, shank portions d d at right angles to the stems b b and extending outward from the plane of the tongue a, and the portions e e, f f, and g g, for holding the spool, the ends of the wire being arranged to project into the spool, substantially as set forth.

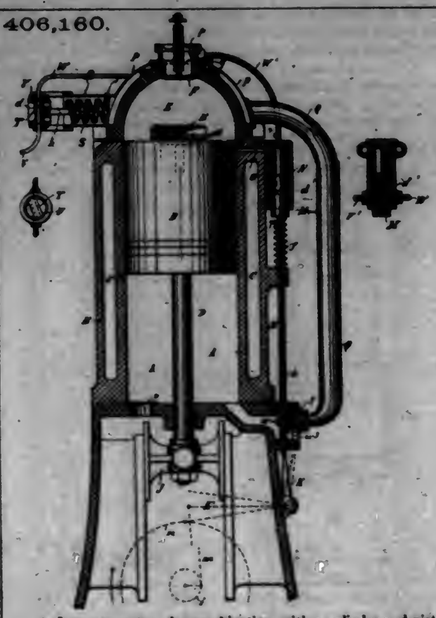
406,160. GAS-MOTOR. EMIL CAPITAINE, Berlin, Germany. Filed Nov. 14, 1888. Serial No. 290,790. (No model.) Patented in Germany Aug. 15, 1888, No. 45,129.

Claim.—1. In a gas-engine, the combination, with a cylinder and piston, of a combustion-chamber on the cylinder, a jacket surrounding said combustion-chamber, and pipes for conducting air into and out of the jacketed space, a thermostat in said air-outlet pipe, and a water-valve governed by said thermostat, substantially as set forth.

2. In a gas-engine, the combination, with a cylinder and piston, of an explosion-chamber on one end of the cylinder, tubes for conducting air into and out of said explosion-chamber, a thermostat in the outlet-tube, a valve mounted to rock on its center and connected with said thermostat, and two water-conducting pipes connected with the valve-casing at opposite points, substantially as set forth.

3. In a gas-engine, the combination, with a cylinder and piston, of a combustion-chamber, a jacket surrounding said combustion-chamber, a pipe for conducting air into said jacket, a valve controlling said pipe, a rod on which said valve is secured, a piston on the upper end of said rod, and a cylinder in which the piston works, said cylinder being connected with the upper part of the main cylinder of the machine, substantially as set forth.

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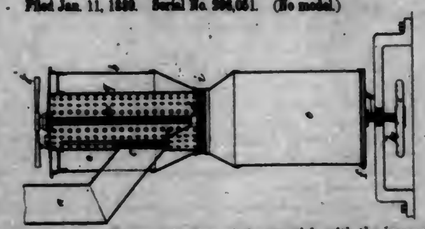


4. In a gas-engine, the combination, with a cylinder and piston, of a combustion-chamber, a jacket surrounding said combustion-chamber, a pipe for conducting air into said jacket, a valve controlling said pipe, a rod on which said valve is secured, a piston on the upper end of said rod, and a cylinder in which the piston works, said cylinder being connected with the upper part of the main cylinder of the machine, a water-supply pipe controlled by said piston, leading to the explosion-chamber, substantially as set forth.

5. In a gas-engine, the combination, with a cylinder and piston, of an explosion-chamber on said cylinder, a jacket surrounding the explosion-chamber, a pipe for conducting air into said jacket, a valve controlling said pipe, a rod on which said valve is secured, a piston on the upper end of said rod, a cylinder in which said piston works, said cylinder being connected with a channel in the upper part of the main cylinder, and a spring for pressing the piston of said additional cylinder upward, substantially as set forth.

6. In a gas-engine, the combination, with a cylinder and a piston, of an explosion-chamber on said cylinder, a jacket surrounding said explosion-chamber, a cylinder connected with the top of the main cylinder, a piston in said additional cylinder, a rod connected with said additional piston, an angle-lever having one arm below said rod, and an eccentric on the main shaft governing said angle-lever, and a water-supply pipe extending from the additional cylinder to the jacket of the explosion-chamber, substantially as set forth.

406,161. APPARATUS FOR SEPARATING, FILTERING, AND DISINFECTING FECAL MATTERS. JEAN CHABANEL, Paris, France. Filed Jan. 11, 1889. Serial No. 296,051. (No model.)



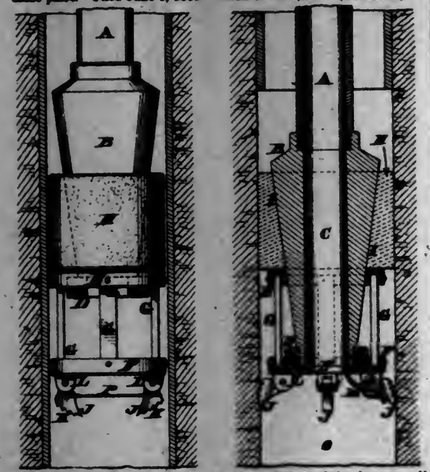
Claim.—1. The combination of the vessel b, with the inner perforated cage g, with the inlet-pipe a, leading into said cage, and with the piston d within said cage, said piston being provided with the lower packing-ring k and the circumferential scraper p, substantially as and for the purpose herein shown and described.

2. The combination of the vessel b and inner perforated cage g, and inlet-pipe a, leading to said cage, with the piston d, adapted to move within said cage, and with the slide c, which is adapted to be moved up and down by said piston to open and close the inlet-pipe, as specified.

3. The combination of the vessel *b*, inner perforated cage *q*, inlet-pipe *a*, slide *c*, and piston *d*, with the lower vessel *e*, table *f*, and screw *g*, substantially as and for the purpose specified.

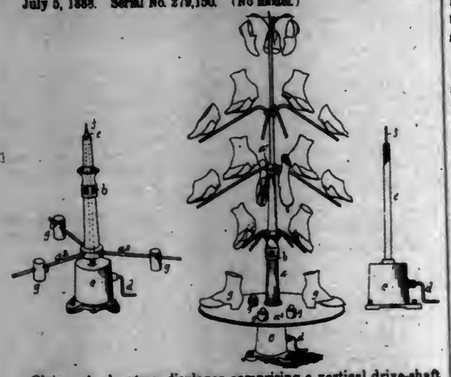
4. The combination of the vessel *b*, inner perforated cage *q*, inlet-pipe *a*, leading to said cage, slide *c*, piston *d*, and overflow-pipe *r*, having branch *u*, with the lower receiving-vessel *e*, and vertically-movable table *f*, for supporting said vessel *e*, as specified.

406,162. COMBINED WELL PACKING AND ANCHOR. WILLIAM A. DONNELL, Greensburg, Ind., assignor of one-half to Joseph Drake, same place. Filed June 8, 1888. Serial No. 276,509. (No model.)



Claim.—A well packer and anchor consisting of the downwardly tapering plug B, having an axial bore C, a pipe A, secured to the upper end of said plug, and a nut D, screwed to its lower end, in combination with an open cage composed of an upper ring E and lower ring F, united by a system of bars G, the lower ring F being provided with a series of self-acting dogs J, and the upper ring E carrying an elastic packing H, having a longitudinal bore I, traversed by said tapering plug B, all as herein described, and for the purpose stated.

406,163. DISPLAY-RACK. ROBERT FARIES, Decatur, Ill. Filed July 5, 1888. Serial No. 279,150. (No model.)

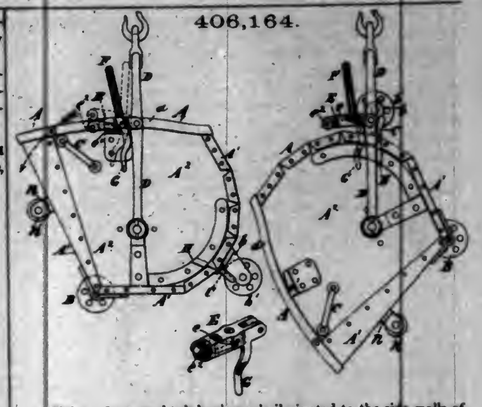


Claim.—1. A rotary displayer comprising a vertical drive-shaft, a displayer resting on the upper end of the drive-shaft in stable equilibrium, and a support on the displayer for movable weights, as and for the purpose set forth.

2. A rotary displayer comprising a vertical drive-shaft and a displayer on a tubular standard that rests on the upper end of the shaft and encompasses the same, the said displayer being adapted to support movable weights, as and for the purpose set forth.

3. A rotary displayer comprising a vertical drive-shaft and a displayer on a tubular standard that rests on the upper end of the shaft and encompasses the same, the displayer being adapted to support shifting weights, and the standard being perforated to expose the drive-shaft, as and for the purpose set forth.

406,164. COAL-TUB. GEORGE FORST, Hoboken, N. J. Filed Oct. 15, 1888. Serial No. 288,184. (No model.)



Claim.—1. A coal-tub having a bail pivoted to the side walls of the same, latches pivoted to the said bail on each side of the tub, each provided with a roller at its free end, which latches are connected by an arm or bail extending from the latch on one side to the latch on the other, and lugs attached to the side walls of the tub, substantially as described.

2. A coal-tub having a bail pivoted to the side walls of the same, a latch pivoted to the said bail on each side of the tub, an arm or bail extending from the latch on one side to the latch on the other side of the tub, an arm extending from each of said latches downward, and a lug attached to each side of the tub, substantially as described.

3. A coal-tub having a bail pivoted to the side walls of the same, a latch pivoted to the said bail on each side of the tub, an arm or bail extending from the latch on one side to the latch on the other side of the tub, arms extending from the said latches downward, a lug attached to each side of the tub, and a fixed stop attached to the bottom part of the tub, substantially as described.

4. A coal-tub having a bail pivoted to the sides of the tub, a latch pivoted to said bail on each side of the tub, an arm or bail extending from the latch on one side to the latch on the other side, an arm extending downward from one of said latches, and a lug on each side of the tub, substantially as described.

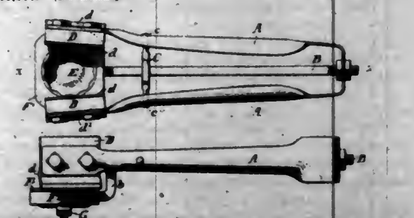
5. A coal-tub having a bail pivoted to the sides of the tub, a latch pivoted to said bail on each side of the tub, an arm or bail extending from the latch on one side to the latch on the other side, and a lug on each side of the tub, substantially as described.

6. A coal-tub having a bail pivoted to the sides of the tub and a fixed lug on each side of the tub, a latch pivoted to said bail on each side of the tub, an arm or bail extending from the latch on one side to the latch on the other side, and an arm extending downward from one of said latches, substantially as described.

7. A coal-tub having a bail pivoted to the sides of the tub and a fixed lug on each side of the tub, a latch pivoted to said bail on each side of the tub, and an arm or bail extending from the latch on one side to the latch on the other side, substantially as described.

8. A coal-tub having a bail pivoted to the side walls of the same, a latch pivoted to the said bail on each side of the tub, an arm extending down from one of said latches, and a lug attached to each side of the tub, substantially as described.

406,165. DEVICE FOR MOLDING ARTICLES FROM GLASS. WILLIAM S. FOX, Philadelphia, Pa. Filed Mar. 27, 1889. Serial No. 305,000. (No model.)



Claim.—1. The combination of a central rotating mold, a lateral non-rotating mold-block, and means, substantially as set forth, whereby the mold-block may be moved transversely to the axis of rotation of the mold during the rotation of the latter.

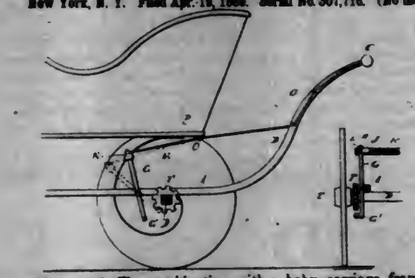
2. The combination of a pair of tongs, a pair of mold-blocks attached to the free ends of said tongs, a mold-carrier suitably mounted upon said tongs, and a rotating mold freely mounted within said carrier, substantially as set forth.

3. The combination of a pair of spring-tongs, a pair of mold-blocks mounted upon the free ends of said tongs, a rod attached to the center of said tongs, a guide and stop piece arranged upon said rod, a mold-carrier mounted upon said rod and having a horizontal flange on which said mold-blocks move, and a rotating mold freely mounted within said mold-carrier, substantially as set forth.

406,166. OBTAINING CATTLE-FOOD FROM STARCH REFUSE. PAUL H. GRIEM, Glen Cove, N. Y., assignor to the Glen Cove Manufacturing Company, same place. Filed Apr. 12, 1888. Serial No. 307,026. (No specimens.)

Claim.—The process herein described of obtaining dry feed for animals from the refuse of the starch and glucose manufactures; consisting in first subjecting the coarse refuse to pressure to free it from water, next adding to this coarse refuse freed from water the fine refuse containing the glutinous and nitrogenous parts of the grain, afterward subjecting the said coarse refuse and fine refuse together to pressure to express the greater part of the moisture therefrom, and finally subjecting them to the action of heat for the purpose of evaporating the moisture therefrom, substantially as herein set forth.

406,167. BRAKE FOR BABY-CARRIAGES. ROBERT T. HAWKINS, New York, N. Y. Filed Apr. 19, 1888. Serial No. 307,716. (No model.)

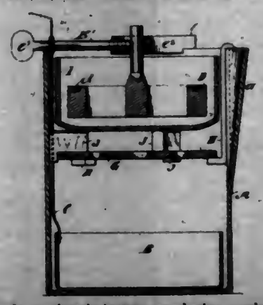


Claim.—1. The combination, with a baby-carriage frame, of wheels having toothed disks or wheels on their hubs, a locking-lever pivoted to the side bars of the supporting-frame of the carriage at each hub, to swing in a plane parallel with that of the side bar, a laterally-projecting lug on the lower end of each lever adapted to engage the teeth of the disks, and straps connecting with said levers and extending to the handle-bar of the carriage-frame, substantially as set forth.

2. The combination, with a baby-carriage frame and its wheels, of toothed disks or wheels secured to the hubs, locking-levers adapted to engage the toothed wheels or disks on the hubs, a cross-bar uniting said levers, and a strap secured to said bar and to the handle-bar of the frame, substantially as set forth.

3. The combination, with a baby-carriage frame and wheels, of toothed disks or wheels F on the hubs, pivoted locking-levers G, having screw-threaded stems N on their upper ends and having their lower ends adapted to engage the toothed disks or wheels F, the cross-bar K, having longitudinal slots through which the screw-stems H are passed, the nuts L, screwed on said stems, and straps extending from the bar K to the handle-bar, substantially as set forth.

406,168. ELECTRIC BATTERY. CHARLES A. HUSSEY, New York, N. Y. Filed Nov. 17, 1888. Serial No. 291,143. (No model.)

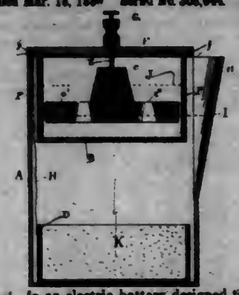


Claim.—1. In an electric battery employing a solution of a salt of copper, the combination, with a cell and positive and negative elements, of a porous diaphragm arranged in the upper part of the cell below the positive element, and a piece of metal which is arranged below the porous diaphragm and will decompose the salt-of-copper solution, substantially as specified.

2. In an electric battery employing a solution of a salt of copper, the combination, with a cell and positive and negative elements, of a porous diaphragm arranged in the upper part of the cell below the positive element, and a piece of iron or steel arranged between the porous diaphragm and the negative element, substantially as specified.

3. In an electric battery employing a solution of a salt of copper, the combination, with positive and negative elements, of a piece of iron or steel interposed between the said elements, substantially as specified.

406,169. ELECTRIC BATTERY. CHARLES A. HUSSEY, New York, N. Y. Filed Mar. 18, 1889. Serial No. 303,644. (No model.)



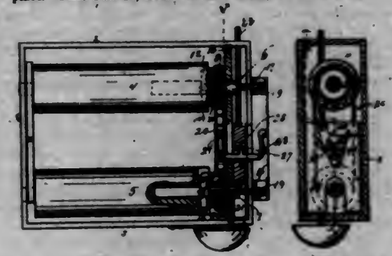
Claim.—1. In an electric battery designed for two fluids, a porous diaphragm for separating the two fluids and extending solely in a horizontal or approximately horizontal plane and having non-porous vertical walls, substantially as specified.

2. In an electric battery designed for two fluids, the combination, with a cell, of a cup having a porous bottom portion and an upper non-porous portion, substantially as specified.

3. In an electric battery designed for two fluids, a cell made of porous material, the upper portion being made non-porous by the application of a material closing the pores and resisting the fluids in the battery, substantially as specified.

4. In an electric battery designed for two fluids, the combination, with a cell provided with a spout, of a cup arranged in the upper part of the cell, its bottom being above the lower portion of the spout, substantially as specified.

406,170. STATION AND STREET INDICATOR. CHARLES H. JESSE, Indianapolis, Ind., assignor of one-half to Norman S. Braden, same place. Filed Dec. 17, 1888. Serial No. 293,767. (No model.)



Claim.—1. In an indicator of the character described, the main casing, a vertical gravitating block at the side thereof, a crank-shaft passing through said block, and a yoke-lever on the inner end thereof, in combination with rollers within said casing, an apron on said rollers, for the purpose set forth, and means for imparting rotary motion to said rollers.

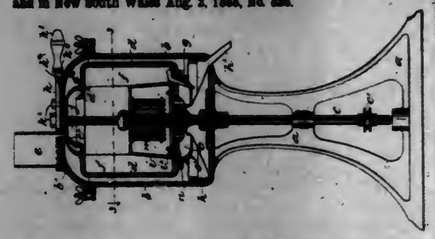
2. In an indicator for street-cars, &c., the main casing, rollers therein, sprocket-wheels mounted on the ends of said rollers, and an endless sprocket-chain engaging said sprocket-wheels, in combination with a block located at the side of the main casing and formed with an opening, a V-shaped spring in said opening, a crank-shaft having an upwardly-projecting pin adapted to engage said spring, a yoke-lever secured on the inner extremity of said crank-shaft, and a rope or chain having its end secured to said block, all substantially as and for the purposes set forth.

3. In an indicator for street-cars, &c., the main casing, rollers journaled therein, hollow spindles at the extremities of said rollers, and an apron connecting said rollers and adapted to serve the purpose specified, in combination with sprocket-wheels mounted on said

spindles and having their inner faces formed with crown-teeth, an endless sprocket-chain engaging said sprocket-wheels, and pawls, one member of each of which is pivoted within one of said hollow spindles, and the other member extends out therefrom and is adapted to engage the crown-teeth of one of said sprocket-wheels, as set forth.

4. In an indicator for street-cars, &c., the main casing, rollers mounted therein and located one above the other, apron on said rollers, for the purpose specified, sprocket-wheels mounted on the journals of said rollers and having crown-teeth on their inner faces, and an endless sprocket-chain, in combination with hinged pawls located partially within the ends of said rollers and adapted to engage the crown-teeth of said sprocket-wheels, sliding plates, and rods connecting said plates and pawls, all substantially as and for the purposes specified.

406,171. CENTRIFUGAL BUTTER-EXTRACTOR. CARL A. JOHANSSON, Stockholm, Sweden, assignor to the Aktiebolaget Extraktor, same place. Filed Feb. 14, 1889. Serial No. 299,855. (No model.) Patented in Sweden Jan. 21, 1887, No. 1,059; in England Mar. 15, 1888, No. 3,994; in Norway May 24, 1888, No. 1,058; in France May 29, 1888, No. 190,886; in Belgium May 31, 1888, No. 81,987; in Finland June 6, 1888, No. 311, and in New South Wales Aug. 2, 1888, No. 326.



Claim.—1. In a centrifugal apparatus for the separation of butter from milk, the combination of the revolving drum provided with a partition arranged within it, which separates the cream layer from the layer of blue milk, and an adjustable cream-disturber, which is arranged within the drum and projects into the revolving layer of cream and breaks up the same, as set forth.

2. In a centrifugal apparatus for the separation of butter from milk, the combination of the revolving drum provided with an outlet at its bottom for the blue milk, and another outlet at its bottom for the butter separated from the milk, an annular butter-receiving chamber connected with and arranged below said drum, an adjustable butter-removing tube, the receiving end of which projects into said butter-receiving chamber, and a cream-disturber arranged within said drum and adapted to project into the cream layer or wall, as set forth.

3. The combination of the revolving drum *d*, provided with an upright annular partition concentric with the axis of the drum to separate the cream layer from the layer of blue milk, said partition having apertures in it near its base for the passage outward of such blue milk as may have passed over with the cream, and a cream-disturber arranged in said drum and within the space included within said partition.

4. The combination, with the fixed outer casing and the receiver for the blue milk arranged within said casing, of the revolving drum, the cream-disturber arranged therein, and the annular chamber *o*, fixed to the under side of said drum and receiving the butter therefrom, said butter-receiving chamber having an outlet opening into the blue-milk receiver for the passage of such blue milk as may be pressed out of the butter in said chamber, as set forth.

5. The combination of the fixed casing, the revolving drum mounted therein and having an annular butter-receiving chamber *o*, the cream-disturber within said drum, whereby the butter is separated from the milk, the adjustable butter-removing tube *p*, mounted rotatively in the bottom of the casing, with its axis parallel with the axis of the drum, and its receiving end bent laterally and entering the butter-receiving chamber, and the handle *q*, whereby said tube may be rotated axially, as set forth.

6. The combination, with the casing *b* and its cover, provided with an undercut guide k^3, of the trundle-wheel, its shaft *j*, the operating-lever *k*, fulcrumed in the cover of the casing and provided with a screw-threaded stem, a sliding piece k^4 on said stem, which takes under the overhanging portion of said guide, and the socketed handle portion k^5 of the lever screwed onto the stem of said lever, whereby a brake is formed for holding the lever in any desired position, as set forth.

406,172. ELECTRIC REGISTERING APPARATUS. JOHN A. LARNER, Cleveland, Ohio. Filed Dec. 20, 1886. Serial No. 222,073. (No model.)



406,172.

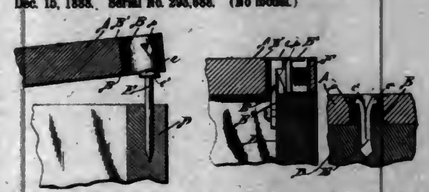
Claim.—1. In an electric registering apparatus, a registering-surface having a separate column for each of the units, in combination with separate columns for each of the tens, and running in the direction that the registering-surface is moved, substantially as set forth.

2. In an electric registering apparatus, a registering-surface having a separate column for each of the units and a separate column for each of the tens, in combination with a registering device to register from one to nine in units-column and from ten to ninety-nine in both units and tens columns, substantially as set forth.

3. In an electric registering apparatus, a shaft carrying a marking device to register units in different planes, clock-work to turn the shaft, an escapement-wheel connected with the shaft of the marking device, an anchor having arms to hold the escapement-wheel, a registering-arm pivoted to swing against the marking device and make the impressions, and connections between the registering-arm and the marking device, and actuated by the arm to release the marking device and allow it to move to its original position, substantially as set forth.

4. In an electric registering apparatus, a shaft carrying a registering device formed in a single piece to register in different planes, clock-work to turn the shaft, an escapement-wheel connected with the clock-work and the shaft of the registering device, an anchor having arms to hold the escapement-wheel, and a single registering-arm pivoted to swing against the marking device and make the impressions in different planes, substantially as set forth.

406,173. BOX-CATCH. WILLARD C. LIPE, Syracuse, N. Y. Filed Dec. 15, 1888. Serial No. 293,668. (No model.)



Claim.—1. The combination of an eyelet secured in the top of the cover, a shoulder provided upon said eyelet, a stud or projection secured to the body of the box, and a spring for removably engaging said projection with the eyelet, substantially as and for the purpose specified.

2. The combination of an eyelet secured in the cover of the box, a shoulder provided on the eyelet at a point below the top surface thereof, with a stud secured to the body of the box and held in removable engagement with the shoulder provided on the eyelet, substantially as and for the purpose specified.

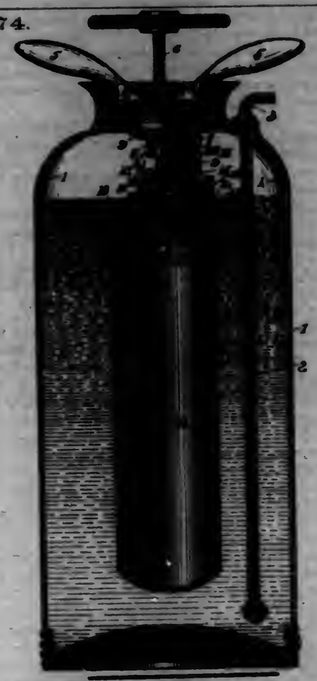
3. The combination of the eyelet secured to the cover of the box, shoulders provided on the interior of the eyelet with an interposed space between said shoulders, with a stud secured to the body of the box and registering with said interposed space between the shoulders of the eyelet, said stud and shoulders being removably engaged, substantially as and for the purpose specified.

406,174. FIRE-EXTINGUISHER. HENRY A. MANSFIELD, Bridgeport, assignor of one-half to Samuel Babcock, Middletown, Conn. Filed Jan. 26, 1888. Serial No. 297,804. (No model.)

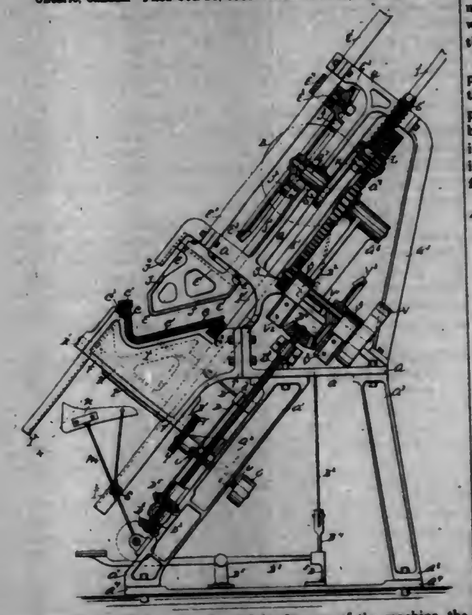
Claim.—1. The combination, with the outer liquid-holding cylinder and a discharge-pipe leading therefrom, of the screw-threaded cap adapted to fit the top of said cylinder, a valve-stem extending downward through said cap, an air-holding cylinder suspended within the liquid-holding cylinder and provided with a valve and valve-stem, and a removable connection between the upper and lower valve-stems, substantially as set forth.

2. The combination, with the outer liquid-holding cylinder, of a cap secured thereon and a valve-stem extending through said cap, a bracket open as to one side thereof depending from the said cap, an air-holding cylinder having a valve and stem and a flange near its upper end adapted to engage the bracket, and a coupling embracing the ends of the two valve-stems, and whereby the lower stem may be rotated by the upper stem and the lower cylinder retained against displacement on the bracket, substantially as set forth.

406,174.



406,175. CRIMPING-MACHINE. ROBERT MARSHALL, Hamilton, Ontario, Canada. Filed Oct. 26, 1888. Serial No. 289,223. (No model.)



Claim.—1. The combination of the frame *a* of the machine, the trix with its rod and longitudinal slotted bar E^4, bevel-wheel E^3, with its cam J^3, with and for reciprocating the double press-plates J, substantially as described.

2. The combination of the sliding molds *c'*, grooved bearings c^2, secured to the rigid mold of the machine, the guide-bar c^3, springs *c*, the double screw-shaft D', nuts D^2, levers D, angle-shaft D^3, with its wheels keyed onto the same, and all driven by the mechanism, substantially as herein described.

3. The combination, with the frame of the machine, of the rubber rollers and bearings, spur-wheels T and T', shaft U, with its pulley U', the large pulley V on shaft V', driven by the mechanism of the machine, as described.

4. The combination, with the frame of the machine, of the matrix I, with its rod I', the longitudinal cross-bars L, spiral springs S', the crank K, and the guide-bars P, substantially driven as herein described.

5. The combination of the under side-pressure surface-plates N N, their arms M M, the double-screwed movement-shaft O, and the trix E, with its rod E', and the bevel-wheel E^2, all driven by the mechanism of the machine, as described.

6. The combination of the trix E, with its rod E', the sliding molds *c'*, with their springs C, the rigid molds F, bolted to the frame *a* and provided with the corrugated-metal plates H H, with rubber backings, the matrix I and its rod I', the double press-plates J, with rods J', and the under-pressure surface-plates, all driven by the mechanism, as herein described and set forth.

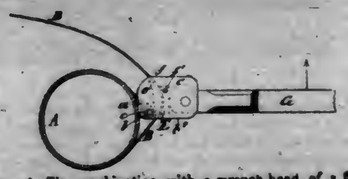
406,176. ALE OR BEER MEASURE. OSCAR MAYER, New York, N. Y. Filed May 10, 1889. Serial No. 310,234. (No model.)



Claim.—1. The combination, with the body of the measure and the gage G thereon, of the plain removable slide *j*, mounted in keepers on the inner face of the body and serving as a partition between the gage-chamber *g'* and the interior of the measure, said slide being cut away at *j'* to form a contracted passage for the liquid from the measure to the gage-chamber and standing out of contact with the wall of the body *a* at its upper end, whereby the outlet *l* is formed for the escape of air from the gage-chamber, as set forth.

2. The combination, with the body of the measure having a depressed annular portion or channel *b'* in its bottom *b*, and the gage G, the chamber in which extends below the level of the bottom *b*, of the plain removable slide *j*, mounted in keepers on the inner face of the body and serving as a partition between the gage-chamber and the interior of the measure, said slide having a contracted passage under its lower end connecting the channel *b'* with the gage-chamber, as set forth.

406,177. PIPE-WRENCH. MELVIN W. MORRISSON and MORRAD S. KELLOGG, Brooklyn, N. Y. Filed Sept. 20, 1888. Serial No. 285,941. (No model.)



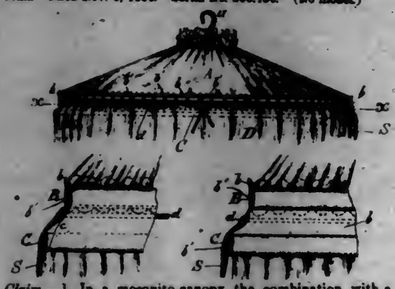
Claim.—1. The combination, with a wrench-head, of a flexible metallic gripper secured near one end to said head and having one of its ends free to be passed about a pipe, and a clamping device, substantially as described, for securing the free end of the gripper to the head after the same has been passed about the pipe, substantially as specified.

2. The combination, with a wrench-head, of a flexible metallic gripper having a pivotal connection near one of its ends with said head and having its other end free to be passed about a pipe, and a clamping device, substantially as described, for securing the free end of the gripper to the head after the gripper has been passed about a pipe, substantially as specified.

3. The combination, with a wrench-head, of a flexible metallic gripper connected near one of its ends to said head and having its other end free to be passed about a pipe, and a clamping device, substantially as described, for securing the free end of the said gripper to the head after it has been passed about a pipe, and a lever fulcrumed upon said head and provided with a cam-surface adapted to bear against said clamping device, substantially as specified.

4. The combination, with a wrench-head provided with a cam-surface adapted to bear against a pipe, of a flexible metallic gripper secured near one of its ends to said head and having its other end free to be passed about a pipe, and a clamping device, substantially as described, for securing the free end of the gripper to the head after the same has been passed about a pipe, substantially as specified.

406,178. MOSQUITO-CANOPY. ISAAC B. PALMER, Middletown, Conn. Filed Nov. 6, 1888. Serial No. 290,136. (No model.)



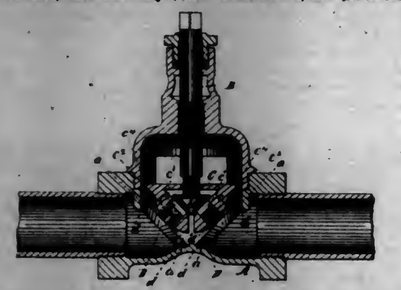
Claim.—1. In a mosquito-canopy, the combination, with a top portion, of a frame by which the same is distended, and a body portion depending from the top portion and detachably secured thereto, substantially as specified.

2. In a mosquito-canopy, the combination, with a top portion, of a hook-like frame by which the same is distended, and a body portion depending from the top portion and detachably secured thereto, substantially as specified.

3. In a mosquito-canopy, the combination, with a top portion, of a frame by which said top portion is distended, a hoop supported from said top portion, and a detachably body portion supported between said top portion and the hoop, substantially as specified.

4. In a mosquito-canopy, the combination, with a top portion, of a hoop by which said top portion is distended, a second hoop supported from the top portion below the hoop first named, and a detachable body portion supported between said hoops, substantially as specified.

406,179. STRAIGHT-WAY VALVE. WILLIAM PORTEOUS, Elmwood Place, Ohio. Filed May 4, 1888. Serial No. 272,759. (No model.)



Claim.—1. In a straight-way valve, the combination, with a shell or casing, of a valve-stem provided with a wedge-piece, a divided valve-carrier loosely connected to the stem, and valve-disks swiveled in the carrier, substantially as and for the purpose described.

2. In a straight-way valve, the combination, with the shell or casing provided with valve-seats at an angle of about forty-five degrees, of a valve-stem provided with a wedge-piece, a divided valve-carrier connected with the stem and adapted to move a limited distance relatively thereto, and a valve-disk swiveled in each half of the carrier.

3. In a straight-way valve, the combination, with a shell or case provided with inclined valve-seats, of a valve-stem provided with a wedge-piece, a valve-carrier loosely mounted upon the stem and divided transversely at right angles to the bore of the valve, and valve-disks swiveled in the carrier.

4. In a straight-way valve, the combination, with a shell or casing provided with inclined valve-seats, of a stem screwing into the shell and provided with a wedge-piece at its lower end, a divided valve-carrier provided with a recess to receive the wedge-piece and to permit a limited independent movement thereof, and valve-disks swiveled to the carrier.

5. In combination with a case or shell provided with inclined valve-seats, a valve-stem provided with a wedge-piece and screwing into the shell, a divided valve-carrier loosely connected to the stem, and valve-disks swiveled to the carrier.

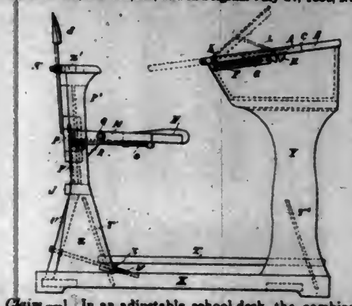
6. The combination, in a straight-way valve, of a valve-stem, a wedge-piece, a sectional valve-carrier, rotary valve-disks supported thereby, and a valve-case having inclined valve-seats, substantially as and for the purpose specified.

7. The combination, in a straight-way valve, of a threaded valve-stem, a coniform wedge-piece carried thereby, a sectional valve-carrier having inclined external faces, rotary valve-disks secured to the respective sections of the valve-carrier, and a valve-case having inclined valve-seats, substantially as specified.

8. In a straight-way valve, the combination of the sectional valve-carrier C, the rotary valve-disks D, having grooved stems d', and the pins c^3, substantially as and for the purpose specified.

9. In a straight-way valve, the threaded valve-stem B, wedge-piece A, the sectional valve-carrier C, the rotary valve-disks D, the guides d' c^3, substantially as and for the purpose specified.

406,180. ADJUSTABLE SCHOOL-DESK. FRANS T. SELANDER, Gothenburg, Sweden. Filed Aug. 15, 1888. Serial No. 282,722. (No model.) Patented in Sweden Apr. 16, 1888, No. 1,530; in England July 23, 1888, No. 10,640; in Norway July 26, 1888, No. 1,048; in France July 26, 1888, No. 192,047, and in Belgium July 27, 1888, No. 81,718.

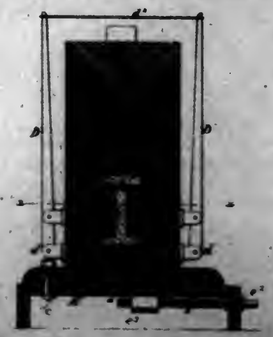


Claim.—1. In an adjustable school-desk, the combination, with the standards, of the desk-top mounted in guides thereon, and the locking or stop device for the desk-top, said device consisting of the slotted guide-plate G on the standard, the T-headed bolt F in said slot, the nut F', into which said bolt is screwed, and the notched lug H on the desk-top, arranged to engage said bolt, substantially as set forth.

2. In an adjustable school-desk, the combination, with the seat-supports, of the seat constructed of two parts, the one part provided with tongues matching with grooves in the other part, and with an adjusting-screw collared at its ends in bearings on one part and passing through a nut on the other part, whereby rotation of said screw causes one part to play over the other.

3. In an adjustable school-desk, the combination, with the seat-standards and the desk-standards provided with parallel inclined guides, and the slotted guide-bar U' between said seat-standards, of a foot-rest mounted in said guides and provided with a nut, and a clamping-screw passing through said nut on the foot-rest, and also through the slot in said guide-bar, whereby said foot-rest may be supported at any desired elevation on the guides, substantially as set forth.

406,181. MOLD FOR MAKING STEEL CASTINGS. WILLIAM R. SHEDIKER, Trenton, N. J. Filed Dec. 22, 1888. Serial No. 294,417. (No model.)



Claim.—In a mold, the combination, with an upper divided portion, of a lower divided portion made separate from the upper divided portion, distance-pieces interposed between said upper and lower portions, and upon which the upper portion rests, and levers fulcrumed upon one of said portions and connected to the said distance-pieces, which levers may be operated to withdraw the distance-pieces from between said upper and lower portions of the mold, substantially as specified.

406,182. SEAT FOR VEHICLES. FREDERICK C. STRAUB, Syracuse, N. Y. Filed Dec. 3, 1888. Serial No. 292,435. (No model.)



Claim.—1. The combination, with the ordinary seat of a vehicle, of an extension-seat hinged to a swinging supporting-standard and adapted to fold under the ordinary seat and be withdrawn therefrom to operative position, substantially as specified.

2. The combination, with the ordinary seat of a vehicle, of a guideway beneath the ordinary seat, an auxiliary seat, and a supporting-standard for said seat hinged to the guideway, substantially as and for the purpose specified.

3. The combination, with the ordinary seat of a vehicle, of a hinged auxiliary seat adapted to fold over and a supporting-standard for the auxiliary seat, said standard hinged at its lower extremity and adapted to fold under the ordinary seat and be withdrawn therefrom to operative position, substantially as specified.

4. The combination, with the ordinary seat of a vehicle, of a supporting-standard, an auxiliary seat hinged thereto, and a swinging bar K, secured to the seat and automatically abutting against shoulders on said supporting-standard, retaining the seat in operative position, said bar being adapted to be disengaged from abutment with the standard when the seat is folded, substantially as and for the purpose set forth.

5. The seat H, a guideway e, and the supporting-standard G for the seat H, said standard hinged to the guideway and held from movement when in operative position, substantially as and for the purpose set forth.

6. The combination, with the ordinary seat of a vehicle, of an auxiliary seat, a guideway beneath the ordinary seat, and a swinging supporting-standard for the auxiliary seat, provided with a pivotal pin or stud for engaging the said guideway and guiding the swinging support, substantially as and for the purpose specified.

7. The combination, with the ordinary seat of a vehicle, of an auxiliary seat, guideways beneath the ordinary seat, and a supporting-standard interposed between the guideways, and having a pin F riding in said guideways for guiding the supporting-standard and hinging the same thereto, substantially as and for the purpose specified.

8. The combination, with the ordinary seat of a vehicle and a guideway beneath said seat, of an auxiliary seat, a supporting-standard for said seat, a pin or stud for pivoting said supporting-standard to the guideway and guiding the same beneath the ordinary seat, and means, substantially as described, for retaining the pivoted supporting-standard in its upright position when withdrawn from the ordinary seat, substantially as and for the purpose specified.

9. The combination, with the bar or support C, of an auxiliary seat H and a rocking standard G, having an open slot L, adapted to register with the bar C when the seat is in operative position, substantially as and for the purpose described.

10. The combination, with the ordinary seat of a vehicle, of an extension-seat and a swinging standard G, having a lug or pin F secured thereto and guided in a way beneath the ordinary seat, substantially as described.

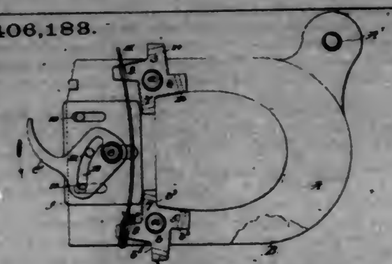
11. The combination, with the ordinary seat of a vehicle, of the parallel guideways e, the standard G, the pins or lugs F, projecting from said standard and guided in said ways, and an extension-seat hinged to said standard G, substantially as and for the purpose set forth.

12. The combination, with the ordinary seat of a vehicle, guideways e, having the extension e', and a bar or support C, of the auxiliary seat H and the standard G, guided in the ways E and e, said standard being engaged with the bar C when guided to the extension e', substantially as and for the purpose set forth.

406,183. TOP-LIFT HOLDER. RAPHALET A. TRIPP, New Bedford, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Mar. 2, 1888. Serial No. 301,773. (No model.)

Claim.—1. The combination, with a top-lift plate, of pivoted dogs having each two or more seats and holding-faces, whereby the said dogs are adapted to receive and hold the breast corners of top lifts of various sizes, and means, substantially as described, to close the dogs upon the top lift, substantially as described.

406,188.

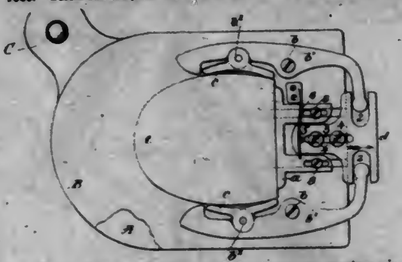


2. The combination, with the top-lift plate and pivoted dogs having each two or more seats to hold the breast corners of a top lift, of a spring to normally keep the said dogs closed upon the top lift, substantially as described.

3. The combination, with the top-lift plate and pivoted dogs having each two or more seats to hold the breast corners of a top lift, of a spring connected therewith to normally keep the said dogs closed upon the top lift, and with a movable plate to act upon the said dogs and move them apart to receive a top lift, substantially as described.

4. The combination, with the top-lift plate and pivoted dogs having each two or more seats to hold the breast corners of a top lift, of a spring to normally keep the said dogs closed upon the top lift, and with a movable plate to act upon the said dogs and separate them for the reception of a top lift, and with a lever to move the said plate, substantially as described.

406,184. TOP-LIFT HOLDER. RAPHALET A. TRIPP, New Bedford, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Mar. 2, 1888. Serial No. 301,774. (No model.)



Claim.—1. The top-lift plate and the levers or carriers pivoted thereon, combined with the rocking blocks mounted upon the said levers to contact with the side edges of the top lift, and with means, substantially as described, to operate the said levers in unison, substantially as set forth.

2. The top-lift plate, the levers pivoted thereon, and the rocking blocks carried by the said levers, combined with the spring-actuated plate to engage both of the said levers and move them in unison, substantially as described.

3. The top-lift plate, the levers mounted thereon, and rocking blocks carried by the said levers, combined with the adjustable breast-gage mounted upon the top-lift plate and with means to move the said levers, substantially as described.

4. The top-lift plate and levers attached thereto and recessed, as shown, at their inner sides, and means to actuate the said levers, combined with rocking blocks pivoted in the said recesses, to operate substantially as described.

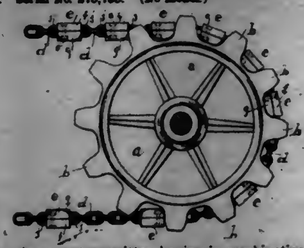
5. The top-lift plate, the levers pivoted thereon and having their ends beveled, as shown, for the easy introduction of the top lift, and means to actuate the said levers, combined with rocking blocks mounted on the said levers and contained wholly back of the beveled ends thereof, and with a breast-gage, to operate substantially as described.

406,185. BALL-CASTER. JAMES C. WEIR, San Francisco, Cal. Filed Sept. 4, 1888. Serial No. 284,564. (No model.)



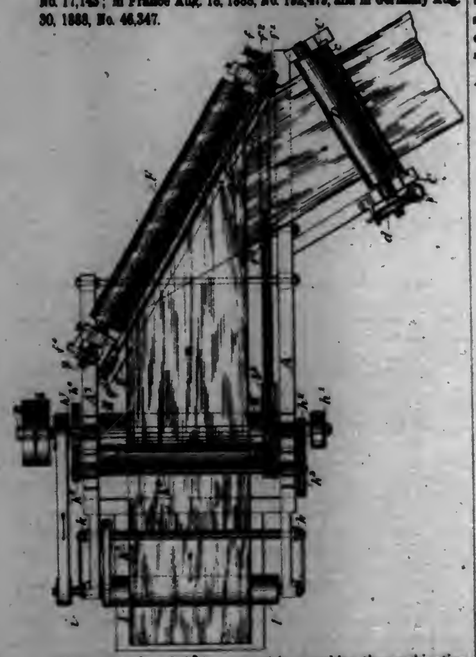
Claim.—The herein-described ball-caster, consisting of the socket A, having the separate internal recesses a^2 and the flange a, the bottom plate B, ball C, and the bearing-rollers D D^x, mounted on hoops E, all constructed and combined for operation as set forth.

406,186. CONVEYER-CHAIN. CHARLES S. WELLS, Bay City, Mich., assignor of three-fifths to Harry W. Garland, same place. Filed June 1, 1888. Serial No. 275,735. (No model.)



Claim.—A power-transmitter having in combination the following elements, namely: an endless link chain comprising oval links at right angles to each other, a series of engaging-blocks consisting of the sections *f* and *g* applied on opposite sides of such chain, each section having, as described, a transverse recess in which the links lie loosely, and both such sections having their adjacent faces held firmly together by bolts or rivets, but leaving the links free to rock or move in their recesses, all substantially as described.

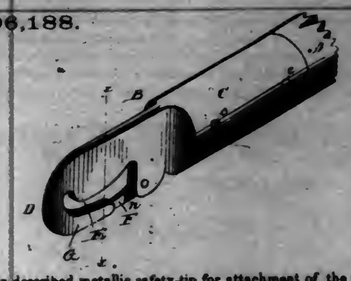
406,187. MACHINE FOR BRUSHING AND WAPPING FABRICS. JAMES WORRALL, Ordsall, Salford, County of Lancaster, and JOHN KERSHAW, Hebden Bridge, County of York, England. Filed Sept. 25, 1888. Serial No. 276,326. (No model.) Patented in England Dec. 13, 1887, No. 17,143; in France Aug. 18, 1888, No. 192,479, and in Germany Aug. 30, 1888, No. 46,347.



Claim.—1. In a finishing and raising machine, the combination, with a guide-roller for leading in the cloth and a drawing-roller for passing it out of the machine, of a transverse diagonal bed or bar over the edge of which the cloth is drawn, and a rotary finishing-brush or card-roller arranged to work parallel thereto, as and for the purpose above set forth.

2. The combination, with the diagonal bed or bar E, of the smoothing-roller G, and means, substantially as described, for rotating the said roller, as and for the purpose above set forth.

406,188. SAFETY-TIP FOR VEHICLE-TONGUES. THOMAS AUBURN, Pittsville, Wis. Filed Mar. 16, 1889. Serial No. 303,709. (No model.)



Claim.—1. The combination, with a vehicle pole or tongue, the herein-described metallic safety-tip for attachment of the neck-yoke therein, consisting of the rearwardly-extending tubular portion adapted to fit over and be removably secured to the vehicle-tongue, and of the flat or reduced outer portion having an open loop formed thereon to permit of the reception of the neck-yoke ring, of the tongue pivotally secured in the downwardly-extending portion and adapted to close the opening of the loop for the retention of the neck-yoke ring therein, and the walls having grooves or recesses formed therein and into which the end of the said tongue fits in its raised or lowered position, substantially as and for the purpose herein set forth.

2. The herein-described safety-tip for neck-yokes, consisting of the rearwardly-extending tubular portion fitting over the vehicle-tongue and adapted to be secured thereto, the flat or reduced outer portion, said outer portion having the inner depending slotted wall and the outer turned-under or hooked portion, forming a longitudinal curved slot between the upper edge of the hook and the under edge of the body of the flat head of the tip, said under edge having a recess therein, the longitudinal slot also terminating at its forward end in an enlargement; in combination with the lever or tongue pivoted in the depending slotted wall and adapted to close the opening between said depending wall and the inner end of hook and to have its free end rest in a recess formed in the upper edge of the end of said hook, as set forth.

406,189. WATER-FILTER. FRED W. BAKER, Rochester, N. Y. Filed Apr. 17, 1888. Serial No. 270,975. (No model.)



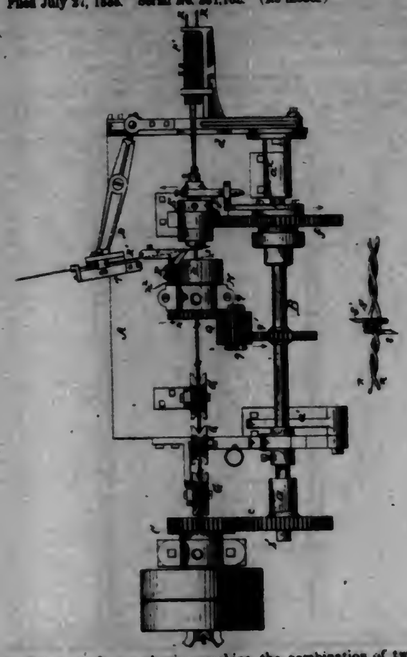
Claim.—1. The combination, with the water-receiver A, of the sponge-receptacle B, the receptacle C, containing filtering material and divided into two compartments C' C^2 by the perforated partition C^3, and having the discharge-openings *e* in the upper part of the compartment C^2, and the sediment well or receptacle E, surrounding the two-part receptacle C and having overflow-openings near its upper end, substantially as described.

2. The receptacle C, containing the filtering material and divided into two compartments by the vertical perforated partition and having the removable imperforate cap constituting its bottom, substantially as described.

3. The receptacle C, containing the filtering material and divided into two compartments by the vertical perforated partition, and having the removable imperforate cap constituting its bottom, in combination with the sediment well or receptacle surrounding said receptacle C and having the overflow-openings near its upper end, substantially as described.

4. The combination, with the water-receptacle A, of the sponge-cup B, the receptacle C, containing filtering material and having the vertical perforated partition and the removable imperforate screw-cap for its bottom, the sediment well or receptacle surrounding said two-part receptacle and having the overflow-openings near its top, and the main filter, all constructed and arranged substantially as described.

406,190. BARB-WIRE MACHINE. ALBERT J. BATES, Joliet, Ill. Filed July 27, 1888. Serial No. 281,162. (No model.)

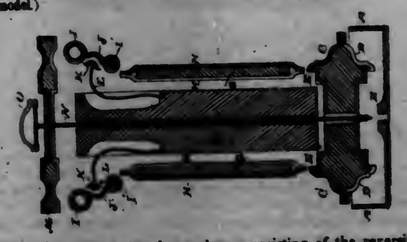


Claim.—1. In a barb-wire machine, the combination of two reversely-rotatable coilers placed in the same longitudinal line, one of said coilers having a cutter with a barbing-wire guide, and a cutter placed to one side of said coilers, the guide and lathe-cutter being both stationary, whereby, when the barbing-wire is fed to the coilers, a piece is first cut from the wire and then turned about the main strands in reverse direction, as set forth.

2. In a barb-wire machine, the combination of the coiler E, the coiler N, carrying the cutter P, and the stationary cutter *p*, as set forth.

3. In a barb-wire machine, the combination of the table A, the bearing *o*, the coiler N, consisting of the neck n^2, the gear-wheel *n*, and the head *n'*, and having the cutter P, the stationary cutter *p*, and the coiler E, as set forth.

406,191. CASKET-PEDESTAL. HARRY B. BELDEN and MELVIN A. TAYLOR, Oakland, Cal. Filed Feb. 6, 1889. Serial No. 298,883. (No model.)



Claim.—1. A pedestal or column consisting of the reversible base having the upper and lower surface of contrasting colors, the flexible and reversible capital, and the intermediate flexible and reversible column having an inner and outer surface of contrasting color, substantially as described.

2. The column having the plinth made reversible, with its inner and outer surfaces of contrasting colors, substantially as described.

3. The column, with the reversible base having an upper and lower surface of contrasting colors, the flexible reversible shaft-covering having an inner and outer surface of different colors, the reversible capital and cornice or entablature having its upper and lower surfaces of different colors, substantially as described.

4. The reversible base, the shafts consisting of the longitudinal rigid strips having a flexible covering, so united between the strips that the covering may be bent into a circular form in either direction, and a capital formed of the upper and lower rigid rings and the intermediate flexible portion, so that these parts may be reversible, substantially as described.

5. The reversible capital consisting of the upper and lower rings with intermediate flexible portion, whereby the capital may be reversed so as to present either side outwardly, in combination with the circular segments fitted into the intermediate flexible portion of the capital, substantially as described.

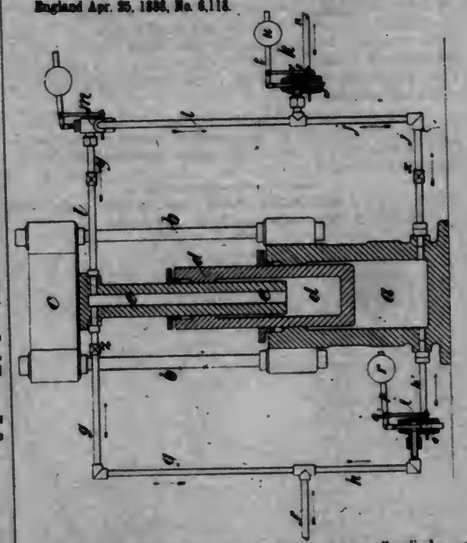
6. The reversible base having its opposite sides of different color, the central shaft, and the surrounding flexible and reversible shaft-covering having its inner and outer surfaces of contrasting color, the reversible capital with the upper and lower rigid rings and the intermediate flexible one, in combination with the segments mounted upon springs which are supported from the central column, said segments being fitted to expand and make rigid the intermediate flexible portion of the capital, substantially as described.

406,192. PROCESS OF REVIVIFYING GAS-LIME. JOSEPH BELL, Brooklyn, N. Y. Filed Dec. 3, 1888. Serial No. 292,543. (No specimens.)

Claim.—1. The herein-described process of revivifying gas-lime by incorporating it with fresh slaked lime, and burning it, substantially as described.

2. The herein-described process of revivifying gas-lime by mixing it with fresh slaked lime and fuel, and burning the whole in a furnace, substantially as described.

406,193. APPARATUS FOR HYDRAULIC PACKING-PRESSES. EDWARD L. BELLHOUSE, Manchester, County of Lancaster, England. Filed May 20, 1888. Serial No. 275,512. (No model.) Patented in England Apr. 25, 1888, No. 6,116.



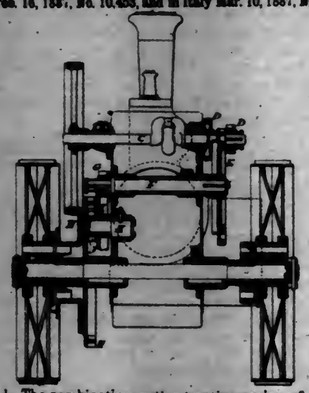
Claim.—1. The combination of a large and a small cylinder, an intermediate hollow piston sliding in the large cylinder and on the small cylinder, with a supply-pipe having two branches, one valved, and communicating with the large cylinder and the other communicating with the small cylinder, two other branches leading to a hydraulic press, one branch being valved and leading from the small cylinder and the other leading from the large cylinder, and suitable check-valves, all substantially as described.

2. The combination of a large and small cylinder, an intermediate hollow piston sliding in the large cylinder and on the small cylinder, with a supply-pipe having two branches, one communicating with the large cylinder and the other with the small cylinder, and an automatic valve on the latter branch, two other branches leading to a hydraulic press, one branch leading from the small cylinder and the other from the large cylinder, suitable check-valves, and an automatic valve on the branch leading from the small cylinder loaded to a greater

extent than the valve on the branch leading to the large cylinder, all substantially as described.

3. The combination of a small and large cylinder, an intermediate hollow piston sliding in the large cylinder and on the small cylinder, with a supply-pipe having two branches, one valved and communicating with the large cylinder and the other communicating with the small cylinder, two other branches leading to a hydraulic press, and one being valved and leading from the small cylinder and the other leading from the large cylinder, suitable check-valves, and a regulating-valve on the piping leading to the press, all substantially as set forth.

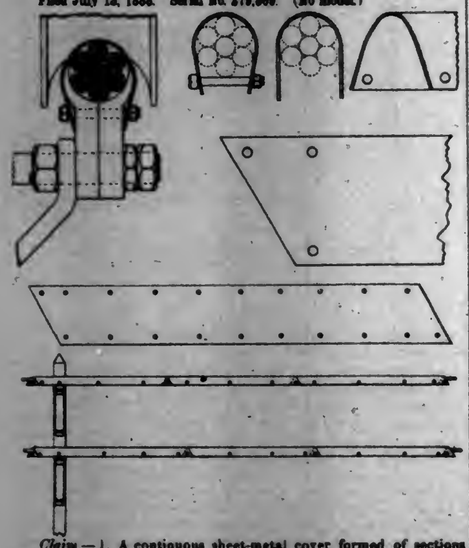
406,194. COMBINED TRACTION-ENGINE AND DIGGING-MACHINE. FREDERICK J. BURRELL, Thetford, County of Norfolk, England. Filed June 21, 1887. Serial No. 242,056. (No model.) Patented in England July 12, 1886, No. 9,059; in France Jan. 11, 1887, No. 180,517; in Spain Feb. 16, 1887, No. 10,453, and in Italy Mar. 10, 1887, No. 21,234.



Claim.—1. The combination, with a traction-engine, of the horn-plates A', having journal-bearings for crank-shafts C, rotary shafts F, shaft-carrying eccentric K, shaft M, and the main shaft carrying the wheels supporting the rear portion of the structure, substantially as shown and described.

2. The combination, with a traction-engine, of the crank-shaft C, pinions D D, double spur-wheel E, mounted on the counter-shaft F, pinion G, gear-wheel H, gear-wheel I, pinion J, and eccentric bush K substantially as shown and described.

406,195. SUSPENSION-TRACK. CHARLES CARR, Boston, Mass. Filed July 12, 1888. Serial No. 279,869. (No model.)



Claim.—1. A contiuous sheet-metal cover formed of sections united and secured to each other by bolts, in combination with a continuous cable to form a suspension-track, substantially as described.

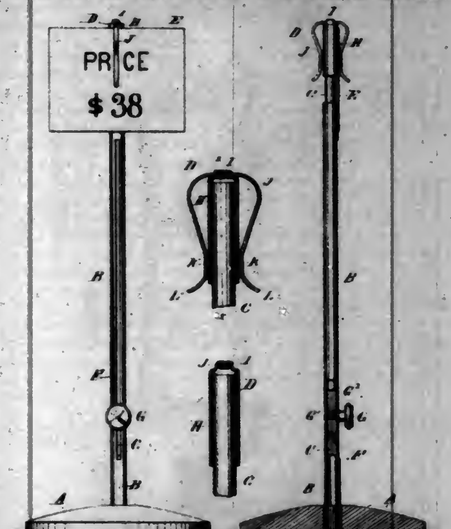
2. The cable-track-covering sections formed with overlapping ends, in combination with holding-bolts passing through both sections and the cable, substantially as described.

3. The cable-track covering as cut or formed with diagonal ends and bolt-holes, in combination with the cable and bolts, substantially as described.

4. A cable-track cover or jacket made continuous by means of interlocking bolts through projecting ends, in combination with the cable, substantially as described.

5. The combination of a continuous cable and a continuous sheet-metal covering formed of sections united to each other by bolts at their ends, and secured directly to the cable by means of said bolts and other transverse bolts, substantially as described.

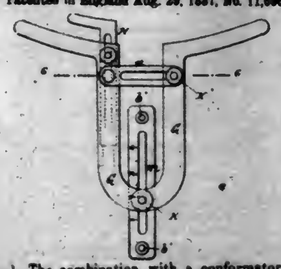
406,196. CARD-HOLDER. JOHN CLAYTON and JACOB ABRAHAM, New York, N. Y. Filed Feb. 21, 1889. Serial No. 300,851. (No model.)



Claim.—1. In a card-holder, the combination, with a vertically-adjustable rod, of a holder comprising a shell fitted on the upper end of the said rod and a spring-wire secured on the said shell and pressing with its ends against part of the said shell, substantially as shown and described.

2. In a card-holder, a holder comprising a shell and a lyre-shaped spring-wire secured in its middle to the upper end of the said shell and extending downward at its ends outside the said shell, substantially as shown and described.

406,197. ADJUSTABLE GARMENT-PATTERN. JULES COUTEAU, Béziers, Hérault, France. Filed Oct. 20, 1887. Serial No. 252,894. (No model.) Patented in England Aug. 29, 1887, No. 11,696.

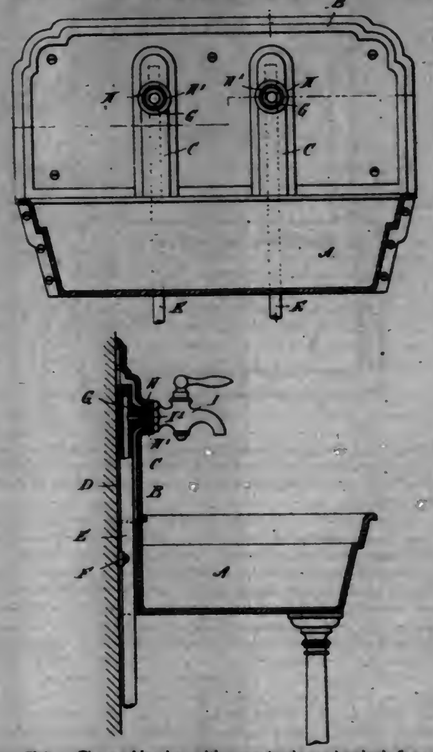


Claim.—1. The combination, with a conformator having a vertically-slotted and graduated plate at the upper portion of its back section, of a vertically-adjustable forked collar-guide sliding in and along said slotted plate, said guide having its upper ends curved to conform to the shape of a collar.

2. The combination, with a conformator having a vertically-slotted and graduated plate at the upper portion of its back section, of a vertically-adjustable forked collar-guide sliding in and along said slotted plate, the two forks of said guide being pivoted together, and an adjustable fastening slotted link connecting the said forks.

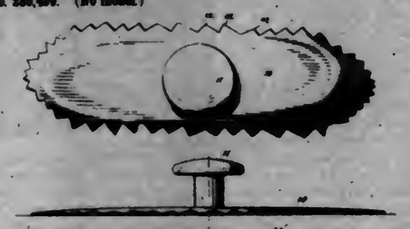
3. The combination, with a conformator, of a vertically-adjustable guide at the top of the back section and a slide adjustable vertically relatively to said guide and adapted to indicate the height of the collar.

406,198. SINK-BACK. THOMAS F. COTER, Brooklyn, N. Y. Filed Feb. 13, 1889. Serial No. 299,704. (No model.)



Claim.—The combination, with a supply-pipe and a nipple formed on the said supply-pipe, of a sink-back having a recess in its rear for the reception of the said supply-pipe, and an apertured offset or rosette connecting with the said recess and forming a passage for the said nipple, substantially as shown and described.

406,199. IMPLEMENT FOR SEPARATING CHECKS, TICKETS, &c. ALFRED H. CRIDGE, New York, N. Y. Filed Oct. 30, 1888. Serial No. 289,499. (No model.)



Claim.—1. A detacher or tearing implement having an irregularly-serrated edge.

2. A detacher or tearing implement having a surrounding serrated edge, the teeth or projections forming said edge varying in form.

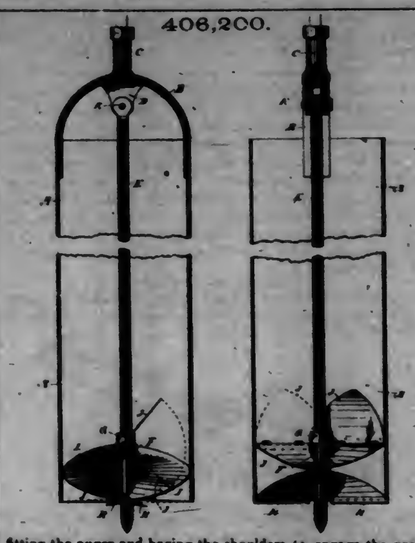
3. A detacher or tearing implement having a concave under surface and a serrated edge.

4. A detacher or tearing implement having a concave under surface and an irregularly-serrated edge.

406,200. WELL-BORING APPARATUS. JEREMIAH R. DAY, San Francisco, Cal., assignor of one-half to Joseph Prasy, same place. Filed Feb. 11, 1889. Serial No. 299,493. (No model.)

Claim.—1. The auger having the cutting blades or bits of greater length than the diameter of the auger, the inclosing case or barrel

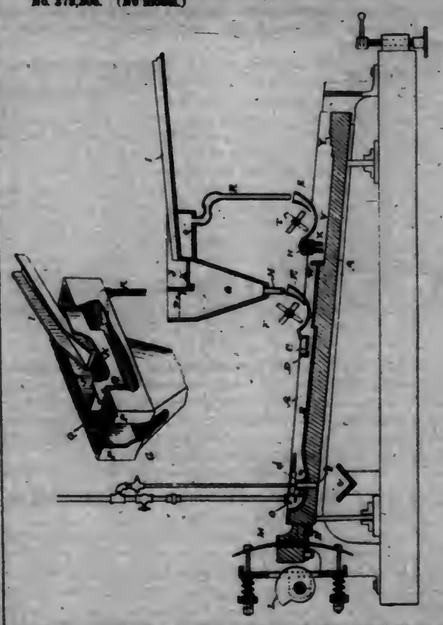
406,200.



fitting the auger and having the shoulders to engage the projecting blades, the bail by which the upper end of the barrel is connected with the operating-rods, the lugs projecting downwardly from the center of the bail, and the auger-rod connected with said lugs by a bolt, substantially as and for the purpose herein described.

2. The exterior barrel or casing, with a bail for connecting the upper end with the boring-rods, lugs projecting downwardly from the center of said bail, an auger fitting the interior and lower end of the barrel and having its shank detachably connected with the lugs, and bits or cutters fitted to the lower ends of the auger-blades and extending beyond the bottom of the barrel and engaging the shoulders thereon, in combination with the valves hinged to the upper edges of the auger-blades and closing upon the spiral surface thereof, substantially as described.

406,201. ORE-CONCENTRATOR. MILES B. DOREE, San Francisco, Cal., assignor to Parks & Lacy, same place. Filed July 6, 1888. Serial No. 279,202. (No model.)



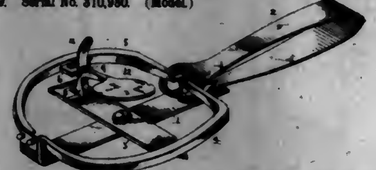
Claim.—1. The hopper G, provided with the box J, the screen K, and the troughs Q upon each side of the hopper, said troughs har-

ing the overflow-edges P, in combination with the perforated plug H, for regulating the discharge from the hopper, substantially as herein described.

2. The hopper or receiver G, provided with the screen K, the overflow-passages, and a regulating discharge-plug H, in combination with the segmental receiver E, the rotary distributing-arms F, and the box D, placed between the receiver E and the table B, and having perforations C made through it, so as to leave space for the downward flow of material on the surface of the table B between the points where the pulp is supplied to the table, substantially as herein described.

3. The hopper G, provided with the screen K, the overflow pipes or passages, and the discharge-pipe R, in combination with the supplemental receiver S, distributer T, discharging upon the surface V of the table below the riffle W, and the stirrers or agitators X, substantially as herein described.

406,202. JAW-TRAP. THOMAS DOULON, Cortland, N. Y., assignor to the Hitchcock Manufacturing Company, same place. Filed May 16, 1889. Serial No. 310,980. (Model.)

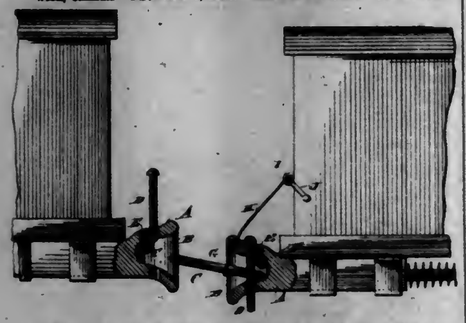


Claim.—1. In a jaw-trap, an inwardly-extending loop on one of the jaws, a catch pivoted to the base or bar, having a head which rests on this loop when the trap is set, and a bait-pan connected to said catch and acting to swing the head of the catch off from the loop on the jaw with either an upward or a downward movement of said pan, all in combination, substantially as described.

2. In a jaw-trap, a jaw having an inwardly-projecting loop, a catch pivoted to the base and having a head engaging said loop, an upwardly-extending head on said catch about in the path of movement of the jaw, and a bait-pan rigidly connected to said catch, all combined substantially as described.

3. In an animal-trap, the combination of a jaw having an inwardly-projecting loop with arms therefrom, a pivoted catch having a neck capable of swinging through said passage, and a head above the same too broad to enter said passage, and an upward projection of said head about in line of movement of said jaw, and a bait-pan rigidly connected to said catch, all in combination, substantially as described.

406,203. CAR-COUPLING. PATRICK J. BEAN, Carleton, New Brunswick, Canada. Filed Jan. 7, 1889. Serial No. 295,616. (No model.)

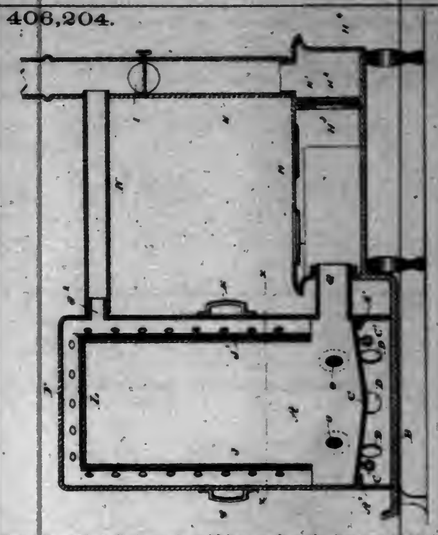


Claim.—In a car-coupling, the combination, with a draw-head provided with a pin-opening and a coupling-pin working therein, of the block E, of elastic material, rigidly secured in the draw-head in rear of and adjacent to the pin-opening, and provided with a shoulder, which when the block is in its normal position is in alignment with the said pin-opening, substantially as described.

406,204. STOVE. NICHOLAS J. EGELER, Ipswich, Dak. Filed Feb. 28, 1889. Serial No. 301,469. (No model.)

Claim.—1. In a stove of the class described, the combination, with a shell having a cone-shaped bottom and a smoke-pipe leading from the said bottom, of perforated pipes held in the said shell and connecting with the chimney-pipe, substantially as shown and described.

2. In a stove of the class described, the combination, with a shell provided with a heater or cooking-stove having a chimney-pipe, and also provided with a cone-shaped bottom, of a smoke-pipe leading



from the said shell above the said bottom into the heater or cooking-stove, and perforated pipes held in the said shell and connecting with the chimney-pipe of the said heater or stove, substantially as shown and described.

3. In a stove of the class described, the combination, with a heater or cooking-stove provided with a chimney-pipe, a base, and a shell resting on the said base and provided near its bottom with apertures, of a cone-shaped bottom suspended in the said shell above the said apertures, a smoke-pipe leading from the said shell above the said cone-shaped bottom into the heater or cooking-stove, and perforated pipes held in the said shell and connected with the chimney-pipe of the heater or cooking-stove at their upper ends, substantially as shown and described.

4. In a stove of the class described, the combination, with a heater or cooking-stove provided with a chimney-pipe, a base, and a shell resting on the said base and provided near its bottom with apertures, of a cone-shaped bottom suspended in the said shell above the said apertures, a smoke-pipe leading from the said shell above the said cone-shaped bottom into the heater or cooking-stove, perforated pipes held in the said shell and connected at their upper ends with the chimney-pipe of the heater or cooking-stove, and dampers held on the said shell above the said cone-shaped bottom, substantially as shown and described.

5. In a stove of the class described, a heater or cooking-stove provided with a transverse partition having an aperture, a damper held in the said transverse partition to open or close said aperture, and a chimney-pipe held on the said heater or cooking-stove and into which discharges said opening, in combination with a base held in front of the said heater, a shell closed at the top and resting with its open bottom on the said base, a cone-shaped bottom suspended in the lower end of the said shell, a smoke-pipe leading from the said shell above the said bottom into the said heater, and perforated pipes extending vertically in the said shell connected with said chimney-pipe, substantially as shown and described.

6. In a stove of the class described, a heater or cooking-stove provided with a transverse partition having an aperture, a damper held in the said transverse partition to open or close said aperture, and a chimney-pipe held on the said heater or cooking-stove and into which discharges said aperture, in combination with a base held in front of the said heater, a shell closed at the top and resting with the open bottom on the said base, a cone-shaped bottom suspended in the lower end of the said shell, a smoke-pipe leading from the said shell above the said bottom into the said heater, perforated pipes extending vertically in the said shell connected with said chimney-pipe, and dampers held in the said shell above the said bottom, substantially as shown and described.

406,205. CULTIVATOR AND SEEDER. LOUIS S. PLATAU, Pittsburg, Tex. Filed July 10, 1888. Serial No. 279,580. (No model.)

Claim.—1. The combination, with the side bars or beams suitably connected together at their rear ends and at their forward ends by a cross bar or yoke provided at its ends with clips or staples, of the side draft-connections applied to said beams or side bars and passed through said clips and connected to singletrees, substantially as set forth.

406,205.



2. In a combined planter and cultivator, the combination, with the bar B, having clips *c* at its ends, and the parallel plow-beams A A, secured thereto at their forward ends, connected at their rear ends by a bar or rod, and provided with plow-standards, of the inclined bars C, secured at their rear ends to the said beams between the ends thereof and extending through the clips *c*, substantially as set forth.

3. In a combined wheel cultivator and planter, the combination, with the frame and plows, the hopper supported on the frame, and the oscillating agitator or stirrer in the bottom of the hopper, having a gear J, of the wheel-axle having an eccentric I^1, the ring or strap I^2, embracing the eccentric and having a rod I^3, and the rocking segment K, having a tubular arm I^4, receiving the rod I^3 to be oscillated thereby, substantially as set forth.

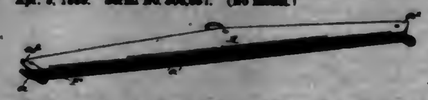
4. A combined cultivator and planter comprising the parallel plow-beams A A, the cross-bar B at the forward ends thereof, the plow-standards, the curved bars *l*, secured to the bar B between the standards, curved downward and provided with a plow, the braces O, connecting the bars *l* with the beams A A, the hopper G, secured between the bars *l* and having a chute *j* and depending arms *k k*, the wheel H, having its axle journaled in said arms and provided with an eccentric k^1, the vertical conical stirrer or agitator in the bottom of the hopper and having inclined fingers, and a connected gear J below the hopper, the rocking segmental gear K, meshing with said gear J and having a depending arm k^2, and a ring k^3 on the eccentric provided with an arm or rod k^4, having a sliding connection with the arm k^4, substantially as set forth.

406,206. BALING-PRESS. LOUIS S. PLATAU, Pittsburg, Tex. Filed Dec. 14, 1888. Serial No. 293,615. (No model.)



Claim.—In a baling-press, the combination of the press box or frame, the frame M, secured to said box or frame, and having an arm *m*, an arm *m'*, and a distance-sleeve M^3, extended from arm *m'* and provided with a pin or stud m^3, the follower provided with a screw-shaft extended through distance-sleeve M^3 and arm *m*, a bevel-gear K on said shaft between the sleeve M^3 and arm *m*, and the shaft L, having a wheel *l*, meshing with the wheel K, such shaft L being journaled at its lower end on the pin or stud m^3, all substantially as and for the purposes set forth.

406,207. WHIFFLETREE. LOUIS S. PLATAU, Pittsburg, Tex. Filed Apr. 9, 1889. Serial No. 306,857. (No model.)

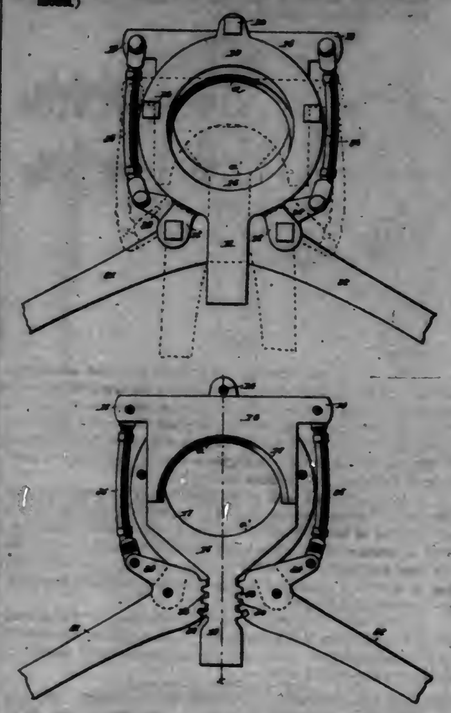


Claim.—1. The combination of a whiffletree formed of a single metal plate having the perforations and bent to form a hollow tree, the hooks and ring having the enlarged perforated ends, and the rivets, substantially as set forth.

2. The combination of a whiffletree formed of a metal plate having the longitudinal end recesses and bent to form a hollow tree, and the hooks pivoted in the said recessed ends, substantially as set forth.

3. The combination of a whiffletree formed of a metal plate having the longitudinal and semicircular end recesses and the perforations and bent to form a hollow tree, the end hooks and the ring having the perforated enlarged ends, and the rivets, substantially as set forth.

406,208. IMPLEMENT FOR DEHORNING CATTLE. JAMES W. PEARL, Lawrence, Kans. Filed Mar. 28, 1888. Serial No. 268,361. (No model.)



Claim.—1. In a dehorning implement, the combination, with a frame having a circular opening therein, of an upper and a lower cutter held to slide one upon the other in opposite directions and having semicircular cutting-edges, and means, substantially as shown and described, for simultaneously manipulating the said cutters, as and for the purpose specified.

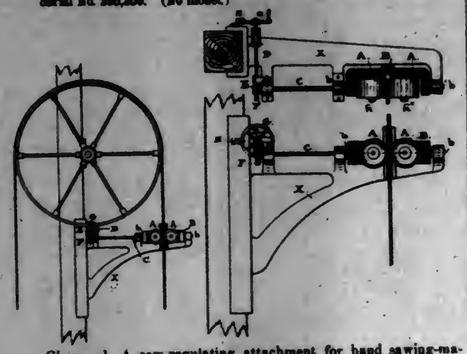
2. The combination, with a frame provided with a central opening, and an upper and a lower cutter held to slide one upon another within the said frame, provided with opposed concaved cutting-edges, of levers contacting with the lower cutter and capable of moving the same, and a pitman-connection between said levers and the upper cutter, all combined for operation substantially as shown and described.

3. The combination, with a frame provided with a central opening, and an upper and a lower cutter held to slide one upon the other within the said frame, provided with opposed concaved cutting-edges, of levers having a toothed head capable of contact with the lower cutter, a horn projected from the said lever-heads, and a pitman-connection between the said horns and the upper cutter, substantially as shown and described.

4. The combination, with a frame provided with a central opening, and an upper and a lower cutter held to slide within the said frame provided with opposed semicircular cutting-edges, the lower cutter having integral therewith at the bottom a downwardly-extending shank provided with toothed side edges, of levers fulcrumed within the frame having a toothed head capable of contact with the teeth of the lower cutter, and a pitman-connection between said heads of the levers and the upper cutter, all combined for operation substantially as and for the purpose specified.

5. The combination, with a frame consisting of two spaced united rings having a shank integral with the lower periphery at the center, and a lug at each side of the said shank, an upper and a lower cutter held to slide one upon the other between the rings, provided with opposed concaved cutting-edges, and a shank integral with the lower edge of the lower cutter at the center, having teeth produced in each side edge, of a lever fulcrumed upon the lugs of the rings provided with a head having teeth meshing with the teeth of the lower cutter, a horn outwardly projected from the upper portion of the said lever-heads, and a pitman-connection between the said horns and the upper end of the upper cutter, all combined for operation substantially as shown and described, and for the purpose specified.

406,209. SAW-REGULATING ATTACHMENT FOR BAND SAW-ING-MACHINES. ELIJAH S. GILMORE, San Francisco, Cal., assignor of two-thirds to Nathan W. Spaulding, same place. Filed Jan. 3, 1888. Serial No. 295,260. (No model.)



Claim.—1. A saw-regulating attachment for band sawing-machines, consisting of two rollers adapted to grip the saw-blade between them and capable of angular adjustment with respect to the plane in which the saw-blade runs, whereby they can be set to rotate at an angle across the saw-blade, in combination with means for setting and holding the rollers at different angles across the saw-blade, substantially as described, for operation as set forth.

2. In combination with a band-saw, a pair of gripping-rollers adapted to embrace and run with the saw-blade, and mounted in a tilting frame or carrier which is capable of adjustment to change the angle of rotation of the rollers with respect to the plane in which the saw runs, and mechanism connected with said tilting carrier for setting it at different angles of elevation and depression, as described for operation as set forth.

3. In a band sawing-machine, the combination of the pivoted tilting frame or yoke having studs h $h^{\times}$, rollers A A, setting-shaft D, shaft C, connecting the yoke with the setting-shaft, and gears E F, arranged for operation as set forth.

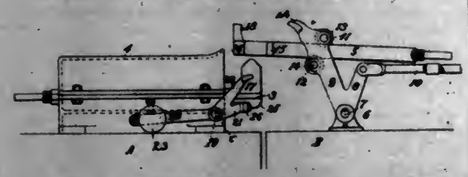
406,210. PROCESS OF REDUCING METALLIC ORES. MATTHEW GRAFF and JAMES JOHNSON, Pittsburg, Pa. Filed May 10, 1888. Serial No. 273,445. (No specimens.)

Claim.—1. The herein-described method of reducing and smelting ores, which consists in intimately mixing the ore with carbonaceous material protected as against rapid combustion by a coating of suitable material, and with a suitable flux adapted to combine with the protecting coating, and then subjecting the mixture to the action of a reducing-flame in a suitable furnace, substantially as set forth.

2. The herein-described method of reducing and smelting ores, which consists in intimately mixing the ore with carbonaceous material coated with lime and adding thereto a suitable flux, and then subjecting the mixture or charge to the action of a reducing-flame, substantially as set forth.

3. The herein-described method of reducing and smelting ores, which consists in intimately mixing the ores with carbonaceous material protected by a coating of suitable material as against rapid combustion, and with borax, and then subjecting the mixture or charge to the action of a reducing-flame in a furnace having a carbonaceous bottom coated with a material adapted to retard the combustion thereof, substantially as set forth.

406,211. COUPLING FOR SIGNAL-RODS. JAMES T. HANBAY, Wilkinsburg, assignor to the Union Switch and Signal Company, Pittsburg, Pa. Filed Nov. 20, 1888. Serial No. 291,357. (No model.)



Claim.—1. The combination of a series of signal-rods provided with a series of vertically-movable sections and a like series of sections stationary as against vertical movement, each of said sections being provided with interlocking lugs, substantially as set forth.

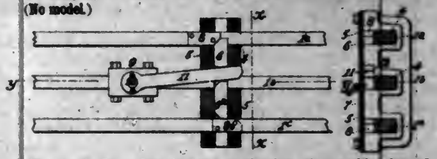
2. The combination of a series of movable signal-rod sections, a like series of sections stationary as against vertical movement, said sections being constructed to engage each other when in normal position, the movable sections being provided with stops to prevent their disengagement when shifted longitudinally out of normal position for the purpose of setting a signal, substantially as set forth.

3. The combination of a stationary guide-box, a series of signal-rod sections longitudinally movable through said box, a like series of vertically-movable signal-rod sections, said sections being provided with interlocking lugs, vertically-movable sections being provided with toes to prevent any vertical movement when shifted within the box, substantially as set forth.

4. The combination of signal-rod sections stationary as against vertical movement, corresponding vertically-movable sections, a shaft provided with grooved rollers for supporting and guiding the vertically-movable sections, and arms for raising and lowering said shaft, substantially as set forth.

5. The combination of a series of two or more signal-rods formed of a series of two or more sections stationary as against vertical movement, and a series of two or more vertically-movable sections adapted to interlock in a vertical plane with the sections of the first series, a vertically-movable support for the movable series, and a lock for the stationary series controlled by such movable support, substantially as set forth.

406,212. SWITCH AND SIGNAL INTERLOCKING APPARATUS. JAMES T. HANBAY, Wilkinsburg, assignor to the Union Switch and Signal Company, Pittsburg, Pa. Filed Feb. 21, 1889. Serial No. 300,704. (No model.)



Claim.—1. In an interlocking mechanism, the combination of a series of three or more longitudinally-movable locking-bars, dogs secured to two or more of said bars, a finger or fingers pivotally attached to one or more of said bars, and a series of two or more movable locking-blocks, substantially as set forth.

2. In an interlocking mechanism, a frame having a series of two or more transverse slots and a groove formed at an angle to the slots, a series of three or more longitudinally-movable locking-bars arranged in said slots, dogs secured to two or more of said bars, a finger or fingers pivotally attached to one or more of said bars, and a series of two or more movable locking-blocks arranged in the groove of the frame, substantially as set forth.

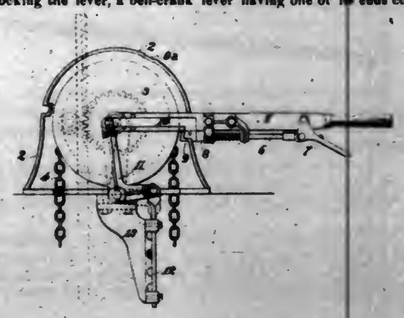
3. In an interlocking mechanism, the combination of a series of three or more longitudinally-movable locking-bars, dogs secured to two or more of said bars, a notched finger or fingers pivotally attached to one or more of said bars, and a series of two or more movable locking-blocks, substantially as set forth.

4. In an interlocking mechanism, the combination of a series of three or more longitudinally-movable locking-bars, dogs secured to two or more of said bars, a finger or fingers pivotally attached to one or more of said bars, and a series of two or more independently-movable locking-blocks, substantially as set forth.

5. In combination with any of the known systems of interlocking, dogs secured to two or more of the locking-bars thereof, a finger or fingers pivotally attached to one or more of said locking-bars, and a series of two or more movable blocks, substantially as set forth.

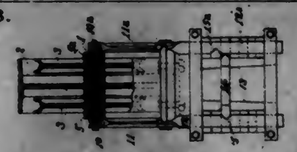
406,213. SWITCH AND SIGNAL APPARATUS. JAMES T. HANBAY, Wilkinsburg, assignor to the Union Switch and Signal Company, Pittsburg, Pa. Filed Feb. 21, 1889. Serial No. 300,707. (No model.)

Claim.—1. In a horizontal-lever machine for operating switches and signals, the combination of an operating-lever, a movable block for locking the lever, a bell-crank lever having one of its ends connected to said block and movable thereby into and out of line with the center of movement of the lever, and an interlocking mechanism operated by the bell-crank, substantially as set forth.

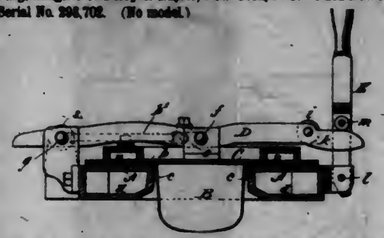


2. In a switch and signal apparatus, a series of two or more horizontal-lever machines separated to form a passage-way between adjacent machines, each machine having two levers interlocked with each other, in combination with interlocking mechanism for interlocking the levers of one machine with those of another machine, substantially as set forth.

406,218.



406,214. PRESS FOR HAT-BRIMS. WILLIAM G. HARMER, Newburg, assignor to Perry & Napier, New York, N. Y. Filed Feb. 5, 1889. Serial No. 298,702. (No model.)



Claim.—In a press for pressing and finishing the brims of felt and other like hats, the combination, with the bed A, having a hat-body-receiving aperture c, and steam or other heating jacket d on its under side outside of said aperture, of the hinged platen C, having a steam or other hollow heating-belt n on its top for operation in connection with the heating-jacket on the under side of the bed upon the brim of the hat, as described, and the heating-medium-circulating pipes b' c', connected at their forward ends with the belt n of the platen and supported by and adapted to turn in sockets in the rear in axial line with the hinge-pin of the platen, substantially as specified.

406,215. PLASTERING COMPOUND. ISAAC C. HART, Cincinnati, Ohio, assignor of one-half to William Grey Wade, same place. Filed Mar. 20, 1889. Serial No. 304,040. (No specimens.)

Claim.—1. A plastering compound composed of sand, plaster-of-paris, lime, and asbestos, prepared substantially as hereinbefore set forth.

2. The hereinbefore-described plastering compound, consisting of equal parts, by measure, of sand, plaster-of-paris, lime, and asbestos mixed together in a dry state, substantially as and for the purpose set forth.

406,216. APPARATUS FOR COOLING, WARMING, MOISTENING, OR SATURATING AIR. JAMES HOWORTH, Farnworth, County of Lancaster, England. Filed Dec. 4, 1888. Serial No. 292,861. (No model.) Patented in England Mar. 5, 1886, No. 3,134.



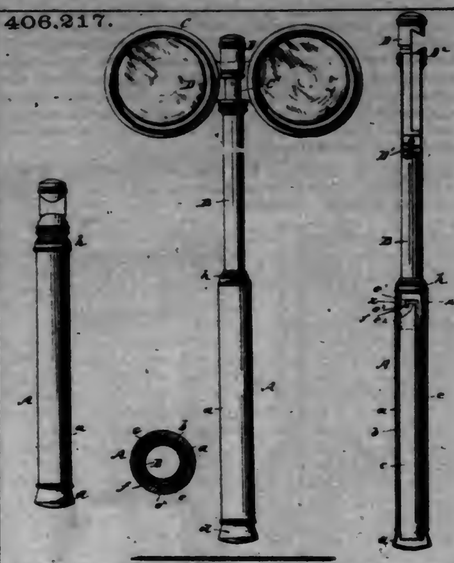
Claim.—An apparatus for cooling, heating, or moistening air, consisting of a box divided by a dividing-plate into two compartments at its lower part, the dry compartment having an air-inlet at the bottom and containing a coil of pipe for steam or refrigerating-liquid, and at the top a hood or deflecting-plate extending over the dividing-plate to deflect the air into the wet compartment, which latter contains a steam-pipe and stop-cocks for the pipes, as and for the purposes set forth

406,217. OPERA-GLASS HOLDER. GIDEON ISLEY, Jersey City, N. J., assignor to Edwin Terry, Brooklyn, and Leo Wormser, New York, N. Y. Filed Feb. 5, 1889. Serial No. 298,712. (No model.)

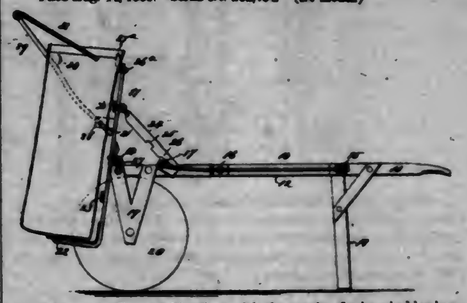
Claim.—1. The handle A, having the continuous intermediate tube b and the inner tube c, formed with slot c c', in combination with the sliding section B, having stud f, substantially as described.

2. The handle A, having the outer ornamental tube a, intermediate continuous tube b, extended at d, and the inner tube c, slotted at c c', in combination with the sliding section B, having stud f, substantially as described.

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406,218. RACKING APPARATUS. THOMAS B. JONES, Radnor, Ohio. Filed Aug. 14, 1888. Serial No. 282,734. (No model.)



Claim.—1. The combination, with the truck, of a bag-holder having vertically-extending uprights or arms connected between their ends to the front end of the truck-body and extending at their lower ends below said body, substantially as set forth.

2. The combination, with the truck, of a bag-holder connected between its ends to the front end of the truck-body to rock vertically above and below the same, and having a forwardly-projecting platform at its lower end to support the bag and devices at its upper end to engage the mouth of the bag, substantially as set forth.

3. The combination, with the truck having a cross-rod on the front end of its body, of a bag-holder having suspension hooks or cleats on its rear side between its ends engaging said rod, substantially as set forth.

4. The combination, with the truck, of the vertically-rocking bag-holder pivotally suspended between its ends on the front end thereof, and an adjustable latch connecting the holder and truck beyond their point of connection, substantially as set forth.

5. The combination, with a bag-holder, of arms pivotally connected thereto and having an inwardly-extending shield connected therewith, for the purpose set forth.

6. The combination, with the spaced uprights having hooks at their upper ends, of the U-shaped arm 29, pivoted near its ends to the standards and extending outward and upward above the standards, and the shield 31, pivotally connected with the cross-piece of said arm 29, and extending inwardly toward the uprights, substantially as set forth.

7. The combination, with a truck provided with a rearwardly-inclined cross-bar, of a frame detachably attached to the front of said truck, a platform secured to the lower end of the frame and upon the upper end of the same, a latch engaging the cross-bar, an essentially U-shaped arm pivoted to the frame, hooks secured to said U-bar, and a shield hinged to the same, all combined to operate substantially as shown and described.

8. The combination, with a truck provided with a rearwardly-inclined cross-bar, of a frame provided with cleats detachably attached to the truck, a platform at right angles to the frame, hooks secured to the upper end of the frame, and a latch pivoted to the rear of said frame provided with spaced recesses, an essentially U-shaped arm pivoted to the front face of the frame, teeth secured to the members of said arm, and a shield hinged to the body of the same, substantially as shown and described.

406,219. **MACHINE FOR FORMING ORNAMENTAL SPIRAL GROOVES.** RALPH W. JORDAN, Thomaston, Conn. Filed Feb. 6, 1889. Serial No. 298,861. (No model.)



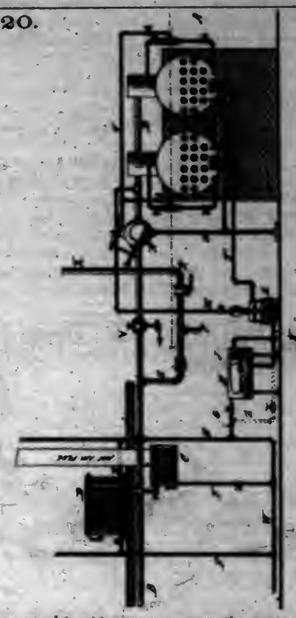
Claim.—1. The combination, with a revoluble shaft provided with spurs or retaining attachments, of a tool-carrier mounted above the shaft, levers upon which the tool-carrier is supported, cords or strips wound upon the shaft, and connections between said cords and the levers, substantially as described.

2. The combination, with a shaft provided with prongs or projections 15, of a tool-carrying strip mounted above the shaft, levers to which the tool-carrying strip is connected, connections between the levers and the shaft, and apertured tool-carrying blocks carried by the strip, substantially as described.

3. The combination, with a shaft provided with prongs or projections, of a tool-carrying strip mounted above the shaft, pivotally-mounted levers to which the tool-carrying strip is pivoted, cords or strips wound in opposite directions upon the shaft, and adjustable connections between the cords and the levers, substantially as described.

4. The combination, with a shaft provided with prongs or projections, of a tool-carrying strip mounted above the shaft, pivotally-mounted levers to which the tool-carrying strip is pivotally connected, cords wound upon the shaft, connections between the cords and the levers, segmental racks, and limit pins or stops carried by said racks, substantially as described.

406,220. **AUTOMATIC RETURN STEAM-HEATING SYSTEM.** TIMOTHY J. KIELEY, New York, N. Y. Filed Apr. 18, 1887. Serial No. 235,288. (No model.)

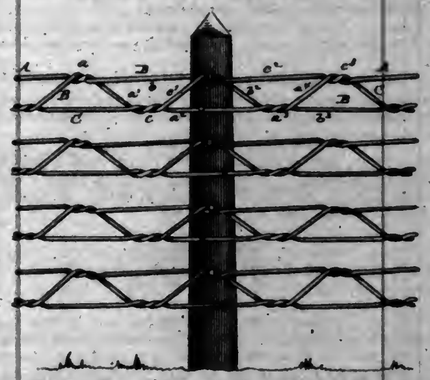


Claim.—1. The combination, in a steam-heating system, of a main steam-supply pipe, a main return-pipe, and a pump in said main return for forcing the water back to the boiler, a steam-pipe carrying steam to said pump, a boiler-feed governor operating the valve of said steam-pipe, a connection from the bottom of said boiler-feed governor below the water-level of the boiler, and a connection from the top of said boiler-feed governor to the boiler at the level at which it is desired to maintain the water in the same, substantially as described.

2. In a steam-heating system, the combination of a boiler, a main steam-supply pipe, and a main return-pipe connecting the boiler and radiators, a pump in the main return-pipe for forcing the water back to the boiler, a steam-supply pipe connecting with said pump, a controlling-valve in the steam-pipe for the pump, and a boiler-feed governor connected with said valve to operate the same, substantially as described.

3. The combination of the boiler A, main steam-supply pipe B, main return-pipe W, pump L in said main return-pipe for forcing water back to the boiler, the boiler-feed governor N, provided with a float-connection O from said governor below the water-level of the boiler, connection Y from said governor to the boiler at its water-level, and the automatic supply-tank H, communicating with the pump, substantially as described.

406,221. **WIRE FENCE.** MELVIN D. KILMER, New Windsor, assignor to the Kilmer Manufacturing Company, Newburg, N. Y. Filed Mar. 5, 1889. Serial No. 301,999. (No model.)



Claim.—The wire fence-strand consisting of the three wires A, B, and C, the wires A and B being twisted together and the latter running horizontally and the former obliquely, the wire A being twisted to the wire C and then running horizontally, the wire C running obliquely to the wire B, to which it is twisted, the wire B running from this twist obliquely to the wire A, and the wire C running horizontally, the said wires thus alternately running horizontally and obliquely throughout the entire strand, as set forth.

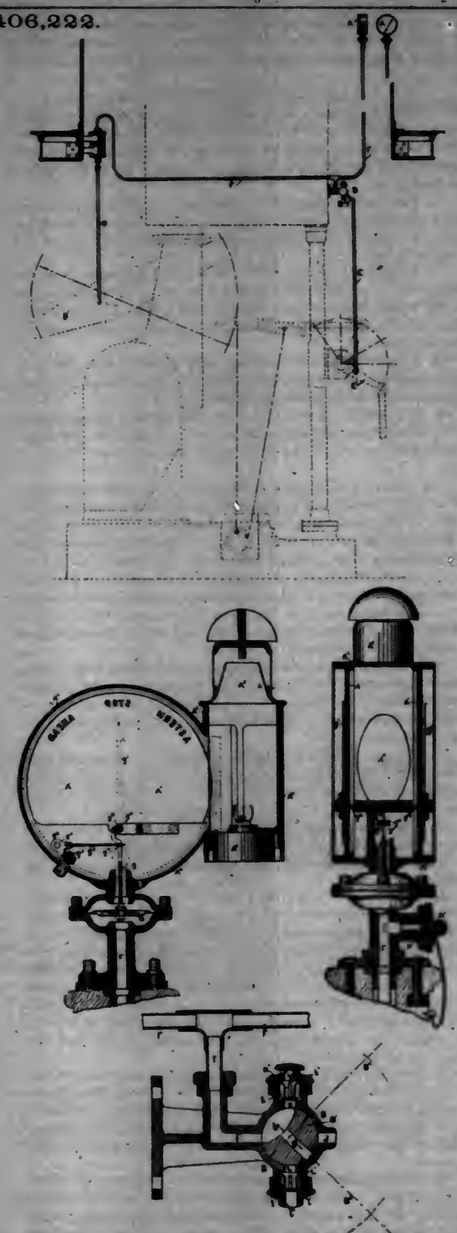
406,222. **INDICATOR OF MOTION AND SPEED OF STEAM AND LIKE MOTORS.** EDOUARD LARMENT, Marseilles, France, assignor to J. Gordon Alison & Co., Birkenhead, England. Filed Aug. 20, 1888. Serial No. 283,703. (No model.) Patented in France July 26, 1888, No. 177,507.

Claim.—1. In an indicator for engines, the combination, with the engine, of a pump connected therewith and actuated thereby, an indicator connected with the pump by means of a pipe, a valve located in the pipe, and a connection between the valve and the reversing-lever of the engine.

2. In combination with an engine, a pump operated thereby, a pipe F, connected with the pump and provided with an inlet-valve L and outlet-valve K, an indicator, a diaphragm connected with the indicator and placed within the pipe F, and a connection between the valves L K and the reversing-lever of the engine, whereby one valve is free to rise and fall with difference in pressure when the engines are going ahead and the other only when they are going astern.

3. In combination with an engine, a pump operated synchronously thereby, a pipe connected with the pump, an indicator, a valve or cock in pipe F, operated by the reversing-lever of the engine, all substantially as shown, and a diaphragm placed in the pipe F and serving to actuate the pointer of the indicator by variations in the pressure within the pipe.

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4. In an indicator, the combination, with a case or shell, of a pipe communicating therewith, a pointer pivoted in the casing, a diaphragm connected with the pointer and placed within the pipe, or an extension thereof, and means for varying the pressure beneath the diaphragm.

5. In an indicator, the combination, with a case or shell, of a pipe communicating therewith, a pointer pivoted in the casing, a diaphragm placed within the pipe and connected with the pointer, a semaphore operated by the pointer, and means for varying the pressure upon the diaphragm.

6. In combination with an engine, a pump actuated synchronously by the engine, an indicator, an expansible and contractible device, connected with and actuating the indicator, and a pipe adapted to convey the pulsations of air or other fluid caused by the pump to the expansible and contractible device.

7. In an indicator for engines, the combination, with an engine and an indicating mechanism, of a cylinder C, pipes F' F², communicating with opposite ends of the cylinder, a piston C', actuated by the engine and provided with a valve C², opening in one way only, and a four-way valve B, with which the pipes F' F² communicate, located between the indicating mechanism and the cylinder.

8. In combination with cylinder C and piston C', pipes F' F², communicating with the cylinder, an indicator, a four-way valve, and a pipe F, connecting the valve with the indicating mechanism, whereby the pulsations conveyed by said pipe shall operate the indicator.

9. In an indicator for engines, the combination, with a pump operated synchronously by the engine, of an indicator, a pipe connecting the indicator and pump, and a four-way valve B, located in the pipe between the indicator and pump.

10. In an audible indicator for engines, the combination, with the engine, of a pump operated synchronously thereby and a whistle connected with the pump, all substantially as shown.

11. In an audible indicator for engines, the combination, with the engine, of a pump operated synchronously thereby, a whistle connected with and operated by the pump, and a stopping device H'.

12. In combination with a casing provided with a dial having the neutral point at the top, a pointer pivoted in the casing and adapted to maintain, normally, an upright position, a diaphragm G, exposed to pulsations of a fluid and connected with the pointer, whereby the pulsations will cause the pointer to oscillate to one or the other side of the neutral line, according as the pulsations are above or below a predetermined degree.

13. In an indicator, the combination of an air-pump, an indicator provided with a pointer, a diaphragm connected with and adapted to actuate the pointer, a pipe connecting the pump with the chamber in which the diaphragm is placed, whereby when the pressure of the air is above atmospheric pressure it will move the pointer in one direction, but when below atmospheric pressure it will move it in the reverse direction.

406,223. **GALVANIC BATTERY.** JOHN R. LEE, Conshohocken, Pa., assignor to the J. Ellwood Lee Company, same place. Filed Mar. 14, 1889. Serial No. 303,201. (No model.)



Claim.—1. The combination of the battery-cell having a cup electrode with a contact-plate having a grooved stem passing through the body of the cell and into the cup, and the metallic body mechanically securing the said stem and electrically connecting it to the cup, all substantially as described.

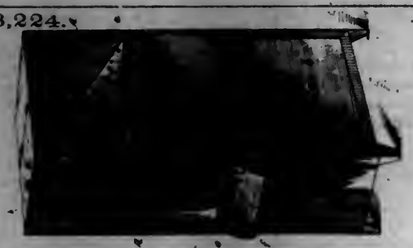
2. The combination of the battery-cell having a cup electrode with an outside contact-plate having a grooved stem passing through the body of the cell and into the cup, the metallic body mechanically securing the said stem and electrically connecting it to the cup, and a protecting layer of shellac or similar material over said metallic body, substantially as described.

3. The combination of the body of the cell and the screw-cap having a contact-plate on the outside and a screw-stem passing through it with a rod electrode and a rubber disk held between the end of the rod and the cap, and also serving as a gasket for the rim of the cell, all substantially as described.

406,224. **ASH-SIFTER.** JOSEPH W. LOVE, Baltimore, Md., assignor of one-half to August Beck, same place. Filed Sept. 4, 1888. Serial No. 284,582. (No model.)

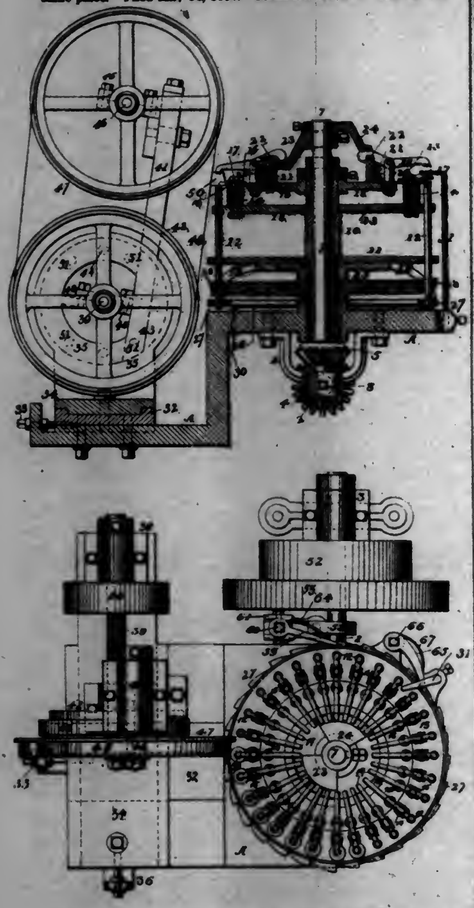
Claim.—In the improvement hereinbefore specified, the combination, with the upper and lower screens inclined in opposite direc-

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tions, of the interposed angular hood B, which extends to and supports the upper screen and forms the top or cover, as well as sides, of the lower screen, all as shown and described.

406,225. CORK-MACHINE. FRANK METZ, New Brighton, Pa., assignor, by direct and mesne assignments, of one-half to John Carbon, same place. Filed May 31, 1887. Serial No. 239,754. (No model.)



Claim.—1. The combination of an endless-band knife, a horizontal rotating table in proximity thereto, and a series of vertical rotating spindles carried upon the table and adapted to support the corks upon the spindles.

2. The combination of a horizontal intermittently-rotating table and a series of vertical intermittently-rotating spindles carried by the table and adapted to support the corks upon the spindles.

3. In a cork-machine, a horizontal rotating table, a vertical rotating spindle mounted thereon and adapted to support a cork, and combined therewith, and a clamp disposed above said spindle.

4. In a cork-machine, a rotating table, a rotating spindle carried thereon, a clamp-jaw arranged above said spindle and moving with the table, and a stationary projection or cam arranged within the path of the clamp-jaw and adapted to throw the clamp into engagement during a portion of the rotation of the table, all in combination, as set forth.

5. The combination of a rotating table, a rotating spindle carried thereon, a clamp-jaw upon the table arranged above the spindle, and a stationary projection or cam adapted to throw the clamp into and a stationary projection for throwing the clamp out of engagement, both of said projections being arranged to lie in the path of the clamp-jaw.

6. The combination, in a cork-machine, of a rotating table, a rotating spindle thereon, and an adjustable guide arranged at the upper end of the spindle in proximity thereto and adapted to be set to and from the spindle.

7. A rotating table provided with a rotating spindle, in combination with a pivoted clamping-jaw arranged in proximity to the spindle, a main frame carrying the table and spindle, and a vertically-adjustable frame, in which the lamp is pivoted, mounted upon the rotating table.

8. The combination of a rotating table provided with a series of rotating spindles, and a stationary projecting arm adapted to sweep the path above the spindles as the latter revolve.

9. In a cork-machine, a horizontal rotating table, in combination with a vertical spindle carried thereby having both a rotary and vertical movement in the line of its length and adapted to support a cork.

10. In a cork machine, a rotating table, a vertical rotating spindle mounted thereon and combined therewith, and a stationary projection or ring below the spindle and extending throughout a portion of the peripheral path of the spindle and adapted to contact and raise said spindle out of engagement with the driving mechanism.

11. In a cork-machine, the combination of a stationary standard, a rotating table having a central sleeve and mounted upon the standard, a drive-wheel mounted also upon the standard, and a series of rotating spindles mounted upon the table and having pinions adapted to engage the drive-wheel.

12. The combination, with a horizontal driving-shaft having drive-pulleys and a bevel-pinion, of a standard, a sleeve mounted thereon having a bevel-gear, a drive-wheel keyed to the sleeve, a rotating table, and rotating spindles carried thereby having pinions engaging the drive wheel.

13. The combination of two band-wheels with a standard made in two parts, a flanged disk upon each part, a series of holes passing through said disks, and a bolt or bolts adapted to pass through said holes, for the purpose of bolting the standards adjustably.

14. The combination of a table, a bed or frame, a seat-block thereon adjustable to and from the table, and a standard located upon the seat-block adjustable at right angles thereto and carrying the endless-band knife.

15. A circular table having a ratchet thereon, a drive-shaft for rotating the table provided with a cam, and intermediate mechanism for engaging the ratchet and intermittently rotating the table, a drive-wheel, and a series of intermittently-rotating spindles having pinions located upon the table and adapted to be driven by the drive-wheel.

16. The combination of an intermittently-rotating table, a series of cork-supporting spindles carried thereby provided with pinions, a drive-wheel adapted to engage the pinions, and a cam arranged in the path of the spindles upon the table and adapted to throw the pinions out of engagement.

17. The combination of a rotary table, rotating spindles carried thereby, a rotating clamp-support, a series of pivoted clamping-jaws arranged over the axial line of the spindles, a segmental stationary cam or projection adapted to throw the jaws into and a segmental stationary cam or projection adapted to throw the jaws out of engagement.

18. The combination of a rotary table, a ratchet-wheel carried thereby, a pawl, a cam for reciprocating the pawl, a drive-shaft for operating the cam, a series of spindles carried by the table, a drive-wheel adapted to engage the spindles, and a cam device adapted to disengage the spindles.

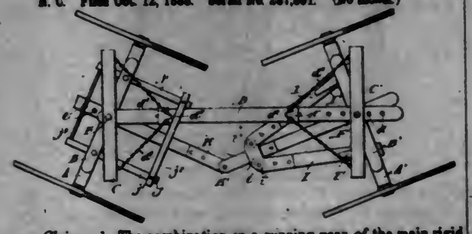
19. The combination of a standard, a table having a sleeve and mounted on the standard rotatably, adjunctive mechanism for rotating the sleeve intermittently, and a clamp-support mounted upon said sleeve and adjustable vertically thereon.

20. The combination of a rotary table, a ratchet device for intermittently rotating said table, a cam device for actuating the ratchet, a driving-shaft for operating the cam, a series of spindles carried upon the table, and a cam device for intermittently rotating the spindles.

21. The combination of a driving-shaft, a cam upon said shaft, a ratchet device actuated by the cam, a table rotated intermittently by the ratchet device, a series of spindles carried by the table, pinions upon the spindles, and a drive-wheel adapted to engage the spindles, said wheel being driven by said driving-shaft.

22. The combination of a driving-shaft, a rotary table, a cam and ratchet device for operating the table, a series of spindles upon the table, pinions upon the spindles, a drive-wheel engaging the spindles, and a stationary cam for disengaging the pinions.

406,226. RUNNING-GEAR. URIAH R. MILLER, Kellig's Mills, N. C. Filed Oct. 12, 1888. Serial No. 287,891. (No model.)

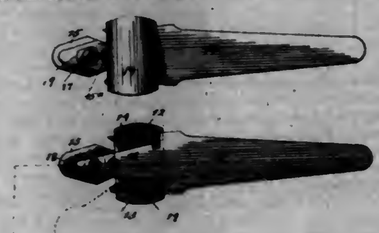


Claim.—1. The combination, in a running-gear, of the main rigid reach D, having its one end adjustable, the auxiliary reach E, hinged centrally to flex in a lateral direction and adjustable at the end opposite the adjustable end of the reach D, collars d', formed with hooks d^3 and secured to reach D, one of the collars being adjustable thereon, and the chains d^4, extending from the hooks d^3 to the body-bolsters, substantially as described.

2. The combination, in a running-gear, and with the axles and bolsters thereof, of the main reach D, pivotally secured at each end and longitudinally adjustable at one end, the frame J, secured to the front gear and between the spaced cross-bars j^3 of which the reach D lies, the auxiliary reach E, hinged at its center to flex laterally and made adjustable at one end, the bounds I, spaced at their ends, the plates i, uniting said spaced ends, and the friction-rollers i', substantially as described.

3. The combination, in a running-gear, of a main rigid reach D, adjustable longitudinally at its rear end, the auxiliary reach E, hinged at its center to flex laterally and adjustable longitudinally at its front end and having a free endwise movement at its opposite end, the keepers G G', secured to the under side of the axles, and the friction-rollers H, between which the free end of reach E is guided, substantially as described.

406,227. SAW-SWAGE. JASON W. MIXTER, Plymouth, Mass. Filed Mar. 20, 1889. Serial No. 303,961. (No model.)



Claim.—1. The combination, with a saw-swage provided with a triangular tongue and a die secured to the base of the tongue at top and bottom, of guides provided with a longitudinal recess upon the inner face capable of receiving the sides of the tongue, and means, substantially as shown and described, for securing the said guides to the said tongue, as and for the purpose specified.

2. The combination, with a saw-swage provided with a tongue projected from one end, a die held in contact with the top and bottom, respectively, of said tongue at the base, and a band clamping said dies to said tongue, of a key consisting of a half-round pin capable of passing through the tongue in contact with the band, substantially as and for the purpose specified.

3. The combination, with a saw-swage provided with a triangular tongue, a die located at the top and bottom of the tongue at the base, a band binding said dies to said tongue, and a key consisting of a half-round pin capable of passing through the tongue in contact with the outer face of the band, of a guide detachably secured to each side of the tongue in advance of the dies, and means, substantially as shown and described, for adjusting the said guides upon the said tongue, as and for the purpose specified.

406,228. SAW-GUMMER. JASON W. MIXTER, Plymouth, Mass. Filed Mar. 20, 1889. Serial No. 303,962. (No model.)

Claim.—1. The combination, with a saw-gummer, of a gage bar or link adjustably attached thereto, and an adjustable lock link or bar capable of contact with the said gage-link, substantially as and for the purpose specified.

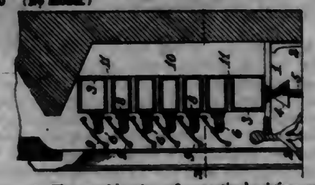
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2. The combination, with a saw-gummer, of a gage link or bar provided with a lip extending at a right angle from one end, essentially L-shaped in cross-section, and an adjustable lock link or bar adapted for contact with one side of the gage-link, substantially as and for the purpose specified.

3. The combination, with a saw-gummer provided with an ordinary gage-screw, of a gage link or bar adjustably attached thereto, provided with a lip essentially triangular in cross-section and projected from one end, whereby an angular recess is formed, and an adjustable lock link or bar located at a right angle to the gage-link and capable of contact therewith, substantially as and for the purpose specified.

406,229. GAS-BURNER FOR STOVES OR FIRE-PLACES. TERRENCE MCSWEENEY, Allegheny, Pa. Filed Feb. 11, 1889. Serial No. 299,480. (No model.)



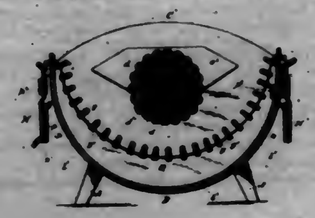
Claim.—1. The combination of a vertical mixing and heating chamber, a mixer communicating with said chamber at its lower end, a series of perforated burner-pipes located adjacent to the front of the chamber and communicating therewith, and a series of retarding and radiating plates supported one above another adjacent to the burner-pipes, substantially as set forth.

2. The combination of a vertical mixing and heating chamber, a mixer communicating with said chamber at its lower end, and a series of burner-pipes provided with burner-openings and located adjacent to the front of the chamber, said pipes communicating with the chamber through openings which increase gradually in diameter from the highest to the lowest of the series, substantially as set forth.

3. The combination of a vertical mixing and heating chamber, a mixer communicating with said chamber at its lower end, a series of perforated burner-pipes located adjacent to the front of the chamber and communicating therewith, an inclosed air-heating passage open at bottom and adjoining the rear of the chamber, and a series of air-supply passages leading through the chamber from said air-heating passage to points adjacent to the burner-pipes, substantially as set forth.

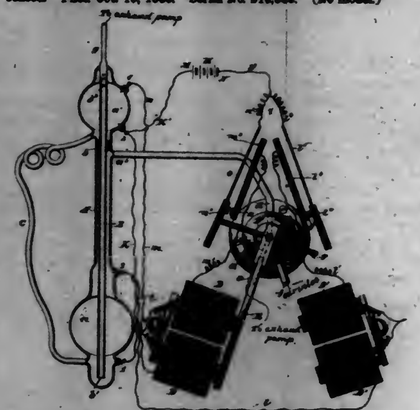
4. The combination of a vertical mixing and heating chamber, a mixer communicating with said chamber at its lower end, a series of perforated burner-pipes located adjacent to the front of the chamber and communicating therewith, and a series of perforated retarding and radiating plates supported one above the other adjacent to the burner-pipes and inclined downwardly and outwardly from the front of the chamber, substantially as set forth.

406,230. WASHING-MACHINE. HAIM NETHELL, Stromsburg, Nebr. Filed May 5, 1888. Serial No. 272,884. (No model.)



Claim.—In a washing-machine of the kind herein shown and described, the combination, with the outer casing thereof, of the elastic removable washing-apron composed of a series of slats secured together at their lower edges by means of spring-connections, the outer ends of said washing-apron having secured thereto the retaining-boards H and H', for holding the same within an adjusted position in said outer casing, the side blocks c^3 c^3, cross-strip p^3, and the projecting lip p', formed upon the end board H, as and for the purpose herein shown and described.

406,231. DEVICE FOR AUTOMATICALLY MANIPULATING THE VALVES OF HIGH-VACUUM PUMPS. EDMUND B. NICOLAUS, Cleveland, Ohio; Paul Schneider administrator of said Edmund B. Nicolaus, deceased. Filed Oct. 19, 1886. Serial No. 216,669. (No model.)



Claim.—1. The combination, with the mercury reservoirs of a high-vacuum pump, a valve and tubes for admitting variable pressure upon the mercury within the reservoirs, electro-magnets for actuating the valve, and electric circuits having terminals located within the mercury-reservoirs, so that the circuits will be opened and closed by the mercury in the pump, of circuit-breakers located outside of the pump and adapted to automatically open and close the circuits immediately prior to their being opened or closed by the mercury of the pump, substantially as set forth.

2. The combination, with a high-vacuum pump and electro-magnets for actuating the valve for controlling the pump-connections, of contacts arranged and adapted to be closed by the mercury in the pump, and circuit-breakers outside of the mercury-reservoirs for opening the circuits before the mercury contacts are broken, substantially as set forth.

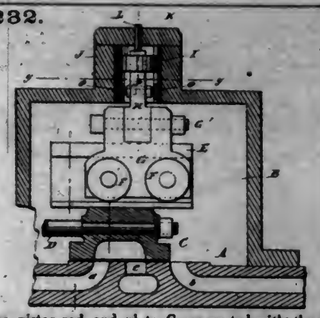
3. The combination, with a high-vacuum pump and electro-magnets for actuating the valve for controlling the pump-connections with the open air and exhaust-pump, of circuit-breakers for automatically opening and closing the circuits connected with the mercury-reservoirs at points outside of said reservoirs, substantially as set forth.

4. The combination, with the mercury-reservoir of a high-vacuum pump, contacts located within the reservoir and adapted to be closed by the mercury therein, and an electric circuit connected with the contacts and having an electro-magnet included therein, of a circuit-breaker adapted to break the circuit at a point outside of the mercury-reservoir immediately after the circuit has been closed within the reservoir, substantially as set forth.

5. In a high-vacuum pump, the combination, with the mercury-reservoirs, a valve for controlling the pump-connections with the open air and exhaust-pump, and electro-magnets for automatically actuating the valve, of a circuit-breaker for alternately opening and closing the circuits connected with the mercury-reservoirs at points outside of the pump, substantially as set forth.

6. The combination, with the mercury-reservoirs, a valve and tubes connecting therewith, and electro-magnets and circuits, the latter connecting with the mercury-reservoirs and adapted to be opened and closed by the mercury in the pump, of circuit-breakers constructed to be operated by the electro-magnets, substantially as set forth.

406,232. BALANCED SLIDE-VALVE. FRANK D. PATTEN, Montrose, Iowa. Filed July 3, 1883. Serial No. 272,926. (No model.)

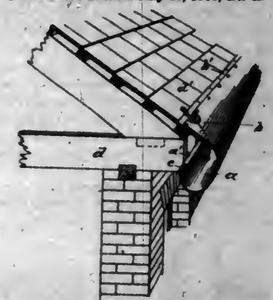


Claim.—1. The combination, with the steam-chest having a cylinder at the top, the slide-valve having the angular guideways E, the piston-rod and piston sliding in said cylinder, of the plate G, which is pivotally connected with said rod, and rollers journaled on the plate, as shown and described, to operate as specified.

2. The combination, with the steam-chest having a cylinder at the top, the piston-rod and plate G, connected with the latter and held against endwise movement, and the slide-valve having guideways E, of the rollers F F, which are mounted and rotate on journals fixed in said plate, as shown and described, for the purpose specified.

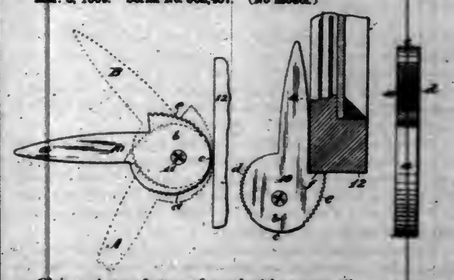
3. The combination, with a steam-chest and a cylinder formed on the same, of a piston held to slide in the said cylinder, a piston-rod carrying the said piston, a plate pivotally connected with the said piston-rod, rollers held on the said plate, a slide-valve provided with guideways traveling on the said rollers, and a cross-head held on the said piston-rod and fitting into the said cylinder, substantially as shown and described.

406,233. EAVES-GUTTER FOR ROOFS. JOHN PHELPS, Dulwich, County of Surrey, England. Filed Jan. 22, 1889. Serial No. 297,312. (No model.) Patented in India July 16, 1888, No. 12.



Claim.—A combined eaves-gutter and cover therefor, constructed of a sheet of metal bent to form both the gutter proper *a* and the sloping cover *b*, the gutter portion *a* being secured to the eaves along the edge *a'* and the cover-portion *b* overlapping the roof and being secured thereon at its edge *b'* in a plane parallel with the surface of the roof, but at a sufficient distance above the roof to permit of drainage beneath the part *b* into the gutter *a*, substantially as specified.

406,234. SASH-HOLDER. ELIAS C. PRUITT, Twiggs, S. C. Filed Mar. 3, 1889. Serial No. 302,407. (No model.)



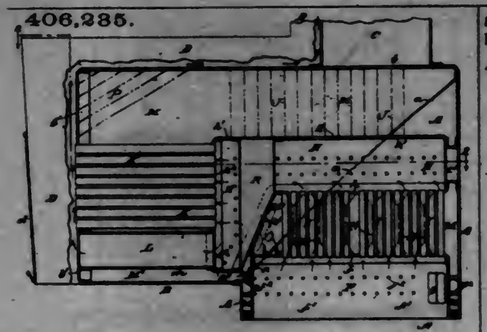
Claim.—A sash-fastener formed with an extending arm, a shoulder *f*, and eccentric bearing-faces *d e*, substantially as described.

406,235. STEAM-BOILER. ROBERT S. ROOT, Jersey City, N. J. Filed Mar. 30, 1889. Serial No. 305,362. (No model.)

Claim.—1. A boiler made in two cylindrical or rounded sections connected by an elbow-joint to produce a self-bracing shell, and provided on the upper horizontal section with a steam-dome, substantially as herein set forth.

2. A boiler made in two cylindrical or rounded sections connected by an elbow-joint to produce a self-bracing shell, and an uptake or back connection extending at the rear and top of the shell, substantially as herein set forth.

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3. A boiler made in two cylindrical or rounded sections connected by an elbow-joint to produce a self-bracing shell, the fire-box being arranged at the bottom of one rounded section and the fire tubes or flues and the combustion-chamber arranged in the two sections above and in rear of the fire-box, substantially as herein set forth.

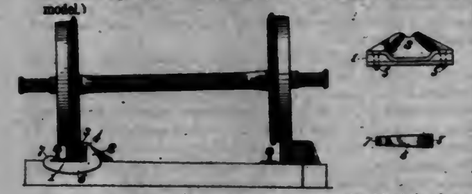
4. A boiler made in two cylindrical or rounded sections connected by an elbow-joint to produce a self-bracing shell, the fire-box being arranged at the lower end of one rounded section and the fire tubes or flues and combustion-chamber arranged in the two sections above and in rear of the fire-box, and with a steam-dome on the shell, substantially as herein set forth.

5. The combination, in a boiler, of two cylindrical or rounded sections A B, connected in elbow form, a fire-box F at the bottom of section A, a combustion-chamber H above the fire-box, tubes connecting the fire-box and combustion-chamber, and fire-tubes communicating with the combustion-chamber and with the uptake or back connection of the boiler, substantially as herein set forth.

6. The combination, in a boiler, of a shell, a fire-box therein, a combustion-chamber above the fire-box, tubes connecting the fire-box and combustion-chamber, fire-tubes connecting the combustion-chamber and the uptake or back connection of the boiler, and a water-circulation and man-hole tube crossing the combustion-chamber and communicating with the upper and lower parts of the water-space of the boiler, substantially as herein set forth.

7. The combination, in a boiler, of a shell made in two cylindrical or rounded sections connected in elbow form, a fire-box at the bottom of the front section, a combustion-chamber above the fire-box, tubes connecting the fire-box and combustion-chamber, fire-tubes connecting the combustion-chamber and the uptake or back connection of the boiler, and a water-circulation and man-hole tube crossing the combustion-chamber and communicating with the upper and lower parts of the water-space of the boiler, substantially as herein set forth.

406,236. WRECKING-FROG. CHARLES P. ROYCE and GERRARD R. GIBB, Allegheny, Pa. Filed Feb. 1, 1889. Serial No. 298,347. (No model.)

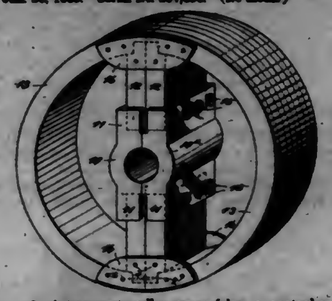


Claim.—1. In a wrecking-frog, a tapering guide-block having a central groove of a depth greater than the flange of a car-wheel and gradually increasing in width toward the thin end of the frog, and provided with treads along each edge, substantially as set forth.

2. In a wrecking-frog, the combination of a tapering guide-block, and a clamp adapted to pass under the rail and guide and provided at one end with a jaw constructed to engage the flange of the rail and at its opposite end with a jaw constructed to have a firm bearing upon the side and top of the block, the portion of the jaw bearing upon the side of the block having reversely-beveled edges, substantially as set forth.

3. In a wrecking-frog, the combination of a guiding-block and a lifting-block, said blocks being made for a part of their length of a height sufficient to support the wheel at or above the level of the rails, the remaining portions being inclined, the guiding-block having a central groove of a depth greater than the flange of a car-wheel and gradually increasing in width toward the thin end of the frog, and provided with treads along each edge, substantially as set forth.

406,237. SPLIT PULLEY. EDWARD P. SHERBURNE, Racine, Wis. Filed Jan. 26, 1889. Serial No. 297,893. (No model.)



Claim.—1. A two-part pulley comprising a central part or hub formed in two sections, arms supported by said sections face to face, rim-sections secured at their ends to the ends of said arms, and plates connected to the abutting ends of the rim-sections and to the arms to join the two pulley-sections, substantially as set forth.

2. A two-part pulley comprising a central part or hub formed in two sections having their adjacent faces provided with half-bearings between their ends and their ends provided with sockets open on their inner sides, the arms resting at their ends in said sockets, the rim-sections secured at their ends to the ends of the arms, bolts connecting the two pulley-sections at the inner ends of the arms, and plates connecting the two pulley-sections at the outer ends of the arms, substantially as set forth.

3. A two-part pulley consisting in the central part or hub in two sections 10 10^a, each having a half-bearing on its inner face and sockets 11 at its ends, the arms 12 resting in said sockets face to face, the semicircular rim-sections 13, secured at their ends to the outer ends of the said arms, and formed of strips secured together side by side, the plates 16, securing the abutting ends of the rim-sections and the outer ends of the arms 12 together, and the bolts 15, passed through the said sockets and inner ends of the said arms, substantially as set forth.

406,238. JUG-COVER. SAMUEL J. SCOTT, Cincinnati, Ohio. Filed Sept. 24, 1888. Serial No. 286,143. (No model.)



Claim.—1. In a jug-cover, the combination of the cover C, the leaf D, hinged to the cover, said leaf being notched at the rear, having the bearing *d* for the front of the jug-handle, and the downwardly-projecting fingers *d'*, formed integral with the leaf D and adapted to pass down outside of the jug-body upon each side of the handle, substantially as set forth.

2. The combination, substantially as set forth, of the vessel A, having the upwardly-projecting handle, part *b*, and bead *a*, the cover C, and leaf D, hinged to the cover, the said part D being cut away at the rear to pass upon each side of the handle, and having the bearing part *d* and fingers *d'*, whereby the leaf D is clamped upon the jug.

3. The herein-described jug-cover, comprising the two parts C and D, hinged together as shown, the part D being recessed at the back to bear against the jug-handle, and having fingers *d'* to press the outside of the vessel upon opposite sides of the handle.

406,239. ATTACHMENT FOR DRESSES. LEWIS SEARSON, Jackson, Mich. Filed Mar. 15, 1888. Serial No. 267,267. (No model.)

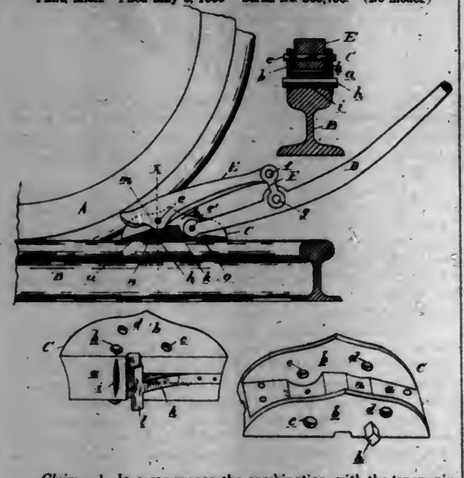
Claim.—The improved dress attachment described, composed of two like parts, each consisting of a steel, the non-elastic closely-woven strips arranged at right angles to said steel and secured thereto by stitching, and an outer fabric inclosing said steels and strips and co-

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cured around said steels by stitching, and the outer ends of the strips free to be attached to a dress, substantially as shown and described.

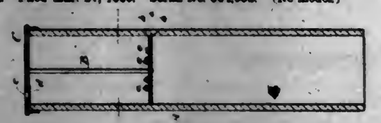
406,240. CAR-MOVER. JOHN SKINNER and CHARLES B. WALLACE, Flint, Mich. Filed May 6, 1880. Serial No. 309,738. (No model.)



Claim.—1. In a car-mover, the combination, with the levers pivotally connected to a shoe having the concave bottom, of a spring secured in the under side of the shoe and adapted to raise one end thereof, and of the sharp-edged pin projecting with its edge through the shoe, substantially as described.

2. In a car-mover, the combination, with levers pivotally connected to a shoe having a concave bottom, of the sharp-edged pin projecting with its middle nearly through said shoe, the T-shaped spring normally extending below said shoe, a recess formed in the upper portion of the shoe for the reception of the corresponding portions of the levers and of the flanges *b*, substantially as described.

406,241. GAS-LEAK DETECTOR. JOHN F. STARK, New Haven, Pa. Filed Mar. 27, 1889. Serial No. 304,932. (No model.)



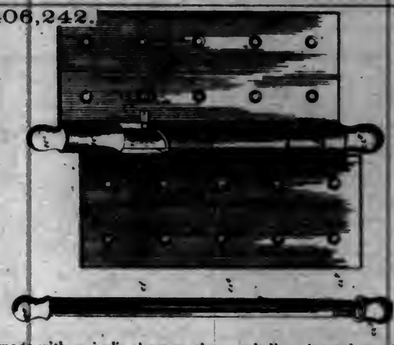
Claim.—1. The within-described device for detecting, by the aid or exposure of phosphorus, the presence or escape of gas in a room or elsewhere, consisting of a transparent tube having an opening below but mainly closed above, and of a phosphorus-table within the tube, composed of a series of gauze disks adapted to form a close fit within the tube, substantially as specified.

2. The within-described gas-leak detector operating by the aid or use of phosphorus, as specified, the same consisting of the transparent tube A, open below, a removable cap C, having a gauze-covered opening in it and adapted to close the upper end of said tube, a wire or pendant attached to said cap and arranged to project down within the tube, and a close-fitting phosphorus-carrying table within the tube, composed of a series of wire-gauze disks *b*, one above the other and attached to said wire or pendant, essentially as herein set forth.

406,242. HINGE. SIDNEY L. STILES, Watseka, Ill. Filed Feb. 15, 1889. Serial No. 299,962. (No model.)

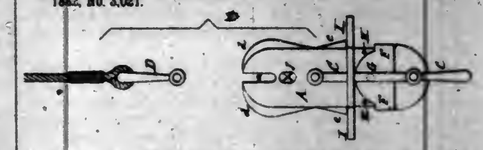
Claim.—The automatically-closing hinge herein described, consisting of the two wings or leaves having tubular sleeves, one of which

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is made with an inclined upper edge, a spindle or journal attached to the other wing or leaf and bearing a friction-roller resting upon the incline, and a detachable pintle or hinge-pin having a longitudinal slot in the same receiving the end of the journal of the friction-roller, substantially as and for the purpose described.

406,243. DETACHING-HOOK FOR COLLIERY-HOISTS. JOHN A STRALEY, Brooklyn, N. Y., ancillary executor of John King, deceased, assignor to Stephen Humble, Westminster, England. Filed Feb. 4, 1889. Serial No. 298,596. (No model.) Patented in England June 27, 1882, No. 3,021.



Claim.—1. A detaching-hook for the cages of colliery-hoists, consisting of outer plates having central recesses at their upper ends and straight slots below said recesses in the upper parts of the plates, an intermediate or distance plate between the outer plates at the lower end of the same, a cage-suspending tackle applied to the outer and distance plate, inner shifting plates pivoted to the outer plates and provided with hook-shaped upper ends, reversely-inclined slots between said ends and the pivot of the shifting plates, and stop-shoulders at the lower ends, and means, substantially as described, for causing the outward shifting of the inner plates and the release of the hauling-shackle when overwinding takes place, substantially as set forth.

2. A detaching hook for the cages of colliery-hoists, consisting of outer plates A, having slots *g* and J, and recesses at the upper ends, an intermediate or distance plate B, a cage-suspending shackle C at the lower ends of the plates A and distance-plate B, inner shifting plates E, pivoted to the plates A and provided with curved slots *g'*, reversely-inclined slots K, stop-shoulders *e*, and hook-shaped upper ends *d*, and slide-plates F, for causing the shifting of the inner plates and the releasing of the hauling-shackle when overwinding takes place, substantially as set forth.

3. A detaching-hook for the cages of colliery-hoists, consisting of outer plates A, having straight slots *g* and J and recesses *a*, an intermediate or distance plate B, a cage-suspending shackle C, and inner shifting plates E, pivoted to the plates A and provided with curved slots *g'*, reversely-inclined slots K, and hook-shaped upper ends *d*, the slots J and K of the plates A and E serving for inserting the pin of the hauling-shackle for lowering the shackle below the stop-plate after overwinding has taken place, substantially as set forth.

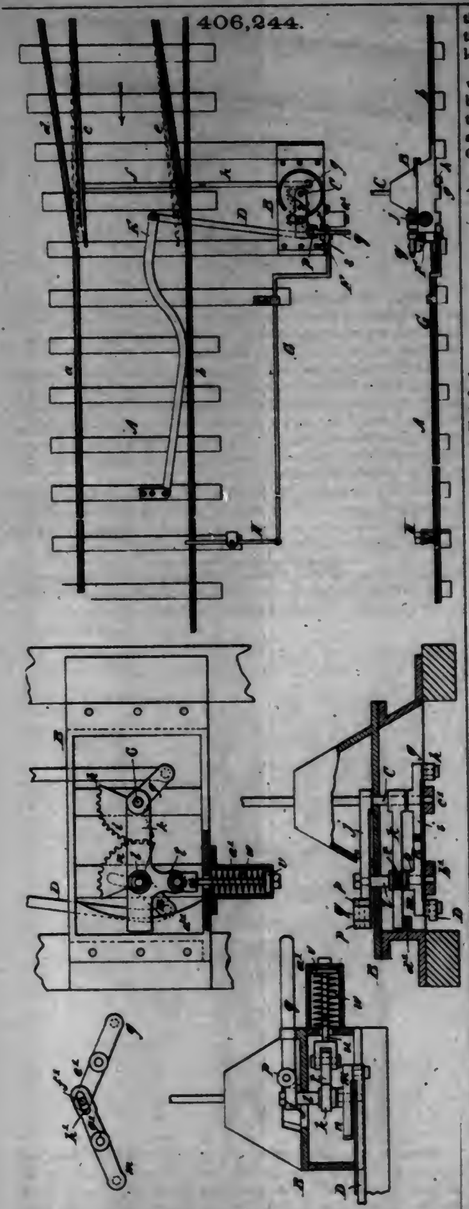
406,244. RAILWAY-SWITCH. JAMES B. SUFFERN, Hilburn, N. Y. Filed Nov. 1, 1886. Serial No. 220,714. (No model.)

Claim.—1. The combination, with the switch-bar and the vertical crank-shaft for operating it, of horizontal arms pivoted at their inner ends, one above the other, to said crank-shaft, a vertical shaft journaled in said arms and geared to the vertical crank-shaft, a track-lever to be operated by a passing train and connected with said vertical shaft, and means for throwing the said pivoted arms toward the track to move the lever away from the rail, substantially as set forth.

2. In an automatic switch, the combination, with the switch-rails *c e*, the stand B, provided with the crank-shaft C, and the connections between the switch-rails and the crank-shaft, of the track-lever E, the connecting-rod D, the cranks *m g*, and connections intermediate between the cranks *m g*, substantially as specified.

3. In an automatic switch, the combination of the switch-rails

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c e, the crank *g*, provided with the toothed sector *i*, the crank *m*, provided with the toothed sector *n*, the track-lever E, and the connecting-rod D, substantially as specified.

4. In an automatic switch, the combination of the shaft C, crank *g* and toothed sector *i*, carried by the said shaft, the shaft *l*, crank *m*, and sector *n*, mounted on the said shaft, the arms *j k*, and the lever *q*, substantially as specified.

5. In an automatic switch, the combination of the base provided with the notches *r s*, the shaft C, crank *g* and toothed sector *i*, carried by the said shaft, the shaft *l*, the crank *m*, and sector *n*, mounted on the said shaft, the arms *j k*, and the jointed lever *q*, adapted to drop into the notches *r s*, substantially as specified.

6. In an automatic switch, the combination of the base provided with the notches *r s*, the shaft C, crank *g* and toothed sector *i*, carried by the said shaft, the shaft *l*, the crank *m*, and sector *n*, mounted on the said shaft, the arms *j k*, the jointed lever *q*, adapted to drop into the notches *r s*, the right-angled lever F, the rod G, and the track-lever H, substantially as specified.

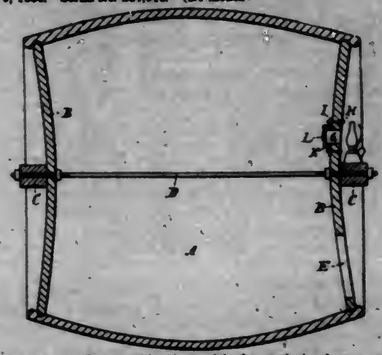
7. In an automatic switch, the combination of the base provided with the notches *r s*, the shaft C, crank *g* and toothed sector *i*, carried by the said shaft, the shaft *l*, the crank *m*, and sector *n*, mounted on the said shaft, the arms *j k*, the rod *u*, spring *w*, the jointed lever *q*, adapted to drop into the notches *r s*, the right-angled lever F, the rod G, and the track-lever H, substantially as specified.

406,245. NUT-LOCK. ANDREW D. VAN BIBBER, Zeln, W. Va. Filed Dec. 6, 1888. Serial No. 292,790. (Model.)



Claim.—The combination, with the bolt and the nut, of the washer having a flange on its edge, the sliding locking-plate mounted on the washer and having a shoulder engaging the flange of the washer, and the spring pivoted on the locking-plate and adapted to be turned at right angles to bear against the end of the flange of the washer, as set forth.

406,246. BEER-CASK. JOHN WAGNER, Detroit, Mich. Filed Oct. 9, 1888. Serial No. 287,616. (No model.)

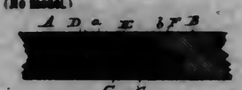


Claim.—1. The combination, with the cask having an aperture in its end and a brace across said end beneath said aperture, of a glass over said aperture, and a lamp supported by said brace, substantially as and for the purpose specified.

2. The combination, with the head having aperture G, of the flanged ring I, secured to the head around said aperture and provided with screw-threaded flange J, the lens, and the threaded collar K, for holding said lens against the flange, substantially as shown and described.

3. The combination, with the aperture G in the head of the cask, of the flanged ring I, provided with the screw-threaded flange J, the lens, the threaded ring K, the cap M, provided with the shoulder R, the gasket N, the bolt O, cross-brace P, and screw-nut Q, the parts being arranged to operate substantially as described.

406,247. HINGE. GEORGE B. WEBB, New York, N. Y., assignor to Wyckoff, Seamans & Benedict, same place. Filed Apr. 6, 1889. Serial No. 306,283. (No model.)



Claim.—1. In a hinge, the combination, with the leaves D and F, of the intermediate leaf E, pivotally connected at its ends to the leaves D and F, and comprising the arms *d* and *e*, set at an angle to each other.

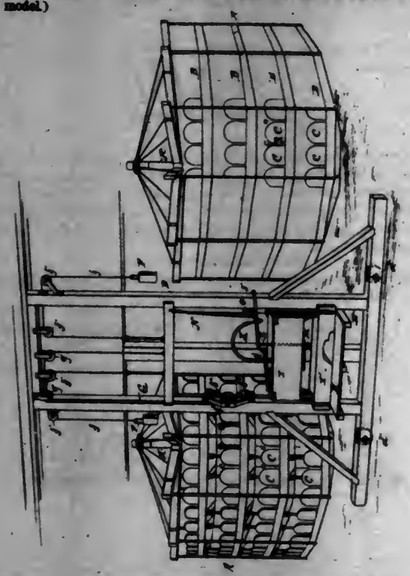
2. In combination with the parts A and B, the latter provided with a socket, as C, a hinge comprising the three leaves D, E, and F, the leaves D and F being secured, respectively, to the parts A and B, and a spring seated in the socket and bearing against the under side of the leaf E.

3. In combination with the parts A and B, the latter having a socket C, a hinge comprising three leaves D E F, the leaves D F secured, respectively, to A and B, a spring beneath leaf E, and an arm H, carried by leaf D, to engage with the top wall of the socket.

4. In combination with a fixed part B and a movable part A, a hinge comprising three leaves, one of the leaves being secured to part A and another to part B, and a spring bearing against the under side of the connecting-leaf and tending to throw its outer end upward above the top of part B.

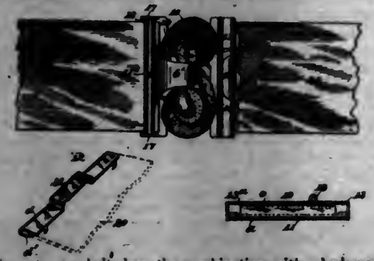
5. In combination with parts A and B, the bent leaf E, secured to part B and having its outer end free to rise above the top of the latter, and a leaf D, secured to part A and pivotally secured to the outer end of leaf E.

406,248. POULTRY-FATTENING MACHINE. WILLIAM C. WILLIAMS, Ossan, N. Y. Filed Dec. 12, 1888. Serial No. 293,390. (No model.)



Claim.—A poultry-feeding apparatus consisting, essentially, of a horizontally-sliding frame, a food-receptacle arranged in said frame, means for elevating said food-receptacle, and a series of pivotal coops, as and for the purpose described.

406,249. BELT-CLASP. GEORGE B. ZELTMACHER, Brooklyn, N. Y. Filed Apr. 3, 1889. Serial No. 305,834. (No model.)



Claim.—1. In a belt-clasp, the combination, with a body portion provided with a longitudinal groove in its under face at each side and a hook integral with one side edge, of a toothed lock-lever pivoted upon the under face beneath one of the grooves, and a keeper-bar consisting of a metal strap having its under face indented to receive the hook of the body, substantially as shown and described.

2. In a belt-clasp, the combination, with a body portion provided with longitudinal grooves in the under face at each side, a hook integral with one side edge, and ears projected downward from the ends of the grooves at the opposite side edge, of a toothed lock-lever pivoted in said ears, provided with a handle, and a keeper-bar consisting of a strip of metal bent upon itself, forming upper and lower parallel members, the upper member being provided with a raised portion upon the upper side, whereby a keeper is produced to receive the body-hook, substantially as shown and described.

406,250. NECK-YOKE CENTER. JOHN W. ALBAUGH, Burlington, Iowa. Filed Nov. 14, 1888. Serial No. 290,826. (No model.)

406,250.

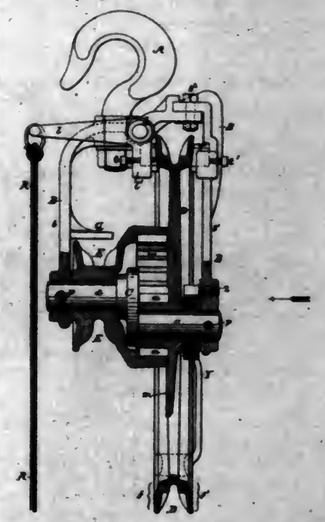


Claim.—1. The combination, with a neck-yoke, of two eyebolts secured thereto, a ring horizontally pivoted in the eyes of said bolts, and a pole-ring vertically pivoted at diametrically-opposite points in said outer ring, substantially as described.

2. The combination, with a neck-yoke, of two eyebolts secured thereto, a ring having two shouldered projections formed thereon and pivoted in the said eyebolts, two projections F F, formed on the front face of said ring, said projections being concaved on their rear faces, and a pole-ring pivoted in the outer ring and having bosses thereon which bear against the concaved faces of the said projections F F, substantially as described.

3. The combination, with a neck-yoke, of two eyebolts secured thereto, a ring pivoted in said eyebolts, and a pole-ring vertically pivoted in said outer ring, said pole-ring having enlargements bearing against projections on the outer ring, substantially as described.

406,251. HOIST. VICTOR ANGERER, Philadelphia, Pa., assignor to the William Wharton, Jr., & Company, Incorporated, same place. Filed Feb. 21, 1887. Serial No. 228,339. (No model.)

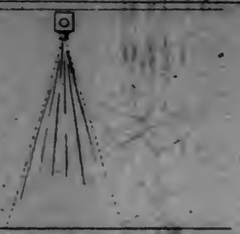


Claim.—1. The combination, in a hoist, of the chain-drum and its operating-wheel, a frame therefor, and a brake-block carried by said frame upon one side of the operating-wheel, with a brake-block upon the opposite side of the rim of said wheel carried by a lever hung to the frame, the operation of said lever causing the lateral movement of the wheel against the brake-block carried by the frame, substantially as specified.

2. The combination, in a hoist, of the fixed frame made in two parts, and a crank-spindle secured to the frame and having two arms both in the same vertical plane, one arm carrying the chain-drum and its gear-wheel, and the other arm carrying the drive-chain wheel and its pinion, with a brake-lever hung to said frame and carrying upon one of its arms a brake-block adapted to act against the rim of the drive-chain wheel, substantially as specified.

406,252. METHOD OF PRODUCING DRAMATIC PERFORMANCES. C. LAWRENCE BARRY and GEORGE B. UPHAM, Boston, Mass. Filed Sept. 25, 1886. Serial No. 214,343. (No model.)

406,252.



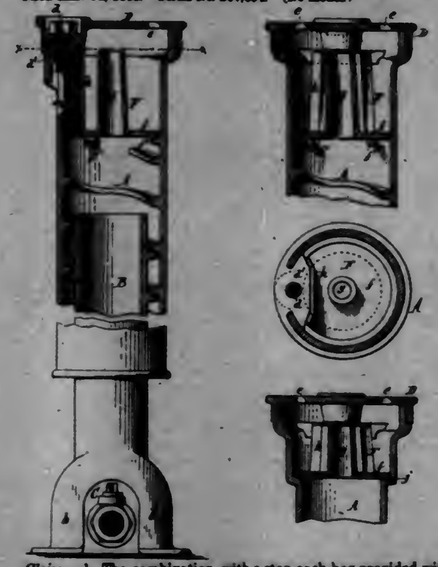
Claim.—1. The improvement in the art of producing dramatic compositions which consists in representing part of the drama by means of actors and part by pictorial representations during the intervals between the acts, narrative of the incidents of the drama conceived to happen during such intervals, substantially as described.

2. The improvement in the art of producing dramatic compositions which consists in representing part of the drama by means of actors and part by photographic representations of the said actors during the intervals between the acts, narrative of the incidents of the drama conceived to happen during such intervals, substantially as described.

3. The improvement in the art of producing dramatic compositions which consists in representing part of the drama by means of actors and part by photographic representations during the intervals between the acts in their serial order taken of the said actors while acting the incidents conceived to happen during the said intervals, substantially as described.

4. The improvement in the art of producing dramatic compositions which consists in representing part of the drama by means of actors and part by stereopticon views during the intervals between the acts of photographs in their serial order, taken of the said actors while acting the incidents conceived to happen during the said intervals, substantially as described.

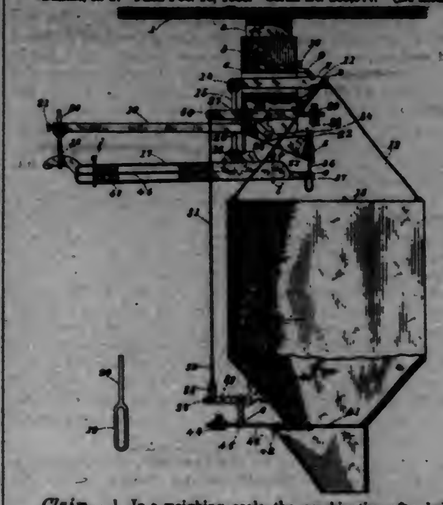
406,253. STOP-COCK BOX. CHARLES F. BURNHAM, Buffalo, N. Y. Filed Mar. 20, 1888. Serial No. 267,954. (No model.)



Claim.—1. The combination, with a stop-cock box provided with a removable cover having gas-escape openings *e*, of a removable dirt-trap F, arranged within the box and composed of a bottom plate or diaphragm *f*, fitting the inside of the box, and an upwardly-projecting tube *g*, having its lower end opening into the box below the plate *f* and its upper end terminating below the removable cover, whereby any gas contained in the box below the trap F is permitted to escape through the tube *g* and openings *e*, substantially as set forth.

2. The combination, with the stop-cock box provided on its inner side with a lug *d'*, of the cover D, provided with gas-escape openings *e* and attached to the stop-cock box by a screw-bolt arranged in said lug, the removable diaphragm F, supported within the box and provided with an upright plate A, bearing against the lug *d'*, and an upright gas-escape tube *g*, substantially as set forth.

406,254. AUTOMATIC GRAIN-SCALE. WALTER A. BRADLEY, Buffalo, N. Y. Filed Feb. 10, 1888. Serial No. 263,577. (No model.)



Claim.—1. In a weighing-scale, the combination of a hollow scale-beam pivoted near one end and inclosing a rolling weight for carrying the weight of the beam in the direction of its incline, with a supporting loop-bar 15, pivoted thereto and having its opposite end pivoted to a beam 7, pivoted by a pivot 8 to a support 9, and carrying a hopper at its opposite end, substantially as described.

2. In a weighing-scale, the combination therewith of a hollow scale-beam pivoted near one end, a longitudinal partition within said beam dividing it into apartments, and a series of rolling weights within said apartments, substantially as and for the purposes described.

3. In a weighing-scale, the combination of the pivoted beam 7, connected by a connecting-link to the weighing-beam 17, a hopper connected to the beam 7, a pivoted arm 27, connected by a connecting-rod to an angular arm pivoted to the lower portion of the hopper and having a lower portion *e* for engaging with a pin on the arm 43 of the valve 41, two arms pivoted to opposite sides of the grain-spout, carrying a cut-off 22, and a pivoted link 36, connected by a loop and pin *e* on the weighing-beam 17, the arm 23 having an extension 26, adapted to engage with the arm 27, whereby when the hopper is nearly filled with grain the weighing-beam begins to rise and allows the cut-off to be partly closed, and when the weight in the hopper is just sufficient to raise the front end of the beam so as to incline from the front downward the rolling weight will immediately change its position from the front to the rear of the beam and cause the flow of grain to be shut off from the bin and open the valve to permit the grain to flow from the hopper, substantially as described.

406,255. PICTURE-HANGER. WARREN M. BRINKERHOFF, Auburn, N. Y. Filed Nov. 19, 1887. Serial No. 255,694. (No model.)



Claim.—1. A picture-hanger consisting of a main body provided with means for engaging a support for the same, a cord-support, a locking projection or projections below the cord-support, and a construction between the highest cord-engaging point and the locking devices for outwardly deflecting the cord, said cord-engaging parts extending forward of the plane of the wall-engaging portion of the hanger, whereby the cord can be attached to and removed from the hanger without detaching it from the picture-frame, substantially as described.

2. A picture-hanger consisting of a main body provided with means for engaging a support for the same tending to hold it from lateral vibration on said support, a rigid cord-support, a locking projection or projections below the cord-support for holding the cord in an inwardly-deflected position, and cord-engaging portions between the highest cord-engaging point and the locking devices for holding the cord in an outwardly-deflected position, said cord-engaging parts extending forward of the plane of the wall-engaging portion of the hanger and open for access forward of said plane, whereby the picture-

cord may engage with and be disengaged from said parts without detaching the cord from the picture or its frame, substantially as described.

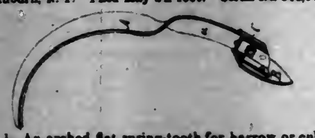
3. A picture-hanger consisting of a main body provided with means for engaging a support for the same, a forwardly-projecting rigid cord-support which extends outward on each side below its highest cord-engaging point, said outwardly-extending portions being rigidly connected and held from lateral deflection, and a forwardly-extending projection or projections for removably engaging both of the depending portions of the cord and holding them in an inwardly-deflected position, said outwardly-extending portions being open for engagement with the cord without passing through the hanger, substantially as described.

4. A picture-hanger consisting of a knob provided with attaching means and having its base provided with two cord-engaging projections at one side of the same, integral therewith, the distance between said projections being less than the diameter of the cord-engaging portion of the knob, substantially as described.

5. A picture-hanger consisting of a knob provided with means for engaging a support for the same, and a base-plate secured in fixed relation thereto, provided with a projection or projections for holding the cord in an inwardly-deflected position, substantially as described.

6. A picture-hanger consisting of a knob provided with a rearwardly-extending wall-engaging support for the same, connected by a non-pivotal engagement, and a cord-engaging projection or projections below the neck of the knob for holding the cord in an inwardly-deflected position, substantially as described.

406,256. SPRING-TOOTH FOR HARROWS. WARREN M. BRINKERHOFF, Auburn, N. Y. Filed May 24, 1889. Serial No. 311,949. (No model.)



Claim.—1. An arched flat spring-tooth for harrow or cultivator, having a broad surface presented to the line of draft throughout the main portion of its length, and having at its lower extremity a broad earth-engaging part, and a narrower portion between the said earth-engaging part and the main body of the tooth, substantially as described.

2. An arched flat spring-tooth for harrow or cultivator, having a broad surface presented to the line of draft throughout the main portion of its length, and having at its lower extremity a broad earth-engaging part, and a portion between the said earth-engaging part and the main body turned edgewise to the line of draft, substantially as described.

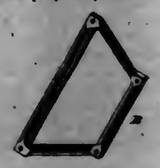
3. A flat spring-tooth for harrow or cultivator, having a broad surface presented to the line of draft throughout the main portion of its length and terminating at its lower extremity in a portion turned edgewise to the line of draft and provided with an attached point, substantially as described.

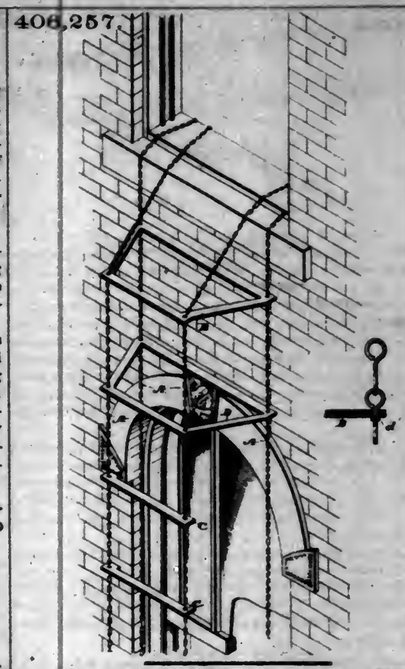
4. A spring-tooth for harrows or cultivators, consisting of a spring shank turned near its lower end at right angles to itself, so as to present its edge to the front, and a shoe having a web or flange projecting back at right angles to its face parallel with and adapted to be fastened to the twisted end of said spring-shank, substantially as described.

5. The combination, with a spring harrow or cultivator tooth turned at right angles to itself and edgewise to the line of draft at or near its lower end, of a shoe engaged therewith by a transverse bolt passing through said edgewise portion back of said shoe, substantially as described.

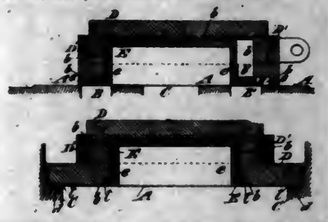
406,257. FIRE-ESCAPE. CORA A. BUTLER, Canton, Ohio. Filed Nov. 26, 1888. Serial No. 291,919. (No model.)

Claim.—In a fire-escape, the combination of the suspending-chains A, the braces B, attached to the suspending-chains and adapted to abut against the wall of a building between the windows, the bars C, attached to the outer suspending-chains and adjusted to come opposite the windows below the one from which the escape is suspended, and means for attaching the suspending-chains to the wall of a building, substantially as and for the purpose specified.



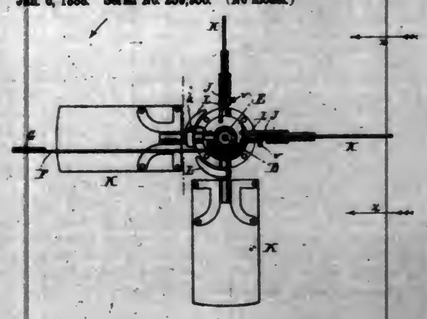


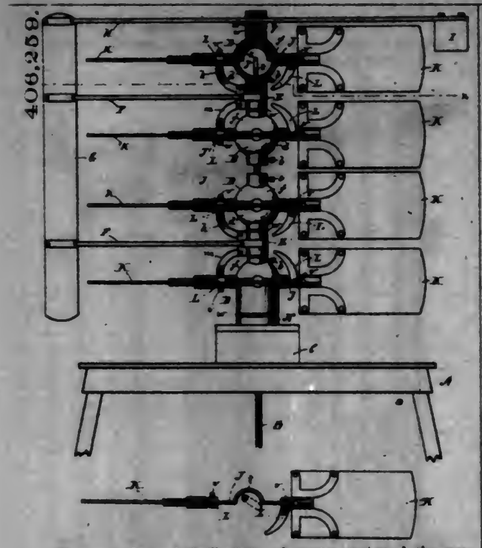
406,258. SLIDE-VALVE. BENJAMIN CARLEY, Paterson, N. J. Filed Oct. 15, 1888. Serial No. 288,113. (No model.)



Claim.—The combination, with the slide-valve seat of an engine having two induction-ports and an interposed eduction-port, of valves arranged one within the other and both working on said seat with a lost motion between them, the outer valve for controlling the entrance of the motive agent to the said induction-ports and the inner one being coved for controlling the exhaust through said induction-ports to said eduction-port, the inner valve and the cavity in the outer valve wherein the inner one works being of less dimension in a direction transverse to the direction of the movement of the valve than the dimension of the eduction-port in the same direction, whereby portions of the face of the outer valve are always exposed to the eduction-port, substantially as and for the purpose herein set forth.

406,259. WINDMILL. AMOS H. CARPENTER, Waterford, Vt. Filed Jan. 6, 1888. Serial No. 259,950. (No model.)





Claim.—1. In a windmill of the character described, the combination of the following instrumentalities, to wit: a main shaft, a support or bearing for said shaft, a hollow hub secured to said shaft, two float-shafts journaled at right angles to each other in said hub, two floats rigidly secured to each of said float-shafts and arranged at right angles to each other, a tappet-arm for each of said floats, said arms being secured to the float-shafts, a cam or cam-bar arranged in the pathway of said tappet-arms and fitted to revolve around said main shaft, and a tail-piece or steerer connecting with the cam-bar and adapted to present it to the tappet-arms in such a manner as to feather the floats properly in accordance with the direction of the wind, said float-shafts being curved in opposite directions at or near their centers and the curved portions disposed within said hub to serve as stops for said shafts, substantially as set forth.

2. In a windmill of the character described, the combination of the following instrumentalities, to wit: a main shaft, a bearing or support for said shaft, two hollow hubs secured to said shaft, two float-shafts journaled at right angles to each other in each of said hubs, two floats rigidly secured to each of said float-shafts and arranged at right angles to each other, a tappet-arm for each of said floats, said arms being secured to the float-shafts, a collet loosely disposed on said main shaft between said hubs, an upwardly and also a downwardly projecting cam-bar secured to said collet, and a tail-piece or steerer connected with said collet and adapted to present said cam-bars to the tappet-arms in such a manner as to feather the floats properly in accordance with the direction of the wind, said float-shafts being secured in opposite directions at or near their centers and the curved portions respectively disposed within said hubs to serve as stops for said shafts, substantially as specified.

3. In a windmill of the character described, the hub D, consisting of the dish-shaped disks *d f*, connected by the bolts *h* and having the bearings *i*, said hub being provided with a hole for the reception of the main shaft B, substantially as specified.

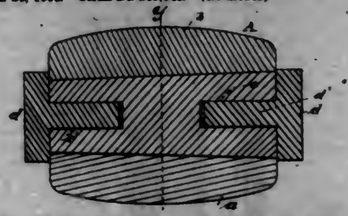
4. In a windmill of the character described, the hollow hub D, composed of the connected disks *d f*, having the bearings *i*, in combination with the shaft B, a collet fitted to revolve on said shaft, and the balls *w*, disposed between said hub and collet, substantially as specified.

5. In a windmill of the character described, the rod H, centrally pivoted or journaled above the hub D, in combination with a movable cam-bar, as *k*, said rod being connected at one end with the tail-piece G and provided at the other with the counterbalancing-weight I, substantially as specified.

6. In a windmill of the character described, the main shaft B, a bearing or support for said shaft, a hollow hub secured to said shaft, two float-shafts journaled at right angles to each other in said hub, two floats rigidly secured to each of said float-shafts and arranged at right angles to each other, a tappet-arm for each of said floats, said arms being secured to the float-shafts, means, substantially as described, for adjusting the tappet-arms on the float-shafts, stops for preventing the float-shafts from being revolved too far in either direction, a cam or cam-bar arranged in the pathway of said tappet-arms and adapted to be revolved by the wind around said main shaft, and a tail-piece or steerer connecting with said cam-bar and adapted to present it to the tappet-arms in such a manner as to feather the floats properly in accordance with the direction of the wind, substantially as set forth.

7. In a windmill of the character described, the rod F, centrally pivoted over the hub D and provided with a cam or cam-bar *k*, tail-piece G, and counter-balance I, in combination with the main shaft B and float-shafts J, said float-shafts being journaled in said hub and provided with the tappet-arms L, substantially as set forth.

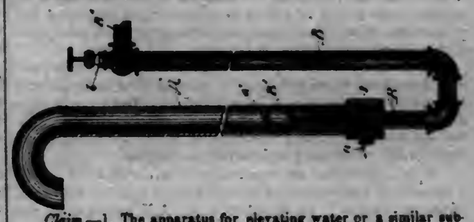
406,260. MUFF-BLOCK. GEORGE F. CARTER, Orange, N. J. Filed Sept. 20, 1888. Serial No. 285,642. (No model.)



Claim.—1. A muff-block made substantially as herein described, consisting of a series of cylindrical sections and a smaller adjusting-section *b*, the inner sides of said sections forming a central tapering cylindrical opening through the block, and a tapering cylinder adapted to fit said central opening to bind a muff-skin tightly and uniformly on said block throughout its length, as set forth.

2. A muff-block made substantially as herein described, consisting of a series of cylindrical sections, and a smaller adjusting-section *b*, the inner sides of said sections forming a central tapering cylindrical opening through the block, a tapering cylinder adapted to fit said central opening to bind a muff-skin tightly and uniformly on said block, and adjustable wrist-blocks with tenons to enter sockets in the ends of said tapering cylinder, as set forth.

406,261. GAS-PRESSURE PUMP. WILLIAM H. CASTOR and SAMUEL B. CASTOR, Wayne, County of Hamilton, Ind. Filed June 23, 1888. Serial No. 277,997. (No model.)



Claim.—1. The apparatus for elevating water or a similar substance, consisting of a pipe inserted in a supply of water and another pipe arranged within said first pipe for supplying gas under pressure, its top end being arranged beneath the surface of the water or other substance, and the tubular set-screw *a*, inserted through said first-mentioned pipe against said last-mentioned pipe, whereby it is secured in position and water-inlets provided, substantially as set forth.

2. The combination, in an apparatus for elevating water, of the pipe A, the lower end of which is inserted in the water-supply, the natural-gas pipe B, inserted in the lower end of said pipe A, and the valve B^2 in the upper end of said pipe B, consisting of a disk of a size to close the end of said pipe mounted on a stem which extends down into said pipe, and the stop *a'*, arranged above said valve in the pipe A, all substantially as described, and for the purpose specified.

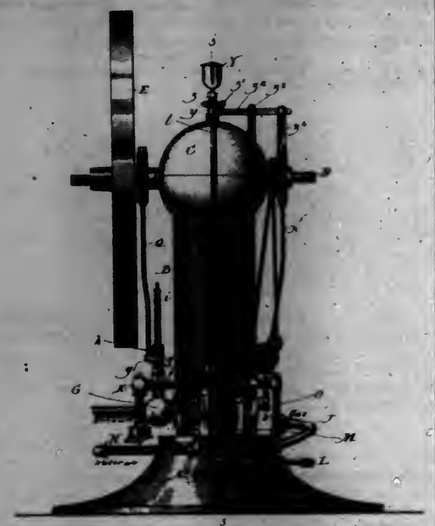
3. The combination of a pipe or stock A, extending beneath the surface of the water or other substance to be elevated, the gas-pipe B, provided with a valve *b*, and extending up into the lower end of the stock or pipe A, and the valve B^2, arranged in the top of said pipe B, subject to gas-pressure on the lower side and water-pressure on the upper side, suitable openings being provided at the lower end of the stock or pipe A for the inflow of the substance to be elevated, substantially as set forth.

406,262. BARREL-HOOP. GEORGE T. CHESTER, Lockport, N. Y. Filed Jan. 10, 1889. Serial No. 296,961. (No model.)



Claim.—A wooden barrel-hoop provided with a longitudinal indentation impressed into the wood, substantially as set forth.

406,263. GAS-ENGINE. LEWIS T. CORNELL, Chicago, Ill., assignor to the Cornell Engine Company, same place. Filed Oct. 13, 1888. Serial No. 288,027. (No model.)



Claim.—1. In a gas-engine, the combination of the base A, having a central circular recess *a* and a concentric annular recess *a'*, the cylinder B, having a working-chamber V corresponding to and extended into the recess *a*, and a water-space X, corresponding to the annular recess *a'*, and an induction-valve having a valve-chest provided with a water-space *x*, that communicates with the water-space of the cylinder, substantially as described.

2. In a gas-engine, the cylinder B, cast or formed in a single piece, having a central working-chamber V, provided at its lower end with a pocket W, a water-space X, surrounding the working-chamber, a compressing-chamber U of large diameter above the working-chamber and water-space, and a hemispherical upper end provided with bearings for a crank-shaft, substantially as described.

3. In a gas-engine, the combination, with a cylinder B, having a compressing-chamber U, provided with a port *u*, and a working or explosion chamber V, provided with a port *v*, of a valve-chest containing a rotary valve having recess *p* and peripheral ignition-slot *e*, and an igniting device, substantially as described.

4. In a gas-engine, a cylinder having ports *u* and *v*, in combination with a valve-chest containing a rotary valve having a recess *p*, an ignition-slot *e*, and grooves *d*, communicating with said slot, and a discharge-passage *g* from the valve to the open air, substantially as and for the purpose specified.

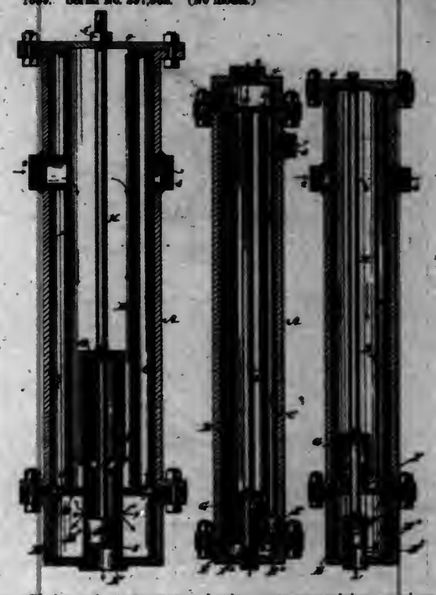
5. In a gas-engine, the combination of a solid induction-valve having an ignition-groove on its periphery, a valve-chest having groove *g'*, a pipe *m*, attached to the valve-chest and communicating with the ignition-groove of the valve, and a burner for heating said pipe, substantially as described.

6. In a gas-engine, the combination of the induction-valve chest, a pipe *m*, bent to form a loop and screwed into the valve-chest at one end and open at the other, a burner for heating said pipe, and a valve having an ignition-groove on its periphery, substantially as described.

7. In a vertical gas-engine, the combination, with the eduction-valve having a vertical stem *g*, provided with adjustable button *j*, of the bracket A, the spring *i* on the valve-stem, and the rod Q, depending from an eccentric on the engine crank-shaft and having its lower end connected with the valve-stem above the button *j*, substantially as described.

8. In a vertical gas-engine, the combination, with the cylinder B, having the compression-chamber U, provided with port *u*, the explosion-chamber V, provided with port *v*, the piston T, located in said chambers, and the induction-valve chest F, having inlet-port *f* and a rotary induction-valve P, provided with recess *p* and peripheral ignition-slot *e*, of the pipes *l* and *l'*, located on the outside and inside of the cylinder, respectively, and one leading to the induction-valve chest and the other to the piston from an oil-cup located above the cylinder, substantially as described.

406,264. STEAM-TRAP. CHARLES CORNWELL, Philadelphia, Pa., assignor of one-half to Henry C. Dunlap, same place. Filed Jan. 24, 1889. Serial No. 297,382. (No model.)



Claim.—1. A steam-trap having a water-receiving vessel and bottom and side chambers separated therefrom, a cylinder with ports, and a valve, said ports forming communication between said vessel and the bottom chamber, substantially as described.

2. A steam-trap having a water-receiving vessel, a discharge-chamber, a valve between said chamber and vessel, and a rod of expansible nature connected with said valve, substantially as described.

3. A steam-trap having separate receiving and discharging water-chambers, a valve between the same, a rod of expansible nature controlling said valve, and also simultaneously controlling a second valve regulating a discharge-port at the base of the discharge-chamber, substantially as described.

4. A steam-trap having a discharge-chamber provided with two outlet or eduction openings, one at the base of the chamber and the other at or near the top thereof, a primary receiving-chamber located within said discharge-chamber and communicating therewith by a valve between them, and automatic valve mechanism controlling said lower eduction opening of the discharge-chamber, substantially as described.

5. A steam-trap having a valve therein, a cylinder with ports, a chamber containing said valve, and a diaphragm between said chamber and the primary receiving-chamber, whereby the water of condensation enters the cylinder through one port, escapes through the other port into said chamber, and is permitted to discharge at the bottom of the trap or above the same, according to the different conditions of temperature of the water, substantially as described.

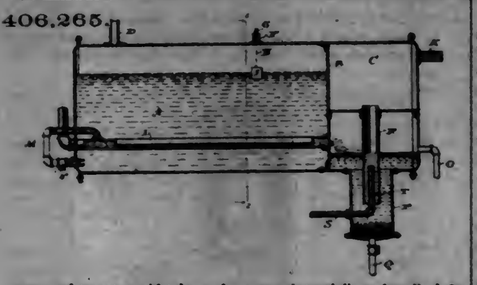
6. A steam-trap having separate receiving and discharging chambers, the former inclosed within the latter, eduction-openings at the base of both of said chambers, tubular sliding valves covering said openings, respectively, and a rod of expansible nature simultaneously controlling both of said valves, covering and uncovering the eduction-ports thereof, substantially as described.

406,265. WATER HEATER AND CONDENSER. JAMES R. CRAWLEY, Whitewater, Wis. Filed Jan. 29, 1889. Serial No. 297,867. (No model.)

Claim.—1. A shell divided into a water-tank and condensing-chamber, a tube arranged within the condensing-chamber, a steam-pipe extended through the water-tank to enter said condensing-chamber, a pipe connecting said water-tank and steam-pipe, a boiler feed-pipe connected to the condensing-chamber, and a head on the latter pipe extended up into said tube, substantially as set forth.

2. A shell provided with a water-inlet, an exhaust-steam outlet and a partition dividing it into a water-tank and condensing-chamber, a tube arranged within the condensing-chamber, a steam-pipe extended through the water-tank to enter said condensing-chamber, a pipe connecting said water-tank and steam-pipe, a boiler feed-pipe

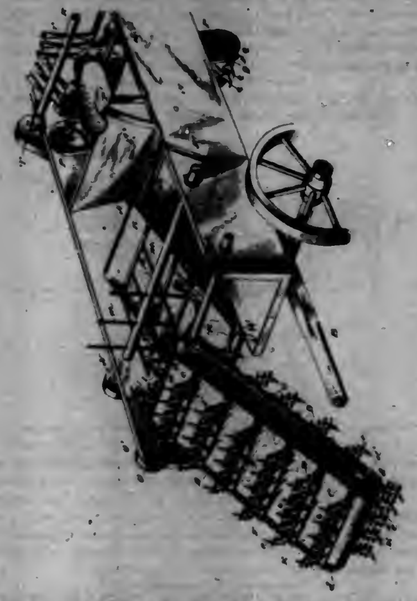
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arranged to enter said tube, and means, substantially as described, for indicating the depth of water in said tank, as set forth.

3. A shell divided into a water-tank and condensing-chamber, a tube arranged within the condensing-chamber, a steam-pipe extended through the water-tank to enter said condensing-chamber, a pipe connecting said water-tank and steam-pipe, and a boiler feed-pipe arranged to enter the tube, substantially as set forth.

406,266. COTTON-HARVESTER. JAMES P. CUNNINGHAM, Sr., Anson, Tex. Filed Oct. 30, 1886. Serial No. 217,599. (No model.)



Claim.—1. In a cotton-harvester, the combination, with a cotton-receptacle, of a picker at the front end, consisting of two endless chains connected by a series of finger-supports, each support having a series of curved pointed fingers provided with brushes projecting laterally into the space between the fingers, said chains being supported upon a forwardly-projecting frame and actuated from the main wheels of the machine, substantially as described.

2. In a cotton-harvester, the combination, with a cotton-receptacle, of a picker at the front end, consisting of two endless chains connected by a series of finger-supports, each support having a series of curved pointed fingers provided with brushes projecting laterally into the space between the fingers, an endless apron closing the space between the chains, said chains and apron being supported upon a forwardly-projecting frame and actuated from the main wheels of the machine, substantially as described.

3. In a cotton-harvester, the combination, with a cotton-receptacle, of a picker at the front end, consisting of two endless sprocket-chains connected by a series of finger-supports, each support having a series of curved pointed fingers provided with brushes projecting laterally into the space between the fingers, an endless apron closing the space between the chains, a projecting frame pivoted at its rear end and provided at its front and rear ends with shafts, having each two sprocket-wheels for the chains, and a drum for the apron intermediate of said sprocket-wheels, substantially as described.

4. In a cotton-harvester, the combination, with a picker consisting of endless chains provided with a series of transverse finger-bars having a series of curved fingers, provided on the sides with brushes of yielding material projecting into the spaces between the fingers, of a frame pivoted at its rear end to a shaft journaled in the sides of the main body of the machine, said frame having drums for the apron and wheels at its ends for the chains, an auxiliary endless apron extending from beneath the discharging end of the picker-frame to a receptacle for the cotton, and suitable intermediate bands or gearing connecting the operating-shafts with the drive-wheels.

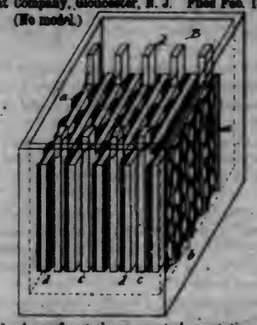
5. The combination, with the picking device described, consisting of a series of transverse finger-bars secured to endless chains supported upon a frame projecting from the body of the harvester, each of said bars being provided with a series of curved fingers having in their sides rows of brushes extending toward each other, of an auxiliary endless apron extending from beneath the discharging end of the picking device to a receptacle for the cotton, and a shaft in the rear of the picking device and above the forward end of the auxiliary endless apron, said shaft being provided with a series of arms which pass through the brushes between the fingers of the picking mechanism, as and for the purpose described.

6. In a cotton-harvester, the combination, with a main frame and a projecting frame at or near the front of the main frame, carrying a picking device for gathering cotton from the stalks, of the auxiliary frames having their upper ends loosely pivoted upon a shaft at the rear end of the machine and the lower ends dragging on the ground, and having endless belts revolving over drums at the ends of the said frames, provided with hooks or claws which pass near the ground and gather all fallen cotton therefrom, whereby cotton is gathered both from the stalks and the ground at the same time, substantially as described.

7. In a cotton-harvester, the combination, with one or more frames having their upper ends loosely pivoted upon a shaft journaled in the sides of the body near its rear end and their free ends extending rearward and trailing upon the ground, each frame provided at both ends with pulleys or drums carrying an endless belt having on its face claws or hooks which pass over the ground beneath the lower drum and gather therefrom all fallen cotton, of the revolving shaft adjacent to the upper ends of said frames having brushes for disengaging the cotton, and the receptacle beneath said shaft, substantially as and for the purpose described.

8. A cotton-harvester having a picker at the front for gathering cotton from the stalks and a picker at the rear of the harvester for gathering cotton from the ground, substantially as and for the purpose described.

406,267. INSULATING-PLATE FOR SECONDARY BATTERIES. STANLEY C. G. CURRIE, Philadelphia, Pa., assignor to the United Electric Improvement Company, Gloucester, N. J. Filed Feb. 16, 1889. Serial No. 300,236. (No model.)



Claim.—1. A perforated corrugated insulating plate or diaphragm permitting of the free passage of the current as well as the free circulation of the liquid and gases in or through the perforations and around or along the grooves or recesses of the corrugations thereof, substantially as and for the purposes set forth.

2. A perforated corrugated insulating plate or diaphragm having the lines of corrugation lying in a vertical plane, substantially as described.

3. A perforated insulating plate or diaphragm formed with corrugations, substantially in the manner and for the purposes described.

406,268. CUT-OUT. STANLEY C. G. CURRIE, Philadelphia, Pa., assignor to the United Electric Improvement Company, Gloucester, N. J. Filed Apr. 19, 1889. Serial No. 307,755. (No model.)

Claim.—1. An electric cut-out device consisting of two pieces of metal interposed in a circuit and engaging with and held by an insulated yoke and said pieces of metal embedded in an insulating substance susceptible of being melted and immersed in a conducting ma-

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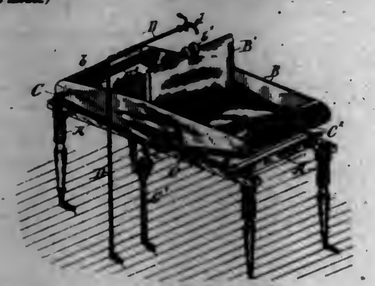
terial in a vessel, and a band circumscribing said vessel, substantially as and for the purposes set forth.

2. An electric cut-out device consisting of two wires or pieces of metal interposed in an electric circuit and supported in or by a block composed of an insulating material, and said wires or pieces of metal in engagement with an insulated yoke and embedded in an insulating substance capable of being fused at a low temperature and immersed in a conducting-fluid in a vessel surrounded by a band, substantially as and for the purposes set forth.

3. A cut-out device consisting of two pieces of metal interposed in an electric circuit in engagement with a yoke, and said pieces of metal embedded in an insulating substance capable of being melted at a lower temperature than will melt said pieces of metal, and portions thereof immersed in a conducting-fluid in a vessel, and means to prevent said vessel from falling and to allow of the device being readjusted after the circuit is broken, substantially as described.

4. The combination, with two pieces of metal interposed in a circuit and a supporting insulated yoke, of an insulating substance and a fluid contained within a vessel, and a supporting-yoke, substantially as and for the purposes set forth.

406,269. PHOTOGRAPHIC WASHING APPARATUS. JAMES W. DALRYMPLE, Solsberry, Ind. Filed Sept. 3, 1888. Serial No. 284,404. (No model.)



Claim.—1. A rocking washer or pan provided with waste-pipes attached to itself and extending from the ends to near the center, where they are united into a down-spout, substantially as shown and described.

2. The combination, in a washing-machine, with a double pan, of waste-pipes connected to its ends and perforated pipes running across inside said ends and connected with said waste-pipes, substantially as set forth.

3. In a washing-machine, in combination with the waste-pipes thereof, perforated pipes connected to said waste-pipes and revolubly mounted, whereby the perforations may be given different elevations and the depth of water to be maintained in the pans thus regulated, substantially as set forth.

4. In a washing-machine, a double rocking pan having rounded ends which extend a short distance in from the extreme ends of the pan, substantially as described, and for the purposes specified.

5. The combination, in a washing-machine, with a double rocking pan having a central partition extending above its upper edge, of a saddle-like piece *b'* for receiving the discharge of water, and the water-pipe having its discharging end vertically above the pivot-point of said pan and over said saddle-like piece, substantially as set forth.

406,270. PROCESS OF MAKING DRY FLOUR-PASTE. JOHN H. DAY, Albany, N.Y. Filed Dec. 10, 1888. Serial No. 293,196. (Specimens.)

Claim.—The process of manufacturing flour-paste into a dry form by feeding liquid paste through a suitable slot into a cylindrical receptacle at or near the top thereof, and forcing hot air into contact with the paste as it is fed into the receptacle, rapidly eliminating the water therefrom by evaporation, the paste dropping on the bottom of said receptacle in a dry form, substantially as described.

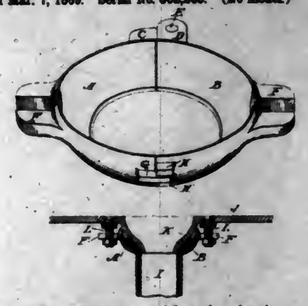
406,271. THEATRICAL APPLIANCE. EDWARD W. [illegible], Boston, Mass., assignor to himself, William Wesley Coe, and Frank Gilman Reynolds, same place. Filed Apr. 2, 1888. Serial No. 269,504. (No model.)



Claim.—1. As an improvement in theater appliances, the combination of side screens with a vertical frame inclosing a picture-frame, removable screens having a costume painted thereon, and a screen suspended above and in rear of the removable screen to form a continuation of the background of the picture painted thereon, substantially as set forth.

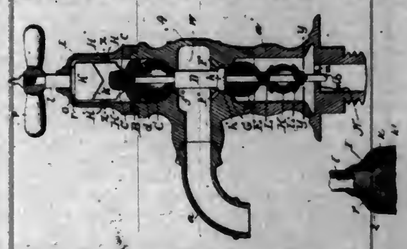
2. As an improvement in theater appliances, the combination of side screens with a vertical frame inclosing a picture-frame, removable screens having a costume painted thereon, and provided with sleeves of cloth that admit the arms of a person standing behind the screen, and a screen suspended above and in rear of the removable screen to form a continuation of the background of the picture painted thereon, substantially as shown and described.

406,272. SINK-COUPLING. LOUIS J. BUVRARD, Montclair, N. J. Filed Mar. 7, 1889. Serial No. 302,263. (No model.)



Claim.—The combination, with each other in an annular coupling for sinks, of the two semicircular divisions A and B, dished or concaved on one face only, and having slotted offsets projecting outwardly midway the curved rim of each, and ears or lugs projecting at each end of the straight edge of the one division to pass between embracing ears or lugs formed opposite thereto at the ends of the straight edge of the opposite division, and thereby form interlocking joints, which insure the proper registry of the divisions, substantially in the manner and for the purpose herein set forth.

406,273. SELF-CLOSING FAUCET. PIERCE E. EVERETT, Kansas City, Mo. Filed Feb. 2, 1889. Serial No. 298,466. (No model.)



Claim.—1. In a faucet, the combination, with a body, of a valve-stem carried within said body, a valve secured upon the stem, and an air-cushion also secured upon the stem and adapted to prevent the hammering of the valve, substantially as shown and described.

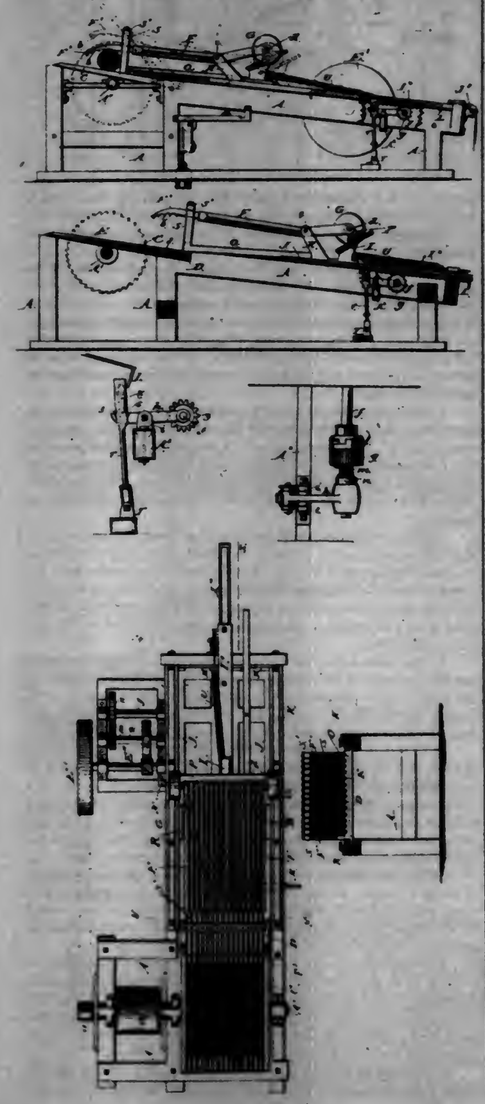
2. In a faucet, the combination, with the body constructed as shown, of a valve-stem carried within said body, the valve E, secured upon its stem, the hollow rubber ball K, carried beneath the valve, the hollow elastic ball secured upon the upper portion of the valve-stem, the nut B, cams *k k'*, and handle *p*, all arranged and adapted to operate substantially as shown and described.

3. The combination, with a cap provided with an oiling-aperture *r*, of the upper cam *k*, the rod *l*, handle *p*, and the lower cam *k'*, having the vertical oil-retaining ledge or rim 2, substantially as shown and described.

4. In a faucet, the combination, with a body A, provided with the usual cap, stand, and discharge-pipe and water-chamber, of the valve-seat G, having the enlarged recess *h'*, the passages F, communicating with the water-chamber and the recess *h'*, the valve-stem D, and valve E, all arranged and adapted to operate substantially as shown and described.

5. In a faucet, the combination, with a body constructed substantially as shown, of a valve-stem D, formed with an enlarged portion A, adapted to enter the enlarged recess *h'*, the ball-valve E, hollow rubber air-cushion K, carried below the valve-seat, the hollow expansible ball C, carried upon the upper portion of the valve-stem, the nut B, cams *k k'*, and handle *p*, all connected substantially as shown and described.

406,274. SAWING-MACHINE. JAMES FERSON, Alpena, Mich. Filed Feb. 13, 1889. Serial No. 299,703. (No model.)



Claim.—1. The combination, with the main frame, the arbor mounted therein, and the saws upon the arbor, of the carriage moving in guides upon the main frame, the movable dog-block, the levers carried by the carriage and operated by the dog-block, and the dog on the levers, substantially as herein described.

2. The main frame, the arbor, and the saws thereon, in combination with the fixed table D, the table C, hinged to the fixed table, the reciprocating carriage, and the arms O, carried thereby, said tables C and D having their upper surfaces grooved for the reception of the arms, substantially as herein described.

3. The main frame, the arbor, and the saws thereon, in combination with the fixed grooved table D and the hinged grooved table C, the reciprocating carriage, the arms O, carried thereby and moving in the grooved table, and provided with the upwardly-extending slotted portions S, and the levers carried by the carriage and provided with dogs F', which are guided in the slotted portions S of the arms O, substantially as herein described.

4. The main frame, the arbor, the saws thereon, and the reciprocating carriage, in combination with the hinged and fixed tables C and D, having grooves extending between the saws, the arms O, carried by the carriage, having upwardly-extending forward portions S, provided with slots, and the levers mounted on the carriage and provided with dogs F', operating in the slotted portions S, substantially as described.

5. The main frame, the arbor, the saws thereon, and the tables having grooved surfaces, in combination with the carriage having the upwardly-extending arms R, and the arms O, having slotted portions S, the levers mounted in the arms R and having their front portions provided with dogs F', working in the slotted portions S, and a movable dog-block operating against the short arms of the levers, substantially as herein described.

6. The main frame, the arbor, the saws thereon, and the carriage J, in combination with the table, the dog-block, the operating rack and pinion, the pivoted levers carrying the dogs and the frame P, said frame being engaged by the movements of the dog-block to operate the levers, substantially as herein described.

7. The main frame, the tables, the arbor, the saws, the reciprocating carriage, and the levers pivoted thereon and having their rear ends mounted on a rod, the dogs on the levers, and the frame P, in combination with dog-block, the bar I', the operating rack and pinion, the counter-weight for returning the carriage, and the spring for returning the dog-block, substantially as described.

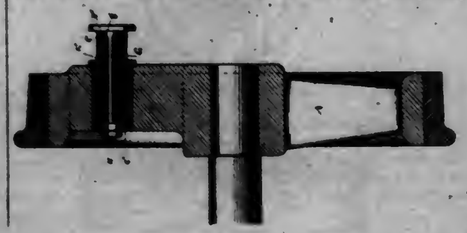
8. The main frame, the tables, the arbor, the saws, the carriage, the dog-block, and the operating rack and pinion, in combination with the levers having the dogs F', a rod passing through the rear ends of said levers, weights upon said rod, and the frame P, engaged by the dog-block on its forward movement to lower the forward ends of the levers, said levers being elevated on the return of the dog-block by the weights on the rod, substantially as herein described.

9. The main frame, the table, the arbor, the saws thereon, the carriage, the levers having the dogs F' and dog-block, and the operating rack and pinion, in combination with a mechanism for tripping the pinion at the end of the forward stroke, said mechanism comprising a projection carried by the carriage, a pivoted arm carrying the pinion, and a rocking lever having a trip engaged by the projection, substantially as described.

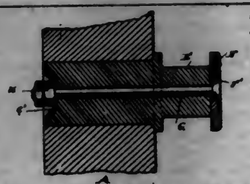
10. The main frame, the arbor, the saws, the carriage, the levers having the dogs F', the operating dog-block, and the rack and pinion, in combination with the power mechanism, the shaft *f*, on which the pinion is mounted, the clutch and return spring on said shaft, the arm *k*, the rocking arm *k*, having a trip T, and the rocking arm mounted on the base of the main frame and connected with the rocking arm *k*, substantially as described.

406,275. CRANK-PIN. HENRY D. GORDON, Wilmington, Del. Filed Dec. 9, 1887. Serial No. 257,281. (No model.)

Claim.—1. The combination, with a connecting-pin bored out longitudinally, of a device for retaining a rod or bar upon the outer end of said pin, said device consisting of a disk fitting against said outer end, a bolt-shank connected integrally with said disk and passing



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through the bored pin, and means for securing the bolt-shank at the inner end of said pin.

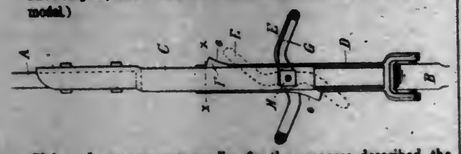
2. The combination, with a crank, of a connecting-pin bored out longitudinally, a device for retaining a rod or bar upon the outer end of said connecting-pin, said device consisting of a disk fitting against said outer end, a bolt-shank connected with said disk and passing through the bored pin, and means for securing the bolt-shank at the inner end of the pin.

3. The combination, with a crank, of a connecting-pin bored out longitudinally and countersunk at its inner end, a device for retaining a rod or bar upon the outer end of said pin, said device consisting of a disk fitting against said outer end, a bolt-shank connected with said disk and passing through the bored pin, and means, located within the countersunk portion of the pin, for securing the bolt-shank.

4. The combination, with a connecting-pin bored out longitudinally and having the hole thus made flared at its outer end, of a device for retaining a rod or bar upon the outer end of the pin, said device consisting of a disk fitting against said outer end, a bolt-shank connected integrally with said disk, said bolt-shank passing through the bored pin and having a fillet adapted to fit the flared end of the pin, and means for securing the bolt-shank at the inner end of the pin.

5. The combination, with a connecting-pin countersunk at its inner end and having a longitudinal aperture flaring at its outer end, of a device for retaining a rod or bar upon the outer end of said pin, said device consisting of a disk fitting against said outer end, a bolt-shank connected integrally with said disk, said bolt-shank passing through the bored pin and having a fillet adapted to fit the flared end of the pin, and means, located within the countersunk portion of the pin, for securing the bolt-shank.

406,276. PUMP-ROD COUPLING. CLARENCE J. HAMILTON, Plymouth, Mich., assignor of one-half to Cyrus A. Pinckney, same place. Filed May 22, 1888. Renewed June 7, 1889. Serial No. 313,449. (No model.)



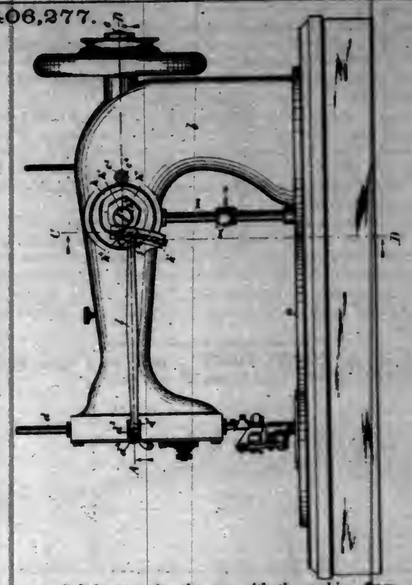
Claim.—In a pump-rod coupling for the purposes described, the two parts of the coupling slidingly engaged with each other upon opposite sides, a double bail pivotally secured to one, and two stops formed upon the other and adapted to engage with the two ends of the bail, substantially as and for the purposes described.

406,277. SEWING-MACHINE. THOMAS P. HART and GEORGE S. HILL, Lynn, Mass.; said Hill assignor to said Hart. Filed May 29, 1888. Serial No. 275,475. (No model.)

Claim.—1. The combination, with the rocking frame *d'*, needle-bar *d*, shaft *c*, and spur-gear *h*, driven by the shaft and having a polygonal cam-groove *h''*, of the swinging arm *k*, engaging the cam-



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groove, a link *l*, connecting the arm with the rocking frame, and a lengthwise-sliding pin *k'*, carrying the swinging arm for moving said arm laterally from engagement with the cam-groove, substantially as described.

2. The combination, with the rocking frame *d'*, needle-bar *d*, shaft *c*, and spur-gear *h*, driven by the shaft and having a polygonal cam-groove *h''*, of the swinging arm *k*, engaging the cam-groove, a link *l*, connecting the arm with the rocking frame, a lengthwise-sliding pin *k'*, carrying the arm for moving it laterally from engagement with the cam-groove, and a spring *k''* on the pin for restoring it to its normal position and engaging the arm with the cam-groove, substantially as described.

3. The combination, with the rocking frame *d'*, needle-bar *d*, shaft *c*, and spur-gear *h*, driven by the shaft and having a polygonal cam-groove *h''*, of the swinging arm *k*, engaging the cam-groove, a link *l*, connecting the arm with the rocking frame, a lengthwise-sliding spring-pressed pin *k*, carrying the arm, and the shaft *m*, having a projection *m''* to act on the pin and move it lengthwise, substantially as described.

4. The combination, with the rocking frame *d'*, needle-bar *d*, shaft *c*, and spur-gear *h*, driven by the shaft and having a projection *h''*, and a cam-groove *h''*, of a swinging arm *k*, connected with the rocking frame and engaging the cam-groove, a spring-pressed pin *k'*, carrying the arm, the shaft *m*, having the projection *m''* and notched lever M, and the spring-pressed pin *n*, having locking-pin *n''*, substantially as described.

5. The combination of the shipper-shaft *m*, the lever *p*, secured thereto and having the regulating-screws *p''*, the lever *q*, pivoted to the lever on the shipper-shaft, the adjustable bar *r*, pivoted to the lever *q*, the feed-dog *g*, and the feed-lever *f*, having a slotted connection with the feed-dog, substantially as described.

406,278. RAILROAD-FROG. OMAR S. HAWLEY, Truxton, N. Y. Filed Oct. 18, 1888. Serial No. 288,488. (No model.)

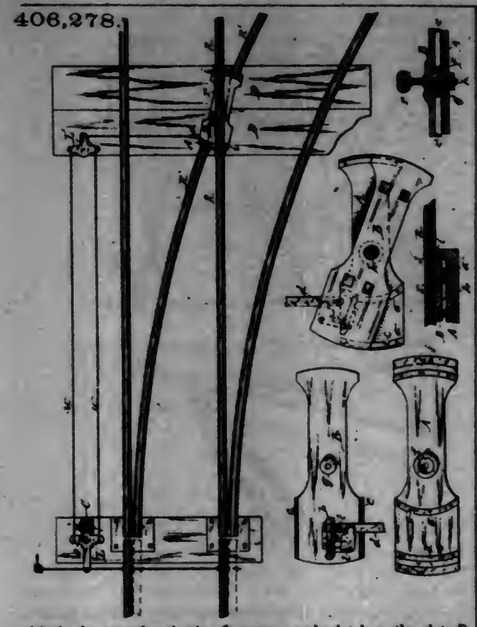
Claim.—1. The combination, with the stationary bed-plate and rail-carrying plate pivoted to said bed-plate, of catches on one of said plates and a latch on the other of said plates adapted to engage the aforesaid catches, substantially as and for the purpose set forth.

2. The combination, with the bed-plate A and rail-carrying plate B, pivoted thereto, of the segmental ribs *a a* on the bed-plate, provided with notches *c c*, the bolt *b* on the plate B, the lever *l*, pivoted to the latter plate and engaging the bolt, and the rod *d*, connected to said lever, substantially as described and shown.

3. In combination with the bed-plate A, provided with the notched ribs *a a*, and the rail-carrying plate B, pivoted to the said bed-plate, the sliding bolt *b* on the plate D, the bell-crank lever *l*, having one arm engaging the bolt with a play between the points of engagement, the spring *s*, connecting said lever with the bolt, and the rod *d*, engaging the lever *l*, substantially as described and shown.

4. In combination with the bed-plate A, provided with the notched ribs *a a*, the rail-carrying plate B, pivoted to said bed-plate and formed

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with the downward-projecting flanges *c c*, and a latch on the plate B, adapted to engage the notches of the ribs *a a*, substantially as described and shown.

5. The combination of the bed-plate A, formed with the rail-seats *i*, having abutments *j*, and the plate B, pivoted to said bed-plate and carrying the rail *r*, substantially as described and shown.

6. The improved railway-frog composed of the bed-plate A, formed with the socket *f*, notched ribs *a a*, and rail-seats *i j*, the plate B, formed with the hub *g*, pivoted in the aforesaid socket, and with downward-projecting flanges *c c*, the coupling-bolt *h*, passing through the center of the aforesaid hub and socket, the bolt *b* and lever *l* on the plate B, and the rod *d*, engaging the said lever, substantially as described and shown.

406,279. ATTACHMENT FOR SHOE-BRUSHES. HERMAN HEINE, Milwaukee, Wis. Filed Feb. 19, 1889. Serial No. 300,476. (No model.)



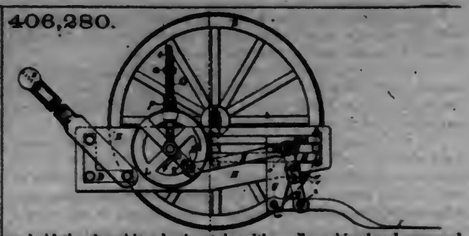
Claim.—1. An attachment for shoe-brushes having a convex roughened rubbing-surface and a scraping-blade projecting at an obtuse angle thereto, substantially as set forth.

2. An attachment for shoe-brushes having a concave inner surface, a convex outer roughened rubbing-surface, a scraping-blade projecting therefrom, and means for attachment to the handle of a shoe-brush, substantially as set forth.

406,280. WEED-CUTTER. EDWARD A. HERMANN, Indianapolis, Ind. Filed Mar. 23, 1889. Serial No. 304,508. (No model.)

Claim.—1. In a weed-cutter, the following elements, namely: an axle and a pair of carrying-wheels mounted thereon, a main frame suspended from said axle, a guiding-handle secured to the frame, a crank-plate arranged to rotate on the main frame, a cross-head arranged to slide in suitable guides on the main frame, a connecting-rod connecting said crank-plate and cross-head, a bracket secured to the cross-head and depending therefrom, a shovel pivoted to said bracket, and a link pivoted to the cross-head and to the shovel so as

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to hold the shovel in a horizontal position, all combined and arranged to co-operate substantially as and for the purpose specified.

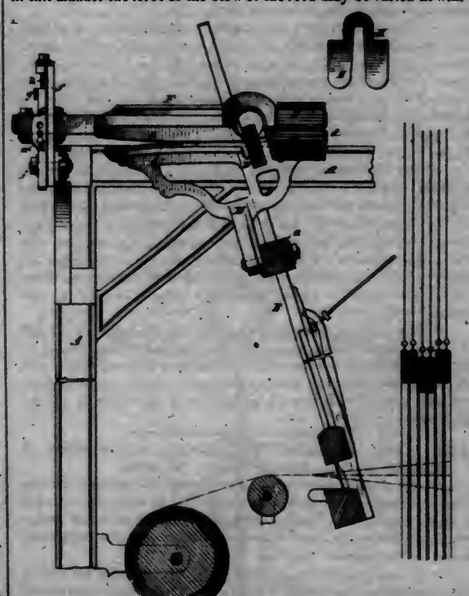
2. The combination, with the crank-plate, the sliding cross-head, the bracket depending from said cross-head, and the shovel pivoted to the bracket, of the connecting-rod having an extension which forms a bell-crank lever therewith, and the link connecting said extension with the shovel, all arranged to co-operate substantially as specified, whereby a horizontally-reciprocating and vertically-oscillating movement is imparted to the shovel, as set forth.

3. The combination, with the crank-plate L, sliding cross-head J, having pin T, bracket U and V, shovel I, and connecting-rod N, of the link W, having pin *n*, arranged to temporarily secure said link and connecting-rod together, and link Z, pivoted to the shovel and to link W, all substantially as and for the purpose set forth.

4. The combination, with the crank-plate L, sliding cross-head J, having pin T, bracket U V, shovel I, and connecting-rod N, of the links W and Z, said links being pivoted together at one end and having their opposite ends pivoted, respectively, to pin T and to the shovel, and means, substantially as shown and described, for securing the overlapping ends of the links rigidly together, for the purpose set forth.

406,281. LOOM. EDUARD HERRIG, West Hoboken, assignor to R. and H. Simon, Union, N. J. Filed Sept. 3, 1888. Serial No. 284,262. (No model.)

Brief.—By varying the height of the pivot of the weighted lever and by shifting the removable weight at its end the force of its contact with the bracket on the gravitating batten may be altered, and in this manner the force of the blow of the reed may be varied at will.



Claim.—1. The combination, with a batten, of the bracket E, carried by said batten, and of the lever F, for engaging said bracket, substantially as described.

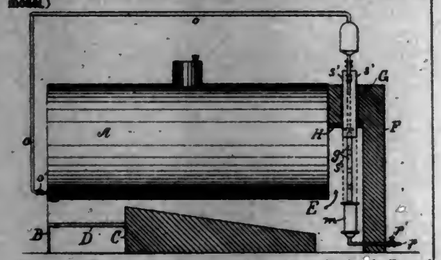
2. In a loom, the batten B, carrying the bracket E, said bracket having the edges *b d*, combined with the lever F, that rests upon said bracket, the outer part *c* of said lever being adapted to contact with the edge *b* of the bracket and the inner part of said lever being adapted to contact with the edge *d* of the bracket, substantially as described.

3. In a loom, the batten B, and the bracket E carried thereby, combined with the lever F, that engages said bracket, and the weight H, carried by said lever, substantially as described.

4. In a loom, the combination, with the frame A, carrying the support *f* and the lever F, of the frame G, to which the lever F is connected, the batten B and bracket E, carried by said batten and engaging said lever, substantially as described.

5. In a loom, the frame A, having support *f*, said support carrying the screw *h* and the bolt *j*, and the frame G, engaged by said screw and bolt, combined with the lever F, pivoted in said frame G, and with the batten B and bracket E, carried by said batten, upon which bracket the lever F rests, and with the weight H, all arranged and operated substantially as herein shown and described.

406,282. **FEED-WATER HEATER AND PURIFIER.** EMIL HOLTHAUER, Brooklyn, N. Y. Filed Mar. 23, 1889. Serial No. 304,566. (No model.)



Claim.—1. The combination, with the uptake of a flue-boiler, of the coil of pipes arranged vertically above one another and having suitable inlet and outlet pipes, and a shield movable vertically over the coil through an aperture in the boiler-casing, as and for the purpose set forth.

2. The combination, with the uptake of a flue-boiler, of the coil of pipes arranged vertically above one another, the vertical pipes *i* and *m'*, connected with the ends of the coil, the horizontal pipe *j* above the top of the boiler, the cocks *l*, *n*, and *l'*, inserted in the several pipes, and a shield movable vertically over the coil and the pipes *i* and *m'*, as and for the purpose set forth.

3. The combination, with the uptake of a flue-boiler, of the coil of pipes arranged vertically above one another, the vertical pipes *i* and *m'*, connected with the ends of the coil, the horizontal pipe *j* above the top of the boiler, the mud-drum *m* at the junction of the coil and the pipe *m'*, the filter *k*, connected with the pipe *j* and by pipe *o* with the boiler, the cocks *l*, *n*, and *l'*, connected with the several pipes, and the shield movable vertically over the coil and the pipes *i* and *m'*, as and for the purpose set forth.

4. The combination, with the uptake of a flue-boiler, of the coil of pipes arranged vertically above one another, the vertical pipes *i* and *m'*, connected with the ends of the coil, the horizontal pipe *j* above the top of the boiler, the mud-drum *m* at the junction of the coil, and the pipe *m'*, the filter *k*, connected with the pipe *j*, and by pipe *o* with the boiler, the cocks *l*, *n*, and *l'*, connected with the several pipes, the shield movable vertically over the coil, as set forth, and suitable cords, pulleys, and weight to counterbalance the same, as and for the purpose set forth.

5. The combination, with the uptake of a flue-boiler, of the coil of pipes arranged vertically above one another and having suitable inlet and outlet pipes, and the shield consisting in the jackets *s s'*, connected together with the intermediate space *t*, and adapted to move vertically over the coil through an aperture in the casing, as and for the purpose set forth.

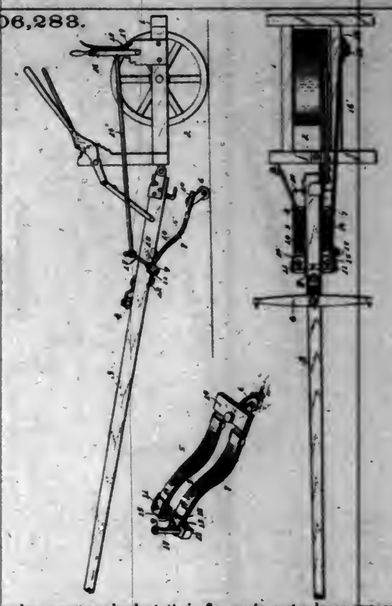
406,283. **TONGUE-SUPPORT.** MARTIN L. HORNER, Astoria, Ill. Filed Mar. 21, 1889. Serial No. 304,161. (No model.)

Claim.—1. A tongue-support consisting of a spring-metal bar forming a hanger and adapted to be connected at one end to a tongue in such a manner as to incline downwardly therefrom, and a caster-wheel swiveled to the lower unconfined end of said bar, substantially as and for the purpose described.

2. A tongue-support consisting of a depending hanger formed by two connected springs, which are secured at their upper extremities to the tongue and provided with a caster-wheel at their lower unconfined ends, substantially as and for the purpose described.

3. The combination, with a pivoted tongue, of an adjustable hanger pivoted to the tongue and carrying a caster-wheel, and a lever supported on the frame of the machine or vehicle and connected to said hanger to adjust the latter vertically, substantially as and for the purpose described.

4. The combination, with a tongue, of a rock-shaft journaled thereon, the depending springs rigidly secured to said rock-shaft and

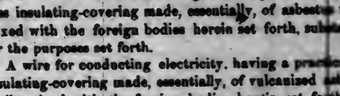


carrying a caster-wheel at their free ends, and a lever connected to said rock-shaft, substantially as and for the purpose described.

5. A tongue-support consisting of the longitudinally-curved springs secured at one end to a common support and carrying a caster-wheel at their unconfined ends, and the auxiliary springs connected to said main springs, substantially as and for the purpose described.

6. In a tongue-support, the combination, with a pivoted tongue, of a rock-shaft having the longitudinally-curved springs secured thereto, a caster-wheel journaled in a bar connecting the unconfined ends of said springs, an arm fixed to the rock-shaft, and a lever connected by an intermediate rod with said arm, as and for the purpose described.

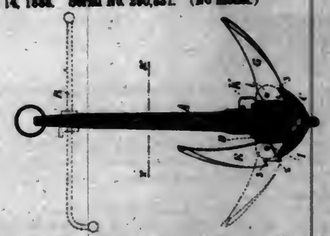
406,284. **INSULATED ELECTRIC WIRE.** HENRY W. JOHNS, Jr., New York, N. Y. Filed Jan. 3, 1889. Serial No. 295,753. (No model.)



Claim.—1. A wire for conducting electricity, having a practically seamless insulating-covering made, essentially, of asbestos mechanically mixed with the foreign bodies herein set forth, substantially as and for the purposes set forth.

2. A wire for conducting electricity, having a practically seamless insulating-covering made, essentially, of vulcanized asbestos mechanically mixed with the foreign bodies herein set forth, substantially as and for the purposes set forth.

406,285. **ANCHOR.** JAMES O. JOHNS, Hammondsport, N. Y. Filed Nov. 14, 1888. Serial No. 290,831. (No model.)

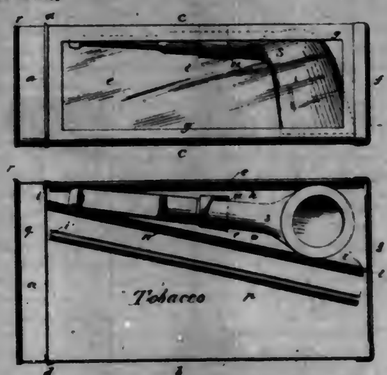


Claim.—1. The anchor-shank A, having a hollow conical head C, in combination with the collar D, and the flukes hinged to the collar and resting, when opened, against the edge of the hollow conical head, substantially as set forth.

2. The anchor-shank A, having a hollow conical head C, in combination with the movable collar D, surrounding and sliding on the shank, the flukes hinged to the collar and each fluke provided with shoulders 2 and 3 to rest against the edge of the conical head when the flukes are extended or folded, substantially as set forth.

3. The combination, with the anchor-shank A and hollow conical head C, of the movable collar D, flukes hinged to the collar and provided with the shoulders that rest against the edges of the conical head, and a key K, passing through the mortise in the shank A, substantially as set forth.

406,286. **COMBINED TOBACCO AND PIPE BOX.** FREDERICK R. KALDENBERG, New York, N. Y. Filed Sept. 14, 1888. Serial No. 285,069. (No model.)



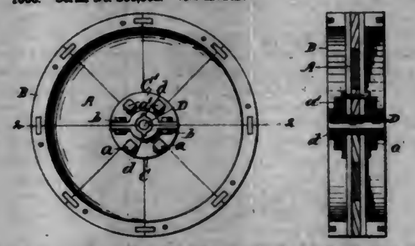
Claim.—1. A combined tobacco and pipe box consisting of a rectangular body having an open end fitted with a removable cover, and an open top having a sliding top piece of glass, and having grooves extending obliquely from end to end and a sliding partition of glass separating it into two compartments, as and for the purpose set forth.

2. A combined tobacco and pipe box consisting of a box having an open end with a removable cover, and an open top with a sliding top piece of glass, and a sliding division-piece of glass separating the interior into two compartments, the upper one being adapted to hold a pipe, and the interior of both compartments being visible from the outside of the box, substantially as shown and described.

3. A combined tobacco and pipe box consisting of a rectangular body having an open end fitted with a removable cover, and open top with a sliding top piece of glass, and having oblique grooves with a sliding partition of glass separating it into two compartments, the upper one having a ring-support for the pipe, substantially as shown and described.

4. The combination, with the box *a*, having open end and cover *f*, sliding top piece *c*, and sliding partition *l*, of the match-compartment *q*, as set forth.

406,287. **SPLIT BAND-PULLEY.** ADOLPHUS KESSLER, Warsaw, Ind., assignor of one-half to Wilbur F. Maish, same place. Filed Oct. 27, 1888. Serial No. 289,302. (No model.)



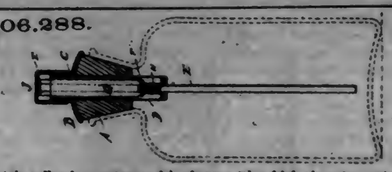
Claim.—In a split pulley, the combination, with the two separable halves thereof, of the flanged hub parts correspondingly divided and provided with grooves, as described, the two-part bushing having a feather formed on each part which engage with the grooves in said flanges, and the bolts for clamping the different parts together, substantially as set forth.

406,288. **ATOMIZER.** PAUL KÖTHNER, Berlin, Germany. Filed Apr. 26, 1888. Serial No. 308,794. (No model.) Patented in France Mar. 2, 1888, No. 184,625.

Claim.—1. In an atomizer, the combination, with a suction-tube, of an air-forcing tube hinged on a sliding collar of the suction-tube, substantially as set forth.

2. In an atomizer, the combination, with a stopper, of a metal tube passing through the same, a smaller suction-tube secured in said metal tube, an air-forcing tube, a sliding collar on said suction-tube,

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which collar is provided with pivots with which the air-suction tube is connected, substantially as set forth.

3. In an atomizer, the combination, with a stopper, of a tube passing through the same, a smaller suction-tube passing through said tube in the stopper, an air-forcing tube hinged on the sliding collar of the suction-tube, and a top plate on the stopper, which top plate is provided with an externally-screw-threaded neck, substantially as set forth.

4. In an atomizer, the combination, with a stopper, of a tube passing through the same, a smaller suction-tube passing through the bottom of the tube in the stopper, a sliding collar in said suction-tube, an air-forcing pipe hinged to said sliding collar, and a spiral spring surrounding the suction-tube with the metal tube in the metal tube in the stopper, substantially as set forth.

406,289. **FLAG-STONE AND CEMENT PAVEMENT.** CHARLES KUHL, Cincinnati, Ohio. Filed Feb. 16, 1889. Serial No. 300,101. (No model.)

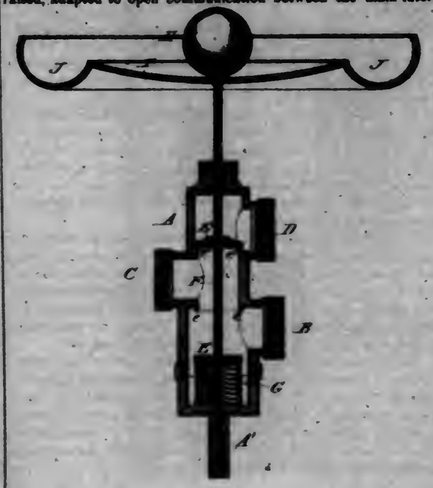


Claim.—1. The combination, in a pavement, of the stones roughened upon the upper surface, the binding-coat B, placed on the same, the coarse concrete C, and the finishing coat D, the whole arranged and the block divided, substantially as specified.

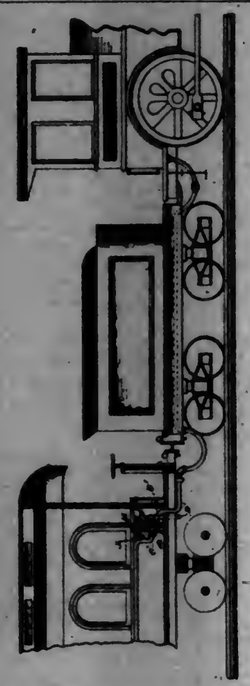
2. The method herein described of repairing stone pavements, which consists of the following steps: first, cutting down and roughening the uneven surfaces of the stones; second, coating the upper surface with a binding-coat of cement and sand; third, placing on the same a concrete coating composed of coarse stone, sand, and Portland cement; fourth, placing upon the coarse concrete a finishing coat of fine sand and Portland cement, substantially as specified.

406,290. **SAFETY-VALVE FOR CAR-HEATERS.** CHARLES F. MURDOCK, Detroit, Mich. Filed Oct. 26, 1888. Serial No. 289,260. (No model.)

Claim.—1. In a valve for car-heaters, the main casing having an upper escape outlet-opening, a lower supply inlet-opening, and an intermediate main outlet-opening, with pipes leading to and from said openings, in combination with upper and lower valves secured to a valve-rod extending beyond the top of the main casing, said rod having a spring coiled about its lower extremity, the upper valve, when raised, adapted to open communication between the main interme-



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diate outlet-opening and escape-outlet and the lower valve, when lowered, adapted to open communication between the supply-inlet and main outlet, a disk connected to the upper extremity of the valve-rod, a ball or weight supported by said disk and normally in alignment with said valve-rod, and a circular track or way secured to the car-body.

2. The main casing having a lower inlet-opening and a conducting-pipe coupled thereto, an upper escape outlet-opening having an exhaust-pipe connected thereto, an intermediate main outlet-opening situate on the opposite side of the main casing relatively to the said upper and lower openings and having a radiating conducting-pipe coupled thereto, in combination with upper and lower valves secured to a valve-rod which extends beyond the top of the main casing and has its upper end secured to a disk and its lower extremity surrounded by a spring, a ball or weight supported by the said disk, and a curved track or way secured to the car-body.

406,291. ELECTRICAL TYPE-WRITING MACHINE. JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed Nov. 26, 1887. Serial No. 256,102. (No model.)

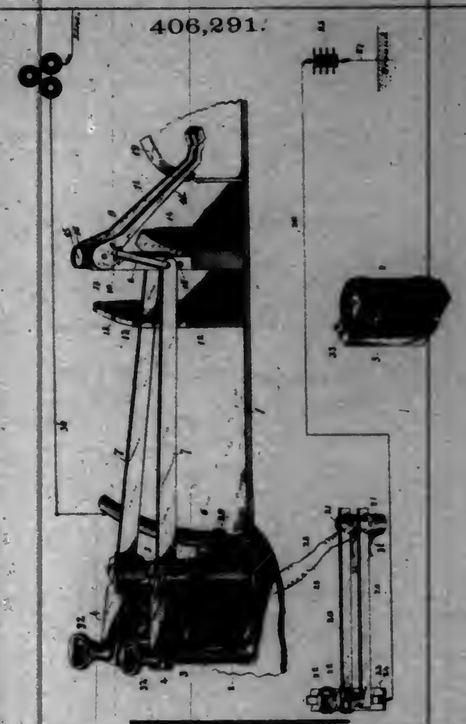
Claim.—1. In a type-writer, the combination of a type-lever having a curved slot near one end and a type at the other end, with a key-lever having a link pivoted to one end, said link carrying a pin at the other end loosely engaging the slot in the type-lever, substantially as described.

2. In a type-writer, the combination of a type-lever having a curved slot near one end and a type at the other end, with a link carrying a pin which normally engages the slot at a distance from the rear end of the latter, and a key-lever operatively connected with the link, whereby the type-lever receives the momentary impact of the pin after the latter has acquired speed under the action of the key-lever, substantially as described.

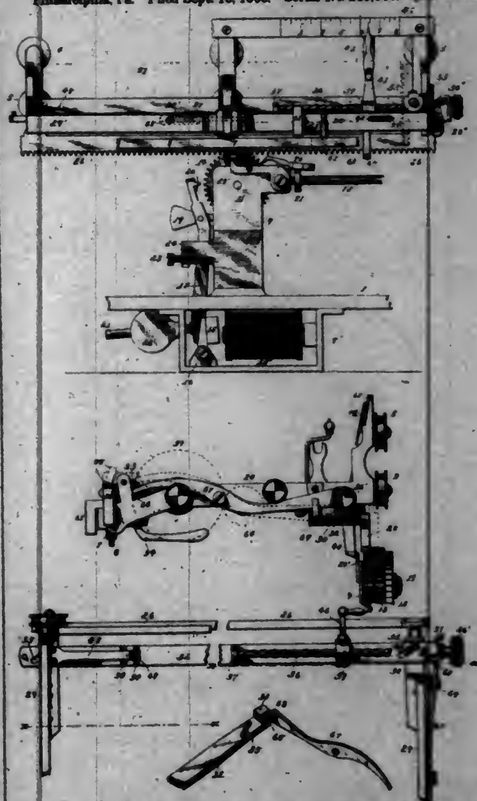
3. In an electrical type-writer, the combination of a pivoted type-lever having an expanded head with a curved slot in the same, and a key-lever for actuating the type-lever, with a link pivoted at one end to the key-lever, and a pin at the other end engaging the said slot, whereby the type-lever, after receiving the momentary impact of the pin, will move independently of the latter to produce the impression and to return to its normal position, substantially as described.

4. In an electrical type-writer, the combination of a pivoted type-lever having a curved slot near its pivot, and a similar key-lever for actuating the former, with a link pivoted to the key-lever, and carrying a pin engaging the said slot, and stops for the levers, whereby in the normal position of the latter the pin will be in the middle of the slot, so that the movement of the key-lever precedes that of the type-lever, substantially as described.

406,291.



406,292. TYPE-WRITING MACHINE. JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed Sept. 10, 1888. Serial No. 285,086. (No model.)



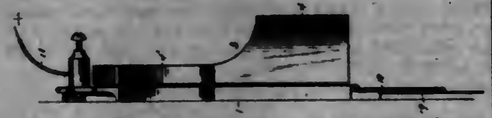
Claim.—1. In a type-writer having automatic letter and line spacing mechanisms, the combination, with such mechanisms and a spring-barrel for storing power during and by the letter-spacing operation, and for reversing the carriage automatically when the end of a line of writing is reached, of a shifting rack-bar upon the carriage, which in one position actuates the spring-barrel and in the other position is actuated by the same, mechanism for shifting the rack-bar automatically in one direction by the letter-spacing movement of the carriage, and mechanical connection with the line-spacing mechanism for shifting the rack-bar automatically in the other direction, substantially as described.

2. In a type-writer having automatic letter and line spacing mechanisms, the combination of a spring-barrel for storing power during the letter-spacing operation and a shifting rack-bar upon the carriage actuating the spring-barrel in one position and actuated by the same in another position, with a sliding bar for shifting the rack-bar, positively actuated in one direction by the letter-spacing movement of the carriage and in the other direction by the line-spacing mechanism, substantially as described.

3. In a type-writer having automatic letter and line spacing mechanisms, the combination of a spring-barrel for storing power during the letter-spacing operation and a rack-bar upon the carriage in gear with the spring-barrel, with a gear-wheel normally engaging the rack-bar for advancing the carriage step by step, a sliding bar for shifting the rack-bar out of and into engagement with the gear-wheel, a fixed stop in the path of the sliding bar for actuating the latter positively in one direction, and a lever operated by the line-spacing mechanism for actuating the sliding bar positively in the other direction, substantially as described.

4. In a type-writer, the combination of an automatic step-by-step carriage-feed or letter-spacing mechanism and an automatic line-spacing mechanism with a spring-barrel actuated by a rack-bar mounted upon the carriage for storing power during the letter-spacing operation, a sliding bar for shifting the rack-bar in and out of engagement with the letter-spacing mechanism, a fixed stop in the path of the sliding bar for actuating the latter to disengage the rack-bar, a lever operated by the line-spacing mechanism for actuating the sliding bar to engage the rack-bar, and a spring for holding the sliding bar in either of its shifted positions, substantially as described.

406,293. COMBINED ELECTRIC BELL AND ANNUNCIATOR. JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed Feb. 8, 1889. Serial No. 299,111. (No model.)

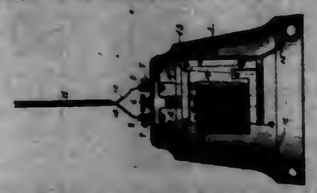


Claim.—1. The combination, with an electro-magnet, of an angle-armature provided at its free end with a lug, a knuckle-lever with one end in operative relation to the lug, and an indicator-plate provided with a lug in direct operative relation to the other end of the lever, substantially as described.

2. A combined electric bell and annunciator consisting of a frame, an electro-magnet and bell-armature supported by said frame, a knuckle-lever with one end in operative relation to the armature and the other end extending through a passage or recess in the frame, and an indicator-plate hinged to the frame so as to be exposed to view in one position and hidden from view in another position, and provided with a lug or projection engaged and locked by the lever when the plate is hidden from view, substantially as described.

3. A combined electric bell an annunciator comprising a frame, an electro-magnet, a bell-armature and a knuckle-lever in operative relation to the armature and extending through a passage in the frame, a bell inclosing and concealing said mechanism, and a gravity-annunciator normally engaged and held in position where it is hidden from view by said knuckle-lever, substantially as described.

406,294. ELECTRIC TREMBLER-BELL. JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed Mar. 29, 1889. Serial No. 305,213. (No model.)



Claim.—1. An electric trembler-bell consisting, essentially, of a bell, a vibratory polarized armature having like poles in operative relation to each polar terminal of the neutral electro-magnet, and a bell hammer or hammers carried by the armature, substantially as described.

2. In an electric trembler-bell, the combination of a bell, an electro-magnet, a bell-crank polarized armature having like poles in operative relation to each polar terminal of the electro-magnet, and a bell hammer or hammers carried by the armature, substantially as described.

3. In an electric trembler-bell, the combination of a bell and electro-magnet supported within the same, having one of its poles extended and turned up parallel with the coil of the electro-magnet, with a polarized bell-crank armature having like poles at its free ends, with one of them extending horizontally in operative relation to the upper free end of the core of the electro-magnet, and the other arm extended vertically with its free end in operative relation to the extended upturned pole of the electro-magnet, and a bell hammer or hammers carried by the armature, substantially as described.

4. An electric trembler-bell consisting, essentially, of a bell, a neutral electro-magnet, a polarized armature having a consequent pole in the middle, and its free poles in operative relation to the polar terminals of the electro-magnet, and a bell hammer or hammers carried by the armature, substantially as described.

406,295. CLIP-MOLD. JOSEPH MCLEAN, Rockville, Conn. Filed Mar. 23, 1888. Serial No. 304,469. (No model.)



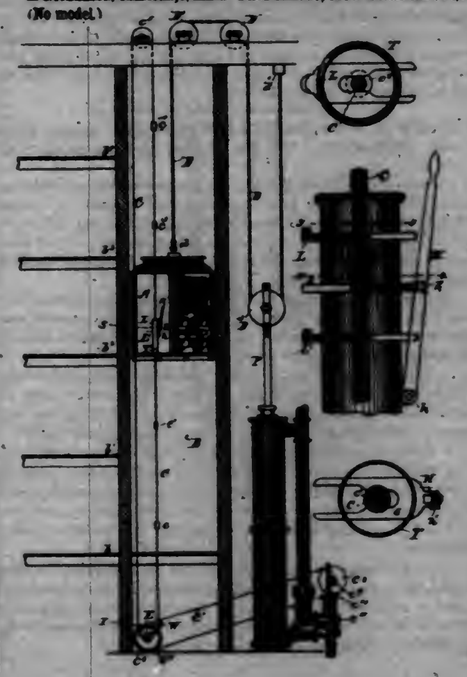
Claim.—1. In combination, in a mold, the sectional shell-pieces and the sliding cores borne in the respective shell-sections, the meeting faces of the shell-sections and cores being hollowed to form a chamber, all substantially as described.

2. In a mold, in combination with the sectional shells *f f'*, the sliding cores *g g'* and the clamp-screws *h h'*, for holding the cores against sliding movement in the shells, all substantially as described.

3. In combination with the shells *f f'*, the sliding cores *g g'*, borne in the respective shell-sections, the core *g*, having the channels *i i'*, forming a connection between the several parts of the mold-chamber when the core is in the several positions of its adjustment, all substantially as described.

4. In a mold, in combination with the sectional shells *f f'*, having the meeting faces crosswise of the shells, the sliding cores *g* and *g'* and the clamping devices *h h'*, for holding the cores against sliding movement within the respective shells, one of the cores bearing a graduated scale, all substantially as described.

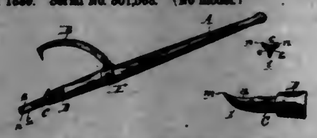
406,296. CONTROLLING DEVICE FOR ELEVATORS. WILLIAM R. HICKMOTT, Cambridge, Mass. Filed Mar. 26, 1888. Serial No. 304,009. (No model.)



Claim.—1. In an elevator, the combination of an elevator-carriage, a hand-rope, a hand-rope-engaging device controlled by the operator, a controlling-valve, a mechanism for transmitting the motion of the hand-rope to the said controlling-valve, and a swinging weight adapted to be raised by the motion of the elevator-carriage to a position from which in dropping it will open said controlling-valve, substantially as and for the purpose set forth.

2. In an elevator, the combination of the engaging-slide S, rope C, having buttons c' c^2, and a segment-guide E, with swinging weight W, hand-rope wheels c^3 c^4, rope C, valve-setting device, and controlling-valve, substantially as and for the purpose set forth.

406,297. CANT-HOOK. CHRISTIAN HYGAARD, Oshkosh, Wis. Filed Feb. 28, 1889. Serial No. 301,563. (No model.)



Claim.—1. In a cant-hook, the combination, with the handle A, of a pike inserted in the end thereof, having an upper broad face depressed spoon-like and curved upwardly, the sides of the pike grooved longitudinally to form a lower circular sharp edge bearing from the point backward when used as a pry, the hook thereof being at right angles to the line of movement, substantially as shown, for the purposes specified.

2. A pike bent upwardly to form a pry and tapered from below to a broad sharp edge at the end, the upper surface being depressed spoon-like, and with longitudinal grooves on each side to form a sharp engaging lower edge at right angles with the end, substantially as shown, for the purposes specified.

3. A cant-hook provided with a pike having a recess or depression on one side, the edges of the recess being sharp to prevent side slipping of the pike when used as a pry, and having a wedge-shaped bearing-edge opposite the recessed side.

406,298. RUNNING-GEAR FOR VEHICLES. HOMER R. OLMSTEAD, Decatur, Mich. Filed Feb. 6, 1889. Serial No. 298,889. (No model.)



Claim.—In a running-gear for vehicles, the front axle and sand-bar provided with chafing-plates, the thimbles having raised bearings for supporting the sand-bar above the axle, the reach passing through the space between the sand-bar and axle, and the hound-plates connecting the sand-bar and axle with the reach, all arranged substantially as and for the purpose described.

406,299. PHOTOGRAPHIC-LIGHT APPARATUS. LUCIEN C. OVERPECK, Hamilton, Ohio. Filed Feb. 13, 1888. Serial No. 264,435. (No model.)

Claim.—1. In photographic-light apparatus, the combination, substantially as set forth, of a supporting-shelf adapted to receive flash-light material, a pair of conducting-fingers disposed thereat, a fine conducting-wire connecting these fingers, a generator of electricity, a circuit-closing key, and electrical conductors connecting said fingers and generator and key.

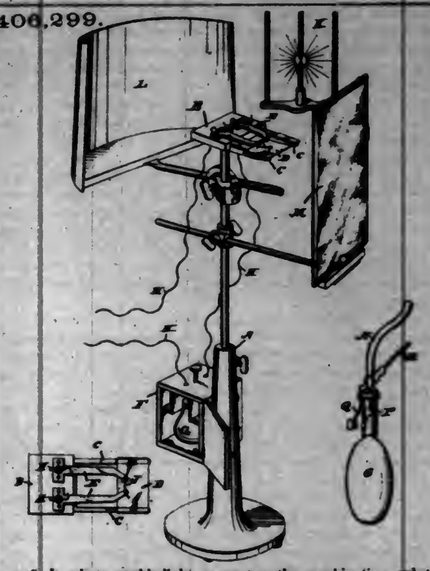
2. In photographic-light apparatus, the combination, substantially as set forth, of a pair of shelf-supports, a shelf of transparent material resting removably thereon adapted to receive a charge of flash-light material, and means for igniting said material.

3. In photographic-light apparatus, the combination, substantially as set forth, of a continuous actinic light, as an electric-arc lamp, an exposed shelf disposed contiguous thereto and adapted to receive a charge of flash-light material, and means for igniting said charge.

4. In photographic-light apparatus, the combination, substantially as set forth, of a standard, a crown-piece, shelf-supports attached thereto, conducting-fingers E, rigidly attached to the crown-piece, wire J, connecting with the fingers, and an electric battery, said battery and fingers being adapted for connection into a circuit with a circuit-closer.

5. In photographic-light apparatus, the combination of a tube adapted for connection with the pneumatic-shutter mechanism of a camera, a hand-bulb at the free end thereof for producing a compression of the air, an electric-circuit-closing key secured at said bulb and electrical conductors connecting with said key.

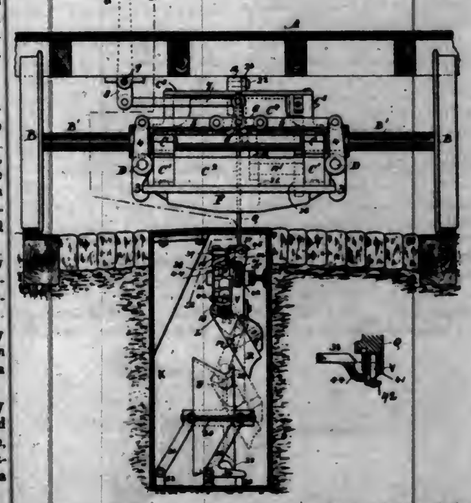
406,299.



6. In photographic-light apparatus, the combination, substantially as set forth, of a continuous artificial actinic light, as an electric-arc lamp, an exposed support for flash-light material disposed contiguous thereto, and an adjustable screen common to both said lights.

7. In photographic-light apparatus, the combination, substantially as set forth, of adjustable standard A, an adjustable reflector and a screen supported thereby, shelf-supports attached to the standard, fingers E at said shelf, wire J, connected with the fingers, battery G, and conductors H.

406,300. CABLE-GRIP. JOHN H. PRENDERGAST, Brooklyn, and ANDREW BETTES, Jr., and CORNELIUS TIERS, New York, assignors to the Rapid Transit Cable Company, New York, N. Y. Filed Nov. 30, 1888. Serial No. 292,260. (No model.)



Claim.—1. The combination, with the gripping device, of the stationary standard H and connections to the car-axle, the moving slides Q, for raising and lowering the gripping device, the toggle-cranks 16 and 23, pinion 26, rack-bar T, and mechanism for giving endwise motion to such rack-bar, substantially as set forth.

2. The combination, with the endless belt P and the grip-blocks 10, of the grip-shoe S and pick-up wheels R, and the device for supporting and moving the respective parts, the pick-up wheels R being located in such a manner as to support the cable out of contact with the grip-shoe, so that such cable may travel without friction upon the shoe and be brought into contact with the grip-blocks to give motion to the endless band before the gripping action is applied to the cable, substantially as specified.

3. The combination, with the endless belt and grip-blocks, of the grip-shoe having hooks 15, near the ends of the shoe, to aid in guiding the cable into place, the end portions of the shoe and the hooks being rounded to prevent injury to the cable, substantially as set forth.

4. The combination, with the grip-shoe and hooks 15, of the pick-up wheels R and the frame or bar for supporting and moving the same, such grip-wheels R having conical concave edges, and the wheels being placed at an inclination to press the cable laterally as the wheels and cable are moved downwardly for picking up such cable, substantially as set forth.

5. The combination, with the gripping and pick-up mechanism, of the conical wheels U, having flanges 28, the frame 30, and the diagonal links 31 32, for allowing the wheels U to be moved laterally by the pick up mechanism, substantially as specified.

6. The combination, with the grip-shoe and pick-up wheels and the frame for supporting and moving the parts, of the swinging chocks V, with the projections 46, the levers 38, with the projections 45, for moving the chocks, the spring-bolts 41, and the stationary arms 38 and 40, for causing the levers and chocks to be moved in throwing the cable out of the shoe and in restoring the parts to the normal position, substantially as specified.

7. The combination, with the pick-up and gripping mechanism, of the plate F, to which the parts of the grip are connected, the hooks 3, for supporting such plate, and mechanism for moving the hooks to disconnect the gripping mechanism from the car and allow the same to drop, substantially as set forth.

8. The combination, with the plate F, of the hanging standard H, connected therewith, the endless belt and grip-blocks, and the wheels O O', supported by such hanging standard, the grip-shoe, the vertical slides Q, and the mechanism for moving the same to apply or release the grip, substantially as set forth.

9. The plate F and movable mechanism for supporting the same from the car, and the hanging standard H, connected with such plate, in combination with the gear-wheel 26 and shaft 17, having a journal box or bearing upon the plate F, the crank-arm 16 at the end of the shaft 17, the crank-arm 23, forming with the arm 16 a toggle, the vertical slides Q, and the grip-shoe connected with the same and receiving their motion from the toggle, and the rack-bar T, for moving the gear 26, substantially as set forth.

10. The combination, with the plate F and the grip mechanism therewith connected, of the hooks 3, for supporting such plate, the shafts D and bearings for sustaining the hooks, the lever-arms 4, links 5, three-part lever G and hand-lever G', and link 7, for actuating the hooks in connecting or disconnecting the plate F, substantially as set forth.

406,301. CABLE-RAILWAY GRIP. JOHN H. PRENDERGAST, Brooklyn, and ANDREW BETTES, Jr., New York, assignors to the Rapid Transit Cable Company, New York, N. Y. Filed Mar. 19, 1888. Serial No. 268,262. (No model.)

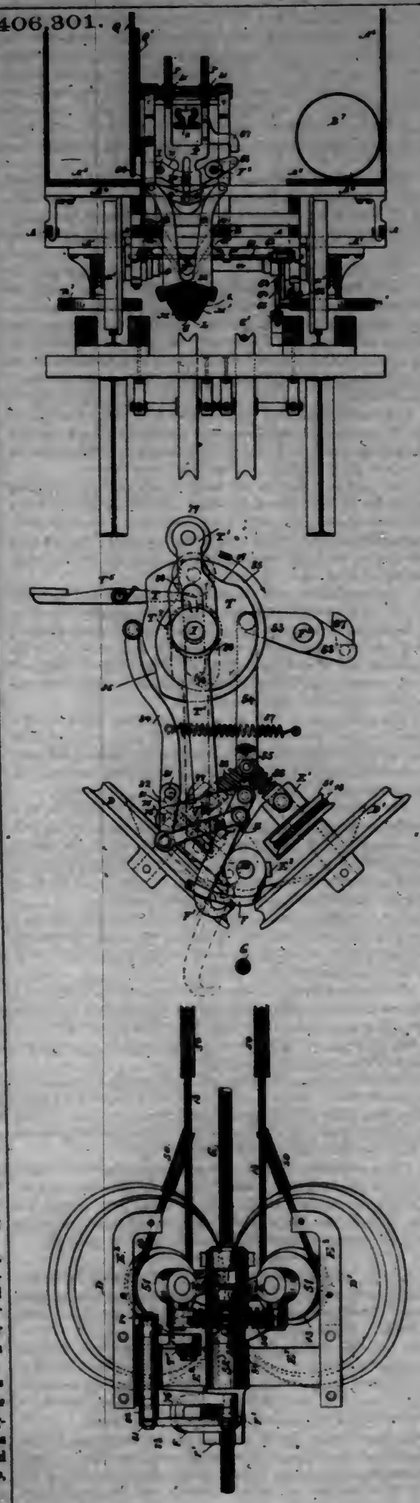
Claim.—1. The combination, with the car-wheels and main platform, of a transversely-moving frame and the cable-gripping mechanism supported by such transversely-moving frame, so as to adapt the gripping mechanism to the position of the cable upon which the same acts, substantially as set forth.

2. The combination, with the car-wheels and platform, of a transverse movable platform or frame supported by the main platform, cable-gripping mechanism supported upon and moving with such transverse platform, bolts for holding the platform in the position to which it may be moved, air-cylinders, pistons, and piston-rods for giving motion to the platform, substantially as set forth.

3. The combination, with the belt-wheels and an endless belt having gripping-blocks, of gripping-jaws for acting upon the gripping-blocks, the cable-wheels D D', placed at an inclination and grooved for the reception of the cable, the swinging bearings pivoted together and receiving the axes of the cable-wheels, and toggle mechanism for swinging the bearings and moving the cable-wheels toward or from each other, substantially as set forth.

4. The combination, with the endless belt having gripping-blocks and the gripping-jaws for acting upon the same, of the cable-wheels D D', placed at an inclination and grooved to receive the cable, swinging bearings for the axes of the cable-wheels, pulleys upon the axes of the cable-wheels, and belts extending therefrom, and pulleys and belt-wheels for giving motion to the endless belt and gripping-blocks, substantially as set forth.

406,301.



5. The combination, with the transverse moving frame B B', of the frame-arms E², extending from the ends of the frame B B', the cross-frame E², the swinging bearings E E', pivoted upon the frame E², the cable-wheels D D', set at an inclination and grooved for the reception of the cable, the axis of the cable-wheels being supported in the swinging bearings, the toggle-links pivoted together and to the swinging bearings, the shaft F², arms 53, and links 54, for acting upon the toggle-links and moving the swinging bearings, substantially as set forth.

6. The combination, with the swinging bearings E E', cable-wheels D D', and their axes within the swinging bearings, of toggle-links formed of two parts, one sliding within the other, and expansible springs for giving pressure of the cable-wheels upon the cable, substantially as set forth.

7. The combination, with the endless belt and gripping-blocks and the belt-wheels, of the gripping-jaws, the levers and toggles for acting upon the same, the rack-bar, pinions and hand-wheel for opening and closing the gripping-jaws, the ratchet-wheel and pawl for holding the parts in position, the roller 64, incline 65, the link for holding the roller, and the connection therefrom to the pawl for liberating the same automatically and releasing the grip-jaws, substantially as set forth.

8. The combination, with the lifting-hook F, of the arm 76, vertical bar T, and cam 80, for raising and lowering the hook, and the link 83, and the arm 84 and cam 85, for swinging the lifting-hook beneath or away from the cable, substantially as set forth.

9. The combination, with the cable-wheels D D' and swinging bearing for the same, of the toggle-links and mechanism for acting upon the same to swing the cable-wheels toward or from each other, the hanging lifting-hook, and arm and links for raising and lowering the hook and for swinging the same beneath or away from the cable, substantially as set forth.

10. The combination, with the gripping mechanism and the cable-wheels D D', of the toggle-links, the swinging bearings for the cable-wheels, the shaft F², extending along the car, and the crank-arms 53, for giving motion to the toggle mechanism at both ends of the car simultaneously, the shaft I, cam-wheels T, lifting-hooks F, links and crank-arms whereby the lifting-hook is actuated in unison with the cable-wheels, substantially as set forth.

11. The combination, with the wheels and main platform, of a transversely-moving platform supported by the main platform, bolts for holding said transversely-moving platform in position, and gripping mechanism supported by such transversely-moving platform, substantially as specified.

12. The combination, with the wheels and main platform, of a transversely-moving platform, gripping mechanism supported by such platform, a movable link for connecting the motor-car to the cars to be drawn, there being holes in the end sill of the main platform in a line extending to the center of the transversely-moving platform, or nearly so, substantially as and for the purposes specified.

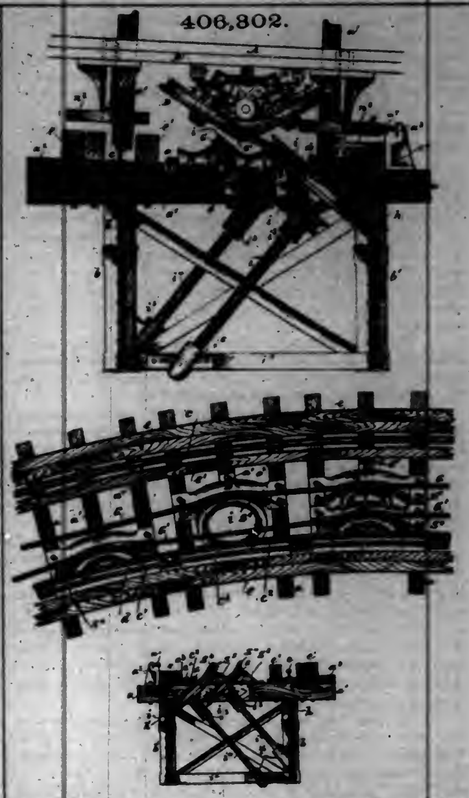
13. The combination, with the wheels and main platform on a motor-car, of the transversely-moving frame, and a grip mechanism and a pick-up device connected to and supported by the transversely-moving frame, substantially as set forth.

14. The combination, with the wheels and main platform in a motor-car, of the transversely-moving frame, the grip mechanism connected to and supported by the said frame, and mechanism for holding the said frame in the position to which it may be moved upon the main platform, substantially as set forth.

15. The combination, with the endless belt having gripping-jaws, and pendent shields or chocks S, of cable-wheels to support the cable after it has been lifted and for causing the cable to come into contact with the pendent shields or chocks and give motion to the belt while the car is at rest, substantially as specified.

16. The combination, with the cable-gripping mechanism, of cable-wheels D D', in pairs and at an inclination, and swinging bearings for such cable-wheels, and a pivot for such swinging bearings which is above the cable, so that the weight of the parts will cause the wheels to press at opposite sides on the cable, substantially as specified.

406,802.



406,802. CABLE-RAILWAY STRUCTURE. JOHN H. PENDLETON, Brooklyn, and ANDREW BRYSON, Jr., New York, assignors to the Rapid Transit Cable Company, New York, N. Y. Filed Apr. 11, 1889. Serial No. 306,837. (No model.)

Claim.—1. The combination, with the elevated-railway structure and the inclined pulleys *i*, of cross-ties *c*, short ties *c'*, adjacent to where the inclined pulleys *i* are introduced, the outer guard-rails *c*, and inner guard-rails *c'*, to which the cross-ties and short ties are bolted for holding the short ties in position, substantially as set forth.

2. The combination, in an elevated-railway structure having straight and curved tracks, of two cables occupying different positions between the rails, and the inclined guide-pulleys upon the curved portion of the track for the respective cables, and the short ties *c'*, bolted to the guard-rails and adjacent to the guide-pulleys, substantially as set forth.

3. The combination, in an elevated-railway structure, with two cables occupying different positions between the track-rails, of supporting-pulleys for the two cables, such supporting-pulleys being in line, or nearly so, with the short ties *c'*, such short ties being supported by and bolted to the guard-rails, substantially as set forth.

4. The combination, with the railway structure and two cables between the rails of such structure, of two sets of guide wheels or pulleys, one set for each cable, the guide-wheels at the curved portions of the track that receive the cable nearest the convex side of the track being at an inclination to pass down below the guide-wheels that support the cable at the concave side of the track, substantially as set forth.

5. The combination, with the railway structure and two cables between the rails, of two sets of guide wheels or pulleys in pairs, both guide-wheels being upon inclined axes and one guide-wheel of each pair of guide-wheels passing partially beneath the other guide-wheel of the pair, substantially as set forth.

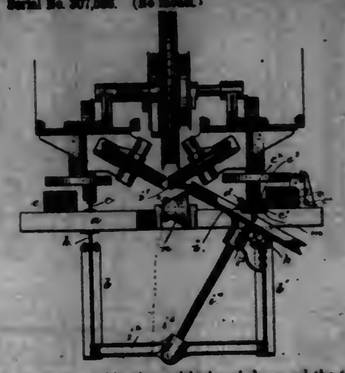
6. The combination, with the railway structure and the cable, of an inclined guide-wheel for the cable and an inclined shield in the form of an arch extending over the upper edge of the inclined guide wheel or pulley and secured at its ends to the railway structure, substantially as set forth.

7. The combination, with the railway structure and the cable, of inclined guide-wheels and stationary inclined lifters formed as segments of cylinders, and supports at the ends of said lifters connected with the railway structure, substantially as set forth.

8. The combination, in a railway structure, with the track-rails and guard-rails, of a standing rail at the concave side of the track, supports for sustaining such rail upon the cross-ties, and a horizontal wheel connected to the car and rolling against said rail to sustain the car against the lateral strain of the cable as such car is traveling around the curve, substantially as specified.

9. The combination, with the railway structure having cross-ties *c*, track-rails *c c'*, and guard-rails *c c'*, of the standing rail *n*⁴ at the concave side of the track, and the brackets *a*⁵, for supporting such rails *n*⁴, and bolts for connecting the brackets to the cross-ties and the guard-rail, substantially as set forth.

406,803. CABLE RAILWAY. JOHN H. PENDLETON, Brooklyn, and ANDREW BRYSON, Jr., New York, assignors to the Rapid Transit Cable Company, New York, N. Y. Filed July 21, 1888. Renewed Apr. 16, 1889. Serial No. 307,808. (No model.)



Claim.—1. The combination, with the girders and the ties and track supported by them upon the straight portion of the road, of beams or their equivalents upon said girders at the curved portion of the road, the ties and track upon said beams, and the inclined guide-pulleys placed at intervals around the curve and passing between the inner rail and girder, substantially as specified.

2. The combination, with the girders and the ties and track supported by the same, of beams or their equivalents for elevating the track at the curved portion of the road above the level of the track at the straight portion of the road, and inclined guide-pulleys placed at intervals around the curve and passing between the inner rail and girder, substantially as specified.

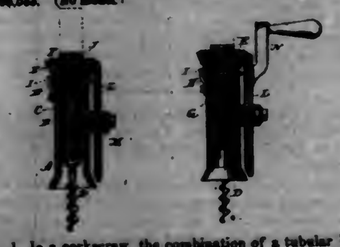
3. The combination, with the girders and the ties and track supported by them upon the straight portion of the road, the beams or their equivalents upon said girders at the curved portion of the road, and the ties and track upon said beams, of the inclined pulleys placed at intervals around the curve and passing between the inner rail and girder, and a supporting-bar beneath said inner rail at each place where a guide-pulley is located, as set forth.

4. The combination, with the girders and the ties and track supported by them upon the straight portion of the road, the beams or their equivalents upon said girders at the curved portion of the road, the ties and track upon said beams, and the inclined pulleys placed at intervals around the curve, of the bars or rails c^4 c^5, substantially as specified.

5. The combination, with the elevated-railway structure and the beams or their equivalents for supporting the ties and track at the curved portion of the road, of the grooved pulley *i* for the cable, the axis for said pulley, a cross-bar supported by the girders and having a bearing for the lower end of said axis, and a bearing for the upper part of said axis, as set forth.

6. The combination, with the elevated structure and the traveling cable, of the inclined guide-pulleys *i*, placed at intervals around the curve, of the pulleys *n n*, one at each side of the guide-pulleys *i*, each pulley *n* being upon a horizontal axis and having a face inclined upwardly toward the guide-pulley for directing the cable into said guide-pulley, as set forth.

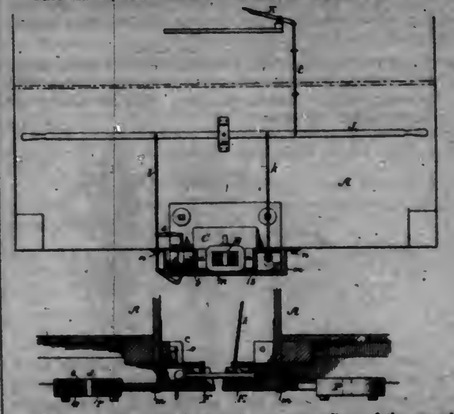
406,804. CORKSCREW. EDWARD T. POLLARD, Richmond, Va., and FRANK J. LUNDSTEN, Waterbury, Conn. Filed Dec. 14, 1888. Serial No. 293,563. (No model.)



Claim.—1. In a corkscrew, the combination of a tubular barrel constructed at its lower end to form a seat for the neck of a bottle, a mandrel arranged to work vertically in said barrel and provided at its lower end with a corkscrew, the said mandrel constructed with a right and left hand screw-thread, the said threads corresponding substantially to the screw-thread of the corkscrew, and the said spiral grooves of the threads on the mandrel crossing each other, a rocking shoe arranged upon a pivot within the barrel and adapted to engage either the said right or left hand thread on the mandrel, and means, substantially such as described, to impart rotation to said mandrel, and whereby under such rotation of the mandrel it will be caused to descend and then ascend without change in the direction of rotation.

2. The combination of the tubular barrel A, the mandrel C, arranged therein, said mandrel provided with a corkscrew at its lower end and constructed with a right and left hand screw-thread upon its surface, the spiral grooves of the said threads crossing each other, a rocking shoe P, supported upon a pivot upon the inside of the barrel, the said shoe corresponding to the said grooves on the mandrel and adapted to engage either as they are presented, a pinion E, arranged upon said barrel concentric with said mandrel, and through which the said mandrel works, the said pinion free for rotation, but held against movement in an axial direction, said pinion and mandrel, the one constructed with a spline and the other with a corresponding groove, and a gear, as L, arranged to work into said pinion and provided with a suitable lever, whereby rotative movement may be imparted to said gear, substantially as described.

406,805. CAR-COUPLING. WALTER A. POST, Newport News, Va. Filed Jan. 30, 1889. Serial No. 297,908. (No model.)

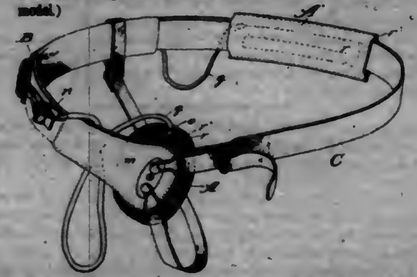


Claim.—1. The combination, in a car-coupling, of the opposite coupling-heads, an orifice in the top of one of said heads to receive the coupling-bar carried by the other head, with a vertically-hinged top piece covering said orifice and adapted to be raised by the entrance or withdrawal of the coupling-bar from the head, said top piece being connected to a system of levers operating the coupling-bars for the purpose of uncoupling the cars, substantially as specified.

2. The combination, in a car-coupling, of a casting carrying two coupling-heads, a laterally-extended pocket for receiving said casting, and to which it is pivoted by a vertical pin to permit of the lateral movement of the casting in the pocket, substantially as specified.

3. The combination, in a car-coupling, of a casting carrying two coupling-heads, a laterally-extended pocket for receiving said casting and to which it is pivoted by a vertical pin, and a spring interposed between the casting and the rear of the pivot-pin, substantially as described.

406,806. ELECTRODE FOR THERAPEUTIC BODY-WEAR. HARRY P. PRATT, Chicago, Ill. Filed Mar. 12, 1889. Serial No. 302,960. (No model.)



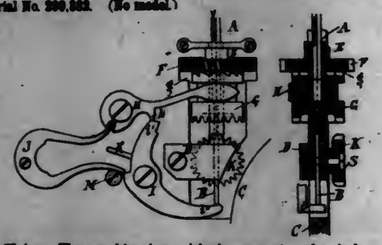
Claim.—1. An electrode for use with electro-therapeutic body appliances and formed with flexible absorbent material, having a flexible metallic conductor *p* secured to it, substantially as and for the purpose set forth.

2. In an electrode for use with electro-therapeutic body appliances, the combination of a layer *r*, of flexible absorbent material, a layer *r'*, of flexible material, secured to the layer *r*, an interposed flexible metallic conductor *p*, and a conductor *q*, attached at one end to the conductor *p* and provided at its opposite end with means for connecting it with an electric generator, substantially as and for the purpose set forth.

3. In combination, a truss C, an electric battery B upon the truss, and electrodes connected with the opposite poles of the battery, and each formed with flexible absorbent material having a flexible metallic conductor *p* secured to it and from which connection of the electrode with the battery is made, substantially as and for the purpose set forth.

4. In combination, a truss C, an electric battery B upon the truss, an electrode A' upon the girdle portion of the truss and comprising a layer *r*, of flexible absorbent material, a layer *r'*, of flexible material, the said layers being secured together, and a flexible metallic conductor *p*, interposed between the layers and from which connection of the electrode with the battery is made, and an electrode A, to be interposed and form a cushion between the pad of the truss and surface of the body, and comprising a layer *r*, of flexible absorbent material, a layer *r'*, of flexible material, the said layers being secured together, and a flexible conductor *p*, interposed between the layers and from which connection of the electrode with the battery is made, substantially as and for the purpose set forth.

406,307. HAND-SETTING MECHANISM FOR WATCHES. ERNEST J. ROUX, Geneva, Switzerland, assignor to the Ancienne Fabrique Vacheron and Constantin, (Limited,) same place. Filed Feb. 14, 1889. Serial No. 299,982. (No model.)



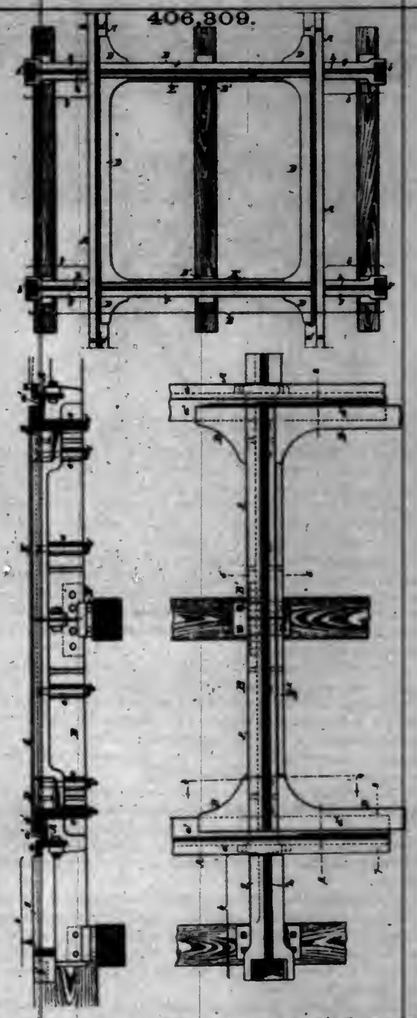
Claim.—The combination, with the stem A and tubular axis E, of the clutch G, sliding upon the tubular axis, the lever H, for moving the sliding clutch, the lever I, pin B, and the spring J, for acting upon the respective levers, substantially as set forth.

406,308. CHURN-DASHER. IRA A. SAHM, Kalvesta, Kans. Filed Jan. 19, 1889. Serial No. 296,833. (No model.)



Claim.—The combination of the dasher-staff formed or provided with a lower enlarged end square or rectangular in shape, the angles thereof being provided with recesses, the upper blades arranged at right angles to each other and having upper wedge-shaped surfaces with a gradual taper from each end inwardly, so as to form a contracted or decreased inner portion, the intermediate vertically-extending blades fitting in the recesses upon the under side of the upper blades and in the angles of the rectangular portion of the dasher-staff, and the lower blades provided with wedge-shaped upper surfaces with a gradual taper from each end inwardly and extending radially between the spaces and alternating with the upper set of blades, substantially as set forth.

406,309. STREET-RAILWAY CROSSING. EDWARD SAMUEL, Philadelphia, Pa., assignor to William Wharton, Jr., & Company, Incorporated, same place. Filed Sept. 21, 1888. Serial No. 285,979. (No model.)



406,309.

Claim.—1. The combination, in a railway-crossing, of the unbroken rails A of the track, girders supporting said rails, and crossing-rails with tie-plates extending from girder to girder and forming wagon-mounts, all substantially as described.

2. The combination, in a railway-crossing, of the rails A of one track, transverse girders having cross-rails between the rails A, and tie-plates situated at the inner sides of the rails A, and having lips which overlap said rails and are beveled to form a gradual rise, substantially as described.

3. The combination of the continuous main rails, the supporting-girders, the intervening cross-rail sections having high treads, and the outer cross-rail sections having grooves with inclined bottoms for lifting the flanges of the wheels to the top of the main rails, all substantially as specified.

4. The combination, in a railway-crossing, of the continuous main girder-rails and cross-rails, with plates situated at the inner sides of said main rails and extending below the base of the rail and alongside of the paving, substantially as and for the purpose described.

5. The combination, in a railway-crossing, of the main rails, the supporting-girders, the intervening cross-rail sections with internal re-enforcing flanges B^2 on the said girders extending alongside the inner edge of the rail-sections, substantially as set forth.

406,310. DEVICE FOR HEATING SOLDERING-IRONS, LEAD-MELTING POTS, &c. JOHN H. SANGER, Brooklyn, assignor to Fred Ades & Co., New York, N. Y. Filed May 4, 1888. Serial No. 272,702. (No model.)

Claim.—1. The stove E, having openings at both ends that are larger than the gas-supply pipe, internal perforated plate *m*, side openings e^2 above said plate, and external cup *o*, having raised ledge *n*, that acts as a tool-rest, substantially as herein shown and described.

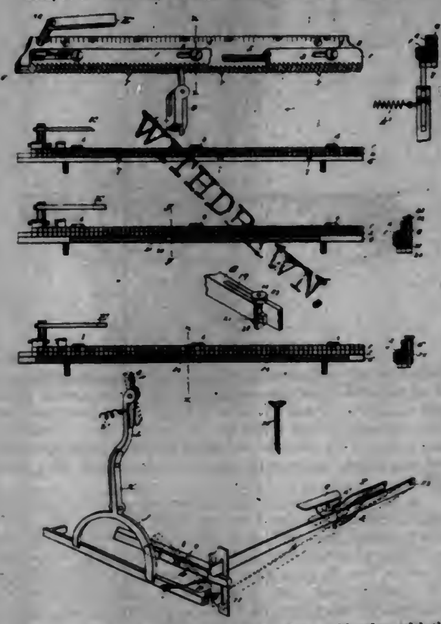
2. The combination of the plate A, having the internally-screw-threaded collar *d*, with the externally-screw-threaded pipe B fitting said collar, the reversible stove E, open at both ends, one end being adapted to rest on the plate A, the opening in the opposite end being larger than the pipe B, said stove having the internal perforated plate

406,310.



m and the opening e^2, whereby the stove may be used either as a solder or soldering-iron heater, substantially as described.

406,311. TYPE-WRITING MACHINE. JOHN H. SEDDLE, Jersey City, N. J., assignor to the American Writing Machine Company, New York, N. Y. Filed July 22, 1886. Serial No. 208,705. (No model.)



Claim.—1. In a type-writing machine, the combination, with the carriage, the driving mechanism, and the rocking frame carrying a dog or pawl, of a stop to limit the forward vibration of the rocking frame, and an arm or lever to remove said stop and permit a further forward vibration of the rocking frame and a releasement therefrom of the carriage, substantially as and for the purposes set forth.

2. In a type-writing machine, the combination, with the driving mechanism, the carriage, the racks 1 and 2 thereon, and the rocking frame carrying the dog or pawl, of a stop to limit the forward vibration of the rocking frame, and an arm or lever for removing said stop and permitting a further forward vibration of the rocking frame and a disengagement of the dog or pawl from the racks 1 and 2, as and for the purpose set forth.

3. In a type-writing machine, the combination, with the driving mechanism, the carriage, the racks 1 and 2 thereon, and the rocking frame carrying the dog or pawl, of a pivoted stop for said rocking frame, and an arm or lever for vibrating said pivoted stop, as and for the purpose set forth.

4. In a type-writing machine, the combination of the driving mechanism, the carriage, the racks 1 and 2 thereon, the rocking frame carrying a dog or pawl, the keys or levers P P', arranged on opposite sides of the machine, the stop for said rocking frame, and the lever or arm for operating said stop connected to the key or lever P, the combination being such, as described, that the ordinary step-by-step spacing movements of the carriage are effected through the operations of the key or lever P', and the liberation of the carriage for rapid movements through the operations of the key or lever P, as set forth.

5. In a type-writing machine, the combination of the driving mechanism, the carriage, the racks 1, 2, and 6 thereon, the latter provided with a less number of teeth, and the rocking frame carrying the dog or pawl, of a stop for said rocking frame, and an arm or lever for operating said stop, whereby the dog or pawl may be disengaged from the teeth of the racks 1 and 2, for the purpose described, and engaged with the teeth or a tooth on the rack 6, as set forth.

6. In a type-writing machine, the combination of the driving mechanism, the rocking frame carrying the dog or pawl, the stop for said rocking frame, the arm or lever for operating said stop, the carriage, and the racks 1, 2, and 6 thereon, the latter provided with an adjustable tooth, as and for the purpose set forth.

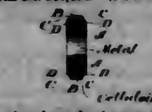
7. In a type-writing machine, the combination of the driving mechanism, the rocking frame carrying the dog or pawl, the stop for said rocking frame, the arm or lever for operating said stop, the carriage, and the racks 1, 2, and 6, the latter formed with an elongated slot and provided with an adjustable tooth, as and for the purpose set forth.

8. In a type-writing machine, the combination of the driving mechanism, the rocking frame carrying the dog or pawl, the carriage provided with the racks 1, 2, and 6, the latter having a less number of teeth, and means, substantially as described, for vibrating the rocking frame and throwing the dog farther forward to co-operate with the rack 6, as set forth.

9. In a type-writing machine, the combination, with the carriage, of an adjustable column-stop, a dog to engage the same, and a finger-piece or key to actuate said dog, substantially as and for the purpose set forth.

10. In a type-writing machine, the combination, with the dog and slotted rack, of a stop adjustably arranged on said rack, substantially as and for the purpose set forth.

406,312. REGISTERING-WHEEL. FRIEND W. SMITH, Bridgeport, Conn., assignor to the Beasley Supply Company, New York, N. Y. Filed Oct. 8, 1888. Serial No. 287,494. (No model.)

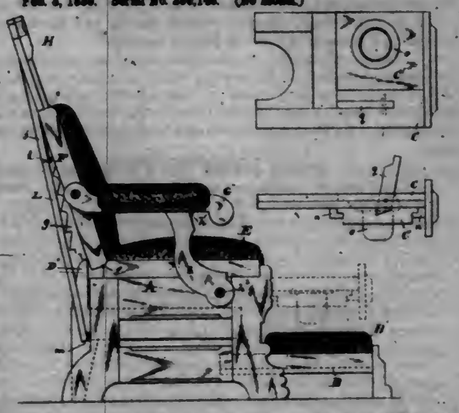


Claim.—1. A registering-wheel consisting of a metallic core and a celluloid facing, substantially as set forth.

2. A celluloid registering-wheel having a metallic bushing and a metallic side facing provided with notches, as set forth.

3. A registering-wheel having a facing of celluloid, a bushing or hub of metal, and a notched metallic plate extending at right angles from said bushing or hub against the side of said facing, substantially as set forth.

406,313. INVALID-CHAIR. WILLIAM SMITH, Baltimore, Md. Filed Feb. 3, 1889. Serial No. 298,146. (No model.)



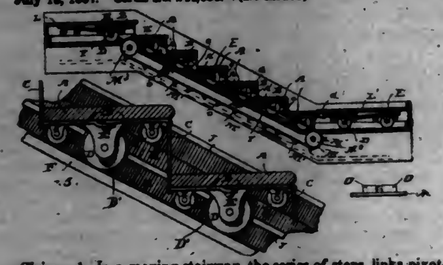
Claim.—1. In an adjustable chair, the combination of the seat-frame A, a sliding cushion-supporting drawer C, provided with crosswise strips *n*, and a chamber-supporting drawer C', movable laterally on said crosswise strips, substantially as specified.

2. In an adjustable chair, the combination of the seat-frame A,

a sliding drawer C, provided with crosswise strips *n*, a chamber-supporting drawer C', movable laterally on said cross-strips, a chamber-cover *p*, hinged to said sliding drawer C, and a stud *q*, pivoted also to said sliding drawer, substantially as specified.

3. As an improved article of manufacture, an adjustable chair having its seat-frame A provided with drawers B and C, movable in and out at the front of the seat, and the laterally-moving drawer C', the slide D, interposed between the drawers B C and sliding to the rear of said seat, said slide being provided with a jack D', adapted to engage the rack-bar on the back of the chair when said back is lowered, said slide also provided with a leg D^2, which rests on the floor to support said back, substantially as specified.

406,314. STAIRWAY. LEANDER S. SOUDER, Norristown, Pa. Filed July 18, 1887. Serial No. 244,633. (No model.)



Claim.—1. In a moving stairway, the series of steps, links pivotally attached to the same, connecting-links hinged thereto, for the purpose set forth, and supporting-rollers, in combination with means for preventing the tilting of the said steps in rounding curves, consisting of rollers and guiding-rails, between which the said rails run.

2. The steps A, the projections A' thereupon, means for connecting the several steps, the endless belt M, and the projections M' thereupon, all arranged and combined for joint operation in the manner and for the purpose herein set forth.

3. In a moving stairway, the combination, with a series of steps united by links or rods pivotally attached thereto and to each other, and the supporting and guiding rails F, J, and K, of the wheels D and G, substantially as herein set forth.

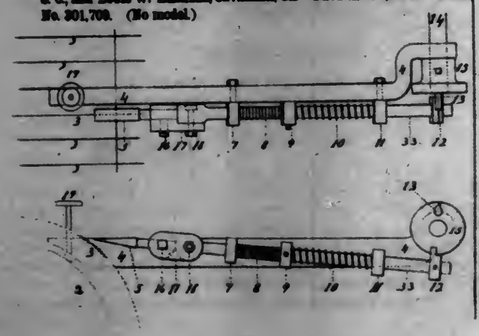
4. In a moving stairway, the series of steps and connecting hinged links or rods, in combination with the rails F J K, adapted to guide and support the steps during their ascent, a series of guides for the steps during their descent, and an endless propelling-belt, all substantially as and for the purpose set forth.

5. In a moving stairway, the series of steps united by links or rods pivotally attached thereto and to each other, in combination with a series of wheels guided upon and between a series of rails and adapted conjointly with said series of links to control the motion of the steps, a propelling-belt, and inclined or wedge-shaped blocks O, secured thereon, and adapted to operate in the manner and for the purpose herein set forth.

6. In a moving stairway, the steps thereof and suitable means for connecting the same, in combination with a propelling-belt and inclined or wedge-shaped blocks O secured thereto, and adapted to operate in the manner and for the purpose set forth.

7. In a moving stairway, the combination, with the series of steps, of a series of horizontal links or rods pivotally attached to the under side of the said steps, and a series of vertical links or rods serving to connect the series of steps by having their extremities secured to the extremities of the horizontal links or rods, substantially as herein set forth.

406,315. GIN-SAW GUMMER. ERWIN W. THURSTON, Columbia, S. C., and LOUIS W. HASKELL, Savannah, Ga. Filed Mar. 1, 1889. Serial No. 301,709. (No model.)

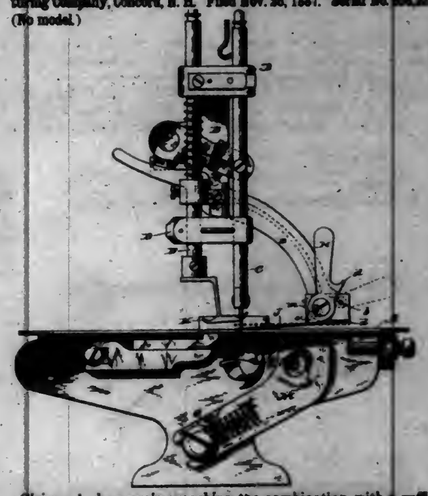


Claim.—1. The combination of a frame having temporary bearings in which the shaft of a gang or roll of saws revolves and an adjustable chisel which is caused to indent the root of each saw-tooth in succession, substantially as shown, for the purpose specified.

2. The combination of a frame having bearings in which the shaft of a gang or roll of saws revolves while being gummed and an adjustable chisel which is caused to indent the root of each saw-tooth by means of a set of springs and crank arm or cam, substantially as shown, for the purpose specified.

3. The combination of a frame having bearings in which a roll or gang of saws revolves while being gummed and an adjustable chisel which is caused to indent the root of each saw-tooth in succession, with adjustable pawl or pawls, which act upon a saw other than the one being gummed to revolve the whole roll or gang, substantially as set forth, for the purpose specified.

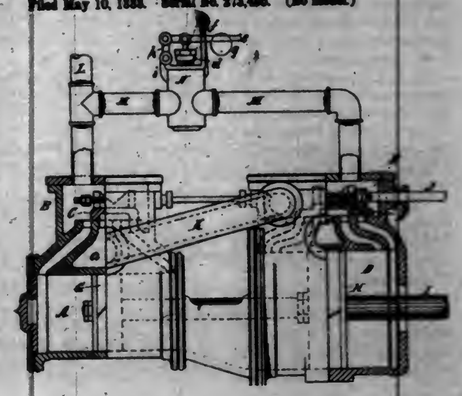
406,316. SEPARATOR-PLATE FOR SEWING-MACHINES. MILLAR G. TURNER, Westborough, Mass., assignor to the Turner Manufacturing Company, Concord, N. H. Filed Nov. 26, 1887. Serial No. 256,227. (No model.)



Claim.—1. In a sewing-machine, the combination, with a ruffler-feed below the work-plate and means for operating said ruffler-feed, of the supporting-arm E, secured to the frame of the machine above said work-plate, the separator-plate J, pivotally attached to said arm, and a lever also pivoted to said arm and having a part or projection, as *c*, to engage the said separator-plate forward of its pivotal point, and thus depress the forward end of said plate, substantially as set forth.

2. In a sewing-machine, the combination, with a ruffler-feed arranged below the work-plate and means for operating said ruffler-feed, of a supporting-arm E, secured to the machine-frame above the work-plate, a separator-plate J, pivoted at its rear end to the said arm E, and the lever H, also pivoted to said arm and having projections *c d* on opposite sides of its pivotal point to engage said separator-plate and depress or raise the forward end thereof, substantially as set forth.

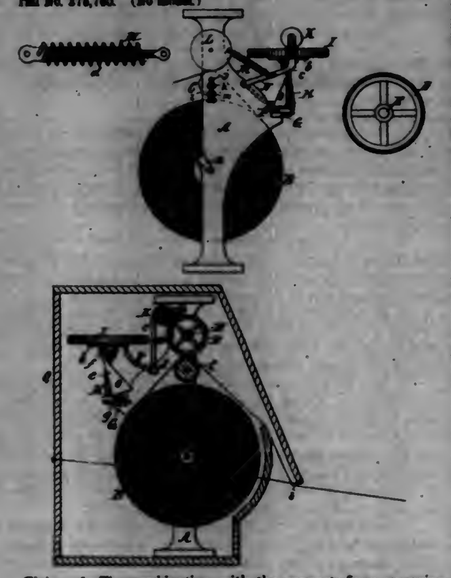
406,317. COMPOUND ENGINE. JOHN H. VAILE, Dayton, Ohio. Filed May 10, 1888. Serial No. 273,496. (No model.)



Claim.—1. In a compound steam-engine, the combination, with the high and low pressure cylinders, of a passage for the exhaust of the high-pressure cylinder leading to the steam-chest of the low-pressure cylinder, and a passage from the boiler for the simultaneous admission of exhaust and live steam to the steam-chest of the low-pressure cylinder, and a regulating-valve governing the admission of the live steam controlled by the pressure in the said steam-chest, substantially as described.

2. In a compound steam-engine, the combination, with the high and low pressure cylinders, of a pipe-connection between the exhaust of the high-pressure cylinder and the steam-chest of the low-pressure cylinder, and a live-steam pipe from the boiler to said steam-chest for the simultaneous admission of steam to said steam-chest, and a valve in the steam-pipe from the boiler opened by an adjustable weight and closed by the increase of pressure in the low-pressure steam-chest, substantially as described.

406,318. COMBINED WRAPPING-PAPER HOLDER AND PRINTER. EDWARD B. WESTON, Dayton, Ohio. Filed July 2, 1888. Serial No. 278,765. (No model.)

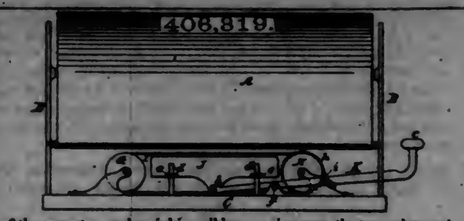


Claim.—1. The combination, with the supports for a wrapping-paper roll and a bed-roller and printing-roller in frictional contact and between which the paper from the first-mentioned roll is passed, of an inking-plate and an inking-roller, with connecting mechanism between said printing-roller and inking-roller, whereby the drawing forward of the paper actuates the bed, printing, and inking rollers to cause the printing of the paper, substantially as described.

2. The combination, with the supports for a wrapping-paper roll and a bed-roller and printing-roller in frictional contact and between which the paper from the first-mentioned roll is passed, of a pivoted inking-plate with connecting mechanism between said plate and printing-roller, and an inking-roller with connecting mechanism between said inking-roller and printing-roller, whereby the drawing forward of the paper actuates the inking-plate and the bed, printing, and inking rollers to cause the paper to be printed, substantially as described.

3. The combination and arrangement of the supports A, bed-roller C, printing-roller D, carrying a type-plate F, said rollers C and D being in frictional contact and having the paper from the roll B passed between them, the shaft J, connected to the roller D by a yielding pitman M, and provided with the arms *c*, carrying the inking-roller K, and the inking-plate I, provided with the ratchet *b*, and actuated by the arm O, carrying the dog *f*, the spring *g*, and the wiper-arm P, substantially in the manner and for the purpose specified.

406,319. PRINTING DEVICE FOR WRAPPING-PAPER ROLLS. EDWARD B. WESTON, Dayton, Ohio. Filed July 2, 1888. Serial No. 278,769. (No model.)

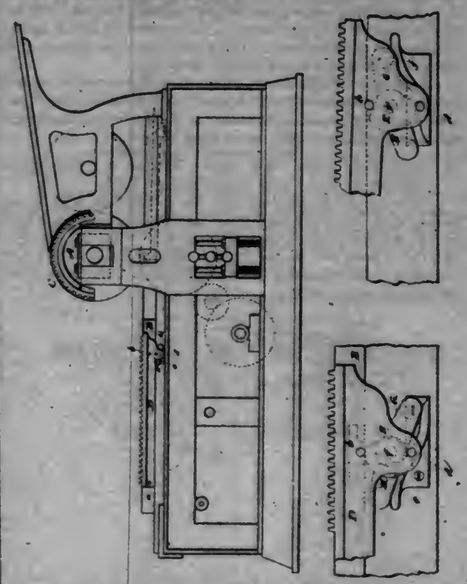


Claim.—1. The combination, with a suitable frame-work and a paper-roll journaled therein, of a cushion-plate beneath which the paper from the roll passes, a vertically-reciprocating type-plate beneath the cushion-plate, a lever pivoted at one end to the type-plate and fulcrumed in the frame-work, the other end of said lever extending outside the frame-work, in position to be operated by the hand of the operator, and an inking-ribbon passing over the type-plate, substantially as described.

2. The combination, with a suitable frame-work and a paper-roll journaled therein, of a cushion-plate beneath which the paper from the roll passes, guide-rods secured in the base of the frame-work, a vertically-reciprocating type-plate having perforated lugs through which the said guide-rods pass, a lever pivoted at one end to the type-plate and fulcrumed in the frame-work, the other end of said lever extending outside the frame-work, in position to be operated by the hand of the operator, a spool at each end of the type-plate, mechanism for turning the spools, and an inking-ribbon carried by said spools passing over the type-plate, substantially as described.

3. The combination, with the paper-roll A, of the cushion-plate E, inking-ribbon I, spools G H, upon which said ribbon is carried, a type-plate J, and a forked pivoted lever K, carrying said type-plate and provided with a dog *i*, engaging with a ratchet *h* upon the spool H, substantially in the manner and for the purpose specified.

406,320. RECIPROCATING MECHANISM FOR CYLINDER PRINTING-MACHINES. STEPHEN WHITLOCK, Birmingham, Conn., assignor to the Whitlock Machine Company, same place. Filed Apr. 16, 1888. Serial No. 270,840. (No model.)



Claim.—1. The combination of an impression-cylinder and reciprocating bed of a printing-press, a toothed segment on the end of the cylinder, with a rack on the side of the bed, toothed corresponding to said segment, the said rack hinged by its rear end to the bed, and so as to receive a vibratory movement in a vertical plane, mechanism, substantially such as described, between the free end of the said rack and the said bed, whereby the up-and-down movement is imparted to said rack, and a point stationary on the frame at each extreme movement of the bed, corresponding to the said mechanism, and with which said mechanism will engage as the bed approaches its two extreme movements, substantially as described, and whereby under such engagement at the termination of the advance movement the said free end of the rack will be dropped and at the extreme retreating movement the free end of the rack will be raised.

2. The combination of the impression-cylinder and reciprocating bed of a printing-press, a toothed segment on the end of the cylinder, with a rack on the side of the bed, toothed corresponding to said segment, the said rack hinged by its rear end to the bed, and so as

to receive a vibratory movement in a vertical plane, an oscillating cam E, hung in the bed near the forward or free end of said rack, with a bearing on said rack adapted to work upon said cam, the said cam provided with arms H G, extending, respectively, forward and rearward, and stationary cams *e f* on the frame of the machine, with which said arms *g h* are adapted, respectively, to engage as the bed approaches its extreme forward or rear movement, substantially as and for the purpose described.

406,321. **BEVERAGE-SHAKER.** JOHN A. WIEDERSHEIM, Philadelphia, Pa. Filed Oct. 27, 1888. Serial No. 289,253. (No model.)



Claim.—1. A beverage-shaker having a vessel-holder, an oscillating yoke carrying said holder, an eccentric encircled by said yoke, and means for rotating said eccentric, said parts being combined substantially as described, whereby vertical and horizontal motions are imparted to the holder.

2. A beverage-shaker consisting of an oscillating yoke, an eccentric encircling said yoke, means for rotating said eccentric, a vessel-holder secured to the yoke, a closing-cap for the vessel, and a clamp for the cap, said parts being combined substantially as described.

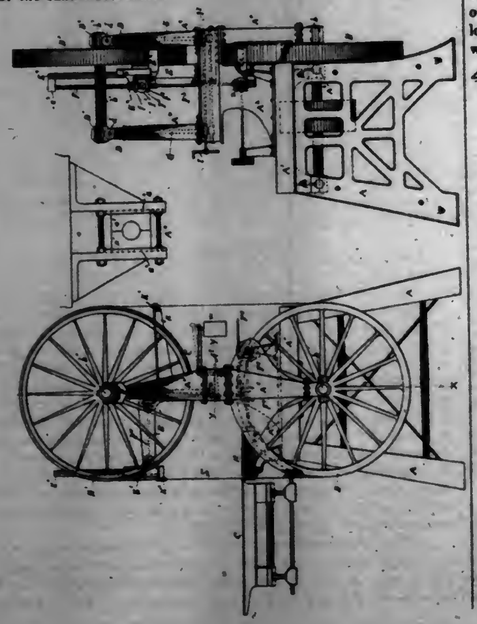
3. In a beverage-shaker, an eccentric and means for rotating the same, in combination with a yoke which is engaged by said eccentric and carries a vessel-holder, and is provided with a guiding-neck, substantially as described.

4. A beverage-shaker consisting of a frame, a rotary shaft having an eccentric mounted thereon, a yoke carrying a holder and embracing said eccentric, and a guiding-neck secured to said yoke, said parts being combined substantially as described.

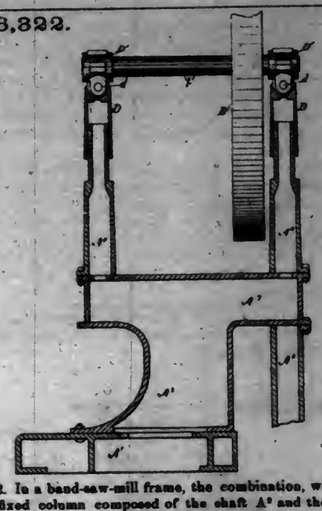
5. A beverage-shaker consisting of a frame, a rotary shaft with an eccentric mounted thereon, a yoke carrying a holder and having a neck with a slot, and a pin secured to the frame and entering said slot, substantially as and for the purpose set forth.

406,322. **BAND-SAW MILL.** WILLIAM M. WILKIN, Erie, Pa. Filed Dec. 17, 1888. Serial No. 293,965. (No model.)

Claim.—1. In a band-saw mill, the combination, with the supporting frame-work and husk or bed and the upper and lower band-wheels and shafts, of a T-shaped column A^3 A^2, which is mounted on said bed or husk and has one of its arms extended out between the two band-wheels in position to sustain the supports of the outer ends of the band-wheel shafts.



406,322.



2. In a band-saw-mill frame, the combination, with the base A', of a fixed column composed of the shaft A^2 and the cross-arm A^3, seated on said base, the outer hanger of the lower band-wheel depending from the lower side of the outer end of said cross-arm, and the posts which support the upper band-wheel mounted at the ends of said cross-arm.

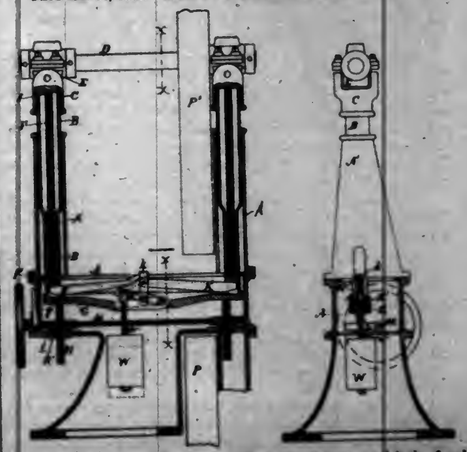
3. In a band-saw-mill frame, a column formed of the shaft A^2 and cross-arm A^3, cast in one piece, in combination with the posts A^4, mounted at each end of said cross-arm, and the hanger A^5, suspended from the lower side of the outer end of said cross-arm.

4. In a band-saw-mill frame, the combination, with the T-shaped column A^2 A^3, of the posts A^4 A^4, mounted on the ends of the cross-arm A^3, and the guide post and arm E, mounted also on the cross-arm of said column between said posts A^4 A^4.

5. In a band-saw-mill frame, the combination of a base-support A, a base A', a T-shaped column A^2 A^3, mounted on said base, an outer hanger A^5, depending from the cross-arm of said column, a shaft *b*, supported at its outer end by the said hanger A^5 and at its inner end by a hanger depending from said base A', and held against lateral vibration by a hanger A^6, having ways a^5, for vertically moving boxes *a'*, said hanger A^6 being between the outer hanger A^5 and the driving-pulley on said shaft and attached to said base.

6. In a band-saw mill, the combination of a fixed cross-arm extending out between the upper and lower band-wheels, a hanger A^5 on the outer end of said cross-arm, for supporting the outer end of the lower band-wheel shaft, and extensible supports for the upper band-wheel shaft mounted on the ends of said cross-arm.

406,323. **BAND-SAW MILL.** WILLIAM M. WILKIN, Erie, Pa. Filed Jan. 31, 1889. Serial No. 298,271. (No model.)



Claim.—1. In a band-saw mill, the combination, with the fixed frame-work A A' A', and the vertically-adjustable yoke G, contained within the frame-work A, of automatically extensible supports for

the upper band-wheel shaft contained with the frame-work A' A' and supported by said yoke.

2. In a band-saw mill, the combination, with the fixed frame-work A A', of the yoke or bar G, posts B, seated on said yoke, sliding caps C on said posts, boxes E on said caps, and screws H, for vertically moving said yoke or bar.

3. In a band-saw mill, the combination, with the fixed frame-work A A', of the yoke G, posts B, seated on said yoke, sliding caps C on said posts, boxes E on said caps, bars F within said posts B and supporting said caps, levers K, fulcrumed on said yoke and supporting said bars F, weight-lever K', fulcrumed on said yoke and connected with said levers K, and screws H, for vertically moving said yoke.

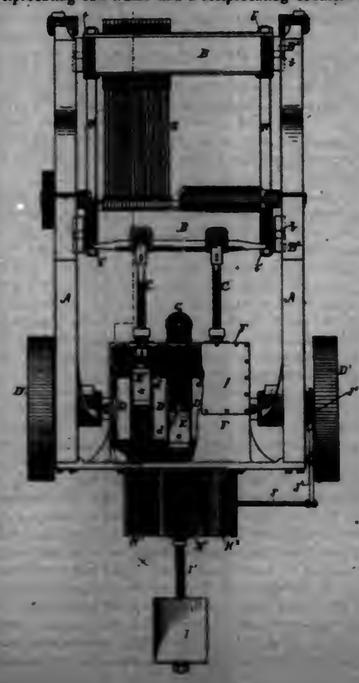
4. In a band-saw mill, the combination, with the hollow horizontal frame-piece A and the hollow vertical frame-pieces A', of the yoke G, contained within the frame-piece A, the posts B, contained within the vertical frame-pieces A' and resting on said yoke, a lifting apparatus supported by said frame-piece A, which vertically moves said yoke G and posts B, scale-gearing supported on said yoke, vertical bars F within said posts B, which are moved by said scale-gearing, sliding caps C on said posts B, which rest on said bars F, and boxes E, for the upper band-wheel shaft, supported by said caps.

406,324. **GANG-SAW MILL.** WILLIAM M. WILKIN, Erie, Pa. Filed Feb. 1, 1888. Serial No. 298,307. (No model.)

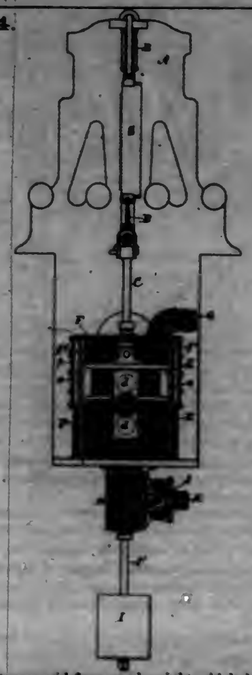
Claim.—1. In a gang-saw mill, the combination, substantially as described, of a reciprocating saw-frame, a reciprocating counter-balance, an intermediate crank-shaft having three cranks, the middle one of which stands opposite the others, three steam-engine cylinders, each of which is in line with one of the cranks of the crank-shaft, and the middle one of which moves opposite from the others, and connections, substantially as set forth, for actuating said reciprocating parts oppositely and rotating said crank-shaft from said steam-engine cylinders.

2. In a gang-saw mill, the combination, substantially as set forth, of a reciprocating saw-frame, a reciprocating counter-weight, an intermediate crank-shaft having three cranks, the middle one of which stands opposite the others, three steam-engine cylinders arranged so that their pistons will move vertically and placed each in line with one of the cranks of the crank-shaft, the middle one of which has its piston moving in opposition to the others, connecting-gearing, substantially as described, connecting the middle engine with the said counter-weight and the outer engines with the saw-frame, and yokes in each of said connections which engage the contiguous crank of the said crank-shaft.

3. In a gang-saw mill, the combination, substantially as set forth, of a reciprocating saw-frame and a reciprocating counter-weight, a



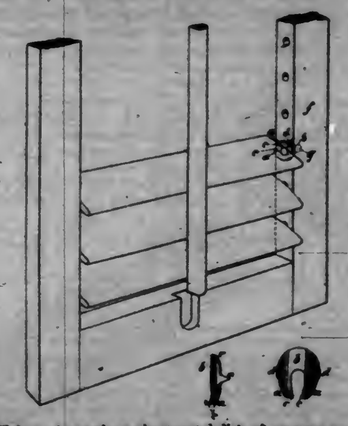
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crank-shaft between said frame and weight which has three cranks the middle one of which is opposite the others, connections, substantially as described, connecting the said outer cranks with the saw-frame and the inner crank with the counter-weight, and a direct-acting vertical steam-cylinder and piston acting upon one or more of said cranks.

4. In a gang-saw mill, the combination, with a reciprocating saw-frame, a reciprocating counter-weight, an intermediate crank-shaft, and a direct-acting steam-engine operating said parts, of an inclosing-box which forms a protecting and a lubricating chamber for the crank-bearings, substantially as shown.

406,325. **BLIND-STOP.** FREDERICK WHARF, New York, N. Y. Filed Feb. 6, 1889. Serial No. 298,908. (No model.)

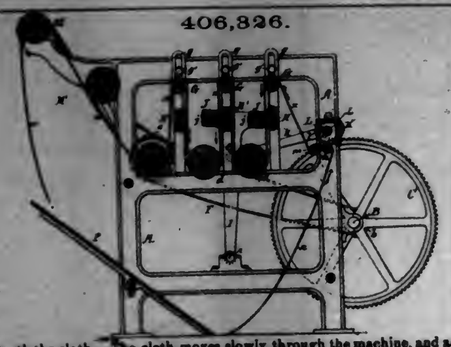


Claim.—A struck-up sheet-metal disk of concavo-convex shape *c*, having an opening *b*, with the ends or points *a a* approaching each other, for the purpose of retaining the disk on the trunnion of the slat, substantially as described.

406,326. **GIGGING-MACHINE.** CHRISTIAN WORLITZ, Philadelphia, Pa., assignor of one-half to Howard W. Harley and Joseph Brunner, same place. Filed Mar. 10, 1888. Serial No. 266,954. (No model.)

Brief.—The cloth itself engages the gigging-teeth, and not the

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teeth the cloth. The cloth moves slowly through the machine, and as the teeth strike the cloth the cloth continues its movement and engages the teeth, and as the latter pass away from the cloth they drag with them a portion of the fabric and form a nap thereon.

Claim.—1. The combination, in a gigging-machine, of a reciprocating frame carrying one or more gigging-bars with teeth upon their opposite sides, opposite padded backing-bars, and means for reciprocating said gigging-bars between the backing-bars, with feeding devices for carrying the cloth to be gigged through the machine, substantially as specified.

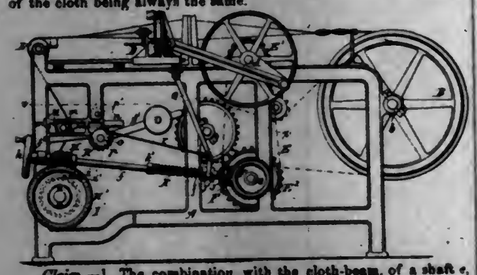
2. The combination, in a gigging-machine, of one or more stationary backing-bars, the reciprocating frame carrying one or more transverse bars of round or rectangular cross-section, said bars being provided with reserve gigging-teeth capable of adjustment to working position, means for reciprocating said frame, and feeding devices for carrying the cloth to be gigged through the machine, substantially as specified.

3. The combination, in a gigging-machine, of the stationary bars H H', guiding-rollers G and D, and the feed-roller E with a reciprocating gigging-frame having cross-bars J and teeth on the sides of the cross-bars opposite the stationary bars H H', with means for reciprocating the gigging-bar, all substantially as set forth.

4. The combination, in a gigging-machine, of the gigging-frame composed of bars H H' and the reciprocating gigging-frame, the guiding-rollers, and feed-rollers with a brush N, situated in the rear of the gigging-frame, and means to reciprocate said gigging-frame, substantially as and for the purpose set forth.

406,327. TAKE-UP MECHANISM FOR LOOMS. FREDERICK K. WRIGHT, Rochester, N. Y., assignor to the Steam Gauge and Lantern Company, same place. Filed July 26, 1887. Serial No. 245,182. (No model.)

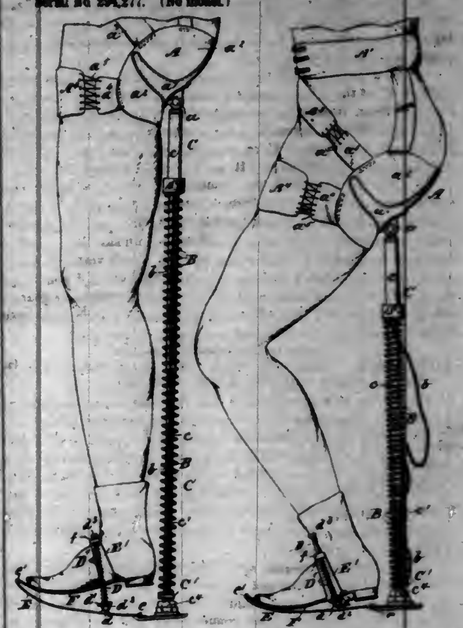
Brief.—As the amount of slack in the cloth varies, its tension, acting in opposition to the weighted lever, effects variations in the position of the tension-roller, which, through the connected devices, throws into and out of operation the actuating mechanism for the cloth-beam, which is in this manner intermittingly rotated, the tension of the cloth being always the same.



Claim.—1. The combination, with the cloth-beam, of a shaft *e*, from which the cloth-beam is rotated, a connecting-shaft *f*, geared with the cloth-beam, a clutch J J', applied to the shaft *f* and geared with the shaft *e*, a tension-roller M, movable bearings *m*, in which the tension-roller is journaled, means for moving the movable bearings, and a shaft *o*, geared with the bearings and connected with the clutch, substantially as set forth.

2. The combination, with the cloth-beam, of a shaft *e*, provided with gear-wheel F, a connecting-shaft *f*, geared with the cloth-beam, and provided with a gear-wheel F' and clutch J J', a tension-roller M, provided with movable bearings *m*, having rack-bars *n*, a shaft *o*, provided with gear-wheels *p*, weighted arm S, and pulley R, a clutch-lever Q, and a band *r*, connecting said lever with the pulley R, substantially as set forth.

406,328. APPARATUS TO FACILITATE WALKING AND RUNNING. NICHOLAS YAGN, St. Petersburg, Russia. Filed Dec. 21, 1888. Serial No. 294,277. (No model.)



Claim.—1. In an apparatus of the class described, a spring-support for the body and pivotal connections for connecting the opposite extremes of the support to the corresponding extremes of the legs, substantially as and for the purposes specified.

2. In an apparatus of the class described, a spring-support for each leg, comprising a telescopic standard, a power-spring having its extremes connected with the extreme sections of the standard, a seat or bearing for connecting the standard to the upper extreme of the leg, and a pivotal connection between the lower extreme of said standard and the foot, substantially as and for the purposes specified.

3. In an apparatus of the class described, a spring-support for each leg, comprising a telescopic standard, a seat or bearing for connecting the standard to the upper extreme of the leg, a pivotal connection between the lower extreme of the standard and the foot, a power-spring, a fixed abutment on the lower section of said standard for one end of the spring, a movable abutment for the opposite end of the spring on the upper section of the standard, and a lock for locking said abutment against motion, substantially as and for the purpose specified.

4. In an apparatus of the class described, a spring-support for each leg, comprising a telescopic standard, a seat or bearing for connecting the standard to the upper extreme of the leg, a pivotal connection between the lower extreme of the standard and the foot, a power-spring, a fixed abutment on the lower section of said standard for one end of the spring, a movable abutment for the opposite end of the spring on the upper section of the standard, a lock for locking said abutment against motion, and a connection between the movable abutments of the two standards operating to automatically lock and unlock the abutments in the act of walking, running, or jumping, substantially as described.

5. In an apparatus of the class described, the combination, with a spring-support for each leg, of a seat at one end thereof for attachment to the upper extreme of the leg, and a shoe at the opposite end of said support for attachment to the foot, substantially as described.

6. In an apparatus of the class described, the combination, with a spring-support for each leg, of a seat hinged at one end thereof for attachment to the upper extreme of the leg, and a shoe pivotally connected with the other end of said support and adapted to be attached to the foot, substantially as and for the purposes specified.

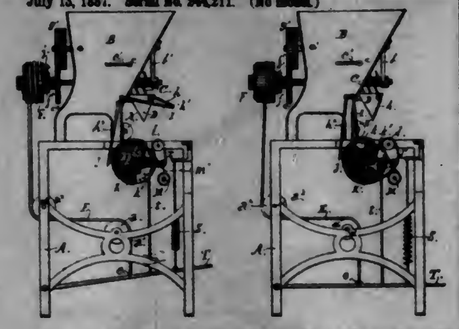
7. In an apparatus of the class described, the combination, with a spring-support for each leg, of a seat hinged at one end thereof for attachment to the upper end of the leg, a shoe articulated at the instep, and a universal joint between the heel of the shoe and the lower end of the support, substantially as and for the purposes specified.

8. In an apparatus of the class described, the combination, with a spring-support for each leg, a hinge-connection for attaching the upper end of said support to the upper extreme of the leg, a shoe pivotally connected with the lower end of the support, and an elastic foot-rest connected with the shoe, substantially as and for the purposes specified.

9. In an apparatus of the class described, the combination, with a spring-support for each leg, a connection for attaching the upper end thereof to the upper extreme of the leg, and a shoe articulated at the instep and pivotally connected with the support, of an elastic foot-rest consisting of a plate or sole articulated to the shoe at the toe, a stirrup connected with the foot-rest at the instep, and spring-bearings for said stirrup pivotally connected with the shoe, substantially as and for the purposes specified.

10. In an apparatus of the class described, the combination, with a spring-support for each leg, a connection for attaching the upper end thereof to the upper extreme of the leg, and a shoe articulated at the instep and pivotally connected with the support, of an elastic foot-rest consisting of a plate or sole articulated to the shoe at the toe, a stirrup connected with the foot-rest at the instep, and spring-bearings composed of a rod hinged to the shoe on opposite sides thereof, and springs mounted on said rods and supporting the stirrup, substantially as and for the purposes specified.

406,329. CIGAR-BUNCHING MACHINE. JOHN H. ABRAHAM, Lancaster, Pa., assignor to the Conestoga Cigar Company, same place. Filed July 13, 1887. Serial No. 244,211. (No model.)



Claim.—1. In a cigar-bunching machine, the combination, with the rotating cylinder having a recess formed in its side, a spring-actuated roller, cords extending therefrom, and the apron to which the cords are attached, whereby the slack of the apron is drawn down into the recess to form a pocket, substantially as set forth.

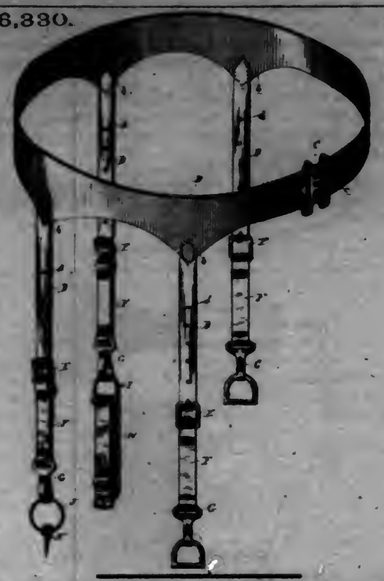
2. The combination, in a cigar-bunching machine, of the apron, the cylinder or surface upon which the apron is placed, and which is provided with a recess, a spring-actuated roller, and guiding-rollers for the belt and cords, which are attached to opposite edges of the apron, so as to draw its slack down into the recess to form a pocket, substantially as shown.

3. In a cigar-bunching machine, the combination of the hopper and the chute having a wicket with the rotating cylinder having a recess formed in its side, the apron, and a spring-actuated roller, cords extending from the roller and connected to opposite edges of the apron, whereby the slack of the apron is drawn down into the recess to form a pocket, substantially as described.

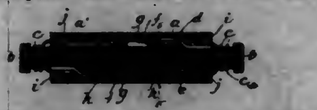
4. In a cigar-bunching machine, the combination, with the surface on which the bunch is rolled, said surface having a recess formed therein, of the apron and the cords fastened to said apron, and having a spring attachment whereby the apron is drawn down into the recess to form a pocket.

5. In a cigar-bunching machine, the combination, with the surface upon which the bunch is rolled, and which is provided with a recess which extends across its surface, of the apron and a spring attachment whereby the apron is drawn down into the recess to form a pocket, substantially as shown.

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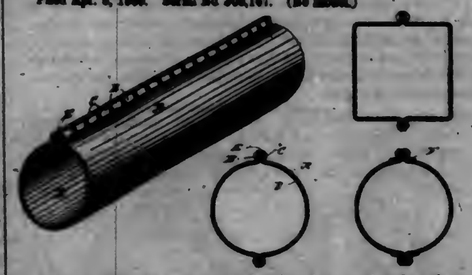
406,331. ELECTRIC COUPLING AND CIRCUIT-CLOSER. WILLIAM H. BAKER, Chicago, Ill. Filed Mar. 22, 1888. Serial No. 304,066. (No model.)



Claim.—1. An electrical coupling and circuit-closer for electric wires of cars, consisting of two similar shells *a a'*, each comprising the core *b*, having the conducting-pin *h* passing transversely through it, the projecting bar *c*, secured to one side of the core and having a notch *f*, and the spring-bar *d*, secured to the opposite side of the core and having a projection *g*, for engaging a notched bar, said spring-bar serving to lock the coupling-sections together and also to rest upon and make the electrical connection with the pin when the sections are separated, substantially as described.

2. An electric coupling and circuit-closer for electric wires of cars, consisting of two similar shells *a a'*, adapted to abut at their adjacent ends and each comprising a central core *b*, having its opposite sides longitudinally cut away or grooved and terminating flush with the inner end of its shell, an oblique conductor-pin *h*, passing transversely through the core, the bar *c*, secured in one cut-away or grooved side projecting beyond the core and provided with a notch *f*, and the spring-bar *d*, secured in the cut-away or grooved part of the core directly opposite the notched bar, serving to rest on the conductor-pin to close the circuit, and having the projection *g* to engage a notched bar, substantially as described.

406,332. PIPE OR TUBE. JAMES C. BAYLIS, New York, N. Y. Filed Apr. 6, 1888. Serial No. 269,167. (No model.)



Claim.—1. A pipe composed of a sheet-iron section shaped into cylindrical form with outwardly-projecting flanges along its opposite longitudinal edges, and a sheet-lead section similarly shaped and arranged within the sheet-iron section, with its flanges brought together face to face and secured to and between the flanges of the iron section.

406,330. CHILD'S CARRIAGE ATTACHMENT. PAULINE AMSTIL, Brooklyn, N. Y. Filed Mar. 21, 1888. Serial No. 268,182. (No model.)

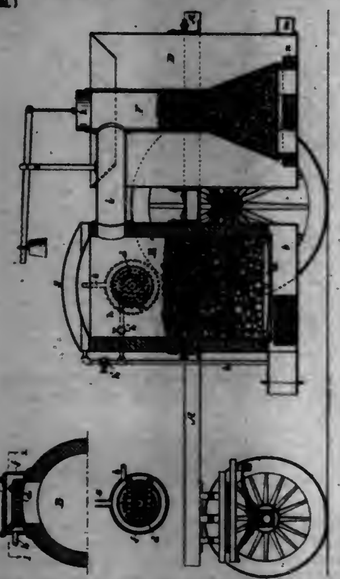
Claim.—1. An attachment for children's carriages, consisting of the belt B, having points *b*, a buckle C, and the front and rear straps connected to the points *b* and each having a snap-hook at its free end, substantially as described.

2. The combination, with a child's carriage provided with rings permanently attached thereto, of the belt B, having straps D attached to its front and rear, adjusting-buckles E, short straps attached to said buckles, and snap-hooks G, whereby the child may be secured, whether sitting or reclining, all substantially as shown and described.

2. A pipe composed of two or more sheet-iron sections, each shaped into the partial form of the pipe, with outwardly-projecting flanges at their longitudinal edges and provided with a sheet-lead lining, the sections being arranged in pipe form and their flanges secured together.

3. A pipe composed of sections of sheet-iron shaped longitudinally into pipe form and secured together along their longitudinal edges, and having a sheet-lead lining which is secured to the iron sections at their seams.

406,333. APPARATUS FOR MELTING SNOW AND ICE. WILLIAM BURGESS, Philadelphia, Pa. Filed Jan. 3, 1889. Serial No. 295,906. (No model.)



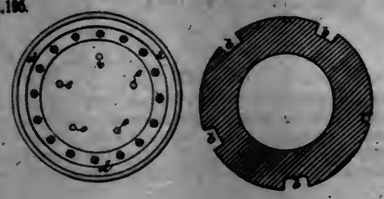
Claim.—1. The combination, in a snow-melting device, of the wheeled frame, the furnace or gas-generator, and snow-receiving tank carried by said wheeled frame, and a secondary furnace located within said tank and communicating with the main furnace or gas-generator, said secondary furnace extending down into the lower portion of the snow-receiving tank and having an opening through which fuel can be introduced, substantially as specified.

2. The combination of the wheeled frame and the gas-generator and snow-receiving tank mounted thereon, with a gas-distributer located within the tank and communicating with the gas-generator, said distributer having an upright conical and perforated lower portion, whereby the snow is supported and the gas directed upwardly and outwardly through the same, substantially as specified.

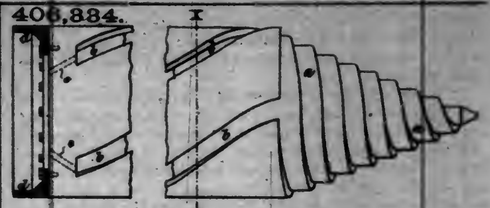
3. The combination of the wheeled frame, the snow-receiving tank, the furnace having a gas-distributing pipe in said tank, the closing door for the feed-opening of the furnace, the casing inclosing said door and forming an air-chamber, and means for supplying air to said chamber, substantially as specified.

4. The combination of the wheeled frame, the snow-receiving tank, the furnace having a gas-distributing pipe in said tank, the fire-door, the air-chamber surrounding the same, the chambered cap or cover, the closed ash-pit, and a communication between said ash-pit and the chambers around the fire-door and within the cap or cover, substantially as specified.

406,334. PROJECTILE. RICHARD CAIL, Newcastle-upon-Tyne, County of Northumberland, England. Filed Jan. 30, 1888. Serial No. 262,663. (No model.) Patented in England Dec. 16, 1886, No. 16,542; in France Feb. 21, 1887, No. 181,682, and in Germany Mar. 2, 1887, No. 41,195.



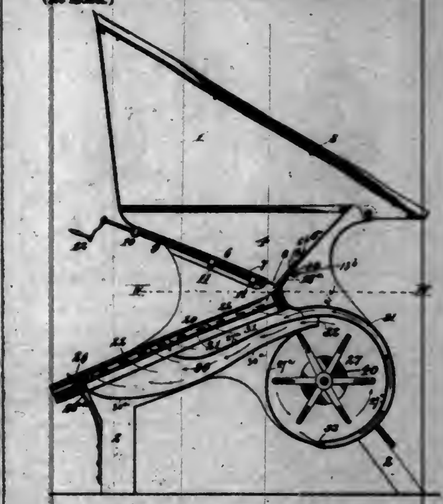
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Claim.—1. A projectile having a spiral groove with an annular cutting or boring edge extending circumferentially around the nose, substantially as hereinbefore set forth.

2. A projectile provided with an annular recessed gas-check at its rear, and having upon or near its surface helical grooves or tubes registering with the recess in the annular gas-check, the ends of said helical grooves or tubes being open, so as to allow the powder-gases to pass through them to rotate the projectile, substantially as hereinbefore set forth.

406,335. DRY-ORE CONCENTRATOR. GUSTAVE T. GRANQUIST, St. Louis, Mo., assignor to the Sonora Mining and Dry Concentrator Company, East St. Louis, Ill. Filed Dec. 4, 1888. Serial No. 292,670. (No model.)



Claim.—1. In an ore-concentrator, the combination, with an inclined ore-bed, of upper flue 31, beneath the upper portion of the ore-bed, a lower flue 30, beneath the lower portion of the ore-bed and beneath the upper flue and of larger size than the latter, and a fan producing air-currents through the flues, substantially as described.

2. In an ore-concentrator, the combination, with an inclined ore-bed, of the fan, the lower flue 30, having an opening 32 into the fan-chamber and a base-plate 30ª curved downwardly from the top of the fan-chamber to the lower end of the ore-bed, the upper flue 31, having an opening 33 into the fan-chamber, and an outer plate 31ª, curved upwardly from the base of the fan-chamber, around and over the latter to the upper end of the ore-bed, and the intermediate plate 27ª, extending from the middle portion of the ore-bed to and around the fan and forming the fan-chamber, substantially as described.

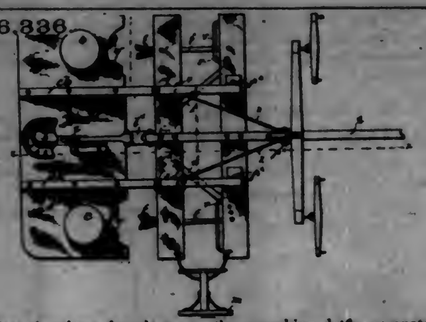
3. In an ore-concentrator, the combination of an ore-bed resting on an inclined support and having pins 26, and springs 26ª, adapted to engage said pins and hold the bed on its support, substantially as and for the purpose set forth.

406,336. PLANT-SETTING MACHINE. NOAH M. CREW, Southport, Ind. Filed Feb. 16, 1889. Serial No. 300,376. (No model.)

Claim.—1. A plant-setting machine comprising a working-platform mounted upon brackets carrying a pair of covering-wheels on each side, a forward section beneath which are secured furrow-marking plows on each side hinged to cross-bars connected with the rear platform and also to a link pivoted to a lever carried upon the rear platform, each platform cut out on either side above the covering-wheels, with means for raising and lowering the front part of the machine from the rear part thereof, substantially as shown and described.

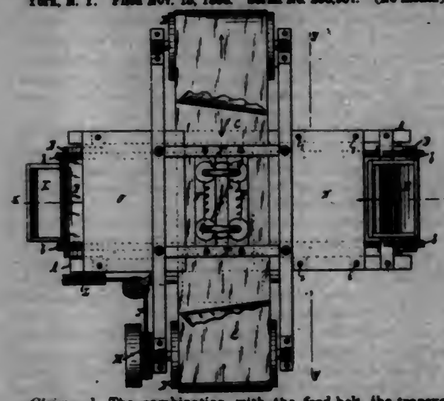
2. A plant-setting machine whose frame-work is composed of two

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sections hinged together, the rear section, a working-platform mounted on pairs of covering-wheels and providing seats for the workmen, a ratchet-lever mechanism secured thereto and connected to the forward section, furrow-plows secured beneath the latter, a box for holding the plants thereon, and a guide-marker for centering the next series of rows connected to one side thereof, all combined substantially as shown and described.

406,337. MAGNETIC SEPARATOR. GORDON COMBLING, Glens Falls, assignor to the Combling Ore Dephosphorizing Company, New York, N. Y. Filed Nov. 15, 1888. Serial No. 290,907. (No model.)



Claim.—1. The combination, with the feed-belt, the transverse belt, and the magnet or magnets contained in said transverse belt, of a cover extending over the feeding-section of the feed-belt, substantially as described.

2. The combination, with the feed-belt, the transverse belt, and the magnet or magnets contained in said transverse belt, of a cover extending over the feeding-section of the feed-belt and beneath the edge of the transverse belt, substantially as described.

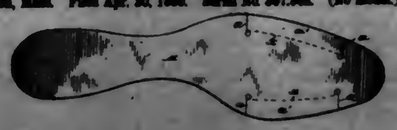
3. The combination, with the feed-belt, the transverse belt, and the magnet or magnets contained in said transverse belt, of two covers, one extending over the feeding-section and the other over the discharge-section of the feed-belt, substantially as described.

4. The combination, with the feed-belt, the transverse belt, and the magnet or magnets contained in said transverse belt, of two covers, one extending over the feeding-section of the feed-belt and beneath the edge of the transverse belt and the other extending over the discharge-section of the feed-belt and over the edge of the transverse belt, substantially as described.

5. The combination, with the feed-belt, the transverse belt, and the magnet or magnets contained in said transverse belt, of a cover provided on its under surface with flanges and extending over the feeding-section of the feed-belt, substantially as described.

6. The combination, with the feed-belt having raised rims at its edges, and with the transverse belt and the magnet or magnets contained in the transverse belt, of a cover provided with flanges n n and extending over the feeding-section of the feed-apron, substantially as described.

406,338. LASTING BOOTS AND SHOES. WILLIAM C. CRESS, Boston, Mass. Filed Apr. 30, 1888. Serial No. 307,962. (No model.)



406,338.



Claim.—1. The described improvement in the manufacture of boots and shoes, consisting in slitting the inner sole at the points *a* to form side flaps *a'* along the ball portion, placing the sole thus prepared flat upon the last, lasting the upper to the inner sole, as described, so that the flaps *a'*, although unturned and extended upon the last and overlapped by the upper, shall not be attached thereto, then laying the outer sole, next removing the shoe from the last and sewing the outer sole to the shoe, first lifting and turning back the flaps *a'* from the upper, so that the stitches at these points shall pass through the upper and outer sole only, and then turning down the flaps again into place, all substantially as hereinbefore set forth.

2. In the manufacture of boots and shoes, the method of securing the shank and forward portion of the upper to the slitted inner sole, which consists in attaching the shank and toe portions of the upper to the inner sole by lasting-tacks and lasting the intermediate portion of the upper to the portion of the inner sole included between the slits by cords or strings, substantially as and for the purposes hereinbefore set forth.

3. In the manufacture of boots and shoes, the method of holding the upper to the ball portion of the slitted inner sole, consisting in permanently securing the upper to the said portion of the inner sole along lines back of the flaps of the inner sole and back of the lines upon which the outer sole is afterward sewed to the upper, and then laying the outer sole and sewing it throughout the ball portion of the shoe to the upper only, the flaps of the slotted inner sole being turned back during this operation, substantially as set forth.

406,339. COMBUSTIBLE SUBSTANCE. MOSES H. DAY, Brookline, Mass. Filed Mar. 12, 1888. Serial No. 267,095. (No specimens.)

Claim.—A combustible substance consisting of a base of ordinary merchantable fuel impregnated with a chemical salt in a crystalline or anhydrous state, which, when acted upon by fire, in the destruction of the base by fire, will give a distinctive color to the flame produced, substantially as set forth.

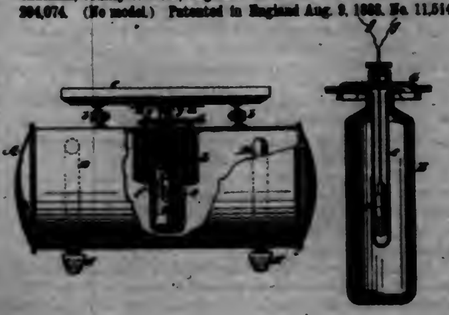
406,340. PINCUSHION. WILLIAM O. DAY, Seneca Falls, N. Y. Filed Oct. 10, 1887. Renewed May 16, 1889. Serial No. 311,006. (No model.)



Claim.—1. In a pincushion, the combination of a cup having a base 2 and a body 1, the filling 4, a cover 6 to the body, and the band 7, having the flange 8, substantially as described.

2. In a pincushion, the combination of a cup having a base 2, formed with a rabbet 3, and a cylinder 1, seated on the base, the filling 4, a cover 6, and the band 7, having the flange 8, substantially as described.

406,341. ELECTRICAL FIRE-EXTINGUISHER. THOMAS R. DOUSE, Chatham, County of Kent, England. Filed Dec. 19, 1888. Serial No. 294,074. (No model.) Patented in England Aug. 9, 1888, No. 11,514.



Claim.—In an electrical fire-extinguisher, the combination of an alkali-containing vessel A, having tubes D projecting therefrom and provided on their exposed ends with spray-nozzles E, a screw-cap G, inserted in the upper part of said vessel and provided with a clip *d*, an acid-containing bottle suspended from the clip *d* within said vessel, a tube *c*, extending into and sealing the bottle, a detonator *f*, placed in said tube, and an electric circuit including the detonator, substantially as described.

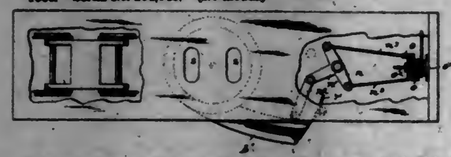
406,842. GAME-BOARD. JAMES H. DUMONT, Kingston, N. Y. Filed Mar. 7, 1889. Serial No. 302,265. (No model.)



Claim.—1. The combination, in a game-board, of the sections A and B, hinged to each other, one of said sections being adapted to be maintained in a vertical position when the other section is inclined, brackets *c c* and *d*, secured to the vertical board, and an inclined screen *e*, secured above the central bracket and beneath an opening in the board, substantially as shown.

2. The combination, in a game-board, of the sections A and B, suitably connected to each other, so that one section may be maintained in a vertical position while the other is inclined, the vertical section being provided with brackets *c c* and *d*, a screen *e*, and an opening above said screen, the section A having its surface divided into sections, the section near the vertical board having an opening *a*, the sections, openings, and brackets being provided with numbers or marks indicative of value, substantially as shown, and for the purpose set forth.

406,843. APPARATUS FOR TRANSFERRING PACKAGES TO MOVING CARS. WILLIAM H. ELLIOT, Brooklyn, N. Y. Filed Nov. 26, 1888. Serial No. 291,943. (No model.)



Claim.—1. A train-receiver consisting of a car provided with a receiving-chamber below the floor of the same and an entrance-spout leading to said chamber, substantially as described.

2. A train-receiver consisting of the combination, with a suitable car or truck, of a circular chamber or receptacle below the floor of the car and a mouth or entrance-spout leading to said chamber, substantially as described.

3. A train-receiver consisting of the combination, with a suitable car, of a chamber below the floor of the car and a movable entrance-spout, substantially as described.

4. A train-receiver consisting of the combination, with a suitable car, of a chamber below the floor of the car, a movable entrance-spout, and a stationary cover for capping said spout, substantially as described.

5. In a car for receiving packages while in motion, the combination of a chamber below the floor of the car, a floor provided with an opening leading from said chamber, and an entrance-spout leading to said chamber, substantially as described.

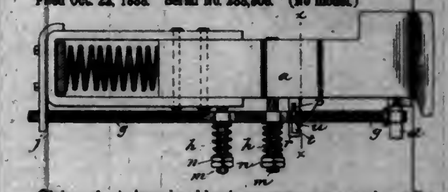
6. In a car for receiving packages while in motion, the combination of an entrance-spout leading to a chamber, a chamber below the floor of the car, a floor having an opening leading from the chamber to the interior of the car, and a trap-door for closing the opening, substantially as described.

7. In a car for receiving packages while in motion, and having a truss, substantially as described, a chamber below the floor of the car, and an entrance-spout leading through the truss to the chamber, substantially as described.

8. In a car for receiving packages while in motion, and having a truss, substantially as described, a chamber provided with a spherical bottom and arranged below the floor of the car, and an entrance-spout leading through the truss to said chamber, substantially as described.

9. The combination of a package-receiver, a vibratory entrance-spout, and means for operating said spout, consisting of a crank-lever, a link for connecting the lever and the spout, a drum or windlass, and rope or cord for connecting the drum and lever, substantially as described.

406,844. CAR-COUPLING. EBENEZER FERRIS, Manchester, N. H. Filed Oct. 22, 1888. Serial No. 288,806. (No model.)



Claim.—1. A draw-head having a spring-supported coupling-pin adapted to move vertically into the link-receiving chamber from below, and provided with shoulders *f f*, whereby it is adapted to support the link, as set forth.

2. The combination of a draw-bar, a coupling-pin adapted to move vertically into the link-receiving chamber thereof from below, the rod *g*, engaged at its forward end with said pin and fulcrumed at its rear end, an operating-lever extending across said rod and adapted to depress the same, and one or more independent springs supported by the draw-bar, and arranged to support said rod and pin and to hold the rod in contact with the operating-lever, as set forth.

3. The combination of a draw-bar, a coupling-pin adapted to move vertically into the draw-bar from below, a spring-supported rod *g*, supporting said pin, a transverse lever *p*, extending across said rod to both sides of the car, and two fulcrums for said lever at opposite sides of the draw-bar, as set forth.

4. The combination of a draw-bar, a coupling-pin adapted to move vertically into the draw-bar from below, a spring-supported rod *g*, supporting said pin, a transverse lever *p*, extending across said rod to both sides of the car, two fulcrums for said rod, and stops or shoulders *u u* below said fulcrums, whereby the lever may be locked or held with either end depressed, as set forth.

5. The combination of the draw-bar, the coupling-pin, the rod *g*, supporting said pin and fulcrumed at its rear end, the bolts *m*, engaged with the draw-bar and projecting downwardly therefrom, the springs *h*, supported by said bolts and supporting the rod *g*, and the operating-lever *p*, whereby said rod with the coupling-pin may be depressed, as set forth.

406,845. REFRIGERATIVE APPARATUS. PHILANDER R. GRAY and PHILANDER R. GRAY, Jr., Elizabeth, N. J. Filed May 10, 1888. Serial No. 273,490. (No model.)

Claim.—1. The combination, with the circulating-pipes and essential apparatus of an evaporation and absorption refrigerative system, of a still having a removable shell, a fixed base, multiple steam-coils arranged within the still and supported by the base, and pipe-connections extending laterally through the fixed base by which the pipe-coils are connected with the steam supply and discharge pipes, substantially as set forth.

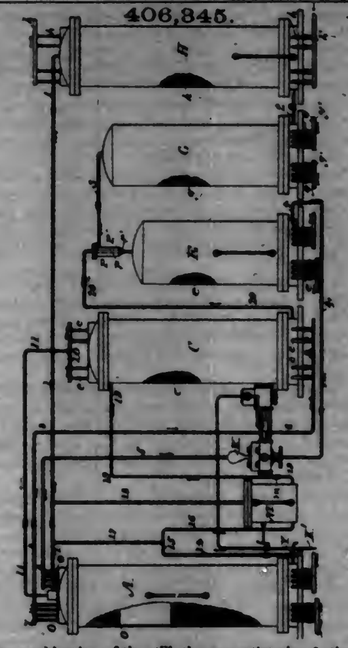
2. The combination of the still having a removable shell, a fixed base, independent multiple steam-coils arranged within the still upon the base, pipe-connections which connect each coil with steam supply and discharge pipes and extend laterally through enlarged openings in the base, packing-rings a^2, arranged in said openings and embracing the pipes, and a gland or follower, substantially as set forth.

3. The combination of the fixed base of the still, the steam-coils, the removable shell, the removable cover, and the aqueous-vapor-condensing coils carried by the cover and removable therewith, substantially as set forth.

4. The combination of the still, its cover, the concentrically coiled aqueous-vapor-condenser coils arranged in the top of the still, through which the cold strong ammonia passes, the pipe 8, leading the strong ammonia from said coils to the exchanger, and the pipes 11 and 12, returning the strong ammonia from the exchanger into the still, the latter extending down into the still through the center of said coils, substantially as set forth.

5. The combination of the fixed still-base, the independently-removable multiple steam-coils arranged upon the base, the removable shell, the removable cover, and the independently-removable multiple aqueous-vapor-condenser coils carried by the cover and all removable therewith, substantially as set forth.

406,845.



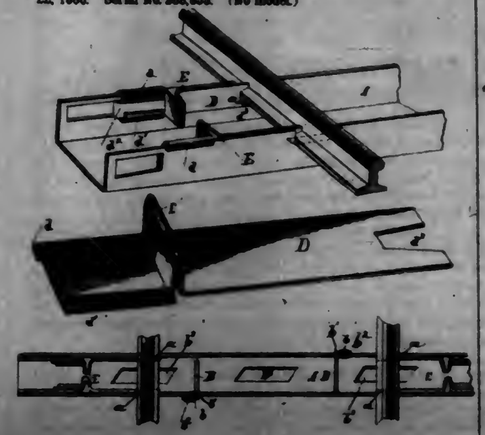
6. The combination of the still, the gas-outlet pipe 1, the weak-ammonia-discharge pipes 14, 15, and 16, the regulator M, and the pressure-equalizing pipes 17 and 18, extending, respectively, from the gas-outlet pipe 1 to the pipe 15 and from the gas-outlet pipe to the regulator, substantially as and for the purpose set forth.

7. In an absorption refrigerative system, the combination of the still and circulating pipe system, the regulator through which the weak ammonia passes on its way from the still, the float therein, a pressure-equalizing pipe-connection connecting the interior of the regulator with the top of the still, the pump for supplying strong ammonia to the still, its steam-supply pipe and valve, and connections between the float and valve, whereby the speed of the pump is regulated by the level of the weak ammonia in the regulator.

8. The combination, in the regulator, of the hollow float, the pipe-guide N, and the pipe 18, in which it works, connected with the gas-outlet pipe leading from the still, substantially as set forth.

9. The combination of multiple pipe-coils, a base having a fixed bottom upon which the pipe-coils rest, and lateral openings through which the ends or inlet and outlet connections of each coil pass, inlet and outlet manifolds with which the ends of the coils are connected outside of the still, and the detachable removable shell enveloping the coils and supported upon the base.

406,846. RAILROAD-TIE. LEVI HAAS, Chester, Pa. Filed Oct. 22, 1888. Serial No. 288,633. (No model.)



Claim.—1. As an improvement in metallic railroad-ties, the tie having bracing or strengthening arms formed with one side and removably connected to the opposite side, substantially as described.

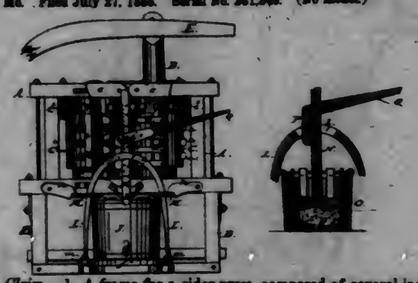
2. As an improvement in metallic railroad-ties, the tie having the arms struck from opposite sides thereof, and the lips for securing the ends of said arms, substantially as described.

3. The tie having the plates D secured thereto for clamping a rail, substantially as described.

4. As an improvement in railroad-ties, the plate D, having a groove or recess in its end, and the spring for holding the same against the rail, substantially as described.

5. The tie having short arms struck therefrom, in combination with the adjustable plate having lips for securing the same in place, and provided with a U-shaped spring or bend and recessed ends, substantially as described.

406,847. CIDER MILL AND PRESS. JOSEPH G. HARRIS, Sedalia, Mo. Filed July 27, 1888. Serial No. 281,249. (No model.)



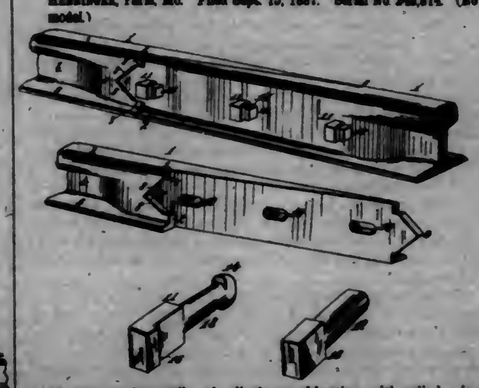
Claim.—1. A frame for a cider-press, composed of several independent sections formed of slats and cleats to hold them together and provided with a hook *k'*, in combination with a tub which, when the several sections are in place, holds them together, as and for the purpose set forth.

2. The combination, with the press-bail hooked to the base of the press, provided with a slot in its crown, and a post *p*, secured in said slot, of the press-lever pivoted to said post *p*, the upright perforated bar provided with a pin for a fulcrum, the platen for the pomace, and the base of the press provided with staples for the bail, as and for the purpose specified.

3. The combination, with the mill-frame, the bail for the press, and bar N, of catches M and *n* and the base for the tub provided with staples, as and for the purpose set forth.

4. The combination, with the mill having vertically-arranged cylinders geared together with meshing gear-wheels and provided with feed-teeth on the one and indentations on the other, the lever-sweep fixed upon the shaft of one of said cylinders, the feeding-gate, and scrapers, substantially as described, of the press consisting of a frame formed as described and fitting in a half-barrel, as described, the upright perforated bar N, provided with fulcrum-pins, the press-lever provided with notches and pivoted in post *p*, the bail L, provided with hooks on its ends and a slot in its crown, the platen O, and the base for the half-barrel provided with staples to receive the hooks of the bail, all arranged substantially as and for the purpose set forth.

406,848. RAILROAD-RAIL COUPLING AND BOLT. DAVID P. HENNINGER, Paris, Mo. Filed Sept. 15, 1887. Serial No. 249,814. (No model.)

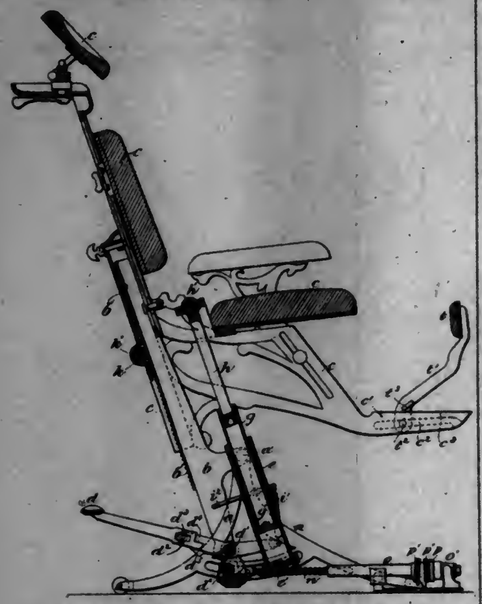


Claim.—1. In a railroad-rail, the combination, with rails having beveled and interlocking ends and provided with horizontally-elon-

gated bolt-holes 10, of the double-headed bolts 11, having cylindrical shanks 13 and shoulders 15, and the locking-pins 12, having square heads to engage the shoulders on the bolts, substantially as described.

2. In a railroad-rail joint, the combination, with the rails having beveled ends, as shown, provided with shoulders 2, recesses 6, and corresponding projections 9, said beveled rails being provided with horizontally-elongated bolt-holes 10, of the double-headed bolts 11, having cylindrical shanks 13 and shoulders 15, and the locking-pins 12, having square heads 16 to engage the shoulders on the bolts, substantially as described.

406,349. DENTAL CHAIR. DUNCAN D. HEPBURN, London, and EDWARD GARDNER, Cornbrook, Manchester, England. Filed Nov. 26, 1888. Serial No. 291,850. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of a chair-support, a lifting-treadle, a series of hydraulic rams all mounted on the lifting-treadle, and a chair-body mounted on one of the rams.

2. The combination, substantially as hereinbefore set forth, of a chair-support, a lifting-treadle, its pivot on the chair-support, a series of interposed hydraulic rams mounted on the treadle-lever, and a chair-body mounted on one of the rams, which are successively operated to lift the chair-body by a step-by-step movement.

3. The combination, substantially as hereinbefore set forth, of a chair-body, a series of hydraulic rams supporting it, and a lifting-treadle on which the rams are mounted and which lifts the chair-body by reciprocating one of the rams relatively to the others.

4. The combination, substantially as hereinbefore set forth, of a chair-body, a hydraulic elevating apparatus supporting it, a store-vessel connected with the elevating apparatus, and a lifting-treadle supporting both the elevating apparatus and store-vessel.

5. The combination, substantially as hereinbefore set forth, of a chair-body, hydraulic elevating-rams, on one of which it is mounted, a store-vessel connected with the rams, a self-closing inlet-valve and an outlet-valve between the store-vessel and rams, and a lifting-treadle on which the chair-body, rams, and store-vessel are mounted.

6. The combination, substantially as hereinbefore set forth, of a chair-body, hydraulic rams supporting it, a store-vessel connected therewith, an escape-valve between the rams and store-vessel, a lever on the valve-stem, a lifting-treadle supporting and actuating the rams, and a spring connecting the valve-lever and treadle normally to hold the valve closed.

7. The combination, substantially as hereinbefore set forth, of a chair-support, a chair-body, a series of telescopic rams, on one of which it is mounted, a store-vessel surrounding the rams, separate inlet and outlet valves for the outer cylinder, a combined self-acting inlet and outlet valve for the inner cylinder, and a lifting-treadle pivoted on the chair-support, on which treadle the chair-body, rams, and store-vessel are mounted.

8. The combination, substantially as hereinbefore set forth, of a chair-support, a chair-body, a solid ram or plunger on which it is mounted, a hollow ram inclosing the plunger, an outwardly-closing self-acting inlet-valve in the hollow ram, a reciprocating cylinder inclosing this ram, a store-vessel, an outwardly-closing self-acting inlet-valve, a separate outlet-valve the opening of which causes the descent of the inclosed hollow ram, the opening of its valve, and the descent in turn of the plunger and chair-body, and a lifting-treadle and its pivots on the supporting-frame, on which lifting-treadle the rams, store-vessel, and chair-body are mounted.

9. The combination, substantially as hereinbefore set forth, of a chair support or frame, a chair-body movable vertically thereon, an automatic locking device on the frame adapted to hold the chair-body at any desired elevation, hydraulic apparatus supporting the chair-body, and a lifting-treadle which lifts both the hydraulic apparatus and chair-body.

10. The combination, substantially as hereinbefore set forth, of a chair support or frame, a chair-body movable vertically thereon, an automatic locking device adapted to hold the chair-body at any desired elevation, a lifting-treadle, and telescopic hydraulic rams supporting and lifting the chair-body and supported and actuated by the lifting-treadle.

11. The combination, substantially as hereinbefore set forth, of a chair-support, a chair-body movable vertically thereon, an automatic locking device on the chair-support adapted to hold the seat at any desired elevation, a plunger supporting the seat, a reciprocating hydraulic cylinder actuating the plunger, and a lifting-treadle supporting and actuating the cylinder.

12. The combination, substantially as hereinbefore set forth, of a chair-support, a chair-body movable vertically thereon, an automatic locking device on the chair-support adapted to hold the seat at any desired elevation, a plunger supporting the seat, a hollow ram inclosing the plunger, a reciprocating hydraulic cylinder inclosing and actuating the ram and plunger with a step-by-step movement, and a lifting-treadle supporting and actuating the hydraulic cylinder.

13. The combination, substantially as hereinbefore set forth, of a base frame or standards, a chair support or frame pivoted thereon, mechanism for adjusting the angle of inclination of the chair-support, a chair-body movable vertically on the frame, a lifting-treadle pivoted on the chair-support, and telescopic hydraulic apparatus supporting and actuating the chair-body and supported and actuated by the lifting-treadle simultaneously to adjust all these parts as the inclination of the chair is varied.

14. The combination, substantially as hereinbefore set forth, of the base-frame, its standards, a chair-support, its intermediate transverse pivots on the standards, a longitudinal male screw pivoted to the chair-support, an inclosing female screw journaled in the base-frame, and its ratchet-gear and actuating-pawl to adjust and hold the chair-support at any desired inclination.

15. The combination, substantially as hereinbefore set forth, of a base-frame, a chair-support pivoted therein, a compound or telescopic adjusting-screw pivoted at one end to the chair, longitudinal male screw pivoted on the chair-support and inclosing female screw journaled in the base-frame, a ratchet-gear on the screw, a double-acting transverse pawl-lever journaled on the screw, and double-acting lifting-springs, so that the lever may be reversed and worked from either side of the chair to vary the inclination of the chair-support.

406,350. MOLD OR OUTSIDE RING FOR POTTERY. SAMUEL P. JACKSON, East Liverpool, Ohio, assignor to Homer Laughlin, same place. Filed Mar. 7, 1889. Serial No. 302,290. (No model.)



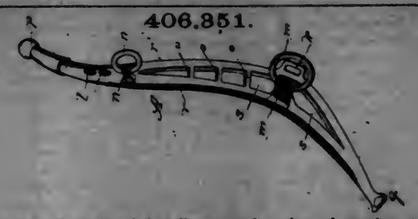
Claim.—1. In combination with a lathe head or table, a socket-bed attached thereto and provided with raised walls, a removable ring adapted to encircle the socket-bed and form a continuation thereof, and a mold constructed to have a bearing in and on the socket-bed and upon the removable ring, substantially as shown, and for the purpose set forth.

2. In combination with a head or rotary disk A, having a socket-bed attached thereto, a removable ring C, having interior wall adapted to fit over the exterior wall of the socket-bed, said ring being cut away at opposite points to be of less diameter than the mold, and a mold D, having the base shaped to fit within the inner walls of the socket-bed and also bear upon the upper faces of said socket-bed and ring, substantially as shown, and for the purpose set forth.

406,351. HAME. WILLIAM V. KAY, Chicago, Ill. Filed Sept. 4, 1888. Serial No. 284,837. (No model.)

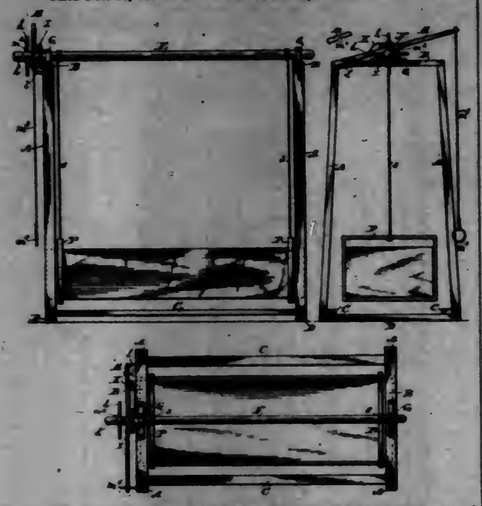
Claim.—A skeleton hame comprising the section r, a brace r', extending along the outer side of the said section from between one

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extremity thereof and the adjacent stud or place of attachment for the tug or trace to near the opposite extremity and affording a space *s*, and strengthening-rib *o*, connecting the section r and brace r' across the space *s*, substantially as described.

406,352. WAGON-BODY LIFTER. ROBERT L. KEITH, Brazil, Ind. Filed Feb. 20, 1889. Serial No. 300,569. (No model.)

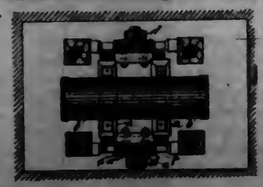


Claim.—A wagon-body lifter consisting of the frame composed of the uprights and cross-piece A B, side and end pieces C D, in combination with a single windlass F on the top of the frame, the handles, brackets G, secured to the cross-piece B, and in which the said windlass is journaled, the ratchet I, secured to the said windlass F, and pawl K, pivoted to the top cross-piece B, the hanging frames P P, composed of upright and cross pieces and adapted to extend under the wagon-body and up its sides, cords supporting said frames from the windlass, and the brake M, pivoted to a bracket on cross-piece B and provided with a groove *m'*, to close upon the said windlass F, and with a cord and handle with which to operate it, substantially as described.

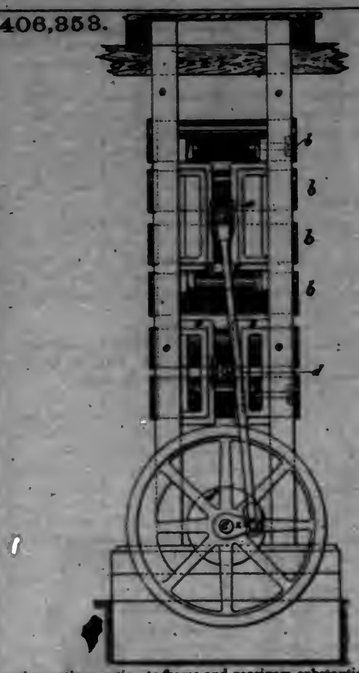
406,353. APPARATUS FOR PRODUCING SHOT. FRANZ A. KÖHLER, Smichow, near Prague, Austria-Hungary, assignor of one-half to Ludwig Keyling, Berlin, Germany. Filed Nov. 17, 1888. Serial No. 291,157. (No model.)

Claim.—1. In an apparatus for manufacturing shot, the combination of the standards or supports *o*, having ways P, the frame *a*, having sliding blocks *a'* fitting in said ways, the receivers carried by said frames *a*, the crank-shaft, and the connecting pitmen for transmitting motion between the shaft and sliding blocks, all substantially as explained.

2. In an apparatus for manufacturing shot, the combination of suitable supports *o*, a frame *a*, sliding on said supports and carrying cylindrical receivers, having sliding doors *m* in their ends for the removal of the shot, with suitable driving mechanism for imparting a

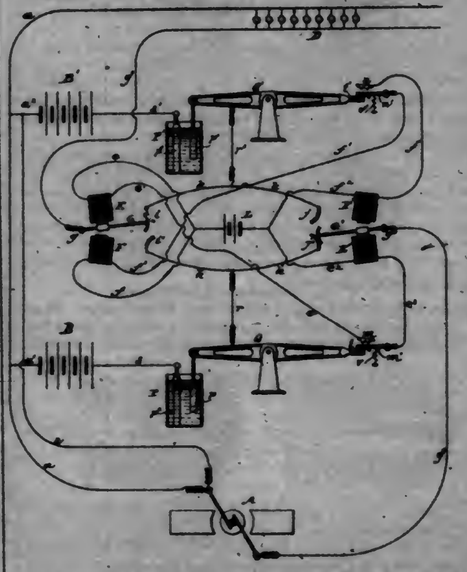


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reciprocating motion to frame and receivers, substantially in the manner and for the purpose set forth.

406,354. SYSTEM FOR CHARGING AND DISCHARGING STORAGE-BATTERIES. WILLIAM P. KOSTERSKY, Brooklyn, N. Y., assignor to the Kostersky Electric Company. Filed Aug. 25, 1888. Serial No. 283,709. (No model.)

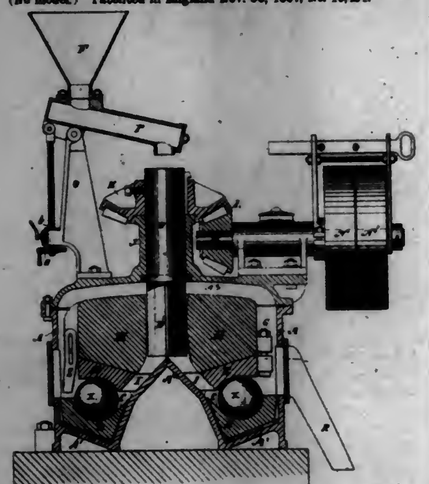


Claim.—1. The combination of a charging-circuit, two storage-batteries, a working-circuit, two electro-depositing cells, each respectively forming a part of both the charging and discharging circuits of one of the storage-batteries, and each of such depositing-cells having one of its plates suspended from the arm of a balance-beam so as to move up or down under the operation of the current through the cell, and a double alternating switch operated alternately by the movement of the balance-arms by which the storage-batteries, automatically and

alternately with each other, are connected in circuit alternately with the working-line and with the charging-source, the one to charge while the other is discharging, substantially as and for the purpose described.

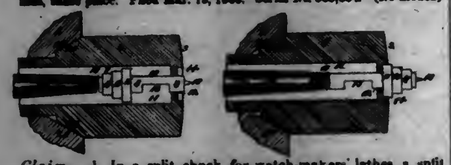
2. The combination of a charging-circuit, two storage-batteries, a working-circuit, two electro-depositing cells, each respectively forming a part of both the charging and discharging circuits of one of the storage-batteries and each of such depositing-cells having one of its plates suspended from the arm of a balance-beam so as to move up and down under the operation of the current through the cell, two local circuits with electro-magnets in them, which circuits when closed operate switch-connections in the battery-circuits to alternately and alternately with each other change them from connection with the working-circuit to connection with the charging-source, and circuit closers and breakers in the local circuits automatically operated by the balance-arms of the respective depositing-cells, substantially as and for the purpose described.

406,355. GRINDING-MILL. ANDREW LAMBERTON, Coatbridge, County of Lanark, Scotland. Filed July 23, 1888. Serial No. 280,783. (No model.) Patented in England Nov. 30, 1887, No. 16,451.



Claim.—In a grinding-mill, the combination of a casing A, having a bottom A', inclined toward the circumference of the casing, a cone A^3, extending upward from the inner side of the bottom, and a top A^3, the bed B, having concave circular path C, the balls X, working in the path, the loose driver H, having face-plate E, resting on the balls, and formed with a central eye and an annular passage I around the cone, the sleeve J, surmounting the top of the casing, the hollow shaft D, turning in the sleeve, having an angular lower end D', fitting loosely in the eye of the driver, to enable the latter to wabble around with it, and driving mechanism connected with the hollow shaft, substantially as described.

406,356. SPLIT CHUCK FOR WATCH-MAKERS' LATHES. FREDERICK LAUTERMILCH, Kirkwood, Mo., assignor of one-half to Edward Wilmes, same place. Filed Mar. 19, 1889. Serial No. 303,834. (No model.)

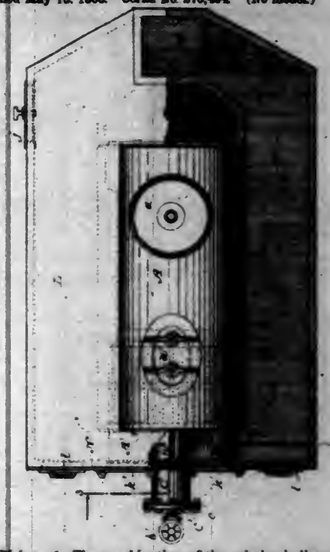


Claim.—1. In a split chuck for watch-makers' lathes, a split chuck whose head is provided with a lateral opening into the tubular center of the chuck for the insertion of watch-cylinder spindles, and the step cone-pulleys mounted thereon, and other objects to be trued by the lathe when presented to the grip of the chuck, substantially as described, and for the purpose set forth.

2. In a split chuck for watch-makers' lathes, the combination of the split chuck provided with longitudinal slots between its jaws and having jaws closing toward its center grip, the head of said chuck being provided with a lateral opening into its tubular center for the insertion of watch-cylinders and other articles to be chucked, and the spy-holes 38 for the inspection of the object to be treated, substantially as described, and for the purpose set forth.

3. In a split chuck for watch-makers' lathes, the combination of the chuck-head and the stem that carries said head, the bevel-shoulder at the connection of the head to said stem, the said head and stem being provided with a tubular center and slotted longitudinal openings 5, that separate the jaws, the said head being also provided with an insertion-hole 37 from its periphery to its tubular center for the presentation and adjustment of the object to be operated on, which thus provides an approach to the jaws of the chuck from the inside, the spy-holes 37 in said head, the countersunk jaw-grip 14 in the face of the head, the extension-stem 23, with its enlarged end 24, the shoulder 25 of which works against the rear end of the tubular running spindle 2, the tube of which spindle is provided with a flaring mouth 28, with which the bevel-shoulder 20 of the split head engages when closing its grip, the junction-screws that connect the stems 23 and 19, the hand-wheel by which said stems and their junction-screws are operated to close and also to release the jaw of the chuck, and the back center-core rod 30, substantially as described, and for the purpose set forth.

406,357. BOILER-SETTING. FREDERICK LINDRUM, Chicago, Ill. Filed May 10, 1888. Serial No. 273,464. (No model.)



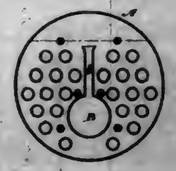
Claim.—1. The combination of the tubular boiler with the front chambers formed by the arched and vertical ribs, the back chamber, the side flues connecting the front chambers with the chimney, and the fire-box and combustion-chamber, substantially as herein set forth.

2. The combination, substantially as hereinbefore set forth, of a boiler with a boiler-front having a vertical rib and a rib joining the vertical rib at its bottom and extending inwardly under the boiler, whereby two front chambers are formed.

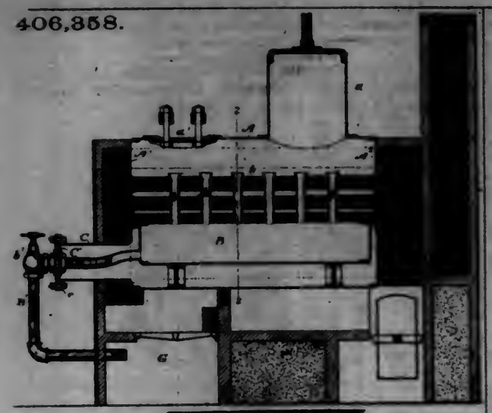
3. The combination, substantially as hereinbefore set forth, of a boiler and a boiler-front having a rib spanning the front of the fire-box, and a vertical rib extending upward from the rib spanning the front of the fire-box.

406,358. BOILER-CLEANER. FREDERICK LINDRUM, Chicago, Ill. Filed July 27, 1888. Serial No. 281,215. (No model.)

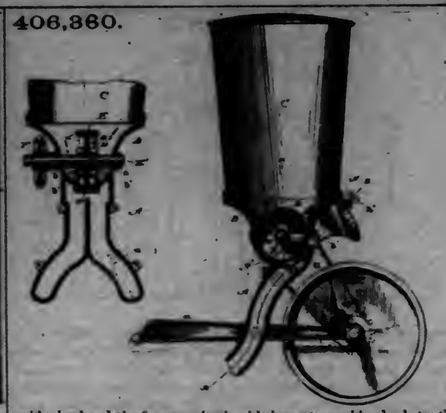
Claim.—The combination of the boiler, the tubular projection from its front head extending through the front wall of the setting, the collecting-vessel and its skimming-tubes within the boiler, and the blow-off pipe provided with a valve outside of the tubular projection leading from the collector through the tubular projection, whereby the collector and its connections are protected from the direct action of the heat, substantially as and for the purpose hereinbefore set forth.



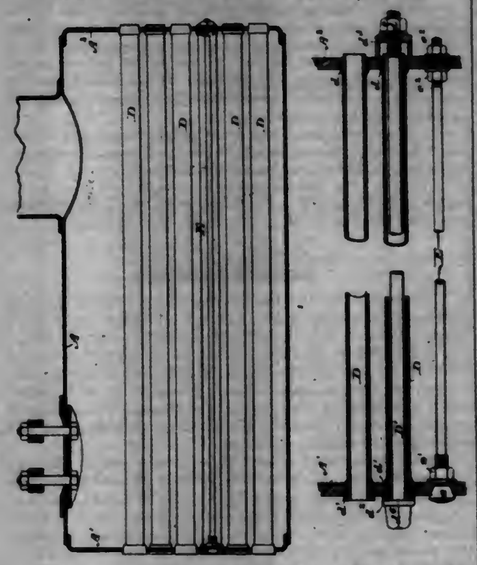
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406,360.



406,359. TUBE FOR STEAM-BOILERS. FREDERICK LINDRUM, Chicago, Ill. Filed July 27, 1888. Serial No. 281,216. (No model.)



Claim.—1. The combination of boiler-tubes having conical collars at each end with boiler-heads having tapered apertures to receive the conical collars, and stay-bolts between the tubes connecting the boiler-heads, substantially as and for the purpose hereinbefore set forth.

2. The combination of the tube-sheets with the stay-bolts, consisting of tapered head at one end, a threaded portion beneath said head provided with a nut, and a threaded outer end provided with two nuts, one for the outside and one for the inside of the tube-sheet, whereby the tube-sheets are held rigid.

3. The combination of the stay-bolt with its conical head and screw-threaded shank, and the clamping-nut and washer upon this shank, the long body of the bolt smaller in diameter than the shank, screw-threaded at its end and provided with clamping-nuts and washers, with the boiler-heads A' A^3, one of which has a tapering aperture to receive the conical bolt-head and the other a plain aperture for the end of the bolt, all assembled and operating substantially as shown, and in the manner hereinbefore set forth.

406,360. SEEDING ATTACHMENT FOR PLOWS. WILLIAM D. LINDSLEY, Huntsville, Knox. Filed Mar. 11, 1889. Serial No. 302,763. (No model.)

Claim.—1. In a seeding attachment for plows, the upright tubular conductor forked at the lower end and having the rigid front and rear arms, the furrow-wheel mounted on the rear arm, a clamp pivoted to the front arm, the hopper, the feed-wheel having duplicate channels in opposite faces, and suitable connecting-gearing between said wheel and the furrow-wheel, said elements combined substantially as and for the purpose described.

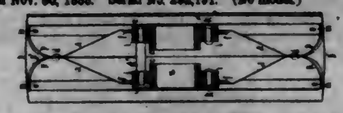
2. In a seeding attachment for plows, the vertical feed-wheel having duplicate channels in opposite faces and its supporting-shaft, in combination with the seed-cup formed, as described, to permit the passage of the seed to the sides of the wheel at the rear but contracted at the front and provided with delivery-openings in both sides, the forked tubular conductor having a central partition and bolted to the seed-cup, a supporting-wheel, and an arm for connection with the plow.

3. The vertical feed-wheel having duplicate channels in its faces, in combination with the seed-cup having the laterally-expanded front portion, the contracted rear portion fitting the sides of the wheel, the studs b^3 and g', the outlet-openings between said studs, the regulating-gates located between said openings and the studs g', the forked lever attached to the plates, and the bridge overlying the wheel.

4. In combination with a seed-distributing mechanism substantially such as described, the supporting-clamp pivoted thereto, said clamp comprising a plate with clamping devices thereon, an underlying plate pivoted thereto and provided with slotted ears, and a top plate having vertical screws and horizontal trunnions extended through the slots of the bottom plate.

5. In a clamp for connecting a seeding attachment to the cross-brace of a mold-board plow, the plate provided with studs and a fastening-screw for connecting it with the brace, in combination with the underlying plate pivoted thereto and provided with upright slotted ears, and the top plate provided with vertical screws, and with trunnions extending through the slotted ears.

406,361. PULLEY. HEINRICH E. LUDWIG, Berne, Switzerland. Filed Nov. 30, 1888. Serial No. 292,191. (No model.)



Claim.—1. The combination of the hub or nave, the sheet-metal disks *a*, secured to each other on a circle *d* and having each the outwardly-bent portion *p*, with flange-*m* and offset *m'*, rim *b*, rings *o*, and means for fastening together the rim, the disks, and the rings, substantially as specified.

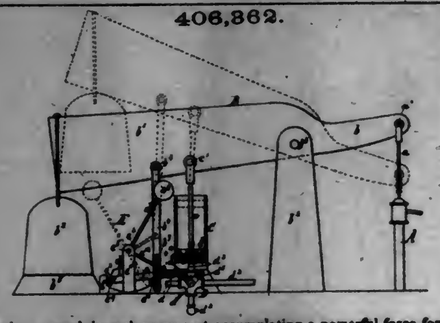
2. The combination of the divided hub or nave *c*, having flanges *i*, with projecting rim *i'*, divided disks *a*, having one or more corrugations *f*, divided rings *e* and *e'*, corrugated on the side facing the disks, screw *q*, and means for securing together the disks, the rings, and the flanges *i*, substantially as described.

3. The combination of the divided hub or nave *c*, having flanges *i*, with recess *r*, divided disks *a*, having one or more corrugations *f*, divided rings *e* and *e'*, corrugated on the side facing the disks and the rings *e'* being each provided with a projection *t*, and means for securing together the disks, the rings, and the flanges, substantially as set forth.

406,362. METHOD OF OPERATING OIL-WELLS. MURDOCK LITTLE, Duke Centre, Pa. Filed Jan. 9, 1888. Serial No. 260,164. (No model.)

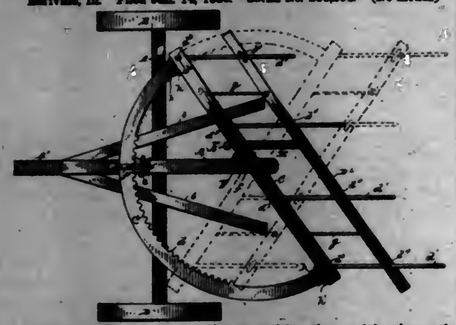
Claim.—The within-described method of operating slowly-flowing oil-wells equipped with lifting-pumps, as described, consisting, first, in automatically lowering the pump-piston very slowly relative to its upward movement, thereby allowing time for a full supply of oil to flow into the well by the time the piston has completed its down-

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stroke; second, in such movement accumulating a powerful force for raising the piston, and, third, automatically withdrawing the lowering force and allowing the said accumulated raising force to automatically come into action and suddenly, powerfully, and automatically raise the piston and the oil carried by the same, substantially as described.

406,363. HAY-RAKE. WILLIAM R. MANN and GEORGE KEITH, Rutville, Ill. Filed Jan. 14, 1889. Serial No. 296,291. (No model.)



Claim.—The horse hay-rake comprising the semicircular rack, the rake-head to which said rack is pivoted at its ends, the tongue or draft-pole extension upon which at its rear end said rake-head is pivoted by means of a pivoted ear-plate and staples, the tooth-bar having pivoted connection with said rake-head, the rake-teeth having pivotal connection with the rake-head, and the handled shaft carrying a pinion engaging said rack, substantially as set forth.

406,364. ANTI-MAGNETIC WATCH. CHARLES T. MASON, Sumter, S. C., assignor, by direct and mesne assignments, to the American Waltham Watch Company, of Massachusetts. Filed June 26, 1888. Serial No. 278,256. (No model.)



Claim.—1. The combination, with a watch-balance, of a ring of magnetic metal encircling or surrounding the said watch-balance, substantially as described.

2. The combination, with the balance-wheel of a watch, of a soft-iron ring surrounding the balance-wheel, substantially as specified.

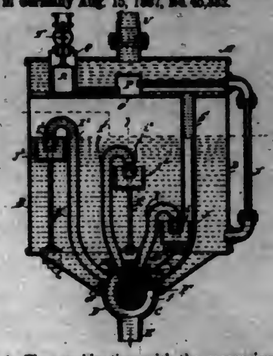
3. The combination, with a balance-wheel of a watch, of a ring of soft iron surrounding the balance-wheel and provided with an inwardly-projecting flange on its lower part, substantially as herein shown and described.

406,365. PROCESS OF GALVANIZING METALS. THOMAS MIDGLEY and WALTER B. NYE, Beaver Falls, Pa. Filed Sept. 2, 1886. Serial No. 212,504. (Specimens.)



Claim.—The above-described process of galvanizing metal, which consists in passing the metal into and through a large body of lead, and through and out of a smaller body of zinc floating upon the lead, as herein described, and for the purposes set forth.

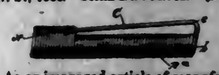
406,366. MEASURING-VESSEL FOR LIQUIDS. JOHN P. MÜLLER, Brooklyn N. Y. Filed Apr. 23, 1888. Serial No. 308,240. (No model.) Patented in Germany Aug. 15, 1887, No. 45,332.



Claim.—1. The combination, with the measuring-vessel B, having a shell D, provided with a series of openings leading to the vessel, of an outflow E, a supply-pipe S, made to communicate with one of said openings, a series of siphons of varying heights made to communicate with said openings, adjustable cups into which said siphons dip, and a plug F, provided with a depression for opening and closing said openings, substantially as described.

2. The combination, with a vessel having a siphon, of a cup into which said siphon dips, a jointed arm holding the cup, and an adjusting-rod K for said arm, substantially as described.

406,367. SAFETY-PIN. EDWARD MCCONNELL, Cape Elizabeth, Me. Filed Nov. 27, 1888. Serial No. 291,962. (No model.)



Claim.—1. As an improved article of manufacture, a safety-pin constructed of a single piece of wire, this wire being formed into a large guard-coil A, and a longer flexible body-coil B, this body-coil being of less diameter than the said guard-coil and having its inner end abutting the inner end of the same, whereby the coils are mutually braced, and a crescent-shaped opening *a* is formed for the reception of the point of the securing-pin, and a pin C, formed of a continuation of the outer end of the body-coil, and bent so as to enter the said opening *a*, substantially as described.

2. As an improved article of manufacture, a safety-pin constructed of a single piece of wire, this wire being formed into a spring guard-coil at one end, a long spring body-coil of less diameter than the guard-coil, and setting up close against the inner end of the latter, thereby bracing the two coils and forming a crescent-shaped opening for the reception of the securing-pin, and the pins, substantially as described.

406,368. SHUTTLE FOR SEWING-MACHINES. J. FREEMAN MCKENNEY, Baltimore, Md. Filed July 9, 1887. Serial No. 243,994. (No model.)



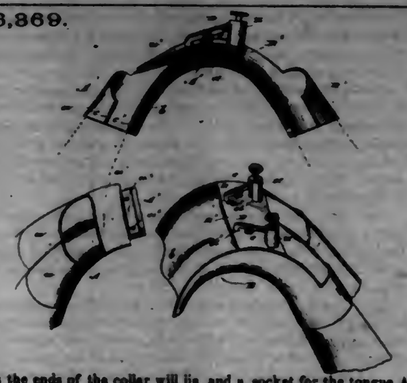
Claim.—1. A sewing-machine shuttle having a cylindrically-bored barrel provided with a flattened face curved in the direction of the length of the shuttle, and a flattened bottom surface at an acute angle with the flattened face, as set forth.

2. The combination, with the shuttle-race having a flat curved side engaging the face of the shuttle, and a carrier having a flat surface engaging the bottom of the shuttle, as set forth, of a shuttle provided with a flattened face curved in the direction of its length, and a flattened bottom surface at an acute angle with said flattened face, as and for the purposes described.

406,369. HORSE-COLLAR FASTENER. ALEXANDER P. PORTER, Marengo, Ohio. Filed Apr. 11, 1888. Serial No. 306,755. (No model.)

Claim.—In a horse-collar fastening, the section A, provided with sockets *a a*, having perforations *c* and *c'*, a raised cross-bar located above said sockets, and a tongue with perforations, in combination with a section B, having similarly-constructed sockets, the cross-bar raised above the base-plate of said section to provide a recess within

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which the ends of the collar will lie, and a socket for the tongue A', said cross-bar carrying pivoted spring-actuated catches, said catches having their ends which pass through the perforations in the cross-bar beveled, said section B having a curved portion *b*, the parts being organized substantially as shown, and for the purpose set forth.

406,370. HAME STAPLE AND CLIP. JOHN I. REAN, Greeley Center, Nebr. Filed Apr. 4, 1888. Serial No. 306,082. (No model.)



Claim.—1. The combination, in an attachment for hames, of a clip or staple the ends of which are adapted to be attached to the hames, the rear edge of the cross-bar thereof being provided with a recess *b'*, the trace-plate having the rounded end *c* adapted to lie within said recess, and a strap encircling the cross-bar of the staple, and means for pivotally connecting the trace-plate to said strap, substantially as shown, and for the purpose set forth.

2. The combination, in an attachment for hames, of a staple, the rear edge of the cross-bar thereof being provided with a recess *b'*, a connecting-strap or open-ended loop adapted to encircle the bar *b* and provided with circular recesses *c c* and a connecting-screw, a trace-plate having a circular plate *c*, raised portions *d*, and semicircular flange *d'*, formed on one end thereof, while the trace is adapted to be attached to the other end, substantially as shown, and for the purpose set forth.

406,371. MEANS FOR SECURING STEREOTYPE-PLATES WHICH ARE CAST SEPARATELY FROM THEIR BEDS. EDWARD D. ROGERS, Church End, Finchley, County of Middlesex, England, assignor to Paul Wilcox, New York, N. Y. Filed Sept. 17, 1887. Serial No. 250,007. (No model.) Patented in England June 4, 1869, No. 2,575.



Claim.—1. A stereotype-plate provided with straight vertical flanges along its edges and at right angles thereto, in combination with a bed provided with correspondingly-shaped recesses to receive said flanges, and means for holding said plate in position, substantially as described.

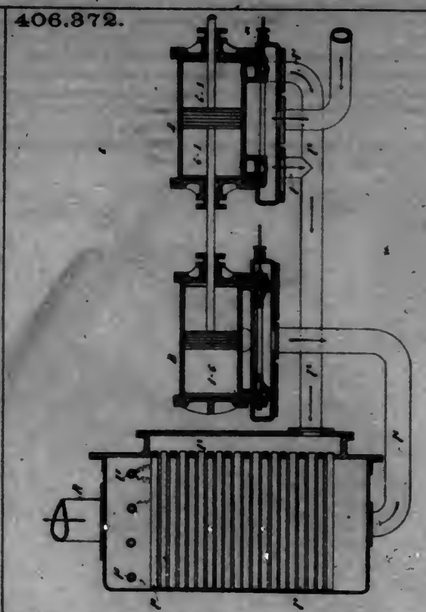
2. A type-plate having along its edges and at right angles thereto and integral therewith rigid non-flexible vertical side flanges *b*, in combination with a block provided with vertical sides against which said flanges may rest, and whereby the said flanges are adapted to fit loosely over the said vertical sides and permit the ready removal of the plate by lifting it vertically from the block, substantially as set forth.

406,372. UTILIZING EXHAUST-STEAM. WILHELM SCHMIDT, Halberstadt, Prussia, Germany. Filed Dec. 11, 1886. Serial No. 220,396. (No model.) Patented in England Sept. 6, 1886, No. 12,066.

Claim.—1. A method of utilizing the latent heat of exhaust-steam, which consists in first using live steam to compress air and using the exhaust-steam from this air-compressing engine for warming and evaporating water the steam of which is mixed with the compressed air, substantially as and for the purpose as described.

2. A method of utilizing the latent heat of exhaust-steam, which consists in first using live steam to compress air, and using the exhaust-steam from this engine for warming and evaporating water the steam of which is mixed with the compressed air, and heating this compressed air before or during its passage through the evaporating

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apparatus for the purpose of increasing its absorbing powers, substantially as described.

406,373. RUNNING-GEAR FOR VEHICLES. LARANCE W. SIBBIS and JAMES H. WALKER, Holden, Mo. Filed Mar. 23, 1889. Serial No. 304,472. (No model.)



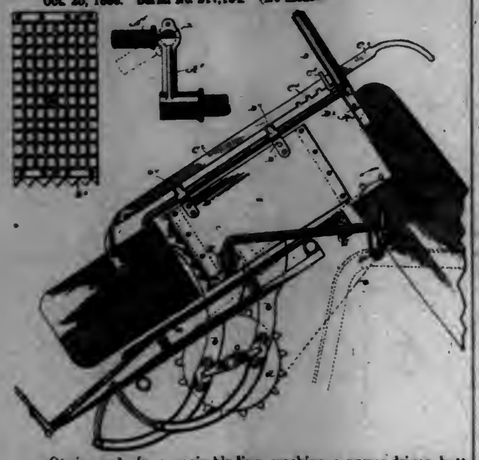
Claim.—1. The combination, with the front axle and bolster, of the pivoted tongue, the rigid non-yielding bearing *h* on the rear end of said tongue, the swinging bail pivotally attached to the tongue forward of its pivotal point, and the spring-bar attached at one end to the bolster and at the other to said bail and bearing on said bearing, substantially as shown and described.

2. The combination, with the front axle, the tongue pivoted as shown, and the reach pivoted as described, of the spring bearing on the

tongue, and the wire L, bearing on the reach, substantially as described.

3. The combination, with the hounds and the pivoted reach, of the roller journaled on the reach and adapted to travel on the hounds, and the spring-wire L, adapted to bear on the reach between its pivot and the said roller, substantially as shown and described.

406,374. GRAIN-BINDER. JOHN F. STEWARD, Chicago, Ill. Filed Oct. 25, 1886. Serial No. 217,154. (No model.)



Claim.—1. In a grain-binding machine, a power-driven butt-board the active face of which is pitted or reticulated, substantially as shown, to receive and retain the ends of the straws.

2. In a grain-binding machine, a butt-board provided with a facing of rubber or like yielding elastic material to act upon the ends of the grain-straws.

3. In a grain-binding machine, a rod or guide extending along the edge of the grain table or chute, in combination with a butt-board mounted at its ends upon and wholly sustained by said rod and movable in the direction of its length thereon.

4. In combination with a practically-straight rod or guide, a butt-board mounted thereon at both ends, a crank, and a pitman connecting the crank and board, whereby the board may be reciprocated endwise in a line parallel with its face.

5. In a grain-binding machine, the combination, substantially as described and shown, of a sustaining rod or guide and a butt-board mounted longitudinally on said rod and free to reciprocate endwise and also to vibrate transversely thereon.

6. In combination with the table or chute over which the grain is delivered laterally, the pivoted horizontally-adjustable guide, and the butt-board mounted at one edge on said guide to slide lengthwise thereof and also to vibrate laterally thereon, and mechanism, substantially such as shown and described, for imparting said motions thereto.

7. In a grain-binding machine, a sustaining rod or guide, a butt-board connected at its edge to said rod to slide longitudinally and vibrate laterally thereon, a driving-crank having its wrist oblique to its axis of rotation, and a pitman attached to the crank and to the board, substantially as described, whereby the board is caused to swing toward the grain when moving endwise in a forward direction and caused to swing away from the grain during its end motion in the opposite direction.

8. In combination with the butt-board and the guide whereon it is movable longitudinally and laterally, its operating-pitman, and the driving-crank having the wrist adjustable, as described, so that it may be placed at a greater or less angle to the axis of rotation, whereby the lateral vibration of the board may be increased or diminished.

9. The combination of the butt board or plate D and its guide, the butt-retaining plate C at its end, the driving-crank A^3, the pitman G, attached at one end to said crank, and the bearing E, connecting the pitman with the butt-board.

10. The combination of the guide-rod B^3, the butt plate or board D, sliding and vibrating thereon, the butt-retaining plate C, the crank A^3, and the connecting-pitman G, substantially as described, all adjustable by means of a rod or lever under the control of the driver, as described, whereby they are made to operate and regulate the direction of movement of the grain.

11. In combination with a grain harvesting and binding machine, a round guide-rod B^3, extending along the edge of the binder-table, the butt-board D, its ears or plates D', and the anti-friction rollers D^4, journaled to said ears and mounted on top of the guide-rod, as shown, the board being free to move longitudinally and to vibrate laterally at its lower edge, as described.

12. In a grain-binding machine, and in combination with the grain table or chute, an arm B^3, overhanging said table and pivoted to swing horizontally in combination with a locking device to hold said arm in different positions, a butt-board suspended from and guided at both ends by said rod to move longitudinally and vibrate laterally thereon, a crank lying outside of the plane of said board, and a pitman extending from the crank to the board.

13. In a grain-binding machine, a guide B^3, adjustable horizontally to change its angle to the edge of the grain-table, the butt-board arranged to reciprocate longitudinally and vibrate laterally on said guide, the butt-retaining plate C, hinged to the guide-rod, and the adjusting-bar C^3, rigidly attached to said plate.

14. In a grain-binding machine, a guide B^3, adjustable horizontally to change its angle to the edge of the grain-table, the butt-board arranged to reciprocate longitudinally and vibrate laterally on said guide, and the butt-retaining plate C, hinged to the guide.

15. In a grain-binder, a butt-board having teeth D^2, projected toward the grain-space to engage the butts of the grain, in combination with a fixed guide B^3, whereon the board may reciprocate in a line parallel with its face and also swing in a line at right angles to its face to and from the grain, and suitable mechanism for imparting said movements to the board.

16. In a grain-binding machine, the circulatory packers *b b* and their actuating-crank, as usual, the reciprocating butt-board provided with teeth to engage the butts of the grain, the crank and pitman for operating the board, and intermediate mechanism, substantially as shown, connecting the two cranks and timed to compel the advance of the board and packers in unison, whereby the grain is subjected to the action of the packer and the butt-board simultaneously.

17. In a grain binding and harvesting machine, a longitudinally-reciprocating butt-board having a vertical row or series of teeth at its end to engage the butts of the grain, and a circulating packer to act against the middle of the grain, in combination with operating mechanism, substantially as described, adjusted to cause the simultaneous advance of the butt-board and the packer.

18. In a grain-binding machine, a butt-board and a packer combined with operating mechanism whereby they are advanced simultaneously against the grain.

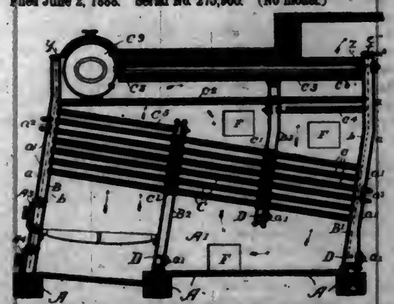
19. In combination with a grain-binding machine, a longitudinally-reciprocating butt-board the lower or forward end of which is provided with a vertical row or series of teeth D^2, whereby the end of the board is adapted to engage the end of the straws and prevent them from rising at the butts as they are forced laterally.

406,375. FOUNTAIN-PEN. CHRISTOPHER STOCKMANN, Brooklyn, N. Y. Filed Dec. 13, 1888. Serial No. 293,463. (No model.)



Claim.—The combination, with the ink-reservoir A, of the pen-plug having a pen-receiving socket, and the feed-plug made to fit the interior of the pen-plug and having two channels *d d*, separated from each other by an intervening ridge, and a feed-tongue having two openings *e e*, one for each channel, substantially as described.

406,376. WATER-TUBE BOILER. JOHN TAYLOR, Troy, N. Y. Filed June 2, 1888. Serial No. 275,900. (No model.)



Claim.—1. A water-tube steam-boiler consisting of a group of inclined water-tubes, a single water-chamber at each end of the group, into which the individual tubes all open, formed from sheets of wrought metal united at their edges and centrally cross-stayed, a row of horizontal water tubes connecting the upper parts of the water-chambers with each other, a steam-drum and connections leading thereto from the upper part of one of the water-chambers, water-supply pipes leading into the lower part of one of the water-chambers, fire-grate, and grate and boiler supporting inclosure, and a flame-deflector extending transversely of the group of water-tubes, consisting of sheets of wrought metal united at their edges to form a single water-chamber having a lower supply and upper discharge pipe and centrally cross-stayed and provided with tube-receiving thimbles passing transversely through the chamber, substantially as described.

2. In a water-tube boiler, the combination, with inclined water-tubes supported at their ends by front and rear legs, of a flame-deflector consisting of metal plates secured together to form a water-chamber by tube-receiving thimbles passing through the chamber, inlet water-connections leading to the water-chamber of the deflector, and outlet-connections leading to the steam-pipe, substantially as described.

3. In a water-tube boiler having a front and rear water-chamber leg and a superheated steam-drum, a steam-tube having solid welded heads, and expanded nipple-connections by which one end of the tube is connected with one of the leg-chambers and the other end with the steam-drum, substantially as described.

4. The combination of the front and rear water-legs, the water-tubes connecting the same, and the hollow water-containing flame-deflector between said legs, with the steam-drum located between the front leg and deflector, above the grate, and communicating only with the rear water-leg, substantially as and for the purpose set forth.

5. The combination of the front and rear water-legs, the intermediate hollow water-holding flame-deflector, and the grate supported on said deflector and front leg, with the inclined water-tubes connecting the front and rear legs and passing through the deflector, but not communicating therewith, substantially as specified.

6. The combination of the front and rear water-legs and the intermediate water-chamber flame-deflectors, with the water-tubes connecting said legs and passing through the upper portion of one deflector and through the lower portion of the opposite deflector, but not communicating with either, substantially as and for the purpose described.

7. The combination of the stationary front water-leg and the rear water-leg having an enlarged mud-chamber at bottom and mounted on a movable support, with the water-tubes connecting said legs, the flame-deflector, the steam-drum located between the front leg and deflector, and the connections between said drum and rear water-leg, substantially as specified.

8. In a boiler, a water-circulating tube located above the grate and in the water-space of the boiler and formed to be of less strength than the other parts of the boiler, whereby it will break when subjected to undue steam-pressure without danger or injury to other portions of the boiler, substantially as and for the purpose set forth.

9. The combination of the front and rear water-legs and the intermediate hollow water-holding deflectors provided with horizontal hand-holes at their upper ends, with the tubes connecting the said deflectors respectively with the front and rear legs at points opposite said hand-holes, and the water-tubes connecting the front and rear legs and passing through the deflectors, substantially as and for the purpose set forth.

10. The combination of the front and rear water-legs, the intermediate water-holding deflectors, the water-tubes connecting said legs and passing through said deflectors, but not communicating therewith, with the steam-tubes leading from the deflectors and front leg to the top portion of the rear leg, and the steam drum and pipe located above the deflectors and tubes and communicating with the top of the rear water-leg also, all substantially as set forth.

11. The combination, in a tubular boiler, of the water-legs and steam-drum, with a fragile water-tube located above the grate and connecting the water-legs of the boiler and constructed to be of less tensile strength than the remaining tubes, for the purpose and substantially as set forth.

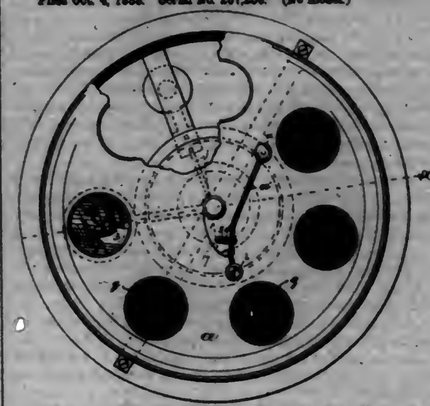
12. The combination of the front and rear water-legs and the intermediate water-containing deflectors with the water-tubes connecting the legs, but not communicating with the deflectors, the tubes connecting said deflectors respectively with the front and rear legs, and the steam-drum communicating solely with the rear leg, substantially as specified.

13. A hollow water-leg for tubular boilers, having its inner plate perforated in staggered order for the reception of the ends of the water-tubes and its outer plate provided with oblique hand-holes, substantially as and for the purpose specified.

14. The combination of the front water-leg, the rear water-leg having an enlarged mud-chamber at bottom and resting on a movable support, the water-chamber deflectors between said legs, the water-tubes passing through and not communicating with said deflectors and connecting the front and rear legs, the water-supply pipes to said legs and deflectors, the steam-drum located between the front legs and deflector above the grate, the steam-tube connecting said drum with the rear leg, and the steam-connections between said legs and deflectors, all substantially as set forth.

15. A water-leg for tubular boilers, composed of wrought-metal plates riveted together to form water-tight chambers, the inner plate having openings in it for the reception of the water-tube ends made in staggered order, and the outer plate having oblique hand-holes opposite a pair of openings in the inner plate, in combination with the obliquely-arranged hand-plates closing said holes, all substantially as specified.

406,377. ANNUNCIATOR. ALBION A. VANDERPOEL, Newark, N. J. Filed Oct. 4, 1888. Serial No. 287,236. (No model.)



Claim.—1. In an annunciator, the combination of a center shaft carrying an indicating-hand or indicator, a cam having opposite inclines, and a series of arms adapted to engage said cam and revolve or turn the said shaft and arm thereon, a slotted guide or holder *r*, and suitable means, as described, for operating said arms, substantially as and for the purposes set forth.

2. In an annunciator, the combination of a shaft carrying an indicator, and a cam having opposite inclines *n* terminating in a point, and a series of arms adapted to be operated by the person making the call, substantially as and for the purposes set forth.

3. In an annunciator, the combination, with a case or face-plate *a*, having a series of openings providing indicating-characters, a shaft carrying an indicator and adapted to bring said indicator into coincidence with said openings, a cam revolving with said shaft, and a series of arms corresponding in number with said openings and adapted to engage said cam and cause the cam to turn the shaft and indicator thereon into coincidence with the corresponding opening, substantially as and for the purposes set forth.

4. In combination with the indicator or hand *o*, a cam revolving with said hand and provided with inclines *n*, a point *p*, and a recess *m*, a series of armature-arms engaging said cam, a bell-wheel, and means, substantially as described, for transmitting the motion of the said arms to said wheel, a bell and hammer, and means, substantially as described, for transmitting the motion of said wheel to the said hammer, a battery, conducting-wires, and magnets, substantially as set forth.

5. In combination, in an annunciator, with a series of magnets and armatures, a central shaft carrying a cam having inclines *n* and a recess *m*, a bell, and a circuit breaker or closer operated by said armatures to secure a succession of strokes on the bell, a battery and conducting-wires, all said parts being arranged and combined substantially as and for the purposes set forth.

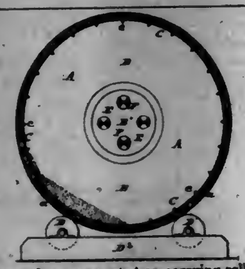
6. In an annunciator, the combination of a case *a*, having a bell and hammer thereon and apertures therein, with transparent panes with characters thereon in said apertures, a central shaft *k*, cam-lever *l*, a series of armature-levers *h* engaging said cam, a series of magnets *g*, shaft 10, springs 18, levers 6, wheel 3, contact-point 13 14, and pintle 4, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

406,378. APPARATUS FOR COMMINUTING AND CORRODING LEAD. EDWARD A. WESTON and LOUIS O. GIBB, Chicago, Ill. Filed Apr. 2, 1888. Serial No. 269,360. (No model.)

Claim.—1. An apparatus for corroding and comminuting lead in the Versepuy mode of manufacturing white lead, the same consisting of a shaftless cylinder or drum supported on carrying-rollers and provided with axial openings or man-holes, essentially as set forth.

2. An apparatus for corroding and comminuting lead in the Versepuy mode of manufacturing white lead, comprising, in combination,

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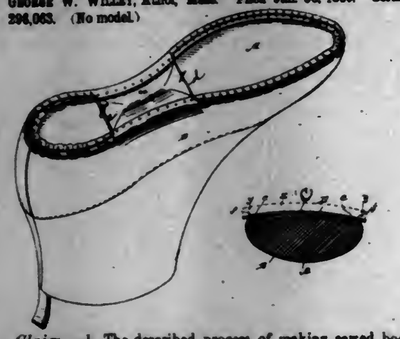


a shaftless cylinder or drum supported on carrying-rollers, a lining C for the same provided with longitudinal ribs, an axially-arranged gas-introducing tube extending to or near the middle of the cylinder, and axially-arranged removable man-heads E, closing central man-holes in the cylinder-heads and adapted to permit of the inspection, &c., of the material during the rotation of the cylinder, essentially as described, and for the purpose set forth.

3. An apparatus for corroding and comminuting lead in the Versepuy mode of manufacturing white lead, comprising, in combination, a shaftless cylinder or drum supported on carrying-rollers, a lining C for the same provided with longitudinal ribs *c*, an axially-arranged gas-introducing tube extending to or near the middle of the cylinder, and removable man-heads closing central man-holes in both the heads of the cylinder and provided with a series of adjustable openings, essentially as described, and for the purpose set forth.

4. An apparatus for comminuting and corroding lead, consisting of a shaftless cylinder or drum supported on carrying-rollers and provided with band-tracks *a a*, having lapped tongues *a' a'*, laterally-arranged lugs a^3 a^3, and tightening bolts a^4 a^4, as described, and for the purpose set forth.

406,879. MANUFACTURE OF SEWED BOOTS AND SHOES. GEORGE W. WILLEY, Athol, Mass. Filed Jan. 30, 1886. Serial No. 226,063. (No model.)



Claim.—1. The described process of making sewed boots or shoes, consisting in first lasting the upper directly to the last, then attaching the stay-welt to the upper and sewing the two together, then inserting the inner sole and securing it in place, and securing or sewing the outer sole to the stay-welt only, substantially as and for the purposes hereinbefore set forth.

2. The method of making welted boots and shoes, which consists in first lasting the upper directly to the last, then applying and securing the stay-welt to the upper while on the last, and subsequently removing the upper and stay-welt from the last and securing the outer sole to the stay-welt, substantially as and for the purposes hereinbefore set forth.

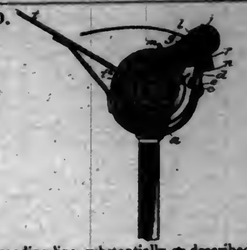
3. The described method of lasting the upper, consisting in lasting the shank of the upper by means of lasting-tacks to a shank-filling formed and applied to the last, substantially as described, and lasting the remaining portions of the upper to the last (without the inner sole) by means of draw cords or strings, substantially as and for the purposes hereinbefore set forth.

4. In the operation of lasting the upper to the last without an inner sole, the method of lasting the shank of the upper, which consists in first applying to the last a shank-filling of the character described, and then lasting the shank of the upper to said shank-filling by means of lasting-tacks, substantially as hereinbefore set forth.

406,880. COPY-HOLDER. FREDERICK G. WIENER, Leavenworth, Kans. Filed Mar. 28, 1888. Serial No. 268,172. (No model.)

Claim.—1. A cylindrical shell copy-holder open at its rear side and top, its front edge terminating in a reading-line for the copy and having pressure drawing-rolls mounted in bearings in its ends above

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the said front reading-line, substantially as described, for the purpose specified.

2. A cylindrical shell copy-holder open at its rear side and top, its front edge terminating in a reading-line for the copy, having an inner front supporting-back for the latter arranged to lap the said case front edge and form the opening through which the copy is drawn, and having pressure drawing-rolls mounted in bearings in its ends above the said supporting front plate, substantially as described.

3. A cylindrical shell copy-holder open at its rear side and top, its front edge terminating in a reading-line for the copy and having at its rear edge rearwardly-extending copy-sustaining arms, in combination with pressure drawing-rolls mounted in bearings in the ends of the said shell, substantially as described.

4. In a copy-holder, the combination, with a cylindrical shell open at its rear side and top and terminating at its front edge in a reading-line, of a pair of pressure drawing-rolls mounted in the ends of the shell, the upper one whereof is mounted in arms pivoted to the ends of the shell and adapted to be turned back to carry the top roll away from the under roll, substantially as described, for the purpose specified.

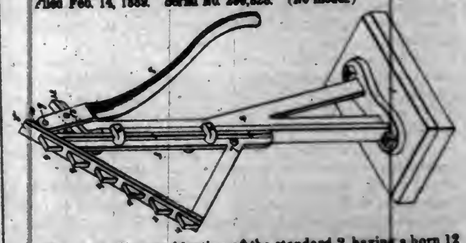
5. The combination, in a copy-holder, of a cylindrical shell open at its rear side and at its top, its front edge terminating in a reading-line and having a back supporting-plate for the copy, with a pair of pressure drawing-rolls mounted in the ends of said shell above said reading-line, and spring-fingers extending from said front edge in contact with the copy and bearing upon the lower of the pressure drawing-rolls, substantially as described, for the purpose specified.

6. The combination, in a copy-holder, of a cylindrical shell containing the copy, terminating at its front edge in a reading-line and having an interior back support for such copy, with pressure drawing-rolls mounted in said shell above said front edge and a cover-plate pivoted to the ends of the shell and adapted to be set in the arc of a circle in relation to said reading-line, substantially as described.

7. The combination, in a copy-holder, of a cylindrical shell terminating at its front edge in a reading-line, with pressure drawing-rolls mounted in the ends of said shell above the said front edge, and arms having suitable clamps, whereby the device is attached to the carriage of the type-writer, substantially as described.

8. As a copy-holder attachment for type-writers, the cylindrical shell open at the rear side to contain the copy in a loose coil, having a front reading-guide edge, pressure drawing-rolls mounted in said shell above said edge, an interior supporting-back for the copy, and laterally-adjustable arms provided with suitable attaching-clamps, substantially as described.

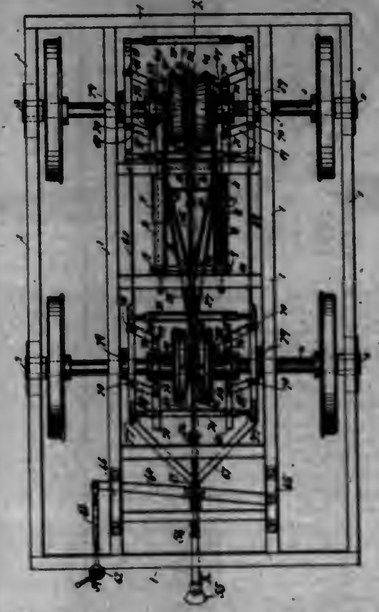
406,881. CARRIAGE-JACK. ARTHUR ZIMMERMAN, St. Louis, Mo. Filed Feb. 14, 1889. Serial No. 299,828. (No model.)



Claim.—1. The combination of the standard 2, having a horn 12 at its upper end formed with an inclined upper side, the lifting-frame 3, having an upward projection 3^p, provided with a lug 10, and the lever 8, formed with a slot 11, through which the horn projects, pivoted to the lug and provided with a fulcrum-pin 13, substantially as described.

2. The combination of the standard 2, having a horn 12 at its upper end formed with an inclined upper side, and hooked lugs 6, the lifting-frame 3, having flanges 5, upward projection 3^p, and lug 10, and the lever 8, having slot 11 pivoted to the lug and provided with a fulcrum-pin 13, substantially as described.

406,882. CAR BRAKE AND STARTER. ALFRED B. ARNOLD, Columbus, Ind., assignor of five-eighths to the Arnold Car Brake and Starter Company, same place. Filed July 16, 1888. Serial No. 280,114. (No model.)



Claim.—1. In a car-brake, the combination of a guide-rod secured to the car-frame, a cross-head adapted to slide longitudinally along said guide-rod, a spring arranged to force said cross-head along said guide-rod, a sprocket-wheel turning loosely on rear car-axle, a sprocket-spool turning loosely on forward car-axle, a chain connected thereto, and springs bearing against said cross-head, said chain engaging with sprocket wheel and spool, a clutch mounted on forward car-axle arranged to turn therewith, slide longitudinally thereon, and engage with said sprocket-spool, a clutch mounted on rear axle and adapted to turn thereon, and to engage with friction-disks firmly mounted and secured to axle, and mechanism for simultaneously operating said clutches, substantially as and for the purpose described.

2. In a car-brake, the combination of the horizontal parallel guide-rods secured to the car-frame, the cross-heads arranged to slide longitudinally thereon, the coiled accumulator-springs loosely encircling said guides and arranged to force said cross-head along them, a sprocket-wheel turning loosely on rear car-axle, sprocket-spool turning loosely on forward car-axle, a chain connected to and accumulator-springs bearing against said cross-head, said chain engaging with sprocket wheel and spool, a clutch mounted on forward car-axle arranged to turn therewith, slide longitudinally thereon, and to engage with the said sprocket-spool, a clutch mounted on rear axle and adapted to turn thereon and to engage with friction-disks, said disks firmly mounted on and secured to axle, and mechanism for simultaneously operating said clutches, substantially as and for the purpose set forth.

3. In a car-brake, the combination of two parallel guide-rods secured to car-frame, a cross-head adapted to slide longitudinally along said guide-rods, a coiled accumulator-spring loosely encircling said guide-rods and arranged to force said cross-head along them, a sprocket-spool turning loosely on car-axle, a chain connecting said sprocket to cross-head, clutches mounted on car-axle and arranged to turn therewith, slide longitudinally thereon, and to simultaneously engage with both ends of sprocket-spool, and mechanism for operating said clutches, substantially as and for the purpose described.

4. In a car-brake, the combination of a spring, a rod engaging with said spring, sliding longitudinally in bearings secured to car-frame and a fork secured thereto, a stop-lever fulcrumed on said fork, a spool turning loosely on car-axle and provided with annular flanges on which stop-lever arms rest, and a stop integral therewith, a clutch mounted on said axle and adapted to turn therewith, slide thereon, and to engage with said spool, and mechanism to operate said clutch, substantially as and for the purpose set forth.

5. In a car-brake, the combination of a guide-rod secured to car-frame, a cross-head adapted to slide along said guide-rods, a coiled accumulator-spring encircling said guide-rods and arranged to force said cross-head along them, a stop-lever, a rod connected to said stop-lever, and adapted to engage with accumulator cross-head at a point near the end of its stroke, a spool turning loosely on car-axle and provided with annular flanges on which stop-lever arms rest, and a stop integral therewith, a chain connected to and a spring bearing against said accumulator-spring cross-head, said chain connected to spool, a clutch mounted loosely on car-axle arranged to turn therewith, slide longitudinally thereon, and to engage with aforesaid sprocket-spool, and mechanism for operating said clutch, substantially as and for the purpose set forth.

6. In a car-brake, the combination of a guide-rod secured to car-frame, a cross-head adapted to slide along said guide-rod, a coiled accumulator-spring encircling said guide-rods and arranged to force said cross-head along them, a stop-lever, a rod connected to said stop-lever and adapted to engage with accumulators at a point near the ends of their stroke, an auxiliary spring, a rod engaging with said auxiliary spring sliding longitudinally in bearings secured to car-frame, and a fork secured thereto, in which stop-lever is fulcrumed, a spool turning loosely on car-axle and provided with annular flanges on which stop-lever arms rest, and a stop integral therewith, a chain connected to and a spring bearing against said accumulator-spring cross-head, said chain connected to spool, a clutch mounted loosely on car-axle arranged to turn therewith, slide longitudinally thereon, and to engage with aforesaid sprocket-spool, and mechanism for operating said clutch, substantially as and for the purpose set forth.

7. In a car brake and starter, the combination of a cross-head 9, provided with the integral-threaded boss 10, the casing 6, telescoping into casing 7 and threaded to receive boss 10, the casing 7, threaded and receiving washer 11, and the guide-rods receiving said washer and secured to car-frame, substantially as and for the purpose set forth.

8. In a car-starter, the combination of a guide-rod secured to the car-frame, a cross-head adapted to slide longitudinally along said guide-rod, a spring arranged to force said cross-head along said guide-rod, a gravity-clutch arranged to engage, when moving in one direction only, with a disk secured to car-axle, and means for connecting said gravity-clutch to said cross-head, substantially as and for the purpose described.

9. In a car-starter, the combination of the horizontal parallel guide-rods secured to the car-frame, the cross-head adapted to slide longitudinally thereon, the coiled accumulator-springs loosely encircling said guide-rods and arranged to force said cross-head along them, the clutch arranged to engage, when moving in one direction only, with the adjacent disks secured to car-axle and turning therewith, and means for connecting said clutch to said cross-head, substantially as and for the purpose described.

10. In a car-starter, the combination of a guide-rod secured to car-frame, a cross-head adapted to slide longitudinally along said guide-rods, a coiled accumulator-spring loosely encircling said guide-rod and arranged to force said cross-head along it, a gravity-clutch arranged to engage, when moving in one direction only, with its adjacent engaging-disks secured to car-axle and turning therewith, and means for connecting said gravity-clutch to said cross-head, substantially as and for the purpose set forth.

11. In a car-starter, the combination of a guide-rod secured to the car-frame, a cross-head adapted to slide along said guide-rod, a coiled accumulator-spring encircling said guide-rod and arranged to force said cross-head along it, an auxiliary spring encircling a guide-rod, said guide-rod arranged to slide in suitable bearings in frame, a connecting-rod secured to auxiliary guide-rod at one end and adapted to engage with accumulator-spring cross-head at a point near the end of its stroke, a clutch arranged to engage, when moving in one direction only, with its adjacent engaging-disks, said disks secured to and turning with car-axle, and means for connecting said clutch to said cross-head, substantially as and for the purpose described.

12. In a car brake and starter, the combination of the guide-rods 8, spring 5, cross-head 9, connecting-rod 15, chain 20, disks 45 and 46, secured to car-axle, sprocket 42, carrying pawls 43 and the stop-pins 44, substantially as and for the purpose set forth.

13. In a car brake and starter, the combination of the guide-rods 8, the springs 5, the cross-head 9, connecting-rod 15, chains 23, 28, and 29 and their connecting-rods 21, 27, 30, and 31, said rods 27, 30, and 31 provided at their rear ends with the distance-rods 25 and 26, for the purpose described and shown, the sprocket 42, carrying pawls 43 and the stop-pin 44, disks 45 and 46, of the character described and shown, secured to car-axle, clutches 47 and 48, axles 3 and 4, spool 35, clutches 37, and toggle-frames arranged to simultaneously operate said clutches 37, 47, and 48, substantially as and for the purpose set forth.

14. In a car brake and starter, the combination of the guide-rods 8, the springs 5, the cross-head 9, connecting-rod 21, stop-lever 53, connecting-rod 58, chains 20, 23, 28, and 29 and their connecting-rods 21, 27, 30, and 31, said rods 27, 30, and 31 provided at their

rear ends with the distance-rods 25 and 26 for the purpose described and shown, the sprocket 42, carrying the pawls 43 and stop-pin 44, disks 45 and 46, secured to car-axle, clutches 47 and 48, axles 3 and 4, spool 35, provided with flange 81 and stop 80, clutches 37, and toggle frame arranged to simultaneously operate said clutches 37, 47, and 48, substantially as and for the purpose set forth.

15. In a car brake and starter, the combination of the guide-rods 8, springs 5, cross-head 9, connecting-rod 21, draw-bar 55, auxiliary spring 56, fulcrum 54, secured to said draw-bar, stop-lever 53, and rod 58, jointed thereto in a manner to maintain arms of stop-lever in contact with spool-flange 81, and provided with a catch at its rear end, chains 20, 23, 28, and 29 and their connecting-rods 21, 27, 30, and 31, distance-rods 25 and 26, sprocket 42, carrying pawls 43 and stop-pin 44, disks 45 and 46, clutches 47 and 48, axles 3 and 4, spool 35, provided with flange 81 and stop 80, clutches 37, and toggle-frame arranged to simultaneously operate said clutches 37, 47, and 48, substantially as and for the purpose described.

16. In a car brake and starter, the toggle-frames 68 and 69, of the form described and shown, adjustable cross-braces 74, 75, 76, and 77, connected to said toggle-frames, toggles 69, clutch-straps 71, having their top members prolonged, as described, clutches 37, 47, and 48, angle-brace 67, connecting said toggle-frame to intermediate lever 64, fulcrumed in fulcrum-brace 65 and guided at its outer end by the brace-guides 66, toggle-frame collars secured to and turning with car-axles, the adjustable connecting-rod 63, the brake-rod 59, carried by the standard 60, and having the eccentric 62, all in combination, substantially as and for the purpose described.

17. In a car brake and starter, the combination of the guide-rods 8, springs 5, cross-head 9, connecting-rod 21, draw-bar 55, auxiliary spring 56, fulcrum 54, secured to said draw-bar, stop-lever 53, and rod 58, jointed thereto for the purpose described, and provided with a catch at its rear end, chains 20, 23, 28, and 29 and their connecting-rods 21, 27, 30, and 31, distance-rods 25 and 26, sprockets 42, carrying pawls 43 and stop-pins 44, disks 45 and 46, axles 3 and 4, clutches 37, 47, and 48, toggle-frame 68 and 69, adjustable braces 74, 75, 76, and 77, toggles 69, clutch-strape of the character described and supported by their adjacent cross-braces, angle-brace 67, toggle-frame collars secured to and turning with car-axles, intermediate lever 64 and its fulcrum 65 and guide 66, adjustable brake-rod 63, and brake-rod 59, its standard 60, and eccentric 62, secured thereto, all combined substantially as and for the purpose set forth.

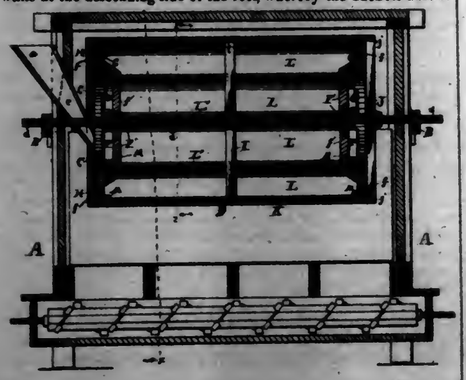
406,388. PROCESS FOR MAKING ALUMINIUM ALLOYS. WILLIAM A. BALDWIN, Chicago, Ill. Filed Aug. 21, 1888. Serial No. 283,364. (No specimens.)

Claim.—The process described of aluminizing a metal, consisting in fusing such metal and pouring the same on an unfused compound of clay or substances bearing alumina, sodium chloride, and charcoal or other carbonaceous substances placed in a vessel or pouring-ladle, substantially as specified.

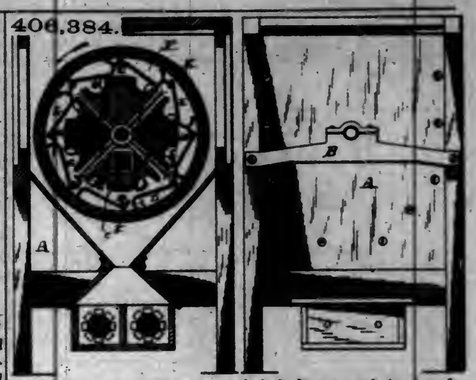
406,384. BOLTING-REEL. CHARLES A. BARNARD, Moline, Ill., assignor to the Barnard & Leas Manufacturing Company, same place. Filed July 12, 1888. Serial No. 279,769. (No model.)

Claim.—1. A bolting-reel covered exteriorly with suitable material, in combination with internal elevator-buckets pivoted in end frames of the reel, said buckets being limited in their outward movements by striking and jarring the frame of the reel, and in their inward movements by studs on the end frame, substantially as specified.

2. A bolting-reel having its outer surface covered with bolting-cloth, in combination with a series of swinging elevator-buckets therein moving automatically by gravity as the reel revolves and having blocks which strike the reel-frame when the buckets swing outwardly while at the descending side of the reel, whereby the buckets answer



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the double purpose of elevators and cloth-cleaners, and the stops for limiting the inward swing of the buckets, substantially as specified.

3. In a reel, the combination of the central shaft and the opposite spider-frames thereon, provided with inwardly-standing studs, with a series of elevator-buckets having an angular portion L' and an outwardly-curved portion *l*, and studs M M on the ends of said buckets journaled in the opposite spider-frames, substantially as set forth.

4. In a reel, the combination of the opposite spider-frames F F, having stop lugs on their inner faces, and the longitudinal swinging elevator-buckets L L mounted thereon, with the reel-head and the tail-spider of larger diameter than and supported on said spider-frames, and the bolting-cloth attached thereto, substantially as and for the purpose set forth.

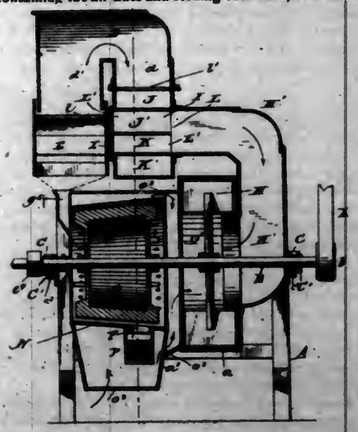
5. The combination of the central shaft, the opposite spider-frames mounted thereon, having lugs on their inner faces, with the series of longitudinal swinging elevator-buckets mounted on said frames, the reel-head H, the spiders I and J, and the bolting-cloth, all substantially as described.

6. In a bolting-reel, the combination of the central shaft, the spider-frames mounted thereon at opposite ends of the reel and having inwardly-standing lugs, and a series of swinging longitudinal elevator-buckets mounted between said spiders and limited in their inward movement by said lugs, with the reel-head, tail-spider, and intermediate spider of larger diameter than said frames, and the bolting-cloth stretched thereon and inclosing said spider-frames and buckets, the buckets being provided with blocks which strike the rim of the central spider when at the descending side of the reel and jar the same, all substantially as set forth.

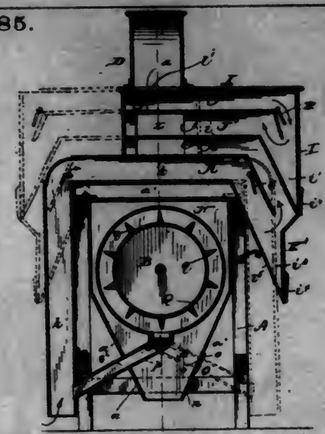
406,385. GRAIN-SCOURER. HERMAN A. BARNARD, Moline, Ill., assignor to the Barnard & Leas Manufacturing Company, same place. Filed Sept. 16, 1886. Serial No. 213,686. (No model.)

Claim.—1. The combination of the main frame, trunk D, the screening-casing, the fan and trunk H', with the detachable and reversible casing I, containing the air-flues and the trunk K', substantially as and for the purpose set forth.

2. In a grain-separator and smut-machine, the combination of the main frame, the fan, the scouring-cylinder and its case, the reversible casing containing the air-flues and settling-chambers, with the reversi-



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ble vertical air-trunk connecting with said casing, all substantially as and for the purpose specified.

3. In a grain-separator and smut-machine, the combination, with the fan, the fan-casing, the main shaft, the casings, and beater mounted within said casings upon the main shaft, of a reversible casing containing the air-flues and settling-chambers connecting with the fan-casing, and a vertical air-trunk connected to said air-flue casing and to the beater-casing and reversible with the air-flue casing, all constructed and adapted to operate substantially as and for the purpose set forth.

4. The combination of the main frame, the scourer-casing, the reversible casing I, a vertical air-trunk K', opposite to and reversible with casing I, and a detachable spout P, with the fan adapted to rotate in either direction, substantially as specified.

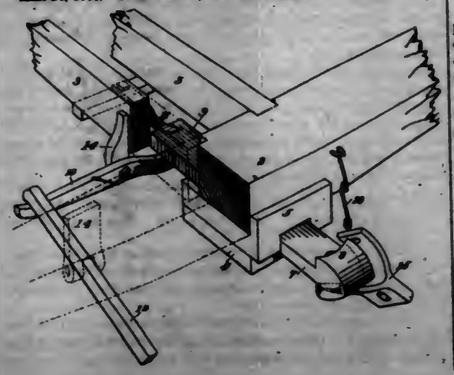
5. In a grain-separator and smut-machine, the combination, with the main frame, its shaft, the fan and beater mounted on the same, and the perforated scouring-case surrounding the beater, of reversible air-flues, reversible separating-trunk, and the reversible delivering tube from the scouring-case, all substantially as described.

6. In a grain-separator and smut-machine, the combination, with the fan and beater mounted upon the main shaft within suitable casings, of the reversible air-flue casing and trunk, all constructed and operating substantially as and for the purpose set forth.

7. The combination, with the fan mounted on the main shaft and its casing, and the reversible air-flue casing I and trunk K', of the conical perforated scouring-casing adjustably connected with air-trunk K', and the conical beater Q, mounted on the main shaft within the scouring-casing, and provided with peripheral angular longitudinal flanges *q*, all substantially as and for the purpose specified.

8. In a grain-separator and smut-machine, provided with a fan and beater mounted on the main shaft within suitable casings, and an air-trunk D, a casing I, adjustable to either side of the machine, and provided with the air-flues K K' and J J', and settling-chambers f f', substantially as described, and the trunk K', with the casing I, all constructed and adapted to operate substantially as and for the purpose set forth.

406,386. CAR-COUPLING. JOHN BLEHER, McKeesport, Pa. Filed Mar. 26, 1888. Serial No. 304,904. (No model.)



Claim.—1. In a car-coupling, the combination of a coupling-bar and a box having an inclined cavity in which the bar is oscillatory, said cavity having faces *b* and *c*, situate on opposite sides of the bar and adapted to fit against the same, substantially as and for the purposes described.

2. In a car-coupling, the combination of a coupling-bar, a box in which the bar is set and is oscillatory, and oppositely-situate shoulders on the bar and within the box, by which motion of the bar in either direction is limited, substantially as and for the purposes described.

3. In a car-coupling, the combination of a coupling-bar, a box in which the bar is set and is oscillatory, and a spring 11, bearing on a portion of the bar projecting to the rear of the box, substantially as and for the purposes described.

4. In a car-coupling, the combination of the end sill 2, the flanged metal box 5, secured to the under side of the sill, and a coupling-bar oscillatory within the box, substantially as and for the purposes described.

5. In a car-coupling, the combination of a coupling-bar having an arrow-shaped head and a removable link having a portion which fits over the head of the bar, and having an integral projecting shank perforated to receive a coupling-pin, substantially as and for the purposes described.

406,387. RAILWAY-GATE. JOHN BOWERS, Marion, Va., assignor of part to John W. Richardson, George W. Richardson, George W. Pratt, and J. L. Thornton, all of same place. Filed Apr. 19, 1888. Serial No. 307,711. (No model.)



Claim.—1. The combination, with the rail 1, having the laterally-projecting pins 42, of the spring-tread 34, having the central thickened portion 34^a, the offsetted portion 41^a, and the reduced intermediate spring portions 46, terminating in slots 47 and mounted on the pins, substantially as specified.

2. The combination, with the rail 1, having the projecting pins 42, terminating in heads, of the tread 34, having the intermediate spring portions 46, slotted ends 47, mounted on the pins, the intermediate outwardly-curved portion 41^a, and the coiled springs 44, interposed between the heads and the tread, substantially as specified.

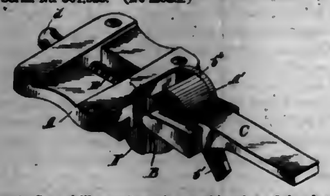
3. The combination, with the gate-frame provided with a gate, and a latch adapted to operate upon a pin projecting from the gate, of a connecting-rod, as 32, a rock-arm connected with the rod and mounted upon a rock-shaft provided with an opposite slotted arm, and a spring-tread pivoted to the rail and connected with the rock-arm, substantially as specified.

4. The combination, with a signal-frame, of a gate pivoted therein, a three-armed lever pivoted in rear of the gate and having the front one of its arms connected therewith, oppositely-arranged spring-treads, each of which is connected to one of its remaining arms and adapted to operate the same to close the gate, and an in-

termediately-arranged spring-tread adapted to operate a rock-shaft for releasing the gate, substantially as specified.

5. The combination, with the rail 1, provided with the opposite treads 34, rock-shafts 36, and rock-arms 39, of the gate-frame having the pivoted gate, the lever 12, mounted in rear of the gate and having arms 13 and 14, the rod 41, connecting the arm 13 and the rock-arm of one of the shafts 36, a rod 16, connecting the arm 14 to a pivoted arm 17, and the rod 46, connecting the lower end of the arm 17 to the opposite rock-arm 36, substantially as specified.

406,888. **THILL-COUPLING.** WILLIAM J. CARD, Olean, N. Y., assignor to R. L. Gage, same place, and William Mellinn. Filed Feb. 25, 1889. Serial No. 301,023. (No model.)



Claim.—1. In a thill-coupling, the combination of the slotted hollow head, the slotted sleeve movable inside said head, the lever actuating said sleeve, and a spring-actuated rod adapted to enter the slot in the sleeve to lock the sleeve, all substantially as described.

2. In a thill-coupling composed of a slotted and hollow head, a slotted sleeve fitting into said head for the slotted end of the thill to be dropped into, and a spring-actuated rod acting at once to lock the sleeve and upon the end of the thill, substantially as set forth.

3. In a thill-coupling, a spring-actuated rod D, combined with the slotted and flanged sleeve and the hollow and slotted head, substantially as described.

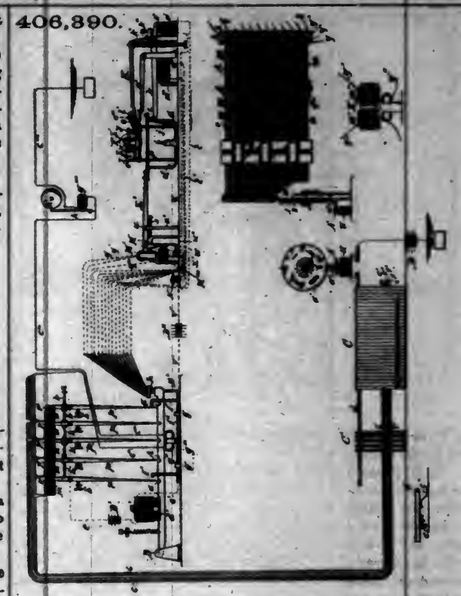
4. In a thill-coupling device, the combination of the following elements, viz: a slotted and hollowed head, a slotted sleeve fitting therein, a longitudinally-moving and spring-actuated rod adapted to act in conjunction with said slotted sleeve, and a side piece on the coupling which acts to receive backward pressure on the thill and prevent any strain on the spring.

406,889. **CANOPY-SUPPORT FOR CHILDREN'S CARRIAGES.** FLORENCE J. D. CHAPPELL, Baltimore, Md., assignor, by direct and mesne assignments, of forty-nine one-hundredths to Wilbur H. Riddle, same place. Filed Sept. 3, 1888. Serial No. 284,936. (No model.)



Claim.—The combination, with the carriage-body, of the two clamps B, constructed as described, consisting of the bars *i*, the central flat plates *f*, bearing against the inner flat faces *j* of the said bars and having concave grooves *n*, the bow ends fitting in said grooves, the eyes *e*, through which the ends of the bow pass, the pivot-bolt *d* and clamp-nut *o*, and the clamp H and set-screw, whereby the handle of the parasol or canopy is adjustably fastened to the bow, the whole being arranged so that the parasol can be adjusted in any desired position with respect to the body of the carriage, substantially as specified.

406,890. **ELECTRICAL TYPE-WRITER.** MARK W. DEWEY, Syracuse, N. Y., assignor of two-thirds to Emil Lamm and Charles H. Duell, both of same place. Filed Dec. 1, 1887. Renewed Nov. 24, 1888. Serial No. 291,808. (No model.)



Claim.—1. In combination with the feelers A A and the plates *p p*, provided with armatures *p' p'*, separate magnets for the respective plates and transmitting-keys electrically connected with the aforesaid magnets, as set forth.

2. In combination with circuit making and breaking keys at the transmitting-station, the feelers A A and the plates *p p* at the receiving-station, separate magnets *m m* for the respective plates, main-line wires *c c c*, connecting the keys with the magnets, circuit making and breaking points arranged to come in contact with the feelers by the movement of the latter, and printing-levers operated by magnets electrically connected with the aforesaid circuit making and breaking points, substantially as set forth.

3. In combination with circuit making and breaking keys at the transmitting-station, the feelers A A and plates *p p* at the receiving-station, separate magnets *m m* for the respective plates, main-line wires *c c c*, connecting the keys with said magnets, circuit making and breaking points *k k*, arranged to come in contact with the feelers by the movement of the latter, a type-writer at the receiving-station, a platen-carriage on said type-writer, feed mechanism for moving said carriage, the lever *e'*, adapted to throw the feed mechanism in and out of gear, an armature on said lever, a magnet *m'''* for operating said lever, and wires connecting magnets *m'''* with one of the contact-points *k*, substantially as and for the purpose set forth.

4. In combination with the plates F, the pivoted carrier G, type-bars *j j j*, pivoted to and arranged in sets on said carrier, the series of levers *k k k*, arranged one for each set of type-bars, electro-magnets *m'' m'' m''* for operating said levers, the lever K' for turning the carrier, and electro-magnets M' M'' for operating the lever K', substantially as described and shown.

5. In combination with the frame E, carriage I, and plates F, the screw H, pivoted to the said frame, the ratchet-wheel *l'*, attached to said screw, lever *n*, and pawl *l''* for turning the screw, and an arm *o*, pivoted to the carriage and adapted to engage and release the screw, substantially as and for the purpose set forth.

6. In combination with the frame E, carriage I, and plates F, the screw H, pivoted to the said frame, the ratchet-wheel *l'*, secured to the screw, the pivoted lever *n*, provided with the armature *n'*, the pawl *l''*, connected to said lever and engaging the ratchet-wheel, the electro-magnet *m'''*, facing the said armature, and a circuit maker and breaker in the circuit with which said magnet is connected, as set forth.

7. In combination with the frame E, carriage I, and plates F, the screw H, pivoted to said frame, the ratchet-wheel *l'*, lever *n*, and pawl *l''* for turning the screw, the arm *o*, pivoted to the carriage and adapted to engage and release the screw, and the lever *o'*, adapted to throw the arm *o* out of engagement with the screw, substantially as described and shown.

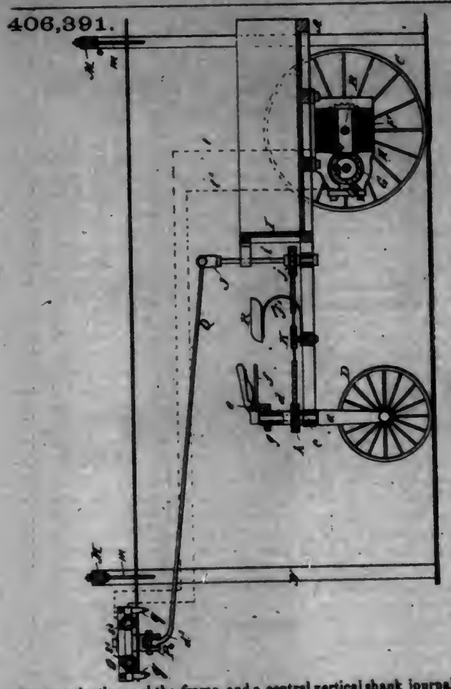
8. In combination with the frame E, carriage I, and plates F, the screw H, pivoted to said frame, the ratchet-wheel *l'*, lever *n*, and pawl *l''* for turning the screw, the arm *o*, pivoted to the carriage and adapted to engage and release the screw, the lever *o'*, adapted to throw the arm *o* out of engagement with the screw, and the spring-lever K, connected with the carriage to retrograde the same when released from the screw, as set forth.

406,891. **SYSTEM OF ELECTRIC PROPULSION.** HARVEY D. DUBLE, Rockford, Dak. Filed Feb. 2, 1889. Serial No. 298,449. (No model.)

Claim.—1. In a system of electric propulsion for common roads, the trolley having opposite front and rear pairs of vertical rollers, and horizontal rollers insulated from each other and from the frame or body, substantially as set forth.

2. In a system of electric propulsion for common roads, the trolley consisting in a frame, opposite depending front and rear pairs of vertical rollers, opposite front and rear horizontal rollers insulated

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from each other and the frame, and a central vertical shank journaled in the frame and having a fork on its lower end, substantially as set forth.

3. In a system of electric propulsion for common roads, the trolley consisting in a frame having a central vertical chamber apertured in its bottom and having an apertured cap plate or cover, a shank extending through said apertures and having a fork at its lower end, a spring surrounding the shank within the chamber and connected at its end with the shank and cap plate, respectively, opposite front and rear pairs of vertical rollers depending from the frame, and opposite front and rear horizontal rollers insulated from each other and the frame, substantially as set forth.

4. The combination, with the overhead conductors and the trolley thereon, having a vertical shank journaled thereon, of a road-wagon having a motor connected with the trolley, a vertical shaft journaled on the wagon, and a rod pivoted or hinged at its ends to said shank and shaft, substantially as set forth.

5. In a system of electric propulsion for common roads, the wagon provided with drive-wheels and a steering-wheel having a vertical axis or shaft provided with a locking mechanism and a sprocket-wheel, a vertical shaft between the drive and steering wheels, a sprocket-wheel thereon, a chain connecting said sprocket-wheels, a rod pivotally connected to the upper end of said second vertical shaft, and an electric motor, the shaft of which is geared to the axis of the drive-wheels, substantially as set forth.

6. In a system of electric propulsion for common roads, the combination of a trolley provided with the conductors *l l'*, the vertical rollers *q*, and horizontal rollers *s s'*, the wagon provided with a body A, the axle B, drive-wheels C, caster-wheel D, motor H, and means for connecting the motor and the trolley, substantially as specified.

7. In a system of electric propulsion for common roads, the combination of the suspended conductors *l' l'*, the trolley provided with the frame *n* and chamber *u*, and having arms *o*, the studs *p*, and insulated studs *r r'*, the rollers *q*, journaled on the studs *p*, the rollers *s s'*, journaled on the studs *r r'*, and adapted to roll on the conductors, the fork P, furnished with the shank *w*, journaled in the frame *n*, and the spring *b'*, connecting the frame *n* and the shank *w*, substantially as specified.

8. In a system of electric propulsion for common roads, the combination of the suspended conductors *l' l'*, the trolley provided with the frame *n* and chamber *u*, and having arms *o*, the studs *p*, and insulated studs *r r'*, the rollers *q*, journaled on the studs *p*, the rollers *s s'*, journaled on studs *r r'* and adapted to roll on the conductors, the fork P, furnished with the shank *w*, journaled in the frame *n*, the spring *b'*, connecting the frame *n* and the shank *w*, the knuckle *c'*, the rod Q, provided with the right-angled end *d'*, the shaft *i*, carrying the slotted fork J, the sprocket-wheel *j*, attached to the said shaft, the caster-wheel D, the shank *c*, the sprocket-wheel *h*, and the endless chain K, connecting the sprocket-wheels *h j*, substantially as specified.

9. In a system of electrical propulsion, the combination, with overhead electrical conductors, a trolley adapted to run thereon, a wagon provided with an electric motor, and connections between said motor and conductors, of a caster-wheel on the wagon, a sleeve on the shank of said caster-wheel carrying a sprocket-wheel, a vertical shaft journaled on the wagon provided with a sprocket-wheel, a belt connecting said sprocket-wheels, a steering-rod swiveled to the trolley and to the said vertical shaft, and a steering-lever on the shank of the caster-wheel, all arranged for operation as and for the purposes set forth.

406,892. **DRAWING-KNIFE.** JAMES R. FIELEY, Delphi, Ind., assignor of one-half to Willis J. Sinn and Michael McGlennon, both of same place. Filed Aug. 18, 1888. Serial No. 283,084. (No model.)



Claim.—The combination of the frame having parallel slotted rearward projections, an adjustable and removable blade provided with similar projections having square apertures, bolts having square shanks adapted to fit in the said apertures, and thumb-nuts for engaging the said bolts, substantially as described.

406,893. **SMOKE-PREVENTER FOR FURNACES.** SAMUEL S. FLEET, St. Louis, Mo., assignor of one-third to William F. Mills, same place. Filed Apr. 16, 1888. Serial No. 307,478. (No model.)



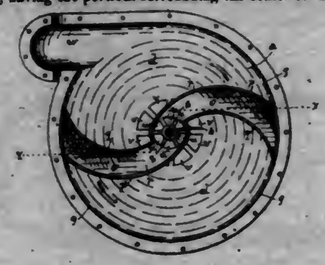
Claim.—1. In a steam-boiler or other furnace, the combination of an injector-jet having a perforated nozzle-cap, which incloses the jet and forms a mixing-chamber, an air-tube inclosing and extending beyond the jet and its cap, and an outer air-tube surrounding and extending beyond the injector-tube, substantially as shown, and for the purpose described.

2. In a steam-boiler or other furnace, the combination of an injector-jet having a perforated nozzle-cap, which incloses the jet and forms a mixing-chamber, an air-tube inclosing and extending beyond the jet and its cap, and a series of air-tubes placed one within the other around the injector-tube and extending, respectively, beyond the latter and each other, substantially as shown, and for the purpose described.

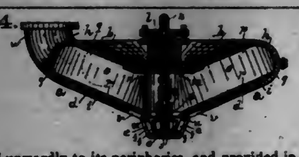
3. In a steam-boiler or other furnace, the combination of a series of injector-jets having perforated nozzle-caps and surrounding air-tubes, all constructed and arranged substantially as described, with a series of air-tubes communicating with each other and opening from the ash-pit through the fire-bridge into the furnace-chamber, substantially as shown, and for the purpose described.

406,894. **CENTRIFUGAL PUMP.** JOSEPH J. FORSTER, Bay City, Mich., assignor of one-half to Charles B. Curtis, same place. Filed Jan. 2, 1889. Serial No. 295,112. (No model.)

Claim.—1. In a centrifugal pump, the combination, with the casing having the upper and lower sections inclosing a horizontal circular chamber, having the portions surrounding the center of the said sec-



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tions inclined upwardly to its peripheries, and provided in the central part of its lower section, as described, with two series of induction-openings and an eduction-pipe leading from the periphery of the casing, of the rearwardly-curved upwardly-inclined arms within the chamber and each provided with a longitudinal opening of greater area at their outer ends than at their inner ends, and projecting outwardly from a central barrel having in its lower portion induction-openings, and mounted upon a shaft passing through the upper section of the casing, substantially as and for the purpose set forth.

2. In a centrifugal pump, the combination, with a casing inclosing a circular chamber and having upper and lower disks inclined from the center upward to their peripheries, and having the central portion *c* of the lower disk depressed and provided with side openings *f*, and the openings *v* in the lower disk *d*, around the depressed portion *c*, and having the eduction-pipe *w*, the shaft *k*, passed downwardly through the center of the chamber, the barrel *n*, provided with the upper hub *m* and lower hub *l*, mounted upon a shaft, and having the induction-openings *u*, of the upwardly-inclined rearwardly-curved hollow arms *o*, projecting laterally from the sides of the said barrel *n*, substantially as and for the purpose set forth.

406,395. CHURN-DASHER. JAMES R. GIBBS, Jonesborough, Tenn. Filed Mar. 6, 1889. Serial No. 302,062. (No model.)



Claim.—1. As an improved article of manufacture, a metallic hub for churn-dashers, having radial arms provided with slots in the plane of the angle of the arms, and a crown-ratchet having a hollow spindle thereon, substantially as described.

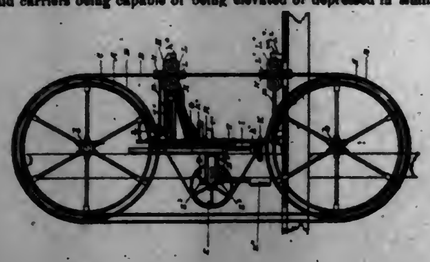
2. In a churn-dasher, a metallic hub having radial arms provided with slots in the plane of the angle of the arms, and a crown-ratchet having a hollow spindle projecting therefrom, in combination with detachable blades secured in the slots of the arms of the hub, substantially as described.

3. In a churn-dasher, an upper section having a crown-ratchet on its lower surface, and a hollow spindle projecting from the face of said ratchet, in combination with a lower section having a crown-ratchet on its upper surface, and an inwardly-projecting hollow spindle adapted to receive the spindle of the upper section, in combination with a handle having the sections loosely mounted thereon, substantially as described.

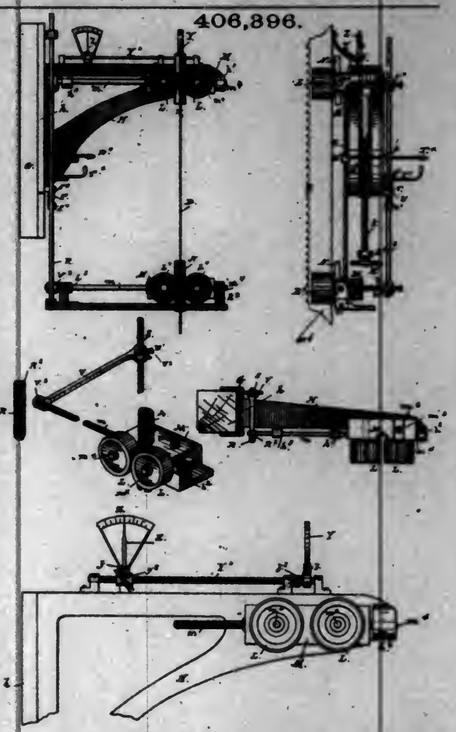
406,396. BAND SAWING-MACHINE. ELIJAH S. GILMORE, San Francisco, Cal., assignor of two-thirds to Nathan W. Spaulding, same place. Filed June 16, 1887. Renewed Nov. 30, 1888. Serial No. 292,331. (No model.)

Claim.—1. In a band sawing-machine, the combination, with two sets of laterally-adjustable deflecting-rollers, of rods *m*, by which the rollers are adjusted, and the upright rods R and S, connected to rods *m*, in the manner and for the purpose set forth.

2. In a band sawing-machine, the combination of the two sets of deflecting-rollers and pivoted carriers on which the rollers are mounted, said carriers being capable of being elevated or depressed in similar



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vertical arcs, rods *m*, connected to the carriers, and upright rods R and S, connected to the rods *m*, in the manner set forth, whereby the vertical movement of the carriers is produced and the sets of rollers are set simultaneously and equally, as set forth.

3. In a band sawing-machine, the combination of deflecting-rollers, a sliding carrier on which they are mounted, rod *m*, connected to said carrier, and upright rod R, connected to rod *m*, in the manner and for the purpose set forth.

4. The combination of the pivoted and sliding roller-carrier M, rod *m*, connected thereto, arm V, secured upon rod *m* and having the groove V^2, and the upright rod R, having a spline R^2 working in groove V^2, and the upright rod S, to which one end of the arm V is connected, in the manner and for the purpose set forth.

5. The combination of the pivoted roller-carriers M, rods *m m*, connected thereto, arms V V, secured upon rods *m*, rods S, to which the arms V V are connected at their opposite ends, and the screw-threaded sleeve T and fixed nut U on rod S, as a means for moving said rod, as set forth.

6. The combination of the sliding roller-carrier M, rod *m*, connected thereto, having a groove V^2 in it or in a part fixed upon it, and the upright rod R, having a spline R^2, working in the groove, as set forth.

7. The combination, with the pivoted roller-carriers M, of the rods *m*, connected thereto, arms V, secured upon rods *m*, the rod S, the yielding collars U^x, by which the arms V are connected to the rod S, and the stop N, against which the back of the saw works, as set forth.

8. The combination, with an endless band-saw, of an indicator adapted to show the true vertical position of the saw and to indicate the degree of its departure therefrom, consisting, essentially, of a pointer, a scale or dial, and a finger bearing against the saw and connected with the pointer to operate the same by or from the movement of the saw, as set forth.

9. The combination, with the roller-carriers M, rods *m*, connected thereto, arms V, secured upon rods *m*, and rod S, to which the arms V are connected, of the clamp-screw and slotted plate P, through which the clamp-screw passes to the arms V, as and for the purpose set forth.

406,397. COUPLING FOR THE STEAM-PIPES OF RAILWAY CARS. ROBERT I. HAMPTON, Athens, Ga. Filed Mar. 21, 1888. Serial No. 304,196. (No model.)

406,397.



Claim.—1. In a coupling for the steam and other pipes upon railway-cars, the combination, with two similar pipe-sections, each having segmental lugs upon opposite sides, provided with alternate guides and guide-seats, of a locking-sleeve rotatively mounted upon one of said pipe-sections and capable of a limited longitudinal adjustment thereon, said sleeve having a cam-stop adapted to engage a stud or post upon the other pipe-section to hold the coupling in position for separation, substantially as described.

2. In a coupling of the type set forth, the combination, with two similar pipe-sections having locking-shoulders thereon, of a locking-sleeve having a slot with a recess therein, which receives a stud on one pipe-section, and provided with locking-shoulders engaging the similar shoulders on the respective pipe-sections, said slot having an inclined surface at one end, whereby the stud is thrown into the recess to hold the sleeve in coupling position, substantially as described.

3. In a coupling of the type described, the combination, with two similar pipe-sections, each having lugs provided with straight shoulders and separate cam-inclined shoulders, of a locking-sleeve having a straight slot provided with an incline at its end and having a recess opposite said incline, the other pipe-section being provided with a stud or post, and the edge of the sleeve adjacent to said post having a cam-stop which is engaged with the stud by the displacement of the sleeve caused by the action of the incline upon the stud lying in the recessed slot in the sleeve, substantially as described.

4. In a coupling of the type described, the combination, with two similar pipe-sections, each having opposite segmental lugs provided alternately with guide-pieces and seats therefor, of a locking-sleeve loosely mounted on one section and having straight and inclined shoulders engaging straight shoulders on one pipe-section and cam-shoulders on the other, one of said pipe-sections having a stud running in a slot in the sleeve, said slot having an inclined end and recess adjacent thereto, and the other having a similar stud engaging a cam-stop on the end of the sleeve as the pipe-sections come together, substantially as described.

5. In a coupling of the type described, the combination, with two similar pipe-sections, each having segmental lugs provided with guiding devices, and each having straight and cam surfaces or shoulders on the rear faces of each lug, of a locking-sleeve having a straight slot to receive a stud on one pipe-section and provided with a recess into which said stud may pass to hold the sleeve when set for coupling, the other pipe-section being provided with a stud to engage a cam-stop on the open end of the sleeve and throw the stud on the other pipe-section out of its recess and release the sleeve as the ends of said sections meet, substantially as described.

406,398. APPARATUS FOR GRAINING PRINTING-PLATES. JAMES G. HARRIS, Providence, R. I., assignor to Harris & Jones, same place. Filed Aug. 20, 1888. Serial No. 283,271. (No model.)



Claim.—1. A plate-holding bed provided with raised sides and holding a quantity of sand and a number of balls, with means for reciprocating the said bed to agitate the sand and balls upon the plate, substantially as described.

2. A plate-holding bed provided with raised sides and holding a quantity of sand, a number of balls, and a quantity of water, with means for reciprocating the said bed to agitate the sand, balls, and water upon the plate, substantially as described.

406,399. GRAIN DOOR FOR CARS. EDWARD A. HILL, Chicago, Ill. Filed Nov. 26, 1888. Serial No. 291,867. (No model.)

Claim.—1. The combination of a door, a pivot at each upper corner thereof, a guide-rod at each side of the doorway, and a ring encircling said guide-rod, and said pivot at their intersection, substantially as described.

2. The combination of a door, a pivot at each upper corner thereof, a guide-rod at each side of the doorway, its upper end receding from the doorway and having a ledge formed thereon, a ring encircling the guide-rod and pivot at their intersection, its upper edge lying on the side of the guide-rod toward the center of the door, substantially as described.

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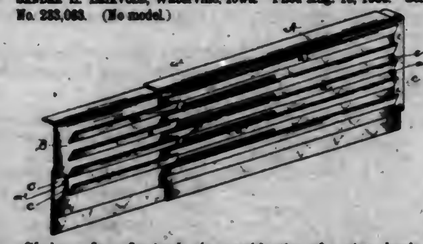
406,400. CHAIR-ROCKER. CORNELIA M. JACOBY, St. Louis, Mo., assignor of two-thirds to Frank Tombridge and Julius J. Seitz, both of same place. Filed Feb. 7, 1888. Serial No. 298,950. (No model.)



Claim.—1. In a chair-rocker, the combination of rocker *a*, provided with a beveled groove *k*, box or casting *c'*, constructed substantially as described, and having a dovetail projection *j*, which is inserted within a corresponding groove or slot *k'*, formed along the rocker *a*, with a screw-bolt *g'*, working through one end of box *c'* and carrying a clamp *h*, substantially as shown, and for the purpose described.

2. In a chair-rocker, the combination of a rocker *a*, provided with a beveled groove *k*, a box or casting *c'*, having dovetail projection *j* inserted within groove *k'*, of rocker *a*, one end of said box *c'* having a rubber or other cushion *f'*, clamp *h*, provided with rubber cushion *i'*, and a screw-bolt *g'*, swiveled centrally to clamp *h'*, substantially as shown, and for the purpose described.

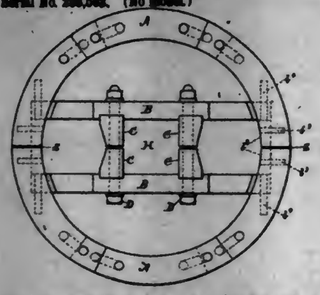
406,401. ADJUSTABLE FIRE-BACK. HOLVER O. JERLOW and SANDER H. LEHVOLD, Waterville, Iowa. Filed Aug. 13, 1888. Serial No. 283,083. (No model.)



Claim.—In a fire-back, the combination of a plate having a number of upward-extending parallel ribs and longitudinal open-ended slots between the ribs, a plate having similar ribs arranged out of line with the ribs of the first-named plate and adapted to slide be-

tween the same, adjustable plates fitting on the back of the ribbed plates, having a series of openings near their outer edges, projections on the ribbed plates engaging the said openings, and bolts extending through the adjustable and the ribbed plates to clamp the whole together, substantially as described.

406,402. WOODEN PULLEY. JOSEPH G. MOONY, Erie, Pa., assignor to the Taper Sleeve Pulley Works, same place. Filed Dec. 14, 1888. Serial No. 293,562. (No model.)

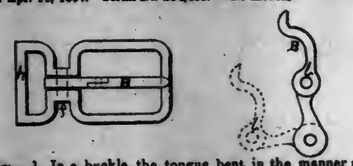


Claim.—1. The combination, in a split wooden pulley, of a central rim part composed of the rings *a'*, divided on the line S S and having the notches *b* cut therein, the spoke-bars B, seated in said notches, the pieces b^3, filling said notches, the finishing-rings *a a*, completing the rim and divided so as to bisect the pulley on the line S S, and the blocks C C on said spoke-bars.

2. The combination, in a wooden split pulley, of a central rim part formed of the rings *a'*, divided into segments and having the notches *b* cut at the ends of each segment, the spoke-bars B B, seated in said notches and secured by dowels b^2 b^4, the piece b^3 formed from the pieces *b'*, filling the notches *b*, the dowels b^2, holding said pieces b^3 and the bars B in place, and the finishing-rings *a*, completing said pulley-rim.

3. In a wooden split-pulley, the combination, with the rim A, spoke-bar B, and filling-piece b^3, of the dowels b^2 and b^4, entering said rim at right angles to each other.

406,403. BUCKLE. GEORGE C. PAIGE, Boston, assignor to Joseph A. Hurd, Salem, A. B. Towne, Boston, and C. D. Moore, Chelsea, Mass. Filed Apr. 11, 1887. Serial No. 234,468. (No model.)



Claim.—1. In a buckle, the tongue bent in the manner shown and provided with a joint, substantially as and for the purpose shown.

2. The combination, in a buckle, of the jointed and bent tongue B and a frame provided with a recessed slot *c*, substantially as and for the purpose described.

3. The combination, in a buckle, of the bent and jointed tongue B and the frame provided with the recessed slot *c*, hubs or bosses *c*, and loop E, the whole adapted to be used in connection with a metallic lug, and all substantially as described and shown.

4. The combination, in a buckle, of the independent bar or pivot *f* with the bent and jointed tongue and a frame provided with the recessed slot *c*, as and for the purpose substantially as described.

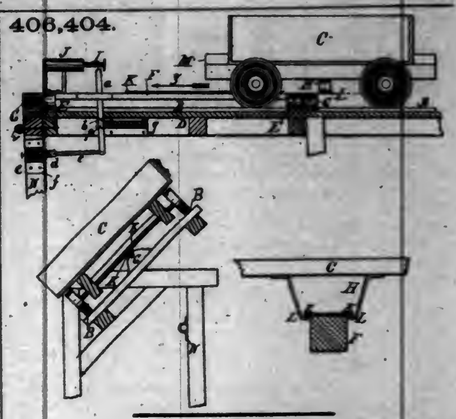
5. The combination, in a harness-buckle, of the independent bar or pivot *f* and the bent and jointed tongue B, substantially as and for the purpose described.

6. The combination, in a buckle, of the frame, the sides of which are drawn in, as described, the bar A, and the tongue B, substantially as and for the purpose shown.

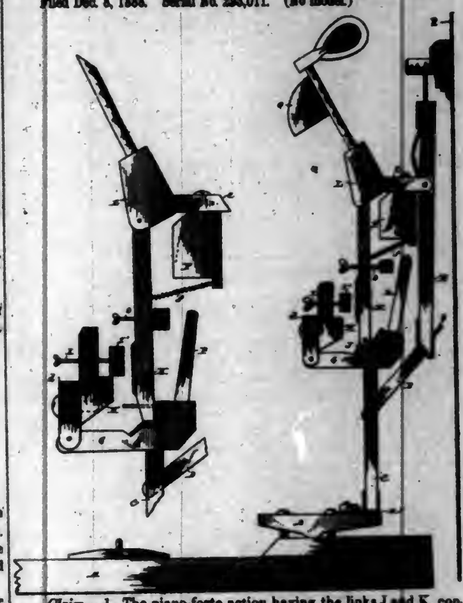
406,404. DUMPING APPARATUS. GEORGE W. PAYSON, Crawford, Ill., assignor of one-half to Deisse & Shepard. Filed May 26, 1888. Serial No. 275,411. (No model.)

Claim.—A dumping apparatus comprising the bed D, pivotally supported in alignment with the main track A, and provided with the central rail F, having flanges K, a buffer I J, attached to said rail, a lever *a*, pivoted to said bed and having a connecting-rod *c* and *a*, pin *d*, a socketed plate *f*, connected with a fixed support to receive said pin, and a spring joined to the lever and the bed, all adapted for operation in connection with a truck carrying the clutch H L, substantially as described.

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406,405. PIANO-ACTION. SAMUEL R. PERRY, Wilkes-Barre, Pa. Filed Dec. 8, 1888. Serial No. 293,011. (No model.)



Claim.—1. The piano-forte action having the links J and K, connected to the hammer-butt, and arm G, pivoted to the pitman of the key, substantially as and for the purpose set forth.

2. The piano-action having the arm G, pivoted upon the key-pitman, post P, applied to said arm, and the link J, connecting said arm to the link K, connecting with the hammer-butt L and acting upon the cushioned regulating-screw I, substantially as and for the purpose set forth.

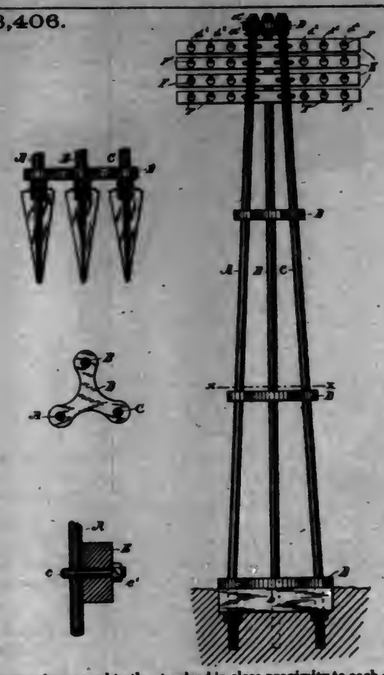
3. The piano-forte action having the spring *f*, connected to the link K, substantially as set forth.

4. The piano-forte action having the links J and K, combined with the arm or lever G, the pitman C, and arm D, for the purpose specified.

406,406. TELEGRAPH-POLE. CHARLES M. RUSSELL, Bowling Green, Ky., assignor of one-third to Thomas B. Lyne, same place. Filed Oct. 3, 1888. Serial No. 287,544. (No model.)

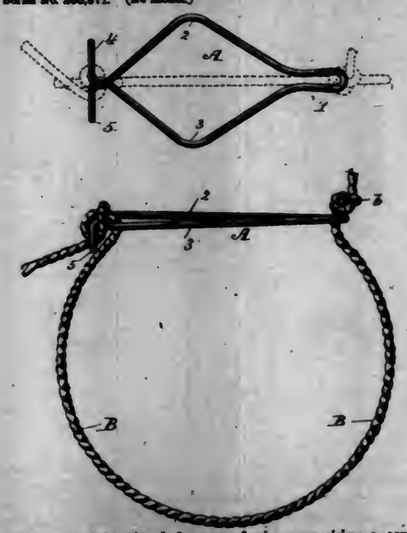
Claim.—In a telegraph-pole, the combination of the tubular standards A B C, arranged in the shape of a tripod, the cast-metal brackets or spiders having the vertical holes, through which the standards are extended, the cross-pieces E, having transverse horizontal holes therein to receive the insulators, the staples *c*, extending through the cross-pieces and around the standards, where they are secured by bolts, and the insulators seated in the holes in the cross-pieces, so as not to project above or below said cross-pieces, whereby the cross-

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pieces may be secured to the standard in close proximity to each other, substantially as described.

406,407. FODDER-BINDER. ENOS B. SMITH, Dayton, Ohio, assignor of one-half to James A. Weed, same place. Filed Oct. 22, 1888. Serial No. 288,871. (No model.)

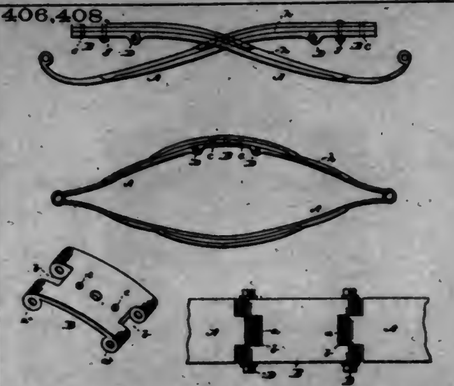


Claim.—A fodder-band fastener of wire, comprising a central band with nearly-parallel sides, them bent outwardly and inwardly with the ends interlocking and bent slightly downward at the point of junction, said ends standing at nearly a right angle to the longitudinal axis of said fastener, substantially as shown and described.

406,408. VEHICLE-SPRING. ALBERT WAGGONER, Columbus, Ohio, assignor of one-half to Orrin H. Allen, St. Louis, Mo. Filed Oct. 20, 1888. Serial No. 288,035. (No model.)

Claim.—In a vehicle-spring, the combination, with the upper and

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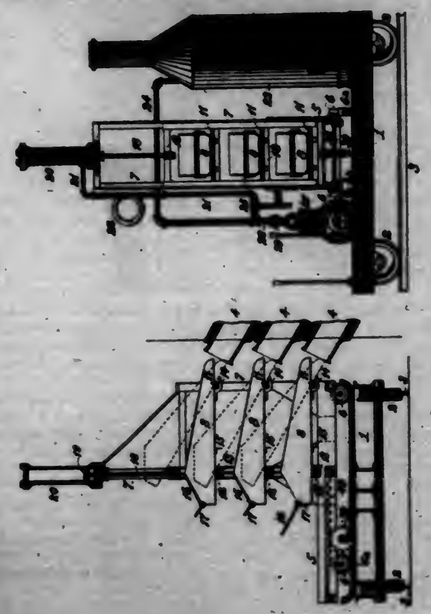
lower leaves A, the said upper leaf being made in sections and provided with perforated eyes or lugs *c*, of a connecting-link B, provided with recesses *b*, into which fit the eyes or lugs *a* of the spring, said recesses being located intermediate of the eyes *a'*, the latter being perforated, the vertical openings *c* in said link, and the bolts D, passing through the aligned perforations of the eyes or lugs *a* and *a'*, as described, for the purpose specified.

406,409. RETORT-CHARGING DEVICE. JAMES H. WALKER, Sewickley, assignor to the Pneumatic Gas and Electric Engineering Company, (Limited,) Pittsburg, Pa. Filed Feb. 16, 1889. Serial No. 300,165. (No model.)

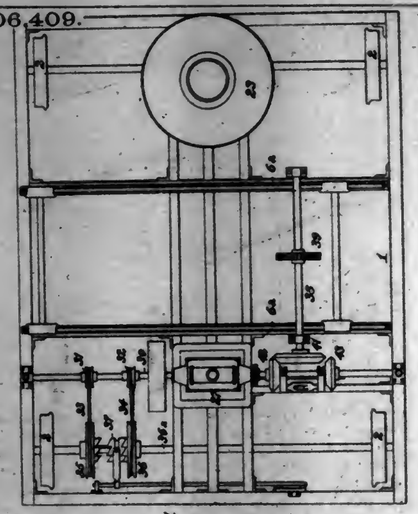
Claim.—1. In a retort-charging machine, the combination of a carriage, a frame fixed thereon, a fluid-pressure cylinder secured to the frame and having a piston and rod connected to a frame fitted to move vertically on the fixed frame, and a series of tilting chutes, each supported adjacent to opposite ends upon the fixed and the movable frames, respectively, substantially as set forth.

2. In a retort-charging machine, the combination of a carriage, a frame fixed thereon, a fluid-pressure cylinder secured to the frame and having a piston and rod connected to a frame fitted to move vertically in the fixed frame, a series of tilting chutes, each supported adjacent to opposite ends upon the fixed and the movable frames, respectively, and stops fixed to the chutes in position to abut against their supports and regulate their degree of horizontal traverse thereon, substantially as set forth.

3. In a retort-charging machine, the combination of a carriage,

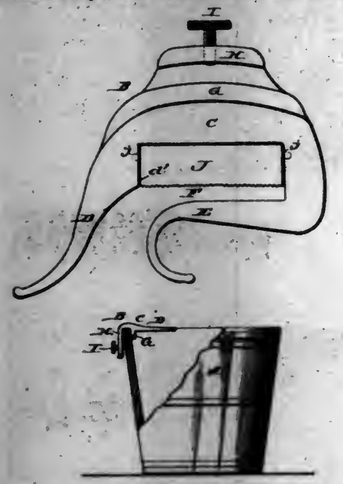


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a frame fixed thereto, a fluid-pressure cylinder secured to the frame and having a piston and rod connected to a frame fitted to move vertically on the fixed frame, a series of tilting chutes, each supported adjacent to opposite ends upon the fixed and the movable frames, respectively, and receiving-plates hinged to the chutes at their ends adjacent to the movable frames, substantially as set forth.

406,410. MOP-GRIP. JOHN H. WARE, Eureka, Cal. Filed Apr. 7, 1888. Renewed May 2, 1889. Serial No. 309,411. (No model.)

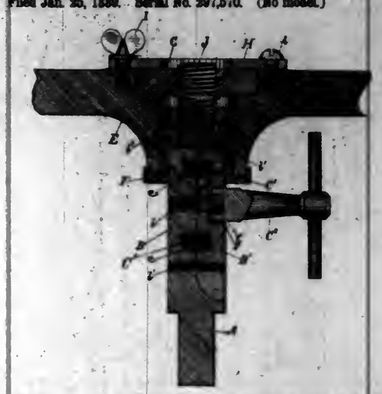


Claim.—1. A mop-grip arranged to be attached to a bucket, provided with a rectangular opening between two arms, and a plate pivoted in said opening in such manner that it will fall or bind against a mop-rag and prevent the latter from turning, substantially as specified.

2. A mop-grip arranged to be attached to a bucket, and comprising the body C, having the horn D and arm E, with their free ends curving away from each other, and having the rectangular space F and the oscillating plate J, provided with the outer roughened or toothed edge and journaled at *j j* in said space, substantially as specified.

3. In a mop-grip, the combination, with the body C, provided with the curved horn D, arm F, shoulder G, arm H, and set-screw I, and having the rectangular space or opening F, of the oscillating plate J, journaled at *j j* in said space, nearer its inner edge than its outer edge, and with its outer edge flush with the shoulder *d'* of the horn, substantially as specified.

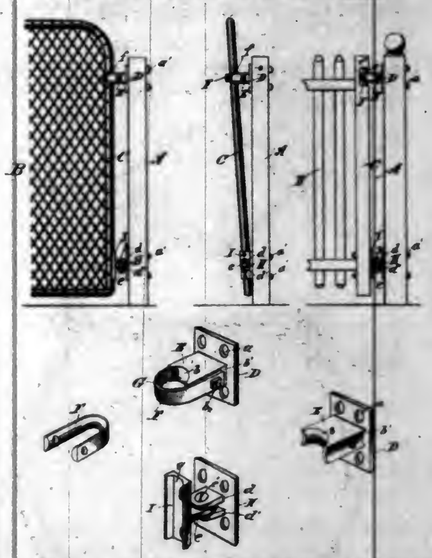
406,411. NIPPLE-HOLDER. JAMES C. WILLIAMS, Erie, Pa., assignor to the Jarecki Manufacturing Company, (Limited,) same place. Filed Jan. 25, 1889. Serial No. 297,570. (No model.)



Claim.—1. The combination, with the fixed jaw B, forming the body of the holder and having the shank A, the movable jaw B', the opening-springs working between said jaws, and the clamping-screw C, substantially as and for the purpose described.

2. The combination, with the fixed jaw B, forming the body of the holder and having the shank A, of the movable jaw B', the opening-springs and dowel-pins working between said jaws, and the clamping-screw C, all constructed substantially as and for the purposes specified.

406,412. GATE-HINGE. HENRY EBERHARDT, Chicago, Ill., assignor to the Gilbert & Bennett Manufacturing Company, Georgetown, Conn. Filed Mar. 20, 1889. Serial No. 304,026. (No model.)



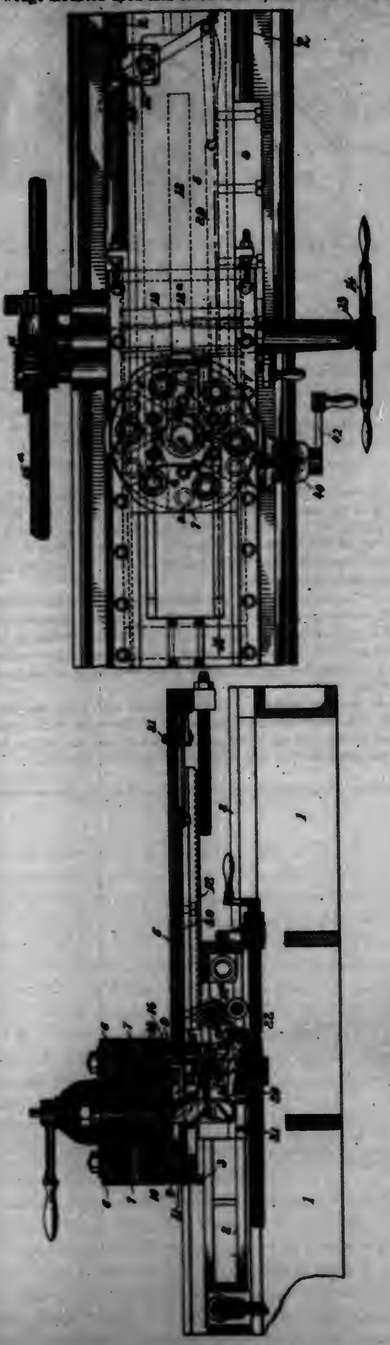
Claim.—1. A gate-hinge composed of the plate D, the projection E, formed with recess *b* and grooves *b'*, and the bent strap F, secured to the arm or projection E, forming the eye G, substantially as set forth.

2. A gate-hinge composed of a plate D, the projection E, formed with a curved recess *b* and concave grooves *b'*, and a bent strap F, having its inner surface convex and secured to the projection E, forming the eye G, substantially as shown and described, and for the purpose set forth.

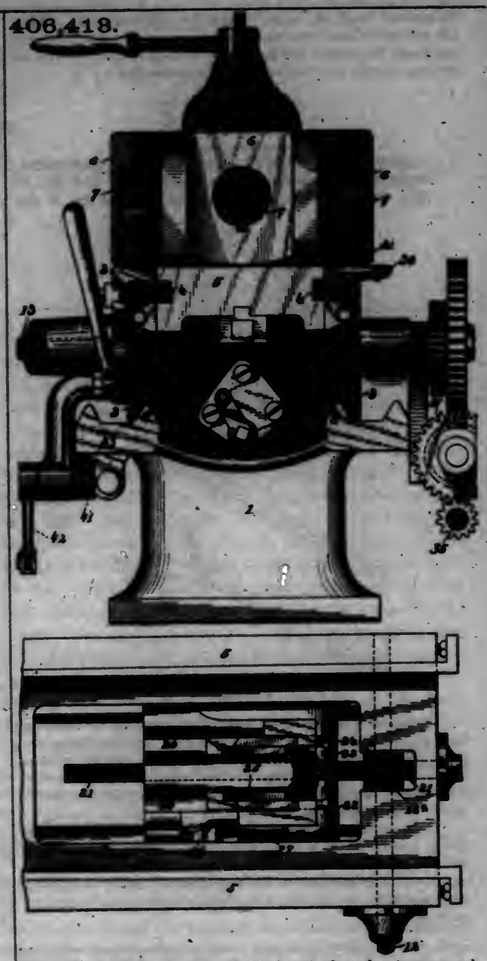
3. The combination of an upper hinge having a plate D, projection E, formed with a curved recess *b*, concave grooves *b'*, a bent strap F, having its inner surface convex and secured to the projection E, forming the eye G, with a cylindrical bar or rod C, and a lower hinge attached to said bar, substantially as shown and described, and for the purpose set forth.

406,418. TURRET-LATHE. CHARLES I. LIGHT, Bridgeport, Conn., assignor to Edward P. Ballard, same place. Filed Feb. 16, 1888. Serial No. 263,183. (No model.)

Claim.—1. The combination, in a machine of the character described, with the base, the carriage, means for moving the same, and the revolvable turret mounted thereon, of the locking-bolt engaging said turret, the movable block arranged beneath said carriage, a hinged wedge mounted upon said block in the path of said locking-



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bolt, and a pawl hinged upon said block and adapted to engage and turn the said turret, substantially as specified.

2. The combination, in a machine of the character described, with the base having ways formed thereon, of the carriage mounted on the ways and means for moving it thereon, the rotatable turret upon said carriage, studs projecting downward from the turret, a spring-actuated locking-bolt arranged in the carriage and adapted to engage recesses in the turret, the block beneath the carriage, and wedges arranged thereon in the path of the locking-bolt, and a spring-actuated pawl arranged in the plane of the studs on the turret and adapted to engage therewith, whereby the locking-bolt may be withdrawn and the turret turned, substantially as set forth.

3. The combination, with the bed, the carriage, the turret mounted and adapted to turn thereon, and the locking-bolt, of the block mounted in ways beneath the carriage, a screw for varying the position of said block lengthwise of the machine, the yoke hinged upon said block and provided with wedges located in the path of the locking-bolt, the spring-actuated pawl pivoted upon the block just forward of the yoke, and the studs upon the turret, wherewith the said pawl is adapted to engage in rotation, substantially as set forth.

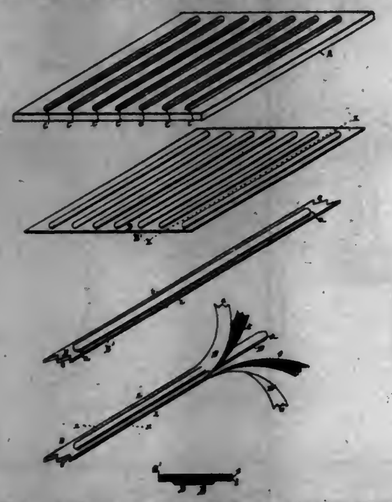
4. The combination, with the turret and the studs upon the lower surface thereof, of the pawl pivoted to a stationary part of the lathe and adapted to engage and turn the studs *serviam*, the sliding carriage supporting the turret and having a slot through which the pawl is raised into engagement with the studs, and a sliding plate and means for actuating the same, whereby the slot may be opened for the reception of the pawl or closed as against entrance of the same, substantially as specified.

5. In a machine of the character described, the combination, with the base and carriage, of the turret, its studs and the locking-bolt,

the movable block, the means thereon for withdrawing the locking-bolt, the pawl whereby the studs may be engaged, and the cover-plate and means for moving the same over or away from the slot in the carriage beneath the studs, substantially as specified.

REISSUES.

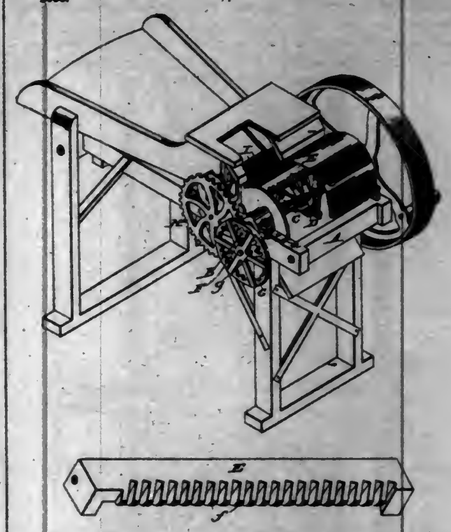
11,009. GARMENT-STAY. BRUCE C. BOWLING, Ypsilanti, Mich., assignor of one-half to Henry P. Glover, same place. Filed Sept. 26, 1888. Serial No. 286,573. Original No. 362,566, dated May 10, 1887.



Claim.—1. The stay herein described, comprising the stiffening-blade D, having sheets of rubber *t t* lying upon each side thereof and projecting over the edges and ends of said blade, with the covering fabrics B B', having a like projection and adhering thereto, whereby a stitching-edge is provided surrounding the stiffening-blade, as and for the purposes specified.

2. The stay herein described, comprising the stiffening-blade D, having a sheet of rubber *t* lying upon the side thereof and projecting over the edges and ends of said blade, with the covering fabrics B B', having a like projection and adhering thereto, whereby a stitching-edge is provided surrounding the stiffening-blade, as and for the purpose specified.

11,010. FODDER-CUTTER. LIBBY SWANGER, Canton, Ohio, administratrix of David Swanger, deceased; said David Swanger assignor of two-thirds to William Betz and Anton Hammerly, same place. Filed Apr. 4, 1888. Serial No. 269,697. Original No. 362,993, dated May 24, 1887.



Claim.—1. The combination, with the diagonally-toothed cutter-bar E, of the rotary shaft B, the arms C, connected in pairs by collars and adjustably secured to said shaft in different planes, thereby forming a spiral thereon, and the knives D, adjustably secured to the ends of said arms with their cutting-edges standing at an angle thereto, substantially as described.

2. The combination of the feed-rollers I, the toothed cutter-bar E, the rotary shaft B, having pinion F, the arms C, mounted on said shaft and provided with knives D, the adjustable bracket L, having slot M and stud K, the wheel G and pinion *g*, mounted on said stud, and the wheel H, attached to the lower feed-roller, substantially as described.

3. In a fodder-cutter, the combination, with the cutter-bar provided with diagonally-arranged teeth, of the main shaft, arms attached thereto and arranged spirally thereon, and knives attached to and set at an angle to said arms, substantially as described.

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DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Western District of Pennsylvania.

PUTNAM *et al. v.* THE KEYSTONE BOTTLE STOPPER COMPANY *et al.*

Decided March 28, 1889.

1. DE QUILLFELDT—BOTTLE-STOPPERS—REISSUES.
Reissue Letters Patent No. 7,722, granted June 5, 1877, to Charles De Quillfeldt, for an improvement in bottle-stoppers, construed, and *Held* that the first claim, when read in connection with the specification and drawings of the original patent, contains the same elements found in the first claim of the original patent, combined and operated in the same way and producing the same results.

2. REISSUES—ENLARGEMENT.
While a comparison of the two patents evinces that the specification of the reissue is amplified, yet this amplification is in matters of an explanatory nature and embraces nothing of any importance which is not plainly disclosed in the original specification and accompanying drawings.

3. VOM HOFE—BOTTLE-STOPPERS.
Letters Patent No. 167,141, granted August 24, 1875, to William Vom Hofe, for an improvement in bottle-stoppers, not anticipated by a previous patent to said Vom Hofe, No. 163,533, dated May 18, 1875.

SUR motion for a preliminary injunction.

Mr. Arthur v. Briesen and *Mr. W. Bakewell* for the complainants.

Mr. Wm. H. Doolittle for the defendants.

ACHESON, *J.*:

The bill of complaint charges the defendants with the infringement of two Letters Patent for improvements in bottle-stoppers, one granted to Karl Hutter, assignee of Charles De Quillfeldt, being Reissue No. 7,722, dated June 5, 1877, of original patent to De Quillfeldt, No. 158,406, dated January 5, 1875, and the other granted to William Vom Hofe, being Patent No. 167,141, dated August 24, 1875. The title of the plaintiffs to these patents is not controverted.

The De Quillfeldt reissue, No. 7,722, has 9 claims; but infringement of the first claim only is here alleged. That claim is as follows:

1. The combination, substantially as before set forth, of the compound stopper, the yoke, the lever, and the supporting device on the bottle, by means of three pivotal connections, upon which the said members can be turned relatively to each other without disconnecting either one from the other.

In two suits in the second circuit, *Putnam* v. *Hollender* (6 Fed. Rep., 882) and *Putnam* v. *Vom Hofe*, (Id., 897,) the De Quillfeldt reissue, No. 7,722, was sustained by Judge Blatchford, who also there held that the first claim of said reissue was infringed by a bottle-stopper from which the bottle-stopper made and sold by the defendants does not differ in any substantial particular. The like conclusions were reached by Judge McKennan in the case of *Putnam* v. *Hammet and Sunderman*, a suit in this court on the De Quillfeldt reissue, wherein, after full argument, a preliminary injunction was allowed, and subsequently a final injunction was granted. Moreover, in this case against Hammer and Sunderman, in a proceeding for contempt for violating the injunction, Judge McKennan held that a bottle-stopper in every material respect identical with the stopper which the defendants manufacture infringed the first claim of the reissue now in suit. No such new proofs have been submitted in this case as would warrant a different conclusion, either upon the question of anticipation or the question of infringement, from that reached in the several cases referred to; and therefore, according to the prevailing rule in patent causes, in disposing of the present motion for a preliminary injunction those decisions should be accepted and followed. (*Mallory Mfg. Co.* v. *Hickok*, 20 Fed. Rep., 116.) It is, however, strenuously urged that such effect ought not to be here given to those adjudications, because they were made before the decision touching reissues in *Miller* v. *Brass Co.*, (104 U. S., 350,) and (as is supposed) without regard to the principles there enunciated; and the defendants insist that under the doctrine established by that decision the reissue in suit must be held to be void. But in *Putnam* v. *Hollender*, *supra*, Judge Blatchford said:

The answer sets up that the reissue covers more than was described in the specification of the original patent, and is not for the same invention. There is no evidence to this effect, and there does not appear to be any ground for the assertion. (6 Fed. Rep., 888.)

It appears, then, that the question of the enlargement of the scope of the patent was raised and considered in that case, and the determination of the court was that the reissue was for the same invention as the original patent. I might therefore well rest this case upon the opinion of Judge Blatchford and the presumption that the several decrees heretofore made sustaining the validity of the De Quillfeldt reissue were fully considered and right. I have, however, given this question an independent investigation, confining myself, of course, to the first claim of the reissue, which is the only one here involved. My conclusions I will state briefly.

While a comparison of the two patents evinces that the specification of the reissue is amplified, yet this amplification is in matters of an explanatory nature and embraces nothing of any importance which is not plainly disclosed in the original specification and accompanying drawings. Clearly the invention set forth in the reissue is the precise invention set forth in the

original patent, and the construction and mode of operation described are the same in both. Therefore it seems to me that the first claim of the reissue is no broader in scope than the first claim of the original patent, which was in these words:

1. The bottle-stopping device composed of a pivotal lever-frame applied to neck of bottle, with eccentrically-hinged yoke carrying the elastic stopper and cap-piece, arranged and operated substantially in the manner and for the purpose set forth.

Read, as it must be, in connection with the preceding specification and accompanying drawings, this claim contains the same elements which are contained in the first claim of the reissue, combined and operating in the same way and producing the same results. This conclusion is supported by *Reed* v. *Chase*, (25 Fed. Rep., 95.)

Second, touching the second branch of the plaintiffs' case—that which relates to the Vom Hofe patent, No. 167,141—little need be said. The stopper manufactured under that patent was held by Judge Blatchford, in the cases heretofore cited, to infringe the first claim of the De Quillfeldt reissue; but the titles to those two patents are now united in the plaintiffs, and the Vom Hofe patent, as an improvement upon the De Quillfeldt invention, may well be sustained as against the present defendants. (*Cantrell* v. *Wallick*, 117 U. S., 689.) That the defendants infringe this patent is, I think, entirely clear. Their bottle-stopper is substantially identical with the Vom Hofe stopper. Whatever differences between them may exist are merely formal, and, upon the question of infringement, altogether immaterial. The defense against this patent mainly relied on is based on a prior patent to Vom Hofe, No. 163,533, dated May 18, 1875, which the defendants insist is an anticipation of the patent in suit, No. 167,141. But I do not concur in that view. From the mere grant of the patent there arises a fair presumption that there is a substantial difference involving invention between the two patents, and that the later one is for a patentable improvement upon the earlier patent. The defendants, I think, have not succeeded in overcoming or weakening that presumption by anything submitted to me.

A preliminary injunction must be granted.

U. S. Circuit Court—District of New Jersey.

ZINSSER *et al. v.* KREMER.

Decided June 12, 1889.

1. MUSSGILLER AND SCHEDLER—TREATING BEER AND OTHER LIQUIDS.

Reissue Letters Patent No. 9,129, granted March 23, 1880, upon the application of Friedrich C. Mussgiller and R. W. Schedler, for an improvement in treating beer and other liquids, sustained.

2. INVENTION—PROCESS.

A change in the method of making an article of manufacture producing a different and beneficial result, although the difference consists only in improving or cheapening the article, and the change and its advantages not having been seen or made by others interested in seeing and making it, is sufficient evidence of invention to sustain a process patent.

Mr. Arthur v. Briesen for the complainants.
Mr. Joseph M. Deuel for the defendant.

BUTLER, *J.*:

The suit is for infringement of reissued Letters Patent No. 9,129, granted to the plaintiff March 23, 1880, for a new and useful improvement in treating beer and other liquids.

The claim is stated as follows:

The process of charging beer and other liquids of a similar nature with carbonic acid by dropping into and through the liquid lumps of bicarbonate of soda or of other alkali, thereby causing the acid discharged from the lumps to pass through the entire column of liquid, substantially as specified.

The specifications are as follows:

This invention consists in treating beer and other liquids of a similar nature with lumps of bicarbonate of soda or of other alkali, said lumps being compacted by means of a suitable cement, so that they are heavy enough to at once drop through the liquid to be treated upon the bottom of the vessel containing the liquid. The carbonic acid evolved from said lumps is thus compelled to permeate the entire column of liquid above it, and at the same time to give up the requisite quantity of alkaline matter. Together with the lumps of bicarbonates of alkali may be used lumps of tartaric or other suitable acid compacted in the same manner as the lumps of bicarbonate of alkali, so that the amount of carbonic acid evolved from the latter can be easily controlled.

It is a common practice with brewers and others to use bicarbonate of soda, either alone or together with tartaric acid, in the manufacture of beer, sparkling wines, and other effervescent liquids for the purpose of increasing the life of such liquids.

The mode of applying such article or articles—by brewers, for instance—is to apply about one ounce of the bicarbonate of soda to each quarter-barrel with a table-spoon, the bicarbonate being in the form of a powder. The powder, on being thrown into a barrel of beer, will at first float on the surface of the liquid, and immediately evolve carbonic acid, a large portion of which is lost, together with the beer which is thrown out by the action of the acid before the barrel can be closed by a bung. Besides this, the operation of filling barrels is carried on in a great hurry, and a large quantity of the bicarbonate of soda handled with a spoon is spilled over the barrel and wasted. Like defects occur in the use of tartaric acid in crystals when applied together with powdered bicarbonate of soda.

These disadvantages we have obviated by preparing the bicarbonate of soda or of other alkali and the acid in solid lumps of such weight that the lumps at once drop through the liquid upon the bottom of the vessel, and give off the carbonic acid to the entire column of liquid, and not only, as heretofore, to the upper stratum. These lumps we produce by mixing powdered bicarbonate of alkali with a suitable cement, such as a solution of dextrine, and then compressing the same in molds of suitable size and shape. Lumps of acid are made in like manner.

The advantage of using the bicarbonate of alkali, either alone or in connection with acid in this shape, is perceptible at once. The lumps being in compact form, when dropped into a barrel filled with beer, ale, or other liquid, will at once sink to the bottom, and the carbonic acid evolved from them is forced to stay in the liquid. The barrel can be easily closed by a bung without losing a particle of carbonic acid or of beer, and the said lumps can be introduced into the barrel without any waste. Besides this, the weight or size of our lumps is so gaged that each barrel will receive the exact quantity of bicarbonate of alkali and of acid required, and that the liquid in a number of barrels, after having been treated with the bicarbonate of alkali, with or without acid, will be of uniform quality.

The answer attacks the patent for want of inventive novelty, for defective specifications and claims, and because of prior use. It also denies infringement.

The inventive novelty claimed consists in passing compacted lumps of bicarbonate of soda or other alkali through beer and similar liquids in casks and depositing the same at the bottom, where it will slowly dissolve, and the carbonic acid evolved be distributed equally throughout the liquid.

The treatment of beer and other liquids with bicarbonate of soda was not new. It was in common use and had been for a long time. The method employed, however, was that of dropping powdered bicarbonate on top. This was attended with serious disadvantages. The liquid was not thoroughly permeated, and the powder floating on top instantly evolved acid in quantities so large as to cause overflow before the casks could be closed. The patentee sought for means to obviate these disadvantages. He saw that if the bicarbonate could be deposited at the bottom of the liquid and its dissolution retarded the entire contents of the cask would be equally treated, and the loss from overflow be avoided. He further saw that if the bicarbonate could be compressed into solid lumps it would pass to the bottom when dropped and the dissolution also be retarded. Experimenting with this method, he found the result beneficial and satisfactory.

Thereupon he applied for and obtained the patent. The novelty thus exhibited seems quite sufficient to sustain his claim. It is true that nothing more is done than charging the liquid with carbonic-acid gas, and this had been done before. But he does it in a different way and with different results, producing a better article more economically, avoiding all waste. The same objection was made to the Crane patent for an improvement in the manufacture of iron. It covered a hot blast with anthracite coal. A hot blast with bituminous coal was old, and a cold blast with anthracite was old. The patentee simply introduced into the existing process a hot blast with anthracite. The change was very slight, but the result was highly beneficial, and the patent, after a severe contest, was sustained. *Crane* v. *Price* (1 Web. Pat. Ca., 375) has withstood the test of criticism and time, and is as good authority to-day as when first published. Hall's patent for a new process of manufacturing lace is similar in character. It covered the use of gas-flame for singeing off the superfluous fibers of thread. Flames of other substances had been employed for a long time. By the use of gas-flame, however, the fibers were more effectually removed and the lace given a smoother and finer finish. This patent encountered the same objection, want of novelty; but was sustained in *Hall* v. *Jarvis*, (1 Web. Pat. Ca., 100,) which is still quoted with approval. The reports show many similar cases. Probably no one has considered this subject with greater care than Judge Curtis, who says, (Curtis on Pat., p. 7–8:)

We have seen that in order to make a new process or method of working or producing a new effect or result in matter the subject of a patent in England a somewhat liberal construction of the term "manufacture" became necessary, by which an improvement in the art or process of making or doing a thing was made constructively to be represented by the term which ordinarily would mean only the thing itself when made or done. It was doubtless to avoid the necessity for this kind of construction that the framers of our legislature selected a term which *proprio vigore* would embrace those inventions where the particular machinery or apparatus, or the particular substance employed, would not constitute the discovery so much as a newly-invented mode or process of applying them in respect to the order or position or relation in which they are used. The difficulty is obviated by our use of the term "art," which was intended to embrace those inventions where the particular apparatus or machinery used may not be of the essence of the discovery, but where that essence consists in using apparatus or materials in a new way, method, or relation, so as to constitute a new mode of obtaining an old result or of obtaining a new result.

And again at page 9 he sums up the cases as follows:

It will be seen that the comprehensive position laid down embraces the instances where the process itself exhibits advantages of the change from the old to the new, or where the article manufactured exhibits the advantages, or where they appear both in the process itself and the result of using it. Thus if the article made be either new or better, having different or superior properties, the advantages are presented by the thing itself. If the article as made by the new process is of as good quality and cheaper, and the advantage of cheapness is gained by the new process, the improvement appears in the process, although the article made by it may not be new—that is to say, may not possess other new properties than the cheapness.

The line dividing invention from non-invention is very dim, and cases lying near it often present great difficulty. In deciding them judges have occasionally used expressions which seem extravagant and calculated to mislead. Some of them would almost justify a doubt whether a majority of the patents issued are valid, and others whether any of them are invalid. The decisions, however, are generally harmonious. We think it may safely be said that wherever a change in the method of making an article of manufacture produces a different and beneficial result, although the difference consists only in improving or cheapening the article, and the change and its advantages had not been seen or made by others (than the patentee) interested in seeing and making it, there is sufficient evidence of invention to sustain a process patent.

There the effect of the change is to improve and also to cheapen. The respondent admits the advantages by adopting the change. Much reliance is placed by him on *Dryfus* v. *Searle*, (124 U. S., 60.) On first blush this reliance may seem justified. Closer examination, however, will show that it is not. The patent was "for an improved process of imparting age to wine" by introducing heat directly to the wine by means of metallic pipes passing through the casks, instead of the former method of applying heat to the outside of the casks by placing them in ovens. While the specifications assert that this change saves time and fuel and has other advantages, the case as reported does not show this. It does show, however, that precisely the same method of heating water and high wines (to evolve alcoholic vapor in the latter) had been employed prior to the patent. The court finds these facts, and says:

There was no patentable invention in heating wine or other liquid from the inside of casks by apparatus which had been previously used in the same manner.

With such finding of facts the case could not have been decided otherwise. It would be very unsafe to conclude, from what is said respecting the process, that the case would have been so decided without the facts referred to, and with proof of positive and material advantage from this method of applying heat.

We do not find anything to support the allegation of "defective specification and claim." Nor is the allegation of "prior use" sustained. There is some evidence that lumps of bicarbonate of soda were used at Brunges & Linnewerths' brewery before the complainant's invention; but it is met by as much, if not more, evidence to the contrary. With the burden of proof on the respondent, this would be fatal if nothing else stood in his way. In addition, however, is the important fact (proved by his own witnesses) that the use was strictly secret. Such a use is not important. (*Gaylor* v. *Wilder*, 10 How., 477; *Adams* v. *Edward*, 1 Fish., 1.)

Do the proofs show infringement? The respondent used lumps of bicarbonate of soda, as the complainant does, artificially compressed, so as to form a solid mass without employing cement. This we believe to be an infringement. The employment of cement in forming the complainant's lumps is not a part of the patented process and is not mentioned in the claim. It is referred to in the specification as an available aid in solidifying the bicarbonate. It has no other office. The lumps of bicarbonate alone are important in the process. It may be more convenient, require less time and less pressure, to use cement in forming them. The powder itself, however, if slightly moistened or sufficiently compressed, will fill the role of a cement, as Dr. Sloan states. What the complainant discovered and secured by his patent is the use of artificially-compressed lumps of bicarbonate of soda or other alkali in the manner and for the purpose described in his claim. What the respondent has done is an infringement upon the right thus secured.

A decree will therefore be entered sustaining the bill.

U. S. Circuit Court—Eastern District of New York.

UNDERWOOD *et al. v.* GERBER *et al.*

Decided February 13, 1889.

1. PATENTS UPON DIVIDED APPLICATIONS—VOID PROCESS.

Under Rule 41, Rules of Practice of the Patent Office, as interpreted by *ex parte Blythe* (30 O. G., 1321) and *ex parte Herr*, (41 O. G., 463,) two patents in which the description was substantially the same, No. 348,072 for a composition for transfer surfaces for producing copies of type-writing, and No. 348,073, for a process of reproducing surfaces for type-writing and manifolding, were obtained with a single claim on each, instead of one patent with two different claims, each embodying one of the above inventions. Suit for infringement was instituted upon Patent No. 348,073 alone. *Held* that the claim of this patent covering the mere taking of a coloring-substance already known and applying it to paper did not involve invention, and in view of the state of the art the patent is void.

2. SAME—SUITS FOR INFRINGEMENT.

The complainants insist that their position is precisely the same as if they held a single patent with two claims—one for the process or composition of matter producing the coloring-substance, the other for the combination of that substance with paper. This might be so if they could be considered as holding both patents; but in this suit they have carefully abstained from declaring upon the first patent or even in any way referring to it. By not declaring upon it as its present owner, they leave it to the defendant to be availed of as if it were the property of a stranger.

For the complainants: *Mr. James A. Hudson*, cited (to the point decided in opinion) *Railway Signal Mfg. Co.* v. *Broadway & Seventh Ave. R. R.*, (22 Fed. Rep., 655;) *McMillen* v. *Ross*, (1 Fed. Rep., 722.)

For the defendants: *Mr Arthur v. Briesen*, cited (to the same point) *Mahn* v. *Harwood*, (112 U. S., 354;) *Mosler Safe & Lock Co.* v. *Mosler*, (127 U. S., 354;) *Suffolk* v. *Hayden*, (3 Wall., 315;) *Morris* v. *Huntington*, (1 Paine, 348;) *Matthewson* v. *Fowler*, (25 Fed. Rep., 830.)

LACOMBE, *J.*:

This is a suit brought to restrain the defendants from infringing Letters Patent No. 348,073, granted to the complainants, John T. Underwood and F. W. Underwood, August 24, 1886, for an improved reproducing surface for type-writing and manifolding.

The circumstances of the case are peculiar and present what seems to be a novel question.

On March 22, 1886, the complainants filed their application, (known as Serial No. 196,200.) The patent issued thereon and now sued on sets forth that the invention relates to an improved reproducing surface adapted to be employed for obtaining copies of type-writing or other printed or written impressions by means of a type-writer or other printing device, or by the employment of a stylus or other writing means. That the transfer-surface is spread upon a sheet or vehicle, and when so applied is adapted to be employed in place of the articles of trade commonly known and designated as "carbon papers" or "semi-carbon papers." The specification then proceeds as follows:

* * * "Carbon paper" or "semi-carbon paper," * * * are employed by type-writers and others to produce copies of impressions either obtained by a machine or by a stylus or other writing means.

In carrying out our invention we employ in the manufacture of our improved transfer-surface dye-wood solutions or their active principles, which we filter and precipitate with alkalies and mineral salts, or with alkalies, acids, and mineral salts, or with acids or alkalies alone. After the solution has been filtered the precipitate is removed from the filtering device and dried. The precipitate is then mixed with lard-oil and wax or their equivalents, and the mixture is then ground together in a warm state.

The dye solutions we prefer to employ are obtained from logwood or hæmatoxylin, the active principle of logwood, Brazil wood, sapan wood, peach-wood, madder, or its active principle—alizarine.

The proportions we find to answer well in producing our improved surface are as follows: Take one pound of extract of logwood and dissolve the same in one gallon of water, then add to the solution one pound of soda and one pound of mineral salt, using one of the salts of iron or copper, preferably sulphate of copper. The mixture thus obtained is then placed in a filter. After the solution has been filtered the precipitate is removed from the device employed for filtering and then dried, after which the precipitate is ready for use. To every two pounds of precipitate thus obtained we add one pound of oil and one pound of wax, and then grind the mixture in a warm state in what is commonly known as a "paint" or other suitable grinding mill. The heated mixture thus obtained is then applied to tissue-paper or other suitable paper or fabric by means of a sponge or other suitable transferring device.

The paper or fabric to which our improved surface is to be applied is placed upon a heated table, by preference formed of iron, and heated by steam; but this may be varied.

In place of employing oil or wax, or both combined, we can employ any other suitable oleaginous matter or combination of oleaginous matter having equivalent or approximately-equivalent properties.

The invention having been thus described, the patentees claimed:

A sheet of material or fabric coated with a composition composed of a precipitate of dye-matter, obtained as described, in combination with oil, wax, or oleaginous matter, substantially as and for the purposes set forth.

On the same day (March 22, 1886, Serial No. 196,199) complainants also applied for a patent for a "composition for transfer-surfaces for producing copies of type-writing," and Letters Patent therefor (No. 348,072) were issued to complainants on the same day as those sued on, August 24, 1886.

The specification sets forth that the invention relates to the process of producing a transfer-surface adapted to be employed upon a sheet or vehicle to take the place of the articles of trade commonly known and designated as "carbon papers" or "semi-carbon papers." It then states that these papers are employed by type-writers or others to produce copies of impressions either obtained by a machine or by a stylus or other writing means, and proceeds to describe the invention in the identical words used in the other patent and quoted above.

Having thus described their invention, the patentees claimed:

The coloring composition herein described for the manufacture of a substitute for carbon paper, composed of a precipitate of dye-matter, in combination with oil, wax, or oleaginous matter, substantially as set forth.

This novel method of manifolding an invention was adopted, as complainants state, in order to comply with recent decisions of the Patent Office, interpreting Rule 41 of that Office, and holding that where a person has "invented something in an art, or, as it is ordinarily called, 'a process,' also a machine for carrying out the process, and also the manufacture or article which is produced in the operation or the process by the machine," he must take out three separate patents—one for the process, one for the machine, and one for the product. (*Ex parte Blythe*, 30 O. G., 1321; *ex parte Herr*, 41 O. G., 463.) Before those decisions the patent would have contained the common specification above quoted with two separate claims—one for the process and resulting composition, the other for its combination with the paper. The complainants insist that their position is precisely the same, whether their invention is covered by a single patent with a double claim or by two separate patents. Whether this is so under the circumstances of the particular case here presented must be now determined. The defendants insist that no invention is set forth in either patent and that they do not infringe.

For the purposes of the argument upon the preliminary objection, however, the converse of these propositions will be accepted.

The present application is to restrain the defendants from continuing to infringe; and for some unexplained and unaccountable reason the complainants sue only on a single patent, and that, too, the one whose numbers would indicate that it was in time of application and of issue subsequent to the other. Having taken their stand solely upon this patent, what is their position toward defendants who make the composition of matter described in both patents and combine paper with it as indicated in the one sued on?

When differentiated from each other, it is found that the only step in advance which the higher-numbered patent suggests is the spreading upon paper of the composition described in the lower-numbered patent. In view of the earlier patents and publications which have been put in evidence—in fact, considering only what is within the common knowledge of all who have for upward of a generation manifolded writing by the use of a paper coated or impregnated with some pigment—it is difficult to see how even the Patent Office could detect novelty or invention in merely taking a coloring substance already known and applying it to paper. If the patent for the composition of matter forming the coloring substance had been granted to John Doe the day before complainants applied for their patent covering the application of that substance to paper, the latter would be clearly void for want of novelty or invention. It follows that if the first-numbered patent were held by an assignee of the complainants, near or remote, he could not be held an infringer of the second patent. Complainants conceded, upon the argument, that an assignee could not be so held except for the combination of paper with the coloring substance for the purpose named, and such a combination is clearly old. The complainants insist that their position is precisely the same as if they held a single patent with 2 claims—one for the process or composition of matter producing the coloring substance, the other for the combination of that substance with paper. This might be so if they could be considered as holding both patents. But in this suit they have carefully abstained from declaring upon the first patent or even in any way referring to it. Its issuance is only known to the court through the defendants, who set it up in defense. The complainants base their claim to a monopoly solely upon the second patent. As that single patent, tried by the usual tests, may stand or fall, the case which they make out upon their complaint must also stand or fall. One who seeks to enforce the rights secured to him by a patent is an Ishmaelite—his hand against every one and every one's hand against him. His adversary may avail of every publication of the fruits of human invention—by Letters Patent, by printed books, by actual public use—as if they were his own. When offered in evidence, they may prove not conflicting, not anticipatory, or be found otherwise immaterial; but for what they are worth they are the common property of all who are called upon to justify their acts in the face of a complainant patentee. The holder of the patent sued upon in this case must submit it to comparison with the first patent, as if that first patent were outstanding. By not declaring upon it as its present owner he leaves it to the defendant to be availed of as if it were the property of a stranger. What, then, is his position? At the very time when his patent was issued the composition of matter which enters into his combination with paper was known, and the right to exclude all persons from making it was conferred upon the holder of another patent. Upon the holder of the patent sued upon was conferred the right to exclude all others from combining paper with this combination; but, in view of the state of the art, such a grant was void.

The cases cited by complainant (*Railway Signal Mfg. Co.* v. *Broadway & Seventh Ave. R. R.*, 22 Fed. Rep., 655, and *McMillen* v. *Ross*, 1 Fed. Rep., 723) do not apply. There it was held that the additional combination which the original inventor sought to secure by his later patent was in fact a real step in advance. It was held that the description of his invention in the earlier patent would not preclude him from securing his additional claim, because that additional claim covered a patentable invention. "Whether two patents," says the court in the case last cited, "cover the same invention must be determined by the tenor and scope of their claims, not by the description in the specifications." Here, as we have seen, the combination which the second patent sought to cover was not patentable. This suit, based upon it alone, must therefore fail. To the holder of the first patent, whoever he may be, alone belongs the right to exclude all others from making the new composition of matter, the only invention which (if the other issues in the case be decided against the defendant) was sufficiently novel to warrant the granting of Letters Patent.

Usual decree for defendant.

U. S. Circuit Court—Eastern District of Pennsylvania.

SHELDON AXLE COMPANY *v.* STANDARD AXLE WORKS.

Decided 1889.

1. USE OF PATENTED ARTICLES — ASSIGNMENTS — TERRITORIAL RIGHTS.

Where an assignment of territorial rights has been made, the subsequent purchase of the patented article from the inventor or a later assignee (with notice) will not entitle the purchaser to use said article within the territory of the first-mentioned assignee.

2. FORMER DECISION REVIEWED.

Adams v. *Burke* (23 O. G., 114) commented upon, and *Held* not to conflict.

Mr. John R. Bennett for the complainant.
Messrs. Flemming & McCarrell for the defendant.

BUTLER, *J.*:

The principal objections made to the plaintiff's title are met by the amendment to the record just filed. The transfer from the Philadelphia Axle Company is properly executed. The State statute relating to the execution of deeds by such companies has application to transfers of real estate.

The plaintiffs owned the interest acquired by the Philadelphia Axle Company. The patentees transferred to this company all their right and interest in the patent and any improvements and reissues which might thereafter be made or granted within the ter-

ritorial limits specified in the transfer. The company thus took the exclusive monopoly of the manufacture, use, and sale within these limits. The patentees thereafter could not interfere with the enjoyment of this monopoly, and, consequently, could not authorize any one else to do so. Subsequent assignees of interests and purchasers of machines (with notice) took subject to the company's rights. This seems entirely clear. It is urged, however, that *Adams* v. *Burks* (23 O. G., 114; 7 Wall., 453) decides otherwise, as respects the use of machines subsequently purchased; that such use may be enjoyed within this territory. It would be strange, indeed, if this were so. It is as clear as language can make it that the right to use, within the territory, is as distinctly conveyed as the right to manufacture and sell. It is not, of course, questioned that the latter right cannot be interfered with. On what ground, then, can such a distinction be supported? None has been suggested, and we can see none. It is urged, however, that this distinction is drawn in *Adams* v. *Burks*. We do not so understand that case. There the patentees assigned their right to manufacture, use, and sell within certain territorial limits, and subsequently transferred their remaining interest to another.

The patented article was a coffin-lid. The purchaser of a lid from the first assignee used it outside the prescribed limits. Of this use the second assignee complained. The question thus raised was one of construction. Its decision turned on the interpretation of the first assignment. If the use of lids sold under this instrument was intended to be confined to the territory named, the complaint was well founded; otherwise it was not. The court (laying stress on the character of the article—the fact that it is incapable of continuous use) held that the use was not intended to be so confined; that the right to sell (which is distinct from the right to manufacture and use) contemplated a use of the lids sold everywhere; consequently that the second assignee took subject to this right, and therefore had no just cause of complaint. The case stands on this interpretation of the contract. The court says:

> It would engraft a limitation not contemplated, * * * nor within the reason of the contract, to say that it (the lid) could only be used within the ten-mile circle—

to which the right of sale was confined. This construction seems to rest on the conclusion that as a sale by the patentees before assigning conferred a right to such unrestricted use, the assignment of their authority to sell conferred on purchasers under it the same unrestricted use. The court distinguished, as it had done before, between the right to manufacture and use and the right to sell, and held that the territorial limitation was not intended to restrict the use of lids sold. What is said in this case of the patentee's "receipt of compensation for the use outside the territory," of a sale "emancipating the patented article from the monopoly," &c., was applicable there; but it is inapplicable to the case before us. The defendants here did not pay for a use within the plaintiffs' territory, a use which they knew the patentees had previously sold and received compensation for. Their purchase could not emancipate the machine from a monopoly which their vendors did not own and could not interfere with. The distinction, which seems to be broad and plain, between this case and *Adams* v. *Burk* consists in the facts that the assignment here, under which the plaintiffs hold, is first in the order of time, conferring upon them the entire monopoly of the patent within their territory, and that the second assignment, under which the defendants hold, is subject to this; while in *Adams* v. *Burks* the plaintiff's assignment was subsequent to that under which the defendant purchased, by which latter assignment, as the court held, a right was tranferred to use the article so purchased everywhere. The situation of the parties in *Adams* v. *Burks* is here reversed; which makes all the difference in the world—rendering the decision in that case wholly inapplicable to this.

Other decisions of the Supreme Court, cited by the defendants, lend no support to their position. *Bloomer* v. *McQuewan* (14 How., 549) determines no more than that the lawful purchase of a patented machine covers a right to use it until worn out, notwithstanding the patent may have expired and been removed in the meantime. General observations made by the Court in disposing of such a case can have no influence in deciding the question before us. *Chaffee* v. *The Belting Company* (22 How., 217) and *Mitchell* v. *Howley* (16 Wall., 544) are equally inapplicable. The facts involved bear no relation to those before us. Nor are the cases cited from the circuit courts entitled to greater influence. We had occasion to consider them in *Hatch* v. *Adams*, (24 Fed. Rep., 450,) and nothing need be added to what is there said on the subject.

The foregoing is predicated on the supposition that the defendants and their predecessors, Ives and Miller, had knowledge of the previous assignment to the Philadelphia Axle Company. Had they such knowledge? Notice may be actual or constructive. The latter, which results from an authorized record, Ives and Miller had not. The duty of recording was neglected until after they had purchased. It is entirely clear, however, that they had actual notice. A review of the testimony respecting this is unnecessary. The fact is abundantly proved. Ives and Miller first purchased the patentee's entire remaining interest, some months after the transfer to the company, with knowledge that the latter had an interest, and later, on being informed by the company of the character and extent of this interest, they refused to pay the consideration, returned the property and entered into a contract for twenty machines, one of which was sold to the defendants, brought within the plaintiffs' territory, and used. It is unimportant that Mr. Miller says the patentees denied the company's statement respecting its interest. The latter was not required to do more than inform Ives and Miller of it. Ives and Miller, however, acted as if they believed it—declining to carry out their contract and returning the property. It is unnecessary in this case to invoke the rule that knowledge of facts sufficient to put a prudent man to inquiry is notice. Direct, explicit notice is proved. That the defendants also had notice, constructive as well as actual, is equally clear. The assignment was on record several years before their purchase, and the evidence abundantly shows that they had actual knowledge of the plaintiffs' rights. Their correspondence with Ives and Miller puts this beyond doubt. It shows not only that they were fully apprised of these rights, but that they directed their most earnest efforts to the discovery of means whereby the plaintiffs' enjoyment of them might be circumvented and defeated. They were slow to believe that a purchase outside this territory would confer a right on them to use the machine within, in view of the exclusive right vested in the plaintiffs, and they consequently demanded a guaranty from Ives and Miller. This being refused, however, they resolved to take the risk.

A decree must be entered for the plaintiffs.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

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Instructions to Examiners, Applicants, and Others.

(ORDER No. 560.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 2, 1889.

1. All marginal notes, interlineations, or other marks placed upon application-papers by examiners for convenience in conducting their work of examination will be removed when the application is passed to issue.
2. Official communications will not refer to memoranda or pencil notes made by examiners on application-papers.
3. Letters emanating from this Office must be couched in respectful and courteous language, and give full, clear, and explicit information to the applicant or correspondent on the subject under consideration, and must be absolutely free from personal controversy.
4. The Commissioner will strictly enforce the provisions of Rule 22 requiring applicants and attorneys to conduct their business with the Office with decorum and courtesy. No complaints against examiners will be permitted in papers intended to be filed in connection with applications.

C. E. MITCHELL,
Commissioner.

Examiners' Hours for Interviews.

(ORDER No. 561.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 2, 1889.

The examiners having agreed upon the hour from 11 to 12 o'clock A. M. and the hour from 1 to 2 o'clock P. M. for interviews concerning applications and other matters pending before the Office, such hours are hereby approved and established for such purposes. The respective examiners will, if they deem it expedient, designate additional hours or extend the foregoing hours, as they may find convenient.

C. E. MITCHELL,
Commissioner.

Oath of Inventor in Relation to Foreign Patents.

(ORDER No. 562.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 2, 1889.

In applications for patents for inventions which have not been patented abroad it will be deemed a sufficient compliance with Rule 46 of the Rules of Practice if the American inventor makes oath that the invention has not been patented to himself or to others with his knowledge or consent in any foreign country.

C. E. MITCHELL,
Commissioner.

Assignment of Applications for Examination.

(ORDER No. 563.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 2, 1889.

Whenever the question arises to which one of two or more divisions an application should be assigned for examination, the examiners in charge of such divisions will use their best efforts to effect a proper assignment before the case is submitted to the Assistant Commissioner for decision.

C. E. MITCHELL,
Commissioner.

Issue of July 9, 1889.

Patents	450	No. 406,414 to No. 406,863, inclusive.
Designs	11	No. 19,195 to No. 19,205, inclusive.
Trade-Marks	21	No. 16,787 to No. 16,807, inclusive.
Labels	8	No. 5,956 to No. 5,965, inclusive.
Reissues	1	No. 11,011.
Total issue	491	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	1	....	Nebraska	6	....
Arizona Territory	1	....	Nevada	1	....
Arkansas	3	....	New Hampshire	4	....
California	10	2	New Jersey	23	1
Colorado	....	....	New Mexico Terri'ty	....	....
Connecticut	12	2	New York	94	4
Dakota Territory	1	....	North Carolina	....	....
Delaware	4	....	Ohio	23	2
District of Columbia	2	....	Oregon	1	....
Florida	....	....	Pennsylvania	41	3
Georgia	3	....	Rhode Island	7	....
Idaho Territory	1	....	South Carolina	1	....
Illinois	38	2	Tennessee	2	1
Indian Territory	....	....	Texas	5	....
Indiana	7	....	Utah Territory	1	....
Iowa	10	....	Vermont	3	....
Kansas	6	....	Virginia	3	....
Kentucky	5	....	Washington Territ'y	....	....
Louisiana	....	1	West Virginia	....	....
Maine	2	....	Wisconsin	12	....
Maryland	9	....	Wyoming Territory	....	....
Massachusetts	40	2	United States Army	....	....
Michigan	16	2	United States Navy	2	....
Minnesota	4	....			
Mississippi	....	....	Total to citizens of the United States	429	23
Missouri	24	1			
Montana Territory	1	....			

To citizens of foreign countries: Patents and Designs—32, Trade-Marks and Labels—6.

DESIGNS.

19,195.—FLUE-STOPPER OR COLLAR.—*Emanuel Ettenheimer*, New York, N. Y. Application filed May 13, 1889. Serial No. 310,643. Term of patent 7 years.

19,196.—GIMP.—*George W. Graham*, New York, N. Y. Application filed May 23, 1889. Serial No. 311,681. Term of patent 7 years.

19,197.—SURFACE ORNAMENTATION OF WATER-CLOSET BOWLS.—*Christian H. Hansen*, Trenton, N. J., assignor to *Henry Huber*, New York, N. Y. Application filed January 4, 1889. Serial No. 295,451. Term of patent 7 years.

19,198.—VAPOR-STOVE.—*Thomas Johnson*, St. Louis, Mo., assignor to *Johnson & Brandon*, same place. Application filed May 29, 1889. Serial No. 312,655. Term of patent 14 years.

19,199.—LOUNGE.—*Adolph Karpen*, Chicago, Ill. Application filed January 2, 1889. Serial No. 295,253. Term of patent 3½ years.

19,200.—SEWING-MACHINE COVER.—*Theodor Kundtz*, Cleveland, Ohio. Application filed May 28, 1889. Serial No. 312,462. Term of patent 7 years.

19,201.—DISH.—*Thomas Maddock*, New York, assignor to *Henry Maddock*, Brooklyn, N. Y. Application filed September 8, 1888. Serial No. 284,983. Term of patent 7 years.

19,202.—ORNAMENTATION OF SASH-LIFTS OR OTHER ARTICLES OF BUILDERS' HARDWARE.—*Floyd N. Perkins*, Cleveland, Ohio. Application filed May 13, 1889. Serial No. 310,646. Term of patent 3½ years.

19,203.—HANDLE FOR SPOONS, FORKS, &c.—*Frederick Schmidt*, North Attleborough, Mass., assignor to *F. M. Whitney & Co.*, same place. Application filed June 13, 1889. Serial No. 314,145. Term of patent 3½ years.

19,204.—SAD-IRON HANDLE.—*Henry W. Schneider*, Little Oley, assignor to *The Colebrookdale Iron Company*, Douglas, Pa. Application filed April 15, 1889. Serial No. 307,342. Term of patent 14 years.

19,205.—SPOON, &c.—*George P. Tilton*, Newburyport, Mass., assignor to *The Towle Manufacturing Company*, same place. Application filed June 5, 1889. Serial No. 313,203. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,787.—DISPLAY-FRAMES HAVING ADJUSTABLE JOINTS FOR EXHIBITING WEARING-APPAREL.—*William A. Aiken*, Norwich, Conn. Application filed April 13, 1889. Used since February 23, 1889.

"The figure of Mercury outlined by a black ground."

16,788.—PRESERVING-PAINT.—*Gebrüder Avenarius*, Gaualgesheim, Germany. Application filed April 19, 1889. Used since February 25, 1889.

"The words 'CARBOLINEUM AVENARIUS.'"

16,789.—PILLS OF ESSENCE OF TAR.—*A. Bertelli & Cie.*, Milan, Italy. Application filed June 11, 1889. Used since December, 1884.

"The word 'CATRAMINA.'"

16,790.—WHISKY.—*Betterton & Co.*, Knoxville, Tenn. Application filed May 15, 1889. Used since March 3, 1888.

"The words 'DAVEY CROCKETT.'"

16,791.—WHISKY.—*Elias Block & Sons*, Cincinnati, Ohio. Application filed May 8, 1889. Used since August 15, 1863.

"The word 'MERCANTILE,' in a curved line, under which, in a straight line, is the word 'CLUB.'"

16,792.—[Withdrawn.]

16,793.—BRONZE, COPPER, AND BABBITT INGOTS AND ARTICLES USEFUL AND ORNAMENTAL MADE THEREFROM.—*The Eastwood Wire Manufacturing Company*, Belleville, N. J. Application filed March 16, 1889. Used since July 28, 1888.

"The word 'PERFECTION.'"

16,794.—DENTAL INSTRUMENTS, MACHINERY, PREPARATIONS, AND FURNITURE.—*George W. Fels*, Cincinnati, Ohio. Application filed January 24, 1889. Used since September 1, 1883.

"The word 'FAVORITE' and the picture of an infant."

16,795.—GOLD PAINT MADE OF GOLD BRONZE.—*Gerstendörfer Bros.*, New York, N. Y. Application filed May 20, 1889. Used since May 1, 1889.

"The representation of a star inclosing the initial letter 'G' and the syllable 'BROS.' within said letter."

16,796.—GOLD PAINT MADE OF GOLD BRONZE.—*Gerstendörfer Bros.*, New York, N. Y. Application filed May 20, 1889. Used since May 1, 1889.

"The figure of a Japanese woman."

16,797.—ELECTRIC BATTERIES.—*George A. Harmount*, Chicago, Ill. Application filed June 10, 1889. Used since December 1, 1888.

"The word 'MONITOR.'"

16,798.—SALT.—*Thomas Higgin & Co.*, Liverpool, county of Lancaster, England. Application filed October 18, 1888. Used since September 1, 1873.

"The representation of a rhombus figure and a monogram or cipher composed of the initial letters 'T H & Co.'"

16,799.—FERMENTED CIDER OR CIDER CHARGED WITH CARBONIC-ACID GAS.—*William L. Horne*, Wallingford, Conn. Application filed June 7, 1889. Used since May 26, 1889.

"The word 'APPLEAGNE.'"

16,800.—LIQUID PREPARATION FOR USE AS AN INGREDIENT IN BEVERAGES AND BITTERS FOR INDIGESTION.—*William Robert Julian Gill Knight*, Barbadoes, West Indies. Application filed November 22, 1887. Used since June, 1885.

"The word 'DINNER.'"

16,801.—WHISKY.—*J. M. Mackenzie & Co.*, Wishaw, county of Lanark, Scotland. Application filed March 19, 1889. Used since January 1, 1839.

"The word 'CLYDESDALE.'"

16,802.—OLIVE-OIL.—*Carlo Maspero*, New York, N. Y. Application filed May 24, 1889. Used since May 1, 1889.

"Registrant's family coat of arms, composed of a heraldic shield having three panels, the top panel containing an eagle, the intermediate panel two comets, and the lower panel the heraldic representation of a lion, together with a breast-plate and helmet and the scrolls extending from the same."

16,803.—OIL FOR SEWING-MACHINES AND LIGHT MACHINERY.—*Nesbitt D. Stoops*, Philadelphia, Pa. Application filed May 23, 1889. Used since April 1, 1889.

"The representation of a whaling or sea-going vessel and portion of the body of a whale projecting above the surface of the sea, showing the act of removing the blubber."

16,804.—WHISKY.—*Patrick J. Sullivan*, Sault Ste. Marie, Mich. Application filed April 1, 1889. Used since December 31, 1888.

"The words 'BLACK THORN.'"

16,805.—ASPHALTUM PAVING-BLOCKS.—*The Trinidad Asphaltum Block Company*, Philadelphia, Pa. Application filed April 29, 1889. Used since April 1, 1889.

"The words 'TRINIDAD ASPHALTUM BLOCK CO.' displayed upon a picture of an asphaltum paving-block."

16,806.—DRUGGISTS' RUBBER GOODS, AS NIPPLES, SYRINGES, TEETHING-RINGS, WATER-BOTTLES, AIR-PILLOWS, AIR-CUSHIONS, &c.—*Tyer Rubber Company*, Andover and Boston, Mass. Application filed May 18, 1889. Used since May 1, 1883.

"The word 'TYRIAN.'"

16,807.—CHEMICAL FIRE-EXTINGUISHING APPARATUS.—*Worcester Fire Appliance Company*, Worcester, Mass. Application filed April 27, 1889. Used since April 15, 1889.

"The words 'WORCESTER CHEMICAL FIRE PAIL' in connection with the design of a pail or bucket and the hand of an unseen person breaking through the cover of the same."

LABELS.

5,958.—Title: "HOSPITAL REMEDIES."—*A. H. Dixon*, Toronto, Ontario, Canada. Application filed April 8, 1889.

5,959.—Title: "MRS. A. A. DRAPER'S CORN KILLER."—*A. A. Draper*, Blue Island, Ill. Application filed June 13, 1889.

5,960.—Title: "LANGLES" (FOR BISCUITS.)—*Justin J. Langlés*, New Orleans, La. Application filed March 28, 1889.

5,961.—Title: "THE ST. LOUIS JEANS PANTS."—*Harry N. Marx* and *Aaron Haas*, St. Louis, Mo. Application filed May 21, 1889.

5,962.—Title: "D. MAURER & SON'S INFALLIBLE RAT AND ROACH EXTERMINATOR."—*Conrad Daniel Maurer*, Philadelphia, Pa. Application filed May 11, 1889.

5,963.—Title: "DR. C. K. MERRIAM'S FEMALE HERBAL PASTILLETTES."—*Dr. C. K. Merriam*, Ludington, Mich. Application filed May 20, 1889.

5,964.—Title: "HAIR WASH."—*Charles Parker*, Stockton, Cal. Application filed March 6, 1889.

5,965.—Title: "VISCOL-DRESSING" (FOR LEATHER.)—*Adolph Sommer*, Berkeley, Cal. Application filed October 8, 1888. (Trade-Mark Registered.)

DISCLAIMER.

143,160.—*James M. Ellis*, Bridgeport, Conn. IMPROVEMENT IN COIL-SPRING GARTERS AND BELTS. Patent dated December 2, 1873. Disclaimer filed June 29, 1889, by the present assignees, *The Chapman and Armstrong Manufacturing Company*, Waterbury, Conn.

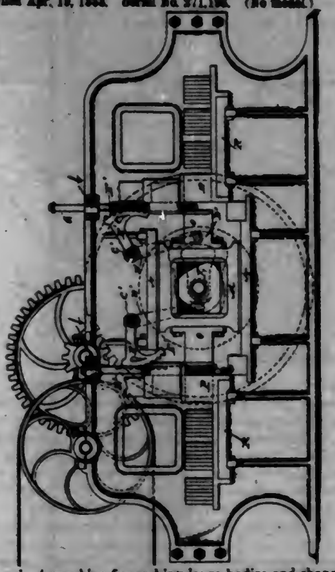
Enters its disclaimer—

"To so much of both clauses of claim in said Letters Patent as does or might make them include a structure not having the 'tip D' described and shown in the specification and drawings of said patent."

PATENTS

GRANTED JULY 9, 1889.

406,414. BRICK-MACHINE. JAMES C. ANDERSON, Highland Park Ill. Filed Apr. 19, 1888. Serial No. 271,198. (No model.)



Claim.—1. A machine for making large bodies and shapes from clay, in which the compression-plungers press a thin slab of clay onto a series of similar slabs or layers in an open-ended mold, and rolls or described equivalents for depositing a layer or film of slip or vitrifiable or cementing material between each slab, as set forth.

2. In a machine for making blocks of a series of thin clay slabs, an open-ended mold-chamber, a feed-charger working in front of the mold-chamber, and a plunger working into and through the charger to press the clay and compact it against the previously-formed blocks in the compression-chamber, as set forth.

3. In a machine for making blocks, colums, &c., of a series of thin clay slabs, an open-ended mold-chamber, a charger working in front of the mold-chamber, said charger being provided with rolls for depositing a slip between the layers or slabs, and a plunger working into and through the charger to press the clay therefrom and compact it against the previously-formed blocks in the compression-chamber, as set forth.

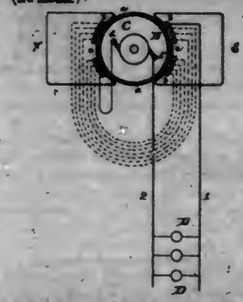
4. In a machine of the character described, the clay spouts or chambers located above the compression-chamber and communicating with the vertically-moving charger at the side thereof, the plate V for closing one side of the charger, and devices, substantially as described, for moving the charger up and down in front of the compression-chamber, as set forth.

5. The shafts G, having the crank-arms D, adapted to engage cam-grooves B, and with the arms E, having the toothed sectors F to engage the rack-bars G' of the chargers, whereby said chargers are moved up and down in front of the compression-chambers.

6. In a machine of the character described, the clay-charger T, in combination with the rolls I' and K' and the slip-trough L', whereby a film or layer of slip is deposited on the face of the newly-formed slab at each movement of the charger, as set forth.

7. The ratchet-wheel M' and disk P', mounted on the shaft of the slip-roll I', in combination with the pawls N' and R', whereby, when the ratchet-wheel and disk have made one revolution, the roll I' will be held from contact with the clay slab and the block separated at this point.

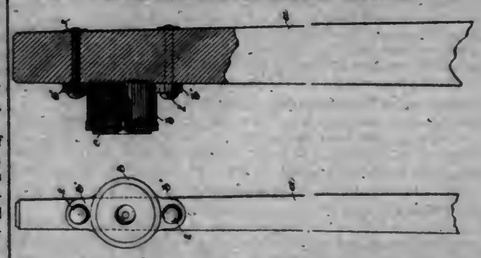
406,415. DYNAMO. WILLIAM R. ANDREWS, New York, N. Y., and THOMAS SPENCER, Westbrook, Conn. Filed Aug. 17, 1888. Serial No. 311,100. (No model.)



Claim.—1. In a dynamo-electric machine, the combination of the armature, the generating-coils thereon, the field-magnet, and the external stationary coils supported upon said field-magnet and wound so as to oppose the magnetizing effect on the armature-core of said generating-coils, substantially as set forth.

2. In a dynamo-electric machine, the combination of the armature, the generating-coils thereon, the field-magnet having grooves in its pole-pieces, and the coils wound in said grooves, so as to oppose the magnetizing effect on the armature-core of said generating-coils, substantially as set forth.

406,416. LOOM-PICKER. EVERETT H. ARCHIBALD, Lawrence, Mass. Filed Mar. 26, 1888. Serial No. 304,847. (No model.)

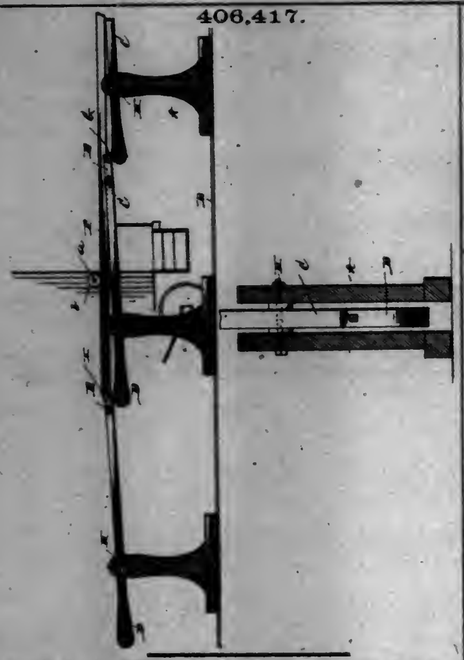


Claim.—The loom-picker herein described, it consisting of the metallic support *b*, formed with a circular socket within it and having external ears *b'*, and the circular piece *c*, placed in the circular socket in the support and having the central guiding hole or eye therethrough for the point or beak of the shuttle, all as and for the purposes set forth.

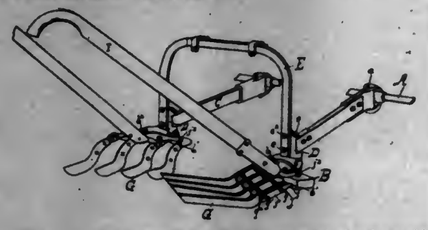
406,417. RAILROAD-GATE. JOHN T. BARLOW, Richmond, Va. Filed Feb. 2, 1889. Serial No. 298,426. (No model.)

Claim.—The combination, with a series of standards erected along a railway-track at a crossing, of tumbling-bars connected pivotally to the upper ends of said posts or standards and having weights at their lower ends, and a connecting-bar connected pivotally to the upper end of each of said tumbling-bars, substantially as herein described, and for the purpose set forth.

406,417.



406,418. CULTIVATOR. DAVID W. RASH, Sandwich, Ill., assignor to the Sandwich Enterprise Company, same place. Filed Apr. 11, 1887. Serial No. 234,468. (No model.)



Claim.—1. In a cultivator, the combination of the heads provided with rounded sockets, arms having one end flattened and the other end rounded and adapted to fit in said sockets, and set-screws for retaining them therein, with blades adjustably secured to the flattened end of said arms, substantially as and for the purpose specified.

2. In a cultivator, the combination of the heads provided with rounded sockets, arms having one end flattened and the other end rounded and adapted to fit in said sockets, and set-screws for retaining them therein, with blades pivoted to the flattened end of said arm, and a slot, bolt, and nut for securing said blade in any desired position, substantially as and for the purpose specified.

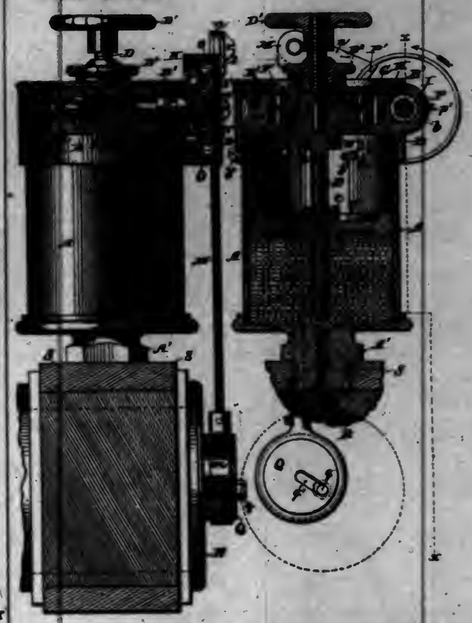
3. In a cultivator, the combination of suitable heads, and standards secured thereto, with an arch having its ends pivotally connected with said standards, and means for rigidly securing the standards and arch together, substantially as and for the purpose specified.

4. In a cultivator, the combination of suitable heads, each having blades secured thereto, and an arch extending between said heads, with standards, and adjustable connections between said standards and both the arch and the heads, substantially as and for the purpose specified.

5. In a cultivator, the combination of suitable heads and standards secured thereto, an arch having its ends pivotally connected with said standards, and means for rigidly securing the standards and arch together, with the frame and beams pivotally connected to both the frame and the heads, as and for the purpose set forth.

6. In a cultivator, the combination of suitable heads, each having blades secured thereto, an arch extending between said heads, and standards adjustably connected to both the arch and the head, with the frame and beams pivotally connected to both the frame and the heads, substantially as and for the purposes hereinbefore set forth.

406,419. SPEED-REDUCING MECHANISM FOR LUBRICATORS. WILLIAM S. REYNAR, Ashland, Wis. Filed Apr. 30, 1888. Serial No. 272,223. (No model.)



Claim.—1. The combination of a rotary eccentric, an internal gear inserted therein, and differential gears working with said internal gear, substantially as and for the purposes set forth.

2. The combination of a rotary eccentric having a worm-gear formed on its periphery, an internal gear inserted therein, concentric differential gears working with said internal gear, and a worm working with said worm-gear and connected with a suitable source of power, substantially as and for the purposes set forth.

3. The combination of concentric differential gears, one being fixed and the other revoluble, a rotary eccentric, and an internal gear interposed between said eccentric and said differential gears and working therewith, substantially as and for the purposes set forth.

4. The combination, with a piston or follower having a rotary stem, of differential gears, one of which is fixed and the other revoluble, a clutch adapted to secure said revoluble gear to said stem, a rotary eccentric, and an internal gear inserted in said eccentric and engaging with both differential gears, substantially as and for the purposes set forth.

5. The combination, with a suitable receptacle and a piston or follower adapted to work therein, of a cover constituting a gear-case, an eccentric worm-gear revoluble in said gear-case, differential gears placed within said worm-gear concentric with its axis of rotation, an internal gear interposed between said worm-gear and said differential gears, and a revoluble stem connecting said piston with one of said gears, substantially as and for the purposes set forth.

6. The combination, with a suitable receptacle and a piston adapted to work therein, of differential gears, one fixed and the other revoluble, a screw-threaded stem working with a nut in said piston and extending throughout said gears and provided at its outer end with a head by means of which it may be turned, a friction-disk and a jam-nut placed on said stem on opposite sides of said revoluble gear, and a driving-gear working with both differential gears, substantially as and for the purposes set forth.

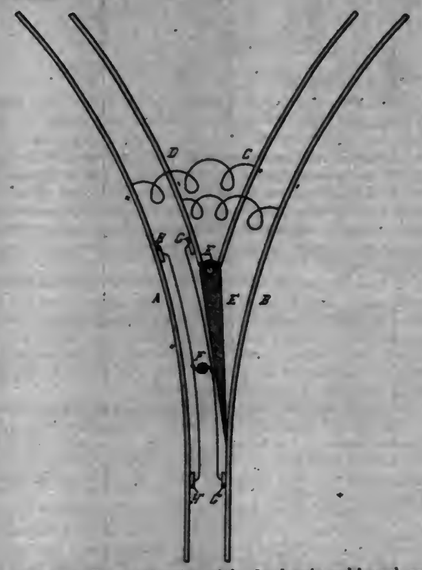
7. The combination of concentric differential gears, an eccentric annular worm-gear, an internally-toothed ring working within said worm-gear in engagement with said differential gears, a worm working with said worm-gear, and an oscillatory friction-clutch connected with said worm and with a suitable source of power, substantially as and for the purposes set forth.

8. The combination, with a piston or follower and a stem connected therewith, of a friction-wheel provided with a laterally-projecting annular rim, speed-reducing mechanism connecting said friction-wheel with said stem and composed of a rotary eccentric worm-gear, a worm working therewith, an internal gear inserted in said eccentric, and differential gears concentric with the axis of rotation of said eccentric and working with said internal gear, an oscillatory head, and friction-shoes working with the rim of said friction-wheel and so connected with said oscillatory head as to be moved into engagement with said rim when said head moves in one direction and moved out of engagement therewith when the head moves in the reverse direction, substantially as and for the purposes set forth.

9. The combination of a piston provided with a stem, an internal friction-wheel connected with said stem by speed-reducing gearing composed of a worm, a rotary eccentric worm-gear, an internal gear inserted therein, and differential gears concentric with the axis of rotation of said eccentric worm-gear and both working with said internal gear, and oscillatory friction-clutch mechanism working with said friction-wheel, substantially as and for the purposes set forth.

10. The combination of a piston provided with a stem, an intermittingly-rotating shaft connected with said stem by speed-reducing gearing composed of a worm, a rotary eccentric worm-gear, an internal gear inserted therein, and differential gears concentric with the axis of rotation of said eccentric worm-gear and both working with said internal gear, oscillatory clutch mechanism connected with said shaft, and an eccentric adjustably attached to the actuating crank-pin and connected with said oscillatory clutch mechanism, substantially as and for the purposes set forth.

406,420. ELECTRIC-RAILWAY SWITCH. FRANCIS O. BLACKWELL, New York, N. Y. Filed Nov. 23, 1888. Serial No. 291,643. (No model.)



Claim.—1. The combination of the fixed main and branch conductors and a movable switch-point forming no part of the electric circuit, for directing the collector upon either branch, with a traveling vehicle, a propelling electric motor therefor, and a contact device in circuit with the motor, which bridges the switch-point, making contact with one fixed conductor before breaking contact with the other, substantially as described.

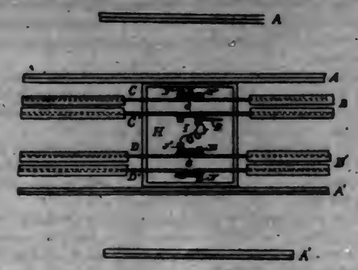
2. The combination of the fixed main and branch conductors and the movable switch-point with a traveling vehicle, a propelling electric motor therefor, and a contact device in circuit with the motor, bridging the switch-point and adapted to contact with the fixed conductors on either side of the switch-point, substantially as described.

3. The combination of the conductors A B and C D for main and branch tracks and the movable switch-point E, forming no part of the electric circuit, with a traveling electrically-propelled vehicle and a contact device which bridges the switch-point.

4. The combination, in an electric railway, of the fixed main and branch conductors and the intermediate movable switch-point out of circuit with the said fixed conductor, to form a mechanical guide for the traveling current-collector.

5. The combination, in an electric railway, of the two main conductors, which extend beyond the switch to form the outer conductors of said branch tracks, with the two inner conductors of said branch tracks and the movable switch-point E, out of circuit with the conductors, but extending from the main to the branch conductors, to form a mechanical guide for the traveling current-collector.

406,421. ELECTRIC-RAILWAY CIRCUIT. JOSIAH L. BLACKWELL, New York, N. Y. Filed Mar. 11, 1889. Serial No. 302,930. (No model.)



Claim.—1. The combination of a supply-conductor extending along the line of an electric railway with the supplementary flexible emergency-conductor I, normally forming no part of the line-circuit, but placed in engagement with the supply-conductor upon the interruption of the circuit therein for temporarily bridging the break in said supply-conductor.

2. The combination, in an electric railway, of two parallel tracks, bared supply-conductors of like polarity extending along said tracks, and a loop-circuit for bridging a fault upon the supply-conductor of one road, said loop-circuit consisting in part of the supply-conductor of the second road.

3. The combination, in an electric railway, of two supply-conductors of like polarity between the tracks of two parallel roads supplying current to the motors upon the said roads, respectively, and a flexible supplementary conductor connecting the two said conductors upon the occurrence of a fault on either one.

4. The combination, in an electric railway, of two parallel tracks, supply-conductors of like polarity extending along the said tracks, respectively, said conductors being each made up of independent sections normally in circuit with one another, switches at intervals for breaking the circuit of the supply-conductors, and a supplementary conductor connecting the supply-conductors of the two roads when the circuit of one is interrupted.

5. The combination, in an electric railway, with two sectional supply-conductors of like polarity extending along the line of two parallel roads and supplying current to the motors traveling upon the two roads, respectively, of switches normally coupling up in circuit the sections of each supply-conductor, and two supplementary conductors, substantially as described, whereby one section of supply-conductor may be cut out and the circuit completed around said section through the supplementary conductors and supply-conductor of the parallel road.

6. The combination of two slotted conduits between the tracks of a double-track road, supply-conductors of like polarity inclosed therein and supplying current to the motors upon the two roads, respectively, a common opening affording access to the conductors of both roads, and a supplementary conductor in said opening joining the supply-conductors of both roads upon the interruption of the circuit upon either one of them.

7. The combination, with two parallel tracks, of two conduits between the tracks, and sectional supply-conductors inclosed therein supplying current to the motors upon the two tracks, respectively, with switches normally uniting the adjacent sections of each supply-conductor, and a common opening permitting access to the conductors of both roads and their bridging-switches.

8. The combination, with the two tracks, of a double-track road, two conduits between the said tracks, and an inclosed supply-conductor in each conduit, with a common pit or opening permitting access from the street to the conductors of both roads.

9. The combination of the conduits with a common pit, inclosed sectional conductors of like polarity supplying current to the motors upon the tracks of a double-track road, and having adjacent sections terminating in said pit, the switches for connecting and disconnecting adjacent sections, and the supplementary conductor connecting the supply-conductors of the two roads upon the interruption of the circuit on either one of them.

10. The combination, with the sectional supply-conductors of like polarity of two parallel roads, of the switches for connecting and disconnecting adjacent sections of each supply-conductor, the exposed terminals adjacent to said switches, and the supplementary conductor adapted to engage said terminals, whereby the circuit of either conductor may be broken and connection made to the second conductor, substantially as described.

11. The combination, with the supply-conductors of like polarity of two parallel roads, of the supplementary flexible emergency-con-

ductor I, joining the supply-conductors upon the interruption of the circuit in either one.

12. The combination, with a sectional supply-conductor extending along the line of an electric railway, of a bridging-switch between adjacent sections pivotally connected with one and engaging the other of said sections.

13. The combination, with the sectional supply-conductor extending along the line of an electric railway, of the insulating-backing at the break between adjacent sections, and a bridging-switch behind said backing.

14. The combination, with a sectional supply-conductor extending along the line of an electric railway, of the studs projecting from adjacent sections, and a switch pivoted upon one of said studs and engaging the other.

15. The combination, with a sectional supply-conductor extending along the line of an electric railway, of an insulated mechanical connection between adjacent sections, and a switch for establishing an electrical connection at will.

16. The combination of a sectional supply-conductor extending along the line of an electric railway with a bridging-switch forming an electrical connection between adjacent sections, and a catch for said switch holding the same against accidental displacement.

17. The combination of two line-conductors of like polarity supplying current to motors traveling upon an electric railway, and generators normally in circuit with the line-conductors, respectively, with a supplementary conductor for joining the said supply-conductors, and a switch for coupling up the generators in circuit with either line-conductor at will.

18. The combination of two line-conductors of like polarity supplying current to motors traveling upon two parallel roads, respectively, a generator normally in circuit with each conductor, and a switch for cutting out a portion of one of the line-conductors, with a supplementary conductor joining the line-conductors, and a switch at the supply-station for shifting the circuit of the generator from the cut-out section to the conductor of the other line, substantially as described.

19. The combination, with the supply-conductors of two roads, and an independent generator normally supplying current to the motors upon each road, of the supplementary conductors for joining the supply-conductors of like polarity upon the two roads, and the switches at the supply-station for shifting the circuit of the generators from one line to the other.

20. The combination, in an electric railway, of two parallel roads, and an independent generator normally supplying current to each road, with switches and circuit-connections for putting both generators in circuit with one of the roads, as set forth.

406,422. CULTIVATOR. WILLIAM H. BOSWELL, Brookville, Ind. Filed Aug. 21, 1888. Serial No. 283,314. (No model.)

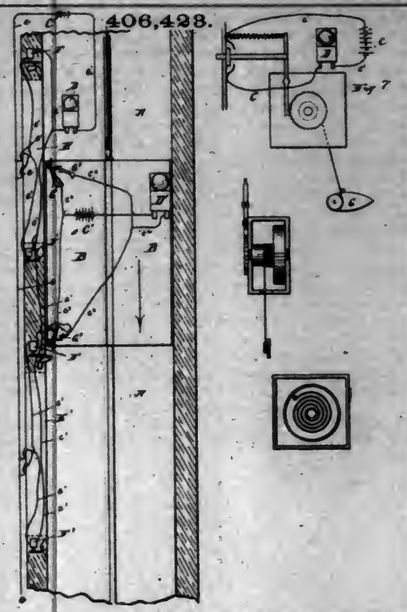


Claim.—1. In a wheeled cultivator, the combination of an axle extended horizontally outward from the central arch and bent downward terminally, wheel-pintles engaging said vertical terminals to swing horizontally upon the same as pivots, draft-bars rigidly secured directly to and extending forward from the wheel-pintles, coupling-blocks F, and share-beams connected with the horizontal portions of said axle, whereby an unequal strain upon one of the draft-bars is compensated for by the pivotal connection of the said wheels and share-beams with the axle and the proper alignment of the cultivator preserved, substantially as described.

2. In a wheeled cultivator, the combination, with the axle and the share-beams, of the coupling blocks or caps F, each having a vertical pivot for connecting it with its share-beam, pivoted horizontally to the axle and having a central aperture, and a collar *b* in said aperture embracing the axle and held in any desired position by a set-screw, substantially as described.

3. In a wheeled cultivator, the combination, with the arched axle C and the pivoted share-beams E, of a bifurcated link *w*, adapted to be attached to the arched axle and elevate the share-beams out of working position, substantially as described.

406,423. SIGNALING APPARATUS FOR ELEVATORS. JOHN F. BOWER, Chicago, Ill. Filed Oct. 19, 1887. Serial No. 252,804. (No model.)



Claim.—1. The combination, with an elevator-car and its shaft, of a stationarily-located signal-trip device, as a trip-lever operated by the car when going down, a second stationarily-located signal trip device, as a trip-lever operated by the car when going up, an electric circuit embracing magnets for setting said trip devices, and buttons or switches *c d*, placed at the elevator stations or landings, substantially as set forth.

2. The combination, with the elevator-car, the shaft, and the trip devices, and an electric circuit in the shaft for operating said trip devices, of an electric circuit on the car for operating a signal thereon and controlled by contact with the trip devices in the motion of the car, and a sound-signal, as a bell, connected with said first-mentioned circuit and operated by the setting of the trip devices to give the general call-signal, substantially as set forth.

3. The combination, with an elevator-car and its shaft, of a trip-lever located and stationary in the shaft, an electric circuit or its equivalent located and stationary in the shaft, and a sound-signal, as a bell, located stationarily in the shaft and operated by the electric circuit, said circuit being controlled by the setting of the trip-lever, substantially as specified.

4. The combination of magnet F, its armature *f*, pawl f^2, trip G, swinging arm G′, lever G^2, arm G^2, gong D′, and electric circuit upon the elevator-car for operating said gong, substantially as specified.

5. The combination of the battery C, gong D, magnets F and F′, operating-armatures *f* and *h*, the trips G and H, the circuit from the battery C, with the battery C′, gong D′, and contact devices on the elevator-car, together with the circuit thereon, substantially as specified.

6. The combination, with an elevator-shaft and its car, of a signal-giving trip stationarily located in the shaft and operated by the car, a sounding call-signal, and electrical devices whereby the passenger may simultaneously set the trip and sound the call, the same consisting of the magnet and the circuit including said magnet, the push-button, the sound-signal and battery, or the equivalents of such electrical devices, substantially as set forth.

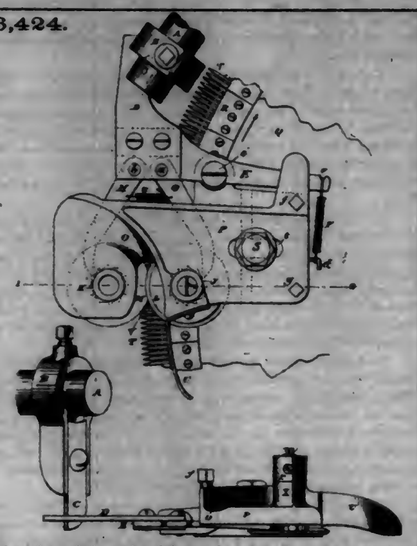
7. The combination, with an elevator-shaft and its car, of a signal-giving device, as a trip-lever, located at a stopping-station and operated by the car as it approaches such station, a sound-signal, as a bell, a button to be used by the passenger, and an electrical circuit embracing both the trip-signal and the sound-signal, whereby the passenger sets the lever of the first signal and sounds said bell at the same time, substantially as set forth.

406,424. TRIMMING ATTACHMENT FOR MACHINES FOR SEWING KNIT FABRICS. BYRON H. BROWN, Bennington, Vt. Filed Apr. 23, 1888. Serial No. 308,980. (No model.)

Claim.—1. The combination, in machines for trimming the seams of knit fabrics, of the finger C, connected with the oscillating needle-arm, the lever D E, pivoted as shown, and the retractile spring F, attached to the end thereof and fastened at the other end to the bed-plate for effecting the back-stroke of the lever D E, with the pawls H G, connected by the spring *k*, the ratchets K J, and the rotary cutters L M, when arranged to operate substantially in the manner described, and for the purposes set forth.

2. The combination, with the table of a looper-frame, of the cutter bed-plate P, having the rib *u*, set-screws *f* and *g*, elongated slot *t*, and screw-bolt S, as and for the purposes set forth.

406,424.

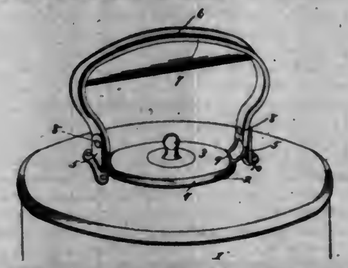


406,425. FEED-TROUGH. GEORGE D. BURTON, Boston, Mass. Filed May 22, 1888. Serial No. 274,746. (No model.)



Claim.—A feed-trough consisting of a curved body, heads having flanges curved to conform to the shape of the body, and binding-strips substantially semi-cylindrical in shape covering the edges of the body, the inner sides of the ends of said strips being bent to cover the flanges of the heads and secured to the body and flanges, as set forth.

406,426. HANDLE. GUSTAV A. BYON, Edgar, Nebr. Filed Sept. 18, 1888. Serial No. 285,732. (No model.)



Claim.—The vessel 1, having opening 2, and opposite perforated ears 5, in combination with the cover 3, mounted in the opening and having the overlapping annular flange 4, and the handle 6, pivoted, as at 8, to the ears, and having the stiffening-wires 7 projecting beyond the handle and terminating in loops 9, bent, as at 10, for taking over the flange of the cover, substantially as specified.

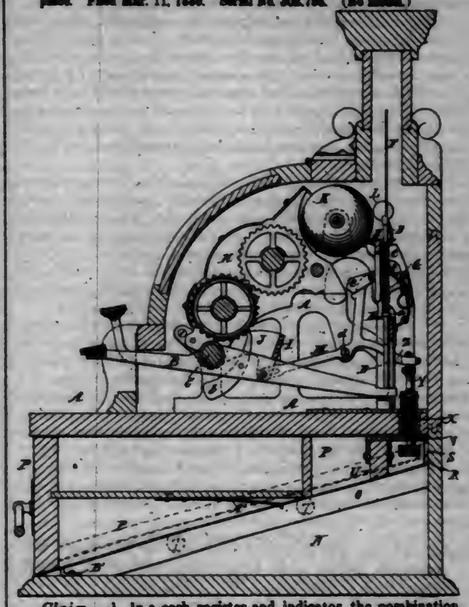
406,427. COMPOUND FOR THE SCRUBBING-SURFACES OF WASH-BOARDS. JAMES P. CLINTON, Xenia, Ohio. Filed May 14, 1888. Serial No. 310,981. (No model.)

Claim.—The herein-described compound, consisting of powdered fire-clay, Spanish white, litharge, powdered or granulated wood, gum-shellac, pitch, and a solvent oil, mixed and incorporated substantially in the manner and for the purpose set forth.

406,427.



406,428. CASH INDICATOR AND REGISTER. WILLIAM S. CRAIG, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed Mar. 11, 1889. Serial No. 302,796. (No model.)



Claim.—1. In a cash register and indicator, the combination, with the operating-keys and the case or cabinet provided with a drawer-compartment, of a drawer fitted therein and arranged when released to be automatically propelled therefrom by its own gravity, and means for releasably holding the drawer in its compartment actuated by the operating-keys to release the drawer, substantially as described.

2. In a cash register and indicator, the combination, with the operating-keys and the case or cabinet provided with a drawer-compartment, of a drawer fitted therein and arranged when released to be automatically propelled therefrom by its own gravity, a locking device for locking the drawer in its compartment and actuated by the operation of the keys to release the drawer, substantially as described.

3. In a cash register and indicator, the combination, with the operating-keys and the case or cabinet provided with a drawer-compartment, of a drawer fitted therein, an incline upon which the drawer

travels in and out of its compartment, and means for releasably holding the drawer in its compartment and actuated by the operating-keys to release the drawer, substantially as and for the purpose described.

4. In a cash register and indicator, the combination, with the operating-keys and the case or cabinet provided with a drawer-compartment, of a drawer fitted therein, an incline upon which the drawer travels in and out of its compartment, and a locking device for locking the drawer in its compartment and actuated by the operation of the keys to release the drawer, substantially as and for the purpose described.

5. In a cash register and indicator, the combination, with the case or cabinet provided with a drawer-compartment, of a drawer fitted therein, an incline upon which the drawer travels in and out of its compartment, friction-rollers interposed between the drawer and incline, a locking device for locking the drawer in its compartment, and the operating-keys mediately connected with said locking device to actuate the same to release the drawer, substantially as and for the purpose described.

6. In a cash register and indicator, the combination, with the operating-keys and the case or cabinet provided with a drawer-compartment, of a drawer fitted therein, an incline upon which the drawer travels in and out of its compartment, means for releasably holding the drawer in its compartment and actuated by the operating-keys to release the drawer, and a stop for limiting the outward movement of the drawer, substantially as and for the purpose described.

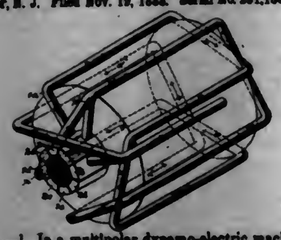
7. In a cash register and indicator, the combination, with the operating-keys and the case or cabinet provided with a drawer-compartment, of a drawer fitted therein, an incline upon which the drawer travels in and out of its compartment, friction-rollers interposed between the drawer and incline, a locking device for locking the drawer in its compartment and actuated by the operation of the keys to release the drawer, and a stop for limiting the outward movement of the drawer, substantially as and for the purpose described.

8. In a cash register and indicator, the combination, with a series of operating-keys, registering and indicating mechanisms actuated thereby to register and indicate the values of the keys operated, and a case or cabinet provided with a drawer-compartment, of a drawer fitted in said compartment and arranged when released to be automatically propelled therefrom by its own gravity, and a locking device for holding the drawer in its compartment and actuated upon the operation of a key to release the drawer, substantially as and for the purpose described.

9. In a cash register and indicator, the combination, with a series of operating-keys, registering and indicating mechanisms actuated thereby to register and indicate the values of the keys operated, and a case or cabinet provided with a drawer-compartment, of a drawer fitted in said compartment, an incline upon which the drawer travels in and out of its compartment, and a locking device for holding the drawer in its compartment and actuated by the operating-keys to release the drawer, substantially as and for the purpose described.

10. In a cash register and indicator, the combination, with a series of operating-keys, registering and indicating mechanisms actuated thereby to register and indicate the values of the keys operated, and a case or cabinet provided with a drawer-compartment, of a drawer fitted in said compartment and arranged when released to be automatically propelled therefrom by its own gravity, a bar common to all the operating-keys and actuated by the operation of any one of them, and a locking device for holding the drawer in its compartment and actuated by the movement of said bar, whereby when any key is operated its value is registered and indicated and the drawer is released and automatically propelled from its compartment, substantially as and for the purpose described.

406,429. DYNAMO-ARMATURE. STANLEY G. C. CURRIE, Philadelphia, Pa., assignor to the United Electric Improvement Company, Gloucester, N. J. Filed Nov. 19, 1888. Serial No. 291,186. (No model.)



Claim.—1. In a multipolar dynamo-electric machine, the combination of a commutator whose bars are insulated from each other with an armature in which the winding or circuit between two commutator-bars traverses or influences each pole thereof, is connected at each of its terminals with but a single point or bar in the commutator, and is unconnected at any intermediate point with any other commutator-bar.

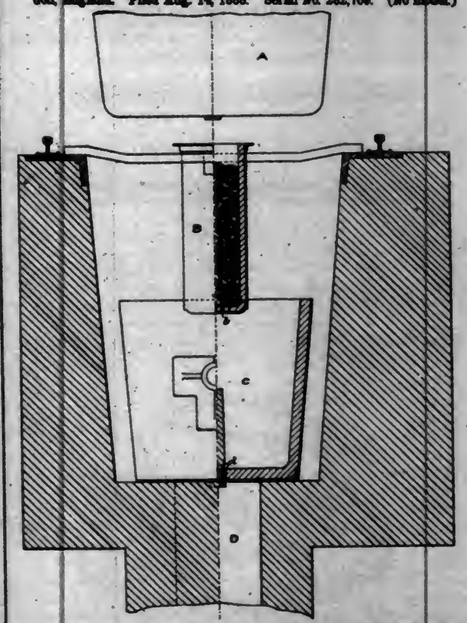
2. In a dynamo-electric machine, the combination of a commutator whose bars are insulated from each other with an armature in which the winding between any pair of adjoining commutator-bars traverses or influences equally each pole, is connected at each of its terminals with but a single point or bar in the commutator, and is unconnected directly with any other commutator-bar, in combination with three or more brushes, substantially as and for the purpose set forth.

3. In a dynamo-electric machine, the combination of the commutator whose bars are insulated from each other with an armature in which the winding extending from one commutator-bar to an adjoining commutator-bar constitutes a circuit that extends around the entire armature, traversing or influencing each pole thereof, is connected at each of its terminals with but a single point or bar in the commutator, and is unconnected at any intermediate point with any other commutator-bar, substantially as set forth.

4. An armature for dynamo-electric machines, in which the commutator-bars are insulated from each other and are apportioned or divided into groups, the windings of each group constitute one layer upon the armature, the winding between adjoining bars of any group traverses or influences equally each pole and is unconnected intermediately with any other bar, and the end of the windings of each group is connected to the first bar of the next group, in combination with brushes, substantially as and for the purpose set forth.

5. A multipolar armature for dynamo-electric machines, in which each winding traverses and influences each pole of the armature, is connected at its beginning with but a single commutator-bar and at its end with but a single commutator-bar adjoining that from which it started, and is unconnected between its terminals with any bar, each winding tending on the commutator-bar from which the next winding starts, substantially as set forth.

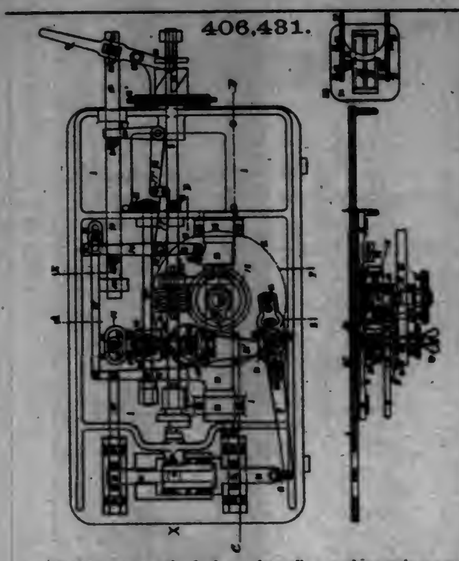
406,430. PROCESS OF RECARBONIZING STEEL. JOHN H. DARBY, Brymbo, County of Denbigh, assignor to Percy Carlyle Gilchrist, London, England. Filed Aug. 14, 1888. Serial No. 282,709. (No model.)



Claim.—The herein-described process of converting crude iron into ingot iron or steel, the same consisting in first purifying the crude metal, and then passing the same while still molten to and through a mass of carbonaceous material.

406,431. SEWING-MACHINE. PIERRE A. DARRAGH, Le Pré St. Gervais, France. Filed Oct. 14, 1887. Serial No. 252,341. (No model.) Patented in France Feb. 22, 1887, No. 181,742, and in England Aug. 22, 1887, No. 11,668.

Claim.—1. In a sewing-machine, the combination, with a stitch-forming mechanism, and a presser foot or plate, of the longitudinally-



movable slide carrying the feeders, a laterally-movable carriage, connections between the carriage and slide whereby the movements of the carriage are transmitted to the slide, a lever mounted on the carriage and connected with the slide to impart thereto its longitudinal reciprocations in regular succession to cause the stitches to be laid, a cam for imparting the successive movements to the lever, and a driver for the cam, substantially as set forth

2. In a sewing-machine, the combination, with the stitch-forming mechanism and the presser foot or plate, of the longitudinally-movable slide carrying the feeders, a laterally-movable carriage, connections between the carriage and slide whereby the movements of the carriage are transmitted to the slide, a lever which imparts longitudinal reciprocations to the slide in regular succession to cause the stitches to be laid, an adjustable fulcrum-support for the lever mounted upon and movable with the carriage, a cam for imparting movements to the lever also mounted upon the carriage, and a driver for the cam, substantially as set forth.

3. In a sewing-machine, the combination, with the stitch-forming mechanism and the presser foot or plate, of the slide carrying the feeders, the carriage 51, connections between the carriage and the slide, a slotted arm carried by the carriage, a slotted lever connected with the slide which imparts longitudinal reciprocations thereto in regular succession to cause the stitches to be laid, an adjustable fulcrum-support passing through the slots in the lever and the said arm, a clamp for holding the fulcrum-support after adjustment, and a cam for moving the lever, substantially as set forth.

4. In a sewing-machine, the combination, with the stitch-forming mechanism and the presser foot or plate, of the slide carrying the feeders, the carriage 51, with which the slide is connected, provided with a slotted arm having a rack 31, the slotted lever 17, connected with the slide, the sleeve 27, passing through the slots in the arm and lever and constituting an adjustable fulcrum for the lever, a pinion 30, mounted upon the stem and meshing with the said rack, an adjustable plate 25, secured to the lever through which the sleeve 27 passes, and a clamp for securing the sleeve after adjustment, substantially as set forth.

5. In a sewing-machine, the combination, with the stitch-forming mechanism and the presser plate or foot, of the slide carrying the feeders movable both laterally and longitudinally, a sliding carriage connected with the said slide to impart lateral motions thereto, a step-by-step driving device for moving the carriage, a lever mounted upon the sliding carriage and connected with the said slide to move it longitudinally, a cam for imparting irregular vibrations to the lever, and a driver for the cam, substantially as set forth.

6. In a sewing-machine, the combination, with the stitch-forming mechanism and the presser foot or plate, of the slide carrying the feeders, a sliding carriage, a main driving-shaft 3, the lever connected with the slide to move it longitudinally, a cam which drives the lever mounted upon the carriage, a worm spliced to and movable upon the said driving-shaft and connected to move with the carriage, and a worm-wheel connected with the said cam, substantially as described.

7. In a sewing-machine, the combination, with the stitch-forming mechanism, the presser plate or foot, and the slide carrying the feeders, free to be moved laterally, of the sliding carriage connected with the slide, the rack and pinion by which the carriage is moved, the ratchet-wheels 46 47, having teeth inclined in opposite directions, connected to move the said pinion, the vibrating lever 58, the pawls which respectively engage with the ratchet-wheels carried by and sliding upon the said lever, and a shifting device for sliding the said pawls, whereby they are independently brought into engagement with their respective ratchet-wheels, substantially as described.

8. In a sewing-machine, the combination, with the stitch-forming mechanism, the presser foot or plate, and the slide carrying the feeders, free to be moved laterally, of the sliding carriage connected with the slide, a rack and pinion for moving the carriage, the ratchet-wheels having teeth inclined in opposite directions connected to rotate the said pinion, pawls engaging, respectively, with the said ratchet-wheels and provided with the yokes 63, the said pawls being free to slide toward and from the ratchet-wheels, and the cams 64 65, engaging with the yokes for bringing the pawls into and out of engagement with the ratchet-wheels mounted upon a shaft provided with an operating-handle, substantially as described.

9. In a sewing-machine, the combination, with the stitch-forming mechanism, the presser foot or plate, and the slide carrying the feeders free to be moved laterally, of a sliding carriage connected with the slide, the rack and pinion by which the carriage is moved, the ratchet-wheels 46 47, having teeth inclined in opposite directions connected to rotate said pinion, the vibrating lever 58, a cam by which the lever is vibrated, the pawls 56 57, which engage with the said ratchet-wheels respectively, supported upon said lever, on which they are free to slide toward and from the ratchet-wheels, and each provided with a yoke 63, the springs which tend to move the pawls into engagement with the ratchet-wheels, and the cams engaging with the said yokes for regulating the position of the pawls in respect to their ratchet-wheels, substantially as set forth.

10. In a sewing-machine, the combination, with the main driving-shaft, the stitch-forming mechanism, the presser-foot, and the slide carrying the feeders, of a sliding carriage connected with the said slide, a feeding mechanism for the carriage by which it is moved in either direction, a clutch on the main driving-shaft, a clutch-shifter, and the independent connections between the sliding carriage and the clutch-shifter, whereby the latter is operated when the sliding carriage reaches the end of its movement whichever direction it be moved, substantially as set forth.

11. In a sewing-machine, the combination, with the main driving-shaft 3, the stitch-forming mechanism, the presser foot or plate, and the feeder-slide, of the sliding carriage connected with the feeder-slide, the clutch 72, the clutch-shifter having two contacts 80' 85, the lever 76, connected with the sliding carriage, and arranged to bear against the contact 85, and move the clutch-shifter when the carriage moves in one direction, and the train of levers 73, 77, 78, and 80, connected with the carriage and adapted to bear upon the contact 80', and move the shifter when the carriage moves in the opposite direction, substantially as set forth.

12. In a sewing-machine, the combination, with the main driving-shaft 3, the stitch-forming mechanism, the presser plate or foot, and the feeder-slide, of the sliding carriage connected with the feeder-slide, the clutch 72 on the main driving-shaft, the sliding bar 79, connected with the sliding carriage and provided with a slot 88', the clutch-shifting lever, and the block carrying the pivot-pin 88, which enters the slot 88', and connects the said sliding bar and the lever, adjustable in a slot in the lever, substantially as set forth.

13. In a sewing-machine, the combination, with the stitch-forming mechanism, the presser-foot, the feeder-slide, and the sliding carriage connected therewith to move the same, of an indicator 86, extending above the bed-plate of the machine, a connecting-bar between the said indicator and the sliding carriage, whereby the two are caused to move together, and a handle for moving both the said indicator and the sliding carriage, whereby the parts may be brought to the proper position for starting, substantially as described.

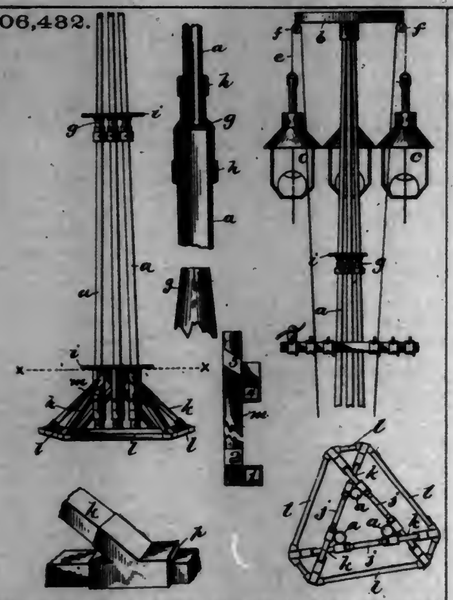
406,432. LIGHT-TOWER. JOHN W. DAVY, Kingston, Ontario, Canada. Filed Sept. 7, 1888. Serial No. 284,786. (No model.)

Claim.—1. A base or anchor for a pole or tower, comprising main horizontal beams secured to the lower end of the pole or tower, cross-bars connecting the outer ends of the horizontal beams, and inclined braces secured to the beams and pole or tower, substantially as set forth.

2. The herein-described joint, comprising a sleeve or connecting-link provided with sockets at its opposite ends to snugly receive the parts to be joined, the ends of the link being split and tapered outwardly, and one or more rings to be driven on each end of the link and thereby contract the sockets and by friction clamp said parts in the same, whereby the use of screw-threads is avoided, substantially as described.

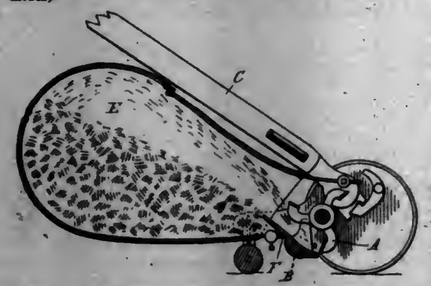
3. A tower comprising uprights formed in sections, connecting-links having tapered split ends surrounding sockets in which the up-

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right sections are located, one or more rings forced upon the tapered split ends, thereby contracting the sockets and by friction clamping the upright sections therein, the split ends being "upset" upon the rings, and cross-pieces securing each set of connecting-links together, substantially as set forth.

406,483. ATTACHMENT FOR LAWN-MOWERS. FRANK A. DE LAND, Memphis, Mich. Filed Mar. 6, 1889. Serial No. 302,057. (No model.)



Claim.—1. The combination, with a lawn-mower, of a grass-collecting receptacle secured in rear thereof, and a shield carried by and extending rearwardly from the knife-bar into said receptacle above the bottom thereof, substantially as described.

2. The combination of the grass-collecting receptacle E and the shield F, rigid with and extending from the rear edge of the stationary knife-bar B into the grass-receptacle and above the bottom of the same, substantially as described.

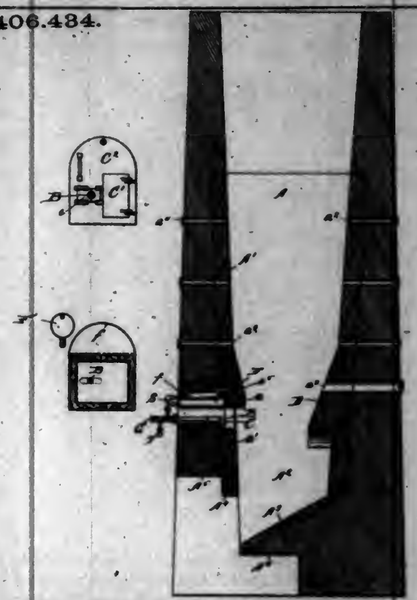
406,484. LIMEKILN. JOSEPH DRUECKER, Druecker, Wis., and JOHN DRUECKER, Chicago, Ill. Filed Dec. 10, 1888. Serial No. 293,141. (No model.)

Claim.—1. The combination of a limekiln having a single burner-recess in the walls thereof at one side of the cupola with a hydrocarbon-burner mounted in said recess, substantially as specified.

2. The combination of a limekiln having but one burner-recess in the walls thereof, and provided with an inclined face, arched projection D opposite said burner-recess, and a hydrocarbon-burner mounted in said burner-recess, substantially as specified.

3. The combination of a limekiln having but one burner-recess in the walls thereof, and provided with an inclined faced projection D opposite said burner-recess and an oppositely inclined-faced projection E above said burner-recess and opposite said projection D, and a hydrocarbon-burner mounted in said burner-recess, substantially as specified.

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4. The combination, with a limekiln having a single burner-recess in the walls thereof at the extremity of the longer diameter of the cupola, of a hydrocarbon-burner mounted in said recess with its mouth or nozzle and about eighteen inches from the inner edge of the cupola-wall, substantially as specified.

5. The combination, with a limekiln having a burner-recess in the walls thereof, of a hydrocarbon-burner pivotally mounted to swing laterally in said burner-recess to adjust the direction of the blast, substantially as specified.

6. The combination, with a limekiln having a burner-recess in the walls thereof and a hydrocarbon-burner mounted in said recess, of a steam-boiler located at said recess, and steam-pipe connections directly from said boiler to the steam-pipe of said burner, whereby the burner is supplied with a blast of dry hot steam, substantially as specified.

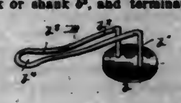
7. The combination, with a limekiln having a burner-recess in the walls thereof and a hydrocarbon-burner mounted in said recess, of a steam-boiler heated by said burner, and steam-pipe connections directly from said boiler to the steam-pipe of said burner, whereby the burner is supplied with a blast of dry hot steam, substantially as specified.

8. The combination, with a limekiln having a burner-recess in the walls thereof and a hydrocarbon-burner mounted in said recess, of a steam-boiler heated by said burner, and steam-pipe connections directly from said boiler to the steam-pipe of said burner, whereby the burner is supplied with a blast of dry hot steam, said boiler extending only partially through the walls of the kiln, and said kiln having a course of fire-brick between the end of the boiler and the cupola or fire-space of the kiln, substantially as specified.

9. The combination, with a limekiln having a burner-recess in the walls thereof and a hydrocarbon-burner mounted in said recess, of a steam-boiler heated by said burner, and steam-connections directly from said boiler to the steam-pipe of said burner, whereby the burner is supplied with a blast of dry hot steam, said boiler being in the form of a rectangular shell and forming a portion of the side, top, and bottom walls of the burner-recess, and extending through the wall of the kiln to within about nine inches of the interior thereof, the inner end of the boiler abutting against the fire-brick lining of the cupola, substantially as specified.

406,485. CUFF-HOLDER. JAMES C. EMERSON, Waterbury Centre, Vt. Filed Mar. 2, 1889. Serial No. 302,059. (No model.)

Claim.—The herein-described cuff-holder, consisting of the button b and the upwardly-projecting opposite arms b' b^2, rearwardly bent to form a neck or shank b^3, and terminating in the loop b^4, in

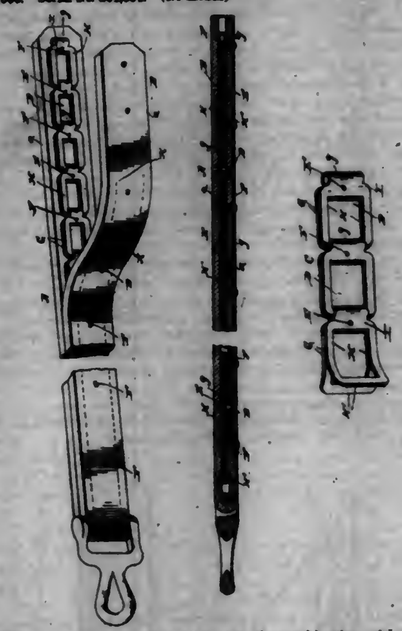


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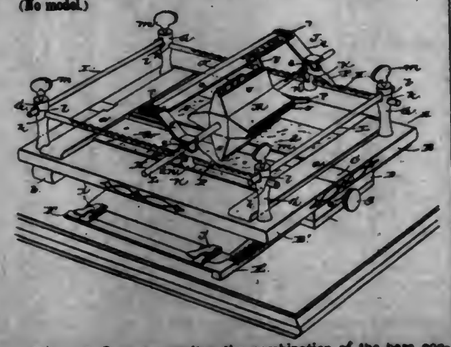
combination with a device secured to the sleeve for engaging the loop, substantially as specified.

406,486. TRACE. GEORGE W. FAIL, Bethany, Mo. Filed Nov. 20, 1888. Serial No. 291,331. (No model.)



Claim.—As an improvement in traces, the combination, with the pair of straps forming a trace connected by stitching along their edges, of a metallic chain interposed between said straps, said chain being composed of flat double-leaved links, each of which has a perforation in its solid portion, each alternate link being secured to one of the straps by a rivet passing through its perforation, and the perforations in the intermediate non-riveted links registering with perforations for the buckle-tongue in both straps, substantially as set forth.

406,487. TYPE-WRITING MACHINE. FRANK FELT and ISAAC W. ARCHIBALD, Everett, Mass. Filed Nov. 2, 1887. Serial No. 254,067. (No model.)



Claim.—1. In a type-writer, the combination of the base consisting of a stationary platen and the parallel longitudinal plates having their rear ends pivoted to the opposite sides of the platen at the rear end thereof and adapted to rest on opposite sides of the platen, and a type-carriage mounted on the said parallel plates, as set forth.

2. In a type-writer, the combination of the stationary platen, the parallel plates pivoted to the platen and adapted to rest on opposite sides of the same, the type-carriage frame mounted on said plates, a shaft mounted in the type-carriage frame and adapted to move transversely and vertically therein, and a rotatable type-head mounted on said shaft and having radial portions carrying type, as set forth.

3. The combination of the platen, a block secured to one end of the same having a recess in its under side, a rack-bar arranged in said recess, a bar secured to the rack-bar and provided with paper-securing clips, a shaft journaled in the block on the platen and carrying a pinion meshing with the rack-bar, and the parallel plates pivoted to the platen and adapted to rest on opposite sides of the same, as set forth.

4. The combination of the platen, the parallel plates pivoted thereto on opposite sides thereof, the notched bars mounted on said parallel plates, the blocks mounted on said notched bars, the shaft inserted through the blocks, the type-head on said shaft, the springs arranged within the blocks and bearing against the said shaft, and the dogs engaging the notched bars and having ears pivotally mounted on the said shaft, as set forth.

5. The combination of the platen, the plates pivoted thereto, the type-carriage mounted on said plates and having the blocks K, the inclined plates q, secured on said blocks, the spring-ears r on the upper ends of the said plates, the index-plate secured by said ears and having a series of notches at its front edge, the shafts mounted on the blocks K, the type-head mounted on said shaft, and the radial arms at the end of the type-head adapted to engage the notches in the index-plate, as set forth.

6. The combination, in a type-writing machine, of side bars, standards having intersecting openings for said bars, binding-screws for the same, and type-carriage and platen, substantially as described.

406,488. SLAT-FASTENER. ANDREW FRANK, Creighton, Mo. Filed Apr. 6, 1889. Serial No. 306,356. (No model.)



Claim.—1. The combination, with the rail of a bed-frame having sockets therein, and slats having vertical and longitudinal grooves in their ends and under sides, respectively, of metallic fasteners located in the grooves and formed with upwardly-extending end portions, one of which has its outer end bent down parallel with the main portion of the fastener and a pin on the fastener, substantially as described.

2. A slat-fastener consisting of a metallic strip having its ends bent up at right angles, one of which is also bent down parallel with the main portion, said ends being tapered to a point, and a pin extending out from the under side of the fastener, substantially as described.

3. A slat-fastener consisting of a metallic strip having its end portions bent up at right angles, one of which has its end bent down parallel with the main portion and the other having an inclined outer face, and a pin formed on the under side of the fastener adjacent to its outer end, substantially as described.

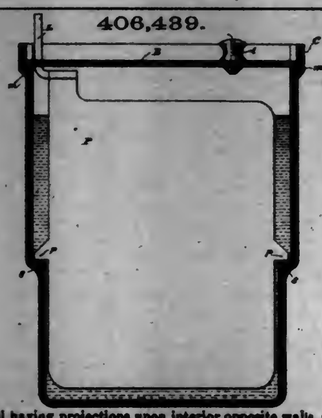
406,489. SECONDARY BATTERY. WILLIAM W. GIBBON, Haverford College, Pa., assignor to the Electrical Accumulator Company, of New York. Filed Apr. 12, 1888. Serial No. 306,921. (No model.)

Claim.—1. In a secondary battery, a cell of insulating material having projections formed in or upon its interior opposite walls and near the central vertical distance, in combination with two elements, each composed of a series of interleaved parallel plates having projections upon opposite sides, near the central vertical distance, resting upon or supported by said projections from the interior of the cell, whereby one element may be removed without disturbing the other, substantially as described.

2. The combination, in an electric battery, of an inclosing-cell of insulating material, having shoulders or projections upon its opposite interior walls, near the upper edge thereof, a cover of insulating material resting upon said projections and having one or more rigid perforated handles, suitable elements or electrodes for said battery, and an electrolytic liquid, all arranged and operating substantially as and for the purpose described.

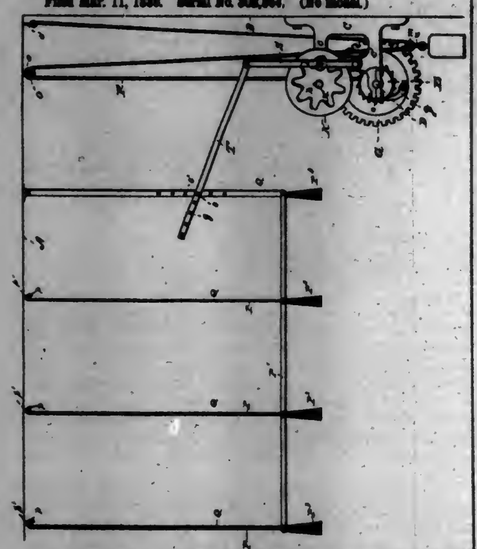
3. In an electric battery, the combination of a hard-rubber in-

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closing-coil having projections upon interior opposite walls, at or near the central vertical distance and at or near the upper edge thereof, elements resting upon the first-named projections and supported thereby, a hard-rubber cover resting upon said second projections, and one or more perforated rigid battens of hard rubber located in said cover, whereby the cover may be removed and replaced and the accumulating gases may escape, all arranged substantially as described.

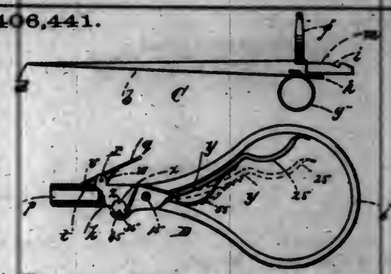
406,440. MECHANICAL MOTOR. EDGAR S. HARPER, Tyler, Tex. Filed Mar. 11, 1889. Serial No. 302,864. (No model.)



Claim.—The combination of the supporting-frame C, provided with the forwardly-projecting arms *c c'*, the shaft D, having its bearings in the arms *c'*, the drum E, loosely mounted on said shaft, and the gear-wheel G, rigidly mounted on said shaft intermediate said arms *c'*, said drum E being provided with a toothed flange *e*, a pawl *g*, pivoted to said gear-wheel and engaging the teeth of said flange, the shaft H, having its bearings in the arms *c*, carrying at one end the pinion I, which meshes with the gear-wheel G, and at its other end the wheel K upon the outside of one of the arms *c*, said wheel K being provided upon its outer face with the cam-shaped recess *k*, the rod S, pivoted to the frame and carrying intermediate its ends the anti-friction roller traveling in said recess, the connecting-rod T, adapted to be connected at one end to a fan-frame, its opposite end being pivoted to the upper end of the rod S, the rope F, attached at one end to the drum E, passing over a pulley attached to the ceiling and attached at its opposite end to the ceiling, and the weight M, carried by said rope, substantially as specified.

406,441. COMBINED CANDLE-HOLDER AND CAP-NIPPER. STEPHEN T. HARRINGTON, Butte City, Mont. Filed Jan. 25, 1889. Serial No. 297,541. (No model.)

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Claim.—1. A candle-holder comprising an elongated pointed body provided with a flexible holder proper and a supporting hook, the head of said body being notched to receive a spring-catch projecting into the holder-chamber of the cap-nippers, substantially as described.

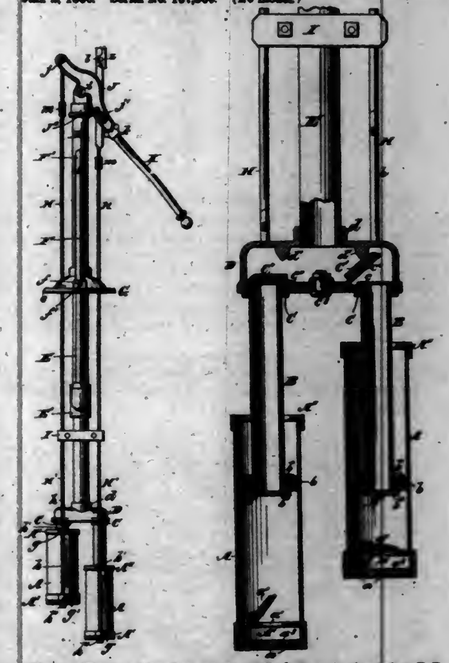
2. The improved nippers herein described, consisting of a body provided with a curved handle and a groove forming the fixed jaw thereof, a pivoted handle projecting within said curved handle and having a jaw registering with said fixed jaw, and inwardly-projecting brads on said jaws for indenting the cap, substantially as described.

3. Cap-nippers comprising a body having a curved groove forming the fixed jaw and a circular handle, a handle pivoted to said body and provided with a curved jaw registering with said fixed jaw, brads in said jaws for indenting the cap, and a spring for keeping said jaws distended, substantially as described.

4. The nippers D, comprising the body *k*, having the handle *l* and groove *x*, the handle *y*, pivoted to said body and provided with the jaw 35, the brads *z* and 45, and the spring 55, for distending said jaws, all being arranged to operate substantially as described.

5. The holder C, having the point *d*, holder proper *g*, and notch *i*, in combination with the nippers D, provided with the chamber *p*, for receiving said holder, and the spring-actuated rod *q*, for detachably securing it therein, substantially as described.

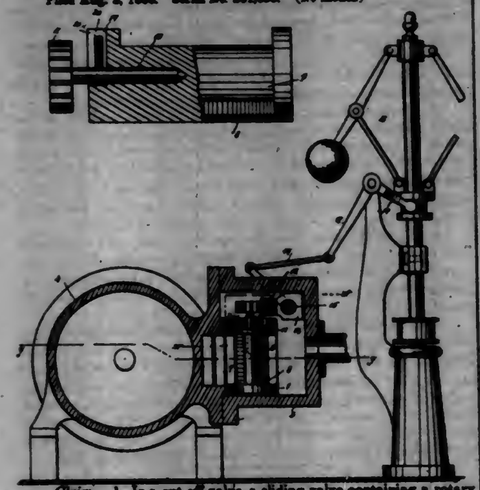
406,442. FORCE-PUMP. ROMULO K. HAYES, Kewanee, Ill. Filed Jan. 2, 1886. Serial No. 187,308. (No model.)



Claim.—The combination of the cylinders A A, the tubes B B, provided with pistons B' B' within said cylinders, the valve-controlled receiving-chamber D, the tube E, extending upwardly from said chamber, the beam J, fulcrumed in a support on the upper end of said tube, and the detachable rods H, one of which is extended above the beam for connection with a wind-wheel, whereby the pump may be made either double-acting or single-acting and the opposite sides

be operated either by the same power or one by hand and the other by wind-wheel, substantially as described.

406,443. CUT-OFF VALVE. MICHAEL J. MURPHY, Brooklyn, N. Y. Filed Aug. 2, 1888. Serial No. 281,883. (No model.)



Claim.—1. In a cut-off valve, a sliding valve containing a rotary valve having a recess, and a pinion with a shaft loosely mounted in the rotary valve, a projection on the shaft located in the recess and movable therein, and a rack engaging the pinion, substantially as shown and described.

2. The combination, with a sliding valve containing a rotary valve having a recess, and a pinion with a shaft loosely mounted in the rotary valve, and a projection on the shaft located in the recess and movable therein, of a rack engaging the pinion, a rotary threaded shaft engaging a nut on the rack, and an engine-governor connected with and operating the rotary shaft, substantially as shown and described.

3. The combination, with a double slide-valve containing rotary valves having recesses, pinions with shafts loosely mounted in the rotary valves, and projections on the shafts located in the recesses and movable therein, of racks engaging the pinions, a right and left hand screw-threaded rotary shaft engaging threaded nuts on the racks, and an engine-governor connected with and operating the rotary shaft, substantially as shown and described.

4. The combination, with valve 8, having circumferential recess 9, and the quadrantal-shaped recess 19 in one end, of the pinion 11 with shaft 10 loosely mounted in valve 8, and having pin 20 located in recess 19, substantially as shown and described.

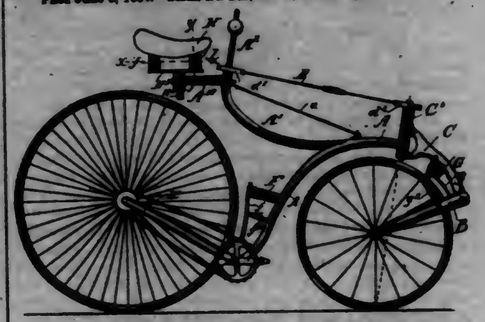
5. The combination, with double slide-valve 1, containing rotary valves 8, having circumferential recesses 9, and quadrantal-shaped recesses 19, pinions 11, with shafts 10 loosely mounted in valves 8, and lateral pins 20 located in recesses 19, of racks 12, engaging pinions 11, a rotary shaft 15, with right and left screw-threaded portions 14 engaging nuts 13 on racks 12, and engine-governor 18, connected by pivoted levers 17, and crank 16, with shaft 15, substantially as shown and described.

406,444. PAPER-FILE. ROBERT G. HEARNE, Kansas City, Mo. Filed May 20, 1889. Serial No. 275,294. (No model.)



Claim.—In a paper-file, the combination of a pair of covers perforated in one edge, a series of stubs of leaves doubled to form upper and lower thicknesses, said upper thickness being doubled again under itself to form a suitable binding portion and leave space for attaching papers or letters to said lower portion, perforations in said twice-doubled portion registering with the perforations in the covers, a pair of upright standards adapted to engage the perforations in said covers and said leaves and formed of one piece of metal bent in the form of a U, and mechanism, substantially as described, for forcing said covers together, all arranged and adapted to operate in the manner and for the purpose set forth.

406,445. VELOCIPEDE. THOMAS B. JEFFERY, Ravenswood, Ill. Filed June 6, 1887. Serial No. 240,266. (No model.)



Claim.—1. In a bicycle, in combination with the front steering-wheel, a steering-head having its axis in line with the wheel's contact with the ground and forward of the steering-wheel's axis, substantially as set forth.

2. In a bicycle, in combination with the front steering-wheel and the rear driving-wheel, the steering-head having its axis in a line forward of the steering-wheel's axis and leaning forward, substantially as set forth.

3. In a velocipede, in combination with the front steering-wheel and the rear driving-wheel, the backbone and the front bone pivoted together, the axis of the pivot being in a line which leans forward, the rider's seat secured to the backbone, and the tiller-rods connecting the handle-bar shaft to the steering-head on the front bone, substantially as set forth.

4. In a velocipede, in combination with the rear driving-wheel and the front steering-wheel, the backbone situated over the steering-wheel and extending between the steering and driving wheels and pivoted to the front bone in a steering-head axle, the steering-wheel, the front fork hinged to the front bone, and a spring reacting between said hinged parts to spread them, substantially as set forth.

5. In a bicycle, in combination with the rear driving-wheel and the front steering-wheel, the backbone and the front bone pivoted together in a steering-head whose axis is inclined forward and is in a line passing in front of the steering-wheel's axis, and a front fork in which the steering-wheel is journaled, hinged to the front bone forward of the steering-head, substantially as set forth.

6. In combination with the rear driving-wheel and the front steering-wheel, the backbone and the front bone pivoted together in a steering-head over the front wheel, the driving-wheel fork hinged to the backbone and the steering-wheel fork hinged to the front bone, and springs reacting between said hinged parts, respectively, to uphold the joints, substantially as set forth.

7. In combination with the rear driving-wheel and the front steering-wheel, the backbone and the front bone pivoted together in a steering-head, and the rear driving-wheel frame or fork hinged to the backbone, and the front-wheel frame or fork hinged to the front bone, and springs reacting between the hinged parts, respectively, and checks to limit the action of the springs, substantially as set forth.

8. In a velocipede, in combination with a front steering-wheel and the rear driving-wheel, the seat-support between the wheels hinged to the rear driving-wheel frame or fork, and a spring reacting between the seat-support and said rear driving-wheel frame to spread them apart, substantially as set forth.

9. A velocipede having a frame elastic at two joints, one elastic joint being forward of each wheel, substantially as set forth.

10. In a velocipede, a single front steering-wheel, the front-wheel frame comprising the steering-head and the bearings for the steering-wheel and jointed between said head and bearings, and a spring reacting between said jointed parts, and a rigid frame pivoted to said front-wheel frame at the steering-head, and the handle-bar secured to and turning said rigid frame, substantially as set forth.

11. In a velocipede, a single front steering-wheel, the front-wheel frame comprising the steering-head and the bearings for the steering-wheel and jointed between said head and bearings, a spring reacting between said jointed parts, a rigid frame pivoted to said front-wheel frame at the steering-head, and the seat and handle-bar both supported on said rigid frame.

12. In a velocipede, in combination, front and rear forks, front and rear bones, a spring reacting between the front fork and front bone, and a spring reacting between the rear fork and rear bone, substantially as set forth.

13. In a velocipede, in combination, front and rear wheels, front and rear forks, and front and rear bones, a spring reacting between

the front fork and front bone, and a spring reacting between the rear fork and rear bone, and a seat secured to one of the bones, substantially as set forth.

14. In a velocipede, in combination with the rear driving-wheel and the frame in which it is journaled, a forward frame which is joined to said driving-wheel frame by a horizontal pivot, and a spring which contacts with and reacts between said frames, and the rider's seat supported on said forward frame, substantially as set forth.

15. In a velocipede, in combination with the rear driving-wheel and the frame in which it is journaled, a forward frame joined to the rear driving-wheel frame by a horizontal pivot located lower than the axle of said driving-wheel, a spring reacting between said frames, and the rider's seat secured to the forward frame, substantially as set forth.

16. In combination with a rear driving-wheel and a front steering-wheel and the frame in which said rear driving-wheel is journaled, the backbone joined to said rear driving-wheel frame upon a horizontal pivot, and a spring which contacts with and reacts between said frame and backbone, the backbone extending from said pivot to a point above the steering-wheel, and the steering-wheel frame pivoted to said backbone in a steering-head, and the seat secured to the backbone, substantially as set forth.

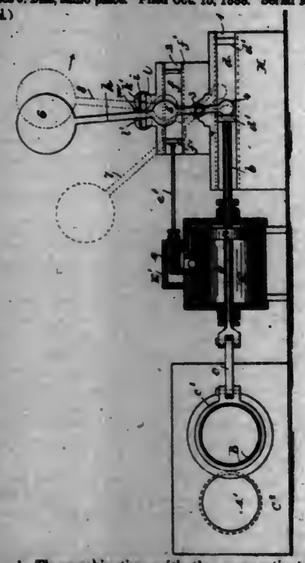
17. In a velocipede, in combination with a rear driving-wheel and the front steering-wheel, and the frame in which said rear driving-wheel is journaled, a frame pivoted to the driving-wheel frame on a horizontal pivot, and a spring which contacts with and reacts between said frames, the latter frame extending from said pivot to the steering-head and having the bearings for the pedal-crank shaft, substantially as set forth.

18. In a velocipede, in combination with the rear driving and the front steering wheel, and the frame in which said rear driving-wheel is journaled, a frame pivoted thereto on a horizontal pivot, and a spring which contacts with and reacts between said frames, the latter frame extending thence to the steering-head and supporting both the seat and the handle-bar, substantially as set forth.

19. In a velocipede, in combination with the rear driving-wheel and the front steering-wheel, and the frame in which said rear driving-wheel is journaled, a frame pivoted thereto on a horizontal pivot, and a spring which contacts with and reacts between said frames, the latter frame extending from said pivot to the steering-head and having the bearings for the pedal-crank shaft and affording support for both the handle-bar and the seat, substantially as set forth.

20. In combination, substantially as set forth, the rear driving-wheel and its frame, the pedal-crank shaft journaled in said frame, a forward frame pivoted to said driving-wheel frame near the pedal-crank-shaft axis, the rider's seat secured to the forward frame, and a spring which contacts with and reacts between said frames to resist the approach of the seat to the driving-wheel.

406,446. PNEUMATIC SWITCH FOR PNEUMATIC DISPATCH-TUBES. PATRICK KENNEDY, Jr., Brooklyn, N. Y., assignor to himself and Charles J. Dias, same place. Filed Oct. 15, 1888. Serial No. 288,110. (No model.)



Claim.—1. The combination, with the pneumatic tubes and a switch, of an air-cylinder and its piston-rod adapted to be operated by compressed air, and a weighted pivoted arm operated by the piston-rod and electrically controlled and adapted to shift the slide-valve of the air-cylinder, substantially as set forth.

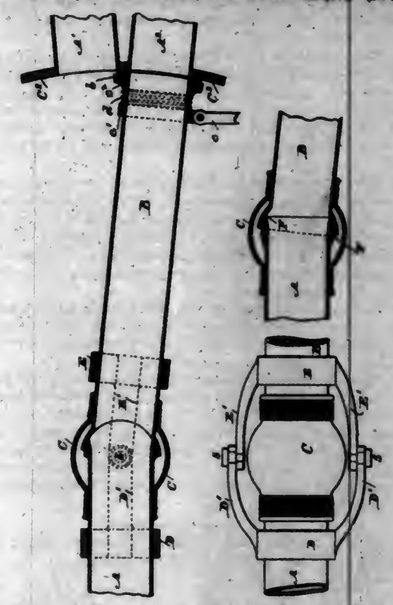
2. The combination, with pneumatic tubes and a switch, an air-cylinder, its chest, piston-rod, and slide-valve, of the frame having slideways, slide-blocks having right-angled projecting ends, and connected, respectively, to the piston-rod and rod of the slide-valve, and a weighted arm moving in a vertical plane and electrically controlled and operated by the piston-rod and adapted by its movement to shift the slide-valve, substantially as set forth.

3. The combination, with pneumatic tubes and a switch, of the piston and piston-rod connected to the switch and adapted to be operated by compressed air, the slide-blocks *d* and *f* and their projections *d'* and *f'* and slideways for the same, a vertical weighted pivoted arm *h*, having a circular end 4 and a circular portion 5, the electro-magnet *i*, the slide-block *l*, having a notched outer end adapted to engage the arm *h*, and a spring *m*, substantially as set forth.

4. The combination, with the pneumatic tubes and a switch, of an air-cylinder and its piston-rod adapted to be operated by compressed air, a slide-valve and rod, and a pivoted arm electrically controlled and adapted to shift the slide-valve and rod, substantially as specified.

5. The combination, with pneumatic tubes, a switch, and a cylinder for compressed air, and mechanism connected with said cylinder for operating said switch, of an electro-magnet *i*, a slide-block *l*, having a notched end and acting as an armature moving in one direction, a spring for moving the slide-block in the reverse direction, and with mechanism, substantially as set forth, engaging the notched end of the slide-block, and adapted by its release from said slide-block to operate the slide-valve of the air-chest, substantially as set forth.

406,447. SWITCH FOR PNEUMATIC DISPATCH-TUBES. PATRICK KENNEDY, Jr., Brooklyn, N. Y., assignor to himself and Charles J. Dias, same place. Filed Oct. 20, 1888. Serial No. 288,276. (No model.)

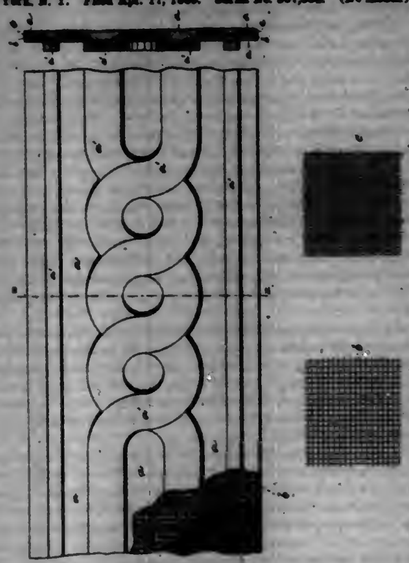


Claim.—1. The combination, with the pneumatic tube A, of the pneumatic tubes A' A^2, the segment-piece C^2, connecting the ends of the tubes A' A^2, the pneumatic switch consisting of a length of tube B, pivotally connected to the tube A, and a ring and packing surrounding the end of the tube B and adapted to bear against the segment-piece C^2, for forming an air-tight joint, substantially as set forth.

2. The combination, with the pneumatic tubes A A' A^2, of the pneumatic switch consisting of a length of tube B, the collar D and arms D', connected to the tube A, the collar E and the arms E', connected to the switch-tube B, the pivots 5, connecting said arms, the rubber sleeve or gasket C, surrounding the junction of the main and switch tubes A B and forming an air-tight joint, the segment C^2, the collar c^2 and its packing, and a helical spring that holds the same against the segment to form an air-tight joint, substantially as set forth.

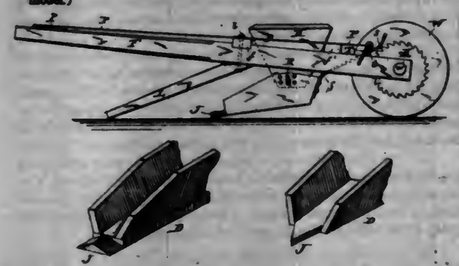
3. The combination, with the pneumatic tubes A A' A^2, of the pneumatic switch consisting of a length of tube B, the meeting ends of the tubes A and B being curved and the one adapted to set within the other, the rubber sleeve or gasket C, surrounding and connecting the tubes A and B and forming an air-tight joint, the segment C^2, the ring c^2 and its packing, and a helical spring adapted to press the ring and its packing against the segment to form an air-tight joint, substantially as set forth.

406,448. MOLDED FACING FOR WALLS. JOHN KLEE, New York, N. Y. Filed Apr. 17, 1888. Serial No. 307,532. (No model.)



Claim.—A plastic composition for walls having relief ornaments molded thereon and containing two sheets of textile fabric, the front sheet having wider meshes than the rear sheet and being pressed out to form forward projections that enter the reliefs of the plastic composition, substantially as specified.

406,449. DISTRIBUTER. HERMIAN O. KIRK, Greenville, S. C. Filed Mar. 18, 1886. Renewed Jan. 17, 1887. Serial No. 224,655. (No model.)



Claim.—1. In a fertilizer-distributer, the combination, with the hopper, of the dropper D and an extension J, shaped as described, and situated in substantially the same horizontal plane with the bottom of the dropper, as and for the purpose set forth.

2. The combination of the hopper, the dropper D, the arm and ground-wheel for actuating the same, and the extension J, projecting beyond the side walls of the dropper and tapering toward the rear end of the extension, as and for the purpose set forth.

3. The combination, with the hopper, of the dropper D, having an extension J, shaped as described, and constituting a rearwardly-extending integral part of the bottom of the dropper, as set forth.

406,450. MACHINE FOR CORKING BOTTLES AND WIRING THE CORKS THEREIN. HENRY LA CAMP, Syracuse, and GEO. WILE, Rochester, N. Y.; said La Camp assignor to said Wile. Filed Nov. 24, 1888. Serial No. 291,772. (No model.)

Claim.—1. The herein-described bottle-wiring machine having the following mechanisms, to wit: for securing strands of wire to the bottle, for turning the wire over the top of the bottle and the inserted cork, and for securing the wire in said position, and connected mechanism for operating the foregoing in due order, substantially as described.

2. The herein-described bottle-wiring machine having the following mechanisms, to wit: for securing strands of wire to the bottle, for turning their opposite extremities upward, and for then twisting them together over the top of the bottle and the inserted cork, and connected mechanism for operating the foregoing in due order, substantially as described.

3. The combination of the following mechanisms, to wit: for securing strands of wire to the bottle, for inserting a cork into the bottle, for turning the wire over the top of the bottle and the inserted cork, and for securing the wire in said position, and connected mechanism for operating the foregoing parts conjointly in due order, substantially as specified.

4. The herein-described bottle-wiring machine having the following mechanisms, to wit: for applying separate strands of wire to the bottle, for twisting together the extremities of the separate strands, for turning the twisted extremities over the top of the bottle and the inserted cork, and for then twisting together the twisted opposite extremities of the separate strands, and connected mechanism for operating the foregoing in due order, substantially as described.

5. The combination of a bottle-support with a cork-inserter, means for securing the wire to the bottle and over the cork, said means being arranged to operate conjointly with the cork-inserter, and connected mechanism for actuating the wire-securing means and cork-inserter in due order, substantially as and for the purpose set forth.

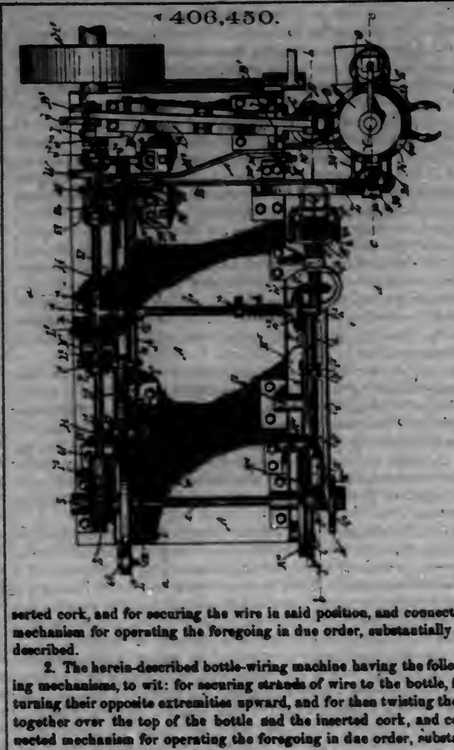
6. The combination of a cork-inserter for inserting the cork, mechanism for securing the wire to the bottle, and connected mechanism between the parts for actuating the cork-inserter to insert the cork into the bottle during the operation of the wire-securing mechanism in securing the wire to said bottle, substantially as and for the purpose set forth.

7. The combination of a bottle-support for holding the bottle, a cork-inserter having a movement toward and away from the supported bottle, wire-securing mechanism having a movement toward and away from said supported bottle, and connected mechanism for conjointly operating the cork-inserter and wire-securing mechanism substantially as and for the purpose set forth.

8. The combination of a bottle-support, a cork-inserter for inserting the cork, mechanism for actuating the cork-inserter toward and away from the supported bottle, mechanism for securing the wire to the bottle, with the extremities projecting therefrom, mechanism for actuating the wire-securing devices toward and away from the supported bottle, and connected mechanism for conjointly operating the cork-inserter and wire-securing mechanism, substantially as and for the purpose set forth.

9. The combination of a bottle-support, means for securing the wire to the bottle, a cork-inserter for inserting the cork, mechanism

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for passing the wire over the top of the bottle and the inserted cork, mechanism for securing the wire in said position, a feed or carrier for feeding the bottle from the cork-inserter and the mechanism for securing the wire to the bottle, the mechanism for securing the wire over the top of the cork, and connected mechanism for operating the parts in due order, substantially as and for the purpose described.

10. The combination of mechanism for securing the wire to the bottle, with its ends projecting therefrom, said mechanism being actuated to encircle the bottle, mechanism for passing the wire over the top of the bottle and the inserted cork, mechanism for securing the opposite extremities of the wire together, and connected mechanism for operating the foregoing in due order, substantially as and for the purpose set forth.

11. The combination of wire-securing jaws or arms for securing the wire to the bottle, with the opposite extremities projecting therefrom, a cork-inserter for forcing the cork between said arms, mechanism for turning the wire over the top of the bottle and cork, mechanism for securing the wire in said position, and connected mechanism for operating said parts in due order, substantially as and for the purpose specified.

12. The combination of the compressor for compressing the cork, means for holding the compressor normally open to receive the cork, with the following mechanisms, to wit: for securing the wire to the bottle, with its extremities projecting therefrom, for inserting the cork into the bottle, for passing the extremities of the wire over the top of the bottle and the inserted cork, and for securing the extremities in said position, and connected mechanism between the several parts for operating them in due order, substantially as and for the purpose specified.

13. The combination of wire-securing mechanism for securing the wire to the bottle, with its extremities projecting therefrom, a reciprocating compressor timed with the wire-securing mechanism, and a cork-inserter, with the following mechanisms, to wit: for passing the wire over the top of the bottle and the inserted cork, for securing the wire in said position, and connected mechanism for operating the foregoing parts conjointly in due order, substantially as described.

14. The combination of reciprocating wire-securing mechanism for securing the wire to the bottle, with the extremities projecting therefrom, a reciprocating compressor timed with the reciprocating wire-securing mechanism, and a cork-inserter, with the following mechanisms, to wit: for passing the wire over the top of the bottle and the inserted cork and for securing the wire in said position, and connected mechanism for operating the foregoing in due order, substantially as and for the purpose specified.

15. The combination of a compressor for compressing the cork, reciprocating jaws for securing the wire to the bottle, with the opposite extremities projecting therefrom, and a cork-inserter for inserting the cork, with the following mechanisms, to wit: for passing the wire over the top of the bottle and the inserted cork, for securing the wire in said position, and connected mechanism for operating the foregoing in due order, substantially as and for the purpose set forth.

16. The combination of a wire-carrier having a movement toward and away from the bottle, oscillating jaws mounted on the wire-carrier for securing the wire around the bottle, with the opposite extremities projecting therefrom, mechanism for passing the wire over the top of the cork, mechanism for securing the wire in said position, and connected mechanism for operating the foregoing parts in due order, substantially as and for the purpose set forth.

17. The combination of yielding jaws encircling the bottle for securing the wire thereto, with its extremities projecting therefrom, mechanism for withdrawing the yielding jaws around the bottle, with the following mechanisms, to wit: for turning the extremities of the wire over the top of the bottle and cork, for securing the wire in said position, and connected mechanism for operating the foregoing in due order, substantially as and for the purpose described.

18. In a wiring-machine, the combination of the following mechanisms, to wit: for securing the wire to the bottle, with the extremities of the wire projecting therefrom, for actuating said wire-securing device lengthwise of the bottle, for passing the wire over the top of the bottle, and for securing the wire in said position, and mechanism operatively connecting the foregoing parts, substantially as specified.

19. The combination of a bottle-support for the bottle, a cork-inserter having a movement toward and away from the supported bottle, wire-securing mechanism having a movement toward and away from the said supported bottle, and also having a movement lengthwise of the bottle, and connected mechanism for actuating the cork-inserter, and wire-securing mechanism to operate conjointly upon said bottle, substantially as and for the purpose set forth.

20. In a wiring-machine, the combination of a bottle-support for the bottle, mechanism for securing the wire to the bottle, with the extremities projecting therefrom, said mechanism having a movement toward and away from the bottle, and also a movement lengthwise of the same, mechanism for turning the projecting extremities over the top of the bottle and the inserted cork, mechanism for securing the wire in said position, and connected mechanism between the parts for operating the same in due order, substantially as and for the purpose specified.

21. In a wiring-machine, the combination of yielding reciprocating jaws or arms for securing the wire to the bottle, with the opposite extremities projecting therefrom, mechanism for actuating said jaws lengthwise of the bottle, mechanism for passing the wire over the top of the bottle and the inserted cork, mechanism for securing the wire in said position, and connected mechanism between the parts, substantially as and for the purpose specified.

22. The combination, in a wiring-machine having the following mechanisms, to wit: for applying the separate strands of wire to the bottle, with their extremities projecting therefrom, for twisting together these projecting extremities and for automatically withdrawing the wire-twisting mechanism, for turning the twisted projecting extremities over the top of the bottle and cork and for securing the wire in said position, and connected mechanism for operating the foregoing in due order, substantially as and for the purpose set forth.

23. The herein-described wiring-machine having the following mechanisms, to wit: for securing separate strands of wire to the bottle, with their extremities projecting therefrom, for twisting together these projecting extremities, for automatically withdrawing the wire-twisting mechanism, for turning the twisted projecting extremities over the top of the bottle and cork, and for twisting together these twisted extremities in said position, and mechanism operatively connected to the foregoing parts, substantially as and for the purpose set forth.

24. In a wiring-machine, the combination of shuttle jaws or arms for applying the separate strands of wire to the bottle, means for rotating the shuttle jaws or arms to twist the said strands together, mechanism for turning the twisted extremities over the top of the bottle and the inserted cork, mechanism for securing the wire in said position, and connected mechanism between the parts, substantially as and for the purpose specified.

25. In a wiring-machine, the combination of a wire-carrier having a movement toward and away from the bottle for applying the wire to the bottle, with the extremities projecting therefrom, arms secured to the carrier encircling the bottle on the forward movement of the carrier and forced around the bottle by the retraction of the carrier, means for rotating the arms when withdrawn clear of the bottle, said rotating means adapted to cease operation when the rearward movement of the carrier is reached, with mechanism for turning the opposite extremities of the wire over the top of the bottle and cork, mechanism for securing the wire in said position, and connected mechanism between the parts, substantially as and for the purpose specified.

26. The combination of an adjustable bottle-support with the following mechanisms, to wit: for securing the wire to the bottle, with its extremities projecting therefrom, for passing the wire over the top of the bottle and the inserted cork, and for securing the wire in said position, and connected mechanism between the parts, substantially as and for the purpose set forth.

27. The combination, with the following mechanisms, to wit: for securing the wire to the bottle, with its extremities projecting therefrom, for passing the wire over the top of the bottle and the inserted cork, and for securing the wire in said position, of an adjustable bottle-support and means for retaining the bottle-support in its adjusted position, substantially as and for the purpose set forth.

28. The combination of an adjustable bottle-support with a cork-inserter having a movement toward and away from said support, wire-securing mechanism having a movement toward and away from said support, and connected mechanism for conjointly operating the foregoing parts, substantially as and for the purpose set forth.

29. In a wiring-machine, the combination, with means for securing the wire to the bottle, of a bottle-support, a feed or carrier for feeding the bottle to the support, mechanism for lowering the bottle-support before a new bottle is fed thereto, mechanism for raising the support to contact with the bottle, and connected mechanism for operating the foregoing in due order, substantially as and for the purpose set forth.

30. The combination of an adjustable bottle-support and a feed or carrier for feeding the bottles to said support, of a cork-inserter having a movement toward and away from the bottle-support, wire-securing mechanism having a movement toward and away from the bottle, and connected mechanism between the parts for operating them conjointly in due order, substantially as and for the purpose set forth.

31. The combination, in a wiring-machine, of wire-securing mechanism for securing the wire to the bottle and over the top of the inserted cork with a bottle-support for holding the bottle, a rotary shank provided on the bottle-support, mechanism for turning said shank and raising or lowering the bottle-support, and connected mechanism between the parts, substantially as and for the purpose set forth.

32. The combination of a bottle-support for the bottles, a rotary shank provided on the bottle-support, and connected mechanism for automatically turning said shank and raising or lowering the bottle-support, substantially as and for the purpose set forth.

33. The combination of a compressor for compressing the cork, said compressor having a movement toward and away from the bottle, a cork-inserter, a bottle-support for the bottle, means for adjusting the bottle-support to suit different heights of bottles, means for retaining the support in its adjusted position, mechanism for securing the wire to the bottle, with its extremities projecting, mechanism for passing the wire over the top of the bottle and the inserted cork, mechanism for securing the wire in said position, and connected mechanism between the parts for operating them in due order, substantially as and for the purpose set forth.

34. The combination, in a wiring-machine, of mechanism for securing the separate strands of wire around the bottle, mechanism for twisting together the projecting extremities of said strands, with a cut-off for severing the wire secured to the bottle from the wire-twisting mechanism, mechanism for turning the opposite extremities of the wire over the top of the bottle and the inserted cork, mechanism for securing the wire in said position, and connected mechanism for operating the foregoing in due order, substantially as and for the purpose set forth.

35. The combination, in a wiring-machine, of wire-securing means having a movement toward and away from the bottle, a cut-off for cutting off the wire at the end of the rearward movement of the wire-securing means, mechanism for turning the extremities of the wire over the top of the bottle and the inserted cork, mechanism for securing the wire in said position, and mechanism for operating the aforesaid parts in due order, substantially as and for the purpose set forth.

36. The combination, in a wiring-machine, of wire-securing mechanism having a movement toward and away from the bottle, means for turning the wire-securing mechanism and thus twisting the wires, a cut-off for cutting off the wire at a point substantially midway between the bottle and the wire-securing mechanism when in its retracted position, mechanism for turning the extremities of the wire over the top of the bottle, mechanism for securing the wire in said position, and connected mechanism for operating the foregoing in due order, substantially as and for the purpose specified.

37. The combination of a rotary bottle-carrier, a cork-inserter, means for securing the wire to the bottle and over the cork, said means being arranged to operate conjointly with the cork-inserter, and connected mechanism for operating the foregoing in due order, substantially as and for the purpose specified.

38. The combination of a bottle-support for the bottles, a cork-inserter having a movement toward and away from the support, wire-securing mechanism having a movement toward and away from the said support, a feed or carrier for feeding the bottles over said support, and connected mechanism for operating the foregoing in due order, substantially as and for the purpose specified.

39. In a wiring-machine, the combination of wire-securing mechanism for securing the wire to the bottle, with the extremities projecting therefrom, mechanism for twisting the wire over the top of the bottle and cork, a bottle feed or carrier for feeding the bottles to the wire-securing mechanism and then to the device for twisting together the opposite extremities of the wire, and connected mechanism between the parts for operating them in due order, substantially as and for the purpose specified.

40. The combination of the cork-inserter, means for securing the wire around the bottle, with its extremities projecting therefrom, mechanism for turning the said extremities over the top of the bottle and cork, and mechanism for twisting said extremities together, with a bottle feed or carrier having bearings for the bottles arranged at intervals corresponding to the relative distance between the cork-inserter and the device for twisting together the extremities of the wire, and connected mechanism between the parts for operating them in due order, substantially as and for the purpose set forth.

41. The combination of a bottle feed or carrier having pivoted arms for grasping the bottle and the following mechanisms, to wit: for securing strands of wire to the bottle, with their extremities projecting therefrom, for passing the wire over the top of the bottle and the inserted cork, and for securing the wire in said position, and connected mechanism between the parts, substantially as and for the purpose set forth.

42. The combination of the cork-inserter and means for securing the wire to the bottle and over the top of the cork, said wire-securing means being arranged to operate conjointly with the cork-inserter, with a bottle feed or carrier having oscillating arms for grasping the bottle and feeding it to said mechanism, and mechanism for operatively connecting the aforesaid parts and actuating them in due order, substantially as and for the purpose specified.

43. In a wiring-machine, the combination of a bottle-support for the bottles, wire-securing mechanism for securing the wire to the bottle, with the extremities projecting therefrom, mechanism for turning the wire over the top of the bottle and the inserted cork, mechanism for securing the wire in said position, a carrier for feeding the bottles, means for discharging the bottles, and connected mechanism for operating the parts in due order, substantially as and for the purpose set forth.

44. The combination of a bottle-support for the bottles, a cork-inserter having a movement toward and away from said support, wire-securing mechanism having a movement toward and away from the said support, a feed or carrier feeding the bottles over the support, mechanism for discharging the bottles from the carrier, and connected mechanism between the foregoing for operating them in due order, substantially as and for the purpose set forth.

45. The combination of the cork-inserter, mechanism for securing the wire to the bottle and over the top of the cork, said mechanism being arranged to operate conjointly with the cork-inserter, with a bottle feed or carrier, arms provided on the carrier and held normally open to receive the bottles, and connected mechanism between the parts for operating them in due order, substantially as specified.

46. The combination, in a wiring-machine, of mechanism for securing the wire around the bottle, with its extremities projecting therefrom, a bottle feed or carrier for feeding the bottles, oscillating lifting-arms for elevating the opposite extremities of the wire secured to the bottle, mechanism for twisting together these extremities, and connected mechanism for operating the foregoing in due order, substantially as and for the purpose specified.

47. The combination, in a wiring-machine, of mechanism for securing the wire to the bottle, with the extremities projecting therefrom, a rotary bottle feed or carrier for feeding the bottles, mechanism for turning the extremities of the wire upward over the top of the bottle and the inserted cork, and connected mechanism between the parts, substantially as and for the purpose specified.

48. The combination of a stop or gage for forcing the bottles to the desired plane, of the following wire-securing mechanisms, to wit: for securing strands of wire to the bottle, for passing the wire over the top of the bottle and the cork, and for securing the wire in said position, and connected mechanisms between the parts, substantially as and for the purpose set forth.

49. The combination of a support for the bottles, a cork-inserter having a movement toward and away from the support, wire-securing mechanism having a movement toward and away from said support, a stop or gage for bringing the bottles into the required plane, and connected mechanism between the parts, substantially as and for the purpose set forth.

50. The combination of a support for the bottle, a cork-inserter having a movement toward and away from the support, wire-securing mechanism having a movement toward and away from said support, a feed or carrier for feeding the bottles over the said support, a stop or gage for forcing the bottles down to the desired position in said carrier, and mechanism for operatively connecting the aforesaid parts, substantially as described.

51. The combination, in a wiring-machine, of a support for the bottle, wire-securing mechanism for securing the wire to the bottle, said wire-securing mechanism being arranged to operate conjointly with the cork-inserter and over the top of the cork, with a bottle feed or carrier for feeding the bottles, oscillating arms mounted on the carrier, a stop or gage for contacting with the bottle, mechanism for impinging the oscillating jaws against the bottle, and connected mechanism for operating the foregoing parts in due order, substantially as and for the purpose set forth.

52. The combination of a cork-inserter for inserting the cork, a spool having two separate feeding-strands wound thereon, and mechanism for feeding out the wire, with the following mechanisms: for securing the wire to the bottle, with its extremities projecting therefrom, for passing the wire over the top of the bottle and the inserted cork, for securing the wire in said position, and connected mechanisms for operating the foregoing parts in due order, substantially as and for the purpose set forth.

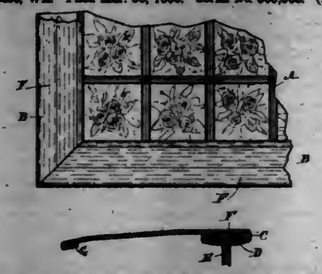
53. The combination of mechanism for securing the wire around the bottle, with its extremities projecting therefrom, oscillating arms for acting on said extremities of the wire, mechanism for locking and rotating the oscillating arms, and connected mechanism for operating the said working parts, substantially as and for the purpose set forth.

54. The combination, in a wiring-machine, of mechanism for securing the wire around the bottle, with its extremities projecting therefrom, with means for elevating the projecting extremities of the wire, oscillating arms or nippers for twisting together these projecting extremities over the top of the cork, a bottle feed or carrier for feeding the bottles, mechanism for actuating the wire-twisting arms or nippers toward and away from the bottle feed or carrier, and connected mechanism between the parts for operating the same in due order, substantially as and for the purpose set forth.

55. The combination, in a wiring-machine, of mechanism for securing the wire to the bottle, with its extremities projecting therefrom,

means for elevating these projecting extremities of the wire, oscillating arms or nippers for twisting together the projecting extremities of the wire, mechanism for locking these arms or nippers upon the wire mechanism for unlocking these arms, and connected mechanism between the parts for operating them in due order, substantially as and for the purpose set forth.

406,451. CARPET BINDING AND FASTENER. DIEGO LANGE, La Crosse, Wis. Filed Mar. 30, 1889. Serial No. 305,382. (No model.)



Claim.—1. A metallic carpet-binding consisting of a strip B, having perforated folded parts C and D, provided with a series of retaining-tacks E, inserted through said folded parts C and D, the said parts C and D being turned and folded against the under side of the body F of the strip, whereby said tacks are retained in said perforations, substantially as and for the purpose specified.

2. In a metallic carpet-binding, the strip B, provided at its exterior marginal edge with perforated folds C and D and at its inner marginal edge with the fold G, in combination with the series of retaining-tacks E, inserted through said folds C and D and turned beneath the body F of said strip, all substantially as and for the purpose specified.

406,452. METHOD OF MAKING CANNON. JOSEPH P. LAVIGNE, New Haven, Conn. Filed Aug. 13, 1888. Renewed June 7, 1889. Serial No. 313,459. (No model.)



Claim.—1. A method of making cannon, consisting in independently preparing a filling and a tube and securing them together, and then casting an envelope over such filling and tube, so as to hermetically seal the filling between the tube and envelope, substantially as set forth.

2. A method of making cannon, consisting in independently preparing a filling and a tube, then shrinking the former upon the latter, and then casting an envelope over them, so as to hermetically seal the filling from the air, substantially as set forth.

406,458. DEVICE FOR EVAPORATING LIQUIDS. JOHN U. LLOYD, Cincinnati, Ohio. Filed Dec. 11, 1888. Serial No. 293,273. (No model.)

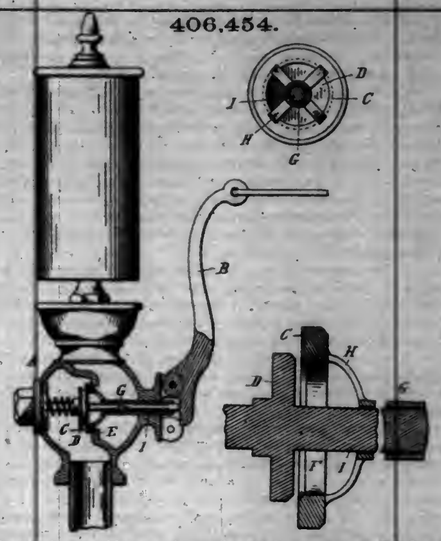


Claim.—In an apparatus for evaporating or concentrating liquids or solutions, the funnel-shaped plate A, having the upper part thereof provided with supply-pipes B, perforated flange C, and openings K, and the lower portion thereof with outlet-pipe D, and means for heating said plate, in combination with the removable lid or cover E, having opening F for the passage of a current of air over the surface of the moving liquid, substantially as and for the purpose specified.

406,454. STEAM-WHISTLE. CHARLES D. LYNCH, Detroit, Mich. Filed Feb. 11, 1889. Serial No. 299,468. (No model.)

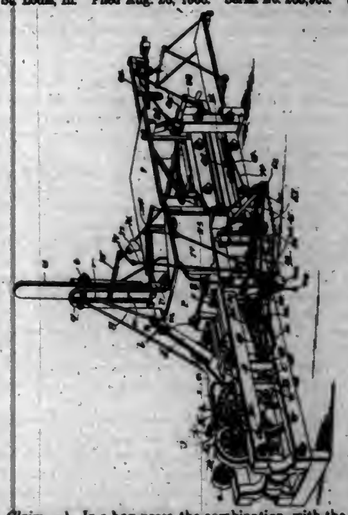
Claim.—In a steam-whistle, the combination, with the valve-seat E, of the hollow stem G, formed with spider-arms H, and valve-disk

406,454.



C, operating on said seat, and a smaller disk D, seated on the disk C and provided with a stem I, working through the stem G, said valve-stems projecting into different proximity to the operating-lever and operating substantially as described.

406,455. AUTOMATIC HAY-PRESS. FRANK X. MAURER, East St. Louis, Ill. Filed Aug. 28, 1888. Serial No. 283,962. (No model.)



Claim.—1. In a hay-press, the combination, with the main frame, of the plunger, the driving mechanism having the wheel E provided with wrist-pin F, and the toggle-levers acted upon by said wrist-pin and having their rear ends pivoted to the plunger and their front ends pivotally supported on opposite sides of the center of the wheel E, as set forth.

2. The combination, with the main frame, of the plunger, the toggle-levers having their outer ends pivoted to the plunger, the rammer, the angle-lever connected to the rammer, and the driving mechanism having the gear-wheel E, provided with the wrist-pin F, to act on the toggle-levers, and the lug G, to act on the angle-lever, as set forth.

3. The combination, with the main frame, of the rammer, the angle-lever connected to the rammer, the pin projecting from the angle-lever, the tube pivoted to the frame, the rod connected to the pin projecting from the angle-lever and extending into said tube, the spring in said tube acting on said rod, and mechanism for operating the angle-lever, as set forth.

4. In a hay-press, the combination of the rammer, the angle-lever, the plate pivoted to the angle-lever and having a notched edge

engaging a pin on the angle-lever, a link connecting said plate with the rammer, and mechanism for operating the angle-lever, as set forth.

5. The combination, with the main frame, of the plunger, the sliding carriage actuated by the plunger, the transversely-sliding plate operated by the carriage, connections between the sliding plate and the carriage, and mechanism for reciprocating the plunger, as set forth.

6. The combination, with the main frame and the guide-trough projecting laterally from the main frame, of the plunger, the sliding plate mounted on the guide-trough, intermediate devices between the plunger and the sliding plate, whereby the sliding plate will be moved along the guide-trough by the plunger, and suitable operating mechanism, as set forth.

7. The combination, with the main frame, of the plunger, the sliding carriage mounted on the main frame and actuated by the plunger, the guide-trough projecting from the main frame, the transversely-sliding plate thereon, connections between said plate and the carriage, and suitable operating mechanism, as set forth.

8. The combination, with the main frame having a vertical opening 16 in its side, of the plunger, the sliding carriage actuated thereby, the needle carried by the carriage and projected thereby across the said opening 16, the sliding plate adapted to be moved to and from said opening, connections between said plate and the carriage, and mechanism for reciprocating the plunger, as set forth.

9. The combination, with the main frame, of the plunger, the transversely-sliding plate, the sliding carriage actuated by the plunger and connected to said plate, the trip-hook on the main frame and adapted to be engaged by the carriage, devices for releasing said trip-hook, and mechanism for actuating the plunger, as set forth.

10. The combination, with the main frame, of the plunger, the carriage mounted on the main frame and having the hook 38, and the trigger 33, adapted to be alternately engaged by the plunger, the sliding plate connected to the carriage, and mechanism for operating the plunger, as set forth.

11. The combination, with the main frame, of the sliding plate, the carriage mounted on the main frame and having the pawl 24, and the trigger 33, and the hook 38, the pin 35, projecting from the plunger and adapted to engage the trigger 33 and the hook 38 alternately, mechanism for actuating the plunger, and devices for locking the carriage and releasing the same, as set forth.

12. The combination, with the main frame, of the plunger, the carriage actuated thereby and having the pawl 24, the lug 27, having a shoulder 26 engaged by said pawl, the trip-hook adapted to release said pawl from said lug, the rock-shaft 106, having the ratchet-wheel 105 adapted to actuate said trip-hook, and mechanism for rotating said shaft, as set forth.

13. The combination, with the main frame, of the trough 54, projecting from one side of the same, the sliding plate mounted on said trough, the plunger, the sliding carriage actuated thereby and connected with the sliding plate, mechanism for operating the plunger, the standard pivoted to the sliding plate, and the rod pivoted to the standard and adapted to engage said plate, as set forth.

14. The combination, with the main frame, of the guide-trough projecting from the same, the sliding plate mounted on said trough, the arms 57, projecting inward from said plate, the lip 56 at the outer edge of said plate, the standard pivoted to the arms 57, the rod pivoted to said standard and engaging the lip 56, the plunger, the sliding carriage actuated by the plunger and connected with the sliding plate, and mechanism for operating the plunger, as set forth.

15. The combination, with the main frame, of the plunger, the trough projecting therefrom, the sliding plate 45, mounted thereon, the carriage mounted on the main frame and actuated by the plunger, the chains 40 and 51, and the rod 50, extending between the plate and the carriage, the rod 42, extending from the carriage, and the chain 43, secured to said rod and adjustably connected to the sliding plate, as set forth.

16. The combination, in a hay-press, of the main frame, the lever 71, pivoted on the side of the frame, the lever 66, mounted on the frame, a connecting-rod between the levers 66 and 71, a bell supported above the frame-work, and connections between said bell and the lever 71, as set forth.

17. The combination, with the main frame, of the standard erected thereon, the arm projecting from said standard, the angle-lever fulcrumed on said arm and carrying a bell, the lever 71, pivoted on the main frame, connections between the lever 71 and the angle-lever, the lever 66, fulcrumed on the main frame, and a rod connecting the said lever and the lever 71, as set forth.

18. The combination of the rammer *u*, the rammer-plate comprising the rigid section *x*, secured to the rammer, and the swinging section *y*, hinged to the rigid section, the spring secured to the rammer, and the swinging section of the rammer-plate, the tube, the rod playing in said tube and connected to the swinging section of the rammer-plate, and the spring in the tube controlling said rod, as set forth.

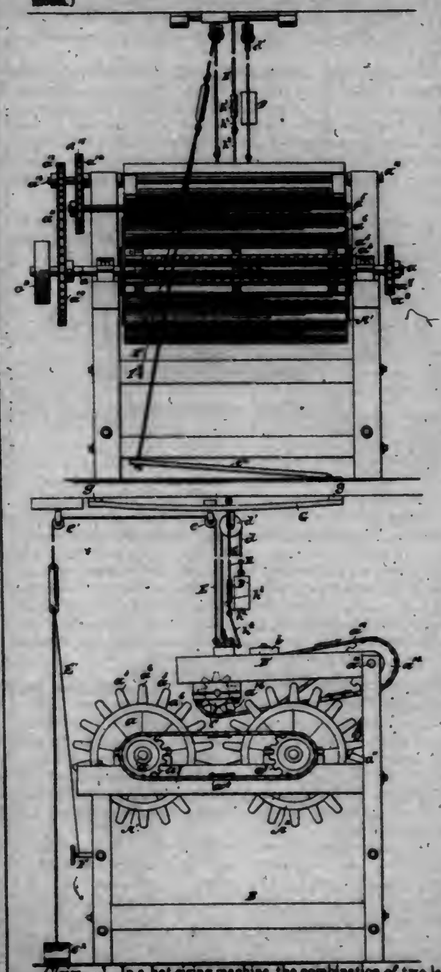
19. The combination, with the main frame, of the rearwardly-diverging boards 14 on the upper side of the same, the feed-table having the swinging leaves bearing against said diverging boards, the spring between the leaves, and mechanism for operating the feed-box, as set forth.

20. The improved feed-box having the leaves 11, the hooks 12 on the rear side of said leaves, and the spring 13 between said hooks, substantially as specified.

21. The combination, with the main frame having a vertical opening in one side, of the block 18, secured to the rear wall of said opening, the division-block having a plain front side and provided on its rear side with horizontal ribs 63 adapted to engage the upper and lower edges of the said block 18, and mechanism for pushing said division-block through the said opening 16, as set forth.

22. The combination, with the main frame having the opening 16, and the block 18, secured to the rear side of said opening, of the horizontal lever 66, mounted on the main frame and longitudinally adjustable thereon, said lever being adapted to sound an alarm, the division-block adapted to pass through the opening 16, and having the ribs 63 adapted to engage the block 18, and provided with the recess 64 in its lower corner adapted to operate the lever 66, and mechanism for pushing the division-block through the opening 16, as set forth.

406,456. HAT SIZING OR SHRINKING MACHINE. CHARLES H. MERRITT, Danbury, Conn. Filed Oct. 25, 1888. Serial No. 289,120. (No model.)



Claim.—1. In a hat-sizing machine, the combination of two large

wheels or drums provided with obliquely-slotted lags, substantially as specified.

2. In a hat-sizing machine, the combination of two large wheels or drums and a smaller wheel or drum having obliquely-slotted lags arranged intermediately thereof and above the adjacent portion of the same, substantially as specified.

3. In a hat-sizing machine, the combination of two large wheels or drums having lags provided with oblique slots and a smaller wheel or drum arranged above and intermediately of them and supported by a swinging frame, substantially as specified.

4. In a hat-sizing machine, the combination of two large wheels or drums and a smaller wheel or drum arranged above and intermediately of them, and having a vertically-movable support, all of said wheels or drums having obliquely-slotted lags, substantially as specified.

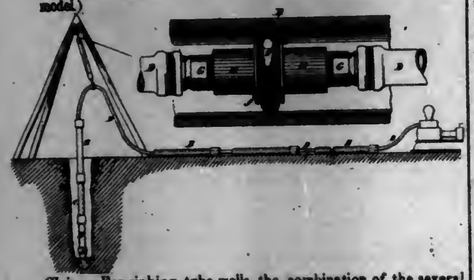
5. In a hat-sizing machine, the combination of two large wheels or drums, a smaller wheel or drum having a vertically-movable support, a sliding weight on said support, and a counterbalance-weight connected by a cord or chain to the vertically-movable support, substantially as specified.

6. In a hat-sizing machine, the combination of two large wheels or drums, a smaller wheel or drum having a vertically-movable support, a counterbalance-weight connected by a cord or chain to the vertically-movable support, a guide or pulley around which the cord or chain passes, and a spring sustaining the said guide or pulley, substantially as specified.

7. In a hat-sizing machine, the combination of two large wheels or drums, a smaller wheel or drum having a vertically-movable support, a treadle, a cord or chain connecting the vertically-movable support and treadle, a guide or pulley around which the cord or chain passes, and a spring sustaining said guide or pulley, substantially as specified.

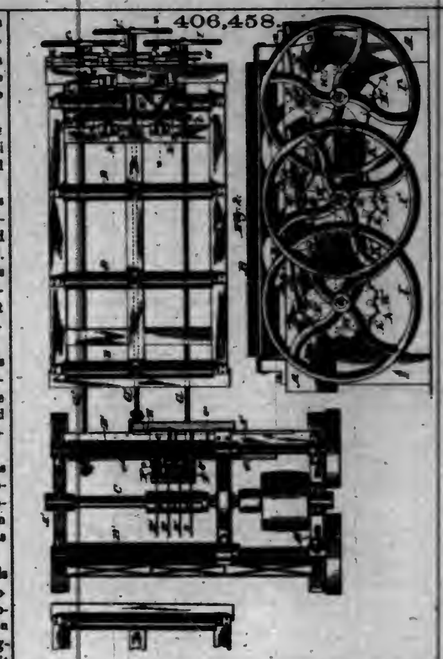
8. In a hat-sizing machine, the combination of two large wheels or drums, a smaller wheel or drum having a vertically-movable support, a treadle, a cord or chain connecting the vertically-movable support and treadle, a guide or pulley around which the cord or chain passes, a spring sustaining said guide or pulley, a cleat, and an engaging device for the cord or chain serving to secure the latter when it is desired to permanently elevate the smaller wheel or drum, substantially as specified.

406,457. MEANS FOR SINKING TUBE-WELLS. FREDERICK W. MILLER, Brooklyn, N. Y. Filed Apr. 13, 1888. Serial No. 307,173. (No model.)



Claim.—For sinking tube-wells, the combination of the several detached sections of well-tube B B B with the hose-pipe D D, the said detached sections being strung along on the said hose-pipe before the sinking of the well is commenced, whereby the said sections for the entire well, one after another, can be joined together to complete the well without interrupting the flow of water for washing down the same from the commencement to the completion of the well, substantially in the manner and for the purpose set forth.

406,458. GANG-EDGER. ERNST J. MULLER, Milwaukee, Wis. Filed Nov. 17, 1888. Serial No. 291,144. (No model.)



Claim.—1. In a gang-edger, the combination, with two or more saws movable lengthwise of their arbor and shifting mechanism connected therewith, of two concentric revoluble dials, one having a scale and connected with the shifting mechanism of one saw, and the other having an index or opening adjacent to said scale and connected with the shifting mechanism of another saw, substantially as and for the purposes set forth.

2. In a gang-edger, the combination, with two or more saws movable upon their arbor lengthwise thereof, of a register composed of a circular revoluble scale, and a revoluble index concentric therewith, one connected with one movable saw and the other connected with another movable saw, substantially as and for the purposes set forth.

3. In a gang-edger, the combination of a fixed and two or more movable saws and shifting mechanism connected with said movable saws, a rotary scale connected with the shifting mechanism of the first movable saw, a fixed index adjacent to said scale, and a register composed of a rotary index concentric therewith, one connected with the shifting mechanism of the first movable saw and the other connected with the shifting mechanism of the second movable saw, substantially as and for the purposes set forth.

4. In a gang-edger, the combination, with a number of laterally-movable saws and shifting mechanism connected therewith, of two or more registers each composed of a circular rotary scale and a rotary index concentric therewith, one connected with the shifting mechanism of one saw and the other connected with the shifting mechanism of the next saw, substantially as and for the purposes set forth.

5. In a gang-edger, the combination of a number of laterally-movable saws each provided with shifting mechanism, registers each composed of a rotary scale and a rotary index, which are connected one with the shifting mechanism of one saw and by said mechanism with a part of the next register and the other connected with the shifting mechanism of another saw, substantially as and for the purposes set forth.

6. In a gang-edger, the combination, with three or more laterally-movable saws, of two or more registers each composed of a movable scale and a movable index, each intermediate saw being connected with one of the movable parts of each adjacent register, and the outer saws being connected with the remaining parts of said registers, substantially as and for the purposes set forth.

7. In a gang-edger, the combination, with one fixed and a number of laterally-movable saws and shifting mechanism connected with the movable saws, of a register connected with the first movable saw so as to indicate its distance from the fixed saw, and registers each composed of a movable scale and a movable index, the several scales and indexes being connected in series with the several movable saws, substantially as and for the purposes set forth.

8. In a gang-edger, the combination, with laterally-movable saws and shifting mechanism connected therewith, of a register composed of a circular rotary scale and a circular rotary index-plate provided with an opening through which a single division of said scale is disclosed, but otherwise covering the scale, said index and scale being separately connected with the movable saws, substantially as and for the purposes set forth.

9. In a gang-edger, the combination, with laterally-movable saws and shifting mechanism connected therewith, of a register composed of a circular rotary scale divided into a number of similar parts having like subdivisions, and of a rotary index-dial having a number of openings through which like divisions on the different parts of said scale are disclosed, said index and said scale being separately connected with said movable saws, substantially as and for the purposes set forth.

10. In a gang-edger, the combination, with a number of laterally-movable saws and shifting mechanism connected therewith, of a register composed of a circular beveled rotary scale and a rotary index-dial concentric therewith, provided with an opening through which a single division of said scale is visible, said scale and index being separately connected with said saws, substantially as and for the purposes set forth.

11. In a gang-edger, the combination, with a number of laterally-movable saws and saw-shifting shafts severally connected with said saws and extending to the front of the machine, where they are provided with means for turning the same, of registers mounted upon shafts midway between and parallel with said saw-shifting shafts and each composed of a rotary scale and a concentric rotary index, gears connecting said scale with the saw-setting shaft on one side of said register, and gears connecting the index with the shaft on the opposite side of said register, substantially as and for the purposes set forth.

12. In a gang-edger, the combination, with a number of laterally-movable saws and shifting-shafts individually connected with the several saws and each provided with a pinion, of registers mounted upon shafts between and parallel with said shifting-shafts, and each composed of a rotary scale and a rotary index, a pair of gears mounted on each register-shaft, one connected and revoluble with said scale and meshing with the pinion of the shifting-shaft on one side and the other connected with the pinion of the shifting-shaft on the other side of said register, substantially as and for the purposes set forth.

13. In a gang-edger, the combination, with a fixed and a number of laterally-movable saws, of shifting-shafts severally connected with said movable saws and each provided with a pinion, registers each composed of rotary dials, one provided with a circular scale and the other with an index-opening, and a pair of gears connected with said dials and meshing one with the pinion of the shifting-shaft on one side and the other with the pinion of the shifting-shaft on the other side of said register, a circular scale formed on the index-dial of the first register, and a fixed index indicating on said scale the distance of the first movable saw from the fixed saw, substantially as and for the purposes set forth.

14. In a gang-edger, the combination, with a laterally-movable saw, of a rack connecting therewith, and a pinion meshing with said rack and composed of two sections, one fixed and the other loosely mounted upon the pinion-shaft, a polygonal collar having a number of transverse perforations and adjustably secured on said pinion-shaft by a pin passing through a perforation therein and one of the perforations in said collar, and a spring attached at one end to the loose section of said pinion and at the other end to said collar, substantially as and for the purposes set forth.

15. In a gang-edger, the combination, with a laterally-movable saw, of a rack in connection therewith, a pinion composed of a fixed and a loose section working with said rack, the teeth of one section being formed with working-faces on one side and cut away on the other side, and the teeth of the other section being similarly formed but reversed, and a spring connecting the loose section with the pinion-shaft, substantially as and for the purposes set forth.

16. In a gang-edger, the combination, with a laterally-movable saw, of shifting mechanism connected therewith and arranged to move the same lengthwise of its arbor, a locking device positively holding the saw in place when locked, and an operating device connected with said shifting mechanism and capable of a limited movement independently thereof, the initial movement of said operating device acting to unlock said locking device before it moves the saw-shifting mechanism, substantially as and for the purposes set forth.

17. In a gang-edger, the combination, with a laterally-movable saw, of shifting mechanism connected therewith and provided with a hand-wheel capable of a limited movement independently of the rest of said shifting mechanism, and a locking device connected therewith and arranged to be unlocked by the initial movement of said hand-wheel, substantially as and for the purposes set forth.

18. In a gang-edger, the combination of a laterally-movable saw, a rotary shifting-shaft connected therewith and provided with a hand-wheel capable of a limited movement upon said shaft, and a spring-latch acting normally to prevent the rotation of said shifting-shaft and adapted to be unlocked by the initial movement of said hand-wheel, substantially as and for the purposes set forth.

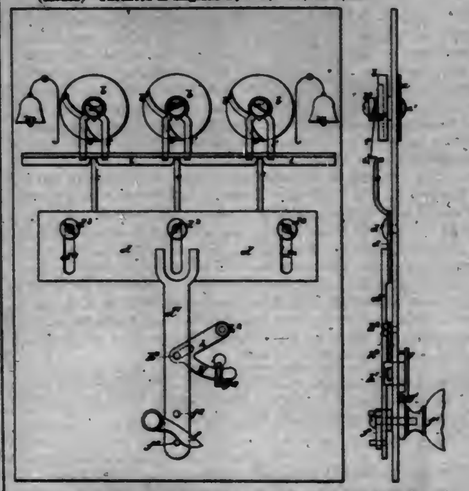
19. In a gang-edger, the combination of a laterally-movable saw, a rotary shifting-shaft connected therewith, a pair of disks, one notched and fixed upon said shaft, the other toothed and having a limited angular movement thereon, and a spring-latch adapted to engage with said notched disk and to be engaged and unlocked by the initial movement of said toothed disk, substantially as and for the purposes set forth.

20. In a gang-edger, the combination, with a number of laterally-movable saws severally provided with shifting mechanism, of a number of registers connected with each other and composed each of a movable scale, and a movable index whereby the distance between the several saws is automatically indicated, substantially as and for the purposes set forth.

21. In a gang-edger, the combination, with a number of laterally-movable saws and rotary shifting-shafts connected with said saws, one to each saw, of a number of registers each composed of a circular rotary scale, and a rotary index geared with said shifting-shafts, and a single part of each register being geared with a single part of the next register, whereby the distance between the several movable saws is indicated upon said registers, substantially as and for the purposes set forth.

22. In a gang-edger, the combination, with a number of laterally-movable saws and shifting mechanism connected therewith, of a number of registers each composed of a scale and index and connected with each other and with said shifting mechanism so as to indicate the distance between the several saws, and automatic locking devices connected with said shifting mechanism and arranged to be unlocked by the initial movement of said shifting mechanism, substantially as and for the purposes set forth.

406,459. PERMUTATION-LOCK. STUART C. MUNRO, London, County of Middlesex, England. Filed Aug. 10, 1888. Serial No. 282,457. (Model.) Patented in England Apr. 27, 1887, No. 6,145.



Claim.—1. In apparatus such as described, the combination of a series of disks having letters or figures marked thereon with a second series of disks having curved cam-grooves formed on the faces thereof, substantially as specified.

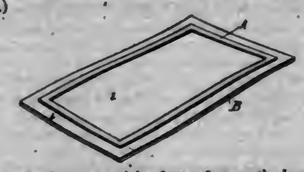
2. The combination, with a series of disks having cam-grooves on the faces thereof, of a series of pins bent or hooked at their ends, attached to a bar capable of being moved vertically upward and downward from the outside of the safe, substantially as specified.

3. The combination, with a series of grooved disks and a sliding bar and pins for operating the same, of a bar for securing the key-hole guard connected with and operated by said sliding bar, substantially as specified.

4. The combination, with a series of grooved disks, of a swinging or movable bar for covering the edges of the grooves, substantially as specified.

5. The combination, with a series of grooved disks, of a swinging or movable bar capable of being forced inward or outward by cams on the axes of the grooved disks, substantially as specified.

406,460. SUPPORT FOR PHOTOGRAPHIC FILMS. RALPH MCNEIL, New York, N. Y. Filed July 12, 1888. Serial No. 279,856. (No model.)

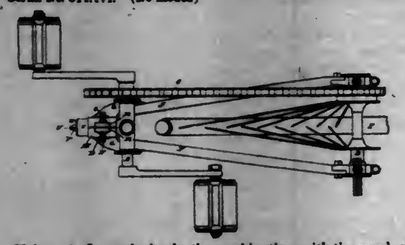


Claim.—1. As a new article of manufacture, the herein-described substitute for paper of plate-mounts for photographic films, and consisting of an open frame or mat with a photographic film permanently adherent at its margin to the said frame or mat.

2. As a new article of manufacture, an open frame or mat having a photographic film cemented to it around its margin.

3. As a new article of manufacture, an open frame or mat carrying a sensitized photographic film with a strengthening film or stratum adhering to the sensitized film.

406,461. VELOCIPEDE. ALBERT H. OVERMAN, Newton, assignor to the Overman Wheel Company, Boston, Mass. Filed May 17, 1889. Serial No. 311,171. (No model.)



Claim.—1. In a velocipede, the combination, with the crank-shaft and a driving-chain, of a hanger in which the shaft is mounted, a slotted carrier rigidly connected with the frame of the vehicle and having the hanger movably mounted upon it, a sliding block extending transversely through the carrier and located in the slots thereof, a coupling-bolt extending through the hanger, block, and carrier, and an adjusting-bolt connected with the said block and operated for moving the hanger on the carrier to regulate the tension of the chain, substantially as set forth.

2. In a velocipede, the combination, with the crank-shaft and a driving-chain, of a crank-shaft hanger provided with a split sleeve furnished with a clamping-bolt, a carrier rigidly connected with the frame of the machine and having two elongated horizontal slots, a sliding block located in the said slots and having flat bearing-faces engaging with the side walls thereof, a coupling-bolt passing transversely through the hanger, the carrier, and the block, an adjusting-bolt connected with the sliding block and projecting out of the carrier, a nut located on the outer end of the bolt, and a perforated disk placed over the end of the carrier and forming a point of purchase for the nut, substantially as set forth.

406,462. BRAKE FOR VELOCIPEDES. ALBERT H. OVERMAN, Newton, assignor to the Overman Wheel Company, Boston, Mass. Filed May 17, 1889. Serial No. 311,172. (No model.)



Claim.—1. In a velocipede, the combination, with a brake composed of one or more levers, of a spring located at one end of such lever or levers, and a seat located at the other end thereof and forming a point of purchase for the spring for holding the lever or levers against rattling, substantially as set forth.

2. In a velocipede, the combination, with a brake-train consisting of connected series of brake parts, of a spring located at one end of the train and a seat located at the other end thereof and forming a point of purchase for the spring for holding the train under tension and against rattling, substantially as set forth.

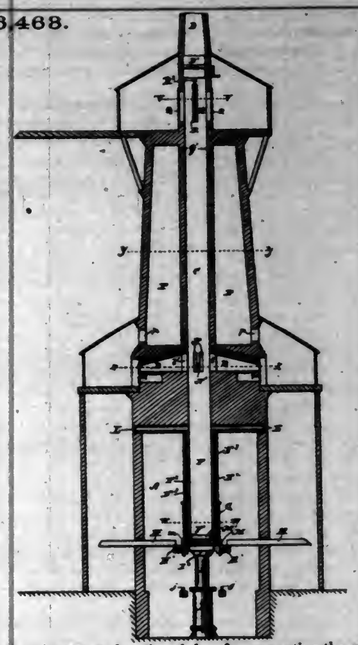
3. In a velocipede, the combination, with a longitudinally-adjustable brake-train consisting of a connected series of brake parts, of a spring located at one end of the train and a seat located at the other end thereof and forming a point of purchase for the spring in holding the train under tension and against rattling, substantially as set forth.

4. In a rear-driving front-steering bicycle, the combination, with a brake-spoon placed for engagement with the driving-wheel, connecting-rods, a bell-crank lever, an adjusting-rod, and a hand-lever, the said parts being connected to form a brake-train, of a spring pressing against the spoon, and a shoulder formed upon the hand-lever and pressing against the handle-bar, which forms a point of purchase for the spring which holds the train under tension and against rattling, substantially as set forth.

406,463. BRICK-KILN. CLARK D. PAGE, Rochester, N. Y., assignor to Page's Patent Brick Kiln Company, same place. Filed May 15, 1888. Serial No. 273,967. (No model.)

Claim.—1. In a brick-kiln of the character described, the combination, with the cupola and the girders supporting the same, of the downwardly-extending portion, and the tie-rods extending through

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the same and connected to the girders for supporting the extension, substantially as described.

2. In a brick-kiln of the character described, the combination, with the cupola and girders, of the lower depending extension of the cupola, formed of brick, with the interposed and bottom plates, and the tie-rods uniting the plates and connected to the girders for supporting the depending extension, substantially as described.

3. In a brick-kiln of the kind described, the combination, with the furnace and cupola, of the lower extension formed of brick, the protecting corner-plates, and the hood arranged to slide over said extension, substantially as described.

4. In a brick-kiln of the kind described, the combination, with the furnace and cupola, of the lower extension constructed of brick, the corner-plates and bolts or rods connecting them, and the hood arranged to slide over said extension, substantially as described.

5. In a brick-kiln of the character described, the combination, with the feeding-aperture, of a hot-air passage opening into the kiln below or at one side of the feeding-aperture and a discharge-opening above or at the opposite side of the same, whereby warm air is caused to pass in front of the said feeding-aperture and prevent contact of cold air with the vapor from the bricks in the center of the kiln, substantially as described.

6. In a brick-kiln of the character described, the combination, with the feeding-aperture, of the cupola below the same, the hot-air chamber surrounding the cupola and heated thereby, air-passages communicating with said hot-air chambers and opening into the cupola below or to one side the feeding-apertures, and the discharge on the opposite side, substantially as described.

7. The combination, with the furnace, the cupola, the chamber formed at the side of the latter open to the air, the feeding-apertures of the kiln, and the drying-chamber located in proximity thereto, heated by the air from the chambers at the side of the cupola, substantially as described.

8. The combination, with the cupola having the protecting-covering, of the air chamber or chambers at the sides, substantially as described.

9. The combination, with the furnace, the cupola, the hot-air chamber at the sides of the latter open to the air, and the feeding-apertures for the kiln, of the drying-chambers located in proximity and heated by air from said hot-air chambers and the openings from the hot-air chambers into the cupola below the feeding-apertures, substantially as described.

10. In a vertical kiln, the combination of the furnaces having the broad inner ends opening into the shaft and the side passages extending to one side and discharging into the shaft at an angle to the direct passages, substantially as described.

11. In a vertical kiln, the combination, with the four furnaces having the broad inner ends discharging into the shaft and arranged

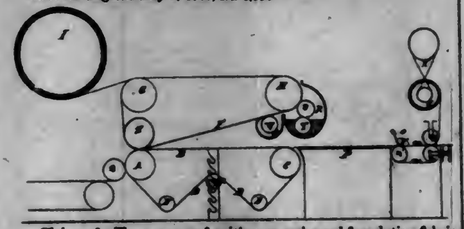
in pairs on each side thereof, of the side passages extending around from the outside of each furnace and entering the shaft in pairs at near the center of the sides, substantially as described.

12. In a brick-kiln, the combination of the feeding-apertures, the partition-plate, and the spacing or forming bar provided with the slot adapted to co-operate with the plate, substantially as described.

13. In a brick-kiln, the combination of the feeding-apertures, the central partition-plate, the horizontal notched bars, and the spacing or forming bar adapted to rest in the notches, substantially as described.

14. In a brick-kiln, the combination of the feeding-apertures, the horizontal notched bars, and the spacing-bar adapted to rest in the notches, substantially as described.

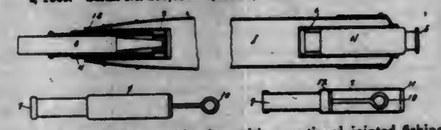
406,464. MANUFACTURE OF MATERIAL FOR COVERING WALLS OR OTHER SURFACES. THOMAS J. PALMER, Lancaster, England. Filed May 21, 1888. Serial No. 274,556. (No model.) Patented in England May 2, 1888, No. 6,554.



Claim.—1. The process of uniting an embossed foundation fabric or material and an ornamental facing, which process consists in spreading a layer of cement on one of said materials and passing both between rollers, together with a band of elastic or yielding material, substantially as described.

2. The process of uniting an embossed foundation fabric with an ornamental facing of metal, which process consists in spreading upon the metal sheets or strips a layer of cement, heating it and passing it, together with the foundation material and an elastic band, between rollers, whereby a yielding pressure is brought to bear on the two materials and the metal facing made to conform to the surface of the foundation fabric, substantially as described.

406,465. FISHING-ROD. JOHN PEPPER, Rome, N. Y. Filed Feb. 4, 1889. Serial No. 297,880. (Model.)



Claim.—1. The combination, with a sectional jointed fishing-rod, of a supplemental reducing-ferrule for shortening the rod by substituting the same for one of the intermediate sections of the pole, substantially as described.

2. The combination, with a sectional jointed fishing-rod, of a butt-section having a socket 2 and a socket 6, and a supplemental reducing-ferrule adapted to be placed in either socket, substantially as described, for the purposes stated.

3. The combination, with a sectional jointed fishing-rod, of a butt-section having sockets in each end thereof, a supplemental reducing-ferrule, for the purposes stated, adapted to be placed in either socket, and a cap adapted to be applied to either end of the butt-section over the socket, substantially as set forth.

4. The combination, in a sectional jointed fishing-rod, of a supplemental reducing-ferrule having a handle capable of retreating into the ferrule, substantially as described, for the purpose stated.

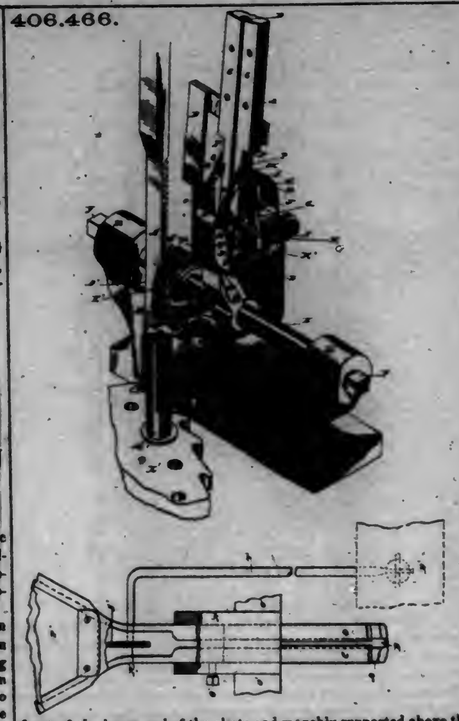
5. The combination, with a jointed fishing-rod of three or more sections, of a supplemental reducing-ferrule, substantially as described, and a line-eye having overlapping free ends, substantially as described.

406,466. MACHINE FOR CAPPING CARTRIDGES. WILLIAM R. PLACE, West Haven, Conn., assignor to the American Buckle and Cartridge Company, same place. Filed Feb. 25, 1889. Serial No. 301,136. (No model.)

Claim.—1. In a machine for capping cartridges, the combination, with a chute, of a gate for closing the lower end thereof, a cap-carrier for removing the caps one by one from the chute, and a guard located in front of the chute and operatively connected with the gate and adapted to retain the caps in the cap-carrier until they are firmly grasped thereby, substantially as set forth.

2. In a machine for capping cartridges, the combination, with a chute, of a gate for closing the lower end thereof, a cap-carrier for removing the caps one by one from the chute, a guard located in

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front of the lower end of the chute and movably supported above the mouth thereof, and means for operating the guard to engage it with the upper end of the cap-carrier and hold it in engagement with the same until the fingers thereof have firmly grasped the cap, and then lift it above the said fingers to permit them to deliver the cap to the cartridge, substantially as set forth.

3. In a machine for capping cartridges, the combination, with a chute, of a gate for closing the lower end thereof, a cap-carrier for removing the caps one by one from the chute, a guard pivoted to the lower end of the chute, and means operatively connected with the gate for retiring it and for bringing it into action, substantially as set forth.

4. In a machine for capping cartridges, the combination, with a chute, of a gate for closing the lower end thereof, two pivotal upright arms for carrying the gate extending above the same, a cap-carrier for removing the caps one by one from the chute, and a guard located in front of the lower end of the chute and having two arms pivoted at their upper ends to the chute and provided with elongated slots, through which they are coupled by screws with the upper ends of the arms carrying the gate, substantially as set forth.

5. In a machine for capping cartridges, the combination, with a cap-carrier, of a rock-shaft on which it is mounted, a gear-wheel frictionally mounted on the shaft, and stops which limit the movement of the carrier in either direction, whereby the wheel is caused to slip, substantially as set forth.

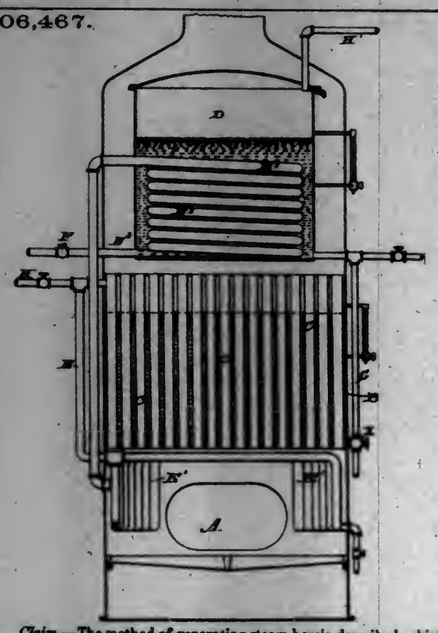
6. In a machine for capping cartridges, the combination, with a hopper, of a thin narrow blade located in the neck thereof, a chute rigidly connected with the hopper, and means for moving such blade to agitate the caps and cause them to feed into the chute which is combined with the hopper, substantially as set forth.

7. In a machine for capping cartridges, the combination, with a cap-carrier and means for rocking it back and forth, of two adjustable buffers, respectively located so as to be engaged by the carrier at the opposite ends of its stroke, substantially as set forth.

8. In a machine for capping cartridges, the combination, with a cap-carrier, of a rock-shaft to which it is secured, a gear-wheel frictionally mounted on the shaft and having a power-connection, whereby the shaft is operated to rock the carrier back and forth, and two adjustable buffers, respectively located so as to be engaged by the carrier at the opposite ends of its stroke, substantially as set forth.

406,467. METHOD OF GENERATING STEAM. AUGUST POSSENDORFF, CARL BEHNE, and FRITZ BEHNE, Rochester, N. Y. Filed Jan. 16, 1889. Serial No. 296,568. (No model.)

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Claim.—The method of generating steam herein described, which consists in first generating it in a water-receptacle heated by fire, conveying it thence to a superheater and superheating it, and conveying it thence into submerged pipes within another water-receptacle to generate steam there, the superheated steam being kept separate from the water in the second water-receptacle, substantially as set forth.

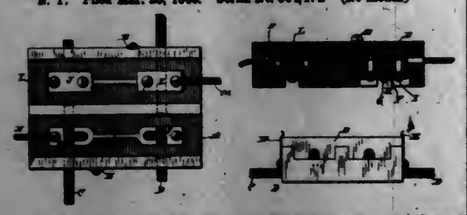
406,468. ELECTRICAL SWITCH. JOSEPH A. POWERS, Lansingburg, N. Y. Filed Mar. 23, 1889. Serial No. 304,473. (No model.)



Claim.—1. The combination, in an electric switch mechanism, with a loosely-mounted disk or carrier for the contacts limited in its movement, and prominences J thereon, of a lever pivoted on the arbor of the disk and a spring or yielding cam carried by the lever and having two prominences adapted to engage with those on the disk or carrier, as set forth.

2. In an electric switch, the combination, with an insulating contact-carrying disk loosely mounted on a vertical spindle, detents for limiting the range of movement thereof, and rollers mounted in opposite sides of the disk, of a lever pivoted to the spindle, and a circular spring carried thereby and bent to form a cam-track with two prominent points adapted to engage with the rollers, as set forth.

406,469. CONNECTION-BOX. JOSEPH A. POWERS, Lansingburg, N. Y. Filed Mar. 23, 1889. Serial No. 304,474. (No model.)

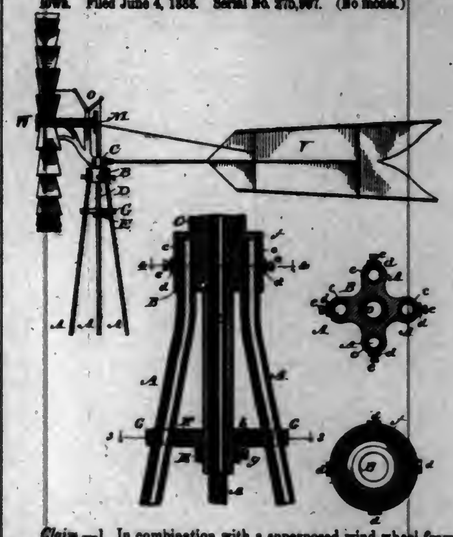


Claim.—1. The combination, with the base or block A, adapted to be placed over the wires of a circuit, of the connecting-plates F G for inclosing the wires and the safety-strip, and clamps J, secured by screws passing through the plates F G, as set forth.

2. The combination, with the base or block A, adapted to be placed over the wires of a circuit, of the connecting-plates F G for inclosing the wires, the clamps J, secured by screws to the plates F G, the terminal clamps L, and the safety-strips joining the said clamps J and L, as set forth.

3. The combination, with the base or block A, containing grooves on its under side adapted to receive the wires of a circuit, and grooves on its upper side for containing the safety-strips, of the connecting-plates F G for inclosing the wires, the clamping-plates J, adapted to receive the ends of safety-strips and secured to the plates F G by screws, the terminal clamping-plates L, secured to the base, and the safety-strips connecting the said clamping-plates J and L, as set forth.

406,470. WINDMILL-TOWER. CHARLES B. PUTNAM, Marion, Iowa. Filed June 4, 1888. Serial No. 275,997. (No model.)



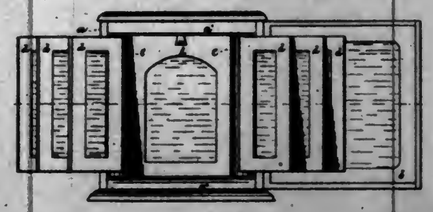
Claim.—1. In combination with a superposed wind-wheel frame turning in a horizontal plane and having a depending pivot, an annular turn-table casting having vertical cells open at bottom and corresponding drilled and tapped bosses provided with set-screws, and converging corner-posts having vertical upper extremities fastened in the respective cells by said set-screws, substantially as hereinbefore specified.

2. The combination, in a windmill-tower, of converging corner-posts having vertical upper extremities, an annular turn-table casting having vertical cells fitted to said post extremities, and set-screws fastening the latter in said cells, a superposed wheel-frame casting having a depending pivot, an annular casting having radial arms with concave outer ends fitted to the posts within a converging portion of the tower, and a collar fastened on said pivot below the casting last named, substantially as hereinbefore specified.

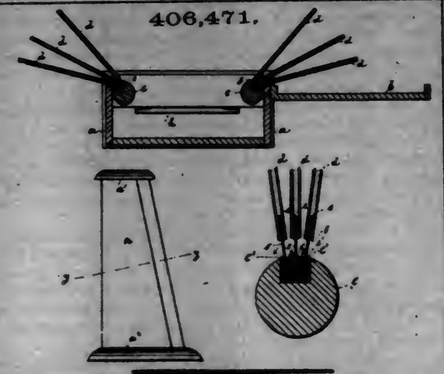
3. The combination of the corner-posts A, turn-table casting B, wheel-frame casting C, tubular pivot D, collar E, casting F, and band G, substantially as hereinbefore specified.

406,471. PICTURE-EXHIBITOR. JACOB REITS, New York, N. Y. Filed Jan. 14, 1889. Serial No. 296,230. (No model.)

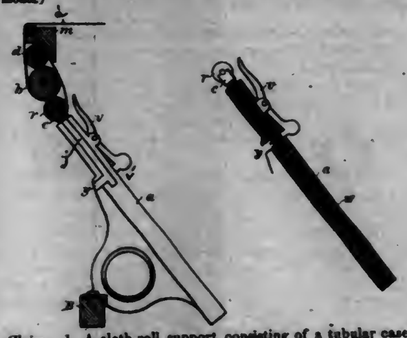
Claim.—A case having journaled therein slotted posts and picture-holding leaves, united thereto by joints consisting of rigid pieces united by a flexible connection, the hub-pieces being held in the slotted posts, while side plates are united to the other pieces to form picture-receiving spaces, substantially as specified.



406,471.



406,472. CLOTH-ROLL SUPPORT FOR LOOMS. HORATIO A. REMINGTON, River Point, R. I. Filed Feb. 26, 1889. Serial No. 301,232. (No model.)



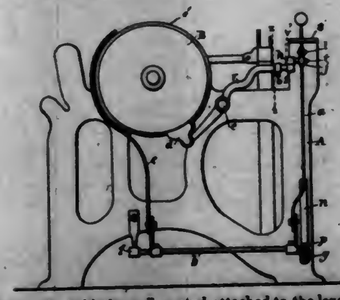
Claim.—1. A cloth-roll support consisting of a tubular case inclosing a spiral spring and having a slot and opening made in it, substantially as described, in combination with a bearing-block, to hold the journal of the cloth-roll, substantially as and for the purpose described.

2. The combination of the tubular case *a*, having a slot *j'* and opening *y*, substantially as described, with the spiral springs *w*, roll-bearing *c*, and the lever *v*, having the projection *v'*, substantially as and for the purpose set forth.

3. The combination of the top roll *d*, supports *c*, draft-roll *b*, and cloth-roll *r*, with the tubular cases *a*, having slots *j* and openings *y*, springs *w*, and levers *v*, substantially as specified, and for the purpose set forth.

406,473. BRAKING MECHANISM FOR LOOMS. HORATIO A. REMINGTON, River Point, R. I. Filed Feb. 26, 1889. Serial No. 301,233. (No model.)

Brief.—By means of the described devices the brake is removed from the brake-wheel immediately after it has been applied, and the loom is thus left free to be turned backward or forward by hand. Also, in starting the loom the brake is not removed from the brake-wheel until the driving-belt is far enough upon the fast pulley to give the loom sufficient speed to throw the shuttle clear across into the opposite box at the first pick.



Claim.—1. A friction roll or stud attached to the lever for operating the belt-shipper, in combination with a brake-lever having a cross-bar attached to it with its surface made with a double incline, and the shipping-lever, substantially as and for the purpose set forth.

2. The adjustable plate *j*, having a slot in it and carrying a stud with a friction-roll, substantially as described, and its adjusting-bolt *l*, in combination with a brake-lever carrying a cross-bar adjustably attached to it with its surface made with a double incline, stud *v'* and set-screw *o*, and shipping-lever *a*, substantially as and for the purpose set forth.

3. The combination of the plate *j*, bolt *l*, stud *t*, roll *h*, and lever *a* with the brake-lever *r*, shoe *d*, cross-bar *s*, having a double-inclined surface, stud *v'*, and set-screw *o*, substantially as described, and for the purpose specified.

406,474. WINDOW-SHADE SUPPORTER. WALTER S. REYNOLDS, Clayton, Del. Filed Feb. 12, 1889. Serial No. 299,561. (No model.)



Claim.—1. In a window-shade supporter, the combination of the rack-bars secured to and projecting forward from the window-frame and provided at their front edges with inwardly-projecting notched flanges, the curtain-bar having its ends moving between the window-frame and the notched flanges and provided with longitudinal notches, and the supporting-rods journaled in the ends of the curtain-bar and provided with horizontal crank-arms playing in the notches in the ends of the curtain-bar and engaging the notches in the flanges of the rack-bars, as specified.

2. The combination of the rack-bars, the curtain-bar provided in its ends with the notches F, the openings G, leading downward from said notches, and the grooves K, leading upward from said notches, and the supporting-rods adapted to be inserted through the grooves K and journaled in the openings G, and provided with crank-arms playing through the notches F and engaging the rack-bars, as specified.

406,475. BED-SPRING. CHARLES E. RICE, Jonesburg, Mo. Filed Jan. 6, 1888. Serial No. 259,955. (No model.)



Claim.—1. The bed-spring formed from a single piece of wire and comprising the twin spiral coils, the Z-shaped connecting-wire between the upper ends thereof, said connecting-wire being bent to form the parallel longitudinal portions *e* on opposite sides of the top of the coils, the obliquely-arranged portion e^3, connecting the parts *e* and arranged to bridge the space between the twin springs, one of the side portions *e* projecting longitudinally beyond one of the coils and being then bent to form the oblique portion e', which merges in the top of the coil and diverges from the portion e^3, said portions *e*, e^3, and e' being arranged in the same horizontal plane above the tops of the coils, substantially as described.

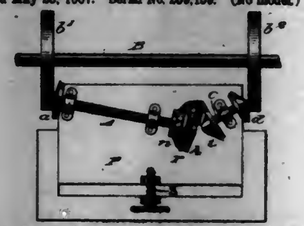
2. The twin springs comprising the coils, the Z-shaped connecting portion between their tops, and the acute-angled arm projecting longitudinally from the top of one of the coils and arranged in the same horizontal plane with the connecting portion, whereby, when the pairs of said springs are arranged in the same longitudinal line and in reverse relation to each other, the acute-angled arms will lap in the space between the proximate coils, with their oblique portions parallel, and bridge the said space, substantially as described.

406,476. BOOK-BINDING. HENRY J. RIES, Iowa City, Iowa. Filed Nov. 20, 1888. Serial No. 291,322. (No model.)



Claim.—The book A, held in the flexible back E, having free flaps at either end, in combination with the concentric flexible backs C D, having, respectively, the ends *c d*, and the covers B', slitted to form beveled walls b^2 b^2, wherein the ends *c* are secured, the ends *d* being fastened to the outer surface of the cover B'

406,477. FRICTIONAL GEARING. ALSON ROBINSON, Lewiston, Me. Filed May 23, 1887. Serial No. 239,159. (No model.)

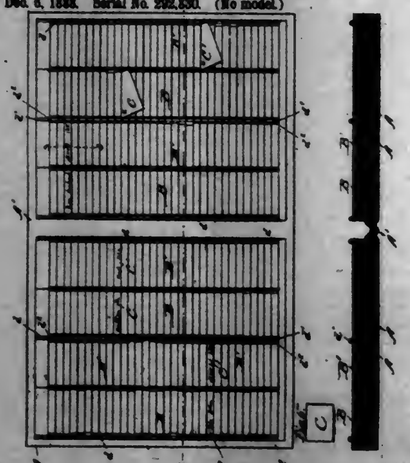


Claim.—1. In a train of mechanism for transmitting rotary motion, two frictional contrate-wheels mounted upon the same shaft, two conical friction-gears tangential to the planes of the contrate-wheels, and two conical friction-gears tangential to each other and to a plane parallel to the plane of the contrate-wheel, all combined with each other and with the shafts upon which they are mounted, substantially as set forth.

2. In a train of mechanism for transmitting rotary motion, the combination of two shafts mounted upon a movable bed-piece, conical friction-gears connecting these shafts and having their point of contact in a straight line parallel to the line of motion of the bed-piece, a third shaft at right angles to this line of motion, a pair of frictional contrate-wheels mounted upon this shaft, a conical friction-gear upon the first shaft in continual contact with one of the contrate-wheels, and a conical friction-gear upon the second shaft in continual contact with the other contrate-wheel, all as set forth.

3. The combination of a bed-piece, two shafts mounted thereon, a pair of conical friction-gears upon each shaft whose working-surfaces make equal and opposite angles with the shaft, a third shaft in the same plane, a pair of frictional contrate-wheels mounted thereon, and means for varying the distance between the third shaft and the bed-piece, all as set forth.

406,478. ACCOUNT-BOOK. JUNIUS ROGERS, Fremont, Nebr. Filed Dec. 6, 1888. Serial No. 292,830. (No model.)



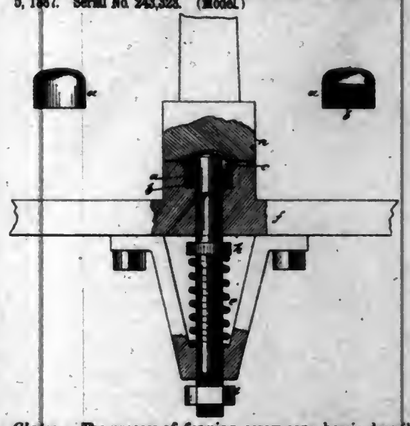
Claim.—1. The account-book for showing daily balances, consisting of a base or back board A, provided with a series of pockets B, in a column one above another, furnished with separately-removable name slips or leaves C, and a second series of pockets B', in a column one above another, at the side of said column of pockets B, and furnished with separately-removable account slips or leaves C', substantially as specified.

2. The account-book for showing daily balances, consisting in a base or back board A, furnished with a series of pockets B, formed by a series of pocket-slips *b*, having flaps *b'* pasted or secured to said board A, one above another, said slips *b* being sewed or secured at the ends thereof flat upon said board A, and said pockets being furnished with separately-removable account slips or leaves, substantially as specified.

3. The account-book for showing daily balances, consisting in a base or back board A, furnished with a series of pockets B, formed by a series of pocket-slips *b*, having flaps *b'* secured to said board A, one above another, and flaps b^2 folded inwardly at the lower edge of said slips *b*, said slips *b* being secured at the ends thereof flat upon said board A, and said pockets being furnished with separately-removable account slips or leaves, substantially as specified.

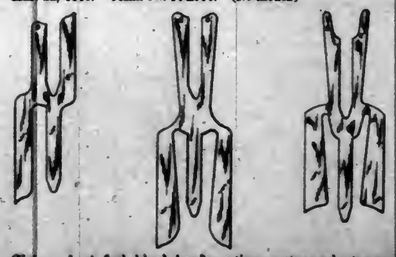
4. The combination of board A with pocket-slips *b*, having flaps *b'* b^2, said flaps *b'* being secured to said board A, and said pocket-slips *b* being secured at their ends and also at their middle to said board, so as to form two columns of pockets B and B', and account slips or leaves C and C', fitting in said pockets, substantially as specified.

406,479. PROCESS OF FORMING SCREW-CAPS. GEORGE SCHRADER, New York, and JOSEPH SCHMITT, Brooklyn, N. Y. Filed July 5, 1887. Serial No. 243,323. (Model.)



Claim.—The process of forming screw-caps herein described, which consists, first, in stamping a cylindrical cup-shape blank out of sheet metal; second, cutting a screw-thread therein, and, third, swaging between suitably-formed dies, so as to contract the lower or neck portion, while the upper or dome-shaped portion is crushed downward and expanded outward by the same operation sufficiently to just fill the dies and take the desired form, as shown, without the use of a filling to transmit the pressure to the interior walls of the blank, substantially as shown and described.

406,480. FORK-BLANK. FRANK SILLIMAN, Jr., Springfield, Mass., and WARREN H. COWDERY, Ashtabula, Ohio; said Silliman assignor to Samuel R. Harris, Ashtabula, Ohio. Filed Aug. 29, 1887. Renewed Mar. 22, 1889. Serial No. 304,339. (No model.)



Claim.—1. A fork-blank having a tine portion and a tang portion formed in substantially parallel lines, and having two other tine portions formed in substantially parallel lines with each other and projecting from the blank-head in an opposite direction from said first two portions, said two other tine portions being separated from each other throughout their entire length a distance substantially equal in width to the width of the tang portion, substantially as set forth.

2. A fork-blank having an outer tine portion and an inner tine portion formed parallel, and having an outer tine portion and a tang portion formed parallel but projecting in an opposite direction from the first two portions, substantially as set forth.

406,481. SHADE-ROLLER FIXTURE. HENRY W. SIMS, Bay City, Mich. Filed June 10, 1888. Serial No. 277,541. (No model.) Patented in Canada July 9, 1888. No. 34,532.

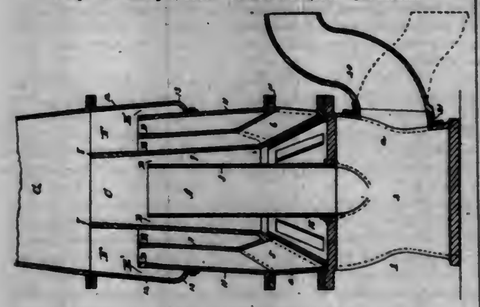


Claim.—1. In a shade-roller fixture, the shade-roller having an inclosed actuating-spring, a spindle *c*, passed into the end of the roller and connected to one end of the spring and provided with a flattened portion *d*, and a journal *f*, projecting beyond the roller, and a bracket *i*, having a slot supporting the journal and provided with an inwardly-projecting lug *n*, in combination with a wheel *j*, having a central opening fitted to and passed upon the part *d* between the end of the roller and the bracket and provided with spokes *k*, engaging with the said lug *n*, substantially as set forth.

2. In a shade-roller fixture, the combination, with a shade-roller having an inclosed actuating-spring and a rod *c*, passed into the end of the roller and secured to the spring and provided with a flattened portion *d*, and a journal *f*, extending from the roller, of a wheel *j*, having a central opening fitted to and passed upon the said portion *d*, and a lug *o*, projecting from the end of the roller and engaging with the spokes of the wheel, substantially as and for the purpose set forth.

3. In a shade-roller fixture, the combination, with the roller having an end piece *e* and an inclosed actuating-spring *b*, a spindle *c*, placed within the coils of and secured to one end of the spring and having a journal extending beyond the said end piece, of a retaining-piece *g*, having a loop *t* attached to the opposite end of the spring and provided with a lug *o*, passed through an opening in the said end piece *e*, and having a flange *r* between the end of the roller and the end piece *e*, substantially as and for the purpose set forth.

406,482. BLAST OR EXHAUST APPARATUS. JOHN Y. SMITH, Doylestown, Pa., assignor to the Smith Exhaust Pipe Company, of New Jersey. Filed May 9, 1888. Serial No. 273,266. (No model.)



Claim.—1. In an exhaust apparatus such as described, in combination with an annular ejector, the supplemental steam-nozzle located within the air-passage, substantially as described.

2. In combination with an ejector comprising a steam-nozzle surrounding an air inlet or passage, a supplemental steam-nozzle located in said air-passage adjacent the inner wall thereof, substantially as described.

3. In combination with the steam-nozzle, air-passage, and confining-chamber of the outer ejector, the supplemental steam-nozzle, substantially as described.

4. In an apparatus such as described, in combination with the annular steam-nozzle, inner air-passage, and confining-flue, the supplemental air-passage surrounding the steam-nozzle, substantially as described.

5. In an apparatus such as described, in combination with the steam-nozzle and inclosing air-passages, the supplemental steam-nozzle located in one of said air-passages, as and for the purpose set forth.

6. In combination with the steam-nozzle and air-passage of the outer ejector, the supplemental air-passage outside the steam-nozzle and the supplemental steam-nozzle adjacent the inner wall of the main air-passage, substantially as described.

7. In an apparatus such as described, containing inner and outer ejectors receiving steam through a common supply-chamber and each provided with a confining-flue in advance of their steam and air nozzles or openings, the combination, with the outer ejector, of the supplemental steam and air passages, as set forth.

8. In an apparatus such as described, and in combination with the flue or pipe forming the division between the inner and outer ejectors, the tube surrounding said pipe and attached thereto, and the ports formed near the base of said pipe, substantially as described.

9. In an apparatus such as described, the combination, with the base and hollow wall, of the removable air-tube secured to said wall, the cap or intermediate section 4, secured to the base and provided with two series of ports or passages and supporting-tubes 7 and 8, and the casing 11, detachably secured to the section 4, substantially as described.

10. In an apparatus such as described, containing a steam-chamber and two ejectors whose nozzles receive steam from said chamber, a damper arranged in proximity to but out of contact with the steam-ports leading to one of said nozzles, as and for the purpose set forth.

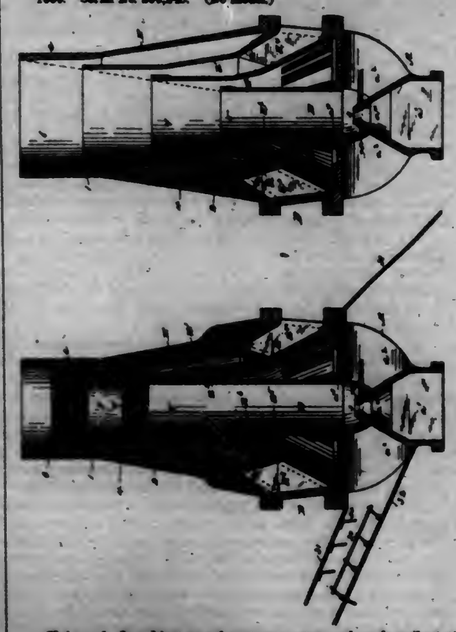
11. In combination with a double blast or exhaust apparatus such as described, located in the smoke-box and provided with inlet-openings at different levels, a conduit or flue extending from a remote point in the smoke-box and communicating with one of said air-inlets, as and for the purpose set forth.

12. In an exhaust or blast apparatus such as described, the combination, with the smoke-box and boiler-flues, of an ejector located in the smoke-box opposite the flues, and an independent flue or conduit adjustably applied to one of the air-inlets and extending laterally and opening into a remote portion of the smoke-box, substantially as described.

13. In combination with the air inlet or passage of an exhaust apparatus such as described, a supplemental pipe or conduit projected laterally from the blast apparatus and communicating with its air-inlet, said supplemental pipe being adjustably applied, so as to permit its outer or induction opening to be moved vertically within the smoke-box, substantially as described.

14. In an exhaust apparatus such as described, the combination, with a blast-pipe and air-passage co-operating therewith to form an ejector, of a supplemental tube or conduit communicating with said air-passage and having its induction end adjustable both laterally and vertically within the smoke-box, substantially as described.

406,488. TRIPLE-EXPANSION BLAST OR EXHAUST APPARATUS FOR LOCOMOTIVES. JOHN Y. SMITH, Doylestown, Pa., assignor to the Smith Exhaust Pipe Company, of New Jersey. Filed Feb. 9, 1888. Serial No. 263,945. (No model.)



Claim.—1. In a blast or exhaust apparatus such as described, the

combination, with an inner and an outer steam-nozzle, of an air-passage adjacent the outer nozzle, an air-passage centrally of the inner nozzle, and a jet pipe or nozzle discharging into the induction end of the central air-passage, substantially as described.

2. In a blast or exhaust apparatus such as described, the combination, with steam-nozzles 1 and 2, air-passages 4 and 5, and a steam-chamber common to the said nozzles and communicating through separate passages with the cylinders, of a steam-nozzle or jet-pipe 3 in open communication with both passages leading to the cylinders, as and for the purpose set forth.

3. In a blast or exhaust apparatus such as described, the combination, with the outer annular steam-nozzle, its confining-flue and air-passage, the inner annular steam-nozzle, its confining-flue and central air-passage, and the jet-pipe or steam-nozzle located at or near the induction end of the said central air-passage, of a chamber or passage communicating with the three steam-nozzles and the cylinders, substantially as described.

4. The combination, in a blast or exhaust apparatus such as described, comprising inner and outer ejectors having separate air-passages, of inlet-ports located at different levels, and a perforated screen inclosing or covering the upper series of air-inlets, substantially as described.

5. The combination, with the smoke-box flues and smoke-stack, of an exhaust or blast apparatus such as described provided with inner and outer steam-nozzles and separate air-passages opening into the smoke-box at different levels, a jet-pipe or steam-nozzle delivering into the induction end of the lower air-passage, and a screen inclosing the upper air-inlets and the inlet to the smoke-stack, as and for the purpose set forth.

6. In a blast or exhaust apparatus such as described, comprising inner and outer ejectors, the combination, with the walls or tubes forming the steam and air passages, of the removable tubular section forming the confining-chamber and outer wall of the outer steam-nozzle, and the eduction-orifice of the apparatus, substantially as described.

7. In a blast or exhaust apparatus such as described, the combination, with the central air-passage communicating through a transverse tubular bridge with the lower portion of the smoke-box, of a supplemental steam-nozzle discharging into the induction end of said central passage and connected with the boiler, substantially as and for the purpose set forth.

8. In combination with a blast or exhaust apparatus such as described, containing a central air-passage, an annular steam-nozzle surrounding said passage, and a central jet-pipe or steam-nozzle discharging into said air-passage, and passages connecting said annular and central nozzles with the exhaust-ports of the cylinders, a supplemental blast pipe or nozzle surrounding the central nozzle and discharging into the central air-passage, said supplemental blast-pipe being in communication with a constant steam-supply, as and for the purpose set forth.

9. In a blast or exhaust apparatus such as described, the combination, with the central air-passage and annular steam-nozzle surrounding said air-passage, of a confining-flue located in advance of the steam-nozzle and provided with parallel walls at its eduction end, substantially as and for the purpose set forth.

10. The combination, in a blast or exhaust apparatus such as described, and with an inner ejector consisting of a steam-nozzle, air-passage, and confining-flue, of an outer ejector, including air-passage, steam-nozzle, and confining-flue, the walls of said nozzle and flue being formed parallel, substantially as and for the purpose set forth.

11. In a blast or exhaust apparatus such as described, the combination, with the inner ejector whose confining-flue is provided at its eduction end with cylindrical walls, of an outer ejector provided with cylindrical steam and air nozzles located in advance of the confining-flue of the inner ejector, and a cylindrical confining-flue common to the two ejectors, as and for the purpose set forth.

12. In a blast apparatus such as described, the combination, with the hollow base-piece provided with a partition and a transverse tubular bridge-piece containing the induction-passages and a port or opening into the air-passage of the ejector, a hollow projection or tube located within said tubular bridge and provided with a steam-nozzle or escape-orifice discharging into the ejector, said hollow projection containing a division-wall separating it into two chambers, each of the latter communicating with one of the steam-passages in the base-piece and with the steam-nozzle, as and for the purpose set forth.

13. In a blast or exhaust apparatus such as described, the combination, with the hollow piece containing steam-passages and a tubular bridge, a tube forming an air-passage mounted upon and communicating with the interior of the tubular bridge, an intermediate section containing a steam-chamber surrounding the central air passage or tube and communicating with the steam-passages in the base-piece, and two series of reversely-inclined ports, the one for air and the other for steam, of two tubular walls separated from each other and the inner air-tube to form air and steam passages, and an outer tube arranged above the intermediate section and provided with a detachable eduction end, substantially as and for the purpose set forth.

14. The combination to form a blast or exhaust apparatus such as described, of the base A, formed or provided with steam-passages a, a tubular bridge a^3, and nozzle 3, a tube B, applied to an opening in bridge a^3 above and in line with nozzle 3, intermediate section D, containing a steam chamber or space, two series of ports or passages d^3 d^4, and tubes d' d^2, and an upper section E, the whole arranged for conjoint action, substantially as set forth.

15. The combination, in a blast or exhaust apparatus such as described, of a base formed or provided with two steam-passages a and a steam nozzle or orifice 3, communicating with both of said passages, a central air-passage 5 in line with nozzle 3 and provided with inlet-openings near the base of the apparatus, a steam-chamber surrounding passage 5 and communicating with passage a, two steam-passages communicating with said steam-chamber and terminating the one in nozzle 2 and the other in nozzle 1, an air-passage 4, with its eduction end between nozzles 1 and 2, a confining-flue 7 in advance of nozzle 2 and the discharge end of passage 5, and a confining-flue 6 in advance of nozzle 1 and the discharge end of flue 7, as and for the purpose set forth.

16. In a blast or exhaust apparatus such as described, containing steam-nozzles 1 and 2, an intermediate air-passage 4, and a steam-chamber from which steam is supplied to both said nozzles, the combination, with the walls forming the air-passage 4 and the steam-passage leading to nozzle 1, of a ring-section, such as D, containing two series of reversely-inclined ports or passages, the one leading from the steam-chamber to the steam-passage of nozzle 1 and the other from the exterior of the apparatus to the air-passage 4, substantially as and for the purpose set forth.

17. In an exhaust or blast apparatus such as described, the combination, with the outer casing E and removable section e, of the arms 43, provided with shoulders engaging a groove or shoulders on section e, and a clamp for confining said arms, substantially as described.

18. In a blast or exhaust apparatus for locomotives, the combination, with the boiler, its flues and smoke-box, and the ejector located within the smoke-box, of a perforated hood or deflecting-plate extending upward and forward from the bottom of the smoke-box and covering the rear induction-passage, substantially as described.

19. In a blast or exhaust apparatus for locomotives, the combination, with the boiler, its flues and smoke-box, and the ejector located within the smoke-box, of an inclined plate arranged in the front of the smoke-box and covering the front induction-passage of the ejector, and a chute or inclosed passage communicating with said induction-passage, and provided with an opening near the upper end of the inclined plate to receive the ashes, cinders, &c., substantially as and for the purpose specified.

20. In an exhaust or blast apparatus for locomotives, and in combination with the smoke-box and the ejector located therein and discharging into the smoke-stack, a perforated deflecting-plate covering the rear induction-passage, an inclined plate covering the front induction-passage, and a chute or conduit leading from the front induction-passage to and opening through the inclined plate, substantially as described.

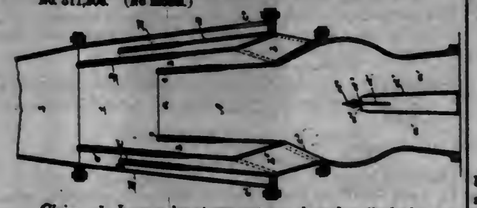
21. In an exhaust or blast apparatus such as described, the combination of the ejector located within the smoke-box, a partition above the induction-passage of the ejector, and a chute or chamber communicating with the forward portion of the smoke-box and said induction-passage, and provided with deflecting-plates to retard the passage of cinders, &c., substantially as and for the purpose set forth.

22. In a blast or exhaust apparatus such as described, the combination of the ejector located within the smoke-box, a chamber or chute communicating with the induction-passage of the ejector, a deflecting-plate provided with an opening for the escape of cinders, &c., into said chamber or chute, and a series of hinged or pivoted deflecting-plates projected within the said chamber or chute and connected together, substantially as described.

23. In an exhaust or blast apparatus for locomotives, the combination, with the boiler, its flues, smoke-box, and smoke-stack, and an ejector provided with two or more sets of induction-passages at different levels, of a perforated guard surrounding the upper set of induction-passages, a perforated deflecting plate or guard covering the rear induction-aperture of the lower set of passages, an inclined plate covering the front induction-aperture of the lower passages, and a chute or chamber communicating with said front induction-opening, said inclined plate being provided with an opening or passage for the admission of cinders, &c., into the said chute or chamber, whence they are conducted to the induction-passage of the ejector, substantially as set forth.

24. In an exhaust or blast apparatus such as described, the combination, with the central air passage or flue and central jet-pipe, of an annular steam-nozzle surrounding the central air-passage, an uncontracted flue into which the said steam-nozzle and air-passage open, and an annular air-nozzle surrounding the eduction end of said uncontracted flue and delivering into a second uncontracted flue or passage whose eduction end is surrounded by an annular steam-nozzle, the latter delivering steam through a confining chamber or flue whose inner walls are straight, whereby choking or undue retardation of air or gas and steam within the ejector is prevented, substantially as described.

406,484. EXHAUST APPARATUS FOR LOCOMOTIVES. JOHN Y. SMITH, Doylestown, Pa., assignor to the Smith Exhaust Pipe Company, of New Jersey. Filed May 9, 1888. Renewed May 17, 1889. Serial No. 311,206. (No model.)



Claim.—1. In an exhaust apparatus such as described, the combination of the central blast-pipe A, an air-passage adjacent to said nozzle, and a confining flue or chamber in advance of and surrounding said nozzle and air-passage and into which they both discharge, as set forth.

2. In combination with the central steam-pipe, an inclosing wall or tube supported in proximity to but removed from the exterior of said steam-pipe and extending beyond the nozzle, with inlet ports or passages opening from the exterior of the apparatus to the space between the exterior wall and the steam-pipe, substantially as described.

3. In combination with the outer ejector, consisting of the annular steam and air pipes, the inner ejector comprising the annular air-pipe, central steam-nozzle, and confining-chamber, substantially as described.

4. In combination with the blast-pipe A, provided with nozzle a^3, and steam-ports, as described, a detachable connection consisting, essentially, of an outer ejector, the steam-passage leading to its nozzle registering with the steam-ports in blast-pipe A, and a central flue to receive the nozzle a^3 and form an air-passage and confining-flue, as and for the purpose set forth.

5. As an attachment for the ordinary blast-pipe A when provided with steam-ports in the sides, an annular ejector provided with steam and air passages and a confining-flue, combined with a central flue to receive the nozzle of the blast-pipe and form, in conjunction therewith, a central ejector with air-passage and confining-flue, substantially as described.

6. In combination with blast-pipe A, a tube or flue B, supported on said blast-pipe and provided with two series or sets of passages, the one extending from ports in pipe A to the exterior of tube B, and the other from the exterior of the apparatus to the interior of tube B, said tube B extending beyond the nozzle of pipe A to form a confining-chamber, as set forth.

7. In combination with blast-pipe A, perforated at a point below the nozzle, flue or pipe B, provided with passages leading from said perforations to the exterior of said flue, an inclosing-casing E, and a wall or flue D, interposed between said casing and flue B, with inlet-passages leading to the spaces between A and B and D and E, substantially as described.

8. In combination with the outer ejector, having steam-nozzle and air-passage, the inner ejector provided with air-passage, a central steam-nozzle, and a confining-flue, and an auxiliary confining-flue into which both ejectors discharge, substantially as described.

9. In combination with a blast-pipe A, the hollow bridge open at the ends and top, and the division plate and bar having inclined faces, substantially as described.

10. In combination with the blast-pipe A and the flue B, forming, in conjunction therewith, an air-passage surrounding the nozzle, and a confining-chamber, the hollow bridge inserted in the base of the blast-pipe and provided with air-inlet openings, substantially as described.

11. In combination with the blast-pipe A and the outer ejector applied thereto and receiving steam from said blast-pipe whose nozzle forms part of an inner ejector, the hollow bridge located within the blast-pipe A and provided with inlet-openings situated below the steam-ports leading to the outer ejector, substantially as described.

406,485. CARPET-BEATING MACHINE. CHARLES T. STORY, Boston, Mass. Filed Aug. 6, 1888. Serial No. 282,101. (No model.)

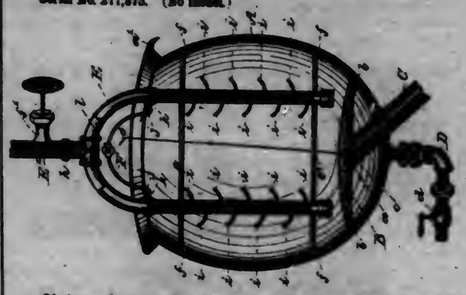
Claim.—1. The shaft B, with its frames E and plates G, in combination with the arched rods a and nuts b, all operating substantially as set forth.

406,485.



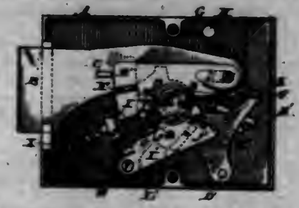
2. The shaft B, with its frames E, plates G, and rods a, in combination with the beaters H, all constructed to operate substantially as set forth.

406,486. STEEPING-TUB FOR STEEPING BARLEY OR OTHER GRAINS. FRITZ SUSSENBIL, Davenport, Iowa. Filed June 22, 1888. Serial No. 277,873. (No model.)



Claim.—In a steeping-tub, the combination of an inverted-U-shaped water-pipe within such tub, its lower ends closed, such pipe having attached to it short laterally-projecting and communicating water-pipes which are perforated, and the interior of such U-shaped water-pipe being also provided with a perforated air-pipe of less diameter and similarly shaped, each air-pipe arranged to be supplied with compressed air and each U-shaped water-pipe with water, for the purposes set forth, and substantially as described.

406,487. LOCK. WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Feb. 18, 1889. Serial No. 300,806. (Model.)



Claim.—1. In a lock, a rotary key-hub provided with two key-holes and two keys, each adapted to act separately through its own hole on its own set of tumblers, substantially as described.

2. In a lock, the combination of a rotary key-hub provided with two key-holes and two keys, and a separate set of tumblers for each key, substantially as described.

3. In a lock, the combination, with the bolt, of one set of tumblers which dogs the bolt, and another set of tumblers and a detent or holder which holds the first set, substantially as described.

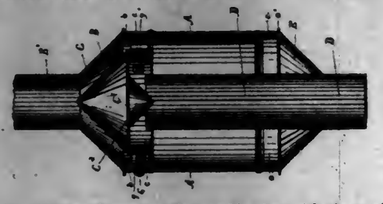
4. In a lock, the combination, with the bolt and the main tumbler mechanism, of a movable dog or detent which holds the main tumbler mechanism, a lever for operating said detent, and an independent key for operating the said lever, substantially as described.

5. In a lock, the combination, with the bolt, of a set of main tumblers, a set of supplementary tumblers, and dogging mechanism between said main and supplementary tumblers, whereby the bolt is held until the supplementary tumblers are set by their proper key and

the dogging mechanism is moved by the rotation of said key, substantially as described.

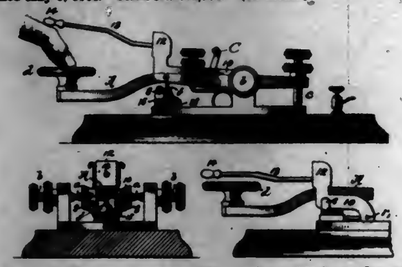
6. The combination, with the key-bub and keys, of the bolt and its tumblers and fence, a separate guard-tumbler, the pivoted fence-lever and fence thereon, and the bell-crank or detent, substantially as described.

406,488. SPARK-ARRESTER. WILLIAM J. UMBERY, Norwich, Ontario, Canada. Filed Nov. 28, 1888. Serial No. 292,116. (No model.) Patented in Canada Apr. 5, 1888, No. 26,819.



Claim.—In a spark-arrester, the combination, with the conical base E, having an outwardly-projecting flange *d* and a vertical flange *e* on its upper edge, the pipe D, secured rigidly in the base and extending above the same, the drum A, fitted on the flange *e*, the conical cap C in the upper part of the drum above the pipe, the bolts *g*, for supporting the cap, the diaphragm C', the conical projection C, secured to the diaphragm and extending into the pipe, and the cover B, having flange *b* and pipe B', substantially as described.

406,489. TELEGRAPH-KEY. HENRY A. WALDO, Reno, Nev. Filed May 5, 1888. Serial No. 272,998. (No model.)

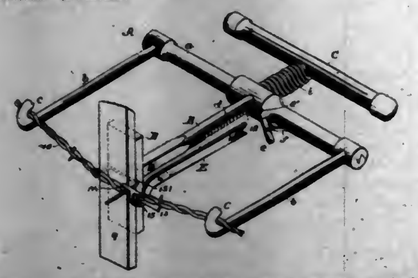


Claim.—1. The combination, with a telegraphic key, of a self-closer consisting of a pair of pivotally-mounted arms having a stem overlying the key-button and a pair of spring-fingers adapted to contact with the sides of the arms of the self-closer, substantially as described.

2. The combination, with a telegraphic key, of a self-closer consisting of a pair of pivotally-mounted spring-arms 10, having a stem overlying the key-button, and a fixed bifurcated contact consisting of a pair of spring-fingers 8, adapted to receive the arms 10 between them and bear against their sides, substantially as described.

3. The combination, with a telegraphic key, of a self-closer consisting of a pair of spring-arms 10, pivotally mounted at one end on the pivots of the key-lever and at the other end united in a head having a stem overlying the key-button, and a pair of spring-fingers adapted to contact with the sides of the arms of the self-closer, substantially as described.

406,490. DEVICE FOR ATTACHING PICKETS TO WIRE FENCES. REUBEN P. WILCOX, Kansas City, Mo. Filed Nov. 15, 1888. Serial No. 290,866. (No model.)



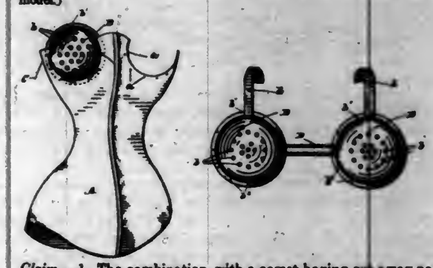
Claim.—1. The herein-described tying tool, comprising a body portion bent at 13 to form a short limb 15, adapting it to hook upon the strand-wires and having lateral projections 144 with notches upon their lower faces, substantially as set forth.

2. The combination, with a yoke having limbs that are provided with hooked ends and a sliding clamping-bar, of a ratchet-toothed rack formed on the sliding bar, a locking-dog, and a retracting-spring, substantially as set forth.

3. The combination, with a yoke comprising a perforated cross-bar and two parallel limbs having hooks on their free ends and a bar that is provided with ratchet-teeth and adapted to slide in the perforation of the cross-bar, of a pivoted locking-dog and a spiral retracting-spring, substantially as set forth.

4. The combination, with a yoke having limbs with hooked ends, of a toothed sliding bar having a cross-handle and a clamping-block, a pivoted dog, a spring to actuate the dog, and a spring to retract the sliding bar, substantially as set forth.

406,491. COMBINED CORSET AND BREAST-PAD. MARY A. WILLIAMS, Kansas City, Mo. Filed Apr. 1, 1889. Serial No. 305,866. (No model.)



Claim.—1. The combination, with a corset having cut-away portions opposite the breasts of the wearer and provided with eyelet-holes in the marginal walls of the cut-away portions, of hollow hemispherical perforated pads formed with a laterally-projecting flange *b'*, having eyelet-holes registering with the eyelet-holes of the corset, tape or cord passed through each series of eyelet-holes for securing the pads to the corset, and shoulder-straps secured to said pads, substantially as set forth.

2. The combination, with a corset having the portions opposite the breasts of the wearer cut away and provided with a series of eyelet-holes, of pads having laterally-projecting flanges provided with eyelet-holes registering with the eyelet-holes of the corsets, the said flanges seated behind the margins of the cut-away portions of the corsets, and a tape or cord laced through the eyelet-holes of the corsets and flanges of the pads, substantially as set forth.

406,492. ARMATURE-WINDING FOR DYNAMOS. JAMES J. WOOD, Brooklyn, N. Y. Filed Oct. 12, 1888. Serial No. 287,917. (No model.)



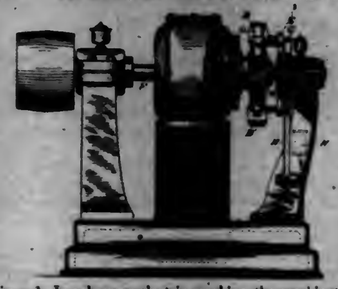
Claim.—1. An armature-coil consisting of a single length of wire wound with its middle portion at the inner part and its terminal portions at the outer part, and with the outer convolutions of its opposite end portions wound on opposite sides of an insulating-sheet, whereby the tendency to short-circuit between the opposite end portions of the wire is overcome by the additional insulation afforded by said interposed sheet.

2. An armature wound with coils consisting each of a single length of wire with its middle portion wound against the core and its opposite end portions wound on opposite sides of a sheet of insulating material, whereby the tendency to short-circuit between the opposite end portions of the wire is overcome by the additional insulation afforded by said interposed sheet.

3. A Gramme armature wound with juxtaposed pairs of coils consisting of a single length of wire with its middle portion crossing between the two coils and an insulating-sheath separating the two coils.

4. The combination, with an armature-coil consisting of a single length of wire wound with its middle portion at the inner part and its terminal portions at the outer part, and with the outer convolutions of its opposite end portions wound as separate half-coils in opposite halves of the space for the coil, of an insulating-sheet *f*, interposed between said half-coils, formed with a central opening to admit the core, and a notch *e'* to admit the middle convolution of wire.

406,498. SELF-REGULATING DYNAMO. JAMES J. WOOD, Brooklyn, N. Y. Filed Nov. 20, 1883. Serial No. 291,264. (No model.)



Claim.—1. In a dynamo-electric machine, the combination, with the field-magnet and armature, of main-current brushes connected to the line-circuit, the field-magnet coil in a shunt-circuit, terminal brushes for said shunt relatively adjustable around the commutator to positions of different relative potentials, whereby a variable continuous current is fed to the shunt field-coil, a regulating magnet or solenoid connected with the main circuit and responding to variations therein, and a mechanical connection between the movable member of said magnet and the movable shunt-terminal brush or brushes, whereby the movements of the former due to changes in the circuit are communicated proportionally to the latter and the current to the field-coil is thereby varied to alter the magnetization of the field in compensation for the variations in the external circuit.

2. In a dynamo-electric machine, the combination, with the field-magnet and armature, of main-current brushes connected to the line-circuit, the field-magnet coil in a shunt-circuit, terminal brushes for said shunt relatively adjustable around the commutator to positions of different relative potentials, whereby a variable continuous current is fed to the shunt field-coil, a regulating magnet or solenoid connected with the main circuit and responding to variations therein, a lever to which the movable member of said magnet is connected, formed with a sector, and a movable yoke carrying the movable shunt-terminal brush or brushes, and formed with a sector gearing with the sector of said lever, whereby the movements of said magnet are communicated proportionally to the shunt-terminal brush.

3. In a dynamo-electric machine, the combination, with the field-magnet and armature, of main-current brushes connected to the line-circuit, the field-magnet coil in a shunt-circuit, terminal brushes for said shunt relatively adjustable around the commutator to positions of different relative potentials, whereby a variable continuous current is fed to the shunt field-coil, a regulating magnet or solenoid responsive to variations of electrical condition in the main circuit, a mechanical connection between the movable member thereof and the movable shunt-terminal brush or brushes for communicating the movements of the former proportionally to the latter, the main circuit formed with a branch in which said magnet or solenoid is connected, and a comparatively sensitive relay-magnet in connection with the main circuit adapted to govern the flow of current through said branch, and arranged when excited by an increased current to disproportionately augment the current through said regulating-magnet, whereby the action of the latter is intensified.

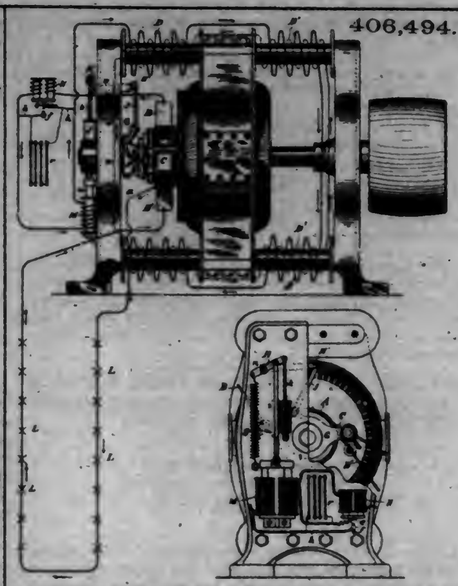
406,494. REGULATOR FOR DYNAMO-ELECTRIC MACHINES. JAMES J. WOOD, Brooklyn, N. Y. Filed Nov. 21, 1888. Serial No. 291,456. (No model.)

Claim.—1. A dynamo for generating constant currents, combined with a shunt field-magnet coil connected to receive normally a continuous current and wound inversely, so that the current in it acts to reduce the magnetization of the field-magnet, and with automatic means for varying the electro-motive force of the current in the shunt-coil inversely to and in proportion to variations of the resistance in the external circuit in order to maintain the current in said circuit uniform.

2. A dynamo for generating constant currents having its field-magnet wound with an exciting-coil in series and with an inversely-wound coil in a shunt of uniform resistance, and with automatic means for varying the electro-motive force of the current in the shunt-coil inversely to and in proportion to variations of resistance in the external circuit in order to maintain the current in said circuit uniform.

3. In a dynamo, the combination, with the commutator and main collecting-brushes, of the field-magnet wound with a series coil in the main circuit and with an inversely-connected shunt-coil terminating

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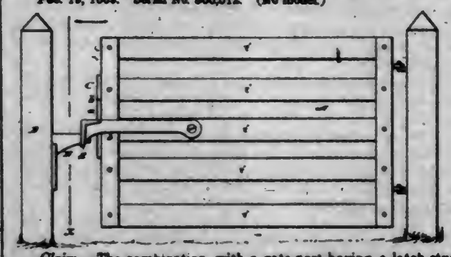


in commutator-brushes relatively adjustable around the commutator to vary their relative potentials, and consequently to vary the inverse current in said shunt-coil, and an automatic regulator responsive to changes in the external circuit, connected to said brushes to effect such relative adjustment thereof in the direction to vary the current in said shunt-coil proportionally to and in compensation for the changes in the external circuit.

4. In a dynamo, the combination, with the commutator and main collecting-brushes, of the field-magnet wound with a series coil in the main circuit and with an inversely-connected shunt-coil joined at one terminal to one of the main collecting-brushes, an auxiliary brush to which its other terminal is connected, said brushes adjustable relatively around the commutator to vary their relative potentials, and consequently to vary the inverse current in said shunt-coil, and an automatic regulator responsive to changes in the external circuit, connected to said brushes to effect such relative adjustment thereof in the direction to vary the current in said shunt-coil proportionally to and in compensation for the changes in the external circuit.

5. In a dynamo, the combination, with the commutator and main collecting-brushes, of the field-magnet wound with a series coil in the main circuit and with an inversely-connected shunt-coil joined at one terminal to one of the main collecting-brushes, and an adjustable auxiliary brush to which its other terminal is connected, and an automatic regulator responsive to changes in the external circuit, connected to said auxiliary brush to adjust the same around the commutator toward or from said main brush, to vary the current in said shunt-coil proportionally to and in compensation for the changes in the external circuit.

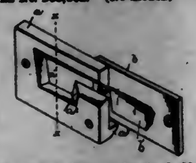
406,495. GATE-LATCH. JOHN J. WRIGHT, Bremen, Ind. Filed Feb. 19, 1889. Serial No. 300,512. (No model.)



Claim.—The combination, with a gate-post having a latch-stud, of the gate having the plates C, secured to the forward vertical rail thereof, and having the cut-out portion *a* and shoulders *b*, to form upper and lower stops, and the gravitating latch composed of the parallel arms pivoted at their inner ends to the opposite sides of the gate, and the integral latch-bars at their opposite ends having a central notch, as shown, and inclined on its lower edge in opposite directions

from said notch and terminating in handle portions, substantially as specified.

406,496. BOOK-CASE. ROBERT YAGER, Ann Arbor, Mich. Filed Aug. 27, 1888. Serial No. 283,882. (No model.)



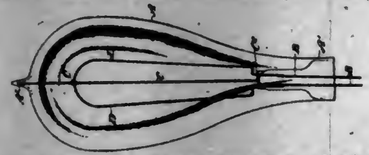
Claim.—A portable or knockdown book-shelf consisting of the end uprights A, having irons *a*, provided with dovetailed recesses *a'*, and horizontal dovetailed slots a^2 leading thereto, in combination with shelves B, having the dovetailed tenon-irons *b'*, said shelves being adapted to rest upon the ledges or flanges a^3 on the irons *a*, substantially as described.

406,497. HAME-FASTENER. LEE ANDERSON, Paris, Tex., assignor of two-thirds to Thomas Broad and John Martin, same place. Filed Mar. 20, 1889. Serial No. 303,960. (No model.)



Claim.—In a hame-fastener, the combination, with the casting A, having the longitudinal rectangular opening *a*, the opening *a'* on the under side thereof, the depending cheeks *b*, provided with the curved edges *b'*, the hook *f'*, and the guard F at the forward end of said casting, of the rectangular bar B, toothed upon its under side, passing through the opening *a* and provided with the hook *f* at its rear end, and the stop B', the locking-dog C, pivoted upon the pivot b^3, between the cheeks *b*, and provided with the shoulders *c'*, having the curved edges c^2 abutting against the curved edges *b'*, the nose c^3, engaging the teeth of the bar B, the forwardly-projecting finger-piece E, and the rearwardly-projecting shank *c*, and the coiled spring D, located between the shank *c* and the partition *d'* of casting A, substantially as described.

406,498. INCANDESCENT LAMP. CHARLES A. RACKSTROW, New York, N. Y. Filed Mar. 20, 1889. Serial No. 304,782. (No model.)



Claim.—1. In combination with the filament of an electric lamp, an extraneous support for the same, said support being fast to the lamp at one end and abutting loosely against the lamp at the other, substantially as described.

2. In combination with the filament of an electric lamp, a fine rib fast at the base of the same and abutting loosely between the sides of the exhaust-seal, substantially as described.

3. In combination with the filament of an incandescent electric lamp, a rib fastened to the base of said lamp and abutting loosely between the sides of the seal thereof, said rib being provided with an aperture through which said filament is adapted to pass, substantially as described.

4. In combination with the glass globe and filament of an incandescent lamp, a glass rib spun from the base of the globe and abutting loosely within the seal thereof, substantially as described.

5. In an incandescent electric lamp, a rib attached to the base thereof abutting between the sides of the seal of the same and provided with an aperture, in combination with a filament passing through said aperture, and a conducting material inserted in said aperture, substantially as described.

6. In an incandescent electric lamp, a support attached to the base thereof and provided with an aperture, in combination with a filament passing through said aperture, and a conducting material inserted into said aperture, substantially as described.

406,499. SPRING-SCALE. EDWARD F. BERGMAN, Frankfort, assignor of one-half to John R. Stack, Ilion, N. Y. Filed Oct. 26, 1888. Serial No. 289,362. (No model.)

Claim.—1. The combination, with a weight-support and a spring

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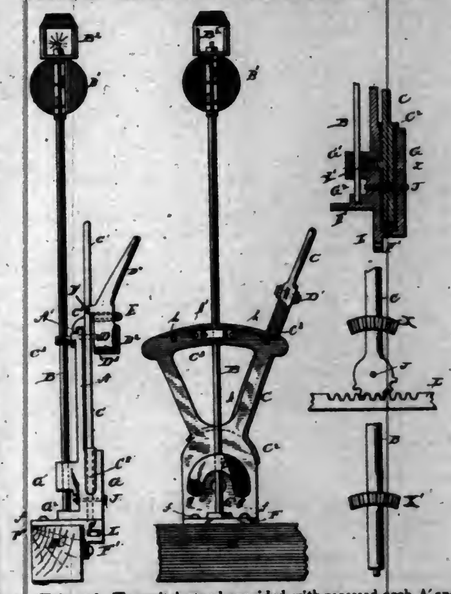
having opposite legs suitably connected to the weight-support, of separate supports secured to the opposite legs of said spring, and an indicator-finger pivoted to one support and connected to the other support by a link pivoted to said support and pivoted to the indicator-finger at a leverage with its point of support, substantially as and for the purpose set forth.

2. The combination of a suspension-support, a spring, a weight-support connected to the spring, a scale or dial, an oscillating indicator-finger, and an adjustable connection to said indicator-finger for rocking the same and indicating the weight applied to the weight-support, substantially as and for the purpose specified.

3. The combination of a U-shaped spring, a weight-support, and connections or links connecting the weight-support to the opposite legs or extremities of the spring, with a scale, an indicator-finger rocked over said scale, and lugs or supports secured to opposite legs of said spring and pivoted to separate points on the indicator-finger, one of which lugs or supports is adjustable for adjusting the indicator-finger, substantially as and for the purpose set forth.

4. In a spring-scale, the combination of a weight-support, a spring having opposite legs suitably connected to the weight-support, an indicator-finger, an adjustable support secured to one leg of said spring and to the indicator-finger, and a link pivotally supported upon the opposite leg of the spring and pivoted to the indicator-finger, substantially as and for the purpose described.

406,500. HIGH-SIGNAL SWITCH-STAND. NATHANIEL W. BOYD, Stockton, Pa. Filed Feb. 18, 1889. Serial No. 300,357. (No model.)

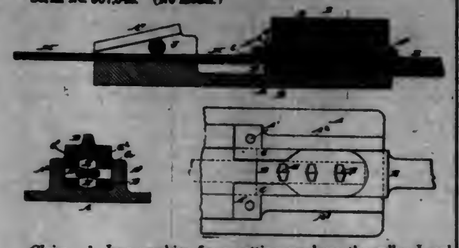


Claim.—1. The switch-stand provided with recessed arch A' and with flanges F and F', adapted to embrace the cross-tie K, in combination with the lever C, pivoted to the stand at J and provided with the arm C^3, adapted to hook onto the arch of the stand, and with the gravity-pawl D, pivoted to the said lever above said arm and provided with the interlocking tenon D^3, adapted to enter by gravity and register with holes *h* in the arch of the stand, and thus to lock the lever at either end of its throw, substantially as and for the purpose set forth.

2. The switch-stand formed with base adapted to rest on a single cross-tie and having the signal-shaft B journaled in abutments on the same, in combination with the operating-lever C, intergeared with said shaft by a segmental gear-connection, and with the gravity-pawl D, pivoted to the lever and provided with the interlocking tenon D^3, and extension, so that both lever and pawl-handle may be grasped instantly

with the same hand, said lever being connected to work along the side of the arch-head of said stand, substantially as and for the purposes set forth.

406,501. APPARATUS FOR UPSETTING EYE-BARS. WATSON COOKE and DANIEL CARLOUGH, Paterson, N. J. Filed Apr. 17, 1888. Serial No. 307,543. (No model.)

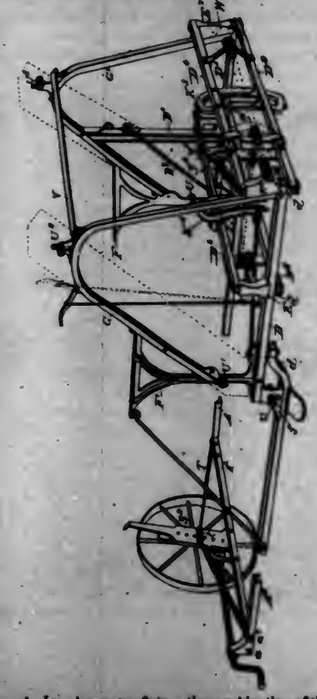


Claim.—1. In a machine for upsetting eye-bars, the roller J and internal wings A^4, in combination with the top piece or platen D, bed A, and ram R, arranged to serve as herein specified.

2. In a machine for upsetting eye-bars, the bed A, with its side ledges A^3 A^3, the platen D, having two longitudinal grooves provided with two dovetail ridges G' and G^2, the top slide G and bottom slide B, exchangeable cheeks C, the reciprocating ram R, and means for holding the bar against the action of the ram, all combined and arranged to serve as herein specified.

3. In a machine for upsetting eye-bars, the ram R, slides B and G, side ledges A^3 A^3, and cheeks C, in combination with each other and with anti-friction rollers E, in contact with the hot metal, arranged to receive directly the flatwise-distending pressure of the bar in the act of upsetting, substantially as herein specified.

406,502. SELF-MENDING HARVESTER. ORVILLE COOLEY, EDWARD PRIDMORE, and HOMER M. JOHNSTON, Batavia, N. Y., assignors to the Johnston Harvester Company, same place. Filed June 9, 1887. Serial No. 240,529. (No model.) Patented in Canada Jan. 27, 1887, No. 27,294, and in England Apr. 30, 1887, No. 6,364.



Claim.—1. In a harvester-frame, the combination of the metallic quadrangular three-faced channeled bars, the intervening securing-plate having the central bolt-hole and face-depression on one side corresponding with the face of one bar and depressions on its opposite face to receive the edge of the flanges forming the side squares of the other bar, with ribs that project over and impinge against the sides of the same for the prevention of lateral displacement, and the securing-bolts made to pass through the bar and plate for holding the parts in an interlocked position, substantially as described.

2. The combination of the harvester gear-frame, the seat-plank standard, and the bent channel-steel elevator-supporting bar, the outer end of which bar rests upon the outer bar of the gear-frame, while the inner end of the said bent bar abuts against and is secured to the seat-plank standard, substantially as described and set forth.

3. In combination with a harvester provided with a grain-elevator, the metallic quadrangular three-faced channeled bar gear-frame, rectangular in form, with two straight longitudinal channeled bars, one over the other, upon each side of the frame, the intervening bar-supporting posts placed at the ends of the side bars, the posts having their upper ends grooved for receiving the lower edges of the flanges forming the sides of the channel-bar, while the reverse end of the post is recessed so as to form lips that shut over upon either side of the face of the lower bar, against which it impinges, and the front and rear cross-tie bars made from quadrangular three-faced channel steel, the parts being firmly united by bolts passing through the faces of the bars and lengthwise of the posts, substantially as described and set forth.

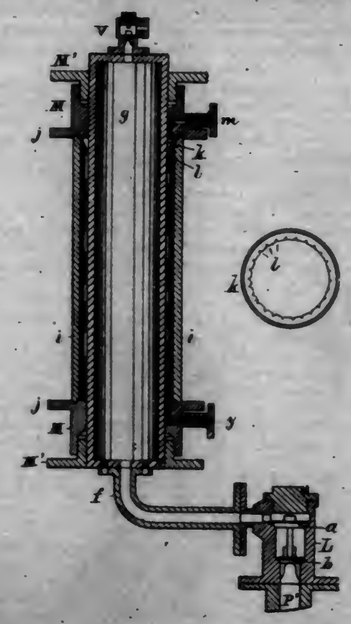
4. The combination, in a channel-steel harvester-frame formed in the manner shown, of the bars D^2 D^2, post Y', having the channeled and grooved ends corresponding with the face of the bars against which the ends of the posts abut, the diagonal arm Y^2, for supporting the inner end of the finger-bar, the post-securing bolt, the curved extension Y, and bar D', all arranged substantially as described, and for the purpose set forth.

5. The combination, with the tilting mechanism and the channel-steel frame-work of a harvester, of the brace-rod D^4, the straight side bar D^2, the vertical post D^4, the bar D', and the bar G', bent in the form shown, all the parts arranged and operating substantially as described and set forth.

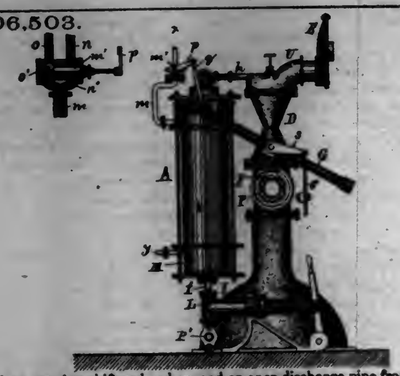
406,503. APPARATUS FOR VAPORIZING OIL. HERBERT CORTHELL, Newark, N. J. Filed Nov. 1, 1887. Serial No. 253,951. (No model.)

Claim.—1. In a hydrocarbon-vaporizing apparatus, the combination, with the generator, of a contiguous receptacle for retaining hot and cold fluid in contact with the generator, pipes for supplying hot and cold fluid to the said receptacle, valves with passages for alternately connecting such pipes with the receptacle, and a gas-receiver with a movable part arranged and operated to shift such valves, as and for the purpose set forth.

2. In a hydrocarbon-vaporizing apparatus, the combination, with the generator, of a contiguous receptacle for retaining hot and cold fluid in contact with the generator, pipes for supplying hot and cold fluid to the said receptacle, a gas-receiver with a movable part arranged



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and operated to shift such valves, and an open discharge-pipe from the receptacle, as and for the purpose set forth.

3. In a hydrocarbon-vaporizing apparatus, the combination, with a cylindrical generator, of a receptacle for hot and cold fluid surrounding the same, a distributer inserted in the receptacle with notches adjacent to the shell of the generator, a discharge-pipe from such receptacle, and pipes for supplying hot and cold fluid to such receptacle, as and for the purpose set forth.

4. In a hydrocarbon-vaporizing apparatus, the combination, with a cylindrical generator *g*, of the cylindrical receptacle *i* surrounding a portion of the same, stuffing-boxes applied to the ends of the generator and clamped upon the ends of the receptacle, and pipes for supplying hot and cold fluid to the receptacle, as and for the purpose set forth.

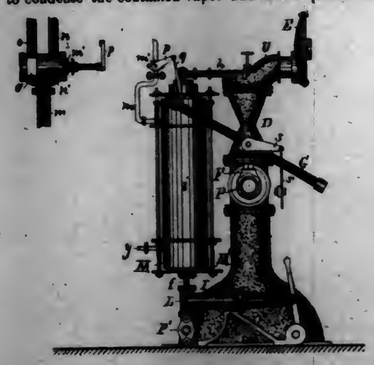
5. In a hydrocarbon-vaporizing apparatus, the combination, with a cylindrical generator *g*, of the cylindrical receptacle *i*, surrounding a portion of the same, stuffing-boxes M, applied to the generator, with flanges *j*, grooved to fit the ends of the receptacle *i*, glands M', fitted to the stuffing-boxes, rods R', with nuts applied to the flanges of the glands, and springs S', applied to the rods to press the flanges *j* elastically together upon the receptacle *i*, and pipes to supply hot and cold fluid to the receptacle, as and for the purpose set forth.

6. In a hydrocarbon-vaporizing apparatus, the combination, with the generator, of a contiguous receptacle for retaining hot and cold fluid in contact with the generator, pipes for supplying hot and cold fluid to the said receptacle, valves with passages for alternately connecting such pipes with the receptacle, a gas-receiver with a movable part arranged and operated to shift such valves, a generator supply-pipe connected with the reservoir of hydrocarbon fluid, a valve-chamber inserted in such supply-pipe, and a pump connected with such valve-chamber to force the hydrocarbon fluid into the generator when starting the apparatus, as and for the purpose set forth.

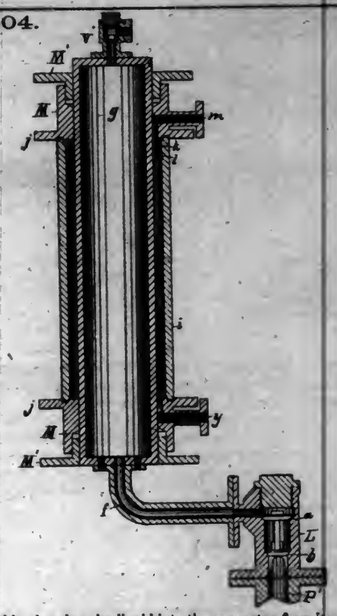
406,504. PROCESS OF VAPORIZING OIL. HERBERT COTTRELL, Newark, N. J. Filed Dec. 22, 1887. Serial No. 258,664. (No model.)

Claim.—1. In the art of generating vapor from a hydrocarbon liquid, the method of drawing the liquid intermittently into the generator, which consists in intermittently heating and cooling the generator, and forming a partial vacuum therein, to lift the liquid from its reservoir, substantially as herein set forth.

2. The process of generating vapor from a hydrocarbon liquid, which consists, first, in supplying the liquid to the generator; secondly, heating the generator to vaporize the liquid; thirdly, cooling the generator to condense the contained vapor and form a partial vacuum,



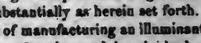
406,504.



and, fourthly, drawing the liquid into the generator from its reservoir by such vacuum, substantially as herein set forth.

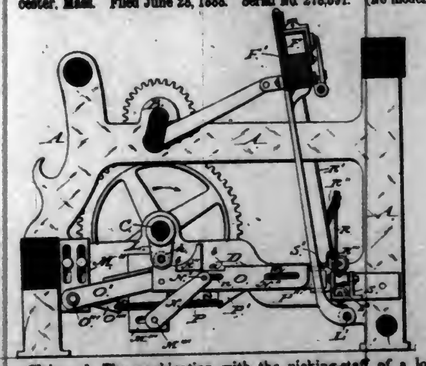
3. The process of manufacturing an illuminant with hydrocarbon vapor, which consists, first, in supplying the hydrocarbon fluid to the generator; secondly, heating the same to vaporize the liquid; thirdly, discharging the vapor from the generator against a regulated pressure, fourthly, cooling the generator when such pressure rises too high, to produce a partial vacuum, and, fifthly, drawing the liquid into the generator from its reservoir by such vacuum, substantially as herein set forth.

406,505. PROCESS OF FINISHING PAPER. ZENAS CRANE, Jr., Dalton, Mass. Filed Mar. 19, 1888. Serial No. 267,951. (No specimens.)



Claim.—The hereinbefore-described process of finishing laid paper, which consists in piling two or more sheets of the paper as it is made by the machine in alternate positions with respect to the lines of said paper and submitting the pile to pressure.

406,506. SHUTTLE-MOTION FOR LOOMS. JAMES T. CREE, Worcester, Mass. Filed June 23, 1888. Serial No. 278,391. (No model.)



Claim.—1. The combination, with the picking-staff of a loom and a rotating shaft carrying a tappet-arm, of a toggle-jointed lever arranged in position to be struck by the said tappet-arm in its rotation, and devices intermediate the free end of said lever and the picking-staff for actuating the latter to throw the shuttle.

2. The combination, with the picking-staff of a loom and a rotating shaft carrying a tappet-arm, of a toggle-jointed lever arranged in position to be struck by the said tappet-arm in its rotation, a shoe

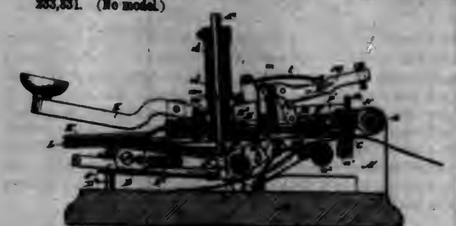
carried at the free end of the said lever, a lever carrying a roller in contact with the inclined side of said shoe, and a connection from the said lever to the picking-staff.

3. The combination, with the picking-staff of a loom and a rotating shaft carrying a tappet-arm, of a toggle-jointed lever arranged in position to be struck by the said tappet-arm in its rotation, a sliding piece mounted on one of the members of said lever, an arm jointed to said sliding piece and forming therewith a toggle-connection the angle of which is less than that between the parts of the carrying-lever, and a connection intermediate the said sliding part and the picking-staff for actuating the latter to throw the shuttle.

4. The combination, with the picking-staff and the shaft C, having the arm L, carrying the roller A, of the treadle O O', jointed, as described, the sliding part P", having the shoe N" and carried by the part O, the arm N, having a toggle-connection with said sliding part, the spring P, and devices intermediate the part P" and picking-staff for actuating the latter to throw the shuttle.

5. The combination, with the picking-staff and the shaft C, having the arm L, carrying the roller A, of the treadle O O', jointed, as described, the sliding part P", having the shoe N" and carried by the part O, the arm N, having the toggle-connection with the said sliding part, the spring P, the shoe S', the bracket S and its roller, the arm R and its roller, and the connection R".

406,507. TYPE-WRITING MACHINE. JOHN H. DAY, New York, and CHARLES STOFFORD, Brooklyn, assignors to John H. Day and George Lester, both of Richmond Hill, N. Y. Filed Apr. 6, 1887. Serial No. 233,531. (No model.)



Claim.—1. In a type-writing machine, the combination, substantially as described, of a longitudinally-movable printing-carriage, a series of type carried thereby and movable independently thereof, a printing-lever for effecting impressions from the type, a lever for determining the position of the series of type with reference to the printing-lever, a sleeve or collar coupling the two levers, whereby the first-named lever may be operated by the second lever, and an escapement or feeding device and actuating mechanism therefor, substantially such as described, for advancing said carriage longitudinally after each impression.

2. The combination, in a type-writer, of an index-plate, a series of type, an index-finger for determining the position of the type through the instrumentality of the index-plate, a printing-lever, a pin engaged by the printing-lever for effecting impressions from the type, an escapement device, the vertically-movable pin d^3, operating the escapement device, and a vertically-movable collar coupling said pin with the printing-lever.

3. The combination, in a type-writer, of a longitudinally-movable carriage, the type carried thereby and movable independently thereof, a printing-lever for effecting impressions from the type, an escapement device for the carriage governing its longitudinal movement, a detachable mechanical connection consisting, essentially, of the hook upon the central pin d^3 and the movable lever *d*, between the escapement device and the carriage, and a tension device for impelling the carriage in one direction, placed under stress by the forcible movement of the carriage in the opposite direction, substantially as described.

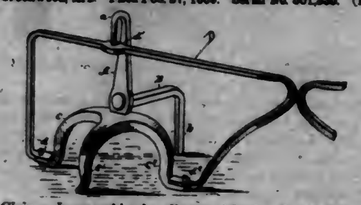
4. In a type-writer, the combination, with the movable carriage and the escapement-bar, of pawls engaging the teeth of said bar, and a yielding spring normally forcing the pawls toward and holding them in engagement with the bar, but permitting them to be moved at right angles to the length of the bar and then thrust out of engagement therewith upon the backward movement of the carriage, substantially as described.

5. In a type-writing instrument, the combination, with the movable carriage and the levers for effecting the impressions from the type, of an escapement device, a pin moving with the levers normally engaging the support of the escapement device, and means, substantially as described, for withdrawing the support from engagement with said pin.

6. In a type-writing instrument, the combination of the adjusting device consisting of the lever P, having the wedge-shaped extension, the toothed plate G, the lever M, for effecting impressions from the type, the bell-crank lever p^3, with which the adjusting-lever is connected, and a yielding connection between said bell-crank lever and the lever M.

7. In a type-writing instrument, the combination of an index-plate, a type-carrying plate, a printing-lever, a lever for determining the position of the type, said lever moving in a horizontal direction, and also having a vertical movement in any of its horizontal positions, a mechanical connection between the printing-lever and the last-named lever, consisting of a sleeve or collar, and an adjusting-lever engaging the type-carrying plate.

406,508. COMBINED ANDIRON AND FENDER. SAMUEL DUNN, Greenwood, Ark. Filed Feb. 27, 1889. Serial No. 301,336. (No model.)



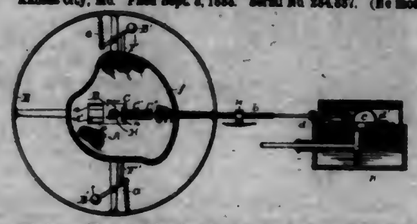
Claim.—In a combined andiron and fender, the combination, with the upright having its upper end bent downwardly in hook form, and the supporting-feet having their ends turned upwardly and terminating in hook-shaped projections, of a fender or bow provided with an aperture near the center of its length to receive the bent end of the upright, and with similar apertures in its ends to receive the projections of the supporting-feet, substantially as and for the purposes set forth.

406,509. DOOR-CHECK. WILLIAM H. FOUTS, Keokuk, Iowa. Filed Apr. 12, 1889. Serial No. 306,923. (No model.)



Claim.—The combination, with the part A, formed with recess *b*, and the base B, secured to said part A by means of the screw *d*, serving as a swivel-connection between said parts, of the two steel ribbons D D', secured to the door, with their adjacent ends curved and underlapped, substantially as shown and described.

406,510. STEAM-ENGINE GOVERNOR. FREMONT R. GAYLORD, Kansas City, Mo. Filed Sept. 2, 1888. Serial No. 284,887. (No model.)

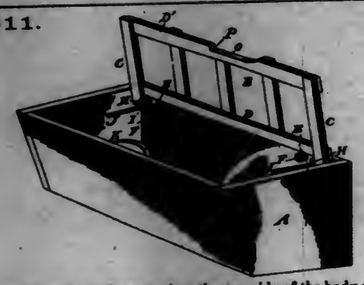


Claim.—The combination of slide-block D with main shaft H, the said block revolving with said shaft, plate A, having cam-grooves *f*, and arranged to slide loosely on said block, valve-operating rod *b*, moved by connection with said plate, screw C, having one end threaded into a socket in plate A, pinion C, mounted on the free end of this screw and located in socket 16 in said block D, toothed rack E, pivoted at *g* and meshing with said pinion, fly-wheel B, mounted on the main shaft adjacent to plate A, weights B', pivoted to the arms of said fly-wheel, opposing springs *a*, and rods F F', which connect said weights to the toothed rack, substantially as specified.

406,511. FEED-TROUGH. ELIAS GRAHAM and JAMES DOOLITTLE, Hazel Dell, Ill. Filed Mar. 22, 1889. Serial No. 304,263. (No model.)

Claim.—1. In a feed-trough, the combination, with the body A, of the rack having its timbers C extended beyond the rear strip D, the staples E, secured to the rear edge of said strip, the eyes G, on the inner face of the rear side of the trough and engaging said staples, the pins I, arranged lengthwise of the body and secured in the extended ends of the timber C, and the coiled springs H H, having their convolutes around said pins, with one end secured to the strip D and

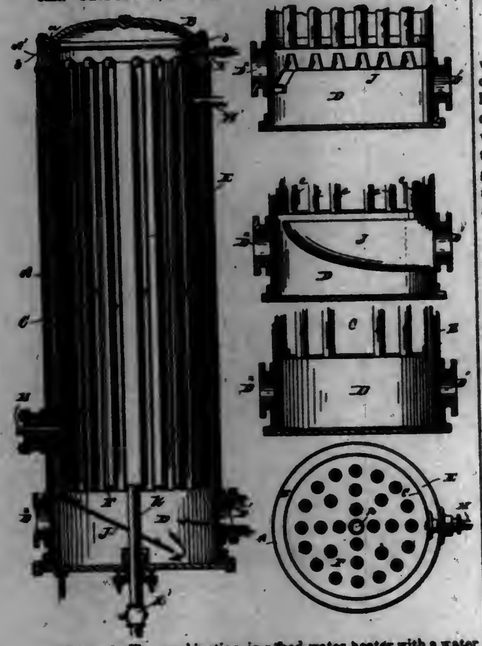
406,511.



the other end adapted to bear against the rear side of the body of the trough, substantially as and for the purpose specified.

2. The combination, with the body of the trough and the hinged rack, the front cross-bar of which is formed with recess O and shoulder P, of the latch K, pivoted to the front wall of the body within the same and having near its upper end a notch L, and the spring-rod M, one end secured within the lower end of the latch and the other end retained in the loop N, substantially as shown and described.

406,512. FEED-WATER HEATER. JOHN J. HOPPE, Springfield, Ohio. Filed Dec. 19, 1887. Serial No. 258,363. (No model.)



Claim.—1. The combination, in a feed-water heater with a water space or chamber, of a steam-supply chamber extending entirely under said water-space and provided with contracted outlet and inlet openings, heating-tubes opening in said steam-supply chamber closed at one end and extending longitudinally into said water-space, whereby steam is caused to enter said heating-tubes from said supply-chamber without the aid of circulating-tubes, substantially as specified.

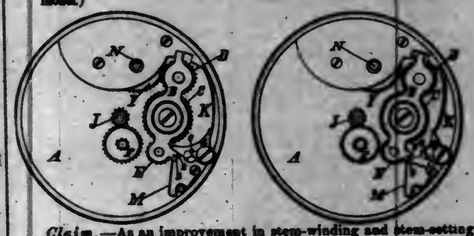
2. The combination, in a feed-water heater with a water space or chamber, of a steam-supply chamber extending entirely under said water-space and provided with contracted outlet and inlet openings, heating-tubes leading into said supply-chamber closed at one end and extending longitudinally through said water-space, and a deflector in said supply-chamber to further retard the passage of the steam through the same and cause it to enter said heating-tubes, substantially as specified.

3. The combination, with an outer casing having an inner casing secured therein, so as to form a heating passage or chamber between the same, a supply-chamber in the lower portion of said outer casing, and below the bottom of said inner casing, the vertical heating-tubes extending into said inner casing, said tubes being closed at the top and open at the bottom in the said supply-chamber, substantially as and for the purpose set forth.

4. The combination, with an outer and inner casing, the supply-chamber in the lower portion of said outer casing, the vertical heating-tubes leading from said supply-chamber in said inner casing, said tubes being of uniform external diameter and closed at the top, as described, an inlet and outlet pipe connected to said inner chamber, a blow-off pipe above said outlet-pipe, a discharge-pipe leading from the bottom of said inner casing and stuffing-boxes around said supply and discharge pipe where they pass through said outer casing substantially as and for the purpose set forth.

5. The combination, with the water-space C, of a supply-chamber D, the heating-tubes *c* closed at one end and extending into the water-space, and the deflector J, substantially as and for the purpose set forth.

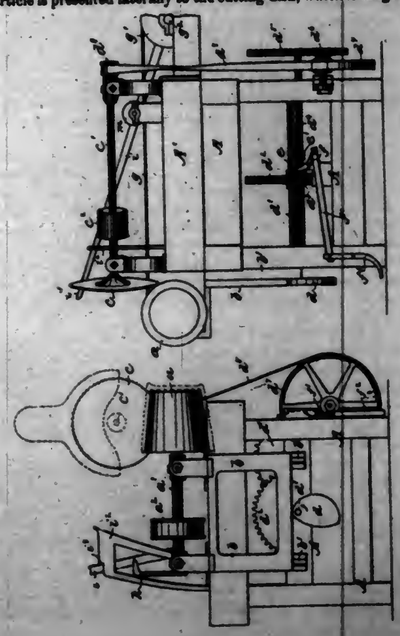
406,513. STEM WINDING AND SETTING WATCH. GUSTAF F. JOHNSON, Aurora, Ill. Filed Sept. 12, 1887. Serial No. 249,488. (No model.)



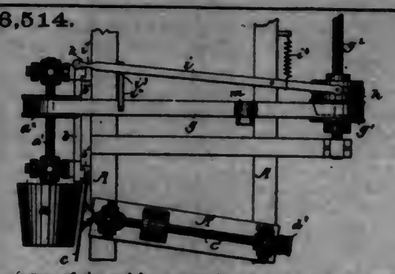
Claim.—As an improvement in stem-winding and stem-setting watches, the lever A, actuated by the end-thrust of the stem-key, in combination with the lock-lever G and the swinging yoke B, said lock-lever and yoke being so formed at the point of their contact as to cause the yoke with its attached wheels to be locked in engagement with the dial-wheels when the lock-lever is restrained in its movements to a certain limit, but will permit the same to be automatically disengaged therefrom when the lock-lever is allowed additional movement, as when the watch is removed from the case, all substantially as shown and described.

406,514. TURNING-MACHINE. FRANK E. KEITH, Peterborough, N. H., assignor of one-half to The Amoskeag Indurated Fibre Ware Company, same place. Filed Aug. 20, 1888. Serial No. 283,168. (No model.)

Claim.—1. The combination of a cutting-disk having peripheral teeth, the cutting-edges of which are in the plane of one face of the cutter and at the ends of the said teeth, with a mandrel that supports and rotates the article to be turned, and feed-carriage for said mandrel having guides at right angles to the axis of said mandrel, whereby the article is presented laterally to the cutting-disk, which is tangential



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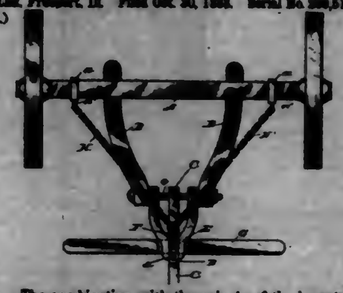


to the surface of the article supported on the mandrel, substantially as described.

2. The mandrel and its supporting and feeding carriage, combined with the cutter and train of wheel-work actuated by the cutter-shaft, one of the shafts of which train is provided with a cam which actuates the carriage, and a clutch by which portions of said train of wheel-work are connected to cause the feed movement of the carriage, said clutch being constructed, as described, to be disengaged by the return movement of the carriage, substantially as described.

3. The combination of the cutter with the mandrel for supporting and rotating the article to be turned, and a feed-carriage for said mandrel, with an actuating-shaft for said mandrel and clutch thereon, and clutch-shipper operated by said carriage, substantially as described.

406,515. WAGON-TONGUE-ATTACHING DEVICE. ALBERT KOEHLER, Prospect, Ill. Filed Oct. 20, 1888. Serial No. 288,510. (No model.)



Claim.—The combination, with the axle A, of the bounds B and tongue C, pivotally secured thereto, the slotted plate D, recessed upon its upper surface and secured to the lower surface of the tongue in front of the tongue-pivot, the bolt E, passing through the slot with its head resting in the recess, the doubletree-clevis F, supported by the bolt, and the chain H, fastened at its middle to the clevis and having its ends secured to the axle near the ends thereof, substantially as set forth.

406,516. FENCE-MAKING MACHINE. THOMAS L. ARMSTRONG and EDWARD CLARK, Oakland, and GEORGE COTTRELL, San Francisco, assignors to the Union Fence Manufacturing Company, San Francisco, Cal. Filed July 6, 1887. Serial No. 243,005. (No model.)

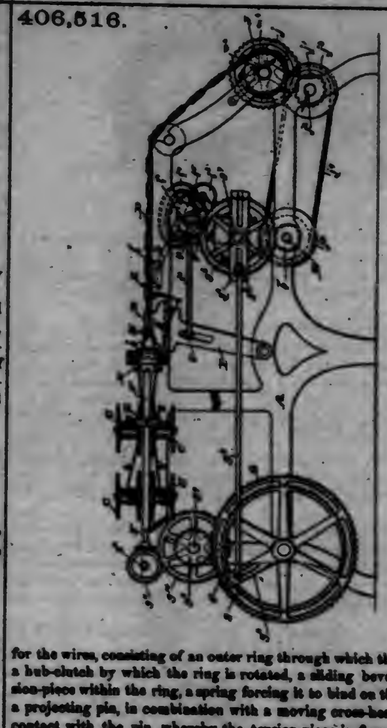
Claim.—1. In a fence-making machine, the spools carrying the wires and the twisting-spindles by which the spools are carried, in combination with a pawl and ratchet, power mechanism for operating the pawl and ratchet, and gearing by which the power of the ratchet is transmitted to the spindles, whereby a limited motion of the ratchet is multiplied to effect the necessary number of turns of the spindles to twist the wires, substantially as herein described.

2. In a fence-making machine, the spools carrying the wires and the twisting-spindles by which the spools are carried, in combination with the means for rotating the spindles, consisting of a power-shaft having a crank-wheel, a swinging pawl, an adjustable connecting-rod between the pawl and the crank-wheel, a ratchet with which the pawl engages, and gearing between the ratchet and the rear ends of the spindles, substantially as described.

3. In a fence-making machine, a twister-head and tension-clutch for the wires, consisting of an outer ring through which the wires pass, a hub-clutch by which it is rotated, and a sliding tension-piece within the ring binding on the wires normally and adapted by its movement to relieve them, substantially as herein described.

4. In a fence-making machine, a twister-head and tension-clutch for the wires, consisting of an outer ring through which the wires pass, a hub-clutch by which the ring is rotated, a sliding bevel-ended tension-piece within the ring, and a spring causing the tension-piece to bind on the wires, substantially as herein described.

5. In a fence-making machine, a twister-head and tension-clutch



for the wires, consisting of an outer ring through which the wires pass, a hub-clutch by which the ring is rotated, a sliding bevel-ended tension-piece within the ring, a spring forcing it to bind on the wires, and a projecting pin, in combination with a moving cross-head coming in contact with the pin, whereby the tension-piece is forced to release the wires, substantially as herein described.

6. In a fence-making machine, the twister-head and tension-clutch consisting of the outer ring, the hub-clutch, and the sliding spring and actuated tension-piece within the outer ring, in combination with the rotating spindle fitted to the hub-clutch, whereby the twister-head is rotated, substantially as described.

7. In a fence-making machine, the movable cross-head H, before which the slat is inserted and forced and held against the previous twist, in combination with the means for operating said cross-head, comprising the rack and segmental gear, the swinging arm or lever, the cam, and the connecting-rod, substantially as herein described.

8. In a fence-making machine, the combination of rotating spindles, spools for carrying wire, twister-heads and tension-clutches comprising outer rings, hub-clutches and tension-pieces within said outer rings, and a sliding cross-head for forcing and holding the slat against the previous twist while the wires are twisting and releasing the clutch, substantially as described.

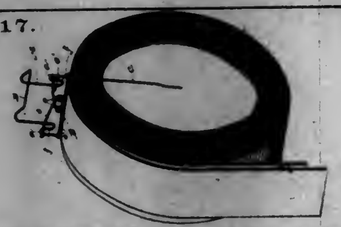
9. In a fence-making machine, the reel consisting of a head fixed on the drive-shaft, a head fixed on a removable shaft, one end of which is mounted in a bearing from which it can be removed and the other end is loosely fitted in a square socket in the first head, a pivoted stop for holding the removable shaft in place, and removable pipes fitted on lugs on the two heads, substantially as described.

10. In a fence-making machine, the reel consisting of the independent heads mounted on separate shafts, one of which is removable, and the pipes fitted on lugs on one head and having slots by which they are fitted on lugs on the other head, and fixed guides on said head by which the pipes are held to place, the wheels being arranged so that the reel may be readily taken to pieces and put together again, substantially as described.

406,517. CLASP FOR RIBBON-ROLLS. DANIEL H. DARBY and GEORGE B. GRIFFENBERG, Meadon, Ill. Filed Feb. 6, 1889. Serial No. 298,881. (No model.)



406,517.



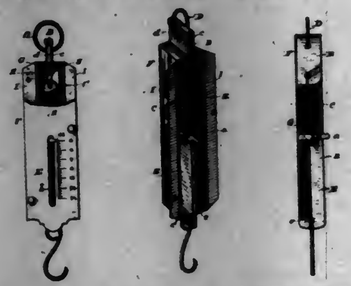
Claim.—1. In a holder for rolled material, the combination, with the two spring-arms and connecting-frame, of the presser-bar mounted and adapted to slide on said arms, and the springs for holding said bar depressed against the circumference of the roll, substantially as described.

2. In a holder for rolled material, the combination, with the two arms and connecting-frame, of the presser-bar mounted and adapted to slide on said arms, and the springs, one of the ends of which engages shoulders or projections on the frame, and the opposite ends of which engage the presser-bar to hold the same depressed, substantially as described.

3. In a ribbon-holder, the combination, with the main frame formed with the depending arms and the bends or shoulders *a*, of the presser-bar and the springs resting thereon for holding the same depressed and engaging the said bends or shoulders, substantially as described.

4. In a ribbon-holder, the combination, with the main frame formed of a single piece of spring-wire, having the depending arms with the inwardly-turned ends, the shoulders *a*, and the suspension-hook, of the presser-bar adapted to slide on said arms, and the springs resting thereon and engaging said shoulders to hold the bar depressed.

406,518. SPRING-SCALE. CHARLES FORSCHNER, New York, N. Y. Filed Feb. 11, 1889. Serial No. 299,366. (No model.)



Claim.—1. A casing for spring-scales, composed of a single piece of sheet metal which is bent up to form the back, side walls, and front flanges of the casing, and which is further formed with a closed top and with a closed bottom, substantially as set forth.

2. A casing for spring-scales, comprising in a single piece of sheet metal a back, side walls, front flanges, top wings, constituting the closed top of the casing, and bottom wings formed on the side walls of the casing and projecting at right angles thereto, said bottom wings being formed on their outer edges so as to constitute an open slot for the passage of the sliding rod of the spring-scale, substantially as set forth.

3. A casing for spring-scales, composed of a single piece of sheet metal and formed at its upper portion with wings projecting from the side walls of the casing, said wings being bent at right angles to the side walls so as to constitute a top for the casing, and said wings being further bent upwardly alongside of the suspending-bar of the scale, and one of said wings being bent over the top of said suspending-bar and down upon the other wing, substantially as set forth.

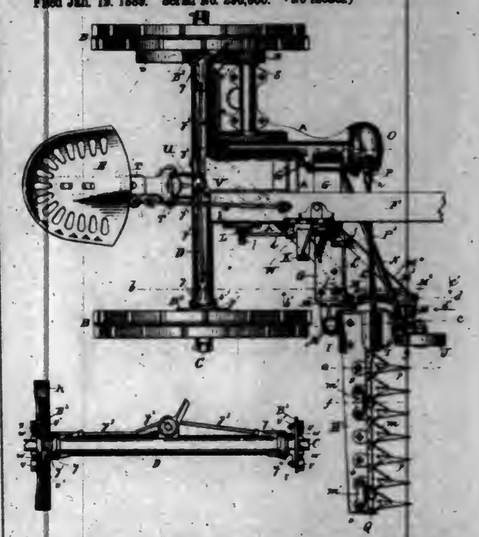
4. In a spring-scale, a suspending-bar, a sliding rod, and a coiled spring connecting said suspending-bar and said sliding rod, in combination with a casing inclosing said bar, rod, and spring, said casing being formed of a single piece of sheet metal bent to form the back, side walls, and front flanges of the casing, and being further bent to constitute a bottom for the casing, having a notch through which said sliding rod passes, and being formed at its upper portion with wings, which are bent to constitute the top of the casing, and which extend alongside the suspending-bar, one of the said upper wings being bent over the top of the suspending-bar and down against the other upwardly-extending wing, the dial-plate of the scale secured to the front flanges of the casing, and the suspending-loop passing through the upper wings of the casing and through the suspending-bar, substantially as set forth.

406,519. PROCESS OF TRANSFERRING PRINTS, &c. JOHN J. FOX, Flushing, N. Y. Filed Sept. 1, 1888. Serial No. 284,301. (No specimens.)

Claim.—1. The process of transferring a print of any description to an enameled oil-painted surface by preparing the surface by, first, rubbing the enameled surface with soap and water; second, applying turpentine thereto; third, applying nine parts of alcohol to one part of saturated alcoholic solution of camphor, substantially as described.

2. The process of transferring a print of any description to an enameled oil-painted surface by, first, rubbing the surface with soap and water; second, applying turpentine thereto; third, applying nine parts of alcohol to one part of saturated alcoholic solution of camphor, placing the print to be copied on the moistened surface, the application of direct pressure thereto, then the application of heated frictional pressure, substantially as described.

406,520. MOWING-MACHINE. JOEL GARFIELD, Worcester, Mass. Filed Jan. 19, 1889. Serial No. 296,800. (No model.)



Claim.—1. In a mowing-machine, the finger-bar and inner shoe, the latter pivoted at the back side to the frame rigid with the coupling-arm and resting upon an inclined supporting slide-block mounted in the front side of said frame to support the cutters at their proper normal level, but not impeding their upward movements, in combination with said frame, a suitable holding-rod pivoted to the shoe and the frame for holding the parts in position laterally, and a hand-lever connected with the slide-block, for elevating and lowering the cutters by hand, substantially as and for the purpose set forth.

2. The inner finger-bar shoe pivoted at its back side to an angular frame secured to the pivoted coupling-arm, which is connected with the lifting-lever, in combination with said angular frame, a holding-rod connected with the main frame, pivoted to the front side of the shoe and adapted to rest on said angular frame, substantially as set forth.

3. The inner finger-bar shoe pivoted at its back side to an angular frame secured to the pivoted coupling-arm, which coupling-arm is connected with the lifting-lever, in combination with said angular frame, a holding-rod connected with the main frame, pivoted to the front side of the shoe and adapted to rest on an inclined block fitted to slide in the angular frame, and a hand-lever operatively connected with said slide-block, substantially as and for the purpose set forth.

4. The combination of the inner finger-bar, shoe I, the ball-and-socket-joint bearing M', angular frame M, secured to the pivoted coupling-arm G, holding-lever N, pivoted to the main frame and to the front side of the shoe, inclined block M^3, fitted to slide in the angular frame, connecting-rod A^3, angle-rod A', fitted to rock in bearings on coupling-arm G, connecting-rod A, spring-lever L, and means for holding the same in an adjusted position, substantially as and for the purpose set forth.

5. The combination, with the pivoted finger-bar, the inner shoe I, and holding-rod N, of the hand-lifting mechanism consisting of the inclined block M^3, fitted to slide in frame M, connecting-rod A^3, angle-rod A', fitted to rock in bearings on pivoted coupling-arm G, connecting-rod A, pivoted spring-lever L, and the fixed quadrant for holding said lever in its adjusted position, substantially as shown and specified.

6. In a mowing-machine, the combination of the angular supporting-frame M, with the finger-bar pivoted at the back side of said frame only and the front side pivoted to a holding-rod N, in turn pivoted at its opposite end to the main frame, said holding-rod, and the pitman-rod P^4, both said holding and pitman rods being arranged above the frame M, brace-bar M^4, shoe I, slide-block M^3, and its rod A^3, coming in line therewith vertically, so as to admit of the cutting apparatus being folded over onto the pole of the machine, substantially as set forth.

7. In a mowing-machine, the combination of the fingers, the finger-bar, the rigid bottom cutters or ledger-plates, and the cutter-bar guide-clasps, arranged one over the other in contact with the finger-bar and ledger-plates between the fingers and said guide-clasps, and a series of bolts, each passed vertically through said parts to clamp them all tight together, substantially as set forth.

8. In a mowing-machine, the fingers, the finger-bar, the rigid bottom cutters or ledger-plates, the cutter-bar guide-clasps arranged one over another in contact with the finger-bar and ledger-plates, between the fingers and said guide-clasps, and a series of bolts each passed vertically through said parts to clamp them all tight together, in combination with the cutter-bar fitted in a slot in the under side of the aforesaid guide-clasps and the top movable cutters or sickles fastened to the under side of said cutter-bar, substantially as and for the purpose set forth.

9. In a mowing-machine, the main driving-wheels fitted to turn on the main shaft and having hubs, each provided with an internal ratchet-gear, in combination with spring latches, one for each wheel, mounted on fixed hubs secured to the main shaft at each end thereof, (one of said hubs having a gear formed or secured thereon adapted to engage with the pinion for operating the cutting apparatus,) and a suitable foot-lever pivoted to the main-shaft sleeve and operatively connected with beveled rings adapted to engage with said spring-latches, substantially as and for the purpose set forth.

10. In a mowing-machine, the combination of the main driving-wheels fitted to turn on the main shaft and having hubs, each provided with an internal ratchet-gear, with suitable spring-pawls adapted to engage with said ratchet-gears, the pawls being fastened to short pins or studs fitted to turn in hubs secured to the main shaft, (one of said hubs having a gear formed or secured thereon adapted to engage with the pinion for operating the cutting apparatus,) said hubs and pins or studs, suitable pawls also secured to the pins or studs upon the opposite end from the spring-pawls, a beveled slide-ring fitted to slide on the main-shaft sleeve and to engage with the last-mentioned pawls, a double-arm foot-lever pivoted to said sleeve, and suitable connecting-rods for connecting the beveled rings with the hub of said foot-lever eccentric to its axis, substantially as and for the purpose set forth.

11. The combination of the seat-supporting bar having a front holding-rod pivoted thereto and to the pole or main frame of the machine, in combination with a rocking lever pivoted to the main frame, also pivoted at its rear end to the lower end of said seat-supporting bar and at its front end to a bar connected with said main frame, and the coupling-arm, whereby the weight of the rider on the seat may be utilized to counterbalance the weight of the cutting apparatus and thereby lighten the draft required in propelling the machine, substantially as set forth.

12. The combination of the jointed adjustable seat-supporting bar, with a front holding-rod pivoted thereto and to the pole or frame of the machine, a rocking lever arranged under the main shaft pivoted to the frame, preferably a little back of its center, also having an adjustable block at its rear end, to which the lower end of the seat-supporting-bar is pivoted and its front end pivoted to the coupling-arm, to which the lifting-lever is connected to lift the cutting apparatus, whereby a portion of the weight of said cutting apparatus may be counterbalanced by the weight of the rider on the seat and thus produce an easier draft, substantially as set forth.

406,521. HEATING-STOVE. CHARLES O. GRAVES, Washington, Kans. Filed Apr. 13, 1888. Serial No. 270,573. (No model.)

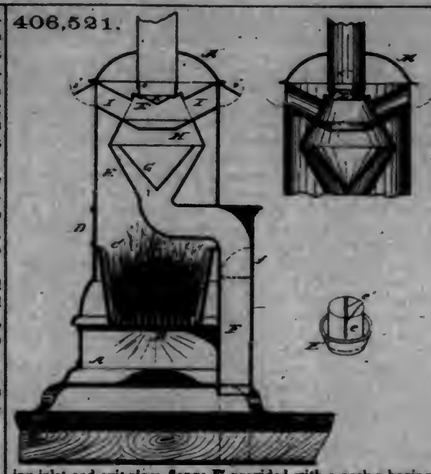
Claim.—1. The combination, with a stove, of the air-heating drum E, suspended inside of the same, having frusto-conical sides, inlet-flue F, entering the stove above the fire-pot, upwardly-inclined exit-pipes I, provided with dampers *i*, flange E', and the removable dished stop-plate K, substantially as described.

2. The combination, with a stove, of an air-heating drum E, having frusto-conical sides, a conical deflector G, suspended therein, an inwardly and downwardly inclined annular flange H, above the deflector, inlet-flue F, entering the stove above the fire-pot, and exit-pipes I, substantially as described.

3. The combination, with a stove, of an air-heating drum E, having frusto-conical sides, a conical deflector G, suspended therein, an annular flange H, above the deflector, inlet and exit flues, flange E', and stop-plate K, substantially as described.

4. The combination, with a stove, of an air-heating drum E, having inlet and exit pipes, flange E', provided with a neck *e*, having slots *e'*, and a removable plate for closing the neck, substantially as described.

406,521.



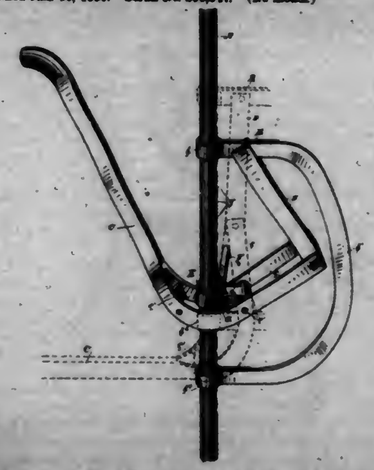
406,522. GRINDING-MILL. FRANK C. HALL, Philadelphia, Pa., assignor to William C. Stevenson, same place. Filed Nov. 1, 1888. Serial No. 289,702. (No model.)



Claim.—1. In combination with a series of independent grinding-surfaces, an outer hopper with openings in the bottom thereof leading to each grinding-surface, and a supplemental removable hopper for each opening, whereby the grinding-surfaces may be utilized to grind material of one kind or color or materials of different kind or color, substantially as described.

2. In a grinding-mill, a series of independent grinding-surfaces combined with a single outer hopper and openings within said hopper, one leading to each grinding-surface, and operating mechanism for the grinding-surfaces, substantially as described.

406,523. LIFTING-JACK. JAMES P. HAYS, North Temescal, Cal. Filed Jan. 16, 1889. Serial No. 296,547. (No model.)



Claim.—1. In a lifting-jack, the combination of a standard, a lift vertically movable thereon, a lever connected with the lift, and a

clutch connected with the lever and engaging the standard, said clutch forming the fulcrum for the lever and support for the lift, substantially as described.

2. In a lifting-jack, the combination of a standard, a lift vertically movable thereon, a lever connected with the lift, and a clutch fitted to and vertically movable upon the standard, said clutch being connected with the lever and forming, when engaging the standard, the fulcrum for the lever and support for the lift, substantially as described.

3. In a lifting-jack, the combination of a standard, a lift vertically movable thereon, a lever connected with the lift, and a clutch-ring pivoted to the lever and fitting over the standard, whereby it is adapted to cramp thereon and form a fulcrum for the lever and support for the lift, substantially as described.

4. In a lifting-jack, the combination of a standard, a lift vertically movable thereon, a lever having an upturned inner end, a link connecting said end with the lift, and a clutch-ring pivoted to the upturned end of the lever and fitting over the standard, whereby it is adapted to cramp thereon and form a fulcrum for the lever and support for the lift, substantially as described.

5. In a lifting-jack, the combination of the standard, the lift having an eye or socket fitted on the standard, and an extension with guide eye or socket fitted on the standard below, whereby said lift is adapted to move vertically on the standard and is guided in its movement, the lever having forked upturned ends passing on each side of the standard, the links connecting said ends with the lift, and the clutch-ring pivoted in the upturned ends of the lever and fitting over the standard, whereby it is adapted to cramp thereon and form a fulcrum for the lever and support for the lift, substantially as described.

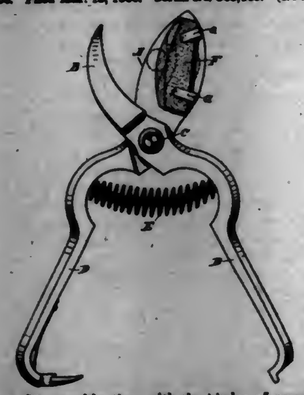
6. In a lifting-jack, the combination of a standard, a lift vertically movable thereon, a lever connected with the lift, a clutch-ring pivoted to the lever and fitting over the standard, whereby it is adapted to cramp thereon and form a fulcrum for the lever and support for the lift, and the arm fixed to the clutch-ring for relieving it from the standard, substantially as described.

7. In a lifting-jack, the standard having the notches or teeth, the lift fitted to and vertically movable on the standard, the lever connected with the lift, the clutch-ring pivoted to the lever and fitting over and engaging the standard, as described, and the fixed pawl on the clutch-ring for engaging the notches or teeth of the standard, substantially as described.

8. In a lifting-jack, the standard having the notches or teeth, the lift fitted to and vertically movable on the standard, the lever connected with the lift, the clutch-ring pivoted to the lever and fitting over and engaging the standard, as described, the pawl on the clutch-ring for engaging the notches or teeth of the standard, and the arm on the clutch-ring for relieving it, substantially as described.

9. A lifting-jack consisting of the combination of the notched standard, the sliding lift with guide-extensions fitted on said standard, the forked lever passing on each side of the standard, the links connecting said lever with the lift, the clutch-ring pivoted to the lever and fitting over the standard, and the pawl and arm of said clutch-ring, substantially as described.

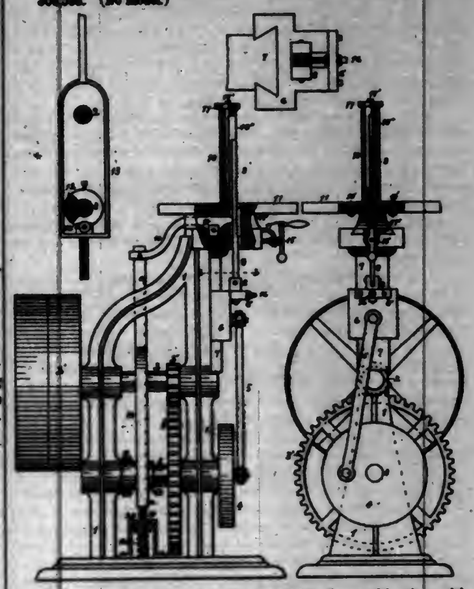
406,524. PRUNING-SHEARS AND FRUIT-PICKER. BYRON JENNINGS, San José, Cal., assignor to C. W. Breyfogle and F. L. Voorhies, same place. Filed Mar. 13, 1888. Serial No. 267,165. (No model.)



Claim.—1. The combination, with the blades of pruning-shears, of the rubber block and the clamps extending over the ends of said block only, while the center is left free to move backward from the edge of the blade when pressure is brought upon it, substantially as herein described.

2. In a pruning-shears, the blade A, having the extensions C upon its back, and curved over the front to form clamps near each end of the blade, in combination with a block of rubber fitted to slip beneath these clamps and having the central portion free from any holding device, substantially as herein described.

406,525. KEY-SEAT-CUTTING MACHINE. ORSON C. LITTLE and ADDISON H. LITTLE, Menasha, Wis.; said Orson C. Little assignor to Duncan T. H. MacKinnon, same place. Filed Apr. 9, 1889. Serial No. 306,988. (No model.)



Claim.—1. In a key-seat-cutting machine, the combination, with a mandrel adapted in diameter to enter the bore of the hub to be grooved, the mandrel having a longitudinal groove therein adapted to receive a cutting-tool, and means for its reciprocation thereon, of a slide carrying a socket or holder, and the aforesaid cutting-tool being pivoted thereon, said socket or holder being adapted for adjustment upon the slide and producing thereby the taper of the key-seat, substantially as described.

2. In a key-seat-cutting machine, a cutting-tool adapted for a reciprocating movement thereon, said tool being pivoted in a socket or holder, and the socket or holder adapted for adjustment for producing the taper of the key-seat, in combination with a lever, against one end of which said cutting-tool is reciprocated, said end of the lever being pressed against the cutting-tool and the feed thereof produced by the resiliency of a spring during its downward movement, and the spring relieved from pressure thereon during its return movement by the action of a cam or other like positive movement, substantially as described.

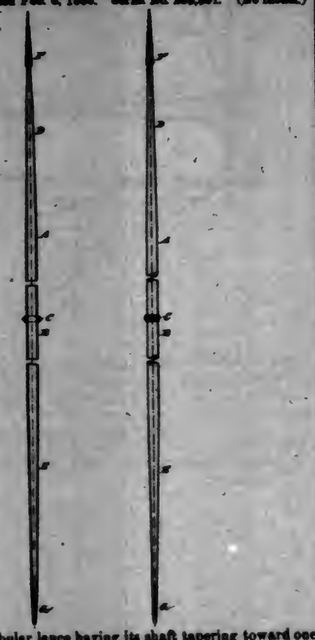
3. In a key-seat-cutting machine, the combination, with a reciprocating cutting-tool, of a lever fulcrumed in the rear of said tool and its free end arranged to press against the back thereof for producing the feed to said tool, a spring arranged to provide for said pressure, and a cam to relieve the pressure upon the tool during the return movement thereof, substantially as described.

4. In a key-seat-cutting machine, the combination, with a mandrel adapted in diameter to enter the bore of the hub to be grooved, the mandrel having a longitudinal groove therein adapted to receive a cutting-tool, of a reciprocating cutting-tool and a movable backing therefor, said backing being pressed against the tool, and the feed of said tool produced during its downward or cutting movement by the resiliency of a spring, and relieved from said pressure upon its return movement by the action of a cam or other like positive movement, substantially as described.

5. In a key-seat-cutting machine, the combination, with a mandrel adapted in diameter to enter the bore of the hub to be grooved, the mandrel having a longitudinal groove therein adapted to receive a cutting-tool reciprocative in said groove, said tool being pivoted in a socket or holder arranged for adjustment for producing the taper of the key-seat, of a lever fulcrumed in the rear of said tool, the free end thereof arranged for pressure against the back of said tool by the resiliency of a spring during the downward or cutting movement of the tool and thereby producing the feed thereof, and also arranged for being relieved of said pressure upon the tool during its return movement by the action of a cam or other like positive movement, substantially as described.

6. In a key-seat-cutting machine, the combination of the frame 1, having the crank-shaft 3, arranged for revolution therein, the crank-wheel 4, connection-rod 5, slide 6, table 11, arranged for horizontal movement on the frame aforesaid, a mandrel secured to the table and movable therewith, said mandrel having a groove longitudinally thereof, and a cutting-tool 9, adapted for reciprocation therein, the socket 8 and means for its adjustment upon the slide 6, for the purpose of producing the desired taper in the key-seat, the lever 14, fulcrumed in the socket 1', the loop 13, cam 12, spring 18, means for limiting the movement of the spring, and the cage 20, all arranged and operating substantially as described.

406,526. TUBULAR LANCE. WILHELM LORENZ, Carlsruhe, Baden, Germany. Filed Feb. 6, 1889. Serial No. 298,891. (No model.)



Claim.—1. A tubular lance having its shaft tapering toward one end, which terminates in a lance-head, substantially as set forth.

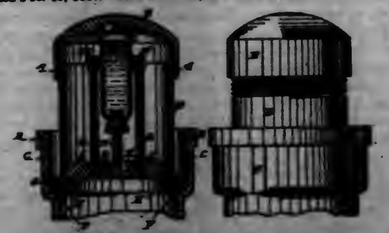
2. A tubular lance provided with a shaft tapering from near its center both toward the tip and toward the foot, as set forth.

3. A tubular lance provided with a shaft tapering toward each end and having the thickness of its tube-wall varied from the center to the ends, as set forth.

4. A tubular lance-shaft provided with a cylindrical portion substantially midway its length, and tapering from said cylindrical portion toward each end, as set forth.

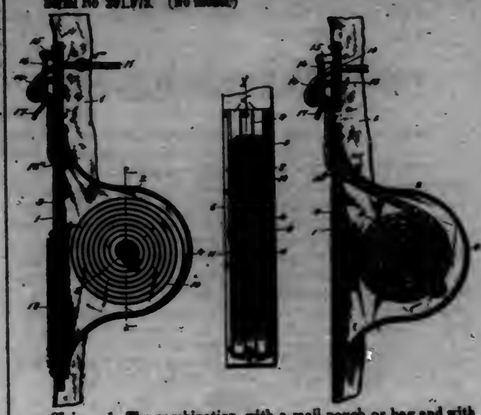
5. A tubular lance having a shaft provided with a central cylindrical portion, and tapering from said portion to the end, the said central cylindrical portion having an annular flange to facilitate the grasping of the lance, as set forth.

406,527. DRAIN-TRAITER. BENJAMIN MERRAM, Boston, Mass. Filed Feb. 15, 1889. Serial No. 300,065. (No model.)



Claim.—In a drain-coster, the combination of an outer vessel open as its bottom and optionally closed by a screw-cap at its top and adapted to be attached to the drain-pipe, a smaller vessel removably contained in said outer vessel, a removable stopper in said inner vessel, a pin in contact with said stopper, and a screw-cap upon the outer vessel, the parts being so arranged that screwing down the cap on the outer vessel operates to remove the cork from the inner vessel, substantially as and for the purpose specified.

406,528. MAIL-POUCH. CHARLES W. MILLER, Clifton, Ariz., assignor of one-half to Charles Royce, same place. Filed Nov. 27, 1888. Serial No. 291,972. (No model.)



Claim.—1. The combination, with a mail pouch or bag and with its closing-cord, of a spring take-up secured within the bag and having the closing-cord connected therewith, substantially as specified.

2. The combination, with a mail pouch or bag and its closing-cord, of a face-plate secured to the pouch and having cord passages or openings and provided with take-up mechanism attached to said face-plate, substantially as specified.

3. The combination, with a mail pouch or bag and with its closing-cord, the bag being provided with an opening for the entrance of the slack portion of the cord into the bag, of a take-up and of an independent cord-fastening device, substantially as specified.

4. The combination, with a mail pouch or bag, of a face-plate and a housing attached thereto and divided into parallel compartments for the reception and operation of springs and cords, respectively, substantially as specified.

5. The combination, with a mail bag or pouch, of a face-plate secured to the bag, a housing secured within the bag over a cord-receiving opening in the face-plate and having a partition separating the part of the housing over said opening from the remaining portion of the housing, and a spring arranged in said remaining portion of the housing, and a shaft connected with a spring and passing through the housing and partition, substantially as specified.

6. The combination, with a mail pouch or bag, of a take-up mechanism arranged within the bag, closing-cords connected with said take-up mechanism, and a cord-fastener consisting of a bail and a projecting horn, against which the bail is adapted to bind the cord, substantially as specified.

7. The combination, with a pouch or bag, of a plate fastened within said bag, a horn projecting through the side of said bag, a bracket also projecting through the side of said bag, a bail hung to said bracket and taking over said horn, and a closing-cord passing through an opening in said plate, substantially as described.

8. The combination, with a mail pouch or bag, of a face-plate secured to the pouch and having a take-up, and provided with inlet and outlet cord passages or openings, and with an independent cord-fastening device located intermediate the openings, substantially as specified.

9. The combination, with a mail pouch or bag, of a face-plate secured to the pouch and having a take-up fastened thereto, and provided with inlet and outlet cord passages or openings, and with a protruding horn-shaped lug, over which the cord passes, and a swinging bail adapted to take over the lug and fasten the cords, substantially as specified.

10. The combination, with a mail pouch or bag, of a face-plate secured to the pouch and having a take-up, and provided with inlet and outlet cord passages or openings, and with a protruding horn-shaped lug, over which the cord passes, and a swinging pivoted spring-bail adapted to be sprung over the lug and bind the cords thereupon, substantially as specified.

11. The combination, with a mail pouch or bag, of a face-plate

secured thereto and having inlet and outlet cord-passages, and provided with a cord-receiving shaft, and a coiled spring for rotating the shaft and placed at one side thereof, substantially as specified.

12. The combination, with a mail pouch or bag, of a face-plate secured upon the inside thereof, provided with inlet and outlet cord passages or openings, and a housing secured to the plate, consisting of bent end strips, interposed partitions, and side strips, the whole being bound together and provided with a transverse shaft having a coiled spring, substantially as specified.

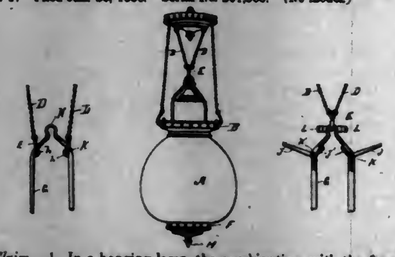
406,529. **HAME-TUG.** JOSEPH H. MCKENZIE, Tyler, assignor of one-half to Leslie A. Seymour, Eureka, Tex. Filed Feb. 27, 1889. Serial No. 301,306. (No model.)



Claim.—1. In a hame-tug, the combination, with the bar provided at one end with a buckle, of the shield secured to the inner side of the bar and provided with an outward-extending guard, which extends through the loop of the buckle and is provided with a slot for the reception of the tongue of the buckle, substantially as specified.

2. In a hame-tug, the combination of the stiffening-bar A, provided at one end with a buckle and at the other end with a loop B, the shield D, attached to the inner side of the said bar and extending to the outer end of the buckle and provided with the guard G, the box-loop secured to the stiffening-bar, and the cover or protector F, secured over the said bar to conceal the same, substantially as specified.

406,530. **HANGING LAMP.** WILLIAM S. MCLEWEE, New York, N. Y. Filed Jan. 30, 1888. Serial No. 261,385. (No model.)



Claim.—1. In a hanging lamp, the combination, with the frame, rollers supported by said frame, a frame or holder adapted for the support of a lamp, and flexible connections adapted to operate on said rollers, of a globe or shade detachably held or supported by said flexible connection, and one or more catches on the opposite end of said flexible connection to adjustably support the said frame or holder and engage the lower portion of the globe or shade, whereby said frame or holder is securely held and locked below the base of said globe or shade, substantially as and for the purpose set forth.

2. In a hanging lamp, the combination, with a frame provided with rollers, a holder adapted for the support of a lamp, and flexible connections adapted to operate upon said rollers, of a globe or shade detachably held by said flexible connection, and a locking or holding device adapted to securely lock and hold the holder or lamp-support in a fixed position below the base of the said globe or shade, substantially as described, and for the purpose set forth.

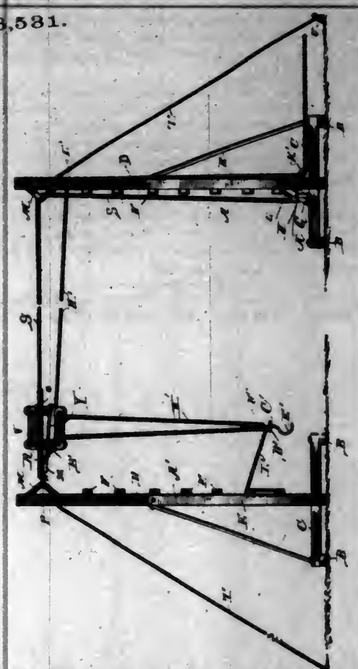
406,531. **HAY-STACKER.** WILLIAM NIGHTINGALE, Valley, Nebr. Filed Dec. 21, 1888. Serial No. 294,263. (No model.)

Claim.—1. The combination of the derricks, the angle-plates at the upper ends of said derricks, the track-rope having one end connected with the angle-plates of one of the derricks, a pulley journaled between the angle-plates of the other derrick and supporting the track-rope, a windlass having the free end of the track-rope attached and wound thereon, and a detent to prevent said windlass from rotating, substantially as set forth.

2. The combination of the derrick having the angle-plates at its upper end, the horizontal plate secured between said angle-plates and having a vertical perforation, and the track-rope having one end passed through said perforation and knotted and connected by lashing with the outer end of said plate, substantially as set forth.

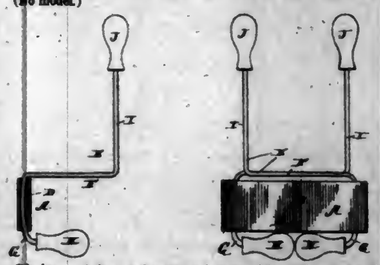
3. The combination of the derricks, the angle-plates at the upper ends of said derricks, a pulley journaled between the angle-plates of one of said derricks, a horizontal track-plate secured between the angle-plates of the other derrick and having a beveled catch on its under side and a vertical perforation, the track-rope passing over the pulley between the angle-plates of one of the derricks and having one end passed through the said perforations and knotted and secured by

406,531.



lashing with the outer end of said plate, a windlass for tightening the said track-rope, and a carrier having a pivoted catch to engage the beveled catch upon the under side of the horizontal track-plate, substantially as and for the purpose set forth.

406,532. **HAT AND COAT RACK.** JOHN M. OWEN and JOHN R. ROBERTS, Youngstown, Ohio. Filed Feb. 23, 1889. Serial No. 300,915. (No model.)



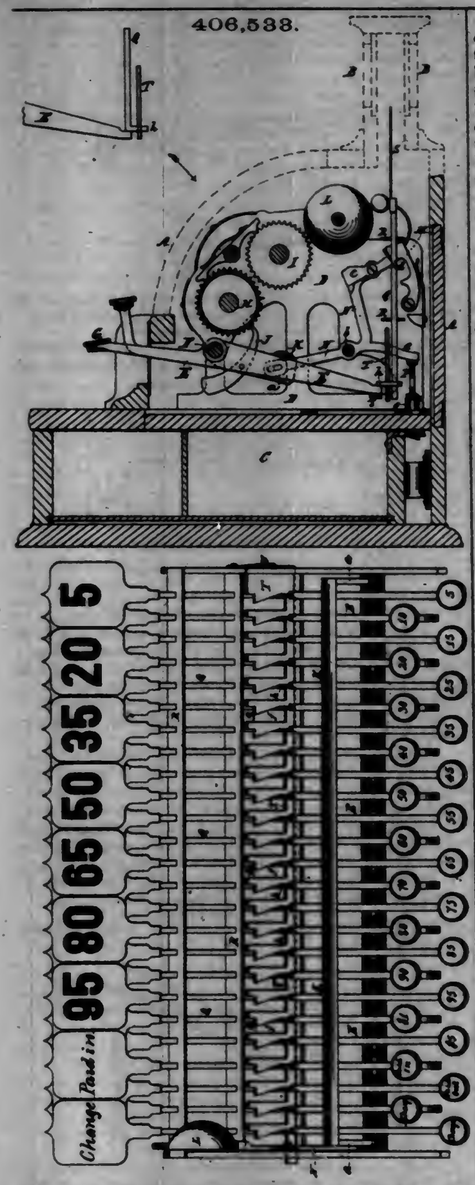
Claim.—A hat and coat rack comprising a base-plate having a vertical opening and a wire passed through said opening and curved so as to bind against the side of the opening, the wire being bent forward above and below the base-plate and the upper portion being bent upward, both ends of the wire being provided with knobs, as set forth.

406,533. **CASH INDICATOR AND REGISTER.** JOHN H. PATTERSON, Dayton, Ohio, assignor to the National Cash Register Company, same place. Filed June 23, 1888. Serial No. 278,010. (No model.)

Claim.—1. In a cash register and indicator, the combination of a series of operating-keys of fixed values pivoted on a horizontal shaft at the front of the machine, a horizontal supporting-bar extending transversely across the machine in rear of the rear ends of the keys and provided with a series of vertical slots, each having an inclined wall and supporting-shoulder, and a series of vertical tablet-rods arranged in guides and actuated by said operating-keys, and carrying at their upper ends indicating-tablets, and provided at their lower ends with projections which extend through the slots in said supporting-bar, substantially as and for the purpose described.

2. In a cash register and indicator, the combination of a series of operating-keys of fixed values pivoted on a horizontal shaft at the front of the machine, and a registering mechanism operated by said keys to register the value thereof, a horizontal supporting-bar extending transversely across the machine in rear of the rear ends of the

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keys and provided with a series of vertical slots, each having an inclined wall and supporting-shoulder, and a series of vertical tablet-rods arranged in guides and actuated by said operating-keys, and carrying at their upper ends indicating-tablets, and provided at their lower ends with projections which extend through the slots in said supporting-bar, substantially as and for the purpose described.

3. In a cash register and indicator, the combination of a series of operating-keys of fixed values pivoted on a horizontal shaft at the front of the machine, a horizontal supporting-bar extending transversely across the machine in rear of the rear ends of the keys and provided with a series of vertical slots, each having an inclined wall and supporting-shoulder, and a series of vertical tablet-rods arranged in guides, and a registering-wheel operated by said keys and bearing on its periphery a series of numbers in multiples of one, substantially as and for the purpose described.

4. In a cash register and indicator, the combination of a series of operating-keys of fixed values pivoted on a horizontal shaft at the front of the machine, a series of registering-wheels operated by said keys to register the value thereof, a horizontal supporting-bar extending transversely across the machine in rear of the rear ends of the keys and provided with a series of vertical slots, each having an inclined wall and supporting-shoulder, and a series of vertical tablet-rods arranged in guides, carrying at their upper ends indicating-tablets, and provided at their lower ends with projections which extend through the slots in said supporting-bar and are engaged by the rear ends of the pivoted operating-keys, substantially as and for the purpose described.

5. In a cash register and indicator, the combination of the operating-keys E, pivoted on the shaft F, slotted supporting-bar T, extending transversely across the machine in rear of the rear ends of said keys, and the vertical tablet-rods Q, carrying at their upper ends the indicating-tablets S, and provided at their lower ends with the projections A, extending through the slots in the bar T, substantially as and for the purpose described.

6. In a cash register and indicator, the combination of the operating-keys E, pivoted on the shaft F, and provided with the actuating-dogs J, registering-wheels H, slotted supporting-bar T, extending transversely across the machine in rear of the rear ends of the keys, and the vertical tablet-rods Q, carrying at their upper ends the indicating-tablets S, and provided at their lower ends with the projections A, extending through the slots in the bar T, substantially as and for the purpose described.

7. In a cash register and indicator having a series of operating-keys of fixed values actuating a series of indicating-tablets and a registering mechanism to indicate and register the cash sales corresponding to the values of said keys, the combination of a supplemental operating-key having on its front end a button bearing the sign "Paid In," an indicating-tablet actuated thereby and bearing a corresponding sign, and a registering-wheel operated by said supplemental key and bearing on its periphery a series of numbers in multiples of one, said supplemental key, tablet, and registering-wheel being designed and arranged to indicate each receipt of money on account and to register the total number of such receipts, substantially as described.

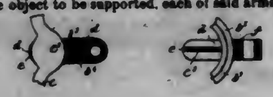
8. In a cash register and indicator having a series of operating-keys of fixed values actuating a series of indicating-tablets and a registering mechanism to indicate and register the cash sales corresponding to the values of said keys, the combination of a supplemental operating-key having on its front end a button bearing the sign "Paid Out," an indicating-tablet actuated thereby and bearing a corresponding sign, and a registering-wheel operated by said supplemental key and bearing on its periphery a series of numbers in multiples of one, said supplemental key, tablet, and registering-wheel being designed and arranged to indicate each payment of money out on account and to register the total number of such payments, substantially as described.

9. In a cash register and indicator having a series of operating-keys of fixed values actuating a series of indicating-tablets and a registering mechanism to indicate and register the cash sales corresponding to the values of said keys, the combination of a supplemental operating-key having on its front end a button bearing the sign "Charge," an indicating-tablet actuated thereby and bearing a corresponding sign, and a registering-wheel operated by said supplemental key and bearing on its periphery a series of numbers in multiples of one, said supplemental key, tablet, and registering-wheel being designed and arranged to indicate each credit sale and to register the total number of such sales, substantially as described.

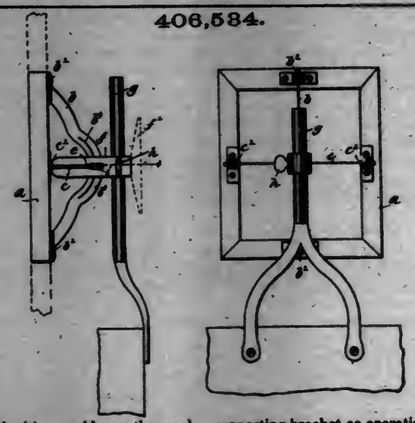
10. In a cash register and indicator having a series of operating-keys of fixed values actuating a series of indicating-tablets and a registering mechanism to indicate and register the cash sales corresponding to the values of said keys, the combination of a supplemental operating-key having on its front end a button bearing the sign "Change," an indicating-tablet actuated thereby and bearing a corresponding sign, and a registering-wheel operated by said supplemental key and bearing on its periphery a series of numbers in multiples of one, said supplemental key, tablet, and registering-wheel being designed and arranged to indicate each operation of the machine for the purpose of making change and to register the total number of such operations, substantially as described.

406,534. **ADJUSTABLE SUPPORT FOR MIRRORS OR SIMILAR OBJECTS.** JOHN R. PERKINS, Milford, N. H. Filed Mar. 11, 1889. Serial No. 302,747. (No model.)

Claim.—1. The combination of two supporting-arms, one arranged transversely to the other and having a pivotal or hinged connection with the object to be supported, each of said arms being pro-



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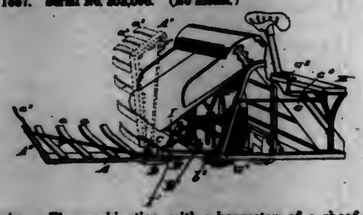
vided with a guide portion and a supporting-bracket co-operating with the guide portions of said arms, respectively, substantially as described.

2. The combination of the bracket having guide-slots transverse to one another with supporting-arms having pivotal joints at their ends, and each having a guiding-surface flattened to operate in a corresponding slot of the bracket, the said guide portions of each arm being curved concentrically with the pivotal axis of the other arm and the guide portion of one having a larger radius than the guide portion of the other, substantially as and for the purpose described.

3. The combination of the horizontal supporting-bracket *f*, provided with a horizontal guide-slot *c*, with a horizontal supporting-arm *e*, provided with a pivotal joint at each end and with a broad flat curved guiding portion between its ends working in the guide-slot of said bracket, and a vertical arm hinged at its ends and having an intermediate guiding portion working in a guide in said bracket, substantially as described.

4. The combination of the supporting-bracket provided with guides transverse to one another with supporting-arms having intermediate guide portions and provided with pivotal joints at their ends, the guide portion of one of said arms being provided with a rib entering a corresponding groove in the supporting-bracket for retaining said supporting-arms in engagement with the bracket, substantially as described.

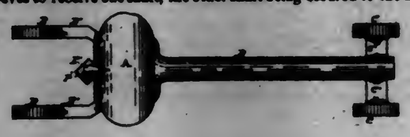
406,585. BUNDLE-DROPPER. EDWARD FRIEDRICH, Batavia, N. Y., assignor to the Johnston Harvester Company, same place. Filed Oct. 11, 1887. Serial No. 252,096. (No model.)



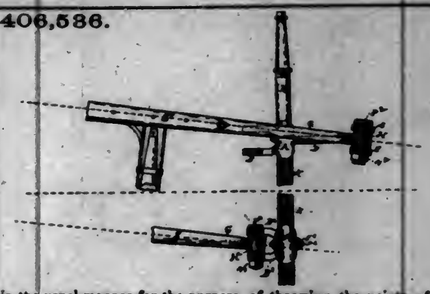
Claim.—The combination, with a harvester, of a sheaf-carrier composed of a finger-supporting beam divided into two parts and having its abutting ends hinged together, the upwardly and outwardly inclined end beam, the rearwardly-extending fingers secured to the said beams, the diagonal brace-rod, one end fastened to the free end of the end beam, the other end secured to the main beam at or near the hinge thereof, the dump-pivot on the inner end of the supporting-beam, the rock-arm B' and its pin *b'*, the crank-rod G, link G', rod G^2, and foot-piece G^3, substantially as described.

406,586. VEHICLE-SHAFT COUPLING. WILLIAM W. RANKIN, Pittsburg, Pa. Filed Oct. 26, 1888. Serial No. 288,103. (No model.)

Claim.—In combination with an axle and a pair of shafts, an arm extending from said axle substantially horizontally, and having coupling-eyes to receive one shaft, the other shaft being secured to the axle

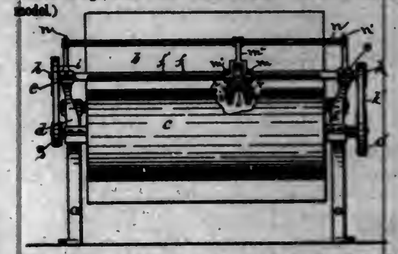


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in the usual manner for the purpose of throwing the points of the shaft to one side, all substantially as and for the purposes set forth.

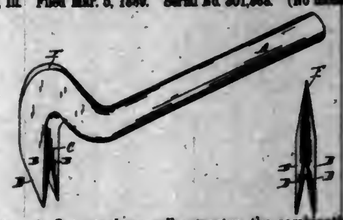
406,587. CARD-GRINDING MACHINE. FRANK I. THURSTON, Central Village, Conn. Filed June 12, 1888. Serial No. 276,956. (No model.)



Claim.—1. In combination with a longitudinally-channeled shaft and mechanism for rotating the same, a forked grinder-carriage, a double crown-wheel splined on said shaft between the forks of said carriage, bevel-gears supported by said carriage engaging said crown-wheel and carrying emery-rolls, as set forth, and mechanism for moving said grinder laterally on its shaft, substantially as and for the purpose specified.

2. In combination with a longitudinally-channeled shaft and mechanism for rotating the same, a fixed rod parallel with said shaft and adjacent thereto, a forked grinder-carriage fitted at one end to slide on said channeled shaft and at the opposite end to slide on said parallel rod, a double crown-wheel embraced by the fork of said carriage and splined on said channeled shaft, bevel-gears supported by said carriage meshing with said crown-wheel and carrying conical emery-rolls, as set forth, and mechanism for moving said grinder laterally on its shaft, substantially as and for the purpose specified.

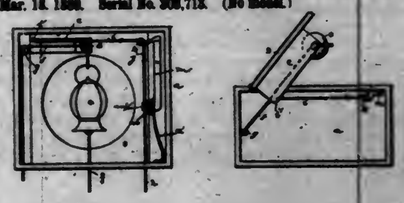
406,588. STAPLE OR NAIL EXTRACTOR. ORMOND ENGLAND, Lee, Ill. Filed Mar. 5, 1889. Serial No. 301,963. (No model.)



Claim.—1. In a staple or nail extractor, the combination of the lever A and jaws B B, the latter provided with substantially straight sides C and outer cutting-edges D, substantially as shown, and for the purpose described.

2. In a staple or nail extracting lever, the combination of the lever A, fulcrum F, and jaws B B, the latter provided with external cutting-edges D, substantially as shown, and for the purpose described.

406,589. SIGNAL-LIGHT. JOHN F. RIDENOUR, Hector, Ohio. Filed Mar. 18, 1889. Serial No. 303,713. (No model.)



Claim.—1. A signal-light box adapted to be located a distance from the ground and provided with a hinged door, in combination with a rod or connection for opening said door from the ground, and a cord carrying the signal, by which the same can be raised or lowered, and connected with the door to close the same from the ground and swing the signal in or out of the box, substantially as described.

2. In combination, a signal-light box, a hinged door for the same, a cord loosely connected with the door and extending from the same to or near the ground and carrying the signal, and by which the signal can be raised or lowered, and when raised to the door the same is closed, carrying the signal into the box, substantially as described.

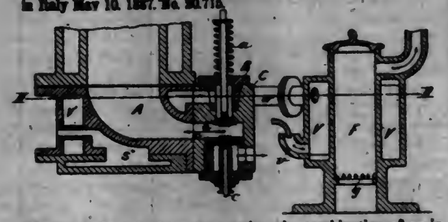
3. In combination, a signal-light box, a hinged door for the same, an inwardly-extending plate or arm carried by the door, a cord connected with the plate or arm and adapted to carry the signal or lantern and extend to or near the ground and close the door, and thereby swing the lantern into the box, substantially as described.

4. A signal-light box provided with a hinged door, a latch for the door, a rod or connection secured to the door and extending down to or near the ground, and adapted to operate the latch to release the door and swing the same open, a cord connected with the door and adapted to carry the lantern and raise and lower the same and close the door and swing the lantern into the box, substantially as described.

5. A signal-light box provided with a hinged door, a cord to carry the light and raise and lower the same, and a plate or projection carried by the door, to which said cord is connected, and which is adapted to swing the lantern in and out of the box, substantially as described.

6. A signal-light box having a hinged door, an inwardly-extending plate or projection carried by the door, and provided with a pulley near its outer portion, and a pulley in the box, located opposite said pulley carried by the door, in combination with a rope or cable, said cable passing over said pulleys and depending from the same and adapted to extend to or near the ground, and a signal-light adapted to be inclosed in said box and carried by the portion of the cable depending from said plate, for the purpose set forth.

406,540. HYDROCARBON-ENGINE. MATHIAS V. SCHILLER, Cologne, Prussia, Germany. Filed Apr. 9, 1889. Serial No. 306,762. (No model.) Patented in Germany Apr. 10, 1888, No. 46,121; in Belgium June 30, 1888, No. 73,679; in France July 3, 1888, No. 177,181; in England Aug. 16, 1888, No. 10,480; in Austria-Hungary Oct. 26, 1888, No. 19,286, and in Italy May 10, 1887, No. 20,715.



Claim.—1. In a hydrocarbon-engine, the combination of an independent furnace with a metallic evaporating-jacket surrounding the said furnace and divided by transverse partitions, so as to increase the evaporating-surface, substantially as described, and for the purpose specified.

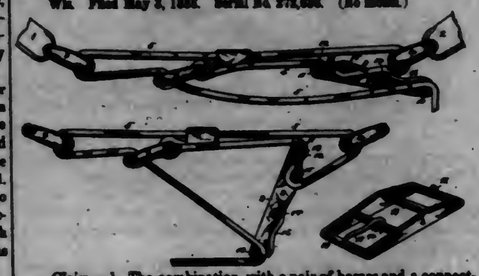
2. In a hydrocarbon-engine, the combination of the explosion-chamber with an independent furnace, a metallic evaporating-jacket surrounding the said furnace and divided by transverse partitions, so as to increase the evaporating-surface, and a valve adapted to establish and interrupt communication with the explosion-chamber at every cycle of the engine, substantially as described, and for the purpose specified.

3. In a hydrocarbon-engine, the combination of an independent source of heat, with a helical or zigzag shaped evaporating-canal adapted to be heated by the said source and provided with a valve adapted to establish and interrupt communication with the explosion-chamber of the engine at every cycle, an oil feeder or pump adapted to introduce into the said evaporating-canal small exactly-measured quantities of liquid fuel at every cycle of the engine, and a pump, preferably the working-cylinder, for producing in the said canal at every cycle of the engine an air-blast into or toward the explosion-chamber, substantially as described.

4. In a hydrocarbon-engine, the combination of an independent furnace or lamp, with a helical or zigzag shaped evaporating-canal surrounding the said source of heat and provided with a valve adapted to establish and interrupt communication with the explosion-chamber at every cycle of the engine, an oil feeder or pump adapted to introduce into the said evaporating-canal small exactly-measured quantities of liquid fuel at every cycle of the engine, and a pump, preferably the working-cylinder, for producing in the said canal at every cycle of the engine an air-blast into or toward the explosion-chamber, substantially as described.

5. In a hydrocarbon-engine, the combination of the explosion-chamber and valve-chest, with an evaporating-canal surrounding the said explosion-chamber and adapted to be heated by the same, an independent source of heat, an auxiliary evaporating-canal adapted to be heated by the same, and a cock or valve adapted to establish communication between the explosion-chamber alternately with the first or the second of the said evaporating-canals, substantially as described, and for the purpose specified.

406,541. HAME-FASTENER. WILLIS S. SHERMAN, Marinette, Wis. Filed May 3, 1888. Serial No. 272,696. (No model.)



Claim.—1. The combination, with a pair of hames and a connecting hame-strap, of the herein-described buckle comprising longitudinal side bars and transverse end-connecting bars arranged in a common plane, one of which is provided with a lug adapted to take into a perforation formed in the hame-strap and having intermediate transverse bars arranged in a different plane, one of which bars is embraced by the strap and the other of which is provided with a tongue adapted to take into one of a series of perforations formed in the strap, substantially as specified.

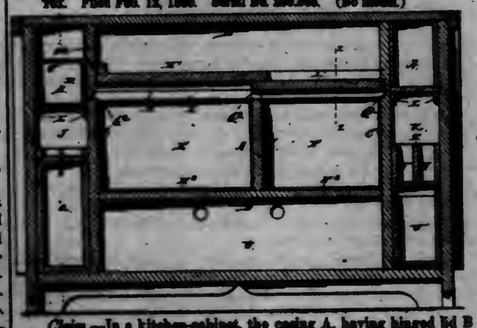
2. The combination, with the hames 1 and 2, having the rings 3 and 4, the strap 5, having the perforations, and buckles 6, connecting the same, of the buckle 8, having the side bars 9 and cross-bars 10, 14, 15, and 11, the bar 14 being provided with a tongue and the bar 11 being provided with a lug 12, taking into an aperture 13 in the strap, which strap passes over said bars 11 and 15, the buckle being adapted, when swung to one side, to bend the strap upon itself, substantially as specified.

406,542. COVER FOR CROCKS AND JARS. JAMES A. SILVA, Sandusky, Ohio. Filed May 6, 1889. Serial No. 309,737. (No model.)



Claim.—The combination, with a crock having the flange B at its upper edge, of the elastic band C, provided with the screw-thread and encircling the crock just beneath the flange, and cover D, having a depending flange, said flange being provided with a corresponding screw-thread, the parts being constructed and arranged to operate substantially as and for the purpose described.

406,543. KITCHEN-CABINET. JAMES M. SKIPPER, Granbury, Tex. Filed Feb. 12, 1889. Serial No. 299,869. (No model.)



Claim.—In a kitchen-cabinet, the casing A, having hinged lid B

and partitions C C D G, forming flour and meal bins E F, in combination with the removable sheet-metal linings for the said bins, the removable cleats H I, and the covers H' I', arranged to slide upon the said cleats one above the other, substantially as set forth.

406,544. FASTENER OR BINDING-STRAP. FERDINAND W. STARR, Springfield, Ohio. Filed Mar. 20, 1889. Serial No. 304,010. (No model.)



Claim.—1. A fastener or binding-strap provided with prongs formed integrally and upset out of the plane of the strip to constitute a driving-head, substantially as described.

2. A fastener or binding-strap consisting of a strip of metal having corrugated prongs, the base of which is struck up out of the plane of the strip to form driving-heads, substantially as described.

3. A fastener or binding-strap consisting of sheet metal, having integral prongs corrugated and struck up at their bases to form driving-heads and having an angular outline at their driving edges, substantially as specified.

4. A fastener or binding-strap provided with prongs formed integrally and upset out of the plane of the strip, the metal being thickened at the base of said prongs, substantially as specified.

5. A fastener or binding-strap provided with prongs formed integrally, corrugated and struck up out of the plane of the bases of the same to form driving-heads, and having multiple points at their driving edges, substantially as described.

406,545. DOUBLE-POINTED CORRUGATED FASTENER. FERDINAND W. STARR, Springfield, Ohio. Filed Mar. 20, 1889. Serial No. 304,011. (No model.)



Claim.—1. A corrugated fastener, each corrugation of which is provided with a double point, substantially as specified.

2. A corrugated fastener, each of the corrugations of the same having a double point comprising a draw cutting-edge intermediate the points, substantially as described.

3. A corrugated fastener, each of the corrugations of which is provided with a double point comprising a draw cutting-edge, and having beveled notches in the sides of said corrugations, substantially as described.

4. A fastening device consisting of a single corrugation having a double point, substantially as described.

5. A fastening device consisting of a single corrugation having a double point, comprising a draw cutting-edge, substantially as described.

6. A fastening device consisting of a single corrugation having a double point, comprising a draw cutting-edge intermediate said points, and having a beveled notch on the side of said spike, substantially as described.

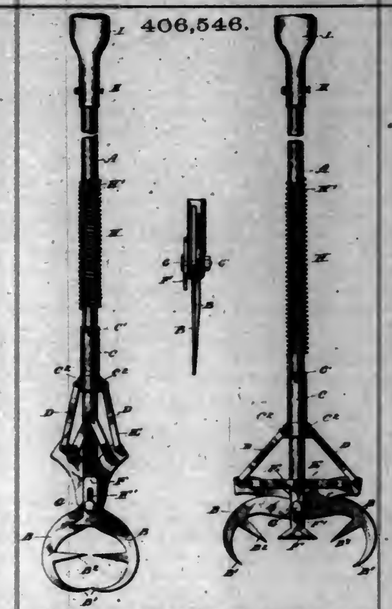
406,546. FISH-SPEAR. WILLIAM TABER, Clinton Corners, N. Y., assignor of two-thirds to Charles Haight Griffen, same place. Filed Mar. 9, 1889. Serial No. 302,723. (No model.)

Claim.—1. In a fish-spear, a cleft stem, a pair of spiked clutches pivoted to one another and to said stem within said cleft, a trip-link between said clutches and sliding upon said pivot, and locking-links pivoted to said clutches for the purpose of holding them open, in combination with a sleeve sliding upon said stem and attached to said clutches at their rear ends by means of links, and a spring attached to said stem and to said sleeve, substantially as described.

2. In a fish-spear, a cleft stem, a pair of spiked clutches pivoted to one another and to said stem within said cleft, and means for closing said clutches upon the fish, in combination with a sleeve, as I, fastened to the end of the staff of said spear, and a spring-pin, as K, passing through the rear end of said stem and the front end of said sleeve, substantially as described.

3. In a fish-spear, a cleft stem, a pair of spiked clutches pivoted to one another and to the stem within said cleft, said clutches being prolonged backward, and locking-links attached to said backward prolongations for the purpose of holding the clutches open, in combination with a sleeve sliding upon said stem and attached to said

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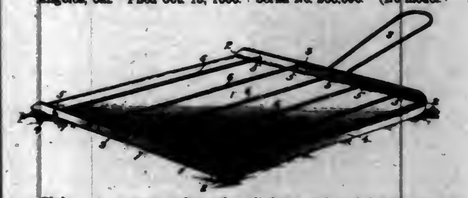


backward prolongations, a pin fastened to said stem, and a spiral spring attached to said sleeve, two coils of said spring embracing said pin, substantially as described.

4. In a fish-spear, a cleft stem, clutches bearing two spikes, said spikes being in the same plane, said clutches pivoted to one another and to the stem within said cleft, and means for closing said clutches upon the fish, substantially as described.

5. In a fish-spear, a cleft stem, a pair of spiked clutches pivoted to one another and to said stem within said cleft by means of a pivot having a screw-thread for insertion in said stem and a squared end, a nut screwing onto the other end of said pivot, a pair of locking-links attached to said clutches and to each other by means of pivots, and a trip-link provided with a slot sliding upon said squared end of the pivot and in the path of said locking-links, in combination with a sleeve sliding upon said stem pivotally attached to said clutches, and a spiral spring attached to said stem and to said sleeve, substantially as described.

406,547. TOASTER OR BROILER. CHARLES T. TARPENNING, Los Angeles, Cal. Filed Oct. 15, 1888. Serial No. 288,090. (No model.)



Claim.—1. A toaster formed of light metal and having two of its opposite sides bent downwardly at an angle to its body portion and its remaining opposite sides bent upwardly at an opposite angle and perforated, and provided with transverse wires extending from side to side, substantially as specified.

2. A toaster formed of sheet metal, of a rectangular shape, and having each of its corners slit or recessed and two of its opposite sides bent downward to form a rest for the toaster, and its remaining opposite sides bent upwardly at a reverse angle and perforated, and provided with transverse wires extending from side to side, headed at their outer ends, two of the wires being extended to form a handle, substantially as specified.

3. The toaster 1, having the corner recesses 2, and having its opposite sides bent in reverse directions, as at 3 and 4, and the latter provided with a series of perforations 5, and transverse wires 6, mounted therein and bent to form a handle 8, substantially as specified.

406,548. BILL-OF-FARE AND ADVERTISING CASTER. DELANCY R. TERRILL, Copenhagen, N. Y., assignor of one-half to Judson P. Hadcock, same place. Filed Mar. 19, 1889. Serial No. 303,847. (No model.)

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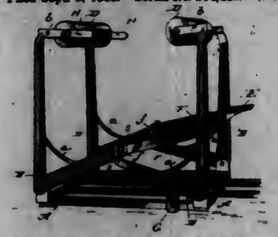
Claim.—1. The combination, with the base, the standard secured thereto at its lower end and at its upper end screw-threaded, as shown, and the handle having internal threads to engage the threaded end of the standard, of the body having rigid therewith the central downwardly-extending tubes B sleeved on the standard, the shoulder D^3 on the standard to form a stop for the tube, and the blocks in said body, substantially as shown and described.

2. The herein-described bill-of-fare and advertising caster comprising in combination a standard, a body pivoted upon said standard, a handle secured to the end of the standard above the body, and two or more series of interchangeable blocks having printed matter upon their faces, trays for receiving the blocks, and openings in the faces of the body of the caster for displaying the blocks within the trays, substantially as described.

406,549. COMPOSITION FOR COATING EGGS. JOHN F. TIMMONS, Maryville, Mo., assignor of one-half to William A. Peart, same place. Filed Apr. 2, 1889. Serial No. 305,600. (No specimens.)

Claim.—The herein-described composition of matter to be used for the preservation of eggs, consisting of water, gum-shellac, bicarbonate of soda, white glue, and Spanish whiting, in the proportions specified.

406,550. MOP-WRINGER. WILLIAM P. TRACY, Grand Rapids, Mich., assignor of two-thirds to George N. Davis and Arthur Meigs, same place. Filed Sept. 3, 1888. Serial No. 284,412. (No model.)



Claim.—1. In combination, the four L-shaped levers supported to have pivotal movement, one of said pair being extended by a treadle-arm secured directly thereto, and a direct sliding connection between the second pair of arms or levers and the first pair, substantially as described, whereby when the treadle-arm is depressed the first pair of levers will be rocked, which will cause the operation of the second pair through the sliding connection.

2. In combination, the four L-shaped levers pivotally supported, a direct sliding connection between the pairs, consisting of the forks *f* on the lower arms of one pair embracing the lower arms of the other pair and the pins passing through the forks, and an operating-lever, substantially as described.

3. In combination, the two pairs of L-shaped levers, one set having forks embracing the other set, and stop projections against which the forks bear, substantially as described.

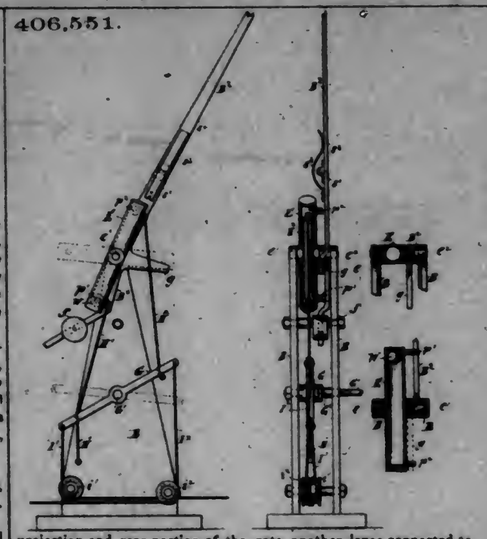
406,551. RAILROAD-GATE. GEORGE VARAR, Jr., New York, N. Y. Filed Jan. 23, 1889. Serial No. 297,948. (No model.)

Claim.—1. The combination, with a railway-gate having a transverse projection, of a lever and a movable weight supported by said lever, the said gate and lever being independently hung upon the same shaft, and the said lever being provided with pins or projections for engaging the transverse projection and operating the gate, substantially as specified.

2. The combination, with a railway-gate having a rear extension and a transverse projection, of a lever independently hung upon the same shaft, a weight supported by said lever, pins or projections at opposite ends of said lever alternately engaging the rear extension and transverse projection of the gate, tappets adjacent to the track, and connections between the tappets and said levers, substantially as specified.

3. The combination, with a railway-gate having a transverse projection, of a lever independently hung upon the same shaft, a weight supported by said lever, pins or projections engaging the transverse

406,551.

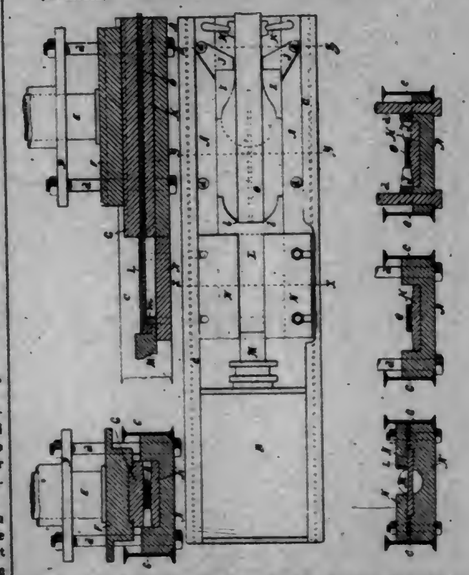


projection and rear portion of the gate, another lever connected to the weight-supporting lever with provision for lost motion, tappets adjacent to the track, and connections between the tappets and the second-mentioned lever, substantially as specified.

4. The combination, with a gate B', of a box E, provided with pins or projections for operating said gate, a lever G, cords or chains $H' H^2$, cords or chains $I' I^2$, and tappets adjacent to the track, substantially as specified.

5. The combination, with a gate B', of a box E, provided with trunnions, on one of which the gate turns and is supported, said box containing a weight and having projections for operating a gate-beam, substantially as specified.

406,552. APPARATUS FOR UPSETTING EYE-BARS. WILLIAM R. WEBSTER, Philadelphia, Pa. Filed Apr. 22, 1889. Serial No. 308,065. (No model.)



Claim.—1. In an apparatus for upsetting eye-bars, the combination of one or more sliding dies with an upsetting-plunger arranged to work between the die-faces without engaging them.

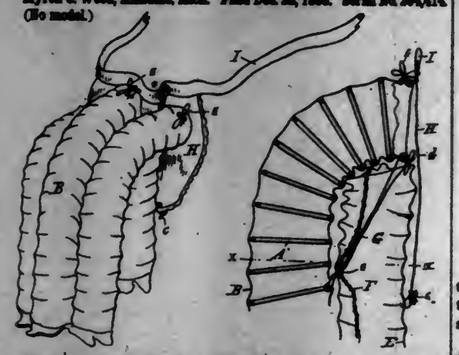
2. In an apparatus for upsetting eye-bars, the combination of dies for holding the bar to be upset, an upsetting-plunger arranged to work between said dies, supporting-guides for said plunger, arranged

in front of the dies, and a ram arranged to actuate the plunger and work between the said guides.

3. In an apparatus for upsetting eye-bars, the combination of a hydraulic cylinder or its equivalent and the housing of the dies with beams C C, connecting and binding them together, substantially as and for the purpose specified.

4. In an apparatus for upsetting eye-bars, a shaping-plunger having a shallow recess in its center adapted to engage the end of a bar and prevent it from moving sidewise during the early stages of upsetting.

406,553. BUSTLE. ALBIN WHITE, Detroit, assignor of one-half to Myron G. Wood, Hillsdale, Mich. Filed Dec. 28, 1888. Serial No. 294,414. (No model.)



Claim.—In a bustle, the combination of the outer set of coils A A A', the inclosing fabric B, in which said outer set of coils are secured in vertical pockets formed therein, the inner set of tubular coils D D, the inclosing fabric E, forming the vertical pockets in which the said inner set of coils are secured and provided with an eyelet *a*, the bow-tape G, adjustably connecting the central portion of the outer set of coils with the top thereof, and passing through the eyelet *a* of the inner set of coils, the pad H, secured to the outer and inner set of coils by the tapes *c*, and having the waistband I, constructed and arranged substantially as described.

406,554. TONGS FOR HANDLING MERCHANDISE. ALBERT J. WOOD, Kansas City, Mo. Filed Jan. 22, 1889. Serial No. 297,112. (No model.)



Claim.—The tongs consisting of the handle having at its outer end a fixed arm and a pivoted arm provided with an extension connected by a rod to a lever pivoted upon the handle, said arms having clamping-plates, one of which has a hook, and which arms are curved upwardly and deflected or curved at their outer or upper ends in a line diverging upward from a vertical line passing through their pivotal points, substantially as set forth.

406,555. REVOLVING BOOK-CASE. JOHN B. ENTLER, Canton, Ohio. Filed Jan. 10, 1888. Serial No. 260,266. (No model.)

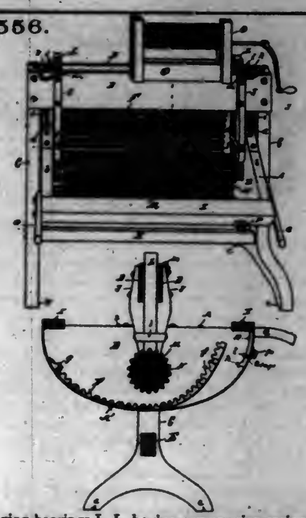


Claim.—In a revolving book-case, an outer casing provided with shaft-bearings and friction-rollers, in combination with an interior casing mounted upon a central shaft pivoted in said bearings, and consisting of corner-posts B^{17} and removable shelves B^{9}, connected to each other and to the corner-posts by pins B^{16}, and suitable gearing, substantially as and for the purpose specified.

406,556. WASHING-MACHINE. JOSEPH W. BAKER, Corry, Pa. Filed June 15, 1888. Serial No. 277,246. (No model.)

Claim.—The combination, in a washing-machine, of an oscillating tub A, having a semi-elliptical-shaped bottom A' and a fluted washboard F therein, with a fluted compression-roller M, mounted in ver-

406,556.



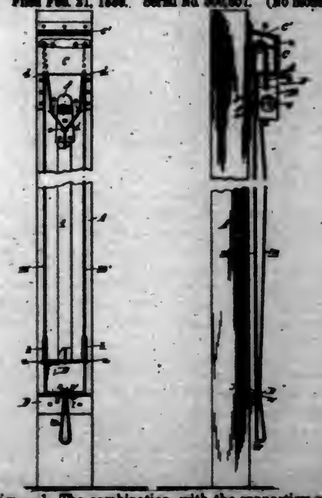
tically-moving bearings L L, having compression-springs *k k* secured to said bearings and to the frame, substantially as and for the purpose set forth.

406,557. BALANCED SLIDE-VALVE. JOSHUA R. BARNES, Springfield, Ill. Filed Feb. 16, 1889. Serial No. 300,194. (No model.)



Claim.—In a balanced slide-valve for steam-engines, said valve having a cap or rider adapted to slide steam-tight against the inner surface of the steam-chest cover, and made steam-tight upon the crown part of the valve by packing located in a groove extending entirely round the crown of the valve, the combination of steam-passages *c*, having their ingress-orifices in the exterior lower part of the crown of the valve and their egress-orifices in the packing-groove *d*, the packing ring or band *i*, ledges or shoulders *r*, a semicircular channel in the bottom of the groove *d*, and supporting-springs *h*, all of said parts constructed and adapted to operate substantially as and for the purpose set forth.

406,558. SIGNAL APPLIANCE. WILLIAM J. BARNES, Oshkosh, Wis. Filed Feb. 21, 1888. Serial No. 300,657. (No model.)



Claim.—1. The combination, with the supporting-post A, of a light frame or box joined to stanchions which pass, when raised,

through corresponding openings in a pulley-supporting box above and are connected with a double raising-lanyard passing over pulleys from below, the lower end being attached to and carried by the light-frame from below to form a lowering-rope integral with the raising-rope, a drag attached to a lower supporting-platform and engaging both the raising and lowering ropes, and a supporting-hook at the top arranged so as to engage a corresponding hook or projection upon the light-frame when descending in a perpendicular, substantially as shown, for the purposes specified.

2. The combination, with a supporting-post A, of a light-frame having posts or stanchions extending upwardly, attached to a double lanyard passing upwardly over pulleys at the top and downward below the light-frame and attached thereto, eyes or sockets at the top to admit or inclose the stanchions when raised, and a supporting-hook at the top to engage a corresponding hook or projection upon the light-frame when at perpendicular, substantially as shown, for the purposes specified.

3. In a railroad or other signal, the combination, with a supporting-post, of a pulley secured to the upper part of the post, an elevating and lowering cord passing over the pulley, said cord extending in a loop near the bottom of the post, a light-frame having the two ends of the cord connected thereto, a hook or support for the light-frame to hold it firmly at the proper signaling-point, and a protective covering for the portion of the cord which passes over the pulley when the lamp is lowered for lighting or trimming.

406,559. PROCESS OF MANUFACTURING STARCH. ARNO REHN, Chicago, Ill. Filed July 10, 1888. Serial No. 280,432. (No specimens.)

Claim.—The herein-described method of producing refined starch by the acid process, embracing the following steps, to wit: the preliminary soaking of the whole grain in a weak acid solution, the crushing of the grain and its mixture with water, the separation of the germs and hulls from the starch-milk, the running of the starch-milk over starch-tables, the collection of the starch from the starch-tables and its mixture with a sufficient quantity of water to form a starch-milk of, say, 20° Baumé, the treatment of such starch-milk with an alkali—such as caustic soda—the introduction of the resulting alkalied starch-milk into the drum of a centrifugal separator and the separation of the starch from the gluten by centrifugal force, the removal by washing of any gluten deposited upon the surface of the starch-wall and the draining of the water and gluten from the drum, and, finally, the mixture of the starch collected from the drum with water and the washing out and elimination of the alkali by settlement and decantation, as set forth.

406,560. BOB-SLED. WILL J. BLACKSTON, Otter Lake, Mich. Filed Apr. 12, 1888. Serial No. 308,961. (No model.)



Claim.—1. In a sled, the combination, with the casting formed with semicircular bearing and circular block in said bearing, of the wearing-plate formed with ears embracing said block, and with the ribs *g* connecting said ears, substantially as shown and described, and for the purpose specified.

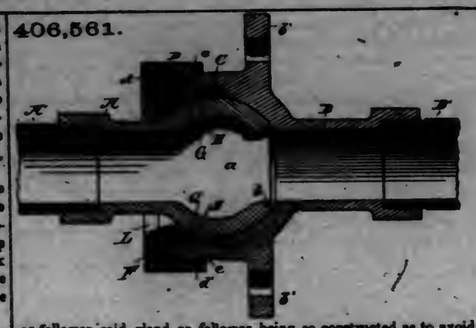
2. In a sled, the hollow casting B, formed with semicircular bearing at its upper end and with circular block in said bearing, with a space at each end thereof, combined with the wearing-plate formed with depending ears and ribs *g* connecting the same, and the transverse bolt pivotally connecting said ears and block together, substantially as shown and described.

3. In a sled, the combination, with the runners provided with the knuckles and the transverse timbers secured to portions of said knuckles, of the longitudinal timber, the rocking plate on the under side thereof at one end, and the loosely-working bolt securing the said end of the longitudinal timber to one of the transverse timbers, substantially as shown and described.

406,561. BALL-AND-SOCKET JOINT. WILLIAM BURNHAM, New York, N. Y. Filed Jan. 23, 1889. Serial No. 297,393. (No model.)

Claim.—1. In a ball-and-socket joint, the combination of a socket having a packing-space formed within its walls, a soft packing interposed between the ball and socket, a ball within said socket, a gland

406,561.



or follower, said gland or follower being so constructed as to avoid frictional contact with the ball, and an expansible ring interposed between the gland and packing, substantially as and for the purposes set forth.

2. In a ball-and-socket joint, the combination of a socket having a packing-space formed in its walls, a soft packing, a ball within the socket, a gland or follower so arranged as to have no frictional contact with the said ball, an expansible ring between the gland or follower and the packing, and a movable ring between the packing and said expansible ring, substantially as set forth.

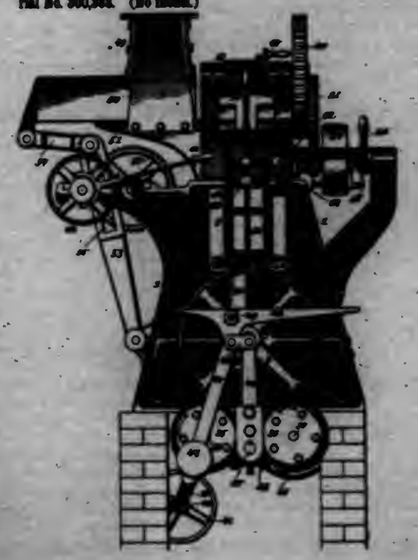
3. In a ball-and-socket joint, the combination of a socket having a packing-space formed in its walls, a soft packing interposed between the ball and socket, a ball within said socket, a gland or follower, means for restricting the inward movement of said gland, and an expansible ring interposed between the gland and packing, substantially as and for the purposes set forth.

4. In a ball-and-socket joint, the combination of a socket having a packing-space formed in its walls, a soft packing, a ball within the socket, a gland or follower, a shoulder formed on said gland, an expansible ring between the said gland and packing, and a movable ring between the packing and said expansible ring, substantially as set forth.

5. The combination, in a ball-and-socket joint, of a ball and socket, said ball being within said socket, a gland or follower arranged as described, split ring G, and movable ring H, and soft packing beneath said movable ring, these parts being arranged for joint operation substantially as hereinbefore set forth.

6. The combination, in a ball-and-socket joint, of a ball *a*, socket *b*, said ball being within said socket, packing *c*, a gland or follower arranged as described, split ring G between the gland and packing, and a movable ring H between the packing and said split ring, these parts being arranged for joint operation substantially as hereinbefore set forth.

406,562. BRICK-MACHINE. WALFRED BURNHAM, Los Angeles, Cal., assignor to Charles H. Frost, same place. Filed Feb. 16, 1888. Serial No. 300,268. (No model.)



Claim.—1. In a brick-machine, a main frame, one or more mold-boxes supported in the main frame, a cover, as 13, for the mold-boxes, an eccentric-shaft, as 16, journaled in said cover, and a plunger, as 17, in combination with gear-wheels, a pulley, and clutch for operating said shaft and plunger, substantially as and for the purpose specified.

2. In a brick-machine, a main frame, one or more mold-boxes supported by the frame, and a gage, as 62, supported by the frame, in combination with a lower plunger and gages 64 and 65, supported by such plunger, substantially as and for the purpose specified.

3. In a brick-machine, a main frame, one or more mold-boxes, a lower plunger, a screw, gear-wheels, and friction-drum for operating the plunger, in combination with a rocker carrying friction-rollers 35 and 36 and belt-pulleys through which the friction-rollers are put into motion, substantially as and for the purposes specified.

4. In a brick-machine, a main frame, one or more mold-boxes, a lower plunger operated by a screw and gear-wheels, a friction-drum, as 12, and a rocker carrying pulleys and friction-wheels, in combination with a foot-lever 42, through which the lower plunger can be brought into operation or stopped at will, substantially as and for the purposes specified.

5. In a brick-machine, a main frame carrying one or more mold-boxes and a clay-filler, as 50, in combination with a pitman-crank, gear-wheels, pulley, clutch, and lever through which the clay-filler is moved and stopped at will, substantially as and for the purposes specified.

6. In a brick-machine, the combination of a main frame, one or more mold-boxes, a hinged cover, as 13, an eccentric-shaft, as 16, upper plunger, as 17, lower plunger, as 4, a screw, as 8, a rocker carrying friction-pulleys, as 35 and 36, a friction-drum, as 12, and a foot-lever, as 42, gage 62, supported by the frame, and gages 64 and 65, supported by the lower plunger, substantially as and for the purposes specified.

7. In a brick-machine, the combination of a main frame, one or more mold-boxes, a plunger, as 4, and a gage, as 64, supported by the said plunger, substantially as and for the purposes specified.

8. In a brick-machine, the combination of a main frame, one or more mold-boxes, a plunger, as 4, a gage, as 62, supported by some fixed part, and a gage, as 64, supported by said plunger, substantially as and for the purposes specified.

9. In a brick-machine, a rocking shaft, as 27, in combination with arms 29, sleeves 30, sleeves 31 and 32, shafts 33 and 34, friction-wheels, as 35 and 36, and driving-pulleys, as 37 38, substantially as and for the purposes specified.

406,563. COMPOSITION FOR FLOORING, ROOFING, AND OTHER PURPOSES.

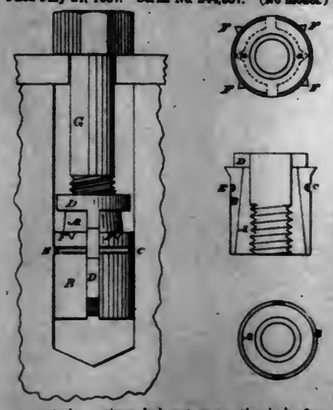
CHARLES A. CATLIN, Providence, R. I., assignor of one-half to Cornelius S. Sweetland, same place. Filed Mar. 9, 1888. Serial No. 266,725. (No specimens.)

Claim.—1. The herein-described material or composition, the same being a tough, tenacious, and somewhat elastic substance composed of silicate of soda or potash having a comparatively small proportion of fibrous asbestus mixed therewith and uniformly distributed throughout the same, substantially as set forth.

2. A material or composition for roofing, flooring, and similar purposes, composed of silicate of soda or potash having fibrous asbestus mixed therewith and rendered insoluble by the addition of an acid, substantially as described.

406,564. EXPANSION-BOLT DEVICE.

ISAAC CHURCH, Toledo, Ohio. Filed July 21, 1887. Serial No. 244,857. (No model.)



Claim.—1. A bolt, a threaded nut upon the bolt, formed with inclined outer sides, and supplemental wedges movable upon the same, as and for the purpose set forth.

2. A bolt, a threaded nut upon the bolt, formed with an annular collar and right angled ribs, semicircular inclined surfaces between the ribs, and semicircular wedges movably secured upon the inclined surfaces, as and for the purpose set forth.

3. A bolt and a threaded nut upon the bolt, formed with diametrically-opposite inclined surfaces, in combination with oppositely-inclined wedges movably secured upon the inclined surfaces of the nut, as and for the purpose set forth.

4. A bolt and a threaded nut upon the bolt, formed with inclined surfaces, in combination with wedges movably secured upon the nut and provided with projecting studs upon the outer side thereof, as and for the purpose set forth.

406,565. EXPANSION-BOLT.

ISAAC CHURCH, Toledo, Ohio. Filed Apr. 22, 1889. Serial No. 308,170. (No model.)



Claim.—1. In an expansion-bolt, a shell formed with an interior inclined annular portion and a cylindrical tapered nut within the same, in combination with a threaded bolt within the nut, as and for the purpose set forth.

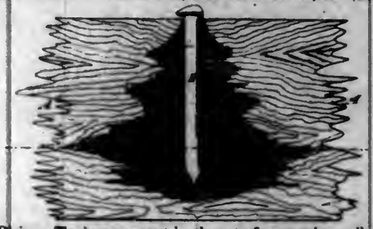
2. In an expansion-bolt, a cylindrical internally-inclined shell formed of two sections joined by a flexible portion intermediate the same, in combination with an inclined nut movable upon the incline of the shell, as and for the purpose set forth.

3. In an expansion-bolt, a cylindrical shell formed of a plurality of sections connected by a flexible central portion, each of the sections being formed with an inclined interior surface and a segment of an annulus, in combination with an oppositely-tapered nut movable upon the incline of the sections, and a bolt movable within the annulus formed by the assembling of the segments, as and for the purpose set forth.

4. In an expansion-bolt, semicircular sections formed with an internally-inclined interior portion, and slots extending from the same to the outer edge, in combination with an inclined nut between the sections formed with projections to move within the slots, as and for the purpose set forth.

406,566. PRESERVING RAILWAY-TIES.

PLIMMON H. DUDLEY, New York, N. Y. Filed Dec. 23, 1886. Serial No. 222,375. (No model.)



Claim.—The improvement in the art of preserving railway-ties and other spiked and bolted timbers, consisting in first boring a hole in the wood transverse to the length of the pores and grain and which exposes the ends of the pores, in then applying a preservative compound in the hole, where it has access to the exposed ends of the pores, and in finally driving a spike or bolt to substantially fill the hole and force the preservative compound into the wood upon all sides, substantially as herein described.

406,567. TELEPHONE.

THOMAS A. EDISON, Menlo Park, N. J. Filed Feb. 19, 1886. Serial No. 192,485. (No model.)



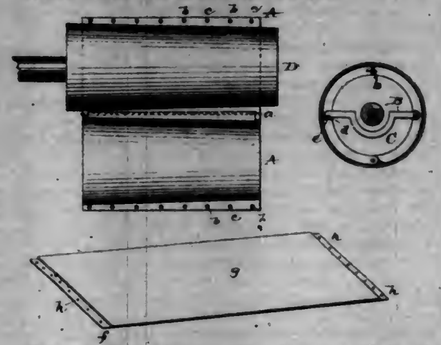
Claim.—1. An electrode for telephones composed of a body of granules of carbonized hard coal, substantially as set forth.

2. In a telephone, the combination, with a diaphragm, of an electrode composed of a body of granules of carbonized hard coal included in the circuit and acted upon by the diaphragm to vary the resistance of the circuit, substantially as set forth.

3. In a telephone, the combination, with a diaphragm, of an electrode composed of a body of granules of carbonized hard coal, and metal surfaces between which such body of carbon-granules is held, one of such metal surfaces being controlled by the diaphragm, substantially as set forth.

406,568. PHONOGRAPH.

THOMAS A. EDISON, Llewellyn Park, N. J. Filed Oct. 17, 1888. Serial No. 288,363. (No model.)



Claim.—1. The combination, with a phonogram-cylinder, of a false shell made in two parts hinged together for receiving the phonogram-blank, substantially as set forth.

2. The false shell for phonographs, having a tapering bore and a cylindrical outer surface and made in two parts hinged together, substantially as set forth.

3. The false shell for phonographs made in two parts hinged together, in combination with a locking device for holding said parts together, substantially as set forth.

4. The false shell for phonographs composed of two parts hinged together, and having their edges provided with registering projections and perforations, substantially as set forth.

5. The flexible phonogram-blank consisting of a backing of flexible material covered, except at its ends, with flexible indenting material, substantially as set forth.

406,569. PHONOGRAM-BLANK.

THOMAS A. EDISON, Llewellyn Park, N. J. Filed Jan. 19, 1889. Serial No. 296,878. (No model.)



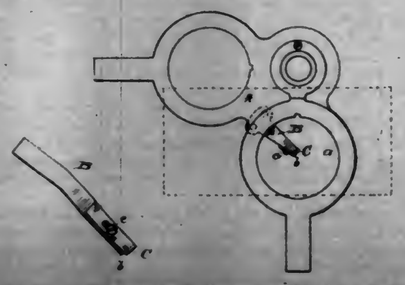
Claim.—1. A cylindrical phonogram-blank having a wound inner surface of filiform material, such as thread, and an outer surface of sound-recording material, substantially as set forth.

2. A cylindrical phonogram-blank having, in combination, a cylindrically-wound body of filiform material, such as thread, and an outer covering of the sound-recording material, substantially as set forth.

3. A cylindrical phonogram-blank having a wound internal lining of filiform material, substantially as set forth.

406,570. PHONOGRAPH.

THOMAS A. EDISON, Llewellyn Park, N. J. Filed Feb. 11, 1889. Serial No. 299,452. (No model.)

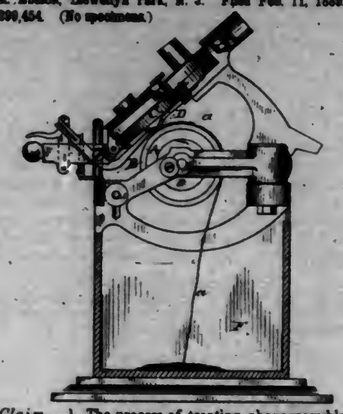


Claim.—1. In a phonograph, the turning-off tool provided with a breaking shoe or shoulder for powdering or breaking the chips, substantially as set forth.

2. In a phonograph, the combination, with the turning-off tool, of a breaking-shoe adjustably secured thereto and acting to powder or break the chips, substantially as set forth.

406,571. PROCESS OF TREATING PHONOGRAM-BLANKS.

THOS. A. EDISON, Llewellyn Park, N. J. Filed Feb. 11, 1889. Serial No. 299,454. (No specimens.)

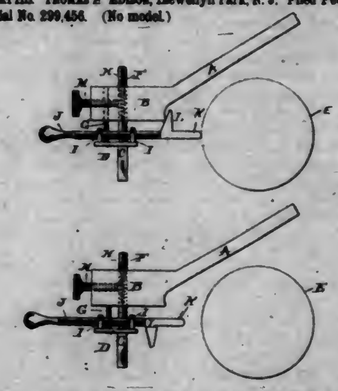


Claim.—1. The process of treating phonogram-blanks having hard brittle surfaces, consisting in producing a tough film upon the surfaces of such blanks preparatory to turning them off, substantially as and for the purpose set forth.

2. The process of treating phonogram-blanks having hard brittle surfaces, consisting in applying to such blanks preparatory to turning them off a solution which attacks the substance of the blanks and softens and toughens the surface, substantially as and for the purpose set forth.

406,572. AUTOMATIC DETERMINING DEVICE FOR PHONOGRAPHS.

THOMAS A. EDISON, Llewellyn Park, N. J. Filed Feb. 11, 1889. Serial No. 299,456. (No model.)



Claim.—1. In a phonograph, the combination, with the recorder or reproducer frame movable toward and away from the phonogram-surface, a guide-rest, and an adjustable presser-foot supporting the said frame from the guide-rest, of a determining-point carried by said frame and making contact with the phonogram-surface, a lock locking the spectacle-frame, operated by hand after the determining-point touches the phonogram-surface, substantially as set forth.

2. In a phonograph, the combination, with the recorder or reproducer frame movable toward and away from the phonogram-surface, a guide-rest, and an adjustable presser-foot supporting the said frame from the guide-rest, of a determining-point carried by said frame and making contact with the phonogram-surface, a lock locking the spectacle-frame, operated by hand after the determining-point touches the phonogram-surface, and mechanism independent of the locking mechanism operating to withdraw the determining-point from contact with the phonogram-blank after the locking of the spectacle-frame is effected, substantially as specified.

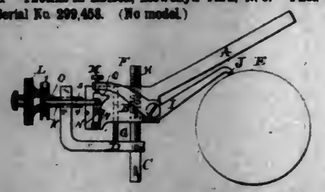
3. In a phonograph, the combination, with the recorder or reproducer frame movable toward and away from the phonogram-surface, a guide-rest, and an adjustable presser-foot supporting the said frame from the guide-rest, of a lever and a determining-point carried by said lever and making contact with the phonogram-surface, and a lock

locking the spectacle-frame, operated by hand after the determining-point touches the phonogram-surface, substantially as specified.

4. In a phonograph, the combination, with the recorder or reproducer frame movable toward and away from the phonogram-surface, a guide-rest, and an adjustable presser-foot supporting the said frame from the guide-rest, of a lever and a determining-point carried by said lever and making contact with the phonogram-surface, a lock locking the spectacle-frame, operated by hand after the determining-point touches the phonogram-surface, and mechanism, independent of the locking mechanism, operating to withdraw the determining-point from the phonogram after the locking of the spectacle-frame is effected, substantially as specified.

5. In a phonograph, the combination, with the recorder or reproducer frame movable toward and away from the phonogram-surface, a guide-rest, and an adjustable presser-foot supporting the said frame from the guide-rest, of a determining-point carried by said frame and making contact with the phonogram-surface and operated by hand after the operation by hand of the lock locking the spectacle-frame, and said lock locking the spectacle-frame, operated by hand after the determining-point touches the phonogram-surface, substantially as set forth.

406,573. AUTOMATIC DETERMINING DEVICE FOR PHONOGRAPHS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Feb. 11, 1889. Serial No. 299,458. (No model.)



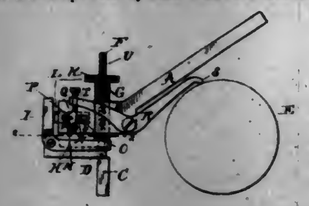
Claim.—1. In a phonograph, the combination, with the recorder or reproducer frame movable toward and away from the phonogram-surface, a guide-rest, and an adjustable presser-foot supporting the said frame from the guide-rest, of a determining-point carried by said frame and determining by contact with the phonogram-surface the exact position of adjustment of the recording or reproducing point therewith, and a lock operated by hand for locking the position of the spectacle-frame at such point of adjustment, and a tripper tripping the determining-point away from the phonogram-blank operated by a farther movement of the locking mechanism beyond that necessary to lock, substantially as specified.

2. In a phonograph, the combination, with the recorder or reproducer frame movable toward and away from the phonogram-surface, a guide-rest, and an adjustable presser-foot supporting the said frame from the guide-rest, of a lever and a determining-point carried by said lever and determining by contact with the phonogram-surface the exact position of adjustment of the recording or reproducing point therewith, and a lock operated by hand for locking the position of the spectacle-frame at such point of adjustment, and a tripper tripping the determining-point away from the phonogram-blank operated by a further movement of the locking mechanism beyond that necessary to lock, substantially as specified.

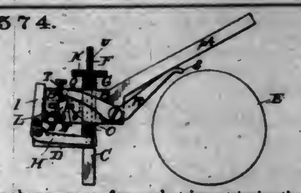
3. In a phonograph, the combination, with a movable frame, a guide-rest, and adjustable presser-foot, of a lock operated by hand to lock the movable frame and a tripper formed with a depression and a lever bearing the determining-point resting on said tripper, a sliding head on the locking-piece, and a connection between the tripper and sliding head, whereby the tripper is operated to trip the determining-point away from the phonogram-blank, substantially as specified.

406,574. AUTOMATIC DETERMINING DEVICE FOR PHONOGRAPH. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Feb. 11, 1889. Serial No. 299,459. (No model.)

Claim.—1. In a phonograph, the combination, with the recorder and reproducer frame movable toward and away from the phonogram-surface, a guide-rest, and an adjustable presser-foot supporting the said frame from the guide-rest, of a determining-point carried by said frame and making contact with the phonogram-surface, a lock locking the spectacle-frame operated by hand after the determining-point has contacted with the phonogram, comprising a bar on the presser-foot, a screw-threaded bar in the spectacle-frame surrounding the bar on the presser-foot, and through which said bar is free to slide, and said presser-foot, substantially as specified.



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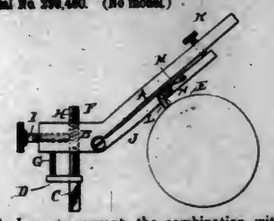
touches the phonogram-surface, and a tripper tripping the determining-point out of contact with the phonogram-blank operated by the operation of the lock, substantially as specified.

2. In a phonograph, the combination, with the recorder and reproducer-frame movable toward and away from the phonogram-surface, a guide-rest, and an adjustable presser-foot supporting the said frame from the guide-rest, of a lever and a determining-point carried by said lever and making contact with the phonogram-surface, a lock locking the spectacle-frame operated by hand after the determining-point touches the phonogram-surface, and a tripper tripping the determining-point out of contact with the phonogram-blank operated by the operation of the lock, substantially as specified.

3. In a phonograph, the combination, with the recorder and reproducer frame movable toward and away from the phonogram-surface, a guide-rest, and an adjustable presser-foot supporting the said frame from the guide-rest, of a lever and determining-point carried by said lever and making contact with the phonogram-surface, a lock locking the spectacle-frame operated by hand after the determining-point has contacted with the phonogram, comprising a bar on the presser-foot, a screw-threaded bar in the spectacle-frame surrounding the bar on the presser-foot, and through which said bar is free to slide, and said presser-foot, substantially as specified.

4. In a phonograph, the combination, with the recorder and reproducer frame movable toward and away from the phonogram-surface, a guide-rest, and an adjustable presser-foot supporting the said frame from the guide-rest, of a lever and determining-point carried by said lever and making contact with the phonogram-surface, a lock locking the spectacle-frame operated by hand after the determining-point has contacted with the phonogram, comprising a bar on the presser-foot, a screw-threaded bar in the spectacle-frame surrounding the bar on the presser-foot, and through which said bar is free to slide, and said presser-foot, a tripper for withdrawing the determining-point from the phonogram-blank operated by the movement for operating the lock, comprising a rocking lever, sliding bolt, and tripping-piece, substantially as specified.

406,575. AUTOMATIC DETERMINING DEVICE FOR PHONOGRAPH. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Feb. 11, 1889. Serial No. 299,460. (No model.)



Claim.—1. In a phonograph, the combination, with a movable frame, a guide-rest, and adjustable presser-foot, of a pivoted determining-point adapted to ride in a canted position on the surface of a revolving phonogram, substantially as specified.

2. In a phonograph, the combination, with a movable frame, a guide-rest, and adjustable presser-foot, of a pivoted L-shaped piece, one arm of which forms a determining-point, and the other arm of which is operated upon by a spring to throw the determining-point into the perpendicular when the phonogram ceases to revolve, and said spring, substantially as specified.

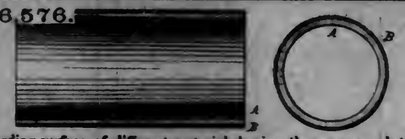
3. In a phonograph, the combination, with a movable frame, a guide-rest, and adjustable presser-foot, of a pivoted determining-point adapted to ride in a canted position on the surface of a revolving phonogram, and a lock locking the movable frame, operated by hand after the determining-point comes in contact with the phonogram, substantially as specified.

4. In a phonograph, the combination, with a movable frame, a guide-rest, and adjustable presser-foot, of a lever bearing a pivoted determining-point and an adjusting-screw for said lever, substantially as specified.

406,576. PHONOGRAM-BLANK. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Feb. 16, 1889. Serial No. 300,514. (No model.)

Claim.—1. A phonogram-blank composed of a base and an outer

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recording-surface of different materials having the same or substantially the same coefficient of expansion, substantially as set forth.

2. A phonogram-blank composed of a base of one material and a sound-recording surface of a different material, which is of a hard and brittle nature at ordinary temperatures, the two materials having the same or substantially the same coefficient of expansion, substantially as set forth.

3. A phonogram-blank having, in combination, a base of asphaltic material and an outer covering of sound-recording material, substantially as set forth.

4. A phonogram-blank having, in combination, a base of molded material and an outer covering of material having the same or substantially the same coefficient of expansion, substantially as set forth.

5. A phonogram-blank having, in combination, a base of molded material and an outer covering of another molded material, the two materials having the same or substantially the same coefficient of expansion, substantially as set forth.

6. A phonogram-blank having, in combination, a base of asphalt mixed with a material which contracts greatly in solidifying, such as carnauba-wax, and an outer covering of sound-recording material, substantially as set forth.

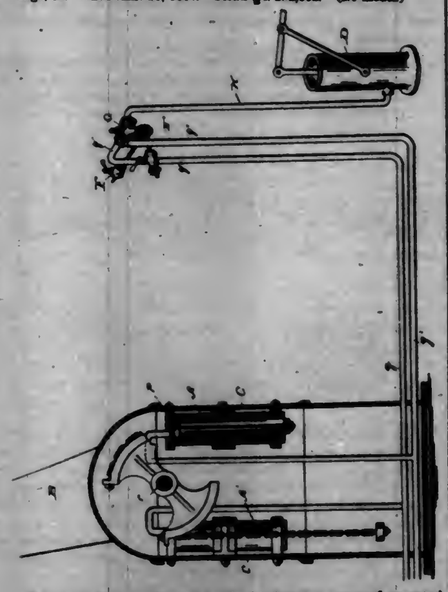
7. A phonogram-blank having, in combination, a base of asphalt mixed with a liquefying material, and an outer covering of sound-recording material, substantially as set forth.

8. A phonogram-blank having, in combination, a base of asphalt mixed with a material which contracts greatly in solidifying, such as carnauba-wax, and also with a liquefying material, and an outer covering of sound-recording material, substantially as set forth.

9. A phonogram-blank having an outer surface of metallic soap, and a base of another material having the same or substantially the same coefficient of expansion, substantially as set forth.

10. A phonogram-blank having a base of asphaltic material and an outer surface of metallic soap, substantially as set forth.

406,577. GATE. WILLIAM P. ELLIOTT and ARTHUR FARRAR, Chicago, Ill. Filed Mar. 29, 1887. Serial No. 232,862. (No model.)



Claim.—1. In a gate having a swinging bar on a post and actuated by fluid-pressure exerted from a pump, the combination, with the fluid-pressure mechanism at the post and the fluid-pump, of a cock G, in the communication between the said fluid-pressure mechanism and pump, having a recess *x* in its plug, a head *g*, provided with openings *f* and *f*², and valves for controlling the said openings, substantially as described.

2. In a gate having a swinging bar on a post and actuated by fluid-pressure exerted from a pump, the combination, with the fluid-pressure mechanism at the post and the fluid-pump, of a cock G, in the communication between the said fluid-pressure mechanism and pump, having a recess *x* in its plug, a head *g*, provided with openings *f* and *f*², and tubes *f* and *f'*, extending from the said opening, and provided with valves, substantially as and for the purpose set forth.

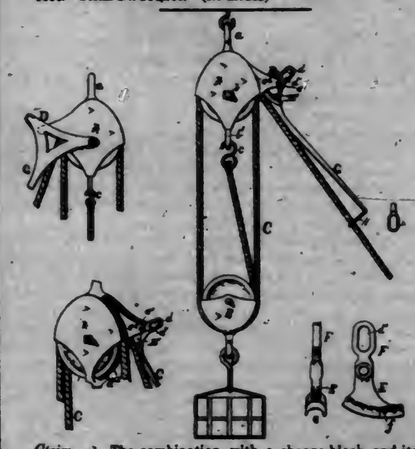
406,578. COPYING-PRESS. ADOLF REIMANN, Hamburg, Germany. Filed Dec. 17, 1888. Serial No. 293,836. (No model.)



Claim.—1. In copying-presses, the combination of the base-board or bed-plate *b*, the spring *f*, affixed to said board or plate, and the plate *a*, hinged to said spring *f*, substantially as set forth.

2. A copying-press comprising a bed-plate *b*, a spring *f*, affixed thereto, a plate *a*, hinged to said spring, a pin *k*, and a pivoted lever *h*, having a flange *u*, adapted to engage on said pin, and a rail *t*, the whole combined substantially as and for the purpose described.

406,579. HOIST. JOSEPH J. GREEN, Canton, Ohio. Filed Aug. 31, 1888. Serial No. 284,260. (No model.)

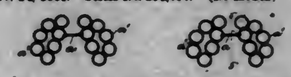


Claim.—1. The combination, with a sheave-block and its rope, of a lever and a segment pivoted at different points to the sheave-block, said lever having a pin engaging with a slot in the segment, whereby the movement of the lever controls the movements of the segment to hold or release the rope, substantially as described.

2. The combination of the sheave-blocks A and B, the rope C, the lever D, provided with the pin *d*, the pendent arm G, provided with the eye H, and the segment E, provided with the extension or arm F, having the elongated slot *d'*, substantially as and for the purpose described.

3. The combination of the sheave-blocks A and B, the rope C, the lever D, provided with the pendent arm G and eye H, the segment E, the groove *e*, and the teeth *f*, substantially as and for the purpose described.

406,580. NASAL RESPIRATOR. SUMNER H. GUYOT, Boston, Mass. Filed Nov. 24, 1888. Serial No. 291,757. (No model.)

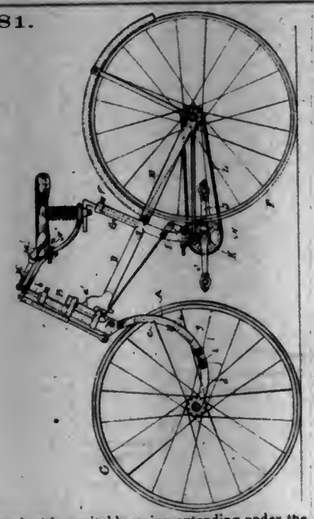


Claim.—The improved nasal respirator herein described, consisting of a bow *a*, provided at each end with one or more shields *a'*, made up of a number of rings secured together, substantially as and for the purpose set forth.

406,581. VELOCIPEDE. CLAUS HAMSON and ANDREW PETERSEN, Worcester, Mass., assignors to Ivar Johnson, same place. Filed Nov. 1, 1888. Serial No. 289,756. (No model.)

Claim.—1. In a velocipede, the front fork having the arms thereof made in two parts, one pivoted to the other, with the main

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parts provided with a suitable spring extending under the upper end of the end section of each arm, and said end sections provided with a projection extending above its pivot, adapted to bear upon the spring aforesaid, substantially as and for the purpose set forth.

2. In a velocipede, the combination of the main parts *c* of the front fork, having the springs *g* secured thereto and extending under the end sections *d* of said arms, with said end sections *d* pivoted at their upper ends to the lower ends of the main parts *c*, and having the flanges *f* at their upper ends extending above their pivots and adapted to bear upon the top of the aforesaid springs, and the wheel-axle, substantially as and for the purpose set forth.

3. In a velocipede, the combination of the main parts *c* of the front fork, each having the vertical slot *h*, and the spring *g*, secured thereto in said slot, the free ends of said springs extending under the upper ends of the end sections *d*, and adjusting-screws *i*, adapted to bear upon the under sides of the springs *g* with said end sections *d* pivoted to the lower ends of the main parts *c*, and having a flange *f* at the upper end of each extending above the pivots of said sections and adapted to bear upon the tops of springs *g*, and the front-wheel axle, substantially as and for the purpose set forth.

4. In a velocipede, the combination of the main parts *c* of the front fork, having the springs *g* secured thereto and extending under the end sections *d* of said arms, and adjusting-screws *i*, adapted to bear upon the under side of each spring *g*, with said end sections *d* pivoted to the lower ends of the main part *c*, and each having a flange *f* at its upper end extending above the pivots of said sections and adapted to bear upon the tops of springs *g*, the foot-rests, and front-wheel axle, substantially as and for the purpose set forth.

5. In a velocipede, the front-fork pivot consisting of the pivot-bolt *e*, having a threaded longitudinal opening and transverse slots at its screw end to admit of said end being expanded, the expanding-screw *j*, and holding-nut *e'*, in combination with the main part *c* and end section *d* of the front fork, substantially as and for the purpose set forth.

6. In a velocipede front fork, the combination of the main part *c*, having the spring *g* secured in the vertical slot *h*, and the cushion *g'* in said slot under the lower end of said spring, with the end section *d* pivoted to the lower end of the main part *c* and having a flange *f*, adapted to bear upon the lower end of spring *g*, substantially as and for the purpose set forth.

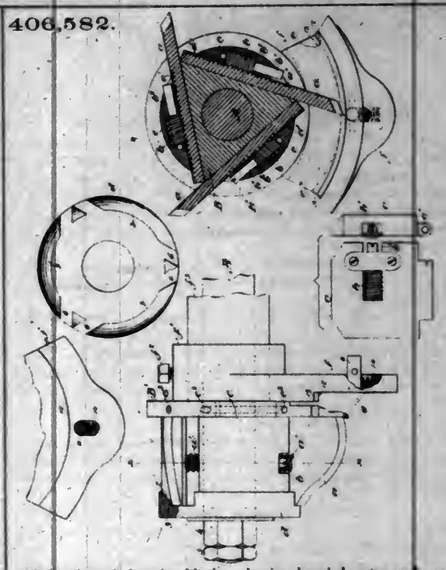
7. In a velocipede front fork, the combination of the main part *c*, having a spring *g* secured in a vertical slot *h*, and the adjustable holding-screw *i'*, adapted to bear against the under side of the lower end of said spring *g*, with the end section *d* pivoted to the lower end of the main part *c* and having a flange *f* adapted to bear upon the lower end of spring *g*, substantially as and for the purpose set forth.

406,582. HEEL-TRIMMER. MICHAEL T. HARRIGAN, Wollaston, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Jan. 15, 1889. Serial No. 296,334. (No model.)

Claim.—1. In a heel-trimming tool, the head and blades having a series of partial screw-threads, and caps or plates having each a recess at its inner side, combined with the worm-screws inserted in the openings of the said cap and engaging the said blades.

2. In a heel-trimmer, the head, the flange B', a series of blades,

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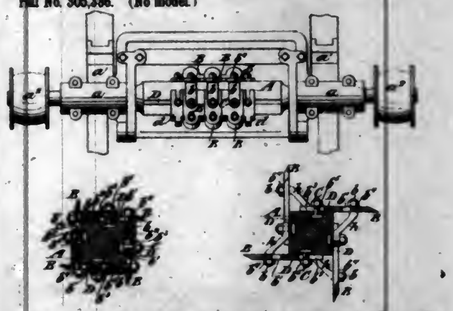


and the pivoted clamping-blocks *c*, having beveled outer ends, combined with the cap *d*, having a beveled surface to act upon the outer ends of the said blocks and force them toward the blades, substantially as described.

3. In a heel-trimmer, a head and blades and a bracket, combined with a segmental tread-guard and movable pivot for the same, whereby the tread-guard is free to tip for a limited distance in the direction of its length, substantially as and for the purpose set forth.

4. In a heel-trimmer, the head, the blades having the series of threads, the flange B', and the series of pivoted blocks having screw-threads at their inner faces and beveled at their outer ends, combined with the series of blade-adjusting worm-screws and a cap having a beveled portion 3 to act upon the said blocks, to operate substantially as described.

406,583. PLANING-MACHINE. ALFRED B. HUTCHINSON, Brooklyn, and ERNST F. AUTENRIETH, New York, assignors to the Glen Cove Machine Company, (Limited,) Brooklyn, N. Y. Filed Mar. 30, 1889. Serial No. 305,286. (No model.)



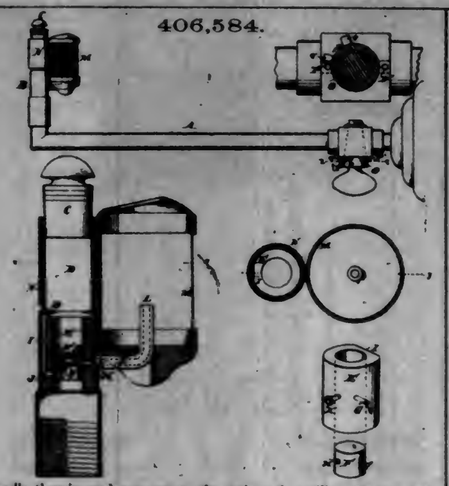
Claim.—1. The combination, with a cutter-head, of a cutter placed against one side thereof, a bolt securing the rear end of the cutter to the said side of the head, and a second bolt one end of which is fastened to the head on a side thereof at an angle to the first-mentioned side and which passes through the cutter outside of the head, substantially as and for the purpose herein set forth.

2. The combination, with a cutter-head, of a cutter placed against one side thereof, a bolt securing the rear end of the cutter to the said side of the head, a second bolt passing through the cutter outside of the head, and a third bolt securing said second bolt to the head, substantially as and for the purpose herein set forth.

406,584. GAS-BURNER. ALFRED P. JACOB, Philadelphia, Pa. Filed Aug. 13, 1888. Serial No. 282,594. (No model.)

Claim.—1. The combination of a main gas-burner with an auxiliary burner opening therefrom, a short inverted-cup-shaped valve loosely held entirely within said main burner and free to move ver-

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tically therein, and passages to the main and auxiliary burners controlled by said valve, so that when the one is opened the other is closed.

2. The combination of a main gas-burner with an auxiliary burner opening therefrom, a cylindrical chest held in said main burner and provided with passages leading, respectively, to the main and auxiliary burners, and a sliding valve loosely supported in said cylindrical chest normally open to the passage leading to the auxiliary burner and closed to that leading to the main burner.

3. The combination of a main gas-burner with an auxiliary burner opening therefrom, a removable cylindrical chest held in said main burner and provided with passages leading, respectively, to the main and auxiliary burners, and a sliding valve loosely supported in said cylindrical chest normally open to the passage leading to the auxiliary burner and closed to that leading to the main burner.

4. A gas-burner consisting of a main burner, in combination with an auxiliary burner opening therefrom, and a valve operated by the pressure of the gas, consisting of a vertically-movable inverted cup, and a cylindrical piece within which said cup is supported and upon the sides of which it is guided, located within the main burner, and provided with openings, respectively, to said main and auxiliary burners, said openings to the main burner being normally closed and the opening to the auxiliary burner being normally open.

5. A gas-burner consisting of a main burner, in combination with an auxiliary burner opening therefrom and a valve operated by the pressure of the gas, consisting of a vertically-movable inverted cup, and a cylindrical piece within which said cup is supported and upon the sides of which it is guided, provided with passages substantially in opposite sides opening, respectively, into the main burner and into the auxiliary burner located within the main burner, the former of said passages being normally closed and the latter normally open when the supply is increased.

6. In a gas-burner, the combination of the main burner B, auxiliary burner L, opening thereinto, cylinder E, held in said burner, having a passage-way K on the one side to said auxiliary burner, and passage-ways I J on the other to said main burner, valve F, provided with opening H, normally opposite to passage-way K into the auxiliary burner loosely secured in said cylinder E, but free to rise therein to close the passage-way into the auxiliary burner and to open that into the main burner.

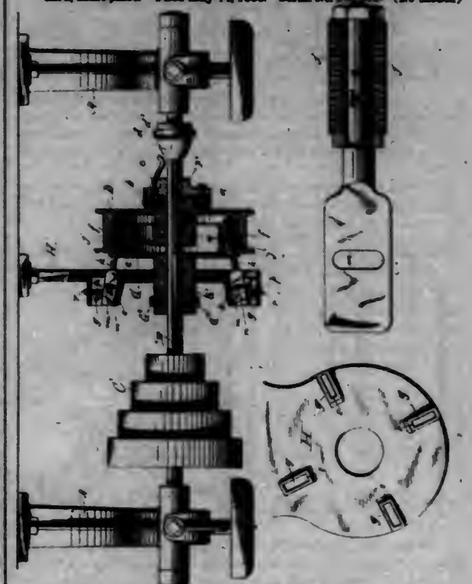
7. In a gas-burner, the combination of the main burner B, auxiliary burner L, opening thereinto, cylinder E, held in said burner having a passage-way K on the one side to said auxiliary burner and passage-ways I J on the other to said main burner, valve F, provided with opening H, normally opposite to passage-way K into the auxiliary burner, loosely secured, by means of slot *f* and pin G, on said cylinder E, but free to rise therein to close the passage-way into the auxiliary burner and to open that into the main burner.

406,585. MATERIAL FOR THE TREATMENT OF WALLS, &c. JOSE P. KING, West Brighton, N. Y. Filed Apr. 24, 1888. Serial No. 308,494. (No specimens.)

Claim.—1. The above-described composition of matter, composed, essentially, of a restraining material, ground stone or its equivalents, and a fibrous material—such as asbestus—as set forth.

2. The above-described composition of matter, composed, essentially, of a restraining material, ground stone or its equivalents, and a fibrous material—such as asbestus or its equivalents—reduced to a finely-divided condition and combined, as set forth.

406,586. APPARATUS FOR REVERSING ROTARY MOTION. GEORGE LAYER, Worcester, Mass., assignor of one-half to Silas W. Goddard, same place. Filed May 14, 1888. Serial No. 273,896. (No model.)



Claim.—1. In an apparatus for reversing rotary motion, the combination, with a shaft and a pulley running loosely thereon and provided with an internally-tapering flange, of a conical pulley having a spline-connection with said shaft, but capable of sliding thereon, and a series of intermediate rolls placed between the tapering surfaces of said pulleys, whereby the rotary motion of one pulley is made to impart a reverse rotary motion to the other pulley, substantially as described.

2. The combination, with a pulley running loosely on its shaft and a pulley having a spline-connection, but capable of sliding on the same shaft, of a series of rolls intermediate the inner and outer faces of said pulleys, substantially as described, said rolls being held on spindles pivoted in a supporting-frame, so the axes of said rolls may be brought into true alignment with the opposing faces of said pulleys, substantially as described.

3. The combination, with pulleys D and G and rolls *j*, arranged substantially as described, of a rigid frame held in a fixed position, and spindles pivoted in said fixed frame and carrying said rolls *j*, substantially as described.

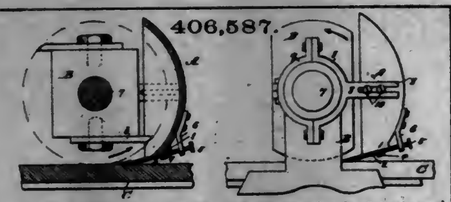
4. The combination, with pulleys D and G, provided with opposing faces, and rolls *j* placed between said faces, of supporting-frame H, with mortises to receive the roll-spindles, and springs applied to said roll-spindles, whereby said rolls are held from contact with the opposing surfaces of said pulleys when the same are separated, substantially as described.

5. The combination, with a shaft and a pulley running loosely around said shaft and being provided with clutching mechanism, whereby its motion is imparted to said shaft, of a pulley having a spline-connection and sliding on said shaft, said pulleys having opposing parallel faces inclined to the axis of their rotation, and rolls placed between said inclined faces, whereby the rotary motion of one pulley is made to impart a reverse rotary motion to the other pulley, substantially as described.

406,587. ROTARY PLANING-MACHINE. VINTON V. LAWRENCE, Waterford, Vt., assignor of one-half to Isaac F. Paul, Boston, Mass., and Amos H. Carpenter, West Waterford, Vt. Filed Aug. 29, 1888. Serial No. 284,104. (No model.)

Claim.—1. The combination, with the rotary cutter-head, of arms 8, which are journaled on the same axis and provided with slots, the presser-bar having an inclined cutter-seat 1 on its lower side, clamp-screws 10, which secure the cutter to said arms in any adjustment permitted by the slots, and the cutter 2, attached to the inclined seat 1, and screws for securing and adjusting said cutter, as shown and described.

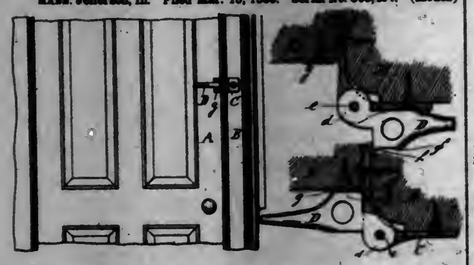
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2. The combination, with the rotary cutter-head, of horizontal arms which are journaled on the same axis and provided with slots, the presser-bar, and clamp-screws which secure the latter to said arms in any adjustment permitted by the said slots, as specified and described.

3. The combination, with the rotary cutter-head, of a presser-bar which is journaled on the same axis and is adjustable toward and from the cutter-head, as specified and described.

406,588. LATCH. DANIEL J. MILLMANN and DANIEL G. MILLMANN, Jefferson, Ill. Filed Mar. 15, 1889. Serial No. 303,497. (Model.)



Claim.—The combination, with a door and casing, of an angle-plate C, secured against the casing and having pivoted thereon the hub of a lever D, provided with square offset *f*, and fin *h*, engaging with plate *g* of the door, all substantially as set forth.

406,589. COTTON-CHOPPER. JOSEPH C. MCCOLLUM, Bloomfield, Mo. Filed Mar. 30, 1889. Serial No. 305,433. (No model.)



Claim.—In a cotton-chopper, the combination, with the frame, the lever, the wheels, and handles, of the blocks K, in advance of the levers, and having the vertical shank *k*, fitted in sockets in the side bars of the frame, and the scrapers L, secured to said blocks, substantially as shown and described, and the rakes M, in advance of the scrapers and having shanks secured in the side bars of the frame, as set forth.

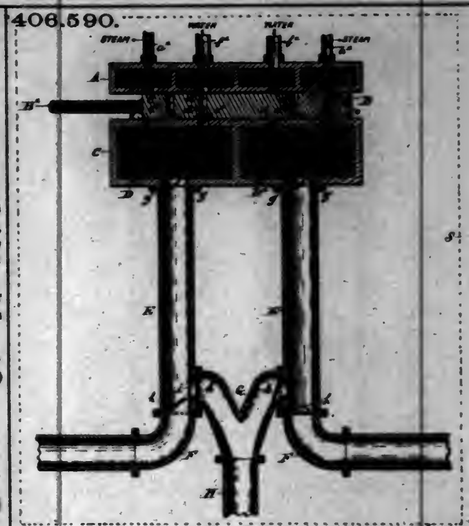
406,590. STEAM AND VACUUM PUMP. JOHN MCFARLANE, Washington, D. C., assignor of two-thirds to George J. Baxter and Henry Wax, same place. Filed Mar. 27, 1889. Serial No. 304,922. (No model.)

Claim.—1. In a vacuum-pump for dredgers, the combination, with a casing divided into two vacuum-chambers and a casing divided into two sets of water and steam compartments, of a reciprocating valve provided with ports, as described, and arranged to admit water and steam alternately into each vacuum-chamber, as and for the purpose set forth.

2. In a vacuum-pump for dredgers, the combination, with a casing divided into two vacuum-chambers and a casing divided into two sets of water and steam compartments, of a reciprocating valve provided with ports, as described, and arranged to admit water and steam alternately into each vacuum-chamber, and suction-pipes communicating with the vacuum-chambers, and valves situated in such suction-pipes, as set forth.

3. In a vacuum-pump for dredgers, the combination, with a casing divided into two vacuum-chambers and a casing divided into two sets of water and steam compartments, of a reciprocating valve provided with ports, as described, and arranged to admit water and steam alternately into each vacuum-chamber, suction-pipes communicating with the vacuum-chambers, and a Y-shaped discharge communicating with such suction-pipes, and a valve situated in such suction-pipes, and a valve situated in the Y, as set forth.

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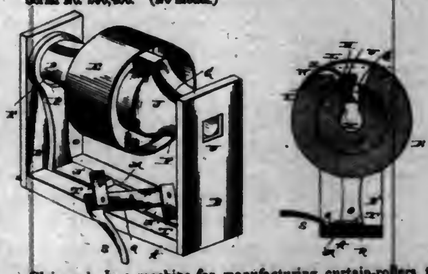


406,591. TICKET-HOLDER FOR RAILWAY-CARS. CHARLES W. MCMURRAN, Hightstown, N. J. Filed Apr. 10, 1889. Serial No. 306,686. (No model.)



Claim.—The combination, in the ticket-holder, of the box B, having end flanges and slots 4, the spring C within the box B, and secured to the same at one end and having at the other end a thumb-piece, the end of the box being slotted for such thumb-piece to project, substantially as set forth.

406,592. MACHINE FOR MANUFACTURING CURTAIN-ROLLERS. ANDREW NORDLUND, Menominee, Mich. Filed Jan. 15, 1889. Serial No. 296,406. (No model.)

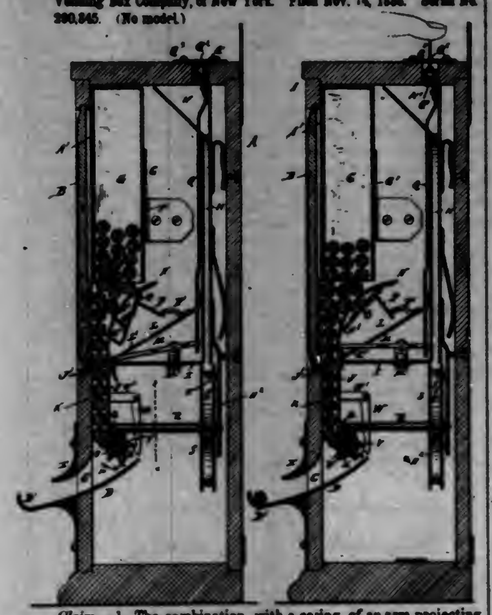


Claim.—1. In a machine for manufacturing curtain-rollers, the revolving tubular shaft having a longitudinal slot, one side of which is provided with a radial dovetailed recess, in combination with the radially-adjustable cutter-bar having a dovetailed lug fitting in the said recess, a spring arranged to force the said cutter-bar in an outward direction, and mechanism for forcing it inwardly toward the longitudinal center of the tubular shaft against the tension of the spring, as set forth.

2. The combination of the longitudinally-slotted revolving tubular shaft having tapering ends, the cutter-bar arranged to slide radially therein, and rings or bands arranged to move in opposite directions upon the tapering ends of the shaft, whereby the said cutter-bar may be forced inward toward the longitudinal center of the shaft, substantially as set forth.

3. The combination of the frame having front and rear uprights, the longitudinally-slotted shaft journaled therein and having tapering ends, the cutter-bar arranged to slide radially in said tubular shaft, the slides arranged to move longitudinally upon the base of the frame and having uprights provided with rings or bands encircling the tapering ends of the shaft, and mechanism for moving the said slides simultaneously in opposite directions, substantially as set forth.

406,593. SELLING-MACHINE. JAMES M. O'REILLY, New York, N. Y., assignor, by direct and mesne assignments, to the Automatic Vending Box Company, of New York. Filed Nov. 14, 1888. Serial No. 290,845. (No model.)



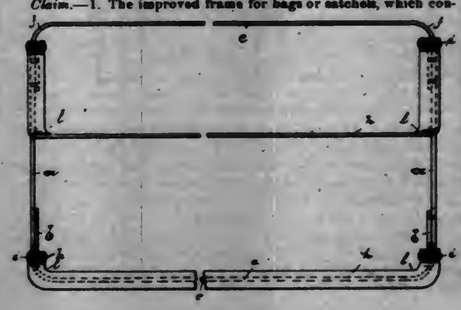
Claim.—1. The combination, with a casing, of an arm projecting parallel with the front of the casing from the inner surface of one side wall and of a removable receptacle for the article to be sold, which receptacle fits in between the front of the casing and said arm and is provided with a projection on its rear wall, said projection resting on the above-mentioned arm, whereby the receptacle is held and supported in vertical position behind the front of the casing, substantially as set forth.

2. The combination, with a box or casing, of a coin-chute, a bar projecting through the upper end of the same, a lever actuated by the lower end of said bar, a curved plate secured to said lever, a cigarette-adjusting plate pivoted to said curved plate and having prongs forming a pocket, which prongs project through slots in the curved plate, an arm on said pivoted cigarette-adjusting plate, and a fixed arm against which the arm on the pivoted cigarette-adjusting plate abuts, substantially as set forth.

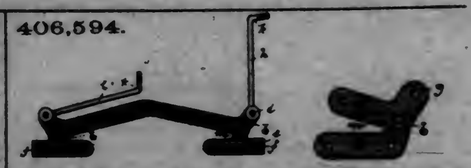
3. The combination, with a box or casing, of a coin-chute, a bar projecting into the upper end of the same, a lever actuated by the lower end of said bar, a curved plate on said lever, and a cigarette-adjusting plate pivoted on said curved plate, substantially as set forth.

406,594. BAG OR SATCHEL FRAME. WILLIAM ROSNER, Newark, N. J. Filed Oct. 30, 1888. Serial No. 289,373. (No model.)

Claim.—1. The improved frame for bags or satchels, which consists of end pieces *a a* and side pieces *c c*, united at their ends by hinge-pieces *b b*, and jaws *h h*, pivotally connected to said hinge-pieces, substantially as and for the purposes set forth.



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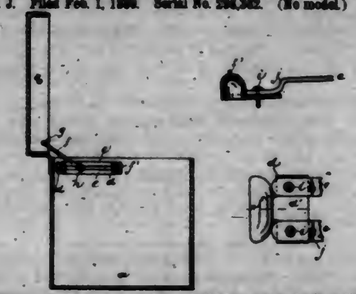
2. The improved frame combining end pieces and side pieces, and hinge-pieces connecting said side and end pieces, said hinge-pieces having an upward extension *g*, and jaws *h*, pivoted upon said extensions, substantially as and for the purposes set forth.

3. The improved bag-frame combining end and side pieces, and hinge-pieces having arms *c d*, against which said end pieces and side pieces are riveted, substantially as and for the purposes set forth.

4. The improved bag-frame combining end and side pieces, and hinge-pieces provided with extensions *g*, and arms *c d*, against which said end and side pieces are riveted, the latter being bent, as at *f*, to lie against said arms, and jaws *h*, and pivots *i*, connecting said jaws with said hinge-pieces, substantially as and for the purposes set forth.

5. A frame having end pieces *a a* and side pieces *c c*, extensions *g*, projecting above the line of the end pieces at the outer extremities thereof, and jaws hinged upon said extensions, substantially as and for the purposes set forth.

406,595. TRUNK STAY OR BRACE. WILLIAM ROSNER, Newark, N. J. Filed Feb. 1, 1886. Serial No. 290,362. (No model.)



Claim.—1. The improved trunk-lid brace herein described, combining therein end plates *d d*, stripe or rods *e e*, arranged in parallel relation to one another and secured to said end plates, a slot or way being formed between said stripe or rods, rivets or nails *i i*, for securing said parts together, and a bracing-strip arranged to work in said slot or way and adapted to be pivoted on the trunk-lid, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

2. The improved trunk-lid brace herein described, combining therein end plates *d d*, provided with flanges *d' d'* and guarding projections *f' f'*, stripe or rods *e e*, secured on said flanges apart and in parallel relation to one another to form a slot or way, and a bracing-strip arranged to work in said way and adapted to engage the trunk-lid, substantially as and for the purposes set forth.

3. The improved trunk-brace herein described, combining therein rods *e e*, having a slot or way between and end plates with guards *f' f'*, and a bracing-strip working in said slot or way at one end and adapted to engage the trunk-lid at the other, substantially as and for the purposes set forth.

4. The improved trunk-brace herein described, combining therein rods *e e*, arranged in parallel and separate relation to one another to form a slot or way, end plates *d d*, having flanges *d' d'*, and projections *f'*, serving as guards for the trunk-tray and as abutments to engage the extremities of the rods and pins, rivets or nails *i i*, for securing end plates and rods to one another and to the trunk-body, and a bracing-strip having its shank or stay *h* working in said slot or way, and said strip being adapted to engage the lid or cover, substantially as set forth.

406,596. LETTER FILE AND BINDER COMBINED WITH PERFORATING DEVICE. SOPHUS M. SCHEEL, Christiania, Norway. Filed Apr. 19, 1888. Serial No. 270,190. (No model.) Patented in Norway Mar. 14, 1888, No. 606.

Claim.—1. In a file for letters, papers, invoices, &c., the combination of a binding-case, impaling needle or needles, and arched transfer wire or wires, which latter, with their forward curved ends closing on or interlocking with the needles, are susceptible of a sidewise mo-

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tion, by which the back ends of the said transfer-wires swing off the back piece of the binding-case and close up to the inner edge of the bottom board of same and to the papers resting on it, substantially as and for the purposes specified.

2. In a file for letters, papers, invoices, &c., the combination of a binding-case, impaling needle or needles, and arched transfer wire or wires, which latter, with their forward curved ends closing on or interlocking with the needles, are susceptible of a sidewise motion, and by the base-plates F connected with the binding-case A B C of the letter-file, arranged substantially as and for the purposes specified.

3. The combination, with a base-plate F, of a transfer-wire E, whose inner end, carried through an aperture *f* in the base-plate, is provided with an arm *g*, substantially as and for the purposes specified.

4. A binding-case A B C, in combination with a flap L to allow the needles D to be thrown into a horizontal position, as and for the purposes specified.

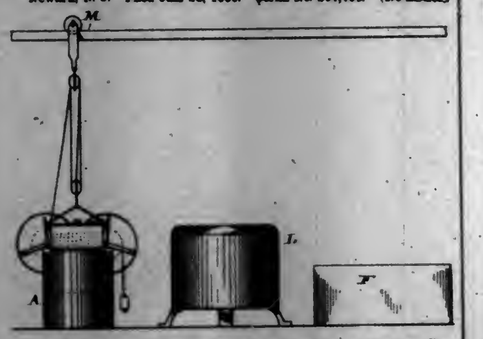
5. In a file for letters, invoices, and papers, in which a mere tablet or board is substituted for the binding-case A B C to form a suitable base against which the filed papers rest, the combination of such board or tablet, needle or needles D, transfer wire or wires E, and flap L, the transfer-wires E being capable of a sidewise movement, by which their back parts swing close up to the inner edge of the papers, and the flap L allowing the needles to be thrown back into a horizontal position, all arranged substantially as and for the purposes specified.

6. The combination, with the studs O, fixed in the plate R, of the plate S, by its inner end fastened to the plate R and in its outer free end having apertures registering with the studs O, substantially as shown.

7. The combination, with the top board A of the binding-case, of a plate T, having a groove *q*, which, together with a split button *w*, serves to fasten the paper-punch to the binding-case, substantially as shown.

8. The combination, with the needles D, of a wire *m*, which, with both ends carried into the openings of the tube *k* of a plate N, swings in between the needles D, substantially as and for the purpose specified.

406,597. APPARATUS FOR THE MANUFACTURE OF PYROXYLINE. ROBERT C. SCHUPPHAUS, Adams, Mass., and MERRITT T. WHITE, Newark, N. J. Filed Jan. 28, 1889. (Serial No. 297,761. (No model.)



Claim.—1. In an apparatus for the manufacture of pyroxyline, the combination of a nitrating-pot and a removable receptacle for containing the cellulose, substantially as set forth.

2. In an apparatus for the manufacture of pyroxyline, the combination of a nitrating-pot and a removable perforated receptacle for containing the cellulose, substantially as set forth.

3. In an apparatus for the manufacture of pyroxyline, the combination of a nitrating-pot, an independent receptacle adapted to contain the cellulose, and covers for said nitrating-pot and independent receptacle, whereby the atmosphere is cut off from said nitrating-pot and receptacle, substantially as set forth.

4. In an apparatus for the manufacture of pyroxyline, the combination of a nitrating-pot, an independent removable receptacle for containing the cellulose adapted to be inserted in the nitrating-pot, a centrifugal machine, and a traveling carrier for conveying said removable receptacle from said nitrating-pot to said centrifugal machine, substantially as set forth.

5. In an apparatus for the manufacture of pyroxyline, the combination of a nitrating-pot, a centrifugal machine, a dumping-trough, a cage for containing the cellulose, and a traveling carrier for conveying said cage from said nitrating-pot to the centrifugal machine and dumping-trough successively, substantially as set forth.

6. In an apparatus for the manufacture of pyroxyline, the combination, with a dumping-trough provided with a water-space and a chamber to receive a charge of nitrated cellulose, of a receptacle for said nitrated cellulose adapted to fit within said chamber, and means for discharging the contents of said receptacle into said water-space, substantially as set forth.

7. In an apparatus for the manufacture of pyroxyline, the receptacle for the cellulose having in combination the cage perforated on all sides and having a perforated bottom and cover, and a perforated tube having an open bottom within said receptacle, substantially as set forth.

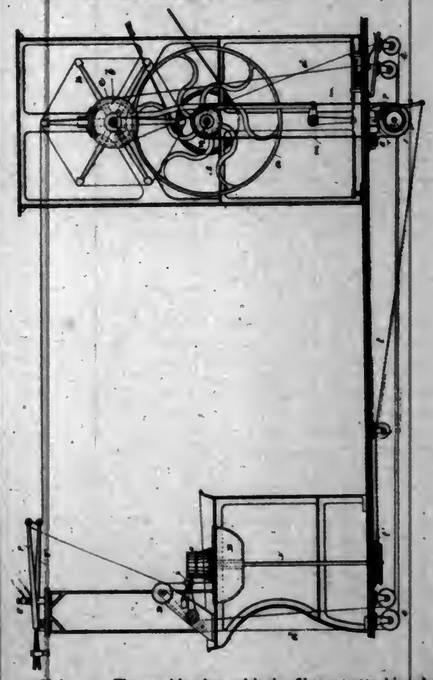
8. In an apparatus for the manufacture of pyroxyline, the cage for receiving the cellulose having a vertically-sliding bottom and means for lifting said bottom, substantially as set forth.

9. In an apparatus for the manufacture of pyroxyline, the receptacle, for the cellulose having in combination the external cage, the internal tube, and the vertically-sliding bottom for such cage attached to said tube, substantially as set forth.

10. In an apparatus for the manufacture of pyroxyline, the dumping-trough provided with a holder for receiving the cellulose-receptacle, substantially as set forth.

11. In an apparatus for the manufacture of pyroxyline, the dumping-trough and a holder for the cellulose-receptacle, in combination with means for securing said receptacle in said holder, substantially as set forth.

406,598. SILK-REELING MACHINERY. EDWARD W. SERRELL, Jr., New York, N. Y. Filed Apr. 25, 1884. Serial No. 129,193. (No model.) Patented in France Feb. 26, 1882, No. 147,624; in Sweden Mar. 21, 1882; in Italy Mar. 23, 1882; in Germany Mar. 28, 1882, No. 19,385; in Austria-Hungary May 17, 1882, No. 10,629; in Portugal June 30, 1882, and in Spain Sept. 26, 1882.



Claim.—1. The combination, with the filament-attaching device and means, substantially as set forth, for rotating the same, of a feeding-drum around which the thread is passed, a reel upon which the thread is wound, means, substantially as set forth, for rotating the reel and feeding-drum, a regulating-lever operated by variations in the tension of the thread, an electro-magnet and its circuit, which includes the regulating-lever, a cocoon-holder, and mechanism, substantially as set forth, that is brought into action by said magnet to rotate the cocoon-holder, substantially as and for the purposes set forth.

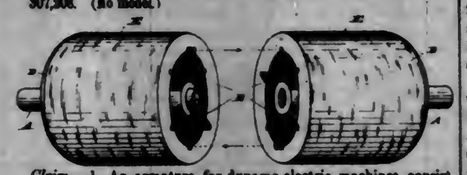
2. The combination, with the filament-attaching device and means, substantially as set forth, for rotating the same, of a feeding-drum, a reel upon which the thread is wound, means, substantially as set forth, for rotating the reel and feeding-drum so that the reel is revolved at a greater surface speed than that of the feeding-drum, a regulating-lever operated by variations in the tension of the thread, an electro-magnet and a circuit which includes the regulating-lever, a cocoon-holder, and mechanism, substantially as set forth, brought into action by the electro-magnet for rotating the cocoon-holder, substantially as and for the purposes set forth.

3. The combination of a winding-reel, a feeding-drum, mechanism, substantially as set forth, for rotating the reel and feeding-drum, the former at a greater speed than that of the feeding-drum, a lever operated by the breaking of the thread, a filament-attaching device, a cocoon-holder, means, substantially as specified, for rotating the cocoon-holder and filament-attaching device, an electro-magnet and circuit which includes the aforesaid lever, and mechanism, substantially as set forth, operated by said magnet for disconnecting the reel from its driving-wheel, substantially as and for the purposes set forth.

4. The combination, with the electro-magnet G, armature *r*, lever S, spring w^3, and electric circuit for said magnet, of the revolving-shaft J, ratchet-wheel *l*, pawl *p*, spring w^5, case *o*, cam *q*, and lever I, substantially as and for the purposes set forth.

5. The combination, with the electro-magnet G, its armature *r*, its electric circuit, the revolving shaft J, ratchet-wheel *l*, pawl *p*, case *o*, cam *q*, levers I and S, and springs w^3 w^5, of the cocoon-holder, shaft N, ratchet-wheel X, pawl l^2, slide *t'*, spring T, and connection *t* between the lever I and slide *t'*, substantially as and for the purposes set forth.

406,599. DYNAMO-ELECTRIC MACHINE. WILLIAM L. SILVEY, Lima, Ohio. Filed Apr. 20, 1888. Renewed Apr. 13, 1889. Serial No. 307,208. (No model.)



Claim.—1. An armature for dynamo-electric machines, consisting of two interlocking spiders B B, on which are mounted end plates D, one at each end, with numerous alternate blanks of sheet-iron and paper pressed between them, and the whole mounted on a shaft, substantially as and for the purpose set forth.

2. In an armature for dynamo-electric machines, the supporting-spiders B B, having each alternate wing shorter than the other, whereby the wings are made to interlock when the armature-blanks D E are mounted thereon, substantially as and for the purpose specified.

3. An armature-spider for supporting a magnetic ring on which the wires are wound, the spider consisting of separable parts united together by wedge-shaped projections, as set forth and described.

406,600. ELECTRIC RAILWAY-MOTOR. FRANK J. SPRAGUE, New York, N. Y., assignor to the Sprague Electric Railway and Motor Company, same place. Original application filed Mar. 1, 1889, Serial No. 301,683. Divided and this application filed June 4, 1889. Serial No. 313,083. (No model.)

Claim.—1. The combination of a wheeled vehicle and an electro-dynamic motor mounted thereon and propelling the same, the same being centered at one end on an axle of the vehicle at more than one point, and a flexible support for said motor at its other end, substantially as set forth.

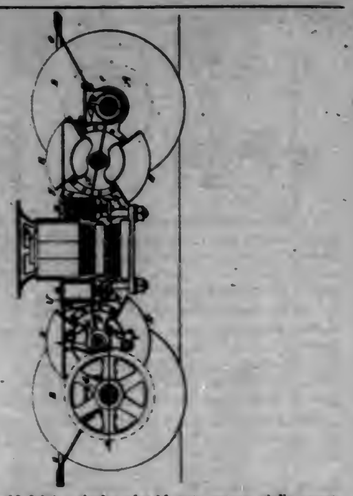
2. The combination of wheeled vehicle and an electro-dynamic motor mounted thereon and propelling the same, having its field-magnet sleeved at one end on an axle of the vehicle at more than one point, and a flexible support for said field-magnet at its other end, substantially as set forth.

3. The combination of a wheeled vehicle, an electro-dynamic motor mounted thereon and propelling the same, the same being centered at one end on an axle of the vehicle at two points—one on each side of the motor—and a flexible support for said motor at its other end, substantially as set forth.

4. The combination of a wheeled vehicle, an electro-dynamic motor mounted thereon and propelling the same, having its field-magnet sleeved at one end on an axle of the vehicle at two points—one on each side of the motor—and a flexible support for said field-magnet at its other end, substantially as set forth.

5. The combination of a wheeled vehicle, an electro-dynamic motor mounted thereon and propelling the same, brackets extending from the field-magnet of said motor on each side and sleeved on an axle of the vehicle, a driving-shaft supported by said brackets, and

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gearing between said driving-shaft and said axle, substantially as set forth.

6. The combination of a wheeled vehicle, an electro-dynamic motor mounted thereon and propelling the same, brackets extending from the field-magnet of the motor on each side and sleeved on an axle of the vehicle, the armature-shaft of the motor supported in bearings on said brackets, and gearing between said armature-shaft and said axle, substantially as set forth.

7. The combination of a wheeled vehicle, an electro-dynamic motor mounted thereon and propelling the same, brackets extending from the field-magnet of the motor on each side and sleeved on an axle of the vehicle, the armature-shaft of said motor, a counter-shaft supported by the brackets, gearing between said armature-shaft and said counter-shaft, and gearing between said counter-shaft and said axle, substantially as set forth.

8. The combination of a wheeled vehicle, an electro-dynamic motor mounted thereon and propelling the same, brackets extending from the field-magnet of the motor on each side and sleeved on an axle of the vehicle and formed or provided with bearings in which the armature-shaft of the motor is supported, a counter-shaft also supported by said brackets, gearing between said armature-shaft and said counter-shaft, and gearing between said counter-shaft and said axle, substantially as set forth.

9. The combination, with a wheeled vehicle, of an electro-dynamic mounted upon and propelling the same, the keeper of the field-magnet of said motor being situated parallel with and in proximity to a driving-axle of said vehicle and provided with two extensions, one on each side, which are sleeved on said axle at points outside the center of the motor, substantially as set forth.

10. The combination of a wheeled vehicle, an electro-dynamic motor mounted thereon and propelling the same and centered at one end on an axle of the vehicle at more than one point inside the wheels on said axle, and a flexible support for said motor at its other end, substantially as set forth.

11. The combination of a wheeled vehicle, an electro-dynamic motor mounted thereon and propelling the same and centered at one end on an axle of the vehicle at more than one point, a flexible support for said motor at its other end, and gear-wheels on said axle between the centering-supports of the motor and the axle-boxes, substantially as set forth.

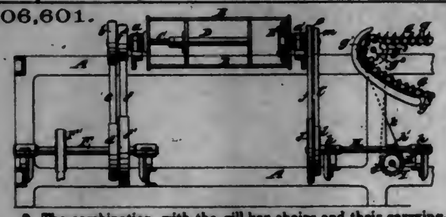
12. The combination of a wheeled vehicle, an electro-dynamic motor mounted thereon and propelling the same, brackets detachably secured to the field-magnet on each side and sleeved on an axle of the vehicle, a driving-shaft supported by said brackets, and gearing between said driving-shaft and said axle, substantially as set forth.

406,601. MACHINE FOR SPINNING HEMP, &c. JOHN F. W. STAIRS, Halifax, Nova Scotia, Canada. Filed Apr. 19, 1888. Serial No. 307,734. (No model.)

Brief.—The object of the invention is to dispense with the regulator and improve the construction of the machine, whereby a uniform yarn may be produced.

Claim.—1. The combination, with the endless series of gill-pin bars and the flier, of mechanism, substantially as herein described, interposed between the flier and said series of bars for the purpose of driving the said bars from the flier, substantially as herein described.

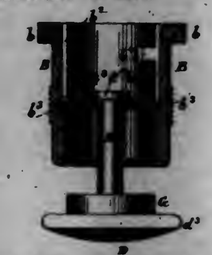
406,601.



2. The combination, with the gill-bar chains and their carrying-shafts and the flier, of mechanism, substantially as herein described, between the flier and one of the said carrying-shafts whereby the movement of the gill-pins is derived from the flier, substantially as and for the purpose herein described.

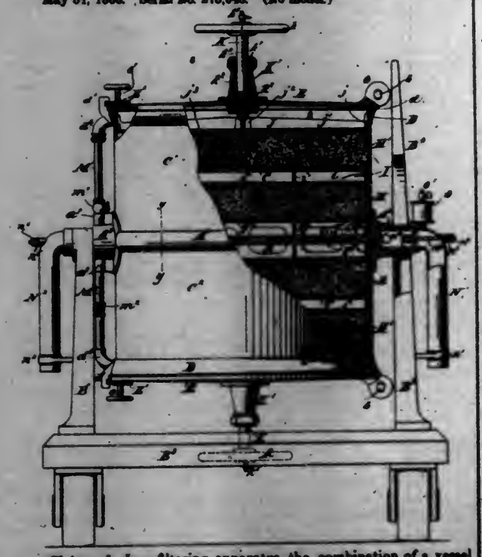
3. The combination, with the main shaft, the flier, the capstan therein, the gill-bar chains, and one of the carrying-shafts g^2 for the latter, of a shaft H between the flier and capstan and one of the said carrying-shafts, a pulley *e* on the flier, a pulley *m* on the capstan, pulleys *J l* on the said shaft H, belts *j j'* between the said pulleys *e J* and the said pulleys *l m*, respectively, and gearing, substantially as described, between the said shaft H and the carrying-shaft g^2, whereby the gill-pins bars and the capstan are both driven from the flier, all substantially as herein set forth.

406,602. BUNG. WILLIAM H. SUNDAY, Scranton, Pa. Filed Apr. 19, 1889. Serial No. 307,829. (No model.)



Claim.—A bung having the inside bayonet-slot b^2, in combination with a valve D, having the stem E, provided with arms e^2 e^2, which engage said longitudinal slot, whereby said valve may be opened or closed by a forked hook-wrench, as described.

406,603. CONTINUOUS FILTER. JOHN SUTTON, Islip, N. Y. Filed May 31, 1888. Serial No. 275,648. (No model.)



Claim.—1. In a filtering apparatus, the combination of a vessel composed of a floor, a band or flanges at the circumference of the same, hollow trunnions secured to said band or flanges and serving one to receive and one to deliver liquid, shells fitted to the flanges or bands, covers at the outer ends, pipes or conduits between the receiving-trunnion and the compartments formed by the floor, shells, and covers, and pipes or conduits extending from the compartments to the delivery-trunnion, substantially as specified.

2. In a filtering apparatus, the combination, of a vessel, a cover for the vessel, a screw fitted in a socket with which the cover is provided and having two circumferential grooves separated by a rib notched in the direction of the length of the screw, a projection extending transversely from the socket into the grooved portion of the screw, and a lug attached to the vessel opposite the screw and provided with a tapped hole for engaging with the screw, substantially as specified.

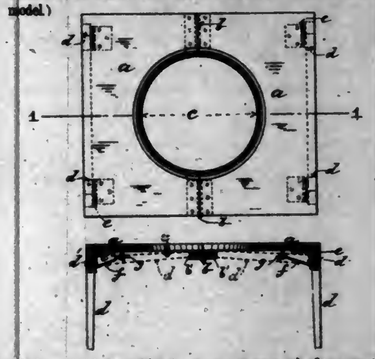
3. In a filtering apparatus, the combination of a vessel, a cover for such vessel, a screw extending through the cover, an air-passage extending through the cover to an air-chamber surrounding the screw, a passage from the air-chamber through the outer portion of the screw, and an air-cock at the outer end of the screw, substantially as specified.

4. In a filtering apparatus, the combination of a vessel and a frame for sustaining filtering material therein and consisting of a ring and braces, the ring fitting snugly within the vessel and provided externally with a groove filled with packing material, substantially as specified.

5. In a filtering apparatus, the combination, with a vessel, of a support for filtering material arranged therein and consisting of a ring and braces, both the said ring and braces having transverse openings or recesses, through which liquid may flow to circulate within the whole of the space within said support.

6. In a filtering apparatus, the combination of a vessel having two compartments, a floor or diaphragm separating the two compartments, hollow trunnions, and stationary pipes fitted to the ends of the trunnions and secured to the trunnions by bolts affixed at their inner ends to the trunnions, extending through the pipes, and fitted with nuts at the ends outside the pipes, substantially as specified.

406,604. PORTABLE SEAT FOR WATER-CLOSETS. HAROLD H. TITTMANN, St. Louis, Mo. Filed Feb. 11, 1889. Serial No. 299,626. (No model.)



Claim.—1. A portable closet-seat composed of two seat-sections, each section having a semicircular orifice in one edge and each section provided at its opposite edge with legs hinged to fold against the under side thereof, said sections connected together on either side of the semicircular orifices by offset hinges, whereby the seat-sections may fold together substantially parallel to each other and accommodate the folded legs between them, substantially as and for the purposes described.

2. A portable closet-seat composed of two sections, each section having a semicircular orifice in one edge, said sections having strengthening-cleats secured to the under side of their abutting edges and hinged together at said edges to fold together, and each section provided at the opposite edge with legs hinged to fold against and between the seat-sections, substantially as and for the purposes described.

3. A portable closet-seat composed of two seat-sections, each section having a semicircular orifice in one edge and each section provided at its opposite edge with hinged legs adapted to fold against the under side thereof, said sections connected at their edges having the semicircular orifices by offset hinges, whereby the said sections may fold together substantially parallel and accommodate the folded legs between them, and locking devices secured to the legs and seat-sections for holding the legs upright while the seat is in use, substantially as and for the purposes described.

406,605. CARPENTER'S PLANE. REINHARD T. TORKELSON, Worcester, Mass., assignor to Iver Johnson, same place. Filed Nov. 23, 1888. Serial No. 291,675. (No model.)

406,605.



Claim.—1. A combined cutter and cap for carpenters' planes, comprising, in combination, the cutter having a suitable transverse holding-loop above its top surface and the cap having a longitudinal spring tongue or blade adapted to be passed through said loop to hold the cap in position during and after adjustment upon the cutter preparatory to the application thereof to the plane, substantially as and for the purpose set forth.

2. The combination of the cutter D with the detachable angle-plate M, fitted transversely in a suitable opening therein, and the cap E, having the longitudinal spring tongue or blade *g*, adapted to be passed through the loop formed by said angle-plate when fitted in position in the cutter, substantially as and for the purpose set forth.

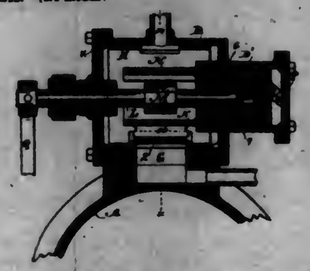
3. The combination of the cutter D with the detachable angle-plate M, fitted transversely in a suitable opening therein, and the cap E, having the supporting side flanges *h h* and the longitudinal spring tongue or blade *g*, the latter adapted to be passed through the loop formed by said angle-plate when fitted in position in the cutter, substantially as and for the purpose set forth.

4. In a bench-plane, the combination, with the cutter D, having a transverse opening with beveled sides, of the detachable angle-plate M, having flanges with the edges thereof beveled to correspond with the sides of the opening in the cutter, substantially as and for the purpose set forth.

5. In a bench-plane, the combination, with the cutter D, having a transverse opening with beveled sides, of the detachable angle-plate M, having flanges with the edges thereof beveled to correspond with the sides of the opening in the cutter and the tongue or blade of cap E, substantially as and for the purpose set forth.

6. The combination of the stock, saddle, and clamp device of a bench-plane with the cutter D, provided with a transverse loop above its top surface, and the cap E, having the supporting-flanges *h h* and the tongue or blade *g*, the latter adapted to be passed through said loop to hold the cap upon the cutter during and after adjustment preparatory to the application thereof to the plane, substantially as and for the purpose set forth.

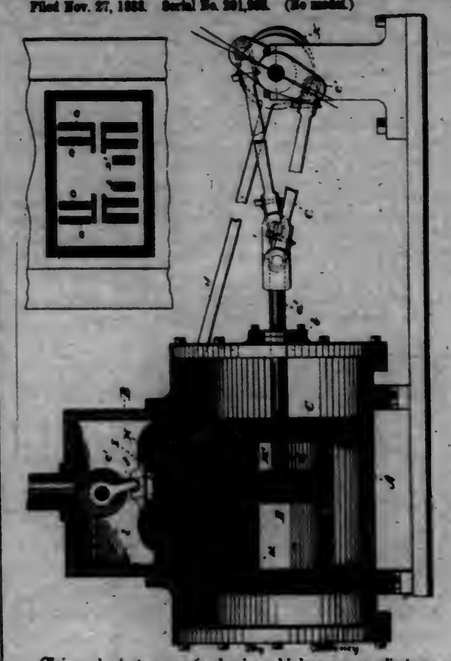
406,606. VALVE FOR STEAM-PUMPS. ABRAHAM A. TRIFOLD and CHARLES H. TRIFOLD, Brooklyn, N. Y. Filed Apr. 15, 1889. Serial No. 307,212. (No model.)



Claim.—1. The combination, with the steam-chest, cylinder, piston, and the ports between the steam-chest and cylinder, of a cylindrical valve having ports therein, a valve-moving plunger within the valve and steam-chest and adapted to be rotated and to move endwise, and inclined projections upon the valve-moving plunger and upon the head of the steam-chest, whereby the valve-moving plunger receives an endwise movement by the projections when turned and communicates to the valve a further movement in the same direction by the action of the inclined projections against each other when the plunger is moved endwise by the pressure of the steam, substantially as set forth.

2. The combination, with the steam-cylinder A and the steam-chest D, having ports, and the tubular extension D', of the head P, with inclined projections 8 upon its inner surface, the valve-moving plunger N, with corresponding inclined projections 7 upon the end thereof, the stem L and tappet M within the valve-moving plunger, and mechanism for moving the stem by the connection to the piston-rod of the engine, the valve H, surrounding one end of the plunger N, and the connection between the plunger N and valve H, substantially as set forth.

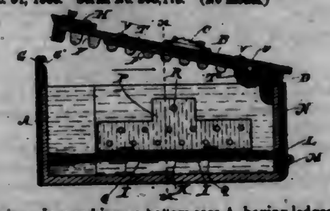
406,607. STEAM-ENGINE. WILLIAM A. VERHLAND, Chicago, Ill. Filed Nov. 27, 1888. Serial No. 291,968. (No model.)



Claim.—1. A steam-engine having a high-pressure cylinder operating as a piston in a low-pressure cylinder, the low-pressure cylinder having steam-passages communicating with ports or passages in the inner high-pressure cylinder and controlled by separate valves, the final exhaust-ports also being controlled by separate valves, said high-pressure cylinder also having a piston, substantially as set forth.

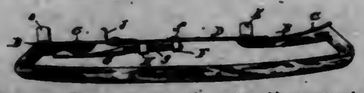
2. A steam-engine having a high-pressure cylinder operating as a piston in a low-pressure cylinder, the low-pressure cylinder having steam-passages communicating with ports or passages in the high-pressure cylinder and controlled by separate valves, the final exhaust-ports also being controlled by separate valves, said high-pressure cylinder also having a piston and the low-pressure cylinder having a plurality of piston-rods, substantially as specified.

406,608. SAD-IRON. SARAH WATERMAN, Milwaukee, Wis. Filed Dec. 31, 1888. Serial No. 295,175. (No model.)



Claim.—In a sad-iron, a hollow case A, having ledges I I integral with its sides at a distance from the bottom, and an aperture L across its rear end opposite to and below the grate, in combination with a grate K, supported movably on the ledges I I, and adapted to be withdrawn from the case rearwardly through the aperture L, substantially as described.

406,609. SKATE. JOHN H. YOUNG, Concord, N. H. Filed Nov. 16, 1888. Serial No. 291,021. (No model.)



Claim.—1. The combination of an adjustable plate having at one end an upward projection for engaging the heel of a boot and at the other end a block or nut swiveled to the under side and containing a horizontally-threaded opening, and an actuating-lever having its forward end swiveled to a plate for adjusting the sole-clamps and pro-

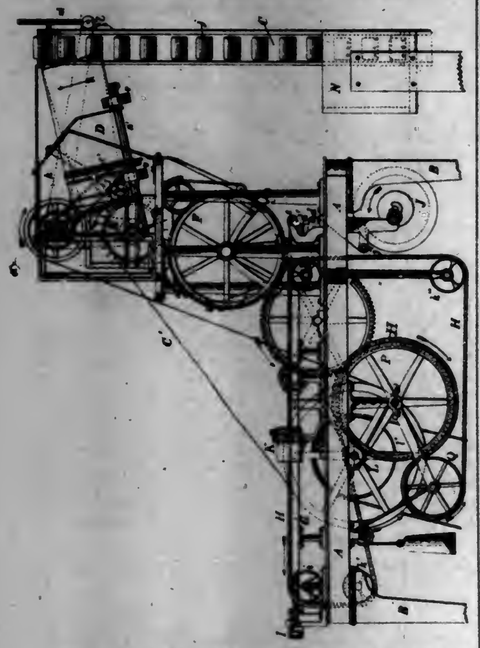
vided with a central threaded portion confined within said nut or threaded block, all substantially for the purpose set forth.

2. The combination, with a plate for actuating the sole-clamps and an adjustable heel-clamp, of a threaded actuating-lever, and a swiveled arm provided at one end with a swiveled nut connecting the threaded portion of said lever with said adjustable heel-clamps, substantially for the purpose set forth.

3. In clamping mechanism for skates, an arm or link for connecting the actuating-lever with the adjustable heel-clamp, having at one end a suitable hook for the reception of the free end of said lever, substantially for the purpose set forth.

4. In clamping mechanism for skates, the combination, with an actuating-lever having a threaded portion, of an arm or link having at one end a swiveled nut fitting the thread on said lever, its opposite end being attached to an adjustable heel-clamp, and provided with a suitable hook for the reception of the free end of said lever, all for the purpose described.

406,610. CIGARETTE-MACHINE. OSCAR W. ALLISON, Rochester, N. Y. Filed Nov. 10, 1885. Serial No. 182,362. (No model.)



Claim.—1. The combination, with the endless flexible band provided in its face with a continuous longitudinal groove, of a device so constructed as to distend the continuous groove in the band, substantially as set forth.

2. The combination, with the endless flexible band provided in its face with a continuous longitudinal groove, of a carrying-pulley provided with a raised ridge over which the band passes and whereby the band is bent transversely, thereby distending the groove, substantially as set forth.

3. The combination, with the endless flexible band provided in its face with a continuous longitudinal groove, of carrying-pulleys provided with raised ridges whereby the band is bent transversely and its groove is distended, and a supporting-table arranged between said pulleys, upon which table the band is carried in its normal straight form, substantially as set forth.

4. The combination, with suitable tobacco-feeding mechanism, of paper-supply rollers, the endless flexible band provided in its face with a continuous longitudinal groove, and a distending device whereby the band is bent transversely to distend its groove for receiving the paper and filler, substantially as set forth.

5. The combination, with the endless flexible band provided in its face with a continuous longitudinal groove and a device for distending the groove in the band, of the paper-supply rollers and the paper-former arranged between the supply-rollers and the grooved belt, substantially as set forth.

6. The combination, with the endless flexible band provided in its face with the continuous longitudinal groove and a device for distending the groove in the band, of the paper-former *f*, arranged to act on the paper before it passes into the distended groove, a paper-supply roll, and suitable paper-guide rolls arranged between the supply-roller and the paper-former, substantially as set forth.

7. The combination, with the feed-box N, of the elevator C, having its casing open at the bottom below the feed-box, substantially as described.

8. The combination, with the rotary feeding-cylinder D, of the slotted stationary plate R and the rotary toothed picker E, the teeth of which operate in the slot or slots of the plate, substantially as described.

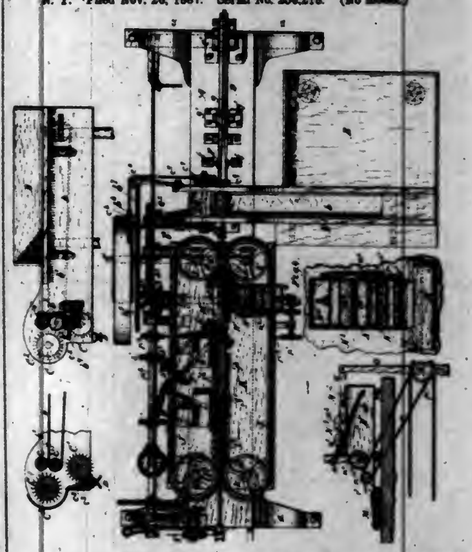
9. The combination, with the rotary feeding-cylinder D, stationary slotted plate R, and toothed picker E, working in the slot or slots of the plate R, of the revolving supports *r r*, substantially as described.

10. The combination, with the rotary feeding-cylinder provided with internal pins *u*, of the stationary slotted plate R and the rotary picker-wheel E, working in the slot or slots of the plate R, substantially as set forth.

11. The combination, with the stationary slotted plate R, provided with rings *w* and *x*, the latter being cut away at *y*, of the rotary feeding-cylinder D, having one or more pins *y*, adapted to revolve in the annular groove between the said rings, substantially as described.

12. The combination, with the rotary feeding-cylinder D, of the slotted plate R, arranged at an angle with the axis of the cylinder, and the rotary toothed picker E, having teeth working in the slot or slots of the plate, substantially as described.

406,611. CIGARETTE-MACHINE. OSCAR W. ALLISON, Rochester, N. Y. Filed Nov. 26, 1887. Serial No. 256,218. (No model.)



Claim.—1. The combination, with the endless carrying-apron *b*, supported at its delivery end by roller *c'*, and the pressure-roller *c*, arranged over the delivery end of the apron, of the inclosing-casing C^3, provided with discharge-throat c^3, the upper picker-wheel C, arranged at the delivery end of the carrying-apron, and a picker-wheel C', arranged in the throat c^3, below the picker-wheel, and the carrying-apron *b*, substantially as set forth.

2. The tobacco-feeding mechanism, consisting, essentially, of the endless tobacco-carrying apron *b*, supported by roll *c'* at its delivery end, the pressure-roller *c*, arranged over the delivery end of the apron, the inclosing-casing C^3, provided with discharge-throat c^3, the upper picker-wheel C, arranged at the delivery end of the carrying-apron, a picker-wheel C', arranged in the throat c^3, below the picker-wheel, and the carrying-apron *b*, in combination with a grooved and flexible band D, substantially as described.

3. The combination, with the tobacco-feeding mechanism, of a traveling endless flexible receiving-band provided with a continuous longitudinal groove which receives the loose tobacco from the feeding mechanism, a wedge-faced wheel over which said band passes and whereby its groove is distended, inclined rollers or wheels arranged on opposite sides of said band and bearing against the base portions thereof, whereby the groove is held distended, and flat-faced rollers whereby the band is returned to its normal condition, substantially as set forth.

4. The combination, with the tobacco-feeding mechanism, of the traveling endless flexible receiving-band D, provided with a continuous longitudinal raised rib *d*, having continuous groove *d'* and base-flanges d^2 d^3, and rollers so constructed as to distend the groove and then return it to its normal condition, substantially as described.

5. The combination, with the tobacco-feeding mechanism, of the traveling endless flexible receiving-band D, provided with the continuous longitudinal raised rib *d*, having continuous groove *d'* and base-flanges d^2 d^3, suitable rollers for carrying the band, so constructed as to distend the groove in the rib and then return it to its normal condition, and the endless flexible compressing-band H, running in the groove of the receiving-band, substantially as described.

6. The combination, with the tobacco-feeding mechanism, of the traveling endless flexible receiving-band D, provided with a continuous longitudinal raised rib *d*, having continuous groove *d'* and base-flanges d^2 d^3, suitable rollers for carrying the band, so constructed as to distend the groove in the rib, the compressor-wheel *g*, operating to compress the tobacco in the groove, and the endless flexible compressing-band H, running in the groove, substantially as described.

7. The combination, with the feeding mechanism, of an endless flexible receiving-band provided with a continuous longitudinal groove which receives the loose tobacco from the feeding mechanism, pulleys whereby the groove of said band is distended, and returned to its normal condition, and an endless compressing-band which runs in the groove of the receiving-band after the latter has been returned to its normal condition, substantially as set forth.

8. In a cigarette-machine, the herein-described mechanism for drawing the cigarette-rod, consisting of the horizontally-arranged endless flexible bands J J, running face to face around pulleys on a suitable support, each band being provided at its upper corner with a continuous longitudinal recess, the two recesses forming the groove j^3, for receiving the cigarette-rod, substantially as described.

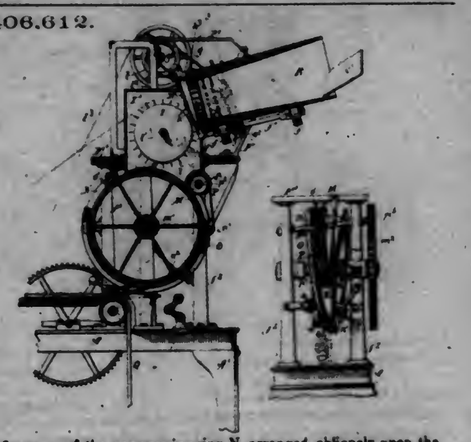
9. The combination, in a cigarette-machine, of mechanism for drawing the cigarette-rod, consisting of the horizontally-arranged endless flexible bands J J, running face to face around pulleys on a suitable support, each band being provided at its upper corner with a continuous longitudinal recess, the two recesses forming the groove j^3 for receiving the cigarette-rod, and the pressure-roller j^5, arranged over said groove, whereby the tobacco-filler is held down in the groove at or near the meeting-point of the bands, substantially as described.

10. The combination, in a cigarette-machine, of mechanism for drawing the cigarette-rod, consisting of the horizontally-arranged flexible bands J J, running face to face around pulleys on a suitable support, each band being provided at its upper corner with a continuous longitudinal recess, the two recesses forming groove j^3 for receiving the cigarette-rod, the pressure-roller j^5, arranged over said groove, whereby the tobacco-filler is held down in the groove, and the paper-folder M and rotating paper-folding brush S, also arranged over the groove, substantially as described.

11. The combination, with the paste-table and a reciprocating frame, of paste-grinding rollers mounted in said frame, a wiper, and a paste-roller, whereby the paste is applied to the wiper, substantially as set forth.

12. The combination, with the paste-table and the grinding-rollers, of a reciprocating frame in which said rollers are mounted, a rock-arm whereby said frame is actuated, a rotary wiper, a paste-roller whereby the paste is applied to said wiper, and a pawl-and-ratchet mechanism connected with said reciprocating frame, whereby an intermittent rotary movement is imparted to said paste-roller, substantially as set forth.

406,612. CIGARETTE-MACHINE. OSCAR W. ALLISON, Rochester, N. Y. Filed Sept. 10, 1888. Serial No. 284,962. (No model.)



Claim.—1. The combination, with the receiving-wheel M, having a spherical or convex face and provided with a flange *m*, of the compressing-ring N, mounted obliquely upon the face of the receiving-wheel, and the covering-ring O, arranged obliquely upon the flange *m* of the receiving-wheel, substantially as set forth.

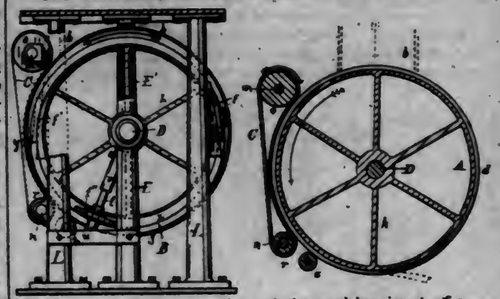
2. The combination, with the receiving-wheel M, having a spherical face and provided with a flange *m*, of the compressing-ring N, mounted obliquely upon the face of the receiving-wheel, the covering-ring O, arranged obliquely upon the flange *m* of the receiving-wheel, and supporting or guide rollers, whereby the compressing and covering rings N O are held in position, substantially as set forth.

3. The combination, with the receiving-wheel M, having a spherical face and provided with a flange *m*, of the compressing-ring N, arranged obliquely upon the face of the receiving-wheel, supporting-rollers *n*, a supporting-roller *n'*, mounted in an adjustable arm or bracket, and the covering-ring O, mounted obliquely upon the flange *m* of the receiving-wheel, substantially as set forth.

4. The combination, with the receiving-wheel M, provided with a flange *m*, of the compressing-ring N, arranged obliquely upon the face of the receiving-wheel, the covering-ring O, mounted obliquely upon the flange *m* of the receiving-wheel, and an endless belt P, arranged on the front or descending side of the receiving-wheel and adapted to cover the space between the flange *m* and the compressing-ring N, substantially as set forth.

5. The combination, with the continuously-revolving receiving-wheel M, having a spherical exterior surface and carrying an upwardly-projecting flange, of the obliquely-arranged revolving compressing-ring N, fitted upon wheel M and adapted to compress the tobacco against the flange projecting beyond the spherical surface of the wheel, and suitable mechanism for retaining the tobacco in the tapering space while being compressed, substantially as described.

406,613. CIGARETTE-MACHINE. OSCAR W. ALLISON, Rochester, N. Y. Filed Feb. 2, 1889. Serial No. 298,425. (No model.)



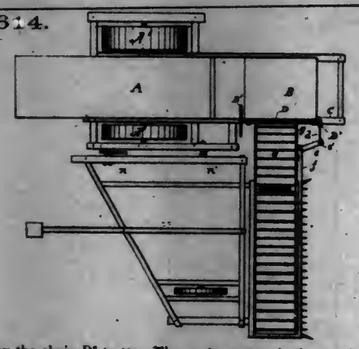
Claim.—1. The combination, with the revolving ring A, of a spherical shape on its exterior and provided with projecting flange *d*, of the outer obliquely-arranged ring B, fitted to the spherical surface of the ring A and traveling in the same direction, and the endless traveling apron or belt C, arranged and adapted to close the space between the rings on the descending side thereof and to complete the compression of the tobacco-filler, substantially as shown and described.

2. The combination, with the revolving ring A, of a spherical shape on its exterior and provided with projecting flange *d*, of the obliquely-arranged ring B, fitted to the spherical surface of the ring A and traveling in the same direction, and the endless traveling apron or belt C, arranged and adapted to close the space between the rings on the descending side thereof and to complete the compression of the tobacco-filler and the roller *r*, substantially as shown and described.

406,614. RAISING AND LOWERING MECHANISM FOR HARVESTERS. CHARLES A. ASHLEY, Stockton, Cal., assignor of three-fourths to Ann Clark, Robert A. Ashley, and Lucius E. Ashley, all of same place. Filed Sept. 30, 1887. Serial No. 251,145. (No model.)

Claim.—1. The combination of the header-frame, the thrasher-frame connected thereto, so as to rise and fall, as usual, the beam C of the thrasher and the beam *f* of the header, the rod *d*, provided with a hook end secured to the chain D^4 by pin *d'* and to the beam *f* by the eye-iron *e*, the chain D^4, the shaft D, having its bearings in boxes secured to feed-box B, the sprocket-wheel D^5 at its end con-

406,614.



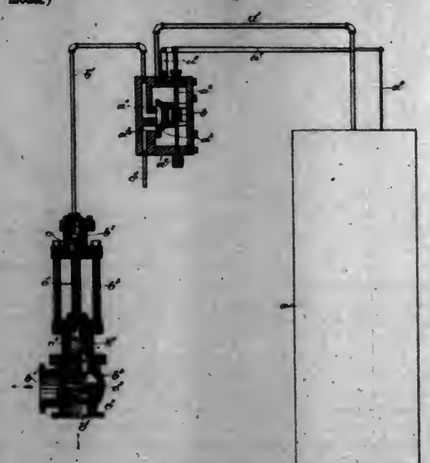
nected by the chain D^4 to the roller c, the roller c in the stand C, and stand C', the latter secured to the beam C, all substantially as shown.

2. In a combined thrasher and header, the combination of the shaft D, mounted in boxes secured to the feed-box B, and having the tiller-wheel D' at one end and the sprocket-wheel D^3 at the other end, the endless chain D^4, the forked stand C', the beam C of the thrasher, and its roller c, the washers c' upon the stem of the stand C', and means for connecting the chain D^4 to the header-frame and the beam C, all substantially as set forth.

3. In a combined thrasher and header, the combination of the shaft D, the tiller-wheel D', the sprocket-wheel D^3, the chain D^4, the roller c, the forked stand C', and its washers c' on the stem of the stand C', the rod d, with an eye in its lower end and hook at its upper end connecting the chain D^4 to the header, the eye-iron e, secured to the header-frame, and the beam C, all suitably located and attached to the machine, as shown and described.

4. In a combined thrasher and header, the combination of the beam C with the forked stand C', provided with the roller c and washers c', and connected by the chain D^4 to the sprocket-wheel D^3 on the end of the shaft D, the header-frame, the chain D^4 being suitably connected with the beam f of the header, all operating substantially as shown and set forth.

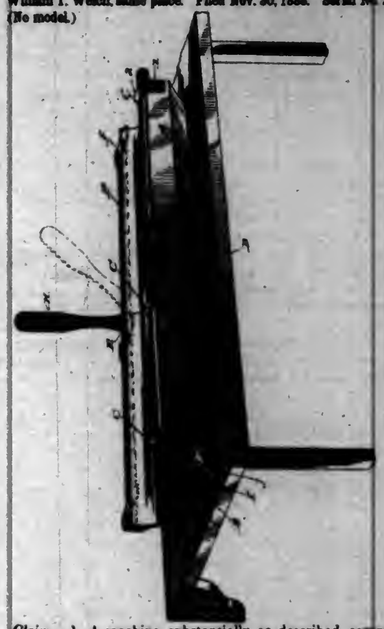
406,615. HYDRAULIC GOVERNOR FOR STEAM-PUMPS. CHAS. H. ATKINS, Palmer, assignor to the Geo. F. Blake Manufacturing Company, Boston, Mass. Filed July 16, 1888. Serial No. 280,027. (No model.)



Claim.—1. In a hydraulic governor for steam pumping-engines, the combination, with a valve-casing provided with a steam-inlet port and a steam-outlet port connected to the pump, and a valve in said casing to control the supply of steam to the pump, of a cylinder b^3, a piston in said cylinder connected to said valve, an independent valve-chest, an accumulator tank or vessel, a pipe connecting said valve-chest with said accumulator, a port in said valve-chest connected to the cylinder b^3, a valve in said valve-chest to control the supply of water to said cylinder, and a float or ram in said accumulator-tank connected to the valve in the valve-chest, to operate substantially as described.

2. In a hydraulic governor for steam pumping-engines, the combination, with a valve-casing provided with a steam-inlet port and a steam-outlet port connected to the pump, and a valve in said casing to control the supply of steam to the pump, of a cylinder b^3, and a cylinder b^4 intermediate of the cylinder b^3 and valve-casing, pistons c c^2 in said cylinders connected to the said valve, an independent valve-chest provided with an outlet-port a^4, connected to the cylinder b^3, and an exhaust-port a^5, an accumulator tank or vessel, and a pipe connecting said tank with the said valve-chest, a valve in said valve-chest to control the supply of water to the cylinder b^3, and a float or ram in said accumulator-tank connected to the valve in the said valve-chest, substantially as described.

406,616. SOLDERING-CLAMP FOR EAVES-TROUGHS AND SPOUTS. HENRY C. ATKINSON, Scottville, Ky., assignor of one-half to William T. Welch, same place. Filed Nov. 30, 1888. Serial No. 292,341. (No model.)



Claim.—1. A machine, substantially as described, comprising a body portion provided with a longitudinal trough-like cavity and having at one edge of such cavity a stop, bearing, or seat, the presser-bar arranged at the opposite edge of such cavity extended approximately the full length thereof and having a portion or portions whereby to engage the trough-sections, such presser-bar being movable longitudinally in the direction of length of the cavity and downward, and a lever whereby to operate such bar, all substantially as described, whereby the portions engaging the edge of the trough-sections move thereagainst with a sliding and downward motion, as and for the purposes specified.

2. The combination of the body portion having cavity B and provided at one edge of such cavity with a stop, bearing, or seat, the bar F, arranged at the opposite side of the said cavity and provided with a portion or portions to engage the trough-sections and with diagonal slots g, the screws or studs G, passed through said slots, and the lever, all substantially as set forth.

3. A machine, substantially as described, consisting of a body-piece provided in one side with a gutter or groove I and in its other side with a trough-like cavity B and having a stop, seat, or bearing at one edge of such cavity, and a presser at the opposite edge of such cavity, substantially as set forth.

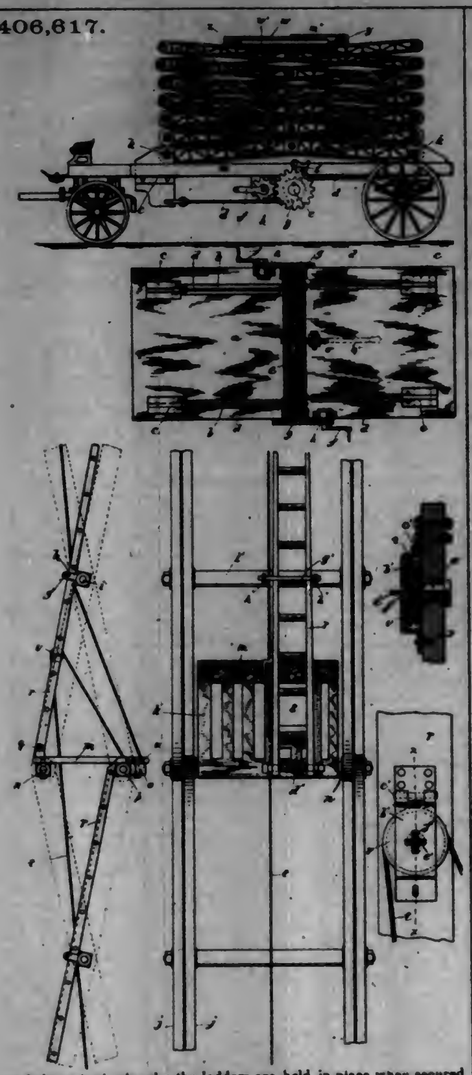
406,617. FIRE-ESCAPE AND LADDER. FRANCIS BAKER, Boston, Mass. Filed Sept. 24, 1888. Serial No. 286,160. (No model.)

Claim.—1. The combination of the lazy-tongs, the series of platforms pivoted thereto, the ladders between the platforms, and the rope or chain arranged, as shown, to raise all the platforms simultaneously.

2. The combination of the lazy-tongs, the pivoted platforms, the ladders, the pulleys on said ladders, and the rope or chain engaged with said pulleys and platforms, as set forth.

3. The combination of the lazy-tongs, the platforms, the ladders detachably secured at their lower ends to the platforms, as described,

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and the rods g', whereby the ladders are held in place when secured to the platforms, as set forth.

4. The combination of the lazy-tongs, the ladders having the pulleys v, and the movable yokes or guards for said pulleys, the platforms, and the rope engaged with the platforms and pulleys, as described, said rope being made detachable from the pulleys by the movable guards, as set forth.

5. The combination, with the lazy-tongs and a platform thereon, of a block 9, adapted to be pivotally engaged with said platform to swing horizontally, and a bridge pivoted to said block, so as to be capable of swinging vertically, as set forth.

6. The combination of the lazy-tongs having the horizontal platform w', an arm w'', connected by a rule-joint y' to a support on said platform, whereby said arm may be folded within the ladder or projected therefrom, and a pulley at the swinging end of said arm, whereby a rope may be suspended and raised and lowered.

7. The lazy-tongs composed of risers or members, consisting of the side pieces 2 2, connecting end pieces 3, transes 5, and bolts 4, as set forth.

406,618. PANEL. HIRAM A. REDDOUT, Syracuse, N. Y., assignor of one-half to George I. Beach, same place. Filed June 30, 1888. Serial No. 278,098. (No model.)

Claim.—1. A section consisting of pulp-board or its described equivalent completely framed with wood, the pulp and frame being

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jointed together and having a surface-finishing material secured to the section and extending over the frame to the extreme edges of the same, substantially as specified.

2. A stile, standard, or cross-bar comprising two sections, each consisting of a body of pulp-board and having a surrounding frame of wood jointed or secured thereto, said sections being fastened apart, whereby grooves are formed for the reception of panels, substantially as specified.

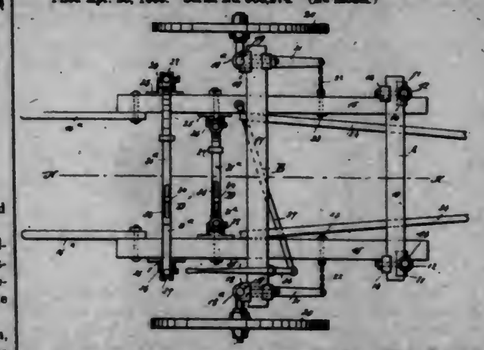
3. A cross-bar consisting of two sections, each comprising a pulp-board body having a surrounding frame B of wood jointed thereto, tenons F, and spacing-blocks E, substantially as specified.

4. A section consisting of pulp-board or its described equivalent completely framed with wood, the pulp and frame being jointed together, and the frame being jointed at its corners by mortise-and-tenon joints, the tenons being shorter than the thickness of the mortised pieces, whereby the exterior surfaces of the latter are unimpaired, substantially as specified.

5. A structure comprising sections each consisting of two or more sheets of pulp-board cemented and compressed together, jointed to a wooden frame, and surfaced with veneer, and standards and cross-bars each comprising two of said sections connected together, substantially as specified.

6. A structure comprising sections consisting of a pulp-board body completely framed with wood and surfaced with veneer, standards made up of two of such sections spaced, as described, to form mortises for tenons, and cross-bars made up of two of such sections spaced and provided with tenons, substantially as specified.

406,619. CULTIVATOR. JOHN C. BENTHALL, Schulenburg, Tex. Filed Apr. 23, 1888. Serial No. 308,274. (No model.)



Claim.—1. In a cultivator, the combination, with a forward cross-bar, tubes laterally and vertically adjustable upon the same, a rod held in each of said tubes, and spaced longitudinal body-beams having one end secured to said rods, of an axle cross-bar, tubes vertically and laterally adjustable upon said axle-bar, an angled spindle held in each tube carrying a drive-wheel, and a link-connection between the spindles and body-beams, substantially as shown and described.

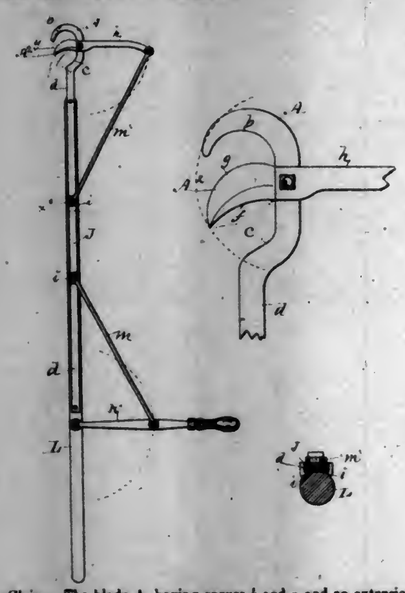
2. In a cultivator, the combination, with a forward cross-bar, tubes laterally and vertically adjustable upon the same, a rod held in each tube, and spaced longitudinal body-beams secured at one end to said rods, of an axle cross-bar, tubes vertically and laterally adjustable thereon, an angled spindle held in each tube carrying a drive-wheel, a link-connection between the spindles and body-beams, and laterally and vertically adjustable arched blade or share carriers secured to the body-beams, substantially as shown and described.

3. In a cultivator, the combination, with a forward cross-bar, tubes laterally and vertically adjustable upon the same, a rod held in each tube, and spaced longitudinal body-beams secured to the said rods, of an axle cross-bar, tubes vertically and laterally adjustable thereon, an angled spindle held in each tube carrying a drive-wheel, a link-connection between the spindle and body-beams, laterally and vertically adjustable arched blade or share carriers secured to the body-beams, a lever fulcramed upon the axle cross-bar, and a pitman-connection between the lever and opposite body-beam, substantially as shown and described.

4. In a cultivator, the combination, with a swinging frame, of transversely-aligning tubes secured to the side beams of the frame, a standard passed upward through each tube curved at the lower end to receive a share or blade, a thimble provided with two interior diameters, a set-screw uniting the tubes and standards, and curved bars secured to the upper end of each standard, united to form a laterally-adjustable arch-connection, substantially as shown and described.

5. In a cultivator, the combination, with a swinging frame and disks having one radially-toothed face secured to the side beams of the frame, a second grooved and toothed disk contacting with the frame-disk, a tube detachably clamped to the grooved disks and frame, a share-carrying standard passed upward through each tube, a thimble provided with two interior diameters, a set-screw clamping the tubes to the standards, and a curved bar rigidly secured to the upper end of each standard, said bars being united by a laterally-adjustable connection, substantially as shown and described.

406,620. PRUNING-SHEARS. DANIEL B. BENTLEY, Geneva, Nebr., assignor of one-half to Daniel H. Goodrich, same place. Filed Feb. 25, 1889. Serial No. 301,017. (No model.)



Claim.—The blade A, having curves *b* and *c*, and an extension *d*, fixed to the handle L, the blade A^1, having cutting-edges *f* and *g*, and an extension *h*, pivoted to the blade A, the slide J, having clasps *i* at its ends, the lever *k*, pivoted to the lower end of the handle, and the rods *m* and *m'*, connected with the ends of the slide, constructed and combined substantially as shown and described, for the purposes stated.

406,621. DOOR-CHECK. EUGENE I. BLOUNT, Cambridge, Mass., assignor to the Blount Manufacturing Company, Portland, Me. Filed Dec. 7, 1888. Serial No. 292,912. (No model.)

Claim.—1. In a door-check, the spring-actuated cap *g* and its connected arm, combined with a pivoted cylinder, and a piston and piston-rod, said piston-rod being pivoted at its outer end upon the periphery of said cap, substantially as set forth.

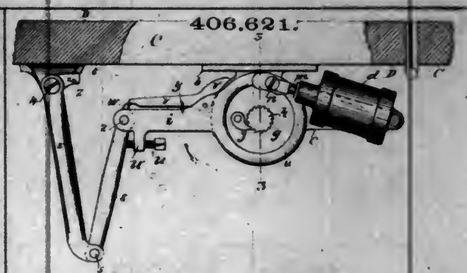
2. The spring barrel or casing, spring, and arbor, said spring being secured at one end to said barrel and at the other end to said arbor, combined with a rotary cap and connected arm, a ratchet-wheel on said arbor, a pawl pivoted on said cap and engaging said ratchet-wheel, a pivoted cylinder, and a piston-rod and piston, said piston-rod being pivoted at its outer end on the periphery of said cap, substantially as set forth.

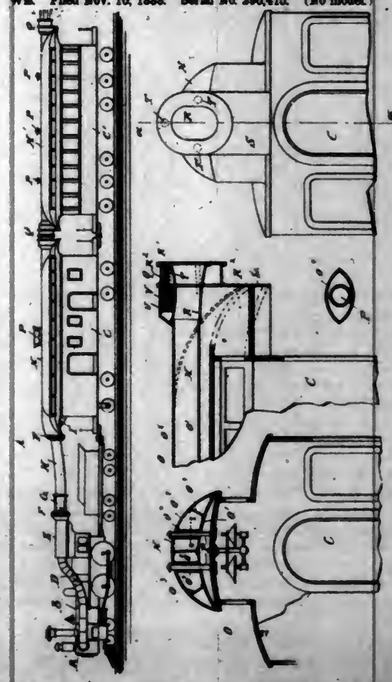
3. The spring barrel or casing provided on its periphery with a cam, combined with the spring-actuated arm, the door, toggle-levers connecting said arm with the door, a lever *v*, pivoted upon said arm and provided at one end with a shoe adapted to operate on the periphery of the barrel and be actuated by said cam, the other end of said lever *v* engaging a projecting finger of one of said toggle-levers, and a set-screw or stop connected with said arm on the side of the fulcrum of said lever opposite that of the aforesaid projecting finger, substantially as set forth.

4. The spring barrel or casing provided on its periphery with a cam, combined with a spring-actuated arm, the door, a lug or bracket on the door, toggle-levers *s t*, connecting said arm with the door, a lever *v*, pivoted upon said arm and provided at one end with a shoe adapted to operate on the periphery of the barrel and be actuated by said cam, the other end of said lever *v* engaging a projecting finger of toggle-lever *s*, a set-screw or stop connected with said arm on the side of the fulcrum opposite that of the aforesaid finger, and said toggle-lever *t* being constructed and arranged to engage the stop of the lug or bracket on the door, substantially as set forth.

5. In a door-check, the spring casing or support provided with a base-plate and its connected bracket *c*, and the spring-actuated cap *g* and its connected arm, combined with a cylinder pivoted on said bracket and a piston and piston-rod, said piston-rod being pivoted at its outer end upon the periphery of said cap, substantially as set forth.

406,622. SPARK-CONDUCTOR. EDWARD J. BRANDT, Watertown, Wis. Filed Nov. 10, 1888. Serial No. 290,415. (No model.)





Claim.—1. The combination, with a train, of pipes leading from the opposite sides of the smoke-box of the locomotive to longitudinal

channels formed on the cars, a removable pipe between the locomotive-pipes and the said car-channels, and couplings for connecting the several channels with each other, substantially as shown and described.

2. The combination, with a train comprising a locomotive and cars, of pipes leading from the smoke-box of the locomotive, a fan or blower located in one of the cars and connected with the said pipes, and channels formed on the cars and into which the said blower discharges, substantially as shown and described.

3. The combination, with a train comprising a locomotive and cars, of pipes leading from the smoke-box of the locomotive, a fan or blower located in one of the cars and connected with the said pipes, channels formed on the cars and into which the said blower discharges, and flexible couplings for connecting the said channels of two succeeding cars with each other, substantially as shown and described.

4. The combination, with a train comprising a locomotive and cars, of a longitudinal channel formed on the clear story of each car and connected with the smoke-box of the locomotive, substantially as shown and described.

5. The combination, with a train comprising a locomotive and cars, of a longitudinal channel formed on the clear story of each car and connected with the smoke-box of the locomotive, and vertical pipes passing through the said channels for the passage of the ventilators of the cars, substantially as shown and described.

6. The combination, with a car provided with a channel N on its clear story, of a flexible tube connected with the end of the said channel, a metallic plate connected to the outer end of the said flexible tube, and a flexible casing connecting the said metallic plate with the end of the car, substantially as shown and described.

7. The combination, with a car provided with a channel N on its clear story, of a flexible tube connected with the end of the said channel, a metallic plate connected to the outer end of the said flexible tube, a flexible casing connecting said metallic plate with the end of the car, and tapering pins secured to the said metallic plate and projecting into corresponding sockets at the end of the clear story of the said car, substantially as shown and described.

8. The combination, with a car provided with a channel N on its clear story, of a flexible tube connected with the end of the said channel, a metallic plate connected to the outer end of the said flexible tube, a flexible casing connecting said metallic plate with the end of the clear story of the car, tapering pins secured to the said metallic plate and projecting into corresponding sockets at the end of the said car, and springs held in the said sockets and pressing against the said metallic plate, substantially as shown and described.

9. The combination, with a locomotive, of pipes leading from the smoke-stack of the said locomotive to a channel formed in the cab of the locomotive, the coupling F, held on the rear end of the said cab of the locomotive, a pipe projecting from the rear of the said coupling F, a flexible tube telescoping in the said pipe, and a second coupling F, held at the rear end of the said flexible tube and also secured on the front end of the first car, substantially as shown and described.

10. The combination, with a locomotive, of pipes leading from the smoke-stack of the said locomotive to a channel formed on the cab of the locomotive, the coupling F, held on the rear end of the said cab of the locomotive, a pipe projecting from the rear of the said coupling F, a flexible tube telescoping in the said pipe, a second coupling F, held at the rear end of the said flexible tube and also secured on the front end of the first car, and a pipe leading from the second coupling to a fan or blower, substantially as shown and described.

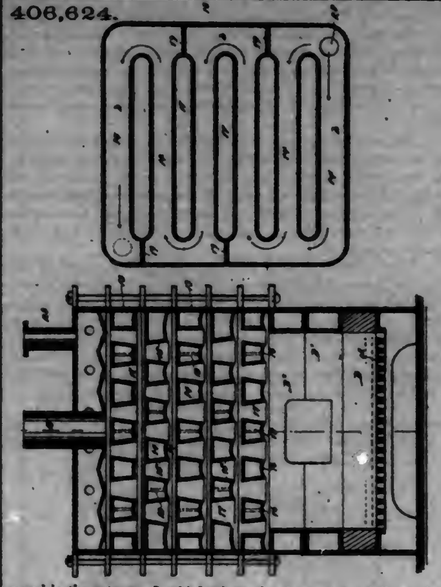
406,623. PICTURE-HANGER. WARREN M. SHINKERHOFF, Auburn, N. Y. Filed July 1, 1887. Serial No. 243,111. (No model.)



Claim.—A picture-hanger consisting of a main body provided with means for engaging a support for the same, a cord-support, and a single cord-locking projection extending outward from the facing surface of the main body, said projection being concaved or reduced between its outer end and the main body to form a notch or notches for the reception of the cord, substantially as described.

406,624. BOILER. WILLIAM H. BYRAM and JOHN REDMAN, Fishkill Landing, N. Y. Filed Mar. 14, 1889. Serial No. 303,224. (No model.)

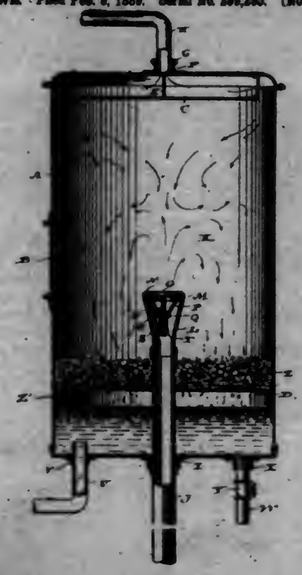
Claim.—1. The combination, with a series of sections containing parallel horizontal tubes and vertical tubes connecting the horizontal tubes of said sections, of alternately-arranged partitions rigidly secured in the returns of said horizontal tubes, substantially as shown and described, whereby a circuitous course is imparted to the water, as set forth.



2. The combination, with a series of sections containing horizontal, parallel, hollow, bar-like water-tubes having a concaved under surface, and vertical tubes connecting the horizontal water-tubes of said sections, of vertical alternately-arranged partitions located in the returns of the said horizontal tubes, substantially as shown and described.

3. In a boiler, the combination, with a series of independent sections arranged above the fire-box, one above the other, horizontal tubes carried by said sections having tapering sides and a concaved bottom surface, and vertical tubes connecting the outer tubes of each section at opposite diagonal corners, of vertical partitions alternately arranged in the opposite returns of the horizontal tubes of each of the said sections, all combined for operation substantially as shown and described, and for the purpose specified.

406,625. FEED-WATER HEATER. WILLIAM H. BURR, Sheboygan, Wis. Filed Feb. 9, 1889. Serial No. 299,295. (No model.)

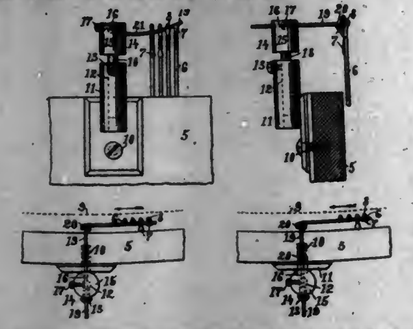


Claim.—1. The combination of a shell, a filter-bed arranged to divide the same into steam and water chambers, a steam-pipe communicating with the steam-chamber, a water-inlet pipe passed up through the water-chamber and filter-bed into said steam-chamber, a spring-controlled valve arranged on the latter pipe, and a delivery-pipe communicating with said water-chamber, substantially as set forth.

2. The combination of a shell, a filter-bed arranged to divide the same into steam and water chambers, a steam-pipe communicating with the steam-chamber, a water-inlet pipe passed up through the water-chamber and filter-bed into said steam-chamber, a spring-controlled valve arranged on the latter pipe, a delivery-pipe communicating with said water-chamber, and a blow-off pipe for the latter, substantially as set forth.

3. The combination of a shell provided with a suspended diaphragm, a filter-bed dividing the shell into steam and water chambers, a steam-inlet pipe communicating with said shell above the diaphragm, a division-plate arranged on the diaphragm to intercept the steam-pipe, a water-inlet pipe passed up through the water-chamber and filter-bed into the steam-chamber, a spring-controlled valve arranged on the pipe, and a delivery-pipe communicating with said water-chamber, substantially as set forth.

406,626. COMBINED THREAD-GUIDE AND LATCH-OPENER FOR KNITTING-MACHINES. HENRY A. CHURCH, Providence, R. I. Filed Nov. 8, 1887. Serial No. 254,605. (No model.)



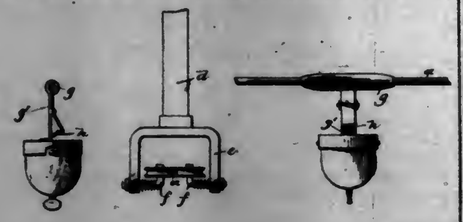
Claim.—1. A combined thread-guide and latch-opener for knitting-machines, consisting, essentially, of a single piece of wire bent in substantially L shape, and provided at the junction of the two legs constituting the L with a guide-eye formed by bending the wire, one of the legs being adapted to engage and open the latches of the rotating knitting-needles, substantially as set forth.

2. A combined thread-guide and latch-opener for knitting-machines, consisting, essentially, of a single piece of wire bent in substantially L shape, and provided at the junction of the two legs constituting the L with a guide-eye formed by bending the wire, and formed also on one of its legs with one or more guide-eyes 20, substantially as set forth.

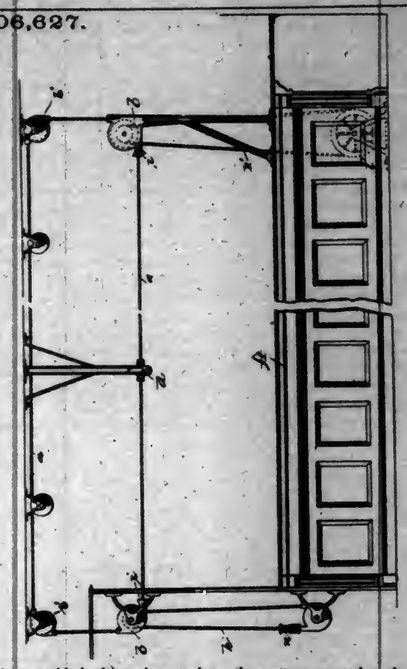
3. The combination, with the stand formed with a vertical socket and having a set-screw working into said socket, of a holder having a depending stem working in the socket of the stand, said holder having a horizontal passage or opening, and an L-shaped thread-guide and latch-opener working in said opening and adjustably held by a set-screw, said guide having one or more eyes and adapted to engage and open the latches of the knitting-machine, substantially as set forth.

406,627. CASH-CARRIER APPARATUS. DAVID W. COPELAND, Syracuse, N. Y. Filed Mar. 18, 1889. Serial No. 303,767. (No model.)

Claim.—1. In combination with an endless band and a receptacle carried thereby, a pair of horizontally-arranged pulleys on each side of the band for supporting the same, an arm or post having a yoke upon its lower end spanning the band, and brackets carrying the pulleys, said brackets having bearings in the ends of the yoke, and



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being provided with springs to keep the pulleys pressed against the band, substantially as described.

2. In combination, an endless band, means for operating it, supporting-drums at each end, an inclosing-case for each drum, a tubular socket projecting from each case, through which the band passes, and a carrier connected to the band and having cone-shaped projections in line with the socket, substantially as described.

406,628. BRAKE FOR VEHICLES. MICHAEL CONSEY, Forestville, Iowa. Filed Mar. 21, 1889. Serial No. 304,121. (No model.)



Claim.—1. The combination, with the frame of a sled having the rear ends of the runners thereof bifurcated, of the cross-piece pivoted in the forward ends of the runners and formed or provided with a forwardly-extending arm, said arm being provided with a longitudinal vertically-extending slot, the sleeves or clips arranged at opposite ends of said arm, the horizontal bars, the upper cross-piece pivoted to the forward ends of said bars, the tongue passing through the sleeves or clips and provided with a vertical perforation, the bolt passing through said perforation and through the longitudinal slot in the forwardly-extending arms, and the rear downwardly-extending bars pivoted to the ends of the horizontal bars and also pivoted in the bifurcated portion of the runners, said arms being provided with hooked ends, substantially as set forth.

2. The combination, with the frame of a sled having the rear ends of the runners thereof bifurcated, of the cross-piece pivoted in the forward ends of the runners and formed or provided with a forwardly-extending arm, said arm having a longitudinal vertically-extending slot, the clips or sleeves arranged at opposite ends of said arm, the rear horizontal bars, the forward horizontal bars pivoted thereto, the forward pivoted cross-piece, the tongue passing through the clips or sleeves and provided with a vertical perforation, the bolt passing through said perforation and through the longitudinal slot in the forwardly-extending arm, and the rear downwardly-extending bars pivoted to the ends of the horizontal bars and also pivoted in the bifurcated portion of the runners, said arms being provided with hooked ends, substantially as set forth.

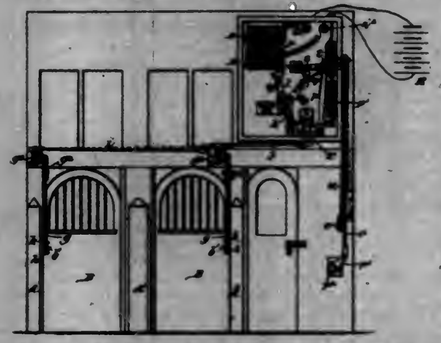
3. In a brake for sleds and other vehicles, the combination of the brake mechanism, the cross-piece pivoted to the forward ends of the runners and formed or provided with a forwardly-extending arm, said arm having a longitudinal vertically-extending slot therein, the sleeves

or clips arranged at opposite ends of said arm, the sliding tongue, and the turn-button for regulating the inward movement of said tongue, substantially as set forth.

4. In a brake for sleds and other vehicles, the combination of the brake mechanism, the cross-piece pivoted to the forward ends of the runners and formed or provided with a forwardly-extending arm, said arm having a longitudinal vertically-extending slot therein, the sleeves or clips arranged at opposite ends of said arm, the upper cross-piece, the sliding tongue secured thereto and provided with forward and rear perforations, the double-headed bolt passing through the forward perforations, the bolt passing through the rear perforation, and the turn-button, substantially as set forth.

5. The combination of the cross-pieces of the frame provided with staples upon their upper sides, the cross-piece pivoted in the forward ends of the runners and formed or provided with a forwardly-extending arm, said arm having a longitudinal vertically-extending slot therein, the clips or sleeves arranged at opposite ends of said arm, the rear horizontal bars, the forward pivoted bars, the upper cross-bar pivoted to the forward ends of said bars, the tongue passing through the clips or sleeves and provided with perforations for the reception of suitable bolts, the turn-button, the strip or brace connecting said turn-button to the upper pivoted cross-piece, the lower brace-piece, and the rear downwardly-extending bars suitably pivoted to the ends of the rear horizontal bars and also pivoted in the runners of the sled, said rods being provided with hooked ends, substantially as herein described and set forth.

406,629. ELECTRIC HORSE-DISCONNECTOR. GEORGE A. COULTER, Omaha, Nebr., assignor of one-half to James C. Ish, same place. Filed Sept. 15, 1887. Serial No. 249,811. (No model.)

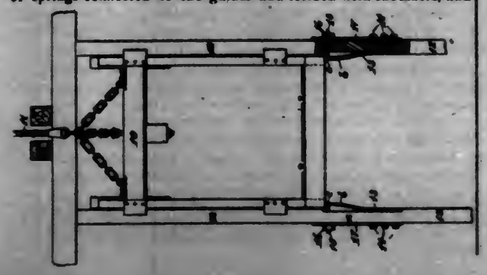


Claim.—1. The combination, with the two stall-doors hinged adjacent to each other, and electro-magnet-releasing devices, of a pair of horizontal levers C C, having a stationary fulcrum on the casing and their free ends loosely connected to the doors, the link-bars $c' c$, connected to the short ends of the levers, the cross-head c', screw-bolt c^2, spring c^3, and nut c^4, substantially as shown and described.

2. The combination, with the stall-doors and the locking devices for the same, of the rods $i j$, the T-shaped lever T, vertical bar p, attached to one arm thereof and provided with an upwardly-pulling spring p', lever q, loosely connected to the bar and having vertical pull-rod, link k, attached to the other arm of the lever T, lever l, with knuckle-plate n, pivoted to the box and also to the link, the magnets D D, and the armature having a spring pulling in unison with the magnets, substantially as shown and described.

406,630. SAFETY ATTACHMENT FOR ELEVATORS. JAMES COWIE, Lebanon, Pa. Filed Feb. 27, 1889. Serial No. 301,397. (No model.)

Claim.—The combination, with an elevator-cage and its guides, of springs connected to the guides and formed with shoulders, and



406,630.

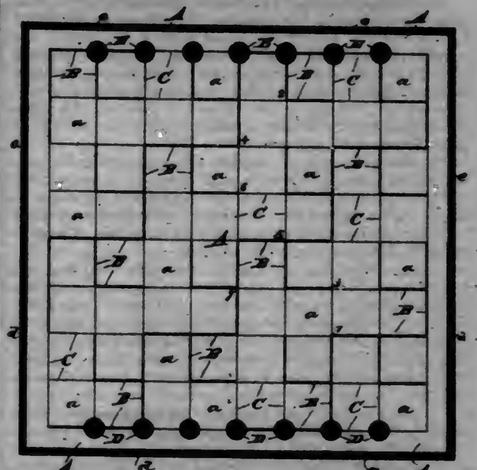


with outwardly-extending threaded shanks connected to the springs, and nuts which engage said shanks, substantially as described.

406,631. DRY-FLOUR PASTE. JOHN H. DAY, Albany, N. Y. Filed Mar. 27, 1889. Serial No. 304,993. (Specimens.)

Claim.—A new article of manufacture resulting from evaporating the moisture from liquid flour paste composed of flour, glue, and alcohol, and grinding the residue to a fine powder, substantially as described.

406,632. GAME APPARATUS. FREDERICK R. DUNHAM, New York, N. Y. Filed Mar. 11, 1889. Serial No. 302,981. (No model.)

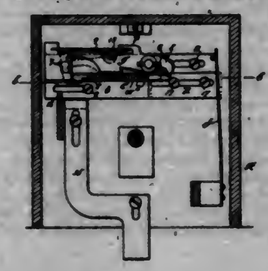


Claim.—1. A game-board made with a series of adjacent figures, one part of each figure being formed by a line or lines of one color or style and the remaining part of each figure being formed by a line or lines of another color or style, said lines or colors being severally adapted to indicate the direction and extent of movement of the pieces or men used in playing the game, substantially as herein set forth.

2. A game-board made with a series of adjacent figures, one part of each figure being formed by a line or lines of one color or style and the remaining part of each figure being formed by a line or lines of another color or style, combined with two or more series of readily-distinguishable pieces or men adapted for movement on the boundary-lines of the figures of the board, substantially as herein set forth.

406,633. VENDING APPARATUS. CORNELIUS F. DE RIDDER, New York, N. Y., assignor, by mesne assignments, to the Postage Stamp Service Machine Company, of New York. Filed Mar. 30, 1889. Serial No. 305,397. (No model.)

Claim.—1. The combination, in a machine of the class referred to, of the casing having the slot to receive the coins with a movable



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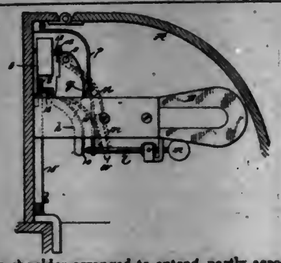


plate *b*, having a shoulder arranged to extend partly across said slot in position to be engaged by a coin of the proper thickness, substantially as described.

2. The combination, in a machine of the class referred to, of the casing having the slot *a* to receive the coins with the movable plate *b*, having the slot *c* registering with the slot *a* and contracted at one end to form shoulders which project partly across the slot *a*, substantially as described.

3. The combination, in a machine of the class referred to, of the casing having the slot to receive the coins with a movable plate *b* having a shoulder arranged to extend partly across said slot, and thereby reduce its width at one end, a second plate *d*, movable with and independently of the plate *b* and extending across the portion of the slot *a* which is reduced in width by the shoulders, and in position to be engaged by a coin or piece of metal of less than the proper thickness, and the latch-plate *g*, operated by said plate *d*, to lock the plate *b*, substantially as described.

4. The combination, in a machine of the class referred to, of a support *k*, arranged to receive the coins as they are introduced into the machine and to direct them forward in the proper course, with a magnet E, located adjacent to said support and in position to attract and retain thereon pieces of iron or other metal capable of being attracted by a magnet, substantially as described.

5. The combination, in a machine of the class referred to, of a support *k*, arranged to receive the coins as they are introduced into the machine and to direct them forward in the proper course, a magnet E, located adjacent to said support and in position to attract and retain thereon pieces of iron or other metal capable of being attracted by a magnet, and the guide *n*, operated to remove the arrested metal from the support by the deposit of the next coin, substantially as described.

6. The combination, in a machine of the class referred to, of the casing having the slot to receive the coins with the guide *k*, the counterbalanced support *k*, and the stop 14, for arresting a coin or piece of metal which is heavier than the proper coin, substantially as described.

7. The combination, in a machine of the class referred to, of the casing having the slot to receive the coins, with the guide *k*, the counterbalanced support *k*, and the stop 14, for arresting a coin or piece of metal which is heavier than the proper coin, and the guide *n*, operated to remove such heavier coin or piece of metal from the support by the deposit of the next coin, substantially as described.

406,634. VENDING APPARATUS. COMFORT F. DE REDON, New York, N. Y., assignor to Francis L. Wellman, same place. Filed May 6, 1889. Serial No. 309,709. (No model.)

Claim.—1. A delivery mechanism for a stamp-vending apparatus, consisting of the combination, with strip-feeding and stamp detaching and delivering apparatus, of a sliding carriage and means for reciprocating the same, substantially as described.

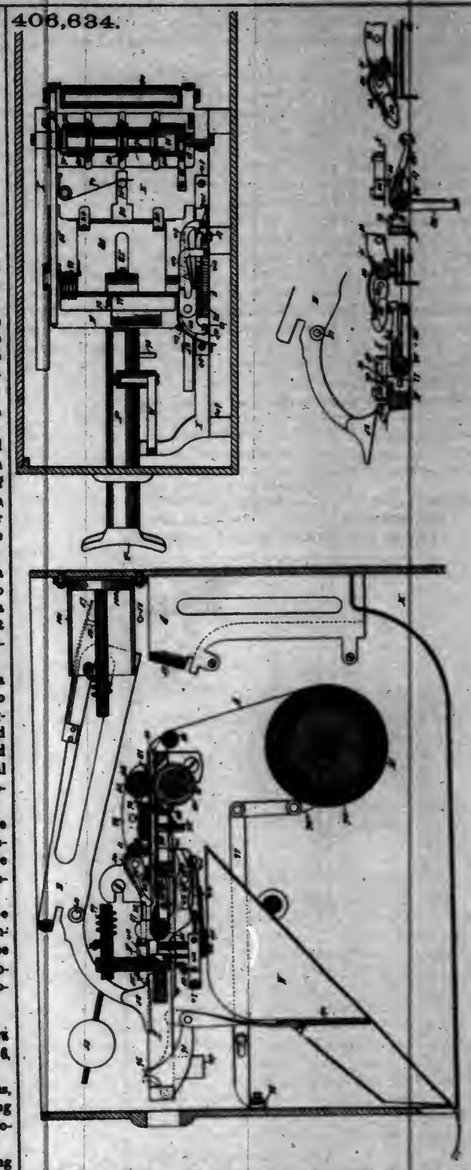
2. In a vending apparatus, the combination, with strip-feeding and stamp detaching and delivering apparatus, of a sliding carriage and a pulling-handle, substantially as described.

3. In a vending apparatus, the combination, with a sliding carriage through the reciprocation of which the various operations of feeding, detaching, and delivering the stamp are accomplished, of a governing-lever normally acting to lock the carriage stationary and adapted to gravitate and release said carriage, substantially as described.

4. The combination, with the sliding carriage F, of the double ratchet-bar, vibrating double pawl, and a switch operating at the end of a completed movement of the carriage in either direction to set the pawl into engagement with the ratchet-bar to prevent a false movement of said carriage, substantially as described.

5. In a vending-machine, the combination, with a sliding or reciprocating carriage whereby the feeding, detaching, and ejecting operations are effected, of a safety apparatus operating to compel the completion of the movement of the carriage, once begun, in either direction before the reverse movement can be made, substantially as described.

406,634.



6. In a vending-machine, the combination, with the apparatus for feeding the ribbon of stamps forward, of a detent operating to nip and hold the ribbon of stamps and a detaching apparatus operating to seize the foremost stamp and by a sliding movement to detach the same from the ribbon, substantially as described.

7. In a vending-machine, the combination, in the delivery mechanism for the stamps, of a stationary part through which the stamps are fed, means for suspending the movement of the strip of stamps, and a sliding carriage carrying a detaching apparatus operating to seize the foremost stamp, remove it from the ribbon of stamps, and deposit it in a delivery-chute, substantially as described.

8. In a vending-machine, the combination, with the stationary part of the delivery mechanism through which the stamps are fed and periodically held and the sliding carriage carrying the detaching apparatus operating to seize the foremost stamp, remove the same from the ribbon of stamps, and deliver the same, of a controlling-gate and means preventing its opening to discharge the stamp until the sliding carriage has completed its actuating movement, substantially as described.

9. The combination of a sliding carriage, the controlling-gate, and intermediate tripping device co-operating so that the forward movement of the carriage shall be completed before it raises the said gate to discharge the stamps, substantially as described.

10. The combination, with the sliding carriage carrying the stamp-delivering jaws 25 26 and means for feeding forward the strip of stamps, of the sliding stamp-guide 82, whereby the foremost stamp is supported close to the jaws when the same advance to seize it, substantially as described.

11. The combination, with the sliding carriage F, ratchet-bar having opposed teeth 28 11, of the double pawl 42 41 and switch-lever 46, with its arms 43 44, substantially as described.

12. The combination, with the sliding carriage F and ratchet-bar having opposed teeth 28 11, of the double pawl 42 41, switch-lever 46, its arms 43 44, and the stop-block 49 and stop-pin 29, substantially as described.

13. The combination, with the rack carried by the sliding carriage F, the pinion driven thereby, and the feeding-wheels, of a clutch for connecting the shaft carrying the pinion with the said pinion-wheel, so as to rotate them to perform the feeding operation, substantially as described.

14. The combination, with the sliding carriage F, its rack 65, the feeding-roll 62, wheel 60, and pinion 64 on shaft 61, of ratchet-wheel 73 and pawl 71, substantially as described.

15. The combination, with the guide 82, detent 30, and means for detaching the foremost stamp from the strip, of the feed-roller 62 and means for raising it temporarily out of action at the end of its feeding movement, substantially as described.

16. The combination, with the feed-roller 62 and jaws 25 26, of the sliding guide 82 and its cam 21, substantially as described.

17. The combination, with the jaws 25 26 and sliding guide 82 of a spring 74, substantially as described.

18. The combination, with the jaws 25 26 and pins 24, of the sliding guide 82 and its tongue 94, substantially as described.

19. The combination, with the feeding-roll 62 and detent 30, of the reciprocating jaws 25 26 and cam-arms 33, substantially as described.

20. The combination, with the reciprocating jaws 25 26 and detent 30, of actuating cam-arms 33 and elastic connections between said jaw 30 and arms 33, substantially as described.

21. The combination, with the nipping-jaws 25 26 and the sliding carriage, of the rock-arms 37 and cams 36 and 40, substantially as described.

22. The combination, with the nipping-jaws 25 26, of the tappet 77 and stop 78, substantially as described.

23. The combination, with the nipping-jaws 25 26, of the tappet 77, stop 78, and cams 36 and 40, substantially as described.

24. The combination, with the nipping-jaws 25 26, of the toes 20, substantially as described.

25. The combination, with the nipping-jaws 25 26 and arms 33 of the spring 86, substantially as described.

26. The combination, with the nipping-jaws 25 26 and arms 33, of the spring 86 and toes 20, substantially as described.

27. The combination, with the sliding carriage F and its tappet 93, of the gate 90 and lifting-lever 91, substantially as described.

28. The combination, with the sliding carriage F and its nose-piece 55, of the governing-lever B and its shoe 52, substantially as described.

29. The combination, with the sliding carriage F and its nose-piece 55, of the governing-lever B, its shoe 52, stop 56, and stud 58, substantially as described.

30. The combination, with the sliding carriage F and its nose-piece 55, a governing-lever B, its shoe 52, and stop 56, of the stud 58 and coin-guide G, substantially as described.

31. The combination, with the casing having coin-slot *a*, the sliding plate *b*, co-operating therewith, and the arm 15, of the rocking lever 98, latch-bar 97, lever 95, and actuating spring-arm 96, released to operate upon said lever 95 by unreeling the ribbon or strip of stamps therefrom, substantially as described.

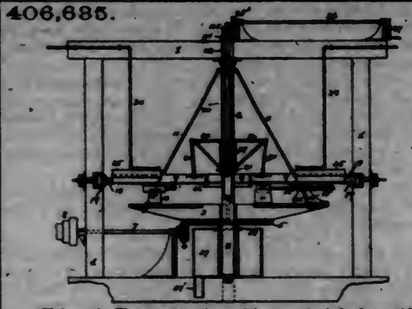
32. In a vending-machine, the combination, with the sliding carriage whereby the feeding, detaching, and ejecting operations are effected, of the spring-operated retracting-rod, substantially as described.

33. In a vending-machine, the combination, with the sliding carriage whereby the feeding, detaching, and ejecting operations are effected, of the cushioned rod 99, substantially as described.

34. In a vending-machine, the combination, with the sliding carriage whereby the feeding, detaching, and ejecting operations are effected, of the rod 99, piston 100, and cylinder 101, substantially as described.

406,635. CONCENTRATING AND AMALGAMATING MACHINE. GEORGE Q. DEMMING, Stockton, Utah. Filed May 26, 1887. Renewed May 28, 1889. Serial No. 312,264. (No model.)

406,635.



Claim.—1. The combination, with a vertical shaft provided with a support for the pans, of the said pans having the forms of sectors, whereby they form a circle when assembled, and each pan provided with sliding bearings on its support, and mechanism comprising a cam, a cam-roller, buffers, and spring for imparting to each pan a radial sliding and jarring movement as it is carried around by the shaft.

2. The combination, with a vertical shaft 2, provided with a suitable support 3 for the pans, said support having buffers 14', of the mechanism for imparting rotation to said shaft, the pans 9, each provided with shoes 10 10', a buffer 14, a cam 18, a spring-rod 15, and a spring 16, and the rollers 19 on the machine-frame, arranged to strike said cams on the pans.

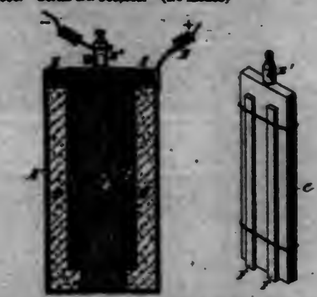
3. The combination, with the tubular slotted shaft 2 and the pans 9, of the rod 20 in the hollow of the shaft, the cross-piece 21, loose on said rod and engaging the slots in shaft 2, the sleeve 29 on shaft 2 and resting on cross-piece 21, said sleeve having arms 30, the links 31, connecting arms 30 with the pans, respectively, and means, substantially as described, for raising and lowering said rod 20.

4. The combination, with the main frame and the rollers 19, mounted adjustably thereon, of the shaft 2, rotatively mounted in said frame and provided with a support for the radially-sliding pans, the said pans each provided with a cam 18, adapted to bear on said rollers as the shaft revolves, and the springs that return or retract the pans, substantially as and for the purposes set forth.

5. The combination, with the independently-moving pans arranged around the shaft, of the said shaft, the feed-pipes arranged over the pans, and the deflecting-shields 35, arranged over the spaces between the pans under said feed-pipes, and means for operating said pans, substantially as set forth.

6. The combination, with the pans and hollow shaft 2, of the mechanism for simultaneously lifting the inner ends of said pans, consisting of the non-rotative lifting-rod 20 in said hollow shaft 2, cross-piece 21, rotatively mounted on the rod 20, sleeve 29 and its arms, coupling-links 31, nut 25, and mechanism for rotating said nut.

406,636. GALVANIC BATTERY. MATTHEW DOUGHTY, Worcester, Mass., assignor of one-half to Edward P. King, same place. Filed Mar. 14, 1889. Serial No. 303,202. (No model.)



Claim.—1. The excitant-paste for batteries, composed of madder, sal-ammoniac, sulphate of zinc, bichloride of mercury, and water, mixed together in proportions substantially as specified.

2. The excitant composition formed of madder, sal-ammoniac, sulphate of zinc, bichloride of mercury, and water, substantially as described, in combination with the zinc and carbon elements in an electric battery, substantially as set forth.

3. The combination, with the carbon or negative element, the positive element, and the excitant-filling, in an electric battery, of pieces of wood-charcoal disposed in contact with the carbon or negative element for absorbing and condensing hydrogen.

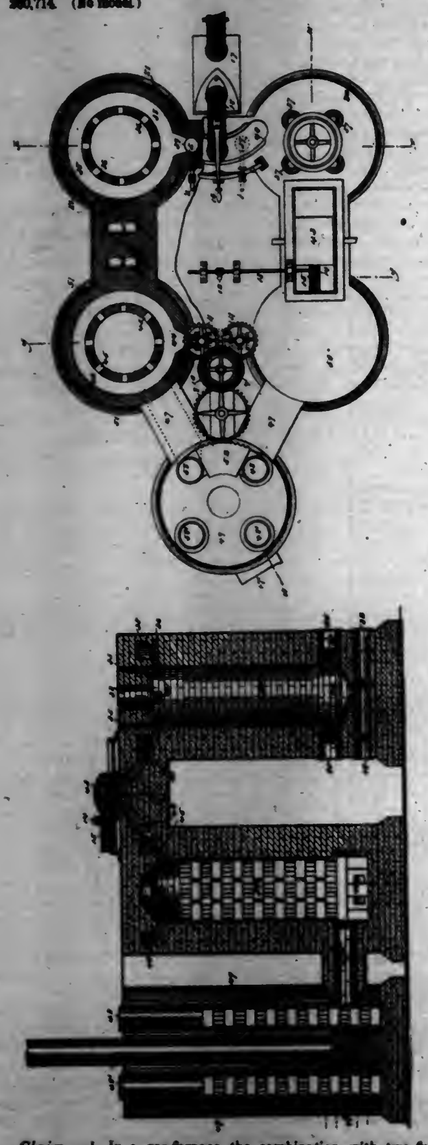
4. The combination, in an electric battery, of the zinc A, the car-

bon C, the excitant material or paste D, composed of madder, sal-ammoniac, sulphate of zinc, bichloride of mercury, and water, as specified, and wood-charcoal F, for absorbing hydrogen, all substantially as and for the purpose set forth.

5. A battery composed of the double-cell cup of indurated fiber or neutral material, with a zinc lining, a carbon center having a filling or re-enforce of wood-charcoal, and an intervening filling between said zinc and carbon, of excitant-paste composed of madder, sal-ammoniac, sulphate of zinc, bichloride of mercury, and water, substantially as set forth.

6. An electric battery having or containing pulverized madder, in combination with the excitant agents, substantially as and for the purpose set forth.

406,687. APPARATUS FOR THE MANUFACTURE OF FUEL-GAS. MARY T. DWIGHT, Montclair, N. J., administratrix of George S. Dwight, deceased. Original application filed Oct. 2, 1884, Serial No. 144,530. Divided and this application filed Jan. 14, 1888. Serial No. 260,714. (No model.)



Claim.—1. In a gas-furnace, the combination, with two fuel-chambers 20 21, communicating with each other at their bases, of two air-heating chambers 50 51, communicating with the upper parts of the respective fuel-chambers above the fuel contained therein, and steam-pipes and gas-escape passages also communicating with the upper parts of each of said fuel-chambers above the fuel contained therein, whereby an air-blast may be passed through either of said air-heating chambers, thence downward through the fuel in the fuel-chamber connected therewith and upward through the fuel in the other fuel-chamber, and the products of combustion passed thence through the other air-heating chamber, and whereby steam may be passed downward through the fuel in either fuel-chamber and then upward through the fuel in the other fuel-chamber, and the resulting gas escape from the upper part of the last chamber, substantially as described.

2. In a gas-furnace, the combination, with two fuel-chambers 20 21, communicating with each other at their bases, of two air-heating chambers 50 51, communicating with the upper parts of the respective fuel-chambers above the fuel contained therein, and steam-pipes and gas-escape passages also communicating with the upper parts of each of said fuel-chambers above the fuel contained therein, whereby an air-blast may be passed through either of said air-heating chambers, thence downward through the fuel in the fuel-chamber connected therewith and upward through the fuel in the other fuel-chamber, and the products of combustion passed thence through the other air-heating chamber, and whereby steam may be passed dowaward through the fuel in either fuel-chamber and then upward through the fuel in the other fuel-chamber, and the resulting gas escape from the upper part of the last chamber, and the shifting pipe 18, for connecting with the upper parts of the gas-escape passages of either of said fuel-chambers, substantially as described.

3. In a gas-furnace, the combination, with two fuel-chambers 20 21, communicating with each other at their bases, of two air-heating chambers 50 51, communicating with the upper parts of the respective fuel-chambers above the fuel contained therein, and steam-pipes and gas-escape passages also communicating with the upper parts of each of said fuel-chambers above the fuel contained therein, whereby an air-blast may be passed through either of said air-heating chambers, thence downward through the fuel in the fuel-chamber connected therewith and upward through the fuel in the other fuel-chamber, and the products of combustion passed thence through the other air-heating chamber, and whereby steam may be passed downward through the fuel in either fuel-chamber and then upward through the fuel in the other fuel-chamber, and the resulting gas escape from the upper part of the last chamber, and valves for controlling the communication between said air-heating chambers and the respective fuel-chambers, substantially as described.

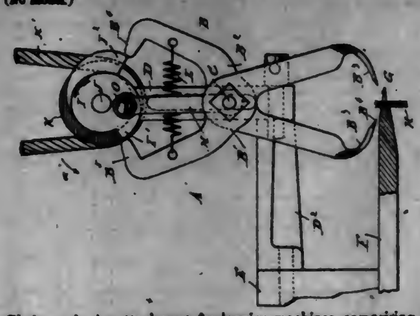
4. In a gas-furnace, the combination, with two fuel-chambers 20 21, communicating with each other at their bases, of two air-heating chambers 50 51, having connections for receiving an air-blast at each end and communicating with the upper parts of the respective fuel-chambers above the fuel contained therein, and steam-pipes and gas-escape passages also communicating with the upper parts of each of said fuel-chambers above the fuel contained therein, whereby an air-blast may be passed through either of said air-heating chambers, thence downward through the fuel in the fuel-chamber connected therewith, and upward through the fuel in the other fuel-chamber, and the products of combustion passed thence into and burned with an air-blast as they pass through the other air-heating chamber, and whereby steam may be passed downward through the fuel in either fuel-chamber and then upward through the fuel in the other fuel-chamber, and the resulting gas escape from the upper part of the last chamber, substantially as described.

5. In a gas-furnace, the combination, with two fuel-chambers 20 21, communicating with each other at their bases, of two air-heating chambers 50 51, having connections for receiving an air-blast at each end and communicating with the upper parts of the respective fuel-chambers above the fuel contained therein, and steam-pipes and gas-escape passages also communicating with the upper parts of each of said fuel-chambers above the fuel contained therein, whereby an air-blast may be passed through either of said air-heating chambers, thence downward through the fuel in the fuel-chamber connected therewith, and upward through the fuel in the other fuel-chamber, and the products of combustion passed thence into and burned with an air-blast as they pass through the other air-heating chamber, and whereby steam may be passed downward through the fuel in either fuel-chamber and then upward through the fuel in the other fuel-chamber, and the resulting gas escape from the upper part of the last chamber, and a steam-boiler having flues communicating with each of said air-heating chambers to receive the products of combustion therefrom, substantially as described.

6. In a gas-furnace, the combination, with the two fuel or combustion chambers 20 21, of the two air-heating chambers 50 51, the passages 41 42, connecting said fuel and air-heating chambers, the sliding covers 43, for controlling said passages, and means by which said covers can be operated simultaneously, substantially as described.

7. In a gas-furnace, the combination, with the two air-heating chambers 50 51, of the air-pipe 55 and its branches, communicating with the tops and bottom of said chambers, the cocks 4 5 6 7, and means by which said cocks can be operated simultaneously, substantially as described.

406,638. ATTACHMENT FOR LOOPING-MACHINES. RAYMOND R. ELLSWORTH, Cohoes, N. Y. Filed Nov. 3, 1888. Serial No. 289,896. (No model.)



Claim.—1. An attachment for looping-machines, comprising a pair of vertically-movable tongs, a rotary cam between the upper ends of the tongs to rock the two members thereof on their pivot, means for closing the tongs, and a positive connection between the cam and the tongs for raising and lowering said tongs, substantially as set forth.

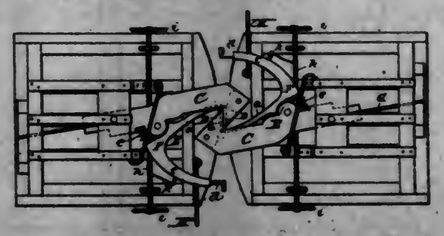
2. An attachment for looping-machines, comprising a pair of tongs adapted to engage with their lower ends the surplus material above the impaling-needles, a cam-wheel for opening and a spring for closing said tongs, and a pitman pivotally connected with the pivot of the said tongs, and also connected with a crank-pin on the cam-wheel, substantially as shown and described.

3. An attachment for looping-machines, comprising a pair of tongs adapted to engage with their lower ends the surplus material above the impaling-needles, a fixed frame having a slot in which is held to slide the pivot of the said tongs, a cam-wheel having a rotary motion and serving to open said tongs, a spring for closing the tongs, and a pitman pivotally connected with the pivot of the said tongs and with a crank-pin on the said cam-wheel, substantially as shown and described.

4. An attachment for looping-machines, comprising a pair of tongs adapted to engage with their lower ends the surplus material above the impaling-needles, a fixed frame having a slot in which is held to slide the pivot of the said tongs, a cam-wheel having a rotary motion and serving to open and close said tongs, a pitman pivotally connected with the pivot of the said tongs and with a crank-pin on the said cam-wheel, and a spring for closing said pair of tongs, substantially as shown and described.

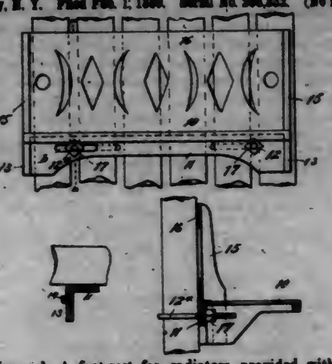
5. An attachment for looping-machines, comprising a frame having a vertical slot, a pair of tongs adapted to engage with their lower ends the surplus material above the impaling-needles, the pivot of said tongs being held to slide in the said vertical slot, a cam-wheel secured to a shaft mounted to rotate in the said frame and serving to open the upper ends of the said tongs, a spring connected with the upper ends of the said tongs to close the same, a pitman pivotally connected with the said pivot-pin of the tongs, and a crank-pin secured on the face of the said cam-wheel and pivotally connected with the said pitman, substantially as shown and described.

406,639. CAR-COUPLING. AUSTIN ELLIOTT, Kansas City, Kans. Filed Sept. 26, 1888. Serial No. 286,470. (No model.)



Claim.—The herein-described car-coupling, consisting of the elongated draw-head pivoted near its rear end to the platform of the car and provided with the spring G, the front end of said draw-head terminating in a hook-shaped projection D, and provided with an elbow-shaped lever F, the one arm of which rests within the space at the rear of the said hook-shaped projection D, while the other arm thereof projects to one side of the car, substantially in the manner and for the purpose specified.

406,640. RADIATOR FOOT-REST. GEORGE C. FELTER, Haverstraw, N. Y. Filed Feb. 1, 1889. Serial No. 298,332. (No model.)



Claim.—1. A foot-rest for radiators provided with vertical grooves or recesses on its sides at the inner ends thereof, and a vertical open-work shield having downward-extending arms 14 entering said recesses or grooves, substantially as set forth.

2. As an improved article of manufacture, a foot-rest for radiators, consisting in the shelf 10, having integral depending flanges 11 13 along its inner side and ends, respectively, the flange 11 being provided with a bolt-aperture and a longitudinal slot 6, and the end flanges 13 being vertically grooved or recessed at their inner ends, the hook-bolts extending inwardly through said aperture and slot, and provided with nuts on their inner ends, and the open-work shield 16 having integral end flanges 15 and depending arms 14 entering said recesses or grooves, substantially as set forth.

406,641. MEASURING-VESSEL. JOHN FREYTAG, Dayton, Ohio. Filed Nov. 26, 1888. Serial No. 291,942. (No model.)



Claim.—1. An improved measuring apparatus, substantially as described, comprising a supply-pipe, a discharge-pipe, a number of measuring-chambers, faucets controlling the inlet to and discharge of said measuring-chambers, branch pipes connecting the faucets of each of said measuring-chambers with the supply-pipe, and branch pipes connecting each of such faucets with the discharge-pipe, all being constructed substantially as described, whereby all of said measuring-chambers may be filled through the same pipe and emptied through the same pipe, as and for the purposes set forth.

2. An apparatus, substantially as described, consisting of the casing or cabinet, the measuring-chambers arranged in said cabinet, the faucets arranged in the cabinet and controlling the inlet to and discharge from said measuring-chambers, the handles of said faucets being arranged outside the cabinet, the supply-pipe, the branch pipes arranged in the cabinet and connecting the supply-pipe with the faucets of each of the measuring-chambers, the discharge-pipe extended through the front wall of the casing or cabinet, and the branch pipes arranged in the cabinet and connecting the discharge-pipe with the faucets of each of the measuring-chambers, substantially as set forth.

406,642. WIRE-STRETCHER. WILLIAM G. FROST, Lebanon, Ind. Filed Oct. 3, 1888. Serial No. 287,097. (No model.)

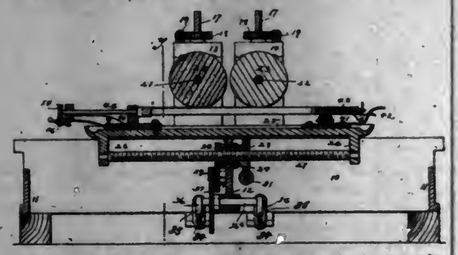


Claim.—1. A wire-stretcher consisting of a horizontal frame with means at one end for securing the end of a fence-wire, and a pulley or wheel at the other end with a pawl-and-ratchet wheel and means for operating the same, and lateral projections with means for securing brace-wires thereto, substantially as described.

2. A wire-stretcher consisting of frame 1, with horizontal portion 2, having at one end eye 3, and at the other vertical side pieces 5, a pulley 7, with ratchet-wheel 10, having its axle 6 provided with squared end 12, mounted in inclined slots 9 in the side pieces 5, pawl 11, engaging ratchet-wheel 10, and lateral projections 13, with holes 14, substantially as described.

3. The combination, with a wire-stretcher consisting of frame 1, with horizontal portion 2, having the eye 3 at one end and the vertical side pieces 5 at the other, pulley 7 and ratchet-wheel 10, having axle 6, with squared end 12, mounted in inclined slots 9 in said side pieces, pawl 11, engaging ratchet-wheel 10, and lateral projections 13, with holes 14, of the brace-wires 15, having their ends secured to projections 13, the horizontal fence-wire 4, secured to eye 3, and the fence-wire 5', secured to pulley 7, substantially as described.

406,643. MACHINE FOR GRINDING AND POLISHING RIFLE-BARRELS. ORLANDO M. GRIMES, New Haven, Conn. Filed Aug. 23, 1883. Serial No. 283,553. (No model.)



Claim.—1. The combination, with the frame having opposite front and rear standards, parallel transverse shafts journaled in said standards, a buffing-roller on one shaft and a grinding-roller on the other, and pulleys on said shafts, of upward-extending levers pivoted between their ends to the opposite sides of the frame and engaging at their upper ends the opposite ends of both roller-shafts, a transverse shaft connecting the lower ends of each pair of levers, and a longitudinally-extending shaft having cams for operating said two connecting-shafts, substantially as set forth.

2. The combination, with the frame and the transverse roller journaled thereon, of a longitudinally-reciprocating table under the roller, and a head and a tail stock mounted on the said table and provided, respectively, with a longitudinally-extending aligned key and spindle, substantially as set forth.

3. The combination, with the reciprocating table, of a head-stock provided with a series of longitudinally-extending parallel keys, a transverse shaft geared to the outer ends of said keys for rotating them, and a series of parallel longitudinally-sliding spindles mounted in the tail-stock in alignment with said keys, substantially as set forth.

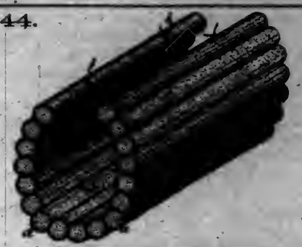
4. The combination, with the frame, the rollers, the levers 32, one for each roller, engaging at their upper ends the ends of the roller-shafts, the transverse shafts 34 34, connecting the lower ends of said levers and provided with vertical fingers 35, the longitudinally-extending shaft 36, having cams 36 36 between said fingers, and a gear-wheel 37, of the longitudinally-reciprocating table having a feed-screw 27, a rotary internally-threaded hub 28, through which the said screw passes, a drive-shaft geared to said hub, and a pinion 30 on the hub, a pinion 39, driven by the pinion 30, and a smaller pinion 38, connected with pinion 39 and meshing into gear-wheel 37, substantially as set forth.

5. In a machine for grinding and polishing rifle-barrels, the combination, with slotted standards, vertically-adjustable boxes held in said standards, rotary roller-carrying shafts journaled in said boxes capable of lateral movement, and a sliding table below said shafts, of levers engaging the ends of the roller-shafts, finger-carrying shafts linked to said levers, a cam in frictional contact with the fingers, a feed-bar attached to the table, and a drive-shaft and gearing, substantially as shown and described, connecting the drive-shaft with the cam-shaft and table-feed, as and for the purpose specified.

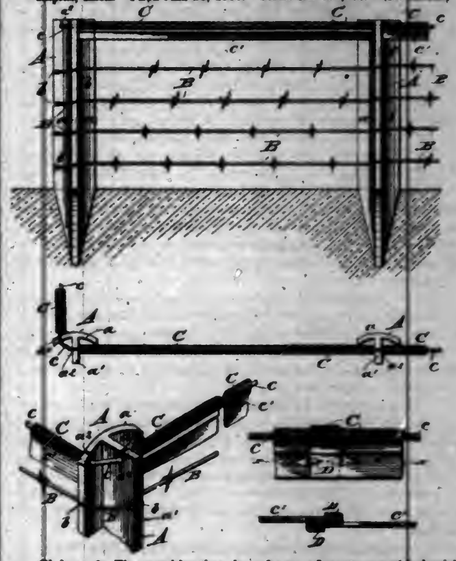
406,644. NON-HEAT-CONDUCTING FABRIC. HIRAM M. HANMORE, Santa Cruz, Cal. Filed Jan. 16, 1889. Serial No. 295,994. (No model.)

Claim.—A non-heat-conducting fabric consisting of a woven foundation fabric having a weft of tule-grass, each of the spires of which is independently covered with a coating of adhesive material, an external coating of non-heat-conducting heat-proof substance covering both the warp and the weft of the fabric, and a coating of pulverulent non-heat-conducting and water-proof substance applied to the exterior of said non-heat-conducting and heat-proof substance, substantially as specified.

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406,645. FENCE. JAMES HIGGINS and JOHN SULLIVAN, Grand Rapids, Mich. Filed Jan. 26, 1889. Serial No. 297,700. (No model.)



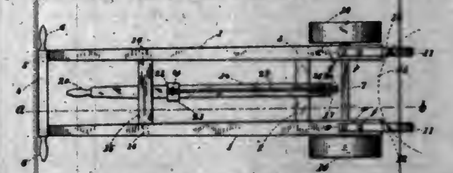
Claim.—1. The combination, in a fence, of posts provided with upper slots, a wire run along the posts and into said slots, and guard-rail plates clamped to said wire and abutting adjacent posts, substantially as herein set forth.

2. The combination, in a fence, of posts made with a face-plate and a flange or rib, said flange provided with an upper slot, a wire stretched along the posts and in their flange-slots, and a guard-rail plate clamped to the wire between and abutting adjacent posts, substantially as herein set forth.

3. The combination, in a fence, of posts A, made with face-plate a and flange or rib a', said flanges provided with slots b a^3, barbed-wire stringers B, set into the post-slots b, and an upper guard-rail C, consisting of a plain wire c, stretched along the posts in their slots a^3, and plates d', clamped to the wire c and abutting adjacent posts, substantially as herein set forth.

4. In a fence, the combination, with adjacent slotted posts, a head-wire stretched between them in the slots, and a guard-rail plate consisting of two parts end-lapped and having bent tongues clasped over and upon the extremities of the parts at their joint, substantially as herein set forth.

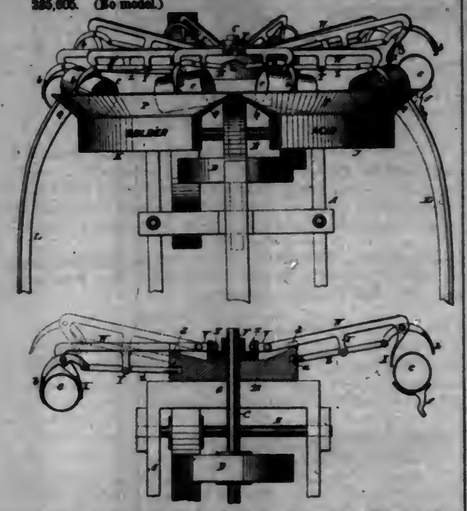
406,646. BARREL-TRUCK. JULIAN P. HILL, Buffalo, N. Y. Filed Apr. 13, 1889. Serial No. 307,149. (No model.)



Claim.—1. A barrel-truck consisting of the frame portion provided with handles 6, and carrying the wheels and pointed holding-irons, in combination with a tilting bar pivoted between the side frame-bars and provided with two holding-hooks 17 and 18, one directly back of the other, whereby the edge of a barrel may be caught between the two hook portions 17 and 18 and held securely, so that it cannot tip either way, substantially as described.

2. In a barrel-truck, the combination of the frame portions secured together by cross-bars and provided with handles 6 and truck-wheels 10, holding-irons 11, having substantially upright portions 12, and a pivoted tilting bar 14, having a handle 20, hooks 17 and 18, secured to the end of the tilting bars, and a supplementary hook-bar secured to a collar made longitudinally adjustable on the tilting bar, for the purposes described.

406,647. CAN-SOLDERING MACHINE. WILLIAM HIPPERLING, New York, N. Y., assignor to Stephen A. Gross, Plainfield, N. J., and Richard A. Donaldson, Brooklyn, N. Y. Filed Sept. 17, 1883. Serial No. 285,805. (No model.)

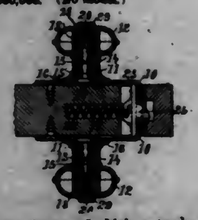


Claim.—1. In a machine for soldering the seams of tin cans, the receptacles for acid and solder arranged in the arc of a circle, combined with a series of rotating clamps for carrying the cans through the baths and a cam for opening and closing the clamps, said clamps consisting of the levers W Z and jaws X b, substantially as and for the purposes set forth.

2. In a machine for soldering the seams of tin cans, the receptacles for acid and solder arranged in the arc of a circle, combined with the wheel F, clamping-levers W, radiating therefrom and having jaw X, the rocking levers Z, carried by the levers W, the pivoted jaw b, and the cam having cam edge d and groove e, substantially as set forth.

3. In a machine for soldering the seams of tin cans, the horizontal acid and solder receptacles J K, having inclinations Q at their ends and arranged in the arc of a circle, combined with the vertical driving-shaft C, the wheel F thereon, a series of rotating clamps connected with said wheel, and a cam-wheel E, for opening and closing said clamps, said cam having elevations and depressions arranged to cause the clamps to tilt the cans after leaving the baths, substantially as and for the purposes set forth.

406,648. LATCH. JOHN HOYT, Jr., Providence, R. I. Filed July 16, 1888. Serial No. 280,068. (No model.)



Claim.—1. A lock the frame of which extends over the inside and outside of the door and across the edge thereof, provided with two independent knobs for operating the latch, substantially as described.

2. The lock formed with the U-shaped frame to clasp the door, provided with the hubs having the knobs loosely mounted thereon, and the eccentric for operating the latch provided with shafts constructed to be connected with and disconnected from the knobs, as described.

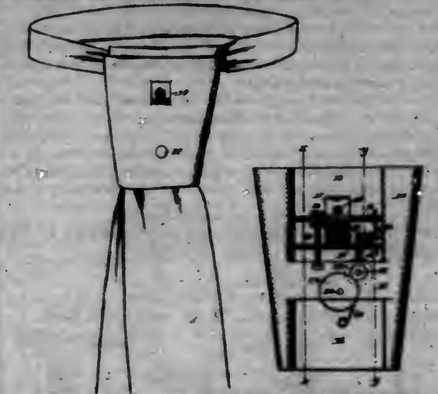
3. The combination, in a lock, of a knob loosely mounted on the frame, the latch, the eccentric for operating the latch, and a key for locking the knob to the eccentric, substantially as and for the purpose herein described.

4. The combination, in a lock, of the knob loosely mounted on the frame of the lock, the shaft provided with a locking end and carrying the eccentric, and the U-shaped latch-frame having the latch attached thereto and operated by the eccentric when the knob is secured to the shaft of the eccentric, substantially as described.

5. The combination, in a lock, with the lock-frame, of a knob loosely mounted, a shaft connected with the latch-operating device, the latch-frame provided with the latch, and a key constructed to secure the knob to the latch-shaft, as described.

6. The combination, in a lock, of the frame 10, the hub 11, the knob 12, the shaft 15, the eccentric 16, the latch-frame 23, provided with the latch 25, and the spring 26, substantially as described.

406,649. NECKSCARF. ELLIS T. HOWARD, Chicago, Ill. Filed Mar. 20, 1888. Serial No. 268,247. (No model.)

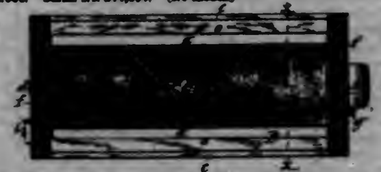


Claim.—1. A form for necktie-heads consisting of a shell shaped to the contour of said head, provided with parallel flanges 12 and cross-bar 11, an opening being formed in the front of the shell, a clock-work mounted between said flanges and cross-bar, a rotary carrier operated thereby and provided with peripheral ornamentations successively registering with the said front opening, substantially as set forth.

2. The combination, with a necktie having an opening in its head and a small aperture below the same, of a rotary peripherally-ornamented carrier visible through said opening, a clock-work actuating said carrier, and a winding-shaft extending through the aperture, substantially as set forth.

3. The combination, with a necktie, of a shell shaped to the contour of the head of the tie and covered by the material thereof, the shell and material having registering openings, a carrier within the shell and having a series of ornaments successively registering with said openings, and mechanism within the shell for operating the carrier, substantially as set forth.

406,650. BLACKBOARD-ERASER. WALTER F. JONES, Perth, assignor of one-half to C. W. Burdett, Syracuse, N. Y. Filed June 20, 1888. Serial No. 277,697. (No model.)



Claim.—1. In a blackboard-rubber, the handle of which consists of a dust-receptacle, the eraser situated centrally in the said receptacle, with dust-entrances at opposite sides of the eraser, as set forth and shown.

2. A blackboard-rubber consisting of a handle formed with a dust-receptacle, a main eraser situated in said receptacle and extending from end to end thereof, with dust-entrances at opposite sides of the eraser, and eraser-strips extending across the ends of the main

eraser and ends of the aforesaid dust-entrances, substantially as described and shown.

3. In combination with the handle formed with a dust-receptacle, the eraser situated in said receptacle and extending from end to end thereof, with dust-entrances at opposite sides of said eraser, and a tongue projecting from the back of the eraser and extending lengthwise thereof, substantially as and for the purpose set forth.

4. In combination with the handle formed with a dust-receptacle, the eraser situated in said receptacle and pivoted to opposite ends thereof, dust-entrances between the sides of the eraser and sides of the receptacle, and valances along the edges of the receptacle, substantially as described and shown, for the purpose set forth.

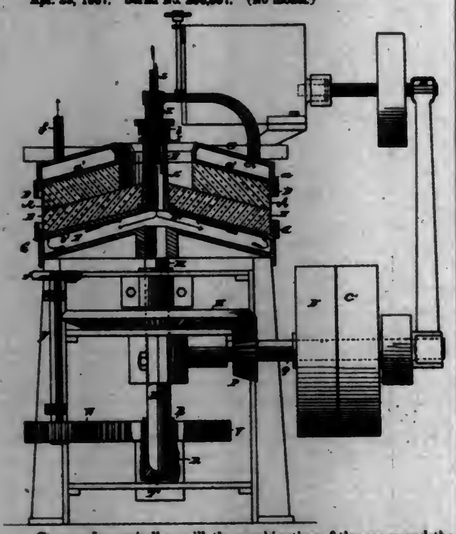
5. In combination with the handle formed with a dust-receptacle and an eraser occupying the longitudinal central portion of said receptacle, with dust-entrances along the sides of the eraser, cleats attached to the edges of the dust-receptacle and projecting part way over the dust-entrances, substantially as described and shown.

6. In combination with the handle formed with a dust-receptacle, the eraser occupying the longitudinal central portion of said receptacle and pivoted to opposite ends thereof, a thumb-piece attached to one of the pivots of the eraser, and a latch connected to the end of the handle and adapted to engage the thumb-piece, and thereby lock the eraser in its position, as set forth.

7. In a blackboard-eraser, the combination of the handle, formed with a dust-receptacle and with a discharge-opening at the end of said receptacle, and a gate connected to the handle and adapted to close said opening, as set forth.

8. The combination of the handle formed with a dust-receptacle, the eraser occupying the longitudinal central portion of the receptacle, with dust-entrances at opposite sides of the eraser, a discharge-opening in the corner of one end of the receptacle, and a cushion on the back of the handle to receive the concussion when rapping the handle to expel the dust from the receptacle, substantially as described.

406,651. **GRINDING-MILL.** ROBERT KENT, Brooklyn, N. Y. Filed Apr. 29, 1887. Serial No. 236,557. (No model.)

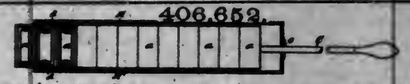


Claim.—In a grinding-mill, the combination of the upper and the lower stones and their hollow metal chambers with means for producing a circulation of water within said chambers, consisting of the sleeve H, extending from the lower chamber up through the eye of and above the upper stone and its cooling-chamber, the pipe K, having a stuffing-box I, connecting it with the upper end of said sleeve, and having also a lateral branch communicating with the cooling-chamber of the upper stone, and the supply-pipe L, passing into the top of said pipe K and terminating below the communication of the latter with its side branch, whereby the cold water entering the supply-pipe and the lower cooling-chamber is caused to return and pass from the latter by the inflow and around the supply-pipe to the upper cooling-chamber, substantially as described.

406,652. **CIGARETTE-CASE.** FRANCIS S. KINNEY, Pequanno, N. J. Filed May 12, 1887. Serial No. 237,994. (No model.)

Claim.—1. The herein-described case for packages of cigarettes, having the removable end piece *b*, the pressure piece or pieces *d*, and

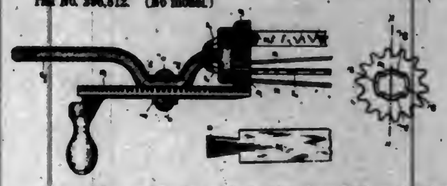
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an opening or openings arranged to receive a plunger in position to act upon the innermost package, substantially as described.

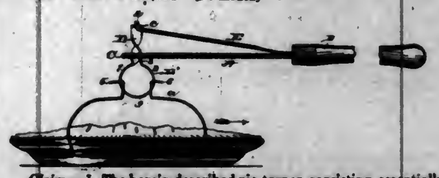
2. The combination, with the case A, having the removable end piece *b* and slot *g*, of the plunger C, extending through it and adapted to move in the slots, substantially as described.

406,653. **HOG-BEATER.** JOHN L. KIRBY, Cambridge, assignor to the Dover Stamping Company, Boston, Mass. Filed Jan. 19, 1887. Serial No. 224,812. (No model.)



Claim.—The combination of the beating-floats E, formed at their upper ends into dovetails, with the pinion D, formed with a cavity in its center composed of two pairs of conical segments *d d'*, the pair *d* being of greater transverse diameter than the pair *d'*, and with the conical bushing-plug *g*, substantially as and for the purpose described.

406,654. **PIE-TURNER.** WARREN R. LOCKE, West Somerville, assignor of one-third to Theodore F. Hovey, Boston, Mass. Filed Mar. 9, 1888. Serial No. 266,664. (No model.)

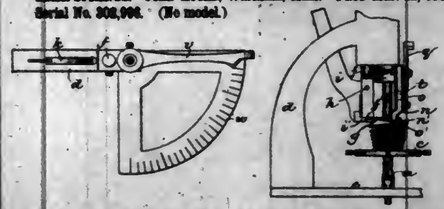


Claim.—1. The herein-described pie-turner, consisting, essentially, of a rigid handle A, formed with the elongated guide-eye C, the spirally-twisted metallic ribbon D, arranged in and vertically and rotarily movable in said guide-eye, the flat spring E, connected with the handle and with the ribbon at one side of the guide-eye in said handle, and the hooks or arms attached to the ribbon at the opposite side of said guide-eye and adapted to engage a pie-plate, substantially as described.

2. The rigid handle A, terminating at one end in the guide-eye C, and a flat spring-arm B, arranged above the handle, combined with a spirally-twisted ribbon arranged in the said guide-eye and pivoted to the spring-arm, and having a stop to limit its upward movement, and hooks pivoted to the lower portion of the said ribbon, substantially as described.

3. The handle A, having a guide-eye, and a spring interposed between the handle and the upper end of the spirally-twisted ribbon, combined with said spirally-twisted ribbon arranged in the guide-eye, and pivotally attached at its upper end to the spring and at its lower end bent to form a hook-supporting portion, and two hooks pivoted to said portion intermediate of its extremities to provide for the separation of the hooks, substantially as and for the purpose set forth.

406,655. **APPARATUS FOR TESTING WATCH BALANCES AND HAIR-SPRINGS.** JOHN LOGAN, Waltham, Mass. Filed Mar. 12, 1889. Serial No. 302,906. (No model.)



Claim.—1. The combination, with an oscillating or reversely-rotating chuck or balance holder, of holding-jaws arranged to hold the outer end of a hair-spring at one side of the center of oscillation of the chuck and adjusting-jaws movable in the arc of a circle whose center is in line with the said center of oscillation, as set forth.

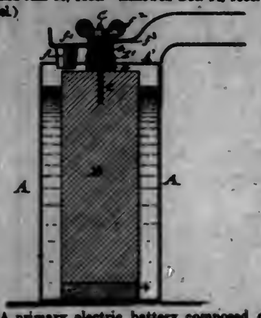
2. The combination, with an oscillating or reversely-rotating chuck or balance holder, of holding-jaws arranged to hold the outer

end of a hair-spring at one side of the center of oscillation of the chuck, adjusting-jaws movable in the arc of a circle whose center is in line with the said center of oscillation, and a pointer and index-plate, whereby the extent of movement of the adjusting jaws may be determined, as set forth.

3. The combination of the standard *d*, having the holding-jaws *f f'*, and the sleeve *m*, journaled in said standard and having the adjusting-jaws *n' o'*, as set forth.

4. The standard having the holding-jaws, the sleeve journaled in top standard, the adjusting-jaws and the pointer on said sleeve, and the index-plate attached to the standard, all combined substantially as set forth.

406,656. **GALVANIC BATTERY.** FREDERICK LOVE, New York, N. Y., assignor, by direct and mesne assignments, to John A. Annesley, same place. Filed Jan. 16, 1888. Renewed Dec. 14, 1888. Serial No. 293,657. (Model.)



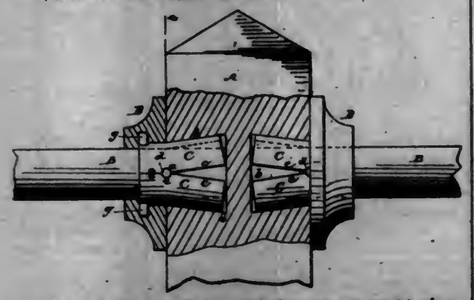
Claim.—1. A primary electric battery composed of a closed exterior casing made of hermetically-sealed zinc plates, a carbon block supported at the interior of said casing, an exciting-liquid in the space between the carbon block and the casing, and a screw-post applied to the carbon block and extended to the outside of the casing, and fastening devices for said block, substantially as set forth.

2. The combination of a closed exterior hermetically-sealed zinc casing, a carbon block supported at the interior of the same, an exciting-liquid in the space between the block and casing, a screw-post applied to the carbon block and extended to the outside of the casing, insulating-collars applied to the carbon block and the top of the casing, and screw-nuts for retaining the block and collars in position, substantially as set forth.

3. A primary electric battery composed of a closed exterior hermetically-sealed casing of zinc plates, a carbon block at the interior of said casing, an exciting-liquid in the space between the carbon block and casing, a screw-post attached to the carbon block and extended through the top of the casing, insulating-collars applied to the carbon block and the top of the casing, a screw-nut for holding said collars in position, and a binding thumb-nut for the conducting-wire, substantially as set forth.

4. In a primary electric battery, a closed exterior hermetically-sealed casing or shell formed of zinc plates soldered together, substantially as set forth.

406,657. **FENCE.** HENRY H. MADDEN, Hudson, N. Y. Filed Apr. 4, 1888. Serial No. 269,966. (No model.)



Claim.—1. The combination, with the post or support having a tapering recess increasing in size toward its inner end, of a metal rod or tube fitting loosely at its end within said recess or socket, rocking locking devices connected intermediately of their length to the sides of the entering end portion of the rod or tube, and a closing flange or nut on the rod, arranged to engage with said rocking devices, and operating to spread the inner end portions of the latter within the enlarged portion of the recess or socket in the post or support, substantially as specified.

2. The combination of the post or support A, having one or more tapering sockets or recesses *b* in it, increasing in size in an inward direction, the metal rod or tube B, the angularly-constructed half-sleeves or bushings C C, connected, as by a pin or bolt *d*, with and fitted to rock upon said rod, and the closing nut or flange D, applied to said rod or tube and to the outer end portions of the half-sleeves or bushings, and operating to expand the inner end portions of the latter within the tapering socket or recess in the post or support, essentially as shown and described.

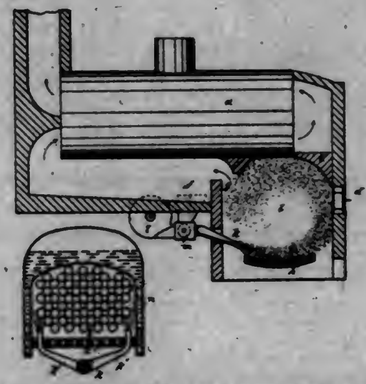
406,658. **MACHINE FOR STARTING HAT-BODIES.** WILLIAM P. MARSHALL, Newburyport, Mass., assignor of one-half to Charles H. Pierson, Brooklyn, N. Y. Filed Sept. 26, 1888. Serial No. 286,344. (No model.)



Claim.—1. In a starting-machine for hat-bodies, the combination, with a roller having its periphery of other than round shape to form ribs or edges, of a second roller having its periphery of other than round shape to form edges or ribs and supported in fixed bearings above the first roller to form a pocket for the reception of the hat-bodies to be treated, and rotating at a greater speed than the first roller, whereby a squeezing action is obtained, substantially as described.

2. In a starting-machine for hat-bodies, the combination, with a roller having its periphery of other than round shape to form ribs or edges, of a second roller of smaller diameter and having its periphery of other than round shape to form edges or ribs and supported in fixed bearings having its center above the periphery of the larger roller to form a pocket for the reception of the hat-bodies to be treated, and rotating at a greater speed than the larger roller, substantially as described.

406,659. **APPARATUS FOR BURNING CULM OR PULVERIZED COAL.** ALLAN MACUE, Brooklyn, assignor to Herbert H. Sanderson, trustee, New York, N. Y. Filed Mar. 2, 1888. Serial No. 266,552. (No model.)



Claim.—1. The combination, with a furnace-chamber, of an air and pulverized-coal injector upwardly projecting the injected coal into the chambers provided with deflecting-surfaces, as shown, thereby maintaining the coal in suspension during combustion above a still air-space in the lower part of the furnace-chamber for reception of the ashes, substantially as described.

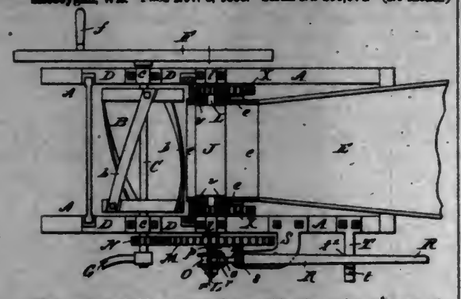
2. The combination, with a furnace-chamber, of an air and pulverized-coal injector and deflectors in the chamber upwardly projecting and maintaining the coal in suspension during combustion above a still air-space in the lower part of the furnace-chamber for reception of the ashes, substantially as described.

3. The combination, with a furnace-chamber, of an air and pulverized-coal injector and a concave-pan deflector in the lower space, on which the impinging jet is diffused upwardly and backward over the incoming jet, substantially as described.

4. The combination, with a furnace-chamber, of an air and pulverized-coal injector that injects the coal and air, the deflector A, located above a comparatively still air-space below for reception of the ashes, in the lower space whereon the incoming jet impinges, and one

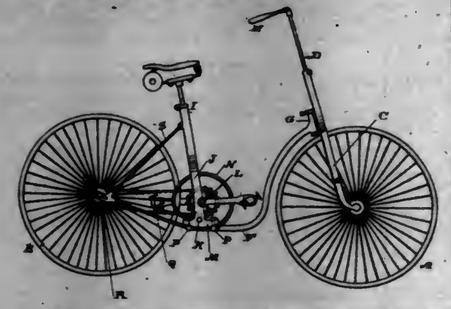
or more deflectors in the upper space that direct, diffuse, and, with the currents of injected air, maintain the coal in suspension during combustion, substantially as described.

406,660. FODDER-CUTTER. PHILIP MEYER and WILLIAM SCHRAGE, Sheboygan, Wis. Filed Nov. 6, 1888. Serial No. 290,074. (No model.)



Claim.—In a fodder-cutter, the combination, with a frame, of a main driving-shaft journaled within the same, a cutter-head mounted upon the driving-shaft, a pinion secured upon the end of the driving-shaft, the upper and lower feed-rolls, the upper roller being mounted in the vertically-adjustable frame V, the driving-wheel M, loosely mounted upon the lower feed-roll shaft and meshing with the pinion N, the clutch O for operating the said wheel, the lever R, gears *j* and *k*, idlers X and Y, for operating the upper feed-roll, and means for operating the main driving-shaft, substantially as shown and described.

406,661. BICYCLE. EDWIN MORRIS, San Francisco, Cal. Filed Nov. 22, 1888. Serial No. 291,595. (No model.)



Claim.—1. In a bicycle, the front perch or frame and the seat-standard having the lower ends united upon a movable pivot, in combination with a spring or springs supporting said joint and connecting the rear axle or the frame thereof with the front frame, substantially as herein described.

2. In a bicycle, the front frame or perch and the rear frame having the movable joint or union at their point of meeting, the crank-shaft journaled in the lower end of the seat-standard, the chain-pulleys, and chain whereby power is transmitted from the crank-shaft to the rear wheel, in combination with an intermediate spring or springs forming a connection with the front frame or perch and the rear frame or wheel axle, substantially as herein described.

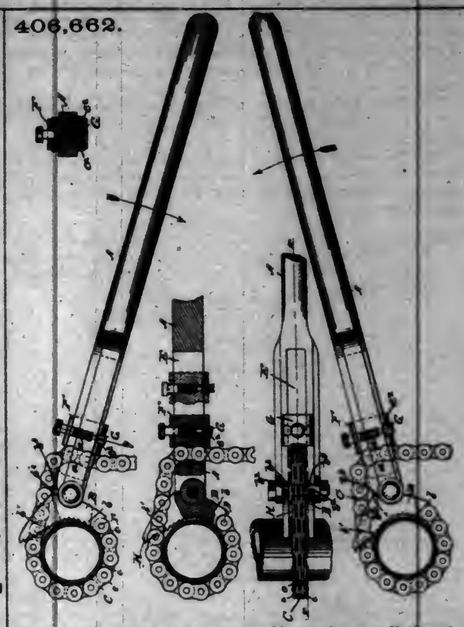
3. In a bicycle, the front and rear wheels and frames within which the wheels are journaled and by which the machine is guided, a seat-standard the lower end of which is connected by a movable joint with the front frame or perch, a spring or springs secured to the lower ends of the seat-standard and connected, respectively, with the front perch and the rear-wheel axle or frame, and the braces S, connecting said rear-wheel axle with the seat-standard, substantially as and for the purpose herein described.

406,662. CHAIN-WRENCH. JOHN D. MORAN, New York, N. Y. Filed July 12, 1888. Serial No. 279,704. (No model.)

Claim.—1. In a chain-wrench, the combination, with the lever having the end shoulder or abutment b^3, of a gripping-jaw having its toothed face concave at *b* and relatively convex at b', and having the back edge shoulder b^2, the said jaw being pivoted to the end of the lever for co-operation of the said shoulders with the said concave and convex toothed parts, and the chain connected to one end of said gripping-jaw, whereby the wrench may be operated in either direction to screw or to unscrew the pipe without removing it therefrom.

2. In a chain-wrench, the combination of the lever having the

406,662.



slot E, the notch c^3, and the end shoulder or abutment b^3, the gripping-jaw having its toothed face concave at *b* and relatively convex at b', and constructed with the back shoulder b^2, the pivot connecting said jaw with the lever at one side of the said joint-shoulders b^3 and b^2, the chain having one end pivoted to the heel of the jaw, and the slide F in the lever-slot, and provided with a locking-latch G, substantially as described, for the purpose specified.

3. In a chain-wrench, the combination of the lever having the slot E and the notch c^3, a gripping-jaw pivoted to the end of said lever, and a chain connected to one end of said pivoted jaw, with means for locking said chain to the lever, consisting of the slide F, secured within said slot, and the spring-latch G, carried by said slide and operating in the said notch, the said slide and the end of the lever-slot having coincident swells *a a*, corresponding to the curved edges of the chain, substantially as described.

406,663. GARDENER'S AND COTTON-PICKER'S BRACE. JAMES D. MCKINNEY, Mossy Creek, Ga. Filed Nov. 13, 1888. Serial No. 290,751. (No model.)



Claim.—1. A brace for gardeners, cotton-pickers, &c., consisting of a fulcrum-pad adapted to bear upon the pelvis and having two springs attached thereto and extending downwardly behind the legs and provided with fastenings, and a middle spring extending upwardly, and fastening devices for connecting its upper end to the arms or shoulders, substantially as and for the purpose described.

2. A brace for gardeners, cotton-pickers, &c., consisting of the combination of a fulcrum-pad A, two springs C C, extending downwardly therefrom and provided with straps D D, for securing the same to the legs, a middle spring B, extending upwardly, and a cross-bar E, connected to the top of spring B and provided at its ends with arm-rings F and strap G, substantially as and for the purpose described.

406,664. DRAWER-PULL. GEORGE S. PEARSON, Waterbury, Conn. Filed May 8, 1889. Serial No. 310,095. (No model.)

Claim.—1. A stud for furniture-handles, consisting of a shank having a head, a sleeve having a flange, and a shell having a shoulder

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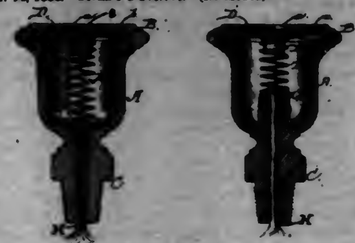


against which the head of the shank rests, and a flange closed over said head and the flange of the sleeve to fasten the parts together.

2. The combination, with a stud consisting of a shank having a head, a sleeve having a flange, and a shell having a shoulder 7 and flange 10, said flange being closed over the head and the flange of the sleeve to hold the parts together, of an escutcheon having an opening 2, through which the shank and sleeve are passed, the sleeve being closed over the back of the escutcheon to hold the latter and the stud together.

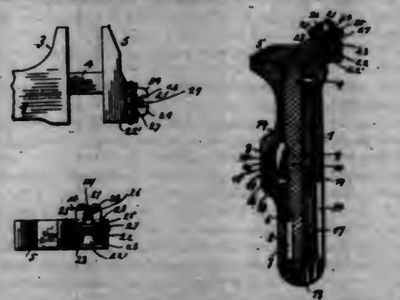
3. In combination, an escutcheon having openings 2, a bail having lugs 12, and a stud consisting of a shank having a head, a sleeve having a flange, and a shell having openings 6, which are engaged by the lugs, a shoulder 7, and flange 10, said flange being closed over the head of the shank and the flange of the sleeve, the shank and sleeve being passed through openings 2 and the sleeve turned over the back of the escutcheon to hold the parts in place, substantially as described.

406,665. LUBRICATOR. DAVID M. PERRIN, Baltimore, Md. Filed Apr. 14, 1888. Serial No. 270,670. (No model.)



Claim.—The herein-described lubricating-cup, having a chamber A, exteriorly screw-threaded at its upper edge and provided with a tubular stem C, the cap B, fitting over the open top of the chamber A, provided with a female screw to engage the threaded upper edge of said chamber, and also provided with a central aperture *a*, the spiral spring F, resting at its lower end on the floor of the chamber A, the valve-head E, fitted to the upper end of the said spring and provided with a flat upper surface and a central upstanding spur *e*, and the elastic packing-disk D, arranged on the flat upper surface of the valve-head and engaged at its center by the spur *e*, whereby said disk is normally pressed by the spring against the inner surface of the cap to cover the aperture therein, and may be removed from the head by disengaging it from the spur, substantially as and for the purpose specified.

406,666. COMBINATION-WRENCH. FRED J. PRATT and JOHN H. LAKE, Jackson, Mich. Filed June 19, 1888. Serial No. 277,556. (Model.)

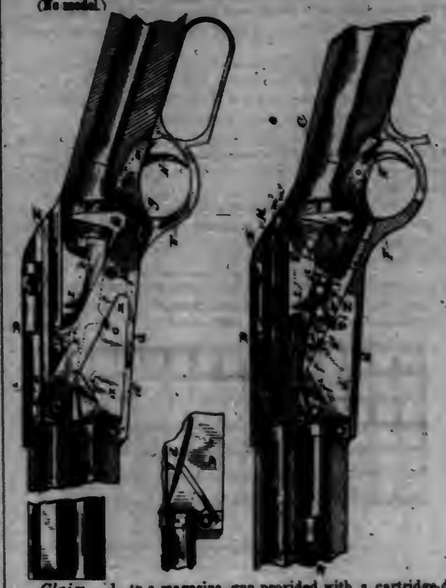


Claim.—1. The combination, with the wrench provided with a socket having a lateral opening with tapering sides, of gripping-jaws eccentrically pivoted in said socket, substantially as described.

2. A wrench constructed with an auxiliary pair of automatic gripping-jaws eccentrically pivoted in a socket having a lateral opening and tapering sides adapted to close the jaws, and a vertical central tapering rib located between the shanks of the jaws and serving to open the jaws, substantially as shown and described.

3. A combination-wrench consisting of casing 1, with serrated clamping-block 8 and thumb-nut 11, the movable jaw 5, with serrated shank 4, engaging block 8, the sliding bit 17, located in casing 1 and having pin 19, located in slot 20 and extensible through slot 18, and the grip 21, consisting of jaws 24, eccentrically pivoted to ears 25 and located in socket 22, with lateral opening 23, having tapering sides, and the vertical tapering rib 22′, extending between the shanks 28 of jaws 24, substantially as and for the purpose specified.

406,667. MAGAZINE FIRE-ARM. JOSEPH M. REAMS and WILLIAM L. HORNE, Meriden, Conn. Filed July 5, 1888. Serial No. 279,078. (No model.)



Claim.—1. In a magazine-gun provided with a cartridge-discharge in the rear of the receiver, the combination, with a sliding breech-bolt, of a guard-lever pivoted thereto and a cartridge-carrier, said guard-lever having a cartridge-passage through the same, substantially as described.

2. In a magazine-gun, the combination, with the cartridge-carrier and sliding breech-bolt, of the bifurcated guard-lever and the carrier-lever provided with pivoting-ears with a cartridge-passage between them, substantially as described.

3. In a magazine-gun provided with a cartridge-discharge in rear of the receiver, the combination, with cartridge receiving and operating devices having a longitudinal cartridge-passage, (a firing-pin being located above the said passage,) of a trigger and a rear, also having a cartridge passing through the same, substantially as described.

4. The combination, with the cartridge-carrier and its supporting-lever, of a cartridge-stop on said lever yielding in a rearward and downward direction, substantially as described.

5. The combination, with the cartridge-carrier and its supporting-lever, of a cartridge-stop yielding in a rearward and downward direction and a spring for returning said stop after a movement in either direction, substantially as described.

6. In a magazine-gun provided with a cartridge-discharge in rear of the receiver, a cartridge-carrier and a cartridge-carrier lever, a passage for the cartridge through the receiver above the main body of said lever, and a cartridge-stop on said lever yielding in a rearward and downward direction, substantially as described.

7. The combination, with the cartridge-lever, of the cartridge-stop provided with two curved slots, a connection with the lever through each slot, and a spring forcing the bottoms of said slots against said connections, substantially as described.

8. In a magazine-gun having the magazine below the barrel, the combination, with a cartridge-carrier and a cartridge-discharge in the rear of said carrier, of a yielding cartridge-stop provided with a finger-piece, whereby the same may be operated to permit the free removal of the cartridges from the magazine, substantially as described.

9. The combination, with the bifurcated guard-lever, of the link pivoted to the lever and to the receiver and provided with the spring securing-pin adapted to engage the lever, substantially as described.

10. The combination, with the bifurcated guard-lever having a recess in one of its arms, of the link pivoted between the arms to the

receiver and provided with the spring-actuated pin adapted to engage the securing-recess of the arm, substantially as described.

11. The combination, with the guard-lever provided with a locking-recess, of the cartridge-carrier and the carrier-lever provided with projections adapted to engage the locking-recesses of the guard-lever when in its open position, whereby the said parts are held against accidental displacement when in an open position, substantially as described.

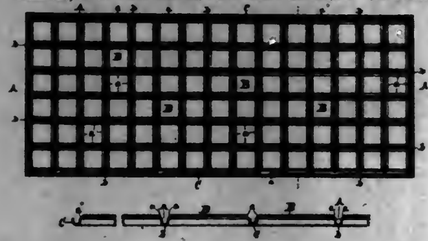
12. The combination, with the guard-lever provided with the locking recesses and cams, of the cartridge-carrier and carrier-lever, the latter provided with projections adapted to engage the locking-recesses of the guard-lever in front of the cams, substantially as described.

13. In a magazine-gun provided with a cartridge-discharge in rear of the receiver, the combination, with the cartridge-carrier, of the bifurcated guard-lever, each arm of said lever being provided with a cartridge-guide f^3, substantially as described.

14. The combination, with a magazine-gun, of a device for closing the charge-opening of the same, consisting of a pivoted spring-actuated lever and a closing-plate pivoted to said lever, substantially as described.

15. The combination, with a magazine-gun, of a device for closing the charge-opening of the magazine, consisting of a bifurcated spring-actuated lever and a closing-plate pivoted between the arms of said lever, substantially as described.

406,668. METALLIC FINISHING FOR BUILDINGS. LOCKLEY L. SAGEBORPH, Cincinnati, Ohio, assignor of one-half to Charles H. Harder, Fishmont, W. Y. Filed Mar. 16, 1888. Serial No. 268,557. (No model.)



Claim.—As a new article of manufacture, a sheet of metallic finishing made up of figures B, each figure being formed by the compound grooves A, each groove having the angular faces *a*, terminating in the circular portion *b*, substantially as set forth.

406,669. RED COLOR. TRAUGOTT SANDMEYER, Basle, Switzerland, assignor, by mesne assignments, to the Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Prussia, and the Action-Gesellschaft für Anilin Fabrikation, Berlin, Germany. Filed Oct. 24, 1888. Serial No. 288,073. (Specimens.)

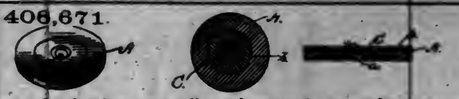
Claim.—The herein-described process for the production of red to violet colors by first boiling ortho-toluidine with caustic soda and gradually adding thereto nitro-benzine; the product is then reduced by means of zinc powder, then allowed to stand until cold; it is then poured into concentrated muriatic acid, boiled, and diluted with water, then filtered, after which I add Glauber's salt and mix it with muriatic acid cooled and diazotized by nitrite of sodium; the final product is poured into a solution of soda and naphthionate of sodium, the whole heated and precipitated with salt, substantially as described.

406,670. YELLOW COLOR. TRAUGOTT SANDMEYER, Basle, Switzerland, assignor, by mesne assignments, to the Farbenfabriken, vormals Fr. Bayer & Co., Elberfeld, Prussia, and the Action-Gesellschaft für Anilin Fabrikation, Berlin, Germany. Filed Oct. 24, 1888. Serial No. 288,074. (Specimens.)

Claim.—The herein-described process for producing yellow colors (dyeing cotton without mordants) by first boiling ortho-toluidine with caustic soda in proper proportion, then adding thereto gradually nitro-benzine in proper proportion, then reducing the product by means of powdered zinc, then allowing the same to stand till cold, then pour it into muriatic acid, boil, dilute with water, and then filter, then add Glauber's salt, then diazotized by the addition of nitrate of sodium, the whole then poured into a solution of caustic soda, soda, and salicylic acid, then heat the whole, and precipitate with salt, substantially as herein described.

406,671. WIRE-DRAWING DIE. WILLIAM H. SAWYER, Providence, R. I. Filed July 6, 1888. Serial No. 207,412. (No model.)

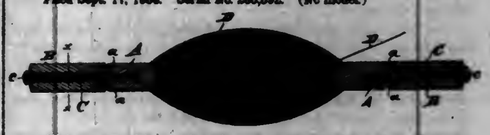
Claim.—1. The herein-described wire-drawing die, consisting of the supporting-plate A, having a wire-passage, and the drilled jewel or die C, having its die-hole in line with the wire-passage, and secured



upon the plate by a surrounding and overlapping mass of cement or readily-fusible metallic alloy, substantially as described.

2. The wire-drawing die composed of the recessed supporting-plate A, having a wire-passage through the bottom of its recess, the jewel or die C, arranged upon the bottom of said recess with its hole in line with the wire-passage, and the jewel-embedding alloy or cement surrounding and overlapping said jewel in the recess, substantially as specified.

406,672. KITE-CORD STICK. CHARLES SCHULTZE, New York, N. Y. Filed Sept. 17, 1888. Serial No. 285,592. (No model.)



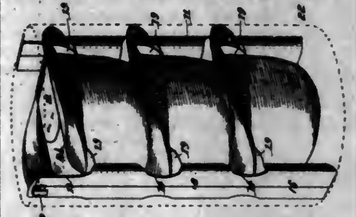
Claim.—1. A kite-cord stick made with a body portion adapted to receive the cord and provided with tapering or conical end parts or shoulders, and handles axially in line with the stick-body, and on which the body is journaled, substantially as herein set forth.

2. A kite-cord stick made with a body portion adapted to receive the cord and provided with tapering or conical end parts or shoulders, and handles at the ends of the body of like diameter and axially in line therewith, and on which the body is journaled, said handles being countersunk to correspond with the conical ends of the stick-body, substantially as herein set forth.

3. A kite-cord stick made with a body portion adapted to receive the cord and provided with tapering or conical end parts or shoulders, and handles on which the stick-body is journaled and countersunk to correspond with the ends of the stick-body at the joints therewith, substantially as herein set forth.

4. The combination, in a kite-cord stick, of a body portion A, having tapering ends or shoulders *a a*, tubular handles B B, countersunk to correspond with said ends *a a*, and headed nails or pins C C, passed through the handles into the ends of the stick-body, substantially as herein set forth.

406,673. REST FOR PACKING HATS. JAMES W. SUTHERS, Brooklyn, assignor of one-half to Triest & Co., New York, N. Y. Filed Oct. 16, 1888. Serial No. 288,228. (No model.)



Claim.—1. In a hat-rest, a column provided with a series of spaced slots and integral tongues below said slots extending transversely to and beyond the sides of the column, substantially as shown and described.

2. In a hat-rest, a tubular column provided with a series of spaced transverse slots, integral transverse tongues below said slots extending beyond the sides of the column, and a flexible strap secured to the upper end of the column above the upper tongue, substantially as and for the purpose specified.

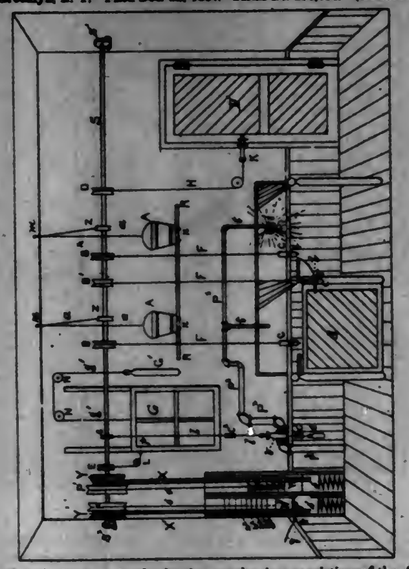
3. In a hat-rest, the combination, with a tubular column provided with a series of transverse slots and tongues below said slots extending beyond the sides of the column, of a strip of pliable material attached at one end to the upper portion of the column and adapted to extend beyond the upper tongue, substantially as shown and described.

4. The combination, with opposed tubular columns provided with a series of horizontally-aligning spaced slots and tongues below each of said slots extending beyond the sides of the columns, of flexible straps attached to the upper contiguous surface of each column projecting beyond and over the upper tongue and having their free ends secured together, substantially as shown and described.

5. An essentially rectangular blank cut away centrally and transversely at one end, a series of central transverse spaced slots parallel with the upper cut-away portion, and semicircular cuts extending

downward from the ends of the upper cut and the transverse slots and curving inward, substantially as shown and described.

406,674. ANIMAL-RELEASING DEVICE. MORTIMER M. SHELLEY, Brooklyn, N. Y. Filed Dec. 22, 1887. Serial No. 258,668. (No model.)



Claim.—1. An animal-releasing mechanism consisting of the following-named elements in combination: a winding-shaft, a line secured thereto and provided with a weight, removable means for upholding the weight, and a line also secured to said shaft and provided with a releasing-bolt, whereby, when said weight is permitted to fall, said shaft is thereby rotated and withdraws the releasing-bolt by winding up its line, substantially as and for the purposes set forth.

2. An animal-releasing mechanism consisting of the following-named elements in combination: a winding-shaft, counter-weights suspended by lines or wires on opposite sides from said shaft, and one or more releasing-bolts suspended by lines or wires from said shaft, whereby said shaft may be rotated in either direction by impairing the counter-balance of said weights, substantially as and for the purposes set forth.

3. In an animal-releasing mechanism, in combination with a winding-shaft and a weight secured thereto by a line or wire, one or more releasing-bolts suspended by lines or wires from said shaft, and an elastic bumper or arresting device, whereby the momentum of said weight is gradually arrested when unwinding its line from said shaft, substantially as and for the purposes set forth.

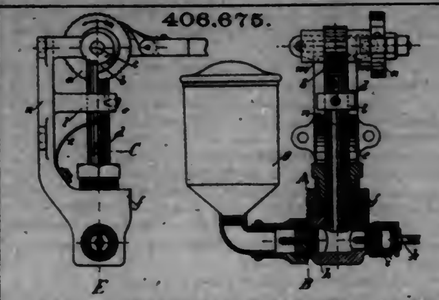
4. In an animal-releasing mechanism, in combination with a winding-shaft, one or more hinged buckets connected thereto by a line or lines, whereby on the turning of said shaft said buckets are turned upon their hinges and their contents discharged, substantially as and for the purposes set forth.

5. In an animal-releasing mechanism, in combination with a winding-shaft provided with a line and weight, a water-releasing device, an endless belt or line secured to said releasing device and operated on fixed pulleys by said shaft, and a running weight secured by a line to said endless belt, whereby while the slack of said belt is taken up lost motion for said shaft is obtained before it causes the opening of said releasing device by said endless belt, substantially as and for the purposes set forth.

6. An animal-releasing mechanism consisting of the following-named elements in combination: one or more halter-detachers, a pipe and bucket—one or both—for discharging water, and a releasing bolt or catch on one or more doors, all connected by lines or wires to a winding-shaft operated by a weight secured thereto by a line or wire, whereby upon the fall of the weight the animals are released and driven out of the building without the necessity of persons entering the same, substantially as and for the purposes set forth.

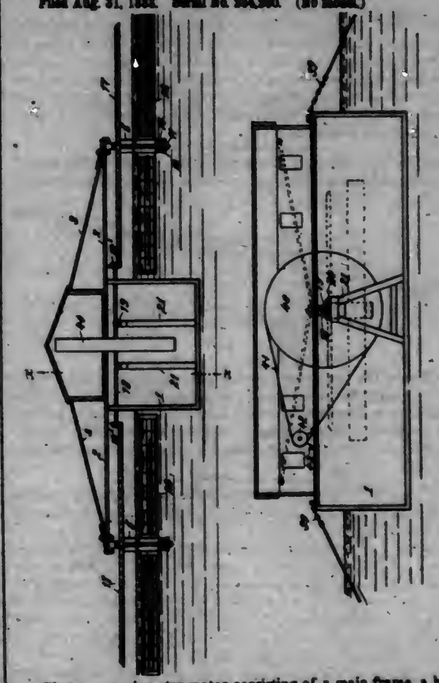
406,675. LUBRICATOR. CHARLES F. L. SIMONSEN, Copenhagen, Denmark. Filed Mar. 20, 1888. Serial No. 268,089. (No model.) Patented in France Feb. 20, 1888, No. 188,241; in Belgium Feb. 20, 1888, No. 80,710; in England Feb. 20, 1888, No. 2,888, and in Norway Feb. 20, 1888, No. 363.

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Claim.—In a lubricator, the combination, with a casing, of a piston working in the same, a spring pressing the piston upward, a cam which presses the piston downward gradually as said cam rotates, a ratchet-wheel on the shaft of the cam, and a pawl engaged with said ratchet-wheel, substantially as herein shown and described, and for the purpose set forth.

406,676. WATER-MOTOR. HUGO A. STRAUSS, New York, N. Y. Filed Aug. 31, 1888. Serial No. 284,260. (No model.)



Claim.—1. A water-motor consisting of a main frame, a horizontal driving-shaft mounted thereon, horizontal water-wheels suspended from frames projecting from the main frame, each water wheel having a horizontal bevel gear-wheel geared with the driving shaft, and having wings vertically movable on the axis of the water-wheel and formed with a series of hinged plates opening in one direction only, the several parts of the wings being detachable, substantially as described.

2. In a water-motor, a horizontal water-wheel constructed with vertical rod 4, a rotary casing 5, surrounding rod 4 and having external vertical T-shaped slots 23, the blocks 8, with necks 9 in their ends, the inclosed casings 6, with anti-friction rollers 7, bearing against rod 4, and anti-friction rollers 14, located between plates 10 and 11 at the bottom of casing 5, in combination with vertically-movable T-shaped pieces 22, located in slots 23, horizontal bars 24, hinged to pieces 22 and having depending arms 25, with bottom bar 26, and horizontal rods 27, having hinged thereto the overlapping plates 28, and the end vertical bar 30, fastened to bar 24, with recesses 31, into which rods 27 project, a bar 32, hinged to the upper end of bar 30, with projections 33, located in recesses 31 and secured

to slotted lug 34 by pin 35, and the horizontal brace-bars 36, connecting with the ends of bars 24 and engaging pins 37 thereon, substantially as described.

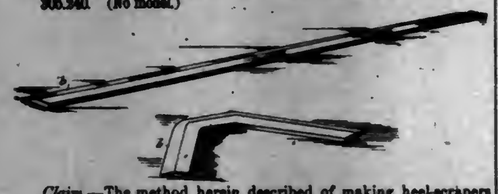
3. In a water-motor, a horizontal water-wheel constructed with a vertical rod 4, and a rotary casing 5, mounted on rod 4 and having external vertical T-shaped slots 23, in combination with T-shaped wing-supports 22, engaging and vertically movable in slots 23, horizontal bars 24, connected by brace-rods 34' and bars 36 and hinged to supports 22, to swing upward thereon, and having depending arms 25, with bottom bar 26, and horizontal rods 27, having hinged thereto the detachable overlapping plates 28, the end vertical bar 30, fastened to bar 24 and having recesses 31, into which rods 27 project, and a bar 32, hinged to the upper end of bar 30, with projections 33, located in recesses 31 and secured to slotted lug 34 by pin 35, substantially as described.

4. In a water-motor, a main frame, a driving-shaft mounted in anti-friction roller-bearings thereon, and a horizontal water-wheel constructed with a vertical rod depending from the main frame, a rotary casing loosely mounted on the vertical rod and having anti-friction roller-bearings, vertically-movable wings mounted on the casing, with horizontal rods, and overlapping plates hinged to the rods and opening in one direction, and a horizontal bevel gear-wheel mounted on the casing and geared with the driving-shaft, substantially as described.

5. A water-motor consisting of float 1, having mounted therein the driving-shaft 18, resting on anti-friction rollers 19, and the supporting-frame consisting of laterally-extending bars 2 and brace-rods 3, the vertical rods 4, depending from the bars 2, rotary casings 5, mounted on rods 4, having anti-friction roller-bearings 7 and 14, water-wheel wings mounted on casings 5, vertically movable thereon, formed in detachable parts and having overlapping plates 28, and the bevel gear-wheels 17, mounted on casings 5 and geared with driving-shaft 18, substantially as described.

406,677. METHOD OF MAKING HEEL-SCRAPERS FOR PLOWS.

HENRY D. TERRELL, Conyers, Ga. Filed Mar. 29, 1889. Serial No. 305,240. (No model.)



Claim.—The method herein described of making heel-scrapers from a straight flat bar having its front longitudinal edge beveled downwardly and outwardly, which consists in first heating said bar at its center and then bending it edgewise rearwardly at opposite sides of its center to form the inclined scraping-blades, substantially as set forth.

406,678. RECORDING APPARATUS FOR ELECTRIC METERS.

GEORGE W. WALKER, New York, N. Y. Filed Mar. 9, 1889. Serial No. 302,650. (No model.)

Claim.—1. The combination of a source of light, a substance sensitive to light, and a partition having a straight slot with an electric meter whose indicating part is provided with an elongated eye.

2. The combination of a source of light, a substance sensitive to light, and a partition having a slot, with an electric meter whose indicating part is provided with an eye and shields on the right and left thereof equal each in size to the length of the slot in the partition.

3. The combination, with the vibratory or indicating part of an electric meter, of a source of light, a sensitized substance, a motor for feeding the same, a partition provided with two slots, and a shutter governing one of said slots.

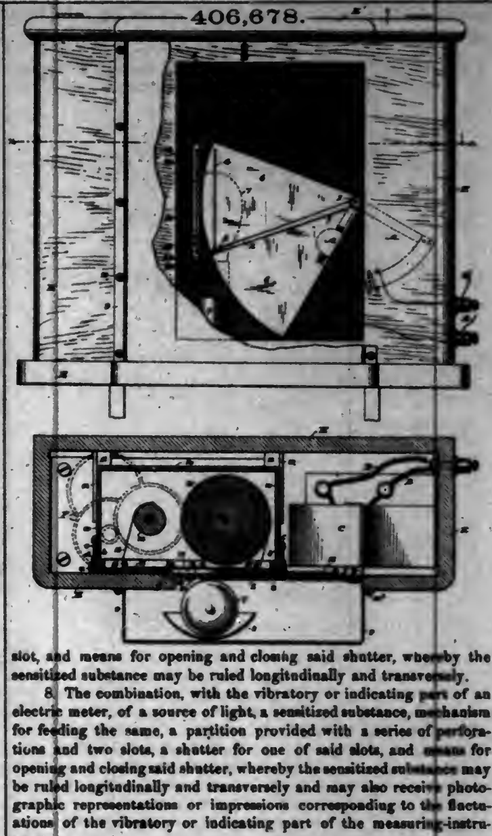
4. The combination, with the vibratory or indicating part of an electric meter, of a source of light, a sensitized substance, a motor for feeding the same, a partition provided with two slots, a shutter governing one of said slots, and means for opening and closing said shutter at predetermined periods of time.

5. The combination, with the vibratory or indicating part of an electric meter, of a source of light, a sensitized substance, a motor for feeding the same, a partition provided with two slots, a shutter provided with an arm and a spring, a lever, a cam for actuating said lever, and a clock-movement for rotating said cam.

6. The combination, with an electric meter, of a source of light, a sensitized substance, mechanism for feeding the same, and a partition provided with a series of apertures for effecting longitudinal ruling of the sensitized substance.

7. The combination, with an electric meter, of a source of light, a sensitized substance, mechanism for feeding the same, a partition provided with a series of perforations and a slot, a shutter for said

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slot, and means for opening and closing said shutter, whereby the sensitized substance may be ruled longitudinally and transversely.

8. The combination, with the vibratory or indicating part of an electric meter, of a source of light, a sensitized substance, mechanism for feeding the same, a partition provided with a series of perforations and two slots, a shutter for one of said slots, and means for opening and closing said shutter, whereby the sensitized substance may be ruled longitudinally and transversely and may also receive photographic representations or impressions corresponding to the fluctuations of the vibratory or indicating part of the measuring-instrument.

9. The combination, with the vibratory or indicating part of an electric meter, of a sensitized substance, an electric lamp for affecting said substance, an electric circuit including said meter, said lamp, and translating devices, and means, substantially as described, for extinguishing the light of said lamp when all of said translating devices have been disconnected or thrown into disuse.

10. The combination, with the vibratory or indicating part of an electric meter, of a sensitized substance, an electric lamp for affecting said substance, an electric circuit, translating devices, an electro-magnet, and a circuit-closer, whereby the said lamp is adapted to be lighted as soon as one (or more) of said translating devices is put into use.

11. The combination, with the vibratory or indicating part of an electric meter, of a suitable casing, a source of light, a box or compartment removably fitted within said casing, a sensitized substance within said box, and means for feeding said sensitized substance.

12. The combination, with an electric meter, of a suitable casing, a source of light, a clock-movement, a box removably connected to said clock-movement, and a strip or ribbon of sensitized material within said box adapted to be fed by said clock-movement.

406,679. WINDMILL-TOWER.

GEORGE WALLENMEYER, Ithaca, N. Y. Filed Sept. 25, 1888. Serial No. 286,373. (No model.)

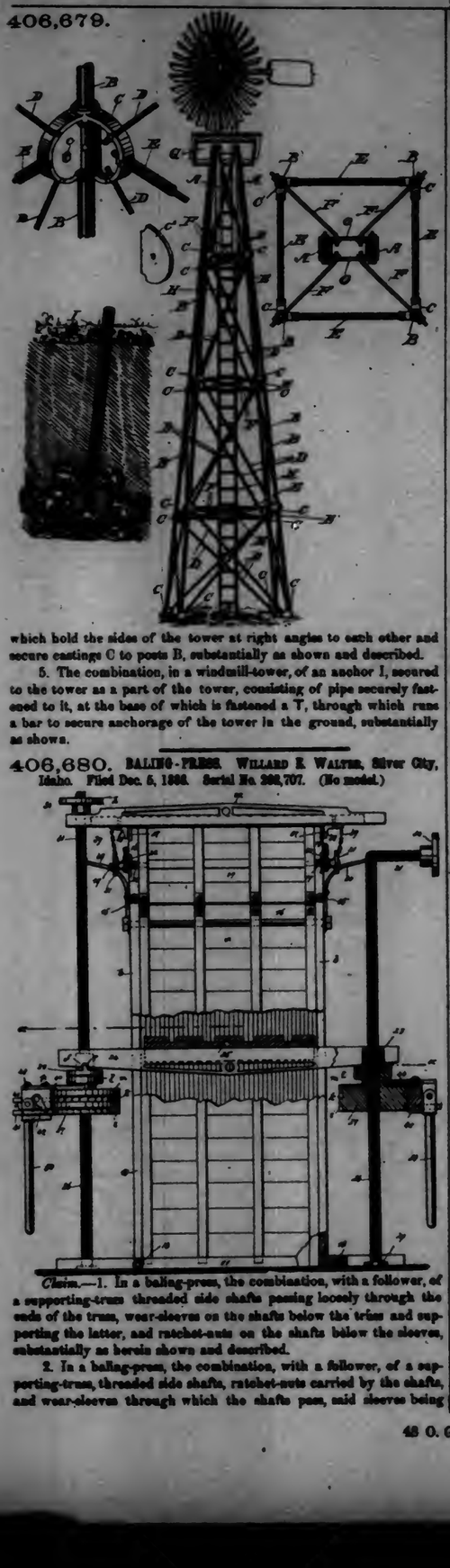
Claim.—1. The combination, in a windmill-tower, of the castings C with the girts E and stay-rods D, said castings being provided with circular openings through which the four corner-posts B are passed, substantially as shown.

2. The combination, in a windmill-tower, of the four corner-posts B and the castings C with the stay-rods D and the girts E, of the support of the corner-posts B, substantially as and for the purpose set forth.

3. The combination, in a windmill-tower, of the four corner-posts B and the castings C, provided with the slots, the stay-rods D, and the girts E, and the metal plates *c'*, which hold said rods in the slots and prevent the nuts from turning in the castings C, substantially as set forth.

4. The combination, in a windmill-tower, of the post B and the castings C, the stay-rods D, and the girts E with the diagonal rods F,

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which hold the sides of the tower at right angles to each other and secure castings C to posts B, substantially as shown and described.

5. The combination, in a windmill-tower, of an anchor I, secured to the tower as a part of the tower, consisting of pipe securely fastened to it, at the base of which is fastened a T, through which runs a bar to secure anchorage of the tower in the ground, substantially as shown.

406,680. BALING-PRESS.

WILLARD R. WALTER, Silver City, Idaho. Filed Dec. 5, 1888. Serial No. 292,707. (No model.)

Claim.—1. In a baling-press, the combination, with a follower, of a supporting-truss threaded side shafts passing loosely through the ends of the truss, wear-sleeves on the shafts below the truss and supporting the latter, and ratchet-nuts on the shafts below the sleeves, substantially as herein shown and described.

2. In a baling-press, the combination, with a follower, of a supporting-truss, threaded side shafts, ratchet-nuts carried by the shafts, and wear-sleeves through which the shafts pass, said sleeves being formed with ribs which enter recesses formed in the truss ends, substantially as described.

3. In a baling-press, the combination, with a structure 10, united by cross-bolts, of doors hinged to the side and end walls of said structure, a means for binding said doors to place, a press-head hinged to two of the doors, a follower, and a follower-advancing mechanism, substantially as described.

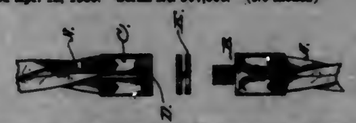
4. In a baling-press, the combination, with a follower, of a truss by which said follower is supported, threaded shafts, ratchet-nuts mounted upon said shafts, the truss ends overlapping the nuts, a press-head, a truss secured thereto, threaded rods hinged to the threaded shafts, and nuts carried by said threaded rods, the nuts being arranged to engage the ends of the truss that is arranged in connection with the press-head, substantially as described.

5. In a baling-press, the combination, with the structure 10, of the hinged side doors 17, the hinged end doors 18, provided with the recesses 20, the bolts 19, secured to the doors 17 and adapted to enter the recesses 20 of the doors 18, and the nuts 21 on said bolts, substantially as herein shown and described.

6. In a baling-press, the combination, with the ratchet-nuts 27, provided with the ratchet-teeth *i k*, the heads *l*, and the flanges *m*, of the recessed lever-heads 40, the pawls 41, pivoted in the recesses of the said heads, the pivoted springs 42, and the lever-arms 50, pivoted to the heads, substantially as described.

406,681. LIGHTNING-ROD.

JOHN H. C. WATTS, Baltimore, Md. Filed Apr. 12, 1888. Serial No. 307,008. (No model.)

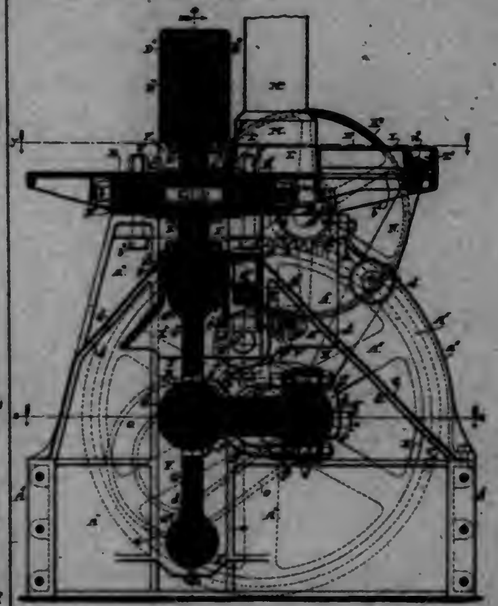


Claim.—1. A coupling for lightning-rods, consisting of the flat resilient spring interposed between the screw-threaded shanks of two sections or lengths, substantially in the manner and for the purpose specified.

2. In a coupling for lightning-rods, the flat resilient spring E, in combination with the screw-threaded shanks B and C of sections A, substantially as and for the purpose specified.

406,682. BRICK-MACHINE.

BRUCE C. WHITE, Chicago, Ill., assignor to Chisholm, Boyd & White, same place. Filed June 27, 1887. Serial No. 242,577. (No model.)



Claim.—1. The combination, with the machine-frame, a stationary mold sustained thereon, and upper and lower compressing-plungers sliding therein, of slide-bars connected with the upper plunger and movable vertically upon the frame, toggle-arms pivoted to said slide-bars and to the lower plunger and sustaining said slide-bars and upper plunger from the lower plunger, means connected with the middle joint of the toggle-arms for actuating the same, and a lifting device

applied to the lower plunger for moving the same vertically, together with the toggle-arms, slide-bars, and upper plunger, substantially as described.

2. The combination, with a machine-frame, a stationary mold, and upper and lower compressing plungers, of slide-bars mounted upon the frame and connected with the upper plunger, toggles pivoted to the lower plunger and to the slide-bars and sustaining said slide-bars from the lower plunger, a horizontal shaft provided with a crank, a connecting-rod joining the crank with the middle joint of said toggles, and a cam mounted upon the shaft and acting upon under surface of the lower plunger to raise and lower the plungers, slide-bars, and connected parts, substantially as described.

3. The combination, with a machine-frame, a series of stationary molds located at the upper part of the frame, upper and lower compressing-plungers, upper and lower cross-heads supporting said plungers, vertical slide-bars mounted in the machine-frame and attached at their upper ends to the upper cross-head, toggle-arms pivoted to the lower cross-head and to the said slide-bars and supporting the said slide-bars from said lower cross-head, a horizontal shaft located beneath and parallel with the lower cross-head, said shaft being provided with a crank, a connecting-rod joining the said crank with the middle joint of the toggles, and cams mounted upon said shaft and acting upon the lower cross-head to raise and lower the said cross-head and connected parts, substantially as described.

4. The combination, with stationary molds, upper and lower plungers, and upper and lower cross-heads supporting said plungers, of vertically-movable slide-bars attached at their upper ends to the upper cross-head, toggle-arms pivoted to the lower ends of the slide-bars and to the lower cross-head and sustaining said bars from the said lower cross-head, a drive-shaft provided with a crank for actuating the toggles, a connecting-rod uniting said crank with middle joint of the toggle-arms, and cams mounted upon the shaft and acting upon the lower cross-head, said cams being provided with outwardly-inclined surfaces for lifting the lower cross-head and connected parts, located in such position with relation to the crank-pin that in compressing the brick the lower cross-head will be elevated by the action of the cams before the upper cross-head is depressed by the action of the toggle-arms, substantially as described.

5. The combination, with a machine-frame, a stationary mold, and two opposing vertically-moving plungers sliding in the mold, of toggles or equivalent compressing devices connected with both of said plungers, said toggles and connected parts being mounted to slide freely in a vertical direction upon the frame, cams or equivalent lifting devices separate from the said compressing devices, acting upon the lower plunger and the compressing devices connected therewith for moving the latter vertically, and an adjustable stop sustaining the lower plunger and connected parts when the latter are unsupported by the lifting devices, whereby the quantity of clay placed in the mold to form the brick may be varied as desired, substantially as described.

6. The combination, with stationary molds, upper and lower plungers working therein, an upper cross-head sustaining the upper plungers, vertically-movable slide-bars attached at their upper ends to the said upper cross-head, a lower cross-head sustaining the lower plungers mounted to slide vertically in the machine-frame, toggle-arms pivoted to the lower ends of said slide-bars and to the lower cross-head and supporting said slide-bars from the said lower cross-head, a crank-shaft provided with a crank for actuating the toggles, a connecting-rod uniting the said crank with the middle joint of the toggles, cams upon the said shaft acting upon the lower cross-head to move the latter and connected parts vertically, and adjustable stops upon the machine-frame sustaining the lower cross-head when the latter is unsupported by the cams, substantially as described.

7. The combination, with the machine-frame and a stationary mold supported upon the frame, of upper and lower plungers working in said mold, cross-heads supporting said plungers, long slide-bars rigidly attached at their upper ends to the ends of the upper cross-head and sustaining and guiding the same, said slide-bars extending past and below the lower cross-head, and the frame being provided with guides for the lower parts of the slide-bars, said guides being located entirely below the top of the mold-table, and compressing devices connected with the lower ends of said slide-bars and with the lower cross-head, acting to force the plungers together, said compressing devices being located beneath the mold-table, all substantially as described.

8. The combination, with the machine-frame and stationary molds, of upper and lower plungers, upper and lower cross-heads, slide-bars attached to the upper cross-head, toggles connecting the lower ends of the slide-bars with the lower cross-head, a shaft provided with a crank, a connecting-rod uniting the crank with the toggles and cams on the said shaft acting upon the lower cross-head, said lower cross-head being constructed to bear at its ends against the side edges of said slide-bars, substantially as described.

9. The combination, with the machine-frame comprising imperforate frame-plates A and A', a mold-table secured to the top of said plates, and actuating devices located beneath the mold-table, of removable covers Q and Q', fitted between the said frame-plates, substantially as described.

10. The combination, with frame-plates A A', provided upon their inner faces with inclined ribs, of covering-plates Q and Q', resting upon said ribs, substantially as described.

11. The combination, with the machine-frame comprising imperforate frame-plates A A', a mold-table secured to the top of said plates, upper and lower cross-heads, and mechanism located beneath the table for actuating said cross-heads, said lower cross-head being provided with flat vertical side faces, of covering-plates Q Q', supported at their side edges upon the frame-plates and bearing at their upper margins against the lower cross-head, substantially as described.

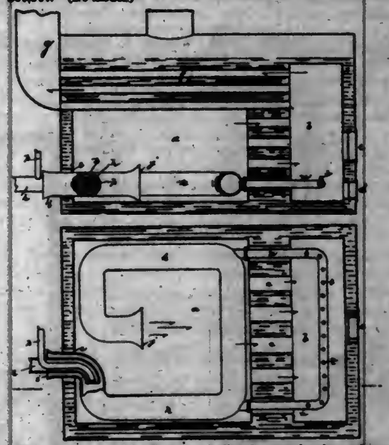
406,683. JOINT FOR HOLLOW SHELLS, &c. LYMAN WHITE, Waterbury, Conn., assignor to Randolph & Clowes, same place. Filed Nov. 22, 1888. Serial No. 291,569. (No model.)



Claim.—1. The combination, with opposing cylinder-sections having their contiguous ends turned inward at an angle, of an interior peripherally-grooved tie-ring, a locking-ring, and an external cover or strengthening-band, substantially as shown and described.

2. The combination, with opposing cylinder-sections having their ends turned inward at an angle to form a flange, of an internal supporting tie-ring provided with a peripheral groove adapted to receive the flanges of the cylinder-sections, and a locking-ring also entered into the groove of the tie-ring between said flanges and in contact therewith, all combined for operation substantially as shown and described.

406,684. APPARATUS FOR MAINTAINING COMBUSTION IN SECONDARY CHAMBERS OF BOILER OR OTHER FURNACES. JOHN WILSON, New York, and ALLAN MASON, Brooklyn, assignors to Herbert M. Sanderson, trustee, New York, N. Y. Filed Mar. 8, 1888. Serial No. 266,567. (No model.)



Claim.—The combination, in a boiler-furnace having primary and secondary combustion-chambers, of the pipe-retort entering and extending around the sides, back, and front of the primary combustion-chamber and terminating therein in a lateral discharge, the branch pipe of said retort, said branch pipe extending into said secondary combustion-chamber and provided with a series of burners, and the injector-feeder extending within the retort for supplying said retort with the fuel elements, substantially as described.

406,685. WATER-HEATING APPARATUS. LEONARD M. WOOLCOCK, Auburn, N. Y. Filed Mar. 9, 1889. Serial No. 302,602. (No model.)

Claim.—1. The combination, with a series of horizontal sections having central apertures forming the fuel-magazine, and provided with draft-flues, of a cylinder forming a continuation of said fuel-magazine, provided with radial webs or ribs terminating at the lower edge of the cylinder in radial feet, and a steam-dome surrounding said cylinder and supported upon said sections and said radial feet, substantially as described.

2. The combination, with the fuel-magazine, of a sliding cover for the same, said cover having an inclined top adapted when the cover is disengaged from the magazine to guide the fuel into the magazine, substantially as described.

3. The combination, with the fuel-magazine, of a sliding cover for the same, having an inclined top concave or trough-shaped in cross-section, adapted when said cover is disengaged from the magazine to guide the fuel into said magazine, substantially as described.

4. The combination, with the fuel-magazine, of a sliding cover for the magazine and one or more sets of guides for said cover, whereby said cover may be made to engage either set of guides, substantially as described.

5. The combination, with the fire-pot having an ash-pit beneath the same, of a damper in a wall of said ash-pit and a check-draft damper between the ash-pit and the smoke-flue, substantially as described.

6. The combination, with the fire-pot having an ash-pit beneath the same, of a damper in a wall of said ash-pit, a check-draft damper between the ash-pit and smoke-flue, and an operative connection between the damper and the check-draft damper, substantially as described.

7. The combination, with the fire-pot having an ash-pit beneath the same, of a chamber surrounding the fire-pot and connected with the smoke-outlet, a damper in the wall of said ash-pit, and a check-draft damper between the ash-pit and the said chamber, substantially as described.

8. The combination, with the fire-pot having an ash-pit beneath the same, of a chamber connected with the smoke-outlet, a damper for controlling the draft, a check-draft damper between the ash-pit and said chamber, and an arm on said damper engaging the check-draft damper, substantially as described.

9. The combination, with the fire-pot, of sections forming the boiler, the section adjacent to said fire-pot having a hollow annular portion around the center of the same depending within the fire-pot and extending below the horizontal plane of the bottom of said section, substantially as described.

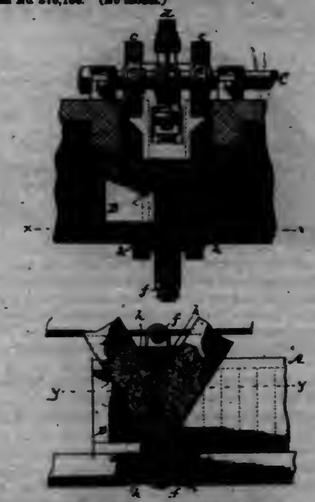
10. The combination, with a furnace having a hand-hole in its walls communicating with the smoke-flues and having unequal diameters, of a cover having unequal diameters engaging said hand-hole, a bolt passing through said cover and provided at one end with a securing-plate rigidly secured thereto and at the other end with a head, whereby said bolt may be turned and the plate made to engage the walls of said hand-hole for securing said cover in place, substantially as described.

406,686. MACHINE FOR RABBETING TABLE-LEAVES. REUBEN W. WOODMAN, Saccarappa, Me. Filed Nov. 6, 1888. Serial No. 290,173. (No model.)

Claim.—1. In a machine for rabbeting swinging table-leaves for receiving their hinges, the combination of a sliding table for receiving the table-leaf, a cutter-head rotating in a plane at right angles to said table and having its cutting-edge adjusted to cut a shallow recess or groove in the edge of said leaf, a frame beneath said table, a saw or cutter journaled therein, and means for lifting said frame and feeding it horizontally to cut a narrow longitudinal groove through said shallow recess, substantially as and for the purpose set forth.

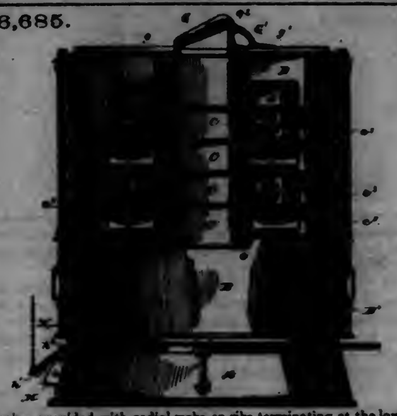
2. In a machine for rabbeting swinging table-leaves for receiving hinges, the combination of the saw-frame and the cams for supporting and lifting said frame, said cams being provided with teeth, racks on the bottom of said frame to engage said teeth when the frame is lifted to the desired height, and levers for rotating said cams, substantially as and for the purpose set forth.

406,687. METHOD OF MANUFACTURING ORNAMENTAL BRICK. JAMES C. ANDERSON, Highland Park, Ill. Filed June 6, 1888. Serial No. 276,186. (No model.)

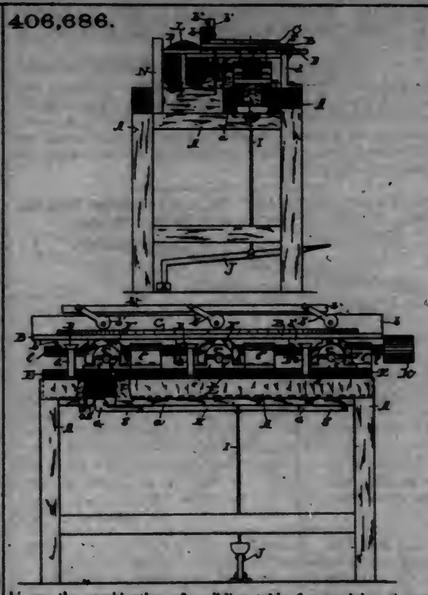


Claim.—The method herein described of ornamenting dry-clay brick, which consists in pressing the clay into brick form and then forcing into the face of the newly-formed brick a dry clay powder in the form of vines, stems, fruits, and flowers in relief or in depression.

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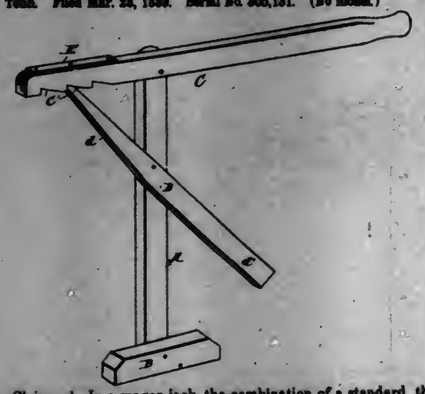
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406,688. METHOD OF ENAMELING OR INCRUSTING BRICKS, &c. JAMES C. ANDERSON, Highland Park, Ill. Filed Apr. 24, 1889. Serial No. 308,451. (No specimens.)

Claim.—An improvement in the art of manufacturing incrusted bricks, tiles, and other clay articles, which consists in applying a composition of finely-divided or comminuted enamel and pure metals to the articles while the same are in a green or unburned state, and in then burning said articles to the pottery point to fuse the enamel and metals and cause them to form an incrustation of enamel integral with the main body of the article.

406,689. LIFTING-JACK. WILLIAM R. ANDREWS, Union City, Tenn. Filed Mar. 28, 1889. Serial No. 305,131. (No model.)

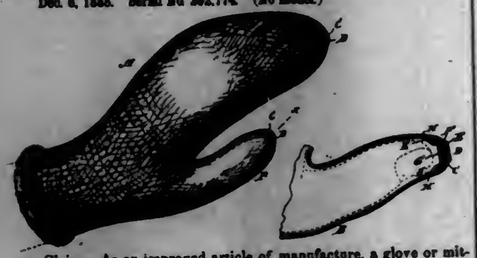


Claim.—1. In a wagon-jack, the combination of a standard, the lever pivoted to the upper end of the standard and provided upon the under side of the short arm with a rack, and a prop pivoted to the standard and adapted to engage automatically said rack intermediate of its ends, substantially as described.

2. In a wagon-jack, the combination of the standard, the lever pivoted at the upper end of the standard and provided with a rack, and the prop pivoted to the standard and having its upper portion gradually reduced in thickness, the longer and heavier arms of said lever and prop being on the same side of their points of pivotal connection to the standard, substantially as and for the purpose described.

3. In a wagon-jack, the combination of the standard secured to a suitable base, the lever pivoted to the upper end and to one side of the standard and provided with a rack, and the prop pivoted near the opposite side of the standard, whereby the parts are adapted to be folded compactly together, substantially as described.

406,690. MITTEN, &c. JOHN ARBUCKLE, Brooklyn, N. Y. Filed Dec. 6, 1888. Serial No. 292,774. (No model.)

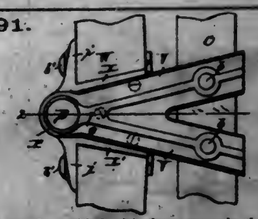


Claim.—As an improved article of manufacture, a glove or mitten for the hand, provided with an air-passage and a spring-pressed valve which closes outwardly to prevent the egress of air and opens inwardly to permit air being blown into the glove or mitten from the mouth to warm parts of the hand, substantially as described.

406,691. WHIFFLETREE. SAXTON J. ARNOLD, Everett, Mass. Filed Apr. 9, 1889. Serial No. 306,503. (No model.)

Claim.—1. The combination of the braces adapted to be secured





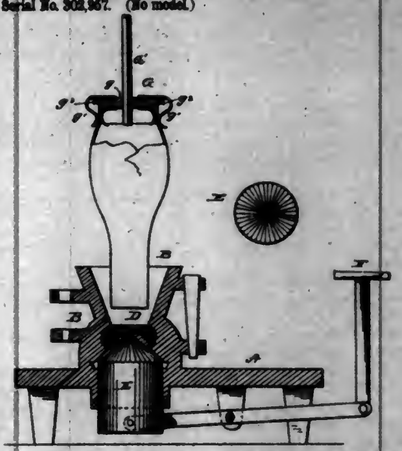
to a cross-bar and provided with the recesses in their inner faces, the whiffletree-iron having the projecting bearings upon its upper and lower faces journaled in said recesses, and a bolt passing through the braces and whiffletree-iron, as set forth.

2. The combination, with the bolt, of the braces adapted to be secured to a cross-bar and provided with recesses on their inner faces, the whiffletree-iron having projecting bearings upon their upper and lower faces and provided with a vertical hole A, of greater diameter than the bolt, whereby the whiffletree-iron is out of contact with said bolt, substantially as described.

3. The combination of the V-shaped braces provided with recesses in their inner faces, the whiffletree-iron having bearings journaled in the recesses of the braces and provided with the rearward-extending plates approximately triangular in form and designed to be set in corresponding recesses in the whiffletree, and a bolt passing through the braces and the whiffletree-iron, substantially as described.

4. The combination of the V-shaped braces provided with recesses in their inner faces and having bolt-holes concentric with said recesses, one of said bolt-holes being square, the whiffletree-iron having bearings journaled in said recesses and provided with a central hole A, adapted to receive a bolt, and a bolt passing through the braces and the whiffletree-iron and being out of contact with the latter, substantially as described.

406,692. METHOD OF ORNAMENTING OPEN-ENDED GLASSWARE. THOMAS B. ATTERBURY, Pittsburg, Pa. Filed Mar. 12, 1889. Serial No. 302,957. (No model.)



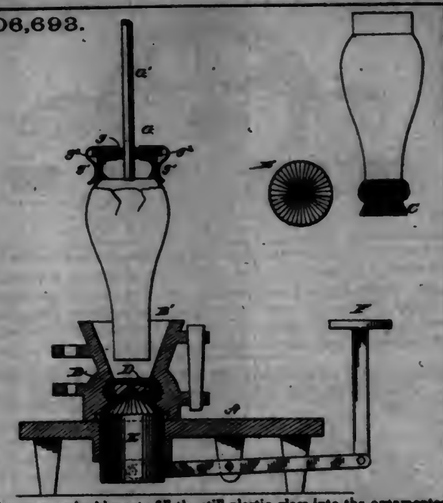
Claim.—1. The method of ornamenting open-ended glassware, which consists in placing the heated article in a former having the ornamental configuration to be given to the article, closing the ends, and then blowing into the article to cause it to be forced into or assume the configuration of the mold, as set forth.

2. The method of ornamenting open-ended glassware, which consists in blowing the article and finishing it in plain form without the aid of a mold, then placing the article in a blow-snap, reheating the portion to be ornamented, placing the heated end in a former having a movable bottom, moving the movable bottom upward to ornament the top, making the same air-tight, and finally blowing through the snap to fill the still plastic glass into the ornamented portion of the former, as set forth.

406,693. APPARATUS FOR ORNAMENTING OPEN-ENDED GLASSWARE. THOMAS B. ATTERBURY, Pittsburg, Pa. Filed Mar. 12, 1889. Serial No. 302,958. (No model.)

Claim.—1. In a device for ornamenting hand-blown glassware, a former or mold having the ornamental configuration to be given to the article formed or cut in the inner face thereof, a plug to close the bottom thereof, and a device for holding the article and permitting

406,693.



the same to be blown to fill the still plastic glass into the ornamented portion of the former, as set forth.

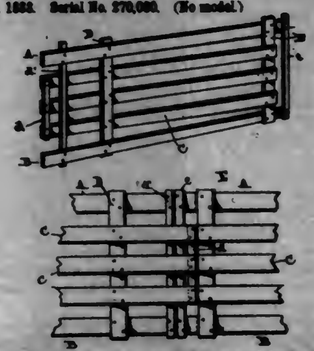
2. In a device for ornamenting hand-blown glassware, a former or mold having the ornamental configuration to be given to the article formed or cut in the inner face thereof, a plug or plunger provided with the corrugated face to crimp the edge of the article, and a blow-snap to hold the article, substantially as and for the purpose set forth.

406,694. ICE-BREAKER. ALVAH H. ASHTON, Webster City, Iowa. Filed Feb. 28, 1889. Serial No. 301,467. (No model.)



Claim.—A composite ice-breaker for piers and the like, consisting of two metallic sides inclined laterally with respect to each other and partly surrounding the pier, a concrete filling, and piles extended vertically between the sides of the structure and embedded in said filling, substantially as described.

406,695. FENCE. MARION J. BARROW, New Mecanfield, Mo. Filed Apr. 9, 1888. Serial No. 270,089. (No model.)

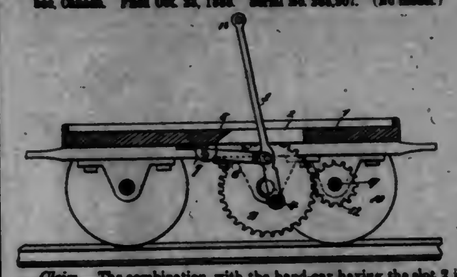


Claim.—1. The herein-described fence-panel having end battens and having the ends of the rails fastened to the opposite sides of the said battens, respectively, the rails being extended at one end beyond the end batten and provided with stops on their opposing faces which are adapted to spring apart, and the other end of the panel being provided with a corresponding stop, substantially as and for the purpose described.

2. The herein-described fence-panel, having the ends of the rails extended beyond the end battens, some of the said ends being in one plane and others in another, and adapted to be sprung apart and provided with stops on their opposing sides, substantially as and for the purpose described.

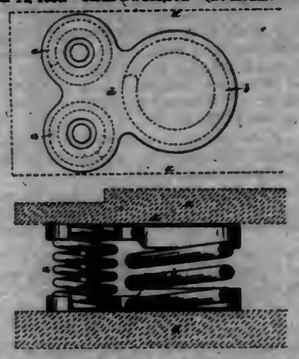
3. The herein-described fence-panel, having the ends of the rails extended at one end beyond the end batten and arranged in different planes, the top and bottom rails being in one plane and the intermediate rails being in another plane, and having the ends of the rails of each plane united by a step, the two steps being adapted to be sprung apart, substantially as and for the purpose described.

406,696. HAND-CAR. THOMAS S. BARWIS, Arthabaskaville, Quebec, Canada. Filed Oct. 22, 1888. Serial No. 288,907. (No model.)



Claim.—The combination, with the hand-car having the slot 2 in its platform and a transverse crank-shaft journaled under the platform between the front and rear axles, of the upwardly-projecting lever 3, extending down through said slot and connected with the crank, and the longitudinally-extending lever 6, pivoted to the under side of the platform at one end of the slot to work therein, and at its other end pivoted to the lower end of lever 3 above the crank, and gearing connecting the crank-shaft with an axle of the car, substantially as set forth.

406,697. GRADUATED CAR-SPRING. THOMAS M. BELL, Philadelphia, Pa., assignor to the Charles Scott Spring Company, same place. Filed Dec. 14, 1888. Serial No. 293,561. (No model.)



Claim.—1. A graduated car-spring having the primary and secondary springs arranged in the form of a triangle with a pair of springs at the outer portion of the structure, so as to provide a support for the outer end of a spring-bolster throughout substantially the whole width of the latter, as set forth.

2. The combination, in a graduated car-spring, of a pair of primary springs, and a secondary spring arranged in the form of a triangle, the pair of primary springs being at the outer portion of the structure, so as to support the outer end of the spring-bolster, all substantially as specified.

406,698. INCRUSTATION PREVENTIVE. DAVID R. BOOSINE, St. Louis, Mo. Filed Dec. 15, 1888. Serial No. 293,003. (No specimens.)

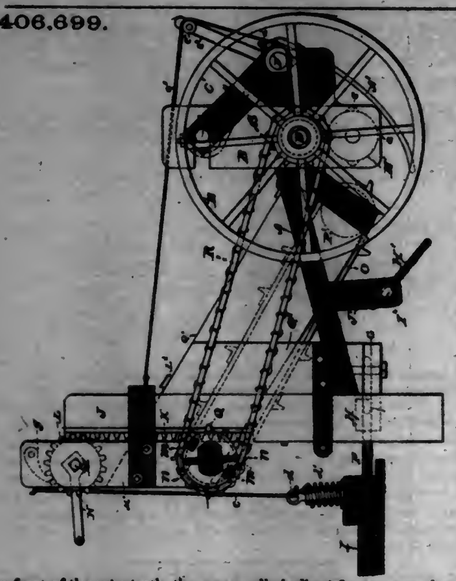
Claim.—A boiler compound consisting of extract of hemlock, gambia, sumac, wormwood, and salts of tartar, mixed together in about the proportions named.

406,699. HAY-LOADER. HARRY L. BOSWORTH, Clifton, Dak. Filed Nov. 27, 1888. Serial No. 291,967. (No model.)

Claim.—1. The combination, with the endless carrier, the pulleys, and the driving mechanism, the sprocket-wheel of the driving mechanism being loosely mounted on the extended journal of one of the pulley-shafts, the clutch-arms thereon extending in opposite directions, of the clutch-block having the angular longitudinal opening engaging an angular portion of the extended journal, said angular portion having a notch, the vertical arms thereon, and the spring-keeper, substantially as specified.

2. The combination, with the loader-frame, the side pieces B, wheels E, the shaft D, and the rake-teeth, of the rock-shaft having journaled bearings in the depending portions of the frame and located

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in front of the rake-teeth, the rearwardly-inclined fingers secured to said rock-shaft, and the feed-roller having the projections and operated by the pinions on the wheel-axle, substantially as set forth.

406,700. DEODORANT AND DISINFECTANT. HENRY M. CALDWELL, Sydney, New South Wales, assignor to Harry James Goodricke Cattanach, same place. Filed May 27, 1886. Serial No. 203,373. (No specimens.) Patented in Victoria Mar. 31, 1886, No. 4,486; in Queensland Apr. 3, 1886, No. 111; in England May 24, 1886, No. 6,966, and in New South Wales June 5, 1886, No. 1,868.

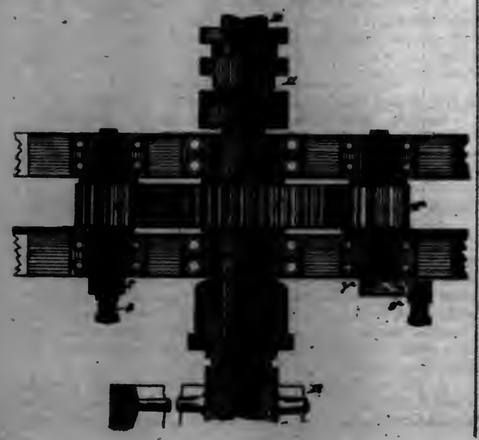
Claim.—1. A composition of matter formed of sulphate of iron, oxide of manganese, oil of eucalyptus, and water, substantially in the manner and in the proportions set forth.

2. A composition of matter formed of sulphate of iron, oxide of manganese, oil of eucalyptus, water, caustic soda, and peroxide of manganese, substantially in the manner and in the proportions set forth.

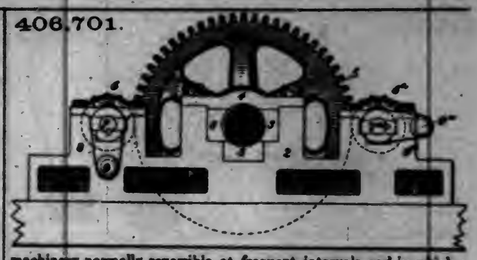
406,701. ROLLING-MILL. ROBERT A. CARTER, Pittsburg, Pa. Filed Dec. 13, 1888. Serial No. 293,454. (No model.)

Claim.—1. As a mechanism for operating roll-trains and other geared machinery normally reversible at frequent intervals and in which a fly-wheel is dispensed with, the combination of a main gear-wheel mounted on the shaft through which reversibility is effected, and two or more independently-driven pinions (but without fly-wheels) arranged to engage the main gear-wheel at equal or approximately equal distances around its periphery, substantially as set forth.

2. As a mechanism for operating roll-trains and other geared

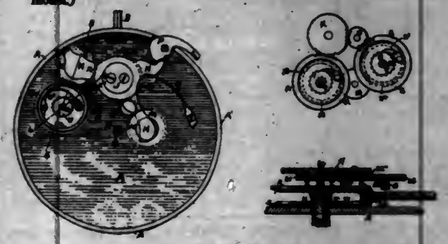


406,701.



machinery normally reversible at frequent intervals and in which a fly-wheel is dispensed with, the combination of two or more main gear-wheels mounted on the shaft through which reversibility is effected, and two or more independently-driven pinions alternating with the main gear-wheels, each pinion intermeshing with the main gear-wheels on each side thereof, substantially as set forth.

406,702. WATCH-WINDING MECHANISM. WHEELOCK R. CLIFFORD, Waltham, Mass. Filed Feb. 9, 1888. Serial No. 263,537. (No model.)



Claim.—1. In combination with a watch-movement actuated from the unwinding of a wound spring, mechanism for winding said spring, composed of two loose-turning gear-wheels, two ratchet or clutch wheels, one for each of said loose gear-wheels, two pawls or clutches to engage and to pass freely over said ratchet or clutch wheels, and means, consisting of a driving gear-wheel having connection with both of said loose gear-wheels, whereby from its rotation in either direction the loose gear-wheels will be simultaneously rotated, but in opposite directions, all combined, arranged, and operating substantially as and for the purpose described.

2. In combination with a watch-movement actuated from the unwinding of a wound spring, mechanism for winding said spring, composed of two loose-turning gear-wheels, an arbor or stud common to both of said gear-wheels, two ratchet or clutch wheels, one for each of said gear-wheels, two pawls or clutches to engage and to pass freely over said ratchet or clutch wheels, and means consisting of a driving gear-wheel having connection with both of said loose gear-wheels, whereby from its rotation in either direction the loose gear-wheels will be simultaneously rotated, but in opposite directions, all combined, arranged, and operating substantially as and for the purpose described.

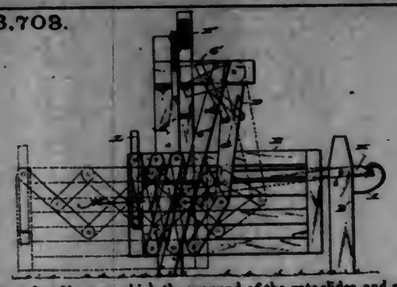
3. In combination with a watch-movement actuated from the unwinding of a wound spring, mechanism for winding said spring, composed of two loose-turning gear-wheels, an arbor or stud common to both of said gear-wheels, two ratchet or clutch wheels, one for each of said gear-wheels, two pawls or clutches to engage and to pass freely over said ratchet or clutch wheels, and a gear-wheel to directly mesh with one and to connect with the other of said loose gear-wheels through an intermediate gear-wheel, and to rotate them in opposite directions, all combined, arranged, and operating substantially as and for the purpose described.

4. In combination with a watch-movement actuated from the unwinding of a wound spring, mechanism for winding said spring, composed of two loose-turning gear-wheels, an arbor or stud common to both of said gear-wheels, two ratchet or clutch wheels, one for each of said gear-wheels, two pawls or clutches to engage and to pass freely over said ratchet or clutch wheels, a gear-wheel to directly mesh with one and to connect with the other of said loose gear-wheels through an intermediate gear-wheel and to rotate them in opposite directions, and a support for said driving gear-wheel adapted to be adjusted to place its said gear-wheel in and out of said mesh, all combined, arranged, and operating substantially as and for the purpose described.

406,703. GATE. CASSIUS M. COCHRAN, Marion, Ind. Filed Apr. 23, 1888. Serial No. 306,599. (No model.)

Claim.—1. The combination, in a sliding gate, of the supporting-posts, bell-crank lever, and lazy-tongs, supported substantially as

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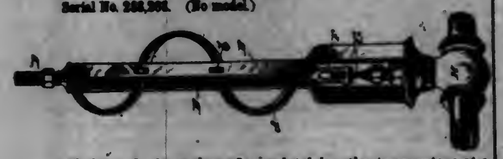


shown, a bar H, upon which the rear end of the gate slides, and a vertically-sliding bar which engages with pins extending from the bar H and from a short arm of the bell-crank lever for operating the bar H, bell-crank lever, and gate, substantially as shown, and for the purpose set forth.

2. The combination, in a sliding gate, of the pivoted levers F, having depending bars F', the lower ends of which are connected to double-crank arms, a vertically-sliding bar E, connected to levers F and having slots *e'* and *f*, lazy-tongs M, a bell-crank lever D, the short arm thereof having a pin which engages with the slot *e'*, and the long arm of said lever engaging with the inner end of the lazy-tongs M, a vertically-moving bar L, connected to the front end of said lazy-tongs, the bar H, having near one end a notch and a projecting pin engaging with the slot *f*, the other end of the bar H having a spring I, and a pin *j* upon the gate for engaging with said notch, the parts being organized substantially as shown, and for the purpose set forth.

3. The combination, in a sliding gate operated by a bell-crank lever and lazy-tongs, arranged substantially as shown, of a movable bar L, adjustably secured to the front end of the gate, the forward end of the lazy-tongs being adapted to engage with said bar, for the purpose set forth.

406,704. THERMOSTATIC DRAFT-REGULATOR. SAMUEL F. COLLINS and GRAHAM S. SLACK, Binghamton, N. Y. Filed Oct. 16, 1886. Serial No. 216,206. (No model.)



Claim.—1. A regulator for maintaining the temperature at a determined point, consisting of a tube arranged in sinuous form, a suitable support, suitable guides to control the movement of the tube and cause its lower end to move in approximately a straight line, a connection from one end of said tube to the valve or damper, and an opening to the interior of said tube for filling the same, substantially as described.

2. A regulator consisting of a tube bent in sinuous form and having movable supports between the bends, connection between one end and the valve or damper, said tube containing or being in connection with an expansible material, substantially as described.

3. A regulator consisting of a tubular spring bent in sinuous form with movable supports therefor, and an adjustable connection between one end of said tube and a valve or damper, said tube containing or being in connection with an expansible material, substantially as described.

406,705. METAL WHEEL. LOUIS J. CRECELIUS, St. Louis, Mo. Filed Dec. 11, 1888. Serial No. 293,242. (No model.)



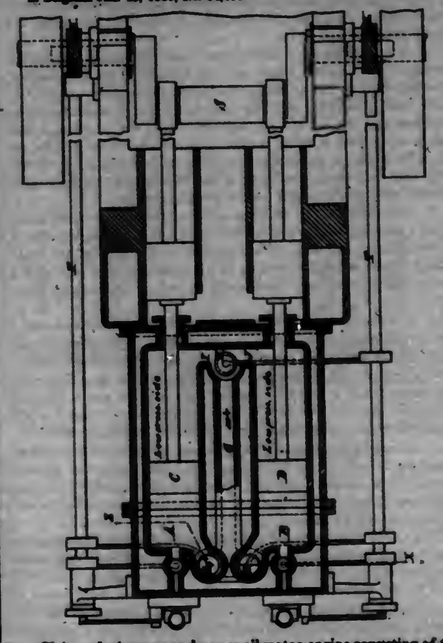
Claim.—1. A metal wheel having a hub-filling cast therein onto the ends of the spokes, for the purpose described.

2. In a metal wheel, the combination of the spokes and a hub, the latter consisting of a shell, and a filling applied around the ends of the spokes in a molten or liquid condition, substantially as and for the purpose set forth.

3. In a metal wheel, the combination of the spokes and hub, the latter consisting of a shell and a filling in which the ends of the spokes are embedded and having end flanges S, substantially as and for the purpose set forth.

4. In a metal wheel, the combination of the spokes and hub, the latter having perforated enlarged ends to receive the spokes, and a filling cast into the shell, substantially as and for the purpose set forth.

406,706. COMPOUND GAS OR OIL MOTOR-ENGINE. WILLIAM J. CROSSLEY, Openshaw, Manchester, County of Lancaster, England, assignor to the Gas-Motoren-Fabrik-Deutz, Deutz-on-the-Rhine, Germany. Filed Jan. 31, 1888. Serial No. 262,570. (No model.) Patented in England Feb. 4, 1886, No. 1,705; in France Jan. 12, 1889, No. 186,331, and in Belgium Jan. 15, 1889, No. 84,695.



Claim.—1. A compound gas or oil motor-engine consisting of two cylinders having discharge-valves at the rear ends, the two reciprocating pistons, an exhaust-valve common to the front ends of both cylinders, and a passage-way leading from the said discharge-valves and communicating with the front ends of both cylinders to conduct the gaseous products from behind each piston into the spaces in front of both pistons, where such products expand and are discharged through the exhaust-valve common to both cylinders, substantially as described.

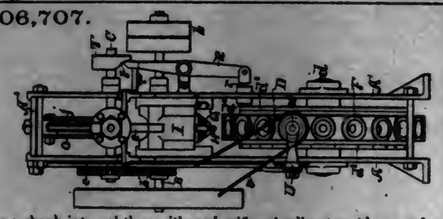
2. A compound gas or oil motor-engine consisting of two cylinders located side by side, having at their rear ends alternately-opened discharge-valves and provided with front communicating ends, the two pistons connected with a single crank-shaft to move to and fro together, an exhaust-valve opened at intervals and common to the front open ends of both cylinders, and a passage-way interposed between the cylinders and leading from the said discharge-valves to and communicating with the front ends of both cylinders and the exhaust-valve to conduct the gaseous products from behind each piston into the spaces in front of both pistons, where such products expand, move the pistons rearward, and then discharge through the exhaust-valve common to both cylinders, substantially as described.

406,707. MACHINE FOR MOLDING PLASTIC MATERIALS. FREDERICK C. DAHL, Cleveland, Ohio. Filed Aug. 7, 1888. Serial No. 282,170. (No model.)

Claim.—1. In a machine for molding plastic material, the combination of a vertical wheel and mechanism for imparting to said wheel an intermittent movement and for holding it firmly while the material is being pressed into shape, with a reciprocating hollow die, outlet and inlet pipes to said die, whereby a cooling-fluid may be kept constantly circulating through said die, said outlet-pipe being arranged to discharge said fluid into one or more of the molds containing the molded articles, substantially as and for the purpose specified.

2. In a machine for molding plastic material, a die consisting of a recessed bottom part, a plate secured to said bottom part and hav-

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ing a shank integral therewith, and orifices leading to said recess for the attachment of outlet and inlet pipes, substantially as and for the purpose specified.

3. In a machine for molding plastic material, the combination of a vertical wheel having molds secured radially to the face thereof, and mechanism for imparting to said wheel an intermittent movement and for holding it firmly while the material is being pressed into shape, a reciprocating die having an inclosed recess, and outlet and inlet pipes to said recess, whereby a fluid may be forced through said recess under pressure, the outlet-pipe being so formed that it will discharge said fluid into one or more of the molds containing the molded articles, substantially as and for the purpose specified.

4. In a machine for molding plastic material, a vertical wheel having a series of molds on the edge thereof and having a series of ratchet-teeth on said edge, with a grooved cam, a pivoted bar, a pin secured to said bar and operating in the groove of said cam, and a pawl pivoted to said bar, substantially as and for the purpose specified.

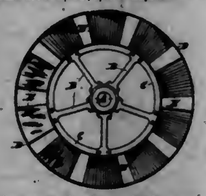
5. In a machine for molding plastic material, the combination of a reciprocating die, a vertical wheel carrying a series of molds and having a plate secured to the side thereof, said plate being provided with sockets a^5, and mechanism for revolving said wheel intermittently, with lever, a pin for engaging said sockets, and a cam for moving said lever in one direction and a spring for moving it in the opposite direction, substantially as and for the purpose specified.

6. In a machine for molding plastic material, the combination of a cross-head and means for guiding the same, and a die secured thereto, with a toggle, a cylinder, piston and piston-rod, a link connecting said toggle and piston-rod, and cam L, substantially as and for the purpose specified.

7. In a machine for molding plastic material, a wheel and a series of molds secured thereto, combined with a revolving swab and mechanism for drawing said swab into and out of said molds, substantially as and for the purpose specified.

8. In a machine for molding plastic material, a wheel and a series of molds secured thereto, combined with a pivoted arm, a horizontal bar pivotally connected therewith, a revolving swab carrying spindle journaled in said bar, a spring for moving said arm in one direction, and a revolving cam for moving it in the opposite direction, substantially as and for the purpose specified.

406,708. PROPELLER-WHEEL. WILLIAM H. DANIELS, Southampton, England. Filed Nov. 15, 1888. Serial No. 290,939. (No model.) Patented in England Nov. 2, 1888, No. 13,344.

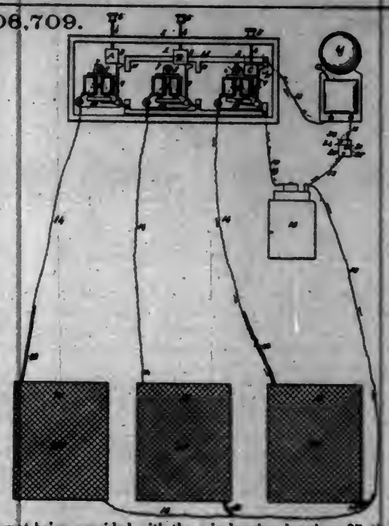


Claim.—A marine propeller formed of a central boss, arms of a suitable length radiating from said boss approximately parallel to the plane of motion, an inner circular rim carried by the ends of said arms, transverse blades set at any desired pitch and secured to said rim, and the outer concentric rim to which the tips of the blades are secured, the space between the boss and inner rim affording a free water-space, whereby churning is prevented, substantially as set forth.

406,709. INVISIBLE BURGLAR-ALARM ELECTRIC MAT. JAMES W. DAWSON, St. Louis, Mo. Filed Apr. 19, 1889. Serial No. 307,637. (No model.)

Claim.—1. In a burglar-alarm mat, &c., the combination of the series of compartments of the sectional mat constructed of pasteboard or paper fabric, the sheet-metal interlacing straps 19, that flexibly connect said sections, the connecting strap 22, the straps 24 and 25, secured on top of the mat, the positive and negative conductors 13, 14, and 38, that connect with the straps 22 and 25, the sections of

406,709.



said mat being provided with the spiral-spring housings 27, the twin spiral springs that are seated in said housings and are metallically secured in electric contact to the straps 24, and the bow-wires 29, that couple the twin spirals together, and which bow-wires come into electric contact with the straps 19 when the burglar steps on the mat and closes the circuit, all adapted to form part of a closed-circuit line, substantially as described, and for the purpose set forth.

2. In a burglar-alarm mat, the combination of the series of compartments of the sectional mat, provided with perforate housings for spiral springs, the sheet-metal interlacing-straps 19, their connecting-strap 22, the straps 24 and 25, the twin spiral springs 28, the coupling bow-wire 29, that couples said springs, the copper-foil conductors 38, the electric positive and negative wires 13 and 14, the battery 16, the annunciator 1, and the electric bell 44, substantially as described, and for the purpose set forth.

3. In a burglar-alarm mat, &c., the combination of the perforated compartments of a sectional mat composed of pasteboard or paper fabric, the interlacing sheet-metal strips 19, the strap 22, the straps 24 and 25, the twin spiral springs 28, the bow-wires 29, that couple said springs, the loop-hinges 36, that connect sections of said mat to enable it to fold, the copper-foil conductors 38, the positive and negative conductors 13 and 14, the annunciator 1, having announcing-tablets 3, the magnets 6, the armature 10, the pivoted brush-switches 9, the conducting-bar 12 and its pendent arm 11, with which the brush of said switch affiliates when the circuit is closed, the electric bell 44, with which the side switch of the electric current connects, and the battery 16, substantially as described, and for the purpose set forth.

4. In a burglar-alarm mat, &c., the combination of the perforated compartments of the sectional mat of pasteboard or paper fabric, the interlacing sheet-metal straps 19, the straps 22, 24, and 25, the twin spiral springs 28, their bow-wire coupling 29, the annunciator 1, the battery 16, the electric bell 44, the switch-box 30, for breaking the current, and the circuit making and breaking devices that electro-magnetically connect the parts, substantially as described, and for the purpose set forth.

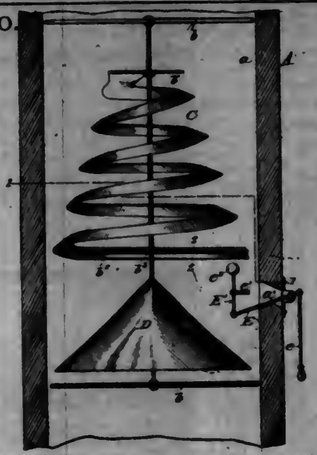
5. In a burglar-alarm mat, &c., the combination of the compartments of the sectional electric alarm-mat provided with the spiral-spring housings 27, the sheet-metal interlacing straps, the straps 22, 24, and 25, the twin spiral springs 28, the bow-wires that couple said springs, the fabric cover that surmounts said mat, the battery, the electric bell, the annunciator with its recording-tablets, magnets, brush-switch, and conducting-bar 12, and the copper-foil and wire conductors that connect said parts, substantially as and for the purpose set forth.

406,710. SOOT AND SPARK ARRESTER. JEAN B. E. DUHAM, Chicago, Ill., assignor of three-fourths to Abraham Bachrach, Charles Bachrach, and Dominick L. Langevin, all of same place. Filed Feb. 20, 1889. Serial No. 300,612. (No model.)

Claim.—1. The combination, with the chimney A, having flue *a*, of the rotating spiral C, mounted in said flue, and having an increasing diameter from top to bottom, substantially as and for the purpose specified.

2. The combination, with the chimney A, having flue *a*, of the rotating spiral C, mounted in said flue, and composed of a strip having a body inclined transversely downward and outward, and provided at its outer margin with a depending flange, the said spiral increasing in diameter from top to bottom, whereby the convolutions are caused to overlap each other, substantially as and for the purposes specified.

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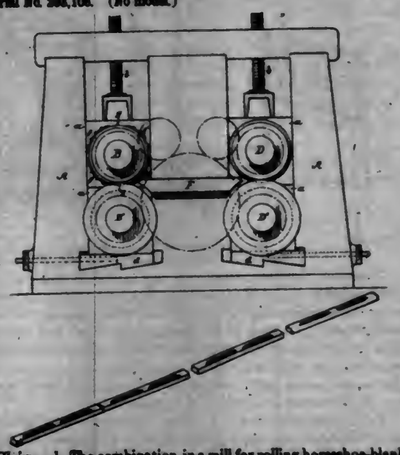


3. The combination, with the chimney A, having flue *a*, of the rotating spiral C, mounted in said flue, and having an increasing diameter from top to bottom, and the cone D, arranged in the flue below the spiral with its apex upward, and having a base of a diameter equal to the diameter of the bottom of the spiral, substantially as and for the purposes specified.

4. The combination, with the chimney and its flue, of the spiral loosely suspended therein, and means for vibrating said spiral, substantially as and for the purposes specified.

5. The combination, with the chimney and its flue, of the spiral loosely suspended therein, the lever E, extending through a slot in the chimney, and the rod E', operated by said lever and adapted to strike the spiral, substantially as and for the purposes specified.

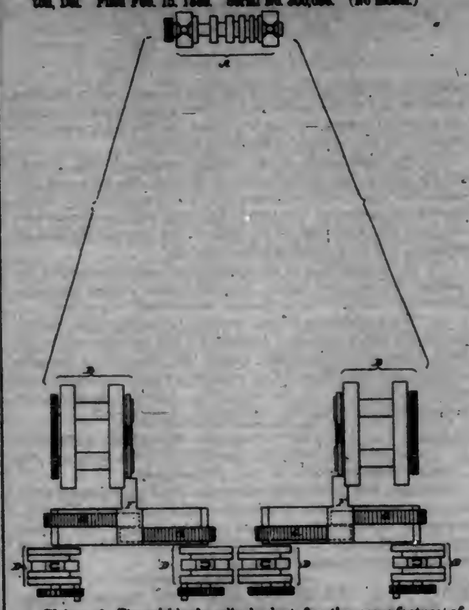
406,711. ROLL FOR ROLLING HORSESHOE-BLANKS. WILLIAM BYRON and WILLIAM SEAMAN, Wilmington, Del. Filed Dec. 10, 1888. Serial No. 293,108. (No model.)



Claim.—1. The combination, in a mill for rolling horseshoe-blanks, of the creasing-rolls having one or more fins or projections for transversely indenting the bar so as to partially sever the same, and finishing-rolls driven at slightly greater surface speed than the creasing-rolls, so as to impart a slight draft to the bar and tear it apart at the indented portions, all substantially as specified.

2. The combination of the creasing-rolls having one or more indenting-fins for partially severing the bar, the finishing-rolls driven at a greater surface speed than the creasing-rolls, so as to impart draft to the bar and pull it apart at the indentations, and a box or trough for guiding the bar in its passage from the creasing-rolls to the finishing-rolls, all substantially as specified.

406,712. PLANT OF MACHINERY FOR THE MANUFACTURE OF HORSESHOES. WILLIAM BYRON and WILLIAM SEAMAN, Wilmington, Del. Filed Feb. 15, 1889. Serial No. 300,094. (No model.)

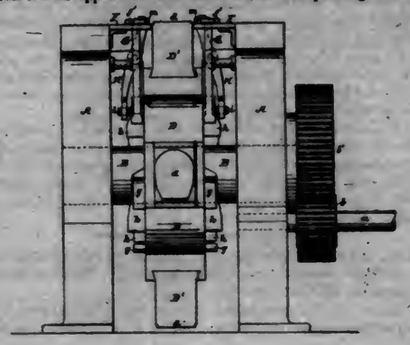


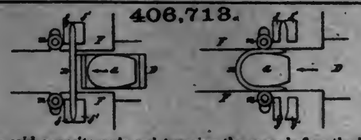
Claim.—1. The within-described plant for the manufacture of horseshoes from a bar, said plant comprising a mill for rolling horseshoe-blanks from said bar, a pair of blank-bending machines located one at each side and in advance of said mill, a receiving-table at the delivery end of the mill, and feed belts or aprons extending laterally from said receiving-table, one to one bending-machine and the other to the opposite bending-machine, whereby the blanks delivered by the mill can be conveyed to the bending-machines alternately, substantially as specified.

2. The within-described plant for the manufacture of horseshoes from a bloom or billet, said plant comprising a bar-rolling mill, a pair of supplementary rolling-mills located one at each side and in advance of said bar-mill and constructed to form into separate horseshoe-blanks the bars delivered by said bar-mill, four blank-bending machines located one at each side and in advance of each blank-rolling mill, a receiving-table at the delivery end of each blanking-mill, and a pair of laterally-extending feed belts or tables for each receiving-table, one feed-belt extending to one bending-machine and the other to the opposite bending-machine, whereby the bar produced by the primary rolling-mill may be conveyed to the blanking-mills alternately and the blanks produced by each blanking-mill can be conveyed alternately to the bending-machines working in conjunction therewith, substantially as specified.

406,713. HORSESHOE-BENDING MACHINE. WILLIAM BYRON and WILLIAM SEAMAN, Wilmington, Del. Filed Feb. 15, 1889. Serial No. 300,097. (No model.)

Claim.—1. The combination of the rotating die-holding disk, supports for the opposite ends of the blank, beveled pressing-dies for





406,718.

acting on said opposite ends and tapering the same before the blank is bent around the former-die as the latter advances, levers carrying the movable pressing-dies, and cams upon the disk for actuating said levers as the disk rotates, substantially as specified.

2. The combination of the rotating die-holding disk, supports for the opposite ends of the blank to be bent, dies for pressing the ends of the blank, rolls for pressing said ends inward against the contracted rear portion of the former-die, levers carrying the movable dies and rolls, and cams at the ends of the die-carrying disk for actuating said levers, substantially as specified.

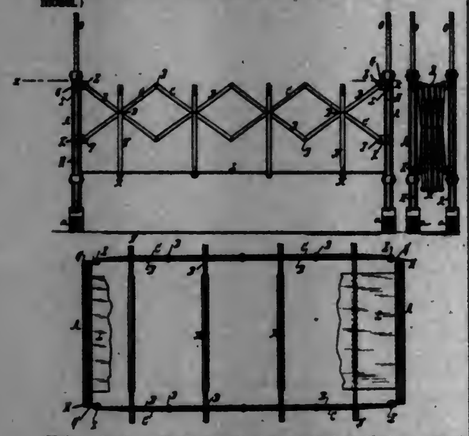
3. The combination of the rotating disk having dovetailed projections, with the dies having dovetailed bases secured within the dovetailed recesses of the projections, substantially as specified.

4. The combination of the rotating die-carrying disk, and the dies rigidly mounted thereon, bearings for the opposite ends of the blank, acting to bend the blank around the former-die as the latter advances, and supporting shelves or tables eccentric in respect to the axis of rotation of the die-holding-disk, whereby the shoes are stripped from the former-die, substantially as specified.

406,714. PROCESS OF MAKING FIRE-PROOF MATERIALS. ALEXANDER FELDMANN, Linden, near Hanover, Prussia, Germany. Filed July 7, 1886. Serial No. 207,267. (No specimens.)

Claim.—The process of producing fire-proof material and articles by comminuting fluoride of magnesium and magnesia, mixing the substances together with water and making a dough thereof, imparting to the said dough the required form, and subsequently drying and burning the same, substantially as described.

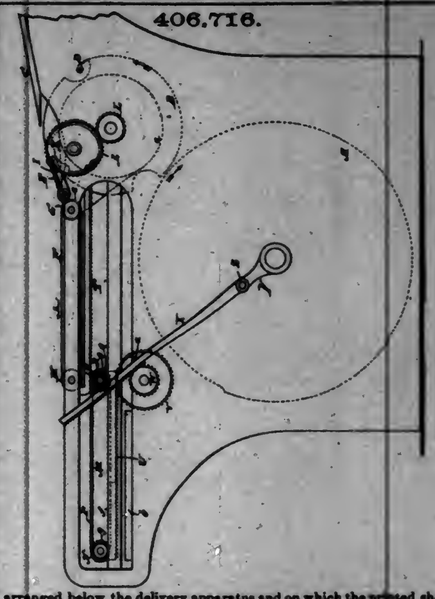
406,715. FOLDING BED OR CRADLE. CHARLES A. FISHER, Mystic River, Conn. Filed Mar. 15, 1888. Serial No. 303,440. (No model.)



Claim.—1. A cradle composed of the ends A A, having vertical rods H H attached thereto, the upper brackets G G, stationary on said rods, the lower brackets K K, adapted to slide on said rods, the sides composed of folding sections B C, pivoted together in the form of lattice-work or lazy-tongs, and jointed to said upper and lower brackets, the arms N N, suspended from pivoted connections of the lattice-work, the cross-bars M M, supported by the lower ends of said arms, and the flexible fabric L, attached to the ends A A, and cross-bars M M, substantially as described.

2. The combination of the ends A A, the rods H H, attached to said ends and extended over the same to form loops O O, the brackets G G, stationary on said rods, the brackets K K, movable on said rods, and the sides composed of the folding sections B C, pivoted together in the form of a lattice-work or lazy-tongs and jointed to the said brackets, substantially as described.

406,716. SHEET-DELIVERY APPARATUS FOR PRINTING-MACHINES. GEORGE P. FERNER, New London, Conn. Filed Sept. 20, 1888. Serial No. 285,879. (No model.)



406,716.

Claim.—1. In combination with an impression-cylinder, a delivery apparatus, and a receiving-table, of a reciprocating carriage arranged below the delivery apparatus and on which the printed sheet is deposited by said delivery apparatus, and a crank for positively moving said carriage in both directions, substantially as described.

2. The combination, with an impression-cylinder and a receiving-table, of a delivery traveler or tapes receiving the sheet direct from the cylinder without the aid of grippers or equivalent mechanism, and a reciprocating carriage located below the tapes and on which the printed sheet is deposited by the said delivery-tapes, substantially as described.

406,717. HEAD-LIGHT SIGNAL ATTACHMENT. WILLIAM O. FISK, Moreland, assignor of one-third to Martha Terrell, Chicago, Ill. Filed Jan. 31, 1889. Serial No. 298,396. (No model.)



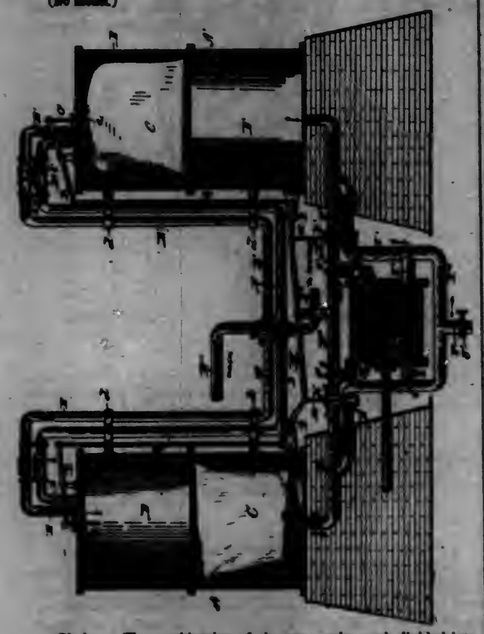
Claim.—1. In combination with the head-light casing of a railway-locomotive, a colored glass mounted in a frame, lugs on opposite sides of the frame having holes through them, rods secured to the head-light casing in front of the flame of the light and serving as guides for the lugs, springs combined with the rods to lift said frame, a pulley secured beneath a rod, and a cord fastened to a lower corner of the frame passing under the pulley and extending back into the cab of the locomotive, as and for the purpose stated.

2. The combination, with a railway-locomotive head-light casing formed with a slot in its upper part back of its white glass, of a colored glass mounted in a frame, a chamber covering the slot and made large enough to receive the frame, rods extending vertically from the bottom of the head-light casing to the top of the chamber, spiral springs encircling the rods, lugs on opposite sides of the frame having bearings for the rods, and a cord leading from a lower corner of the frame under the pulley back to the cab of the locomotive, substantially as and for the purpose stated.

3. The combination of the colored light D, mounted in the frame D', the lugs *d*, formed with holes through them and secured two and two to opposite sides of the frame, the head-light casing of a railway-locomotive having a slot made in its top parallel with and back of the white glass of the head-light and large enough to permit the

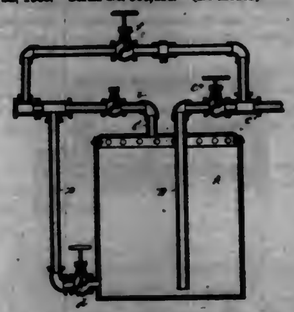
frame and lugs to pass through, the chamber C, covering the slot and being large enough to receive said frame, the rods *e e*, secured to the bottom of the head-light casing and the top of the chamber and passing through the holes in the lugs, the spiral springs *d' d'*, encircling the rods, the lug d^2, secured to the lower side of the frame, the pulley *c'*, secured to the lower side of the head-light casing, the hollow hand-rail A', and the cord d^3, fastened to the lug d^2, passing beneath the pulley and extending through the hand-rail back into the cab of the locomotive, substantially as and for the purposes specified.

406,718. APPARATUS FOR FORCING GAS THROUGH MAINS. JOHN S. FISH, Cheshire, Ga. Filed Nov. 27, 1888. Serial No. 291,963. (No model.)



Claim.—The combination of the two tanks, each divided into two compartments by a movable imperforate diaphragm, valved inlet and outlet pipes leading into the gas-compartments of the said tanks, an air-pump, valved pipes connecting the air-pump with the air-compartment of the said tanks, and valves for automatically reversing the flow of air through the pump, substantially as herein described.

406,719. APPARATUS FOR HEATING TIRES. JAMES W. FOSBIT, Chalmer Hill, Va., assignor of one-half to Edward H. Winston, same place. Filed Apr. 22, 1889. Serial No. 308,131. (No model.)



Claim.—1. In a tire-heating apparatus, the combination of a reservoir or tank, an air-supply pipe communicating therewith, an outlet-pipe, and the hydrocarbon-supply pipe D, entering the tank or reservoir below the surface of the liquid and communicating with the outlet-pipe, substantially as described.

2. In a tire-heating apparatus, the combination of a reservoir or tank, an air-supply pipe, an outlet-pipe, and the hydrocarbon-supply pipe D, entering the tank near the bottom and communicating with the outlet-pipe and provided with a cock or valve, substantially as described.

406,720. PROCESS OF TRANSFERRING PRINTS, &c. JOHN J. FOX, Flushing, N. Y. Filed May 15, 1888. Serial No. 310,570. (No specimens.)

Claim.—1. In the process of transferring a print of any description to an oil-painted surface, preparing the said surface by pouring over the surface methylic alcohol and then allowing it to evaporate, substantially as described.

2. The process of transferring a print of any description to a smooth oil-painted surface by preparing the surface by, first, pouring alcohol (methylic alcohol included) over the surface and allowing it to evaporate; second, smearing the surface with oil or grease, substantially as described.

3. The process of transferring a print of any description to a smooth oil-painted surface by, first, pouring methylic alcohol over the surface and allowing it to evaporate; second, smearing the surface with oil or grease; third, placing the print on the prepared surface and applying direct or frictional pressure thereto, substantially as described.

4. The process of transferring a print of any description to a smooth oil-painted surface by, first, pouring methylic alcohol over the surface and allowing it to evaporate; second, smearing the surface with oil or grease; third, placing the print on the prepared surface and the application of pressure thereto; fourth, saturating the print with any suitable chemical solution or water, and finally stripping the print from the said surface, substantially as described.

406,721. CAR-AXLE-BOX LID. LEONARD FREDERICK, Pittsburg, Pa., assignor to the Morris Box Lid Company, same place. Filed May 16, 1889. Serial No. 310,994. (No model.)



Claim.—1. A car-axle-box lid formed with an elastic or spring bulge or swell bounding or bordering the perforation for the pivotal bolt of said lid, substantially as described.

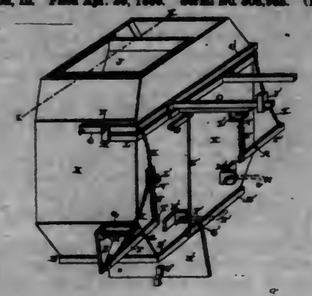
2. A car-axle-box lid formed of sheet spring metal and with an elastic swell or bulge at the pivotal end and a hole through said bulge, substantially as described.

3. A car-axle-box lid formed of sheet spring metal and with an outward bulge or corrugation transverse to its length at one end and with a hole through said bulge or corrugation, substantially as described.

4. In combination with a car-axle box, a lid formed of sheet spring metal and with an outward bulge at one end bounding or bordering a hole through said bulge, and a pivotal bolt inserted through said hole into the box and bearing with its head against the convex side of the bulge, substantially as described.

5. In combination with the car-axle box having the opening B and rib or shoulder C at the lower edge of said opening, a lid formed of sheet-steel, and with a tongue at one end having an outwardly-bulging transverse corrugation, and a hole through the same, and a bolt inserted through said hole into the box and bearing with its head against the convex side of the corrugation, substantially as described.

406,722. GRAIN-WEIGHING MACHINE. HORACE M. FOLWIDER, Redmon, Ill. Filed Apr. 30, 1888. Serial No. 308,962. (No model.)

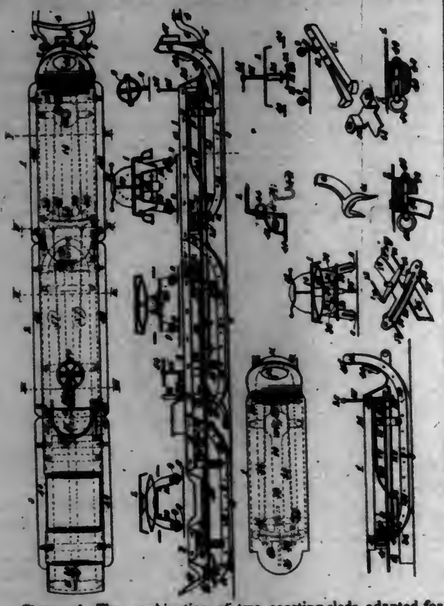


Claim.—1. The combination of the receptacle K, the bearings Q, the shafts R, the latches S, bottoms H', and the partially-revolving shaft G', with the trip-arms T, the springs secured to their inner ends, the chains secured to their outer ends, and the scale-beam, substantially as shown.

2. The combination of the receptacle K, the laterally-moving hopper placed in its upper end, suitable partially turning or rotating supports upon which the hopper is supported, a connecting mechanism, and the bottoms H', by means of which the hopper is moved from one side of the partition in the receptacle to the other, substantially as described.

3. The combination of the divided receptacle, the laterally-moving hopper, the cranks connected to the hopper, the shafts Z, to which the lower ends of the cranks are secured, the cranks D' F', the connecting-rod between the cranks, the partially-revolving shaft G' and the bottoms secured thereto, substantially as specified.

406,723. COASTING-SLED. ALBERT I. GALLAWAY, St. Louis, Mo. Filed Mar. 28, 1889. Serial No. 304,969. (No model.)



Claim.—1. The combination of two coasting-sleds adapted for connection together and one of them having the runners connected to its body by a fifth-wheel connection, substantially as and for the purpose set forth.

2. A sled-body connected to the runners by a pivot-connection, supporting-wheels tracking on the body, and a plate or bar on the runners, substantially as set forth.

3. A sled-body pivoted to the runners and having bearing thereupon by a block 30, connected to the body by a spring 29 and carrying wheels 31, tracking on a plate 20, secured to the runners, all substantially as set forth.

4. The combination, in a sled, of runners connected to the body by a pivot-joint, and a hand or tiller shaft 27, with hand-bar 28, connected to the runners, substantially as and for the purpose set forth.

5. The combination of a sled supported on runners fixed upon the body, a sled 1, connected to the sled 2 and in line therewith, and having its runners connected to the body by a pivot, rods 57, connected with the pivoted runners, and a hand wheel or bar 54, shaft 55, and cross-bar 56, to which the rods 57 are connected, substantially as and for the purpose set forth.

6. The sled-coupling composed of the bar 54, having a spring-hook 51 upon one sled and bracket 53 upon the other engaging together, substantially as set forth.

7. The combination of wheels 31 upon the sled-body, plate 20 upon the runners, pivotal connection between the body and the runners, a lug 32 upon the wheel-bearing 30, passing through a slot 33 in the plate, and pin 34, passing through the lug beneath the plate, substantially as set forth.

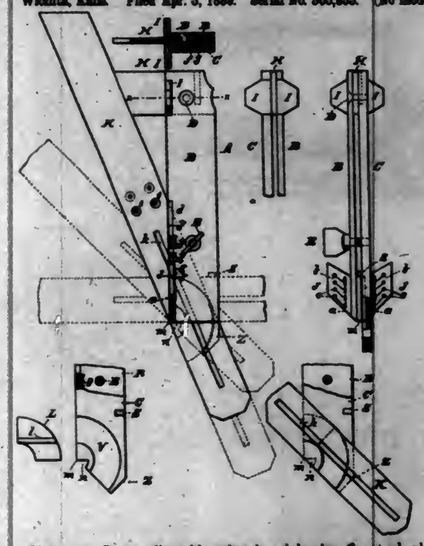
8. The combination, in a sled having the body and runners connected by a pivot, of wheels 31 upon the body, tracking on a plate 20 upon the runners, provided with a curved slot 33, a lug 32, working in the slot, with pin 34, and the cleats 38, substantially as and for the purpose set forth.

9. The starting-lever 67, connected to the sled by a fulcrum-pin 66, extending through a longitudinal slot 68 in the lever, allowing the vertical and oscillatory movements of the lever, for the purpose set forth.

10. The sled-runner formed of a longitudinally-slotted pipe, with a flat steel blade inserted in the slot, substantially as shown and described.

11. The steps 40, hinged to the sides of the sled with the brace-rods, constructed and operating substantially as set forth.

406,724. ADJUSTABLE MITER-BEVEL. MATTHIAS GAYER, Wichita, Kans. Filed Apr. 3, 1889. Serial No. 305,853. (No model.)

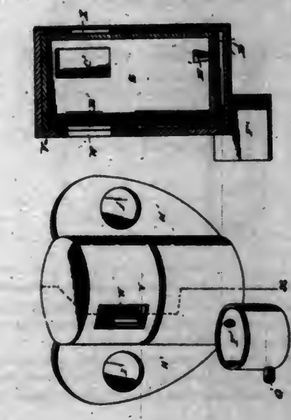


Claim.—1. In an adjustable miter-bevel having the stock-plates B and C, the miter-flanges having their bevel edges extending back from the center point *m* and having the indicator-marks and perforations for miter-bevels of less angular opening, substantially as specified.

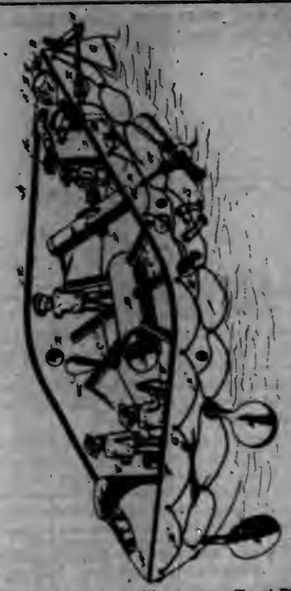
2. An adjustable miter-bevel consisting of the stock-plate B, having the clamp-screw E and right-angle stop S, the slotted stock-plate C, having the arc-bearing extension Z beyond its center point, the try-square blade, clamp-screw, the slotted bevel-blade having rabbet-markers, and the slide, substantially as specified.

406,725. SUBMARINE BOAT. JEAN B. GERBER, San Francisco, Cal. Filed Jan. 3, 1888. Serial No. 259,753. (No model.)

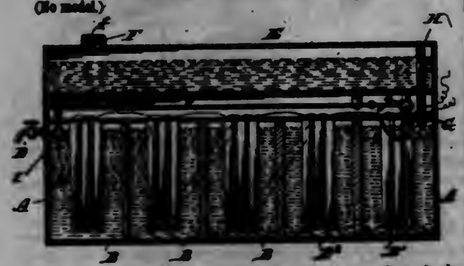
Claim.—A submarine life-saving boat having a closed deck fore and aft, except at the point Y, a stationary vertical cylinder V, provided with lateral wings H', forming sealed partitions between the interior of the boat and the exterior chamber Y, the windows I in said wings, the inlet *x*, and the outlet W, provided in said cylinder, the internal rotative cylinder Z, provided with apertures C' and B', and an air-inlet and an air-storage drum communicating with the internal cylinder through its bottom, all constructed and adapted to operate as specified.



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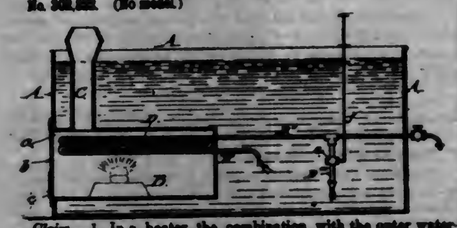
406,726. GALVANIC BATTERY. HENRY GOSWITH, Philadelphia, Pa., assignor of three-fourths to Charles W. Kennedy and Ransom F. Rankin, both of same place. Filed Apr. 16, 1889. Serial No. 307,309. (No model.)



Claim.—1. The combination of the battery, the supply-tank, the outlet or overflow pipe, the pipes connecting the several cells of the battery to one another, the vent-pipe, the feed-pipe having a valve for opening or closing it, and the lever jointed at one end to said valve and having a hydrometer at its other end, substantially as and for the purpose set forth.

2. The combination, with the cells and the automatically-operating feed-tank, of the regulating device consisting of the hydrometer, in combination with the lever and valve for opening or closing the outlet of the feed-tank, substantially as and for the purpose set forth.

406,727. WATER-HEATER. JOSEPH HACKER, LOUIS W. COLBY, and JOHN W. HEATON, Waterloo, Iowa. Filed Mar. 11, 1889. Serial No. 302,882. (No model.)



Claim.—1. In a heater, the combination, with the outer water-tank, of the longitudinally-disposed furnace supported therein above its bottom and having one end opening through one end of the outer tank, a door closing said end, and the coil D within the furnace, having its ends D' D'' passing through the inner end of the furnace, one of said ends communicating with the water-tank and the other extending through one of the walls of said tank and having a valve exterior thereof, whereby water may be drawn directly from the coil, substantially as described.

2. The combination, with the outer tank and the furnace therein having an open end closed by a door and provided with the flue C, of the coil D within the furnace, having its opposite ends D' D'' passing through the rear of the furnace at different levels, one of said ends communicating with the water-tank and the other extending through the outer tank and provided inside of said tank with the downwardly-extending branch pipe D''', the valves in the end D'' and branch pipe D''', and the operating-rod connected with the valve-stem of the valve in the branch pipe, substantially as described.

406,728. PROJECTILE. HENRY ST. J. HALFORD, Widow, and WILLIAM H. HALFORD, Redland, Bristol, assignors of one-third to Arthur Greenwood, Leeds, England. Filed May 5, 1888. Serial No. 272,902. (No model.)



Claim.—A projectile or bullet having a solid metal core formed of lead or alloy inclosed in a case of copper or other metal harder than lead, said projectile or bullet having its solid core protected against fusing by friction in a gun-barrel through the medium of an additional thickness of substance interposed between the core and case and which is of slower conductivity than the solid core, substantially as described.

406,729. DOOR-PLATE. CHARLES R. HARRIS, Williamsport, Pa. Filed May 22, 1888. Serial No. 274,875. (No model.)



Claim.—1. A door-plate formed of two or more parts and which are made extensible, according to the length of the name, substantially as shown.

2. The combination of the two end pieces, central connecting-pieces for uniting the end pieces together and upon which the end pieces can be adjusted in relation to each other, and the letter and division plates out of which the name is formed, substantially as shown.

3. The combination of the end pieces of the frame and the connecting-pieces by which they are adjustably united, the connecting-pieces being adapted to receive and hold the letter and division plates the same as the end pieces, substantially as described.

4. The combination of the end pieces of the frame having their inner edges turned inward, the connecting-pieces having both their edges turned inward and adapted to catch over the two edges of the frame, and the letter and division plates having their ends turned inward and adapted to catch over the turned-in edges of the parts of the frame and the connecting-pieces, substantially as specified.

406,730. LOCK-HINGE. LEWIS R. HARVIN, Frankfort, Ky. Filed Dec. 17, 1888. Serial No. 293,770. (No model.)



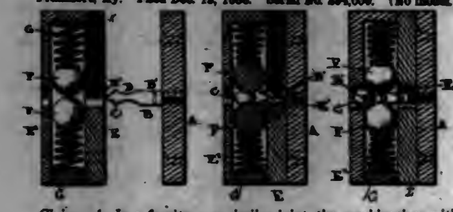
Claim.—1. A hinge having a catch rigidly affixed to and projecting from the face of one leaf at a distance from the pintle, and the opposite hinge-leaf mortised opposite said catch and having a spring-clasp engaging said catch only when the hinge is closed, substantially as described.

2. The leaf of a hinge having a rigid catch projecting from the face thereof at a distance from the pintle, and the opposite leaf having a slot or mortise therein at a position opposite the catch, and a pair of spring-pressed balls or cylinders behind said mortise in position to engage the catch only when the hinge is closed, all in combination, substantially as described.

3. The combination, with one leaf of a hinge, of a catch projecting from the face thereof, the opposite leaf of the hinge having a mortise through which said catch passes when the hinge is closed, and a positive locking-piece which may engage said catch and lock the hinge closed, as set forth.

4. The combination, with the leaves of a hinge, of a catch on one leaf, a friction-clasp on the other leaf operating on said catch, and a positive lock, also operating on the catch, substantially as described.

406,731. COUPLING FOR FURNITURE. LEWIS E. HARVIE, Frankfort, Ky. Filed Dec. 19, 1883. Serial No. 294,059. (No model.)



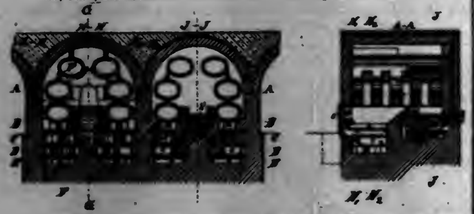
Claim.—1. In a furniture or similar joint, the combination, with a coupling-plate, of a projecting catch having an enlarged head and inclined neck behind the same, a second perforated plate having its face bearing on the first when the coupling is closed, and a pair of spring-pressed clasps behind said second plate in position to bear on the inclined neck of the catch, substantially as described.

2. In a furniture-joint, the combination, with a plate having a projecting catch provided with enlarged head and inclined neck, of a second plate having a hole through which said catch passes, so that the two plates abut when the joint is closed, and spring-pressed balls or cylinders connected to said second plate in position to bear on the inclined neck at both sides of the head of the catch, all substantially as described.

3. In a furniture-joint, the combination of a coupling-plate having a projecting catch with enlarged end and inclined neck, a second perforated plate which receives the catch and bears on the first when the coupling is closed, spring-pressed clasps connected to the second plate in position to bear on the inclined neck of the catch when the coupling is closed, and a positive lock, also in position to engage said catch and hold the coupling-plates in contact, all substantially as stated.

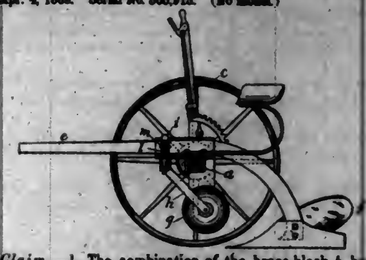
4. In a furniture-joint, a coupling-plate having a catch adjustably connected thereto, said catch having enlarged head and inclined neck, and a second perforated plate which bears on the first when the coupling is closed, said second plate having spring-pressed clasps in position to engage the inclined neck of the catch when the coupling is closed, all combined and relatively arranged substantially as described.

406,732. RETORT AND MUFFLE FURNACE. JULIUS T. HAHN and HERMANN M. VACHERON, Dresden, Saxony, assignors to the Stettiner Chamottefabrik Actien-Gesellschaft, Stettin, Prussia, Germany. Filed Oct. 10, 1885. Serial No. 179,499. (No model.) Patented in Germany May 26, 1883, No. 23,226; in England May 23, 1884, No. 8,144; in Belgium June 16, 1884, No. 66,294; in Sweden July 26, 1884; in Norway Aug. 5, 1884; in Denmark Oct. 30, 1884, No. 944, and in Spain Nov. 20, 1884, No. 6,423.



Claim.—The fire-place having air-inlets *i* below the grate, and the combustion-chamber, also having an air-inlet *l* behind the bridge-wall, in combination with a series of air-heating channels h^3 below the combustion-chamber and leading to the inlet *l*, air-flues *h h'*, communicating with both the air-inlets to the fire-place and with the air-flues h^2, and the air-inlet *l* to the combustion-chamber, and smoke-flues intermediate of these flues *h h'*, all substantially as described.

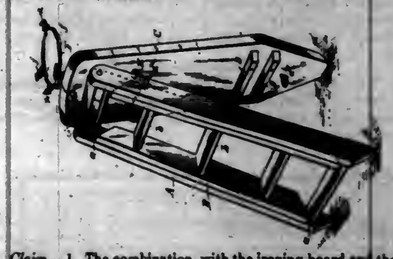
406,733. SULKY-PLOW. CALVIN M. HERVEY, Fulton, Ark. Filed Apr. 4, 1888. Serial No. 205,913. (No model.)



Claim.—1. The combination of the brace-block *k*, having the groove 3, flange 4, extension 5, having the groove 7 and perforations *j* and 9, and the center piece having the perforations 10 and the half-sleeve *l'*, with axle *a*, fitting in said groove 7, seat-spring *n*, fitting on the upper face of said extension, U-bolt 8 and nuts binding the whole together, beam *c*, fitting in slot 3, half-sleeve *l*, fitting on half-sleeve *l'*, and U-bolt *m* and nuts, binding the whole together, substantially as shown and described.

2. The cast-iron combination-block provided with the flanges 2 and groove 3, flange 4, extension 5, having the flanges 6, groove 7, perforations *j* and 9, and the center piece having the perforations 10 and half-sleeve *l'*, said block adapted to combine with said bolt in place the axle *a*, seat-spring *n*, beam *c*, and half-sleeve *l* or pin *i*, in conjunction with the U-bolts *m* and 8, all substantially as shown and described.

406,734. COMBINED STEP-LADDER, IRONING-BOARD, AND STAND. REUBEN HOOVER, Boone, Iowa. Filed Jan. 25, 1889. Serial No. 297,807. (No model.)



Claim.—1. The combination, with the ironing-board and the support, as A B, having steps, of the rest or stand F and the hinge connecting the said stand with the ironing-board and having a pivotal support, whereby the said stand can be turned end for end and thrown back, substantially as hereinbefore set forth.

2. The combination, with the combined ironing-board and step-ladder, of the stand and the hinge connected by pivot with the board and fastened to the said stand, substantially as and for the purpose described.

3. The combination, with the ironing-board, of the reversible rest or stand having feet, the said feet having offsets formed therein, substantially as and for the purpose described.

406,735. FORK. DANIEL J. HUGHES, East Boston, Mass., assignor of one-half to Frank. D. Brivogio, same place. Filed Apr. 10, 1889. Serial No. 306,660. (No model.)

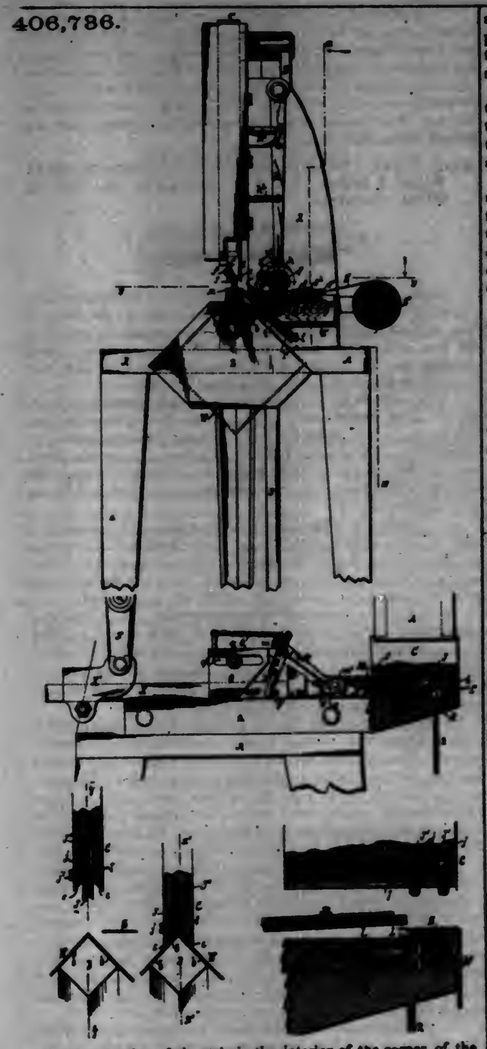


Claim.—The herein-described fork having the intermediate circular tines and the outer elliptical tines of greater width than the circular tines, whereby an arch is formed between the outer tines which rest upon the cob when in use, substantially as described.

406,736. MACHINE FOR APPLYING FASTENING-STRIPS TO BOXES. GORAY L. JARDEN, New York, N. Y. Filed Jan. 26, 1888. Serial No. 262,005. (No model.)

Claim.—1. The combination, with a die and a recessed support co-operating to lay a fastening-strip upon the exterior of the corner of an interposed box, of the slide K, extending into the recess in the support, a supporting-segment L, connected with said slide, and a folder M, moving in a direction opposite to said slide for laying the

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overlapping portion of the strip in the interior of the corner of the box, substantially as shown and described.

2. The combination, with a die and a recessed support co-operating to lay a fastening-strip upon the exterior of the corner of an interposed box, of the slide K, extending into the recess in the support, a spring-pressed supporting-segment L, pivoted to the slide, and a folder M for laying the overlapping portion of the fastening-strip in the interior of the corner of the box, substantially as shown and described.

3. The combination, with a die and a recessed support co-operating to lay the fastening-strip upon the exterior of the corner of the interposed box, of a reciprocating slide extending into the recess in the support, a supporting-segment connected with the interior end of the slide, and a folder having a translatory and oscillatory movement, substantially as shown and described.

4. The combination, with a die and a recessed support co-operating to lay the fastening-strip upon the exterior of the corner of the interposed box, of a slide extending into the recess in the support, a spring-pressed supporting-segment connected with the interior end of the slide, a folder M, a link-lever and pin connection of the same with the slide, the foot-lever D, having a cam-surface *d'*, and a lever N, having a roller-stud N', engaging said surface *d'*, said lever being connected with the slide, substantially as shown and described.

5. The combination, with a vertically-reciprocating die and a recessed support, of the slide extending into the recess in the support, a supporting-segment connected with the interior end of the slide, and a folder M, said slide and folder being actuated to lay the overlapping end of the strip in the interior of the corner of the box when the die is upon the corner of the box, substantially as shown and described.

6. The combination, with the die and support co-operating to lay the fastening-strip upon the corner of a box, of a yielding clamp in the die, said clamp being provided with diverging faces constructed to hold a strip against the corner of the box while said strip is being severed, substantially as described.

7. The combination, with the die and support co-operating to lay the fastening-strip upon the corner of a box and a yielding clamp fitted into a recess in the die and constructed to hold a strip against the corner of the box while said strip is being severed, of a feeding device, substantially as described, for feeding the strip between the die and support and a cutter for severing the strip, substantially as described.

8. The combination, with the main frame A, the angular box-support B, the reciprocating die C, and the feeding and cutting devices, substantially as described, of the vertical gage R, fitting upon and movable along the length of the box-support, serving as an abutment for the edges of a box and provided with an attached horizontal arm resting on the main frame, and having a longitudinal slot lengthwise adjustable and adapted to be rigidly fixed in a stationary position by a screw-connection with said main frame, substantially as described.

9. The combination, with the die and a recessed support co-operating to lay a fastening-strip upon the interior of the corner of an interposed box, of the longitudinally-adjustable slide K, extending into the recess in the support, a supporting-segment L, connected with the slide, and an adjustable folder M, substantially as shown and described.

10. The combination, with a die and a support having diverging faces and co-operating to lay a fastening-strip upon the corner of an interposed box, a cutter, a feeding device, substantially as described, and a folder having a vibratory movement in the direction of the movement of the die and a translatory movement perpendicular to the path of the same, substantially as shown and described.

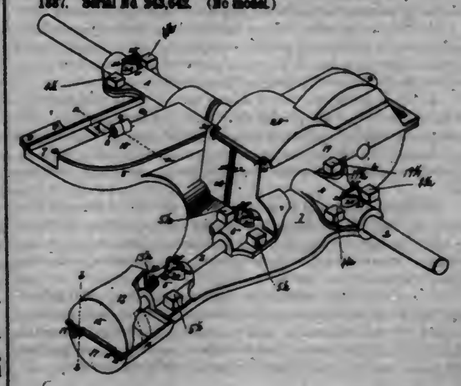
11. The combination, with a die and a support co-operating to lay a fastening-strip upon a box, of mechanism, substantially as described, for suitably severing and feeding the strip and rendering the same adhesive, and a presser-plate *t*, made to engage said box, substantially as described.

406,737. SUBSOIL-HOE. JOHN R. JOHNSON, Newton, Ill. Filed Aug. 14, 1888. Serial No. 282,715. (No model.)



Claim.—As an improved article of manufacture, the hereinbefore-described subsoil-hoe, composed of a handle having a kerf in its lower end, and the blade composed of a thin strip of spring-steel of uniform thickness and of a width corresponding with the diameter of the handle bent between its ends on an oblique line and having one edge beveled to an edge, one end of the blade being inserted in said kerf and held therein by rivets, substantially as specified.

406,738. MOWER-FRAME. JAMES H. JOHNS, Rockford, Ill., assignor to the Emerson, Talcott & Company, same place. Filed July 7, 1887. Serial No. 243,642. (No model.)



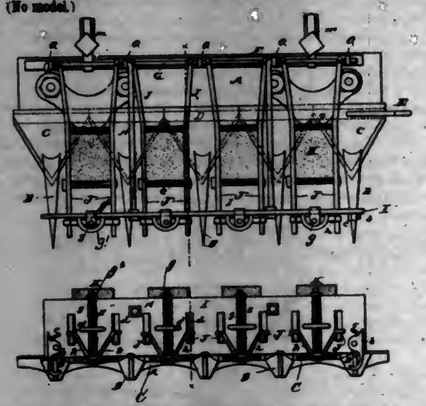
Claim.—1. In a mowing-machine frame, the combination of a tool-box, a lid to the tool-box, and a hinge connecting the lid to the box, the hinge consisting of a pintle and a hook, one of these two parts being formed integral with the lid, and the hook being held in engagement with the pintle by a removable part of the frame, substantially as set forth.

2. In a mowing-machine frame, the combination of a tongue, a tool-box, a lid for the tool-box, and a hinge for connecting the lid to the box, the said hinge consisting of a pintle and a hook, one of the parts being formed integral with the lid and the other locked to the frame by the tongue, substantially as set forth.

3. In a mowing-machine frame, the combination of a tongue removably secured to the frame, a tool-box, a tool-box lid, and a hinge for connecting the tool-box lid with the box, the said hinge consisting, essentially, of a pintle formed integral with the lid, and a hook having a shank bent to conform to the tongue-seat in the frame, whereby the securing of the tongue to the frame locks the hook of the hinge against displacement, substantially as set forth.

4. The combination, in a mower, of the frame constructed to form the lower portion of the gear-case, the upper portion of the said case composed of two sections, the lower section of the said upper portion having a split wall and perforated hinge-ears at opposite ends of the said wall, the top section of the upper portion being a lid with projecting pintles to enter the perforated ears in the lower section, the split wall springing apart in order to allow the pintles to be secured in the ears, substantially as set forth.

406,739. MOWING-MACHINE-KNIFE GRINDER. CLEMENT A. KELLOGG, East Carmel, Ohio. Filed Feb. 15, 1889. Serial No. 299,954. (No model.)



Claim.—1. The combination, with a mower, of the spring grindstone-holders, their attaching-frame, the slotted plate connected to the arms of said frame and provided with pivoted hooks engaging the finger-bars, and buttons engaging said hooks for securing said holders in position upon the finger-bar, whereby the grindstones are held between the guards to engage the edges of the cutters as they are reciprocated during the motion of the mowing-machine over the ground substantially as specified.

2. The combination, with the finger-bar of a mowing-machine, of a detachable spring grindstone-holder, its attaching-frame, the plate connected to the arms of the attaching-frame, and a button-and-hook connection between said plate and finger-bar, substantially as specified.

3. The combination, with a mower, of pivoted spring-holders, grindstones, and limiting-guides consisting of yokes engaging said holders, preventing lateral motion of said holders, while allowing the vertical motion thereof, substantially as specified.

4. The combination, with a mower and clamps to hold the same to the cutter-bar, of the pivoted detachable grindstone-holders, their springs, the limiting-guides consisting of yokes engaging said holders, preventing lateral motion of said holders, and the fastenings whereby the holders are secured to the guards in front, substantially as specified.

5. The combination, with a mower, of the slotted front plate or guide, the detachable pivoted clamping-holders engaging said plate or guide, springs to press the holders down to their work, and fastenings to secure the holder-frame to the cutter-bar of a mowing-machine, substantially as specified.

6. The cutter-bar grinder for mowers, consisting of the detachable frame and its clamps and front fastenings, the pivoted clamping-holders for the grindstones, and the guide-slots of the frame-plate, through which the straps of said holders extend, the spring-guides and yokes, and the pressure-springs, substantially as specified.

7. A grinder for cutter-bars of mowers, consisting of the pivoted spring-holders and beveled grindstones projecting downward from said holders between the guards of the cutter-bar, and yokes engaging said holders permitting vertical play of said spring-holders, but preventing lateral movement, said attachment being designed to be detachably secured to the finger-bar to grind the cutters thereof as they are reciprocated during the motion of the machine over the ground, substantially as specified.

406,740. TOP DRAWING-ROLL FOR SPINNING-MACHINES. WARREN T. KELLOGG, Cohoes, N. Y. Filed Mar. 14, 1888. Serial No. 267,144. (No model.)



Claim.—1. The spindle for a drawing-roll of a spinning-machine, consisting of a shaft formed with a bearing-surface for the revoluble boss, and end supports consisting of end caps detachably secured to the ends of the shaft and formed with their inner ends of greater diameter than the diameter of the bearing-surface of the shaft, substantially as described, and for the purpose specified.

2. The spindle for a drawing-roll of a spinning-machine, consisting of a shaft formed with a bearing-surface for the revoluble boss and having screw-threaded sockets in the ends, and end supports consisting of end caps of larger diameter than the bearing-surface of the shaft and formed with centrally-projected screw-stems to engage the threaded sockets of the shaft, substantially as described, and for the purpose specified.

3. A spindle for a top roll of a spinning-machine, consisting of a shaft formed with a bearing to take the revoluble boss and having diametrical holes formed through the said bearings, in combination with a saturable packing arranged in said holes with the ends flush with the periphery of the bearing, substantially as described.

4. A spindle for a top roll of a spinning-machine, consisting of a shaft formed with a bearing to take the revoluble boss and having diametrical holes formed through the said bearings, said holes having chamfered edges, in combination with a saturable packing arranged in said holes with the ends flush with the periphery of the bearing, substantially as described.

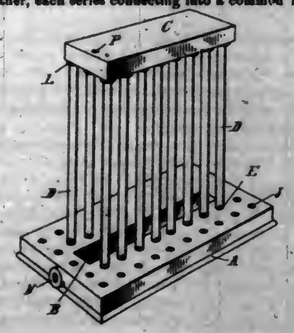
5. A spindle for a top roll of a spinning-machine, consisting of a shaft A, formed with bearings having diametrical oil-wells for the revoluble bosses, a middle portion 1, of greater diameter than the said bearings and terminating in shoulders 3, and provided with screw-threaded sockets in the ends, and bearings consisting of end caps having threaded projections to engage the threaded sockets of the arbor and annular shoulders extending beyond the circumference of the boss-bearings on the shaft, substantially as described.

6. The combination of the spindle A, having boss-bearings provided with oil-holes projected diametrically through the said bearings, and packing arranged in said holes with the ends flush with the surface of said bearings, a middle portion of greater diameter than the said bearings and provided with threaded sockets in the ends, bearings consisting of end caps having threaded stems projected from their inner faces, and annular shoulders extending beyond the face of the bearings, and bosses formed with counterbored ends to set over the annular shoulders of the end caps, substantially as described.

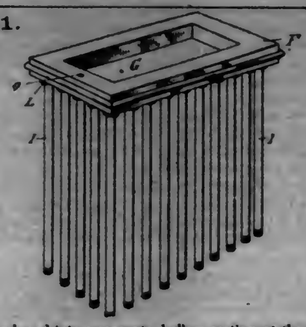
7. The combination, with the spindle having oil-holes diametrically arranged through it, and detachable end pieces consisting of caps of larger diameter than the spindle secured to the ends of the spindle, of bosses having counterbored ends to project over the inner edges of the detachable end caps, substantially as described.

406,741. RADIATOR. PATRICK J. KENNEDY, Detroit, Mich. Filed Apr. 11, 1889. Serial No. 306,884. (No model.)

Claim.—1. In a radiator consisting of two series of piping, one within the other, each series connecting into a common hollow cast-



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ing at one end and into a separate hollow casting at the other end, substantially as described.

2. The base A, having two series of screw-threaded apertures, the central cast top C, the outer cast top F, and two series of radiating-pipes connecting the two-part top with the base, substantially as described.

3. In a radiator, the base A, having two series of screw-threaded apertures and a central aperture, the central cast top C, the outer cast top F, the space H between two series of radiating-pipes connecting the two-part top with the base, and a suitable air valve or valves in said top, substantially as described.

4. In a radiator, a central cast hollow top and an outer cast hollow top, each having a series of connecting-pipes, each pipe secured to the top by means of a long screw-thread and a lock-nut, a screw-thread on the lower end, and a base common to both series of pipes, substantially as described.

406,742. TIRE FOR WHEELS. JAMES H. KLIPSTEIN, Buchanan, Va. Filed Apr. 13, 1889. Serial No. 307,102. (No model.)



Claim.—1. In a vehicle-wheel, a tire of continuous coiled wire or band-steel surrounding the rim of the wheel, substantially as specified.

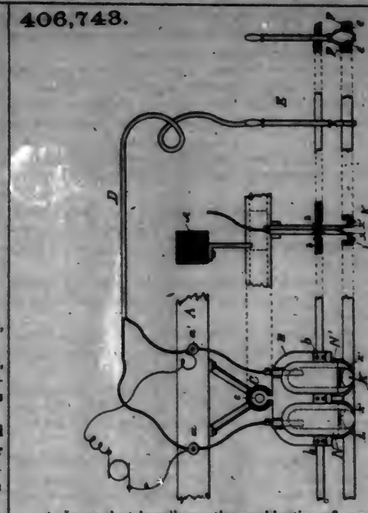
2. A vehicle-tire of continuous elastic coiled steel wire or band-steel, substantially as specified.

3. The combination, with a tire of continuous coiled wire or band-steel, of the nuts secured in the ends of the tire and the bolt swiveled to one of said nuts and adapted to engage the other, substantially as described.

4. The combination, with a tire, of the nuts secured in the ends thereof, the bolt swiveled to one of said nuts and adapted to engage the other and provided with a reduced portion *d*, and a key having a slot conforming to a configuration of the sides of the reduced portion and provided with a projection to engage a recess in a felly, substantially as described.

5. The combination of the tire of continuous coiled wire or band-steel having its ends suitably secured together and an elastic cord passing through said end around the felly, substantially as described.

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4. In an electric railway, the combination of a supply-conductor and the terminal of a propelling electric motor, with a connection therefrom leading to a contact device normally in contact with the supply-conductor, and a supplemental flexible conductor also connecting with the terminal and normally out of contact with the said conductor, but adapted to be placed manually in engagement therewith.

5. In an electric locomotive, the combination of the propelling-motor and two contact devices, both in electrical connection with one pole of the motor, one of said contact devices being normally in engagement and the other normally out of engagement with a supply-conductor.

6. In an electric railway, the combination of a supply-conductor and a propelling electric motor with a contact device normally in engagement with the conductor and a supplemental contact device adapted to be placed in engagement with the said conductor, but normally out of contact therewith, both said contact devices being electrically connected to one pole of the motor.

7. In an electric railway, the combination of the vehicle, the propelling-motor, and a supply-conductor with a contact device removed from and independent of the movement of the vehicle and a flexible electrical connection between the contact device and the motor, whereby the motor-circuit can be completed after the car has left the track.

8. In an electric railway, the combination of a vehicle, a propelling-motor, and an exposed supply-conductor extending along the line of way with a contact device independent of the movement of the vehicle and in engagement with the conductor at a substantially fixed point and an electrical connection between the contact device and the motor.

9. In an electric railway, the combination of a vehicle and a propelling-motor with a conduit, a supply-conductor therein, a contact device engaging with the conductor in the conduit detached from and not partaking of the movement of the vehicle, and a yielding electrical connection between the contact device and the vehicle.

10. The combination of a vehicle, a motor, a line-conductor, and an electrical connection adapted for normal traveling contact with the line-conductor, with a flexible conductor longer than the normal connection between the motor and line-conductor connected to a terminal of the motor and placed in temporary connection with said line-conductor.

11. A manual contact device for use upon an electric railway and disconnected from the vehicle, except through a flexible conductor comprising a bared contact-surface adapted to be placed in engagement with a supply-conductor, and a support for the contact-surface, having an insulated handle.

12. The combination, with a conduit and an inclosed conductor, of a manual contact device disconnected mechanically from the vehicle and comprising a contact-conductor adapted to extend into the conduit, an insulating-handle outside the conduit, and a flexible conductor for connection with a translating device.

13. In an electric railway, the combination, with a supply-conductor inclosed in a slotted conduit, of a contact-conductor smaller in diameter than the width of the slot, so as to turn therein, and an offset at its lower end having one dimension smaller than the width of the slot, so as to be withdrawn therethrough.

406,744. ELECTRIC RAILWAY. WALTER H. KNIGHT, New York, N. Y. Original application filed Mar. 13, 1886, Serial No. 195,133. Divided and this application filed Dec. 22, 1888. Serial No. 294,441. (No model.)

Claim.—1. The combination, with an electric locomotive having a contact device adapted to normally maintain a traveling connection between the stationary supply-conductor and the motor of the locomotive, of a supplementary contact device having a flexible connection with the motor and adapted to be manually operated to connect with the said supply-conductor.

2. The combination, with an electric locomotive and a supply-conductor inclosed in a conduit, of an intermediate contact device extending into the conduit and a supplementary manual contact device having a flexible connection with the locomotive and having one dimension smaller than the opening in the conduit, so as to be inserted and withdrawn therethrough at will.

3. In an electric railway, the combination, with a terminal of a propelling electric motor, of a contact device adapted to normally maintain a traveling electrical connection between the motor and a supply-conductor, a supplemental flexible conductor leading from said terminal, and a manual contact device thereon adapted to be placed in connection with a supply-conductor.

14. In a current-collector for electric railways, the combination of a common frame or support with two independent insulating-panels secured thereto and a conducting-core in each panel.

15. The combination of the frame having the three projecting legs and the contact-conductors supported between adjacent legs.

16. The combination of the frame having a plurality of legs in line with one another and contact-conductors in the spaces between adjacent legs.

17. The combination of two insulated conductors having a common frame with an intermediate metallic connecting-piece supporting the conductors.

18. The combination, with the two insulated conductors extending through the slot of the conduit, of protecting metallic pieces before and behind extending into the slot and a corresponding intermediate protecting-piece.

19. The combination, with the two insulated conductors extending into the slot of a conduit, of a surrounding plow-frame having an intermediate metallic portion.

20. In a current-collector, the combination of a common frame, two guides thereon, and two insulating-panels containing the contact-conductors engaging the said guides.

21. In a current-collector, the combination of the common frame or support, the projecting legs extending down therefrom, the two insulating-panels and contact-conductors, and guiding devices between the panels and the legs.

22. In a current-collector, the combination of the common frame having two recesses therein open at their lower ends, insulating-panels adapted to slide into said recesses, and contact-conductors in said panels.

23. In a current-collector for electric railways, the two insulated conductors and a common frame having an intermediate portion between the conductors, in combination with a contact-shoe in circuit with each conductor, but extending in an opposite direction from their supports.

24. In an electric railway, the combination of a conduit and the plow consisting of a common frame, two insulating-panels, each inclosing a contact-conductor extending down into the conduit in line with the slot, and contact-pieces extending laterally from said conductors.

25. In a current-collector, the combination of the common frame and the two insulated contact-conductors therein with the pivoted contact-shoes projecting in opposite directions.

26. The combination of the insulated conductors of opposite polarity and a common protecting-frame therefor with a contact-shoe pivoted directly to each of said conductors.

27. The combination, in a current-collector, of the common frame, two insulated contact-conductors carried thereby, two contact-shoes depending below the conductors, respectively, and an insulating projection behind each shoe.

28. The combination, in a current-collector, of a supporting-frame having two or more projecting legs, an insulating panel and conductor included between the said legs, and an electrical connection from the said conductor extending through the frame.

29. The combination of a metallic frame or support, an insulating panel and conductor held therein, and an insulated electrical connection from the said conductor extending through the frame.

30. The combination, with a plow-frame, of an insulating-bushing through the upper part thereof, a connecting-rod extending through the said bushing, and a conducting-core leading to the contact device, with which core the said rod connects.

31. In a contact device for an electric railway, the combination of a frame or guard having depending legs, with an insulating-panel inclosing a connecting-core adapted to be inserted through the opening between said legs and guided thereby, and a connection with the said core extending through the upper part of said frame, but insulated therefrom.

32. The combination, in an electrically-propelled vehicle, of a transverse guide, a contact device for a supply-conductor inclosed in a slotted conduit engaging therewith, having a frame or guard to which the contact-conductor extending through the slot is attached, and an electrical connection leading from said contact-conductor at a point above the said frame or guard to a fixed point of the vehicle.

33. In a contact device for an electric railway, the combination of a frame or guard having depending legs, an insulating-panel adapted to be inserted between said legs and secured thereto, and a conducting-core in said panel having a contact-piece at one end and at the other end a connecting device.

34. The combination, with the plow-frame, of the flat conducting-core insulated therefrom and a contracted conductor extending from the upper end of said core through the frame for connection with the propelling-motor.

35. The combination of an insulated protected conductor extending through the slot of a conduit with a pivoted shoe in circuit with said conductor and having a contact-piece connected to its support with an intermediate air space.

36. In a contact device for an electric railway, the combination, with a metallic frame or guard, of a conducting-core therein extending below its insulating-sheathing to a contact-piece, and the said insulating-sheathing wholly inclosing the said core to a point below the said frame or guard.

37. The combination, with the conduit and the insulated conductor adapted to extend into the conduit, of a permanent frame or guard therefor connected to the vehicle and wearing-pieces attached to the frame and extending into the conduit.

38. In an electric railway, the combination of a slotted conduit inclosing a supply-conductor, a plow frame or support connected to the vehicle, a contact-conductor carried by said support, and a removable wearing-guard fastened to the support independently of the conductor.

39. In an electric railway, the combination of a slotted conduit inclosing a supply-conductor, a collector-support carrying a contact-conductor, and removable guard-plates along the edges of the support for protecting the same.

40. The combination of the supporting-piece connected to the vehicle and extending down into the conduit with a conductor carried thereby and a wearing-piece between the side of the conduit and the support secured to said support.

41. The combination of the conduit, the plow-frame having two or more projecting legs, and the insulated conductor with a removable guard attached to each leg and extending into the conduit.

42. The combination of the plow-frame having two or more legs extending down through the slot of a conduit and guard-plates protecting each leg from wear against the conduit.

43. The combination of a plow or current-collector extending through the slot of a conduit and a guard let into the same, so that their outer surfaces are substantially flush.

44. The combination of a contact-conductor extending into a slotted conduit with a protecting-piece and a removable wearing-guard substantially flush with the outer surface of the protecting-piece.

45. The combination of the plow-frame or guard extending into a slotted conduit and a contact-conductor carried thereby with removable wearing-guards let into the frame substantially flush with its outer surface.

46. In a current-collector, the combination of the conductor extending through the slot of a conduit with a plow-frame having an exposed panel of insulating material in which the said conductor is inclosed, detachable wearing-guards on the frame extending into the conduit, and a support for the frame permitting transverse movement relatively to the vehicle.

47. The combination of the transverse guide, the plow-frame movable along the same, and the wearing-pieces attached to the frame.

48. The combination of the transverse guide, the plow-frame engaging therewith and carrying an insulated conductor with an electrical connection at its upper end, permitting movement of the conductor, and detachable wearing-pieces attached to the frame and extending into the slot of the conduit.

49. In an electrically-propelled vehicle, the combination of a transverse guide independent of the axle, a conduit, and an inclosed conductor with a plow movable freely along said guide.

50. In an electric railway, the combination of a conduit, a conductor inclosed therein, a transverse guide independent of the car-axle, a contact device for the conductor, and a connection between the contact device and the vehicle movable freely along said guide.

51. The combination of a transverse guide independent of the car-axle, a contact device, a mechanical connection between the contact device and the vehicle movable freely along said guide, and an independent electrical connection between the contact device and motor.

52. The combination of a conduit and inclosed conductor with a transverse guide upon a vehicle independent of the axle, a contact-plow movable freely along said guide, and a flexible electrical conductor between the plow and motor.

53. The combination of a vehicle, a transverse guide independent of the axle, a conduit and inclosed conductor with a common frame movably connected to said guide, and two contact devices connected to the frame and extending into the conduit.

54. The combination, with a contact device for an electric locomotive, of a moving head attached thereto and a transverse guide extending over the path of movement of said head and embracing the same, whereby the engaging-surfaces are protected.

55. In an electric railway, the combination, with a supply-conductor inclosed in a conduit beneath the surface of the roadway and a vehicle upon the roadway, of an intermediate contact device, a moving head therefor, and a transverse guide beneath the vehicle extending over the path of movement of said head and embracing the same, whereby the engaging-surfaces are protected from mud and dust.

56. The combination of a conduit, an inclosed conductor, a transverse guide upon the vehicle, and an insulated protected contact-conductor extending into the conduit and movable along said guide to compensate for irregularities in the slot, and a contact-piece in circuit with said conductor and movably attached to its support.

57. The combination of a vehicle, a transverse guide thereon, a conduit and inclosed conductor with an insulated protected contact-conductor extending into the conduit and movable along said guide, and a contact-piece in circuit with said conductor and movably connected to its support through an intermediate spring.

58. The combination of a common plow-frame, two conductors therein, and contact devices movably attached to their supports, the said frame having bearings permitting movement relatively to the vehicle.

59. The combination of a vehicle, a transverse guide thereon, and a common frame carrying insulated contact-conductors and movable along said guide with two pivoted contact devices having movements independent of the frame.

60. The combination of a transverse guide upon a vehicle with a current-collector movable along said guide and consisting of a common frame or guard, two insulating-panels, and a contact-conductor inclosed in each of said panels.

61. The combination of an electrically-propelled vehicle, a conduit outside the track-rails, and a supply-conductor therein with a transverse guide, a contact device for engagement with the conductor, and intermediate connections movable freely on said guide.

62. The combination, with a vehicle, a conduit placed outside the track-rails, and a supply-conductor therein with a current-collector connected to the vehicle at a point beyond the wheels and movable laterally relative thereto.

63. The combination of an electrically-propelled vehicle, a conduit extending along the line outside the track-rails, and a supply-conductor therein with a transverse guide on the vehicle, a contact device, and a support therefor movable along said guide.

64. The combination of a vehicle and a transverse guide thereon extending beyond the wheels with a supply-conductor laid substantially parallel with the track and outside the rails, and a contact device connected to and movable along said guide.

65. The combination of the vehicle, the conduit and line-conductor extending along outside of the track, and the transverse guide extending beyond the wheel of the vehicle with the plow or collector movable laterally along the guide.

66. The combination, with the vehicle, the conduit and line-conductor outside the track, and a transverse guide connected to the vehicle and extending beyond the slot in the conduit, of the current-collector movable freely along said guide.

67. The combination, in an electric railway, of a slotted conduit, an inclosed supply-conductor, and an electrically-propelled vehicle with a contact-plow extending down into the slot and movable laterally relatively to the vehicle and a hinged contact shoe or piece connected to the plow at a point inside the conduit and having an independent movement relatively to the remainder of the plow.

68. The combination, in an electric railway, of a conduit and inclosed supply-conductor, an intermediate contact-plow consisting of an upright part extending down into the conduit and movable laterally relatively to the vehicle, and a contact shoe or piece hinged to the upright part on a longitudinal axis at a point within the conduit.

406,744. FRUIT-GATHERER. JEREMIAH KRESS, Carlisle Springs, Pa. Filed Mar. 5, 1888. Serial No. 266,393. (No model.)

Claim.—1. In a fruit-picker, the combination of the pole, a picking-claw pivoted at its lower end to and extending above the upper end of the pole, said claw consisting of a body portion and a series of diverging fingers extending upwardly from said body and curving forwardly at their upper ends, a connection loosely secured to said claw above its pivoted end and extending downwardly along the pole to draw the claw down, and a spring secured to the pole and connected to said claw to yieldingly hold the same in its normal upright position, substantially as described.

2. In a fruit-picker, the combination of the pole, a picking-claw formed integral and consisting of a body portion pivoted to the upper end of the pole to swing forwardly and having a series of diverging fingers extending upwardly and curving forwardly at their free ends, a plate-spring at one end secured to the pole and extending upwardly and connected to said claw to yieldingly hold the same in its normal position, and a rod or connection to draw the claw downwardly, substantially as described.

3. The combination, with the pole, a picking-claw hinged to the upper end of the pole, and a rod or connection connected to the claw and extending longitudinally of the pole, of an operating-lever extending transversely through and pivoted in the pole and loosely secured to said connection at one end, and a stationary handle secured to the pole near said operating-lever, substantially as described.

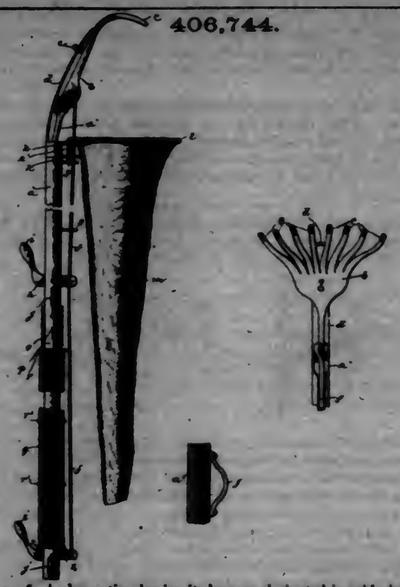
4. The combination of the pole, a cap on the upper end of the pole having an upwardly-extending bifurcated pin, a picking-claw consisting of a body portion having its lower end pivoted in said pin and a series of diverging picking-fingers, a spring secured to the rear side of the claw to yieldingly hold it in position, and a rod connected to its front side to draw the claw down, substantially as described.

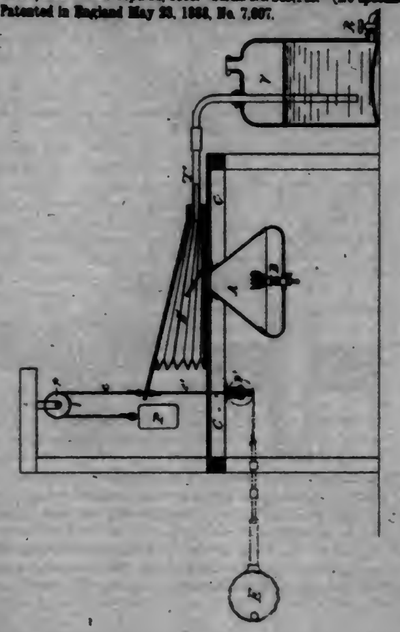
5. In a fruit-picker, the combination of the pole, and lateral perforated brackets secured to the upper end of the pole, with a flexible conveyer or tube, and a ring by which the same is supported and its upper end held open, said ring being provided with a hook removably located in the perforation of said brackets, substantially as described.

6. A fruit-picker comprising a pole made in two sections removably secured together by a sleeve and pins, a series of wires around the lower section and longitudinally located on and secured to the same to prevent bending, and a picker carried by the pole, substantially as described.

406,745. METHOD OF ORNAMENTING CHINA, PORCELAIN, &c. VICTOR J. KUHN, Paris, France, assignor to F. Bapterosses & Company, same place. Filed Sept. 11, 1888. Serial No. 285,143. (No specimens.) Patented in England May 23, 1888, No. 7,607.

406,744.



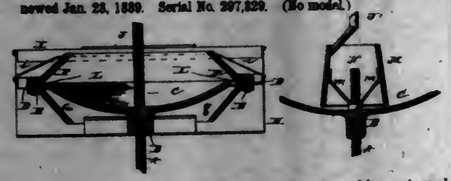


Claim.—1. The herein-described method of ornamenting china, porcelain, &c., consisting in painting the articles with vitrifiable colors combined with silicate of potassa, acetate of lead, pulverized borax, and glycerine, and then vitrifying the colors, all substantially as set forth.

2. The method herein described of ornamenting china, porcelain, &c., by painting the articles with vitrifiable colors combined with silicate of potassa, acetate of lead, pulverized borax, and glycerine, and then vitrifying the colors by treatment with a bath composed of a solution of borax, hydrochloric acid, sulphuric acid, and hydrofluoric acid.

406,746. CENTRIFUGAL MACHINE FOR CREAMING MILK.

CHRISTIAN F. LARSEN, Copenhagen, Denmark. Filed Mar. 7, 1888. Renewed Jan. 23, 1889. Serial No. 297,829. (No model.)



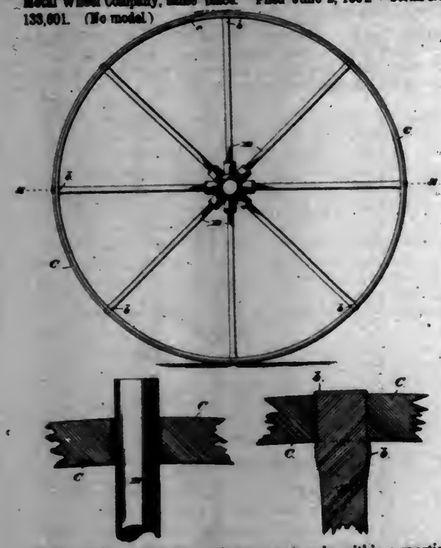
Claim.—1. As an improvement in centrifugal machines adapted for creaming milk, &c., the combination, with a shallow receiver, of an upper inwardly-projecting collar and a lower inwardly-projecting collar, the receiver communicating with the space formed between its under side and the lower collar by means of suitable ducts, substantially as and for the purpose shown and set forth.

2. The combination of the inwardly-projecting upper collar, the shallow centrifugal disk or receiver, pipes secured to the bottom of the receiver, the inwardly-projecting lower collar, and suitable ducts or connections between the receiver and the annular space formed between the bottom of the receiver and its encircling lower collar, substantially as and for the purpose shown and set forth.

3. The combination of the receiver, constructed in the form of a shallow vessel or pan, and having an upper inwardly-projecting collar and a lower inwardly-projecting collar, and provided with ducts, as described, with the truncated cone arranged in the center of the receiver, and the adjustable supply pipe or nozzle, substantially as and for the purpose set forth.

406,747. MANUFACTURE OF METAL WHEELS.

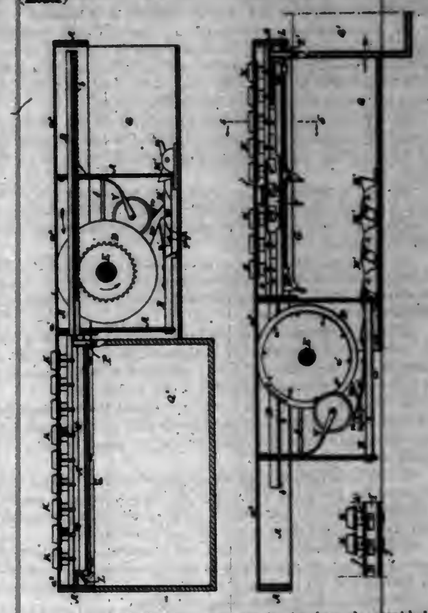
JAMES R. LITTLE, Quincy, Ill., assignor, by mesne assignments, to the Quincy Metal Wheel Company, same place. Filed June 2, 1884. Serial No. 133,601. (No model.)



Claim.—The method of securing a metal spoke within a mortise, which consists in inserting the spoke into the mortise and then expanding the portion contained therein by compressing the same longitudinally between two relatively-movable devices, one of which is adapted to bear against the inner end of said spoke and the other to inclose and grasp said spoke outside of said mortise and to prevent enlargement at the point grasped, substantially as and for the purpose specified.

406,748. CASH REGISTER AND INDICATOR.

MATTHIAS R. LOSSIER, Philadelphia, Pa. Filed Oct. 18, 1888. Serial No. 288,497. (Model.)



Claim.—1. An indicating apparatus having interchangeable key-bars for tens, units, &c., each carrying a series of keys, a sliding number-plate, a locking-bolt, and a hinged retaining-frame for the sliding plate.

2. An indicating apparatus having interchangeable key-bars for different denominations, as tens, units, &c., each carrying a series of keys, a sliding number-plate, and a locking-bolt, substantially as described.

3. An indicating apparatus having key-bars each with transverse openings for the reception of the keys, a longitudinal groove on one side for the number-plate, and a longitudinal groove on the other side for the locking-bolt, substantially as described.

4. The combination of the key-bar and the series of keys, each having a spring to tend to keep it elevated, with a sliding number-plate and operating-spring, and a pivoted retaining-frame for the sliding plate acted upon directly by the keys.

5. The combination of the key-bar having a sliding number-plate on one side and a locking-bolt on the other, with a series of operating-keys, each having on one side a shoulder to form a stop for the sliding plate and on the other a catch to engage with the locking-bolt, substantially as described.

6. The combination of the grooved key-bar and operating-keys with a sliding number-plate of T-section and having a rack on one flange, a cog-wheel gearing with the rack, a spring to act on the said wheel, and a retaining-frame for the plate operated by the keys, substantially as described.

7. The combination of the key-bar, keys, and locking-bolt having a projecting finger with a hinged retaining-frame engaging with and retaining the locking-bolt until operated by one of the keys, and a spring to act on the locking-bolt.

8. The combination of the key-bar, keys, and locking-bolt having a spring, with a rock-shaft having a catch to retain the bolt in its outward position and a sliding frame to act on the shaft to free the bolt from the catch, all substantially as described.

9. The combination of the frame and sets of operating-keys with sliding number-plates and a sliding frame having projections to act directly on the said plates to return them to their normal positions, substantially as described.

10. An adding or registering mechanism having a series of adding-wheels and a set of controlling-keys for each of the several wheels, with a cash-drawer to transmit motion from one adding-wheel to the next higher, substantially as described.

11. The combination of the frame and sets of operating-keys with sliding number-plates and locking-bolts, and a sliding frame to act directly on the plates and bolts to return them to their original positions after registry.

12. The combination of the frame and sets of operating-keys with sliding number-plates and a cash-drawer having projections to act on the said plates to return them to their normal positions, substantially as described.

13. The combination of an indicating and registering machine with a cash-drawer free to be moved in and out before the operation of the indicator, but adapted to act upon the moving parts after each indication, substantially as described.

14. The combination of the frame and sets of operating-keys with sliding number-plates, locking-bolts for the keys, and a cash-drawer having projections to act on the said plates and locking-bolts to return them to their normal positions after each registry.

15. The combination of numbered indicating-wheels and operating-springs with keys numbered to correspond and controlling the said wheels, and adding-wheels, also correspondingly numbered and mounted upon the same shaft with the indicating-wheels, all substantially as set forth.

16. The combination of the sliding number-plates, operating-keys, and spring-operated indicating-wheels geared to the number-plates, with a series of adding-wheels mounted upon the same shaft with the aforesaid wheels and operated therefrom, all substantially as setforth.

17. An indicating and registering machine having its indicating-wheels and adding-wheels all mounted upon the same shaft, with a series of devices arranged out of line with the shaft to transmit movement successively from one adding-wheel to the next, substantially as set forth.

18. An indicating and registering machine having indicating and adding wheels representing successive denominations all mounted upon the same shaft, with a sliding frame carrying devices to transfer motion from one adding-wheel to the next higher successively, substantially as specified.

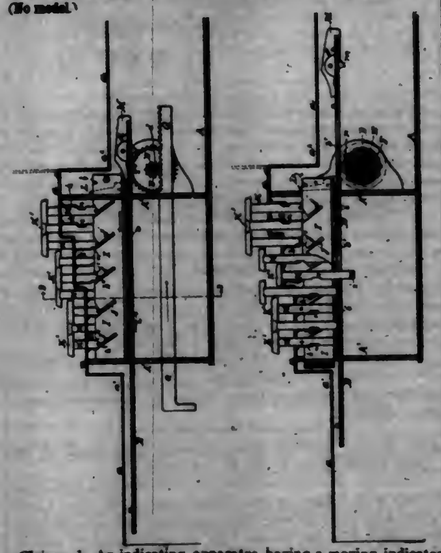
19. The combination of the adding-wheel U of a registering-machine with another adding-wheel U', and a fixed bar having a switch-gate to be opened by the first wheel at each revolution, and a sliding frame carrying a lever, a part of which travels on the bar and is adapted to operate the second wheel on the opening of the said switch-gate, all substantially as described.

20. The combination of the adding-wheel U of a registering-machine with another adding-wheel U', a bar having a switch-gate to be opened by the first wheel at each revolution, a sliding frame carrying a lever with a tail-piece traveling on the bar and adapted to operate the second wheel when the switch-gate is open, the said bar having a notch to prevent return of the sliding frame without completing the registration.

21. The combination of the fixed frame carrying a series of adding-wheels mounted upon a shaft with a sliding frame and devices, substantially as described, mounted part upon the fixed frame and part upon the sliding frame to transfer motion from one wheel to the next.

406,749. CASH REGISTER AND INDICATOR.

MATTHIAS R. LOSSIER, Philadelphia, Pa. Filed Apr. 5, 1889. Serial No. 306,061. (No model.)



Claim.—1. An indicating apparatus having a moving indicator and means to move it from its normal position at zero, with a series of keys, one or more engaging with the said indicator to retain it in its normal position, and any one of the keys being adapted when operated to act as a stop for the moving indicator, all substantially as described.

2. An indicating apparatus having a number of moving indicators for successive columns of figures, as units, tens, hundreds, &c., and each having combined with it a means to move it from its normal position at zero, and a series of keys, one or more engaging with the said indicator to retain it in its normal position, and any one of the keys being adapted when operated to act as a stop for the moving indicator, all substantially as described.

3. An indicating apparatus having a moving indicator and its impelling-spring, with a series of keys, one or more engaging with the said indicator to retain it in its normal position, and any one of the keys being adapted when operated to act as a stop for the moving indicator, and devices, substantially as set forth, to restore the parts to their normal positions, all substantially as set forth.

4. In an indicating apparatus, the combination of a moving indicator and its impelling-spring with a series of keys, each of which is adapted to arrest the moving indicator, and one or more of the keys engaging with the moving indicator to retain it in its normal position, and a locking-bar to act in conjunction with the keys, all substantially as described.

5. An indicating apparatus having interchangeable key-bars representing successive denominations, as units, tens, hundreds, &c., each carrying a moving indicator and a series of keys, one or more engaging with the indicator to retain it in its normal position at zero, and any one of the keys serving as stops, all substantially as described.

6. An indicating apparatus having interchangeable key-bars, each carrying a moving indicator and its impelling-spring, with a series of keys, one or more engaging with the indicator to retain it in its normal position, and a locking-bolt to act in conjunction with the keys, all substantially as described.

7. In an indicating apparatus, the combination of a moving indicator and its impelling-spring with a series of keys, one or more engaging with the indicator to retain it in its normal position, and any one of the keys serving to arrest the moving indicator when depressed, and a locking-bar having a positive motion imparted to it by the depressed key, all substantially as set forth.

8. In an indicating apparatus, the combination of a moving indicator and its impelling-spring with a series of keys to normally retain and also to arrest the indicator when released, and having pins or projections, with a locking-bolt having inclined notches for the pins or projections to move the bar upon the depression of a key, all substantially as described.

9. In an indicating apparatus, the combination of a moving indicator and its impelling-spring with a series of keys to normally retain and also to arrest the indicator when released, and having pins or projections, with a locking-bar having inclined notches for the pins or projections to move the bar upon the depression of a key, and yielding retainers to hold the keys in their normal elevated positions, all substantially as described.

10. The combination of a moving indicator having a notch or notches with a series of keys, one or more having a projection or projections to engage with such notch or notches to retain the indicator in its normal position, and an impelling-spring for the indicator, any of said keys being adapted to act as a stop for the moving indicator, all substantially as described.

11. The combination of a moving indicator and its impelling-spring with a series of keys having pins or projections, one or more engaging with the indicator to retain it in its normal position, and any one of the keys acting as stops for said moving indicator, with a locking-bar having inclined grooves for said pins or projections, and also having bevels or inclines *j'* for such of the keys as act as retainers, all substantially as described.

12. The combination of a moving indicator, its impelling-spring, and a series of keys to normally retain the indicator, and also to arrest it, with a locking-bar acting in conjunction with the keys and devices, substantially as set forth, to return the parts to position.

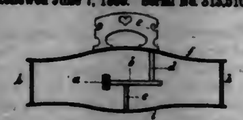
13. The combination of a moving indicator, its impelling-spring, and a series of keys to normally retain the indicator, and also to arrest it, with a locking-bar acting in conjunction with the keys, yielding retainers to hold the keys in their normal elevated positions, and devices, substantially as set forth, to return the parts to position.

14. An indicating apparatus having a number of moving indicators and corresponding series of keys representing successive denominations, as units, tens, hundreds, &c., with the numbered heads of each series of keys out of line with their respective key-stems and arranged alternately on one and the other side of the line of their stems, substantially as and for the purpose described.

15. An indicating apparatus having a number of moving indicators for different columns of figures, and each indicator with a

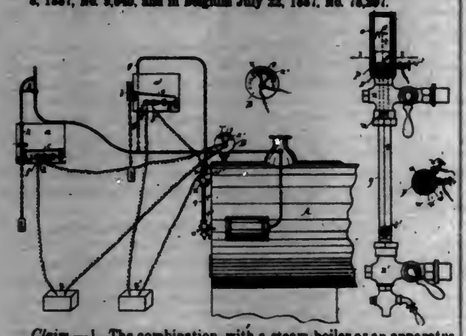
series of numbered keys therefor, the numbers of adjoining series being contrasted in color, as and for the purpose set forth.

406,750. VIOLIN. JOHAN D. LOFTHUSEN, Pittsburg, Pa. Filed July 7, 1888. Renewed June 7, 1889. Serial No. 313,510. (No model.)



Claim.—The combination, with the violin *f h i* and the center bar *e* thereof, of the lever *b*, resting with one end in a mortise in said bar *a*, a sounding-post *d*, standing between the other end of said lever *b* and the front *f* of said instrument, and the post *c*, standing between the middle of said lever *b* and the back of said instrument, all substantially as and for the purpose set forth.

406,751. ELECTRICAL APPARATUS FOR REGULATING STEAM-BOILERS, &c. FRANÇOIS MARTINOT, Paris, France. Filed June 27, 1887. Serial No. 242,502. (No model.) Patented in France Mar. 10, 1887, No. 182,066; in Germany July 4, 1887, No. 6,133; in England July 8, 1887, No. 9,645, and in Belgium July 22, 1887, No. 78,267.



Claim.—1. The combination, with a steam-boiler or an apparatus of a similar character, and with a manometer or similar instrument attached thereto and an electric battery connected therewith, and an electro-magnet *e e'* and a pivoted lever *d*, engaging therewith, of an apparatus *a*, provided with a vertically-sliding rod *k*, having a weight *l* suspended from its lower end, and having its upper end connected with the handle of a cock or valve *k'*, communicating with an escape-pipe leading from the boiler, whereby provision is made for the escape of the excess of steam in order to prevent explosion, substantially as herein described.

2. The combination, with a steam-boiler or an apparatus of a similar character, and with a water-gage attached thereto and an electric battery connected therewith, of an apparatus *a'*, provided with an intermittently-rotating wheel *b*, having peripherical grooves carrying a weighted chain, and having pegs *b'* on its side for engagement with a lever *c*, which in turn engages with a lever *d*, engaging with an electro-magnet *e e'* and with an electric battery connected with said boiler, and with a pipe leading from the source of water-supply, whereby provision is made for automatically feeding water to the boiler, substantially as herein described.

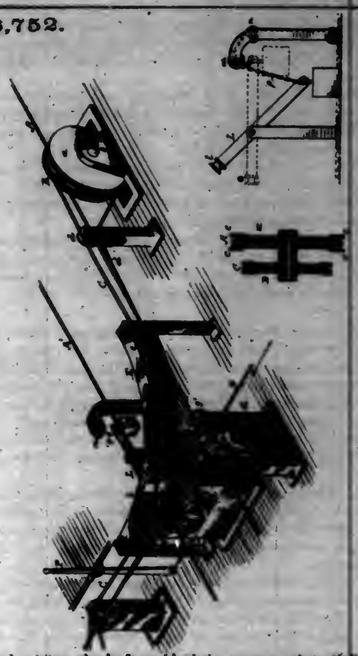
3. In an apparatus embracing the application of electricity to steam-boilers and devices of a similar character, for the purpose of automatically feeding water to the boiler, the combination, with the boiler, the water-gage, the water-feeding apparatus, and the battery *a'*, of the devices inclosed in the chamber *p* and cap *o* and connected therewith, consisting of the vessels *w' w''*, and the forked rod *t*, carrying the float *t'*, and the washer or collar *u*, arranged and operating substantially as and for the purpose herein described.

406,752. CURVE AND CROSSING DEVICE FOR CABLE RAILWAYS. ASHBEL MATTHEWS, Philadelphia, Pa. Filed Mar. 20, 1888. Serial No. 268,206. (No model.)

Claim.—1. In a cable-railway system, the combination of the main and crossing cables, the supplemental curve cable, a driving-wheel having a broad periphery around which the main cable passes without crowding, and a grooved wheel mounted on the same shaft with the driving-wheel and around which the curve cable passes, said grooved wheel being at a sufficient distance from the driving-wheel to permit the passage of the grip between the two wheels, substantially as specified.

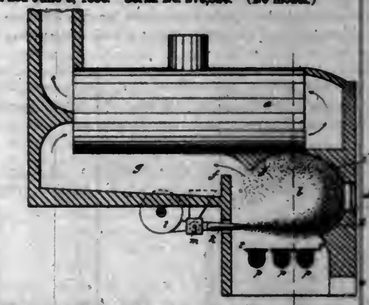
2. The combination, in a cable-railway system, of a lever carrying at one of its ends a depressing-roller with an operating chain or

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rope and guiding-wheels for said chain or rope, substantially as described.

406,753. APPARATUS FOR BURNING CULM. ALLAN MASON, Brooklyn, assignor to Herbert H. Sanderson, trustee, New York, N. Y. Filed June 8, 1888. Serial No. 276,589. (No model.)



Claim.—1. The combination, with a furnace-chamber, of one or more air and pulverized-coal injectors and deflecting-surfaces for injecting and for a time maintaining the coal in suspension in the furnace-chamber by the injecting forces, and independent or separate burners below the injected fine fuel, between which the coal-ashes are precipitated, substantially as described.

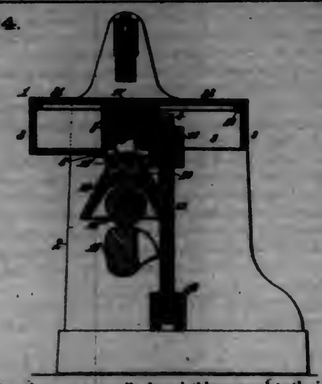
2. The combination, with a furnace-chamber, of one or more air and pulverized-coal injectors and deflecting-surfaces for injecting and for a time maintaining the coal in suspension in the furnace-chamber by the injecting forces, and independent or separate burners below the injected fine fuel, between which the coal-ashes are precipitated, and consisting of trough-shaped drawers adapted for being inserted and withdrawn through the side wall of the furnace and being charged with fuel independently, substantially as described.

3. The combination, with a furnace-chamber, of the improved burner consisting of a fuel-holding trough having perforated sides and top flanges and fitted in a slideway through the furnace-wall, substantially as described.

406,754. BRICK-MACHINE. HENRY W. MEAD, Quincy, Ill. Filed Aug. 2, 1888. Serial No. 281,767. (No model.)

Claim.—1. In a brick-machine, the stationary mold-table having a transverse rib 4, side standards 2, and vertical side plates 5 beside the standards, provided with offset top edges 7 and inwardly-turned bottom edges 6, in combination with the interchangeable mold-box

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bearing against the transverse rib, detachably secured to the inwardly-turned bottom edges and having top lateral flanges 9, resting on the offset top edges of the plates, substantially as described.

2. In a brick-machine, the stationary mold-table comprising the vertical side plates 5, provided at their upper edges with the offsets 7 and at their lower portions with inwardly-turned edges 6, in combination with the interchangeable mold-box resting at its bottom on the inwardly-turned lower edges of the plates and having its upper edge provided with lateral flanges 9, resting on the offsets of said plates, and bolts 10, passing through the inwardly-turned lower edges of the plates and detachably engaging the mold-box, substantially as described.

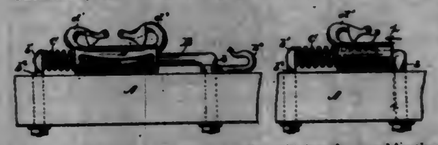
3. The combination, with the stationary mold-table having the transverse rib 4, provided at one side with the plunger-head guide-bearing 13, and the vertical plates 5, having inwardly-turned lower edges 6, of the interchangeable mold-box 8, resting on the said inwardly-turned edges at one side of the transverse rib, the plunger-head 11, moving in and guided by said guide-bearing at the other side of said rib and having a laterally-projecting plunger-support 14, and the interchangeable plunger 17, having a rigid stud detachably connected with the lateral support, substantially as described.

4. The combination, with the mold-table and mold-box of a brick-machine, of a plunger-head guide-bearing on the table outside the mold-box, and a plunger-head moving in said guide-bearing, and having a laterally-projecting support carrying a plunger, substantially as described.

5. In a brick-machine, a plunger-head having a lateral projecting plunger-support for the plungers, and provided with a recess into which open apertures through the support, in combination with plungers having studs passing through said apertures and receiving nuts upon their threaded ends, substantially as described.

6. In a brick-machine, the combination, with a mold-table having upper and lower bearings, of a plunger-head moving in and wholly guided by said bearings, an interchangeable mold-box, and a suitable support upon the plunger-head for interchangeable plungers, substantially as described.

406,755. DRAFT ATTACHMENT FOR VEHICLES. JOHN D. MILLER, Washington, D. C., assignor of one-half to John A. Baker, same place. Filed Jan. 4, 1889. Serial No. 295,491. (No model.)



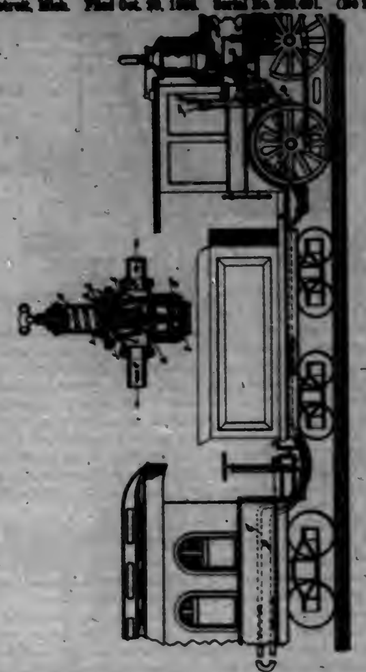
Claim.—1. In a draft attachment for vehicles, the combination, with the horizontal bar rigidly attached to the shaft, of the slide mounted on said bar with the draft-chain or trace-hook mounted directly thereon, and the spring interposed between said slide and the forward end of the horizontal bar through which the draft is transmitted to the shaft, substantially as described.

2. In a draft attachment for vehicles, the combination, with the horizontal bar rigidly attached to the shaft, of the slide mounted on said bar and having the sockets in the forward end, the draft-chain or trace-hook mounted on said slide, and the coil-spring within the socket through which the draft is transmitted to the shaft, substantially as described.

3. In a draft attachment for vehicles, the combination of a slide carrying hooks for attachment to the draft chain or trace and the back-chain, said hooks having pivotally attached to them pawls for retaining the links of such chains in position, and a spring interposed between said slide and the forward end of a horizontal bar upon which all these parts are mounted, and which bar is rigidly attached to the shafts of a vehicle, substantially as described.

4. In a draft attachment for vehicles, the combination, with a slide containing a socket for the accommodation of a spiral spring, and having upon it hooks for attachment to the draft chain or trace and the back-chain, said hooks having gravitating pawls for retaining in position said chains, a spring interposed between said slide and the forward end of a horizontal bar, upon which all these parts are mounted, and which bar is rigidly attached to the shafts of a vehicle, of a hook for attachment to the breeching-chain, said hook mounted upon the rear depending end of said horizontal bar, substantially as described.

406,756. CAR-HEATING APPARATUS. CHARLES F. MIMBOUR, Detroit, Mich. Filed Oct. 20, 1888. Serial No. 288,691. (No model.)



Claim.—The combination, in a hot-water-heating apparatus for car-heating, of a high-pressure boiler or heater, a pressure-reducing valve having an indicating-gage, an air-expansion chamber provided with an indicating-gage, said chamber being secured to and having communication with the end of the return-pipe of the radiating system, and a branch connecting-pipe secured to the said return-pipe near said chamber and affording communication between said return-pipe and a force-pump, as described.

406,757. SMOKE-CONSUMER. GORDON MCDOWELL, Evanston, Ill. Filed Jan. 2, 1889. Serial No. 295,576. (No model.)

Claim.—1. A furnace provided with slots for the admission of air to the fire situated above the furnace-door, having a door for closing such slots, and means for automatically regulating the closing of such door, substantially as described.

2. The combination of a chamber situated above the entrance to the furnace and communicating therewith by means of slots or perforations, a door for closing such slots, and means for automatically regulating the closing of such door, substantially as described.

3. The combination of the fuel-door, a chamber situated above the entrance to the furnace and communicating therewith by means of slots or perforations, a door for closing such slots, and an arm secured to the fuel-door and adapted to open the slot-door, substantially as described.

4. The combination of the fuel-door, slots or perforations in the roof of the furnace-entrance, a door for closing such slots, an arm secured to the fuel-door and adapted to open the slot-door, and means for automatically regulating the closing of such door, substantially as described.

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5. The combination of the fuel-door B, lever B', for opening such door, chamber D, slots C C, door E, for closing such slots, arm R, for opening door E, and means for automatically regulating the closing of such door, substantially as described.

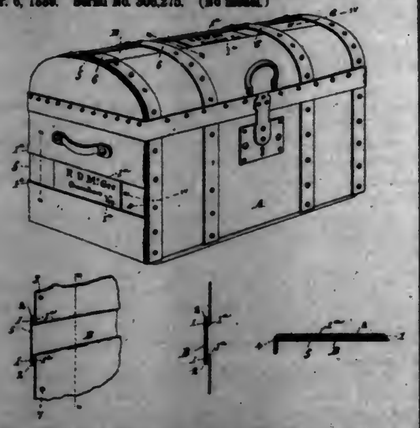
6. The combination of door B, having lever B' and arm R, chamber D, slots C C, and door E, arm G, rods H H', piston I, spring K, and cylinder J, having pipe K' and cock L, substantially as described.

7. The combination of the fuel-door, an air-chamber situated above the entrance to the furnace and communicating therewith by means of slots or perforations for the admission of air to the fire, a door for closing such slots, an arm attached to the fuel-door for opening the slot-door, and deflectors for directing the air downward toward the fire, substantially as described.

8. The combination of an air-chamber situated above the entrance to the furnace and communicating therewith by means of slots or perforations, a door for closing such slots, an arm attached to the fuel-door for opening the slot-door, and means for automatically regulating the closing of such door, substantially as described.

9. The combination of an air-chamber situated above the entrance to the furnace and communicating therewith by means of slots or perforations, a door for closing such slots, an arm attached to the fuel-door for opening the slot-door, means for automatically regulating the closing of such door, and deflectors for directing the air downward toward the fire, substantially as described.

406,758. TRUNK. ROBERT D. MCGEE, Owensborough, Ky. Filed Apr. 6, 1889. Serial No. 306,275. (No model.)



Claim.—1. The combination, with a trunk, of a sheet-metal covering bent, substantially as described, to form inner laps 1, outer laps 1°, and grooves 2 entirely across the surface of the trunk, said grooves being closed at one end and open at the other end, and having re-enforce straps 6, all substantially as herein described.

2. The combination, with a trunk, of a sheet-metal covering bent to form the inner laps 1, outer laps 1°, and grooves 2, running across the surface of the trunk, whereby the card may be inserted, said grooves being closed at one end by the straps 6, substantially in the manner described.

3. The combination, with a trunk, of a sheet-metal covering bent to form inner laps 1 and outer laps 1° for the retention of the card, substantially in the manner and for the purposes explained.

4. A pocket for the reception of a card, constructed of a single piece of sheet metal bent to form the inner laps 1, outer laps 1°, and the grooves 2, in connection with said laps, and adapted to be attached to the article to be labeled, substantially in the manner shown and described.

406,759. PAPER-FASTENER. GEORGE W. MCGILL, Rivertale, N. Y. Filed Dec. 6, 1888. Serial No. 292,796. (No model.)



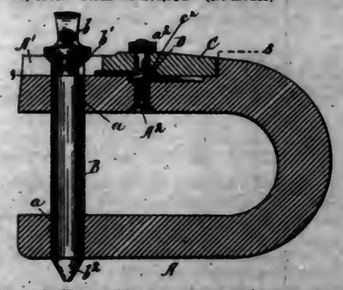
Claim.—As an improved article of manufacture, the adhesive paper-fastener herein described, consisting of a piece of flexible fabric having an adhesive surface and formed with a flat head and tongue in substantially the same plane, and the tongue provided with a transverse depression, forming its joining hinge-like connection with the lower edge of the head to facilitate the turning down and cementing of the latter, substantially as set forth.

406,760. SHOE. WILLIAM J. MCKINNEY, Rising Sun, Md. Filed Sept. 21, 1888. Serial No. 285,967. (No model.)



Claim.—In a shoe, the combination of a vamp A, having its rear edges cut in substantially a vertical line, the back A', having its front edges parallel with and abutting against the rear edges of the vamp, the gores A^3, secured to the edges of the vamp and back and folded upon itself, and the elastic attachment secured to the upper parts of the vamp and back, substantially as described.

406,761. CLEVIS. EMERY M. MCVICKER, Madison, Wis. Filed Nov. 30, 1888. Serial No. 292,214. (No model.)



Claim.—1. The combination, with the clevis provided with rigid arms having end apertures and an independent pin, of the latch or arm pivoted on one of the said rigid arms of the clevis and adapted to be turned upon its pivot so as to be brought into engagement with the clevis-pin, and a spring bearing upon said pivoted latch or arm and holding the same normally in a position to engage with the clevis-pin, substantially as and for the purposes specified.

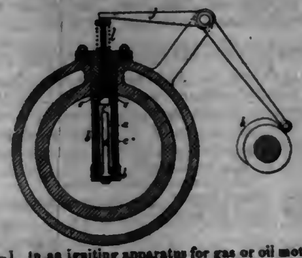
2. The combination, with the clevis-body having rigid arms, one of which is cut away, as described, and an independent pin, of a spring-actuated latch or arm pivoted on said cut-away portion and having the form thereof, whereby a flush surface without any projections is provided, substantially as and for the purposes specified.

3. The combination, in a clevis, of the body A, with rigid arms provided with apertures *c*, one of said arms being cut away, as shown at *d*, and having projection A', arranged at one side of the aperture *c*, and having a latch in the form of said cut-away portion, on which it is mounted and abutting normally against the projection A', substantially as and for the purposes specified.

4. The combination, with the clevis-pin, of the clevis-body having rigid arms, one of which is cut away, as described, a pivoted latch mounted on said cut-away portion and having the form thereof, and a spring for actuating said latch, said spring being arranged entirely between the latch and clevis-body and wholly inclosed thereby, substantially as and for the purposes specified.

5. The combination, with the independent clevis-pin, of the clevis-body A, having rigid arms, one of which is provided with a pivot-post A^3 and groove a^3, the latch C, having aperture *c* to receive the pivot-post and groove c^3, and the spring D, coiled around said post and having its ends arranged, respectively, in the grooves a^3 and c^3, substantially as and for the purposes specified.

406,762. IGNITING APPARATUS FOR GAS OR OIL MOTOR-ENGINES. NICOLAUS A. OTTO, Cologne, assignor to the Gas-Motoren-Fabrik-Deutz, Deutz-on-the-Rhine, Germany. Filed Nov. 6, 1883. Serial No. 290,072. (No model.) Patented in Italy Jan. 3, 1888, XLVIII, 98; in England Oct. 5, 1888, No. 14,349; in Belgium Oct. 13, 1888, No. 83,954, and in France Nov. 5, 1888, No. 193,988.



Claim.—1. In an igniting apparatus for gas or oil motor-engines, an incandescent metal tube contained within a chamber forming a narrow annular channel around it and a central channel through it, said passages communicating with the cylinder-space by an opening controlled by a valve or slide, a portion of the combustible charge in the cylinder being admitted at the required moment into said channels, so as to come into intimate contact with both the inner and outer surfaces of the incandescent tube and be ignited thereby, the heat of the incandescent body being maintained by the said combustion, substantially as described.

2. In an igniting apparatus for gas or oil motor-engines, an incandescent body of fire-clay or other suitable refractory bad conductor of heat formed as a lining to a metal chamber projecting into the cylinder and containing a refractory metal tube, the interior of such chamber being put in communication with the interior of the cylinder at the required moment by a slide or valve controlling an opening from the cylinder to such chamber, so that a portion of the combustible charge passes into the said chamber and becomes ignited by contact with the incandescent refractory lining and tube, such lining and tube being maintained in a state of incandescence both by the combustion within it and by the heat of the combustion in the cylinder transmitted through the walls of the chamber, substantially as herein described.

406,763. LASTING-MACHINE. SETH W. PAINE, Rochester, N. Y., assignor to William S. King, Minneapolis, Minn. Filed Sept. 26, 1888. Serial No. 286,249. (No model.)

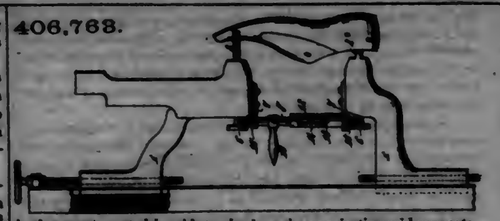
Claim.—1. The combination, with suitable standards or supports, of two movable rests for respectively supporting the heel and toe of a last, and a rock-shaft acting upon both rests to simultaneously depress them, substantially as described.

2. The combination, with suitable standards or supports, of two lengthwise-movable rests for respectively supporting the heel and toe of a last, springs acting on the rests to move them outward, and a rock-shaft acting on both rests to simultaneously move them inward against the pressure of the springs, substantially as described.

3. The combination, with suitable standards or supports having brackets, of the lengthwise-movable toe and heel rests carried by the standards, springs forcing both rests upward, and a rock-shaft journaled in the brackets and acting at its extremities on both rests to simultaneously move them downward, substantially as described.

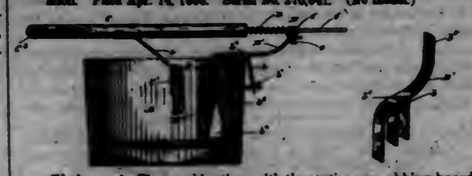
4. In a boot or shoe lasting mechanism, the combination, with suitable standards adjustable toward and from each other, of toe and heel supports seated in said standards, springs projecting said supports in one direction, a shaft having cams acting upon flanged heads or collars on said supports, and a sleeve embracing the shaft and having a slot receiving a pin thereon, substantially as described.

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5. In a boot or shoe lasting mechanism, the combination, with suitable standards adjustable toward and from each other, of last-supports having springs projecting them longitudinally, and a shaft having cams which retract said last-supports, one of the cams being keyed to and adjustable on the shaft to compensate for the adjustment of the standards, substantially as described.

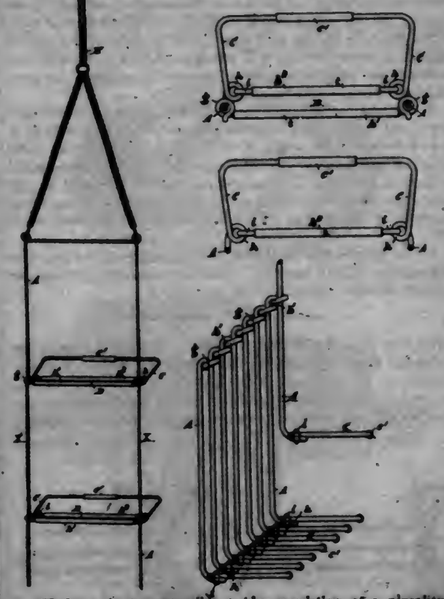
406,764. WASHING-MACHINE. LEE R. PALMER, Imlay City, Mich. Filed Apr. 14, 1888. Serial No. 270,641. (No model.)



Claim.—1. The combination, with the stationary rubbing-board provided with a supporting-arm having a bearing, of a reciprocating rubbing-board provided with an operating-handle projected forward from its engagement with said latter board, its forward end engaged with the bearing of said arm and having a sliding movement therein, substantially as described.

2. The combination, with the stationary rubbing-board provided with an arm having a bearing and a tub-clamp secured to said arm, of a reciprocatory rubber provided with a handle which slides in said bearing and a spring for imparting a resilient movement to said reciprocatory rubber, substantially as set forth.

406,765. EXTENSIBLE LADDER. JOHN B. PARRY, Liverpool, County of Lancaster, England. Filed Feb. 7, 1889. Serial No. 299,078. (No model.)



Claim.—1. An extensible ladder consisting of a plurality of stages, each comprising the side members A, having at the top por-

tion the top loops *g*, connected by the stationary rung-bar *b'*, and in which connected loops the vertical parts of the stage next above slide, said side members of each stage having their lower portions extended at right angles through the top loops of the stage next below, and thence bent laterally around at the rear into the rectilinear stay-bar C, substantially as described.

2. An extensible ladder consisting of a plurality of stages, each comprising the side members A, having loops *g* at their upper ends, connected by a stationary top bar *b'*, in which loops the vertical parts of the stage next above slide, said side members of each stage having their lower portions extended at right angles through the top loops of the stage next below into the stay-bar C, having the connecting bottom rung-bar *b*³, which, when the ladder is extended, moves beside the rung-bar connecting the top loops of the stage next below, substantially as described.

3. In an extensible ladder composed of a plurality of stages, as described, the stages herein set forth, consisting of a top *b'*, loops *g*, side members A, rung-bar *b*³, and prop-bars C, substantially as described.

4. The combination, in an extensible ladder composed of a plurality of stages, as described, of the bars *b'* and *b*³, constituting the rungs of the ladder when extended, the bar *b'* being the top bar of the said stage, and connected to the side members A thereof, the bar *b*³ being connected to the lower end of the said side members and adapted to lie parallel and in the same horizontal plane as the bar *b'* when the ladder is extended, substantially as described.

5. In an extensible ladder composed of a plurality of stages, as described, the combination of side members A of said stages, loops *g*, and top bar *b'*, said top bar of a stage being adapted to serve as the rung or part of the rung between said stages, substantially as set forth.

406,766. KITCHEN-CABINET. DUPLEAR PECORD and LEVI PECORD, Concordia, Kans. Filed Jan. 3, 1889. Serial No. 295,282. (No model.)



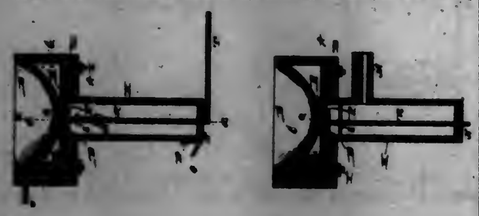
Claim.—1. In a kitchen-cabinet, the combination, with the casing having a horizontal partition C, and the flour and meal bins arranged between said partition and the top of the casing, of the slide O, supported by the said partition and carrying a sifter, and moving under the mouths of the bins so as to bring the sifter under either, and the independent transverse slides Q R, arranged between the partition and the slide O, and adapted to cover or uncover the mouths in the lower ends of the bins, as set forth.

2. The combination, with the casing having the horizontal partition C, and the flour and meal bins arranged between the said partition and the top of the casing, of the cleats N, secured to the under side of said partition, the slides Q R, arranged between said cleats and the partition and below the bins, and the slide O, supported by said cleats below the slides Q R, and carrying the sifter, and moving under the mouths of the bins so as to bring the sifter under either, as set forth.

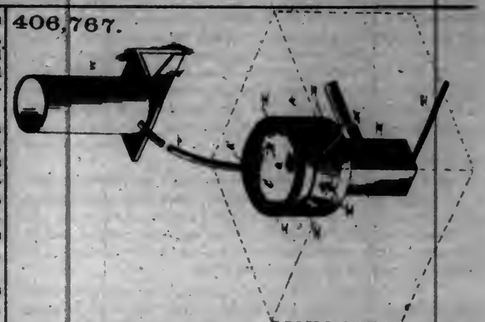
3. In a kitchen-cabinet, the bins G H, arranged side by side, combined with the slide O, carrying a sifter, and adapted to register with the mouth of either one of the bins, as set forth.

406,767. BLACKSMITH'S FORGE. WILLIAM J. PUGSLEY, McCracken, Kans. Filed Mar. 29, 1889. Serial No. 305,303. (No model.)

Claim.—1. In a blacksmith's forge, the combination, with the tuyere-box, the bottom of which has a central screw-threaded opening, of the concavo-convex cover constituting the fire-pot and having



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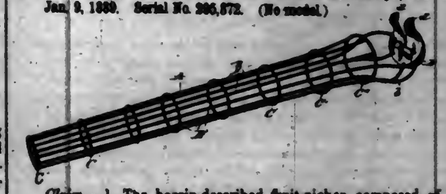
a central downwardly-extending screw-threaded pipe, by which it is connected with the bottom of said box, substantially as set forth.

2. The combination, with the annular water-chamber or tuyere and the top constituting the fire-pot, of the cinder-box located below the same and having the blast-pipe connected thereto, the rotatable grate located in the central tube of the tuyere and having a rod extending downwardly through the cinder-box, and an operating-handle at the lower end of said rod, substantially as set forth.

3. The combination of the annular water-chamber or tuyere, the cinder-box located below the same, the rotatable grate, the removable slide at the lower end of the cinder-chamber, and the latch to retain said slide in position, substantially as and for the purpose set forth.

4. The combination of the cinder-box having an annular horizontal flange at its inner end, the tuyere-box or water-chamber having perforations extending vertically through its walls, the concave top plate constituting the fire-pot and having a central depending tube connecting it through the bottom of the water-chamber with the upper end of the cinder-box, and suitable connecting-bolts, substantially as and for the purpose set forth.

406,768. FRUIT-PICKER. HUGH M. RAGUE, Brooklyn, Ala. Filed Jan. 9, 1889. Serial No. 295,872. (No model.)



Claim.—1. The herein-described fruit-picker, composed of longitudinal rods B and B' and inclosing rings or bands for holding the rods together, the rods B', extended beyond the ends of the rods B and having the cutting-plate attached to said extended rods, substantially as shown.

2. The herein shown and described fruit-picker, composed of longitudinal rods B and B', the latter of which are extended beyond the ends of the rods B and have the extended portions *b* curved first outwardly and then inwardly, rings encircling the said rods, and the cutting-plate attached to the ends of the extended portions *b* and having one side elongated and curving inwardly and outwardly to form blades, substantially as described.

406,769. SIGNAL OR ALARM TRANSMITTER AND TIME-INDICATOR. ANDREW J. REAMS, El Dorado, Kans. Filed Aug. 3, 1888. Serial No. 281,916. (No model.)

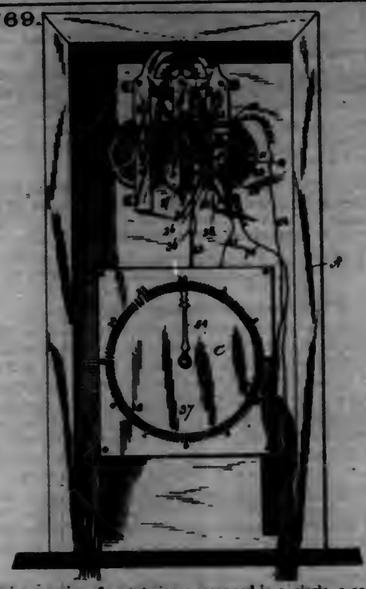
Claim.—1. The combination, with the clock-frame, of a block of insulating material secured thereto, an L-shaped lever pivoted upon the block having an arm of an insulating material and the other arm of a conducting material, a circuit-closing disk, and springs engaging the disk and conducting-arm of the lever, substantially as described.

2. The combination, with the sleeve of the hour-wheel, of a wheel secured thereto, a stud on the frame, a cam-wheel on the stud engaging the wheel on the sleeve of the hour-wheel, an L-shaped lever pivoted to a block of insulating material secured to the frame, a roller on the lever engaging the cam-wheel, and a spring for engaging L-shaped lever, substantially as and for the purpose specified.

3. The combination, with the sleeve of the hour-wheel, of a wheel secured thereto, a stud secured to the frame and carrying a cam-wheel meshing with the said wheel, an L-shaped lever pivoted to the frame and carrying a roller engaging the cam-wheel, and a spring for drawing the lever out of contact with the cam-wheel, substantially as described.

4. The combination, with the clock mechanism, of an automatic circuit-closing device constructed of a plate of suitable insulating ma-

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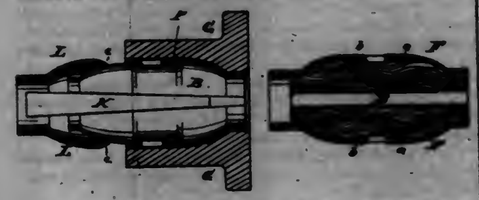


terial, having a series of metal pieces arranged in a circle, a contact hand or pointer mounted above the said pieces, mechanism connecting with the hand or pointer, and an insulated wire connecting the clock mechanism and mechanism for operating the hand or pointer, whereby, when the clock is in operation, the hand or pointer will be operated at determined intervals, substantially as and for the purpose specified.

5. The combination, with the minute-arbor, of a ratchet-wheel secured thereto, a lever pivoted above the same and having a pin engaging the ratchet-wheel, an automatic circuit-closer below the clock mechanism, a hand or pointer moving over the same, and an insulated rod connecting with the lever on the clock and operating the hand or pointer on the circuit-closer, substantially as and in the manner described.

6. The combination of an automatic circuit-closer, metallic pieces secured thereto, a switch-board, and conducting-wires connecting the metallic pieces and switch-board, a contact hand or pointer mounted above the metallic pieces, and mechanism for operating the hand or pointer, substantially as and for the purpose specified.

406,770. VEHICLE-HUB. THOMAS J. REID, Gananoque, Ontario, Canada. Filed Apr. 17, 1888. Serial No. 307,580. (No model.)



Claim.—1. A vehicle-hub consisting of a split or checked wooden core, metallic shells for incasing said core, and a wooden wedge for expanding said core within the casing, substantially as and for the purpose set forth.

2. A hub for vehicle-wheels, having a wooden core made from cracked hub-blocks first compressed and subsequently expanded within a metallic shell, substantially as and for the purpose described.

3. In a hub for vehicle-wheels, the combination of the wooden core B and metallic shells L and F, having oppositely-beveled inner edges so inclined that the edge of one will be upset by contact with the other as the shells are driven to place, substantially as and in the manner described.

4. In a hub for vehicle-wheels, the combination of the wooden core B and metallic shell F, extending beyond the middle of the hub, having its inner portion thickened so as to form an inwardly-projecting shoulder, substantially as and in the manner described.

5. In a hub for vehicle-wheels, the combination of the wooden core B, the metallic shell F, with inner portion thickened to form inwardly-projecting shoulder and inner edge beveled upward, and the metallic shell L, with inner edge beveled downward, substantially as and for the purpose described.

6. As an improved article of manufacture, a hub made up of a wooden body having a single longitudinal split and a wedge-shaped expanding piece tapering both longitudinally and transversely, said hub being incased by a metallic shell, within which it is expanded by the wedge-shaped piece.

406,771. SECONDARY-BATTERY ELECTRODE. ANDREW L. RICE, New York, N. Y. Filed Apr. 24, 1889. Serial No. 308,249. (No model.)



Claim.—1. The method of preparing a secondary element, which method consists in forming a plate or support of conductive material with cells or holes decreasing in diameter from one side to the other, filling such cells with active material, and then folding the plate upon itself in such manner that the smaller ends of the holes are outside, substantially as described.

2. The method of preparing a battery element, which method consists in forming a plate of lead or other material with tapering cells or holes, filling such cells or holes with active material, and then folding said plate on a line such that the large end of the cells will be opposite to a solid part of the plate, substantially as described.

3. The method of preparing a battery element, which method consists in forming a plate with tapering cells or holes, filling the same with active material, and folding the plate upon itself with a sheet of absorptive material interposed between the two leaves, the fold being so made that the small ends of the cells or holes are outside, substantially as described.

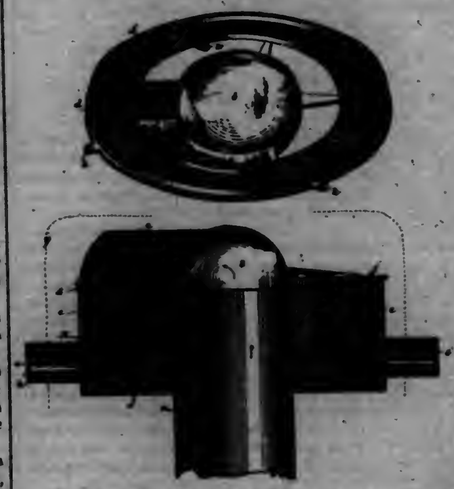
4. The method of preparing a battery element by forming a plate with tapering holes and projecting strips or ears, filling the holes with active material, folding the plate upon itself, and clamping the two leaves together by overlapping the strips or ears, substantially as described.

5. A secondary-battery element consisting of a folded plate or support having holes or cells of larger area on one side of the plate than on the other, said holes or cells being filled with active material and the smaller ends of said cells being outside, substantially as described.

6. A secondary-battery element consisting of a doubled or folded plate provided with tapering holes filled with active material, the smaller ends of said holes being outside, and a sheet of absorbent material interposed between said holes, substantially as described.

7. A secondary-battery element consisting of a doubled or folded plate having cells filled with active material, the two leaves of said element being bound together by overlapping strips or ears at the edges of the plate, substantially as described.

406,772. COVER FOR RADIATORS. THOMAS T. ROCKETT, Philadelphia, Pa. Filed Apr. 2, 1889. Serial No. 305,769. (No model.)



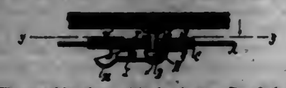
Claim.—1. The combination, with the passage conveying the products of combustion from the fire-box of a furnace, and an annular chamber provided with an exit and surrounding the passage, of a dome or cap closing the top of said passage, a ring closing the top of

said annular chamber, and a horizontal flue extending radially from said cap and resting upon the top of said ring and opening through the same into said chamber, said ring-flue and cap being cast in one piece separate from said passage and chamber.

2. In a hot-air furnace, the combination, with a vertical passage for the products of combustion, and an annular radiator-chamber provided with an exit and into which said products of combustion are passed, of a dome or cap closing the top of said chamber, a ring closing the top of said chamber and located in a plane below the cap, and a flue extending radially from said cap to and resting upon the top of said ring, the outer end of the flue being closed and the ring being provided with an opening connecting said chamber and flue, the cap, flue, and ring being cast in one piece, substantially as described.

3. In a hot-air furnace, a vertical passage for the products of combustion, and an annular chamber surrounding the same, into which the products from the passage pass, in combination with a single integral casting forming a cap for the upper end of the passage, a ring forming the top of said chamber, and a flue opening into and extending radially from the cap to an opening through the ring, substantially as described.

406,773. FASTENING FOR CARRIAGE-CURTAINS. HENRY C. SAGEMAN and JOHN SEIBOLD, Mount Vernon, N. Y., assignors, by direct and mesne assignments, to Ann Maria Sageman, same place, and George W. Mabie, Brooklyn, N. Y. Filed Feb. 23, 1888. Serial No. 301,434. (No model.)

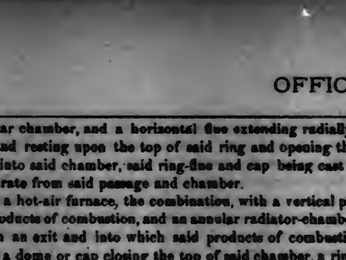


Claim.—1. The combination, with the button B, of the plate C, formed with the openings D E, and the covering-plate hinged to the plate C and formed with the cover G, the socket H, and the thumb-piece M, substantially as described.

2. The curtain A and plates C and N, formed with openings D E to receive the button or article to which the fastening is to be applied, in combination with the hinged covering-plate formed with the cover G, the socket H, and thumb-piece M, substantially as described.

3. The button B, in combination with the plate C, formed with the openings D E, and the covering-plate G H M, connected to plate C by a spring-hinge operating to bring the cover G of the covering-plate down upon the plate C to close the opening D and lock the button in the fastening, substantially as described.

406,774. GAGE FOR SAWS. HENRY SAUNDERS, Perry, Mo. Filed Mar. 30, 1888. Serial No. 305,363. (No model.)



Claim.—1. In a gage for sharpening and swaging the teeth of circular saws, the combination of the arm A, the extension-plate E thereon, the clamp-screw to secure said extension-plate to said arm at any desired adjustment, and the clamp or vise pivoted to the extension-plate, substantially as described.

2. The vise or clamp comprising the laterally-adjustable plates, one of which is provided with the arm Y, in combination with the arm A, the extension-plate E thereon, and the pivot-connection between the arm Y and said extension-plate, substantially as described.

3. In a saw-gage, the vise or clamp comprising the plates M N, adapted to the contour of the saw-teeth, and the adjusting-screws to move said plates laterally toward and from each other, in combination with a support for the clamp, substantially as described.

4. In a saw-gage, the clamp or vise comprising the plates M N, adapted to the shape of the saw-teeth and having the lateral arms at their rear ends guided one on the other, the set-screws to secure said arms at any desired adjustment, the ears projecting from the lower front ends of the plates, and the set-screws connecting said ears, in combination with means for supporting the gage, substantially as described.

5. In a gage for circular saws, a standard having the clamp or vise adapted to receive the saw-teeth in succession, said clamp or vise having the shoulders O beveled outward on their opposing sides at their front edges, for the purpose set forth, substantially as described.

6. The circular-saw gage comprising the arm A, having the foot B, for the purpose set forth, the extension-plate E, guided on the arm and having the longitudinal slot I and the curved slot H, the set-screw in slot I and engaging-arm A, the vise or clamp bearing against the extension-plate and comprising the laterally-adjustable plates M N and the screws to operate the same, the handle extending through the extension-plate and having the studs forming the pivot for the vise or clamp, and the adjusting or set screw operating in slot H and engaging the vise or clamp, substantially as described.

406,775. THERMOSTATIC-VALVE REGULATOR. CHARLES F. SAUTTER, Brooklyn, N. Y. Filed Oct. 27, 1888. Serial No. 289,348. (No model.)

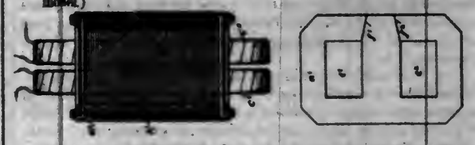


Claim.—1. In an apparatus for producing cold by the expansion of a gaseous fluid, the combination, with the expansion-chamber O, of the closed box A, the gas-supply pipe B, leading into said box, the pipe C, leading from the box into the expansion-chamber, the valve adapted to close the pipe C, and the thermostat adapted to control the position of the valve, both the expansion-chamber and the closed box being situated in the refrigerator, substantially as described.

2. The combination, with the expansion-chamber O, of the closed box A, the gas-supply pipe B, leading into said box, the pipe C, leading from the box into the expansion-chamber, the tip A, secured in said pipe, the spring-pressed roller-valve E, adapted to close the mouth of the tip A, and the thermostat adapted to control the position of the valve, both the expansion-chamber and the closed box being situated in the refrigerator, substantially as described.

3. The combination, with the expansion-chamber O, of the closed box A, the gas-supply pipe B, leading into said box, the pipe C, leading from the box into the expansion-chamber, the valve adapted to close the pipe C, the thermostat adapted to control the position of the valve, and the adjusting device G, both the expansion-chamber and the closed box being situated in the refrigerator, substantially as described.

406,776. LAMINATED CORE FOR ELECTRICAL APPARATUS. ALBERT SCHMID, Allegheny, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed Nov. 6, 1888. Serial No. 290,150. (No model.)



Claim.—1. A core for electrical apparatus, consisting of thin stamped plates of magnetizable material placed side by side and intervening layers or lamina of electrically-insulating magnetic oxide formed upon and covering the entire surfaces and edges of the plates.

2. A core for electrical apparatus, composed of thin stamped plates of magnetizable material and intervening strata of non-electric-conducting oxide formed upon the surfaces of such plates and covering the edges and burrs thereof.

3. A core for electrical apparatus, consisting of stamped plates of magnetizable material placed side by side and in contact with each other, said plates being annealed after being stamped, whereby their entire surfaces and edges are coated by an oxide.

4. A core for electrical apparatus, consisting of alternate layers of magnetizable material and magnetic oxide formed by annealing after the plates are stamped.

5. A core for electrical apparatus, consisting of alternate layers of magnetizable material and magnetic oxide, the latter being formed in layers upon the surfaces of the plates and covering the edges and burrs.

6. A core for electric converters, consisting of annealed plates of magnetizable material placed side by side and intervening lamina of insulating oxide formed upon the surfaces of the plates and covering the edges thereof, in combination with coils of insulated wire.

406,777. ARMATURE FOR ELECTRIC MACHINES. ALBERT SCHMID, Pittsburg, Pa., assignor to the Westinghouse Electric Company, same place. Filed Dec. 26, 1888. Serial No. 294,570. (No model.)

Claim.—1. An armature for electric machines, composed of lamina of magnetizable material having openings, the openings through certain of said lamina being of different shape from those of other of the lamina.

2. An armature for electric machines, consisting of plates or lamina of magnetizable material laid with their faces adjacent to each other, said lamina having openings, the openings of certain of the

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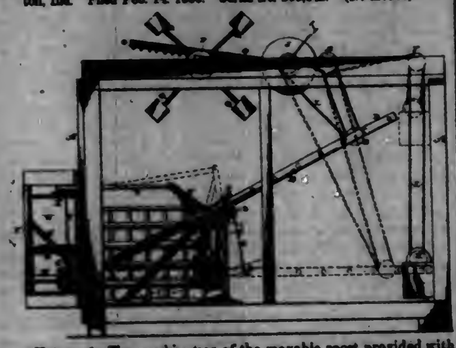


plates corresponding with each other in size and position, while the metal of the other plates projects a greater or less distance into the longitudinal openings left by the first-named lamina.

3. An armature for electric machines, composed of lamina of magnetizable material, having longitudinal openings extending from end to end, certain of the lamina projecting into said longitudinal openings.

4. An armature for electric machines, consisting of plates of magnetizable material stamped with openings and arranged in groups, and of alternate groups of plates stamped with openings of a different size or shape, the openings in the several groups of plates forming together continuous openings through the armature.

406,778. POULTRY-HOUSE. GOTTLIEB W. SCHROEDER, Huntington, Ind. Filed Feb. 14, 1889. Serial No. 299,842. (No model.)



Claim.—1. The combination of the movable roost provided with a series of pulleys, two sets of pulleys overhead, and a counter-weight provided with pulleys, a wheel provided with a spring-dog, a cord which passes around the pulleys and the hub upon the wheel, the crank-shaft upon which the wheel is loosely placed, the toothed rod, and the wheel P, provided with teeth to engage with the toothed connecting-rod, and the weighted arms, substantially as shown.

2. The combination of the movable roost and a counter-weight connected thereto for returning it to position with a connecting-cord, a pivoted and weighted lever mounted upon a standard and provided with an arm U, the pivoted connecting-rod having a cord Y attached to its outer end, and a bolt mechanism whereby the movement of the lever S, as the roost descends, causes the door to which the bolt mechanism is applied to first close and then operates the bolt so as to lock the door, substantially as described.

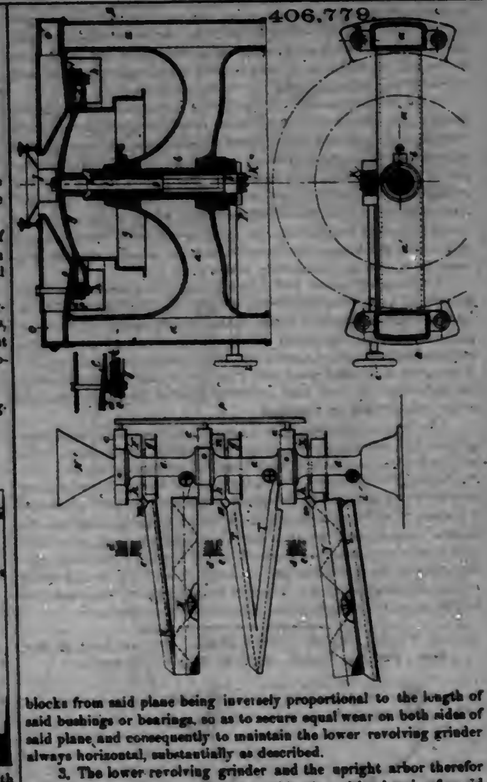
3. The combination of the pivoted roost and a counter-weight connected thereto with the pivoted lever S, provided with a counter-weight at one end, the cord which connects the lever to the roost, the arm U, the pivoted connecting-rod V, having a cord Y attached to one end, the door W, the pulley attached to the door, the pivoted rods B', connected together at their inner end by the rod C', a weight A', and the bolt D', attached to the vertical rod C', substantially as set forth.

406,779. GRINDING-MILL. JOSEPH SCHWEITZER, Paris, France. Filed Oct. 6, 1888. Serial No. 287,373. (No model.) Patented in France May 30, 1888, No. 190,915.

Claim.—1. In combination with the machine-frame and stationary horizontal upper disk-grinder, the revolving horizontal lower disk-grinder, the upright revolving arbor having the said lower grinder mounted thereon, and the vertically-adjustable tubular step-bearing supported upright in said machine-frame and constituting the sole journal-bearing for said arbor, said tubular bearing being closed at the bottom for holding oil, and comprising a tubular portion which extends over nearly the whole length of said arbor, and a step which is attached to and adjusted with said tubular portion and underlies the lower end of the said arbor, substantially as described.

2. The lower revolving grinder and revolving arbor therefor provided with a driving-pulley, in combination with bushings or bearing-blocks on opposite sides of the horizontal plane through the middle of said pulley, the distances of the middle of the bushings or bearing-

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blocks from said plane being inversely proportional to the length of said bushings or bearings, so as to secure equal wear on both sides of said plane and consequently to maintain the lower revolving grinder always horizontal, substantially as described.

3. The lower revolving grinder and the upright arbor therefor provided with a driving-pulley, in combination with a bearing for said arbor, with bearing-surfaces of equal length on opposite sides of the horizontal plane through the middle of said pulley and at equal distances from said plane, substantially as described.

4. The combination, with a supporting-frame and a stationary grinder, of a revolving grinder, an upright arbor, an adjustable tubular step-bearing supported in said frame, and composed of a tubular portion extending over nearly the whole length of said arbor, and a step attached to and adjustable with said tubular portion, and a pulley in the same horizontal plane with a portion of said tubular step-bearing, mounted with said revolving grinder on the said upright arbor, substantially as described.

5. The combination, with a supporting-frame and a stationary grinder, of a revolving grinder, an upright arbor, an adjustable tubular step-bearing supported in said frame and constituting the sole journal-bearing for said arbor, and a pulley mounted with said revolving grinder on said upright arbor and arranged in the same horizontal plane with a portion of said tubular step-bearing, the latter being composed of a tubular portion and a step attached thereto and adjustable therewith, and its tubular portion being provided with bearing-surfaces on opposite sides of the horizontal plane through the middle of said pulley and at distances from said plane which are inversely proportional to the respective lengths of said bearing-surfaces, substantially as described.

6. The series of superposed mills for gradual reduction, each provided with a hopper for the grist and a collecting-chamber with a side delivery for the chop or meal, and each composed of its individual frame with legs, its individual vertical arbor adjustable in its own frame independently of the other arbors, and a pair of grinders, the mills of the series being each supported by the legs of its own frame resting on the frame of the mill below outside the hopper thereof, in combination with sieves and purifiers arranged at the side of the series of mills, receiving the chop or meal from the collecting-chamber of a higher mill and delivering the sifted or purified material as grist into the hopper of the next lower mill, substantially as described.

7. The series of superposed mills for gradual reduction, composed each of a pair of legs, a double bracket connecting said legs, a vertically-adjustable arbor supported in bearings by said bracket, a revolving disk-grinder mounted on said arbor, a stationary disk-grinder, and a stationary crown supporting said stationary grinder, the crown

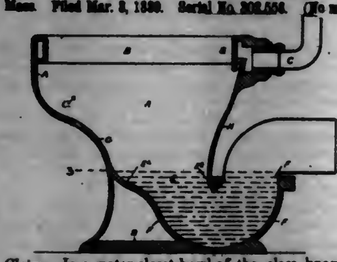
in each mill having extensions which rest upon the tops of the legs in its own mill and form rests or supports for the legs of the mill above, substantially as described, in combination with sieves and purifiers set at one side of the series of mills in the vertical space between each pair of disk-grinders and the pair below, as set forth.

8. A mill composed of a frame having legs connected by a double bracket, a vertically-adjustable tubular step-bearing supported in said bracket, and composed of a long tubular portion and a step attached thereto and adjustable therewith, an upright arbor in said tubular portion, with its lower end resting on said step, a plate-pulley and grinder mounted on said arbor, with the pulley in the same horizontal plane with a portion of said step-bearing, which it surrounds, the crown supported by said legs, the stationary grinder fastened under said crown, the hopper for the grist, and the annular chamber and spout for the chop, substantially as described.

9. The combination, with a supporting-frame and a stationary grinder, of a revolving grinder, an upright arbor, an adjustable tubular step-bearing supported in said frame, and composed of a tubular portion extending over nearly the whole length of said arbor, and a step attached to and adjustable with said tubular portion, and a pulley in the same horizontal plane with a portion of said tubular step-bearing and supported from said revolving grinder on the said upright arbor, substantially as described.

10. The combination, with a supporting-frame and a stationary grinder, of a revolving grinder, an upright arbor, an adjustable tubular step-bearing supported in said frame and constituting the sole journal-bearing for said arbor, and a pulley secured to and depending from said revolving grinder and arranged in the same horizontal plane with a portion of said tubular step-bearing, the latter being composed of a tubular portion and a step attached thereto and adjustable therewith, and its tubular portion being provided with bearing-surfaces on opposite sides of the horizontal plane through the middle of said pulley and at distances which are inversely proportional to the respective lengths of said bearing-surfaces, substantially as described.

406,780. WATER-CLOSET BOWL. William Scott, Medford, Mass. Filed Mar. 8, 1889. Serial No. 302,556. (No model.)



Claim.—In a water-closet bowl of the class known as a "short hopper" and having means to flush it, an elongated discharge-opening E in the bottom of the bowl, a discharge way or passage F, leading from said opening and coincident, or substantially so, with the longer axis E^3 E^3 of and rising to a height above said discharge-opening, and a slope G of the inner surface of the bowl, in the vertical plane of the longer axis of said discharge-opening and directly at each side of said plane, which has generally a downward direction from below or near the flushing means to a horizontal plane below the horizontal plane of the discharge-opening and above the level of the standing water of the bowl has a portion G^3 of a more or less horizontal direction, substantially as described, for the purposes specified.

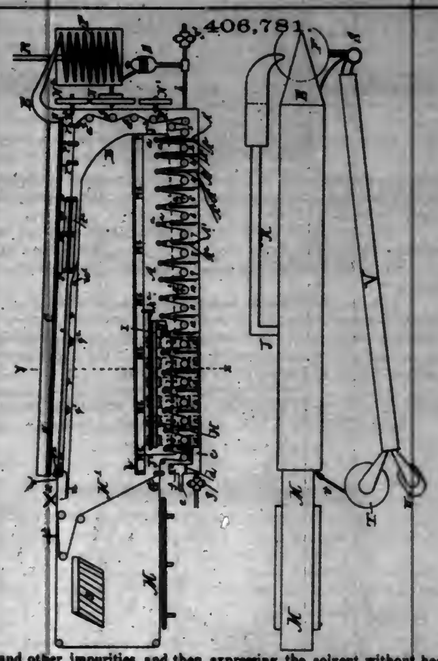
406,781. PROCESS OF CLEANING WOOL. Ignatius Singer and Moritz W. Jüdell, Adelaide, South Australia. Filed May 18, 1888. Serial No. 274,267. (No model.) Patented in South Australia Jan. 16, 1888, No. 945; in Victoria Jan. 17, 1888, No. 5,566; in New South Wales Jan. 18, 1888, No. 463; in Queensland Jan. 20, 1888, No. 337; in New Zealand Jan. 30, 1888, No. 2,773; in Tasmania Jan. 31, 1888; in England Feb. 20, 1888, No. 2,533; in Belgium Mar. 3, 1888, No. 80,961; in Luxemburg Mar. 6, 1888, No. 964; in France Mar. 9, 1888, No. 189,294; in Germany Mar. 23, 1888, No. 44,015; in Cape of Good Hope May 25, 1888, No. 6/307; in Spain June 30, 1888, No. 7,966; in Italy July 12, 1888, XLVI. 301, and in Austria-Hungary Oct. 3, 1888, No. 18,590 and No. 31,944.

Claim.—1. The process of cleansing wool and like material, consisting in passing the same continuously through a constantly-flowing counter-current of bisulphide of carbon for the purpose of removing grease and other impurities, and subsequently passing the wool through a chamber in which it is subjected to the action of heated air, substantially as set forth.

2. The process of cleansing wool and like material, consisting in passing the same continuously through a constantly-flowing counter-current of bisulphide of carbon for the purpose of removing grease and other impurities, and then expressing the solvent without heat, and afterward passing the wool through a heated chamber provided with heated rollers and a counter-blast of heated air for the purpose of removing the remaining traces of the solvent, substantially as set forth.

3. The process of cleansing wool and like material, consisting in passing the same continuously through a vessel containing bisulphide of carbon for the purpose of removing grease and other impurities, then removing the solvent by the action of heated air, then condensing the volatilized bisulphide of carbon, and then returning the said product of condensation to the said vessel, substantially as set forth.

4. The herein-described process of cleansing wool and like material, consisting in passing the same into and out of the successive cells of a trough or vessel adapted to contain a liquid, and simultaneously passing a liquid current of bisulphide of carbon from one cell to the next in a direction opposite to the movement of the wool, whereby the material is alternately immersed in and withdrawn from a liquid of progressively-increasing purity, substantially as set forth.



406,782. FASTENING FOR MINING-DRILL STOCKS. Edward Smith, Plymouth, Pa. Filed Apr. 25, 1889. Serial No. 308,803. (No model.)



Claim.—1. The combination, with the stock of a mining-drill having a stationary jaw formed on its forward end and provided with a lug or projection on its inner side, of a movable jaw recessed or slotted on its inner side to receive the lug of the stationary jaw and pivoted to said lug, and provided with a lever-extension, and means for operating said lever to separate the outer ends of the jaws, all constructed, arranged, and operating substantially as shown and described.

2. The combination, with the stock of a mining-drill having a stationary jaw formed on its forward end and provided with a projecting lug on its inner side, of a movable jaw recessed on its inner side to receive the lug of the stationary jaw and pivoted to said lug, and provided with a lever-extension, a spring interposed between said lever and the stock to hold the lever normally away from the stock and the jaws closed, and means for operating said lever against the tension of its spring to separate the forward ends of the jaws, all constructed, arranged, and operating substantially as shown and described.

3. The combination, with the stock of a mining-drill having a stationary jaw formed on its forward end and provided with a projecting lug on its inner side, of a movable jaw recessed on its inner side to receive the leg of the stationary jaw and pivoted to said lug, and provided with a lever-extension having a slot in its rear end, a screw-threaded arm or bolt pivoted at one end to the stock and projecting through the slot in the lever and being provided with a nut adapted to engage with the outer side of said lever, and when screwed upon said pivoted arm to draw the lever toward the stock and separate the forward ends of the jaws, substantially as shown and described.

4. The combination, with the stock of a mining-drill having a stationary jaw B formed on its forward end provided with a projecting lug C on its inner side, of a movable jaw D, having a recess E on its inner side to receive the lug C, and pivoted to said lug, and provided with a lever-extension D', having a slot g in its rear end, and a screw-threaded arm or bolt G, pivoted at one end to the stock and extending through the slot g, and provided with a nut g^4, engaging with the outer side of said lever, all constructed, arranged, and operating substantially as shown and described, as and for the purpose set forth.

5. The combination, with the stock of a mining-drill having a stationary jaw B formed on its forward end provided with a projecting lug C on its inner side, of a movable jaw D, having a recess E on its inner side to receive the lug C, and pivoted to said lug, and provided with a lever-extension D', having a slot g in its rear end, a spring F, interposed between the stock and lever to hold said lever normally away from the stock and keep the jaws closed, and a screw-threaded arm or bolt G, pivoted at one end to the stock and extending through the slot g, and provided with a nut g^4, engaging with outer side of said lever, all constructed, arranged, and operating substantially as shown and described.

6. The combination, with the stock of a mining-drill having a stationary jaw formed on its forward end, of a movable jaw pivoted to said stock and having a lever-extension, a spring interposed between the lever and the stock to hold said lever normally away from the stock and the jaws closed, and means for operating the lever against the tension of the spring to separate the forward ends of the jaws, substantially as shown and described.

406,783. SIRUP FOR SODA-WATER. Frank L. Smith, Sioux City, Iowa. Filed Apr. 3, 1889. Serial No. 306,020. (No specimens.)

Claim.—A sirup composed of celery, alcohol, phosphoric acid, water, and sugar, in or about the proportions described.

406,784. APPARATUS FOR DYEING. Jos Smith, Philadelphia, Pa., assignor to George C. Hetzel & Co., same place. Filed Apr. 20, 1889. Serial No. 308,050. (No model.)



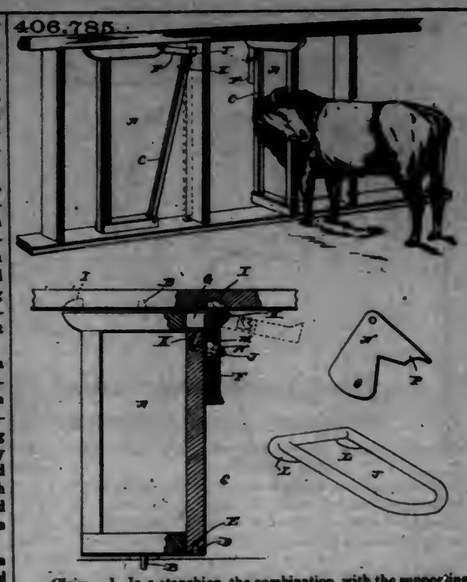
Claim.—1. In a machine for dyeing or scouring yarn, the combination of a vat or tank, an endless chain traversing said tank, and a series of yarn-holding frames mounted upon said endless chain, said frames consisting of bars projecting outward from the chain and having lateral yarn-carrying arms, substantially as specified.

2. In a machine for dyeing or scouring yarn, the combination of the vat or tank and endless chains traversing said tank with a series of yarn-holding frames mounted upon said endless chains, each frame consisting of a cross-bar extending from chain to chain, upright bars extending from said cross-bar, and transverse yarn-carrying rods supported upon said upright bars, substantially as specified.

3. In a machine for dyeing or scouring yarn, the combination of a vat or tank and an endless chain traversing said tank with a series of frames secured to said chain, each of said frames having a series of orifices for the reception of the yarn-carrying bars, substantially as specified.

4. In a machine for dyeing or scouring yarn, the combination of a vat or tank and an endless chain traversing said tank with a series of yarn-supporting frames carried by said chain, each frame having guards to retain the hanks of yarn in proper lateral position, as set forth.

406,785. STANCHION. Ralmon W. Smith, Addison, N. Y., assignor to Frank G. Parsons and Jacob V. Graham, same place. Filed Mar. 6, 1889. Serial No. 302,694. (No model.)



Claim.—1. In a stanchion, the combination, with the supporting-frame having the recesses I in its top, of the stanchion-frame mounted therein and provided with a swinging side bar, and a latch pivoted to the upper end of the stanchion-frame, adapted to engage the recesses I, and connected with the swinging side bar, as set forth.

2. The combination of the supporting-frame having the recesses I, the swinging stanchion having the swinging side bar C, and the latch pivoted to the stanchion and adapted to be operated by the swinging side bar to engage the recesses I, the said latch being provided with a point or tooth to enter one of the said recesses, and having a rounded extremity, as set forth.

3. The combination of the stanchion having the swinging side bar C, provided at its upper end with the slot K, the latch F, pivoted to the stanchion, the link engaging the slot K and passing around the latch, and having the lugs L engaging against the side of the bar C, and the locking-lever pivotally mounted on the latch and having a concave recess in its edge engaging the link, as set forth.

4. The combination of the stanchion having the swinging side bar C, the latch F, pivoted to the stanchion and having a recess M, the link mounted on the side bar and passing around the latch, and the locking-lever pivoted in the recess M and having a weighted arm O, and a concave recess P, adapted to engage the link, as set forth.

406,786. METAL FABRIC. Robert F. Snow, Detroit, Mich., assignor of one-half to Charles E. Snow, Rochester, N. Y. Filed Mar. 19, 1888. Serial No. 267,648. (No model.)



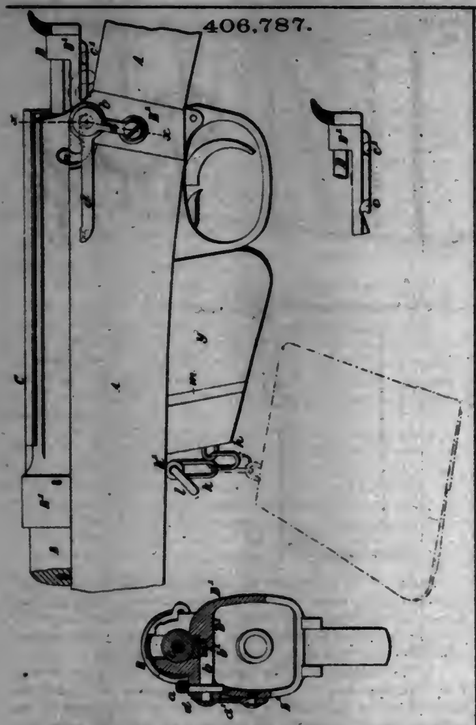
Claim.—1. A metal fabric consisting of a series of slotted bars having in combination therewith a series of twisted bars, the width of the slots respectively being less than the diameter of the periphery of the twisted bar, substantially as described.

2. A metal fabric consisting of the combination, with a series of bars slotted at suitable intervals, of a series of twisted bars, the width of the slots being less than the peripheral diameter of the twisted bars, and a border located about one or more edges of the fabric, substantially as set forth.

3. A metal fabric consisting of the combination, with a series of corrugated bars slotted at suitable intervals, of a series of twisted bars, the width of the slots being less than the peripheral diameter of the twisted bars, substantially as set forth.

406,787. MAGAZINE FIRE-ARM. James J. Speed, Waltham Cross, England. Filed Dec. 19, 1888. Serial No. 294,103. (No model.) Patented in England Nov. 1, 1888, No. 15,793.

406,787.



Claim.—1. The combination, with the receiver and the breech bolt of a breech-loading fire-arm, of a firing-pin and a movable locking-pin adapted to move into engagement with and lock the firing-pin in both its cocked and uncocked positions, substantially as described.

2. The combination, with the breech-bolt, of the firing-pin having the front and rear notches *c c'*, and a movable locking-pin for engaging either of said notches to lock the firing-pin in both its cocked and uncocked positions, substantially as described.

3. The combination, with the firing-pin D, having a cocking-piece D' and provided on its under side with the front and rear semicircular notches *c c'*, of the rotary pin *b*, having the semicircular end *b'*, to engage either of said notches and thereby lock the firing-pin in its cocked or uncocked positions, substantially as described.

4. The combination, in a fire-arm, of the firing-pin D, the transverse locking-pin *b*, adapted to engage the firing-pin in both its cocked and uncocked positions, the swinging rear sight-arm *d* carried by the locking-pin and having a peep-hole, and the spring *d'*, acting on the sight-arm to hold it in either a vertical or horizontal position, substantially as described.

5. The combination, with a fire-arm, of a cartridge-magazine and the link-hinge connecting the magazine with the receiver or shoe of the fire-arm, substantially as described.

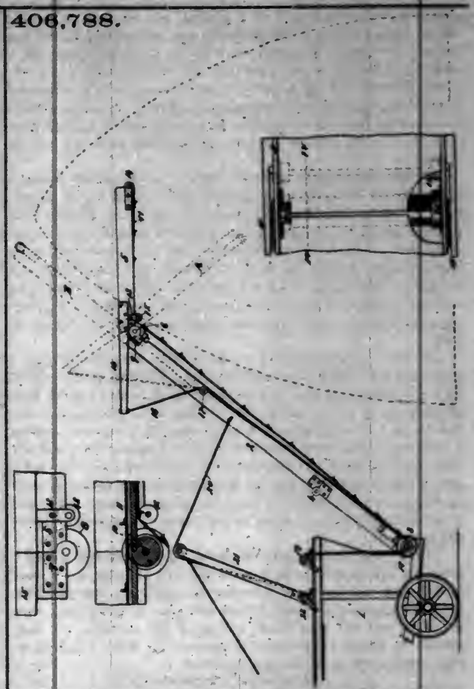
6. A cartridge-magazine for fire-arms, consisting of the casing having a laterally-widened base and contracted at the top to substantially the width of a single cartridge, said casing being thus adapted to contain a zigzag column of cartridges and provided near the front end alone of its opposite side walls with vertically-extending depressions, and the cartridge-platform *n*, having the laterally-widened or extended parts *n'* in front of the said depressions for preventing the said extended parts of the platform from passing the depressions when its rear end is depressed, substantially as described.

406,788. STRAW-STACKER. PEARLEY J. SPRAGUE, Adrian, Mo. Filed Aug. 20, 1888. Serial No. 283,249. (No model.)

Claim.—1. In a straw-stacker, the combination of a main section and an outer section having floors, the outer section being connected with the main section by journal-brackets 9, and a cylindrical part 8, rigidly secured to the inner end of the outer section, the floor of the latter being tangential thereto, whereby said cylindrical part 8 is caused to follow the motion of the outer section, thus preserving the symmetry of the floor between the two sections, substantially as set forth.

2. A straw-stacker having a main section and an outer section,

406,788.

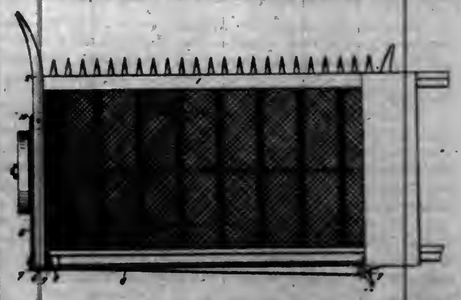


the latter being jointed to the former by means of a notched cylindrical rigid part 8, in which the inner end of the outer section fits, and journal-brackets for said roller on the main section, a raddle, and idlers 25, over which the raddle passes, substantially as set forth.

3. In a straw-stacker having a main section and an outer section united with the latter by a hinged joint, both of said sections having carrying-belts, rigid arms secured to and projecting from the outer sections, a windlass, ropes connecting said arms with the windlass for controlling the outer section, idlers 25 in line with the hinge-joint, idlers 12, and a raddle passing over the sections and over and under idlers 25 and over idlers 12, substantially as set forth.

4. In a straw-stacker, the combination of the main section, an outer section hinged to the main section, arms 15, secured to the outer section, ropes 16, secured to the arms, windlass 19, to which the ropes are secured, raddle 11, and rollers 12, substantially as and for the purpose set forth.

406,789. GRAIN RETARDER AND REGULATOR FOR HARVESTERS. PEARLEY J. SPRAGUE and JAMES M. MCCRAW, Adrian, Mo. Filed Aug. 20, 1888. Serial No. 283,247. (No model.)



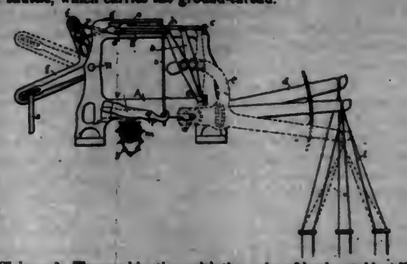
Claim.—1. In combination with a cutter-bar and apron of a harvester, a crank-shaft, a belt operated by said crank-shaft and arranged to move parallel with the divider-bar, and a cord resting upon the apron and made fast to said movable belt, whereby said cord may be moved toward and from the cutter-bar without stopping the machine, substantially as set forth.

2. In combination with the cutter-bar and apron of a harvester, a retarder consisting of a cord and means for adjusting said cord, consisting of a movable belt parallel with the divider-bar, to which

belt the cord is made fast, pulleys journaled in the divider-bar, over which the belt passes, and a drum and crank-shaft for turning the belt.

406,790. SHEDDING MECHANISM FOR LOOMS. GEORGE W. STAFFORD, Providence, R. I., assignor to the Geo. W. Stafford Manufacturing Company, same place. Filed Dec. 18, 1886. Serial No. 204,008. (No model.)

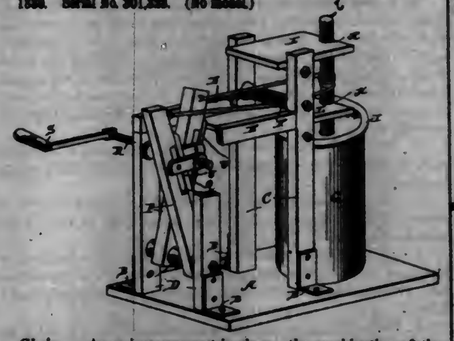
Brief.—By means of the double-hooked latches and the lifter-bars, which are actuated to move over paths of unequal extent, it is possible to raise any one of the harness-frames, so as to shed either for the upper shuttle, which carries the figure-thread, or else for the lower shuttle, which carries the ground-thread.



Claim.—1. The combination, with the series of horizontal heddle-levers *d*, having curved arms extending up with jack-levers pivoted to them, of double-hooked latches pivoted to the upper ends of said jack-levers, two lifter-bars placed one above and the other below the said hooked latches, and means for moving said lifter-bars simultaneously in toward the loom side at one beat of the lathe and outward at the succeeding beat, the outward movement imparted to one of the lifter-bars being greater than that imparted to the other, substantially as described.

2. The combination of the heddle-levers having arms with jack-levers pivoted thereto, with double-hooked latches pivoted to the upper ends of said jack-levers, two lifter-bars placed one above and the other below said hooked latches, links *p p'*, connected to the lifter-bars, and the lever *f*, to one arm of which the said bars are pivoted at different distances from its center of motion, substantially as described.

406,791. CHURN. DAVID STEPHENS, Rushville, Ill. Filed Feb. 27, 1889. Serial No. 301,322. (No model.)



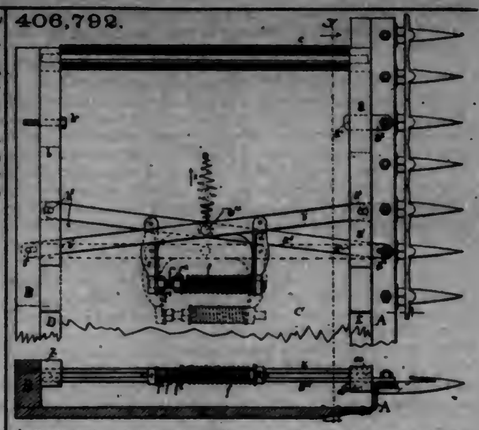
Claim.—As an improvement in churns, the combination of the dasher-shaft, the standards D D, the oscillating levers P, pivoted at their lower ends between the standards D D, and provided near their upper ends with the longitudinal slots Q, the belt V, having its central portion wrapped around the dasher-shaft and its ends secured to the upper ends of the levers P, and the shaft journaled on the standards D D, and having its crank-arms engaging the slots Q of the levers, the lateral portions of the crank-arms being flattened and engaging the sides of the levers, substantially as specified.

406,792. CANVAS-STRETCHER FOR HARVESTING-MACHINES. JOHN F. STEWARD, Chicago, Ill. Filed Nov. 24, 1888. Serial No. 291,888. (No model.)

Claim.—1. In combination with the platform-frame, the apron-sustaining roll, the two slides supporting said roll, and the crossed levers united by the pivot and connected each at one end to the frame and at the other end to one of the slides, whereby the two slides are compelled to move simultaneously and equally.

2. In a harvester, the combination of a suitable supporting-frame, an apron-carrying roll, two slides sustaining the ends of said roll, two crossed levers pivoted together and connecting at their opposite ends the respective slides with the frame, and a spring, substantially as described, acting to carry the roller outward and thereby stretch the apron.

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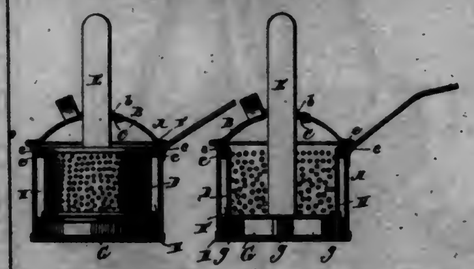
3. In combination with the supporting-frame, the apron-carrying roll, and the roll-supporting slides, the crossed levers connecting at their opposite ends the respective slides with the frame and pivoted together, the rigid arms on said levers, and a spring acting between said arms.

4. The roll, the roll-carrying slides *a b*, the crossed levers connected to the frame and to the respective slides at opposite ends and pivoted together, the arms *d e*, secured rigidly to the respective levers, the bolt *f'*, the spring *f* thereon, and the adjustable nut *f''*, said elements combined substantially as described and shown.

5. In combination with the supporting-frame and the two roll-supporting slides provided with slots, the crossed levers extending through the slots in the slides and connected at their opposite ends to the frame and the slides, substantially as described, whereby the levers are adapted to serve the twofold purpose of adjusting and supporting the slides.

6. In combination with the roll-supporting slide, the finger-bar and the guard-finger bolted thereto, as usual, and the slide-sustaining plate *a'*, secured to the bar by the vertical finger-bolt.

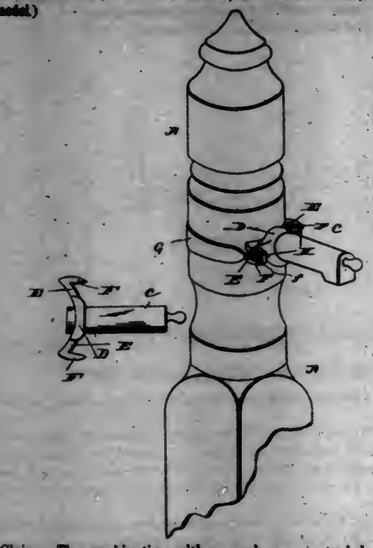
406,793. STEAMER AND BOILER. AMELIA H. STORMS, Farmingdale, N. J. Filed July 3, 1888. Serial No. 278,913. (No model.)



Claim.—1. The combination, with the cylindrical boiler and a suitable cover therefor, of the removable steamer arranged within said boiler and smaller in diameter than the diameter of the depending flange of the cover, whereby an annular space is formed between them, and the partition F within said steamer, said partition having ears *e e*, engaging the upper edge of the steamer and passing thereover into said annular space, which ears simultaneously support the partition vertically and hold the steamer concentric with said cover, as and for the purpose set forth.

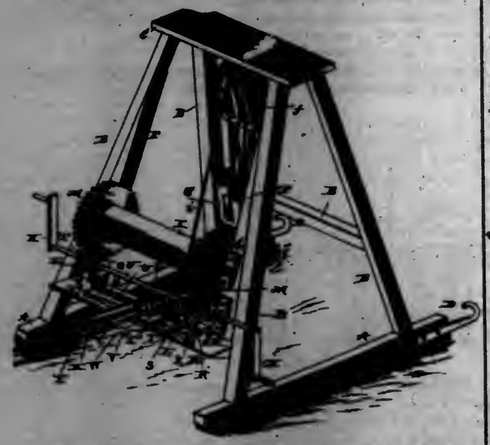
2. The combination, with the cylindrical boiler, the cover B therefor, said cover having a slot in its body, and the plate C, pivoted to the cover and adapted to close said slot, of the cylindrical steamer D, removably inserted within said boiler, the body of the boiler being larger in diameter than that of the steamer, and the vertical sides of the latter extending upwardly nearly to the cover, for the purpose set forth, and the flat handle E, rigidly secured to the interior of the steamer and projecting upwardly through said slot in the cover, and with the removable partition F within said strainer, said partition having ears *e e*, engaging its upper edge, passing thereover, and fitting between the outside of the strainer and the inside of the depending flange *c* of the cover, as and for the purpose set forth.

406,794. MEANS FOR SECURING PUMP-SPOUTS. JAMES G. TAYLOR, Brasher Falls, N. Y. Filed Aug. 13, 1888. Serial No. 282,602. (No model.)



Claim.—The combination, with a wooden pump-stock having an opening to receive a spout, of a metallic spout having at a short distance from its inner end an annular collar adapted to bear against the face of the pump-stock and provided with laterally-extending flanges having upturned slotted outer ends, the flat clip or band having screw-threaded ends, and the fastening-nuts, substantially as and for the purpose set forth.

406,795. STUMP-EXTRACTOR. JACOB H. TERRY, Phillipsburg, Mo. Filed Mar. 8, 1888. Serial No. 302,482. (No model.)

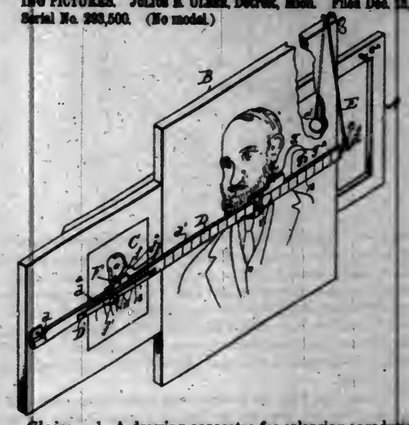


Claim.—1. The combination of the supporting-frame, the driving-shaft mounted thereon, the half-clutches secured rigidly on the driving-shaft, the windlass mounted on the supporting-frame above the driving-shaft and provided with gear-wheels at its ends, the pinions loosely mounted on the driving-shaft meshing with the gear-wheels and adapted to engage the half-clutches, the horizontally-moving slides mounted on the supporting-frame and having vertical forks engaging said pinions, and means for operating said slides, as set forth.

2. The combination of the supporting-frame, the windlass mounted thereon and provided with gear-wheels at its ends, the driving-shaft mounted on the supporting-frame below the windlass, the half-clutches secured rigidly on the driving-shaft, the pinions mounted loosely on the said shaft engaging the gear-wheels on the windlass and adapted to engage the half-clutches, the guides mounted on the supporting-frame below the driving-shaft, the slides moving in said guides and carrying forks engaging the loose pinions, the springs arranged around the slides and adapted to project them outward, and a lever connected to the slides and adapted to throw them inward, as set forth.

3. The combination of the supporting-frame, the windlass mounted thereon and provided with gear-wheels at its ends, the half-clutches secured rigidly on the driving-shaft, the pinions mounted loosely on the said shaft meshing with the gear-wheels and adapted to engage the half-clutches, the slides mounted on the supporting-frame and carrying forks engaging the loose pinions, the plate *b*, having the notch *a*, the lever connected with the slide, the latch pivoted on the lever and adapted to engage the notch *a*, and the springs for forcing the slides apart, as set forth.

406,796. DRAFTING APPARATUS FOR ENLARGING OR REDUCING PICTURES. JULIUS R. ULMER, Detroit, Mich. Filed Dec. 13, 1888. Serial No. 293,500. (No model.)



Claim.—1. A drawing apparatus for enlarging or reducing pictures, consisting of the combination, with a suitable frame for the drawing-sheet and the copy, of a pivoted bar provided with a large scale, a small scale, and movable supports F G, bearing pointers, said bar being adapted to be traversed across the sheet, and the pointer-supports adapted to be adjusted to corresponding points along their respective scales, substantially as described.

2. A drawing apparatus for enlarging or reducing pictures, consisting of the combination, with a supporting-frame for the drawing-sheet and the copy, of a pivoted bar D, a fixed scale d', a reduced scale d^2, and pointers fixed to movable supports adapted to be adjusted along their respective scales, said reduced scale being made interchangeable with other reduced scales to correspond with the dimensions which the reduced picture bears to the larger picture, substantially as described.

3. The combination, with the movable support G, of a pointer made of paper or card-board, substantially as and for the purposes described.

4. The combination, with the movable supports F and G, of pointers made of paper or card-board, substantially as and for the purposes described.

5. The combination, with the bar D, having a permanent inch or other scale d', of an interchangeable scale d^2 and means for temporarily securing said scale d^2 in place on the bar, substantially as described.

6. The combination, with the movable supports F and G, of the pointers supported therefrom and having overhanging hooked points, thereby leaving a working-space between them and the supports, substantially as described.

7. The combination, with the bar D and movable pointer-supports F G, of means at the free end of said bar for adjusting and supporting the same in any position, substantially as described.

406,797. CLOSED SLOTTED CONDUIT FOR ELECTRIC RAILWAYS. CHARLES J. VAN DEPOELE, Lynn, Mass. Filed Apr. 13, 1889. Serial No. 307,130. (No model.)

Claim.—1. The combination, in a closed slotted conduit, of means for supplying compressed air thereto and for localizing the air-pressure therein, substantially as described.

2. The combination, with a conduit for electric conductors having a surface slot closed by flexible packing, of means for supplying compressed air to desired portions of said conduit and for confining said air therein.

3. A closed slotted conduit having a conductor-containing chamber therein, flexible conductors at desired points along said conduit, and means for supplying compressed air to the conductor-containing

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chamber and for contracting the flexible conductor to close the chamber and confine and localize the air-pressure.

4. A flexibly-closed slotted conduit having a conductor-containing chamber therein, flexible conductors at desired points along said conduit, and means for holding said flexible conductors in close contact to close and shut off any desired portion of the conduit.

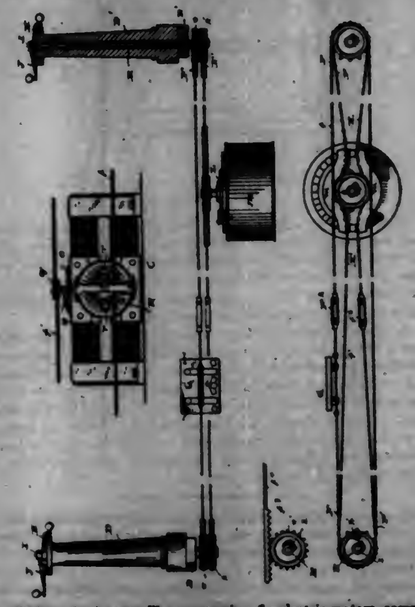
5. The combination, in a conduit having a conductor-containing chamber, of sections of stationary conductors electrically united by flexible connections, an elastic casing inclosing the flexible connections and joined to the extremities of the main conductor-containing chamber, and suitable springs applied to contract the casing inclosing the flexible conductors and thereby render the conductor-containing chamber discontinuous.

6. The combination, with a flexibly-closed slotted conduit and a conductor containing chamber therein, of means for contracting and closing the conductor-containing chamber and a contact device adapted to forcibly open and pass through the said closed portion or portions of the conduit.

7. The combination of discontinuous portions of a conductor-containing conduit, permanent electrical connection between said discontinuous portions, a movable section of conduit adapted to connect the discontinuous stationary parts, and permanent electrical connections between the stationary and moving sections of the conduit.

8. The combination, with a draw-bridge carrying a section of electric-railway conduit, of stationary termini of the main conduit at each extremity of the normal position of the bridge, permanent electrical connections between the conductors of the stationary portions of the conduit, and a permanent electrical connection between the said stationary portions of the conduit and the section upon the bridge.

406,798. MECHANISM FOR CONTROLLING ELECTRIC-RAILWAY MOTORS. CHARLES J. VAN DEPOELE, Lynn, Mass. Original application filed Oct. 20, 1888, Serial No. 288,693. Divided and this application filed Apr. 13, 1889. Serial No. 307,133. (No model.)



Claim.—1. A controlling mechanism for electric motors, comprising a pair of movable hand-levers supported at either end of the vehicle to be propelled and at a distance from the motor or motors, two sets of movable mechanical connections, one attached to and operated by each hand-lever, current-controlling devices mechanically connected to one of the movable connections for regulating the speed and power of the motor, and circuit-reversing mechanism connected to and operated by the other of said hand-levers and connections, substantially as described.

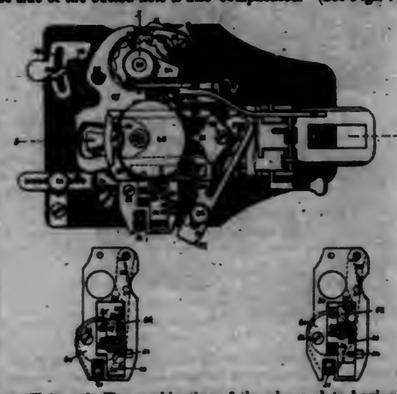
2. The combination of an electrically-propelled vehicle, an electric motor or motors connected to the running-gear thereof, a support or standard upon the forward part of said vehicle, a tubular shaft within said standard, a shaft within the tubular shaft, operating-levers attached, respectively, to said shafts for imparting rotary movement thereto independently, sprocket wheels and chains upon each shaft, and connections extending from said independent set of sprocket-chains to devices for controlling, respectively, the direction of movement and the rate thereof of the motor or motors, substantially as described.

3. The combination of an electrically-propelled vehicle, a post or support upon the forward part thereof, a tubular shaft sustained in said support and provided with an operating-handle at its upper end and with a sprocket-wheel or equivalent at its lower extremity, said shafts, operating-handles, and sprocket-wheels operating independently, means for controlling the direction of rotation of the armature of the motor propelling the vehicle and for varying the speed thereof, and separate sets of connections between the sprocket-wheels and the said speed and direction controlling devices, substantially as described.

4. The combination of an electrically-propelled vehicle, posts D D', located one on each platform thereof, a reversing-switch included in the circuits of the motor, a rheostat also included in the external circuit of the motor, a tubular shaft E in each post and an operating-handle adapted to engage the upper extremities thereof, sprocket-wheels on the lower extremities of each of said tubular shafts, an endless flexible connection extending between said sprocket-wheels and the reversing-switch, separate shafts extending through the tubular shafts and provided with an operating handle or handles at their outer extremities and with sprocket-wheels on their lower extremities, and flexible connections extending from said sprocket-wheels to the circuit-controlling devices for regulating the speed and power of the motor, substantially as described.

406,799. BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES. WASHINGTON WALLIS, Philadelphia, Pa. Filed Jan. 26, 1888. Serial No. 262,196. (No model.)

Brief.—The groove 66 in the vibrating plate 27 engages with a pin upon the plate 50 to vibrate the same and the clamp while stitching the ends of the button-hole. The mechanism for shifting from one side of the button-hole is also complicated. (See Figs. 7 and 8.)



Claim.—1. The combination of the clamp-plate having a transverse slot, the traversing cam for said plate, transmitting mechanism comprising a slotted and pivoted traverse-arm and a traverse-regulating bar slotted to receive the pivot-pin and having pins entering the slots of the clamp-plate and traverse-arm, ratchet mechanism for operating the traverse-cam, a stop-plate and regulating-lever, whereby the extent of movement of the ratchet is controlled, and graduated scales, whereby corresponding adjustments of said regulating-lever and traverse-governing bar are facilitated, all substantially as specified.

2. The combination of the clamp-plate, the shifter-frame, and the traverse-cam for operating the latter with connecting devices comprising a slotted and pivoted traverse-arm connected to the frame and a traverse-regulating bar adjustable longitudinally in respect to its fulcrum, said bar being connected to the clamp-plate and having a pin engaging the slot in the pivoted traverse-arm, all substantially as specified.

3. The combination of the clamp-plate, the vibrator-lever having a portion swinging longitudinally or in the same direction as the

traverse motion of the clamp-plate, the shifter-cam, the shifter-frame connected to the clamp-plate, a pin carried by said frame, and a slot formed in the longitudinally-moving portion of the vibrator-lever for the reception of said pin, said slot comprising opposite longitudinal side portions and transverse end portions, whereby the shifter-frame is brought under control of the vibrator-lever while said frame is being shifted laterally, all substantially as specified.

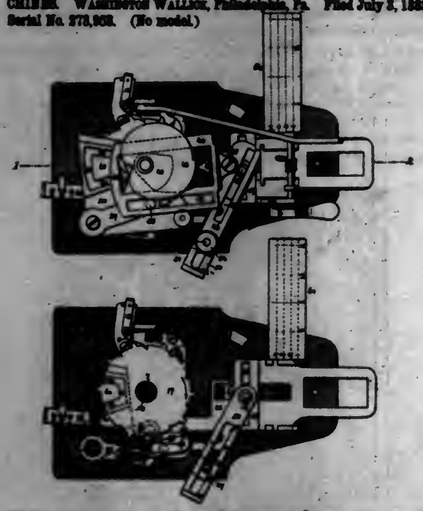
4. The combination of the clamp-plate, the vibrator-lever, the vibrator-plate, the vibrator-slide guided in the plate, the lever and bolt for locking said slide to the vibrator-plate, the trip-plate having a lug for acting on the locking-bolt lever, the shifter-frame engaging with projections on said trip-plate and vibrator-slide, and means for connecting the vibrator-slide to the clamp-plate, all substantially as specified.

5. The combination of the pivoted clamp-plate, the vibrator-plate and means for operating the latter, a transmitter-link 39, connected to the vibrator-plate, a longitudinally-adjustable regulating-bar, and slot-and-pin connections between said regulating-bar and the clamp-plate and transmitter-link, all substantially as specified.

6. The combination of the clamp-plate, the vibrator-lever, the vibrator-plate, the vibrator-slide, the lever hung to the vibrator-plate and having a locking-bolt for the slide, the trip-plate for the lever, the shifter-frame engaging with projections on said trip-plate and vibrator-slide, the eccentric hung to the vibrator-plate, a connection between the vibrator-slide and eccentric adjustable from and toward the fulcrum of the latter, and means for connecting the eccentric to the clamp-plate, all substantially as specified.

7. The combination of the traversing mechanism for the clamp-plate with a pivoted stud and a clamp-plate having a longitudinal slot for the reception of said pivot-stud, and a transverse slot for engagement with the traversing mechanism, said transverse slot being formed in a portion of the plate located above and crossing the longitudinal pivot-slot, all substantially as specified.

406,800. BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES. WASHINGTON WALLIN, Philadelphia, Pa. Filed July 3, 1888. Serial No. 278,968. (No model.)

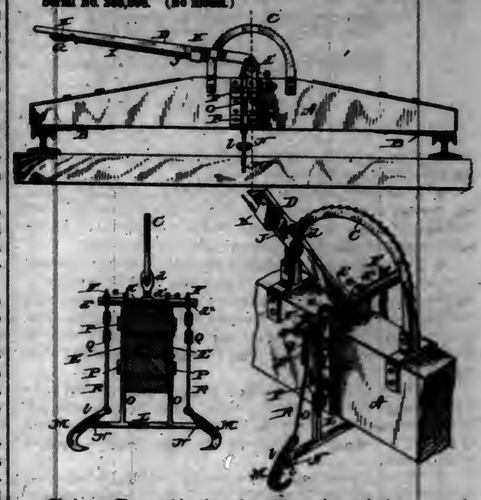


Claim.—1. The combination of the clamp-plate, operating mechanism therefor having as one of its elements a ratchet-wheel, the operating-lever, the pawl-lever, a swinging arm engaging with the operating-lever, and stops for the free end of said arm, one of said stops consisting of a short arm of an adjustable lever hung to the pawl-lever, substantially as specified.

2. The combination of the clamp-plate, the pawl-lever and its pawl, a vibrator-lever the arms of which have projecting lugs, mechanism for operating the pawl-lever and for transmitting the movement of the vibrator-lever to the clamp, and a ratchet-wheel having teeth the faces of which are engaged by the pawl, the backs of some of the teeth acting upon the lugs of the vibrator-lever to impart a vibrating movement thereto, substantially as specified.

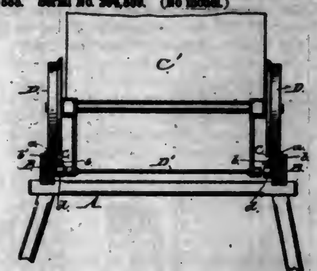
3. The combination of the clamp-plate, the vibrator-lever, the swinging shifter-frame, operating mechanism for said lever and frame, the pivoted shifter-lever having two arms, one of which engages with the shifter-frame, and a transmitter-lever connected to the clamp-plate and pivoted at one end to the vibrator-lever and at the opposite end to the other arm of the shifter-lever, whereby said pivots may both serve as fulcrums for the transmitter-lever, substantially as specified.

406,801. RAILWAY-GAGE AND TIE-GRIP. ALFRED P. WARNER and HENRY R. KRIMMEL, Independence, Oreg. Filed Sept. 20, 1888. Serial No. 285,602. (No model.)



Claim.—The combination of the beam, the arched or curved rack-bar, the lever having longitudinal slot and provided with a cross-head having enlarged ends, said enlarged ends being provided with hooks, means for securing the lever in its adjusted position, the side bars, each provided with an eye or perforation in its upper end, the bracket having the lower cross-piece thereof provided with bifurcated ends, the hooks pivoted in said bifurcated ends, and the connecting links and rods, substantially as set forth.

406,802. RAILWAY. DAVID G. WEEMS, Baltimore, Md., assignor to the Electro-Automatic Transit Company, same place. Filed Dec. 29, 1888. Serial No. 294,899. (No model.)



Claim.—1. The combination, with a car having bearing-wheels, a shaft below the main axles, and supplemental wheels thereon, of an angular rail having an upper tread or bearing-surface for the main wheels, and a laterally-projecting arm or flange, the under surface of which forms a track for the supplemental wheels when brought into contact therewith, substantially as described.

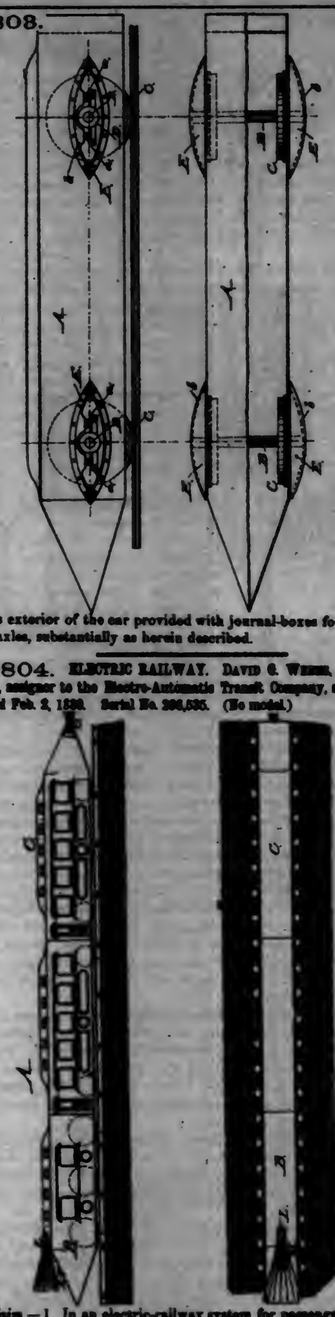
2. The combination, with a carrier or vehicle having the wheels D and *d*, of angular rails between said wheels, and each consisting of a horizontal arm having a bearing-surface or track for the wheels D, and a vertical arm *c*, having a laterally-projecting flange *b*, the lower under surface of which serves as a track or surface for the other wheels *d*, the said wheels *d* being normally slightly below the vertical arm of the rail and being brought into contact with its lower bearing-surface when the main wheels D attempt to leave their track or surface, substantially as herein described.

406,803. CARRIER FOR ELECTRIC-RAILWAY SYSTEMS. DAVID G. WEEMS, Baltimore, Md., assignor to the Electro-Automatic Transit Company, same place. Filed Jan. 30, 1889. Serial No. 298,110. (No model.)

Claim.—1. A car or carrier having closed semi-elliptical housings bolted to its external sides and adapted to contain the journal-boxes for the shafts of the main bearing-wheels.

2. The car or carrier having bearing-wheels within and near the inner walls thereof and the axles for said wheels projecting through the sides of the car or carrier, in combination with closed semi-elliptical

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housings exterior of the car provided with journal-boxes for the ends of said axles, substantially as herein described.

406,804. ELECTRIC RAILWAY. DAVID G. WEEMS, Baltimore, Md., assignor to the Electro-Automatic Transit Company, same place. Filed Feb. 2, 1889. Serial No. 298,535. (No model.)

Claim.—1. In an electric-railway system for passenger traffic, in which a train of cars is propelled, lighted, and heated by a current from an electric rail, a locomotive or carrier having a pointed end and head-light, and a rear car having a pointed end, the apex of which is provided with a signal-light, both the head-light and signal being in the main circuit and lighted thereby, substantially as herein described.

2. In an electric-railway system for passenger traffic, in which a train of cars is propelled, lighted, and heated by a current from an electric rail, a head-light and rear signal-light in said circuit and lighted thereby, and an independent conductor conveying a second current to telegraphic or other instruments on the train, substantially as herein described.

3. In an electric-railway system operated by a current from an electric rail, a locomotive or carrier having a point or front capable of movement in vertical planes, substantially as described.

4. In an electric-railway system operated by a current from an electric rail, a locomotive or carrier having a pointed end or front hinged or jointed to the body thereof and movable about its joint, whereby said point may be adjusted, substantially as herein described.

5. In an electric-railway system operated by a current from an electric rail, a locomotive or carrier having its pointed front or end hinged to the body portion, and a system of levers connected with said movable point or front, whereby the latter is adjusted, substantially as described.

6. In an electric-railway system operated by a current from an electric rail, a locomotive having a pointed front end, a rear car having a pointed rear end, and a signal-light in the apex of the pointed rear end, substantially as herein described.

7. In an electric-railway system operated by a current from an electric rail, a locomotive having an adjustable front or point provided with a "lookout," substantially as and for the purpose described.

8. In an electric-railway system, a car or carrier having its rear end pointed and having in the apex thereof a signal-light, substantially as described.

9. An electric system for passenger traffic comprising the following instrumentalities, to wit: a train of cars, the locomotive and rear car having a pointed end, as described, said locomotive carrying a motor, a main conductor conveying an electric current to the motor and propelling, heating, and lighting the cars, signals in the main circuit, and telegraphic instruments in a second circuit, substantially as herein described.

406,805. ELECTRIC RAILWAY. DAVID G. WEEMS, Baltimore, Md., assignor to the Electro-Automatic Transit Company, same place. Filed Mar. 7, 1889. Serial No. 302,317. (No model.)



Claim.—1. In electric railways, a main rail having a laterally-extending flange, in combination with a conductor secured to the bottom of said flange, but insulated therefrom, and bolts passing through the flange and securing the conductor in position, substantially as described.

2. In electric railways, a main rail having a flange provided with a downwardly-extending projection, in combination with a conductor bolted to the under surface of the flange, and insulating material between the conductor and flange and between the securing-bolts and flange, substantially as described.

3. In electric railways, the combination of a rail having a conductor bolted to the under surface of its flange, but insulated therefrom, and a non-conducting cap fitted on the bolts, substantially as described.

4. In electric railways, a conductor bolted to the rail and insulated therefrom, and a cap or covering of non-conducting material fitted over the exposed portions of the bolts and their securing-nuts, substantially as described.

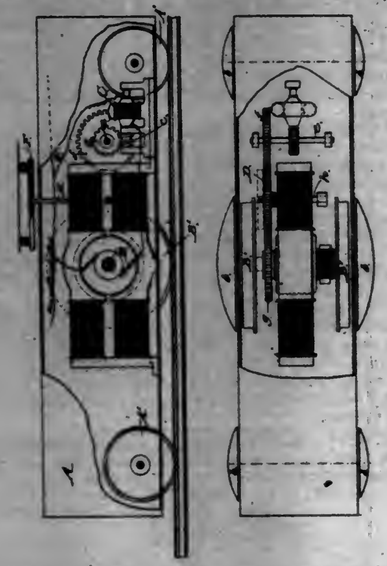
5. In electric railways, the combination of a main rail having an outwardly-extending flange, a copper or other plate or conductor bolted to the under surface of the flange, the bolts and nuts for securing the conductor to the flange, insulating material between the flange and conductor, an insulating-bushing between the bolts and their nuts and the flange, and caps inclosing the upper portions of the bolts and seated on the flange, said caps being formed of non-conducting material, substantially as and for the purpose specified.

6. In electric railways, a conductor bolted to the under surface of the flange of the rail, and a cap of non-conducting material screwed upon the outer exposed ends of the securing-bolts, said conductor and bolts being insulated from the rail, substantially as herein described.

7. In electric railways, the main rails having outwardly-extending flanges with downturned projections, the copper strip or conductor, the bolts securing said conductor to the under surface of the flange, insulating material between the conductor and flange and between said flange and the bolts, in combination with caps of non-conducting

material having annular flanges and threaded sockets, which engage the threaded ends of the bolts, whereby the caps are secured, substantially as described.

406,806. ELECTRIC RAILWAY. DAVID G. WEBER, Baltimore, Md., assignor to the Electro-Automatic Transit Company, same place. Filed Mar. 15, 1889. Serial No. 303,430. (No model.)



Claim.—1. In electric railways, a locomotive having a motor operated by the main current and a supplemental motor in the main-motor circuit for effecting a preliminary movement of the driving-wheels of the locomotive.

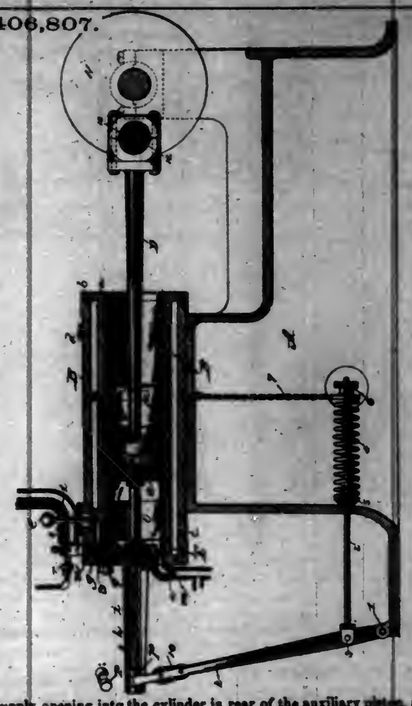
2. In electric railways, a locomotive having a main motor operated by the main current, a supplemental motor in the main circuit, and gearing between the supplemental motor and driving-wheels, whereby a preliminary movement of said wheels is effected.

3. In electric railways, a locomotive having a main motor operated by the main current, a supplemental motor carried by said locomotive and operated by said current, gearing between said supplemental motor and the driving-wheels, and a shifting-lever for disconnecting the gearing and cutting off the current from the supplemental motor, substantially as described.

4. In electric-railways, a locomotive having a main motor operated by the main current, a supplemental motor carried by the locomotive and operated by said current, gearing connecting the supplemental motor with the drive-wheels of the locomotive, and a trip-lever and clutch mechanism for connecting and disconnecting the gearing, substantially as described.

5. In electric-railways, the combination of a locomotive having a main motor for driving it, a supplemental motor on the locomotive for effecting a preliminary movement of its drive-wheels, gearing between the supplemental motor and drive-wheels, a shifting-lever for connecting and disconnecting the gearing, and fixed obstructions for tripping the lever and disconnecting the gearing, whereby the power of the supplemental motor is removed from the drive-wheels, substantially as described.

406,807. GAS-ENGINE. CHARLES WHITE and ARTHUR R. MIDDLETON, Baltimore, Md. Filed Jan. 18, 1889. Serial No. 296,726. (No model.)



Claim.—1. A gas-engine consisting of a cylinder, a reciprocating piston within said cylinder, an independent auxiliary piston separated from the main piston, the space between the two forming the explosion-chamber, a fuel-supply entering the cylinder in rear of the auxiliary piston, and a device for moving the auxiliary piston in one direction independent of the main piston, substantially as described.

2. A gas-engine consisting of a cylinder having main and auxiliary pistons, the said pistons being separated from each other by a projection on one extending beyond the line of the face of said piston the space between the two pistons constituting the explosion-chamber, means for igniting the charge, means for giving movement to the auxiliary piston in one direction independent of the main piston, a fuel-supply opening into the cylinder in rear of the auxiliary piston, and a passage therefrom to the front of said piston to the combustion-chamber, substantially as described.

3. In a gas-engine, a cylinder, a piston therein, an auxiliary piston separated from the main piston by a projection from one of said pistons, the explosion-chamber being formed between the two pistons, a fuel-supply opening into the cylinder in rear of the auxiliary piston, means for igniting the charge, and means for operating the auxiliary piston in one direction, consisting of a spring and an operating connection between said spring and said piston, substantially as described.

4. In a gas-engine, a cylinder, a main piston within the same, an auxiliary piston, means for moving said auxiliary piston in one direction, consisting of a spring and connections therefrom to the said piston, a fuel-supply in rear of said piston, passages for said supply to the explosion-chamber, means for igniting the charge, and an adjustable extension projecting from one of the cylinders and separating the same, the space between the two constituting the explosion-chamber, substantially as described.

5. In a gas-engine, a cylinder, a main piston in the same, an auxiliary piston separated from the main piston, the space between the two forming the explosion-chamber, means for moving said auxiliary piston in one direction, consisting of a spring and connections therewith to the piston, a fuel-supply in rear of said piston, passages for said supply to the explosion-chamber, and means for igniting the charge, substantially as described.

6. In a gas-engine, a cylinder, a piston therein, an auxiliary piston, said pistons being separated to form an explosion-chamber, means for automatically operating the auxiliary piston, a fuel-supply, and igniting means controlled by the said auxiliary piston, substantially as described.

7. In a gas-engine, a cylinder, a main piston within the same, an auxiliary piston, said pistons being separated to form the explosion-chamber by a projection extending from one of said pistons, means for igniting the charge, a fuel-supply, means for advancing the auxiliary piston, and valved openings in said piston, substantially as described.

8. In a gas-engine, a cylinder, a piston within the same, an auxiliary piston operated independently in one direction, said pistons being separated to form the explosion-chamber by a projection extending from one of said pistons, valved openings in said auxiliary piston, a fuel-supply in rear of said piston, and a check-valve in the fuel-supply pipe, substantially as described.

9. In a gas-engine, a cylinder, a piston within the same, an auxiliary piston, said pistons being separated by a projection from one of the pistons, means for advancing the auxiliary piston, a fuel-supply, igniting means, and an opening leading therefrom to the explosion-chamber, and a valve for said opening controlled by the auxiliary piston, substantially as described.

10. In the described gas-engine, a main piston, means for igniting the charge, consisting of a burner, a chimney therefor, a tube passing through the chimney and extending into the shell of the cylinder, a passage leading therefrom to the interior of the cylinder, a valve for controlling said opening, and an auxiliary piston for operating said valve, substantially as described.

11. In combination, a cylinder, a main piston, an auxiliary piston, a separating-stem between the two, an igniting-tube, a fuel-supply, a spindle bearing against the rear face of the auxiliary piston, a spring, and a pivoted lever under the tension of said spring and in connection with the spindle for advancing the said auxiliary piston, substantially as described.

12. In combination with the cylinder, the pistons C and E, igniting means, a valve controlling the ignition of the charge, said valve being operated by the rearward movement of the piston E, a lever *k*, and a positive connection between said lever and the piston E, whereby the said piston may be retracted by hand operation of the lever *k* and the engine thereby started by the ignition of the charge, substantially as described.

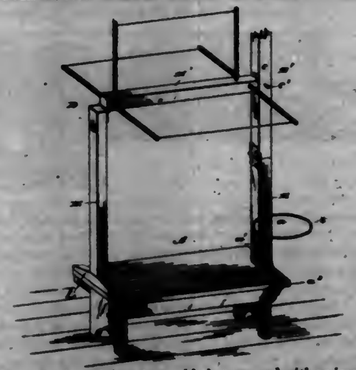
13. In a gas-engine, a cylinder, a piston within the same, an auxiliary piston, an explosion-chamber between the two pistons, a fuel-supply, igniting means with an opening therefrom leading to the cylinder, and a valve for said opening normally closed and opened positively by the backward movement of the auxiliary piston, substantially as described.

14. A gas-engine consisting of a cylinder, a main piston within the same, an auxiliary piston in rear of the main piston, an explosion-chamber between the two, a fuel-opening in rear of the auxiliary piston, an igniting-opening, an exhaust-opening arranged relatively to the main piston, whereby it is uncovered in the outward movement of said piston, and means for advancing the auxiliary piston as soon as the exhaust is uncovered, substantially as described.

15. A gas-engine consisting of a cylinder, a main piston, an auxiliary piston, a fuel-opening, an igniting-opening, an exhaust-port arranged relatively to the outward limit of the main piston, so as to be uncovered in said movement, and means for giving said auxiliary piston a quick forward movement as the port is uncovered, consisting of the spring, the lever *k*, the rod pivoted to the lever *k* at its lower end to form a long arm, and a connection between the lever *k* and the piston, substantially as described.

16. A gas-engine consisting of a cylinder, a main piston within the same, an auxiliary piston in rear of main piston, a fuel-supply pipe, an igniting-tube, means for moving the auxiliary piston, consisting of the spring and lever *k* and connections therefrom to the said piston, an extension from the cylinder-head, and a scale thereon, the lever *k* being adapted to act as an indicator, substantially as described.

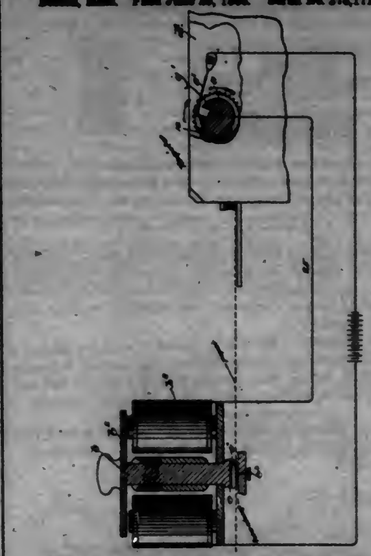
406,808. WASH-BENCH. ELIZA J. WHITLOW, Mountain, Mo. Filed Jan. 24, 1889. Serial No. 297,302. (No model.)



Claim.—1. A wash-bench provided at one end with an immovable standard B, a section B', hinged to the top thereof and provided with a mortise c, a hook and staple to retain the section vertically on the standard, and a removable drying-frame consisting of a vertical member E, provided with a foot and a horizontal section fitted with radial arms and terminating at its free end in a tenon to engage the mortise c, substantially as described.

2. In a wash-bench having rigid vertical standard B, a section B', hinged thereto, and provided with a recess c, a drying-frame made up of the sections E and E', the section E' having arms and a tenon adapted to fit within the recess or mortise c, substantially as shown.

406,809. MESSAGE AND TIME RECORDER. JOHN C. WILSON, Boston, Mass. Filed June 25, 1888. Serial No. 278,171. (No model.)



Claim.—1. The combination, with a self-starting register, of a time-stamp comprising continuously-moving time-printing devices and a presser, the paper fed by the register and upon which the signal is recorded moving between the said time-printing devices and the presser, an electro-magnet controlling the presser for effecting the printing of the time on the paper, and a circuit-changing device controlled by the register for changing the condition of the circuit of the said electro-magnet, substantially as described.

2. The combination, with a self-starting register and a time-stamp comprising continuously-moving time-printing devices, a presser, and an operating electro-magnet, of a circuit-changer controlled directly by the said register for changing the condition of the circuit of said operating electro-magnet, substantially as described.

3. The combination, with a self-starting register, of a time-stamp comprising continuously-moving time-printing devices and an electro-magnetically-movable presser, the circuit of the presser-magnet being controlled by the motor mechanism of the register, the paper upon which the signal is recorded moving between the said time-printing devices and the said presser, substantially as described.

4. The combination, with a register comprising as a co-operative part of it a starting-lever and stop-wheel and motor mechanism and a circuit-changing device the circuit-wheel of which is moved by the said motor mechanism, and is formed to co-operate with its pen and change the condition of the circuit just before the stop-wheel is engaged by the starting-lever to stop the register, of a time-stamp and an electro-magnet for said time-stamp included in the circuit controlled by said circuit-changing device, substantially as described.

5. The combination, with a register comprising as a co-operative part of it the starting-lever *n*, stop-wheel *j*³, and motor mechanism, the circuit-wheel *o*, rotated by the said motor mechanism, making one complete rotation while the stop-wheel completes one-third of a rotation, the projection 12, formed on said circuit-wheel, and the pen *s'*, of the local circuit 25, the electro-magnet included in said circuit, and the time-stamp controlled by said electro-magnet, substantially as described.

406,810. SEAL-LOCK. ORANGE S. WHEAM, Chicago, Ill. Filed Feb. 28, 1888. Serial No. 265,674. (Model.)



406,810.

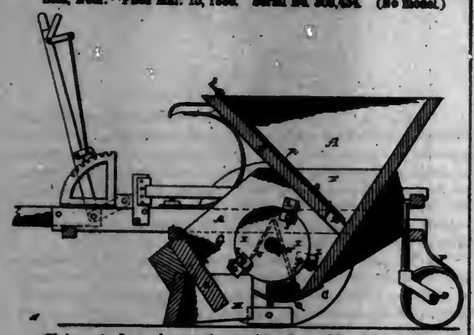


Claim.—1. The combination of the recessed case A, having the slot *b* and opening *k*, the bolt D, having a notch *g*, the latch H, adapted to engage said notch and having a pin *e* to engage the slot *b*, and the bar I, having a pin *j* to engage the opening *k*, substantially as described.

2. The combination of the recessed and slotted case A, a notched bolt D, a latch H, adapted to engage said bolt and provided with a pin to engage a slot in the case, a locking-bar operated by the bolt, the plate C, having groove or channel *l* and shoulders *m*, and a seal, substantially as described.

3. The combination of the case A, having slots or openings *b k* and a perforated projection *p*, the plate C, the notched bolt D, having hole *o*, the latch H, having pin *e*, the bar I, having pin *j*, a seal held by the plate C, and an auxiliary seal G, substantially as described.

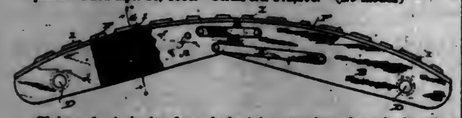
406,811. POTATO OR SEED PLANTER. CHESTER WRIGHT, Fairfield, Nebr. Filed Mar. 15, 1888. Serial No. 303,434. (No model.)



Claim.—1. In a planter, the combination, with a V-shaped frame having an inclined partition forming a hopper at its upper end and a wheel planting-chamber at its front lower end, of furrow-openers placed in its lower front end, a driving-shaft passing through the lower chamber, having driving and supporting-wheels upon its ends, a planting-wheel secured to said shaft within the lower chamber and provided with seed-cups, and stationary brushes within the chamber for brushing away the seed, whereby the planting-wheel is adjacent to the furrow-opener, substantially as shown and described.

2. In a planter, the combination, with a V-shaped frame having an inclined partition forming a hopper at its upper end and a wheel planting-chamber at its front lower end, of the furrow-openers, the driving-shaft passing through the chamber, driving-wheels on its ends, a planting-wheel placed on the shaft within the chamber and having seed-cups, stationary brushes within the chamber below the periphery of the planting-wheel, and division-plates secured to the sides of the chamber extending inward near the face of the planting-wheel, for the purpose specified.

406,812. DEVICE FOR PRINTING SIGNS. EDWARD A. BISHOP, Racine, Wis., assignor of one-half to H. Prochl and W. G. Gittings, same place. Filed Apr. 30, 1888. Serial No. 272,290. (No model.)



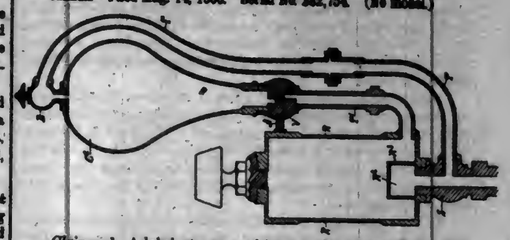
Claim.—1. A device for printing signs on fence-boards, &c., that comprises two or more segmental frame-sections hinged one to the other, and suitable letters or characters arranged on the sections, substantially as set forth.

2. A device for printing signs on fence-boards, &c., that comprises two or more segmental frame-sections hinged one to the other and provided with opposing cross-braces, a button pivoted to the cross-brace of one section to be brought over upon the opposing cross-brace of the adjacent section, and suitable letters or characters arranged on said sections, substantially as set forth.

3. A device for printing signs on fence-boards, &c., that comprises two or more segmental frame-sections, the pivotal links J K, uniting each two of the sections, and suitable letters or characters arranged on said sections, substantially as set forth.

4. A device for printing signs on fence-boards, &c., that comprises two or more segmental frame-sections, the pivotal links J K, uniting each two of the sections, the stops *g* for the links K, and suitable letters or characters arranged on said sections, substantially as set forth.

406,813. LUBRICATOR. BENJAMIN A. BURDSALL, London, Ontario, Canada. Filed Aug. 14, 1888. Serial No. 282,754. (No model.)



Claim.—1. A lubricator comprising an oil-reservoir R, a steam-heated chamber R^3 within said reservoir and separated from the lubricant contained in said reservoir by a solid partition R^3 and a hollow stem S, substantially as shown and described, and for the purpose specified.

2. A lubricator comprising an oil-reservoir R, hollow stem S, the tube T, ante-chamber B, condensing-chamber C^3, valve V, and tube T, substantially as shown and described, and for the purpose specified.

3. A lubricator comprising an oil-reservoir R, a steam-heated chamber R^3, within said reservoir and separated from the lubricant contained in said reservoir by a solid partition R^3, a hollow stem S, the tube T, ante-chamber B, condensing-chamber C^3, valve V, and tube T, substantially as shown and described, and for the purpose specified.

4. A lubricator comprising an oil-reservoir R, hollow stem S, the tube T, ante-chamber B, condensing-chamber C^3, valve V, and tube T, in combination with the brackets B' B^3, having passages P P' therein, respectively, valve V^3, and glass tube G, substantially as shown and described, and for the purpose specified.

5. A lubricator comprising an oil-reservoir R, a steam-heated chamber R^3 within said reservoir and separated from the lubricant contained in said reservoir by a solid partition R^3, a hollow stem S, the tube T, ante-chamber B, condensing-chamber C^3, valve V, and tube T, in combination with the brackets B' B^3, having passages P and P' therein, respectively, valve V^3, and glass tube G, substantially as shown and described, and for the purpose specified.

406,814. FOLDING BED. SANFORD S. BURR, Winnetka, and CHAS. TREVEL, Chicago, assignors to the A. H. Andrews & Company, Chicago, Ill. Filed Apr. 9, 1888. Serial No. 269,566. (No model.)



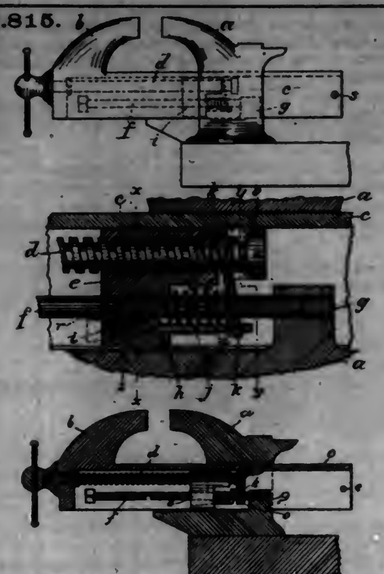
Claim.—1. In a folding bed, the combination, with the main casing, of a bed-frame pivoted thereto, said bed-frame being provided at its lower portion with an extension E, and being provided, also, with a front B', hinged at its top in a manner permitting it to swing outwardly, said hinged front being provided at its bottom with a ledge D, hinged thereto, and having a suitable block or blocks K affixed thereto and adapted to engage with the front of the extension E, to retain said hinged front in normally-closed position, substantially as described.

2. In a folding bed, the combination, with the main casing, of a bed-frame pivoted thereto, a front for said frame hinged thereto near its upper end, and a fastener to hold said front and frame normally together, said front, on release of said fastener, being free to swing away from the bed-frame at its lower portion to permit access to the under side of the bed-frame, substantially as described.

406,815. VISE. CLARENCE A. CHANDLER, East Bridgewater, Mass. Filed Oct. 12, 1888. Serial No. 287,946. (No model.)

Claim.—1. The combination of the fixed jaw, the sliding jaw having a shank fitted to slide in the fixed jaw, a screw journaled in the shank of the sliding jaw, a nut within said shank engaged with said screw, a fixed rod arranged substantially parallel with the screw, a gib interposed between said rod and a part of the nut and provided with a spring-supporting arm, a spring interposed between the nut and said arm, whereby the gib is normally engaged with the rod and nut, and a stop which moves with the sliding jaw, whereby the gib may be displaced to release the nut from the fixed rod, as set forth.

406,815.



2. The combination of the fixed jaw, the sliding jaw and its shank, the screw journaled in said shank, the loose nut engaged with the screw and provided with a cavity at one side thereof, the rod affixed to the fixed jaw and passing through said cavity, the gib located in said cavity at one side of the rod and provided with an arm *k*, the spring *j*, interposed between the nut and said arm *k*, whereby the gib is normally held in engagement with the fixed rod, the stop *o*, moving with the sliding jaw, and a spring or springs *r*, whereby the gib is separated from the fixed rod when displaced from its normal position, as set forth.

406,816. WATCH-CASE. EDWARD C. CHAFFEE, Philadelphia, Pa. Filed Mar. 2, 1888. Serial No. 301,720. (No model.)



Claim.—1. The combination of a center having a flange or rim projecting inwardly from the bezel and forming an annular groove back of the bezel, with a movement-ring formed with an annular rim extending beyond the dial-plate and within said groove and centering upon the flange.

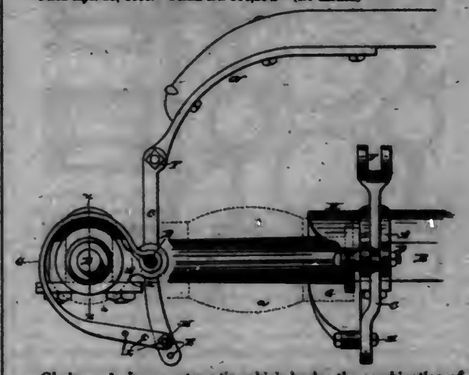
2. The combination of a combined watch center and bezel provided with a curved annular groove about the bezel portion and on the interior of the center, a movement-holding ring secured in said combined center and bezel and provided with a curved annular rim adapted to fit into said groove, and a removable back secured upon said combined center and bezel.

3. The combination of a combined watch center and bezel provided with a curved annular groove about the bezel portion and on the interior of the center, a movement-holding ring provided with a curved annular rim adapted to fit into said groove, a removable back secured upon said combined center and bezel, and means, substantially as described, to removably secure said movement-ring in said combined center and bezel and force said curved rim into said annular groove to form a dust-proof connection.

4. The combination of a combined watch center and bezel provided with a curved annular groove about the bezel portion and on the interior of the center, a movement-holding ring provided with a curved annular rim adapted to fit into said groove, a removable back secured upon said combined center and bezel, and means, substantially as described, to removably secure said movement-ring in said combined center and bezel and force said curved rim into said annular groove to form a dust-proof connection, consisting of a projecting ledge or flange about the surface of said combined bezel or ring and half-heads driven upon said movement-ring.

5. The combination of the combined bezel and center A, having the bezel reflector-rim B, forming the annular internal groove *b*, the movement-ring E, having annular rim or flange H, fitting into said annular groove *b*, means, substantially as described, to removably secure said movement-ring in said combined center and bezel and force the flange or rim H into the annular groove to form a dust-proof connection, and a removable back secured upon the combined bezel and center.

406,817. AUTOMATIC BUGGY-BRAKE. JOHN J. CHESNUT, Henderson, Tenn., assignor of one-half to Chas. H. Williams, same place. Filed Apr. 28, 1889. Serial No. 308,264. (No model.)

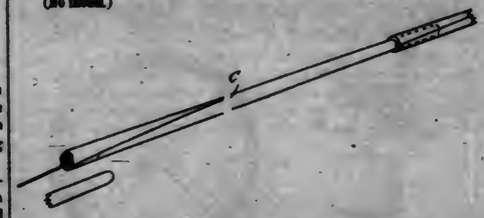


Claim.—1. In an automatic vehicle-brake, the combination of the levers, the thills attached thereto, and the brake-bands passed around the wheel-hubs, having their front upper ends attached to fixed points and their lower ends attached to the levers, substantially as described.

2. The combination of the levers pivotally attached to the front axle, the thills pivotally connected to the upper ends of the levers, and the brake-bands passed around the front-wheel hubs, having their upper ends attached to fixed points and their lower ends attached to the levers, substantially as described.

3. In an automatic vehicle-brake, the brake-bands adapted to bear on the annular surfaces of the inner portions of the wheels, and provided with the flanges I to bear against the inner ends of the hubs, substantially as described.

406,818. UNDERGROUND CONDUIT FOR ELECTRICAL CONDUCTORS. GEORGE W. COES, Detroit, Mich., assignor of one-third to Charles C. Geary, same place. Filed Dec. 6, 1888. Serial No. 292,973. (No model.)



Claim.—1. In a conduit for electrical conductors, in combination with an outer conduit, an inner conduit consisting of a series of like paper tubes fitted one within the other, substantially as described.

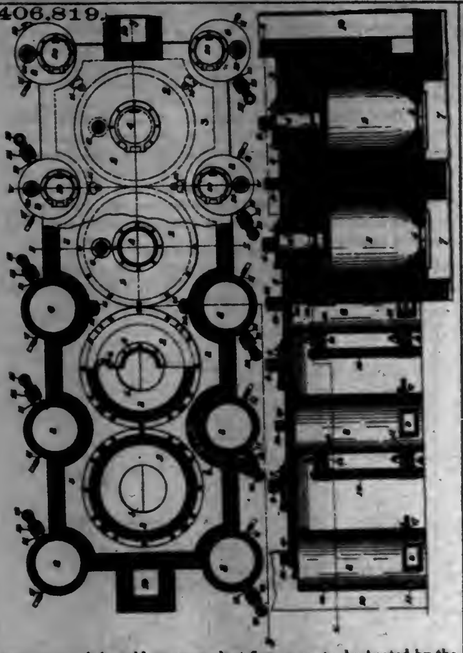
2. A conduit for electrical conductors, consisting of a series of like paper tubes saturated with paraffine and taper-jointed together.

3. A conduit for electrical conductors, consisting of a series of like tapering asbestus-paper tubes, substantially as described.

406,819. APPARATUS FOR THE MANUFACTURE OF GAS. JOHN M. CHEVELOW, Beaver Falls, Pa., assignor of one-half to Reuben T. Roberts, Thurville, Pa., and Hugh McKay, London, Canada. Filed June 8, 1887. Serial No. 240,703. (No model.)

Claim.—1. The combination, with two or more water-gas generators having a common waste-product flue, of a coal-distilling re-

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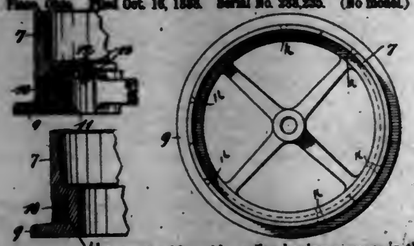


tort arranged in said waste-product flue, so as to be heated by the waste products from the water-gas generators, said coal-retort having a steam-adit for the admission of steam at or near the close of distillation of the coal, substantially as and for the purposes described.

2. The combination, with two or more water-gas generators having a common waste-product flue, of two or more coal-distilling retorts arranged in said waste-product flue, so as to be heated by the waste products from the water-gas generators, said coal-retorts having each a steam-adit for the admission of steam at or near the close of distillation of the coal, substantially as and for the purposes described.

3. In an apparatus for the manufacture of water-gas, the combination, with a gas-producer, a waste-product chamber, a gas-retort located in said chamber, steam-adits in the producer and retort, an air-adit at the top part of said producer, the waste-pipe of said producer being connected with the waste-product chamber, and a damper in said waste-pipe for regulating the supply of waste products to the waste-product chamber, substantially as and for the purposes specified.

406,820. CABLE-GUIDE PULLEY. JOHN CROWTHER, Elmwood Place, Ohio. Filed Oct. 16, 1888. Serial No. 288,235. (No model.)

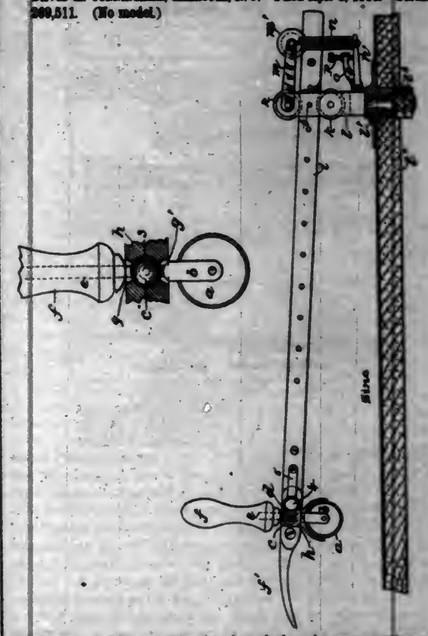


Claim.—1. A flanged cable-guide pulley having a recess in that portion of its rim adjacent the flange, which is ordinary pulleys of the kind is mostly worn, and a supplementary rim filling said recess and flush with the main portion of the rim at its junction therewith, substantially as shown and described.

2. A horizontal cable-guide pulley having an upright rim, a flange extending outwardly from the lower edge thereof, and a recess provided in the main rim near the junction of rim and flange, and a removable supplementary rim secured in said recess flush with the balance of the rim and completing the same, as shown and specified.

3. A flanged cable-guide pulley having a recess in that portion of its rim adjacent to the flange, which is ordinary pulleys of the kind is mostly worn, and a supplementary rim filling said recess and flush with the main portion of the rim at its junction therewith, said pulley being divided horizontally into two separable sections and having means for securing said sections together, substantially as shown and described.

406,821. MACHINE FOR CUTTING CLOTH AND PATTERNS. DAVID H. CUNNINGHAM, Elizabeth, N. J. Filed Apr. 3, 1888. Serial No. 269,511. (No model.)

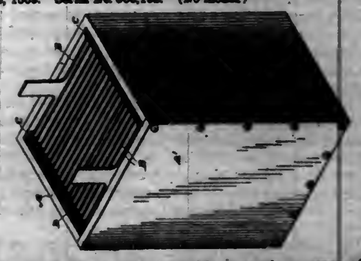


Claim.—1. The combination, in a cloth and pattern cutter, of the yoke, the rotary cutter having its axis in the sides of the yoke, the ball forming a part of the stem of said yoke, the socket containing said ball, the handle projecting from the latter, and the sliding bar and a suitable support therefor, substantially as shown and described.

2. In a cloth-cutting machine, the combination, with a bar and a pivotal support for the same, of a rotary cutter supported by a yoke, a ball on the stem thereof, and a socket in the said bar in which the ball is mounted, the ball having a depression and the bar carrying a spring-controlled pin engaging said depression, substantially as described.

3. In a cloth-cutting machine, the combination of the sliding bar with the vertical rotary slotted standard journaled in the table, the friction-rollers having axes in said standard, the vibrating arms pivoted to the upper part of the standard, the guide-rollers mounted on said arms, the retracting-springs each having one of their ends connected with one of said arms, the vibrating arm fulcrumed near the bottom of the said standard and with which the lower ends of the retracting-springs are connected, the bracket, and the adjusting-screw at the end thereof, as set forth.

406,822. SECONDARY BATTERY. HARRY R. DEY, New York, N. Y., assignor to Phoebus H. Alexander, Hyde Park, Mass. Filed Feb. 16, 1889. Serial No. 300,162. (No model.)

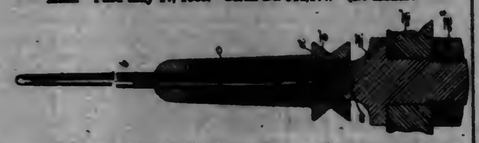


Claim.—1. The combination, with an open box or case, of a series of smaller vertically-arranged battery-plates of a width less than the interior of the case, insulating-strips between the sides and lower ends of said plates, thereby forming cells between the plates, and an insulating and water-proof cement filling between the sides of the case and the edges of the plates.

2. The combination of a box or case, a series of similar battery-plates of width less than the interior of the case, insulating-strips between the sides and lower ends of said plates, thereby forming cells between the plates, and an insulating and water-proof cement filling between the sides of the case and the edges of the plates.

3. The combination of a series of battery-plates arranged with insulating-divisions between them, said divisions being made moisture-tight, whereby the spaces between the plates form cells for the electrolyte, and insulating-plates interspersed, whereby the battery is divided into two or more separate series.

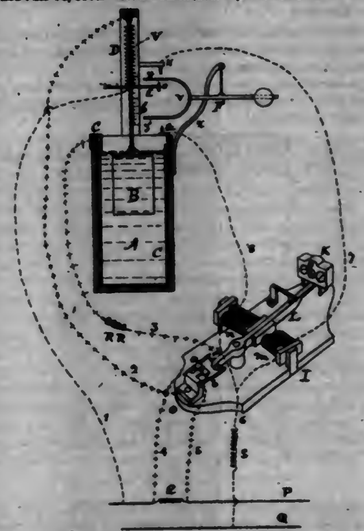
406,823. SUPPORT FOR SPINNING-SPINDLES. WILLIAM P. DRAPER, Hopedale, assignor to the Sawyer Spindle Company, Boston, Mass. Filed May 17, 1888. Serial No. 311,177. (No model.)



Claim.—1. The combination, with a spindle, supporting-case or holder, and step-support, of a bolster and step bearing swiveled at its lower end to rock or tip on the said step-support, substantially as described.

2. The combination, with a supporting-case or holder, a step-support, and a sleeve-whirl spindle, of a loose bolster and a step portion, the latter being free to rock or tip at or near the line of the band-pull, substantially as described.

406,824. ELECTRIC METER. THOMAS A. EDISON, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Jan. 31, 1881. Serial No. 26,093. (No model.)



Claim.—1. The webermeter, consisting of a coil, a spring-suspended electrode, and an index and scale, substantially as set forth.

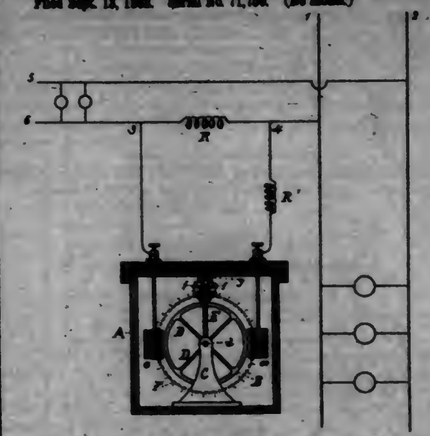
2. The combination, in a webermeter, of a coil, a spring-suspended electrode therein, and means controlled thereby for reversing the circuit through the coil to cause each electrode to become alternately anode and cathode, substantially as set forth.

3. The combination, in a webermeter, of a coil, a spring-suspended electrode therein, and means controlled thereby for registering the rise and fall of each electrode in the coil, substantially as set forth.

4. The combination, with a suspended plate in a plating-coil, of means for registering the accurateness of maximum and minimum deposition thereon, and means for indicating the fractional depositions between the maximum and minimum, substantially as set forth.

5. The combination of the spring-suspended plate, an arm projecting therefrom, a counterbalanced yoke or Y, and two contacts, the arm of the plate controlling the movement of the yoke, substantially as set forth.

406,825. ELECTRIC METER. THOMAS A. EDISON, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Sept. 13, 1888. Serial No. 71,780. (No model.)



Claim.—1. The combination, with the electrodes of an electrolytic cell, of a rotating body forming part of the circuit between them and caused to revolve by the differences in weight between its two sides, due to the deposition and removal of metal, substantially as set forth.

2. In an electrolytic-cell meter, the combination of an electrolytic cell, the electrodes thereof, the cylinder placed in the cell, forming part of the circuit through the cell, and caused to revolve by variations in weight, as described, with means for registering the number of revolutions of said cylinder, substantially as set forth.

3. In an electrolytic-cell meter, the combination, with the electrodes of the cell and the revolving cylinder, of the paddle-blades carried by said cylinder and immersed in the liquid of the cell, substantially as set forth.

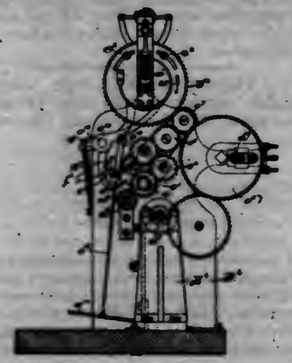
4. In an electrolytic-cell meter, the rotating cylinder having an exterior surface of amalgamated zinc, in combination with the anode and cathode plates, also of amalgamated zinc, said cylinder being located in circuit between the said electrodes, substantially as set forth.

406,826. MACHINE FOR TREATING BOOTS OR SHOES. WARREN G. EVANS, Exeter, N. H., assignor to the Automatic Heel Trimming and Burnishing Machine Company, same place. Filed Oct. 29, 1888. Serial No. 289,618. (No model.)

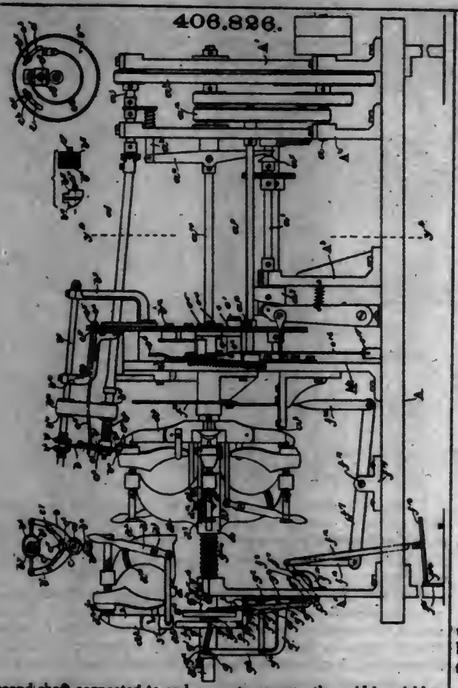
Claim.—1. In a machine for treating the heels of boots or shoes, a tool-shaft and a burnishing-tool consisting of two blocks or pieces, combined with levers secured to said blocks and with means to move said levers to produce a reciprocation of the said blocks, substantially as described.

2. In a machine for treating the heels of boots or shoes, a tool-shaft and a burnishing-tool consisting of two blocks or pieces, combined with eccentrics connected to the said blocks to reciprocate the same one with relation to the other, substantially as described.

3. In a machine for treating the heels of boots or shoes, a rotating shaft, a burnishing-tool consisting of two wedge-shaped blocks or pieces vertically movable one with relation to the other, levers secured to said blocks, and a second shaft, combined with eccentrics on said



406,826.



second shaft connected to and so as to operate the said burnishing-tool, substantially as described.

4. In a machine for treating the heels of boots or shoes, a rotating tool-shaft and gears to produce travel of the said shaft about the heel of a boot or shoe, and a reversing mechanism consisting of gears to produce travel of the tool-shaft in opposite directions, combined with the adjustable stop carried by the said gears to operate the reversing mechanism and reverse the travel of the tool-shaft, substantially as and for the purpose specified.

5. In a machine for treating the heels of boots or shoes, a jack consisting of arms, as d^2 d^3, the arm d^2 having its heel-seat portion hinged or pivoted, combined with a lever pivoted on the arm d^2 and operatively connected to said hinged portion of the arm d^2, and with a pawl on the said lever and ratchet on the arm d^2 to lock said hinged portion in adjusted position, substantially as described.

6. In a machine for treating the heels of boots or shoes, a shaft and a plurality of jacks mounted thereon, a disk, as f, provided with holes or sockets, a pin to engage said sockets, a disk g^{12}, having teeth, a rack-bar to engage the teeth on the said disk, and means, substantially as described, to produce longitudinal movement of the shaft, combined with a treadle and with intermediate levers connected to the said treadle, whereby the shaft is rotated and moved longitudinally at one operation, substantially as described.

7. In a machine for treating the heels of boots or shoes, a shaft and a plurality of jacks mounted thereon, a disk, as f, provided with holes or sockets, a pin to engage said sockets, a disk g^{12}, having teeth, a rack-bar to engage the teeth on the said disk, and a slotted lever g^5, combined with a treadle and with intermediate levers, to operate substantially as described.

406,827. FASTENER FOR STAIR-RODS. ALBERT D. FIELD, Waterbury, Conn., assignor to the Globe Curtain Pole Company, same place. Filed Aug. 31, 1888. Serial No. 284,223. (No model.)

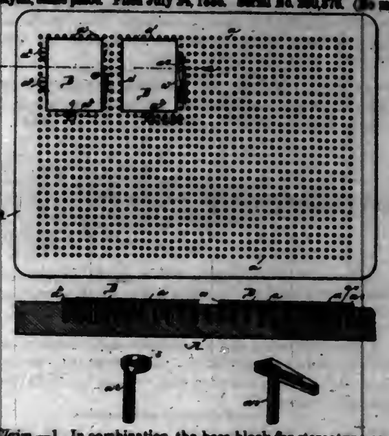


Claim.—1. In a stair-rod fastener, the combination, with a shell provided with a single hole and a slotted washer, of a screw the head of which is adapted to pass through the hole in the shell and be engaged by the washer, substantially as set forth.

2. In a stair-rod fastener, the combination, with a shell having a screw-hole therein and a rib, of a clamping-screw and a slotted washer adapted to rest under the head of the screw and engage the rib, substantially as set forth.

3. As a new article of manufacture, a shell having a screw-hole therein for the passage of the head of a screw and a slotted washer, the latter adapted to rest on the shell and engage the under side of the head of the screw, substantially as set forth.

406,828. BLOCK FOR STEREOTYPE OR ELECTROTYPE PLATES. HERMAN FISCHER, Jr., Chicago, Ill., assignor of one-half to Daniel W. Ryan, same place. Filed July 24, 1888. Serial No. 280,876. (No model.)

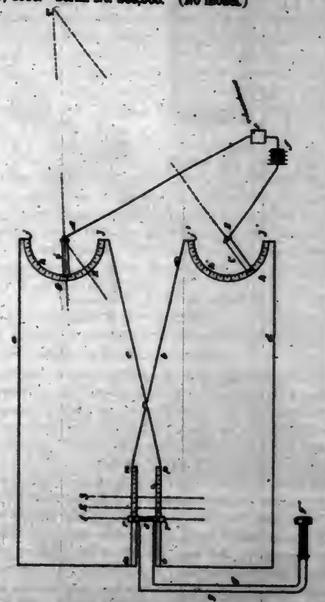


Claim.—1. In combination, the base-block for stereotype or electrotype plates, having holes in its surface, stop-pins adapted to said holes, and wedges for forcing the plates against the stop-pins, substantially as described.

2. In combination, the base-block for stereotype-plates, having holes, stop-pins adapted thereto, and wedge-pins a^2, having eccentric heads, substantially as described.

3. In combination, the base-block having the holes with smooth sides, the smooth stop-pins adapted thereto, and the wedging means, substantially as described.

406,829. RANGE-FINDER. BRADLEY A. FISKE, U. S. Navy. Filed Oct. 17, 1888. Serial No. 288,505. (No model.)



Claim.—1. In a range or position finder, in combination with a source of electricity and an indicating device such as described, two similar bodies of conducting material similarly disposed with reference to a predetermined base-line, alidade-arms establishing and maintaining electrical contact with said bodies, and circuit-connections, as set forth, and including a Wheatstone bridge having adjacent members d and c connected to said arms and adjacent members a and b connected to corresponding extremities of said bodies.

2. In a range or position finder, in combination with a source of electricity and an indicating device, such as described, two similar bodies of conducting material similarly disposed with reference to a predetermined base-line, alidade-arms establishing and maintaining electrical contact with said bodies, and circuit-connections, as set forth, and including a Wheatstone bridge having adjacent members, as d and c and a and b, connected to corresponding ends of said bodies.

3. The combination of the four members a b c d of a Wheatstone bridge, two arcs h k', respectively interposed between members a c and b d, two pivoted radial arms i i', respectively having their free ends moving over and maintaining electrical contact with said arcs, a source of electricity having one pole connected to one of said arms and the other pole connected to the other of said arms, two bars of conducting material respectively interposed between members a b and c d, contact-pieces adjustable upon each of said bars, a loop-conductor connected at its ends, respectively, to said contact-pieces, and an indicating device, such as described, in said loop.

406,830. METHOD OF FINDING RANGE AND POSITION OF DISTANT OBJECTS. BRADLEY A. FISKE, U. S. Navy. Original application filed Oct. 17, 1888, Serial No. 288,505. Divided and this application filed Feb. 27, 1889. Serial No. 301,311. (No model.)



Claim.—1. The improvement in the art of finding the range of a distant object, which consists in first determining a fractional portion of a conducting-body bearing in length a ratio to the angle included between two lines of sight directed upon a distant object, and, second, measuring the electrical resistance of said length, substantially as described.

2. The method of determining the angle included between two lines of sight directed upon a distant object, which consists, first, in directing two alidade-arms located at opposite ends of a base-line longitudinally in line with said object, the said arms establishing and maintaining contact with similar bodies of conducting material similarly disposed with reference to said base-line; second, measuring the difference between the electrical resistances of the lengths of said conducting-bodies included between corresponding extremities of the aforesaid bodies and the adjusted positions of the contact-points governed by said arms, substantially as described.

3. The method of determining the angle included between two lines of sight directed upon a distant object, which consists in, first, directing two pivoted alidade-arms located at opposite ends of a base-line longitudinally in line with said object, the said arms being pivoted at one extremity and having their other extremities moving over arcs of conducting material; second, placing one arm parallel to the other arm, and thereby establishing an electrical balance; third, measuring the length of the arc included between the initial and final positions of said last-mentioned arm, substantially as described.

406,831. FIRE-ESCAPE. OLIVER P. FISHER, Hornellsville, N. Y., assignor of one-half to Luther T. Mason, same place. Filed Mar. 16, 1889. Serial No. 303,513. (No model.)



Claim.—1. In a fire-escape, the combination, with the central suspending-pulley and the lateral carve-pulleys, of the central steady-pulley and the lateral steady-pulleys, respectively located below the central and lateral suspending-pulleys, the three wire ropes engaging said pulleys, as shown, the suspended car connected to said wire ropes, and the branched steady-rope connected to said car, substantially as specified.

2. The fire-escape consisting of the central arch or brace and its suspending-pulley, the lateral suspending-pulleys and the central and lateral steady-pulleys vertically below said suspending-pulleys, the cross-balled car, its branched steady-rope and central bearing-post, and the central and lateral wire ropes attached to said car at the intersection of its balls, passing over the suspending-pulleys downward, engaging the steady-pulleys, and having the free operating ends k extending from said steady-pulleys, substantially as shown, and for the purpose set forth.

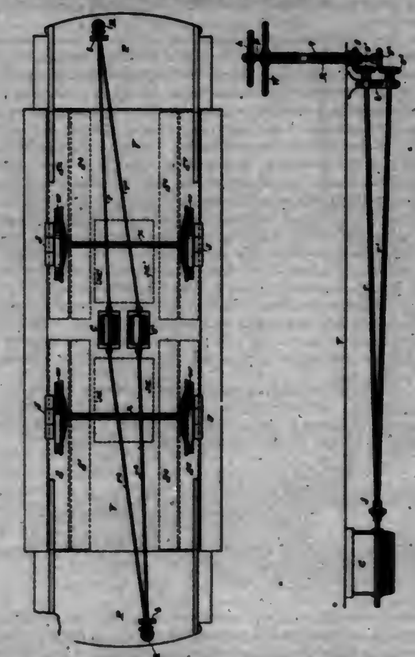
406,832. BOTTLE-STOPPER. GEORGE P. GOULDEN, Rochester, N. Y., assignor of one-half to Yeoman & Erbe, same place. Filed Jan. 12, 1889. Serial No. 296,128. (Model.)



Claim.—1. The herein-described cork-holder, made of elastic metal and having the top plate b^4, with depending arms b', bent at their lower ends to form the fingers c, to engage the shoulder 2 of the bottle-neck, the arms and fingers being corrugated longitudinally, substantially as described.

2. The herein-described cork-holder, made of elastic metal and consisting of a top plate b^4, provided with the projection 5 to enter the cork, and having the depending arms b' bent at their lower ends to form fingers c, to engage the shoulder 2 of the bottle-neck, the arms and fingers being corrugated longitudinally, substantially as described.

406,833. MEANS FOR PROPELLING VEHICLES BY SECONDARY BATTERIES. WILLIAM W. GIBBINS, Haverford College, Pa. Filed Mar. 30, 1889. Serial No. 305,966. (No model.)



Claim.—1. The combination of a vehicle having four or more wheels mechanically united in pairs, two or more electric motors, one for each pair of wheels, mechanically connected thereto, a number of cells of secondary battery divided into eight substantially equal series, two series being located in parallel planes in the plane of and adjacent to each wheel, a permanent electrical connection between the more distant ends of each such parallel series, a switch or circuit-changer located at a central point, having a series of fixed contacts, one for each free terminal of each series of cells, two or more series of movable contacts registering with said fixed terminals to produce two or more

variations in the connection of such cells with respect to each other, and a second switch or circuit-changer located in proximity to the first switch, consisting of a series of fixed terminals having an electrical connection with the terminals of both motor-armatures, with the terminals of both field-magnets, and with the terminals of the battery, respectively, and a series of movable contacts for varying the connection of said fixed terminals with respect to each other, whereby said motors may be connected in series or in parallel with respect to the battery, the cells of which may be similarly varied in connection with respect to each other and to said motors, substantially as described.

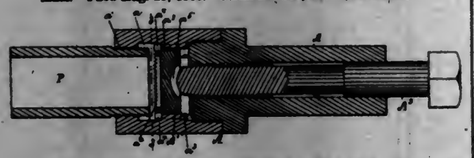
2. The combination of a wheeled vehicle, an electric motor carried thereby and connected with said wheels to produce rotation thereof, a series of cells of secondary battery carried by said vehicle and connected in circuit with said motors, two switches or circuit-changers located at or near the center of the car, each consisting of a series of fixed terminals and a series of movable contact-points, a shaft for each switch extending from said switch to the platform of the car, containing a universal joint, and a compound shaft at said platform for operating both shafts, substantially as described, whereby the connections of the cells may be varied with respect to each other and the connection of said motors may be varied with respect to the battery and to each other.

3. The combination of a wheeled vehicle, one or more electric motors for propelling said vehicle, a series of cells of battery in circuit with the motor and carried by said vehicle, and two or more switches for varying the connection of the battery with respect to the motors, and vice versa, two rods connecting with the switches, one rod for each switch, and a compound shaft, substantially as described, for operating each rod independently.

4. The combination of a wheeled vehicle, one or more electric motors for propelling said vehicle, a series of cells of battery in circuit with the motor and carried by said vehicle, two or more switches located at or near the center of the car for varying the connection of the battery with respect to the motors, two rod extending from each platform to one end of each switch, and a compound shaft at each platform, substantially as described, for controlling each switch independently.

5. The combination of a wheeled vehicle, two or more electric motors mechanically connected to two or more wheels, respectively, a number of cells of secondary battery divided into eight substantially equal series, two series being located in parallel planes in the plane of and adjacent to each wheel, a permanent electrical connection between the more distant ends of each such parallel series, a switch or circuit-changer located at a central point having a series of fixed contacts, one for each free terminal of each series of cells, two or more series of movable contacts registering with said fixed terminals to produce two or more variations in the connection of such cells with respect to each other, and a second switch or circuit-changer located in proximity to the first switch, consisting of a series of fixed terminals having an electrical connection with the terminals of both motor-armatures, with the terminals of both field-magnets, and with the terminals of the battery, respectively, and a series of movable contacts for varying the connection of said fixed terminals with respect to each other, whereby said motors may be connected in series or in parallel with respect to the battery, the cells of which may be similarly varied in connection with respect to each other and to said motors, substantially as described.

406,834. NIPPLE-HOLDER. JAMES F. GUERRIE, Jr., Somerville, assignor to Thomas C. Ashley, Boston, and George H. Graves, Malden, Mass. Filed Aug. 23, 1888. Serial No. 283,587. (No model.)

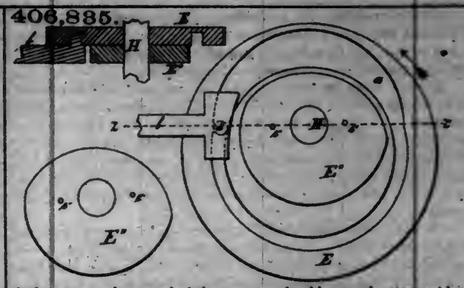


Claim.—Holder A, having a chamber *a*, provided with interior threads *a'*, in combination with a non-rotary auxiliary holder A', which is mounted in chamber *a*, is movable therein toward and away from the mouth thereof, and is provided with teeth a^2, which project from the holder A' toward the mouth of the chamber *a*, and means, substantially such as described—for example, a set-screw A^2—to force the toothed holder A' into engagement with the article to be operated on, substantially as and for the purpose set forth.

406,835. VALVE-GEAR. MARSH R. HALL, U. S. Navy, assignor of one-half to Mary C. Hall, Lowell, Mass. Filed Mar. 7, 1888. Serial No. 266,695. (No model.)

Claim.—The combination of a single valve and valve-rod, a crank-shaft, a grooved eccentric (whose groove is widest on the steam side) rigidly secured thereto and directly actuating said valve and valve-rod, whereby the admission, release, and compression are normally and invariably controlled, and a cut-off cam suspended loosely upon said crank-shaft and adapted to a rotary movement upon said shaft and connected with and operated by an automatic centrifugal governor, whereby steam is cut off at varying points of the stroke by the said valve without change in its other movements, substantially as described.

406,835.



406,836. SEMAPHORE-SIGNAL. JOSEPH W. HANCOCK, Knighton, County of Leicester, England. Filed Feb. 13, 1888. Serial No. 263,734. (No model.) Patented in England Feb. 1, 1884, No. 2,556.



Claim.—1. In a semaphore-signal, the combination, with the lantern, of a signal-arm of a hollow wedge shape, having open end and one face or both the front and back faces covered with glass, substantially as described.

2. The combination, with the cylindrical lantern provided in its circumference with the openings *a'* and *b'*, of the pivoted signal-arm in the form of a hollow wedge, and provided with the plates *c* and *d*, substantially as and for the purpose specified.

406,837. VENTILATED PAD. MICHAEL HARRIS and FREDERIC ROSPERT, Litchfield, Minn.; said Rospert assignor to said Harris. Filed Nov. 9, 1888. Serial No. 290,572. (No model.)



Claim.—The combination, with the saddle 1, having the open center 3, of the cap 5, secured to said saddle and raised above said open center, substantially as described.

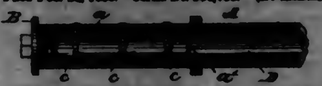
406,838. SHAFT-COUPLING. JOHN H. HEMBLETHWAITE, Rock Falls, Ill., assignor of one-half to Joseph Wright, same place. Filed Jan. 7, 1888. Serial No. 260,102. (No model.)



Claim.—1. The within-described coupling device, consisting of a clamp made of two similar pieces, each centrally and longitudinally grooved, and secured together by bolt and nut devices near the upper edges and having lateral openings at the lower edge of the longitudinal groove, and locking means inserted therein, substantially as and for the purposes set forth.

2. The twin clamping-pieces C, each centrally and longitudinally grooved at D and having transverse openings E in the lower edge of the said groove for the admission of keys, combined with and compressed together by the bolts and nuts near the upper edges of the clamps, substantially as and for the purposes described.

406,839. AXLE-LUBRICATOR. JOSEPH L. HOUSE, Minneapolis, Minn. Filed Feb. 26, 1889. Serial No. 300,791. (No model.)



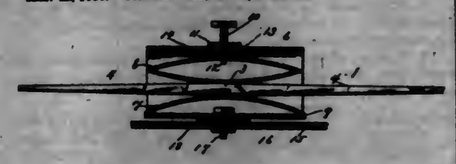
Claim.—1. In the axles of wheeled vehicles, the combination of a drilled and plugged oil-reservoir in the end of said axle, one or more transverse countersunk holes communicating between said reservoir and the bearing-surface of said axle, and screw-threads in said transverse holes, whereby the wicks for conveying the oil through said holes may be adjusted and securely held in any desired position, substantially as and for the purpose set forth.

2. In combination, the axle of a wheeled vehicle, the drilled and plugged hole D in the end of said axle, the smaller hole *d*, extending beyond the end of D, the oil-hole *d'*, drilled in the body of the axle back of the bearing and communicating with *d*, the countersunk holes *d'*, the wicks *c*, passing through said holes *d'*, and screw-threads in said holes *d'*, substantially as and for the purpose set forth.

3. In wheeled vehicles, the combination of a tubular axle A, having tapped and countersunk holes *d'*, an internal can or oil-reservoir *d''*, having holes to correspond to holes *d'*, and wicks screwed into said holes *d'* for the double purpose of holding said oil-can in place and conveying the oil from said can to the interior of the hub of the wheel by the capillary action of said wicks, all substantially as and for the purpose specified.

4. In wheeled vehicles, the combination of a tubular axle A, having countersunk and tapped holes *d'* in the bearing of said axle and an oil-hole *d'* back of said bearing, an internal oil-can *d''*, having holes to correspond to holes *d'* and *d''* in said axle, and wicks screwed into said holes *d'* and extending down into said oil-can, substantially as and for the purpose specified.

406,840. DOOR-CHECK. GEORGE R. G. JOHNS, Louisville, Ky. Filed Mar. 12, 1889. Serial No. 303,005. (No model.)



Claim.—1. A door-check consisting of a check-rod having its greatest diameter or thickness at a point near or at one side of its middle and is gradually tapered toward both ends, a sleeve fitted on said rod, and springs which are arranged with and connected to the sleeve and bear constantly on the lateral faces of the rod, substantially as and for the purpose described.

2. In a door-check, the combination, with a check-rod, substantially such as described, and a sleeve arranged to slide over said rod, of a spring connected to and fitted within the sleeve to bear on the rod, said spring being composed of two curved parts or members which are connected to each other at their ends, substantially as and for the purpose described.

3. A door-check consisting of a longitudinally-tapered check-rod, a sleeve having a threaded boss in its upper side, a lower curved spring within the sleeve and connected at its ends thereto, an upper spring also arranged within the sleeve and having the two reversely-curved connected parts or members, and a regulating-screw fitted in the threaded boss of the sleeve and connected to the upper spring, substantially as described.

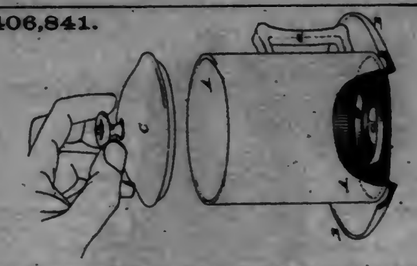
4. A door-check consisting of a pivoted check-rod having its greatest diameter at its middle and gradually tapered toward both ends, a sleeve fitted on said rod, the curved leaf-springs arranged within and secured to the sleeve and bearing on opposite lateral faces of the check-rod, a bracket adapted to be fixed on the door, a washer interposed between the sleeve and bracket, and a vertical pivot-bolt intermediate of the bracket and the sleeve to permit the latter to move in a horizontal plane, substantially as and for the purpose described.

406,841. CUP FOR RECEIVING CONDENSED MILK OR MARMALADE PACKAGES. LAZARUS KOHNS, New York, N. Y. Filed Sept. 20, 1888. Serial No. 286,209. (No model.)

Claim.—1. As a new article of manufacture, a cup for receiving condensed-milk or marmalade packages, having an opening in its bottom and an integral flange projecting outwardly therefrom near its bottom, substantially as described.

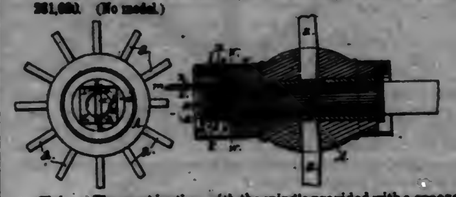
2. A cup or receptacle having an opening in its bottom, an upwardly-projecting rim surrounding said opening, and an integral flange

406,841.



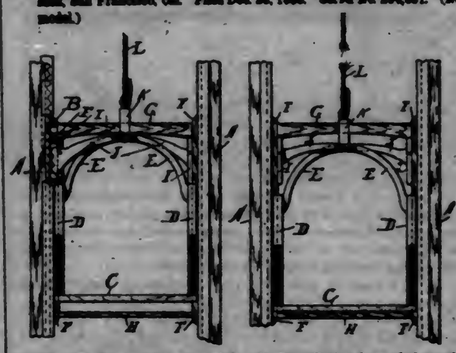
projecting outwardly from said cup near its bottom, substantially as described.

406,842. NUT-LOCK. HARRY H. KNEE, Salisbury, Pa., assignor of one-half to Joseph H. Batt, same place. Filed Aug. 1, 1888. Serial No. 281,630. (No model.)



Claim.—The combination, with the spindle provided with a groove across the end thereof, of a nut having a groove cut across its front face and adapted to register with the groove in the end of the spindle, a locking-arm pivoted in one end of the groove in the nut and constructed to engage with it and the groove in the spindle when they register with each other, and a face-plate rigidly secured to the front of the locking-arm, so as to cover the front of the spindle and nut, substantially as and for the purpose specified.

406,843. SAFETY DEVICE FOR ELEVATORS. RICHARD LAIDLEY, San Francisco, Cal. Filed Dec. 26, 1888. Serial No. 294,661. (No model.)



Claim.—The combination of the platform C, the channeled standards D, the hangers E, the grooved uprights F, the upper cross-beam G, the lower cross-bar H, the side supports I, the safety-levers J, the toothed racks K, the draw-head K, and the hoisting-rope L, all substantially as described.

406,844. BRAKE FOR LOCOMOTIVES. FRANK LAMBERT, St. Louis, Mo., assignor to the Lamberg Brake Company, East St. Louis, Ill. Filed Mar. 19, 1888. Serial No. 268,242. (No model.)

Claim.—1. In a brake for locomotives, &c., the combination of a fixed piston, a movable cylinder, and connection between the cylinder and brake-shoes, substantially as and for the purpose set forth.

2. In a brake for locomotives, &c., the combination of a fixed piston, a movable cylinder, brake-shoes, and connection between the brake-shoes and cylinder, consisting of a strap or yoke and links, substantially as and for the purpose set forth.

3. In a brake for locomotives, &c., the combination of a fixed piston, a movable cylinder, brake-shoes, a strap or yoke connected to the cylinder, the cross-head secured to the lower ends of the strap, a link secured to the cross-head, and links connecting the shoes to the link of the cross-head, substantially as and for the purpose set forth.

4. In a brake for locomotives, &c., the combination of a bracket 2, secured to the frame of the locomotive and having a flange or

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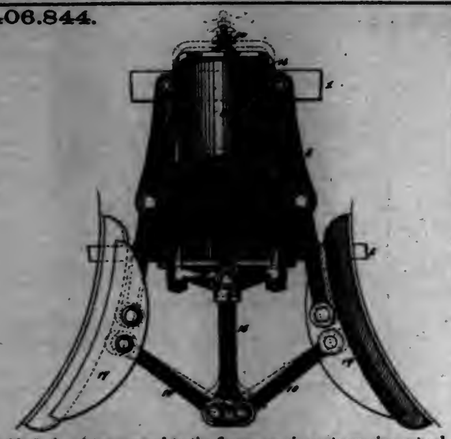
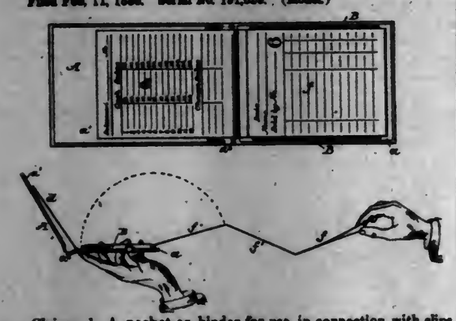


table 5, the piston secured to the flange, an air or steam pipe extending up through the piston, a movable cylinder fitting over the piston, a strap or yoke secured to the cylinder by means of a pin 19 and a cap 20, a cross-head secured to the lower end of the strap, brake-shoes, and links connecting the shoes to the cross-heads, substantially as and for the purpose set forth.

406,845. MANIFOLD SALES-BOOK. THOMAS W. LAWSON, Cambridge, assignor to the Lawson Manufacturing Company, Boston, Mass. Filed Feb. 11, 1886. Serial No. 191,639. (Model.)



Claim.—1. A pocket or binder for use in connection with slips for sales-memoranda and for duplicate copies thereof, composed, at least in part, of duplicating fabric which is relied upon for confining said slips in position convenient for service, and which also serves as a duplicating medium, substantially as described.

2. In a manifold sales-book, the combination, substantially as hereinbefore described, of a stack or pile of zigzag-folded slips for sales-memoranda and for duplicate copies thereof, and a fabric which constitutes the front of a pocket or binder for said pile or stack, and also serves as the duplicating medium, whereby said folded slips are maintained in compact form and the duplicating fabric maintained in position for convenient use in making duplicate copies.

3. In a manifold sales-book, the combination, substantially as hereinbefore described, of a stack or pile of integrally-connected sales-slips and their appropriate copy-slips and duplicating fabric, which is adjustably arranged with relation to said stack to operate as a binding medium and enable fresh surfaces of said fabric to be presented for duty between any pair of said slips.

4. The combination, substantially as hereinbefore described, of a series of zigzag-folded sales-slips and a series of slips for fac-simile copies, interfolded, and each copy-slip arranged with relation to its proper sale-slip for receiving a duplicate of any memoranda made upon said sale-slip.

5. In a manifold sales-book, a series of zigzag-folded sale-slips consecutively and integrally connected with a series of alternating slips for receiving fac-simile copies of entries made upon said sale-slips, substantially as described.

406,846. DEVICE FOR CLEANING YARN, &c. JOHN H. HARMON, Utica, N. Y., assignor of one-half to James G. Smith, Jr., same place. Filed Jan. 12, 1889. Serial No. 296,141. (No model.)

Brief.—The invention consists in the improved device for removing bunches from yarn, &c.

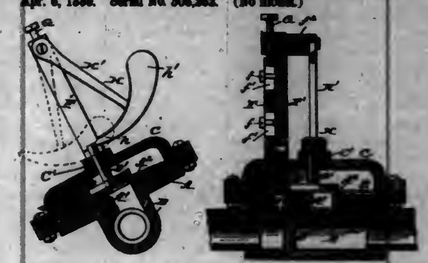
406,846.



Claim.—1. The combination of the adjustable comb, the adjusting-screw, the guide, the movable protector, and the supports of said guide-comb and protector, substantially as set forth.

2. The combination of the movable comb, the guide, and the movable protector and support of each, arranged substantially as set forth.

406,847. AUTOMATIC CUT-OFF. JOSEPH MILLER, Greenfield, Ind., assignor to Joseph Miller and Henry Snow, same place. Filed Apr. 6, 1888. Serial No. 305,262. (No model.)

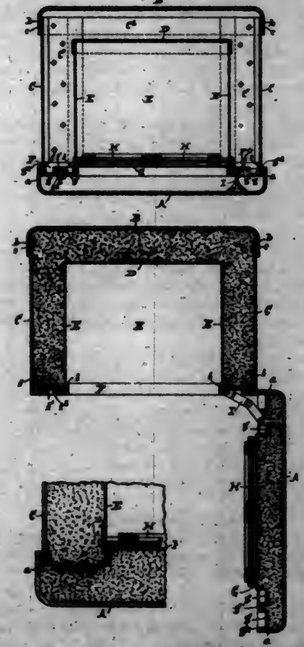


Claim.—1. In a cut-off, the combination, with a valve having the projecting stem, of a pivoted locking-wedge, substantially as set forth.

2. In a cut-off, the combination, with a valve having the projecting stem, of the locking-wedge pivoted to a post on the valve-casing, substantially as set forth.

3. In a cut-off, the combination, with a valve having the projecting stem, of the adjustable post, and the locking-wedge pivoted to the same, substantially as set forth.

406,848. FIRE-PROOF SAFE. MOSES MOSLER and MAX S. GOLDSMITH, Cincinnati, Ohio, assignors to the Mosler Safe and Lock Company, same place. Filed Mar. 11, 1889. Serial No. 302,807. (No model.)



Claim.—1. In a fire-proof safe, the combination of the pan-shaped back B, the sheet C, bent around and secured to the flange or rim of said back, the inner box, and the frame F, securing the two together and forming the body of the safe, substantially as described.

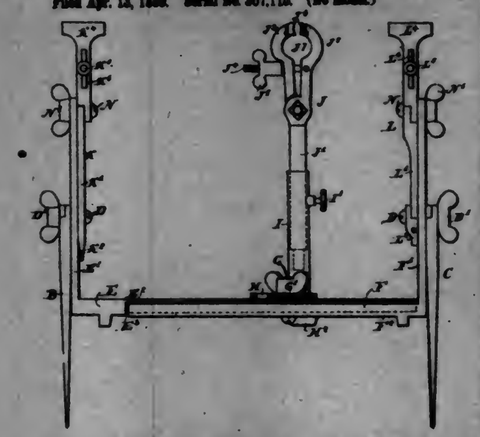
2. A door for fire-proof safes, consisting of the pan-shaped front A *a*, and back G, having its edges formed to match the front of the safe, both front and back plates of the door being stamped up from sheet metal and united together, substantially as described.

3. The combination, substantially as described, in a fire-proof safe, of the inner and outer shells, the frame F, uniting the same, the back B, having rim *b*, capped over the back of the outer shell and secured thereto, and the door composed of front A, having rim *a*, and the back G, having its edges formed to match the safe front and secured to the flanges *a*, said door being arranged to close over the front of the safe, substantially as specified.

4. The combination of the inner and outer boxes, each composed of a sheet-metal shell having one end closed by a flanged sheet-metal cap, the stamped sheet-metal frame uniting the two shells and forming the safe front and door-frame, the flanged sheet-metal cap forming the door front, and the inner wall G of the door having its edge stamped to match the safe front and close over the same, substantially as shown and described.

5. An outer shell for safe-bodies, composed of the sheet-metal pan-shaped back and sheet-metal box C, said shell having an opening to receive the filling, and a flanged cap, as J, to close said opening, the parts being combined and arranged substantially as specified.

406,849. PIPE-HOLDER. PATRICK MCCAHLEY, Braddock, Pa. Filed Apr. 13, 1889. Serial No. 307,118. (No model.)



Claim.—1. A pipe-holder comprising a frame, calipers detachably secured to the ends of the frame and forming legs, and a vise at each end of the frame, substantially as described.

2. A pipe-holder comprising a frame, calipers detachably secured to the ends of the frame and forming legs, and vises having shanks and detachably secured to the ends of the frame, the shank of one vise being formed with a screw-driver and the shank of the other with a wrench, substantially as described.

3. A pipe-holder comprising an adjustable frame, calipers detachably secured to the ends of the frame and forming legs, a vise secured to each end of the frame, each vise being provided with a shank, one of which is formed with a screw-driver and the other a wrench, an arm adjustably secured to the frame and formed with a cutter, and a third vise adjustably supported by said arm, substantially as herein shown and described.

4. In a pipe-holder, the combination, with two L-shaped arms held adjustably one on the other, of two pairs of calipers pivoted on the said arms and forming a frame with the same, and vises secured on the said L-shaped arms, substantially as shown and described.

5. In a pipe-holder, the combination, with two L-shaped arms held adjustably one on the other, of two pairs of calipers pivoted on the said arms and forming a frame with the same, vises secured on the said L-shaped arms, a slotted arm held adjustably on the said frame, a pipe secured on the said arm, and a third vise held vertically adjustable in the said pipe, substantially as shown and described.

406,850. ADJUSTABLE BROOM BAND OR CLAMP. ANDREW W. OTTERSON, Boston, Mass. Filed Mar. 15, 1889. Serial No. 303,493. (No model.)

Claim.—1. The combination, with a broom-encircling band or clamp, of the supporting-rod D, secured thereto and provided at its upper end with an adjustable spring-clamp G, composed of two loops or rings *c d*, formed in the same piece with said rod, and adapted to encircle the broom-handle at an angle to each other and exert a pressure thereon in opposite directions, whereby the rod is held securely in place when adjusted, substantially as set forth.

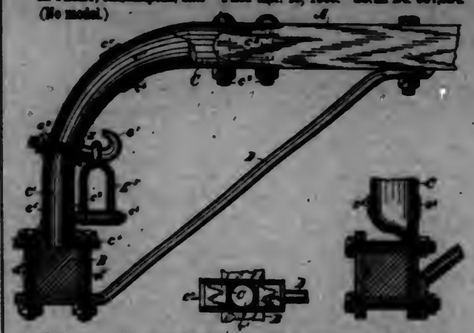
406,850.



2. The supporting-rod D, provided at its upper end with a fastening device for securing it to the broom-handle, and having at its lower end a hand-holder consisting of a loop H, formed in the same piece with the rod D, and having a swinging bar *g*, pivoted at one end to said loop, in combination with the broom-encircling band C, having one end secured to said loop and its opposite end adjustably confined between the opposite side of the loop and the swinging bar *g*, substantially as and for the purpose set forth.

3. The broom-band supporting rod D, provided at its upper end with an adjustable spring-clamp G, consisting of the loops or rings *c d*, arranged at an angle to each other, and the spring-coil *e*, formed in the same piece with the said rod and rings, substantially as described.

406,851. VEHICLE ATTACHMENT. DAVID M. PARRY and THOMAS H. PARRY, Indianapolis, Ind. Filed Apr. 15, 1886. Serial No. 307,204. (No model.)



Claim.—1. The combination of a horizontally-straight shaft, a curved one-piece metal clip constructed from malleable iron or drawn or swaged steel, having a tubular or partially tubular body flanged at its lower end, as axle, and a brace bolted to the flange at the sides of and beneath the axle and to the shaft in advance of the clip, substantially as described.

2. The combination, with the shaft-clip, of the bolt H, having the elongated head *d* and re-enforced portion at its forward end, and the reduced, screw-threaded, and square portions at its forward end, as shown, and the bifurcated spring-supporting link W, supported thereby, substantially as described.

406,852. FASTENING FOR THE TIPS OF BILLIARD-CUES. WILLIAM RAMSEY, St. Louis, Mo., assignor of one-half to Herman H. Lieuka, same place. Filed Oct. 5, 1888. Serial No. 287,204. (No model.)



Claim.—1. In a billiard-cue, the combination of trigger-lever *i*, inserted in recess *e* at the end of the billiard-cue and fulcrumed therein, said lever *i* having hook *j* and pin *k* projecting through hole *l*, spring *m*, and tip *b*, having shank *c* and hook *d*, the whole combined and operating substantially as described.

2. In a billiard-cue, the combination of a trigger-lever *i*, inserted in recess *e* at the end of the billiard-cue and fulcrumed therein, said lever *i* having hook *j* and pin *k* projecting through hole *l*, spring *m*, tube *f*, fixed in recess *e* and having cap *h*, and tip *b*, having shank *c* and hook *d*, the whole combined and operating substantially as described.

406,853. CAR-WHEEL. JAMES RIDDY, Minneapolis, assignor to the Rigby Car Wheel Company, St. Paul, Minn. Filed Oct. 9, 1886. Renewed Dec. 26, 1888. Serial No. 294,847. (No model.)

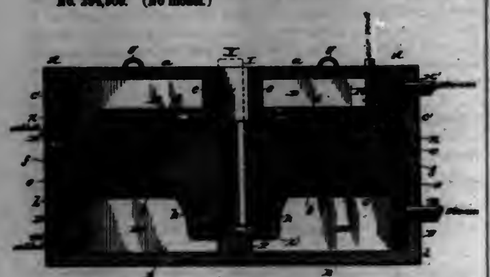
Claim.—In combination with the body of a car-wheel, the tire formed of steel or wrought-iron mixed with aluminum and having a groove and inwardly-projecting lip or flange at one edge or face, and a beveled spring locking ring or arc formed with a thick or broad

406,853.



outer periphery and a thin inner periphery, whereby said lip may be hammered down and forced to embrace the thick periphery of the beveled ring for the purpose of securing the body and tire together, as described.

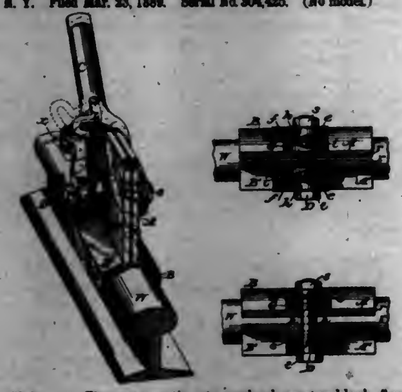
406,854. METALLIC MOLD FOR CASTING CAR-WHEEL BODIES. JAMES KENT, Minneapolis, assignor to the Rigby Car Wheel Company, St. Paul, Minn. Filed Nov. 6, 1886. Renewed Dec. 28, 1888. Serial No. 294,909. (No model.)



Claim.—1. In a metallic mold for casting car-wheel bodies, the upper removable hollow portion A, having neck *c*, connecting the outer and inner walls and forming central passage C for insertion of the axle-core and pouring in the molten metal, in combination with the lower hollow portion B, and provisions for fitting the upper and lower portions of the mold together, substantially as described.

2. In a double-walled metal mold for casting car-wheel bodies, the upper removable portion A, having the annular rim *e*, connecting the circumferential mold-wall with the outer wall, and neck *c*, forming central passage C, in combination with the lower portion B, having rim *f*, connecting the circumferential mold-wall with the outer wall, and also central recess *i*, formed in the inner surface of the mold-plate below passage C, for receiving the axle-core I, as described.

406,855. RAILWAY CHOCK OR STOP-BLOCK. THOMAS B. ROGERS, Brooklyn, assignor of one-half to William G. Robinson, New York, N. Y. Filed Mar. 23, 1889. Serial No. 304,425. (No model.)

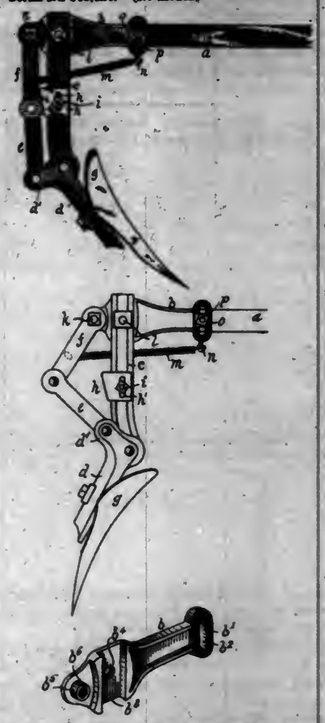


Claim.—1. The combination, in a chock or stop-block for railways with the clamping-plates to embrace the rail, of a forked lever, whose arms embrace the plates, a pivotal bolt passing transversely through the arms and plates, and whose head and nut afford bearings for the outer faces of said arms, an angular projection upon the inner face of one of said arms having its apex bisected by the bolt, and a counterpart angular recess in the outer face of a projection upon the proximate plate having its re-entrant angle in like manner bisected by the bolt, whereby the arms of the lever are in constant contact with the plates each at two diametrically-opposite points, one on each side of the transverse pivotal bolt, substantially in the manner and for the purpose herein set forth.

2. The combination, substantially as set forth, with the forked lever, the clamping-plates embraced by the lever and adapted to embrace a railway-rail, the transverse loose bolt upon which the lever is pivoted, the opposed cams formed upon the opposite faces of either lever-arm and the proximate plate, of a swinging latch pivoted to the lever to drop transversely upon the outer edges of the plates in engagement with notches therein, substantially in the manner and for the purpose herein set forth.

3. The combination, substantially as set forth, of the forked lever, the clamping-plates embraced by the lever and adapted to embrace a railway-rail, the transverse loose bolt upon which the lever is pivoted, the opposed cams formed upon the opposite faces of either lever-arm and the proximate plate, a swinging latch pivoted to the lever to drop transversely upon the outer edges of the plates in engagement with notches therein, and a padlock fitted to an aperture in the lever in position to prevent a movement of the latch out of the notch, substantially in the manner and for the purpose herein set forth.

406,856. CULTIVATOR. MARSHALL SATTLEY, Taylorville, Ill., assignor of one-half to Archibald Sattley, same place. Filed Mar. 13, 1889. Serial No. 303,129. (No model.)



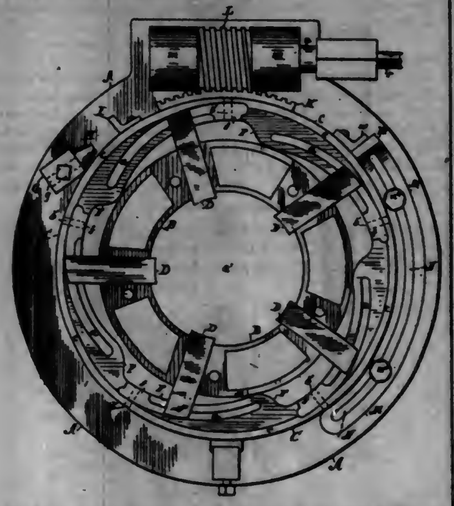
Claim.—1. In cultivators, in combination, a beam, a bracket carrying a shank and secured to the beam, a sleeve pivoted on the shank and carrying a shovel, a toggle-joint connected with the bracket and with the sleeve, a spring to hold the toggle-joint extended, and an adjustable stop between the toggle-joint and the shank, as set forth.

2. The combination, in cultivators, of the bracket having the transverse recess and the boss, the shank held in the recess of the bracket, the sleeve pivotally connected with the shank and carrying a shovel, the toggle-joint pivoted on the boss of the bracket and pivotally connected with the sleeve, a spring to hold the toggle-joint extended, and an adjustable stop interposed between the shank and the toggle-joint, as set forth.

3. The combination, in cultivators, of the bracket having the transverse recess, the boss and the slotted end, the beam, the shank held in the recess of the bracket by a bolt that penetrates the shank, the bracket and the beam, the bolt in the beam extending through the slot of the bracket, the sleeve pivotally connected with the shank and carrying a shovel, the toggle-joint pivoted on the boss of the bracket and pivotally connected with the sleeve, and the extension-spring to extend the toggle-joint, as set forth.

4. In cultivators, in combination, a beam, a shank on the beam, a sleeve pivotally connected with the shank and carrying a shovel, an approximately vertical toggle-joint connecting the sleeve with the beam, and an approximately horizontal extension-spring connected with the beam and with the toggle-joint, near the center thereof, whereby the action of the spring is exerted in the manner and for the purpose set forth.

406,857. SCREW-CUTTING DIE. ALEXANDER SAEMANN, Yonkers, N. Y., assignor to D. Saemann' Sons, same place. Filed Apr. 11, 1888. Serial No. 306,780. (No model.)



Claim.—1. The combination of the removable stop H with the back plate A, having the hub B and carrying radial jaws D, and the stop I on the shell C, which has the grooves *a*, and the recesses *f* contiguous therewith, substantially as and for the purpose herein set forth.

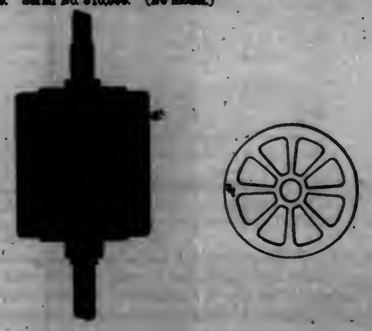
2. The combination of the removable stop H with the back plate A, having the hub B and carrying radial jaws D, and the stop I on the shell C, which has the grooves *a*, the recesses *f* contiguous therewith, and the holes or openings *b'* behind said recesses *f*, substantially as and for the purpose herein set forth.

3. The combination of the worm L, provided upon the back plate A, which has the hub B and carries the jaws D, with a curved rack or toothed sector K on the circumference of the shell C, which has the eccentric grooves *a* arranged to actuate the said jaws, substantially as and for the purpose herein set forth.

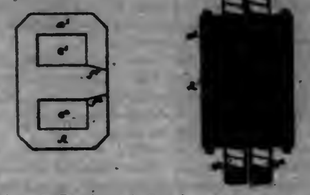
4. The combination of the slide M, placed upon the back plate A, which has the hub B and the jaws D, with the stop *w* on the circumference of the shell C, which has the grooves *a*, which actuate the said jaws, substantially as and for the purpose herein set forth.

5. The removable stop H, worm L, an adjustable slide M, placed upon the back plate A, which has the hub B and carries the jaws D, with the stop I, the curved rack or toothed sector K and stops *c* upon the periphery of the shell C, which has the eccentric grooves *a*, which actuate the aforesaid jaws, substantially as and for the purpose herein set forth.

406,858. METHOD OF FORMING LAMINATED CORES FOR ELECTRICAL APPARATUS. ALBERT SCHMID, Allegheny, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed May 13, 1889. Serial No. 310,866. (No model.)



406,858.



Claim.—1. The hereinbefore-described method of constructing the cores of electrical apparatus, which consists in first stamping out plates of magnetizable material—such as soft iron—afterward annealing and coating them with an insulating oxide, and building up the core from such annealed plates.

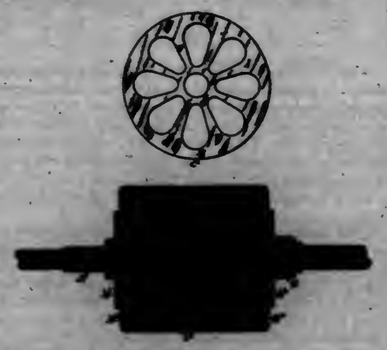
2. The hereinbefore-described method of constructing the laminated cores of electric converters and other electrical apparatus, which consists in first stamping out plates of magnetizable material having the required shape and size, heating such plates after they are so stamped and allowing them to cool gradually, thereby covering their surfaces and edges by coatings of oxide, and afterward building up the core from such plates by placing them face to face, substantially as described.

3. The hereinbefore-described method of constructing the laminated cores of electric converters and other electrical apparatus, which consists in first stamping thin plates of magnetizable material having the required shape and size, heating such plates after they are so stamped and allowing them to gradually cool, thereby covering their surfaces and edges by coatings of magnetic oxide, and afterward building up the core from such plates by placing them face to face, substantially as described.

4. The hereinbefore-described method of constructing the cores of electrical apparatus, which consists in first stamping out plates of magnetizable material—such as soft iron—afterward coating them with an insulating oxide, and building up the core from such oxidized plates.

5. The hereinbefore-described method of constructing the cores for electrical apparatus, which consists in first stamping out the plates of magnetizable material—such as soft iron—afterward coating the edges of the same with an oxide, and building up the core from such oxidized plates.

406,859. METHOD OF FORMING CORES FOR ELECTRICAL APPARATUS. ALBERT SCHMID, Allegheny, assignor to the Westinghouse Electric Company, Pittsburg, Pa. Filed May 13, 1889. Serial No. 310,869. (No model.)



Claim.—1. The hereinbefore-described method of constructing the laminated cores of electrical apparatus, which consists in building up the core of plates or sheets of magnetizable material, turning the core to the proper shape and form, afterward separating the plates, annealing the same, and finally reassembling them.

2. As a step in the manufacture of laminated cores of electrical apparatus, the turning down of the core to the proper size and shape, taking down the core, annealing the lamina, and reassembling the same.

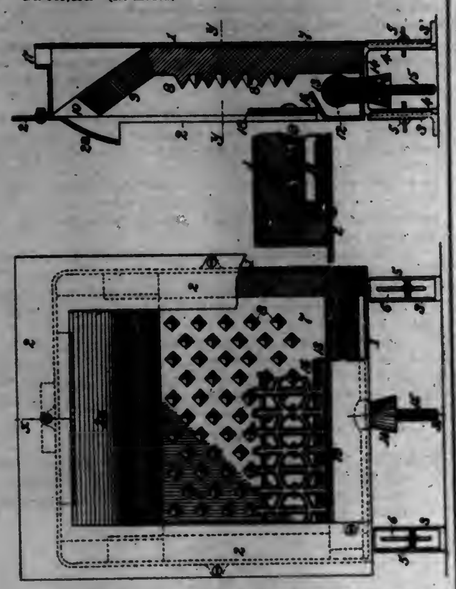
3. The herein-described method of constructing the armature-core of an electric machine, which consists in mounting upon the armature-shaft laminæ of magnetizable material, binding them firmly in position, with the faces of consecutive laminæ adjacent to each other in the peri-

tions which they are finally to occupy, turning down the core to the proper size and form, dissociating the laminæ, annealing them, and thereby coating their surfaces and edges with an oxide of metal, and finally reassembling the laminæ in approximately the positions formerly occupied thereby, substantially as described.

4. The hereinbefore-described method of constructing the laminated cores of electrical apparatus, which consists in building up the core of plates or sheets of magnetizable material, turning the core to the proper shape and form, afterward separating the plates, oxidizing the same, and finally reassembling the same.

5. The hereinbefore-described method of constructing the laminated cores of electrical apparatus, which consists in building up the core of plates or sheets of magnetizable material, turning the core to the proper shape and form, afterward separating the plates, coating the edges with insulating material, and finally reassembling them.

406,860. **GAS-BURNER FOR STOVES OR FIRE-PLACES.** JOHN SMITHLEY, Pittsburg, Pa., assignor to the Fuel Gas and Electric Engineering Company, (Limited,) same place. Filed Mar. 15, 1889. Serial No. 303,498. (No model.)

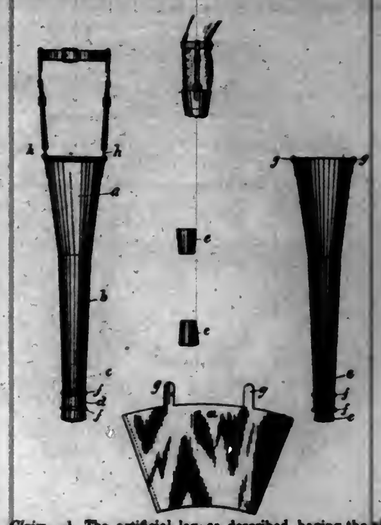


Claim.—1. The combination of a refractory radiating-plate having a series of projections on its front, an inclined deflecting-plate having an upper discharge-opening and placed above the radiating-plate, a burner-pipe having a series of burner-openings and located in front of the lower portion of the radiating-plate, a front deflecting-plate located above and adjacent to the burner-openings and inclined toward the radiating-plate, a mixer communicating with the burner-pipe, and a gas-supply pipe leading into the mixer, substantially as set forth.

2. The combination of a casing, a centrally-open front plate or frame secured thereto, a radiating-plate of refractory material fitted within the casing adjacent to its rear side and having a series of projections on its front, a deflecting-plate having an upper discharge-opening and inclined upwardly from the top of the radiating-plate to the front plate, a delivery-plate fixed to the front plate and outwardly and downwardly inclined in front of and below the discharge-opening of the deflecting-plate, a front deflecting-plate secured to the front plate and projecting inwardly and upwardly therefrom above and adjacent to the burner-openings, a chimney-passage communicating with the discharge-passage of the upper deflecting-plate and leading out of the casing, a mixer communicating with the burner-pipe, and a gas-supply pipe leading into the mixer, substantially as set forth.

3. The combination of an open front casing, a refractory radiating-plate fitted within the casing and having a series of projections on its front, a deflecting-plate having an upper discharge-opening and placed above the radiating-plate, a burner-pipe supported in the lower portion of the casing in front of the radiating-plate and having a series of burner-openings, a mixer communicating with the burner-pipe, a gas-supply pipe leading into the mixer, adjusting-arms projecting downwardly from the bottom of the casing, and longitudinally-slotted standards connected by clamping-screws to the adjusting-arms, substantially as set forth.

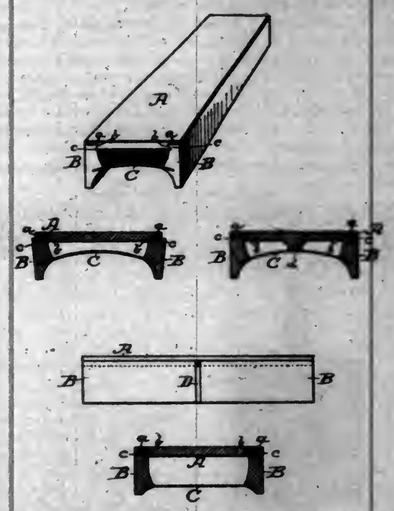
406,861. **ARTIFICIAL LEG.** JOHN T. STEER, Lamar, assignor to Willie Lawson Delony, Little Rock, Ark. Filed May 6, 1889. Serial No. 309,758. (No model.)



Claim.—1. The artificial leg, as described, having the air-tight cone-shaped socket *a*, provided with the integral ears *g* and proper extension to support said socket, substantially as shown and described.

2. In an artificial leg, as described, the air-tight cone-shaped socket *a*, having the integral ears *g*, hollow air-tight extension *b*, cork *c*, fitting in the lower end of said extension, flange *d*, secured to the lower end of said extension, rings or bands *f*, to strengthen said extension, flange *d*, and tapering rubber tip *e*, fitting into the end of said flange, all substantially as shown and described.

406,862. **STEREOTYPE-PLATE AND BASE.** FRANK D. THOMASSE, Englewood, assignor to the American Press Association, Chicago, Ill. Filed Nov. 12, 1888. Serial No. 290,730. (No model.)

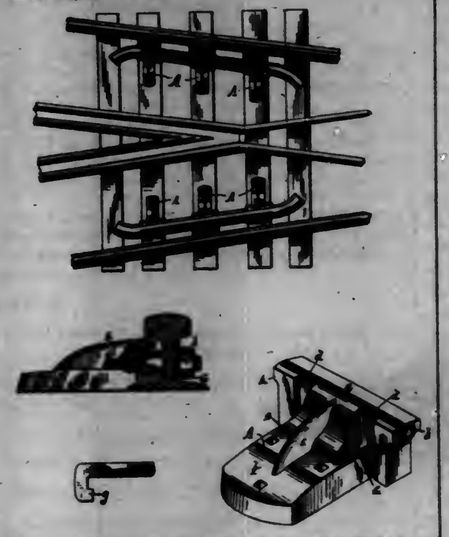


Claim.—1. The combination, with a stereotype-plate A, having its under surface rabbeted parallel and next to its side edges, of the base consisting of the legs B, connected by a transverse elastic web, and having shoulders in their upper inner edges which oppose and lock said plate thereto and bear against the vertical walls of the rabbeted edges of the plate, as set forth.

2. A stereotype-plate having its under surface next to and parallel with its side edges rabbeted so that the vertical shoulders of said rabbets are inversely beveled, and having a central longitudinal leg depending downward a suitable distance from its under surface, in combination with the legs B B, having longitudinal inversely-beveled shoulders in their upper inner edges which oppose the inversely-beveled walls of the rabbets of said plate, and a flexible transverse sheet-metal web connecting said legs.

3. A stereotype-plate having its under surface next to and parallel with its side edges rabbeted so that the vertical shoulders of said rabbets are inversely beveled, in combination with the legs B B, having longitudinal inversely-beveled shoulders in their upper inner edges which oppose the inversely-beveled plate, a flexible transverse sheet-metal web connecting said legs, and a transverse lead D, of a length equal to the width of said plate and of a height rising to the plane of the under surface thereof, as set forth.

406,863. **COMBINATION RAILROAD-BRACKET.** GEORGE WATERMAN, Villisca, Iowa, assignor to William W. Hite, Charles J. West, John Waterman, and W. S. Hite, all of same place. Filed Mar. 27, 1889. Serial No. 304,960. (No model.)



Claim.—1. The combination, with the bracket formed with vertical channels, of the bolts having hooked ends and designed to be passed through the rail with said hooked ends engaging in said channels, substantially as shown and described.

2. The combination, with the bracket formed with base portion, vertical channels, and shoulders *c*, of the rail and the bolts passed through the rail and provided with hooked ends reaching around the ends of said bracket and engaging in said channels, substantially as and for the purpose specified.

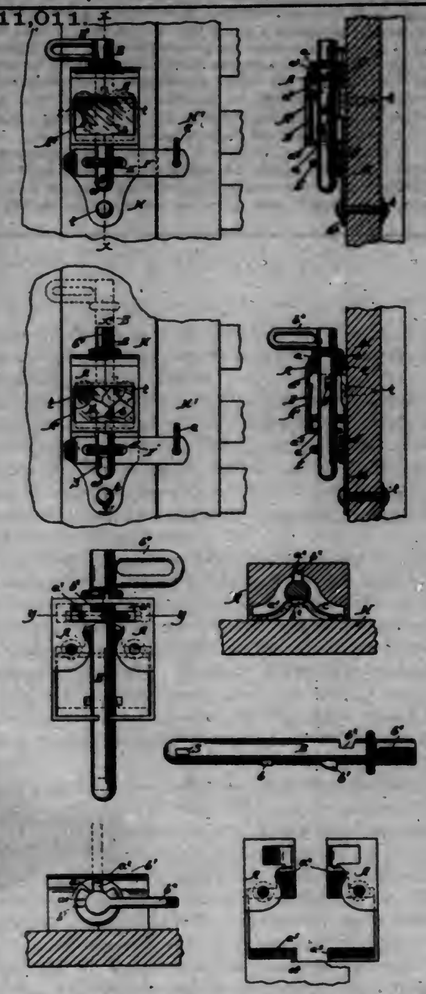
3. The combination, with the rail and the bracket formed with a head-piece provided with vertical channels extending below the shoulders *c* on the base portion of the bracket, of the bolts provided with hooked ends reaching around the ends of the bracket and engaging in said channels, and provided upon their opposite ends with adjusting-nuts, substantially as shown and described.

REISSUES.

11,011. **SEAL-LOCK.** CHARLES E. DAVIS, Chicago, Ill., assignor, by mesne assignments, to the Trans-Continental Car Lock and Seal Company, same place. Filed Apr. 24, 1889. Serial No. 308,477. Original No. 371,087, dated Oct. 4, 1887.

Claim.—1. In a seal-lock, in combination with the frame having a seal-holding space and the bolt journaled in such frame, and having both rotary and longitudinal movement in its bearings, and having a seal-breaking part which is moved into the seal-holding space by the

11,011.



rotary movement, a catch which locks the bolt to prevent its longitudinal movement out of locking position, the frame and the bolt having projections which co-operate to retain the seal in the seal-space, such projection on the bolt being so located thereon that it is moved into seal-retaining position by the longitudinal movement of the bolt, substantially as set forth.

2. In seal-locks, the combination of a lock-frame adapted to sustain in fixed position a frangible sealing-plate, substantially as shown, a perpendicularly and axially movable shackle-bolt, sustained by said frame and provided with a suitable projecting portion *b* and a lug *b'*, and means for securing said bolt in a certain position, from which it cannot be withdrawn or removed without breaking the said sealing-plate when the same is fixed in position, all arranged and adapted to be operated substantially as set forth.

3. In a seal-lock, in combination with a frame having a seal-receiving space, a bolt having bearings in said frame and capacity for rotary and longitudinal movement in said bearings and protruding longitudinally from its bearings to effect the locking by its longitudinal movement, and having a seal-breaking portion which is moved into the seal-space to break the same by the rotary movement, and a catch lodged in the frame which engages the bolt to obstruct its longitudinal movement when said bolt has been moved longitudinally to locking position and been rotated out of its seal-breaking position, substantially as set forth.

4. In a seal-lock, in combination with a frame having the seal-receiving space, a bolt having bearings in said frame and capacity for rotary and longitudinal movement in said bearings and protruding

longitudinally from said bearings to effect the locking, and having a seal-breaking part which is moved into the seal-space to break the seal by the rotary movement, and a catch in the frame which engages the bolt to obstruct its longitudinal movement when the bolt has been moved longitudinally into locking position and rotated out of seal-breaking position, the frame having a keeper E, through which the bolt protrudes when in locked position, and the bolt having a transverse aperture S beyond said keeper, substantially as set forth.

5. In combination, the frame A, the locking-bolt B, journaled therein and having capacity for longitudinal and rotary movement in its bearings, said frame having a seal-receiving space, and the bolt having a projection b, which moves into said space when the bolt is rotated, and having a transverse slot b^3, the leaf-spring C, extending transversely with respect to the bolt and adapted to rest in said slot, and the frame having a transverse cavity in which said spring is retained and prevented from moving longitudinally with respect to the bolt, substantially as set forth.

6. In combination with the frame A, having the seal-receiving space, and the spring-retaining cavity, and the spring C therein, the bolt B, having a seal-breaking projection, the spring-engaging notch b^3, and the projection b', the frame being provided at the upper part with notches a^5 and a^6, ninety degrees separated in the arc of movement of the projection b' about the axis of the bolt-bearings, substantially as and for the purpose set forth.

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DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE MCMAHAN.

Decided June 10, 1889.

1. DIVISION—PROCESS AND APPARATUS.
   Division of an application should not be demanded unless there is in the given case such a total want of interdependence between the two matters claimed as would render them absolutely independent and distinct inventions.
2. When the apparatus cannot operate for any other purpose than to carry out the process, and the process can be carried out only by a machine operated substantially upon the principle of that shown by the applicant, division should not be required.
3. In such case there is no reason for requiring a division upon the ground that the examination of the Office would be facilitated, because the field of search is precisely the same whether the application is divided or not.

ON petition.

METHOD OF AND APPARATUS FOR SEPARATING MAGNETIC FROM NON-MAGNETIC SUBSTANCES.

Application of John M. McMahan filed February 20, 1889, No. 300,609.

Referred to the Assistant Commissioner, by order of the Commissioner, for hearing and decision.

Mr. Anthony Pollok for the applicant.

FISHER, *Assistant Commissioner:*

This petition is taken from the action of the Primary Examiner requiring applicant to divide his application upon the line of process and apparatus.

The application covers an improvement in the art of separating magnetic from non-magnetic particles in a finely-divided condition, which consists in feeding the particles through a magnetic field of force and at the same time subjecting them to the action of a suction current of air. Claims 1, 2, and 3 cover the method and the remaining claims the apparatus by which it is carried out. It is held that these two sets of claims cannot be treated in the same application. No good ground exists for this holding. There is no provision of the statute which prevents the joinder of a process and its apparatus in the same application. The courts have never declared a patent invalid for the reason that its claims embrace both, but, on the contrary, have sustained many such patents. And Rule 41 of the Patent Office expressly provides that inventions dependent upon each other and mutually contributing to produce a single result may be claimed in the same application. Both the law and the rule warrant the conclusion that division should not be demanded unless there is in the given case such a total want of interdependence between the two matters claimed as would render them absolutely independent and distinct inventions.

In this case the process and apparatus are dependent upon each other and do mutually co-operate to produce a single result. The apparatus cannot operate for any other purpose than to carry out the process, and the process can be carried out only by a machine operated substantially upon the principle of that shown by applicant.

The reason sometimes urged for requiring division in cases of this character, that examination would be facilitated, is of no force here, because it would be impossible to examine the claims for either the process or apparatus without at the same time examining the claims for the other. The field of search is precisely the same in each case, and patents embracing the apparatus and process, respectively, if granted, would be placed in the same class and sub-class of the same division.

All these are strong reasons why the division should not be required in this case; but it may be further said that the law provides that any person who has made an invention shall receive a patent granting to him the exclusive right to make, use, and vend the same throughout the United States and its Territories. By requiring two patents to be taken in such cases as this one would cover the right to make and vend the apparatus, while the other would cover only the right to use it. An invention would thus be split up into separate parts, one of which might fall into the hands of one assignee and the other into those of another, perhaps antagonistic. Such an interference with the rights of inventors was never contemplated by the statute, and the Patent Office should take no action which would accomplish it.

Division should not be required in this case, and the prayer of the petition is granted.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Eastern District of Michigan.

THE CONSOLIDATED ROLLER MILL COMPANY *v.* COOMBS.

Decided May 20, 1889.

1. GRAY—GRINDING-MILLS.
   Letters Patent No. 222,895, granted December 23, 1879, to William D. Gray, for an improvement in grinding-mills, construed and sustained, and *Held* that Gray's invention is for such an improvement as to entitle him to a liberal construction of the claims of the patent and a liberal application of the doctrine of equivalents.

2. SAME—INFRINGEMENT.

The defendant's entire machine is simply a rearrangement of the Gray combination for the obvious purpose of an attempt to avoid his patent. The result attained by both combinations is the same. The means adopted to attain such result differ only in the location of the several elements and such dependent differences as are made necessary by such change of location.

3. COMBINATIONS—PATENTABILITY.

The rearrangement of an old combination, when each element operates practically as before, is not patentable unless a new or greatly-improved result is obtained.

4. DOWLING—FEED MECHANISM FOR ROLLER-MILLS.

Letters Patent No. 289,518, granted December 4, 1883, to Daniel E. Dowling, for an improvement in feed mechanism for roller-mills, *Held* to be an aggregation of old elements adapted to a new machine, but producing practically the same results. No invention involved in putting these devices together and placing them in the hopper of a flouring-mill.

5. MARMON—ROLLER-MILLS.

Letters Patent No. 274,506, granted March 27, 1883, to D. W. Marmon, for an improvement in roller-mills, construed, and so much of claim 1 as is not covered by the Gray patent—to wit: "means for adjusting simultaneously both ends of the counter-shaft"—*Held* to be so far anticipated as to involve only mechanical skill.

6. SAME—SUBSEQUENT PATENTS.

A former patent, No. 265,927, granted October 10, 1882, to Marmon jointly with one Warrington, construed, and *Held* that no one can take out a patent either jointly or severally for an invention, and, after the patent is issued, without reservation in his original application, obtain a second patent with broader claims for the device.

7. CONSTRUCTION OF CLAIMS.

Claims of patents should receive such interpretation as will enlarge or restrict them, so as to cover the actual invention when not absolutely inconsistent with the language used by the patentee. (*Winans* v. *Denmead*, 15 How., 330; *Van Martyr* v. *Miller*, 15 Blatchf., 562.) If, upon the one hand, the state of the art shows the invention to have been a narrow one, a strict interpretation will be given the claims. (*Manufacturing Co.* v. *Ladd*, 102 U. S., 408.) And it is of no practical consequence whether such restrictions are imposed by the Patent Office or not. (*Toepfer* v. *Goetz*, 41 O. G., 933.) If, upon the other hand, the patentee has taken a decided step in advance of the state of the art at the time his application was filed, the courts will, if possible, construe the language of his claim so as to give him the full benefit of his improvement. (*Turrill* v. *R. R. Co.*, 1 Wall., 491; *Rubber Co.* v. *Goodyear*, 9 Wall., 788.)

STATEMENT OF THE CASE.

This was a bill to recover damages for the infringement of Letters Patent No. 222,895, issued to William D. Gray December 23, 1879, for an improvement in roller grinding-mills; Patent No. 289,518, issued to Daniel E. Dowling December 4, 1883, for a feed mechanism for roller-mills, and Patent No. 274,508, issued to D. W. Marmon March 27, 1883, for a roller-mill.

The invention covered by the Gray patent was stated in the preamble to consist—

in a peculiar construction and arrangement of devices for adjusting the rolls vertically as well as horizontally, whereby any unevenness in the wear of the rolls, or in their journals or bearings, may be compensated for and the grinding or crushing surfaces kept exactly in line—

and also—

in the special devices for separating the rolls when not in action, and in other details.

The Dowling patent was essentially for an agitator centrally located within the hopper of the roller-mill above the grinding-rolls—

and provided with teeth or fingers arranged to reciprocate immediately above the surface of the feed-roll, and lengthwise thereof, to loosen and disintegrate the material and distribute it in a free condition upon the surface of the feed-roll in such manner that its delivery from the hopper is effected in a thin continuous sheet, which is delivered from the surface of the feed-roll directly to the surface of the grinding-rolls thereunder.

The Marmon patent related to a counter-shaft parallel with the roll-shaft and simultaneously adjustable at each end, so as to tighten or loosen the belts at both ends of the machine at one operation.

The defendant by his answer and proofs made the following defenses: (1) that the Gray patent is so circumscribed by reason of the limitation voluntarily made by the applicant, or imposed by the Commissioner of Patents and accepted as a condition precedent to the grant, that it does not cover defendant's machine or any part thereof; (2) that the features of defendant's machine are found in many prior patents recited in the answer and introduced in evidence; (3) that in view of the state of the art as shown by prior patents and publication the Gray patent is invalid for want of novelty; (4) that the plaintiff has never been engaged in the manufacture, sale, or use of the alleged inventions covered by its patents; denies that the same are of value or that plaintiff is entitled to damages.

The chief defense to the Dowling and Marmon patents are a want of invention, in view of the prior state of the art.

Mr. Rodney Mason for the complainant.

Mr. Joseph G. Parkinson and *Mr. Robert H. Parkinson* for the defendant.

BROWN, *J.*:

The ancient system of reducing wheat to flour by grinding between revolving stones, which obtained from the earliest historical period, has, within the last 20 years, largely given place to the system of crushing between rolls, which seems to have originated in Buda-Pesth, in the Kingdom of Hungary. These roller-mills, which soon after their invention were introduced into this country, and have practically superseded in all large flouring-mills the old-fashioned method of grinding, consist generally of two or more pairs of rollers mounted in a strong frame, and, as a rule, lying in the same horizontal plane. One of these rolls is fixed, and mounted in a stationary bearing, but susceptible, of course, of revolution. The other is mounted upon an adjustable bearing, which permits it to yield or give way in case any hard substance enters between them. While these rolls are not in actual contact when grinding, they are very nearly so, and their adjustment is a matter of extreme nicety. That the wheat may be ground and not merely crushed it is necessary that the rolls be corrugated upon their surfaces and driven at differential speeds, so as to give them a rubbing or tearing as well as a crushing action, and when driven by belts it is customary to drive one roll in each pair by a belt at one end of the machine and the other roll by a belt at the opposite end. A counter-shaft is run through the machine from end to end beneath the rolls, and driven by a line shaft or any suitable motor, and provided with pulleys over which the belts at each end of the machine are thrown, thereby driving the rolls with which these belts connect. It is desirable that the axes of the rolls shall always be parallel with each other, and to accomplish this the bearings of the movable roll are made independently adjustable, both vertically to bring the two rolls of a pair axially into the same plane, and horizontally, so that their surfaces may be exactly parallel, or else they will grind unequally. This adjustment should be so arranged that it can be made with one hand, while the other is feeling the product of the mill as it issues from the rolls. The adjustment must be absolutely rigid, so that the work may be uniform, and yet the faces must never come in contact, since that would ruin their surfaces. Above the grinding-rolls is arranged a hopper, at the bottom of which is a long narrow opening parallel with and above the line of the two rolls. This opening is nearly closed by a feed-roller, which by its revolution is intended to carry the material in an even regular stream to fall between the grinding-rolls.

The Gray patent relates to the adjustment of the rolls, both to preserve their parallelism, their grinding distance, and the pressure of the movable against the fixed roll. The Dowling patent relates to the feeding of the material in the hopper to the rolls, and the Marmon patent to the adjustment of the counter-shaft to tighten or loosen the belts at each end of the machine simultaneously.

THE GRAY PATENT.

We will proceed to consider the Gray patent, No. 222,895, the first and most important in the case. As before stated, this patent relates to the means for adjusting the rolls both vertically and horizontally, the requisites of such adjustment being that it must be fixed and permanent, and at the same time be capable of yielding to a breaking strain in case a hard substance enters between them, and at the same time of returning to their original position without a readjustment. They must also be capable of a vertical adjustment, or an adjustment for "tramming," as it is called, so that in case of irregular wearing of the surfaces or bearing the axis may be brought exactly in line. Seven claims are made in the patent, the second, third, fourth, and fifth of which are alleged to be infringed. That part of the preamble which refers to devices for adjusting the rolls vertically as well as horizontally relates to the subject-matter of the second and third claims, and that clause referring to the special devices for separating the rolls relates to the subject-matter of the fourth and fifth claims. An important question connected with this patent is the construction to be given to it in view of the limitations or restrictions imposed upon the original claims by the Commissioner of Patents. In his original specification, filed with his application, Gray stated his invention to consist—

in devices for adjusting the rolls vertically as well as horizontally, whereby any unevenness in the wear of the rolls or their journals or bearings may be compensated for and the grinding or crushing surface kept exactly in line—

and also—

in the devices for separating the rolls when not in action.

His claims correspond with his evident belief that he was the inventor, broadly, of devices for a roll adjustable both vertically and horizontally, and were as follows:

2. In combination with a stationary roll, an adjustable roll mounted substantially in the manner described, whereby it may be adjusted both vertically and horizontally.
3. In a roller grinding-mill, a roll mounted at its ends in arms or supports arranged to be independently adjusted both vertically and horizontally, substantially in the manner described.
4. In combination with the roll C, the independent arms or supports D, mounted upon eccentrics, substantially as shown, whereby either end of the roll may be adjusted vertically.
5. In combination with the stationary roll B and adjustable roll C, means, substantially such as described, for drawing the roll C to a fixed point.

His application in such form was refused by the Commissioner of Patents in a letter dated August 14, 1879, notifying Gray that "the invention alleged and claimed in his case is not generic, in view of the English patent No. 3,328 of 1877, this being known as the 'Lake English patent.'" Gray thereupon concluded to submit to this opinion of the Commissioner, and immediately amended his application by two insertions in the preamble, so that instead of reading "consists in devices for adjusting the rolls vertically as well as horizontally," it reads "consists in a peculiar construction and arrangement of devices for adjusting the rolls vertically as well as horizontally," and by inserting the word "special" before the words "devices for separating the rolls when not in action." Pursuant to the same intimation of the Patent Office, Gray also amended his claims to read as follows:

2. In a grinding-mill, the combination of a roll, an upright swinging arm at each end of said roll, an eccentric adjustable pivot located at the lower end of said arm, and devices, substantially such as shown, acting against the upper end of the arm.
3. The combination of a roll and upright swinging arms having their lower ends mounted on vertically-adjustable pivots, the latter thus serving both to sustain and adjust the rolls.
4. In combination with the movable roller-bearing, the rod G, adjustable stop devices to limit the inward movement of the bearing, an outside spring urging the bearing inward, and adjusting devices, substantially such as shown, to regulate the tension of the spring.
5. In combination with the roller-bearing, the adjusting-rod provided at one end with a stop to limit the inward movement, a spring, and means for adjusting the latter, and provided at the other end with a stop and holding devices, substantially as shown and described.

Now, if the plaintiff be limited to the literalism of these claims and is denied the benefit of the ordinary doctrine of equivalents, as contended by the defendant, then it is clear the defendant does not infringe, since he has neither an eccentric adjustable pivot nor a pivot located at the lower end of the swinging sustaining-arm, nor devices of any kind acting against the upper end of the arm. Authority for the proposition that plaintiff is limited to the exact language of his claims, where limitations and restrictions have been imposed upon the original claims by the Patent Office, is claimed to be found in numerous decisions of the Supreme Court to the effect that limitations introduced by the applicant are binding upon him, even if his actual invention be larger than his claim; that claims accepted by the patentee cannot be enlarged, and when a claim is restricted as to specific elements all are regarded as material. That this is particularly true of limitations introduced after rejection, and to ascertain what these limits are the court is not confined to the face of the patent, but may take into consideration the proceedings in the Patent Office in construing the meaning and scope of the claims, and for that purpose can go to the file-wrapper and contents of the original applicant. In the recent case of *Rodebaugh* v. *Jackson* (37 Fed. Rep., 882) we had occasion to consider the most prominent of these cases, notably that of *Sargeant* v. *The Hall Safe and Lock Co. et al.*, (31 O. G., 661; 114 U. S., 86,) in which it is broadly stated in the opinion of the court—

That in patents for combinations of mechanism, limitations, and provisos imposed by the inventor, especially such as were introduced into an application after it had been persistently rejected, must be strictly construed against the inventor and in favor of the public, and looked upon as in the nature of disclaimers.

Upon an examination of the other cases upon the same subject, however, we came to the conclusion that nothing more was intended than that where, under the state of the art and the action of the Patent Office, a patentee of a combination has modified and limited his claims he shall be held strictly to his combination as he has described it. What shall be considered as an infringement must depend largely upon the state of the art as it existed at the time the patent was issued. It has always been the law that a patentee is limited by his claims, even though his invention be broader, and that if he include a certain element in a

combination he is not at liberty to say that such element is immaterial. (*Vance* v. *Campbell*, 1 Black, 427.) At the same time it is equally true that a combination patent covers not only the elements named, but also such as may be substituted therefor and are known as mechanical equivalents. Practically all which the rejection of a claim by the Patent Office means is that after the patentee has limited his claim he shall not be permitted by construction to have the benefit of his claim as originally presented. (*Leggett* v. *Avery*, 101 U. S., 256.) But what shall be deemed a mechanical equivalent for his claim depends so largely upon the state of the art at the time his patent was issued that it is impossible to gather from the general language of the courts with respect to the construction of claims what should be the construction in any particular case. When we find a court using language which indicates that the patentee should be strictly limited to his claim and to the restrictions and the provisos he has inserted therein, we shall generally find that the invention is only a trifling deviation from or improvement upon what has gone before. When, upon the other hand, the case shows the doctrine of mechanical equivalents to be vigorously asserted and liberally applied, it will usually appear that the patent is a pioneer or a marked improvement upon any device which had previously existed. The prime object in construing a patent should be to preserve to the patentee his actual invention if this can be done consistently with the language he has himself chosen. Occasionally it will happen that the patentee will by inadvertence or mistake claim less than he is entitled to and the courts be powerless to help him; but their disposition is and should be to deal liberally with those who have made valuable contributions to the natural sciences. In this connection we fully coincide in the opinion of Judge Shipman in *Schillinger* v. *Gunther* (11 O. G., 831) that a strict construction should never be given to the claim where such construction would be a limitation upon the actual invention. Similar language is used by Judge Shepley in the case of *Esterbook* v. *Dunbar*, (2 B. & A., 427,) in which he says:

> The technical claims in a patent are to be construed with reference to the state of the art, so as to limit the patentee to and to give him the full benefit of the invention he has made. They are also to be construed in connection with the specification, so as to limit the patentee to and to give him the full benefit of the invention he has described. The general terms and sometimes special words in the claims may receive such a construction as may enlarge or contract the scope of the claim, so as to uphold that invention, and only that invention which the patentee has actually made and described, when such construction is not absolutely inconsistent with the language of the claim.

Indeed, the general principle is sustained by abundance of authority to the point that claims of patents should receive such interpretation as will enlarge or restrict them, so as to cover the actual invention when not absolutely inconsistent with the language used by the patentee. (*Winans* v. *Denmead*, 15 How., 330; *Van Martgr* v. *Miller*, 15 Blatchf., 562.) If, upon the one hand, the state of the art shows the invention to have been a narrow one, a strict interpretation will be given the claims. (*Manufacturing Co.* v. *Ladd*, 102 U. S., 408.) And it is of no practical consequence whether such restrictions are imposed by the Patent Office or not. (*Toepfer* v. *Goetz*, 41 O. G., 933.) If, upon the other hand, the patentee has taken a decided step in advance of the state of the art at the time his application was filed, the courts will, if possible, construe the language of his claim so as to give him the full benefit of his improvement. (*Turrill* v. *R. R. Co.*, 1 Wall., 491; *Rubber Co.* v. *Goodyear*, 9 Wall., 788.)

In the case under consideration Mr. Gray claimed broadly in his second original claim the combination of the stationary and movable rolls mounted in such a way that they could be adjusted both vertically and horizontally. In his third claim he limited himself only to "a roll mounted at its ends in arms or supports arranged" for vertical and horizontal adjustments. These claims were rejected in view of the Lake patent, and Gray thereupon re-formed and limited them. While, of course, we are bound to acquiesce in his action, we are not fully satisfied that he was not entitled to broader claims than he actually submitted to. Undoubtedly a horizontal adjustment was provided for in the Lake patent, and some of the drawings would indicate that a vertical adjustment was also possible; but there is some doubt as to whether it was such a vertical adjustment as is contemplated in the Gray patent. It is true that Lake in his preamble states that his invention—

> relates particularly to means for varying the relative heights of the axes of the rollers to each other, and also their relative horizontal distances;

but he also states that it was—

> for the purpose of producing a greater or less pressure of the one roller on the other,

and he further states that—

> the pressure of one roller upon the other depends upon the variations of the relative height of their axes to each other. This height may be altered according to the pressure required by displacing the block carrying the axle with the eccentric and by adjusting the set-screws arranged beneath the bearings of the adjustable roller.

In all the drawings of the Lake patent, where a vertical adjustment is provided for, it appears that the two rollers are not upon the same horizontal plane, but at an angle of 45 degrees, or less, to each other, and that the adjustment was intended to regulate the pressure of one upon the other, and not an adjustment for tramming, as provided in the Gray patent. It may be doubtful, however, whether this makes any difference in the principle, since it appears that there was provided an effective, though a somewhat primitive, means of vertical adjustment by a set-screw beneath the movable roller. But, conceding that in the matter of double adjustment Gray was anticipated by Lake, it is quite evident that his machine, at least so far as concerns the vertical adjustment, is decidedly in advance of the other, if such adjustment was not provided for a different purpose. The means used to accomplish these adjustments in the Gray patents are so unlike those employed by Lake that the questions of patentability, novelty, and superior utility can hardly be considered open ones. Indeed, their dissimilarity is such that it is quite immaterial to point out in detail the points of difference. About the only feature common to both is the use of a lever and an eccentric, though in Lake's patent they are used only for the purpose of horizontal adjustment, while in Gray's they are also used for vertical adjustment. Perhaps Gray was entitled to broader claims than he actually made; but at any rate we are satisfied that he is entitled to a liberal application of the doctrine of equivalents.

None of the devices claimed as anticipations, except that of Lake, show a combination of horizontal and vertical adjustment, although devices representing the different elements of plaintiff's combination are numerous. It is clear that his patent cannot be defeated by proof that part of his combination is found in one mechanism and part in another. (Walker on Patents, sec. 66; *Bates* v. *Coe*, 98 U. S., 48; *Parks* v. *Booth*, 102 U. S., 104.) Thus, the Dingler model for grinding paint shows three rolls, the middle one of which is fixed, and the outer ones movable horizontally by springs in the shape of a bow at each end of the rolls, connecting each movable bearing to a rod, which is also connected with an eccentric mounted upon a shaft. This device is not used for opening or adjusting the distance between the rolls, but merely for the purpose of keeping up a constant pressure of the two adjustable outer rolls against the fixed roll. There is no stop to prevent actual contact of the rolls and determine the grinding adjustment, the only object of the eccentric being to increase or diminish the pressure, as coarse or fine grinding is desired, but never to separate the rolls. In the Nagel and Kaemp patent there are means provided for simultaneous horizontal adjustment of the two ends of a movable roll by a yoke or bell-crank lever of the first order. Not only is there no vertical adjustment, but there are no means of adjusting the two ends of the movable roll separately, or adjusting for "tram," as it is called. The only adjustment possible is that of both ends of the roll simultaneously for grinding. Practically the same may be said of the Schacht machine, which also contains means for the simultaneous adjustment of the two ends of the movable roll, but no vertical adjustment, and of course no provision for tramming. In the Mechwart American Patent No. 251,124 there is a horizontal adjustment provided by means of a lever held in position by weights instead of springs, and in this arrangement it bears some resemblance to the Lake patent; but it appears to be but a clumsy contrivance as compared with the American machines. There is here also no arrangement for vertical adjustment. Indeed, while the practice of crushing wheat by roller action was adopted by American millers, the mechanism of the foreign mills for adjusting these rollers proved so clumsy and inadequate that the machines themselves speedily went out of use. In short, none of these prior patents, except Lake's, contain a suggestion of the underlying principle of plaintiff's patent, and are chiefly valuable as showing the extremely imperfect state of the art at the time Gray made his application. In the Lake patent there is, it is true, a provision for vertical as well as horizontal adjustment, sufficient probably to disentitle Gray to the broad claims of his original application; but it is very doubtful in our mind whether the Lake machine was ever intended or is susceptible of anything more than the regulation of the pressure, and his adjustments were accomplished by such rude devices, as compared with those of Gray, that we think his claims, unnecessarily restricted perhaps, are entitled to great liberality in construction.

Coming now to the question of infringement, we are compelled to analyze in some detail the elements of plaintiff's combination, and to compare them with corresponding features of defendant's machine. The second and third claims contain substantially four elements: (1) A roll; (2) upright or sustaining swinging arms at each end of the roll; (3) an eccentric vertically-adjustable pivot located at the lower end of the arm; (4) devices, substantially as shown, acting upon the upper end of the arm. The first two of these elements are undoubtedly contained in the Mawhood roller-mill, represented by defendant's machine, except that the swinging arm or lever of the Mawhood device is pivoted in its center instead of at its lower end; in other words, is a lever of the first instead of a lever of the second order. This is admitted by defendant's expert to be immaterial, as the different "orders of levers may be interchanged indiscriminately so far as the lever functions are concerned in modifying and converting motions." The third element is not exactly reproduced in defendant's machine. Instead of an eccentric adjustable pivot located at the lower end of the arm, there is a non-adjustable pivot located in the center of the arm midway between the ends, which means merely that his lever is of the first instead of the second order; while the adjustable pivot is contained at the outer end of the cross-arm, supporting the main arm which carries the roller. The operation of the two is practically identical. Indeed, the adjustable pivot might have been located in the main arm had the device regulating the grinding adjustment been located above instead of below the rollers. It is notable in this connection that Gray in the sixth and seventh figures of his drawings contemplated as an alternative of the devices shown in Figure 1 a lever pivoted in the middle, and operated at the outer end by a screw to elevate or depress the swinging arm D, located at the other end. It may be said in general that anything named by the patent as an equivalent will be so regarded by the court. (*Hayden* v. *Suffolk County*, 4 Fish., 86.) And while the defendant has not adopted the exact device suggested by Gray, we think the deviation too trifling to avoid the charge of infringement.

Before considering the parts of defendant's devices corresponding to the fourth element of Gray's second and third claims, it is desirable to analyze his fourth and fifth claims, which define more particularly the devices acting against the upper end of the arm. The fourth and fifth claims are for a combination of—(1) a movable roller-bearing; (2) the rod G; (3) an adjustable stop device to limit the inward movement of the bearing; (4) an outside spring urging the bearing inward; (5) means for adjusting the spring, and (6) a stop and holding device at the opposite end of the rod from the spring. There is no doubt the first two of these elements are also found in defendant's machine. It is true that in the Gray patent the rod G is located above, and in defendant's machine below, the rollers; but the location is not specified in the claim, and even if it were, it would be immaterial. The change of the location of an element in a combination, where there is no new function performed by such element in its new location, will not avoid the charge of infringement. (*Adams* v. *Gillette Manufacturing Co.*, 3 B. & A., I; *Ives* v. *Hamilton*, 92 U. S., 426; *Knox* v. *Great Western Co.*, 6 Saw., 430.) Nor is it of any great consequence that Gray's operated as a draw-rod to coerce the two devices together, while defendant's is a thrust-

rod operating in a different direction. (*Ives* v. *Hamilton*, 92 U. S., 296; *Rodebaugh* v. *Jackson*, 37 Fed. Rep., 882.) The third element—viz., the adjustable stop device to limit the inward movement of the bearing—is represented by the nut *l* of the Gray patent and by the nut *l* outside the spring in the Mawhood machine.

(4.) The outside spring urging the bearing inward is lettered H in both patents. What is meant by the term "outside spring" is somewhat uncertain. The expert See defines it as—

a spring located on the outer side of the thing it is intended to exert its operative pressure upon, as distinguished from a spring located on the inner side pressing outwardly against the thing which it is to exert its pressure upon.

Plaintiff's expert, Smith, considers the word "outside" as a word of description only, and not a word of limitation.

In the machine of the defendant the spring acts against the lower end of the bearing D. In order that the movable roll may be moved toward the fixed roll, or inward, the lower end of the bearing must be moved outward by the spring. In the machine of the patentee the spring acts against the upper end of the bearing, and in order that the roll may be urged inward, the upper end must be pressed inward by the spring.

However this may be, there is no doubt but that both springs operate alike to press the movable roll against the fixed roll, and that the different kinds of springs—as, for instance, those operated by contraction instead of expansion—are like the different orders of levers, mere matters of mechanical contrivance or of convenience or ease of construction. The object of the spring in both cases is to permit the movable roll to recede from the fixed roll whenever any foreign hard substance passes between them, so that the surfaces of the roll may not be damaged.

(5.) The means for adjusting the tension of the spring (the hand-nuts *j*) in both cases differ only in the fact that in plaintiff's machine this nut is located outside, and in the defendant's machine inside, the spring. Their operation is identical.

(6.) The stop and holding devices at the opposite ends of the rod G are an eccentric, shown in Fig. 8 in plaintiff's patent, operated in one case by a wheel and in the other by a lever.

In short, we regard defendant's entire machine as simply a rearrangement of the Gray combination for the obvious purpose of an attempt to avoid his patent. The result attained by both combinations is the same. The means adopted to attain such result differ only in the location of the several elements and such dependent differences as are made necessary by such change of location. As we had occasion to observe in *Rodebaugh* v. *Jackson*, the rearrangement of an old combination, where each element operates practically as before, is not patentable unless a new or greatly improved result is obtained. (Walker on Patents, sec. 41; *Woodward* v. *Dunsmore*, 4 Fish., 163, 169.)

THE DOWLING PATENT.

Plaintiff also claims for an infringement of the first, third, and fourth claims of the Dowling patent. The fourth claim contains the clearest statement of the combination, and is the only one which is necessary to be considered. It reads as follows:

4. In a grinding-mill, the combination of two grinding-rolls, the feed-roll above the same, a hopper above the feed roll, and a toothed agitator centrally located within the hopper and extending lengthwise above the feed-roll, and mechanism for reciprocating said agitator in a lengthwise direction.

The prominent feature of this combination is the centrally-located agitator, introduced for stirring up the material, and thereby keeping a continuous and uniform flow. The tendency of the material is to bank up or bridge over in the hopper when soft. This reciprocating comb prevents the bridging of the material by working out the center and permitting the loosened material to fall on the feed-roll. This impediment in the flow is most liable to occur in the reductions of the wheat after the first reduction, of which there are usually six or seven. It is also liable to occur in the soft material incident to finishing the middlings reductions. Agitators of this description for the purpose of breaking up lumps in such material as plaster, ashes, lime, or manure are not uncommon, and their mode of operation is practically the same. In Caine's patents, Nos. 78,423 and 137,051, for an improved machine for sewing fertilizers and seeds, there is shown a revolving stirrer E corresponding to the Dowling feed-roll D, and a reciprocating agitator F, having saw-like teeth on its lower edge, resting on or near the feed-roller. The rod of this agitator is reciprocated by a cam, substantially in the same manner as the plaintiff's. It is true this agitator is not centrally located within the hopper, but lies flat against one of its sides. But the patent to T. J. West, No. 100,573, has an adjuster which is centrally located in a machine for sowing fertilizers, and the patent to H. E. Keeler, No. 254,140, shows a similar device similarly located in a fanning-mill. Like devices are shown in other patents offered in evidence. In short, Dowling's combination of the two grinding-rolls, the feed-roll above the same, a hopper above the feed-roll, (used in all roller-mills,) and the toothed agitator of the Caine, West, Keeler, and Mahaffy patents centrally located as in the West and Keeler patents, and the mechanism for reciprocating such agitator in a lengthwise direction is but an aggregation of old elements adapted to a new machine, but producing practically the same results. We do not think that any invention is involved in putting these devices together and placing them in the hopper of a flouring-mill.

THE MARMON PATENT.

Plaintiff also claims an infringement of the first, second, and third claims of the Marmon patent, the first of which only it is necessary to notice. It reads as follows:

1. The combination, in a roller-mill, of the supporting framework, the roll-shafts, a counter-shaft extending from end to end of the machine substantially parallel with said roll-shafts, pulleys on several shafts, belts connecting the same, and means for adjusting both ends of said counter-shaft simultaneously, whereby the belts at both ends of the machine are tightened or loosened at one operation, substantially as set forth.

This claim consists of six elements, viz: (1.) The supporting-frame, which is a rigid casting in one piece, supporting all four grinding-rolls and a counter-shaft. (2.) The roll-shafts. (3.) A counter-shaft extending from end to end of the machine substantially parallel with the roll-shafts, receiving motion at one end from the main driving-belt, and communicating the motion to one roll of each pair at the other end. (4.) Pulleys on the roll-shafts and counter-shafts. (5.) Belts on the roll and counter shaft pulleys, arranged to give reversed and differential movement to the two rolls of each pair. (6.) Means substantially such as described for simultaneously adjusting both ends of the counter-shaft, by which means all the roll-belts may be tightened or loosened by one operation; and of which means

a great variety is shown in the drawings accompanying the patent.

As Gray's prior patent, No. 228,525, is admitted to contain the first five of these elements, the only question is whether the sixth element—viz., means for adjusting simultaneously both ends of the counter-shaft—is found in prior patents. It will be noticed that the patentee claims, broadly, any means of simultaneously adjusting both ends of the counter-shaft, and not specific devices for so doing, and the drawings accompanying his patent show twelve different devices for that purpose, which are thereby made equivalents of one another. It follows that if the defendant would be guilty of infringement by using any means of simultaneous adjustment, plaintiff's patent would also be anticipated by the prior use of any such means. Means for the independent adjustment of each end of such counter-shaft are admitted to be found in Gray's patent, No. 228,525. While defendant's testimony has failed to establish a case of the simultaneous adjustment of both ends of a counter-shaft, there is shown in the Lane and Bodley saw-mill a device for moving both ends of a shaft for carrying a circular saw, for the purpose of tightening and loosening the belts, a similar device in Clark's patent, No. 174,719, for a coal-breaker, and in the Odell patent, No. 250,954, there is shown a roller-mill containing a device for simultaneous adjustment of two short shafts carrying pulleys, each revolving in an opposite direction. The means adopted are not dissimilar, and, in our opinion, there is nothing beyond mere mechanical skill required in applying these means to the counter-shaft of a roller-mill. We agree with the defendant's expert that it does not call for the exercise of inventive faculty. (*Aron* v. *Manhattan Railway Co.*, 26 Fed. Rep., 314.) Beyond this, however, there is produced a prior patent to Marmon and one Warrington, dated October 10, 1882, or about six weeks before the filing of the application for the Marmon patent, in which the same adjusting devices shown in Fig. 20 of the Marmon patent are employed. This construction is made the subject-matter of the twelfth claim of the Marmon and Warrington patent in the following language:

12. The combination, with the counter-shaft M, of an adjusting mechanism consisting of the devices N, the rods O, and mechanism connecting said rods together, whereby they are operated simultaneously, all substantially as set forth.

The construction and operations of the corresponding parts in the two patents are substantially the same and the result produced by their action is the same. It is true that Marmon in the patent under consideration does not limit himself to any particular means for the simultaneous adjustment of the two ends of the counter-shaft, but he exhibits twelve different devices for such purpose, which are thereby made mechanical equivalents each of the other. If this be so, then it would follow that his patent will be anticipated by the use of any one of these equivalents in the prior patent to Marmon and Warrington, since a patentee making use of any mechanical equivalent of the Marmon and Warrington combination would be equally liable as an infringer as if he made use of the special device therein set forth. Upon the face of these two patents there appears to be an anticipation of the claim sued upon in this case. Plaintiff, however, seeks to avoid the force of this by showing that Marmon and Warrington, the original patentees, conceded priority of invention to Marmon of the device in question. It appears from the file wrapper and contents of the Marmon patent, that in his application Marmon stated that—

many of the devices and combinations shown and described herein are the invention of Jesse Warrington, or the joint invention of said Warrington and myself. They are therefore, of course, not claimed in this application, but are made the subject-matter of other applications for Letters Patent, either pending or in course of preparation. I regard myself, however, as the first inventor of a roller-mill having a counter-shaft extending from end to end of the mill parallel with the roll-shafts and simultaneously adjustable as a whole toward or from the roll-shafts. I therefore intend to claim the above invention broadly in this application, together with the specific means shown in the principal drawings, leaving the other constructions to be covered specifically by the other Letters Patent, the applications for which have been made or may be made either by himself or by others.

There seems to have been some effort made to have the Marmon patent advanced and passed upon before the Marmon and Warrington patent; but this does not seem to have been done, since the Marmon and Warrington patent seems to have been issued before the correspondence on this subject took place. On December 22, 1882, the examiner writes to Marmon's attorney, refusing claims 1, 2, and 3 of his patent, and stating that—

an applicant cannot receive protection in a separate application for matter which was described, claimed, sworn to jointly by himself and another, and jointly patented prior to the filing of the subsequent application. Whatever rights the present applicant may have had solely for broad claims on the driving mechanism should have received protection prior to the filing of the application; or the right to apply for broader claims subsequently might have been saved by an express reservation in said patent.

In reply to this the attorney wrote that there was no dispute between the parties as to the matter of invention; that "each is preparing further applications which will show just what each is entitled to separately and what jointly with the other, and the proper steps will be taken to put the record in shape so the objection urged by the examiner will be overcome," and at the same time he forwarded to the Patent Office a concession on the part of Marmon and Warrington of priority of invention to Marmon of the device for simultaneous adjustment. This was stated by the examiner not to be "sufficient to warrant the Office in issuing two patents for the same invention—a joint patent to two parties and a separate patent to one of them," and how the second patent came to be issued does not clearly appear by the record. There is nothing before us to show that the first patent was ever canceled or reissued, nor do we see how a mere concession of priority from one patentee to a later applicant, after the prior patent had been issued, could be binding as against infringers. Indeed, we are unable to see upon what theory this concession and correspondence is admissible at all. If the first patent is valid, then any infringer could be prosecuted under it at any time within seventeen years from the time the patent was issued; and if the second patent, which was issued nearly six months after the first, be also valid, infringements could also be prosecuted at any time within seventeen years from the time that was issued, so that the monopoly of the invention might thus be indefinitely extended. No one can have two patents for the same device, either as joint inventors or as sole inventor. No one can take out a patent, either jointly or severally, for an invention, and after the patent is issued, without reservation in his origi-

nal application, obtain a second patent with broader claims for the same device. The authorities upon this point are numerous and conclusive. (*Sickles* v. *Falls Company*, 4 Blatchf., 508; *O'Reilly* v. *Morse*, 15 How., 62; *Odiorne* v. *Amesbury Nail Factory*, 1 Robb., 300; *Smith* v. *Ely*, 5 McLean, 76; *James* v. *Campbell*, 104 U. S., 356.)

If there be anything in defendant's point that plaintiff's remedy is at law, the objection comes too late to be of any service. If such want of jurisdiction appears upon the face of the bill, it should be taken advantage of by demurrer. (*Clark* v. *Flint*, 22 Pick., 231; *Ludlow* v. *Simond*, 4 Caine's, 60, 40, 56; *Underhill* v. *Van Courtland*, 2 John's Ch., 369: *Pierpont* v. *Fowle*, 2 W. & M., 35; *Frandin* v. *LeRoy*, 2 Paige, 509.) If not, it should be set up by plea or answer and called to the attention of the court at the earliest opportunity. (*Roberdeau* v. *Rous*, 1 Atk., 543; *Bank* v. *R. R. Co.*, 28 Vt., 470; *Livingstone* v. *Livingstone*, 4 John's Ch., 287.) The objection cannot be taken at the hearing. (*Niles* v. *Williams*, 24 Conn., 279.)

It would be a great hardship in a case like this where the parties have spent many years of time and many thousands in money preparing for a hearing upon the merits to deny the plaintiff relief upon the ground that it should have resorted to a court of law.

It results from this that the plaintiff is entitled to a decree for an injunction, and the usual reference to a master to assess damages upon the Gray patent, and that the defendant is entitled also to have inserted therein a clause dismissing the bill as to the Dowling and Marmon patents.

U. S. Circuit Court—District of Massachusetts.

LOW *v.* BARSTOW STOVE COMPANY. LOW *v.* MAGEE FURNACE COMPANY.

Decided December 10, 1888.

LOW—TILE DECORATION.

Letters Patent No. 336,242 and 336,243, both granted to John G. Low February 16, 1886, for tile decoration, declared void for want of invention.

Mr. Thomas Wm. Clarke for the complainant.

Mr. David A. Burr for the defendants.

COLT, *J.*:

These suits are brought on two Letters Patent granted February 16, 1886, to the complainant, John G. Low, for improvements in the art of tile decoration. The claim in Patent No. 336,243 is as follows:

As an improvement in the art of decorating metallic or other surfaces, a medallion tile formed with a rabbet upon its edge, and glazed into the rabbet, in combination with a perforated plate suited to the contour of the projecting medallion, and with suitable backing to the tile attached to said perforated plate, substantially as and for the purposes described.

The claim in Patent No. 336,242 is as follows:

An improvement in the art of decorating surfaces to be ornamented, consisting in applying thereto by pins or screws passing through holes in the tile ornamental tiles of appropriate patterns and glazed to their bases, substantially as and for the purpose described.

The main defense to these patents is want of invention. I have carefully considered all that has been urged in support of the validity of these patents, and I am unable to find any invention in them in view of the prior state of the art. Both of the patents may describe tiles which present a very pleasing and artistic appearance to the eye; but it does not follow from this that it required in the sense of the patent law the exercise of the inventive faculty to produce them. The improvement described in Patent No. 336,243 consists in making the tile medallion in form with a rabbet upon its edge and glazed into the rabbet, in combination with a perforated plate and backing to attach the tile to the plate. Now, it is proved beyond question that a square tile formed with a rabbet and glazed into the rabbet, in combination with a perforated plate and suitable backing, was in use at the time Low made his alleged invention. It may also be said that a round medallion without the rabbeted edge was old at this time. Under these circumstances the changing of a square tile with a rabbeted edge to a round or medallion tile with a rabbeted edge involved no such exercise of the inventive faculty as entitles the party to a patent under the law.

As for Patent No. 336,242, the claim appears to be broad enough to cover any ornamental tiles glazed to their bases through which are applied pins or screws; but the complainant contends that this claim is limited by the specification and drawings to rosette tiles perforated through their geometrical center attached with round-headed screws or pins which harmonize with the rosette. But as thus limited the claim is manifestly void for want of invention. It was old in the art to attach porcelain or earthen knobs and shields of various forms, glazed to their base, to articles by means of screws or pins passing through holes in their center or upon their sides. In view of this there was no inventive skill required to decorate a surface by applying thereto a perforated rosette tile glazed to its base and secured by a pin or screw passing through a hole in its center or elsewhere. For these reasons and without entering upon the other defenses raised, the bills should be dismissed.

Bills dismissed.

U. S. Circuit Court—Northern District of Illinois.

COLEMAN HARDWARE COMPANY *et al. v.* KELLOGG, JOHNSON & BLISS *et al.*

Decided May 27, 1889.

SHUMARD—SASH-BALANCE.

The novel feature of Letters Patent No. 285,079, granted September 18, 1883, to Warren Shumard, for an improvement in sash-balances, is a brake so arranged as to be adjustable from the outside; and the second and third claims of this patent are infringed by a sash-balance having a band-brake bearing on the periphery of the drum.

Messrs. Banning & Banning & Payson for the complainants.

Mr. George P. Barton for the defendants.

BLODGETT, *J.*:

This is a motion for an injunction to restrain the infringement by defendant of a patent granted September 18, 1883, to Warren Shumard, for a sash-balance.

The device covered by this patent is what is known as a "spring-balance" for a window-sash, instead of the ordinary pulley-balance. The proof now before me shows that this class of devices is not new, one of the patents cited having been issued in 1856; but the feature in the complainants' patent which seems to me to be new and meritorious is the brake so arranged that it is adjustable from the outside. Defendants' patent also shows a brake adjustable from the outside, and differing only from the complainants' in the fact that it is what is known as a "band-brake" bearing upon the periphery of the drum, while complainants' brake is the ordinary brake-shoe bearing upon the periphery of the drum, and the pressure secured by a spring. There is no essential difference in the function of the two brakes; but the band-brake was a well-known equivalent for a spring-brake like the complainants' at the time complainants' patent was issued. I think, therefore, as at present advised from the proof before me, that the difference, so far as the brake is concerned, between complainants' and defendants' device is merely colorable, and that defendants infringe upon this feature of complainants' patent, and possibly upon other features.

An injunction will therefore be ordered according to the prayer of the bill,

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

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The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

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France	3	2	foreign countries	46	9

DESIGNS.

19,206.—SURFACE ORNAMENTATION OF SHEET-GLASS.—*Anthony D. Brogan* and *Andrew M. Malloch*, Firhill, Glasgow, county of Lanark, Scotland. Application filed June 17, 1889. Serial No. 314,653. Term of patent 14 years.

19,207.—EXTERIOR OF A COUNTRY HOUSE.—*Antoine Lacroix, Jr.*, Brooklyn, N. Y. Application filed June 8, 1889. Serial No. 313,610. Term of patent 7 years.

19,208.—CARPET.—*John S. Lamond* and *Colin T. Robertson*, Paterson, N. J. Application filed November 23, 1888. Serial No. 291,722. Term of patent 3½ years.

19,209.—GLASSWARE.—*Thomas W. Mellor*, Philadelphia, Pa., assignor to *Gillinder & Sons*, same place. Application filed June 1, 1889. Serial No. 312,933. Term of patent 14 years.

19,210 and 19,211.—SPOON, FORK, OR OTHER TABLE UTENSIL.—*Edward C. Moore*, Yonkers, assignor to *Tiffany & Company*, New York, N. Y. Applications filed May 24, 1889. Serial Nos. 312,005 and 312,006. Term of patents 14 years.

19,212.—SPOON OR FORK HANDLE.—*William Rogers*, Hartford, Conn. Application filed April 23, 1889. Serial No. 308,337. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,808.—BRUSHES.—*Louis Alfred Emile Robert*, Méru, Oise, France. Application filed May 29, 1889. Used since March 15, 1888.

"The representation of a balloon."

16,809.—NATURAL MINERAL WATER, ITS SALTS, AND COMPOUNDS CONTAINING THE SAME.—*The Apollinaris Company, (Limited,)* London, England. Application filed June 11, 1889. Used since April 4, 1885.

"The words 'DOUBLE TRIANGLE MARK.'"

16,810.—NATURAL MINERAL WATER, ITS SALTS, AND COMPOUNDS CONTAINING THE SAME.—*The Apollinaris Company, (Limited,)* London, England. Application filed June 11, 1889. Used since May 15, 1885.

"The words 'DISC MARK.'"

16,811.—NATURAL MINERAL WATER, ITS SALTS, AND COMPOUNDS CONTAINING THE SAME.—*The Apollinaris Company, (Limited,)* London, England. Application filed June 11, 1889. Used since April 4, 1885.

"The words 'TRIANGLE MARK.'"

16,812.—NATURAL MINERAL WATER, ITS SALTS, AND COMPOUNDS CONTAINING THE SAME.—*The Apollinaris Company, (Limited,)* London, England. Application filed June 11, 1889. Used since April 4, 1885.

"The words 'DIAMOND MARK.'"

16,813.—MINERAL WATER.—*The Apollinaris Company, (Limited,)* London, England. Application filed April 11, 1889. Used since March, 1880.

"A narrow oblong neck-label of orange or yellow color."

16,814.—BEER.—*J. & P. Baltz Brewing Company*, Philadelphia, Pa. Application filed April 11, 1889. Used since 1881.

"The representation of a barrel lying on a rack, with 'J. & P. B.' across its head, and a barrel standing behind, the whole surrounded by clusters of hop-vines and grain."

16,815.—MIXED PAINTS AND VARNISHES.—*Baum & Co.*, Spokane Falls, Wash. Ter. Application filed March 19, 1889. Used since February 1, 1889.

"The capital letter 'B' set diagonally in a square frame."

16,816.—PREPARATION FOR THE CURE OF YELLOW FEVER.—*William Condory*, Baltimore, Md. Application find June 17, 1889. Used since May, 1880.

"The phrase 'DR. CONDORY'S AQUA-TERRA.'"

16,817.—DYSPEPSIA-PILLS.—*James A. Deane*, Catskill, N. Y. Application filed July 20, 1888. Used since June 1, 1888.

"The letter 'D,' with the upper bar containing 'DR.,' the left-hand upright bar containing a 'D,' the right-hand upright bar a 'D' also, and the lower bar the letter 'P.'"

16,818.—CHEMICALS AND DRUGS TO PRODUCE LAXATIVE EFFECTS.—*The Doctor Thorpe Medicine Company*, New York, N. Y. Application filed May 27, 1889. Used since April 15, 1889.

"The word-symbol 'FRUITILAXI,' associated with the picture of a sheep."

16,819.—TONIC AND STIMULANT, A CLEANSER AND PURIFIER, AND A BALM FOR THE SKIN.—*Charlotte E. Draper*, New York, N. Y. Application filed June 4, 1889. Used since November, 1888.

"The word 'ARLESIAN.'"

16,820.—WATER-PROOF COMPOUNDS FOR PULLEY-BELTS.—*James H. Faulkner*, Gastonia, N. C. Application filed May 14, 1889. Used since January, 1889.

"The representation of a pair of pulleys connected by a belt."

16,821.—MEDICINAL PREPARATION IN THE FORM OF PASTILS FOR CURING UTERINE DISEASES.—*Watson A. France*, Columbus, Ohio. Application filed April 15, 1889. Used since January 1, 1889.

"The words 'OLIVE BLOSSOM.'"

16,822.—SPECIFICS FOR RHEUMATIC, NEURALGIC, AND SCROFULOUS DISORDERS AND THEIR RELATED DISEASES.—*Samuel French*, London, England, and New York, N. Y. Application filed June 4, 1889. Used since February, 1889.

"The word-symbol 'KOPTICA.'"

16,823.—MEDICAL BEVERAGES FROM THE SODA-FOUNTAIN AND TONICS FOR THE STOMACH AND FOR THE NERVOUS SYSTEM.—*Edward W. Healy*, Chicago, Ill. Application filed July 26, 1888. Used since June 24, 1888.

"The word 'ZOZONE.'"

16,824.—MEDICINES OF HISTOGENETIC CHARACTER.—*J. Eugene Jordan*, Seattle, Wash. Ter. Application filed June 19, 1889. Used since March 1, 1888.

"The picture of a phenix with the word 'HISTOGENETIC' across the body and outstretched wings."

16,825.—WALL-FINISHES, PLASTIC COMPOUNDS, AND CEMENT.—*J. B. King & Co.*, of New York, N. Y. Application filed June 13, 1889. Used since 1870.

"The word 'WINDSOR.'"

16,826.—SPICED FOOD FOR CATTLE.—*Thomas Myers*, Liverpool, county of Lancaster, England. Application filed June 18, 1889. Used since August 13, 1865.

"The words 'MYERS FOOD' and a portrait of the registrant."

16,827.—REMEDY FOR RHEUMATISM AND GOUT.—*Bryan G. McSwyny*, New York, N. Y. Application filed March 6, 1889. Used since October 2, 1888.

"The words 'SIR DOMINIC CORRIGAN, M. D., OF DUBLIN, IRELAND, RHEUMATIC AND GOUT REMEDY.'"

16,828.—STICKY FLY-PAPER.—*The National Fly Paper Company*, Cincinnati, Ohio. Application filed May 25, 1889. Used since December 1, 1888.

"The words 'SPIDER WEB' and the representation of a spider's web."

16,829.—MEDICINES TO PREVENT UNNATURAL ACCUMULATION OF FLESH.—*Florence Potter*, New York, N. Y. Application filed May 27, 1889. Used since May 10, 1889.

"The word-symbol 'BONA FORMA.'"

16,830.—MEDICINES FOR STOMACH AND BOWEL DIFFICULTIES.—*Alfred J. Rankin*, Pittsburg, Pa. Application filed April 6, 1889. Used since July, 1883.

"The words 'MINTED GINGER.'"

16,831.—PARASOLS AND UMBRELLAS.—*F. Revel Père et Fils*, Lyons, France. Application filed May 1, 1889. Used since April, 1885.

"The word 'SOLIDOR.'"

16,832.—MEDICINE IN THE NATURE OF A SIRUP FOR CERTAIN DISEASES NAMED.—*De Forest W. Saxe*, Omaha, Nebr. Application filed June 18, 1889. Used since May 1, 1889.

"The word 'PHOSPHO-GUARANA.'"

16,833.—WRITING AND PRINTING PAPER.—*Charles L. Seeger*, New York, N. Y. Application filed May 11, 1889. Used since March 19, 1889.

"The representation of the shield and pen combined."

16,834.—REMEDY FOR RHEUMATISM AND LIKE DISEASES.—*John A. Smith*, South Bend, Ind. Application filed May 29, 1889. Used since April 1, 1889.

"The word 'GLORIA.'"

16,835.—LIQUID MEDICINE TO CURE RHEUMATISM.—*Carrie Wertheim*, New York, N. Y. Application filed May 11, 1889. Used since January 20, 1889.

"The words 'AUNTY CARRIES RHEUMKEENE' and the representation of an athlete or gladiator."

LABELS.

5,966.—Title: "AVERBECK'S BIRCH BEER."—*Max J. Averbeck*, Youngstown, Ohio. Application filed June 19, 1889.

5,967.—Title: "AVERBECK'S BIRCH BEER."—*Max J. Averbeck*, Youngstown, Ohio. Application filed June 19, 1889.

5,968.—Title: "WARRANTED FAST COLORS," (FOR COTTON GOODS.)—*Samuel A. Crozer & Son*, Upland, Pa. Application filed May 13, 1889.

5,969.—Title: "1-7 BALL PUZZLE."—*Lou Mortimer*, New York, N. Y. Application filed April 19, 1889.

5,970.—Title: "WOODRUFF'S CATARRH SNUFF."—*Scott & Co.*, Toledo, Ohio. Application filed April 13, 1889.

5,971.—Title: "BAY SIDE," (FOR PRINTED WOOLEN GOODS.)—*Union Print Works*, New York, N. Y. Application filed May 29, 1889.

5,972.—Title: "YOUNG'S HEADACHE TABLETS."—*Martin B. Young*, Philadelphia, Pa. Application filed May 13, 1889.

PATENTS

GRANTED JULY 16, 1889.

406,864. **HORSE HAY-RAKE.** HORACE A. ALDEN, Peoria, Ill., assignor to the Acme Hay Harvester Company, same place. Filed Apr. 27, 1888. Serial No. 272,011. (No model.)



Claim.—1. In a horse hay-rake, the combination, with a rake-head having forwardly-projecting teeth and a seat-frame at the rear thereof and hinged with respect thereto, of a shifting-rod in connection with the rake-head, a ratchet-plate at the rear end of said shifting-rod, an operating-lever for effecting the forward and backward movement of the shifting-rod, a pawl carried by said operating-lever for engagement with said ratchet-plate, a spring sustained by and movable with said operating-lever for forcing said pawl into engagement with said ratchet-plate, and a suitable releasing device sustained by said operating-lever, whereby said pawl may be forced out of engagement with said ratchet-plate, substantially as described.

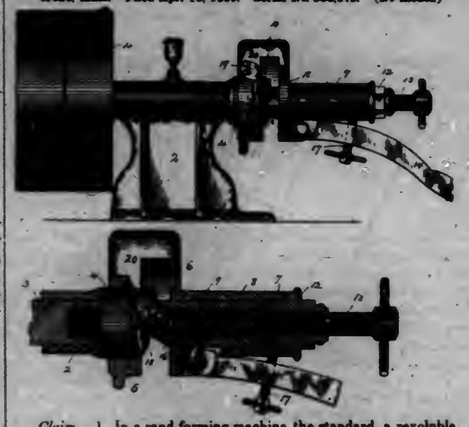
2. In a horse hay-rake, the combination, with a rake-head having forwardly-projecting teeth and a seat-frame at the rear thereof and hinged with respect thereto, of a shifting-rod in connection with said rake-head, an operating-lever for effecting the forward and backward movement of said shifting-rod, a ratchet-plate at the rear end of said shifting-rod, a pawl on the operating-lever for engagement with said ratchet-plate, a spring for forcing said pawl into engagement with said ratchet-plate, and a releasing device for said pawl, comprising a wedge-plate for lifting and holding said pawl and a lever for moving said wedge-plate, substantially as described.

3. In a horse hay-rake, the combination, with a rake-head having forwardly-projecting teeth and a seat-frame at the rear thereof and hinged with respect thereto, of a shifting-rod connected with said rake-head, an operating-lever for controlling the forward and backward movement of said shifting-rod, a ratchet-plate at the rear end of said shifting-rod, a slide-block pivotally connected to the operating-lever and through which said ratchet-plate slides, a pawl for engagement with said ratchet-plate, and a releasing device for said pawl, substantially as described.

4. In a horse hay-rake, the combination, with a rake-head having forwardly-projecting teeth and a seat-frame at the rear thereof and hinged with respect thereto, of a shifting-rod connected with said rake-head, a ratchet-plate at the rear end of said shifting-rod, a pawl for engagement with said ratchet-plate, a releasing device for said pawl, a slide-block for sustaining said ratchet-plate and pawl, an operating-lever whereon said slide-block is pivotally held, and a draw-bolt and ratchet-plate for determining the position of said operating-lever, substantially as described.

5. In a horse hay-rake, the combination, with a rake-head having forwardly-projecting teeth and a seat-frame at the rear thereof and hinged with respect thereto, and a shifting-rod in pivotal connection with said rake-head, of an operating-lever for controlling the forward and backward movement of said shifting-rod, a ratchet-plate at the end of said shifting-rod, a slide-block pivotally connected to the operating-lever and through which said ratchet-plate slides, a pawl for engagement with said ratchet-plate and sustained by said slide-block, and a releasing-lever pivotally connected with said slide-block, the shorter end of said releasing-lever being provided with suitable means for throwing said pawl out of engagement with the ratchet-plate, substantially as described.

406,865. **RAND-FORMING MACHINE.** FRANCIS P. ARNOLD, Pembroke, Mass. Filed Apr. 10, 1889. Serial No. 306,675. (No model.)



Claim.—1. In a rand-forming machine, the standard, a revoluble arbor, and a removable toothed head thereon, combined with a sleeve-bracket separable from the standard, a hollow spindle axially aligned with the arbor, the presser-block upon said spindle, and means for controlling pressure upon the presser-block, as likewise means—namely, a screw-actuated lever—to effect its endwise travel, substantially as herein described.

2. The combination, with a radially-toothed revoluble head, a presser-block co-operating therewith, and the hollow spindle which carries said block, of the spring actuating said spindle and block and the lever with its prong which engages said spindle to control the endwise movement of the block, substantially as and for the purposes herein stated.

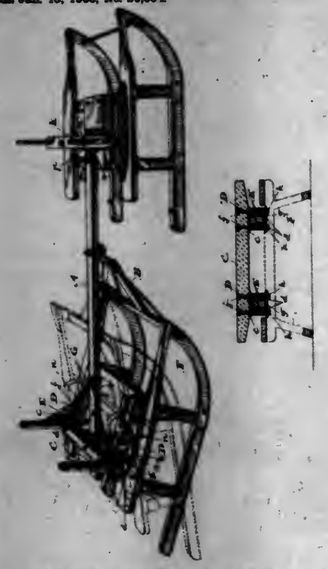
3. In rand-forming machines, a revoluble head 4, having radially-divergent teeth, the co-operating spring presser-block 10, adjustable with respect thereto, the standard 2, and its separable bracket 6, composed of the sleeve 7 and boss 20, combined with the lever 14, its actuating-screw 17, the screw 13, to regulate the pressure, and the throw-off plate 19 upon the bracket, substantially as herein specified.

406,866. **CARPET-FASTENER.** HIRAM W. ATWATER, Rochelle, Ill. Filed Mar. 26, 1889. Serial No. 304,778. (No model.)



Claim.—The combination, with the carpet-fastener bent at its middle to form an eye and at its ends to form upriving prongs, of a tack or screw inserted in said eye to secure the fastener in position, and a staple straddling the branches of said fastener between the eye and the prongs to relieve the strain upon said tack or screw and to prevent the carpet from sliding beneath the fastener, substantially as set forth.

406,867. BOB-SLEIGH. GEORGE A. RAIN, Woodstock, Ontario Canada. Filed Dec. 1, 1888. Serial No. 292,369. (No model.) Patented in Canada Jan. 13, 1888, No. 26,354.



Claim.—1. In a double bob-sleigh, the rear bob provided with curved bearing-blocks for the rear bolster to rest on, the said bearing-blocks being so shaped that they may slide freely under the rear bolster, which is rigidly attached to the long reach, and through sleeves formed below the said bolster, a short reach pivotally attached to the long reach and to the rear bob, and the long reach pivotally attached at its front end to the front bolster by means of eyebolt and swivel, substantially as specified.

2. In a double bob-sleigh, the rear bob pivotally attached to the long reach by a short reach, having bearing-blocks so shaped as to be adapted to slide through sleeves formed under the rear bolster with a surface practically parallel and adjacent to the bottom of the rear bolster, which is rigidly attached to the long reach, substantially as described and specified.

3. In a double bob-sleigh, the long reach attached to the front bolster on the front bob by means of eyebolt and swivel connected therewith, in combination with a rear bolster rigidly attached to the long reach and provided with sleeves formed on its under side, through which curved bearing-blocks formed on the rear bob are adapted to slide under the rocking of the bob, so as to present at all times surfaces practically parallel to the bottom of the rear bolster, substantially as specified.

4. In a double bob-sleigh, the combination of long reach A, the bifurcated rod G, bolted to the long reach and having hooked ends adapted to engage in holes *b* in the plate *c*, the rear bolster C, plates *e*, bolts *f*, thimbles *d*, clip *g*, nuts *h*, and curved bearing-blocks D, having the curved metal plates *n* and formed on the rear bob F, substantially as specified.

5. In a double bob-sleigh, the combination of the long reach A and swivel *m*, pivotally attached thereto, the curved plate *p*, rigidly attached to the front bolster H, and eyebolt *o*, connecting the swivel with the curved plate *p*, substantially as specified.

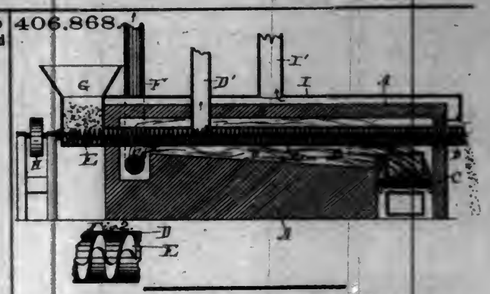
6. In a double bob-sleigh, the combination, with the rear bolster C, of the bolts *f*, metal plate *c*, thimbles *d*, clip *g*, nuts *h*, plates *n*, and curved bearing-blocks D, attached to the rear bob, substantially as specified.

7. In a double bob-sleigh, curved bearing-pieces attached to the rear bob and so shaped as to be adapted to slide under the pitching of the bob when passing over uneven ground, so as to present even surfaces to the adjacent surfaces of the rear bolster, substantially as specified.

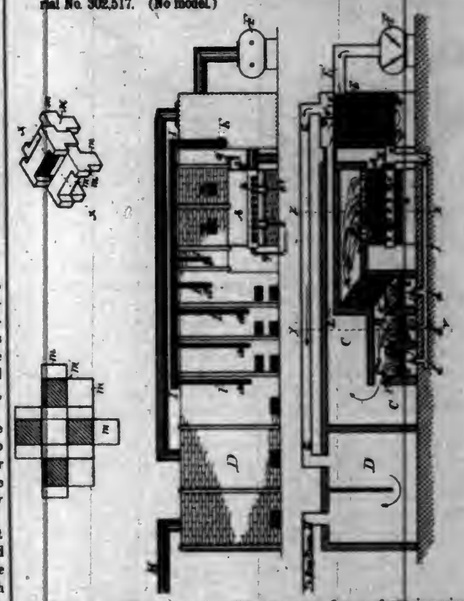
406,868. PROCESS OF REFINING FUMES. FRANK L. BARTLETT, Portland, Me. Filed Aug. 23, 1888. Serial No. 283,568. (No model.)

Claim.—The herein-described process of refining fume, which consists in passing it through a heated tube in the presence of air and continually stirring and scraping it from the walls of said tube during its passage, substantially as described.

406,868.



406,869. PROCESS OF MANUFACTURING PIGMENTS. FRANK L. BARTLETT, Portland, Me. Original application filed Sept. 15, 1887, Serial No. 249,775. Divided and this application filed Mar. 8, 1889. Serial No. 302,517. (No model.)



Claim.—1. The herein-described process of manufacturing pigment, which consists in mixing the ores of lead, zinc, or antimony with carbon, subjecting the mixture to an air-blast in a suitable furnace, then successively supplying air to the fumes thus produced, bringing them into contact with incandescent fire-clay or other refractory material, subjecting them to the action of an oxidizing-flame, then suddenly cooling them, substantially as shown.

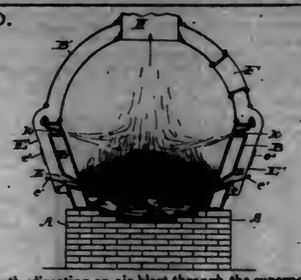
2. The herein-described process of manufacturing pigment, which consists of mixing the ores of lead, antimony, or zinc with carbon, subjecting the mixture to an air-blast in a suitable furnace, then successively supplying air to the fumes thus produced, bringing them into contact with incandescent fire-clay or other refractory material, subjecting them to the action of an oxidizing-flame, and finally collecting them, substantially as shown.

3. The herein-described process of manufacturing pigment, which consists in mixing the ores of lead, zinc, or antimony with carbon, subjecting the mixture to an air-blast in a suitable furnace, then successively supplying air to the fumes thus produced, bringing them into contact with incandescent fire-clay or other refractory material, subjecting them to the action of an oxidizing-flame, withdrawing said oxidizing-flame after the apparatus becomes heated through, then suddenly cooling them when in a highly-heated state, and finally collecting them, substantially as shown.

406,870. PROCESS OF SMELTING ORES. FRANK L. BARTLETT, Portland, Me. Filed Mar. 8, 1889. Serial No. 302,518. (No model.)

Claim.—1. The herein-described process of treating ores containing zinc, sulphur, and other volatile metals, which consists in burning the ore mixed with fuel in a suitable furnace, whereby the non-volatile metals and a portion of the zinc, sulphur, &c., settle down and form

406,870.

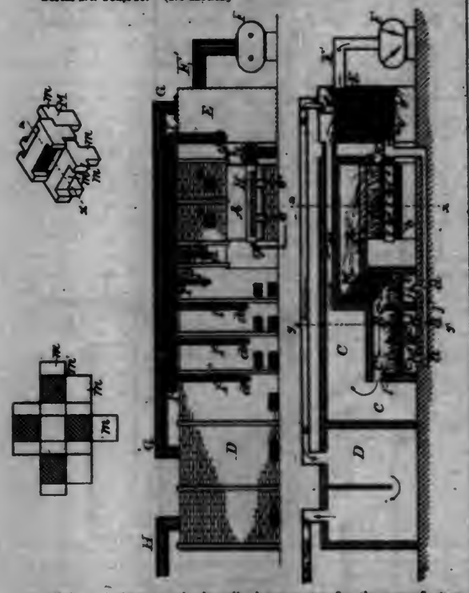


a scorifying-bath, directing an air-blast through the superposed mass of unfused ore and fuel down onto the surface of said bath to volatilize the volatile metals, and directing an air-blast at or near the top of the body of ore to prevent the condensation of said zinc and sulphur, substantially as described.

2. The herein-described method of treating ores of the kind described, which consists of burning the ore mixed with fuel in a suitable furnace, whereby the non-volatile and a portion of the volatile metal are fused and form a scorifying-bath, directing an air-blast through the superposed mass of unfused ore and fuel down onto the surface of said bath to volatilize the volatile metals, and keeping up the heat in the unfused ore to prevent condensation of said volatile metals, substantially as described.

3. The herein-described method of treating ores of the kind described, which consists in burning the ore mixed with fuel in a suitable furnace, whereby the non-volatile and a portion of the volatile metals are fused to form a scorifying-bath, and directing an air-blast through the superposed mass of unfused ore and fuel down onto the surface of said bath for driving off said volatile metals, substantially as shown.

406,871. APPARATUS FOR THE MANUFACTURE OF PIGMENT. FRANK L. BARTLETT, Portland, Me. Original application filed May 16, 1888, Serial No. 274,426. Divided and this application filed Mar. 8, 1889. Serial No. 302,519. (No model.)



Claim.—1. The herein-described apparatus for the manufacture of pigment, consisting of a blast-furnace, a passage or flue leading therefrom, an oxidizing-furnace placed in the line of said flue, a mass of refractory material filling said flue between said oxidizing-furnace and the main furnace and having numerous tortuous flues passing through it, a flue leading from said oxidizing-furnace to a cooling-chamber having numerous small flues for the passage of fume, a pressure-blower connected with the space surrounding said small flues, a settling-chamber connecting with said cooling-chamber, and pipes connecting said cooling-chamber with said blast-furnace, oxidizing-furnace, and the flue leading from said blast-furnace, substantially as shown.

2. The herein-described apparatus for the manufacture of pigment, consisting of a blast-furnace, a passage or flue leading therefrom, an oxidizing-furnace in the line of said flue, a mass of refractory material filling said flue between said oxidizing-furnace and the main furnace and having numerous tortuous flues passing through it, a flue leading from said oxidizing-furnace over or by said main furnace and in contact therewith to a cooling-chamber having numerous small flues for the passage of fume, a settling-chamber connected with said cooling-chamber, and pipes leading from said cooling-chamber to said oxidizing-furnace, blast-furnace, and to the flue leading therefrom for supplying air thereto, substantially as shown.

3. The herein-described apparatus for the manufacture of pigments, which consists of a shallow blast-furnace having tuyeres entering at its side or sides, a passage or flue leading from said blast-furnace, an oxidizing-furnace in the line of said flue, a mass of refractory material filling said flue between said oxidizing-furnace and the main furnace and having numerous tortuous flues passing through it, a flue leading from said oxidizing-furnace to a cooling-chamber having small flues for the passage of fume surrounded by an air-space, a pressure-blower and a pipe connecting it with the space surrounding said contracted flues, a settling-chamber connecting with said cooling-chamber, and pipes for blowing air to said blast-furnace, oxidizing-furnace, and to the flue leading from said blast-furnace, said pipes connecting with said cooling-chamber, in combination substantially as described.

406,872. CHILD'S CARRIAGE. MONTAGUE M. BEAR, Chicago, Ill. Filed Mar. 12, 1889. Serial No. 302,994. (No model.)



Claim.—1. In a knockdown carriage, the combination, with the body and the running-gear, of laterally-folding springs for sustaining the body, substantially as described.

2. In a knockdown carriage, the combination, with the body and the side bars, of the sustaining-springs hinged to the side bars, and slide-blocks to which said springs are also hinged, substantially as described.

3. In a knockdown carriage, the combination, with the body provided on its under side with grooves or ways, and the side bars, of slide-blocks held within said grooves or ways, sustaining-springs hinged to the slide-blocks, and suitable chains attached to said slide-blocks, substantially as described.

4. In a knockdown carriage, the combination, with the axle having tubular ends, of the outwardly-movable and downwardly-movable short journals and wheels on said journals, whereby by moving outwardly the said journals and turning them in downward direction the wheels can be brought to a substantially horizontal position, substantially as described.

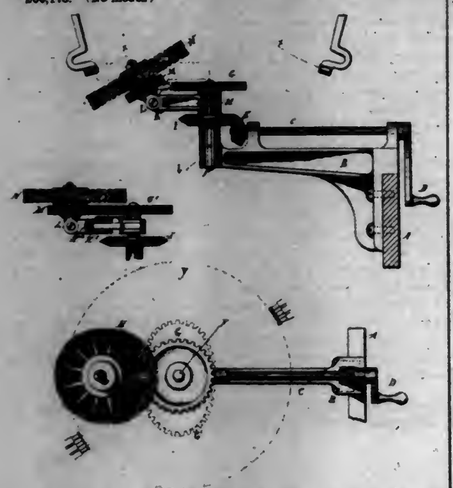
5. In a knockdown carriage, the combination of a tubular axle, short journals adapted to fit within the ends of said axle, suitable means for holding said journals normally within the ends of the axle, and wheels on said journals, substantially as described.

6. In a knockdown carriage, the combination of a tubular axle, short journals adapted to fit within the ends of said axle, a spring for holding said journals normally within the ends of the axle, and wheels on said journals, substantially as described.

7. In a knockdown carriage, the combination of a tubular axle having seats at its ends, and short journals adapted to fit in the ends of the axle and having each a reduced portion to enter the corresponding slot of the axle when the journals are turned to a horizontal position, substantially as described.

8. In a knockdown carriage, the combination of the tubular and slotted axles, the coiled springs within said axles, the short journals attached to said springs, and the wheels, substantially as described.

406,873. CLEANER FOR TYPE-WRITING MACHINES. ALEXANDER T. BROWN, Syracuse, N. Y. Filed Sept. 24, 1888. Serial No. 286,175. (No model.)



Claim.—1. A cleaning attachment for type-writers, consisting of a supporting-piece, a planetary gear thereon, and a rotating cleaner driven by said gear, so as to turn on its own axis while it traverses the face of the type of the machine, all combined substantially as described.

2. In a type-writer cleaner, a driving-gear and a rotating brush connected thereto, said brush supported on a movable axle, to be thrown into or out of operative position and gear at the same time, substantially as described.

3. In a type-writer, the combination of a rotating brush, a planetary gear by which it is operated, the fixed member of said gear corresponding in general outline to the position of the type on the machine, and an extensible arm supporting the brush, whereby the brush may be brought into contact with the type when arranged in other than circular position, substantially as described.

406,874. ELECTRIC MOTOR. JOHN BUCKLEY, Boston, Mass. Filed June 13, 1888. Serial No. 276,966. (No model.)



Claim.—1. In an electric motor, two armatures, each consisting of a pair of spools or bobbins, each pair being secured to a separate bar, said bars being insulated from each other and mounted on a shaft to appear as one armature of four spools, the cores of which lie parallel to the shaft on which they are mounted, in combination with a field-magnet and two commutators, substantially as set forth.

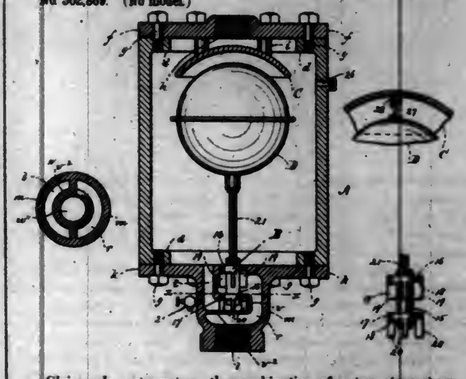
2. In an electric motor, the straight bar J and yoke K, secured together, but insulated from each other, in combination with the electro-magnets H H' I I' and shaft F, substantially as and for the purposes set forth.

3. The combination, substantially as set forth, of a field-magnet the two armatures, each consisting of a pair of spools secured to a separate bar, the two commutators, and brushes arranged to send the current successively through the two spools of one armature and then through the two spools of the other armature, substantially as and for the purposes described.

4. In an electric motor, two armatures, each consisting of a pair of spools mounted upon a separate bar and so as to appear as one armature of four spools, and so connected that one armature shall only receive its current after its passage through the other or by a short-circuit through the commutator to the opposite armature, substantially as set forth.

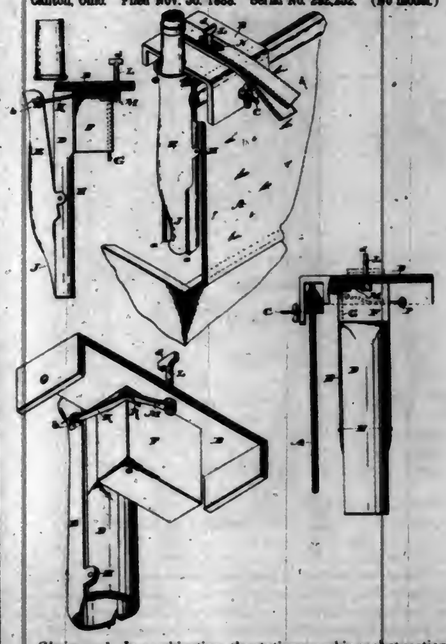
5. In combination with an electric motor, electro-magnets having disk-faces provided with inward extensions which rest upon an insulating-sleeve surrounding the shaft, substantially as and for the purposes set forth.

406,875. STEAM-TRAP. CHARLES A. CARLSTON, Woodstock, assignor to William L. Blake, Portland, Me. Filed Mar. 11, 1889. Serial No. 302,869. (No model.)



Claim.—In a steam-trap, the combination of a steam-trap chamber provided with an inlet in its top, a dome secured within said steam-trap chamber opposite said inlet, two semi-annular valve-chambers in the bottom of said body connected by a circular valve-opening, one of said valve-chambers opening directly into the trap-chamber, and the other being connected therewith by a circular valve-opening, said valve-openings being in alignment, a valve provided with annular flanges fitted to work in said valve-openings, the lower surfaces of said flanges being on inclined planes so as to open and close gradually, and a ball-float on the stem of said valve disposed beneath said dome, substantially as described.

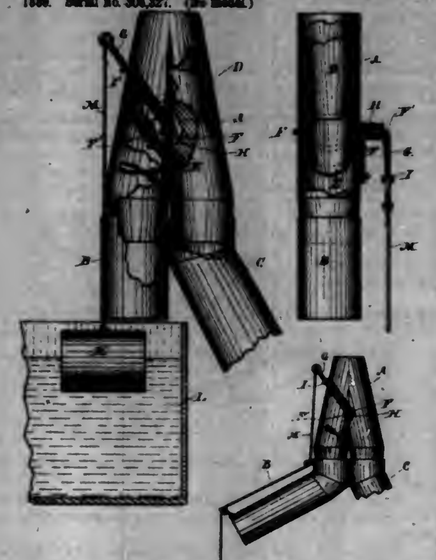
406,876. WHIP AND REIN HOLDER. JAMES L. CAVANAUGH, Canton, Ohio. Filed Nov. 30, 1888. Serial No. 292,252. (No model.)



Claim.—1. In combination, the stationary whip-socket section, the pivoted whip-socket section, the rocking rein-holder post, arms extending laterally from the pivoted socket-section and rein-holder post, and a locking-bolt common to the two arms, whereby the whip and the reins may be simultaneously secured, substantially as set forth.

2. In combination, a frame having a box and a stationary whip-socket section fixed thereto, means for securing the frame to the dash-board, a whip-socket section pivoted to the said stationary socket-section, a rocking rein-holder, arms extending from the pivoted socket-section and from the rein-holder to a point within the said box, and a locking-bolt located within the box and common to the said arms, substantially as set forth.

406,877. AUTOMATIC CUT-OFF. FRANKLIN D. CLARK and FRED RICE, Waukesha, Wis.; said Rice assignor to said Clark. Filed Apr. 5, 1889. Serial No. 306,227. (No model.)



Claim.—1. In an automatic cut-off, a case A, having discharge pipes B and C, in combination with a tilting dam E, having an axle F, shank F', and crank-arm G, a spring H, coiled about the shank F' and secured at one end to the case A and at the other end to the crank-arm G, and a float K, located in a cistern and having sufficient weight to serve for a counterpoise, connected by a cord M with crank-arm G, substantially as described.

2. In an automatic cut-off, the combination of a case A, having discharge-pipes B and C, and a pipe D within the case A, smaller at its lower end than the surrounding part of the case A, with a tilting dam E, in semicircular form, supported on a bent axle F, having a shank F' and crank-arm G, a spring H, secured at one end to the case A and at the other end movably secured to the crank-arm G and adapted to tilt the dam E in one direction, and a float K in a cistern, the float being of sufficient weight to serve as a counterpoise when unsupported by the water, and being connected by a cord M to the outer end of the crank-arm G, substantially as described.

406,878. WINDOW-SCREEN. ALBERT H. CLEAVELAND, Belvidere, Ill. Filed Jan. 28, 1889. Serial No. 297,773. (No model.)



Claim.—1. A window-screen composed of a center frame holding the screen and an outside frame in two or more angular sections made vertically and laterally adjustable with relation to the center frame, each of said sections forming one or more corners of the frame, substantially as set forth.

2. A window-screen composed of a center frame holding the screen and an outside frame in two or more angular sections made vertically and laterally adjustable with relation to the center frame, each of said sections forming one or more corners of the frame, and clasps for holding the sections when adjusted, substantially as set forth.

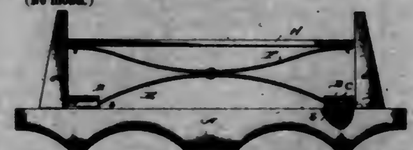
3. A window-screen composed of a center frame holding the screen and an outside frame composed of sections, each section forming one-half of an end and side and made adjustable with relation to the center frame in width and height, substantially as set forth.

4. A window-screen composed of a center frame holding the screen and an outside frame composed of sections, said sections forming one-half of an end and side and made adjustable with relation to the center frame in width and height, and clasps holding the sections together when adjusted, substantially as set forth.

5. A window-screen composed of a center frame and an outside frame, said outside frame completely inclosing the center frame and composed of sections, a clasp connecting the sections, said clasp having slots located at an angle to each other, and screws passing through the slots into the sections, whereby the sections are rendered vertically and laterally adjustable and are retained in their positions, substantially as set forth.

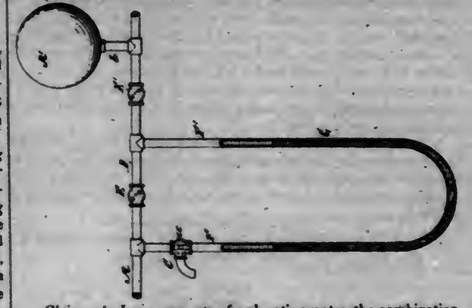
6. A clasp for frames, substantially as herein described, consisting of the sides 10, 11, and 12, the edges of the sides 11 and 12 being provided with inwardly-projecting flanges and the sides 10 and 11 with longitudinal and transverse slots, respectively, substantially as set forth.

406,879. WAGON BOLSTER-SPRING. WESLEY COLE and VICTOR C. DILLMANN, Kansas City, Mo. Filed Apr. 10, 1889. Serial No. 306,683. (No model.)



Claim.—The combination, with a wagon-bolster, of the sockets secured thereon, the cushion-springs arranged in the sockets, the cross-bar, the ellipsoidal spring having its opposite ends working in sockets or staples on its under side, and the lower ellipsoidal spring connected with the upper one, and having its opposite ends bearing in the sockets on the standards and against the cushion-springs therein, substantially as specified.

406,880. APPARATUS FOR ELEVATING WATER. NATHANIEL A. COWLIN, Brooklyn, N. Y. Filed Dec. 24, 1888. Serial No. 294,460. (No model.)



Claim.—1. In an apparatus for elevating water, the combination, with a supply-pipe, of a pipe D, having check-valves E E', a receiver having its ends connected to the supply-pipe and the pipe D, a plunger in said receiver, and a three-way cock in the receiver adjacent to the supply-pipe, substantially as specified.

2. The combination, with the supply-pipe, of the receiver having the plunger and communicating at its ends with the supply-pipe, the three-way cock in said receiver, the check-valve in the supply-pipe between the ends of the receiver, the check-valve beyond said receiver, and the air-chamber beyond the last-named check-valve, substantially as specified.

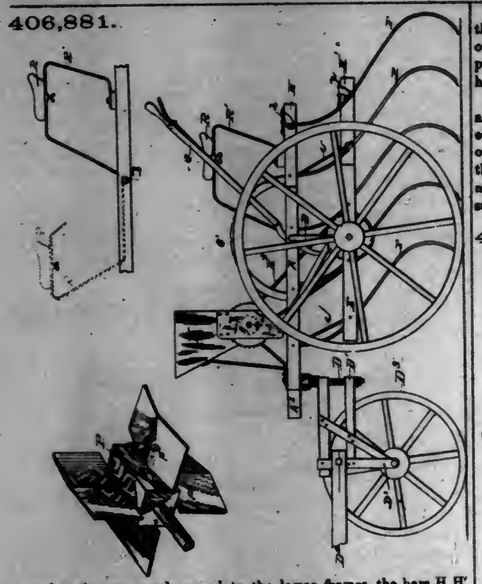
3. In a water-distributing system, the combination, with the supply-pipe, of the pipe D, extended therefrom, the receiver having its ends communicating therewith, the stop-cock in one branch of said receiver, the pressure-storing device in said receiver, the check-valve between the ends of the receiver, the check-valve beyond said receiver, and the air-chamber having connection with the pipe D beyond the last-named check-valve, substantially as specified.

406,881. COMBINED SEEDER AND HARROW. JOHN R. COON, Cold Spring, Phelps County, Mo. Filed Dec. 12, 1887. Serial No. 257,732. (No model.)

Claim.—1. In a combined seeder and harrow, the combination, with the upper frame, of the two lower frames hinged to the upper frame, the spring-teeth pivoted to the upper frame and secured to the lower frames, the arched axle, and the levers fulcrumed on the axle and connected with the lower frames, substantially as described.

2. The combination, with the upper frame, of the two lower frames, the hinges connecting the same, the spring-teeth pivotally se-

406,881.



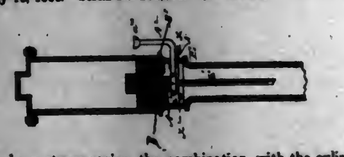
cured to the upper and secured to the lower frames, the bars H H', the lateral arms on the bars, and the teeth on the arms, substantially as described.

3. The combination, with the upper and lower frames, of the downwardly-extending post D on the upper, the detachable wheel-supporting frame on the post, composed of two substantially U-shaped yokes united at their ends by vertical supports, in which the wheel is mounted, and the tongue secured to the said wheel-supporting frame.

4. The combination, with the upper and lower frames and teeth, of the feed-box, the cups on the box, the shafts and gearing for operating the feed, and the distributers below the cups, composed of revolving rectangular blocks having deflectors of varying incline thereon, substantially as described.

5. The combination, with the upper frame, of the movable seat-support pivoted on the axle of the machine and adapted to be moved forward, the removable tongue, and the front wheel-frame, as described, detachably secured to the main frame, substantially as described.

406,882. STUFFING-BOX. LUCIUS D. COPELAND, Camden, N. J. Filed May 16, 1888. Serial No. 274,071. (No model.)



Claim.—In a steam-engine, the combination, with the cylinder-head B, provided with an interiorly-threaded portion B', and the exteriorly-threaded gland A, having flange *a*, provided with radial holes a^2, of the tube A^2, passing through the slot A' in the casing E, substantially as described.

406,883. LUBRICANT. WILLIAM J. CORDER, Orange, Tex. Filed Sept. 24, 1888. Serial No. 286,262. (Specimens.)

Claim.—The herein-described lubricating compound, composed of sulphate of zinc, plumbago, borax, bicarbonate of soda, and lubricating-oil, in about the proportions set forth.

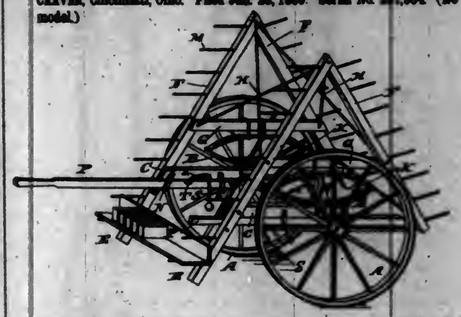
406,884. CAR-COUPLING. CYRUS W. COURTNEY, Bliss, Idaho. Filed May 15, 1889. Serial No. 310,904. (No model.)



Claim.—1. In an automatic car-coupler, the combination, with the draw-head and coupling-pin having an opening near its lower end, of a spring-actuated slide adapted to enter the hole in the coupling-pin and prevent the same from falling within the opening in the draw-head, substantially as shown and described.

2. The combination, with the draw-head, the coupling-pin having an opening therethrough near its lower end, the spring-actuated slide engaging said opening, and the casting H, connected with said slide, of a spring-actuated slide within the draw-head adapted to engage the casting H and move the same backward to release the slide connected with said casting from its engagement with the coupling-pin, substantially as shown and described, and for the purpose specified.

406,885. TRUCK FOR CARRYING BRICK-PALLETS. JOHN R. CRAVEN, Cincinnati, Ohio. Filed Jan. 26, 1889. Serial No. 297,884. (No model.)



Claim.—1. In a truck, pallet-carrying arms provided with pins, as M, substantially as set forth.

2. In a truck, pallet-carrying arms having pins, as M, the arms E extending down to form supports for the truck, substantially as set forth.

3. In a truck, arms E and F, having pins, as M, in combination with adjustable handles, substantially as set forth.

4. In a truck, handles, in combination with a locking-lever, as S, substantially as set forth.

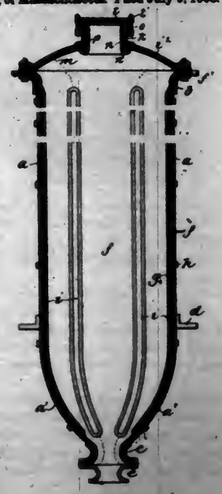
5. In a truck, handles P, pieces C, and lever S, in combination with pallet-carrying arms E and F, having pins M, substantially as set forth.

6. In a truck, arms E and F, having pins, as M, spring-bars G, and springs B, substantially as set forth.

7. In a truck, a frame-work provided with pins or projections for carrying the pallets, as specified, mounted on springs, substantially as set forth.

8. In a truck, a suitable frame-work having pins, substantially as set forth, in combination with suitable handles and means for automatically locking and unlocking said handles, substantially as set forth.

406,886. DIGESTER. WILLIAM O. CROCKER and WILLIAM P. CROCKER, Turner's Falls, Mass., assignors of one-half to the New England Fibre Company, of Massachusetts. Filed July 9, 1888. Serial No. 279,405. (No model.)



Claim.—1. A digester composed of an outer shell substantially cylindrical through the main portion of its length, combined with a lining composed of longitudinal strips of lining material united along their edges by longitudinal seams, substantially as and for the purpose described.

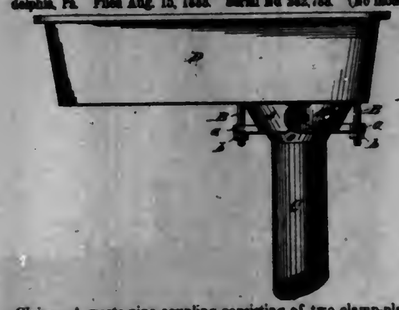
2. The main outer shell of a digester and longitudinal strips of lining material extending from one to the other end of the side walls of said shell and meeting at their edges, combined with stay-pieces overlapping the meeting edges of two adjacent lining-strips and being fastened to the main shell, and caps of lining material over the said stay-pieces united at their edges with the main lining, substantially as described.

3. The combination of the head or end piece of a digester, having a central opening, with a lining-sleeve extending through the said central opening, provided with a flange at its lower edge that engages the edge of the lining around the opening in the end piece, and a lining for said sleeve extending over the flange thereof and being united with the lining of the end piece, substantially as described.

406,887. WELDING COMPOUND. WILLIAM H. CUTHBERTH and JACOB SOMMER, Hollandsburg, Ind. Filed Apr. 1, 1889. Serial No. 305,515. (No specimens.)

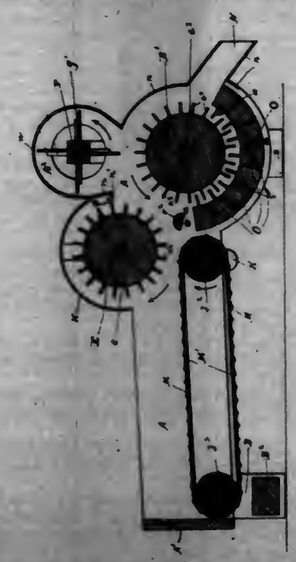
Claim.—A welding compound formed of saltpeter, borax, sulphate of zinc, and white flint sand, in about the proportions set forth.

406,888. WASTE-PIPE COUPLING. WILLIAM H. H. DAVIS, Philadelphia, Pa. Filed Aug. 15, 1888. Serial No. 282,783. (No model.)



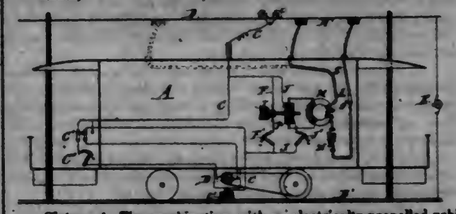
Claim.—A waste-pipe coupling consisting of two clamp-plates A A, each provided with a pin E and hole F, and adapted for connection, substantially as specified, and provided with holes to receive bolts for holding them to the waste-pipe and holding the waste-pipe to a sink or basin, substantially as shown and described.

406,889. FEEDING MECHANISM FOR COTTON-GINS. VAN B. DAVIS, Temple, Ga. Filed Aug. 2, 1888. Serial No. 281,804. (No model.)



Claim.—The combination, with the frame A A', of the carrier M, the carrier-drums J^3 J^3, mounted, respectively, in vertically and horizontally adjustable bearings, provisions for adjusting said bearings, as described, the toothed cylinder E, the notting H, the fan F, the guiding-bridge c^3, the toothed cylinder E', and a concave bed formed of separate bars provided with teeth adapted to pass between the teeth of the rotating cylinder E', substantially as set forth.

406,890. ELECTRIC HEATING APPARATUS FOR RAILWAY SYSTEMS. MARK W. DUTTON, Syracuse, N. Y., assignor to the Dutton Corporation, same place. Filed Apr. 10, 1889. Serial No. 307,066. (No model.)



Claim.—1. The combination, with an electrically-propelled vehicle, working-conductors supplied with direct current along the path of said vehicle, conductors on the vehicle in contact with the working-conductors and the electric motor for propelling the vehicle, and controlling devices connected with the vehicle-conductors, of a shunt-circuit of the vehicle-conductor around the said motor and its controlling devices, a second electric motor and controlling device in said shunt-circuit, a second shunt-circuit around both motors and their controlling devices, a pulsator operated by the second motor and primary coil of an inductional transformer in the second shunt-circuit, a secondary circuit of low resistance in circuit with the secondary coil of said transformer, one or more electric heating devices included in the secondary circuit, and means for cutting one or more of said heating devices out of circuit.

2. The combination, with an electrically-propelled vehicle, the supply-conductors on the vehicle and the electric motor for propelling the vehicle, and controlling devices connected with the said supply-conductors, of a shunt-circuit of the said supply-conductors, a second electric motor in said shunt-circuit, a pulsator operated by the second motor and primary coil of a transformer in shunt-circuit, a secondary circuit including the secondary coil of said transformer, and one or more suitable electric heating devices in said secondary circuit.

3. The combination, with a vehicle, the conductors on the vehicle connected with a source of direct current, and a translating device and means for controlling the same connected in circuit with said conductors, of a shunt-circuit around both the said translating and controlling devices, an electric motor in the shunt-circuit, a pulsator operated by the motor and primary coil of a transformer in shunt-circuit, a secondary circuit including the secondary coil of the transformer, and one or more electric heating devices in said secondary circuit.

4. The combination, with a vehicle, the conductors on the vehicle connected with a source of direct current, and a translating device and means for controlling the same in circuit with said conductors, of a shunt-circuit around both the translating and controlling devices, an electric motor and adjustable resistance in the shunt-circuit, a second shunt-circuit around said motor and adjustable resistance, a pulsator operated by the motor and a primary coil of a transformer in the second shunt-circuit, a secondary circuit of low resistance, including the secondary coil of the transformer, and one or more electric heating devices in said secondary circuit.

5. The combination, with a vehicle, the conductors on the vehicle connected with a source of direct current, and a translating device and controlling devices therefor in circuit with said conductors, of a shunt-circuit around said devices, an electric motor and a rheostat in the shunt-circuit, a second shunt-circuit around said motor and rheostat, a pulsator operated by the motor and a primary coil of a transformer in the second shunt-circuit, means for regulating the current flowing through said primary coil, a secondary circuit of low resistance, including a secondary coil of the transformer, and one or more electric heating devices in said secondary circuit.

6. The combination, with an electrically-propelled vehicle, working-conductors supplied with direct current along the path of said vehicle, conductors on the vehicle in movable contact with the working-conductors, and the electric motor for propelling the vehicle and its controlling devices in circuit with the vehicle-conductors, of a shunt-circuit on said vehicle around the motor and its controlling devices, a second electric motor and adjustable resistance in said shunt-circuit, a second shunt-circuit around both motors and their controlling devices, a pulsator operated by the second motor, a primary coil of a transformer and regulating device in the second shunt-circuit, a sec-

ondary circuit, including the secondary coil of said transformer, and one or more electric heating devices on the vehicle in the secondary circuit.

7. The combination, with a vehicle, working-conductors supplied with direct current along the path of said vehicle, the conductors on the vehicle, and a translating device and controlling devices therefor in circuit with said vehicle-conductors, of a shunt-circuit around said devices, an electric motor and a rheostat in the shunt-circuit, a second shunt-circuit around said devices, motor, and rheostat, a pulsator operated by the motor and a primary coil of a transformer in the second shunt-circuit, means for regulating the current flowing through said primary coil, a secondary circuit of low resistance, including a secondary coil of the transformer, and one or more electric heating devices in said secondary circuit.

8. The combination, with a vehicle and a line working-conductor arranged along the path of said vehicle, of a closed electric circuit to be moved with the vehicle, including a conductor of lower resistance than the line conductor, movable contacts connected with the terminals of said low-resistance conductor and in contact with the said line working-conductor, and a portion of the line working-conductor between the terminals and supplied with electric current from a suitable source, for the purpose set forth.

9. The combination, with a vehicle and a line working-conductor arranged along the path of said vehicle, of a closed electric circuit to be moved with the vehicle, including a conductor on the vehicle, terminals of said conductor disposed one in advance of the other and in contact with the line working-conductor, and a portion of the line working-conductor between the terminals and supplied with electric current from a suitable source, for the purpose set forth.

10. The combination, with a vehicle and a continuous line working-conductor arranged along the path of said vehicle, of a low-resistance conductor on the vehicle supplied with electric current, terminals of said vehicle-conductor disposed one in advance of the other in contact with the line working-conductor and the portion of the said line conductor between the said terminals, for the purpose set forth.

11. The combination of an electrically-propelled vehicle, a continuous-line working-conductor arranged along the path of said vehicle, an electric motor propelling said vehicle, an electric connection between said motor and working-conductor, a shunt-circuit around the motor on the vehicle, a primary coil of a transformer in said shunt-circuit, means to regulate the current flowing through the shunt-circuit, a secondary circuit including the secondary coil of the transformer, terminals of the secondary circuit in contact with the line conductor, and a portion of the line working-conductor between the said terminals, for the purpose set forth.

12. The combination of an electrically-propelled vehicle, a continuous line working-conductor arranged along the path of said vehicle, an electric motor propelling said vehicle, an electric connection between said motor and working-conductor, a shunt-circuit around the motor on the vehicle, a pulsator and a primary coil of a transformer in said shunt-circuit, means to regulate the current flowing through the shunt-circuit, a secondary circuit including the secondary coil of the transformer, terminals of the secondary circuit in contact with the line conductor, and a portion of the line working-conductor between the said terminals, for the purpose set forth.

13. The combination of an electrically-propelled vehicle, a continuous-line working-conductor arranged along the path of said vehicle, an electric motor propelling said vehicle, an electric connection between said motor and working-conductor, a shunt-circuit around the motor on the vehicle, a pulsator and a primary coil of a transformer in said shunt-circuit, means to regulate the current flowing through the shunt-circuit, an electric motor operating the pulsator, a secondary circuit including the secondary coil of the transformer, terminals of the secondary circuit in contact with the line-conductor, and a portion of the line working-conductor between the said terminals, for the purpose set forth.

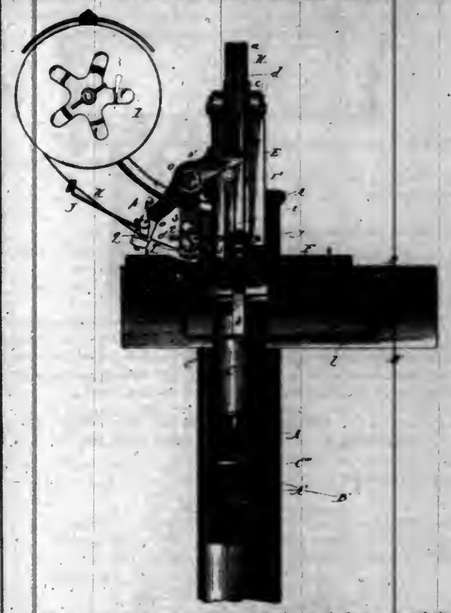
14. The combination of an electrically-propelled vehicle, a continuous-line working-conductor arranged along the path of said vehicle, an electric motor to propel said vehicle, an electric connection between said motor and working-conductor, a shunt-circuit around the motor on the vehicle, a pulsator and a primary coil of a transformer in said shunt-circuit, means to regulate the current flowing through the shunt-circuit, an electric motor operating the pulsator, a secondary circuit including the secondary coil of the transformer, and a plurality of heating devices, terminals of the secondary circuit in contact with the line conductor, a portion of the line working-conductor between the said terminals forming one of said heating devices, and means for cutting in or out of circuit one of the said heating devices independent of the other heating device in circuit, for the purpose set forth.

15. In an electric railway, a line working-conductor, a traveling vehicle, an electric motor to propel said vehicle, an electrical connection between said vehicle and working-conductor, an inductional transformer on the vehicle, a secondary circuit of low resistance, an electric heater to heat said vehicle in the secondary circuit, and means to control the current passing through the transformer independently of the motor.

16. In an electric railway, a line working-conductor, a traveling vehicle, an electric motor to propel said vehicle, an electrical connection between said motor and working-conductor, a current-transformer on the vehicle in electrical connection with the working-conductor, a secondary circuit of lower resistance than the working-conductor, an electric heater to heat said vehicle in the secondary circuit, and means to control the current passing to the transformer independently of the motor.

17. The combination of a vehicle, a line working-conductor arranged along the path of said vehicle, a translating device on the vehicle, an electrical connection between said translating device and working-conductor, a current-transformer on the vehicle in electric connection with the working-conductor, a secondary circuit of lower resistance than the working-conductor, an electric heater to heat said vehicle in the secondary circuit, and means to control the currents passing to the translating device and transformer independently of each other.

406,891. STAPLING-MACHINE. EDWARD P. DONNELL, Chicago, Ill. Filed Dec. 15, 1888. Serial No. 293,733. (No model.)



Claim.—1. The combination, with the staple-former c and the driver d, of the lever H, having an arm b, adapted to become engaged with and disengaged from said former, and an arm a, adapted to come in contact with the upper portion of the driver, substantially as described.

2. The combination of the longitudinally-grooved former c, having in its grooved face a projection f, the driver d, engaged in said grooved face of the former and having a shoulder e, and a lever having an arm to engage said former and an arm to come in contact with the upper end of the driver, substantially as described.

3. The combination of the bent lever r s, having the spring s', a locking-disk v, with the pin r', and former c, substantially as and for the purpose specified.

4. The combination of the bent lever r s, having the slots q', with the pivoted lever t, spring w, and rotatable disk v, substantially as described.

5. The combination of the pivoted lever r s, pin r', former c, with the lever H, having the projecting arms or forks a b, substantially as described.

6. The combination, with the hinged table D D', of the inverted-trough-shaped feed-guide and holding-plate y, supported above said table, and means for giving a vertical adjustment to said guide and holder, substantially as described.

7. The combination, with the driver d, the staple-former c, having a pin r', and the arm a, of the lever-arms r s, and adjustable stop s', substantially as described.

8. The combination and arrangement of the rod G, lever H, having the forks or arms a b, with the driver d, the former c, having the pin r', the pivoted lever r s, operating to feed wire, form, and drive staples by a single movement of the lever, substantially as set forth.

406,892. COASTING-TOBOGGAN. CHARLES H. BRENNON, Yonkers, N. Y. Filed Jan. 30, 1887. Serial No. 225,966. (No model.)



Claim.—1. In a coasting-toboggan, side slats bent at their front ends and disconnected from the cross-bars in the hood, substantially as described.

2. In a coasting-toboggan, side slats bent at their front ends, disconnected from the cross-bars in the hood and coupled together by ties or links beneath the central portion of the hood, substantially as described.

3. In a slat-bottomed coasting-toboggan, the combination, with the bent ends of the slats which form the hood, of the front cross-bar, and re-enforcing leaves interposed between said cross-bar and the slats and extending forward within the hood, substantially as described.

4. In a slat-bottomed coasting-toboggan, the combination, with the slats, of cross-bars having concave under surfaces to which the slats are secured, substantially as described.

5. In a slat-bottomed toboggan, the combination, with the slats, of the cross-bars having concave under surfaces and the cross-bars having straight under surfaces, substantially as described.

6. In a slat-bottomed toboggan, the combination of cross-bars having upwardly-inclined under surfaces at their outer ends, side slats secured to said inclined surfaces and presenting an upwardly-inclined bearing-surface, and intermediate slats which afford a general lateral and longitudinal bearing-surface for the toboggan, substantially as described, and for the purposes specified.

7. In a slat-bottomed toboggan, the combination, with the hood, of adjustable straining and cushion-holding cords extending from the edge bar of said hood downward and thence to the rear cross-bar and adjustably secured thereto, substantially as described.

8. In a slat-bottomed toboggan, the combination, with the slats and a cross-bar, of a flexible plate interposed between said bar and the slats and united thereto, substantially as described.

9. In a slat-bottomed toboggan, the combination, with the bearing-slats and a cross-bar, of an interposed metal locking-plate provided with integral spurs for engaging with the slats and binding them together and to said plate, substantially as described.

10. In a slat-bottomed coasting-toboggan, the combination, with the slats and a cross-bar, of a flexible plate interposed between said bar and slats, secured to said slats, and provided with flanges which engage with and secure said cross-bar to said plate, substantially as described.

11. In a slat-bottomed coasting-toboggan, the combination, with the slats and a cross-bar, of a flexible plate interposed between said bar and the slats and provided with slat-securing spurs and also with flanges for engaging with and confining said cross-bar, substantially as described.

12. A toboggan hand-rail post composed of sheet metal bent to form a loop for receiving said rail, in combination with a cross-bar, a nut embraced within the base of said post, and a bolt for securing the post to said cross-bar, substantially as described.

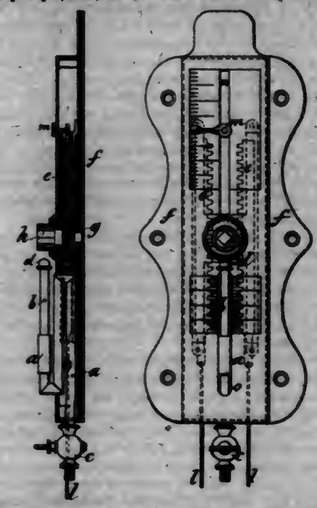
406,893. WIRE BAND FOR BOXES. CLARK W. EVANS, Plainfield, N. J. Filed Oct. 7, 1887. Serial No. 251,719. (No model.)



Claim.—1. As an article of manufacture, a band for securing packages consisting of strands of wire twisted together, and having at convenient intervals staples of wire coiled between the loops of the band, and their sharpened ends turned down between said loops and parallel with the length of the band, substantially as set forth.

2. A band for securing packages, having coiled between its loops at convenient intervals staples of wire, substantially as and for the purpose described.

406,894. GAS-PRESSURE GAGE AND REGULATOR. GEORGE B. FRANKLEY, Brixton, County of Surrey, England. Filed July 14, 1887. Serial No. 244,242. (No model.) Patented in England July 15, 1886, No. 8,209; in France Apr. 20, 1887, No. 170,277; in Belgium Apr. 20, 1887, No. 77,260; in Germany Apr. 20, 1887, No. 3,207, and in Austria-Hungary May 3, 1887, No. 7,237 and No. 21,106.



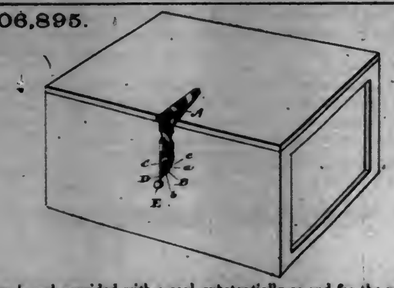
Claim.—In a gas-regulator, the combination, with a pressure-gage consisting of an entry-valve e, and a bent tube comprising one part a of metal and one part b of glass, graduated, as specified, means for introducing gas into said pressure-gage, substantially as set forth, and a supporting-frame by which the apparatus is held in position, of the racks c, sliding in the frame f, the spindle A, journaled in said frame between said racks, the pinion g, mounted on said spindle and meshing into said racks, the index m, carried by one of said racks and adapted to move upon a graduated scale, and means, substantially as specified, for connecting said racks with the key of a gas-supply cock, all substantially as and for the purpose set forth.

406,895. SEALING DEVICE FOR HASP-FASTENERS. WILLIAM A. FERGUSON, Toronto, Ontario, Canada. Filed Dec. 1, 1888. Serial No. 292,261. (No model.)

Claim.—The combination, with the hasp having slot, as described, and curved end a, formed with hole c, of the swivel-plate B, having curved extension-piece b, formed with hole, as described, the swivel fastening on the plate B and extending through said slot in the hasp, and wire through the coincident holes in the curved end a and exten-

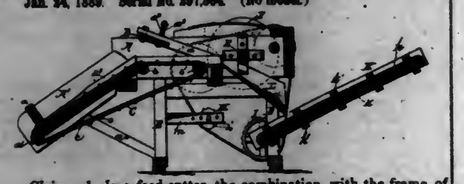


406,895.



sion *b*, and provided with a seal, substantially as and for the purpose specified.

406,896. FEED-CUTTER. DIEDERICH FRESE, Lamoille, Ill. Filed Jan. 24, 1889. Serial No. 297,864. (No model.)



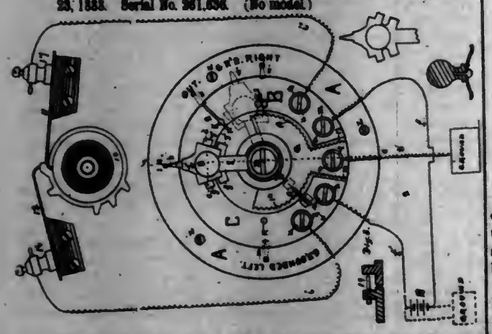
Claim.—1. In a feed-cutter, the combination, with the frame, of the inclined conveyer-trough having parallel compartments therein, yielding fingers above the compartments, shaft E, having knives arranged thereon, the endless chains traveling in the conveyer-trough and beyond the same, having projections thereon, the partitions a^3, and the gearing for moving the several parts, substantially as described.

2. In a feed-cutter, the combination, with the frame, of an inclined conveyer-trough having endless chains traveling therein and beyond its end, which are provided with projections, the partitions a^3, the inclined yielding fingers above the chains in close proximity thereto, a rectangular shaft at the end of the conveyer-trough, and fingers and knives arranged on the shaft, and gearing for operating the several parts, substantially as described.

3. The combination, with the frame and inclined conveyer-trough, of the endless chains extending beyond the trough having projections thereon, the partitions a^3, the inclined yielding fingers having concave under faces, the shaft E, the U-shaped knives arranged alternately on the shaft, the hopper below the knives, the elevator into which the hopper discharges, and gearing for operating the several parts, substantially as described.

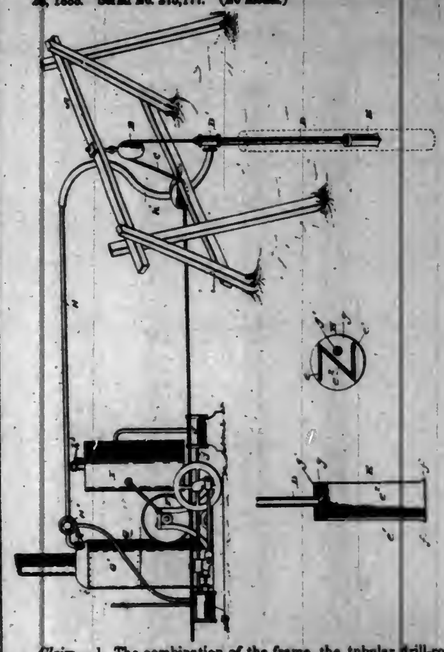
4. The combination, with the frame and inclined conveyer-trough, of the obliquely-disposed cross-piece, the fingers adjustably secured thereon, the pins d^4, extending through the cross-piece and fingers, spiral springs surrounding the pins, nuts on the ends of the pins, the endless chains in the conveyer-trough extending beyond the same, the rotating knives arranged at the ends of the fingers, and gearing for operating the knives and chains, substantially as described.

406,897. ELECTRIC SWITCH. THOMAS F. GAYNOR, Louisville, Ky., assignor to the Gaynor Electric Company, same place. Filed Jan. 23, 1888. Serial No. 261,636. (No model.)



Claim.—In an electric switch, an insulating-base, in combination with two line-plates, a ground-plate, and a pivoted contact-lever having a spring-tension contact upon the plate and provided with a stop projection, the plates having registering stop-holes for the stop projection of the lever to enter into, the base or plates having characters which designate the nature of the connection made when the index of the lever is brought into registering position therewith, substantially as described.

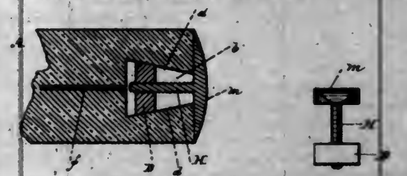
406,898. COMPRESSED-AIR AND STEAM APPARATUS FOR SINKING WELLS. HERVEY K. GOODRICH, Sherman, Tex. Filed May 28, 1888. Serial No. 275,177. (No model.)



Claim.—1. The combination of the frame, the tubular drill-rod, the drill formed with outlet-passages through the lower side of the drill-head, the compressed-air reservoir, the steam-boiler, the steam-engine, connections for reciprocating the drill, and a supply-pipe adapted to be connected at will with either the boiler or the air-reservoir, substantially as described, for the purpose set forth.

2. In an apparatus for sinking wells or shafts, the combination of a tripod or frame having a guide-pulley, a tubular drill-rod provided with a coupling, a drill fixed to the lower end of the rod and having one or more ducts communicating therewith, an air-reservoir and a compressor or pump for feeding the same, a steam-boiler, a valved supply-pipe connected at one end to the drill-rod and adapted to be connected with the air-reservoir or steam-boiler, and a cable connected to the drill-rod, and with mechanism for reciprocating the rod vertically, substantially as described.

406,899. AX-HELVE. HIRAM HALL, Jr., Spruce Head, Me. Filed Mar. 5, 1889. Serial No. 301,823. (No model.)



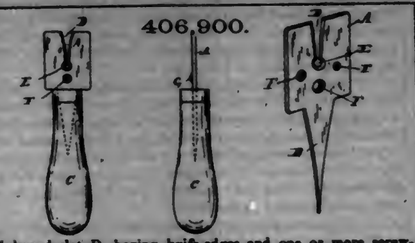
Claim.—1. In an ax-helve, the combination of a chamber having outwardly-converging walls and a saw-kerf extending inward from the bottom thereof, a beveled nut disposed in said chamber, and a screw working in said nut and provided with an oval or button-shaped head, substantially as described.

2. In an ax-helve, the helve A, provided with the chamber *b*, having converging walls *d*, the saw-kerf *f*, the nut D, disposed in said chamber, and the screw H, working in said nut and provided with the oval head *m*, all being combined and arranged to operate substantially as described.

406,900. SLATE-PENCIL SHARPENER. BENJAMIN HAMBURG, Detroit, Mich. Filed May 9, 1888. Serial No. 310,150. (No model.)

Claim.—1. In a slate-pencil sharpener, the plate A, provided with the V-shaped slot D, having knife-edges and one or more screw-threaded apertures, as F, substantially as described.

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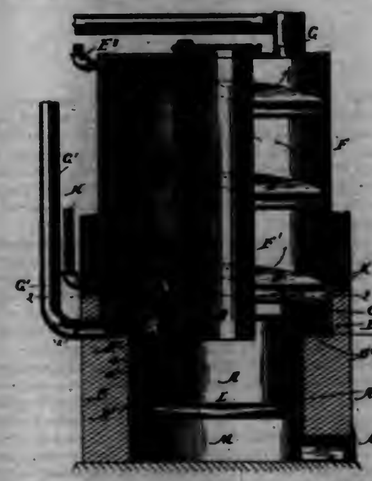


2. As a new article of manufacture, a slate-pencil sharpener consisting of the steel plate A, secured to a handle and provided with the V-shaped slot D, the circular enlargement, and one or more screw-threaded apertures, substantially as described.

406,901. PROCESS OF DRESSING LEATHER. WALTER R. HARTER, West Hesticoke, Pa. Filed Jan. 18, 1889. Serial No. 296,736. (No specimens.)

Claim.—The method of dressing leather, consisting, first, in applying thereto a compound of alum, bicarbonate of soda, borax, and washing-soda dissolved in water, and, second, by applying a coloring composition of iron scales and cider-vinegar, and, third, by coating the leather with castor-oil, substantially as described.

406,902. WATER-CIRCULATING HEATER. MICHAEL HAVEY, Chicago, Ill. Filed Jan. 26, 1889. Serial No. 297,945. (No model.)



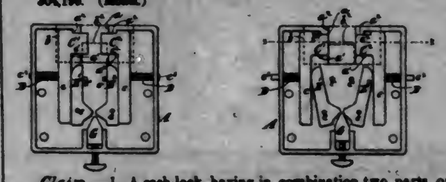
Claim.—1. In a water-heating furnace, in combination with a fire-box, a water-chamber constructed in the form of a spiral about an upwardly-extending axis, the successive turns of such spiral being non-communicating except in the direction of their continuous spiral course, whereby the water is compelled to follow that course, and the smoke-passage leading from the fire-box having as its upper and lower walls the coils of said spiral water-chamber, substantially as set forth.

2. In a water-heating furnace, in combination with the fire-box, a water-chamber adjacent thereto and directly exposed to the heat thereof, a water-chamber constructed in the form of a spiral about an upwardly-extending axis, the successive turns of such spiral being non-communicating except in the direction of their continuous spiral course, whereby the water is compelled to follow that course, said spiral chamber communicating at its lower end with the lower part of the water-chamber which is adjacent to the fire-box, a water-supply pipe communicating with the spiral chamber at the upper end, the water-discharge pipe leading from the upper part of the chamber which is adjacent to the fire-box, and a case inclosing the spiral chamber, the smoke-passage from the fire-box leading into said case, whereby the spiral interval between the successive coils of the spiral water-chamber forms part of the smoke-passage to the chimney, substantially as set forth.

3. In a water-heating furnace, in combination with a fire-box, a water-chamber constructed in the form of a spiral duct about an upwardly-extending axis, such duct being quite broad with respect to its thickness, the successive turns of such spiral being non-communicating except in the direction of their continuous spiral course, whereby the water is compelled to follow that course, a case inclosing the entire spiral duct, and the smoke-passage from the fire-box leading into the case, whereby the interval between the turns of the spiral duct forms a continuation of the smoke-passage, whereby such duct exposes to the smoke upper and lower surfaces which are large relatively to the quantity of water in the duct, substantially as set forth.

4. In a water-heating furnace, in combination with the fire-box, a chamber communicating with the same bounded by an outer case F and an interior tube D, a water-chamber in the form of a spiral duct located in the space between the tube D and the case F, the successive turns of such spiral being non-communicating except in the direction of their continuous spiral course, whereby the water is compelled to follow that course, and making close junctions with the walls of said tube and case, respectively, whereby it defines and forms the upper and lower boundaries of a spiral smoke-passage from the fire-box through the chamber constituted by the tube D and the case F, and the smoke-pipe leading from the upper end of said chamber, substantially as set forth.

406,903. FASTENER FOR THE MEETING-RAILS OF SASHES. HENRY B. HERBST, New York, N. Y. Filed Mar. 21, 1888. Serial No. 304,199. (Model.)



Claim.—1. A sash-lock having in combination two parts, one made in the form of a box furnished with a sliding bolt or dog and having an opening adjacent to the bolt or dog, a guide-rod for the bolt, and a spring on the guide-rod, and the other part having a plate extending beneath said opening and having an upper portion provided with a head or shoulder, substantially as specified.

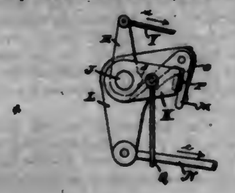
2. A sash-lock having in combination two parts, one made in the form of a box furnished with a bolt or dog, said box being provided with an opening and furnished with a lever, and a sliding push-piece for operating the lever, and the other part having a plate extending beneath said opening and having an upper portion provided with a head or shoulder, substantially as specified.

3. A sash-lock having in combination two parts, one made in the form of a box furnished with two opposite sliding dogs or bolts and having an opening adjacent to the bolts or dogs, and guide-rods for said bolts or dogs, and the other part having a plate extending beneath said opening and having an upper portion provided with a head or shoulder, substantially as specified.

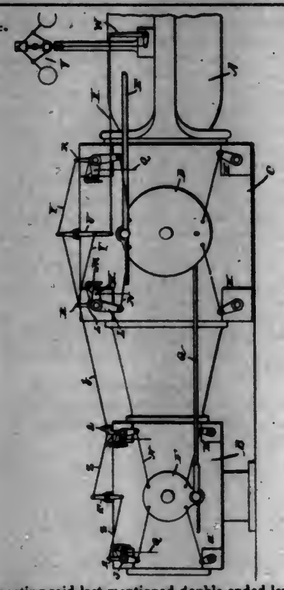
4. A sash-lock having in combination two parts, one made in the form of a box furnished with two opposite bolts or dogs and provided with an opening and having two levers and a sliding push-piece for operating the levers, and the other part having a plate extending beneath said opening and having an upper portion provided with a head or shoulder, substantially as specified.

406,904. VALVE-GEAR. GEORGE H. HELVEY, Hamilton, Ohio, assignor to the Hooven, Owens & Rentschler Company, same place. Filed Jan. 26, 1888. Serial No. 297,591. (No model.)

Claim.—In a compound engine having valve-gear of the Corliss type and having the two cylinders arranged tandem and having at each steam-valve of each cylinder a cam-lever to be adjusted angularly to change the point of valve-closure, the combination, substantially as set forth, with such cam-levers and the governor which is to actuate them, of a double-ended lever pivoted on one cylinder between the two steam-valves of that cylinder, a link connecting said lever with the governor, links connecting said lever with each of the cam-levers of the cylinder on which the lever is pivoted, a link connecting said lever with one of the cam-levers of the second cylinder, a double-ended lever pivoted on the second cylinder between its steam-valves,

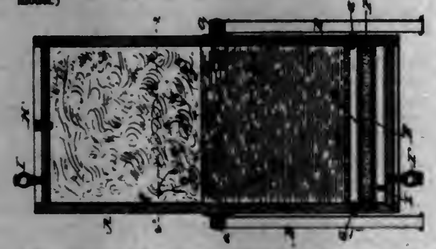


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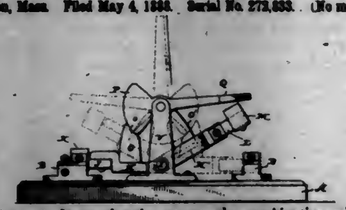
and links connecting said last-mentioned double-ended lever with the two cam-levers of said second cylinder.

406,905. VINEGAR GENERATOR AND FILTER. RUDOLPH H. HERDER, Chicago, Ill. Filed Dec. 21, 1888. Serial No. 294,242. (No model.)



Claim.—In a reversible vinegar-generator balancing on trunnions and in one end thereof, the three perforated diaphragms C, D, and E, with filtering material F, packed between diaphragms D and E, with bung-holes leading from opposing sides into the chamber between diaphragms C and D, and with a faucet reaching into the chamber below diaphragm E, all substantially as set forth, for the purpose specified.

406,906. CUT OUT FOR ELECTRIC CIRCUITS. WARREN S. HILL, Boston, Mass. Filed May 4, 1888. Serial No. 273,333. (No model.)



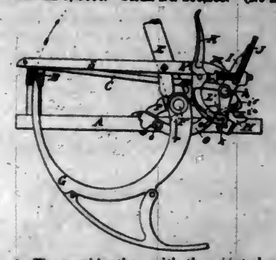
Claim.—1. In an electric cut-out, the combination, with the main and working circuit terminals, of two pivoted frames, each carrying connecting-conductors, a lever for operating both the frames, a segment on the lever, and projections on the frames arranged in the path of the segment, the segment being wider than the space between the projections, whereby the connections between one set of terminals must be completed before the connections between the other set are broken, substantially as described.

2. In an electric cut-out, the combination, with the main and working circuit terminals, of a pivoted frame carrying connecting-conductors arranged to complete the circuit between the main-line terminals, another pivoted frame carrying connecting-conductors arranged to complete the circuit between the working-circuit conductors and the main line, a lever for operating both the frames, a segment carried by the lever, and projections on the frames in the path of the segment, substantially as described.

3. In an electric cut-out, the combination, with one set of main-line terminals, of a pivoted frame carrying a conductor arranged to complete the circuit between said terminals, another set of main-line terminals electrically connected with the first set, a set of working-circuit terminals arranged adjacent thereto, and another frame carrying connecting-conductors arranged to complete the circuit between the last-named main-line conductors and the working-circuit conductors, substantially as described.

4. The combination, with the base-board, of one set of main-line conductors, another set of main-line conductors electrically connected thereto, a set of working-conductors arranged adjacent to the latter, a standard arranged between the two sets of main-line conductors, a lever mounted in the standard having a segment, and two frames pivotally mounted in said standard carrying connecting-conductors and having projections arranged in the path of the segment, substantially as described.

406,907. GRAIN-BINDER. WATSON M. HOLMES, Hoosick Falls, N. Y. Filed Jan. 9, 1888. Serial No. 260,265. (No model.)



Claim.—1. The combination, with the pivoted compressor, of a toggle-joint to lock the compressor in an upright position, and a projection on the needle-arm adapted during the initial descent thereof to engage a rocking bar forming part of said toggle-joint on one side of its pivot to break the lock and on the further descent of the needle-arm to engage the rocking bar on the other side of its pivot to again lock the compressor in an upright position, substantially as and for the purpose specified.

2. The combination of the compressor rocking on a pivot at the outer edge of the binder-platform, a rocking arm pivoted to the machine beneath the binder-platform, intermediate mechanism between the rocking arm and the compressor and forming therewith a toggle-joint, a spring-cam projection on the rocking arm, and a roller on the needle-arm adapted to engage the spring-cam during the descent of the needle-arm, substantially as and for the purpose specified.

3. The combination, with the shaft mounted at the outer edge of the binder-platform independently of the binder-driving mechanism, of a casting pivoted on the shaft, a crank-arm secured to the casting, a rocking arm pivoted to the machine beneath the binder-platform, a link connecting the crank-arm and the rocking arm and forming therewith a toggle-joint, the compressor pivoted to the casting, and a spring interposed between the casting and the compressor, substantially as and for the purpose specified.

4. The combination, with the compressor mounted at the outer edge of the binder-platform independently of the binder-driving mechanism and held in an upright position by a toggle-joint during the binding of the bundle, of a projection on the needle-arm to overcome the lock formed by the toggle-joint, and a heel-extension on the needle-arm to retard the fall of the compressor, substantially as and for the purpose specified.

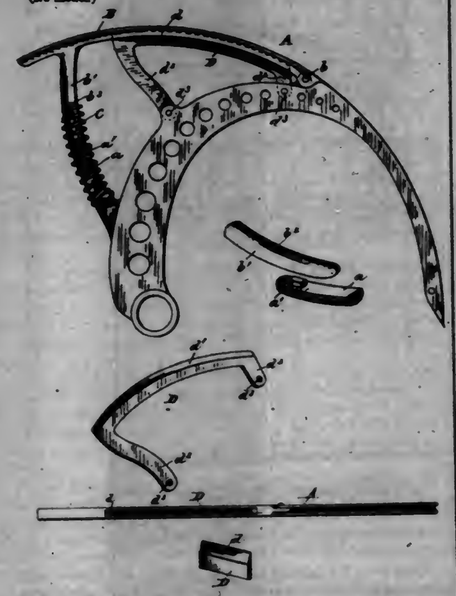
5. The combination of the compressor, the rocking arm connected to the compressor by the toggle-joint, and a fixed stop on the machine, against which the toggle-joint is forced by the grain accumulating against the compressor, substantially as and for the purpose specified.

6. The combination, with the compressor pivoted to the drop-board mounted at the outer edge of the binder-receptacle independently of the binder-driving mechanism, of a spring interposed between the compressor and the drop-board, a rocking arm pivoted to the machine beneath the binder-platform, a crank-arm attached to the drop-board, a link connecting the crank-arm and the rocking arm and forming therewith a toggle-joint, and the needle-arm formed with a projection to engage the inner end of the rocking arm during the descent of the needle-arm to overcome the lock formed by the toggle-joint, substantially as and for the purpose specified.

7. The combination, with the needle-arm and the compressor, of a rocking arm pivoted to the machine beneath the binder-platform, intermediate mechanism interposed between the rocking arm and the compressor and forming therewith a toggle-joint, and an adjustable piece secured to the needle-arm to engage the inner end of the rocking arm to overcome the lock formed by the toggle-joint, substantially as and for the purpose specified.

8. The combination, with the compressor and the rocking arm pivoted beneath the binder-platform to the machine, and intermediate mechanism interposed between the rocking arm and the compressor and forming therewith a toggle-joint by which the compressor is locked in an upright position, of a projection on the needle-arm to overcome the lock formed by the toggle-joint by engaging with the rocking arm at its inner end during a portion of the descent of the needle-arm and to again lock the compressor in position by engaging on the further descent of the needle-arm with the rocking arm at its forward end, substantially as and for the purpose specified.

406,908. NEEDLE-ARM FOR GRAIN-BINDERS. WATSON M. HOLMES, Hoosick Falls, N. Y. Filed Jan. 11, 1889. Serial No. 296,091. (No model.)



Claim.—1. The combination, with the needle-arm of an automatic grain-binder and a stationary knife attached to the back thereof, of a yielding wing pivoted to the needle-arm, substantially as and for the purpose specified.

2. The combination, with the needle-arm of an automatic grain-binder and a stationary knife attached to the back thereof, of a pivoted wing and a spring interposed between the wing and the needle-arm to normally hold the wing outwardly, so as shield the knife, but adapted to yield upon undue pressure to expose the knife, substantially as and for the purpose specified.

3. The combination, with the needle-arm having the projection *a*, semicircular in cross-section, provided with lug *a'*, of the pivoted wing B, its slotted arm *b'*, semicircular in cross-section, the knife D, and the spiral spring C, substantially as and for the purpose specified.

4. The combination, with the slotted pivoted wing of the needle-arm and the stationary knife, of a spring to hold the wing to sheathe the knife, but adapted to be overcome by undue pressure upon the wing to expose the knife, substantially as and for the purpose specified.

406,909. SQUIRREL-POISONING MACHINE. WILLIS J. HOWARD, Mariposa, assignor of one-half to John W. Farmer, San Francisco, Cal. Filed Jan. 7, 1889. Serial No. 295,703. (No model.)

Claim.—The improved device described, consisting of the bowl having a converging bottom, the discharge-spout leading from said bottom, the spring-pressed gates at the lower end of the tube, the ball secured to the bowl, the hand-lever pivoted to the ball, the triangular-shaped lever secured at one end to the gates, and the cord leading from the opposite end of said lever to one end of the hand-lever, and the spring having one end secured to the tube and its opposite end pressing against the triangular-shaped lever, substantially as specified.

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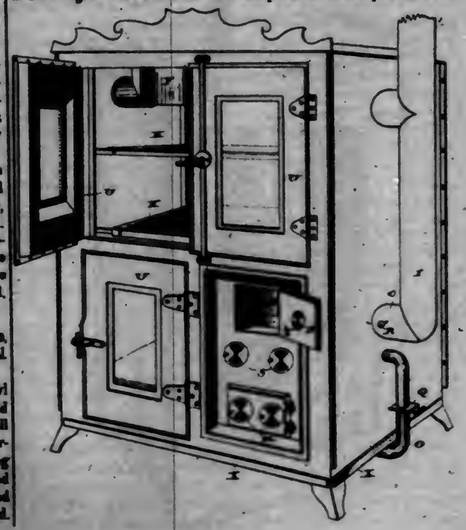


406,910. BAKING-OVEN. CHARLES F. HUSBARD, Toronto, Ontario, Canada. Filed Sept. 12, 1888. Serial No. 285,165. (No model.) Patented in England Oct. 20, 1888, No. 16,067.

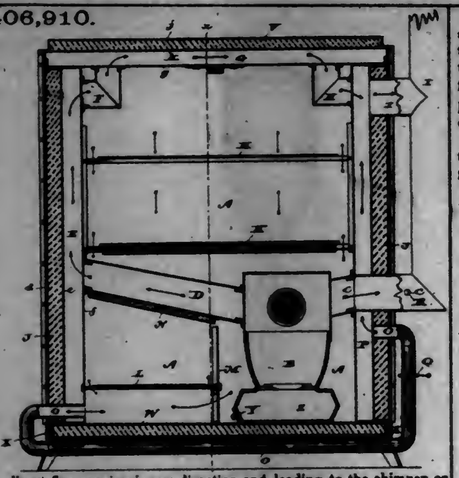
Claim.—1. A double-walled chamber combined with a furnace located entirely within the same and surrounded by said double walls and having its combustion-chamber distinct from said double-walled chamber, and provided with two independent smoke-pipes, one leading directly to the chimney or main flue and the other running in the opposite direction and leading to the air-space between the double walls, substantially as described.

2. A double-walled chamber having located within it a stove or independent furnace provided with an independent flue or flues, said chamber having an air-inlet in proximity to the stove or independent furnace, and an air-outlet connecting with the interior of the chamber and entering the hollow space formed in the vertical walls of said chamber and leading to and connecting with the smoke-flue of the stove or independent furnace, substantially as and for the purpose specified.

3. A double-walled chamber having a casing lined with asbestos and arranged to contain a stove or independent furnace provided with



406,910.

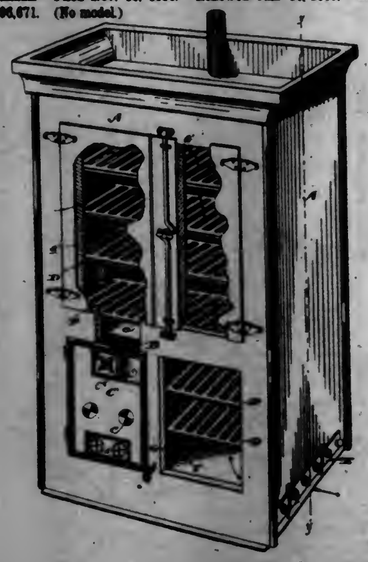


a direct flue running in one direction and leading to the chimney or main flue and an independent indirect flue running in another direction and leading to an air-space formed within the walls of the chamber and communicating with the chimney or main flue, substantially as and for the purpose specified.

4. A chamber having a casing lined with asbestus and arranged to contain a stove or independent furnace provided with a direct flue leading to the chimney or main flue and an indirect flue leading to an air-space formed within the walls of the chamber and communicating with the chimney or main flue, in combination with an air-inlet entering the chamber at a point in proximity to the stove or independent furnace and an air-outlet flue entering the chamber at a point remote from the stove or independent furnace and leading to and connecting with an air-space formed in the wall of the chamber and communicating with the main flue or chimney, substantially as and for the purpose specified.

5. A chamber having a casing lined with asbestus and arranged to contain a stove or independent furnace provided with a direct flue leading to the chimney or main flue, in combination with air-spaces formed in the vertical walls of the chamber and connected with a horizontal air-space formed in the top of the chamber by means of elbows projecting into the chamber, the said air-spaces being connected to a smoke-flue of the stove or independent furnace, substantially as and for the purpose specified.

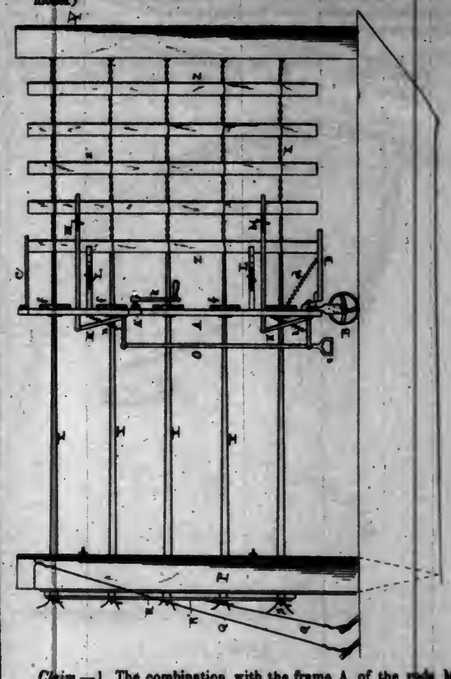
406,911. COOKING-OVEN. CHARLES F. HUBBARD, Toronto, Ontario, Canada. Filed Nov. 18, 1886. Renewed Jan. 17, 1889. Serial No. 296,671. (No model.)



Claim.—1. The case or oven A, provided with a series of shelves and having an opening near its base, and a stove-compartment B in the lower part of said oven and communicating with the upper part thereof through the opening *a*, and provided with an opening *b*, affording communication between the stove-compartment and the lower part of the oven, and the slide G, controlling said opening *b*, the damper *d*, and the slide E, substantially as described.

2. A case or oven formed in sections lined with asbestus, said sections being formed with flanges *b*, and the rivets passed through said flanges outside the oven, substantially as shown and described.

406,912. FENCE-MACHINE. EDWARD HUGHES and BENJAMIN F. WILLIAMS, Cookport, Pa. Filed May 20, 1889. Serial No. 311,369. (No model.)



Claim.—1. The combination, with the frame A, of the rods M, having hooks *m* and abutments *m'*, elbow-levers N, fulcrumed on the frame and connected with the rods M, and a stirrup-rod O, connected with the levers, substantially as described.

2. The combination, with the frame A, of the rods M, having hooks *m* and adjustable abutments *m'*, elbow-levers N, connected with the rods M, springs *n*, for retracting the levers, and means for simultaneously actuating the levers against the tension of the springs, substantially as described.

3. The combination, with the spacers M and means for moving them, of the forked picket-holder L, composed of two pieces having serrated surfaces clamped together by a thumb-screw *l*, substantially as described.

4. The combination, with the frame of a fence-machine, of a twister having a slot for the fence-wire, and an adjustable piece covering said slot and having itself a slot arranged to cross the slot in the twister and adapted to change the point of intersection when adjusted to different positions, substantially as described.

5. A twister for a fence-machine, provided with two curved symmetrically-arranged eccentric slots, and an adjustable plate covering said slots and provided itself with two similar slots turned in opposite directions to those in the twister, substantially as described.

6. The combination, with the twister F, having a tubular shank, a sprocket-wheel *f*, recess *f'*, and the curved slots *f²*, having enlarged ends, of the disk G, seated in said recess and having the oppositely-curved slots *g*, and means for adjustably securing the disk in the recess, substantially as described.

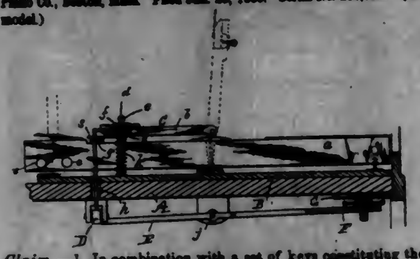
7. The combination, with the frame A, of the sleeve E, the twister F, having a tubular shank inserted through the sleeve and provided with slots *f²*, the adjustable slotted disk G, covering the slots *f²*, the cross-bar I, placed against the end of the shank, and the bolt H, passing through the disk, twister, and cross-bar, substantially as described.

8. A tension device for fence-machines, consisting of the post P,

having the bed R, extending from its top to near its bottom and provided with the concave groove *r*, the plate R', having a convex surface *r'*, matching the groove *r* for substantially its whole length, and the bolts S, provided with nuts *s*, whereby the several wires of a fence can be clamped at one and the same time, substantially as described.

9. A tension device for fence-machines, consisting of the bed R, having the concave groove *r* and suitable holes, the plate R', having a convex surface *r'* and the prongs *r²*, the bolts S, and nuts *s*, substantially as described.

406,913. TOUCH-REGULATING DEVICE FOR MUSICAL INSTRUMENTS. WILLIAM H. IVERS, Dedham, assignor to the Ivers & Pond Piano Co., Boston, Mass. Filed Jan. 26, 1889. Serial No. 297,991. (No model.)



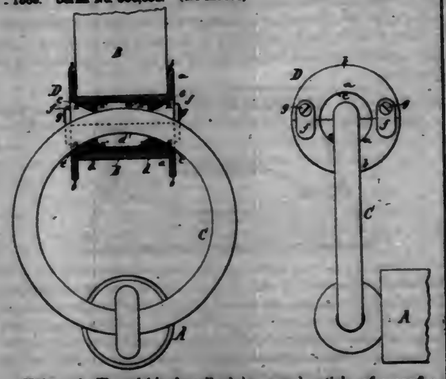
Claim.—1. In combination with a set of keys constituting the key-board of a musical instrument, a rigid transverse rail C, arranged above said keys, arms *b b*, whereby said rail is pivoted to the frame of the instrument, springs attached to said rail and bearing individually on the rear parts of said keys, and adjusting devices for regulating the pressure of said rail and springs on said keys, substantially as set forth.

2. The transverse rail C, consisting of a bar *c* and a truss-rod *d*, held therefrom in the middle by eyes *e*, in combination with springs on the said rail, keys against which said springs bear, and which constitute the key-board of a musical instrument, and adjusting devices for regulating the pressure of said rail and springs on said keys, substantially as set forth.

3. In combination with the keys of a key-board, a transverse rail provided with springs bearing thereon, springs *k* between the said rail and the key-frame, an adjusting-lever E, rocker-arms D, jointly united to said lever, and rods *h*, connecting the outer ends of said rocker-arms to the outer ends of the transverse rail, substantially as set forth.

4. The combination, with the key-board G of a musical instrument, the swinging touch-regulating rail C, trussed as described, mounted above the keys, and one or more springs *k k* beneath the rail, of a series of spring mediums affixed to said rail, the connecting-rods *h h*, rocker-arms D, lever E, and hand-wheel F, substantially as set forth.

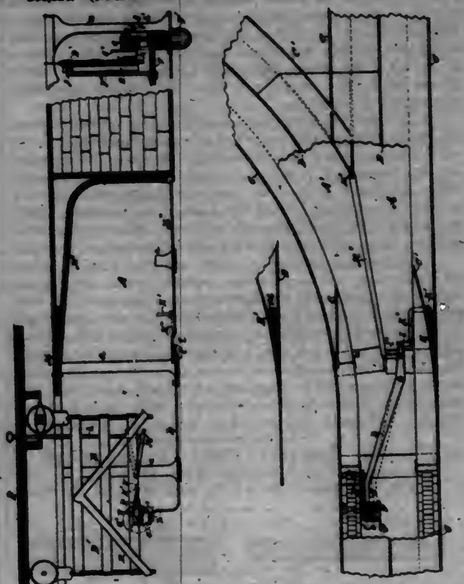
406,914. NECK-YOKE RING. WILLIAM H. JOHNSON, Delhi, N. Y., assignor of one-half to Marcus O. Landon, same place. Filed Apr. 30, 1888. Serial No. 308,032. (No model.)



Claim.—1. The within-described improved article of manufacture, consisting of a flanged roller for the neck-yoke ring and breast-strap of harness, said roller being formed with a passage through it which is flared concentrically with the ring at each end, and provided with an interior annular groove between said flared ends, substantially as described.

2. The within-described improved article of manufacture, consisting of the flanged roller for the neck-yoke ring and breast-strap of harness, said roller being formed of halves, the flanges of one half being provided with perforated lugs and of the other half with perforations, and the passage for the ring being flared concentrically with the ring at each end and provided with an interior annular groove between said concentric portions, and the whole united upon the ring by suitable fastenings, substantially as described.

406,915. SWITCH FOR PNEUMATIC STREET-RAILWAYS. WITHROW L. JUDSON, Minneapolis, Minn., assignor to the Judson Pneumatic Railway Company, same place. Filed Apr. 2, 1888. Serial No. 269,236. (No model.)



Claim.—1. In a system of surface street-railways having a slotted underground conduit for the propelling mechanism, the combination, with a car having a dependent portion projecting through said slot into the interior of the conduit, of a vertical shaft at the convergence of the switch and main rails, pivoted to swing in the horizontal plane, provided with a switch-tongue rigidly secured to the top of the same adapted to be thrown into line with either rail, a crank-arm on said shaft, a cam in the conduit in the path of the dependent portion of the car, and a connection from said cam to said crank-arm lever, substantially as described.

2. In a street-railway switch, the combination, with a car having a dependent portion, of a pivoted vertical shaft at the convergence of the main and switch rails, a switch-tongue rigidly secured to said shaft adapted to line with either rail, a crank-arm on said shaft, a segmental cam mounted on a fixed shaft in the path of the dependent portion of the car and provided with a diagonal cam-groove in its periphery, a pivoted horizontal lever arranged lengthwise of the car-track, a link connecting one end of the same with the crank-arm on said vertical shaft, and a vertical arm on the other end having a cam-head working in said cam-groove, substantially as described.

3. In a street-railway switch, the combination, with a car having a dependent portion, of a pivoted vertical shaft at the convergence of the rails, a switch-tongue rigidly secured to the same, a crank-arm on said shaft, a segmental cam mounted on a shaft fixed adjacent to the path of the dependent portion of the car and provided with a diagonal cam-groove on its periphery, a lateral projection on the dependent portion, a segmental plate attached to said cam, an adjustable lateral projection on the dependent portion of the car adapted to engage with said plate, a pivoted horizontal lever arranged lengthwise of the car-track, and having a cam-arm at one end provided with cam-head working in said cam-groove, and a link connecting the other end of said horizontal lever with the crank-arm on said vertical shaft, substantially as described.

4. In a system of surface street-railways having a slotted underground conduit for the car-propelling mechanism, the combination, with a car having a dependent portion, of a pivoted slot switch-tongue at the convergence of the main line and switch-slots adapted to align with either, a crane-shaped lever mounted in bearings within said conduit, and having one arm attached to the free end of said

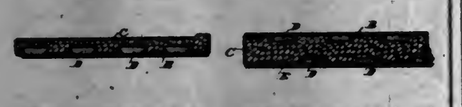
switch-tongue, a cam in the path of the dependent portion of the car, and a connection from said cam to said crane-shaped lever, substantially as described.

5. In a system of surface street-railways having a slotted underground conduit for the car-propelling mechanism, the combination, with a car having a dependent portion projecting into said conduit, of a pivoted switch-tongue at the convergence of the slots, a crane-shaped lever having its vertical arm pivoted within the conduit at the divergence of the tracks and its horizontal arm attached to said tongue, a crank-lever on said vertical arm, a segmental cam mounted on a shaft fixed in the conduit adjacent to the path of the dependent portion of the car, and having a cam-groove on its periphery and an adjustable lateral projection on the dependent part of the car, a horizontal lever pivotally secured near the bed of the conduit, a cam-arm on one end of the same provided with a cam-head working in said groove, and a link connecting its other end with said crank-lever, substantially as described.

6. In street-railways having slotted underground power-conduits, the combination, with the car having a dependent portion, of pivoted rail and slot tongues at the convergence of the main and branch rails and slots respectively, vertical horizontally-pivoted shafts supported within the conduit, having their upper ends directly attached to said pivoted tongues, crank-arms on said shafts, a cam within the conduit in the path of the dependent portion of the car, and connections from said cam to the crank-arms of said shafts, substantially as described.

7. In street-railways having slotted underground power-conduit, the combination, with a car having a dependent portion, of a vertical horizontally-pivoted shaft at the convergence of the branch and main rails, having a switch-rail rigidly attached thereto, and provided with a crank-arm within the conduit, a pivoted slot-tongue at the convergence of main and branch slots, a vertical crane-shaped lever within the conduit at the convergence of the lines, having its free end attached to said slot-tongue and provided with a crank-arm, a cam within the conduit in the path of the dependent portion of the car, and connections from said cam to said crank-arms, substantially as described.

406,916. SECONDARY BATTERY. ISIDOR KITSEE, Cincinnati, Ohio, assignor to Mayer Sulzberger, trustee, Philadelphia, Pa. Filed May 10, 1888. Renewed Mar. 1, 1889. Serial No. 301,727. (No model.)



Claim.—1. An electrode for a secondary battery, consisting of a supporting-plate formed of a porous material and provided upon one or more of its surfaces with a layer of a suitable element substance, substantially as specified.

2. An electrode for a secondary battery, consisting of a supporting-plate formed of a porous and stiff substance unsusceptible to electrolysis and provided upon one or more of its surfaces with a layer of a suitable element substance, substantially as specified.

3. An electrode for a secondary battery, consisting of a supporting-plate formed of a porous substance unsusceptible to electrolysis, provided as to parts of its surface with red lead or with other "active" material, and also provided with an exterior layer of lead or of other suitable element substance, substantially as specified.

4. An electrode for a secondary battery, consisting of a supporting-plate formed of a porous substance unsusceptible to electrolysis, provided as to one or more of its surfaces with a series of grooves or cavities containing red lead or other active material, and also provided with an outer layer of lead or other suitable element substance, substantially as specified.

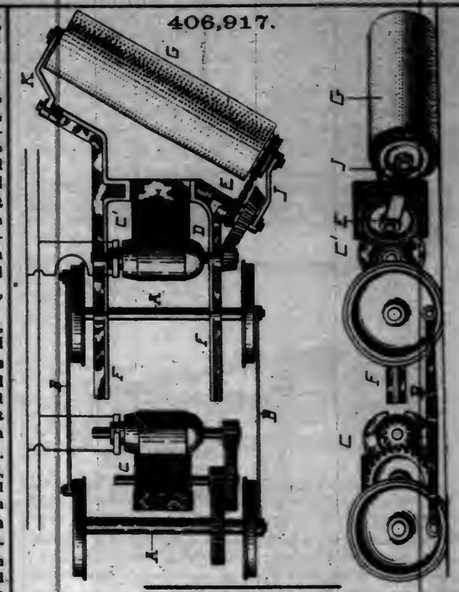
5. In a secondary battery, in combination, a containing box or vessel, a series of electrodes, each consisting of a supporting-plate of porous material provided with a layer of a suitable element substance, metallic conducting-plates each at the respective ends of the said electrodes in contact with the adjacent ends of each alternate electrode of the said series, and conducting-wires respectively attached to each of said conducting-plates, substantially as specified.

406,917. ELECTRIC TRACK-SWEEPER. WALTER H. KNIGHT, New York, N. Y. Filed Mar. 5, 1889. Serial No. 301,882. (No model.)

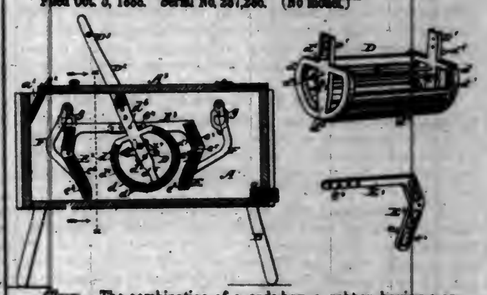
Claim.—1. The combination, with an electrically-propelled vehicle, of a track-sweeper connected thereto, consisting of a rotating broom or cleaning device with an independent operating-motor supplied from the same source as the propelling-motor of the vehicle.

2. The combination, in an electrically-propelled vehicle, of a motor geared to one axle thereof, a mechanical connection with the opposite axle, a rotating broom or cleaning device, and an independent operating-motor for said cleaning device supplied from the same source of electricity as the propelling-motor of the vehicle.

406,917.

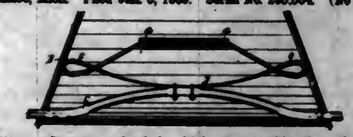


406,918. WASHING-MACHINE. JONAS L. KNOLL, Lebanon, Pa. Filed Oct. 5, 1888. Serial No. 287,286. (No model.)



Claim.—The combination of a suds-box, a rubber having a cylindrical rubbing-surface formed of slats having their widest edge at the top and pivoted centrally in said box, arms D', projecting upward from the ends of said rubber and having outwardly-projecting pins d^4, with racks having horizontal arms provided with a series of perforations for adjustable engagement with the pins d^5, and connecting-rods F, having one end pivoted to the lower end of the rack and their upper end pivoted in bearings g to the suds-box, substantially as described.

406,919. TWO-WHEELED VEHICLE. WARREN LAWRIA, Kalamazoo, Mich. Filed Jan. 5, 1889. Serial No. 295,504. (No model.)

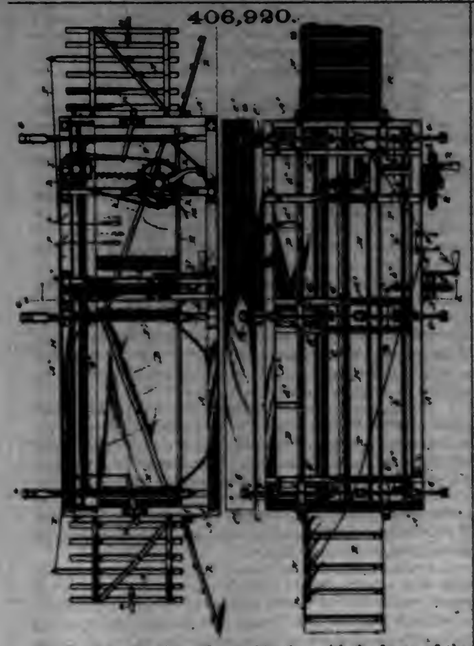


Claim.—In a two-wheeled vehicle, the combination of the body fulcrumed at the forward end, the axle, and the spring consisting of the semi-elliptic member, the ends of said member being bent around, downward, thence upward, flatwise, forming complete loops in rear elevation, with the edges of the bar forming said loops presented to the rearward, thence extended upward toward each other and attached to the body by vertical pivots, substantially as set forth.

406,920. BRANDING-CHUTE. EDGAR A. LEHARD and GEORGE W. SHEETS, Karle, Ohio. Filed Jan. 5, 1889. Serial No. 295,913. (No model.)

Claim.—1. In a branding-chute, the combination, with the frame, of the movable side, the arm pivotally connected therewith for moving the same, and the cranked shaft and connections for moving the arm, substantially as described.

406,920.



2. In a branding-chute, the combination, with the frame, of the sides between which the animals are clamped, both pivoted at the top to the frame, a catch or lock for holding one side rigidly in position, and the crank-shaft and connections for moving the opposite side toward and from the same to secure the animals, substantially as described.

3. In a branding-chute, the combination, with the frame, of the movable sides between which the animals are held, and the substantially horizontal supports or timbers connected to one side and adjustably connected to the frame for holding the side rigidly in adjusted position, and mechanism for moving the opposite side toward and from said first-mentioned side, substantially as described.

4. In a branding-chute, the combination, with the sides movable toward and from each other to hold the animals, of the supports or timbers secured to one side and adjustable connections between said supports and the uprights, and the platforms or walks on the ends of the supports, substantially as described.

5. In a branding-chute, the combination, with the sides pivoted at the top and movable toward and from each other to hold the animals, of the supports or timbers connected to one side, an adjustable connection between the supports and the uprights, and mechanism for moving the opposite side toward and from said first-mentioned side, substantially as described.

6. In a branding-chute, the combination, with the sides pivoted at the top and movable toward and from each other to hold the animals, of the supports or timbers connected to one side and adjustably connected to the frame, the arm for moving the opposite side, and the cranked shaft and connections for imparting motion to the arms, substantially as described.

7. In a branding-chute, the combination, with the movable side for securing the animals, of the arms connected thereto, the slides connected to said arms, the cranked shaft connected to the slides, and the crank-handle for rotating the said shaft, whereby the side may be moved, substantially as described.

8. In a branding-chute, the combination, with the movable sides and the supports or timbers for holding the same in adjusted position, of the branding-doors in the side, hinged at the bottom and resting on said supports or timbers, when open, in horizontal position, to form platforms, substantially as and for the purpose specified.

9. In a branding-chute, the combination, with the branding-door, of the catches therefor, formed by the pawls engaging the door at different points and secured on a common shaft, whereby they are moved simultaneously to release the door, substantially as described.

10. In a branding-chute, the combination, with the sides between which the animals are held, converging toward the bottom, of the vertically-movable bottom on which the animals are driven, located below the sides, and operating, when lowered, to leave the animals supported by the sides, substantially as described.

11. In a branding-chute, the combination, with the sides between which the animals are held, adjustable toward each other to secure the animals, of the vertically-movable bottom on which the animals are driven, located below the sides and operating, when lowered, to leave the animals supported by the sides, substantially as described.

12. In a branding-chute, the combination, with the sides between which the animals are held—one stationary and the other movable toward and from the same—of the vertically-movable bottom on which the animals are driven, located below the sides, and operating, when lowered, to leave the animals supported between the sides, substantially as described.

13. In a branding-chute, the combination, with the frame, of the movable bottom, the shaft extending longitudinally of the frame and the chains connected thereto, and connections between said chains and the movable bottom for raising the same, substantially as described.

14. In a branding-chute, the combination, with the frame, the movable bottom, and the levers connected therewith, of the shaft and the chains connected thereto and to the said levers for raising the bottom, substantially as described.

15. In a branding-chute, the combination, with the frame, the movable bottom and shaft at the top of the frame, extending longitudinally of the same, and connections between said shaft and the bottom for moving the same, of the sprocket-wheel on the lower portion of the frame, having the crank-handle, the chain, a gearing, and connections uniting the sprocket-wheel and shaft for rotating the same, substantially as described.

16. In a branding-chute, the combination, with the adjustable side and the shaft and connections for moving the same, of the gates and the catches therefor connected to the shaft, whereby when the shaft is rotated to move the side back the gate will be released, substantially as described.

17. In a branding-chute, the combination, with the movable sides and bottom and the crank-handles, and connections between said handles and the side and bottom for moving the side and bottom, respectively, of the gates and cords extending therefrom to a point in proximity to the crank-handles, whereby the operator may close the gates without leaving his station, substantially as and for the purpose set forth.

406,921. KNOCKDOWN MUSIC-RACK. JOHN A. LOHAGEN, Milwaukee, Wis. Filed Oct. 4, 1888. Serial No. 287,181. (No model.)



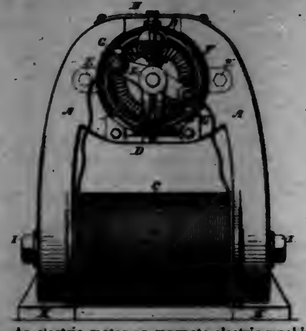
Claim.—1. In a knockdown music-rack, the combination of wire end pieces having loops formed at intervals therein and supporting-bends at their lower front portions with a series of rods whose ends are clipped into said loops, thereby uniting said end pieces, substantially as set forth.

2. In a knockdown music-rack, the combination of wire end pieces having loops formed at intervals therein and supporting-bends at their lower front portions with a series of rods fitting in said loops and connecting said end pieces, and a movable intermediate wire supporting-piece bent to correspond with the supporting-bends of the end pieces and provided with loops, whereby it is fitted on the lower front rod of the rack, substantially as set forth.

3. In a knockdown music-rack, the combination of wire end pieces having loops formed at intervals therein and supporting-bends at their lower front portions with a series of rods fitting in said loops and connecting said end pieces, and a spring-wire clip or clips, each having loops whereby it is secured adjustably on one of the rods of the rack, and a spring end bent back and adapted to bear against a sheet or page of music placed beneath it, substantially as set forth.

4. The knockdown music-rack described, consisting of the combination of wire end pieces having loops formed at intervals therein and supporting-bends at their lower front portions, a series of rods fitting in said loops and connecting said end pieces, a movable intermediate wire supporting-piece bent to correspond with the supporting-bends of the end pieces and provided with loops which receive the lower front rod of the rack, and laterally-movable spring-wire clips having loops which receive one of the said rods, and spring ends bent back toward the other ends of said clips, substantially as set forth.

406,922. ELECTRIC MOTOR. GEORGE W. MANSFIELD, Cleveland, Ohio, assignor to Matthew H. Robinson and Orlando A. Foster, Boston, Mass. Filed Feb. 27, 1888. Serial No. 301,137. (No model.)



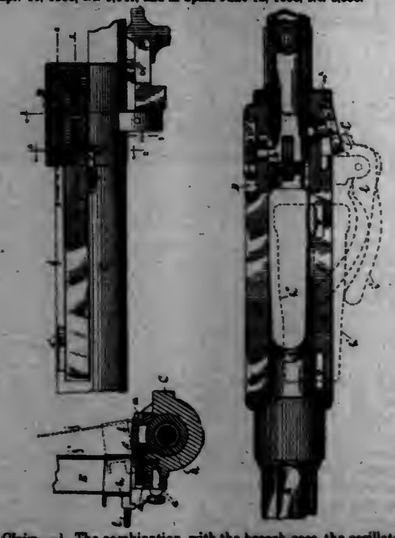
Claim.—An electric motor or magneto-electric machine consisting of a magnet having polar extensions between which the armature is arranged, with the part of said polar extensions near the magnet and neutral point fashioned into feet to support the motor, and the horizontal coil mounted between the polar extensions and attached thereto near the feet, substantially as described.

406,923. METHOD OF ORNAMENTING SURFACES WITH MOLTEN METAL. WILLIAM H. MARSHALL, Chelsea, Mass. Filed Oct. 1, 1888. Serial No. 286,914. (No model.)



Claim.—The herein-described method of ornamenting surfaces with molten metal, consisting in submerging the surface to be ornamented in a liquid, pouring the molten metal in a stream into the liquid and onto the surface, substantially as described.

406,924. BREECH-LOADING FIRE-ARM. PAUL MAUSER, Oberndorf-on-the-Neckar, Würtemberg, Germany, assignor to the Waffenfabrik Mauser, same place. Filed June 30, 1888. Serial No. 278,657. (No model.) Patented in Germany Mar. 2, 1888, No. 44,328; in Belgium Mar. 9, 1888, No. 80,968; in Italy Mar. 31, 1888, No. 23,202; in England Apr. 16, 1888, No. 5,041, and in Spain June 12, 1888, No. 8,053.



Claim.—1. The combination, with the breech-case, the oscillatory bolt, and the non-rotative bolt-head formed with a recess in one side thereof, and the shell-extractor carried by the bolt-head on the top thereof, of an ejector pivoted in the side of the breech-case and in the same plane with said recess, and a spring for pressing said ejector inwardly, so that on the retraction of the bolt its nose shall enter said recess and encounter the side of the base of the receding cartridge-shell.

2. The combination, with the breech-case and bolt, the non-rotative bolt-head F, formed with a recess g^3, having a sloping bottom, and the shell-extracting claw r, carried by said bolt-head, of an ejector g, pivoted to the breech-case, with its nose in the same plane as said recess, and a spring for pressing the ejector inwardly.

3. The combination, with the breech-case and bolt, of an ejector having a pintle fixed to it, which pintle is flattened on one side and has bearings in the breech-case, and a spring pressing against the flattened portion of said pintle, and thereby tending to project the nose of the ejector into the bore of the breech-case.

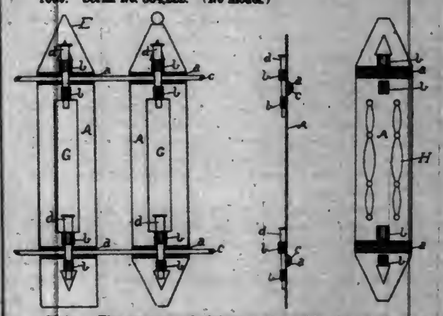
4. The combination of the detachable magazine having an operating-lever with a bolt-gun adapted for the attachment of said magazine, and having a guide-plate connected to and moving longitudinally with its bolt, and an inclined shoulder or cam-face on said guide-plate, and adapted upon the extreme retraction of the guide-plate to effect the displacement of said operating-lever, and thereby cause the delivery of a cartridge to the breech of the gun.

5. The combination of the detachable magazine having an operating-lever with a bolt-gun adapted for the attachment of said magazine, and having a guide-plate connected to and moving longitudinally with its bolt, and an inclined shoulder or cam-face on said guide-plate, and a push-lever pivoted to the gun in a position intervening, when the bolt is retracted, between the said inclined face and the operating-lever of the magazine, and adapted to transmit the movement of said inclined face to said operating-lever, and thereby to displace the latter and operate the magazine.

6. In a bolt-gun, the construction of the breech-case with the portion of its bore forming the cartridge-rest unobstructed at its bottom, and with an opening formed therein adapted for the attachment of a cartridge-magazine from beneath, in combination with a bolt and a guide-plate mounted to slide longitudinally over the opening in the top of the breech-case and connected to the bolt, so as to be moved longitudinally thereby.

7. In a bolt-gun, the construction of the breech-case with an opening p in its bottom for the insertion of a cartridge-magazine from beneath, in combination with the bolt, a shell-extractor carried by the bolt-head, and an ejector mounted in the side of the breech-case, and a spring for pressing said ejector inwardly, so that its nose shall enter the bore of the breech-case, whereby the bottom of the cartridge-rest is left unobstructed.

406,925. FENCE. JAMES T. MATHEW, Vista, Cal. Filed Mar. 21, 1889. Serial No. 304,222. (No model.)

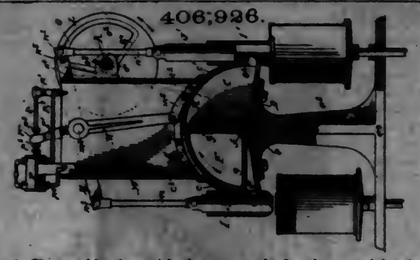


Claim.—The open-panel pickets A, formed by dies of sheet metal, with transverse grooves a upon one side and longitudinal adjoining grooves or loops b on the opposite side, in combination with strings c and keys d, constituting a removable adjustable fence, as described.

406,926. CAN-FILLING MACHINE. GAIUS L. MERRELL, Syracuse, N. Y. Filed July 12, 1888. Serial No. 279,746. (No model.)

Claim.—1. The combination, with the receptacle for the material to be canned, of a fixed measuring-chamber communicating with said receptacle, a movable gate whereby the communication between the receptacle and the measuring-chamber is controlled, a movable piston which is arranged in the measuring-chamber and expels the material therefrom, an open-mouthed discharge-cylinder communicating with the discharge-opening of the measuring-chamber, and a valve-piston which is arranged in said cylinder and closes the discharge-opening of the measuring-chamber while the movable gate is open and the chamber is being filled, and opens the discharge-opening while the gate is closed and the measured quantity of material is being expelled from the measuring-chamber, substantially as set forth.

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2. The combination, with the receptacle for the material to be canned, of a segmental measuring-chamber communicating with said receptacle and provided with inlet and discharge openings in its periphery, an oscillating piston arranged in said chamber, a movable gate which opens and closes the inlet-opening of the measuring-chamber, a discharge-cylinder communicating with the discharge-opening of the measuring-chamber, and a valve-piston arranged in the discharge-cylinder, substantially as set forth.

3. The combination, with the measuring-chamber provided with discharge-openings at both sides, of an oscillating piston arranged in said chamber, a receptacle for the material to be canned communicating with the top of said chamber, and a movable gate whereby the opening between the measuring-chamber and the receptacle is closed in front of the piston when the measuring-chamber has been filled, substantially as set forth.

4. The combination, with the receptacle for the material to be canned, of a segmental measuring-chamber communicating at its top with said receptacle and provided with discharge-openings at its sides, discharge-cylinders communicating with said discharge-openings, plungers arranged in said cylinders, an oscillating piston having a curved peripheral face and arranged in the measuring-chamber, and a curved cut-off gate arranged between the measuring-chamber and the receptacle, substantially as set forth.

5. The combination, with the segmental measuring-chamber having discharge-openings at its sides and having its bottom provided with a central depression, of an oscillating piston arranged in said chamber and having its hub seated in said depression, substantially as set forth.

6. The combination, with the receptacle A, of the measuring-chamber C, provided with discharge-cylinders I I' and plungers J J', a piston F, arranged in the measuring-chamber, a movable cut-off gate H, a rock-lever M, connected with the plungers J J', and an arm M', connected with said cut-off gate, substantially as set forth.

7. The combination, with the receptacle A, of the measuring-chamber C, provided with discharge-cylinders I I' and plungers J J', a piston F, arranged in the measuring-chamber, a movable cut-off gate H, a rock-lever M, connected with the plungers J J', an arm M', connected with said cut-off gate, a crank-disk L, connected with the oscillating piston F, and a cam-groove O, engaging with the rock-lever M, substantially as set forth.

8. The combination, with the receptacle for the material to be canned, provided with an agitating device, and the measuring-chamber and piston, of a pump having its delivery-pipe opening into said receptacle, whereby the syrup or other liquid is delivered into said receptacle, substantially as set forth.

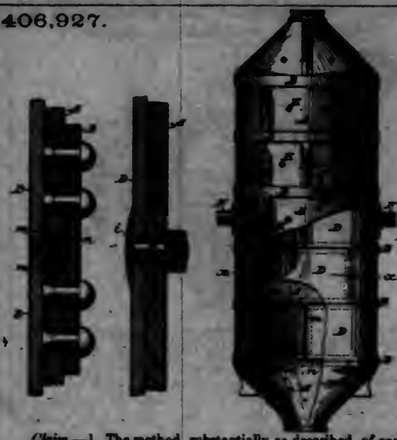
9. The combination, with the receptacle for the material to be canned, provided with an agitating device, and the measuring-chamber and piston, of a pump working in unison with said piston and having its delivery-pipe opening into said receptacle, whereby the syrup or other liquid is delivered in measured quantities into said receptacle and mixed therein with the material to be canned, substantially as set forth.

10. The combination, with the receptacle A, of the measuring-chamber C, having discharge-openings at its sides, cylinders I I', plungers J J', a rock-lever connected with the plungers, a liquid-pump, and an arm connected with the rock-lever, whereby said liquid-pump is actuated, substantially as set forth.

11. The combination, with the trough-shaped receptacle for the material to be canned, of a screw-conveyer arranged in said receptacle, a measuring-chamber arranged underneath the receptacle and communicating at its top therewith, a piston arranged in the measuring-chamber, a cut-off gate arranged between the measuring-chamber and the receptacle, and a discharge-cylinder and valve-plunger connected with the discharge-opening of the measuring-chamber, substantially as set forth.

406,927. METHOD OF CONSTRUCTING LEAD-LINED CONVEYING. JOHN HEMMERLE, Saugerties, N. Y. Filed Apr. 24, 1888. Serial No. 272,102. (No model.)

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Claim.—1. The method, substantially as described, of constructing a lead-lined iron vessel, which consists in forming inwardly-enlarged recesses in the inner face of the wall thereof, filling said recesses with lead, fixing to the inner face of the wall sheets of lead whose joints coincide with and partly overlap said lead-filled recesses, and finally uniting by fusion the edges of the lead lining-plates to the lead in the seams overlapped thereby.

2. The method, substantially as described, of constructing a lead-lined iron vessel, which consists in rabbeting the edges of the iron plates to constitute its walls, uniting said plates by riveting the same upon bands or strips of iron made to overlap the seams in such manner as that the rabbeted edges shall form an inwardly-enlarged recess along each seam, filling said inwardly-enlarged recesses with lead, bolting upon the inner face of each iron plate a sheet of lead of like configuration, but so enlarged as to partially overlap the lead-filled seams, covering the heads of the bolts with lead joined by fusion to the underlying sheet, and, finally, uniting the edges of each sheet of lead to the lead in the seams by fusion.

406,928. TRACTION-GRIPPER FOR CABLE RAILWAYS. MOSES A. MICHALIS, Allegheny, assignor of one-half to John T. Moore, Pittsburg, Pa. Original application filed May 15, 1888, Serial No. 273,961. Divided and this application filed July 10, 1888. Serial No. 279,515. (No model.)



Claim.—1. The combination, with a grip rail-brake having rotating brake-shaft, of a cable-grip and an interposed rock-shaft having a gearing, and a crank-arm for simultaneously and reversely operating both the grip and brake, substantially as and for the purposes described.

2. In a combined grip and brake mechanism for cable roads, the combination, with a bar which actuates the grip and a grip rail-brake, of an interposed rock-shaft for simultaneously and reversely operating both the grip and brake mechanism, substantially as and for the purposes described.

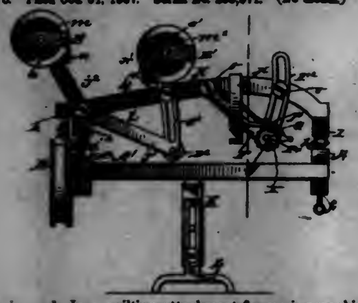
3. The combination of a grip mechanism, a brake mechanism, and an interposed rock-shaft connected with the gripper-bar, and skew-gearing for connecting the rock-shaft with the rotating shaft which actuates the rail-brakes, substantially as and for the purposes described.

4. In a gripping mechanism for cable railways, the combination of an angle-iron having a rigid jaw, cable-supporting rollers journaled in the ends of said angle-iron, and a movable jaw located beneath said rigid jaw intermediate of said rollers, substantially as and for the purposes specified.

5. In a cable-grip, the combination of the angle-plates d^9, having the fixed half-grip d^8, the cable guide-rollers d^{10}, and the intermediate movable shoe d^7, substantially as and for the purposes specified.

6. In a combined cable-grip and brake mechanism, the combination of the angle-plates d^9, having fixed half-grip d^8, movable shoe d^7, vertical brake-shafts d^{12} d^{13}, shaft d^5, and suitable gearing for connecting the parts, substantially as and for the purposes specified.

406,929. QUILTING-FRAME. URIAH E. MILLER, Kelly's Mill P. O. Filed Oct. 31, 1887. Serial No. 253,571. (No model.)



Claim.—1. In a quilting attachment for sewing-machines, the combination, with the frame C and the take-up roller G, adjustably journaled therein, of the brackets *j l*, adjustably secured to said frame, said brackets consisting of horizontal portions *j'*, extended below said frame and forming bearings for the lower roller D^2, upwardly-extending arms j^3 j^3, projecting above the frame and forming bearings for the lining-roller D and covering-roller D', respectively, said brackets pivoted, as at *o*, and means for securing said brackets in proper adjustment, substantially as and for the purpose set forth.

2. The combination, with the frame C, of the brackets *j l*, adjustably secured to said frame, said brackets consisting of horizontal portions *j'*, adapted to extend below said frame, said portions forming bearings for the lower roller D^2, upwardly-extending arms j^3 j^3, provided with bearings for the roller D, and upwardly-extended slotted arms provided with bearings in their upper ends for the roller D', said brackets being pivoted, as at *o*, and adjusted about said pivot by the screws *o'*, passing through the slotted arms, substantially as shown and described.

3. In a quilting attachment for sewing-machines, the carriage C and the quilting-fabric rollers, for the purpose specified, said carriage consisting, essentially, of the longitudinal beams 1 2 and the transverse beams 3 4, one of said beams 1 being stopped short of the cross-bar 3 and connected to said bar by a metal strip X, forming a space Y between said bars, whereby the carriage is adapted to be readily slipped under the needle-bar of the sewing-machine, substantially as and for the purpose described.

406,930. CAR-COUPLING. EDWARD E. MILLER, Avenue City, Mo. Filed Nov. 9, 1888. Serial No. 290,247. (No model.)



Claim.—1. The combination, with the draw-bar having an opening in its side, of a horizontal trip-lever K, having its end projecting into the link-throat, the vertical lever I, having a hook at its upper end, a horizontal hand-lever fulcrumed to the end of the car and having on the inner side a loosely-connected coupling-pin, and a rod extending to the top of the car, the outer end being formed as a handle and arranged to engage with the catch-lever, substantially as described.

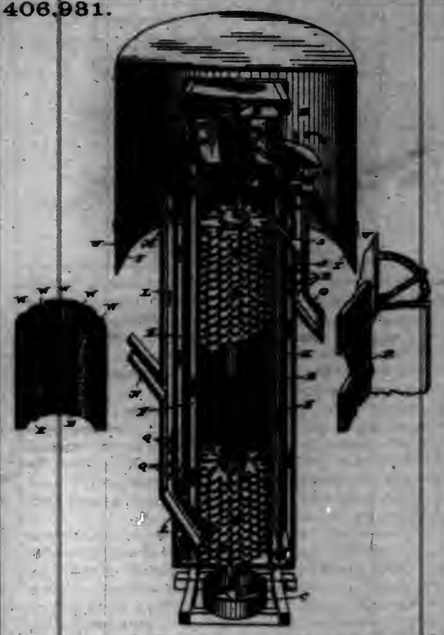
2. The combination, with the draw-bar having an opening in its side, of the horizontal trip-lever K, having one end projecting into the link-throat, the vertical lever I, having a hook at its upper end, a horizontal hand-lever supporting the coupling-pin, a spring arranged behind the catch-lever, and a positive-locking seat for the hand-lever arranged beside the catch-lever, substantially as and for the purpose described.

3. The combination, with the draw-bar having a contracted throat with pin-holes and shoulders *e*, of a perforated plate E, hung upon a horizontal bolt at the upper front end of the draw-bar and having its rear end extended past the narrow portion of the throat and weighted at its rear end, as described, to hold the link horizontal.

406,931. GRAIN-SCOURER. ARTHUR MOORE, Toronto, Ontario, Canada. Filed Dec. 1, 1888. Serial No. 292,492. (No model.)

Claim.—1. A vertical conveyer revolving within a perforated cylinder, in combination with a chamber surrounding said cylinder,

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an air-leg communicating with the said chamber at its upper end and with the cylinder at its lower end, and passage-ways designed to spout the grain into the bottom of the conveyer and to discharge it out of the top of the cylinder, substantially as and for the purpose specified.

2. A conveyer revolving within a perforated cylinder and having its outer edge formed into a series of fingers, each finger being curved or bent, so that one edge shall project slightly above the edge of the finger next to it, in combination with a chamber surrounding said cylinder, an air-leg communicating with the said chamber at its upper end and with the cylinder at its lower end, and passage-ways designed to spout the grain into one end of the conveyer and to discharge it out of the other end, substantially as and for the purpose specified.

3. A vertical conveyer revolving within a perforated cylinder and having its outer edge formed into a series of fingers, each finger being curved or bent, so that one edge shall project slightly above the edge of the finger next to it, in combination with a chamber surrounding said cylinder, an air-leg communicating with the said chamber at its upper end and with the cylinder at its lower end, and passage-ways designed to spout the grain into the bottom of the conveyer and to discharge it out of the top of the conveyer, substantially as and for the purpose specified.

4. A vertical conveyer revolving within a perforated cylinder and having its outer edge formed into a series of fingers, each finger being curved or bent, so that one edge shall project slightly above the edge of the finger next to it, in combination with a chamber surrounding said cylinder, an air-leg communicating with the said chamber at its upper end and with the cylinder at its lower end, and passage-ways designed to convey the grain into the bottom of the conveyer and to discharge it out of the top of the conveyer, and with a suction-fan located above the conveyer, substantially as and for the purpose specified.

5. A vertical conveyer revolving within a perforated cylinder contained within a chamber, a revolving suction-fan contained within the said chamber, in which it is designed to produce an upward draft and an outward blast through the sides of the said chamber, in combination with passage-ways designed to spout the grain into the bottom of the conveyer and to discharge it out of the top of the conveyer, and adjustable valves for regulating the passage of air into and from said chamber, substantially as and for the purpose specified.

6. A hollow shaft, a vertical conveyer carried by said shaft and revolving within a perforated cylinder contained within a chamber, the edges of the said conveyer being formed into a series of fingers, each finger being curved or bent so that one edge shall project slightly above the edge of the finger next to it, a revolving suction-fan contained within the said chamber, in which it is designed to produce an upward draft and an outward blast through the sides of the said chamber, in combination with passage-ways designed to spout the grain into the bottom of the conveyer and to discharge it out of the top of the conveyer, substantially as and for the purpose specified.

7. A vertical conveyer revolving within a perforated cylinder contained within a chamber, a revolving suction-fan contained within the said chamber, in which it is designed to produce an upward draft and an outward blast through the sides of the said chamber into the chamber H, communicating with the chamber K, connected to the chamber containing the conveyer at or near its bottom end, shelves projecting over the openings between the chamber H and chamber K being provided, in combination with passage-ways designed to spout the grain into the bottom of the conveyer and to discharge it out of the top of the conveyer, substantially as and for the purpose specified.

8. A vertical conveyer revolving within a perforated cylinder contained within a chamber, a revolving suction-fan contained within the said chamber, in which it is designed to produce an upward draft and an outward blast through the sides of the said chamber into the chamber H, communicating with the chamber K, connected to the chamber containing the conveyer at or near its bottom end, shelves projecting over the openings between the chamber H and chamber K being provided, in combination with said chambers H and K, the air-leg L, connected at its upper end with the chamber containing the suction-fan and at its bottom end with the interior of the perforated cylinder at or near the bottom end of the revolving conveyer, a grain-spout being connected to the said air-leg near its bottom, and a discharge-spout communicating with the interior of the perforated cylinder at the top of the conveyer, substantially as and for the purpose specified.

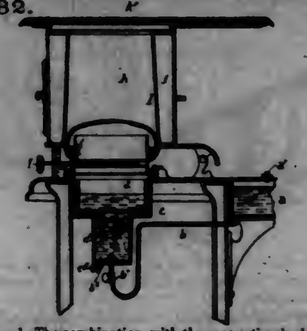
9. A vertical conveyer revolving within a perforated cylinder having a series of brushes arranged in it, said perforated cylinder being contained within a chamber, a revolving suction-fan contained within the said chamber, in which it is designed to produce an upward draft and an outward blast through the sides of the said chamber into the chamber H, arranged to communicate with the chamber K, connected to the chamber containing the conveyer at or near its bottom end, in combination with the air-leg L, connected at its upper end with the chamber containing the suction-fan and at its bottom end with the interior of the perforated cylinder at or near the bottom end of the revolving conveyer, a grain-spout being connected to the said air-leg near its bottom, and a discharge-spout communicating with the interior of the perforated cylinder at the top of the conveyer, substantially as and for the purpose specified.

10. A vertical conveyer revolving within a perforated cylinder having a series of brushes arranged in it, said perforated cylinder being contained within a chamber, a revolving suction-fan contained within the said chamber, in which it is designed to produce an upward draft and an outward blast through the sides of the said chamber into the chamber H, communicating with the chamber K, connected to the chamber containing the conveyer at or near its bottom end, in combination with an air-leg L, connected at its upper end with the chamber containing the suction-fan and at its bottom end with the interior of the perforated cylinder at or near the bottom end of the revolving conveyer, a grain-spout being connected to the said air-leg near its bottom and above one or more air-regulating valves placed on an opening or openings connecting the air-leg with the chamber K, and a discharge-spout communicating with the interior of the perforated cylinder at the top of the conveyer, substantially as and for the purpose specified.

11. A vertical conveyer revolving within a perforated cylinder having a series of brushes arranged in it, said perforated cylinder being contained within a chamber, a revolving suction-fan contained within the said chamber, in which it is designed to produce an upward draft and an outward blast through the sides of the said chamber into the chamber H, communicating with the chamber K, connected to the chamber containing the conveyer at or near its bottom end, in combination with the air-leg L, connected at its upper end with the chamber containing the suction-fan and at its bottom end with the interior of the perforated cylinder at or near the bottom end of the revolving conveyer, a grain-spout being connected to the said air-leg near its bottom and above one or more air-regulating valves placed on an opening or openings connecting the air-leg with the chamber K, and a discharge-spout communicating with the interior of the perforated cylinder at the top of the conveyer and with the interior of the chamber containing the suction-fans, regulating air valve or valves being placed on an opening or openings made between the discharge-spout and chamber K, below the passage-way leading between the said discharge-spout and the interior of the perforated cylinder, substantially as and for the purpose specified.

406,932. FEEDER FOR STOVES OR LAMPS FOR BURNING OIL. FRANK S. MOORE, Brooklyn, N. Y. Filed Sept. 6, 1888. Serial No. 284,736. (No model.) Patented in England Oct. 4, 1887, No. 12,626; in France Oct. 4, 1887, No. 183,933; in Belgium Oct. 4, 1887, No. 73,980, and in Germany Oct. 4, 1887, No. 44,361.

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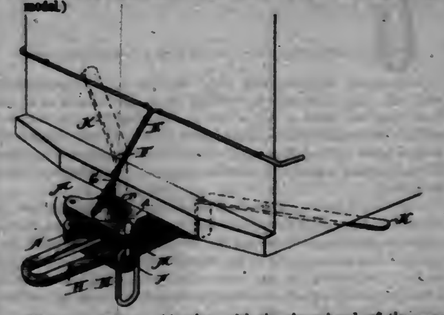
Claim.—1. The combination, with the supporting-body of a stove or lamp, of an oil-reservoir, a water-chamber having its bottom below the level of the oil in the reservoir, and the water-surface about on a level with the bottom of said reservoir, said chambers having a passage leading from one to the other, and a wick-receiving vessel above said water-chamber having a perforated partition between, substantially as described.

2. The oil-reservoir and a pipe leading therefrom, a water-chamber into which said pipe opens, the bottom of said water-chamber being lower than that of the oil-reservoir, a perforated partition above said water-chamber, and an oil-chamber above said partition, in combination, substantially as described.

3. An oil-reservoir, a water-chamber connected thereto, a partition partially dividing said water-chamber, and a perforated partition above said water-chamber, leaving an oil and wick space above, the combination being and operating substantially as described.

4. An oil-reservoir, a water-chamber connected thereto by a tube which enters said water-chamber below the level of the oil-reservoir, and an oil-chamber above said water-reservoir, the combination being substantially as described, whereby the weight of the oil and water column on one side will form a hydrostatic balance with the weight of the oil on the other side of the balance, and the combustion of oil above the water will cause a feeding of oil from the reservoir to renew the supply for combustion.

406,933. CAR-COUPLING. JOHN S. MORGAN and BENNET M. BEAN, McLEOD, Emporia, Kans. Filed Apr. 24, 1889. Serial No. 308,268. (No model.)



Claim.—1. The combination, with the draw-head, of the coupling-link mounted therein and the horizontal lever pivoted to the bottom of the car and having its inner end connected to the link, as set forth.

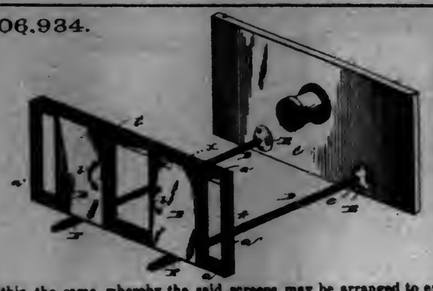
2. The combination, with the draw-head having a longitudinal slot in its bottom, of the coupling-link having a depending stud passing through the said longitudinal slot, and the horizontal lever having its inner end provided with a longitudinal slot engaging said stud, as set forth.

3. The combination of the draw-head having the barrel C on its upper side, the coupling-pin mounted in the draw-head and passing through said barrel, the rock-shaft mounted on the end of the car and connected with the coupling-pin, the link mounted in the draw-head, and the horizontal lever having its inner end connected with the link, as set forth.

406,934. CAMERA ATTACHMENT. OTTO L. MUSSEN, Grafton, Nebr., assignor of one-half to W. C. Powers, same place. Filed Jan. 15, 1889. Serial No. 296,206. (No model.)

Claim.—1. A frame mounted in front of a camera and capable of adjustment relative thereto, and provided with screens sliding

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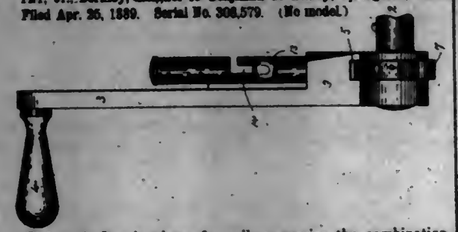
within the same, whereby the said screens may be arranged to exclude the light from any portion or portions of a negative, substantially as described.

2. The frame mounted in front of the camera and composed of the guide-strip, V-shaped in cross-section, and the side pieces connecting the ends of said strips, and the screens provided with corresponding V-shaped grooves, whereby they are retained between the guide-strips, substantially as and for the purpose described.

3. The herein-described camera attachment, comprising the rods D, adapted to be secured to the front of a camera, the rectangular frame A, provided with sleeves F, fitting upon the said rods and enabling the frame to be adjusted relatively to the camera, and the screens B, sliding within the frame, substantially as and for the purpose described.

4. The herein-described camera attachment, comprising the rods D, adapted to be secured to the front of a camera by the disks E, the rectangular frame A, consisting of the V-shaped guide-strips and the side pieces, the screens B, provided with corresponding V-shaped grooves, whereby they are retained in between the guide-strips, substantially as described.

406,935. SAFETY-CRANK FOR HAND-CARS. JEREMIAH MURPHY, Jr., Berkley, assignor to Benjamin F. Handy, Springfield, Mass. Filed Apr. 26, 1889. Serial No. 308,579. (No model.)



Claim.—1. In a hand-car for railway-service, the combination, with the main shaft and the toothed wheel fast thereon, of a crank loose upon said shaft, a hollow tube at right angles to the longitudinal axis of the shaft, and a single pawl within the tube and adapted to turn upon its own axis, as likewise to move endwise with respect to the toothed wheel with which it engages, substantially as herein described.

2. In a hand-car, a revoluble shaft provided with a wheel fast thereon, having oppositely undercut teeth, a crank loose thereon which straddles said wheel, and the reversible spring-actuated pawl having radial movement with the wheel, combined with a slotted tube which incloses the pawl, and an actuating-pin by which the pawl has axial as likewise endwise movement, substantially as herein set forth and specified.

3. In combination with a shaft 2, the crank 3, loose thereon, the tube 8, provided with the slots 14 15, and the wheel 6, with its teeth 7 oppositely undercut, a single pawl, 9, substantially as described, its spring, and an actuating-pin 13, moving in the slots, whereby the pawl is given axial as likewise endwise movement, substantially as and for purposes herein stated.

406,936. HOLDBACK FOR VEHICLES. JAMES R. MCALISTER, Rome, N. Y. Filed Jan. 5, 1889. Serial No. 295,531. (No model.)

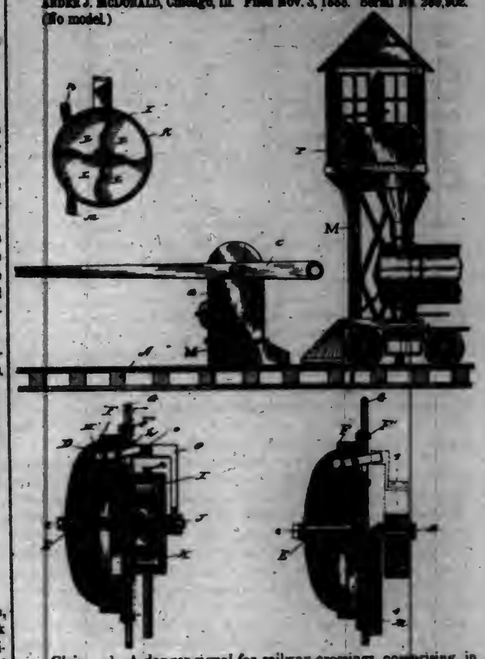


Claim.—1. In a holdback for vehicles, the combination of a holdback-iron having an eye and an extended shank, and a thill having a vertically-inclined slot formed transversely in a diagonal direction across the length of the thill, and in which the shank is snugly fitted, substantially as and for the purpose described.

2. In a holdback for vehicles, the combination of a thill, a plate fixed laterally thereto and having a vertically-inclined slot formed transversely therein in a diagonal direction across its length, and a holdback-iron having an eye for the attachment of a strap and an extended shank adapted to be fitted in said diagonal slot, substantially as described.

3. In a holdback for vehicles, the combination of a plate fixed laterally to a thill and having a longitudinal recess and a transverse diagonal slot, a spring housed in said recess and arranged across the slot at one side thereof, and a holdback-iron fitted in said slot in position for the spring to impinge against one of the lateral faces thereof, substantially as and for the purpose described.

406,937. DANGER-SIGNAL FOR RAILWAY-CROSSINGS. ALEXANDER J. MCDONALD, Chicago, Ill. Filed Nov. 3, 1888. Serial No. 289,902. (No model.)



Claim.—1. A danger-signal for railway-crossings, comprising, in combination, a bell secured at the crossing, a power-wheel having radial curved spokes and adapted through suitable mechanism and by its rotation to operate the bell-clapper, and an air-pump and connections whereby to rotate said power-wheel, substantially as described.

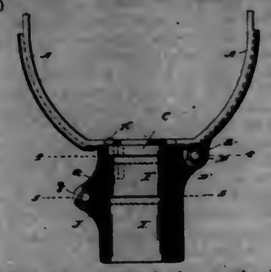
2. A danger-signal for railway-crossings, comprising, in combination, a railway gate-post, a bell secured thereto, a power-wheel having radial curved spokes and inclosed in a case attached to the gate-post, an arm secured upon the axle of said wheel and adapted to engage the bell-clapper, an air-pump having a pipe communicating with the interior of said case whereby to deliver air under pressure to said power-wheel to impart motion thereto, and said arm adapted to engage with the bell-clapper, substantially as described.

3. A danger-signal for railway-gates, comprising, in combination, a bell secured to the gate-post and having a clapper secured upon a pivoted arm projected to the interior of said post, a power-wheel secured within the gate-post and adapted to be rotated by pneumatic pressure and having an arm or lever secured to its axle and rotating therewith and adapted to engage the arm of the bell-clapper when the power-wheel is rotated, substantially as described.

4. A danger-signal for railway-crossings, having, in combination, a power-wheel having an arm or lever adapted to engage the bell-clapper, an inclosing-case surrounding said wheel and forming therewith air-chambers, and a suitable air-pump and connections whereby to supply said chambers with air under pressure to rotate the wheel, substantially as described.

5. In danger-signals for railway-crossings, the combination, with a bell, of an inclosed power-wheel, an arm secured to the axle of said wheel, a clapper secured to an arm projected into the path of the axle-arm, an air-supply pipe, and a discharge-pipe, each communicating with the interior of said casing, substantially as described.

406,938. RAILWAY-GATE. ALEXANDER J. MCDONALD and ROBERT B. BRENT, Chicago, Ill., assignors to the Pneumatic Power and Railroad Gate Company, same place. Filed Nov. 3, 1888. Serial No. 289,905. (No model.)



Claim.—1. A railway-gate arm having a section hinged or pivoted to the base and body of the arm, respectively, and breakable fastenings for said hinged section, substantially as described.

2. A railway-gate arm constructed of tubular sections, one of said sections being connected to the base and to an adjoining section by hinge-joints and break-pins to secure the swinging section normally in line with the base, substantially as described.

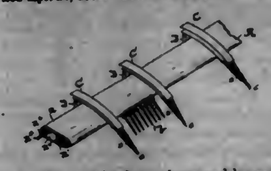
406,939. TOBOGGAN. JOHN R. MCLAREN, Jr., Montreal, Quebec, Canada, assignor to Charles H. Emerson & Co., Burlington, Vt. Filed Mar. 16, 1886. Serial No. 195,464. (No model.) Patented in Canada Dec. 23, 1884, No. 20,785.



Claim.—1. A toboggan having a portion of its bearing stripe or ribs thicker than those intervening, all of said strips or ribs being firmly secured by means of cross-bars and having the faces of said thick strips projected below the faces of the thin strips, substantially as set forth.

2. A toboggan having flat bearing strips or ribs thicker than the interrening strips, the whole being secured by means of cross-bars and having the faces of the thick strips projected below the faces of the thin strips, substantially as shown and described.

406,940. PAPER-RULING MACHINE. WILLIAM MCNAB, Holyoke, Mass. Filed Apr. 27, 1888. Serial No. 272,017. (No model.)



Claim.—1. The combined pen-clamp and beam for paper-ruling machines herein described, consisting of a clamp composed of two members constructed to hold between them at their front side a series of single ruling-pens and having adjustably secured to their rear side a series of extended pen-holders, arranged and operating substantially as set forth, whereby the use of an independent beam is avoided.

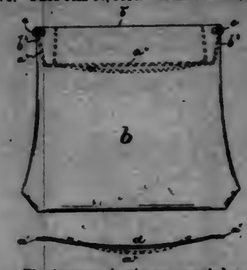
2. The pen-clamp for paper-ruling machines herein described composed of the two members a a', having at their front edges corresponding plane surfaces, whereby they are adapted to hold the single pens b between them, and having standards D adjustably secured directly to their rear edges, said standards having adjustably secured thereto the extended pen-holders C, combined and operating substantially as set forth, whereby the use of an independent beam is avoided.

3. The combination, with pen-clamp A, having the T-shaped opening a^4 in its rear side, of standards D, bolts d^2, having T-shaped heads inserted in said opening a^4 and having their shanks passed through said standards, nuts d^3 upon the outer ends of said bolts, and extended pen-holders C, mounted upon said standards, substantially as and for the purpose set forth.

4. The combination, with pen-clamp A, of standards D, adjustably secured thereto, said standards terminating at their upper ends in ears d^1, extended pen-holders C, having lugs c^3, located between said ears, and screw d^3, inserted through one of said ears and through said lug c^3, substantially as and for the purpose described.

5. The combination, with clamp A and standard D, secured to the rear side thereof, of pen-holder C, mounted upon said standard, said pen-holder consisting of strips c' c^2, connected together near their rear ends by plate c^4, said strip c' projecting at its rear end beyond the end of strip c^2, substantially as and for the purpose described.

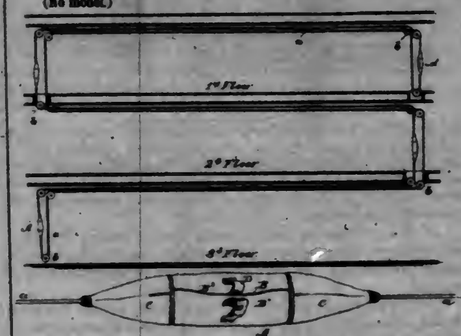
406,941. TOBACCO-POUCH. CHARLES L. HEISLER, Clinton, Essex County, N. J. Filed Jan. 17, 1889. Serial No. 296,629. (No model.)



Claim.—1. The improved tobacco-pouch herein described, combining therein a bag-body, a spring having a central portion lying within the bag and extending straight across the mouth parallel with the edges b', a little away from said edges, the bulk of the body portion of the bag being free from said spring, the said spring being bent near its opposite extremities, forming extensions a' a', which engage the ends b^2 b^2 of the bag, and clips fastening the said extensions to the said ends, substantially as and for the purposes set forth.

2. The combination, with a bag-body, of a spring having its ends bent toward the mouth of the bag, and having additional bends or turns at suitable points in its length to secure a lateral movement of the central part of the spring when the extremities thereof are pressed toward one another, substantially as and for the purposes set forth.

406,942. STORE-SERVICE APPARATUS. NELSON NEWMAN, Springfield, Ill., assignor of two-thirds to George A. Sanders and Samuel J. Willett, both of same place. Filed Mar. 28, 1888. Serial No. 305,272. (No model.)



Claim.—1. The combination, in store-service apparatus, with an endless traveling cable and suitable supporting-pulleys therefor, of an elastic carrier or pouch interposed between the sections of the cable and forming a continuation thereof, the elasticity of the pouch serving to compensate for the variations in the length of the cable due to atmospheric changes, substantially as described.

2. In store-service apparatus, the combination with an endless traveling cable and suitable supporting-pulleys therefor, of an elastic pouch or carrier interposed between the sections of the cable and forming a continuation thereof, said pouch or carrier having the mouth B, the finger-loops on opposite sides of the mouth to distend and open the same, and the end pieces C, the latter being attached to the ends of the said cable, substantially as described.

406,948. SAD-IRON. SPARROW M. NICKERSON and CALVIN J. HOLMAN, Chicago, Ill.; said Holman assignor of one-half his right to William Kaplinger, same place. Filed Apr. 20, 1888. Serial No. 271,208. (No model.)

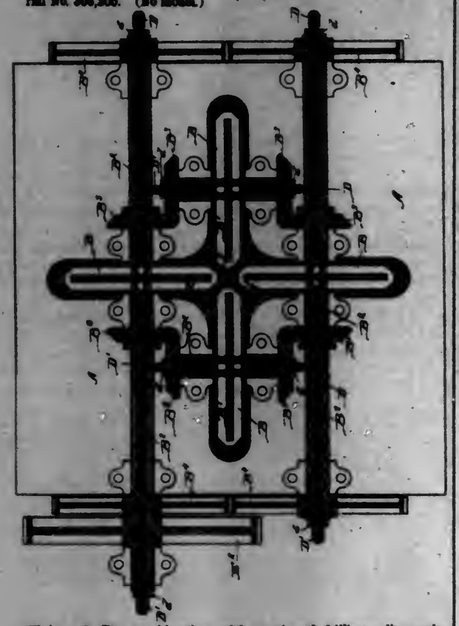


Claim.—1. A hollow internally-heated sad-iron having vertical ribs b projecting from the side walls and formed integral with the face of the iron, and perforations between said ribs, substantially as described.

2. A hollow internally-heated sad-iron provided with vertical ribs *b* and horizontal ribs *c*, projecting from the side walls of the iron, the vertical ribs being integral with the face of the iron, substantially as described.

406,944. APPARATUS FOR MANUFACTURING RAILROAD-RAILS.

Edwin Norton and John G. Hodgson, Maywood, assignors to said Norton, and Oliver W. Norton, Chicago, Ill. Filed Apr. 6, 1889. Serial No. 306,205. (No model.)



Claim.—1. The combination, with a series of chilling-rolls revolving together with a space or passage between them, of a pouring vessel or nozzle for directing a stream of molten metal between said rolls, substantially as specified.

2. The combination, with a pouring-vessel, of a series of chilling-rolls having working-faces and bevel rolling or stop faces to limit the extent to which said rolls may approach each other, substantially as specified.

3. The combination, with a pouring-vessel, of a series of hollow chilling-rolls revolving together and having a space or passage for the stream of molten metal between them, and means for causing water to circulate through said hollow rolls, substantially as specified.

4. The combination, with a pouring-vessel, of a series of chilling-rolls revolving together, and a second series of rolls, between which the rail or bar passes as it issues from said chilling-rolls, substantially as specified.

5. The apparatus for producing metal bars directly from molten metal, consisting in a series of rolls revolving together, with a space or passage between them and having their axes in a common horizontal plane, so that a vertical stream of metal may be passed between them tangentially and be compressed and set thereby, substantially as specified.

6. The combination, with a series of chilling-rolls arranged to revolve together, with their axes in a horizontal plane, of means for directing a continuous stream of molten metal tangentially between said rolls, so that the stream of metal will be compressed from all sides while in a fluid or setting state, substantially as specified.

7. The combination, with a series of chilling-rolls revolving together, with a space or passage between them, of a pouring vessel or nozzle for directing a stream of molten metal between said rolls, said rolls revolving at an equal or greater surface speed than the velocity of the flowing metal, substantially as specified.

8. The combination, with a pouring-vessel, of a series of chilling-rolls having working-faces and bevel rolling or stop faces to limit the extent to which said rolls may approach each other, said rolls revolving at an equal or greater surface speed than the velocity of the flowing metal, substantially as specified.

9. The combination, with a pouring-vessel, of a series of hollow chilling-rolls revolving together and having a space or passage for the stream of molten metal between them, and means for causing water to circulate through said hollow rolls, said rolls revolving at an equal or greater surface speed than the velocity of the flowing metal, substantially as specified.

10. The combination, with a pouring-vessel, of a series of chilling-rolls revolving together, and a second series of rolls between which the rail or bar passes as it issues from said chilling-rolls, said rolls revolving at an equal or greater surface speed than the velocity of the flowing metal, substantially as specified.

11. The combination, with a series of chilling-rolls arranged to revolve together, with their axes in a horizontal plane, of means for directing a continuous stream of molten metal tangentially between said rolls, so that the stream of metal will be compressed from all sides while in a fluid or setting state, said rolls revolving at an equal or greater surface speed than the flowing metal, substantially as specified.

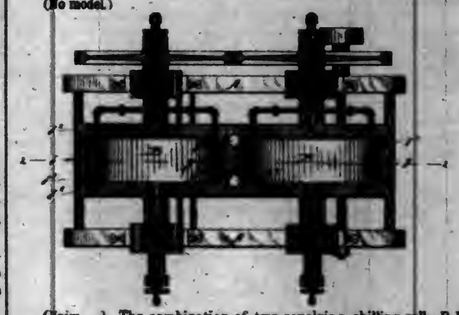
12. The combination, with a pouring-vessel, of a series of rolls revolving together, a second series of rolls between which the rail or bar passes as it issues from said first series of rolls, a curved guide, and a horizontal series of rolls, substantially as specified.

13. The combination, with a series of rolls having their axes arranged in a horizontal plane, a pouring-vessel arranged above and between them in a direction tangential to the peripheries of all of said rolls, and a second series of rolls arranged directly beneath the first series, of a curved guide consisting of a series of rolls arranged in a curve, and a horizontal conveyer consisting of a horizontal series of rolls, substantially as specified.

14. In an apparatus for rolling fluid metal, the combination, with chilling-rolls, of a pouring nozzle or vessel above and between them, and a guide or shield C^9, surrounding said pouring-vessel and extending down to near the meeting-point of the rolls, substantially as specified.

406,945. APPARATUS FOR MAKING SHEET METAL.

Edwin Norton and John G. Hodgson, Maywood, assignors to said Norton, and Oliver W. Norton, Chicago, Ill. Filed Apr. 6, 1889. Serial No. 306,206. (No model.)



Claim.—1. The combination of two revolving chilling-rolls B B with a pouring-vessel above and between them, said rolls B B having working-faces *b b* and rolling faces or collars b^9 b^9, serving as stops to regulate the space between the working-faces of the rolls, substantially as specified.

2. The combination, with a pair of revolving chilling-rolls, of a pouring-nozzle arranged above and between them, said rolls having working-faces and rolling-faces outside of the working-faces, and grooves or recesses between the rolling-faces and the working-faces, substantially as specified.

3. The combination, with a pair of revolving chilling-rolls, of a pouring-vessel arranged above and between them, and a second pair of rolls G G, substantially as specified.

4. The combination, with a pair of chilling-rolls and pouring-vessel arranged above and between them, of a curved guide for deflecting the sheet-metal strip from the vertical to a horizontal direction, and a second pair of rolls G G, to which the strip is delivered by said guide, substantially as specified.

5. The apparatus for producing sheet metal in a continuous strip as it is poured from a vessel, consisting in a pair of chilling-rolls, between which the molten metal is poured and by which it is set, in combination with a pair of finishing-rolls to farther roll the metal while it is still hot, substantially as specified.

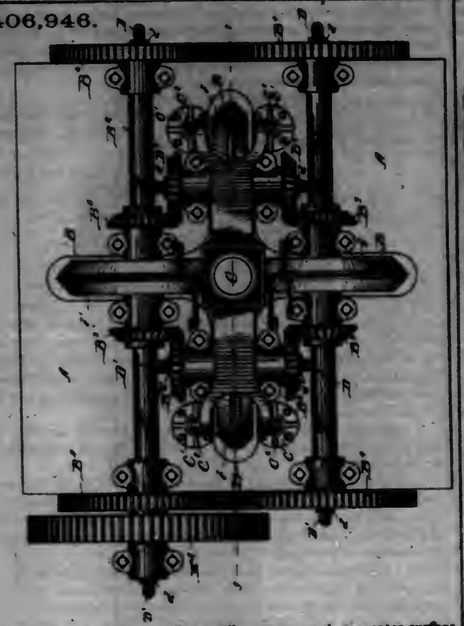
6. The combination, with a pouring-vessel and chilling-rolls, of finishing-rolls, substantially as specified.

406,946. MANUFACTURE OF METAL BARS OR RAILS.

Edwin Norton and John G. Hodgson, Maywood, assignors to said Norton, and Oliver W. Norton, Chicago, Ill. Filed Apr. 11, 1889. Serial No. 306,868. (No model.)

Claim.—1. The process of manufacturing metal bars directly from molten metal, consisting in pouring a continuous stream of molten metal and compressing, setting, and shaping the metal on all sides into a bar by contact with continuously-moving chilling and

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compressing surfaces or rolls traveling at an equal or greater surface speed than the velocity of the flowing stream of metal, substantially as specified.

2. The process of manufacturing metal bars directly from molten metal, consisting in pouring a continuous stream of molten metal and compressing, setting, and shaping the metal on all sides into a bar by contact with continuously-moving chilling and compressing surfaces or rolls traveling at an equal or greater surface speed than the velocity of the flowing stream of metal, and then rolling the bar as it issues and while still at a high heat, substantially as specified.

3. The process of manufacturing metal bars directly from molten metal, consisting in pouring a continuous stream of molten metal between a converging series of continuously-revolving chilling-rolls revolving together and surrounding the passing stream on all sides, and thus compressing, setting, and shaping the constantly-moving stream into a bar or rail, substantially as specified.

4. The process of manufacturing metal bars directly from molten metal, consisting in pouring a continuous stream of molten metal between a converging series of continuously-revolving chilling-rolls revolving together and surrounding the passing stream on all sides, and thus compressing, setting, and shaping the constantly-moving stream into a bar or rail, and then farther rolling the bar as it issues and while still at a high heat, substantially as specified.

5. The process of manufacturing metal bars directly from molten metal, consisting in pouring a continuous stream of molten metal directly downward between continuously-revolving chilling-rolls, and thereby compressing, setting, and shaping the metal stream into a bar, then deflecting or curving the hot bar as it issues in a horizontal direction, and finally rolling and straightening it while it is still hot, substantially as specified.

406,947. APPARATUS FOR ROLLING SHEET METAL FROM FLUID METAL.

Edwin Norton, Maywood, assignor to himself, and Oliver W. Norton, Chicago, Ill. Filed May 9, 1889. Serial No. 310,109. (No model.)

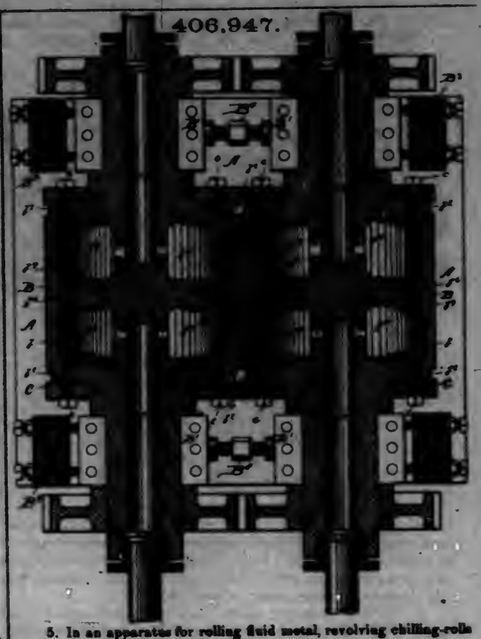
Claim.—1. In an apparatus for rolling fluid metal, the combination, with the revolving chilling-rolls B B, of removable and interchangeable stop-collars to govern the space between the rolls, whereby the same rolls are adapted to produce metal of different thickness, substantially as specified.

2. The revolving chilling-rolls B B, furnished with removable segmental stop-collars C C, substantially as specified.

3. The revolving chilling-rolls B B, in combination with a pouring-vessel D, said rolls being mounted in adjustable bearings and furnished with removable stop-collars C C, substantially as specified.

4. In an apparatus for rolling fluid metal, the hollow chilling-rolls B B, having a central web with water-passages through the same for deflecting water and supporting the peripheral wall of the rolls, substantially as specified.

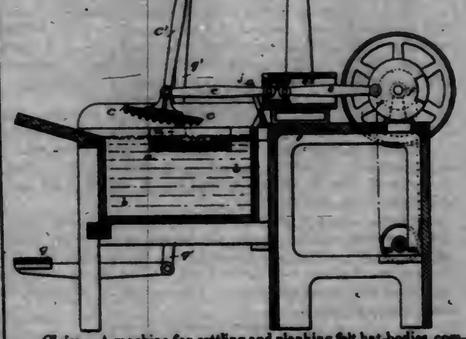
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5. In an apparatus for rolling fluid metal, revolving chilling-rolls B B, having a hollow space in the interior thereof, divided into two or more compartments by a central web, said web having openings through the same for the passage of the water, and said rolls having hollow shafts for the entry and exit of the water, substantially as specified.

406,948. MACHINE FOR SETTLING AND PLANKING FELT HAT-BODIES.

Joseph Oldham and Orlando Oldham, Denton, County of Lancaster, England. Filed July 26, 1887. Serial No. 245,260. (No model.) Patented in England Jan. 8, 1887, No. 312.



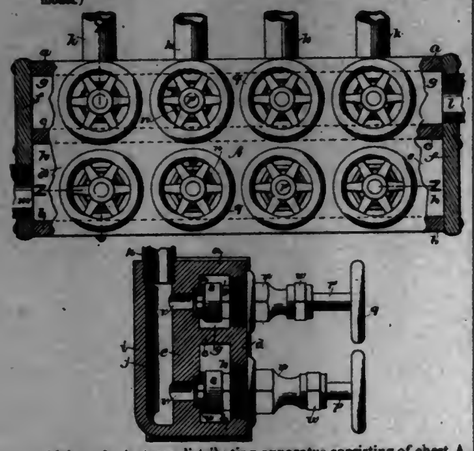
Claim.—A machine for settling and planking felt hat-bodies, comprising the hot-water tub *b*, the immersed platform *c*, having a concave curved working-surface, the elevated rock-shaft *d*, pivotal connections between said rock-shaft and plate, the jointed pitman *e e*, mechanism, substantially in the horizontal plane of the tub, for reciprocating said pitman, a horizontal guide for limiting its vibrations, the treadle *g*, pitmen *g'*, connecting said treadle and rock-shaft, and stops *i*, attached to said pitmen *g'* and engaging with the top of the tub, substantially as hereinbefore specified.

406,949. NON-CONDUCTIVE AND ELASTIC WATER-PROOF COMPOSITION FOR PIPE-JOINTS, &c.

Richard Overlade, Boston, Mass. Filed May 1, 1888. Serial No. 309,268. (No specimens.)

Claim.—An elastic water-proof insulating material, consisting of siliceous sand, resin, bolted whiting, cement, ground glass, oxide of iron, suboxide of copper, raw linseed-oil, and sulphuric acid, compounded substantially in the manner and proportions specified.

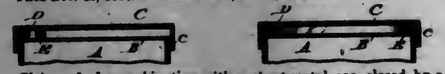
406,950. **STEAM-HEATING APPARATUS.** HENRY PARSONS, Marlborough, Mass. Filed May 3, 1888. Serial No. 273,256. (No model.)



Claim.—1. A steam-distributing apparatus consisting of chest A, having two compartments, with an inlet-pipe for each said compartment, chambers formed in said chest and each communicating with both said compartments, a valve to control each said passage from said compartments to said chambers, and conduits connecting with said chambers, all substantially as specified.

2. The combination of chest A, having compartments *g k*, and inlets *l m* for said compartments, respectively, chambers *j*, each having passage *v*, communicating with said compartments, valves *s*, arranged to control said passages, and conduits *k*, communicating with chambers *j*, all substantially as specified.

406,951. **CAN-OPENER.** GEORGE H. PERKINS, Philadelphia, Pa. Filed Nov. 12, 1888. Serial No. 290,561. (No model.)



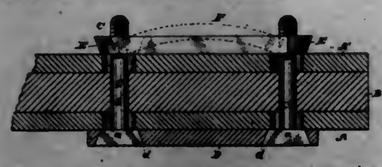
Claim.—1. In combination with a sheet-metal can closed by a head of thin metal, an exterior removable cover from the substance of the head of which a barb or cutter is struck and bent in, substantially as set forth.

2. In combination with a sheet-metal can closed by a head of thin metal, an exterior removable cover the head of which is provided with a fixed inwardly-facing barb or cutter, and a packing interposed between the thin head of the can and the inner face of the head of the cover, substantially as and for the purposes set forth.

406,952. **THIOPARATOLUIDINE.** WILLIAM PFITZINGER, Elberfeld, Prussia, Germany, assignor to the Farbenfabriken, vormals Fr. Bayer & Co., same place. Filed Mar. 9, 1889. Serial No. 302,860. (No specimens.) Patented in England Apr. 23, 1888, No. 6,319; in France May 11, 1888, No. 190,535; in Spain Oct. 17, 1888, No. 8,634, and in Italy Oct. 30, 1888, No. 24,011.

Claim.—The new thioparatoluidine herein described, which is nearly insoluble in boiling alcohol and concentrated hydrogen chloride infusible at 220° centigrade, combining with fuming sulphuric acid to form a new sulphonic acid, the soda salt of which possesses the property of dyeing unmordanted cotton yellow in an alkaline bath, substantially as described.

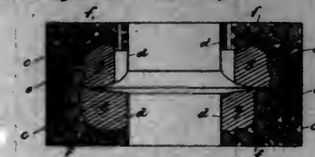
406,953. **NUT-LOCK.** ALEXANDER J. PERRY, U. S. Army. Filed Mar. 23, 1887. Serial No. 232,154. (No model.)



Claim.—1. The combination, substantially as herein set forth, of the bolts, their beveled nuts, and the semi-rigid endwise-expansible locking-plate or bar forked at opposite ends and having beveled tines which correspond with and snugly fit the beveled nuts when the locking-plate is expanded to its greatest extent.

2. The combination, substantially as herein set forth, of the abutting rails, the fish-plates having elongated apertures for the bolts and overlapping the abutting ends of the rails, the bolts having angular beveled heads, and the bolt-locking plate having angular beveled recesses closed on all sides for the bolt-heads.

406,954. **MILLSTONE.** CHARLES J. POTTER, Hoxton Hall, Newcastle, England. Filed July 10, 1888. Serial No. 279,536. (No model.) Patented in England Nov. 2, 1887, No. 14,950.



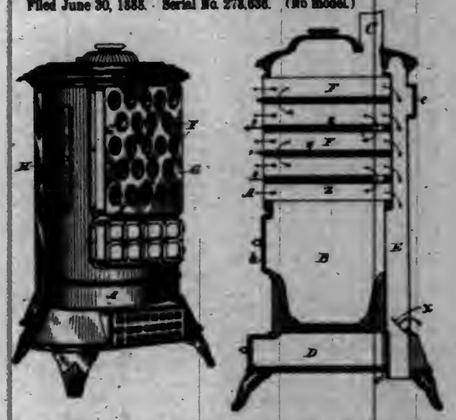
Claim.—1. A millstone consisting of the combination of small irregular lumps of emery having spaces or interstices intervening between their edges, and cement interposed between the lumps and filling said spaces or interstices, said millstone presenting on its working face alternate portions of stone and cement, substantially as and for the purpose specified.

2. A millstone built up of lumps of emery cemented together, the size of the lumps decreasing from the center outward, substantially as described.

3. A millstone consisting of the combination of lumps of emery separated from each other, as described, leaving spaces or interstices intervening between their edges, Portland cement interposed between the lumps and filling the spaces, and an inclosing metallic cylinder, substantially as described.

4. A millstone having an interior ring or burr of solid stone and an outer ring filled up with small irregular lumps of emery, and cement interposed between the lumps, substantially as described.

406,955. **HEATING-STOVE.** EBENEZER W. RIDER, Racine, Wis. Filed June 30, 1888. Serial No. 278,636. (No model.)



Claim.—1. In a stove, as described, having a vertical air-flue at the rear, horizontal air-pipes detachably connected at their rear ends with said flue and open at the front ends, and the plate G, said pipes being secured at this point to the said plate, whereby they can be easily attached to or removed from the stove for repair.

2. In a stove, horizontal air-pipes F, located over the fire-chamber, and movable plates Z between the said flues and the rear vertical air-pipe E, provided with the damper *x*, and communicating with said horizontal air-pipes, substantially as and for the purposes set forth.

3. In a stove, substantially as described, a series of open-ended air-pipes placed over or above the fire-chamber and combined with movable plates located between said flues, whereby a direct or zigzag passage for the volatile products of combustion is afforded.

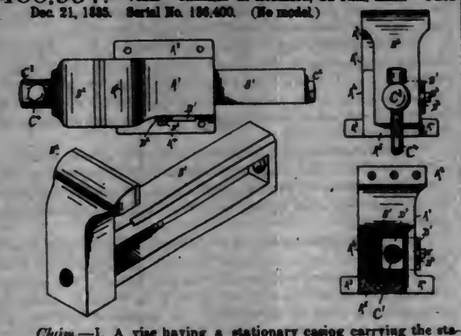
406,956. **GAGE-COCK.** DUGALD H. ROBERTS, Williamsburg, Ontario, Canada, assignor of one-half to William D. McRae, same place. Filed Sept. 12, 1888. Serial No. 285,238. (No model.)



Claim.—1. A gage-cock having two or more seats formed on the face of its pivoted head, in combination with a partition located between the passage-way and the pin on which the head is pivoted, substantially as and for the purpose specified.

2. A gage-cock having two or more seats formed on the face of its pivoted head, sides J formed on the said head to support the pin D, which passes through a hole E, made in the boiler portion A of the cock, in combination with the curved partition H, made in the head C and projecting into a curved recess I, located between the passage-way B and the pin D, as shown.

406,957. **VISE.** CHARLES H. ROBINSON, St. Paul, Minn. Filed Dec. 21, 1885. Serial No. 186,400. (No model.)



Claim.—1. A vise having a stationary casing carrying the stationary jaw, and a slide reciprocating with reference to said casing, said slide carrying the movable jaw, in combination with an operating-rod extending along the line of the reciprocation of said slide, said rod being arranged at one side of the longitudinal center of said slide, and said jaws being arranged centrally with reference to said rod, projecting outwardly beyond one side of said slide, whereby they are adapted to hold work vertically and parallelly, substantially as set forth.

2. A vise having a stationary casing carrying the stationary jaw, and a slide reciprocating with reference to said casing, said slide carrying the movable jaw, and said slide being open on one side throughout its length, in combination with an operating-rod extending along the line of the reciprocation of said slide, said rod having its outer edge nearly in line with the edges of the open side of the said slide, said jaws being arranged centrally with reference to said rod and projecting outwardly beyond said open side of the slide, substantially as set forth.

3. A vise having a stationary casing carrying the stationary jaw, and a slide reciprocating in said casing and carrying the movable jaw, said slide having its front side open throughout its length, and having close and solid top and bottom and rear side, in combination with an operating-rod journaled at opposite ends in the ends of said slide close to the open side thereof, whereby the outer edge of said rod is brought nearly in line with the edges of said open side, said jaws being arranged centrally with reference to said rod and projecting outwardly beyond said open side of the slide, and a forward extension formed on said casing composed of a bottom plate extending beneath the bottom of the slide and of the width thereof and of a side wall extending along the closed side of the slide and of the height thereof, substantially as set forth.

406,958. **CAR-BRAKE.** CHARLES V. ROTE, Lancaster, Pa., assignor of part to Bernard J. McGrann, Eugene G. Smith, and Elmer Ellsworth Snyder, same place. Filed Nov. 9, 1888. Serial No. 290,374. (No model.)

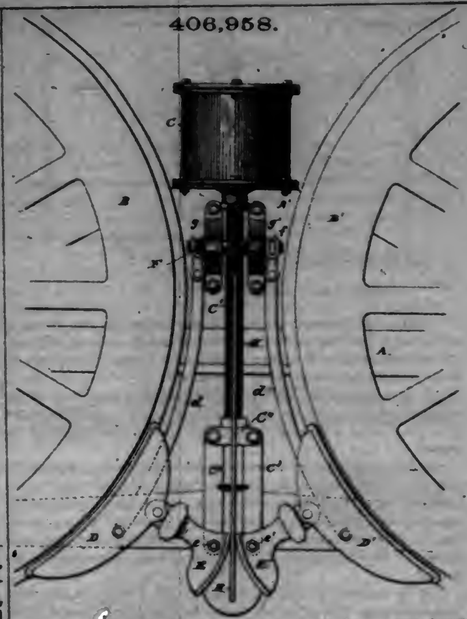
Claim.—1. The combination, with the brake-shoes and the cam blocks or levers for throwing the shoes into frictional engagement with the wheels, of the rock-shaft and interposed longitudinally-movable rod or bar connected therewith, substantially as described.

2. The combination of the brake-shoes, the cam blocks or levers for actuating said shoes, the interposed rod or bar, the suspending links or rods to which said cam-blocks are connected, and the rock-shaft to which said rods are attached, substantially as described.

3. The combination, with the brake-shoes and their actuating cam-blocks, of the links or rods and rock-shaft on which said brake-shoes are suspended, and the bar interposed between the cam-blocks and connected with and operated from the brake-shoes, substantially as described.

4. The combination, with the brake-shoes and the mechanism for throwing the same into engagement with the wheels, of a rock-shaft and rods connected therewith for upholding said shoes, and a sliding bar actuated by the frictional engagement of the shoes to increase

406,958.



the pressure of the brake-shoes on the wheels, also connected with said rock-shaft, substantially as described.

5. The combination, with the brake-shoes and their actuating cam blocks or levers, of the suspending-rods and the rock-shaft to which said rods are connected, the bar interposed between the cam-blocks and connected with and operated from the rock-shaft, as described.

406,959. **STAIR-ROD SECURER.** MADISON RUSS, Philadelphia, Pa. Filed Jan. 29, 1889. Serial No. 296,013. (No model.)



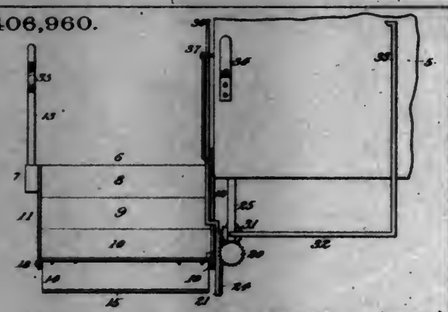
Claim.—1. The combination, to form a stair-rod securer, of a keeper having clips which form a guideway, and forwardly-bent rod-engaging bottom and top portions, the latter of which embodies an aperture, and a key mounted in said keeper, formed with a head which presents through said aperture, and with prongs, one of which is engaged in the aforesaid guideway and another adapted to engage a staple, substantially as set forth.

2. The combination, to form a stair-rod securer, of a keeper having staple-slots formed in it, and forwardly-bent rod-engaging bottom and top portions, the latter of which embodies an aperture, and a key mounted in said keeper and formed with a head which presents through said aperture, and with prongs, one of which is engaged in the aforesaid guideway and another adapted to engage a staple, substantially as set forth.

3. In a stair-rod securer, in combination, a keeper provided with devices to engage a stair-rod, clips cut from the substance of the keeper and bent up to form holders for a key, a staple adapted to present through the slot formed by the folding in of a clip, and a key mounted in said keeper, the handle of which projects through an aperture in the upper portion thereof, one prong of which is engaged with said clips and the other adapted to engage with said staple, as specified.

406,960. **CAR STEP AND PLATFORM SAFETY-BAR.** JOHN C. F. SCHENCK, Moline, Ill. Filed Mar. 26, 1889. Serial No. 304,766. (No model.)

406,960.



Claim.—1. In a railway-car, an extensible folding step journaled to the permanent step, with a cog-wheel attached to one of said journals engaging cogs on a segment operated by a lever, with means for locking said lever, substantially as described.

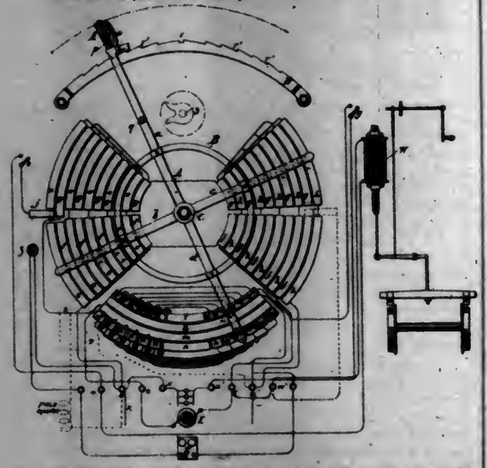
2. In a railway-car, a safety-bar attached to a crank-arm having engagement by cog-wheels with the cogs upon a segment operated by a lever, with means of locking said lever, substantially as described.

3. In combination with a railway-car and with the platform and permanent steps thereof, an extensible folding step journaled to the permanent step, with a cog-wheel attached to one of said journals engaging cogs on a segment, and a safety-bar attached to a crank-arm having engagement through cog-wheels with cogs upon said segment, such segment being operated by a lever, substantially as described.

4. In combination with a railway-car and with the platform and permanent steps thereof, an extensible folding step journaled to the permanent step, and a safety-bar attached to the car, with positively-operating devices for folding said step and placing said bar horizontally over the same and supporting such bar, and with positively-operating devices for unfolding said step and removing said safety-bar, substantially as described.

5. In combination with a railway-car and with the platform and permanent steps thereof, a folding step journaled to the lower permanent step, with a positive device for folding such step against the riser of said lower permanent step and temporarily widening the tread of the next permanent upper step, a horizontal guard-bar projecting from the lower surface of the inner edge of the tread of such folding step, and a horizontal safety-bar supported above and across such step, with a positive device for placing said bar in such position or removing it therefrom, substantially as described.

406,961. REGULATING DEVICE FOR ELECTRIC-RAILWAY CARS. WILLIAM M. SCHLESINGER, Philadelphia, Pa. Filed Nov. 6, 1886. Serial No. 218,131. (No model.)



Claim.—1. In an electric-motor circuit, the combination, with circuit making and breaking devices, a pole-changer, a regulator for controlling the speed of the motor, and a regulator for controlling the resistance of the derived circuit containing lamps, of an operating-lever controlling the said devices, the said lever serving also, when operated, to move the brushes of the motor, whereby the moving of the lever to different positions will start the motor, break the circuit of the same, reverse the motor, determine its speed, set the brushes for different directions of the current, and regulate the brilliancy of electric lights.

2. In an electric-motor circuit, the combination, with a speed-regulator for the motor, and a regulator for controlling the resistance of a derived circuit containing lamps, of an operating-lever controlling both the said regulators, whereby the resistance of the lamp-circuit will be adjusted to the speed of the motor.

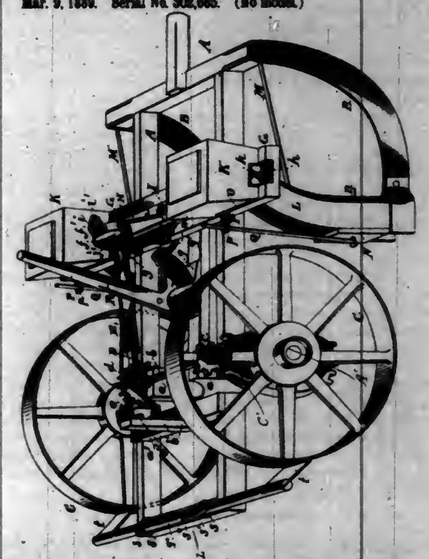
3. In an electric-motor apparatus, the combination, with strips e f f g g h h, contacts l l' l^2, &c., and n n' n^2, &c., strips k and m, bridges i i, and lever A, of contact-piece j, switch s, and brake W, and electrical connections, as and for the purpose set forth.

4. In an electric-motor apparatus, the combination, with circuit making and breaking devices, of the prolonged strip g, contact-piece j, bridge i, lever A, brake W, and electrical connections to the brake, the extension of strip g and the contact-piece j being so placed as to be bridged only after the circuit-controller is on open circuit, as and for the purpose set forth.

5. The combination, with a circuit-controlling lever, as A, of a spring-catch, as o, and a segmental bar, as D, provided with notches r and r', the notch r' being central and adapted to resist the motion of the lever only when moving from the center, as and for the purpose set forth.

6. The combination, with a circuit-controlling lever, as A, of a spring-catch, as o, and a segmental bar, as D, having a point at which the lever is adapted to rest normally, the said bar being also provided with notches which allow the lever to be pushed rapidly toward the said point, but resist its movement in the opposite direction, as and for the purpose set forth.

406,962. SEED-PLANTER. ALBERT C. SMITH, Sardinia, Ind. Filed Mar. 9, 1889. Serial No. 302,665. (No model.)

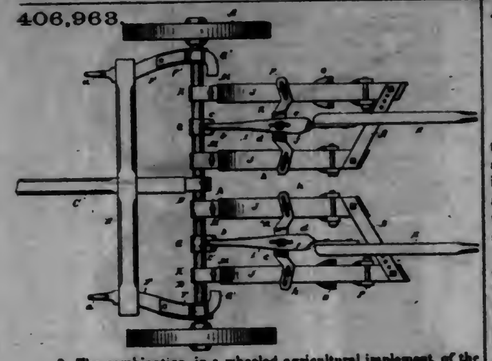


Claim.—The comoination, with the frame A, the transverse bar C, having longitudinal groove A, and the dropper-bar adapted to reciprocate in said groove, of the runners, the open standards L, secured to the under side of the bar G and at their lower ends secured to the runners, the rods M, connecting the standards with the runners, the plates N, secured to the rear sides of the standards, the longitudinal shafts n, having bearings in said plates and the front walls of the standards, the rearwardly-extending plate P, secured to the dropper-bar, and the upright arms Q, connecting said plates P with the rear ends of the shafts n, substantially as described.

406,963. WHEELED AGRICULTURAL IMPLEMENT. NAPOLEON B. SPRADLEY, Ashville, Ala. Filed May 2, 1889. Serial No. 309,330. (No model.)

Claim.—1. The combination of the axle, the wheels, the perforated lugs rigidly secured to said axle, the agricultural implement loosely secured to said axle, the saddle secured to said implement, the slotted handles loosely attached to said saddle and having their ends pivoted in said lugs, and the supports rigidly secured to said axle, substantially as described.

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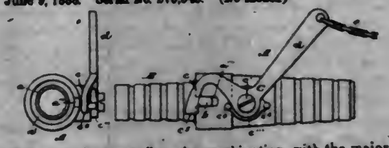


2. The combination, in a wheeled agricultural implement, of the beams J, having the half-clips adjustably secured to the axle, the saddles adjustably secured to said beams, the handles pivotally secured to said axle and adjustably secured to said saddles, and the supports rigidly secured to the axle, whereby a cultivator, a harrow, or a rake may be attached to said axle and a vertical and lateral movement imparted thereto, substantially as described.

3. A wheeled frame adapted to carry various agricultural implements, in combination with the tug-irons, the bars F', extended to form beam-supports in the rear of the axle, the collars having perforated lugs projecting therefrom, and the agricultural implement adjustably attached to said axle, and perforated lugs, whereby said implement may be moved laterally and vertically, substantially as described.

4. The combination, in a wheeled agricultural implement, with the axle having the perforated lugs projecting therefrom, the handles loosely secured to said lugs, and the supports fixed to said axle, of the beams having the perforated half-clips movable on the axle, the adjustable perforated bar connecting said beams, and the adjustable saddles secured to said beams, substantially as described.

406,964. COUPLING FOR HOSE, PIPES, &c. GEORGE A. STEDMAN, New York, N. Y., and DAVID R. STEDMAN, Elizabeth, N. J. Filed June 9, 1888. Serial No. 276,545. (No model.)



Claim.—1. In a coupling, the combination, with the major member provided with a packed socket to receive the minor member and a guide-notch a''' to receive a lug on said minor member, of the minor member provided with a lug b to engage said notch a''', a spring hook-latch mounted on said major member, with its hooked extremity arranged to stand normally across the notch a''' and to engage said lug b when the latter stands in said notch, and the chain or connector c, attached at one end to the arm of said hook-latch and at the other end to the car carrying said latch, substantially as set forth.

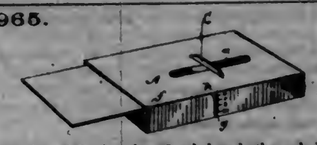
2. In a coupling, the combination, with the major member provided with a packed socket to receive the minor member and with a notch a''', of the spring hook-latch mounted on said major member, its hook having a broad end c^4, which projects beyond the end of said major member and stands normally across and closes the entrance of said notch a''', and the minor member of the coupling provided with a lug b, which engages said notch a''' when said latch is displaced, said lug b standing in front of the broad end of the latch when the minor member is inserted in the major member, whereby partial rotation of the minor member causes said lug to lift and displace said latch and thus open the entrance to said notch, as set forth.

3. The combination, in an interchangeable coupling for use on cars, of the major member A, provided with a socket to receive the minor member and with a notch a''' to receive a stud on the said minor member, the spring hook-latch mounted on said major member, and the double-ended minor member constructed alike at both ends and provided at each end with a stud to engage the notch a''' in the major member, said latch-hook being arranged to engage said stud when the members of the coupling are engaged, as set forth.

406,965. CARD OR TICKET BOX. JOSEPH STOVEL and JOHN W. GORLEY, Toronto, Ontario, Canada. Filed Mar. 26, 1889. Serial No. 305,194. (No model.)

Claim.—1. A box A, designed to contain a given number of

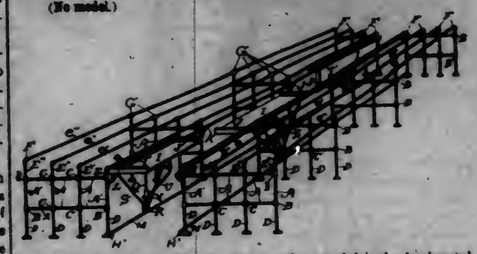
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tickets or cards and having slots f and d made through its ends and a slot a in its bottom, a plate B, having a flange b formed on one end of it, and a button or projection C, batting against the bottom of the box and connected with the plate B by a suitable shank passing through the slot a, in combination with the top G, false top D, and spring or springs E, substantially as and for the purpose specified.

2. A box A, designed to contain a given number of tickets or cards and having slots f and d made through its ends and a slot a in its bottom, a plate B, having a flange b formed on one end of it, and a button or projection C, batting against the bottom of the box and connected with the plate B by a suitable shank passing through the slot a, in combination with the false top D, provided with a pin g, to project through the slot h, the spring or springs E, and the top G, substantially as and for the purpose specified.

406,966. MAIL-BAG RACK AND DISTRIBUTING-TABLE. STEPHEN STRANGE, Los Angeles, Cal. Filed Sept. 11, 1888. Serial No. 285,130. (No model.)



Claim.—1. In a mail-bag rack, beats for sustaining the horizontal rods, consisting of pipe-sections secured together by pipe-fittings to form a horizontally-united series of perpendicular rectangular frames, a series of pipe-sections of equal lengths screwed into the fittings on the lower side of such frames to form the legs of the bent, and pipe-sections of relatively-increasing length screwed into the fittings on the upper side of the frames and projecting upward therefrom to form supports for the horizontal rods of the rack, and provided with pipe-fittings in which such rods may be secured.

2. A mail-bag rack comprising the combination of two rack-frames fixed parallel to each other with a narrow unobstructed aisle between them, and one or more running distributing half-tables movably mounted upon each rack-frame and projecting therefrom half-way across the aisle to form with its opposing half-table a complete distributing-table when the opposing tables are made to coincide with each other.

3. In a mail-bag rack such as set forth, the combination of two rack-frames fixed parallel to each other with a narrow unobstructed aisle between them, a movable running distributing half-table, provided along the back and ends of its upper face with upright guards J, square at the free edge of the table, mounted upon one of such frames and projecting therefrom half-way across such aisle, and a like table similarly mounted upon the other frame.

4. In a mail-bag rack such as set forth, the combination, with the frame of the rack, of the upright bracket-arms L, secured to the bents of the rack and projecting therefrom into the aisle, the upper running-rail, greater in diameter than the bracket-arms, secured upon the top ends of such arms, the lower running-rail M, two perpendicular grooved wheels O, secured to the under side of the table near to the rear edge thereof with their front peripheries on a line parallel to the axis of the table, two vertical anti-friction rollers secured to the under side of the table, with their rear peripheries on a line parallel with the axis of the table and with a space between the line of the front peripheries of the grooved wheels and the rear peripheries of the anti-friction rollers approximately equal to the diameter of the upper running-rail, a perpendicular support-rod secured to the under side of the table and having at its lower end a grooved caster-wheel resting upon the top of the lower running-rail, longitudinal braces secured to the lower end of the support-rod and to the bottom of the table, and a lateral support-brace secured to the support-rod and extending therefrom up to the under side of the table.

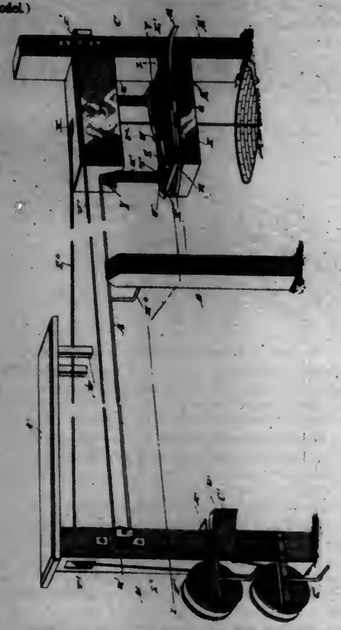
5. In a mail-bag rack such as set forth, the combination of the running movable half-table secured to the rack by suitable mechanism and divided longitudinally near the rear edge between such mechanism and the front edge of the table, hinges securing the front and

rear sections of the table together, the perpendicular support-rod, and the lateral support-brace U, swiveled upon the support-rod.

6. In a mail-bag rack such as set forth, the combination, with the running-rails of the rear section I', of the table rigidly secured to the running-rails by suitable hangers, such hangers, the front section I of the table hinged to the rear section, and a swiveled support-brace secured to the rear section of the table.

7. In a mail-bag rack such as set forth, the combination, with the running-rail of the rear section I', of the running table provided with suitable hanging mechanism, the front section I of the running table hinged to the rear section, the perpendicular support-rod Q, the T-fittings V V', forming journals around the support-rod Q, the collar W and set-screw X, the collar Y, lateral support-brace U, with the convex head *a* on its upper end, and the catch-plate Z, secured to the table and having its under face beveled at the ends and having a slight depression *b* in the under face of the catch-plate.

406,967. **WATER ELEVATOR AND CARRIER.** WILLIAM S. TALLEY, Mountain Home, Ark. Filed Nov. 21, 1888. Serial No. 291,440. (No model.)



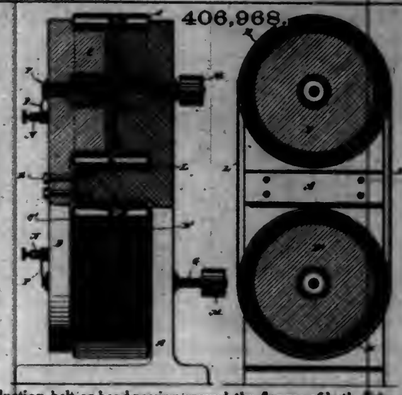
Claim.—1. The combination of the posts B C, the wire stretched between said posts, the carriage traveling on said wire and having the sheave X, the spring-actuated clutch-levers pivoted on the carriage, the catch T, having the hooks U V at opposite ends and pivoted also on the carriage, the keepers attached to the posts and adapted to engage the hooks, cams on said posts to automatically engage and open the clutch-levers, the elevating-cord guided through the carriage and on the sheave X, and the block attached to said cord and adapted to be engaged by the clutch-levers and to trip the catch T, substantially as described.

2. The combination, in a water elevator and carrier, of the post B, having the cams D' on its inner side, the post C, having the cleats M' on opposite sides, the wire stretched between said posts, the traveling carriage suspended from said wire, and the spring-pressed clutch-levers fulcrumed to the carriage, said clutch-levers having the cams L on one end adapted to engage the cams D' and the diverging arms M at the opposite end to engage the cleats M', for the purpose set forth, substantially as described.

406,968. **DYNAMO-ELECTRIC MACHINE.** NIKOLA TESLA, New York, N. Y., assignor of two-thirds to Charles F. Peck, Englewood, N. J., and Alfred S. Brown, New York, N. Y. Filed Mar. 23, 1889. Serial No. 304,498. (No model.)

Claim.—1. An electrical generator consisting of the combination, with two rotary conductors mounted in unipolar fields, of a flexible conductor or belt passing around the peripheries of said conductors, as herein set forth.

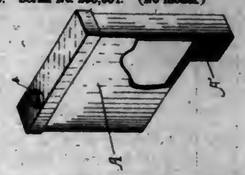
2. The combination, with two rotary conducting-disks having peripheral flanges and mounted in unipolar fields, of a flexible conducting belt or band passing around the flanges of both disks, as set forth.



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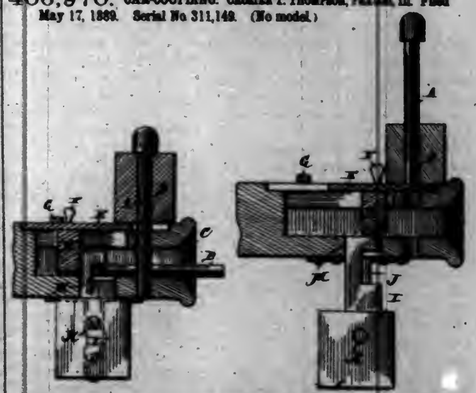
3. The combination of independent sets of field-magnets adapted to maintain unipolar fields, conducting-disks mounted to rotate in said fields, independent driving mechanism for each disk, and a flexible conducting belt or band passing around the peripheries of the disks, as set forth.

406,969. **SECONDARY BATTERY.** CHARLES H. THOMPSON, Detroit, Mich., assignor to the Woodward Electrical Company, same place. Filed Jan. 7, 1889. Serial No. 295,631. (No model.)



Claim.—The method of producing a support for an electrode, which consists in first making a portion of a suitable metallic substance with a solid projection for a terminal, then producing the rest of the metal in a highly porous or cellular body by running the metallic substance among the refractory mass afterward to be removed, substantially as described.

406,970. **CAR-COUPLING.** CROMER T. THOMPSON, Peters, Ill. Filed May 17, 1889. Serial No. 311,149. (No model.)

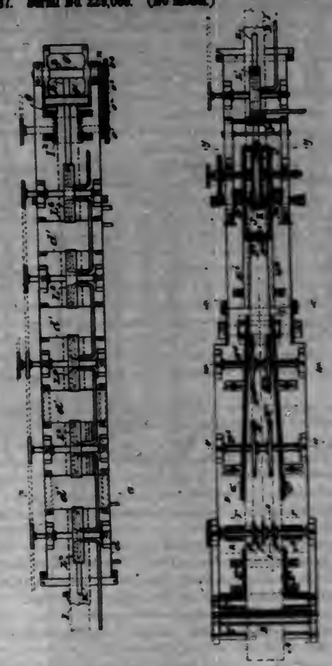


Claim.—1. The combination, with the draw-head, of the pin-support sliding in the upper portion thereof, and provided with a stop on its upper side and a depending lug on its under side, as and for the purpose set forth.

2. The combination, with the draw-head, of the link-holder playing vertically through the bottom of the same, and provided near its upper end with a notch adapted to receive the end of the coupling-link, as set forth.

3. The combination, with the draw-head and the brackets L on the under side of the same, of the link-holder playing through the draw-head and having lateral studs engaging the brackets L, and provided with a notch near its upper end adapted to receive the end of the coupling-link, as set forth.

406,971. **MACHINE FOR MANUFACTURING WRAPPERS FOR BOTTLES, &c.** ROBERT H. THOMPSON and SILAS H. WILSON, Brooklyn, N. Y.; said Wilson assignor to Henry D. Harris, same place. Filed Feb. 26, 1887. Serial No. 229,060. (No model.)



Claim.—1. In a machine for folding paper or like material, the combination of a bed, a carrying-belt traveling over a portion of said bed, holding-wheels for maintaining the material to be folded in contact with the bed before reaching said belt, folders having their opposite sides flared decreasingly from one end toward the other, and other folders having flanges of increasing projection from one end to the other, substantially as specified.

2. In a machine for folding paper and like material, the combination of a bed, a carrying-belt traveling over a portion of the bed, adjustable holding-wheels for maintaining the material to be folded in contact with the bed before reaching the belt, folders having their opposite sides flared decreasingly from one end toward the other, and other folders having flanges of increasing projection from one end to the other, substantially as specified.

3. In a machine for folding paper and like material, the combination of a bed, converging folders having their opposite sides flared decreasingly from one end toward the other, other folders which have on their opposite sides flanges which increase in projection and extend progressively nearer the bed from one end toward the other, and means, substantially such as described, for adjusting the two sets of folders independently of each other, substantially as specified.

4. In a machine for folding paper and like material, the combination of a bed, a pair of folders having their opposite sides converging and flared decreasingly from one end toward the other, holding-wheels above the bed between these folders, another pair of folders having on their opposite sides flanges which increase in projection and extend progressively near the bed from one end toward the other, and a belt traveling over the bed between the last-mentioned pair of folders, substantially as specified.

5. In a machine for folding paper and like material, the combination of folders, substantially such as described, and mechanism, substantially such as described, for applying paste or other adhesive substance to a strip and directing said strip to material folded by said folders at the meeting edges of said material, and drying-rollers, substantially as specified.

6. In a machine for folding paper or like material, the combination of folders, substantially such as described, mechanism, substantially such as described, for applying adhesive material to a strip and directing said strip to the folded material, and a steam-chest and rollers for holding the folded material in proximity thereto, substantially as specified.

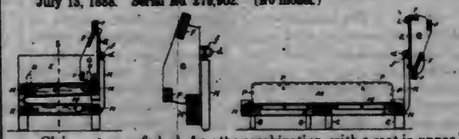
7. In a machine for folding paper and like material, the combination of folders, substantially such as described, mechanism, substantially such as described, for applying adhesive material to a strip for uniting the meeting edges of the folded material, a steam-chest, and steam-bridges for drying the material, substantially as specified.

406,972. **QUEEN-REARING CHAMBER.** GEORGE L. TINKER, New Philadelphia, assignor of one-half to Winfield S. Kline, Bolivar, Ohio. Filed Feb. 11, 1889. Serial No. 300,087. (No model.)



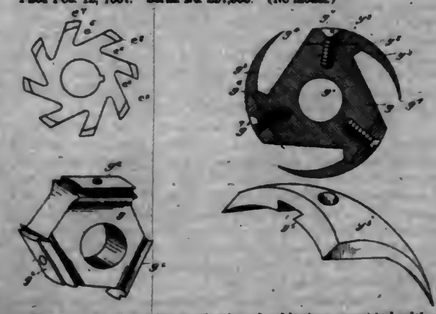
Claim.—A queen-rearing chamber consisting of a rectangular box having a solid vertical partition dividing the box into compartments, said box having queen-bee openings leading to each compartment, supports in each compartment for suspending a comb frame, a comb-frame on such supports, and a top and bottom each consisting of a series of longitudinal slats spaced apart, having in their edges saw-kerfs carrying narrow strips of perforated metal, substantially as and for the purpose set forth.

406,973. **SOFA-BED.** EMIL TOLENDORFF, Cambridge, Mass. Filed July 13, 1888. Serial No. 279,902. (No model.)



Claim.—In a sofa-bed, &c., the combination, with a seat in upper and lower seat-sections hinged together at the front side of the seat and when opened into a horizontal position adapted to be suitably supported, of posts H at the back edge and at opposite ends of the lower seat-section, vertical links *f f*, held on the upper ends of posts H, a chambered back-frame F, to contain bedclothes and adapted to be opened and closed, horizontal links *d d*, held on the back-frame F and engaging the links *f* of posts H, whereby the back-frame can be swung upon the posts to bring either side thereof to the front, substantially as described, for the purpose specified.

406,974. **SOLE AND HEEL TRIMMER.** CHARLES H. TRASK, Lynn, Mass., assignor to the Duplex Shoe Trimmer Company, Portland, Me. Filed Feb. 12, 1887. Serial No. 227,355. (No model.)

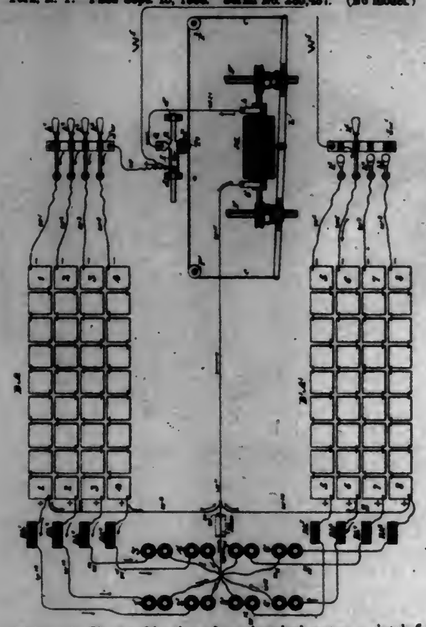


Claim.—1. The trimmer having the block *g*, provided with a shaft-hole *g'* and a straight dovetail projection *g²*, with the trimming-

blades g^6, having dovetail recesses g^8 and stops g^9, and fastening-screws g^7, substantially as described.

2. The curved trimming-blade made thick at the butt and having a straight dovetail recess g^8 therein, gradually reduced in thickness from its butt to form the sharp cutting-edge g^4.

406,975. MOTIVE APPARATUS AND TIME-INDICATOR FOR USE WITH SECONDARY BATTERIES. JEAN T. VAN GEMPEL, New York, N. Y. Filed Sept. 15, 1888. Serial No. 285,457. (No model.)



Claim.—1. The combination of an electrical motor, a clutch for connecting the armature-shaft of said motor to mechanism to be driven, mechanism connected to said clutch for operating it, a generator of electricity, and electrical connections operatively attached to the clutch-controlling mechanism for connecting and disconnecting said generator to and from the motor at the same time that the armature is connected or disconnected to and from the mechanism to be driven, substantially as described.

2. The combination of the following elements: an electrical motor having its armature connected by clutch mechanism to one or more axles or shafts of mechanism to be driven, a clutch-operating shaft and lever for connecting and disconnecting said parts, an electrical generator for operating said motor, electrical connections carried by a rack geared to said shaft for connecting and disconnecting said battery to and from the motor at the same time the clutch mechanism is operated, substantially as described.

3. The combination of the following elements: an electrical motor, a battery divided into sections having multiple-arc connection at one end to one pole of said motor, a series of switches, one for each section of battery, said switches having a common connection to the remaining poles of the battery and motor, clutch mechanism for connecting the armature of the motor to mechanism to be driven, mechanical connections for manipulating said clutch mechanism, and a circuit-controller connected to the clutch-operating mechanism for making and breaking the circuit from the battery to the motor at the same time the armature thereof is connected or disconnected from the mechanism to be driven, substantially as described.

4. The combination of two or more series of storage-batteries or analogous electrical generators, a translating device as a motor, a switch for each series of generators, a time mechanism having mechanical connection with a series of dial-indicators, one for each series of generators, a magnet for each series of dial-indicators, said magnets being in circuit with their respective batteries, and mechanical connection between the armature of the magnets, the dial-indicator shafts, and the clock mechanism for operatively connecting or disconnecting said dial-indicators according as the batteries are cut in or out, substantially as described.

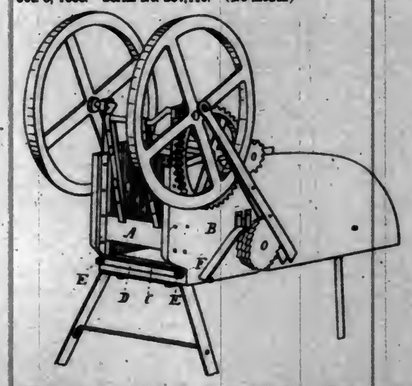
5. The combination of two or more series of storage-batteries having multiple-arc connection at one end of each series to one pole of a motor, with multiple-arc connections from the other end through individual switches, and a single conductor to the remaining pole of the motor, with a time mechanism operatively connected to a main shaft, and electro-magnets located in derived circuits from the first-named several multiple-arc branches and connections in the nature of clutch mechanism between the armatures, the dial-shafts, and the clock-motor shaft, substantially as described.

6. The combination of the following elements: a generator of electricity in circuit with a motor having its armature connected normally to loose-running worm-gear, a mechanical clutch for connecting said armature to a car-axle, a series of levers and connections for operating said clutch mechanism, electrical connections attached to the clutch-operating mechanism for connecting and disconnecting the generator to and from the circuit, and a time-indicator controlled by a magnet located in the battery-circuit, the whole being connected and operating substantially as described.

7. In an apparatus for propelling tram-cars or analogous vehicles, the combination of the following elements: a motor operatively connected by loose running-gear to one or more car-axles, a clutch mechanism, a series of levers, pulleys, and connecting mechanism for operating said clutch mechanism and connecting and disconnecting the motor and the car-axle, a circuit-controller in circuit with a battery for connecting and disconnecting said battery and motor electrically, a time mechanism having a shaft geared to its hour-hand shaft, a dial-hand attached to a counter-shaft normally disconnected from the first-named shaft, intervening clutch mechanism for connecting the shaft and counter-shafting, an armature-lever connected to said clutch mechanism, and an electro-magnet energized by the current from the battery when operatively connected to the motor, substantially as described.

8. In an apparatus for propelling tram-cars or analogous vehicles by electricity, the combination of the following elements: a motor operatively connected to one or more axles of the car by clutch mechanism, levers and connections for manipulating said clutch mechanism, a circuit-controller attached to the clutch-controlling mechanism, a series of batteries having multiple-arc connection through the motor, independent switches for controlling the independent series of battery, a time mechanism, a dial-indicator, one for each series of battery, an electro-magnet operatively connected to each dial-indicator shaft and adapted to be connected or disconnected to a shaft of the time mechanism, said electro-magnets being located in derived circuits from their respective battery-circuits, substantially as described.

406,976. FEED-CUTTER. MORRIS VOICE, Lapeer, Mich. Filed Oct. 3, 1888. Serial No. 287,119. (No model.)



Claim.—1. In a feed-cutter, the combination, with the reciprocating knife, of the stationary cutting-bar C and the adjustable bar D, having its inner upper edge beveled, as at a, and secured in front of and parallel with the bar C by means of the bolts, nuts, and elastic washers, substantially as and for the purpose specified.

2. In a feed-cutter, the combination, with the box and the reciprocating cutting-knife, of the stationary bar C, the bar D, parallel therewith and beveled upon its inner upper face, as shown at a, the bolts passed loosely through the bar D, through the bar C, and into the box, and the elastic washers on said bolts between the nut thereon and the bar D, substantially as and for the purpose specified.

406,977. SOIL OR SEWER PIPE FLUSHING DEVICE. JAMES J. WADE, Chicago, Ill. Filed Nov. 12, 1888. Serial No. 290,515. (No model.)

Claim.—1. A soil, drain, or sewer pipe having in the wall thereof a cavity communicating with said pipe through a long narrow orifice, said cavity emerging at the outer surface of the soil-pipe, in combination with a water-pipe communicating with said cavity at its outer end, substantially as set forth.

2. A soil, drain, or sewer pipe having in the wall thereof a cavity communicating with the interior of the soil-pipe and opening exteriorly through the wall of said pipe, said cavity having the orifice through which it opens into the soil-pipe long and narrow, and said cavity diminishing in respect to the longer dimension and increasing in respect to the narrower dimension of said orifice as it extends outward, in combination with a water-pipe communicating with the orifice at its outer end, substantially as set forth.

3. A soil, drain, or sewer pipe having in the wall thereof a cavity communicating with the interior of the pipe through a long narrow orifice extending longitudinally with respect to said pipe, the direction of said cavity at the point where it emerges through said orifice into the soil-pipe being approximately tangential to the inner surface of said soil-pipe, in combination with a water-pipe communicating with said cavity at its outer end, substantially as set forth.

4. A soil, drain, or sewer pipe having in the wall thereof a cavity which communicates with the interior of said pipe, said cavity extending from said orifice back spirally about the pipe, in combination with a water-pipe communicating with said cavity at its outer end, substantially as set forth.

5. A soil, drain, or sewer pipe having in the wall thereof a cavity which communicates with the interior of the pipe through a long narrow opening, and which has adjacent to such cavity a hand-hole provided with a removable cover, in combination with a water-pipe which communicates with the cavity at its outer end, substantially as set forth.

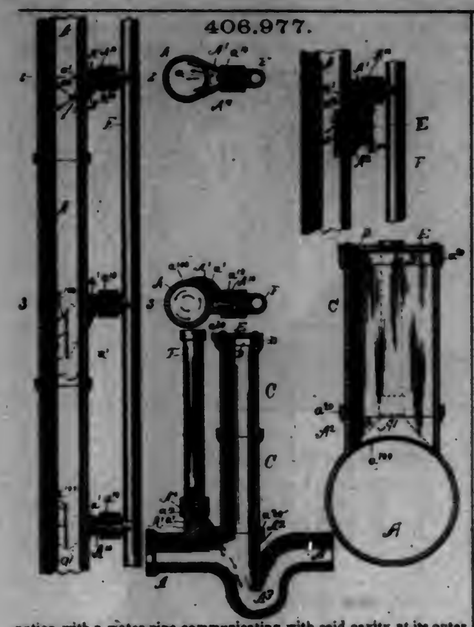
6. In combination with a soil, drain, or sewer pipe having the boss A^3 for the purpose of a hand-hole, said boss terminating outwardly in a hub a^{20}, the thimble D, equal in height to the interior of the hub, and the cover E, consisting of a flat disk adapted to be secured to the outer edge of the thimble, substantially as set forth.

406,978. UNDERGROUND CONDUIT. THOMAS WALLACE, New York, N. Y., assignor to the New York Atmospheric Conduit Electric Light and Power Company, of West Virginia. Filed Jan. 26, 1889. Serial No. 297,569. (No model.)

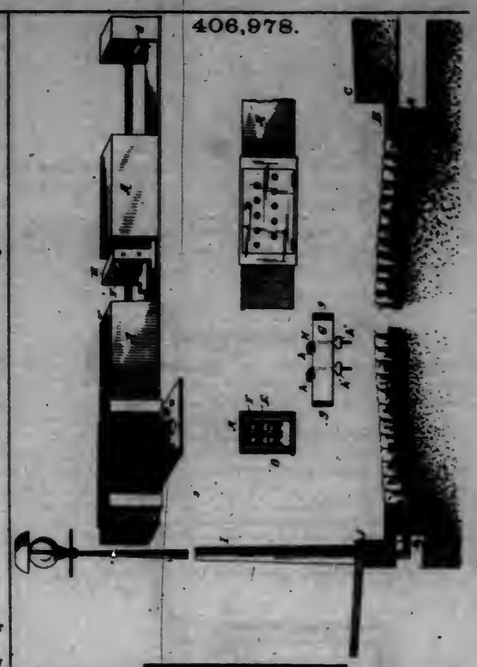
Claim.—1. An electric conduit consisting of a casing embedded in asphalt or other material and arranged alongside the curb, hollow lamp-posts connected at intervals with the conduit, hand-holes provided with perforated doors, and supports arranged at intervals in the conduit and having insulating spools or rollers upon which the conductors are held, whereby a free circulation may be maintained throughout the conduit in connection with the freely-supported conductors, substantially as described.

2. The combination, with a conduit, of the insulating guide-rollers to support the conductors and the clamp-beams and clamps for securing the conductors at the hand-holes, substantially as described

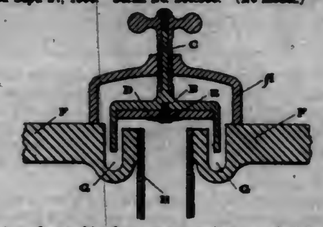
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406,979. SEWER-GAS TRAP AND SINK. WILLIAM WALLACE, San Francisco, Cal., assignor to himself and Robert G. BRUNS, same place. Filed Sept. 27, 1888. Serial No. 286,553. (No model.)

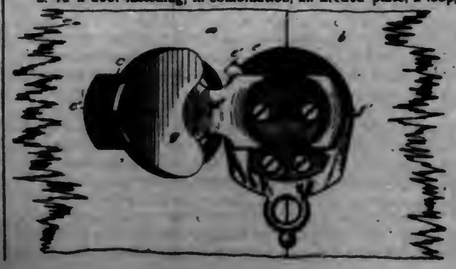


Claim.—In combined sewer-gas excluders and sinks, the combination, with a sink having a groove in its bottom concentric to the discharge-aperture, of the shell A, having its lower edge notched, as shown, to form a strainer, and having a central aperture in its top internally threaded, the trap-cup having a plain vertical stem with its lower edge adapted to enter the groove in the sink-bottom, and the threaded sleeve surrounding the stem of the trap-cup and having a handle portion, substantially as specified.

406,980. DOOR-FASTENING. EDWARD N. WARNER, Rocky Hill, Conn. Filed Nov. 6, 1888. Serial No. 290,152. (No model.)

Claim.—1. In a door-fastening, in combination, a plate adapted to hold a loop, a plate having an outwardly-projecting flange, and a loop loosely held by one plate having a portion of sufficient diameter to extend over the flange on the other plate, while the remainder is of less diameter, substantially as specified.

2. In a door-fastening, in combination, an arched plate, a loop,

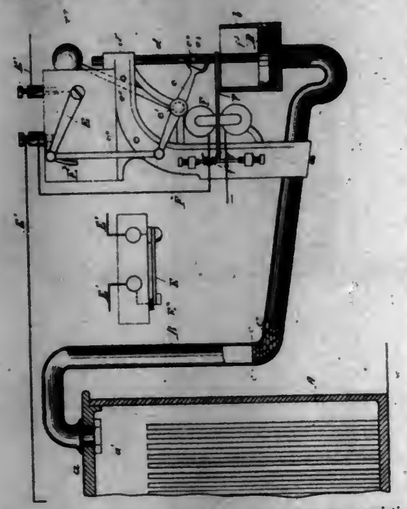


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portions of which are of different diameters, held under said arch, a lug projecting outwardly from said loop, and a plate having an outwardly-projecting flange, substantially as specified.

406,981. AUTOMATIC CUT-OFF FOR SECONDARY BATTERIES. ARTHUR AHORY and ROBERT AHORY, Boston, Mass. Filed Mar. 19, 1887. Serial No. 231,521. (No model.)



Claim.—1. An automatic cut-off for storage-batteries, consisting of the combination of a tight casing or box inclosing a battery or a cell thereof to prevent the escape of pressure accumulating therein, a chamber, a pipe connecting said casing or box with said chamber and containing a power-transmitting medium, a piston or plunger in said chamber, and a switch connected with said piston or plunger, substantially as set forth.

2. The combination, with a tight casing or box and a battery or a cell thereof inclosed therein, of a plunger-chamber, a pipe connecting said chamber with said casing or box and containing a column or body of mercury or other power-transmitting medium, a piston or plunger arranged in said chamber and provided with a stem or rod, an actuating-lever operated by said rod, a switch connected with said lever, an extended contact-point over which the said switch is moved, and an overbalancing-weight to cause said switch to be engaged with or disengaged from said contact-point, substantially as set forth.

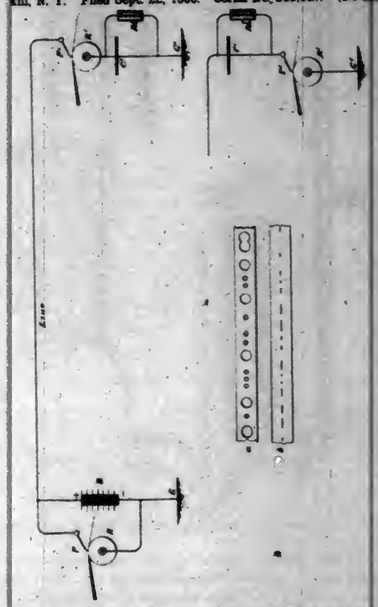
3. The combination, with a storage-battery, of a switch in a charging-circuit, operated or controlled by pressure generated by the action of charging the battery, a weight for moving the said switch, and an electrically-controlled holding device connected with the battery-circuit for holding the switch open until the storage-battery has lost or discharged its electrical energy, as and for the purposes specified.

4. The combination of a storage-battery or a cell thereof inclosed in a tight case or box and the charging-circuit E', a pipe or tube connecting the chamber of said battery or cell with a chamber *b*, and the body or column C of mercury or other power-transmitting medium therein contained, the plunger D, the rod *d*, having a stop f^3, the weighted lever *e*, the switch E in the charging-circuit, the contact-point E^2, and the stop-lever F, operated by an electro-magnet in the battery-circuit F^1 in one direction and by the spring f^2 in the reverse direction, substantially as described.

5. In an automatic cut-off for a storage-battery, a switch in the charging-circuit, and mechanism for operating the same to close the circuit, and a holding device for holding the switch or its actuating mechanism from closing the circuit until the storage-battery is discharged of its electrical energy, controlled in its operation by a circuit connected by said battery, substantially as specified.

6. The combination of the lever or latch controlling the time of operation of the switch E of the charging-circuit E' of a storage-battery with an electro-magnet operated by said battery and a spring adapted to move the lever in a direction opposite that from which it is operated by the said electro-magnet, as and for the purposes specified.

406,982. AUTOMATIC TELEGRAPH. FRANK ANDERSON, Poughkeepsie, N. Y. Filed Sept. 22, 1888. Serial No. 286,067. (No model.)



Claim.—1. In an automatic telegraph, the following combination of elements: a single transmitting-battery at a transmitting-station connected to earth and directly to a main line, which it normally charges, a shunt around said battery including in its circuit an automatic transmitter adapted to open and close said shunt, a recording-receiver at the distant receiving-station located in the main line, and a condenser also located directly in the main line between the receiver and the earth, substantially as described.

2. An automatic telegraph system consisting of the following elements: a main line earthed at each end and containing a single main-line or transmitting battery normally in circuit, a transmitter consisting of a perforated fillet, a contact brush or pen, and a transmitting-cylinder located in a normally-open shunt around the entire battery, a receiver located at a receiving-station, and a condenser located between the receiver and the earth, substantially as described.

3. A transmitting-fillet for use in automatic telegraphy, consisting of a perforated strip or band, the perforations being in a single row and of two sizes, the large perforations representing the spaces between individual letters only and the small perforations the spaces between the elements of the letters only, the greatest distance between any two elements of an individual letter not exceeding one of the small perforations, substantially as described.

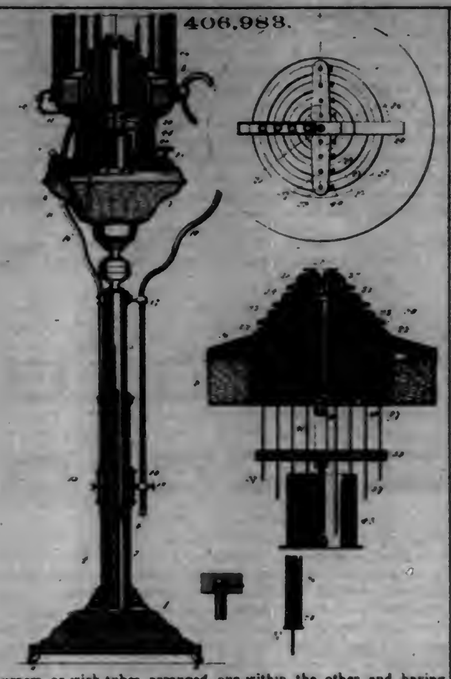
4. A transmitting-fillet for use in automatic telegraphy, consisting of a perforated strip or band, the perforations being located in a single row and of two sizes, the large perforations representing the spaces only between individual letters and being in every instance of uniform size, while the small perforations represent the spaces only between the elements of the letters, the greatest space between any two letters of a word not exceeding the diameter of one of the larger perforations and that between any two of the elements of a letter not exceeding the diameter of one of the smaller perforations, substantially as described.

5. A fillet for use in automatic telegraphy, consisting of a perforated strip, the perforations being in a single row and of two sizes, both circular, the larger-sized perforations representing the spaces between individual letters of a word and the small perforations representing the spaces between the individual elements of a letter, the space between any two letters of a word not exceeding the diameter of one of the larger perforations and that between any two elements of a letter never exceeding the diameter of one of the smaller perforations, substantially as described.

406,983. LAMP. ALLEVI AMBRALE, Chicago, Ill. Filed June 4, 1888. Serial No. 276,046. (No model.)

Claim.—1. The combination, substantially as set forth, of annular

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burners or wick-tubes arranged one within the other and having spaces between them for the passage of air, with the flame and air deflectors, as 28, 31, and 32, the base of each air-deflector constituting a button or flame-deflector to turn the flame of the next surrounding burner outward.

2. The combination, substantially as set forth, of an annular reservoir for burning-fluid and a series of burners arranged one within the other in the central space of said reservoir and in communication therewith, each of said burners drawing its supply of fluid from said annular reservoir.

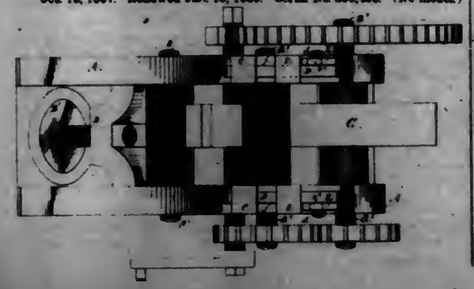
3. The combination, substantially as set forth, of the annular reservoir for containing burning-fluid, the pipe 20, extending across the lower part thereof, the annular burners in the central space of the reservoir above the pipe 20, and the tubes 21, connecting said pipe with each of the burners.

4. The combination, substantially as set forth, of the burners or wick-tubes arranged one within the other, the wick-supporting rings, as 36, within said burner-tubes, the rods extending downward from said rings, and the bar 39, for raising and lowering the wicks.

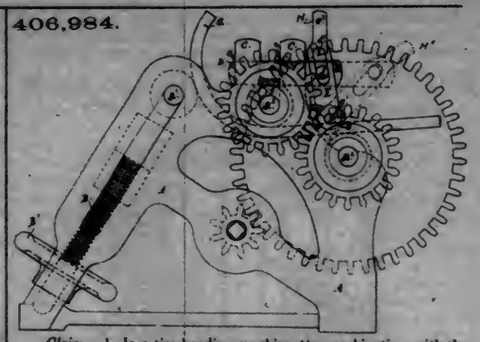
5. The combination, substantially as set forth, of the annular burners or wick-tubes, the wick-supporting rings, the rods extending downward therefrom, bar 39, the drum 43, and the pulley and chain for actuating the said drum to raise and lower the wicks.

6. The combination, substantially as set forth, of two reservoirs for burning-fluid, arranged one above the other, the upper reservoir being annular in form and supplied with fluid from the lower one, a pump for forcing fluid from the lower to the upper reservoir, and a series of annular burners arranged within the central space of said annular reservoir and each taking its supply of fluid therefrom.

406,984. TIRE-BENDER. ISAAC L. ASWEILER, Columbia, Pa. Filed Oct. 18, 1887. Renewed Jan. 15, 1889. Serial No. 296,468. (No model.)



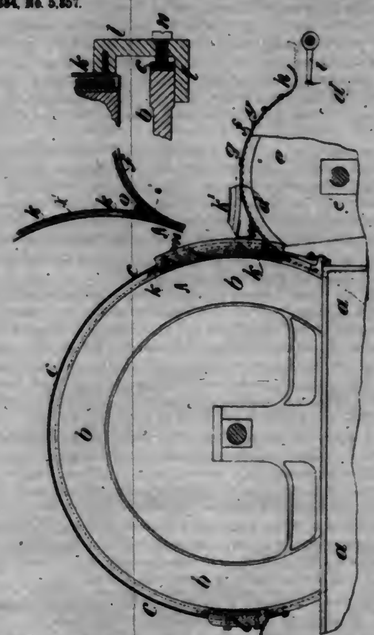
406,984.



Claim.—1. In a tire-bending machine, the combination, with the frame A and central-roll journal a^4, of the wedge-key D and shifting-lever E, said lever E adapted to operate said key D for the purpose of retaining said journals a^4 in position in the frame A, substantially as set forth, and for the purpose described.

2. In a tire-bending machine, the combination of the following elements: the wedge-key D, the lugs C C in the frame A, and the journals a^3 of the central roller, said key D being adapted to pass through slots *c c* in the lugs C C, retaining said journals a^3 in position in the frame A, as set forth, and for the purpose described.

406,985. CARDING-ENGINE. GEORGE ASHWORTH and ELIJAH ASHWORTH, Manchester, County of Lancaster, England. Filed Aug. 21, 1888. Serial No. 283,368. (No model.) Patented in England Apr. 3, 1884, No. 5,857.



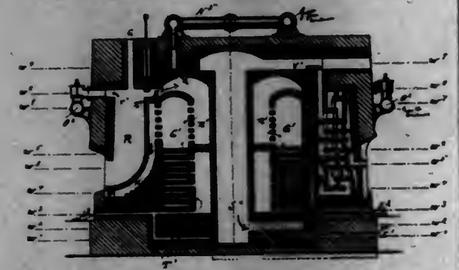
Claim.—1. The combination of the cylinder and side frames of a carding-engine and bands or arcs thereon with the arc-shaped cover *k*, angle-pieces which carry the said cover and are fitted to the frames, and accurately-adjusted stops which bear upon the bands or arcs to determine the distance of the cover from the cylinder, all substantially as set forth.

2. The combination of the doffer-cylinder and pedestals in which its shaft turns with the turned end casings *e*, each cast in one piece with the corresponding pedestal of the doffer, and the adjustable sheet-metal cover fitted to the said turned end casings, and means, substantially as described, for adjusting the cover thereon, substantially as set forth.

3. The combination of the cylinder, doffer, side frames, and turned end casings with the sheet-metal cover *k* on the frames and the adjustable sheet-metal cover *f* on the turned end casings, and means,

subtantially as described, for adjusting the cover thereon, the adjacent edges of the covers nearly meeting in the space between the cylinder and doffer, substantially as and for the purpose set forth.

406,986. COKE-OVEN. THEODOR BAUER, Munich, Bavaria, Germany. Filed Aug. 2, 1887. Serial No. 245,935. (No model.)



Claim.—1. A coke-oven having a series of radial retorts connected by flues with a central annular combustion-chamber having air and gas ports, substantially as set forth.

2. A coke-oven having a series of retorts arranged radially around and connected by flues with a central annular combustion-chamber, and a central gas conduit or flue for conveying gases to said annular combustion-chamber, substantially as set forth.

3. A coke-oven having a series of radial retorts connected by ducts with a central gas-conduit, said gas-conduit being surrounded by an annular combustion-chamber having air and gas ports, and which annular combustion-chamber is connected with the central conduit by said gas-ports, substantially as set forth.

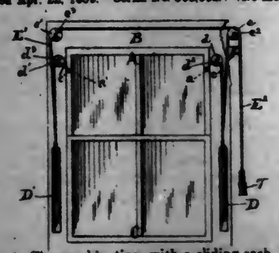
4. A coke-oven having a series of radial retorts, a central gas-conduit with which said retorts are connected by ducts, an annular combustion-chamber provided with air-induction flues and surrounding the conduit and in communication with gas-combustion channels below and between the several retorts, and flues connecting the central conduit and the annular combustion-chamber, substantially as set forth.

5. A coke-oven having a series of radial retorts connected by ducts with a central gas-conduit, an annular combustion-chamber provided with air-induction flues and surrounding the gas-conduit, gas-combustion channels below and between the retorts, which channels are in communication with the combustion-chamber, a chimney which is in communication with the channels below and between the retorts and flues connecting the central conduit and the annular combustion-chamber, substantially as set forth.

6. A coke-oven having a series of radial retorts connected by ducts with a central conduit, a combustion-chamber surrounding the gas-conduit, channels extending from the combustion-chamber under and around the bottoms and sides of the retorts, channels for conducting air into the combustion-chamber, additional channels for conducting air into the gas-channels between and below the retorts, and flues connecting the central conduit and the annular combustion-chamber, substantially as set forth.

7. A coke-oven having a series of radial retorts connected by ducts with a central gas-conduit, an annular combustion-chamber provided with air-induction flues and surrounding said gas-conduit, flues connecting the central conduit and the annular combustion-chamber, and a central exit-pipe within the gas-conduit having its lower end connected with a series of gas-outlet channels which are so arranged vertically between two series of horizontal air-inlet channels that the air passing through said air-inlet channels is heated by spent gases passing out of said vertical pipe, substantially as set forth.

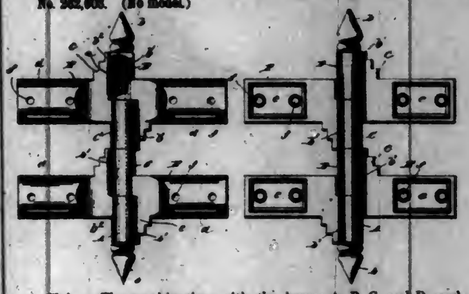
406,987. SASH-BALANCE. ALEXANDER W. BIDDLE, Philadelphia, Pa. Filed Apr. 22, 1889. Serial No. 308,062. (No model.)



Claim.—1. The combination, with a sliding sash and sash-guiding casing-frame equipped with ordinary sash cords and pulleys, of a pair of equal overbalancing-weights, operating-cords secured thereto, and auxiliary pulleys whereby said cords are led from said weights to an altitude at least as high as that of the ordinary sash-pulleys and thence passed to convenient external operating positions, substantially as and for the purposes hereinbefore described.

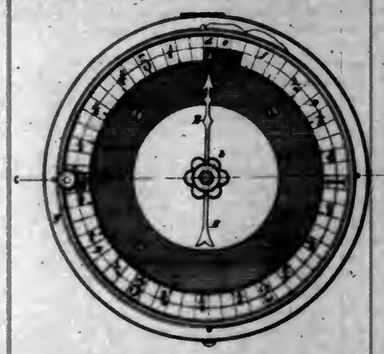
2. The combination, with a sliding sash and sash-guiding casing-frame equipped with ordinary sash-weight cords and pulleys, of a pair of equal overbalancing-weights, overhead auxiliary pulleys, and a forked operating-cord, the common stem of which after branching leads its parts by way of said pulleys to the sash-weights, to which its branched ends are respectively attached, substantially as and for the purposes hereinbefore described.

406,988. HINGE. SAMUEL BIRDSALL, Perrysburg, Ohio, assignor of one-half to John G. Hoffman, same place. Filed Feb. 1, 1888. Serial No. 262,603. (No model.)



Claim.—The combination, with the leaves A, B, C, and D, each of which is provided with the perforated cylindrical portions *b'*, those of the end leaves A and D being extended beyond their upper and lower edges, respectively, and terminating at about the center of the leaves, and the first mentioned terminating in the threaded socketed cap *b*, and each provided with diagonal bracing-webs *c*, and those intermediate sections B and C having their cylindrical portions beginning at about their centers and projecting beyond their adjacent ends and provided with the webs, as *c*, and the pintle *a*, having head *b* and threaded in the opposite head *b*, substantially as specified.

406,989. TIME-SIGNAL. NICHOLAS H. BORSFELDT, Brooklyn, N. Y. Filed Nov. 19, 1888. Serial No. 291,208. (No model.)



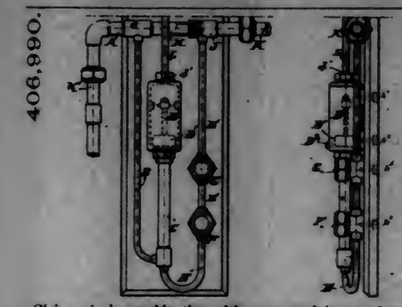
Claim.—1. A clock having a pointer B, and means for automatically moving the same, and a dial D, divided into sections indicating lineal measurement at the rate of double the distance traveled by sound during the motion of the pointer B.

2. In a clock having a pointer B, and means for automatically moving the same, the dial D, having independent sections *e f*, and having its remaining portion divided into sections indicative of double the distance traveled by sound during the motion of the pointer B, substantially as described.

3. In a clock having a pointer B, and means for automatically moving the same, the dial D, having independent sections *e f*, and having its remaining portion divided into sections indicative of double the distance traveled by sound during the motion of the pointer B, in combination with the movable index-hand E, substantially as described.

406,990. COMBINED PRESSURE-GAGE AND SAFETY-VALVE. JOHN D. BOWMAN, Altoona, Pa. Filed Dec. 13, 1888. Serial No. 293,421. (No model.)

406,990.

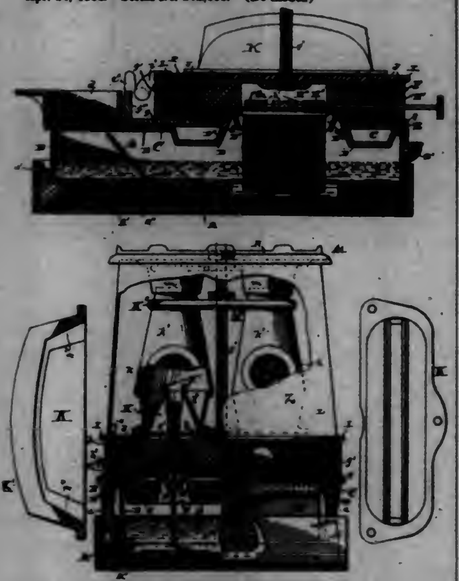


Claim.—1. In combination with a gas-conduit, a perforated diaphragm interposed in the same, an indicator consisting of a U-tube adapted to contain mercury, having one leg connected with and leading down from the conduit on the exit side of the diaphragm, and a blow-off chamber secured on the top of the other leg, substantially as and for the purpose specified.

2. In combination with a gas-conduit, a perforated diaphragm interposed in the same, an indicator consisting of a U-tube adapted to contain mercury, having one leg connected with and leading down from the conduit on the exit side of the diaphragm, a blow-off chamber secured on the top of the other leg, and an inverted cup sustained in the blow-off chamber over the mouth of the open leg of the U-pipe, substantially as and for the purpose specified.

3. In combination with a gas-conduit, a perforated diaphragm interposed in the same, a U-tube adapted to contain mercury, having one leg connected with and leading from the conduit on the exit side of the diaphragm, and the other leg open to the atmosphere, and a pipe connected to the conduit on the entrance side of the diaphragm and to the open leg of the U-pipe above its bottom, substantially as and for the purpose specified.

406,991. LAMP-STOVE. JOSEPH W. BROER, Chicago, Ill. Filed Apr. 27, 1888. Serial No. 272,008. (No model.)



Claim.—1. The herein-described oil-stove, comprising a base-frame having upstanding lugs *a*, the oil-tank supported thereon, the plate closing said tank and forming the water-pan and having flanged wick-openings, substantially as described, and the burner and drum, and the plate supporting the burner and drum, having depending lugs E', that support the same on lugs *a*, all substantially as specified.

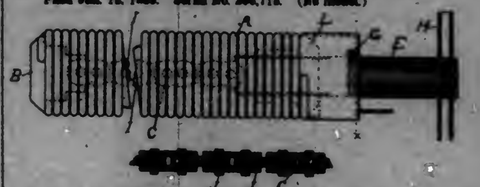
2. The within-described oil-stove, consisting of the bottom frame A, having upstanding lugs *a*, the oil-tank supported thereon, the plate C, closing the open end of the tank and bolted to frame A and formed with a water-pan D, and the plate E, having depending lugs E' resting on the lugs *a* of frame A and supported thereby above plate C, the drip-plate G, and the burner and drum supported on plate E, all substantially as described.

3. The combination of the base-frame, and oil-tank, and burner-supporting plate E, having upstanding bifurcated lug *e'*, with the disk I, having depending feet I' resting on plate E, and inclined studs *i*, formed with laterally-projecting ears *i'*, adapted to engage the lugs *e'* and form hinge-joints therewith, all substantially as specified.

4. The oil-stove herein described, consisting of a base-frame, oil-tank, water-pan, and drip-plate, and thesplate E, substantially as described, and the disk I, supported on plate E and carrying the heating-drum and burner-cones, and the burner having a base-plate supported on the frame E below disk I, all substantially as set forth.

5. The combination of the base-frame A, having upstanding lugs *a*, the oil-tank supported thereon, and the plate C, supported on the oil-tank and bolted to frame A, with the plate E, having depending lugs E' resting on lugs *a* of frame A, the burner carried on plate E, the disk I, having feet I' supported on plate E, the burner-cones and chimneys supported on the disk I, and the drum Z, supported on disk I, having a top disk M, formed with depending flanges *m m*, all substantially as and for the purpose specified.

406,992. PIPE-BENDER. EDWARD L. BURDSON, Los Angeles, Cal. Filed Jan. 18, 1888. Serial No. 266,718. (No model.)

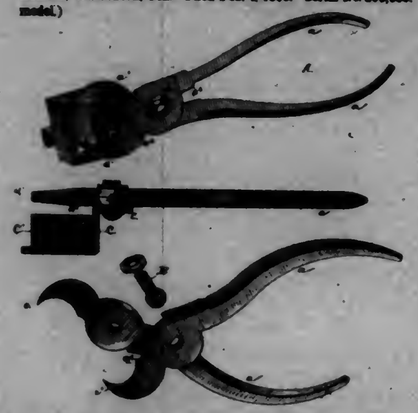


Claim.—1. In a spiral-spring pipe-bender, the combination, with the spring, of a flexible non-twistable connection fixed by one end to one end of the spring and connected at the other end with the other end of the spring by means of a ratchet.

2. The combination of the spiral spring fixed at one end to a head B, to which one end of the flexible non-twistable connection C is fixed, the head L, having the other end of the spring fixed thereto, the cylindrical handle E, attached to the connection C, and the ratchet connecting the head L and the handle.

3. The combination of the spiral spring A, fixed at one end to a head B, the flexible non-twistable connection fixed to the head B, the head L, provided with a female screw, the cylindrical handle E, provided with a screw-thread to screw therein and attached to the flexible non-twistable connection, and the ratchet connecting the handle and the head L.

406,993. COMBINATION-TOOL. JAMES T. CARTER and WILLIAM KOEPKE, Warrenton, Tex. Filed Feb. 4, 1889. Serial No. 298,695. (No model.)



Claim.—1. In a combination implement of the character set forth, the combination of the two overlapping fulcrumed or pivoted levers having handles and forward ends of flattened crescent shape bent in reverse directions to cause their extreme reduced ends to abut to form nippers, and provided with beveled shoulders at the bases of their inner edges to form cutters and with serrated projections in rear of the pivot or fulcrum, and an angular arm movably attached to said pivot or fulcrum, carrying a receptacle adapted to be adjusted under the nippers for the reception of staples, substantially as described.

2. The combination, with an implement having a grip or nipper formed therewith, of an angular arm movably attached to the pivot or fulcrum thereof and a receptacle secured to said arm adapted to be adjusted under the grip or nipper for the reception of staples or other articles, substantially as described.

406,994. ELECTRIC WIRING. FRANK R. CHISHOLM, Brooklyn, N. Y. Filed Mar. 30, 1889. Serial No. 305,475. (No model.)



Claim.—1. The combination, with a cleat or back-piece, of an insulator fitting within the same and provided with a flange behind it interlocking with the back-piece, substantially as specified.

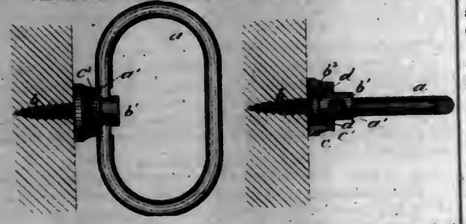
2. The combination, with a cleat or back-piece, of an insulator fitting within the same and provided with a flange behind the cleat or insulator, and having a notch for engaging a pin, substantially as specified.

3. The combination, with a cleat or back-piece, of an insulator fitting within the same and provided with a flange behind the cleat or insulator, a cap-piece for the insulator, and a wire or cord passing through the insulator just in front of the cleat or back-piece and across the cap-piece, substantially as specified.

4. The combination of an insulator having in one end a notch for a circuit-wire, a cap-piece provided with a tongue entering said notch and having in its outer end a notch extending transversely to the notch of the cap-piece, and a wire or cord passing from the insulator across the notch of the cap-piece, substantially as specified.

5. The combination of an insulator having in one end a notch for a circuit-wire, a cap-piece provided with a tongue entering said notch, and a wire or connection securing the cap-piece to the insulator on a line transverse to the length of the notch in the insulator, substantially as specified.

406,995. HAND-HOLD. PERRY F. CRAFTS, Leeds, Mass. Filed June 2, 1888. Serial No. 275,804. (No model.)



Claim.—1. In combination with a handle *a*, the screw *b*, attached to and turning thereon, with a flange b^3, and the clamping-collar *c*, borne on the screw-stem and free to slide on said stem a limited distance, all substantially as described.

2. In combination with a ring-shaped handle, a screw attached thereto by the passage of the handle through a socket in the screw-stem and rotary on said handle, the sliding clamping-collar borne on the screw-stem, with its inner end projecting beyond the base of the screw-head, and the interengaging locking devices, as described, borne on the handle and the collar, respectively, all substantially as described.

3. In a detachable holding device, a ring-shaped handle, a screw attached to said handle and rotary thereon across the plane of the handle, the clamping-collar borne on the screw-stem, with its outer end projecting beyond the inner side of the screw-head and having a spring-socket, and the spring seated in said socket and forcing the collar normally toward the handle, all substantially as described.

406,996. ATTACHMENT FOR LADIES' SATCHELS. HENRY S. CRAUL, Mount Vernon, N. Y. Filed Apr. 22, 1889. Serial No. 308,073. (No model.)

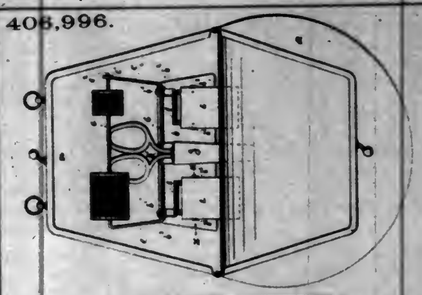
Claim.—1. The combination of a satchel or work-box with face-plate *b* and with wire *c*, hinged thereto and adapted for the reception of spools, substantially as specified.

2. The combination of a satchel or work-box with face-plate *b* and with spring-wire *c*, hinged thereto and having parallel shanks and interlocking ends, substantially as specified.

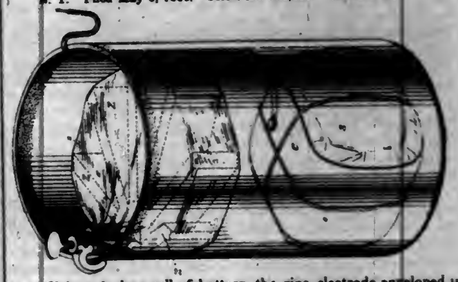
3. The combination of a satchel or work-box with face-plate *b* and with wire *c* and sheath *g*, having hook *g'*, substantially as specified.

4. The combination of a satchel or work-box with face-plate *b* and with wire *c*, sheath *g*, and pockets *e*, secured to the face-plate, substantially as specified.

406,996.



406,997. GALVANIC BATTERY. PATRICK R. DELANY, New York, N. Y. Filed May 9, 1889. Serial No. 310,069. (No model.)



Claim.—1. In a cell of battery, the zinc electrode enveloped in a bag or cover of porous material, in combination with a charge of sulphate-of-copper crystals having interposed between it and the battery solution a porous medium.

2. In a gravity-cell of battery, the combination, with the zinc and copper elements, of a cartridge consisting of crystals of sulphate of copper enveloped in porous material, substantially as set forth.

3. The herein-described cartridge for a cell of battery, consisting of a charge of crystals of sulphate of copper, for instance, inclosed in an envelope of porous material.

4. The cartridge of sulphate-of-copper crystals for a cell of gravity-battery, encircled by the copper electrode of the battery and having a porous medium to separate the crystals from the fluid of the battery.

5. The copper element of a gravity-battery, consisting of a band of copper and a bag of sulphate-of-copper crystals encircled by the copper band.

6. A battery-cell having its rim roughened or sanded, for the purpose set forth.

406,998. TOWEL-RACK. THOMAS M. DILL, Davenport, Iowa. Filed Dec. 26, 1888. Serial No. 294,604. (No model.)

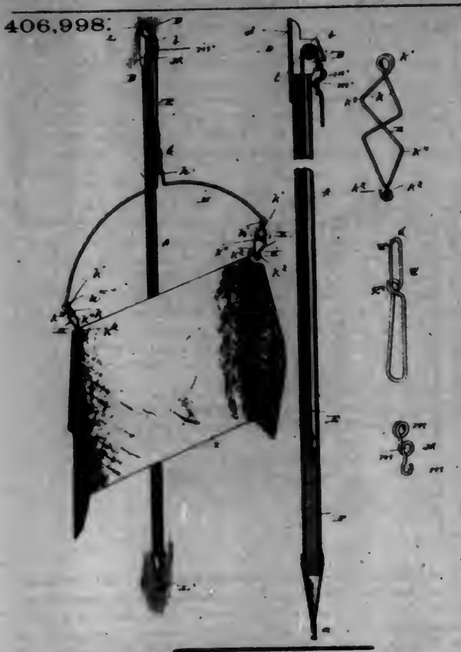
Claim.—1. In a towel-rack, the combination of the tubular casing provided at its lower end with an eye *a*, the removable guard B at its upper end having an apertured ear D to receive screws to secure the casing to a support, and the pulley C, journaled transversely in said guard, with the cord passing over the pulley at the upper end of the casing, provided at one end with a clamp to engage the towel and at the other end with a counterbalancing-weight operating in the casing, substantially as specified.

2. In a towel-rack, the combination, with the tubular casing A, the guard B at its upper end having the parallel cheeks *b b*, of the rollers *c*, journaled transversely in said guard, the cord passing over the said roller, provided at its outer end with a clamp to engage the towel and at its inner end with a counterbalancing-weight, and the wire stop M, comprising a series of rings *m m*, through which the cord passes, the said stop being adapted to strike against the cheeks *b b* to limit the movement of the cord, substantially as specified.

3. In a towel-rack, the combination, with the supporting-cord, of the clamp connected to the free end of the cord and consisting of the arms *k k*, connected at their upper ends by the spring-coil k' and having the angular bends k^3 and k^4, the said arms intersecting each other between the said bends, and the oppositely-extending hooks k^2 k^2 on the lower ends of said arms, arranged in a plane at right angles to the plane of the arms and normally in contact, as specified.

4. In a towel-rack, the combination, with the cord passing over a roller and provided with a counterbalancing-weight, of the bow connected to the free end of the said cord and clamps at its ends adapted to engage the towel and hold the latter in a spread condition, substantially as and for the purpose specified.

406,998.



406,999. METHOD OF DECORATING METAL SURFACES. NELLIE C. DUNCOMBE, New York, N. Y. Filed June 1, 1888. Serial No. 275,730. (No model.)



Claim.—1. A metal surface decorated with etched and oxidized portions in two or more different colors, whereby a design is produced by the contrast of such metallic colors.

2. A metal surface decorated with bright lustrous or frosted etched portions and with dull etched and discolored oxidized portions of two or more different colors, whereby a design is produced by the contrast of such metallic colors with each other and with the frosted portions.

3. A metal surface having an etched ground and decorated with etched and oxidized portions of different colors or tones, and with high lights of bright polished metal, whereby a design is produced by the contrast of the polished metal and the metallic colors with the etched ground.

4. A decorated metal surface having an etched ground, and a design produced by different colors or tones of oxidation with the high lights of bright polished metal.

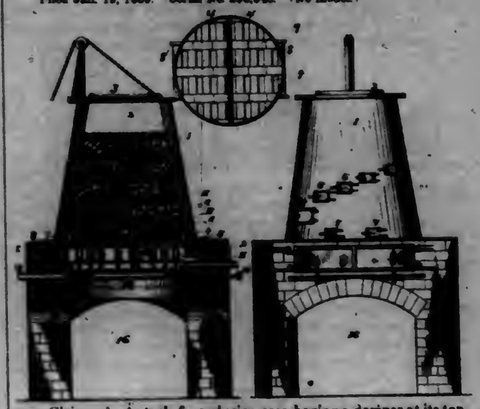
5. The improvement in the art of decorating metal surfaces, consisting in covering the surface to be preserved, immersing in an acid bath in which a metal or alloy is dissolved to etch and prepare the uncovered portions, and subsequently exposing the latter to the air to oxidize the etched surface.

6. The improvement in the art of decorating metal surfaces, consisting in covering the surface to be preserved, immersing in acid to etch the uncovered portions, and then exposing them to the fumes of an acid bath in which a metal or alloy is dissolved.

7. The improvement in the art of decorating metal surfaces, consisting in successive alternations of etching and oxidizing, the portions of the surface to be retained after each oxidation being covered over, and the successive oxidations being effected in different colors or shades.

8. The improvement in the art of decorating polished metal surfaces, consisting in covering the portions to be retained polished in the design, oxidizing the uncovered portions by exposure to an acid bath in which a metal or alloy is dissolved, then covering the oxidized portions to be preserved, etching the uncovered surface, and finally removing the covering medium.

407,000. REDUCING-STACK. CHARLES J. RAHM, New York, N. Y. Filed Jan. 19, 1889. Serial No. 296,840. (No model.)



Claim.—1. A stack for reducing ores, having a damper at its top, a drop-grate at its bottom, a slide below the drop-grate, and a series of air-ports at its base just above the plane of the grate, substantially as and for the purposes specified.

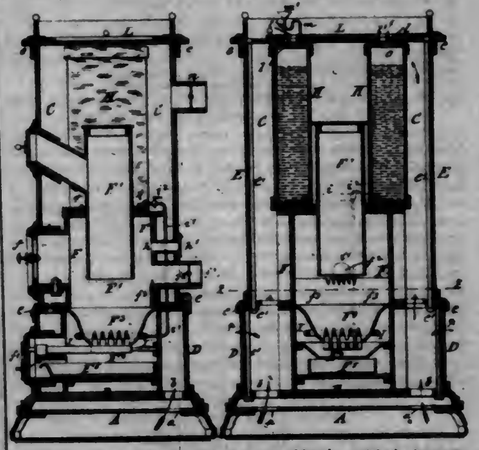
2. A stack for reducing ores, having a dumping-grate at its base, a series of air-ports encircling the stack at its base, a slide arranged below said grate and forming a closed chamber beneath the grate, and a series of charging-doors arranged on successive levels, substantially as and for the purposes specified.

3. A reducing-stack having at its base a drop-grate provided with a facing or checker-work of fire-brick, substantially as and for the purposes specified.

4. The combination, with a reducing-stack having a drop-grate, of a detachable or sliding gas-burner arranged below the grate, substantially as and for the purposes specified.

5. The combination, with a reducing-stack having a drop-grate, of a removable or sliding burner arranged below the grate and a removable slide arranged below the burner, substantially as and for the purposes specified.

407,001. HEATING-STOVE. OTTO P. ELTERICH and G. OTTO ELTERICH, Newark, N. J., assignors of one-third to Clemens Heitemeyer, same place. Filed May 1, 1888. Serial No. 272,528. (No model.)

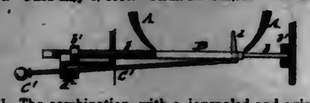


Claim.—1. In a heating-stove, the combination, with the fire-box and basket of the same, of a water-box supported on the fire-box, a perforated jet-pipe extending around the basket, the jet-openings being located between the prongs of the basket, and a valved pipe connecting the water-box with the said jet-pipe, substantially as set forth.

2. In a heating-stove, the combination, with a fire-box and basket of the same, of the water-box supported on the fire-box, a pipe con-

necting the lower ends of the water-box, a jet-pipe extending around the basket and having jet-openings located intermediately between the prongs of the same, and a valved pipe connecting one of the water-boxes with the jet-pipe, substantially as set forth.

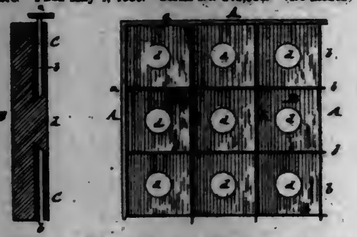
407,002. FURNACE-GRATE. OTTO P. ELTERICH and G. OTTO ELTERICH, Newark, N. J., assignors of one-third to Clemens Heitemeyer, same place. Filed May 1, 1888. Serial No. 272,889. (No model.)



Claim.—1. The combination, with a journaled and axially-movable grate, of a poker provided with teeth or fingers extending into the openings of the grate, a shank or rod extending forward from said poker, and an eye or sleeve for guiding the shank located below the journal of the grate, said eye being rounded off at the edge and provided with an inclined bottom part, substantially as set forth.

2. The combination, with a journaled and axially-movable grate, the rear bar of which is provided with recesses at the inner side, of a poker having teeth or fingers extending into the openings of the grate, a shank or rod extending forward from said poker, and an eye or sleeve for guiding the shank located below the journal of the grate, said eye having rounded-off edges and an inclined bottom part, so as to support the poker when in dropped position, substantially as set forth.

407,003. MANTEL FOR STOVES. OTTO P. ELTERICH and G. OTTO ELTERICH, Newark, N. J., assignors of one-third to Clemens Heitemeyer, same place. Filed May 1, 1888. Serial No. 272,890. (No model.)



Claim.—1. A mantel for stoves, consisting of a metallic supporting frame or grating, tiles or glass plates provided with dovetailed dowels at the back and arranged in front of said supporting-frame, and a layer of cement that unites the dowels at the back of the tiles with the supporting frame or grating, substantially as set forth.

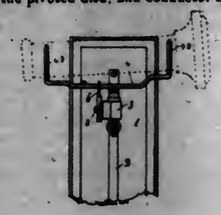
2. A mantel for stoves, consisting of a metallic supporting frame or grating, a number of tiles or glass plates, each provided with a dovetailed dowel at the back, said dowels being located at the front of the supporting-frame, and with dowels projecting into the spaces formed between the strips of the grating, and a layer of refractory cement embedding the grating and dowels at the rear of the tiles for uniting the frames and tiles, substantially as set forth.

407,004. TELEPHONIC APPARATUS. NATHAN S. FIKE, Utica, N. Y. Filed Apr. 15, 1889. Serial No. 307,385. (No model.)

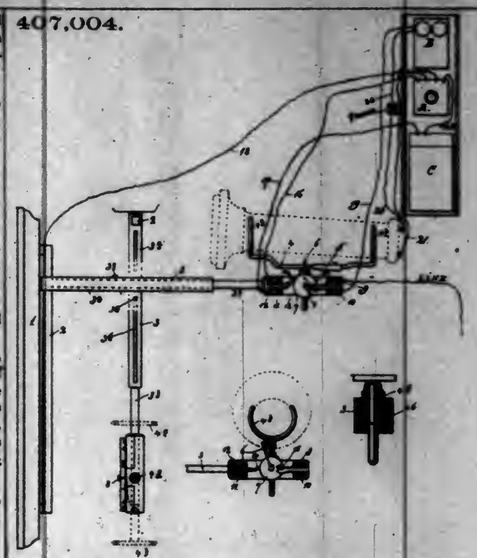
Claim.—1. In a telephonic apparatus, the combination of the projecting arm, the receiver-supporter pivoted upon the arm, and the pivoted disk operated by the turning of the receiver upon its pivot and the contacting conductor-springs, substantially as set forth.

2. In a telephonic apparatus, the combination of a supporting-arm, a receiver-supporter mounted upon a pivot-spindle engaging the arm, the spindle having its bearing end at an acute angle and resting upon an inclined surface, and the circuit former and breaker operated by the turning of the supporter upon its pivot.

3. The combination, in a telephonic apparatus, of a vertical stationary bar, a vertically-movable extension projection-arm, a receiver-supporter mounted upon a pivot-spindle engaging in a socket in the arm and having its bearing end at an acute angle and resting upon an inclined surface, the pivoted disk, and conductor-springs, substantially as set forth.



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4. The combination, in a telephonic apparatus, of the vertical stationary bar, the vertically-movable extension-arm, the receiver-supporter, having two pairs of fingers, one of which pairs is on a higher horizontal plane than the other, mounted upon a pivot-spindle, the bearing end of which is at an acute angle and resting upon an inclined surface, the pivoted disk, and contacting conductor-springs, substantially as set forth.

407,005. ORGAN-PEDAL. GRACE I. FOSTER, Milford, Iowa. Filed Jan. 16, 1889. Serial No. 296,460. (No model.)

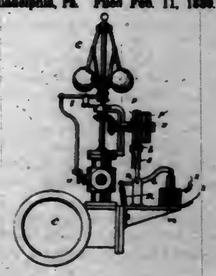


Claim.—1. A pedal composed of upper and lower portions 4 and 7, pivotal arms connecting said parts, a pivotal pawl adapted to engage with notches in one of said parts, and means, substantially as described, for engaging and disengaging said pawl, whereby the pedal may be expanded or contracted to regulate its height to the requirements of the operator, substantially as set forth.

2. In a pedal, the combination of the parts 4 and 7, forming the bottom and top thereof, respectively, toggle-jointed arms connecting said parts, notches formed on one of said parts, a pawl pivotally connected with said toggle-arms, and a finger-piece connected with said pawl and adapted to engage and disengage the same, all substantially as and for the purpose set forth.

3. In a pedal, the combination of the parts 4 and 7, forming the top and bottom of the same, toggle-jointed arms 5 and 6, connecting the parts 4 and 7 transversely and longitudinally, connecting rod or rods 8, connecting with the arms 5, which fold in the same direction, a pawl 10, engaging with notches 11, and means, substantially as described, for engaging and disengaging the same.

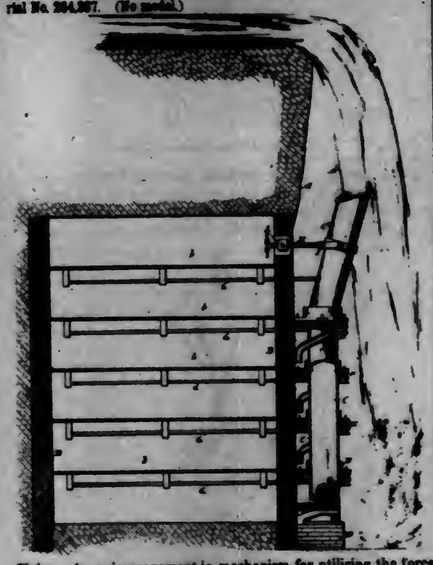
407,006. AUTOMATIC REGULATION OF ELECTRICAL CIRCUITS. WM. W. GIBBON, Haverford College, assignor to the Electro Dynamic Company, Philadelphia, Pa. Filed Feb. 11, 1889. Serial No. 299,562. (No model.)



Claim.—1. The combination of a prime motor, a suitable source of power—such as steam, water, or gas—a pipe or passage for conducting or applying such power to said motor, a normally-open valve or gate controlling said passage, a dynamo-electric machine operated by said prime motor, an electrical circuit containing said dynamo, and an electro-magnet having a normally-attracted armature mechanically connected with said valve, whereby the failure of current in said circuit releases said valve and closes the gate or passage, substantially as described.

2. The combination of a prime motor, a suitable source of power—such as steam, water, or gas—a pipe or passage for conducting or applying said power to the motor, a normally-open valve or gate controlling said passage, a governor normally out of action for operating said gate or valve, a dynamo-electric machine operated by said prime motor, an electrical circuit containing said dynamo, an electro-magnet located in said circuit having a normally-attracted armature, and means for establishing an operative connection between said governor and a moving part of the motor controlled by said armature, whereby the failure of current in said circuit releases said valve and closes the gate or passage, substantially as described.

407,007. APPARATUS FOR UTILIZING THE FORCE OF WATER-FALLS. ELIAS H. HAMILTON, New York, N. Y., assignor to the Niagara Hydraulic Electric Company, Alexandria, Va. Filed Sept. 1, 1883. Serial No. 284,867. (No model.)



Claim.—As an improvement in mechanism for utilizing the force of falling water, a motor which is located within the breast of a waterfall in rear of the sheet of water, in combination with a chute that has one end connected with the casing of such motor, and its opposite end made adjustable by mechanism, substantially as shown, toward and from the falling water, whereby a portion of such water may be caused to pass into or impinge upon such motor, substantially as and for the purpose specified.

407,008. COMPOSITION FOR THE TREATMENT OF PAPER-HANGINGS. NORVAL W. HELME, RICHARD STOCKDALE, and ROBERT H. HELME, Lancaster, England. Filed Jan. 28, 1888. Serial No. 261,904. (No specimens.) Patented in England Apr. 7, 1887, No. 5,171; in France Jan. 14, 1888, No. 186,139; in Belgium Jan. 16, 1888, No. 80,289, and in Canada June 25, 1888, No. 30,394.

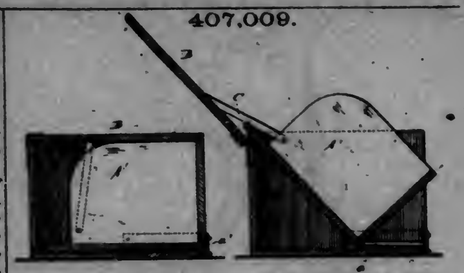
Claim.—1. The composition for the preparation or treatment of paper-hangings, comprising boiled oil, a suitable alkali, mucilaginous matter, an earthy matter—such as china-clay—a pigment, and a vehicle, all in substantially the proportions herein described.

2. The herein-described composition for the preparation or treatment of paper-hangings, comprising boiled oil, an earthy matter—such as china-clay—and a suitable alkali and vehicle.

407,009. CIGAR-BOX. JULIUS H. HOLWITH, New York, N. Y. Filed Apr. 17, 1889. Serial No. 307,800. (No model.)

Claim.—1. A cigar-box the body of which is formed of an outer section open at the front and of an inner section open at the rear end, the inner section being pivoted by corner pins in guide-slots in the outer section, a hinged lid on the outer section, and pivoted straps

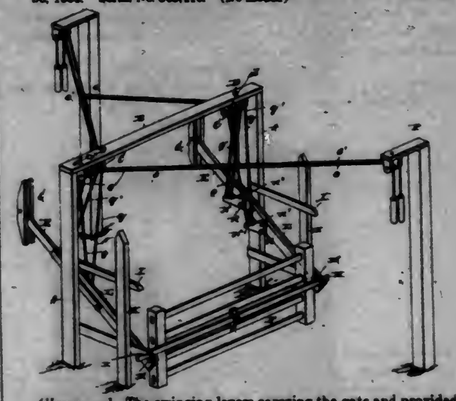
407,009.



connecting the lid with the side walls of the inner section, substantially as set forth.

2. A cigar-box the body of which is composed of an outer section open at the front end and an inner section open at the rear end, said inner section being guided by pivot-pins at its lower corners in guide-slots of the side walls of the outer section, substantially as set forth.

407,010. GATE. CHARLES I. HUBLER, Hermitage, Mo. Filed Mar. 30, 1889. Serial No. 305,416. (No model.)



Claim.—1. The swinging levers carrying the gate and provided with counterbalancing-weights, in combination with operating-cords provided with branches which pass over guiding-pulleys and are connected at their free ends to the swinging levers, respectively, on opposite sides of their pivots, substantially as and for the purpose specified.

2. The combination of the swinging levers carrying the gate, the latch-bar projecting at its ends beyond the ends of the gate to engage suitable catches, the sliding bars connected to the said latch-bar, the angle blocks or levers mounted on the swinging levers and connected to the sliding bars, and the operating-cords connected to the said blocks or levers, substantially as specified.

3. The combination of the swinging levers mounted on suitable posts and carrying the gate, the catch-posts provided with suitable catches arranged on opposite sides of the gate, the spring latch-bar projecting at its ends beyond the ends of the gate to engage the said catches, the sliding bars mounted on the swinging levers and connected to the free ends of the latch-bar, and the angle blocks or levers mounted on the swinging levers, respectively, on opposite sides of their pivots, connected to the sliding bars, whereby the latter are operated, and provided with operating-cords, substantially as specified.

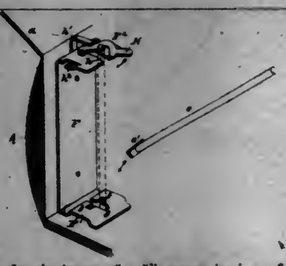
4. The combination, with the side posts supporting a cross-beam and the swinging levers pivoted to the side posts and carrying the gate, of the pulley-blocks swiveled on the cross-beam, the latch-bar projecting at its ends beyond the ends of the gate to engage suitable catches, the sliding bars connected to the free ends of the latch-bar, the angle blocks or levers connected to the said sliding bars, and the operating-cords connected to the angle blocks or levers, and passing through the pulley-blocks, substantially as specified.

407,011. HOLDER FOR LETTER-FILES. LOUIS P. HUNS, Lee, Mass. Filed Nov. 6, 1888. Serial No. 290,114. (No model.)

Claim.—1. A retainer for the leaves of a filing-case, said retainer having at one end a cross-shaped slot and having at the other a notch with a locking-catch.

2. A retainer for the leaves of a filing-case and provided with a foot-piece having a raised portion containing a cross-shaped slot and a top piece with a notch and a locking-catch.

407,011.



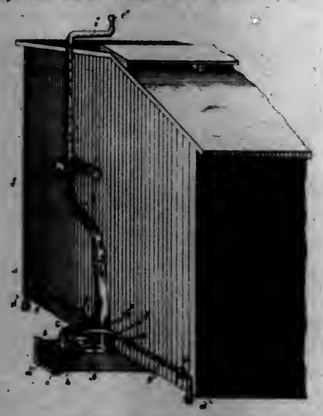
3. A retainer for the leaves of a filing-case, having a foot-piece and a raised portion, leaving a groove behind it containing a cross-shaped slot, in combination with a top piece having a notch and locking-catch therefor and spring-catches on its under side.

4. A retainer for the leaves of a filing-case, having a slotted foot-piece, a notched top piece with a locking-catch, and a holding-down finger.

5. A combination of a detachable headed pin with a retainer having a foot-piece provided with a cross-shaped slot, and a top piece provided with a notch and a locking-catch.

6. A retainer for the leaves of a filing-case, having a slotted foot-piece, and a top piece with a notch widened at its open end, and having a locking-catch for this notch.

407,012. CAR-COUPLING. THOMAS HINES, Northbridge, Mass. Filed Mar. 15, 1889. Serial No. 303,495. (No model.)



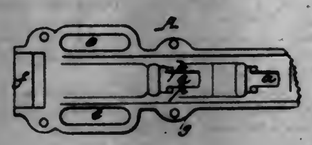
Claim.—1. The combination, in a car-coupler, of the draw-head having the long slots a^3 a^3 in its upper and lower walls, respectively, the coupling-pin B, movable in said slots, as specified, the draw-lever C, the spring E, and the link F, substantially as described.

2. The combination of the draw-head having slots a^3 a^3, the coupling-pin B, the lever C, connected with the head thereof and having a long arm c^2, offset c^3, extending above the top of the car, and having the horizontal extension c^4, and handle c^5, substantially as described.

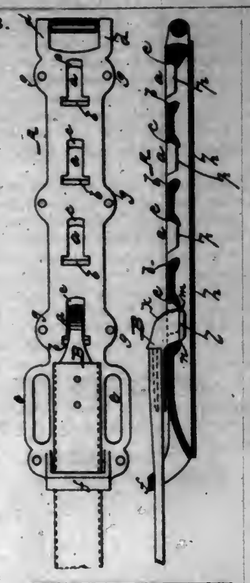
3. The combination of the draw-head having the slots a^3 a^3, the coupling-pin B, the lever C, and the turning-rods D D', having the handles d^3, substantially as described.

407,013. HAME-TUG. HARN P. JENNER, New Hartford, Iowa. Filed Apr. 8, 1889. Serial No. 306,437. (No model.)

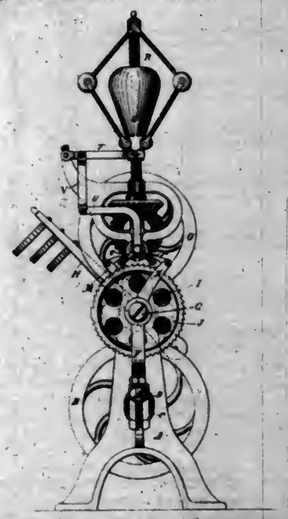
Claim.—The within-described improved article of manufacture, consisting of a hame-tug having a longitudinally-arched plate A, provided with a series of T-shaped beveled slots having under flanges or shoulders *p p* and beveled ends, the bridges provided with outwardly-beveled lips, the strap A, subtending the arch of plate A, and a removable arm having twin plates *i i'*, and a curved end provided with side flanges *l l*, adapted to interlock with the plate A, all as specified and shown.



407,018.



407,014. REGULATOR FOR ELECTRIC MOTORS. JOHN F. KELLY, New York, N. Y., and PAUL H. BRANCH, Newark, N. J., assignors to the United States Electric Lighting Company, New York, N. Y. Filed July 31, 1888. Serial No. 281,569. (No model.)



Claim.—1. In a regulating mechanism for electro-magnetic motors, the combination, with a driven shaft formed or provided with two eccentrics or cranks of unequal throw, of two oppositely-acting pawls or pushers oscillated by the cranks, wheels for shifting the position of a rheostat-arm when moved by one or the other of the pawls, and a governor operated by the motor for controlling the action of the pawls, as set forth.

2. In a regulating mechanism for electro-magnetic motors, the combination, with a driven shaft formed or provided with two cranks or eccentrics of unequal throw, of two oppositely-acting pawls mounted on arms oscillated by the cranks, two ratchet-wheels under the pawls and adapted to shift a rheostat-arm when moved by the pawls, stops for maintaining the pawls in an elevated position, or out of engagement with the ratchets, a centrifugal governor adapted to be run by the motor, and connections for raising and lowering the pawls according to its speed of rotation, as herein set forth.

407,015. HANDLE FOR CANES, UMBRELLAS, OR PARASOLS. AUGUST KIESLER, New York, N. Y. Filed Apr. 4, 1889. Serial No. 306,026. (No model.)



Claim.—1. A cane-head formed of a series of interlocking spiral strips of metal, substantially as set forth.

2. A cane-head composed of a body, formed of a series of interlocking spiral strips of metal, a cap, and a base-ring, and a lining of lead or soft solder which firmly holds together the spiral strips, cap, and base-ring, substantially as set forth.

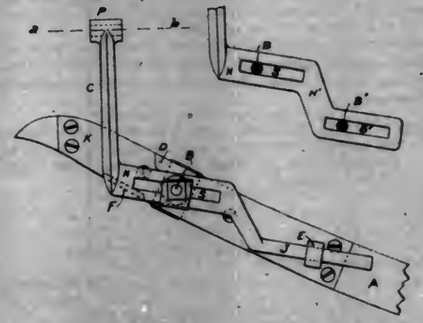
3. A head for canes, umbrellas, or parasols, composed of a shell formed of a series of interlocking spiral strips and a lining of lead or soft solder, which holds the said strips together, substantially as set forth.

407,016. COTTON-GIN ROLLER. REMER Y. KIRKLAND, Benton Fla. Filed Jan. 8, 1889. Serial No. 296,735. (No model.)



Claim.—A gin-roller comprising a shaft or core, in combination with a strip or strips of fabric cut on the bias, wound edgewise spirally upon the shaft or core and having the raw inner edge secured thereto by glue or cement, and the rings mounted upon the ends of the core bearing against and having the ends of the strips of fabric secured thereto, and pegs for securing said rings to the core, substantially as set forth.

407,017. CARRIAGE-POLE COUPLING. JOSEPH KLOTS and FERDINAND KUECHEL, Pittston, Pa. Filed Nov. 1, 1888. Serial No. 289,765. (No model.)



Claim.—1. The combination, in an adjustable carriage-pole coupling, of the shank C, having an eye P and a slotted arm H, terminating in an offset guide-bar J, which is parallel to but not in line with the slot in arm H, with the bolt B, eye E, and plate K, substantially as shown and described.

2. In an adjustable device for attaching carriage-poles, the plate K, having a lug D projecting from one side of it, and a flange F projecting from the opposite side, substantially as shown and described, for the purpose set forth.

3. In an adjustable carriage-pole coupling, the offset arm H H' and parallel slots S S', with the bolts B B', substantially as shown and described, for the purpose set forth.

4. An adjustable carriage-pole coupling consisting of a coupling-eye and a shank having a laterally-projecting arm formed with an offset into two parallel guides, which are out of line with each other, substantially as shown and described.

407,018. OPERATING ORDNANCE. ALFRED C. KOSMOS, Paris, France, assignor, by mesne assignments, to the Hotchkiss Ordnance Company, (Limited,) London, England. Filed Dec. 18, 1885. Serial No. 186,055. (No model.)

407,018.



Claim.—1. The combination, with the gun, the supporting-frame, and the rocking trunnion-arms pivoted to the frame and supporting the gun, of the hydraulic cylinder having a piston connected to said trunnion-arms to resist the recoil of the gun, the bearing-arms 14, extending rearward from the trunnion-arms, and the springs 12, interposed between said arms 14 and the supporting-frame to resist recoil and to restore the gun after recoil, substantially as described.

2. The combination, with the gun, the supporting-frame, and the rocking trunnion-arms pivoted to the frame and supporting the gun, of the hydraulic cylinder having a conical bore decreasing in diameter rearward and provided with a piston connected to said trunnion-arms to resist the recoil of the gun, the bearing-arms 14, extending rearward from the trunnion-arms, and the springs 12, interposed between said arms 14 and the supporting-frame to resist recoil and to restore the gun after recoil, substantially as described.

3. The combination, with the bed-plate having a pivot, of a swiveling supporting-frame turning upon said pivot and having one or more rollers which travel upon the bed-plate, a front clip 7, and a rear clip 8, having a screw-clamp 9, for guiding said swiveling frame upon the bed-plate and for locking it in position, a shoulder-piece extending rearward from the swiveling frame, the rocking arms 10, pivoted to the swiveling frame and supporting the gun at their upper ends, the elevating-bar 15, pivoted to the swiveling frame and connected to the gun by the connecting-bar 21, the screw for moving said bar 15, the hydraulic cylinder having a piston connected to the rocking arms 10, the bearing-arms 14, extending rearwardly from the arms 10, and the springs 12, interposed between the arms 14 and the swiveling frame, substantially as described.

407,019. BUCKET OR TUB. JOHN L. KRAMER, Leeper, Pa. Filed Dec. 5, 1888. Serial No. 292,690. (No model.)

Claim.—1. A stave for a tub or bucket, made of wood and having the grain running crosswise or in the direction of the width of the stave, substantially as specified.

2. A bucket or tub composed of a number of staves made of

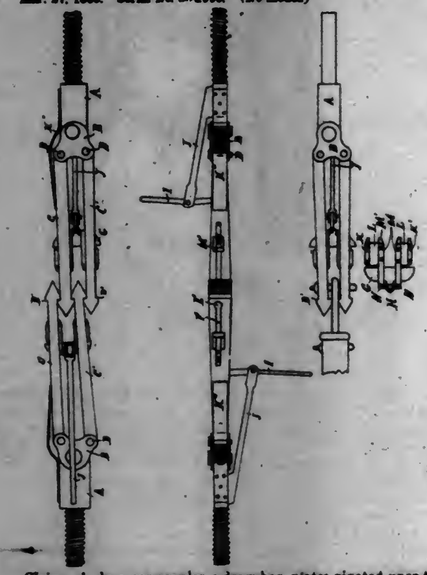


407,019.



wood, said staves having the grain of the wood extending crosswise thereof and in the direction of their widths, substantially as specified.

407,020. CAR-COUPLING. CONRAD KOEHLER, Toledo, Ohio. Filed Mar. 27, 1889. Serial No. 304,969. (No model.)



Claim.—1. In a car-coupler, a draw-bar, plates pivoted upon the same, and duplex coupling-bars having pointed ends and engaging-shoulders pivotally connected to the plates, in combination with movable plates having wedge-shaped ends adapted to uncouple the coupling-bars when in engagement, as and for the purpose set forth.

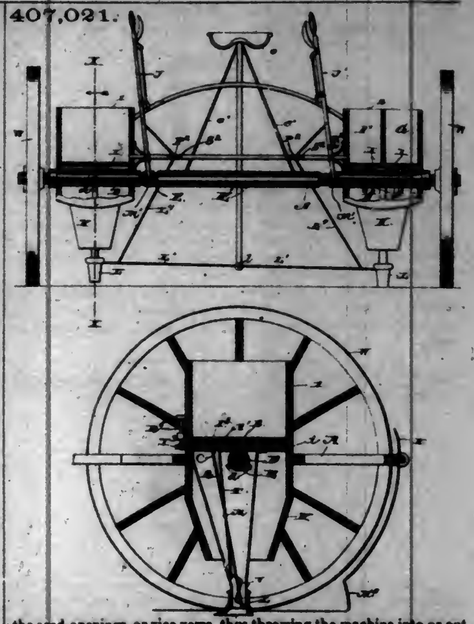
2. In a car-coupler, two coupling-bars formed with inclined ends and engaging-shoulders, each bar having an elongated opening in the body portion thereof, in combination with a plate extending within each opening and connected to a lever and to movable plates within the slots in the coupling-bars, each of the latter having wedge-shaped ends, as and for the purpose set forth.

3. In a car-coupling, two coupling-bars formed with inclined ends and engaging-shoulders, in combination with a lever connected with a movable series of inclined strips adapted to pass between the inclines of the engaging-bars, with which they are connected, as and for the purpose set forth.

407,021. PLANTER. JAMES G. LLOYD, Chicago, Ill. Filed Aug. 9, 1888. Serial No. 282,314. (No model.)

Claim.—1. In a seed-planter, the combination of the frame, the seed-boxes, the longitudinally-reciprocating seed-slides actuated by tappet-sleeves mounted upon the axle, clutches feathered upon the axle and adapted to engage said tappet-wheels, hand-levers pivoted to the frame and connected with said clutches, rods and bell-crank levers connecting said hand-levers with rods extending forwardly from the seed-slides, seed-tubes extending downwardly from the hoppers, shoes mounted upon levers pivoted to the frame, and bell-cranks connecting said levers with the hand-levers, whereby by a single operation of the latter the shoes shall be raised, the clutches uncoupled from the tappet-sleeves, and the seed-slides drawn forward, so as to cover

407,021.

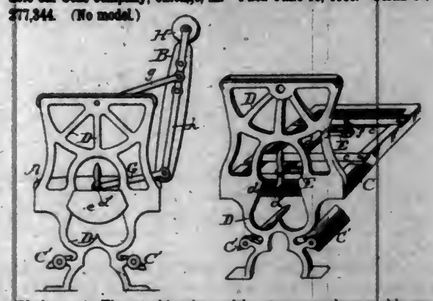


the seed-openings, or vice versa, thus throwing the machine into or out of gear, substantially as set forth.

2. The combination of the seed-spouts, the shoes L, supported upon pivoted rods L', the elbow-levers L^4, mounted pivotally upon pins P^3, sliding in slots S^2 in the frame and having their lower arms connected to the rods L', and the hand-levers connected with the upper arms of the elbow-levers L^4 and adapted to operate the latter, substantially as set forth.

3. In a planter, the combination, with the grain-spout and the partition R, dividing the grain-spout, of the flirt-valve V, pivoted midway of its ends to the said partition and having its ends curving in opposite directions and passing through slots in the partition, and the lever T, having its lower end connected with the flirt-valve and adapted to have its upper end connected with the seed-slide, substantially as described.

407,022. CAR-SEAT. ATHOL B. MACKLIN, Toronto, Ontario, Canada, assignor, by direct and mesne assignments, to the Macklin Adjustable Car Seat Company, Chicago, Ill. Filed June 16, 1888. Serial No. 277,344. (No model.)



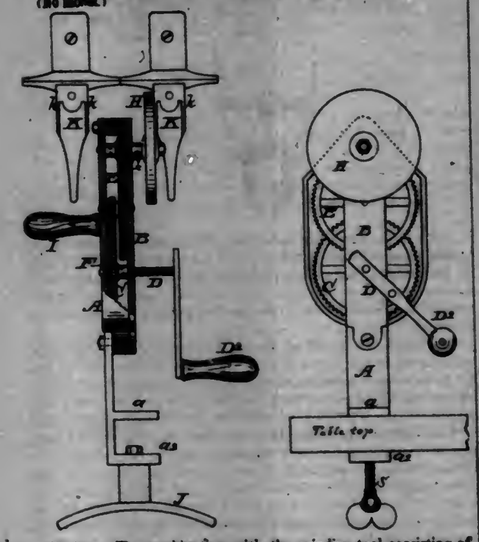
Claim.—1. The combination, with a transversely-movable car-seat and side frames, of the back, and links *g g*, connecting the side edges of said back to the said side frame above the plane of the seat, and links G, connecting the side edges of the back at a point near the lower edge thereof and said car-seat, as set forth.

2. The combination, with a transversely-movable car-seat, back B thereof, links *g*, connecting said back to the seat-frame, and the links G, connecting the lower side edges of said back to said car-seat, of the said frame D, rectangular frame C, and the transverse guide-plates *c*, as set forth.

3. The combination, with a transversely-movable seat, transverse plates *a*, secured to its under side, having a flange projecting from one longitudinal edge thereof and provided with a longitudinal series of holes therein, back B, links *g*, connecting the said back to the seat-frame, and link G, connecting the lower side edges of said back to the car-seat, of said seat-frame D, rectangular frame C, supported by said seat-frame D, transverse plates *c*, placed across frame C with reference to plates *a* of the seat, rock-shaft *d*, journaled in the ends of frame C, arms E, projecting from shaft *d*, and bolts *f f*, pivoted in the ends of said arms and extending vertically up through plates *c* into one of the series of holes in plate *a*, as set forth.

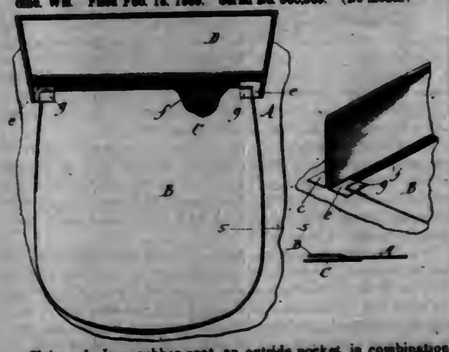
4. The combination, with a transversely-movable seat, transverse plates *a*, secured to its under side, having a flange projecting from one longitudinal edge thereof and provided with a longitudinal series of holes therein, back B, links *g*, connecting the said back to the seat-frame, and links G, connecting the lower side edges of said back to the car-seat, of said seat-frame D, rectangular frame C, supported by said seat-frame D, transverse plates *c*, placed across frame C with reference to plates *a* of the seat, rock-shaft *d*, journaled in the ends of frame C, handle *d'*, projecting from one end thereof, arms E, projecting from shaft *d*, and bolts *f f*, pivoted in the ends of the said arms and extending vertically up through plates *c* into one of the series of holes in plate *a*, and a torsion-spring F, wound around shaft *d*, as set forth.

407,023. TOOL FOR GRINDING REAPER-CUTTERS. CHARLES H. MALLORY, Springborough, Pa. Filed Feb. 23, 1889. Serial No. 300,980. (No model.)



Claim.—The combination, with the grinding-tool consisting of the two plates A and B, having the handle I and carrying the gears C E, having their shafts journaled in said plates, shaft D, provided with crank-handle D^2, and shaft G, carrying grinding-wheel H, of the lugs a a^2, formed on the end of plate A, and the removable breast-piece J, attached to lug a, all constructed and arranged to operate substantially as specified.

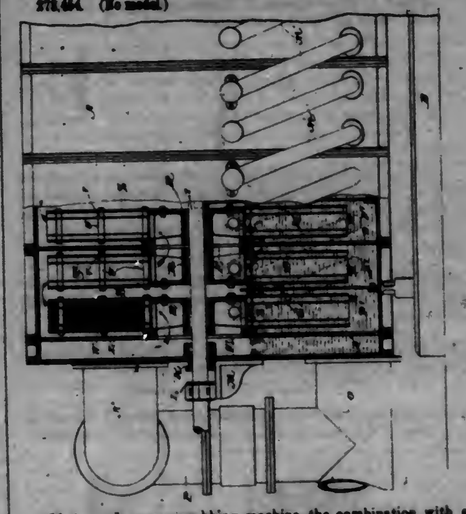
407,024. POCKET FOR RUBBER COATS. HENRY J. MILLER, Racine, Wis. Filed Feb. 18, 1889. Serial No. 300,269. (No model.)



Claim.—1. In a rubber coat, an outside pocket, in combination with a long pocket-lid which extends over and beyond the ends of the pocket-opening, said lid being provided with a piece *c*, secured to the body of the coat, and with pieces *c c*, integral with the lid, secured to the body of the coat and overlapping the corners of the pocket, substantially as and for the purpose specified.

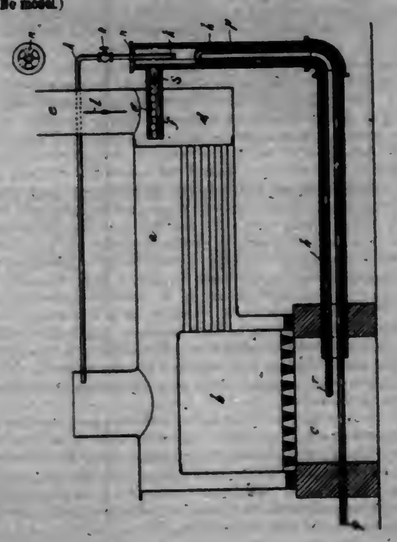
2. In a rubber coat, an outside pocket, in combination with a long pocket-lid which extends over and beyond the ends of the pocket-opening, said lid being provided with a piece *c*, secured to the body of the coat, and with a piece *d*, divided into three parts *c c* and *f*, the parts *c c* being secured to the body of the coat and overlapping the corners of the pocket, and the part *f* being secured to the back side of the pocket, substantially as and for the purposes specified.

407,025. APPARATUS FOR SCRUBBING AND WASHING GAS. KARL H. MITCHELL, St. Joseph, Mo. Filed June 20, 1888. Serial No. 278,454. (No model.)



Claim.—In a gas-scrubbing machine, the combination, with a shaft arranged to revolve in a suitable casing having transverse partitions, of the hubs mounted upon said shaft, the annular sheet-metal plates secured to the ends of said hubs, the annular foraminous plates arranged between the said sheet-metal plates, the scrubbing-sticks extending through the said foraminous plates, the connecting-bolts, and the spacing-sleeves on the latter, substantially as set forth.

407,026. SMOKE-CONSUMING APPARATUS. JOHN G. MOSS and AARON YELLIS, Reading, Pa. Filed May 10, 1889. Serial No. 310,236. (No model.)



Claim.—1. The combination, with a steam-boiler, of a pipe *f*, communicating with the smoke-flue and also with a pipe *h*, arranged at right angles to said pipe *f* and extending into the ash-pit, a steam-jet pipe *k*, extending through an adjustable cover *n* into said pipe *h*, and a damper *s*, all arranged substantially as set forth.

2. In combination with a steam-boiler, the pipes *f*, *h*, and *k*, arranged substantially as described, said pipe *h* inclosing a water-circulating conduit, substantially as and for the purpose set forth.

3. The combination, with a steam-boiler, of smoke-pipe *f*, blast-pipe *h*, steam-jet pipe *k*, water-pipe *p*, and dampers *l* and *s*, and adjustable cover *n*, all arranged and adapted to operate substantially as set forth.

407,027. DRAWER-PULL. CHARLES P. MORGAN, Meriden, Conn., assignor to Foster, Merriam & Company, same place. Filed Apr. 11, 1889. Serial No. 306,789. (No model.)

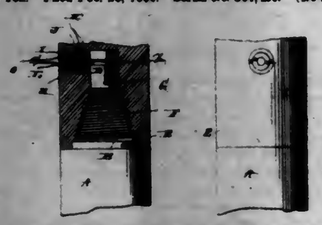


Claim.—1. In a drawer-pull, the combined boss and pull stop consisting of a section surrounding the fastening-bolt of the pull, and an integral extension d^3, bent or formed at substantially a right angle to the portion which surrounds the bolt, as and for the purposes described.

2. In a drawer-pull, the plate D, having the hole d^2, one or more notches d^4, a stop d^3, with the bolt C, having a wing or fin to enter said notch or notches, and a pull connected to said bolt, substantially as described.

3. The combination of the escutcheon-plate, the plates D, having the bolt-holes d^2 and stops d^3, the eyebolts C, and the drawer-pull B, connected with the eyebolts, substantially as described.

407,028. TOOL FOR DRILLING WELLS. HIRAM H. MCLANE, San Antonio, Tex. Filed Feb. 28, 1889. Serial No. 301,429. (No model.)



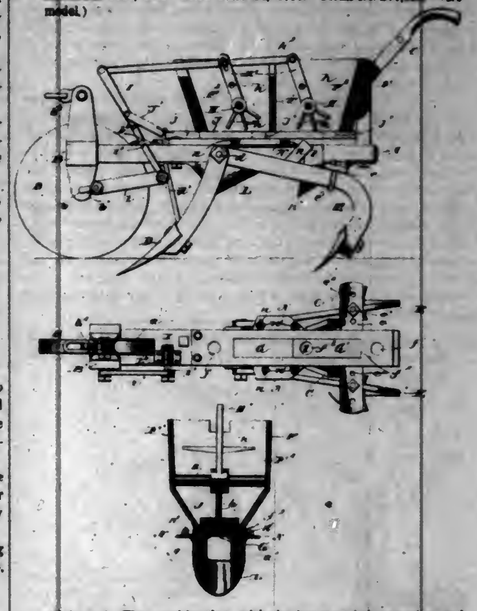
Claim.—1. The combination, with a drill or well-boring tool or the like having a cylindrical annularly-grooved extension above its screw-threaded portion, of a socket formed for its reception in the lower end of the drill-rod, a transverse opening communicating with said socket, and a non-rotating follower arranged to slide in the said opening and to engage the annular groove in the upper cylindrical portion of the drill, substantially as and for the purpose set forth.

2. The combination, with a drill or well-boring tool or the like having a cylindrical annularly-grooved extension above the screw-threaded portion at its upper end, of a socket formed for its reception in the lower end of the drill-rod, a transverse opening connecting said socket with the outer side of the drill-rod, a screw-threaded plug moving in said opening, and a non-rotating follower engaging the annular groove in the cylindrical portion of the drill, substantially as set forth.

3. The combination of a drill or shaft having a screw-threaded portion and an annular groove with a socket formed in the lower end of the drill-rod, a transverse opening communicating with said socket, a non-rotating follower sliding in said opening, so as to engage the annular groove in the drill, and having an outwardly-extending stem screw-threaded at its outer end, a screw-threaded plug moving in the transverse opening and bearing at its inner end against the shoulders of the follower, and a cylindrical nut adjusted upon the outer screw-threaded end of the stem and seated in a suitable recess formed for its reception in the outer end of the plug, substantially as and for the purpose set forth.

4. The combination, with a drill or shaft having a screw-threaded portion and an annular groove, of a socket formed in the lower end of the drill-rod, a transverse opening communicating with said socket, a follower arranged to slide in said opening and adapted to engage the annular groove in the drill, and means for moving the said follower positively in either an inward or outward direction, substantially as and for the purpose set forth.

407,029. CULTIVATOR AND PLANTER. WILLIAM C. MCTYEIRE, Hatchechubbee, Ala. Filed June 14, 1888. Serial No. 277,088. (No model.)



Claim.—1. The combination, with the beam and the opening and covering plows connected to the sides of the beam by a single bolt, of the brace for the opening-plow, and the cross-bar having a series of openings at each end, and the clips adjustably connecting the rear ends of the covering-plows with the said cross-bar, substantially as described.

2. The herein-described planter, composed of the longitudinal beam having an opening at its front end and a slot near its rear end, the drive-wheel mounted in bearings in a vertical bracket and extending into the said front opening, the crank, the vertical lever I, connected with the crank, the opening-plow, and the coverers connected with the beam at their upper ends by a single bolt, the said plow and coverers being suitably braced, the double hopper, the bottom of the hopper having end and middle discharge-openings, the seed-slide having corresponding discharge-openings and operated from the said lever I, and the block attached to the wall separating the hopper and extending over the middle opening, substantially as described, for the purpose specified.

3. The combination, with the hopper having its bottom extended beyond its ends, provided with discharge-openings at points beyond its ends, and with the intermediate longitudinal slot or opening, of the removable blocks fitted in said slot or opening, the oscillating stirrers in the hopper, the reciprocating removable seed-slide bearing on the blocks and guided through the ends of the hopper, the lever I, and connections between the same and the stirrers and seed-slide, whereby said stirrers and slide are operated simultaneously, substantially as described.

4. The combination, in a planter, of the beam having the vertical longitudinal slot, the cut-off slides N, arranged in horizontal openings communicating with the slot, and provided with the transverse slots *n*, the set-screws *n'*, mounted in said slots and bearing against the beam, the hopper mounted on the beam, the oscillating agitators or stirrers in the hopper, and the lever I, connected to the said stirrers and to the slide, substantially as described.

5. The combination, with the hopper, of the agitator-shaft H, journaled in the sides of the hopper and provided with the vertical lever H', having the agitator-fingers *h* at its lower end below the agitator-shaft, and the agitator-bar K, arranged transversely in the hopper above and parallel with the agitator-shaft, and mechanism for operating the agitators, as set forth.

6. The combination of the beam having a longitudinal slot, the hopper resting on the beam and having a slot in its bottom aligning with the slot in the beam, the slides N, inserted horizontally between the beam and the bottom of the hopper and provided with slots *n*, and the set-screws *n'*, inserted obliquely through said slots and having their ends bearing against the sides of the beam, as set forth.

7. The combination, with the double hopper having a slot in its bottom and having the ends of its bottom extended and provided with discharge-openings, of the two aligned blocks fitted in the said slot, one of said blocks having a discharge-opening, the seed-slide working on the bottom of the hopper and holding the said blocks in place, mechanism for operating the seed-slide, the chute K', arranged under the rear end of the hopper, and the double chute L, arranged under the front end of the hopper, as specified.

407,030. BRICK-MOLD-SANDING MACHINE. ALBERT H. NEWTON, Cohoes, N. Y. Filed Feb. 3, 1889. Serial No. 299,182. (No model.)



Claim.—1. In a brick-mold-sanding machine, a feed-table having a mold-retarding device at the bottom thereof, substantially as described.

2. In a brick-mold-sanding machine, a feed-table having a movable mold-retarding device at the bottom thereof, substantially as described.

3. In a brick-mold-sanding machine, the combination of a feed-table having a mold-retarding device, with a mold-cylinder and feed-rollers tangential to the path of the molds, substantially as described.

4. In a brick-mold sanding machine, the combination of a feed-table having a mold-retarding device, with a mold-cylinder and positively-rotated feed-rollers tangential to the path of the molds, substantially as described.

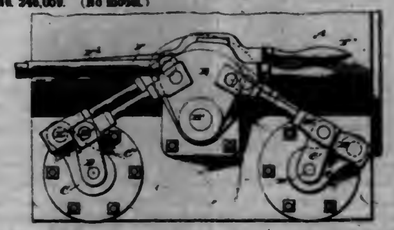
5. In a brick-mold-sanding machine, a feed-table, a sanding-cylinder, belt-rollers, and feed-rollers, in combination with belts passing around said cylinder, belt-rollers, and feed-rollers, substantially as described.

6. In a brick-mold-sanding machine, a feed-table and sanding-cylinder, in combination with a pivoted arm and a stop-rod pivoted to said arm and tangential to the path of the molds, substantially as described.

7. In a brick-mold-sanding machine, a feed-table and sanding-cylinder, in combination with a pivoted arm, a stop-rod pivoted to said arm and tangential to the path of the molds, and a spring attached to said arm for holding it, as described, in an operative position.

8. In a brick-mold-sanding machine, a feed-table and sanding-cylinder, in combination with a pivoted arm, a stop-rod pivoted to said arm and tangential to the path of the molds, a spring attached to said arm for holding it, as described, in an operative position, and pins upon the head of said cylinder moving in a path which intersects the end of said arm, substantially as described.

407,031. VALVE-GEAR. DAVID W. PAYNE, Elmira, N. Y., assignor to R. W. Payne & Sons, same place. Filed Aug. 3, 1887. Serial No. 246,059. (No model.)



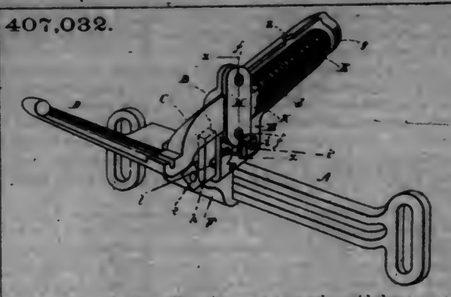
Claim.—1. The combination of a fixed eccentric, a wrist-plate, and admission and exhaust valves connected with said wrist-plate with a cut-off, a wrist-plate, and a shifting eccentric directly connected with each other, substantially as described.

2. The combination, with the cylinder A, having the ports A' A^2, communicating with valve-seats A^3, of the valves P and Q, the latter arranged within the former, valve-stems D D', connecting-rods E E', wrist-plates B and B^3, eccentric-rods F F^3, shifting eccentric M, and fixed eccentric M', substantially as specified.

407,032. LOOM-TEMPLE. JOHN E. PERRY, Northbridge, Mass. Filed Sept. 17, 1888. Serial No. 285,586. (No model.)

Claim.—1. In a loom-temple, the arm C, carrying the head-stock

407,032.



D, the bracket B, clamp H, and means for securing said clamp, a portion of said arm being angular in cross-section and arranged with an angle at its side, and said bracket being provided with a corresponding angular bearing for receiving the angular portion of the arm, whereby the wear of the arm in the bearing may be readily compensated for by tightening the clamp, substantially as described.

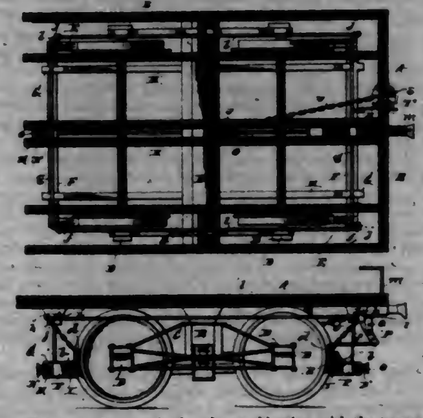
2. The arm C, carrying the head-stock D and provided with the spring E, the bracket B, clamp H, and screws *f*, a portion of said arm being angular in cross-section and fitted to work in a corresponding bearing in said bracket, said arm being so arranged that its corners or angles will stand at the top, bottom, and side, respectively, of the bearing, substantially as and for the purpose set forth.

3. In a loom-temple, the plate A, carrying the bracket B, provided with the clamp H, and the arm C, carrying the head-stock D and provided with the spring E, a portion of the body of said arm being triangular in cross-section and fitted to work in a corresponding bearing in said bracket, substantially as described.

4. In a loom-temple, the bar C, provided with the spring E, the plate K, mounted on said bar and provided with the projection *d*, and the bracket B, provided with the notch *z*, substantially as and for the purpose set forth.

5. In a loom-temple, the combination of the supporting-plate A, the frame F, provided with the dovetail *h* and slot *l*, the clamping device for adjustably connecting said frame and plate, the bracket B, provided with the slot *p* and a dovetail groove adapted to engage the dovetail on said frame, and a clamping-bolt disposed in said slots, whereby the bracket may be longitudinally adjusted and secured in position on said frame, substantially as described.

407,033. CAR-BRAKE. TIMOTHY P. RANDALL, Adrian, Mich. Filed Mar. 12, 1889. Serial No. 303,016. (No model.)



Claim.—1. In a car-brake, the combination, with the transverse bars F, of the brake-shoes, and the links having their opposite ends pivoted to the said shoes and the said bar, as set forth.

2. In a car-brake, the combination of the transverse bars F, the brake-shoes, and the links having their opposite ends pivoted to the shoes and to the said bar, and provided with the shoulders *d c*, adapted to bear against the brake-shoes and the said bar, as set forth.

3. In a car-brake, the combination of the longitudinal beams, the transverse bars mounted at the ends of said beams and carrying the brake-shoes, and the springs bearing on the transverse bars to throw the brake-shoes from the wheels, as set forth.

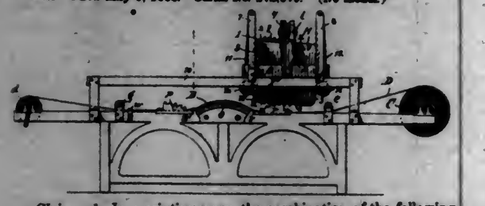
4. In a car-brake, the combination of the longitudinal beams, the transverse sliding bars mounted on said beams and carrying the

brake-shoes, springs acting on the sliding bars and cushioning the same, mechanism for applying the brakes, and the springs for releasing the same, as set forth.

5. In a car-brake, the combination, with the truck and the transverse bars, of the brake-shoes loosely mounted on the transverse bars, the rock-shafts journaled on the truck, the chains connecting the brake-shoes with said rock-shafts, and the longitudinal rods connecting the rock-shafts, whereby the said shafts may be operated to hold the brake-shoes at one end of the truck out of contact with the wheel, while the brake-shoes at the other end may be applied to the wheel, as set forth.

6. The combination, with the truck and the transverse bars, of the brake-shoes loosely mounted on the transverse bars, the rock-shafts journaled on the truck and provided with radial pins playing between stops on its bearings and having crank-arms at its ends, the chains connecting the rock-shafts with the brake-shoes, and the longitudinal rods connecting the rock-shafts, as set forth.

407,034. PRINTING-MACHINE. JOHN R. RANKIN, Indianapolis, Ind. Filed May 5, 1888. Serial No. 273,679. (No model.)



Claim.—1. In a printing-press, the combination of the following elements, namely: a bed-frame, a convex platen secured to said bed-frame, and a type-carrier having a recessed plane surface in which types are set, all arranged to co-operate substantially as specified, whereby an impression from the types is obtained by rolling the type-carrier over the platen and along the bed-frame, as set forth.

2. In a printing-press, the bed-frame, the convex platen secured to said bed-frame, the type-carrier having a recessed plane surface in which types are set, the curved rack-bars secured to the bed-frame opposite the ends of the platen, the straight rack-bars secured to the type-carrier opposite the ends of the type-surface and arranged to intermesh with said curved rack-bars, and supports for the type-carrier arranged on each side of the platen to receive and support the carrier when off the platen, all combined and arranged to co-operate substantially as and for the purpose specified.

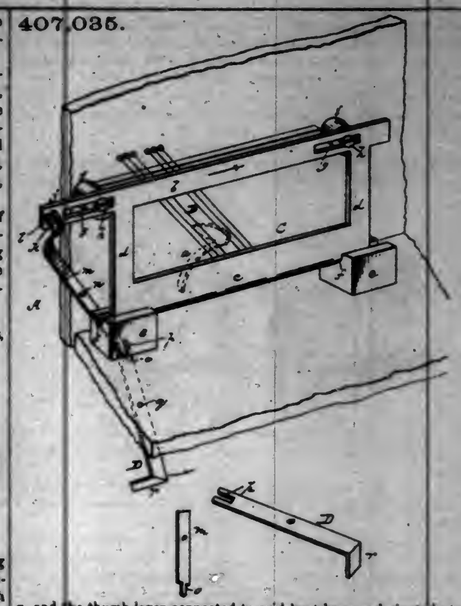
3. In a printing-press, the combination, with the bed-frame, the convex platen secured thereto, and the plane-surfaced type-carrier arranged to be rolled over and in contact with said convex platen, of a pair of rollers mounted on the bed-frame on opposite sides of the platen and carrying a web of paper which is attached to both rollers, and intermediate guide-rollers, all arranged substantially as shown and described, whereby the paper is drawn smoothly over the convex surface of the platen, and an impression of the type carried by the type-carrier is made on the paper by the rolling pressure of the type-carrier, as set forth.

4. In a printing-press, the combination of the bed-frame, the convex platen secured to the bed-frame, the curved rack-bars secured to the frame opposite the ends of the platen, the plane-surfaced rectangular type-carrier arranged to be rolled over and in contact with the platen, the rack-bars secured to the type-carrier opposite the type-surface and arranged to engage said curved rack-bars, the rack-bars secured to the bed-frame on each side of the platen at opposite ends and forming interior angles therewith, and forming also supports for the type-carrier when off the platen, and the rack-bars secured to opposite sides of the type-carrier and arranged to engage said rack-bars, all arranged to co-operate substantially as and for the purpose specified.

5. In a printing-press of the class described, the combination, with the bed-frame and the type-carrier arranged to be rolled thereon, of the guide-bars secured to opposite sides of the bed-frame above and parallel therewith, a shaft projecting from opposite ends of the type-carrier, two frames mounted on said shaft at opposite ends of the type-carrier resting on said bars and carrying ink-rolls which rest on the surface of the type-carrier, whereby the ink-rolls are carried with the type-carrier along the bed-frame and in contact with the surfaces of the type-carrier, substantially as and for the purpose specified.

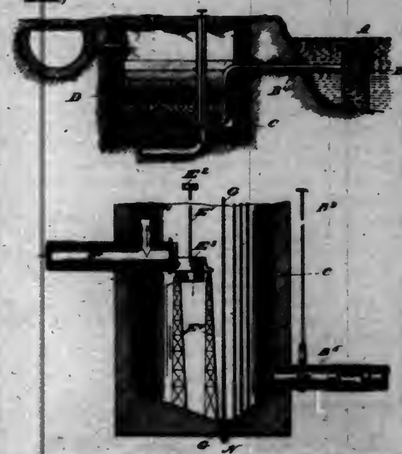
407,035. SHIFTING PIANO-ACTION. CHARLES M. RICHARDS, Fort Scott, Kans. Filed Jan. 7, 1889. Serial No. 295,614. (No model.)

Claim.—The within-described shifting device for pianos and the like, consisting of the sliding frame provided with guideways or grooved blocks *c c*, the upper horizontal bar having guides or slots *g g*, and provided with the pin *k*, the bent forked lever *m*, pivoted at



n, and the thumb-lever connected to said bent lever and pivoted at *q* to the casing, the whole adapted to operate substantially as described.

407,036. FILTERING SYSTEM AND PLANT. JAMES RIGBY, Minneapolis, Minn. Filed Jan. 24, 1889. Serial No. 297,284. (No model.)



Claim.—1. In a filtering plant or system, an intake or supply pipe arranged below the low-water line of a natural source and extended under ground to a receiving-well having agitating, aerating, and screening devices, a filtering-compartment, a pipe leading from the said well to the bottom of said filtering-compartment arranged under ground and below the point of supply, and a conductor leading from said filtering-compartment to a pumping-station, substantially as specified.

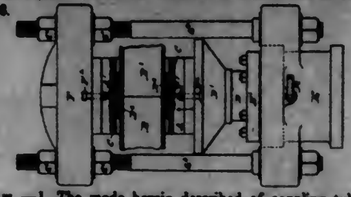
2. In a filtering system or plant, a receiving-well provided with a series of screens, an agitating device, a supply-pipe having an overflow and a by-pass pipe, and suitable controlling-valves, substantially as specified.

3. A filtering system or plant comprising a supply-pipe or intake arranged at a suitable point below the low-water line of a natural source, a receiving-well provided with agitating, aerating, and screening devices, a by-pass connected with the supply and discharge pipes of said well, a series of filtering-compartments having the filters thereof arranged below the point of supply, a discharge-pipe extending from each filtering-compartment to a conduit, and a pump-station

connected with the conduit, the whole being arranged in excavations below the point of supply, substantially as and for the purpose specified.

4. In a filtering system or plant comprising a filtering-compartment, layers of filtering material, a mud-well, a cleansing-pipe extending into a layer, and a pipe extending through all the layers and communicating with the mud-well, and a valve located above the filtering-layers and arranged in said pipe, whereby the upper layers of the filter may be cleansed and the solids separated therefrom conducted to the mud-well without passing through the lower layers, substantially as specified.

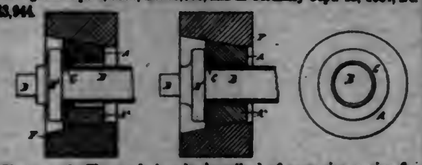
407,037. MODE OF COUPLING TUBES OR PIPES. JAMES ROBERTSON, Glasgow, County of Lanark, Scotland. Filed Sept. 2, 1887. Serial No. 248,608. (No model.) Patented in England Nov. 18, 1886, No. 14,988.



Claim.—1. The mode herein described of coupling tubes or pipes, said mode consisting in placing over the adjacent ends of the tubes or pipes to be coupled a wrought-iron or steel socket and then crushing the hard-metal socket in a cold state onto the said tubes or pipes by direct radial or lateral compression, diminishing the diameter of the socket, all substantially as set forth.

2. The mode herein described of coupling tubes or pipes, said mode consisting in placing over the ends of the tubes or pipes to be coupled a wrought-iron or steel coupling-socket, interposing a jointing material, and crushing this hard-metal socket in a cold state onto the said tubes or pipes and jointing material by direct lateral or radial compression, diminishing the diameter of the socket, all substantially as set forth.

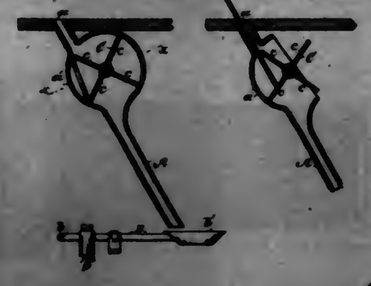
407,038. MODE OF PREPARING PIPES OR TUBES FOR COUPLING. JAMES ROBERTSON, Birmingham, County of Warwick, England. Filed May 22, 1889. Serial No. 311,732. (No model.) Patented in England Nov. 18, 1886, No. 14,988; in France Sept. 6, 1887, No. 185,673; in Belgium Sept. 7, 1887, No. 73,980, and in Germany Sept. 13, 1887, No. 43,944.



Claim.—1. The mode herein described of preparing a pipe for coupling, said mode consisting in placing upon the end of the pipe a boss or socket end of wrought-iron or steel, and compressing this hard-metal boss or socket end in a cold state on the end of the pipe by direct radial or lateral pressure, diminishing the diameter of the socket, as set forth.

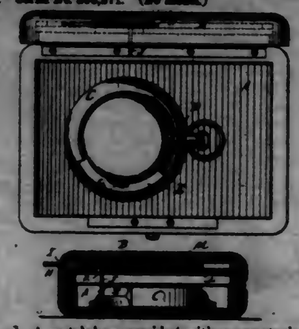
2. The mode herein described of preparing pipes for coupling, said mode consisting in placing over the end of the pipe or tube a wrought-iron or steel boss or socket end, interposing a jointing material, and crushing this hard-metal boss or socket end in a cold state onto the said tube or pipe and jointing material by direct lateral or radial compression, diminishing the diameter of the socket, all substantially as set forth.

407,039. COIN-OPERATED MACHINE. ALFRED W. ROOTHE, Brooklyn, N. Y. Filed Dec. 24, 1888. Serial No. 294,682. (No model.)



Claim.—In a coin-operated machine, the combination, with a pivoted coin-receptacle, of a chute having the internally-concaved portion and contracted portions arranged in a line at opposite sides of the concaved portion, and a wheel adapted to be operated by the weight of a coin, having its axis out of the line of the contracted portions and provided with blades extending to the wall of the concaved portion, and so spaced that two of the blades may have their edges between the two contracted portions, substantially as specified.

407,040. BOX FOR REPEATING-WATCHES. HENRI SANDOZ, Locle, Switzerland, assignor to Adolphe Schwob, New York, N. Y. Filed Feb. 9, 1889. Serial No. 299,871. (No model.)



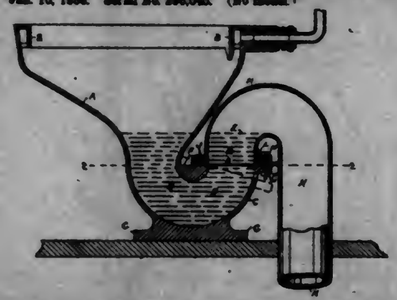
Claim.—1. A watch-box provided with a receptacle for holding a repeating-watch in fixed position, a lever, and a pin projecting from said lever adjacent to the pusher of the repeating-watch in the receptacle, substantially as set forth.

2. A watch-box having a receptacle for holding a repeating-watch in fixed position, a lever provided with a pin which is adjacent to the pusher of the repeating-watch, and a spring acting on said lever, substantially as set forth.

3. A watch-box provided with a receptacle for holding a repeating-watch in fixed position, a lever pivoted to the cover of the box and projecting through a slot in the front edge of the box, and a pin on said lever adjacent to the pusher of the repeating-watch, substantially as set forth.

4. A watch-box provided with an annular receptacle for holding a repeating-watch, which receptacle has a notch for the watch-pendant and a recess in which the pusher of the repeating-watch can be moved, a lever pivoted on the box, and a pin projecting from said lever adjacent to the pusher of the repeating-watch, substantially as set forth.

407,041. WATER-CLOSET. WILLIAM SCOTT, Medford, Mass. Filed Jan. 10, 1888. Serial No. 260,045. (No model.)

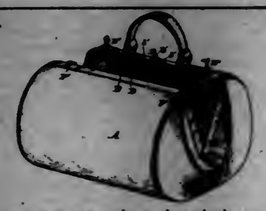


Claim.—A short-hopper closet-bowl having means to flush it, and a discharge leading downward from the lowest portion of the bowl and turned upward therefrom, terminating in a ledge and forming part of a water-trap, having its dip between said ledge and the bowl, all in one piece of earthenware, in combination with a metal waste-pipe shaped to form the other part of the trap and in continuation of said discharge of the bowl and united to said ledge, and its joint suitably packed and submerged in the standing water of the trap, substantially as and for the purpose described.

407,042. TRAVELING-BAG. GEORGE W. STRATTAN, Altoona, Pa. Filed Apr. 10, 1888. Serial No. 307,732. (No model.)

Claim.—1. In combination with a traveling-bag having central and side latches, movable bars secured on the bag-frame with one end substantially in contact with the movable part of the central latch, so as to move with it, and their other ends substantially in contact with

407,042.



the side latches, so as to move them when the bars are moved, all substantially as specified, and so that the unlatching of the central latch will unlatch the side latches.

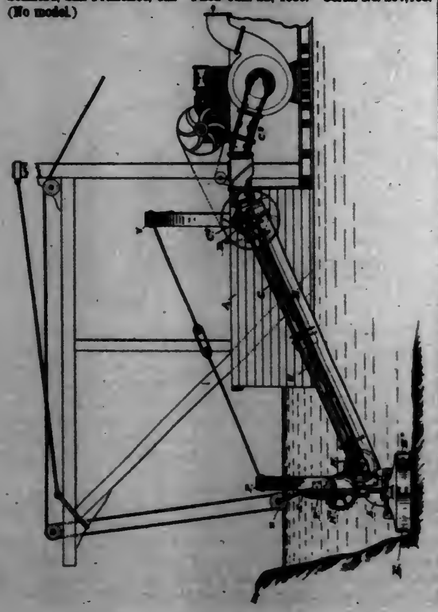
2. In combination with a traveling-bag having central and side latches, lever-bars pivoted on the frame of the bag, with one end substantially in contact with the movable part of the central latch, so as to move with it, and their other ends substantially in contact with the side latches, so as to move them when the levers are moved, all substantially as specified, and so that the unlatching of the central latch will unlatch the side latches.

407,043. BOILER-FEEDER. FLORENS I. VEERKAMP, Philadelphia, Pa. Filed Oct. 19, 1888. Serial No. 288,562. (No model.)

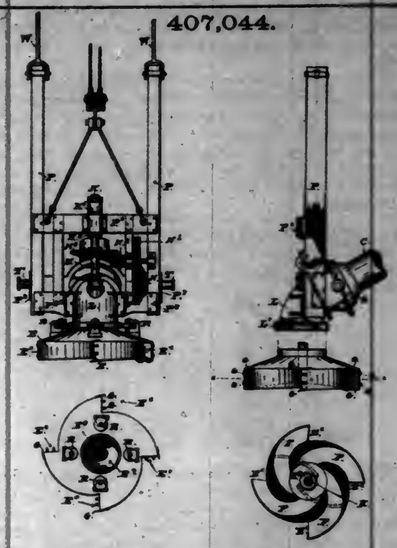


Claim.—A device for automatically supplying water to steam-boilers, consisting of a hollow rotating water-cock D, having a single inlet and outlet port K, an annular band G, adapted to fit water-tight around said cylinder, and within which the latter is rotated, said band G having inlet and outlet openings at opposite points in its periphery and corresponding with the port K of the rotating water-cock D, a pipe *g*, leading from the inlet-port of said annular band to a water-reservoir, and a pipe C, leading from the outlet-port thereof to the interior of the boiler, and terminating at the desired water-level therein, a supporting-casing B, and suitable mechanism to constantly rotate said hollow water-cock D, said parts being combined, arranged, and operated substantially as set forth.

407,044. HYDRAULIC DREDGING-MACHINE. JULIUS H. VON SCHMIDT, San Francisco, Cal. Filed Jan. 22, 1889. Serial No. 297,183. (No model.)



407,044.



Claim.—1. A rotary excavator for dredging-machines, having a central receiving-chamber, helical passages extending therefrom outward to the periphery, at which point the ends of the passages terminate in cutting mouths or buckets with cutting-edges setting in radial planes, in combination with a suction-pipe having an end section that is connected with the main pipe by a ball-and-socket joint, and is curved at the outer end to take the rim of the open end of the suction-chamber, and driving mechanism adapted to rotate the excavator about a perpendicular axis, substantially as described.

2. A rotary excavator having peripheral openings with cutting-edges, separate passages of helical form leading inwardly and delivering into a common suction-chamber at the center, and a bottom without openings having helical scraping blades or ribs extending from center to periphery in the opposite direction to the turns of the internal passages, said excavator being mounted for rotation about a perpendicular axis, substantially as described.

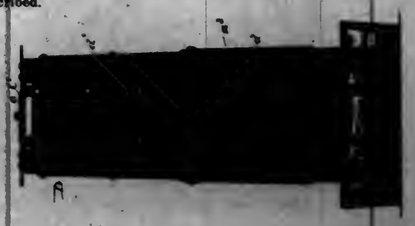
3. In a rotary excavator, the combination of a body provided with peripheral openings having cutting-edges, a common central chamber E^3, whose walls revolve with the excavator and lie immediately under the end of suction-pipe, and helical passages leading from the peripheral openings to the central chamber, where each passage has a separate discharge always open into the central chamber, as set forth.

4. A rotary excavator for dredging-machines, consisting of a body having peripheral openings, a common central receiving-chamber formed and revolving with the excavator, and helical passages leading from the peripheral openings to the common central chamber and discharging therein at all points of revolution, as set forth.

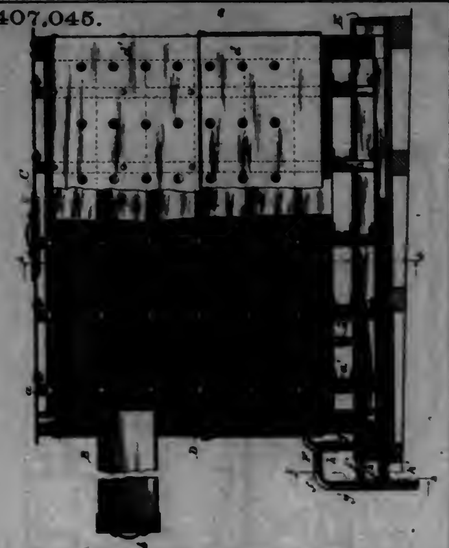
407,045. REFRIGERATING APPARATUS. FRANK A. WALIN, Chicago, Ill. Filed Apr. 12, 1886. Serial No. 270,405. (No model.)

Claim.—1. In a refrigerator, an ice-chamber and its supporting-bars, in combination with a perforated iron casing composed of the removable part *d* and a stationary part *d'*, the latter being riveted to the supporting-bars, substantially as and for the purpose hereinbefore set forth.

2. In a refrigerator, the ice-chamber having a closed bottom and supports resting in a basin, in combination with a pipe leading from the chamber and having two branches, one leading to the basin and having a cock, the other leading outside of said basin and having a cock-controlled connection with said basin, as and for the purpose described.



407,045.



407,046. COUPLING. WILLIAM WILCOX and WILLIAM A. WILCOX, Grand Rapids, Mich. Filed Feb. 26, 1889. Serial No. 301,232. (No model.)



Claim.—1. A coupling consisting of sections A B, having screw-threaded extensions at one end, and a fluid-joint at the opposite ends, and a sleeve engaging with both of said sections, in combination with brackets having screw-threaded apertures with which the extensions of the coupling-sections engage, substantially as described.

2. A coupling consisting of a section B, having an enlargement or head, as *f*, a seat, as *g*, shoulders, as *h*, a tubular extension at one end and a conical projection, as *i*, at the opposite end, a counter-section A, having a head, as *b*, a conical seat, as *d*, in said head, and studs *c* on the periphery of the head *b*, in combination with brackets, as D, provided with screw-threaded apertures, and a sleeve, as C, having a flange, as *k*, adapted to the seat *g*, and shoulder *h* on the section B, and angular grooves *m* to receive the studs *c* on the section A, substantially as described.

407,047. VALVE. WILLIAM WILCOX and WILLIAM A. WILCOX, Grand Rapids, Mich. Filed Feb. 26, 1889. Serial No. 301,233. (No model.)

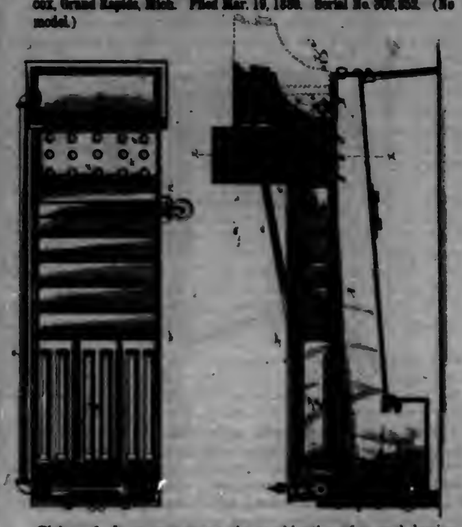


Claim.—1. As an article of manufacture, a valve consisting of a plate or base having a discharge-aperture and provided with a plain flat rear surface, and a raised seat and ways on the opposite side, and a valve pivotally secured thereto, substantially as described.

2. As an article of manufacture, a valve consisting of a plate or base having a straight lower edge and a discharge-aperture, a disk having a surface corresponding with the lower edge of the base, and a beam on its outer side, in combination with a lever secured to a boss on the base and on the valve, substantially as described.

3. As an article of manufacture, a valve consisting of a plate or base having a discharge-aperture, a disk, an arm or lever attached to the base at the rear end of the arm and engaging with a boss on the disk, and a screw passing through the lever and into the disk for preventing the disk from revolving in the lever, substantially as described.

407,048. EVAPORATOR. WILLIAM WILCOX and WILLIAM A. WILCOX, Grand Rapids, Mich. Filed Mar. 19, 1889. Serial No. 303,852. (No model.)



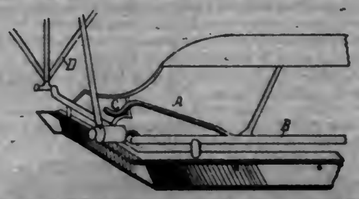
Claim.—1. In an evaporator, the combination of an arch having an uptake provided with an open end, and a removable heater having flues and projecting into the uptake, substantially as described.

2. In an evaporator, the combination of a removable heater provided with flues and an arch having an open uptake and an extension to form a support for the heater when withdrawn from the uptake, substantially as described.

3. In an evaporator, an arch having an uptake supported thereon, one end of said uptake being open, in combination with a horizontally-sliding heater having a horizontal extension provided with a series of tubes and constructed to be inserted into the uptake through the open end, substantially as described.

4. In an evaporator, an arch having an uptake open at one end, in combination with a removable heater having a horizontal extension provided with a series of vertical flues and a vertical extension in the rear thereof provided with a discharge-pipe near its upper end, and a valve for drawing off the contents below the discharge-pipe, substantially as described.

407,049. REST FOR BUGGY-TOPS. HOMER H. ALLEN, Oceanside, Cal. Filed Sept. 7, 1888. Serial No. 284,815. (No model.)



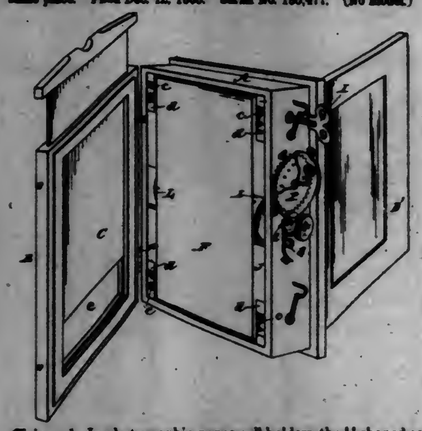
Claim.—1. The buggy-top bow-spring support consisting of a spring-arm attached by one end to the back-seat rod and projecting outward beyond the end of the seat into the path of the buggy-top bow, approximately at right angles therewith, and having a seat at its free end to receive such bow.

2. The buggy-top bow-spring support consisting, as set forth, of the spring-arm attached to the buggy-seat-back rod, and projecting outward beyond the end of the seat into the path of the buggy-top bows, approximately at right angles therewith, and having its end curved, as at C, to form a seat for the bows.

3. The combination set forth of the back-seat rail, the clamp-plate G, provided on its clamping-face with the transverse groove I and the transverse groove J, having a crook therein, the clamp-plate G', provided on its clamping-face with the transverse groove I' and the transverse groove J', corresponding in its reversed form and position with the form and position of the groove J, and the spring-arm having one end formed to fit the socket formed by the grooves J J'

whose the plates are clamped together and having its other end curved to form the seat C.

407,050. PHOTOGRAPHIC PAPER-ROLL HOLDER. ERASTUS B. BARKER, New York, N. Y., assignor to E. & H. T. Anthony & Company, same place. Filed Dec. 12, 1885. Serial No. 185,477. (No model.)



Claim.—1. In photographic paper-roll holders, the U-shaped carrier H, adapted to operate substantially as shown and described.

2. In photographic paper-roll holders, the combination, with the paper-carrying roller, of a spring-carrier detachable from the holder and constructed to form bearings for the ends of the roller and to throw tension on the roller at its ends, substantially as specified.

3. In a photographic camera, the combination of the carrier H, and the pivots G, constructed with flanges *b*, arranged a short distance from the ends of the pivots, substantially as and for the purpose set forth.

4. The combination, with the paper-carrying roller, of the roller-carriers H, and the fixed bearing supports or guides *d* for said carriers, substantially as specified.

5. The combination of the U-shaped carrier H with the paper-carrying rollers, substantially as shown and described.

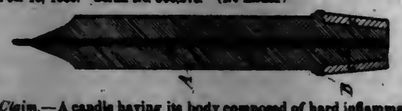
6. The paper-carrying roller, constructed with a longitudinal groove and a slot at each end of the groove, deeper than the groove, in combination with a rod adapted to fit said groove, and provided at each extremity with a bent end or hook adapted to enter the said slots, as herein set forth.

7. In a photographic paper-roll holder, the body A, provided with supplementary intermediate guides for extra paper-carrying rollers, substantially as and for the purpose herein set forth.

8. In a photographic paper-roll holder, the combination, with the holder, of an automatic numbered index or indicator, actuated by the paper in motion and constructed to show and register each exposure and the number of consecutive exposures of the sensitized paper or sheet, essentially as and for the purposes herein set forth.

9. The combination, with the registering-wheels L and their shaft *k*, of the back or cover D', and one or more springs M, carried by said cover and arranged to bear upon or against said shaft, essentially as and for the purpose herein set forth.

407,051. CANDLE. ANTON F. BAUMER, Syracuse, N. Y. Filed Feb. 18, 1889. Serial No. 300,873. (No model.)



Claim.—A candle having its body composed of hard inflammable material and its base provided with a facing of softer analogous inflammable material, substantially as set forth.

407,052. GRAIN-SEPARATOR. JOHN R. BEYER, Watertown, Wis., assignor of one-half to James B. Murphy, same place. Filed Dec. 11, 1883. Serial No. 296,290. (No model.)

Claim.—1. The combination of a pivoted valve, a rotary adjustable block arranged on the valve-pivot, and a longitudinally-adjustable weight connected to the block, substantially as set forth.

2. The combination, with a hopper and air-flue, of a casing arranged within the hopper, the inner wall of the casing provided with upper and lower openings and the outer wall with a lower opening only, a valve pivoted in said casing and having two surfaces of different areas and planes, and means, substantially as described, for producing a forced current in said air-flue, as and for the purpose set forth.

3. The combination, with a chamber having an outlet-opening, of a hood surrounding the same and provided with a back piece, a valve pivoted in the hood and having two surfaces of different areas and planes, and means, substantially as described, for inducing a forced draft against the valve, as and for the purpose set forth.

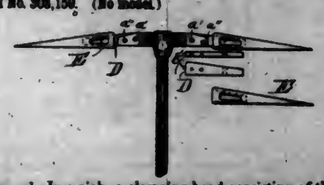
4. The combination, with a flue and its casing, of a flue arranged in said casing, and a valve pivoted in the flue and having two surfaces of different areas and planes, substantially as set forth.

5. The combination, with a flue and its casing, of a flue arranged in the casing, a valve pivoted in the flue and having two surfaces of different areas and planes, and a weight adjustably connected to the valve, substantially as set forth.

6. The combination of the receptacle A, provided with the depending chamber E and partition K, the tube H, having the cap *g*, the adjustable disk I, the valve G, flue L, hopper M, provided with the casing N, the valve O, the casing B, provided with the flue P, the weighted valve Q, and the fan C, all arranged to operate substantially as and for the purpose set forth.

7. The combination of an air-flue having a side thereof provided with an opening, a fan having its casing communicating with the air-passage, and a pivoted valve for the opening having two surfaces of different areas and planes, whereby the suction created, by the fan is normally exerted to maintain the closure of the valve, substantially as set forth.

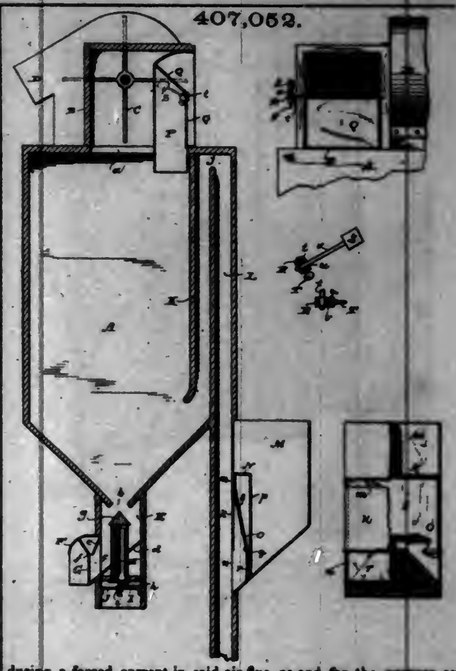
407,053. PICK. JOHN T. BOSS, Atlanta, Ga. Filed Mar. 13, 1889. Serial No. 303,150. (No model.)



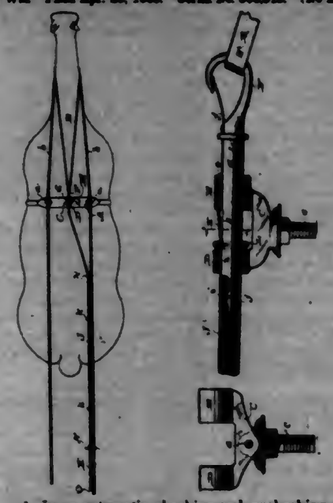
Claim.—1. In a pick, a clamping-head consisting of the head A, having an eye for the insertion of a handle and recesses in its ends having a hole in each of their bottoms for the introduction of a tenon of an inserted part, in combination with the intermediate piece D and the point E, substantially as set forth.

2. In a pick, the combination of the head A, the intermediate piece D, and the point E, and the screws *a'*, *a''*, and *c*, all combined and operating substantially as shown and described, and for the purpose specified.

407,052.



407,054. HORSE-CHECKING DEVICE. PHILIP A. BOOTH, Rib Mountain, Wis. Filed Apr. 23, 1888. Serial No. 271,313. (No model.)



Claim.—1. In an automatic checking and unchecking device, the combination of a bracket having horizontally-arranged sleeves, a check-rein-hook having a shank passing through said sleeves, a strap attached to said shank and extending back to within reach of the driver, a spring secured to said shank, and a spring-controlling device on said shank between the said sleeves, substantially as set forth.

2. In an automatic checking and unchecking device, the combination of a bracket carrying sleeves, a check-rein-hook having a shank passing therethrough and carrying a spring and spring-controlling device, a strap secured to the end of said shank, and a spring attached to the rear end of said strap and to the harness within reach of the driver, substantially as set forth.

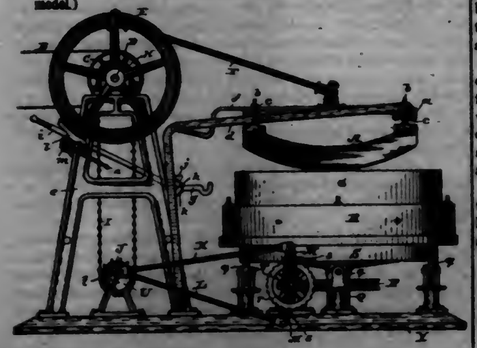
407,055. POCKET-KNIFE. WILLIAM BERRY, Hamakua, Hawaii. Filed Aug. 22, 1888. Serial No. 283,397. (No model.)



Claim.—1. In a pocket-knife, the combination, with the cheek-piece *b*, of linings *a a'*, the chambered plate *c*, the cheek-piece *b'*, having the whetstone B attached to its inner side and adapted to enter the chamber of the plate *c*, and means for connecting said cheek-piece and handle, substantially as shown and described.

2. A pocket-knife provided with a chambered plate *c*, notched studs *d d'*, the apertured cheek-piece *b'*, provided with slotted slides *f f'*, adapted to engage the studs *d d'*, and the whetstone B, attached to the cheek-piece *b'* and adapted to be received in the chambered plate *c*, substantially as shown and described.

407,056. MEAT-CUTTER. PETER H. BROCKMEIER and PETER J. TRESER, Milwaukee, Wis. Filed Oct. 1, 1888. Serial No. 286,861. (No model.)



Claim.—1. In a meat-cutter, the combination, with the knife-carrying frame *e* and an arm *f*, rigidly attached thereto, of a shaft A, journaled on the supporting-frame, and a bracket-arm *g*, provided with a handle *i*, rigid on said shaft, substantially as described.

2. In a meat-cutter, a horizontally-rotating wheel S, an arbor Q, rigid to the frame, about which arbor the wheel S rotates, and an arbor *u*, rigid on the arbor Q, eccentric to the axis thereof and entering a recess therefor in the bottom of case R eccentric to its center, in combination with case R, resting movably on the wheel S and rotating eccentrically about the arbor *u*, a small cog-wheel *v*, rigid on the wheel S entirely at one side of the axis of that wheel, and an inwardly-facing cog-wheel W, rigid on case R, eccentric to its arbor, and meshing with the wheel *v*, whereby the case R is rotated eccentrically about its own arbor and is carried eccentrically about the axis of the wheel S, substantially as described.

3. In a meat-cutter, a shaft N, having thereon a wheel meshing with a wheel on the meat-block-supporting mechanism, and a ratchet-wheel *r*, rigid on shaft N, in combination with oppositely-extending arms M M, pivoted at their inner ends on the shaft N, gravity-pawls *s s*, pivoted severally on the arms M M, and connecting-rods K and L, severally pivoted at one end to the outer ends of the arms M M, and at the other ends pivoted eccentrically by a common wrist-pin to a power-supplying wheel, substantially as and for the purpose set forth.

4. In a meat-cutter, a mechanism-driving shaft N, provided with a worm therefor, a ratchet-wheel *r* rigid thereon, and two oppositely-extending arms M M, pivoted at their inner ends on the shaft N, and provided with gravity-pawls *s s*, adapted to engage alternately with the ratchet-wheel *r*, in combination with connecting-rods K and L, pivoted at one end severally to the arms M M, and at the other end pivoted by a common bolt *t* eccentrically to a driving-wheel, and the driving-wheel U, having a slot across its face, in which the bolt *t* is adjustably secured, substantially as described.

407,057. SEAL FOR MAIL-PACKAGES, &c. EDWARD J. BROWN, East Orange, N. J. Filed June 19, 1888. Serial No. 314,803. (No model.)



Claim.—1. A sealing-rivet having a rigid head at one end and a normally hard and brittle but fusible stem, the latter composed of ignitible wax, whereby the same is adapted to be preliminarily and securely attached to the package-jacket and to be ignited so as to prepare it *in situ* for the sealing operation, substantially as hereinbefore specified.

2. A sealing-rivet having a stem of wax and a head formed by the rim of a metallic eyelet, the crown of which surrounds the adjoining portion of the stem, substantially as hereinbefore specified.

407,058. MOTOR FOR SEWING-MACHINES. JOHN M. BROWN, Atlanta, Ga. Filed Aug. 28, 1888. Serial No. 283,565. (No model.)

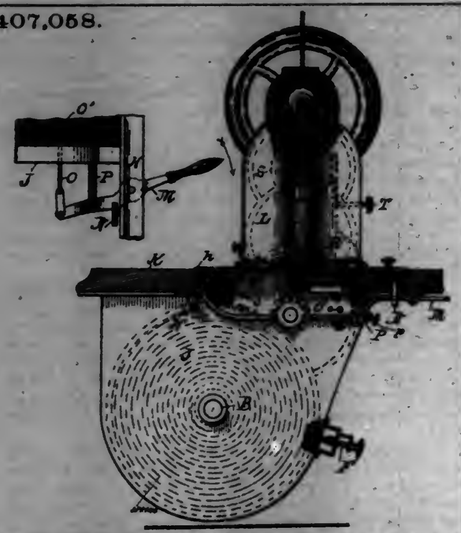
Claim.—1. A means for operating a sewing-machine, consisting of a spring-driven train of gearing connected directly with the machine and mounted partly within the arm of the machine-head and partly in a casing beneath the table, said arm of the machine-head being hinged to the table and adapted to carry with it the portion of the train of gearing therein inclosed, substantially as shown and described.

2. The combination, with the motor-frame, the head, their hinged connection, and the portion of the train of gears contained in said frame and head, of the means employed for connecting them and preventing further movement of the gears when the parts are disengaged, consisting of the notched lug N, lever M, pin O, attached to said lever, and the gear O', provided with holes to receive said pin, substantially as shown and described.

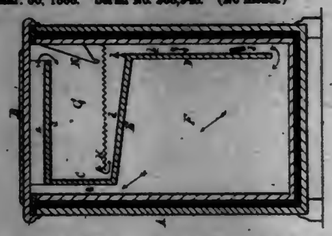
3. As a means for winding driving-springs, the ratchets A and A', the shaft B, and the sleeve G', the lever C, pawls *c'*, spring *c''*, cam D, lever *d*, and connecting-rod *d'*, combined and arranged substantially as shown and described.



407,058.

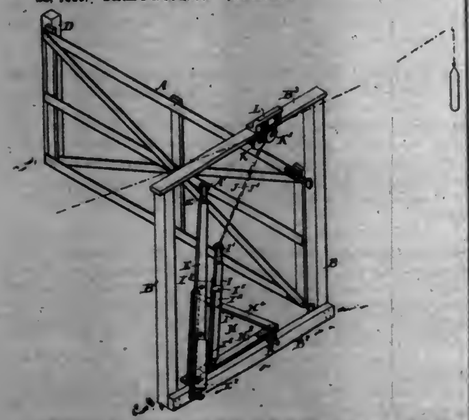


407,059. REFRIGERATOR. GEORGE W. BULLER, Ann Arbor, Mich. Filed Mar. 30, 1888. Serial No. 268,948. (No model.)



Claim.—In a refrigerator, the combination of the preserving-chamber F at the bottom, the ice-receptacle G at the top, having the rack H, there being a space between the rack and partition C, the air-passage *a* on one side leading from the top of the chamber F, the air-passage *c* at the top leading from the passage *a* to the opposite side of the receptacle G, and the air-passage *b* at the opposite side from the passage *a*, the passage *b* leading from the bottom of the receptacle G to the bottom of the chamber F, as set forth.

407,060. GATE. AMOS W. CHILCOTT, Mattoon, Ill. Filed Mar. 22, 1889. Serial No. 304,285. (No model.)



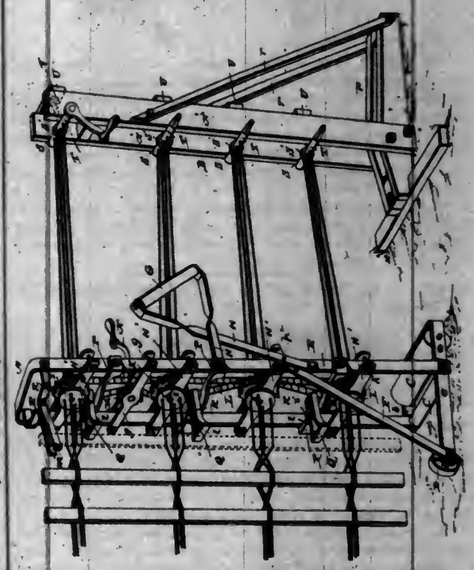
Claim.—1. The combination, with the hinged gate, of a lever pivotally connected at one end to the gate, a triangle hinged at its base and pivotally connected at its apex to the said lever between the ends thereof, and a weight on the projecting end of the lever beyond the apex of the triangle.

2. The combination, with the hinged gate, of the triangle hinged at its base and provided with an operating-arm projecting beyond one of its sides near the apex and an operating-lever E, pivotally connected at its under side between its ends to the apex of the triangle, pivotally connected at its inner end with the gate, and provided at its free end with a weight E', substantially as set forth.

3. The combination, with a gate mounted to swing, of a weighted lever pivotally connected with the said gate, a triangle pivotally connected at its apex with the said weighted lever and mounted to swing at its base, an extension-arm secured to the said triangle, ropes connected with the said extension-arm, pulleys located above the base of the said triangle, over which pass the said ropes, and a second set of pulleys held on posts alongside the gateway and over which the said ropes pass, substantially as shown and described.

4. The combination, with a gate mounted to swing, of a weighted lever pivotally connected with the said gate, a triangle pivotally connected at its apex with the said weighted lever and mounted to swing at its base, an extension-arm secured to the said triangle, ropes connected with the said extension-arm, pulleys located above the base of the said triangle, over which pass the said ropes, a second set of pulleys held on posts alongside the gateway and over which the said ropes pass, and handles held on the downwardly-hanging ends of the said ropes, substantially as shown and described.

407,061. FENCE-MACHINE. GEORGE J. CLINE, Goshen, Ind. Filed Apr. 26, 1889. Serial No. 308,698. (No model.)



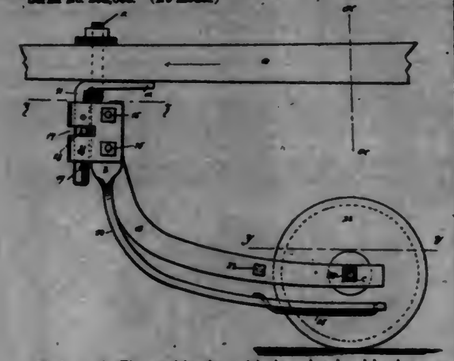
Claim.—1. The combination, with the tension-device frame having notched bearings, of the bobbins arranged in said bearings, the eye-bolts holding the bobbins in their seats, the cross-bars secured to the upright frame and receiving the threaded eyebolts, and the nuts on said bolts for adjusting the same, substantially as specified.

2. The combination, with the twisting-machine, of twisting devices applied to transverse bars secured to an inverted-U-shaped frame, the sprocket-wheel also secured to transverse bars of said frame, the adjustable bumpers arranged in the vertical line of the twisters, a roller-base frame provided with long cylindrical rollers C and a guide-roller D, said base-frame being pivoted to the frame A, the brace-arm F, pivoted to the front arm *e* of the base-frame and adjustably attached to frame A, and the handle G, secured to the latter by bars H, all as specified.

3. The combination, in a wood-and-wire-fence-making machine, of wire-twisting devices, longitudinally-adjustable bumpers Q, vertically-adjustable supports H' therefor, and a main frame A, substantially as described.

4. The combination, with the frame A, bearing fence-wire twisters, and fence-panel bumpers, of a supporting-carriage to which said frame is pivoted, composed of the frame *a c b*, the long roller C, and a front guiding-wheel D, the said frame and carriage provided with a bracing-arm F, pivoted to the latter and adjustably attached to the former, as specified.

407,062. ROLLER-COLTER. SIDNEY COOK, Orlando, Fla., assignor to himself and WILLIAM M. OGILVIE, same place. Filed Nov. 26, 1888. Serial No. 292,063. (No model.)



Claim.—1. The combination, with the colter-head having rearwardly-extending arms secured at their forward ends thereto, and the colter journaled in the rear ends of said arms, of the weed-depressing arms secured to the colter-head and curved downward and rearward under the colter-arms, substantially as set forth.

2. The combination, with the colter-arms having a head at their forward ends and the colter journaled in their rear ends, of parallel spring-arms secured at their forward ends to said head, and extending rearwardly under the colter-axis, substantially as set forth.

3. The combination, with the colter-arms set edgewise and projecting upward at their forward ends, and the weed-holding arms extending flatwise under the colter-arms to or beyond the axis of the colter, and having flat upper ends parallel with the adjacent ends of the colter-arms, of the U-shaped head, embracing the ends of said arms and bolts extending therethrough, substantially as set forth.

4. The combination, with the flat weed-depressing arm having apertures near its rear lower end, of a guard wire or rod on the under side of said arm with its ends secured in said openings, substantially as set forth.

5. The combination, with the colter-arms having longitudinally-aligned apertures in their rear or lower ends, and the socketed bushings 20, inserted in said apertures, and having flanges bearing on the inner sides of said arms, of the colter having a shaft the ends of which turn in the socket in said bushings, and a tie-rod connecting the said arms beyond the colter, substantially as set forth.

6. A colter comprising the vertical pivot-pin 10, having transverse apertures and a rearward-projecting upper end *a*, the U-shaped head 16, having bolt-holes through its sides, and a transverse slot 17 through it at its bend, the pin 18 passed through said apertured pin and slot, the colter and weed-depressing arms bolted flatwise between the rear ends of said head and extending downward and rearward therefrom, the latter arms extending below and in vertical alignment with the former or colter arms, and the colter journaled in the rear ends of the colter-arms above the rear ends of the weed depressing or holding arms, substantially as set forth.

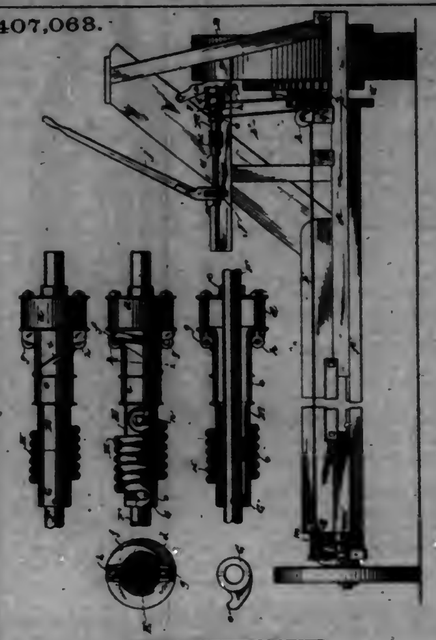
407,063. HARVESTER. HENRY F. CRANDALL, Milwaukee, Wis., assignor to the Milwaukee Harvester Company, same place. Filed Sept. 6, 1887. Serial No. 248,983. (No model.)

Claim.—1. The combination, in a harvester, of a bull-wheel, its axle, and the pinions and sheave carried by the axle, with racks fixed to the harvester-frame and receiving the pinions, a lifting-shaft carried by the harvester-frame, a fixed and loose sleeve carried by the shaft, a spring uniting the two sleeves, and a flexible connection having one end secured to the sheave and the other to the loose sleeve, substantially as described.

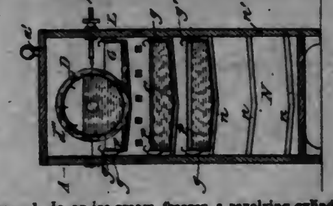
2. The combination, with the lifting-shaft and its fixed and loose sleeves and uniting-spring, of a flexible connection having one end secured to the loose sleeve and the other end secured to an arm of the lifting mechanism for the outer end of the grain-platform, substantially as described.

3. The combination, in a harvester, of a bull-wheel, its axle and pinions, a sheave carried by the axle, racks fixed to the harvester-frame and receiving the pinions, a lifting-shaft carried by the harvester-frame, a fixed and loose sleeve carried by the shaft, a spring uniting the two sleeves, ordinary lifting mechanism on the axle of the grain-wheel, and flexible connections leading from the loose sleeve, one having an end secured to the sheave on the axle and the other having an end secured to the lifting mechanism of the grain-wheel, as set forth.

407,068.



407,064. ICE-CREAM FREEZER. EDWIN I. DRAKE, Winchester, Tenn., assignor of one-half to RUFUS W. SMITH, La Grange, Ga. Filed Sept. 21, 1888. Serial No. 286,015. (No model.)



Claim.—1. In an ice-cream freezer, a revolving cylinder having non-conducting ends, in combination with a cream-containing pan provided with laterally-thrusting springs, whereby it is retained in position below the cylinder, but depressible by the layer of cream as it gradually increases in thickness on the cylinder, substantially as set forth.

2. In an ice-cream freezer, a revolving cylinder having its ends formed of non-conducting material, in combination with a cream-containing pan provided with laterally-thrusting springs, whereby it is retained in position below the cylinder, but depressible by the layer of cream as it gradually increases in thickness on the cylinder, the chamber inclosing said cylinder and pan, and the adjustable knife attached to the side of said chamber so that its edge can be brought to bear upon the surface of the cylinder to clear it of the frozen cream, substantially as set forth.

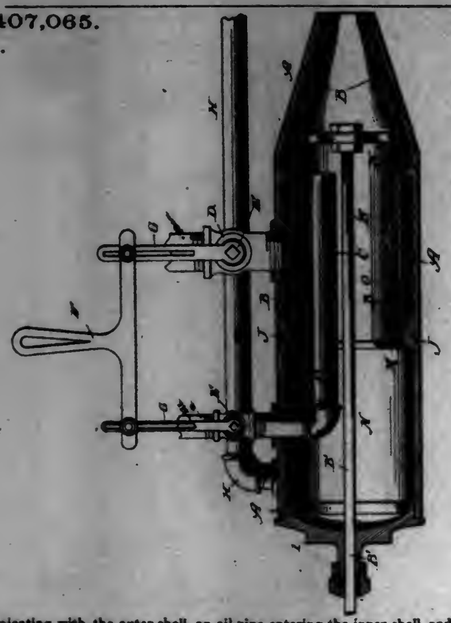
407,065. INJECTOR OIL-BURNER. WILLIAM H. ESSON, Chicago, Ill., assignor of one-half to SIMON FRANKENSTEIN, same place. Filed Dec. 18, 1888. Serial No. 294,017. (No model.)

Claim.—1. In an injector oil-burner, the combination of an outer shell, an inner shell, means for adjusting such inner shell, a steam-pipe communicating with the outer shell, an oil-pipe extending within the inner shell, cocks in such pipes, and means for regulating the relative opening of such cocks, substantially as described.

2. In an injector oil-burner, the combination of an outer conical shell, an inner conical shell, means for adjusting such inner shell, a steam-pipe communicating with the outer shell, oil-pipe communicating with the inner shell, cocks for closing such pipes, and means for regulating the relative opening of such cocks, substantially as described.

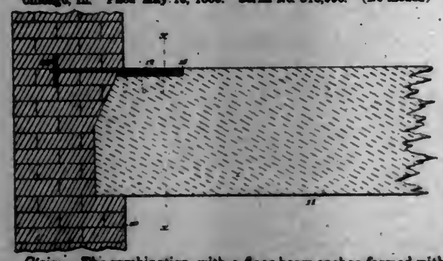
3. In an injector oil-burner, the combination of an outer shell, an inner shell, means for adjusting such inner shell, a steam-pipe comme-

407,065.



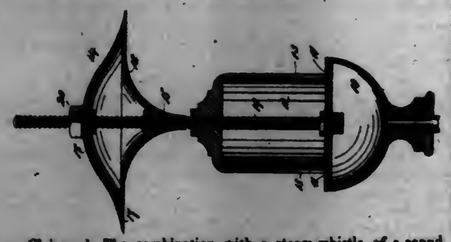
nicating with the outer shell, an oil-pipe entering the inner shell, and a hot-air pipe leading from the fire-chamber and communicating with the outer shell at a point near the rear end thereof, substantially as described.

407,066. FLOOR-BEAM CONNECTION. THOMAS EDWARDS, Sr., Chicago, Ill. Filed May 16, 1889. Serial No. 310,996. (No model.)



Claim.—The combination, with a floor-beam anchor formed with downwardly-extending projections, of a plate formed with apertures adapted to receive said projections and arranged for connection with the floor-beam, substantially as described.

407,067. WHISTLE. JAMES R. ELDRIDGE, Yarmouth, Nova Scotia, Canada, assignor to himself and Reuben McKinnon, same place. Filed Feb. 26, 1889. Serial No. 301,060. (No model.)



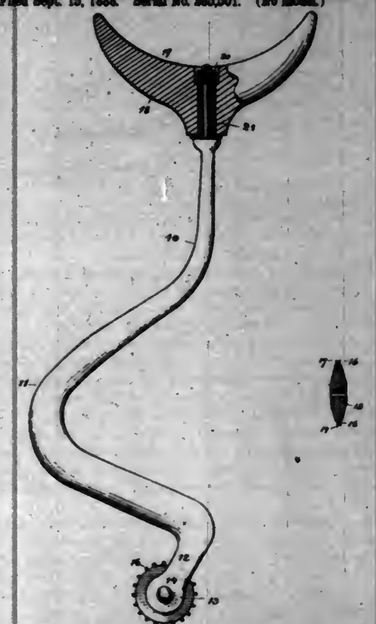
Claim.—1. The combination, with a steam-whistle, of a sound-deflector supported above the same, having a curved under surface, substantially as shown and described.

2. The combination, with a whistle, of a sound-deflector supported above the same, provided with a central stem upon the under surface, the exterior of which stem is concaved, substantially as shown and described.

3. The combination, with a steam-whistle, of a sound-deflector supported above the same, provided with a central stem upon the under surface, and having the under face upwardly and outwardly curved from the base of the stem, which curve is merged into an essentially horizontal line near the periphery of the deflector, substantially as and for the purpose specified.

4. The combination, with a steam-whistle, of a sound-deflector supported above the same, provided with a stem upon the under face, and having the under surface curved from the base of the stem essentially to the periphery of the deflector, and provided with a convex outer surface, and means, substantially as shown and described, for supporting the said deflector, as and for the purpose specified.

407,068. PERFORATING-TOOL. WILLIAM FALLON, Newburg, N. Y. Filed Sept. 15, 1888. Serial No. 285,501. (No model.)



Claim.—1. A perforating-tool consisting of a shank bent in V shape near the end, and having the lower end bent slightly back in direction of the V, a marking-wheel pivoted in the said lower end of the shank, and a shoulder-piece swiveled to the upper end of said shank, substantially as shown and described.

2. A marking-wheel consisting of a disk having a series of solid pins upon the periphery, provided with a recess in the outer end producing a cutting-edge, substantially as shown and described.

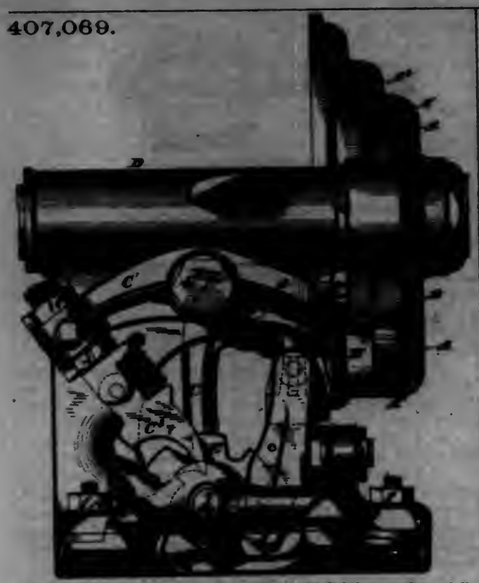
407,069. GRAIN-BINDER. JAMES A. GRAHAM, Milwaukee, Wis., assignor to the Milwaukee Harvester Company, same place. Filed Jan. 17, 1887. Serial No. 294,541. (No model.)

Claim.—1. In a knotter-head for grain-binders, the combination, with the knife-arm and disk-lever, each having an anti-friction roller at its end, of a wheel of unusual depth having formed therein two eccentric cam-tracks, one extending farther into the wheel than the other, the said tracks being for a certain portion of their length concentric to each other and for a certain portion side by side, but non-concentric, substantially as set forth.

2. In a knotter-head for grain-binders, the combination, with the knife-arm C, carrying the anti-friction roller B at one end, and the disk-lever C', carrying the anti-friction roller B' at its corresponding end, of the cam-wheel A, of unusual depth, having formed therein two eccentric cam-tracks $A' A^2$, the former being of greater length, depth, and width than the latter, said tracks being for a certain portion of their length concentric to each other and for a certain portion side by side, but non-concentric, substantially as set forth.

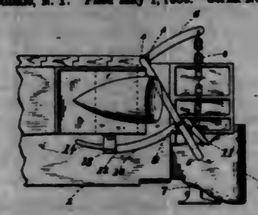
3. In a knotter-head for grain-binders, the combination, with a cam-wheel of unusual depth having formed therein two eccentric cam-tracks, one extending farther into the wheel than the other, the said tracks being for a certain portion of their length concentric to each other and for a certain distance side by side, but non-concentric, of a frame, the disk-lever C', of substantially crescent shape in a horizontal plane and pivoted midway between its ends to said frame, the anti-friction roller B', pivoted to one end of said disk-lever, and the

407,069.



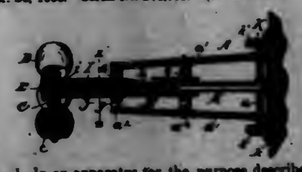
disk-pawl O^3, secured to the other end of said disk-lever, substantially as set forth.

407,070. DEVICE FOR OPERATING CAR-COUPLING PINS. ROBERT GOSS, Buffalo, N. Y. Filed May 1, 1889. Serial No. 308,170. (No model.)



Claim.—A device for operating the locking pin of a car-coupling, consisting of a bar 4, mounted in bearings at the end of a car and provided with a handle and an arm 6, in combination with a curved bar 10, pivoted to the handle 5, and provided with a handle 11 at its forward end and a shoulder at its opposite end, a guide-piece for the curved bar to operate through, and a chain connecting with the arm 6 and the locking-pin of a car-coupling, substantially as described.

407,071. MOVEMENT-CURE APPARATUS. HARVEY L. HOPKINS, Chicago, Ill., assignor to the Portable Machine Company, same place. Filed Apr. 26, 1888. Serial No. 271,906. (No model.)



Claim.—1. In an apparatus for the purpose described, a sliding shaft, in combination with rollers mounted on one end thereof, a support for said shaft on which it is movable lengthwise, and a device adapted to rotate the shaft by the sliding movement of the latter on its support, substantially as and for the purpose specified.

2. The tubular shaft provided with a spiral slot, in combination with balls mounted loosely on journals set radially to the shaft at one end thereof, a supporting-frame provided with bearings for the shaft, upon which it may be reciprocated lengthwise, and a pin on said frame arranged to enter the spiral slot in the shaft, substantially as and for the purposes specified.

3. The frame A, in combination with the tubular shaft B, having a spiral slot *b*, the balls D, set loosely on the journals *c*, arranged at the end of the shaft mounted radially thereto, the pin F, arranged on the frame to enter the slot in the shaft, and a spring arranged to thrust the shaft outward from the frame, substantially as and for the purposes specified.

4. The frame A, provided with the rings a^2 a^2, in combination with the sliding and rotating shaft B, arranged to slide back and forth within said rings, and the balls D, mounted on radial pins on the outer end of said shaft, substantially as and for the purposes specified.

5. The supporting-frame, in combination with the sliding and rotating shaft, and bearing-rollers on the frame set at an angle to the axis of the shaft, substantially as and for the purposes specified.

6. The supporting-frame, in combination with the sliding tubular shaft provided with a spiral slot, the stationary pin arranged to enter said slot, and the bearing and guiding rollers on the frame inclined to the axis of the shaft at an angle corresponding to the pitch of the spiral slot, substantially as and for the purposes specified.

7. The supporting-frame A, in combination with the sliding and rotating shaft B, the balls D, mounted on the outer end thereof, the tube H, the rod I, and the spring J, substantially as and for the purposes specified.

8. The sliding and rotating shaft, in combination with the button E, mounted in a loose bearing at the end of the shaft, and the balls D, mounted loosely on journals set radially at the outer end of said shaft, substantially as and for the purposes specified.

9. The supporting-frame mounted on pivotal bearings at its inner end, in combination with the sliding rotary shaft and the balls mounted loosely on the outer end thereof, substantially as and for the purposes specified.

10. The frame A, pivoted to the wall or other suitable support, in combination with the sliding shaft B mounted thereon, the balls D, mounted loosely on the outer end of the shaft, the spring operating to thrust the shaft outward, and the suspending and adjusting chain, substantially as and for the purposes specified.

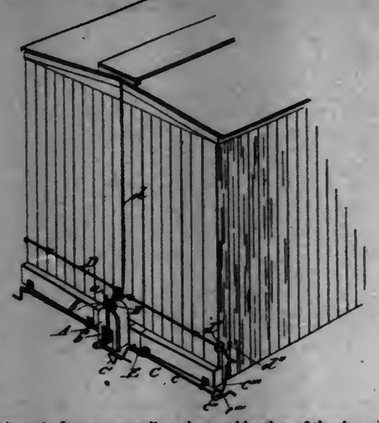
407,072. SCREEN ATTACHMENT FOR WINDOWS. WILLIAM J. HORTON, Halifax, Nova Scotia, Canada. Filed Aug. 24, 1888. Serial No. 283,674. (No model.)



Claim.—1. The combination, with the window-sash having studs 5 5 and the vertical rods 2, fixed beside the jambs inside the window-frame, of the folding screen 1, the recessed cross-bar 3, having its ends notched to receive said rods and its front edge curved downward, and the catches 4, pivoted to said cross-bar and provided with lateral notches and forward projections to adapt them for the functions specified.

2. The combination, with the upper window-sash and the rods 2, fixed on the inner sides of the jambs, of the recessed cross-bar 3, having its ends notched to receive said rods, the brackets 6, which secure the bar rigidly and permanently to the sash, and the folding screen, arranged as shown and described.

407,073. CAR-COUPLING. LEWIS H. HUNT, Hiram, Ga. Filed Feb. 26, 1889. Serial No. 301,142. (No model.)

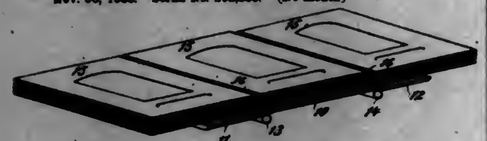


Claim.—1. In a car-coupling, the combination of the draw-head A, and the pin B, having guide-link b^x fastened at both head and point of said pin, substantially as shown and described.

2. In a car-coupling, the draw-head A, having pin *a*, and the pin B, having arm *b* sliding on said pin *a*, all combined and operating substantially as shown and described, and for the purpose specified.

3. In a car-coupling, the link-lifter consisting of the shaft *c*, plate *c'*, spring E, pawl c^x, and ratchet c^w, all combined and operating substantially as and for the purpose specified.

407,074. ALBUM. CHRISTIAN JABSEN, New York, N. Y. Filed Nov. 30, 1888. Serial No. 292,253. (No model.)



Claim.—1. A book formed with two backs and a cover that is divided centrally in a line substantially parallel with the backs.

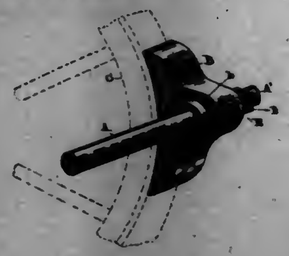
2. In a book, the combination, with a bottom cover 10, of top covers 11 and 12, backs 13 and 14, by which the covers are connected, strips 16, and leaves connected to the strips, substantially as described.

3. In a book, the combination, with a bottom cover, of backs connected thereto, upper covers connected to the backs, the combined width of the upper covers being about equal to that of the bottom cover, and leaves connected to the covers within the backs, substantially as described.

4. In a book, the combination, with a bottom cover, of upper covers connected to the side edges thereof by backs and alternately-spaced leaves connected to the covers within the backs, substantially as described.

5. In a book, the combination, with a bottom cover 10, of top covers 11 and 12, backs 13 and 14, by which the covers are connected, strips 16, arranged as described, and leaves connected to the strips and arranged to interlock, substantially as described.

407,075. BRAKE-BLOCK. JOHN A. JEWELL, Washington, D. C., assignor of one-half to George B. Starkweather, same place. Filed Sept. 26, 1888. Serial No. 286,460. (No model.)





Claim.—1. A brake-block B, having a lateral aperture through it provided with a seat for the shaft A, and shoulders $g\,g'$, as specified.

2. The combination, with a brake-block recessed as described, and provided with shoulders $g\,g'$, of a shaft or brake-bar having a flange *a* and washers *d d*, as specified.

3. The combination, with a brake-block recessed as described, of elastic or endwise-yielding washers and a flanged brake-bar, as specified.

4. The combination, with a brake-block, of washers which are interchangeable, and a compressing-nut, with a shaft A, and intermediate shoulders $g\,g'$, and a stop-screw, as specified.

5. The combination, with a brake-block having integral therewith an eye portion *b*, both sides being flush with the sides of the block, of a lug-stop on the brake-shaft, whereby the block is allowed only a limited oscillation about the axis of its shaft, as specified.

6. A brake-block having an eye or lug protruding from its back and adapted to afford internal shoulders for a brake-shaft, as specified.

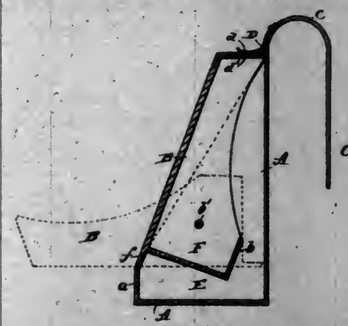
7. A brake-block B, having a lug provided with a semicircular aperture transversely through it, terminating in converging shoulders or abutments $g\,g'$, in combination with the shaft-section *a*, having a concentric portion a^3 between two lugs $a'\,a'$, and a screw E, tapped through the brake-block lug *b* and entering the free space between the said lugs $a'\,a'$, all substantially as specified.

8. The combination of a brake-block having a lug *b*, recessed as described, with the lugs $a'\,a'$, and the intermediate concentric portion a^3, formed on the shaft *a*, and a screw E, tapped through the lug on the brake-block, substantially as specified.

9. The combination, with the brake-block having a lug formed integral with it and recessed as described, of the shaft portion *a*, having two lugs $a'\,a'$, and an intermediate concentric portion a^3, the set-screw E, washers fitted into recesses *c c*, and a nut D, all substantially as described.

10. The combination, with a brake-block having a lug recessed as described, a brake-shaft having a portion *a*, provided with lugs $a'\,a'$, and an intermediate concentric cylindrical portion a^3, of a screw E, entering the broad space between said lugs $a'\,a'$, and yielding or elastic washers recessed into both sides of the brake-block lug, substantially as specified.

407,076. FOLDING SOAP-BOX. ISABELLA B. JOHNS, New York, N. Y. Filed Dec. 14, 1888. Serial No. 293,574. (No model.)



Claim.—1. A soap-box made with a case or body open at one side and formed with a lower drip-chamber, and a soap-tray hinged to the case and adapted to fold therein to conceal the soap, substantially as herein set forth.

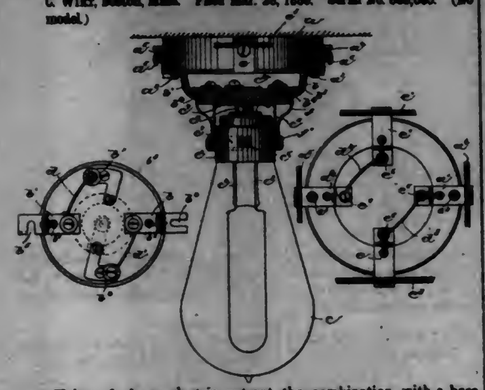
2. A soap-box made with a case or body open at one side, and a soap-tray hinged to the case and provided with a chamber holding the drip when the tray is folded to the case, substantially as herein set forth.

3. A soap-box made with a case or body open at one side and formed with a lower drip-chamber, and a soap-tray hinged to the case and provided with a chamber holding the drip when the tray is folded to the case, substantially as herein set forth.

4. A soap-box made with a case or body open at one side and provided with a hook by which to suspend it from a pail or vessel, and a soap-tray hinged to the case and adapted to fold thereto to conceal the soap, substantially as herein set forth.

5. The combination, in a soap-box, of a case A, having an open side and a low front wall *c* and provided with a hook C, and a tray B, hinged at *b'* to the case and provided with an inner wall *b*, substantially as shown and described.

407,077. ELECTRIC CUT-OUT. JAMES L. KINBALL and HERBERT C. WIRT, Boston, Mass. Filed Mar. 26, 1889. Serial No. 305,085. (No model.)

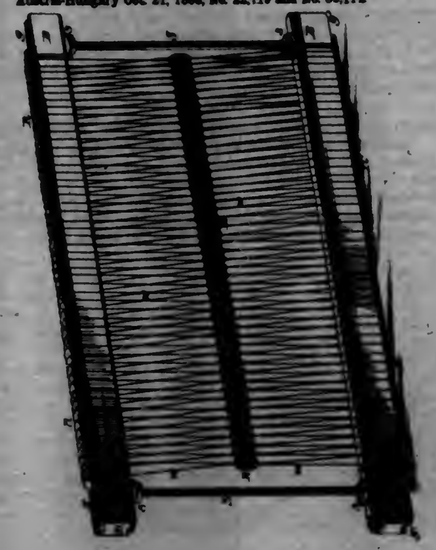


Claim.—1. In an electric cut-out, the combination, with a base provided with contact-arms secured thereto and to which the line-wires may be connected, of a cap or rosette provided with contact-arms extended beyond the said cap or rosette and means to secure positive electrical connection between the contact-arms of the cap and base outside of the said cap, substantially as described.

2. In an electric cut-out, the combination, with a flat base *a* and contact-arms secured thereto and to which the line-wires may be connected, of screws $a^7\,a^8$, secured to said contact-arms, and a cap or rosette provided with contact-arms *b b'*, extended beyond the sides of the cap and provided, respectively, with slots to engage the screws a^7 a^8 on the contact-arms secured to the base, substantially as described.

3. In an electric cut-out, the combination, with a base provided with two sets of contact-arms secured thereto to form a main line and a branch line or circuit and fuse-wires secured directly to the said sets of contact-arms to establish electrical connection from the main to the branch line, of a cap or rosette provided with contact-arms extended beyond the sides of the cap and adapted to be secured to said base outside of the said cap, substantially as described.

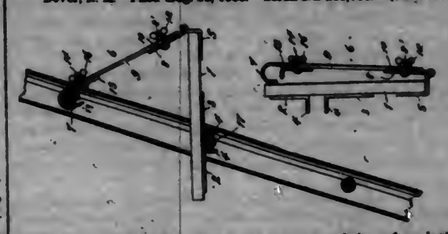
407,078. HEDDLE-FRAME FOR LOOMS. CALVIN P. LADD, Cambridge, Mass., and WILLIAM MOSS, New York, N. Y., assignors, by mesne assignments, to the National Loom Harness Company, of Maine. Filed Nov. 4, 1887. Serial No. 254,205. (Model.) Patented in England Nov. 23, 1887, No. 16,133; in France Nov. 25, 1887, No. 187,206; in Belgium Nov. 26, 1887, No. 79,080; in Italy July 24, 1888, No. 23,612, and in Austria-Hungary Oct. 21, 1888, No. 32,719 and No. 30,114.



Claim.—1. The combination, with the eyes E, the bars B, grooved in their outer edges, yielding cushions placed in the grooves of the said bars, and the continuous wires W, fastened at the ends thereof to the bars, and each passing alternately around a bar and its cushion and through one of the eyes, as described, of means for straining the bars apart from each other, whereby a tension may be applied to the wires, all substantially as set forth.

2. In a heddle-frame for looms, the combination of the heddle-bars B, having grooves $g\,g'$ in their outer edges, their adjusting screw-rods S S, their nuts *s s*, the rope cushions R R', loosely seated in said grooves, the eyes E, and the two continuous wires threaded through said eyes and looped over and upon the rope cushions of the bars to form the leashes of each bar, and secured at their ends to the bars, whereby the wires of each bar may be drawn uniformly taut from end to end over a free bearing, as shown and described.

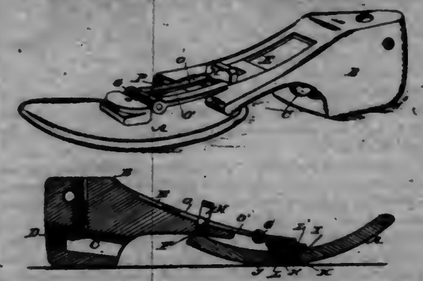
407,079. LADDER PLATFORM-BRACKET. LEWIS R. LAMBY, Dover, N. H. Filed Aug. 26, 1888. Serial No. 283,966. (No model.)



Claim.—1. A ladder platform-bracket consisting of a platform with means for engaging it with the round of a ladder, and a brace-bar hinged to the platform, said bar provided with a hook 17 at its free end adapted to engage a ladder-round, and an adjustable guard fitted on said end, said guard consisting of an L-shaped plate 13, sliding on the portion 9 of the hinged bar, and having a pin 14 projecting through a slot 15 in said bar and secured in position by thumb-nut 16, as and for the purposes specified.

2. In a ladder platform-bracket, the combination, with platform 1, provided with catches 2 3 3, and hinge-plate 5, of the brace-bar 6, consisting of the portion 8, hinged to plate 5, having serrations 10, and provided with hinge-pin 8, having nut 12, the portion 9, having hook 7, slots 11 and 15, and serrations 10, and the L-shaped plate 13, provided with pin 14, having nut 16, substantially as shown and described.

407,080. ADJUSTABLE LAST. ARTHUR M. LEBARON, Port Townsend, Wash., assignor of one-half to James Homer Littlemore, same place. Filed Jan. 17, 1889. Serial No. 296,773. (No model.)



Claim.—1. The combination of a heel part formed with the longitudinal recess, a double-pointed toe part, a hinge pivotally secured at one end to the toe part and having its other end formed with a longitudinal slot, and the retaining-screw, substantially as set forth.

2. In a last, the combination of the heel part formed with the longitudinal recess, the reversible curved toe part formed with a narrow end and a wide end and having the central circular recesses and opening, the lower nut having the central bearing-collar, the connecting-screw, the hinge having the circular projection formed with the central threaded aperture on its forward end, and the rear strap formed with the longitudinal slot, and the thumb-screw, substantially as set forth.

3. In a last, the combination of the heel part formed with the longitudinal recess, the threaded aperture, and the heel-opening having the plug in its rear end, the toe part having a narrow end and a wide end, the hinge pivotally secured at one end to the toe part and having its other end formed with a longitudinal slot, and the thumb-screw, substantially as set forth.

407,081. BOOT OR SHOE LAST. ARTHUR M. LEIGHTON, Port Townsend, Wash., assignor of one-half to James H. Livermore, same place. Filed Mar. 1, 1889. Serial No. 301,608. (No model.)

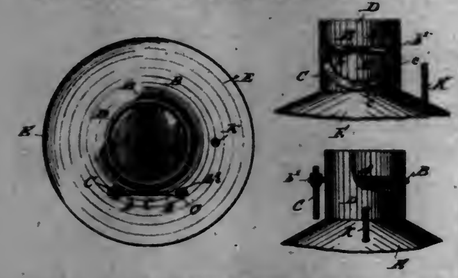


Claim.—1. A last comprising a heel piece or portion and the improved foot-piece having a socket *b*, a groove extended from one side of such socket, and a ledge overlapping the socket at the side opposite said groove, combined with the stud having a head fitted to said socket, and the fastening-plate, whereby to secure the sted in such socket, substantially as set forth.

2. A last comprising a heel portion, the foot or toe piece provided in its upper side with a circular socket and having a ledge b^2 overlapping one edge of such socket, the connection piece or bar secured at one end to the heel-piece and provided at its opposite end with the stud having a head fitted to the socket of the foot-piece, and the fastening-plate by which to secure the stud in such socket, substantially as set forth.

3. The improvement in lasts, substantially as herein described, comprising the heel-piece, the bar secured at one end thereto and provided at its opposite end with a headed stud, the foot-piece having in its upper side a socket *b*, fitted to receive said stud and provided with a groove *b'* leading from and a ledge b^2 overlapping such socket, and the fastening-plate C, fitted to groove *b'* and having at its inner end a ledge C', all substantially as and for the purpose specified.

407,082. PIPE-DAMPER. MARK J. LEDDELL, Mount Pleasant, Mich. Filed Nov. 9, 1888. Serial No. 290,349. (No model.)



Claim.—1. A pipe-damper consisting of two plates pivoted at contiguous edges and a latch device connected to the plate-pivots and adapted to hold the plates at any required adjustment, substantially as herein set forth.

2. A pipe-damper consisting of two plates pivoted at contiguous edges, arms on the plate-pivots, and a latch-bar pivoted to the arm of one plate and engaging the arm of the other plate, substantially as herein set forth.

3. A pipe-damper consisting of two plates pivoted at contiguous edges, arms on the plate-pivots ranging in the same plane as the plates, and a latch device held to the arm of one plate and engaging the arm of the other plate, substantially as herein set forth.

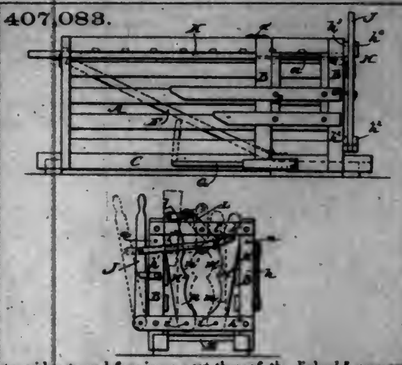
4. A pipe-damper consisting of two plates pivoted at contiguous edges, the plate-pivots provided with arms ranging at right angles, and a semicircular latch-bar pivoted to the end of one arm and provided with detents adapted to engage the extremity of the other arm, substantially as herein set forth.

5. The combination, in a pipe-damper, of a pair of plates A A, pivoted by pins or shafts B B to and within a pipe, said pivots having arms *b b* outside the pipe, one arm being provided with an eye or loop *b'*, and a curved latch-bar C, pivoted to the end of the other arm and provided with a series of notches or detents adapted to engage said eye or loop *b'*, substantially as herein set forth.

407,083. HOG-TRAP. SOLOMON LOFTIN, Hartland, Mo. Filed Aug. 16, 1888. Serial No. 282,675. (No model.)

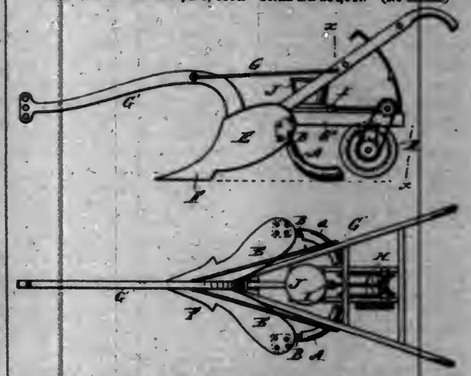
Claim.—The main frame of the trap and the front gate H, hinged to the front end of said main frame, in combination with the stanchions H' H², pivoted in said gate, the vertical levers J and L, pivoted

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to said gate and forming a part thereof, the links *l l*, connecting the opposite ends of the lever L to the stanchions H' H², respectively, and the link *l'*, connecting the lever L to the lever J, substantially as and for the purposes described.

407,084. COMBINED LISTER AND DRILL. WILLIAM A. LOMBERT, Odessa, Nebr. Filed Sept. 5, 1888. Serial No. 284,647. (No model.)



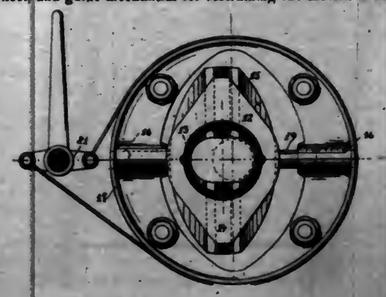
Claim.—1. The combination, with a listing-plow, of concave and inwardly-curved blades secured to the plow, substantially as described.

2. The combination, with a combined lister and drill, of the concave and inwardly-curved blades A, adjustably secured to the inside of the mold-board, substantially as herein shown and described.

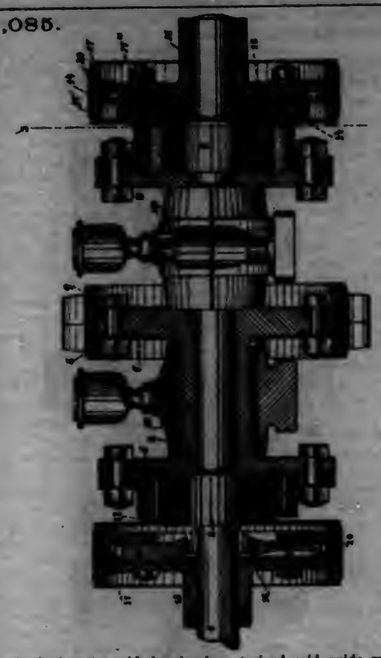
3. The combination, with the combined lister and drill, of two inwardly-curved and concave blades attached to the inside of the mold-board extending downward toward each other, and a grooved wheel held on the combined lister and plow in the rear of the said blades, the said wheel imparting motion to the slide of the said box, substantially as shown and described.

407,085. POWER-TRANSMITTING DEVICE. WILLIAM MAIN, Brooklyn, N. Y. Filed Aug. 27, 1887. Serial No. 248,011. (No model.)

Claim.—1. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating wheel, and guide mechanism for restraining the motion of said oscil-



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lating wheel when the guide-bearing is restrained, said guide mechanism being made up of parts having a double sliding motion, substantially as described.

2. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, and a restrainable guide-bearing normally moving with said oscillating wheel and connected thereto by guide mechanism made up of a slide reciprocating in one direction along guiding-surfaces upon the guide-bearing and in a direction at right angles thereto along guiding-surfaces connected to said oscillating wheel, substantially as described.

3. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing connected with said oscillating wheel by guide mechanism made up of parts having a double sliding motion, and a brake for restraining or retarding the movement of the guide-bearing, substantially as described.

4. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable rotatory guide-bearing normally moving with said oscillating wheel, guide mechanism for restraining the motion of said oscillating wheel when the guide-bearing is restrained, said guide being made up of parts having a double sliding motion, and a brake for restraining the rotation of said bearing, substantially as described.

5. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable rotatory guide-bearing normally moving with said oscillating wheel, a brake for restraining the rotation of said bearing, and guide mechanism connecting said bearing with said oscillating wheel, said guide mechanism being made up of a sliding piece reciprocating with reference to the guide-bearing in one direction along guiding-surfaces and with reference to the oscillating wheel in a direction at right angles thereto along guiding-surfaces, substantially as described.

6. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally moving with said oscillating wheel, and guide mechanism for restraining the motion of said oscillating wheel when said guide-bearing is restrained, said guide mechanism including a sliding piece having a rectilinear reciprocation with respect to the oscillating wheel and a rectilinear reciprocation with respect to the guide-bearing, said reciprocations being at right angles to each other, substantially as described.

7. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a rotatory pulley mounted loosely upon the driving-shaft, a brake for restraining the rotation of the pulley, and guide mechanism connecting the pulley and the oscillating wheel for restraining the motion of the oscillating wheel, said guide mechanism consisting of a cross-head encircling the driving-shaft and connected, respectively, to the oscillating wheel and the pulley by the engagement of guiding-surfaces extending in directions at right angles to each other, substantially as described.

8. A power-transmitting device for connecting a driving-shaft with a driving mechanism, consisting of a set of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a rotatory pulley, a cross-head encircling the driving-shaft and having guide-grooves for receiving lugs or projections mounted upon said oscillating wheel and adapted to slide in said guide-grooves, said cross-head also having at right angles to said guide-grooves lugs or projections adapted to slide in guide-grooves formed in the pulley, and a brake for restraining the rotation of said pulley, substantially as described.

9. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of separate sets of differently-proportioned gear-wheels, the members of each set being normally out of operative connection, and a brake for simultaneously throwing into operative connection the members of one set and throwing out of operative connection the members of the other set, whereby the motion due to either set of gears may, as desired, be imparted to the driven mechanism, substantially as described.

10. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of separate sets of differently-proportioned gear-wheels, one of the wheels of each set having an oscillating motion about a center, and each set having a restrainable guide-bearing normally moving with its oscillating wheel, guide mechanism for restraining the motion of said oscillating wheel when the guide-bearing is restrained, and a brake for simultaneously releasing both guide-bearings or arresting either one and releasing the other, substantially as described.

11. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, one member of which is in operative connection with the driving-shaft and the other with the driven mechanism, a restrainable guide-bearing normally moving with the oscillating member of said sun-and-planet gear, and a guide for restraining the motion of said oscillating gear when the guide-bearing is restrained, the parts of said guide having a double rectilinear motion, one motion with respect to the oscillating wheel and the other with respect to the guide-bearing, substantially as described.

12. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, one member of which is in operative connection with the driving-shaft and the other with the driven mechanism, a rotatory pulley normally moving with the oscillating member of said sun-and-planet gear, a guide connecting the oscillating wheel with the pulley, said guide being made up of parts having a double rectilinear sliding motion, and a brake for arresting the rotation of said pulley for the purpose of restraining the motion of the oscillating wheel, substantially as described.

13. The combination of a driving-shaft, a driven mechanism, a set of sun-and-planet gear-wheels connecting said shaft and mechanism, guides connected to the oscillating member of the sun-and-planet gear, guide-bearings, and a clutch for locking the guide-bearings to said driving-shaft, substantially as described.

14. The combination of a driving-shaft, a driven mechanism, a set of sun-and-planet gear-wheels connecting said shaft and mechanism, the oscillating member of said gear-wheels being eccentrically mounted on said shaft, guides connected to the oscillating member of the sun-and-planet gear, guide-bearings, and a clutch for locking the guide-bearings to said driving-shaft, substantially as described.

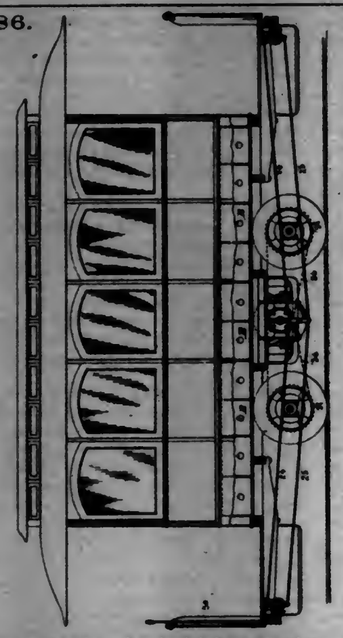
15. The combination of two concentric shafts, sun-and-planet gear-wheels connecting the same, a rotatory pulley loosely mounted upon the inner shaft and connected to the oscillating member of said gear-wheels by guide mechanism, and a clutch for locking the rotatory pulley to the inner shaft, substantially as described.

16. The combination of a driving-shaft, a driven shaft concentric therewith, two sets of differently-proportioned sun-and-planet gears connecting said shafts, the oscillating members of each set being mounted upon the driving-shaft and the driven members being rigid with the driven shaft, and guide mechanism for throwing either of said sets of gears into operation, substantially as described.

407,086. POWER-TRANSMITTING CONNECTION FOR VEHICLES. WILLIAM MAIN, Brooklyn, N. Y. Filed Oct. 26, 1887. Serial No. 253,619. (No model.)

Claim.—1. The combination of a storage-battery, an electric mo-

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tor, a driven mechanism, and a clutch independent of the motor-circuit for establishing or breaking connection between the motor-shaft and the driven mechanism without interfering with the continuity of the said motor-circuit, and consequently without interrupting the uniform discharge of the battery, substantially as set forth.

2. The combination of a storage-battery, an electric motor and its circuit-controlling devices, a speed-transmitting mechanism between the motor-shaft and the driven mechanism, and a friction-brake for controlling said transmitting mechanism, whereby by a greater or less pressure the speed of transmission may be varied without interfering with the motor-circuit and without interrupting the discharge of the battery, substantially as set forth.

3. The combination of a storage-battery, an electric motor, a driven mechanism, and means independent of the motor-circuit for establishing or breaking connection between the motor-shaft and the driven mechanism without interfering with the continuity of said motor-circuit, and consequently without interrupting the discharge of the battery, substantially as set forth.

4. The combination of a vehicle, a storage-battery and an electric motor mounted thereon, and means independent of the motor-circuit for establishing or breaking connection between the motor-shaft and the driven mechanism without interfering with the continuity of said motor-circuit, and consequently without interrupting the discharge of the battery, substantially as set forth.

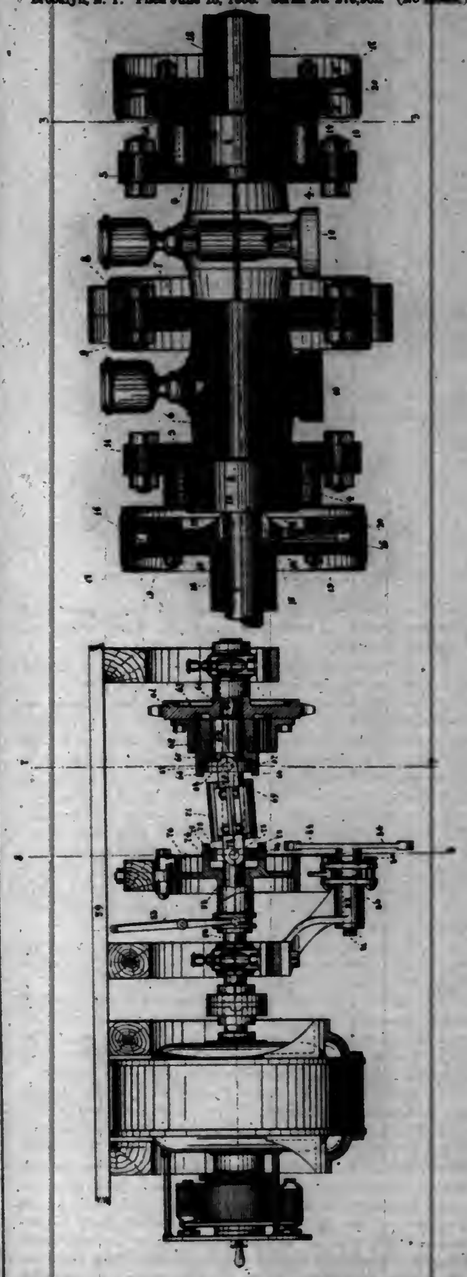
5. The combination of a vehicle, a battery, an electric motor, the motor and battery being mounted upon the vehicle, sun-and-planet gear-wheels connecting the motor-shaft with the driving-axle of the vehicle, and means whereby the oscillating gear-wheel of the sun-and-planet series may be arrested or permitted to revolve freely, substantially as set forth.

6. The combination of a vehicle, a battery and electric motor mounted thereon, two or more sets of sun-and-planet gear-wheels between the shaft of the motor and the driving-axle of the vehicle, the wheels of each set being differently proportioned to each other, a locking device for each of said sets of gear-wheels for bringing it into operative connection with the motor-shaft, and means for bringing into operation any one of said locking devices, substantially as described.

7. The combination of a vehicle, a battery and electric motor mounted thereon, a train of sun-and-planet gear-wheels connecting the motor-shaft with the vehicle-axle, and a friction-brake controlling the operative engagement of the shaft with the gear-wheels, the transmitted speed increasing relatively to the amount of pressure applied to the brake, substantially as described.

8. The combination of a vehicle, an electric motor mounted thereon, a train of gear-wheels connecting the motor-shaft with the vehicle-axle, one of said gear-wheels having an oscillating and also a rotatory motion, a rotatory pulley normally rotating with said oscillating gear, and friction-brakes for restraining the rotation of said pulley and thereby bringing the train of gear into operative engagement with the shaft, substantially as described.

407,087. POWER-TRANSMITTING DEVICE. WILLIAM MAIR, Brooklyn, N. Y. Filed June 13, 1888. Serial No. 276,962. (No model.)



Claim.—1. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels, one of said wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating wheel, and guide mechanism for restraining the rotary motion of said oscillating wheel when the guide-bearing is restrained, substantially as described.

2. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, and a restrainable guide-bearing normally moving with said oscillating wheel and connected therewith by guide mechanism having a swinging motion about centers, substantially as described.

3. A power-transmitting device for connecting a driving-shaft and a driven mechanism, consisting of a set of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing moving with said oscillating wheel and connected thereto by guide mechanism having a swinging motion about centers, and a brake for arresting the movement of said guide-bearing, substantially as described.

4. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing moving with said oscillating wheel and connected thereto by guide mechanism having a swinging motion in two directions, and a brake for arresting the movement of said guide-bearing, substantially as described.

5. A power-transmitting device connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a rotatory pulley normally rotating with said oscillating wheel and connected therewith by guide mechanism having a swinging motion about centers, and a brake for arresting the rotation of said pulley, substantially as described.

6. A power-transmitting device connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a rotatory pulley normally rotating with said oscillating wheel and connected thereto by guide mechanism having a swinging motion in two directions, and a brake for arresting the rotation of said guide-bearing, substantially as described.

7. A power-transmitting device connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, and a restrainable guide-bearing normally moving with said oscillating wheel and connected thereto by guide mechanism joined at one end to the guide bearing by a universal joint and at the other end to the oscillating wheel by a like joint, substantially as described.

8. A power-transmitting device connecting a driving-shaft with a driven mechanism, consisting of a sun-and-planet gear one member of which is in operative connection with the driving-shaft and the other with the driven mechanism, a restrainable guide-bearing normally moving with the oscillating member of said sun-and-planet gear, and guide mechanism for restraining the motion of said oscillating gear when the guide-bearings are restrained, substantially as described.

9. A power-transmitting device connecting a driving-shaft with a driven mechanism, consisting of a sun-and-planet gear, a restrainable guide-bearing normally moving with the oscillating member of said gear, and guide mechanism for restraining the motion of said oscillating member when the guide-bearing is restrained, said guide mechanism made up of parts having a swinging motion in two directions, substantially as described.

10. A power-transmitting device connecting a driving-shaft with a driven mechanism, consisting of a sun-and-planet gear, a movable guide-bearing connected with the oscillating member of said sun-and-planet gear by guide mechanism having a swinging motion in two directions, and a brake for arresting the movement of said guide-bearing, substantially as described.

11. A power-transmitting device connecting a driving-shaft with a driven mechanism, consisting of a sun-and-planet gear, a rotatory pulley connected with the oscillating member of said gear by guide mechanism having a swinging motion in two directions, and a brake for arresting the rotation of said pulley, substantially as described.

12. A power-transmitting device connecting a driving-shaft with a driven mechanism, consisting of a sun-and-planet gear, a guide-bearing, and swinging connecting guide mechanism joined at one end to the guide-bearing by a universal joint and at the other end to the oscillating member of the gear by a like joint, substantially as described.

13. A power-transmitting device connecting a driving-shaft with a driven mechanism, consisting of a sun-and-planet gear, a rotatory pulley mounted on the driving-shaft, a sleeve encircling said shaft and connected at one end to the pulley by a universal joint and at the other end to the driving member of the gear by a like joint, and a brake for said pulley, substantially as described.

14. A power-transmitting device connecting a driving-shaft with a driven mechanism, consisting of a sun-and-planet gear the driving member of which is mounted within the driven member and is in operative connection with the driving-shaft, a restrainable guide-bearing normally moving with the driving member of said sun-and-planet gear, and guide mechanism for restraining the motion of said driving member when the guide-bearing is restrained, substantially as described.

15. A power-transmitting device connecting a driving-shaft with a driven mechanism, consisting of a sun-and-planet gear the oscillating member of which is mounted within the driven member and is in operative connection with the driving-shaft, and a restrainable guide-bearing normally moving with said driving member and connected therewith by guide mechanism having a swinging motion about centers, substantially as described.

16. A power-transmitting device connecting a driving-shaft with a driven mechanism, consisting of a set of sun-and-planet gear the driving member of which is mounted within the driven member and is in operative connection with the driving-shaft, a movable guide-bearing connected with the said driving member by guide mechanism having a swinging motion about centers, and a brake for arresting the movement of said guide-bearing, substantially as described.

17. A power-transmitting device connecting a driving-shaft with a driven mechanism, consisting of a set of sun-and-planet gear the driving member of which is mounted within the driven member and is in operative connection with the driving-shaft, a guide-bearing, and a swinging connecting-piece joined at one end to the guide-bearing by a universal joint and at the other end to the driving member of the gear by a like joint, substantially as described.

18. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of sun-and-planet gear the driving member of which is mounted within the driven member and is in operative connection with the driving-shaft, a rotatory pulley mounted on the driving-shaft, and a sleeve encircling said shaft and connected at one end to the pulley by a universal joint and at the other end to the driving member of the gear by a like joint, and a brake for said pulley, substantially as described.

19. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of sun-and planet gear, a rotatory pulley mounted upon the driving-shaft, a sleeve encircling said driving-shaft and having a pair of oppositely-disposed lugs at each of its ends, a ring encircling said driving-shaft and connected to the driving member of the sun-and-planet gear and to the lugs upon the proximate end of the sleeve by trunnion-pins, and a similar ring connecting in like manner the opposite end of the sleeve with the pulley, and a brake for said pulley, substantially as described.

20. In a power-transmitting device, the combination of a driving-shaft provided with an eccentric fast thereon, a hollow driven shaft provided with a so-called "sun-wheel" and mounted upon said driving-shaft, a planet-wheel mounted upon the eccentric and engaging with the sun-wheel, a rotatory pulley mounted upon the driving-shaft, a swinging sleeve connected at one end to the planet-wheel by a universal joint and at the other to the pulley by a like joint, and a brake for said pulley, substantially as described.

21. In a power-transmitting device of the kind described, the combination, with the rotatory pulley, of a brake therefor, consisting of pivoted brake-blocks disposed at opposite parts of the periphery of said pulley, links to which the brake-blocks are attached, a shaft having projecting lugs to which the links are attached, and arms for turning said shaft in one direction or the other, so as to apply or release the brake, substantially as described.

22. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels, one of said wheels having a rotary and also an oscillating motion, a bearing, and a guide mechanism joined on the one side to the bearing by a universal joint and on the other side to the oscillating wheel by a like joint, whereby the tendency to rotary motion of the oscillating wheel is restrained, substantially as described.

23. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of sun-and-planet gear-wheels, a bearing, and a guide mechanism joined on the one side to said oscillating member by a universal joint and on the other side to said bearing by a like joint, substantially as described.

24. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of sun-and-planet gear-wheels, the oscillating wheel of which set is mounted within the other wheel, a bearing, and a guide mechanism joined on the one side to said bearing by a universal joint and on the other side to the oscillating gear-wheel by a like joint, whereby the tendency to rotary motion of the oscillating wheel is restrained, substantially as described.

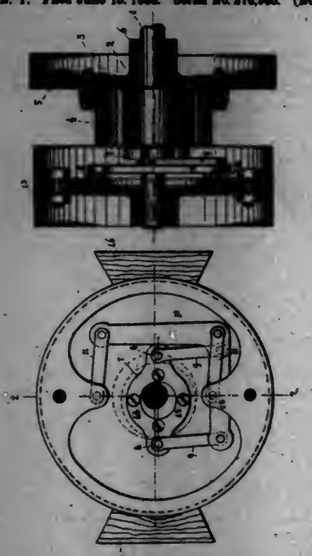
25. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels connecting the two, one of said wheels having a rotary and also an oscillating motion, a bearing, a sleeve encircling the driving-shaft and having a pair of oppositely-disposed lugs at each of its ends, a ring encircling the driving-shaft and connected to said oscillating wheel by trunnion-pins and to the lugs upon the proximate end of the sleeve by like pins, and a similar ring connecting in like manner the opposite end of the sleeve with the bearing, substantially as described.

26. A power-transmitting device connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels, one of said wheels having a rotary and also an oscillating motion, a rotatory pulley mounted concentrically with the driving-shaft normally rotating

with said oscillating wheel, and guide mechanism for restraining the rotary motion of said oscillating wheel when the rotation of the pulley is restrained, substantially as described.

27. A power-transmitting device connecting a driving-shaft with a driven mechanism, consisting of a set of sun-and-planet gear, a rotatory pulley mounted concentrically with said driving-shaft normally rotating with the oscillating wheel of said gear, and guide mechanism for restraining the rotary motion of said oscillating gear when the rotation of the pulley is restrained, substantially as described.

407,088. POWER-TRANSMITTING DEVICE. William Main, Brooklyn, N. Y. Filed June 13, 1888. Serial No. 276,963. (No model.)



Claim.—1. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating wheel, and a guide for restraining the rotary motion of said oscillating wheel when the guide-bearing is restrained, said guide being made up of parts having a swinging motion about centers in a plane perpendicular to the axis of rotation of the oscillating gear-wheel, substantially as described.

2. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating wheel, a guide for restraining the rotary motion of said oscillating wheel when the guide-bearing is restrained, said guide being made up of parts having a swinging motion in two directions, said motions being in a plane perpendicular to the axis of rotation of the oscillating gear-wheel, and a brake for restraining the rotation of said guide-bearing, substantially as described.

3. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating wheel, and a guide for restraining the rotary motion of said oscillating wheel when the guide-bearing is restrained, said guide consisting of a block connected on the one side by swinging links to the oscillating wheel and on the other side by like links to the guide-bearing, substantially as described.

4. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, a restrainable guide-bearing normally rotating with the driving member of said gear-wheels, and a guide for restraining the rotary motion of said driving member when the guide-bearing is restrained, said guide being made up of parts having a swinging motion in a plane perpendicular to the axis of rotation of the driving member of the gear, substantially as described.

5. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, a restrainable guide-bearing normally rotating with the oscillating member of said gear-wheels, a guide for restraining the rotary motion of said oscillating member when the guide-bearing is restrained, said guide being made up of parts having a double swinging motion in a plane perpendicular to the axis of rotation of the driving member of the gear, and a brake for restraining the movement of said guide-bearing, substantially as described.

6. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said sun-and-planet gear-wheels being mounted within the other member, a restrainable guide-bearing normally rotating with said oscillating gear-wheel, and a guide for restraining the rotary motion of said oscillating gear-wheel when the guide-bearing is restrained, said guide being made up of parts having a swinging motion in two directions in a plane perpendicular to the axis of rotation of the oscillating gear-wheel, substantially as described.

7. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said sun-and-planet gear-wheels being mounted within the other member, a restrainable guide-bearing normally rotating with said oscillating gear-wheel, a guide for restraining the rotary motion of said oscillating gear-wheel when the guide-bearing is restrained, said guide being made up of parts having a swinging motion in two directions in a plane perpendicular to the axis of rotation of the oscillating gear-wheel, and a brake for restraining the rotation of said guide-bearing, substantially as described.

8. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said gear-wheels being mounted within the other member, a restrainable guide-bearing normally rotating with said oscillating gear-wheel, and a guide for restraining the rotary motion of said oscillating wheel when the guide-bearing is restrained, said guide being made up of a connecting-piece joined to the oscillating gear-wheels by links and to the guide-bearing by links and having a swinging motion in a plane perpendicular to the axis of rotation of said oscillating gear-wheel, substantially as described.

9. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said gear-wheels being mounted within the other member, a restrainable guide-bearing normally rotating with said oscillating gear-wheel, a guide for restraining the rotary motion of said oscillating wheel when the guide-bearing is restrained, said guide being made up of a connecting-piece joined to the oscillating gear-wheel by links and to the guide-bearing by links and having a swinging motion in a plane perpendicular to the axis of rotation of said oscillating gear-wheel, and a brake for restraining the rotation of said guide-bearing, substantially as described.

10. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said sun-and-planet gear-wheels being mounted upon an eccentric formed upon the driving-shaft, a restrainable rotatory pulley loosely mounted upon the driving-shaft and normally rotating with said oscillating wheel, a guide for restraining the rotatory motion of said oscillating wheel when the pulley is restrained, said guide consisting of a connecting-piece joined to the oscillating wheel and to the pulley by links, and a brake for restraining the rotation of said pulley, substantially as described.

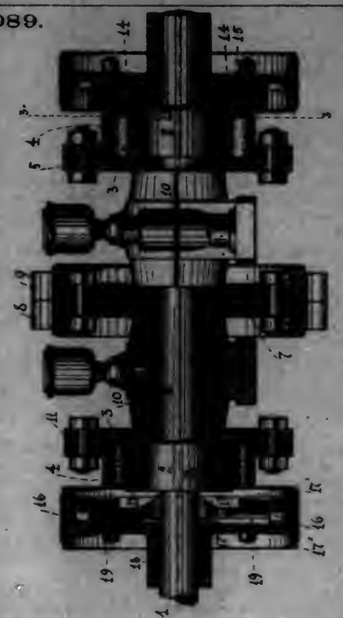
11. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said sun-and-planet gear-wheels being mounted upon an eccentric formed upon the driving-shaft, a restrainable rotary pulley loosely mounted upon the driving-shaft and normally rotating with said oscillating wheel, a guide for restraining the rotary motion of said oscillating wheel when the guide-bearing is restrained, said guide consisting of a connecting-piece joined to the oscillating wheel and to the guide-bearing by links and having a swinging motion in two directions in a plane perpendicular to the axis of rotation of the oscillating gear-wheel, and a brake for restraining the rotation of said pulley, substantially as described.

12. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of gear-wheels, one of said gear-wheels having an oscillating motion about a center, and a restraining guide for said oscillating wheel consisting of parts having a double swinging motion about centers in a plane perpendicular to the axis of rotation of the said oscillating wheel and connecting said oscillating wheel with a relatively fixed guide-bearing, whereby the oscillating wheel is maintained in positions of constant parallelism, substantially as described.

407,089. METHOD OF TRANSMITTING POWER. William Main, Brooklyn, N. Y. Filed June 13, 1888. Serial No. 276,964. (No model.)

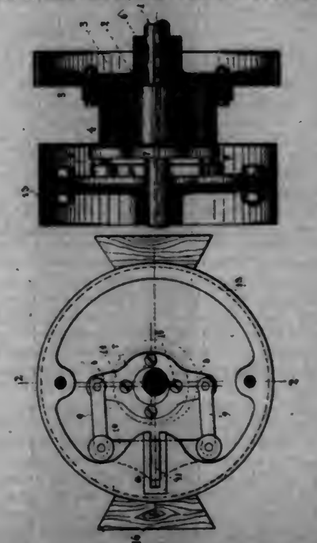
Claim.—1. The method of obtaining uniformity of motion in the driven member of a sun-and-planet gear and graduating the speed of transmission from the driving member thereof, which consists in restraining the rotation of the oscillating member of the gear by the application of friction, so that said member shall assume successive positions of parallelism with itself, and graduating the amount of friction so applied to correspond to the speed of transmission desired, substantially as described.

407,089.



2. The method of obtaining uniformity of motion in the driven member of a sun-and-planet gear and graduating the speed of transmission from the driving member thereof, which consists in restraining the rotation of the oscillating member of the gear by the application of friction, so that said member shall assume successive positions of parallelism with itself, and graduating the amount of friction so applied to correspond to the speed of transmission desired.

407,090. POWER-TRANSMITTING DEVICE. William Main, Brooklyn, N. Y. Filed June 13, 1888. Serial No. 276,965. (No model.)



Claim.—1. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating wheel, and a guide for restraining the rotary motion of said oscillating wheel when the guide-bearing is restrained, said guide being made up of parts having a swinging motion in one direction and a sliding motion in another direction, said motions being in a plane perpendicular to the axis of rotation of the oscillating gear-wheel, substantially as described.

2. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating wheel, a guide for restraining the rotary motion of said oscillating wheel when the guide-bearing is restrained, said guide being made up of parts having a swinging motion in one direction and a sliding motion in another direction, said motions being in a plane perpendicular to the axis of rotation of the oscillating gear-wheel, substantially as described.

3. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating wheel, and a guide for restraining the rotary motion of said oscillating wheel when the guide-bearing is restrained, said guide being made up of a connecting-piece joined to the oscillating wheel by pivoted links and playing along guiding-surfaces attached to the guide-bearing, substantially as described.

4. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, a restrainable guide-bearing normally rotating with the oscillating member of said gear-wheels, and a guide for restraining the rotary motion of said oscillating member when the guide-bearing is restrained, said guide being made up of parts having a swinging motion in one direction and a sliding motion in another direction, said motions being in a plane perpendicular to the axis of rotation of the driving member of the gear, substantially as described.

5. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, a restrainable guide-bearing normally rotating with the oscillating member of said gear-wheels, a guide for restraining the rotary motion of said oscillating member when the guide-bearing is restrained, said guide being made up of parts having a swinging motion in one direction and a sliding motion in another direction, said motions being in a plane perpendicular to the axis of rotation of the driving member of the gear, and a brake for restraining the movement of said guide-bearing, substantially as described.

6. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, a restrainable guide-bearing normally rotating with the oscillating member of said gear-wheels, and a guide for restraining the rotary motion of said oscillating member when the guide-bearing is restrained, said guide being made up of a connecting-piece joined to the driving member of the gear by links and playing along guiding-surfaces attached to the guide-bearing, substantially as described.

7. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, a restrainable guide-bearing normally rotating with the oscillating member of said gear-wheels, a guide for restraining the rotary motion of said oscillating member when the guide-bearing is restrained, said guide being made up of a connecting-piece joined to the oscillating member of the gear by links and playing along guiding-surfaces attached to the guide-bearing, and a brake for restraining the rotation of said guide-bearing, substantially as described.

8. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said sun-and-planet gear-wheels being mounted within the other member, a restrainable guide-bearing normally rotating with said oscillating gear-wheel, and a guide for restraining the rotary motion of said oscillating gear-wheel when the guide-bearing is restrained, said guide being made up of parts having a swinging motion in one direction and a sliding motion in another direction, said motions being in a plane perpendicular to the axis of rotation of the oscillating gear, substantially as described.

9. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said sun-and-planet gear-wheels being mounted within the other member, a restrainable guide-bearing normally rotating with said oscillating gear-wheel, a guide for restraining the rotary motion of said oscillating gear-wheel when the guide-bearing is restrained, said guide-bearing being made up of parts having a swinging motion in one direction and a sliding motion in another direction, said motions being in a plane perpendicular to the axis of rotation of the oscillating gear, and a brake for restraining the rotation of said guide-bearing, substantially as described.

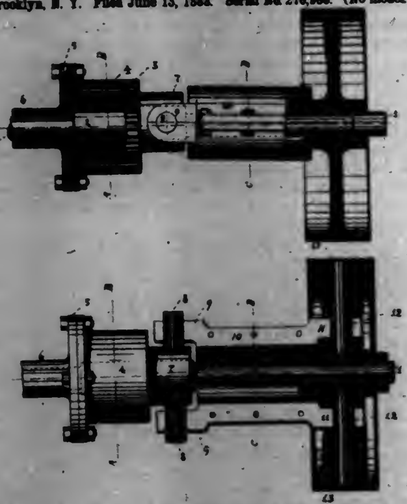
10. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-

wheels, the oscillating member of said gear-wheels being mounted within the other member, a restrainable guide-bearing normally rotating with said oscillating gear-wheel, and a guide for restraining the rotary motion of said oscillating wheel when the guide-bearing is restrained, said guide being made up of a connecting-piece joined to the oscillating gear-wheel by links, and moving along guiding-surfaces upon the guide-bearing, substantially as described.

11. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said gear-wheels being mounted within the other member, a restrainable guide-bearing normally rotating with said oscillating gear-wheel, a guide for restraining the rotary motion of said oscillating wheel when the guide-bearing is restrained, said guide being made up of a connecting-piece joined to the oscillating gear-wheel by links and moving along guiding-surfaces upon the guide-bearing, and a brake for restraining the rotation of said guide-bearing, substantially as described.

12. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said sun-and-planet gear-wheels being mounted upon an eccentric formed upon the driving-shaft, a restrainable rotatory pulley loosely mounted upon the driving-shaft and normally rotating with said oscillating wheel, a guide for restraining the rotatory motion of said oscillating wheel when the guide-bearing is restrained, said guide consisting of a block connected to the said oscillating wheel by links and playing along guiding-surfaces upon the pulley, and a brake for restraining the rotation of said pulley, substantially as described.

407,091. POWER-TRANSMITTING DEVICE. William Main, Brooklyn, N. Y. Filed June 13, 1888. Serial No. 276,966. (No model.)



Claim.—1. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating wheel, and a guide mechanism for restraining the rotary motion of said wheel when the guide-bearing is restrained, said guide mechanism having a swinging motion in one direction and a sliding motion in another direction, said motions being in planes parallel with the axis of rotation of the oscillating gear-wheel, substantially as described.

2. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating wheel, a guide mechanism for restraining the rotary motion of said wheel when the guide-bearing is restrained, said guide mechanism having a swinging motion in one direction and a sliding motion in another direction, said motions being in planes parallel with the axis of rotation of the oscillating gear-wheel, and a brake for restraining the rotation of said guide-bearing, substantially as described.

3. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating wheel, and a guide for restraining the rotary motion of said wheel when the guide-bearing is restrained, said guide being made up of a connecting-piece joined to the guide-bearing by trunnion-pins and to the oscillating wheel by trunnion-pins, substantially as described.

4. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating wheel, and a guide for restraining the rotary motion of said wheel when the guide-bearing is restrained, said guide consisting of a connecting-piece having a swinging motion in one direction and a sliding motion in another direction, said motions being in a plane parallel with the axis of rotation of the driving member of the gear, substantially as described.

5. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating wheel, a guide for restraining the rotary motion of said wheel when the guide-bearing is restrained, said guide consisting of a connecting-piece having a swinging motion in one direction and a sliding motion in another direction, said motions being in a plane parallel with the axis of rotation of the driving member of the gear, and a brake for restraining the rotation of said guide-bearing, substantially as described.

6. A power-transmitting device connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, a restrainable guide-bearing normally rotating with the oscillating member of said gear-wheels, and a guide for restraining the rotary motion of said wheel when the guide-bearing is restrained, said guide consisting of a connecting-piece joined at one end to the guide-bearing by trunnion-pins and at the other end to the oscillating gear-wheel by trunnion-pins, substantially as described.

7. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, a restrainable guide-bearing normally rotating with the oscillating member of said gear-wheels, and a guide for restraining the rotary motion of said wheel when the guide-bearing is restrained, said guide consisting of a sleeve connected at one end to the guide-bearing by trunnion-pins and at the other end to the oscillating gear-wheel by trunnion-pins, substantially as described.

8. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, a restrainable guide-bearing normally rotating with the oscillating member of said gear-wheels, a guide for restraining the rotary motion of said wheel when the guide-bearing is restrained, said guide consisting of a sleeve connected at one end to the guide-bearing by trunnion-pins and at the other end to the oscillating gear-wheel by trunnion-pins, and a brake for restraining the rotation of the said guide-bearing, substantially as described.

9. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said gear-wheels being mounted within the other member, a restrainable guide-bearing normally rotating with said oscillating wheel, and a guide for restraining the rotary motion of said wheel when the guide-bearing is restrained, said guide consisting of a connecting-piece having a swinging motion in one direction and a sliding motion in another direction, said motions being in a plane parallel with the axis of rotation of the oscillating gear, substantially as described.

10. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said gear-wheels being mounted within the other member, a restrainable guide-bearing normally rotating with said oscillating wheel, a guide for restraining the rotary motion of said wheel when the guide-bearing is restrained, said guide consisting of a connecting-piece having a swinging motion in one direction and a sliding motion in another direction, said motions being in a plane parallel with the axis of rotation of the oscillating gear, and a brake for restraining the rotation of said guide-bearing, substantially as described.

11. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said gear-wheels being mounted within the other member, a restrainable guide-bearing normally rotating with said oscillating wheel, and a guide for restraining the rotary motion of said wheel when the guide-bearing is restrained, said guide consisting of a connecting-piece joined at one end to the guide-bearing by trunnion-pins and at the other end to the oscillating gear-wheel by trunnion-pins, substantially as described.

12. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said gear-wheels being mounted within the other member, a restrainable guide-bearing normally rotating with said oscillating wheel, a guide for restraining the rotary motion of said wheel when the guide-bearing is restrained, said guide consisting of a connecting-piece joined at one end to the guide-bearing by trunnion-pins and at the other end to the oscillating gear-wheel by trunnion-pins, and a brake for restraining the rotation of said guide-bearing, substantially as described.

13. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said gear-wheels being mounted within the other member, a restrainable guide-bearing normally rotating with said oscillating wheel, a guide for restraining the rotary motion of said wheel when the guide-bearing is restrained, said guide consisting of a sleeve joined at one end to the guide-bearing by trunnion-pins and at the other end to the oscillating gear-wheel by trunnion-pins, and a brake for restraining the rotation of said guide-bearing, substantially as described.

14. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said wheels being mounted within the other member and being provided with a projection 7, a restrainable guide-bearing normally rotating with said oscillating gear-wheel, and a guide for restraining the rotary motion of said wheel when the guide-bearing is restrained, said guide consisting of a sleeve connected at one end to the guide-bearing by trunnion-pins and at the other end to the projection 7 by trunnion-pins, substantially as described.

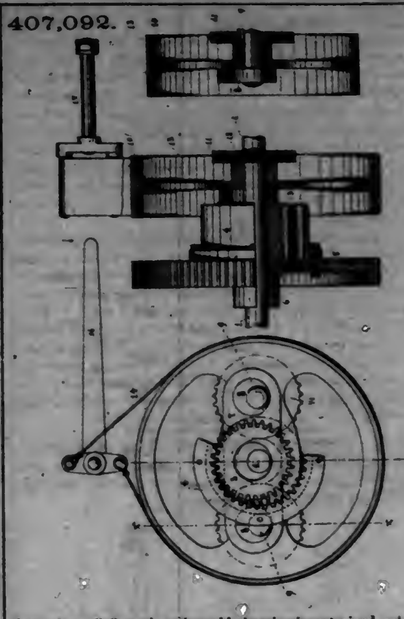
15. In a power-transmitting device, the combination of the driving-shaft and driven mechanism, a set of gear-wheels connecting said shaft and mechanism, one of said gear-wheels having a rotary and also an oscillating motion, and a guide for restraining the rotary motion of said oscillating gear-wheel, said guide consisting of a connecting-piece having a swinging motion in one direction and a sliding motion in another direction, said motions being in a plane parallel with the axis of rotation of the oscillating gear-wheel and connecting said oscillating gear-wheel with a relatively-fixed guide-bearing, substantially as described.

16. In a power-transmitting device, the combination of a driving-shaft and driven mechanism, a set of gear-wheels connecting said shaft and mechanism, one of said gear-wheels having a rotary and also an oscillating motion, and a guide for restraining the rotary motion of said oscillating gear-wheel, said guide consisting of a connecting-piece joined at one end to said oscillating gear-wheel by trunnion-pins and at its other end to a relatively-fixed guide-bearing by trunnion-pins, substantially as described.

17. In a power-transmitting device, the combination of a driving-shaft and driven mechanism, a set of gear-wheels connecting said shaft and mechanism, one of said gear-wheels having a rotary and also an oscillating motion, and a guide for restraining the rotary motion of said oscillating gear-wheel, said guide consisting of a sleeve joined at one end to said oscillating gear-wheel by trunnion-pins and at its other end to a relatively-fixed guide-bearing by trunnion-pins, substantially as described.

18. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the oscillating member of said gear-wheels being mounted within the other member and upon an eccentric formed on the driving-shaft, a restrainable guide-bearing loosely mounted upon the driving-shaft normally rotating with said oscillating wheel, a guide for restraining the rotary motion of said oscillating wheel when the guide-bearing is restrained, said guide consisting of a sleeve connected at one end to the guide-bearing by trunnion-pins and at the other end to the oscillating wheel by trunnion-pins, and a brake for restraining the rotation of said guide-bearing, substantially as described.

407,092. POWER-TRANSMITTING DEVICE. William Main, Brooklyn, N. Y. Filed June 13, 1888. Serial No. 276,967. (No model.)



Claim.—1. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a set of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating gear-wheel, and a guide mechanism for restraining the rotary motion of said oscillating gear-wheel when the guide-bearing is restrained, said guide mechanism having a motion of complete rotation about centers, substantially as described.

2. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating gear-wheel, and a guide mechanism for restraining the rotation of said oscillating gear-wheel when the guide-bearing is restrained, said mechanism consisting of two or more crank shafts or pins journaled in the guide-bearing, the crank portions of said shafts moving with the oscillating gear-wheel in its path of oscillation and restraining it to positions of parallelism when the guide-bearing is restrained, substantially as described.

3. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating gear-wheel, a guide mechanism for restraining the rotation of said oscillating gear-wheel when the guide-bearing is restrained, said mechanism consisting of two or more crank shafts or pins journaled in the guide-bearing, the crank portions of said shafts moving with the oscillating gear-wheel in its path of oscillation and restraining it to positions of parallelism when the guide-bearing is restrained, and gearing connecting said crank-shafts and the driving-shaft, whereby the rotation of said crank-shafts on their own axes is promoted, substantially as described.

4. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating gear-wheel, a guide mechanism for restraining the rotation of said oscillating gear-wheel when the guide-bearing is restrained, said mechanism consisting of two or more crank shafts or pins journaled in the guide-bearing, the crank portions of said shafts moving with the oscillating gear-wheel in its path of oscillation and restraining it to positions of parallelism when the guide-bearing is restrained, and a brake for restraining the rotation of said guide-bearing, substantially as described.

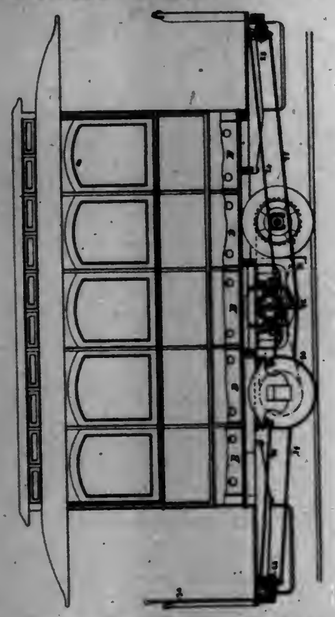
5. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of gear-wheels, one of said gear-wheels having a rotary and also an oscillating motion, a restrainable guide-bearing normally rotating with said oscillating gear-wheel, a guide mechanism for restraining the rotation of said oscillating gear-wheel when the guide-bearing is restrained, said mechanism consisting of two or more crank shafts or pins journaled in the guide-bearing, the crank portions of said shafts moving with the oscillating gear-wheel in its path of oscillation and restraining it to positions of parallelism when the guide-bearing is restrained, gearing connecting said crank-shafts and the driving-shaft, whereby the rotation of said crank-shafts on their own axes is effected, and a brake for restraining the rotation of said guide-bearing, substantially as described.

6. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, a restrainable guide-bearing normally rotating with the driving member of said sun-and-planet gear, and a guide mechanism for restraining the rotary motion of said driving member when the guide-bearing is restrained, said guide mechanism consisting of two or more crank shafts or pins journaled in the guide-bearing, the crank portions of said shafts moving with the oscillating gear-wheel in its path of oscillation and restraining it to positions of parallelism when the guide-bearing is restrained, substantially as described.

7. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, a restrainable guide-bearing normally rotating with the driving member of said sun-and-planet gear, a guide mechanism for restraining the rotary motion of said driving member when the guide-bearing is restrained, said guide mechanism consisting of two or more crank-shafts journaled in the guide-bearing, the crank portions of said shafts moving with the oscillating gear-wheel in its path of oscillation and restraining it to positions of parallelism when the guide-bearing is restrained, and gearing connecting said crank-shafts and the driving-shaft, whereby the rotation of said crank-shafts on their own axes is promoted, substantially as described.

8. A power-transmitting device for connecting a driving-shaft with a driven mechanism, consisting of a series of sun-and-planet gear-wheels, the driving member of said gear-wheels being placed within the driven member, a restrainable guide-bearing normally rotating with the driving member of said sun-and-planet gear, and a guide mechanism for restraining the rotary motion of said driving member when the guide-bearing is restrained, said guide mechanism consisting of two or more crank shafts or pins journaled in the guide-bearing, the crank portions of said shafts moving with the oscillating gear-wheel in its path of oscillation and restraining it to positions of parallelism when the guide-bearing is restrained, substantially as described.

407,098. METHOD OF VEHICLE-PROPULSION BY ELECTRIC MOTORS. WILLIAM MAIN, Brooklyn, N. Y. Original application filed Oct. 23, 1887, Serial No. 253,610. Divided and this application filed Aug. 21, 1888. Serial No. 283,354. (No model.)



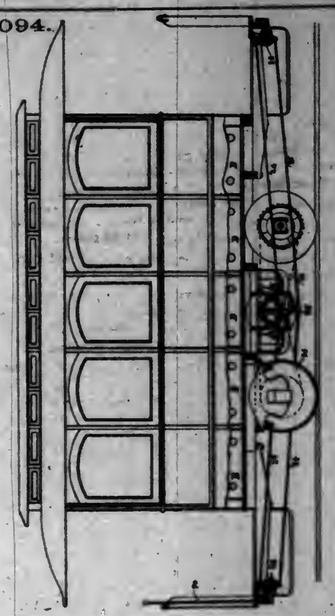
Claim.—In the propulsion of vehicles and the like by electric motors actuated by batteries, the method of obtaining the maximum effect from the motor without deterioration of the battery, which consists in maintaining the flow of current from the battery and maintaining continuous revolution of the motor itself during temporary stoppages of the vehicle, whereby the drain upon the battery is continuous and the power of the motor during said stoppages is accumulated in inertia utilizable at the next starting.

407,094. CAR-PROPELLING APPARATUS. WILLIAM MAIN, Brooklyn, N. Y. Filed Aug. 21, 1888. Serial No. 283,355. (No model.)

Claim.—1. The combination, with a vehicle, of a motor therefor, a chain for transmitting power from the motor, a traction-shaft, a gear-wheel mounted so as to turn upon said traction-shaft and engaging with the chain, and springs connecting the gear-wheel with the traction-shaft, said springs having a reversible action and forming a springy connection between the gear-wheel and the traction-shaft in whichever direction the gear-wheel tends to revolve, substantially as set forth.

2. In a vehicle-propelling apparatus, the combination, with the traction-shaft, of a driving gear-wheel mounted thereon and driven

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from the vehicle-motor, a flange keyed to said traction-shaft, and springs connecting the gear-wheel with the flange, provided at each end with bearings upon the flange and the gear-wheel, whereby the operation of the springs may be reversed on the reversal of the rotation of the gear-wheel, substantially as set forth.

3. In a vehicle-propelling apparatus, the combination, with the traction-shaft 39, of gear-wheel 37 38, mounted thereon and driven from the vehicle-motor, sleeve 40, provided with flanges 41, cap 42, provided with flanges 43, and springs 47, substantially as set forth.

4. In a vehicle-propelling apparatus, the combination, with the traction-shaft 39, of a gear-wheel 37 38, mounted thereon and driven from the vehicle-motor, flanges 43 41, recessed as shown and described, and rods 46, substantially as set forth.

5. The combination, with a vehicle, of a motor therefor, a motor-shaft, a traction-shaft, two sprocket-wheels, one on each shaft, one of said sprocket-wheels being mounted so as to turn upon its shaft, a chain connecting said sprocket-wheels, a sleeve fixed to the shaft alongside of the freely-revolving sprocket-wheel, and flexible connections uniting said sleeve and freely-revolving sprocket-wheel in such manner as to normally tend to hold the hub and wheel in a certain fixed relation to each other and to permit a limited relative motion between them in either direction under tension, substantially as set forth.

6. The combination, with a vehicle-body, of a motor mounted thereon, two traction-shafts, and sprocket-chains connecting the motor-shaft with the traction-shafts, one of the sprocket-chain wheels having a springy connection with its shaft, substantially as described.

7. The combination of a vehicle-body with a truck for supporting the same, springs between the vehicle-body and the truck, a motor mounted upon the vehicle-body, two traction-shafts mounted in the truck, and sprocket-chains connecting the motor-shafts with the traction-shafts, one of the sprocket-chain wheels having a springy connection with its shaft, substantially as described.

8. The combination of a vehicle-body with a truck for supporting the same, springs between the vehicle-body and the truck, a motor mounted upon the vehicle-body, two traction-shafts mounted in the truck, and sprocket-chains connecting the motor-shaft with the traction-shafts, a sprocket-chain wheel for each of the said chain-wheels, having a springy connection with its shaft, substantially as described.

9. The combination of a vehicle-body with a truck for supporting the same, springs between the vehicle-body and the truck, an electric motor mounted upon the vehicle-body, two traction-shafts mounted in the truck, and sprocket-chains connecting the electric-motor shafts with the traction-shafts, one of the sprocket-chain wheels having a springy connection with its shaft, substantially as described.

10. The combination of a vehicle-body with a truck for supporting the same, springs between the vehicle-body and the truck, an electric motor mounted upon the vehicle-body, two traction-shafts mounted in the truck, sprocket-chains connecting the electric-motor shafts with the traction-shafts, and a sprocket-chain wheel for each

of said chain-wheels, having a springy connection with its shaft, substantially as described.

11. The combination of a vehicle, an electric motor mounted thereon, sun-and-planet gear-wheels connecting the motor-shaft with the driving-axle of the vehicle, and guides for securing a constant parallel motion of the driving member of the sun-and-planet gear, substantially as set forth.

12. The combination of a vehicle, a motor mounted thereon, sun-and-planet gear-wheels connecting the motor-shaft with the driving-axle of the vehicle, and a friction-brake connected with one of the said gear-wheels, whereby the said gear-wheel may be thrown into or out of operative engagement, substantially as set forth.

13. The combination of a vehicle, a motor mounted thereon, a shaft for said motor, provided with an eccentric, a train of sun-and-planet gear-wheels between said shaft and the driving-axle of the vehicle, one wheel of said train being loosely mounted upon said eccentric, and a friction-brake connected with the wheel, whereby the said wheel may be locked, so as to partially or wholly check its rotation about its own center, substantially as set forth.

14. The combination of a vehicle, a motor mounted thereon, a shaft for said motor, provided with an eccentric, a train of sun-and-planet gear-wheels connecting said shaft with the driving-axle of the vehicle, one wheel of said train being loosely fitted upon said eccentric and adapted to rotate about the same as a center, a friction-pulley mounted to revolve freely, and guides connecting the wheel fitted upon the eccentric and the pulley, whereby they are caused to revolve together, substantially as set forth.

15. The combination of a vehicle, a motor mounted thereon, a shaft for said motor, two or more sets of sun-and-planet gear-wheels between the shaft and the driving-axle of the vehicle, the wheels of each set being differently proportioned to each other, guides for securing parallelism of motion of one member of each of said sets of gear-wheels, and means for bringing into operation either of said guides, substantially as set forth.

16. The combination of a vehicle, a motor mounted thereon, a shaft for said motor, two or more sets of sun-and-planet gear-wheels between the motor-shaft and the driving-axle of the vehicle, the wheels of each set being differently proportioned to each other, guides for securing parallelism of the driving member of each of said sets of gear, and means for controlling said guides, by which either of said guides may be thrown into operation, each of the other guides being in such position of the controlling mechanism thrown out of operation, substantially as set forth.

17. The combination of a vehicle, a motor mounted thereon, a train of gear-wheels between the motor-shaft and the driving-axle of the vehicle, one member of said train being normally rotated by the motor-shaft when the train is out of operative engagement therewith, a rotating pulley connected by guides with the normally-rotating gear, and friction-brakes for arresting said pulley, and thereby bringing the train of gear into operative engagement with the motor-shaft, substantially as set forth.

18. The combination of a vehicle, a motor therefor, a rotating brake device mounted upon the motor-shaft, a set of differential gear-wheels between the motor-shaft and the driving-axle of the vehicle, and guides connecting said gear-wheels and said rotating device, whereby the operation of the gear-wheels may be controlled, substantially as set forth.

19. The combination of a vehicle, a motor mounted thereon, and a train of sun-and-planet gear-wheels between the motor-shaft and the driving-axle of the vehicle, the initial wheel of said train maintaining in its movements positions of parallelism with itself when transmitting power, substantially as set forth.

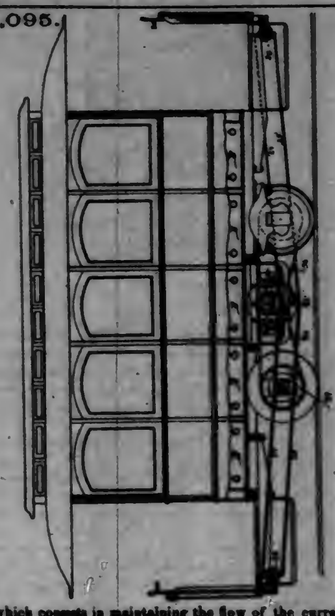
20. The combination of a vehicle, a motor mounted thereon, a series of sun-and-planet gear-wheels between the shaft of the motor and the driving-axle of the vehicle, the initial wheel of said series maintaining positions of parallelism with itself while operative to transmit motion, and guides for partially suspending the operation of said initial wheel, and thereby creating changes of speed in the transmitted motion, substantially as set forth.

21. The combination of a vehicle, a motor mounted thereon, a train of gear-wheels connecting the shaft of the motor with the driving-axle of the vehicle, and a friction-brake controlling the operative engagement of the shaft with the gear-wheels, the transmitted speed increasing relatively to the amount of pressure applied to the brakes, substantially as set forth.

407,095. METHOD OF VEHICLE-PROPULSION. WILLIAM MAIN, Brooklyn, N. Y. Original application filed Oct. 23, 1887, Serial No. 253,610. Divided and this application filed May 15, 1888. Serial No. 273,822. (No model.)

Claim.—1. In the propulsion of vehicles and the like by electric motors actuated by batteries, the method of changing the speed of the vehicle while causing the least possible deterioration of the bat-

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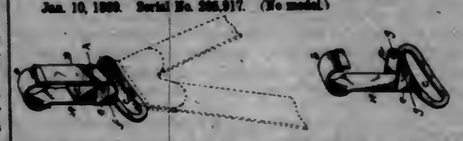


tery, which consists in maintaining the flow of the current from the battery and maintaining, as nearly as practicable, a constant rate of revolution for the motor and varying the ratio of transmission between the motor-shaft and the driving-shaft to correspond to the speed desired, substantially as described.

2. In the propulsion of vehicles and the like by electric motors actuated by batteries, the method of obtaining the maximum effect from the motor in starting while causing the least possible deterioration of the battery, which consists in first causing the motor to revolve disconnected from the driving-shaft of the vehicle and then effecting a power-transmitting connection between the revolving motor-shaft and the driving-shaft, substantially as described.

3. In the propulsion of vehicles and the like by electric motors actuated by batteries, the method of obtaining the maximum effect from the motor in starting while causing the least possible deterioration of the battery, which consists in first causing the motor to revolve disconnected from the driving-shaft of the vehicle, then effecting a power-transmitting connection between the revolving motor-shaft and the driving-shaft, and gradually attaining the speed of locomotion desired by gradually increasing the ratio of transmission between the motor-shaft and driving-shaft, substantially as described.

407,096. SNAP-HOOK. CHARLES A. MAIN, Buffalo, assignor of one-half to Adolph C. Knothe and Frank Knothe, New York, N. Y. Filed Jan. 10, 1889. Serial No. 295,917. (No model.)

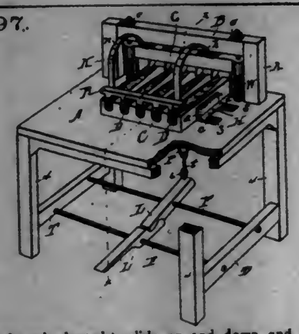


Claim.—In a snap-hook, the combination, with the frame A, provided at one end with a hook *b* and at its opposite end with a loop *c*, and having on its lateral edges upwardly-projecting lugs *e*, of a U-shaped spring-tongue D, having its lower branch *d* resting upon the frame A, and provided on its upper branch with laterally-projecting pins *f*, depressed below the upper branch of said tongue and pivoted between the ears of the frame, whereby the tongue is held from both lateral and lengthwise movement on the frame, and an offset formed on the forward front end of the tongue and engaging against the end of the hook *b*, substantially as set forth.

407,097. DEVICE FOR SLITTING THE ENDS OF CIGAR-BUNCHES. EDWARD MARETZ, Detroit, Mich. Filed Feb. 26, 1889. Serial No. 301,606. (No model.)

Claim.—1. A device for slitting the end of cigar-bunches, consisting of a table to which is secured an upright frame, said frame supporting the vertical guide-rods V V, the cross-head G, arranged

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upon the rods and adapted to slide up and down, and having elongated slots S, the knives located in the slots in said cross-head, and means for adjusting them laterally therein, the coiled springs W W, and the actuating angle-rod P, having its ends secured to the under face of the cross-head G and being connected with the foot-lever L L', substantially as and for the purposes specified.

2. In a device for slitting the end of cigar-bunches, the combination of the table A, upright frame B K, guide-rods V V, and coiled springs W W, with the cross-head G, having the slots S, carrying the knives O O, the arched spring-arms *n n*, bolted to said cross-head and attached at their outer ends to the cross-piece R, the rod P, having its ends secured to the under face of the cross-head G, the link *t*, connecting the downward-extending loop of the rod P with the inner end of the part L of the foot-lever, the duplex foot-lever consisting of the parts L L', mounted on the fulcrum-rods F F', substantially as and for the purposes specified.

3. The combination of the legs, table, gages H H', the upright frame, guide-rods V V, springs W W, cross-head G, having slots S S, carrying knives O O, the spring-arms *n n*, cross-piece R, having blocks 3 3, the mold C, rod P, link *t*, the duplex lever, and rods F F', arranged and operating as and for the purposes specified.

407,098. PIGEON-HOLE CASE. DAVID C. MEEHAN, Columbus, Ohio. Filed Feb. 23, 1889. Serial No. 300,542. (No model.)



Claim.—1. A pigeon-hole case having vertically-moving shutters arranged in series, those of one series overlapping those of adjoining series, substantially as herein described.

2. A pigeon-hole case divided into compartments, in combination with vertically-moving shutters arranged in series, those of one series overlapping those of the series below it, and a rest or support for the upper series of shutters, substantially as herein described.

3. The combination, with a case divided into compartments and having horizontal partitions or shelves, of vertically-moving shutters having pivoted gravity-latches engaging said partitions when the shutters are elevated and adapted to automatically fall out of connection therewith when the shutters are moved, substantially as herein described.

4. The case divided into compartments having horizontal shelves or partitions, in combination with vertically-moving shutters arranged in overlapping series, rests or supports for the shutters of the upper series, and gravity-latches carried by the shutters and engaging the horizontal partitions or shelves, whereby said shutters are held in elevated positions, substantially as described.

5. The combination, with a case containing compartments and vertically-moving shutters, of pivoted latches carried by the shutters and engaging the horizontal partitions or floors of the compartments to maintain the shutters in raised positions, said latches being adapted to automatically fall out of engagement with the partitions or floors when the shutters are again moved, substantially as herein described.

6. The combination, with a case containing compartments and provided with vertically-moving shutters, of the gravity-latch secured to each shutter and comprising a pivoted lever, and a pivoted pawl secured to the lever and having its inner end adapted to engage the horizontal partitions or floors of the compartments, substantially as described.

7. The combination, with a case containing compartments and vertically-moving shutters, of a plate secured to each shutter, a gravity-lever pivoted to the plate, and a pawl pivoted to the lever and extending through the plate and shutter, said pawl having a prong at its inner end for engaging the floors of the compartments or horizontal partitions, substantially as herein described.

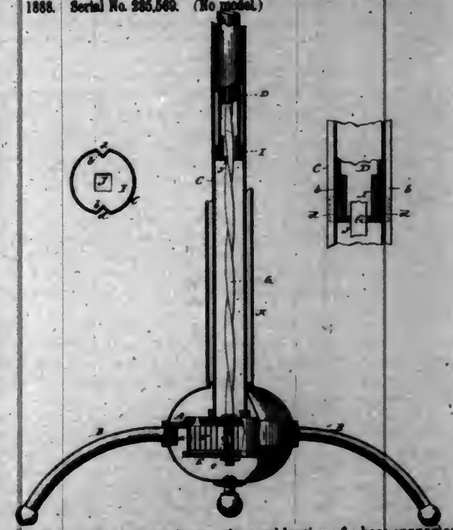
407,099. SWINGING CHAIR OR HAMMOCK. ROBERT W. MEYER, Berlin, Ontario, Canada. Filed Dec. 14, 1888. Serial No. 293,544. (No model.)



Claim.—1. The side rails B, top bar G, side bars I, pivoted on and suspended from said top bar, the cross-bar J, connecting the bars I, and the side bars K, jointed to the bars I and pivoted to the lower ends of the side bars, combined with the suspension-ropes, the cross-bar M, placed between the bars K, below the bar J, and the canvas L, supported at its lower end by the bar M, and at its upper end by the cross-bar connecting the bars B, substantially as described.

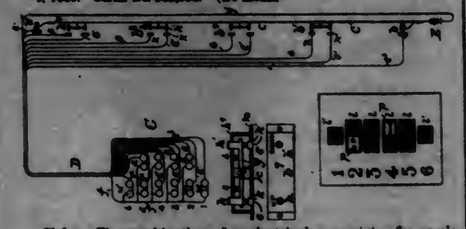
2. The top bar G, pulleys F and H, supported thereby, the side rails B, and the ropes E, passed over said pulleys and connected at the ends to the rails B, combined with the side bars I and K, jointed together, the bars I being connected to the bar G, and the bars K, pivoted to the ends of the rails B, the cross-bar J, connecting the bars I, the head-piece C, connecting the upper ends of the rails B, the cross-bar M, placed between the bars K below the cross-bar J, and the canvas L, connected at one end to the head-piece C and at the other end to the bar M, substantially as shown and described, and for the purpose specified.

407,100. STANDARD LAMP. JOHN C. MILLER, Meriden, Conn., assignor to the Meriden Bronze Company, same place. Filed Sept. 17, 1888. Serial No. 285,569. (No model.)



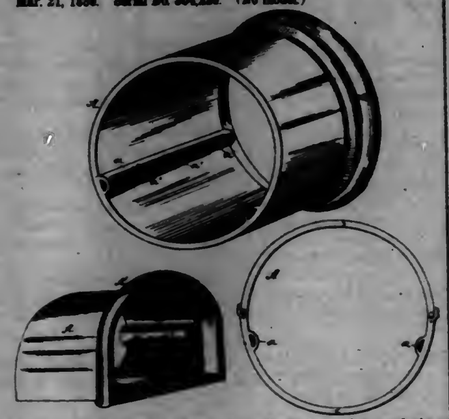
Claim.—In a standard lamp, the combination of a base supported upon legs and adapted to rest upon the floor, a vertical tube C, stationary on said base and constructed with inwardly-projecting vertical ribs *b*, a second tube D, vertically adjustable in said tube C, a nut I, fixed to the lower end of the said tube D and constructed with grooves to engage the said ribs *b* in the tube C as a guide for the vertical movement of said tube D and so as to prevent its rotation, a coiled spring F, arranged in the base, its axis vertical, one end of said spring stationary in the base, and a vertical screw-rod G, supported in the base, held against vertical movement, but so as to permit its rotation, and extending centrally through the said coiled spring, the inner end of the said spring attached to the said rod, the said rod extending upward through the said nut and so that the vertical movement of the said tube D will impart rotative movement to the said rod, substantially as and for the purpose described.

407,101. SIGNALING APPARATUS. GEORGE P. MILLIKEN, Boston, assignor of one-half to Albert P. Sawyer, Newburyport, Mass. Filed Apr. 1, 1889. Serial No. 305,502. (No model.)



Claim.—The combination of an electrical annunciator for an elevator-car, having indicators for announcing the different floors and words or symbols indicating direction, with transmitting-keys attached to different floors and electrically connected with said annunciator, each floor-indicator and direction-indicator of the annunciator being each electrically connected with its corresponding keys, all substantially as shown and operating as set forth.

407,102. SEWER-PIPE. JOHN A. MEBUS, New Orleans, La. Filed Mar. 21, 1888. Serial No. 304,220. (No model.)



Claim.—1. A pipe provided with perforated supplemental pipes or tubes arranged upon its inner side, said supplemental pipes formed integral with the main pipe, substantially as shown and described.

2. A pipe provided with supplemental pipes or tubes perforated along the entire length, as shown, said supplemental pipes or tubes cast integral with the body of the main pipe and extended the entire length thereof and disposed on the lower inner surface of said main pipe, substantially as shown.

3. The pipe A, formed of sections, one or more of the lower sections provided with a supplemental perforated pipe or tube extending its entire length cast integral therewith, substantially as and for the purpose described.

407,103. SAFETY-PILOT FOR RAILWAY-TRAINS. NORMAN S. MOREY, New York, N. Y. Filed Nov. 30, 1888. Serial No. 292,270. (No model.)

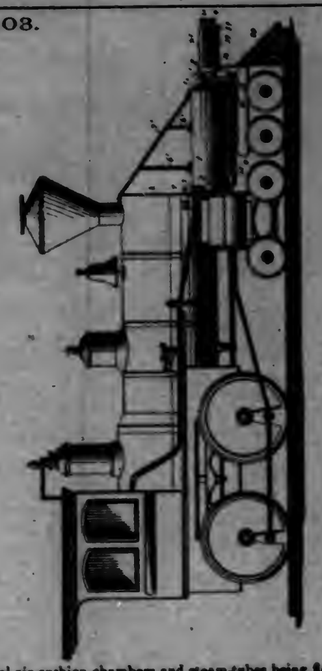
Claim.—1. The combination, with a locomotive, of a series of telescopic air-cushion chambers, a buffer at the outer end of the telescopic air-cushion chambers, and a rolling support for the telescopic chambers, substantially as shown and described.

2. The combination, with a locomotive, of a series of telescopic air-cushion chambers with a buffer at their outer end, a pilot-car for supporting the telescopic air-cushion chambers, and means, substantially as described, for moving the telescopic air-chambers into extended position, substantially as shown and described.

3. The combination, with a locomotive, of a series of telescopic air-cushion chambers with a buffer at their outer end, a pilot-car for supporting the telescopic air-cushion chambers, and a series of telescopic tubes connected with the telescopic air-cushion chambers and with the locomotive and adapted to be projected by means of steam or compressed air, substantially as shown and described.

4. The combination, with a locomotive, of a series of telescopic air-cushion chambers with a buffer at their outer end, a pilot-car for supporting the telescopic air-cushion chambers, and a series of telescopic tubes connected with the telescopic air-cushion chambers and with the locomotive and adapted to be projected by means of steam, the several air-cushion chambers and steam-tubes being flexibly connected with the locomotive and the pilot-car, substantially as set forth.

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5. The combination, with a locomotive, of a pilot-car, a series of telescopic air-cushion chambers forming a connection between the pilot-car and the locomotive, a second series of telescopic air-cushion chambers mounted on the pilot-car with a buffer at their forward end, and means for projecting the first and second series of telescopic air-cushion chambers, substantially as shown and described.

6. The combination, with a locomotive, of a pilot-car, a series of telescopic air-cushion chambers forming a connection between the pilot-car and the locomotive, a double series of telescopic air-cushion chambers mounted on the pilot-car and having a buffer at their forward end, a series of telescopic tubes connected with the several series of telescopic air-cushion chambers and movable therewith and connected with the locomotive to be extended by steam or compressed air, substantially as shown and described.

7. The combination, with a locomotive, of a series of telescopic air-cushion chambers, a buffer at their outer end formed with an open recess having inwardly-projecting spring-clutches, and a rolling support for the telescopic air-cushion chambers, substantially as shown and described.

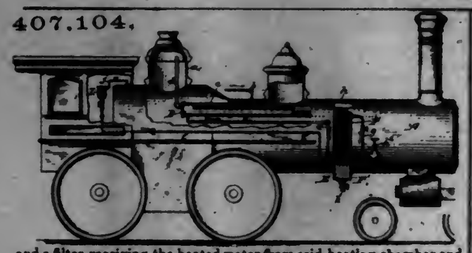
8. The combination, with a locomotive, of a series of telescopic air-cushion chambers, a buffer at their outer end formed with an open recess having inwardly-projecting spring-clutches, and a detachable head-piece with lateral slots engaging the spring-clutches and projecting out of the buffer, and a rolling support for the telescopic air-cushion chambers, substantially as shown and described.

9. The combination, with a locomotive 2, of a pilot-car 9, a series of telescopic air-cushion chambers 1, connected to the locomotive 2 and having a piston-rod 8 at their forward end flexibly connected to car 9, a double series of telescopic air-cushion chambers 22, mounted on the pilot-car 9 and having a buffer at their forward end, a series of telescopic tubes 38, connected to air-chambers 1 and connecting by a pipe 46 at their rear end with the boiler of locomotive 2, the pipe 46, having a safety-valve 47, and a double series of telescopic tubes 39, connected to air-chambers 22 and connecting by means of branch tubes 45 with tubes 38, substantially as shown and described.

407,104. HEATING AND PURIFYING FEED-WATER FOR STEAM-BOILERS. VIRGIL H. MCCONNELL, Buffalo, N. Y. Filed Dec. 20, 1888. Serial No. 294,967. (No model.)

Claim.—1. The combination, with a steam-boiler, of a water-heating chamber arranged within the boiler and communicating with the interior of the boiler, whereby the water in said chamber is heated by the steam entering the chamber, a spray device whereby the water is delivered into said heating-chamber in a finely-divided condition,

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and a filter receiving the heated water from said heating-chamber and connected with the interior of the steam-boiler, substantially as set forth.

2. The combination, with a steam-boiler, of a water-heating chamber arranged within the boiler and communicating with the interior of the boiler, whereby the water in said chamber is heated by the steam entering the chamber, a spray device whereby the water is delivered into said heating-chamber in a finely-divided condition, a filter receiving the heated water from said heating-chamber and connected with the interior of the steam-boiler, and a vessel containing alumina or any other coagulating agent and connected with the filter, substantially as set forth.

3. The combination, with a steam-boiler, of a closed heating-chamber B, arranged lengthwise within the boiler and extending along the upper portion thereof, a steam-supply pipe *d*, connected with said heating-chamber and terminating in the dome of the boiler, a spray-pipe arranged in said heating-chamber, a water-supply pipe connected with said spray-pipe, a filter, a pipe connecting the filter with the heating-chamber B, and a pipe whereby the purified water is conducted from the filter into the boiler, substantially as set forth.

4. The combination, with a steam-boiler, of a closed heating-chamber B, arranged within the boiler and connected with the interior of the boiler by a pipe *d*, terminating in the dome of the boiler; a spray-pipe *c*, arranged within said heating-chamber, a water-supply pipe *b*, connected with said spray-pipe, a filter E, a pipe *e*, connecting the filter with the heating-chamber B, a pipe *g*, whereby the purified water is conducted from the filter into the boiler, a vessel I, containing alumina or any other coagulating agent, and connected with the filter supply-pipe *c*, and a steam-pipe *j*, connecting the vessel I with the interior of the steam-boiler, substantially as set forth.

407,105. PAPER HOLDER AND CUTTER WITH PRINTING ATTACHMENT. CHARLES J. MCRAE and HENRY C. BAKER, Kansas City, Mo. Filed May 6, 1888. Serial No. 273,216. (Model.)

Claim.—1. In a paper-holder, a rocking frame adapted to support a roll of paper mounted thereon, said rocking frame being pivoted between supports, substantially as described.

2. In a paper-holder, a rocking frame for supporting a roll of



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paper, journaled between perpendicular supports, said frame being provided with one or more supporting-rollers for the paper, substantially as set forth.

3. In a paper-holder, a rocking supporting-frame for a roll of paper, and said supporting-frame provided with a printing-roller, substantially as set forth.

4. In a paper-holder, a rocking frame for supporting a roll of paper, and said frame provided with a printing-roller and a cutting-knife, substantially as set forth.

5. In a paper-holder, a rocking frame for supporting a roll of paper, and said frame provided with printing and ink-supplying rollers and a cutting-knife, substantially as set forth.

6. In a paper-holder, a roll of paper, a printing-roll located beneath the roll of paper, and another printing-roll located above said roll of paper, substantially as set forth.

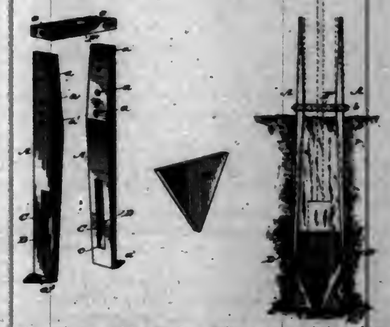
7. In a paper-holder, the combination of a core and shaft for supporting a roll of paper, said shaft being adapted to slide in parallel grooves in the upright frame and a printing-roller above it journaled in a frame which also slides in the same grooves, substantially as described.

8. In a paper-holder, the combination of a rocking frame for supporting a roll of paper, a shaft or spool mounted in a vertically-grooved support, and a printing-roller mounted in a sliding frame, substantially as described.

9. In a paper-holder, the combination of the supports for a roll of paper and a printing attachment mounted above said roll and having a device for fastening it out of contact with the paper, in the manner substantially as set forth.

10. In a paper-holder, a rocking frame for supporting a roll of paper, said rocking frame being provided with a printing-roller, a supporting-roller, and a double-edged cutting-knife, substantially as described.

407,106. ANCHOR ATTACHMENT FOR WINDMILL-POSTS. LEONARD J. M. NERF, Sutton, Nebr. Filed Apr. 10, 1888. Serial No. 306,741. (No model.)



Claim.—1. An anchor attachment for posts, consisting of two leg portions, a yoke for holding the upper ends thereof apart, the upper ends of said legs having a pivotal bearing in said yoke, and a wedge adapted to be forced between the lower ends of said legs to spread them apart, substantially as and for the purpose described.

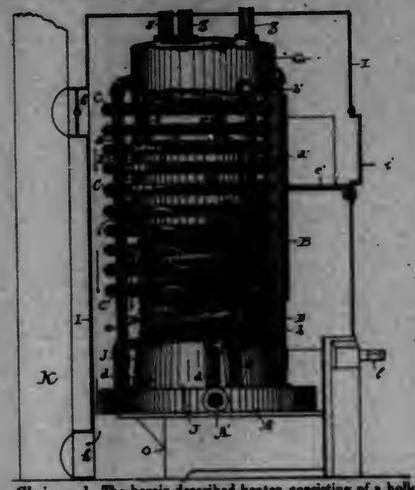
2. An anchor attachment for posts, consisting of leg portions A A, having lateral outwardly-projecting feet a^3 at their lower ends, a yoke for holding the upper ends of said legs apart, the upper ends of said legs having a pivotal bearing in said yoke, and a wedge adapted to force the lower ends of the legs apart when forced downward, substantially as shown and described.

3. The combination, with the legs A A, having a substantially pivotal bearing near the upper ends, said legs tapered on their inner faces upwardly and downwardly from said pivotal point, of a wedge-block adapted to be inserted between the lower ends of said legs and spread the same when forced downward, substantially as shown and described.

4. An anchor attachment for posts, consisting of the legs A A, provided with vertically-elongated slots C C near their lower ends, lateral outwardly-projecting feet at their lower ends, a yoke for holding the upper ends of the legs apart, said legs having a pivotal bearing in said yoke, bails D, formed on the outer faces of the legs, projecting over the lower ends of the slots C C, a wedge fitting between the lower ends of the legs, the upper outer edges thereof engaging the slots C, said edges adapted to slip under and engage the bails D when the wedge is forced home, substantially as and for the purpose described.

5. As an improvement in anchor attachments for posts, the combination, with post-section G, of the legs A A, tapered at their upper ends, as shown, means for securing said ends to the post, substantially as described, the lower ends thereof formed into lateral feet a^3 a^3, elongated slots C C, formed near their lower ends, bails D, formed on the outer faces of the legs over the slots, and a wedge disposed between the legs, its upper outer ends engaging the slots and held from upward movement by the bails D, all arranged substantially as and for the purpose shown and described.

407,107. HEATER. CHARLES B. NELSON, Portland, Me. Filed Nov. 30, 1883. Serial No. 302,203. (No model.)



Claim.—1. The herein-described heater, consisting of a hollow base, a plurality of pipes connected with said base and coiled or wound to form a single-cylinder fire-box above it, and a dome or chamber above said coil and connected therewith, in combination with a case inclosing said parts, substantially as shown.

2. The herein-described heater, consisting of a hollow base, pipes connected with said base and formed into a coil or fire-box, a chamber or dome above said coil and connected therewith, a hollow ring or jacket above said coil and below said dome, and pipes connecting said jacket with said dome and said base, in combination with a case inclosing said parts, substantially as shown.

3. The herein-described heater, consisting of a hollow base, pipes connected with said base and formed into a coil or fire-box, a dome or chamber above said coil and connected therewith, a vertical pipe or column connected with said base outside of said coil and extending above said base, and pipes extending from said column around said coil substantially concentric therewith and connecting with said dome, in combination with a case inclosing said parts, substantially as shown.

4. The herein-described heater, consisting of a hollow base, pipes connected with said base and formed into a coil or fire-box, a dome or chamber above said coil and connected therewith, a ring or jacket above said coil and below said dome, and pipes connecting it with said dome and said base, a vertical pipe or column connected with said base outside of said coil and extending above said base, and pipes extending from said column around said coil substantially concentric therewith and connecting with said dome, in combination with a case inclosing said parts, substantially as shown.

407,108. HAT-STAY. SAMUEL T. NEWMAN, Danbury, Conn., assignor of one-half to Edmund Tweedy, same place. Filed Nov. 16, 1888. Serial No. 291,697. (No model.)

Claim.—1. A hat-stay consisting of frame-work, substantially as described and shown, suspending-strips for holding the hats, and side strips adapted to extend from the bottom over the top of the upper hat.

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2. A hat-stay consisting of frame-work, substantially as described and shown, suspending-strips for holding the hats, side strips adapted to extend from the bottom over the top of the upper hat, and holding-pieces secured to the side strips to engage the brims of the hats and support the hats when the frame-work is inverted.

3. A hat-stay consisting of frame-work, substantially as described and shown, suspending-strips for holding the hats, an independent cross-piece adapted to lie over the upper hat, and side strips extending from the bottom over said cross-piece, where they are secured, so that in use the hats cannot come in contact with the box.

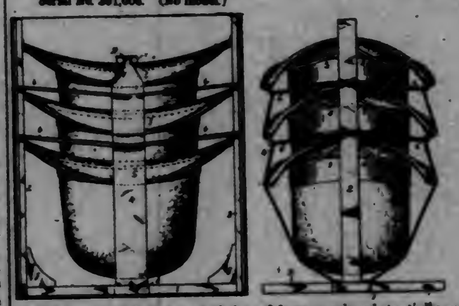
4. A hat-stay consisting of frame-work, suspending-strips for holding the hats, an independent cross-piece, side strips extending from the bottom over the top of said cross-piece, and holding-pieces to engage the brims of the hats, whereby they are supported when the frame-work is inverted.

5. A device for packing hats, consisting of a base-piece, end pieces, and a cross-piece secured to the base-piece, suspending-strips attached to the end pieces to engage the opposite sides of the hats, and side strips secured to the cross-piece and capable of being passed over the edges of the brims and secured together at the top.

6. A device for packing hats, consisting of a base-piece, end pieces, and a cross-piece secured to the base-piece, suspending-strips secured to the end pieces, side strips having holding-pieces to engage the brims of the hats, and an independent cross-piece for engaging the upper hat, over which the side strips are secured, the end pieces and cross-pieces only coming in contact with the hat-box in use.

7. A device for packing hats, consisting of a base-piece, end pieces, and a cross-piece 3, secured to the base-piece, a cross-piece 7, having a stay on its upper side to lie within the hat, and notches at its ends, suspending-strips and side strips having holding-pieces 6 to engage the brims of the hats, said side strips engaging the notches and being secured together over cross-piece 7.

407,109. HAT-STAY. SAMUEL T. NEWMAN, Danbury, Conn., assignor of one-half to Edmund Tweedy, same place. Filed Nov. 16, 1888. Serial No. 291,698. (No model.)



Claim.—1. A hat-stay consisting of frame-work, substantially as described and shown, suspending-strips for holding the hats, side strips adapted to extend from the bottom over the tops of the hats, and independent strips for inclosing the side strips between each pair of brims, whereby the hats may be held securely in position.

2. A hat-stay consisting of frame-work, substantially as described and shown, suspending-strips for holding the hats, an independent cross-piece for use over the upper hat, side strips extending from the bottom over said cross-piece, where they may be secured, and independent strips for inclosing the side strips between each pair of brims, whereby the hats may be secured in position.

3. A device for packing hats, consisting of a base-piece, end pieces, and a cross-piece secured to the base-piece, suspending-strips secured to the end pieces, whereby the hats may be supported, side

strips secured to the cross-piece and connected over an independent cross-strip 3, and independent strips 6, for inclosing the end pieces and the side-strips between each pair of brims, so that the bats may be held in place in any position in which the box may be placed, the end strips and cross-pieces only coming in contact with the box.

407,110. DEVICE FOR OPERATING DOORS FOR ELEVATOR-WELLS. WILLIAM E. NICKERSON, Cambridge, Mass. Filed Mar. 23, 1889. Serial No. 304,531. (No model.)



Claim.—1. In an elevator, the combination of the well-room door C, having a spring L and a spring S of less force, said springs being adapted to respectively open and close said door C, substantially as described, with an elevator-carriage having upon it rods adapted to operate at the option of the attendant the said spring L by means of a movable block L^4, and a chain connecting the block and spring, substantially as described, and for the purpose set forth.

2. In an elevator, a door C, having counteracting springs of different forces adapted to operate in opposition to each other, as described, with a movable block attached to the walls of the elevator well-room and operated by the movement of the elevator-carriage, and a latch-hook K^3, adapted to be released by a lever under the control of the attendant, substantially as described, and for the purpose set forth.

3. In an elevator, the combination of the door C, spring S, spring L_1, sliding block L^4, and an elevator-carriage having rods adapted to engage with the sliding block L^4, substantially as described, and for the purpose set forth.

4. In an elevator, the combination of the door C, the spring L_1, chain L', block L^4, having pawls L^5 L^6, the rod M, and cams M^3 M^4, with the elevator-carriage having engaging rods E' and D^3, substantially as described, and for the purpose set forth.

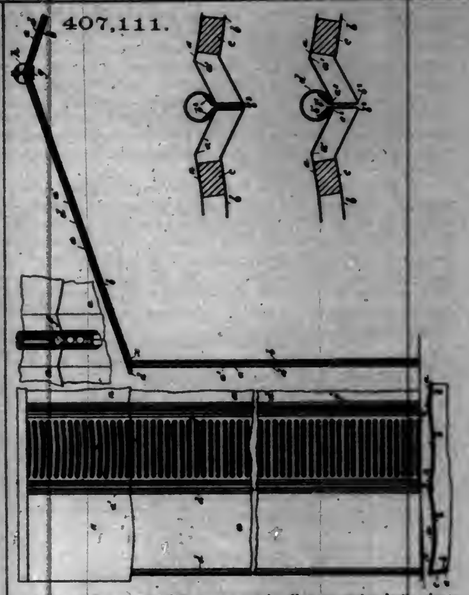
5. In an elevator, the combination of the foot-lever D', rod D^2, lever D^4, rod D^5, with sliding block L^6, having pawls L^5 L^6, chain L', spring L_1, and door C, having a retractor-spring S, substantially as and for the purpose set forth.

6. In an elevator, the combination of the latch-hook K^3, the sliding bar K', having a recess k, with the spring-plate K and actuating-lever H^3, substantially as and for the purpose set forth.

7. In an elevator, the combination of the door C, spring L_1, chain L', and block L^4, adapted to be moved by the carriage, as described, with the piston-rod P, piston P', and cylinder P^2, substantially as described, and for the purpose set forth.

407,111. SHEET-METAL STRUCTURE. WILLIAM ORR and PETER S. BROWN, Glasgow, County of Lanark, Scotland. Filed Mar. 1, 1889. Serial No. 301,632. (No model.) Patented in England Aug. 21, 1888, No. 12,686.

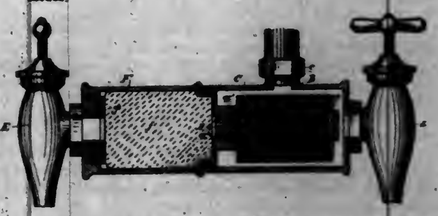
Claim.—1. For use in the erection of metal structures, an anti-thermal panel composed of two plain or corrugated sheets whose edges are bent or folded so as to grip hold upon each other, the sheets being



maintained at required distances apart by distance-strips, bolts, rivets, or equivalents, and the space between them being filled in or not with a non-conducting material, substantially as described.

2. For use in the erection of sheet-metal structures, an anti-thermal panel composed of two plain or corrugated sheets whose edges are so folded that the bent ends of one sheet butt against bends near the ends of the other sheet, the extremities of the second sheet being flared over the bend of the first-mentioned sheet, and the sheets being maintained at required distances apart by distance-strips, bolts, rivets, or equivalents, the space between them being filled or not with non-conducting material, substantially as described.

407,112. FILTER. CHARLES H. PARMENTER and GEORGE V. BLACKMAN, Oakland, Cal. Filed Feb. 14, 1889. Serial No. 299,778. (No model.)



Claim.—1. In a filter, a bolt or bar having grooves or channels in its sides and provided with a number of independent disks of cloth or other filtering material encircling it around its grooves or channels and pressed closely together, in combination with an encircling casing connected with the water-supply, a faucet connected with said casing, and a faucet having a nut *a*, connected with the threaded end of said bolt or bar and communicating with its grooves or channels, substantially as described.

2. In a filter, a bolt or bar having openings in its sides and provided with a number of independent disks of cloth or other filtering material encircling it around its grooves or channels and pressed closely together, in combination with an encircling casing connected with the water-supply, a faucet connected with said casing, a cylinder communicating with the grooves or channels of the bolt or bar and containing purifying material, and a faucet connected with said cylinder, substantially as described.

3. In a filter, the bolt or bar having grooves or channels in its sides and provided with a number of independent disks of cloth or other filtering material encircling it around its grooves or channels and pressed closely together, in combination with an encircling casing connected with the water-supply, a faucet connected with said casing, a cylinder communicating with the grooves or channels of the bolt or bar and containing purifying material, a faucet connected with

said cylinder and having a flanged base screwing thereon, and a washer in the cylinder pressed upon by the flanged base of the faucet for compressing the purifying material, substantially as described.

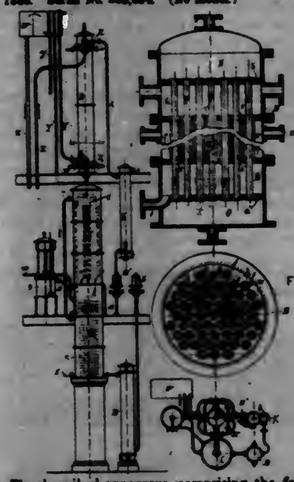
407,113. DEVICE TO PREVENT INTERFERENCE OF HORSES' FEET. CHARLES F. POWELL, Minneapolis, Minn. Filed Apr. 22, 1889. Serial No. 308,103. (No model.)



Claim.—1. In a harness attachment, the anti-interfering device consisting of strips or tongues of springy material having their front ends padded and their divergent rear ends secured to a plate, and means for securing the device to the breeching of a harness, substantially as and for the purpose described.

2. In a harness attachment, the combination of an anti-interfering device consisting of two springy tongues projecting forward from a rear plate uniting them, padding secured to their front ends, and straps secured to said rear plate, with the breeching of a harness, substantially as and for the purpose described.

407,114. APPARATUS FOR SEPARATING LIQUIDS AT DIFFERENT BOILING-POINTS. LOUIS E. A. PEAUDET, Paris, France. Filed Aug. 24, 1888. Serial No. 283,054. (No model.)

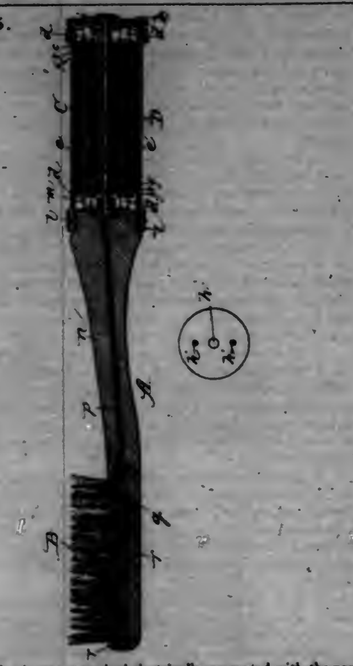


Claim.—The described apparatus, comprising the following elements in combination, namely: first, the regenerator composed of chambers, such as a hollow coil and an inclosing-chamber on opposite sides of heat-conducting walls and provided with individual inlets and outlets; second, the boiler composed of a receiving-chamber and a heater therefor, such as a coil, arranged therein; third, the retarding-analyzer composed of a series of communicating chambers, and, fourth, the analyzing-condenser composed of a vessel provided on the inside with a number of narrow parallel flat passages, such as formed between concentric tubes of nearly the same diameter, and with an inlet and an outlet for the said passages separate from those for the space in said vessel on opposite sides of said passages, the interiors of said four elements communicating with one another, as follows, namely: the outlet for one chamber of the regenerator with the first chamber of the retarding-analyzer, the inlet for the other chamber of the regenerator with the boiler, the last chamber of the retarding-analyzer with said boiler, the inlet to the flat passages in the analyzing-condenser with the said first chamber of the retarding-analyzer, and the inlet and outlet of the space in said condenser on opposite sides of said passages with circulating-pipes, substantially as and for the purpose set forth.

407,115. ELECTRIC BRUSH. HARRY P. PRATT, Chicago, Ill. Filed Mar. 21, 1888. Serial No. 304,164. (No model.)

Claim.—1. In combination, a brush or the like article and a galvanic battery inclosed in the brush with the elements forming it secured together independently of the inclosure containing them, whereby the battery may be readily removed and readjusted with the poles

407,115.



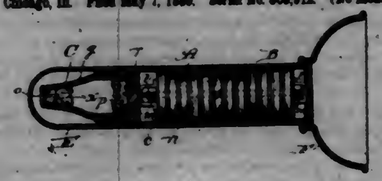
reversed and having one terminal electrically connected with the part of the article to be applied to the body and the other with the part to be held in the hand, whereby, when the article is used, the circuit shall be closed through the body of the user, substantially as and for the purpose set forth.

2. In combination, a brush having its bristles or corresponding portion formed with non-metallic material secured to metal *r* and a handle portion conductive of electricity, and a galvanic battery inclosed in the handle and having one pole connected therewith and the opposite pole with the conductor *r*, substantially as and for the purpose set forth.

3. In combination, a brush or the like provided with a hollow handle conductive of electricity and containing a galvanic battery, formed with perforated plates of suitable materials, a rod *g*, extending through the plates and supported at opposite extremities in the opposite ends of the handle, rods *c*, extending through the plates and having clamp-nuts *d* on their opposite ends holding the plates of the battery together, and a conductor *r*, leading to the bristles B or analogous part of the brush and in contact with the nuts *d* at one end of the battery, these at the opposite end being in contact with the handle, substantially as and for the purpose set forth.

4. An electric brush comprising, in combination, a neck portion *n*, of insulating material carrying a conductor *r*, supporting bristles B or the like and extending through the neck and terminating in a flanged metal socket *m*, a hollow metal handle C, secured to the neck *n* and provided with a removable metal cap *k*, and a galvanic battery D in the handle formed with perforated plates of suitable materials, a rod *g*, extending through the plates and supported at opposite ends in the socket *m* and cap *k*, and rods *c*, extending through the plates and having clamp-nuts *d* on their opposite ends holding the plates of the battery together and in contact with the socket *m* and cap *k* at opposite ends of the battery, the whole being constructed and arranged to operate substantially as described.

407,116. ELECTRO-THERAPEUTIC DEVICE. HENRY P. PRATT, Chicago, Ill. Filed May 7, 1889. Serial No. 309,912. (No model.)



Claim.—1. In an electro-therapeutic device, the combination of a chamber A, having its ends formed of conducting material, a cap B of conducting material covering one of said ends, and an electric generator D in the chamber having its poles in electrical connection with the said ends, whereby, when the device is held at one end in the hand and the cap on the other end is applied to the body, the circuit will be closed through the body, substantially as and for the purpose set forth.

2. In an electro-therapeutic device, the combination of a chamber A, having at opposite ends a cap B and a nozzle C, both of conducting material, and an electric generator D in the chamber, having contacts *l* at opposite ends in electrical contact with the parts B and C, substantially as and for the purpose set forth.

3. In an electro-therapeutic device, the combination of a chamber A, having at opposite ends a cap B and a nozzle C, both of conducting material, an electric generator D in the chamber, having contacts *l* at opposite ends in electrical contact with the parts B and C, and a cap E, of conducting material, removably secured over the nozzle, substantially as and for the purpose set forth.

4. In an electro-therapeutic device, the combination of a chamber A, having at opposite ends a cap B and a nozzle C, both of conducting material, the nozzle being formed with a coupling *r* and tip *q*, separably connected together, and an electric generator D in the chamber having metallic contacts *l* at opposite ends and respectively in contact with the cap B and coupling *r*, substantially as and for the purpose set forth.

5. In an electro-therapeutic device, the combination of a chamber A, having at opposite ends a cap B and a nozzle C, both of conducting material, and a galvanic battery D in the chamber having its elements connected by a rod *n* and clamped together on the rod, and contacts *l* on the projecting ends of the rod confined, respectively, against the cap B and nozzle C, substantially as and for the purpose set forth.

6. In an electro-therapeutic device, the combination of a chamber A, having at opposite ends a cap B and a nozzle C, both of conducting material, the nozzle being formed with a coupling *r* and tip *q*, separably connected together, absorbent material *p* in the nozzle moistened with an inhalent substance, and an electric generator D in the chamber, having contacts *l* confined against the parts B and C, substantially as and for the purpose set forth.

7. In an electro-therapeutic device, the combination of a chamber A, having at opposite ends a cap B and a nozzle C, both of conducting material, an electric generator D in the chamber, having contacts *l* at opposite ends confined against the parts B and C, a cap E of conducting material, removably secured over the nozzle, and a cap F, extending from the cap B, substantially as and for the purpose set forth.

407,117. PROCESS OF CONVERTING CRUDE IRON INTO MALLEABLE IRON OR STEEL. GUSTAVE L. ROBERT, Stenay, France, assignor, by mesne assignments, to the Bookwalter Steel and Iron Company, Jersey City, N. J. Filed Nov. 20, 1888. Serial No. 291,319. (No specimens.) Patented in England May 9, 1888, No. 6,886.



Claim.—1. In the conversion of molten cast or crude iron into malleable iron or steel, the mode substantially as hereinbefore described, consisting in subjecting the molten metal to the action of a converting blast on the surface portion only of the metal, and in lowering the level of the blast as the conversion proceeds, substantially as described.

2. In the conversion of crude iron into malleable iron or steel, subjecting the bath of molten metal to the action of an oxidizing-blast upon a limited portion of the metal at the surface only of the bath, and maintaining the relative positions of the metal surface and the blast during the process of conversion, substantially as described.

407,118. FIRE-HOSE REST OR SUPPORT. CYRUS B. ROBINSON, East Concord, N. H. Filed Dec. 26, 1888. Serial No. 294,583. (No model.)

Claim.—1. In an apparatus for partially supporting one end of a fire-hose and its nozzle, a rod to which are rigidly attached two or

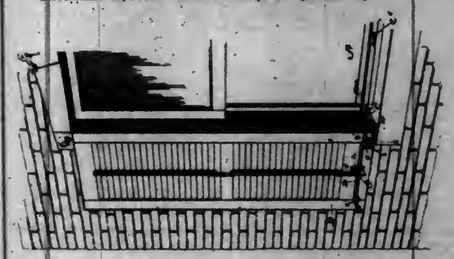


more brackets provided with straps and buckles for securing a section of hose thereto, and rods secured at opposite sides of said brackets and bent in a manner to form handles adapted to be grasped by a fireman in directing a stream.

2. In an apparatus for partially supporting one end of a fire-hose and its nozzle, a rod having one end sharp, and provided near its sharp end with a rigid collar, two or more brackets rigidly secured to said rod provided with straps and buckles for securing a section of hose thereto, and rods secured at opposite sides of said brackets and bent in a manner to form handles adapted to be grasped by a fireman in directing a stream.

3. The combination, with a rod having one end sharp and provided with a rigid collar, as shown, of a bracket rigidly secured to its opposite end, having ears at opposite sides and projecting upward therefrom and provided with horizontal slots, as shown, and flexible straps and a buckle for securing a section of hose thereto, one or more brackets rigidly secured to said rod at points below its top, provided with straps and buckles, as shown, and rods secured at opposite sides of said brackets and bent in a manner to form handles adapted to be grasped by a fireman in directing a stream.

407,119. SHUTTER-WORKER. DAVID H. ROYER, Millmont, Pa. Filed June 19, 1888. Serial No. 277,262. (No model.)



Claim.—1. In combination with the swinging shutter, the jointed rotating and sliding rod passed through the sill at an inclination from the horizontal, and plates, substantially as described, connecting the outer end of the rod to the shutter and arranged with relation to each other to permit the rod to play vertically and also horizontally, substantially as and for the purpose described.

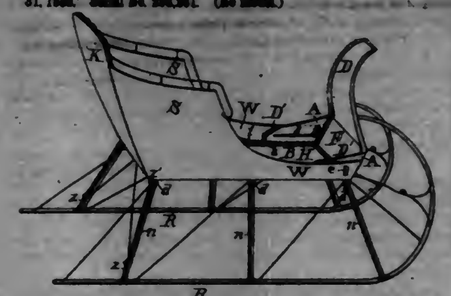
2. In combination with the swinging shutter, the plate *b'*, fixed thereto, the plate c^2, applied to the first-named plate to slide horizontally and provided with a vertical slot *c'*, and the jointed sliding and rotating rod C, extended through the sill or casing and mounted at its outer end in the slot *c'*.

3. In combination with the shutter and window-sill having an inclined surface, the jointed rotating and longitudinally-moving rod connected at its outer end to the shutter, and the tapered covering and supporting plate F, applied to the sill and encircling the rod, as described.

4. In combination with the shutter and the jointed longitudinally-movable rotative rod, the catch or dog E, pivoted to the shutter, and the operating-arm D, fixed to the rod and acting upon the dog, as described.

5. In combination with the shutter and a plate *h* thereon, the jointed longitudinally-movable rotative rod and the arm D, fixed on said rod and provided with shoulder *g* to engage the plate *h*.

407,120. SLEIGH. WILLIAM B. ROBERTS, Detroit, Mich. Filed Jan. 31, 1888. Serial No. 262,261. (No model.)

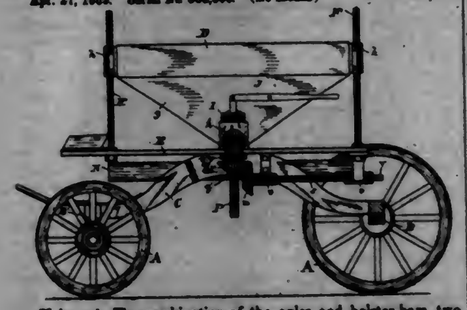


Claim.—1. In combination with the running-gear of the sleigh, the stationary foot-board, the rearwardly-extending side sections made fast at one end to said foot-board, the horizontal slots in the side sections, the horizontally-sliding box having the reduced sides W, which overlap the side sections A, and the bolts loosely coupling the overlapped portions, substantially as and for the purposes specified.

2. In a sleigh, and in combination, the beams, the rails made fast thereto, the stationary foot-board, the side sections attached thereto, the slots *s*, the shifting box having the bars H' made fast thereto and lying parallel with and outside of the rails H, the reduced sides of the box overlapping the side sections, and bolts coupling movably the sides of the box to the fixed or side sections, as and for the purposes specified.

3. In combination with the beams, knees, and runners of the sleigh, the stationary foot-board, the metal side extensions, the shifting box, the swinging braces coupling the box to the running-gear of the sleigh, and means of adjustably coupling the sides W of the box to the fixed sections A, whereby the box is adapted to be moved forward and backward to decrease and increase its length, for the purposes specified.

407,121. COAL-CART. JOSEPH R. EARLE, Baltimore, Md. Filed Apr. 27, 1888. Serial No. 272,060. (No model.)



Claim.—1. The combination of the axles and bolster-bars, two arched reach-bars C, horizontal bars E, attached to the reach-bars, vertical guide-bars F, projecting up from the said horizontal bars, and the body D, seated on the elevated part of the arched bars and provided with a side discharge-gate.

2. The combination of the axles and bolster-bars, two arched reach-bars C, horizontal bars E, attached to the reach-bars, vertical guide-bars F, projecting up from the said horizontal bars, a body seated normally on the elevated part of the arched bars, and a lift-screw P, to raise the body above its normal seat.

3. The combination of the axles and bolster-bars, reach-bars, vertical guide-rods F, provided with slots, a body D, having bearings A, which slide on the vertical rods, a lift-screw to raise the body, and keys *w*, inserted in the said slots above the body-bearings.

407,122. LUBRICATOR FOR SPINNING MACHINERY. LAZARUS B. SANFORD and THOMAS GREENWAYTE, Fall River, Mass. Filed Nov. 23, 1888. Serial No. 291,674. (No model.)

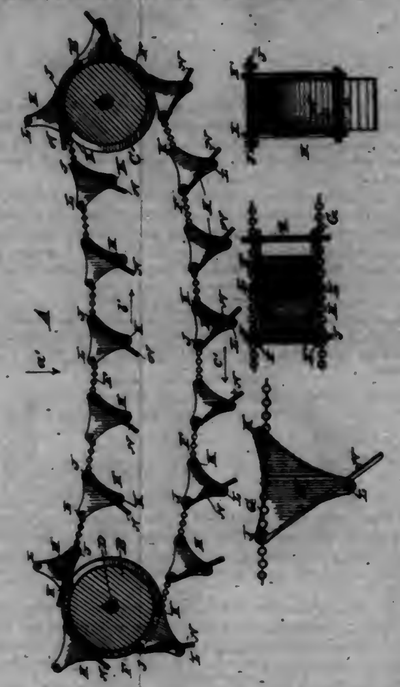
Claim.—1. A lubricator for spinning machinery, consisting of a tube provided with a foot having a recess on its inside, an aperture leading from the recess to the tube, and lugs for pivoting it to the tension device of the rolls, as set forth.

2. The lubricator K, consisting of the tube L, provided with the foot N, having the recess P, the aperture O, leading from the recess to the tube, and with the lugs N', by which it is pivoted to the tension device, the lower end N² of the foot resting against the neck of one of



the rolls and serving as a cleaner for the same, substantially as described and shown.

407,123. WATER-MOTOR. LOUIS P. SAPPY, Gleasonia, Kans. Filed Mar. 27, 1889. Serial No. 305,017. (No model.)



Claim.—1. A water-motor comprising two traveling endless chains and buckets pivoted on the said chains, and each comprising side plates, stays connecting the said side plates with each other, one of the stays forming the pivot for the bucket, and a gate forming the bottom of the bucket pivoted on the pivotal stay and free to swing between the other two stays, all arranged substantially as shown and described.

2. In a water-motor, a bucket comprising two side plates, stays for connecting the said side plates with each other, and a gate forming the bottom of the bucket pivoted on one of the said stays and free to swing between the other stays, substantially as shown and described.

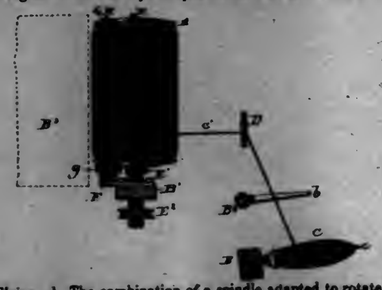
3. In a water-motor, the combination, with two endless chains mounted to travel, of a bucket pivoted between the said chains and each comprising side plates fitted between the said chains, stays connecting the said side plates with each other placed equidistant apart, the said stays projecting at each end beyond the said plates to engage the chains, and a gate forming the bottom of the bucket pivoted on one of the said stays between the said side plates and free to swing between the other stays, substantially as shown and described.

4. In a motor, the combination, with two parallel drums mounted to rotate, of endless chains passing over the said drums, and buckets pivoted on the said chains and each comprising side plates fitted between the said endless chains, stays connecting the said side plates with each other placed equidistant apart, the said stays projecting at each end beyond the said plates to engage the chains, and a gate forming the bottom of the bucket pivoted on one of the said stays between

the said side plates and free to swing between the other stays, substantially as shown and described.

407,124. MACHINE FOR WINDING THREAD OR YARN UPON BOBBINS. LOUISA A. SAUNDERS, Nashua, N. H., executrix of Benjamin Saunders, deceased. Filed Apr. 1, 1889. Serial No. 305,943. (No model.)

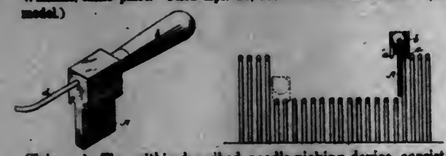
Brief.—The object of the invention is to secure approximately equal lengths of thread or yarn upon all the bobbins of a set.



Claim.—1. The combination of a spindle adapted to rotate a receiving-bobbin by frictional contact, with an idle-roll placed in position near the spindle and adapted to press upon the thread and prevent the further rotation of the bobbin when the thread has accumulated upon the bobbin to the desired amount.

2. The combination of a spindle adapted to rotate a receiving bobbin by frictional contact with a stand near the spindle, provision for adjusting the position of said stand, and an idle-roll carried by said stand and adapted to press upon the thread and prevent the further rotation of the bobbin when the thread has accumulated upon the bobbin to the desired amount.

407,125. NEEDLE-PICKING TOOL FOR KNITTING-MACHINES. ROBERT W. SCOTT, Philadelphia, Pa., assignor of one-half to Louis H. D. Williams, same place. Filed Apr. 20, 1889. Serial No. 308,947. (No model.)



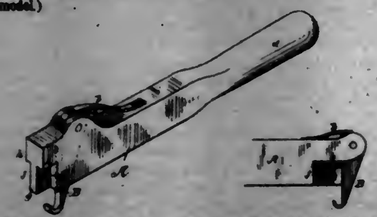
Claim.—1. The within-described needle-picking device, consisting of a bar for bearing against the side of the needle to be depressed, said bar having a shoulder for overlapping the head of the needle and engaging with the same as the bar is lowered, substantially as specified.

2. The within-described needle-picking device, consisting of a bar for bearing against the side of the needle to be depressed and having two shoulders, one for engaging with needles of the right hand and the other for engaging with needles of the left hand, substantially as specified.

3. The within-described needle-picking device, consisting of a bar for bearing against the side of the needle to be depressed, said bar having shoulders on opposite sides of the same for engaging with the heads of the needles, substantially as specified.

4. The within-described needle-picking device, consisting of a bar for bearing against the side of the needle, said bar having a shoulder for engaging with the head of the needle, and being provided with a suitable operating-handle and with a projecting needle-lifting tongue or prong, substantially as specified.

407,126. NEEDLE-PICKING TOOL FOR KNITTING-MACHINES. ROBERT W. SCOTT, Philadelphia, Pa., assignor of one-half to Louis H. D. Williams, same place. Filed May 16, 1889. Serial No. 310,963. (No model.)



Claim.—1. The within-described needle-picking device for knitting-machines, the same consisting of a bar having a projecting hook occupying such lateral relation to the side of the bar that when said side of the bar is brought into contact with a projected needle of the machine the hook will be in position to engage with an adjacent needle occupying a different vertical plane, substantially as specified.

2. The within-described needle-picking device for knitting-machines, the same consisting of a bar having a projecting hook midway between the opposite sides of the bar, so that when either side of the bar is pressed against a projected needle of the machine the hook will be in position to engage with an adjacent needle in a different vertical plane, substantially as specified.

3. The within-described needle-picking device for knitting-machines, the same consisting of a bar having a projecting hook for engaging with a needle of the machine when the side of the bar bears against an adjacent projected needle and having said side of the bar recessed so as to form a shoulder for overlapping the needle when the recessed portion of the bar bears against the same, substantially as specified.

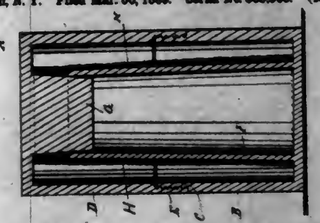
4. The within-described needle-picking device for knitting-machines, the same consisting of a bar having a projecting hook for engaging with a needle when the side of the bar bears against an adjacent projected needle, and having recesses forming shoulders, one for engaging with needles on the right hand and the other for engaging with needles on the left hand when the recessed portion of the bar is pressed against the sides of said needles, substantially as specified.

5. The within-described needle-picking device for knitting-machines, the same consisting of a bar having a projectieg hook located midway, or thereabout, of its lateral width, and having in opposite sides recesses forming a central contracted portion, with opposite shoulders at the top of the same, substantially as specified.

6. The within-described needle-picking device for knitting-machines, the same consisting of a bar having a projecting hook free to yield on the bar and a spring acting thereon, the hook occupying such lateral relation to the side of the bar as to engage with one needle of the machine when the side of the bar bears against an adjacent projected needle, substantially as specified.

7. The within-described needle-picking device for knitting-machines, the same consisting of a bar having a pivoted hook and a spring acting thereon, the hook bearing such lateral relation to the side of the bar as to engage with one needle of the machine when the side of the bar bears against an adjacent projected needle, substantially as specified.

407,127. PHONOGRAM-RECEIVING BOX. HARRY P. SHARLE, Brooklyn, N. Y. Filed Mar. 30, 1889. Serial No. 305,395. (No model.)



Claim.—1. A phonogram-receiving box comprising a hollow box-body, a conical offset held concentric in the said box-body and projecting above the top of the said box-body, and a cover adapted to be secured on the said box-body and serving to lock the phonogram-cylinder in place, substantially as shown and described.

2. A phonogram-receiving box comprising a hollow box-body, a conical offset held concentric in the said box-body, adapted to receive the hollow phonogram-cylinder and extending above the top of the said box-body, a cover screwing on the said box-body and serving to lock the phonogram-cylinder in place, and a conical lug held in the said cover and adapted to engage the top of the said offset, substantially as shown and described.

407,128. AUTOMATIC PNEUMATIC INSTRUCTOR. JOHANN SETZEITS, Vienna, Austria-Hungary, assignor to Alfred J. Cotheimer, Philadelphia, Pa. Filed May 9, 1889. Serial No. 310,132. (No model.) Patented in Germany Feb. 1, 1888, No. 45,141; in England Feb. 10, 1888, No. 2,041; in France Mar. 9, 1888, No. 189,232, and in Austria-Hungary Apr. 10, 1888, No. 419 and No. 11,466.



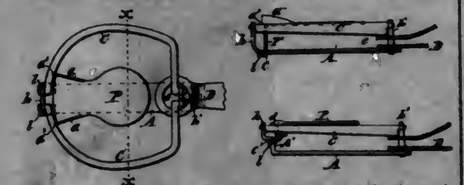
Claim.—1. A pneumatic toy or instructor comprising a series of tubes corresponding with questions to be answered, each tube being connected by an air-passage with another tube corresponding with the answer to such question, a sounding device, a flexible pipe for connecting any of the first group of tubes with said sounding device, and an aspirator or device for injecting a current of air into any of the second group of tubes, substantially as described.

2. The combination of two groups of tubes, each tube of one group being connected with a tube of the other group, a sounding device—such as a bell—a flexible pipe for connecting the same with any of one group of tubes, and a movable air-forcing device—such as a hollow ball or bulb—for connection with any of the other group, substantially as described.

3. The combination, with a desk or stand, of two groups of connected tubes projecting therefrom, a pneumatic signaling device thereon, an aspirator or air-forcing device adapted to be placed at will over any of one of the groups of tubes, and a flexible pipe for connecting any of the other group with said signaling device, substantially as described.

4. The combination of the sounding device, the group of question-tubes and the group of answer-tubes projecting from a desk or stand and connected as described, the movable aspirator, the connecting-pipe for the sounding device, and a series of question and answer sheets having perforations corresponding to the positions of said tubes, as set forth.

407,129. ANIMAL-TRAP. HENRY J. SETHOUR, Niagara, Ontario, Canada. Filed Jan. 7, 1889. Serial No. 295,693. (No model.)

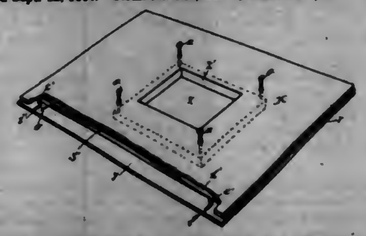


Claim.—1. In an animal-trap, the combination of the frame A, provided with posts *b b'* and with the notches *c c* in the edges of the frame in proximity to one of said posts, the jaws C C, hinged to said post, and the bait-pan P, formed with lugs *l l*, passing through the said notches and upset or bent at their protruding ends, and two catches integral with the side edges of the bait-pan and engaging the two jaws when in their set position, as set forth.

2. In an animal-trap, the combination of the frame A, provided with posts *b b'* and with the notches *c c* in the edges of the base of one of the posts, the jaws C C, hinged to said posts, and the bait-pan P, formed with the downward extension P', terminating with lugs *l l*, passing through the aforesaid notches and upset or bent at their protruding ends, and the flanges *a a*, integral with the bait-pan and formed with rearward projections *a' a'*, engaging and holding both jaws in their set position, substantially as described and shown.

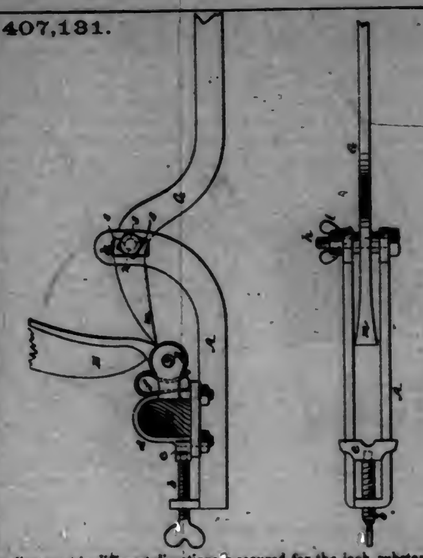
3. In combination with the frame A, provided with posts *b b'*, and the jaws hinged to said posts, the spring D, hung at one end on the post *b'* and having its opposite end in a plane approximately parallel with that of the frame A and encircling the hinged ends of the jaws adjacent to said post, substantially as and for the purpose set forth.

407,130. WASHING-MACHINE. DAVID D. SHANDON, Ovid, Mich. Filed Sept. 12, 1887. Serial No. 249,422. (No model.)



Claim.—In combination with the suds-box, the plunger-head having the rubber strip let into one edge of said head, the cleat Y, and spring for actuating said cleat located in the edge of said plunger-head at right angles to the rubber strip, as and for the purposes specified.

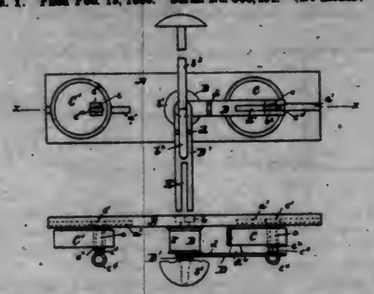
407,131. THILL-COUPLING JACK. JAMES M. SMITH, Greenwich, Conn. Filed Nov. 24, 1888. Serial No. 291,762. (No model.)



Claim.—1. In a thill-coupling jack, the combination, with a strap-like clamping-frame, of an adjustable clamping-screw at the rear end thereof and an operating-lever arranged at the forward end of the same, and having its fulcrum adjustable up or down, whereby a double adjustment in different directions is secured for the jack, substantially as specified.

2. The within-described thill-jack, composed of a clamping-frame A, having an adjustable clamping-screw *b* at its rear end, with attached loose bearing-block *c*, in combination with the lever G at the opposite end of the clamping-frame, having a chisel-pointed inner end portion *m*, and having its fulcrum adjustable up and down within the clamping-frame, substantially as shown and described

407,132. HOLDING-BRACKET. WILLIAM P. SPURGIN, West Point, N. Y. Filed Feb. 19, 1889. Serial No. 300,401. (No model.)



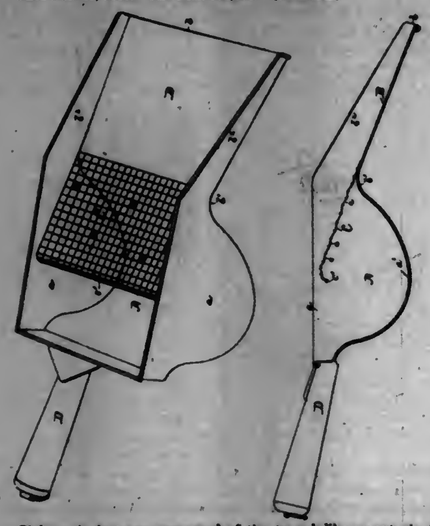
Claim.—1. In a holding-bracket, the combination, with the base-plate A and the post B, fixed rigidly therein, of a roller C, having a continuous cylindrical periphery provided with the described frictional tires and journaled eccentrically on and free to revolve upon a shaft set in said base-plate alongside said post, substantially as and for the purpose set forth.

2. In a holding-bracket, the combination, with the base-plate A and the post B, fixed rigidly therein, of a roller C, journaled eccentrically and free to revolve upon a shaft mounted upon the base-plate and adjustable relatively to said post on said base-plate, substantially as set forth.

3. In a holding-bracket, the combination, with the base-plate A and the post B, fixed rigidly therein, of a roller C, journaled eccentrically and free to revolve upon a shaft mounted on said base-plate, a hasp D, journaled on said post, and a staple c^4 on said roller-shaft, said hasp being adapted to swing to and engage said staple, together with a locking device to fasten said hasp to said eye, substantially as and for the purpose set forth.

4. In a holding-bracket, the combination, with the base-plate A and the post B, fixed rigidly therein, of a roller C, journaled eccentrically and free to revolve upon a shaft mounted on said base-plate, a hasp D, journaled on said post, a staple on said roller-shaft adapted to be engaged by said hasp, and a projection d^3 on said hasp adapted to engage said roller perimetally, together with a locking device to fasten said hasp to said eye, substantially as and for the purpose set forth

407,133. DUST-PAN. WILLIAM P. STUBBS, West Point, N. Y. Filed Feb. 26, 1889. Serial No. 301,201. (No model.)



Claim.—A dust-pan composed of the trough-like receptacle A, having the described bottom *a'*, the inclined platform B, extending forwardly and downwardly from the front edge of said receptacle, with its lower edge *b* substantially in line with the crown or apex of said bottom of said receptacle, and the perforated plate C, extending from the junctures of said platform with said edge of said receptacle rearwardly over said receptacle to a line substantially midway of the front and rear edges thereof, as and for the purpose specified.

407,134. HEATING GAS-BURNER. SAMUEL STEWART, Newark, N. J. Filed Aug. 14, 1888. Serial No. 282,727. (No model.)



Claim.—1. A heating gas-burner consisting in the tube *a*, the collar *d'*, provided with flange *e*, the diaphragms *d d'*, separated by such collar, and the collar fitted over the collar and projected above the diaphragms, substantially as herein set forth.

2. A heating gas-burner consisting in the tube *a*, having open bottom, the transverse pipe *b*, with aperture *c* opening within the tube, the collar *d'*, with flange *e* fitted to the top of the tube, the diaphragms *d d'*, separated by the flange, as described, and the collar *f*, provided with base *f'*, fitted over the collar, and with bead *g*, fitted upon the edge of the diaphragm *d'*, as and for the purpose set forth.

407,135. COMPOSITION OF MATTER FOR CEMENT, &c. CARL STRAUB, Syracuse, N. Y. Filed Oct. 20, 1887. Serial No. 253,334. (No specimens.)

Claim.—1. The herein-described composition of matter, consisting of acid, a retarder, as glue or oil, a calcined calcareous base, as plaster-of-paris, and silicate of potash or natron, combined substantially in the proportions specified.

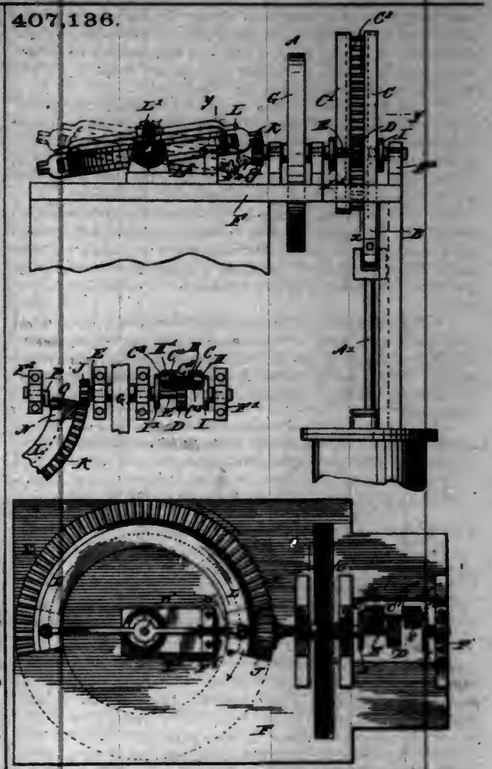
2. The herein-described composition of matter, consisting of sulphuric or muriatic acid, an acid retarder, as glue or oil, calcined calcareous base, as plaster-of-paris, silicate of potash, and land-plaster, in about the proportions specified.

407,136. MECHANICAL MOVEMENT. GEORGE W. THOMAS, Ogallala, Nebr. Filed Sept. 24, 1888. Serial No. 286,178. (No model.)

Claim.—1. In a mechanical movement, the combination, with a pitman consisting of two grooved bars and teeth connecting the bars with each other, of a gear-wheel meshing into the said teeth, a main shaft carrying the said gear-wheel, and crank-disks engaging by their crank-pins the grooves in the said bars of the pitman, substantially as shown and described.

2. In a mechanical movement, the combination, with a pitman

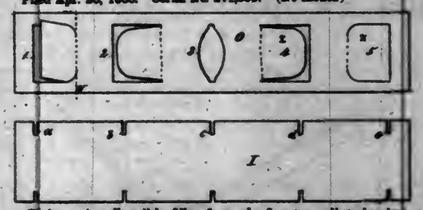
407,136.



provided with two grooved bars connected with each other by gear-teeth, of a gear-wheel adapted to mesh in the said gear-teeth at either side, a main driving-shaft carrying the said gear-wheel, friction-rollers fitting into the grooves in the said bars, and crank-disks carrying the said friction-rollers and held in axial line with the said main driving-shaft, substantially as shown and described.

3. In a mechanical movement, the combination, with a main driving-shaft and a gear-wheel secured on the same, of a segmental wheel having gear-teeth adapted to mesh at either side into the said gear-wheel, a shaft carrying the said segmental wheel and mounted to turn and to swing, and a crank-arm held in axial line with the said main shaft and carrying friction-rollers engaging a segmental groove in the said segmental wheel, substantially as shown and described.

407,137. SHIPPING-CASE. EVERT M. THOMPSON, Evansville, Ind. Filed Apr. 30, 1888. Serial No. 271,355. (No model.)



Claim.—A collapsible filler formed of outer splints having openings formed in the body thereof for admitting inter splints, such openings closed by gates moving upon scored or perforated hinges at the rear of such gate, the gated openings at the ends of such splints formed in a reverse position with reference to each other, in combination with inter splints I, having notches cut in their edges and interlocking with the outer splints at each joint, substantially as shown and described.

407,138. HARROW-TOOTH. FREDERICK VAN PATTEN, Auburn, N. Y. Filed Apr. 19, 1888. Serial No. 307,775. (No model.)

Claim.—1. The combination, with a spring-tooth, of a supplemental point or tooth having perforated ears extending rearwardly from its side edges past the sides of the spring-tooth, a clamping-

407,138.

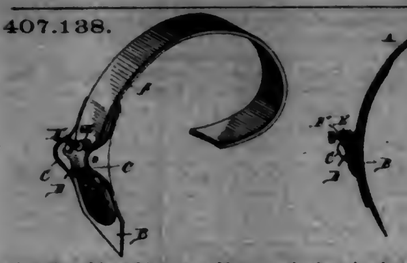


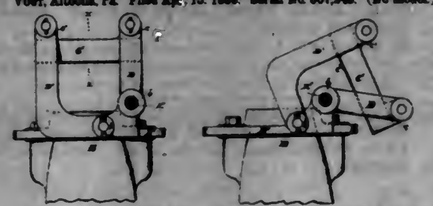
plate pivoted in and between said ears and adapted to bear against the spring-tooth, and a clamping-screw mounted in said clamping-plate and adapted to bear against the spring-tooth, as set forth.

2. The combination, with the spring-tooth, of the supplemental tooth provided at its edges with ears passing beyond the edges of the spring-tooth, and the clamping-plate pivoted in said ears and bearing against the spring-tooth, as set forth.

3. The supplemental point or tooth carrying as a fixed part thereof a pivoted clamping-plate, as set forth.

4. The supplemental point or tooth carrying as a fixed part thereof a pivoted clamping-plate provided with a set-screw, as set forth.

407,139. EXHAUST-MUFFLER FOR LOCOMOTIVES. AXEL S. VOGT, Altoona, Pa. Filed Apr. 15, 1889. Serial No. 307,343. (No model.)



Claim.—1. In combination with the exhaust-nozzle of a locomotive, a perforated muffling-screen and swinging links pivotally secured in pairs at four points on the screen and at four points to the nozzle, so as to hold the screen securely above the nozzle and permit it to be folded to one side thereof, substantially as and for the purpose specified.

2. In combination with the exhaust-nozzle of a locomotive, a perforated muffling-screen, a pair of links pivotally secured to opposite points on the screen and upon the nozzle, a second pair of links pivotally secured to opposite points on the screen at a distance from the points where the first links are attached and to opposite points on the nozzle situated closer to the points where the first links are attached than the distance between the ends of the links on the screen, whereby the screen is held securely above the nozzle and permitted to fold to one side and turn downward, all substantially as and for the purpose specified.

3. In combination with the exhaust-nozzle of a locomotive, a perforated muffling-screen, a pair of links pivotally secured to opposite corners of the screen and to lugs on the exhaust-nozzle, a second pair of links pivotally secured to the other two corners of the screen at one end and at their other ends to lugs on the exhaust situated close to and below the lugs to which the first pair of links are attached.

4. In combination with the exhaust-nozzle of a locomotive, a perforated muffling-screen, a pair of straight links pivotally secured to opposite corners of the screen and to lugs on the exhaust-nozzle, a second pair of L-shaped links pivotally secured to the other two corners of the screen at one end and at their other ends to lugs on the exhaust situated close to and below the lugs to which the first pair of links are attached.

5. In combination with the exhaust-nozzle of a locomotive, a shaft journaled in lugs attached to the nozzle and extending out through the wall of the smoke-box, a perforated muffling-screen, a pair of links attached at one end to said shaft and pivoted at their other ends to opposite corners of the screen, and a second pair of links pivoted at one end to the other corners of the screen and at their other ends pivoted to the nozzle.

6. In combination with an exhaust-nozzle of a locomotive, a shaft journaled in lugs attached to the nozzle and extending out through the wall of the smoke-box, a perforated muffling-screen, a pair of links attached at one end to said shaft and pivoted at their other ends to opposite corners of the screen, and a second pair of longer links pivoted at one end to the other corners of the screen and at their other ends pivoted to the nozzle at points below the level of the shaft and close to it.

7. In combination with the exhaust-nozzle of a locomotive, a shaft journaled in lugs attached to the nozzle and extending out through the wall of the smoke-box, a perforated muffling-screen, a pair of links attached at one end to said shaft and pivoted at their other ends to opposite corners of the screen, a second pair of links pivoted at one end to the other corners of the screen and at their other ends pivoted to the nozzle, detents secured on the outside of the smoke-box and around the shaft, a lever attached to said shaft, and a catch secured to said lever, so as to engage with the detents and lock the shaft in the desired position.

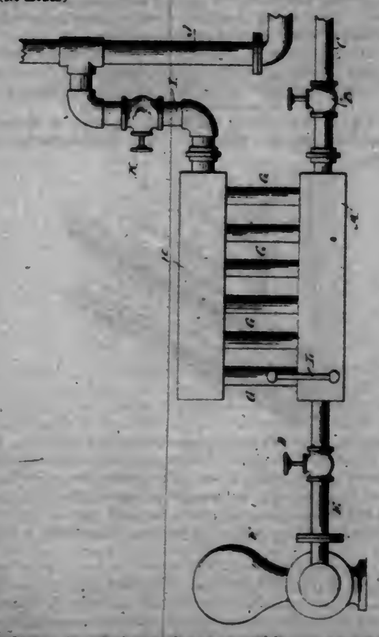
407,140. DOOR-FASTENER. CHARLES L. WARD, Cavendish, Vt. Filed Apr. 8, 1889. Serial No. 306,407. (No model.)



Claim.—1. The door having the slotted casting or bracket C, in combination with a combined handle and latch consisting of the handle portion pivoted at its lower end to the door and having its upper end playing loosely in said slotted casting and being guided thereby, a latching-arm projecting from the handle portion above the pivot-connection, and a catch or keeper with which the head of the latching-arm engages, substantially as described.

2. A door-fastener consisting of the door with its slotted casting, a pivoted handle portion secured to the door having its upper end playing loosely in the slotted casting, and an integral latching-arm projecting therefrom having its head spear-shaped and tapered or beveled, in combination with a slotted catch or keeper having its inner walls beveled, substantially as described.

407,141. FEED-WATER HEATER AND CONDENSER. JOHN WILLERSDINE, New Richmond, Ohio. Filed Apr. 10, 1889. Serial No. 306,715. (No model.)



Claim.—1. A feed-water heater comprising a water-supply pipe connecting with the pump discharging into the boiler, and a number of vertical pipes opening into the said water-supply pipe and connect-

ing with the exhaust-pipe of the steam-engine, substantially as shown and described.

2. A feed-water heater comprising a supply-pipe having a valve near each end, a pump connected with one end of the said supply-pipe and discharging into the boiler, a number of vertical pipes opening into the said water-supply pipe, and an exhaust-pipe into which discharges the exhaust-steam of the engine and which is disconnected from the said vertical pipes, substantially as shown and described.

3. In a water-heater, the combination, with a water-supply pipe provided with valves near each end, of a number of pipes extending from the said water-supply pipe, a horizontally-extending pipe connected with the upper ends of the said number of pipes, and an exhaust-pipe connected with the said horizontally-extending pipe, substantially as shown and described.

4. In a water-heater, the combination, with a water-supply pipe provided with valves near each end, of a number of pipes extending from the said water-supply pipe, a horizontally-extending pipe connected with the upper ends of the said number of pipes, an exhaust-pipe connected with the said horizontally-extending pipe, and a branch pipe connecting the said exhaust-pipe with the said horizontally-extending pipe, substantially as shown and described.

5. In a feed-water heater, the combination, with a water-supply pipe, of a pump connected with one end of the said water-supply pipe and discharging into the boiler, a number of vertical pipes opening into the said water-supply pipe, a horizontal pipe extending from the upper ends of the said number of pipes, and an exhaust-pipe discharging into the said horizontally-extending pipe, substantially as shown and described.

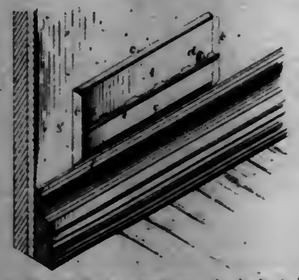
407,142. TOY. CHRISTIAN WORITZ, New York, N. Y., assignor of one-half to Julius Kamaler, same place. Filed Apr. 12, 1889. Serial No. 306,998. (No model.)



Claim.—1. As a new article of manufacture, a toy comprising a main body, wings hinged thereto a spring for holding the wings normally closed, a return-cord, and links connecting the spring and return-cord to the wings, substantially as described.

2. The body A, having openings *d f*, in combination with the hinged wings B, rods *c*, connected thereto, spring *b*, and return-cord C, all arranged substantially as and for the purpose set forth.

407,143. WALL-PAPER PROTECTOR. FREDERICK W. WOODHULL, Lincoln University, Pa. Filed Apr. 11, 1889. Serial No. 306,828. (No model.)



Claim.—1. In a wall-paper protector, the body A, having like opposite longitudinal marginal protecting portions *c c*, backwardly-turned ends *b b*, and a handle intermediate of the width of said body, whereby the protector may be reversed to make either of its longitudinal margins a protecting edge, and the hand used in cleaning is prevented from working beyond the protector, substantially as specified.

2. In a wall-paper protector, the body A, having opposite longitudinal marginal protecting portions *c c* and partly-spherical protuberances *d* on its face intermediately of its width, essentially as described.

3. As a new article of manufacture, the within-described wall-paper protector, consisting of a body A, having opposite longitudinal marginal protecting portions *c c*, backwardly-turned ends *b b*, a handle on its back intermediate of the width of the protector, and partly-spherical protuberances *d* on its face, also intermediate of the width of the body, as set forth

407,144. RULER. WILLIAM J. WRIGHT, San Francisco, Cal. Filed Mar. 16, 1889. Serial No. 303,610. (No model.)



Claim.—A ruler formed with a groove on its upper back portion, serving as a finger-hold, a groove in its base or under surface, forming narrow bearing-edges on which the ruler rests, and a round ruling portion on its front projecting over its base, substantially as described.

407,145. ORNAMENTAL BRICK. JAMES C. ANDERSON, Highland Park, Ill. Filed Aug. 6, 1887. Renewed Nov. 26, 1888. Serial No. 291,930. (No specimens.)

Claim.—A brick or block the main body color of which is of copper and the surface thereof spotted or splotched with the drops of the metal contained therein, as set forth.

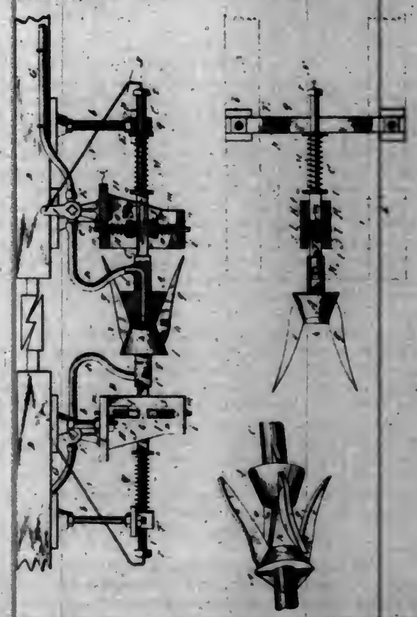
407,146. ORNAMENTAL BRICK. JAMES C. ANDERSON, Highland Park, Ill. Filed Aug. 6, 1887. Renewed Nov. 26, 1888. Serial No. 291,931. (No specimens.)

Claim.—A brick for architectural purposes the body color of which is bronze and the surface of which is spotted or splotched with the drops of the metal contained therein, as set forth.

407,147. ORNAMENTAL BRICK. JAMES C. ANDERSON, Highland Park, Ill. Filed Aug. 26, 1887. Renewed Nov. 26, 1888. Serial No. 291,932. (No specimens.)

Claim.—A brick or block the main body color of which is of brass and the surface thereof spotted or splotched with the drops of the metal contained therein, as set forth.

407,148. AUTOMATIC COUPLING AND VALVE-CONTROLLING MECHANISM FOR THE STEAM OR AIR PIPES OF CARS. JAMES D. BAGG, Springfield, Mass. Filed Dec. 4, 1888. Serial No. 292,679. (No model.)



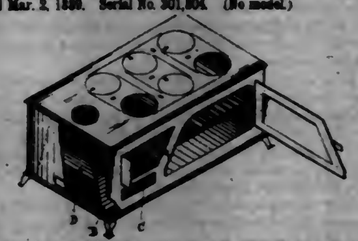
Claim.—1. The steam or air pipe of a car and the frames D E, one in advance of the other, the former comprising the upper and lower cross-girders *i i* and the longitudinal vertical walls H, and the latter the suspended cross-beam *p* with the transverse aperture *q* therein, in combination with the coupling-bar having in its head a longitudinal passage open at its outer end and connected with said pipe and provided with the shoulders *o r*, and extending between said walls H H and through said beam-aperture *q*, the vertical springs *o o*, bearing between the said girders and the said bar, and the spring M between the bar-shoulder *s* and the said beam, substantially as described.

2. The steam or air pipe of a car and the frames D E, one in advance of the other, the former comprising the upper and lower cross-girders *i i*, provided with the guide-sockets *n*, and the longitudinal vertical walls having the ways *j j* therein, and the latter comprising the cross-beam transversely apertured, in combination with the coupling-bar having in its head a longitudinal passage open at its outer end and connected with said pipe and provided with the shoulders *r s*, and extending between said walls H and through the said beam-aperture, the bearing-blocks J J above and below the said bar, guided in said ways *j* and having the guide-spindle *m* playing through said sockets, and the springs *o o*, substantially as described.

3. In combination, the steam or air pipe of a car provided with a valve having a radial arm *f* on its stem, the frames D E, one in advance of the other, the former comprising the upper and lower cross-girders *i i*, provided with the guide-sockets *n*, and the longitudinal vertical walls having the ways *j j* therein, and the latter comprising the suspended cross-beam having the transverse aperture *q*, the coupling-bar having a head the nose of which is formed of rubber and provided with a longitudinal passage open at its outer end, and the shoulders *s* and *r*, and extending between said walls and through the said beam-aperture, the bearing-blocks J J above and below said bar, guided in said ways *j*, and having the guide-spindles *m* playing through said sockets, the springs *o o*, the flexible pipe K, connecting said valved pipe with the passage in the coupling-head, and the connecting-rod N between said coupling-bar and said valve-arm, all substantially as described and shown.

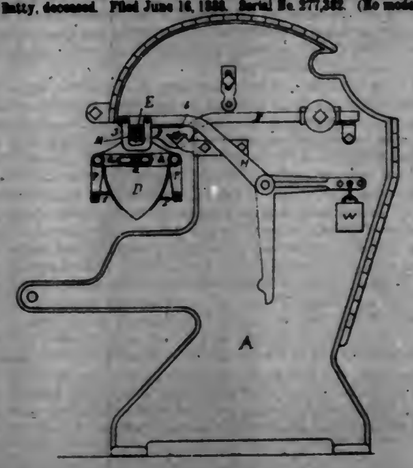
4. The combination, with the steam or air pipe of a car, of a coupling-bar spring supported from the car and adapted to have an endwise and vertical and horizontal swinging movements, provided at its forward end with a coupling-head of truncated conical form, the taper of which is outward, provided with oppositely-disposed forwardly-projecting and outwardly-diverging horns having the angle and distance between the inner faces thereof corresponding to the angular surface of said conical head and having a longitudinal passage open at its outer end and connected with said pipe, substantially as described.

407,149. COOKING-STOVE. VARAN M. BARRETT, Atlanta, Ga. Filed Mar. 2, 1889. Serial No. 301,804. (No model.)



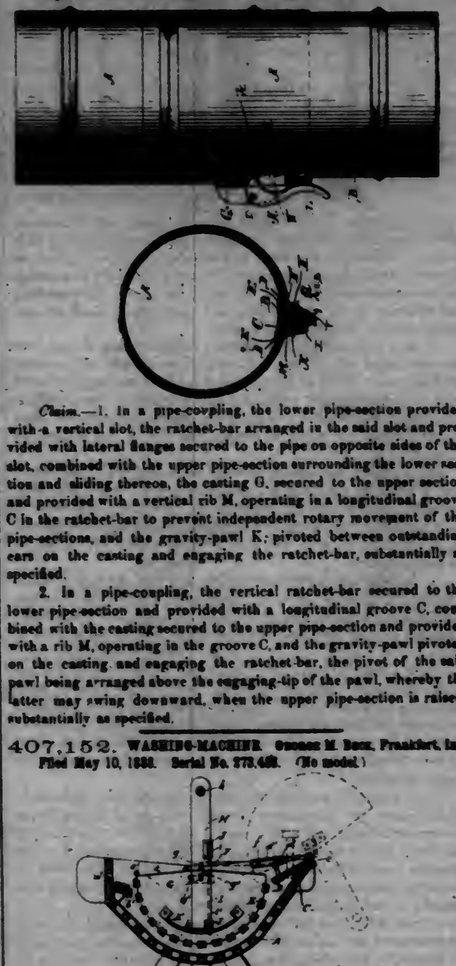
Claim.—In a cooking-stove, the fire-chamber E, the ash-chamber F, subdivided by partition D, the flue A, passing backwardly over the oven, thence downwardly under the oven and ash-chamber into the outlet, and the deflectors B, all arranged substantially as and for the purpose set forth.

407,150. FEEDING DEVICE FOR CARDING-MACHINES. HANNAH BATTY and ALBERT BATTY, Philadelphia, Pa., administrators of Job Batty, deceased. Filed June 16, 1888. Serial No. 277,382. (No model.)



Claim.—The combination, with the scale-beams B and the lever H, carrying the iron J, of the hopper having the supporting-shaft M, the movable sides, the shafts N, carrying said sides, the arms G, mounted on said shafts N, the pin *a*, the arms P, mounted on shafts N, and the spring S, connecting said arms P, substantially as described.

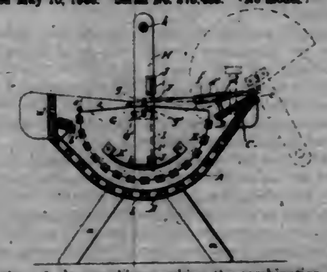
407,151. PIPE-COUPLING. EDWARD BEAN, Chicago, Ill. Filed July 25, 1888. Serial No. 280,905. (No model.)



Claim.—1. In a pipe-coupling, the lower pipe-section provided with a vertical slot, the ratchet-bar arranged in the said slot and provided with lateral flanges secured to the pipe on opposite sides of the slot, combined with the upper pipe-section surrounding the lower section and sliding thereon, the casting G, secured to the upper section and provided with a vertical rib M, operating in a longitudinal groove C in the ratchet-bar to prevent independent rotary movement of the pipe-sections, and the gravity-pawl K, pivoted between outstanding ears on the casting and engaging the ratchet-bar, substantially as specified.

2. In a pipe-coupling, the vertical ratchet-bar secured to the lower pipe-section and provided with a longitudinal groove C, combined with the casting secured to the upper pipe-section and provided with a rib M, operating in the groove C, and the gravity-pawl pivoted on the casting and engaging the ratchet-bar, the pivot of the said pawl being arranged above the engaging-tip of the pawl, whereby the latter may swing downward, when the upper pipe-section is raised, substantially as specified.

407,152. WASHING-MACHINE. GEORGE M. BEEM, Frankfort, Ind. Filed May 10, 1888. Serial No. 273,468. (No model.)



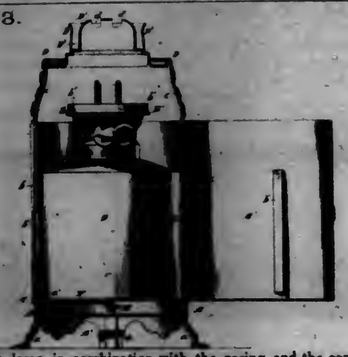
Claim.—1. In a washing-machine, the combination, with a reciprocating pivoted rubber, of adjustable uprights provided with handles and pivoted to the rubber, locking-rods attached to the uprights, and plates secured to the rubber and provided with holes for the locking-rods to engage with, so that the uprights may be held in various positions, substantially as set forth.

2. The combination, with a washing-machine tub, of the sloping drip-board provided with the supporting-ledge *e* and the rod D, pivoted in a groove in the under side of the drip-board and provided with the cranked pivot-arm *d* at each end, journaled at the top edges of the tub, substantially as and for the purpose set forth.

407,153. LAMP. WILLIS BROWN, New York, N. Y. Filed July 23, 1888. Serial No. 281,209. (No model.)

Claim.—1. In a lamp, in combination with the casing and the cone or deflector supported therefrom, the lamp-body provided with the burner and made movable up and down in the casing, and means on the casing for positively forcing the lamp-body up in the casing and locking it as raised, substantially as and for the purpose shown.

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2. In a lamp, in combination with the casing and the cone or deflector and chimney-holder supported therefrom, the lamp-body made movable within the casing and carrying the burner, guides on the casing and lamp-body to guide the body and prevent its rotation, and positively-acting means on the casing for raising the lamp-body with reference to the cone-deflector and holding it as raised, substantially as and for the purpose described

3. In a lamp, in combination with a suitable casing or frame and the uprights thereon, the ring supported on the uprights and provided with the cone or deflector, the movable lamp-body carrying the burner, and a cam device on the casing or frame engaging the lamp-body, so as to raise it to bring the burner to the cone or deflector, and holding the body as so raised, substantially as and for the purpose described.

4. In a lamp, in combination with the casing and the stationary cone or deflector, the rising-and-falling lamp-body within the casing, provided with the burner, guides on the casing and lamp-body to guide and steady the latter, and a swinging arm below the lamp-body adapted to raise the same and hold it raised, substantially as and for the purpose shown.

5. In combination with the casing and the stationary cone or deflector, the movable lamp-body provided with the burner, the rock-shaft provided with the arm to engage the lamp-body, and suitable means for rocking such shaft, substantially as and for the purpose set forth.

6. In a lamp, in combination with the casing or frame for supporting the cone or deflector and chimney-holder, the movable lamp-body carrying the burner, the rock-shaft supported in the frame or casing and provided with the lamp-body-engaging arm, the lever on the shaft, and a catch on the casing to lock such lever when the shaft has been turned to raise the lamp-body, substantially as and for the purpose described.

7. In a lamp, in combination with the movable lamp-body carrying the burner, the lamp-casing provided with means for supporting the cone or deflector and with a door to admit of the removal of the lamp-body, the rock-shaft having the lamp-body-engaging arm, the operating lever or handle on the rock-shaft, and a suitable catch on the casing-door to engage and hold the shaft, lever, or handle, substantially as and for the purpose specified.

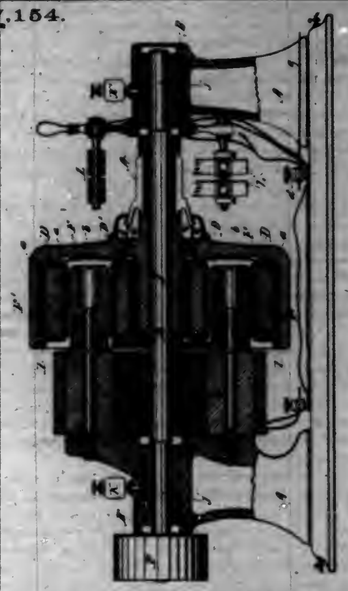
8. In a lamp, in combination with the movable lamp-body carrying the burner, the casing provided with a door to allow removal of the lamp-body from the casing, guides on the door and casing to engage the lamp-body, guides on the lamp-body adapted to engage some of the guides on the casing to prevent rotation of the lamp-body, and means for raising and lowering the body within the casing, substantially as and for the purposes shown

9. In a lamp, in combination with the movable lamp body or reservoir carrying the burner, the casing provided with a door to admit of removal of the lamp-body, the stationary cone or deflector and chimney-support, the lamp-body-engaging guides on the casing and casing-door, the guides on the lamp-body, the rock-shaft provided with the arm to engage the bottom of the lamp-body, and the lever or handle for rocking the shaft, substantially as and for the purpose set forth.

10. In a lamp, in combination with the movable lamp-body having the burner, the casing having the door, the upright guide-bars within the casing, having their lower ends continued downward to form feet for the lamp and their upper ends forming supports for the ring carrying the cone or deflector, the guide-strip on the door, and means for raising and holding the lamp-body up within the casing, substantially as and for the purpose described.

407,154. ELECTRIC MACHINE. EDWIN H. EMMERT, Jr., Bayonne, N. J. Filed Feb. 23, 1889. Serial No. 300,907. (No model.)

407,154.



Claim.—1. In an electric machine, an inner and outer armature confined within and secured to a frame fast to and revolving with said shaft, in combination with field-magnets having pole-pieces projecting between said armatures, substantially as described.

2. In an electric machine, an inner and an outer revolving ring-armature confined within and supported by a frame mounted upon and fast to the shaft of the machine, in combination with the field-magnets having pole-pieces projecting between said armatures, substantially as described.

3. In an electric machine, the combination of a revolving ring-armature mounted upon a shaft, bearings for said shaft, stationary magnets fast to or formed integral with the bracket forming the bearing for one end of said shaft, pole-pieces fast to or formed integral with said magnets and extending between said armature and another ring-armature confined within and secured to a frame fast to and revolving with said shaft, substantially as described.

4. In an electric machine, the combination of a revolving armature mounted upon a shaft, bearings for said shaft, stationary magnets fast to or formed integral with the bracket forming the bearing for one end of said shaft, pole-pieces fast to or formed integral with said magnets and extending between said armature and a ring-armature confined within and secured to a frame fast to and revolving with said shaft, substantially as described.

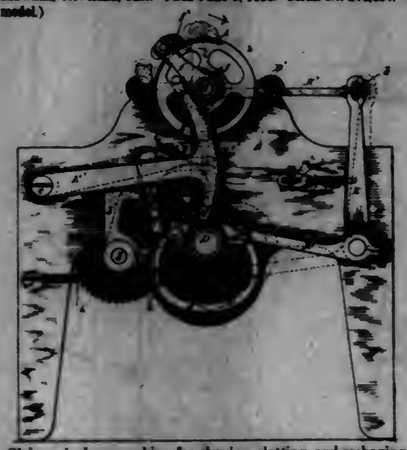
5. In an electric machine comprising two revolving ring-armatures, between which are arranged the pole-pieces of stationary field-magnets, a frame or spider for supporting said armatures and connecting them to the shaft, consisting of a hub mounted on said shaft and having flanges to receive the inner armature, and arms radiating from said hub and terminating in flanges to receive the outer armature, substantially as described.

6. In an electric machine comprising two revolving ring-armatures, between which are arranged the pole-pieces of stationary field-magnets, a frame or spider for supporting said armatures and connecting them to the shaft, consisting of a hub mounted on said shaft and having flanges to receive the inner armature, and arms radiating from said hub and terminating in flanges to receive the outer armature, in combination with a collar H and ring I, substantially as described.

7. In an electric machine comprising two revolving armatures, between which are arranged the pole-pieces of stationary field-magnets, a frame or spider for supporting said armatures and connecting them to the shaft, consisting of a hub mounted on said shaft and having flanges to receive the inner armature, and arms radiating from said hub and terminating in flanges to receive the outer armature, in combination with a collar H and ring I, substantially as described.

8. In an electric machine, an inner and outer armature confined within and secured to a frame fast to and revolving with the shaft, in combination with field-magnets having pole-pieces projecting between said armatures, and electrical connections, as described, whereby the current passes from one armature to the field and from the other armature to the line, as and for the purpose set forth.

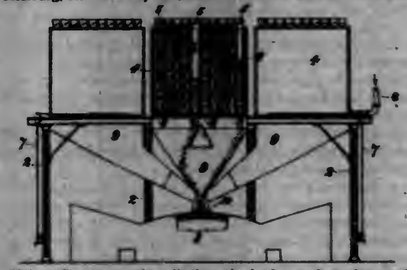
407,155. MACHINE FOR SLOTTING SCREW-HEADS. JAMES A. BIDWELL, Cleveland, Ohio. Filed June 9, 1888. Serial No. 276,857. (No model.)



Claim.—1. In a machine for shaving, slotting, and reshaving the heads of wood-screw blanks, the combination, with pin f and stop L, of wheel e, whose outer periphery is provided with pin-holes e' and whose hub is provided with circular cams e^3, having end walls e^4, substantially as set forth.

2. In a screw-machine, the combination of a rotary shaft B, carrying cam-wheel e, stop L engaging with said wheel, rotary cam d and levers K K' K^2, connecting said cam and stop L, substantially as set forth.

407,156. MANUFACTURE OF STEEL. THOMAS S. BLAIR, Jr., Pittsburg, Pa. Filed Apr. 28, 1887. Serial No. 235,747. (No model.)



Claim.—The herein-described method of manufacturing steel direct from ore, which consists in heating the ore mixed with carbonaceous material in an air-tight retort for the purpose of deoxidizing the ore, charging the deoxidized ore or spongy iron into a bath of molten cast-iron directly into the furnace in such masses as will cause the ore or sponge to sink, and finally subjecting the combined metals to the ordinary open-hearth process, substantially as set forth.

407,157. BOTTLE-STOPPER. RUDOLPH BLOSSER, Scranton, Pa. Filed Feb. 15, 1889. Serial No. 299,994. (No model.)



Claim.—1. In a bottle-stopper, the combination, with the top and bottom plates, the bolt for drawing the plates together, the central elastic portion, and the locking device, of the link passing through the top of the bolt to prevent the withdrawal of the bolt, and a pivotal connection between said link and the neck-wire, substantially as described.

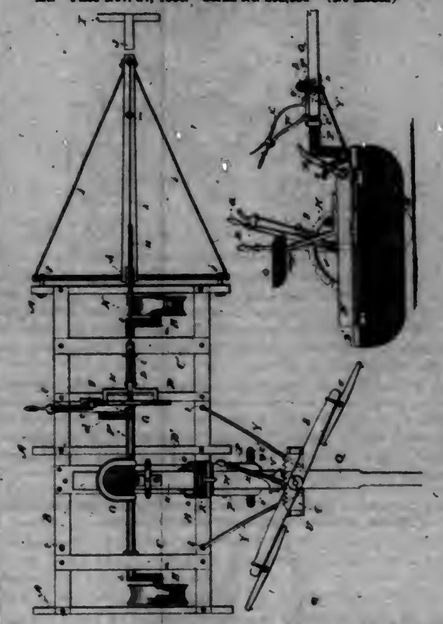
2. In a bottle-stopper, the combination, with the top and bottom plates, the bolt for drawing the plates together, having a slot in the upper end, and the central elastic portion, of the U-shaped link passing through the slot in the bolt, a pivotal connection between the ends of said link and the neck-wire, and the locking-lever pivoting on said link, substantially as described.

3. In a bottle-stopper, the combination, with the top plate or cap, the central stud with the enlarged lower end or plate, and the locking-lever, of the link uniting said bolt and locking-lever, and the link pivotally connected to the neck-wire and also pivotally connected to said first-mentioned link, substantially as described.

4. In a bottle-stopper, the combination, with the top and bottom plates, the elastic center portion, the bolt, and the locking-lever for drawing said plates toward each other, having the shoulder thereon, of the link with which said shoulder engages to withdraw the stopper, connected to the stopper, and a pivotal connection between said link and the neck-wire, substantially as described.

5. In a bottle-stopper, the combination, with the top plate or cap, the central bolt with the enlarged lower end or plate, and the locking-lever having the shoulder thereon, of the link with which the said shoulder engages, uniting the locking-lever and bolt, and the link pivotally connected to said first-mentioned link and also pivotally connected to the neck-wire, substantially as described.

407,158. CORN-ROW MARKER. SAMUEL T. BOATHAM, Roanoke, Va. Filed Nov. 27, 1888. Serial No. 292,060. (No model.)



Claim.—1. In a corn-marker, the combination, with the runners and the frame, of the rock-shaft having the cranked ends and spindles, the truck-wheels thereon, the arm on said rock-shaft having the projection, the slotted lever pivoted to the frame, the spring-actuated dog, and the arc rack, substantially as specified.

2. In combination with the double end runners and the frame, the guide-shoe having the rod pivoted to the runner, the brace-rods, the pivoted lever having the spring-actuated dog thereon, the arc rack secured to the frame, the pivoted shifting fulcrum-bar, and the lifting-line, substantially as specified.

3. In a corn-marker, the combination, with the pivoted guide, and its operating-lever and line, of the shifting fulcrum-rod engaging said line, substantially as specified.

4. In a corn-marker, the combination, with the runners rounded or curved at both ends, of the shifting tongue and the wing-braces, substantially as specified.

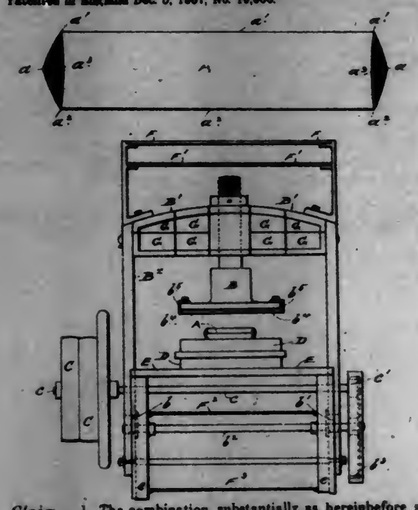
5. In a corn-marker, the combination, with the runners rounded or curved at both ends, of the tongue secured to the pivoted shifting-bar and the seat having its leg rigidly secured to said bar, substantially as specified.

6. In combination with the runners rounded at both ends, the frame, and the pivoted shifting-bar, the pole having the angle-irons pivoted to said shifting-bar, the rearward curved arms on said angle-irons, and the yoke pivoted to the shifting-bar and adapted to engage the curved arms, substantially as specified.

7. The combination, with a corn-marker having the runners rounded or curved at both ends and the shifting tongue, of the rack-

plate having the whiffletree thereon and the rib, the transverse channel-plate engaging said rib, and the journaled segment-gear engaging the rack-plate and having the rearward-extended lever, substantially as specified.

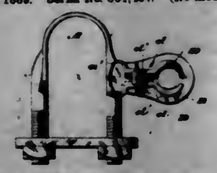
407,159. MACHINE FOR CUTTING SHOE-UPPERS. THOMAS BRIMBE, Leeds, County of York, England, assignor of one-half to George Lister, same place. Filed Feb. 13, 1889. Serial No. 299,794. (No model.) Patented in England Dec. 5, 1887, No. 16,690.



Claim.—1. The combination, substantially as hereinbefore set forth, of the knife formed with upper and lower cutting-edges, the frame of the cutting-press, the block D, of soft material, on which the leather is placed and which supports the cutting-knife, the buffer B, having a facing b^6 of soft material, and means for reciprocating the buffer, substantially as set forth.

2. In cutting the upper leathers of boots or shoes, the combination of the knife A, having two edges a' a^3 opposite to each other, the buffer B, covering b^4, head B', side bars B^3, eccentrics b b', shaft b^3, pulleys C, shaft c, pinion c', internal spur-wheel b^2, wood block D, table E, legs e, shelves F F^2 F^3, and pockets G, all arranged as and adapted for the purposes set forth.

407,160. THILL-COUPLING. THOMAS DAWSON, Eagle Rock, Idaho. Filed Feb. 28, 1889. Serial No. 301,467. (No model.)



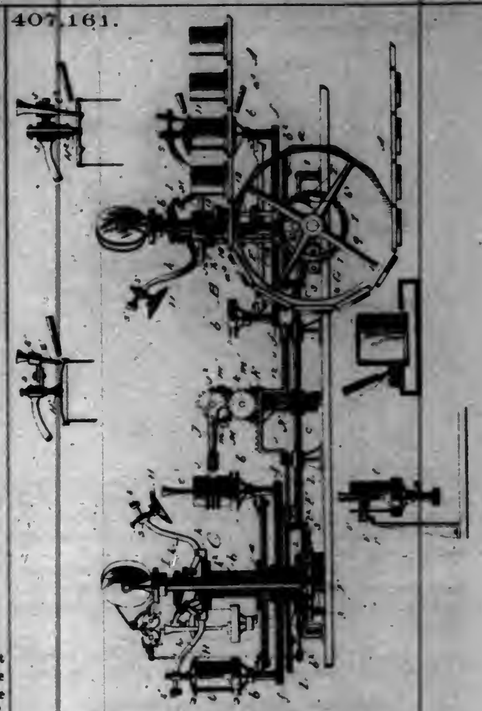
Claim.—1. In a thill-coupler, the combination of the axle-clip having forwardly-projecting apertured arms B, the bolt C, provided with an annular groove, the spring secured at center to the outer face of one of the arms and provided at its ends with jaws designed to engage the groove of the bolt, and a key E, secured to rotate in said arm and provided with a flattened shank to engage the shanks of the jaws and with shoulders or projections to overlap the outer faces of said shanks, substantially as described.

2. The combination, in a thill-coupling constructed substantially as shown, of a bolt or pin having a recess c, the spring-actuated jaws D D, curved to lie within the recess of the bolt, said jaws being connected by members d, the inner sides of which are provided with recesses d' and spring portion e, and a key E, having a flattened portion f, said key being secured to the clip, substantially as shown, and for the purpose set forth.

407,161. CAN-SOLDERING MACHINE. WILLIAM D. BROOKS, Baltimore, Md., assignor of one-third to D. D. Mallary, same place. Filed May 13, 1889. Serial No. 310,500. (No model.)

Claim.—1. In combination with a soldering-machine comprising can-seats, an inverter and transferrer for the cans positively operated to remove them from one seat and place them upon another, and means for operating said transferrer, substantially as described.

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2. In combination with the two tables B C, with a series of can-seats and with soldering devices, the positively-operating can inverting and transferring mechanism for moving the can from one table to the other and means for operating said mechanism, substantially as described.

3. In combination, two can-seats arranged in the same horizontal plane, and a positively-operating inverter and transferrer with operating means, substantially as described.

4. In combination, the two can-seats and a gripping inverter and transferrer with operating means therefor, substantially as described.

5. In combination with the soldering-machine comprising can-seats, the oscillating pivoted arm and gripping mechanism carried thereby for moving the can from one seat to another and inverting it, substantially as described.

6. In combination with the soldering-machine, the pivoted arm having rack-teeth, the reciprocating rack in connection with the teeth of the pivoted arms for operating the arm, and the automatic gripping devices, substantially as described.

7. In combination with the two tables, the transferring arm and grip, said arm having rack-teeth, the reciprocating rack, and the intermediate pinion, substantially as described.

8. In combination, the tables, the transferring-arm, the reciprocating bar having connection thereto for operating the same and the cam for operating the bar in one direction, and the means for retracting the bar, substantially as described.

9. In combination, the can-seats, the transferring-arm, the gripping-fingers carried thereby, and the cam for operating said fingers, substantially as described.

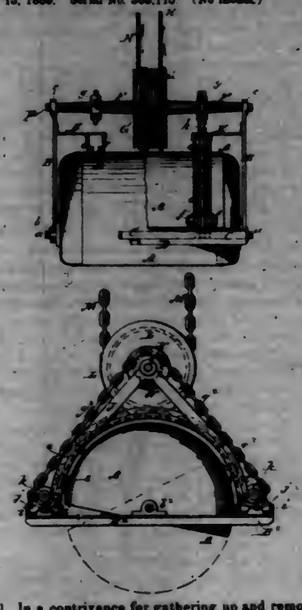
10. In combination, the can-seats, the transferring-arm, the gripping device, and the cam for operating said device, the said cam being arranged with its center to one side of the pivot of the transferring-arm, substantially as described.

11. In combination, the two tables, the shaft extending between them, the transferring-arm, the gripping device carried thereby, and the operating connection between said gripping device and the said shaft, substantially as described.

12. In combination, the two tables with can-seats, the transferring-arm, the gripping device, the cam with connections for operating said device, and the worm and the intermediate pinions for operating the cam, substantially as described.

13. In combination with the can-seats and can-holders, the sockets S and the upper solder-tubes held in these sockets, substantially as described.

407,162. GRAB-BUCKET. ALEXANDER E. BROWN, Cleveland, Ohio. Filed Mar. 13, 1889. Serial No. 303,115. (No model.)



Claim.—1. In a contrivance for gathering up and removing coal or other material, a single bucket-like device or receptacle having an axis of motion located within itself and the working or entering edges of which move downwardly into the mass of material to be gathered up, and thence move upwardly through said mass, in combination with suitable means for imparting such action to said bucket-like device, all in substantially the manner and for the purpose hereinbefore set forth.

2. In a contrivance for gathering up and removing coal or other material, the combination of the following instrumentalities, viz: first, a single oscillatory bucket or receptacle adapted to pass downwardly into and thence upwardly through the material in substantially the manner specified; second, a suitable frame-work adapted to rest on top of the material to be handled and having the said bucket pivotally connected therewith, substantially as described, and, third, means which effect a partial rotation of said bucket round about its pivotal connections with the said frame, the said combination being and operating in the manner and for the purposes hereinbefore set forth.

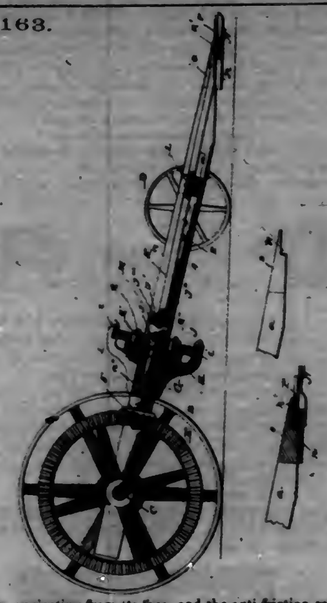
3. In combination with a suitable frame-work adapted to rest on the material to be handled, an oscillatory bucket or receptacle pivotally connected with said frame-work and a drive-shaft mounted in the upper portion of said frame-work, one or more drive-wheels mounted on said shaft, one or more chains arranged in engagement with said wheels, a series of chain-wheels mounted on the lower portion of said frame-work, and chain channels or housings e, within which travel such portions of the chain as effect an engagement with the bucket to be rotated, all substantially in the manner and for the purposes hereinbefore set forth.

407,163. LAWN-MOWER. LAURISTON S. BROWN, Oriskany Falls, N. Y., assignor of one-half to Minnie L. Brown, same place, and Cora A. Todd, Lebanon, Mo. Filed Sept. 10, 1888. Serial No. 285,047. (No model.)

Claim.—1. In a lawn-mower, the combination, with the rotary disk provided with the pins projecting from its face, and rollers mounted on said pins, of bracket-arms secured to the main frame, a transverse frame supported and retained in place by said bracket-arms and provided with a rectangular opening having spurs j at its opposite sides, an arm j', extending laterally across the forward face of the transverse frame and provided with rearwardly-curved ends attached to said frame, and a centrally-located transverse slot j'', intersected by a centrally-disposed aperture, and a pitman pivoted in the slot of the arm j' at one end, pivoted through its intermediate portion upon the main frame, and connected at its other end to the reciprocating cutter-bar of the cutting mechanism, substantially as specified.

2. In a lawn-mower, the combination, with a crown-wheel mounted on the axle, a pinion meshing with said crown-wheel, a shaft journaled longitudinally in the main frame of the mower and having said pinion on its rear end, the disk secured to the front end of said shaft

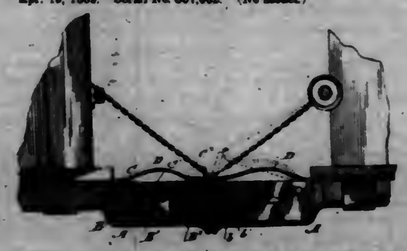
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with pins projecting from its face, and the anti-friction rollers on said pins, of the bracket-arms secured to the main frame, the transverse frame supported by and reciprocating upon said arms and provided with an opening having the curved spurs j, the transverse arm j', secured to said reciprocating frame, the pitman pivoted at its rear end to said arm and intermediately to the main frame, and the cutter-bar pivoted to the front end of the pitman, substantially as specified.

3. In a lawn-mower, the combination, with the main frame provided with the adjusting openings R in its side bars, and the wheels D, having shafts adapted to be journaled in any pair of the openings R to change the adjustment of the main frame, of the blocks O, bolted to the inner surfaces of the front ends of side bars of the main frame and having the horizontal recesses n' in their front ends, the finger-bar having rearwardly-extending arms secured to said blocks, the cutter-bar with its rear edge seated in the recesses n', the pitman pivoted to the main frame and at its front end to the cutter-bar, the reciprocating transverse open frame having the curved spurs j in its opening and suitably supported upon the main frame, the arm or bar j', secured to the transverse frame and having the rear end of the pitman pivoted upon it, the rotary disk provided with pins projecting from its face and mounted on a longitudinal shaft journaled in the main frame, and the anti-friction rollers mounted on said pins, substantially as specified.

407,164. CAR-COUPLING. JOHN M. BURDEN, Huntsville, Ky. Filed Apr. 19, 1889. Serial No. 307,962. (No model.)

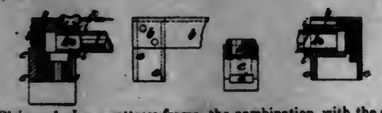


Claim.—1. In a car-coupling, a draw-head comprising a body or main section B, having a flared forward end provided in its upper side with a recess B' and having a groove B^2 extending between the said recess B' and the flared forward end, and the spring-actuated section C, hinged to section B, having a flared forward end provided in its under side with a recess C', and having a groove C^2 extending from recess C' forward to the front flared portion, all substantially as and for the purposes set forth.

2. The combination of the body or main section, the section C, the shaft F, having a bevel-gear f', a connection between shaft F and section C, and the shaft G, having a bevel-gear meshing that of the shaft F, substantially as set forth.

3. The improved car-coupling, substantially as described, consisting of the draw-head having a section B, formed with recess B' and groove B², section C, hinged at its rear end to section B and formed with recess C' and groove C², the dowels *b*, provided on one of such sections and entering the other, the spring for actuating the section C, the shaft F, connected with section C and having a bevel-gear *f*', and the shaft G, having a bevel-gear meshing the gear *f*'

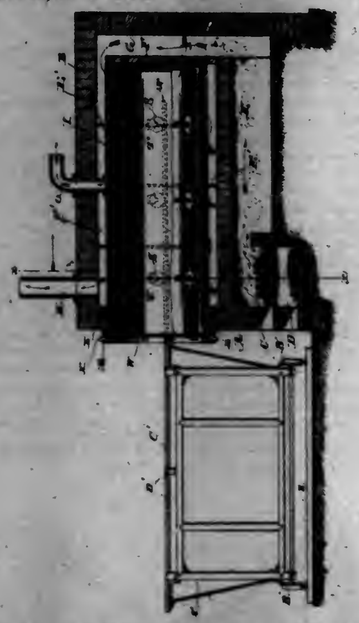
407,165. BED-FRAME. ISAAC CROMPTON and GEORGE L. SCOTT, Manchester, County of Lancaster, England. Filed Oct. 24, 1888. Serial No. 288,997. (No model.) Patented in England Aug. 17, 1885. No. 9,743.



Claim.—1. In a mattress-frame, the combination, with the sides, and the corner-brackets *c*, carried thereby, and having sockets open at their upper ends, of the end angle-irons *b*, provided with the tongues *c*, adapted to fit said sockets, substantially as set forth.

2. In a mattress-frame, the combination, with the sides, and the corner-brackets *c*, carried thereby, and having sockets open at their upper ends, of the end angle-iron *b*, provided with tongues *c*, adapted to fit said sockets, an opposing end piece *b*', a flexible mattress-bottom connected with said end pieces, and means for moving end piece *b*' to strain said bottom, substantially as set forth.

407,166. RETORT FOR DISTILLING WOOD AND MAKING CHARCOAL. FRANKLIN S. CLARK, Wilmington, N. C. Filed Jan. 5, 1888. Serial No. 259,834. (No model.)

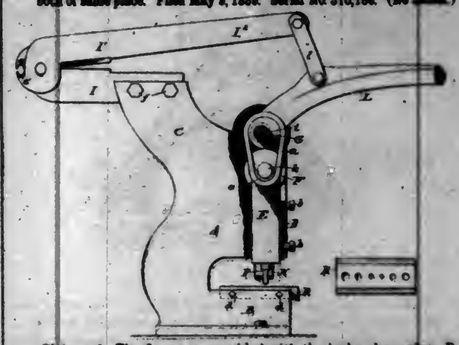


Claim.—1. The furnace having the fire-chamber C at the front end, the arch E, extending from the fire-chamber to the rear of the furnace, the rear end of the arch being open, the flue G at the rear end of the furnace communicating with the open rear end of the arch E, said flue G being formed by the back wall of the furnace and the vertical wall F, said wall F being arranged at a suitable distance from the back wall of the furnace and terminating at its upper end a short distance below the roof of the furnace, the roof B, provided with the escape-flue H at the front end, the furnace-chamber, the retort placed within the furnace-chamber between the arch E and the roof, but out of contact with both, the rear end of the retort being close to the wall F, and the baffle-plates E', arranged in the space separating the retort and the furnace, and each alternate plate open at its opposite ends, so as to provide tortuous passages F' for the hot air escaping from the flue G to the flue H.

2. In a wood-distilling apparatus, the outer cylinder I, having its outer end open and provided with the ring or mouth L, having flange M, combined with the inner cylinder having the plate W, of greater diameter than the inner cylinder, and adapted to fit snugly within the flange M and bear against the mouth L, and the wedges or keys X, passing through perforations of the flange M and bearing against the outer plate W, so as to hold the inner cylinder in place, provide an air-tight connection, and dispense with the necessity of a separate door, as set forth.

3. In a wood-distilling apparatus, the furnace, combined with the stationary outer cylinder I, arranged within the furnace, and the removable inner cylinder P, to contain the wood and having the openings T in its sides, said inner cylinder being smaller than the outer cylinder and arranged within the latter, so as to provide an air-space around the inner cylinder, with which air-space the openings T communicate, and the doors U on the inner cylinder for closing the openings, said doors being carried by the inner removable cylinder when it is drawn out, as set forth.

407,167. COMBINED PUNCH AND SHEARS. JASPER CLARK, Elmira, N. Y., assignor to Theodore C. Northcott and Cynthia Jane Clark, both of same place. Filed May 2, 1889. Serial No. 310,186. (No model.)

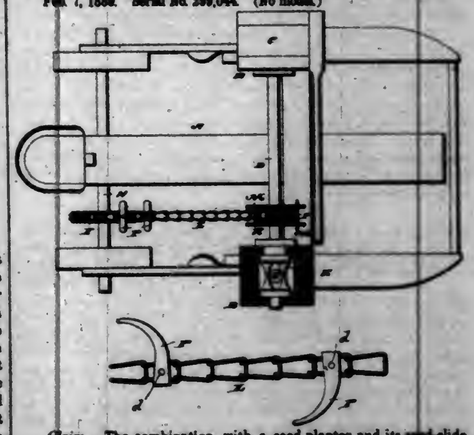


Claim.—1. The frame A, provided with the bed or base plate B, and having the slide E, provided with the friction-roller F, mounted in said frame, in combination with the hand-lever L, having the eccentric G formed thereon, and the connecting loops or links *a*, all constructed and arranged to operate substantially as shown and described.

2. In combination with the frame A, having the pivoted lever L arranged to operate a punch, the fixed shear-blade I, and the movable blade F, having its arm connected to said lever L, substantially as shown and described.

3. The curved cutting-bades *c* and *d*, formed on the projecting ends of the shear-blades, for cutting round or other shaped rods, substantially as shown and described.

407,168. CORN-PLANTER. GEORGE J. CLINE, Goshen, Ind. Filed Feb. 7, 1889. Serial No. 299,044. (No model.)



Claim.—The combination, with a seed-planter and its seed-slide having lugs or triggers, of the endless chain L, the triggers P, tapering and curved outwardly and having their inner ends formed with an elongated loop *b*, and a perforation *a* transversely through the loop, and the rivet or stud *d*, passing through the perforation in the loop and through links in the chain, so as to secure the triggers alternately on opposite sides of the chain, substantially as specified.

407,169. STOPPER FOR BOTTLES. JOHN W. COLLINS, Washington, D. C., assignor of one-half to John Proffit, Atsel, same place. Filed May 13, 1889. Serial No. 310,497. (No model.)

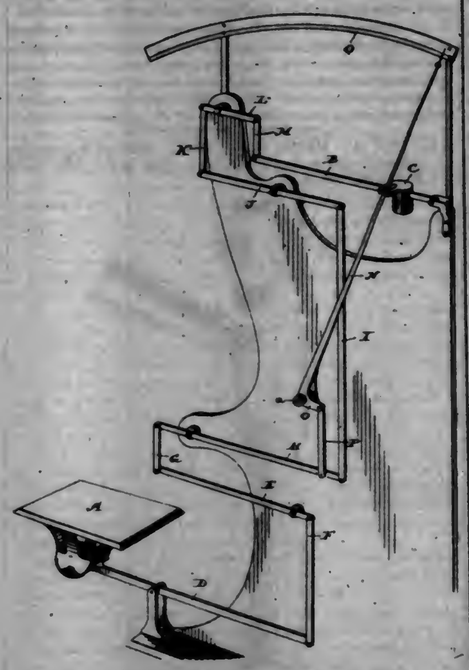


Claim.—1. In a bottle-stopper, the combination, with the cork fitting within the mouth of the bottle for closing the same, of the cap extending down around the top of the bottle, removably united to the cork by the spiral or screw, which passes only partially through the latter, whereby the cap may be applied to the cork after the same is in place, substantially as described.

2. In a bottle-stopper, the combination, with the cork fitting within the mouth of the bottle for closing the same and the cap extending down around the top of the bottle, removably secured to the cork, of the bail pivotally connected to the top of the cap and free to swing up to enable the cork to be withdrawn, substantially as described.

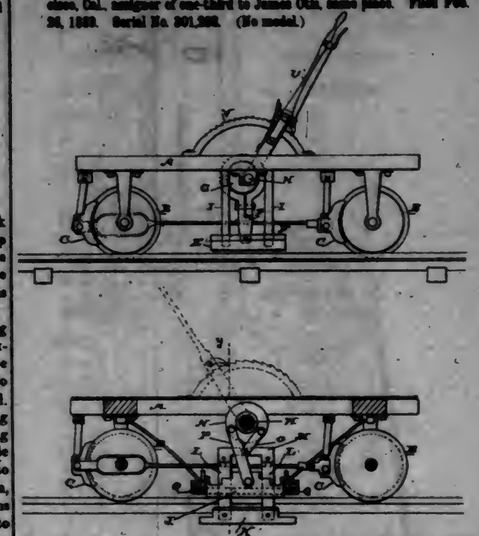
3. In a bottle-stopper, the combination, with the cork fitting within the mouth of the bottle for closing the same, the cap having the long depending edge entirely surrounding the top of the bottle and removably united to the cork by the screw or spiral secured to the cap and entering the cork, of the neck-wire having the ears thereon, the bail pivoted freely on the cap and having the hooked portions engaging said ears to hold the stopper in place, and the handle to facilitate the removal of the cork, substantially as described.

407,170. AUTOMATIC WEIGHING-SCALES. JAMES CORMICK, Port Arthur, Ontario, Canada. Filed Nov. 1, 1888. Serial No. 289,730. (No model.)



Claim.—An automatic weighing-scale consisting of a series of levers arranged in connection with an adjustable weight calculated when at zero to balance the weighing table or platform and mechanism connected therewith, a pivoted pointer being connected to the levers and to the adjustable weight, whereby the movement of the levers shall operate the pointer so as to adjust the said weight to a point on the weigh-beam which will produce an equilibrium between the article being weighed and the adjustable balance-weight, substantially as and for the purpose specified.

407,171. CABLE-RAILWAY BRAKE. OLIVER COPE, San Francisco, Cal., assignor of one-third to James Otis, same place. Filed Feb. 26, 1889. Serial No. 301,362. (No model.)



Claim.—1. The vertically-moving grip-shoes, one above and one below the slot-irons of a cable-railway tube or tunnel, a guide upon the car through which the shoe shanks or connections move, a horizontal shaft journaled upon the car, having a disk mounted thereon, and connecting-rods extending from opposite sides of said disk to the shoes or their connecting-yokes, so that the rotation of the disk will move the shoes in opposite directions, substantially as described.

2. A horizontal shaft journaled upon a cable-railway car or dummy, having a disk upon it and a lever by which the shaft and disk may be rotated, gripping-shoes supported, respectively, above and below the slot-irons of the cable-railway tube or tunnel, and the links connecting said shoes with a disk upon the opposite sides of the rotary shaft, whereby the rotation of the shaft will cause the gripping-shoes to approach to or recede from each other, substantially as described.

3. The slot-iron gripping-shoes, the connecting-links, and rotary shaft and disk whereby they are actuated, in combination with the fixed guids supported from the car-body, whereby the shoes are caused to retain their position and are guided in their movements, substantially as described.

4. The vertically-moving gripping-shoes, with the connecting-links, and a disk fitted loosely upon the horizontal shaft which is journaled across the car-frame, in combination with a clutch-sleeve traveling longitudinally upon a feather upon the shaft and having its end adapted to engage the disk, and a lever whereby said clutch-sleeve is moved upon the shaft, substantially as described.

5. The vertically-moving brake-shoes, the disk fitted loosely upon a horizontal shaft journaled across the car-frame, said disk connected with the shoes by links, whereby they are actuated, a clutch-sleeve traveling longitudinally upon a feather upon the shaft, a lever by which said sleeve is moved in one direction, and a spring acting against said lever or the sleeve, so as to throw it into engagement with the disk when released, substantially as described.

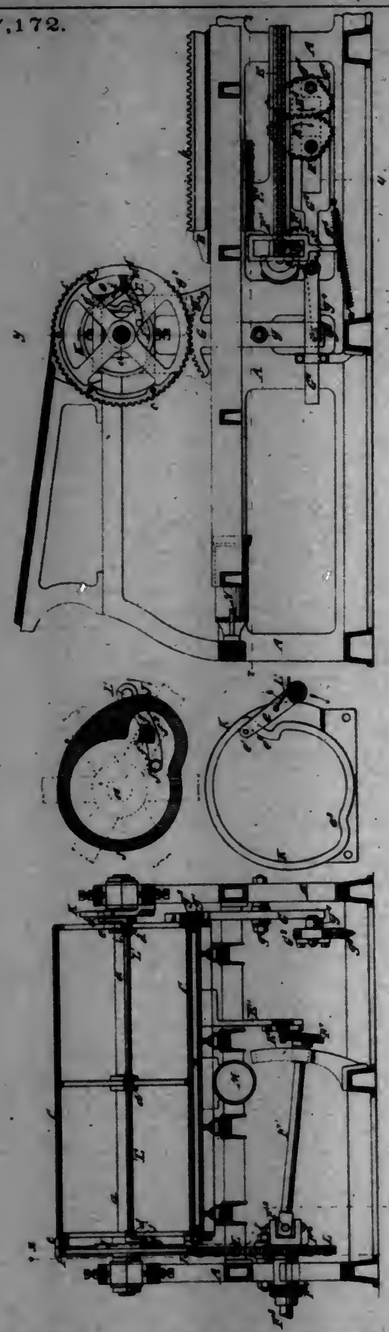
6. The loose spring-actuated sleeve fitted upon the horizontal shaft which is journaled to the car-frame, the clutch connected therewith and moved to engage with the disk, and a pawl or stop acting against the end of the clutch-sleeve when the latter is in engagement with the disk, so as to prevent its becoming disengaged, substantially as described.

7. A brake mechanism for cable-railway cars, consisting of the vertically-moving slot-iron grip-shoes, the track-brake consisting of shoes adapted to be pressed downward upon the track, a horizontal shaft journaled across the frame and having a central disk by which the grip-shoes are actuated, and eccentrics upon its outer end, whereby the track-brakes are actuated simultaneously with the slot-grip by the rotation of the shaft, substantially as described.

407,172. STOP-CYLINDER PRINTING-MACHINE. CALVERT B. COTTRELL, Stonington, Conn. Filed Aug. 25, 1888. Serial No. 283,773. (No model.)

Claim.—1. The combination, with the main shaft and impression-cylinder and a bed having a rack for engaging with teeth on the said

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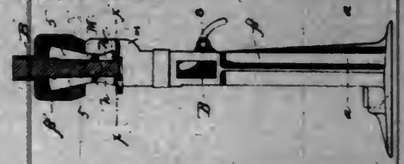


cylinder for driving the same during printing, a cam-actuated toothed sector-lever, and teeth upon said cylinder gearing with said lever for starting the said cylinder, of a wheel loose upon said cylinder and in gear with the main shaft to run always in one direction and a cam-actuated clutch for clutching said loose wheel with the cylinder after the starting of the same by the sector-lever and unclutching the said loose wheel from the cylinder after printing, substantially as herein set forth.

2. The combination, with the main shaft and impression-cylinder and a bed having a rack for engaging with teeth on the said cylinder for driving the same during printing, a cam-actuated starting-lever, and teeth upon said cylinder gearing with said lever, of a wheel loose upon said cylinder to run always in one direction, an intermediate wheel gearing with said loose wheel and with a gear upon the main shaft, and a clutch for clutching said loose wheel with and unclutching it from the cylinder, substantially as and for the purpose herein set forth.

3. The combination, with the impression-cylinder of a printing-machine and a gear-wheel loosely attached thereto, of a clutch mechanism for connecting them together and disconnecting them, consisting of a rotary clutch-piece attached to and rotating with said wheel, and a stationary cam and rock-shaft carried by said cylinder and having one arm for engaging with said rotary clutch-piece and another arm engaging with said stationary cam for causing the engagement of the first-mentioned arm with the said rotary clutch-piece and its disengagement therefrom, substantially as and for the purpose herein set forth.

407,173. LIFTING-JACK. LOUIS J. CRESSLIUS, St. Louis, Mo., assignor to Andrew Warren, same place. Filed May 15, 1889. Serial No. 310,846. (No model.)

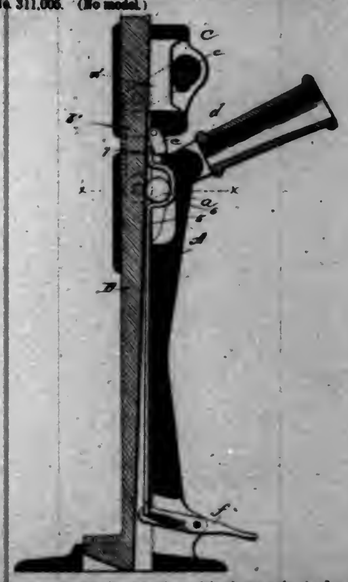


Claim.—1. In combination, a standard, a head, and a suitable lifting-lever, with gripping mechanisms in the standard and head, and a lifting-bar having a separate taper for each gripping mechanism, substantially as described.

2. In combination, the standard, the head, and suitable lifting-lever, duplicate gripping mechanisms for the standard and head, and a lifting-bar having duplicate tapers, one set for each gripping mechanism, arranged in relation to each other substantially as described.

3. In combination with the standard and a lifting-bar, a gripping-wedge in the standard, a head having gripping-wedges with extensions downward, a plate having notches to receive these extensions when the plate is in normal position, and a projection on the standard-wedges, adapted to move the plate out of normal position when the standard-wedges are raised, substantially as and for the purpose explained.

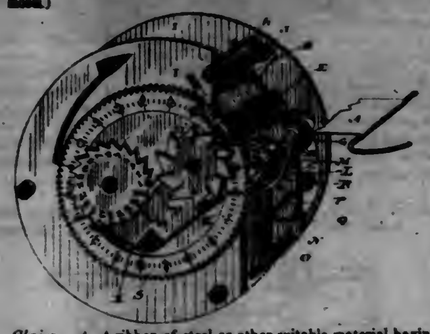
407,174. LIFTING-JACK. LOUIS J. CRESSLIUS, St. Louis, Mo., assignor to Andrew Warren, same place. Filed May 16, 1889. Serial No. 311,005. (No model.)



Claim.—1. In combination with the standard of a lifting-jack and with its head having a pivoted lug a grip located in a chamber in the standard and adapted to bear against the lifting-bar and a releasing-rod arranged to bear against the upper and under sides of said grip and extending to the pivoted lug, substantially as described.

2. In combination with the standard of a lifting-jack and a grip arranged in a chamber in said standard, a releasing-rod bent to bear against the upper and lower sides of said grip and working in a groove in rear of the grip, substantially as described.

407,175. LUMBER-MEASURE. ALEXANDER CRUICKSHANK, Weston, Ontario, Canada. Filed Sept. 1, 1888. Serial No. 284,362. (No model.)



Claim.—1. A ribbon of steel or other suitable material having stamped or otherwise formed on its surface a series of divisions substantially similar to the divisions on an ordinary lumber-rule, each division representing one foot board-measure, or other fixed proportion in a board of a given length for which the particular divisions may be marked, in combination with a disk actuated by said ribbon and its accessories, by which the movement of the ribbon while measuring the width of a board shall act upon a counter by which the board-measure of all the pieces measured shall be automatically summed up and registered, substantially as and for the purpose specified.

2. A ribbon A, having stamped or otherwise formed on its surface a series of divisions substantially similar to the divisions on an ordinary lumber-rule, each division representing one foot board-measure, or other fixed proportion in a board of a given length for which the particular divisions may be marked, in combination with a disk arranged to engage with the ribbon A, and so connected to a counter that the movement of the ribbon shall cause the counter to move and register the quantity of lumber measured, substantially as and for the purpose specified.

3. A ribbon A, marked with a series of divisions substantially similar to the divisions on an ordinary lumber-rule, substantially as described, and wound upon the spring-drum D, the said ribbon extending past and held against the roller E, in combination with the disk C, having spokes B radiating from it to engage with the elongated holes made in the ribbon A, and with counting mechanism connected, as described, to the spindle of the disk C, substantially as and for the purpose specified.

4. A ribbon A, marked substantially as described and wound upon the spring-drum D, the said ribbon extending past and held against the roller E, which is supported in suitable journals made in the adjustable plate H, in combination with the longitudinally-adjustable disk C, having spokes B radiating from it to engage with the elongated holes made in the ribbon A, and with counting mechanism connected, as described, to the spindle of the disk C, substantially as and for the purpose specified.

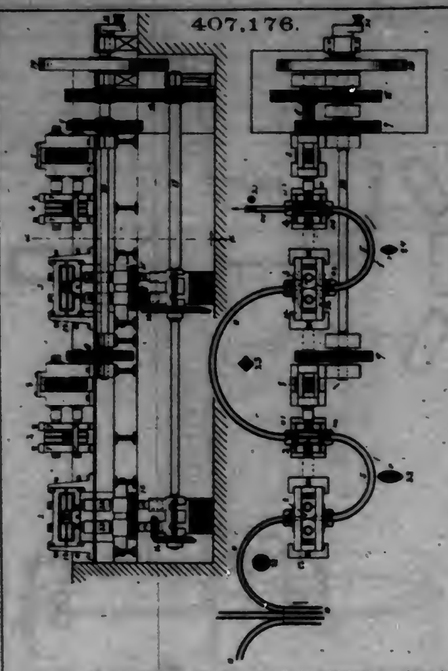
5. A ribbon A, marked substantially as described and wound upon the spring-drum D, the said ribbon being provided with perforations extending past and engaging with the disk C, which is provided with spokes and journaled on a sleeve F, longitudinally adjustable upon the spindle G, in combination with the bracket N and screw P, substantially as and for the purpose specified.

6. A ribbon A, marked substantially as described and wound upon the spring-drum D, the said ribbon being provided with perforations extending past and engaging with the disk C, which is provided with spokes and journaled on a sleeve F, longitudinally adjustable upon the spindle G, in combination with a bracket N, pointer Q, and adjustable screw P, substantially as and for the purpose specified.

407,176. WIRE-ROD-ROLLING MILL. FRED H. DANIELS, Worcester, Mass. Filed Jan. 31, 1888. Serial No. 262,260. (No model.)

Claim.—1. A wire-rod-rolling train composed of a series of pairs of rolls arranged in sets, each set consisting of two pairs of rolls having, respectively, oval passes and square passes, and disposed with the axes of one pair at right angles with the axes of the other pair, and an overfeed-guide connecting each pair of rolls with the succeeding pair, the rolls and guides being arranged and operating substantially as described.

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2. A rolling-mill having a pair of rolls in which the rod is given a square section and another pair of rolls in which the rod is given an oval section, in combination with an overfeed-guide that automatically and without twisting conducts the oval rod from the rolls which give it an oval section into the pairs of the rolls which give it a square section, the oval-pass roll being arranged axially at right angles with the square-pass rolls, all substantially as and for the purpose set forth.

3. A rolling-mill composed of a series of rolls disposed in pairs for successive reductions of the rod by back and forth feeding, and having the successive pairs of rolls disposed with the axes of each pair relatively at right angles to the axis of the next preceding pair, substantially as described.

4. In a rolling-mill, the combination, with a pair of rolls 1 and a pair of rolls 2, of the overfeed-guide 5, said guide and rolls being arranged, as described, to prevent twisting the rod while bending it, the whole combination being and operating substantially as described.

5. In a wire-rod-rolling mill, the combination, with the oval-pass reducing-rolls, of guide 5, the inner surface of its flange shaped, as shown, to match the side of a rod of oval section and curved from end to end, substantially as set forth.

6. A rod-rolling mill having a series of pairs of reducing-rolls, the alternate pairs having oval passes, in combination with a guide for directing an oval rod from one pair to another pair of rolls, and a pair of yielding feed-rolls that form a part of the guide and also advance the rod to the reducing-rolls, substantially as described.

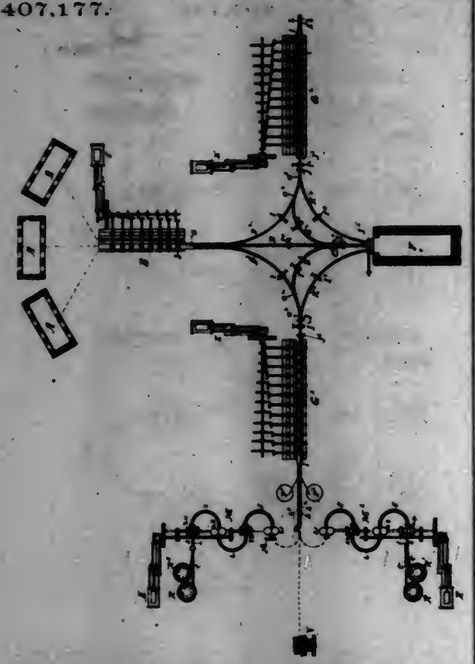
7. In a wire-rod-rolling mill, the combination, with two pairs of reducing-rolls, of a semicircular overfeeding repeater-guide 5, for conducting the end of the rod from its place of issue from one pair of reducing-rolls to the place of entry to the other pair of reducing-rolls, and a pair of feed-rolls 23, disposed in the line of said repeater-guide near its delivery end, substantially as and for the purpose set forth.

407,177. ROLLING-MILL PLANT. FRED H. DANIELS, Worcester, Mass. Filed Jan. 31, 1888. Serial No. 262,260. (No model.)

Claim.—1. In the rolling-mill plant described, the arrangement of a first train of rolls, a conductor, a second rolling-train through which the product is delivered from said conductor, a second conductor through which the product is delivered from said second rolling-train, and a third rolling-train for finishing the product, all disposed and operating as and for the purpose specified.

2. In a rolling-mill plant, the arrangement, substantially as described, of a first rolling-train, a second rolling-train, a supplemental storage chamber or furnace, a conductor leading from said first rolling-train to said second rolling-train, a conductor from said first rolling-train to said storage-furnace, and a return-conductor through which the product can be withdrawn from its approach to the second

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rolling-train and directed to said storage-chamber, said conductors being respectively provided with switches and with feed-rolls for advancing or retracting the product, as set forth.

3. In a rolling-mill plant, the arrangement, substantially as described, of the billet-mill, a plurality of rod-mills, a supplemental furnace or receiver, a series of conductors leading from said billet-mill to the rod-mills and supplemental furnace, with a switch for directing the product to either conductor, feed-rolls and cutters in the line of said conductors, and return-conductors with feed-rolls for withdrawing the billets from the rod-mill conductor for delivery to the furnace, as set forth.

4. In a rolling-mill plant, the arrangement, substantially as set forth, of the billet-mill, the rod-mill, a conductor leading from said rod-mill to said billet-mill and having feed-rolls and cutters in the line thereof, as indicated, a finishing-mill, a conductor from said rod-mill to said finishing-mill provided with a switch and cutter having a branch guide, and an automatic reel to which the rod is delivered by said branch guide, for the purpose set forth.

5. In the rolling-mill plant described, the arrangement, with a rod-mill having a train of rolls arranged in pairs for operating in continuous order, of a plurality of finishing-trains consisting of pairs of rolls with the axes of the several pairs of rolls disposed at right angles, a series of overfeed-guides for leading the end of the rod through said finishing-train, and a conductor between the rod-mill and the finishing-trains, substantially as set forth.

6. In a rolling-mill plant, the arrangement, substantially as described, of the billet-mill, the rod-mill, a conductor with shears and feed-rolls for trimming and advancing the product from said billet-mill into the rod-mill, a plurality of finishing-trains having their rolls disposed at right angles and provided with overfeed-guides, conductors from said rod-mill to said finishing-trains, a switch for directing the rod to either finishing-train, and reels for coiling the finished rods, substantially as set forth.

7. In a rolling-mill plant, the arrangement, substantially as described, of the billet-mill, the rod-mill, a conductor with shears and feed-rolls for trimming and advancing the product from said billet-mill into the rod-mill, a finishing-train, conductors from said rod-mill to said finishing-train, and a reel for coiling the finished rods, as set forth.

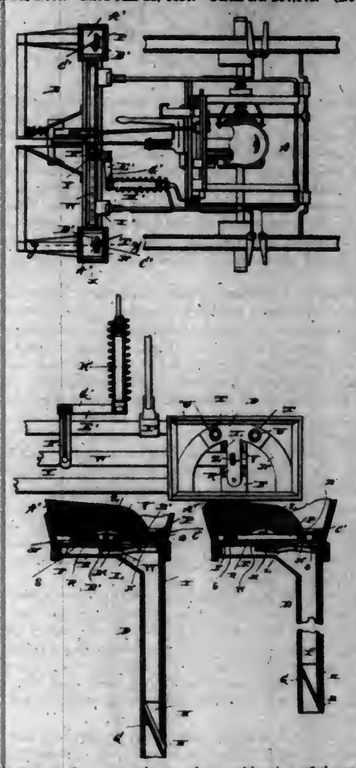
8. The rolling-mill plant consisting of a billet-mill, an inclosed conductor for maintaining the heat of the product of the billet-mill and for conveying it to the rod-mill, a rod-mill, an inclosed conductor for maintaining the heat of the product of the rod-mill and for conveying it to the finishing-mill, a finishing-mill, and a reel for coiling the product of the finishing-mill.

407,178. TRUNK TRAY AND COVER. SERENA H. DAVENPORT, St. Paul, Minn. Filed Feb. 5, 1889. Serial No. 298,751. (No model.)



Claim.—The trunk-tray 3, having its bottom extending beyond the sides and ends of the tray for the purpose of forming a supporting-ledge 4 for the cover to rest upon when in place, and having straps 5, provided with buckles, as shown, secured to the bottom of the tray, as described, in combination with the independent removable cover of the tray constructed of suitable water-tight material and adapted for use as a bath-tub, as and for the purpose described.

407,179. CHECK-ROW CORN-PLANTER. DANIEL H. PILLOW, Nelson, Nebr. Filed Jan. 22, 1889. Serial No. 297,175. (No model.)



Claim.—1. In a corn-planter, the combination of the seed-spouts having the forwardly-extending hollow arms, the vertically-movable slides or valves arranged in said seed-spouts, the levers mounted upon transverse pivots in the said hollow arms and having forked rear ends connected to the slides or valves and provided with cams or enlargements at their front ends, and the transverse reciprocating bar having cams to engage the cams at the front ends of the levers, substantially as set forth.

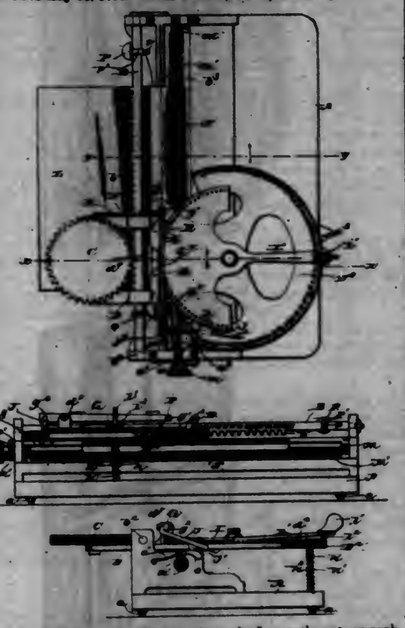
2. In a corn-planter, the seed-spouts provided with the forwardly-extending hollow arms, in combination with the levers located in the latter and operating the vertically-sliding valves in the seed-spouts, substantially as specified.

3. In a corn-planter, the combination of a seed-spout provided at its bottom with an inclined plate and a discharge-opening at the lower end of the same, with a vertically-sliding valve-plate arranged to slide against the rear side of the spout, and provided at its lower end with flanges bent forwardly and having inclined edges adapted to bear against the inclined bottom plate, substantially as set forth.

4. In a corn-planter, the combination of a seed-spout having a forwardly-extending hollow arm, an inclined plate, and a discharge-opening at the bottom of said seed-tube, a vertically-sliding valve-plate provided at its lower end with beveled flanges adapted to bear against said inclined plate, a lever mounted in the hollow arm of the seed-spout, and having a forked rear end engaging the valve-plate, and operating mechanism, substantially as described.

5. In a corn-planter, the combination of the hoppers having suitable seed-openings, the seed-spouts having forwardly-extending hollow arms, the curved plates N, having seed-openings O, the oscillating seed-plates having slots V, the vertically-sliding valve-plates arranged in the seed-spouts, the levers arranged in the hollow arms of the spouts, engaging said valve-plates and having cams at their front ends, and the transverse reciprocating bars having cams to engage the said cam-levers, and pins engaging the slots in the seed-slides, substantially as set forth.

407,180. TYPE-WRITING MACHINE. ISAAC B. DODSON, Danville, Va. Filed May 31, 1888. Serial No. 275,614. (No model.)



Claim.—1. The combination of the main frame, the rotary rack-bar B, journaled in the frame, the carriage mounted on the said rack-bar and sliding thereon, the spring-actuated wheel secured to the back of the carriage and engaging the rack-bar, mechanism for preventing the movement of the carriage, the pin K^1, depending from the front portion of the carriage, and the spring surrounding said pin and having its upper end secured to the carriage and its lower end resting on the base of the main frame, as set forth.

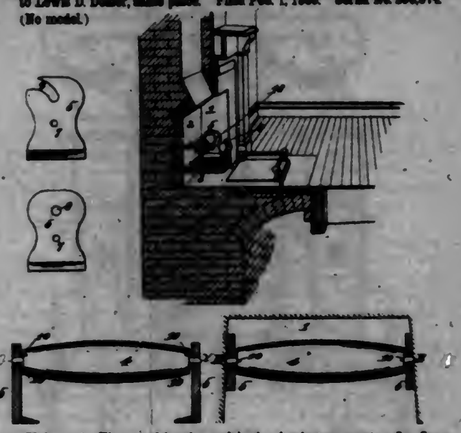
2. In a type-writer, the combination of the main frame, the carriage suitably mounted in the frame and capable of being elevated and depressed, a lever pivoted to the carriage and provided with a striking-pin, a connecting-lever having one end secured to an end of the lever carrying the striking-pin and the other end secured to the carriage and fulcramed intermediate of its ends on the main frame, whereby the striking-pin will be caused to descend upon depression of the front of the carriage and the type arranged in the path of the striking-pin, substantially as described.

3. In a type-writer, the combination of the main frame, the square bar having upon its under side teeth, the carriage, the lever provided with a striking-pin, a curved spring-arm pivoted to the carriage and adapted when elevated to engage the teeth of the square bar, the said arm being capable of a lateral spring movement, and a spring to hold the curved arm elevated, substantially as specified.

4. In a type-writer, the combination of the main frame, the bar provided upon its lower face with teeth, the carriage mounted upon the said bar and capable of being elevated and depressed, the lever provided with a striking-pin and secured to the carriage, the connecting-lever fulcramed on the main frame and having one end attached to the carriage and the other secured to the lever provided with the striking-pin, and the curved spring-arm F engaging the teeth on the lower face of the said bar and supporting an end of said lever provided with the striking-pin, whereby the curved arm will be disengaged from the teeth of the bar and the striking-pin lowered upon depression of the carriage, substantially as described.

5. In a type-writer, the combination, with the main frame having the toothed bar B, of the tilting carriage sliding on the said bar and carrying the type, the lever G, connected to the carriage and carrying a striking-pin to engage and depress the type, the laterally resilient arm F, pivoted to the carriage and connected to the lever G and adapted to normally engage the toothed bar, and the shouldered set-screw S on the carriage to limit the lateral swing of the arm F, substantially as specified.

407,181. FIRE-PLACE. JAMES H. DOSTER, St. Louis, Mo., assignor to Lewis D. Doster, same place. Filed Feb. 1, 1889. Serial No. 298,374. (No model.)



Claim.—1. The combination, with the basket or grate of a fire-place, of a horizontal radiating-bar extending over the fuel and having end supports, substantially as described.

2. The combination, with the basket or grate of a fire-place, of a horizontal radiating-bar and the side pieces for supporting the ends of the bar, substantially as described.

3. The fire-place radiator consisting of the side pieces 5 and the radiating-bar 4, mounted on said side pieces, substantially as described.

4. The fire-place radiator consisting of the side pieces 5 and the radiating-bar 4, journaled in the side pieces, substantially as described.

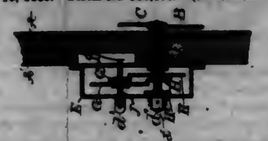
5. The fire-place radiator consisting of the side pieces 5 and the radiating-bar 4, formed with notches 10 at each end and journaled in the side pieces, substantially as described.

6. The fire-place radiator consisting of the side piece 5 having journal-perforation 8, the side piece 5 having journal-slot 9, and the radiating-bar 4, having end notches 10 and journaled in the side pieces, substantially as described.

407,182. PROCESS OF REFINING OILS. JAMES A. DUNN, Allegheny Pa. Filed Dec. 2, 1888. Serial No. 292,507. (Specimens.)

Claim.—As an improvement in the art of refining oils containing sulphur, the herein-described method, which consists in adding arsenium or its salts to the oil, subjecting the compound to a volatilizing-heat, and then condensing the vapors so produced, substantially as set forth.

407,183. TEACHER'S DIAL. AYERS M. EDWARDS, Lewiston, Me. Filed Apr. 19, 1889. Serial No. 307,809. (No model.)



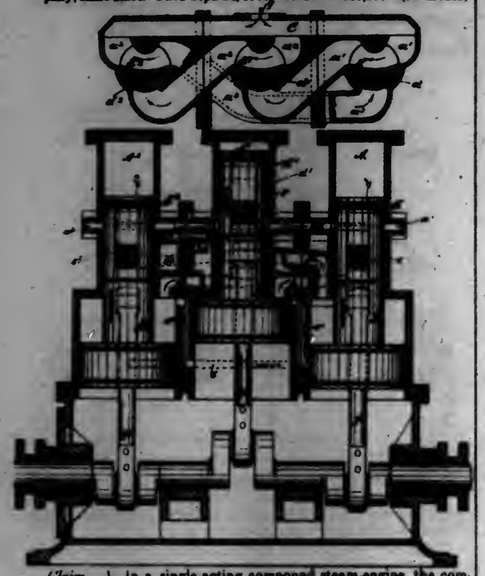
Claim.—1. The herein-described teacher's dial, having an hour and a minute hand, an hour-hand dial-wheel and a center pinion connected with said hands, a pintle having thereon a dial-wheel, and a pinion adapted to engage said center pinion and hour-hand dial-wheel and having a longitudinal movement in its bearings, a spring for forcing said dial-wheel and pinion out of gear, and a cam for forcing them into gear, substantially as shown.

2. The herein-described teacher's dial, having an hour-hand and an hour-hand dial-wheel connected therewith, a minute-hand and a center post attached thereto, a center pinion and an extra pinion on said center post, a shaft having on one end a knob or handle and on

the other end a gear for engaging said extra pinion, an independent dial-wheel and pinion adapted to connect said hour and minute hands, and means for throwing the same in and out of gear, substantially as shown.

3. The pintle movable longitudinally in its bearings, gears thereon for connecting the hour and minute hand gears, a spring for moving said pintle in one direction, and a hand-controlled cam for moving it in the other, whereby said gears are connected and disconnected, substantially as shown.

407,184. SINGLE-ACTING COMPOUND ENGINE. JOHN H. RICKERMONT, Cincinnati, Ohio, assignor to the Triumph Compound Engine Company, same place. Filed Sept. 24, 1888. Serial No. 286,268. (No model.)



Claim.—1. In a single-acting compound steam-engine, the combination of a series of cylinders, each of two diameters, having pistons working therein, and passages through said pistons and connecting said cylinders, said passages being opened and closed by said pistons, in the manner and for the purpose described.

2. The combination, in a single-acting compound steam-engine, of a series of cylinders, each of two diameters, having pistons working therein, and passages in which steam flows through one cylinder-piston into a second cylinder and actuates the piston working in said second cylinder, substantially as and for the purpose specified.

3. The combination, in a single-acting compound steam-engine, of a series of cylinders, each of two diameters, having pistons working therein, passages in which steam flows through one cylinder-piston into a second cylinder and actuates the piston working therein, and a piston governing the flow of steam, in the manner and for the purpose specified.

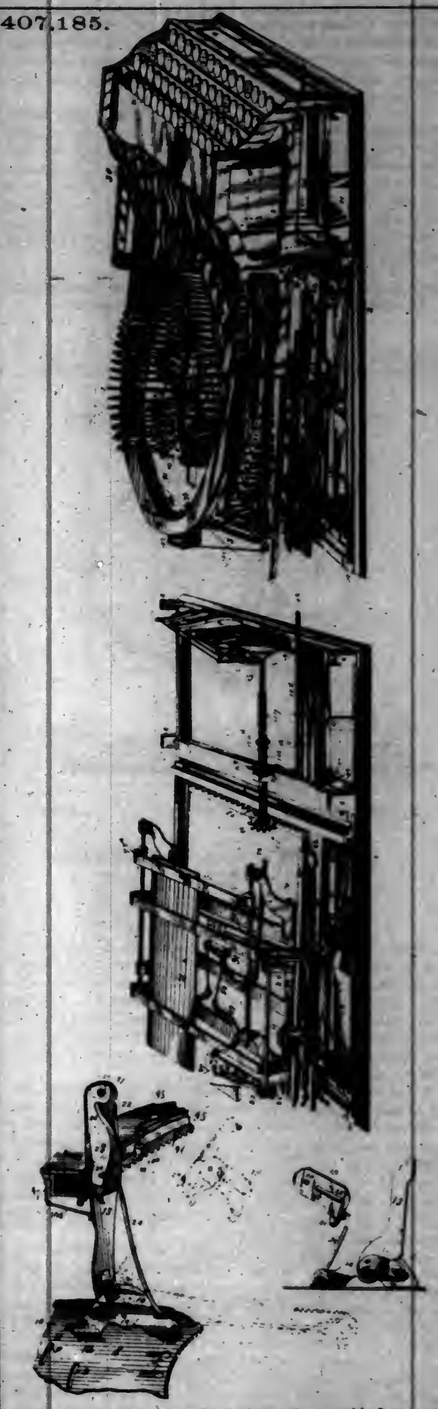
4. In a multiple-cylinder single-acting compound steam-engine, the combination of a series of cylinders, each of two diameters, pistons working therein, and a valveless exhaust connecting one cylinder with the free end of a second cylinder, the flow of steam in said exhaust being controlled by the piston of said second cylinder, substantially as described.

5. In a compound single-acting engine, cylinders A A' A^2, each of two diameters, pistons B B' B^2, working therein, live-steam passages a' a^2 a^3, and exhaust-passages c c' c^3, combined in the manner and for the purpose specified.

6. In a compound single-acting engine, cylinders A A' A^2, each of two diameters, pistons B B' B^2, working therein, live-steam passages a' a^2 a^3, expansion-steam passages b b' b^2, and exhaust-passages c c' c^2, combined in the manner and for the purpose specified.

7. In a compound single-acting engine, cylinders A A' A^2, each of two diameters, pistons B B' B^2, expansion-steam passages b b' b^2, working therein, and exhaust-passages c c' c^2, combined in the manner and for the purpose specified.

407,185. TYPE-WRITING MACHINE. WILLIAM H. BLLING, Cleveland, Ohio. Filed Jan. 24, 1887. Serial No. 225,408. (No model.)



Claim.—1. In a type-writer, the main frame, a movable frame supported in transverse guides on said main frame, a letter-spacing carriage supported in transverse guides on the movable frame, and a line-spacing carriage supported in longitudinal guides on the letter-spacing carriage, all combined and operating substantially as set forth.

2. In a type-writer, a letter-spacing carriage and a line-spacing carriage supported in guides at right angles to one another, in combination with a printing-table formed in two separate sections supported on the line-spacing carriage, and levers, as 89, pivoted beneath said table and connected by levers and links with the sections of the table to raise and lower the same, substantially as set forth.

3. In a type-writer, a letter-spacing carriage and a line-spacing carriage one upon the other, in combination with a sectional printing-table, main lever, as 86, levers, links, and evener, as 89 90 91, respectively, a yoke with arms and links connecting the leaves of the table and the levers 89, and the cross-bars 92 and 93, substantially as set forth.

4. In a type-writer, a letter-spacing carriage having a cross-bar, as 92, attached thereto, and a line-spacing carriage having a bar, as 93, attached thereto, in combination with a printing-table formed in sections longitudinally, and levers, as 89, and connecting-links, with a main operating-lever to operate the same for pressing the printing-table up to the cross-bars 92 93, substantially as set forth.

5. In a type-writer, a printing-table, a fixed plate having an opening over said table, and a series of radial and concentric slots 8 9 about said opening, in combination with a standard adjustable in said slots, type-arms pivoted on said standards having hooks, as 15, keepers, as 16, and lips, as 18, to guide them on the standards, substantially as set forth.

6. In a type-writer, a fixed plate above the printing-table, with an opening over said table, said plate having radial and concentric slots 8 9, standards secured to said plate through said slots, in combination with type-arms pivoted to said standards, stops and guides for said arms connected with said standards, type-hammers on said arms having each a longitudinal slot, and a rod working in said slot, and a slot in the type-arm for reversing said hammer when lowered to strike, substantially as set forth.

7. In a type-writer, a type-arm and a type-hammer pivoted to the said arm, in combination with an inking-carriage, and an inking-pad behind said hammer, and a spring attached to the inking-carriage frame to engage the type-arm and hold the type normally out of contact with the inking-pad, substantially as set forth.

8. In a type-writer, a type-arm having a curved slot, as 22, in combination with a type-hammer having a slot, as 23, and pivoted on said arm, and a rod having one end bent and passing through said slots, substantially as set forth.

9. In a type-writer, a supporting-frame, an inking-carriage supported on rollers in said frame and having an inking-pad on its outside and gear along its edge, in combination with an actuating-wheel meshing with the gear on said carriage, and connections between said gear and the spacing-carriage, whereby the inking-carriage is rotated by the spacing-carriage, substantially as set forth.

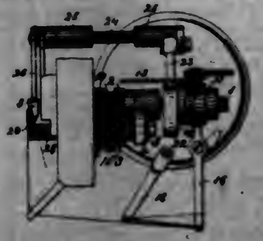
10. In a type-writer, a type-arm having a curved slot 22, in combination with a type-hammer pivoted, as at 20, and having a straight slot 23, and a rod pivoted on a different center from the type-arm and having its end working in said slots, substantially as set forth.

11. In a type-writer, the combination of a track-frame, as 97, of circular form, a circular carriage thereon, anti-friction rollers 96, supporting the carriage, removable plate 98 on the frame, inking-pad 94, and gear 100 on the said carriage, pinion 101, meshing with the said gear, retracting-drum 102, and a cord on the drum actuated by the line-spacing carriage, substantially as set forth.

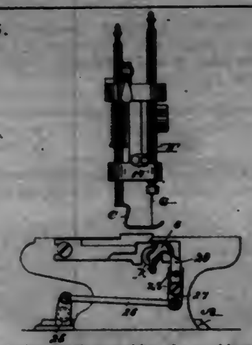
12. In a type-writer, the letter-spacing carriage and the line-spacing carriage, one supported on the other, in combination with a printing-table formed in sections longitudinally, and having means to operate the same, consisting in yoke-arms 82, connecting posts 83 and ears 87 on the table-sections, links 88, likewise connecting said parts below the yoke-arms, main lever 86, levers 89, and links 90, and evener 91, connecting said levers, and links 85, uniting levers 89, and projecting yoke-arms 84, substantially as set forth.

13. In a type-writer, a circular inking-pad constructed to be rotated around its axis, type-levers with reversed type striking against said pad, and ink-distributing rolls at intervals between said type-levers, substantially as set forth.

407,186. SEWING-MACHINE. HENRY H. PEPER, Philadelphia, Pa., assignor of one-half to Thomas A. Pearce, same place. Filed Aug. 30, 1888. Serial No. 284,115. (No model.)



407,186.



Claim.—1. In a sewing-machine, the combination, with the reciprocating needle, of the driving-shaft having a socket in one end, a shaft carrying the hook or looper fitted in said socket, gearing on the driving and hook shafts, gearing meshing with said gearing for driving the hook and driving-shafts at different speeds, and a sliding looper operating in conjunction with the needle and rotary hook or looper, substantially in the manner and for the purpose described.

2. In a sewing-machine, the combination, with the reciprocating needle, of the driving-shaft having one end socketed, said shaft also carrying gearing, a hook-shaft carrying a gear-wheel fitted in the socket of the driving-shaft, and gearing meshing with the gearing of the looper and driving-shaft for imparting different speeds thereto, substantially in the manner and for the purpose described.

3. In a sewing-machine, the combination, with the reciprocating needle, of a driving-shaft, a hook-shaft having a journal-bearing in said driving-shaft, a stud parallel with said driving and hook shafts, meshing gearing on said driving and hook shafts and said stud, one of said gear-wheels on said stud being of twice the diameter of the meshing gear-wheel on the hook-shaft, substantially as and for the purpose set forth.

4. In a sewing-machine, the combination of a reciprocating needle, a driving-shaft and a hook-shaft carrying gear-wheels, a stud carrying a gear-wheel of different diameter from those on the driving-shaft and hook-shaft, gear-wheels on the stud meshing with the gear-wheels on the driving and hook shafts, and a sliding looper operating in conjunction with the revolving looper and needle, substantially in the manner and for the purpose described.

5. In a sewing-machine, the combination of the driving-shaft carrying gear-wheels, a hook-shaft having a bearing in an end of said driving-shaft, a stud parallel with said shafts, meshing gearing on said shafts and stud, substantially as described, an eccentric on the driving-shaft, a band encircling the same and having an arm, a crank-shaft, a link, and a pivoted lever carrying a curved looper at one end, substantially as and for the purpose set forth.

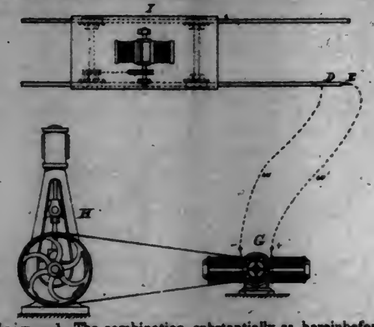
407,187. GLASS-FURNACE. ANDREW FERRARI, Glassborough, N. J., assignor, by mesne assignments, to the Whitney Glass Works, of New Jersey. Filed Sept. 15, 1887. Serial No. 249,741. (No model.)



Claim.—1. A glass-furnace consisting of a fire-box, a batch-chamber with a separate front wall from the back wall of the fire-box, and a bridge forming a top passage and a lower channel, a pot-chamber communicating with said batch-chamber by said passage and channel, a stack above said pot-chamber, and side chamber leading from top passage to said stack and having valves therein, said parts being combined substantially as and for the purpose set forth.

2. A glass-furnace consisting of a fire-box, a batch-chamber with a bridge having an air-space in the same, said bridge forming a top passage and a lower channel, a pot-chamber in communication with said passage and channel, and side chambers provided with valves and leading from said top passage to a stack above the said pot-chamber, the floor of the lower channel being on a level with the floor of the batch-chamber and below that of the pot-chamber, and the air-space in the bridge being above the lower channel, said parts being combined substantially as described.

407,188. ELECTRIC RAILWAY. STEPHEN D. FIELD, New York, N. Y., assignor to David Dudley Field, trustee, and Stephen J. Field, Cyrus W. Field, Henry M. Field, and Stephen D. Field. Filed Mar. 10, 1890. Serial No. 4,732. (No model.)

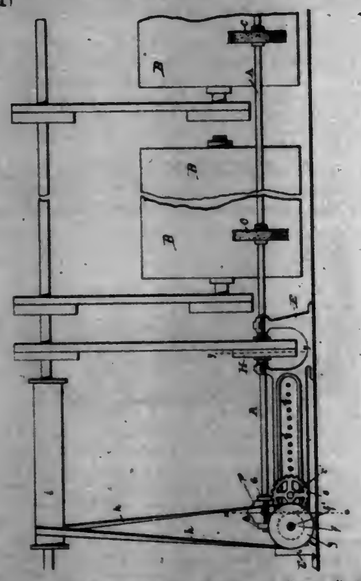


Claim.—1. The combination, substantially as hereinbefore set forth, of a stationary dynamo-electric generator driven by a suitable motor, a circuit of conductors composed in part of an insulated or detached section of the line of rails of a railroad-track, a wheeled vehicle movable upon or along said insulated section of track, an electro-magnetic motor mounted upon said vehicle for propelling the same and included in said circuit of conductors, and a circuit-controlling device placed upon said vehicle.

2. The combination, substantially as hereinbefore set forth, of a railway carriage or vehicle propelled by an electro-magnetic motor mounted thereon, with a continuous hollow chamber inclosing an insulated electric conductor and provided with a longitudinal slot to permit the entrance of an arm projecting from said carriage, so as to form a traveling electric connection with said insulated conductor.

3. The combination, substantially as hereinbefore set forth, of a wheeled carriage or vehicle, an electro-magnetic motor mounted thereon, and a yielding or frictional mechanical connection between the driving-wheels of said vehicle and the electromotor.

407,189. CLEANER FOR CARDING-CYLINDERS. CHARLES H. FOSS, Tewksbury, Mass. Filed Nov. 16, 1888. Serial No. 291,074. (No model.)



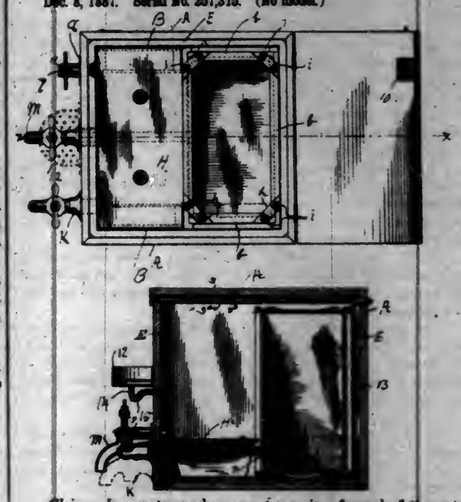
Claim.—1. In mechanism for stripping carding cylinders or combs, the combination, with the rotary shaft carrying toothed wheels, of the carriage applied to said shaft and having a mangle-rack and pinion-actuating mechanism, substantially as and for the purposes hereinbefore set forth.

2. In mechanism for stripping carding cylinders or combs, the combination, with the traveling shaft, the toothed wheels on said shaft, and the carriage or head having a pinion, of the table having a rack engaging said pinion, a guiding slot or way receiving one end of the shaft of said pinion, and driving mechanism for said pinion, substantially as and for the purpose set forth.

3. The combination of the traveling shaft, the stripping-wheels thereon, the shaft-carriage D, provided with mangle-pinion *e*, pinions *e f*, and pulley or wheel *g*, the driving belt and cylinder for said pulley *g*, and the mangle-rack *d* and its supporting-frame, substantially as and for the purposes hereinbefore set forth.

4. In a mechanism for stripping carding cylinders or combs, the combination of the traversing head or carriage carrying the rotary traveling shaft, the toothed or card-clothing-armed wheels arranged upon said shaft alongside of the carding cylinders or combs, the driving-pulley for imparting rotary motion to said shaft, having a splined connection with the latter, the carriage-supporting table, the mangle-rack and its engaging-pinion applied to the carriage-supporting table and the carriage, respectively, the intergearing pinions, one being on the shaft of the aforesaid pinion, the pulley or wheel upon the shaft of the other of said pinions, and the driving belt and cylinder for said wheel, substantially as specified.

407,190. WATER-COOLER. MERRITT S. FOYE, Lynn, Mass. Filed Dec. 8, 1887. Serial No. 257,315. (No model.)



Claim.—In a water-cooler, an outer casing formed of the outer and inner walls A B, having an air-space E between them and constituting an ice-chamber, a drip-faucet K, leading from said ice-chamber, a water-tank within the casing having a pipe leading therefrom through the ice-chamber to the outside, said outer casing having an opening through it for the admission of outside air to the ice-chamber and air-space E, and exhaust-openings at the bottom thereof from the ice-chamber and air-space E, respectively, whereby the cold air may pass out and the temperature of the receptacle be regulated, substantially as described.

407,191. HORSE-DETACHER. GEORGE C. FRENCH, Crane's Mills, Pa. Filed Feb. 26, 1889. Serial No. 301,214. (No model.)

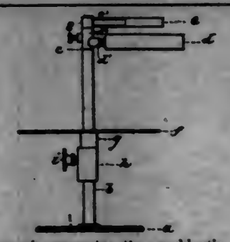


Claim.—The combination, with the lever for actuating the thill-coupling, of the spring-holder consisting of the spring metal plate e^3, having one apertured right-angular arm e' clipped to the front axle, the outer free end of said plate having the recess *g*, formed in part by the flange *h* at its upper end and the lip *i* at its lower end, substantially as shown and described.

407,192. MICROSCOPE. STILES FROST, Newton, Mass., assignor to George Frost, same place. Filed Nov. 5, 1888. Serial No. 290,067. (No model.)

Claim.—1. In a microscopic apparatus, the combination of a standard, lenses *d e*, having arms of different lengths, a disk upon said standard, and a slide and thumb-screw, said slide being under and independent of said disk, whereby the disk may be rotated without disturbing the focus of the lenses, substantially as set forth.

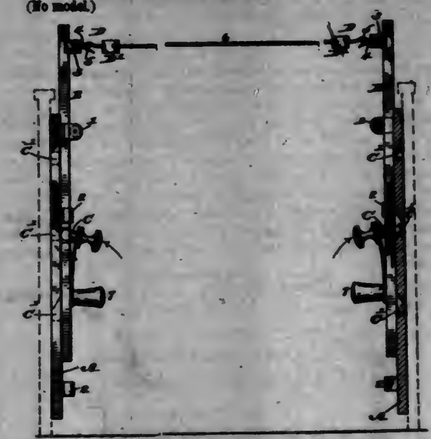
407,192.



2. In a microscopic apparatus, the combination of a standard, the lens *e* and its frame and arm, the tube d^3, the lens *d* and its supporting-arm *d'*, secured to said tube nearer to one of its ends than to the other end, and a disk *f*, adjustably supported upon the standard, substantially as described.

3. In a microscopic apparatus, a lens *d*, with arm which rotates around and also has a vertical movement on the standard *b*, with a thumb-screw *s* on said arm to hold the lens *d* at any place on the standard *b*, with the disk *f* permanently attached to the standard *b*, as shown and described.

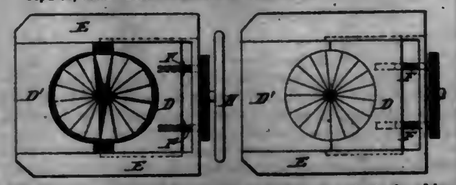
407,193. CLOTHES-LINE SUPPORT AND HOLDER. JOSEPH H. GARAND, Philadelphia, Pa. Filed Sept. 27, 1888. Serial No. 286,066. (No model.)



Claim.—1. A clothes-line support and holder consisting of stationary posts, each with a roller and guides thereon and having openings therein, vertically-movable posts within said guides and between said rollers and stationary posts, a spring-catch secured to said movable posts in fixed position, a cross-bar secured to the upper end of each of said movable posts and provided with eyes, and a line-holder consisting of bars with openings and hooks, said parts being combined substantially as described.

2. Posts A and B and the cross-heads 3, in combination with the line-holder D, having cross-bars D', and the hooks and eyes 5 4, connected with said bars and heads, substantially as and for the purpose described.

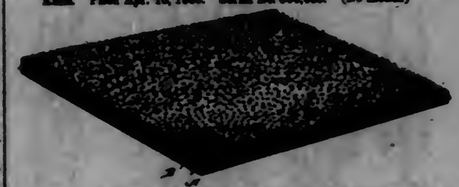
407,194. METHOD OF MAKING ROLLERS FOR JUTE-SLIVERING MACHINES. HOWARD P. GARLAND, San Francisco, Cal. Filed Sept. 10, 1888. Serial No. 284,977. (No model.)



Claim.—1. The herein-described improved method of making wheels or rollers for use in jute-slivering and similar machines, consisting, essentially, in first producing a series of wedge-shaped sections or segments sufficient to form a complete wheel, then in interposing between any two adjacent sections an extra section, then in forcing the sections together, and finally securing the sections together, to form a complete wheel, substantially as described.

2. The herein-described improved method of making wheels, disks, or rollers for use in machines for slivering jute and like purposes, consisting, first, in providing a series of narrow wedge-shaped wooden sections having the grain or fiber lengthwise, said sections being sufficient to form a complete wheel, then in interposing between any two adjacent sections an extra section, then compressing all the sections firmly together, and finally securing the sections together, substantially as described.

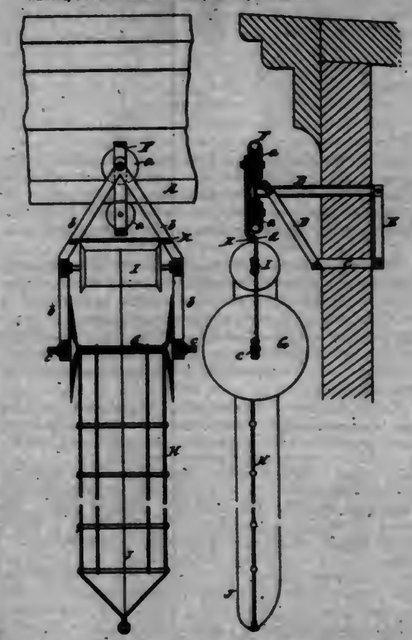
407,195. ROOFING-SHEET. CHARLES M. GARDNER, Wichita, Kans. Filed Apr. 10, 1888. Serial No. 270,603. (No model.)



Claim.—1. As an improved article of manufacture, a flexible water and fire proof fabric composed of a sheet of woven metallic wire having incorporated with it a flexible cement composed of asphaltum, coal-tar, sand, and animal hair, and a tarred sheet of paper, cotton cloth, or tarred felt arranged on the under side thereof, substantially as specified.

2. As an improved article of manufacture, a roofing-sheet composed of a sheet of woven metallic wire having a coating of flexible cement on the upper side of the wire, and a bottom covering of tarred paper, tarred cotton cloth, or tarred felt, substantially as specified.

407,196. FIRE-ESCAPE. JAMES M. GLENN, Cincinnati, Ohio. Filed June 4, 1888. Serial No. 276,003. (No model.)

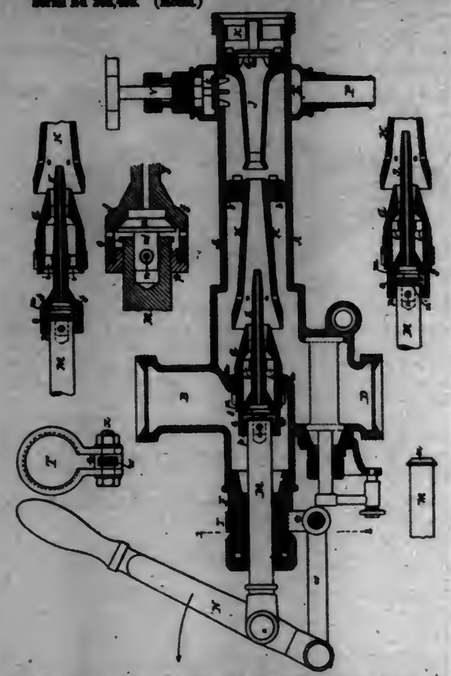


Claim.—1. In a fire-escape apparatus, the combination, with a rail secured to a building, of a roller-frame engaged thereby, a frame provided with a reel carrying a ladder, and a drum carrying one or more endless ropes and secured to said roller-frame, substantially as and for the purpose specified.

2. In a fire-escape apparatus, the combination, with a rail secured to a building and a roller-frame engaged thereby, of an attaching-frame secured to said roller-frame and provided with engaging-dogs and carrying an endless rope, and a ladder-frame adapted to be hoisted from below by said rope and be automatically secured to said attaching-frame, substantially as and for the purpose specified.

3. In a fire-escape apparatus, the combination, with the attaching-frame provided with the dogs *e*, of the ladder-frame having the tube M, provided with the collars *j k*, and carrying the sliding conical pieces *h i*, substantially in the manner and for the purpose specified.

407,197. INJECTOR. JOHN R. GOSHORN, Philadelphia, Pa., assignor to Henry Bolfield and T. Brown Bolfield, same place. Filed Dec. 3, 1888. Serial No. 292,402. (Model.)



Claim.—1. The combination of the forcing-jet tube of the injector, the operating stem or spindle, the valve closing the rear end of the forcing-jet tube and having a projecting lifting-jet tube, and a valve closing said lifting-jet tube, both valves having a slight longitudinal play in respect to the operating stem or spindle, substantially as specified.

2. The combination of the forcing-jet tube, the valve closing the same, and having a projecting lifting-jet tube, and a chamber closed at the rear by a detachable cap, the operating stem or spindle having a flange contained in the chamber of the valve and free to move longitudinally therein to a slight extent, and a supplementary valve closing the lifting-jet tube of the main valve, and also free to move longitudinally to a slight extent independently of the operating-spindle, substantially as specified.

3. The combination of the injector-cap, a split clamp embracing the same, the handle-hanger, and a bolt serving to tighten the clamp and also as a pivot for the handle-hanger, substantially as specified.

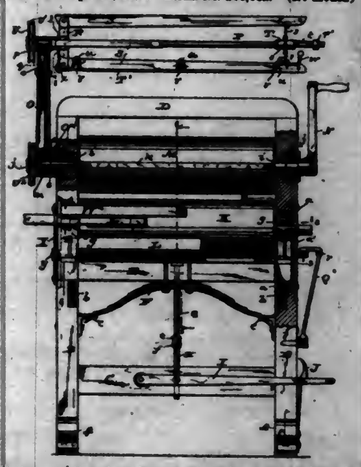
407,198. VAPOR-BURNER. GEORGE S. GRIMWOOD, Greenwich, County of Kent, assignor to the Lenigen Light Company, (Limited,) Westminster, England. Filed Apr. 9, 1888. Serial No. 269,866. (No model.) Patented in England Nov. 14, 1888, No. 16,686; in France Mar. 30, 1888, No. 197,104, and in Belgium Mar. 30, 1888, No. 85,619.

Claim.—1. In a vapor-burner, the combination of a closed oil-reservoir, a burner having a central air-opening in its bottom and supported on a level with the oil-reservoir, a hinged burner-cover having a flame-orifice at the top and containing a perforated inner conoidal casing also terminating at top in a flame-orifice, a steam-coil located in said cover and having at its lower end a steam-jet that projects upward in the center of the burner, a valve for controlling the steam-jet, and a pipe leading from the lower part of the oil-reservoir to the lower part of the burner and provided at its top with an air-inlet to the oil-reservoir, substantially as described.

2. In a vapor-burner, the combination of a closed oil-reservoir, a burner having in its bottom a central air-passage controlled by a valve, a pipe leading from the lower part of the oil-reservoir to the lower part of the burner and communicating therewith only at the lower part of said pipe, which is provided in its upper part with an air-inlet to the oil-reservoir, a hinged burner-cover having a flame-orifice in its top, an inner perforated conoidal casing supported by the cover and also having a flame-orifice in its top, a steam-coil supported in the cover and having at its lower end a steam-jet that projects upward in the center of the burner, a valve for controlling the steam-jet, and a pipe leading from the lower part of the oil-reservoir to the lower part of the burner and provided at its top with an air-inlet to the oil-reservoir, substantially as described.

3. In a vapor-burner, the combination of a closed oil-receptacle, a burner on a level with said reservoir, a pipe leading from the lower part of the reservoir to the lower part of the lamp and having an air-inlet to the reservoir, a hinged burner-cover having a flame-orifice, a perforated and open top inner casing, a steam-generating coil supported in the cover and having at its lower end a steam-jet that projects upward in the center of the burner, a water-tank having a pipe communicating with the steam-coil through the hinge-joint of the cover, and a pump connected to the water-tank, substantially as described.

407,199. LAUNDRY-MACHINE. AXEL R. GUSTAFSON, Hustletta, Wis. Filed Apr. 14, 1888. Serial No. 270,662. (No model.)



Claim.—1. In a laundry-machine, the combination of a suitable frame, a pair of rollers arranged within the frame, an arm pivotally connected to said frame, and a folding clothes-reel in turn connected to the arm, substantially as set forth.

2. In a laundry-machine, the combination of a suitable frame, a pair of rollers arranged within the frame, an arm connected to a journal-bearing of one of the rollers, a bracket connected to said frame on the side opposite the arm, a reel having its shaft journaled in said arm and bracket, and a belt-gear connecting one of the rollers with said reel-shaft, substantially as set forth.

3. In a laundry-machine, the combination of a suitable frame, a pair of rollers arranged within the frame, an arm connected to a journal-bearing of one of the rollers and provided at its free end with a bearing, a shaft arranged in the bearing, a head fast on the shaft, and a series of reel-arms connected to said head, substantially as set forth.

4. In a laundry-machine, the combination of a suitable frame, a pair of rollers arranged within the frame, an arm pivotally connected to a journal-bearing of one of the rollers, a dog for limiting the movement of the arm, a right-angle bearing pivotally adjustable on the free end of said arm, and a reel having its shaft journaled in said bearing, substantially as set forth.

5. In a laundry-machine, a reel that comprises a shaft, a head arranged on the shaft, a series of arms pivotally connected to the head, a sleeve loose on said shaft and provided with hooks to engage eyes on the reel-arms, and a spring-stop for the sleeve, substantially as set forth.

6. In a laundry-machine, a reel that comprises a shaft, a head arranged on the shaft, a series of arms pivotally connected to the head, a sleeve loose on said shaft and provided with hooks to engage eyes on the reel-arms, a spring-stop for the sleeve, and a clamping-rod connected to one of said reel-arms, substantially as set forth.

7. In a laundry-machine, the combination of a suitable frame, an arm pivotally connected to the frame, a folding clothes-reel having one end of its shaft journaled to the arm, another arm secured to said frame and provided with a bearing for the other end of the reel-shaft, a roller arranged on said reel-shaft, and a plate detachably connected to opposing arms of the reel and having a curved portion arranged to come adjacent to said roller, substantially as set forth.

8. In a laundry-machine, the combination of a suitable frame, a roller having fixed bearings in the frame, another roller having its bearings in a vertically-adjustable cross-piece, an elliptic spring clipped to the cross-piece, a support for the spring, a nut, adjustable on said support and impinged against said spring, and means, substantially as described, for adjusting said cross-piece, as set forth.

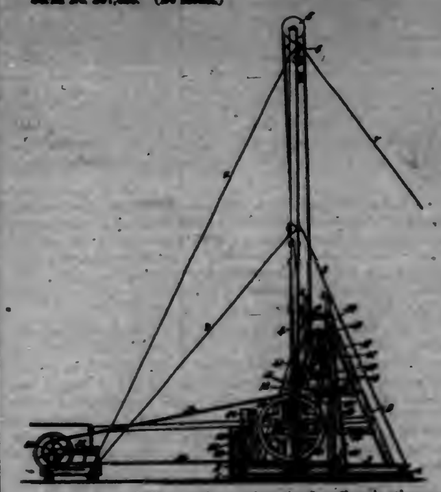
407,200. FIRE-ESCAPE. JAMES F. GUTHRIE, Somerville, Mass. Filed June 21, 1888. Serial No. 277,734. (No model.)

Claim.—A fire-escape consisting of a cage or car adapted to be moved up and down and guided by a tube or chambered guideway and having a weight secured to it by a rope or cord running over a pulley, which weight moves up and down in said tube or guideway, and a piston-head or plunger arranged to slide up and down in a cylinder or casing, for the purpose specified.

407,201. LOOM-SHUTTLE. FRANK J. HALL, Philadelphia, Pa. Filed Apr. 11, 1888. Serial No. 270,269. (No model.)

Claim.—A loom-shuttle having a body formed of wood treated with paraffine, substantially as and for the purpose set forth.

407,202. APPARATUS FOR DRILLING AND PUMPING OIL OR OTHER WELLS. MINNAIR HARDLE, Lima, Ohio. Filed Jan. 21, 1889. Serial No. 297,022. (No model.)



Claim.—1. A drilling and pumping rig for oil and other wells, consisting of a suitable foundation frame-work, a derrick composed of two shear-poles inclined toward each other and rising in substantially a vertical plane from the sides of the foundation, a bull-wheel shaft having a single bull-wheel, a band-wheel shaft combined with and forming part of the bull-wheel shaft, both journaled in uprights which are brought up to or under the derrick, a sand-reel having its axis parallel with the bull-wheel shaft and provided with a friction-pulley and brake-pulley, a secondary or auxiliary shaft geared with the bull-wheel shaft, means for operating the drilling and pumping devices, and clutch-connections between the band-wheel shaft and bull-wheel shaft and between the latter and the secondary shaft, substantially as specified.

2. In a drilling and pumping rig for oil and other wells, the combination, with a derrick composed of two inclining shear-poles, of a band-wheel shaft having a crank-arm, a reciprocating frame arranged and moving in vertical guideways near said shaft, said crank-arm being connected to a wrist-pin on the reciprocating frame by a pitman, and a horizontally-swinging bracket on said frame adapted to carry the temper-screw, substantially as described.

3. In a drilling and pumping rig for oil and other wells, the combination, with a derrick composed of two inclined shear-poles, of a band-wheel shaft having a crank-arm and a reciprocating frame moving in vertical ways near the band-wheel shaft and connected to said crank-arm by a pitman, said frame having connected therewith a pulley for the cable, said pulley being reciprocated by the reciprocation of the frame, substantially as described.

4. In a drilling and pumping rig, the combination, with a suitable foundation-frame having a vertical guideway, of a reciprocating frame moving in said guideway, a bracket-support hinged or pivotally mounted on said reciprocating frame and adapted to carry the temper-screw or pumping-rod, and means for actuating the frame from a crank on the band-wheel shaft, substantially as specified.

5. In a drilling and pumping rig having a suitable foundation-frame provided with a vertical guideway, the combination, with a reciprocating frame moving in said guideway, of a bracket-support hinged or pivotally mounted thereon and adapted to carry the temper-screw or pump-rod, a carrier connected with and operated by said frame and having a grooved pulley mounted on a stud bearing on said carrier, and a pitman connected by one end to a wrist-pin on the reciprocating frame and by the other end to a crank-arm on the band-wheel shaft, substantially as specified.

6. In a drilling and pumping rig having a foundation frame provided with a derrick composed of two poles rising vertically from opposite sides and approaching each other at top, where they are provided with one or more pulleys, the combination, with a bull-wheel shaft and a band-wheel shaft suited and clutch-connected, of a vertically-reciprocating frame moving in a guideway on the foundation, a bracket-support hinged or pivotally mounted on said frame and so constructed as to permit the attachment of the temper-screw or pump-rod, a carrier connected to and reciprocated by the said frame and provided with a grooved pulley to receive the cable, means for locking the bracket-support in any desired position, and a pitman con-

nected to a wrist-pin on the reciprocating frame and to a crank-arm on the band-wheel shaft, substantially as specified.

7. In a drilling and pumping rig having a foundation frame-work provided with a derrick composed of two shear-poles rising from its sides and approaching each other, the combination, with a bull-wheel shaft and band-wheel shaft united and clutch-connected and journaled in supports brought close to said derrick, of a reciprocating frame moving in a vertical guideway, a lever fulcrumed at one end at a distance from the guideway and linked at the other end to the reciprocating frame, a grooved pulley mounted on a stud carried by said lever, and a pitman operated by a crank on the band-wheel shaft and connected to a wrist-pin on the reciprocating frame, substantially as specified.

8. In a drilling and pumping rig, the combination, with a vertical guideway rising from a foundation frame-work, of a reciprocating frame moving in said guideway, a lever fulcrumed by one end at a distance from the guideway and linked at the other end to the reciprocating frame, a pulley journaled on said lever, and means for reciprocating said frame in the guideway for spudding, drilling, or pumping, and other purposes, substantially as specified.

9. In a drilling and pumping rig for oil and other wells, the combination, with a bull-wheel shaft, of a band-wheel shaft entering the same upon an axial line, a clutch splined to the one shaft to connect and disconnect the two, a band-wheel having its arms arranged near the outer edge of its rim and provided with a casting bolted to the inner face of said arms and carrying a crank-arm, and an upright in which the band-wheel shaft is supported, said upright having its outer face beveled off above and below the point of support to accommodate the rim of the band-wheel and give an increased bearing to the shaft, substantially as specified.

10. In a drilling and pumping rig for oil and other wells, the combination, with a bull-wheel shaft having at one end a casting lying partly within the shaft and provided with a flange bolted to its end, of a band-wheel shaft entering said casting axially and carrying a band-wheel, and a clutch splined on said band-wheel shaft between the latter and the band-wheel and engaging with a corresponding clutch-seat in the casting, substantially as described.

11. In a drilling and pumping rig for oil and other wells, the combination, with a vertical guideway rising from the foundation frame-work, of a reciprocating frame moving in said guideway, a supporting-bracket hinged or pivotally mounted on said frame and having two parallel arms separated by a block inserted a little behind the free or projecting ends of said arms, means for locking the said support in any desired position, and a pitman reciprocating the frame carrying the latter, substantially as specified.

12. In a drilling and pumping rig for oil and other wells, a band-wheel having a central casting bolted to its arms and carrying an integral crank-arm, substantially as specified.

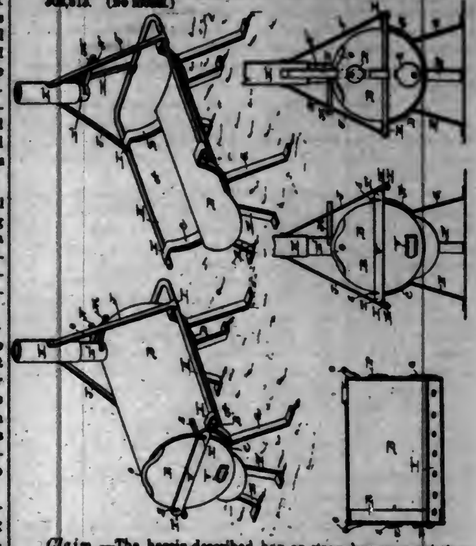
13. In a drilling and pumping rig for oil and other wells, the combination, with a foundation frame and a derrick formed of two shear-poles rising from opposite sides, of an upright guideway supported by inclined braces, a reciprocating frame moving in said guideway and carrying a hinged bracket-support having a locking-yoke, a lever fulcrumed at one end to one of the inclined braces, its other end linked to the reciprocating frame and provided with a grooved pulley journaled on a stud carried by said lever, a band-wheel shaft, and a pitman carried by a crank on the band-wheel shaft and connected to a wrist-pin on the reciprocating frame, substantially as specified.

14. A drilling and pumping rig for oil and other wells, consisting of a foundation-frame, a derrick formed of two shear-poles rising from its sides and inclining toward each other, a bull-wheel shaft and band-wheel shaft combined and journaled in supports brought up to or under the derrick, a secondary or auxiliary shaft arranged at right angles to and detachably geared with the band-wheel shaft, a reciprocating frame moving in a vertical guideway near the band-wheel, a bracket-support hinged or pivotally mounted on said frame, a pitman connecting the crank on the band-wheel shaft with said frame, and a lever fulcrumed at one end and connected at the other end to the reciprocating frame and provided with a pulley mounted on the said lever, substantially as specified.

15. In a drilling and pumping rig for oil and other wells, the combination, with a secondary or auxiliary shaft, of an extended band-wheel shaft carried through and projecting beyond the bull-wheel drum or shaft to receive the gearing connecting it with said auxiliary shaft, a clutch by which the revolution of the band-wheel shaft may be communicated to said auxiliary shaft, a reciprocating lever having a pulley to receive the cable operating the tool, and a pitman operated by the band-wheel shaft and reciprocating said lever, the cable or tool passing through an opening or slot in the maul, and the latter being connected to a cable operated by the secondary shaft, whereby the drill or spudding-tool and maul may be operated simultaneously, substantially as specified.

407,208. HAY OR STRAW BURNER.

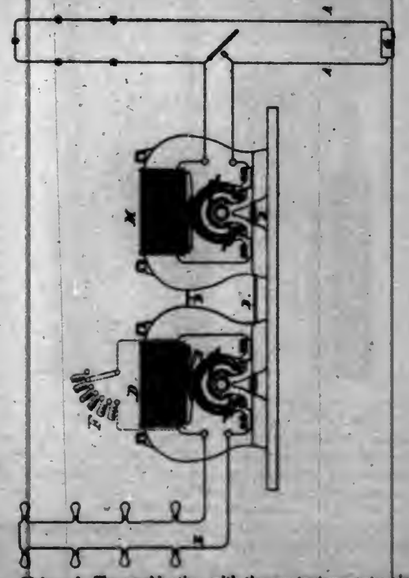
William H. Harris and Gurdon W. Harris, Steele City, Nebr. Filed Mar. 9, 1888. Serial No. 302,612. (No model.)



Claim.—The herein-described hay or straw-burner, consisting of the cylindrical drum, the concave plate on which said drum is seated, the concave yokes supporting said concave-plate, the guard-rail connected to the yokes, the inclined arms rising from the yoke at one end, the pipe supported by said yoke, the pipe-section in said pipe having an arm, and the keeper on one of the inclined supports for engaging the arm on the sliding pipe-section, all of said parts being arranged substantially as shown, and for the purpose described.

407,204. SYSTEM OF ELECTRICAL DISTRIBUTION.

Daniel Higham, Philadelphia, Pa., assignor to the Higham Patent Right Company, Rockland, Me. Filed Aug. 17, 1888. Serial No. 283,091. (No model.)



Claim.—1. The combination, with the constant-current mains, of one or more local stations, each containing a motor in series in the said mains, a separate dynamo driven from the motor, and incandescent lamps or other translating devices in series in the local dynamo-circuit.

2. The combination of the constant-current mains of high tension with one or more local stations, each containing a motor in series with the said mains, a separate dynamo, and incandescent lamps or other translating devices in series in the local dynamo-circuit.

3. The combination of constant-current mains of high tension with one or more local stations, each containing a motor in series with the said mains, a separate dynamo driven from the motor through an electrically-insulated connection, and incandescent lamps or other translating devices in series in the local dynamo-circuit.

407,205. FLUID-COMPRESSOR.

Benjamin Hill, South Norwalk, Conn. Filed Apr. 15, 1886. Serial No. 307,574. (No model.)



Claim.—1. In a fluid-compressing apparatus, the combination of a governor adapted to control the speed of the motor, a piston and cylinder, one side of the piston open to the pressure of the fluid and with a reactive resistance upon the piston in the opposite direction, mechanism between the said piston and the governor for imparting rotation to said governor, and a speed-controller between said mechanism and said piston, substantially as described, and whereby the movement of the said piston under varying pressure of the fluid correspondingly varies the speed of the governor.

2. In a fluid-compressing apparatus, the combination of a cylinder, a piston in said cylinder free for longitudinal movement, a resisting-spring upon one side of the piston, the other side of the piston open to the fluid-pressure, a shaft in connection with said piston and movable longitudinally therewith, a governing mechanism, substantially such as described, for imparting revolution to said governor, and a speed-controller in connection with said piston-shaft between the said governor and said mechanism, substantially as described.

3. In a fluid-compressing apparatus, the combination of a cylinder, a piston in said cylinder free for longitudinal movement, a resisting-spring upon one side of the piston, the other side of the piston open to fluid-pressure, a shaft in connection with the said piston and arranged to revolve, a disk adapted to receive revolution from the compressor-motor, the axis of said disk at substantially right angles to the axis of said piston-shaft, a friction-wheel on the said piston-shaft and arranged to work upon the surface of the said disk, whereby the said piston-shaft receives revolution from said disk, the said friction-wheel movable radially on the surface of said disk according to the movement of said piston, and a governor in connection with said piston-shaft, whereby the rotation of the piston-shaft is imparted to the said governor, substantially as described.

4. In a fluid-compressor, the combination of two cylinders, a piston in each of said cylinders, a resisting-spring against each of said pistons, the piston of one cylinder open to the inlet-pressure, the corresponding side of the piston of the other cylinder open to outlet-pressure, a shaft connecting said pistons, a governor mechanism, substantially such as described, to impart revolution to said governor, and a speed-controller in connection with said piston-shaft, substantially as described, which, under the longitudinal movement of the pistons, produced by either the inlet or outlet pressure, will correspondingly vary the revolution of the governor.

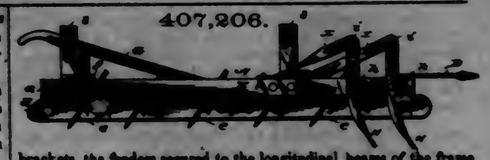
407,206. COMBINED HARROW AND CULTIVATOR.

John S. Rider, Oakland, Iowa. Filed Mar. 9, 1889. Serial No. 302,662. (No model.)

Claim.—1. The cultivator-frame composed of the two parallel beams, the arched brackets connecting the same and terminating in pintles, as shown, in combination with the harrow-sections hinged to the said brackets on opposite sides of the cultivator-frame, substantially as specified.

2. The combination, with the cultivator-frame, of the arched





brackets, the fenders secured to the longitudinal beams of the frame on the inner sides thereof, and the outer harrow-sections removably hinged to the pintles of the said brackets, substantially as specified.

3. The combined harrow and cultivator described, consisting, essentially, of the two longitudinal beams, the arched brackets securing the same to form a passage for listed corn, the fenders secured to the inner sides of the longitudinal beams, the lateral harrow-sections hinged to the brackets, and the cultivator and harrow sections carrying, respectively, a pivoted plow provided with a break-pin, substantially as specified.

407,207. MILK DELIVERY AND SHIPPING CAN.

Charles E. Herman and Thomas H. McCramer, McCook, Nebr., assignors of one-half to William O. Russell, same place, and Andrew J. Pate, Denver, Colo. Filed May 13, 1889. Serial No. 310,698. (No model.)



Claim.—1. The combination, with a milk delivery and a shipping can, of a conical displacement and compression plug extending from the top to the bottom of the interior of the can, said plug having a sight-opening in its upper part, the upper edge of the opening being on the same plane with the upper edge of the chamber of the can, as set forth.

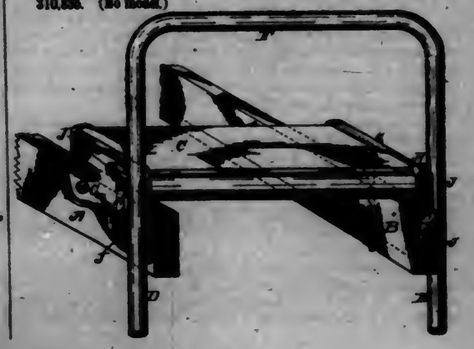
2. The combination, with a can having a conical top, of a hollow conical displacement and compression plug open at one end extending from the top to the bottom of the interior of the can, said plug having a sight-opening with its upper edge on the same plane with the converging inner edges of the top of the can, and a screw-threaded sleeve on its upper end having a packing thereon, and fitting a screw-threaded flange extending from the top of the can, as set forth.

3. The combination, with a conical top, of a two-part conical plug extending from the top to the bottom of the can, the upper cone having a sight-opening at its upper edge, and open at each end and extending into the can from the top, and the lower or extension cone being secured within the lower end of the open cone and extending to the bottom of the can, as set forth.

4. The combination, with a can, of a two-part conical plug extending from the top to the bottom of the can, the upper cone being open and having a sight-opening in its side and a screw-threaded sleeve secured on its upper end working in a vertical flange of the can, and its lower end extending into the center of the can and provided with an internal screw-threaded sleeve, the lower or extension cone being closed and having a screw-cap on its upper end working within the sleeve on the lower end of the upper cone, said screw-cap having a stud thereon for engaging with a key for operating the cone, as set forth.

407,208. BED-FRAME.

Benjamin G. Hopkins, Hartford, Conn., assignor to Henry Roberts, same place. Filed May 18, 1889. Serial No. 310,836. (No model.)



Claim.—A bed-frame consisting of the side pieces A and B, the end piece C, the posts D and E united by the reach F, the corner-pieces G, each of which is provided with a flange H, having the open recesses I, and the bolts J, passing through the posts parallel with the side pieces A and B and fixed in those open recesses, all substantially as described.

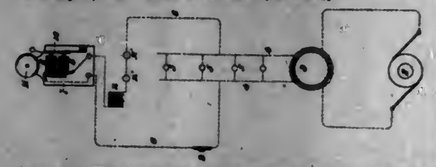
407,209. FIREMAN'S HAT. JAMES P. HOPKINS, Somerville, Mass. Filed Jan. 30, 1889. Serial No. 297,905. (No model.)



Claim.—1. A fireman's hat having an outer metallic crown, a hood or brim, and an inner felt crown having its edge secured between said outer metallic crown and hood or brim, and between which and said outer crown a space is formed, substantially as set forth.

2. As a new article of manufacture, a fireman's hat having an outer crown composed of corrugated sheet metal and intersecting metal ribs, and having a flange *g*, the hood or brim *c*, and the inner crown having its edge secured between the flange *g* and hood or brim *c*, as set forth, a space being formed between said crowns.

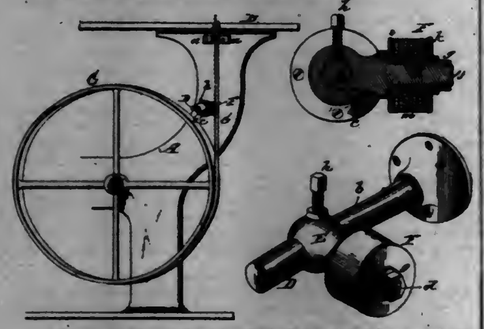
407,210. LIGHTING SYSTEM. JOSEPH H. HUNTER, Pittsburg, Pa. Filed May 11, 1889. Serial No. 310,439. (No model.)



Claim.—1. The combination of an electrical generator of alternating currents, a lamp-circuit, and an alarm or signal having a magnet or magnets connected in parallel with the lamp-circuit and having a vibratory armature, substantially as and for the purposes described.

2. The combination of an electrical generator of alternating currents, a lamp-circuit, an alarm or signal having a magnet or magnets connected in parallel with the lamp-circuit, and resistance devices arranged in circuit with said magnets, substantially as and for the purposes described.

407,211. GUARD FOR BAND-SAWS. ASA P. HYDE, Oxford, N. Y. Filed Jan. 19, 1889. Serial No. 296,864. (No model.)

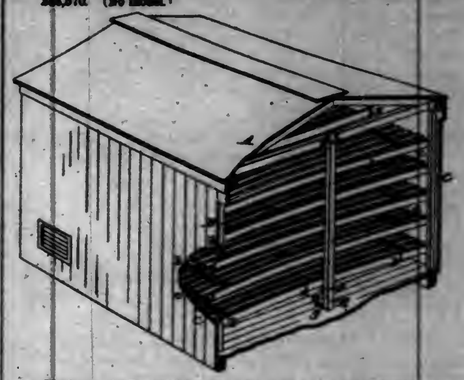


Claim.—1. The combination, with the band-saw frame and saw, of the lateral arm provided with means for securing it to the frame, the stem projecting at right angles to said arm and having a head provided with an opening through which said arm is passed, said stem being adjustable on said arm, and a roller carried by said stem, substantially as shown and described.

2. The combination, with the band-saw frame and the saw, of the lateral arm provided with means for securing it to the frame, and grooved longitudinally, as shown, the stem projecting at right angles to said arm and having a head provided with an opening through which said arm is passed, a roller carried by the outer end of said stem, and a set-screw passed vertically through the head of the stem and working in the groove of the arm, substantially as shown and described.

3. A guard for band-saws, consisting of a stem, a clamp *i*, having a hub *l*, through which the said stem is passed, the clamp *k* on said stem, the plurality of rings on the stem between the said clamps, and the nut *g*, all substantially as and for the purpose specified.

407,212. CAR. SIMEON T. JENKINS, Baltimore, Md., assignor to Jenkins, McGuire & Co., same place. Filed Oct. 19, 1888. Serial No. 288,570. (No model.)



Claim.—1. In combination with a car or other conveyance, a detachable and removable tray formed of elastic slats with intervening open spaces, and thereby adapted to support fruit, &c., to permit the passage of air between the slats and to take up the jar and concussion incident to the motion of the vehicle.

2. In combination with a car or other vehicle provided with suitable supports, a folding tray or trays consisting of a series of slats connected one with another, but having intervening open spaces for the passage of air, said trays resting upon but being readily removable from their supports.

3. In combination with a car or other conveyance having horizontal ledges or supports on its walls, a tray or trays composed of slats slightly longer than the space between the end supports of the tray, whereby said slats are caused to assume a curved or arched form when placed in position.

4. In combination with a car or other conveyance having horizontal strips or ledges *c* and vertical guides D, trays B, having slats *a*, longer than the space over which the trays extend, substantially as and for the purpose set forth.

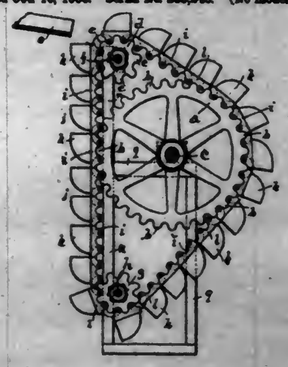
5. In combination with a car or other conveyance provided with ledges *c* and guides D, trays B, having the ends of their slats supported by said ledges and guides, and horizontal bars *d*, extending beneath the trays at their middle.

6. In combination with a car or like conveyance having horizontal supporting-ledges *c* and vertical guides D, trays B carried thereby, horizontal bars or timbers *d*, provided with hooks *e*, removable post E, and eyes or staples *f*, carried by said post and by the wall of the conveyance to receive the hooks *e*.

7. In combination with a car or like conveyance provided with supporting-ledges *c*, trays B, resting at their ends upon said ledges, bars *d*, extending beneath the trays at a point between the ends thereof, supporting-posts for said bars *d*, and springs or elastic supports for said posts.

8. In combination with the trays B and end supports therefor, intermediate supporting-bars *d*, provided with T-heads, and supports E, having sockets of like form provided with spring-supports *f*, substantially as described and shown.

407,213. WATER-MOTOR. FERDINAND JOHNSON, New London, Pa. Filed Oct. 16, 1888. Serial No. 288,240. (No model.)



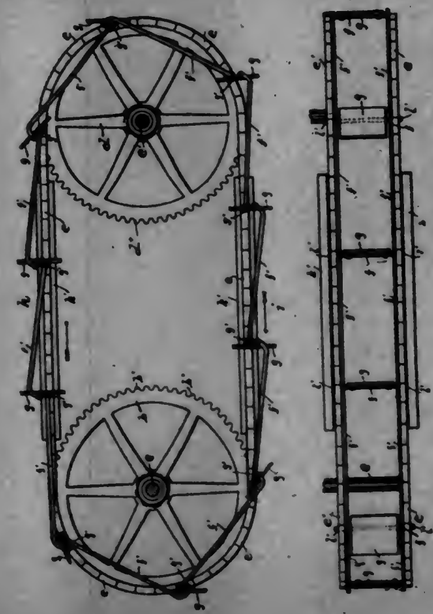
Claim.—1. In a water-motor, the combination, with the wheels *d*, provided on their peripheries with teeth or engaging devices, and the wheels *g*, located below the said wheels *d* and provided on their peripheries with teeth or engaging devices, and the central wheels *c*, suitably mounted and with one edge of their peripheries in alignment with one edge of the peripheries of the said wheels *d* and *g*, and provided with radially-projecting teeth, the endless chains *i*, passed over the peripheries of the said wheels and engaging with the teeth thereon and carrying a series of buckets *k*, and having the guides *m*, projecting laterally from the sides of its sections or links, of the vertical slides *n* on each side of the vertical run *j* of the chain, and provided with the grooves *p*, carrying the said side pieces *m*, substantially as set forth.

2. In a water-motor, the combination, with the frame *g*, the upper supporting-wheels *d*, and the lower supporting-wheels *g*, each provided on its periphery with radial teeth or engaging devices, of the central wheel *c*, provided on its periphery with suitable teeth, and suitably mounted in a position between and with one edge of its periphery in vertical alignment with one edge of the peripheries of the said wheels *d* and *g*, the endless chains *i*, carrying buckets *k*, passed over the said wheels *d*, *g*, and *c*, and engaging with the said teeth thereon; and the trough or flume *o*, substantially as and for the purpose set forth.

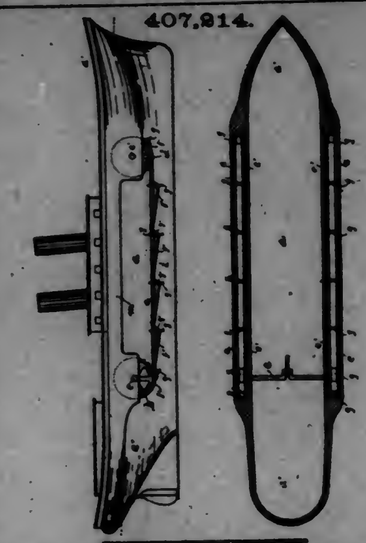
407,214. DEVICE FOR PROPELLING AND VENTILATING SHIPS. FERDINAND JOHNSON, New London, Pa. Filed Oct. 30, 1888. Serial No. 289,571. (No model.)

Claim.—1. In a device for propelling vessels, the combination, with the hull, the endless gear-chains mounted on sprockets and arranged with upper and lower horizontal runs between the said sprockets, the cross-rods *f*, with their ends passed through the chains and carrying the blades *g*, pivotally secured thereto, the brace-rods *f'*, with one end pivotally secured to the blades below their pivotal supports and with their opposite ends extended forward and pivoted to the chains, of the lugs *F'*, projecting laterally on opposite sides of the chains, and the horizontal guide-pieces *k* and *k'*, supported on opposite sides of the chains and provided with the grooves *l* to receive the lugs *F* and support the chains on the said horizontal runs thereof, substantially as set forth.

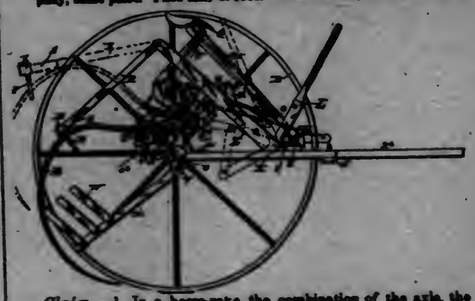
2. In a device for propelling and ventilating vessels, the combination, with the hull *a*, the endless chains *c* and *c'*, mounted on supporting-wheels and provided with an upper horizontal run *h* and a lower horizontal run *i* between the supporting-wheels, the blades *g*, supported in a perpendicular position between and carried by the said chain, of the casing *m*, inclosing the upper run *h* of the said chains, and having its forward end extended downward and sealed by the water, and the air-pipe *n*, opening into the forward end of the said casing and leading to the interior of the hull, substantially as and for the purpose set forth.



407,214.



407,215. HORSE-RAKE. JOHN A. JOHNSON and ELIAS G. STARKS, Madison, Wis., assignors to the Fuller & Johnson Manufacturing Company, same place. Filed May 5, 1888. Serial No. 272,992. (No model.)



Claim.—1. In a horse-rake, the combination of the axle, the castings *c'* secured thereupon, the rod secured to the castings, the inverted-U-shaped hollow lugs on the rod, eyebolts in said lugs, the rake-teeth extending through the lugs and the eyebolts, and nuts on the eyebolts bearing against the outer sides of the lugs, substantially as and for the purpose specified.

2. In a horse-rake having the ordinary teeth and levers for operating the same, the combination, with the axle, of a casting secured to each end having ears and a slide guard pivotally secured near its upper end to each of the ears, the extreme upper end of each guard being adapted to bear against the under side of the casting and prevent the opposite end of the guard from bearing upon the ground, substantially as and for the purpose set forth.

407,216. UMBRELLA-RUNNER. GERRATH JOSEPH and ELLIS I. O'NEILL, Philadelphia, Pa. Filed Sept. 20, 1888. Serial No. 286,045. (No model.)



Claim.—1. An umbrella-runner consisting of a divided or split band or sleeve and a clamp connected with the ends of said band or sleeve for contracting said ends, substantially in the manner and for the purpose described.

2. An umbrella-runner divided and having lips on its ends, in combination with a slide engaging with one lip and a lever pivoted to said slide having a cam or eccentric head, which latter engages with the other lip, substantially as described.

3. An umbrella-runner consisting of a divided band or sleeve, lips on the ends of the sleeve, and a clamping device carried by the lips for causing the contraction of the sleeve, substantially in the manner and for the purpose described.

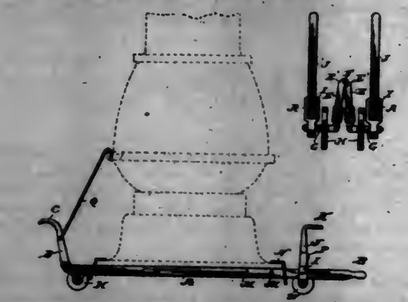
4. An umbrella-runner consisting of a divided band or sleeve, a rod or plate connected to one end of the sleeve and passing through the other end thereof, and a cam or eccentric pivoted to the rod and operating against one end of the sleeve to cause the contraction of the sleeve, substantially in the manner and for the purpose described.

407,217. HYDRAULIC JACK. FRANK I. JOYCE, Dayton, Ohio. Filed Aug. 27, 1888. Serial No. 283,606. (No model.)



Claim.—The combination, in a hydraulic jack, of a base-frame provided with a hollow cylinder, a fluid-containing ram-tube sliding lengthwise in the cylinder, a ram-head fixed to the lower end of the ram-tube working along the cylinder and having a longitudinal chamber in communication with the fluid in the ram-tube, a valve in the lower portion of the ram-head, a hollow plunger-rod having a hollow packed plunger working in the ram-head, a valve carried by and located in the packed plunger, and a lateral tube communicating with the hollow plunger and extending from the latter at a point above both the plunger-valve and ram-head to a point nearly or adjacent to the extreme side of the fluid-containing ram-tube for enabling the jack to be used in a horizontal or inclined or perpendicular position, substantially as described.

407,218. COMBINED TRUCK AND CARRIER. FRANKLIN P. KELLER, Savannah, assignor of one-half to Straits F. Champlin, Chicago, Ill. Filed July 17, 1888. Serial No. 280,161. (No model.)



Claim.—1. The parallel carrying-bars, in combination with links connecting said bars, a vertical rule-joint between said links, pivot-connections between said links and bars, and adjustable sliding sleeves fitting over said pivot-connections for rendering them rigid, substantially as described.

2. The parallel carrying-bars, in combination with links connecting said bars, a horizontal pivot-connection between said links, opposing abutting shoulders on the links above said pivot-connection, pivot-connections between said links and bars, and adjustable sleeves sliding on said bars and fitting over said pivot-connections, substantially as described.

3. The parallel carrying-bars, links connecting said bars, and a horizontal pivot-connection between said links, in combination with truck-wheels and a journal for said wheels on said links, substantially as described.

4. The parallel carrying-bars, links connecting said bars, and a horizontal pivot-connection between said links, in combination with journals bearing in said bars at one end and having a pivotal connection with the links at their opposite ends, truck-wheels loosely mounted on said journals, and adjustable sleeves sliding upon the links and fitting over said pivot-connections, substantially as described.

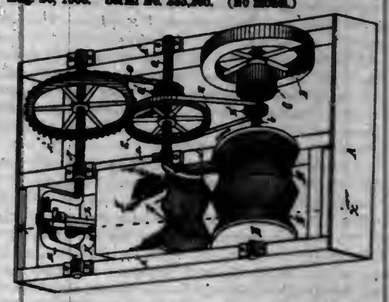
5. The parallel carrying-bars, a vertically-flexible but horizontally-rigid connection between said bars at one end, and wheels journaled on said connection, in combination with adjustable sliding boxes mounted on said bars toward their opposite ends, a vertically-flexible but horizontally-rigid connection between said boxes, and wheels journaled on said connection, substantially as described.

6. The parallel carrying-bars, a vertically-flexible but horizontally-rigid connection between said bars at one end thereof, and wheels journaled on said connection, in combination with adjustable sliding boxes mounted on said bars toward the opposite ends thereof, arms projecting from said boxes terminating in handles, a vertically-flexible but horizontally-rigid connection between said boxes, and wheels journaled on said connection, substantially as described.

7. The parallel carrying-bars, a vertically-flexible but horizontally-rigid connection between said bars at one end, wheels journaled thereon, adjustable sliding boxes mounted on said bars toward the opposite ends thereof, a vertically-flexible but horizontally-rigid connection between said boxes, and wheels journaled on said connection, in combination with adjustable grappling-hooks mounted on said bars between said front and rear wheels, and a sliding connection between said hooks and bars, substantially as described.

8. The parallel carrying-bars, a vertically-flexible but horizontally-rigid connection between said bars at one end thereof, wheels journaled on said connection, adjustable sliding boxes mounted on said bars toward the opposite ends thereof, a vertically-flexible but horizontally-rigid connection between said boxes, and wheels journaled on said connections, in combination with adjustable grappling-hooks mounted on said bars and provided with slots corresponding in size and contour to and through which the bars project, substantially as described.

407,219. CLAY-GRINDING MACHINE. DAVID KENNEDY, Jr., Erie, Pa., assignor of one-half to Erastus B. Lipton, same place. Filed Aug. 20, 1888. Serial No. 283,305. (No model.)



Claim.—1. The combination, in a clay-grinding machine, of a rotating corrugated grinding-cylinder and a corrugated grinding-jaw, with a reciprocating crushing-block operating on tracks above the grinding-jaw, substantially as and for the purpose set forth.

2. The combination, in a clay-grinding machine, of an annularly-grooved and longitudinally-corrugated grinding-cylinder, with an adjustable vertically-grooved and horizontally-corrugated grinding-jaw and a vertically-grooved and horizontally-corrugated reciprocating crushing-block, operating upon tracks above the grinding-jaw, substantially as and for the purpose set forth.

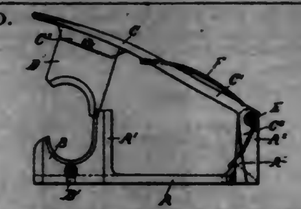
3. The combination, in a clay-grinding machine, of a grinding-cylinder having V-shaped radial grooves and longitudinal corrugations therein, with a grinding-jaw having transverse corrugations and vertical V-shaped grooves to correspond with the radial grooves in the grinding-cylinder, and a reciprocating crushing-block having transverse corrugations and vertical V-shaped grooves to correspond with the radial grooves in the grinding-cylinder, substantially as and for the purpose set forth.

4. The combination, in a clay-grinding machine, of the grooved and corrugated grinding-cylinder B, the hopper B', and the adjustable grinding-jaw G, having a grooved corrugated grinding-face *g*, with the reciprocating block I, having a grooved and corrugated crushing-face J, the pitman L, crank M, and shaft N for operating said reciprocating block I, substantially as and for the purpose set forth.

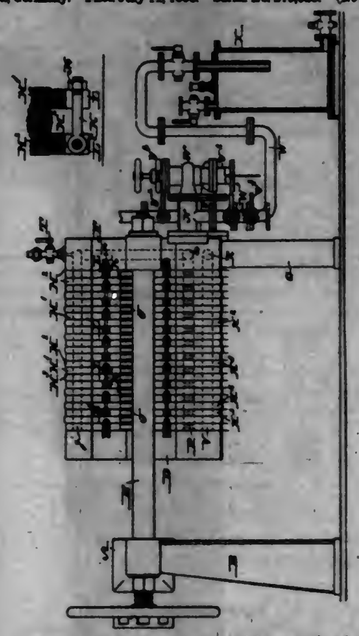
407,220. CIGAR-CUTTER. JOHN M. KIRK, Reading, Pa. Filed Oct. 23, 1888. Serial No. 288,935. (No model.)

Claim.—1. In a cigar-cutter, the combination, with the bed-plate A, having a concave cutter B secured to a high standard A', and standards A^2, with stops A^3 at the opposite end of said bed-plate, of a cutter-lever C, having bifurcated end C', with heel-pieces C^2 pivoted to the standards A^2, and a spring F, secured to the pivotal pin E between said standards A^2, said standard A' serving as a stop for the lever, and all arranged and adapted to operate substantially as set forth.

2. In a cigar-cutter, the combination, with the bed-plate A, having a concave cutter B adjustably secured to a correspondingly-shaped bracket A', one arm of which is extended upward, as described, of a cutter-lever pivoted to the bed-plate and a spring F adapted to raise it, the downward movement of said lever being stopped against the extended standard A', all substantially as set forth.



407,221. FILTER-PRESS. FRITZ KLEINHANS, Schöningen, Brunswick, Germany. Filed July 11, 1888. Serial No. 279,638. (No model.)



Claim.—1. In a filter-press, standards with a cross-head and side rods, the follower D, the cross-head F, with the diagonal passage Q, the filter-plates H^3 H^3, and cake-frames H', said plates and frames being between said follower and cross-head F and having the longitudinal passages P and R, communicating with said passage Q, and the said cake-frames H', having the passages *b*, leading from said passages P and R, and the supply-pipe N, leading into said passage Q, said parts being combined substantially as described.

2. In a filter-press, standards with side rods and cross-head, a follower guided on said side rods, the head F, with passage Q and inlet *a*, the filter-plates H^3 H^3, and cake-frames H', said plates and frames being between the follower and head F and having the longitudinal passages P and R communicating with the passage Q, and the said plates H^3 H^3, having the lower recesses *h*, and the ports *j* and channels *j'*, communicating with said recesses *h*, and the said cake-frames H', having the passages *b*, communicating with the passages P and R, and the supply-pipe N, leading into the passage Q, said parts being combined substantially as described.

3. In a filter-press, the combination of a follower, with the cake-frames H' and filter-plates H^3 H^3, the said frames and plates having longitudinal passages P and R and openings V, and said frames H', having the passages *b*, leading from said passages P and R, and the plates H^3 H^3, having the recesses *h* and communicating ports *l*, filtering plates and cloths between said frames H' and plates H^3 H^3, the head F, with passage Q, communicating with passages P and R, and the supply-pipe N, substantially as described.

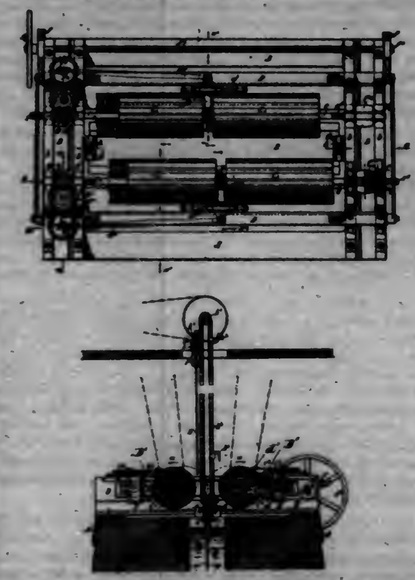
4. The combination of standards with side rods and a cross-head, a follower guided on said side rods, the cross-head F, with passage Q, cake-frames H', and filter-frames H^3 H^3, having passages P and R, the cake-frames having the passages *b*, communicating with said passages P and R, and the plates having recesses *h* and *g*, vertical grooves connecting said recesses and ports *l*, filtering plates and cloths between said cake-frames and filter-plates, and supply-pipe N, leading to said passage Q, substantially as and for the purpose set forth.

5. In a filter-press, the combination of two cake-frames H', having bifurcated lugs L, with a filter-plate between the said frames, the bolt K, and nut M, substantially as described.

6. In a filter-press, the filter cake-frames H', having their inner faces inclined, the filter-plates H^3 H^3, with ports and recesses, substantially as described, the neck H^6, having ribs forming vertical passages communicating with the ports and recesses of said plates, the said plates being secured to said frames so that a plate is between adjacent frames and the plates H^3 H^3 alternate with each other, and each plate having its outer side covered with a perforated sheet or netting, said parts being combined substantially as and for the purpose set forth.

7. In a filter-press, the combination of a follower, with the cake-frames H' and filter-plates H^3 H^3, the said plates having the longitudinal passages P and R and openings V, the plates H^3, having the recesses *h* and communicating passage *l*, filtering material between each of said cake-frames and each of said filter-plates, the head F, with passage Q and passage K', the pipe N, communicating with the said passage Q, and the pipe U, communicating with the passage K' and having the valve U' and cock S, substantially as and for the purpose set forth.

407,222. APPARATUS FOR COATING METALS WITH ZINC OR OTHER METALS. FRIEDRICH W. KNYLER, Unter St. Veit, near Vienna, assignor of one-half to Adalmar Breden, Vienna, Austria-Hungary. Filed June 16, 1888. Serial No. 277,260. (No model.) Patented in Germany Dec. 23, 1884, No. 30,987; in France Dec. 23, 1884, No. 166,109; in Austria-Hungary Jan. 20, 1885, No. 40,949 and No. 3,771, July 8, 1886, No. 15,741 and No. 34,722, Dec. 8, 1886, No. 34,792 and No. 60,901, and Sept. 20, 1887, No. 14,366 and No. 36,793; in Belgium Oct. 16, 1888, No. 79,888, and in England Oct. 19, 1888, No. 12,465.



Claim.—1. In a machine of the class described, the combination, with the pan for containing the molten zinc and a support for the article to be zinked, of vertically-movable endless parallel chain carriers arranged above the pan and provided with hook-bearings for said support, and supporting and driving pulleys for said chain carrier, substantially as and for the purposes specified.

2. In a machine of the class described, the combination, with the pan for containing the molten zinc and a support for the article to be zinked, of vertically-movable endless parallel chain carriers arranged above the pan and having hook-bearings for said support of alternately-reversed position arranged above the pan, and supporting and driving pulleys for said carriers, substantially as and for the purpose specified.

3. In a machine of the class described, the combination, with the pan for holding the molten zinc, of a parallel endless chain carrier provided with hook-bearings *a*, a support for the article to be zinked provided with journals fitting into said hook-bearings, and brushes

arranged on opposite sides of the endless carriers, substantially as and for the purposes specified.

4. In a machine of the class described, the combination, with the pan for containing the molten zinc, of a parallel endless chain carrier provided with hook-bearings of alternately-reversed position, fixed bearings below the chain carrier within the reach of the hooks thereof, and a support for the article to be zinked provided with journals fitting into said hook-bearings, substantially as and for the purpose specified.

5. In a machine of the class described, the combination, with the pan for containing the molten zinc and the traveling carrier for the article to be zinked, of brush-shafts arranged on opposite sides of the carrier, mechanism for revolving the brushes in a direction at right angles to and toward said carrier, and motion-translating mechanism for translating the rotary motion of the brush-shafts into reciprocating motion connected with and operated directly from the brush-shafts, substantially as and for the purposes specified.

6. In a machine of the class described, the combination, with the pan for containing the molten zinc and a traveling carrier for the article to be zinked, of brush-shafts arranged on opposite sides of the carrier, mechanism for moving the same toward and from said carrier, a belt-pulley for and connected with each shaft by a spline or feather, and motion-translating mechanism for translating the rotary motion of the brush-shafts into reciprocating motion connected with and operated directly from the brush-shafts, substantially as and for the purposes specified.

7. In a machine of the class described, the mechanism for imparting lateral motion in opposite direction to the brush-shafts, which consists in the combination, with sliding bearings for said shafts and superposed rack-bars secured thereto, of an intermediate pinion for each pair of rack-bars, said pinions being mounted on the same cross-shaft, substantially as described.

8. In a machine of the class described, the combination, with the brush-shaft and a worm or endless screw connected therewith by a feather or spline, of a crank-shaft, intermediate gearing operated by the endless screw to rotate said crank-shaft, an actuating-arm connected with the brush-shaft, mechanism for imparting a reciprocating motion to the arm, abutments to hold said arm against independent reciprocation on the shaft, and a connecting-rod connecting said arm with the crank-shaft, substantially as and for the purposes specified.

9. In a machine of the class described, the combination, with the brush-shaft, a worm or endless screw connected therewith by a spline or feather, and sliding bearings for said shaft, of a connecting-bar rigidly secured to said bearings, an arm connected with the shaft and reciprocating on the connecting-bar, abutments to hold said arm against independent reciprocation on the brush-shaft, a crank-shaft, intermediate gearing operated by the endless screw to rotate the crank-shaft, and a connecting-rod connecting the crank-shaft with the reciprocating arm, substantially as and for the purposes specified.

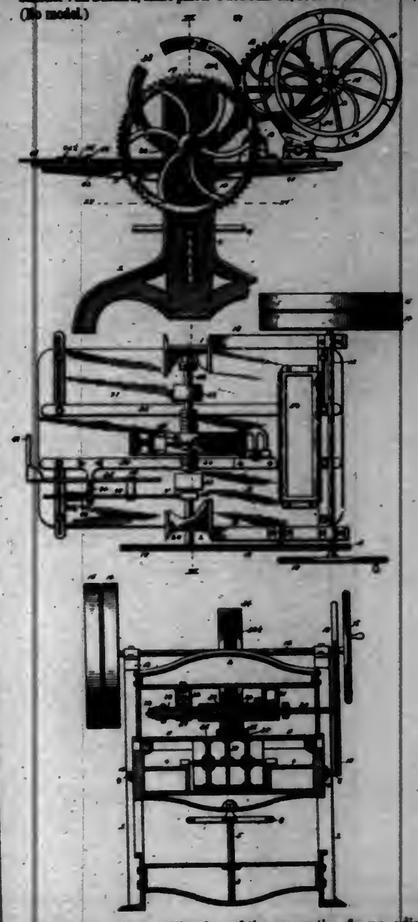
10. In a machine of the class described, the combination, with the brush-shaft *c*, of a worm or endless screw connected therewith by a spline or feather, sliding bearings for said shaft, and a rack-bar and pinion for moving said bearings on their support, of a connecting-bar rigidly secured to the brush-shaft bearings, an arm connected with the shaft and reciprocating on the connecting-bar, abutments to hold said arm against independent reciprocation on the brush-shaft, a crank-shaft, intermediate gearing operated by the endless screw to rotate the crank-shaft, a connecting-rod connecting the crank-shaft with the reciprocating arm and bearings for said crank-shaft, and intermediate gearing rigidly secured to and moving with the brush-shaft bearings, substantially as and for the purposes specified.

11. In a machine of the class described, the combination, with the endless carrier, of a support for the article to be zinked, comprising a supporting-bar and holding-tongues, in combination with mechanism for closing the tongues, consisting of a cam operating on the arms of the tongue-jaws to move said arms in opposite directions and close the jaws, substantially as described.

12. In a machine of the class described, the combination, with the endless carrier, of a support for the article to be zinked, comprising a supporting-bar and a plurality of tongues suspended therefrom, in combination with a cam-shaft *i* and cams *i'* thereon lying between the arms of the tongue-jaws and operating to simultaneously move the arms of all the tongue-jaws in opposite directions to close the jaws when a partial rotation is imparted to the cam-shaft, substantially as described.

13. In a machine of the class described, the combination, with the pan for containing the zinc, and the endless carrier h^2 h^3, provided with hook-bearings at suitable distances apart, whose position is alternately reversed, and the curvilinear bearers i^3, provided with the projection or stop i^7, of the support for the articles to be zinked, provided with journals i^5, fitting into the hook-bearings of the carriers, substantially as and for the purposes specified.

407,223. WOOD EMBOSSING, FILLING, AND BACKING-OUT MACHINE. WILLIS W. KNOWLTON, Fort Scott, Kans., assignor of one-half to Samuel Van Buskirk, same place. Filed Jan. 12, 1889. Serial No. 296,216. (No model.)



Claim.—1. The combination of the supporting-frame, adjustable table supported in the frame, a shaft provided with a cog-wheel, and an embossing-wheel provided with cogs on its inner surface which mesh with the cog-wheel secured to the shaft, and means for rotating said shaft, substantially as and for the purpose set forth.

2. The combination of the supporting-frame, adjustable table supported in the frame, a shaft provided with a cog-wheel, an embossing-wheel provided with cogs on its inner surface which mesh with the cog-wheel on the shaft, said embossing-wheel being provided with an opening 32, and suitable gearing for rotating said shaft and embossing-wheel, substantially as and for the purpose set forth.

3. The combination of an adjustable table, drive-shaft 12, shaft 20, intermediate gearing connecting said shafts, embossing-wheel located on the shaft 20, and a feeding device consisting of the rods 42 45, said rods being adjustably connected to each other, and a collar 40, secured to the shaft 20 and provided with a set-screw 41 for the purpose of operating said feeding device, substantially as described, and for the purpose set forth.

4. As a new article of manufacture, an embossing-wheel provided with cogs on its inner surface and an opening 32, substantially as and for the purpose set forth.

5. As a new article of manufacture, an embossing-wheel provided with cogs on its inner surface and having a depression 33 in said cogs, substantially as described, and for the purpose set forth.

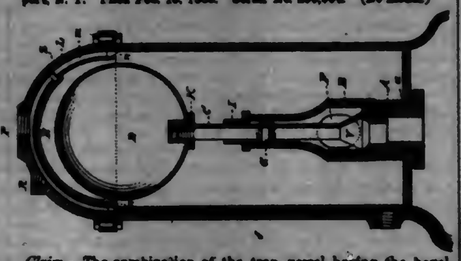
6. The combination of a frame, shaft 20, mounted in said frame, said shaft being in sections, one of the sections being supported by a swivel-bearing 27, in order that said section may be disconnected from the fixed section when it is desired to remove the shaft from the machine, substantially as described, and for the purpose set forth.

7. The combination of the frame 1, table 11, shafts 12 20, embossing-wheel 34, suitable gearing connecting said shafts in order to rotate said embossing-wheel, and a filling device consisting of a box 50, roller 53, situated beneath the box, means for supporting said roller, and a tension-spring 57, connected with said roller, substantially as and for the purpose set forth.

8. The combination of a supporting-frame, sliding frame 4, friction-roller 35, journaled therein, and a stamping device 38 at the center of the friction-roller, substantially as and for the purpose set forth.

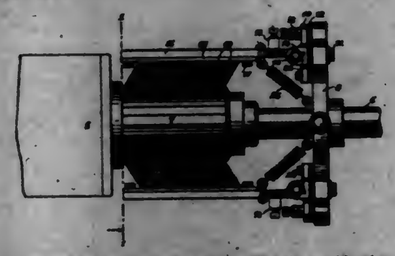
9. The combination of the frames 1 2, shafts 12 20, sliding sleeve 26, gearing-wheels 17 18 19, table 11, adjustable cutter 50, guide 62, supported in a frame 61, and a screw 63, substantially as and for the purpose set forth.

407,224. STEAM OR WATER TRAP. HIRAM F. LELAND, Lockport, N. Y. Filed Feb. 15, 1888. Serial No. 263,964. (No model.)



Claim.—The combination of the trap-vessel having the bevel-faced valve-seat, the tubular guide connected to said seat, the bevel-faced valve having an upwardly-extending stem provided with an annular stop, the spherical float applied to the upper end of said stem, and the hemispherical guard secured to the under side of the dome of the trap-vessel and having the lower deflected edges of flanges, substantially as set forth.

407,225. COMMUTATOR-BRUSH AND HOLDER. CHARLES P. LOCKE, Somerville, Mass., assignor to the Locke Electric Manufacturing Company, of New York. Filed Feb. 23, 1889. Serial No. 300,993. (No model.)



Claim.—1. In a dynamo-electric machine, the combination, with the commutator-cylinder, of a terminal-plate mounted on a support and insulated therefrom, and a brush-holder having a brush and hinged to said plate, for the purpose set forth.

2. In a dynamo-electric machine, the combination, with the commutator-cylinder, of the brush-holder yoke and a terminal-plate mounted thereon and insulated therefrom, a brush-holder carrying a brush and hinged to said plate, and a spring for forcing the holder in toward the commutator to hold the brush in engagement therewith, substantially as and for the purpose set forth.

3. In a dynamo-electric machine, the combination, with the commutator-cylinder, of a brush composed of the strips or lamiæ 19 19, broadened at their attaching ends 20 and tapering toward their contact ends 21, whereby the lamiæ may be pliant, at the same time stout enough to resist buckling up, substantially as set forth.

4. In a dynamo-electric machine, the combination, with the commutator-cylinder 7, of the brush-holder yoke 8, the terminal-plate 10, mounted thereon and insulated therefrom, the swinging brush-holder 16, carrying a brush and hinged to the said plate in electrical connection therewith, the spring 22, mounted on the said plate 10 and engaging the said brush-holder 16, the terminal-post 13, and a spring for forcing the holder in toward the said commutator, substantially as and for the purpose set forth.

5. In a dynamo-electric machine, the combination, with the commutator-cylinder 7, of the brush-holder yoke 8, the terminal-plate 10, mounted on and insulated from the yoke, the swinging brush-holder 16, carrying a brush and hinged to said plate 10, in electrical connection therewith, the spring 22, mounted on the plate 10 and engaging the holder 16, the terminal-post 13 and the spring 30, intermediate the holder 16, and yoke 8, for forcing the holder in toward the commutator, substantially as and for the purpose set forth.

6. In a dynamo-electric machine, the combination, with a swinging brush-holder, consisting in a bar, such as a bar 16, of a bed-plate, such as a bed-plate 18, secured to the bar and having the brush-lamiæ attached thereto, for the purpose described.

7. In a dynamo-electric machine, the combination, with a terminal-plate 10, suitably mounted and insulated and provided with perforated hinge-ears 14, of a brush-holder, such as 16, carrying a brush, and having hinge-pintles 15, for hinging with the ears 14, substantially as and for the purpose set forth.

407,226. GREASE-CUP. WILLIAM F. MATTES and JOHN F. LEWIS, Scranton, Pa., assignors to Wm. P. Hetzel, trustee, same place. Filed Oct. 10, 1888. Serial No. 287,742. (No model.)



Claim.—1. The combination, with the cup provided with a slot in the side of the upper part thereof and having a notch extending from the side of the slot, and the piston working in the cup, of the cross-head arranged to slide within the upper part of the cup, a spring interposed between the cross-head and the piston, and an arm projecting from the cross-head and extending through the said slot in the upper part of the cup, substantially as and for the purpose described.

2. The combination, with the cup having slots in the upper part thereof, and the piston, of the cross-head having arms that extend through said slots, and the spring placed between the piston and the cross-head, substantially as and for the purpose described.

3. The combination, with the cup having slots in the upper part thereof, the armed cross-head, the piston, and the piston-rod passing through the said cross-head, of a projecting collar secured to the piston-rod above the cross-head, substantially as and for the purpose described.

4. The combination, with the cup having slots in the upper part thereof, the armed cross-head, the piston, and the spring, of the cap K, for strengthening the upper part of the cup and protecting the operating parts, substantially as set forth.

5. The combination, with the cup having a feed-hole in the bottom, of the piston having the groove G, packing L, and wire W.

6. The combination, with the cup having the cylindrical projection O^3, provided with slots O and with notches O^4, of the piston having the rod P^2, the cross-head having the depending rim *t*, the arms T^2, and the spring interposed between the cross-head and the piston, having its upper end fitting in the rim *t*, substantially as described.

407,227. LATCH. PHILIP MAY, Terre Haute, Ind. Filed Dec. 24, 1888. Serial No. 294,542. (No model.)

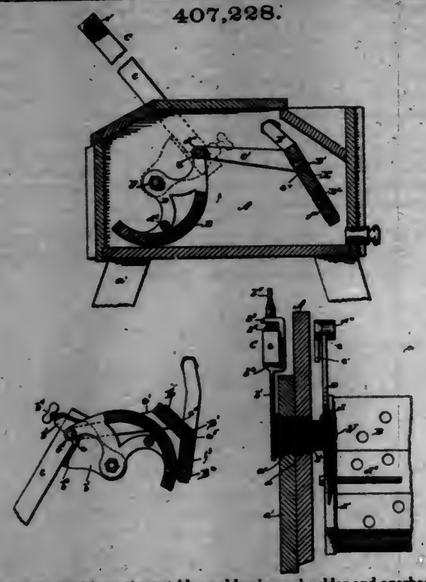


Claim.—The combination, in a gate-latch, with a box having front and rear plates, of a pair of catch-levers having outwardly-extending lugs on their front ends, said levers passing through said box, a screw entering the box and serving as a pivot for the levers, a stop formed on each lever projecting forwardly over the edges of the box, and a spring secured to one lever with its free end pressing against the opposite lever, substantially as described.

407,228. WASHING-MACHINE. GEORGE M. MILLER, York, Pa. Filed Oct. 24, 1888. Serial No. 288,612. (No model.)

Claim.—1. In a washing-machine such as described, and in combination with their box thereof, the pivot-pins inserted through openings in the sides of the box, removably connected to the presser-board on the inside and provided with laterally-projecting arms formed in-

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tegral therewith on the outside, and having a shoulder and overhanging portion carrying a thumb-screw, and the handle uniting said pivot carrying arms and secured thereto by the thumb-screws, as and for the purpose set forth.

2. In a washing-machine of the character described, and in combination with the box thereof provided with coincident openings for the insertion of the pivots, the flanged thimbles open at both ends inserted from the outside in said openings, the pivots bearing in said thimbles each removably connected to the presser-board on the inside and provided with a laterally-projecting arm on the outside, formed integral therewith and having a clamp, and the handle secured to said arms by the clamping devices thereon to retain the handle in position and hold the pivots and thimbles in place in the sides of the box, substantially as described.

3. In a washing-machine such as described, the combination, with the box having coincident openings in its sides, of the pivots projected through said openings and provided with arms to which the handle is secured, and the brackets carrying an oscillating member of the washing mechanism, said brackets being detachably secured to the inner ends of the pivots and held from rotary movement by the corrugated or notched surfaces, permitting adjustment of the handle, substantially as set forth.

4. In a washing-machine such as described, and with the box thereof provided with bearings in opposite sides, the pivot-pins secured to and connected by the handle and projected through the bearings in the sides of the box, the inner ends of said pivot-pins being provided with a shoulder having radial shoulders or corrugations and a stud or pin, the brackets supporting the oscillating pressure-board provided with a series of shoulders or corrugations fitting those on the pivot-pins, and fastening devices for clamping said brackets onto the pivot-pins, as set forth, whereby the handle can be adjusted with relation to the pressure-board and held rigidly in position.

5. In a washing-machine, the combination, with the sides of the box and the legs, perforated as described, and the thimbles inserted through said openings and forming coincident bearings extending through one leg and the side of the box on opposite sides of the latter, of the curved presser-board secured to brackets attached to the opposite ends of said board and each provided with a boss perforated and having radial ribs or corrugations formed on its outer face, two pivot-pins inserted from the outside through the thimbles and each provided with a shoulder notched or corrugated on its inner face and a stud, the latter entering the perforation in the boss on one bracket and clamped thereto by a nut, an arm rigidly secured to each pivot-pin, and a handle provided with two side bars, each of the latter being clamped to one of the pivot arms, substantially as described.

6. In a washing-machine, and in combination with the box and a swinging pressure-board, a bearing formed in the side of the box, a pivot-pin inserted through said bearing, its inner end detachably and adjustably fastened to the swinging pressure-board, while the outer end is provided with an arm formed with an extended bearing, an overlying flange and a thumb-screw, and a handle-bar resting upon said extended bearing and held in position thereon by the thumb-screw, substantially as described.

7. In a washing-machine such as described, the combination, with the board B, suspended upon pivots to oscillate back and forth, of a swinging board B^2, also suspended from pivots, and the pressure-board B', pivotally attached to and connecting the swinging boards B B^2, substantially as described.

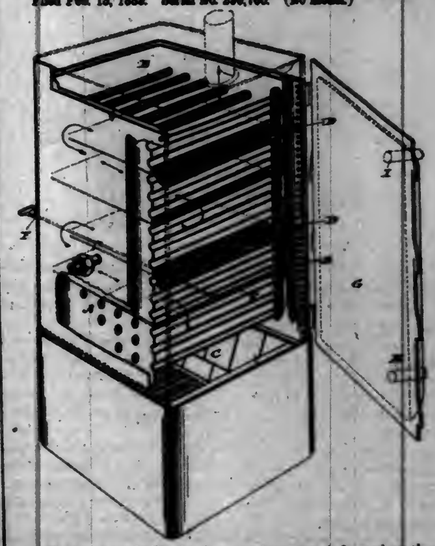
8. In a washing-machine such as described, and in combination with the box and the pressure-boards pivotally supported at or near opposite ends of said box, the pressure-board B', pivoted to the supports of one of said swinging boards at a point intermediate the board and its pivotal point of suspension, and arms attached to said board B' and loosely attached to the opposite swinging board B, substantially as and for the purpose set forth.

9. In a washing-machine, and in combination with the box thereof and the pressure-board B, pivotally supported therein near one end, the opposite pressure-board B^2, supported in brackets applied to the end thereof and furnished with pins or journals projected into bearings formed in the sides of the box, and the pressure-board B', provided with end plates, which are each furnished with a pivot engaging a socket in one of the supporting-brackets of board B^2, and an arm connected to the frame of the pressure-board B by a loose connection, substantially as described.

10. In a washing-machine, and in combination with the box, the pressure-board B, provided with brackets at the ends, which latter are detachably and adjustably secured to pivots projecting through openings in the side of the box, the end plate carrying board B', provided with arms detachably and loosely attached to the brackets of board B, said end plates being also loosely and detachably connected to the swinging brackets of the opposite pressure-board B^2, substantially as described.

11. In a washing-machine, and in combination with the box and the pressure-boards B B' B^2, arranged and co-operating substantially as described, the brackets D, detachably secured to pivots b and board B, the brackets F, provided with journals fitting bearings in the sides of the box and detachably secured to board B^2, and the end plates E, provided with pivots engaging brackets D and F and detachably secured to board B', substantially as described.

407,229. BOILER. WILLIAM MORRISON, Toronto, Ontario, Canada. Filed Feb. 13, 1888. Serial No. 263,760. (No model.)



Claim.—1. A boiler having a water-space A formed on three of its sides, the two opposite sides being connected together by tubes B, and the side on which no water-space is formed having a door G, arranged substantially as and for the purpose specified.

2. A boiler having a water-space A formed on three of its sides, the two opposite sides being connected together by tubes B, and the side on which no water-space is formed having a door G, in combination with a series of plates D, arranged between the tubes B, substantially as and for the purpose specified.

3. A boiler having a water-space A formed on three of its sides, the two opposite sides being connected together by tubes B, and the side on which no water-space is formed having a door G, in combination with a plate D and adjustable damper E, provided with a rod F and designed substantially as and for the purpose specified.

4. A boiler having a water-space formed on three of its sides, the two opposite sides being connected together by tubes B, in combination with a hinged door G, having a water-space formed in it, which latter water-space is connected to the water-space A by a pipe I, provided with a suitable coupling, substantially as and for the purpose specified.

407,230. TOOL-HOLDER. FRITZ MÜLLER, New York, N. Y., assignor to Alfred Deiga, same place. Filed Mar. 7, 1888. Serial No. 266,269. (No model.)



Claim.—A tool-holder composed of a handle A, provided with a split screw-nipple B, having a tapering end, a ferrule C, provided with an internal screw-thread and with a tapering mouth to engage the screw-nipple B, and of a cap E, fitting the outer end of the ferrule, substantially as described.

407,231. CAR-COUPLING. ADAM S. NEAL, Richmond, Tex. Filed Apr. 25, 1888. Serial No. 272,562. (No model.)



Claim.—1. In a car-coupler, the combination of the draw-heads A, provided with forwardly-projecting portions having curved faces B and notches b in the rear thereof, bails E, pivoted centrally on vertical pins passing through the center of the draw-heads, springs exerting a rearward pressure on the rear ends of the bails, and chains secured to the forward ends of the bails to move them in opposition to the pressure of their springs, substantially as shown, and for the purpose set forth.

2. The combination, in a car-coupler, of the draw-heads A, provided with forwardly-projecting portions curved, as shown, notches b, located in the rear of said curved portions, inclined faces C and abutting faces D, bails E, pivoted centrally on vertical pins passing through the draw-heads forward of the notches b, springs g, exerting a rearward pressure on the rear ends of the bails, and chains to move the bails in opposition to the pressure of their springs, substantially as described.

3. In a car-coupler, the combination of the draw-heads the front ends of which are rounded on one side, notches b, formed in rear of the rounded faces, bails E, pivoted on vertical pins passing centrally through the draw-heads, springs exerting a rearward pressure on the rear ends of the bails, and spring-catches to engage the rear ends of the bails and suspend the operation of the coupler, substantially as described.

407,232. LAMP-EXTINGUISHER. WILLIAM NOTLEY, London, County of Middlesex, England. Filed Dec. 17, 1888. Serial No. 293,261. (No model.) Patented in England June 16, 1887, No. 8,099; in Germany Jan. 15, 1888, No. 44,468; in Belgium Jan. 16, 1888, No. 80,288, and in India July 4, 1888, No. 86.

Claim.—1. The combination, with the burner, of an extinguisher for the flame, an independent sliding weight encircling the extinguisher, and upwardly-inclined ways extending in the direction of the wick and supporting the weight, whereby, when the burner is upset, a portion of said weight will move toward the extinguisher for actuating the same and extinguishing the flame, substantially as described.

2. The combination, with the burner, of pivoted extinguisher-



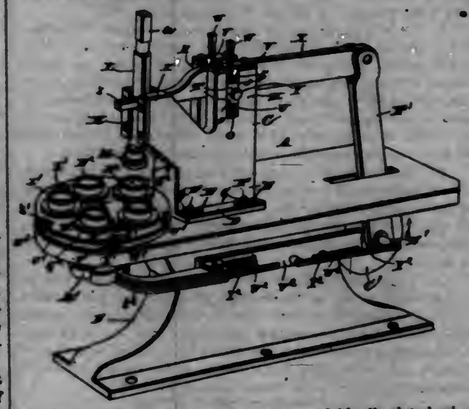
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flaps, and an independent sliding weight mounted below the pivoted flaps upon upwardly-inclined ways extending in the direction of the wick, whereby, when the lamp is upset, some portion of the weight will be carried upward to actuate the extinguishing device, substantially as described.

3. The combination, with the burner of an oil-lamp, of an extinguisher consisting of two disks or flaps A, positively pivoted to a fixed portion of the burner, and a movable ring or plate C, the whole arranged to operate substantially as set forth.

407,233. MACHINE FOR STAMPING AND MOLDING SOAP. CARRIE P. OLDHAM, Knoxville, Tenn., assignor of one-half to Samuel H. McNutt and Edward S. Shepard, same place. Filed Feb. 20, 1888. Serial No. 265,726. (No model.)



Claim.—1. The combination of the revolvable die-plate having the ratchet-wheel and the notches X', the spring-pressed longitudinally-moving detent to engage said notches and provided with arms R^2, the reciprocating rod V^3, having the pawls (one or more) to engage and rotate the ratchet-wheel, the crank-wheel having the tappet-pin D', to engage the arm of the detent and release the same, and the pitman connecting the rod V^3 with the crank-wheel, substantially as described.

2. In a machine for stamping and molding soap, &c., the revolvable die-plate having the ratchet-wheel and the notches X', the spring-pressed detent to engage the notches, the rod V^3, having the pawl to engage the ratchet-wheel, the rocking bar X, the plunger attached thereto and having the die, the crank-wheel C, the rod F', connecting the latter to the rocking bar, the pitman W^3, connecting the crank-wheel to the rod V^3, and the tappet-pin on the crank-wheel to operate the detent, the pawl-actuating rod, and the plunger, as set forth.

3. In a soap-molding machine, the combination of the pivoted die-plate having the notches X', the longitudinally-moving detent N^2, having the arm R^2 and the engaging-point S^2, the spring U^3, to move the detent in one direction and engage its point with the die-plate, and the revolving wheel C, having the tappet-pin D', to engage the detent-arm, for the purpose set forth, substantially as described.

4. In a machine for stamping soap, the combination of the revolvable die-plate, the pawl-and-ratchet mechanism to rotate the same intermittently, the plunger carrying the die, the lever mechanism for reciprocating the plunger, and the driving-shaft, to which both pawl-and-ratchet mechanism and the lever mechanism are respectively connected, and the expelling devices for the die-plate, comprising the plungers in the molds, and the cams arranged under the die-plate, said devices being operated by the cam-face, whereby as the die-plate turns said devices will ride up the cam-face to cause the expulsion of the stamped soap from the die.

5. The combination of the bed or table having the horizontal arm H' at one end and the vertical standard, the vertical shaft L', journaled in arm H', the die-plate secured to the upper end of said shaft, the ratchet-wheel secured to the lower end thereof, the cups or molds arranged on the die-plate in a concentric series, the plunger guided on the standard, the rocking lever connected to the plunger, the crank-wheel connected to and operating the lever, the reciprocating rod V^3, having the pawls engaging the ratchet-wheel, and the pitman connecting said rod to the crank-wheel, substantially as described.

6. In a soap-press, the combination of the plunger-rod, the standard C, having the slots or ways, the boxes T, adjustable in said slots or ways, the screws to raise and lower the boxes, and the beam or lever having its bearings in the adjustable boxes and connected with and adapted to operate the plunger-rod, substantially as described.

7. In a soap-press, the combination of the bed or table constituting the frame or support, the pivoted revolving die-plate having the series of concentrically-arranged cups or molds, the peripheral notches and the ratchet-wheel, the reciprocating rod V^3, the pawls pivoted thereto and engaging the ratchet-wheel, the crank-wheel having the tappet-pin D', the pitman connecting said wheel to rod V^3, the plunger-rod, the rocking lever connected thereto, the pitman F', connecting the crank-wheel to the rocking lever, the detent having the arm in the path of the pin D', and the spring to engage said detent with the notches of the die-plate in succession, substantially as described.

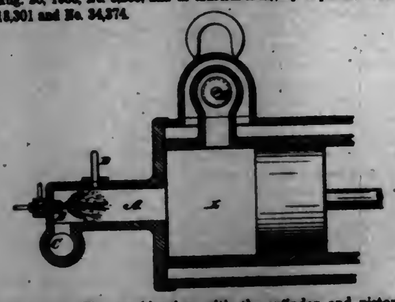
8. In combination with the revolvable die-plate having the cups or molds and the openings A^2, the vertically-adjustable cam-ring N', having the groove T', the plungers in the cups or molds, the depending pins B^2 on the plungers, and rollers D^2 on their lower ends traveling in the groove T' of the cam-ring, as set forth.

9. The die-plate having the cups or molds provided with flanges F^2, the circular plates G^2, provided with central countersunk openings H^2, which fit over the molds or cups and receive the flanges thereof, the slots I^2 in one of the ends of plates G^2 and enlarged circular openings K^2 in the other ends, the screws or bolts L^2, which extend through the slots I^2 and openings K^2 and enter the die-plate, and the washer M^2 on the bolts L^2 to cover the openings K^2 and enable the screws to clamp the plates G^2 to the die-plate, as set forth.

10. The revolvable die-plate and the removable interchangeable and adjustable molds or cups thereon, combined with the standard C, adjustable toward or from the die-plate and carrying the plunger for the cups or molds, whereby the standard with the plunger can be adjusted relative to the adjustment of the cups or molds, for the purpose set forth.

11. The revolvable die-plate, the cups or molds thereon, and the ratchet-wheel carried by the die-plate, combined with the standard C, the rocking lever X, pivoted to the standard, the plunger L, guided in the standard and connected to the rocking lever, the crank-wheel C', connected to and operating the rocking lever, the reciprocating rod V^3, having the pawl engaging the ratchet-wheel, and the pitman V^2, connecting the rod V^3 to the crank-wheel, as set forth.

407,234. MOTOR-ENGINE WORKED BY THE COMBUSTION OF SPRAY OF PETROLEUM. NICOLAUS A. OTTO, Cologne, Prussia, assignor to the Gas-Motoren-Fabrik-Deutz, Deutz-on-the-Rhine, Germany. Filed May 28, 1888. Serial No. 274,980. (No model.) Patented in England Apr. 17, 1888, No. 5,794; in Belgium Apr. 27, 1888, No. 81,563; in France June 2, 1888, No. 190,979; in Italy June 23, 1888, XLVI, 216; in Spain Aug. 20, 1888, No. 8,365, and in Austria-Hungary Sept. 16, 1888, No. 18,301 and No. 34,374.

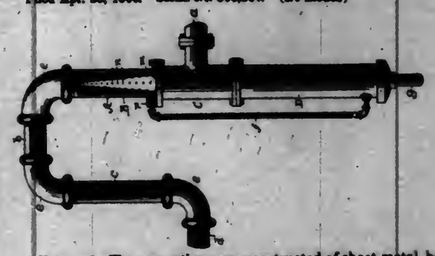


Claim.—1. The combination, with the cylinder and piston of a petroleum motor-engine, which operates with combustible charges that are first introduced and compressed within the cylinder and subsequently fired, of a tubular extension projecting from the end of the cylinder of less sectional area than the latter, containing inlets for petroleum and air, and means for heating the tubular extension externally by an independent source of heat, said tubular extension being made to communicate directly and of its full sectional area with the cylinder, so that the mixture of petroleum and air as it enters the said tubular extension and becomes heated shall pass in a vaporized condition freely into the cylinder to be compressed therein, substantially as herein described.

2. The combination, with the cylinder and piston of a petroleum motor-engine, which operates with combustible charges that are compressed within the cylinder and subsequently fired, of a tubular extension projecting from the end of the cylinder of less sectional area than the latter, containing inlets for petroleum and air, and an externally-heated igniting-tube, and means for heating the tubular extension externally by an independent source of heat, said tubular extension being made to communicate directly and of its full sectional area with the cylinder, so that the mixture of petroleum and air as it enters the said tubular extension and becomes heated shall first pass freely into the cylinder, so as to be compressed by the instroke of the piston, and shall then be ignited within the tubular extension by the heated igniting-tube, substantially as herein described.

3. In a petroleum motor-engine, the combination, with the engine-cylinder, of a tubular extension thereon communicating at one end freely with the cylinder, and having at the other end an inlet for petroleum-spray and air, and heated externally by a suitable heating device, substantially as described.

407,235. SEPARATOR. LAWSON A. PALMER, Kansas City, Mo. Filed Apr. 23, 1888. Serial No. 308,267. (No model.)



Claim.—1. The separating-cone constructed of sheet metal, having apertures a punched inwardly through its body and provided with flange *m* at its base, in combination with an inclosing-chamber and connections, the flange *m* being clamped upon one end of said inclosing-chamber to hold the cone in position, substantially as and for the purpose set forth.

2. In a separator, the combination of an inclosing-chamber provided with a steam-supply connection with a boiler, a perforated separating device inclosed within said chamber, and the drain-pipe *f*, located on the exterior of the inclosing-chamber and connecting the space in the upper portion of the inclosing-chamber with the bottom thereof, substantially as set forth.

3. The steam-separator having a T-shaped pipe-connection and a perforated cone-pipe arranged in a pipe-section superposed upon the vertical arm of said T-shaped pipe-connection, substantially as set forth.

4. The steam-separator comprising the T-shaped pipe-connection, whose pipe-sections are of varying diameters, the receiving-chamber D, the cone-pipe chamber superposed upon the upper arm or section of the T-shaped pipe-connection and containing the perforated cone-pipe, the pipe or chamber D, connected to the lower end of the vertical arm or section of said T-pipe connection, and the drain-pipes, one connecting with the base of the cone-pipe chamber and with the bottom of the chamber D and the other connecting with the bottom of the latter chamber D and with the water chamber of the boiler, substantially as set forth.

407,236. WEFT STOP MECHANISM FOR LOOMS. JAMES PATTERSON and TOM BROOK, Huddersfield, County of York, England. Filed Aug. 6, 1887. Serial No. 246,340. (No model.) Patented in England Nov. 17, 1886, No. 14,941, and in Belgium Dec. 18, 1886, No. 74,346.



Claim.—1. A cross-head C, having weft-feeding fingers secured thereto, and stop-arms C' C², the pointed pivotal set-screw supports E, on which the weft-fork is mounted, the bracket for said supports, the locking-nuts for the supports, the lifting-bar, and the connecting-rod and sliding guide-plate for actuating said bar and the lay, substantially as described.

2. In an automatic weft stop mechanism, the combination of a sliding cam or lifting-bar D, slide F, with projection G, connecting rod or link K, spiral spring O, and brackets L and M, substantially as described, for the purpose specified.

3. An automatic weft stop mechanism comprising, in combination, the weft-fork and its supports, the sliding lifting-bar D, the slide F, the projecting stop G, the knocking-off lever H, provided with a regulating set-screw, with which the said stop G is adapted to come in contact, the bracket to which said lever is pivoted, the breast-beam for supporting said bracket, the lever P and starting-shaft Q, the spring-actuated connecting-rod K, and the bearing on said breast-beam through which said rod slides, substantially as and for the purpose described.

407,237. GAS-MIXER. WALTER S. PAYNE, Fostoria, Ohio. Filed Apr. 13, 1888. Serial No. 270,408. (No model.)

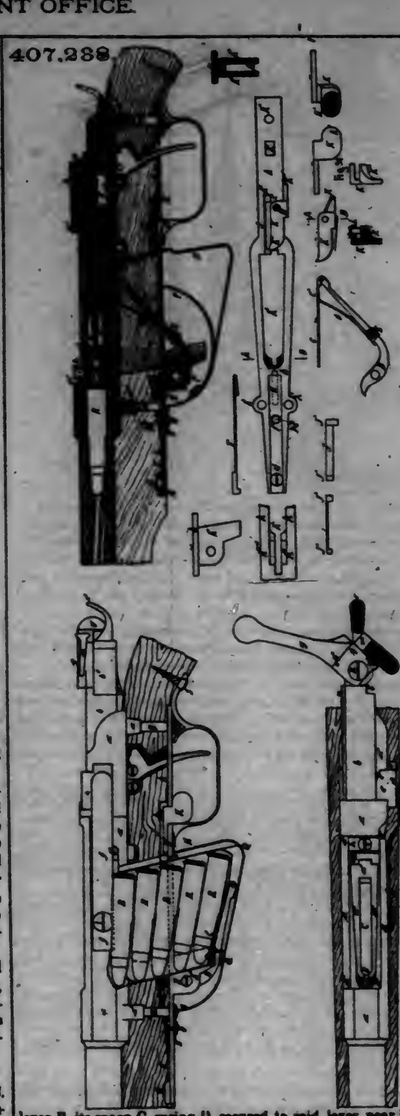


Claim.—1. The combination of the valve-case, the jet or tube screwed thereto and having the flange F, the collar or sleeve loose on the jet-tube and having the exterior screw-threads, and the globe or mixer having the openings for the admission of air and having the threaded opening at its lower end adapted to receive the threaded sleeve, whereby said globe or mixer is connected to the valve-case and to the jet-tube, substantially as described.

2. The combination of the valve-case having the threaded opening in one side, the jet-tube or nipple B, adapted to enter the said threaded opening, having the polygonal projecting end and the flange F thereof, and having the exterior screw-thread, and the polygonal flange K at the base of said threaded portion, and the globe or mixer having the openings M and provided on the lower side with the threaded collar to receive the threaded sleeve, said collar having the seat at its upper end, against which the flange F of the jet-tube or nipple impinges, substantially as described.

3. The combination of the valve-case, the jet or tube secured thereto having the flange F and adapted to be engaged by a wrench, the collar or sleeve loose on the jet-tube and having the exterior screw-threads, and the globe or mixer having the threaded opening at its lower end adapted to receive the threaded sleeve, substantially as described.

407,238. MAGAZINE OR REPEATING FIRE-ARM. FRANZ J. PEYET, Vienna, Austria-Hungary, assignor of one-half to Julius Reichmüller, same place. Filed June 18, 1888. Serial No. 277,494. (No model.)



Claim.—1. In a magazine-gun, the combination of a receiver provided with the opening a^4 for the locking-key, the movable cylindrical breech-piece *b b'*, having the recess b^3 therein, the locking-key *c*, entering the opening a^3, and spring *f*, which presses the key *c* into the opening, thereby serving to maintain the breech-piece closed, substantially as shown and described.

2. In combination with the receiver of the gun having a recess to receive the same, the locking-key *c*, as made with its guiding-groove *d*, projection c^2, and taper c^3, the handle *g*, carried by the cylindrical breech-piece, and having the nose g^2 to engage the key *c* and move the same outward, and the flat spring *f* on the receiver for forcing inward the key to its locking position, substantially as and for the purpose set forth.

3. In combination with the locking-key *c*, seated in the receiver, and handle *g*, carried by the reciprocating breech-piece, the described breech-piece for opening and closing the breech and introducing the cartridge, consisting of the two parts *b* and *b'*, joined together, the one part *b* having in it the recess b^3 for the locking-key, and also having a fulcrum part *b'* for said handle, all substantially as set forth.

4. In a magazine-gun, the combination of the cartridge-lifting lever B, its spoon C, spring D, secured to said lever near its fulcrum and its free end bearing on the under side of the spoon, as set forth, the under plate A, provided with projections A^{11}, serving as a fulcrum-support and guide for said lever, the releaser K, fixed on the under plate at the rear of its opening A^6, and spring J J' J^3, carried by the said under plate and serving to retain the magazine in place, substantially as shown and described.

5. In a magazine-gun, in combination, the cartridge-lifting lever B, the spoon C thereon, and spring D, secured near the fulcrum of said lever, the spring F, bearing on the short arm of said lever, and the casing N for protecting these parts and provided with shoulders N^2 and having the opening Q, through which the empty magazine may fall, all substantially as shown and described.

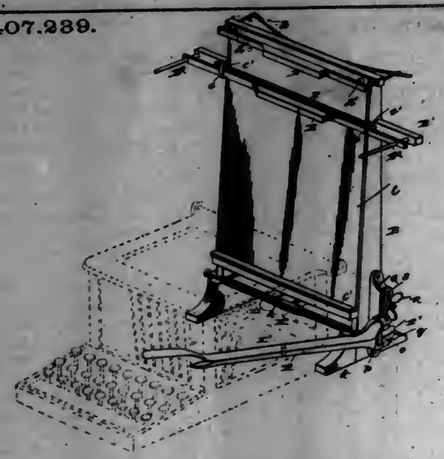
407,239. COPY-HOLDER. HENRY H. POTTER, Kingwood, W. Va. Filed Apr. 16, 1889. Serial No. 307,626. (No model.)

Claim.—1. The table C, having the stops *d'*, in combination with the clip D and the spring *d*, for drawing said clip against said table or against the heads of said stops, as and for the purpose described.

2. The table C and a clutch for moving it upwardly step by step, in combination with the stationary line-marker E, beneath which the table moves, substantially as described.

3. The rack B, transverse bar B' thereon, and forwardly-project-

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ing and slightly-converging spring-pins B^3 at each end of said bar, in combination with the vertically-movable table C and the line-marker E, having holes engaging said pins, as and for the purpose set forth.

4. The vertically-movable table C, in combination with the line-marker E, the arms *e*, carried by said marker and having eyes *e'*, and the elliptical glass rod F, supported in said eyes, as and for the purpose described.

5. The rack B, having grooves *b*, in combination with the table C, having tongues *c*, engaging said grooves, and with a clutch and lever for raising said table step by step, as described.

6. The table C and the rod G, carried thereby, in combination with the rack B, upon which said table slides, the guides B^3, connected to said rack, the clutch H, pivoted between said guides and normally engaging said rod to support said table, and a clutch and lever for raising the table by a step-by-step motion, substantially as described.

7. The table C, rod G, carried thereby, the rack B, upon which said table slides, and the clutch H, pivoted in said rack and normally engaging said rod to support the table, in combination with the second clutch I, engaging said rod, the arm J, to which said second clutch is pivoted, and a handle connected to the lower end of said arm for raising it intermittently, as and for the purpose set forth.

8. The table C, rod G, carried thereby, the rack B, upon which said table slides, the upright parallel guides B^3, connected to said rack, and the clutch H, pivoted between the upper ends of said guides and normally engaging said rod to support said table, in combination with the second clutch I, engaging said rod, the arm J, sliding between said guides, and to the upper end of which said second clutch is pivoted, the transverse shaft L, lever *k*, keyed thereon and pivoted at its free end to the lower end of said arm J, the handle O, keyed to said shaft, and a stop for limiting the movement of said handle, substantially as described.

9. The rod G and a table carried thereby, the rack B, and the clutch H, pivoted in said rack and normally engaging said rod, in combination with the second clutch I, engaging said rod G below the clutch H and carrying a pin *i* in its upper face, and an arm and lever for reciprocating said second clutch slightly to raise said rod and table or lifting it considerably to force the pin *i* against the clutch H and trip both clutches, as and for the purpose set forth.

10. The base A, lug Q thereon, having a pin *q*, thumb-screw R in said lug, and slotted stop S on said thumb-screw, in combination with the shaft L, journaled in said base, and a handle keyed to said shaft, said handle having an extension P', adapted to operate between said pin *q* and stop S, as and for the purpose described.

11. The base A and stops carried thereby, in combination with the shaft L, journaled in said base, the collar M on said shaft, carrying the arm N, and a handle removably secured to said arm, said handle having an extension P', adapted to operate between said stops, substantially as described.

12. The shaft L, the collar M thereon, the arm N, carried by said collar, and the handle O, removably secured to said arm, in combination with the supplemental handle P, centrally pivoted beneath said handle O, having a hole *p*, receiving the end of said shaft, and also having an extension P', for the purpose set forth, and with a spring *o*, carried by said handle O and normally pressing said supplemental handle P against said collar M, substantially as described.

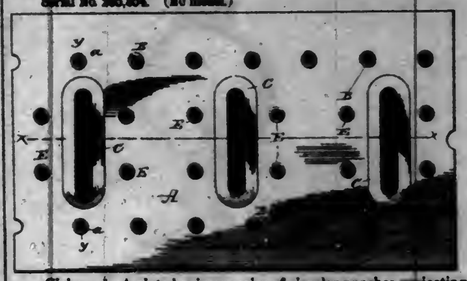
407,240. PHOSPHATIC FERTILIZER. NATHANIEL R. POTTER, New York, N. Y., assignor to John Orrett, Kingston, Jamaica, West Indies. Filed Mar. 2, 1888. Serial No. 265,989. (No specimens.)

Claim.—A dry granular compound for fertilizers, composed of phosphatic rock or earth containing over ten per cent. of alumina or iron, sulphuric acid, and tank-water containing about twenty per cent. of animal matter, combined substantially in the proportions set forth.

407,241. PHOSPHATIC FERTILIZER. NATHANIEL R. POTTER, New York, N. Y., assignor to John Orrett, Kingston, Jamaica, West Indies. Filed Aug. 20, 1888. Serial No. 283,220. (Specimens.)

Claim.—The dry fertilizing composition herein described, composed of phosphatic guano or rock from the Cayman Islands, water containing about fifty per cent. of animal matter in excess of sulphuric acid, and sulphate of lime, combined substantially in the proportions set forth.

407,242. PUNCH. JOHN R. GUTHS, Toledo, Ohio. Filed Jan. 9, 1889. Serial No. 295,854. (No model.)



Claim.—1. A plate having a series of circular punches projecting from one face thereof near each longitudinal edge, and a series of elongated punches also projecting from said plate intermediate of the two series of circular punches, substantially as set forth.

2. A plate having a series of circular punches projecting from one face thereof near each longitudinal edge, a series of elongated punches located within the space between the two rows of punches, and series of circular punches located between and outside of the elongated punches, substantially as set forth.

407,248. STEM WINDING AND SETTING WATCH. HENRY RENFF, Houtzdale, Pa. Filed Nov. 21, 1888. Serial No. 291,611. (No model.)



Claim.—1. In a stem setting and winding watch, the combination, with the yoke, the winding and setting mechanism carried by the yoke, and the spring J, of the lever L, pivoted midway of its ends, the lower end being extended laterally and engaging with the said lever, the spring K, stronger than the spring J, pressing on the lower end of the lever L, and the stem to depress the upper end of the lever L, substantially as and for the purpose described.

2. In a stem setting and winding watch, the combination, with the yoke having a vertical arm and the winding and setting mechanism carried by the yoke, of the lever L, pivoted midway of its ends and having its lower end extended laterally and engaging with the said vertical arm, the spring K, and the stem, substantially as described.

3. In a stem setting and winding watch, the combination of the plates A and B, the pinion D, the block C, the yoke having a vertical arm, the winding and setting mechanism carried by the yoke, the spring J, bearing on one end of the yoke, the lever L, having its lower end extended through an opening in the plate A and engaging with the said vertical arm, the spring K, stronger than the spring J, bearing on the lever L, the stem E, and the sleeve *n* on the lower end of the said stem E, substantially as and for the purpose described.

407,244. CORN AND CANE HARVESTER. RICHARD B. ROGERS, Adrian, Mich. Filed May 12, 1888. Serial No. 273,602. (No model.)



Claim.—1. In a corn and cane harvester, the combination, with a main frame, a receiving-table secured on said frame, a stalk-cutter secured to and projecting in front of the receiving-table, an axle mounted in bearings on the frame, suitable wheels mounted on said axle, and a clutch connecting one of said wheels with the axle, of an upright hollow shaft mounted in suitable bearings and located to one side of and back of the cutter, and having a bevel-gear on its lower end engaging with a bevel-gear rigidly mounted on the axle, a telescopic extension mounted in the hollow shaft and provided with a double crank on its upper end, gathering-arms pivotally secured to said double crank, a suitable guide in which said arms rock, and a set-screw mounted in the upright hollow shaft and adapted to engage with the telescopic extension and secure it to the hollow shaft at any desired vertical adjustment, all constructed, arranged, and operating substantially as shown and described, whereby the forward ends of the gathering-arms will have an elliptical movement, passing alternately in front of and back over the cutter.

2. In a corn and cane harvester, the combination, with a main frame, a receiving-table secured on said frame, a stalk-cutter secured on and projecting in front of said receiving-table, an axle B, mounted in bearings on the frame, wheels C C, mounted on the axle, and a clutch D, connecting one of said wheels with said axle, of an upright hollow shaft H, mounted in suitable bearings and located to one side of and back of the cutter, and having a bevel-gear I on its lower end engaging with a bevel-gear I', rigidly mounted on the axle, a telescopic extension H', mounted in the hollow shaft and provided with a double crank on its upper end, a set-screw A, mounted in the hollow shaft and adapted to engage with the telescopic extension and secure it to said hollow shaft at the desired vertical adjustment, gathering-arms K K, pivotally secured to the double crank and working in a guide H^3, a short upright shaft L, mounted in a bearing in the receiving-table located back of and on the opposite side of the cutter from the shaft H, and having a double crank on its upper end and a bevel-gear L' on its lower end engaging with a bevel-gear L^2, rigidly mounted on the axle, and arms M M, pivotally secured to said double crank and working in a guide *d'*, all constructed, arranged, and operating substantially as shown and described.

3. In a corn and cane harvester, the combination, with a main frame, an elevated rectangular frame A, secured on suitable uprights, a receiving-table secured on said main frame to one side of and below the elevated frame, a cutter mounted on and projecting in front of the receiving-table, a bar 15, secured to suitable uprights on the outer side of the receiving-table, said bar being parallel with the inner side of the elevated frame and extending back of the receiving-table, and having inwardly and downwardly projecting fingers N formed on its extended portion, of a shaft O, mounted in bearings formed on the inner side of the elevated frame and extending back of said elevated frame parallel with the bar 15, and having two oppositely-disposed sets of curved fingers P P, secured to its extended portion, a ratchet *s'*, rigidly mounted on said shaft O, a foot-lever R, having a pawl *r*, adapted to engage with the ratchet and alternately hold the oppositely-disposed sets of fingers P P in position to co-operate with the fingers N to receive the stalks, all constructed, arranged, and operating substantially as shown and described.

4. In a corn and cane harvester, a main frame, a cutter comprising two blades secured to and projecting in front of the frame so as to leave a space between the blades, said blades having diagonal cutting-edges converging inwardly toward each other, and a transverse blade connecting the inner ends of the projecting blades and adjustably secured thereto, whereby its cutting-edge may be adjusted at different angles to the cutting-edges of said projecting blades, substantially as shown and described.

407,245. ABRADING-COVERING FOR BUFFERS. ANDREW W. ROGERS, Beverly, Mass., assignor to Sidney W. Winslow, trustee, same place. Filed Dec. 7, 1888. Serial No. 292,985. (No model.)



Claim.—1. In combination with the foot of a buffer, an abrading-covering for said foot, having a practically stiff margin extending beyond the margin of the said foot and a non-abrading edge, substantially as described.

2. In combination with the foot of a buffer, an abrading-covering for said foot, said covering having a continuous working-face, a practically stiff margin extending beyond the margin of the foot, and a non-abrading edge, substantially as described.

3. In combination with the yielding foot of a buffer, an abrading-covering loosely mounted on the flexible foot and extending beyond the margin of the foot, substantially as described.

4. A detachable abrading-covering for buffers, having its connection to hold it to the foot attached directly to the inner face of said covering, substantially as described.

5. An abrading-covering for the foot of a buffer, combined with connections attached to its inner face, between the margin and the center thereof, for connecting it to the foot, substantially as described.

6. An abrading-cover for buffers, having its flexible connections to hold it to the foot attached directly to the inner face of said covering, substantially as described.

7. In combination with the abrading-covering provided with connections on its inner face, a foot having notches or holes to receive the connections, substantially as described.

8. An abrading-covering for buffers, having a re-enforcement on its inner face and connections for holding it to the foot integral with said re-enforcement, substantially as described.

9. An abrading-covering for buffers, having an annular re-enforcing strip secured upon the inner face at the margin and immediately adjacent thereto, substantially as described.

10. An abrading-covering for buffers, having a marginal re-enforcement on its inner face, with connecting-tongues formed on the inner edge of said re-enforcement, combined with the foot having notches or holes, substantially as described.

11. An abrading-covering for buffers, combined with a buffer-foot and holding-connections between the cover and the foot, the said holding-connections being arranged circumferentially to draw obliquely to the surface of the cover and in line with the rotation of the foot, substantially as described.

407,246. BUFFER. ANDREW W. ROGERS, Beverly, Mass., assignor to Sidney W. Winslow, trustee, same place. Filed Dec. 7, 1888. Serial No. 292,984. (No model.)



Claim.—1. In combination with the foot of a buffer, an abrading-covering for said foot, having a practically stiff margin extending beyond the margin of the said foot and a non-abrading edge, substantially as described.

2. In combination with the foot of a buffer, an abrading-covering for said foot, said covering having a continuous working-face, a practically stiff margin extending beyond the margin of the foot, and a non-abrading edge, substantially as described.

3. In combination with the yielding foot of a buffer, an abrading-covering loosely mounted on the flexible foot and extending beyond the margin of the foot, substantially as described.

4. A detachable abrading-covering for buffers, having its connection to hold it to the foot attached directly to the inner face of said covering, substantially as described.

5. An abrading-covering for the foot of a buffer, combined with connections attached to its inner face, between the margin and the center thereof, for connecting it to the foot, substantially as described.

6. An abrading-cover for buffers, having its flexible connections to hold it to the foot attached directly to the inner face of said covering, substantially as described.

7. In combination with the abrading-covering provided with connections on its inner face, a foot having notches or holes to receive the connections, substantially as described.

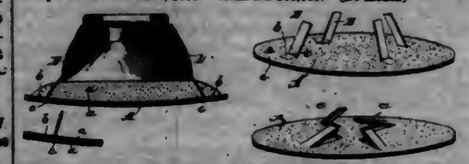
8. An abrading-covering for buffers, having a re-enforcement on its inner face and connections for holding it to the foot integral with said re-enforcement, substantially as described.

9. An abrading-covering for buffers, having an annular re-enforcing strip secured upon the inner face at the margin and immediately adjacent thereto, substantially as described.

10. An abrading-covering for buffers, having a marginal re-enforcement on its inner face, with connecting-tongues formed on the inner edge of said re-enforcement, combined with the foot having notches or holes, substantially as described.

11. An abrading-covering for buffers, combined with a buffer-foot and holding-connections between the cover and the foot, the said holding-connections being arranged circumferentially to draw obliquely to the surface of the cover and in line with the rotation of the foot, substantially as described.

407,247. ABRADING-COVERING FOR BUFFERS. ANDREW W. ROGERS, Beverly, Mass., assignor to Sidney W. Winslow, trustee, same place. Filed Dec. 7, 1888. Serial No. 292,985. (No model.)



Claim.—1. A reversible abrading-covering for buffers, consisting of a flexible disk of concave-convex form, and abrading material on both sides of said disk, combined with reversible connections attached to said cover for holding it to the foot of the buffer, substantially as described.

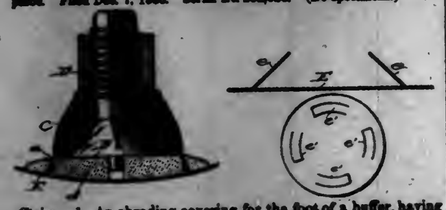
2. A reversible abrading-covering for buffers, composed of two disks of abrading material placed back to back and having slits in each disk, in combination with fastening devices adapted to the slits in the disk, substantially as described.

3. A reversible abrading-covering for buffers, composed of two disks of abrading-covering placed back to back and having slits in each disk, combined with the stiff strips B, having bent lower ends adapted to the slits in the disk, substantially as described.

4. The combination of a buffer-foot, a double-faced reversible cover supported removably on said foot, and holding connections between the cover and foot, substantially as described.

5. A reversible abrading-covering for buffers, consisting of a disk composed of two sheets placed back to back, with abrading material on the outer face of each, combined with the reversible connecting devices for holding it to the foot of the buffer, substantially as described.

407,248. ABRADING-COVERING FOR BUFFERS. ANDREW W. ROGERS, Beverly, Mass., assignor to Sidney W. Winslow, trustee, same place. Filed Dec. 7, 1888. Serial No. 292,926. (No specimens.)

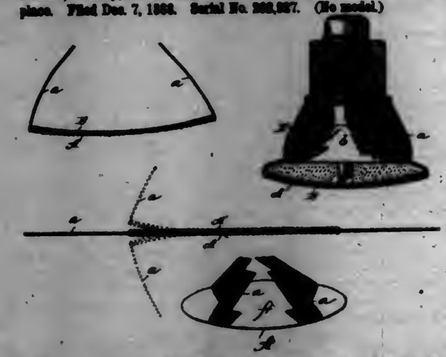


Claim.—1. An abrading-covering for the foot of a buffer, having projections by which it is attached, formed of tongues cut out from the material of the covering within the margin thereof, substantially as described.

2. A reversible abrading-covering having the abrading-surfaces with the projecting connections by which it is attached formed of tongues cut out of the material of the covering itself within the margin thereof, substantially as described.

3. An abrading-covering for the foot of a buffer, having projecting connections by which it is attached formed of tongues cut circumferentially out of the material of the covering itself, whereby the connection is less liable to be torn from the body of the covering, substantially as described.

407,249. ABRADING-COVERING FOR BUFFERS. ANDREW W. ROGERS, Beverly, Mass., assignor to Sidney W. Winslow, trustee, same place. Filed Dec. 7, 1888. Serial No. 292,927. (No model.)



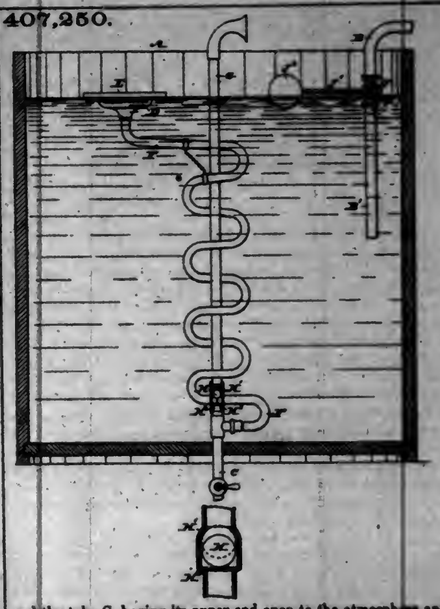
Claim.—1. An abrading-covering for buffers, consisting of a disk having an abrading-surface and non-abrading edges and flexible non-abrading connecting-strips secured to the inner face with the free ends projecting outward, substantially as described.

2. An abrading-covering for buffers, consisting of a disk having an abrading-surface and non-abrading edge, a re-enforcement on its inner face at or near the edge, and flexible non-abrading connecting-strips secured to the inner face between the abrading-disk and the re-enforcement with the free ends extending outward, substantially as described.

407,250. APPARATUS FOR PURIFYING WATER. HENRY ROEMER, Philadelphia, Pa. Filed Jan. 28, 1887. Renewed June 15, 1889. Serial No. 314,240. (No model.)

Claim.—1. A tank for aerating water, having the supply-pipe B, the float E, with strainer D secured thereto, the discharge-pipe C, the flexible pipe F, connected to said strainer and to the discharge-pipe,

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and the tube G, having its upper end open to the atmosphere and its lower end connected with the discharge-pipe, all of said parts combined substantially as and for the purpose set forth.

2. A tank having a supply-pipe and a discharge-pipe, the latter passing within the tank, an air-tube connected at its lower end to the discharge-pipe within the tube, and a strainer with a flexible tube, the latter connected to the discharge-pipe below the connection of the air-tube and within the tank, substantially as described.

3. The tank A, in combination with the supply-pipe B, the discharge-pipe C, the floating strainer D, the flexible pipe F, connecting said strainer with said discharge-pipe, and the tube G, open at its upper end to the atmosphere, and at its lower end connected to the discharge-pipe above the connection of the pipe F, and provided with the automatic valve H, all substantially as described.

4. The tank A, with automatic supply-pipe B, having its lower end below the water-level, the floating strainer D, with flexible pipe F, the discharge-pipe C, with cock, and the air-tube G, leading into said discharge-pipe and provided with perforated automatic valve H, all substantially as and for the purpose set forth.

407,251. STEAM-BOILER. PHILIP ROEHM, St. Louis, Mo., assignor of one-half to Erskine L. Babcock, Cuyahoga Falls, Ohio. Filed Feb. 4, 1889. Serial No. 298,662. (No model.)

Claim.—1. The combination, in a boiler, of a main part or trunk, one or more series of radial pipes 11 extending therefrom, a drum between the source of heat and said pipes communicating with said main part to act as a shield for said radial pipes, and fire-tubes 13 passing therethrough.

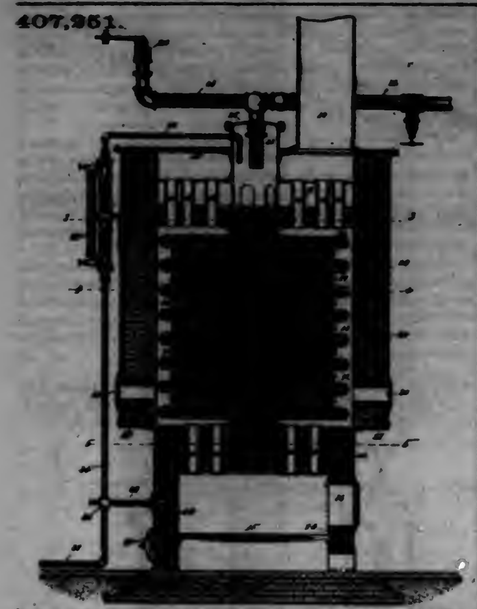
2. The combination, in a boiler, of a main part or trunk, a drum communicating with said main part adjacent to the source of heat, a second drum communicating with said main part remote from said source of heat, and several series of pipes, as 11, extending from said main part and located in the space between the two drums, for the purpose described.

3. The combination, to form a boiler, of the main part 10, the drum 12, communicating therewith, having fire-tubes 13 passing through the same, the upper drum 17, also communicating with said main part 10 and having fire-tubes 18 passing through it, and several series of radial pipes 11, extending from said main part 10 between said drums.

4. The combination, to form a boiler, of the main part 10, vertically arranged, the water-drum 12, communicating with the same, having fire-tubes 13 extending therethrough, the water-leg 14, opening into said drum, the grate 15 adjacent to the aforesaid drum and water-leg, the radial pipes 11, extending from said main part 10, a second drum 17 above said pipes communicating with the main part 10, having fire-tubes 18 passing therethrough, a top 20, smoke-stack 19, and steam-connections, as set forth.

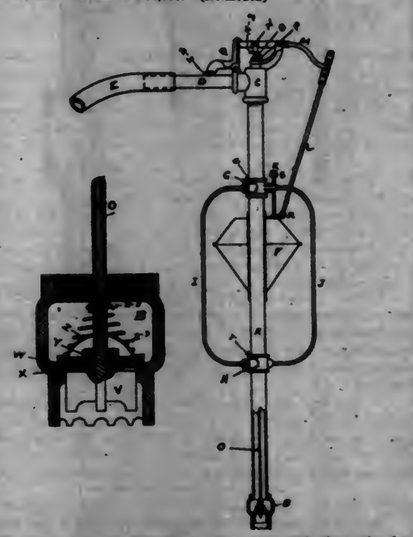
5. The combination, in a boiler, of a main part, a horizontally-disposed drum communicating therewith adjacent to the source of

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heat, a water-leg 14, opening into said drum, a casing for said boiler, and a flange 27, extending from said drum for supporting said casing.

407,252. CAN-FILLER. EDWARD C. SAMA, Columbus, Ga. Filed Oct. 20, 1888. Serial No. 288,089. (No model.)



Claim.—1. In a can-filler, the combination, with the main pipe, the valve in the lower end thereof, and its valve-stem, of the vertically-sliding float on the main pipe, a suitably-fulcrumed valve-lever pivoted to the upper end of the valve-stem, a latch arranged to engage one end of this lever, the connecting-rod between its other end and the float, and the guides for the pipe adapted to enter opposite corners of the can, and thus support said pipe in an upright position, all substantially as described.

2. In combination with the main pipe of a can-filler, the guide-rods I J and their upper and lower collars G H, which collars are movable on said main pipe, substantially as described.

3. The combination of the main pipe, its valve and valve-stem, the vertically-sliding float on the main pipe, the guides for the pipe adapted to enter opposite corners of the can, and thus support said pipe in an upright position, the step on the float connected to these guides, the lever pivoted to the upper end of the valve-rod, the latch engaging the same, and the rod connecting the lever with the float, substantially as described.

4. In combination with the main pipe of a can-filler, the hose for supplying it, the valve and valve-stem in the main pipe, the sliding float on the main pipe, the valve-lever pivoted to the valve-stem, the spring-latch engaging the valve-lever, the connecting-rod between the valve-lever and the float, and the guide-rods connected adjustably to the main pipe and adapted to enter corners of the can to support the same in an upright position, substantially as and for the purpose described.

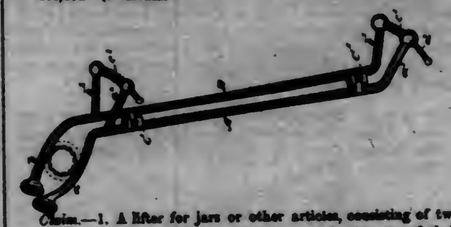
5. The combination of the valve and the valve-stem, having at its lower end a spring holding valve in position and allowing for unequal expansion without opening the valve, substantially as described.

407,253. FUNNEL. CHARLES F. SAUTTER, Brooklyn, N. Y. Filed Oct. 27, 1888. Serial No. 289,249. (No model.)



Claim.—As a new article of manufacture, a funnel having a spout adapted to enter the mouth of a bottle and its bell open at the top and provided with a continuous spiral groove terminating at its lower end in the spout for holding a hollow conical filtering fabric from contact with the internal surface of the bell, all in such manner that the filtrate which passes outwardly through the filter from the interior thereof enters the groove and forms a stream that increases in volume as it descends to exert a suction on the unfiltered liquid in the conical filter to promote the filtering action, substantially as described.

407,254. LIFTER FOR JARS, BOTTLES, OR OTHER ARTICLES. CHARLES F. SAUTTER, Brooklyn, N. Y. Filed Dec. 13, 1888. Serial No. 293,444. (No model.)



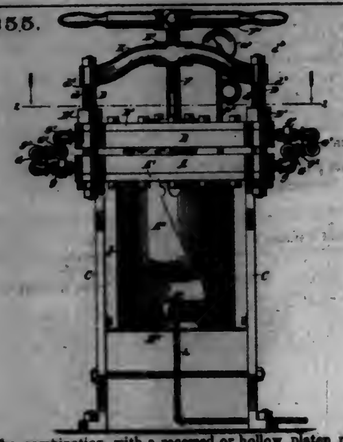
Claim.—1. A lifter for jars or other articles, consisting of two rods A B, arranged parallel to each other and having one of their extremities bent substantially at right angles to their bodies to form two jaws *a b*, and their other extremities bent substantially at right angles to their bodies in an opposite direction to the jaws to form two handles *a' b'*, a hinge-joint connecting the parallel rods adjacent to the jaws, a hinge-joint connecting the parallel rods adjacent to the handles, and a spring acting to bodily turn the parallel rods on their two hinge-joints in a direction toward each other, substantially as described.

2. A lifter for jars, bottles, or other articles, composed of two jointed spring-actuated rods, each rod being provided with two handles extending at right angles from its body, and with a jaw which extends at an angle from its body in an opposite direction to the handles, substantially as described.

407,255. APPARATUS FOR VULCANIZING RUBBER. LOUIS E. SEXTRUM, Chicago, Ill. Filed Sept. 3, 1888. Serial No. 284,603. (No model.)

Claim.—1. A press for the purpose set forth, comprising a stationary platen the lower wall of which is provided with a depending water-receptacle in communication with the hollow interior of the platen, a second hollow movable platen or follower the interior of which is in communication with the platen first mentioned, stationary guides for the movable platen, and mechanism operating independently of the steam-pressure within the platen for forcing the movable platen toward the stationary platen, substantially as described.

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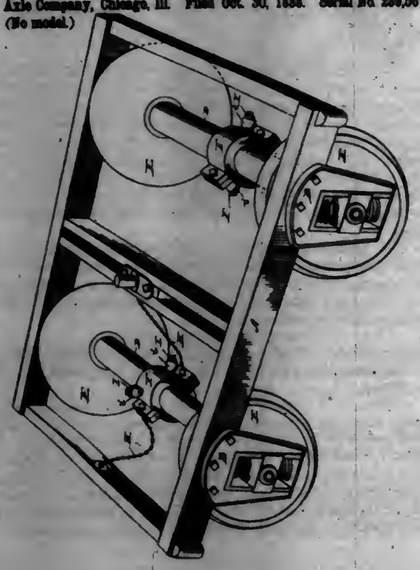
2. The combination, with a recessed or hollow platen provided with a depending water-receptacle in communication with the recess thereof and forming a steam-generator, of a superposed movable platen having steam connection with the first platen, mechanism independent of the steam-pressure for moving said platen, supporting legs or standards attached to the lower platen, and a burner sustained upon said legs or standards beneath the water-receptacle of the lower platen, substantially as described.

3. The combination, with a platen and movable follower, of screw-threaded posts secured to the platen, a yoke connected with said posts, a screw-threaded shaft engaging said yoke and acting upon the follower or upper platen, and nuts placed upon said posts above the follower, said posts, yoke, screw-shaft, and follower being connected with each other by means affording lost motion between the follower and posts, substantially as described.

4. The combination, with the recessed platen and recessed follower and a steam-generator communicating with the recesses of said platen and follower, of top and side walls located over the said follower and forming with the top of the latter a drying-oven, substantially as described.

5. The combination, with the hollow platen A and follower or platen B, of the posts D D, nuts D' D' thereon, a horizontal plate K, located above the follower, tubular posts *k' k'*, surrounding the posts D D, and walls *k k*, located between the said follower and the plate K, said plate and walls forming with the follower a drying-oven, substantially as described.

407,256. SELF-LUBRICATING CAR-AXLE. FREDERICK J. SEYMOUR, Findlay, Ohio, assignor to the Automatic Lubricating Tubular Axle Company, Chicago, Ill. Filed Oct. 30, 1888. Serial No. 289,567. (No model.)

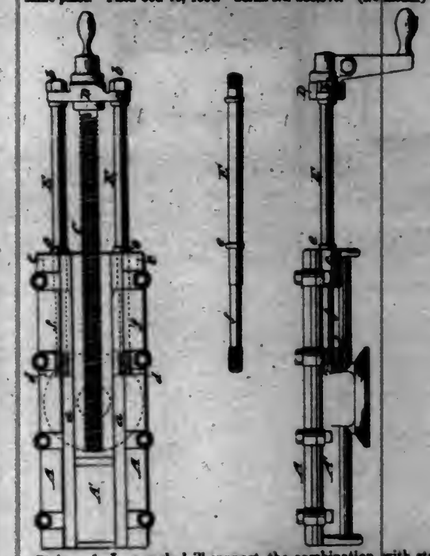


Claim.—1. In a compound car-axle, the combination of a central axle-body adapted to form the journals, and two hollow sleeves exterior to the central axle, to which the wheels are rigidly secured, said sleeves terminating at the outer sides of the wheels and adapted for independent rotation, and said axle provided with a central flange, against which said sleeve-sections abut at their inner ends, substantially as described.

2. The combination, in a car-axle, of an inner axle-body extended to form the journals, of two exterior sleeve-sections, to which the respective wheels are rigidly secured, said axle having a central flange or collar, and said sleeves having on their inner ends flanges abutting against said collar and being adapted for independent rotation, and a divided clamp adapted to prevent endwise movement of the wheels on the axle, substantially as described.

3. A compound car-axle, comprising in construction an inner axle-body and exterior sleeve-sections, to which the wheels are secured, said inner axle having a central flange or collar, and said sleeve-sections having flanges abutting the central collar, and a central clamp adapted to secure the sleeve-sections in place and provided with a lubricator, substantially as described.

407,257. ROCK-DRILL SUPPORT. HENRY C. SERGEANT, New York, N. Y., assignor to the Ingersoll-Sergeant Rock Drill Company, same place. Filed Oct. 19, 1888. Serial No. 288,576. (No model.)



Claim.—1. In a rock-drill support, the combination, with standards, of bearings upon the support receiving said standards, certain of said bearings being inward of the others, so that spaces will be left between them, the standards having a screw-threaded engagement with the inner of said bearings, substantially as and for the purpose herein described.

2. In a rock-drill support, the combination, with standards, of bearings on the support receiving said standards, certain of said bearings being inward of the others, so that spaces will be left between them, the portions of the standards between said bearings being reduced in diameter, substantially as and for the purpose herein described.

407,258. DIRECT-ACTING ENGINE. HENRY C. SERGEANT, New York, N. Y., assignor to the Ingersoll-Sergeant Rock Drill Company, same place. Filed Oct. 19, 1888. Serial No. 288,582. (No model.)



Claim.—1. The combination, with an oscillating valve provided with tappets and a passage whereby steam is received at one of its ends and two passages by which steam is discharged at the other of its ends, of a cylinder in which said valve is partly arranged, a cap removably secured to the cylinder and provided with an arc-shaped seat for the valve, passages within the said cap for conveying steam or other fluid to and from the cylinder and adapted to be brought alternately into communication with the passages in the valve, and stops for the tappets of the valve upon said cap, substantially as specified.

2. The combination, with a cylinder, of a cylindric valve arranged in said cylinder so as to be oscillated therein, and provided with a passage whereby steam is received at one end of the valve and two passages by which steam is ejected at the other end of the valve, oppositely-arranged tappets upon the valve, a piston within the cylinder having oppositely-extending inclined surfaces inward of its heads and a straight portion intermediate of the inclined surfaces of less diameter than the said heads, and a cap removably secured to said cylinder and provided with passages for conveying steam behind the heads of the piston and with a seat for the valve, substantially as specified.

3. The combination, with a cylinder, of a cylindric oscillating valve arranged with its axis transverse to the axis of the cylinder and adapted to receive steam or other fluid at one end and eject it from the other end, a cap removably secured to said cylinder and provided with steam-passages adapted to communicate with the said valve, said valve having bearings at its ends, whereby leakage is prevented from the supply to the exhaust, oppositely-arranged tappets on the valve, and a piston within the cylinder provided with inclined surfaces adapted to contact with said tappets during the movements of the piston, substantially as specified.

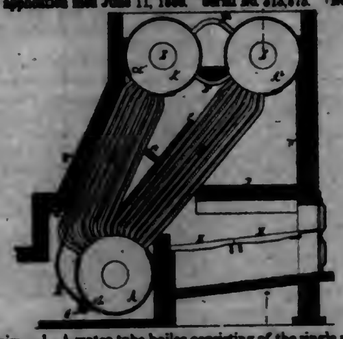
407,259. PLOW. CLARENCE C. SMALLEY, Manitowoc, Wis. Filed Mar. 30, 1889. Serial No. 305,267. (No model.)



Claim.—1. The combination, with the landside and mold-board and the transverse brace connecting the same, of the handles pivotally connected at their forward ends with the said brace, and the braces G, pivotally connected at their forward ends with the plow-beam and at their rear ends slotted and adjustably connected with the handles near the rear ends of the latter, substantially as and for the purpose specified.

2. In a plow, the combination, with the landside and mold-board and transverse brace, of the handles pivoted to the brace at their forward ends, the cross-piece E, connecting the handles near their rear ends, the braces G, pivotally connected at their forward ends to the plow-beam and slotted at their rear ends, and the transverse bolt F, passed through the piece E and through the slots of the braces G, and provided with the nut *g*, substantially as shown and described.

407,260. STEAM-BOILER. ALLAN STIRLING, New York, N. Y., assignor to the International Boiler Company, (Limited,) same place. Original application filed Feb. 24, 1889, Serial No. 301,437. Divided and this application filed June 11, 1889. Serial No. 313,573. (No model.)



Claim.—1. A water-tube boiler consisting of the single mud-drum A, the two elevated steam and water drums A' A', the water-tubes B', connecting the water-spaces of the steam and water drums, the steam-tubes B², connecting the steam-spaces of said steam and water drums, and two sets of water-tubes B B, directly connected, respectively, at their upper ends with the steam and water drums and both sets connected at their lower ends with the single mud-drum, substantially as described.

2. A water-tube boiler consisting of a furnace structure, a single mud-drum A, the two elevated steam and water drums A' A', having their steam and water spaces respectively placed in communication, two sets of water-tubes B B, directly connected, respectively, at their upper ends with the steam and water drums and both sets connected at their lower ends with the single mud-drum, the fire-brick arch D, extending over the fire-place from the wall of the furnace structure to the front set of water-tubes, and the fire-brick partition C, inclined between the two sets of water-tubes and located between the single mud-drum and the two steam and water drums, substantially as described.

407,261. HAT BRUSH AND PAD. MARTIN J. SUMMERLIN, Watkins, N. Y. Filed Aug. 22, 1888. Serial No. 283,549. (No model.)



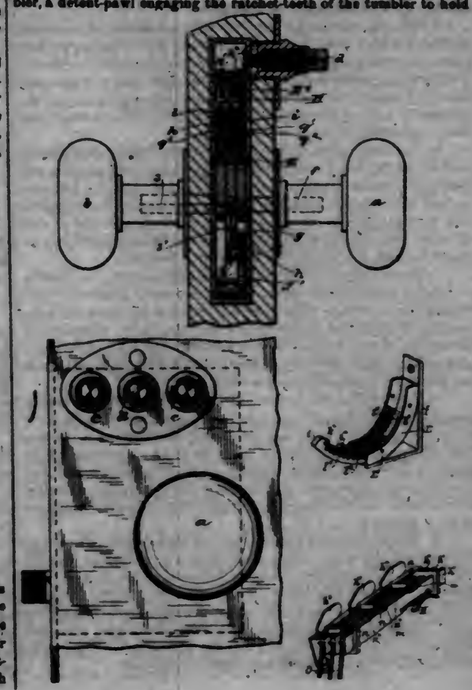
Claim.—1. In an elastic pad or brush, the combination of a flexible back and a flexible brushing-face secured together, and an interposed stiffening-sheet extending entirely across the width of the brush and through the main portion of its length, whereby the main portion of the brush will remain stiff, and the rest of the brush may be curved or flexed, as and for the purpose set forth.

2. The combination, in an elastic brush, of the pliable back and brushing-face secured together, a transverse spring interposed between the same, and metallic clamps *c c*, clasping the side edges of the brush and the ends of the said transverse spring, whereby the spring will be firmly held in place and all the parts securely bound together, substantially as described.

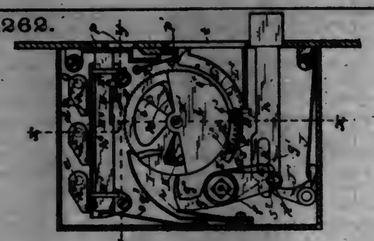
3. In a brush, the combination of the brushing-face and back-piece, the interposed transverse spring covered with impervious material, the interposed stiffening-sheet extending entirely across the brush and to within a short distance from the ends of the brush, and the metallic clamps clasped over the edges of the brush, so as to hold all the parts securely together.

407,262. COMBINATION-LOCK. JAMES F. THOMPSON, Chicago, Ill. Filed Feb. 27, 1888. Serial No. 265,260. (Model.)

Claim.—1. The combination, with the bolt and knob-spindle, of a notched tumbler mounted on a pivot parallel with the axis of the knob-spindle and provided with ratchet-teeth, an arm or projection upon the said knob-spindle adapted to engage the notch in the tumbler, a detent-pawl engaging the ratchet-teeth of the tumbler to hold



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the same from backward movement, and an actuating-pawl acting upon said tumbler to move the latter, substantially as described.

2. The combination, with the bolt and knob-spindle, of a plurality of tumblers controlling the movement of the bolt, said tumblers being provided with ratchet-teeth, slides moving in planes parallel with the tumblers, actuating-pawls mounted upon said slides, push-pins, and bell-crank levers connecting said push-pins with the said slides, substantially as described.

3. The combination, with the bolt and knob-spindle, of a tumbler provided with ratchet-teeth, a detent-pawl engaging the teeth of the tumbler to hold the same from backward movement, an actuating-pawl acting upon said tumbler to move the same, and a part actuated by the knob-spindle when the latter is turned backward, constructed to engage and move the said detent-pawl for releasing the tumbler, substantially as described.

4. The combination, with the bolt and knob-spindle, of a notched tumbler provided with ratchet-teeth, an arm or projection upon the said knob-spindle adapted to engage the notch of the tumbler, a detent-pawl engaging the tumbler, and an actuating-pawl acting on the tumbler to move the same, said arm or projection upon the knob-spindle being constructed to engage and move the detent-pawl when the spindle is turned backwardly, substantially as described.

5. The combination, with the bolt and knob-spindle, of a notched tumbler provided with ratchet-teeth, a detent-pawl engaging the said ratchet-teeth, an actuating-pawl acting upon said tumbler to move the same, and a stop adjustably mounted on the lock-frame and adapted to engage the said tumbler, substantially as described.

6. The combination, with the bolt and knob-spindle, of a notched tumbler provided with ratchet-teeth, a detent-pawl, an actuating-pawl acting upon said tumbler to move the same, a curved strip provided with a projection forming a stop for the tumbler, a curved guide supporting said strip, and means for adjustably securing said strip to the said guide, substantially as described.

7. The combination, with the bolt and knob-spindle, of a notched tumbler provided with ratchet-teeth, a detent-pawl engaging the said teeth, an actuating-pawl also engaging the ratchet-teeth for moving the tumbler, a part actuated by the spindle constructed to engage and move the detent-pawl, and a locking-detent adapted to engage the tumbler for holding the same in position to allow the actuation of the bolt, substantially as described.

8. The combination, with the bolt and knob-spindle, of a notched tumbler provided with ratchet-teeth, an actuating-pawl engaging and moving the tumbler, a part actuated by the spindle engaging and moving said detent-pawl, a spring locking-detent engaging the tumbler to hold the same from movement, and an exposed movable part or slide upon the lock-frame constructed to thrust the locking-detent into engagement with the tumbler, substantially as described.

9. The combination, with the bolt and knob-spindle, of a plurality of notched tumblers provided with ratchet-teeth, adjustable stops limiting the movement of the tumblers, detent-pawls for holding the tumblers from backward movement, actuating-pawls engaging and moving the tumblers, slide-bars carrying said actuating-pawls, push-pins, and bell-crank levers transmitting motion from said push-pins to the slide-bars, substantially as described.

10. The combination, with the bolt and knob-spindle, of a tumbler provided with ratchet-teeth, a detent-pawl engaging the teeth of the tumbler to hold the same from backward movement, an actuating-pawl acting upon said tumbler to move the same, a part actuated by the knob-spindle in the backward movement of the latter constructed to engage said detent-pawl for releasing the tumbler, and a spring applied to resist such backward movement of the knob-spindle, substantially as described.

11. The combination, with the bolt and knob-spindle, of a notched tumbler provided with ratchet-teeth, an arm or projection upon the said knob-spindle adapted to engage the notch of the tumbler, a detent-pawl engaging the tumbler, an actuating-pawl acting upon the tumbler to move the same, said arm or projection upon the spindle being constructed to engage and move the detent-pawl when the spindle is turned backwardly, and a spring applied to resist the backward turning of the spindle, substantially as described.

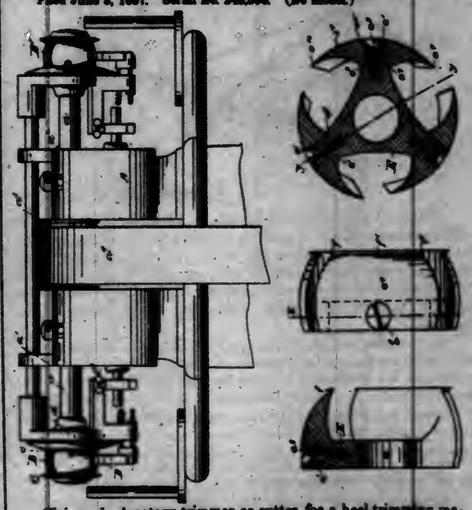
12. The combination, with the bolt and knob-spindle, of a plurality of tumblers controlling the movement of the bolt, said tumblers being provided with ratchet-teeth, slide-bars moving in planes parallel with the tumblers, actuating-pawls mounted upon said slide-bars, push-pins, and bell-crank levers, one or more of said slide-bars being provided with pins engaging the bell-crank levers, and a lateral arm or arms attached to one or more of said slide-bars to sustain the pins belonging thereto, substantially as described.

13. The combination, with the bolt and knob-spindle, of a notched tumbler provided with ratchet-teeth, a detent-pawl engaging said ratchet-teeth, an actuating-pawl also engaging said ratchet-teeth, a slide-bar carrying said pawl, and a stationary part or arm located in position to engage the actuating-pawl and throw the same away from the tumbler in the backward movement of the said slide-bar and pawl, substantially as described.

14. The combination, with the bolt and knob-spindle, of a notched tumbler provided with ratchet-teeth, a detent-pawl, a bodily-movable actuating-pawl, an exposed removable plate secured to the lock-frame, and a stop adjustably mounted on said removable plate and adapted to engage the tumbler, substantially as described.

15. The combination, with the bolt and knob-spindle, of a notched tumbler provided with ratchet-teeth, a detent-pawl, an actuating-pawl, an exposed removable plate attached to the lock-frame, a curved strip provided with a projection forming a stop for the tumbler, and a curved guide supporting the said strip, said curved guide being attached to said removable plate, substantially as described.

407,263. SOLE AND HEEL TRIMMER. CHARLES H. TRASK, Lynn, Mass., assignor to the Duplex Shoe Trimmer Company, Portland, Me. Filed June 3, 1887. Serial No. 240,208. (No model.)



Claim.—1. A rotary trimmer or cutter for a heel-trimming machine, having a blade or knife support and reversible shell blades or knives carried thereby, which are provided with two cutting-edges, each of which is adapted to be used in turn either for right cutting or for left cutting, substantially as described.

2. The combination of a block or support E for a rotary sole-edge trimmer or cutter with the shell blades or knives c^4, shaped substantially as specified, each of which has a cutting-edge c^9 and a cutting-edge c^{10}, attached to the said block or support in a manner, substantially as described, to permit them to be swung or moved thereon to bring each cutting-edge of the said knives or blades into operative position either for right or left trimming, substantially as described.

3. The combination of the block E, having the posts or studs d and the shaft-hole e, the blades c^4, having the cutting-edges c^9 c^{10}, and the locking-screws c^5, substantially as described.

4. The combination of the block E, having the shaft-hole e, the post f, and the shoulders c^6 c^7, the posts and shoulders being arranged in relation to the center of the block as specified, with the shell blades or knives c^4, having the cutting-edges c^9 c^{10}, and the fastening-screws c^5, substantially as described.

5. A rotary trimmer for a sole or heel edge trimming machine, having reversible blades provided with two cutting-edges concentrically secured to a holding-block, whereby the blades when occupying one position thereon present one trimming-edge, while the other trimming-edge is within the circle described by the operative trimming-edge, whereby upon the turning of the blades upon their supports the inoperative cutting-edge is brought into operative position and the first-named cutting-edge moved to a position within the circle which it formerly described, as and for the purposes specified.

6. A rotary trimmer for a heel and sole edge trimming machine, having a block E and a series of reversible blades c^4 secured thereto, one or more of which has the rand-trimmer f integral with it or them, substantially as described.

7. The shell blade or knife c^4, having the hole c^8, the shoulders c^6 c^7, and the cutting-edges c^9 c^{10}, substantially as described.

8. A shell blade or knife having the hole c^8, the shoulders c^6 c^7, and cutting-edges c^9 c^{10}, the extension f' upon one edge having the cutting-edge f, as and for the purposes described.

9. The combination, in a heel-trimming machine, of a shaft a, a right trimmer B, comprising a block or support E, and the reversible blades c^4, arranged to extend outwardly therefrom and supported at one end of the shaft a, the left trimmer B', comprising the block E and reversible blades c^4, which extend outwardly from it, and is supported upon the opposite end of the shaft a, a rand-guide C, top-lift rest and guide c, and a heel-rest D for each cutter, as and for the purposes described.

407,264. COMPOSITION FOR WATERPROOFING TEXTILE MATERIALS. JACOB WEST, New York, N. Y., assignor of one-half to Sigmund S. Hirschler, same place. Filed June 28, 1888. Serial No. 277,886. (No specimens.)

Claim.—A waterproofing composition consisting of glue, sugar of lead, alum, chloride of zinc, and water, as described.

407,265. COMPOSITION FOR WATERPROOFING TEXTILE MATERIALS. JACOB WEST, New York, N. Y., assignor of one-half to Sigmund S. Hirschler, same place. Filed June 28, 1888. Serial No. 278,000. (No specimens.)

Claim.—A waterproofing composition consisting of glue, sugar of lead, alum, and water, substantially as herein described.

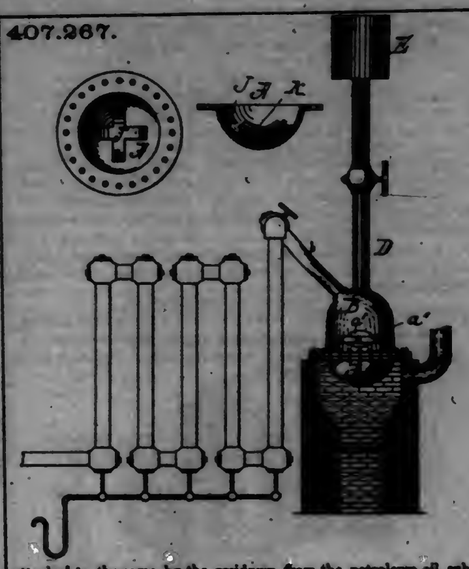
407,266. WHEEL FOR VEHICLES. DARIUS S. WEST, Great Falls, Mont. Filed Apr. 10, 1889. Serial No. 306,694. (No model.)

Claim.—In a wheel for vehicles, the combination of the countersunk felloes, curved spokes having enlarged heads at their outer ends and bent at their inner ends to form right-angled elbows, the hub comprising a central threaded sleeve or thimble, a central disk having recesses alternating with one another on both sides, and two side disks having recesses on their inner sides registering, respectively, with the recesses on opposite sides of the outer disks or side disks, keys for locking said disks together, and the nut working upon the threaded end of the hub-thimble and adapted to force the several disks together laterally, substantially in the manner and for the purpose herein shown and set forth.

407,267. APPARATUS FOR GENERATING GAS FROM PETROLEUM-OIL. ARCHIE WEYER, Tallapoosa, Ga. Filed Jan. 12, 1889. Serial No. 296,602. (No model.)

Claim.—In an apparatus for generating gas from petroleum-oil, a retort having a false bottom J, said false bottom having a hook attached to its edge to be used in withdrawing said bottom from the retort, and the bricks K, carried by said false bottom adapted to be

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attached to the same by the residuum from the petroleum-oil, substantially as and for the purpose set forth.

407,268. LATCH. EDWIN R. WESTMACOTT, Westwich, County of Kent, England. Filed Dec. 17, 1888. Serial No. 293,286. (No model.) Patented in England July 5, 1884, No. 9,766.

Claim.—1. In a latch, the combination, with a latch-bolt having a projection thereon, of a block having a catch or pawl adapted to engage such projection on the bolt, and also having a projection q, a latch-spindle extending to the opposite side of the door, its weighted arm, and a striking-plate r, having a slot s and cam-surfaces t and u, substantially as and for the purposes described.

2. In a latch, the combination, with a latch-bolt having a projection k on its upper end and provided with a bore having an opening therein, a sliding block j, having a catch or pawl i, adapted to engage said projection k, and also having a projection q and a spindle k', fitting in the opening of the bolt and extending to the opposite side of the door, a bore through which said spindle passes, provided with teeth to engage the teeth of the rack f, the short spindle and its weighted arm, and a striking-plate r, having a slot s and cam-surfaces t u, all substantially as and for the purposes set forth.

407,269. STOP FOR PEDALS. SAMUEL T. WHITE, Brooklyn, N. Y. Filed Mar. 22, 1889. Serial No. 304,312. (No model.)



Claim.—1. The combination, with a pedal, of a stop for said pedal, and a releasing-pedal for said stop, substantially as described.

2. The combination, with a pedal, of a stop for said pedal, and a releasing-pedal connected to the stop by a bell-crank lever and link, substantially as described.

3. The combination, with a pedal, of a stop for said pedal, a pivot or joint about which said stop moves, and a releasing-pedal for said stop, substantially as described.

407,270. BUFFER. SIDNEY W. WINSLOW and FREEMAN H. WINSLOW, Beverly, Mass., administrators of Freeman Winslow, deceased, assignors to Sidney W. Winslow, trustee, same place. Filed Dec. 7, 1888. Serial No. 292,982. (No model.)



Claim.—1. An abrading-covering for boot or shoe buffers, the same consisting of a disk composed of a sheet of thin flexible material having an abrading-surface and a non-abrading edge, combined with connections for holding it to the foot, and the foot attached by said connections to the covering between the center and margin thereof, substantially as and for the purpose set forth.

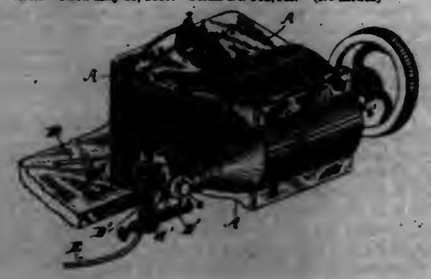
2. As an article of manufacture, an abrading-covering for boot or shoe buffers, consisting of a disk composed of a sheet of thin flexible material having an abrading-surface and a non-abrading edge, attaching-connections, and countersinks between the center and margin of said covering adapted to receive the attaching-connections to hold it to the foot, substantially as described.

3. An abrading-covering for boot or shoe buffers, consisting of a disk composed of a sheet of thin flexible material molded with countersinks at intervals on its working-surface between the center and the margin, combined with a foot and connecting devices inserted through the countersinks in said covering and through the foot, substantially as described.

407,271. PLASTIC COMPOUND. ARTHUR T. WOODWARD, New York, N. Y. Filed Apr. 26, 1889. Serial No. 308,966. (No specimens.)

Claim.—The plastic compound herein described, composed of pulverized silica—such as flint, glass, or sand—and a mineral or vegetable resin or pitch mixed therewith, combined with sulphur, arsenic, and manganese, substantially as described, for the purpose specified.

407,272. ELECTRIC MOTOR. LEONIDAS G. WOOLLEY, Grand Rapids, Mich. Filed May 23, 1889. Serial No. 312,443. (No model.)



Claim.—1. In an electric motor, the field-magnet having its core constructed wider than the pole-pieces, whereby the centers of the armature and said core may be brought closer together and the distance through which the magnetic force must travel thus reduced, while the proper quantity of metal in said core is maintained, substantially as set forth.

2. An electric motor or dynamo in which the core of the field-magnet is wider than the pole-pieces, and in which that portion leading from said core to said pole-pieces tapers gradually, whereby the lines of magnetic force are concentrated instead of being broken or dispersed, substantially as set forth.

3. The combination, in a motor or dynamo, of a single cap composed of diamagnetic metal, and bearing-supports for the armature-shaft, secured to the ends of said cap, substantially as shown and described.

4. In a motor or dynamo, a single cap constructed cup-shaped, as described, in combination with the bearing-supports secured thereto, substantially as set forth.

5. In a motor or dynamo, the combination, with the armature and its shaft, of a bearing-support having extended wings which also support the brush-holders, substantially as set forth.

6. An electric motor or dynamo in which the core of the field-magnet and the pole-pieces are cast in a single piece, said core being wider than said pole-pieces, and arranged to include the neutral part of the machine.

407,273. CULTIVATOR. ROBERT ALLSTATTER, Hamilton, Ohio, assignor to the Long & Allstatter Company, same place. Filed Mar. 25, 1889. Serial No. 304,762. (No model.)

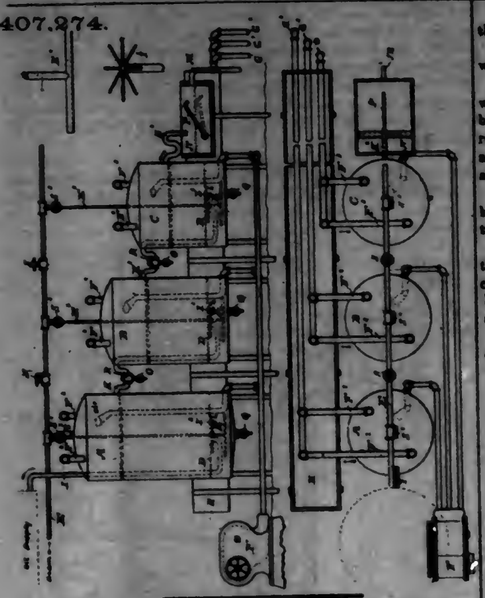


Claim.—The combination, substantially as set forth, of a beam, a toothed shank pivoted thereto, so as to be capable of oscillating motion and a reciprocating motion with reference thereto, a latch-ment serving to hold the shank into normal position with reference to the beam and adapted to engage and disengage by the reciprocating motion of the shank upon the beam, and a spring acting between the beam and shank and arranged to resist the disengagement of the latchment and to resist the swinging back of the tooth-shank when the latchment is disengaged.

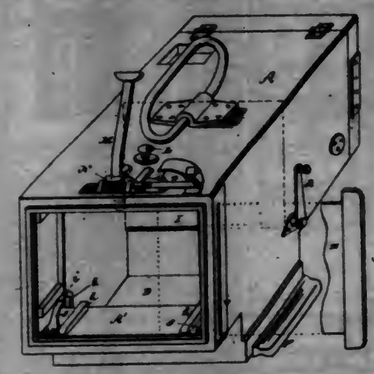
407,274. PROCESS OF PURIFYING AND DEVOLATILIZING PETROLEUM DISTILLATES. HENRY R. ASTON, Brooklyn, N. Y. Filed June 5, 1885. Renewed Sept. 26, 1888. Serial No. 286,708. (No model.)

Claim.—The process of obtaining purified and graded oils and naphthas from petroleum distillate, consisting in repeatedly subjecting the distillate to the action of heated water in closed tanks at increasing temperatures by passing the distillate upwardly through the heated water in said tanks, separately removing the volatilized products of each tank as the process advances, and condensing and discharging said products separated from each other and from the distillate, substantially as set forth.

407,274.



407,275. PHOTOGRAPHIC CAMERA. RUFUS B. RAMSEY, Newark, N. J. Filed Apr. 11, 1887. Serial No. 234,462. (No model.)



Claim.—1. A magazine-camera for photographic purposes in which are combined the following elements: a chamber in the rear end of the camera-body for storing the sensitized plates or their holders, upper and lower stops adapted to finally support the forward plate-holder, spring-supports arranged in proximity to the lower stops and adapted to sustain the front plate-holder, a spring adapted to force forward the series of plates, and a well to receive the plates successively after exposure, essentially as and for the purposes herein described.

2. In a magazine photographic camera, the combination of the chamber A' in rear of the camera-body, having an upper stop *e* and lower side stops *i*, the spring-supports *J J*, the guards or guides *k*, and the well or chamber D, substantially as specified.

3. In a magazine photographic camera, the combination, with the magazine or chamber A', of the rails or guides *h h* and the spring-supports *J J*, substantially as specified.

4. The trigger or button L, in combination with the spring-supports *J J* and the stops *e i*, essentially as described, and for the purpose set forth.

5. In a magazine photographic camera, the spring M, adapted to slide in and out of the chamber containing the plates to be exposed, also to set out in a backward direction relieved of tension, and to project or be adjusted forward subject to tension, substantially as specified.

6. The combination of the plate-holders S', provided with lower side trunnions *e e*, the spring-supports *J J*, and the stops *e i*, essentially as specified.

7. The spring M, in combination with the spring-supports *J J* and the stops *e i*, substantially as described.

8. The plate-holder S', adapted to receive the plate and provided with a covering-lip *f*, substantially as specified.

9. In a magazine photographic camera provided with a lower well or chamber for reception of the plates after exposure, the combination, with said well or chamber and with an apertured board in rear of the lenses of the camera, of a rocking supplementary shutter adapted to close in its different adjustments the aperture in said board and the well at its top, substantially as and for the purposes specified.

10. The removable plate-holding box G, having a slide H, in combination with the well D, its slide F, the chamber A', and slide E, essentially as described, and for use as herein set forth.

11. In a magazine photographic camera, the combination, with the chamber A', of the spring M, adapted to slide in and out of said chamber, the slotted rocker N, carrying said spring, and the pivoted handle O, for operation together, substantially as and for the purposes specified.

407,276. ROLL FOR JORDAN PULP-ENGINES. EDWIN W. BARTON, Lawrence, Mass. Filed June 26, 1882. Serial No. 278,169. (No model.)



Claim.—1. The tapering ungrooved roll *b*, having the annular projections *b' b'*, grooved transversely for the reception of the blades *c c*, in combination with the hoops or rings *d, d*, surrounding the said annular projections and adapted to serve as means for holding the said blades secured to the roll *b*, substantially in a manner and for the purpose specified.

2. In combination with the blades *c c*, having the bayonet-shaped notches *c'* and ledges *c''*, as described, the ungrooved roll *b*, having annular projections *b'*, transversely grooved for the reception of said blades, and the annular hoops *d*, surrounding said projections *b'* and adapted to receive between their inner surfaces and the grooved portions of the projections *b'* the ledges *c''* of the notched bars *c*, substantially as and for the purpose set forth.

3. The roll *b*, having the annular projections *b'* and end projections *b'' b''*, transversely grooved and having the respective hoops or rings *d c c*, in combination with the blades *c*, having the bayonet-notches *c'* and ledges *c''*, substantially as and for the purpose set forth.

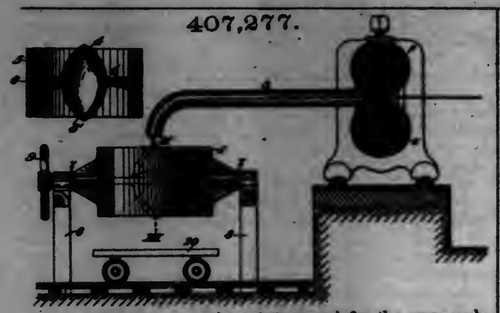
4. The ungrooved roll *b*, having the annular and transversely-grooved projections *b'*, and the hoops or rings *d*, surrounding the same, in combination with the blades *c*, having the notches *c'* and ledges *c''*, and the filling-pieces *f f*, all arranged and combined substantially as and for the purpose set forth.

407,277. METAL-COILING APPARATUS. FRANK. BRAMEIS, Pittsburg, Pa., assignor to Henry Roberts, same place. Filed Apr. 11, 1889. Serial No. 306,573. (No model.)

Claim.—1. In apparatus for coiling metal rods, the combination, with the roll, of a tapering or conical turret, and a guide leading from the rolls and having a stationary delivery end at the end of the turret, substantially as and for the purposes described.

2. The combination of the rolls 2, the conical turret 4, and a guide 3, leading from the rolls and having its delivery end flared and directed

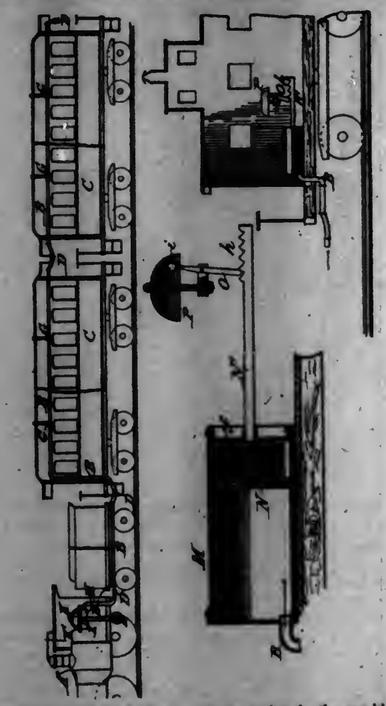
407,277.



to the apex of the turret, substantially as and for the purposes described.

2. The double coiling-box provided with opposite compartments having turrets, said box being mounted on pivots so as to be capable of being overturned, substantially as and for the purposes described.

407,278. RAILWAY-CAR SIGNAL. MILTON R. CAMPANY, Hamilton, Mich. Filed Aug. 16, 1888. Serial No. 282,911. (No model.)

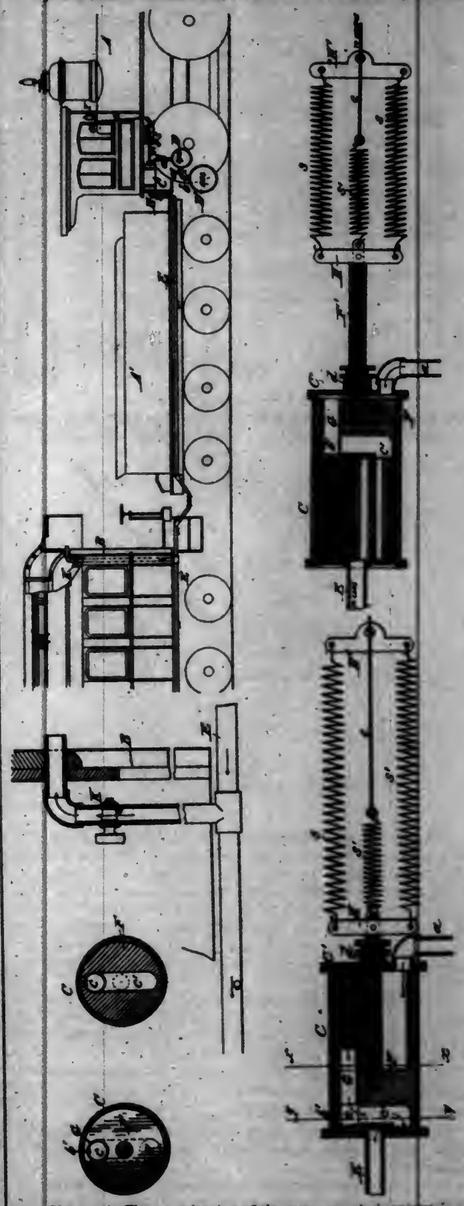


Claim.—1. As an improvement in train-signals, the combination of an air-pipe extending through the train, a compressed-air receptacle upon the locomotive with which said pipe is connected, a cylinder placed in the rear car of the train, also connected with said pipe, a piston in said cylinder actuated in one direction by a spring and in the opposite direction by compressed air, and a bell or gong arranged to ring by the movement of said piston, all the parts arranged to ring the bell upon the escape of air from the pipe through a suitable valve or upon the breaking of a pipe-coupling, substantially as set forth.

2. As an improvement in train-signals, the combination of an air-pipe extending through the train and provided with suitable escape-valves, a compressed-air receptacle attached to the locomotive and with which said pipe is connected, a rotary motor also connected with the air-pipes and mounted upon the locomotive, and a bell and bell-ringing devices put in motion by the motor upon the escape of air from the pipe to convey signals from any car in the train to the engine, as specified.

3. As an improvement in train-signals, the combination of a rotary motor mounted upon the locomotive, a bell and bell-ringing devices put in motion by said motor, an air-pipe extending through the train and connected with said motor, a cylinder placed in a car of the train and also connected with said air-pipe, a piston in said cylinder actuated in one direction by a spring and in the opposite direction by compressed air, and a bell or gong arranged to ring by the movement of said piston, all arranged to give signals upon the locomotive and also upon the train upon the escape of air from the pipe through a suitable valve or upon the breaking of a pipe-coupling, substantially as set forth.

407,279. TRAIN-SIGNALING APPARATUS. MILTON R. CAMPANY, Hamilton, Mich. Filed Dec. 20, 1888. Serial No. 294,145. (No model.)

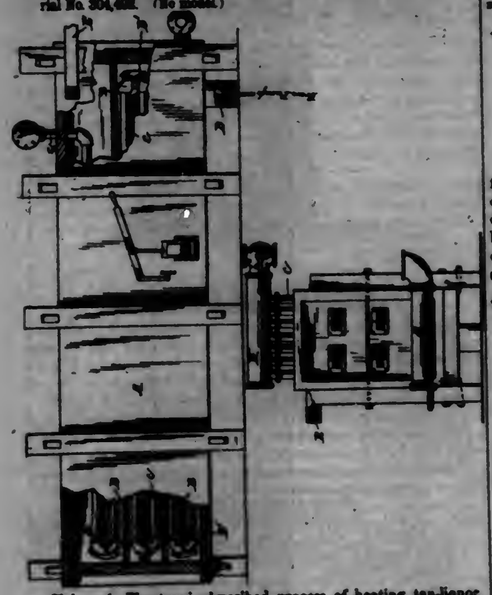


Claim.—1. The combination of the compressed-air reservoir employed to supply the brakes of a train, an air-chamber connected with said reservoir by a pipe containing a check-valve for maintaining an equable pressure in said chamber, a cylinder and a piston moving therein, the piston provided with an automatically-operating valve having a longitudinal sliding movement, an independent train-pipe connecting with the chamber and cylinder and provided with escape-valves, and devices, substantially as herein shown and described, for connecting the piston with the gong or whistle, as set forth.

2. As an improvement in train-signaling apparatus, the cylinder connected at one end to an air-chamber and at the other to a train-pipe, said cylinder containing a movable piston capable of being moved in one direction by compressed air and provided with an automatically-moving valve in combination with the piston-rod, its cross-head and the springs connecting said cross-head to the opposite ends of a swinging lever adapted to return said piston to its normal position when the air-pressure within the cylinder is equalized, as set forth.

3. As an improvement in train-signaling apparatus, the combination of the cylinder, the perforated piston, the hollow cylindrical valve moving in said perforation, the piston-rod, the spring *d'*, attached to said rod, the cord *e*, attached to the spring, and the whistle I, all arranged, as shown and described, to operate the whistle by a yielding pull upon its lever, as set forth.

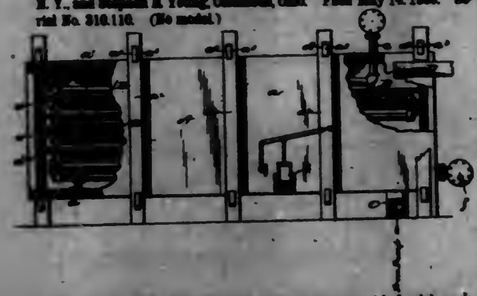
407,280. PROCESS OF HEATING TAN-LIQUOR. OLIVER F. CARLEY, Westfield, Pa., assignor of two-thirds to Dewitt C. Conklin, Olean, N. Y., and Stephen H. Young, Columbus, Ohio. Filed Mar. 23, 1889. Serial No. 304,462. (No model.)



Claim.—1. The herein-described process of heating tan-liquor, which consists in passing it in a sinuous flow over the surface of steam-pipes in a direction opposite to that of the movement of the steam within the pipes, whereby the advancing liquor is subjected to a gradually-increasing temperature, substantially as described.

2. The herein-described process of heating tan-liquor, which consists in pumping it upward through a series of sinuous passages, through which steam is circulating in pipes in a direction contrary to that of the direction of the liquor, substantially as described.

407,281. APPARATUS FOR HEATING TAN-LIQUOR. OLIVER F. CARLEY, Westfield, Pa., assignor of two-thirds to Dewitt C. Conklin, Olean, N. Y., and Stephen H. Young, Columbus, Ohio. Filed May 14, 1888. Serial No. 310,110. (No model.)



Claim.—1. A tank for heating tan-liquor, provided with a zigzag passage for the liquor and a zigzag steam-heating coil within the liquor-passage, substantially as and for the purposes set forth.

2. In combination with the tank A, having partitions B to afford a zigzag passage throughout it, the zigzag steam pipes or coils E, the inlet F, the connections *e*, the pump C, for forcing the liquor through the tank, and steam or water outlet *f*, all as set forth.

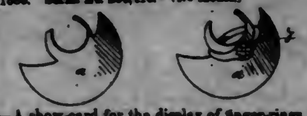
3. In combination with the tank A, made as described and having zigzag passages for the tan-liquor and steam, a gate G, for letting off the liquor when desired.

4. In a tank for heating tan-liquor, the coil pieces *d'* and rods *e'* for holding them in position, whereby, when occasion requires, the said pieces, or either of them, can be removed and access had to the entire inner part of the tank, substantially as set forth.

5. In an apparatus for heating tan-liquor, the combination of the following elements, viz: a knockdown tank having zigzag passages for the liquor, zigzag heating-pipes in said passages, means for forcing the liquor through the tank, doors by which each coil can be inspected, removable end pieces by which the entire interior of the tank can be inspected, and a gate to draw off the liquor as occasion demands.

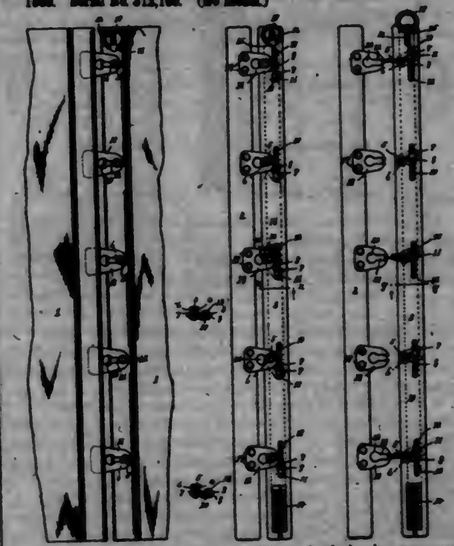
6. In an apparatus substantially as described, the combination of the steam pipe or coil having a projecting lug *e'* at each bend or joint, as set forth, with the partitions B, whereby the coil or pipe is supported in the manner and for the purposes explained.

407,282. SHOW-CARD. JOHN W. DAVIES, Worcester, Mass. Filed Feb. 1, 1889. Serial No. 298,410. (No model.)



Claim.—A show-card for the display of finger-rings, constructed from flexible sheet material in a single blank in the shape of a semi-disk, and with the yoke or arms projecting in the same plane, but divergently from the straight or diametric edge, the whole, when bent or slightly curved, being adapted to receive a ring over the yoke or arms, and to support it in an elevated and conspicuous position, substantially as shown and described.

407,283. CORSET-CLASP. ALBERT H. DEAN, Bridgeport, Conn., assignor of one-half to Leonard K. Hayden, same place. Filed May 25, 1888. Serial No. 312,169. (No model.)



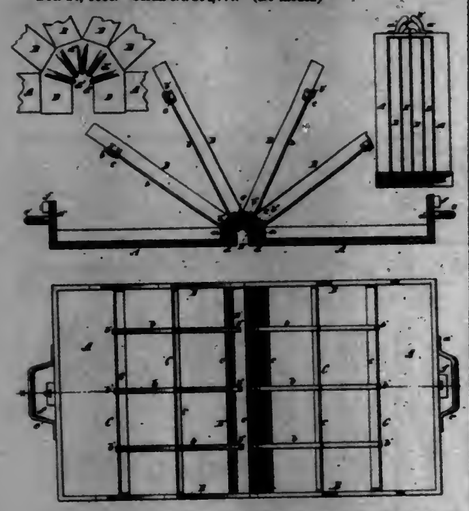
Claim.—1. A corset-clasp comprising a bank having eyes, each of which is provided with a slot at its outer edge leading to the central opening, and a second bank having rotary clasping-studs, said studs being cut away upon one side, so that when in position they will remain in engagement with the eyes, and when partially rotated they will pass through said slots, so that the banks may be disengaged without movement toward each other.

2. A corset-clasp comprising a pair of banks, one of which is provided with rotary studs cut away upon one side, the other being provided with eyes having openings to receive the heads of the studs, slots extending therefrom toward the outer edge thereof, which receive the shanks of the studs, and reduced slots leading to the outer edge, of suitable size to allow the studs to pass through when the lesser diameter is presented thereto, but to hold the banks in the clasped position when the greater diameter of the studs is presented thereto.

3. A corset-clasp comprising a pair of busks, one of which is provided with rotary studs cut away upon one side, the other busk being provided with eyes having openings 20, of suitable size to receive the heads of the studs, slots 21, of suitable size to receive the greater diameter of the studs, and slots 22, leading to the outer edge, of suitable size to allow the studs to pass through when the lesser diameters are presented.

4. A corset-clasp comprising a pair of busks, one of which is provided with rotary studs 4, cut away upon one side, and slots 12, plates attached to the inner ends of said studs and provided with slots 9, said slots lying obliquely to slots 12, and a slide having studs 11 passing through slots 9 and 12, so that when said slide is moved either upward or downward the greater or lesser diameters of studs 4 are placed in operative position, the other busk being provided with eyes adapted to be engaged by the greater diameter of stud 4 in the usual manner, and having slots 22 at the outer edges thereof, which allow studs 4 to pass out when the smaller diameters are placed in operative position, but which hold said stud in the clasped position when the greater diameter is in operative position.

407,284. PORTFOLIO. ALBERT EDWARDS, Brooklyn, N. Y. Filed Dec. 27, 1888. Serial No. 294,777. (No model.)



Claim.—1. A portfolio composed of a case, a flexible back attached thereto, and hinged leaves connected with the flexible back, said flexible back consisting of a series of keystone-shaped pieces flexibly connected with each other at the upper points of their beveled sides or edges, in contact with each other at the upper points of their beveled sides or edges when the portfolio is closed, and capable of binding together by the contact of their beveled sides or edges with each other when the portfolio is open, said hinged leaves consisting of upright pieces and connections working in unison with the series of keystone-shaped pieces, all substantially as described.

2. In a portfolio, a hinge consisting of a series of keystone-shaped pieces flexibly connected with each other at the upper points of their beveled sides or edges, in contact with each other at said upper points of their beveled sides or edges when the portfolio is closed, and capable of binding together by the contact of their beveled sides or edges with each other when the portfolio is open, substantially as set forth.

3. In a portfolio, the combination of a case, a series of keystone-shaped pieces flexibly connected with each other at the upper points of their beveled sides or edges joined to said case, said keystone-shaped pieces being in contact with each other at the upper points of their beveled sides or edges when the portfolio is closed, and capable of binding together by the contact of their beveled sides or edges when the portfolio is open, with hinged leaves composed of upright pieces, and connections working in unison with the keystone-shaped pieces, substantially as set forth.

4. In a portfolio, the combination of a case A *a*, a flexible back connected therewith, consisting of a series of keystone-shaped pieces flexibly connected with each other at the upper points of their beveled sides or edges and working upon each other, as described, with upright pieces B B B, and connections working in unison with the keystone-shaped pieces, all substantially as set forth.

5. In a portfolio, substantially as described, the combination of a series of keystone-shaped pieces flexibly connected with each other at the upper points of their beveled sides or edges and working upon each other, as described, substantially as and for the purposes set forth.

6. In a portfolio, the combination of a case A *a* with pieces B B B, of wood or suitable material, attached thereto, said pieces B B B having their sides or edges beveled in the form of keystones and being flexibly held together by a fastening *c c c*, of canvas, leather, tape, cord, or suitable material, upon their upper faces, with upright pieces B B B *b b b* and connections *c c c*, attached to the beveled pieces B B B at or near the respective ends of said beveled pieces and upon the upper faces thereof, all substantially as described.

7. In a portfolio, substantially as described, the combination of pieces B B B, of wood or suitable material, having their sides or edges beveled in the form of keystones, and being flexibly held together at the upper points of their beveled sides or edges by a fastening *c c c*, of canvas, leather, tape, cord, or suitable material, and working upon each other, as described, substantially as and for the purposes set forth.

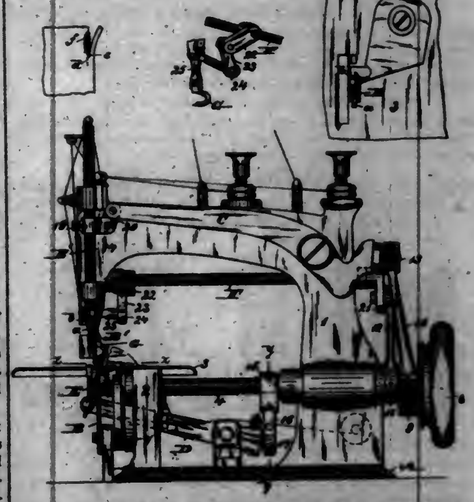
407,285. COMBINED SQUARE, LEVEL, PROTRACTOR, &c. CHRISTIAN HENNINGER, Albany, N. Y., assignor, by mesne assignments, of one-half to Cortland S. Babcock, same place. Filed Dec. 16, 1887. Serial No. 258,073. (No model.)



Claim.—1. The square A, having each of its angular limbs made with surfaces *a a'*, which are parallel with each other, and having in the same from their inner surfaces the grooves *c c*, parallel with the side surfaces a^2 a^2 of said limbs, for operation with a protractor and T-square at will, substantially as and for the purposes set forth.

2. The combination, with a square constructed as described, of a protractor which is attachable at will with said square, and a level which is pivoted at one of its ends to the protractor at the point of the center of curve of the same, and provided with an index, substantially as and for the purposes set forth.

407,286. COMBINED SEAMING, TRIMMING, AND OVERSEAMING MACHINE. HENRY H. FRYER, Philadelphia, Pa., assignor of one-half to Thomas A. Pearce, same place. Filed Oct. 27, 1888. Serial No. 289,285. (No model.)



Claim.—1. The combination, with a needle and looper and their operating mechanism, of an additional needle and looper and a spreader adapted to take the loop from said looper and spread it for the additional needle, with operating mechanism for said needle, looper, and spreader, a vertically-moving trimming device operating between the path of the needles and in advance of said additional needle, substantially as and for the purpose set forth.

2. The combination, with a needle and looper and their operating mechanism, of an additional needle and looper and a spreader or carrier for the loop from said additional needle to its looper, with operating mechanism for said needle, looper, and spreader, forming combined devices for seaming and overseaming, the first-mentioned needle and looper being in advance of said additional needle and looper, substantially as described.

3. In a combined seaming, trimming, and overseaming machine, the parallel shafts 4 and F and operating mechanism, two needles *a b* and bars carrying the same, the looper 5 for the needle *a*, the looper E for the needle *b*, the spreader G, passing to and from the looper 5 and needle *b*, with operating mechanism, and a trimming-knife intermediate of the two needles, said parts being combined substantially as described.

4. A combined seaming, trimming, and overseaming machine having a cloth-feeding device, two vertically-operating needle-bars, one of which has a seaming and the other an overseaming needle, a vertically-operating trimmer on the side of the path of the work of the needle and behind the seaming but before the overseaming needle, a looper-needle working through the cloth-plate and connected with and operated by mechanism connected with the driving-shaft, and a pivoted spreader above the cloth-plate and operated by mechanism connected with the driving-shaft, the said spreader being adapted to receive the loop from the looper-needle and spread it for the overseaming-needle, said parts being combined substantially as described.

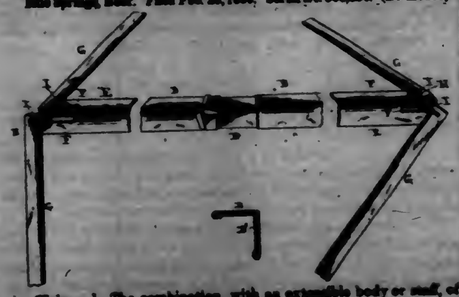
407,287. SMOKE AND GAS CONSUMING FURNACE. ALBERT PICKETT, Rochester, N. Y., assignor of one-half to Theodore W. Hulett, same place. Filed Feb. 11, 1889. Serial No. 299,689. (No model.)

Claim.—1. In a furnace, the combination of a magazine extending across the furnace-space, doors opening into the fire-chamber provided with chutes which tally with discharge-openings in the magazine, and cut-off valves covering the passage between the magazine and chutes, as shown and described, and for the purpose specified.

2. In a furnace, the combination of a magazine extending across the furnace-space, doors opening into the fire-chamber provided with chutes which tally with discharge-openings in the magazine, cut-off valves covering the passage between the magazine and chutes, and separate screw conveyers having their ends resting, respectively, under the chutes, said conveyers forming part of the main grate of the furnace, as herein shown and described.

3. In a furnace, the combination of the grate-bars *i i*, the separate screw conveyers *h h*, standing on a level with said grate-bars and operated independently, and the troughs *l l*, in which the conveyers rest, provided with slots *m m* in their bottom for the discharge of ashes below the conveyers, as herein shown and described.

407,288. GAGE FOR MARKING SPOUTING. LOREN S. FLETCHER, Blue Springs, Nebr. Filed Feb. 23, 1889. Serial No. 300,866. (No model.)

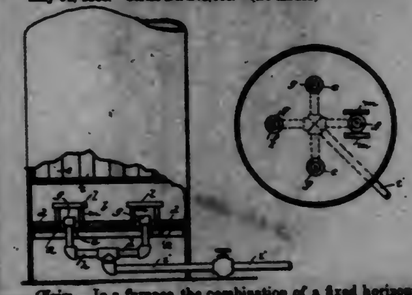


Claim.—1. The combination, with an extensible body or staff, of a plate having two plane faces at an angle to each other, and a gage-piece attached to each of the faces and each adjustable to any angle in the plane of the face, substantially as described.

2. The combination, with the extensible body, of the angle-plate perforated near its end, a perforated gage-piece secured to each face of the angle-plate and movable in the plane of that face, and a clamp for securing each gage in adjusted position, substantially as described.

3. The combination of the extensible staff, an angle-plate at each end of said staff having two faces in different planes, and an adjustable gage-piece connected to each of the faces of each angle-plate, all substantially as described.

407,289. GAS-FURNACE. ROBERT S. FRAZE, Gloucester, Pa. Filed May 31, 1888. Serial No. 275,602. (No model.)



Claim.—In a furnace, the combination of a fixed horizontal partition *a*, located in the combustion-chamber and having a refractory lining *d* and a series of openings which extend through said lining and the partition, the vertical inlet-pipes *h* of less diameter than the openings *c* through which they are passed to provide intermediate air-spaces for air to pass through said openings into the combustion-chamber, the fixed caps on the upper extremities of said inlet-pipes and having the contracted central discharge-openings, the horizontal deflecting-plates *l*, one arranged above each of the caps at right angles to the path of the gas issuing from the discharge-opening thereof, and the spaced tiles *m*, resting on the lining *d* beneath the ends of the deflecting-plate and leaving wide spaces between themselves for the free escape of the gas impinging against said deflecting-plates, substantially as described.

407,290. BALING-PRESS. JOHN H. GARDNER, Dalton, Ga., assignor to J. R. Sanders and Sam Waddell, both of Union City, Tenn. Filed Feb. 23, 1889. Serial No. 300,896. (No model.)



Claim.—1. In a baling-press, the baling-chamber and the door C attached thereto, adapted when open to swing clear of the feed-aperture and having on its front edge the piece *c*, combined with the weighted locking-ball, substantially as shown and described.

2. In combination with the baling-chamber slotted as *a*, the weighted locking-ball D, the door C, having a piece *c* on its front edge, the pivoted arm G, and the platen having the studs moving in said slots *a*, substantially as and for the purposes set forth.

3. In a baling-press, the pitman F, carrying platen E and having notches *d' d²* in its end, combined with the piece K, having studs *k* at its respective ends, and the sweep L, having arm *l*, each having a pin or stud at or near its end to engage, respectively, with said notches *d' d²*, substantially as and for the purposes set forth.

4. The combination of casing A, slotted at *a'*, the door C, the weighted ball, and the arm G with the platen E, studs *c*, and pitman F, operated as set forth.

407,291. GAS-BURNER. CORNELIUS J. HAMILTON, Philadelphia, Pa., assignor to James H. Wilson, same place. Filed July 26, 1888. Serial No. 281,267. (No model.)

Claim.—1. In a gas-lamp, the combination of a central supply-pipe with a series of distributing-pipes leading to an annular gas-chamber having outlets at the top thereof, the perforated conical cap 5 on said gas-chamber, the deflector C, secured to said cap, the air-distributer 7, surrounding said gas-distributing pipes, the inverted cup 8, surrounding said air-distributer and forming a chamber having openings leading into the lower part thereof, and the perforated cap 6,

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surrounding the gas-chamber and above the air-distributer 7, substantially as and for the purpose set forth.

2. In a gas-lamp, gas-supply pipes, a gas-chamber communicating therewith having outlets, a perforated cap above the same, a perforated cap and an air-distributer surrounding the gas-supply pipes and gas-chamber, and an imperforate shell or guard surrounding said air-distributer, substantially as and for the purpose described.

3. In a gas-lamp, the combination of a central supply-pipe having a radiating series of distributing-pipes therefrom leading to an upper annular gas-chamber, the latter having openings at its top, the perforated cap 5 above said gas-chamber, the deflector C, secured to said cap, an air-distributer surrounding the distributing-pipes, and a perforated cap surrounding the gas-chamber below the top outlets thereof, the inverted cup 8, surrounding the air-distributer, and an air-chamber connected with the central supply-pipe and having pipes or tubes leading into the space between the cup 8 and the air-distributer 7, substantially as and for the purpose described.

4. In a gas-lamp, the combination of the collar A, the hollow plug 1, the air-chamber 10 on said collar, gas-supply pipes 2, leading from said hollow plug, annular gas-chamber 3 above said gas-supply pipe 2 and having outlets 4, a perforate air-distributer surrounding said gas-supply pipes, the imperforate shell 8, surrounding said air-distributer and forming the air-chamber B, the air-pipes 9, leading into the base of said chamber B from said air-chamber 10, a perforated cap surrounding said annular gas-chamber, air-space 12 within said gas-chamber, the perforated cap 5 above said gas-chamber 3 and air-space 12, and the conical deflector C, surrounding the said perforated cap 5, substantially as described.

407,292. NIPPLE-HOLDER. HARVEY D. HARNER, Council Bluffs, Iowa, assignor of one-half to Edward W. Hart, same place. Filed Apr. 29, 1889. Serial No. 309,053. (No model.)

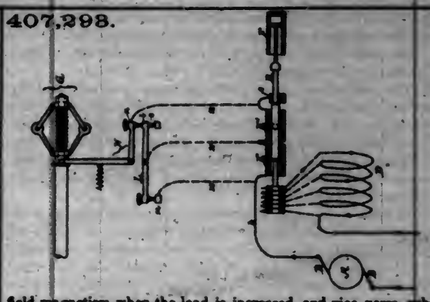


Claim.—In a nipple-holder, the tubes A and B and the threaded rod C, in combination with the swivel D and spear-headed rod E, all constructed and arranged substantially as and for the purpose described.

407,293. REGULATION OF ELECTRIC MOTORS. DANIEL HIGHAM, Philadelphia, Pa., assignor to the Higham Electric Motor Company, same place. Filed Oct. 3, 1887. Renewed Dec. 22, 1888. Serial No. 294,445. (No model.)

Claim.—1. The combination of the armature of an electric motor and a field-magnet having all its coils in series with the armature-coils with a centrifugal governor driven by the armature-shaft and electro-magnetic devices controlled by the governor to increase the

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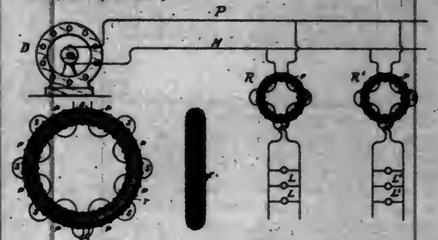
field magnetism when the load is increased, and vice versa, substantially as described.

2. The combination of the armature and field-magnet of an electric motor with solenoid-coils, a core therefor and contacts controlled thereby, and centrifugal devices driven by the armature to automatically cut out one or the other of the solenoid-coils to vary the field magnetism, substantially as described.

3. The combination of the armature and field-magnet coils of an electric motor, and contact-rings connected to sections of the field-magnet coils with a pair of solenoid-coils, a common core controlling the contact for the said rings, and devices for automatically throwing one or other of the solenoid-coils out of action under the control of the armature-shaft, all substantially as set forth.

4. The combination of the armature and field-magnet coils of an electric motor, a pair of solenoid-coils, and a common core therefor with contact-rings, and a contact-rod controlled by said core, a centrifugal governor driven by the armature of the motor, and contacts acted on by the said governor to cut out one or other of the solenoid-coils, all substantially as set forth.

407,294. METHOD OF ELECTRICAL DISTRIBUTION BY SECONDARY GENERATORS. RANKIN KENNEDY, Glasgow, County of Lanark, Scotland, assignor, by mesne assignments, to the Westinghouse Electric Company, Pittsburg, Pa. Filed Nov. 13, 1888. Serial No. 290,717. (No model.)



Claim.—The method of distributing and regulating alternating electric currents by secondary generators, which consists in producing in two or more derived circuits constituting the primaries of two or more secondary generators a counter electro-motive force which, when any secondary is open, is practically equal to the applied electro-motive force in its primary, and in controlling said electro-motive force by the current flowing in the corresponding secondary, when the secondary is closed, in such manner that the current in the primary shall vary with and be approximately inversely proportional to the resistance in the secondary, substantially as described.

407,295. GLOVE-FASTENER. EDWIN J. KRAFFERT, Gloversville, N. Y., assignor to the International Fastening Company, Portland, Me. Filed Mar. 5, 1888. Serial No. 301,854. (No model.)



Claim.—1. A member of a fastener, consisting of a cap, a stud-embracing fastening-eyelet, a suitable filling, and a downwardly-projecting clinching-eyelet held by its flange within said cap, in combination with a recessed anvil-plate, substantially as described.

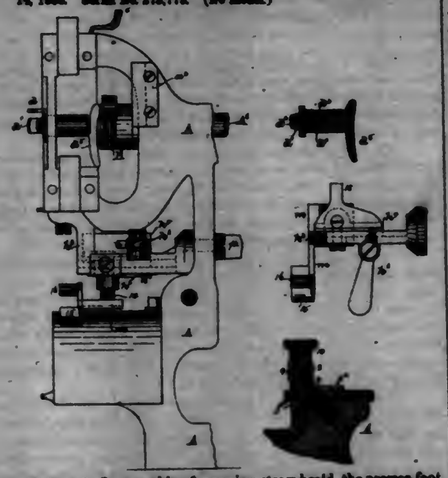
2. The button-hole member of a fastener, consisting of a cap E, a stud-embracing fastening-eyelet F, and a downwardly-projecting clinching-eyelet G, held by its flange within the said cap, in combination with a recessed anvil-plate washer H, whereby the final clinching of the parts to the leather or fabric is invisibly accomplished beneath the said leather or fabric, substantially as described.

407,296. CAR-COUPLING. SYLVE LAU, La Crosse, Wis., assignor of one-half to Moses Anderson, same place. Filed Apr. 3, 1888. Serial No. 269,894. (No model.)



Claim.—An improved car-coupling, consisting of a draw-head having the lower slotted jaw, the coupling-pin and link, the transverse bolt, and the tumbler thereon, said tumbler having the arm *e*, which receives the impact of the coupling-link, the arm *f*, which passes through the coupling-link and behind the coupling-pin, and an arm *g*, projecting at right angles to the arm *e*, said arm *g* being broader at its front end than at its rear and supporting the link after the parts are coupled, substantially as herein described.

407,297. STRAW-BRAID-SEWING MACHINE. MOSES MARSH, Amherst, Mass., assignor to the Hills Company, same place. Filed May 14, 1888. Serial No. 273,779. (No model.)



Claim.—1. In a machine for sewing straw braid, the presser-foot, the bed-plate, an edge-guide G, adjustable just above the bed-plate to guide the edge of the body of the article, and the guide A^3, located above and independent of the presser-foot, combined with the braid-gage *m*, unattached to and independent of the presser-foot, and having a rod 14 extended into the said guide A^3 loosely, and with a lever to lift the said rod 14 and its attached braid-gage, substantially as described.

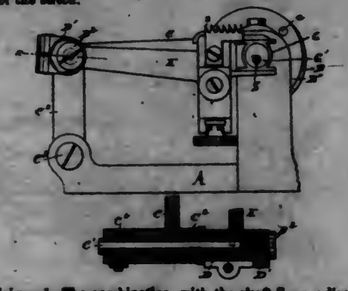
2. The presser-foot, the lever 20, to lift it and not lift the braid-gage, the bed-plate, the adjustable edge-guide G, and the braid-gage *m*, having the vertical rod 14, and the guide A^3, detached from the presser-foot and guiding the said rod, combined with a second lever *p*, to engage the said rod 14 and lift the said braid-gage, substantially as described.

3. The bed-plate and the presser-foot, combined with an independent detached braid-gage *m*, having a vertical rod 14 and a lip 15, and with the longitudinally-adjustable carriage having a sleeve or guide A^3 for the said rod 14, and the support for the said carriage entirely above the said bed-plate and independent of the said presser-foot, substantially as described.

4. The bed-plate and the presser-foot, combined with an independent detached braid-gage *m*, having a vertical rod 14 and a lip 15, and with the longitudinally-adjustable carriage having a sleeve or guide A^3 for the said rod 14, and the support for the said carriage entirely above the said bed-plate and independent of the said presser-foot and with a lever to adjust the said carriage horizontally and with it the said braid-gage, substantially as described.

407,298. FEEDING DEVICE FOR SEWING-MACHINES. MOSES MARSH, Amherst, Mass., assignor to the Hills Company, same place. Filed Sept. 14, 1888. Serial No. 285,206. (No model.)

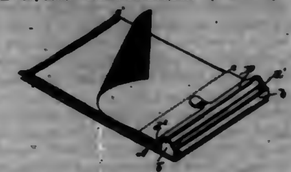
Brief.—By means of an adjustable eccentric-sleeve interposed between the hub of the feed-bar and its supporting-stud, the feed is controlled so that it will start from the same point whatever be the length of the stitch.



Claim.—1. The combination, with the shaft S, an adjustable eccentric actuated by it, the rocker, the stud, and connections between the said eccentric and rocker to vibrate the latter, of the feed-bar and the eccentric-sleeve interposed between the said stud and the hub of the feed-bar, to operate substantially as described.

2. The combination, with the shaft S, an adjustable eccentric actuated by it, the rocker, the stud, and connections between the said eccentric and rocker to vibrate the latter, of the feed-bar and the eccentric-sleeve interposed between the said stud and the hub of the feed-bar, and with the screw D^2 to fasten the said eccentric-sleeve in adjusted position, substantially as described.

407,299. SALE-SLIP. THOMAS J. A. MACDONALD, Detroit, Mich. Filed June 19, 1888. Serial No. 277,542. (No model.)



Claim.—A paper-clip consisting of a plate B, having an upturned heel-plate *b* and side pieces *b'*, and a jaw D, consisting of a strip of sheet metal bent lengthwise at a right angle and journaled between the side pieces *b'*, the construction being such that the paper is jammed between the edge *d*, the plate B, and the heel-plate *b*, substantially as described.

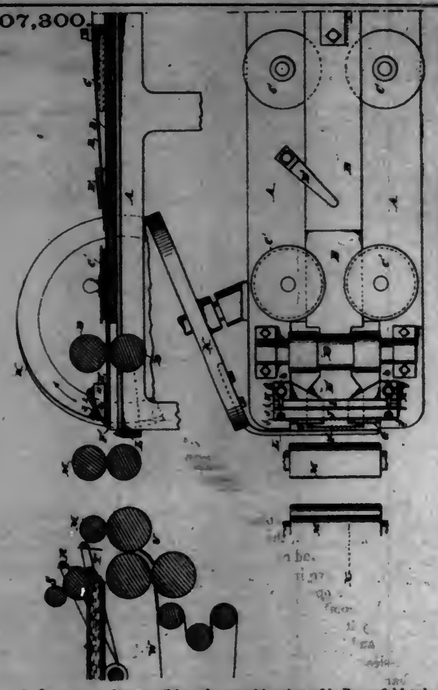
407,300. PAPER-BAG MACHINE. FRANK M. MCGUILL, Philadelphia, Pa., assignor to Frank H. Leach, same place. Filed Sept. 14, 1888. Serial No. 285,462. (No model.)

Claim.—1. In a paper-bag-tube machine, the combination of a lower cutter and an upper cutter for the outer folds of the paper tube and two intermediate side or bellows-fold cutters, the lower, upper, and side cutters being arranged stationary in different planes and slightly separated for the passage of the paper, the edges of one of said outer cutters projecting beyond the edges of said intermediate side or bellows-fold cutters, with a movable beater or cutter transversely movable across the cutting-edges of the stationary cutters.

2. In a paper-bag-tube machine, the combination of a lower cutter and an upper cutter for the outer folds of the paper tube and two intermediate side or bellows-fold cutters, the lower, upper, and side cutters being arranged stationary in different planes and slightly separated for the passage of the paper, having their cutting edges projecting beyond each other and the edges of one of said outer cutters projecting beyond the edges of said intermediate side or bellows-fold cutters, with a movable beater or cutter transversely movable across the cutting-edges of the stationary cutters.

3. In a bag-tube machine, the combination of forming devices for folding the paper into a tube having bellows side folds with cutters for transversely severing the top and bottom layers of the tube, two side cutters projecting into the bellows folds, and a transversely-moving beater or cutter to force the layers of paper forming the bellows fold against the cutters to sever them at each side of the tube.

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4. In a paper-bag machine, the combination of bellows-fold-tube-making mechanism with a stationary cutter for each of the outer layers of the tube and two side cutters for the bellows-fold layers, and in which said cutters have their cutting-edges projecting beyond each other, substantially as set out, the edges of one of said cutters for the outer layers projecting beyond the edges of the side cutters for the bellows side folds and a transversely-movable cutter or beater adapted to move past the cutting-edges of the first-mentioned cutters to sever the tube.

5. In a paper-bag machine, the combination of bellows-fold-tube-making mechanism with a stationary cutter for each of the outer layers of the tube, and two side cutters for the bellows-fold layers, in which said cutters have their cutting-edges projecting beyond each other, substantially as set out, the edges of one of said cutters for the outer layers projecting beyond the edges of the side cutters for the bellows side folds, a transversely-movable cutter or beater adapted to move past the cutting-edges of the first-mentioned cutters to sever the tube, and pasting and folding devices to apply paste and fold over the bottom of the tube.

6. In a paper-bag machine, the combination of bellows-fold-tube-forming devices with stationary transverse cutters for the top and bottom layers of the tube and two lateral or side cutters adapted to extend into the bellows folds of the tube and arranged between the other cutters, means to adjust said side or bellows-fold cutters, and a transversely-movable beater or cutter to sever the tube.

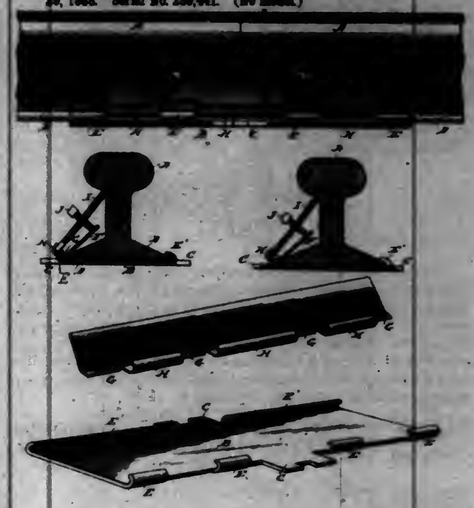
7. In a paper-bag machine, the combination of bellows-fold-tube-forming devices with stationary transverse cutters for the top and bottom layers of the tube made relatively adjustable longitudinally to separate or reduce the space between their cutting-edges, and two lateral or side cutters adapted to extend into the bellows folds of the tube and arranged between the other cutters, means to adjust said side or bellows-fold cutters, and a transversely-movable beater or cutter to sever the tube.

8. The combination of the lower outer cutter F, upper outer cutter I, intermediate side cutters G G, arranged with their cutting-edges projecting beyond each other, as set out, with the edges of one of said outer cutters projecting beyond the edge of said intermediate side cutters, and a rotary beater L, adapted to be moved past said cutters F, I, and G to sever the tube.

9. In a paper-bag machine, bellows-fold-tube forming and guiding devices, in combination with independent cutters, substantially as set out, for severing transversely the top, bottom, and bellows-fold layers of the tube, the edges of one of the cutters for the outer layers projecting beyond the edges of the cutter for the bellows fold.

10. In a paper-bag machine, bellows-fold-tube forming and guiding devices, in combination with independent cutters, substantially as set out, for severing transversely the top, bottom, and bellows-fold layers of the tube at different places in the length of the tube to expose all three layers from one side of the tube, the edges of one of the cutters for the outer layers projecting beyond the edges of the cutter for the bellows fold.

407,301. RAIL-JOINT. MILTON C. HILES, Chicago, Ill. Filed Oct. 29, 1888. Serial No. 289,441. (No model.)



Claim.—1. In a rail-joint, the rails, the chair, and a clamping-plate connected with said chair at the side edge thereof and fulcrumed upon the rail-flange, in combination with the brace-plate confined between said clamping-plate and the under side of the rail-top, and means for operating said plate, substantially as described.

2. In a rail-joint, the rails, the chair, and a clamping-plate connected with said chair at the side edge thereof and fulcrumed upon the rail-flange, in combination with the brace-plate confined between said clamping-plate and the under side of the rail-top, and bolts working through said brace-plate for bearing upon and depressing the inner free edge of said clamping-plate, substantially as described.

3. In a rail-joint, the rails, the chair provided with upturned side edges, constituting hooks, under one of which one edge of the rail-flange is inserted, in combination with a clamping-plate fulcrumed on the rails, the outer edge of which engages the other upturned edge of the chair, and means for operating said clamping-plate, whereby, when the inner free end thereof is depressed, the hook of the chair on the opposite side of the rail will be caused to bind tightly against the flange thereof, substantially as described.

4. In a rail-joint, the chair, the upturned side edges thereof, under which the flange of the rail is inserted, a clamping-plate fulcruming upon the rail-flange at the opposite side, and a connection between said plate and the chair, in combination with the brace-plate confined between the outer edge of said clamping-plate and the under side of the rail-top, and bolts working through said brace-plate for depressing the inner free edge of the clamping-plate, substantially as described.

5. In a rail-joint, the rail, the chair upturned along one side edge, under which the flange of the rail is inserted, and a series of hooks on the opposite side edge thereof, in combination with a clamping-plate fulcrumed upon the flange of the rail, the outer edge of which engages the hooks on the chair, and a series of upturned portions alternating with the hooks on the chair, a brace-plate confined between said upturned portions and the under side of the rail-flange, and bolts working through said brace-plate bearing upon and depressing the inner free end of the clamping-plate, substantially as described.

407,302. RAIL-JOINT. MILTON C. HILES, Chicago, Ill. Filed Mar. 11, 1889. Serial No. 302,867. (No model.)

Claim.—1. In a rail-joint, the combination, with the rail and a base-plate provided with a shoulder against which one of the flanges of the rail impinges, of a toggle confined between said plate and the rail, so as to clamp the same together, substantially as described.

2. In a rail-joint, the combination, with the rail and a base-plate provided with a shoulder against which the flange of the rail impinges, of a clamping and a brace plate constituting a toggle, the opposite edges of which respectively engage the base-plate and the rail, and means for operating said toggle, substantially as described.

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3. In a rail-joint, the combination, with the rail of a base-plate provided with a shoulder against which one of the flanges of the rail impinges, of a clamping and brace plate constituting a toggle engaging the base-plate and rail, respectively, and a tightening-bolt working through said rail for operating the toggle, substantially as described.

4. In a rail-joint, the combination, with the rail and a base-plate provided with a shoulder against which the rail-flange abuts at one side, of a clamping-plate pivoted upon the rail-flange and engaging the base-plate at the opposite side of the rail, a brace-plate confined between the top of the rail and said clamping-plate, and a tightening-bolt working through the rail-flange and engaging the clamping-plate near the point of engagement therewith of the brace-plate, substantially as described.

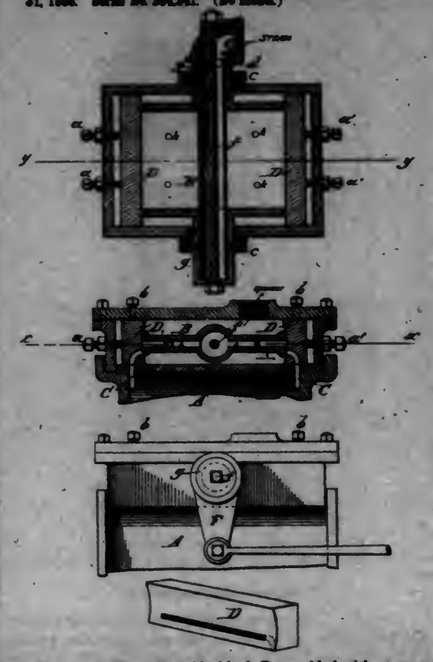
5. In a rail-joint, the combination, with the rail and a base-plate provided with a shoulder at one side, against which the flange of the rail abuts, of a clamping-plate pivoted upon the rail-flange and engaging the base-plate at the opposite side of the rail, a brace-plate confined between said clamping-plate and the top of the rail, a tightening-bolt working through the rail-flange and said plates, the nut of which bears against the upper edge of the clamping-plate, a locking-plate provided with a depending lip from the upper edge thereof, engaging the upper edge of the clamping-plate, and ears thereon projecting beneath said nuts, substantially as described.

407,303. LETTER-BOX. REED M. NOBLE, Washington, D. C., assignor of one-half to William A. Raburg, same place. Filed Feb. 18, 1889. Serial No. 300,314. (No model.)



Claim.—In a receptacle for valuables, the combination of a top provided with an opening, a hinged door for closing said opening, said door being provided with a rabbet in its free end to engage a rabbet upon the side of the opening, a cam upon the under side of the door, and a guard-plate pivoted below the door with its light end in loose frictional engagement with said cam, the lower end of said plate having a length sufficient to come in contact with the front wall of the receptacle when the door is depressed, in the manner and for the purpose substantially as described.

407,304. BALANCED VALVE. WARREN T. REAMER, Fairmount, Nebr., assignor to the Round Valve Company, Chicago, Ill. Filed Aug. 31, 1888. Serial No. 284,341. (No model.)



Claim.—1. The adjustable block D, provided with steam-ports, as shown, and adapted for adjustment to the valve and to be secured in place by the set-screws, substantially as shown and described, and for the purpose set forth.

2. In a balanced oscillating valve, the combination of the chambered valve extending nearly the whole length of the cylinder with the adjustable port-blocks provided with passages connecting with the cylinder-ports, substantially as shown and described.

3. As an improvement in balanced oscillating valves for steam-engines, the valve B, chambered throughout its length, the walls of said chamber being connected and stiffened by the studs or connections *h*, and the ends of the valves expanded to form a wearing-surface, in combination with adjustable port-blocks forming the valve-seats, and the means for imparting an oscillatory movement to said valve, substantially as shown and described.

407,305. PROCESS OF DECORATING BASE METALS, GLASS, &c., WITH PRECIOUS METALS. FRANZ ROSSMLER, Furth Amboy, N. J. Filed Oct. 22, 1888. Serial No. 288,638. (No specimens.)

Claim.—The process of decorating articles of base metal, glass, terra-cotta, and the like, consisting in first applying varnish to the surface of such article, next drying the varnish, next applying a solution of the sulphuret of a precious metal and balsam of sulphur, and subsequently firing, substantially as specified.

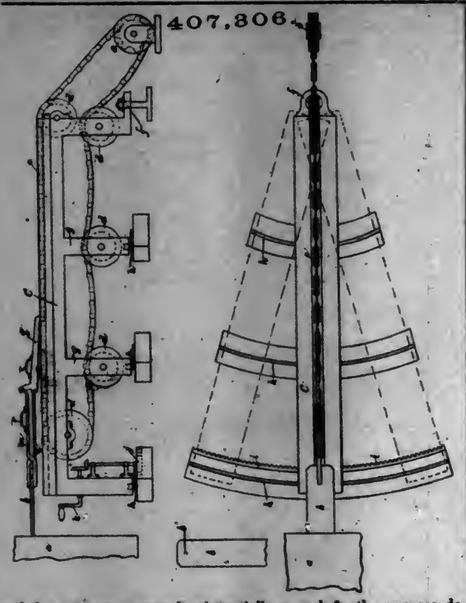
407,306. APPARATUS FOR SKELPING OR TUBE-WELDING. JAMES A. SIMPSON, McKeesport, Pa. Filed Oct. 2, 1888. Serial No. 286,967. (No model.)

Claim.—1. A skelping or tube-welding table pivoted at one end, so as to be capable of horizontal oscillation, and provided with an endless traveling chain, combined with skelping-tongs having a hook to engage said chain, substantially as and for the purposes described.

2. A skelping or tube-welding table pivoted at one end, so as to be capable of horizontal oscillation, and provided with an endless traveling chain, combined with skelping-tongs consisting of arms united by a slide-joint, said joint having inclined faces, and a hook to engage the chain, substantially as and for the purposes described.

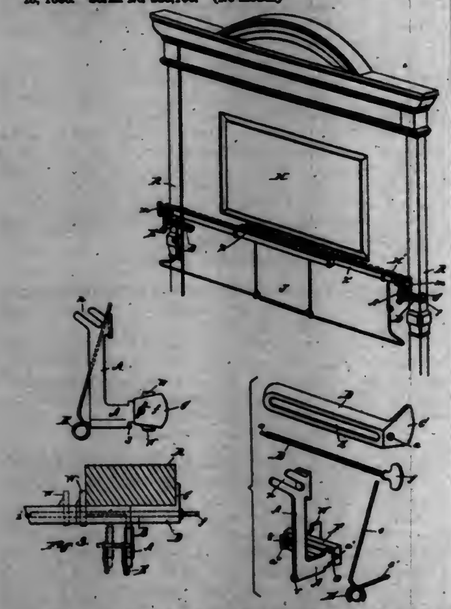
3. A skelping or tube-welding table pivoted at one end, so as to be capable of horizontal oscillation, and provided with an endless traveling chain, combined with skelping-tongs consisting of arms united by a slide-joint, one of the arms being provided with a holding-lug, and a hook to engage the chain, and to which hook the arms

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of the tongs are secured, substantially as and for the purpose described.

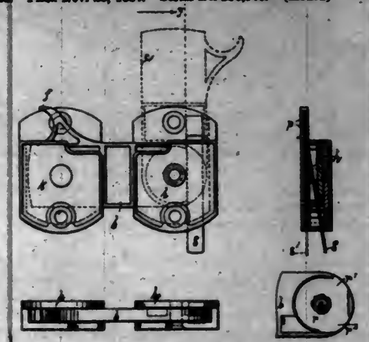
407,307. COMBINED BRACKET AND CLAMP FOR PILLOW-SHAM HOLDERS. GEORGE S. TOMPKINS and CHARLES WHITTINGHAM, Detroit, Mich.; said Whittingham assignor to said Tompkins. Filed Oct 15, 1888. Serial No. 288,168. (No model.)



Claim.—1. In combination with the L-shaped bracket having the base and jaw formed integral therewith, and screw-threaded holes in the base thereof, the base-plate D, having the central opening with fixed jaw at one end thereof and holes in each end of the base, the screw-threaded bolt engaging with the base F, having its ends journaled in the holes of the base-plate D, as and for the purposes specified.

2. In combination with the bracket A, having the forked upper end with base and jaw W formed integral therewith, the base-plate D, having the oblong opening and holes in each end and jaw C at one end, the screw-threaded bolt having threaded engagement with the base of the bracket, its ends being journaled in the base-plate D and carrying a button on one end, substantially as set forth.

407,308. SHUTTER-FASTENER. AVERY VAN WIE, Indianapolis, Ind. Filed Nov. 29, 1887. Serial No. 256,379. (Model.)

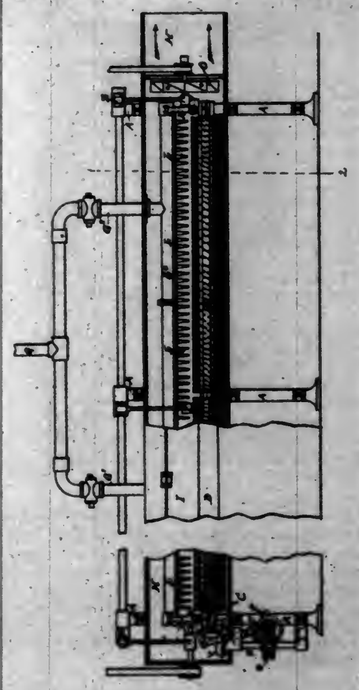


Claim.—In a shutter-fastener, a housing A, adapted at *p* to receive the fixed end of spring *s*, a bar *v*, pivoted at *a* within said housing, said bar being provided with recesses or grooves *r' r²*, within which spring *s* is adapted to engage, the above-named spring, and a keeper *k*, all combined to operate substantially as and for the purpose specified.

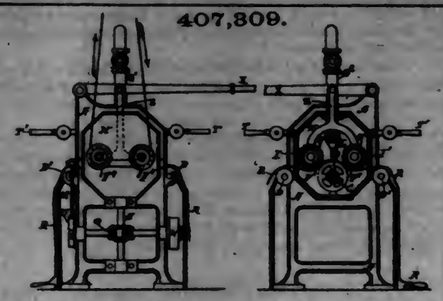
407,309. MACHINE FOR CLEANING AND PURIFYING CARPETS OR OTHER FABRICS. THOMAS WARDLE and ARTHUR S. WARDLE, Nottingham, County of Nottingham, England, assignors to George Wigley, same place. Filed Feb. 11, 1888. Serial No. 263,736. (No model.) Patented in England June 8, 1886, No. 7,962.

Claim.—1. The combination, with the frame, the shaft journaled therein, the casing, and the perforated drum in said casing and carried by said shaft, of the supply-pipes, the nozzles thereon, the fan at one end of the casing, the brushes, and means, substantially as described, for revolving said drum and brushes, substantially as and for the purpose specified.

2. The combination, with the frame, the shaft journaled therein, the casing, and the perforated drum in said casing and carried by



407,309.



said shaft, of the supply-pipes, the nozzles carried thereby, the fan at one end of the casing, the brushes, the levers K K, the axles Y Y, rod M, eccentric U, worm P, driving-pulley N, worm-wheel Q, shaft S, and bevel-wheels V V, all arranged and operating substantially as and for the purpose specified.

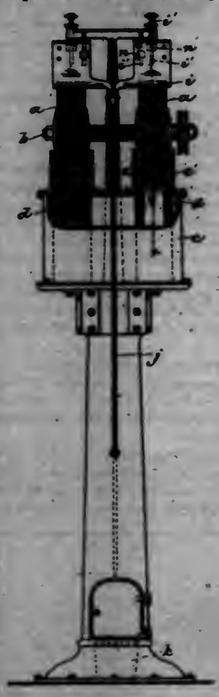
407,310. LEATHER-CLEANING MACHINE. HAROLD A. WEBSTER, Haverhill, assignor of one-half to Lewis P. Tunney, Boston, Mass. Filed Jan. 12, 1888. Serial No. 260,136. (No model.)

Claim.—1. In a leather brushing or cleaning machine, the combination of the tank or reservoir having the bed or support mounted thereon, the feeder having one end in the tank and the other end supported on the bed, and the brush adapted to revolve against the feeder, substantially as described.

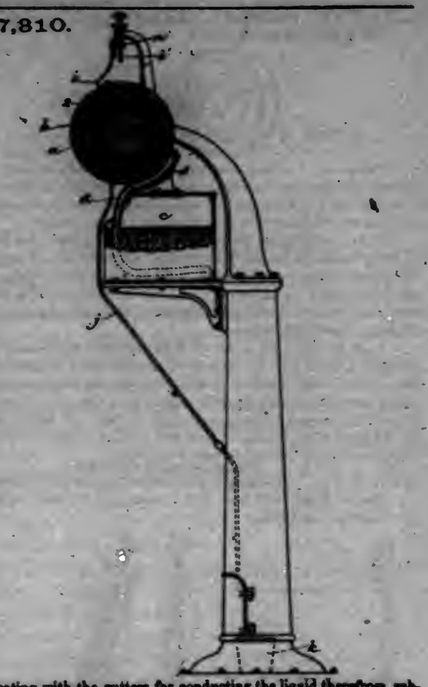
2. In a leather brushing or cleaning machine, the combination of the tank, the guide or bed on said tank, the brush adjacent to said guide, and the wick having one end in the tank and the other end resting on the guide and in contact with the brush, substantially as and for the purpose described.

3. In a leather brushing or cleaning machine, the combination of the tank or reservoir, the brush arranged above said reservoir, the wick having one end in the reservoir and the other end in contact with the brush, and the scrapers arranged above and in contact with the brush, substantially as and for the purpose described.

4. In a leather brushing or cleaning machine, the combination of a tank or reservoir, brushes arranged above said reservoir, wicks leading from the reservoir to said brushes, scrapers having gutters for removing the surplus liquid from the brushes, and a pipe or tube com-



407,310.



municating with the gutters for conducting the liquid therefrom, substantially as and for the purpose described.

407,311. SULPHUR FABRIC. HENRY P. WEBER, Newark, N. J., assignor to Jacob Klotzbach and John B. Stolzenau, same place. Filed Mar. 5, 1888. Serial No. 266,012. (Specimens.)

Claim.—As a new article of manufacture, a fabric consisting of paper or textile material impregnated with granular or crystalline sulphur, substantially as set forth.

407,312. TOP-FLAT CLEANER FOR CARDING-MACHINES. CHAS. H. WHITTEN, Lawrence, assignor to the Potter Machine Works, Newton, Mass. Filed Sept. 26, 1888. Serial No. 286,468. (No model.)

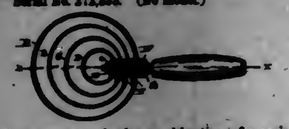
Brief.—The cleaner consists of a series of cloth-covered rolls within the chain of flats and journaled in slotted arms upon a shaft. The cleaner is rotated by the engagement with successive ribs of the flats and picks up the dirt between each two of the same.



Claim.—1. The improved top-flat cleaner herein described, the same consisting of a central shaft adapted to revolve in but removable from supports at opposite sides of a carding-engine and within the series of top-flat frames, this shaft being provided with enlargements or extensions having a series of brushes or cleaners A in slotted revoluble connection therewith, the brushes being arranged circumferentially around the shaft and having a cross-section sufficient to permit them to enter and clean the trough B, formed by parts of adjacent flats, all substantially as set forth.

2. The improved cleaning device for carding-machines herein shown, consisting of the central shaft C, extension-pieces D, connected to said shaft, top-flat cleaners A, revolubly mounted in radial slots in said extension-pieces, and the circular brushes E G, mounted upon the shaft C, the whole forming a single device adapted to clean the top-flats and their grinding-faces and sprockets simultaneously and during the operation of the carding-machine.

407,813. CURRY-COMB. JAMES DU SHANE, South Bend, Ind. Filed May 4, 1888. Serial No. 272,833. (No model.)

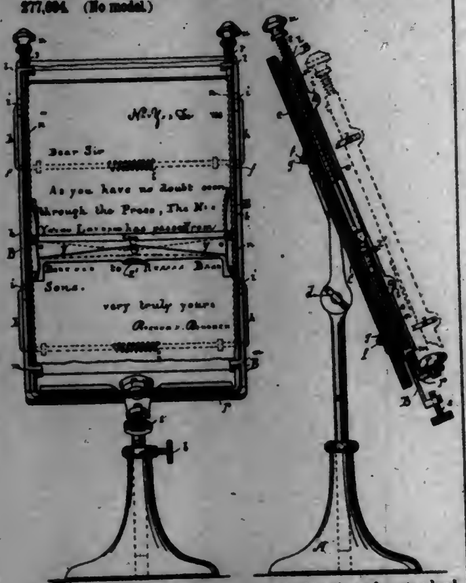


Claim.—1. In a curry-comb, the combination of a series of rings or loops, serrated on one edge and arranged within each other, with a handle and a bolt attached to and securing the handle to said rings or loops on one side of the same, substantially as specified.

2. In a curry-comb, the combination of the rings or loops formed of strap metal and serrated on one edge, placed within and eccentrically to each other, with the washers placed between said rings at the point where they approximate, the handle secured to the rings at such point, and the bolt entering the handle and rings, substantially as and for the purpose described.

3. As an improved article of manufacture, a curry-comb composed of a series of rings serrated on one edge, and washers placed between said rings at the points where they are secured to the handle, with a handle having a flattened head and a lug depending therefrom, and the bolt passing through said rings, washers, and lug for securing the rings to the handle, all constructed and arranged substantially in the manner and for the purpose described.

407,814. AUTOMATIC COPY-HOLDER AND LINE-INDICATOR. JOHN V. BERRY, New York, N. Y. Filed June 20, 1888. Serial No. 277,604. (No model.)



Claim.—1. In a copy-holder, the combination of a standard, bed-plate, and movable platen-frame, with suitable connections arranged to hold the copy, and also to admit of the ready insertion and removal thereof, substantially as described.

2. In a copy-holder, a frame with its sides notched and movable ratchets so arranged that a space or slot is left between them to receive the ends of a line-ruler, substantially as described.

3. In a copy-holder with a movable frame arranged to rest upon a platen and with the inner edges of its sides notched, the combination of ratchets, pawls, and line-ruler, substantially as described.

4. In a copy-holder with a frame having its inner side edges notched, the combination of ratchets on each side, pawls, and levers to throw the pawls out of connection, substantially as described.

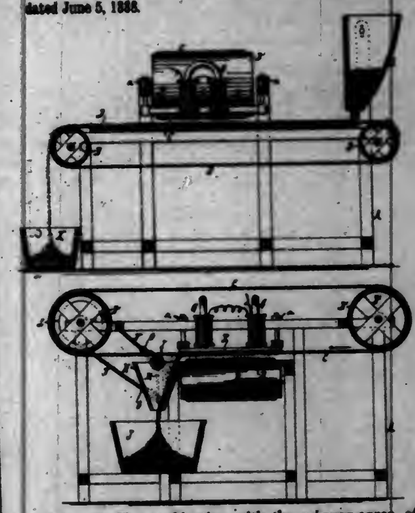
5. In a copy-holder with a frame, the combination of reciprocating ratchets, a cross-bar connecting them, a button or key by which one movement is made, and springs to produce the return movement, substantially as described.

6. In a copy-holder with a frame, the combination of reciprocating ratchets, a cross-bar connecting them, a button or key by which one movement is actuated, and a set-screw attached to the frame to regulate the extent of motion, substantially as described.

7. In a copy-holder, parallel ratchets on each side, one reciprocating and one permanent, in combination with a line-ruler provided with pawls, divided or bifurcated, so that one fork of each engages one ratchet, springs to lift the reciprocating ratchets so arranged that the forks of the pawls in contact with them carry down a line-ruler, while those engaging with the permanent ratchets prevent the line-ruler from returning, substantially as described.

REISSUES.

11,012. MAGNETIC SEPARATOR. GURDON COMLING, Glens Falls, N. Y. Filed June 3, 1889. Serial No. 313,080. Original No. 383,963, dated June 5, 1888.



Claim.—1. The combination, with the primary apron, of a secondary apron to operate transversely to the primary apron, a magnetized plate secured in proximity to said secondary apron, so as to draw the iron particles to said secondary apron, and suitable driving mechanism for actuating the aprons, substantially as set forth.

2. The combination, with a primary apron and a secondary apron made to operate transversely to the primary apron, of a magnetized plate secured in proximity to said secondary apron, so as to draw the iron particles to said secondary apron, suitable driving mechanism for actuating the aprons, and a scraper or brush made to act on said secondary apron, substantially as set forth.

3. The combination, with a primary apron, of a secondary apron made to operate transversely to the primary apron, a magnetized plate secured in proximity to said secondary apron, so as to draw the iron particles to said secondary apron, and means for adjusting the magnetized plate in relation to the secondary apron, substantially as set forth.

4. The combination, with the feed-apron D and the transverse apron C, of a magnetic plate F, situated between the layers of the apron C in close proximity to one of the layers and extending lengthwise in the direction of the motion of said layer, substantially as shown and described.

5. The combination, with the apron C, of a magnetic plate F, situated between the layers of said apron in close proximity to one of its layers and extending lengthwise in the direction of the motion of said layer, substantially as shown and described.

PHOTO LITH. NORRIS PETERS WASH. D.C.

DECISIONS
OF THE
COMMISSIONER OF PATENTS
AND OF
UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE CORDREY.

Decided July 8, 1889.

1. AMENDMENTS TOUCHING THE MERITS UNDER RULE 68.
When an amendment touching the merits is presented nearly two years after the case is in condition for appeal to the Examiners-in-Chief, and no showing or attempt at any showing whatever is made why the amendment was not presented earlier, a petition that the case be reopened and that applicant be heard upon the amendment must be denied.

2. ALTERATIONS OF DRAWINGS.
When a figure is added to an original drawing on file in the Office, without direction or permission of the Office, it must be erased or canceled, even though it has been added in good faith.

ON petition.

STEAM WASHING-MACHINE.

Application of Thomas P. Cordrey filed October 7, 1886, No. 215,546.

Mr. E. E. Masson for the applicant.

MITCHELL, *Commissioner:*

This application was finally rejected August 27, 1887. Since that time it has been in condition for appeal to the Examiners-in-Chief. The applicant now asks that the case be reopened and that he may be heard upon an amended claim. He also presents a new specification and supplemental oath, and has recently, and in aid of his present petition, added a figure to the original drawing filed October 7, 1886.

Rule 68 provides that if amendments touching the merits are presented after an application is in condition for appeal they may be admitted upon a duly verified showing of good and sufficient reasons why they were not earlier presented. In this case nearly two years have elapsed since the final rejection by the examiner, and no showing, verified or unverified, is made or attempted to be made why the amendment now offered was not presented earlier.

In the case of *ex parte Thurmond* (C. D., 1886, 90) Rule 68 was expounded. In that decision Commissioner Montgomery said:

> An applicant's claims are rejected. Applicant himself is absent or sick or unable to confer with his attorney. There are urgent reasons for expedition. The attorney, in perfect good faith and after careful examination, asks a reconsideration and second action. The second action is had and the claims are again rejected. At once thereafter the attorney confers with his client in relation to an appeal, and ascertains that he has mistaken or failed to understand an important part of the invention, or something of that character. He then comes back to the Office and asks, notwithstanding the two rejections, that he be permitted to amend so as to fairly exhibit his true invention as applicant intended, and so that the references cited may be fairly avoided. Upon making a showing of these facts or some similar facts, or of something equally meritorious and blameless, he would undoubtedly be allowed to amend, notwithstanding the two rejections. No such case, however, is exhibited here.

In the case under consideration there is not only no sufficient showing, but no attempt is made at any showing whatever. The petition must therefore be denied.

I have already adverted to the fact that the drawing contains a new figure. This figure is placed upon the single sheet which was originally filed nearly three years ago. So far as the face of the drawing discloses it purports to be one of the figures of the original drawing.

In the present case the figure was placed upon the drawing in entire good faith, with reference to the intended presentation of an amendment which should disclose to the Office the fact that the change in the drawing had been made; nevertheless the figure was added to the original drawing-sheet by the attorney without the direction or permission of the Office, and if it should be permitted to remain would indicate that it was a part of the drawing as originally filed. I am informed by the attorney that this figure was added in the Attorney's Room, and that, in his opinion, such a course is neither unusual nor improper. The Rules of Practice make provision for the correction of drawings so as to make them conform to the specification as originally filed, or to the model, if a model has been required, when such correction is made either by direction or permission of the Office. It is impossible that any other right of correction should be recognized, and the figure added to the drawing in this case will be erased or canceled. The fact that it was added in the exercise of a supposed right, and with the intention to apprise the Office of what had been done, has no tendency to prevent the great and irreparable mischief which might result, and in many instances would result, if alterations of drawings were permitted in the Attorney's Room.

As has been already said, the petition must be denied, not, however, because of the addition of a figure to the drawing, since, as I have said above, such addition seems to have been made in good faith, but because of failure to make any suitable showing in accordance with the requirement of the rule.

MEAD *v.* BROWN.

Decided July 6, 1889.

1. MOTION TO DISSOLVE INTERFERENCE UPON THE GROUND OF ESTOPPEL BY OATH OF APPLICANT TO A PRELIMINARY STATEMENT AND BY THE TESTIMONY OF HIS WITNESSES IN A PREVIOUS INTERFERENCE WHEREIN HE WAS ONE OF TWO JOINT APPLICANTS.
An applicant in a pending interference who claims to have been the sole inventor is not estopped by reason of his oath in a preliminary statement in a previous interference, wherein he was one of two joint applicants, nor by the testimony of his

witnesses in that interference, from correcting an error, if an error can be shown to exist, as to the date when his invention went into public use, when the former statement of applicant and testimony of his witnesses were made with reference to an interference proceeding in which the question of two years' prior public use was not directly in issue.

2. In such a case there is no irregularity in declaring the pending interference, and a motion to dissolve such interference upon the ground that the party claimed to be estopped has no legal standing in the Office will be denied.

APPEAL on motion.

SEEDING-MACHINES.

Application of Edwin D. Mead filed June 28, 1886, No. 206,486. Application of Hiram L. Brown filed June 18, 1886, No. 205,573.

Messrs. Dodge & Son for Mead.
Mr. Philip T. Dodge for Brown.

MITCHELL, *Commissioner:*

On the 10th day of August, 1885, George H. Preston filed an application for improvements in seeding-machines. On the 16th of March, 1886, a joint application was filed by Hiram L. Brown and Richard B. Sheldon. While the Brown and Sheldon case was pending a patent issued to Preston, dated April 6, 1886, No. 339,578. An interference was then declared between the patent to Preston and the joint application of Brown and Sheldon. This interference was decided against Preston, the Office holding that Brown alone was the original and first inventor, but that inasmuch as Brown was a joint applicant with Sheldon no award could be made in favor of Brown alone. Prior, however, to this decision Brown had filed a sole application, as had also Edwin D. Mead, who is the other contestant in the present proceeding, Mead being the junior applicant. Thereupon the present interference was declared between the sole application of Brown and the application of Mead.

On the 11th day of December, 1888, Mead filed a motion to dissolve this interference between himself and Brown, averring that the preliminary statement sworn to by Brown and filed in the previous interference by himself and his joint applicant, Sheldon, and the testimony taken in pursuance of that statement, show conclusively, if true, that the invention in dispute had been for more than two years in public use and on sale prior to the filing of the pending application of Brown; that, whether true or false, Brown is bound by his sworn statement and by those of witnesses called in his behalf in the former interference, and is estopped from denying them in whole or in part; that this Office is bound to take notice of its own records, and cannot issue a patent to a party who has himself sworn to alleged facts constituting a statutory bar; that Brown is therefore without standing in the case, and that the facts thus recited show that there has been such irregularity in declaring the interference as will preclude proper determination of priority, since a party without legal standing cannot contest an interference; that the matter in issue is not patentable to Brown, because, according to his sworn statement, it has been in public use and on sale for more than two years prior to his application, such sale or use constituting a statutory bar against his making or receiving any such claim, from which it appears that the interference is antagonistic to grounds set forth in Rule 122 and in Rule 126. The Examiner of Interferences denied this motion, and from this decision appeal is taken to the Commissioner. It will be observed that this is not a motion to suspend the interference that proceedings may be meanwhile instituted to determine whether a statutory bar exists to the grant of a patent. Both Mead and Brown are before the Office seeking a patent for the same invention, and it is manifest that the result of a public-use proceeding, if fatal to the claims of Brown, would be equally fatal to the application of the junior party, Mead. It is probably for this reason that the motion sets forth that the facts recited show that there has been irregularity in declaring the interference, the proposition of Mead seeming to be that Brown is bound in this proceeding by his sworn statement in the former interference, and that, too, whether such statement be true or false, so that he cannot take a patent whatever may have been the actual fact, but is conclusively estopped from being heard to say or prove that the subject-matter now in issue was not in public use for more than two years prior to his application now pending. On the other hand, it is claimed by Brown, first, that as matter of law he is not barred in the pending proceeding from showing that there was an error in his preliminary statement in the case wherein he was one of two joint applicants, and, second, that as matter of fact the date of sale given in his statement in the present case is consistent with the language in the statement in the former case and with the testimony adduced by him under the former issue.

The first question to be considered is whether, in his present controversy with Mead, Brown is conclusively estopped from showing, if he can, that there was an erroneous allegation in the preliminary statement filed by himself and Sheldon in the former interference with Preston. If this question is answered in the affirmative it will then become material to inquire whether or not the former preliminary statement sets up facts amounting to a statutory bar as against the pending application of Brown. If decided in the negative, however, no further discussion will be necessary. Of course, if Brown is not estopped from obtaining a patent, he is not estopped from contesting priority with another party claiming the same invention.

The former statement of Brown was made with reference to an interference proceeding in which the question of two years' prior public use was not directly in issue. In my opinion, it would be going a great way, and, so far as I know, beyond what any Commissioner has ever held, to take the ground that an inventor is forever precluded from showing what the actual fact may be because he has in a former proceeding not involving the same issue made a sworn statement upon the same subject. Even in the same proceeding the rules provide for the amendment of a preliminary statement when it is essential to justice, and it is scarcely conceivable that a more rigorous rule should be applied to a case in which a stranger to the former proceeding asserts the estoppel. If it should be held that no consideration of justice, truth, or fact could avail to authorize the senior party to prove the actual date when the invention went into public use, then, if the fact should be otherwise than is asserted by the junior applicant, the latter might take a valid patent, while the earlier applicant would have been denied a patent because of the statutory bar of two years' prior public use. A method of administration which involves such a result must be a mistaken one, and I am compelled to the conclusion that under his present application, at some stage of the proceedings arising upon it, Brown is at liberty to show, if he can and if the Office requires it, that his invention was not in public use for more than two years prior to his sole application. Such being the law, it follows that this is not a case in which an interference has been irregularly declared between one party who is entitled to a patent and another party who is forever estopped from obtaining a patent.

The conclusion thus reached in one aspect of the case makes it unnecessary to inquire whether the preliminary statement of Brown and Sheldon and the testimony under it, if unexplained, establish two years' prior public use. It appears, however, that the Brown and Sheldon statement averred that the machines had been in public use and on sale since on or about the 14th day of May, 1885. The testimony taken under this statement was to the effect that on that date one machine was shipped, a car-load being shipped on the 15th of July following, the latter date being within two years. It is now claimed, however, on behalf of Brown that this first machine was shipped by the Empire Drill Company, of Shortsville, N. Y., to its general manager at Baltimore, Md., where it was used only for experimental purposes, not having been sold, and that it is still the property of and in the possession of said Empire Drill Company. Under these circumstances it is claimed that the acts referred to in the original preliminary statement as taking place about May 14, 1885, did not constitute in law public use or sale, and that Brown is entitled in the pending proceeding to have the error corrected.

Whether or not there was such an error, and whether or not the facts are as now claimed, can only be ascertained by a proper investigation at the proper time. The motion before me, however, does not ask that the interference proceedings may be suspended that the actual facts may be ascertained, but that the interference may be dissolved because Brown is claimed to be estopped from showing the actual facts.

In the case of *Kohler* v. *Kohler* and *Chambers* (43 O. G., 247) an analogous question arose—to wit, whether an applicant is estopped by reason of his oath filed with a joint application from asserting his rights as sole inventor. Commissioner Hall said:

> The question then recurs whether Kohler, by reason of having joined in the oath filed with the application of Kohler and Chambers, stating that they were original and first inventors, is estopped or in any manner denied the right to take out a patent for the invention as the sole inventor thereof. Attention has been called to some authorities upon this point, and it seems to be uniformly conceded that no such principle of estoppel applies, and that there is no reason why an applicant should be denied a patent on account of having made an error or mistake as to the matter of his joint inventorship.
>
> The interference will undoubtedly develop the truth and the facts, and if it shall appear that there was a joint invention and no sole invention, Kohler will be denied the patent.

It seems to me that the same principle is involved in the pending case, and that the party who claims to have been the sole inventor is no more estopped to correct an error, if an error can be shown to exist, as to the date when his invention went into public use than he would be to deny and correct his sworn statement that the invention was originally made jointly with another.

I deem it proper to repeat that this is not a motion to suspend the interference to enable proof to be taken upon the ground that the first preliminary statement constitutes *prima facie* proof of prior public use, but a motion to dissolve the interference upon the ground that Brown has no right to have any such proceedings instituted in his behalf, but is finally and conclusively estopped from obtaining a patent or appearing as a contestant in an interference proceeding.

What action would be taken upon a motion to institute public-use proceedings need not be indicated, but the decision of the Examiner of Interferences denying the pending motion is sustained.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the United States.

RUDE *et al. v.* WESTCOTT *et al.*

Decided March 18, 1889.

1. ASSIGNMENT.

A provision in an assignment of a patent, that the net profits arising from sales, royalties, settlements, or other sources are to be divided between the parties to the assignment, so as to give the patentee one-fourth thereof, does not in any respect modify or limit the absolute transfer of title.

2. SAME.

Nor does a clause appointing the assignees attorneys of the patentee, with authority to use his name whenever they deem proper in the management of the business connected with the ownership of the patent, restrict in any way the interest or power of the assignees. Such a clause is simply unnecessary.

3. MEASURE OF DAMAGES—ROYALTIES.

In order that a royalty may be accepted as a measure of damages against an infringer who is a stranger to the license establishing it, it must be paid or secured before the infringement complained of; it must be paid by such a number of persons as to indicate a general acquiescence in its reasonableness by those who have occasion to use the invention, and it must be uniform at the places where the licenses are issued.

4. SAME—PROOF OF DAMAGES.

Where complainants have failed to establish a royalty as measure of damages, and no evidence of the value of the invention to defendants is adduced, except the conjectural estimates of witnesses who had no practical knowledge of the subject, a decree for anything more than nominal damages cannot be sustained.

APPEAL from the Circuit Court of the United States for the District of Indiana.

STATEMENT OF THE CASE.

The original complainants, John M. Westcott and Charles W. West, allege in their bill that they are the owners, by assignment from the patentee, of two patents to Hiram Moore for improvements in seeding-machines, one issued November 20, 1860, and extended for 7 years from November 20, 1874, and the other issued March 28, 1861, for 17 years; that since the assignment the defendants have made, used, and sold seeding-machines in the district of Indiana, and in various other places in the United States, without the consent or license of the complainants and in infringement of their patents; and that the defendants are still engaged in such unlawful acts. The complainants therefore pray that the defendants may upon their best knowledge and information answer as to the matters alleged, and be compelled to account for and pay to the complainants the profits acquired by them and the damages sustained by the complainants, and be enjoined from making, using, and vending the said machines, or any part thereof, or any seeding-machine made in accordance therewith, or similar to those heretofore made, used, and sold by them. The bill was filed in March, 1876. An answer was filed in June following, in which the defendants admit that they have been and are engaged in the manufacture and sale of seeding-machines, but deny that they infringe either of the patents or any of the rights of the complainants under them, or that the complainants have been thereby deprived of any profits. They also deny that Hiram Moore was the first and original inventor of the alleged improvements described and claimed in the patents, and designate several patents previously issued which, as they allege, embody the substantial and material parts of the invention claimed.

In March, 1881, an amendment to the answer was allowed, in which the defendants deny that the complainants have such title to the patents as to enable them to maintain the suit against the defendants, setting up that on the 10th of November, 1874, the complainant Westcott, by an instrument in writing, assigned to Isaac Kinsey and Aaron Morris an undivided part of his interest in the patents, which instrument is recorded in the Patent Office of the United States, and that on the 4th of February, 1879, the said Isaac Kinsey assigned one-twelfth interest in the patents to one Lowell L. Lawrence and the Wayne Agricultural Company, which assignment is also on record in the Patent Office.

A replication to the answer having been filed, proofs were taken, and among other things the assignment by Moore, the patentee, to the complainants, and the assignment by Westcott to Kinsey and Morris, mentioned in the bill and answers, were produced. They are as follows, omitting such parts as are not material to the questions presented:

ASSIGNMENT OF MOORE TO WESTCOTT AND WEST, AND CONTRACT BETWEEN THEM.

This agreement, made this sixth day of October, anno Domini

one thousand eight hundred and seventy-four, by and between Hiram Moore, residing near Ripon, in the county of Fond du Lac, and State of Wisconsin, party hereto of the first part; Charles W. West, of Cincinnati, in the county of Hamilton, and State of Ohio, party hereto of the second part, and John M. Westcott, of Milton, in the county of Wayne, and State of Indiana, party hereto of the third part, witnesseth:

That whereas sundry Letters Patent of the United States heretofore have been granted to said Moore, which said Letters Patent are respectively numbered, entitled, and dated as follows, to wit: No. 30,685, dated November 20th, 1860, and entitled, "improvement in seed-drills," and No. 31,819, dated March 26th, 1861, and entitled "improvement in seed-drills;" and whereas the said Moore is justly indebted unto the said Charles W. West in the full sum of ten thousand dollars, for money advanced to aid him, the said Moore, in perfecting his inventions, and is desirous of securing the repayment of the same; and whereas the said Westcott is desirous of acquiring an interest in the inventions and Letters Patent aforesaid, and in any reissue, renewal, or extension thereof: Now, therefore,

Know all men by these presents, that, for and in consideration of the premises, and of the sum of five dollars in lawful money, to me in hand, by the said Westcott and West, before the execution hereof, paid, and of other valuable considerations, me thereunto moving, I, the said Hiram Moore, do hereby assign, sell, and set over unto the said Charles W. West and John M. Westcott the entire right, title, and interest in and to the Letters Patent aforesaid, and in and to the inventions and improvements represented, shown, or described therein, including any renewal, reissue, or extension thereof, the same to be held and enjoyed by the said West and Westcott, and their legal representatives, as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made, to the full end of any term or terms for which the Letters Patent aforesaid, or either of them, have been, or hereafter may be, granted, reissued, renewed, or extended.

I hereby further agree to sign such lawful papers, and do such lawful acts as may, by the counsel learned in law, of the said West and Westcott, be deemed necessary or expedient in order to obtain an extension or reissue of the patents aforesaid, or to assert, maintain, or defend the rights secured by said Letters Patent. It is expressly understood, however, that the costs and charges of the proceedings aforesaid shall be defrayed by said West and Westcott, as hereinafter provided.

In consideration of the premises, I hereby further make, constitute, and appoint the said Charles W. West and John M. Westcott my true and lawful attorneys in law and in fact, with power irrevocable, giving and granting to them full and exclusive and unreserved power and authority, for me and in my name, place, and stead, to assume and take upon themselves the entire and exclusive management and control of the aforesaid Letters Patent, and of each and every one of them, and to dispose of all the rights, title, and interest which I have under the same, and under each and every of them, for such price or prices, upon such terms, and to such persons, and for such place or places, as they, my said attorneys, shall deem proper, and in my name, place, and stead, and as my own proper act and deed, to sign, seal, deliver, and acknowledge all such deeds and instruments of writing as shall be necessary or proper for the granting or licensing to others the said rights under the said Letters Patent, and to each and every of them, and to ask, demand, sue for, and receive the price of fees, or any part or parts thereof, paid or payable for such grants or licenses, and in my name to execute and deliver receipts and acquittances therefor, and in my name to bring to account and reckoning, and to ask, demand, sue for, and recover and receive of and from all and any person whomsoever, who may have been, or may be, manufacturing or selling said drills containing the improvements aforesaid, or by any or either of them, such reasonable price or fee for such use of said improvements, or either of them, as my said attorneys shall deem proper and reasonable, * * * and generally to do and perform, and execute in my name as aforesaid, all and whatever other acts, matters, and things that they may deem expedient and requisite, or may be advised to do in and about the premises, as fully and effectually, to all intents and purposes, as if I myself were present and did the same, I, the said Hiram Moore, hereby ratifying, allowing, and confirming, and agreeing from time to time, and all times hereafter, to ratify, allow, and confirm as good and valid all and whatsoever the acts, matters, and things which my said attorneys, or their substitute, shall lawfully do, or cause to be done, in and about the premises, by virtue of these presents.

* * *

The said John M. Westcott, for his part, agrees, at his own cost and charges, to procure the extension of said Letters Patent, November 20, 1860, now pending, if practicable, including the expenses already incurred as well as those which hereafter may be incurred in said behalf, which sum is to be paid absolutely whether said extension is granted or not, and in no event is any part of said sum to be reclaimed from, or refunded or repaid by, said Moore, or to be deducted from the sum or sums collected under said patents.

It is hereby covenanted and agreed, by and between the parties hereto, as follows: That from the sum or sums collected under the Letters Patent aforesaid, from sales, royalties, or settlements, or from any other source, shall first be deducted the costs, charges, and expenses of collecting the same, including all litigation expenses save those of the extension application, and then the net profits or receipts shall be divided among the parties hereto as follows: To Hiram Moore, or his legal representatives, one-fourth part; to C. W. West, or his legal representatives, one-fourth part; to John M. Westcott, or his legal representatives, one-half part. In case of loss or failure to realize any profit under said patents, all litigation expenses aforesaid are to be paid by said Westcott, it being expressly understood by the parties hereto that under no circumstances are said Moore or West to incur any obligation, or be under any liabilities for said expenses. It is further agreed that John M. Westcott is to make no charge for his own time spent in this behalf, nor is said West to make any charges for his services.

It is also expressly understood that said Moore's interest is to continue during and throughout the extended time of the patent of November 20, 1860. Should such extension be granted, the parties hereto hereby agree in good faith to perform the covenants between them made.

In testimony whereof, the parties hereto have affixed their hands and seals, the day and year first above written.

HIRAM MOORE. [L. S.]
C. W. WEST. [L. S.]
J. M. WESTCOTT. [L. S.]

In presence of—
WM. D. BALDWIN,
MARY T. PALMER.

ASSIGNMENT OF WESTCOTT TO MORRIS AND KINSEY, AND CONTRACT BETWEEN THEM.

Whereas, heretofore, to wit, October 6th, 1874, Hiram Moore, of Fond du Lac County, Wisconsin, Charles W. West, of Cincinnati, Ohio, and John M. Westcott, of Milton, Indiana, entered into a contract and article of agreement in relation to certain improvements in grain-drills, for which Letters Patent have been issued to said Moore, No. 30,685, dated November 20th, 1860, and No. 31,819, dated March 26th, 1861, in which agreement, amongst other things, the said Moore assigns and conveys to said West one-fourth, and to said Westcott one-half, and retains for himself one-fourth of said interest, contained in said Letters Patent, for said improvements in said grain or feed-drills;

In said assignment, said Westcott, on his part, agrees, at his own cost and charges, to procure the extension of said Letters Patent of November 20th, 1860, including expenses already incurred, as well as those that may hereafter occur in said behalf, to be paid whether such extension be granted or not, and in no event is said sum, or any part thereof, to be reclaimed from or refunded by said Moore, and that from sums collected under said Letters Patents, from sales, royalties, or settlements, or from any other source, shall first be deducted the costs, charges, and expenses of collecting the same, including all litigation expenses, save those of the extension application, and then the net profits, or receipts, shall be divided among said parties; to said Moore one-fourth, said West one-fourth, and said Westcott one-half part. In case of loss or failure to realise any profits under said patent, all litigation expenses aforesaid are to be paid by said Westcott, said Moore or West to be under no liabilities for said expenses. Said Westcott is to make no charge for his own time spent in this behalf, nor is said West to make any charge for his services; said Moore's interest is to continue during and throughout the extended term of the patent of November 20th, 1860, should such extension be granted;

And whereas, in consideration of the foregoing, Isaac Kinsey and Aaron Morris, of Milton, in Wayne county, Indiana, are desirous of obtaining an interest in said Letters Patent, they thereby agree to and with said John M. Westcott, of the same place, to severally take an equal interest with him in the same;

Therefore, this article of agreement witnesseth: That said John M. Westcott hereby agrees to and with said Isaac Kinsey and Aaron Morris, and does hereby set over and assign to each of them one-third part of his one-half interest, retaining one-third part himself in said Letters Patent; and said Kinsey and Morris, fully understanding the original agreement mentioned, do hereby agree to and with said Westcott, to be at one-third expense each with said Westcott, jointly, as set forth in said agreement, and shall be equally entitled and receive one-third profit or proceeds, if any, in said one-half interest, and in all things pertaining hereto to be governed by this and the original contract and agreement.

In witness whereof, we have hereunto set our hands and affixed our seals this 10th day of November, 1874.

J. M. WESTCOTT. [L. S.]
ISAAC KINSEY. [L. S.]
AARON MORRIS. [L. S.]

In May, 1881, the case was brought to a hearing on the pleadings and proofs, and the court held that the patents to Moore were valid; that he was the original and first inventor of the improvements specified in them, and that the title to them was vested in the complainants; that the defendants had infringed the first and second claims of the patent of 1860, and the sixth claim of the patent of 1861, and that complainants were entitled to recover the profits and gains which had accrued to the defendants from the manufacture, use, and sale of the improvements specified in those claims; and ordered a reference to one of the masters of the court to ascertain, state, and report an account of the gains and profits which the defendants or either of them had received by infringing the said claims, as well as the damages the complainants had sustained thereby.

The master thereupon proceeded to comply with the order, and on the 6th of December, 1883, made his report to the court. That report is not contained in the record, but from references to it, and quotations from it in the opinion of the court in considering exceptions taken to it, it appears that he reported that the complainants waived all claim for profits, and relied upon the proofs produced as establishing a fixed license-fee or royalty as the measure of damages. After stating

the testimony of the witnesses who had been examined on the point, he said that it was very difficult to determine from this evidence whether it made proof of such an established royalty or license-fee as furnished a criterion upon which to estimate complainants' damages.

The proof on the subject of damages was thus stated in his report:

It is proved that the Wayne Agricultural Company paid the royalty of $1 for one-horse machines and $2 for two-horse machines for four years—a sum which, in the absence of evidence to the contrary, may be regarded as reasonable. Mast & Co. paid between $2,000 and $3,000 in cash and conceded privileges, which Westcott estimates to have been worth as much more for infringement. It is true Westcott threatened suit, and when money is paid under threat of suit merely as the price of peace, it furnishes no evidence of the amount or value of the real claim in dispute; but the settlement made shows that Westcott was paid something substantial for the infringement, and that the fear of litigation was a small element of the settlement itself. Westcott says that he arrived at the amount by his estimate of the number of the machines made by Mast & Co. and other considerations which are explained in Mast's deposition. Mast says no estimate was made of the number of machines.

Westcott says he gave licenses like the one attached to his deposition to Mast & Co., and to English & Over. Mast was examined but not interrogated on that point. Mr. English, the active man in the firm of English & Over, says he does not recollect whether they took a license or not.

Notwithstanding the difficulty expressed by him, the master reported that the defendants had made and sold 800 infringing one-horse machines, and that complainants' damages on that account were $800; and that defendants had made and sold 800 infringing two-horse machines, and that complainants' damages on that account were $1,600, making $2,400 damages in full. The court, after a full consideration of the exceptions, came to the conclusion that without further evidence the complainants were entitled to only nominal damages, and entered an order that the case be recommitted to the master, with directions to admit further evidence as to damages, and to report the same, with his conclusions of law.

On the 23d of April, 1885, the master made a second report, in which among other things he stated that the additional evidence taken by him did not strengthen the proofs previously made in support of the claim that the complainants had established a license-fee, or royalty, which furnished a criterion by which to estimate the damages. He found that between 1870 and May, 1881, the defendants had made and put on the market about two thousand drills which infringed "the elements of the combination covered by the first claim," one-half of which were one-horse and one-half two-horse drills. He then considered the value of the claim or combination to defendants, who had used it in violation of complainants' rights, and stated that the evidence on this subject was conflicting; that some of the manufacturers considered it of so much value that during the life of the patent they had paid a stipulated license for its use, and that afterward they said it was worth very little if anything, and that it might be true that its value had been impaired and destroyed by new devices and improvements; and that the value of the combination as estimated by the witnesses varied from nothing to $6 per drill. He therefore reported that complainants were entitled to damages for 1,000 one-horse drills at 75 cents each, and 1,000 two-horse drills at $1.50 each, making in all $2,250; but how he arrived at the conclusion that 75 cents on each drill of one class, and $1.50 on each drill of the other class, were the actual damages sustained, nowhere appears.

Exceptions were taken to the report on various grounds, and among others: That the findings were based on speculation, and were only guesses, both as to the number of infringing drills and as to the value of the claim infringed; and that it failed to state any definite facts or evidence as a basis or ground for the findings. In July, 1885, the court decreed that the complainants were entitled to recover $1,800 for the damages sustained, and that so far as the master's report was inconsistent with that decree, the exceptions to it were sustained, but in other respects the exceptions were overruled. From this decision the appeal is taken.

Pending the suit Charles W. West, one of the complainants, and George W. Rude and John R. Rude, two of the defendants, died, and the bill was revived by the substitution of the executors of West in his place, and the administrators of George W. Rude in his place, and the executor of John R. Rude in his place.

Mr. Arthur Stem and *Mr. L. Hill* for the appellants.
Mr. E. E. Wood and *Mr. Edward Boyd* for the appellees.

Mr. Justice FIELD, having stated the facts of the case, delivered the opinion of the Court.

The defendants below, appellants here, seek a reversal of the decree of the circuit court upon several grounds, and, among others, these: first, that the complainants have not established a title in themselves to the patents; and, second, that they have not proved any damages for the infringement of the claims of the patentee. The first of these grounds rests upon the supposed effect of the assignment executed by the patentee to the complainants on the 6th of October, 1874. The instrument in its words of transfer is amply full and expressive to convey to them his entire interest in and title to not only the patents then issued, but also any renewals or extensions thereof. His language is:

I, the said Hiram Moore, do hereby assign, sell, and set over unto the said Charles W. West and John M. Westcott the entire right, title, and interest in and to the Letters Patent aforesaid, and in and to the invention and improvements represented, shown, or described therein, including any renewal, reissue, or extension thereof, the same to be held and enjoyed by the said West and Westcott, and their legal representatives, as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made, to the full end of any term or terms for which the Letters Patent aforesaid, or either of them, have been, or hereafter may be, granted, reissued, renewed, or extended.

Nothing could add to the force of this language. The concluding provision, that the net profits arising from sales, royalties, or settlements, or other source, are to be divided between the parties to the assignment so as to give the patentee one-fourth thereof, does not, in any respect, modify or limit the absolute transfer of title. It is a provision by which the consideration for the transfer is to be paid to the grantor out of the net profits made; it reserves to him no control over the patents or their use or disposal, or any power to interfere with the management of the business growing out of their ownership. The clause appointing the assignees attorneys of the grantor, with authority to use his name whenever they deem proper in such management, does not restrict in any way the power of the assignees after the transfer of the property. It was inserted, perhaps, from over-caution, but it was unnecessary. The assignees were under no obligation to consult him in the management of the property. Their own interests were a sufficient guarantee of a judicious exercise of their power of disposition.

The assignment of Westcott to Kinsey and Morris does speak of an interest possessed by him in the patent; but it explains what that interest is, viz., one-half part of the net profits from the patents, arising from sales, royalties, or settlements, or other sources, and it refers to the original assignment of the patentee to West and Westcott.

It follows that the contention of the defendants, that the complainants have not established their title to the patents, is not sustained. The complainants do not hold the property as trustees for the benefit of the patentee; they are only trustees for him of one-fourth of the profits which may be received by them. (*Tilghman* v. *Proctor*, 125 U. S., 136, 143.)

The second ground of the appellants is, we think, well taken. The master reported in his first report that the complainants waived all claim for profits arising from the manufacture, use, and sale of the patented machines, and relied upon the proofs as establishing such a fixed royalty or license-fee as would furnish a criterion by which to estimate complainants' damages; and, proceeding upon that view, he found

from two instances, and perhaps a third instance, in which a specified sum had been paid for the use of the machines, or for the privilege of making and selling them, that the complainants had suffered damages on each one-horse machine used by the defendants of $1 and on each two-horse machine used by them of $2. One of the instances relied upon was that of the Wayne Agricultural Company, which had paid the sums named for the use of the machines for 4 years. It is not clear when the payment was made, but it would seem that it was made in part under a threat of suit, and in part as the result of an arbitration after litigation on the subject had been commenced, and to avoid future litigation. It is clear that a payment of any sum in settlement of a claim for an alleged infringement cannot be taken as a standard to measure the value of the improvements patented, in determining the damages sustained by the owners of the patent in other cases of infringement. Many considerations other than the value of the improvements patented may induce the payment in such cases. The avoidance of the risk and expense of litigation will always be a potential motive for a settlement. The second instance relied upon is that of a corporation by the name of P. P. Mast & Co., which had obtained a license to manufacture grain-drills and seeders at Springfield, Ohio, and to sell the same within the United States, upon an agreement to pay $1 for every one-horse drill or seeder and $2 for every two-horse drill, provided that if the fee were paid upon the days designated for semi-annual returns, or within 10 days thereafter, a reduction of 50 per cent. should be made from the fee. The corporation soon afterward changed its feeding device, and thus did not infringe, and it settled for a portion of the fees; but it does not appear what they were. It is plain, without regard to the settlement had, that an agreement of this kind, where the charge may be fixed at the pleasure of the owner of the patent, cannot be received as evidence of the value of the improvements patented so as to bind others having no such agreement. The third instance is that of an alleged license to English & Over. The complainant Westcott testifies that they continued to pay as long as they were in partnership, but how much, or how long that partnership continued, does not appear. And Mr. Over, a member of that firm, does not recollect that it ever took a license. Westcott also testifies that no other persons or corporations than those mentioned ever took any licenses from them under the patents sued upon.

It is undoubtedly true that where there has been such a number of sales by a patentee of licenses to make, use, and sell his patents, as to establish a regular price for a license, that price may be taken as a measure of damages against infringers. That rule was established in *Seymour* v. *McCormick*, (16 How., 480,) and affirmed in *Corporation of New York* v. *Ransom*, (23 How., 487;) *Packet Co.* v. *Sickles*, (19 Wall., 611, 617;) *Birdsall* v. *Coolidge*, (93 U. S., 64;) and *Root* v. *Railway Co.*, (105 U. S., 189, 197.) Sales of licenses, made at periods years apart, will not establish any rule on the subject and determine the value of the patent. Like sales of ordinary goods, they must be common, that is, of frequent occurrence, to establish such a market price for the article that it may be assumed to express, with reference to all similar articles, their salable value at the place designated. In order that a royalty may be accepted as a measure of damage against an infringer, who is a stranger to the license establishing it, it must be paid or secured before the infringement complained of; it must be paid by such a number of persons as to indicate a general acquiescence in its reasonableness by those who have occasion to use the invention; and it must be uniform at the places where the licenses are issued. Tested by these conditions, the sums paid in the instances mentioned, upon which the master relied, cannot be regarded as evidence of the value to the defendants of the invention patented. The court below so treated them, and held that without further evidence the complainants would be entitled only to nominal damages, and remanded the case to the master to take further evidence. He did so, but in his second report he stated that the additional evidence did not strengthen the proofs previously made in support of the claim that complainants had established a license fee or royalty which furnished a criterion by which to estimate the damages. He therefore proceeded to estimate the value of the claim or combination patented, to the defendants, who had used it in violation of the complainants' rights, and for that purpose took the opinions of different persons on the subject. Of the witnesses produced by the complainants, it does not appear that any ever manufactured or used the patented machines. One of the principal witnesses stated that he had never read the patent, had never seen a drill made like that described, had no experience in the matter of licenses, and that he placed his estimate of the value of the claim patented at what he considered would be a fair recompense to the inventor. The estimates of all the witnesses of the complainants were merely conjectural; that is, were made without having knowledge of any saving secured either in the cost of the machine or in the labor required for its use, they simply stating that they considered that the amounts named by them would be a reasonable and fair royalty or license-fee for the patented drill. Naturally estimates founded upon supposed but not known benefits were widely apart, varying from $3 to $6 for a two-horse drill and half those sums for a single-horse drill. On the other hand, witnesses produced by the defendants, who had examined, and some of whom had used, the patented drills, stated that they did not consider them of any more utility than other seeding-drills in use, and that they did not bring any greater price in the market. The master does not appear to have given weight to the judgment of any of the witnesses, but concluded, though by what process of reasoning is not perceived, that 75 cents on each one-horse drill and double that sum on each two-horse drill would be the proper amount to allow, and as he had found, though upon testimony equally loose and insufficient, that there were 1,000 one-horse drills and an equal number of two-horse drills, he reported that the complainants were entitled to $2,250 as damages. The court was not satisfied with his conclusion, and, without stating the ground of its action, ordered the amount to be reduced to $1,800 as damages which the plaintiff should recover, besides costs, and $150 fee for the master, sustaining the exceptions to the report so far as it was inconsistent with that decree, and in other respects overruling them.

The action of the court is subject to the same objection as the report of the master. The ruling that a royalty was established, as made in the first report, had been repudiated by it, and no evidence of the value of the invention to the defendants was adduced except the conjectural estimates stated; and they furnished no satisfactory basis for any damages, much less data, which authorized the specific finding made as to the damages for each drill used. Opinions not founded on knowledge were of no value. Conclusions from such opinions were at best mere guesses. By the decision rendered a settled rule of law was violated, that actual, not speculative, damages must be shown, and by clear and definite proof, to warrant a recovery for the infringement of a patent. As was said long ago by this Court:

> Actual damages must be calculated, not imagined; and an arithmetical calculation cannot be made without certain data on which to make it. (*New York* v. *Ransom*, 23 How., 487, 488.)

There was no question in this case of damages arising from lost sales, or injurious competition, for no machines had been manufactured and put on the market by the patentee, or by the complainants, his assignees.

No legal ground being shown for the recovery of specific damages for the alleged infringement of the patents, the decree must be reversed, and the cause remanded, with directions to enter a decree for the complainants for nominal damages; and it is so ordered.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

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Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1887, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 350 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages. In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 52 pages. In paper covers, $1.50.

Issue of July 23, 1889.

Patents	446—No. 407,315 to No. 407,760,	inclusive.
Designs	20—No. 19,213 to No. 19,232,	inclusive.
Trade-Marks	31—No. 16,866 to No. 16,896,	inclusive.
Labels	9—No. 5,073 to No. 5,999,	inclusive.
Reissues	2—No. 11,013 to No. 11,015,	inclusive.
Total issue	508	

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic			Germany	6	1
Australia			Ireland	1	
Austria-Hungary	1		Java	1	
Belgium			Italy		
Bermuda			Mexico		
Brazil	1		New South Wales		
Canada	2		Norway		
Chili			Scotland	2	
Costa Rica			South Australia		
Cuba		1	Sweden	1	
Curaçoa			Switzerland	1	
Denmark					
England	22	3	Total to citizens of foreign countries	42	5
France	4				

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks and Labels.	States.	Patents and Designs.	Trade-Marks and Labels.
Alabama	3		Nebraska		
Arizona Territory			Nevada		
Arkansas			New Hampshire	1	
California	3	1	New Jersey	23	
Colorado	6		New Mexico Terri'ty		
Connecticut	22		New York	73	5
Dakota Territory	2		North Carolina	2	
Delaware	1		Ohio	40	1
District of Columbia			Oregon		
Florida	1		Pennsylvania	44	4
Georgia	5	1	Rhode Island	7	
Idaho Territory	1	1	South Carolina	1	
Illinois	29	5	Tennessee	3	
Indian Territory			Texas	5	2
Indiana	15		Utah Territory	2	
Iowa	7		Vermont	1	
Kansas	9		Virginia	5	
Kentucky	3	1	Washington Territ'y	3	
Louisiana	6		West Virginia	1	
Maine	4		Wisconsin	13	1
Maryland	1	1	Wyoming Territory		
Massachusetts	36	8	United States Army		
Michigan	16		United States Navy		
Minnesota	10				
Mississippi			Total to citizens of the United States	424	34
Missouri	17	3			
Montana Territory	1				

DESIGNS.

19,213.—STICK-HANDLE FOR CANES, &c.—*Stephen M. Creteau*, Providence, R. I. Application filed June 15, 1889. Serial No. 314,496. Term of patent 7 years.

19,214 to 19,218, inclusive.—CURTAIN.—*Riley Hartley*, Philadelphia, Pa., assignor to *Barnes & Beyer*, same place. Applications filed June 24, 1889. Serial Nos. 315,422 to 315,426, inclusive. Term of patents 3½ years.

19,219.—HEATING-STOVE.—*Werter C. Higgins*, Norwich, Conn. Application filed June 26, 1889. Serial No. 315,643. Term of patent 7 years.

19,220.—FASTENER FOR PAPER.—*George W. McGill*, New York, N. Y. Application filed June 26, 1889. Serial No. 315,642. Term of patent 14 years.

19,221.—STRENGTH OR POWER TESTING MACHINE CASE.—*Alfred W. Reeves*, Brooklyn, N. Y. Application filed June 14, 1889. Serial No. 314,302. Term of patent 7 years.

19,222.—PAPER-WEIGHT.—*William H. Ryer*, Salt Lake City, Utah Ter., assignor to *Miller, Metcalf & Parkin*, Pittsburg, Pa. Application filed June 27, 1889. Serial No. 315,880. Term of patent 14 years.

19,223.—BACK FOR BRUSHES, &c.—*Henry Berry*, Shelton, Conn. Application filed June 25, 1889. Serial No. 315,531. Term of patent 7 years.

19,224.—WEDDING-CARD.—*George F. Brown*, Brooklyn, N. Y. Application filed May 11, 1889. Serial No. 310,470. Term of patent 7 years.

19,225 to 19,229, inclusive.—OIL-CLOTH.—*Charles T. Meyer* and *Victor E. Meyer*, Bergen, N. J., assignors to *Edouard C. Sampson*, New York, N. Y. Applications filed July 27, 1889. Serial Nos. 315,813 and 315,816 to 315,818, inclusive. Term of patents 3½ years.

19,230.—POCKET-FLASK.—*Charles H. Read*, Pittsburg, Pa. Application filed June 22, 1889. Serial No. 315,277. Term of patent 3½ years.

19,231.—BABY-CARRIAGE BODY.—*Daniel P. Jefferies* and *James G. Rodgers*, Springfield, Ohio, assignors to *The Tricycle Manufacturing Company*, same place. Application filed December 3, 1888. Serial No. 292,554. Term of patent 14 years.

19,232.—OIL-CLOTH.—*Charles T. Meyer* and *Victor E. Meyer*, Bergen, N. J., assignors to *Edward C. Sampson*, New York, N. Y. Application filed June 27, 1889. Serial No. 315,814. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,836.—COUGH-MEDICINE.—*Thomas Candy*, Columbus, Ohio. Application filed June 7, 1889. Used since May 15, 1889.
"The representation of an hour-glass."

16,837.—MEDICAL COMPOUNDS FOR EXTERNAL APPLICATION FOR PRODUCING EPIDERMICAL HEAT.—*M. E. Casin & Co.*, New York, N. Y. Application filed May 31, 1889. Used since May 28, 1889.
"The words 'BOTTLED SUNSHINE' and the representation of a bottle with the sun in it."

16,838.—COTTON GOODS.—*Samuel A. Croser & Son*, Upland, Pa. Application filed May 10, 1889. Used since January 8, 1889.
"The words 'SUN CHECKS.'"

16,839.—BOOTS AND SHOES.—*Eva Dalsimer*, Philadelphia, Pa. Application filed June 8, 1889. Used since January 3, 1887.
"The words 'DALSIMER LAST' appearing on a picture of the sole of a human foot, surrounded by the outline of a shoe, associated with the legend ''TIS A FEAT TO FIT FEET.'"

16,840.—BOOTS OR SHOES WITH RUBBER SOLES.—*Thomas N. Ferguson*, Readville, Mass. Application filed April 1, 1889. Used since January 1, 1889.
"The representation of a shoe-sole with the word 'KOO-CHOOK' diagonally across it."

16,841.—GINGER-ALE.—*Frank L. Hazelton*, Boston, Mass. Application filed June 14, 1889. Used since December 1, 1888.
"The words 'COLD BLAST.'"

16,842.—FLOUR.—*The Estate of George V. Hecker*, New York, N. Y. Application filed May 16, 1888. Used since March 22, 1888.
"The representation of a lamb upon an island, bearing a flag, and the letters 'AA' in connection therewith."

16,843.—LAGER-BEER.—*Ferd. Heim Brewing Company*, Kansas City, Mo. Application filed May 31, 1889. Used since March, 1888.
"A crescent with a section-sign and the figures '11' placed within its circle."

16,844.—GUITARS AND MANDOLINS.—*J. W. Jenkins & Son*, Kansas City, Mo. Application filed February 25, 1889. Used since August 22, 1885.
"The word 'HARWOOD.'"

16,845.—CRACKERS, BISCUITS, WAFERS, CAKES, AND KINDRED ARTICLES.—*F. A. Kennedy Company*, Cambridge, Mass. Application filed February 27, 1889. Used since February 18, 1889.
"The representation of a series of stars arranged in the form of a circle."

16,846.—COFFEE.—*Alejandro M. Martinez*, Havana, Cuba. Application filed May 29, 1889. Used since April 6, 1889.
"The representation of coffee-plants and a man having a basket under his left arm and his right hand extended gathering the berries from the plants."

16,847.—[Withdrawn.]

16,848.—MEDICINAL PREPARATION OF A PROPHYLACTIC CHARACTER. *William Radam*, Austin, Tex. Application filed May 17, 1889. Used since September 1, 1887.
"The words 'MICROBE DESTROYER' associated with the representation of a shield with the figures of a man carrying a raised club and a skeleton thereon."

16,849.—MEDICINAL PREPARATION OF A PROPHYLACTIC CHARACTER. *William Radam*, Austin, Tex. Application filed May 17, 1889. Used since September 1, 1887.
"The words 'BACTERIA KILLER' associated with the representation of a shield with the figures of a man carrying a raised club and a skeleton thereon."

16,850.—BEER OF ALL DESCRIPTIONS.—*Bass, Ratcliffe & Gretton, (Limited,)* Burton-on-Trent, county of Stafford, England. Application filed March 20, 1889. Used since 1855.
"A rhomboidal or diamond-shaped figure."

16,851.—BEER OF ALL DESCRIPTIONS.—*Bass, Ratclif & Gretton, (Limited,)* Burton-on-Trent, county of Stafford, England. Application filed March 20, 1889. Used since 1855.
"A triangular figure."

16,852.—DRESS-GOODS AND UMBRELLA-COVERINGS.—*William F. Read*, Philadelphia, Pa. Application filed May 16, 1889. Used since November 15, 1888.
"The word 'LANSDOWNE.'"

16,853.—EMBROCATION PREPARATIONS OR EXTRACTS OF SARSAPARILLA, STOMACHIC TINCTURES, BITTERS, LOZENGES, AND PASTILS.—*Friedrich Adolph Richter*, Nuremberg and Rudolstadt, Germany; Vienna, Austria-Hungary; Rotterdam, Holland, and New York, N. Y. Application filed May 25, 1889. Used since March 1, 1869.
"The representation of an anchor."

16,854.—PAPER-CUTTING MACHINES.—*Shniedewend & Lee Company*, Chicago, Ill. Application filed May 9, 1889. Used since March 1, 1888.
"The word 'ADVANCE.'"

16,855.—PAPER-CUTTING MACHINES.—*Shniedewend & Lee Company*, Chicago, Ill. Application filed May 9, 1889. Used since December 1, 1887.
"The word 'CHALLENGE.'"

16,856.—PRINTING-PRESSES.—*Shniedewend & Lee Company*, Chicago, Ill. Application filed May 9, 1889. Used since November 1, 1884.
"The word 'CHALLENGE.'"

16,857.—GLOVES.—*Sterling Fast Black Glove Co.*, Boston, Mass. Application filed May 15, 1889. Used since April 1, 1889.
"The representation of a mousquetaire or fabric glove bearing the words 'FAST BLACK FABRIC GLOVES' and 'STERLING.'"

16,858.—NEWSPAPER.—*Daniel Stern*, Chicago, Ill. Application filed June 13, 1889. Used since 1881.
"The words 'AMERICAN ARTISAN.'"

16,859.—TOILET-PAPER.—*George W. Thompson*, New York, N. Y. Application filed March 28, 1889. Used since January 1, 1873.
"A rectangular figure made up of top, bottom, and side panels, with a circular sight within the panels, and the words 'GLEN MILLS.'"

16,860.—CORDIAL, LIVER-PILLS, BLOOD-SPECIFIC, AND OINTMENT.—*The "Topaz" Cinchona Cordial Company*, Atlanta, Ga. Application filed May 8, 1889. Used since March 1, 1889.
"The portrait or picture of the Beautiful Countess of Cinchon."

16,861.—KEROSENE-OIL.—*Wilson Grocery Company*, Peoria, Ill. Application filed April 1, 1889. Used since January 1, 1887.
"The words 'BREAK OF DAY.'"

16,862.—CONFECTIONERY.—*George Ziegler Company*, Milwaukee, Wis. Application filed May 24, 1889. Used since 1882.
"The word 'PEERLESS.'"

16,863.—PEAR-TREES.—*The Idaho Pear Co.*, Lewiston, Idaho Ter. Application filed February 15, 1889. Used since November 1, 1886.
"The representation of a tag and the words 'IDAHO PEAR' upon it."

16,864.—WORM REMEDY.—*Annis C. McIntosh*, Cambridgeport, Mass. Application filed June 3, 1889. Used since August 1, 1884.
"The words 'DR. CHAMPLIN'S.'"

16,865.—CHEWING-TOBACCO, PARTICULARLY PLUG.—*Perkins & Ernst*, Covington, Ky. Application filed June 10, 1889. Used since May 10, 1889.
"The representation of a lead-pencil."

16,866.—PINS, BRACELETS, CHAINS, CHARMS, SLEEVE AND SHIRT BUTTONS, AND LIKE ARTICLES.—*Plainville Stock Company*, Plainville and Wrentham, Mass. Application filed June 17, 1889. Used since 1884.
"The letters 'P. S. Co.'"

LABELS.

5,973.—Title: "THE 'LUSTER' FURNITURE POLISH."—*Julius S. Mack*, Kansas City, Mo. Application filed June 25, 1889.

5,974.—Title: "BRAND B" (FOR SHEATHING PAPER.)—*Margaret E. Manahan*, New York, N. Y. Application filed June 13, 1889.

5,975.—Title: "CHEMICAL AND VEGETABLE PARLOR ILLUMINATOR" (FOR BURNING FLUID.)—*William K. Wales*, Baltimore, Md. Application filed June 12, 1889.

5,976.—Title: "HOLDEN'S COUGH SYRUP."—*Isaac D. Holden*, Stockton, Cal. Application filed March 16, 1889.

5,977.—Title: "CARTER'S LIQUID GLUE."—*Carter, Dinsmore & Co.*, Boston, Mass., and New York, N. Y. Application filed September 1, 1887.

5,978.—Title: "CARTER'S LIQUID GLUE."—*Carter, Dinsmore & Co.*, Boston, Mass., and New York, N. Y. Application filed September 1, 1887.

5,979.—Title: "DR. W. C. DETWEILER'S MARVELOUS SPECIFICS."—*William C. Detweiler*, Easton, Pa. Application filed June 27, 1889.

5,980.—Title: "JAPANESE BRAND," (FOR MOTH PAPER.)—*Margaret E. Manahan*, New York, N. Y. Application filed June 27, 1889.

DISCLAIMER.

308,661.—*Sidney H. Short*, Columbus, Ohio. IMPROVEMENT IN INSULATING-SUPPORTS FOR ELECTRIC CONDUCTORS. Patent dated February 26, 1889. Disclaimer filed July 15, 1889, by the patentee.

Enters his disclaimer to the second and third claims, which are in the following words:

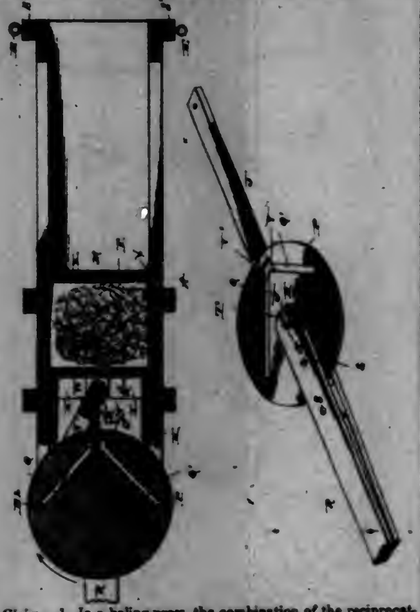
"2. In combination with the shank and its clip, the conducting-wire formed with an offset fitted to the clip, substantially as described.

"3. The conducting-wire formed with an offset, and the clip fitted thereto and provided with a hole in its upper end for connection with the shank, substantially as described."

PATENTS

GRANTED JULY 23, 1889.

407,315. BALING-PRESS. ZACHARIAH J. ANDERSON, Fort Worth, Tex. Filed Feb. 13, 1889. Serial No. 299,709. (No model.)



Claim.—1. In a baling-press, the combination of the reciprocating follower, a retracting-spring connecting said follower with the end of the press-frame, a pitman connected pivotally to the said follower and having a friction-roller at its front end, and a horizontal operating-disk having slots formed therein at right angles to each other, and notches or extensions at their meeting ends, substantially as set forth.

2. The herein-described operating mechanism for baling-presses, comprising the disk-plate having slots formed therein at right angles to each other, and notches formed at the meeting ends of the said slots, and forming practically continuations thereof, in combination with a pitman connected pivotally to a reciprocating follower and having a friction-roller operating in the said slots and notches, substantially as set forth.

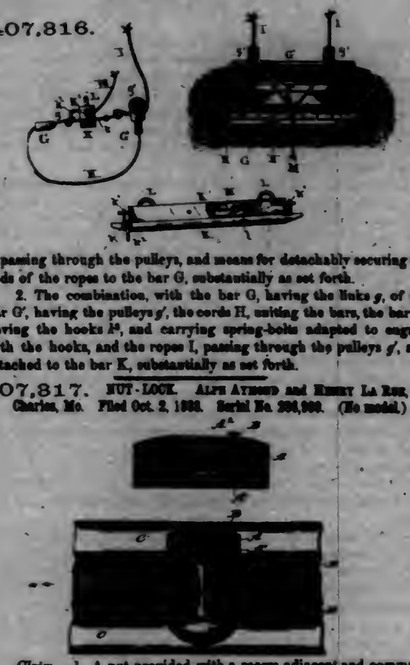
3. In a baling-press, the combination of the press-box, the reciprocating follower, the pitman pivoted to the latter, a vertical bolt at the front end of the press-frame, a horizontal operating-disk mounted loosely on said bolt and having slots formed at right angles to each other, and notches forming continuations of said slots, the bifurcated sweep or operating-lever attached to said cam-plate between a pair of tubular posts or washers upon the bolt, the retracting-spring connecting the follower with the vertical bolt or with one of the posts surrounding the same, and a friction-roller journaled to the end of the pitman and working in the slot and notches in the cam-plate, substantially as set forth.

407,316. HAY-SLING. JAMES G. ARMER, Brookfield, Mo. Filed Nov. 30, 1888. Serial No. 292,177. (No model.)

Claim.—1. A sling for a hay-stacker, consisting of the bars G G', united by the cords H, the pulleys *f*, attached to the bar G', the ropes I, passing through the pulleys, and means for detachably securing the ends of the ropes to the bar G, substantially as set forth.

2. The combination, with the bar G, having the links *g*, of the bar G', having the pulleys *g'*, the cords H, uniting the bars, the bar K, having the hooks k^2, and carrying spring-bolts adapted to engage with the hooks, and the ropes I, passing through the pulleys *g'*, and attached to the bar K, substantially as set forth.

407,316.

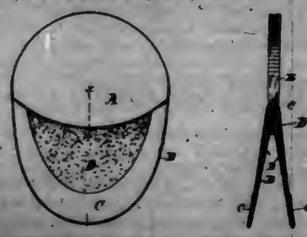


407,317. NUT-LOCK. ALPH ATHERTON and HERBERT LA REE, St. Charles, Mo. Filed Oct. 2, 1888. Serial No. 286,902. (No model.)

Claim.—1. A nut provided with a recess adjacent and communicating with its central or main bore and with a pin fitted in the recess and projecting from the outer face of the nut, said pin being provided with threads substantially coincident with the threads of the nut, substantially as specified.

2. A nut provided with a cylindrical recess adjacent and communicating with its central or main bore and with a cylindrical pin fitted in the said recess and projecting from the outer face of the nut, said cylindrical pin being provided with threads coincident with the threads of the nut, substantially as specified.

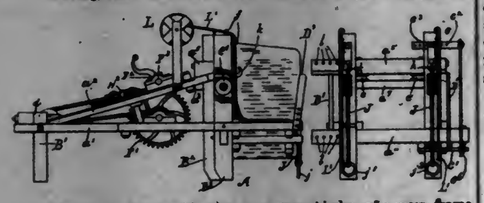
407,318. ARMPIT-SHIELD. EMILY BAIN, New York, N. Y. Filed Nov. 12, 1888. Serial No. 290,560. (No model.)



Claim.—The combination, in a dress-shield, of a water-proof base-piece B, the edge piece C, composed of water-proof material and attached to said base, so as to form a water-tight pocket, and the re-

movable absorbent D, whereby the absorbent material is exposed on one side to take up the perspiration from the person of the wearer and protected on its other side and at its edges so that the absorbed moisture cannot be expressed therefrom, substantially as described.

407,319. MACHINE FOR BINDING STRAW. HAMILTON BAKER, Pittsburg, Ohio. Filed Feb. 7, 1889. Serial No. 299,046. (No model.)



Claim.—1. The combination, in a straw-binder, of a main frame and a binding-table, a windlass supported on said main frame, a movable pulley connected, as described, to said windlass, a binding-rope passing over said movable pulley, with its extremities resting on said binding-table, rings in said binding-rope adapted to engage with stationary hooks on said binding-table, and means, substantially as described, for revolving said windlass, substantially as and for the purpose set forth.

2. The combination of a main frame having a lower longitudinal piece and the upper supporting-pieces at an angle thereto, a movable pulley supported on said upper supporting-pieces, a windlass on the lower longitudinal supporting-pieces connected to the said movable pulley by a rope passing over a fixed pulley on the said main frame, a binding-table having projecting arms adapted to support the ends of a binding-rope which passes over said movable pulley, rings in said binding-rope, and stationary hooks in said binding-table, substantially as and for the purpose set forth.

3. The combination of a main frame having the projecting arms which form the bottom of the binding-table, said projecting arms each consisting of two parallel longitudinal pieces having connecting-bars therein, a supporting-post to which said arms are connected, supporting-pulleys in each of said posts, a binding-rope passing over said pulleys, a movable pulley over which said rope passes, stationary hooks on said posts adapted to be engaged by the rings in the ends of said binding-rope, and means, substantially as described, for drawing said movable pulley against the loop formed in the said binding-rope to cause the same to draw equally from each end, substantially as described.

4. The combination, with a main frame, of the supporting-arms forming a binding-table, the supporting-posts having the stationary hooks therein, and a binding-rope passing through said posts, and a movable pulley around which said rope passes, rings in the ends of said binding-rope adapted to engage said hooks, cord-spools on said main frame, and a notched cord-holder device on each of said supporting-arms, an adjustable butt-board at one end of said binding-table, and means, substantially as described, for drawing said movable pulley against the loop in said binding-rope, substantially as specified.

5. In a straw-binder, the combination, with a main frame, of the supporting-posts B^2 B^3, the supporting-arms secured thereto, stationary hooks on said posts, supporting-pulleys in said posts immediately below said hooks, a binding-rope passing at each end over said supporting-pulley and provided with rings or loops to engage said hooks, a movable pulley in the loop or bight of said binding-rope, and means, substantially as described, for operating said movable pulley to tighten said binding-rope, substantially as specified.

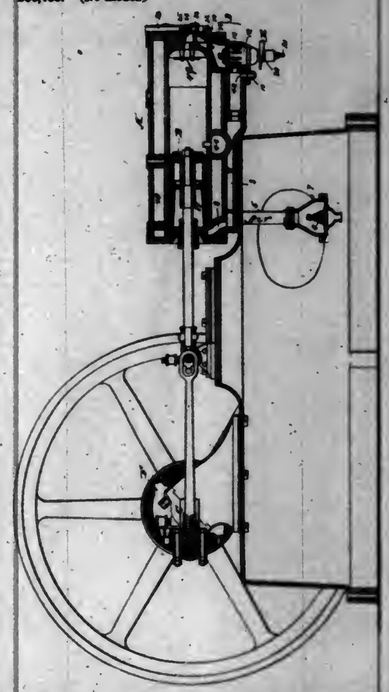
6. The combination, with a main frame, of the front supporting-posts located in different planes to form a binding-table of different capacities at each end, supporting-arms on said posts, stationary hooks and supporting-pulleys supported adjacent to each other by the said posts, a binding-rope passing over said pulleys and provided with rings or loops adapted to engage said hooks, a movable pulley over which said rope passes between the said posts, means, as described, for operating said movable pulley, cord-spools supported on the said frame, and cord-holding pieces on the said supporting-arms, substantially as specified.

7. The combination, with a main frame having a windlass supported thereon and provided with an upper deck portion, and a movable pulley supported on said deck portion and attached to said windlass, of a binding-table having stationary hooks, guiding and supporting pulleys, and a binding-rope passing around said movable pulley and over said guiding and supporting pulleys and adapted at each end to engage the respective hooks, substantially as set forth.

8. The combination of a main frame, a windlass, and a movable pulley supported on said frame, said movable pulley being attached to said windlass, a crank-shaft having a pinion adapted to engage a spur-gear on said windlass, a pawl to limit the motion of said windlass, a binding-table and binding-rope, as described, and stationary hooks adapted to engage the free ends of said binding-rope, which passes over suitable guiding and supporting pulleys and around said movable pulleys, substantially as and for the purpose set forth.

9. The combination, with a main frame, of the front supporting-posts, supporting-arms secured thereto, a binding-rope adapted at each end to engage stationary hooks on said posts, a movable pulley at the rear of said posts around which said rope passes, a windlass for operating said movable pulley, and means, substantially as described, for adjusting one of said supporting-posts and its supporting-arm, substantially as specified.

407,320. GAS-ENGINE. CYRUS W. BALDWIN, Yonkers, N. Y., assignor to William R. Hale, Chicago, Ill. Filed July 28, 1888. Serial No. 280,705. (No model.)



Claim.—1. The combination, with the working-cylinder, inlet-port, and air-pump of a gas-engine, of two chambers communicating with the air-pump and with an air-inlet port, one chamber communicating near its rear end with a gas-supply pipe and both communicating at their rear ends with the passage leading to the cylinder, substantially as set forth.

2. The combination, with the cylinder of a gas-engine having an inlet-port at the rear and air-port at the front, of two chambers communicating with said air-port at the front ends and each communicating independently with the said inlet-port at the rear end, and one of said chambers communicating also with the gas-inlet pipe, substantially as set forth.

3. The combination, with the cylinder, piston, and ports of a gas-engine, of a casing containing two chambers communicating with each other at the front ends, and with an air-inlet port at the front and independently at the rear ends with the charge inlet-port of the cylinder, and a gas-pipe provided with a check-valve communicating with one of said chambers, substantially as set forth.

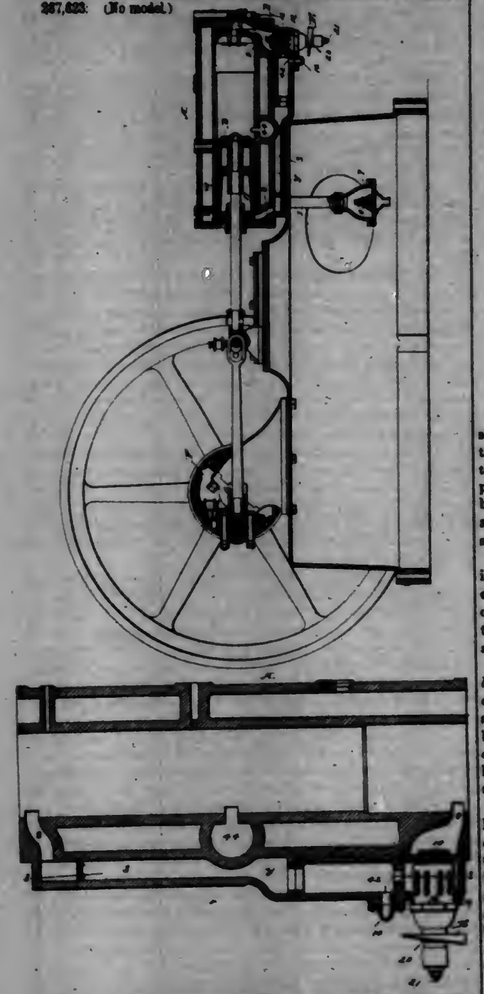
4. The combination, with the cylinder, piston, and ports of a gas-engine, of a casing provided with a partition partially dividing the casing, an air-inlet port, a gas-inlet port communicating with the casing at one side of the partition, and a communication between the rear ends of the chambers on each side of the casing and the inlet-port of the cylinder, substantially as set forth.

5. The combination, with the pump of a gas-engine, of a casing communicating with the pump and with an air-inlet port at one end partially divided into two communicating chambers, a gas-pipe leading to one of the chambers, and a communication between each chamber, and a passage leading to the working-cylinder of the engine, substantially as set forth.

6. The combination, with the cylinder, piston, and ports of a gas-engine, of a casing provided with two chambers side by side, each communicating with the other at one end and at the other with a passage leading to the cylinder, and a gas-pipe connecting with one of the chambers near the end adjacent to said passage, substantially as set forth.

7. The combination of the cylinder, casing, passage leading to the cylinder, valve controlling said passage, and partition dividing said casing longitudinally into two chambers communicating at the forward end and each having a communication with the said passage at the rear end, substantially as set forth.

407,321. GAS-ENGINE. CYRUS W. BALDWIN, Yonkers, N. Y., assignor to William R. Hale, Chicago, Ill. Filed Oct. 9, 1888. Serial No. 287,623. (No model.)



Claim.—1. The within-described improvement in supplying the cylinder of a gas-engine with charges of explosive mixture, the same consisting in drawing air into two chambers, each independent of the gas-chamber, and gas also into one of them, and in then forcing the contents from said chambers and mixing the same together only after they reach the explosion-chamber, substantially as described.

2. The mode of supplying the cylinder of a gas-engine with charges of explosive mixture, consisting in supplying one chamber with a mixture of air and gas having an excess of gas, supplying another chamber with air, forcing the contents from both chambers and bringing them together in the explosion-chamber of the engine, substantially as described.

407,322. STAND-PIPE AND FIRE-ESCAPE. FRANK W. BARNES, Chicago, Ill. Filed Mar. 7, 1889. Serial No. 302,925. (No model.)



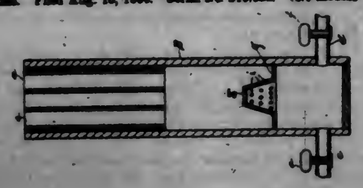
Claim.—1. The combination, with the stand-pipe permanently secured to the balconies of a building, of the sectional ladder secured to the stand-pipe, the different sections extending each from one balcony to another, and each section being on the opposite side of the stand-pipe from the section preceding the same, the floors of said balconies being provided with man-holes, the man-hole of each balcony being at the top of the ladder-section extending down from the same, substantially as and for the purpose specified.

2. A fire-escape consisting of balconies and sections of ladders, in combination with a stand-pipe placed vertically and secured to the different balconies, the sections of the ladder being placed successively on opposite sides of the stand-pipe, and a man-hole in each balcony at the top of the ladder extending down from the same, substantially as and for the purpose specified.

3. The combination, with the vertical stand-pipe *a*, of balconies *b c d*, to which the stand-pipe is secured, ladder-sections *i k l*, and openings *e f g* in the balconies, respectively, one side of each ladder-section being secured to the stand-pipe and the other being secured between the balconies, as described, said sections being arranged successively on different sides of the stand-pipe, and the openings or man-holes *e f g*, corresponding in position to the different ladder-sections, substantially as and for the purpose specified.

4. The combination, with the balconies provided each with a man-hole, of a ladder consisting of different sections or stories, the successive sections or stories of said ladder being placed vertically between the balconies, and each section or story of the ladder having an opening in the balcony at the top of the same, and the floor of the balcony at the foot of each section serving as a landing, said ladder-sections and said man-holes being respectively at the same distance from the building, whereby one descending from one balcony to another is prevented from falling down through the successive openings, substantially as and for the purpose specified.

407,328. GAS-BURNING DEVICE. JOHN F. BARKER, Springfield, Mass. Filed Aug. 13, 1888. Serial No. 282,538. (No model.)



Claim.—1. In a gas-burning device, the combination, with an inclosed chamber, of one or more inlet-pipes for the introduction of gas and atmospheric air under pressure, and a burner-head leading from said chamber consisting of a pipe and a group of tubes arranged side by side therein, substantially as and for the purpose set forth.

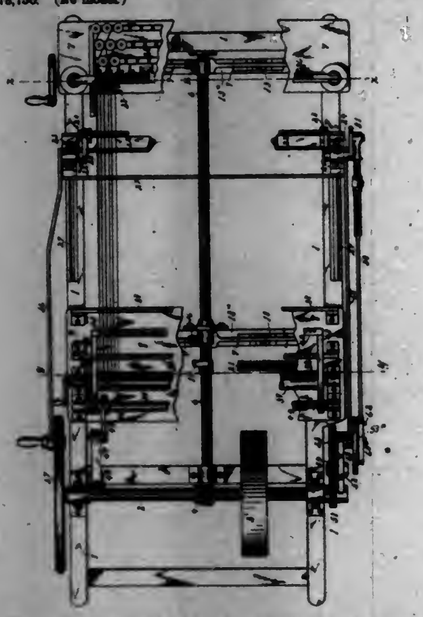
2. In a device for burning combined gases or gas and atmospheric air, the combination, with the delivery-pipe, of tubes, as *a a a*, arranged within the pipe and perforated partition *g*, said pipe being provided with a chamber intervening between the partition and the tube, substantially as described.

3. In a gas-burning device, the combination, with an inclosed chamber, of one or more inlet-pipes for the introduction of gas and atmospheric air under pressure, and a burner-head consisting of a pipe leading from said chamber, and a group of tubes arranged side by side within said pipe, with open interstices between them for the escape of gas, substantially as described

4. In a gas-burning device, the combination, with an inclosed chamber, of one or more inlet-pipes for the introduction of combined gases or gas and atmospheric air, and a pipe leading therefrom with a number of convergent tubes therein for the concentration within a limited space of the heat of burning gas-jets issuing from said pipe, substantially as described.

407,324. MACHINE FOR POLISHING THE EYES OF NEEDLES.

PHILO M. BURNS, Bridgeport, Conn. Filed July 2, 1888. Serial No. 278,730. (No model.)



Claim.—1. In a machine of the class described, the combination, with a reciprocating carriage, an oscillating needle-clamp carried thereby, and connecting-rods 30 and 55, of a main shaft having an arm 52, gears 51, 53, and 54, and cam 58, to which rod 30 is connected.

2. The combination, with the carriage, connecting-rod 55, the clamp journaled on the carriage, and connecting-rod 30, pivoted to the clamp, of tables by which the threads are carried, and mechanism, cams, and levers, as shown, whereby the tables are raised and lowered during the polishing of each row of eyes.

3. The combination, with the carriage, connecting-rod 55, the clamp journaled upon the carriage, and connecting-rod 30, pivoted to the clamp, of tables by which the threads are carried, and mechanism—for example, cams and levers, as shown, and arm 18—whereby the tables are raised and lowered during the polishing of each row of eyes, and a lateral movement is imparted to the table as it rises, as and for the purpose set forth.

4. The carriage, the clamp carried thereby, the main shaft having an arm 52, and connecting-rod 55, whereby the carriage is reciprocated, in combination with a fixed gear 51, within which the shaft rotates, an intermediate gear upon the arm engaging gear 51, a shaft journaled in the arm and carrying a cam having a groove 61, a gear 53, engaging the intermediate gear, and a rod 30, connected to the clamp and having a pin engaging the groove, said gears being so proportioned relatively to each other that gear 53 will lose a tooth at each revolution of the shaft and will complete a revolution when the shaft has made as many revolutions as there are teeth in gear 51.

5. The combination, with the reciprocating carriage, the clamp, and shaft 6, of levers 9, by which the tables are supported, and cams 16, engaging the inner ends of said levers, whereby the tables are raised and lowered during each rotation of shaft 6.

6. In combination, the tables, levers 9, having slots 10 and pivotally secured to the tables, blocks engaging said slots and journaled in suitable brackets, and rotating cams engaging the inner ends of the levers, whereby the tables are raised and lowered.

7. In combination, the tables, levers 9, whose outer ends are pivotally secured thereto, one lever of each pair carrying a roller at its inner end, the other being branched to receive the roller, and rotating cams adapted to engage said rollers, whereby the tables are raised and lowered.

8. The combination, with the tables, shaft 6, and cams 16, of levers 9, pivotally connected to the tables and having slots 10, blocks engaging said slots and having pins at opposite ends, and suitable brackets wherein said pins are journaled, substantially as and for the purpose set forth.

9. In a machine of the class described, frame-work table 8, having arm 18 and eyes 19, and supported by angle-pieces engaging said eyes and eyes upon the frame-work, in combination with a rotating cam engaging said arm to impart a lateral movement to the table, and a spring whereby it is returned to its normal position when the cam has passed the arm.

10. In combination, table 8, having an arm 18, angle-pieces by which the table is supported, shaft 6, having a cam 17, engaging said arm, whereby the table is moved laterally, and a spring whereby the table is returned to its normal position after the cam has passed the arm.

11. Table 8, having eyes 19 and arm 18, and vertically-movable angle-pieces engaging said eyes, in combination with levers 9, whose outer ends are pivoted to the angle-pieces, a rotating cam 16, engaging said levers to raise and lower the table, and a rotating cam 17, engaging arm 18 to impart a lateral movement to the table.

12. Table 8, having thread-bars 38 and a thread-shaft 39, in combination with a rock-shaft having arms 43 and cross-bars, spring-plungers in said cross-bars which engage the threads between bars 38, arm 45, and a strap and weight whereby the spring-plungers are kept in engagement with the thread.

13. Thread-bars 38 and thread-shafts 39, in combination with the rock-shaft, arms 43, cross-bars secured to said arms, spring-actuated plungers carried by said bars and adapted to engage the threads between bars 38, means, as a strap and weight, for retaining the plungers in engagement with the threads, and spring-pawls engaging shaft 39 to prevent backward movement, and the rock-shaft to hold the plungers out of engagement with the threads.

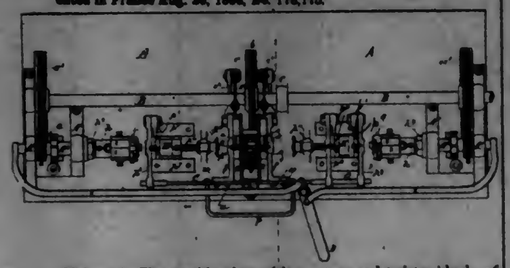
14. In combination, the reciprocating carriage, the needle-clamp journaled thereon, the main shaft, a crank-arm carried thereby, a shaft 53^a, journaled in said arm, a cam rigidly secured to said shaft, intermediate gearing actuated by the main shaft, whereby shaft 53^a and the cam are caused to rotate once during a predetermined number of revolutions of the main shaft, and a connecting-rod pivoted to the needle-clamp and engaging the cam, whereby the plane of the needle-clamp is shifted independently of the movements of the carriage.

15. In combination, the reciprocating carriage, the needle-clamp journaled thereon, the main shaft having a crank-arm, shaft 53^a, journaled in said arm, a grooved cam secured to said shaft, intermediate gearing actuated by the main shaft, whereby said cam is caused to rotate once during a predetermined number of revolutions of the main shaft, and a connecting-rod pivoted to the needle-clamp and to arm 53^a, and having a pin engaging the cam-groove, whereby the plane of the needle-clamp is shifted independently of the movements of the carriage.

16. In combination, the carriage supported by single rollers on opposite sides, the needle-clamp journaled thereon, the main shaft having a crank-arm, a shaft 53^a, journaled in said crank-arm, a grooved cam secured to said shaft, intermediate gearing actuated by the main shaft, whereby rotary motion is imparted to the cam, connecting-rod 55, pivoted to shaft 53^a and rigidly secured to the carriage, connecting-rod 30, pivoted to the needle-clamp and having a slotted connection to shaft 53^a, and a pin engaging the cam-groove, whereby the carriage is reciprocated and tilted forward and backward at each reciprocation and the plane of the needle-clamp is shifted independently of the movements of the carriage.

17. The carriage having a roller 28 at each end, and the needle-clamp carried thereby, in combination with the main shaft having an arm and a hand-wheel, and connecting-rods 55 and 56, one end of said rods being pivoted, respectively, to said arm and said hand-wheel, the other ends being rigidly secured to the carriage, so that each revolution of the shaft will reciprocate the carriage and cause it to tilt forward and backward upon rollers 28.

407,325. NEEDLE-MAKING MACHINE. JEAN BENAIEST, Rixheim, France. Filed June 11, 1888. Serial No. 276,751. (No model.) Patented in France Aug. 26, 1886, No. 173,173.



Claim.—1. The combination, with a rotary end twister-block, of a finger adapted to be moved athwart the line of the heddle and adjustable to and from said block.

2. The combination of two live-spindles whose axes are in line, said spindles being movable in the line of their axes to and from each other, with twister-blocks on said spindles and an eye-forming mechanism between said spindles.

3. The combination, with the spindles A^3 A^4, of levers *l l*, and springs controlling said levers, rods *t t*, and hand-lever D, substantially as and for the purpose set forth.

4. The combination, with the spindle A^3, of the elbowed plate *h*, the fingers *j* and *j'* on said plate *h*, the blocks *r*, having curved surfaces, as set forth, and set-screws *r'*, for adjustment of said blocks, substantially as described.

5. The combination, with the end twister-blocks, of the movable puppets E and the pins *i* on said puppet.

6. The combination, with the end twister-block having the slit finger *j*, of the movable puppet having the pins *i* and *i'*, substantially as and for the purpose set forth.

7. The combination, with the pins *i i* and twister-blocks, of springs tending to drive said pins *i i*, respectively, toward said twister-blocks, for the purpose set forth.

8. A puppet comprising the base-plate *p*, the hinged frame *p'*, the rigid frame p^1, the spring p^2, the plate p^3, sliding in said frame *p'*, the pin *i* on said plate p^3, and the lever p^4, for the purpose set forth.

9. The combination, with the pins *k*, of the guards *e* to said pins, the levers f e^2, and links f' e^3, for operating said guards and pins.

407,326. MILLSTONE-DRESS. JOSEPH BOESELEN, Cincinnati, Ohio. Filed Apr. 22, 1889. Serial No. 308,058. (No model.)



Claim.—A millstone-dress consisting of a series of straight tangential second furrows C, running against the draft and having inclined leading edges *c*, vertical trailing edges *c'*, and enlarged discharging ends, a series of tangentially-curved skirt furrows E, running with the draft and having vertical leading edges *e*, inclined trailing edges *e'*, and contracted outer ends, a concentric distributing-groove D between these sets of furrows, the inner wall of said groove being vertical and its outer wall inclined, and an unfurrowed annular portion F at the rim of the stone, which solid annulus prevents the ground material from being discharged directly from said skirt furrows, all as herein described.

407,327. ELECTRIC GENERATOR. CHARLES R. BURLL, Newark, N. J. Filed Feb. 18, 1889. Serial No. 300,302. (No model.)

Claim.—1. An electrical generator comprising an exterior circuit and a condensing-circuit, gears for actuating the same, and electrical connections with said gears, the said gears being adapted to first complete the condensing-circuit and then break said circuit, whereby said generator is caused to discharge into the said exterior circuit.

2. An electrical generator comprising a spring-actuated armature and a condensing-circuit, a spring and gears for actuating said generator, and electrical connections with said gears, the said gears being adapted to first complete the condensing-circuit and afterward break said circuit, whereby the generator is caused to discharge into the exterior circuit.

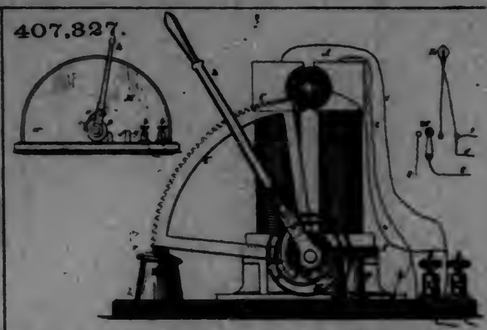
3. The combination, with a generator, of a spring-actuated armature and a winding-up handle or device that is provided with an automatic releasing contact or device, whereby the wound-up armature-actuating mechanism is tripped at a predetermined point in the process of winding.

4. The combination, with a dynamo or magneto electric machine that is provided with a firing-circuit and a condensing-circuit that is completed by the movable parts of the apparatus, as described, of a spring-actuated armature that is provided with an automatic releasing device that in its normal operation trips the armature-actuating mechanism at a predetermined point in the winding, the whole arranged and operating substantially as described.

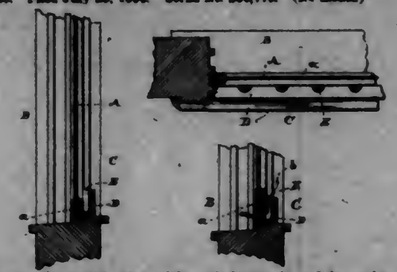
5. An electric generator that comprises an exterior circuit, a condensing-circuit, a spring-actuated armature, gears for actuating said armature, electrical connections with said gears, and a winding handle or device that is provided with a releasing-contact, whereby the wound-up mechanism can be released in the process of winding and the condensing-circuit opened at the desired moment by the moving parts of the apparatus.

6. In an electrical generator the combination, with a spring-actuated armature that is automatically released at a predetermined point in the winding, of a condensing-circuit that is opened at the desired moment in the process of accumulation by the moving parts of the apparatus.

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407,328. WINDOW-VENTILATOR. THEODORE BURT, Cleveland, Ohio. Filed July 23, 1888. Serial No. 280,770. (No model.)



Claim.—In combination with a window-sash and its casing, the bar D, fitted between the sides of said casing in contact with the lower rail of the open sash and having a series of channels or grooves in one side extending nearly to the bottom, as shown, forming controllable openings by means of and in relation with said rail, constructed and arranged substantially as and for the purpose set forth.

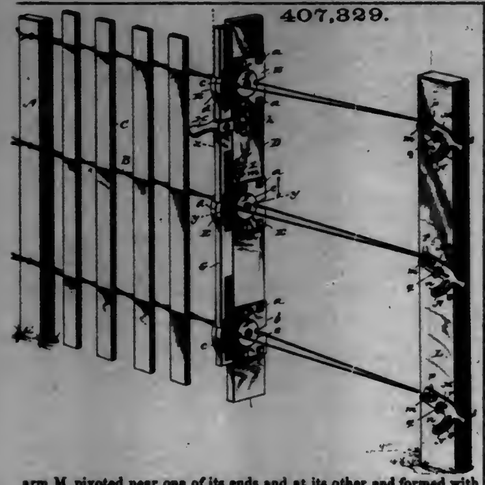
407,329. FENCE-MAKING MACHINE. CHARLES W. BURR, Selden, Ohio. Filed May 2, 1889. Serial No. 309,267. (No model.)

Claim.—1. In a fence-making machine, the combination with the board D and the twisters, of the rack-bar, its handle provided with the projection, as described, the stop-blocks on the board, and the spring carried by one of said blocks, substantially as shown and described, and for the purpose specified.

2. In a fence-making machine, the combination, with the tension-

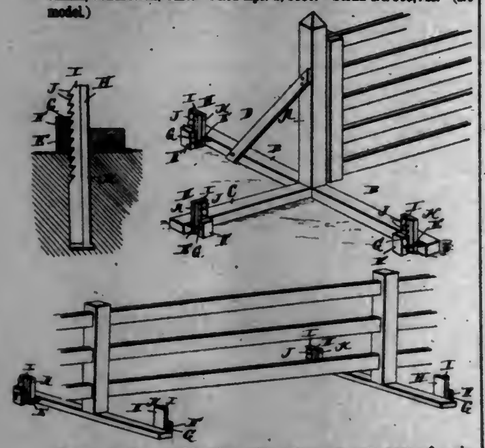


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arm M, pivoted near one of its ends and at its other end formed with curved arm slotted as described, of the pin working in said slot, and the rollers on the arm M, between which the wires pass, substantially as shown and described, and for the purpose specified.

407,330. BRACE FOR FENCE OR GATE POSTS. GEORGE W. CLARK, Johnstown, Ohio. Filed Apr. 2, 1889. Serial No. 305,740. (No model.)

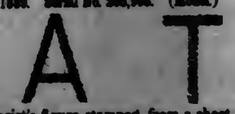


Claim.—1. The combination, with a fence or gate post, of a pivoted stirrup, a block mounted pivotally in said stirrup and having teeth or ratchets on its inner face, and an anchor-bar confined in said stirrup and having teeth or ratchets engaging those of the pivoted block, substantially as set forth.

2. The combination, with a fence or gate post, of a pivoted stirrup, a toothed block mounted pivotally on said stirrup, and a vertical anchor-bar having wings or flanges at its lower end and provided with downwardly-beveled teeth or ratchets engaging those of the pivot-block, substantially as set forth.

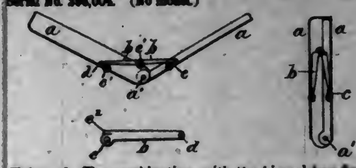
3. The combination of a vertical post mounted upon a suitable sill, stirrups pivoted to the arms of said sill, toothed blocks mounted pivotally upon said stirrups, and the vertical anchor-bars having wings or flanges at their lower ends and provided with downwardly-beveled teeth engaging those of the pivoted blocks, substantially as herein described, and for the purpose set forth.

407,331. FLORIST'S FIGURE. ANDREW T. CORREY, Boston, Mass. Filed Jan. 10, 1889. Serial No. 295,969. (Model.)



Claim.—A florist's figure stamped from a sheet of material, appropriately colored, and having an adhesive coating covered with a flock made of fragments of flowers more or less comminuted, substantially as described.

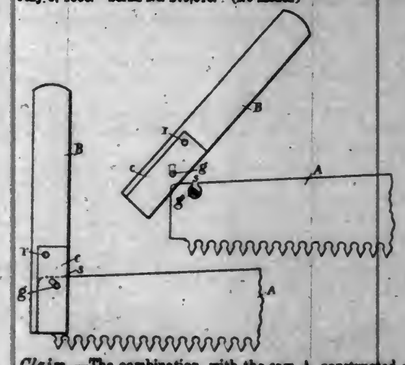
407,332. BAG-HINGE STAY. CHARLES R. CLEVELAND, Newark, N. J., assignor to William H. Peck, same place. Filed Jan. 29, 1889. Serial No. 298,004. (No model.)



Claim.—1. The combination, with the hinged bag-frames *a a*, of the toggle-arms *b*, jointed to one another and to the bag-frames at equal distances from their hinge, each of the arms being provided upon its upper side with a shoulder *s*, to prevent their bending toward the hinge, and the toggle-arms being bent away from the hinge to close the bag and falling by their own weight into an operative position when the bag is opened, as and for the purpose set forth.

2. The combination, with the bag-frames, of the toggle-arms for the bag-frame brace, each pivoted at one end to one of the frames of the bag and at the opposite end to the other toggle-arm, and each being stamped from sheet metal and formed with pivot-holes *d* and *e*, and the stud *d'*, bent laterally to form both stud and shoulder adjacent to the hole *e*, as and for the purpose set forth.

407,333. SAW-HANDLE. JOHN A. COREY, Rockville, R. I. Filed July 5, 1888. Serial No. 279,010. (No model.)

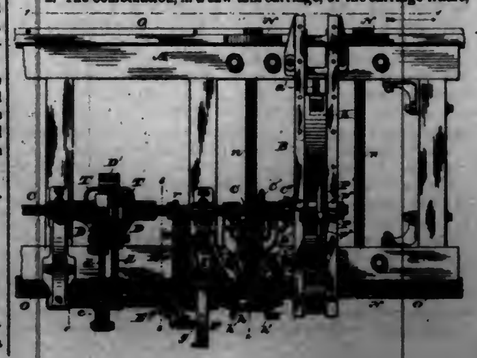


Claim.—The combination, with the saw A, constructed with a notch *s* in its back, of the handle B, constructed with a recess and provided with a plate *c*, and the pin *g*, having a flattened middle portion, substantially as and for the purpose herein set forth.

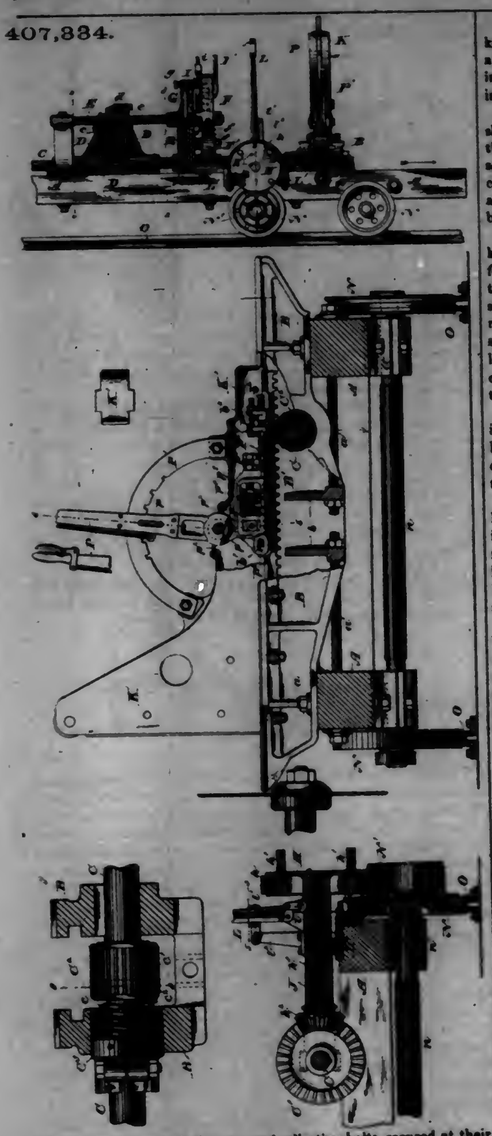
407,334. SAW-MILL SET-WORKS. ALBERT CUNNINGHAM and ERNST J. MULLER, Milwaukee, Wis. Filed Mar. 23, 1887. Serial No. 232,073. (No model.)

Claim.—1. The combination, in a saw-mill carriage, of the carriage-frame, a head-block movable endwise thereon, and adjusting-bolts secured in the side rails of said carriage and connected with and acting horizontally in opposite directions upon said head-block, substantially as and for the purposes set forth.

2. The combination, in a saw-mill carriage, of the carriage-frame,



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a head-block mounted thereon, and adjusting-bolts secured at their inner ends to said head-block and passing horizontally outward and secured in or to the side rails of said carriage-frame, substantially as and for the purposes set forth.

3. The combination, in a saw-mill carriage, of a head-block, a rack movable longitudinally therein, a knee movable transversely to the carriage and capable of longitudinal movement with reference to said rack, and a lever pivoted to said knee and having a horizontally-adjustable connection with said rack, substantially as and for the purposes set forth.

4. The combination, in a saw-mill carriage, of a head-block, a knee movable transversely to the carriage and provided with a rack, a block or frame having a vertically-movable pivot-block and adjustably attached to said rack, and a lever pivoted to the knee and fulcrumed to said vertically-movable block, substantially as and for the purposes set forth.

5. The combination, in a saw-mill carriage, of a head-block, a knee movable transversely to the carriage and provided with a movable rack, and a lever pivoted to said knee and having a horizontally-yielding connection with said rack, substantially as and for the purposes set forth.

6. The combination, in a saw-mill carriage, of a head-block, a knee movable therein transversely to the carriage and provided with a rack, a frame or block adjustably attached to said rack and carrying a yielding block, and a lever pivoted to said knee and fulcrumed in said yielding block, substantially as and for the purposes set forth.

7. The combination, in a saw-mill carriage, of a longitudinally-slotted head-block, a knee arranged to slide therein transversely to the carriage, a rack movable longitudinally on ways in the base of said knee, a yoke or frame adjustably attached to said rack and recessed to receive a vertically-sliding and horizontally-yielding block, and a lever pivoted to said knee and connected with said yielding block, substantially as and for the purposes set forth.

8. The combination, in a saw-mill carriage, of a head-block, a knee movable transversely to the carriage in the ways provided therefor in said head-block, a rack movable lengthwise in ways formed in the base of said standard, a yoke or frame connected at one end by a slotted ear and at the other end by an adjusting bolt or bolts to said rack, a vertically-sliding block inserted in a recess in said frame, a spring acting against one side of said block, an adjusting-bolt for regulating the tension of said spring, and a lever pivoted to said knee and connected with said vertically-sliding block, substantially as and for the purposes set forth.

9. The combination of a shaft, a split pinion, one section of which is fixed and the other section loosely mounted upon said shaft, a collar fixed upon said shaft and bearing in a fixed box, and a spring connecting said collar and the loose section of said pinion, substantially as and for the purposes set forth.

10. The combination, in a saw-mill carriage, of a head-block, a knee movable transversely to the carriage in ways formed therefor in said head-block, a set-shaft, a split pinion, one section of which is fixed and the other section loosely mounted upon said set-shaft, a collar fixed upon said set-shaft and bearing in a box formed in said head-block, and a spring connecting said collar with the loose section of said pinion, substantially as and for the purposes set forth.

11. The combination, in a saw-mill carriage, of a head-block, a knee movable thereon transversely to the carriage, a set-shaft, a split pinion, one section of which is fixed and the other section loosely mounted upon said set-shaft, a collar adjustably secured on said set-shaft and having a bearing in said head-block, and a spring connecting said collar with the loose section of said pinion, substantially as and for the purposes set forth.

12. The combination, in a saw-mill carriage, with the set-shaft and knees, of a transverse shaft mounted in a yoke hinged upon said set-shaft, a gear fixed upon said transverse shaft and working with a gear on the set-shaft, a friction driving-wheel secured to a carriage axle or wheel, a driven friction-wheel fixed upon the outer end of said transverse shaft over said friction driving-wheel, a fixed brake strap or shoe working with the upper face of said driven friction-wheel, and a lever connected with said yoke and arranged to carry the driven friction-wheel into engagement with the driving friction-wheel or brake, substantially as and for the purposes set forth.

13. The combination, in a saw-mill carriage, with the set-shaft and knees, of a transverse shaft geared therewith and bearing in a yoke hinged upon said set-shaft, a paper friction driving-wheel attached to a carriage wheel or axle, which is capable of vertical movement in its adjacent box, a driven friction-wheel mounted upon said transverse shaft vertically, or nearly so, over said friction driving-wheel, whereby the force exerted to produce engagement of said driving and driven friction-wheels acts to increase the traction of said carriage-wheel, and a lever connected with and arranged to move said driven friction-wheel vertically, substantially as and for the purposes set forth.

14. The combination, in a saw-mill carriage, with the set-shaft, a ratchet-wheel fixed thereon, vibrating pawl-carriers provided with pawls working with said ratchet-wheel, and a setting-lever arranged to operate said pawl-carriers, of a quadrant provided with a graduated arc or strap made detachable therefrom to permit of the substitution in its place of arcs or straps having different graduations, a stop fixed relatively to said arc, and a stop movable longitudinally of said arc or strap and arranged to engage the setting-lever at different points in said arc corresponding to its graduation, substantially as and for the purposes set forth.

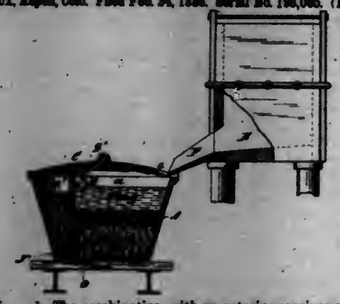
15. The combination, in a saw-mill carriage, with a set-shaft and knees, of a rock-shaft carrying pawl-actuating arms and a setting-arm, vibrating pawl-carriers connected with the arms on said rock-shaft, a ratchet-wheel on said set-shaft operated by the pawls in said carriers, a longitudinally-adjustable setting-arc provided with a fixed stop, and an adjustable stop movable lengthwise of said arc, said stops being arranged to engage said setting-arm and limit the angular movement thereof, substantially as and for the purposes set forth.

16. The combination, in a saw-mill carriage, with the set-shaft, ratchet-wheel, and vibrating pawl-carrier, of a rigid setting-arm, stops arranged to limit the throw of said setting-arm, and a yielding or elastic actuating-lever, substantially as and for the purposes set forth.

17. The combination, in a saw-mill carriage, with the knees and set-shaft, of a ratchet-wheel fixed upon said set-shaft, a rock-shaft provided with arms and an actuating-lever, vibrating pawl-carriers journaled on said set-shaft, one on each side of said ratchet-wheel and each provided with pins projecting transversely over the face of said ratchet-wheel, one or more pawls and a link journaled upon said pins in each pawl-carrier, said link acting in a direct line with said pawls and connecting said pawl-carrier with an arm on said rock-shaft, and a cap-plate secured to and connecting the inner ends of the pins of each pawl-carrier, substantially as and for the purposes set forth.

18. The combination, in a saw-mill carriage, with the knees and set-shaft, of a ratchet-wheel fixed upon said set-shaft, a rock-shaft provided with a cross-head and an actuating-lever, vibrating pawl-carriers journaled on said set-shaft, one on each side of said ratchet-wheel and each provided with pins overhanging the face of said ratchet-wheel, one or more pawls and a link journaled upon said pins in each carrier, said link acting in a direct line with said pawls and connecting said pawl-carrier with the cross-head on said rock-shaft, and an angle-plate secured to and connecting the inner ends of the pins of each carrier and covering the pawl-bearings therein, substantially as and for the purposes set forth.

407,835. APPARATUS FOR SEPARATING LEAD OR BULLION IN SMELTING FROM SLAGS, MATTES, OR SPEISS. WALTER B. DEVEREUX, Aspen, Colo. Filed Feb. 24, 1886. Serial No. 193,065. (No model.)



Claim.—1. The combination, with an exterior receiver or collecting-well, into which the molten products of the smelting-furnace are tapped, of a movable partition for the separation of the heavy from the light molten products.

2. The combination, with an exterior receiver or collecting-well into which the molten products of the smelting-furnace are tapped, of interior devices within said receiver, so constructed and arranged that they may be raised, lowered, removed, and replaced or moved to any point in the receiver for separating the lead and base bullion and the slags from the intermediate portions of the smelted mass.

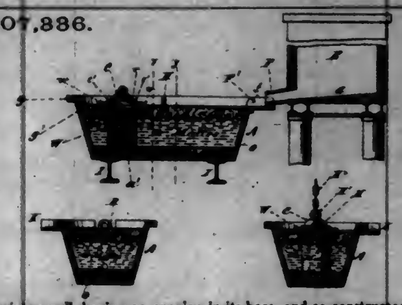
3. The combination, with an exterior receiver or collecting-well into which the molten products of the smelting-furnace are tapped, of a diaphragm in the interior of said receiver so constructed and arranged that it can be raised, lowered, removed, and replaced or moved to any point therein, whereby the same is divided into two compartments, an opening in the bottom of or under said diaphragm connecting said compartments, whereby the heavier material discharged from the furnace into the one compartment flows into and rises in the other compartment in proportion as the static pressure in the first compartment increases, and a discharge-spout at the receiving side of the well, whereby the lighter material is discharged.

4. The combination, with an exterior receiver or collecting-well into which the molten products of the smelting-furnace is tapped, of a diaphragm in the interior of said receiver, so constructed and arranged that it can be raised, lowered, removed, and replaced or moved to any point therein, whereby the receiver is divided into two compartments, means, substantially as described, for holding said diaphragm in position, an opening in the bottom of or under said diaphragm connecting said compartments, whereby the heavier material discharged from the furnace into the one compartment flows into and rises in the other compartment in proportion as the static pressure in the first compartment increases, and a discharge-spout at the receiving side of the well, whereby the lighter material is discharged as it accumulates.

407,836. APPARATUS FOR SEPARATING SLAGS, MATTES, AND SPEISS AND LEAD OR BASE BULLION IN LEAD-SMELTING. WALTER B. DEVEREUX, Aspen, Colo. Filed Jan. 12, 1888. Serial No. 260,803. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, with a portable receiving or collecting well into which the contents of the smelting-furnace are tapped, of a lead-well placed in said

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receiving-well, having an opening in its base, and so constructed and arranged as to be readily removed therefrom, and an opening in the side walls of said receiving-well at a higher level than the opening in said lead-well and at a level lower than the slag-spout of said receiver, for the purposes specified.

2. The combination, substantially as hereinbefore set forth, with a portable receiving or collecting well into which the contents of the smelting-furnace are tapped, of a lead-well placed in said receiving-well, having an opening in its base, so constructed and arranged that it may be removed therefrom at pleasure, an opening for tapping in the side walls of said receiving-well at a higher level than the opening in said lead-well and at a level lower than the slag-spout of said receiver, and means for closing and opening, substantially as described.

407,837. METHOD OF SEPARATING LEAD AND BASE BULLION FROM SLAG, &c. WALTER B. DEVEREUX, Glenwood Springs, Colo. Filed Apr. 4, 1889. Serial No. 305,958. (No model.)



Claim.—The hereinbefore-described method of separating lead and base bullion from slags, mattes, and speiss in the smelting of ores of precious metals, consisting in smelting the ores in a furnace having no crucible proper and in discharging the smelted mass into a receiver or collecting-well provided interiorly with devices, substantially as described, whereby the same is divided into two compartments, in one of which the lead and base bullion rise through the static pressure of the smelted mass in the other compartment, in tapping off the matte through an opening provided for that purpose in the side walls or bottom of the receiver, and allowing the slags to flow off automatically from the top of the receiver through a suitable aperture.

407,838. STEAM-ENGINE. JOHN G. DOWNIE, Beaver Falls, Pa. Filed Feb. 28, 1889. Serial No. 301,462. (No model.)

Claim.—1. The combination, in a steam-pump engine, of the rock-shaft carrying the oscillating cut-off valve, the arm Z', projecting from the rock-shaft, the oscillating arm Y', and the spring-pressed plunger guided by the said oscillating arm and flexibly jointed thereto, substantially as described.

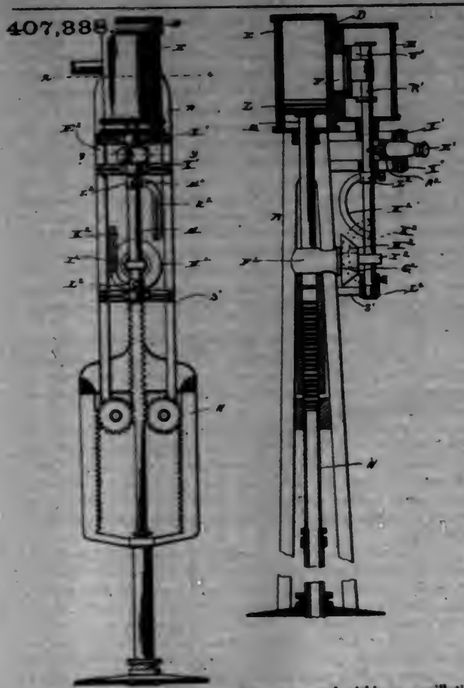
2. The combination, in a steam-pump engine, of the rock-shaft carrying the cut-off valve, the arm Z', projecting from said rock-shaft, the oscillating cylindrical arm Y', the plunger arranged in the said oscillating arm and pivotally connected to arm Z', the spring bearing on said plunger, and means, substantially as set forth, to regulate the tension of the spring, substantially as described

3. The combination, in a steam-pump engine, of the rock-shaft R', having the arm Z' and the segment-arm T', the oscillating cut-off valve having the recess with which arm T' engages, said recess exceeding the width of the said arm to give the latter lost motion, the oscillating arm Y', the spring-pressed plunger guided in said arm and connected to arm Z', and stops to limit the play of the valve, substantially as described.

4. The combination, with an oscillating steam-valve, of mechanism for completing the stroke of such valve independently of the motion communicated to it from the piston-rod of the engine, and stops arranged interiorly in the steam-chest to limit the motion of the valve, substantially as set forth.

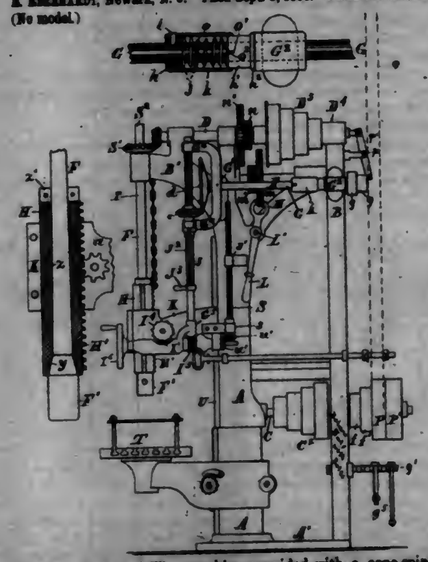
5. The combination of a cylinder or steam-chest, an oscillating valve arranged within the latter, curved arms attached to the valve-stem and adapted to be engaged by a roller journaled to the piston-rod, and an arm extending radially from the valve-stem and connected

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pivotally with a spring-pressed slide arranged within an oscillating casing, substantially as set forth.

407,839. DRILLING-MACHINE. ULRICH EBERHARDT and HENRY R. EBERHARDT, Newark, N. J. Filed Sept. 5, 1888. Serial No. 284,634. (No model.)



Claim.—1. In a drilling-machine provided with a cone-spindle having a back gear secured thereon and a cone and back gear turning loosely thereon, the combination, with the spindle and the cone, of a clutch for locking the cone and spindle together, a back-gear shaft movable longitudinally, with gears to mesh into those upon the cone and cone-spindle, a lever connected with the back-gear shaft to move it longitudinally and with the clutch to shift it in and out of gear, and a shifting-handle operating independently upon the back-gear shaft to shift it longitudinally and to indirectly actuate the cone-clutch, as and for the purpose set forth.

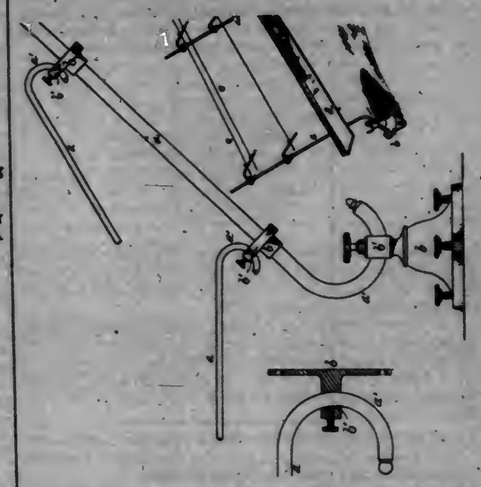
2. In a drilling-machine, the combination, with the feeding-shaft J, provided with the friction-wheel *e*, of the friction-disk *d*, the shaft G, movable longitudinally toward the wheel *e*, bearings for the shaft G, the spring *j*, applied to the shaft, and a collar adapted to press the shaft under the tension of the spring toward the wheel *e*, as and for the purpose set forth.

3. In a drilling-machine, the combination, with the feeding-shaft J, provided with the friction-wheel *e*, of the friction-disk *d*, the shaft G, movable longitudinally toward the wheel *e*, bearings for the shaft G, the spring *j*, applied to the shaft, and a collar adapted to press the shaft, under the tension of the spring, toward the wheel *e*, the collar *b'*, movable longitudinally upon the shaft G and fitted against the bearing G^2, the collar *h*, secured to the shaft by a screw *i*, the holes *o* in the shaft to adjust the collar, and the spring *j*, inserted between the collars *h* and *h'*, as and for the purpose set forth.

4. In a drilling-machine, the combination, with the main spindle, the bracket K, supporting the same movably upon the column A, and a feed-wheel rotated upon the bracket for actuating the feed, of a feed-screw coupled to the bracket, and a clutch for connecting such feed-screw to the rotary feed-wheel upon the bracket, as and for the purpose set forth.

5. In a drilling-machine, the combination, with the spindle F, provided with a long bearing adjacent to the head F', of the socket *y*, of abrupt taper, formed in the bearing adjacent to the spindle-head, and the less taper in the remainder of the bearing fitted to the spindle above the socket *y*, as and for the purpose set forth.

407,840. DISPLAY-RACK. ROBERT FARIS, Decatur, Ill. Filed Dec. 7, 1888. Serial No. 292,881. (No model.)



Claim.—An adjustable support comprising an arm having a bent end of approximately uniform curvature, and a base or bracket having an approximately straight bore or eye slightly greater in diameter than the diameter of the bend, whereby the bend may be adjusted and held in the eye, as set forth.

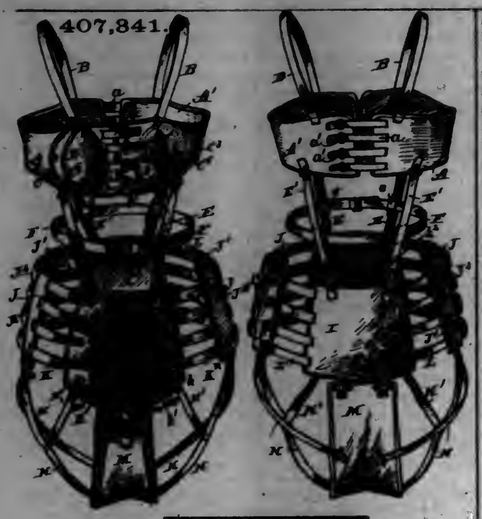
407,841. ABDOMINAL SUPPORTER. IDA M. FRASH, Osage City, Kans. Filed Aug. 22, 1888. Serial No. 283,436. (No model.)

Claim.—1. In a bandage, the combination of the front and rear parts H I, the hip-pads J J, the elastic bands J^3, connecting the hip-pads, and the straps and buckles K L, connecting the hip-pads to the front and rear pads H I, substantially as herein shown and described.

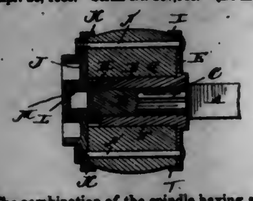
2. The combination, with a breast-bandage, of an abdominal and back pad, straps for connecting the said pads, the keeper-straps E, for connecting the bandage and pads aforesaid, and a belt engaged in the keepers of the straps E, substantially as described.



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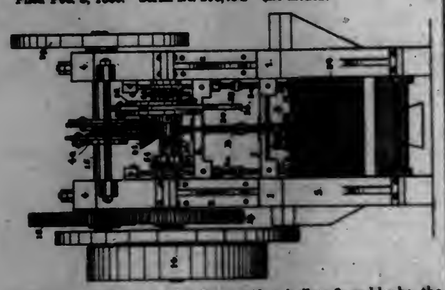
407,842. HUB. EDWARD P. GAINES and WALKER P. ORR, Bradshaw, Tenn.; said Gaines assignor to said Orr and William P. Harwell, same place. Filed Apr. 20, 1889. Serial No. 307,963. (No model.)



Claim.—1. The combination of the spindle having a longitudinal groove, the sleeve mounted on the spindle and fitting in the bore of the hub, the plate J on the end of the hub, having a tube L, and the cap M fitting on said tube, as set forth.

2. The combination of the spindle, the sleeve mounted thereon, the nut on the end of the spindle turning up against the end of the sleeve, the hub fitting on the sleeve, the plates E J at the ends of the hub, the plate J having a central tube L, the cap on said tube, and the long bolts passing through the said plates E J and the hub, as set forth.

407,843. MACHINE FOR FORMING BULLETS. LEON P. GARDIN, San Francisco, Cal., assignor of one-half to John Lafferty, same place. Filed Feb. 6, 1888. Serial No. 263,754. (No model.)



Claim.—1. In a machine for pressing bullets from blanks, the combination of the following parts or elements: a hinged mold having horizontal reciprocating movement between a vertically-acting presser-rod and blank-feeding devices, means by which said mold in its forward run or toward the blank-feeding device is opened to discharge the finished bullet, and then closed to receive a blank at the end of such run, and is held closed on the return to place beneath the presser-rod during the pressing operation, a vertically-acting presser-pin placed for operation beneath the presser-rod and mounted in a swinging centering-plate having lateral movement to set the pin in line and to throw it clear of the mold-aperture while the blank is being fed, and a vertically-acting presser-rod adapted to apply pressure upon the head of the pin, constructed for operation as set forth.

2. In a machine for pressing bullets from blanks, the combination, with the horizontally-reciprocating mold divided longitudinally and opening laterally to discharge the finished bullet, of the laterally-sliding blocks K K, the vertically-movable wedges L L, and mechanism whereby said wedges are operated, as described, to lock the blocks and hold the mold-sections together on the downward movement of the presser-rod while the blank is being pressed, substantially as set forth.

3. In combination with the horizontally-reciprocating mold and vertically-acting presser-rod, the presser-pin adapted to enter the mold-aperture upon the blank held therein, the pivoted plate carrying the end of said pin, and the slotted incline upon which the head of the pin is arranged to travel, as a means of moving said swinging plate laterally to carry the pin into and out of line with the mold-aperture and of moving it also in a vertical direction, substantially as set forth.

4. In combination with the horizontally-reciprocating mold-sections A A, separable on a longitudinal line for lateral movement, the stationary bed-plate having grooves G G, with parallel and divergent portions, and the switch-tongues g^x, and studs a^3 on the mold-sections, substantially as set forth.

5. In a machine for pressing bullets from blanks, the combination of the divided mold-sections A, movable laterally to open and discharge the finished bullet, and the vertically-movable bottom section C, suitably shaped to form the end of the bullet and adapted to close the bottom of the mold-cavity during the operation of the presser, but to withdraw and clear the mold before the sections open, substantially as set forth.

6. In combination with the horizontally-reciprocating mold-sections A A, separable laterally, as described, the vertically-movable bottom piece C, mounted on the upright bar C^x, and the horizontally-sliding plate 33, having the inclined slot C^y, in which the end of the bar 33 is fitted, substantially as described, for operation as set forth.

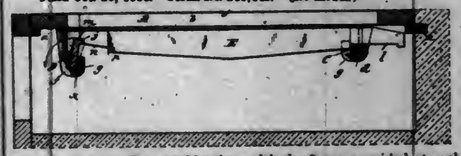
7. In a machine for pressing bullets from blanks, the combination, with a sliding mold having movement between a blank-feeding device and a pressing mechanism, of the blank-feeding tube, sliding gates adapted to operate alternately, the pivoted tongue or finger, and the lug on the lower slide-gate, projecting in the path of the mold in position to be struck and moved by it at the end of the travel, substantially as described.

8. In a machine for pressing bullets from blanks, the combination, with the rod by which pressure is applied to the confined blank, of the rotating shaft 15, cams 60 64, segment-gears 63, link 61, and cam 66, applied for operation as set forth.

9. In a machine for pressing bullets from blanks, the combination, with the rod by which pressure is applied to the confined blank, of the rotating shaft 15, cams 60 64 66, segment-gears 63, and links 61 68, applied for operation as set forth.

10. In combination with the divided mold consisting of the laterally-opening sections A A and the removable bottom section C, from which the sections A A are separated during their reciprocating movement, as described, the stop-pins a^4 a^5, applied for operation as set forth, to support the blank in the mold.

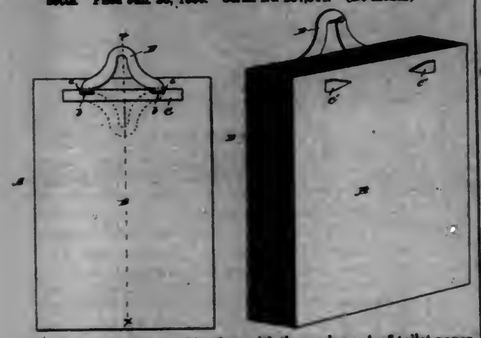
407,844. FURNACE-GRATE. EUGENE H. GATES, Fitchburg, Mass. Filed Oct. 29, 1888. Serial No. 289,445. (No model.)



Claim.—1. The combination, with the frame provided at each side with the downwardly-extending hook-shaped lugs *d f* and the cross-bars C D, supported thereby, and the latter having a width greater than its thickness and having a rolling bearing in the lugs *f*, of the grate-bars, each provided at its one end with a notch *m*, engaging the edge of the bar D, and by its other end portion resting for a slide on the bar C, and means, substantially as described, for rocking said bar D, whereby said grate-bars will be moved endwise and whereby one end of each thereof will be downwardly swung with its contact with the bar C as the center of oscillation, substantially as described.

2. The combination, with the frame provided at each side with the downwardly-extending hook-shaped lugs *d f*, and the cross-bars C D, supported thereby, and the latter having a width greater than its thickness and having a rolling bearing in the lugs *f*, and provided with the rib *j*, of the grate-bars, each provided at its one end with the notch *m*, recess *n*, and engaging the bar D, and by its other end portion resting for a slide on the bar C, and means, substantially as described, for rocking said bar D, whereby said grate-bars will be moved endwise and whereby one end of each thereof will be downwardly swung, substantially as described.

407,845. TOILET-PAPER HOLDER. WARREN R. GIBSON, Springfield, Mass., assignor to the Morgan Envelope Company, of Massachusetts. Filed Jan. 23, 1889. Serial No. 297,311. (No model.)



Claim.—1. The combination, with the package A of toilet-paper, of the stiff backing B, the metal strip C, having the projecting prongs or arms C C, and the hinged bail D, all arranged substantially as described.

2. The package A of toilet-paper, the stiff backing B, the metal strip C, having the projecting prongs C C extending forward through both backing and package A, and having the parts *c c*, to which the bail is hinged, struck up above the face of said strip, in combination with the hinged bail D, having eyes *b b*, adapted, when turned down, to lie flat against the backing, substantially as described.

407,846. MACHINE FOR CRUSHING SEEDS. JAMES A. J. GIBSON, Crawford, Ala. Filed Dec. 26, 1888. Serial No. 294,695. (No model.)

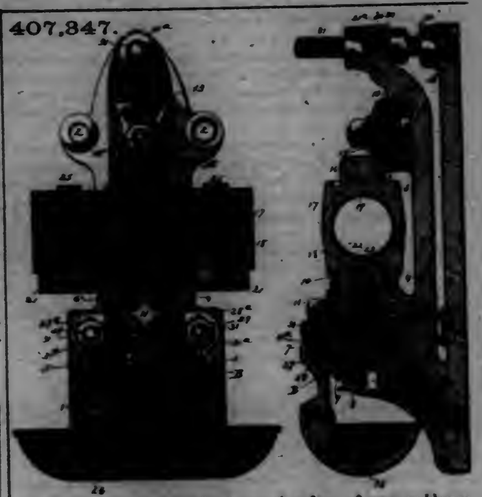


Claim.—In a machine for crushing cotton-seed, the herein-described frame structure, comprising a horizontal rectangular frame, legs depending from the ends of the same, inclined braces secured to the inner sides of the legs and extending upwardly above the horizontal rectangular frame, and crossed braces connecting said inclined braces, said frame structure serving to support the crushing-rolls, which are mounted upon the rectangular horizontal frame, and a hopper which is mounted between the upward extensions of the inclined braces, substantially as set forth.

407,847. SHAFT-HANGER. THEODORE R. GOLDEN, Columbus, Ga. Filed Feb. 21, 1889. Serial No. 300,669. (No model.)

Claim.—1. In a shaft-hanger, the combination, with a bracket

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and a yoke adjustable toward and away therefrom, of upper and lower bearings mounted on the yoke and adjustable in a direction at right angles to the direction of movement of the yoke, and a box carried by said bearings.

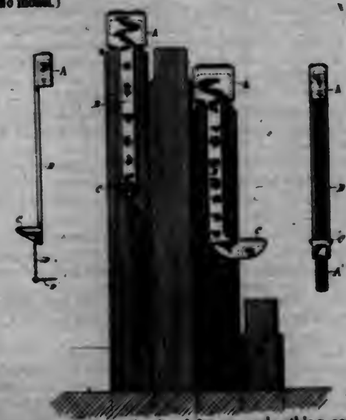
2. In a shaft-hanger, the combination, with a bracket, a yoke adjustable laterally toward and away from the bracket, and lock-nuts for locking the yoke, of upper and lower bearings carried by the yoke and adjustable at right angles to the direction of movement of the yoke, devices for locking the bearings in position, and a box located between and supported by said bearings.

3. In a shaft-hanger, the combination, with a bracket having a slotted shelf, a yoke movable toward and away from said bracket, bearings carried by said yoke and movable in a direction at right angles to the direction of movement of the yoke, screws for locking said bearings in position, and a box located between and supported by said bearings, substantially as set forth.

4. In a shaft-hanger, the combination, with a bracket, of a yoke secured thereto and movable toward and away therefrom, bearings secured to the yoke and adjustable in a direction at right angles to the direction of movement of the yoke, and a sectional box secured between the bearings, substantially as set forth.

5. In a shaft-hanger, the combination, with a fixed plate having a shelf and screw-threaded bolts, a yoke supported on the shelf, and nuts on each side of the yoke by which the latter is moved inward or outward, of a screw-step in the yoke, means for locking it, an adjustable bearing, means for locking it, and a sectional shaft-box supported between the screw-step and adjustable bearing, substantially as set forth.

407,848. DRIVING-HEAD FOR SEWER-SHEATHING. NELSON R. GREEN, Minneapolis, Minn. Filed Mar. 11, 1889. Serial No. 302,815. (No model.)



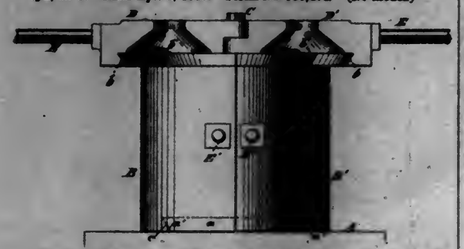
Claim.—1. A driving-head for sewer-sheathing, consisting of a band adapted to incase the sheathing provided with an outturned jaw

adapted to receive the stroke of the driving-hammer, substantially as described.

2. A driving-head for sewer-sheathing, consisting of a cap-band adapted to fit over the end of the sheathing, one or more dependent arms secured to said cap-band, and an outturned jaw on said arm or arms adapted to receive the stroke of the driving-hammer, substantially as described.

3. The combination, with a driving-head for sewer-sheathing, piles, and similar timbers, of a securing-pin connected to the head by a flexible connection adapted to be driven into the timber for securing the head in its working position with freedom for a limited movement thereon, substantially as described.

407,849. MOLD FOR GLASSWARE. MICHAEL H. HAGERTY, Brooklyn, N. Y. Filed Apr. 8, 1889. Serial No. 306,471. (No model.)



Claim.—In the herein-described mold for blown glassware, the combination, with the base A, of the rod or standard C, the sides B B' of the mold proper hinged to said rod, and the independent cap or blow-over D D', also hinged to said rod and arranged above the body of the mold proper and co-operating therewith substantially in the manner as and for the purpose specified.

407,850. PARALLEL-RULER. JOHN J. HAMILTON, St. Louis, Mo. Filed Mar. 22, 1889. Serial No. 304,267. (No model.)



Claim.—1. A parallel-ruler having one or each of its pivoted connecting-links provided with a graduated scale adapted to swing adjacent to a fixed line on the ruler, substantially as set forth.

2. A parallel-ruler having one of its pivoted connecting-links provided with a scale the graduating lines of which are not parallel and are at different distances apart, and a fixed line on the ruler past which the said lines of the scale are moved, substantially as and for the purpose set forth.

3. A parallel-ruler having the two rulers connected by links pivoted near the outer ends of the rulers, and one or both provided along their inner edges with a scale G, substantially as set forth.

4. The combination of the ruler having a beveled edge, the V-shaped straight-edge bar or ruler adapted to lie over the beveled edge of the ruler, and the connecting-links between the ruler and bar, substantially as set forth.

5. A parallel-ruler consisting of a ruler 1, having a ruling-edge, the connecting-links, and another ruler or bar having a straight-edge 8, and the last said ruler or bar being held by the said links above the surface to be ruled with its edge 8 close thereto, but not in contact therewith, substantially as set forth.

407,851. COMPOUND FOR PRODUCING FLASH-LIGHT. ALEXANDER HEMSLEY, Philadelphia, Pa. Filed May 4, 1888. Serial No. 272,783. (No specimens.)

Claim.—1. A compound for producing a momentarily intense flash-light, composed of magnesium, one or more oxygen-yielding salts of the metals or alkaline earths, and phosphorus, substantially as and for the purposes set forth.

2. A compound for producing a flash-light for photographic purposes, composed of powdered or granulated metallic magnesium, one or more nitrates, and amorphous phosphorus, substantially as described.

407,852. EMBROIDERING-MACHINE. JOSEPH IRISH, Bridgeport, Conn., assignor of two-thirds to James McVicker, New York, N. Y. Filed Dec. 15, 1888. Serial No. 293,662. (No model.)

Claim.—1. The combination, with a tambour-frame, of a rotative actuating-shaft by which said frame is moved in opposite directions and movable stops for arresting said shaft in various positions, whereby the length of the stitches is determined, substantially as described.

2. The combination, with a tambour-frame, of a rotative actuating-shaft by which said frame is moved in opposite directions, movable stops for arresting said shaft in various positions, whereby the length of the stitches is determined, and a pattern mechanism for controlling said stops, substantially as described.

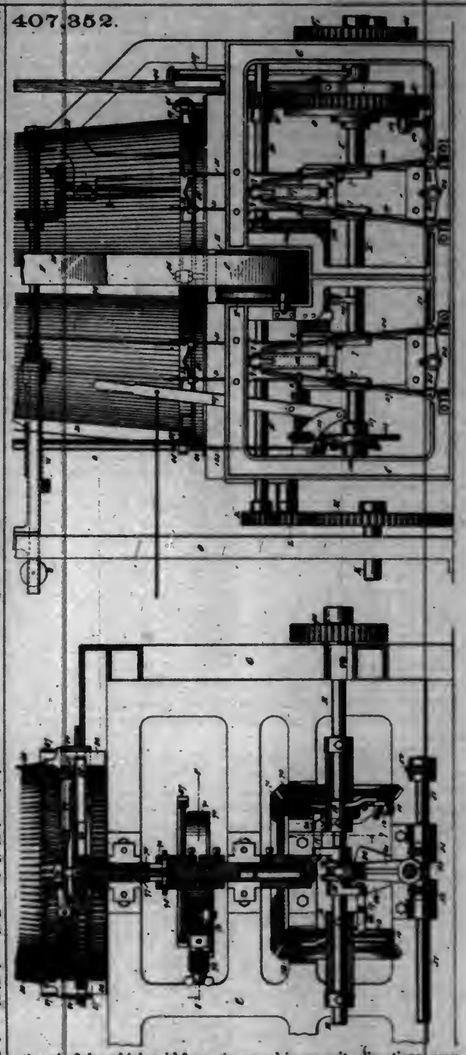
3. The combination, with a tambour-frame, of a rotative actuating-shaft by which said frame is moved in opposite directions, movable stops for arresting said frame in various positions, whereby the length of the stitches is determined, and a yielding connection between said shaft and its driver, substantially as described.

4. The combination, with the tambour-frame and its two-part actuating-shaft, of a yielding connection between the parts of said shaft, means for rotating the shaft in opposite directions, and movable stops for limiting the movement of the shaft, substantially as described.

5. The combination, with the tambour-frame and its two-part actuating-shaft, of a yielding connection between the parts of said shaft, means for rotating the shaft in opposite directions, movable stops for limiting the movement of the shaft, and a pattern mechanism for controlling said stops, substantially as described.

6. The combination, with the tambour-frame and its two-part actuating-shaft, of a yielding connection between the parts of said shaft, reversing-gearing for rotating the shaft in opposite directions, movable stops for limiting the movement of the shaft, and clutches for coupling the reversing-gearing, substantially as described.

7. The combination, with the tambour-frame and its two-part



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actuating-shaft, of a yielding connection between the parts of said shaft, reversing-gearing for rotating the shaft in opposite directions, movable stops for limiting the movement of the shaft, clutches for coupling the reversing-gearing, and a pattern mechanism for controlling the action of the clutches, substantially as described.

8. The combination, with the tambour-frame and its two-part actuating-shaft, of a yielding connection between the parts of said shaft, reversing-gearing for rotating the shaft in opposite directions, movable stops for limiting the movement of the shaft, clutches for coupling the reversing-gearing, and pattern mechanisms for controlling the clutches and stops, substantially as described.

9. The combination, with the movable tambour-frame and its driving-shaft, of a yielding connection for imparting movement to the frame from said shaft and movable stops for limiting the movement of said frame, substantially as described.

10. The combination, with the movable tambour-frame and its driving-shaft, of a yielding connection for imparting movement to the frame from said shaft, movable stops for limiting the movement of said frame, and a pattern mechanism for controlling said movable stops, substantially as described.

11. The combination, with the movable tambour-frame, of a driving-shaft R, connecting mechanism, including reversing-gearing and a yielding connection, for imparting movement from said shaft to the tambour-frame in opposite directions, and movable stops for limiting the movement of the tambour-frame in both directions, substantially as described.

12. The combination, with the movable tambour-frame, of a driving-shaft R, connecting mechanism, including reversing-gearing and a yielding connection, for imparting movement from said shaft to the tambour-frame in opposite directions, movable stops for limiting the movement of the tambour-frame in both directions, and a pattern mechanism for controlling said stops, substantially as described.

13. The combination, with the movable tambour-frame, of a driving-shaft R, connecting mechanism, including reversing-gearing and a yielding connection, for imparting movement from said shaft to the tambour-frame in opposite directions, movable stops for limiting the movement of the tambour-frame in both directions, and a pattern mechanism for controlling said reversing-gearing to move the frame in either direction, substantially as described.

14. The combination, with the movable tambour-frame, of a driving-shaft R, connecting mechanism, including reversing-gearing and a yielding connection, for imparting movement from said shaft to the tambour-frame in opposite directions, movable stops for limiting the movement of the tambour-frame in both directions, and pattern mechanisms for controlling said reversing-gearing and said stops, substantially as described.

15. The combination, with the movable tambour-frame, of a driving-shaft R, connecting mechanism, including reversing-gears and a yielding connection, for imparting movement from said shaft to the tambour-frame in opposite directions, clutches for connecting and disconnecting said reversing-gears, and movable stops for limiting the movement of the tambour-frame in both directions, substantially as described.

16. The combination, with the movable tambour-frame, of a driving-shaft R, connecting mechanism, including reversing-gears and a yielding connection, for imparting movement from said shaft to the tambour-frame in opposite directions, clutches for connecting and disconnecting said reversing-gears, movable stops for limiting the movement of the tambour-frame in both directions, and a pattern mechanism for controlling said clutches and stops, substantially as described.

17. The combination, with the movable tambour-frame, of a driving-shaft R, connecting mechanism, including reversing-gears and a yielding connection, for imparting movement from said shaft to the tambour-frame in opposite directions, clutches for connecting and disconnecting said reversing-gears, movable stops for limiting the movement of the tambour-frame in both directions, and a pattern mechanism for controlling said clutches to move the frame in either direction, substantially as described.

18. The combination, with the movable tambour-frame, of a driving-shaft R, connecting mechanism, including reversing-gears and a yielding connection, for imparting movement from said shaft to the tambour-frame in opposite directions, clutches for connecting and disconnecting said reversing-gears, movable stops for limiting the movement of the tambour-frame in both directions, and pattern mechanisms for controlling said clutches and said stops, substantially as described.

19. The combination, with the movable tambour-frame, of a driving-shaft R, connecting mechanisms, each including reversing-gearing and yielding connections, for imparting movement from said shaft to the tambour-frame in opposite directions and in directions crosswise of each other, and movable stops for limiting the movement of the tambour-frame in each direction, substantially as described.

20. The combination, with the movable tambour-frame, of a driving-shaft R, connecting mechanisms, each including reversing-gears and yielding connections, for imparting movement from said shaft to the tambour-frame in opposite directions and in directions crosswise of each other, clutches for connecting and disconnecting said reversing-gears, and movable stops for limiting the movement of the tambour-frame in each direction, substantially as described.

21. The combination, with the movable tambour-frame, of a driving-shaft R, connecting mechanism, including reversing-gearing and yielding connections, for imparting movement from said shaft to the tambour-frame in opposite directions and in directions crosswise of each other, and movable stops for limiting the movement of the tambour-frame in each direction, and a pattern mechanism for controlling said stops, substantially as described.

22. The combination, with the movable tambour-frame, of a driving-shaft R, connecting mechanism, including reversing-gears and yielding connections, for imparting movement from said shaft to the tambour-frame in opposite directions and in directions crosswise of each other, clutches for connecting and disconnecting said reversing-gears, and movable stops for limiting the movement of the tambour-frame in each direction, and a pattern mechanism for controlling said stops, substantially as described.

23. The combination, with the movable tambour-frame, of a driving-shaft R, connecting mechanism, including reversing-gears and yielding connections, for imparting movement from said shaft to the tambour-frame in opposite directions and in directions crosswise of each other, movable stops for limiting the movement of the tambour-frame in each direction, and a pattern mechanism for controlling said reversing-gearing to move the frame in either direction, substantially as described.

24. The combination, with the movable tambour-frame, of a driving-shaft R, connecting mechanism, including reversing-gears and yielding connections, for imparting movement from said shaft to the tambour-frame in opposite directions and in directions crosswise of each other, clutches for connecting and disconnecting said reversing-gears, movable stops for limiting the movement of the tambour-frame in each direction, and a pattern mechanism for controlling said clutches to move the frame in either direction, substantially as described.

25. The combination, with the movable tambour-frame, of a driving-shaft R, connecting mechanism, including reversing-gearing and yielding connections, for imparting movement from said shaft to the tambour-frame in opposite directions and in directions crosswise of each other, movable stops for limiting the movement of the tambour-frame in each direction, and pattern mechanisms for controlling said stops and said reversing-gearing to move the frame in either direction, substantially as described.

26. The combination, with the movable tambour-frame, of a driving-shaft R, connecting mechanism, including reversing-gears and yielding connections, for imparting movement from said shaft to the tambour-frame in opposite directions and in directions crosswise of each other, clutches for connecting and disconnecting said reversing-gears, movable stops for limiting the movement of the tambour-frame in each direction, and pattern mechanisms for controlling said stops and said clutches to move the frame in either direction, substantially as described.

27. The combination, with the tambour-frame and a driving-shaft for moving the same, of a bevel-wheel loose on said shaft and geared with the tambour-frame-actuating shaft, a clutch for coupling said wheel to the shaft, and a pattern mechanism for controlling the movements of said clutch, substantially as described.

28. The combination, with the tambour-frame and a driving-shaft for moving the same, of companion bevel-wheels loose on said shaft and geared with the tambour-frame-actuating shaft, clutches for coupling said wheels to the shaft; and a pattern mechanism for controlling the movements of said clutches, substantially as described.

29. The combination, with the tambour-frame and a driving-shaft for moving the same, of two pairs of companion bevel-wheels loose on said shaft, each pair geared with one of the tambour-frame-actuating shafts, clutches for coupling said wheels to the shaft, and a pattern mechanism for controlling the movements of said clutches, substantially as described.

30. The combination, with the tambour-frame and a driving-shaft for moving the same, of a bevel-wheel loose on said shaft and geared with the tambour-frame-actuating shaft, a clutch for coupling said wheel to the shaft, a yielding connection between the driving-shaft and tambour-frame, and movable stops for arresting said frame, substantially as described.

31. The combination, with the tambour-frame and a driving-shaft for moving the same, of companion bevel-wheels loose on said shaft and geared with the tambour-frame-actuating shaft, clutches for coupling said wheels to the shaft, a yielding connection between the driving-shaft and tambour-frame, and movable stops for arresting said frame, substantially as described.

32. The combination, with the tambour-frame and a driving-shaft for moving the same, of two pairs of companion bevel-wheels loose

on said shaft, each pair geared with one of the tambour-frame-actuating shafts, clutches for coupling said wheels to the shaft, a yielding connection between the driving-shaft and tambour-frame, and movable stops for arresting said frame, substantially as described.

33. The combination, with the tambour-frame and a driving-shaft for moving the same, of a bevel-wheel loose on said shaft and geared with the tambour-frame-actuating shaft, a clutch for coupling said wheel to the shaft, a yielding connection between the driving-shaft and tambour-frame, movable stops for arresting said frame, and pattern mechanisms for controlling the movements of the stops and clutch, substantially as described.

34. The combination, with the tambour-frame and a driving-shaft for moving the same, of companion bevel-wheels loose on said shaft and geared with the tambour-frame-actuating shaft, clutches for coupling said wheels to the shaft, a yielding connection between the driving-shaft and tambour-frame, movable stops for arresting said frame, and pattern mechanisms for controlling the movements of the stops and clutches, substantially as described.

35. The combination, with the tambour-frame and a driving-shaft for moving the same, of two pairs of companion bevel-wheels loose on said shaft, each pair geared with one of the tambour-frame-actuating shafts, clutches for coupling said wheels to the shafts, a yielding connection between the driving-shaft and tambour-frame, movable stops for arresting the frame, and pattern mechanisms for controlling the movements of the stops and clutches, substantially as described.

36. The combination, with the tambour-frame, of the screw-shafts and nuts *f g* for imparting up and down movements to the frame, and the rods *b*, each having a universal joint at both its ends for transmitting the movement derived from the shafts and nuts to the frame, substantially as described.

37. The combination, with the balancing-levers *p*, carrying the pulleys *l*, of the tambour-frame supported upon said pulleys, the screw-rods *f* and nuts *g*, and the rods *b*, connected to said levers and to said nuts or screw-shafts by universal joints, substantially as described.

38. The combination, with the tambour-frame of an embroidery-machine, a gear 60 or 69 for moving the same, and a yielding connection through which said gear is driven, of an arm 83, moving with said gear and frame, and a series of movable stops 86, for arresting the arm and frame without arresting the driving mechanism, substantially as described.

39. The combination, with the tambour-frame of an embroidery-machine, a gear 60 or 69 for moving the same in opposite directions, according to the direction in which said gear is revolved, and a yielding connection through which said gear is driven, of an arm 83, moving with said gear and frame, and a series of movable stops 86, for arresting the arm and frame as they are moved in either direction without arresting the driving mechanism, substantially as described.

40. The combination, with the tambour-frame of an embroidery-machine, a gear 60 or 69 for moving the same, and a yielding connection through which said gear is driven, of an arm 83, moving with said gear and frame, and a series of movable stops 86, for arresting the arm and frame without arresting the driving mechanism, and a pattern mechanism for controlling said stops, substantially as described.

41. The combination, with the tambour-frame of an embroidery-machine, a gear 60 or 69 for moving the same in opposite directions, according to the direction in which said gear is revolved, and a yielding connection through which said gear is driven, of an arm 83, moving with said gear and frame, and a series of movable stops 86, for arresting the arm and frame as they are moved in either direction without arresting the driving mechanism, and a pattern mechanism for controlling said stops, substantially as described.

42. The combination, with the tambour-frame of an embroidery-machine, a gear 60 or 69 for moving the same, and a yielding connection through which said gear is driven, of an arm 83, moving with said gear and frame, and a series of movable stops 86, for arresting the arm and frame without arresting the driving mechanism, and a reciprocating frame 89, acting upon said stops to restore them to their normal position, substantially as described.

43. The combination, with the tambour-frame of an embroidery-machine, a gear 60 or 69 for moving the same, and a yielding connection through which said gear is driven, of an arm 83, moving with said gear and frame, a series of movable stops 86, for arresting the arm and frame without arresting the driving mechanism, and means for imparting a slight backward movement to said arm after it has been arrested to release the stop, substantially as described.

44. The combination, with the tambour-frame of an embroidery-machine, a gear 60 or 69 for moving the same, and a yielding connection through which said gear is driven, of an arm 83, moving with said gear and frame, a series of movable stops 86, for arresting the arm and frame without arresting the driving mechanism, the series of recesses 2, corresponding to the stops, and the reciprocating bar 90, carried by the arm 83 and arranged to enter one of said recesses after the arm is arrested and move the arm slightly backward to release the stop, substantially as described.

45. The combination, with the tambour-frame of an embroidery-machine, a driving-shaft therefor, and a yielding connection through which the movement of said shaft is transmitted to the frame, of an arm 83, moving with said frame, and a series of movable stops for arresting said arm and frame without arresting the driving mechanism, substantially as described.

46. The combination, with the tambour-frame of an embroidery-machine, a driving-shaft therefor, and a yielding connection through which the movement of said shaft is transmitted to the frame, of an arm 83, moving with said frame, and a series of movable stops for arresting said arm and frame without arresting the driving mechanism, and a reciprocating frame 89, acting upon said stops to restore them to their normal position, substantially as described.

47. The combination, with the tambour-frame of an embroidery-machine, a driving-shaft therefor, and a yielding connection through which the movement of said shaft is transmitted to the frame, of an arm 83, moving with said frame, and a series of movable stops for arresting said arm and frame without arresting the driving mechanism, and means for imparting a slight backward movement to said arm after it has been arrested to release the stop, substantially as described.

48. The combination, in an embroidery-machine, of a driving-shaft R, a loose gear 63 or 64, means for imparting its movement to the tambour-frame, a clutch for connecting and disconnecting said gear to and from the shaft, a movable rod 27 or 28, connected to operate said clutch to clutch the gear, and a reciprocating head 56, arranged to engage with said rod or not, according to the position of the rod, substantially as described.

49. The combination, in an embroidery-machine, of a driving-shaft R, a loose gear 63 or 64, means for imparting its movement to the tambour-frame, a clutch for connecting and disconnecting said gear to and from the shaft, a movable rod 27 or 28, connected to operate said clutch to clutch the gear, and a reciprocating head 56, arranged to engage with said rod or not, according to the position of the rod, and a pattern mechanism for controlling the position of said rod, substantially as described.

50. The combination, in an embroidery-machine, of a driving-shaft R, a loose gear 63 or 64, means for imparting its movement to the tambour-frame, a clutch for connecting and disconnecting said gear to and from the shaft, a movable rod 27 or 28, connected to operate said clutch to clutch the gear, and a reciprocating head 56, arranged to engage with said rod or not, according to the position of the rod, and a cam 78, for operating said clutch to unclutch the gear, substantially as described.

51. The combination, in an embroidery-machine, of a driving-shaft R, loose reversing-gears 63 64, means for imparting their movement to the tambour-frame in reverse directions, clutches for connecting and disconnecting said gears to and from their shaft, movable rods 27 28, connected to operate said respective clutches to clutch the gears, and a reciprocating head 56, arranged to engage with one of said rods or not, according to the position of the rods, substantially as described.

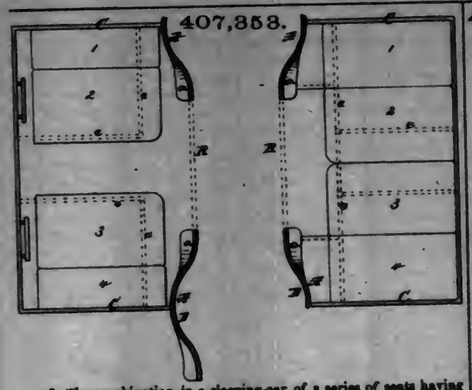
52. The combination, in an embroidery-machine, of a driving-shaft R, loose reversing-gears 63 64, means for imparting their movement to the tambour-frame in reverse directions, clutches for connecting and disconnecting said gears to and from their shaft, movable rods 27 28, connected to operate said respective clutches to clutch the gears, and a reciprocating head 56, arranged to engage with one of said rods or not, according to the position of the rods, and a pattern mechanism for controlling the position of said rods, substantially as described.

53. The combination, in an embroidery-machine, of a driving-shaft R, loose reversing-gears 63 64, means for imparting their movement to the tambour-frame in reverse directions, clutches for connecting and disconnecting said gears to and from their shaft, movable rods 27 28, connected to operate said respective clutches to clutch the gears, and a reciprocating head 56, arranged to engage with one of said rods or not, according to the position of the rods, and a cam 78, for operating said clutches to unclutch the gears, substantially as described.

54. The combination, with a tambour-frame, of a rotative actuating-shaft by which said frame is moved in opposite directions, movable stops for arresting said frame in various positions, whereby the length of the stitches is determined, a pattern mechanism for controlling said stops, and a yielding connection between said shaft and its driver, substantially as described.

407,353. SLEEPING-CAR. LOUIS KELLER, New York, N. Y. Filed Jan. 21, 1889. Serial No. 296,960. (No model.)

Claim.—1. The combination, with a car-seat, of an end frame curved in its horizontal section, with a concave side toward the center of the car, as specified.



2. The combination, in a sleeping-car, of a series of seats having the end frames thereof curved in horizontal section, as specified and set forth.

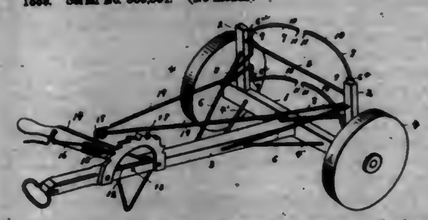
3. The combination, in a sleeping-car, of a car-seat curved in its horizontal section and an upper berth and lower berth of less width than the seat-frame, as specified and set forth.

4. The combination, in a sleeping-car, of a seat-frame and an upper berth and lower berth of less width than the seat-frame, as specified.

5. The combination, in a sleeping-car, of a seat-frame and curtain arranged to hang a distance from the side of the upper and lower berths, which are of less width than the seat-frame, substantially as specified.

6. The combination, in a sleeping-car, of a fixed curtain covering the adjacent ends of two berths and a curtain at the center of the length of the section extending from one fixed curtain to another, substantially as specified.

407,354. TRUCK. JOHN W. KIRK, Kincaid, Kans. Filed May 4, 1889. Serial No. 309,551. (No model.)



Claim.—1. In a truck, opposite standards provided with pivoted grippers and intermediate cranks, in combination with a locking-lever connected with the cranks, substantially as specified.

2. In a truck, opposite standards having vertically-opposite eyes, in combination with a gripper mounted in each of the pair of eyes, and consisting of a central cranked portion, oppositely-bent bearing portions, and opposite terminal gripping-arms, and with an operating-lever pivotally mounted in the frame of the truck and connected with the cranks of the grippers, and provided with a spring-bolt and a locking rack-bar arranged at the side of the lever, substantially as specified.

3. The beam or axle 1, having the tongue 3, wheels 4, and opposite posts 2, the latter provided with eyes 6, in combination with the grippers 7, comprising the central cranked portion 8, the bearings 9, mounted in the eyes and terminating in the gripping-arms 10, having spurs 11, and the lever 14, pivoted as at 13 and carrying the spring-bolt 15 and its operating-rod 16, and the curved rack-bar 17, and the eye 18, and rods 19, connecting the eye and cranks, substantially as specified.

4. In a truck, the grippers mounted on the axle thereof, and comprising the central crank portion 8, the bearings 9, and the gripping-arms 10, combined with the lever 14, its locking device and connecting-rods, as set forth.

407,355. FLAT-IRON HEATER. JASPER D. KNOX, Oxford, Ind. Filed Sept. 26, 1888. Serial No. 286,448. (No model.)

Claim.—1. A flat-iron heater of the class described, consisting of a closed shell having an imperforate bottom and a series of doors in its side, an imperforate draft-tube B, arranged centrally within said shell, opening through the bottom, and terminating a short distance below the top thereof, and a separate perforated concentric tube C surrounding said tube B, whereby the heat is radiated and distributed

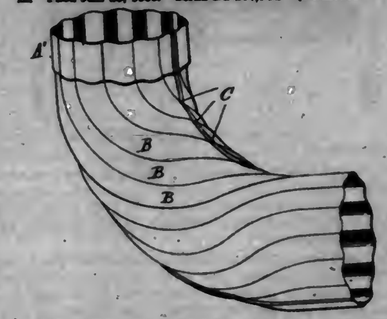
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uniformly from the tube B against the vertical faces of the bottoms of the flat-irons arranged contiguous to said tube B, as and for the purpose described.

2. A flat-iron heater of the class described, consisting of a shell or drum having an imperforate top and bottom and two series of openings F i in its sides, one of the series of openings being closed by doors and the other by valve-plates, substantially as described, a central imperforate draft-tube B, opening through the bottom of the shell and terminating a short distance below the top thereof, and a larger perforated tube C, surrounding said tube B and arranged out of contact therewith, to radiate and distribute the heat uniformly against the flat-irons placed within the shell or drum, as and for the purpose described.

407,356. SHEET-METAL ELBOW. ADDIS O. KITTREDGE, State Hill, N. Y., assignor to James A. Miller and Robert B. Miller, Chicago, Ill. Filed Jan. 26, 1889. Serial No. 297,544. (No model.)



Claim.—A sheet-metal elbow longitudinally divided by seams and formed with spiral corrugations oblique to said seams, as and for the purpose set forth.

407,357. DOOR-HANGER TRACK. JOHN G. LANE, Poughkeepsie, N. Y. Filed May 1, 1888. Serial No. 272,408. (No model.)



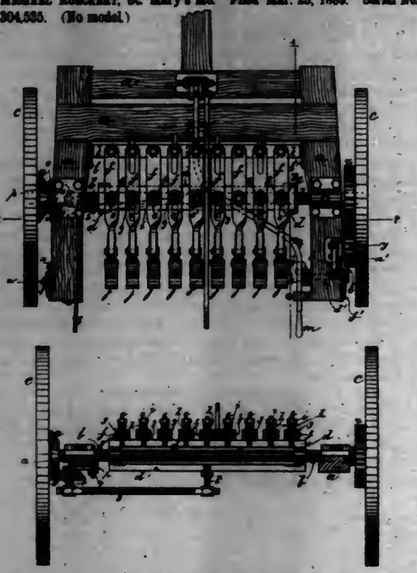
Claim.—In combination with the rail A and brackets B, a coupling-clip the ends of which are bent at right angles to each other and provided with holes, one of which receives the rivet which holds the rail to the bracket, and the other lies between the legs of the bracket and is provided with a bolt to connect it to the adjacent section, substantially as described.

407,358. CIGAR-PERFORATOR. LOUIS LATTAN and HERMAN TRIPP, Chicago, Ill. Filed Feb. 15, 1889. Serial No. 300,017. (No model.)



Claim.—The cigar-perforator described, consisting of a base-plate A, having a central opening, stationary tubes B and G, located concentrically to each other in the central part of the base, the tube B having a vertical slot, the tube G being open at both ends and carrying at its upper end upwardly-projecting perforators, a reciprocating tube F, located between tubes B and G, carrying at its upper end a seat K for a cigar, and a coiled spring located beneath the tube F, all combined and operating as set forth.

407,359. GRAIN-DRILL. CHARLES F. LAWRENCE, Lithium, and MICHAEL RUECKERT, St. Mary's Mo. Filed Mar. 23, 1888. Serial No. 304,535. (No model.)



Claim.—1. In a grain-drill, the combination of a sleeve adapted to slide longitudinally on the carriage-axle and coupled by pins to the drill-teeth bars, a bevel-wheel on the axle engaging in a bevel wheel or pinion pivoted axially to a lever fulcrumed to the frame, said bevel wheel or pinion having a crank-pin coupled by a rod to the sleeve, with means for operating the said lever, substantially as shown, and for the purpose described.

2. In a drill, the combination, with a series of drill-teeth, each having a bar-support which is pivoted on the frame and provided with a slot between the tooth and end of the bar, of a longitudinally-movable pin-support having pins which engage in the slots of the teeth-bars, and gearing for actuating the pin-support from the wheel, substantially as and for the purposes described.

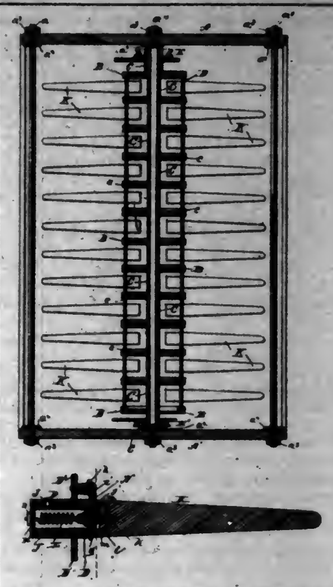
3. In a grain-drill, the combination of drill-teeth having bars pivoted on the frame at their rear ends and slotted opposite the axle, and a shifting-sleeve arranged on the axle and provided with pins which engage in the slots of the teeth-bars, substantially as and for the purposes described.

4. In a grain-drill, the combination, with a series of drill-teeth, each tooth having a bar-support slotted at or near its mid-length, of an adjustable frame-bar on which the bar-supports are pivoted at one end, and a transversely-movable pin-support provided with pins which engage in the mid-length slots of the support-bars, substantially as and for the purposes described.

5. In a grain-drill, the combination, with a series of adjustable drill-teeth, of a lever for adjusting the same, said lever provided with a projecting pin, a rock-lever pivoted on the frame and having one arm arranged in the path of the pin on the first-named lever and its other arm connected by a link with a movable gear arranged to engage with the feed mechanism, and a spring to retract the rock-lever, substantially as and for the purposes described.

6. In a grain-drill, the combination, with a series of drill-teeth, each tooth having a bar-support slotted at or near its mid-length, of an adjustable frame-bar on which the bar-supports are pivoted at one end, a transversely-movable pin-support provided with pins which engage in the mid-length slots of the support-bars, and springs for holding said support-bars down, substantially as and for the purposes described.

407,360. COTTON-HARVESTER. SAMUEL D. T. MANNING, Portsmouth, Va. Filed May 21, 1888. Serial No. 274,623. (No model.)



Claim.—1. In a cotton-harvester, a socket for the picking-spindles, composed of a cylindrical bearing D and a curved plate D', the cylindrical bearing D being the socket proper and formed partly on each side of the plate D' and apertured longitudinally to receive a hollow cylindrical butt J, rotatively fitted therein, substantially as set forth.

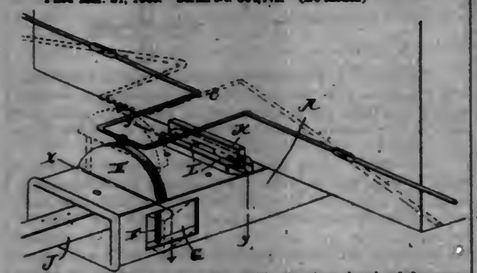
2. In a cotton-harvester, a socket for the picking-spindles, composed of a cylindrical bearing D and a curved plate D', the cylindrical bearing D being the socket proper and formed partly on each side of the plate D' and apertured longitudinally, a cylindrical butt J, rotatively fitted therein, the said butt having a flange formed on its anterior end with radial projections *f* on its face and an annular groove *g* on its periphery, plate M, secured to the opposite end of said butt, cap *j*, having a flange formed at its base with conical projections *m* on one side of the flange and radial grooves on the opposite side, shouldered eye-pin *k*, transverse pin *l*, spiral spring L, and guide-roller A, the said roller being mounted on the plate D' of the socket, all substantially as set forth.

3. In a cotton-harvester, a spindle-socket composed of a cylindrical bearing D, formed upon a curved plate D', apertured disks B, having annular grooves c formed on their sides near their peripheries, longitudinally-apertured sleeves C, vertical rod *a''*, square in cross-section, the disks B and sleeves C, mounted on said rod and closely fitted thereto, so as to prevent circular movement thereon, the sleeves located between the disks, one sleeve located between the top disk and the plate A and one between the bottom disk and the plate A' of the receptacle, the sockets disposed between the disks in the grooves c and supported by said disks, all substantially as set forth.

4. In a cotton-harvester, a spindle-socket composed of a cylindrical bearing D, formed upon a curved plate D', apertured disks B, having annular grooves c formed on their sides near their peripheries, longitudinally-apertured sleeves C, vertical rod *a''*, secured to the plates A and A' of the receptacle, said rod being square in cross-section, the disks and sleeves mounted on said rod and closely fitted thereto, the sleeves located between the disks, one sleeve located between the top disk and the plate A and one between the bottom disk and the plate A' of the receptacle, the sockets disposed between the disks in the grooves c, chain-wheels E and E', rotatively mounted, respectively, on the top and bottom sleeves, arms *c*, formed on opposite sides of said wheels and apertured near their extremities, vertical rods *d* and *d'*, secured in said apertures and bearing against two opposite columns of sockets, vertical operating-shaft F, journaled in the plates A and A' of the receptacle, chain-wheels H and H', mounted on said shaft and secured thereto, and driving-chains I and I', transmitting motion from the chain-wheels H and H' to the chain-wheels E and E', all substantially as set forth.

5. In a cotton-harvester, a spindle-socket composed of a cylindrical bearing D, formed upon a curved plate D', the bearing D apertured longitudinally, hollow cylindrical butt J, rotatively fitted therein, having a flange formed on its anterior end, with an annular groove *g* on its periphery, guide-roller A, mounted on the plate D', apertured disks B, having annular grooves c near their peripheries, longitudinally-apertured sleeves C, vertical rod *a''*, square in cross-section, secured to the plates A and A' of the receptacle, the sleeves and disks mounted on said rod and closely fitted thereto, the sleeves located between the disks, one sleeve located between the top disk and the plate A and one between the bottom disk and the plate A' of the receptacle, the sockets disposed between the disks in the grooves c, chain-wheels E and E', rotatively mounted, respectively, on the top and bottom sleeves, arms *c*, formed on opposite sides of said wheels and apertured near their extremities, vertical rods *d* and *d'*, secured in said apertures and bearing against two opposite columns of sockets, vertical operating-shaft F, journaled in the plates A and A' of the receptacle, chain-wheels H and H', mounted on said shaft and secured thereto, and driving-chains I and I', transmitting motion from the chain-wheels H and H' to the chain-wheels E and E', all substantially as set forth.

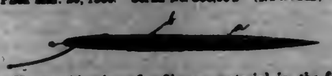
407,361. CAR-COUPLING. CHARLES B. MARVIN, Hartland, Mich. Filed Mar. 21, 1888. Serial No. 304,172. (No model.)



Claim.—1. The combination, with the draw-head, of the coupling-jaws pivoted therein and adapted to engage the coupling-link, the locking-plate mounted in the rear end of the draw-head and adapted to hold the front ends of the coupling-jaws separated, and the fork mounted in the front end of the draw-head and adapted to hold the coupling-jaws in engagement with the coupling-link, as set forth.

2. The combination, with the draw-head, of the coupling-jaws pivoted therein and adapted to engage the coupling-link, the locking-plate mounted in the rear end of the draw-head and having depending beveled arms acting on the rear ends of the coupling-jaws, the fork in the front end of the draw-head adapted to act on the front ends of the coupling-jaws, and the oscillating lever pivoted on the end of the car and connected to the fork, as set forth.

407,362. COMBINATION TOOTH-PICK. DORR T. MASON, Phœnix, N. Y. Filed Mar. 20, 1888. Serial No. 268,004. (No model.)



Claim.—The combination of a fibrous material in the form of thread or floss with a tooth-pick, in the manner set forth, whereby I use the pick as a carrier and holder for the floss.

407,368. COMBINED MEMORANDUM-BOOK, CALENDAR, &c. GEORGE R. MATTHEWS, Buffalo, N. Y. Filed June 12, 1888. Serial No. 276,867. (No model.)

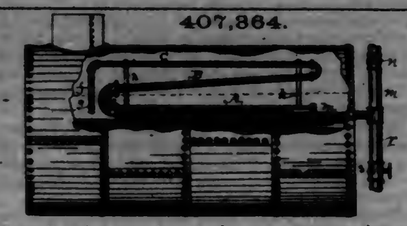


Claim.—As a new article of manufacture, a memorandum-book, calendar, or the like having its covers provided with openings at the upper parts of their front edges and provided with a continuous cord passed through said openings, said cord being of such length as to pass in doubled form around the book and to retain the same in open suspended condition, as described.

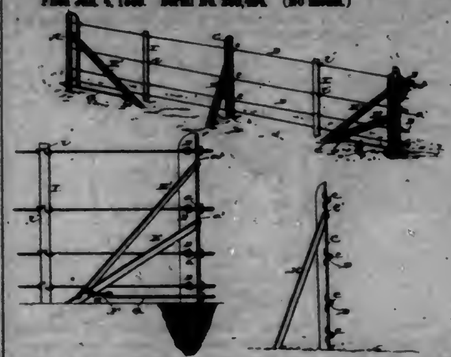
407,364. FEED-WATER PURIFIER. FRED V. MEUTHEN, Des Moines, Iowa. Filed Sept. 24, 1888. Serial No. 286,373. (No model.)

Claim.—1. A feed-water perifier for steam-boilers, composed of two or more straight tubes, and provided with an extension at one end that will project vertically, and that has one or more openings or slots that will admit water to enter at different points of elevation, for the purposes stated.

2. The boiler-water perifier comprising straight tubes A B C, elbows D, and an extension *f*, having one or more openings or slots, and a support A, arranged and combined and applied and operated substantially as set forth.



407,365. FENCE-POST. SAMUEL J. MILLER, Cambridge City, Ind. Filed Jan. 4, 1888. Serial No. 255,694. (No model.)



Claim.—1. In a fence, the combination of the end posts, each having upper and lower perforations, two inclined braces E E', the lower having an opening at its lower end with its upper end engaging the lower perforation of the post, the upper brace having its lower end engaging the opening in the lower brace, and its upper end engaging the upper perforation of the posts, the clevises pivoted to the lower braces, and the tension-rods connected to the clevises and end posts, substantially in the manner and for the purpose described.

2. In a fence, the end posts, in combination with the two inclined braces E E', arranged one above the other, and both having their upper ends connected to the end posts at different points, the brace E' bearing at its lower end on the brace E, and the latter brace resting on the ground, and the tension-rods connected to the brace E, and also to the end posts, substantially as described.

3. The combination, in a fence-post, of the post A, having the perforations *a'* *a²*, respectively at its center and its upper end, the brace E, having a beveled lower end, which rests on the surface of the ground, and provided with a perforation in its upper side near its lower end, the projection on the upper end of the post fitting in the perforation *a'*, the brace E', having a projection on its lower end fitting in the perforation in the lower end of the brace E, and provided with a projection on its upper end which fits in the perforation *a²*, and the tension-rod secured to the lower end of the brace E, passing at its outer end through the lower end of the post, and having a nut on its end to draw the said rod outwardly, substantially as and for the purpose specified.

407,366. HINGE. FRANK W. MIX, New Britain, Conn. Filed Jan. 11, 1887. Serial No. 224,062. (Model.)



Claim.—1. A hinge consisting, essentially, of two leaves, one of which is provided with integrally-formed pintles and curved at its inner end, substantially as shown, and the other provided with a shoulder adapted to engage the concave face of the curved portion of the leaf and with loops for embracing the pintles, substantially as set forth.

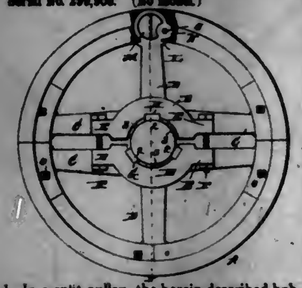
2. A hinge consisting, essentially, of two leaves, one of which is

slotted on its side edge at its inner end and provided at said inner end with a pintle, the latter being formed by rolling or bending said inner end, as described, the other leaf having projecting straps, which latter are bent over into the form of loops to receive the ends of the pintle, the outer ends or sections of said straps resting and having extended bearing against a face of the leaf, substantially as set forth.

3. The combination of two leaves of a hinge, one leaf being provided on one side with a shoulder for limiting the movements of the leaves in one direction, and on the opposite side with an abutment for limiting the movement of the leaves in the opposite direction, substantially as set forth.

4. The combination, with a hinge that has a pintle formed of the material of one leaf, and connected by the loops to the other leaf, of an abutment or angle-plate secured to the surface of one leaf between its loops to have bearing-contact with the opposed leaf to prevent a complete folding of these leaves together, substantially as set forth.

407,867. PULLEY. PETER MCNAUGHTON, Kalamazoo, Mich., assignor to Charles H. Bird and Brastus W. Crane, same place. Filed Feb 14, 1889. Serial No. 299,806. (No model.)



Claim.—1. In a split pulley, the herein-described hub, consisting of two semi-cylindrical castings the inner face of each of which is provided on one side of a central transverse annular groove with a single recess and on the other side of such groove with two seats or recesses, breaking joints with each other and adapted to receive bearing-blocks to be interposed between the hub and shaft, substantially as and for the purpose herein set forth.

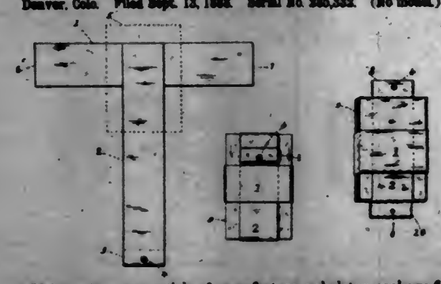
2. In a split pulley, the hub composed of two sections provided interiorly on opposite sides of a central transverse line with projecting bearings so arranged as to break joints with each other and adapted to bear against the shaft, substantially as set forth.

3. In a split pulley, the hub composed of two sections provided on their inner faces with central transverse grooves, and having on opposite sides of said grooves projecting bearings so arranged as to break joints with each other, substantially as herein set forth.

4. In a split pulley, the combination, with the semi-hubs having outwardly-extending arms or spokes provided at their outer ends with rings, as herein described, of the rim or flange the material of which completely fills the said rings at the outer ends of the spokes, substantially as and for the purpose set forth.

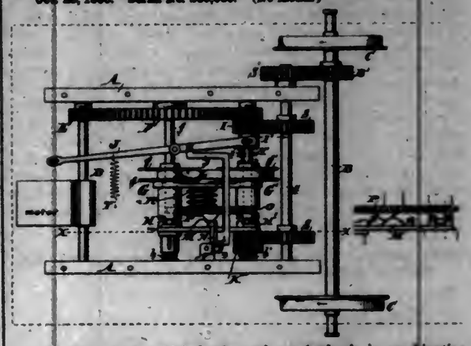
5. In a split pulley, the combination, with the semi-hubs having outwardly-extending arms or spokes provided at their outer ends with rings and circular perforated offsets adjoining said rings, of the rim the material of which completely fills the said rings, and the transverse fastening-bolts passing through the perforated offsets, substantially as herein set forth.

407,868. ADJUSTABLE PACKAGE-BINDER. THOMAS F. NELSON, Denver, Colo. Filed Sept. 13, 1888. Serial No. 285,332. (No model.)



Claim.—As a new article of manufacture, a skeleton package for tickets, cards, &c., consisting of a long narrow strip 2, having an eyelet or similar device at one extremity and a similarly-shaped strip 1, united at its middle to the opposite end of the strip 2, so as to form a T-shaped skeleton holder, substantially as described.

407,869. CAR-STARTER. JOHN H. PALMER, Philadelphia, Pa. Filed Oct. 25, 1888. Serial No. 289,089. (No model.)



Claim.—1. A vehicle having axles and wheels, in combination with a motor to propel the vehicle and speed-increasing power-transmitting mechanism, substantially as set out, between the motor-shaft and axle for automatically accelerating the speed of the axle with a given rotation or speed of the motor.

2. A vehicle having axles and wheels, in combination with a motor to propel the vehicle and speed-increasing power-transmitting mechanism, substantially as set out, between the motor-shaft and axle for automatically accelerating the speed of the axle with a given rotation or speed of the motor, fixed speed-transmitting gear between the motor-shaft and axle for imparting a definite rotation of the axle to a given speed of the motor-shaft, and clutch mechanism for putting either the accelerating transmitting mechanism or fixed speed-transmitting gear into connection between the motor-shaft and axle.

3. A self-propelling vehicle, in combination with a motor to propel it, a variable or accelerating power-transmitting mechanism between the motor-shaft and axle, clutch mechanism for connecting or disconnecting said accelerating power-transmitting mechanism into or out of action, gearing between the motor-shaft and axle for imparting a fixed speed to the axle with a given speed of the motor-shaft, and means for connecting or disconnecting said gearing.

4. A self-propelling vehicle, in combination with a motor to propel it, a variable or accelerating power-transmitting mechanism between the motor-shaft and axle, clutch mechanism for connecting or disconnecting said accelerating power-transmitting mechanism into or out of action, gearing between the motor-shaft and axle for imparting a fixed speed to the axle with a given speed of the motor-shaft, means for connecting or disconnecting said gearing, and connecting mechanism between the clutch mechanism and the means for connecting or disconnecting the fixed speed-gearing, whereby said accelerating power-transmitting mechanism and fixed speed-gearing are alternately put in or out of action.

5. A self-propelling vehicle, in combination with a motor to propel it, a shaft rotated by the motor, a second shaft connected with the axle by a power-transmitting device, and a speed-accelerating power-transmitting mechanism between the two shafts.

6. A self-propelling vehicle, in combination with a motor to propel it, a shaft rotated by the motor, a second shaft connected with the axle by a power-transmitting device, and a speed-accelerating power-transmitting mechanism between the two shafts, consisting of two drums and a connecting band, chain, or rope, substantially as set out.

7. A self-propelling vehicle, in combination with a motor to propel it, a shaft rotated by the motor, a second shaft connected with the axle by a power-transmitting device, a speed-accelerating power-transmitting mechanism between the two shafts, consisting of two drums, a connecting band, chain, or rope, substantially as set out, and mechanism to unwind said connecting-band back into operative position after said drums have been operated.

8. A self-propelling vehicle, in combination with a motor to propel it, a shaft rotated by the motor, a second shaft connected with the axle by a power-transmitting device, a speed-accelerating power-transmitting mechanism between the two shafts, consisting of two drums, a connecting band, chain, or rope, substantially as set out, and mechanism to unwind said connecting-band back into operative position after said drums have been operated, consisting of gear-wheels O and P and spring R.

9. In a car-starter for a motor-car, the combination of a main power gear-wheel operated by the motor, a transmitting gear-wheel adapted to gear with said main power gear-wheel, mechanism, substantially as described, operated by the power gear-wheel to accelerate the rotation of said transmitting gear-wheel, a shifter to connect said transmitting gear-wheel and power-wheel when the former has been accelerated to a proper gearing speed, and gearing between said transmitting gear-wheel and the car-axle.

10. In a car-starter for a motor-car, the combination of a main power gear-wheel operated by the motor, a transmitting gear-wheel adapted to gear with said main power gear-wheel, mechanism, substantially as described, operated by the power gear-wheel to accelerate the rotation of said transmitting gear-wheel, a shifter, and automatic devices to shift said shifter and to connect said transmitting gear-wheel and power-wheel when the former has been accelerated to a proper gearing speed, and gearing between said transmitting gear-wheel and the car-axle.

11. In a car-starter for a motor-car, the combination of a main power gear-wheel operated by the motor, a transmitting gear-wheel adapted to gear with said main power gear-wheel, mechanism, substantially as described, operated by the power gear-wheel to accelerate the rotation of said transmitting gear-wheel, a shifter to connect said transmitting gear-wheel and power-wheel when the former has been accelerated to a proper gearing speed, a clutch actuated by the shifter to bring said accelerating mechanism into operation, and gearing between said transmitting gear-wheel and the car-axle.

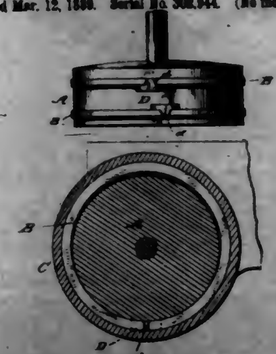
12. In a car-starter for a motor-car, the combination of a main power gear-wheel operated by the motor, a transmitting gear-wheel adapted to gear with said main power gear-wheel, mechanism, substantially as described, operated by the power gear-wheel to accelerate the rotation of said transmitting gear-wheel, a shifter to connect said transmitting gear-wheel and power-wheel when the former has been accelerated to a proper gearing speed, a clutch actuated by the shifter to bring said accelerating mechanism into operation, means, substantially as described, to disconnect said clutch when the proper acceleration is obtained, and gearing between said transmitting gear-wheel and the car-axle.

13. In a car-starter, the combination of a power gear-wheel and its shaft with a transmitting gear-wheel adapted to gear therewith, loosely journaled on its shaft, drums loosely journaled on each of said shafts, a shifter to shift said transmitting gear-wheel to connect and disconnect it with said power gear-wheel, a band or flexible connection between said drums, clutches operated by the shifter when shifted to disconnect said gear-wheels and to secure said drums to their shafts, and gearing between said gear-wheel and the car-axle.

14. In a car-starter, the combination of a power gear-wheel and its shaft with a transmitting gear-wheel adapted to gear therewith, loosely journaled on its shaft, drums loosely journaled on each of said shafts, a shifter to shift said transmitting gear-wheel to connect and disconnect it with said power gear-wheel, a band or flexible connection between said drums, spring-clutches secured to said shafts, adapted to engage with said drums and secure them to the shaft, a lock to hold said clutches out of connection, operated by the shifter when shifted to disconnect said gear-wheels to release said clutches, and gearing between said gear-wheel and the car-axle.

15. In a car-starter, the combination of a power gear-wheel and its shaft with a transmitting gear-wheel adapted to gear therewith, loosely journaled on its shaft, drums loosely journaled on each of said shafts, a shifter to shift said transmitting gear-wheel to connect and disconnect it with said power gear-wheel, band or flexible connection between said drums, spring-clutches secured to said shafts, adapted to engage with said drums and secure them to the shaft, a gear-wheel carried by one of said clutches, a lock to hold said clutches out of connection, operated by the shifter when shifted to disconnect said gear-wheels to release said clutches, and gearing between said gear-wheel on the clutch and the car-axle.

407,370. PISTON-PACKING. EDWARD F. PEACOCK, Philadelphia, Pa. Filed Mar. 12, 1888. Serial No. 302,944. (No model.)

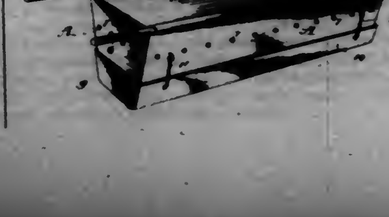


Claim.—1. The combination, with a piston provided with a packing-ring, of a break-joint block seated in a recess in the piston adjacent to the packing-ring groove and having a rib entering between the ends of the ring, the outer surface of the rib lying in the same superficies as the surface of the body of the block, and the depth of the rib being as great as the thickness of the packing-ring, substantially as set forth.

2. The combination, with a piston provided with a packing-ring groove and having a recess adjacent to said groove, of a packing-ring received in the groove and of the same cross-sectional area at all points, and a break-joint block seated in the recess, one face of the block forming a continuation of the wall of the groove, said block having a rib extending transversely of the groove between the ends of the packing-ring, the depth of the rib being as great as the thickness of the ring, substantially as described.

3. The combination, with a horizontal cylinder, of a piston provided with a packing-ring groove and a recess adjacent to but at one side of said groove and located at the bottom of the cylinder, a cut packing-ring lying in the groove, with its ends adjacent to the recess, and a break-joint block composed of a body received entirely within the recess and having a rib entering between the ends of the ring, the outer surface of the rib lying in the same superficies as the surface of the body of the block, and the ends of the ring being free from all tongues, grooves, shoulders, or other weakening conformations, substantially as described.

407,371. NAIL-EXTRACTOR. ABRAHAM ROSENBERGER, Chicago, Ill. Filed Sept. 10, 1888. Serial No. 285,082. (No model.)



Claim.—1. In a nail-extractor, in combination, a head and a handle, the head having a claw and a flat blow-receiving surface, the direction of both the handle and claw being oblique to the blow-receiving surface, and both pointing to the same side of a plane at right angles to said surface and to the opposite sides of the plane of said surface, substantially as set forth.

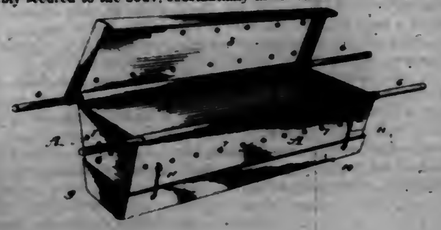
2. A nail-extractor comprising a head and a handle, the head having a flat blow-receiving surface at one end and a claw at the other end, the handle and the claw both pointing obliquely away from the plane of the blow-receiving surface and toward opposite sides thereof and obliquely away from a plane at right angles to said surface and toward the same side of said plane, such handle and claw being approximately at right angles to each other, substantially as set forth.

3. A nail-extractor comprising a handle and a head, the head having a flat blow-receiving surface at one end and a claw at the other end, and a convex outer surface from the handle to the claw, the handle and claw both pointing in directions oblique to the plane of the blow-receiving surface and toward opposite sides thereof and toward the same side of a plane at right angles to said surface, substantially as set forth.

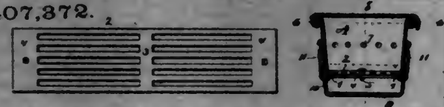
4. A nail-extractor comprising a handle and a head, the head having a claw and a flat blow-receiving surface, the direction of both the handle and claw being oblique to the blow-receiving surface and both pointing to the same side of a plane at right angles to said surface and to the opposite sides of the plane of said surface, the head having also a flat face B^2 intersecting the blow-receiving surface and extending parallel to the handle, substantially as set forth.

407,372. FURNACE. JAMES J. STORTS and EDWIN R. WALKER, Rotard, Ky. Filed Mar. 12, 1888. Serial No. 302,942. (No model.)

Claim.—1. The combination, with a body having a movable cover and a grate forming the bottom of said body, of an ash-pan detachably secured to the body, substantially as set forth.



407,372.

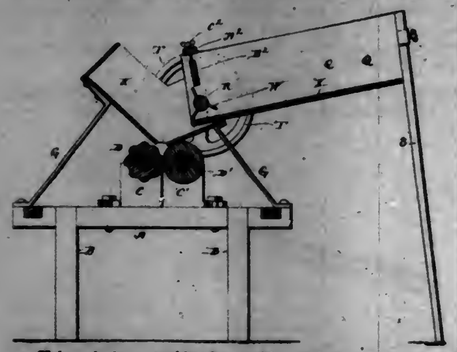


2. The combination, with the body and handle-bars, of a cover hinged to one of said handle-bars, substantially as set forth.

3. The combination, with the body having perforated sides and a grate secured to the bottom, of handle-bars connected with the sides, and a perforated lid or cover hinged to one of the handle-bars, substantially as set forth.

4. The combination, with the body having perforated sides, a continuous flange projecting inwardly from the sides and ends, and a grate secured on the flange, of a perforated lid or cover hinged to one of the handle-bars, and an ash-pan hooked to the body, substantially as set forth.

407,373. COTTON-SEED CRUSHER. GEORGE W. SERMON, Conyers, Ga. Filed Feb. 16, 1889. Serial No. 300,102. (No model.)



Claim.—1. In a machine for crushing seed, the combination of the crushing-rolls, a hopper secured above the same, and a secondary hopper connected pivotally to the main hopper, a shaft passing through the sides of the said hoppers, connecting them pivotally, and having a series of radial spoon-shaped projections, and mechanism for rotating the said shaft when the machine is in operation, substantially as set forth.

2. In a machine for crushing seed, the combination of the crushing-rolls, a hopper arranged above the same, a secondary hopper consisting of a box which is open at one end and connected pivotally at the said open end to the main hopper, a transverse shaft extending through the sides of said hoppers, connecting them pivotally, as described, and having radial spoon-shaped arms, and a prop or support attached adjustably to the free end of the said secondary hopper, which may thus be adjusted at any desired inclination, substantially as set forth.

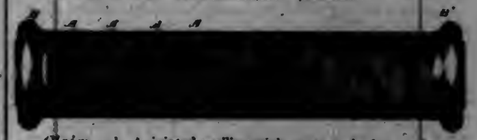
3. In a machine for crushing seed, the combination of the crushing-rolls, a hopper arranged above the same, a secondary hopper consisting of an open-ended box pivoted between the sides of the main hopper, a transverse shaft extending through the sides of the hoppers, connecting them pivotally, as described, and having radial feed-arms, and a vertically-adjustable gage-board, arranged at the open end of the supplementary hopper, substantially as set forth.

4. In a machine for crushing seed, the combination of the crushing-rolls, the main hopper, the supplementary hopper, the feed-shaft having radial spoon-shaped feed-arms connecting the latter pivotally to the main hopper, and a brake-arm pivoted to one side of the main hopper, bearing against the upper side of the feed-shaft, and provided at its free end with an adjustable weight, substantially as and for the purpose set forth.

5. In a machine for crushing seed, in which one roll is arranged to be rotated by frictional contact with the other roll and with the material passing between said rolls, the combination, with the said rolls, of a hand-wheel secured upon one end of the shaft of the loose roll, which projects at one side of the frame, substantially as and for the purpose set forth.

6. In a machine for crushing seed, the combination of the crushing-rolls, the main hopper, the supplementary hopper connected pivotally to the main hopper, a transverse shaft extending through the sides of said hoppers, connecting them pivotally, as described, and having radial feed-arms, and a friction-wheel mounted upon the said feed-shaft and bearing against the shaft of one of the crushing-rolls, substantially as herein set forth.

407,374. SPELLING-STICK. ALONZO F. SMITH, Milwaukee, Wis. Filed Mar. 12, 1889. Serial No. 303,037. (No model.)



Claim.—1. A jointed spelling-stick composed of a number of separable interchangeable figured sections, each formed at one end with an annular flange and at the opposite end with a corresponding recess and capable of turning upon the adjoining section or sections, each section being wholly supported by and supporting the adjoining section or sections, substantially as and for the purposes set forth.

2. A jointed cylindrical spelling-stick composed of a number of separable interchangeable annular figured sections, each formed at one end with a reduced annular flange and at the other end with a corresponding recess, whereby said sections may be joined together in any order and each section may be turned upon the adjoining section or sections, and of closed end sections, one formed with a reduced cylindrical portion and the other with a corresponding recess, each section supporting and supported by the adjoining section or sections, substantially as and for the purposes set forth.

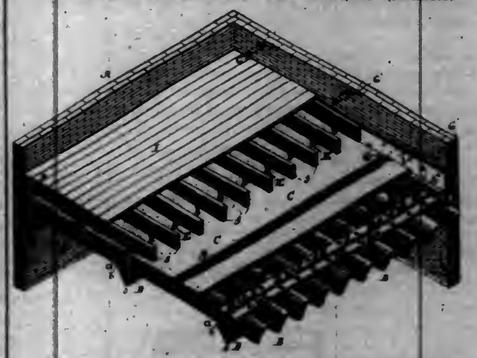
3. A jointed spelling-stick composed of separable interchangeable sections, each provided on its outer face with letters, figures, or the like, and formed at one end with a reduced cylindrical rim and at the other with a corresponding recess, whereby any number of said sections may be joined together, each supporting and supported by the adjoining section or sections, substantially as and for the purposes set forth.

407,375. FERRULE FOR UMBRELLAS, CANES, &c. COMLY S. SMITH, Philadelphia, Pa. Filed Feb. 5, 1889. Serial No. 298,750. (No model.)



Claim.—In a ferrule, in combination with the shank or stem B, a hollow cup or tip D, having sides adapted to yield in being forced in position from above, said cup or tip secured firmly in position with end protruding from said ferrule-shank by soldering or otherwise, substantially as described.

407,376. FIRE AND WATER PROOF CEILING. JOHN SMITH, Kansas City, Mo. Filed Mar. 20, 1888. Serial No. 303,974. (No model.)



Claim.—1. The fire-proof ceiling having its corrugated iron sections or sheets resting upon the ledges or shelves of brackets, in combination with suspenders or hangers having their inner ends adapted to enter said brackets and to take in under the ledges or shelves of the brackets, their upper ends being adapted for connection with the floor-joists above, substantially as set forth.

2. In a fire-proof ceiling, the brackets having a ledge or shelf to support corrugated iron sections or sheets and upwardly-extended parallel plates formed with lateral flanges at their upper edges, substantially as set forth.

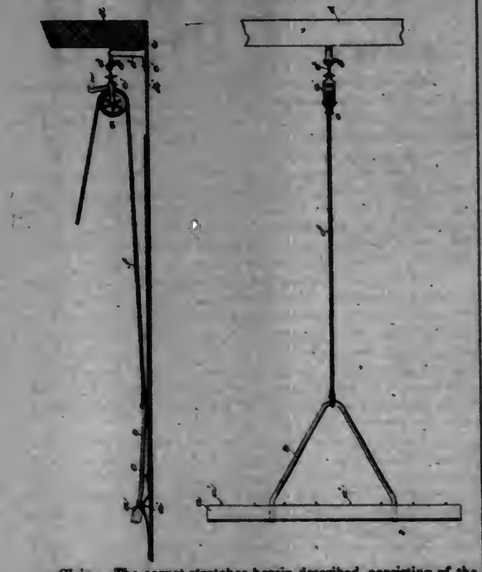
3. In a fire-proof ceiling, the combination of the corrugated ceiling plates or sheets, the hollow brackets having ledges or shelves and their upwardly-extended parallel plates formed at their upper edges with lateral flanges having apertures therein, the hangers or suspenders having lateral arms or flanges let into the brackets and taking in

under the ledges of said brackets and having their upper ends adapted for connection to the floor-joists, the filling of cement, and the angular plates applied to the walls and between the same and the cement filling, substantially as specified.

4. In a fire-proof ceiling, the combination of the corrugated iron sheets or sections, the bracket supporting said sheets or sections, the suspenders or hangers for said brackets, and the cement filling having gutters at intervals in its upper surface, and the outlet spouts or pipes taking the waste water from said gutter, substantially as specified.

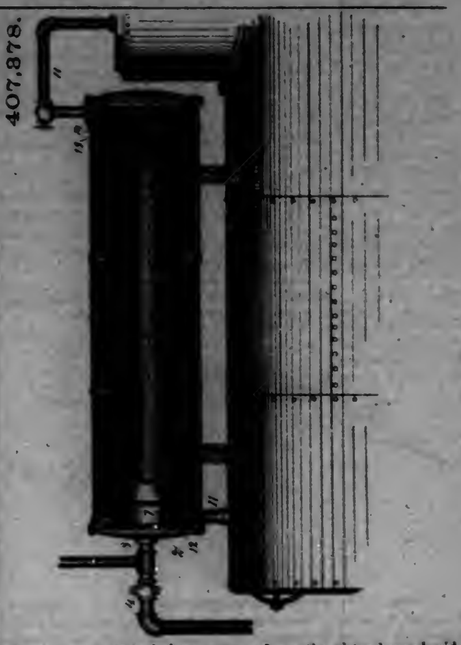
5. In a fire-proof ceiling, the combination of the corrugated iron sheets or sections, the brackets supporting said sheets or sections, the suspenders or hangers for said brackets, the filling of cement, the nozzle-like spouts or pipes having caps applied to their outer discharging ends, and the additional similar pipes or spouts arranged above the next floor, substantially as set forth.

407,377. CARPET-STRETCHER. MOSES B. SMITH, Binghamton, N. Y. Filed Feb. 26, 1889. Serial No. 301,242. (No model.)



Claim.—The carpet-stretcher herein described, consisting of the carpet-engaging device, constructed substantially as described and having a rigid loop or bail, the flexible cord or chain attached thereto, the bracket or support having the wedge-shaped base to be forced beneath a base-board, the pulley journaled in the frame *c'*, supported by said bracket, and over which the flexible cord passes, and the locking device consisting of the wedge *n*, having a serrated face and inserted between the pulley-frame and pulley, its serrated face contacting with the cord to prevent any backward movement of the cord or carpet, substantially as described.

407,378. FEED-WATER HEATER AND PURIFIER. JAMES S. STEPHENS, St. Paul, Minn. Filed Mar. 28, 1889. Serial No. 304,470. (No model.)



Claim.—1. In a feed-water heater and purifier, a heating-chamber having steam communication with the boiler at one extremity and the other end connected with the feed and blow-off pipes, ports connecting the upper part of the interior of said chamber with the interior of the boiler, and a piston fitting said chamber and adapted to be moved in opposite directions by the pressure of the feed-water and steam, respectively, according to the excess of pressure, substantially as and for the purpose herein specified.

2. In a feed-water heater and purifier, a chamber having at one end feed-water and blow-off connections and at the other live-steam inlet and water-outlet ports, and a sliding piston adapted to close said steam-inlet and open said water-outlet by excess of feed-water pressure and to open said steam-inlet and close said water-outlet by excess of steam-pressure, substantially as and for the purpose herein specified.

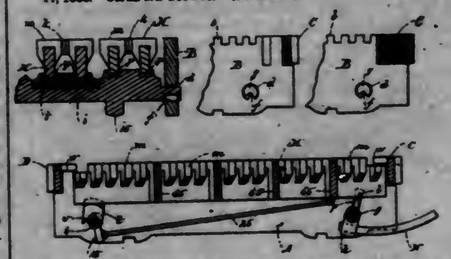
3. In a feed-water heater and purifier, a chamber having steam communication with the boiler at one end and feed-water and blow-off pipes at the other extremity, a piston within said chamber, and ports in the upper part of the chamber at a distance from said steam-inlet a little greater than the length of the piston, substantially as described, whereby excess of feed-water pressure forces the piston beyond said ports to afford escape for the water, and excess of steam-pressure caused by opening the blow-off valve forces the piston to the opposite end of the chamber, closing said ports, as and for the purpose set forth.

4. In a feed-water heater and purifier, a heating-chamber having at one extremity feed and blow-off connections and at the other live-steam inlet and water-outlet, and a cap forming the end of said chamber, to which the feed-pipe is attached, the said cap having a passage therethrough at an angle to the length of the chamber, substantially as specified, whereby a spiral direction is given to the course of the water through the chamber.

5. In a feed-water heater and purifier, a heating-chamber having in one end thereof an opening of less area than the cross-section of the chamber and the opposite end connected with the feed and blow-off pipes, a sliding piston fitting the interior of said chamber, the said chamber having perforations in its upper part at a distance from the inner end of the same a little greater than the length of said piston, and the whole located in the upper part of a boiler or in a suitable shell communicating therewith, substantially as and for the purpose herein set forth.

6. In a feed-water heater and purifier, a clearing-piston adapted to force out deposits in the heating-chamber, operated directly in either direction by the pressure of steam or feed-water, the movement of said piston being controlled by the variation in pressure caused by opening or closing the blow-off valve, substantially as and for the purpose herein set forth.

407,379. GRATE. HIRAM F. TALLMADGE, Boston, Mass. Filed Sept. 17, 1888. Serial No. 285,561. (No model.)

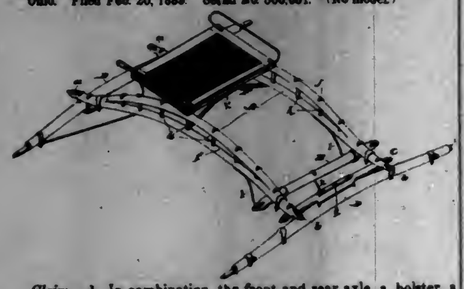


Claim.—1. In a grate, the combination of side bars, end bars connecting the side bars, rocking bars pivotally connected with the side bars, tilting carriages pivoted on said rocking bars, and grate-bars supported at their opposite ends on said rocking bars and carriages, respectively, substantially as described.

2. In a grate, the combination of side bars connected by end bars, grate-bars, rocking bars pivoted on knife-edge bearings in each end of said side bars, knife-edge bearings on said rocking bars for receiving an end of each group of grate-bars, and tilting carriages pivoted on said rocking bars for supporting the opposite ends of said grate-bars, whereby the grate-bars may be moved in opposite directions when said rocking bars are rotated, substantially as described.

3. In a grate, the combination of the side bars A B, connected by the bars C D, the rocking bars *g i*, pivoted in said side bars and provided with the knife-edge bearings *p e*, the tilting carriages *t*, disposed on the bearings *e*, the grate-bars H, disposed at one end on a carriage *t* and at the opposite end on a bearing *p*, and the rod 25, for connecting one or more of said groups, with a lug 15 on the bar *i*, whereby the grate-bars may be moved in opposite directions as said rocking bars are rotated, substantially as set forth.

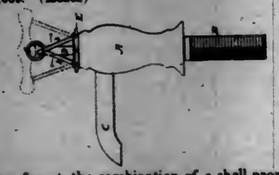
407,380. SKELETON WAGON. SAMUEL TOOMEY, Canal Dover, Ohio. Filed Feb. 20, 1889. Serial No. 300,631. (No model.)



Claim.—1. In combination, the front and rear axle, a bolster, a king-bolt for pivoting the bolster to the front axle, arched body-bars placed side by side and secured at their rear ends to the rear axle and at their forward ends to the bolster, a cross-bar E, uniting the forward ends of said arched bars, a brace *k*, secured to the middle portion of the cross-bar E and to the king-bolt, a seat, and a brace *k'*, secured with its intermediate portion to said seat and with its ends to the arched body-bars, substantially as set forth.

2. An arched body-bar having its opposite vertical sides recessed longitudinally, forming a reduced thickness of material connecting the portions of material above and below it, substantially as set forth.

407,381. FAUCET. FRANCIS E. TOTTEN, Newark, N. J., assignor of one-half to Joseph Stowe Cooke, same place. Filed Apr. 24, 1888. Serial No. 271,689. (Model.)



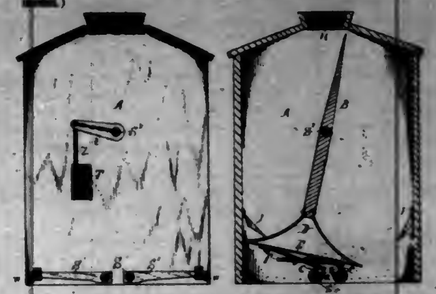
Claim.—In a faucet, the combination of a shell provided with a valve-seat, a valve, a valve-stem, a shell-cap provided with a perforation *f* and adjacent depressions 2 2, a spring encircling the valve-stem within the shell, a handle provided with depressions 4 4 on its under side, and inclined pins fitted into the depressions 2 2 at their lower ends and into the depressions 4 4 at their upper ends, the arrangement being such that the spring operates not only to force the valve down upon its seat and return all the moving parts to their normal positions, but to also hold the lifting-pins in place, as well as prevent their being raised and turned to the dead-point and thus locking open the valve.

407,382. GALLEY. CHARLES W. WALDRON, Lewiston, Me., and GILBERT R. JONES, New York, N. Y., assignors to the Liberty Manufacturing Company, same place. Filed Sept. 1, 1887. Serial No. 248,523. (No model.)



Claim.—A galley the side and end pieces of which are joined by means of tongues and grooves, together with rivets made integral with said tongues and secured in holes communicating with said grooves, substantially as set forth.

407,383. AUTOMATIC GRAIN-WEIGHING MACHINE. OSCAR L. WELLS, Marseilles, Ill. Filed May 6, 1889. Serial No. 309,732. (No model.)



Claim.—1. In the grain weighing and registering machine shown and described, in combination with the case and the oscillating valve having the arms F F, the rock-shafts S S, respectively having the arms *a* and fulcrum-arms *c* and the scale-beams S' S', substantially as and for the purpose set forth.

2. In the grain weighing and registering machine shown and described, in combination with the case A and oscillating valve B, having the flanges D D, the aprons J J, respectively hinged to the side walls of the case immediately above the point of contact of said flanges with the case and in such manner as to alternately engage therewith, substantially as and for the purpose set forth.

3. In the grain weighing and registering machine shown and described, in combination with the outer case A, the oscillating valve B, arranged on shaft S^2, passing about centrally through said valve and boxed at either end in the ends of the case, flanges D D, respectively secured to the lower outer sides of said valve, forming alternately with the sides of said case and said valve the grain-receptacles, the scale-beams S' S', and the means, substantially as specified, for alternately connecting the lower part of said valve and scale-beams, substantially as and for the purpose set forth.

4. In the grain-weighing machine shown and described, in combination with the case A, having a grain-inlet at its upper end and an open bottom, the valve B, arranged centrally and vertically therein and oscillating from a point at about its center, so the upper end will move under said inlet and cause grain to fall to either side thereof, and the side flanges D D, secured to the lower outer sides of said oscillating valve and forming alternately the floor of the grain-receptacle, having sides formed of said case and valve, substantially as and for the purpose set forth.

5. In combination with the case A, having the inlet-hopper H at its upper end, the oscillating valve B, having the concaved side flanges or bottoms D D, plate E, connecting said flanges, arms F, secured to said plate and having their free ends project in opposite directions, shaft S^2, shafts S S, having respectively the arms *a c*, and the aprons J J, substantially as and for the purpose set forth.

6. In combination with the case A, having the inlet-hopper H and an open bottom, the oscillating valve B, having the concave flanges D D, the aprons J J, the shaft S^2, having crank *r*, pitman Z, and tally T, shafts S S, respectively having the arms *a c* and scale-beams S' S', and the arms F F, substantially as and for the purpose set forth.

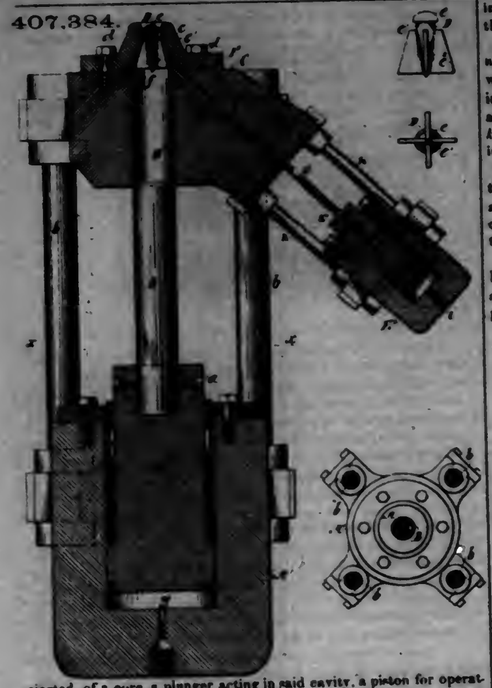
407,384. MACHINE FOR MAKING CURVED LEAD PIPE. GEORGE W. WIDEN, Brooklyn, N. Y. Filed Apr. 19, 1888. Serial No. 271,178. (No model.)

Claim.—1. In a machine for forming curved lead pipe, the combination, with a head-block provided with a cavity for receiving molten metal, and an aperture beyond said cavity through which the metal may be ejected, of a plunger acting in said cavity, a core for forming the interior of the pipe, and a second plunger operating alternately to withdraw metal from the said cavity and to inject it into the same near said discharge-aperture, substantially as specified.

2. In a machine for forming curved lead pipe, the combination, with the cap-piece, the head-block, and the curving device, of the core located wholly above said curving device, and consisting of the central piece, laterally-extending wings of gradually-increasing width from top to bottom, said wings commencing at a point below the top of said core, the core above said point being of the form of the interior of the pipe to be produced, substantially as specified.

3. In a machine for forming curved lead pipe, the combination, with a head-block provided with a cavity for receiving molten metal, and an aperture beyond said cavity through which the metal may be

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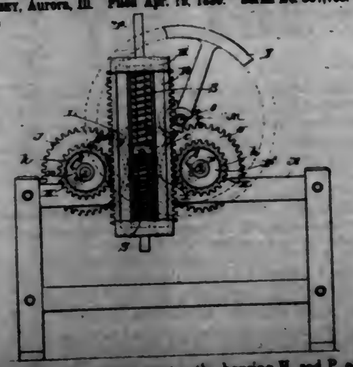


ejected, of a core, a plunger acting in said cavity, a piston for operating said plunger, a second cavity in the head-block, a plunger acting in said second cavity, and a piston for operating the second-named plunger to alternately withdraw metal from the said cavity and inject it into the same near the discharge-aperture, substantially as specified.

4. In a machine for forming curved lead pipe, the combination, with a recessed cap-piece, of a block having a cavity for containing the molten metal in communication with the recess of the cap-piece, a plunger within said cavity, and a second cavity in said block opening into said first cavity at a point near where it communicates with the recess of the cap-piece, and a plunger operating in said second cavity, substantially as specified.

5. In a machine for forming curved lead pipe, the combination of a cylinder and head-block secured thereto, said head-block being provided with two plunger-cavities, and a core wholly above the cavities, a plunger operated by the piston, of the cylinder supporting the head-block within one cavity of the head-block, and a second cylinder supported by said head-block and operating the plunger within the other cavity of said head-block at an angle to the first-named plunger, substantially as specified.

407,385. POWER-CONVERTER. GEORGE W. WILSEY and REUBEN A. WILSEY, Aurora, Ill. Filed Apr. 19, 1889. Serial No. 307,763. (No model.)



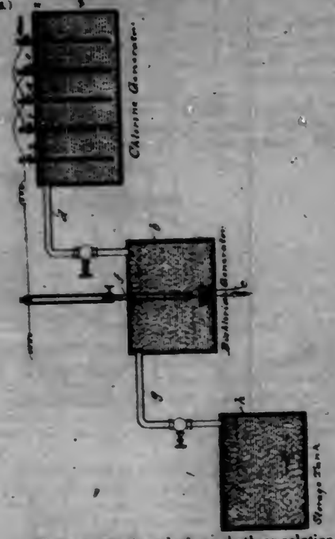
Claim.—1. In a power-converter, the housing H, rod P, collar C thereon, double rack R, guided in a slot *h* in said housing, and springs S coiled on said rod above and below said collar and within said rack, in combination with the twin shafts 1 and ratchet-gears K, mounted thereon and engaging said rack, substantially as described.

2. The rod P and the double rack R carried thereby, in combination with the twin shafts 1, and twin wheels mounted thereon, each wheel comprising a gear K, loosely mounted on the shaft and engaging said rack, a disk P', keyed to said shaft within said gear, a spring-actuated pawl *p*, carried by said disk and engaging an internal ratchet *k* in said gear, and with a main shaft 2 and gears J J and I connecting said twin shafts to said main shaft, substantially as described.

3. The double rack R, the rod P, and collar C fitting loosely thereon, and the spring S, coiled upon said rod within said rack above and below said collar, in combination with a pin *p'*, for securing the collar upon the rod and disconnecting it therefrom at will, substantially as described.

4. The rod P, the rack R, mounted loosely thereon, and the collar C upon said rod within said rack, in combination with cushion-springs within said rack above and below said collar, as and for the purpose set forth.

407,386. BATH OR SOLUTION FOR SEPARATING METALS FROM THEIR ORES. JACOB C. WIDWELL, Medford, assignor, by direct and mesne assignments, to the Electric Gold and Silver Chlorination Company, Boston, Mass. Filed Aug. 13, 1888. Serial No. 282,512. (No specimens.)



Claim.—1. The process of producing a bath or solution for the separation of metals from their ores, consisting of subjecting a solution of salt-water, muriate of ammonia, and muriatic acid to a current of electricity, then placing this solution in a tank containing liquid mercury, and subjecting the whole to a current of electricity, said mercury serving as the anode, as set forth.

2. The process of producing a bath or solution for the separation of metals from their ores, consisting in placing aqua-chlorine in a tank containing liquid mercury, and then subjecting the whole to a current of electricity, said mercury serving as the anode, as set forth.

407,387. FINGER-BAR FOR REAPERS, MOWERS, &c. ALEXANDER WORASK, Emmett, Idaho, assignor of one-half to Andrew Kelley, same place. Filed Feb. 5, 1889. Serial No. 298,768. (No model.)



Claim.—1. The combination, with a finger-bar having dovetailed recesses in its front edge, said recesses having forwardly and upwardly converging end walls, of the wear-blocks fitted in the said

recesses and having their ends converging upwardly and forwardly, and means for supporting the blocks, substantially as specified.

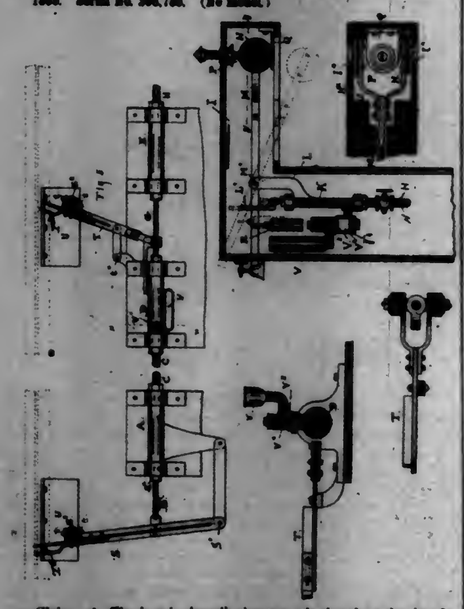
2. The combination of the finger-bar having guard-fingers attached thereto, of the wear-blocks beveled toward their front sides and toward their upper edges, fitted in similarly-shaped recesses in the front edge of the finger-bar and bearing at their lower edges on the fingers, respectively, whereby the latter serve to hold the blocks in place, substantially as specified.

407,388. PULLEY. WILLIAM A. WOODWARD, Lowell, assignor to the Woodward Manufacturing Company, Hudson, Mass. Filed Jan. 24, 1889. Serial No. 297,416. (No model.)



Claim.—The improved pulley above described, consisting of the rim A, cross-pieces B B', bed-pieces D D', half-hubs F F', and means for securing the half-hubs together, combined and operating substantially as described.

407,389. AUTOMATIC SIGNAL FOR CROSSINGS OF CABLE RAILWAYS. GEORGE H. WRIGHT, San Francisco, Cal. Filed Feb. 5, 1889. Serial No. 298,726. (No model.)



Claim.—1. The herein-described automatic signal mechanism for railway-crossings, adapted to be operated by a moving car or train, consisting, essentially, of the line of pipe C, terminating in cylinders A D and filled with liquid, the line of pipe H, also containing liquid and having at one end a cylinder E in close relation to the cylinder at the end of the line of pipe C, the double plunger G, working in both of said cylinders, a plunger B, fitted to the leading cylinder A, the levers S T, connected with the plungers B and G, respectively, and projecting in the path of a bar or projecting part carried by the car to move said plungers when struck by said part, and the cylinder K at the end of the line having a plunger connected to a suitable signal, substantially as set forth.

2. In a signal mechanism, the combination of a line of pipe having cylinders at the opposite ends fitted with plungers, means for applying pressure to the end of the leading plunger to act on a body of liquid confined in said pipe and cylinders and through the medium thereof to move the plunger of the cylinder at the opposite end of the line, and the intermediate cylinders D H, having a plunger G common to both, and means by which said plunger can be moved back or in a direction contrary to the movement given to the leading plunger, substantially as set forth.

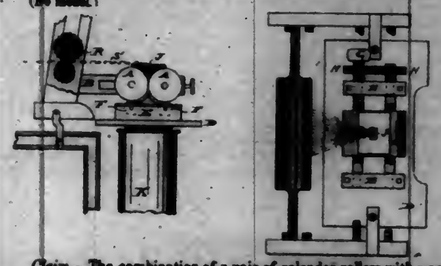
407,390. OIL-STOVE FOR HEATING PURPOSES. AUGUST F. ZINKEISEN, Milwaukee, Wis., assignor of one-half to John A. Dutcher and Pierrepont B. Dutcher, both of same place. Filed May 19, 1888. Serial No. 274,391. (No model.)



Claim.—1. The combination, in an oil heating-stove, of an annular base A, a reservoir N, located within the opening of said base A, annular wall J, cylindrical wick-tube C, located within said annular wall J, the center of which wick-tube forms an air-space communicating from the exterior air through the annular base A to the combustion-chamber above the wick-tube, inlet cold-air duct B, located centrally within said wick-tube C, at a slight distance therefrom, forming thereby an air-space I between said wick-tube C and said air-duct B, drum or exterior cylinder F, resting at its lower end upon the base A, exterior to said wick-tube, interior drum or cylinder E, communicating at its lower end with the upper end of the said cold air duct B, and its upper end through the perforated cover G, cover G, annular air-chamber F, affixed to the upper end of said drum F, and having communication therewith through the apertures D', said annular chamber E being provided with air-escape aperture E', communicating with the room and with air-duct T, communicating with the exterior air, substantially as and for the purpose specified.

2. In an oil-stove for heating purposes, the combination of the base A, drums or air-ducts E and F, arranged one within the other, forming thereby an annular combustion-chamber C, communicating at its lower end with the base A upon the respective sides of the wick-tube, and at its upper end with the annular chamber E, whereby an air-passage h formed on either side of said wick-tube, and also thereby forming a central hot-air duct-E, communicating from the base A through the center of the flame with the perforated cover G, cover G, annular chamber E, provided with a series of apertures E', air-controlling slide F, and air-escape pipe T, provided with air-controlling damper G', substantially as and for the purpose specified.

407,391. APPARATUS FOR DRAWING SLIVERS FROM GILL-BOXES. THOMAS H. ACKROYD and ALLAN BROADLEY, Rishworth, near Leeds, County of York, England. Filed Aug. 15, 1888. Serial No. 282,899. (No model.)



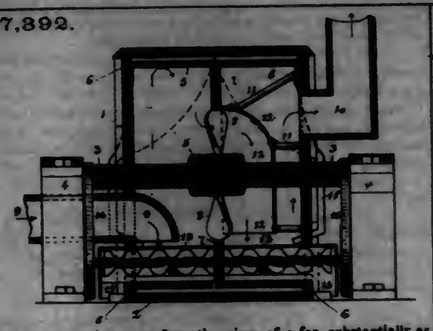
Claim.—The combination of a pair of calender-rollers with a pair of additional rollers, and means, substantially as described, for driving the latter, the calender-rollers being in contact with each other, and each additional roller being in contact with its respective calender-roller, all substantially as and for the purpose set forth.

407,392. DUST-COLLECTOR. JOSHUA R. BARRUS, Baltimore, Md., assignor of one-half to Joseph J. Sellner, same place. Filed Jan. 15, 1889. Serial No. 296,439. (No model.)

Claim.—1. In a dust-collector, the combination of a revolving centrifugal cylinder, through which the dust-laden air is made to pass, a fan suitably located to cause a current of air to flow through said cylinder, and a dust-laden air-inlet pipe projecting into the interior of said cylinder and delivering its air and dust at approximately right angles to the interior of the cylinder, as and for the purpose specified.

2. In a dust-collector, the combination of a revolving centrifugal cylinder provided with arms connecting said cylinder to a hub, said

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arms being skewed so as to form the wings of a fan, substantially as described.

3. In a dust-collector, the combination of a centrifugal cylinder provided with skewed arms connecting the interior thereof, with a revolving shaft passing through its center and by which said cylinder is turned, and dust-collectors projecting into the interior of said cylinder and bearing against the interior surface thereof, whereby the dust which adheres to the interior surface of said centrifugal cylinder will be collected and removed therefrom, and a dust-laden air-inlet pipe projecting into the cylinder on the side into which the air is drawn by the fan.

4. In a dust-collector, the combination of a centrifugal cylinder provided with skewed arms connecting the interior thereof, with a revolving shaft passing through its center and by which said cylinder is turned, and dust-collectors projecting into the interior surface thereof, and a screw conveyer operating within said dust-collector to remove the same therefrom, and a dust-laden air-inlet pipe projecting into the cylinder on the side into which the air is drawn by the fan, substantially as described.

5. In a dust-collector, the combination of a centrifugal cylinder connected to a revolving shaft by arms which are skewed so as to form fan-wings, and a dust-laden air-inlet pipe projecting into the cylinder on the side into which the air is drawn by the fan, and a deflector located within said centrifugal cylinder and on the side of the fan-arms, from which the air is forced in position to deflect the air which is forced through the fan and cause it to impinge upon the interior of the centrifugal cylinder at about right angles thereto.

6. In a dust-collector, the combination of a centrifugal cylinder connected to a revolving shaft which passes through the center thereof by arms which are skewed so as to form the wings of a fan, with a dust-inlet pipe the end of which is curved so as to deliver its dust at right angles to the interior surface of the centrifugal cylinder, and a deflector located on the side of the fan, to which the air is forced in position to deflect the air which comes through the fan and cause it to strike upon the interior surface of the centrifugal cylinder at about right angles thereto, substantially as described.

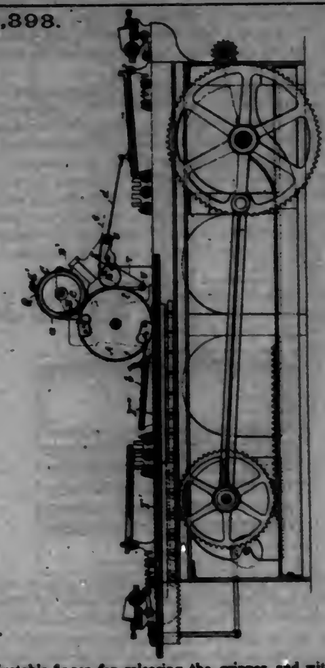
7. In a dust-collector, the combination of a centrifugal cylinder mounted upon and secured to a revolving shaft by arms which are skewed so as to have the wings of a fan, with a casing surrounding said cylinder and closing the ends thereof, and a dust-laden air-inlet pipe projecting into the cylinder on the side into which the air is drawn by the fan, and a pipe leading from the interspace between the cylinder and the casing and terminating upon the interior of the collector, so as to deliver air and dust which may escape into said interspace from the interior of the collector back into the interior of the collector, substantially as described.

8. In a dust-collector, the combination of a centrifugal cylinder connected to a revolving shaft which passes through the center thereof by arms which are skewed so as to form the wings of a fan, with a dust-inlet pipe the end of which is curved so as to deliver its dust at right angles to the interior surface of the centrifugal cylinder, and a deflector located on the side of the fan, to which the air is forced in position to deflect the air which comes through the fan and cause it to strike upon the interior surface of the centrifugal cylinder at about right angles thereto, and a head closing the end of the cylinder from which the air escapes, perforated with an air-outlet aperture.

407,393. PRINTING-MACHINE. JOHN H. BENTON, DAVIES BRAITHWAITE, and MARK SMITH, Manchester, County of Lancaster, England. Filed Feb. 9, 1888. Serial No. 263,543. (No model.) Patented in England Dec. 10, 1884, No. 16,201, Apr. 20, 1886, No. 5,469, and Nov. 22, 1887, No. 16,022.

Claim.—1. In a typographic and similar perfecting machine, the combination of a cylinder having two impression-surfaces with a reversing and refeeding apparatus consisting, essentially, of a rotary gripper, fixed rings concentric with the path of the gripper, gearing and devices, substantially as described, for operating the gripper, and

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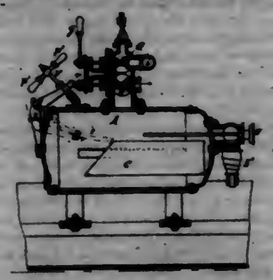


as adjustable finger for releasing the gripper, and with a taking-off apparatus consisting, essentially, of rotating grippers, gearing and devices, substantially as described, for operating the grippers, endless traveling bands, and devices for releasing the grippers of the impression-cylinder, substantially as hereinbefore described, and as illustrated by the accompanying drawings.

2. In a typographic and similar perfecting machine, the combination of a cylinder having two impression-surfaces with a rotary gripper, fixed rings concentric with the path of the gripper, gearing and devices, substantially as described, for operating the gripper, and an adjustable finger for releasing the gripper, substantially as hereinbefore described.

3. In a typographic or similar perfecting machine, a series or set of fixed rings upon or over which the paper is laid for reversal after being removed from the impression-cylinder, in combination with a series of grippers arranged to take the sheet from the impression-cylinder, for the purpose described.

407,394. APPARATUS AND MEANS FOR PROPELLING BY REACTION. ALEXANDRE CHARLES, Paris, France. Filed Oct. 30, 1888. Serial No. 289,669. (No model.) Patented in France Oct. 13, 1888, No. 179,691; in Germany Oct. 19, 1888, No. 52,894; in England June 7, 1887, No. 8,132; in Belgium June 6, 1887, No. 77,764; in Italy June 17, 1887, No. 21,988, and in Austria-Hungary Aug. 21, 1887, No. 41,139.



Claim.—1. A propelling apparatus consisting of the combination of a boat, a balloon-car, or other device to be propelled, with a gas-generating chamber provided with outlets for the direct escape of the gases from the generating-chamber, controlling-valves for the outlets, and an opening closed by a door through which the explosive materials are passed into the generator, substantially as described.

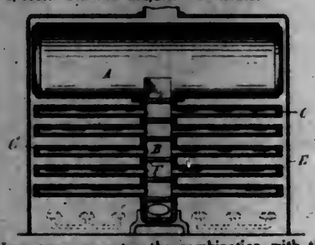
2. A propelling apparatus consisting of a boat, balloon-car, or similar device, in combination with a gas-generator having outlets

and controlling-valves and an opening closed by a door, a removable receptacle for holding the combustible material, and guides within the generator for the removable receptacle, as and for the purpose set forth.

3. A propelling apparatus consisting of the combination of a boat, balloon-car, or other device to be propelled, with a gas-generator consisting of a closed vessel with discharge-outlets and controlling-valves therefor, and a door in the vessel opening inward and closing against a seat under the gas-pressure, all substantially as described.

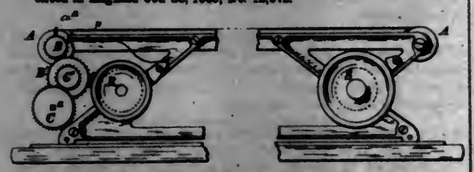
4. A gas-generator consisting of a closed vessel provided with suitable outlets and safety-valves, a door opening inward and closing against a seat under the gas-pressure, a pivoted lever, one end of which is fixed to the door, and a screw attached to the outside of the generator to fasten the other end of the lever when the door is closed, substantially as described.

407,395. STEAM-GENERATOR. George D. Cooper, St. John's, Mich., assignor to the Cooper Boiler and Engine Company, same place. Filed Feb. 2, 1889. Serial No. 298,422. (No model.)



Claim.—In a steam-generator, the combination, with the horizontal cylindrical steam-drum, of the vertical water-leg supporting said drum arranged at right angles thereto and communicating therewith, as shown, and of greater width than the diameter of the drum, the water-tubes closed at their outer ends and at their inner ends communicating with the water-leg, said tubes extending from the opposite sides of the water-leg parallel with each other and with the drum, the stays F, spaced between the inner ends of the tubes from wall to wall of the water-leg, and the outer casing E, inclosing the tubes and drum and forming a jacket around the drum and a combustion-chamber around the tubes, substantially as shown and described.

407,396. ROLL-HOLDER INDICATOR. George Eastman, Rochester, N. Y. Filed July 13, 1885. Serial No. 171,560. (No model.) Patented in England Oct. 26, 1885, No. 12,972.



Claim.—1. In a roll-holder for photographic films, the combination, with the outer casing, of the supporting-frame carrying the winding, unwinding, and measuring rolls independent of and movable with reference to the casing, a gear on the measuring-roll, an indicator mounted upon the main casing and in gear with the measuring-roll, so as to make a single revolution as the measuring-roll is rotated the requisite number of times to reel forward an amount of film for one exposure, said indicator adapted to be connected to and disconnected from engagement with the indicating-roller when desired, substantially as described.

2. In a roller-holder for photographic films, the combination, with the outer casing, of the supporting-frame carrying the winding, unwinding, and measuring rollers independent of and movable with reference to the casing, a wheel or gear on the frame in gear with the measuring-roller, so as to make a single revolution as the latter is rotated the requisite number of times to reel forward an amount of film for one exposure, and an indicator mounted on the casing and adapted to be connected to and disconnected from the gear on the frame, substantially as described.

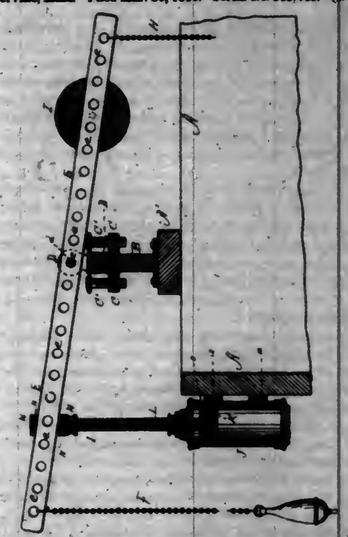
3. In a roller-holder for photographic films, the combination, with the outer casing, of the supporting-frame upon which the winding, unwinding, and measuring rollers are mounted independent of and movable with reference to the casing, the gears B and C, receiving motion from the measuring-roller, and the indicating device mounted upon the casing and adapted to be connected to and disconnected from the gear C, substantially as described.

4. The combination, in a photographic roll-holder, of an indicating device, a measuring-roll, and a gear or pinion for the purpose of connecting the same, substantially as described.

5. In a roller-holder such as described, the combination, with the measuring devices and the casing, of the indicating devices comprising a thimble inserted through the casing and provided with a plate or flange on the outer end, a longitudinally-movable spindle having its bearing in said thimble, and an indicator on its outer end co-operating with the thimble, and a spring contained within the thimble and engaging the indicator-spindle to project the latter toward and hold it in engagement with the measuring devices, substantially as described.

6. The combination, in a photographic roll-holder, of a film-marking device, an indicating device, a measuring-roll, and gearing intermediate the measuring-roll and indicator adapted to effect a single indicated movement of the indicator for two or more rotations of the measuring-roller, substantially as described.

407,397. WATER-CLOSET ATTACHMENT. George V. Eldridge, Somerville, Mass. Filed Mar. 20, 1889. Serial No. 305,315. (No model.)



Claim.—1. In a water-closet attachment, the combination, with the lever E, adjustably weighted, as shown, and provided with the pull-chain F and valve-chain H, of the cylinder J, perforated at *o*, piston or plunger K, tubular rod L, open at its ends, and slotted head N, substantially as and for the purpose set forth.

2. In a water-closet attachment, the combination, with the lever E, adjustably weighted, as shown, and provided with the pull-chain F and valve-chain H, of the cylinder J, perforated at *o*, piston or plunger K, tubular rod L, open at its ends, and slotted head N, having the upper and lower edges of the slot convex at N', substantially as and for the purpose described.

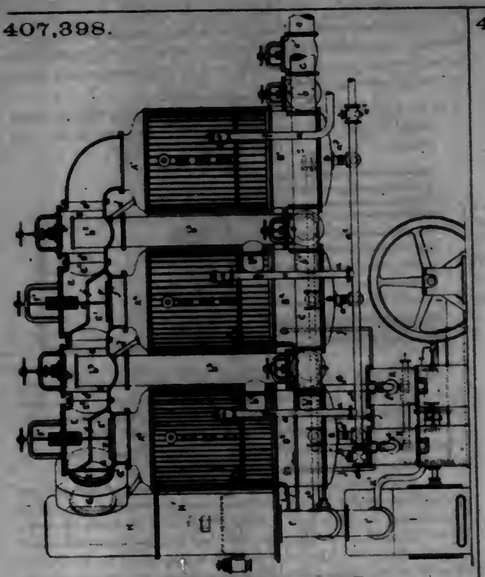
407,398. EVAPORATING APPARATUS. James Foster, Samarang, and John Campbell, Soerabaya, Java. Filed Oct. 29, 1887. Serial No. 253,796. (No model.) Patented in England Dec. 29, 1886, No. 17,041; in France May 11, 1887, No. 183,489; in Belgium May 12, 1887, No. 77,447; in Spain Aug. 18, 1887, No. 7,099, and in Austria-Hungary Nov. 19, 1887, No. 55,023.

Claim.—1. In multiple evaporating steam vacuum-pans, the combination of a series of evaporating-vessels and their steam-heating chambers with connecting valve-boxes at the top, vertical pipes b^2 between the vessels opening at the upper ends into the said valve-boxes, with controlling valves, and near their lower ends having two or more branches b' b^2 b^4 opening radially into each adjacent heating-chamber, substantially as described.

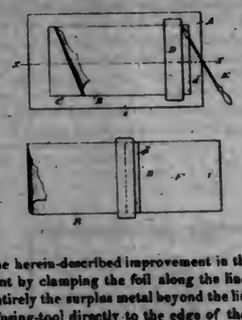
2. The combination of a series of evaporating-vessels having heating-chambers at their lower ends with a supply-pipe C and valved transverse pipes *b*, each of which has two or more branches opening radially into the adjacent heating-chamber, substantially as described.

3. The combination of a series of evaporating-vessels having heating-chambers at their lower ends and having connecting valve-boxes at their upper ends with a supply-pipe C, valved transverse pipes *b*, upright pipes b^2, opening into the said boxes at their upper ends and provided there with valves, and branches on the pipes *b*, opening radially into the heating-chambers, all substantially as described.

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407,399. ART OF WELDING METAL FOIL. John H. J. Haiser, Flushing, N. Y., assignor of one-half to Alexander B. Furnald, Jersey City, N. J. Filed May 24, 1889. Serial No. 311,923. (No model.)



Claim.—1. The herein-described improvement in the art of forming a metal-foil joint by clamping the foil along the line of proposed union, removing entirely the surplus metal beyond the line of pressure, and applying the fusing-tool directly to the edge of the foil, thereby fusing the metal within the line of pressure and producing a joint which lies wholly within such line, as set forth.

2. The improvement in the art of forming a metal-foil joint, which improvement consists in clamping the foil along the line of proposed union and applying a fusing device to the surface of the foil directly along the edges of the clamping device, thereby effecting a separation of the foil at such line, and at the same operation fusing the foil under pressure, as set forth.

407,400. PLAITING ATTACHMENT FOR SEWING-MACHINES. Charles M. Hine, New York, N. Y., assignor of one-half to Charles C. Emmons, Pittsburg, Pa. Filed Nov. 5, 1888. Serial No. 290,049. (No model.)

Claim.—1. The combination, in a sewing-machine, of a plaiting attachment, and a shaft secured to one side of the machine-arm and connected by link and lever to the operating mechanism of the machine, the ratchet secured to said shaft and the pawl therefor, with a cam on the forward end of said shaft for imparting intermittent motion to the vertical levers K K' of the plaiting attachment, whereby said plaiting attachment is operated, substantially as described.

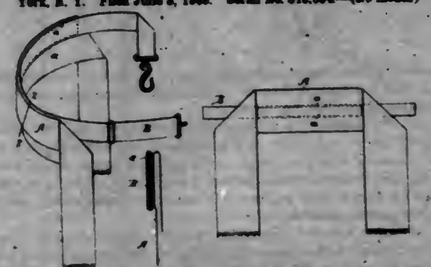
2. The combination of the operating mechanism of a sewing-machine with the shaft A, link C, slotted lever F, ratchet D and pawl therefor, cam J, the levers K K', receiving intermittent motion from said cam, and a plaiting attachment operated by said levers, substantially as described.

3. In combination with the operating mechanism of a sewing-machine, the shaft A, having the cam J and ratchet-wheel D, link G, and slotted lever F, the vertical levers K K', hangers L L', and plaiting-blades having regulating-pins O O', substantially as herein described.

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407,401. OUTING-BELT. Jacob Hirshfeld, New York, N. Y., assignor of one-half to A. G. Spalding & Bros., Chicago, Ill., and New York, N. Y. Filed June 3, 1889. Serial No. 312,004. (No model.)



Claim.—An outing belt and sash consisting of a belt and a sash of greater width than the latter permanently secured for a part of its length to the belt, whereby, when the belt is reversed, the opposite face of the sash will be exposed to view, substantially as and for the purpose described.

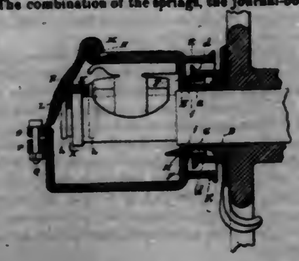
407,402. CAR-TRUCK. Moses G. Huddard, Philadelphia, Pa. Filed Sept. 22, 1888. Serial No. 286,116. (No model.)

Claim.—1. The combination of the car or truck frame, the springs arranged to support the car vertically and laterally without the aid of posts, pedestals, or side supports, and the journal-boxes, substantially as described, whereby side or lateral concussions are prevented, substantially as specified.

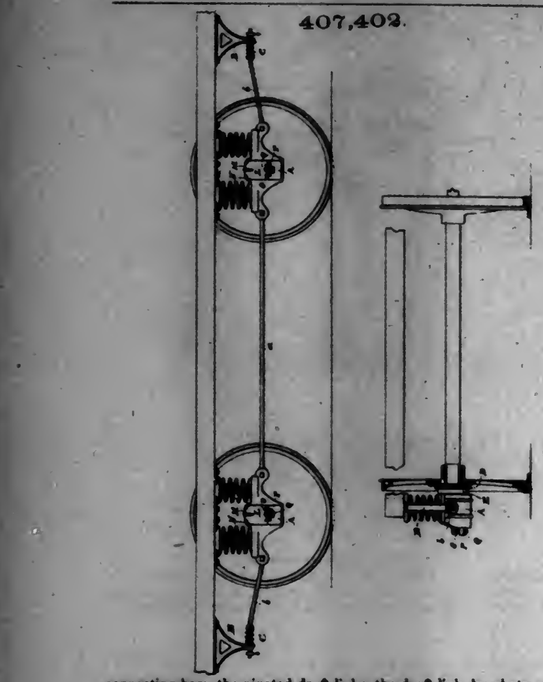
2. The combination of the car or truck frame, the springs arranged to support the car vertically and laterally without the aid of side supports of any kind, the journal-boxes, and the pivoted connecting-bars, substantially as set forth.

3. The combination of the springs, the journal-boxes, the pivoted connecting-bars, and the elastic draft-links, whereby a flexible and elastic attachment of the car to the wheels is obtained, substantially as specified.

4. The combination of the springs, the journal-boxes, the pivoted



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connecting-bars, the pivoted draft-links, the draft-link brackets, and the draft-link springs located between the journal-boxes and said brackets, substantially as described.

5. The combination of the car or truck, having the draft-links pivoted thereto and to the free or vertically and laterally vibrating journal-boxes, with the springs, and wheels and boxes, whereby the springs are held free to vibrate both laterally and vertically and the axles are held at right angles to the car or truck, substantially as and for the purpose specified.

6. A car-axle and journal-box having a flanged outer dirt-ring, in combination with an elastic expanding or telescoping dirt-ring projecting from the car-wheel, whereby all dirt and water are excluded from said journal-box, substantially as and for the purpose set forth.

7. The combination of the car-wheel, the car-axle, and a journal-box having a flanged outer dirt-ring, with a flanged expanding or telescoping wheel dirt-ring having a spring arranged to press the end of the expanding or telescoping portion against the journal-box, substantially as and for the purposes specified.

8. A wheel dirt-ring provided with an extended arm to press between and engage the spokes of the car-wheel, in combination with the car wheel and axle, substantially as and for the purposes described.

9. An expanding or elastic wheel dirt-ring having an annular flange or collar at or near one end, in combination with a journal-box dirt-ring having an annular flange or collar at or near its inner end to prevent dirt from dropping over it upon the wheel dirt-ring, for the purposes substantially as set forth.

10. The combination of a journal-box having a flanged outer dirt-ring with a car-wheel having a flanged expanding or telescoping inner dirt-ring composed of the ring and its inclosed plunger, washer, and spring, substantially as and for the purposes described.

11. The combination of the journal-box and the ordinary button-axle journal with a recessed end-thrust key made to embrace one-half or more of the axle-button and to extend down over the end of the axle, whereby increased end-thrust wearing-surface is obtained, substantially as described.

12. An end plate for a journal-box, having an extending lip at its upper end formed at an angle therewith, in combination with a journal-box provided with an angular rib or flange to fit under said lip, and the vertical bolt, whereby the whole plate is drawn toward the journal-box by the combined action of said angular lip and rib and tightening the one bolt, substantially as and for the purposes set forth.

13. The combination of an end plate, having the angular attachment at its upper end and the vertical bolt at its lower end, with a journal-box provided with a lug or step to prevent the nut of said bolt from turning, whereby the nut is held securely and the bolt is made to remain in position by gravitation, substantially as and for the purposes described.

14. The combination of the pivoted joints, the joint-bolt, and the U-shaped springs, whereby the pivoted joints of the draft-links and connecting-bars and the joint-bolts are kept tight, substantially as and for the purposes specified.

407,403. COMBINED TYPE-TABLE AND GALLEY-RACK. JOHN JEWELL, St. Paul, Minn. Filed July 18, 1888. Serial No. 280,267. (No model.)

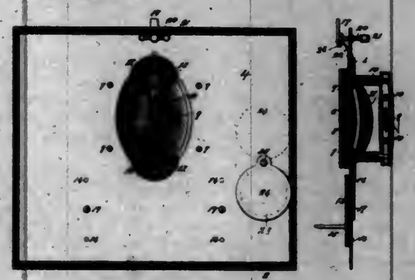


Claim.—1. A table for receiving type, having a metal-covered top, a surrounding ledge whose upper surface is slightly lower than the top of the table, a gutter or trough attached to the same and surrounding the table, and upwardly-projecting cross-ribs upon the upper surface and near the opposite ends of the table, substantially as and for the purpose herein specified

2. A table for receiving type, having a metal-covered top and upwardly-projecting cross-ribs thereon near each end, a surrounding ledge having its upper surface a little lower than the table-top, and a gutter or trough surrounding the table and attached to the said ledge, in combination with a series of portable tables similar to the first and adapted to rest thereupon, each having downwardly-extending supports on the under side thereof adapted to rest against the outer edges of said cross-ribs and be retained in position thereby, substantially as and for the purpose herein specified.

3. A type-receiving table consisting of a series of metal-covered shelves adapted to rest one upon another by means of supports at each end of the under side thereof, the said shelves and supports forming a series of compartments for the reception of type in galleys and forms, the said shelves each having a ledge at the front and rear edges slightly less in height than the surface of the shelf, and a gutter or trough surrounding the upper shelf and attached to said ledge, substantially as and for the purpose herein specified.

407,404. BLOWER. MOLESWORTH KING, Chicago, Ill., assignor of one-half to Louis E. Laflin, same place. Filed Feb. 1, 1889. Serial No. 298,384. (No model.)



Claim.—1. The combination, with a blower, of the hollow handle 9, the shield 6, secured to the rear of the blower back of the handle 9, and the perforations 8 in said blower between the handle and the shield 6, substantially as described.

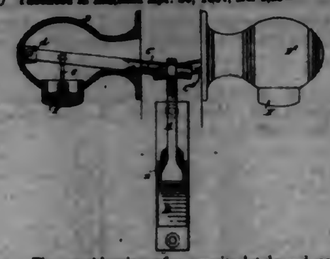
2. The combination, with a blower, of the hollow handle 9, and the shield 11, secured to said blower between the same and the handle, there being a multiplicity of perforations 8 in the part of the blower covered by said shield.

3. The combination, with a blower, of the perforated handle 9, the shield 6, secured to the rear thereof, a second shield 11, secured to said blower between the same and the handle, and a multiplicity of perforations in that part of the blower covered by said shield, substantially as described.

4. A blower for fire-grates, having a catch 19, and a spindle 20, passing through the blower, along which spindle said catch is adjustable, whereby the catch may be adjusted to suit any fire-place.

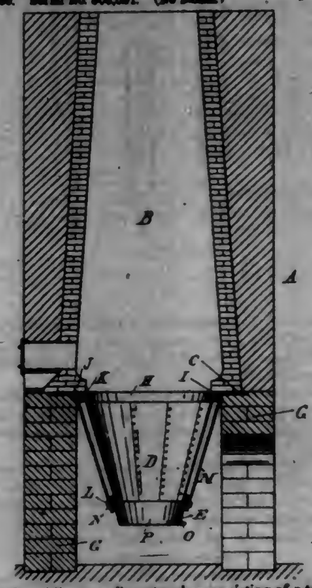
5. A blower for fire-grates, having a catch 19, a spindle 20, passing through the blower, along which spindle said catch is adjustable, a handle 21 for said spindle upon the outside of the blower, and a spring 22, secured to the blower and bearing upon said spindle, whereby the catch may be adjusted to suit any fire-place and will be held in whatever position it is placed.

407,405. LATCH. WILLIAM KRAMS, Barrow-in-Furness, County of Lancaster, England. Filed Apr. 19, 1888. Serial No. 271,193. (No model.) Patented in England Apr. 20, 1887, No. 6,204.



Claim.—The combination of a gravity-latch and catch-rods, each pivoted at one end within its respective knob and the inner ends passing through a slot in the latch, with pushers in the sides of the knobs connected to the catch-rods, substantially as and for the purposes set forth.

407,406. LIMEKILN. FREDERICK KRAMS, Sandusky, Ohio. Filed Apr. 25, 1888. Serial No. 308,281. (No model.)



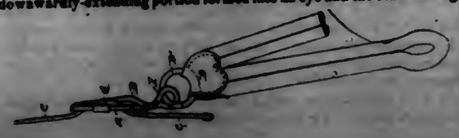
Claim.—1. In a kiln, a cooling-chamber consisting of a top plate and cone secured thereto, a nozzle engaging upon the lower end of the cone, and connection between the top plate and the nozzle, substantially as described.

2. In a kiln, and in combination with the firing-chamber, a cast top plate provided with eyebolts, and the inverted-V-shaped recess, a sheet-metal cone engaging into said recess, a nozzle at the lower end of the cone, and connections between the top plate and the nozzle, substantially as described.

3. In a kiln, a cooling-chamber consisting of the top plate having eyebolts and the inverted-V-shaped recess, a sheet-metal cone engaging with its upper end into said recess, a non-combustible packing in said recess, a nozzle provided with lugs, and bolts connecting the top plate and the nozzle, substantially as and for the purpose described.

407,407. SUSPENDER-BUCKLE. JOSEPH LAWRENCE, New York, N. Y. Filed Feb. 9, 1889. Serial No. 299,204. (No model.)

Claim.—A buckle comprising, essentially, two parts hinged together, between which the webbing is clamped, one part having a downwardly-extending portion formed into an eye and the other having

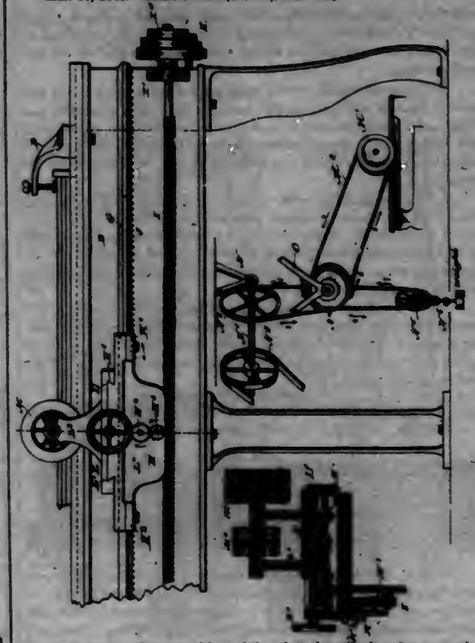


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a like extended portion formed into a hook which is bent rearwardly, the said extended portions crossing each other when the buckle is being closed, with the hook of the hook projecting beyond the eye-like part a sufficient distance to receive the ring of the suspender-end within the hook and between its back part and the eye-like part, substantially as and for the purpose set forth.

407,408. MACHINERY FOR GRINDING THE EDGES OF A SERIES OF SLABS OF SLATE, &c. SAMUEL LLOYD, West New Brighton, N. Y., assignor to the Old Bangor Slate Company, Bethlehem, Pa. Filed Mar. 20, 1888. Serial No. 268,265. (No model.)



Claim.—1. In a machine of the class described, a frame-work, the top or upper beam of which is formed with recesses, in combination with a bed-plate having similar recessed projections adapted to take therein, with clamps mounted in the recesses of the bed-plate, and a bolt passing through said clamp, bed-plate, and beam, substantially as specified.

2. In a machine of the class described, a frame-work provided with a longitudinal feed-screw and a rack-bar at its front, and with ways, in combination with a carriage mounted on said ways and carrying a grinding-wheel and provided with series of gear, one of which meshes with the feed-screw and the other with the rack-bar, substantially as specified.

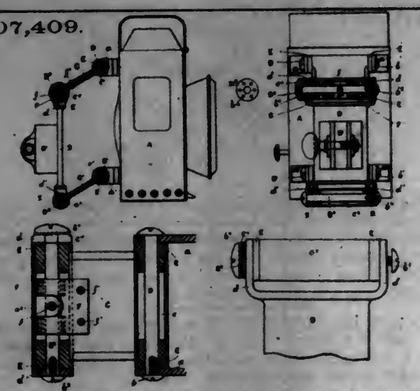
3. In a machine of the class described, the combination of the bed-plate C, having recesses C', with the frame-work B, recessed as at B^1, and with the clamp D, substantially as specified.

407,409. LAMP FOR VELOCIPEDES. HARRY LOCAS, Birmingham, County of Warwick, England. Filed Dec. 3, 1888. Serial No. 292,442. (No model.) Patented in England Jan. 2, 1888, No. 8, and Aug. 30, 1888, No. 12,609.

Claim.—1. The combination, with a lamp and a fixed support, of an arm provided at one end with an eye having a bush of non-metallic material and a pin connecting it to the lamp, and a coiled spring connecting the other end of the arm with the said support, substantially as and for the purpose set forth.

2. The combination, with a lamp and a fixed support, of an arm provided at one end with an eye having a bush of non-metallic ma-

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terial and a pin connecting it to the lamp, and provided at the other end with a coiled spring connecting the arm with the said support, and an eye inclosing the said spring, substantially as and for the purpose set forth.

3. The combination, with a lamp and a fixed support, of an arm provided at one end with an eye having a bush of non-metallic material and a pin connecting it to the lamp, and provided at the other end with a coiled spring connected to said support, and having a bifurcated central portion, substantially as and for the purpose set forth.

4. The combination, with a lamp, of an arm pivoted to the lamp at one end and provided with an adjustable coiled spring at the other end, a revoluble pin passing axially through said spring and secured to it, a fixed bracket supporting the said pin, and projections for securing the pin to the bracket after the tension of the spring has been adjusted, substantially as set forth.

5. The combination, in a velocipede-lamp, of the arms C and C', having eyes or bushes c, c', and c^3, fitted with pliant washer-bushes, the pins B, B', and B^3, the pin B^3, having interlocking teeth b^4 b^4, the spring F, secured to the said pin B^3, and the sock D', carried by the socket-plate D, as set forth.

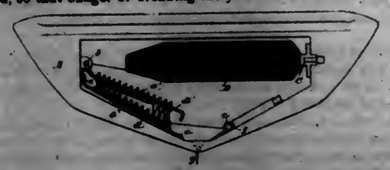
407,410. STOCK-WATERING TANK. MATTHEW LYNCH, Malta Bend, Mo. Filed Mar. 19, 1889. Serial No. 303,997. (No model.)



Claim.—The within-described circular brick water-tight stock-watering tank, comprising the solid bottom or foundation of brick or solid broken material and mortar and several courses of rectangular brick laid radially, flatwise, and edgewise and breaking joints, and with their inner ends binding closely against one another, forming practically water-tight joints, the bricks of the courses bound together by mortar placed between their bottom and top surfaces and in vertical wedge-shaped spaces between the bricks in rear of the said joints and suitably finished on its inner and upper surface, as set forth.

407,411. TENSION-REGULATING DEVICE FOR LOOM-SHUTTLES. GEORGE C. MOORE, Easthampton, Mass., assignor to Joseph W. Green, Jr., and the Glendale Elastic Fabrics Company, both of same place. Filed Aug. 20, 1888. Serial No. 283,259. (No model.)

Brief.—The object of the invention is to provide an improved self-compensating tension device for loom-shuttles of such construction that when there is a sudden jerk on the yarn the tension will be lessened, so that danger of breaking the yarn will be lessened.



Claim.—1. The combination, with a loom-shuttle body, of a tension device consisting of two coils of wire, one of said coils being stationary relative to the body of the shuttle, and a spring-arm by which the other of said coils is carried, whereby the latter coil is free to move toward and from the said stationary coil, substantially as set forth.

2. The combination, with the shuttle-body, of the frame consisting of the fixed and movable arms d and d', the latter being a spring-arm, and the coils e and e', attached to the said arms, substantially as set forth.

407,412. FOUNTAIN-PEN. JOSEPH MORRIS, London, England. Filed Jan. 31, 1889. Serial No. 298,249. (No model.) Patented in England Nov. 7, 1888, No. 16,114.

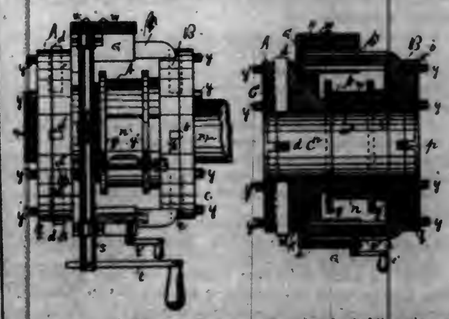


Claim.—1. The combination, in a fountain-pen, of a tube a, rubber sleeve b, valve g, rod e controlling said valve, screw-cap c, to which the rod is secured, rubber disk h, and clip d, substantially as and for the purpose described.

2. In a fountain-pen, the combination, with a barrel a, of an india-rubber or equivalent sleeve b, cap c, clip d, rod e, hole f, valve g, and india-rubber or equivalent disk or washer h, substantially as herein described.

3. In a fountain-pen, the combination, with the reservoir or barrel a, having the opening f therein, and the projection a', with the aperture in the end, and the clip d, formed integral therewith, of the rubber tightly surrounding the reservoir, covering the aperture f to prevent the escape of ink, substantially as described.

407,413. PIPE-THREAD-CUTTING MACHINE. THOMAS MCFADDEN and DAVID ROGERS, Youngstown, Ohio. Filed June 23, 1888. Serial No. 277,946. (No model.)



Claim.—1. The combination, with a vise for holding pipe and the like, of a rotative die-stock and a feed for the latter, consisting of a screw-threaded hub on the die-stock and a nut secured to the vise and movable into and out of engagement with the said hub, substantially as described.

2. The combination, with a vise for holding pipe and the like, of a rotative die-stock and a feed for said stock, consisting of a split nut and an eccentric for operating the nut, the said nut being connected to the vise and die-stock, substantially as and for the purpose specified.

3. The combination, with a vise for holding pipe and the like, of a rotative die-stock, a carriage connecting the vise and die-stock, and gear carried by the carriage and connected to the said die-stock to rotate it, substantially as described.

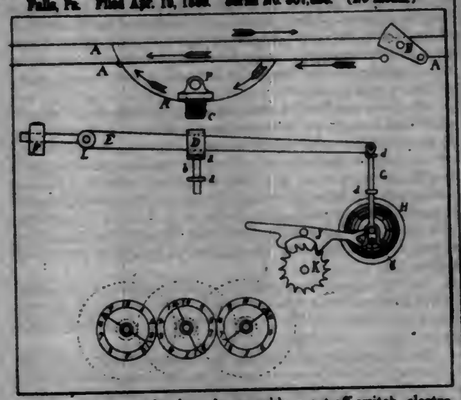
4. The combination, with a vise for holding pipe and the like, of a rotative die-stock, a carriage connecting the vise and stock, operating-gear for the die-stock, a split nut, and the means, substantially as described, for operating said nut to produce a slow feed for the said stock, and a rack and pinion between the vise and carriage to produce a quick feed for the stock, substantially as described.

5. In a thread-cutting machine, a stock consisting of a disk with radial grooves, dies or similar devices in said grooves, and provided with surface threads, a plate or scroll with spiral threads on one face and projecting pins near the periphery, and a washer for holding the scroll to the disk, substantially as described.

6. In combination with the die-stock of a thread-cutting machine, a feed for the said stock, consisting of an internally-threaded split nut engaging said stock, and frames with eccentric grooves engaging pins on said nut, one of the frames having an elliptical opening and embracing the nut, substantially as described.

7. A pipe threading and cutting machine consisting of a vise-stock composed of the disk B, with arms F and hub C, the jaws p, the scroll-plate b, and means, as the washer c, for retaining the plate on the disk, a die-stock composed of the disk a, having the gear A' and threaded hub C^3, dies, substantially as described, the scroll-plate A, and retaining means, as the washer c', for the said plate A, the feed-nut composed of two parts n n and frames g, the carriage G, composed of two parts united by the shafts S, the worms on the shafts to engage the gear A', and the rack-and-pinion feed r w', all combined to operate substantially as described.

407,414. ELECTRIC METER. WILLIAM MCKINNEY, Schuylkill Falls, Pa. Filed Apr. 19, 1889. Serial No. 307,886. (No model.)

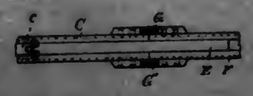


Claim.—1. A conducting wire or cable, a cut-off switch, electro-magnet having its armature connected to a lever, and a forked rod, in combination with a roller-pin and balance-wheel of a lever clock-movement, as shown and described, and for the purpose specified.

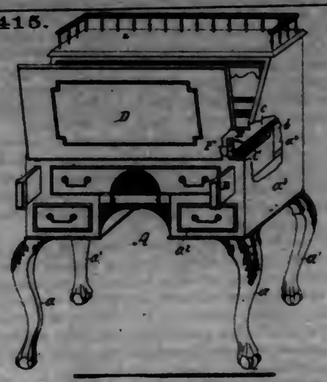
2. The conducting wire or cable, cut-off switch, electro-magnet, and an armature connected to a rod having a forked end, in combination with a roller-pin and balance-wheel of a lever clock-movement, as shown and described, and for the purpose specified.

407,415. DEVICE FOR ACTUATING THE SLIDES OR RESTS OF DESKS. FRANK D. POOLEY and EDWARD P. POOLEY, Philadelphia, Pa. Filed Mar. 26, 1889. Serial No. 305,169. (No model.)

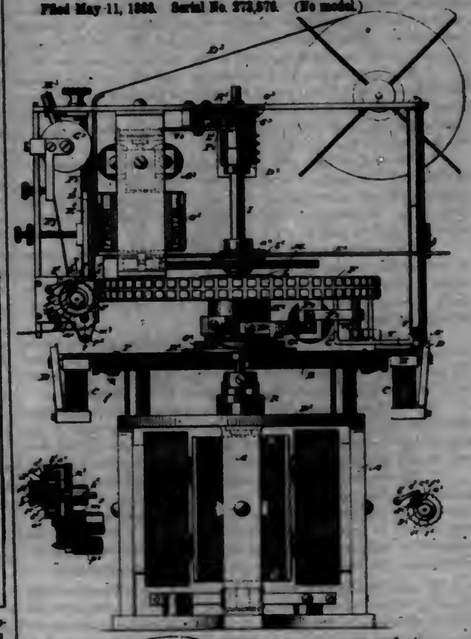
Claim.—The combination, with the desk A and the lid or flap D, of two flanged channeled bars C and F, hinged to each other at G and G' and secured in the frame-work of said desk and lid or flap, and forming the hinge-connections between the lid or flap and the desk and bars E, pivotally connected at one of their ends to the channeled bars F and at their opposite ends to the flanged rails c, which fit in and are afforded a freedom of movement through the channeled bars C to actuate the slides or rests B of the desk, all arranged as shown, and for the purposes described.

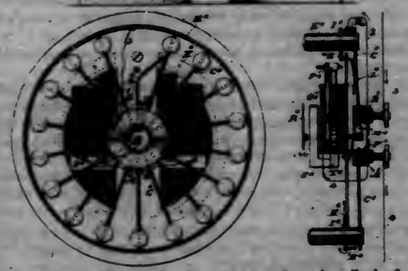


407,415.



407,416. STATION AND WAIT PRINTER. MAJOR D. PORTER, Brooklyn, N. Y., assignor to the Porter Teletype Company, of New York. Filed May 11, 1888. Serial No. 273,876. (No model.)





Claim.—1. The combination, substantially as described, of a series of independent controlling-circuits, a rotary type-wheel controlled in common by said circuits and bearing characters corresponding to the designation of the circuits, a wait or message printing wheel, a transmitter therefor placed in each of the independent circuits and having a series of keys adapted to act upon the circuits at different points in the revolution of a circuit-closing arm connected with said circuit, an actuating or controlling magnet for said circuit-closing arm, and a pulsator connected with the driving mechanism for the message-wheel, as and for the purpose described.

2. The combination of the revolving stop-arm, stop devices therefor, the independent controlling-circuits separately connected with circuit-closing stations, an impelling electric motor in the normally-closed common connection for said circuits, a normally-open local circuit for the motor controlled by the stop devices, and a circuit-breaker between the motor and each line, said circuit-breaker being connected with the stop devices, as and for the purpose described.

3. The transmitter on a normally-open circuit and having a series of circuit-closers each adapted to close the normally-open circuit, in combination with the commutator or circuit-changer provided with a series of contacts severally connected with the normally-closed contacts of circuit-breakers corresponding to the circuit-closers, as and for the purpose described.

4. The combination, with the station-indicating mechanism, of a want or message receiver, electric switches disposed at the various stop-points of the station, indicating mechanism for controlling the connection of the message-receiver to the wire of a station calling, an actuating arm or lever controlled in its action by the device which brings the station-indicating mechanism to rest, and a simultaneously-actuated switch-contact in the connection of the circuit calling through the common return-wire.

5. The combination, with an impelling-shaft, of a room or station indicating device frictionally connected with said shaft, a series of separate stations or circuits controlling the position of the same, a want or message transmitter in each circuit, and a want or message indicator or receiver common to the circuits and also frictionally connected with the impelling-shaft, as and for the purpose described.

6. The combination, with a rotating stop-arm and stop devices therefor controlled from each of a number of independent stations or lines, of an impelling electric motor in the common return for said lines and a frictional connection between the motor and the shaft of the stop-arm.

7. The combination, with the rotating stop-arm and a number of independent lines, each controlling a stop device for said arm, of an impelling electric motor and an electric switch controlled by the stop devices for completing a local circuit for the motor when the stop-arm is brought to rest.

8. The combination of the station-indicating type-wheel, a series of independent controlling-circuits therefor, a message or want type-wheel, a transmitter for the latter in each of the independent circuits, and a printing-magnet for the same having also a printing pad or surface for the station-indicating wheel.

9. The combination, with the type-wheel and the printing pad or lever therefor, of the feed-roll, the actuating-spring, the winding-pawl for said spring actuated by the shaft which drives the type-wheel, and a stop or detent for the feed-roll carried by the printing-lever.

10. The combination, with the rotary stop-arm and its impelling electric motor, of a local circuit-closer for the latter controlled by the stop devices and a circuit-breaking magnet moving with the stop-arm and controlling the said local circuit, as and for the purpose described.

11. The combination, with a rotary station or circuit indicating device controlled from a number of separate stations, of a series of stop-magnets disposed in the circumference of revolution of said device, a latch or lock for temporarily holding the armature of the magnets in stopping position, and the releasing electro-magnet for withdrawing the latch or lock, as and for the purpose described.

12. The combination, with the room or station indicator and the impelling electric motor therefor included in a circuit common to the several stations, of a local circuit-closer for said motor, a message or want indicating wheel driven by the motor, a magnet for opening the local circuit, and a circuit-controller for said magnet actuated by the want-indicating mechanism at or near the zero-point, as and for the purpose described.

13. The combination, with a rotary stop-arm and a catch or latch for holding the same in the station or circuit indicating position, of a want or message receiver, an unlatching electro-magnet for the stop-arm, and a circuit-controller for the latter governed by the want or message receiver, as and for the purpose described.

14. The combination, with the station or circuit indicator controlled by a number of independent circuits, as described, of an alternating-current pulsator in a circuit common to said lines, a type-wheel having a controller-magnet also in said common circuit, and a transmitter at each station having a controlling or actuating magnet responsive to the reversals of current.

15. The combination of a series of transmitters in normally-open circuits, a station-indicator common to the same, a series of stop-magnets, one in each normally-open circuit, a want or message indicator having an actuating or controlling magnet responsive to reversals of current, an alternating-current pulsator driven with said indicator, and at each station an actuating or controlling magnet for the transmitter responsive also to reversals of current.

16. The combination, with the type-wheel and the tape-ejecting mechanism, of an actuating-spring for said mechanism and a rewinding device for the spring driven by the actuating-power of the type-wheel.

17. The combination, with the type-wheel, of the spring-actuated feed-wheel for ejecting the printed strip or tape, a detent or catch for said feed-wheel governed by the printing pad or lever, and a winding-pawl mounted on a support driven by the actuating-motor which is connected with the type-wheel.

18. The combination, with the rotating stop-arm, of a series of stop electro-magnets, a catch or latch carried by the stop-arm for engaging and holding up the armature of any magnet in action, and an unlatching-magnet and armature rotating with the stop-arm, as and for the purpose described.

19. The combination, with a station or circuit indicator controlled by independent circuits leading from separate transmitting-stations, and each including the circuit, of a stop-magnet, a latch or lock for holding the indicator in station-indicating position, and a magnet independent of a stop-magnet for unlocking said latch or lock, as and for the purpose described.

20. The combination, with the spring-actuated feed-wheel, of the rewinding ratchet-wheel and its retaining-pawl and a lifting arm or projection for the latter connected with the wheel by devices having a lost motion, as described.

21. The combination, with the rewinding-ratchet-wheel, of the lifting arm or projection for the retaining-pawl of said wheel and a resetting arm or projection for carrying the lifting device beyond lifting position, said resetting-arm being connected with the spring-driven wheel or shaft, which is intermittently released

22. The combination of a series of push-buttons, each connected with a spring arm or contact and normally tending to make connection electrically with a common plate or stop, of a second plate or stop common to the push-buttons and connected with the zero or unison contact of the rotary commutator, and means controlled by each push-button for completing the electric circuit of the transmitter through said zero or unison contact when any button is depressed.

23. The combination, with the rotary commutator and a unison or zero contact therefor connected to a series of normally-open switches or circuit-closers, of a series of circuit-breaking switches corresponding to the wants or calls and connected normally with contacts of the commutator and a controlling or actuating magnet for said commutator in the line-circuit common to said contacts, as and for the purpose described.

24. In a combined station and want call apparatus, a series of controlling-transmitters in independent circuits, each normally open at the transmitter, each of said transmitters having a series of keys corresponding to the wants or calls and arranged to act on the circuit at different points in the revolution, of a circuit-controlling arm and a circuit-closing device connected with each of the series of keys for completing the normally-open circuit when the key is depressed, whereby the circuit may be closed and the apparatus started into operation on the depression of any key, as and for the purpose described.

25. The combination, with the dial-transmitter, of the supplemental dials or indexes and connecting or switch devices for connecting the instrument with the lines corresponding to said dials, as and for the purpose described.

26. The combination, with the dial-instrument having means for connecting it with different central stations, of the supplemental cards or indexes B^1 B^2, inscribed with the wants or messages to be transmitted to such stations and with characters opposite the wants corresponding to the push-buttons of the transmitter.

27. The combination of the series of contacts, the contact-spring moving over the same, but normally out of connection therewith, the stop-magnets for controlling the movements of the moving support for the contact-spring, and an actuating arm or lever carried by the supporting-arm for the spring and arranged to engage with a stop and bring the spring into connection with a contact, as and for the purpose described.

28. The combination, with the type-wheel and its printing-magnet, of a circuit-controller for the latter carried by a reciprocating arm, a cam of irregular outline normally holding the circuit-controller out of operating position and engaging intermittently with a driving-surface which tends to rotate the cam into position for permitting the circuit-controller to act, and a spring which tends to rotate the cam in the opposite direction.

29. The combination, with the rotary arm or station-indicator, of stop devices for stopping the same at any one of a number of points in its revolution, a lock for holding the stop in position to arrest the indicator, and a releasing-magnet acting on the latch at any point in the revolution of the wheel.

30. The combination, with the station and want call at the common office, of a series of transmitters, each on normally-open circuit, and a commutator in each transmitter having a series of normally-open contacts connected, consecutively, to a series of normally-closed switches corresponding to the wants or calls and each adapted to open the circuit of the commutator-contact, as and for the purpose described.

31. In a combined station and want call apparatus, a series of transmitters on normally-open circuits, a commutator in each transmitter, a step-by-step controlling-magnet therefor in each transmitter, means for closing a branch circuit independent of the commutator, and a pulsator at an office common to the circuits, whereby the commutator may be caused to swing from its zero or unison point toward the want or call indicating point in unison with the central-station device.

32. In a transmitter, the combination of a series of push-buttons connected severally with the contacts of a commutator or circuit-changer, of a branch of the circuit upon which the transmitter is placed around the contacts of the commutator and the circuit-closer operated by each push-button for closing said branch upon depression of any key.

33. The combination, with the transmitter at a station on a normally-open circuit, of a commutator having a series of circuit-closing points and a zero-contact on normally-open circuit, as described, and a controlling-magnet in the circuit of the commutator, whereby the instrument is brought to rest automatically on the completion of its revolution.

34. The normally-open circuit-transmitter having a fixed zero-contact on normally-open circuit for bringing the transmitter to rest at every complete revolution, a controlling-magnet in the circuit of the commutator, a branch circuit, and means for closing said branch circuit at any point in the revolution of the transmitter independent of the zero-contact.

35. The combination of the series of independent circuits connected to a common receiving mechanism, a magnet in each circuit, a rotary transmitter controlled by each magnet, an open-circuiting zero-point for bringing the transmitter to rest at the completion of each whole revolution, a branch around it, a circuit-closer for the same, and a pulsator at the common station.

36. The combination, with the room or station indicating type-wheel, of a want or message type-wheel, a series of controlling-stations in independent circuits, a controlling-magnet for the want or message type-wheel in a circuit common to said stations, a paper strip common to both type-wheels, a printing-lever, and a spring-driven paper-ejecting mechanism controlled by the printing-lever.

37. The combination, with a station type-wheel controlled from a series of independent lines common to said wheel, of a want or message printer common to said lines and placed in a connection normally or when the apparatus is at rest disconnected from said lines, transmitters for the want or message printer at stations on each of said independent lines, and a circuit-closer connected with the several lines, and the want or message printer common to them for closing the connection of the line calling with said printer.

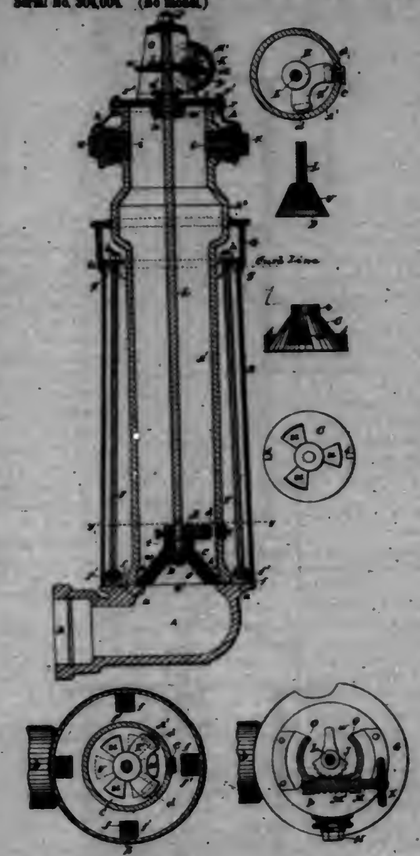
38. The combination, substantially as described, of a series of independent controlling-circuits, a rotary type-wheel controlled in common by said circuits, a want or message type-wheel having a controlling-magnet in a connection common to said independent controlling-circuits, a transmitter therefor in each circuit, a paper strip common to the two type-wheels, and a printer for taking the impression from the first-named type-wheel controlled by the transmitter of the want or message type-wheel.

39. The combination, substantially as described, of a series of independent circuits, a station common to said circuits, a type-wheel controlled by the same and bearing characters corresponding to the designations of the circuits, a transmitter in each circuit having a rotary commutator and controlling-magnet, a want or message type-wheel common to the circuits and controlled by said transmitters, and a paper strip and printing device common to the said type-wheels.

40. The combination, substantially as described, of a series of independent circuits, each having a station containing a transmitter, an office common to said circuits containing a station type-wheel, with stop devices for bringing the same to rest in position corresponding to the separate circuits closed, a message type-wheel having a controlling-magnet in a connection common to the said independent circuits for printing the message sent by any transmitter, and a resetter for the station type-wheel controlled by the message-receiver, whereby on the completion of the message from any station the station type-wheel may be automatically freed and permitted to rotate into position for printing the number of another station.

41. The combination, substantially as described, of a number of separate transmitting-stations in lines branching from a common office, a transmitter at each station having a rotary circuit closer and breaker and controlling-magnet for the same in the circuit of the transmitter, an office common to the circuits containing a type-wheel bearing characters corresponding to the stations and controlled in common by the same, a second or message type-wheel mounted beside the first, a controlling-magnet for the message type-wheel in a connection common to the independent circuits, and switches or circuit-closers connected with the several circuits and with said magnet for throwing the same into the circuit with the magnet and circuit closer and breaker of the transmitter which is operated.

407,417. FIRE-HYDRANT. John W. Ramsey, Beaver Falls, Pa., assignor of one-half to M. M. George, same place. Filed Mar. 20, 1888. Serial No. 304,004. (No model.)



Claim.—1. In a fire-plug, the combination, with a sub-chamber, a stand-pipe, a conical valve, a conical removable valve-seat, a valve-rod, and gearing to revolve the valve-rod, of a drip-orifice formed in the stand-pipe wall and a bifurcated drip-gate arm attached to the valve-rod, which is adapted to close the drip-orifice when the main valve is opened, substantially as set forth.

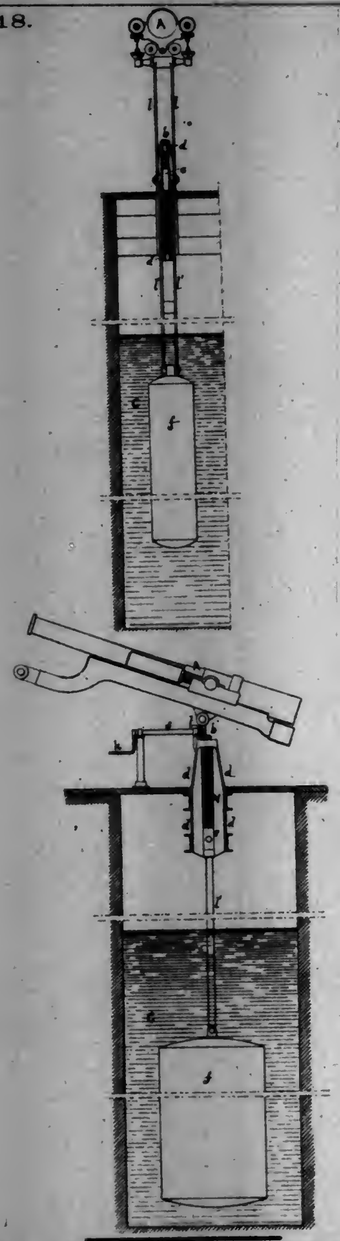
2. In a fire-plug, the combination, with a sub-chamber having a lateral and vertical outlet, a stand-pipe, bolts to connect the stand-pipe and sub-chamber, a hollow conical valve, a hollow conical valve-seat, both valve and seat having ports which are adapted to align with each other, a valve-rod, and worm-gearing which will revolubly move the valve-rod and attached valve, of a drip-orifice and a drip-closing gate attached to the valve-rod which has two limbs, either of which will close the drip-orifice when the plug is discharging water and uncover said orifice when the plug-valve is closed, substantially as set forth.

407,418. GUN-MOUNTING HAVING A DISAPPEARING ACTION. Henri Schneider, Paris, France. Filed July 21, 1887. Serial No. 244,960. (No model.)

Claim.—1. The combination of a gun and its mounting or carriage with a well or pit below it containing a liquid, a closed air-vessel immersed in the liquid, rods connecting the air-vessel with the gun mounting or carriage, and means for raising or lowering the gun, its mounting or carriage, and the plunger, substantially as described.

2. The combination of a gun-mounting with a well or pit below it containing a liquid, a buoyant plunger immersed in the liquid, supporting-rods connecting the plunger with the gun-mounting above it, a nut carried by the rods, and an adjusting-screw adapted to the nut to raise and lower the gun-mounting and plunger.

407,418.

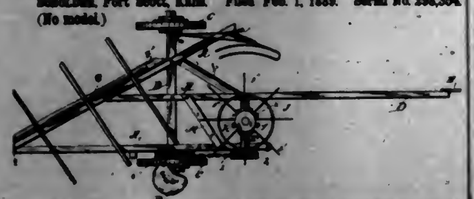


and the diagonally-pivoted dropper Q, located at the rear of the knife for discharging the stalks, substantially as described.

2. The combination of the V-shaped carriage-frame, the angularly-disposed knife L, connected to the forward part thereof, diagonally-pivoted dropper Q behind the knife, vertically-adjustable feeder M, and vertically-adjustable reel *j' j'* K, whereby the stalks as they are cut by the knife are reeled onto the dropper and discharged from the carriage, substantially as described.

3. The combination of the V-shaped carriage-frame A, angularly-disposed knife L, connected to the forward part thereof, the diagonally-pivoted dropper Q, located at the rear of the knife, the vertically-adjustable feeder or guard M, secured to the forward part of the carriage and near one end of the axle, the vertically-adjustable reel *j' j'* K, adjusted by the set-screw *k*, said reel being located at the forward part of the carriage A and adjustably secured to the vertical shaft F, having gear-wheel *f* secured upon its lower end and meshing with gear-wheel *f'* upon and near the end of the transverse shaft G, sprocket-pinions *h i*, and sprocket-chain I, all arranged and operated substantially as described, and for the purposes set forth.

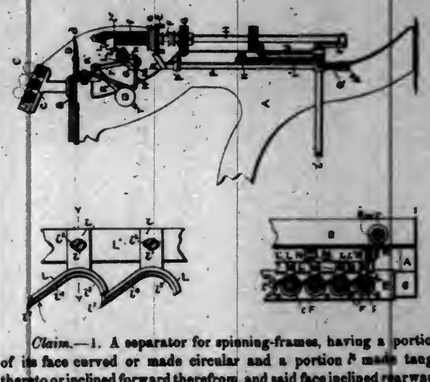
407,419. CORNSTALK CUTTER OR HARVESTER. EDWARD F. SWOLDER, Fort Scott, Kans. Filed Feb. 1, 1889. Serial No. 298,364. (No model.)



Claim.—1. The combination of the V-shaped carriage-frame, the angularly-disposed knife L, connected to the forward part thereof,

407,420. THREAD-SEPARATOR FOR SPINNING-FRAMES. WILLIAM B. SHARPLES, Fall River, Mass. Filed June 4, 1888. Serial No. 276,094. (No model.)

Brief.—The invention consists in the improved construction and arrangement of the thread-separators and of the means for moving them.



Claim.—1. A separator for spinning-frames, having a portion *a* of its face curved or made circular and a portion *b* made tangent thereto or inclined forward therefrom, and said face inclined rearwardly in an upward direction, and a support for the separator, which support is exterior to and independent of the ring-rail, substantially as and for the purposes specified.

2. A separator for spinning-frames, having a portion *a* of its face curved or made circular and a portion *b* made tangent thereto or inclined forward therefrom, and said face inclined rearwardly in an upward direction, substantially as set forth.

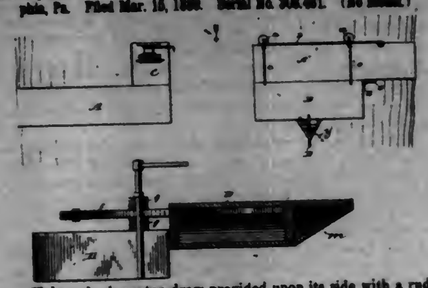
3. The combination, with the spindles, of a series of separators, crank-arms upon which they are mounted to swing in the arc of a circle lying in a horizontal plane, whereby the outer ends or points of the separators may be brought farther forward and nearer to the spindles, supports for said arms, and means, substantially as described, for giving a rearward movement to the separator, substantially as set forth.

4. The combination, with the spindles, of a series of separators, crank-arms upon which they are mounted to swing in the arc of a circle lying in a horizontal plane, whereby the outer ends or points of the separators may be brought farther forward and nearer to the spindles, supports for said arms, and means, substantially as described, for giving backward and forward movements to the separators, substantially as set forth.

5. The combination, with the spindles of a spinning-frame, of a series of separators having ends *a*, which, when in normal position, project forward of a line passing through the spindles, arms and supports therefor, upon which arms the series of separators are mounted to swing in a horizontal plane in the arc of a circle, the pivotal points of the arms on the supports being in the rear of a line passing through the points where the arms are pivoted to the series of separators, and means, substantially as described, for giving a rearward movement to the series of separators, substantially as set forth.

6. The combination of a series of separators, crank-arms upon which they are mounted to swing in a horizontal plane, supports for said arms, which supports are independent of the ring-rail of the machine, a vertically-reciprocating rod, and means, substantially as described, between said rod and separators for giving a rearward movement to the separators, substantially as set forth.

407,421. PONTON-BRIDGE. SYLVESTER H. STEWART, Philadelphia, Pa. Filed Mar. 15, 1889. Serial No. 303,461. (No model.)

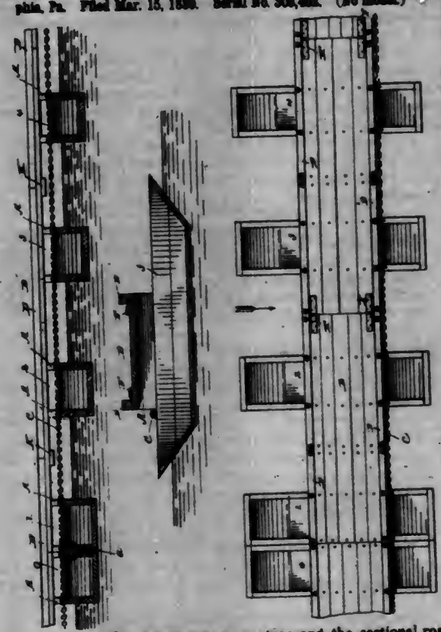


Claim.—1. A ponton-draw provided upon its side with a rudder arranged and adapted to operate substantially in the manner described.

2. The combination, with the floating causeways or main portions of the bridge, having a draw-opening between them, of a floating draw adapted to span the opening and movable to and from the same, and a rudder or rudders on the draw whereby the current-power is caused to move the draw, substantially in the manner hereinbefore set forth.

3. The combination of the floating causeways or main portions of the bridge, the draw, the draw supporting and guiding cable, and the fastenings whereby the draw when opened can be secured to the main portions of the bridge while the cable is slackened, substantially as and for the purposes hereinbefore set forth.

407,422. PONTON-BRIDGE. SYLVESTER H. STEWART, Philadelphia, Pa. Filed Mar. 15, 1889. Serial No. 303,462. (No model.)



Claim.—1. The catamarans or pontons and the sectional roadway thereon, in combination with the stringers or binders D, extending each from about the middle of one section of the roadway to the middle of the next adjoining section, as described.

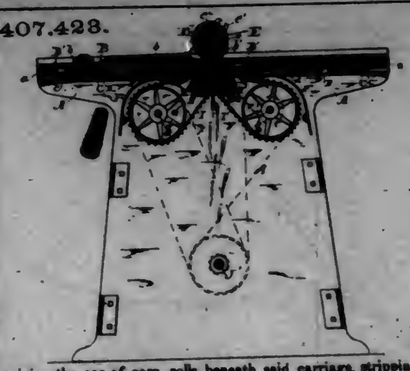
2. The combination of the catamarans or pontons, the sectional roadway thereon, the longitudinal stringers or binders D, and the transverse stays K for stiffening and binding together the roadway, substantially as described.

3. The catamarans or pontons, in combination with the sectional roadway thereon, the stringers or binders D, the chain or rope C, and the hinges F, substantially as described.

407,428. CORN-HUSKING MACHINE. HENRY R. STINCHFIELD, Portland, Me. Filed Sept. 14, 1888. Serial No. 285,265. (No model.)

Claim.—1. In a machine for husking corn, the combination of a reciprocating carriage, an open-bottomed receptacle therein for containing the ear of corn, rolls beneath said carriage, stripping-bands running over said rolls and provided with yielding fingers adapted to operate on said ear, a slide arranged to close the bottom of said receptacle during a part of the forward motion of the carriage, and an apron beneath said carriage whereon said ear is discharged, substantially as shown.

407,428.



2. In a machine for husking corn, the combination of an open-bottomed receptacle for the ear, a pair of small rolls placed face to face beneath said receptacle, a pair of endless bands provided with yielding fingers adapted to run over said small rolls in opposite directions, and other supporting-rolls for said bands, substantially as shown.

3. In a machine for husking corn, the combination of a reciprocating carriage, an open-bottomed receptacle therein for containing the ear of corn, rolls beneath said carriage, and stripping-bands running over said rolls, and means for holding said ear in contact with said stripping-bands, substantially as shown.

4. In a machine for husking corn, the combination of a reciprocating carriage, an open-bottomed receptacle therein for containing the ears of corn, stripping-bands, substantially as shown, beneath said carriage, and a rotating cylinder above said stripping-bands adapted to rotate said ear in contact with said stripping-bands.

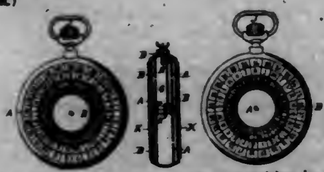
5. In a machine for husking corn, the combination of a reciprocating carriage, an open-bottomed receptacle therein for containing the ears of corn, stripping-bands, substantially as shown, beneath said carriage, a slide for closing said receptacle while the same is approaching the stripping-bands, and means for withdrawing the said slide.

6. In a machine for husking corn, the combination of a reciprocating carriage, an open-bottomed receptacle therein at each end for containing the ear of corn, and stripping-bands beneath said carriage, substantially as shown.

7. In a machine for husking corn, the combination of a reciprocating carriage, an open-bottomed receptacle therein for containing the ear of corn, a slide for closing the bottom of said receptacle, a spring for retracting said slide, a latch for locking the same, and a pin for disengaging said latch as the carriage moves forward, substantially as shown.

407,424. WITHDRAWN.

407,425. CRYPTOGRAPHIC APPARATUS. ALEXIS VON SIMON, Vienna, Austria-Hungary. Filed Sept. 3, 1888. Serial No. 284,457. (No model.)

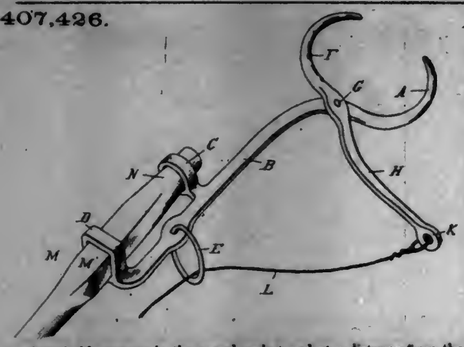


Claim.—A cryptographic apparatus comprising, in combination, two parallel annular fixed ring-disks and two rotary circular disks of the same axis concentric with said annular disks, respectively, said circular and ring disks having on their exposed or reading surfaces visible characters, the characters on the circular disk on one side being repeated on the annular disk on the opposite side, substantially as set forth.

407,426. DEVICE FOR CATCHING ANIMALS. CLAYTON WEBB, Flat Rock, Mich. Filed Mar. 11, 1889. Serial No. 302,774. (No model.)

Claim.—1. In an animal-catcher, the combination of the stationary jaw A, provided with the shank B, and having the round and square sockets C and D formed therein, the pole M, with its end formed

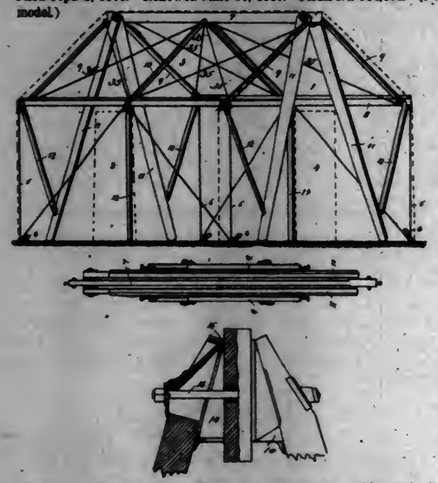
407,426.



to detachably engage in the round socket and at a distance from the end with a squared portion to engage the square socket, the ring E, and the movable jaw F, provided with the shank H and rope L, all arranged and combined to operate substantially as described.

2. An animal-catcher consisting of the shank B, formed with curved jaw A, and with a square socket D at the end and a round socket C between the ends, the ring E on the shank between the sockets, the movable jaw pivoted to the stationary jaw and provided with a shank, the rope L, and the pole formed at its end with a tapering round portion and at a distance from the tapered end with a squared portion, substantially as shown and described.

407,427. TENT-FRAME. GEORGE W. ZIEGLER, Philadelphia, Pa. Filed Sept. 8, 1888. Renewed June 20, 1889. Serial No. 314,891. (No model.)



Claim.—1. A frame for wall-tents, consisting of a ridge-pole 7, having at the ends diverging legs 11, pivotally attached thereto, and inclined rafters 9, secured at the lower ends to eaves-strips 8, supported and braced by an inclined rod 12, supporting the eaves-strip 8 from the lower portion of the leg, substantially as shown and set forth.

2. A frame for wall-tents, having parallel eaves-strip 8, connected by end rafters 9 and 10 and intermediate rafters 10 to a ridge-pole 7, supported by diverging legs 11 and inclined supports 12, extending from the ends of the eaves-strips 8 to the lower portion of the legs 11, and by an intermediate support 13, reaching from the central rafter 10 to the ground, combined with vertical cords 5 and pin 6, adapted to be inserted in the earth, substantially as set forth.

3. A frame for wall-tents, consisting of a ridge-pole 7, supported by divergent folding legs 11 and connected by inclined rafters 9 and 10 with horizontal eaves-strips 8, supported by diagonal braces 12 and braced and held downward by cords 5 and 40, secured to pins 6, substantially as set forth.

4. In combination with a wall-tent frame consisting of a ridge-pole 7, supported by folding legs 11 and united to horizontal eaves-strips 8 by inclined rafters 9 and 10, supported at the lower ends by braces 12, the diagonal braces 35, extending obliquely from the intersection of one rafter with the ridge-pole to the intersection of another rafter with the eaves-strip, substantially as and for the purpose set forth

5. In a frame for wall-tents, the plate 17, having flanges 18, embracing the ridge-pole 7, and eyes 19, holding the hooks 20 upon plates 21, secured to the rafters 9, substantially as set forth.

6. In a frame for wall-tents, the plate 17, having flanges 18, embracing the ridge-pole 7, eyes 19, holding the hooks 20 upon plates 21, secured to the rafters 9, and eyes 30, arranged to hold the ends of the braces 35, substantially as set forth.

7. In a frame for a wall-tent, the plate 17, provided with flanges 18, embracing the ridge-pole 7, eyes 19, holding the hooks 20 on plates 21, attached to the rafters 9 and 10, and hooks 38 and eyes 39, arranged to fit and engage in similar hooks and eyes upon similar plates upon the ridge-poles of similar contiguous tents, substantially as set forth and described.

8. In a frame for wall-tents, the described plate 17, provided with eyes 19, 41, and 39, respectively fitting hooks 20, braces 35, and the hook 38 upon adjacent similar plates for uniting tents, substantially as set forth.

9. In a frame for wall-tents, the plate 24, fitted to the lower ends, rafters 9 and 10, provided with a stem 23, having a head 25, fitting in a fork 26, for the purpose of clamping the eaves-strips 8 to the rafters 9 and 10, and having a spur 28, constructed and arranged to hold in a canvas cover, substantially as set forth and described.

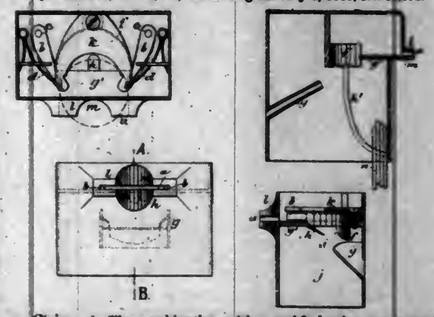
10. In a wall-tent frame, the plates 24, attached to the rafters 9 and 10, provided with stems 23, reaching across the eaves-strips 8 and through the forks 26, and having heads 25, arranged to clamp the eaves-strip 8 between the ends of the rafters 9 and 10 and the forks 26, and having eyes 29 for the attachment of the cords 5, and braces 35, substantially as shown and described.

11. In a wall-tent frame, the described plates 24, for attaching the rafters 9 and 10, eaves-strips 8, and braces 12 and 13, provided with eyes 37 and hooks 38, adapted to fit in and on similar hooks and eyes on similar plates on contiguous tent-frames, for the purpose of uniting the covers of tent-frames in a continuous series, substantially as set forth.

12. The combination of the ridge-pole 7, flexibly connected to the rafters 9 and 10 by the plates 17 and 21, attached thereto with the eaves-strips 8, and braces 12 and 13, detachably connected by the plates 24, and fork-plates 27, and the whole braced diagonally by the braces 35, substantially as shown and described.

13. The plates 27, attached to the braces 12 and 13, having tapering forks 26, in combination with the plates 24, attached to the rafters 9 and 10, having stems 23, and heads 25, for clamping the eaves-strips 8, substantially as set forth and shown.

407,428. APPARATUS FOR PREVENTING FRAUD IN VENDING-MACHINES. EDWARD P. APPLEYARD and JAMES JOHNSON, Bolton, assignors to Charles Arthur Barrett, London, England. Filed Oct. 15, 1888. Serial No. 288,148. (No model.) Patented in England July 10, 1887, No. 10,000; in France Apr. 24, 1888, No. 190,205; in Germany Apr. 27, 1888, No. 45,067, and in Belgium May 1, 1888, No. 81,668.



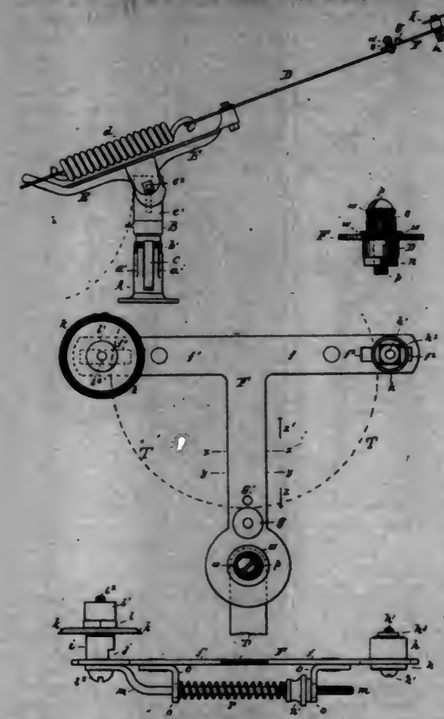
Claim.—1. The combination, with a casing having a money-slot, of a pair of similar spring catches or clips operating, substantially as set forth, to grasp a disk at its opposite edges, and whereby while they will allow the passage of genuine coin into the machine between the two clips the ends of both clips will by the spring action indent the periphery of soft disks so as to hold and prevent them being passed into the apparatus, all substantially as shown and described.

2. In a vending apparatus, a coin-receiving chamber made with a semicircular shroud or flange, as set forth, and for the purpose hereinbefore described.

3. In a vending-machine, a money chamber or receptacle the bottom of which is cut away to a width less than half the diameter of the coin required to operate the apparatus, leaving only a tongue or projection for the purpose of preventing washers being used to operate the machine, substantially as described.

4. In combination with the casing having a coin-receiving duct, the projection *h'*, made in the form of a hook, adapted to receive and hold washers which may be passed into this duct.

407,429. TARGET-TRAP. WILLIAM T. BEST, Minneapolis, Minn., assignor to Marion L. Best and Mattie M. Best, both of same place. Filed Jan. 28, 1889. Serial No. 297,778. (No model.)



Claim.—1. In combination, in a target-carrier, a spring-actuated post having a notch for engaging the rim at one side of a target and adjustable elastic posts for engaging opposite points of the rim, substantially as set forth.

2. In a target-trap, the combination, with the throwing-arm thereof, of a target-carrier pivoted thereto and comprising a T-shaped frame having a spring-actuated clamping device on one arm and adjustable elastic stops on the opposite arm and stem, substantially as set forth.

3. In a target-carrier, a frame having slots at either side of the middle, an elastic block over one of said slots held by an adjusting-bolt, a post over the other slot provided with devices for engaging the rim or surface of a circular target, a spring-actuated rod, a bolt connecting said rod to said post, and a stop on the frame in rear of said post and block, substantially as set forth.

4. In combination, in a target-carrier, an adjustable spring-actuated rotary disk for engaging one side of a target above its rim and adjustable elastic stops for its rim at the opposite points, substantially as set forth.

5. In a target-carrier, a pair of pivoted curved arms, a sliding target-clamp on the one arm having a spring connecting it with the other arm, an adjustable stop on the latter arm, and a stop at the pivotal point, substantially as set forth.

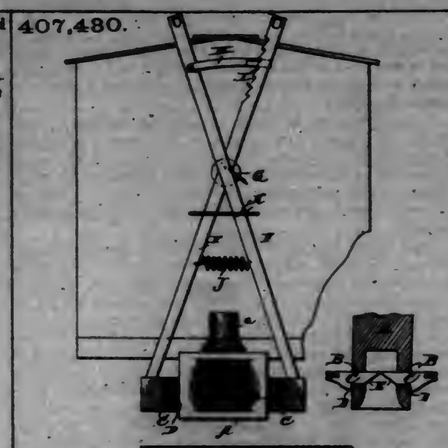
407,480. CAR-COUPLING. WESTHILL J. BOSHER, Montague, Tex. Filed Apr. 11, 1888. Serial No. 306,389. (No model.)

Claim.—1. The combination of the crooked levers, the pawl pivoted to the upper end of one of the said levers, engaging ratchet-teeth on the upper end of the other lever, and the latches carried by the lower ends of said levers, as set forth.

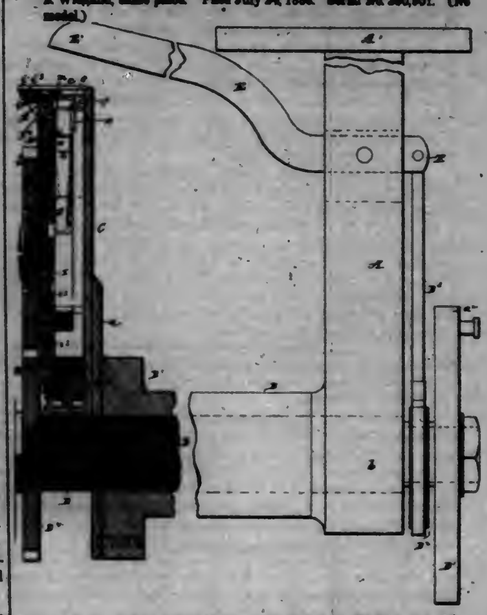
2. The combination of the crooked levers, the bail extending over the same, the spring secured to and extending between said levers, and the latches carried by said levers, as set forth.

3. The combination, with the draw-head, of the cylinder *a* on the upper side thereof, the latches moving transversely in the draw-head and adapted to support the coupling-pin in said cylinder, and mechanism for operating said latches, as set forth.

407,480.



407,481. STAPLE FORMING, SETTING, AND CLINCHING MACHINE. JOHN CRAWFORD, Reading, Pa., assignor of one-half to Edwin R. Wiegand, same place. Filed July 24, 1888. Serial No. 280,901. (No model.)



Claim.—1. In a staple forming, setting, and clinching machine, the combination, with a casing, of piercing-awls, a staple-former, and a staple-clamp, the several parts being constructed and arranged to reciprocate in a single slot, and adapted to pierce the fabric and form and set the staples, substantially as set forth.

2. In a staple forming, setting, and clinching machine, the combination, with a casing having a slot, of a pair of awls adapted to slide in the slot on guide-bars, a staple-former that is located between the awls and their supporting-bars, and a staple-clamp that slides between the strips of the staple-former, substantially as set forth.

3. In a staple forming, setting, and clinching machine, the combination, with a casing having a slot, staple forming, setting, and clinching mechanism located in this slot and adapted to slide therein, of a wire-feeding device and a wire-cutting device that coact together and also with the staple forming, setting, and clinching devices to automatically form a staple of wire, set it in fabric, and clinch it there, substantially as set forth.

4. In a staple forming, setting, and clinching machine, the combination, with a casing and a support therefor, of staple forming, setting, and clinching devices located in a slot of the casing so as to slide in it, staple-wire-feeding mechanism and a wire-cutting device, also supported on the casing, and means to operate these devices and me-

chanical parts in harmonious relation to each other, so as to feed a blank of wire, sever it from a roll, form it into a staple, pierce holes in fabric to receive it, set it in these holes, and clinch it there, substantially as set forth.

5. In a staple forming, setting, and clinching machine, the combination, with a pair of awls mounted on guide-bars to reciprocate and pierce fabric, and an adequate support for these guide-bars that will permit them to slide vertically, of a staple-forming device, which is adapted to slide between the guide-bars that carry the awls and bend a staple into proper form to enter the pierced holes, substantially as set forth.

6. In a staple forming, setting, and clinching machine, the combination, with a casing, of guide-bars supported to slide in this casing and awls that are spring-mounted on the guide-bars and adapted to be spread apart by pressure and return to normal position when the cause of divergence is removed, substantially as set forth.

7. In a staple-forming, setting, and clinching machine, the combination, with a casing properly supported to receive fabric on its upper peripheral surface, of a wire-feeding device, a wire-cutting mechanism, a staple-former, a staple-clamp, two piercing-awls, and a staple-clinching device, all adapted to be moved in proper time with regard to each other, to feed a piece of wire, cut it off the proper length, bend it, pierce fabric, insert the bent staple in the fabric, and clinch it, substantially as set forth.

8. In a staple forming, setting, and clinching machine, the combination, with two guide-bars, of two plate-springs having inclines formed on their adjacent faces near their free ends, and two awls secured in these free ends, substantially as set forth.

9. In a staple forming, setting, and clinching machine, the combination, with a casing and two guide-bars, of two plate-springs, an awl affixed in the free end of each spring, inclines formed on the adjacent faces of the plate-springs near their free ends, and a staple-former that is located between the guide-bars, the ends of which engage the inclines and spread the awls apart when the guide-bars are retracted, substantially as set forth.

10. In a staple forming, setting, and clinching machine, the combination, with a wire-feeding device that may reciprocate on the edge of a circular casing, a wire-cutting device that severs the proper length of wire for a staple, and means to move these devices harmoniously, of two guide-bars, two plate-springs located in recesses of the guide-bars, each spring having an inclined surface formed near its free end to engage a staple-former and be spread apart, a staple-former which slides between the guide-bars, and a clampling device that slides within the side plates of the staple-former, all operated by a cam-plate, substantially as set forth.

407,432. DISCHARGE APPARATUS FOR COAL OR ORE BINS.

WARREN DUNBAR, Minneapolis, Minn. Filed Apr. 4, 1889. Serial No. 306,023. (No model.)

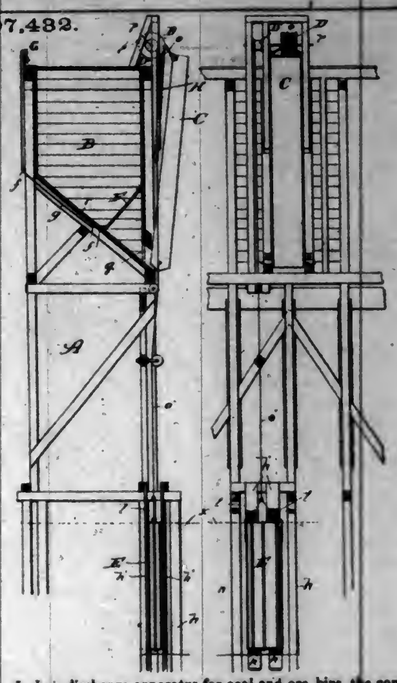
Claim.—1. In a discharge apparatus for coal and ore bins, the combination, with the dock A, having a bin B, a pivotal chute C, and means for raising and lowering the latter, of means for counterbalancing the chute, comprising a body in water and connected with the chute and adapted to be raised and lowered in the water by the adjustment of the chute, thereby automatically proportioning to each other the varying degrees of resistance of the said chute and body, substantially as described.

2. In a discharge apparatus for coal and ore bins, the combination, with the dock A, having a bin B, the pivotal chute C, and means for raising and lowering the latter, of means for counterbalancing the chute, comprising a weight E in water and connected with the chute and adapted to be raised and lowered in the water by the lowering and raising of the chute, thereby automatically proportioning to each other the varying degrees of resistance of the said chute and weight, substantially as described.

3. In a discharge apparatus for coal and ore bins, the combination, with the dock A, having a bin B, the pivotal chute C, and means for raising and lowering the latter, of means for counterbalancing the chute, comprising an oblong rectangular box flaring internally from near its upper toward its lower end and containing sand or the like, the box being connected with the chute and adapted to be raised and lowered in water by the lowering and raising of the chute, thereby automatically proportioning to each other the varying degrees of resistance of the said chute and weighted box, substantially as described.

4. In a discharge apparatus for coal and ore bins, the combination, with the dock A, having a bin B, and the pivotal chute C, of a shaft *p*, supporting drums D and D', a cable *o*, connecting the chute with the drum, means for rotating the shaft *p*, and a body in water and connected with the drum D' by a cable *o'* and adapted to be raised and lowered in the water by the adjustment of the chute, thereby automatically proportioning to each other the varying degrees of resistance of the said chute and body, substantially as described.

407,432.



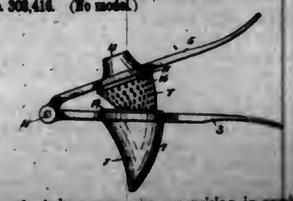
5. In a discharge apparatus for coal and ore bins, the combination, with the dock A, having a bin B, and the pivotal chute C, of a shaft *p*, supporting drums D and D', a cable *o*, connecting the chute with the drum D, means for rotating the shaft *p*, and a weight E in water and connected with the drum D' by a cable *o'* and adapted to be raised and lowered in the water by the lowering and raising of the chute, thereby automatically proportioning to each other the varying degrees of resistance of the said chute and weight, substantially as described.

6. In a discharge apparatus for coal and ore bins, the combination, with the dock A, having a bin B, and the pivotal chute C, of a shaft *p*, supporting drums D and D', a cable *o*, connecting the chute with the drum D, means for rotating the shaft *p*, an oblong rectangular box flaring internally from near its upper toward its lower end and containing sand or the like, piles *h* in the water below the dock affording a guide for the weighted box, and a cable *o'*, connecting the box with the drum D', whereby in raising and lowering the chute the weighted box is adapted to be lowered and raised in the water and the varying degrees of resistance of the chute and weight are automatically proportioned to each other, substantially as described.

7. In a discharge apparatus for coal and ore bins, the combination, with the dock A, having a bin B, and the pivotal chute C, of a shaft *p*, supporting drums D and D', a cable *o*, connecting the chute with the drum D, means for rotating the shaft *p*, a hinged boom H, extending from the bin against the cable *o*, and a body E in the water below the dock and connected by a cable *o'* with the drum D' and adapted to be raised and lowered in the water by the adjustment of the chute, thereby automatically proportioning to each other the varying degrees of resistance of the said chute and body, substantially as described.

407,433. LEMON-SQUEEZER.

CLEMENT BEHR, St. Paul, Minn., assignor of one-half to Philibert Broyer, same place. Filed Mar. 15, 1889. Serial No. 303,416. (No model.)



Claim.—1. A lemon-squeezer comprising, in combination, the handles 3 and 5, having the common hinge 11, the imperforate receiver 1, rigidly secured to one of said handles, and the hollow perforated plunger 7, secured to the other handle and adapted to fit into said receiver, said plunger being pointed and having cutting-edges and provided with the outlet 13, combined and operating substantially as described.

2. In a lemon-squeezer, the combination, with suitable handles 3 and 5, having a common hinge 11, of the imperforate receiver 1, rigidly secured to one of said handles, said receiver being curved or horn-shaped and of elliptical form in cross-section, the hollow plunger 7, rigidly secured to the other handle, curved symmetrically with said receiver and adapted to fit into said receiver, and provided with a point and cutting-edge, the perforations 15 through its walls, and the outlet 13 for the flow of juices from its interior, substantially as described.

407,434. SOLAR BATH.

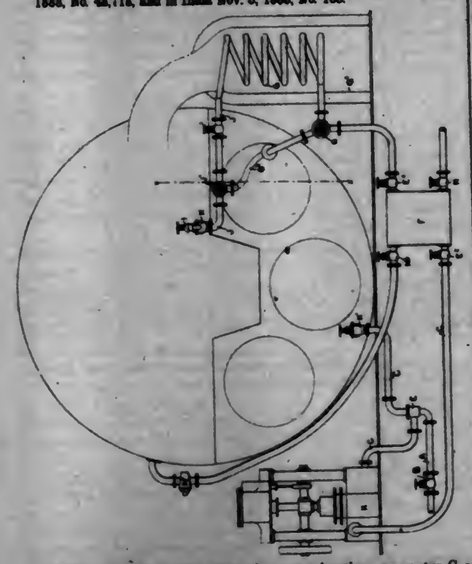
SAMUEL D. EVANS, Asbury Park, N. J. Filed Feb. 21, 1889. Serial No. 300,774. (No model.)



Claim.—A solar bath comprising a casing or cabinet having a detachable front frame and glass panel and frames, and reflector-surfaces hinged to said front frame and adapted to be turned down upon the glass panel, substantially as herein set forth.

407,435. FEED-WATER HEATING AND CIRCULATING APPARATUS.

ROBERT FRASER, Liverpool, County of Lancaster, England. Filed Oct. 13, 1888. Serial No. 288,530. (No model.) Patented in England Mar. 2, 1887, No. 3,210; in Germany Apr. 26, 1887, No. 41,176; in France Aug. 31, 1887, No. 185,748; in Belgium Aug. 31, 1887, No. 78,730; in Italy Dec. 31, 1887, XXI, 23,836, XLIV, 330; in New South Wales Mar. 12, 1888, No. 543; in Victoria Mar. 12, 1888, No. 5,602; in Austria-Hungary Mar. 22, 1888, No. 41,510 and No. 6,140; in Canada Oct. 20, 1888, No. 43,718, and in India Nov. 5, 1888, No. 105.



Claim.—1. The combination of a water-heating apparatus G or G^2 with self-acting valves H H' at each end of the circulating-pipes, safety-valve I, a pipe C, connecting one end of the apparatus with a low point of the boiler, and a second pipe J, connecting the other end with the boiler higher up, substantially as described.

2. The combination of a pipe or pipes G G^2, passing through a heating-space and having automatic cut-off valves H H', one at each end of the circulating-pipes, and a safety relief-valve I, with automatically-adjustable feed and circulating valve E, feed-pipe A, and pipe C, connected with the bottom of the boiler, substantially as described.

3. In a feed-water circulating and cleaning apparatus, the boiler, the three-way self-acting valve E, the pipe delivering the feed-water thereto, and the pipe connecting said valve with the boiler at a point below the water-line, in combination with the pump K and filter F and their connecting-pipes, and the pipe connecting said filter with the boiler, whereby on the cessation of the feed the water from the boiler automatically passes therefrom through the valve to the pump, and is forced thereby through the filter to the boiler.

4. The combination of a heating-pipe G G^2, passing through a furnace, with a pipe C, leading to the bottom of a boiler, and pipe J, leading to the boiler at or near the water-line, pipes C and J being fitted with automatic valves H H', respectively, and a safety-valve I being also on the circuit, whereby overpressure is avoided, and in case of fracture escape of water and steam from the boiler is prevented.

5. In a feed-water-circulating apparatus, the inwardly-opening self-acting stop-valve H, in combination with the outwardly-opening relief-valve I, communicating therewith and formed as one piece with the valve H.

6. In a feed-water-circulating apparatus, the self-acting stop-valve H, kept open by the force of the water entering the boiler, in combination with the relief-valve I, communicating with said valve and closed under ordinary pressure, but adapted to open under undue pressure in the valve H, whereby said valve H is rendered available both as an automatic stop-valve and a relief-valve.

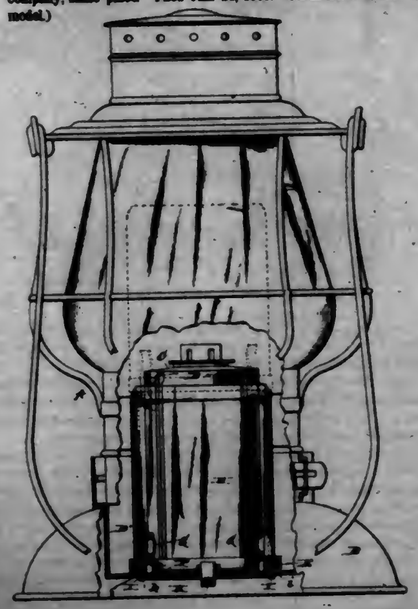
7. In a circulating apparatus for a boiler, a pipe G, and a separate furnace for heating said circulating-pipe outside the boiler, in combination with stop-valves between it and the boiler at both ends of the circulating-pipe, whereby, if the pipe fails, it can be cut off from the boiler and repaired at leisure without any stoppage of the boiler.

8. The combination of a circulating-pipe G^2, passing through the furnace of a boiler, with a self-acting stop-valve at each end capable of self-closing when the pressure on the circulating-pipe is reduced to a given amount below the pressure in the boiler, and a safety-valve on said pipe, whereby the bursting of said pipe from undue pressure is prevented, and if a fracture occurs the said pipe is instantly cut off from the boiler.

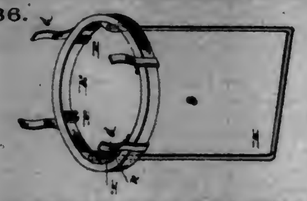
9. In a boiler having a circulating and feed-heating pipe passing through the furnace, a subsidiary circulating-pipe and subsidiary furnace besides the ordinary furnace, whereby, when an accident happens to the ordinary circulating and feed-heating pipe in the boiler-furnace, the said pipe may be put out of operation and the circulation and feed-heating may be conducted through the subsidiary pipe.

407,436. SIGNAL-LANTERN.

ADELBERT R. GIBSON, Cleveland, Ohio, assignor of one-half to the Buckeye Car Seal and Manufacturing Company, same place. Filed Jan. 30, 1889. Serial No. 297,972. (No model.)



407,436.



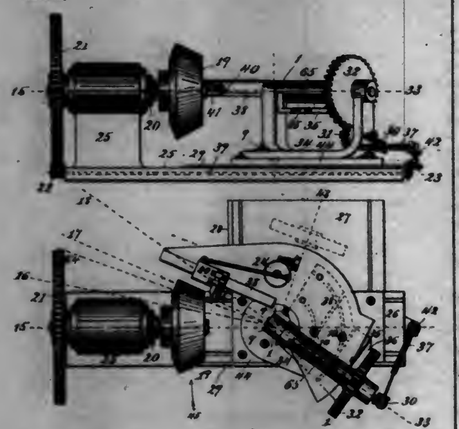
Claim.—1. In a signal-lantern, the combination, with the base, of the concentric oil-cup provided on its sides with vertical guide-bars, the ring provided with the vertical clip-springs and sliding on the said guide-bars and provided with depending eyes which project through apertures in the base when the ring is lowered, and the bail provided with eyes engaging the eyes on the ring, substantially as specified.

2. In a signal-lantern, the combination, with the base and the oil-cup arranged concentrically thereon, of the vertical guide-bars D, attached to the sides of the oil-cup, the ring provided with the vertical clip-springs and surrounding the oil-cup and provided with interior grooved slides F, fitting on the said guide-bars, and the swinging bail connected to the under side of the ring and extending through apertures in the base, substantially as specified.

3. In a signal-lantern, the combination, with the base and the oil-cup, of the sliding ring provided with the vertical clip-springs, whereby it readily receives the colored globe, which is adapted when lowered to surround the oil-cup, the swinging bail connected to the under side of the ring and projecting through apertures in the base, the spring-catch L, to engage the free end of the bail when the ring is lowered, and the spring-hook M, to engage the said bail when the ring is elevated, substantially as specified.

4. In a signal-lantern, the combination, with the body, of a removable base B, provided with central oil-cup C, and an annular receiver or well surrounding the oil-cup, the vertically-movable ring provided with the vertical clip-springs and surrounding the oil-cup and operating in the receiver or well, the colored globe affixed to the ring and adapted when the latter is lowered to be received in the receiver or well and surround the oil-cup, and the swinging bail connected to the ring, substantially as specified.

407,437. MACHINE FOR PLANING GEAR-TEETH. GEORGE B. GRANT, Lexington, Mass. Filed Jan. 14, 1887. Serial No. 224,382. (No model.)



Claim.—1. In a gear-planing machine, the combination of a frame, a gear-spindle, a tool-shaft, the axes of the gear-spindle and the tool-shaft intersecting and being angularly adjustable with respect to each other, a positive connecting mechanism, whereby the gear-spindle and the tool-shaft are simultaneously oscillated, a tool-guide attached to the tool-shaft, and a tool-carriage, with means for reciprocating it upon the tool-guide, substantially as described.

2. In a gear-planing machine, the combination of a frame, a gear-spindle, a tool-shaft, the axes of the gear-spindle and the tool-shaft intersecting and being angularly adjustable with respect to each other, a positive connecting mechanism, whereby the gear-spindle and the tool-shaft are simultaneously oscillated, a tool-guide attached to the tool-shaft and adjustable upon it in a plane parallel to its axis, whereby the tool-guide is attached to the tool-shaft at an angle with its axis and on either side of it in a plane parallel to it, and a tool-carriage, with means for reciprocating it upon the tool-guide, substantially as described.

3. In a gear-planing machine, the combination of the frame 25, the gear-spindle 20, for holding the gear-wheel to be planed, the tool-shaft 65, for holding the planing-tool, the axes of the gear-spindle and the tool-shaft intersecting at the point 1 and being angularly adjustable with respect to each other, the train of gearing whereby the gear-spindle and the tool-shaft are simultaneously oscillated, the tool-guide 38, attached to the tool-shaft in a plane parallel with its axis, and the tool-carriage 40, with means for reciprocating it upon the tool-guide, substantially as described.

4. In a gear-planing machine, the combination of the gear-spindle 20, the frame 25, the tool-shaft 65, the axes of the gear-spindle and the tool-shaft intersecting and being angularly adjustable with respect to each other, the train of gearing whereby the gear-spindle and the tool-shaft are simultaneously oscillated, the tool-guide 38, attached to the tool-shaft and angularly adjustable upon it in a plane parallel with its axis, and the tool-carriage 40, with means for reciprocating it upon the tool-guide, substantially as described.

5. In a gear-planing machine, the combination of the frame 25, the gear-spindle 20, the tool-shaft 65, the axes of the gear-spindle and the tool-shaft intersecting and being angularly adjustable with respect to each other, the train of gearing whereby the gear-spindle and the tool-shaft are simultaneously oscillated, the tool-guide 38, attached to the tool-shaft at right angles with its axis, and the tool-carriage 40, with means for reciprocating it upon the tool-guide, substantially as described.

6. In a gear-planing machine, the combination of the gear-spindle 20, the frame 25, supporting the gear-spindle, the stand 34, supported upon the frame and adjustable upon it in a direction parallel with the axis of the gear-spindle, the tool-shaft 65, supported on the stand 34, with its axis intersecting the axis of the gear-spindle, the tool-guide 38, attached to the tool-shaft, and the tool-carriage 40, with means for reciprocating it upon the tool-guide, substantially as described.

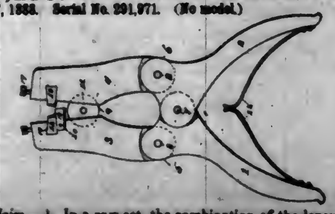
7. In a gear-planing machine, the combination of the gear-spindle 20, the frame 25, supporting the gear-spindle, the stand 34, supported on the frame and adjustable upon it in a direction parallel to the axis of the gear-spindle, the tool-shaft 65, supported by the stand, with its axis intersecting the axis of the gear-spindle, the train of gearing whereby the gear-spindle and the tool-shaft are simultaneously oscillated, the tool-guide 38, attached to the tool-shaft and angularly adjustable upon it in a plane parallel to its axis, and the tool-carriage 40, with means for reciprocating it upon the tool-guide, substantially as described.

8. In a gear-planing machine, the combination of the frame, the gear-spindle, the tool-shaft, the axes of the gear-spindle and the tool-shaft being laterally adjustable with respect to each other, the positive connecting mechanism whereby the gear-spindle and the tool-shaft are simultaneously oscillated, the tool-guide attached to the tool-shaft, and the tool-carriage, with means for reciprocating it upon the tool-guide, substantially as described.

9. In a gear-planing machine, the combination of a frame, a gear-spindle, a tool-shaft, the axes of the gear-spindle and the tool-shaft intersecting and being laterally and angularly adjustable with respect to each other, a positive connecting mechanism, whereby the gear-spindle and the tool-shaft are simultaneously oscillated, a tool-guide attached to the tool-shaft in a plane parallel with its axis, and a tool-carriage, with means for reciprocating it upon the tool-guide, substantially as described.

10. In a gear-planing machine, the combination of the frame 25, the gear-spindle 20, the tool-shaft 65, laterally adjustable with respect to the gear-spindle, the train of gearing connecting the gear-spindle with the tool-shaft, the tool-guide 38, attached to the tool-shaft, and the tool-carriage 40, with means for reciprocating it upon the tool-guide, substantially as described.

407,438. SAW-SET. MILTON H. GROSS, Abilene, Kans. Filed Nov. 27, 1888. Serial No. 291,971. (No model.)



Claim.—1. In a saw-set, the combination of the levers, the jaws pivotally connected together at an intermediate point of their length and pivoted to the levers, and the dies carried by the jaws, substantially as and for the purpose described.

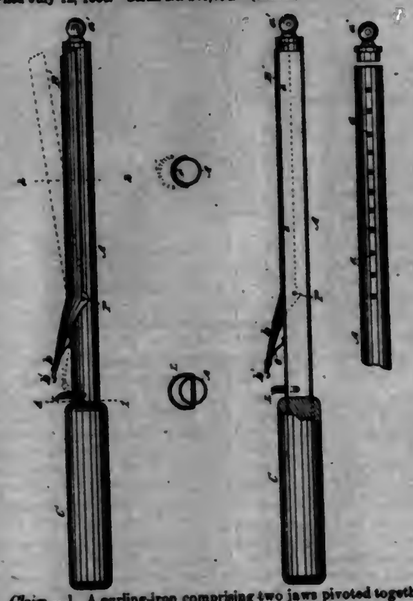
2. In a saw-set, substantially as described, the combination of a pair of jaws pivotally connected together at an intermediate point of their length, a pair of dies secured to the opposing edges of the jaws at one side of the pivotal connection thereof, said dies having coincident teeth and notches in their opposing contiguous faces, and a pair of levers pivotally connected to the jaws for moving the latter and the dies laterally, as and for the purpose described.

3. In a saw-set, substantially as described, the combination of a pair of laterally-movable jaws 3 4, pivotally connected together at an intermediate point of their length, a pair of dies carried by said jaws and located on one side of the pivotal connection thereof, near the free ends of the same, and a pair of levers pivotally connected to each other at 7 and to the jaws at 8, as and for the purpose described.

4. In a saw-set, substantially as described, the combination of a pair of pivoted jaws 3 4, a pair of dies carried by said jaws, the levers pivoted to the jaws for moving the latter and the dies laterally of each other, and a transverse stop fixed to one of the jaws below the die thereof, as and for the purpose described.

5. In a saw-set, substantially as described, the combination of a pair of jaws pivotally connected to each other at an intermediate point of their length, a pair of dies detachably secured to the jaws and having the coincident teeth and depressions in their contiguous opposing faces, a transverse stop fixed to one of the jaws below the die thereon and projecting laterally of the jaw to a line beyond the exposed face of the die on the jaw, to which said stop is fixed, and a pair of levers pivoted to each other and to the jaws, as and for the purpose described.

407,439. CURLING-IRON. SAMUEL HAWKRIDGE, Hoboken, N. J. Filed July 12, 1888. Serial No. 279,794. (Model.)



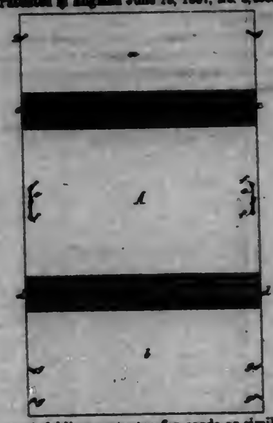
Claim.—1. A curling-iron comprising two jaws pivoted together, one of said jaws being hollow to receive and hold a saturated wick and having one or more openings on the side toward the opposite jaw, substantially as shown and described.

2. A curling-iron comprising two jaws pivoted together, one of said jaws being hollow to receive and hold a saturated wick and having one or more openings on the side toward the opposite jaw, and the other jaw being in the form of a semi-cylindrical shell with its concave side toward the hollow jaw, substantially as shown and described.

3. A curling-iron comprising two jaws pivoted together, one of said jaws being hollow to receive and hold a saturated wick and having one or more openings on the side toward its mate, the other jaw being a semi-cylindrical shell with its concave side toward the hollow jaw to partially surround or embrace the latter and having an arm or extension in rear of the pivot, a spring to press the jaws together, and a loop or catch to engage said arm or extension and hold them apart, substantially as shown and described.

4. In a curling-iron of the character described, the combination of a hollow cylindrical rod or bar adapted to receive and hold a saturated wick and having at one end a handle and in one side one or more openings, a semi-cylindrical or concavo-convex jaw pivoted to said rod or bar and adapted to partially surround or embrace the same, and having a rearward-extending arm or extension, a spring between said arm or extension and the rear end of the said rod or bar, and a loop or catch to engage and hold said extension, substantially as shown and described.

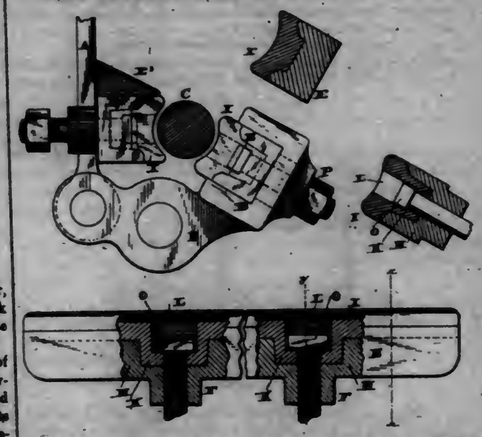
407,440. CASE OR WRAPPER FOR CARDS, PHOTOGRAPHS, BOOKS, &c. GEORGE A. HEARN, Plymouth, England, assignor to Henry Harvell, same place. Filed Nov. 14, 1888. Serial No. 290,613. (No model.) Patented in England June 13, 1887, No. 8,493.



Claim.—1. A folding protector for cards or similar articles, provided with two holes, such as *f*, near its edge, and with two inclined slots, such as *g*, diverging from each other and open at the edge of the protector, in combination with elastic cords or bands *e e*, as and for the purposes described.

2. The described protector or wrapper, constructed as follows, namely: of a single piece of card-board or other suitably thick and stiff material, having the two described similar sets or groups of parallel grooves or scores, the scores being made close to each other, and also having the holes *f*, slots *g*, and elastic cord or band applied thereto, as set forth.

407,441. GRIP. WILLIAM JOHNSON, Penn Yan, N. Y. Filed May 25, 1888. Serial No. 312,067. (No model.)



Claim.—1. The combination, with a cable-grip, of a grip-shoe and a removable wear-plate, said shoe and removable wear-plate being held together and attached to the grip by the same means, substantially as described.

2. The combination of the grip-shoe having recesses therein, a wear-plate having projections which enter said recesses, and a pocket in its wearing-face and securing-bolts passing through the plate and shoe, and having their heads sunk in said pockets practically below the depth of wear, substantially as described.

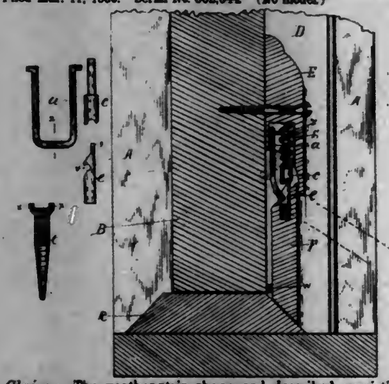
3. The combination, with a grip-shoe E, made with an overhanging incline F, solidly attached thereto, of a removable wear-plate I, having its edge under the overhang of the incline, substantially as described.

407,442. PROCESS OF OBTAINING METHYL ALCOHOL FROM WOOD-PULP LYES. EMIL MEYER, Berlin, Germany. Filed Jan. 8, 1889. Serial No. 295,775. (No specimens.) Patented in Germany Dec. 13, 1887, No. 45,901.

Claim.—1. The process of treating lyes produced in the manufacture of wood pulp, which consists of the following successive steps: first, concentrating said lyes; secondly, mixing the concentrated lyes with charcoal and forming the mass into briquettes; thirdly, roasting the briquettes, and, lastly, condensing the products of distillation, substantially as set forth.

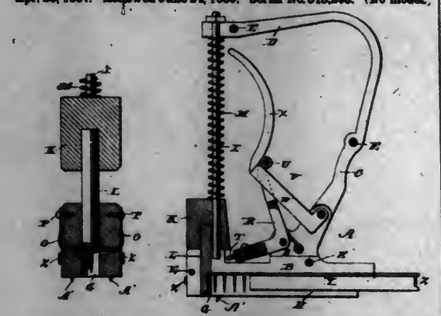
2. In the process of treating lyes produced in the manufacture of wood pulp, the method herein described of regaining the charcoal for further use by lixiviating the same and remixing it with concentrated lyes, substantially as set forth.

407,443. WEATHER-STRIP. ROBERT C. MILLER, Channahon, Ill. Filed Mar. 11, 1889. Serial No. 302,844. (No model.)



Claim.—The weather-strip shown and described, consisting of the combination of the cleat E, leaf F, stud *e*, secured in the upper side of said leaf and having the hooked notch V, and the bearing on its upper end provided with studs X, stirrup *a*, having its lower part curved outwardly from the door and its upper part secured to cleat E in the recess in its lower side, plunger C, having its lower end concaved to rest on the bearing on the upper end of stud *e*, and having its upper end terminate in a stem, and coil-spring S, arranged on the stem of said plunger and seated in said recess, all arranged substantially as and for the purpose set forth.

407,444. TACK-DRIVER. NELSON NEWMAN, Springfield, Ill. Filed Apr. 20, 1887. Renewed June 24, 1889. Serial No. 315,293. (No model.)

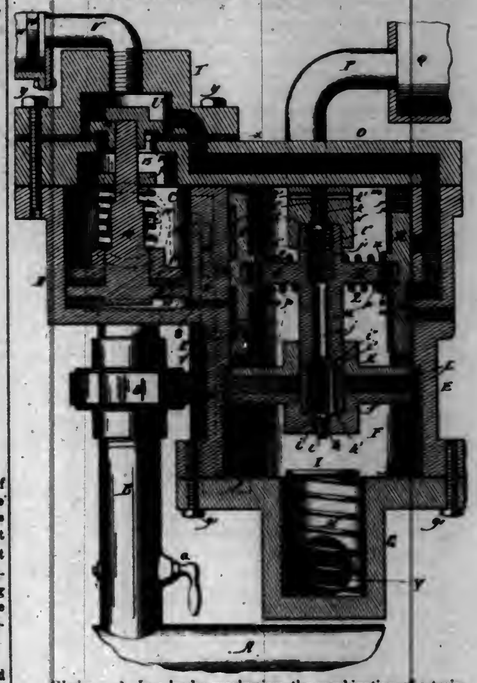


Claim.—1. The combination of the frame A, having the base B, provided with the vertical opening G in its front end and the horizontal opening H, communicating therewith, the standard C, rising from one end of the base, and the horizontal arm D, projecting forward from the standard and arranged over the base, with the spring-actuated feed-slide fitting in the opening H, the rod I, connecting the front ends of the base and arm D, the vertically-movable hammer guided on said rod and having the depending stem L to enter the opening G, and the lever to raise the hammer-head and then release the same, all combined and arranged to operate substantially as described.

2. The frame A, having the horizontal opening H in its base, the vertical opening G, communicating therewith, and the depending engaging studs A', for the purpose set forth, in combination with the vertically-movable spring-actuated hammer having the depending stud adapted to enter the opening G, (on its downstroke,) the spring-actuated feed-slide Y, fitting in the opening H, and the lever pivoted to the frame and adapted to raise the hammer and then release the same, substantially as described.

3. In a magazine-hammer, the combination of the frame, the vertically-movable hammer-head, the lever S, having the spring-actuated detent T to engage the hammer-head, and the roller U, and the handle-lever having the inclined arm W, on which the roller U bears, for the purpose set forth, substantially as described.

407,445. AIR-BRAKE. HARVEY S. PARK, Chicago, Ill. Filed Dec. 3, 1888. Serial No. 292,471. (No model.)



Claim.—1. In a brake mechanism, the combination of a train-pipe, an interposed chamber between the train-pipe, brake-cylinder, and main valve-chamber, a pipe leading from the train-pipe to the interposed chamber, a passage leading from the interposed chamber to the main-valve chamber outside of the main-valve piston, a passage leading from the interposed chamber to the brake-cylinder, and a valve controlling the passage from the interposed chamber to the brake-cylinder and operated by train-pipe pressure, substantially as and for the purposes specified.

2. In a brake mechanism, the combination of a train-pipe, an interposed chamber between the train-pipe, brake-cylinder, and main-valve chamber, a pipe leading from the train-pipe to the interposed chamber, a passage leading from the interposed chamber to the main-valve chamber outside of the main-valve piston, a passage leading from the interposed chamber to the brake-cylinder, a valve controlling the passage from the interposed chamber to the brake-cylinder, a piston in the interposed chamber for operating the valve of the passage to the brake-cylinder, ports and passages leading from the interposed chamber to both sides of the piston therein, and a valve controlling said ports and passages, substantially as and for the purposes specified.

3. In a brake mechanism, the combination of a train-pipe, an interposed chamber between the train-pipe, brake-cylinder, and main-valve chamber, a pipe leading from the interposed chamber to the train-pipe, a passage leading from the interposed chamber to the main-valve chamber outside of the main-valve piston, a passage leading from the interposed chamber to the brake-cylinder, a valve controlling the passage from the interposed chamber to the brake-cylinder, a piston in the interposed chamber for operating the valve for the brake-cylinder passage, ports and passages leading from the interposed chamber on both sides of the piston, a valve controlling such ports and passages, and a piston in the main-valve chamber, operating the valve for the ports and passages, substantially as and for the purpose specified.

4. In a brake mechanism, the combination of a main-valve chamber lying horizontal, a cap or cover for the end of the main-valve chamber, a vertical discharge-passage in the cap or cover, and a horizontal passage leading from the main-valve chamber in line with the bottom thereof to the vertical discharge-passage in the cap or cover for draining the main-valve chamber, substantially as specified.

5. In a brake mechanism, the combination of a main-valve chamber lying horizontal, a cap or cover for the end of the main-valve chamber, a vertical discharge-passage in the lower side of the cap or cover, a horizontal passage leading from the main-valve chamber in line with the bottom thereof to the discharge-passage in the cap or cover, and a plug for closing the discharge-passage in the cap or cover and provided with a blow-off cock, substantially as and for the purposes specified.

6. In a brake mechanism, the combination of a main-valve chamber, a pipe leading from the under side of the main-valve chamber to a car-reservoir, and a passage in the wall of the main-valve chamber for preventing water of condensation from accumulating in the main-valve chamber in front of the piston therein, substantially as specified.

7. The train-pipe A, pipe B, and interposed chamber C, in combination with the passage *d e f* and chamber F, substantially as and for the purpose specified.

8. The train-pipe A, pipe B, union *b*, and chamber C, in combination with the passage *d e f* and chamber F, substantially as and for the purpose specified.

9. The train-pipe A, connecting-pipe B, interposed chamber C, passage *d e f*, and chamber F, in combination with a piston in the chamber C, piston-stem 10, valve 13, passage 14, and chamber 15, substantially as and for the purpose specified.

10. The chamber C, stem 10, a piston on the stem 10, valve 13, and gasket *x*, in combination with the passage 14, chamber 15, bar 16, and spring 17, substantially as and for the purpose specified.

11. The chamber C, stem 10, and piston on stem 10, valve 13, and passage 14, in combination with the chamber U, chamber 15, gasket *x*, and bar 16, substantially as and for the purpose specified.

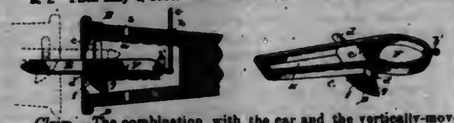
12. The chamber F, lying horizontal, and end cap or cover G, having the vertical discharge-passage Y, in combination with the horizontal passage X in line with the bottom of the chamber F, and the plug Z, closing the passage Y, substantially as and for the purpose specified.

13. The chamber F and groove 3, in combination with a pipe P, leading from the chamber F at the under side thereof, for drainage purposes, substantially as specified.

14. The wall or casing E and chamber F, in combination with a piston traveling in the chamber F, and having a piston-stem M, the arm R' and valve R, the arm 4 and valve 5, and the arm 1, having the ends 2 traveling in the grooves 3, for maintaining the travel of the valve and piston in a straight line, substantially as and for the purposes specified.

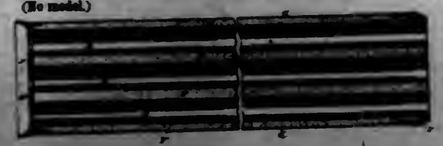
15. In a brake mechanism, the combination of a main-valve chamber, a piston in said chamber, a piston-stem, an arm projecting from the piston-stem, and a valve controlling the passage of air from the car-reservoir to the brake-cylinder, and having a slot larger than the width of the stem-arm entering thereinto for enabling the piston to move slightly without moving the valve, to overcome any sticking of the piston, substantially as specified.

407,446. CAR-COUPLING. JAMES W. PEMBERTON, Providence R. I. Filed May 4, 1889. Serial No. 309,590. (No model.)



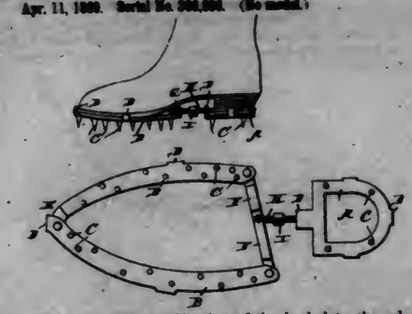
Claim.—The combination, with the car and the vertically-movable link in the draw-head, of the arm *k'*, connected to the rear end of the link, the stiff rod G, pivotally connected at its lower end to said arm and passed through a guide on the end of the car, and the chains or cords connected to the upper end of said rod G, and extending to the top and sides of the car, substantially as shown and described, and for the purpose specified.

407,447. UNDERGROUND ELECTRIC CONDUIT. EDWARD H. PHIPPS, New Haven, Conn. Filed June 17, 1889. Serial No. 314,559. (No model.)



Claim.—A conduit-section consisting of a metal shell and a lining composed of hydraulic cement, silicon, silicate of sodium, and anhydrous calcium sulphate or its equivalent, combined in substantially the proportions set forth.

407,448. ICE-CREEPER. BENJAMIN POPE, Merrill, Wis. Filed Apr. 11, 1889. Serial No. 306,806. (No model.)



Claim.—1. The combination of the heel-plate, the sole-plates pivoted together at their front ends, the links connecting the rear ends of the sole-plates, and the screw extending between the heel-plate and the said links, as set forth.

2. The combination of the heel-plate having a lug at its front edge, the sole-plates pivoted together at their front ends, the links having their outer ends pivoted to the rear ends of the sole-plates, the bearing-block G, having a depending stud forming a pivot for the inner ends of said links, and the screw having its ends mounted in said bearing-block and the lug D, as set forth

407,449. POWDER-BOX. JONAS H. ROEDER, Philadelphia, Pa. Filed Jan. 21, 1889. Serial No. 297,080. (No model.)



Claim.—1. The powder-box hereinbefore described, consisting of the combination, with the body portion or receptacle in which the powder is freely contained, of the lid or cover provided with the chamois or other soft material on one side thereof, so as to form a pad or puff which may be readily charged with said powder, substantially as and for the purpose set forth.

2. The powder-box hereinbefore described, consisting of the combination, with the body portion or receptacle in which the powder is freely contained, of the lid or cover provided with the chamois or other soft material on the inner side thereof, so as to form a pad or puff which may be readily charged with said powder, substantially as and for the purpose set forth.

3. In a powder-box, the combination, with the body portion or receptacle, of the lid or cover, the diaphragm on the inner side thereof, and the chamois or other soft material secured to said diaphragm, substantially as described.

4. In a powder-box, the combination, with the body portion or receptacle, of the lid or cover, and the pad composed of chamois and cotton and secured on the inner side of said lid, substantially as described.

407,450. ATTACHMENT FOR PLOWS. HANS H. SATER, Dubuque, Iowa. Filed Aug. 22, 1888. Serial No. 283,420. (No model.)

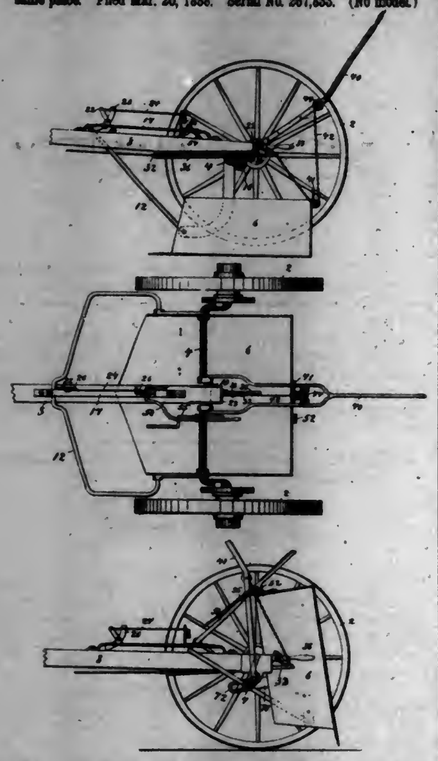


Claim.—1. A brace for mold-board, consisting of a straight portion *d*, secured to the mold-board, a deflected portion *d'*, connected

to the share, and an arm E, for the reception of the mold-board handle, substantially as described and set forth.

2. The combination of a brace D, secured to the mold-board and share and having a corrugated portion thereon, a supplemental brace secured to the landside and also provided with a corrugated portion, and a bolt or screw passing through the two and thereby securing said corrugated portions together.

407,451. WHEELED SCRAPER OR SELF-LOADING CART. CHAS. H. SAWYER, Minneapolis, Minn., assignor of one-half to H. A. Smith, same place. Filed Mar. 20, 1888. Serial No. 267,833. (No model.)



Claim.—1. The combination, in a wheeled scraper, with the cranked axle and the pan suspended from said axle, of the tongue attached to said axle, the strap 14, secured to said tongue and forming a way thereon, the bail attached to the forward end of said pan and passing under said strap and adapted to slide in said way, and the pivoted catch adapted to lock said bail in said way, substantially as described.

2. The combination, in a wheeled scraper, with the cranked axle and the pan suspended from said axle, of the tongue attached to said axle, the strap 14, secured to said tongue and forming a way thereon, the bail attached to the forward end of said pan and passing under said strap, the pivoted catch 16, having the curved end 20, and means for turning said catch upon its pivot, substantially as described.

3. The combination, in a wheeled scraper, with the axle and pan, of the tongue attached to the axle, the tube 30, secured to said tongue and passing above the axle, the snatch-bar 32, arranged in said tube and adapted to slide therein, and the chain connected with said snatch-bar and with said pan, substantially as described.

4. The combination, in a wheeled scraper, with the axle and pan, of the tongue attached to the axle, the raising-lever 40, provided with the spool 44 and springs 48, the snatch-bar, and chain connected to said snatch-bar and adapted to be wound on said spool, substantially as described.

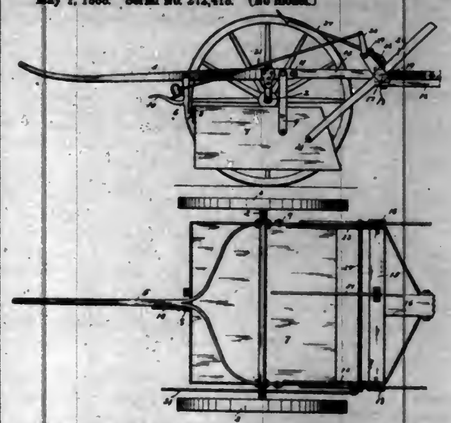
5. The combination, in a wheeled scraper, with the axle and pan, of the tongue attached to the axle, the snatch-bar 32, having the notch 34, the pivoted lever 38, and the catch 36, pivoted on said lever and adapted to engage said snatch-bar when in its retracted position, substantially as described.

6. The combination, in a wheeled scraper, with the axle and the tongue secured thereto, of the pan supported upon said axle, the lever 50 upon said tongue and adapted to hold said pan in its reversed position, and the tripping-lever 55, pivoted upon said lever 50 and adapted to bear upon said pan, substantially as described.

7. The combination, in a wheeled scraper, with the axle and tongue, of a pan swinging on said axle, the auxiliary sliding tongue, the draft mechanism attached to said auxiliary tongue, a detachable connection between the two tongues, and a chain connecting the auxiliary tongue with the back of said pan, whereby when the auxiliary tongue is released the draft of the team will cause the pan to be dumped, substantially as described.

8. The combination, in a wheeled scraper, with the axle and tongue, of the pan swinging on said axle, the auxiliary sliding tongue, the catch 65, for connecting the two tongues together, a bell-crank lever 62, for operating said catch and releasing said tongue, and the chain 67, attached to the auxiliary tongue, passing around suitable pulleys 63 and 64, and secured to the back of the pan, whereby as the chain is drawn over the pulleys by said auxiliary tongue the pan is dumped, substantially as described.

407,452. WHEELED SCRAPER. CHARLES H. SAWYER, Minneapolis, Minn., assignor of one-half to H. A. Smith, same place. Filed May 1, 1888. Serial No. 272,413. (No model.)

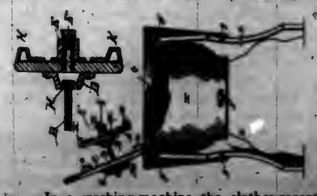


Claim.—1. In a wheeled scraper, the combination, with the wheels 3 and cranked axle 2, of the lever 5, secured to the axle, the pan 7, suspended from the lever in front of the axle, the frame or bars 13, forming a continuation of the tongue pivoted to the lever 5 in front of the suspension-links, and the bars 20, connecting the nose of the pan with the frame, substantially as described.

2. In a wheeled scraper, the combination, with the wheels and cranked axle, of the lever 5, secured to said axle, the pan suspended below said axle, the suspension-links 9, secured to said pan and pivoted to said lever in front of said axle, the bars 13, secured to the tongue and pivoted to the lever 5 at a point in front of said suspension-links, the bars 20, pivoted to the pan, and the blocks 18, pivotally secured to the frame and receiving the bars 20, substantially as described.

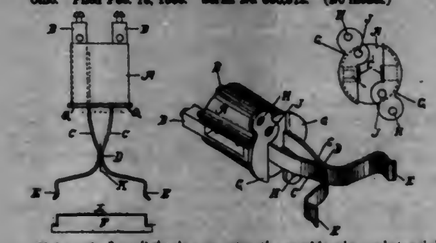
3. In a wheeled scraper, the combination, with the wheels, of the cranked axle, a lever secured to and operating said axle, the front end of said lever extending forward beyond the axle, a frame pivoted to the forward end of the lever and secured to the tongue, a pan or scraper suspended from the lever by suitable links supported upon the lever at a point between its forward end and the axle, and the bars 20, pivotally secured to the frame and to the nose of the pan and capable of being released from said frame when the pan is reversed, substantially as described.

407,453. WASHING-MACHINE. DAVID SAVAGE, Bloomsburg, Pa. Filed June 23, 1888. Serial No. 278,234. (No model.)



Claim.—In a washing-machine, the clothes-receptacle and an agitator-rod, in combination with a perforated agitator which slides upon said agitator-rod, said agitator having a hollow rod-projector extending below the rubber and closed at its lower end, substantially as and for the purposes specified.

407,454. LIGHTNING-ARRESTER. JAMES W. GEE, Hamilton, Ohio. Filed Feb. 18, 1888. Serial No. 300,312. (No model.)



Claim.—1. In a lightning-arrester, the combination, substantially as set forth, of a cylindrical plug of insulating material, a pair of binding-posts rigidly attached thereto, and a pair of metallic springs mounted on said block and adapted to make contact with each other and connected one to each of said binding-posts.

2. In a lightning-arrester, the combination, substantially as set forth, of a cylindrical plug of insulating material, a pair of binding-posts attached thereto, and a pair of metallic springs tending toward each other and connected one to each binding-post and provided with side extensions having clips.

3. In a lightning-arrester, the combination, substantially as set forth, of a cylindrical plug of insulating material, a pair of binding-posts attached thereto, and a pair of metallic springs adapted to make contact with each other and provided with side extensions having clips and connected one with each of the binding-posts.

4. In a lightning-arrester, the combination, substantially as set forth, of a cylindrical plug of insulating material, a pair of binding-posts disposed within said plug and projecting to the rear thereof, and a pair of metallic springs tending toward each other and connected one with each of the binding-posts and projecting from the front of the plug.

5. In a lightning-arrester, the combination, substantially as set forth, of a plug of insulating material provided with two longitudinal grooves, a binding-post secured in each of said grooves, and a metallic spring clamped in each of said grooves between the binding-posts and plug.

6. In a lightning-arrester, the combination, substantially as set forth, of a plug of insulating material, a pair of binding-posts attached thereto and projecting to the rear thereof, a metallic flange attached to each binding-post at the front of the plug and provided with a hole adapted to receive an attaching-screw, and a metallic spring connected with each binding-post at the front of the plug.

7. In a lightning-arrester, the combination, substantially as set forth, of a plug A, of insulating material, provided with holes J, a pair of binding-posts B, attached to the plug and projecting to the rear thereof, a metallic spring connected to each binding-post at the front of the plug, and a metallic flange G, connected with the front end of each binding-post and provided with hole H to receive an attaching-screw.

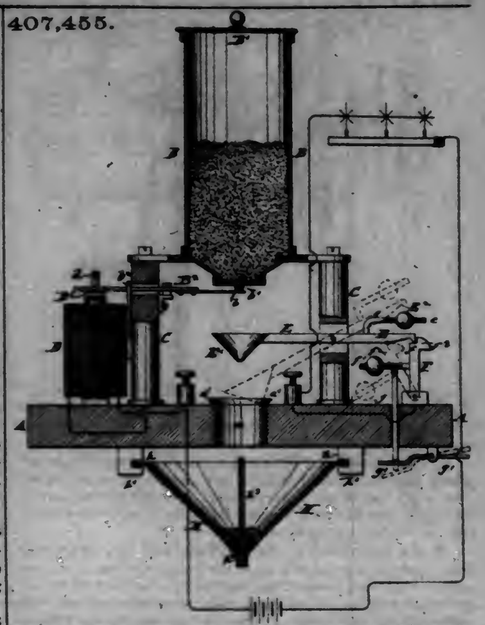
407,455. ELECTRIC CUT-OUT. ADOLPH T. SMITH, New York, N. Y. Filed Jan. 30, 1889. Serial No. 298,122. (No model.)

Claim.—1. In an electric cut-off, the combination of a receptacle for sand or other suitable material, a fulcrumed and spring-actuated valve-lever for closing the bottom opening of said receptacle, an electro-magnet in a normally-open circuit, an armature for operating said valve-lever, a fulcrumed and weighted contact-lever provided with a funnel vertically below the discharge-opening of the receptacle, and a pivoted and weighted contact-piece for the outer end of the contact-lever, the contact of the lever and contact-piece being interrupted by the tilting of the contact-lever whenever the circuit is short-circuited and the funnel filled with sand from the receptacle, substantially as set forth.

2. In an electric cut-off, the combination of a receptacle containing sand or other suitable material and having a bottom opening, a fulcrumed and spring-actuated valve-lever, a valve at the outer end of said lever below the bottom opening of the receptacle, an electro-magnet located in a normally-open circuit, an armature adapted to operate the valve-lever and open the receptacle, and a circuit-breaking device operated by the discharge of sand from the receptacle when short-circuiting takes place, substantially as set forth.

3. The combination of a supporting-bracket, a receptacle for the sand or other suitable material supported on said bracket and provided with a bottom opening, a fulcrumed and spring-actuated valve-lever, an electro-magnet in an electric circuit, an armature adapted to

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operate said valve-lever when attracted by the magnet, a fulcrumed contact-lever provided with a funnel vertically below the discharge-opening of the receptacle, a pivoted contact-piece for the outer end of the contact-lever, and a receiving-funnel below the funnel of the contact-lever supported in ways at the under side of the bracket, substantially as set forth.

4. In an electric cut-off, the combination of a receptacle for sand or other suitable material, a fulcrumed contact-lever provided with a funnel at one end below the discharge-opening of the receptacle and with an adjustable weight at the opposite end, and a pivoted and weighted contact-piece having a stop-shoulder for the contact-lever, the weight of said lever serving to regulate the length of time after which the tilting of the lever takes place, substantially as set forth.

5. In an electric cut-off, the combination of a receptacle for sand or other suitable material, a fulcrumed and weighted contact-lever, a funnel attached to the end of said lever below the discharge-opening of the receptacle, a pivoted and weighted contact-piece having a stop-shoulder for the contact-lever, and a setting-lever and pin for returning the contact-levers into their normal position of contact after a cutting out of the battery has taken place, substantially as set forth.

407,456. HOSE-COUPLING. GEORGE R. WILLIAMS, La Crosse, Wis. Filed Nov. 15, 1887. Serial No. 255,240. (No model.)



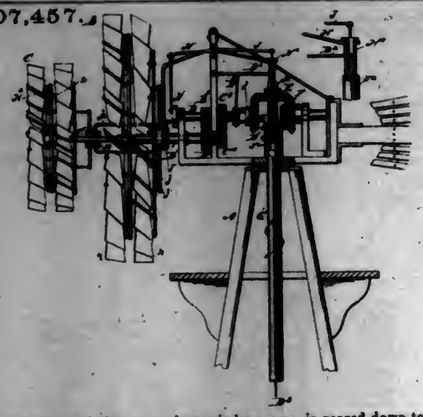
Claim.—1. In a hose-coupling, the case or body having a stop-cock provided with a cam or eccentric disk and having a rigid hook which projects beyond the inner end of the case or body and engages the cam or eccentric disk on the opposing case or body, substantially as specified.

2. In a hose-coupling of that class provided with twin members, each member having a rigid hook 12, the turning plug 10, and the lever 13, fitted to the turning plug to operate the same, the members when coupled together having the hook of one member engaged with the turning plug of the other member, and vice versa, as set forth.

407,457. WINDMILL. ALVIN T. WISSELL, Albion, Mich. Filed Apr. 26, 1888. Serial No. 271,927. (No model.)

Claim.—1. The combination, in a windmill, of wind-wheels of different diameters and concentric shafts, said wheels each independently geared with the drive-shaft by gear-wheels graded to conform to the normal speed of its wind-wheel, whereby each wheel driven at

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its normal speed, due to a given wind-pressure, is geared down to a common speed at the drive-shaft, substantially as and for the purposes described.

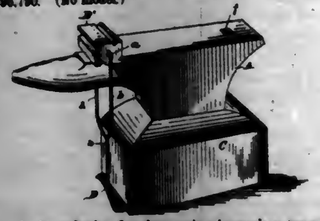
2. In a windmill, the combination, with its wheel and blade-supporting rings, of blades arranged in pairs, one blade forward and the other to the rear of the supporting-rings, each said pair engaged by the angular arm K, pivoted between the blades to said rings, substantially as and for the purposes described.

3. The combination of the fan-blades and their supporting-frame, said blades arranged in pairs, one blade in advance of and one in rear of their supporting-frame, said blades provided with the angular supporting-arms K, said arms engaged at their rear ends with a common rod M, whereby motion communicated to one blade is transmitted to all, substantially as and for the purposes described.

4. In a windmill, the combination, with the drive-shaft D, of gearing for imparting motion from said shaft to the machinery below, the crank H, eccentrically connected with said drive-shaft, and the walking-lever H', for operating a pump, the clutch *d*, and the pinion D', adapted to be thrown out of gear with the shaft by said clutch, whereby the pump may be operated while the gearing is at rest, substantially as described.

5. In a windmill, the combination, with wind-wheels of different diameters and concentric shafts, of sleeves J' J', provided with arms for adjusting the blades of said wind-wheels, the said sleeves connected by arms j^3, whereby the adjustment of the blades of said wheels is effected simultaneously, substantially as described.

407,458. DEVICE FOR SHARPENING CALKS. JOHN ZURBRICK, Cheektowaga, N. Y. Filed May 7, 1888. Renewed Jan. 16, 1889. Serial No. 296,790. (No model.)



Claim.—1. In a device for sharpening horseshoe toe-calks, the die B, having four flat sides and each side having a V-shaped slot therein, and each slot nearer one side than the other on each face, substantially as shown and set forth.

2. In combination with an anvil, the die B, having the V-shaped slots therein and adapted to revolve on the anvil-horn by means of the trunnions *c*, formed on the ends of the die, the rods *b b*, the lower end or ends of which are fastened to a treadle D, attached to the anvil-block, all substantially as and for the purpose specified.

407,459. CAR-COUPLING. AARON B. ALLEN, Pueblo, Colo. Filed May 22, 1889. Serial No. 311,697. (No model.)



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Claim.—The car-coupling combining a coupling-hook, a draw-head, cross-bars applied to the latter and between which the hook is pivoted, the spring connected to said hook, and the lever pivoted to the car and acting upon said spring, and the lever pivoted to the aforesaid lever, substantially as specified.

407,460. AUTOMATIC TELEGRAPH. FRANK ANDERSON, Peekskill, N. Y. Filed Dec. 15, 1888. Serial No. 293,710. (No model.)



Claim.—1. In an automatic telegraph, the following combination of elements: a single transmitting-battery connected to earth and directly to a main line, which it normally charges, and a shunt around said battery, including in its circuit an automatic transmitter adapted to open and close said shunt, a recording-receiver located in the main line, and an electro-magnetic device located in a shunt around said receiving-instrument, substantially as described.

2. An automatic telegraph system consisting of the following elements: a main line earthed at each end and including a single main-line or transmitting battery normally in circuit, a transmitter consisting of a perforated fillet and contact brush or pen, a transmitting-cylinder located in a normally-open shunt around the entire battery, a receiver located at the receiving-station, and an electro-magnetic device included in the shunt about said receiver, substantially as described.

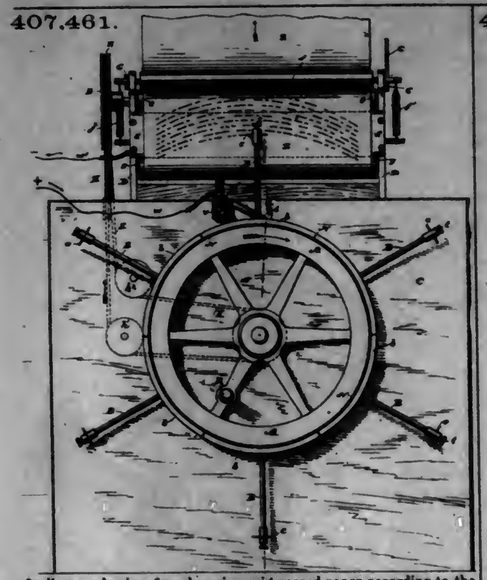
3. In a system of automatic telegraphy, the combination of a normally-charged main line, including a receiving-instrument, with an electro-magnet located in a shunt about the receiver, and a transmitter located in a shunt about the charging-battery, substantially as described.

4. In a system of automatic telegraphy, the combination of a main line, including a battery and a receiving-instrument, with a shunt around the battery, including a transmitter, and a second shunt about the receiver, including an electro-magnetic device for preventing tailings, substantially as described.

407,461. AUTOMATIC TELEGRAPHY. FRANK ANDERSON, Peekskill, N. Y. Filed Feb. 9, 1889. Serial No. 299,364. (No model.)

Claim.—1. An automatic telegraphic receiver consisting of a record roll or supply of sensitized paper or equivalent material, with

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feeding mechanism for advancing said record-paper according to the demands of the transmitting apparatus, and a series of independent receiving-styluses connected to a wheel, said styluses being insulated from each other and having electrical connections for bringing them successively into circuit as the wheel is rotated, substantially as described.

2. In an automatic telegraphic recording apparatus, a series of independent recording-pens mounted on the periphery of a rotatable disk and insulated from each other, in combination with a recording-surface lying in a plane parallel to that of the series of pens, and electrical connections consisting of electrical conducting-segments, and a contacting spring adapted to bear successively thereon as the disk is rotated, whereby said recording-pens are brought successively into circuit, substantially as described.

3. In an automatic telegraphic receiver, the combination of a series of pens or styluses attached to a wheel or disk and having sliding motion in the direction of a radius of the disk, with a fixed cam for giving to said pens or styluses such sliding motion in succession, substantially as described.

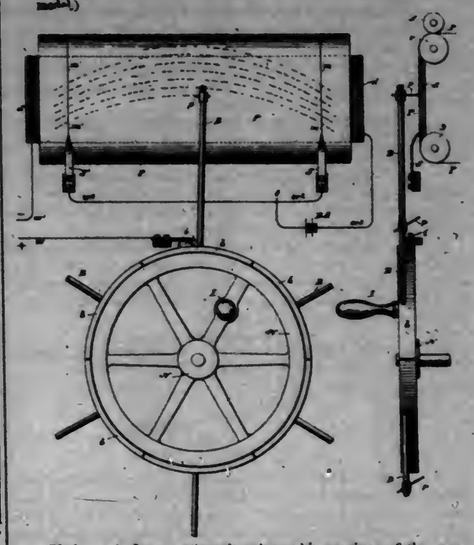
4. In an automatic telegraphic receiver, the combination of the following elements: a supply or roll of record-paper or analogous material, a series of record pens or styluses insulated from each other and adapted to come successively into contact with said record-paper, feeding mechanism for advancing said paper, said mechanism consisting of a pair of feed-rolls, one of which is provided with means for lifting it from the paper and thereby preventing the forward feed, and electrical connections consisting of electrical conducting-segments, and a contact-spring adapted to rest thereon, as described, whereby either an entire message or a series of messages may be placed upon the record-paper and then the feed of the record-paper discontinued, substantially as described.

5. In an automatic telegraphic receiver, the combination of a series of pens carried by arms attached to independent sectors arranged around a disk and insulated therefrom, with a contacting surface and a record-surface resting on said contacting surface, and a contact-spring, said contact-spring and contacting surface being included in an electrical circuit with the successive pens and sectors, whereby as said disk is rotated the pens are brought successively into the electrical circuit and successive record-lines are made, substantially as described.

6. In an automatic telegraphic receiver, a series of recording-pens rigidly secured to a wheel or disk by insulated contacting segments, in combination with a flat conducting-surface on which the record-paper rests, and a contact-spring adapted to rest on the contacting segments successively, whereby a page-record is made transverse to the direction of motion of the record as it is fed forward, and with a margin on each side of the paper, substantially as described.

7. In an automatic telegraphic receiver, the combination of a rotary disk or wheel carrying a series of recording-pens rigidly secured thereto, said recording-pens being insulated from each other, substantially as described.

407,462. AUTOMATIC TELEGRAPHIC RECORDER. FRANK ANDERSON, Peekskill, N. Y. Filed May 7, 1888. Serial No. 309,862. (No model.)



Claim.—1. In an automatic telegraphic receiver of the page type, a message-blank having marginal lines, in combination with a receiving-recorder having a series of pens connected to contacting surfaces, insulated from each other, and electrically connected by a two-point contact-spring to the distant transmitter, the contacting surfaces having a fixed relation to the distance between the two marginal lines, whereby the characters near the ends of the successive lines are repeated, substantially as described.

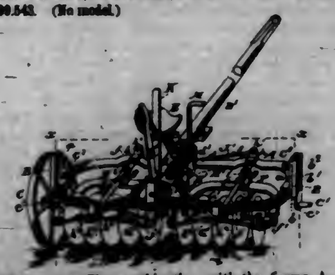
2. An automatic telegraphic record consisting of a series of concentrically-recorded lines of characters upon a sheet of sensitized paper or equivalent material, said record having a definite portion of the characters repeated at the ending and beginning of successive lines, substantially as described.

3. An automatic telegraphic record consisting of a series of concentrically-recorded lines of characters upon a sheet of sensitized paper or equivalent material, said record-paper having two marginal lines as indexes, outside of which all the characters or portions thereof representing telegraphic symbols are duplicated, substantially as described.

4. The combination of two or more rotary receiving-pens with apparatus for producing marginal lines upon a sensitized page-record, consisting of two electrical contact pens or springs connected to one pole of an electrical generator, in combination with a sensitized sheet of paper and a contacting surface connected to the other pole of said electrical generator, substantially as described.

5. The combination of two or more rotary receiving-pens with means for making marginal lines on a page-record, consisting of two contact-pens, in combination with a sensitized sheet of paper, a conducting supporting-surface, and an electrical generator connected to said pens and the conducting-surface, substantially as described.

407,463. ROTARY OR DISK HARROW. GEORGE W. ASHLEY and JOSEPH H. BOYD, Medical Lake, Wash. Filed Feb. 11, 1889. Serial No. 299,543. (No model.)



Claim.—1. The combination, with the frame A, of the longitudinal shafts supported at their ends on the frame A, the frames F, free to oscillate on said shafts, and the disks carried by a shaft ar-

ranged transversely of the frames F, substantially as and for the purpose specified.

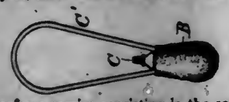
2. The combination, with the frame A and the two independent harrow-frames free to oscillate independently of each other on longitudinal shafts, of the transverse shafts journaled in said frames and carrying the disks, the shaft I, and connections between said shaft and the longitudinal shafts of the harrow-frames, substantially as shown and described, and for the purpose specified.

3. The combination, with the frame A, formed with the curves *f*, of the harrow-frames provided with the lugs *g*, and the means for adjusting said frames, substantially as and for the purpose specified.

4. The combination, with the frame A and the tongue, of the independent rocking harrow-frames, the pivoted foot-levers, and the chains connecting said levers with the inner ends of the harrow-frames, substantially as and for the purpose specified.

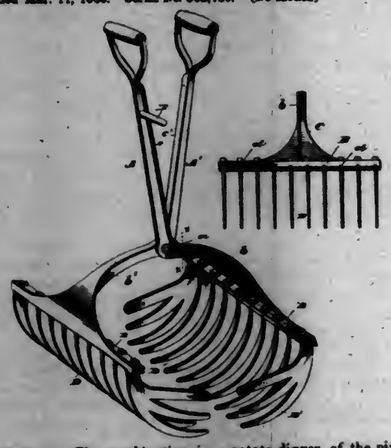
5. The combination, with the frame A and the two independent harrow-frames, of the shafts of said harrow-frames, the shaft I, the operating-lever on one end of said shaft I, and the rods connecting the shafts of the harrow-frames with the said lever and shaft I, substantially as and for the purpose specified.

407,464. PERFUME-CARRIER. Otto Arbenbuster, Brooklyn, N. Y. Filed May 14, 1888. Serial No. 273,383. (No model.)



Claim.—A perfume-carrier consisting in the combination, with the elastic receptacle A, provided with a metallic cap having the open nozzle C projecting therefrom, of the removable jacket B, formed with open mouth and fitted closely to the body of the said receptacle, with the cap of the receptacle exposed at such mouth and the nozzle projected outside the same, and the jacket being provided with a handle C', as and for the purpose set forth.

407,465. POTATO-DIGGER. Charles Brick, South Bend, Ind. Filed Mar. 11, 1889. Serial No. 302,789. (No model.)

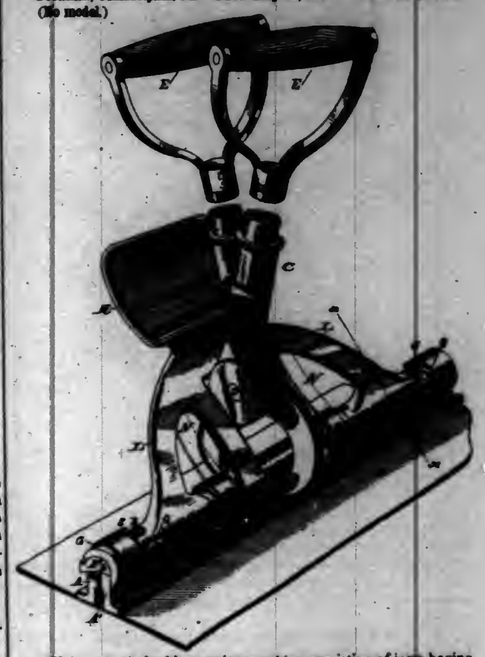


Claim.—1. The combination, in a potato-digger, of the pivoted handle-bars A and A', provided at their lower ends with cross-bars B, to which tines or teeth are attached, re-enforcing strips *c* and *c'*, secured to said handle-bars, the lower portion of said re-enforcing strips having diverging ends which overlap the outer edges of the cross-bars B, substantially as shown, and for the purpose set forth.

2. The combination, in a potato-digger, of the handles A and A', pivoted to each other and provided at their upper ends with spade-handle grips, one of said handles being provided below its grip with a laterally-extending handle, whereby the upper ends of the handles can be held together by one hand while they are being drawn upwardly by the other hand, substantially as shown, and for the purpose set forth.

3. The combination, in a potato-digger, of the handle-bars A and A', pivoted to each other and provided with downwardly-curved portions *b b*, a flat portion being provided above the pivot when the handle-bars are separated, and re-enforcing strips or plates *c* and *c'*, secured at right angles with the handle-bars, cross-bars B, attached to the lower end of the handle-bars and to the re-enforcing plates, curved teeth D, and end tines carrying two or more teeth, the parts being organized substantially as shown, and for the purpose set forth.

407,466. ROOFING DOUBLE-SEAMING MACHINE. Samuel Y. Buckman, Philadelphia, Pa. Filed May 15, 1889. Serial No. 310,817. (No model.)

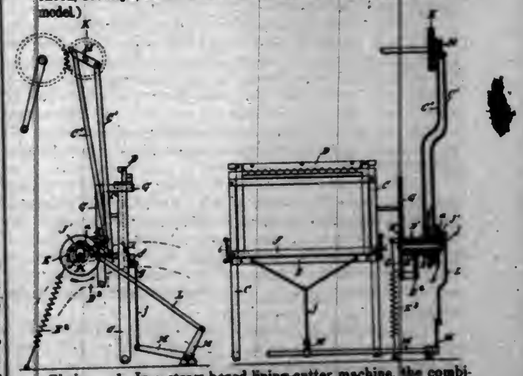


Claim.—1. A double-seaming machine consisting of jaws having flat faces, and connected with tongs, open ears on one of said jaws, a bending-plate journaled in said ears, detachable arms on said plate, and shoulders on the said ears on which said arms are guided and which retain said plate in said ears, said parts being combined substantially as described.

2. A double-seaming machine having jaws with tongs carrying the same, ears on one of said jaws, a bending-plate journaled in said ears, a treadle having arms connected with said plate, and a spring connected with the said ears and adapted to bear against the treadle or arms thereof, said parts being combined substantially as described.

3. A double-seaming machine having jaws with tongs, ears on one of said jaws, and a bending-plate journaled in said ears and provided with an operative treadle connected therewith, the said bending-plate in its normal position having its contact-face downwardly inclined toward the movable jaw, the upper face of the latter being at substantially a right angle with the contact-face of the stationary jaw when closed against it, whereby an angular space is formed between the bending-plate and the upper face of the movable jaw, said parts being combined substantially as and for the purpose set forth.

407,467. STRAW-BOARD-LINING-CUTTER MACHINE. Charles Crook, Brooklyn, N. Y. Filed Oct. 18, 1888. Serial No. 288,605. (No model.)

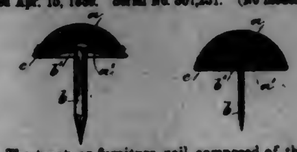


Claim.—1. In a straw-board-lining-cutter machine, the combination, with the frame C, provided with a web-severing knife D and adapted to be moved by a straw-board, and with the L-shaped extension G, provided with a pin *g*, of the cam E, spring E^2, ratchet-wheel A', the ratchet-wheel A, provided with a pin *a*, the pawls B and C'', and arm J', substantially as shown and described.

2. The combination, with the L-shaped extension G, provided with the pin *g* and with the cam E, spring E^2, ratchet-wheel A', and the ratchet-wheel A, provided with the pin *a*, the pawls B and C'', and also with the arm J', of the cross-bar H, wheel K, and rods C' and C'', as and for the uses and purpose set forth.

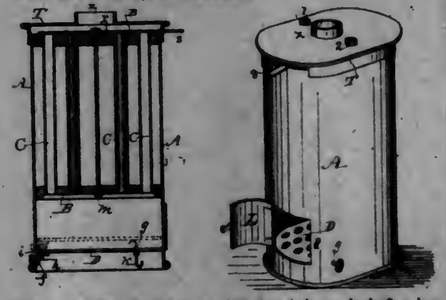
3. The combination, with the frame C and the L-shaped extension G, provided with the pin *g*, of the cam E, spring E^2, ratchet-wheel A', the ratchet-wheel A, provided with the pin *a* and the pawls B and C'', arm J', bar L, bell-crank M, and cord *j*, as and for the uses and purpose set forth.

407,468. NAIL FOR TRUNKS, &c. George Crouch, New York, N. Y. Filed Apr. 15, 1889. Serial No. 307,231. (No model.)



Claim.—The trunk or furniture nail composed of the circular disk or button *a*, of compressed leather or vulcanized fiber, having a recess on the under side, the metal nail having a head integral therewith, and the disk *c*, perforated for the nail to pass through and having a turned-over edge by which the parts are united and held together, substantially as and for the purposes set forth.

407,469. STEAM-GENERATOR. Statis R. Crowder, Newell, Iowa, assignor of one-half to W. J. Miles, same place. Filed Mar. 11, 1889. Serial No. 302,870. (No model.)

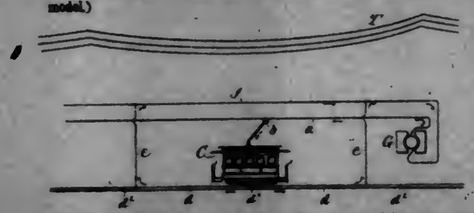


Claim.—1. The adjustable bracket *f*, and the rock-shaft *g*, having projections *k*, in combination with the furnace and boiler-wall A, for the purposes stated.

2. In a steam-generator, the combination of the multiple damper *r*, with the boiler composed of the plates B, tubes C, and wall A, by means of the rod *m*, substantially as shown and described, for the purposes stated.

3. A steam-generator comprising a sheet-metal wall having a grate in its bottom portion, a perforated plate at some distance above the grate, a perforated plate at its top, a series of tubes extending from the lower perforated plate to the upper, a multiple damper pivoted on top of the upper plate by means of a rod that binds the two perforated plates together, a cover fitted to the top, and two open-ended tubes extended through the cover and the upper perforated plate, arranged and combined substantially as shown and described, for the purposes stated

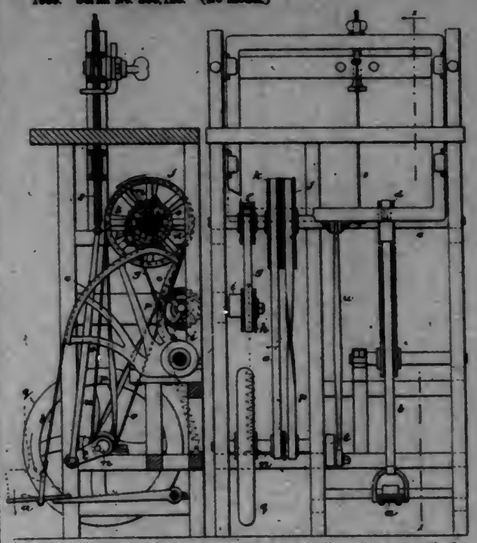
407,470. CIRCUIT FOR ELECTRIC RAILWAYS. Henry M. Cutler, Newton, Mass. Filed Apr. 13, 1889. Serial No. 307,065. (No model.)



Claim.—A circuit for an electric railway, comprising two conductors or main leads connected with opposite terminals of the generator and placed in proximity to one another, whereby each neutralizes the disturbing effect of the other upon adjacent lines, and a contact surface or conductor made in short sections electrically insulated from one another, but with each of said sections connected with one of said main leads, substantially as and for the purpose described.

407,471. WITHDRAWN.

407,472. TREADLE-MOTION. William H. Doughty, Brooklyn, N. Y., assignor of one-half to Wm. Eagle, same place. Filed Feb. 6, 1889. Serial No. 299,128. (No model.)



Claim.—1. The combination, with the treadle and counter-shaft, of the forward-and-backward rotatable shaft connected to said treadle by the band *b*, and the pulley *d*, keyed fast on said shaft, the pulleys *j* and *k* on said shaft alternately driving in opposite directions through the ratchets and pawls respectively connecting them with said shaft reversely, said pulleys connected with the counter-shaft, the one by a direct and the other by a crossed belt, and the spring connected with shaft *c* and opposing thereon the action of the treadle, substantially as described.

2. The combination of the rocker-segment *c* with the treadle *a*, band *b*, pulley *d*, reversely-rotatable shaft *c*, the oppositely-driving pulleys *j k*, and the spring impelling said shaft reversely to the action of the treadle, substantially as described.

407,473. ELECTRO-GALVANIC BELT. Alonzo Dow, Wooster, Ohio. Filed Apr. 11, 1889. Serial No. 306,871. (No model.)



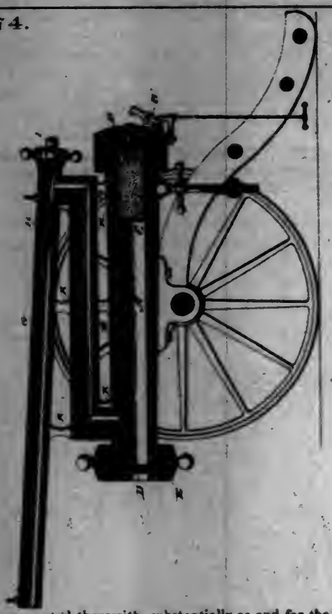
Claim.—1. In an electro-galvanic belt, a cell consisting of two metallic plates and an interposed absorbent pad, which are united together by transverse fastenings, each plate having an integral tongue that is folded or doubled upon the plate and arranged on the inside of the cell adjacent to the absorbent pad, the tongue of one element of the cell forming an eye at one end of said cell, and the tongue of the other element forming an eye at the opposite end of said cell, substantially as and for the purpose described.

2. In an electro-galvanic belt, a cell consisting of two metallic plates, each having a bent or folded tongue and a central and corner perforations, an absorbent pad interposed between said plates, and transverse fastenings passing through the corner apertures of the plates and the absorbent pads, substantially as and for the purpose described.

407,474. METHOD OF COMPRESSING AIR FOR PNEUMATIC GUNS. Dana Dudley, Lynn, Mass., assignor to the Hotchkiss Ordnance Company, (Limited,) London, England. Filed Apr. 26, 1888. Serial No. 308,654. (No model.)

Claim.—1. The method of discharging a pneumatic gun, which consists in compressing air in a suitable chamber by means of the explosion of an explosive therein, and communicating the air-pressure thus produced to the base of a projectile in another chamber sub-

407,474.



terruptedly connected therewith, substantially as and for the purpose described.

2. The method of discharging a pneumatic gun, which consists in compressing air in a suitable chamber by exploding an explosive therein, and causing the compressed air so produced to act uninterruptedly upon a projectile in a gun-barrel connected therewith to expel the same, substantially as described.

3. The method of discharging projectiles by means of the explosion of an explosive in an air-chamber, which consists in interposing a confined body of air uninterruptedly between the projectile and such explosive, and then exploding the explosive in said chamber, whereby high pressure is developed and the projectile discharged, substantially as described.

407,475. PNEUMATIC PISTON-GUN. DANA DUDLEY, Lynn, Mass., assignor to the Hotchkiss Ordnance Company, (Limited,) London, England. Filed Apr. 28, 1889. Serial No. 308,655. (No model.)



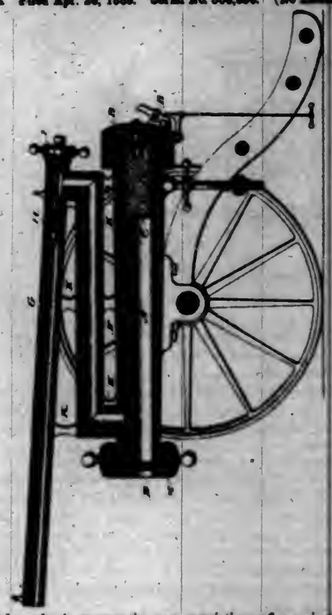
Claim.—1. A pneumatic gun consisting of an air-compression chamber adapted to contain an explosive located in the rear of the piston, a piston driven by the discharge of the explosive, a barrel or tube adapted to discharge a projectile, means for communicating the air-compression produced by the piston to the projectile in the gun barrel or tube, and means for discharging the explosive, substantially as described.

2. The combination, with a pneumatic gun, of an air-compressing chamber adapted to contain an explosive, a piston located in the air-compressing chamber, an explosive in the chamber in the rear of the piston, by the explosion of which the piston is driven, a projectile, means between the air-compressing chamber and the projectile whereby the air compressed in front of the piston acts upon the projectile to discharge it, and means for exploding the explosive, substantially as described.

3. The combination of the air-compressing chamber A, adapted to contain an explosive, a piston B, located in the air-compressing chamber, an explosive in the chamber in the rear of the piston, a projectile, a gun-barrel D, having an uninterrupted confined body of air between the rear of the projectile therein and the piston in the air-compressing chamber, and means for charging and igniting the explosive, substantially as described.

4. The combination of chamber A, adapted to contain an explosive, a piston B, located therein, an explosive in the chamber in the rear of the piston, a projectile, gun-barrel D, head-piece F, connecting the gun-barrel with the air-compressing chamber in front of the piston, means for loading the barrel, and means for loading and exploding the explosive in chamber A, substantially as and for the purpose set forth.

407,476. PNEUMATIC GUN. DANA DUDLEY, Lynn, Mass., assignor to the Hotchkiss Ordnance Company, (Limited,) London, England. Filed Apr. 26, 1889. Serial No. 308,664. (No model.)



Claim.—1. A pneumatic gun consisting of an air-compressing chamber adapted to contain air to be compressed by an explosive therein, a barrel to contain the projectile, means for communicating the air-pressure uninterruptedly to the projectile in the barrel, means for charging the air-compressing chamber and the barrel, and means for exploding the explosive in the air-compressing chamber, substantially as and for the purpose described.

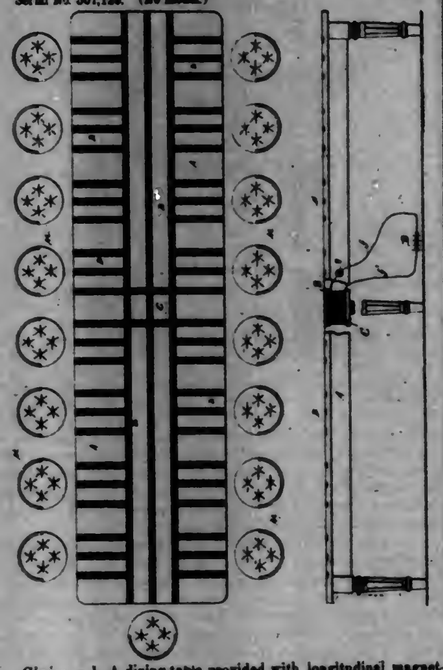
2. The combination of chamber A, adapted to contain air to be compressed by an explosive therein, having a breech-piece B, an explosive contained in said chamber and firing mechanism, barrel G, having the breech-piece I, and tube F, uninterruptedly connecting the air-compressing chamber and the barrel, substantially as and for the purpose set forth.

3. The combination, with a pneumatic gun having an air-compressing chamber A, adapted to contain an explosive, of a safety-valve consisting of a diaphragm D and means for holding it in place, an explosive contained in said chamber, a barrel to contain a projectile, a projectile therein, tube F, uninterruptedly connecting the air-chamber to the barrel of the gun in the rear of the projectile, and firing mechanism for exploding the explosive, substantially as set forth.

4. The combination, with a pneumatic gun, of a chamber adapted to contain air to be compressed by an explosive therein, means for exploding the explosive, and means whereby the compressed air acts uninterruptedly upon the projectile to discharge the same, substantially as described.

5. The combination of chamber A, adapted to contain air to be compressed by an explosive therein and having the breech-piece and firing mechanism for exploding the explosive, diaphragm D and cap E E, closing the explosion-chamber, barrel G, having breech-piece I and tube F F, uninterruptedly connecting chamber A with barrel G in the rear of the projectile, substantially as and for the purpose described.

407,477. MEANS FOR SECURING DISHES TO THE TABLES OF STEAMSHIPS. FRANK BELL, Maranham, Brazil. Filed Apr. 13, 1889. Serial No. 307,139. (No model.)



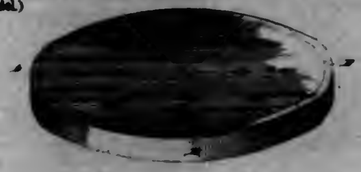
Claim.—1. A dining-table provided with longitudinal magnetizable metallic strips and with laterally-projecting magnetizable metallic strips in connection with said longitudinal strips.

2. A dining-table provided with longitudinal magnetizable metallic strips extending through the center thereof and with laterally-projecting magnetizable metallic strips in connection with the longitudinal strips and disposed at intervals along the table.

3. A dining-table provided with longitudinal magnetizable metallic strips and with laterally-projecting magnetizable metallic strips in connection with said longitudinal strips, in combination with an electro-magnet in connection with the system of strips.

4. A dining-table provided with longitudinal magnetizable metallic strips extending through the center thereof and with laterally-projecting magnetizable metallic strips in connection with the longitudinal strips and disposed at intervals along the table, in combination with an electro-magnet in connection with the system of strips.

407,478. PACKING-DISK FOR HYDRAULIC PRESSES. EDWARD H. GARCIE, Richmond, Va. Filed May 3, 1889. Serial No. 309,468. (No model.)



407,478.

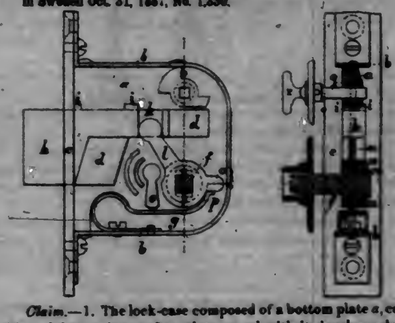


Claim.—1. The piston consisting of the circular vulcanized-rubber part or member having the lower continuous rubber surface and an upper annulus or ring-like surface and the steel wearing plate or disk having its upper surface flush with the upper surface of the said annulus or ring-like rubber portion, substantially as specified.

2. The herein-described piston, consisting of a steel plate provided with a series of upwardly-flared apertures, said plate forming the upper surface of the piston, and a body of rubber which forms the under surface molded upon said metallic disk with portions thereof located in such flared apertures, substantially as described.

3. The herein-described piston, consisting of the central steel disk or plate having a series of flared apertures and the main body having portions located in said flared apertures, and a marginal portion surrounding said disk or plate and made of combined vulcanized rubber and plumbago, substantially as specified.

407,479. LOCK. OSCAR B. HAGLUND, Nyköping, Södermanland Sweden. Filed June 16, 1888. Serial No. 277,360. (Model.) Patented in Sweden Oct. 31, 1887, No. 1,330.



Claim.—1. The lock-case composed of a bottom plate *a*, combined with and fastened on a face-plate *c*, and with its borders edged with a plate-strip *b*, projecting on both sides of the bottom plate, substantially as shown and described.

2. In combination, the bottom plate *a*, having an opening *d* therein, a main bolt *h*, movable in such opening, and the projecting lugs *i*, serving to guide said bolt and embracing the bottom plate, substantially as shown and described.

3. In combination with the slide-bolt *h*, having the side niche *k*, the bottom plate *a*, the two-armed lever *l*, its spring *g*, applied directly to its toe part or short arm *o*, as described, said bottom plate *a* having also a key-hole *e* close to such lever, all substantially as shown and described.

4. In combination with the lock-case having a central plate *a*, the shaft *f* of the door-handle extended through the lock-case and formed with an extension *f'*, such extension constituting on the opposite side of the lock-case a pin for putting on the key at that side, substantially as shown and described.

5. In combination with the bottom plate *a* and with the bolt *h*, a turn-bolt *q*, located at the back part of the bolt and above the same, and a staple *s*, spanning the bottom plate, the pin of the turn-bolt reposing in the corresponding branches of such staple, substantially as shown and described.

6. In combination with the bolt *h* and at one side thereof a tumbler 1, pivoted at 2, the lever *l*, acting on said tumbler when in its lowest position, this tumbler having a longitudinal slot-hole 3 with a curved branch, the side bar 7, having a projecting flap 5, embraced by such curved branch, such slide-bar being arranged to be raised or lowered by the key and thereby raising or lowering the tumbler and preventing the action of the lever on the bolt, substantially as shown and described.

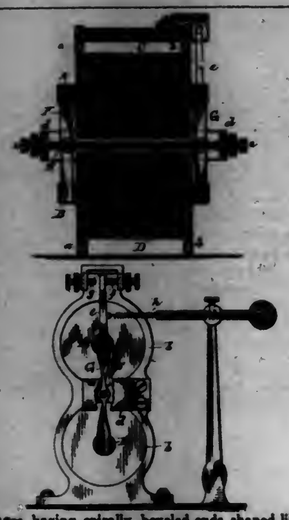
407,480. RELAY FOR QUADRUPLEX TELEGRAPHS. CLARENCE L. HEALY, Brooklyn, N. Y. Filed Sept. 15, 1888. Serial No. 285,502. (No model.)

Claim.—1. A neutral quadruplex relay having, in combination, two straight or bar electro-magnets and two movable armatures connected to move together and bridging adjacent ends of the cores of such magnets, substantially as set forth.

2. A neutral quadruplex relay having, in combination, two straight or bar electro-magnets and two armatures mounted on a shaft between the magnets and overlapping opposite ends of the cores of the magnets, substantially as set forth.

3. In a neutral relay, the combination, with magnet-cores having beveled ends, of an armature pivoted centrally and overlapping such

407,480.

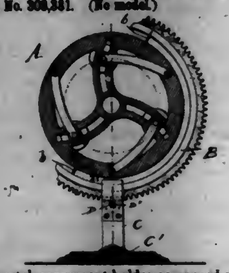


cores, said armature having spirally-beveled ends shaped like propeller blades, substantially as set forth.

4. The combination of the two differentially-wound straight or bar electro-magnets having cores with beveled ends, the intermediate shaft, the propeller-blade armatures, the contact-points, and retracting-spring, substantially as set forth.

5. A neutral quadruplex relay having, in combination, two straight or bar magnet-cores, a differential winding upon each of said cores, and two movable armatures connected to move together and bridging adjacent ends of said cores, substantially as set forth.

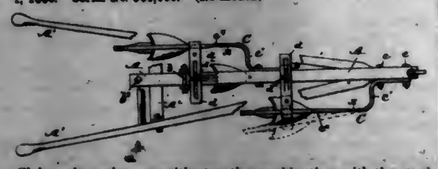
407,481. WATCH-MOVEMENT HOLDER. HEINRICH HEIDENREICH, New York, N. Y., assignor to Henry Stemmern, same place. Filed Apr. 24, 1889. Serial No. 308,381. (No model.)



Claim.—1. A watch-movement holder composed of a supporting-standard, a toothed segment guided in ways of said standard, a pinion for adjusting said segment, and a movement-holder proper that is pivoted to said segment so as to be adjustable on its axis, substantially as set forth.

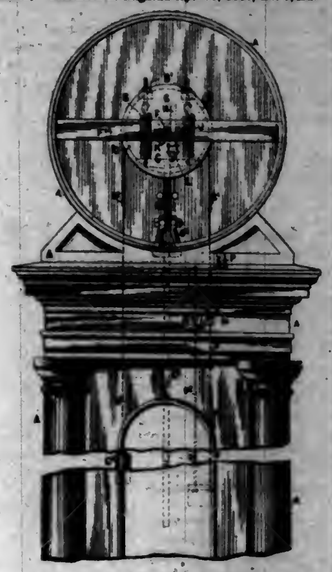
2. The combination of a supporting-standard having guideways, a toothed segment guided in said ways, a pinion meshing with the toothed circumference of said segment, and a movement-holding device that is pivoted at diametrically-opposite points to said segment and provided with a pawl-and-ratchet device for retaining the holding device at any suitable inclination to the segment, substantially as set forth.

407,482. PLOW. JOHN R. HOLLAR, Huntersville, S. C. Filed Mar. 1, 1889. Serial No. 301,609. (No model.)



Claim.—In a plow or cultivator, the combination, with the stock A, of the rigid arms having the thin spring portions *x* and carrying the shanks for the side shovels, said arms being secured at their forward ends to said stock and provided at their rear ends with adjustable clamping devices, whereby their latter ends and the shovels may be adjusted to and maintained at the desired distances from the stock, substantially as set forth.

407,483. COIN-FREED WEIGHING-MACHINE. HENRY KNIGHT, Ryde, Isle of Wight, England. Filed Mar. 16, 1889. Serial No. 303,601. (No model.) Patented in England Apr. 13, 1888, No. 5,092.



Claim.—1. In automatic coin-freed weighing-machines, the combination, with the cross-head C and its operating mechanism, of the pulley G, the cord around the same, the coin-receiving vessel M, attached to said cord, the vertical guides for the coin-receiver, the spindle F, upon which the pulley is mounted, and the pinion and pointer upon said spindle, and the rack-bar meshing with said pinion, whereby the descent of the coin-vessel and revolution of the pinion permit the rack-bar to descend until stopped by contact with the cross-head, substantially as and for the purposes specified.

2. In an automatic coin-freed weighing-machine, the compound weighing-levers D, rod C^3, coiled springs B B, and T-shaped cross-head C, all operated by the weight or pressure of the person or object to be weighed, in combination with the separately acting and detached rack H, the pinion F', the spindle F, the grooved pulleys G, and the cords G' G^2, and the coin-receiving vessel M and its counterpoise G^x, all operated by the weight of a coin or several coins, as set forth.

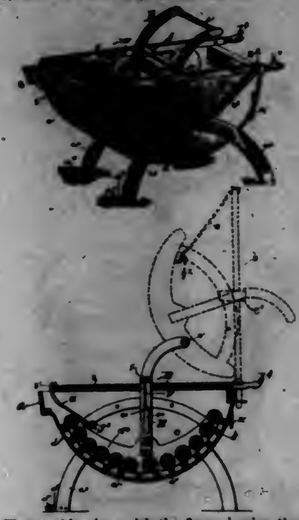
3. In automatic coin-freed weighing-machines, the weighing-platform, weighing-springs, connecting-rods, and the cross-head C, in combination with the receiving-vessel M, with guides N and counterweight G^x, the cords G' G^2, pulley G, spindle F, the pointer and the pinion F', and the rack H, said indicating mechanism being balanced, as described, whereby accuracy of indication is insured, as set forth.

4. In weighing-machines, the combination, with the cross-head C, of the weighing-rod and the screw L in same, the coin-vessel M, guides N, counter-weight G^x, the cords G' G^2, pulley G, the pointer and pinion F', carried by spindle F, and the rack H, the adjustment nut or collar H^3, the rack-guide H^4, and rack-head H^5, whereby the pointer may be adjusted, as set forth.

5. The coin receptacle or vessel M, open at the top and bottom and having pivots M^2 and an arm M^4, a frame surrounding said vessel and in which it is hung by said pivots, the lower part of said frame forming the bottom of the receptacle and serving to retain a coin, in combination with the weighing mechanism and a stop to swing the coin-receptacle upon the upward movement and deliver the coin, substantially as specified.

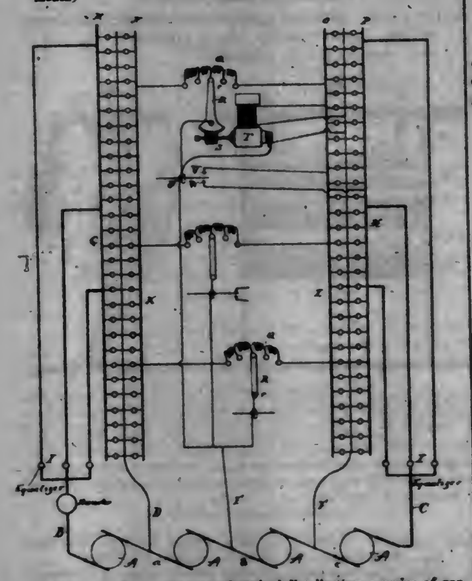
6. In automatic coin-freed weighing-machines, the combination, with a weighted cord and pulley around which the cord passes, of the guides N, the strap-frame M', to which one end of the cord is secured, the tilting coin-receiving vessel M, open at both ends and pivoted in the frame M' and having an arm M^3, and the latch *o*, for operating the arm, whereby the lower part of the frame M' forms a bottom to the coin-vessel to retain the coin until the same is discharged by tilting the vessel, substantially as specified.

407,484. WASHING-MACHINE. JOHN LEE, Jr., Sterling, Ohio. Filed Oct. 8, 1888. Serial No. 287,322. (No model.)



Claim.—The combination, with the frame having the depending lugs, of the rubber, the vertical bars, the short bars or plates having slots, the cross-rod secured to said depending lugs, the transverse bar attached to said vertical bars, the springs, and the handle-bar, substantially as described.

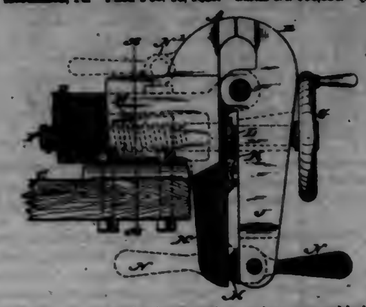
407,485. MULTIPLE-WIRE SYSTEM OF ELECTRICAL DISTRIBUTION. JAMES A. LIGHTIPE, Wilmington, Del., assignor to himself, George W. Bratton, Philadelphia, Pa., and Henry Human, New York, N. Y. Filed Apr. 25, 1888. Renewed Dec. 28, 1888. Serial No. 294,848. (No model.)



Claim.—1. In a system of electrical distribution, a series of generators, two or more groups of translating devices, compensating conductors for the groups connecting with the source of energy, and a central compensator connected with the groups through one or more variable resistances.

2. In a system of electrical distribution, a series of generators, two or more groups of translating devices, and compensating conductors therefor connecting with the source of energy, and one or more central compensators connected to the groups through one or more automatic variable resistances.

407,486. VISE. WILLIAM LOBBY, Philadelphia, Pa., assignor of two-thirds to Christian Gotz, same place, and Frederick S. Dickenshied, Rosemont, Pa. Filed Feb. 16, 1888. Serial No. 263,901. (No model.)



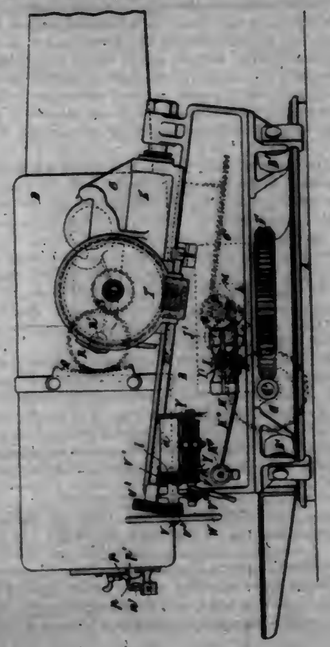
Claim.—1. A vise having a stationary jaw, a movable jaw, a slide to which the movable jaw is pivoted, legs which depend from said slide and movable jaw, and an eccentric which is pivoted to one leg and adapted to tighten against the other jaw, substantially as described.

2. A vise having a stationary jaw, a slide working in said jaw, a movable jaw pivoted to said slide, a nut secured to said stationary jaw, a screw swiveled to the slide and freely passing through the movable jaw and working in said nut, the said slide and movable jaw each having a depending leg, and means connected to one of said legs for clamping said jaws, said parts being combined substantially as described.

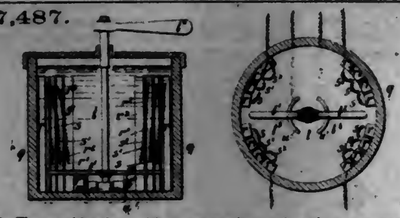
3. In a vise, jaws having parallel motions in opening and closing, in combination with a slide to which the movable jaw is pivoted and an eccentric which is mounted on said jaw in order to close the same against the other jaw, substantially as described.

407,487. APPARATUS FOR ADJUSTING, POINTING, OR TRAINING CANNON. HIRAM S. MAXIM, London, England. Filed Aug. 20, 1887. Serial No. 247,511. (No model.) Patented in England Oct. 17, 1884, No. 13,702; in France Apr. 10, 1885, No. 166,196; in Italy June 6, 1885, No. 18,466; in Belgium June 30, 1885, No. 69,347; in Sweden Aug. 17, 1885, No. 682, and in Austria-Hungary Aug. 19, 1886, No. 30 and No. 1,751.

Claim.—1. The combination, with a gun and gun-carriage, of an electro-magnetic motor connected with the carriage, and gearing for communicating motion from the said motor to the gun, whereby the gun may be elevated or depressed.



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2. The combination, with a gun-carriage, of an electro-magnetic motor connected therewith, and gearing for communicating motion from said motor to the carriage, whereby the gun may be trained, as set forth.

3. The combination, with the controlling-gears of the adjustable supports of a cannon, of electro-magnetic motors engaging, respectively, with such gears and adapted by their rotation to impart movement to the supports through the gears, a generator for producing the current to operate the motors, independent circuits including said motors, and a circuit controller and reverser connected with or included in said circuits and adapted to vary the strength and direction of the currents therein, as herein set forth.

4. The combination, with the vertically and horizontally adjustable supports of a cannon, and independent sets or systems of gears for adjusting the same for pointing and training the cannon, of two electro-magnetic motors engaging, respectively, with said gears and adapted by their rotation to impart movement to the supports through the gears, a generator for producing the current to operate the motors, independent circuit-connections between the generator and the motors, and a circuit controller and reverser connected with or included in said circuits and adapted to vary the strength and direction of the currents therein, as set forth.

5. The combination, with the horizontally and vertically adjustable supports of a cannon, of two electro-magnetic motors and intermediate gearing between said supports and the motors, respectively, for pointing and training the cannon through the action of the motors, a generator for producing the current that operates the motors, circuits from the generator including the motors, respectively, rheostats or variable resistances and switch-terminals in each of said circuits, and a contact-lever or handle operatively combined therewith and adapted by its movement to vary the rheostats and switch-connections and thereby control the strength and direction of the currents in the motor-circuits, as herein set forth.

6. The combination, with the gun D, of the rack C', movable with the gun on its carriage, the shaft J', and rotary electro-magnetic motor L, gearing therewith and mounted on the carriage, the pinion F on shaft O' and engaging with the rack C', the gear-wheel O, engaging with a loose pinion on shaft J', and the controlling-clutch K, for operatively connecting and disconnecting the shafts J' and O', as set forth.

7. The combination, with the gun D, of the worm-wheel F, secured horizontally to the base A, the shaft J', and the electro-magnetic motor geared with the same, mounted on the gun-carriage, the intermediate gearing between the wheel F and the shaft J', and the clutch K, for throwing said gear into or out of operation, as herein set forth.

8. The combination, with the gun D, of the worm-wheel F, secured horizontally to the base A, the shaft J', and the electro-magnetic motor geared therewith, mounted on the gun-carriage, the worm-wheel G', engaging with wheel F, the shaft G, carrying said worm, the gear-wheels H I J, connecting shafts G and J', and the clutch K, for disconnecting the shaft J' from the gears specified.

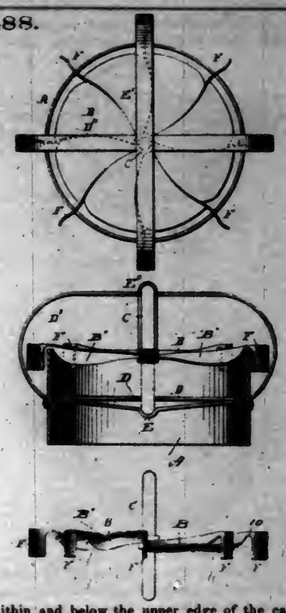
9. The combination, with the gun D, of the toothed segment Q, secured to the side thereof, the worm U, its shaft U', and the rotary electro-magnetic motor mounted on the carriage and geared to the shaft U', the gear-wheels R S, and worm-wheel T between the segment Q and worm U, as herein described.

10. The combination, with the horizontally and vertically adjustable supports of a cannon, of two electro-magnetic motors and intermediate gearing between the said supports and the motors, respectively, of a generator for supplying the current to run the motors, a circuit controller and reverser for varying the strength and direction of the currents transmitted to the motors, and an operating or controlling handle therefor formed or provided with a pistol grip or butt, as herein set forth.

407,488. EXHAUST-VENTILATOR. CHARLES T. MURRAY, Kansas City, Mo. Filed Feb. 15, 1889. Serial No. 299,896. (No model.)

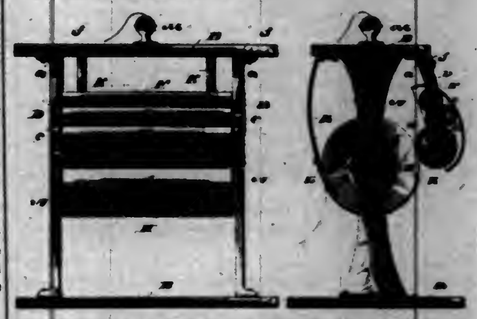
Claim.—In a chimney cowl or ventilator, the combination, with a cap less cylindrical casing A, provided with transverse supporting-bars, of the herein-described rotary wheel or vane provided with a central vertical shaft mounted on said supporting-bars, and consisting of a series of radially-disposed inclined plates or wings B' B', arranged

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entirely within and below the upper edge of the casing out of the range of external currents of air, and having their lower edges curved upwardly and outwardly to the upper edge of the casing, said plates or wings being provided with supplementary wings F, which depend from their extremities and are arranged below and outside of the upper edge of the casing, so as to rotate around the same out of the range of internal currents of air, all constructed substantially as and for the purpose specified.

407,489. COMBINED PAPER HOLDER, CUTTER, AND PRINTING DEVICE. LUTHER A. MCCORD, Laurens County, S. C. Filed Nov. 16, 1887. Serial No. 255,301. (No model.)

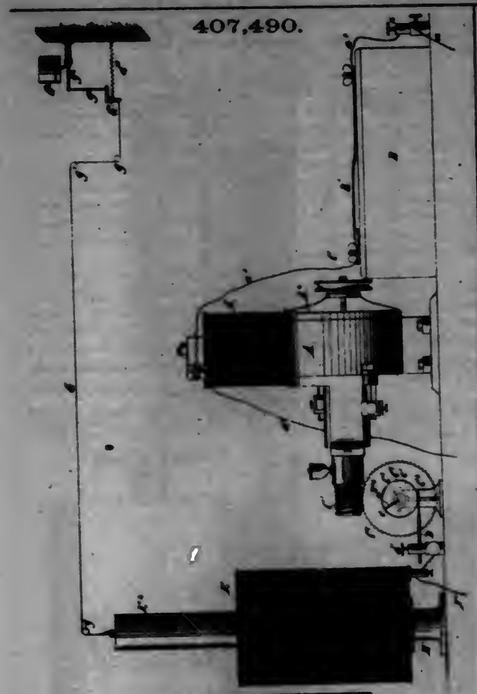


Claim.—The combination of the upright frame having the notched standards for the journals of the paper roll, the cutter secured to spring-arms connected with the main frame, the arms hinged to the top of the said frame, and the printing and inking rolls journaled in the said arms, whereby the paper may be printed and severed at will, the drawing of the paper operating the printing and inking rolls, substantially as specified.

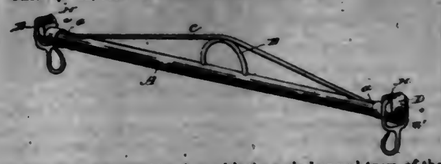
407,490. ELECTRIC SIGNAL. GEORGE MCINTOSH, Stonington, Conn. Filed Apr. 20, 1889. Serial No. 307,974. (No model.)

Claim.—The combination, with an electric motor, of a commutator-wheel continuously rotated thereby when the motor is in motion, and provided upon its periphery with a metallic and a non-metallic surface, a helix, a brush bearing upon said commutator-wheel and in electrical circuit with said helix and commutator-wheel, a movable core for said helix moved in one direction when said helix is energized through the commutator-wheel and in the other direction by a spring when said helix is de-energized by the commutator-wheel, and a signal connected with said movable core and operated when said core is moved by the energizing of the helix, substantially as specified.

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407,491. WHIFFLETREE. ALFRED R. GUIDOBY, Montpelier, Ohio. Filed Apr. 12, 1889. Serial No. 306,952. (No model.)



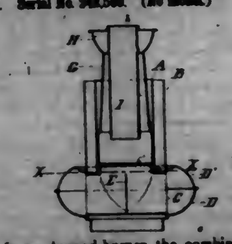
Claim.—1. The combination, with the main bar and truss, of the ferrule formed with an interior partition, through which the truss passes, and means applied to the end of the rod inside the ferrule to hold it and the ferrule in place, substantially as and for the purposes described.

2. The combination, with the main bar and truss, of the thimble or ferrule provided with an interior perforated partition, a key to prevent the thimble from turning on the main bar, and a hook to receive the ring or eye of a tug, substantially as and for the purposes set forth.

3. The combination, with the main bar and truss, of a ferrule or thimble for holding the parts together, formed with a hook on its rear face and made oblong in cross-section where the ring or eye of a tug will lie, substantially as and for the purposes set forth.

4. The ferrule or thimble, for the purposes specified, formed with an interior perforated partition, a hook on its rear face, and means for preventing it from turning, substantially as described.

407,492. ARGAND LAMP-BURNER. FRANK REED, Meriden, Conn., assignor of one-half to Charles S. Upton, New York, N. Y. Filed June 27, 1887. Serial No. 242,569. (No model.)



Claim.—1. In an Argand burner, the combination of a foraminous inner air-distributer and a foraminous shell within said distributer, the lower end of said shell being of a diameter less than that of said distributer, so as to leave an annular opening between said shell and said distributer, substantially as described.

2. In an Argand burner, the combination of a foraminous inner air-distributer and a concentric foraminous portion of substantially cylindric form within said distributer, said concentric portion being of a less diameter than the lower end of said distributer, and so as to leave an annular opening between said concentric portion and said distributer, substantially as described.

3. In an Argand burner, the combination of a foraminous inner air-distributer provided with an imperforate top and a concentric foraminous portion of substantially cylindric form within said distributer, the lower end of said concentric portion open, its upper end closed by said cap, said concentric portion being of less diameter than said distributer, and so as to leave an annular opening between the lower end of said concentric portion and said distributer, substantially as described.

4. In an Argand burner, the combination of an inner air-distributer consisting of a foraminous cone-frustum surmounted by a foraminous button-shaped portion covered by an imperforate cap and a foraminous open-ended cylinder within said distributer, the upper end of said cylinder being closed by said cap, the lower end of less diameter than said distributer, and so as to leave an annular opening between said cylinder and said distributer, substantially as described.

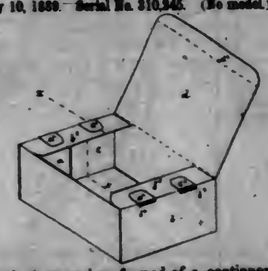
407,493. BLANK FOR PASTEBOARD BOXES. THEODOR REMER, Dresden, Saxony, Germany, assignor to the Actien-Gesellschaft für Cartonnagen Industrie, same place. Filed Apr. 10, 1888. Serial No. 269,677. (No model.)



Claim.—1. As an improved article of manufacture, a blank for pasteboard boxes, consisting of a creased sheet of pasteboard provided on the outer surface of the sheet and along the lines of the creases with angle-binding strips pasted thereon and edge-binding strips pasted on the edges, substantially as set forth.

2. As an improved article of manufacture, a blank for pasteboard boxes, consisting of a sheet of pasteboard grooved on the outer surface and having binding-strips pasted along their side parts only to the outer surface of the sheet at the sides of the grooves, the longitudinal central parts of the strips being raised to form hollow ridges over the grooves, substantially as herein shown and described.

407,494. PAPER BOX. CHARLES SCHWARTZ, Brooklyn, N. Y. Filed May 10, 1889. Serial No. 310,245. (No model.)



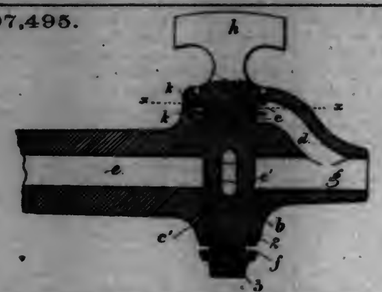
Claim.—1. A paper box formed of a continuous blank, cut out to form three laterally-projecting flaps at each side, the central flaps being provided with slots and with a creased margin b^2, and the end flaps being provided with tongs that engage said slots, the margin b^2 being adapted to fold over the end flaps, substantially as specified.

2. A paper box formed of a continuous blank, cut out to form three laterally-projecting flaps *a b c* at each side, and an upwardly-projecting cover-forming flap *d*, the central flaps *b* being provided with slots and a creased margin, and the end flaps being provided with tongs adapted to engage said slots, the blank being creased in continuation of the lines of flaps *d* and in continuation of the upper edges of the three laterally-projecting flaps, substantially as specified.

407,495. FAUCET. WILLIAM H. SHAW, Brooklyn, N. Y., assignor to himself and John Boerman, same place. Filed Apr. 29, 1889. Serial No. 308,982. (No model.)

Claim.—1. The combination, with the faucet-barrel *b*, of the plug

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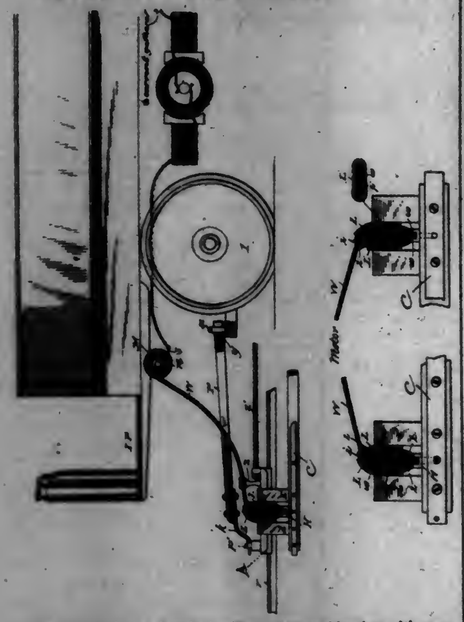


a, having around it grooves, and the spring *f*, whereby an end movement is allowed to the faucet for the passage of the beer or similar liquid around the plug without turning the same, substantially as set forth.

2. The faucet having a barrel *b*, plug *a*, and spring *f*, there being grooves around the plug or within the barrel, or both, for the passage of liquid when an end motion is given to the plug, substantially as set forth.

3. The combination, with the plug *a* and spring *f*, of the barrel *b*, having grooves around within the same, and the passage *d*, extending to the bib or delivery-pipe of the faucet, substantially as set forth.

407,496. ELECTRICAL RAILWAY. SIDNEY H. SHORT, Denver, Colo., assignor to the United States Electric Company, same place. Filed Feb. 19, 1887. Serial No. 228,223. (No model.)



Claim.—1. In an electrical railway, the combination, with a car, of a current-collector within the conduit, a shoe for supporting the same, electrical connections to the car, and a driver between the car and shoe, said driver having both ends forked and detachably connected to the car and shoe, the said connection being adapted to be broken in case an obstruction is met with, substantially as described.

2. In an electrical railway, the combination, with a car, of a current-collector, a shoe supporting the same, a driver or rod between the car and shoe, and extensible electrical connections between the car and collector, substantially as described.

3. In an electrical railway, the combination, with a car, of a current-collector, a shoe supporting the same, a detachable driver or rod between the car and shoe, a spring-roller suitably supported and in connection with the motor on the car, and a wire or cable connected at one end to the current-collector and secured at the other end to the spring-roller, substantially as described.

4. In an electrical railway, the combination, with a car, of a current-collector, extensible electrical connections between the collector and each end of the car, suitable supports for the collector, and a driver or rod connecting the car at each end with the collector-support, substantially as described.

5. In an electrical railway, the combination, with a car, of a current-collector supported on shoes, extensible electrical connections at each end of the car with the collector, a detachable driver or rod connecting the car at each end with the supporting-shoes, and a rod *x'*, connecting the shoes, substantially as described.

6. In an electrical railway, the combination, with the car, of a current-collector within the conduit and a cable for connecting electrically the collector with the car, the said cable being composed of a series of wires, these wires being separated and insulated from each other and arranged side by side at the point where they pass through the conduit-slot, substantially as described.

7. The combination, with an electrical railway, of a current-collector within the conduit-supports *d* E, connecting the same with a shoe traveling in the slot, a cable for electrically connecting the collector with the car, composed of a series of wires, said wires being separated, insulated from each other, and arranged side by side between the supports *d* E in the slot and an outer protecting covering L, substantially as described.

407,497. AGRICULTURAL BOILER. ISRAEL SHOUDY, Jr., and LUTHER L. MILLER, Paw Paw, Ill. Filed Jan. 31, 1888. Serial No. 262,533. (No model.)



Claim.—1. The combination, in an agricultural boiler, of a furnace and a suitable receptacle to contain the substance to be heated, said furnace consisting of a fire-chamber, a fire-grate, an air-flue communicating with the fire-chamber through the fire-grate to support combustion, a smoke-flue, a diving-flue, and a base-flue to connect the diving-flue and smoke-flue, substantially as set forth.

2. The combination, in an agricultural boiler, of a furnace and a suitable receptacle to contain the substance to be heated, said furnace consisting of a fire-chamber, a fire-grate, an air-flue communicating with the fire-chamber through the fire-grate to support combustion, a smoke-flue, a diving-flue, and a base-flue passing under the ash-pan and connecting the diving-flue and the smoke-flue, substantially as set forth.

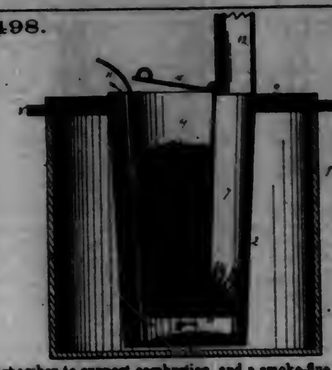
3. In an agricultural boiler, the combination, with a suitable receptacle adapted to contain the substance to be heated, of the outer casing suspended within said receptacle, the fire-pot within said casing, the reservoir suspended within the casing above the fire-pot, and a circulating-coil having its lower section arranged beneath said fire-pot, its intermediate portion extending upward against the exterior side thereof and its upper section arranged within the fire-pot, the said coil communicating at each end with the said receptacle, substantially as set forth.

4. In an agricultural boiler, the combination, with a receptacle adapted to contain the substance to be heated, of an outer casing supported therein and provided with an opening in one of its walls, a fire-pot provided with a closed bottom, a grate supported therein, a damper for opening and closing said opening, the suspended reservoir, the diving-flue, the base-flue, the smoke-flue, the air-supply flues extending vertically within the smoke-flues and communicating at their lower ends with the fire-pot and at their upper ends with the open air, and a circulating-coil in communication with the said receptacle.

407,498. AGRICULTURAL BOILER. ISRAEL SHOUDY, Jr., Paw Paw, Ill. Filed Jan. 30, 1888. Serial No. 262,362. (No model.)

Claim.—In an agricultural boiler, the combination of an outer receptacle to contain the substance to be heated and a furnace within the receptacle, said furnace consisting of a fire-chamber, a fire-grate, a reservoir to contain a supply of fuel, an air-flue communicating with

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the fire-chamber to support combustion, and a smoke-flue to the fire-chamber, substantially as set forth.

407,499. STEAM-INJECTOR. THOMAS J. SWEENEY, Detroit, Mich., assignor to the Penberthy Injector Company, same place. Filed Feb. 8, 1889. Serial No. 299,206. (Model.)

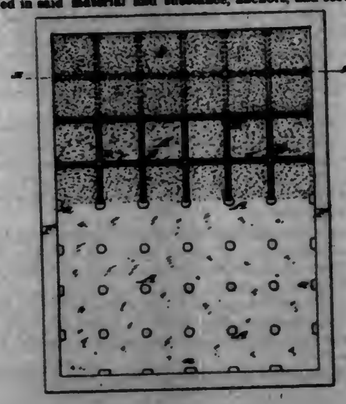


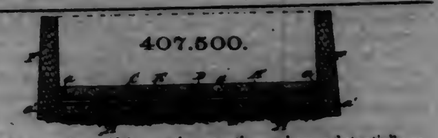
Claim.—1. The steam-injector having the lifting-valve consisting of a disk having plain upper and lower surfaces, in combination with the combining-tube and vacuum-chamber, said valve normally resting wholly upon a shoulder of the combining-tube and arranged below the vacuum-chamber, a narrow space being provided between said disk or valve and the lower edge of said vacuum-chamber, substantially as shown and described.

2. In a steam-injector, the combination, with the tubular casing having the overflow water-chamber provided at its bottom with an unthreaded circular flange, and the hollow plug arranged in alignment with the overflow water-chamber, provided at its bottom with an unthreaded circular flange, and the hollow plug arranged in alignment with the overflow water-chamber, of the integral combining and delivery tube formed with an unthreaded ring or flange, having its upper side fitting against the under side of the flange of the overflow water-chamber and its lower side resting upon the upper edge of said plug, substantially as set forth.

407,500. CELLAR-BOTTOM. ELBAZAR S. VANBRAM, Flatbush, N.Y. Filed Apr. 11, 1888. Serial No. 269,869. (No model.)

Claim.—A cellar-bottom comprising the combination of solid building material and asphalt or bituminous substance, bar-sections embedded in said material and substance, anchors, and securing de-



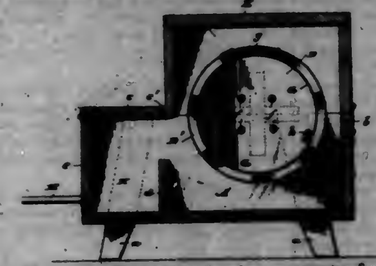


vices for securing said bar-sections to the anchors, substantially as specified.

407,501. METHOD OF MANUFACTURING BRASS KETTLES. WILLIAM R. WALDO, Ansonia, Conn., assignor to the Ansonia Brass and Copper Company, same place. Filed May 6, 1889. Serial No. 309,786. (No specimens.)

Claim.—The method herein specified of tinning and finishing brass kettles, consisting in annealing the kettle when ready for the final spinning or finishing operation, removing oxide or stain from the surface of the brass, then tinning the interior of the kettle, and then spinning or otherwise finishing the kettle to harden and stiffen the metal and leave the blank in a condition ready for trimming, wiring, and bailing, substantially as set forth.

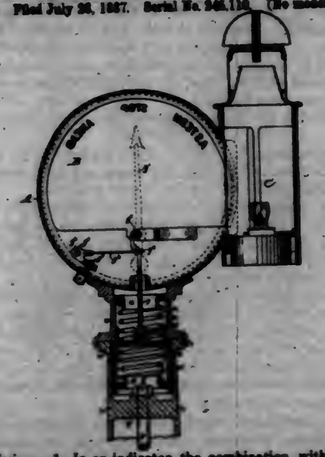
407,502. STARCHING-MACHINE. DENIS B. YOUNG, East Douglas, Mass. Filed Apr. 10, 1888. Serial No. 307,099. (No model.)



Claim.—1. The combination, in an apparatus for starching clothes, of a receptacle A, provided with a top and containing a partition forming two compartments communicating with each other over the upper edge of the partition beneath the receptacle-top, a steam-pipe communicating with one compartment, and a revoluble cylinder mounted in the other, provided with a door and having its ends perforated, substantially as set forth.

2. The combination, in an apparatus for starching clothes, of a receptacle A, having a compartment H formed in one end thereof, a cylinder mounted near the opposite end of the receptacle, said cylinder having a hinged door *g*, adapted to be brought opposite the hinged door *b* at the end of the receptacle A, a hinged cover *c* above the compartment H, a cover E', and a steam-pipe leading into the compartment H, the parts being organized substantially as shown, and for the purpose set forth.

407,503. INDICATOR FOR THE MOTIONS OF THE ENGINES IN STEAMSHIPS. JAMES G. ALDEN, Birkenhead, County of Chester, England. Filed July 26, 1887. Serial No. 245,126. (No model.)



Claim.—1. In an indicator, the combination, with pipe F and cylinder K, of piston G, fitting therein, a dial, a pointer connected

with the piston, and springs upon opposite faces of the piston adapted to maintain the pointer normally at the zero-point.

2. In an indicator, the combination, with pipe F, cylinder K, and piston G, of abutments or rings M M', screwing into the ends of the cylinder, springs N N', bearing at one end against the piston and at the other end upon the abutments, and a pointer connected with and adapted to be operated by the piston.

3. In an indicator for ships, &c., the combination, with the standard L, having the internal web or flange *l* near its upper end and hollow above the flange, of an indicating mechanism, substantially such as shown, secured to the upper end of the standard, and a pipe F passing through the web or flange and adapted to convey the actuating force to the indicating mechanism.

4. In combination with a standard L, provided with an internal web or flange *l* and with a hollow upper end, an indicating mechanism provided with a cylinder K to set into the upper end of the standard, and a pipe F passing through the web or flange and communicating with the cylinder to convey the actuating fluid to the interior of the latter.

5. In combination with a dial, a pointer, a pair of semaphores connected together and adapted to be engaged and actuated by the pointer, and mechanism, substantially such as shown, for actuating the pointer.

6. In an indicator, the combination, with a dial, of a pointer, a moving part G for imparting motion to the pointer, two semaphores connected one with the other and adapted to be actuated by the pointer, and a pipe F to convey fluid to the part G to cause the proper movements of the latter.

7. In an indicator, the combination, with a dial, of a pointer, a moving part G for imparting motion to the pointer, two semaphores connected one with the other and marked to correspond with the dial, said semaphores being adapted to be actuated by the pointer, and a pipe F to convey fluid to the part G to cause the proper movements of the latter.

8. In combination with the semaphores, a dial, a pivoted arm carrying the semaphores, a pivoted pointer and means for actuating the same, and pins i^2 i^3, secured to the pivoted arm and adapted to be struck by the pointer.

9. In combination with an oscillating pointer and means for actuating the same, pivoted semaphores *i i*, connected one with the other and engaging and actuated by the pointer.

10. In combination with a dial, a bridge l', having an open space l^2, a pair of semaphores carried by a pivoted arm and adapted to pass in line with the space l^2, pins i^2 i^3, carried by the pivoted arm, and a pointer adapted to strike the pins on the arm, whereby, whenever the pointer passes to one side or the other of the zero-line, the semaphores will be thrown over.

11. In an indicator, the combination, with a shell or casing, of a pointer g', swiveled therein and provided with an arm g^3, a rod or stem *g*, connected with the arm, and a spring g^3, secured to the shell and engaging with the rod or stem.

12. In an indicator, the combination, with a casing, of a shaft having an arm g^3, a pointer connected with the shaft, a stem *g*, connected with the arm, a bolt g^6, pivoted in the shell and provided with a spring g^7 to engage the stem *g*, and a screw g^8, swiveled in the case and engaging the block.

407,504. AUTOMATIC SWITCH FOR RAILWAYS. JOHN T. ABOO, Poindexter, Ky. Filed July 26, 1888. Serial No. 281,005. (No model.)

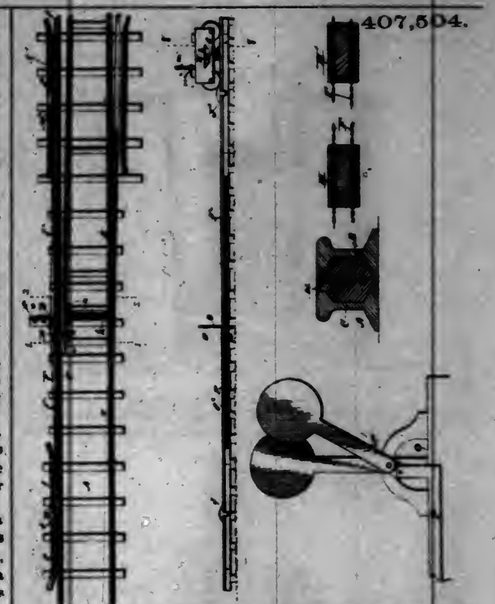
Claim.—1. The combination, with the main track and the switch, of the lever D, means for operating the said lever, as the cable having stops connected with the lever, the connection E, passing through a rail of the switch and having a stop *e*, and the spring *e'*, held between the said rail and the stop *e*, substantially as and for the purpose described.

2. The combination, with the switch, the lever D, for operating the switch and the endless cable, of the stops and the double-inclined blocks, substantially as and for the purpose described.

3. In a switch-operating mechanism, the combination, with the endless cable, of the two stops, one stop being at one end and connected with the upper portion of the cable, the other stop being at the other end and connected with the lower portion of the cable, substantially as and for the purpose described.

4. The combination, with the main and switch rails, the endless cable connected with a lever to operate the said switch-rails and the guard-rail, of the stop having two longitudinal openings which receive the upper and the lower parts of the cable, one of said parts being secured to the said stop and having its side expanded to fit in the space between the foot and the top of the said rails, substantially as and for the purpose described.

5. The combination, with the main track, the switch, the lever D, for opening and closing the switch, and means for operating the said lever, of the connection E, passing through the switch and connected at its outer end with the lever D, and having a stop *e* on its

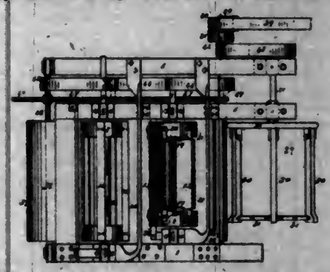


407,504.

inner end, and the spring *e'*, interposed between the said stop *e* and the side of the said switch-rail, substantially as described, for the purpose specified.

6. The combination, with the switch, the switch-operating devices, and the inclined block, of the truck, the vertically-movable arm K, the stops, the spring, and the lateral rollers, substantially as and for the purpose specified.

407,505. INTESTINE-CLEANER. WILLIAM BACHMAN, Kansas City, Kans. Filed Aug. 8, 1888. Serial No. 282,206. (No model.)



Claim.—1. In a casing-cleaning machine, the combination of a pair of cylinders having knives mounted thereon, a pair of cylinders having brushes mounted thereon, and means for revolving the cylinders, substantially as and for the purpose set forth.

2. In a casing-cleaning machine, the combination of a pair of cylinders, knives mounted on the cylinders, a bar within each cylinder having a rubber strip attached thereto for cleaning the inside of the knives, and bars secured outside of the cylinders for the purpose of cleaning the outside of the knives, substantially as and for the purpose set forth.

3. In a casing-cleaning machine, the combination of a feed-roller, a pair of cylinders having knives attached thereto, a pair of cylinders having brushes attached thereto, said brushes being made adjustable, a winding-reel situated to the rear of the cylinders, and suitable means for driving said reel, cylinders, and feed-roller, substantially as and for the purpose set forth.

4. In a casing-cleaning machine, the combination of the supporting-frame 1, feed-roller 37, cylinders 2 3, knives 10 11, cleaners 26, 26½, and 27, supports 32, 33, and 34, cylinders 4 5, brushes 12, shield 15, and reel 29, substantially as and for the purpose set forth.

5. In a casing-cleaning machine, the combination of the cylinder provided with cleaning-brushes, guards 15 behind the brushes, and strips between said guards and brushes, substantially as and for the purpose set forth.

6. In a casing-cleaning machine, the combination of the cylinders,

brushes 12, guards 15, frame 13, and strips 17 18, substantially as and for the purpose set forth.

407,506. SHIELD FOR HORSESHOE-CALKS. SETH T. BABB, Detroit, Mich. Filed Nov. 23, 1888. Serial No. 291,693. (No model.)



Claim.—1. A box adapted to receive the two heel-calks of a horseshoe, in combination with an angle-iron to fit over the heel of the shoe, and means, substantially as described, for locking said box and angle-iron together, substantially as and for the purposes set forth.

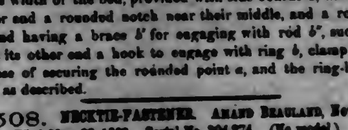
2. The combination of the box G, having the flange C thereon, angle-iron B, bolt E, and nut D, substantially as and for the purposes set forth.

407,507. COMBINED END-GATE AND SCOOP-BOARD. LAWSON W. BAYLISS, Neola, Iowa. Filed Mar. 30, 1889. Serial No. 305,355. (No model.)



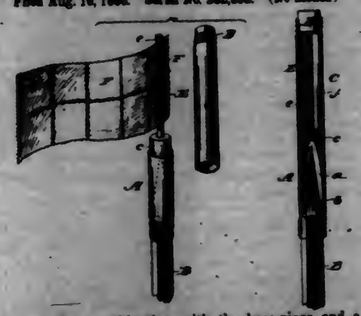
Claim.—In a combination scoop-board and end-gate, the combination, with a wagon-bed, the body A of sufficient width to slightly exceed the width of the bed, provided with side-boards C, having on their lower end a rounded notch near their middle, and a rounded point *a*, and having a brace *b'* for engaging with rod *b''*, such rod having at its other end a hook to engage with ring *b*, clamp B, for the purpose of securing the rounded point *a*, and the ring-headed bolt *b*, all as described.

407,508. NECKTIE-FASTENER. AMAND BEAULAND, New York, N. Y. Filed Mar. 26, 1889. Serial No. 304,274. (No model.)



Claim.—As an improved article of manufacture, a necktie-fastener consisting in an attaching-plate 10, having a key-hole slot 11, an open spring 12, bent to form the figure 8 and secured to the said plate, the upper oval being smaller than the lower oval, and the upper and lower hooks 17, secured to the same side of the plate as the spring and having their points projecting inwardly toward each other, substantially as set forth.

407,509. POSTAGE-STAMP HOLDER. DAVID M. BLOCH, New York, N. Y. Filed Aug. 16, 1888. Serial No. 282,892. (No model.)



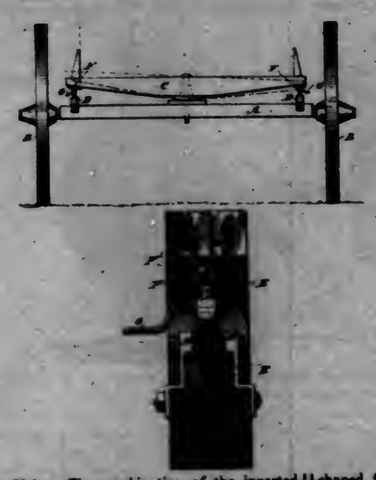
Claim.—1. The combination, with the base-piece and a pin or spindle secured at its lower end thereto and having a longitudinal slit extending from its upper end downwardly, the upper end of said slit being open to admit of the insertion of a stamp or stamps from said upper end, of a tubular cap closed at its upper end, passed downward over the pin or spindle, and fitting at its lower open end over the base or part thereof and removable bodily from said base and pin, substantially as set forth.

2. As an improved article of manufacture, a combined pencil-tip, eraser, and stamp-holder, consisting in the sleeve A, a pin or spindle secured at its lower end to the upper end of the sleeve, said upper end forming a base therefor, a separate and independent tubular cap or cover C, inclosing said pin or spindle and fitting at its lower open end upon the upper end of the sleeve A, and an eraser D, separate and independent from the rod and closing the upper end of the cap or cover C, the cover C and its eraser D being bodily removable together upwardly or outwardly from the sleeve A and pin E, substantially as set forth.

407,510. SIZING COMPOUND. RICHARD D. BUSHER, Jersey City, N. J., assignor to William W. Fenshé, Jr., New York, N. Y. Filed Mar. 26, 1889. Serial No. 304,861. (No specimens.)

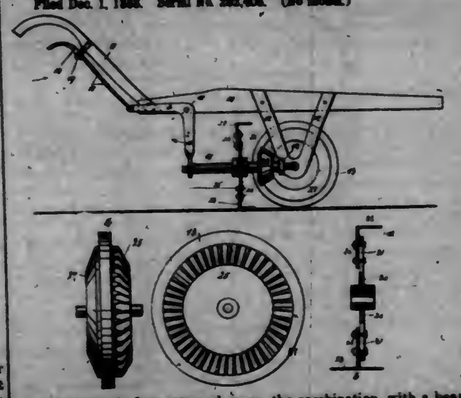
Claim.—A sizing compound consisting of beeswax, copal varnish, and thin and thick lithographic varnish, similar to that described in the trade as 00 and No. 5, in the proportions substantially as specified.

407,511. ADJUSTING ATTACHMENT FOR THRASHING-MACHINES. JOHN D. BURKHART, Dayton, Wash. Filed Mar. 27, 1889. Serial No. 305,096. (No model.)



Claim.—The combination of the inverted-U-shaped frame D, formed with the central threaded opening D', the threaded adjusting-screw E, formed with the pointed upper end and having the small lever G, and the metal casting F, having the recess F^2 formed in its lower side, substantially as set forth.

407,512. COTTON-CHOPPER. WILLIAM P. CLARK, Riberton, Ga. Filed Dec. 1, 1888. Serial No. 292,402. (No model.)

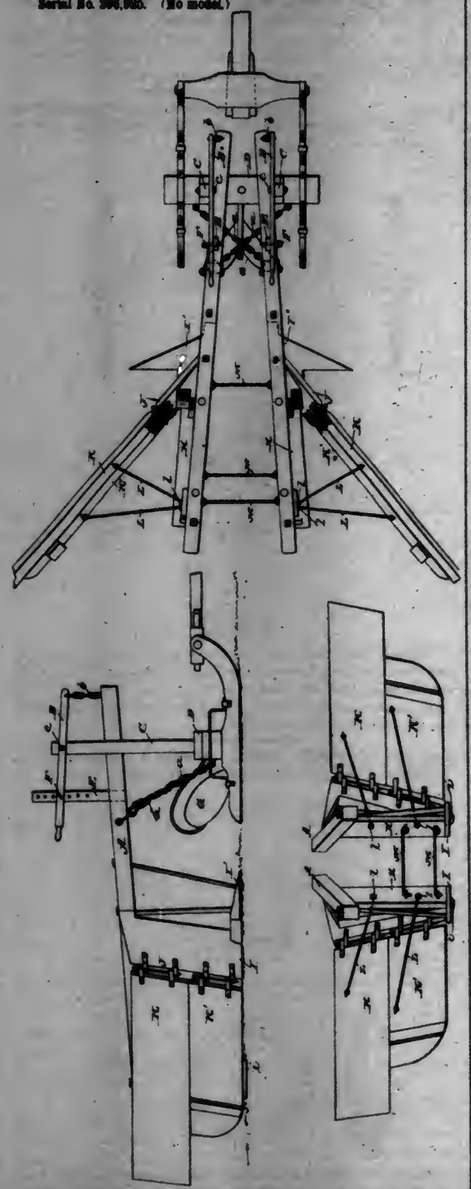


Claim.—1. In a cotton-chopper, the combination, with a beam and hangers secured thereto, of a drive-wheel journaled in said hangers, a bell-crank lever pivoted to the rear end of the beam, a shaft journaled in said bell-crank lever, and a bracket on one of the hangers, a disk provided with adjustable cutters secured to the shaft, and means for operating the shaft from the drive-wheel, substantially as herein shown and described.

2. A driving-wheel for cotton-choppers, provided with a gear upon one face and a friction-ring upon the other, substantially as described.

3. In a cotton-chopper, the combination of the driving-wheel provided with a gear upon one face and a friction-ring upon the other face, a cutter-shaft, and interchangeable pinion and friction-disk adapted to be secured on said shaft, substantially as and for the purpose set forth.

407,513. SNOW-PLOW. WILLIAM H. DEADMAN, Alpena, Mich., assignor of one-half to Austin Deadman, same place. Filed Jan. 19, 1889. Serial No. 296,925. (No model.)



Claim.—1. In a snow-plow, the combination of the truck, the beam-support mounted thereon, the two plow-sections having the forward ends of their beams adjustable and having such beams connected with said supports, and the draft-connections between said plow-sections and the truck, substantially as and for the purposes specified.

2. In a snow-plow, the combination, with the two plows proper having their beams or frames adjustable close together or apart, of an adjustable separating connection or connections by which said beams or frames may be held apart, substantially as set forth.

3. The combination, with the two plows arranged side by side, of an eye or eyes on the inner side of one of said plows, and a rod or rods pivoted at one end to the other plow and having at its free end a hook to enter the eye of the other plow, substantially as set forth.

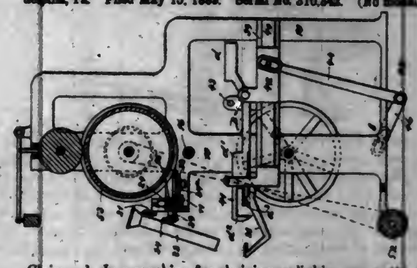
4. A snow-plow having its sole-piece provided with a rib secured to and depending from its under side near its rear end, substantially as set forth.

5. A snow-plow having a plurality of independently-adjustable hinged wings arranged one above the other, substantially as set forth.

6. A snow-plow having a plurality of independently-adjustable wings arranged one above the other, the upper wing being longer than the lower one, substantially as set forth.

7. In a snow-plow, the combination of the beam, the landside connected to and depending from said beam, the sole-piece secured to the landside and extended in advance thereof, the point on said extension, the mold-board, the mold-board wings hinged independently to the mold-board and arranged one above the other, and the brace-rods connected with said wings and having adjustable stops, substantially as set forth.

407,514. MACHINE FOR LINKING WARPS. CLAYTON DUNN, Philadelphia, Pa. Filed May 15, 1889. Serial No. 310,842. (No model.)

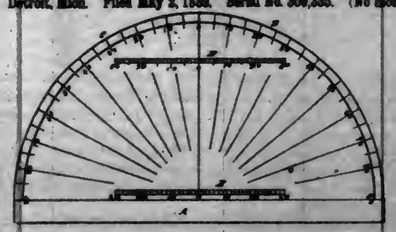


Claim.—1. In a machine for chaining or linking warps, the combination, with the warp-guiding trumpet, of an angled rock-shaft hinged at one end to the trumpet, a spring-actuated bar having a slotted arm at its outer end, a pin passing through the slot into the trumpet, and means, substantially as described, for operating the said rock-shaft and bar to impart a lateral movement in two directions to the lower end of the trumpet, substantially as set forth.

2. In a machine for chaining or linking warps, the combination, with a warp-guiding trumpet, a cam-wheel having a peripheral camway and a smaller wheel having a cam-face mounted upon the same shaft, and shifting-rods contacting with the cam-surfaces of each wheel, of an angled rock-shaft hinged at one end to the trumpet, a link-connection between the shaft and the shifting-rod of the larger cam, a spring-actuated bar connected with the shifting-rod of the smaller cam, a slotted arm projected from said bar, and a pin secured to the trumpet and passing through the slot in said arm, substantially as shown and described.

3. In a machine for chaining or linking warps, the combination, with an angled rock-shaft, a warp-guiding trumpet pivoted to the shaft and provided with an angled pin below its pivot-point, a shaft carrying a large wheel having a camway, and a smaller wheel having a cam-face, a shifting-rod actuated by the larger cam, a connection between the said rod and angled shaft, a spring-actuated bar provided with a slotted arm engaging the angled pin of the trumpet, a shifting-rod actuated by the smaller cam, and a connection between said shifting-rod and arm-carrying bar, of sets of stationary twin hooks below the trumpet and loopers sliding between the members of the hooks, and means for operating the loopers, substantially as shown and described.

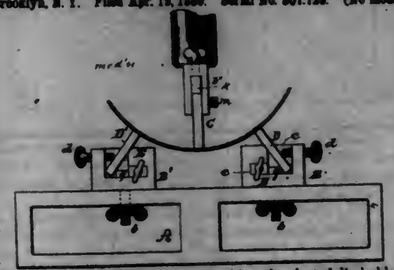
407,515. DRAFTSMAN'S PROTRACTOR. WILLIAM W. DUFFIELD, Detroit, Mich. Filed May 2, 1889. Serial No. 309,335. (No model.)



Claim.—1. A draftsman's protractor made in semicircular form having its circumference graduated equally in both directions from the vertical center and having thereon two equal parallel scales, each laid off on both sides of the vertical center, and located, respectively, between the horizontal or ninety-degree line and the circle of graduations at the circumference, substantially as shown and described.

2. A draftsman's protractor having outer graduated lines extending both ways from its center and having two equal parallel immovable scales located wholly between the horizontal or ninety-degree line and the circle of graduations at the circumference, substantially as and for the purposes set forth.

407,516. METAL-FORMING MACHINE. MICHAEL T. DURKIN, Brooklyn, N. Y. Filed Apr. 19, 1889. Serial No. 307,720. (No model.)

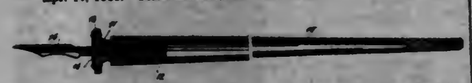


Claim.—1. In a metal-forming machine, the slotted die-holder D, provided with the lateral recess *e* and having inclined surfaces *f f'*, the bar *g*, having inclined surfaces *h h'* and provided with the slotted ear *i*, and the adjusting-screw E and nuts *j j*, substantially as specified.

2. In a metal-forming machine, a slotted die-holder D, provided with a lateral recess *e* and having inclined surfaces *f f'*, the bar *g*, having inclined surfaces *h h'* and provided with the slotted ear *i*, the adjusting-screws E, nuts *j j*, and the screws *d d*, substantially as specified.

3. In a metal-forming machine, the die-holder F, provided with the gib *k* and the adjusting-screws *l*, substantially as specified.

407,517. PEN-HOLDER. JAMES P. BEAN, New York, N. Y. Filed Apr. 17, 1889. Serial No. 307,562. (No model.)



Claim.—1. In a pen-holder, the combination, with a handle, of a flexible pen-receiver consisting of a shank attached to the handle, and a head having a pen-slot produced thereon, and a shield secured to the head provided with a slot registering with the slot in said head, substantially as shown and described.

2. The combination, with a handle, of a flexible pen-receiver comprising a shank attached to the handle, a head having a pen-slot therein, and a shield secured to the head provided with a slot registering with the shank-slot, and a sleeve capable of sliding upon the shank, substantially as shown and described.

3. As an improved article of manufacture, a flexible pen-receiver comprising a shank, a head provided with a pen-slot at or near the center, a plate secured to the said head provided with a slot registering with the shank-slot, substantially as shown and described.

4. As an improved article of manufacture, a flexible pen-receiver comprising a shank, a head provided with a pen-slot, a plate secured to said head provided with a slot registering with the shank-slot, and a sleeve capable of sliding upon the shank, substantially as shown and described.

407,518. PAPER-CUTTER. LEO BERLIEB, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed Oct. 6, 1888. Serial No. 287,438. (No model.)

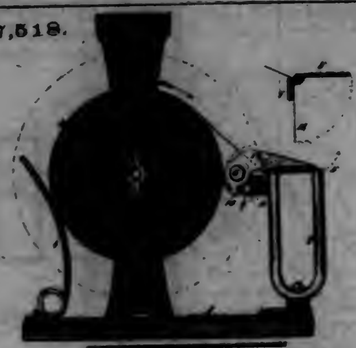
Claim.—1. In a paper-cutter, the combination of a paper-roll, a suitable support for the roll, a knife, and a magnet, substantially as and for the purpose set forth.

2. In a paper-cutter, the combination of the paper-roll, a suitable support for the roll, magnet, a knife, and a bar between which and the knife the paper passes, substantially as set forth.

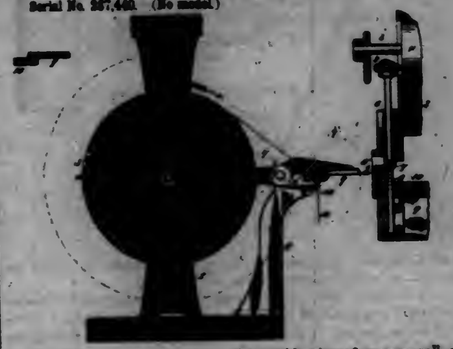
3. In a paper-cutter, the combination of a paper-roll, a suitable support for the roll, magnets, a knife pivoted to the magnets, and a bar secured to the magnets, all substantially as and for the purpose set forth.

4. In a paper-cutter, the combination of a paper-roll, a suitable support for the roll, magnets, bar 7, secured to the magnets, lugs 9 on the magnets, projections 11 on the lugs 9, knife 5, having extension 13, and spurs 10 on the extensions, substantially as set forth.

407,518.



407,519. PAPER-CUTTER. LEO BERLIEB, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed Oct. 6, 1888. Serial No. 287,440. (No model.)



Claim.—1. In a paper-cutter, the combination of a paper-roll, a suitable support for the roll, hinged arms, a knife secured to the outer ends of the hinged arms, and rollers secured to the inner ends of the hinged arms, all substantially as and for the purpose set forth.

2. In a paper-cutter, the combination of the paper-roll, suitable support for the roll, hinged arms, rollers secured to the inner ends of the hinged arms, knife secured to the outer ends of the hinged arms, and a bar between which and the knife the paper fits when the knife is in its normal position, substantially as set forth.

3. In a paper-cutter, the combination of the paper-roll, hinged arms, knife secured to the arms, rollers secured to the inner ends of the arms, and posts to which the arms are pivoted, substantially as and for the purpose set forth.

4. In a paper-cutter, the combination of the paper-roll, suitable support for the roll, posts 5, bar 10, secured to the posts, arms 6, pivoted to the posts 5, and a knife 9, secured to the arms 6, substantially as and for the purpose set forth.

407,520. LAND-ROLLER. JOHN M. FELLOWS, Burlington, Ind. Filed Sept. 5, 1888. Serial No. 284,608. (No model.)

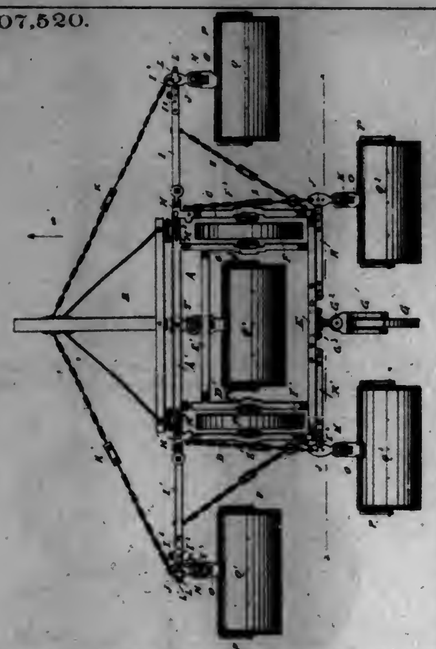
Claim.—1. In a land-roller, the combination, with a main frame, of beams pivoted to said frame, and the clevises for connecting the beams and main frame, the clevises carried at the free end of the beams and connected with the roller-carrying frame, substantially as shown and described.

2. The combination, with the main frame consisting of the beam A E and cross-beams C C' D D', of the slotted vertical bearings F^2 F^2, secured, respectively, to the cross-beams C' D' and C D, the bearings F^2 being provided with racks, the wheels F F', carried between the slotted bearings, shafts F^3, carrying said wheels and provided with pinions F^4 upon their outer ends and adapted to engage with the racks F^2, and the nut F^5, for holding the shaft securely between the slotted bearings, substantially as shown and described.

3. In a land-roller, the combination, with a main frame and a roller universally jointed on the said frame, of beams pivotally connected with the said main frame, a universal joint connected with each pivoted beam, a frame held on the said universal joint, and a roller supported on the said frame, substantially as shown and described.

4. In a land-roller, the combination, with wheels and a main frame held vertically adjustable on the axis of the said wheels, of beams pivoted on the said main frame, a clevis held on the free end of each beam, a universal joint connected with the said clevis, a frame

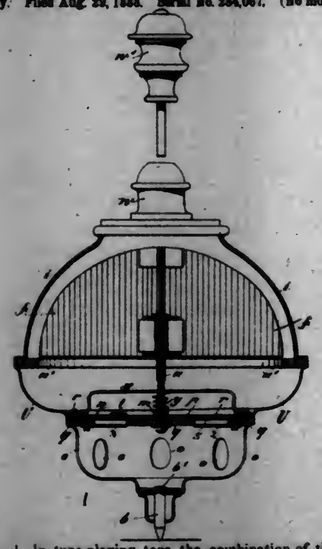
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held on the said universal joint, and a roller mounted to turn in the said frame, substantially as shown and described.

5. In a land-roller, the combination, with a main frame, of beams pivotally connected with the front beam of the said frame, a clevis held on the free end of each of the said beams, a roller held on the said clevis, and a wheel mounted on a rod held to slide vertically in each of the said beams, substantially as shown and described.

407,521. MUSICAL TOP. GEORG FISCHER, Nuremberg, Bavaria, Germany. Filed Aug. 29, 1888. Serial No. 284,067. (No model.)

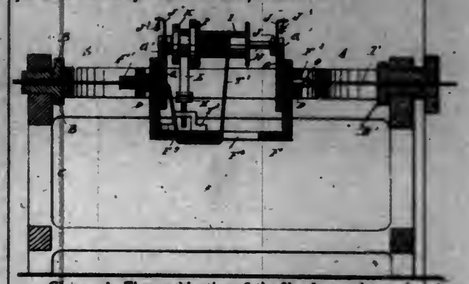


Claim.—1. In tune-playing tops, the combination of the lower body U, having the holes *v v*, reed-plate *q*, covering-plate *p*, having the hole *s*, point *b*, wings *f f*, axle *a* with the head *w*, and wires *i i*, for the purpose as described.

2. In tune-playing tops, the combination of the under body U, head *w*, wires *i i*, point *b*, reed-plate *q*, covering-plate *p*, with the wings *f f*, axle *a*, having the pinion *m*, cog-wheel *n*, cogged ring *r*, and guide *x*, for the purpose as described.

407,522. MACHINE FOR MAKING ROPE. MICHAEL PURSEL, Brooklyn, N. Y. Filed Jan. 26, 1889. Serial No. 297,915. (No model.)

Brief.—The object of the invention is to provide a flier of simple and durable construction, which shall hold the bobbin securely and permit of its ready removal and replacement.



Claim.—1. The combination of the flier-frame, the carriage hung loosely therein, and a spindle mounted on the carriage and having a brake-wheel provided with a pin P, for the purpose described, substantially as set forth.

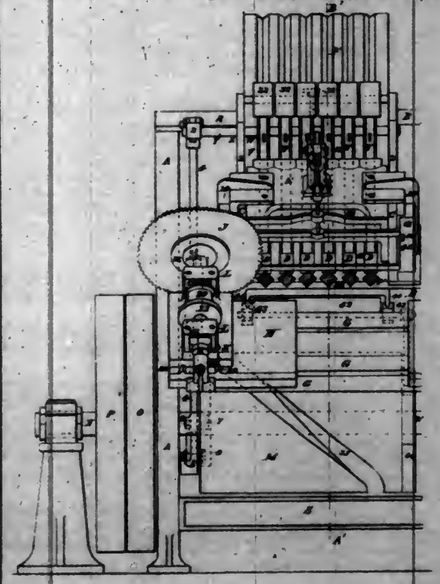
2. In a flier, the combination, with the flier-frame and a carriage provided with forked bearings, of a spindle held to turn in the said forked bearings, and pivoted arms passing through slots in the said forked bearings to engage the top of the said spindle to hold the latter in place, substantially as shown and described.

3. In a flier, the combination, with the flier-frame and a carriage provided with forked bearings, of a spindle held to turn in the said forked bearings, pivoted arms passing through slots in the said forked bearings to engage the top of the said spindle to hold the latter in place, and springs engaging the said pivoted arms to hold the same over the said spindle, substantially as shown and described.

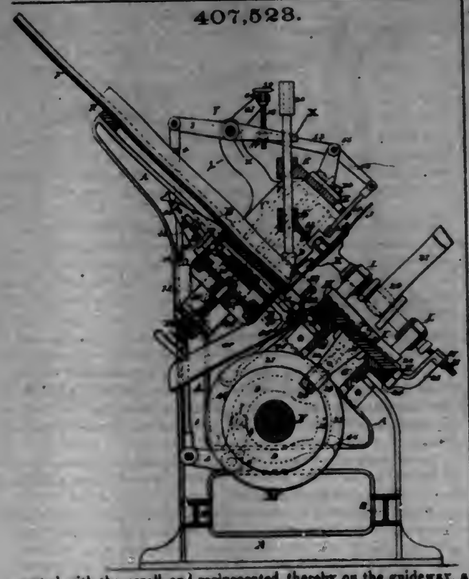
4. A flier-frame A, having parallel legs A' A', transverse bars D D, connecting said legs between their ends, the ends of legs beyond the said bars being inclined toward each other and apertured just in advance of the ends of said bars for the passage of the strands, the hollow trunnions B B, connecting the ends of said legs, the covers R, secured to the outer faces of the parallel portions of said legs, and pulleys journaled at the ends of said covers and over which the strands pass to said apertures and trunnions, substantially as set forth.

407,523. SELF-ACTING SAWING-MACHINE. ARTHUR GREG, Ingley Mills, near Bolton, County of Lancaster, England. Filed May 13, 1889. Serial No. 310,526. (No model.) Patented in England Sept. 15, 1888, No. 13,319.

Claim.—1. In a self-acting sawing-machine, the combination of a frame-work A, having a bed-plate B and a stationary guideway G, a rotating drive-shaft N, having a scroll M, a sliding frame H, con-



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nected with the scroll and reciprocated thereby on the guideway, a head-stock I on the sliding frame, having a rotating spindle provided with a circular saw, a grip-frame E on the bed-plate, a series of feed-guides F above the bed-plate, a series of feeding and holding grips D over the feed-guides, and means for automatically operating the grips to hold and release the timber, substantially as described.

2. In a self-acting sawing-machine, the combination of a frame-work A, having a bed-plate B and a stationary guideway G, a rotating shaft N, having a scroll M, a sliding frame H, connected with the scroll and moved thereby on the guideway, a head-stock I on the sliding frame, having a rotating spindle provided with a circular saw, a grip-frame E on the bed-plate, a series of inclined feed-guides F, a series of feeding and holding grips D, means for raising and lowering the grips, a stop 33 for limiting the movement of the timber downward on the feed-guides, and means for adjusting the stop relatively to the saw, substantially as described.

407,524. BRUSH-HOLDING CABINET. SAMUEL HALL, St. John, New Brunswick, Canada. Filed Apr. 20, 1889. Serial No. 307,976. (No model.)



Claim.—1. A brush-holding cabinet consisting of a receptacle adapted to contain liquid in its lower portion, a door arranged in one side of the cabinet, and a brush-holding device arranged within the case, substantially as and for the purpose described.

2. An air-tight brush holding and carrying cabinet consisting of a receptacle having a door in one side, said door being provided with a suitable packing, and a brush-holding device carried within the receptacle, substantially as shown and described.

3. An air-tight brush-holding case consisting of a rectangular case having its lower portion divided into two compartments by a vertical partition, a door hinged to the case and provided with a suitable packing, and a brush-holder arranged within the case, substantially as described.

4. An air-tight brush holding and carrying case consisting of a suitable receptacle and having its bottom portion lined with metal and formed with an opening for the introduction of the brushes, a door hinged to the case, provided with a suitable packing and adapted to close the opening, and a brush-holding device arranged within the case, substantially as shown and described.

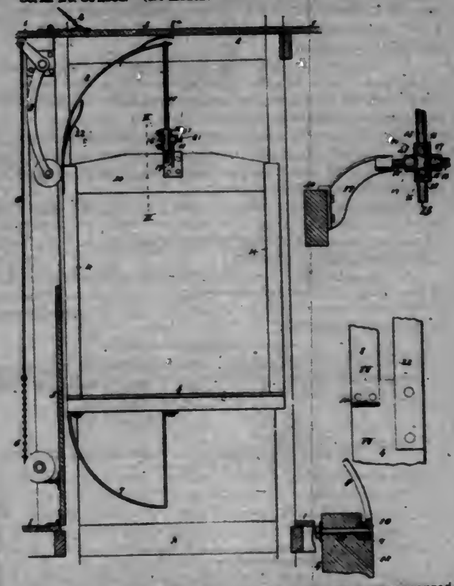
407,525. FASTENING FOR RUBBER SHOES. FURMAN S. HAND and EBEN RICHARDSON, Flanagan, Ill. Filed Apr. 10, 1889. Serial No. 306,703. (No model.)



Claim.—1. A fastening device for rubber shoes, consisting of a cup-shaped retaining device provided with an aperture and clinching-points, whereby it is secured to the inner shoe outside of the same, and a plate attached to the outer shoe and having a projection adapted to engage the aperture of the retaining device, substantially as described.

2. The fastening-plate provided with clinching-points and tongue *d*, in combination with a retaining device having an aperture to receive said tongue, substantially as described.

407,526. HATCHWAY. EMILE J. HERMAN, St. Louis, Mo., assignor to the Safety Hatch Door Company, same place. Filed Sept. 1, 1888. Serial No. 284,332. (No model.)



Claim.—1. The combination, with the cage and a cam secured to an upright of the cage, of the clip and the rod by which the cam is adjusted on the beam, substantially as and for the purpose set forth.

2. The combination, with the cage and a cam hinged to the cage at one end, of the adjustable rigid rod and clip by which the cam is connected to the cage at the other end, substantially as set forth.

3. The combination of a cage, a cam hinged to the cage at one end and adjustably connected to the cage at the other end by means of a vertical rod, a sleeve through which the rod passes, and a set-screw, substantially as set forth.

4. The combination of a cage, a cam secured to the cage, and a horizontally-adjustable clip for securing the upper end of the cam to the cage, substantially as set forth.

5. The combination of the cage, a cam hinged to the cage, a vertical rod secured to the upper end of the cam, and a horizontally-adjustable clip provided with a set-screw for receiving said rod and holding the cam to any suitable adjustment, substantially as set forth.

6. The combination of the cage, a cam hinged to the cage, a vertical rod secured to the upper end of the cam, a clip having a sleeve provided with a set-screw for receiving said rod, a horizontal rod secured to the cage, and a sleeve on said clip provided with a set-screw for receiving said horizontal rod, substantially as and for the purpose set forth.

7. The combination of the cage, a cam secured to the cage, and device for adjusting the upper end of the cam, said cam being con-

nected to the cage at its lower end by a hinged joint consisting of a perforated head fitting in a socket in the cage and a connecting-bolt, the perforation in the head being made larger at its ends than in the center, substantially as and for the purpose set forth.

407,527. INHALER-MASK. BERNET H. HILCHEN, Jersey City, N. J. Filed Jan. 31, 1889. Serial No. 298,184. (No model.)



Claim.—1. In a mask, the combination, with an outer plate provided with a transparent panel, of a rear plate apertured to receive the face of the wearer, a yielding cushion 15, mounted about the aperture and consisting of a strip having a tubular body c and flanges *d*, and connections between the flanges and the apertured plate, substantially as described.

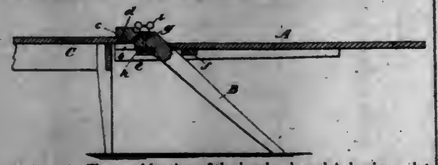
2. In a mask, the combination, with an outer plate provided with a transparent panel, of a rear plate apertured to receive the face of the wearer and a yielding cushion arranged about the edge of the said aperture, substantially as described.

3. In a mask, the combination, with a plate provided with a transparent panel, of an apertured plate, a yielding cushion arranged in connection with said apertured plate, a tube 20, and a check-valve, substantially as described.

4. In a mask, the combination, with a plate provided with a transparent panel and a trap, of an apertured plate, a yielding cushion arranged in connection with said plate, an induction-tube, and a check-valve, substantially as described.

5. The combination, with a mask adapted to fit against the face of the wearer, of an air-reservoir arranged to be worn upon the head of the wearer and connections between the mask and the reservoir, substantially as described.

407,528. IRONING-BOARD. PHILLIP HERR, Clinton, Ky., assignor to himself, W. Clayton Porter, and John P. Davis, all of same place. Filed Apr. 9, 1889. Serial No. 306,518. (No model.)



Claim.—1. The combination of the ironing-board A, having a slot *b* in its inner end, the detachable brace B, provided with a series of steps on the under side of its upper end portion, the screw-bolt *g*, thumb-nut *i*, and transverse clamp *h*, substantially as specified.

2. In an ironing-board, the combination, with the detachable brace B, provided with one or more steps or bearing-surfaces c on the under side of its upper portion, screw-bolt *g*, thumb-nut *i*, and clamp *h*, of the board A, having a slot *b* in its inner end, and the spurs *d*, arranged to project above the upper surface of the board, essentially as described.

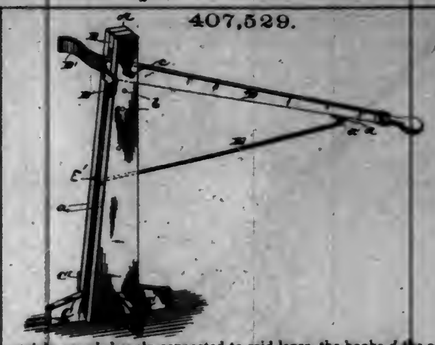
407,529. WAGON-JACK. WILLIAM J. HOLLENBECK, Cortland, N. Y. Filed Dec. 5, 1887. Serial No. 257,051. (No model.)

Claim.—1. In a wagon-jack, the combination, with the double standard the parts of which are rigidly connected together, of a double lifting-lever pivoted one part in each portion of said standard, the said lever parts having their long arms connected together and provided with a handle and retaining-pawls, substantially as described.

2. In a wagon-jack, the combination, with a double standard the parts of which are rigidly connected together, of a double lifting-lever pivoted one part in each part of the standard, said lever parts having their long arms connected together and provided with a handle, T-headed retaining-pawls, and a cord for simultaneously raising said retaining-pawls, substantially as described.

3. In a wagon-jack, the combination of the double standard A A, double lever D D, pivoted in said standard, the handle J, the

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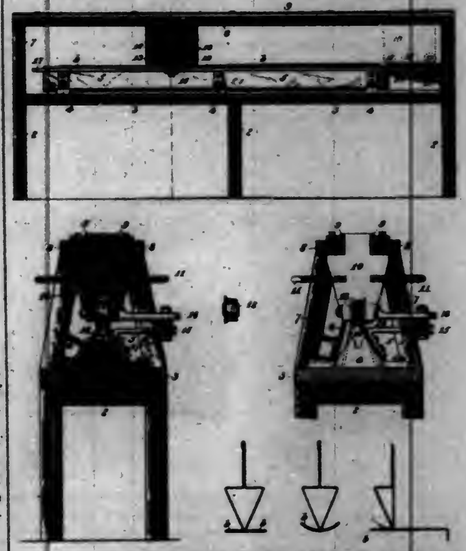


retaining-pawls loosely connected to said lever, the hooks *d*, the cord *k*, and the eyelets *i i*, for guiding the cord, substantially as described.

4. In a wagon-jack, the combination, with a standard, of a lever passing therethrough, provided at one end with a handle and at the other end with two axle-engaging projections diverging out of the vertical plane of the handle, and a retaining-pawl, substantially as described.

5. In a wagon-jack, the combination, with a standard having openings in its sides for the reception of a pivotal pin, of a lever pivoted therein, a T-headed retaining-pawl loosely connected at one end to said lever and operating between the sides of the standard, the T-head of said retaining-pawl having a curved standard engaging face and operating entirely by frictional contact with the front of the standard to hold the lever and weight to be raised stationary at any desired point, substantially as described.

407,530. MACHINE FOR SHAPING SHEET METAL. THOMAS W. IRWIN, Allegheny, Pa. Filed Dec. 6, 1888. Serial No. 292,623. (No model.)



Claim.—1. An improvement in machines for bending sheet metal, which consists in the combination of a die-bed for supporting the article to be formed and of corresponding shape with the formed article, and a traveling weighted forming-roller arranged loosely in guides above the die-bed and supported by the die-bed and freely movable thereon by hand, substantially as described.

2. A machine for bending sheet metal, comprising a die-bed shaped correspondingly to the formed article, combined with a roller similarly shaped, a weighted carriage in which the roller is supported, and guideways which direct the carriage laterally, substantially as described.

3. The combination of a die-bed shaped substantially like the article to be formed, a forming-roller of complemental peripheral outline, a carriage in which the roller is supported, the die-bed directly receiving the carriage and roller and supporting their weight, and

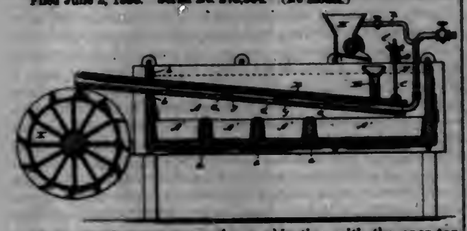
ways arranged over the die-bed and parallel therewith and by which the carriage is guided and adapted to be traversed along the same to act upon and shape the article upon the die-bed, substantially as and for the purposes described.

4. A machine for bending sheet-metal blanks, having flanges and a part forming the shank, which consists in a die-bed constituted of side pieces, between which the shank is placed and on which the flanges rest, and a head-moved weighted forming-roller, of complemental peripheral outline, which travels on the said flanges and shapes them on the said die-bed, substantially as and for the purposes described.

5. An improvement in machines for bending sheet-metal articles, which consists in the combination of a die-bed for supporting the article to be formed and of corresponding shape with the formed article and constituted of side pieces, at least one of which is separable from the others to permit the introduction of the article to be shaped, and a traveling weighted forming-roller arranged loosely in guides above the die-bed and supported by the die-bed and freely movable thereon by hand, substantially as described.

6. In machines for bending sheet metal, having flanges and a part forming the shank, a die-bed consisting of side pieces, at least one of which is hinged to admit the shank, and on which side pieces the flanges rest, a forming-roller, and a reciprocating carriage in which the roller is arranged and which causes the roller to travel on said flanges and shape the flanges upon the die-bed, substantially as and for the purposes described.

407,531. ORE-SEPARATOR. JAMES JENKINS, Harrisburg, Pa. Filed June 2, 1888. Serial No. 275,804. (No model.)



Claim.—1. In a separator, the combination, with the open-top settling-tank having the compartments therein, of the substantially-straight conduit for conveying the material to be separated, located within the tank above the compartments and below the water-level, with the apertures therein corresponding to the compartments, substantially as described.

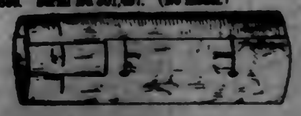
2. In a separator, the combination, with the settling-tank having the compartments therein, of the conduit for conveying the material to be separated, having apertures in the bottom corresponding to the compartments in the tank, the sides of the said apertures in the direction from which the material flows being provided with inclines, substantially as and for the purpose specified.

3. In a separator, the combination, with the settling-tank having the compartments therein, of the substantially-straight inclined conduit for conveying the material, located within the tank above the compartments and below the water-level, with its discharge end above the opposite end, and having the apertures therein corresponding to the compartments, and means for supplying water under pressure to the lower end, substantially as described.

4. In a separator, the combination, with the settling-tank, of the conduit located in the same below the water-level, having apertures in its bottom, through which the separated material passes, and a discharge-orifice outside the tank, and a flexible water-tight joint between the conduit and walls of the orifice in the tank, through which it passes, whereby the end of the conduit is permitted a vertical movement, substantially as described.

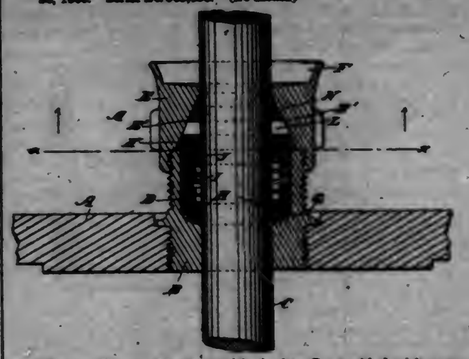
5. In a separator, the combination, with the settling-tank, of the adjustable conduit located in the same below the water-level, having apertures in its bottom, through which the separated material passes, and the discharge-orifice outside the tank, with a water-tight connection between the tank and conduit, and a flexible pipe for supplying water to said conduit, whereby it may be adjusted to different levels, substantially as described.

407,532. TREE-PROTECTOR. HERMAN F. JUSTIS, Palmyra, Mo., assignor, by mesne assignments, to AMY E. Justis, same place. Filed Feb. 23, 1889. Serial No. 301,497. (No model.)



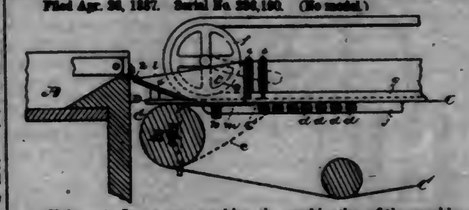
Claim.—As an improved article of manufacture, a tree-protector consisting of a perforated sheet of tarred felt having its upper portion slitted to form a series of flaps, and provided with a wire passing through the flaps, the said flaps being adapted to overlap each other, and the wire being bent at the time that the flaps are overlapped to permit the protector to expand as the tree grows, as set forth.

407,533. PISTON-ROD PACKING. PERCHARTH G. KELLOGG, Brainerd, Minn., assignor to himself and Frank Bell, same place. Filed Mar. 23, 1888. Serial No. 268,126. (No model.)



Claim.—The combination, with the box B, provided with an enlarged central opening D, having a concave bottom, the ring G, having a rounded lower face to fit said bottom, and an annular flange H, the upper ring J, and the spring I on said ring and flange, of the head E, screwed on box B, and having an inner conical opening E', and an outer cup F, and the series of sectional packing-rings L N, breaking joint in the conical opening and beveled on their peripheries, substantially as set forth.

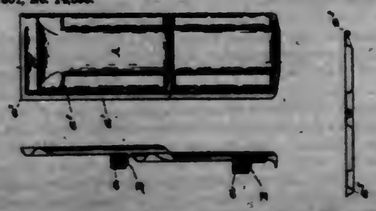
407,534. PAPER-MACHINE. JOSEPH KIDSLAND, Jr., Hatley, N. J. Filed Apr. 26, 1887. Serial No. 236,190. (No model.)



Claim.—1. In a paper-machine, the combination of the machine-frame D, tube-roll frame *j*, tube-rolls *d d d*, a breast-roll B, a wire-cloth disposed on said breast and tube-rolls, slices *c*, arranged over said wire-cloth, and a supplemental apron *m*, arranged underneath the wire-cloth between said breast-roll and tube-rolls *d d*, substantially as and for the purposes set forth.

2. In a paper-machine, the combination of the machine and tube-roll frames, a breast-roll, series of tube-rolls, a wire-cloth arranged over said breast-roll and lying upon the series of tube-rolls, slices, a supplemental apron *m*, arranged beneath the wire between the tube-rolls and breast-roll, and an upper apron *i*, rigidly secured to the machine-frame and extending to the wire-cloth, the said supplemental apron underlying the said upper apron at one edge and terminating at the slices, substantially as and for the purposes set forth.

407,535. METALLIC ROOFING. HERMANN KLEMM, Baden-Baden, Germany, assignor to Julius Klehm, Mauch Chunk, Pa. Filed Nov. 20, 1888. Serial No. 291,269. (No model.) Patented in Germany Jan. 1, 1881, No. 14,336.

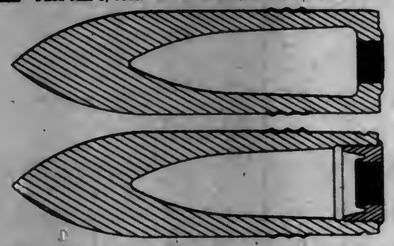


Claim.—1. A roof made up of a series of metallic sections provided on their under sides with hooks and also provided with interlocking edges forming joints, substantially as described.

2. A roof made up of a series of metallic sections provided with hooks and interlocking edges and with grooves or conduits forming receptacles for projecting parts of adjacent sections and means for conducting water, substantially as described.

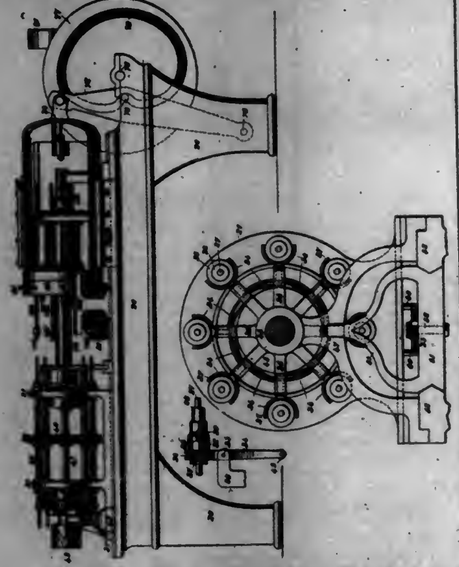
3. As a new article of manufacture, a roofing section consisting of the body provided on two sides with downturned grooved edges, and curved edges designed to interlock with the downturned edges of adjacent sections and provided with hooks for securing the sections in place, substantially as described.

407,586. METHOD OF MANUFACTURING PROJECTILES. GEORGE KYNOCH and HENRY A. SCHLESS, Birmingham, County of Warwick, England. Filed Jan. 5, 1888. Serial No. 259,863. (No model.)



Claim.—The improvement in the art of forming the shell of a pointed projectile, which consists in subjecting a disk of metal of uniform thickness to the action of dies by which the metal is cupped and driven upon itself toward the center, whereby a shallow cup having a thickened and compressed end is formed, then by the successive action of other dies simultaneously extending in length the cup-shaped article thus formed and thinning the walls, and finally finishing the shell by partially closing the open end thereof, substantially as described.

407,587. MACHINE FOR MAKING SCREWS. GUSTAVUS LARRABEE, Hartford, Conn. Filed Aug. 14, 1888. Serial No. 282,723. (No model.)



Claim.—1. In a screw-making machine, the combination of a set of running rod-supplying spindles mounted in a stationary stock supplying the screw-rods to the machine, and a step-by-step rotating tool-holder having a reciprocating movement and provided with a set of tools whereby the tools of the holder may be presented to the work and withdrawn therefrom and the holder rotatively shifted, and said operations repeated, so that the said tools may be presented in succession to the work.

2. In a screw-making machine, the combination of a set of running rod-supplying spindles mounted in a stationary stock in a circle and supplying the screw-rods to the machine, a step-by-step rotating tool-holder adapted to be moved toward and away from the rod-supplying spindles on the line of length of the same and having a set of tools arranged on a circle concentric with the circle of the spindles, whereby the tool-holder may advance toward the spindles, retreat therefrom, and then be rotated, and these operations repeated, so as to present in succession each one of a set of tools in the holder to the rods carried by the spindles.

3. In a screw-making machine, the combination of a set of running rod-supplying spindles mounted in a stock and disposed equidistant on a circle and supplying the rods to the machine, a tool-holder adapted to move toward and away from the said spindles on the line of length of the same, and provided with a set of tools arranged equidistant and on a circle concentric with the circle of the said spindles, the tool-holder acting to simultaneously move the tools longitudinally into contact with the work and to withdraw them therefrom at each reciprocation, the tool-holder and said spindle-stock having a relative step-by-step rotative movement to permit the successive engagement of the tools with the screw-rods.

4. In a screw-making machine, the combination of a set of running rod-supplying spindles mounted in a stock and disposed on a circle and supplying the screw-rods to the machine, a tool-holder adapted to move toward and away from the spindles in the direction of the length of the spindles, a set of independently-operated tools mounted in the tool-holder and arranged in a circle concentric with the circle of the spindles and adapted to be simultaneously carried by the tool-holder into contact with the rods in the spindles, the tool-holder and the said spindle-stock having a relative step-by-step rotating movement to permit the successive engagement of the tools and the work.

5. In a screw-making machine, the combination of a set of running rod-supplying spindles supplying the screw-rods to the machine, and mounted in a stationary stock and disposed equidistant in a circle, a step-by-step rotating tool-holder adapted to move toward and away from the spindles in the direction of the length of the same and making partial revolutions upon its recession, a set of tools mounted in the tool-holder equidistant in a circle concentric with the circle of the said spindles and arranged correspondingly therewith, a feed-clamp mounted in the tool-holder midway between two of the tools and on the circle therewith, whereby at each recession the tool-holder by its partial revolutions may bring the feed-clamp and then the tools into axial alignment with the feed-spindles, and adapted to be periodically thrust forward to grasp the blank screw-rod to be fed when the same is brought into alignment therewith, such feed-clamp being retracted by the further recession of the tool-holder to feed the grasped rod a predetermined length, so that upon advancement of the tool-holder the tools being in alignment with the work are carried onto the same, and upon retreat the tools are shifted out of alignment, while the feed-clamp is shifted into alignment with the rod to be fed and grasps and feeds the rod for a certain length, and then the tool-holder is again shifted, bringing the tools into alignment with the spindles for a repetition of said operation.

6. In a screw-making machine, in combination, a set of running rod-supplying spindles mounted equidistant in a circle in a stock and supplying the rods to the machine, a tool-turret provided with a set of reciprocating tools adapted to be projected and retracted therefrom, so as to engage the screw-rods laterally, and arranged with its axis coincident with the center of the circle of disposition of the spindles, the said spindle-stock and the tool-turret having a relative step-by-step rotative movement, whereby the tools of the turret may be introduced in succession to the screw-rods.

7. In a screw-making machine, in combination, a set of running rod-supplying spindles mounted in a stationary stock and disposed equidistant in a circle and supplying the screw-rods to the machine, a step-by-step rotating tool-turret concentrically arranged with the circle of the spindles and provided with a set of reciprocating tools disposed radially and equidistant in the turret, and the tools adapted to be periodically projected and retracted, so as to encounter the screw-rods laterally, the step-by-step rotative motion of the turret permitting the tools thereof to be presented in succession to the screw-rods.

8. In a screw-making machine, in combination, a set of running rod-supplying spindles mounted in a stationary stock and disposed equidistant in a circle and supplying the screw-rods to the machine, a step-by-step rotating tool-holder provided with a set of tools disposed equidistant in a circle about the axis of rotation of the tool-holder concentric with the circle of the spindles, a rotative mandrel extending through the center of the tool-holder and turning step by step therewith and having a tool-turret mounted thereon and rotating therewith about a common axis, the tool-turret provided with a set of reciprocating tools disposed radially and equidistant, and adapted to be periodically projected and retracted, so as to come into lateral contact with the screw-rods, whereby the step-by-step rotating motion of the tool-holder may be imparted to the tool-turret through means of the mandrel.

9. In a screw-making machine, the combination of the suitably-mounted step-by-step rotated mandrel having a drum-like tool-turret mounted concentrically thereon and rotating therewith and provided with a set of radially-disposed reciprocating tool-slides having the retracting means, a chamber formed in the mandrel and into which the inner ends of the slides project, an endwise-reciprocating spring-actuated projector mounted within said chamber and provided with an inclined surface for engaging and forcing outwardly the tool-slides when the projector is moved in one direction, a tool-holder mounted concentrically on the mandrel and sliding thereover and provided with the means for engaging the tool-slide projector for a limited period in one way of its movement for imparting the requisite motion to said projector to project the slides, substantially as and for the purpose set forth.

10. In a screw-making machine, the combination of the suitably-mounted step-by-step rotated mandrel formed with an interior chamber and having lateral openings communicating therewith, a tool-turret mounted concentrically on the mandrel and rotating therewith and provided with a set of spring-actuated radially-disposed reciprocating tool-slides having their inner ends projecting into said chamber, a projector mounted within said chamber and adapted to reciprocate endwise in the axial line of the mandrel, and having an inclined surface engaging the said inner ends of the tool-slides and projecting the slides when the said projector is moved in one direction, and a spring for returning the projector after such movement, a step-by-step rotating tool-holder mounted concentrically on the mandrel and reciprocating thereon and turning therewith and provided with spring-pawls for taking through said openings in the mandrel and engaging periodically the tool-slide projector within the mandrel, whereby the tool-holder in one direction of its reciprocating movement will impart its motion to the said projector to effect the projection of the tool-slides, substantially as and for the purpose set forth.

11. In a screw-making machine, the combination of a spindle-stock and the running rod-supplying spindles mounted therein, the spindle-driving shaft and the gears intermediate the shaft and spindles, the hollow rotary mandrel having lateral openings and mounted in axial alignment with the spindle-driving shaft and having an extension of the same passing therethrough and rotating therein, the tool-turret mounted concentrically on the mandrel and turning therewith and provided with a set of radially-disposed reciprocating tool-slides having springs to normally hold them within the turret, and having their inner ends engaging the conical surface of the slide-projecting tube, which lies within the mandrel and incases a sleeve mounted loosely on the extension of the spindle-driving shaft, and the step-by-step rotating tool-holder mounted on and sliding over the mandrel and imparting its step-by-step rotating motion thereto, the spring-pawls on the tool-holder acting to periodically engage the projecting tube, so as to move the tube endwise and project the slides from the turret, substantially as and for the purpose set forth.

12. In a screw-making machine, the combination, with a step-by-step rotating tool-turret provided with the periodically-reciprocating tool-slides, of the ratchet-teeth on the turret and the spring-clicks for engaging said teeth to prevent the turret from moving one way, substantially as described.

13. In a screw-making machine, in combination, a set of running rod-supplying spindles mounted in a stationary stock and disposed equidistant in a circle and supplying the screw-rods to the machine, a reciprocating carriage having a step-by-step actuated tool-holder mounted thereon with its axis of rotation parallel with the plane of reciprocation of the carriage and including the center of the circle of the said spindles, a set of tools mounted in the tool-holder, so as to be brought into opposite alignment with the spindles, such tools including the threading-tool and all tools designed to move upon the work in the spindles longitudinally relatively thereto, whereby such tools may be carried onto and withdrawn from the work, then shifted and presented again, and so on, in order that each screw-rod may have such tools act upon it in succession.

14. In a screw-making machine, the combination, to effect the unthreading motion for the threading-die with the spindle-driving shaft, of the reciprocating carriage having the tool-holder rotatively mounted thereon, the threading-die having its supporting-rod mounted loosely in the tool-holder, a clutch mounted on the spindle-driving shaft and having the loose member thereof connected with the said die-supporting rod through means of speed-multiplying gearing, the clutch being periodically operated by the tool-holder in its reciprocations, the retreat of the holder effecting the closing of the clutch and the consequent rotation of the threading-die.

15. In a screw-making machine, the combination, with the running rod-supplying spindles disposed equidistant in a circle and supplying the screw-rods to the machine and a centrally-disposed shaft for driving the spindles, of a reciprocating carriage having a step-by-step rotating tool-holder mounted thereon and having a set of tools, including the threading-die, disposed equidistant in a circle concentric with the circle of the spindles, the said driving-shaft passing through the axis of rotation of the tool-holder, and a clutch mounted on the said shaft and periodically operated by the reciprocations of the tool-holder, multiplying-gearing intermediate the loose member of said clutch and the threading-die rod in the tool-holder, whereby upon the closing of the clutch the threading-die may be rotated at a greater speed than its co-operating rod-supplying spindle and in the same direction therewith.

16. In a screw-making machine, the combination, with the set of running rod-supplying spindles mounted in a stationary stock and disposed equidistant in a circle and supplying the screw-rods to the machine and the centrally-disposed drive-shaft for driving the spindles, of a reciprocating carriage having a step-by-step rotating tool-holder mounted thereon and a hollow rotary mandrel extending from the spindle-stock through the center of the tool-holder and having the spindle shaft extending through its center and projecting thereabeyond, one or more threading-dies mounted in the tool-holder, so as to come into opposite alignment with the co-operating rod-supplying spindles, a clutch on said shaft and speed-multiplying gearing intermediate the said clutch and the threading-die rods, a movable plunger sliding on said shaft and acting to close the clutch, such plunger being connected with the notched slide-bars reciprocating in slots formed in the sides of the mandrel, and the spring-pawls mounted on the tool-holder and automatically engaging and disengaging said slide-bars to periodically move the clutch-plunger back and forth during the reciprocating movement of the tool-holder, substantially as and for the purpose set forth.

17. In a screw-making machine, the combination, with the reciprocating carriage having the step-by-step rotating tool-holder mounted thereon, of a disk rotatively mounted in a stationary bearing and rotating step by step in unison with the tool-holder, the drive-shaft extending through both the center of the tool-holder and the disk, a clutch mounted on the shaft and having its loose member driving a gear, and a threading-die rod loosely mounted in the tool-holder and the disk and provided with a gear meshing with said clutch-driven gear, the said clutch connected with the tool-holder, whereby the reciprocating movements of the holder may periodically operate the clutch, substantially as and for the purpose set forth.

18. In a screw-making machine, the combination, with the step-by-step rotating tool-holder and the disk mounted in a stationary bearing and rotating step by step in unison with the holder, of the drive-shaft extending through the center of both the tool-holder and disk, a clutch mounted on the shaft and having the loose member thereof provided with a sleeve surrounding the shaft and extending loosely through the center of the disk, and a gear-wheel mounted fast on said sleeve, a pinion having a hollow arbor loosely journaled in and extending through said disk and provided with one clutch member, a threading-die having its rod loosely mounted through the tool-holder and extending through said hollow arbor of said pinion and provided with a second clutch member coacting with the member on said arbor, whereby upon the closing of the main clutch on the drive-shaft the clutch on the die-rod will be closed and the rod rotated, substantially as and for the purpose set forth.

19. In a screw-making machine, the combination of the tool-holder and the threading-die having its sustaining-rod mounted thereon and provided with a fast clutch member, a pinion having a hollow arbor through which said rod extends, and a second clutch member mounted on said arbor and having a limited endwise play thereon, the drive-shaft, and the main clutch mounted thereon and operatively connected with the said pinion, whereby upon the closing of the main clutch the motion of the shaft is not immediately imparted to the die because of the play of said clutch member.

20. In a screw-making machine, the combination, with the reciprocating and step-by-step rotating tool-holder and the tools mounted thereon, of the disk mounted in a stationary bearing and rotating step by step in unison with the tool-holder and supporting in part the tools of the holder, which receive operations independently of the operations of the tool-holder.

21. In a screw-making machine, the combination of the reciprocating carriage having the step-by-step rotating tool-holder mounted thereon and carrying the tools, the disk rotatively mounted in the stationary bearing and having said tools extending therethrough, and the mechanism, substantially as described, for operating the tools independently of the tool-holder, the hollow mandrel extending through the center of the tool-holder, and the drive-shaft extending through the mandrel, the rigid connections intermediate the said disk and mandrel, whereby the step-by-step rotating movement of the tool-holder may be imparted to the disk through means of the mandrel and said intermediate connections, substantially as and for the purpose set forth.

22. In a screw-making machine, the combination of a set of running rod-supplying spindles mounted equidistant in a circle in a stock, a reciprocating carriage having a step-by-step rotating tool-holder mounted thereon, a set of tools mounted in the tool-holder in a circle coincident with the circle of said spindles, and a locking device for automatically locking the tool-holder against rotation between each step-by-step movement, for the purpose set forth.

23. In a screw-making machine, the combination, with a recip-

rocating carriage and a cylindrical tool-holder rotatively mounted thereon and provided with a set of radially-disposed push-pins, of a stationary cam arranged near the tool-holder and appropriate to be engaged by a push-pin at each retreating motion of the carriage to give the tool-holder partial revolutions, substantially as and for the purpose set forth.

24. In a screw-making machine, the combination, with a reciprocating carriage and a step-by-step rotating tool-holder mounted in an annular bearing thereon and formed with a series of bolt-holes, of a spring locking device located on said bearing and locking with the holes in the tool-holder, and a cam for engaging and operating said locking device to lock and unlock the tool-holder, substantially as and for the purpose set forth.

25. In a screw-making machine, the combination, with the tool-holder having a reciprocating motion and the threading-die rotatively mounted therein, of a locking device for the die acting to lock it against rotation when the thread is being cut, such locking device being operated by the reciprocating movement of the tool-holder.

26. In a screw-making machine, the combination, with the tool-holder and the mandrel upon which the holder reciprocates, of the threading-die loosely mounted in the holder and having its rod formed with a groove, a spring-actuated detent pivoted on the tool-holder and adapted to take in the groove of the rod, and a pivoted lever actuating the detent and having its foot engaged by the cams fixed upon the mandrel, substantially as and for the purpose set forth.

27. In a screw-making machine, the combination, with a reciprocating carriage provided with an annular bearing and a step-by-step rotating tool-holder mounted in the said bearing and provided with a series of bolt-holes, of a spring-actuated bolt mounted on the bearing and locking with the bolt-holes, a spring-actuated presser for retracting the bolt when pressed on, and a stationary cam-track having depressions and elevations thereon and arranged to be engaged by the end of the presser-rod to lock and unlock the tool-holder, substantially as and for the purpose set forth.

28. In a screw-making machine, the combination, with a reciprocating carriage having a tool-holder mounted thereon and a feed-clamp loosely mounted in the tool-holder and adapted to move endwise in its bearing, of mechanism, substantially as described, for holding the feed-clamp against movement upon advancement of the carriage and then effecting its endwise movement to force it onto a blank screw-rod upon retreat of the carriage.

29. In a screw-making machine, the combination, with the running rod-supplying spindles mounted in a stationary stock and provided each with a feed-clutch, of a reciprocating carriage having a step-by-step rotating tool-holder mounted thereon, and a feed-clamp mounted in the holder and adapted to move endwise therein, and mechanism, substantially as described, for holding the feed-clamp away from the rod-supplying spindles upon advancement of the carriage and forcing it onto a blank-rod in a spindle upon retreat of the carriage, and each retreat effecting the reverse endwise movement of the feed-clamp to feed the clamped blank-rod, the said feed-clutches connected with the said carriage and operated thereby, whereby upon the retreat of the carriage the clutch engaging the blank-rod then to be fed may be held open for such feed.

30. In a screw-making machine, the combination of the running rod-supplying spindles mounted in a stationary stock and disposed equidistant in a circle and provided each with a feed-clutch and supplying the screw-rods to the machine, a reciprocating carriage having a step-by-step rotating tool-holder mounted thereon, and a feed-clamp for each set of tools mounted in the holder and adapted to move endwise therein and to be brought into opposite alignment with a rod-supplying spindle upon retreat of the carriage, the mechanism, substantially as described, for holding the feed-clamp away from the said spindles upon advancement of the carriage and forcing it upon the blank-rod then to be fed when upon retreat of the carriage the clamp is brought into alignment with the same, and the said feed-clutches connected with and operated by the said carriage, for the purpose set forth.

31. In a screw-making machine, the combination, with a reciprocating carriage having a step-by-step rotating tool-holder mounted thereon, a disk mounted in a stationary bearing and rotating step-by-step in unison with the tool-holder, a spring-actuated feed-clamp mounted through the tool-holder and disk and adapted to move endwise therethrough, a feed-fork fulcrumed on the disk and engaging with one prong a shoulder on the rod of the feed-clamp to prevent one-way movement thereof, the other end of said fork adapted to press upon the end of said feed-clamp rod to force the clamp onto the blank-rod to be fed, and a spring-actuated slide engaging and operating the feed-fork, such slide being engaged and moved for a limited distance to press forward the feed-clamp by a device, substantially as described, which is operated by the retreating motion of the carriage.

32. In a screw-making machine, the combination, with the reciprocating carriage, the tool-holder mounted thereon, the disk, and the endwise-moving feed-clamp and the pivoted feed-fork engaging with one prong the rod of the feed-clamp and adapted to press with the other prong upon the end of the clamp-rod to force the clamp onto the blank-rod to be fed, of a spring-actuated slide engaging and actuating the feed-fork, the slide mounted on a stationary arbor having lateral slots formed therein and provided with the depressions, the notched slide-bars engaging said slide and sliding in said slots, and the spring-actuated pawls provided with the disengaging-pins and mounted on the carriage and engaging and moving the slide-bars as the carriage retreats, substantially as and for the purpose set forth.

33. In a screw-making machine, a reciprocating tool-holder carriage consisting in a U-shaped yoke-frame having an attached annular tool-holder bearing the plane of which is normal to that of the yoke-frame, so that access may be had to the working parts of the machine embraced within the yoke-frame, substantially as described.

34. In a screw-making machine, a reciprocating tool-holder carriage consisting in a U-shaped yoke-frame having an attached tool-holder bearing the plane of which is normal to that of the yoke-frame, and the means, substantially as described, for reciprocating the carriage, such means connected to the yoke-frame at the center of the arch thereof, so that the line on which the power is applied to the carriage may be coincident with the longitudinal axial line of the yoke-frame, substantially as and for the purpose set forth.

35. In a screw-making machine, the combination of the rotary spindle-casing having a hub at one end formed with an outwardly-inclined face, and the clutch-tube extending through said casing and provided with a hub lying without the casing, a spring wedging-collar having wedge-shaped lugs at its ends and having an inwardly-inclined face adapted to engage the said inclined face of the hub on the casing, said collar disposed between the two said hubs, a wedging-sleeve sliding over the hub on the clutch-tube and provided with a notch for engaging the wedging-lugs of the collar, which is wedged in between the hubs and acts to retract the clutch-tube when the notch in the sleeve is forced on the lugs, and a lever for sliding the wedging-sleeve to and fro to effect the opening and closing of the feed-clutch.

36. In a screw-making machine, the combination, with the rod-supplying spindles for supplying the screw-rods to the machine and having feed-clutches for clamping such rods, of a reciprocating carriage carrying a tool-holder co-operating with the feed-spindles and adjustably connected with the said feed-clutches of the spindles, whereby the feed-clutches may be operated by the movements of the carriage and the period during which each clutch remains open may be regulated by the adjustment of said intermediate connections.

37. In a screw-making machine, the combination, with the rod-supplying spindles having feed-clutches and supplying the screw-rods to the machine and the reciprocating carriage carrying the tool-holder co-operating with said spindles, of a step-by-step actuated mechanism, substantially as described, intermediate the said feed-spindles and carriage for operating the feed-clutches periodically, such mechanism being operated by the continuous reciprocation of the carriage.

38. In a screw-making machine, the combination, with the rod-supplying spindles and the feed-clutches thereof, and means, substantially as described, mounted on the spindles, for operating the clutches, of the pivoted cam-levers engaging and operating said clutch-operating means, and the intermittently-rotating cam-wheel having a straight cam-groove for the cam-levers, with as many equally-spaced turn-outs in each groove as there are sets of feed-spindles, whereby the feed-clutches of certain spindles may be simultaneously operated.

39. In a screw-making machine, the combination, with the cam-wheel and the cam-drum for operating the same, of a step-by-step actuated reciprocating slide for driving the cam-drum, and the reciprocating tool-holder carriage adjustably connected with said slide whereby the slide may be reciprocated step by step through the continuous reciprocation of the carriage.

40. In a screw-making machine, the combination, with the rotary cam-drum and the slide engaging and operating the drum, of a reciprocating tool-holder carriage, a second slide connected with and responding to the movements of the carriage, and an automatic grip-and-release device between the two said slides, whereby a step-by-step motion may be imparted to the first said slide, for the purpose described.

41. In a screw-making machine, the combination, with the rotary cam-drum and a slide for rotating the same step by step, of a second slide connected adjustably to the reciprocating tool-holder carriage and responding to the movements thereof and engaging and pushing the said first slide in one direction of its reciprocation, a spring-actuated grip-and-release device mounted on the second said slide, a pair of adjustable coupling-studs mounted on said first slide and engaged by the said device, and the trip-pins for engaging and opening said grip device to release it from one of the coupling-pins, whereby as the carriage advances the continuous movement of the second slide may actuate the first slide step by step.

42. In a screw-making machine, the combination, with the rotary cam-drum and the step-by-step reciprocating slide operating the drum, of a second slide provided with an automatic grip-and-release device, substantially as described, for engaging the first slide, the reciprocating tool-holder carriage and a connecting-rod adjustably attached between the carriage and the second slide, a pair of adjustable stops mounted on said rod, and a push-piece projecting from the carriage and engaging said stops, substantially as and for the purpose described.

43. In a screw-making machine, the combination of a set of running rod-supplying spindles 22 22, mounted in a stationary stock and disposed equidistant in a circle and supplying the screw-rods to the machine, and the step-by-step rotating tool-holder 82, having the tools thereof arranged equidistant on a circle about the axis of rotation and concentric with the circle of the said spindles, said tool-holder adapted to reciprocate toward and away from the spindles in the direction of the length of the same, substantially as and for the purpose set forth.

44. In a screw-making machine, the combination of the step-by-step rotating tool-holder 82, adapted to reciprocate, the rotary disk 117, mounted in a stationary bearing and rotating step by step in unison with the tool-holder, the threading-die 113 110, mounted loosely through the tool-holder and disk and provided with the clutch 123 126 and the pinion 121, the shaft 41, and the clutch 116 119, mounted thereon and operated by the reciprocating movements of the tool-holder, the loose member of said latter clutch provided with the fast gear 120, meshing with and driving the pinion 121, substantially as and for the purpose set forth.

45. In a screw-making machine, the combination of the hollow mandrel 83, formed with the lateral slots 142, having the depressions 144 in the edges thereof, the spindle-shaft 41, extending through the center of the mandrel, and the clutch 116 119, mounted thereon and provided with the clutch-levers 126, pivoted to slide 80 on the shaft and engaging collar 127 and having the pivoted cam-toes 163, the clutch-plunger 128, sliding on shaft 41, the slide-bars 141, pivoted to the plunger and sliding in slots 142 of the mandrel and provided with the notches 143, the step-by-step actuated tool-holder 82, feathered on the mandrel so as to turn therewith and reciprocate thereon and provided with the spring-pawls 146, having hooked heads and provided with laterally-projecting lift-pins 150, substantially as and for the purpose set forth.

46. In a screw-making machine, the combination of the step-by-step rotating tool-holder 82 and the reciprocating carriage 62 therefor, the rotary disk 117, rotating step by step in unison with the tool-holder and mounted in a stationary bearing, the spring-actuated feed-clamp 157 156, mounted loosely through the tool-holder and disk and adapted to slide but not to rotate therein, the feed-fork 164, pivoted on disk 117 and engaging with one prong the notch 163 of the clamp-rod and engaging with the other prong the end of said rod, the slotted arbor having the spring-pressed feed-fork carrier 169 mounted thereon and engaging the stem of the fork and provided with the annular shoulder 171, the slide-bars 173, sliding in the slots of the arbor and provided with the projections 172 and the notches 174, and the spring-pawls 177, mounted on the carriage and engaging the slide-bars, substantially as and for the purpose set forth.

47. In a screw-making machine, the combination of the reciprocating carriage provided with the step-by-step rotating tool-holder 82, the mandrel 83, on which the holder reciprocates and with which it turns, the rotary disk 117, mounted in the stationary bearing 118 and supporting in part some of the tools of the tool-holder, and the hollow shaft 151, rigidly connecting the mandrel with the disk, so that the two may move together, substantially as and for the purpose set forth.

48. In a screw-making machine, the combination of the reciprocating carriage 62, having the step-by-step rotating tool-holder 82 mounted thereon, the threading-die mounted in the holder and having its rod formed with a notch 132, the spring-detent pivoted on the holder and engaging the die-rod, the pivoted trip-lever 133, for engaging the detent, the mandrel 83, over which the tool-holder reciprocates, and the cam 134, mounted on the mandrel and engaging the foot of the trip-lever, substantially as and for the purpose set forth.

49. In a screw-making machine, the combination of the reciprocating carriage 62, provided with the annular bearing 66, the cylindrical tool-holder 82, rotatively mounted in the carriage and provided with the radially-projecting push-pins 87, the stationary cam 88, disposed adjacent to the carriage and engaged by the push-pins for giving the partial revolutions to the holder, and the spring-trip device for compelling the push-pins to move onto the cam, substantially as and for the purpose set forth.

50. In a screw-making machine, the combination of the reciprocating carriage 62, provided with the annular bearing 66 and having the step-by-step rotating tool-holder 82 rotatively mounted in the bearing and formed with the series of bolt-holes 96, the locking device consisting in the spring-actuated bolt 98, working in the perforation 97, formed in the bearing 66, and provided with the lateral pins 103, the spring-actuated presser 100, formed with the inclined heads 102, engaging the pins 103, the cam-track 107, formed with the depressions 106 and the elevations 109 and engaged by the presser 100, substantially as described, for the purpose set forth.

51. In a screw-making machine, the combination of the reciprocating carriage 62, having the annular bearing 66, and the yoke-frame 67, provided with the guide-ribs, the cylindrical tool-holder 82, mounted in said bearing, and the semi-cylindrical bed-piece 70, provided with the guideways for the yoke and mounted on the machine-frame, substantially as and for the purpose set forth.

52. In a screw-making machine, the combination of the reciprocating carriage 62, the rocker-bar 72, hinged to the carriage at 74 on the axial line thereof and pivoted at 73, the cam-stud 75, fixed on the rocker-bar, the rotating cam-disk 77, provided with the heart-shaped cam-groove 76, into which the cam-stud 75 projects, and means for rotating the cam-disk, substantially as and for the purpose set forth.

53. In a screw-making machine, the combination of the set of running rod-supplying spindles 22, disposed equidistant and in a circle, the step-by-step rotating tool-turret 183, mounted concentrically with the circle of disposition of the rod-spindles and provided with a set of radially-reciprocating tool-slides, so as to bring the tools on such slides into lateral contact with the work in the rod-supplying spindles, substantially as and for the purpose set forth.

54. In a screw-making machine, the combination of the running rod-supplying spindles 22, disposed equidistant in a circle, the step-by-step rotating mandrel 83, having its center coincident with the center of the circle of the rod-supplying spindles, and the tool-turret 183, mounted on the mandrel and provided with a set of tool-slides 185, having means, substantially as described, for projecting and retracting them, so as to carry the tools laterally onto the work in the spindles, substantially as and for the purpose set forth.

55. In a screw-making machine, the combination of the set of rod-supplying spindles 22, arranged as described, the rotary mandrel 83, formed with the interior chamber 193, and the slots 206, the tool-turret 183, mounted on and turning with the mandrel and provided with a set of movable spring-actuated tool-slides 185, the spring-actuated slide-projecting tube 192, having the conical portion 195 and mounted within the chamber 193 of the mandrel and adapted to move endwise therein and engaging the inner ends of the tool-slides, the step-by-step rotating tool-holder 82, sliding over and turning with the mandrel and provided with the spring-pawls 202, for engaging and drawing out the projecting tube 192, substantially as and for the purpose set forth.

56. In a screw-making machine, the combination of the rotary mandrel 83, formed with the chamber 193, and the endwise-movable projecting tube 192, formed with the conical portion 195 and mounted within the mandrel and having means, substantially as described, for moving it, the tool-turret 183, provided with the set of slide-beds 184, and the spring-actuated tool-slides 185, mounted on such beds and having their inner ends provided with anti-friction rollers 191, engaging the conical portion of the projecting tube, substantially as and for the purpose set forth.

57. In a screw-making machine, the combination of the rotatively-mounted casing 23, having a beveled mouth and provided with a hub 31, having an inclined outer face, the clutch-tube 24, arranged within the casing and provided with the spring feed-clutch 25, the hub 26, fixed upon the end of the clutch-tube, the split spring-collar 29, provided with the wedging-lugs 30 and having an inclined face engaging the incline of hub 31, the said collar lying between the two said hubs 31 and 26, the wedging-sleeve 32, sliding on hub 26 and formed with notch 33, for engaging the wedging-lugs, and a lever for sliding said sleeve, substantially as and for the purpose set forth.

58. In a screw-making machine, the combination of the rod-supplying spindles 22, having the feed-clutches 25 and the mechanism, substantially as described, for operating said clutches, and the cam-levers 34, pivoted upon arms 36 and formed with forked ends for engaging the wedging-sleeves and having their other ends taking into the cam-groove 44 of the step-by-step rotating cam-wheel 45, such cam-groove formed with the turn-outs 50, for effecting the opening and closing of the feed-clutches, substantially as and for the purpose set forth.

59. In a screw-making machine, the combination of the pivoted cam-levers 34, the cam-wheel 45, formed with the cam-groove 44, having turn-outs 50 therein, the shaft 46 and the cam-drum 48 fixed thereon and provided with the peculiar camways 49, the step-by-step actuated slide 51, having its head taking into the camways 49 of the drum, so that the movements of the slide may be imparted to the drum, and the reciprocating tool-holder carriage adjustably connected with the slide 51, whereby the continuous reciprocation of the carriage may impart to the slide a step-by-step movement, substantially as and for the purpose set forth.

60. In a screw-making machine, the combination of the reciprocating slide 51, having a step-by-step movement in one way of its reciprocation, and the coupling-studs 58, adjustably mounted on said

slide, a second reciprocating slide 54, provided with the grip-and-release device 55, for engaging the coupling-studs of slide 51, the trip-studs 56, for engaging said device, the reciprocating tool-holder carriage and the connecting-rod 63, adjustably attached to slide 54 and provided with the adjustable stops 68, and the push-piece 64 on the carriage for engaging the stops 68, substantially as and for the purpose set forth.

61. In a screw-making machine, the combination, with a step-by-step rotating tool-holder having the tools arranged equidistant in a circle therein, of the rod-supplying spindles 22, arranged in a similar circle and equidistant and each provided with a gear 39, and the spindle-driving shaft 41, provided with a gear 40, in mesh with said gears 39, for driving the spindles at uniform speeds, substantially as described.

62. In a screw-making machine, the combination of the rod-supplying spindles 22, arranged as described and provided each with a gear 39, the drive-shaft 41, provided with gear 40, for driving the gears 39, said shaft extending through the mandrel 83 and the disk 117, the tool-holder 82, mounted on the reciprocating carriage and rotating step by step on its axis, and the disk 117, moving in unison therewith, the threading-die 113 110, rotatively mounted in the tool-holder and the disk and provided with a locking device, the speed-multiplying gearing intermediate the shaft 41, and the die-rod 110, for effecting the nothreading motion, and the main clutch on the spindle-shaft operated by the reciprocation of the tool-holder, substantially as and for the purpose set forth.

63. In a screw-making machine, the combination of the rod-supplying spindles 22, arranged as described and provided with feed-clutches 25 and the operating means for the said clutches, the centrally-disposed spindle-driving shaft 41, geared to the spindles, the reciprocating carriage 62, having the step-by-step rotating tool-holder 82 mounted thereon and provided with the tool-sockets 111, the mandrel 83, having the shaft 41 extending therethrough and loosely extending through the tool-holder, which is adapted to slide over the mandrel and to impart its partial revolutions thereto, the tool-turret 183, mounted concentrically on the mandrel 83 and turning therewith, and provided with tool-slides adapted to be projected and retracted, and having the means, substantially as described, for projecting and retracting them, all substantially as and for the purpose set forth.

64. In a screw-making machine, the combination of the rod-supplying spindles, a reciprocating carriage having a tool-holder mounted thereon, and a feed-clamp loosely mounted in the tool-holder, so as to be capable of endwise movement therein, the reciprocations of said tool-holder operating to periodically thrust the feed-clamp onto the blank screw-rod in a spindle and to retract said clamp to effect the drawing out of the rod, for the purpose set forth.

65. In a screw-making machine, the combination of the running rod-supplying spindles, each provided with a feed-clutch for the screw-rods, a tool-holder having a reciprocating carriage for advancing the tools upon and withdrawing them from the screw-rods in the spindles, said feed-clutches connected to the reciprocatiog carriage and intermittently opened and closed by the reciprocations thereof, and an endwise-movable feed-clamp mounted in the tool-holder and adapted, by the reciprocations of the tool-holder, to be forced into engagement with a screw-rod and then withdrawn to effect the feeding of the engaged rod, the feed-clutch being open during such feeding, substantially as and for the purpose set forth.

407,538. STEAM-BOILER. DANIEL T. LAWSON, Wellsville, Ohio. Filed Feb. 13, 1889. Serial No. 299,787. (No model.)

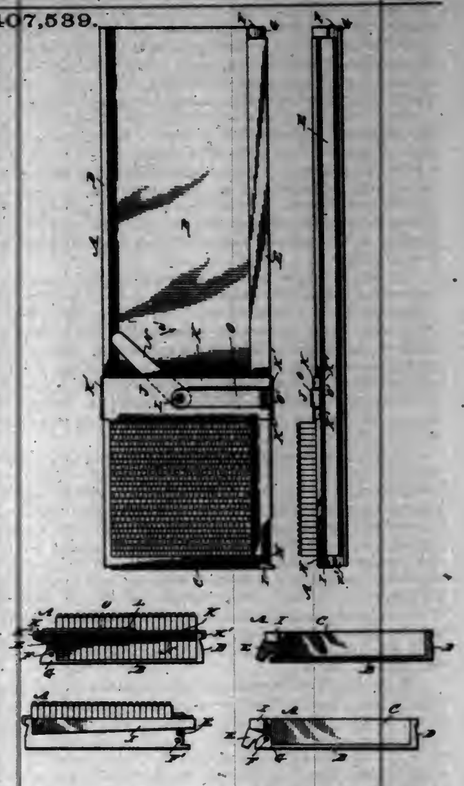


Claim.—1. A steam-boiler having its steam-space separated from the water-space by a horizontal diaphragm provided with openings in the same, and combined with upwardly-opening check-valves arranged upon the diaphragm, substantially as and for the purpose described.

2. The combination, with a steam-boiler, of a horizontal diaphragm separating the steam-space from the water-space and provided with upwardly-opening check-valves and gathering-troughs for sediment, and blow-out pipes extending through the boiler from the level of the troughs, substantially as and for the purpose described.

407,589. GALLEY. GEORGE E. LINCOLN, New York, assignor, by mesne assignments, of one-half to John R. Conner, Brooklyn, N. Y. Filed Dec. 19, 1888. Serial No. 294,091. (No model.)

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Claim.—1. A galley provided with one side pivoted by means of pivots located near the plane of the inner face of said side, substantially as shown.

2. A galley provided with one side pivoted by means of pivots located near the plane of the inner face of the said side and close to the bottom of said side, substantially as specified.

3. A galley provided with one pivoted side, which has its bottom rounded off and has its pivots located near the plane of its inner face, substantially as specified.

4. A galley provided with a pivoted side, in combination with a clamp for locking the said pivoted side in place, substantially as shown and described.

5. A galley provided with a pivoted side, in combination with a clamp adapted to engage the upper ends of the fixed and the said pivoted side and serving to lock the pivoted side in place, substantially as shown and described.

6. A galley comprising a bottom, a fixed side, a fixed end, a pivoted side, and a spring-catch secured to the said fixed end and adapted to engage the said pivoted side, all arranged and operating substantially as shown and described.

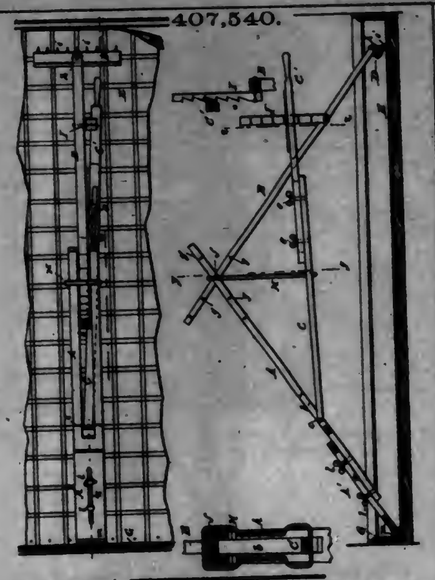
7. A galley comprising a bottom, a fixed side, a fixed end, a pivoted side, and a spring-catch secured to the said fixed end and adapted to engage the said pivoted side, and a clamp adapted to engage the upper ends of the said fixed and pivoted sides to lock the latter in place, substantially as shown and described.

8. A galley comprising a bottom, a fixed side, a fixed end, a pivoted side, and a spring-catch secured to the said fixed end and adapted to engage the said pivoted side, and a clamp comprising a transverse plate carrying an eccentric, a lever for operating the said eccentric, and a clamping-rod held on the said eccentric and adapted to engage one of the said sides, substantially as shown and described.

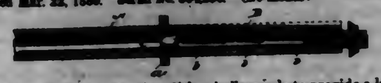
407,540. CARPET-STRETCHER. THOMAS H. MALBY, Andover, Dak. Filed Sept. 24, 1888. Serial No. 286,146. (No model.)

Claim.—The combination, with the slotted body piece or piece A A' and crossing-strip B, adjustably and pivotally connected with each other, as described, of the pivoted stretching comb or toothed head D, the lever C C, the stirrup H, and the rack I, essentially as herein set forth.

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407,541. VEHICLE-AXLE. CHARLES F. MILDREN, Toledo, Ohio. Filed Mar. 22, 1889. Serial No. 304,260. (No model.)



Claim.—1. In combination with a hollow axle to provide a lubricant-chamber and having suitable perforations to permit the escape of the lubricant, a dam provided with integral retaining-lugs projecting radially from its body, whereby to secure the dam within the hollow of the axle, substantially as described.

2. In combination with a hollow axle to provide a lubricant-chamber and having suitable perforations to permit the escape of the lubricant, a dam having tapered peripheral walls provided with integral retaining-lugs projecting radially from its body, whereby to secure the dam within the hollow of the axle, substantially as described.

3. In combination with a hollow axle to provide a lubricant-chamber and having suitable perforations to permit the escape of the lubricant, a dam of smaller diameter than the hollow of the axle and having projections adapted to engage the walls of the axle, substantially as described.

407,542. GRAIN-SEPARATOR. ARCHIBALD M. MISSELDINE, Colfax, Wash. Filed Nov. 7, 1888. Serial No. 290,191. (No model.)



Claim.—1. The upper shoe provided with a sieve adapted to receive the grain from the hopper, said shoe pivotally hung at its upper end in the frame, a rock-shaft disposed transversely in the machine at the lower end of the shoe, a crank-arm I, connecting said shaft with the shoe, and an upwardly-projecting arm K, secured upon the outer end of said rock-shaft, in combination with the drive-shaft D, the drive-wheel E, mounted thereon, provided with a series of projections L, adapted to successively engage and pass the said arm K, and a spring attached to the frame and to the upper edge of the shoe, whereby said shoe is suddenly drawn backward and upward when each projection L passes by the arm K, substantially in the manner and for the purpose described.

2. The combination, with the shoe F, the hangers G, secured thereto and arranged diagonally across the same, and link-connections H H between the upper ends of said bars and the frame, of a rock-shaft J, journaled transversely in the frame near the lower end of the shoe F, a crank-arm I, secured to said shaft and connected to one of the arms G, a projecting arm K, secured upon the outer free end of said shaft, a spring secured to the shoe and frame to normally draw said shoe backward, and means, substantially as shown, for oscillating the arm K, all arranged substantially as shown, and for the purpose described.

3. The combination, with the shoe F, pivotally hung at its upper edge in the main frame, a rock-shaft J, journaled transversely in the frame near the lower end of said shoe, a crank-arm connection between said shaft and the lower end of the shoe, and means, substantially as shown, for rocking the shaft, of a spring secured at its lower end to the upper edge of the shoe, its upper end secured to the frame above the rear end of the shoe, said spring normally drawing said shoe in an upward and rearward direction, and fixed stops *m*, secured to sides of the frame above the upper edge of the shoe, as shown, and adapted to abruptly limit the rearward and upward movement of said shoe after each successive rocking of the shaft J, substantially in the manner and for the purpose described.

4. The combination, with the shoe F, bars or hangers G, secured to the sides thereof, said bars provided with lateral inwardly-projecting members g^4 at the upper ends thereof, links H, pivoted to the frame and to the bars G, a rock-shaft J, journaled transversely in the frame near the lower end of the shoe, and a crank-arm connection between bars G and the shaft J, of the castings M, secured to the sides of the frame, the lower ends provided with projections forming fixed stops *m*, adapted to engage the projecting members g^4 of the bars and limit the same in the rearward movement thereof, and the springs N, secured at their upper ends to the castings M, their lower ends connected to the members g^4 of the bars G, and means for rocking the shaft J, substantially as shown, and for the purpose described.

5. The combination, with the shoe P, hung in the lower portion of the frame, provided with a screen *p*, of the rack R, said rack centrally supported upon a pivot-bolt S, said bolt supported in the framing of the machine, substantially as and for the purpose described.

407,543. CANCELING AND REGISTERING DEVICE. ARTHUR J. MILLER, Sweden, Pa. Filed Sept. 25, 1888. Serial No. 286,308. (No model.)

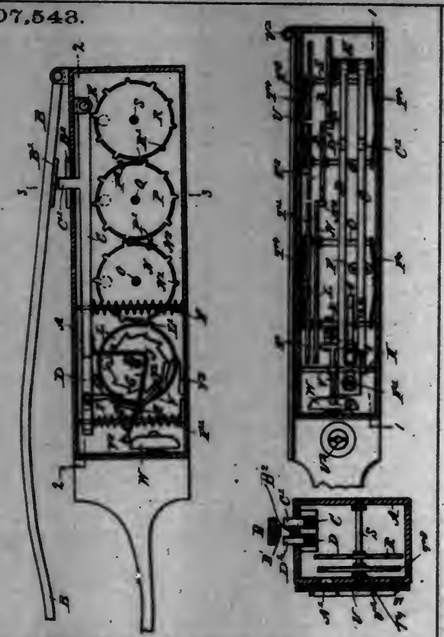
Claim.—1. In a canceling and registering device, the combination, with a box having slots, of a main lever pivoted and held on the outside of the said box, two spring-levers held on the inside of the box and provided with lugs projecting through the slots in the said box, to be engaged by the said main lever, a pawl held on the end of one of the said spring-levers, the ratchet-wheel operated thereby, and a spring-lever secured on the other lever and provided with an arm having a loop inclosing said pawl to guide the same and the register, substantially as shown and described.

2. In a canceling and registering device, the combination, with a box having slots, of a main lever pivoted and held on the outside of the said box, two spring-levers held on the inside of the box and provided with lugs projecting through the slots in the said box, to be engaged by the said main lever, a pawl held on the end of one of the said two levers, a spring-lever secured on the other lever and provided with an arm having a loop inclosing said pawl to guide the same, and a ratchet-wheel adapted to be engaged by the said pawl and carrying a units-wheel, substantially as shown and described.

3. In a canceling and registering device, the combination, with a box having slots, of a main lever pivoted and held on the outside of the said box, two spring-levers held on the inside of the box and provided with lugs projecting through the slots in the said box, to be engaged by the said main lever, a pawl held on the end of one of the said two levers, a spring-lever secured on the other lever and provided with an arm having a loop inclosing said pawl to guide the same, a ratchet-wheel adapted to be engaged by the said pawl and carrying units, tens, hundreds, and thousands wheels, and mechanism, substantially as described, for imparting motion to said tens, hundreds, and thousands wheels from the said units-wheel, as set forth.

4. In a canceling and registering device, the combination, with

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a box provided with slots and a projection on its top, of a main lever pivoted and fulcrumed on the outside of the said box and provided on its under side with a projection similar to the projection on the said box, two spring-levers held on the inside of the said box and provided with lugs projecting through the slots in the said box at each side of the said projections, the pawl-and-ratchet mechanism, and a register, substantially as shown and described.

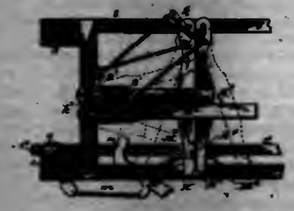
5. In a canceling and registering device, the combination, with a box, of a main lever pivoted and held on the outside of the said box, two spring-levers pivoted and held on the inside of the said box and provided with upwardly-projecting lugs passing through the said box under the said main lever, a pawl held on the end of one of the said two levers, a spring-lever secured on the other of the said two levers and fulcrumed on the said box, an arm projecting upward from the said spring-lever and provided with a loop engaging the said pawl, a ratchet-wheel mounted to turn in the said box and adapted to be engaged by the said pawl, a spring-arm fulcrumed in the said box and held in contact with the said ratchet-wheel, a striker held on the said spring-arm, a bell held in the said box and sounded by the said striker at every revolution of the said ratchet-wheel, and a register, substantially as shown and described.

407,544. WRAPPING-MACHINE. DAVID F. MCDONALD, Lake Butler, Fla. Filed Mar. 15, 1888. Serial No. 267,269. (No model.)

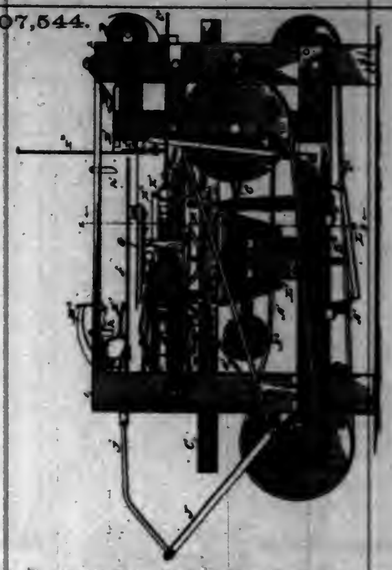
Claim.—1. In a wrapping-machine, a paper-clamp consisting of a series of pivoted bars and connections between said bars, whereby the movement of one bar on its pivot will effect a movement of the others, substantially as set forth.

2. In a wrapping-machine, the combination of the framing, a series of pivoted bars forming a paper-clamp and connected together, whereby the movement of one bar will effect a movement of the others, a slide-bar, and interengaging projections on said slide-bar and one of the clamp-bars, substantially as and for the purposes specified.

3. In a wrapping-machine, the combination of a series of pivoted bars connected together and forming a wrapper-clamp, a slide-bar engaging one of said bars, and a rotating holder arranged adjacent to the said clamp, all substantially as and for the purposes specified.



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4. The combination, with the holder, of a discharger having a portion movable across said holder, whereby to discharge the article therefrom, and having a shank M' pivotally supported, and having an extension m', a spring for retracting said discharger, and the slide-bar having a stud or projection arranged to engage the extension m', all substantially as and for the purposes specified.

5. In a wrapping-machine, the combination of the framing, the holder supported therein, a slide-bar movable in said frame and having a trip projection, a discharger pivoted to the framing and having a portion movable across the holder and provided with a lug or portion projecting into the path of the trip projection of the slide-bar, and a retracting-spring connected with said discharger, substantially as set forth.

6. In a wrapping-machine, the combination, with the rotatable holder constructed to receive the wrapper and the article to be inclosed therein and having a pulley and the drive-belt movable into and out of contact with said pulley, of the belt-shifter engaging said belt, whereby it may be moved into contact with the pulley of the holder, substantially as set forth.

7. In a wrapping-machine, the combination, with the framing, the rotatable holder having a pulley, the drive-belt movable into engagement with said pulley, and a shifter whereby to adjust said belt into engagement with the pulley of the holder and the paper-clamp, of the slide-bar supported in the framing and a bell-crank lever pivoted in said framing and having one arm connected with the shifter and its other arm connected with the slide-bar, substantially as set forth.

8. In a wrapping-machine, the combination of the framing, the drive-shaft, a counter-shaft geared therewith and having a crank-pin, a slide-bar, a pitman connecting the slide-bar with the said crank-pin, the holder having its shaft provided with a pulley and provided with movable fingers and with a rod for operating such fingers, a drive-belt movable into and out of contact with the pulley of the holder, the shifter for moving such drive-belt, the lifting-bar arranged to trip the spring-actuated rod of the holder, the lever connected with said lifting-bar, a pitman connecting the said lever with the sliding bar, the discharger-connections between such discharger and the slide-bar, and the bell-crank lever connected at one end with the shifter and at its other end with the slide-bar, all substantially as and for the purposes specified.

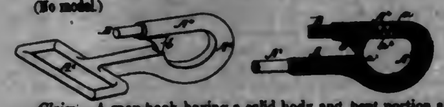
9. In a wrapping-machine, the combination of the framing, the rotatable holder, a shifter whereby said holder may be geared at intervals with the drive-gearing, and intermediate connections between said shifter and the drive-gearing, whereby the shifter may be operated thereby, substantially as and for the purposes specified.

10. In a wrapping-machine, the combination of a rotatable holder having movable fingers and a rod whereby to operate the same, a shifter whereby the holder is at intervals geared with the drive-gearing, the discharger movable across the holder, the slide-bar and connections, whereby the movement of said slide-bar will operate the discharger, the shifter, and the finger-operating rod of the holder, substantially as set forth.

11. In a wrapping-machine, the combination of a paper-carrier, the wrapper-clamp, the rotatable holder, the discharger, whereby to force the wrapped article out of such holder, and the shifter, whereby the drive-gearing may be moved into operative engagement with the holder, substantially as set forth.

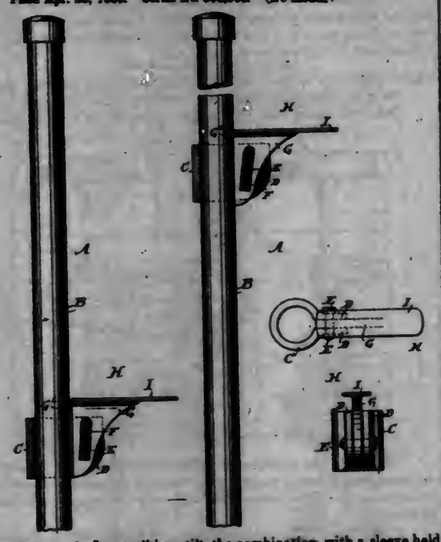
12. In a wrapping-machine, the combination of the framing, the paper-carrier, the wrapper-clamp, the holder, the discharger, the shifter, the slide-bar movably supported in the framing, and connections between said slide-bar and the carrier, clamp, holder, discharger, and shifter, substantially as and for the purposes specified.

407,545. MAP-HOOK. HENRY MCPHERSON, Troy, N. Y., assignor to Jay Willard Glark, same place. Filed Mar. 1, 1888. Serial No. 301,610. (No model.)



Claim.—A map-hook having a solid body and bent portion and its free end tubular and longitudinally slotted, in combination with a solid bolt and a lug to arrest said bolt, and a spring within said free end, substantially as and for the purpose described.

407,546. WALKING-STILT. GEORGE R. HAYS, Brooklyn, N. Y. Filed Apr. 25, 1888. Serial No. 308,503. (No model.)



Claim.—1. In a walking-stilt, the combination, with a sleeve held to slide on a pole and parted lengthwise of the same, of a pin held transversely in the parted ends of the said sleeve, and a step-bracket held between the parted ends of the sleeve and provided with an inclined slot, through which passes the said pin, substantially as shown and described.

2. In a walking-stilt, the combination, with a sleeve held to slide on the pole and parted lengthwise of the same, and lugs projecting from the ends of the said sleeve, of a pin extending transversely through the said lugs, a step-bracket provided with a brace having an inclined slot, through which said pin passes, said brace fitting between the said lugs, and a top plate held on the said brace, substantially as shown and described.

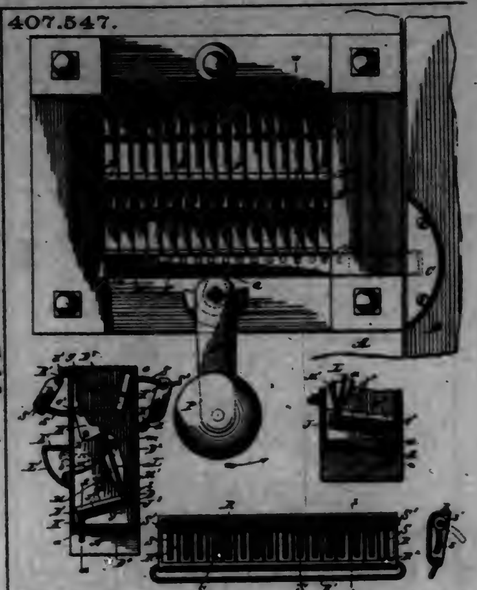
3. In a walking-stilt, the combination, with a pole or standard, of a sleeve held to slide on the said pole or standard and parted lengthwise of the same, lugs projecting from the ends of the said sleeve, a pin extending transversely through the said lugs, a step-bracket provided with a brace having an inclined slot, through which said pin passes, said brace fitting between the said lugs, and a top plate held on the said brace, substantially as shown and described.

407,547. LOCK. GABRIEL HERBRAND, St. Louis, Mo. Filed Aug. 13, 1888. Serial No. 282,495. (Model.)

Claim.—1. In a lock, the combination, with a bolt having a series of recesses or openings, of a series of independent and apertured cases, a locking-pin in each case, and a pin projecting and retracting mechanism carried by the case, substantially as herein shown and described.

2. In a lock, the combination, with a bolt having a series of recesses or openings, of a series of independent and apertured cases, a

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locking-pin in each case, a pin-actuating mechanism for each pin, and a frame having a series of finger-pieces adapted to be projected into the case to operate the pin-actuating mechanism, substantially as described.

3. A lock consisting of two pivoted bars or levers F J, bell-crank H, jointed connecting-arms I L, a locking-pin K, connected to the lever J, and a spring G, in combination with a bolt provided with a recess or opening for the reception of the locking-pin aforesaid, substantially as shown and described.

4. A lock consisting of two pivoted bars or levers F J, the latter being provided with a groove, a bell-crank H, jointed connecting-arms I L, the latter arm being provided on one end with a ball seated in the groove aforesaid, and a pin K, connected to the bar J, in combination with a pivoted plate M, having an arm M^2, and a casing for the lock provided with a slot *b*, substantially as shown and described.

5. A lock consisting of two pivoted bars or levers F J, the latter being provided with a groove, a bell-crank H, jointed connecting-arms I L, the latter arm being provided on one end with a ball seated in the groove aforesaid, and a pin K, connected to the bar J, in combination with the pivoted plate M, having an arm M^2, and a casing for the lock provided with a slot *b*, and a housing E, substantially as shown and described.

6. The combination, with a frame, of a series of finger-pieces or keys pivoted in the said frame, substantially as described.

7. A rectangular frame having an elongated link or bar pivotally secured thereto, and also provided with a series of cross-bars R^2, and a series of finger-pieces or keys, said finger-pieces or keys being pivotally secured to a rod whose ends are secured in the respective ends of the frame aforesaid, substantially as shown and described.

407,548. RAILROAD-TRAIN INDICATOR. JAMES T. COBBS, Richmond, Va., and THOMAS J. DE LASHMET, St. Paul, Minn. Filed Feb. 8, 1888. Serial No. 263,257. (No model.)

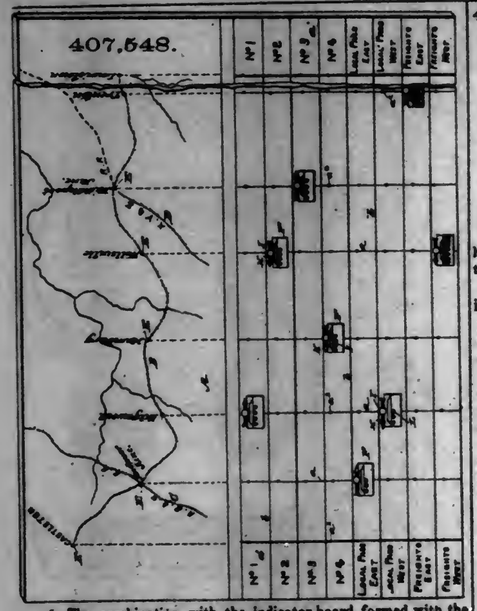
Claim.—1. The combination, with the indicator-board formed with the series of apertures, of the movable indicator-box having a transverse retaining-peg and a series of apertures at its forward side and the removable pegs fitting in said holes, substantially as set forth.

2. The combination, with the indicator-board formed with the series of apertures, of the movable indicator-box having a transverse retaining-peg and a series of apertures at its forward side and removable pegs having the wafers affixed to them, substantially as set forth.

3. The combination, with the indicator-board formed with the series of apertures, of the movable indicator-box having a transverse retaining-pin, a removable slide at the front of said box, having a series of apertures, and removable pegs fitting in said apertures.

4. The combination, with the indicator-board formed with the series of apertures, of an indicator-box having a transverse retaining-peg, an arrow indicating the direction in which the train is running, a slide formed with a series of apertures, and removable pegs fitting said apertures.

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5. The combination, with the indicator-board formed with the series of apertures, of an indicator-box having a transverse retaining-peg, an arrow indicating the direction in which the train is running, a slide formed with a series of apertures, removable pegs fitting said apertures, and the different colored wafers adapted to be attached to said pegs.

6. The combination, with the indicator-board formed with the series of apertures, of an indicator-box having the transverse retaining-peg, the arrow, the dial marked with hours and minutes and having the movable hands, the grooved ways and the perforated slide fitting therein, the removable pegs, and the wafers, substantially as set forth.

7. A train-indicator comprising the main board having upon its upper part a representation of a railroad-line and the telegraph-stations thereon and having apertures arranged below said stations, and movable boxes having retaining-pegs to fit said apertures and having apertures at their forward sides, and indicator-pegs fitting in said apertures.

8. In a train-indicator, the combination of the main board marked with the lines and stations and having the series of apertures below said stations, and the side spaces in which the names of the trains are placed, and the indicator-boxes formed each with the retaining-peg, the arrow, the dial marked with hours and minutes and having the movable hands, the grooved ways and the perforated slide fitting therein, the removable pegs, and the wafers, substantially as set forth.

9. The combination, with the indicator-board, of the movable indicator-boxes and the movable car-indicating pegs L, the series of colored wafers adapted to be attached to the car-indicating-pegs L, and the color-reference chart having the reference-colors N upon it, substantially as set forth.

10. In a train-indicator, the combination, with the indicator-board formed with the apertures a^3, in which the retaining-pegs of the movable indicator-boxes fit, and the movable indicator-boxes, of the flat paper tags R, adapted to be secured by the apertures a^3, substantially as set forth.

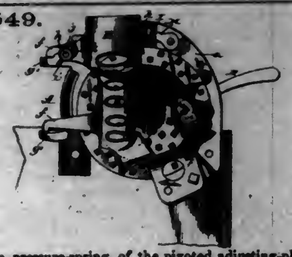
407,549. CORN-SHELLER. ASAHEL H. PATCH, Clarksville, Tenn. Filed Apr. 12, 1888. Serial No. 306,960. (No model.)

Claim.—1. In a corn-sheller, the combination, with the wheel C, shell F, having the guide *a* and chute G, of the semicircular guard *p*, having its upper end extended around and secured to the yoke *a*, substantially as set forth.

2. In a corn-sheller, the combination, with the yoke-frame *a* and hopper E, and the shell F, hinged to the yoke-frame at one side and having the pressure-spring, of an adjusting-plate pivoted at one end to the yoke-frame and adapted to have its free end inserted between the free edge of the shell F and the corresponding edge of the hopper, substantially as set forth.

3. In a corn-sheller, the combination, with the yoke-frame *a* and hopper E, and the shell F, hinged to the yoke-frame at one side and

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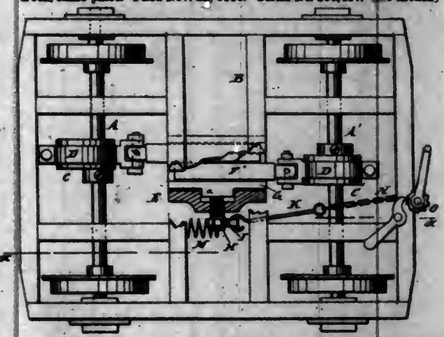
having the pressure-spring, of the pivoted adjusting-plate H, having the beveled free end *h'*, substantially as set forth.

4. In a corn-sheller, the combination of the yoke-frame *a*, having the notched rack I and the hopper E, the shell F, hinged to the yoke-frame at one side and having the pressure-spring, and the pivoted adjusting-plate H, having the rib 1 on its inner side, substantially as set forth.

5. In a corn-sheller, the combination, with the yoke-frame *a*, of the curved clamping-plates J, having the projections J' at their lower ends, and the central apertures, and adapted to be secured to the yoke-frame by a clamping-screw, substantially as set forth.

6. In a corn-sheller, the combination, with the yoke-frame *a*, having the rear slots a^2 and apertures a^3, of the curved clamping-plates J, having the projections *j* J' at their ends, and the screws K, having the winged nuts K^2, substantially as set forth.

407,550. BRAKE FOR CONTROLLING ROTARY MOTION. FREDERICK W. RIMA, Philadelphia, Pa., assignor to himself and JESSE R. ELFRETH, same place. Filed Nov. 22, 1888. Serial No. 291,417. (No model.)



Claim.—1. The combination, with the car-axle, of an eccentric, an eccentric-strap, a reciprocating bar adapted to be slid by the eccentric-strap, and a clamp-box provided with a friction-plate, substantially as specified.

2. The combination, with the axle A, of the eccentric C, the strap D, friction-bar F, recessed clamping-box E, the plate G, provided with the projection *a*, and the clamping-screw H, provided with the lever I, substantially as specified.

3. The combination, with the axle A, of the eccentric C, the strap D, friction-bar F, recessed clamping-box E, the plate G, provided with the projection *a*, the clamping-screw H, provided with the lever I, the retractile spring M and brake-rod K, the chain N, and the windlass O, substantially as specified.

407,551. LINIMENT. JAMES S. SCHRACK, Jessup, Iowa. Filed Mar. 26, 1889. Serial No. 304,821. (No specimens.)

Claim.—The herein-described composition of matter, to be used for curing and healing flesh wounds, consisting of spirits of turpentine, olive-oil, sulphuric acid, carbolic acid, strained honey, and oil of amber, in the proportions specified.

407,552. MAGAZINE-GUN. JOSEPH J. SPEER, Waltham Cross, England. Filed Jan. 5, 1888. Serial No. 259,866. (No model.) Patented in England Oct. 1, 1887, No. 13,236.

Claim.—1. In a breech-loading fire-arm, the combination of a shoe or body provided with socket for rear stock, having slot, groove, or notch at the lower side thereof, and a trigger-guard seated in said slot, and having a forward extension which engages the forward part of the breech-frame, substantially as described.

2. The combination of a shoe or body for breech-loading fire-arms, provided with socket for the rear stock, a slot or groove for the trigger-guard, which engages the stock and the front of the breech-frame, and abutting shoulders for the fore-end stock of a rear stock

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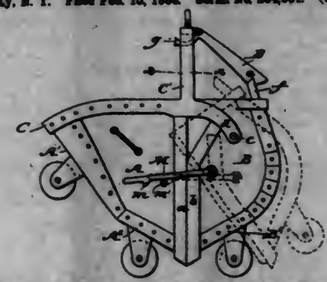
fitting in the socket and a fore-end stock embracing the body of the shoe, substantially as described.

3. The combination, in a breech-loading fire-arm, of a breech-bolt provided with a groove in the side of its head, a shoe or body provided with a rib which works in the groove, and a locking device which, when in locking position, is in line with and forms a continuation of said rib, substantially as described.

4. In a breech-loading gun, the combination, with the shoe or body thereof, having a socket *c* and a groove in the under side of said socket, of a trigger-guard provided with a forward extension, and a bolt or screw for locking the extension and the shoe together, a distance-piece interposed between the shoe and the extension, substantially as described.

5. The combination, with the breech-bolt of a fire-arm, of a two-part shield or cover, one part connected with the body of the bolt, to reciprocate and rotate therewith, and the other part connected with the head of the breech-bolt, substantially as described.

407,553. COAL-BUCKET. GUSTAVUS L. STEARNS, Long Island City, N. Y. Filed Feb. 15, 1888. Serial No. 264,061. (No model.)



Claim.—1. The section A of the bucket, formed or provided with rearwardly-projecting arms *d*, in combination with the section B, hinged to and between the ends of said arms, substantially as shown and described.

2. The section A, having the rim C and bail C' made in one part and riveted to the section A, in combination with the hinged section B, substantially as described.

3. The section A, having the rim C formed with the bail C', and rearwardly-projecting arms *d*, in combination with the section B, hinged to and between the arms *d*, substantially as described.

4. The bail C, having trigger D, in combination with the section A, arm *d*, and section B, hinged to the arms *d*, and provided with a locking-stud *f* for the said trigger D, substantially as described.

407,554. DRILL-CHUCK. CHARLES TAYLOR and GEORGE B. TAYLOR, Birmingham, England. Filed Nov. 30, 1888. Serial No. 291,411. (No model.) Patented in England Oct. 18, 1887, No. 14,146; in France July 24, 1888, No. 191,894, and in Belgium July 26, 1888, No. 82,695.



Claim.—In a lathe-chuck, the combination of a chuck-body having its conical face provided with radial slots parallel with said face and at an angle to the axis of the chuck, sliding jaws adapted to move in said ways and provided with toothed faces projecting above the conical face of the chuck-body, an inclosing-shell surrounding the chuck-body and having a conical portion provided with internal screw-threads that engage the teeth of the sliding jaws, and a ring having a screw-threaded engagement with the rear end of said shell and provided with a shoulder that abuts against a shoulder on the rear portion of the chuck-body, substantially as described.

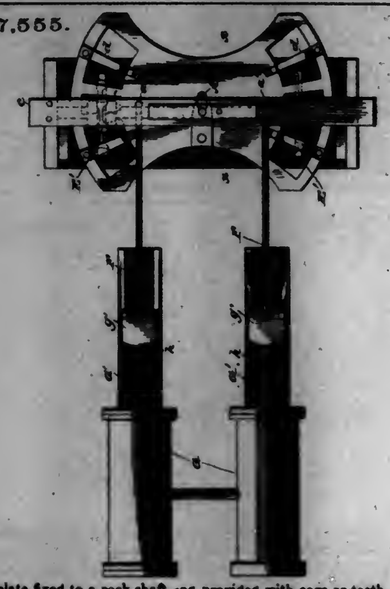
407,555. MECHANISM FOR CONVERTING AND REVERSING MOTION. THOMAS C. THOMAS, Salt Lake City, Utah. Filed Dec. 6, 1888. Serial No. 292,837. (No model.)

Claim.—1. The combination, in a mechanism for converting motion, of an oscillating contrivance or plate provided with series of radial teeth or cogs, one series at each end, with a shaft carrying segments or disks provided with teeth or cogs adapted to successively engage with the aforesaid series of cogs or teeth as the said contrivance or plate is oscillated, substantially as and for the purpose set forth.

2. The combination, in a mechanism for converting motion, of a centrally-hung plate provided with means for the application of power at each side of its axis and with series of cogs or teeth, one series at each end, with a shaft carrying segments or disks provided with cogs or teeth engaging successively with the aforesaid teeth or cogs as the said contrivance or plate is oscillated, substantially as and for the purpose specified.

3. The mechanism for converting and reversing motion, consisting

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of a plate fixed to a rock-shaft and provided with cogs or teeth, the intermediate ones being flush with the surface of the plate, while the end ones are in a plane above the surface of the latter, and a shaft carrying segments or disks provided with teeth or cogs engaging successively with the aforesaid cogs or teeth as said plate is oscillated, substantially as and for the purpose set forth.

4. The mechanism for converting and reversing motion, comprising an oscillating contrivance or plate, a rotary shaft, and reversing mechanism, said oscillating contrivance or plate and rotary shaft being adapted to intergear, and said reversing mechanism effecting the reversal of said rotary shaft, substantially as set forth.

5. The mechanism for converting and reversing motion, having an oscillating contrivance or plate intergearing with a rotary shaft and the reversing mechanism consisting of the eccentric applied to the upper end of the shaft-extension and provided with a reversing-lever, substantially as set forth.

6. The mechanism for converting and reversing motion, comprising an oscillating plate or contrivance provided at each end with a series of teeth or cogs, a rotary shaft provided with toothed segments or disks gearing with the aforesaid teeth, and the rock-shaft offset or inclined to caress the said plate, substantially as set forth.

7. The mechanism for converting and reversing motion, having the rotary shaft provided with the toothed segments or disks, the oscillating plate or contrivance having at each end a series of teeth or cogs gearing with the aforesaid teeth or cogs, the inclined rock-shaft to which said plate is secured, and the eccentric receiving the upper end of said shaft and provided with a lever having a pin-and-aperture connection with the top cross-bar of the supporting-frame, substantially as set forth.

8. The mechanism for converting and reversing motion, comprising the rotary shaft provided with segments or disks, the inclined oscillating plate or contrivance having a series of teeth gearing with the aforesaid teeth, the inclined rock-shaft having an adjustable bearing at its upper end and passing through the plate, substantially as specified.

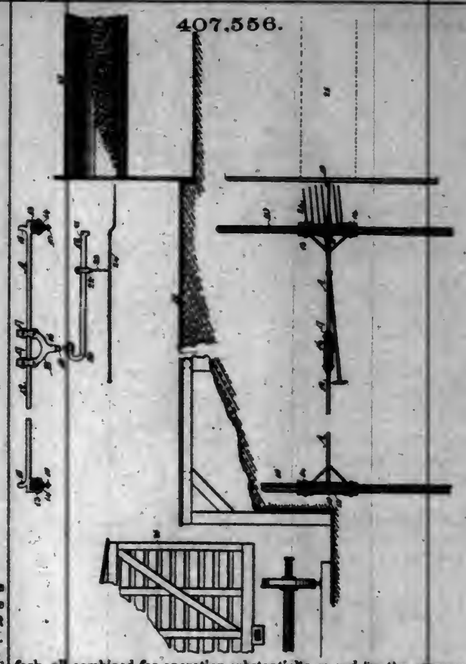
407,556. DEVICE FOR HANDLING COKE. JOSEPH WATT, McKee's Rocks, Pa. Filed Apr. 9, 1889. Serial No. 306,627. (No model.)

Claim.—1. The combination, with a carriage, of a crane mounted to travel on the carriage and a fork having a sliding and flexible connection with the crane, substantially as described.

2. The combination, with a carriage, of a crane comprising a body portion provided with wheels adapted for contact with the carriage, and a horizontal arm, a wheeled frame held to travel upon the arm of the crane, and a fork pivotally suspended from the said frame, substantially as shown and described.

3. The combination, with a carriage comprising a rail and wheeled trucks, of a crane comprising a body provided with wheels capable of contact with the upper and lower surfaces of the carriage-rail and a horizontal arm swiveled to the body, a wheeled frame held to travel upon the crane-arm, a fork, and a connection between said frame and

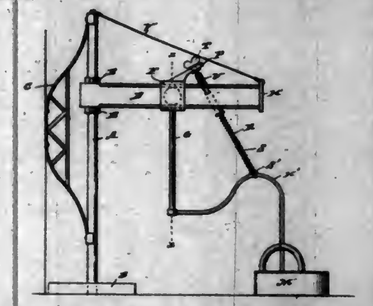
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fork, all combined for operation substantially as and for the purpose specified.

4. The combination, with a carriage comprising a rail, a wheeled truck at each extremity of the rail, and stop-lugs projected from said extremities, of a crane comprising a body provided with wheels capable of contact with the upper and lower surfaces of the carriage-rail, and a horizontal arm curved at one end, swiveled at said curved end to the body, and provided at its free end with a downwardly-extending stop-ing, a wheel-carrying sleeve traveling upon the crane-arm, and a fork suspended from said sleeve by a chain, substantially as shown and described.

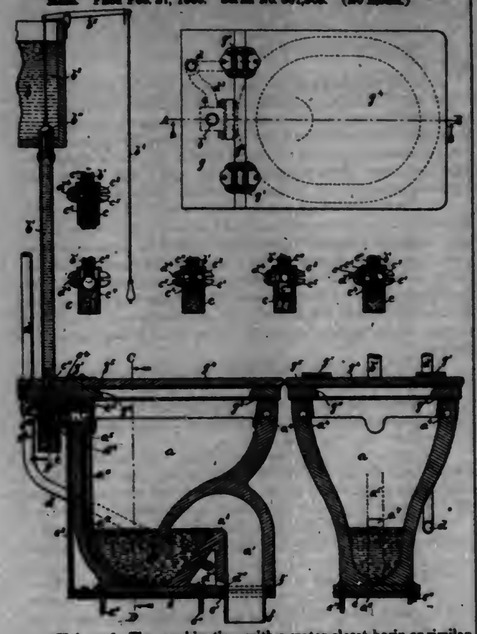
407,557. LAUNDRY-IRON ATTACHMENT. JOHN J. WEBER, Grand Rapids, Mich. Filed Feb. 5, 1889. Serial No. 298,760. (No model.)



Claim.—1. The combination of an upright standard, a horizontally-swinging frame pivoted on said standard, a horizontally-movable sleeve F, supported on said frame and carrying a thumb-screw, an internally-threaded sleeve U, adjustably supported by the thumb-screw, a rod R', connected at one end with the sliding sleeve F and at the other end with a laundry-iron, a rod R, connecting the sleeve U and rod H', and a spring S, mounted on said rod R to exert pressure on the iron, substantially as described.

2. The combination of the standard A, the horizontally-swinging frame D, the sleeve F, mounted on said frame and provided with lug P, pulleys P' P', and depending rod G, a rod H', connected at its lower end to a laundry-iron and having its opposite end attached to the rod G, depending from the sleeve F, the thumb-screw T, supported in the lug P, the internally-threaded sleeve U, the rod R, and the spring S substantially as described.

407,558. WATER-CLOSET, &c. DARIUS WELLINGTON, Boston, Mass. Filed Feb. 27, 1888. Serial No. 301,303. (No model.)



Claim.—1. The combination, with a water-closet basin or similar receptacle having a water-inlet opening, a water-supply tank, a service-pipe for connecting the tank with the inlet-opening, and a supply-controlling valve at the upper portion of the service-pipe, of a valve-casing interposed between and communicating with the lower end of the service-pipe and the inlet-opening of the basin, and a self-closing valve located in said valve-casing between the lower end of the service-pipe and the basin, and automatically opened by the water-pressure when the supply-controlling valve is opened to obtain a noiseless flush at all times, substantially as described.

2. A water-closet basin or similar receptacle having opening a^1 to admit water to flush the basin, the tank b, supply-pipe b', valve b'' to close the supply-pipe at the tank, valve-casing c, having valve-seat c^2, and opening c', communicating with opening a^1 in the basin, valve c^3, and float c^4 to automatically open and close supply-pipe b' at or near the water-closet basin, all combined to be operated as described, for the purpose set forth.

3. In a water-closet or similar receptacle, a basin provided with a flushing-rim and opening to admit water to flush the basin, a valve-casing communicating with the flushing-opening, a supply-pipe entering the valve-casing, a valve to close the supply-pipe, and an air-space in the upper part of the valve-casing and communicating with the basin through the flushing-opening, combined with a ventilating-pipe leading from the upper part of the valve-casing, for the purpose set forth and described.

4. In a trapped water-closet or similar receptacle provided with an opening to admit water to flush the closet, a valve-casing communicating with the flushing-opening, a supply-pipe entering the valve-casing, a valve to close the supply-pipe, an air-space in the upper part of the valve-casing and communicating with the flushing-opening, and a ventilating-pipe leading from the upper part of the valve-casing, combined with a passage-way in the wall of the water-closet, and an opening through the wall connecting the passage-way with the basin of the closet at or a little above the level of the water in the seal of the closet, to operate as and for the purpose set forth.

407,559. HOOP-CLAMP. ASA R. WELLS, San Francisco, Cal. Filed May 2, 1888. Serial No. 309,371. (No model.)

Claim.—1. In a hoop-clamp, the combination of the opposing heads to which the ends of the hoop are secured, a tightening-bolt extending between said heads, and a connection comprising hemispherical nuts and seats between said bolt and the heads, whereby the latter may conform to the line of curvature of the hoop, substantially as described.

2. A hoop-clamp consisting of the combination of the opposing heads to which the hoop ends are secured, said heads having in their inner or adjacent ends hemispherical seats, hemispherical nuts fitted

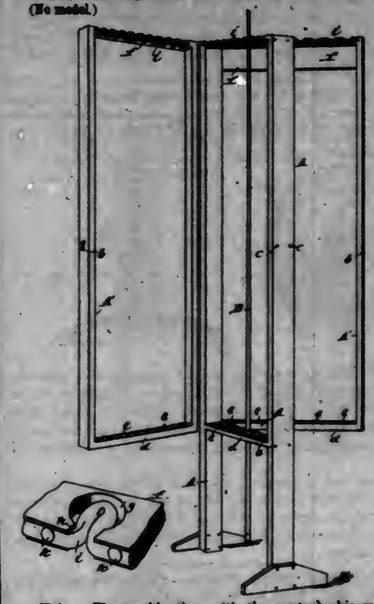
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to said seats, and the tightening-bolt extending between and into the heads and seated in the nuts, whereby the heads may conform themselves to the curvature of the hoop, substantially as described.

3. A hoop-clamp consisting of the combination of the opposing heads to which the ends of the hoops are secured, said heads having in their inner or adjacent ends the hemispherical seats provided with grooves, the hemispherical nuts fitted to said seats and having the ribs fitting in the grooves thereof, and the right and left hand threaded tightening-bolt extending between the heads and seated in the nuts thereof, substantially as herein described.

407,560. WHIP-RACK. DANIEL T. WILSON and FRANK C. REDINGTON, Union City, Mich. Filed Dec. 12, 1888. Serial No. 293,341. (No model.)



Claim.—The combination, with the central whip-rack frame A, of the outer whip-rack frames A', hinged thereto, and fastenings locking or securing the several frames together when closed one upon or against the other, said frames being each constructed with a lower rail d, having one or more rows of perforations e, and an upper rail having pockets g, constructed with contracted mouths h and provided with flexible loop-like linings i to said pockets and their mouths, essentially as shown and described.

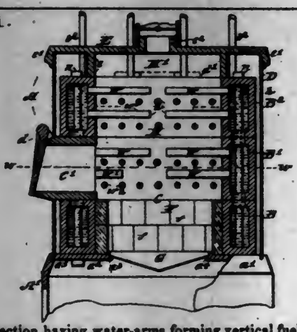
407,561. WATER-HEATER. FRANK WILSON, Easton, Pa., assignor of two-thirds to John L. Wilson and James R. Wilson, same place. Filed Apr. 19, 1888. Serial No. 307,201. (No model.)

Claim.—1. In a hot-water-heating apparatus, the combination, with a grooved base or ash-pit section having securing perforations and an upwardly-extending flange, of a fuel-chamber water-section having vertical passages corresponding to the securing perforations in the base, a casing adapted to the groove in the base, and fire-brick sections between the inner face of the water-sections and the upwardly-extending flange of the base.

2. In a hot-water-heating apparatus, a water-section which is provided with a fuel-supply chute, front, rear, and side series of water-arms of uniform length which extend toward transverse and longitudinal central lines of the heater, and transverse and longitudinal short water-arms in the front portion of the water-section, whereby a vertical fuel-opening at the ends of the short water-arms is produced.

3. In a hot-water-heating apparatus, the combination, with the base or ash-pit section, of the fuel-chamber water-section, the feed-

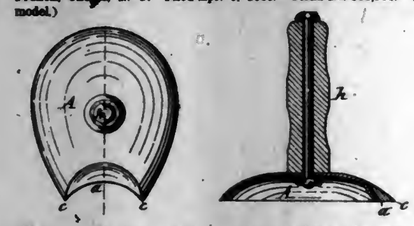
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chute water-section having water-arms forming vertical fuel-opening, and the upper water-section, the three water-sections and the base or ash-pit section being secured together by the holding-rods *h*, substantially as shown and described.

4. In a hot-water-heating apparatus, the combination, with the base or ash-pit section, of the described water-sections secured together and to such base, as set forth, the vertical exterior casing supported upon the base-section, and the flanged cap or top plate resting upon the upper water-section and upon the vertical exterior casing, substantially as specified.

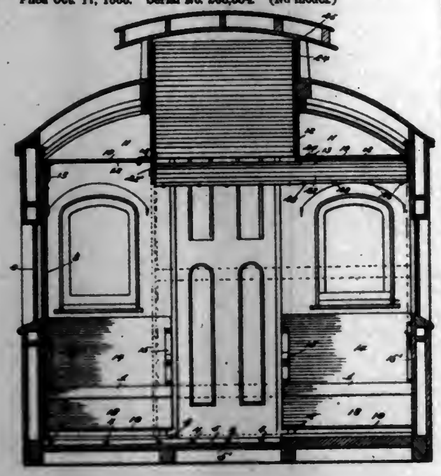
407,562. HOG-SCRAPER. HIRAM AGAN, Rome, N. Y., assignor to Celia A. Agan and Charles H. Dunning, same place, and Edward R. French, Oneida, N. Y. Filed Apr. 8, 1889. Serial No. 306,358. (No model.)



Claim.—1. The improved hog-scraper, consisting of a concavo-convex metal plate, the edge of the main portion of which is oval in contour and the edge of the remainder thereof curved reverse from that of the main portion, and the handle projecting from the convex side of the main portion of said plate, substantially as described and shown.

2. The described hog-scraper, consisting of the concavo-convex metal plate A, the main portion of which is oval in contour, the remainder *a* having its edge curved reverse from that of the main portion and joined therewith by the angular portions *c c*, substantially as described and shown.

407,563. SLEEPING-CAR. CHARLES L. ARNOLD, Wilmington, N. C. Filed Oct. 17, 1888. Serial No. 288,354. (No model.)



Claim.—1. A railway passenger-car having seats movable away from the side of the car to the opposite seats, with partitions extending lengthwise of the car, and transverse folding partitions forming with the laterally-movable lengthwise partitions compartments, and a side passage-way extending lengthwise of the car, substantially as described.

2. A railway passenger-car having seats movable away from the side of the car to the opposite seats, the seats having swinging backs with means for fastening the swinging backs in an elevated horizontal position above the seats, partitions extending lengthwise of the car, and transverse folding partitions forming with the laterally-movable lengthwise partitions compartments, and a side passage-way extending lengthwise of the car, substantially as described.

3. A railway passenger-car having seats movable away from the side of the car to the opposite seats, the seats having swinging backs, with means for fastening the swinging backs in an elevated position above the seats, compartments for holding bedding located above the ceiling at the sides of the car above the seats, partitions extending lengthwise of the car, and transverse folding partitions forming with the laterally-movable lengthwise partitions compartments, and a side passage-way extending lengthwise of the car, substantially as described.

4. A railway passenger-car having seats movable endwise across the center aisle of the car to abut end to end with the seats on the opposite side of the car and form a passage-way on one side of the car, the abutting seats being convertible into sleeping-berths, substantially as shown and described.

5. A railway passenger-car having seats mounted on platforms movable from the side of the car to the opposite seats and friction-rollers located in the floor of the car upon which the platforms rest and over which they move, substantially as described.

6. A railway passenger-car having a series of seats 1, the seats 1 on one side of the car being mounted on platforms 3, provided at the end adjacent to the car-wall with a lengthwise partition 6, having door 7 and windows 8, a series of transverse grooves 5 in the floor of the car, with rollers 4 extending from the side of the car to the opposite seats, the platforms 3, resting upon and movable over the rollers 4, a series of compartments 11, with hinged doors 12, located in the ceilings 10 at the sides of the car above the seats, the top of the partitions 6 abutting against the ceilings 10, and a series of upper and lower rolling slat partitions 22, 23, and 25', mounted on spring-rollers 24, located in and beneath the central elevated portion 25 of the car, and the ceiling 10 at one side of the car and beneath the seats 1, the outer ends of the lower slat partitions 23 being fastened to the seats 1, and the outer ends of the upper slat partitions having detachable fastening devices for securing them to partitions 22, substantially as described.

7. A railway passenger-car having a series of seats 1, the seats 1 at one side of the car having vertical partitions on their inner ends and being movable with the partitions across the car to the opposite seats, the seats 1 having backs 14, mounted on brackets 15', pivoted to one side of the car, and partition 6, with fastening devices for holding the backs 14 in horizontal position, and movable partitions extending crosswise of the car between the seats, substantially as described.

8. A railway passenger-car having seats movable from one side of the car to the seats on the opposite side, and slat partitions extensible over the vertical spaces between the floor and seats and the seats and ceiling of the car to form compartments, substantially as described.

9. A railway passenger-car having a series of seats 1, the seats 1 on one side of the car being movable from the side of the car to the opposite seats, and having vertical partitions 6, extending over their inner ends and movable therewith across the car to form a side passage-way, the seats 1, having backs 14, mounted on brackets 15', pivoted to the partitions 6 and a wall of the car, with fastening devices for holding the backs 14 in a horizontal position, a folding extension 17, hinged to the edge of the backs 14, and an extension 18, hinged to the front edge of the seats 1, and having a foot-rest and guard 19, with a curved notched supporting-bar 20, projecting through a plate 21 on the floor beneath the seats, substantially as described.

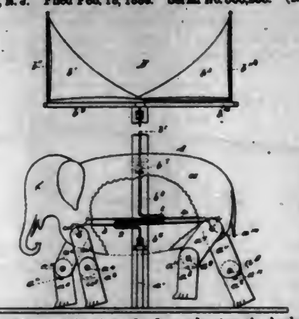
10. A railway passenger-car having seats movable from one side of the car to the opposite seats, and the extensible transverse upper and lower slat partitions 22 and 23, mounted on spring-rollers 24 in the vertical elevated portion 25 of the car beneath the ceiling 10 at one side of the car and beneath the seats 1, the slat partitions being adapted to extend in a vertical plane transverse to the car from the top of the car to the floor, thereby dividing the pairs of seats moved end to end into compartments, substantially as described.

407,564. TOP-PROP NUT FOR VEHICLES. CLAYTON L. BAKER, Moline, Ill. Filed Apr. 9, 1889. Serial No. 306,621. (No model.)



Claim.—A top-prop nut comprising, in combination, a threaded shank provided with a peripheral flange having rivet-apertures therein, a head adapted to be secured to the flange of the shank portion by suitable rivets, a sheet or disk of leather interposed between the head and the flange of the shank portion and secured therebetween, and a leather covering for the head, secured to the described leather disk at their peripheral portions, substantially as described.

407,565. AUTOMATICALLY-MOVING FIGURE. ALFRED P. BALL, Jersey City, N. J. Filed Feb. 18, 1889. Serial No. 300,255. (No model.)

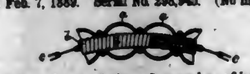


Claim.—1. The combination of a figure having the body immovably mounted on a post and having movable legs each consisting of two sections pivoted together, a stop on each leg near the pivotal point, an upright shaft having oppositely-extending crank portions having connections with the legs, cross-bars on the shaft, and sails secured to the cross-bars.

2. The combination, with a figure having the body portion immovably mounted on a frame, of legs pivoted to said body portion and comprising, respectively, two sections pivoted together, a shaft having a crank portion, connecting-rods extending from the crank portions to the upper sections of the legs, and sails simultaneously operating the legs by means of the cranked shaft and the connecting-rods, substantially as specified.

3. The combination of an upright standard supporting a horizontally-extending body, an upright shaft having horizontally-extending cranks, legs pivotally connected to the body and connected to the cranks by connecting-rods, a bar carried by the upright shaft above the figure, and sails connected to said bar, substantially as specified.

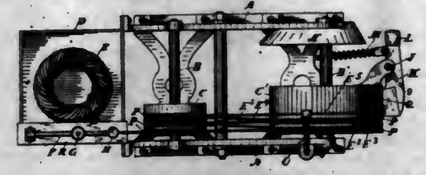
407,566. BRACELET. WALTER R. BALLOU, North Attleborough, Mass. Filed Feb. 7, 1889. Serial No. 298,945. (No model.)



Claim.—1. A bracelet consisting of a number of independent disconnected units strung on an elastic tube, having an endless chain in the tube constructed to limit the expansibility, as described

2. In a bracelet, the combination of the independent disconnected units *a*, the spirally-coiled wire tube *b*, and the chain *c*, forming a continuous flexible ring, as described.

407,567. BAG-STRING CUTTER. ROBERT A. BAUER, Grand Rapids, Mich., assignor of one-half to Henry G. Krekel, same place. Filed Mar. 8, 1889. Serial No. 302,536. (No model.)



Claim.—1. The improved bag-string cutter herein described, consisting of a frame having a grooved pulley mounted upon a shaft journaled in said frame, a second grooved pulley mounted on a shaft journaled in said frame, provided with a pivoted knife adapted to strike upon the face thereof, a spring for operating the knife, a cam adapted to lift said knife from the face of said pulley, and means of regulating the tension of the twine, substantially as described.

2. In a bag-string cutter, in combination with a frame, a grooved pulley journaled in said frame, provided with a knife adapted to strike upon the face thereof, and means for operating said knife and of regulating the tension of the twine, substantially as described.

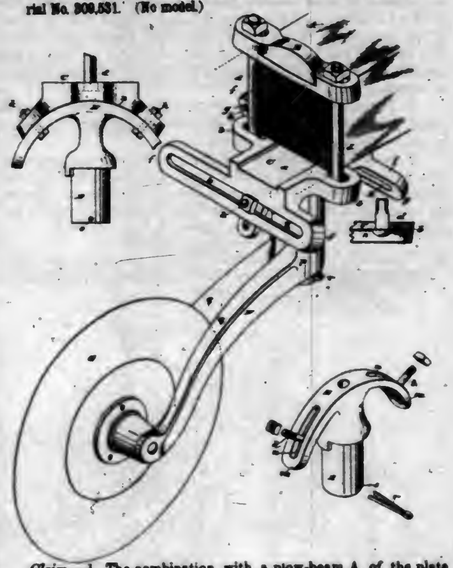
3. In a bag-string cutter, in combination with a frame and a stationary cam secured to said frame, a pulley provided with grooves upon its face journaled in said frame and with a pivoted knife adapted to strike upon the face of said pulley, and a spring for operating the knife and having a roller adapted to said cam, substantially as described.

4. In a bag-string cutter, in combination with a frame and a stationary cam secured to said frame, a pulley having grooves upon its face for receiving the twine and provided with a pivoted knife actuated by said cam and secured to said pulley, having an operating-spring, a block of wood secured to the face of said pulley for receiving the blow of said knife, and means for adjusting the tension of said twine, substantially as described.

5. In a bag-string cutter, the combination, with a frame having a stationary cam secured thereto, of a pulley having grooves upon its face for receiving the twine and provided with a knife having an actuating-spring attached to said pulley adapted to said cam and a block for receiving the blow of said knife secured to the face of said pulley, a guide-arm for guiding the twine attached to said frame, and a pulley having grooves adapted to receive said twine journaled in said frame to the rear of said first-described pulley, and means for regulating the tension of said twine arranged to the rear of said second-described pulley, substantially as described.

6. In a bag-string cutter, substantially as above described, the combination, with a frame, of a grooved pulley having a wooden block secured to its face and a pivoted knife adapted to strike upon said block, a cam adapted to lift said knife, a supplemental grooved pulley journaled in said frame, a guide-arm arranged between said pulleys, and means for holding a ball of twine and regulating the tension of the twine as it is fed upon said supplemental pulley, substantially as described.

407,568. ROLLING COLTER. THOMAS C. BELDING, Canton, assignor to the Universal Plow Company, Wooster, Ohio. Filed May 3, 1889. Serial No. 309,531. (No model.)



Claim.—1. The combination, with a plow-beam A, of the plate C, having its lower face portion circular in cross-section, arms *f* and *b*, bolts *d*, and yoke B, whereby the plate C is secured to the beam, substantially as described, and for the purpose set forth.

2. The combination, with the beam A, the plate C, having its lower face portion circular in cross-section, an arm D, having a convex head portion E, having perforations *n*, and means for securing said head in desired adjustment with the plate C, substantially as described, and for the purpose set forth.

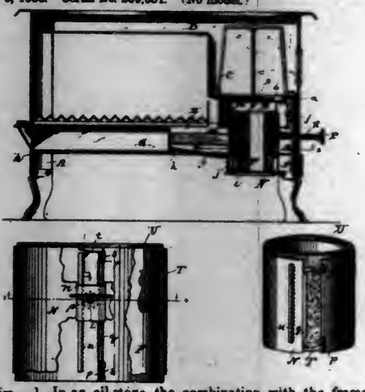
3. In combination with the beam A, the plate C, having side projecting arms *f*, provided with slots *h*, the under surface of said plate being circular in cross-section, a depending arm, as D, having a convex head portion, as E, adapted to rock in the circular face of the plate C.

4. In combination with the beam A, plate C, having a concaved lower face portion, parallel arms *f*, circular in cross-section, slots *h*, arm D, having a convex head E, adapted to rock in said concave in line with the draft and to move laterally, a colter G, arm F, having a sleeve portion, as *p*, loosely secured about an arm, as D, and means

for securing said arm in desired adjustment with the plate C, substantially as described, and for the purpose set forth.

5. In combination, the colter G, colter-arm F, supporting-arm D, having a convex head E, adapted for lateral adjustment, a supporting-plate, as C, having a concaved under portion and parallel arms circular in cross-section, and means for securing said head in desired lateral adjustment on said plate or arms, substantially as described, and for the purpose set forth.

407,569. OIL-STOVE. CHARLES H. BORCK, Milwaukee, Wis. Filed Apr. 6, 1888. Serial No. 269,851. (No model.)

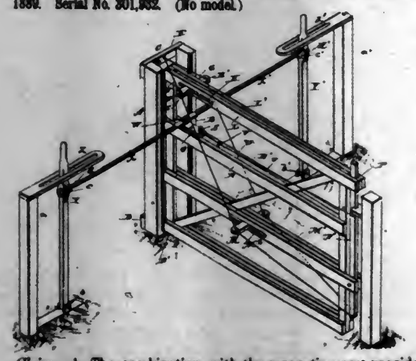


Claim.—1. In an oil-stove, the combination, with the frame, of flanges *h*, projecting inwardly from the sides of the frame, the nest *i* at the front of the stove supported by the said flanges, and a removable reservoir and burner arranged, respectively, on the flanges and nest and secured to and communicating with each other, substantially as described.

2. The combination, in a burner, of a contiguous inner tube and a split outer tube, and a sectional wick the upper section of which is of practically incombustible material.

3. In an oil-stove, a burner consisting of the cup F, the wick-tube having a perforated inner wall and a split outer wall, with means for uniting the severed edges, the wick between the walls, a rack *u* on the outer wall of the wick-tube, and a pinion meshing therewith operated from the outside of the cup, substantially as described.

407,570. GATE. WILLIAM F. BRADLEY, Old Round Rock, Tex., assignor of one-half to William B. Shiflette, same place. Filed Mar. 5, 1889. Serial No. 301,932. (No model.)



Claim.—1. The combination, with the supporting-post provided with the lower cross-strip and the upper centrally-perforated cross-strip, of the gate-frame having the upper parallel slotted gate-rails and the intermediate parallel slotted gate-rails, the transverse strips seated in the slots of said parallel gate-rails, the hinged lever at the front of the gate-frame, the cords or ropes connected to the upper cross-piece of the supporting-post passed through the ends of the sliding cross-strips and connected to the lower end of the hinged front lever, the shifting-block provided with the front pin connected to the hinged front lever, the shifting-levers fulcrumed at opposite sides of the gate in front of its rear edge, their upper ends working in slotted guides, and the shifting-rods hinged to the shifting-levers and connected to a pivot-pin on the rear end of the hinged block that is connected to the front lever, substantially as specified.

2. In a farm-gate, the combination, with the supporting-post provided with upper and lower cross-pieces, of the gate-frame provided with the transverse perforated slides resting in slots in the upper and intermediate rails of the gate-frame, the vertical lever at the front of the gate-frame, the rope connecting the lower end of the lever with the cross-slides and with the upper cross-piece of the gate-post, the pivoted shifting-block connected to the front lever, and levers fulcrumed on each side of the gate and connected by rods to the shifting-block, substantially as specified.

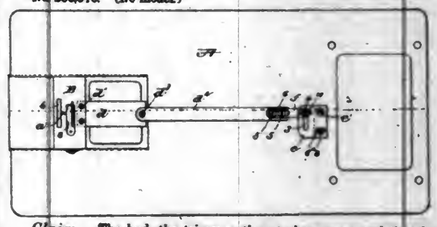
407,571. KNIFE FOR CUTTING CORN, &c. JOSEPH W. CALEF, North Easton, assignor to William T. Andrews, Boston, Mass. Filed Nov. 2, 1885. Renewed June 1, 1888. Serial No. 275,090. (No model.)



Claim.—1. A handle for corn-knives and other purposes, consisting of a metallic rod bent at its upper end to form an armhole at right angles to the handle and twisted about midway of its length to form a grip or hand-hold projecting laterally from the handle below the armhole, substantially as and for the purpose set forth.

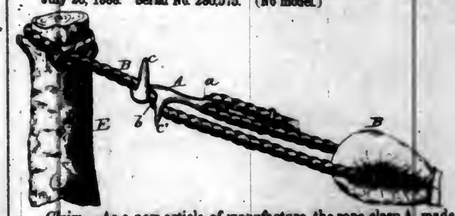
2. A corn-knife consisting of a metal rod bent at its upper end to form an armhole at right angles to the handle and twisted about midway of its length to form a loop projecting laterally from the handle below the armhole, and a blade at the lower end of the rod, substantially as and for the purpose set forth.

407,572. TRIMMING DEVICE FOR SEWING-MACHINES. ANDREW C. CAMPBELL, Bridgeport, Conn., assignor to The Wheeler & Wilson Manufacturing Company, same place. Filed Sept. 26, 1888. Serial No. 286,310. (No model.)



Claim.—The bed, the trimmer throat-plate supported thereby, and its tail-piece or projection, combined with a co-operating cam by which to determine the degree of adjustment of the trimmer throat-plate, substantially as described.

407,573. ROPE-CLASP. MYRON CAMPBELL, South Bend, Ind. Filed July 20, 1888. Serial No. 280,575. (No model.)

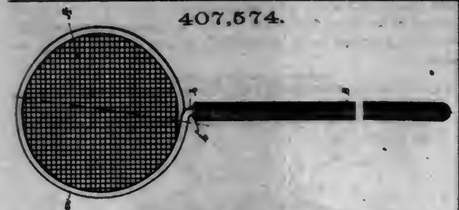


Claim.—As a new article of manufacture, the rope-clasp A, made with the eye *a* at one end and at the other end with the straight open notch *b*, with its axis substantially at right angles to the body of the clasp and at the outer edges of the notch *b*, and the spurs *c* and *c'*, projecting substantially at right angles to the plane of the notch *b*, all substantially as shown and described.

407,574. INSECT-DESTROYER. GEORGE B. CHASE, Cambridge, Mass. Filed May 3, 1888. Serial No. 308,967. (No model.)

Claim.—As an improved article of manufacture, an insect-killer comprising a small sheet of wire-gauze, and a metal binding-strip about the edge of said gauze, formed from flat metal bent at the center of its width to lap upon the edge of said sheet of gauze, to which it is secured by pressure, one end of which folded binding-strip is bent outward and secured to a handle, whereby there is no material projection of the strip from the surface of the gauze, and a yielding connection, in one piece with the binding and between the gauze and the handle, is obtained, substantially as described.

407,574.



407,575. CAR-BRAKE. GEORGE W. CROO, Montvale, N. J. Filed Apr. 2, 1888. Serial No. 269,287. (No model.)



Claim.—1. In an automatic brake, the combination, with the push-bar, of a hollow or box-shaped guide for connecting the portions that pass around the trucks, a lever pivoted to the center portion, having arms connected therewith for operating slides moving in the said guide, levers pivoted to the slides and connecting with the beams carrying the brake-shoes and extending beyond the ends of the car to engage the heads of the push-bars of the cars at its front and rear ends, substantially as described.

2. In an automatic brake, the combination, with the push-bar, of a hollow or box-shaped guide for connecting the portions that pass around the trucks, a lever pivoted to the center portion and having arms connected therewith for operating slides moving in the said guides, levers pivoted to the slides and connecting with the beams carrying the brake-shoes and extending beyond the ends of the car to engage the heads of the push-bars on the cars at its front and rear ends, and springs connecting with the said lever and with the car-frame and operating in opposite directions, whereby, when the pressure is removed from the push-bar, the springs will cause the lever to resume its normal position and thus apply the brakes to the wheels, substantially as described.

407,576. DEVICE FOR OPERATING BRAKES. GEORGE W. CROO, Montvale, N. J. Filed Aug. 18, 1888. Serial No. 283,072. (No model.)

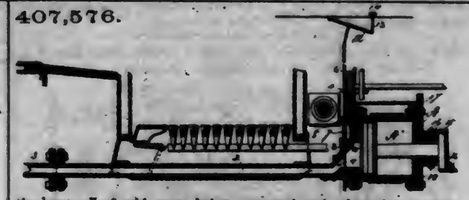
Claim.—1. In a device for operating brakes, the combination of the casings, the pipe communicating therewith, having controlling-valves, the pipe leading from said pipe, the cylinder in communication with said pipe, the piston working in said cylinder, the cross-bar connected with the piston-rod, the rods connected to the ends of the said cross-bar, the lever fulcrumed to the engine-frame and pivoted to the last-named rods, and the arms carrying the brake-shoes, pivoted to the lever, all of said parts being arranged and adapted to operate substantially in the manner, and for the purpose described.

2. In a device for operating brakes, the combination of the cylinder, the pipe for supplying steam thereto having openings therein, the spring-actuated rod having plugs adapted to close said openings, and the lever or handle for operating said rod, substantially in the manner, and for the purpose described.

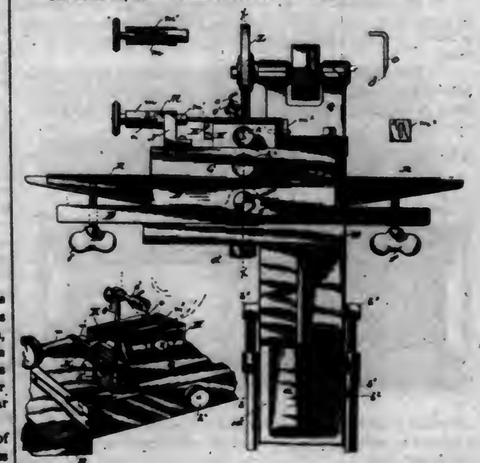
3. In a device for operating the brakes on locomotives and cars, the combination of the cylinder, the piston working therein, a plate secured to its outer portion to prevent the piston-head from striking the cylinder-head, an arm secured to the said outer portion to support a bar for operating the brake-rods on the engine, and rods 19, passing from the said bar to a depending lever pivoted on the engine-frame to operate the brakes carrying the shoes, substantially as described.

4. In a device for operating brakes, the combination of the steam-supply pipe having openings therein, the spring-actuated rod having plugs for closing said openings, the cylinder communicating with the steam-supply pipe, the piston therein, the cross rod connected to the piston-rod, the rods connected to the cross rod or bar, the lever for operating the brake-shoes, connected to the said rods, the links on the cross-bar, and the arm or projection on the piston-rod connected to said links, all of said parts being arranged as shown, and operating in the manner described.

407,576.



407,577. MACHINE FOR BACK-CLEARING TWIST-DRILLS. JACOB D. COX, Jr., Cleveland, Ohio, assignor to Cox & Prentiss, same place. Filed Jan. 24, 1887. Serial No. 225,254. (No model.)



Claim.—1. In a twist-drill-clearing machine, a sliding holder for the drill, having an open groove in which the drill lies supported and is exposed substantially through its entire length, substantially as set forth.

2. In a twist-drill-clearing machine, a holder having an open groove on its face for supporting the drill, and bearings in the line of the groove in which the holder is advanced, substantially as set forth.

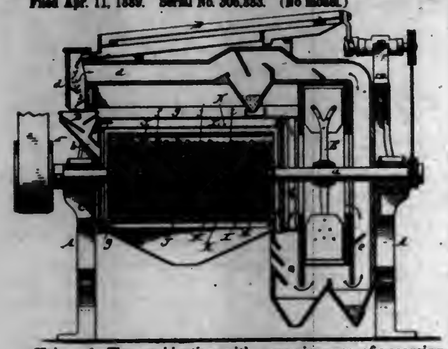
3. In a twist-drill-clearing machine, a sliding holder for supporting the drill, having an open groove in which the drill is exposed above the surface of the holder substantially throughout its entire length, in combination with an emery-wheel to operate on said exposed portion, substantially as set forth.

4. In a twist-drill-clearing machine, a sliding holder for the drill, having a longitudinal groove in which the drill is supported substantially throughout its entire length, in combination with a device, as a finger, fixed to turn the drill, substantially as set forth.

5. In a twist-drill-clearing machine, a metal-removing device rotating in fixed bearings, in combination with a holder having an open groove along one side to support the drill, a base, and guides in the

holder and base, in which the holder is adapted to slide past the metal-removing device, substantially as set forth.

407,578. GRAIN-SCOURER. GILES S. CRAMSON, Silver Creek, N. Y. Filed Apr. 11, 1888. Serial No. 306,863. (No model.)



Claim.—1. The combination, with a scouring-case, of a scouring-drum provided with transverse grooves and recesses or depressions in said grooves, substantially as set forth.

2. The combination, with a scouring-drum provided with grooves and recesses or depressions in said grooves, of a scouring-case provided with grooves and recesses or depressions in said grooves, substantially as set forth.

3. In a grain-scourer, a scouring-plate provided with transverse grooves having inclined advancing sides and abrupt retreating sides, and recesses or depressions in said grooves, substantially as set forth.

4. The combination, with the scouring-case, of a drum having a scouring-plate provided at its entering end with inclined flights and with transverse grooves having recesses or depressions, substantially as set forth.

5. The combination, with the scouring-case, of a drum composed of alternating plates having transverse grooves with recesses or depressions, and plates having longitudinal grooves, substantially as set forth.

6. The combination, with a scouring-drum, of a scouring-case provided with a tight bottom plate having transverse grooves and recesses or depressions in said grooves, and with a ventilated top section, substantially as set forth.

407,579. DRUM. EDWIN J. CURLEY, Ravenswood, Ill. Filed Sept. 28, 1888. Serial No. 286,667. (No model.)



Claim.—1. A straining-rod hinged at one end to a bracket that is applied to one of the hoops of a drum, substantially as and for the purpose set forth.

2. The longitudinally-adjustable straining-rod hinged at one end to a bracket that is applied to one of the hoops of a drum, substantially as described.

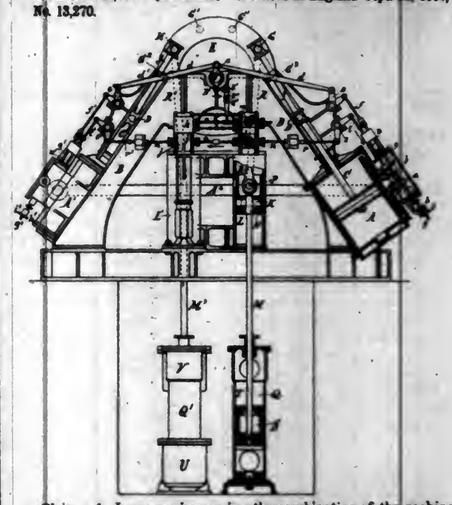
3. The combination, with the straining-rod made adjustable in length and pivoted to a bracket upon one hoop, of a bracket applied to the opposite hoop and having a recess to receive the free end of said straining-rod, substantially as set forth.

4. The combination, with the straining-rod D, made adjustable in length, of the bracket d^3, to which one end of said rod is pivoted, and the bracket d^4, adapted for engagement with the opposite end of the rod, substantially as and for the purpose set forth.

5. The snare-holder consisting of a pair of jaws connected with a nut by a bent rod or wire, such as set forth, and a screw engaging the nut, for the purpose described.

6. The combination, with the bracket H, secured to one of the hoops, of a swinging snare-holder comprising a nut and a pair of jaws suitably connected together, and a screw engaging the nut and having a shank portion which is extended loosely through an opening in the bracket and provided with a stop or shoulder above the same, said opening in the bracket being enlarged relatively to the shank portion of the screw that passes through it, whereby the snare-holder can have a limited swing, substantially as and for the purpose described.

407,580. PUMPING-ENGINE. HENRY DAVEY, Westminster, County of Middlesex, England. Filed Apr. 12, 1888. Renewed June 6, 1889. Serial No. 313,266. (No model.) Patented in England Sept. 20, 1887, No. 13,270.



Claim.—1. In a pumping-engine, the combination of the rocking frame E, having pins G H and a fulcrum F, pumps Q and Q', connecting-rods R I, both pivoted directly to pin G of frame E, and connecting-rods R' and J, both pivoted directly to pin G of frame E, the respective pairs of said connecting-rods forming acute angles at any position of the pins G and H, substantially as and for the purpose described.

2. In a pumping-engine, the combination of the rocking frame E, fulcrumed at F and having pins G and H, and the piston-rods C and C', of steam expansion working-cylinders A A', the adjustable steam expansion-valves *a a'*, valve-gearing comprising arm *c*, rods *d d'*, angular levers *e e'*, connecting valve-rods *f f'*, adjusting valve-rods *g g'*, valves, as *b*, and the pump piston-rods M M', with their pistons S S', substantially as described.

3. The combination of the valves *p q*, the cylinders *j k*, rods *n* and *o*, with their pistons, the cataract-cylinders *l m*, with their pistons, the rods *r r'*, angular levers *s s'*, connecting-rods *t t'*, valve-rods *u u'*, valves, as *b*, and the expansion-valves, as *a a'*, substantially as described.

4. The combination, with the steam pumping-engine working steam expansively and with the pumps, of the cataract-regulator comprising subsidiary steam-cylinders, as *j k*, pistons on rods, as *n* and *o*, cataract-cylinders, as *l m*, and intermediate connections for the valves of the said engine, substantially as and for the purpose described.

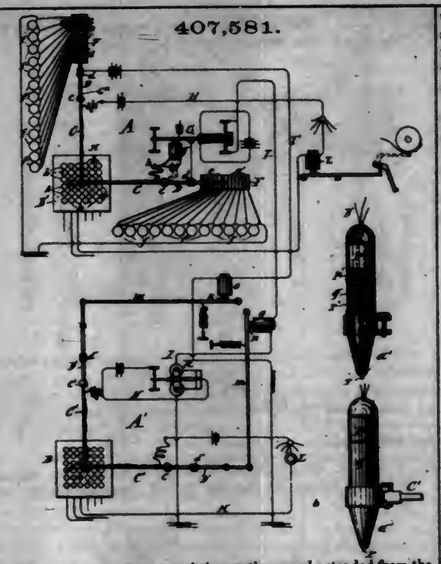
407,581. SELECTING-TELEGRAPH. MARK W. DEWEY, Syracuse, N. Y., assignor, by direct and mesne assignments, to the Dewey Corporation, same place. Filed Sept. 22, 1888. Serial No. 286,097. (No model.)

Claim.—1. In an electric telegraph comprising an electric circuit, a table of operative contacts at the receiving-station, a corresponding table of contacts at the transmitting station, a transmitting-instrument adapted to be moved in different directions and to different distances over the latter table, and an instrument adapted to operate the contacts on the table at the receiving-station and electrically moved in unison with the transmitting-instrument, as set forth.

2. In an electric telegraph, a main-line circuit, a table of contacts at the receiving-station, a corresponding table of contacts at the transmitting-station, a manipulative instrument adapted to be moved in different directions and to different distances over the latter table, an instrument adapted to operate the contacts at the receiving-station and moved in unison with the manipulative instrument by a suitable current or currents through the main line, and a circuit maker and breaker in a local circuit at the receiving-station operated by the aforesaid receiving-instrument.

3. In an electric telegraph, the combination of an electric circuit, corresponding tables of contacts respectively at the transmitting-station and receiving-station, a manipulative instrument adapted to operate the contacts at the transmitting-station, a rod extended from the manipulative instrument, a variable resistance in the aforesaid circuit operated by said rod, a magnet in said circuit at the receiving-station controlled by the varying strength of the current, an instrument adapted to operate the contacts at the receiving-station and actuated by the aforesaid magnet, a pole-changer in said circuit operated by a magnet in a local circuit at the transmitting-station, and a circuit maker and breaker in said local circuit operated by the aforesaid manipulative instrument, a polarized relay at the receiving-station in the main line, a local circuit controlled by said relay, and a magnet in said local circuit also actuating the said receiving-instrument, as set forth.

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4. In an electric telegraph, the combination of electric circuits, corresponding tables of contacts respectively at the transmitting-station and receiving-station, a manipulative instrument adapted to operate the contacts at the transmitting-station, rods disposed at right angles to each other and carrying conjointly at one end the aforesaid manipulative instrument, variable resistances in said circuits operated by said rods, an instrument adapted to operate the contacts at the receiving-station, rods disposed at right angles to each other and carrying conjointly at one end the latter instrument, armature-levers connected with the latter rods, and magnets at the receiving-station controlled by the varying strength of the current or currents in said circuits and operating the aforesaid armature-levers, substantially as described and shown.

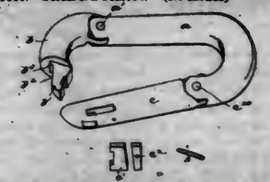
5. In an electric telegraph, the combination of an electric circuit, corresponding tables of contacts respectively at the transmitting-station and receiving-station, a manipulative instrument adapted to operate the contacts at the transmitting-station, rods disposed at right angles to each other and carrying conjointly at one end the aforesaid manipulative instrument, variable resistances operated by said rods, an instrument adapted to operate the contacts at the receiving-station, rods disposed at right angles to each other and carrying conjointly at one end the latter instrument, armature-levers connected with the latter rods, magnets at the receiving-station controlled by the varying current in said circuit and operating the aforesaid armature levers, a pole-changer in the main circuit at the transmitting-station operated by a magnet in a local circuit, a maker and breaker in said local circuit carried and operated by the manipulative instrument, a local circuit at the receiving-station, a magnet carried by the instrument which operates the contacts at the receiving-station, and a relay in the main line at the receiving station moved by the change of polarity in the line to make and break the local circuit including said magnet, for the purpose set forth.

6. A transmitting-instrument consisting of a sleeve of non-conducting material, a metallic plunger sliding longitudinally in said sleeve and having its two ends insulated from each other, a metallic cap on one end of the sleeve forming one terminal of an electric circuit and the upper end of the plunger forming the other terminal of said circuit, and a terminal of another circuit connected with the lower section of the plunger, substantially as described and shown.

7. A receiving-instrument consisting of a solenoid, a sleeve extending from the solenoid and surrounding the core thereof, a spring supporting the core, an electrode extending from the core and terminals of an electric circuit connected with the solenoid, and another terminal of an electric circuit connected with the core, substantially as described and shown.

8. A manipulative transmitting-instrument consisting of a holder, a plunger sliding longitudinally within said holder, electric contact-points on said parts, a pole-changer in an electric circuit, and a magnet in a local circuit operating said pole-changer and connected with the aforesaid contact-points, substantially as set forth.

407,582. SHACKLE. WILLIAM D. DURGIN, Boston, Mass. Filed Mar. 9, 1888. Serial No. 302,637. (No model.)



Claim.—1. The shackle herein described, consisting of three parts, two of which are hinged to the one, one of the hinged parts having a tenon provided with a shoulder and with an inclined side and forming one end of the shackle and the other part having a mortise to receive said tenon, the hinged end being free when unlocked to turn and leave the end of the link open and unobstructed, and a locking device for said tenon, substantially as described.

2. The shackle herein described, consisting of the hinged parts *a b c*, the part *b* having a tenon shaped as shown and described and the part *c* having a mortise to receive said tenon, and the notched block or bar *c'* and the wedge-shaped bar c^2, substantially as described.

3. The shackle herein described, consisting of the hinged parts *a b c*, the part *b* having a tenon shaped as shown and described, the part *c* having a mortise to receive said tenon, and the notched block or bar *c'*, the wedge-shaped bar c^2, and the pin 2, substantially as described.

407,583. ROOFING-PAPER ROLL. MICHAEL BERRY, Jr., Philadelphia, Pa. Filed Mar. 3, 1888. Serial No. 266,069. (No model.)



Claim.—1. A core for a roll of roofing-paper having a chamber at one or both ends and caps therefor larger in diameter than the core, substantially as and for the purpose set forth.

2. A core for a roll of roofing-paper having a chamber at one or both ends and a screw-cap closing said chamber, and having a flange of larger diameter than the core, substantially as and for the purpose described.

3. The combination of a core for a roll of roofing-paper with caps of larger diameter than said core and secured thereto, substantially as and for the purpose set forth.

407,584. LAP-RING. ANDREW T. FOSTER, Belle Union, Ind., assignor of one-half to Albert Cox, same place. Filed Jan. 19, 1889. Serial No. 296,894. (No model.)



Claim.—In a lap-ring, the combination of the hooked part A, having the sleeve thereon, provided with a T-shaped slot, and a hooked part C, movably inserted into the said sleeve and having projections adapted to engaged the said T-shaped slot to lock the two

parts together, the parts A and C having overlapping ends *a b*, substantially as described.

407,585. FOUNTAIN-PEN. JOSEPH FRIEDMANN, Seymour, Conn.
Filed Jan. 21, 1889. Serial No. 296,976. (No model.)



Claim.—1. In a fountain-pen, the pen-holding portion of the socket, constructed in two parts C D, divided longitudinally, the division being in a transverse curve corresponding to the transverse curve of the pen, and so as to form a recess between the two parts to receive the pen, the upper ends of the two parts coming together and externally screw-threaded, so as to be set together and screwed into a correspondingly-threaded socket, the part C constructed with a tongue E, projecting therefrom onto the back of the pen, and the part D constructed with a longitudinal passage G, leading from the fount to the inside of the pen, and an elastic feed-spindle H through said passage onto the inside of the pen, substantially as described.

2. The combination of the tubular fount A, closed at its upper end, the tubular socket B, detachably connected to the lower or pen end of the fount, the pen-holding portion of the socket made in two parts C D, the division between the two parts being longitudinal and transversely curved corresponding to the curve of the pen, and so as to form a recess between the two parts to receive the pen, the upper ends of the two parts together screw-threaded correspondingly to an internal screw-thread formed upon the interior of the socket B, the part C constructed with a tongue projecting from its lower end onto the back of the pen, and the part D constructed with a longitudinal passage from the fount down to the inside of the pen, and a feed-spindle arranged in said passage and extending onto the inside of the pen, substantially as described.

407,586. FOUNTAIN-PEN. JOSEPH FRIEDMANN, Seymour, Conn.
Filed Jan. 21, 1889. Serial No. 296,977. (No model.)



Claim.—The combination of the tubular fount A, the socket made in two parts B E, the one part B detachably connected to the lower or open end of the fount and extending downward in the form of a contracted tube C, the tube open upon one side to form a passage D from the fount downward, the inside of the pen and the tubular part E detachably connected to the part B, the said part E constructed with a tongue F, projecting from its lower end, so as to form an open recess between the tongue and the open side of the tube C, substantially as described.

407,587. PHOTOGRAPHIC CAMERA. WILLARD H. FULLER, Passaic, N. J., assignor to The Scovill Manufacturing Company, New York, N. Y. Filed Dec. 24, 1888. Serial No. 294,453. (No model.)

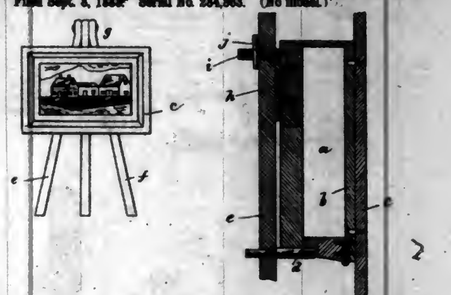


Claim.—1. The combination, with a camera-back or back-frame and a ground-glass frame, of links having pivotal connection with said frames, springs bearing on each of said links, and a detent adapted to hold the ground-glass frame in a rearward position against the actions of the springs, whereby a plate-holder may be inserted or removed, substantially as specified.

2. The combination, with a camera-back or back-frame, of a ground-glass frame adjustably connected thereto, a pin moving with the ground-glass frame, a detent consisting of a lever having a longitudinal slot terminating in a transverse extension and receiving said pin, and a spring carried by the lever, substantially as specified.

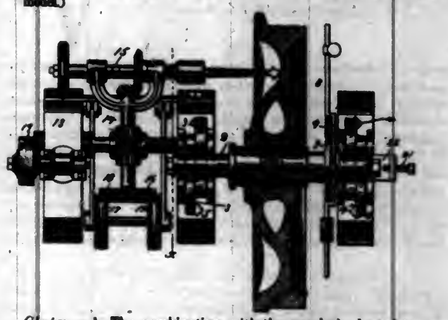
3. The combination, with a camera-back or back-frame and a ground-glass frame, of links, and screws extending vertically through the links and into the top and bottom surfaces of the said back or back-frame and ground-glass frame, and a swinging detent securing the ground-glass frame in its rearward position, substantially as specified.

407,588. WRITING-DESK. ANNIE L. GORHAM, St. Johnsbury, Vt.
Filed Sept. 5, 1888. Serial No. 284,863. (No model.)



Claim.—The combination, with an easel frame or support having projecting pegs, of a desk resting on said pegs and having a right-angular plate projected through an aperture of said frame or support, and a pin passed through said plate, substantially as set forth, the outer portion or face of the lid of said desk being constructed as a picture-frame containing a picture, as stated.

407,589. BALANCING APPARATUS FOR WHEELS, &c. THOMAS A. GRIFFIN, Chicago, Ill. Filed Apr. 26, 1888. Serial No. 308,726. (No model.)



Claim.—1. The combination, with the mandrel adapted to receive the wheel or pulley to be balanced, and supports for said mandrel on which it may revolve, of a lever adapted to revolve said mandrel and provided with a device for weighing the force applied in revolving the mandrel, substantially as described.

2. The combination, in a balancing apparatus, of a mandrel adapted to receive the wheel or pulley to be balanced, supports for said mandrel on which it may revolve, a vibratable lever, a clutch connecting said lever to said mandrel and adapted to move it in one direction only, and a device attached to said lever for weighing the force applied to revolve the mandrel, substantially as described.

3. The combination, in a balancing apparatus, of a mandrel adapted to receive the wheel or pulley to be balanced, supports for said mandrel in which it may revolve, a vibratable lever hung upon said mandrel and connected by a clutch thereto, and a weighing device adjustable on said lever to correspond with the intended position of the counter-weight, substantially as described.

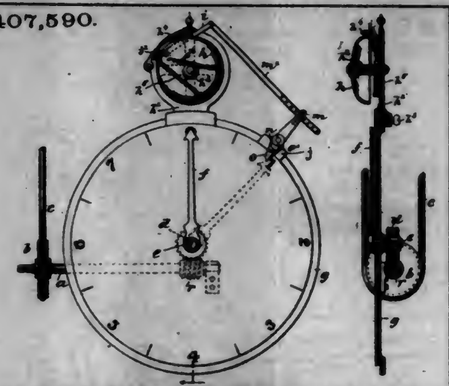
4. The combination, in a balancing apparatus, of a mandrel adapted to receive the pulley or wheel to be balanced, supports for said mandrel on which it may revolve, a lever having a weighing device attached and adapted to revolve the mandrel, and a drill adjustably mounted in the frame carrying the supports for the mandrel, whereby the entire operation of balancing a wheel or pulley may be completed prior to its removal from the apparatus.

407,590. INDICATOR AND SIGNAL FOR ELEVATORS. WILLIAM R. HALL, Butte City, Mont. Filed Apr. 4, 1889. Serial No. 305,994. (No model.)

Claim.—1. The combination, with the dial-plate, the pointer which travels over the same, and its operative mechanism, of the gong and the trip device, substantially as described, mounted adjustably on said dial-plate and coupled to the operating mechanism of the gong, the toe of said trip device being arranged in the path of said pointer, as set forth.

2. The combination, with the dial-plate, the pointer which travels over the same, and its operative mechanism, of the gong mounted adjustably and movably on said plate, and the trip device described,

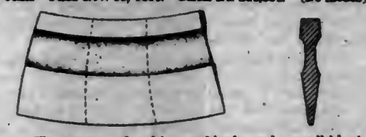
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also mounted adjustably on said plate and connected adjustably to the operating mechanism of the gong, as set forth.

3. The combination, with the dial-plate, the pointer and its operative mechanism, of the gong mounted on the dial-plate and the trip device mounted on and clamped to the dial-plate, said device consisting of the supporting-bracket, the rock-shaft in said bracket, the arm *m* on said shaft coupled to the operating mechanism of the gong, the arm *n* on said shaft, the toe *o*, pivotally mounted in the arm *n*, and the spring *o'*, said toe being arranged in the path of the pointer, as set forth.

407,591. MANUFACTURE OF AXES. HENRY HAMMOND, New Haven, Conn. Filed Nov. 15, 1888. Serial No. 290,861. (No model.)



Claim.—1. The process of making ax-blanks and ax-poll blanks, which consists in forming a curved bar of metal, and then in cutting that bar into pieces on lines the ends of which are substantially coincident with the radius of the curve of the bar, all substantially as described.

2. The process of making ax-blanks and ax-poll blanks, which consists in forming a curved bar the two edges of which are segments of concentric circles, and the two sides of which are provided with curved longitudinal concavities concentric with those circles, and then in cutting that bar into pieces on lines the ends of which are substantially coincident with the radius of those circles, all substantially as described.

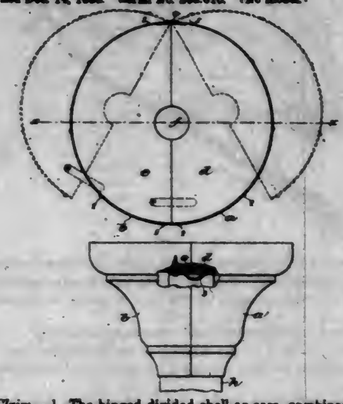
3. The process of making axes, which consists in forming a curved bar of metal, the cross-section of which is nearly identical with the longitudinal section of the axes to be made, except at the sides of the bar opposite to where the eyes of the axes are to be located, where longitudinal concavities are formed, each of which is about equal in cross-section to half the cross-section of the eyes of the axes, and then cutting the bar into pieces on lines the ends of which are substantially coincident with the radius of the curved edges of the bar, and afterward forming an eye in each of those pieces with a chisel or punch, which, as it penetrates the metal between those concavities, forces the sides of the blank apart, and thus expands the blank at the eye portion to the ultimate shape desired, all substantially as described.

407,592. CURTAIN SUPPORTER AND ADJUSTER. LEVERT B. HARKNESS, Boston, Mass. Filed July 30, 1888. Serial No. 281,423. (No model.)



Claim.—As an improved article of manufacture, the herein-described curtain-cord holder, comprising the casing having the front and back plates and connecting side pieces, the pulley located in the upper portion of said casing, the lever fulcrumed in said casing below said pulley and having a toothed or corrugated dog at one end for clamping the curtain-cord against one of said side pieces of the casing, and also having a free arm provided with a notch through which the free end of the curtain-cord is passed, substantially as set forth, said curtain-cord being guided by the front and back plates and side pieces of the casing, as stated.

407,593. ELECTRIC FIXTURE. JOHN C. HOLLIDAY, Boston, Mass. Filed Dec. 14, 1888. Serial No. 293,610. (No model.)



Claim.—1. The hinged divided shell or case, combined with the divided clamping-collar connected to said shell and provided with a central opening, and a locking or retaining device to hold the parts together, substantially as described.

2. The combination, with pipe *g*, of a two-part hinged shell or case and a clamping-collar of insulating material secured thereto, and means, substantially as set forth, to lock or retain the parts upon the said pipe, substantially as described.

3. The divided shell or case hinged, as at *c*, combined with the two-part clamping-collar *d e*, having a central opening *f*, and a locking or retaining device, as 3, to hold the parts together, substantially as described.

4. The combination, with a fixture and its inclosed coupling, of a hinged sectional shell or case having an inclosed clamping-collar of insulating material rigidly secured thereto and adapted to embrace the pipe and inclose the coupling, substantially as described.

407,594. ADJUSTABLE COVER-HOLDING HINGE FOR BUCKETS, &c. WILLIAM T. HOMRA, Magnolia, Ala. Filed Mar. 5, 1889. Serial No. 301,986. (No model.)



Claim.—1. The hinge consisting of the pivotally-connected wings provided with arms, substantially as and for the purpose herein shown and described.

2. The herein-described hinge, consisting of the pivotally-connected wings provided with arms, the metallic strips fitting between the arms, and thumb-screws working in holes provided therein and impinging against said strips, as and for the purpose set forth.

3. The herein-described hinge for raising and lowering the covers of barrels, buckets, and the like, consisting of the pivotally-connected wings provided with arms, the upper wing thereof having the hollow cylindrical outward-extending portion forming the dipper-holder, and the lower wing being provided with flanges, as and for the purpose set forth.

4. The combination, in a hinge for raising and lowering covers for buckets and the like, of the bifurcated wings A B, metallic strips *a b*, thumb-screws *c d*, flanges *h h*, and the hollow cylindrical dipper-holder D, substantially as and for the purpose herein shown and described.

407,595. BOB-SLED. JOHN A. JOHNSON, Madison, Wis. Filed Apr. 10, 1889. Serial No. 306,653. (No model.)



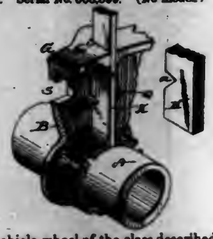
Claim.—1. The combination, with a shoe, of a runner consisting of two parts secured to said shoe and having their forward ends flanged outwardly to form a support for the rave of a sled, substantially as set forth.

2. The combination, with the cross-beam of a sled, of a runner and a knee consisting of two angular pieces having the upper bearing or supporting portions secured to the cross-beam, substantially as set forth.

3. The combination, with a cross-beam of a sled, of a runner, a knee consisting of two angular pieces having upper bearing or supporting portions, said portions being provided with central ridges, and a keeper or bail passing beneath the upper portions of the shoes and fitting in the ridges thereof, the upturned ends of the said keeper or bail passing into the cross-beam of the sled, substantially as set forth.

4. In a sled, the combination of a runner, shoes secured thereto, a bail or keeper, a cross-beam, and standards secured to the knees and provided with supporting-flanges for the rave, substantially as set forth.

407,596. METALLIC WHEEL. JOHN A. JOHNSON, Madison, Wis. Filed Apr. 24, 1889. Serial No. 308,399. (No model.)



Claim.—1. In a vehicle-wheel of the class described, the combination, with the axle-sleeve having the integral cast malleable head provided with an integral peripheral flange having flanged openings for the reception of the metal spoke, of the integral radial bearings on the axle-sleeve, the metallic spokes secured in the felly and tire, and the removable head or cap and the securing bolts and nuts, substantially as specified.

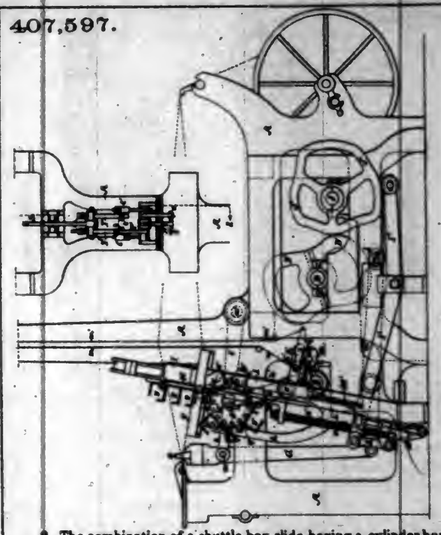
2. The combination, with the axle-sleeve having the integral radial bearings with seats between them, of the integral head provided with the recessed peripheral flange having the inwardly-projecting bearings along the longer sides of the recesses of said peripheral flange, the felly and tire connected by metal spokes having notches near their inner ends, the removable cap, and the securing bolts and nuts for locking the spokes within the hub, substantially as specified.

3. The combination, with the axle-sleeve and the metallic head having the peripheral flange provided with recesses having inwardly-projecting side flanges bent inwardly against the spokes, of the removable cap and the bolts and nuts for securing the parts together, substantially as specified.

407,597. LOOM. CHARLES H. KNOWLTON and BENJAMIN F. MEYER, Camden, N. J., assignors to the M. A. Furbish & Son Machine Company, same place. Filed Dec. 2, 1886. Serial No. 220,467. (No model.)

Claim.—1. The combination, in a loom, of a fixed shuttle-race and an independent beating-up comb and devices for operating the latter, a shuttle-box slide guided on the fixed frame of the loom and having boxes carried partly by said slide and partly by a cylinder hung thereto, mechanism for raising and lowering the shuttle-box slide on the fixed frame, a notched fork for engaging with the cylinder and turning the same as it is raised or lowered, and means for operating said fork, substantially as specified.

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2. The combination of a shuttle-box slide having a cylinder hung thereto, means for operating said slide, a notched lever engaging with the box-cylinder to turn the same, a dictating-lever connected to said operating-lever, Jacquard levers having operating-tails, levers intermediate of the Jacquard levers and the dictating-lever, cords connecting said intermediate levers to the dictating-lever, a movable carrier for the Jacquard levers or intermediate levers, and means for operating said carrier, all substantially as specified.

3. The combination of the levers P P' and their supporting-arm, operating-tails connected to said arm and levers, the lever K, intermediate levers T T', connected by cords to the lever K and constructed for engagement with the levers P P', a lever S, carrying one set of said levers, and means for operating said lever S, so as to carry its set of levers from and toward the other set, all substantially as specified.

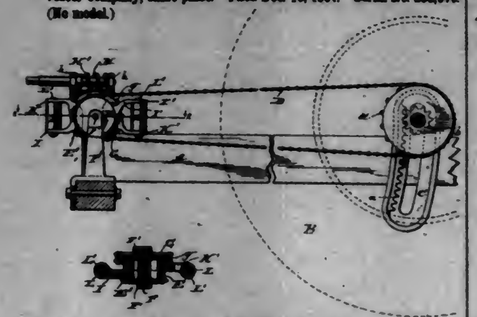
407,598. DUST-COLLECTOR. OSWALD KUTTNER, Chicago, Ill., assignor to the Chicago Exhaust and Blow Pipe Company, of Illinois. Original application filed Oct. 11, 1886, Serial No. 215,947. Divided and this application filed June 18, 1889. Serial No. 314,728. (No model.)



Claim.—1. A dust-collector having a separating-chamber constructed with an imperforate peripheral wall and provided with a discharge-opening for the separated dust toward the bottom of said chamber, and with a discharge-opening for the purified air toward the top of the chamber, and an inlet for the dust-laden air entering the separating-chamber tangentially and with a downward inclination, substantially as described.

2. A dust-collector having a cylindrical separating-chamber constructed with an imperforate peripheral wall, and provided with a discharge-opening in its top for the purified air and with a discharge-opening in its bottom for the separated dust, and with an inlet-pipe for the dust-laden air entering the separating-chamber tangentially near its top and inclined toward the longitudinal axis thereof, substantially as and for the purpose described.

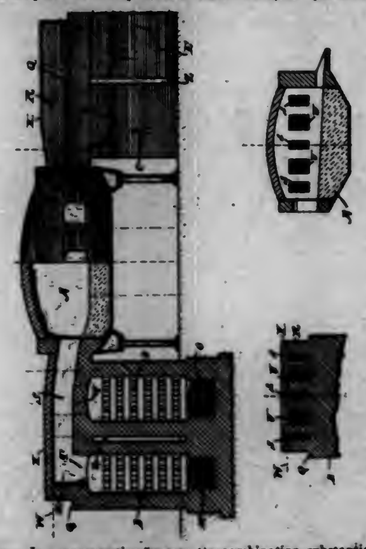
407,599. RAISING AND LOWERING DEVICE FOR HARVESTERS. JOHN W. LATHER, Milwaukee, Wis., assignor to the Milwaukee Harvester Company, same place. Filed Dec. 16, 1887. Serial No. 258,076. (No model.)



Claim.—1. In a harvester, the combination of the bull-wheel, its axle and pinions, the racks suspended from the harvester-frame in which the pinions engage, two sleeves loosely carried by a suitably-supported shaft, each of said sleeves having a pair of arms, the arms of each pair extending in opposite directions from each other, and an arm of each sleeve overhanging an arm of the other sleeve, a spring interposed between the opposing arms of the two sleeves, gearing for revolving one of the sleeves, and means, substantially as described, for connecting the other sleeve with the bull-wheel axle, whereby the latter will be supported by the sleeves and be revolved or prevented from revolving by them.

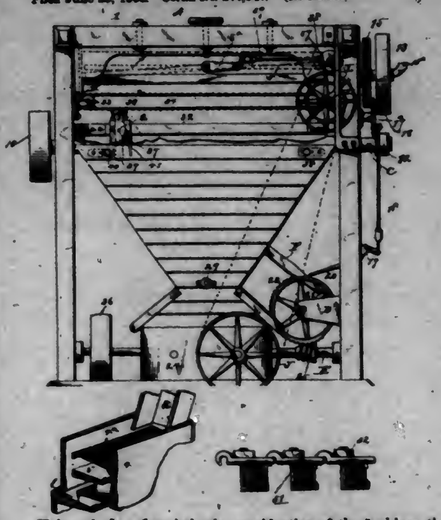
2. In a harvester, the combination of the axle and its pinions, the racks suspended from the harvester-frame, a sprocket-wheel keyed to the axle, a shaft mounted in standards projecting up from the harvester-frame, a pair of sleeves loose on said shaft, each having a pair of arms projecting out from it in opposite directions, with an arm of each sleeve overhanging the arm of its neighbor, a spring interposed between the opposing arms of the two sleeves, an operating-shaft, and gearing connecting the operating-shaft with one sleeve, and sprocket-gear connecting, by means of a sprocket-chain, the other sleeve with the sprocket-wheel on the bull-wheel axle, substantially as described.

407,600. STEEL-FURNACE. LOUIS G. LAUREAU and FRED. W. GORDON, Philadelphia, Pa., assignors to Gordon, Strobel & Laureau, (Limited,) same place. Filed July 13, 1888. Serial No. 279,873. (No model.)



Claim.—In a regenerative furnace, the combination, substantially as set forth, of a heating or melting chamber, regenerators alongside thereof and near thereto and provided with decks having ports, vertically-parallel walls on said decks extending from said chamber to said ports and forming direct open-top ducts from chamber to ports, the longer ducts thus formed extending across the nearer regenerators, and cover-work disposed on said walls from chamber to ports and closing the tops of the ducts.

407,601. FLOUR-BOLT. WILLIAM M. LUCAS, Uhrichsville, Ohio. Filed June 28, 1888. Serial No. 277,947. (No model.)



Claim.—1. In a flour bolt, the combination of the feed-box, the inclined wire-cloth therein, the centrally-pivoted adjustable dividing-board, and the inclined spreading-boards, substantially as described.

2. The combination of the carrier-bolt, links having a shoulder extending parallel thereto, a cross-strip beneath the shoulder, and an L-shaped bolt extending through the shoulder and cross-strip to clamp the same in place, substantially as described.

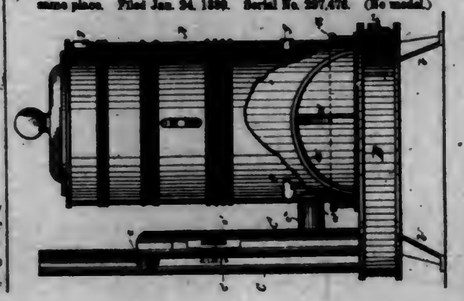
3. The combination of the counter-shaft, the cone-shaped worm thereon, an intermittent gear meshing with the worm, a brush-carrier head operated by the intermittent gear, a sieve in contact with the brush-carrier head, a pawl, and mechanism connecting with the pawl to operate the intermittent gear, substantially as and for the purpose specified.

4. The combination of the supporting-frame, a star-wheel journaled thereon, a jointed rod pivoted to the star-wheel, a crank connecting with the rod, a pawl on the crank, an intermittent gear-wheel operated by the pawl, a brush-carrier head operated by the intermittent gear, and a gear-wheel carrying a pin to operate the star-wheel, substantially as described.

5. The combination of the intermittent wheel, an arm pivoted thereto, a shaft carrying at one end a crank connecting with the arm and at its other end a rod, a hollow arm fitting on the rod, and a brush-carrier head connecting with the hollow arm, substantially as described.

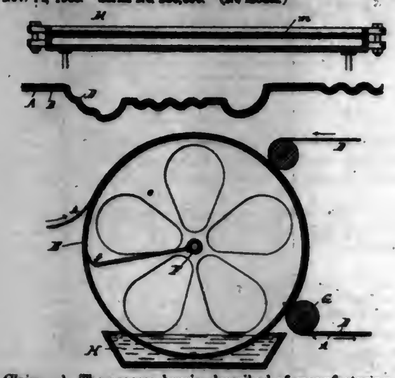
6. The combination, with the frame of the device, of the carrier-head moving thereon, an arm on the carrier-head, a brush-shaft mounted in the arm, the sieve above the brush-shaft, a pawl on the arm, pins on the frame for engaging the pawl, and mechanism, substantially as described, for operating the carrier-head to throw it into and out of engagement with the sieve, substantially as described.

407,602. STRAW-BURNING STOVE. IGNATIUS J. MILLER and HOBART A. DRAKE, De Smet, Dak., said Drake assignor to I. L. Nelson, same place. Filed Jan. 24, 1889. Serial No. 297,476. (No model.)



Claim.—In a straw-burner, the combination, with the magazine A, provided with the removable bottom a, and the semicircular strips a', secured to said bottom, of the drum B, supporting said magazine and provided at its rear end with openings b^2, the vertical longitudinal partition D, dividing said drum into two communicating compartments d d', the pipes C C', secured over the openings b^2 and communicating with each other above the drum, the connecting-pipes c^3 c^4 between said pipes C C', the pipe c^4 having the semicircular strips f over its mouth, and suitable dampers or valves arranged in the pipes C and C', substantially as specified.

407,603. PROCESS OF MAKING DECORATIVE EMBOSSED WORK. WILLIAM S. MORTON, Edinburgh, County of Mid-Lothian, Scotland. Filed Nov. 14, 1888. Serial No. 290,636. (No model.)



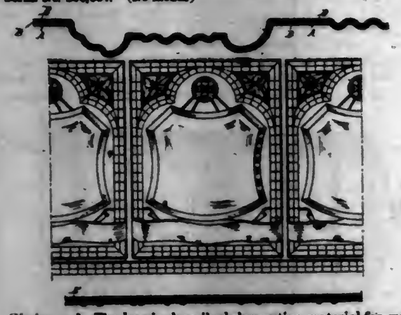
Claim.—1. The process herein described of manufacturing embossed decorative work, said process consisting in sizing canvas, working it into an intaglio mold, applying heat thereto, and then pasting and working a backing of paper into the back cavities of the embossed canvas.

2. The process herein described of manufacturing embossed decorative work, said process consisting in sizing canvas, working it into an intaglio mold, applying heat thereto, putting a coating of stiffening composition on the back of the molded canvas, and then working a layer of paper into the back cavities of the coated and embossed canvas.

3. The mode herein described of manufacturing embossed decorative work, said mode consisting in sizing canvas, working it into an intaglio mold, applying heat thereto, coating the back of the embossed canvas with a stiffening composition while the canvas is still on the mold under heat, and finally working a layer of paper into the back of the embossed canvas, substantially as specified.

4. The mode herein described of manufacturing embossed decorative work, said mode consisting in sizing canvas, working it into an intaglio mold, applying heat to the latter, coating the back of the embossed canvas with a stiffening composition, and pasting a layer of paper onto the back of the canvas and working it into the cavities in the latter while the canvas remains on the mold under heat, substantially as set forth.

407,604. WALL-DECORATING MATERIAL. WILLIAM S. MORTON, Edinburgh, County of Mid-Lothian, Scotland. Filed Nov. 14, 1888. Serial No. 290,637. (No model.)

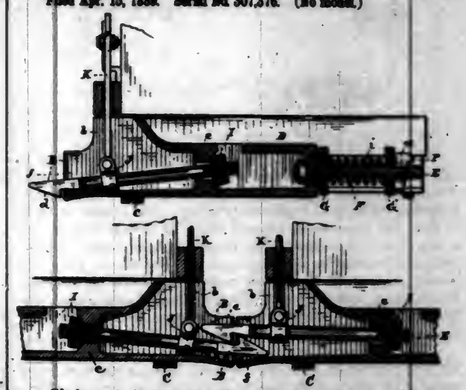


Claim.—1. The herein-described decorative material for walls, ceilings, and other surfaces, said material consisting of a face of embossed canvas, a backing of paper worked into the cavities of the embossed canvas, and an intermediate stiffening composition.

2. The herein-described decorative material for walls, ceilings, and other surfaces, said material consisting of a face of embossed canvas, a backing-paper worked into the cavities of the embossed canvas, and an intermediate stiffening composition containing plaster or similar substance.

3. The herein-described decorative material for walls, ceilings, and other surfaces, said material comprising a surface of embossed canvas with a lining of paper worked into the cavities of the canvas, and with intermediate stiffening composition, and a backing of wood of two or more layers, with the grains running in different directions, substantially as set forth.

407,605. CAR-COUPLING. JOHN L. ORDNER, Thompson, Ohio. Filed Apr. 15, 1889. Serial No. 307,376. (No model.)

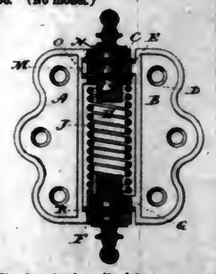


Claim.—1. In an automatic car-coupling with reversible draw-bars, the combination of the head A, bar B, bolt E, spring F, and plates G G', the said head having an extension f, adapted to guide and to allow of turning of said bar, and the bolt E, extending through the rear of said head, carrying said spring and plates in the manner and by the means substantially as shown.

2. In an automatic car-coupling, the combination of the draw-head A, the draw-bar B, the sleeve J, attached to said bar, and the rods and lever for operating said bar, constructed and arranged in the manner as described, and for the purpose specified.

3. An automatic car-coupling consisting of the draw-head A, draw-bar B, sleeve J, rod K, and lever L, in combination with the fulcrum M, rod O, the said draw-bar having a hook d at its front end in projecting relation with the draw-head, and a threaded nut I on the rear end of said bar bearing upon a partition within said draw-head, constructed and arranged substantially as set forth, and for the purpose described.

407,606. SPRING-HINGE. ALBERT A. PAGE, New Haven, Conn., assignor to Sargent & Company, same place. Filed May 3, 1889. Serial No. 309,433. (No model.)



Claim.—1. The herein-described improvement in hinges, consisting of a pintle constructed with annular collars, the two parts of the hinge having their knuckles cast around the said pintle and upon the respective collars, but without contact between the knuckles of the two parts, whereby the said pintle inseparably joins the two parts together in the process of casting said parts, substantially as described.

2. A hinge composed of two leaves A B, the one leaf A constructed with two knuckles C D near one end and with a single knuckle F at the opposite end, the knuckle D constructed with an axial projection H, the other leaf B constructed with a knuckle E corresponding to but less in thickness than the space between the knuckles C D, with a knuckle G corresponding to the knuckle F of the other part, the said knuckle G constructed with an axial projection I corresponding to the projection H of the knuckle D, pintles between the knuckles of the respective parts and constructed with annular collars between the adjacent faces of the knuckles of the two parts, the said pintles being inclosed and held within the knuckles of the respective parts, substantially as described.

407,607. ERASER-HOLDER. KATE PARKE, Chicago, Ill. Filed Apr. 13, 1889. Serial No. 307,136. (No model.)

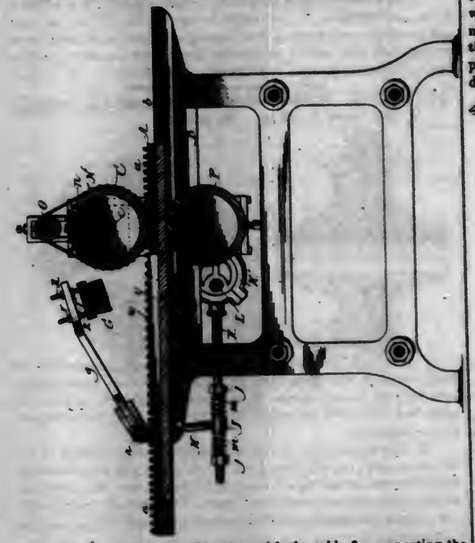


Claim.—1. An eraser-holder having a sheet-metal body cut and bent to form a brush-socket in one end, and having a set of movable jaws at its opposite end, and having a division-plate at the base of said brush-socket, substantially as set forth.

2. In eraser-holders, the combination, with the metal body cut and bent, substantially as shown, to form a brush-socket at one end and extended at the opposite to constitute a clamp-jaw, of the companion jaw pivoted thereto and the reaction-spring bearing against said jaw, substantially as set forth.

3. In eraser-holders, the combination, with the base-plates cut and bent, substantially as shown, to form upturned flanges, with an overlapping top and inturned end to constitute a brush-socket, of the loose jaw having turned ears or lugs joined pivotally to said flanges of the base-plate and the coil-spring reacting to force the clamping-jaws normally together, substantially as described.

407,608. MATRIX-MAKING MACHINE. CHARLES S. PARTRIDGE, Chicago, Ill., assignor to The A. N. Kellogg Newspaper Company, same place. Filed Sept. 22, 1888. Serial No. 286,106. (No model.)



Claim.—1. The combination, with the table for supporting the form to be stereotyped, of an elastically-operated beating-brush located over the table and adapted to beat the matrix material into the type, substantially as specified.

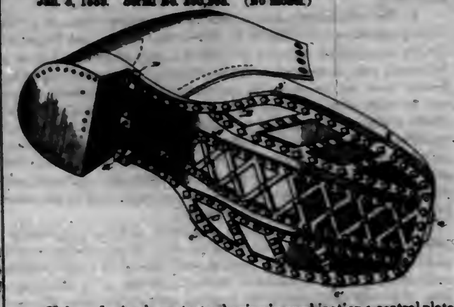
2. In a machine for impressing the matrix upon the type, a vibrating brush and its carrying-levers, in combination with the eccentric-rods and the springs by which the actuating-power transmitted to the brush is rendered elastic, substantially as specified.

3. In a machine for impressing the matrix upon the type, a vibrating brush and its carrying-levers, in combination with the eccentric-rods and the springs interposed between said levers, and the stops at both sides of the levers, substantially as specified.

4. In a machine for impressing the matrix upon the type, the combination of a vibrating brush for beating the matrix and a pressure-roller for pressing it, with a traveling table for carrying the form under said brush and roller, substantially as specified.

5. The combination of the vibrating brush, the pressure-roller, the blanket, roller O, and the moving table, substantially as specified.

407,609. SOLE-PROTECTOR. JAMES F. PRATT, Chicago, Ill. Filed Jan. 3, 1889. Serial No. 295,982. (No model.)

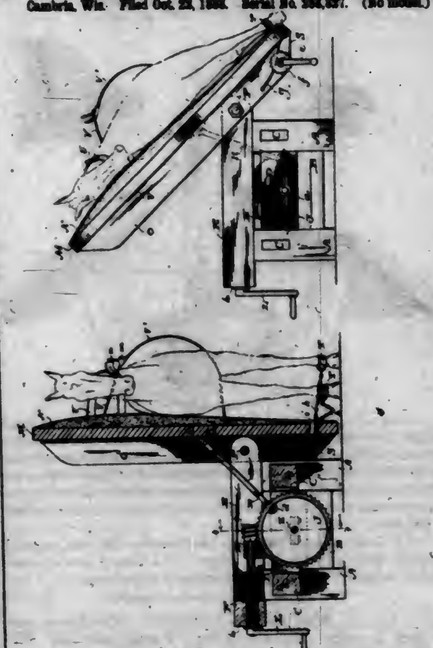


Claim.—1. A sole-protector having in combination a central plate and side plates pivoted thereto at the toe and provided with clamps to engage the sole-edge, each of said plates having toward the heel lugs having bolt-holes and a bolt whereby to draw the side plates together to secure the protector to the shoe, substantially as described.

2. A sole-protector having in combination a central plate and side plates of substantially the length of the sole from toe to inner edge of heel, said plates having corrugations to protect the shank of the sole, the side plates connected pivotally to the center plate at the toe and provided with clamps, and each of said plates being provided toward the heel with projecting lugs having bolt-holes, and a bolt whereby to draw the side plates toward each other to clamp the protector to the shoe.

3. The combination, with the shoe having metallic plates inserted in its sole-edge to provide a wearing-surface, of a protector having a central plate and side plates pivoted thereto at the toe, and provided with clamps to engage the sole-edge and adapted to bear upon the metallic plates in the sole-edge, each of said plates having toward the heel lugs having bolt-holes and a bolt whereby to draw the side plates together to secure the protector to the shoe, substantially as described.

407,610. VETERINARY OPERATING-TABLE. DAVID R. PRICE, Cambria, Wis. Filed Oct. 22, 1888. Serial No. 288,227. (No model.)



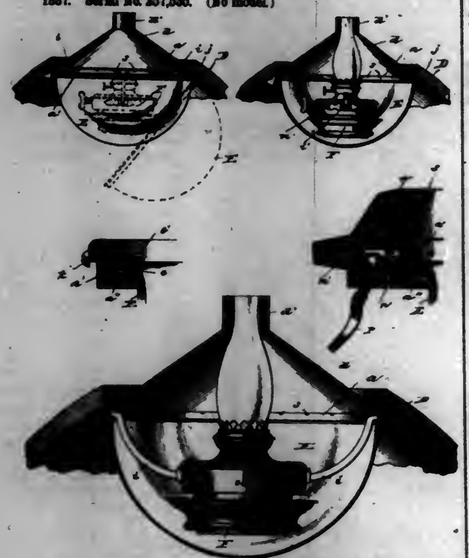
Claim.—1. The combination, with a veterinary operating-table, of a rod journaled in suitable bearings in the lower part thereof, chains or cords of practically equal length connected to said rod, hoppler connected to the free ends of said chains or cords, and means for re-

volving said rod and holding it in any desired adjustment, substantially as set forth.

2. The combination, with a suitable supporting-frame, of a veterinary operating-table hinged to a horizontal rod on said frame below the longitudinal center of said table, a gear-wheel mounted on a horizontal axle in said frame and carrying a transversely-projecting journal near the periphery of said wheel, a journal secured to the rear or under side of the operating-table above the plane of said gear-wheel, a pair of inflexible links pivoted to the last-named journal and straddling the gear-wheel and pivoted to the transverse projecting journal thereon, a horizontal rod mounted in the frame above the gear-wheel and carrying at the inner end a worm-gear rigid with said rod and in mesh with said gear-wheel, and a crank fixed to the other end of said rod, substantially as set forth.

3. The combination, with an adjustable veterinary operating-table provided with a pad or cushion covering its entire outer surface and having holes arranged in pairs at each side of its upper portion and a series of holes arranged in pairs at each side of its lower portion, of a neck-strap passing through one of the upper pairs of holes, body-straps arranged in upper and lower series secured to the table and passing through slits or openings in the cushion, and the straps of one series having clamping-plates and cam-rollers at their free ends, chains or cords of practically equal length passing through the holes in the lower portion of the table and carrying hopples at their outer ends, a transverse revolving rod located adjacent to said lower holes and journaled in cleats or bearings on said table and connected to the inner ends of said chains or cords, a ratchet on said rod, and a spring-pawl on said table adapted to engage with said ratchet, substantially as set forth.

407,611. CAR-VESTIBULE LAMP. AUGUST RAPP, Pullman, assignor to the Pullman's Palace Car Company, Chicago, Ill. Filed Dec. 10, 1887. Serial No. 257,536. (No model.)



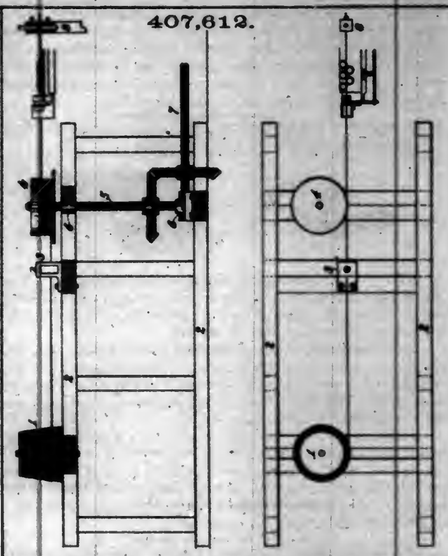
Claim.—1. In a car-vestibule lamp, the combination, with a dome located at or near the roof of the vestibule-extension, a metallic rim attached to said dome centrally and provided with apertures for the admission of air to support combustion, and a supplementary rim beneath and hinged thereto, of a transparent globe supported by the supplementary rim and a cap mounted on the upper rim, substantially as described.

2. In a car-vestibule lamp, the combination, with rims *a* and *a'*, the latter being provided with a flange *a''*, of a globe E, provided with flange *e*, stripe *d'*, and screws *k*, substantially as presented.

407,612. WIRE-WORKING APPARATUS. DAVID RAWSON, Pittsburg, Pa., assignor of one-half to Arthur J. Wilkinson, same place. Filed Feb. 1, 1889. Serial No. 298,340. (No model.)

Claim.—1. In a wire-working apparatus, the combination of a delivery-drum, mechanism for operating on the wire, a mechanism for exerting a pull on the wire, and a continuously-rotating drum having a surface speed equal to or greater than the speed of the pulling mech-

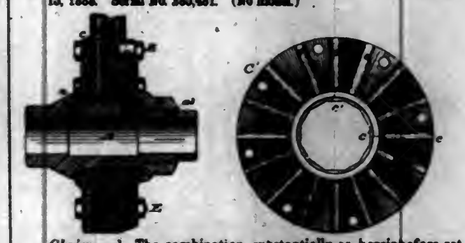
407,612.



anism and having one or more coils or turns of the wire thereon, substantially as set forth.

2. In a wire-drawing apparatus, the combination of a delivery-drum, a drawing-die, a mechanism for exerting a pull on the wire, and a continuously-rotating drum having a surface speed equal to or greater than the pulling mechanism, having one or more coils or turns of the wire thereon, substantially as set forth.

407,613. WHEEL. SEBASTIAN RITTY, Dayton, Ohio. Filed Sept. 15, 1888. Serial No. 285,491. (No model.)

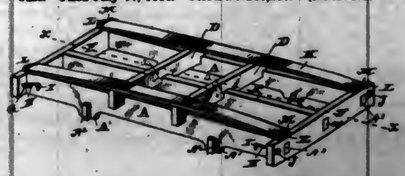


Claim.—1. The combination, substantially as hereinbefore set forth, of the tire, the spokes, the shouldered center box having polygonal seat, the inner hub-rim having waved flange with sockets, the outer hub-rim having correspondingly-waved flange and sockets, and the confining-nut.

2. The combination, substantially as hereinbefore set forth, of the tire, the spokes, the shouldered center box having polygonal seats, the inner hub-rim having waved flange with sockets and re-entrant and salient angles, the outer hub-rim having correspondingly-waved flange and sockets, the fastening-bolts passing through said flanges, and the confining-nut.

3. The combination, substantially as hereinbefore set forth, of the tire, the spokes, the shouldered center box having polygonal seats, the inner hub-rim having waved flange with sockets at re-entrant and salient angles, and shoulders at the inner ends of said sockets, the outer hub-rim having corresponding waved flange, sockets, and shoulders, the fastening-bolts passing through said flanges, and the confining-nut.

407,614. HAY-RACK. ADAM RUTHERFORD and JESSE RAMUS, Beall, Ohio. Filed July 17, 1888. Serial No. 280,216. (No model.)

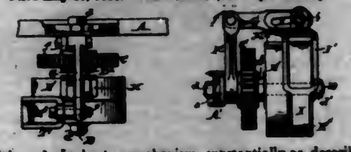


Claim.—1. In a hay-rack, the combination of the side pieces formed with open-ended slots in their upper edges and with reduced ends, the cross-pieces formed with open-ended slots in their lower edge to receive the slots in the side pieces, the end pieces formed with openings to receive the reduced ends of the side pieces and removably secured to the ends of the said side pieces, longitudinal top pieces, and keepers secured to the upper edge of the said end pieces to receive the ends of the longitudinal top pieces, substantially as described.

2. In a hay-rack, the combination of the side pieces formed with open-ended slots in their upper edges and with reduced ends, the cross-pieces formed with open-ended slots in their lower edge to receive the slots in the side pieces, the end pieces formed with openings to receive the reduced ends of the side pieces, longitudinal top pieces, keepers secured to the upper edge of the said end pieces to receive the ends of the longitudinal top pieces, and a longitudinal brace provided with open-ended slots to receive the cross-pieces and with reduced ends to engage openings in the end pieces, substantially as and for the purpose specified.

3. In a hay-rack, the combination of the end pieces, the side pieces provided with slots and having their ends connected to said end pieces, the cross-pieces fitting in the slots of the side pieces, and the longitudinal top pieces having their ends secured to the said end pieces and serving to retain the cross-pieces in place, substantially as described.

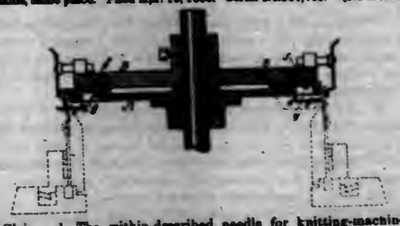
407,615. BRAKE MECHANISM. OTTO W. SCHAUB, Philadelphia, Pa. Filed May 13, 1889. Serial No. 310,553. (No model.)



Claim.—1. In brake mechanism, substantially as described, the combination of a movable stud-shaft adapted to support a fast and loose pulley, and a driving-pinion, with a brake-supporting standard connected directly with said stud-shaft, all substantially as and for the purpose specified.

2. In brake mechanism, substantially as described, the combination of a movable stud-shaft adapted to support a fast and loose pulley, and a driving-pinion with a brake-supporting standard formed integral with said stud-shaft, all substantially as and for the purpose specified.

407,616. KNITTING-MACHINE AND NEEDLE THEREFOR. ROBERT W. SCOTT, Philadelphia, Pa., assignor of one-half to Louis H. D. Williams, same place. Filed Apr. 19, 1889. Serial No. 307,765. (No model.)



Claim.—1. The within-described needle for knitting-machines, said needle consisting of a wire bent to form a guide-shank with projecting bit, and a depending arm terminating in a stitch-forming shank in a different plane from the guide-shank of the needle, substantially as specified.

2. The combination of the radially grooved and slotted dial and a cam-plate, with needles having stems guided in the radial grooves in said dial, bits for engagement with the cams of the plate, and depending arms passing through the radial slots of the dial and terminating in stitch-forming shanks below said dial and free from contact with any radial guiding devices, substantially as specified.

407,617. CENTERING DEVICE. FREDERIC A. SEAVER, Hartford, Conn. Filed Apr. 9, 1889. Serial No. 306,613. (No model.)

Claim.—1. In combination with a retaining-spring, the angular arms having the adjacent clamping-jaws with the flaring working-faces, all substantially as described.

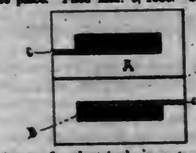
2. In combination with angular arms having clamping-faces and the angularly-disposed working-faces, the cross-bar uniting the two arms, and the spring operating to normally hold the clamping-faces of the arms in contact, all substantially as described.

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3. In combination, the angular arms having the clamping-faces and the angularly-disposed working-faces, the cross-bars fast to one of the arms and projecting beyond the opposite arm, and the retaining-spring, all substantially as described.

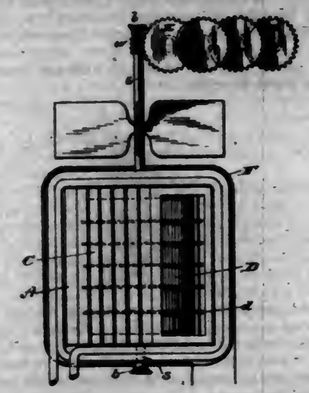
407,618. CORE FOR CONVERTERS. MARMADUKE M. M. SLATTERY, Fort Wayne, Ind., assignor to the Fort Wayne Electric Light Company, same place. Filed Mar. 6, 1889. Serial No. 302,516. (No model.)



Claim.—1. A core for electrical converters or transformers, consisting of two sets of superposed iron plates laid side by side, each plate of a rectangular form divided at the side opposite to the divided side in the corresponding plate of the pair, substantially as shown and described.

2. A compound plate for a converter-core, consisting of two thin flexible laminæ of iron, each with a central opening to embrace the wire coils, and each slitted at one end to permit its being opened and placed upon the coils, the two laminæ to be laid one above the other with no insulation between them and with the slitted ends opposite each other.

407,619. ELECTRIC METER. MARMADUKE M. M. SLATTERY, Fort Wayne, Ind., assignor to the Fort Wayne Electric Light Company, same place. Filed Mar. 14, 1889. Serial No. 303,216. (No model.)



Claim.—1. An electric meter consisting of a fixed coil traversed by alternating currents, a second coil the circuit of which is closed upon itself, fixed in inductive relation with said first coil and with its plane intersecting the plane of the first coil, a moving part consisting of a closed electrical conductor free to rotate placed in inductive relation with the two fixed coils aforesaid, a shunt-coil in a circuit derived from points in the circuit of the first-named coil having a difference of potential between them less than that operating in the circuit of the first-named coil and superadded to said first-named coil, and a retarding and regulating device and registering mechanism.

2. In an electric meter for alternating currents, the combination of a coil connected with a source of alternating current, a fixed closed coil or conductor whose plane is disposed angularly toward the plane of said first coil and in inductive relation therewith, a moving part free to rotate placed in inductive relation with both said coils, and consisting of a cylinder of diamagnetic conducting material whose axis is the axis of rotation, with disks of magnetic material

attached thereto whose planes are in the plane of rotation, and a derived or shunt circuit of a lower potential than that between the terminals of the working-circuit, so disposed as to re-enforce the inductive action of the first and second coils upon the moving part, together with a retarding and regulating device and registering mechanism.

3. In an electric meter for measuring alternating currents containing a primary inducing-coil, a secondary inducing-coil, and a moving part actuated by induction from said coils, a shunt-coil in a circuit of lower potential than that between the terminals of the working-circuit, so disposed as to assist the primary coil for initial action.

407,620. HEDDLE FOR JACQUARD LOOMS. GEORGE W. STAFFORD, Providence, R. I., assignor to the Geo. W. Stafford Manufacturing Company, same place. Filed May 14, 1888. Serial No. 310,735. (No model.)

Brief.—The objects of the invention are to prevent the cramping of the warp-thread as it passes through the eye of the heddle, which is due to the twisting of the heddle, and to diminish the wear upon adjacent warp-threads.



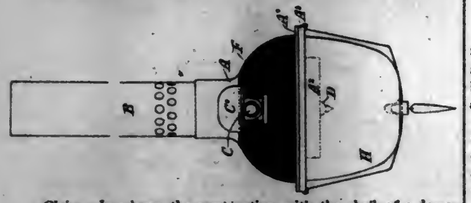
Claim.—As a new article of manufacture, a heddle and linge for Jacquard looms made of a single piece, substantially as shown and described, having its upper end prepared to receive the harness-cord and having an eye for the warp-thread made in it without flattening the body of the heddle, so that the diameter in all directions at the eye shall be about the same as the rest of the heddle.

407,621. PIN FOR PATTERN-CHAINS FOR LOOMS. GEORGE W. STAFFORD, Providence, R. I., assignor to the Geo. W. Stafford Manufacturing Company, same place. Filed May 27, 1889. Serial No. 312,211. (No model.)



Claim.—As a new article of manufacture, a pin for pattern-chains for looms, constructed substantially as described—that is, having a portion of the pin for insertion in the bar of a pattern-chain made with one or more longitudinal grooves therein, substantially as shown.

407,622. INVERTED GAS-LAMP. DAVID W. SUGG, Westminster, England. Filed Jan. 23, 1888. Serial No. 260,002. (No model.) Patented in England Feb. 21, 1884, No. 3,707; in France Mar. 28, 1885, No. 167,943; in Belgium Nov. 21, 1885, No. 70,887; in Italy June 30, 1886, XXXIX, 394; in Spain Sept. 18, 1886, No. 9,483, and in Austria-Hungary Oct. 1, 1886, No. 20,909.



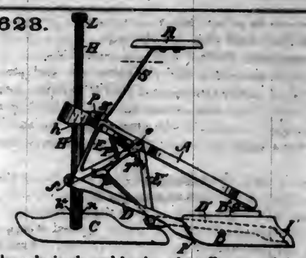
Claim.—In a lamp, the combination, with the shell, of a downwardly-extending gas-tip, a cylindrical apron having a closed upper end and an open lower end surrounding said gas-tip at such distance therefrom as to leave an annular air-space between said apron and the gas-tip, air-tubes opening upon the outside of said shell and communicating with the interior of said apron, perforations in said gas-tip below the lower end of said apron and extending obliquely to the axis of the gas-tip, a deflector at the lower end of said apron, a petticoat having open upper and lower ends and surrounding said apron at a distance therefrom, a perforated air-distributer between said petticoat and the outside of the lamp, and a cup-shaped globe secured upon the lamp into which the gas-tip extends and which receives the air from said air-distributer to be passed to the under side of the flame, substantially as specified.

407,623. VELOCIPEDE-SLED. SYLVANUS J. TALBOT, Milford, N. H., assignor of one-half to John McLane, same place. Filed Dec. 17, 1888. Serial No. 293,311. (No model.)

Claim.—1. A velocipede-sled consisting of a backbone hinged at the rear to a sled-bob, in combination with propelling-bars and a steering-rod provided with a rudder at the lower end thereof, all arranged and operated substantially as and for the purposes described.

2. In a velocipede-sled, a triangular-shaped one-piece spring-actuated bell-crank lever pivoted near one corner to the inclined back-

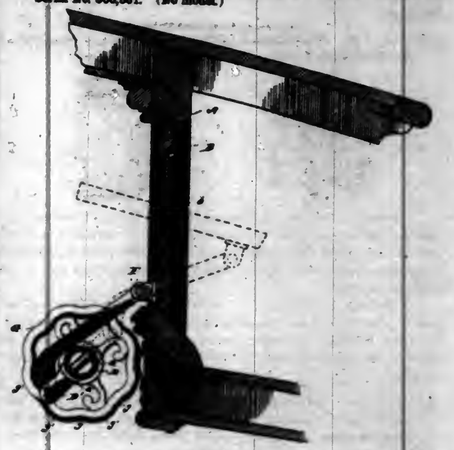
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bone of the velocipede and having pivotally secured thereto, near its other two corners, a pedal and a rearwardly-projecting propelling-bar provided with a claw, substantially as and for the purposes described.

3. In a velocipede-sled, a steering-rod, in combination with a rudder secured thereto at a point in advance of the center, substantially as and for the purposes described.

407,624. TRANSOM-LIFTER. AARON TWYMAN, Pullman, assignor to the Pullman's Palace Car Company, Chicago, Ill. Filed Feb. 23, 1889. Serial No. 300,881. (No model.)



Claim.—1. In a transom-operating device, the combination, with an operating-rod and a transom-arm pivotally connected thereto, of a hand-wheel for the operating-rod, and a locking-spring secured to bear yieldingly on the periphery thereof, whereby to lock the operating-wheel, substantially as described.

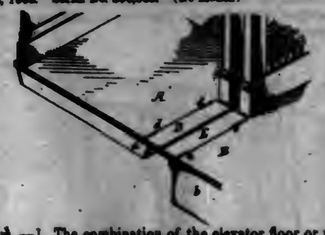
2. In a transom-operating device, the combination, with an operating-rod and one or more transom-arms pivotally connected thereto, of a hand-wheel for the operating-rod having a fluted rim, and a curved locking-spring secured to bear yieldingly upon the said rim, whereby to lock the operating-rod, substantially as described.

407,625. LIFE-PRESERVING BUOYANT BAG. SALVADOR M. Y VALDIVIELSO, Paris, France. Filed Apr. 11, 1889. Serial No. 306,776. (No model.) Patented in England Nov. 17, 1887, No. 15,796.



Claim.—The herein-described buoyant bag, composed of the canvas lining or inner bag A, the outer canvas jacket B, the inflatable air-pocket C D, located between and cemented to said lining and jacket, the inner fabric E, extended from the upper end of said air-pocket to near the top of the outer jacket, thereby forming a covering for the mouth of the inner bag A, the blow-pipe F, for inflating the air pocket, and a locking-handle G H, for the mouth of the outer jacket, substantially as specified.

407,626. ELEVATOR. ROBERT J. WALKER, Philadelphia, Pa. Filed Feb. 4, 1889. Serial No. 298,582. (No model.)



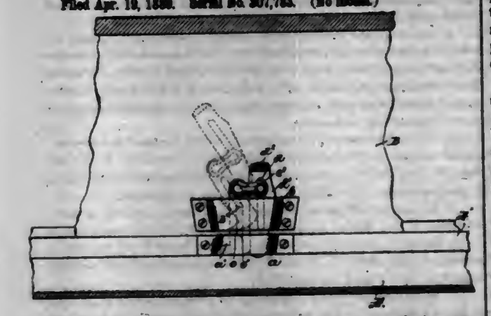
Claim.—1. The combination of the elevator floor or platform, the building-floor, a section pivoted to the elevator-floor and a section pivoted to the building-floor, said pivoted sections filling the space between the floor of the elevator and the floor of the building, and acting substantially in the manner and for the purpose described.

2. The combination of an elevator, the pivoted floor-sections thereon, and pivoted levers projecting into the elevator-well at the different floors of the building and adapted to come in contact with the pivoted floor-section of the elevator on the descent of the elevator, so that the said pivoted section will act as a bridge-piece for the removal of freight from or onto the elevator, substantially as described.

3. The combination, in an elevator, of the floors of the building and pivoted floor-sections thereon, with levers on the elevator which come in contact with and raise said pivoted floor-sections on the ascent of the elevator, so as to form bridge-pieces over which trucks can be moved, substantially as described.

4. The combination of the elevator with the floors of a building, a pivoted floor-section on said elevator and a pivoted floor-section on the different floors of the building, with lugs on the floor-sections of the building and levers on the elevator acting on said lugs, and with lugs on the floor-section of the elevator and levers at or near the different floors of the building which project into the elevator-well and come in contact with the lugs on the pivoted elevator-section, substantially as and for the purpose described.

407,627. WAGON-SEAT LOCK. DANIEL D. WHITNEY, Cornwall, N. Y., assignor to the Whitney Coupling Company, Whitinsville, Mass. Filed Apr. 19, 1889. Serial No. 307,783. (No model.)



Claim.—1. A wagon-body having a latch-engaging device, combined with a wagon-seat having attached thereto a holder *b*, provided with a pin *b'*, a slotted latch pivoted thereon and movable longitudinally in said holder, and a key or wedge for and loosely connected to said latch, also longitudinally movable in the holder, such movement of the key disengaging the latch, substantially as described.

2. A wagon-body having a latch-engaging device, combined with a wagon-seat having a latch pivoted thereto, movable longitudinally, and also adapted to turn on its pivot to withdraw it from the engaging device, and a key or wedge loosely connected with and employed to lock the latch, withdrawal of said key effecting the disengagement of the latch, substantially as described.

3. A wagon-body having a latch-engaging device, combined with a wagon-seat having a latch *c*, slotted to receive the pin *b'*, the arm c^3, having a pin or stud thereon, and the slotted key or wedge *d'*, and holder for the latch, substantially as described.

407,628. CULTIVATOR. HARRY WIARD and JAMES L. JUDD, Syracuse, N. Y. Filed Dec. 3, 1888. Serial No. 292,490. (No model.)

Claim.—1. The combination, with a cultivator-frame formed with a central longitudinal bar, of convex cheek-pieces rigidly secured to opposite sides of said central bar, handles secured at their front ends to the convex sides of the said cheek-pieces and adapted to slide thereon, and two standards formed in one piece mounted adjustably

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on the rear end of the frame and supporting the handles, substantially as set forth.

2. The combination of a cultivator-frame formed with a central longitudinal bar, convex cheek-pieces secured to opposite sides of said bar and provided with a transverse bolt-hole flared from the bar outward, handles resting with their front ends against the convex sides of said cheek-pieces, a bolt passing through the handles and the aforesaid flaring hole of the cheek-pieces and through the longitudinal bar, and props mounted laterally adjustably on the frame and supporting the handles, substantially as described and shown.

3. The combination of the cultivator-frame formed with integral spreader-arms at the rear end, handles adjustably connected at their front ends to the said frame, and a U-shaped frame or brace connected to the handles and mounted laterally adjustably on the aforesaid spreader-arms and clamped thereon in their adjusted position, substantially as set forth.

4. The combination of a cultivator-frame formed with a central longitudinal bar and side bars hinged at their front ends to the central bar and terminating with overlapping inward-extending spreader-arms at their rear ends lying across the central bar, the handles connected adjustably at their front ends to the aforesaid central bar, props united at their bases by a horizontal cross-bar formed integral therewith and seated thereby on the overlapping ends of the aforesaid spreader-arms and connected at their upper ends to the handles, and a clip embracing the rear end portion of the central bar and the overlapping spreader-arms and base of the props and adjustably clamping said parts together, substantially as described and shown.

5. In combination with the cultivator-frame formed with a central longitudinal bar and side bars hinged at their front ends to the said central bar and terminating with overlapping inward-extending spreader-arms at their rear ends, a cylindrical block straddling vertically the central bar, the handles resting with their front ends against opposite sides of said block, a tie-bolt passing transversely through said ends of the handle and through the intervening block and bar, props formed in one piece with a horizontal bar at the base and seated thereby upon the aforesaid spreader-arms, and a clip embracing the rear end portion of the central bar, segmental arms, and base of the props, and adjustably clamping said parts together, substantially as described and shown.

6. The combination of the frame provided with the horizontal slot *a*, the standard *b*, pivotally connected to said frame and formed with the extension *b'*, provided with the bolt-hole *c'* and with bolt-holes *c'' c''* at a greater distance from the pivotal connection of the standard and at different elevations than the bolt-hole *c'*, and a bolt passing through one of said holes and through the slot *a*, substantially as described and shown.

7. The combination of the cultivator-frame having the side bar D, formed with the segmental curved portion *d*, disposed in a horizontal plane, and a standard or tooth-shank formed with a correspondingly horizontally-curved attaching end terminating with a concave bearing and clamped adjustably and directly on the aforesaid curved portion of the side bar, substantially as described and shown.

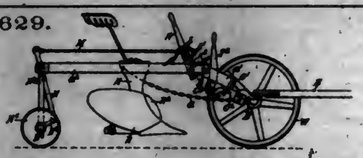
8. The combination of the cultivator-frame having the side bar D, formed with the segmental curved portion *d*, disposed in a horizontal plane and provided with horizontal slots *e e*, the standard *f*, formed with a correspondingly horizontally-curved attaching end terminating with a concave bearing and provided with holes, and attaching-bolts passing through said holes and slots *e e* and adjustably clamping the said standard on the side bar, substantially as described and shown.

9. The combination of the cultivator-frame having the side bar D, formed with the segmental outwardly-deflected portion *d*, disposed in a horizontal plane, and provided with the horizontal slots *e e*, the standard *f*, formed with the forward extension *f'*, terminating with the vertically-enlarged portion *f''*, concaved on its inner side and provided with the bolt-hole *c* and bolt-holes *c' c' c'* at different elevations, and attaching-bolts passing, respectively, through the hole *c* and one of the holes *c' c' c'* and through the slots *e e*, substantially as described and shown.

407,629. PLOW. MALCOLM WILSON, London, Ontario, Canada, assignor to David Smith, same place. Filed Feb. 16, 1889. Serial No. 300,186. (No model.)

Claim.—1. The bearing plate or block C^3, having socket C^4, formed therein, in combination with the frame A and axle C, and means for securing them together, substantially as shown and described, and for the purpose specified.

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2. The combination of the jointed frame A, the bearing plate or block C^3, pivotally secured thereto, the chains G G, the lever K, the anti-friction roller K', rod M, pivotal bar N, link N^3, arm N^4, and caster-wheel N^3, substantially as shown and described, and for the purpose set forth.

3. The combination, with the frame A, of the lever K, anti-friction roller K', rod M, pivotal bar N, link N^3, arm N^4, and caster-wheel N^3, revolving on bearings secured to or in the arm N^4, substantially as shown and described, and for the purpose specified.

4. The combination of the bearing plate or block C^3, jointed to frame A, lever K, and anti-friction roller K', in combination with the rod M, pivotal bar N, link N^3, arm N^4, and caster-wheel N^3, substantially as shown and described, and for the purpose specified.

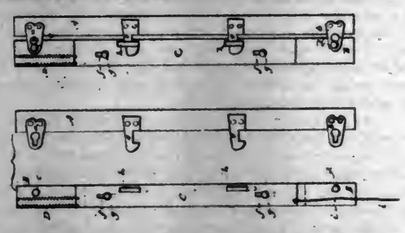
5. The combination of the jointed frame A, having recesses a^3 therein, lever K, anti-friction roller K', dogs K^3, trip L, and connection L', substantially as shown and described, and for the purpose specified.

6. The combination of the jointed frame A, the bearing plate or block C^3, the chains G G, the standards H, plows R, cutters R^3, the lever K, the anti-friction roller K', rod M, pivotal bar N, link N^3, arm N^4, and caster-wheel N^3, substantially as and for the purpose set forth.

7. The combination of the jointed frame A, bearing plate or block C^3, axle C, secured in socket C^3 in the bearing C^3, and a portion T of the axle C formed round in cross-section, the tube T', lever T^2, spring-actuated dog T^3, arm P, and segment C^3, having perforations C^3 formed therein, and the wheels W W', substantially as shown and described, and for the purpose set forth.

8. The combination of the jointed frame A, bearing plate or block C^3, axle C, chains G G, standards H, plows R, cutter R^3, bracket S^2, casting S', bracing-roller S, lever K, anti-friction roller K', rod M, pivotal bar N, link N^3, arm N^4, and caster-wheel N^3, substantially as shown and described, and for the purpose specified.

407,630. CORSET-CLASP. LOUIS WILKIN, New Haven, Conn., assignor of one-half to Max Adler, same place. Filed Apr. 22, 1889. Serial No. 308,120. (No model.)

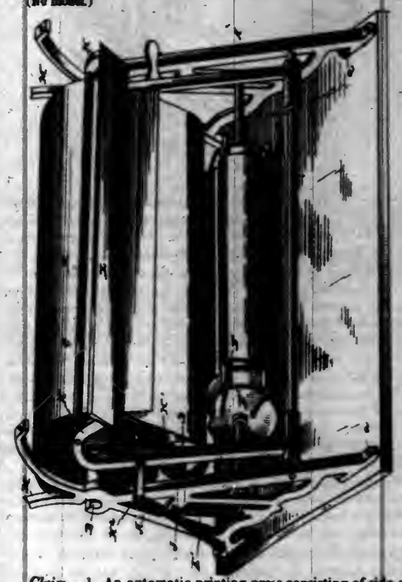


Claim.—1. The combination of the two busks A B, the one provided with an eye at each end and the other with corresponding studs, and one busk provided with one or more stationary hooks projecting from the meeting edge of the busk, a vertically-sliding plate C on the other busk, the said sliding plate constructed with loops corresponding to the said hooks, and a spring between the said sliding plate and its busk, the tendency of which is to yieldingly hold the said plate in the position to interlock with the hooks, substantially as described.

2. The combination of the two busks A B, constructed to engage each other when in the closed position to prevent longitudinal movement of one independent of the other, one of said busks constructed with hooks projecting from its meeting edge, a vertical sliding plate C on the other busk, the said plate constructed with loops corresponding to said hooks, and a spring between the said sliding plate and its busk, the tendency of which is to yieldingly hold said plate in position to interlock with the hooks, substantially as described.

3. The combination of the two busks A B, constructed to interlock the one with the other to prevent vertical movement, with a vertically-sliding plate on one busk, the said sliding plate and the other busk provided the one with loops and the other with corresponding hooks, and a spring between the said sliding plate and its busk, the tendency of which is to yieldingly hold the said plate in position to interlock said loops and hooks, substantially as described.

407,631. AUTOMATIC PRINTING DEVICE. HORSBURY B. BARRADALL, Dallas, and ANDREW J. BRADLEY, Fort Worth, Tex.; said Barradall assignor to said Bradley. Filed July 11, 1888. Serial No. 279,601. (No model.)



Claim.—1. An automatic printing-press consisting of side pieces, the shaft B for the paper roll, the impression-roller D, the type-roller E, said shaft, impression, and type rollers having bearings in said side pieces, and the type-roller journal having springs attached thereto and to the side pieces, an inking device, and a swinging frame carrying a cutter and roller, the said roller and cutter being parallel to said shaft B, said parts being combined substantially as described.

2. An automatic printing-press having a shaft for the paper roll suitably mounted in the frame thereof, an impression-roller below said shaft and parallel therewith, a type-roller rotated by the movement of said shaft and impression-roller, and a swinging arm having a roller parallel to said shaft and provided with a cutter, said parts being combined substantially as described.

3. The side pieces A A, in combination with the shaft B, journaled in said end pieces, the impression-roller D, the type-roller E, the end plates F, the rollers F, having bearings in said plates, and the absorbent G, passing around the rollers F, substantially as described.

4. In an automatic printing-press, the impression-roller D, suitably journaled in end pieces A A, in combination with the type-cylinder E, the springs E', secured to the axle of said cylinder E and to the side pieces A A, the plates F' on said cylinder-axle, and rollers F and absorbent G, substantially as described.

5. In an automatic printing-press, the swinging frame H, pivoted to the end pieces A A, the springs J, connected to said frame and end pieces, the roller K, journaled in said swinging frame, and the knife L, secured at its ends to said frame H, said parts being combined substantially as and for the purpose set forth.

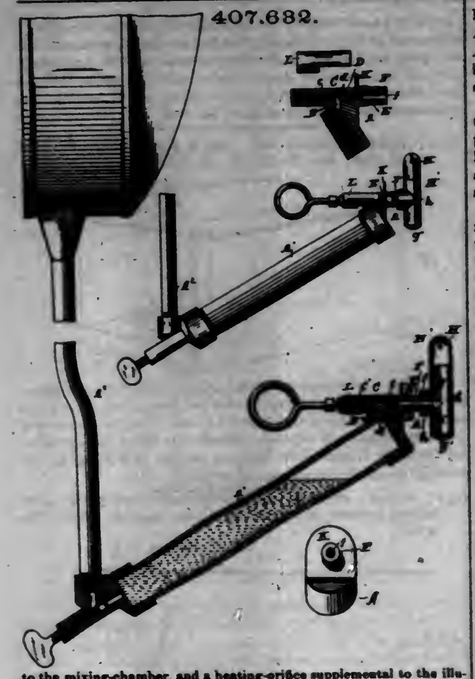
407,632. VAPOR-BURNER. HENRY S. BELDEN, Canton, Ohio. Filed May 23, 1887. Serial No. 239,093. (No model.)

Claim.—1. In a vapor-burner, the combination of the downpipe, the burner and unpacked retort-chamber enlarged relatively to the downpipe and inclined substantially as set forth, whereby the top surface of oil in the retort-chamber can be enlarged and a body of oil can be utilized to prevent recoil, a vertical vapor-passage, as at B, extending up from the retort, a horizontally-arranged needle-valve above the retort, a valve-chamber therefor on top of the retort, and an air-mixing chamber between the needle-orifice and the burner, substantially as set forth.

2. In a vapor-burner, the combination, with the retort, of a horizontally-arranged needle-valve above the retort, the valve-chamber therefor, the horizontal mixing-chamber communicating with the valve-chamber, the vertical gas holder or chamber transverse to the mixing-chamber, the burner-tip above the gas-holder, and the jet-orifice in the wall of the gas-holder, substantially as set forth.

3. A vapor-burner having a burner-tip with an orifice for an illuminating-flame, a mixing-chamber with an orifice for admitting air

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to the mixing-chamber, and a heating-orifice supplemental to the illuminating-jet orifice and formed on a line converging with the line of the said air-orifice, whereby it is adapted to direct a jet of vapor against the metal surrounding said air-orifice, substantially as set forth.

4. A vapor-burner having a burner-tip with an orifice for an illuminating-flame, a gas-chamber directly below said tip, a horizontally-arranged mixing-chamber communicating with the gas-chamber, an orifice for the admission of air to the mixing-chamber, whereby the air and vapor are mingled prior to entering the vertical gas-chamber, and a heating-jet orifice or duct leading from the gas-chamber and directed toward the metal around the air-orifice, substantially as set forth.

5. A vapor-burner having a burner-tip with an orifice for an illuminating-flame, a gas-chamber directly below the burner-tip, an orifice for the admission of air to the gas-chamber, and a heating-orifice supplemental to the illuminating-orifice and situated below the air-orifice, whereby the flame from the heating-orifice rises and bears against the metal around the air-orifice, substantially as set forth.

6. A vapor-burner having a burner-tip with an illuminating-jet orifice, a mixing-chamber, a vapor-orifice communicating with the duct in said mixing-chamber, an air-orifice for admitting air to said duct, a gas-chamber having a duct for the mingled vapor and air situated at an angle to the duct in the mixing-chamber, and having a heating-jet orifice supplemental to the illuminating-jet orifice, and directed to throw the heating-flame into immediate proximity to both the aforesaid vapor-orifice and air-orifice entering the mixing-chamber, substantially as described.

7. In a vapor-burner, the combination of the supply and retort tube A, the vertically-arranged duct B, the burner G H upon one side of said duct, the air-orifices E between the burner G H and the wall of the said duct B, the valve-chamber extending from the said duct B in the direction opposite to that of the burner, and the sleeve L, extending from the said air-orifice along the outside of the valve-chamber to a point on the opposite side of the duct B, and adapted to slide loosely on said valve-chamber, substantially as described.

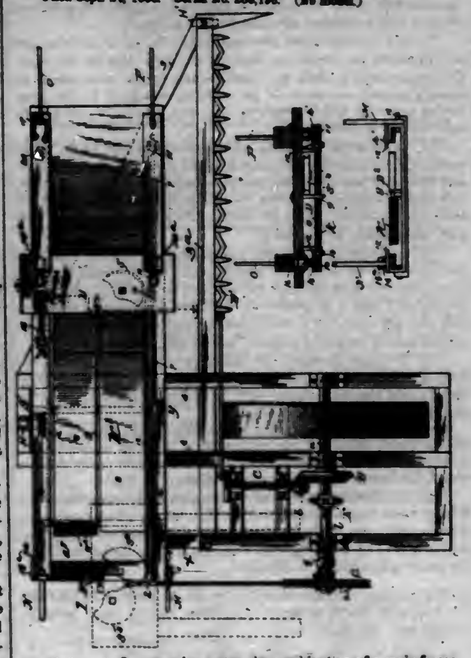
8. The combination, with the downpipe, of the unpacked pipe A', of larger diameter than the downpipe, whereby an enlarged surface of oil is presented and recoil is prevented, the air mixing chamber on the top of said pipe A' and arranged horizontally, and a vertically-arranged gas-holder with its wall situated transverse to the said mixing-chamber and having a heating-jet orifice, and a burner-tip at the upper end of said gas-holder having an illuminating-jet orifice supplemental to the heating-jet orifice, substantially as set forth.

9. The combination of the downpipe, the unpacked pipe A', inclined to the horizon and enlarged relatively to the downpipe, the horizontal mixing-chamber, the duct B, extending upward from pipe A', the needle-valve arranged on a line diverging from the axis of pipe A', the vertical gas-chamber communicating with the horizontal mixing-chamber, and the burner-tip at the top thereof, substantially as set forth.

10. The combination, with the inclined unpacked pipe A', adapted to hold a body of oil in its lower end and a body of vapor in the upper end, of the cap-piece for said pipe, formed with a mixing-chamber having air-orifices and the valve-chamber, the walls of the said valve and mixing chambers being cast integrally with the said cap and situated above and inclined to it, substantially as set forth.

11. In a vapor-burner, the combination, with a horizontally-arranged mixing-chamber, a horizontally-arranged needle-valve and valve-orifice, and a vertically-arranged vapor-holder with a vertically-arranged burner-tip at the upper end, a closed lower end, and a heating-jet orifice supplemental to the illuminating-orifice, said parts being arranged substantially as set forth, whereby the vapor is forced from the valve-orifice on one line through the mixing-chamber and on another line through the vapor-holder to the burner-tip, substantially as set forth.

407,633. CORN-HARVESTER. TAYLOR BOOM, Delaware, Ohio. Filed Sept. 24, 1888. Serial No. 286,196. (No model.)



Claim.—1. In a corn-harvester, the combination of a main frame, a driving-wheel, a sickle, a movable table on the frame, and automatically-operating devices for first moving the table laterally and then pivotally, substantially as described.

2. In a corn-harvester, the combination of a main supporting-frame, a main driving-wheel, a sickle, a laterally-movable table supported on the frame arranged to receive the shock of corn, and driving-connections between the movable table and the main driving-wheel, whereby said table may be moved to deliver the shock upon the ground, substantially as described.

3. In a corn-harvester, the combination of a main supporting-frame, a main driving-wheel, a sickle, a movable table in rear of the sickle for receiving the shock of corn, driving-connections between the movable table and the main driving-wheel, and an automatic clutch in said connection, substantially as described.

4. In a corn-harvester, the combination of a main frame, the driving-wheel and axle, the movable table in rear of the sickle for receiving the shock of corn and supported on the frame, a wheel loose on the axle of the main wheel and having clutch projections, a clutch splined on the axle, and a rope attached to the wheel and the movable table, substantially as described.

5. In a corn-harvester, the combination of the main frame and driving-wheel, the movable table, driving-connections therefrom to

the main driving-wheel, and the stop projections D D², which stop the table and on which the table is caused to have pivotal movement by the driving-connections, substantially as described.

6. In a corn-harvester, the combination of the main driving-wheel and frame, the sickle, the laterally-movable table supported on the frame, driving-connections from said table to the main driving-wheel, a clutch in said connection, and means for automatically operating said clutch, substantially as described.

7. In a corn-harvester, the combination of the main supporting frame and driving-wheel, a sickle, a laterally-movable table on the frame, driving-connections from the table to the main driving-wheel, the segment on the table forming a part of said connections, the stops D D², adapted in connection with the segment and driving-connections to cause pivotal movement of the table, and a track on the frame adapted to control the movement of the table and prevent its pivotal movement until the stops D D² engage with each other, substantially as described.

8. In a corn-harvester, the combination of the main frame and driving-wheel, the sickle, a laterally-movable table, driving-connections between said table and the main driving-wheel for moving the table laterally, means for causing pivotal movement of the table, and a track extending laterally of the frame and arranged to prevent displacement or pivotal movement of the table until it reaches the end of its lateral movement, substantially as described.

9. In a corn-harvester, the combination of the main frame and driving-wheel, the sickle, the laterally-movable table on the frame, driving-connections from the driving-wheel to the table, means for causing pivotal movement of the table, the tracks K K', the latter having a groove, and the roller on the table moving in said groove, substantially as described.

10. In a corn-harvester, the combination of the main frame, wheel, and sickle, the movable table arranged to receive the shock of corn, said table carrying a movable arm for engaging and holding the corn, means for automatically moving the arm during the movement of the table, and automatic means for holding the arm in its adjusted position, substantially as described.

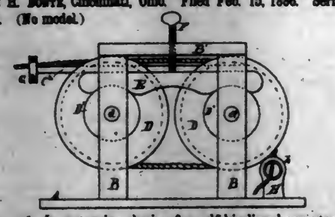
11. In a corn-harvester, the combination of the main frame and driving-wheel, the sickle, and movable table for receiving the corn-shock, the said table having a movable arm for engaging and holding the shock, a cam or projection on the frame for engaging said movable arm and operating it, and a holding-catch on the table for retaining the arm in its moved position, substantially as described.

12. In a corn-harvester, the combination of the main frame and driving-wheel, the sickle, the movable table, the movable arm carried thereby, and the catch on the table for holding said arm in its moved position, substantially as described.

13. In a corn-harvester, the combination of the main frame and driving-wheel, the sickle, the movable table, the arms carried by said table for engaging the shock, and the removable arms at the delivery end of the frame, substantially as described.

14. In a corn-harvester, the combination of the main frame and driving-wheel, the sickle, the movable table, the movable arm thereon, the removable arm at the delivery end of the frame, and a catch on the table adapted to engage and hold said arm to confine the top of the shock, substantially as described.

407,684. ROLLER-TENSION FOR SELF-BINDING HARVESTERS. George H. Dowr, Cincinnati, Ohio. Filed Feb. 15, 1886. Serial No. 191,945. (No model.)

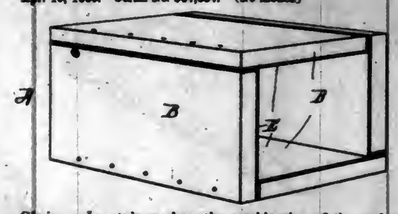


Claim.—1. In a tension device for self-binding harvesters, the grooved rollers, each having a hub or drum D', the independent brake-piece E, resting upon the said hubs, and at the point where it so rests being hollowed to receive the hub, and the set-screw F, engaging a stationary support and pressing against the brake-piece E at a point between the hubs, substantially as and for the purposes specified.

2. In a tension device for self-binding harvesters, the grooved rollers and hubs or drums D', and independent brake-piece resting against the said hubs, and at the point where it so rests being hollowed to receive the hub, and the set-screw F, engaging a stationary support and pressing against the brake-piece E at a point between the hubs, and delivery-guide G, having the funneled-shaped eye, whose larger end is next to the rollers, substantially as and for the purposes specified.

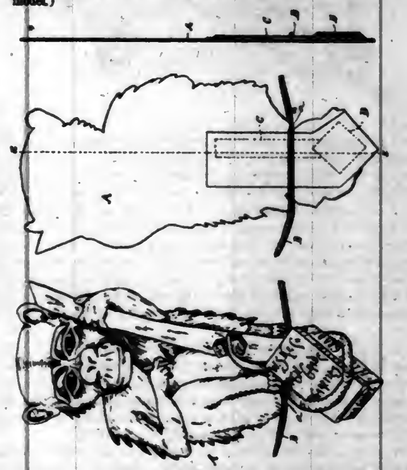
3. In a tension device for self-binding harvesters, the grooved rollers and hubs or drums D', and brake-piece E, in contact with said hubs, and hollowed to receive the latter, and the set-screw F, provided with stationary support, and between said rollers resting on the brake-piece E, and inlet and outlet guides, having funneled eyes, substantially as and for the purposes specified.

407,685. TOBACCO-BOX. John M. Brosius, Atlanta, Ga. Filed Apr. 19, 1889. Serial No. 307,857. (No model.)



Claim.—In a tobacco-box, the combination of the end pieces with the side pieces B, having thereon the lining-pieces E, covering one face and one edge placed adjacent to each other, the tinned nails G, driven through said adjacent sections of the lining, forming burrs, and the solder F, poured into the space between said linings E, substantially as and for the purpose set forth.

407,686. ORNAMENT AND ADVERTISING DEVICE. George W. Brower, Rochester, N. Y. Filed Apr. 4, 1889. Serial No. 305,931. (No model.)



Claim.—1. The combination, with the thin flat body portion having upon it the representation of an animate figure, of a sustaining cord or wire attached to the back of said body and extending transversely thereof, and a counter-weight secured to the back of the body below the cord, substantially as described.

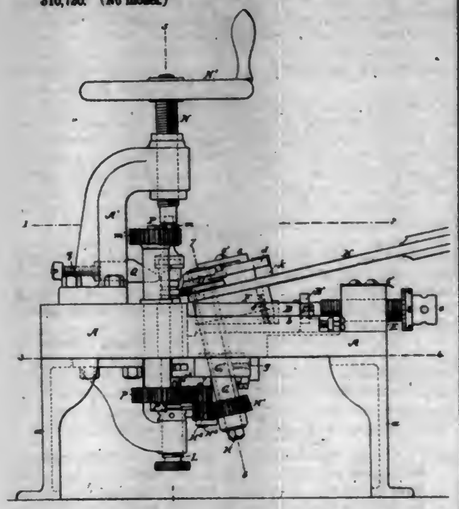
2. In an advertising device, the combination, with the body portion formed of sheet material, of a sustaining cord or wire attached to said body, the counter-weight, and the pocket for the latter formed by the textile covering secured to the back of the body below the sustaining-cord, substantially as described.

3. In an advertising device, the combination, with the body portion formed of sheet material, of the sustaining cord or wire attached to said body, the counter-weight, and the recess in the side of the body at about the level of the cord, into which the latter projects to steady the body, substantially as described.

4. In an advertising device, the combination, with the body portion formed of sheet material, of a sustaining cord or wire, the stiffening-strip and counter-weight, and the pocket for the latter formed by the textile covering secured to the back of the body below the sustaining-cord, substantially as described.

5. In an advertising device, the combination, with a figure formed of sheet material—such as pasteboard—having on one side the pictorial representation of an object or body, of a counter-weight secured to the lower portion of the figure, and a suspension device, as a cord, secured to said figure above the center of gravity, substantially as described.

407,687. THIMBLE-EMBOSSING MACHINE. Joseph Brownell, Philadelphia, Pa., assignor to John F. Simons, Frederick M. Simons, and Edwin S. Simons, all of same place. Filed May 14, 1889. Serial No. 310,720. (No model.)



Claim.—1. The combination, in an embossing-machine, of the thimble-carrying spindle, the embossing-wheel having a concentric ring on which the figure is cut, and two eccentric rings, one inside the other, by which the position of the embossing-ring is varied, substantially as described.

2. The combination, in an embossing-machine, of the vertical shaft, in which is mounted the thimble-carrying spindle, with a shaft carrying an embossing-wheel, and a handle therefor, said shaft being geared to the thimble-shaft, substantially as and for the purpose described.

3. The combination, in an embossing-machine, of the plate A, bearings therein, a thimble-shaft mounted in said bed-plate, with a slide B, carrying the embossing-tool, and a set-screw E for adjusting the slide B toward or from the thimble, with an arm B', carried by the slide and adapted to pass between the end of the set-screw and the slide, substantially as described.

4. The combination of the bed-plate A, the vertical thimble-carrying shaft C, with a slide B, adapted to ways on said frame, and a block in said slide carrying the embossing-tool, with mechanism for raising and lowering said block, by which the angle of the tool is varied, substantially as described.

5. The combination, in an embossing-machine, of the embossing-tool, a vertical thimble-carrying shaft having a pinion at its lower end, with a second shaft having a gear-wheel meshing with said pinion, and having at its upper end a second wheel meshing with a pinion on a spindle carrying the clamp for the head of the thimble, with mechanism for turning the shaft, so that when the shaft C turns the clamp for the head of the thimble will likewise be turned, substantially as specified.

6. The combination, in a thimble-embossing machine, of the thimble-carrying shaft and a clamp for the upper portion of the thimble, with the embossing-tool and a block Q, adapted to take the strain of the embossing-tool, substantially as described.

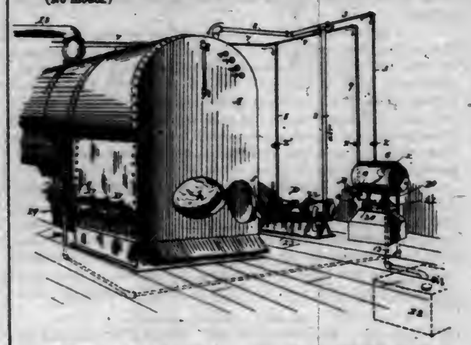
7. The combination, in an embossing-machine, of the bed-plate A, the slide B, a sleeve G, carried by said slide, with a shaft H, adapted to said sleeve and carrying at its upper end the embossing-tool and handle, and having at its lower end a bevel-wheel meshing with a bevel-pinion, which is geared to the thimble-carrying shaft, substantially as described.

8. The combination of the embossing-ring d', having an arm d, with the rings d^3 and d^5, a clamp e, and a set-screw d', by which the rings d^3 and d^5 are clamped to the ring d', substantially as described.

9. The combination, in an embossing-machine, of the embossing-wheel, its shaft and gear-wheel, with a thimble-carrying shaft, its pinion, an intermediate pinion, and intermediate wheel, said wheel being carried by a lever pivoted to the thimble-carrying shaft, but connected to the intermediate pinion, so that on the movement of the embossing-wheel toward or from the thimble the lever J will be moved, substantially as described.

10. The combination, in a thimble-embossing machine, of the hollow shaft C and spindle c therein, carrying the thimble to be embossed, with a clamp M, detachable from the spindle M', so that the thimble and clamp can be detached from the spindles, substantially as described.

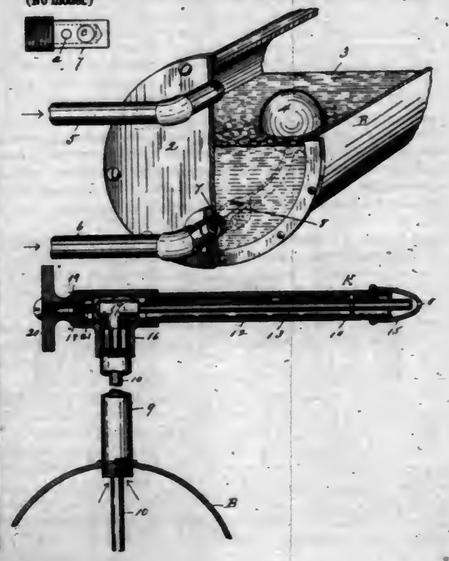
407,688. APPARATUS FOR BURNING HYDROCARBONS AS FUEL. James H. Bullard, Springfield, Mass., assignor to the Aerated Fuel Company, same place. Filed Feb. 6, 1888. Serial No. 263,128. (No model.)



Claim.—1. An apparatus for securing the combustion of hydrocarbons for fuel, consisting of a burner-tank and one or more burners connected therewith and a pipe leading to said tank from an air-compressor, a steam oil-pump having a pipe for conveying steam thereto and having therein a regulating-valve, an oil-tank connected by a pipe with said burner-tank and located at such a height relative to that of said burner-tank that a common oil-level may be maintained in each by the hydrostatic pressure of the oil, and a ball-cock in said oil-tank having a connection, as described, with said steam-pipe regulating-valve, substantially as described.

2. Apparatus for burning hydrocarbons for fuel, consisting of one or more burner-tanks, one or more burners attached to each of said tanks, combined with an oil-pump actuated by steam, having an oil-tank connected therewith supplied by said pump and connected with said burner-tanks by an oil-pipe, a steam-pipe conveying steam to said pump, a regulating-valve in said steam-pipe, and a ball-float in said oil-tank having a connection, as described, with said regulating-valve, and an air-pump having air-pipe connections with said burner-tanks and with said oil-tank, substantially as set forth

407,689. BURNER AND BURNER-TANK FOR HYDROCARBON FUEL. James H. Bullard, Springfield, Mass., assignor to the Aerated Fuel Company, same place. Filed Dec. 1, 1887. Serial No. 256,586. (No model.)

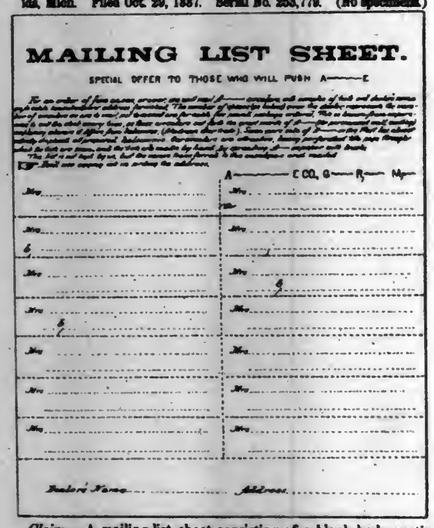


Claim.—1. A hydrocarbon-burner consisting of an air and oil reservoir, an oil-pipe communicating therewith, a nozzle connected to one end of said pipe, an air-pipe communicating with the air-space in the reservoir and with the nozzle, said oil and air pipes being adjustable in the nozzle with reference to each other, and a pipe by which compressed air may be conveyed to the reservoir, whereby the air-pressure in the reservoir serves to force the oil as well as an air-jet to the nozzle, and whereby by the adjustment of the nozzle the relative force of the air and oil jets may be regulated, substantially as described.

2. A hydrocarbon-burner consisting of an air-pipe in two sections, as described, united by a T-connection 16, having a hub screwed thereto, said pipe having a nozzle thereon in which is a discharge-aperture, a hydrocarbon-conducting tube within said air-pipe, consisting likewise of two sections united by a T-connection 17, having a screw-stud thereon, one end of said tube terminating within said nozzle, a sleeve 19, having a screw-connection with said stud, and a hand-wheel connected with said sleeve, combined and operating substantially as set forth.

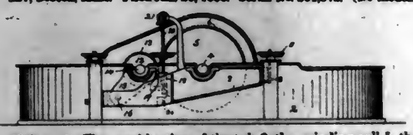
3. The combination of a reservoir, an oil-pipe leading thereto, and a float-valve controlling said pipe, an air-supply pipe leading to said reservoir, an oil-escape and an air-escape pipe leading from the reservoir to a nozzle, and a screw-thread for adjusting one of these pipes with reference to the nozzle, whereby the air-pressure is made to control the flow of air and of oil from the reservoir, and the nozzle is made to control the final mixing of the same, substantially as described.

407,640. MAILING-SHEET LIST. MELVIN B. CHURCH, Grand Rapids, Mich. Filed Oct. 29, 1887. Serial No. 253,779. (No specimens.)



Claim.—A mailing-list sheet consisting of a blank body portion having perforations dividing said portion into slips, printed lines on each slip for the names and addresses, a printed explanatory heading at the top of said sheet, and a blank for the dealer's name and address at the bottom of the sheet, substantially as described.

407,641. BEATING-ENGINE FOR PAPER-PULP. EDWARD CONLEY, Boston, Mass. Filed Jan. 20, 1888. Serial No. 261,372. (No model.)



Claim.—1. The combination of the tub 2, the grinding-roll 5, the lighter-beams 8 8, slotted at 17, a revolving bed-roll 12, and swinging arms 15 15, disposed in said slots, as and for purposes set forth.

2. In beating-engines for paper-pulp, a vertically-adjustable grinding-roll 5, lighter-beams 8 8, and the tub 2, having a mid-feather 3 and back-fall 10, combined with a revolving bed-roll 12, pivotal arms 15 15, and the movable sleeve-nuts 18 18, with their operating mechanism by which the bed-plate is adjusted toward or away from the grinding-roll, substantially as specified.

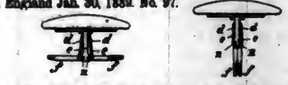
407,642. STEM WINDING AND SETTING WATCH. CONSTANT DIMCHERT, Montilier, near Morat, Freyburg, Switzerland. Filed Apr. 11, 1888. Serial No. 306,814. (No model.)



Claim.—1. The combination, with the crown and the lever actuated by the crown and its stem, of a yoke actuated by the lever for bringing the setting and winding wheels into action and a detent M for locking the lever both in the winding and in the setting position of the mechanism, substantially as described.

2. The combination, with the crown and the lever actuated by the crown and its stem, of a yoke actuated by the lever for bringing the setting and winding wheels into action and a detent M for locking the lever both in the winding and in the setting position of the mechanism, said lever being provided with a locking-shoulder L for holding the yoke in the setting position, substantially as described.

407,643. HINGED BUTTON. ROBERT W. A. DITTMANN, Hamburg, Germany, assignor to Aug. F. Richter, same place. Filed Apr. 3, 1889. Serial No. 305,818. (No model.) Patented in Germany May 27, 1888, No. 45,825; in Austria-Hungary Oct. 5, 1888, No. 32,716 and No. 39,112, and in England Jan. 30, 1889. No. 97.



Claim.—The herein-described improved button, consisting of the button having a hollow shank, the wings pivoted to said shank at their inner ends and having opposite notches and eccentric heads, and the U-shaped spring sliding in said shank and having lateral projections and bent ends inserted in said notches, substantially as set forth.

407,644. LOCKING RAIL-JOINT. PRESTON C. DOCKSTADER, Colorado Springs, Colo. Filed Mar. 19, 1888. Serial No. 267,779. (No model.)

Claim.—1. The combination, with the track-rails, of a chair provided with two arms embracing the rails and resting against the under surface of the heads of the rails, said arms being provided with longitudinally-inclined bearing-surfaces opposite the rail-flanges, wedges driven between the rail-flanges and the chair-arms and bearing laterally against the rail-web, said wedges being provided with a series of holes, and split keys driven into the said holes of the wedges against the rail, substantially as described.

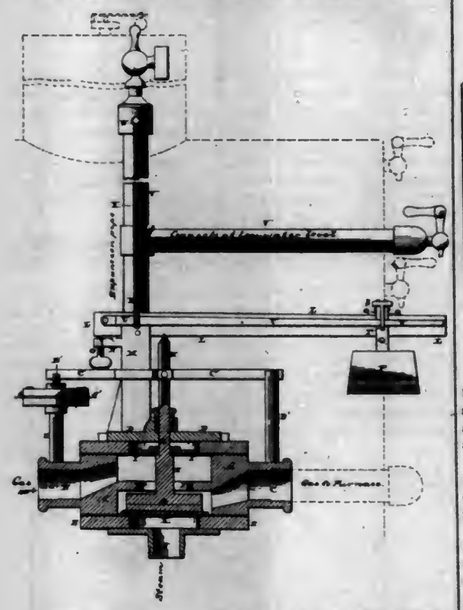
2. The combination, with the track-rails provided with notches *c c* in their flanges, of a chair provided with two arms embracing the rails engaging the under surface of the head thereof, said arms being provided with longitudinally-inclined bearing-surfaces opposite the rail-flanges, and with lugs *a a* formed upon the base of the chair adjacent to the chair-arms and adapted to engage the said notches *c c* of the rails, and wedges inserted between the said inclined bearing-surfaces of the chair-arms and the rail-flanges, substantially as described.

3. The combination, with the track-rails, of a chair provided with two arms embracing the rails, and having a recess or channel extending lengthwise of the upper surface of the base of the chair and forming bearing-surfaces or ledges upon which the flanges of the rails rest, substantially as described.

4. The combination, with the track-rails, of a chair provided with two arms embracing the rails and engaging the under surface of the head thereof, said arms being provided at their lower parts with longitudinally-inclined bearing-surfaces opposite the rail-flanges, and wedges driven between the said inclined bearing-surfaces and the flanges and bearing laterally against the rail-web, said wedges being provided with funnel-shaped holes, substantially as described.

5. The combination, with the track-rails, of a chair provided with upwardly-extending converging arms on opposite sides of the rail constructed to engage the under surface of the rail-head, said arms being provided with longitudinally and transversely inclined surfaces opposite the rail-flanges, and having edges or corners at the inner margins of said inclined surfaces, and locking-wedges provided with ribs *i i*, constructed to engage the said edges or corners of the chair-arms, substantially as described.

407,645. GAS GOVERNOR OR REGULATOR. WILLIAM H. DOWNING, Goodell, Pa. Filed Mar. 15, 1889. Serial No. 303,424. (No model.)



Claim.—1. The combination of the regulator A, the valve G, the stem H, the weighted lever L, which bears upon the stem for regulating the flow of gas, and the diaphragm I, connected to the stem, the diaphragm K, and the pipe J, connected to a boiler or water-supply for shutting off the flow of gas when the limit of the steam-pressure is reached, substantially as set forth.

2. The combination of the pivoted lever L, the weight P, placed upon it and provided with a latch, a removable cap S, provided with a slotted guide R, a rod or lever U, pivoted to the lever S, the expansion-pipe, and a rod connected to the pipe and to the rod U, substantially as specified.

3. The combination of the regulator, a valve placed therein, a weighted lever for bearing upon the stem of the valve, and an expansion-pipe, a rod connected to the pipe, a rod or lever pivoted to the weighted lever, and the weight adapted to drop from its lever and which is operated by the rod U, substantially as shown.

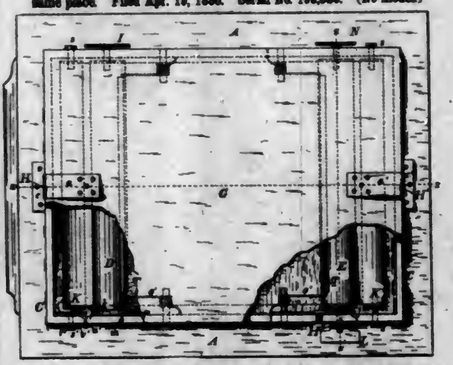
4. In a gas-regulator, the combination of a valve, a weighted lever, expansion-pipe which is connected to the boiler, a rod connected to the expansion-pipe, a lever which is operated by the rod connected to the expansion-pipe, a detachable weight which is connected both to the lever and the rod which is pivoted thereto, and a diaphragm which is placed in the regulator for closing the valve when the weight is detached from the levers, substantially as described.

407,646. ANIMAL-TRAP. EPHRAIM L. DUNLAP, Kingfield, Me. Filed May 3, 1889. Serial No. 309,498. (Model.)



Claim.—The combination of the angular jaw A, provided with stop C and the sharp points B upon its lower end, the jaw D, provided with sharp points at one end and a crank or bend at its opposite end and pivoted upon the jaw A and having a projection I upon its inner edge, the spring H, connected at one end to the jaw A, the connecting-link G, which unites the ends of the spring and the jaw D together, the trigger J, pivoted to the jaw A and adapted to catch over the projection I upon the jaw D, and the notched hook L, pivoted to the jaw A and adapted to engage with the trigger, substantially as shown and described.

407,647. PHOTOGRAPHIC ROLL-HOLDER. GEORGE EASTMAN, Rochester, N. Y., assignor to the Eastman Dry Plate and Film Company, same place. Filed Apr. 19, 1886. Serial No. 199,339. (No model.)



Claim.—1. The combination, in a roll-holder, of the detachable front A, provided with the exposing-slide B, the detachable case C, sustaining the film-support F and inclosing the operating mechanism and the back G, and suitable means for attaching the front, casing, and back to each other, substantially as described.

2. The combination, in a roll-holder, of the front A, provided with the exposing-slide B, the casing C, sustaining the paper-support of the operating mechanism, the back G, and the spring-catches H H', substantially as described.

3. In a photographic roll-holder, the combination, with the detachable front A, provided with guards *g g'*, of the casing C, carrying the paper-support F and inclosing the operating mechanism, and the back G, substantially as described.

4. In a photographic roll-holder, the combination, with the reel E, of the clamp-bar R, provided with slotted arms *d d'*, substantially as described.

5. The combination, with the photographic roll-holder, of the guide-roll K, pinion *c'*, gear *t'*, stud *d'*, and indicator *r'*.

6. In a photographic roll-holder, an audible and visible indicator consisting of the revolving pin *r'* and spring *u'*, attached to the exterior of the case, substantially as described.

7. In a photographic roll-holder and in combination with the measuring-roll thereof, an audible and visible indicator, with intermediate gearing connecting them with the measuring-roll, substantially as described.

8. In a photographic roll-holder, the combination, with a detachable film-spool, of a friction-wheel mounted on the casing, a segmental clamp mounted upon said wheel and held in frictional engagement therewith by the spring of the material of which it is constructed, and a spring attached at one end to the casing and at the opposite end to the segmental clamp, substantially as described.

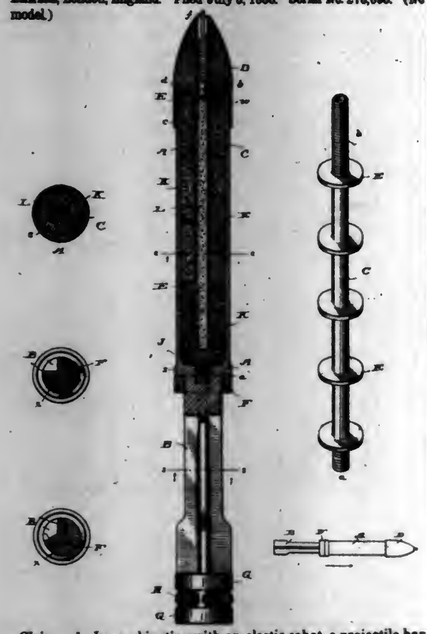
9. In a photographic roll-holder, a tension or film-straining device comprising a friction-clamp embracing a surface rotating in unison with the film-spool, and a spring engaging said friction-clamp to limit its motion, substantially as described.

10. In a photographic roll-holder, the combination, with the film-spool and a cylindrical friction-surface connected to rotate in unison with said spool, of a friction-clamp applied to and embracing said friction-surface, and a spring for restraining the movement of the friction-clamp, substantially as described.

11. In a photographic roll-holder and in combination with the film-spool and grooved friction-wheel or surface, a friction-clamp occupying the groove in the friction-wheel and engaging the latter, and a device engaging said friction-clamp to restrain its motion in one direction only, substantially as described.

12. In a photographic roll-holder, the combination, with the circumferentially-grooved friction-wheel adapted to be connected to and rotated in unison with the film-spool, of a segmental friction-clamp sprung upon the friction-wheel, and a spring connected to said clamp, substantially as described.

407,648. PROJECTILE FOR SMOOTH-BORE GUNS. STEPHEN H. EMMENS, London, England. Filed July 3, 1888. Serial No. 278,893. (No model.)



Claim.—1. In combination with an elastic sabot, a projectile having a hollow cylindrical body constructed with a base portion which fits the bore of the gun behind the charge-chamber, a charge-chamber portion of reduced diameter and an open front end, a head having a rearwardly-projecting lip which fits the bore of the gun, and a charge-holder screwed down upon a suitable packing within the charge-chamber, substantially as hereinbefore specified.

2. A combined strut and charge-holder having axial screw ends and circular webs, in combination with a thin-walled body having an open front end, and a head screwed upon the front end of said strut and charge-holder and having a deep rearwardly-projecting lip, which overlaps said front end, substantially as hereinbefore specified.

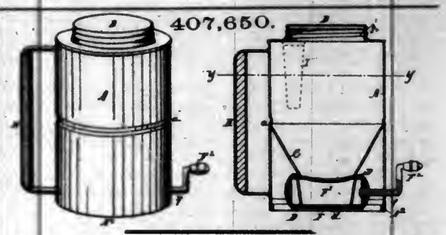
407,649. MANUFACTURE OF WRITING-SURFACES. KARL ENGLER, Horne, Kans. Filed Mar. 23, 1889. Serial No. 304,552. (Specimens.)

Claim.—A compound to be applied to painted objects for producing a writing-surface that can be written upon with an ordinary stick, consisting of linseed-oil, gritty matter, and spirits of turpentine, in about the proportions specified.

407,650. MEASURING CAN OR CANISTER. SYLVESTER B. BRITAINBROOK, Leicester, and JOHN P. ASHEY, Worcester, Mass. Filed Apr. 15, 1889. Serial No. 307,357. (No model.)

Claim.—The within-described canister, consisting of the body A, formed of sheet metal, with a cover B and downwardly-projecting rim A^2, and having the funnel-shaped bottom C, the cylindrical chamber D, connected with and opening to said bottom, and with an exit-opening *d*, the rotating measuring-gate fitted within said cylindrical chamber, and the operating crank or handle F^3, all arranged substantially as shown and described.

407,650.



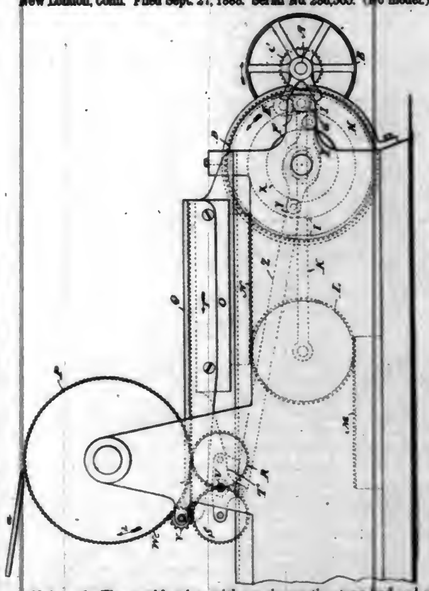
407,651. SHARPENING DEVICE. CHARLES EVERDING, Branford, Conn. Filed Mar. 18, 1889. Serial No. 303,728. (No model.)



Claim.—1. A sharpening device consisting of a casting bent at a suitable angle and provided with ears or flanges, in combination with a file, a holding-pin which catches against the inner side of the file, and set-screws for adjusting the file, substantially as shown.

2. The combination of a casting bent at a suitable angle and having one end made concave and the other end provided with ears or flanges, and a holding-pin which extends across between the ears, with a file and the set-screws for holding the file, substantially as described.

407,652. CYLINDER PRINTING-MACHINE. GEORGE P. PERNER, New London, Conn. Filed Sept. 27, 1888. Serial No. 286,505. (No model.)

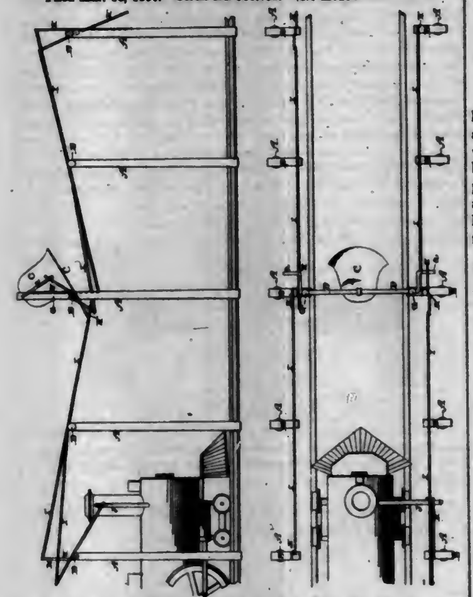


Claim.—1. The combination, with a reciprocating type-bed and an impression-cylinder, of an actuating crank or wheel E, link K, gears L M, connecting the crank or wheel and type-bed, and a guide-cam H, guiding said link and constructed to allow the type-bed to remain temporarily at rest at the end of each reciprocation, substantially as described.

2. The combination, with a reciprocating type-bed and an impression-cylinder, of shifting-gears R S, for conveying motion between the cylinder and type-bed, and a cam for shifting said gears, substantially as described.

3. The combination, with an impression-cylinder and a reciprocating type-bed, of a mechanism for reciprocating said bed, said mechanism consisting of a crank or crank-pin E, a link F, and a stationary cam H, engaged by said link, substantially as described.

407,653. RAILROAD-SIGNAL. CHARLES A. FISLEY, Holton, Kans. Filed Mar. 18, 1889. Serial No. 303,733. (No model.)



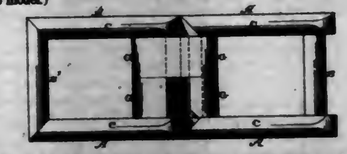
Claim.—In a railroad-signal, the combination of bells supported above the track, horizontal rods connected thereto which extend across the track, cranks upon each end at opposite sides of the track, levers journaled to supports below the cranks at each side of the track and having their upper ends engaged thereby, and intermediate levers on each side of the track which are operated by devices upon the locomotive, with supporting-poles placed upon opposite sides of the track, two lines of wires—one on each side of the track—which connect the said levers, and a device upon the locomotive for operating the levers, substantially as shown and described.

407,654. BURGLAR-ALARM. GEORGE C. GRUBER and THOMAS D. WOGAN, Marita, Ohio. Filed Mar. 29, 1889. Serial No. 305,295. (No model.)



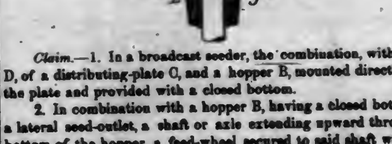
Claim.—In a burglar-alarm, the combination, with a bell-frame, spring-actuated tapper-operating mechanism, and bell connected with said frame, of the outwardly and upwardly bent tapper-arm, spring locking rod *f*, its upper free end being adapted to be made to engage with said tapper, as described, key *h*, having leg *h'*, door-knob-stem clamp *l*, and cord or wire *k*, connecting said clamp and spring-rod *f*, substantially as and for the purpose specified.

407,655. DRIVE-CHAIN. THEODORE P. HALL, Marietta, Ohio; assignor to John Short, same place. Filed Mar. 18, 1889. Serial No. 303,722. (No model.)



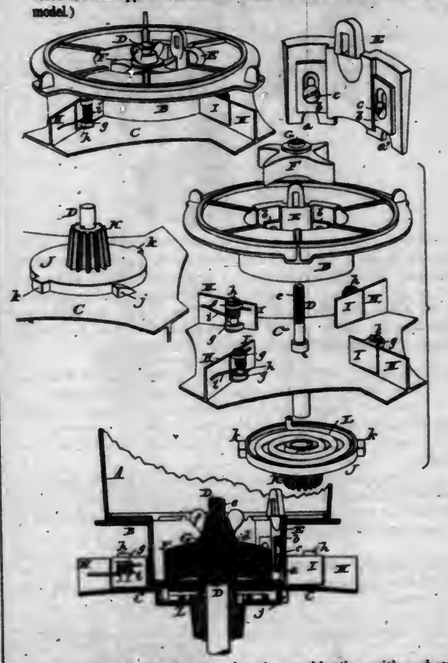
Claim.—In combination with the links of a driving-chain, a pair of coupling-clasps transversely slotted and of approximately C shape and arranged upon the links side by side with the slots in opposite sides of the clasps, substantially as described.

407,656. REGULATING GAS-BURNER. JOHN G. HAWKES and JOHN BARTON, Peterborough, County of Northampton, England. Filed Feb. 27, 1889. Serial No. 301,382. (No model.) Patented in England Nov. 1, 1887, No. 14,806, and Feb. 13, 1888, No. 2,162.



Claim.—In a gas-regulating burner, the combination of a casing having a lower contracted portion, a diaphragm located in said casing at the junction of its expanded and contracted portions and provided with a central opening and a tubular downwardly-projecting portion having lateral openings or slits, a valve located in the downwardly-projecting tubular portion of said lower diaphragm and provided with an upwardly-projecting valve-spindle, a disk on said spindle above the lower diaphragm, and an upper diaphragm having a central opening for passage of the valve-spindle, substantially as described.

407,657. BROADCAST SEEDER. FREDERICK J. HEINRICHSEN, Racine, Wis., assignor to the Henrichsen Manufacturing Company, same place. Original application filed Dec. 22, 1888, Serial No. 294,305. Divided and this application filed June 24, 1889. Serial No. 315,377. (No model.)



Claim.—1. In a broadcast seeder, the combination, with a shaft D, of a distributing-plate C, and a hopper B, mounted directly above the plate and provided with a closed bottom.

2. In combination with a hopper B, having a closed bottom and a lateral seed-outlet, a shaft or axle extending upward through the bottom of the hopper, a feed-wheel secured to said shaft within the hopper, and a distributing-plate also secured to the shaft and placed directly beneath the hopper.

3. In a broadcast seeder, the combination, with the hopper and the shaft journaled therein, of the plate C, provided with yielding ribs.

4. In a broadcast seeder, the combination, with the hopper and the shaft journaled therein, of the plate C, provided with wings or ribs having yielding ends or gates.

5. In a broadcast seeder, the combination, with the hopper and the shaft journaled therein, of the plate C, provided with wings H, gate I, provided with lugs *g*, bolt *h*, passing through the lugs, and spring *i*, bearing at opposite ends against the wing and gate.

6. The combination, in a broadcast seeder, of the grooved shaft D, of the elastic feed-wheel, the metallic bushing, spline, or feather *d*, and means for securing the wheel in position.

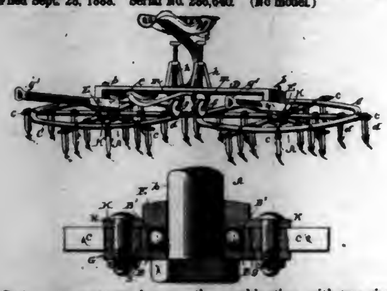
7. In a broadcast seeder, the combination, with threaded shaft D, provided with groove *c*, of elastic wheel F, metallic bushing G, provided with spline *d*, and a thumb nut *f*, applied to the shaft.

8. In a broadcast seeder, the combination, with a shaft, of a distributing-plate C, secured rigidly thereto, a gear-wheel K, provided with a lug *k* to engage a lug *j* on the plate, and a spring L, secured at opposite ends to the wheel and case.

9. In a broadcast seeder, the combination, with a shaft and a distributing-plate secured thereto, of a gear-wheel adapted to engage the plate, and a spring secured to the plate and the gear-wheel, whereby the spring is adapted to take up initial movement of the wheel.

10. In a broadcast seeder, the combination, with a hopper B, and a shaft D, extending upward therethrough, of a feed-wheel mounted upon the shaft within the hopper, a distributing-plate also mounted upon the shaft and provided with wings or blades, a gear-wheel mounted loosely upon the shaft and provided with lugs adapted to engage the plate, and a spring secured to the wheel and plate whereby the initial movement of the gearing may be taken up by the spring.

407,658. ROTARY HARROW. JAMES R. HICKS, Kansas City, Mo. Filed Sept. 28, 1888. Serial No. 286,640. (No model.)



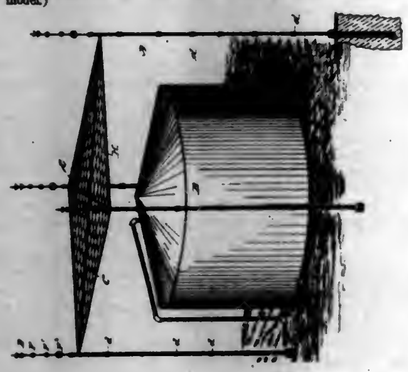
Claim.—In a rotary harrow, the combination, with two similar harrow-frames A A, that are circular and each composed of a central hub-plate G, having upright flange *g*, cap-plate E, bolts *k*, and spaced arms *c*, of king-bolts *b*, located in central perforations of said plates G and E, and two sets of anti-friction rolling devices that are loosely held between and in contact with the king-bolts and the upright flanges of said hub-plates, substantially as set forth.

407,659. WELDING COMPOUND. HIRAM G. HICKS, Worcester, Mass. Filed Dec. 6, 1888. Serial No. 292,810. (No specimens.)

Claim.—1. A compound for the purposes of welding, toughening, and refining steel, consisting of borax, sal-ammoniac, carbonate of iron and plaster-of-paris, in combination, substantially as hereinbefore set forth.

2. A compound for use in welding, refining, or treating steel, composed of borax, sal-ammoniac, carbonate of iron, and plaster-of-paris, combined in the proportions substantially as specified, and prepared in the manner substantially as described.

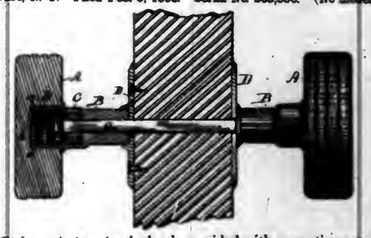
407,660. SYSTEM OF PROTECTION FROM LIGHTNING. CHAS. F. HILL, Hazleton, Pa. Filed Nov. 16, 1888. Serial No. 291,024. (No model.)



Claim.—1. A system for protecting receivers of inflammable or explosive substances from lightning, consisting of a cordon of poles located some distance from the structure and having their upper ends extended above said structure, a metallic net suspended horizontally above the structure by the poles, and conductors connected to said net and embedded at their lower extremities in the earth, substantially as and for the purpose described.

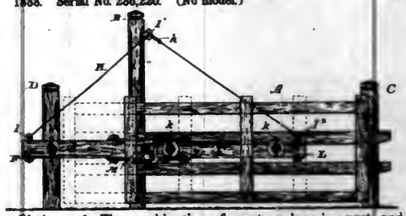
2. A system for protecting receivers of inflammable or explosive substances from lightning, consisting of a cordon of tubular metallic poles located some distance from the structure, a series of conductors arranged horizontally some distance above the tank and passing longitudinally through the poles from end to end thereof and having their lower ends coiled exteriorly around the lower embedded ends of said poles, and a metallic net connected to and supported by the horizontal portions of the conductors, said net being located some distance above and entirely isolated from the structure to be protected, substantially as described.

407,661. KNOB ATTACHMENT. FRANK A. HOLLENBECK, Syracuse, N. Y. Filed Feb. 9, 1888. Serial No. 263,550. (No model.)



Claim.—A door-knob shank provided with a mortise *c*, a nut inserted into the shank and accessible through the mortise, and a spring within the shank bearing against the nut, in combination with a threaded spindle, substantially as described.

407,662. GATE. FLOYD HOPKINS, Belvidere, Ill. Filed Sept. 24, 1888. Serial No. 286,220. (No model.)



Claim.—1. The combination of a gate, a hanging-post, and an anchor-post, with a jointed hanging-bar provided with a pivotal fastening securing it to the hanging-post, and having means of adjustment with the anchor or anchor-post, substantially as and for the purpose hereinbefore set forth.

2. The combination of a hanging-post, a jointed hanging-bar pivoted to the hanging-post and provided with wheels or bearings, a gate, a supporting wire, rod, or chain, and an anchor or anchor-post, substantially as and for the purpose hereinbefore set forth.

3. A gate supported on a jointed bar, extending horizontally, and pivoted at one side of the joint by a bolt to a hanging-post, and provided with means of adjustment, and having bearings whereon the gate may have endwise movement, substantially as and for the purpose described.

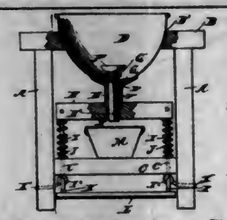
4. A hanging-post, an anchor or anchor-post, and a jointed hanger or bar pivoted to the hanging-post, in combination with a gate and a suspender supported at one point by the hanging-post and connected with the front part of the hanger, substantially as and for the purpose hereinbefore described.

407,663. WASH-BASIN. GEORGE W. HUCKABAY, Garfield, La. Filed Sept. 12, 1888. Serial No. 285,201. (No model.)

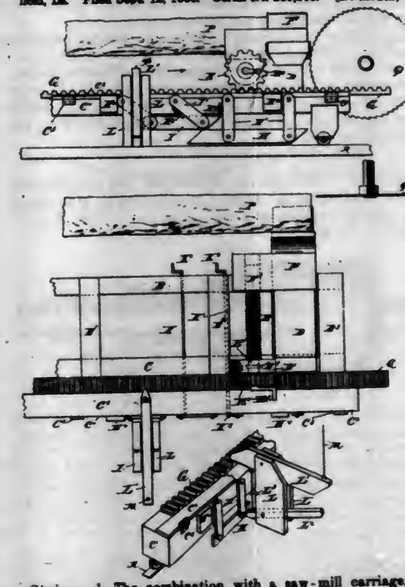
Claim.—1. The combination, with the frame A, its top B, with opening B', and the wash-basin D, having an extension E, the lower end thereof seated in a cross-bar H, provided with an opening H', of the valve-stem F', secured in the opening of the cross-bar at one end, its upper end passing through the extension and into the bowl, and having on its upper end a bowl-shaped valve F, and the said extension and stem having a space between them to form a waste-passage, substantially as specified.

2. The combination, with the frame, its top B and opening B', and the wash-basin seated in said opening and having a downward extension E, of the valve F, mounted on the valve-stem F', located in said extension, said extension and stem having a space between them to form a waste-pipe, the valve-seat G, the spring G', interposed between the valve-seat and valve, the cross-bar H, having an opening communicating with the space between the extension and stem, said extension located in a seat in the bar, and the valve-stem secured by a pin to said bar, the bar C, with openings C', the rods I, with their upper ends secured to bar H and passing through said openings of bar C and having loops I', the springs J J, interposed between the bars H C, the levers K K, connected to said loops and fulcrumed to the frame, and the foot-piece L, secured to said levers, all arranged to operate as set forth.

407,668.



407,664. SAW-MILL SET-WORKS. GEORGE W. HUCKABAY, Garfield, La. Filed Sept. 12, 1888. Serial No. 285,202. (No model.)



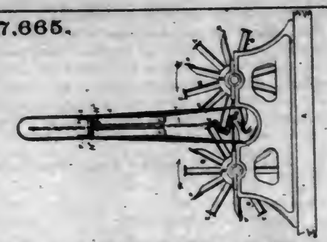
Claim.—1. The combination, with a saw-mill carriage, of a toothed bar seated thereon, an arm for intermittently locking the said bar, so as to permit the carriage to move independently of the same, the gear-wheel engaging said bar, the screw to which said gear-wheel is attached, and the movable head-block operated by said screw, and the bar or lever whereby the movement of the toothed bar is arrested and the parts operated to move the head-block, substantially as specified.

2. The combination, with a saw-mill carriage, of a toothed bar seated thereon, a beveled bar or bars suspended therefrom by hanger-arms L', the rods K K', having arms K^2 and cranks K^3, whereby the bar or bars may be elevated, the blocks for engaging the hanger-arms, the gear, screws, and head-block, the blocks L, and connected arms L' L^2, all arranged to operate substantially in the manner specified.

3. A saw-mill carriage provided with a toothed bar seated thereon and also provided with one or more bars suspended by hanger-arms, and a gear, screw, and head-block, in combination with the connected arms L' L^2, substantially as specified.

407,665. ROTARY BRAKE. WILLIAM S. JOHNSTON, Newtownards, County of Down, Ireland. Filed Nov. 2, 1887. Serial No. 254,057. (No model.) Patented in England May 14, 1887, No. 7,060, and in Germany Oct. 25, 1887, No. 43,490.

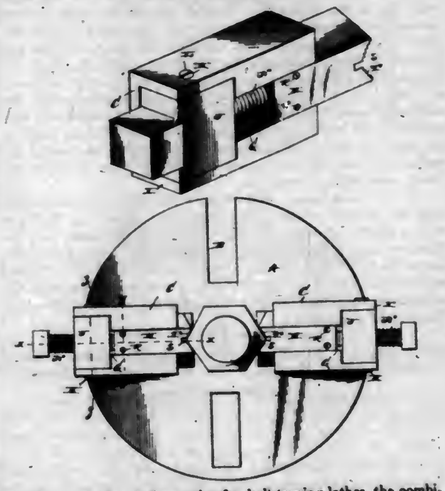
407,665.



Claim.—1. In a machine for breaking, scutching, or cleaning flax, &c., two beaters whose circles of rotation intersect, each provided with alternating radial and tangential blades, in combination with ways and traveling clamps to guide and bring the fiber within the range of such beaters, substantially as described.

2. In a machine for breaking, scutching, and cleaning flax, &c., a pair of beaters whose circles of rotation intersect, provided with alternating radial and tangential blades, the latter having wavy or fluted edges, substantially as described.

407,666. LATHE-CARRIER. JOHN M. KLEIN, Altoona, Pa. Filed Mar. 20, 1889. Serial No. 303,976. (No model.)



Claim.—1. In a lathe-carrier for bolt-turning lathes, the combination, with a block or box mounted adjustably and detachably upon the face-plate of a lathe, of a longitudinally-movable dovetailed slide, the projecting end of which has a toothed angular recess, and in the opposite end of which is swiveled the end of an operating-bolt, substantially as set forth.

2. In a lathe-carrier, the combination, with the block or casing mounted adjustably and detachably upon the face-plate of a lathe, of a longitudinally-movable dovetailed slide, a block or nut secured between the sides of the casing, and a bolt working in the said nut and having its inner end swiveled in a recess in the rear end of the sliding block, substantially as set forth.

3. In a lathe-carrier, the combination of a block or casing, a longitudinally-movable dovetailed slide having an angular toothed recess at its projecting end, a block or nut mounted in the said casing and having a limited oscillating or rocking motion, and a bolt extending through said nut and having its inner end swiveled in a recess in the dovetailed slide, substantially as set forth.

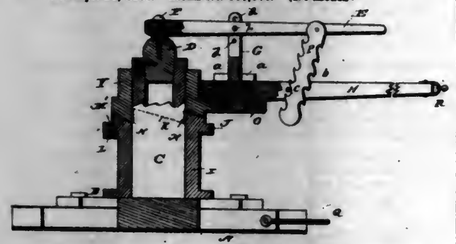
4. In a lathe-carrier, the combination of a block or casing, a dovetailed slide movable longitudinally therein, a nut arranged between the walls of the casing and mounted upon screw-threaded studs or trunnions, and a bolt working in said nut and having its inner end swiveled in the said slide, substantially as set forth.

5. In a lathe-carrier, the combination, with the block or casing having on its rear side a rectangular stud provided with a screw-threaded recess, of one or more washers or liners and the bolt to secure it to the face-plate of a lathe, substantially as herein described, and for the purpose set forth.

6. As an improvement in lathe-carriers, the combination of a

block or casing having on its rear side the rectangular stud provided with a screw-threaded recess, a dovetailed slide movable longitudinally in the said casing and having an angular toothed recess at its projecting end, and a bolt working in a nut which has a limited rocking or oscillating motion between the walls of the casing, the inner end of said bolt being swiveled to the longitudinally-movable slide, substantially as and for the purpose herein set forth.

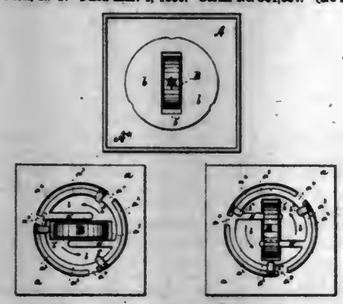
407,667. STUMP-PULLER. OSCAR A. KLEYE, Sigourney, Iowa. Filed Apr. 26, 1888. Serial No. 308,676. (No model.)



Claim.—1. In a stump-puller, the combination, with the cruciform base, of the hollow post arranged thereon, the toothed drum arranged on said post and adapted to receive a winding-rope, the cylinder Y, having an arm for the attachment of the hitch-beam and provided on its under side with a toothed face, the bearing-block arranged in the upper end of the hollow post and beveled, as shown, the hitch-beam secured to the arm of the upper drum-section, the standards secured to said beam, the adjusting-lever journaled in said standards and having one end connected with the bearing-block in the post, and the depending arm pivoted to the lever and having oppositely-directed teeth, and adapted to engage a pin on the hitch-beam, substantially as specified.

2. In a stump-puller, substantially as described, the combination, with the cylinder, of the hitch-beam secured thereto and having a stud or pin, the adjusting-lever fulcrumed in standards rising from the hitch-beam and having one end journaled on a block arranged in the top of the hollow post, and the depending arm pivoted to the adjusting-lever and having its opposite sides provided with oppositely-directed teeth and adapted to engage the stud or pin in the hitch-beam, substantially as specified.

407,668. HOLDER FOR FINGER-RINGS. CHARLES A. KROH, New York, N. Y. Filed Mar. 1, 1889. Serial No. 301,657. (No model.)



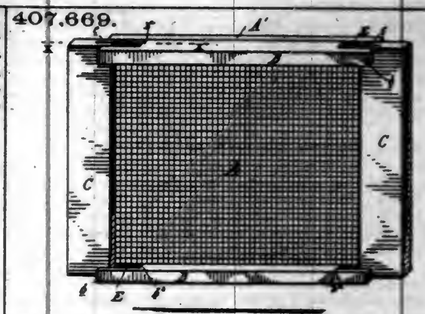
Claim.—1. The combination of plate a, having an opening that is traversed by a horn projecting partially across the opening, with a slotted plate b, adapted to be revolved above plate a, substantially as specified.

2. The combination of fixed plate a, having a central opening traversed by a horn, and a surrounding slot a^2, traversed by radial arms, with a superposed movable plate b, having a central slot, and prongs b^2, that engage the slot a^2 of plate a, substantially as specified.

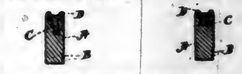
407,669. WINDOW-SCREEN. FRANK LEDUC and AMBROSE LEDUC, Detroit, Mich. Filed Oct. 30, 1888. Serial No. 289,558. (No model.)

Claim.—In a window-screen, the combination of the main frame A with the supplemental rails B, provided with the arm b, shoulder b^2, and groove b', the wing C, having the slot c to hold the rod D, the guide-rod D, reciprocating in the groove b' and provided with the arm d', to be inserted in the wing C, and arm d, to engage with the stop F in the groove b', the coiled spring sleeved on the guide-rod D, and the stop F, as and for the purposes set forth.

407,669.



407,670. ELASTIC-FACED TYPE. EDWIN A. LELAND, New York, assignor to Leonard Richardson, Brooklyn, N. Y. Filed Aug. 8, 1888. Serial No. 282,206. (No model.)

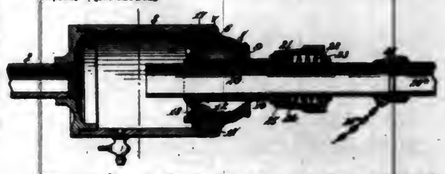


Claim.—1. As a new article of manufacture, a printing-type the body of which is composed of vulcanized fiber having a printing-face, substantially as described.

2. A printing-type the body of which is composed of vulcanized fiber having a yielding printing-face, substantially as described.

3. As a new article of manufacture, an elastic-faced printing-type consisting of a body of vulcanized fiber having at one end an undercut groove and a separate elastic printing-face having a flexible tongue cemented into said groove of the vulcanized-fiber body, substantially as described.

407,671. COUPLING FOR STEAM-PIPES FOR RAILWAY-CAR HEATING APPARATUS. EDWIN A. LELAND, Brooklyn, N. Y., assignor to Leonard Richardson, same place. Filed Apr. 16, 1889. Serial No. 307,430. (No model.)



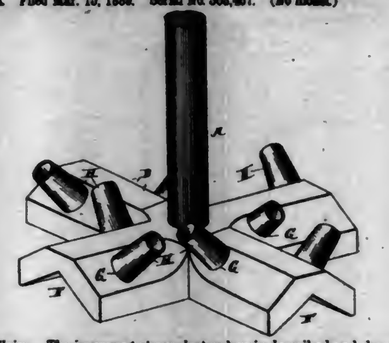
Claim.—1. In a coupling for the steam and other pipes of railway-cars, the combination, with the train-pipe having a cylindrical shell forming an expansion-chamber and provided with a zonoidal section, of a spherical section fitting the latter and containing an internal sleeve having at its outer end an attached conical packing-box, a packing-ring in said conical packing-box, a spring acting upon the packing-ring, and a coupling-pipe section telescoping in the said sleeve and conical packing-box, substantially as described.

2. In a pipe-coupling for the steam-pipes of railway-cars, the combination, with the train-pipe, of a cylindrical casing forming an expansion-chamber, a short cylindrical section threaded into one end of said casing and having a zonoidal section, a cylindrical section having a spheroidal bearing fitting the zonoidal section, an annular packing located between the spheroid and the inner face of the short cylindrical section, and spring-actuated plungers acting on the annular packing, substantially as described.

3. In a coupling for the steam and other pipes of railway-cars, the combination, with the train-pipe having a cylindrical shell forming an expansion-chamber and provided with a zonoidal section, of a spherical section fitting the latter and containing an internal sleeve having at its outer end an attached packing-box, a coupling-pipe section telescoping in the said sleeve and packing-box and provided at its outer end with a collar, and a chain secured to said collar for limiting the outward sliding movement of the telescoping pipe-section, substantially as described.

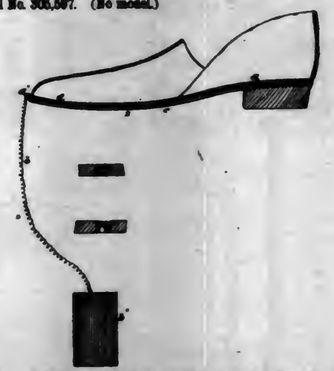
4. In a coupling for the steam-pipes of railway-cars, the combination, with the coupling-pipe section having both angular and telescopic adjustment, of a spring-buckle supporting the same and consisting of an eye or loop surrounding the pipe, a rod on said eye passing through a screw-cap turned upon a cylindrical shell or casing which contains a spiral spring supporting said rod, and a screw-cap turned upon the upper end of the shell and connected to the platform-bottom, substantially as described.

407,672. CHURN-DASHER. LANDAN M. LITTLEFIELD, Valdosta Ga. Filed Mar. 15, 1889. Serial No. 303,467. (No model.)



Claim.—The improved churn-dasher herein described and shown, consisting of the intersecting cross-bars secured rigidly together and provided in their under sides with longitudinal concave channels, and having inclined openings extending in opposite directions through the opposite walls of said channels, and the straight tubes secured in said openings and projecting upward above the cross-bars, as set forth.

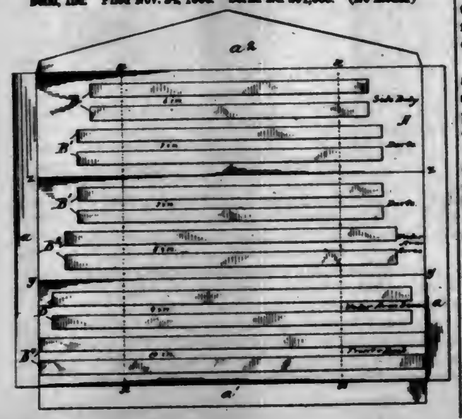
407,673. GALVANIC SHOE. JOHN S. MELLON, St. Louis, Mo., assignor of six-tenths to G. W. Lewis, same place. Filed Apr. 1, 1889. Serial No. 305,567. (No model.)



Claim.—1. The combination consisting of the shoe, the metallic inner sole, and the metallic rivets inserted through and in combination with the shoe-sole, as and for the purposes mentioned.

2. The combination consisting of the shoe, the metallic inner sole, the metallic rivets inserted through and in combination with the shoe-sole, and the metallic ground-connection a', b, and b', as stated herein.

407,674. PACKAGE FOR DRESS-STAYS. CHARLES MOSHER, South Bend, Ind. Filed Nov. 24, 1888. Serial No. 291,805. (No model.)

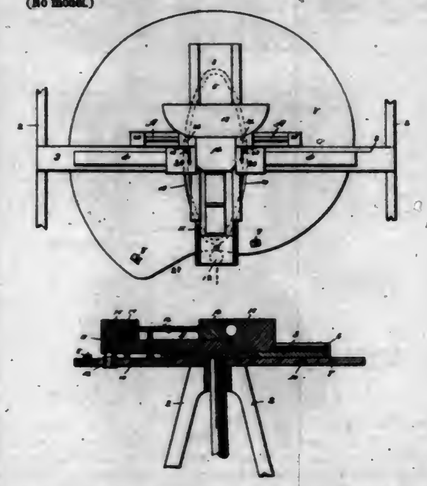


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Claim.—A dress-stay package consisting of the rectangular sheet A, having the set or complement of dress-stays B, B', B^2, B^3, and B^4, secured on its inner face by lines of stitching x x, and having printed thereon characters designating the nature and length of said stays, said sheet being provided with marginal flaps a and a' at the sides and bottom to fold inward and protect the contents, and a flap a^2 at the top to fold over the body of the envelope when folded, the whole sheet being adapted to fold upon the transverse lines y y and z z to form a flat package or envelope to inclose and protect the stays, substantially as and for the purposes specified.

407,675. TUBE-BENDING MACHINE. JOHN F. McHUTT and HIRAM F. GRIMMEST, Warren, Ohio. Filed Mar. 19, 1889. Serial No. 303,931. (No model.)



Claim.—1. The combination, with a support and bed-plate, of a sliding bar provided with a former and oppositely-movable mandrels upon opposite sides of the former, substantially as herein described.

2. The combination, with a support and bed-plate, of a sliding bar provided with a clamp and former, a cam for operating this sliding bar, and oppositely-movable mandrels arranged upon opposite sides of the said former, substantially as described.

3. The combination, with a support and bed-plate provided with ways and a groove at right angles to the said ways, of a former and a bar moving in said groove, slides mounted on the ways, and pivoted mandrels mounted on the said slides, substantially as described.

4. The combination, with a bed-plate, of a former supported by the said bed-plate, a tube-clamp, slides upon opposite sides of the former and adapted to move in opposite directions, and pivoted mandrels upon the said slides, substantially as described.

5. The combination, with a support and bed-plate, of a former and clamp therefor, oppositely-moving slides located upon opposite sides of the former, pivoted mandrels upon these slides, and a cam provided with a groove for moving the said slides, substantially as described.

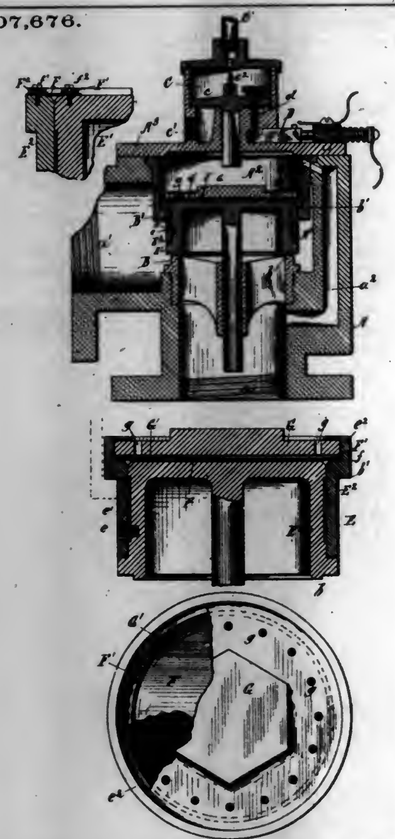
6. The combination, with a former, a sliding clamping-block, and a toggle-lever provided with an extension and connected to the said clamping-block, of vertically-moving pins adapted to operate the said lever, and means for operating the pins, substantially as described.

7. The combination, with a former and clamp, of oppositely-moving slides upon opposite sides of the former, and mandrels pivoted upon these slides, these mandrels being provided with inwardly-projecting rods and ring-dies, as and for the purpose described.

407,676. DOUBLE-SEATED VALVE. AUGUSTUS F. NAGLE, Chicago, Ill. Filed May 3, 1888. Serial No. 309,494. (No model.)

Claim.—1. The combination, with the valve-casing provided with two stationary seats, of the valve composed of two sections movable relatively to each other, and each provided with a seating-surface to fit the corresponding seat of the valve-casing, said sections being held

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to their seats under pressure independently of each other, substantially as and for the purposes specified.

2. The combination, with the valve-casing provided with two stationary valve-seats, of the valve composed of two independently-movable sections, each provided with a seating-surface to fit the corresponding valve-seat, and consisting of an inner section closed at one end and an outer hollow cylindrical section surrounding said inner section, substantially as and for the purposes specified.

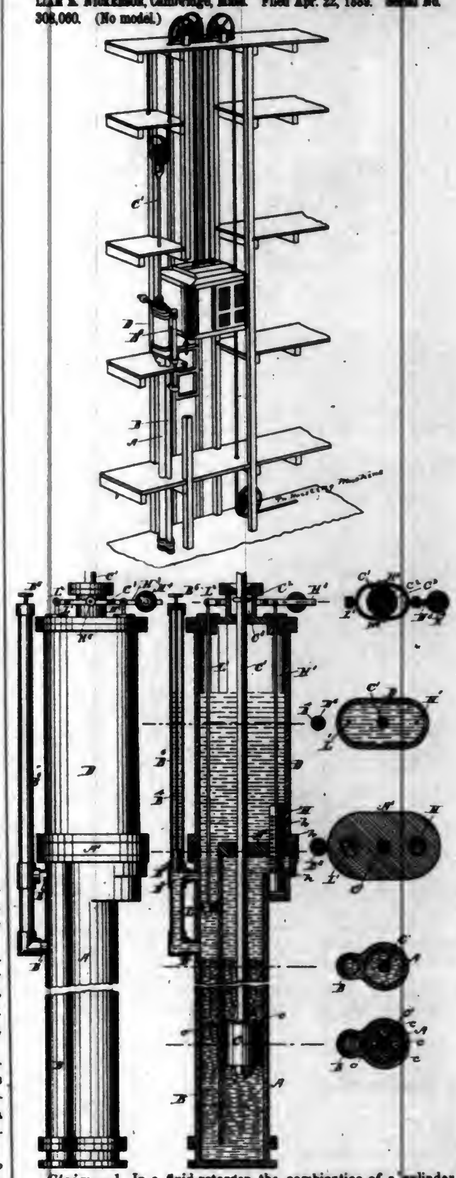
3. The combination, with the valve-casing provided with two stationary valve-seats, of the valve composed of an inner and an outer section movable the one upon the other, and each provided with a seating-surface to fit the corresponding valve-seat, and a flexible disk covering the joint formed by the meeting surfaces of the two sections, substantially as and for the purposes specified.

4. The combination, with the valve-casing provided with two stationary valve-seats, of a differential valve composed of two sections movable relatively to each other, and each provided with a seating-surface to fit the corresponding valve-seat, the effective external area of one section being greater than the similar area of the other, substantially as and for the purposes specified.

5. The combination, with the valve-casing provided with two stationary seats, of the valve composed of an inner and an outer section movable the one upon the other, and each provided with a seating-surface to fit the corresponding valve-seat, and a flexible disk closing the head of the outer section and adapted to bear upon the head of the inner section, substantially as and for the purposes specified.

6. The combination, with the valve-casing A, having seats B and B', of the valve E, composed of the inner section E', having seating-surface b, and the outer section E^2, fitting over and movable upon the section E', and provided with seating-surface b' and upwardly-extending threaded flange e^3, the flexible disk F, resting on a suitable seat at the base of said flange, and the nut G, threaded to fit said flange and having apertures g, substantially as and for the purposes specified.

407,677. FLUID SPEED-REGULATOR FOR ELEVATORS. WILLIAM R. NICKERSON, Cambridge, Mass. Filed Apr. 22, 1889. Serial No. 308,060. (No model.)

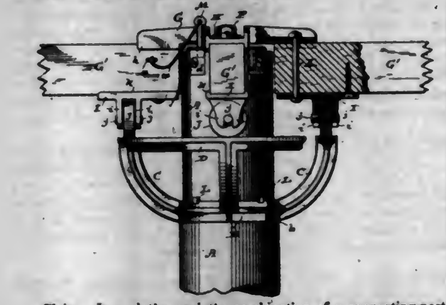


Claim.—1. In a fluid-retarder, the combination of a cylinder and piston with a balanced valve, a disk movable by the flow of the fluid, and connections between the disk and the valve whereby the undue velocity of the flow of the fluid operates the valve and restricts the movement of the piston, all substantially as described.

2. In a fluid speed-regulator, the cylinder A, piston C, piston-rod C', balanced valve H, pipe B, having a disk L, and mechanism for connecting the disk L and balanced valve H, substantially as and for the purpose set forth.

3. In a fluid speed-regulator, the cylinder A, provided with a short passage, piston C, piston-rod C', balanced valve H, pipe B, disk L, and connecting mechanism between the disk L and valve H, and regulating-plunger B^3, substantially as and for the purpose set forth.

407,678. CLOTHES-DRIER. ANDREW J. PEIRCE, Madison, Wis., assignor of one-half to Nicholas Konrad, Jr., same place. Filed May 7, 1888. Serial No. 273,101. (No model.)



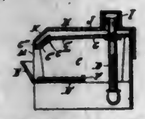
Claim.—In a clothes-reel, the combination of a supporting-post, a reel-head having its bearing on the post, beams arranged beneath the arms of the reel-head, plates secured to the under side of the beams and bolted to the latter and said arms of the reel-head, forked ears depending from the plates, wheels journaled in the ears, and a circular track for the wheels, substantially as set forth.

407,679. CAR-COUPLING. JAMES A. PERDUE, Belfield, Va. Filed Mar. 20, 1889. Serial No. 304,044. (No model.)



Claim.—In a car-coupling, a buffer A, having an annular chamber therein, brackets g g on the top of said buffer, a coupling-pin mounted in said brackets and made of a simple bar bent to form a long arm h, a short arm i, and a pivoting-loop j, a groove f in said buffer for the reception of the lower end of said short arm, a block l, secured to said buffer for the support of the long arm, a rod m, pivoted to said buffer and provided with a crank at its end, and a lug n on said rod and adapted to engage with the long arm of the coupling-pin, for the purpose set forth, substantially as described.

407,680. HYDROCARBON-BURNER. CHARLES H. PHELPS, Cleveland, and EVAN A. EDWARDS, Toledo, Ohio. Filed Mar. 29, 1889. Serial No. 305,244. (No model.)



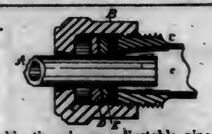
Claim.—1. In a hydrocarbon-burner, a burner-plate formed with a downwardly-extending portion provided with a ledge, an upper plate sustained at some distance from the lower plate and formed with a corresponding downwardly-extending portion, and having a hood forming a chamber, in combination with an oil-supply pipe extending through the lower plate and into the hood formed in the upper plate as and for the purpose set forth.

2. A hydrocarbon-burner comprising a base portion, a base-plate formed with an upwardly-inclined outer edge and an upturned inner edge, in combination with two parallel burner-plates having downwardly-inclined end portions and an oil-supply pipe in communication with the space between the burner-plates, as and for the purpose set forth.

407,681. DETACHABLE PIPE-JOINT. ISAAC B. POTTS, Columbus, Ohio. Filed Mar. 25, 1889. Serial No. 304,752. (No model.)

Claim.—1. In an adjustable pipe-joint, in combination with the heads or coupling-nuts and interposed union of the rings D and E tapering in the direction of the length of the pipe, one edge of each ring being straight and their abutting edges tapered or thicker upon one side than the other and the ring D split, substantially as described

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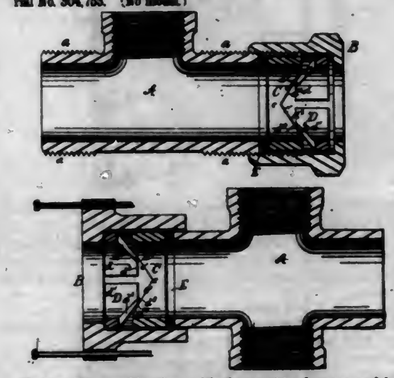


2. The combination, in an adjustable pipe-coupling, with the union or connected pipe end and coupling nut or head having a seat whose edge is curved, of the rings D and E, tapered in the direction of the length of the pipe, the ring D split and with rounded edge.

3. The combination, in an adjustable pipe-coupling, with the coupling nut or head, and rings D and E, tapered in the direction of the length of the pipe, of the union C, having recess c.

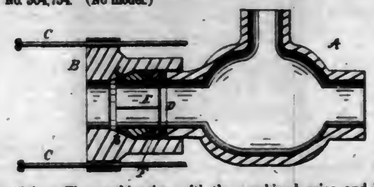
4. The combination, in an adjustable pipe-coupling, with the coupling nuts or heads and interposed union with recess in its interior, of the rings D and E, tapered in the direction of the length of the pipe, and packing interposed at the end of the union, substantially as described.

407,682. COMBINED DETACHABLE PIPE COUPLING AND BRANCH. ISAAC B. POTTS, Columbus, Ohio. Filed Mar. 25, 1889. Serial No. 304,753. (No model.)



Claim.—The combination, with the combined union and branch into which the ends of the pipe to be coupled are inserted, of the follower-ring C, formed with recess c upon each side, having inclined surfaces c', split clamp D, having inclined projections d^3 upon opposite sides, packing-ring E, adjacent the end of the union, and suitable means for applying power to said clamp, for the purposes specified.

407,683. COMBINED DETACHABLE PIPE COUPLING AND BRANCH. ISAAC B. POTTS, Columbus, Ohio. Filed Mar. 25, 1889. Serial No. 304,754. (No model.)



Claim.—The combination, with the combined union and branch A, of coupling-head B, formed with a tapered seat b, collar E in sections and with cylindrical interior and tapered exteriorly from center to each end and fitting against the seat b of the head B, ring F, having tapered interior and fitting upon the inner end of collar E, and packing D, interposed between the union and ring F, all constructed and arranged to operate as described.

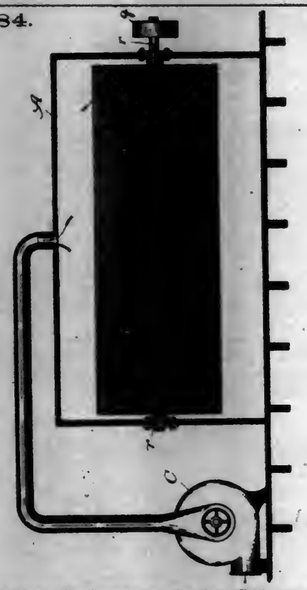
407,684. PROCESS OF TREATING NUTS. ALBERT H. PRATT, Chicago, Ill. Filed Mar. 21, 1889. Serial No. 304,169. (No specimens.)

Claim.—1. The process of treating nuts, which consists in tumbling them with dry pulverized coloring material, substantially as described.

2. The process of treating nuts, which consists in tumbling them to cleanse them of dirt on their surfaces, and then coloring them by tumbling them with a dry pulverized coloring material, substantially as described.

3. The process of treating nuts, which consists in tumbling them with a dry pulverized coloring material, thereby imparting color to

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them, and with powdered soapstone, thereby polishing them, substantially as described.

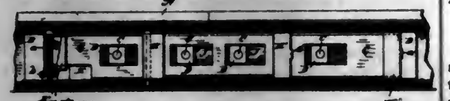
4. The process of treating nuts, which consists in tumbling them with a dry powdered Italian sienna, thereby imparting color to them, and with powdered soapstone, thereby polishing them, substantially as described.

407,685. REFRIGERATOR. WILLIAM A. PRESTON, Fort Branch, Ind. Filed Feb. 9, 1889. Serial No. 299,251. (No model.)



Claim.—In a refrigerator, the combination of the body thereof provided with an opening H in one of its sides, an ice-chamber so suspended in the refrigerator as to form, with the walls thereof, side passages C and D, this ice-chamber being constructed of non-conducting walls and having an open side B leading into the passage C, a non-conducting bridge-wall G over the top of the passage C, the inclined non-conducting partition I, depending from the bottom of the ice-chamber and extending to near the bottom of the refrigerator, forming passages C' and *c*, and a fresh-air-inlet pipe J, provided with an extension J' extending to the lower end of the said passage C', as and for the purposes herein set forth.

407,686. NUT-LOCK. WILLIAM A. PRESTON, Fort Branch, Ind. Filed Feb. 28, 1889. Serial No. 301,477. (No model.)

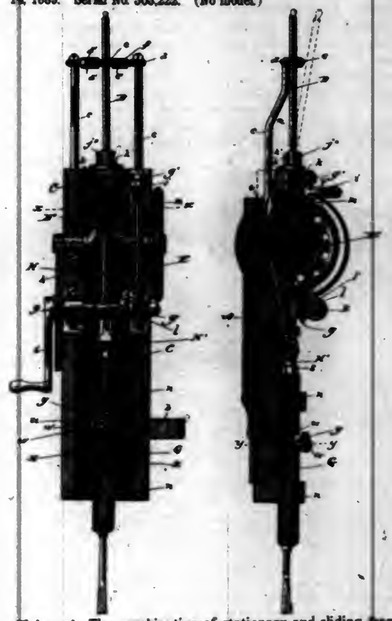


Claim.—The combination of the rails, the fish-plates, the connecting-bolts provided with nuts D, a bar E, clamped to the face of one of the fish-plates and provided with loops F F', the latter loop carrying a stop *a'* and the former a removable pin *a*, a main locking-bar G, held removably against the face of the said bar E by means of the loops F F', and provided with loops H H' and longitudinal slots for the reception of the nuts D, the said loops H H' being provided, respectively, with a removable pin and a stop, a plate J, placed against the face of the bar G between the loops H H', nuts D', for clamping this plate against the face of bar G, a supplemental bar I, held removably against the plate J by the loops H H' and provided with slots for the reception of the nuts D', as and for the purpose set forth.

407,687. LIVER AND KIDNEY REMEDY. ALFRED H. RAMEY, Aurora, Ill. Filed Apr. 8, 1889. Serial No. 306,434. (No specimens.)

Claim.—The herein-described composition of matter to be used for diseases of the kidneys, liver, and urinary organs, consisting of fluid extract of buchu, spirits of niter, acetate of potassium, fluid extract of couch-grass, fluid extract of juniper-berries, and granulated sugar, in substantially the proportions specified.

407,688. DRILL. AUGUSTUS RENETZKY, Lincoln, Ill. Filed Mar. 14, 1889. Serial No. 303,222. (No model.)



Claim.—1. The combination of stationary and sliding frames, a divided box upon the former, a short shaft journaled in the sliding frame and provided with a ratchet-wheel, a screw pivotally attached to the said short shaft and clamped between the said divided box, and a rock-shaft and pawl for operating the said ratchet-wheel, as described.

2. The combination of the drill-holder G, recessed at its upper end, a headed connecting-rod H', inserted in the said recess, a bushing *c*, tapped into the said recess, a cushion interposed between the headed end of the rod H' and the bottom of the said recess, and a metallic washer inserted between the cushion and headed end of rod H', as and for the purpose set forth.

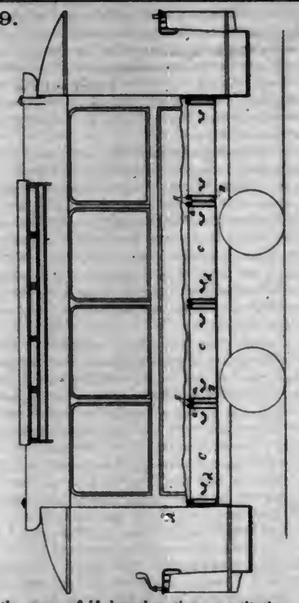
3. The combination of a cylindrical drill-holder and mechanism for reciprocating it, a ratchet-wheel secured to the said holder, a divided collar upon the said holder, a spring-actuated pawl engaging the said ratchet-wheel, and reversely-inclined ways for rotating the said collar, substantially as described.

407,689. CHARGING SYSTEM FOR SECONDARY BATTERIES. ANDREW L. RIKER, New York, N. Y. Filed May 9, 1889. Serial No. 310,200. (No model.)

Claim.—1. A car or other vehicle having compartments all open at the side for the admission of batteries and transverse rails near the top of each compartment, in combination with a series of battery-vessels having rollers adapted to run on said rails, substantially as described.

2. The combination, with secondary batteries having rollers for

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suspending the same, of U-shaped castings constituting supporting-rails, each casting forming two rails, substantially as described.

3. A charging system for electric railways employing secondary batteries, in which the batteries are supported by grooved rollers running on rails transverse to the vehicle, said system comprising a transfer-truck having transverse rails corresponding in position and number to those on the vehicles, and a supporting frame-work having similar rails and adapted to receive the batteries from said truck and support them while being charged, substantially as described.

4. In a charging system for secondary batteries, the combination, with a transfer-truck having rails for supporting a series of batteries, of a frame-work having corresponding rails arranged in tiers one above the other and an elevator for raising said truck to the level of any of said tiers, substantially as described.

5. The combination, with a series of secondary batteries provided with rollers, two of which, on opposite sides of the vessel, are connected with the battery elements to act as terminals, of a series of supporting-rails for said rollers, the rails at the extreme ends being connected with the terminal wires of a circuit, and the adjacent intermediate rails being electrically connected, so that the said circuit is completed when the batteries are put in place upon their respective rails, substantially as described.

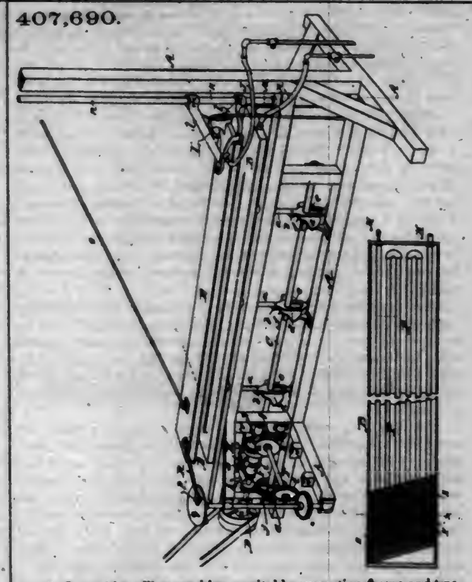
6. In a charging system for secondary batteries, a frame-work adapted to receive said batteries for charging, said frame-work comprising uprights and two or more series of supporting-rails arranged in tiers one above the other, in combination with a transfer-truck having rails corresponding with those on the frame-work, substantially as described.

7. The frame-work for holding secondary batteries while being charged, said frame-work being provided with several series of rails arranged in horizontal tiers, in combination with a charging-dynamo, a main circuit, parallel branch circuits leading therefrom to the end rails of each horizontal tier, respectively, the intermediate adjacent rails being electrically connected, and a series of battery-vessels provided with rollers for running on said rails, said rollers constituting the terminals of the batteries, substantially as described.

407,690. WHIP-ROLLING MACHINE. ELKANAH RISE, Westfield, Mass., assignor to James Noble, Jr., same place. Filed Dec. 17, 1888. Serial No. 293,837. (No model.)

Claim.—1. In a whip-rolling machine, a suitable supporting-frame, and two whip-rolling tables sustained thereon, one thereof being by its inner end pivotally supported on a part of said frame, whereby it is adapted to be reciprocatingly swung across the working-face of the other table, and a stay-rod connected to said frame and to the outer end of said table, holding said outer end more separated from the opposing table than is its inner end, whereby a slight angle between the working-faces of said table is secured, substantially as described.

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2. In a whip-rolling machine, a suitable supporting-frame and two whip-rolling tables, movable supports mounted on said frame, on and by which one of said tables is carried and presented toward and away from the opposing table, and the other of said tables pivotally supported by its inner end on a part of said frame, whereby it is adapted to be reciprocatingly swung across the working-face of the adjacent table, and a stay-rod connected to said frame and to the outer end of said table, holding the said outer end more separated from the opposing table than is the inner end, whereby a slight angle between the working-faces of said tables is secured, substantially as described.

3. In a whip-rolling machine, a suitable supporting-frame and two whip-rolling tables, movable supports mounted on said frame, on and by which one thereof is carried and presented toward and away from the opposing table, and the other of said tables pivotally supported by its inner end on a part of said frame, whereby it is adapted to be reciprocatingly swung across the working-face of the adjacent table, and a stay-rod connected to said frame and to the outer end of said table, holding the said outer end more separated from the opposing table than is the inner end, whereby a slight angle between the working-faces of said tables is secured, combined with a crank-pin and means for securing its revolution, and a pitman-rod secured to said crank-pin and to said pivotally-mounted table, substantially as described.

4. In a whip-rolling machine, the lower table B, the vertically-movable supporting-posts *a* therefor, lateral abutments *b* on one or more of said posts, and a horizontal shaft C, having one or more cams *d*, on which the said post-abutments bear, combined with the upper table E, supported for a lateral vibration, and means for so vibrating said table, substantially as and for the purpose described.

5. In a whip-rolling machine, in combination, two whip-rolling tables, one of which is adapted to have a reciprocatory movement relative to the other, and one of said tables having its working-surface constituted by a series of laterally-extending strips of spring metal, substantially as and for the purpose described.

6. In a whip-rolling machine, in combination, two whip-rolling tables, one of which is adapted to have a vibratory motion relative to the other, and one of said tables having its working-surface constituted by a series of laterally-extending strips of spring metal of arch form secured by their ends to the edge portions of the table, substantially as and for the purpose described.

7. In a whip-rolling machine, in combination, two whip-rolling tables, one of which is adapted to have a vibratory motion relative to the other, and one of said tables being of box form, having its working-surface constituted by a series of laterally-extending strips of spring metal secured by their ends to the side walls of the table, and steam-pipe coils disposed within the chamber of said table, substantially as described.

8. A whip-rolling machine comprising upper and lower whip-rolling tables, the former supported with its face at a slight angle to the other and pivotally hung at its least separated end for a horizontal

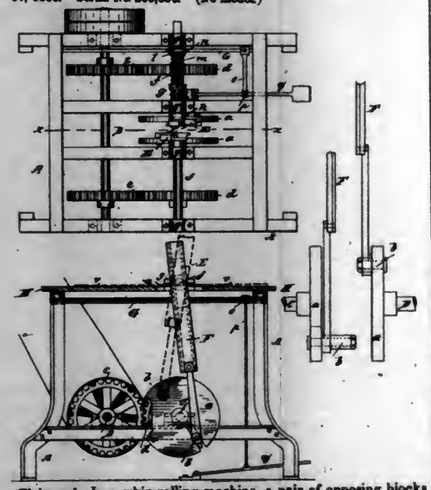
lateral swing therefrom, and the latter having an intermittent vertical vibratory movement, an intermittently-rotating shaft having a crank-pin, and a pitman-rod connected thereto and to said upper table, for the purpose described.

9. In a whip-rolling machine, the combination, with the lower table B, vertically-movable supporting-posts therefor, and the upper vibratory table E, of a shaft C, having the cams thereon for engagement with the said posts and having a gear *y* thereon, a driving-shaft D, having a gear *v* thereon and a clutch therefor, a counter-shaft *i*, geared to receive rotation from the said driving-shaft and to impart rotation to said cam-shaft C, a counter-shaft F, having a gear engaging with said clutching-gear *v*, a shaft G, geared to said counter-shaft F, having a crank-pin, the pitman-rod R, connected to said crank-pin and said upper table, a slide-rod H, having an engagement with said gear-clutch, and cam-inclines carried by a rotary part of the machine for moving said slide-rod, substantially as and for the purpose described.

10. In a whip-rolling machine, the combination, with the driving-shaft D and the gear *v* and clutch therefor, of the cam-shaft C, having thereon the gear *y*, provided with the cam-inclines on its opposite sides, and the slide-rod H, provided with the legs *x x*, located in the path of said cam-inclines to be actuated thereby to move said rod H, and also having an arm *w*, for operating the gear-clutch, substantially as described.

11. In a whip-rolling machine, a suitable supporting-frame and two whip-rolling tables interiorly provided with steam-chambers, movable supports mounted on said frame, on and by which one of said tables is carried and presented near and away from the opposing table, and the other of said tables pivotally supported by its inner end on a part of said frame, whereby it is adapted to be reciprocatingly swung across the working-face of the adjacent table, and a stay-rod connected to said frame and to the outer end of said table, holding the said outer end more separated from the opposing table than is said inner end, whereby a slight angle between the working-faces of said table is secured, combined with flexible steam supply and exhaust conduits leading to and from said chambered tables, substantially as described.

407,691. WHIP-ROLLING MACHINE. ELKANAH RING, Westfield, Mass., assignor of one-half to James Noble, Jr., same place. Filed Dec. 17, 1888. Serial No. 293,838. (No model.)



Claim.—1. In a whip-rolling machine, a pair of opposing blocks E E, having longitudinal slideways therein and pivotally mounted for swiveling movements, combined with whip-rolling boards longitudinally movable in said ways, and means for imparting thereto relatively-reversed longitudinal motions and relatively-reversed lateral vibratory motions with their faces in substantially parallel planes, substantially as and for the purpose described.

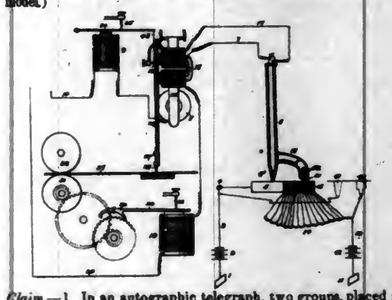
2. In a whip-rolling machine, a pair of opposing blocks E E, having longitudinal slideways therein and pivotally mounted for a swiveling movement, combined with a pair of whip-rolling boards longitudinally movable in said ways, and a pair of revolving eccentric-pins, one set to rotate in advance of the other, to which the lower extensions of said boards are connected, substantially as and for the purposes described.

3. In a whip-rolling machine, a pair of opposing blocks E E, having longitudinal slideways therein, and journaled arbors on which said blocks are mounted for oscillating movements, one of which arbors is movable endwise with or against a spring-pressure, and means for longitudinally moving said arbor, combined with a pair of whip-rolling boards longitudinally movable in said ways, and a pair of revolving eccentric-pins, diametrically opposite each other, to which the lower extensions of said boards are connected, substantially as and for the purpose described.

4. In a whip-rolling machine, a pair of opposing blocks E E, having longitudinal slideways therein, and journaled arbors on which said blocks are mounted for oscillating movements, one of which arbors is movable endwise with or against a spring-pressure, combined with a pair of whip-rolling boards longitudinally movable in said ways, and a pair of revolving eccentric-pins diametrically opposite each other, to which the lower extensions of said boards are connected, the rock-shaft G, having the radial arms *o* and *n*, the latter being in engagement with said longitudinally-movable arbor, a treadle-lever, and the rod connected thereto and to said radial arm *o*, substantially as and for the purpose described.

5. In a whip-rolling machine, in combination, a driving-shaft having the gears *e e* and a supporting-frame therefor, the journals *g g* on said frame, arbors supported for oscillation in said journals, one of which is movable endwise with or against a spring-pressure, the opposing blocks carried by said arbors having ways therein, the counter-shafts C D, provided with the opposing face-plates having the eccentric-pins diametrically opposite each other, the whip-rolling boards adapted to play in the ways of said blocks and by their lower extensions connected with said eccentric-pins, the rock-shaft G, having radial arms *o n*, the former engaging said longitudinally-movable arbor, a treadle-lever *q*, and a rod connected thereto and to said radial arm *o*, all substantially as shown and described.

407,692. AUTOGRAPHIC TELEGRAPH. JAMES H. ROBERTSON, Rutherford, N. J., assignor to the Writing Telegraph Company, of New York. Original application filed Feb. 3, 1885, Serial No. 154,796. Divided and this application filed May 21, 1889. Serial No. 311,516. (No model.)



Claim.—1. In an autographic telegraph, two groups, placed side by side, of insulated conducting-strips connected to resistances, in combination with a contact-maker or circuit-closer in the form of a stylus the contact-points of which constitute the tracing-points, substantially as described.

2. In an autographic telegraph, the combination, with the receiving stylus or pen, of two electro-magnets and two armatures pivoted to move at right angles to each other, one of said armatures pivoted to the other and the said two armatures arranged to operate said stylus, whereby the latter is moved in a straight line by either of said magnets, substantially as described.

3. In an autographic telegraph, the combination, with the receiving stylus or pen, of two electro-magnets and two armatures pivoted to move at right angles to each other, one of said armatures pivoted to the other and carrying the said stylus, and the said two armatures arranged to operate said stylus, substantially as described.

4. In an autographic telegraph, the combination, with the receiving stylus or pen, of two electro-magnets and two armatures pivoted to move at right angles to each other, one of said armatures pivoted to the other and having its electro-magnet fastened to the latter, and the said two armatures arranged to operate said stylus, substantially as described.

5. In an autographic telegraph, the combination, with the receiving-stylus laterally movable in any direction, of the sending-stylus provided with two contact-points, an electro-magnet in circuit with one of the contact-points of the sending-stylus, and an armature therefor connected to the said receiving-stylus for lifting the latter from the paper, substantially as described.

6. The combination, with the receiving stylus or pen laterally movable in any direction, of the sending-stylus provided with two contact-points, an electro-magnet in circuit with one of the contact-points of the sending-stylus, an armature for said magnet, and a cord connecting the stylus with said armature for the purpose of lifting the said styles when the circuit is broken and the spring has retracted said armature, substantially as described.

7. The combination, with the receiving-stylus and a pair of pressure-rollers between which the paper is held, of the sending-stylus provided with two contact-points, an electro-magnet in circuit with one of the contact-points of the sending-stylus, an armature therefor operating an escapement, and a spring and system of gears connected with said pressure-rollers for imparting an intermittent movement to the latter, substantially as described.

8. The combination, with the receiving-styles and the pressure rollers, of two electro-magnets and their armatures, one of said magnets arranged in circuit with one of the contact-points of the sending-stylus and the other magnet in circuit with the other contact-point of said stylus, a connection from one of said armatures to the stylus for lifting the same, and an escapement of a clock-work mechanism geared with the pressure-rollers operated by the other armature for feeding the paper, substantially as described.

9. A combined sending stylus or tracer and contact-maker provided with two contact-points serving as tracers insulated from each other and constructed of a size and form to be held and operated by the hand, substantially as described.

10. A combined sending stylus or tracer and contact-maker constructed to be held and operated by hand, and provided with two contact-points, one of which is spring-seated, substantially as and for the purpose set forth.

11. A combined sending stylus or tracer and contact-maker constructed to be held and operated by hand, and provided with two contact-points insulated from each other, one of which consists of a pin suitably guided and pressed forward by a spring connected to said pin at one end and to the casing at the other, substantially as described.

12. A sending-stylus or contact-maker provided with two contact-points, one of which is formed on the handle constructed to be held in the hand and the other on an insulated arm extending from the same near the lower end thereof, substantially as described.

13. In an autographic telegraph, the combination of two magnets and two vertically-arranged armatures therefor pivoted so as to swing at right angles to each other, with a stylus or marking pen or pencil directly connected to the lower end of one of said armatures, substantially as described.

14. In an autographic telegraph, the combination, with a vertically-arranged armature provided with a guide attached to its lower end, of a marking-instrument loosely fitted in said guide, so as to freely move or slide therein, whereby the contact of the marking-instrument with the paper is insured during all the movements of the armature, substantially as described.

15. In an autographic telegraph, the combination, with a receiving pen or stylus laterally movable in any direction and a set of electro-magnets and armatures for moving said receiving-pen, of paper-feeding mechanism and an electro-magnet for controlling the latter for feeding the paper at intervals, substantially as described.

16. In an autographic telegraph, the combination, with a receiving pen or stylus laterally movable in any direction, a set of electro-magnets and armatures for moving said receiving-pen, and a pen-lifting mechanism, of paper-feeding mechanism and an electro-magnet for controlling the latter for feeding the paper at intervals, substantially as described.

17. In an autographic telegraph, the combination, with the receiving-pen laterally movable in any direction and a set of electro-magnets and armatures for moving said receiving-pen, of a stationary recording-surface, such as paper, over which the pen moves to reproduce the message, a feeding mechanism for moving the paper at times when the writing is suspended, an electro-magnet for controlling said feeding mechanism, and electrical connections including said magnet, and a circuit making and breaking means at the transmitter, whereby the operator at the transmitter can control the shifting of the paper in the receiver, substantially as described.

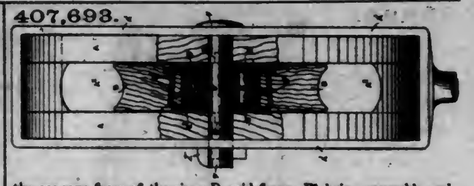
18. In an autographic telegraph, the combination, with the receiving stylus or pen, of two electro-magnets and two armatures pivoted to move at right angles to each other and connected at their operative ends, one of said armatures carrying the other one, together with the latter's adjusting means, substantially as described.

407,698. ROLLER-BEARING FOR PULLEY-BLOCKS. HENRY A. ROOKE, Liverpool, County of Lancaster, England. Filed Sept. 18, 1888. Serial No. 285,004. (No model.) Patented in England Dec. 6, 1887, No. 16,803.

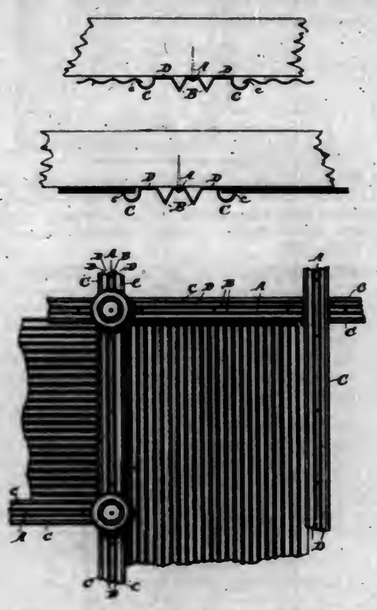
Claim.—1. In roller-bearings for pulley-blocks, the combination of the rollers C, the retaining-rings D, having equidistant roller-bearing pins D' on their inner faces and having their outer faces annularly concaved, and the sleeve E, having flanges E' E² bearing against the concave faces of the rings D, said flange E² being separable and adjustable, whereby the rollers or rings as they become worn may be readily adjusted or removed, substantially as described.

2. In a pulley-block, the combination, with the cheeks A and central pin F, of a roller-bearing casing E E' E², supported between the cheeks upon said pin, and having lugs G, engaged by grooves formed in the inner faces of the cheeks and extended outward to the edge thereof, whereby the casing is prevented from turning within the block, but can readily be detached therefrom without injury to any part, substantially as described.

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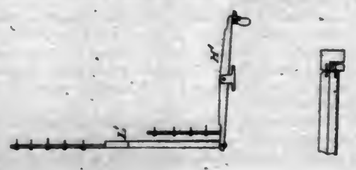
407,694. METALLIC MOLDING-STRIP. LOOSLEY L. SAGENDORPH, Cincinnati, Ohio, assignor of one-half to Charles H. Harder, Piedmont, W. Va. Filed Apr. 1, 1889. Serial No. 305,587. (No model.)



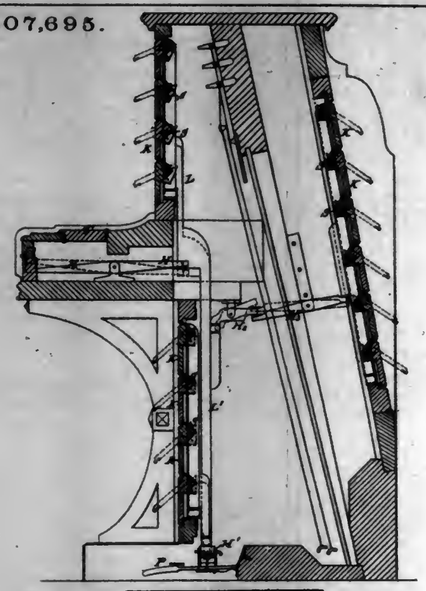
Claim.—A metallic molding-strip having the longitudinal V-shaped corrugations B, extending downward at each side of the nailing portion A, the outer edges of said molding having the circular corrugations C, the top of the upturned portions *c* being below the plane of the central nailing portion A, as and for the purposes set forth.

407,695. PIANO. FERDINAND SCHAAF, Frankfort-on-the-Main, Germany. Filed June 1, 1888. Serial No. 275,193. (No model.)

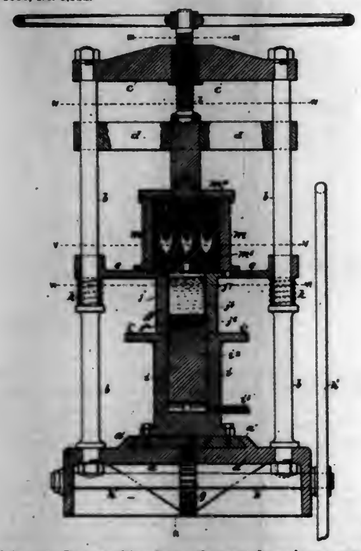
Claim.—An upright piano with inclined back provided with long horizontal flaps K on its front and back sides, in combination with the vertical rods L L', and the levers H H' H² H³, which are opened by the weight of the rods and automatically closed by the shutting of the key-lid T and a pressure upon the pedal P.



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407,696. APPARATUS FOR CASTING METALS UNDER PRESSURE. JOHN J. C. SMITH and CHARLES GRASSER, Passaic, N. J., assignors to the Smith Brothers Manufacturing Company, same place. Filed Feb. 16, 1888. Serial No. 264,189. (No model.) Patented in England June 30, 1887, No. 9,322.



Claim.—1. In a machine for casting metals under pressure, the combination of the hydraulic ram *i*, a metal receptacle *j*, both arranged on a sliding platform, and an elevated mold, substantially as and for the purpose set forth.

2. The combination of the elevated mold-receptacle *m*, table *e*, cylinder *j*, piston i^3, asbestus lining j^3, asbestus disk j^3, covering the head of the ram-piston i^3, and the asbestus partition j^7, provided with a contracted gate and interposed between the mold in the receptacle *m* and the metal in the receptacle *j*, all substantially as and for the purposes herein set forth.

3. The combination of the mold-receptacle *m*, formed in two parts, hinged together and resting on a vertically-movable table *e*, and a metal receptacle *j* and a hydraulic ram *i*, both mounted on a horizontally-sliding platform, substantially as and for the purpose set forth.

4. The combination of the movable table *e* and mold-receptacle *m*, both movable vertically by means of spring and screw, and a movable cover for receptacle *m*, adapted to be raised therefrom by said screw, substantially as and for the purposes set forth.

407,697. SWING-FIGURE MUSICAL TOY. FELIX A. SOMMER, Hammersmith, County of Middlesex, England. Filed Apr. 13, 1889. Serial No. 307,080. (No model.) Patented in England Sept. 11, 1888, No. 13,138.



Claim.—A musical toy consisting of a pin-barrel, sound-producing tongues, a crown-wheel geared to and rotating the pin-barrel, and a pendulum operated by a cord attached thereto and having an escapement-anchor which intermittently rotates the crown-wheel, substantially as described.

407,698. CLAMPING-FRAME. THEODOR STEINERT, Chicago, Ill. Filed Feb. 19, 1889. Serial No. 300,501. (No model.)



Claim.—The frame for the purpose described, consisting of timbers E and F, connected by bar G and stringer H, and having block I, with clamp-screw *i*, and posts *j j'*, engaging bar J, said timber F having projecting plate *f*, and timber E having strip *e*, all substantially as set forth.

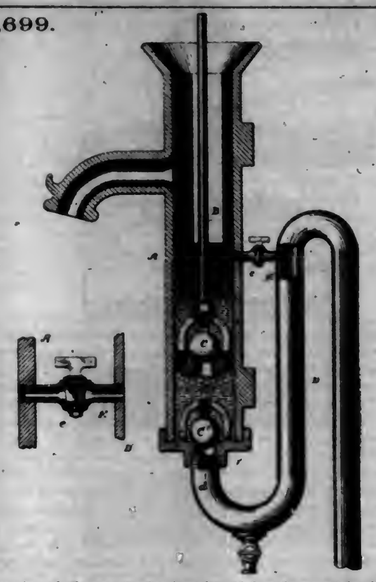
407,699. PUMP. JOHN STEVENS, Neenah, Wis. Original application filed Feb. 1, 1888, Serial No. 83,719. Divided and this application filed Apr. 20, 1888. Serial No. 162,783. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, of the pump-barrel, the supply-pipe having the siphon-bend and the rebend at its end and screw-threaded into a seat at the bottom of the barrel, and the contracted connecting-pipe or air-tube between the upper bend of the siphon and the pump-barrel.

2. The combination, substantially as hereinbefore set forth, of the pump-barrel, the supply-pipe bent into siphon form and rebent at the end of its shorter leg to screw into a seat at the bottom of the barrel, the contracted connecting-pipe or air-tube between the upper bend of the siphon and the pump-barrel, and the stop-cock in said pipe.

3. The combination, substantially as hereinbefore set forth, of

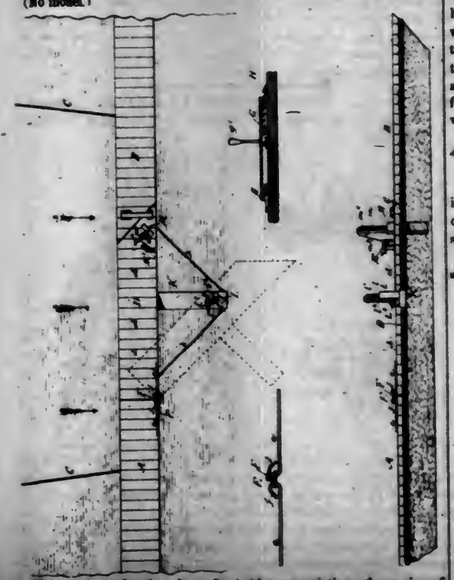
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the pump-barrel, the supply-pipe bent into siphon form and having a rebend at the end of the shorter leg of the siphon to screw into a seat at the bottom of the barrel, the contracted connecting-pipe or air-tube between the upper bend of the siphon and the barrel, and the diminishing aperture opening from the end of said connecting-pipe into the barrel-chamber.

4. The combination, substantially as hereinbefore set forth, of the pump-barrel, the supply-pipe bent into siphon form alongside the barrel and rebent at the foot of its shorter leg to screw into the seat at the bottom of said barrel, the contracted connecting-pipe or air-tube between the upper bend of the siphon and the pump-barrel, the diminishing aperture from the end of said connecting-pipe into the chamber of the barrel, and the stop-cock in said connecting-pipe.

407,700. FLOATING DRAW FOR BRIDGES. SYLVESTER H. STEWART, Philadelphia, Pa. Filed Mar. 26, 1889. Serial No. 304,835. (No model.)



Claim.—1. A floating draw for bridges, consisting of a series of decked scows having parallel and vertical sides, said scows being attached together with their sides in close contact, instead of being placed at intervals, as usual, and the decks of the same forming the road-bed of the draw, substantially as described.

2. In a floating draw for bridges, movable motor-boards M and L, adapted to be projected into the water, substantially as and for the purpose described.

3. In a floating draw for bridges, the combination, with the draw structure and a movable motor-board M, adapted to be held in the water at an angle to the direction of the current, of the raft K and the movable motor-board L, adapted to be projected into the water below the level of the bottom of the raft and at an angle to the direction of the current, substantially as described.

4. In a floating draw for bridges, the combination, with the causeway A, having a rectangular end, and the causeway B, having a triangular end, of the draw D, having one end corresponding in shape to the causeway A, where it is hinged, and its opposite end corresponding in shape to the end of causeway B, substantially as described.

5. In a floating draw for bridges, the combination, with causeway A and metallic strap *e* secured thereon and formed with an eye *f*, of the draw D, having a similar strap and eye, and the rope or other flexible and separable connection F, all constructed and arranged substantially as described.

6. In a floating draw for bridges, the combination, with the swinging draw D, having the pivoted hook G, of the causeway B, having the rack H, with which said hook is adapted to engage and lock the draw, substantially as described.

407,701. AUTOMATIC FIRE-EXTINGUISHER. DANIEL C. STILLSON, Somerville, Mass. Filed Feb. 21, 1889. Serial No. 300,681. (No model.)



Claim.—1. An automatic fire-extinguisher comprising the sprinkler-shell *a*, having the valve-seat *a'*, perforated head *c*, the valve *b*, having a stem *b'*, the levers *d*, and the fusible joint *e* for holding the valve on the seat, said sprinkler-shell having a neck a^2 extending back from the valve-seat in line with the valve and valve-stem and having a lateral tube *g*, located between the valve-seat and the water-supply pipe and closed at its outer extremity against the external atmosphere by an external fusible plug *h*, which, on being fused, permits the escape of air from said neck directly behind the valve, substantially as described.

2. An automatic fire-extinguisher consisting of a sprinkler-head having a lateral water-outlet orifice, a valve-seat at its inner end, a valve held on the valve-seat by a fusible joint, and a tubular neck extending longitudinally from the valve-seat and provided with a lateral tube located in rear of the valve and closed at its outer extremity against the external atmosphere by a fusible plug, which, on being fused, permits the escape of air from the neck directly behind the valve, substantially as described.

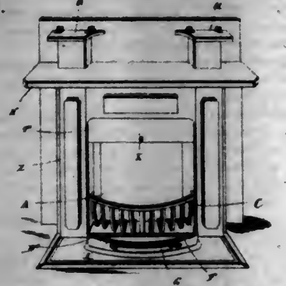
407,702. FIRE-PLACE. THOMAS J. SUGGS, Lafayette, Ala. Filed Oct. 26, 1888. Serial No. 289,210. (No model.)

Claim.—1. In a fire-place, the herein-described hollow base having the rear end of its upper side inclined downwardly, having a draft-opening on its inner or rear side, and provided with a door on its front side, substantially as set forth.

2. The hollow base-plate having a transverse groove in its upper side, in combination with the sides of the mantel having vertical



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grooves on their inner sides, and the vertically-sliding blower, substantially as set forth.

3. In a fire-place, the hollow base-plate having inclined rear end, a draft-opening in its rear side, a hinged front top section, and a hinged front door, substantially as and for the purpose set forth.

4. The combination, with the hollow base-plate having inclined rear end, a draft opening in its rear side, a hinged front top section, a hinged front door, and provided with a transverse groove in its upper side, of the vertically-adjustable blower sliding in grooves in the sides of the mantel, and adapted to have its lower edge fitted in the transverse groove of the base plate, substantially as set forth.

5. The mantel having hollow or recessed sides or legs provided with vertical grooves in their inner sides extending upwardly through the mantel-shelf, and having open upper ends provided with hinged or removable covers, in combination with the vertically-adjustable blower and screen sliding in the grooves in the inner sides of the legs, the counter-weights arranged in the hollow legs, and suitable connecting cords and pulleys, substantially as set forth.

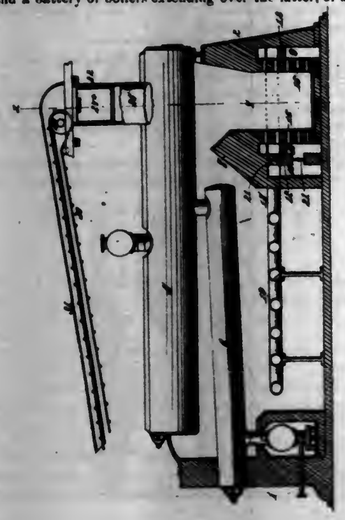
6. The combination, with the mantel and the chimney, of a transverse flue connecting the space in rear of the breast of the mantel with the chimney-flue, substantially as set forth.

7. The combination, with the mantel and the chimney, of a transverse flue connecting the space in rear of the breast of the mantel with the chimney-flue, and the vertically-sliding blower, adapted, when not in use, to occupy said space in rear of the breast of the mantel, substantially as set forth.

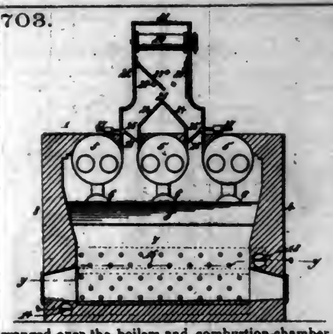
407,703. BAGASSE-FURNACE. WILLIAM W. SUTCLIFFE, New Orleans, La. Filed Mar. 14, 1889. Serial No. 303,287. (No model.)

Claim.—1. The combination, with a bagasse-furnace having a combustion-chamber, of a feed-casing above the furnace having a central dividing feed-guide forming side passages, which extend through the top portion of the furnace above the combustion-chamber, valve-chutes pivotally mounted on the sides of the feed-casing and a pivoted and weighted automatically-closing hopper-valve in each side passage, substantially as described.

2. The combination, with a bagasse-furnace having a combustion-chamber and a battery of boilers extending over the latter, of a feed-



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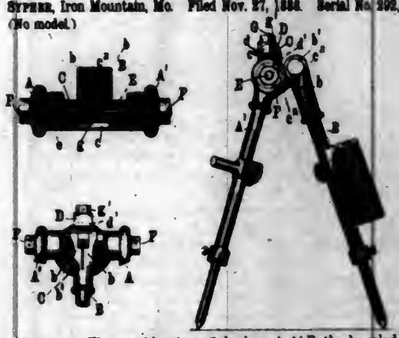
casing arranged over the boilers and combustion-chamber, a central feed-guide having inclined surfaces forming separate passages, respectively extending down between the boilers and provided with hopper-valves, and valve-chutes pivotally mounted above the feed-guide to divert the feed down between the boilers, substantially as described.

3. In a bagasse-furnace, the combination, with a combustion-chamber inclosed by the front, side, and bridge walls, the front wall and bridge-wall having air-chambers divided into upper and lower sections communicating with the furnace by tuyeres, said upper chambers connected by a lateral passage in one side wall and the lower by a lateral side passage in the other side wall, of a hot-blast manifold arranged in the fire-space and communicating with a common air-chamber in the bridge-wall, said chamber connected with the upper and lower air-chambers in the bridge-wall by passages having valves, substantially as described.

4. In a bagasse-furnace, a combustion-chamber having an upper and lower air-chamber in its front wall and bridge-wall, respectively, the two upper chambers communicating by a lateral passage in the side wall above the furnace-door and the two lower by a lateral passage in the other side wall below the furnace-door, said chambers having tuyeres communicating with the furnace, substantially as described.

5. In a bagasse-furnace, the combination, with a battery of boilers, of a feed-casing arranged over the boilers and above the combustion-chamber, a central guide having inclining surfaces meeting at a central angle and forming passages between the boilers which are provided with hoppers, valve-chutes pivotally mounted above the feed-guide to divert the feed from one passage to the other, and suitable feeding devices carrying the fuel to the casing, the combustion-chamber being supplied with upper and lower chambers in the front wall and bridge-wall, the former communicating by a passage in the side wall above the door, and the latter by a passage in the opposite wall below the door, a hot-blast manifold supplying said chambers, and means for cutting off the blast in either the upper or lower chambers in both walls, substantially as described.

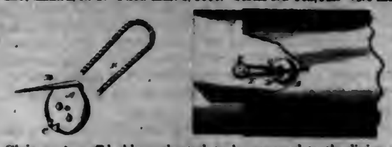
407,704. TRIPOD-SUPPORT FOR ROCK-DRILLS. ABRAHAM J. SYPHER, Iron Mountain, Mo. Filed Nov. 27, 1888. Serial No. 292,022. (No model.)



Claim.—1. The combination of the legs A A' B, the beveled saddle perforated and having the socket and upper edge, as described, the tie-bolt E, the eyebolt G, and the beveled clamp D, said legs being attached to said saddle, as described.

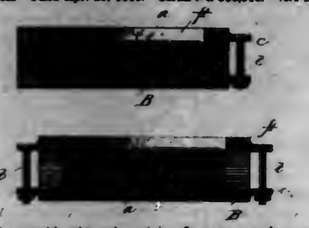
2. The combination of the beveled saddle C, having socket *c*, the tie-bolt E, horizontally passing through the saddle, the legs A and A', secured at the respective ends thereof, the beveled clamp D, the strengthening-lug c^3 on the saddle, the split leg B, and bolt and nut *b'*, substantially as and for the purposes set forth.

407,705. CUFF-HOLDER. WILLIAM R. TERRY and EDWIN K. HANLEY, Elmira, N. Y. Filed Mar. 8, 1888. Serial No. 302,443. (No model.)



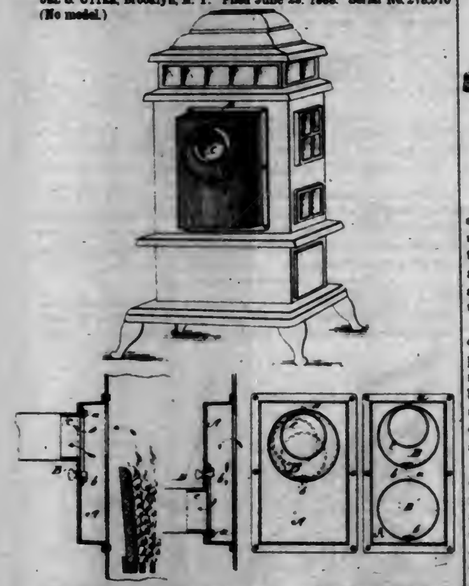
Claim.—A cuff-holder adapted to be secured to the lining of a sleeve, consisting of a plate having an arm or pin projecting forward parallel with its surface, with teeth opposite the arm extending at right angles to the surface of the plate to prevent the holder working up the sleeve, the plate having apertures and a cord having its ends passed through the apertures and secured therein so as to form a loop, for the purpose substantially as shown and described.

407,706. CLAMP FOR STICKY FLY-PAPER. OTTO TRUE, Grand Rapids, Mich. Filed Apr. 25, 1889. Serial No. 308,513. (No model.)



Claim.—In combination, the sticky fly-paper having uncoated edges and central portions covered by the sticky material, the clamping-frames upon each of its sides, one of said frames having bearings pressing upon the paper about its uncoated edges only, whereby the said edges will be compressed and the sticky material confined to the central portions not subjected to pressure, substantially as described.

407,707. ADJUSTABLE PIPE-OPENING IN STOVES, &c. SAMUEL S. UTTER, Brooklyn, N. Y. Filed June 29, 1888. Serial No. 278,570. (No model.)



Claim.—1. A stove provided with an auxiliary back A, of configuration adapted to form an air-chamber on the back of the stove and provided with suitable smoke-discharging opening, in combination with a plate B, adapted to rotate in such opening and having a pipe-collar C and an opening therein disposed on such plate eccentrically, such plate being further provided with a lug *a* and button *b*, substantially as described and shown.

2. As a new article of manufacture, a hollow auxiliary stove-back A, adapted to be attached to the back of a stove and to form an air-chamber thereon, such back provided with a suitable smoke-discharging opening, in combination with the pipe-adjusting device described, consisting of a plate B, adapted to rotate in such opening and having a pipe-collar C and opening therein disposed on such plate eccentrically, such plate being further provided with a lug *a* and button *b*, substantially as described and shown.

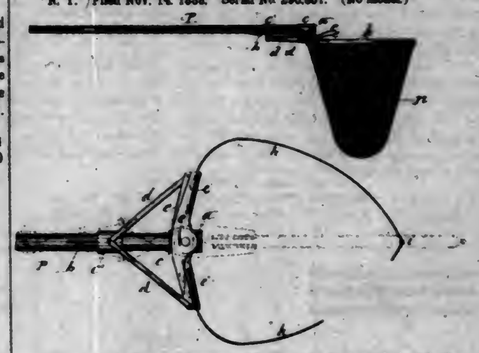
3. The hollow auxiliary stove-back A, adapted to be attached to the back of a stove and to form an air-chamber thereon, such back having two openings of equal size formed therein, in combination with interchangeable plates B B', adapted to rotate in such openings, such plates having suitable holding parts, as the lugs *a* and buttons *b*, and one of such plates B having a pipe-opening and collar C disposed therein eccentrically, substantially as described and shown.

407,708. METHOD OF FASTENING STRIPS. VINTON A. WEAVER, Moundsville, W. Va. Filed Sept. 4, 1888. Serial No. 284,583. (No model.)



Claim.—The method herein described of joining articles, which consists in first making a spirally-coiled ring and inserting the parts to be joined therein and overlapping their ends, and then further coiling the ring in a spiral direction around the strips to be joined and making it of smaller diameter in every direction, whereby the parts to be joined are reduced where they are pressed by the ring, and the latter is caused to coil more than once around the joined parts and hold the overlapping parts in a spiral clasp, substantially as and for the purpose specified.

407,709. FISH-LANDING NET. CHARLES E. WHITE, Syracuse, N. Y. Filed Nov. 14, 1888. Serial No. 290,867. (No model.)



Claim.—1. In combination with the pole P, provided with the stop *a* and catch *b*, and the ferrules *c c'*, mounted movably longitudinally on the pole, the braces *e e*, pivoted at the central portions of their respective lengths to the outer ferrule *c*, the hoop-sections *h h*, attached at their extremities to one end of the said respective braces, and the toggles *d d*, connected to the opposite end of said braces and to the inner ferrule *c'*, substantially as described and shown.

2. In combination with the pole P, provided with stop *a* and catch *b* and the ferrules *c c'*, mounted movably longitudinally on said pole, the braces *e e*, pivoted in common at the central portion of their respective lengths to one and the same side of the outer ferrule *c*, the hoop-sections *h h*, attached at their extremities to one end of the respective braces, and the toggles *d d*, connected to the opposite end of said braces and to the inner ferrule *c'*, substantially as described and shown.

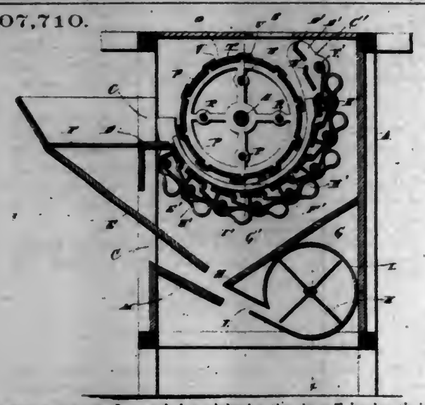
3. In combination with the pole P, provided with the stop *a* and catch *b*, and the ferrules *c c'*, mounted movably longitudinally on said pole, the braces *e e*, lying one upon the other and pivoted in common at the central portion of their respective lengths to one and the same side of the outer ferrule *c*, the hoop-sections *h h*, attached at their extremities to one end of the respective braces, and the toggles connected to the opposite end of said braces and pivoted in common to one and the same side of the inner ferrule *c'*, substantially as described and shown.

407,710. CORN HUSKER AND SHELLER. LOUIS R. WHITING, Dallas, Tex. Filed July 10, 1888. Serial No. 279,604. (No model.)

Claim.—1. The cylinder having the plates T, provided with the overlapping flanges U, the latter having their front sides sharpened to form cutting-edges V and being provided with transverse grooves or recesses W, substantially as described.

2. The combination of the cylinder-heads P, having the annular

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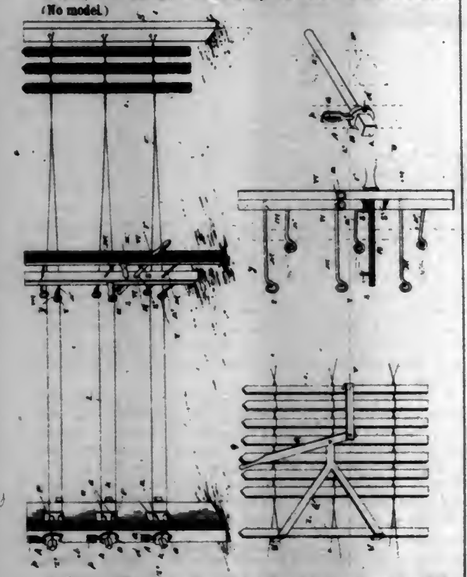


recesses or grooves S near their peripheries, the plates T, having their ends arranged in said grooves or recesses, said plates being provided with the overlapping flanges U, and the clamping-bolts securing the heads of the cylinder on the ends of the plates, substantially as described.

3. The combination of the rib-frame comprising the end walls C', having the flanges F', and the connecting-rods E', with the ribs G', obtuse-angled in cross-section and arranged at a slight distance apart between the end walls C', the arms H', secured to the ribs and pivoted on the rods E', and the springs I', bearing against the outer sides of the ribs and pressing the latter normally against the flanges F, substantially as described.

4. In a corn-shelling machine, the rotating cylinder having the peripheral teeth, in combination with the end walls C', having the flanges F', concentric with the cylinder, the rods E', connecting said end walls, the arms H', pivoted on said rods, the ribs secured to the free ends of said arms and obtuse-angled in cross-section, and the springs bearing against the ribs and keeping the latter normally in contact with the flanges F', substantially as described.

407,711. MACHINE FOR MAKING PICKET FENCES. GILES W. WICKES, New Market, Va. Filed Apr. 23, 1889. Serial No. 308,256. (No model.)

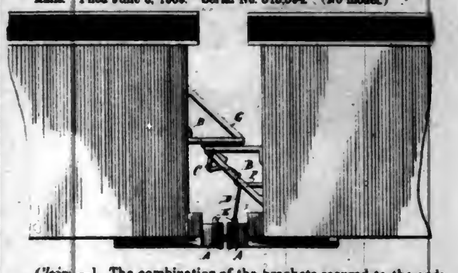


Claim.—1. The weaver herein described, the same comprising the front and rear bars W W, long wires M on the front of said bars passing loosely through holes in the rear bar, and wires N on the rear bar exteeding rearwardly therefrom, all of said wires having eyes Y on their rear ends, the whole adapted for use, substantially as described.

2. The weaving-bars W W and the wires M N, carried thereby, in combination with the rod R, journaled loosely in said bars and having heads *r* on its front end and studs *s s* on its body, said studs being adapted to pass through a slot *s'* in the edge of the bearing in the rear bar, the forward stud being placed a distance from said head equal to the combined thickness of the two bars, and the rearmost stud being placed a distance from said forward stud equal to the distance between the inner faces of said bars when in their utmost distended position, as and for the purpose set forth.

3. The picket-placer herein described, the same comprising the hook V, the lever Q, pivoted at one end to the free end of said hook, and the grapple G, forked in its body and having feet *g* at its front ends adapted to engage the picket being applied, said grapple being pivoted at its rear end to the lever Q, intermediately between its ends, substantially as and for the purpose set forth.

407,712. CAR-COUPLING. FRANK E. WILLIAMSON, Smith Centre, Kans. Filed June 3, 1889. Serial No. 313,594. (No model.)



Claim.—1. The combination of the brackets secured to the ends of the cars, and the lever connected with the coupling-pin and supported by the bracket on the end of one car, and adapted to be acted upon by the bracket on the other car, as set forth.

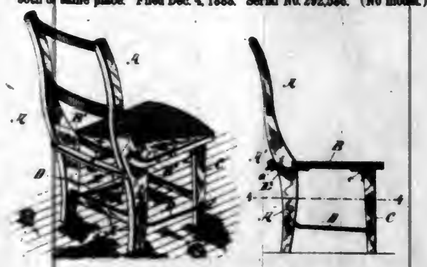
2. The combination of the brackets B, the arm F, the lever supported by the brackets B, and the cable secured to the lever passing through the arm F and secured to the coupling-pin, as set forth.

407,713. GAME APPARATUS. VINCENT W. WILSON, Pawtucket, R. I., assignor to the R. Bliss Manufacturing Company, same place. Filed May 28, 1888. Serial No. 275,389. (No model.)



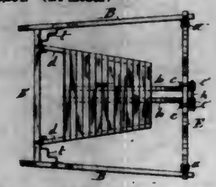
Claim.—In a game apparatus, the combination, with the game board or table, of a ball and a downwardly-inclined conduit formed of a spiral wire coil having its convolutions so separated from each other as to operate to retard the motion of the ball, substantially as and for the purpose specified.

407,714. FOLDING CHAIR. AARON R. ALBERT, Indianapolis, Ind., assignor of two-thirds to Augustus S. Knapp and Charles Stevenson, both of same place. Filed Dec. 4, 1888. Serial No. 292,586. (No model.)



Claim.—The combination of the back A, having the cross-bar A', the engaging-pin *a*, depending from said cross-bar, the seat B, hinged to the side pieces of the back A by the curved hinge-bars B', the front leg C, hinged to the seat by the hinge *c*, the connecting or brace rods D, secured to the front legs on the pivot-pins *c'* and to the rear legs on the pivot-pins *a'*, as shown, said pins *a'* being located in advance of the pins *b* of the hinge-bars B' and also in advance of the center of gravity when the seat is folded up, and the spring-catch E secured to the rear edge of the seat B, and arranged to engage with the catch-pin *a* in the cross-bar A' when the seat is turned down, all substantially as described, and for the purposes specified.

407,715. TWO-WHEELED VEHICLE. GEORGE BEEBE, Penn Yan, N. Y., assignor to William M. Beebe, same place. Filed Apr. 8, 1889. Serial No. 306,251. (No model.)

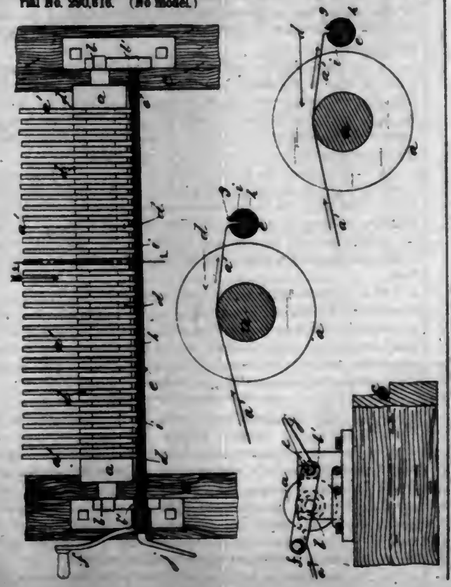


Claim.—1. In a two-wheeled vehicle, the foot-board provided at one end with shackle-eyes and at the opposite end with supporting-arms, in combination with shackle-eyes on the vehicle coinciding with those of the foot-board, a single bolt inserted removably through the aforesaid shackle-eyes and supporting one end of the foot-board, and loops attached to the vehicle and receiving through them the aforesaid supporting-arms of the foot-board, all constructed and combined to allow the foot-board to be removed by the withdrawal of the aforesaid single bolt, substantially as set forth.

2. The combination of the shafts and seat-supporting cross-spring, clip-ties on said spring formed with shackle-eyes, which latter are axially in line with each other, loops on the cross-bar of the shafts, the foot-board provided with forwardly-extending arms passing through the aforesaid loops, and rearwardly-extended arms terminating with shackle-eyes close to the sides of and axially in range with the shackle-eyes of the aforesaid clip-ties, and a single bolt inserted in said shackle-eyes and removably connecting the foot-board to the vehicle, substantially as described and shown.

3. The combination of the shafts and seat-supporting cross-spring, clip-ties on said spring formed with shackle-eyes, which latter are axially in line with each other, and one of said latter eyes screw-threaded internally, loops on the cross-bar of the shafts, the foot-board provided with rearwardly-extended arms terminating with shackle-eyes close to the inner sides of and in range with the shackle-eyes of the aforesaid clip-ties, a single bolt, screw-threaded at one end, passing through the aforesaid shackle-eyes and engaging the screw-threaded eye, and arms extending forward from the foot-board and through the aforesaid loops and removable therefrom, substantially as described and shown.

407,716. APPARATUS FOR WINDING FLEXIBLE LIGHTING-MATCHES. FREDERICK BONNABIUS, New Orleans, La., assignor to the Carroll Flexible Match Company, of Missouri. Filed Nov. 12, 1888. Serial No. 290,616. (No model.)



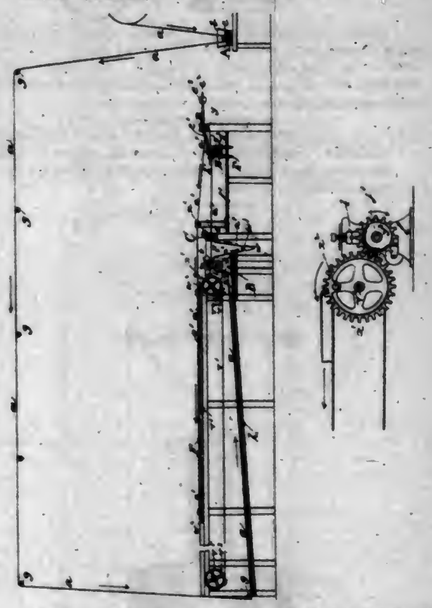
Claim.—The combination of a tubular spindle *e*, mounted removably in bearings and having slot *g* and handle *f*, with rod or spindle *h*, having groove or channel *i* and handle *j*, substantially as shown, and for the purpose described.

407,717. PREPARING FLEXIBLE MATCHES. FREDERICK BONNABIUS, New Orleans, La., assignor to the Carroll Flexible Match Company, of Missouri. Filed Nov. 12, 1888. Serial No. 290,617. (No specimens.)

Claim.—1. The method herein described of manufacturing matches, which consists in first passing a web or band of flexible material through a bath of inflammable composition whereby the web is rendered inflammable; second, drying the web so that the web may be cut without tearing; third, slitting the web longitudinally into a series of strands, and, fourth, depositing an igniting composition on the separated strands at intervals, substantially as and for the purposes specified.

2. The method herein described for making flexible matches, which consists in the following successive steps, viz: first, immersing a web or band of flexible material, such as paper, in a bath of inflammable material, such as a solution of shellac and rosin in fusel-oil; second, exposing said web to the atmosphere to evaporate the solvent and dry the web so that it can be cut; third, slitting said dried web longitudinally into a series of narrow strips or strands, and, finally, depositing an igniting composition at intervals on each of the separate strands of the series, substantially as and for the purposes specified.

407,718. MATCH-MACHINE. FREDERICK BONNABIUS, New Orleans, La., and GRAY STAUNTON, St. Louis, Mo., assignors to the Carroll Flexible Match Company, of Missouri. Filed Nov. 22, 1888. Serial No. 291,705. (No model.)



Claim.—1. In machinery for making flexible lighting-matches, the combination of two series of circular plates or disks fixed vertically on parallel spindles having adjustable bearings, the disks of one series entering the space, respectively, between the disks of the other series, with two slotted bars or combs inserted horizontally and parallel to each other within the respective spaces of the disks for guiding and separating fanwise the strands or strips, and means for rotating one of said spindles, substantially as shown, and for the purpose described.

2. In machinery for making flexible lighting-matches, the combination of circular plates or disks *i i'* and washers *m m'*, fixed vertically on parallel spindles *j j'*, having adjustable bearings *k k'*, combs *q*, inserted horizontally and parallel to each other within the respective spaces of the disks *i i*, for guiding and separating fanwise the strands or strips, roller *p*, and spur-pinion y^3, rotating spindle *j'*, substantially as described.

3. The combination of a front guide-roller having cams on its circumference and pivoted horizontally between end bearings at the sides of the machine, a yoke or lever frame pivoted in advance of

the front guide-roller and having rollers adjacent to the cams and having at its rear end a transverse dipper-bar with a tank or vessel, substantially as shown, and for the purpose described.

4. The combination of a front guide-roller *y*, having grooves *y'* and cams *y²*, and pivoted at the ends in brackets *z*, having forwardly-projecting arms *z'*, carrying pins *b'*, a yoke or lever frame *c'*, fulcrumed on the pins *b'* and provided with rollers *c'* adjacent to the cams *y²*, rods *f'*, depending from the rear end of frame *c'* and connected by dipper-bar *f³* with tank or vessel *g'*, carrying top roller *k'*, substantially as shown, and for the purpose described.

5. In machinery for making flexible lighting-matches, the combination of frame-work *l'*, casing *g³*, containing tank *g'* and supported on table *l²*, roller *k'*, rods *l³*, projecting from the under side of the table *l²* and passing through holes in the lower frame-work *l'*, with spiral springs *m³*, substantially as described.

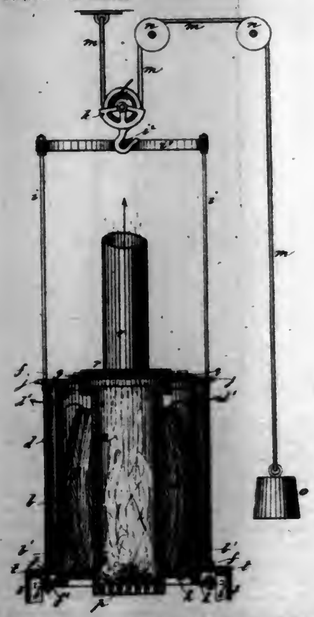
6. The combination of a rectangular frame *o'*, mounted in guides on the table of the machine and having clamping devices, all constructed substantially as described, with endless belt *v'*, having cleats *w²* and pulleys *v²* *v³* on spindles *v⁴* *v⁵*, rotated by handle *x²* on spur-wheel *x'*, substantially as shown, and for the purpose described.

407,719. THREAD-CUTTER FOR THIMBLES. ORRIN CADY, Cincinnati, Ohio, assignor of one-half to Willard B. Pritchard, Waterbury, Conn. Filed Apr. 2, 1889. Serial No. 305,658. (No model.)



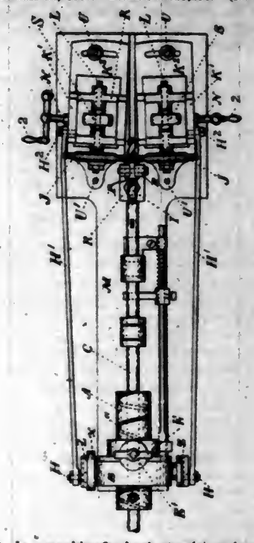
Claim.—In combination with a thimble, a thread-cutter consisting of an open elastic spring-metal band having one of its ends broadened, turned outwardly, and provided with a centrally-located cutting-edge, and with guards projecting above said cutting-edge at each side thereof, substantially as shown and described.

407,720. APPARATUS FOR HEATING AND DRYING BARRELS OR CASKS. JAMES M. CHAMBERS, St. Louis, Mo., assignor to the Chambers Patent Barrel Heater Company, same place. Filed Oct. 27, 1888. Serial No. 289,307. (No model.)



Claim.—In apparatus for heating and drying barrels, the combination of the heater *a*, cylinder or drum *b*, having openings *b'* near its lower end and forming annular space *c*, outer drum or casing *d*, having openings *d'* near its upper end and forming annular space *e*, said drums being carried by framing *f*, with platform *h* for carrying the barrel *g*, and means for raising and lowering said platform, substantially as shown, and for the purpose described.

407,721. MECHANISM FOR BACK-CLEARING TWIST-DRILLS. JAMES D. COX, Jr., Cleveland, Ohio, assignor to Cox & Prentiss, same place. Filed Jan. 24, 1887. Serial No. 225,255. (No model.)



Claim.—1. In a machine for back-clearing twist-drills, a supporting-bed, a pair of frames, each carrying a metal-removing device, and converging guides between the bed and frames, in which the frames are adapted to reciprocate, in combination with the driving-shaft and connections with the pair of frames to reciprocate the said frames, substantially as set forth.

2. In a machine for back-clearing twist-drills, a pair of frames provided with metal-removing devices and supported on the bed in converging guides, with a spindle which carries the drill, said spindle located on the bed with the line of its axis extending between the metal-removing devices, in combination with the driving-shaft, and connections between said shaft and the frames aforesaid to reciprocally operate said frames, substantially as set forth.

3. In a machine for back-clearing twist-drills, a supporting-bed, a spindle for holding the drill, a pair of frames, each provided with a metal-removing device, and guides in which said frames are adapted to slide on the bed, in combination with rods connecting said frames with the driving-shaft, whereby said frames are reciprocated, substantially as set forth.

4. In a machine for back-clearing twist-drills, a supporting-bed, a pair of frames supported in converging guides thereon and latterally adjustable with respect to each other, in combination with revolving metal-removing devices on said frames, a drive-shaft, and parts connecting the shaft and the frames to reciprocate the frames and the metal-removing devices, substantially as set forth.

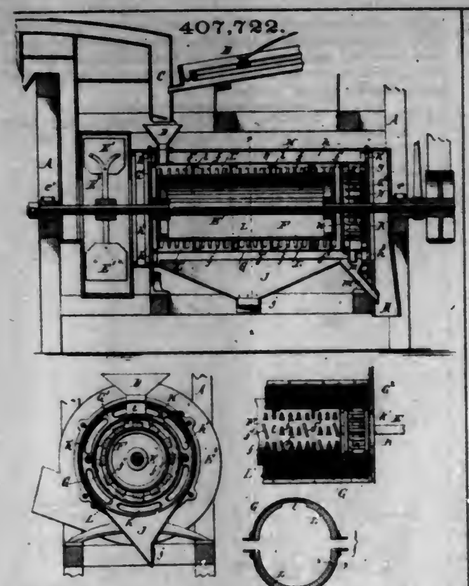
5. In a machine for back-clearing twist-drills, a supporting-bed, a pair of revolving metal-removing devices, and a spindle for holding the drill set with the line of its axis projecting between said metal-removing devices, in combination with separate frames which carry the metal-removing devices, and guides on the supporting-bed in which said frames are adapted to be reciprocated, substantially as set forth.

6. In a twist-drill-clearing machine, a supporting-bed, a pair of metal-removing devices supported upon separate sliding pieces adapted to be reciprocated, in combination with a drill-advancing shaft provided with a gear-wheel, a shaft having a worm meshing with said gear-wheel, and rods connecting the said sliding pieces with the ends of the worm-shaft, substantially as set forth.

407,722. GRAIN-SCOURER. GILBERT S. CRANDON, Silver Creek, N. Y. Filed Apr. 9, 1888. Serial No. 270,084. (No model.)

Claim.—1. The combination, with the horizontal scouring-case provided at opposite ends with an inlet and an outlet for the grain, of a scouring-drum arranged within said case, and a series of retarding-rings secured to the inner side of the scouring-case in the annular space between the drum and the scouring-case and provided with openings in their upper portions through which the grain passes from one compartment to the next, substantially as set forth.

2. The combination, with the horizontal perforated scouring-case



provided at opposite ends with an inlet and an outlet for the grain, of a scouring-drum arranged within said case and provided with scouring-teeth and inclined flights, and a series of retarding-rings secured to the inner side of the scouring-case in the annular space between the drum and the scouring-case and having openings in their upper portions through which the grain passes from one compartment to the other, substantially as set forth.

3. In a grain-scourer, the combination, with the perforated scouring-case G, divided longitudinally, and the feed-hopper D and receiving-hopper J, of the inclosing-casing H, divided lengthwise and obliquely, one of the sections of the casing carrying the feed-hopper D and the other section the receiving-hopper J, substantially as set forth.

407,723. ORNAMENTAL CHAIN. JOSEPH E. CROOK, Providence, R. I., assignor of one-half to A. T. Wall & Co., same place. Filed Dec. 26, 1888. Serial No. 294,633. (No model.)



Claim.—1. An ornamental chain composed of links consisting of an outer grooved ring and an inner ring secured in the groove of the outer ring, as described.

2. A link for an ornamental chain, consisting of an outer ring having a grooved cross-section and an inner ring, the joints of the two rings being placed in opposite points, as described.

3. A link for an ornamental chain, consisting of a grooved outer ring and an inner ring partly embedded in the groove of the outer ring, the inner portion of the inner ring being exposed to view, as and for the purpose set forth.

4. A chain made up of links each composed of an outer grooved ring and an inner ring partly or wholly embedded in the groove of the outer ring, as described.

407,724. GRAIN-CONVEYER FOR HARVESTERS. JOHN S. DAVIS, Cleveland, Ohio. Filed Oct. 19, 1887. Serial No. 252,794. (No model.)

Claim.—1. The combination of a grain-carrier composed of a series of endless belts and their rollers, a revolving shaft located between the rollers and the upper and lower surfaces of the belts, fingers on the shaft, which revolve through the spaces between the belts and into the stream of grain thereon in the same direction, but at a speed different from the speed of the belts, substantially as hereinbefore set forth.

2. The combination of the series of endless belts and their rollers, a revolving shaft located between the rollers and the upper and lower surfaces of the belts and provided with hooked fingers, as shown, which revolve through the spaces between the belts and into the stream of grain thereon in the same direction, but at a speed different from the speed of the belts, substantially as hereinbefore set forth.

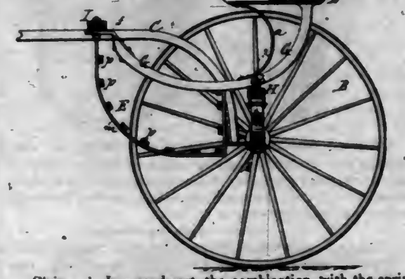
3. The combination of a grain-carrier composed of a series of

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endless belts with a revolving shaft provided with fingers which project between the belts and penetrate the stream of grain thereon, acting upon it in the same direction, but at a speed different from the speed of the belts, substantially as hereinbefore set forth.

407,725. ROAD-CART. JOSEPH A. DIBLEY, East Kendall, N. Y. Filed Apr. 26, 1889. Serial No. 308,750. (No model.)



Claim.—1. In a road-cart, the combination, with the spring-bar H and cross-bar I, of the hangers G G, pivoted to the spring-bar so as to rock vertically, and provided with slotted plates *f f*, that slide forward and back on bolts *h h*, attached to the cross-bar, as shown and described, and for the purpose specified.

2. In a road-cart, the combination of the spring-bar H, the rockers G G, the eyebolts *b c*, connecting said parts, the thill-bar I, the slotted straps *f f*, attached to the rockers, and bolts *h h*, attached to the thill-bar, said parts being connected as shown and described, and operating in the manner and for the purpose specified.

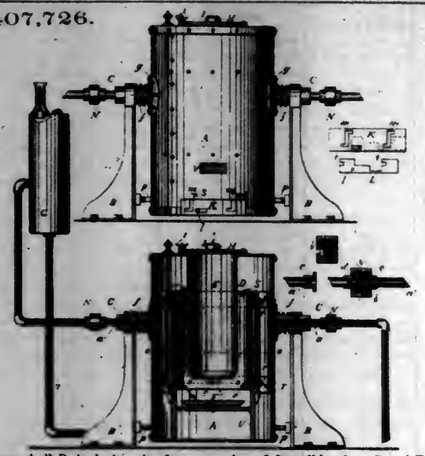
407,726. SAFETY-HEATER FOR RAILWAY-CARS. ELIJAH H. EDSON, Rochester, N. Y. Filed Mar. 21, 1887. Serial No. 231,704. (No model.)

Claim.—1. A heater for railway-cars, inserted in a hot-water-circulation system and suspended above the floor of the car from points above the center of gravity of the heater by hollow trunnions C C, connecting with the water-space, said trunnions resting in bearings in brackets B B, substantially as and for the purposes described.

2. In a heater for railroad-cars, having an outer shell and an inner shell separating the water and fire spaces, pairs of frangible rings connecting the two shells and inclosing therewith the water-space, each pair of rings meeting substantially in V form and each ring being thinned toward the line of meeting with the other ring, so that in the event of fracture of such rings the contents of the water-space will discharge into the fire-space, substantially as and for the purposes set forth and described.

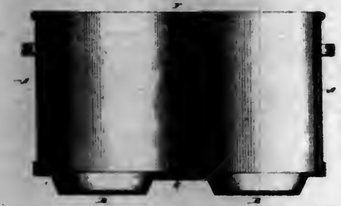
3. In a heater for railway-cars, the outer containing-shell A, the

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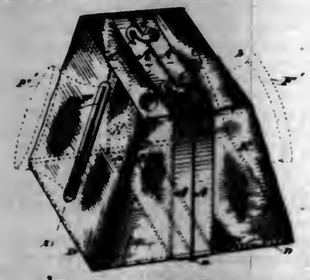
inner shell D, inclosing the fire-pot, pairs of frangible rings S and T, connecting said two shells and inclosing therewith the water-space, fire-tubes *k k*, passing through said water-space and the rings S and T, smoke-flue I, grate F, hollow trunnions C C, fastened to said shell A, connecting with the water-space and resting in bearings in brackets B B, a system of pipes *a a*, and expansion water-tank G, substantially as and for the purposes set forth and described.

407,727. WASH-BOILER. HELEN FARRWELL, Detroit, Mich. Filed Nov. 14, 1888. Serial No. 290,785. (No model.)



Claim.—A wash-boiler consisting of two sections each complete in itself, a plate extending along the adjacent bottom edges of the sections, and a cap extending along the adjacent top edges of the sections, the plate and the cap firmly uniting the two sections into a complete whole, substantially as set forth.

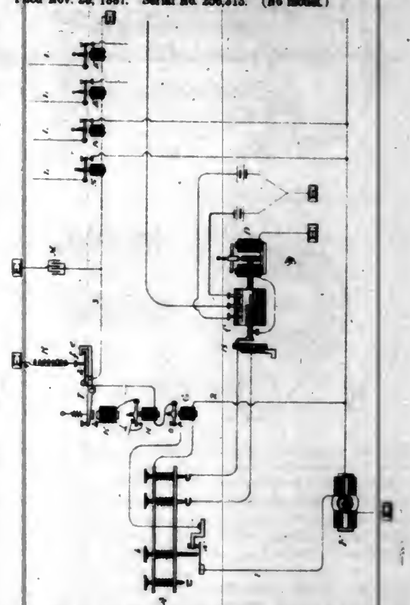
407,728. PHOTOGRAPHER'S PORTABLE COMPARTMENT FOR TRANSFERRING PLATES. SIDNEY GREEN, Brooklyn, N. Y. Filed Jan. 30, 1889. Serial No. 298,036. (No model.)



Claim.—1. The herein-described photographer's transferring-case, consisting of adjacent rectangular standard-frames hinged at one side to open and close toward or from one another, extension-leaves hinged thereon at opposite sides of the respective frames to open or fold upon the exterior of the frames, and opaque flexible hoods attached to the outer margins of said leaves, and said frames having slits or sleeves located at opposite sides of the case, for the purposes described.

2. The combination, in a photographer's transferring-case, of adjacent rectangular standard-frames hinged at one side to open and close toward one another, extension-leaves hinged thereon at opposite sides of the respective frames to open and fold upon the exterior of the frames, opaque flexible hoods attached to the outer margins of said leaves, and said frames having slits or sleeves, as described, and the observation-openings located in suitable parts of the said stand-frames, for the purpose specified.

407,729. PRINTING-TELEGRAPH. CLARENCE L. HEALY, Brooklyn, assignor to the Commercial Telegram Company, New York, N. Y. Filed Nov. 28, 1887. Serial No. 256,313. (No model.)



Claim.—1. In printing-telegraphs, the combination, with the repeat-key circuit, of a number of printing-circuit relays located in a branch circuit, an artificial resistance located in another branch circuit, and a circuit-controller shifting the repeat-key circuit from the relay branch to the resistance branch, substantially as set forth.

2. In printing-telegraphs, the combination, with the repeat-key circuit, of a number of printing-circuit relays located in a branch circuit, an artificial resistance located in another branch circuit, and a continuity-preserving lever operated by a magnet and acting to shift the repeat-key circuit from the relay branch to the resistance branch, substantially as set forth.

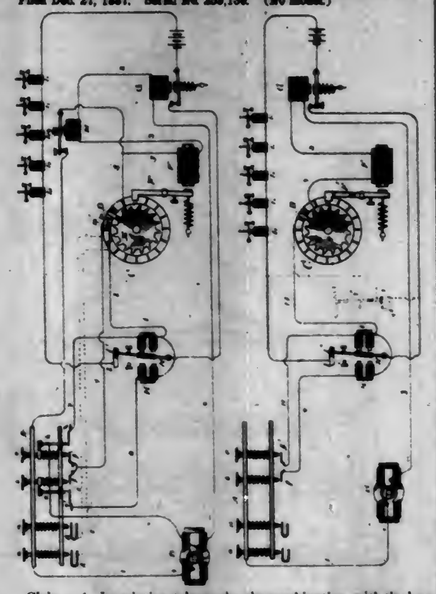
3. In printing-telegraphs, the combination, with the repeat-key circuit, of a number of printing-circuit relays located in a branch circuit, an artificial resistance located in another branch circuit, a circuit-controller shifting the repeat-key circuit from the relay branch to the resistance branch, and a condenser connected with the relay branch to absorb the spark, substantially as set forth.

4. In printing-telegraphs, the combination, with the repeat-key circuit, of a number of printing-circuit relays located in a branch circuit, an artificial resistance located in another branch circuit, a circuit-controller shifting the repeat-key circuit from the relay branch to the resistance branch, a magnet controlled by the repeat-key circuit working this shifting circuit-controller, and a transmitter-circuit controller controlling the repeat-key circuit, substantially as set forth.

5. In printing-telegraphs, the combination, with the repeat-key circuit, of a number of printing-circuit relays located in a branch circuit, an artificial resistance located in another branch circuit, a circuit-controller shifting the repeat-key circuit from the relay branch to the resistance branch, a magnet controlled by another magnet located in the repeat-key circuit working this shifting circuit-controller and a transmitter-circuit controller controlling the repeat-key circuit, substantially as set forth.

6. In printing-telegraphs, the combination, with the repeat-key circuit, of a number of printing-circuit relays located in a branch circuit, an artificial resistance located in another branch circuit, a circuit-controller shifting the repeat-key circuit from the relay branch to the resistance branch, a magnet controlled by another magnet located in the repeat-key circuit working this shifting circuit-controller, and a magnet in the key-board circuit controlling the repeat-key circuit, substantially as set forth.

407,730. PRINTING-TELEGRAPH. CLARENCE L. HEALY, Brooklyn, assignor to the Commercial Telegram Company, New York, N. Y. Filed Dec. 27, 1887. Serial No. 259,130. (No model.)



Claim.—1. In printing-telegraphs, the combination, with the key-board, the sunflower, the trailing arm, and the clutch, of a shifting-circuit, a switch controlling said shifting-circuit, and two magnets moving said switch in opposite directions, the circuits to such magnets being controlled both at the key-board and at the sunflower, substantially as set forth.

2. In printing-telegraphs, the combination, with the key-board, the sunflower, the trailing arm, and the clutch, of a shifting-circuit, a switch controlling said shifting-circuit, two magnets moving said switch in opposite directions, the circuits to such magnets being controlled both at the key-board and at the sunflower, and an electro-magnet in the sunflower circuit acting to close a break in said shifting-circuit at each stoppage of the trailing arm, substantially as set forth.

3. In printing-telegraphs, the combination, with the key-board, the sunflower, the trailing arm, and the clutch, of a shifting-circuit controlled both at the key-board and at the sunflower, substantially as set forth.

4. In printing-telegraphs, the combination, with the sunflower having a divided segment, the parts of which are bridged by the trailing arm, of a circuit broken at the sections of such segment and closed by the trailing arm, substantially as set forth.

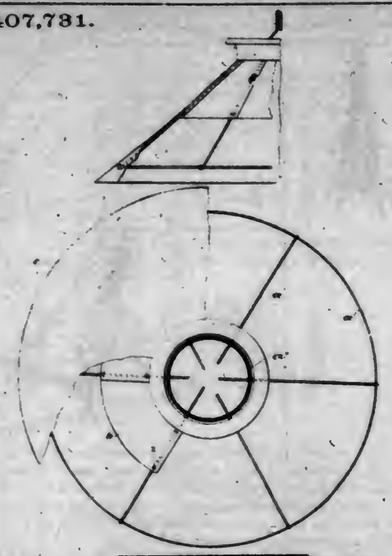
5. In printing-telegraphs, the combination, with the sunflower having a divided segment, the parts of which are bridged by the trailing arm, of a circuit broken at the sections of such segment, and closed by the trailing arm, the key-board having contacts also controlling said circuit, an electro-magnetic circuit-controller in said circuit, and the shifting-circuit controlled by said circuit-controller, substantially as set forth.

6. In printing-telegraphs, the combination, with the unison-keys and the separate insulated contact-rods and contacts at the key-board, and the sunflower having a divided segment, of a circuit-controller composed of two magnets acting oppositely on a circuit-controlling armature-lever, connections through the sections of the divided sunflower-segment to the windings of both magnets, and separate connections from the magnets to the contacts of the insulated rods of the key-board, substantially as set forth.

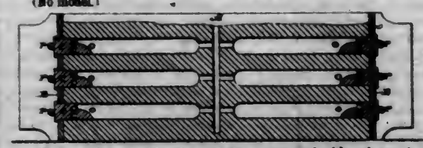
407,731. SHADE FOR ILLUMINATING-BURNERS. JOHN C. HOLLINS, Boston, Mass., assignor to R. Hollings & Co., same place. Filed Nov. 24, 1888. Serial No. 291,773. (No model.)

Claim.—The shade for illuminating-burners, composed of the wire frame, substantially as shown and described, the shield *b*, of material that is a non-conductor of heat, fitted to said frame and secured thereon by loops 2, of thread or wire, and the outer covering resting upon and supported by the frame and shield, as set forth.

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407,732. MOLD FOR CASTING SASH-WEIGHTS. RICHARD JOWITT, South Pittsburg, Tenn. Filed May 29, 1888. Serial No. 312,492. (No model.)



Claim.—The combination of the apertured side pieces A, the metallic perforated end pieces B, the chills which are passed through the end pieces, and the rods passing through the apertures in the side pieces to hold the chills in position, substantially as described.

407,733. MACHINE FOR BUNCHING CIGARS. FREDERICK R. KELSEY, New York, and GEORGE D. WOODWORTH, Brooklyn, N. Y. Filed Apr. 16, 1889. Serial No. 307,268. (No model.)



Claim.—1. In a machine for bunching cigars, the combination, with a mold having separable parts and which is adapted to receive the binder of the bunch and to give the fillers the requisite bunch form, of a holder for retaining the side of the binder while the fillers are being packed in the mold.

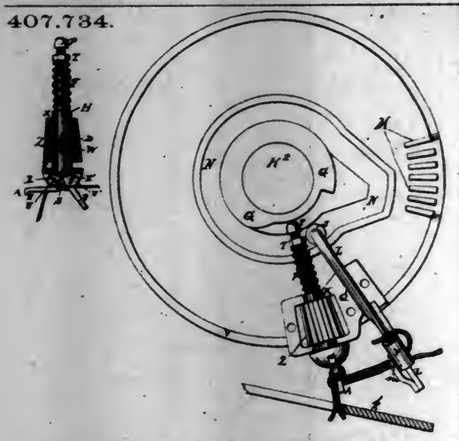
2. In a machine for bunching cigars, the combination, with a mold adapted to receive the binder and to give forth to the bunch of fillers, of a holder for retaining the ends of the binder while the mold is being filled with fillers, the mold having separable parts by which it is opened or the bunch removed therefrom.

3. In combination, the base A, the mold B, having the movable side D E, the binder-holder H, and the link F, adjustably securing the movable part of the mold to the base.

4. In combination, the base A, the mold B, the slide E, carrying the mold-piece D, the binder-holder H, link F and its pivot-rod J, and the cam K and spring L.

407,734. KNOTTING DEVICE FOR GRAIN-BINDERS. KENTON C. KUNKLE and ALLEN A. KUNKLE, Lebanon, Ohio; said Allen A. Kunkle assignor to said Kenton C. Kunkle. Filed Aug. 18, 1888. Serial No. 283,159. (No model.)

407,734.



Claim.—1. In a knotting device, a twine-knotter having two movable knotter-jaws A and B, having the slots U and U', respectively, a knotter-head having pins X X' passed through the slots U U', respectively, and the longitudinally-movable spindle mounted in the knotter-head having the pin S in its lower end, upon which the jaws are pivoted, as and for the purpose specified.

2. In a twine-knotter, the knotter-head and two knotter-jaws A and B, located in an opening between opposing portions of said head and moving toward and away from one another, the jaw A having pivotal slot U, and jaw B having pivotal slot U', each jaw being pivoted to said knotter-head by a pivot passing through its respective slot aforementioned, the jaws being free, when actuated by the spindle H, to reciprocate within the limit of their slots, and reciprocating spindle H, pivotally attached to the rear portion of said jaws between slots, the said slots, when the jaws are closed, lying obliquely to the length of the jaws and parallel to one another, thereby causing the jaws, when apart, to stand at different angles to the axis of the knotter-spindle, substantially as and for the purposes specified.

3. In a twine-knotter, a rotating knotter-head having a longitudinally-movable knotter-spindle mounted therein and connected thereto to rotate upon the same axis by a pin D passing through a slot U in said spindle, knotter-jaws located in a slot in the lower end of the spindle and in the knotter-head and pivotally connected to said spindle and knotter-head, respectively, a tension-spring surrounding the spindle and interposed between the upper end of the knotter-head and an adjusting-nut on the upper portion of said spindle, a cap-piece P, mounted upon the extreme upper end of the spindle to be engaged by a cam-surface on the knotter-operating wheel to reciprocate the spindle in the knotter-head and to open and close the knotter-jaws, and means for rotating said knotter-head, substantially as described.

4. The combination, in a twine-holding device, of the movable jaw L, having the notches *q* and *b* and provided with an anti-friction roller J, the holder-shoe Y, having the notches *d* and *d'* and pivoted to a stationary frame, and spring *a*, bearing against the holder-shoe, and the knotter-operating wheel having cam-groove N N, within which the roller J travels, substantially as and for the purpose specified.

5. The combination of a wheel provided with cam-groove N N, the spring *a*, shoe Y, movable jaw L, having the notches *q* and *b*, and having the anti-friction roller J, traveling in the cam-groove N N, with the knife *m*, secured to and carried by said movable jaw, as and for the purpose specified.

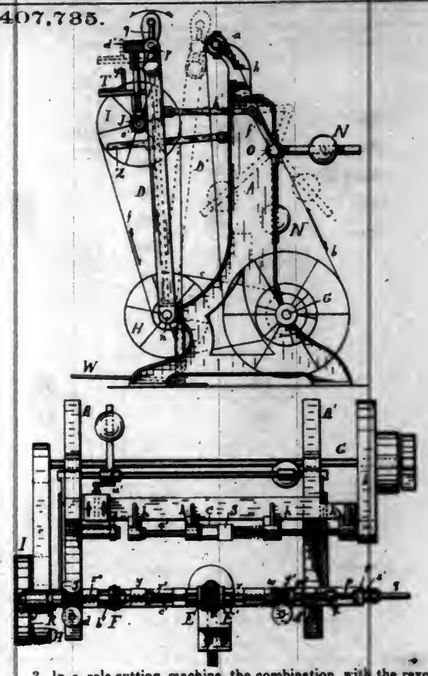
6. The combination, in a twine-holding device for knotting mechanism, of a movable jaw having the notches *q* and *b*, the knife carried thereby and secured thereto, and the holder-shoe Y, having the notches *d* and *d'*, as and for the purpose specified.

407,735. SOLE-CUTTING MACHINE. HENRY LOEWER and BARTON L. BLAIR, Rochester, N. Y., assignors of one-fourth to Anson S. Moon, same place. Filed Mar. 11, 1889. Serial No. 302,801. (No model.)

Claim.—1. In a sole-cutting machine, the combination, with the revolving cutter C and its shaft, of the revolving sole-clamps E E', their supporting-shafts, the movable carriage, and a revolving form operating to vary the relative positions of the cutter and the sole-clamps, substantially as described.

2. In a sole-cutting machine, the combination, with the revolving cutter C and its shaft, of the revolving and traveling recessed sole-clamps E E', form F, suitable supporting-shafts, and guide *s*, substantially as described.

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3. In a sole-cutting machine, the combination, with the revolving cutter C and its shaft, of the revolving sole-clamps E E', supported on shafts on a suitable traveling carriage, and clamp-screw *p*, substantially as described.

4. In a sole-cutting machine, the combination, with the revolving cutter C and its shaft, and guide *s*, of the revolving sole-clamps E E', clamp-plates *z z'*, removable form F, and suitable supporting-shafts, substantially as described.

5. In a sole-cutting machine, the combination, with the revolving cutter C and its shaft, and guide *s*, of the revolving and traveling sole-clamps E E', form F, suitable supporting-shafts, and movable blank-guide T, substantially as described.

6. In a sole-cutting machine, the combination, with the revolving cutter C and its shaft, and guide *s*, of the revolving and traveling sole-clamps E E', suitable supporting-shafts, and movable blank-guide T, provided with adjustable plate *y'*, substantially as described.

7. In a sole-cutting machine, the combination, with the revolving cutter C and its shaft, and guide *s*, of the revolving and traveling sole-clamps E E', divided shaft *r r'*, screw *p*, removable form F, and suitable supporting-shafts, substantially as described.

8. In a sole-cutting machine, the combination, with the revolving cutter C and its shaft, and guide *s*, of the revolving and traveling sole-clamps E E', shafts *r r' r''*, screws *p*, clamp-plates *z z'*, removable former F, and suitable supporting-shafts, substantially as described.

9. In a sole-cutting machine, the combination, with the main frame A A', supporting the revolving cutter C and its shaft, and the guide *s*, of the movable frame D, carrying the revolving sole-clamps E E' and form F, and mechanism adapted to secure the simultaneous revolution of the sole-clamps and the form, substantially as described.

10. In a sole-cutting machine, the combination, with the cutter C and its shaft, and the guide *s*, of the movable carriage D, supporting the sole-clamps E E' and form F, divided shafts *r r' r''*, worms *d d'*, and worm-gears *g g'*, substantially as described.

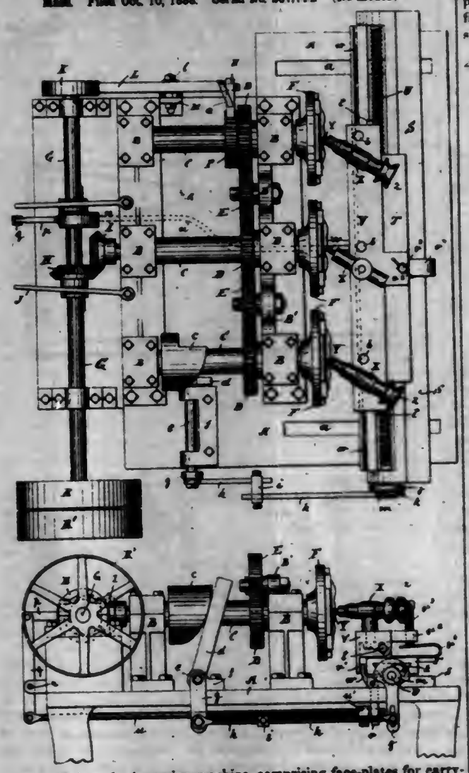
11. In a sole-cutting machine, the combination, with the cutter C and its shaft, and guide *s*, of the movable carriage D, supporting sole-clamps E E', clamp-screw *p*, divided shafts *r r' r''*, worms *d d'*, and worm-gears *g g'*, substantially as described.

12. In a sole-cutting machine, the combination, with the cutter C and its shaft, and guide *s*, of the movable carriage D, supporting the revolving sole-clamps E E', divided shafts *r r' r''*, worms *d d'*, and worm-gears *g g'*, shaft J, bevel-gears *c c'*, clutch *j' k'*, lever R, and cam *l*, substantially as described.

13. In a sole-cutting machine, the combination, with the main frame A A', supporting the revolving cutter C and its shaft, and the guide *s* and driving-shaft G, of the swinging frame D, pivoted to the main frame and carrying the revolving sole-clamps E E', divided shafts *r r' r''*, worms and worm-gears *d d' g g'*, bevel-gears *c c'*, shaft J, and pulleys I H L, substantially as described.

14. In a sole-cutting machine, the combination, with the revolving cutter C and its shaft, provided with the spring-guard S, of the guide *s*, and the revolving sole-clamps E E', form F, and suitable supporting-shafts, substantially as described.

407,736. CARVING-MACHINE. WILLIAM A. N. LOUD, Boston, Mass. Filed Oct. 10, 1888. Serial No. 287,714. (No model.)



Claim.—1. A carving-machine comprising face-plates for carrying the pattern and material to be operated upon, means for intermittently rotating same, substantially as described, a tracer and rotating tools mounted in tool-carriers and arranged to stand horizontally but on an angle to the face of the material to be operated upon and means for periodically raising the tools and tracer from the face of the material, substantially as shown and described.

2. The shafts C, mounted in suitable bearings and to which rotary motion is imparted, the gears D E, and face-plates F, in combination with the slide-bed S, slide T, pivoted tool-carrier plate V, having a lip r^2, the spring r^4, screw r^3, tool-carriers X, tools Y, and tracer W, substantially as and for the purposes set forth.

3. The combination of the shaft G, the cam K, mounted thereon, the lever L, fulcrumed on the frame and having its outer end in contact with the cam K, and a pawl N, mounted upon its inner end, the shafts C, and face-plates F, gears D, mounted upon said shafts, and ratchet-wheel P, mounted upon one of the shafts C, and the intermediate gears E, for imparting an intermittent rotary motion in the same direction to said shafts C and face-plates F, substantially as shown and described.

4. The cam *c*, mounted upon shaft C, in combination with shaft *e*, having a lever *d* mounted on one end, and a lever *g* on its other end, the slide-bed S, slide T, and screw U, passing along the slide-bed and under the slide, ratchet-wheel *m*, and lever *j*, mounted upon one end of the screw, pawl *k* on lever *j*, the rods *h h*, connecting the levers *g* and *j*, and adjustable block *i*, for connecting the rods *h h* together, substantially as and for the purposes set forth.

5. The shaft G, eccentric *n*, mounted thereon, lever *q*, fulcrumed to the frame, arm *p*, connecting lever *q* with eccentric *n*, and rod *u*, having an adjustable block *u'*, in combination with the kick-out lever *m*, fulcrumed on the slide-bed S, and tool-carrier plate V, pivoted at each end to the slide T, and having a lip r^1, substantially as and for the purposes set forth.

6. The spring r^4 and screw r^3, in combination with the slide T and tool-carrier plate V, pivoted at each end to the slide T, for throwing the plate V back after it has been raised, substantially as set forth.

7. In a carving-machine, a series of rotating face-plates for supporting the material to be operated upon and the pattern to be reproduced, and a tracer and cutting-tools, the axes of which are on a plane parallel to the axes of the face-plates, but on an angle to the face of the plates, so that the cut is made by the side of the tool, substantially as set forth.

407,737. LAST. FRANK F. MARTIN, Gloucester, Mass., assignor of one-fourth to Robert T. Mountain, same place. Filed Nov. 24, 1888. Serial No. 291,758. (No model.)



Claim.—1. In a last, the combination, with the parts A and B, having corresponding openings, as *a* and *b*, of the perforated plate C, fitted in one of the said openings, and the pin adjustably supporting the said plate in the other opening, substantially as described.

2. The combination, with the parts A and B of the last, having the openings *a* and *b*, of the plate C, having two sets of openings, as *n* and *n'*, the openings of one set coming opposite the spaces between the openings of the other set, and securing-pins, substantially as described.

3. The combination, with the parts A and B, having openings *a* and *b*, of the plate C, having two sets of openings and tapering in thickness, and the pins *d* and *d'*, substantially as described.

4. The hereinbefore shown and described last, composed of the parts A and B, having openings *a* and *b*, the part A having channel F and the part B the recess E, the plate C, tapering in thickness and having the two sets of openings *n* and *n'*, and the pins *d* and *d'*, substantially as and for the purpose described.

407,738. LOCK. WASHINGTON A. MARTIN, Chicago, Ill., assignor of one-fourth to Henry Reuter, same place. Filed Mar. 6, 1889. Serial No. 302,161. (No model.)

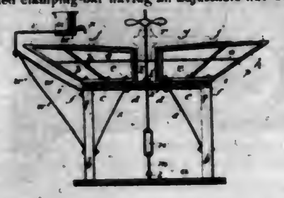


Claim.—1. The combination, substantially as set forth, of the bolt provided with a lug, as 10, the swinging pin or dog to engage said lug and to hold the bolt back, and the trigger provided with an oblique slot, as 16, to throw the dog and release the bolt.

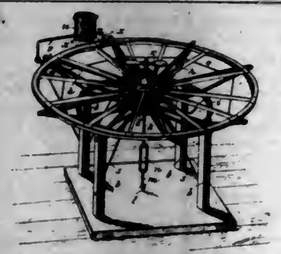
2. The combination, substantially as set forth, of the bolt, the dog, the trigger, the cam to retract the bolt, the cam-arbor having a forked end, and a key-operated lock, as 28, in engagement with said cam-arbor, all arranged and operating substantially as shown and described.

407,739. TIRE-SETTING MACHINE. DAVID R. MILLER, Logansport, Ind. Filed Aug. 20, 1888. Serial No. 284,064. (No model.)

Claim.—In a tire-setting machine, a stationary stand provided with bearing-rings and a rotary table, in combination with a central screw-threaded clamping-bar having an adjustable nut bearing upon



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the wheel-table, the clamping-bar being secured to the base of said stand by a swivel connection, in the manner and for the purpose set forth.

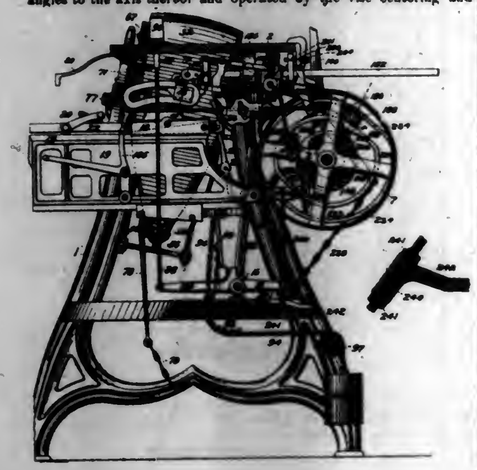
407,740. **WRENCH.** HORATIO B. MORRISON, Britt, assignor of three-fourths to Francis M. Rogers, Charles H. Hughes, and William H. Cottrell, Mason City, Iowa. Filed Aug. 10, 1888. Serial No. 282,456. (No model.)



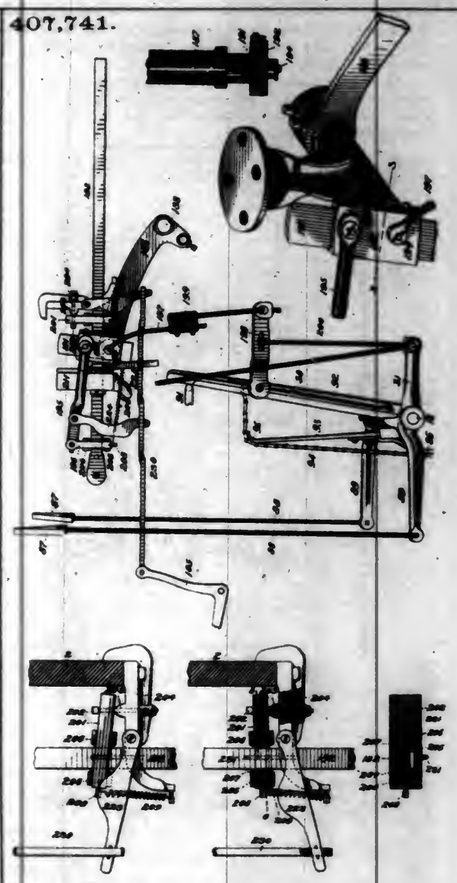
Claim.—The herein-described wrench, comprising the handle composed of the parallel similar side plates B B, secured together at their ends by the transverse screws or bolts C C, the adjustable jaws D D, fitting between the ends of the said plates, mounted on the screws or bolts C C, and provided at their inner ends with the segmental ratchets E, in a common plane with the jaws, the screws or bolts G G, also arranged in registering apertures in the side plates near the inner ends of the said jaws, the pawls H, engaging with the segments, provided with inwardly-extending enlargements *h*, mounted on the screws or bolts G, and having their adjacent ends projecting slightly beyond the edges of the side plates, the pins K K, arranged adjacent to each other near the centers of the side plates, and the springs L L, each bent around one of said pins and around and beyond the other and bearing at their free ends against the adjacent ends of the pawls to hold the latter in engagement with the segments' ratchets, substantially as specified.

407,741. **BROOM-SEWING MACHINE.** GEORGE F. MCCOMBS, Allegheny, assignor to the Hand Stitch Broom Sewing Machine Company, Pittsburg, Pa. Filed Apr. 20, 1889. Serial No. 307,969. (No model.)

Claim.—1. In a broom-sewing machine, the combination of a carriage fitted to slide upon ways or guides, a broom vise or clamp pivoted to said carriage, a rock-shaft 16, operated by the carriage in its inward traverse, mechanism, substantially as described, for centering and clamping the broom-vise in operative position, a rock-shaft 187, a sliding head fitted to have a traverse on the rock-shaft at right angles to the axis thereof and operated by the vise centering and



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clamping mechanism, and a feed-rod connected to the broom vise or clamp and operated by the sliding head, substantially as set forth.

2. In a broom-sewing machine, the combination of a pivotally-mounted broom vise or clamp, mechanism for centering and clamping the broom-vise in operative position, a rock-shaft 16, operating such centering and clamping mechanism and controlled thereby, a rock-shaft 187, a sliding head fitted to have a traverse on said rock-shaft at right angles to the axis thereof, an adjustable connection between the sliding head and an arm on rock-shaft 16, and a feed-rod connected to the broom vise or clamp and operated by the sliding head, substantially as set forth.

3. In a broom-sewing machine, the combination of a pivotally-mounted broom vise or clamp, a plate 183, connected to said vise or clamp and having a circular rim formed thereon, a feed-bar having a groove formed therein for the reception of the circular rim, thereby forming a hinge-joint between the plate and feed-bar, and mechanism, substantially as described, for moving the feed-bar, substantially as set forth.

4. In a broom-sewing machine, the combination of a pivotally mounted broom vise or clamp, a feed-bar connected to the vise or clamp, a reciprocating automatically-operating grip, and an automatically-operating detent, said grip and detent engaging the feed-bar, substantially as set forth.

5. In a broom-sewing machine, the combination of a pivotally-mounted broom vise or clamp, a movable feed-bar connected thereto, and a brake or holdback engaging the feed-bar and controlling the movements of the vise, substantially as set forth.

6. In a broom-sewing machine, the combination of a pivotally-mounted broom vise or clamp, a feed-bar connected thereto, a reciprocating automatically-operating grip, an automatically-operating detent, and a brake or holdback for controlling the movements of the vise or clamp, said grip, detent, and holdback engaging the feed-bar, substantially as set forth.

7. In a broom-sewing machine, the combination of a swinging block having an opening therethrough, jaws arranged in said opening, automatically-adjustable shoes mounted in the adjacent faces of said jaws, and a feed-bar having parallel edges passing between said shoes, substantially as set forth.

8. In a broom-sewing machine, the combination of a swinging block having an opening therethrough, jaws arranged in said opening, one of said jaws being adjustable, automatically-adjustable shoes mounted in the adjacent faces of said jaws, and a feed-bar having parallel edges passing between said shoes, substantially as set forth.

9. In a broom-sewing machine, the combination of a swinging block having an opening therethrough, jaws arranged in said opening, automatically-adjustable shoes mounted in the adjacent faces of said jaws, said shoes lying in different vertical planes, and a feed-bar having parallel edges passing between said shoes, substantially as set forth.

10. In a broom-sewing machine, the combination of a block having an opening therethrough, a feed-bar having a wedge-like portion on one side thereof and passing through said opening, and a stationary and a movable shoe arranged on opposite sides of the feed-bar, the movable shoe having a yielding pressure upon the feed-bar, substantially as set forth.

11. In a broom-sewing machine, the combination of a block having an opening therethrough, a feed-bar having a wedge-like portion on one side thereof and passing through said opening, a stationary and a movable shoe arranged on opposite sides of the feed-bar, and a spring-actuated plunger for forcing the movable shoes against the feed-bar, substantially as set forth.

12. In a broom-sewing machine, the combination of a block having an opening therethrough, a feed-bar having a wedge-like portion on one side thereof and passing through said opening, a stationary and a movable shoe arranged on opposite sides of said feed-bar, a plunger bearing at one end against the movable shoe, a tension-plate adjustably mounted on a stud on said block, and a spring surrounding the plunger and interposed between said plate and a shoulder on the plunger, substantially as set forth.

13. In a broom-sewing machine, the combination of a block having an opening therethrough, a feed-bar having a wedge-like portion on one side thereof and passing through said opening, a stationary and a movable shoe arranged on opposite sides of said bar, a spring-actuated plunger operative on the movable shoe, lever connected to the plunger, a pin bearing against the free end of said lever, and a movable wedge for moving the pin, substantially as set forth.

14. In a broom-sewing machine, the combination of a block having an opening therethrough, a feed-bar having a wedge-like portion and passing through said opening, a spring-actuated plunger for controlling the movements of the feed-bar, and a wedge for forcing the plunger away from the feed-bar, substantially as set forth.

15. In a broom-sewing machine, the combination of a carriage fitted to slide upon ways or guides, a broom vise or clamp pivoted to said carriage, a feed-bar connected to the vise or clamp, a reciprocating automatically-operating grip and an automatically-operating detent, the grip and detent engaging the feed-bar, and tripping-arms for releasing the feed-bar from engagement with the grip and detent, substantially as set forth.

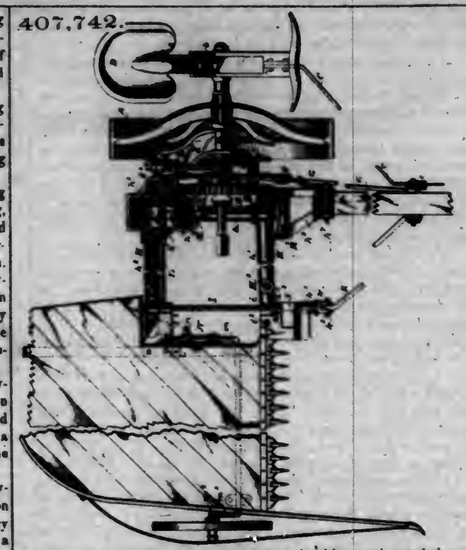
16. In a broom-sewing machine, the combination of a carriage fitted to slide upon ways or guides, a broom vise or clamp pivoted to said carriage, a feed-bar connected to the vise or clamp, a reciprocating automatically-operating grip, an automatically-operating detent, a brake or holdback, the grip, detent, and brake, and simultaneously-operating tripping-levers for releasing the feed-bar from engagement with the grip, detent, and brake or holdback, substantially as set forth.

17. In a broom-sewing machine, the combination of a pivotally-mounted broom vise or clamp, a feed-bar connected thereto, a grip engaging the feed-bar, a rock-shaft connected to said grip, an arm secured to the rock-shaft and provided with rollers, one of which is adjustable, and a wheel having a cam-ring 233, said ring being provided with shoulders 235 on its inner face in line, or approximately so, with the front ends of the active portions of the cam-ring, substantially as set forth.

407,742. **HARVESTER.** HENRY R. PRIDMORE, Chicago, Ill., assignor to the McCormick Harvesting Machine Company, same place. Filed Aug. 12, 1886. Renewed Oct. 8, 1887. Serial No. 251,823. (No model.)

Claim.—1. The combination, substantially as hereinbefore set forth, of the main wheel, the platform, the rectangular gear-frame suspended from the main axle inside the main wheel at practically the level of the platform, the rake-standard located upon and near the outer end of the front lateral arm of said frame, the hinge-joints connecting the platform-frame both to the front and to the rear lateral arms of said gear-frame, and the extension of the front arm beyond the hinge, lapping the inner shoe fixed to said platform-frame,

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and adapted to receive a bolt passing through said extension and shoe to clamp the platform rigidly to the gear-frame.

2. The combination, substantially as hereinbefore set forth, of the main wheel, the platform, the intermediate or gear frame hinged to said platform and adapted to receive a bolt which holds the frame and platform rigidly together, the bracket-casting and its radius-arm connecting the main axle with the rear inner corner of the gear-frame, the hinged tongue, the frame-bar pivoted to the tongue and entering a keeper at the rear of the gear-frame, and the lifting and tilting levers, respectively, supporting the frame-bar from the bracket and the front of the gear-frame from the frame-bar.

3. The combination, substantially as hereinbefore set forth, of the main wheel, the platform, the intermediate or gear frame suspended from the main wheel and adapted to receive a fastening which holds said frame and platform rigidly together, the hinge-connection between the platform and gear-frame, the divided crank-shaft supporting the grain-wheel at its outer end and link-connected to the main axle at its inner, and means for transmitting motion from one section to the other.

4. The combination, substantially as hereinbefore set forth, of the main wheel, the platform, the intermediate or gear frame suspended from the main wheel and having an extension of its front frame-bar adapted to receive a fastening to secure it rigidly to the platform, the hinge-connection between the platform and intermediate frame, the divided crank-shaft supporting the grain-wheel at its outer end, and the link connecting the cranks at the adjacent ends of the sections of said shaft.

5. The combination, substantially as hereinbefore set forth, with a platform and a frame intermediate between it and the main wheel, to which frame it is hinged, of a divided crank-shaft running beneath the platform, having the ends of each section cranked, and the outer crank of each section adapted, the one and the other, to receive a grain-wheel, a link connecting the adjacent cranks of the two sections, and a grain-wheel fitted to be applied to either of the two outer cranks of the sections.

6. The combination, substantially as hereinbefore set forth, of the main wheel, the platform, the gear-frame intermediate between the main wheel and the platform, the hinge-joint between the platform and outer end of said frame, the draft-tongue, and a bound connecting the inner shoe with the tongue and swivel-jointed to said inner shoe on the same axis as the hinge between the platform and frame.

7. The combination, substantially as hereinbefore set forth, of a main wheel, a platform, an intermediate frame, a draft-tongue hinged to said intermediate frame, a hinge between the platform and the intermediate frame parallel with the main wheel, and a bound connecting the inner shoe with the draft-tongue and universally jointed to said inner shoe in line with the axes of the hinges between the platform and frame and tongue and frame.

8. The combination, substantially as hereinbefore set forth, of a main wheel, a platform, an intermediate frame, a draft-tongue hinged to said intermediate frame, a hinge between the platform and intermediate frame parallel with the main wheel, a bound connecting the

inner shoe with the draft-tongue, a swivel-bolt between the hound and inner shoe in line with the platform-hinge, and a pin-joint between said hound and bolt in line with the tongue-hinge.

9. The combination, substantially as hereinbefore set forth, of the main wheel, the main axle, the platform, the intermediate frame suspended from the main axle, the hinge between the platform and the intermediate frame, the extension of the front arm, said frame adapted to receive a fastening to hold the platform rigid, the divided crank-shaft running beneath the frame and platform, the radius-bar connecting the crank at the stubble end of the inner section of said shaft with the main axle, the link connecting the crank at the outer end of said section with a crank on the inner end of the second or outer section, and the grain-wheel mounted on the crank at the divider end of said outer section.

10. The combination, substantially as hereinbefore set forth, with the main wheel, the platform, and the intermediate frame, of the divided crank-shaft running underneath the platform and adjacent frame, the link connecting the adjacent cranks of the two shaft-sections and the spring-pin to said link, whereby it may be readily applied to or detached from the crank on the inner section to permit the grain-wheel to be transferred thereto when the platform is folded.

11. The combination, substantially as hereinbefore set forth, with the main wheel, of the platform and gear-frame suspended from the main axle, and the hinged tongue, the frame-bar pivoted to said tongue and entering a keeper at the rear of the gear-frame and having the reverse curves or arches described, and the lifting and tilting levers arranged to apply their strains at or near the apexes of said curves.

12. The combination, substantially as hereinbefore set forth, of the bracket-casting on the main axle, the lever pivoted thereto, the frame-bar pivoted to the draft-tongue and extending to a keeper at the rear of the inner platform or gear-frame and having an inverted arch, and the link depending from said lever and connected at or near the apex of said arch.

13. The combination, substantially as hereinbefore set forth, of the bracket-casting on the main axle supporting the inner end of the platform and gear-frame, the frame-bar pivoted to the draft-tongue and extending to a keeper at the rear of the gear-frame and formed with an upright curve or arch, the segment and tilting-lever mounted at the apex of said arch, and the link extending from said lever to a hinge-connection at the front of the gear-frame.

14. The combination, substantially as hereinbefore set forth, of the bracket-casting on the main axle supporting the inner platform or gear-frame, the lever pivoted thereto, the link depending from said lever, the frame-bar pivoted to the draft-tongue and extending to a keeper at the rear of the gear-frame and formed with reverse curves, the link depending from the tilting-lever to the apex of the inverted curve of said bar, the tilting-lever and its segment mounted at the apex of the upright curve, and the link depending from said lever to a connection with the front of the frame.

15. The frame-casting composed of the longitudinal sleeve for the reception of the crank-shaft and the transverse hollow arm integral therewith to form the front bar of the frame.

16. The frame-casting composed of the longitudinal sleeve for the reception of the crank-shaft, the box integral therewith at the rear end for the prime pinion and bevel-gearing which drive said shaft, and the hollow transverse arm at the front of said sleeve and integral therewith for the support of the finger-bar.

17. The frame-casting composed of the longitudinal sleeve for the reception of the crank-shaft, with the forward-extending bracket, to which the draft-tongue is hinged, and the transverse hollow arm for the support of the finger-bar.

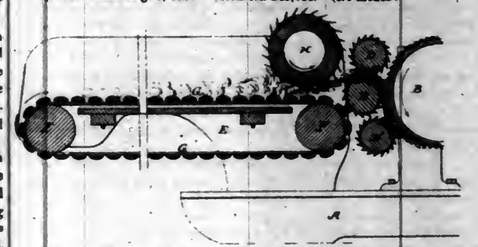
18. The frame-casting composed of the longitudinal sleeve for the reception of the crank-shaft, and the transverse hollow arm supporting the finger-bar and having the rake-standard rising therefrom and integral therewith.

19. The combination, substantially as hereinbefore set forth, of the hollow sleeve for the crank-shaft, the front transverse arm cast integral therewith and formed hollow, the integral rake-standard rising from said arm, the bracket for the draft-tongue hinge, also integral with said casting, and the wrought-metal bar riveted to an ear from the rear end of said casting and extending parallel with the front or hollow arm.

20. The combination, substantially as hereinbefore set forth, of the hollow sleeve for the crank-shaft, the box for the prime pinion and bevel-gearing, the front transverse arm formed hollow and with the rake-standard thereon, and the bracket for the draft-tongue, all cast in one piece, and the wrought-metal bar riveted to an ear from said casting adjacent to the box and extending parallel with the front arm.

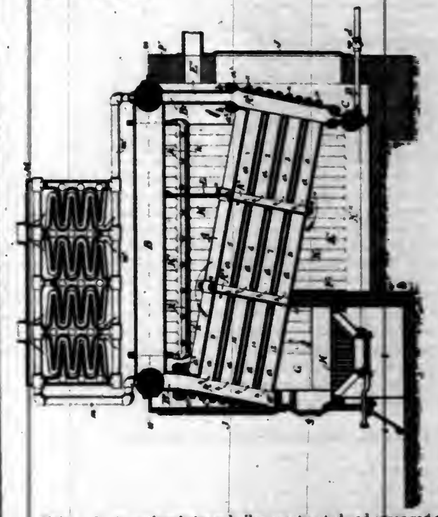
21. The combination, substantially as hereinbefore set forth, of the main wheel, the main axle, the supporting-bracket mounted on said axle, the prime-pinion shaft entering a radius-arm from said bracket, the hinged draft-tongue, the frame-bar, the platform, the levers on the bracket and frame-bar to lift and to tilt the platform, the metal intermediate frame formed as described and having its front arm or bar adapted to receive a stiffening-bolt, whereby it is connected to the finger-bar, the pivot-rod extending between the two arms of said frame and forming the hinge for the platform, the divided crank-shaft running underneath said frame and platform, the radius-bar connecting the axle and crank on the stubble end of the inner section of said shaft, the grain-wheel supported on the crank at the divider end of the outer section, and the link connecting the cranks at the adjacent ends of said sections.

407,743. CARDING-MACHINE. JOSIAH K. PROCTOR, Philadelphia, Pa., assignor to the Philadelphia Textile Machinery Company, same place. Filed Aug. 1, 1887. Serial No. 245,781. (No model.)



Claim.—The combination of the feed-rolls with the feed-apron or equivalent device, and a retainer-roll located above the apron and having teeth, whereby as the fiber is fed between the retainer-roll and apron to the feed-rolls snarls or bunches will be caught and held by the teeth of the roll without preventing the passage of the clear fibers, all substantially as specified.

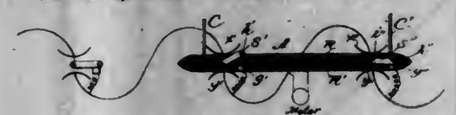
407,744. SECTIONAL STEAM-BOILER. JOHN ROWBOTHAM and WILLIAM ROWBOTHAM, Merchantville, N. J.; said William Rowbotham assignor to said John Rowbotham. Filed Mar. 14, 1888. Serial No. 308,230. (No model.)



Claim.—1. A sectional steam-boiler constructed and arranged as described, each section being a single casting and consisting of a series of tubes formed with and opening into a header or stand-pipe at its ends, and formed with one or more hollow diaphragms intermediate of its length, with which the series of tubes are in open communication, whereby the steam generated in the section to the immediate rear of each hollow diaphragm is caused to flow therein, as set forth.

2. In combination with a steam-boiler, a furnace the vertical walls of which are formed in whole or part of one or more castings, each casting consisting of a series of vertical tubes in such juxtaposition that the thickness of metal of two contiguous tubes at the line of contact is equal only to the thickness of the metal of one tube as to its portion out of contact, said tubes at one end cast integral and in open communication with a laterally-extending base-tube and at its opposite end formed with a flange adapted to be suitably united to a corresponding flanged end of a similarly-cast section of a series of tubes, the latter cast integral, in open communication and preferably at an incline with a steam-drum and together forming the furnace-top, the flanged ends of said sections so formed as, when joined together, to form a laterally-extending tube, and when two or more such co-joint sections are employed in a single furnace the ends of the respective laterally-extending tubes and the steam-drum section formed with a flange as a means of coupling the sections together, all of said tubes adapted to contain water and form radiating-surface for generating steam in connection with a boiler, as set forth.

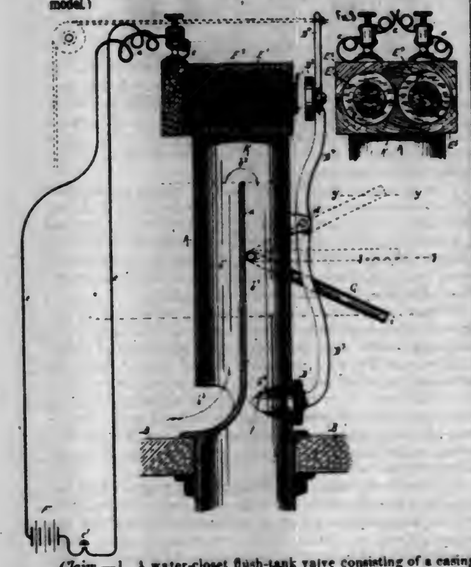
407,745. ELECTRICAL RAILWAY. SIDNEY H. SHORT, Denver, Colo. Filed Apr. 15, 1887. Serial No. 234,994. (No model.)



Claim.—1. In an electric railway, the combination of an insulated underground wire or cable cut in sections, with throw-switches connecting the ends of the sections, and contact-plates at the ends of the sections with a space between them, and a current-collector adapted to operate the switches and collect the current through the contact-plates, substantially as described.

2. An electric railway having a single conductor composed of sections of insulated wire, the ends of the sections being connected together by switches, a switch-shifter for operating said switches, contact-plates on the ends of the sections with a space between them, and a suitable current-collector, substantially as described.

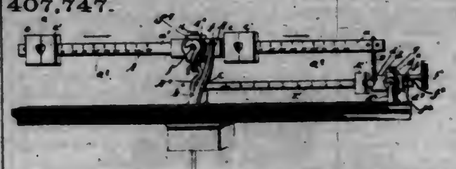
407,746. WATER-CLOSET FLUSHING-VALVE. JOHN W. STEVENS, St. Paul, Minn. Filed Sept. 7, 1888. Serial No. 284,779. (No model.)



Claim.—1. A water-closet flush-tank valve consisting of a casing A, having division *a* and inlet-ports b^3 b^4, an electro-magnet attached to said casing, and a valve-lever D^2, having valve D', adapted to close said port b^4, and an armature D^3, adapted to be actuated by said electro-magnet when the circuit therein is broken or closed to correspondingly open and close said valve, substantially as and for the purpose set forth.

2. A water-closet flush-tank valve consisting of a casing A, having division *a* and inlet-ports b^3 b^4, a valve D', adapted to open and close said port b^4, and an adjustable tube G, connected into said casing, whereby the height of water in the tank may be regulated, substantially as and for the purpose set forth.

407,747. WEIGHING-SCALES. WILLIAM H. STEWART, Kansas City, Kans., assignor of one-half to William S. Whittaker, same place. Filed Nov. 15, 1888. Serial No. 290,971. (No model.)



Claim.—1. A scale-beam fulcrumed at an intermediate point and provided on each side of its fulcrum with a series of graduations which increase, respectively, toward and from the fulcrum, and also provided at each end of each series with a space devoid of graduations to receive the poises, in combination with two sets of poises arranged, respectively, on opposite sides of the fulcrum and adapted to occupy said ungraduated spaces, each set of poises consisting of two independent members, substantially as and for the purpose specified.

2. A longitudinally-adjustable scale-beam fulcrumed at an intermediate point, provided on each side of its fulcrum with a series of graduations which increase in the same direction, respectively, toward and from the fulcrum, and also provided with a central space and end spaces which are devoid of graduations, substantially as specified.

3. In weighing-scales, the centrally-poised main beam, both arms of which are graduated and carry weighing-poises, in combination with an auxiliary beam the longer arm of which is connected near the fulcrum to the outer or free end of one of the arms of the main beam, substantially as specified.

4. In weighing-scales, the centrally-poised main beam, each arm of which is provided with a series of graduations which increase, respectively, toward and from the fulcrum, the load being suspended from the inner end of that arm on which the graduations increase toward the fulcrum, and the weighing-poises arranged, respectively, on the arms of the beam and adapted to be normally located at the initial points of the series of graduations, in combination with an auxiliary scale-beam carrying a poise on its longer graduated arm, said arm being connected near its fulcrum to the extremity of that arm of the main beam on which the graduations increase outward or from the fulcrum, substantially as specified.

5. In weighing-scales, the combination of the main centrally-poised beam having a movable pivot, and having both arms graduated, respectively, toward and from the said pivot, the movable weighing-poises arranged, respectively, on opposite sides of the pivot, and the auxiliary beam provided with a movable pivot and a weighing-poise, and having its longer arm connected to the extremity of one of the arms of the main beam, substantially as specified.

6. A scale-beam provided with a blank or ungraduated space and an auxiliary weighing-poise, in combination with the usual weighing-poise upon the same beam and adapted to register with the same series of graduations and the longitudinally-adjustable auxiliary beam, substantially as set forth.

7. In a weighing-scale, the combination of the scale-beam having two series of graduations and having a blank or ungraduated space at each end of each series of graduations, and the two sets of poises of two poises to each set, one set being adapted to register with each series of graduations, substantially as specified.

8. In weighing-scales, the combination of a centrally-poised main scale-beam having both arms graduated, the two sets of double poises arranged, respectively, on the two arms of the scale-beam, and a movable sleeve fitting on said beam between the series of graduations and carrying the pivots for the scale-beam and the scale-platform rod, substantially as specified.

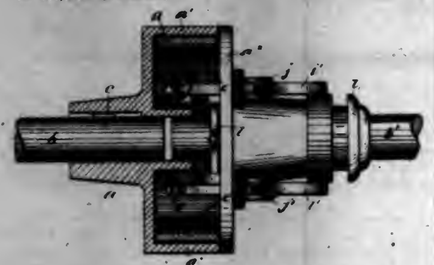
9. In weighing-scales, the combination, with a separate sleeve provided with pivots and a scale-beam extending through and supported in said sleeve, of the movable slide carrying weighing-pivots adjusted on the said sleeve, substantially as and for the purpose specified.

10. In weighing-scales, the combination, with a double or centrally-fulcrumed main scale-beam carrying weighing-poises and provided with a movable sleeve having the poising and weighing pivots, of the auxiliary scale-beam fitting in a fulcrumed sleeve which is connected to one arm of the main scale-beam, said auxiliary beam being longitudinally adjustable in the said sleeve, substantially as specified.

11. In weighing-scales, the combination, with the main centrally-poised scale-beam, of an auxiliary scale-beam provided with a fulcrumed sleeve which is connected to the main scale-beam and is provided with a threaded stem and a milled nut fitting on said stem and provided with a flange which engages a notch in said auxiliary beam, whereby the latter may be longitudinally adjusted in the sleeve by turning the nut on the stem, substantially as and for the purpose specified.

12. In weighing-scales, the combination, with a scale-beam, of a loose sleeve fitting on the beam and provided with pivots and a slide fitting on the said sleeve and provided with pivots, substantially as specified.

407,748. FRICTION-CLUTCH. WILLIAM B. TATRO, Hartford, Conn., assignor to William J. Pierce, same place. Filed Aug. 27, 1888. Serial No. 283,923. (No model.)



Claim.—1. In a friction-clutch, in combination, a driving clutch-section, the divided ring located in said section and having the lever-socket with rounded surfaces formed between the adjacent ends of the ring, the tilting lever radially arranged and having the enlarged rounded head supported between the ends of the ring, and the cam-slide having a projecting lug in sliding contact with one side of the tilting lever, all substantially as described.

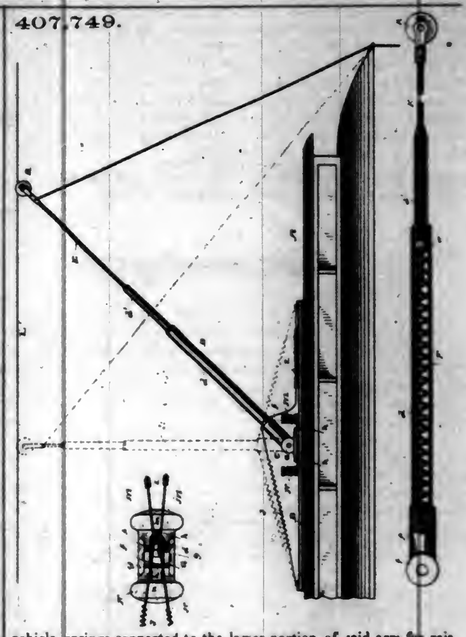
2. In combination, in a friction-clutch, the driving clutch-section, the driven clutch-section, the tilting lever with one end held between the ends of the divided ring and radially arranged, the divided ring having the shoulder on the inner side and adjacent to the tilting-lever socket, and the cam-slide having a projecting lug adapted to engage the said shoulder on the divided ring, all substantially as described.

3. In combination, in a friction-clutch, the divided ring having the tilting-lever socket with rounded surfaces formed between the adjacent ends of the ring, the tilting lever, with one end held in the lever-socket in the divided ring, the cam-slide borne in the guide-block upon one side of said tilting lever, and the stop-slide borne in a guide-block upon the opposite side of said tilting lever, and the within-described slide-operating mechanism, all substantially as described.

4. In combination, in a friction-clutch, the divided ring, with the lever-socket and the shoulders upon opposite sides of the socket, the guide-blocks arranged upon opposite sides of the axis of the clutch-body, the cam-slide, with its projecting arm borne in one of the said guide-blocks, the stop-slide borne in the opposite block and interchangeable each with the other, the sliding collar, and the connected levers and links, whereby the sliding movement of the collar is imparted to the several cam-slides, all substantially as described.

5. In a friction-clutch, in combination, the driving clutch-section provided with bolt-holes, the driven clutch-section provided with corresponding bolt-holes, the two shafts appurtenant to said sections, respectively, the tilting lever held in the socket between the ends of the ring, the within-described tilting-lever-operating mechanism, and the bolts whereby the parts may be positively connected, all substantially as described.

407,749. EXTENSIBLE UPWARD-PRESSURE CONTACT-ARM. CHARLES J. VAN DEPOELE, Lynn, Mass. Original application filed Nov. 23, 1888, Serial No. 291,652. Divided and this application filed June 7, 1889. Serial No. 313,473. (No model.)



Claim.—1. In an electric railway, the combination, with an overhead conductor and a moving vehicle, of a rigid arm hinged to the top of said vehicle, said arm being composed of a tubular section and a telescopic end section carrying a contact-wheel at its free end and fitting into said tubular arm, and a spring within said arm acting against said end section and keeping the contact-wheel normally against the conductor when the arm is moved upon its support.

2. In an electric railway, the combination, with an overhead conductor and a moving vehicle, of a rigid arm hinged to the top of said vehicle, said arm having a telescopic end section carrying a contact-wheel, a spring for projecting said end section and keeping the contact-wheel normally against the under side of the conductor when the arm is moved upon its support, and springs in engagement with the lower part of said arm for raising the same from a horizontal toward a vertical position, according to the height of the conductor.

3. In an electric railway, the combination, with an overhead conductor and a moving vehicle, of a rigid arm hinged to the top of said vehicle, springs connected to the lower portion of said arm for raising the same toward a vertical position, and a telescopic end section carrying a contact-wheel at its free end and fitting into said tubular arm, and a spring within said arm acting against the end section for projecting the same, whereby the arm may be moved into operative position toward either end of the car without detaching the contact device from the conductor.

4. In an electric railway, the combination, with an overhead conductor and a moving vehicle, of a rigid arm hinged to the top of said vehicle, springs connected to the lower portion of said arm for raising the same toward a vertical position from either direction, and a telescopic end section carrying a contact-wheel at its free end and fitting into said tubular arm, and a spring within said arm acting against the end section for projecting the same, whereby the arm may be moved into operative position toward either end of the car without detaching the contact device from the conductor.

5. In an electric railway, the combination, with an overhead conductor and a moving vehicle, of a rigid arm hinged to the top of said vehicle upon a transverse axis, said rigid arm having a telescopic end section fitting within the arm and carrying a contact device at its free extremity, a spring within the arm for projecting the end section, and a spring or springs in engagement with the lower portion of said arm and acting to raise the same toward a vertical position.

6. In an electric railway, the combination, with an overhead conductor and a moving vehicle, of a rigid arm mounted at its lower end upon both a vertical and transverse axis upon the top of said vehicle, springs connected to the lower portion of said arm for raising the same toward a vertical position, and a telescopic end section carrying a contact-wheel at its free end and fitting into said tubular arm, and a spring within said arm acting against said end section for projecting the same, whereby said arm may be moved into operative position toward either end of the car without detaching the contact device from the conductor.

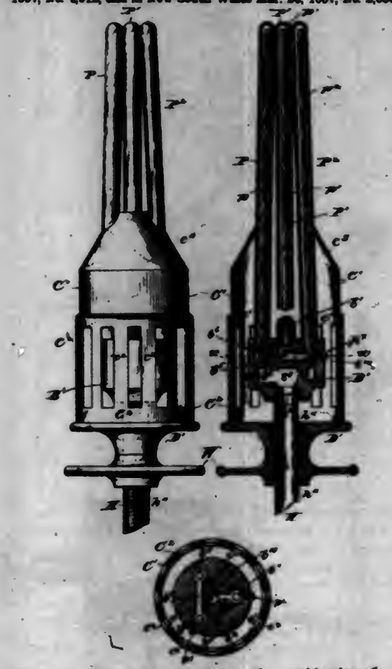
7. In an electric railway, the combination, with an overhead conductor and a moving vehicle, of a contact-carrying arm hinged to the top of the car, springs coiled about the axis thereof, their free ends engaging the said arm, detent devices connected to the other ends of said springs, and devices adjustably engaging the detents, whereby the tension of the springs may be adjusted.

8. In an electric railway, the combination, with an overhead conductor and a moving vehicle, of a contact-carrying arm hinged to the top of the car, springs coiled on the axis thereof, their free ends engaging the shank of the arm, ratchets, as Q, mounted on said axis, the inner end of said springs being secured to the interior of the ratchets, and ratchets, as *q*, rigidly secured on said axis and having teeth engaging the teeth on the ratchets Q, whereby the tension of the springs may be adjusted.

9. In an electric railway, the combination, with an overhead conductor and a moving vehicle, of an arm hinged to the top of the car, a contact-wheel engaging the under side of said conductor, the axis thereof being pivoted in a fork on the end of the arm, and an arm or arms, as L, pivoted at one end to the prongs of the fork and at their outer ends engaging the hub of the contact-wheel, whereby external contact is made between the conductor and the arm.

10. In an electric railway, the combination, with an overhead conductor and a moving vehicle, of an arm hinged to the top of the car, a contact-wheel engaging the under side of said conductor, the axis thereof being pivoted in a fork on the end of the arm, and arms, as L L, pivoted at one end to the prongs of the fork and embracing the hub of the contact-wheel, and an adjustable spring connecting the outer ends of said arms.

407,750. REGENERATIVE BURNER. ROSEMMOND WALLWORK, Manchester, County of Lancaster, England. Filed Oct. 24, 1888. Serial No. 289,045. (No model.) Patented in England Nov. 24, 1886, No. 15,338; in France Dec. 20, 1886, No. 180,379; in Belgium Dec. 22, 1886, No. 75,679; in Germany Dec. 22, 1886, No. 42,190; in Victoria Feb. 1, 1887, No. 4,912, and in New South Wales Mar. 28, 1887, No. 2,099.



Claim.—1. In a regenerative burner, the combination of a supply-pipe, a group of rectilinear regenerative pipes, and a burner-tip arranged axially within the group at the base thereof and in such proximity thereto as to bring them in contact with the flame, substantially as and for the purposes specified.

2. In a regenerative burner, the combination of a supply-pipe, a group of rectilinear regenerative pipes, each composed of two concentric pipes, and a burner-tip arranged axially within the group at the base thereof and in such proximity thereto as to bring them within reach of the flame, said pipes being so connected as to form a continuous circuit the initial whereof is in communication with the supply-pipe and the terminal with the burner-tip, substantially as and for the purposes specified.

3. In a regenerative burner, the combination of a supply-pipe, a group of rectilinear and converging regenerative pipes, and a burner-tip arranged axially within the group at the base thereof and in such proximity thereto as to bring them within reach of the flame, said pipes being connected in series the initial whereof is in communication with the supply-pipe and the terminal with the burner-tip, substantially as and for the purposes specified.

4. In a regenerative burner, the combination, with the supply-pipe and the burner tip or orifice, of a plurality of regenerative pipes, the diameter whereof gradually decreases outwardly, grouped around the burner-orifice and in such proximity thereto to bring them in contact with the flame, said pipes being connected in series, the initial thereof communicating with the supply-pipe and the terminal with the burner-orifice, substantially as and for the purposes specified.

5. In a regenerative burner, the combination, with the burner tip or orifice and the supply-pipe, of a plurality of regenerative pipes, each comprising concentrically-arranged pipes connected in a continuous series, the initial communicating with the supply-pipe and the terminal with the burner-orifice, the diameter of the outer pipes gradually decreasing outwardly, said pipes being grouped around the burner-orifice to bring them in contact with the flame, substantially as and for the purposes specified.

6. In a regenerative burner, the combination, with the burner tip or orifice, and the supply-pipe, of a plurality of regenerative pipes grouped around the burner-orifice and converging toward the axial plane thereof, each pipe comprising concentrically-arranged pipes connected in continuous series, the initial communicating with the supply-pipe and the terminal with the burner-orifice, the diameter of the outer pipes gradually decreasing outwardly, substantially as and for the purposes specified.

7. In a regenerative burner, the combination, with the burner provided with an axial gas-passage leading to the burner tip or orifice, the supply-pipe, a plurality of regenerative pipes, open-ended passages or channels formed in said burner, and apertured connections between the outer ends of the pipes to connect them in series, the initial communicating with the supply-pipe and the terminal with the passage leading to the burner-orifice, of screw-plugs for the open ends of the channels and the apertures in the pipe-connections, substantially as and for the purposes specified.

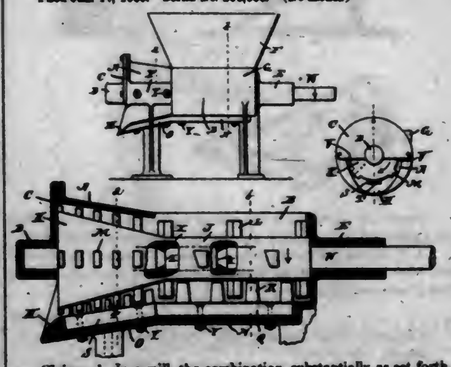
8. In a regenerative burner, the combination, with the burner tip or orifice, the supply-pipe, and a plurality of regenerative pipes grouped around the burner-orifice in such proximity as to bring them in contact with the flame, said pipes being connected in series, the initial communicating with the supply-pipe and the terminal with the burner-orifice, of an air cylinder or chamber encompassing the burner and regulating devices for regulating the volume of air admitted to the burner, substantially as and for the purposes specified.

9. The herein-described regenerative burner, comprising an injector and a multitubular regenerator, having its tubes connected in series and arranged in a projection of the plane of and in proximity to the injector-nozzle, said injector being connected with the terminal of the multitubular regenerator, substantially as and for the purposes specified.

10. The herein-described regenerative burner, comprising an injector, a combining-cone arranged in front of the injector, and a multitubular regenerator having its tubes connected in series and arranged in a projection of the plane of and in proximity to the injector-nozzle and combining-cone, said injector being connected with the terminal of the multitubular regenerator, substantially as and for the purposes specified.

11. In a regenerative burner for volatile combustible liquids, the combination of the cone-cylinder C with regenerative pipes arranged in proximity to the flame for converting the liquid into vapor or gas, and the ejector-tip *b'*, connected with the regenerative pipes and arranged in the axial plane of the cone, for injecting the gas or vapor generated into said cone to produce a partial vacuum and forcibly entrain the air necessary to combustion into the cone, substantially as and for the purposes specified.

407,751. MILL. CHARLES F. WALTERS and WILLIAM H. GARTSIDE, Richmond, Ind., assignors to the Richmond City Mill Works, same place. Filed Jan. 17, 1888. Serial No. 296,660. (No model.)

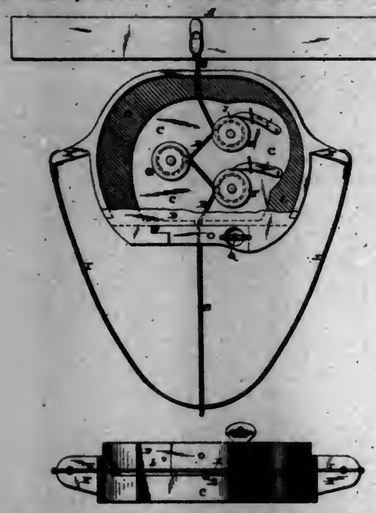


Claim.—1. In a mill, the combination, substantially as set forth, of a horizontal frusto-conical shell prolonged into an open-topped eccentric trough and provided with an axial bearing at the end of the trough and with longitudinally-arranged pockets, a removable axial bearing at the larger end of the shell, toothed blocks secured in the pockets, a shaft mounted in said bearings, and a toothed revolver secured to said shaft and having its body cylindrical in said trough and conical in said conical shell.

2. In a mill, the combination, substantially as set forth, of a frusto-conical shell prolonged into an open-topped eccentric trough and provided with teeth and bearings, a shaft journaled in said bear-

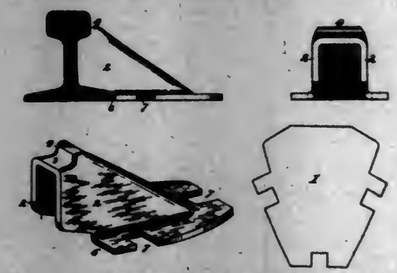
ings and provided with two oppositely-facing shoulders, and a toothed revolver upon said shaft and engaging said shoulders.

407,752. FIRE-ESCAPE. GEORGE C. WATERHOUSE, New Albany, Ind. Filed Sept. 10, 1888. Serial No. 285,094. (No model.)



Claim.—The combination of descending rope B with the main frame C, having the arms H formed integral therewith, and its lower portion cut away so as to form a shoulder, the cover D, having its lower portion provided with the enlarged part L, engaging the shoulder upon the frame, the brake-lever O, pivoted in the part L at right angles to its face, the screw Q, passing through its free end into the frame C, and the friction-rollers around which the rope passes journaled in the frame and cover, substantially as and for the purpose shown and described.

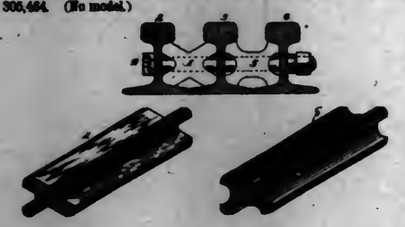
407,753. RAIL-BRACE. FREDERIC C. WEIR and CHARLES PARTINGTON, Cincinnati, Ohio, assignors to The Weir Frog Company, same place. Filed Feb. 18, 1889. Serial No. 300,338. (No model.)



Claim.—1. A railway-brace made from a blank struck up to form the vertical sides 2 and plane shoulder 3, substantially as specified.

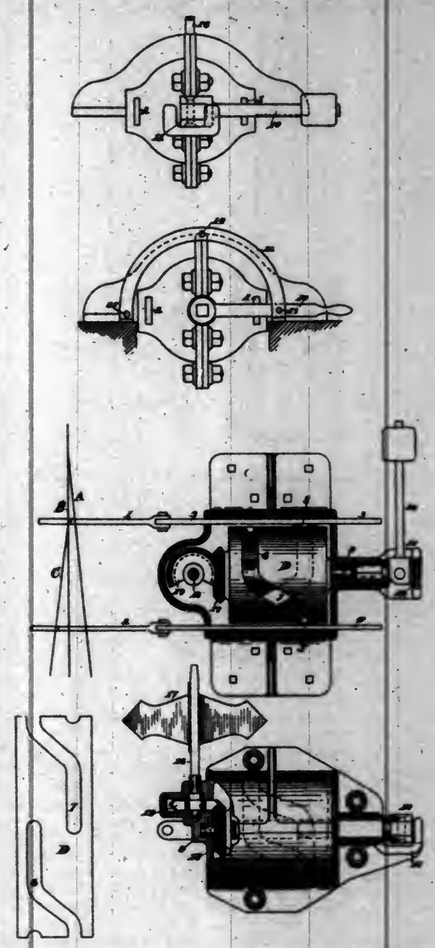
2. A railway-brace made from a blank struck up to form the vertical sides 2 and having the plane shoulder 3 and the bottom shoulders 5, substantially as specified.

407,754. FILLING FOR RAILWAY FROGS AND CROSSINGS. FREDERIC C. WEIR, Cincinnati, Ohio. Filed Mar. 30, 1889. Serial No. 305,464. (No model.)



Claim.—A filling-piece for railway frogs and crossings made in cross form and having the four arms abutting the two adjacent rails in such manner that the two upper arms abut at the juncture of the heads of the rails and the web and the two lower arms at the juncture of the base and the web, substantially as described.

407,755. SWITCH-STAND. FREDERIC C. WEIR and NATHANIEL O. GOLDSMITH, Cincinnati, Ohio, assignors to The Weir Frog Company, same place. Filed Mar. 30, 1889. Serial No. 305,469. (No model.)

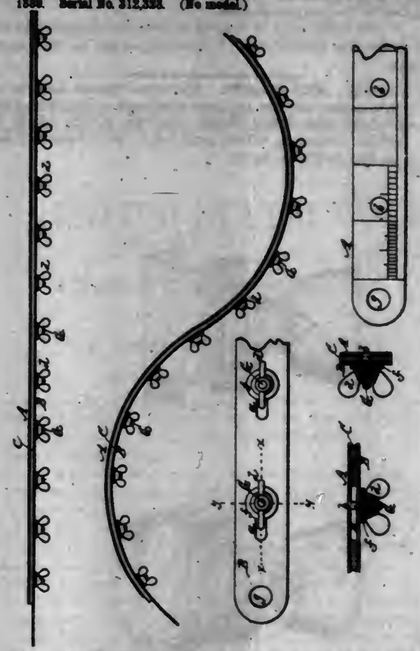


Claim.—1. In a three-throw switch-stand, the horizontal rotating drum having the slots 6 and 7, each formed with an inclined working portion, from which runs a straight idle portion substantially at right angles to the axis of the drum, in combination with drive-bars 3 and 4, connected with different switch-bars and having studs which respectively engage the slots, substantially as described.

2. In a three-throw switch-stand, the horizontal drum having two independent slots 6 and 7, in combination with the casing, the two parallel drive-bars 3 and 4, movable in the casing and having studs respectively engaging the slots, and two different switch-bars 1 and 2, connected, respectively, with the drive-bars, substantially as described.

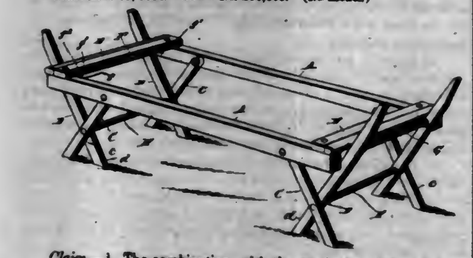
3. The combination of the casing, the horizontal drum having two independent slots 6 and 7 and a shaft 9, the two parallel drive-bars 3 and 4, moving in the casing and having studs respectively engaging the slots, the two switch-bars connected to the drive-bars, the hand-lever 10, connected with the drum-shaft, and a locking device for holding the lever in the three different positions required for the use of the main and switch rails, substantially as described.

407,756. FLEXIBLE RULE. HENRY B. WILLIAMS, Rochester, N.Y., assignor of one-half to Lemuel A. Jeffreys, same place. Filed May 27, 1889. Serial No. 312,323. (No model.)



Claim.—In a flexible rule, the combination of two elastic strips, an intermediate flexible packing, the inner strip and the packing being provided with slots, screws attached to the outer strip and passing through the slots, and nuts turning on the screws, as shown and described, and for the purpose specified.

407,757. FOLDING-COT FRAME. GEORGE H. WILSON, Utica, N.Y. Filed Nov. 15, 1888. Serial No. 290,965. (No model.)



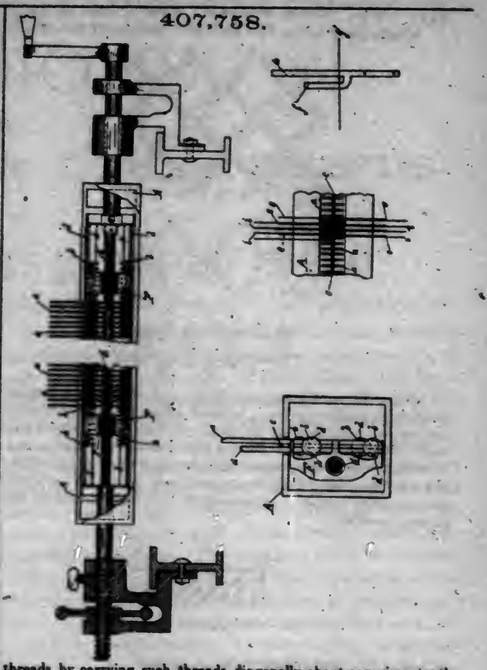
Claim.—1. The combination, with the cot-frame, of the two leg-sections pivoted together, one leg-section being pivoted to the side rails of the cot, the other leg-section D being longer to project above the plane of the cot-frame, and the connections *f f*, having offsets *f'*, which pivotally connect the leg-section D with the front edge of the end bar of said cot-frame, substantially as and for the purpose described.

2. The herein-described folding cot, composed of the side rails, the end bars, supports at each end of the frame, each composed of the two leg-sections of unequal length pivoted together, the shorter leg-section being pivoted to the said side rails, the bars F, connected by staples to the inner ends of the said end bars and having their ends bent at right angles to form the offsets *f'*, and again at right angles to form the connections *f f*, which are connected at their outer ends with the longer of the two leg-sections, substantially as and for the purpose described.

407,758. STRIPING ATTACHMENT FOR WARP-DRESSING MACHINES. HENRY GILDARD, Lewiston, Me. Filed Apr. 23, 1888. Serial No. 271,851. (No model.)

Claim.—1. A series of bifurcated reed-dents composing a double reed, the teeth of which are adapted to regulate and guide certain

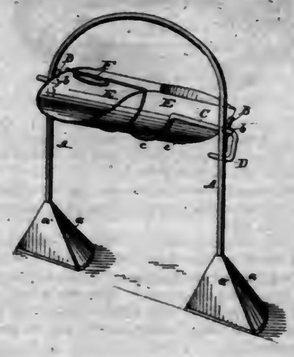
407,758.



threads by carrying such threads diagonally about any given tooth of their respective series, whereby they take and maintain a proper place on the warp-beam, according to the design of the pattern when the yarn is woven into cloth, substantially as described.

2. A reed-dent consisting of a single post bifurcated at the top and operating substantially as and for the purposes set forth and described.

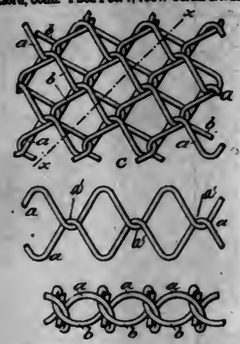
407,759. COUNTER FOR FACILITATING THE TRANSFER OF MONEY. JAMES S. KEY, New York, N. Y. Filed Oct. 23, 1886. Renewed Dec. 13, 1888. Serial No. 293,493. (No model.)



Claim.—1. The combination, with the standard A, having attached spring-bearing B, provided with a concavity *b*, and the weighted pedestals *a*, having smooth rear surface *a'* in the same vertical plane with said standards, of the weighted scoop E, the thumb-rest F, and the pivotal rod C, having a central concavity *c*, a stop D at one end, and a ring *d* at the other, substantially as shown and described, and for the purposes herein set forth.

2. The combination, with the weighted standards A, having attached spring-bearings B, of the scoop E, provided with a thumb-rest at its upper outer end, and a weighted plate *e*, attached to the under side at its inner end, together with a rod C, having a curved central surface *c*, secured to said scoop, and an integral stop D, formed at one end, the said rod adapted to enter said spring-bearings, substantially as shown and described.

407,760. WOVEN-WIRE MAT. ROBERT B. PEASE and HENRY ROBERTS, Hartford, Conn. Filed Feb. 7, 1887. Serial No. 226,757. (Model.)

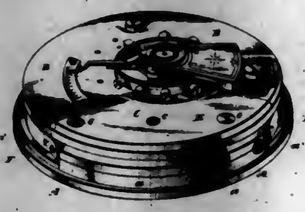


Claim.—In combination, in an interwoven wire fabric, a series of interlocking primary coils *a*, a series of transverse and interlocking bracing-coils *b*, the turns of the latter coils lying outside of the successive primary coils *a*, whereby the several coils of the primary and secondary fabrics are held against depthwise movement on each other, and a flexible shape-defining frame attached to the edge of the fabric and extending around it, all substantially as described, and for the purpose specified.

REISSUES.

11,013. WITHDRAWN.

11,014. WATCH-MOVEMENT. GEORGE HUNTER, Elgin, assignor to the Elgin National Watch Company, Chicago, Ill. Filed May 31, 1889. Serial No. 312,700. (Original No. 347,272, dated Aug. 10, 1886.



Claim.—1. A full-plate watch-movement in which the barrel-bridge extends to and is secured directly upon the bottom plate, substantially as and for the purpose specified.

2. A full-plate watch-movement in which the barrel-bridge is secured to and supported entirely by the bottom plate, substantially as and for the purpose shown.

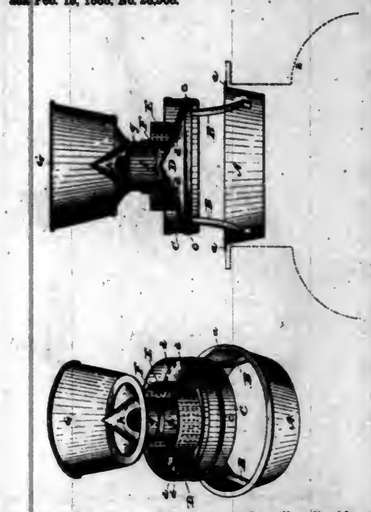
3. A full-plate watch-movement in which the barrel-arbor is in part journaled within a bridge that is disconnected from and independent of the top plate, substantially as and for the purpose set forth.

4. A full-plate watch-movement in which the barrel-arbor and winding-pinion are in part journaled within a bridge that is secured directly to the bottom plate, substantially as and for the purpose shown and described.

5. A full-plate watch-movement in which the barrel-arbor and winding-pinion are journaled within and between the bottom plate and a bridge that is entirely independent of the top plate, substantially as and for the purpose specified.

6. The combination of the bottom plate, the top plate, the barrel-bridge, and the dust-bands, substantially as and for the purpose shown.

11,015. MILK-STRAINER. ALEXANDER THOMSON, Caledonia, Ontario, assignor, by direct and mesne assignments, to John Bellamy Miller, Parry Sound, Ontario, Canada. Filed Mar. 15, 1889. Serial No. 303,504. Original No. 385,582, dated July 3, 1888. Patented in Canada Feb. 13, 1888, No. 28,508.



Claim.—1. A device for aerating and cooling liquids, consisting of a straining receiver or funnel G, and a cylinder arranged centrally under the funnel and provided with a series of small holes arranged to discharge the milk radially and outwardly in separate streams in a horizontal direction, substantially as described.

2. A device for aerating and cooling liquids, comprising a receiver or funnel G, provided with suitable strainers, a perforated cylinder below the same, and a perforated ring surrounding said cylinder, substantially as described.

3. A device for aerating and cooling liquids, comprising a receiver or funnel G, provided with suitable strainers, a perforated cylinder below the same, a perforated ring surrounding said cylinder, an imperforate ring surrounding said perforated ring, and a conical plate connecting said rings and cylinder together and having perforations near its outer edge, substantially as described.

4. In a device for aerating milk, the combination of a funnel provided with strainers *h h*, attached over openings formed in the sides of a conical portion, a band C, having a conical plate D, with perforations *d* therein, a perforated band E, and a supporting-band F, with perforations *f*, the parts being organized substantially as shown, and for the purpose set forth.

5. The combination, in a strainer and cooler for the purpose set forth, of a flanged rim A, having upwardly-projecting standards secured thereto, said standards supporting at their upper ends a band C, of less diameter than the rim A, a conical plate D, with perforations *d*, perforated bands E and F, projecting upwardly therefrom, and a funnel G, having a strainer and depending portion *g*, adapted to fit within the band, substantially as and for the purpose set forth.

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DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

VON WELSBACH *v.* LUNGREN.

Decided June 10, 1889.

MOTION TO DISMISS AN APPEAL FROM DECISION OF PRIMARY EXAMINER GRANTING OR DENYING A MOTION TO DISSOLVE AN INTERFERENCE ON THE GROUND THAT NO INTERFERENCE IN FACT EXISTS UNDER RULE 122.

1. From a decision of the Primary Examiner granting or denying a motion to dissolve an interference on the ground that no interference in fact exists, an appeal lies to the Commissioner under the first paragraph of Rule 124 without any reference whatever to the reasons which the examiner may give for deciding the motion either affirmatively or negatively.
2. A motion to dismiss such appeal on the ground that the decision of the Primary Examiner is affirmative of appellant's right to a patent, that the law makes no provision for appeal from such favorable decision, and that the Commissioner of Patents is without jurisdiction of said appeal, must be denied.
3. The ultimate authority under the statute upon the question whether an interference exists in fact is "the opinion of the Commissioner," (Rev. Stats., sec. 4904,) and it is more than doubtful whether a construction of Rule 124 which would deprive the Commissioner of jurisdiction could possibly be a valid one.

MOTION to dismiss appeal.

ILLUMINANT APPLIANCES FOR BURNERS.

Application of Carl Auer von Welsbach filed June 8, 1886, No. 204,558. Application of Charles M. Lungren filed June 8, 1887, No. 240,572.

Mr. James L. Norris for Von Welsbach.

Mr. Frank MacArthur and *Mr. W. C. McIntire* for Lungren.

MITCHELL, *Commissioner:*

This interference was declared on February 27, 1888. On September 22, 1888, Von Welsbach filed a motion to dissolve the same on the ground that there was no interference in fact, and on November 17, 1888, this motion was granted by the Primary Examiner, then in charge, who decided that "there is no interference in fact." At this stage this class of inventions was transferred from Division XXV to Division XXX. On December 5, 1888, Lungren filed a motion for rehearing before the examiner in charge of Division XXX. This motion was, on April 13, 1889, denied, the examiner holding, with his predecessor, that there was no interference in fact. On April 23, 1889, Lungren appealed from the decision rendered by the examiner formerly in charge. On April 29, 1889, Von Welsbach filed a motion to dismiss this appeal on the ground that—

the decision of the Primary Examiner is affirmative of Lungren's right to a patent for the invention claimed by him; that the law makes no provision for appeal from such favorable decision, and that consequently the Commissioner of Patents is without jurisdiction of said appeal.

Rule 122 provides for four classes of cases in which motions to dissolve an interference may prevail, to wit: when no interference in fact exists; when there has been such irregularity in declaring the interference as will preclude a proper determination of the question of priority; when the patentability of applicant's claim is denied, and when there is a denial of the right to make the claim. Rule 124 provides that appeals may be taken to the Commissioner from the Primary Examiner on all motions, with certain enumerated exceptions. The only two exceptions which relate to the dissolution of interferences are motions to dissolve which deny the patentability of an applicant's claim and motions which deny the right of an applicant to make the claim. It follows that motions to dissolve because there is no interference in fact must be appealable to the Commissioner, since they are not included in the exceptions and are included in the rule.

In the case under consideration it is claimed on behalf of Von Welsbach that no appeal lies to the Commissioner because the decision of the examiner permits a patent to each party for his claim as framed, the position of the applicant being, apparently, that under such circumstances the last paragraph of Rule 124 is applicable. This last paragraph reads as follows:

From a decision affirming the patentability of the claim or the applicant's right to make the same no appeal can be taken.

This paragraph is clearly a limitation upon the right of appeal to the Examiners-in-Chief in the cases referred to in the preceding paragraph of Rule 124; that is to say, the rule, having provided that appeals from decisions on motions to dissolve which deny the patentability of an applicant's claim and on motions to dissolve which deny the right of an applicant to make a claim should, when authorized, go to the Examiners-in-Chief, (when appealable,) goes on to say that decisions on such motions shall not be appealable when the Primary Examiner affirms the patentability or the right of an applicant to make the claim. The last paragraph of Rule 124 simply indicates under what circumstances decisions are appealable which, when appealable, go to the Examiners-in-Chief. When, however, an appeal is taken upon a motion to dissolve upon the ground that there is no interference in fact, the jurisdiction of the Commissioner is in no way affected by the character of the decision rendered by the examiner. It may be added that the ultimate authority under the statute upon the question whether an interference exists in fact is "the opinion of the Commissioner," (Rev. Stats., sec. 4904,) and it is more than doubtful whether a construction of the rule which would deprive the Commissioner of jurisdiction could possibly

be a valid one. But there is no doubt as to the meaning of Rule 124, which, so far as the last paragraph is concerned, simply provides that if, on a motion to dissolve which denies the patentability the Primary Examiner affirms the patentability, or upon a motion to dissolve which denies the right of an applicant to make the claim the examiner affirms such right, there shall be no appeal. In all cases, however, where the ground of the motion is that no interference in fact exists an appeal lies to the Commissioner under the first paragraph of Rule 124, without any reference whatever to the reasons which the examiner may give for deciding the motion either affirmatively or negatively.

In disposing of this case I have not thought it worth while to lay stress upon the fact that this appeal is taken from the decision of the examiner formerly in charge, and that it is immaterial to the present inquiry what reasons were given by the examiner now in charge for refusing to grant a rehearing.

My attention was directed on the hearing of this case to the decision in *Weston* v. *Brush*, (MS. Dec., vol. 22, p. 38.) I have not overlooked that case, but have given it the fullest consideration before reaching the conclusions herein announced.

The motion to dismiss the appeal is denied.

MANNY *v.* EASLEY *v.* GREENWOOD, JR.

Decided July 16, 1889.

1. MOTION TO DISSOLVE—APPEAL.

No appeal lies to the Commissioner from a decision upon a motion to dissolve except upon the ground that there is no interference in fact, or that there has been such irregularity in the declaration as to preclude a proper determination of the question of priority.

2. SAME—JURISDICTION.

Where it appears upon the face of the papers that the real ground of a motion to dissolve relates to the merits, the Commissioner will not take jurisdiction either by appeal or petition.

ON petition.

LEMON-SQUEEZERS.

Application of John P. Manny filed November 19, 1888, No. 291,191. Patent granted John L. Easley July 10, 1888, No. 271,876. Application of John T. Greenwood, Jr., filed August 16, 1887, No. 247,059.

Referred to the Assistant Commissioner, by order of the Commissioner, for hearing and decision.

Mr. A. O. Behel and *Mr. E. C. Seward* for Manny.
Messrs. Munn & Co. for Easley.
Mr. J. J. Sheehy and *Mr. L. L. Morrison* for Greenwood, Jr.

FISHER, *Assistant Commissioner:*

This petition is filed by Easley, one of the parties to the above-entitled interference, asking that he be heard upon the questions, first, that no interference in fact exists, and, second, that there has been such irregularity in declaring the same as will preclude the proper determination of the question of priority.

The history of this case is that on March 9, 1889, a motion was filed by Easley to dissolve the interference upon four grounds, as follows:

(1) Because no interference in fact exists, as the issue is fully shown and described in said patent to Gernert, issued more than three years prior to the claimed conception thereof by either Manny or Greenwood, Jr.; (2) because, in view thereof, neither Manny nor Greenwood, Jr., have the right to claim the invention set forth in the issue hereof; (3) because, in view of said patent to Gernert, the issue of this interference is not patentable by either Manny or Greenwood, Jr.; (4) because the interference has been improperly declared.

This motion, having been transmitted to the Primary Examiner, was by him denied, without allowing Easley an opportunity to appeal from his decision, whereupon the interference proceedings were resumed and times were set for taking testimony. On April 2, 1889, a motion was made by Easley for leave to appeal to the Commissioner from the decision of the Primary Examiner. This motion, having been heard by the Examiner of Interferences, was dismissed for want of jurisdiction. April 15 following a new motion to dissolve was made upon the ground that in view of the patent to Gernert, previously referred to, and an affidavit by one Metcalf, which set forth the former proceedings in the case, there was no interference in fact, and also that there had been such irregularity in declaring the same as would preclude the proper determination of the question of priority. This motion was dismissed by the Examiner of Interferences upon the ground that it embraced substantially the matter covered by the former motion already decided by the Primary Examiner. On May 27, 1889, Easley filed this petition, by which he seeks to have the whole matter reopened and determined by the Commissioner.

It will be seen from the recitals which have been made of the former actions in this case that Easley's original motion was based entirely upon the ground that the subject-matter of the issue is fully shown and described in patent to Gernert. There was no allegation that the devices of the several parties to the interference are not in conflict or that the interference was so irregularly declared that the question of priority could not properly be determined, both of which allegations are necessary before an appeal can be taken to the Commissioner from a decision on a motion to dissolve. The motion in fact was one based wholly upon the merits of the case, and, if appealable, could be taken only to the Examiners-in-Chief; but it was not appealable even to them, as the decision of the examiner was favorable to patentability. The Primary Examiner was therefore right in not fixing a limit of appeal.

The second motion to dissolve, although it stated as grounds for dissolution the two grounds which under Rules 122 and 124 are appealable to the Commissioner, was in fact based upon precisely the same ground as the former motion—want of patentability, in view of the patent to Gernert. The Examiner of Interferences therefore correctly dismissed this motion upon the ground of *res adjudicata*.

It is urged that the second motion was made in the strict language of the Office rules, and that, as it states the grounds upon which appeal may be taken to the Commissioner, the question involved should now be considered by him; but to do this would be entirely to disregard the spirit of the rules. Parties cannot confer jurisdiction upon the Commissioner regardless of the matter involved by the use of a mere form of words. Beneath the words must be sought the real reason upon which the proceeding is based, and if it be found that such reason relates to a question determinable by some other tribunal than the Commissioner, he will rightfully refuse to consider it either upon appeal or petition.

This case is distinguishable from one in which the motion to dissolve is based upon the want of interference in fact and in which the examiner in reaching his conclusion has given reasons involving the merits. In such case the Commissioner has jurisdiction; but it is determined by the real ground of the motion and not by the reason given by the examiner in his decision.

The petition is dismissed.

EX PARTE LASKEY.

Decided July 6, 1889.

1. OBJECTIONS GOING TO THE MERITS.

When applicant claims the combination of a "stitch-forming and cloth-feeding mechanism" in a sewing-machine and "an automatic expansible or yielding hemmer and feller," and the examiner objects to the claim for the reason that the "means for securing an automatic action of the hemmer and feller" and "the means for securing an expansible or yielding action thereof" are not stated, and the applicant insists that his invention resides in a combination of which the peculiar hemmer and feller is an element, irrespective of the mere means by which its automatic action or its expansible or yielding action is secured, *Held* that the objection of the examiner presents a question of fact which relates to the merits, upon which applicant has a right of appeal to the Examiners-in-Chief.

2. PROVINCE OF CLAIMS.

It is the province of claims to relegate to the specification the enumeration of such details of construction as shall be found upon examination to be immaterial to the true scope of the actual invention. The object of enumerating these parts is to enable persons skilled in the art to practice the invention in the form set out in the patent, but not to so limit the claim of the inventor as to make it the easy prey of the infringer.

ON petition.

HEMMERS AND FELLERS.

Application of Stephen Laskey filed May 10, 1888, No. 273,503.

Messrs. Coburn & Thacher for the applicant.

MITCHELL, *Commissioner:*

The examiner objects to claims 1 to 5, inclusive, in this application as vague, indefinite, and litigious. It is unnecessary to quote more than the first claim, which is as follows:

1. The combination, with the stitch-forming and cloth-feeding mechanism of a sewing-machine, of an automatically expansible or yielding hemmer and feller to permit the passage of enlargements of the cloth, substantially as and for the purposes specified.

With reference to this claim the examiner says:

To the old combination of "stitch-forming and cloth-feeding mechanism" in a sewing-machine, applicant has added "an automatically expansible or yielding hemmer and feller." Now, if the means for securing (1) an automatic action of the hemmer and feller and (2) the means for securing the expansible or yielding action thereof were involved in the claims, there would be no objection that the claim set up function alone, stripped of the means by which said function should be certainly secured.

I am unable to understand how the distinction set forth clearly in the passage quoted is a distinction of mere form. Of course if it could be conclusively assumed that the "means for securing an automatic action of the hemmer and feller" and "the means for securing an expansible or yielding action thereof" constitute the entire invention of Laskey, then the proper method of securing that invention would be to designate such "means" in the claims. But the applicant insists that his invention does not reside in such means; that, on the contrary, it resides in a combination of which the peculiar hemmer and feller is an element, irrespective of the mere means by which its automatic action or its expansible or yielding action is secured.

Whether or not applicant's invention is as broad as he insists is a question of fact and not of mere form. It is a question of fact which relates to the merits, upon which the applicant has a right to appeal to the Examiners-in-Chief if he differs in opinion from the Primary Examiner.

The inventor claims to have been the first person who used an automatically expansible or yielding hemmer and feller in combination with the stitch-forming and cloth-feeding mechanism of a sewing-machine to permit the passage of enlargements of the cloth substantially as and for the purposes described by him in the specification. If he is the original and first inventor of that combination there is no reason why he should not receive the usual protection accorded by a patent. There is no adequate reason why he should be compelled to so state his claim that another person using the same combination of elements would be held to be free from the charge of infringement, if such person should prudently omit some one or more of the specific means for securing the yielding action or the automatic action of the hemmer and feller.

It is also said by the examiner that the words of function insisted on by applicant are not objected to *per se*, but because the definite parts of applicant's hemmer and feller upon which he relies to get these functions are omitted from the claims. But it is the province of claims to relegate to the specification the enumeration of such details of construction as shall be found upon examination to be immaterial to the true scope of the actual invention. The object of enumerating these parts is to enable persons skilled in the art to practice the invention in the form set out in the patent, but not to so limit the claim of the inventor as to make it the easy prey of the infringer.

Again, it is said that claims such as those objected to are precisely of that class of claims which are always in contention and have to be brought before the courts for adjudication, and that such claims necessarily call for a lawsuit upon their face. It is not the province of this Office to save lawsuits by unduly limiting claims. It is true there would be little danger of lawsuits if an inflexible rule of form should be adopted requiring that claims should always and invariably detail all the means, immaterial as well as material, which, in the particular structure described, are auxiliary to the essential elements of the combination. Lawsuits certainly would not flourish if no patents were worth protecting.

The attempt of the applicant in this case is to set forth his claim broadly, so as to cover as infringers those who appropriate the principle of the invention which he claims, whether they employ his special means or not. He may be entirely mistaken in his belief that he is entitled to so broad a statement of claim. It may be that the resources of the Office afford proof that patents have been already granted which constitute lawful references to a claim thus broadly stated. If so, the claims must be rejected;

not because they are lacking in an imperative requirement of form, but because they are too broad in their scope—that is to say, because the inventor is mistaken in his supposition that he is entitled to his combination irrespective of the special means for producing the automatic and yielding action. It may be found, indeed, upon examination that only by a detailed enumeration of all the specific means employed by him can he escape the prior art and secure even a claim of restricted scope. But these things can only be known after an investigation. They cannot be known in advance of an examination. They cannot be assumed to have existence and to justify the refusal to act upon the claims because of defective form.

It is again objected that five claims are drawn, "differing the one from the other only in the omission or retention of certain ascriptions of function." The first claim is for the combination broadly stated. The second claim requires that the cloth-turning mechanism shall be in the form of a yielding member. The third claim enumerates the elements of which the proposed hemmer and feller is composed. The fourth and fifth claims enumerate combinations found in the hemmer and feller. This being the case, it is apparent that, although the applicant might possibly have adequately protected the invention with a less number of claims, the latter have been framed upon an intelligible theory and with reference to so stating the invention that no possible infringer could escape. I certainly have not the foresight which enables me to know that the prudence of applicant's solicitors in this regard will necessarily be to no purpose in possible future litigation.

If the claims as framed are too broad, they should be rejected upon the merits. If not, and if it shall appear either to the examiner or to any appellate tribunal of the Office that the actual invention of applicant is co-extensive with the claims as now stated, then the applicant should go out of the Office with claims which will adequately protect his invention.

The objections of the examiner are overruled and the petition is granted.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Southern District of New York.

THOMPSON *et al. v.* AMERICAN BANK NOTE COMPANY.

Decided June 28, 1889.

INFRINGEMENT.

The combination covered by the third claim of plaintiffs' patent, which includes an inclined and retreating anvil to sustain the wire of the staple while being bent and to support the staple while being driven, is infringed by defendant's device having a two-part anvil, which, though different in form, accomplishes the same result in the same way.

Mr. Horace Barnard for the complainants.
Mr. H. D. Donnelly for the defendant.

WHEELER, *J.*:

The patent in this case was before this court in *Thompson* v. *Gildersleeve*, (34 Fed. Rep., 43,) and the validity of the third claim was there sustained. It was again before this court on the same question of infringement that is here now in *Thompson v. American Bank Note Co.*, (35 Fed. Rep., 203.) On account of doubts expressed in other cases as to whether the device in question is an infringement of the combination of that claim, the matter has been fully heard and considered again now. (*Thompson* v. *Rand-Avery Supply Co.*, 38 Fed. Rep., 112.) That combination is of an "inclined" and "retreating" anvil, so called, to sustain the wire of the staple while being bent and to support the staple while being driven, with the bender-foot and driver, in a wire-stapling machine, operating substantially as described. By the operation of these parts wire staples are bent and driven through the material, being stapled without having holes first punched for the prongs of the staples. This had not been done before this invention. The bender-foot and driver operating as in former machines are here without question. The presence of the inclined and retreating anvil of the combination only is denied.

The bender-foot boxed the prongs of the staples on all but their inner sides and prevented their crippling in any other direction. The inclined and retreating anvil of the patent, after supporting the wire for bending by the bender-foot, by filling the space between the prongs and retreating out of the way of the crown as the staples are driven home by the driver, supports the prongs on their inner sides and prevents their crippling in that direction. Thus the prongs of staples of very slender wire are steadied in place and driven into the material. This invention underlies the use of the anvil for this purpose and covers all forms of it based upon the invention. (*Railway Co.* v. *Sayles*, 97 U. S., 554.) In the machine of *Thompson* v. *Gildersleeve* the anvil was in two parts, one for supporting the wire while being bent and the other for supporting the prongs while being driven. Both were inclined in shape, and one retreated in one direction after supporting the wire in being bent and the other retreated in the opposite direction, supporting the prongs as it went, both making room for the crown of the staple. Together these two parts constituted the inclined and retreating anvil of the patent, different in form but accomplishing the same result in the same way. In the machine of this case, now in question, the part of the anvil which supports the wire while being bent is precisely the same in shape and operation. The other part fills the space between the prongs in width and supports them on their inward sides and prevents them from crippling in that direction in precisely the same manner, and retreats out of the way of the crown of the staple in the same way. It does not fill the whole space between the prongs of the staple in height to the crown and does not support the prongs in that place while being driven. Support in that place is not necessary, and this difference appears to be wholly immaterial. All the support against inward crippling of the prongs furnished is by the same means, operating in substantially the same way. This is none the less an infringement because more support is not furnished, especially when all that is useful is furnished. The conclusion reached after going over the whole ground again is the same reached before.

Let there be a decree for a continuance of the injunction and for an account, with costs.

THE OFFICIAL GAZETTE

OF THE

United States Patent Office.

[*BY AUTHORITY OF CONGRESS.*]

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The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

Instructions to Examiners, Applicants, and Others.

(ORDER NO. 560.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 2, 1889.

1. All marginal notes, interlineations, or other marks placed upon application-papers by examiners for convenience in conducting their work of examination will be removed when the application is passed to issue.

2. Official communications will not refer to memoranda or pencil notes made by examiners on application-papers.

3. Letters emanating from this Office must be couched in respectful and courteous language, and give full, clear, and explicit information to the applicant or correspondent on the subject under consideration, and must be absolutely free from personal controversy.

4. The Commissioner will strictly enforce the provisions of Rule 22 requiring applicants and attorneys to conduct their business with the Office with decorum and courtesy. No complaints against examiners will be permitted in papers intended to be filed in connection with applications.

C. E. MITCHELL,
Commissioner.

Indexes to Foreign Patents.

The following indexes to foreign patents have been translated, compiled, and published under the authority of the Commissioner of Patents, and may be obtained as a Patent Office publication at the prices given below:

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Issue of July 30, 1889.

Patents	443	No. 407,761 to No. 408,203, inclusive.
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Arizona Territory	.....	.....	Nevada	.....	.....
Arkansas	.....	.....	New Hampshire	.....	.....
California	6	.....	New Jersey	27	1
Colorado	6	.....	New Mexico Terri'y	.....	.....
Connecticut	18	.....	New York	94	8
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Georgia	1	.....	Rhode Island	4	.....
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Illinois	57	1	Tennessee	1	.....
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Michigan	12	1	U. S. Army	.....	.....
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Mississippi	1	.....			
Missouri	10	1	Total to citizens of the United States	425	35
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TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Australia	.....	.....	Germany	9	.....
Austria-Hungary	1	.....	Ireland	.....	2
Barbadoes	.....	.....	Netherlands	2	.....
Belgium	.....	.....	New South Wales	.....	.....
Brazil	.....	.....	Queensland	.....	.....
Canada	6	1	Russia	.....	.....
Canary Islands	.....	.....	Scotland	2	.....
Colombia, U. S. of	.....	.....	Sweden	1	.....
Cuba	.....	.....	Switzerland	3	.....
Denmark	.....	.....	Victoria	.....	.....
Ecuador	.....	.....			
England	7	.....	Total to citizens of foreign countries	32	3
France	1	.....			

DESIGNS.

19,233.—BADGE.—*Henry M. Betz*, Philadelphia, Pa. Application filed March 23, 1887. Serial No. 232,199. Term of patent 7 years.

19,234 to 19,240, inclusive.—ORNAMENTATION OF CORSETS.—*Catharine A. Griswold*, New York, N. Y. Applications filed June 29, 1889. Serial Nos. 316,094 to 316,100, inclusive. Term of patents 14 years.

19,241.—BRACKET FOR ELECTRIC WIRES.—*Reinhold Herman*, Crafton, Pa. Application filed June 7, 1889. Serial No. 313,505. Term of patent 14 years.

19,242.—BRACKET FOR ELECTRIC WIRES.—*Reinhold Herman*, Crafton, Pa. Application filed July 5, 1889. Serial No. 316,573. Term of patent 14 years.

19,243.—DECORATIVE FABRIC.—*Charles H. Koster*, New York, N. Y. Application filed July 3, 1889. Serial No. 316,445. Term of patent 7 years.

19,244.—DRAWER.—*Oskar Martin*, New York, N. Y. Application filed July 1, 1889. Serial No. 316,238. Term of patent 7 years.

19,245.—SASH-CORD-GUIDE FACE-PLATE.—*Stephen Palmer*, Lansingburg, N. Y. Application filed July 1, 1889. Serial No. 316,239. Term of patent 7 years.

19,246.—CARPET.—*Emil G. Sauer*, Brooklyn, N. Y., assignor to *The Lowell Manufacturing Company*, Lowell, Mass. Application filed June 25, 1889. Serial No. 315,552. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,867.—COMPOUND CONSTITUTING A DEODORIZER, A DISINFECTANT, AND GERMICIDE.—*William Bannerman*, Chicago, Ill. Application filed April 24, 1889. Used since March 27, 1889.
"The name of the registrant in the possessive case and divided by a star and the word 'PHENYLE.'"

16,868.—MILL OR FIRE HOSE.—*Boston Woven Hose Company*, Boston, Mass. Application filed December 15, 1888. Used since January, 1885.
"The letters 'O K,' the letter 'K' being placed within the letter 'O.'"

16,869.—PAPER AND ENVELOPES.—*Z. & W. M. Crane*, Dalton, Mass. Application filed March 27, 1889. Used since January 1, 1889.
"The words 'CRANE'S KID FINISH.'"

16,870.—PAPER AND ENVELOPES.—*Z. & W. M. Crane*, Dalton, Mass. Application filed March 27, 1889. Used since January 1, 1889.
"The words 'CRANE'S OLD STYLE.'"

16,871.—SALVES.—*George J. Kannmacher*, Minneapolis, Minn. Application filed June 11, 1889. Used since February, 1889.
"The words 'ARCTIC ANTI FROST SALVE.'"

16,872.—REED-ORGANS.—*Mason & Risch*, Toronto, Ontario, Canada, and Worcester, Mass. Application filed March 14, 1889. Used since January 26, 1889.
"The word 'CHORALION.'"

16,873.—COFFEE-EXTRACT.—*Douw D. Williamson*, New York, N. Y. Application filed June 24, 1889. Used since April 1, 1889.
"An escutcheon containing a chevron and fleur-de-lis, the word-symbol 'SEMPER FORTIS,' and the words 'COFFEE EXTRACT' in block letters, with the word 'EXTRACT' across the face of the word 'COFFEE.'"

16,874.—WATCH-MOVEMENTS.—*American Waltham Watch Company*, Waltham, Mass. Application filed April 23, 1889. Used since 1864.
"The letters and word 'P. S. BARTLETT' stamped or engraved in a semicircular or curved manner in type or script letters."

16,875.—BRAIDS.—*Butler, Richards & Co.*, New York, N. Y. Application filed June 22, 1889. Used since December 1, 1887.
"The representation of a mailed arm, the hand grasping and holding aloft a weapon."

16,876.—VEHICLE-WHEELS.—*Jerome Bolick*, Conover, N. C. Application filed May 21, 1889. Used since March, 1888.
"The representation of a wheel having printed across its face the words 'SPRING STEEL WHEEL,' the word 'SPRING' being curved downwardly and the other words appearing in horizontal lines, the letters of said words being arranged between the spokes of the wheel."

16,877.—TEA.—*Davidson & Co.*, Belfast, Ireland, and New York, N. Y. Application filed March 29, 1889. Used since December 1, 1888.
"A representation of the warehouse-building of the firm, which is five stories high in the center, with wings four stories high, and having upon one end of the same the words 'SIROCCO TEA WAREHOUSE, DAVIDSON & Co.'"

16,878.—TEA.—*Davidson & Co.*, Belfast, Ireland, and New York, N. Y. Application filed March 29, 1889. Used since December 1, 1888.
"The representation of a tea plantation or estate and a number of people occupied in gathering the leaves of the tea plants, associated with the word 'SIROCCO.'"

16,879.—INSECT-EXTERMINATORS.—*Luise Dirksen*, Brooklyn, N. Y. Application filed May 13, 1889. Used since July 18, 1887.
"The words 'DEAD DROPS.'"

16,880.—HAIR-RESTORER.—*Mary A. Dodge*, St. Paul, Minn. Application filed February 25, 1889. Used since September 1, 1888.
"The fac-simile signature of 'MARY A. DODGE,' and the bust likeness of B. F. Zahm."

16,881.—LUBRICATING AND ILLUMINATING OILS.—*John Ellis & Co.*, New York, N. Y. Application filed March 6, 1889. Used since February 10, 1888.
"The word 'MAGNET.'"

16,882.—WHEAT-FLOUR.—*Charles F. Horning*, Pittsburg, Pa., and Minneapolis, Minn. Application filed May 13, 1889. Used since January 1, 1889.
"The word 'DUQUESNE.'"

16,883.—SILVER-POLISH.—*Jones & Dudley*, Jersey City, N. J. Application filed May 10, 1889. Used since May 1, 1889.
"The word 'KLENZER.'"

16,884.—BEER, ALE, MINERAL WATERS, AND CARBONATED (AERATED) DRINKS.—*Koster & Bial*, New York, N. Y. Application filed May 22, 1889. Used since July 1, 1885.
"The word 'CABINET.'"

16,885.—BOOTS AND SHOES OF ALL KINDS.—*John E. Lentz*, Allentown, Pa. Application filed April 19, 1889. Used since April 12, 1889.
"The words 'HONEST SHOES' appearing in floating clouds across the representation of the globe of the world."

16,886.—SOAP-POWDER.—*Christopher Lipps*, Baltimore, Md. Application filed April 29, 1889. Used since July 16, 1886.
"The name and word 'CHRIS. LIPPS BLEACHER.'"

16,887.—RAT AND ROACH EXTERMINATOR.—*Conrad D. Maurer*, Philadelphia, Pa. Application filed June 1, 1889. Used since May 20, 1889.
"The picture of a roach of white or very light color upon a strongly-contrasted ground of black or dark color."

16,888.—DEVICE FOR CONTAINING A POISON SOLUTION FOR KILLING FLIES.—*Moore & Kibler*, New York, N. Y. Application filed March 30, 1889. Used since July 1, 1888.
"The word 'DAISY.'"

16,889.—BELLS.—*Henry McShane & Co.*, Baltimore, Md. Application filed October 9, 1888. Used since March 30, 1880.
"The fac-simile signature 'McSHANE.'"

16,890.—BELLS.—*Henry McShane & Co.*, Baltimore, Md. Application filed October 9, 1888. Used since March 30, 1889.
"The representation of two bells inverted with regard to one another and one back of the other."

16,891.—ROPES, YARNS, TWINES, AND CORDS.—*Plymouth Cordage Company*, Plymouth, Mass. Application filed June 28, 1889. Used since December, 1881.
"The word 'PLYMOUTH' and the representation of a ship or vessel."

16,892.—RUBBER OR COTTON HOSE.—*Revere Rubber Company*, Boston, Mass. Application filed June 20, 1889. Used since May 1, 1889.
"The word 'TIGER.'"

16,893.—RUBBER OR COTTON HOSE.—*Revere Rubber Company*, Boston, Mass. Application filed June 20, 1889. Used since February 1, 1889.
"The letters 'S. A. P.'"

16,894.—COFFEE.—*John H. Thompson & Company*, Detroit, Mich. Application filed June 17, 1889. Used since November 1, 1888.
"The word 'TIGER' and the representation of a tiger's head."

LABELS.

5,981.—Title: "DALSIMER LAST," (FOR BOOTS AND SHOES.)—*Eva Dalsimer*, Philadelphia, Pa. Application filed July 5, 1889. (Trade-Mark Registered.)

5,982.—Title "MARTINSVILLE MINERAL WATER."—*Myron Dickson*, Martinsville, Ind. Application filed July 6, 1889.

5,983.—Title: "MARTINSVILLE ARTESIAN MINERAL WATER."—*Myron Dickson*, Martinsville, Ind. Application filed July 6, 1889.

5,984.—Title: "PACKERS' FACTORY FILLED," (FOR SALT.)—*Genesee Salt Company*, New York and Piffard, N. Y. Application filed June 27, 1889.

5,985.—Title: "HOP TEA TONIC."—*Ferd. Heim Brewing Co.*, Kansas City, Mo. Application filed March 5, 1889. (Trade-Mark Registered.)

5,986.—Title: "JENCKS' PILE REMEDY."—*Sherwood R. Jencks*, Milwaukee, Wis. Application filed July 6, 1889.

5,987.—Title: "LANGLÉS BISCUITS."—*Justin J. Langlés*, New Orleans, La. Application filed May 13, 1889.

5,988.—Title: "PLYMOUTH CORDAGE COMPANY" (FOR ROPES, YARNS, AND TWINES.)—*Plymouth Cordage Company*, Plymouth and Boston, Mass. Application filed June 28, 1889. (Trade-Mark Registered.)

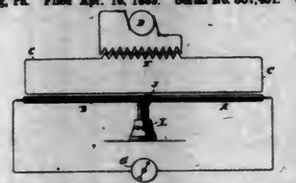
5,989.—Title: "SAXE'S PHOSPHO-GUARANA WITH CELERY."—*De Forest W. Saxe*, Omaha, Nebr. Application filed July 1, 1889. (Trade-Mark Registered.)

5,990.—Title: "RIVEREDGE" (FOR PRINTED WOOLEN GOODS.)—*Union Print Works*, New York, N. Y. Application filed June 28, 1889.

PATENTS

GRANTED JULY 30, 1889.

407,761. CALELECTRIC GENERATOR. EDWARD G. ACHESON, Pittsburg, Pa. Filed Apr. 16, 1889. Serial No. 307,481. (No model.)

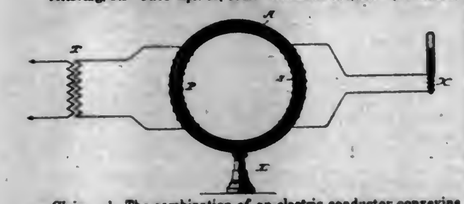


Claim.—1. The method of converting heat energy into electric energy, which consists in causing heat energy to traverse the elements of a thermo-couple and subjecting the said energy to the influence of changing lines of magnetic force, substantially as described.

2. The method, substantially as hereinbefore set forth, of converting heat energy into electric energy, which consists in causing heat-currents to flow from the points of junction of two dissimilar metals, and subjecting said currents to the influence of lines of magnetic force.

3. The method, substantially as hereinbefore set forth, of converting heat energy into electric energy, which consists in producing intermitting currents in a circuit arranged in inductive relation to a thermo-couple producing magnetic lines by the agency of said currents, applying heat to said couple, and subjecting the heat energy in said couple to the influence of said lines of magnetic force, substantially as described.

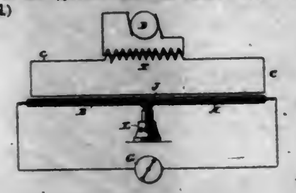
407,762. CALELECTRIC GENERATOR. EDWARD G. ACHESON, Pittsburg, Pa. Filed Apr. 19, 1889. Serial No. 307,825. (No model.)



Claim.—1. The combination of an electric conductor conveying a current of changing value, a mass of material magnetized thereby, and a source of heat arranged to influence said mass, substantially as described.

2. The combination of an electric conductor conveying a current of changing value, a mass of magnetic material magnetized by said current, a source of heat arranged to influence said mass, and a second electric conductor, including a translating device and arranged within the influence of the magnetic mass, substantially as described.

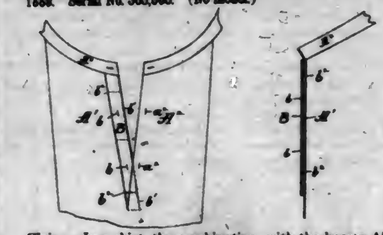
407,763. CALELECTRIC GENERATOR. EDWARD G. ACHESON, Pittsburg, Pa. Original application filed Apr. 16, 1889, Serial No. 307,481. Divided and this application filed June 18, 1889. Serial No. 314,686. (No model.)



Claim.—1. The combination, with an electric conductor through which varying electric currents are passed, of a thermo-couple arranged in inductive relation to said conductor and a source of heat for said couple, substantially as described.

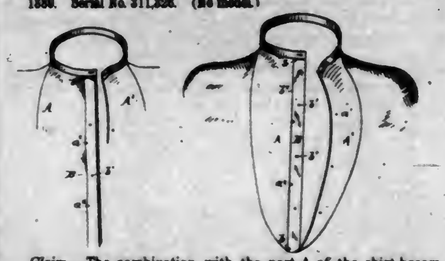
2. The combination, with an electric conductor, of a core energized thereby, thermo-couples arranged in inductive relation to said core, and a source of heat for said couples, substantially as described.

407,764. SHIRT. JAMES ADAIR, New York, N. Y. Filed Apr. 1, 1889. Serial No. 305,660. (No model.)



Claim.—In a shirt, the combination, with the bosom A' A^3, of a fly B, attached to the edge of the upper face of the underlying part A', the outer edge of the fly being unattached to the shirt, the fly B and the overlapping part A^3 being provided, respectively, with the button-holes b a^3, as and for the uses and purpose set forth.

407,765. SHIRT. JAMES ADAIR, New York, N. Y. Filed May 18, 1889. Serial No. 311,226. (No model.)



Claim.—The combination, with the part A of the shirt-bosom, the tacks b, placed at the top and bottom of the same a short distance from the edge thereof, the intermediate tacks a^3, and with the independent fly B secured to the bosom A by the tacks b a^3, of the part A' of the bosom adapted and arranged to overlap the bosom A and the fly B, substantially as described.

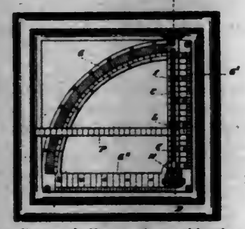
407,766. CULTIVATOR. ROBERT H. AVERY, Peoria, Ill., assignor to the Avery Planter Company, same place. Filed Mar. 6, 1889. Serial No. 302,174. (No model.)



Claim.—1. The combination, with a cultivator-beam, of a standard pivoted to the beam, and a top piece, as C, pivoted to the upper end of the standard and adjustably secured to the beam, substantially as and for the purpose specified.

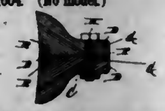
2. In a cultivator, the combination of a shovel-block D, having ears *e*, a standard B, and a curved bolt or clip *f*, passing around the standard B, and having its ends secured in the ears *e*, substantially as and for the purpose specified.

407,767. DISTANCE-INSTRUMENT. WILLIAM BARTON, Liverpool, County of Lancaster, England. Filed June 14, 1888. Serial No. 277,112. (No model.) Patented in England May 12, 1888, No. 7,110.



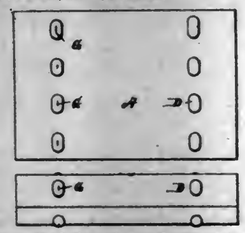
Claim.—In a distance-indicator, the combination, with the graduated arc G and the graduated margin-scales G′ and G″ thereof, of the graduated arm C, pivoted at H and formed with the slot *f*, the sight-vanes D D′, hinged to either end of said arm C, the graduated movable arm P, pivoted in said slot *f*, and the screw and thumb nut L, whereby said movable arm P is adjustably fastened in said slot, all substantially as and for the purpose set forth.

407,768. TOE-WEIGHT. JAMES A. BAUGHMAN, Charlotte, Mich., assignor of one-half to James L. Whitford, same place. Filed Dec. 31, 1888. Serial No. 295,004. (No model.)



Claim.—A horseshoe having an integral elongated dovetailed spur on the upper side of the toe thereof, in combination with a toe-weight constructed of two equal sections, the rear of each of which is concaved and has the half of a dovetailed recess to engage the spur, and the front provided with apertured lugs, and a clamping-bolt adapted to pass through the apertured lugs and adjustably secure the weight on the spur close to the hoof, substantially as described.

407,769. VEHICLE-WHEEL. ROSCOE BEAN, Springfield, Ohio, assignor to the Tricycle Manufacturing Company, same place. Filed May 17, 1889. Serial No. 311,141. (No model.)



Claim.—1. In a wheel, the tube or sleeve constructed of sheet metal and having exterior bulged shoulders, and its meeting edges from shoulder to shoulder, inclusive, in close proximity and made oil-tight by the application of a seam-closing fluid.

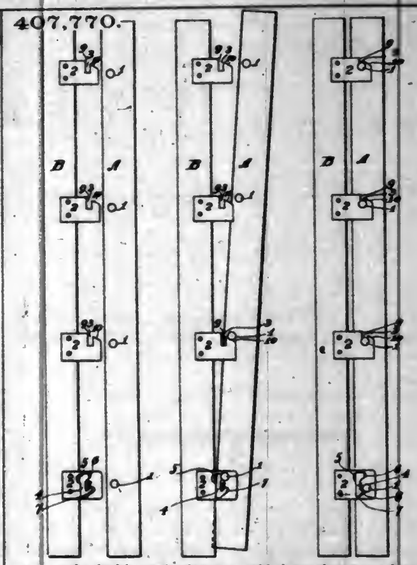
2. In a wheel, the tube or sleeve constructed of sheet metal, and exterior shoulders produced by bulging the blank at intervals, and its meeting edges substantially regular and in close proximity and made oil-tight by the application of seam-closing metallic fluid in a molten state.

407,770. CORSET-CLASP. WILLIAM F. BROOKS, Bridgeport, Conn., Filed Feb. 16, 1889. Serial No. 300,182. (No model.)

Claim.—1. In a corset-clasp, the combination, with the stud secured to one of the steels, of the hook secured to the other steel and having a closed vertical slot leading at the top into an eye and at the bottom into an inclined recess, substantially as set forth.

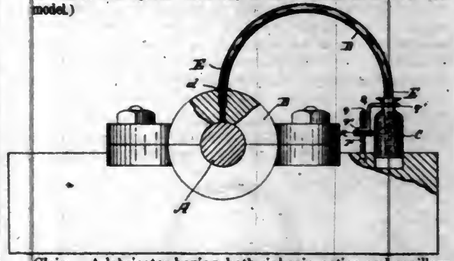
2. In a corset-clasp, the combination, with the open hooks and the studs adapted to be engaged as described, of the lower stud and hook, the latter having a closed slot, an upwardly-extending inclined

407,770.



recess, and a locking-point between said slot and recess, substantially as shown, and for the purposes herein set forth and described.

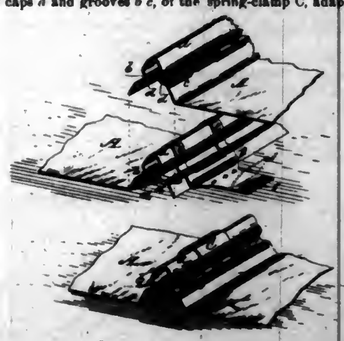
407,771. LUBRICATOR FOR SHAFT-BEARINGS. JOHN CONER, Anderson, Cal., assignor, by direct and mesne assignments, of three-fourths to R. Berger and Edwin Aldersley, same place, and Frederick H. Deakin, Redding, Cal. Filed May 15, 1888. Serial No. 273,955. (No model.)



Claim.—A lubricator having both siphonic action and capillary attraction, for the purpose set forth, and comprising a reservoir adjustably mounted in juxtaposition to the bearing to be lubricated, a siphon-tube extending from the reservoir to a point near said bearing, and a wick within said siphon-tube and extending from the oil in the reservoir to said bearing.

407,772. SHEET-METAL ROOFING, CEILING, OR SIDING. WALLACE R. CURTIS and WILLIAM H. HUNTLEY, Pomeroy, assignors of one-third to Colonel Elsworth Bright, Columbus, Ohio. Filed Feb. 28, 1889. Serial No. 301,449. (No model.)

Claim.—1. The combination, with sheet-metal-roofing sections having caps *a* and grooves *b c*, of the spring-clamp C, adapted to be



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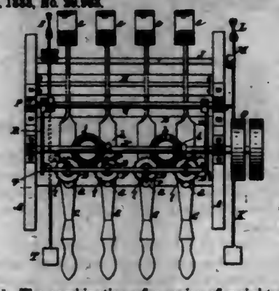


sprung over the joint of the roofing, with its ends engaging in the grooves thereof, substantially as and for the purpose described.

2. The combination, with the sheet-metal-roofing sections, of the anchor D, having straps *c*, substantially as and for the purpose specified.

3. The roofing-sections having caps with side grooves, as shown, in combination with the spring-clamp and anchor, substantially as set forth.

407,773. MACHINE FOR SOLDERING CAPS ON FRUIT-CANS. BARETON DU CREW and ALBERT R. CARPENTER, Hamilton, Ontario, Canada. Filed Oct. 3, 1888. Serial No. 287,598. (No model.) Patented in Canada Oct. 12, 1888, No. 29,963.



Claim.—1. The combination of a series of weighted levers G, pivoted to a frame, the soldering-irons C, the spindles D of the soldering-irons passing through the levers and provided with collars *f*, and a series of lifting-arms operating under the levers, substantially as described.

2. The combination, with the soldering-irons C and their spindles D, of a series of weighted levers G, having the apertures *d*, and a series of lifting-arms I on the shaft J, and collars *f* on the spindles D, substantially as and for the purpose specified.

3. In combination with the spindles D, soldering-irons C, and rods E, the slightly-movable frame F, means for moving the frame vertically, springs *a*, and collars *b*, substantially as and for the purpose specified.

4. The combination of the shaft Q, the slotted arms R, the movable frame F, the rods E, the connecting-rod S, the lever T, the springs *a*, and the collars *b*, substantially as described.

5. The combination of the levers G, having the apertures *d*, the spindles D, having the collars *f*, the soldering-irons C, the shaft J, the arm M, the connecting-lever L, the foot-lever K, and the arms I, substantially as described.

6. The combination, with a series of revolving soldering-irons, of the spindles E, frame F, arms R, connecting-rod S, the lever T, the springs *a*, and the collars *b*, substantially as and for the purpose specified.

7. The hollow spindles D, having the collars *f* and feathers *e*, in combination with the pinions *l*, having recesses *p*, in which the feathers move vertically with the spindles, the levers G, having apertures *d*, the rods E, extending through the spindles, and the soldering-irons C on the spindles, substantially as described.

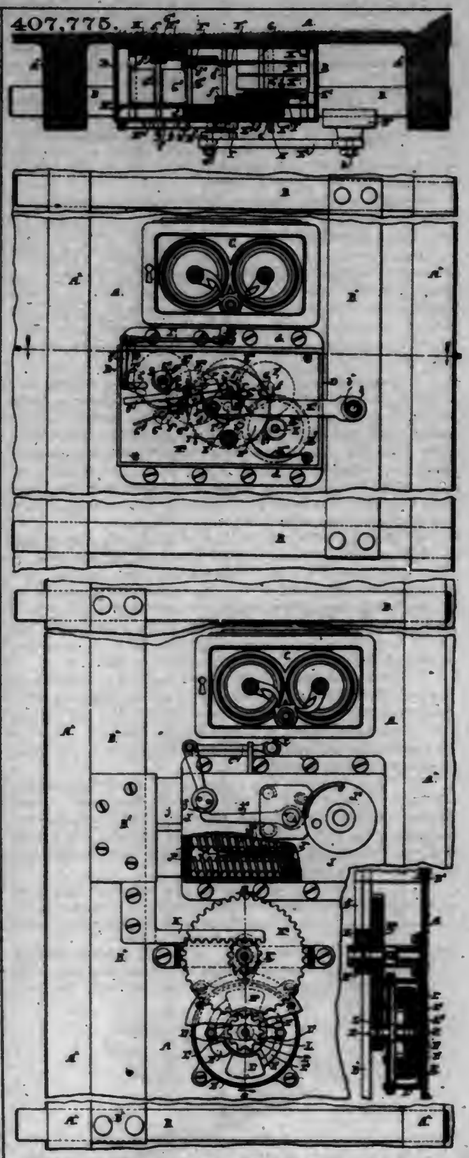
407,774. FELT BOOT. MILLARD H. DRAKE, Hanover, Mich. Filed Oct. 29, 1888. Serial No. 289,395. (No model.)



Claim.—In felt boots and similar foot-wear, a heel-strap consisting of an outer strap secured at the points C and D of the boot, and the inner strap E, secured at its ends to an exterior strap and at its middle to the boot, substantially as described.

407,775. SAFE-LOCK. JAMES C. HARRIS, Dayton, Ohio, assignor of one-half to Augustus G. Burton, Chicago, Ill. Filed Dec. 20, 1888. Serial No. 292,991. (No model.)

407,775.



Claim.—1. The combination, with the bolts of a safe, of a motor applied to actuate the said bolts, said motor comprising a spring, weight, or other prime mover, and a train of gears for retarding the action of said prime mover and the bolt-work, substantially as described.

2. The combination, with the bolts of a safe, of a motor applied to actuate the said bolts, said motor comprising a spring, weight, or other prime mover, a train of gears, and an escape device for retarding the action of the said prime mover and bolt-work, substantially as described.

3. The combination, with the bolts of a safe, of a motor applied to actuate the said bolts, said motor comprising a spring, a train of gears, and an escape device connected with and actuated by a rotating part of the train of gears remote from the actuating-spring and acting to retard the motion of the parts under the action of the spring, and a time mechanism, substantially as described.

4. The combination, with the bolts of a safe, of a spring-motor applied to actuate the said bolts, said motor comprising an actuating

spring or springs, a train of gears, a detent engaging a rotating part of the said train of gears remote from the actuating-springs, and means for actuating said detent in opening the safe, substantially as described.

5. The combination, with the bolts of a safe, of a spring applied to actuate the bolts, means for retarding the movement of the bolts under the action of the spring, a train of gears connected with and actuated by the spring, and a time mechanism applied to control the movement of the train under the action of the spring, substantially as described.

6. The combination, with the bolts of a safe, of a rotating part or crank connected with the said bolts for casting and retracting the latter, a spring applied to actuate said rotating part, a train of gears connected with the said rotating part, a detent engaging a part which is moved by the train of gears for holding the latter and the said rotating part from movement, and automatically-acting means controlled by the movement of the said rotating part for actuating said detent to stop the train when the bolts are cast, and means acting upon the detent for releasing the train to retract the bolts, substantially as described.

7. The combination, with the bolts of a safe, of a rotating part or crank connected with the bolts for actuating the latter, a spring applied to move the said rotating part, a train of gears connected with the said rotating part, a rotating arm *g*, actuated by one of the gears of the train remote from the spring, a pivoted detent-lever I, adapted for engagement with said arm *g*, a cam connected with the said rotating part and having operative connection with said detent-lever, and means for actuating said detent-lever for releasing the arm *g* in opening the safe, substantially as described.

8. The combination, with the bolts of a safe, of a rotating part or crank connected with the bolts for casting and retracting the latter, a spring applied to actuate said rotating part, a train of gears connected with and moved by the said rotating part, a rotating fan or other escape device for controlling the movement of said train of gears, a revolving arm *g*, actuated by one of the arbors of the train remote from the spring, a detent engaging the said arm *g*, and a time mechanism actuating said detent, substantially as described.

9. The combination, with the bolts of a safe, of an actuating device therefor, consisting of coiled spring or springs, a pinion upon the spring-shaft, a gear-wheel intermeshing with said pinion and carrying a crank, means connecting said crank with the safe-bolts, and means for retarding the motion of said bolts under the action of the spring or springs, substantially as described.

10. The combination, with a shaft E^3 and the spring actuating said shaft, of a cam I′ upon the shaft, a pivoted detent-lever I, a train of gears connected with the shaft, a revolving arm *g* upon an arbor belonging to the train, a spring holding said detent-lever in position to engage the said arm *g*, and a time mechanism applied to move said detent-lever, substantially as described.

11. The combination of the bolts of a safe and a spring or other motor actuating said bolts, said bolts having a throw greater than necessary to free them from the jamb, substantially as described.

407,776. FOLDING PILLOW. ARTHUR W. HARRISON, Washington, D. C., assignor of one-half to John F. Waggaman, same place. Filed June 15, 1888. Renewed June 29, 1889. Serial No. 315,984. (No model.)

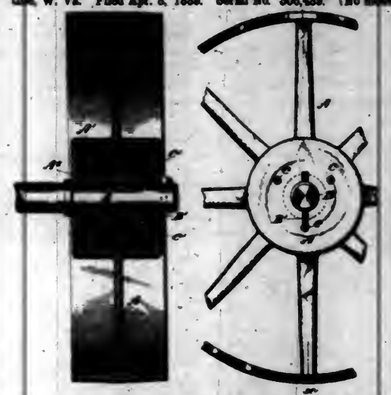


Claim.—1. The combination, with two legs, each of which is provided with a slot extending part way across its width, of a band connecting the upper ends of said legs, substantially as and for the purpose described.

2. A folding pillow consisting of two legs and a band connecting two ends thereof, each of said legs being provided with a slot extending half-way across its width, and being inclined at one end from one edge to the other, substantially as shown and described.

3. A folding pillow consisting of two legs and a band, each of the legs being provided with a slot extending part way across its width, and the band being secured at one end to the upper end of one leg, the other leg being provided with a series of hooks to penetrate the other end of the band, substantially as described.

407,777. SELF-OILING WHEEL. NATHANIEL D. HELMICK, Palatine, W. Va. Filed Apr. 3, 1888. Serial No. 306,459. (No model.)

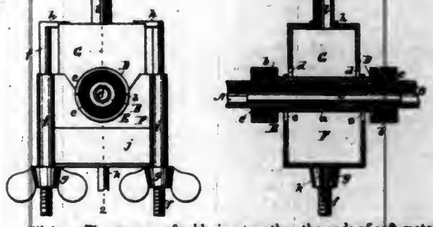


Claim.—1. An oil-reservoir provided with inwardly-disposed and outwardly and exteriorly flared tubes, substantially as specified.

2. An oil-reservoir provided with inwardly-disposed and outwardly and exteriorly flared tubes formed integral therewith, substantially as specified.

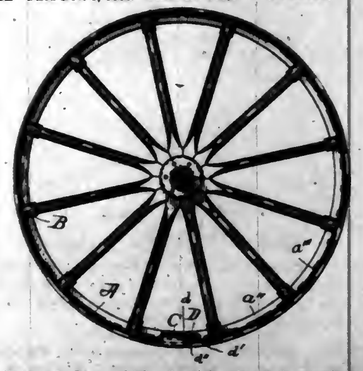
3. The wheel A, having reservoir A′, and hub A^3, provided with oil-receiving openings, in combination with inwardly-disposed and outwardly and exteriorly flared tubes C, inserted in the reservoir A′, substantially as specified.

407,778. PROCESS OF SOLDERING METAL PIPES. WILLIAM A. HENDERSON, Malden, Mass. Filed May 31, 1889. Serial No. 312,692. (No model.)



Claim.—The process of soldering together the ends of soft-metal pipes by placing them end to end, with a narrow ring of solder between them, over a short piece of lining-pipe, inclosing the joint thus formed in a closely-fitting metal casing, melting the solder by the application of heat through the casing, and compressing the melted solder by forcing the ends of the pipes toward each other, substantially as and for the purpose described.

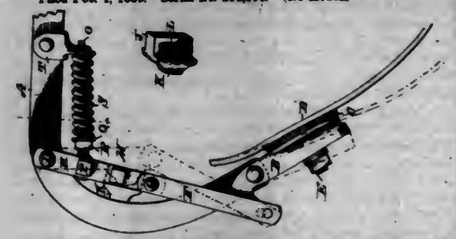
407,779. VEHICLE-WHEEL. WILLIAM C. HODNETT, Douglasville, Ga. Filed Nov. 9, 1888. Serial No. 290,405. (No model.)



Claim.—1. In a vehicle-wheel, the rim A, its contiguous ends formed with screw-threaded projections *a* and *a′*, in combination with the internally-screw-threaded sleeve C, engaging the screw-threaded projections of the rim, substantially as shown and described.

2. In a vehicle-wheel of the class described, the rim A, the sleeve C, attached to contiguous ends of the rim by right and left hand screw-threads, the catch D, attached to the rim, and the notch *d*, arranged and operating substantially as and for the purpose specified.

407,780. SHOVEL-STANDARD FOR CULTIVATORS. MARTIN L. KISSELL, Springfield, Ohio, assignor to P. P. Mast & Company, same place. Filed Feb. 1, 1889. Serial No. 298,396. (No model.)

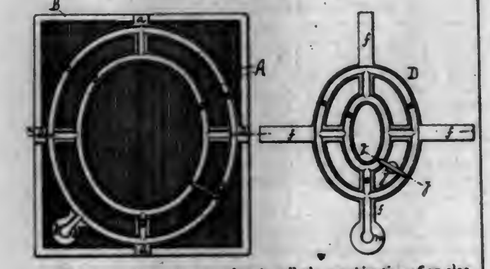


Claim.—1. The combination, with a shovel-standard, a lever pivoted thereto, and a shovel carried by said lever, of two sets of toggle-bars pivoted to each other and respectively to the said lever and standard, and a stop-block adjustable up and down and toward the intersection of either set of toggle-bars with the standard.

2. The combination, with a shovel-standard, of the toggle-bars and the stop-block carried by said bars and adjustable toward and from the intersection of the standard and said bars.

3. The combination, with a set of toggle-bars arranged with a space between them, of a stop-block having a slotted heel fitted upon said bars and a bolt passing through the bars and said slot and arranged to clamp the bars against the said heel while the slot admits of adjustment.

407,781. GALVANIC BATTERY. WILLIAM P. KOOKOGEY, Brooklyn, assignor to the Kookogey Electric Company, of New York, N. Y., Filed Aug. 27, 1888. Serial No. 283,902. (No model.)



Claim.—1. In an electro-galvanic cell, the combination of an electrode provided with a hook-shaped top, with a support from which the electrode hangs, such support having a groove or cavity to contain mercury, substantially as and for the purpose described.

2. In an electro-galvanic cell, the combination of a plate or casting which rests on the top of the receptacle, having openings through which all the elements of the battery of like kind are suspended, and having a continuous groove upon its upper surface to contain mercury, with a series of elements of like kind having hook-shaped tops to rest in the mercury-grooves, substantially as and for the purpose described.

3. An electro-galvanic cell consisting of a receptacle for the solution, two separate plates insulated from each other to rest on top of the receptacle, each of such plates having openings through which the elements of the battery may be suspended, and also having a continuous groove upon its upper surface to contain mercury, and two series of positive and negative elements having hooked-shaped tops to rest in the mercury-grooves of the respective plates, substantially as and for the purpose described.

4. In an electro-galvanic cell having its elements suspended therein by hooks resting in mercury which is held on a supporting-plate, a cap for mercury formed as a part of or attached to such supporting-plate, substantially as and for the purpose described.

407,782. WIRE-SPLICING TOOL. WATSON S. LESLIE, Hartinsburg, Ky. Filed May 20, 1889. Serial No. 311,363. (No model.)

Claim.—1. A wire-splicing tool composed of the handled body A A′ with recess *a*, short jaw B, pivoted to the body A and having a beveled and recessed mouth b' b^3, spring D, and spring locking-bolt C C′, as described, for the purposes specified.

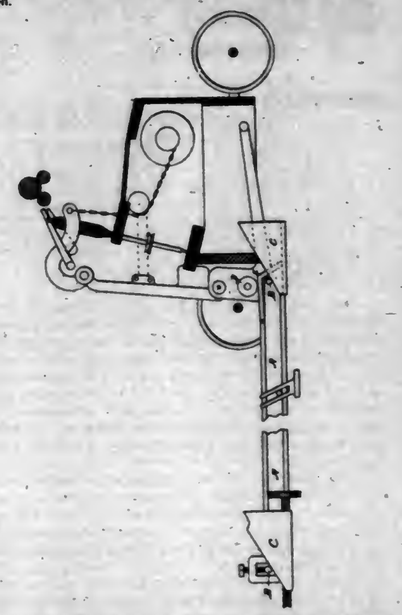


2. In a wire-splicing tool of the nature described, in combination with the handled body A A′, with recess *a*, and short pivoted jaw B, with recess b^3, of the recessed plate b^3 and set-screw b^4, as described, for the purposes specified.

3. A tool for splicing wire, composed of a handled body with a recess, short spring-jaw pivoted to said body, a latch engaging said short pivoted jaw, and a stud E, substantially as described, for the purposes specified.

407,783. SPINNING-MULE. JAMES LOWE, Philadelphia, Pa. Filed Oct. 31, 1887. Serial No. 252,981. (No model.)

Brief.—The point of the copping-rail is caused to descend more slowly than the body of the rail, thereby causing the faller-wires to descend somewhat lower than they otherwise would at the end of each inward run of the carriage, the variation being greater with each successive run. Thus all the yarn spun at each stretch is wound up, preventing the usual slack and consequent irregularities in the yarn caused by the yarn running off the point of the cop as it nears completion.



Claim.—1. The combination, with the copping-rail, the bowl, and the shoe, of an arm hinged to the rail at a short distance from the end of the run of the bowl on the rail, and a support independent of the rail for maintaining the free end of the arm elevated during the descent of the rail, the upper surface of the arm, when raised from the rail during the descent of the latter, forming an inclined plane which acts upon the bowl before the close of the winding on to cause the faller-wires to direct the yarn on to the cop and insure its being wound thereon.

2. In combination with the copping-rail, the bowl, and the shoe, an arm hinged to the rail at a short distance from the end of the run of the bowl on the rail, and a support independent of the rail for maintaining the free end of the arm elevated during the descent of the rail adapted to retard the descent of the arm but not to raise it.

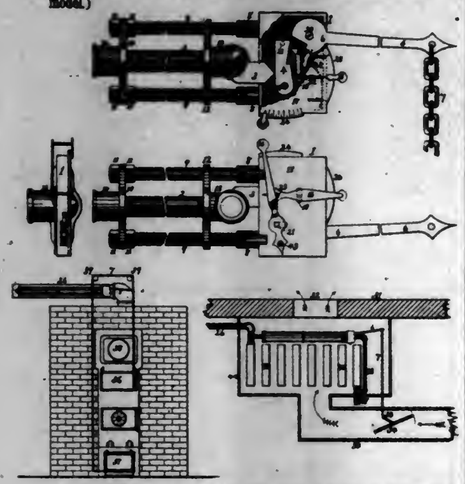
3. In combination with the copping-rail, the bowl, and the shoe, a bent arm hinged to the rail at a short distance from the end of the run of the bowl on the rail, and adapted to carry the bowl, and a support independent of the rail adapted to engage with the point of the arm during the descent of the rail.

4. In combination with the copping-rail, the bowl, and the shoe having a horizontal web, a bent arm hinged to the rail at a short distance from the end of the run of the bowl on the rail and adapted to carry the bowl and to rest at its point upon the web of the shoe.

5. In combination with the copping-rail, the bowl, and the shoe, a bent arm hinged to the rail at a short distance from the end of the run of the bowl on the rail, and adapted to carry the bowl and to rest at its point upon a support independent of the rail, and having an extensible arm.

6. In combination with the copping-rail, the bowl, and the shoe, an arm hinged to the rail at a short distance from the end of the run of the bowl on the rail, and adapted to carry the bowl and to rest at its point upon a support independent of the rail, and having a curved termination at its point.

407,784. REGULATOR FOR HOT-WATER HEATING APPARATUS. SHADUEL MAJOR, Rochester, N. Y., assignor of one-fourth to John H. Stedman, same place. Filed Feb. 10, 1888. Serial No. 263,612. (No model.)



Claim.—1. In a regulator for hot-water, hot-air, or steam heating apparatus, or in any heating or refrigerating apparatus having a circulation system, the combination of an expansion-tube 2, inserted in the circulation system, an elbow 13, connected to one end of said tube and provided with an arm 3, a box 1, rigidly connected to the other end of said tube 2 by rods 9 9, a lever 4, abutting against the arm 3 and pivoted at one end to said box 1, a lifting-bar 6, provided with an arm 41, and also pivoted to said box, and a wedge 5, interposed between said lever 4 and the arm 41, substantially as and for the purposes described.

2. In a regulator for hot-water, hot-air, or steam heating apparatus, or in any heating or refrigerating apparatus having a circulation system, the combination of an expansion-tube 2, inserted in the circulation system, an elbow 13, connected to one end of said tube and provided with an arm 3, a box 1, rigidly connected to the other end of said tube 2 by rods 9 9, a lever 4, abutting against the arm 3 and pivoted at one end to said box 1, a lifting-bar 6, provided with an arm 41, and also pivoted to said box, a wedge 5, interposed between said lever 4 and the arm 41, and a regulator-arm 15, pivoted at one extremity to said box 1 and connected with the wedge 5 by a pivot, substantially as and for the purposes described.

3. In a regulator for hot-water, hot-air, or steam heating apparatus, or in any heating or refrigerating apparatus having a circulating system, the combination of an expansion-tube 2, inserted in the circulation system, an elbow 13, connected to one end of said tube and provided with an arm 3, a box 1, rigidly connected to the other end of said tube 2 by rods 9 9, a lever 4, abutting against the arm 3 and pivoted at one end to said box 1, a lifting-bar 6, provided with an arm 41, and also pivoted to said box, a wedge 5, interposed between said lever 4 and the arm 41, and an indicator-arm 16, pivoted to the box 1 and to the free end of the lever 4, substantially as and for the purposes described.

4. In a regulator for hot-water, hot-air, or steam heating apparatus, or in any heating or refrigerating apparatus having a circulation system, the combination of an expansion-tube 2, inserted in the circulation system, an elbow 13, connected to one end of said tube and provided with an arm 3, a box 1, rigidly connected to the other end of said tube 2 by rods 9 9, a lever 4, abutting against the arm 3 and pivoted at one end to said box 1, a lifting-bar 6, provided with an arm 41, and also pivoted to said box, a wedge 5, interposed between said lever 4 and the arm 41, a regulator-arm 15, pivoted at one extremity to said box 1 and connected with the wedge 5 by a pivot, and a chain or rope 7, attached to the free end of the lifting-bar 6, the end of said chain or rope attached to the draft-door 37 of the furnace, substantially as and for the purposes described.

5. In a regulator for hot-water, hot-air, or steam heating apparatus, or in any heating or refrigerating apparatus having a circulation system, the combination of an expansion-tube 2, inserted in the circulation system, an elbow 13, connected to one end of said tube and provided with an arm 3, a box 1, rigidly connected to the other end of said tube 2 by rods 9 9, a lever 4, abutting against the arm 3 and pivoted at one end to said box 1, a lifting-bar 6, provided with an arm 41, and also pivoted to said box, a wedge 5, interposed between said lever 4 and the arm 41, a regulator-arm 15, pivoted at one extremity to said box 1 and connected with the wedge 5 by a pivot, and a chain or rope 7, attached to the free end of the lifting-bar 6, the end of said chain or rope attached to the draft-door 37 of the furnace, substantially as and for the purposes described.

6. In a hot-water, hot-air, or steam heating apparatus, or in any heating or refrigerating apparatus having a circulation system, the combination of an expansion-tube 2, inserted in the circulation system, an elbow 13, connected to one end of said tube and provided with an arm 3, a box 1, rigidly connected to the other end of said tube 2 by rods 9 9, a lever 4, abutting against the arm 3 and pivoted at one end to said box 1, a lifting-bar 6, provided with an arm 41, and also pivoted to said box, a wedge 5, interposed between said lever 4 and the arm 41, an indicator-arm 16, pivoted to the box 1 and to the free end of the lever 4, and a chain or rope 7, attached to the free end of the lifting-bar 6, the end of said chain or rope attached to the draft-door 37 of the furnace, substantially as and for the purposes described.

7. In a hot-water, hot-air, or steam heating apparatus, or in any heating or refrigerating apparatus having a circulation system, the combination of an expansion-tube 2, inserted in the circulation system, an elbow 13, connected to one end of said tube and provided with an arm 3, a box 1, rigidly connected to the other end of said tube 2 by rods 9 9, a lever 4, abutting against the arm 3 and pivoted at one end to said box 1, a lifting-bar 6, provided with an arm 41, and also pivoted to said box, a wedge 5, interposed between said lever 4 and the arm 41, a regulator-arm 15, pivoted at one extremity to said box 1 and connected with the wedge 5 by a pivot, and a chain or rope 7, attached to the free end of the lifting-bar 6, the end of said chain or rope attached to the draft-door 37 of the furnace, substantially as and for the purposes described.

8. In a hot-water, hot-air, or steam heating appparatus, or in any heating or refrigerating apparatus having a circulation system, the combination of an expansion-tube 2, inserted in the circulation system, an elbow 13, connected to one end of said tube and provided with an arm 3, a box 1, rigidly connected to the other end of said tube 2 by rods 9 9, a lever 4, abutting against the arm 3 and pivoted at one end to said box 1, a lifting-bar 6, provided with an arm 41, and also pivoted to said box, a wedge 5, interposed between said lever 4 and the arm 41, an indicator-arm 16, pivoted to the box 1 and to the free end of the lever 4, and a chain or rope 7, attached to the free end of the lifting-bar 6, the end of said chain or rope attached to the draft-door 37 of the furnace, substantially as and for the purposes described.

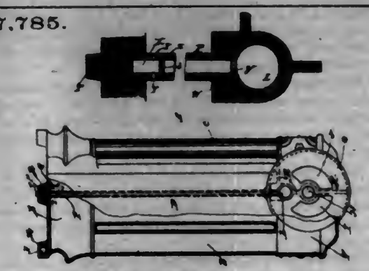
9. In a hot-water, hot-air, or steam heating apparatus, or in any heating or refrigerating apparatus having a circulation system, the combination of an expansion-tube 2, inserted in the circulation system, an elbow 13, connected to one end of said tube and provided with an arm 3, a box 1, rigidly connected to the other end of said tube 2 by rods 9 9, a lever 4, abutting against the arm 3 and pivoted at one end to said box 1, a lifting-bar 6, provided with an arm 41, and also pivoted to said box, a wedge 5, interposed between said lever 4 and the arm 41, and a chain or rope 7, attached to the free end of the lifting-bar 6 and to the weighted arm 35 of the damper 34 of the cold-air inlet 30, substantially as and for the purposes described.

10. In a hot-water, hot-air, or steam heating apparatus, or in any heating or refrigerating apparatus having a circulation system, the combination of an expansion-tube 2, inserted in the circulation system, an elbow 13, connected to one end of said tube and provided with an arm 3, a box 1, rigidly connected to the other end of said tube 2 by rods 9 9, a lever 4, abutting against the arm 3 and pivoted at one end to said box 1, a lifting-bar 6, provided with an arm 41, and also pivoted to said box, a wedge 5, interposed between said lever 4 and the arm 41, a regulator-arm 15, pivoted at one extremity to said box 1 and connected to the wedge 5 by a pivot, and a chain or rope 7, attached to the free end of the lifting-bar 6 and to the weighted arm 35 of the damper 34 of the cold-air inlet 30, substantially as and for the purposes described.

11. In an apparatus constructed and operating substantially as shown, the wedge 5, interposed between the lever 4 and the arm 41, of the lifting-bar 6, in combination with the indicator-arm 16, pivoted at one extremity to the box 1 and to the free end of the lever 4, substantially as and for the purposes described.

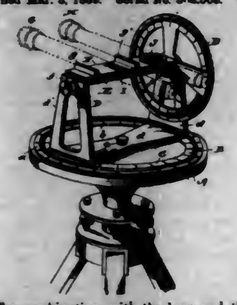
407,785. HOT-WATER RADIATOR. EUGENE S. HARDY, Montreal, Quebec, Canada. Filed Dec. 22, 1888. Serial No. 294,442. (No model.)

407,785.



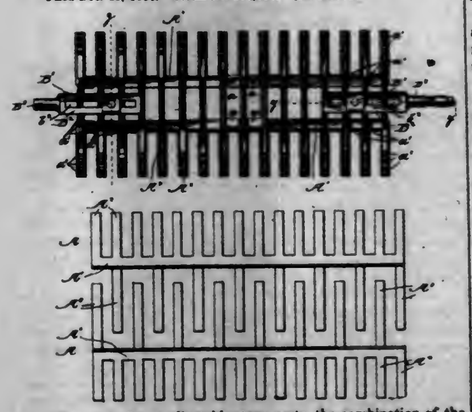
Claim.—In a hot-water radiator, the combination, with a section of the main body provided with water-passages and with the air-passage L in the lower part of it, of the tube P, communicating with said passage L and having holes Y at its upper end and communicating with the upper part of the water-space, and the thin partition Z, provided with a very small air-hole and secured in the said tube a little below the holes Y, substantially as set forth.

407,786. DISTANCE-INSTRUMENT. ANDREW R. MELSCOSE, Villard, Dak. Filed Mar. 3, 1888. Serial No. 265,503. (No model.)



Claim.—The combination, with the base and the carriage pivoted thereon on a vertical pivot, of the platform F, having downwardly-extending ears *f*, arranged within the upright portion of the carriage and formed upon its upper face with flanged supports *g* and *g'*, and the rod E, passed through openings in the said lugs and through openings in the upright portions of the carriage and forming the fulcrum on which the platform tilts, substantially as shown and described.

407,787. STOVE-GRATE. WILLIAM C. METZNER, Chicago, Ill. Filed Dec. 19, 1888. Serial No. 294,007. (No model.)



Claim.—1. In an adjustable stove-grate, the combination of the sections A A, each having on the side adjacent to the other the ribs A^3, said ribs of each section alternating in spacing with those on the other section and extending beneath the other section, slotted bars B^3, terminating in journals B^4, applied at the ends of said grate, and bolts to secure said bars and said sections to each other, substantially as shown and described.

2. In an adjustable stove-grate, the combination of the sections A A, each having on the side adjacent to the other the ribs A^3, said ribs of one section alternating in spacing with those on the other section and extending beneath the other section, bars B^3, terminating in journals B^4, applied at the ends of said grate, and bolts to secure said bars and said sections to each other, substantially as shown and described.

3. In an adjustable stove-grate, the combination of the sections A A, each having on the side adjacent to the other the ribs A^3, said ribs of one section alternating in spacing with those on the other section and extending beneath the other section, slotted bars B^3, terminating in journals B^4, applied at the ends of said grate, and bolts to secure said bars and said sections to each other, substantially as shown and described.

4. In an adjustable stove-grate, the combination of the sections A A, each having on the side adjacent to the other ribs A^3, said ribs of one section alternating in spacing with those on the other section and extending beneath the other section, bars B^3, terminating in journals B^4, applied at the ends of said grate, and bolts to secure said bars and said sections to each other, substantially as shown and described.

5. In an adjustable stove-grate, the combination of the sections A A, each having on the side adjacent to the other the ribs A^3, said ribs of one section alternating in spacing with those on the other section and extending beneath the other section, one or more lugs *a*, seated in said sections between the ribs A^3, bars B^3, terminating in journals B^4, applied at the ends of said grate, and bolts to secure said bars and said sections to each other, substantially as shown and described.

6. In an adjustable stove-grate, the combination of the sections A A, each having on the side adjacent to the other the ribs A^3, said ribs of one section alternating in spacing with those on the other section and extending beneath the other section, one or more lugs *a*, seated in said sections between the ribs A^3, slotted bars B^3, terminating in journals B^4, applied at the ends of said grate, and bolts to secure said bars and said sections to each other, substantially as shown and described.

Claim.—1. In an adjustable stove-grate, the combination of the sections A A, each having on the side adjacent to the other the ribs A^3, said ribs of each section alternating in spacing with those on the other section and extending beneath the other section, and bolts to secure said sections to each other, substantially as shown and described.

2. In an adjustable stove-grate, the combination of the sections A A, each having on the side adjacent to the other the ribs A^3, said ribs of one section alternating in spacing with those on the other section and extending beneath the other section, one or more lugs *a*, seated on said sections between the ribs A^3, and bolts to secure said sections to each other, substantially as shown and described.

407,788. LIFTING-JACK. LEWIS MILLER, Akron, Ohio. Filed Oct. 23, 1888. Serial No. 288,880. (No model.)

Claim.—1. The combination, in a lifting-jack, of a shield or casing, a lever pivoted therein and having sockets *d d'* in its end, and two pawls or clamps, one engaging and actuated directly by the lever, the other through a link interposed between it and said lever, substantially as described.

2. The combination, with a rack-standard, the pawls, and their actuating-lever, of an angular link having its inner face grooved or recessed at one end, and a bearing for the lever at the other eccentric to the pivoted center of the lever, substantially as described.

3. The combination, with a rack-standard and two pawls engaging therewith, of a lever provided on its lower or inner end with a fixed projection or lug formation engaging one of said pawls, and an angular link interposed between said lever and the second pawl for operating the latter, substantially as described.

4. The combination, with the rack-standard and pawls, a guiding-link connecting the pawls, whereby each pawl is guided by the other, as described, a lever acting directly on the lifting-pawl, and a link interposed between said lever and the second pawl, for the purpose and substantially as described.

5. The combination, with the rack-standard and pawls, of a shield or casing having an adjustable cap or side plate provided with lugs or pins on one side for operating the pawls, and means, substantially as described, for adjusting said cap or plate.

6. In a lifting-jack, a casing or shield having an arc extension and slots for the passage of a rack-standard, in combination with a rack-standard and two pawls engaging therewith, and a pawl-operating lever provided with a laterally-projecting arc bearing conforming to and lying in said arc extension of the casing, substantially as specified.

7. In a lifting-jack, the combination, with the rack-standard, of two pawls made in the form of rectangular links, provided each with toothed cross-bars and cam-faced cross-bars and connected by a link for joint operation, and means, substantially as described, for operating said pawls.

8. The combination, with a rack-standard and its pawls, of an inclosing shield or casing having one of its sides adjustable relatively thereto, said adjustable side carrying one or more pins or projections, which act, when the side is adjusted, to disengage the pawls from the

rack-standard, and means, substantially as described, for adjusting said side.

407,789. SELF-ADJUSTING EYEGLASS-FRAME. FRED W. HOLTE, St. Louis, Mo. Filed July 17, 1888. Serial No. 280,162. (Model.)



Claim.—1. In eyeglasses, the bridge having connecting-stems, and the sliding bifurcated loop-straps, within which the connecting-stems of said bridge fit, substantially as and for the purpose set forth.

2. In eyeglasses, the combination of the bridge having connecting-stems, the bifurcated loop-straps, within which loops the connecting-stems of said bridge fit, the angle-pins projecting inward from said stems into the bifurcations of said loop-straps, and the reactionary loop-spring nose-pieces, whose fast ends are secured to said angle-pin, and whose loose ends spring against and within said loop-straps, substantially as and for the purpose set forth.

3. In eyeglasses, the combination of the bridge having connecting-stems, the bifurcated loop-straps, within which the connecting-stems of said bridge fit, the traveling angle-pin at the terminals of said stems of the bridge projecting into said bifurcations, the reactionary loop-spring frames constituting the nose-pieces, the said frames pivotally looped around said angle-pins, the loose end of said spring-loop pressing against and within said loop-strap, the clips 15, embracing the spring-loops near the middle of their attached sides, and the screw attachments by which said clips are secured to lugs that project from the eyeglass-frames, the said clips providing a fulcrum attachment to secure the relatively-increased expansion and contraction of the lower part of the nose-pieces, substantially as and for the purpose set forth.

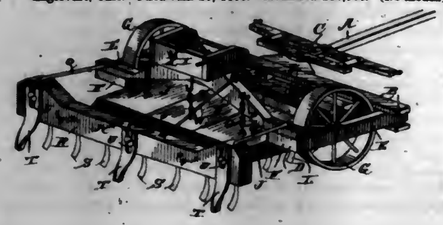
4. In eyeglasses, the combination of the frames 1, the spring-loop nose-pieces, the loop-straps secured to said frames and having bifurcations, the bridge-piece having connecting-stems and angle-pins projecting from said stems and fitting in said bifurcations, and the fulcrum-clips securing the said spring-loop nose-pieces to the frames, whereby said spring-loop fulcrumed on the clip secures an increased ratio of expansion and contraction relatively in the movement of the lower portion of the nose-pieces, substantially as set forth.

5. In eyeglasses, the combination, with the glass-frames, of the loop-straps 5, a bridge having stems fitting in said loop-straps, and the spring-loops carrying nose-cushions having their ends secured to said stems and bearing against said loop-straps, as set forth.

407,790. FOLDING IRONING-TABLE. JEFF. D. PAGE, Gibsland, La. Filed Dec. 15, 1888. Serial No. 293,684. (No model.)

Claim.—The combination, with the table-top having the legs B B pivoted to its rear end, of the side bars pivoted at their rear ends to the upper ends of the said legs, the standard supporting the free end of the table and pivoted at its lower end between the front ends of the side bars, and braces G G, pivoted at their rear ends to the legs B B, fitting at their front ends in keepers on opposite sides of the standard, near its upper end, provided with notches in its lower edge to engage the lower sides of the said keepers, and further provided at intermediate points in their upper edges with notches K K, engaging studs on the side bars, substantially as and for the purpose specified.

407,791. HARROW AND CLOD-CRUSHER. LUCIUS B. PHELPS, Ragleville, Ohio. Filed Jan. 29, 1889. Serial No. 297,976. (No model.)



Claim.—1. The combination of the frame, the clod-crusher sections arranged side by side and having their front ends loosely connected with the frame, and the harrow-bar connected to the frame in rear of the clod-crusher sections, as set forth.

2. The combination of the frame, the clod-crusher sections loosely connected thereto, the harrow-bar loosely connected to the frame in rear of the clod-crusher sections, and the markers carried by the harrow-bar and adjustable both vertically and longitudinally thereon, as set forth.

3. The combination of the frame, the arched bar secured to the rear portion of the same, the clod-crusher sections having their front ends loosely connected with the frame, and the chains secured to the rear portions of said sections and adapted to suspend the same from the said arched bar, as set forth.

4. The combination, with the frame, of the clod-crusher sections having the teeth L and the pulverizing-bar M, and the links N, having their front ends pivoted to the frame and their rear ends pivoted to the clod-crusher sections, as set forth.

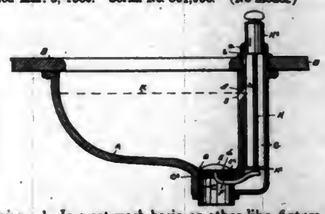
5. The combination, with the harrow-bar having a longitudinal series of bolt-holes, of the markers having longitudinal slots or notches in their upper portions, and the securing-bolts passed through said slots or notches into one of the bolt-holes in the harrow-bar, as set forth.

407,792. BURIAL-CASKET. JOHN D. RIPSON, Suspension Bridge, N. Y., assignor of three-fourths to M. J. Hoenig and William A. Fraser, both of same place. Filed Apr. 8, 1889. Serial No. 306,324. (No model.)



Claim.—A casket having a sliding head-panel and a sliding glass, in different horizontal planes, in combination with a catch having a substantially vertical portion adapted to engage the end of both said panel and glass for holding the two closed, substantially as and for the purpose specified.

407,793. SET WASH-BASIN. WILLIAM SCOTT, Medford, Mass. Filed Mar. 5, 1889. Serial No. 301,980. (No model.)



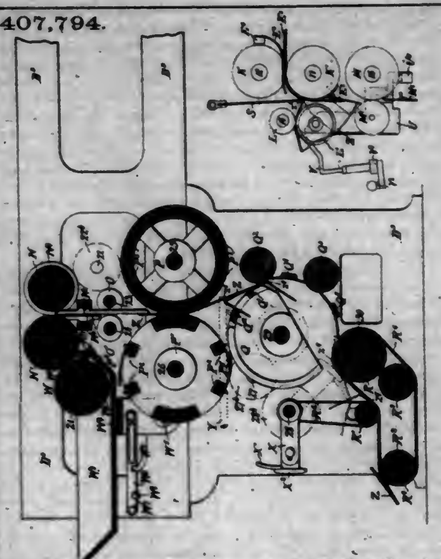
Claim.—1. In a set wash-basin or other like fixture having outlets at its lower and upper portions and waste-water ways C G leading from each of said outlets, the combination of a side chamber C^3 of said waste-water way C, leading from said lower outlet B of the basin, an opening and closing valve E, located within the basin and at its said lower outlet B, a lever-arm F, to operate on the under side of said valve and located within and across and extended into said side chamber C^3 of said waste-water way C, a waste and overflow water way G, connecting upper outlet of the basin and side chamber C^3 of said waste-water way C, and an up and down moving stem or rod H, located in said overflow-way and entered into said side chamber C^3 and therein adapted, in co-operation with said lever-arm, to secure an opening and closing of said valve, substantially as described.

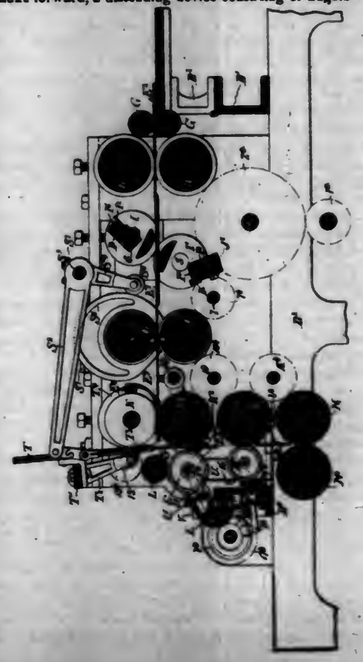
2. In a set wash-basin or other like fixture having outlets at its lower and upper portions and waste-water ways C G leading from each of said outlets, the combination of a side chamber C^3 of said waste-water way C, leading from the lower outlet B of the basin, and opening and closing valve E, located within the basin and at and swinging on one side of said lower outlet B, a lever-arm F, to operate on the under side of said valve and located within and extended into said side chamber C^3 of said waste-water way C, and an up and down moving stem or rod H at its lower end portion entered into said side chamber C^3 and therein adapted, in co-operation with said lever-arm, to secure an opening and closing of said valve, substantially as described.

3. In a set wash-basin or other like fixture having outlets at its lower and upper portions and waste-water ways C G leading from each of said outlets, the combination of a side chamber C^3 of said waste-water way C, leading from said lower outlet B of the basin, an opening and closing valve E, located within the basin and at and swinging on one side of said lower outlet B, a lever-arm F, curving in the direction of its length and to operate on the under side of said valve and located within and across and extended into said side chamber C^3 of said waste-water way C, a stationary partition C^2 of the waste-water way C, and having a slotted bearing *d* for said lever-arm, and an up and down moving stem or rod H at its lower end portion entered into said side chamber C^3 and therein adapted, in co-operation with said lever-arm, to secure an opening and closing of said valve, substantially as described.

4. In a set basin or other like fixture having an outlet at its bottom and a waste-water passage in communication with said outlet, the combination of an overflow-water outlet *f* at and open to the water-chamber of the basin appreciably below the overflow-water level thereof, and thence leading upward through the wall of the basin and rising to the height of said overflow-water level, and a waste-water way G in communication with said overflow-water outlet *f*, substantially as described, for the purpose specified.

407,794. PAPER-BAG MACHINERY. CHARLES B. STILWELL, Philadelphia, Pa., assignor to the Union Paper Bag Machine Company, same place. Filed Mar. 21, 1888. Serial No. 267,965. (No model.)





Claim.—1. In a bag-machine, the device for distending a bellows folded blank in the plane of the bag-bottom to be formed on it, which consists of feed-rolls for feeding the blanks forward, in combination with a device for opening the advancing end of the blanks as they pass through the rolls, distending-fingers V V, or equivalent mechanism, as specified, for engaging the corners of the upper side of the blank, and gripping-fingers K^2 K^3, or equivalent mechanism, as specified, for engaging the corresponding corners of the lower side of the blank, said fingers and grippers or their equivalents being arranged and actuated to coact in distending the bellows-sided tube as it advances through the feed-rolls, substantially as shown and described.

2. In a bag-machine, the device for distending a bellows-sided blank in the plane of the bag-bottom and for defining the folds lying above said bottom, which consists of feed-rolls for feeding the blanks forward, in combination with a device for opening the advancing ends of the blanks, a device for distending the advancing blanks, consisting of the fingers V V and grippers K^2 K^3, or their equivalents, as specified, and a tucker having actuating mechanism whereby it is caused to strike and bend the upper side of the advancing blank on or about the line s^2 and to follow the motion of the blank while it is distending and until the fold at s^2 is fully defined, substantially as shown and described.

3. In a bag-machine, the combination, with feed-rolls for feeding the blanks forward, a distending device consisting of fingers V V and grippers K^2 K^3, or equivalent devices, as specified, for distending a bellows-folded tube as it advances through the feed-rolls, and a tucker for defining the folds lying above the distended part of the tube, of a narrow support placed so as to lie under the center of the upper side of the blank as it advances from the feed-rolls during the distention of its end, said support serving to draw out the upper end of the diamond as the upper side of the blank is withdrawn from it after distention, substantially as shown and described.

4. In a bag-machine, the combination, with feed-rolls for feeding the blanks forward, a distending device consisting of fingers V V and grippers K^2 K^3, or equivalent devices, as specified, for distending a bellows-folded tube, as it advances through the feed-rolls, and a tucker for defining the folds lying above the distended part of the tube, of a narrow support placed so as to lie under the center of the upper side of the blank as it advances from the feed-rolls during the distention of its end, said support serving to draw out the upper end of the diamond as the upper side of the blank is withdrawn from it after distention, and a narrow guide situated between the feed-rolls aforesaid and the rolls which deliver the diamond-folded blank to the mechanism for completing the bag, said guide being arranged to lie within the lower side of the blank and serve to pull out the front point of the diamond, substantially as shown and described.

5. In a bag-machine, the combination, with feed-rolls for feeding the blanks forward, a distending device consisting of fingers V V, grippers K^2 K^3, or equivalent devices, as specified, for distending a bellows-folded tube as it advances through the feed-rolls, and a tucker for defining the folds lying above the distended part of the tube, of a narrow support placed so as to lie under the center of the upper side of the blank as it advances from the feed-rolls during the distention of its end, said support serving to draw out the upper end of the diamond as the upper side of the blank is withdrawn from it after distention, a narrow guide situated between the feed-rolls aforesaid and the rolls which deliver the diamond-folded blank to the mechanism for completing the bag, said guide being arranged to lie within the lower side of the blank and serve to pull out the front point of the diamond, and folder-plates arranged to close down on the diamond and hold it to form after it is drawn out, as aforesaid, and while the diamond-folded end of the blank is passing to the mechanism which completes the bag, substantially as shown and described.

6. In a bag-machine, the combination, with feed-rolls for feeding the bag-blanks forward and a device for opening the advancing end of the blank as it leaves the rolls, of distending-fingers having actuating mechanism whereby they are made to extend forward to receive the upper side of the partially-opened blank, to move apart so as to engage the corners of said upper side at a selected point, and to move together to permit the retraction of side above them, and grippers K^2 K^3, or equivalent mechanism, as described, to engage the edges of the lower side of the blank and coact with the distending-fingers to open the tube in the plane of the bag-bottom, substantially as shown and described.

7. In a bag-machine, the combination, with feed-rolls for feeding the bag-blanks forward and a device for opening the advancing end

of the blank as it leaves the rolls, of distending-fingers having actuating mechanism whereby they are made to extend forward to receive the upper side of the partially-opened blank, to move apart so as to engage the corners of said upper side at a selected point, and to move together to permit the retraction of side above them, grippers K^2 K^2, or equivalent mechanism, as described, to engage the edges of the lower side of the blank and coact with the distending-fingers to open the tube in the plane of the bag-bottom, and a reciprocating tucker having operative mechanism whereby it is caused to strike and bend the advancing blank between the feed-rolls and the distending-fingers, and at the line where the fold z^2 is to be formed in the bag to remain in contact with the blank and move down with it until the fold z^2 is fully defined, and then move up to permit the advance of another blank, substantially as shown and described.

8. In a bag-machine, the combination, with feed-rolls for feeding the bag-blanks forward and a device for opening the advancing end of the blank as it leaves the rolls, of distending-fingers having actuating mechanism whereby they are made to extend forward to receive the upper side of the partially-opened blank, to move apart so as to engage the corners of said upper side at a selected point, and to move together to permit the retraction of side above them, grippers K^2 K^2, or equivalent mechanism, as described, to engage the edges of the lower side of the blank and coact with the distending-fingers to open the tube in the plane of the bag-bottom, a narrow support placed so as to lie centrally under the upper side of the blank as it advances from the feed-rolls and is distended, a narrow guide placed so as to lie centrally within the under side of the blank as it passes to the presser-rolls which complete the diamond, said support and guide coacting to spread out the distended end of the blank to a diamond form, and a reciprocating tucker having operative mechanism whereby it is caused to strike and bend the advancing blank between the feed-rolls and the distending-fingers and at the line where the fold z^2 is to be formed in the bag, to remain in contact with the blank and move down with it until the fold z^2 is fully defined, and then move up to permit the advance of another blank, substantially as shown and described.

9. In a bag-machine, the combination, with feed-rolls for feeding the bag-blanks forward and a device for opening the advancing end of the blank as it leaves the rolls, of distending-fingers having actuating mechanism whereby they are made to extend forward to receive the upper side of the partially-opened blank, to move apart so as to engage the corners of said upper side at a selected point, and to move together to permit the retraction of side above them, grippers K^2 K^2, or equivalent mechanism, as described, to engage the edges of the lower side of the blank and coact with the distending-fingers to open the tube in the plane of the bag-bottom, a narrow support placed so as to lie centrally under the upper side of the blank as it advances from the feed-rolls and is distended, a narrow guide placed so as to lie centrally within the under side of the blank as it passes to the presser-rolls which complete the diamond, said support and guide coacting to spread out the distended end of the blank to a diamond form, a reciprocating tucker having operative mechanism whereby it is caused to strike and bend the advancing blank between the feed-rolls and the distending-fingers and at the line where the fold z^2 is to be formed in the bag, to remain in contact with the blank and move down with it until the fold z^2 is fully defined, and then move up to permit the advance of another blank, substantially as shown and described.

10. In a bag-machine, the device for distending the blank in the plane of the bag-bottom, consisting of the feed-roll K', having a coacting roll, in combination with a device for opening the mouth of the advancing bag-blank as it passes through said rolls, grippers K^2 K^2, pivoted on roll K' and having actuating mechanism whereby they move inward to engage the corners of the lower side of the blank at selected points, remain in contact with the blank for a definite part of the rotation of the roll, and then move outward and release the blank, and reciprocating distending-fingers V V, having actuating mechanism whereby they are made to extend forward to permit the upper side of the blank to pass over them, to spread out so as to engage the corners of the said upper side at points corresponding to those on the side engaged by the grippers, and to close together again to permit the retraction of said upper side, said distending-fingers and grippers being arranged to coact in distending the blank, substantially as shown and described.

11. In a bag-machine, the device for opening the end of a bellows-folded tube into the diamond form, consisting of the feed-roll K', having a coacting roll, in combination with a device for opening the mouth of the advancing bag-blank as it passes through said rolls, grippers K^2 K^2, pivoted on roll K' and having actuating mechanism whereby they move inward to engage the corners of the lower side of the blank at selected points, remain in contact with the blank for a definite part of the rotation of the roll, and then move outward and release the blank, reciprocating distending-fingers V V, having actuating mechanism whereby they are made to extend forward to receive the upper side of the partially-opened blank, to move apart so as to engage the corners of said upper side at a selected point, and to move together to permit the retraction of side above them, grippers K^2 K^2, or equivalent mechanism, as described, to engage the edges of the lower side of the blank and coact with the distending-fingers to open the tube in the plane of the bag-bottom, a narrow support placed so as to lie centrally under the upper side of the blank as it advances from the feed-rolls and is distended, a narrow guide placed so as to lie centrally within the under side of the blank as it passes to the presser-rolls which complete the diamond, said support and guide coacting to spread out the distended end of the blank to a diamond form, a reciprocating tucker having operative mechanism whereby it is caused to strike and bend the advancing blank between the feed-rolls and the distending-fingers and at the line where the fold z^2 is to be formed in the bag, to remain in contact with the blank and move down with it until the fold z^2 is fully defined, and then move up to permit the advance of another blank, substantially as shown and described.

12. In a bag-machine, the combination, with feed-rolls for feeding bellows-folded blanks forward, of a curved former-plate F^2, whereby the advancing end of the blank is opened as it leaves the rolls, mechanism for distending the blanks on the plane of the bag-bottom to be formed and for defining the folds lying above said bottom, consisting of the fingers V V and grippers F^2 F^2, or their equivalents, as described, and a tucker S, all substantially as and for the purpose specified.

13. In a bag-machine, the combination, with the feed-rolls for feeding the blanks forward, a device for distending bellows-folded blanks, consisting of the fingers V V and grippers F^2 F^2, or equivalent mechanism, as specified, and a tucker S, arranged to coact with said distending device, as described, of the narrow drawing-rollers L L' and a narrow guide placed to lie within the lower side of the blank and coact with the roll L' in drawing the distended end of the blank to the diamond form.

14. In a bag-machine, the combination, with the feed-rolls for feeding the blanks forward, a device for distending bellows-folded blanks, consisting of the fingers V V and grippers F^2 F^2, or equivalent mechanism, as specified, and a tucker S, arranged to coact with said distending device, as described, of the narrow drawing-rollers L L' and the drawing-rolls M M', said roll M' being narrow and arranged to rest centrally within the lower blank side, so as to coact with roller L in drawing out the distended end of the blank to the diamond form.

15. In a bag-machine, the combination, with the feed-rolls for feeding the blanks forward, a device for distending bellows-folded blanks, consisting of the fingers V V and grippers F^2 F^2, or equivalent mechanism, as specified, and a tucker S, arranged to coact with said distending device, as described, of a narrow support placed so as to lie centrally under the upper side of the blank as it advances and is distended and the drawing-rolls M M', said roll M' being narrow and placed so as to lie centrally within the under side of the blank, so as to coact with the narrow support aforesaid in drawing out the distended end of the blank into the diamond form.

16. In a bag-machine substantially as specified, the combination of the supporting-roll L' with the reciprocating distending-fingers V V, so that the ends of said fingers in their forward position lie beneath the rim of said roll.

17. In a bag-machine substantially as specified, the combination of the loosely-journaled roll L', having a spring-supported sustaining-arm L^4 and adjustable stop L^5, with the draw-roll L, having a portion of its surface cut away, so as to loosen the grip of said rolls on the blank and permit its withdrawal from between said rolls.

18. In a bag-machine substantially as specified, the combination of the feed-rolls K K', the curved former F^2, the rolls L L', to engage the upper side of the blank, and the guide-plate E^2, for directing said upper side between said rolls.

19. In a bag-machine substantially as specified, the combination, with a rocker-shaft V', of distending-fingers V V, journaled in said rocker-shaft, and actuating-cams whereby the shaft is oscillated and the fingers rotated back and forward in their bearings, so as to give their points a double reciprocating motion.

20. In a bag-machine substantially as specified, the combination of the feed-roll K', the fingers K^2 K^2, secured at the outer edges of said roll, and the cams K^3 K^3, whereby said fingers are made to move inward and engage the blank at a certain point to remain in their inward position for a determined period in the rotation of roll K', and then allowed to move out to release the blank.

21. In a bag-machine substantially as specified, the combination of the tucker S with a reciprocating lever connected with said tucker, cam mechanism for actuating said lever to regulate the up-and-down stroke of the tucker, guides T, within which said tucker reciprocates, a rock-shaft T', attached to said guides, and cam mechanism for actuating said rock-shaft, so as to guide the edge of the tucker during its downward and upward motion.

22. In a bag-machine substantially as specified, the combination, with the feed-roll K', of the tucker S, a reciprocating lever connected with said tucker, cam mechanism for actuating said lever to regulate the up-and-down stroke of the tucker, guides T, within which said tucker reciprocates, a rock-shaft T', attached to said guides, and cam mechanism for actuating said rock-shaft, so as to guide the edge of the tucker during its downward stroke in a path close to the face of roll K'.

23. In a bag-machine substantially as specified, the combination, with the roll M and plate M^2, or equivalent backing, of the folder-plates U U, having actuating cams whereby they are caused to compress and hold the diamond after it is brought to shape and while it passes from the forming mechanism to the presser-rolls, and the presser-rolls N N'.

24. In a bag-machine substantially as specified, the combination of the tucker S, mechanism for actuating said tucker, as specified, the roll M, and plate M^2, comprising a backing or support for the blank or equivalent backing, the folder-plates U U, having actuating-cams whereby they are caused to fold down against the tucker and backing to compress and hold the diamond to form, and the presser-rolls N N'.

25. In a bag-machine substantially as specified, the combination, with the drawing-rolls M M', the said roll M' being narrow to aid in drawing out the diamond, as specified, of the presser-rolls N N' and the folder-plates U U, arranged to fold down against roll M on each side of roll M' and having actuating-cams whereby said plates are folded down on the diamond and remain in contact with it while it passes to the rolls N N' aforesaid.

26. In a bag-machine substantially as specified, the combination, with the folder-plates U U, for holding the diamond in shape after it is formed and as it passes to the presser-rolls, of the presser-rolls N N', and the paste-roll W, held in contact with the roll N' and grooved to contain lines of paste, substantially as specified, whereby the diamond is, while being compressed, furnished with paste to complete the closing of the bag-bottom.

27. In mechanism for forming the final folds on a diamond-folded bag-blank, the combination of creasing-rolls for creasing the diamond on the lines of its final folds, the segmental double roll Q, rotating with greater speed than said creaser-rolls and having recesses Q^2 to engage the edges of the back flap, and guides to hold the blank in contact with said segmental roll.

28. In mechanism for forming the final folds on a diamond-folded bag-blank, the combination of creasing-rolls for creasing the diamond on the lines of its final folds, the segmental double roll Q, rotating with greater speed than said creaser-rolls, having recesses Q^2 to engage the edges of the back flap, guides to hold the blank in contact with said segmental roll, and a presser-roll Q^3, so placed that the blank will be gripped between it and roll Q after it is released by the creasing-rolls.

29. In mechanism for forming the final folds on a diamond-folded bag-blank, the combination of creasing rolls for creasing the diamond on the lines of its final folds, the segmental double roll Q, rotating with greater speed than said creaser-rolls, having recesses Q^2 to engage the edges of the back flap, and recesses Q', guides to hold the blank to the face of roll Q, and a presser-roll Q^3, to coact in feeding the blank forward when it is released by the creasing-rolls, all substantially as and for the purpose specified.

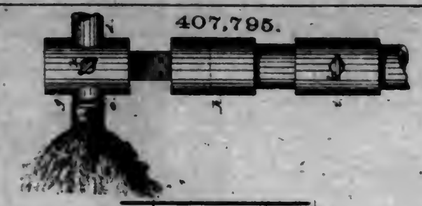
30. In mechanism for forming the final folds on a diamond-folded bag-blank, the combination, with the double segmental roller Q, of the roll R and the rotating arm X, having the segmental presser-plate X^2 for pressing the back flap down upon the bottom of the blank.

31. In mechanism for forming the final folds on a diamond-folded bag-blank, the combination, with the double segmental roller Q, of the roll R the rotating arm X, having the segmental presser-plate X^2 for pressing the back flap down upon the bottom of the blank, the apron R^4, the roll R', and the tapes R^5, coacting to press down the front flap and complete the bag.

32. In mechanism for forming the final folds on a diamond-folded bag-blank, the combination, with the double segmental roller Q, of the roll R, the rotating arm X, having the segmental presser-plate X^2 for pressing the back flap down upon the bottom of the blank, and the fork X', the apron R^4, the roll R', and the tapes R^5, coacting to press down the front flap and complete the bag.

407,795. EXTENSION JOINT OR SPLICE. LIDA A. TARRING, Baltimore, Md. Filed July 16, 1888. Serial No. 280,090. (No model.)

Claim.—The coupling, as a new article of manufacture, formed from a cylinder and having three cylindrical bands, one of which is pierced with two opposite openings, and the other two provided with screw-threaded openings and thumb-screws, substantially as and for the purpose set forth.



407,796. WITHDRAWN.

407,797. HOOK. CHARLES H. THURSTON, Boston, Mass. Filed Oct. 12, 1887. Serial No. 252,227. (No model.)



Claim.—The improved hook herein described, consisting of a continuous wire provided with an attaching-shank and having a horizontal upper arm *b*, bent at the outer end to form the loop *d*, the arm *c*, passing from said loop backward and downward beneath the upper arm and thence bent upward over the inner end of the said upper arm, and the hook *i*, formed by a continuation of said bent end, as herein described.

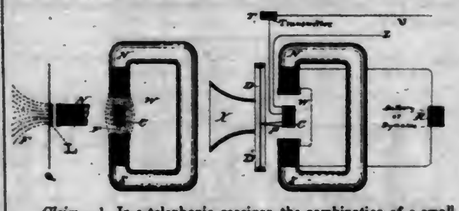
407,798. SLED. ADOLPH TOOK, Monroe, N. Y. Filed June 4, 1888. Serial No. 313,087. (No model.)



Claim.—1. A sled having its runners turned upward and backward at their forward ends to form a pair of foot-receiving recesses above the foot-board, substantially as specified

2. The combination of mortised runners *b* with foot-boards *a*, received by the mortises, the runners *b* being turned upward and backward at their forward ends to form the lips *b'*, and the recesses b^3, above the foot-board, substantially as specified.

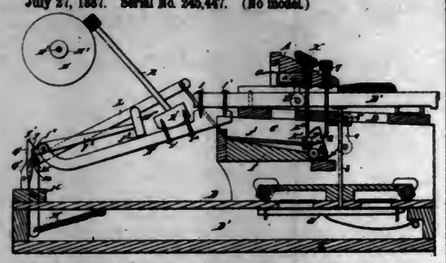
407,799. TELEPHONE. JOHN TROWBRIDGE and SAMUEL SHELDON, Cambridge, Mass. Filed Dec. 17, 1888. Serial No. 293,902. (No model.)



Claim.—1. In a telephonic receiver, the combination of a small movable coil, through which the feeble telephonic currents are passed, and a fixed electro-magnet, the strength of which can be increased indefinitely, said movable coil being so placed in respect to the said fixed magnet as to embrace the fewest possible lines of force of the fixed electro-magnet—that is, it is in the magnetic field and substantially parallel with the direction of the lines of force, substantially as herein set forth and described.

2. The combination of a small movable coil held upon a horizontal wire and a microphonic contact, the small coil being placed between the poles of a strong electro-magnet, in the manner hereinbefore described, and pressing, by means of a button placed eccentrically, upon a microphonic contact placed horizontally, as herein described.

407,800. REED-ORGAN. EDWIN S. VOTEY, Detroit, Mich. Filed July 27, 1887. Serial No. 245,447. (No model.)



Claim.—1. In an organ, the combination, with a key pivoted near its inner end, of a yoke adjustably engaged with its inner end and extending beyond the same about the length of the key, and a hammer having its handle pivotally engaged with the rear end of the yoke and extended therefrom to engage the tripping-jack, said yoke provided with adjustable muffles, substantially as described.

2. In an organ, the combination, with a key, of a yoke connected with its inner end, a hammer pivotally engaged with said yoke, and a muffle also engaged in said yoke, the connection of the yoke to the key and the muffle to the yoke being each an adjustable rocking connection, substantially as described.

3. In an organ, the combination, with a key, of a yoke engaged therewith at its rear extremity, a hammer having its handle pivotally engaged upon the rear end of the yoke and extended therefrom, and a muffle engaged with said yoke, the end of the yoke adjacent to the key and the lower end of the muffle adjacent to the yoke each constructed on the arc of a circle, substantially as and for the purposes described.

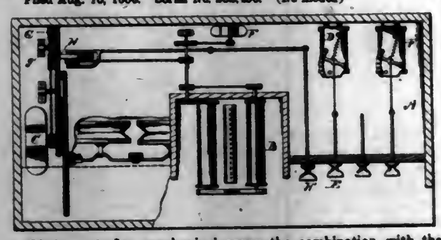
4. The combination, with an organ and its chime of bells, of a series of yielding arms or tripping-jacks G, adapted to engage the bell-hammers, and in connection with said tripping-jacks an oscillatory bar M, against which they impinge, said bar connected with a stop for operating the same, the construction being such that by advancing or withdrawing said bar the said jacks are brought into or thrown out of engagement with said hammers, substantially as described.

5. The combination, with an organ, of a chime of bells, hammers to strike said bells, yielding arms to engage the hammer-handles, and mechanism to throw said arms out of engagement with said hammers, substantially as described.

6. The combination, in an organ, of a key provided with a yoke firmly engaged therewith, a hammer having its handle pivotally engaged with the rear of the yoke and extending therefrom, a device to engage the extended ends of said hammer-handles, and means for throwing said device into and out of operation with said hammer-handles, substantially as described.

7. In an organ, the combination of a chime of bells nested into each other, a rod or bar for supporting said bells, hammers to strike said bells, washers placed between the bells along said rod or bar and each having a thickness corresponding to the space between the bell-hammers, arms to engage the hammer-handles, and means for throwing the said arms out of engagement with the hammers, substantially as described.

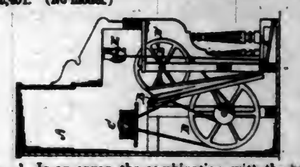
407,801. MECHANICAL ORGAN. EDWIN S. VOTEY, Detroit, Mich. Filed Aug. 10, 1888. Serial No. 282,450. (No model.)



Claim.—1. In a mechanical organ, the combination, with the paper-feeding mechanism, of an electric motor, a rheostat, and a stop, whereby more or less resistance may be inserted in the circuit at will to vary the speed of the paper, the bellows being operated by independent means, substantially as described.

2. In a mechanical organ, the combination, with a rotary disk geared to the motor, of a disk having its axis at right angles to the first disk and bearing with its periphery against the flat face of the latter, means for adjusting said disk to have its frictional contact with the first disk at different points upon the flat face of the latter between the shaft and the edge, and a pulley on the shaft of the frictionally-driven disk geared to the music-roll or paper-feeding roll, substantially as described.

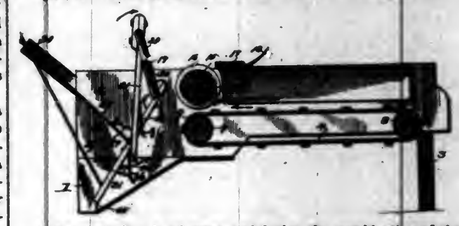
407,802. DRIVING AND GOVERNING MECHANISM FOR ORGANS. EDWIN S. VOTEY, Detroit, Mich. Filed Aug. 10, 1888. Serial No. 282,451. (No model.)



Claim.—1. In an organ, the combination, with the bellows, of an electric motor operating the same, a rheostat by which the speed of the motor may be increased or diminished, and a treadle for controlling said rheostat without requiring the use of the hands of the player, substantially as described.

2. The combination, with the feeders of an organ, of an electric motor, and a worm-gear connection C^2 B', whereby the motor is engaged with and adapted to operate the feeders, substantially as and for the purposes described.

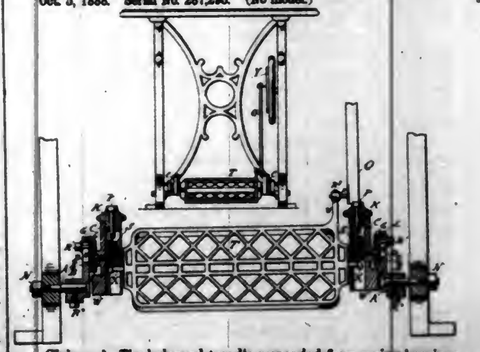
407,803. BAND-CUTTER AND FEEDER. DE WITT WEST, Tampico, Ill. Filed Feb. 24, 1888. Serial No. 265,097. (No model.)



Claim.—1. In a band-cutter and feeder, the combination of the crank-shaft 19, arms 21, pivotally attached thereto at or near their upper ends, and provided with tines 25 at their lower ends, arms 26, provided with tines 36, pivotally attached to the under sides of the arms 21, the rods 27, having the heads 28 pivotally attached to the arms 26, the perforated bar 30, and the rods 29, provided with heads 31, pivotally attached at their lower ends to the lower ends of the arms 21 and with their upper ends passing loosely through the perforations in the bar 30, substantially as described.

2. In a band-cutter and feeder, the combination of the throat 1, frame 2, shaft 19, suitably journaled transversely on said frame, arms 21, pivotally attached at or near their upper ends to the crank-wrists 20 of said shaft, and provided with tines 25 at their lower ends, the perforated bar 30, and the rods 29, provided with heads 31, pivotally attached at their lower ends to the lower ends of the arms 21, and with their upper ends passing loosely through the perforations in the bar 30, and suitable means for rotating said shaft 19, substantially as shown, and for the purpose described.

407,804. TREADLE. JAMES H. WHITNEY, Brooklyn, N. Y. Filed Oct. 5, 1888. Serial No. 287,295. (No model.)



Claim.—1. The balanced treadle suspended from spring-bearings suspended in swivel-chambers.

2. The balanced treadle T, suspended from and in combination with the springs S S, and the swivel-chambers C C.

3. The treadle T, suspended from the springs S S, and the slotted swivel-chambers C C, all in combination.

4. In combination, a balance-wheel, a pitman operating the same, a balanced treadle connected with the pitman through a ball-and-socket joint, substantially as shown and described, and suspended from spring-bearings held in swivel-chambers.

5. In combination, a balance-wheel provided with a counter-weight, a pitman operating the same, a balanced treadle connected with the pitman through a ball-and-socket joint, substantially as shown and described, and suspended from spring-bearings held in swivel-chambers.

6. A balanced treadle provided with trunnions X X, arranged to vibrate in the slots D' D' of the swivel-chambers C C, in combination with the springs S S.

7. In treadles, the combination of the following elements: the swiveled spring-chamber C, the swivel-plate L, and the connecting-plate E.

8. In treadles, the swivel-chamber C, the spring S, swivel-pin P, the cap K, and swivel-plate L.

9. In treadles, and in combination, the following elements: the spring-chamber C, having stop-lug W, and the swivel-plate L.

10. In treadles the following elements in combination: the connecting-plate E, provided with the gibs G G, the slot D, and the adjustable pin A.

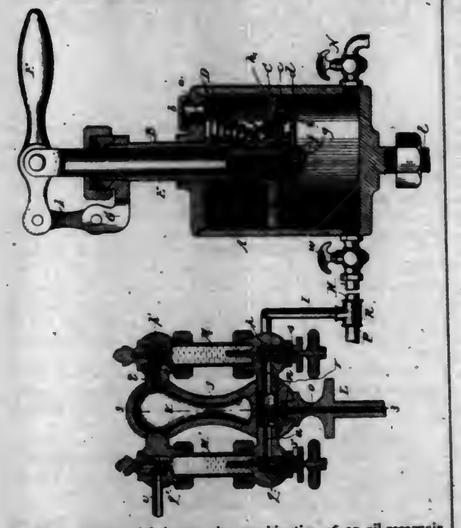
11. The connecting-plate E, provided with the slot D and the gibs G G, the adjusting-pin A, the swivel-chamber C, swivel-plate L, and the pins R and R', all in combination.

12. The treadle T, suspended on each side in spring-bearings and provided with a ball-and-socket connection with the pitman, as shown and described, and in combination.

13. The drive-wheel Y, provided with a counter-balance or weight Z, and a treadle T, suspended in spring-bearings inclosed in swivel-chambers, substantially as shown and described.

14. The drive-wheel Y, provided with a counter-balance or weight Z, a treadle T, suspended in spring-bearings inclosed in swivel-chambers, and having the ball-and-socket connection between the treadle and the pitman, substantially as shown and described.

407,805. SIGHT-FEED LUBRICATOR. WILLIAM WOODWARD, Chicago, Ill. Filed Apr. 19, 1889. Serial No. 307,906. (No model.)



Claim.—1. In a lubricator, the combination of an oil-reservoir, a piston-head dividing the reservoir into an upper oil-holding and a lower oil-receiving chamber, valves for the passage of oil through the piston-head, a hand-pump by operating which the oil is forced from the upper oil-chamber through the piston-head into the lower oil-chamber, and a pipe for connecting the latter with the oil-distributing part of the lubricator, substantially as described.

2. In a lubricator, the combination of an oil-reservoir, a piston-head dividing the reservoir into an upper oil-holding and a lower oil-receiving chamber, valves for the passage of oil through the piston-head, a tubular piston-rod, a reciprocating plunger in the piston-rod, and a hand-lever for reciprocating the plunger and thereby pumping the oil from the upper oil-chamber through the piston-head into the lower oil-chamber, and a pipe for connecting the latter with the oil-distributing part of the lubricator, substantially as described.

3. In a lubricator, the combination, with a series of sight-feed tubes, and a casting having a chamber which connects with the said tubes, of an oil-reservoir, a piston-head dividing the reservoir into an upper oil-holding and a lower oil-receiving chamber, valves for the passage of oil through the piston-head, a hand-pump by operating which the oil is forced from the upper oil-chamber through the piston-head into the lower oil-chamber, and a pipe connecting the latter with the chambered casting and having a single valve which controls the passage of oil to the casting, substantially as described.

4. The combination of a reservoir, a piston-head having an oil-passage, and a tubular piston-rod, a washer secured to the piston-head and having a recess and an oil-passage, valves for governing the flow of oil through said passages, a spring pressing on the piston-head, and a reciprocating plunger in the piston-rod for pumping the oil from one side of the piston-head to the opposite side, substantially as described.

5. In a sight-feed lubricator, the combination of a casting J, having a chamber *m* in its lower portion, and a passage K in its upper portion which communicates with a stem to conduct the oil to a part to be lubricated, a sight-tube M, communicating at its lower end with the chamber and at its upper end with the passage, a sight-tube M', communicating at its lower end with the chamber and at its upper end with a pipe for conveying the oil to another part to be lubricated, and an oil-reservoir having a pipe-connection with said chamber of the casting for supplying it with oil, substantially as described.

6. A lubricator consisting of a chambered casting, a series of sight-feed tubes supplied with oil from the chamber of the casting, an oil-reservoir, and a pipe leading from the reservoir to the chamber of the casting and provided with a single valve *w* for governing the passage of oil to all the sight-tubes, substantially as described.

7. The combination, with an oil-reservoir A and a pipe-connection H, of the casting J, having in its lower portion the chamber *m*, the castings *p* and *q*, having respectively the passages *r* and *u* communicating with said chamber, the sight-feed tubes M M', and the branch pipe I, connecting the chamber of the casting with the pipe-connection of the oil-reservoir, substantially as described.

407,806. VALVE-GEAR FOR ENGINES. ELIJ J. WOOLF and JOHN PERELLE, Minneapolis, Minn., assignors, by mesne assignments, to the Woolf Valve Gear Company, same place. Filed Feb. 25, 1889. Serial No. 301,033. (No model.)



Claim.—1. In a valve-gear, the combination, with an eccentric or crank, of a rigid arm actuated by the eccentric or crank, a guide for said arm constraining it to move in a definite path, and a rod for

driving the valve attached to said arm at a point offset from the center line of the arm's motion, substantially as described.

2. In a valve-gear, the combination, with an eccentric or crank, of a rigid arm actuated by the eccentric or crank, a pivoted guide for said arm constraining it to move in a definite path variable at will, and a rod for driving the valve attached to said arm at a point offset from the center line of the arm's motion, substantially as described.

3. In locomotives, the combination, with the driving-axle and its eccentric, of a carrier boxed on the axle, a guide pivotally mounted on said carrier, an eccentric-strap having an extended arm pivotally mounted in said guide, and a rod for driving the valve attached to said arm at a point offset from the center line of the arm's motion, substantially as described.

4. In a valve-gear, the combination, with an eccentric or crank, of a rigid arm actuated by the eccentric or crank, a guide for said arm constraining it to move in a definite path, an eccentric-rod attached at one end to said rigid arm at a point offset from the center line of the arm's motion, and a rock-shaft having a pair of rocker-arms connected, respectively, one to the valve-rod and the other to said eccentric-rod at or about right angles when the valve is in mid-position, substantially as described.

5. In a locomotive, an automatically-adjustable support for the point of suspension of a valve-gear, consisting of a carrier boxed on the driving-axle and a fixed guide for the carrier rigidly secured to the main frame, of such form as to constrain the point of suspension to move approximately on the arc of a circle when the axle rises and falls with reference to the frame, substantially as described.

6. In a locomotive, an automatically-adjustable support for the point of suspension of a valve-gear, consisting of a carrier boxed on the driving-axle, a fixed guide for the carrier rigidly secured to the main frame, and anti-friction rollers between their bearing-surfaces, the said guide being of such form as to constrain the point of suspension to move approximately on the arc of a circle when the axle rises or falls with reference to the frame, substantially as described.

7. In a locomotive, an automatically-adjustable support for the point of suspension of a valve-gear, consisting of a carrier boxed on the driving-axle having a vertical slot, and anti-friction rollers on the opposite sides of the slot, and a guide-pin fixed to the main frame at an oblique angle to the vertical plane and working in said slot against said rollers, substantially as described.

8. In a locomotive, an automatically-adjustable support for the point of suspension of a valve-gear, consisting of a carrier boxed on the main driving-axle and provided with a vertical slot, and a guide-pin fixed to the main frame at an oblique angle to the vertical plane and working in said slot, substantially as described.

9. In a locomotive, the combination, with the driving-axle, of an eccentric thereon, an eccentric-strap having an extended arm, a carrier boxed on the axle, a guide for the outer end of said arm pivotally mounted in said carrier, a rod for driving the valve attached to said arm at a point offset from the center line of its motion, and a fixed guide for said carrier rigidly secured to the main frame, of such form as to constrain the point of suspension to move approximately on the arc of a circle when the axle rises and falls, substantially as described.

10. In a valve-gear, the combination, with an eccentric or crank, of a pivoted guide, a roller movable in said guide, a rigid arm actuated by the eccentric or crank and having a rigid pivot-pin loosely mounted in said roller, and a rod for driving the valve attached to said arm at a point offset from the center line of motion, substantially as described.

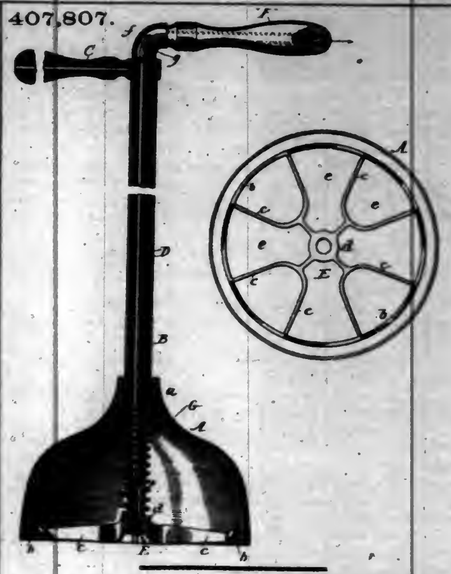
11. In a locomotive, the combination, with the driving-axle and its eccentric, of a carrier boxed on the axle, a guide pivotally mounted on said carrier, a roller movable in said guide, an eccentric-strap having an extended arm pivotally mounted in said roller, a fixed guide for said carrier rigidly attached to the main frame at an oblique angle to the vertical plane, an eccentric-rod attached to said eccentric-arm at a point offset from the center line of its motion, and a rocker-arm on the main frame having a pair of rocker-arms connected, respectively, one to the valve-rod and the other to said eccentric rod at or about at right angles when the valve is in mid-position, substantially as described.

407,807. CLOTHES-POUNDER. JOHN WOOLRIDGE, Rockefeller, Ill. Filed Mar. 16, 1888. Serial No. 303,561. (No model.)

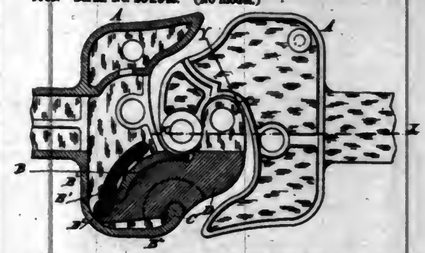
Claim.—1. The combination of the hollow pounder A, tube B, secured to the hollow pounder A, hollow shaft D, provided with an opening at or near each end for the passage of air from the inside of the hollow pounder, and a rubber E, secured to the hollow shaft D and capable of being rotated with such shaft, substantially as and for the purposes specified.

2. The combination of the hollow pounder A, tube B, handle C, hollow shaft D, handle F, rubber E, spring G, and an outlet for air from the pounder A, substantially as and for the purposes specified.

407,807.



407,808. CAR-COUPLING. DAVID L. BARBER, Chicago, Ill., assignor to the Consolidated Coupling Company, of New Jersey. Filed Sept. 7, 1888. Serial No. 284,946. (No model.)



Claim.—1. In a car-coupler, the combination, with a draw-head having an arc-shaped slot formed therein, of a movable knuckle provided with an arc-shaped stem and a tongue or projection extending from said stem, through which is made an opening for receiving a locking device, substantially as described.

2. In a car-coupler, and in combination with a draw-head having an arc-shaped slot formed therein, an inclined slot concentric with such arc-shaped slot, a movable knuckle provided with an arc-shaped stem, a projection or tongue on the end of said stem, and a locking device, one portion of which is adapted to engage with said inclined slot in the draw-head, substantially as and for the purpose described.

3. In a car-coupler, the combination, with a draw-head and the movable knuckle thereof, of a sectional coupling-pin, substantially as described.

4. In a car-coupler, the combination, with a draw-head and the movable knuckle thereof, of a vertically-acting sectional coupling-pin and the means for limiting the motion of the pin, consisting of the pins S and S′ and slots O and O′, substantially as described.

5. In a car-coupler, the combination, with a draw-head and knuckle thereof, and with the sectional coupling-pin substantially of the character indicated, of the lever adapted to give motion to said pin, substantially as described.

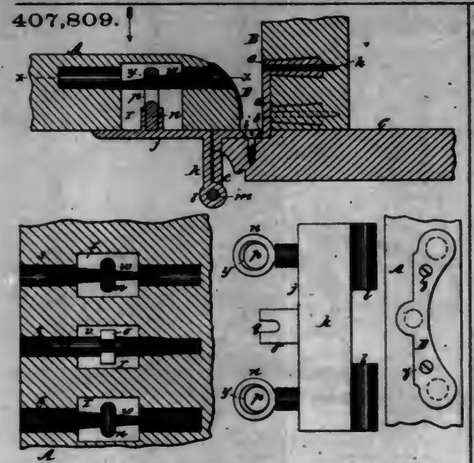
407,809. HINGE. WILLIAM J. BODA, Dayton, Ohio. Filed Apr. 16, 1889. Serial No. 307,395. (No model.)

Claim.—1. A hinge having the leaf which fits upon the door provided with inwardly-extending lugs having eyes and adapted to fit in recesses in the door and be clamped by tapering screws inserted in the rear edge of the door, and with an adjusting-lug likewise fitted in a recess in the door and adapted to be engaged by an adjusting-screw, substantially as described.

2. A hinge having the leaf which fits upon the door provided with inwardly-extending lugs, to which adjustable eyes are secured and adapted to fit in recesses in the door and be clamped by tapering screws inserted in the rear edge of the door, substantially as described.

3. A threaded or barbed fastening-lug for hinges, split up to the plate from which it projects, and having an opening from said split through the plate for the insertion of a pin to spread the lug, substantially as described.

407,809.



407,810. HOSE-SUPPORTER. MINER W. BRUCE, Knox Center, Nebr. Filed Nov. 3, 1888. Serial No. 290,392. (No model.)

Claim.—1. The herein-described hose-supporter, consisting of a divided band A, having the hooks B B rigidly attached to its ends, a clasp D, also provided with a hook B′ at its upper end, and an endless cord C, passing around the hooks B B′ and adapted to slide freely within the same, substantially as and for the purpose described.

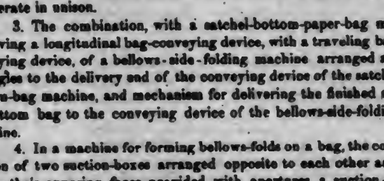
2. The herein-described hose-supporter, consisting of an elastic divided band A, having the hooks B B rigidly attached to its ends, a clasp D, carrying the loop D′ in its upper end, said loop having a hook B′ rigidly attached thereto, and the endless cord C, passing around all the hooks B B′ and adapted to slide freely within the same, substantially as and for the purpose described.

407,811. NECKTIE. MINER W. BRUCE, Knox Center, Nebr. Filed Nov. 13, 1888. Serial No. 290,681. (No model.)



Claim.—A necktie provided with two retaining tapes or bands *a a′*, extending from the opposite upper ends of the shield partly encircling the collar, one of said tapes being permanently secured to the shield, the other detachable, both of said bands carrying hooks a^2 at or near their ends, adapted to engage with the apertures arranged in the sides of the collar, the hook upon the fixed band being secured to the same by means of the elastic tab a^3, substantially as shown and described.

407,812. TABLE-LEAF SUPPORT. THOMAS G. BOOSER, Sheboygan, Wis. Filed Dec. 22, 1888. Serial No. 294,302. (No model.)



Claim.—In a table-leaf support, the combination, with the leaf, of a clip secured thereto and having a recess in one side, a spring-actuated arm pivoted in the clip, the free end of which is bent to one side of the clip and has an opening adjacent to said recess in the clip, and a bar pivoted to a fixed portion of the table and extending through said opening in the arm, and having a lateral projection at its outer end adapted to engage the recess in the clip to support the leaf in a horizontal position, substantially as described.

407,813. PAPER-BAG MACHINE. HARRY C. BURDICK, New York, N. Y. Filed Oct. 19, 1888. Serial No. 288,008. (No model.)

Claim.—1. The combination of a satchel-bottom-paper-bag machine, a bellows-side-folding machine having its feeding end arranged adjacent to the delivery end of the satchel-bottom-bag machine, and feeding-rollers interposed between the delivery end of the satchel-bottom-bag machine and feeding end of the bellows-side-folding machine.

2. The combination of a satchel-bottom-paper-bag machine, a bellows-side-folding machine having its feeding end arranged adjacent to the delivery end of the satchel-bottom-bag machine, and consisting of bag-conveying devices, suction devices for drawing the faces of the bag apart, and folding devices for pressing the side edges of the bag, feeding-rollers interposed between the delivery end of the satchel-bottom-bag machine and feeding end of the bellows-side-folding machine and power mechanism to make all of the machines and feeding-rollers operate in unison.

3. The combination, with a satchel-bottom-paper-bag machine having a longitudinal bag-conveying device, with a traveling bag-conveying device, of a bellows-side-folding machine arranged at right angles to the delivery end of the conveying device of the satchel-bottom-bag machine, and mechanism for delivering the finished satchel-bottom bag to the conveying device of the bellows-side-folding machine.

4. In a machine for forming bellows-folds on a bag, the combination of two suction-boxes arranged opposite to each other and having their opposing faces provided with apertures, a suction-fan or exhauster for said suction-boxes, means to convey a bag between said suction-boxes, whereby it is opened, and fingers or arms to press in the sides of the bag between the suction-boxes during the travel of the bag.

5. The combination of two endless aprons of open-work brought together at one end, two suction-boxes arranged, respectively, back of the aprons and with their opposing faces perforated to suck air through the aprons to open the bag-tube conveyed by said aprons, a

suction-fan or exhauster to draw air through said suction-boxes, and stationary fingers or arms arranged between the lateral edges of the suction-boxes to act upon the bag-tube to press in its sides when the tube is opened and being conveyed between the suction-boxes.

6. The combination of the rollers N and two endless open-work bands M with the suction-boxes O, having perforated faces, and fingers or arms W on each side and between the boxes.

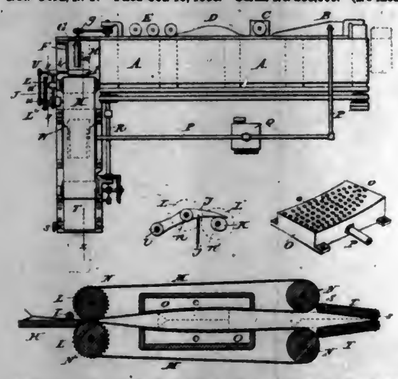
7. The combination of the rollers N and two endless open-work bands M with the suction-boxes O, having perforated faces, fingers or arms W on each side and between the boxes, table H, feed-roll I, and mechanism for intermittently actuating said feed-roll to feed the tubes between the aprons.

8. The combination of the rollers N and two endless open-work bands M with the suction-boxes O, having perforated faces, fingers or arms W on each side and between the boxes, and rollers S and bands T for flattening the tubes after the bellows-folds are formed.

9. A suction-box for a paper-bag machine, having its face formed with a series of perforations covering an area decreasing in width as we move from one end to the other of said face.

10. A suction-box for a paper-bag machine, having its face formed flat in a transverse direction and with a slight curvature in the direction of its length, and with a series of perforations covering an area decreasing in width as we move from one end to the other of said face.

407,814. MANUFACTURE OF PAPER BAGS. HARRY C. BURDICK, New York, N. Y. Filed Oct. 19, 1888. Serial No. 288,609. (No model.)



Claim.—1. The method of rapidly making satchel-bottom paper bags with bellows side folds, which consists in moving the paper tube with a continuous movement, and during such continuous movement first folding one end of the flattened paper tube into a satchel-bottom and pasting said bottom thus formed, and then during the further continued movement opening the bag thus formed and folding in the sides of the finished satchel-bottom bag, forming a completed satchel-bottom bellows side-fold bag, the whole being performed in one continuous operation.

2. The method of forming a bellows-fold satchel-bottom bag, which consists in first forming the satchel-bottom bag and then causing the two flat faces of the bag to be sucked apart, and finally pressing in the edges of the sides while the faces are thus held apart.

3. The method of forming bellows folds on satchel-bottom bags, which consists in causing the two faces of the bag to be sucked apart, and then pressing in the sides, and subsequently flattening down the bag with the sides folded or tucked in to form bellows folds.

4. The method of forming bellows folds on a satchel-bottom bag, which consists in passing said bag in the direction of its length between two suction-boxes, and during its travel sucking its faces apart and simultaneously therewith pressing in the sides, and finally folding or flattening down the bag with the sides folded or tucked in to form bellows folds.

407,815. CASH INDICATOR AND REGISTER. THOMAS CARNEY, Chicago, Ill., assignor to himself and Moses Bensinger, same place. Filed May 11, 1888. Serial No. 302,895. (No model.)

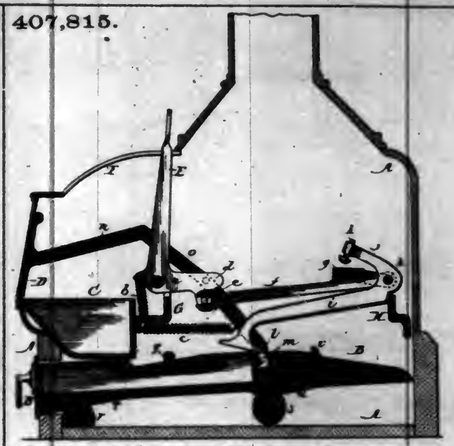
Claim.—1. The combination of the drawer B, having the inclines *t u*, with the rollers *r s*, substantially as and for the purpose specified.

2. The combination of the drawer B, having the inclines *t u* and stop *v*, with the rollers *r s* and stop-pin *q*, substantially as described.

3. The combination of the cash-receptacle B and the pivoted lever *o* with the link or rod *n* and door D, substantially as described.

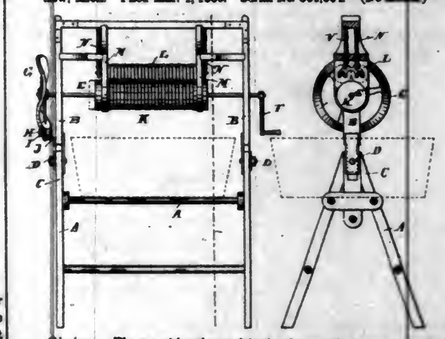
4. The combination of the key E, having the arm *d*, and the lever F, with the cross-bar *g* and lever *i*, constructed and operating substantially as specified.

407,815.



5. In a cash-register, the combination of a fixed or permanent cash-box with a movable cash-box, access to both of which is obtained by the movement of a key and both closed by the return of the movable cash-box, substantially as specified.

407,816. WASHING-MACHINE. THOMAS H. CARSON, East Saginaw, Mich. Filed Mar. 1, 1889. Serial No. 301,604. (No model.)



Claim.—The combination, with the frame, the pressure-rollers, and the laterally-vibrating rubbing-roller K, of the wave cam-wheel G on the shaft of the rubbing-roller, the bracket J on the frame, the horizontal plate I, swiveled on said bracket, and the rollers H on said plate engaging the cam-wheel, substantially as shown and described.

407,817. METHOD OF MAKING PARTS OF HOLLOW DOOR-KNOBS. CROMWELL O. CASE, New Britain, Conn., assignor to P. & F. Corbin, same place. Filed May 16, 1889. Serial No. 310,986. (No model.)

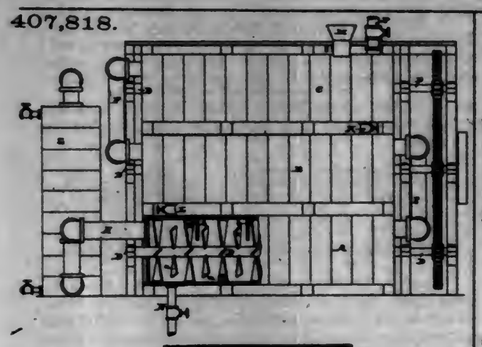


Claim.—That improvement in the method of making parts of knobs which consists in providing the knob-shank A and shell B, having, respectively, the flange 7 and hub 10, securing the parts together by spreading out or heading the end of the knob-shank, and turning the flange 7 down upon the end of the hub 10 of the shell, substantially as described, and for the purpose specified.

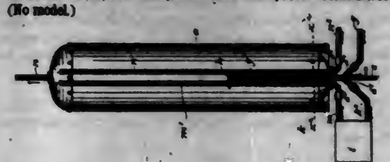
407,818. PROCESS OF CHARGING LIQUIDS WITH GAS. CHARLES A. CATLIN, Providence, R. I. Filed Oct. 30, 1885. Serial No. 181,356. (No model.)

Claim.—The herein-described method of charging or combining liquid with gas, consisting in passing a current of mixed gas continuously through a series of tanks in one direction, passing the liquid intermittingly through the same tanks in the opposite direction, and agitating the liquid and gas, all substantially as described.

407,818.



407,819. APPARATUS FOR HEATING AND PURIFYING WATER. ALLEN P. CARSON, New York, N. Y. Filed Jan. 2, 1889. Serial No. 151,762. (No model.)



Claim.—1. The reservoir and cold-water-inlet pipe therefor extending up through the lower end thereof, combined with an automatically-operated valve seating on the end of the said pipe, the said valve being automatically operated by changes of pressure upon it, substantially as described.

2. The reservoir and cold-water-inlet pipe extended upward therein from the bottom of the reservoir, combined with a check-valve, the pipe or valve having a vent, to operate substantially as described.

3. The reservoir and the cold-water-inlet pipe, combined with an automatically-operated check-valve having an inclined surface for the lateral diffusion of the incoming water, substantially as described.

4. The combination, with a reservoir provided with a hand-hole, of a removable multipassage cover having two or more independent tubular projections attached to or forming part of said cover and to which the pipes or tubes can be attached, and a clamping mechanism to secure and hold the said cover in position to cap the hand-hole without rotating the removable cover, substantially as described.

5. The combination, with the water-heater of a range or stove, of a reservoir and a pipe connecting the said heater and reservoir and extended up within the said reservoir above the sediment-line, the said pipe forming the induction-pipe of the said heater and receiving water from the boiler only, substantially as described.

407,820. HOOF-EXPANDER. FRANK K. DOWLER, Jamestown N. Y. Filed Mar. 23, 1888. Serial No. 304,400. (No model.)



Claim.—1. A V-shaped hoof-expander for use independent of the shoe, having spurs on the inner sides of its arms to engage the opposite sides of the frog, substantially as specified.

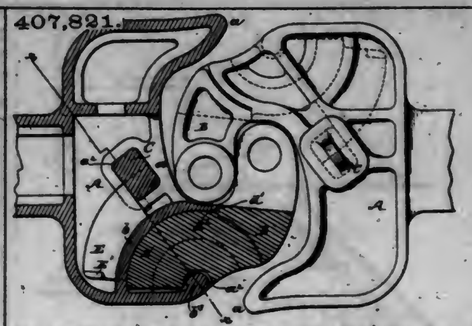
2. The herein-described hoof-expander for use independent of the shoe, having the divergent arms B B, terminating at their rear ends in points E E, to engage the hoof, and provided at intermediate points with spurs G G, to engage the opposite sides of the frog, substantially as and for the purpose specified.

407,821. CAR-COUPLING. EDWARD P. EASTWICK, Jr., New York, assignor to H. Clinton Clark, Saratoga, N. Y. Filed Sept. 10, 1888. Serial No. 285,798. (No model.)

Claim.—1. In a car-coupler, the combination, with a draw-head having an arc-shaped opening formed therein, of a movable knuckle provided with an arc-shaped stem and a web or wing extending from said stem, substantially as described.

2. In a car-coupler, the combination, with a draw-head having an arc-shaped opening formed therein, of a movable knuckle provided with an arc-shaped stem, a web or wing extending from said stem, and a locking device engaging said web or wing, substantially as described.

407,821.



3. In a car-coupler, the combination, with a draw-head having an arc-shaped opening formed therein, of a movable knuckle provided with an arc-shaped stem and a web or wing of less vertical depth than said stem, substantially as described.

4. In a car-coupler, the combination, with an essentially hollow draw-head provided with interior top and bottom circular channels, of a locking jaw or knuckle having formed upon an inner section or stem circular ribs and a wing extending outward from the said inner section or stem, substantially as shown and described.

5. In a coupler, the combination, with an essentially hollow draw-head provided with interior top and bottom circular channels, a locking jaw or knuckle having formed upon the inner section or stem circular ribs, and a wing extending from the said inner section or stem, of a locking-pin passed through the draw-head, provided with a recess at the lower end, whereby a shoulder *d* is formed adapted to rest upon the ring when the latter is in an uncoupled position, substantially as shown and described.

6. In a coupler, the combination, with an essentially hollow draw-head provided with interior top and bottom circular channels, a locking jaw or knuckle having formed upon the inner section or stem top and bottom circular ribs, and a wing extending from the said inner section or stem provided with a stop, of a pin passed through the draw-head coincident with the radial line from the center of revolution of the knuckle and provided with a longitudinal recess in one side, forming a shoulder *d*, all adapted to operate substantially as shown and described.

7. The combination, with an essentially hollow draw-head provided with an interior top and bottom channel, of a locking jaw or knuckle provided with a buffing-surface, ribs formed top and bottom of the interior section or stem of the jaw, a wing extending from the said inner section or stem, a lug integral with said wing, and a locking-pin rectangular in cross-section provided with a reduced lower surface, whereby the pin will lock the jaw in an open position at the end of the wing carrying said lug, the plane of which lug is in an approximately radial line from the center of motion, substantially as shown and described.

8. In a car-coupler, the locking-jaw, substantially as shown and described, consisting of an outer knuckle-section, an inner pivotal section or stem provided with a circular rib at top and bottom, and a wing extending horizontally from said pivotal section or stem provided with a stop-lug, substantially as shown and described.

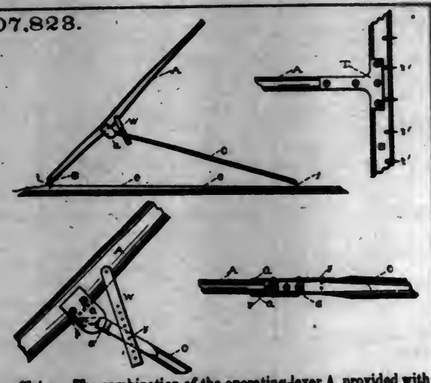
407,822. SEED-PLANTING. SAMUEL R. CROSS, Chicago, Ill. Filed Mar. 25, 1889. Serial No. 304,736. (No model.)



Claim.—As a new article of manufacture, a foundation for planting seed, consisting of a sheet of fabric having its surface supplied with paste and seed attached to the fabric by the paste in the regular form that the plants are desired to appear in the ground, substantially as described.

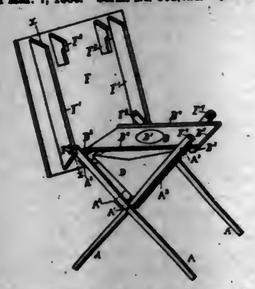
407,823. CARPET-STRETCHER. SAMUEL C. HARLAN, Lake City, Minn. Filed Feb. 23, 1888. Serial No. 300,261. (No model.)

407,828.



Claim.—The combination of the operating-lever A, provided with the flanges *e*, and the bolt *p*, the detachable bar C, provided with the hook G, adapted to engage the bolt *p*, the pivoted retaining-bar W, provided with a series of apertures adapted to engage the pin *y*, located on the bar C, the head B, and the fork *f*, substantially as and for the purpose specified.

407,824. TABLE. SAMUEL HENRY and MARGARET HENRY, Rockford, Ill. Filed Mar. 7, 1888. Serial No. 302,731. (No model.)



Claim.—1. In combination, the legs A, secured together by means of pintles A' and cross-pieces A^2 A^3, the top F, provided with cross-pieces F', hinge-jointed to said table-legs by means of pintles F^2, and the hooks F^3 for engaging with the pins F^4, the attachment B, provided with side pieces B^1, end piece B^2, cleats B^3, and having an opening B' therethrough to admit a wash-bowl, and a wash-bowl B^4, substantially as described, and for the purpose set forth.

2. In combination, the legs A, secured together by means of pintles A' and cross-pieces A^2 A^3, the folding pocket D, depending from the upper cross-pieces A^2, the top F, provided with cross-pieces F', whereby it is hinge-jointed to said table-legs by means of pintles F^2, and the hooks F^3 for engaging with the pins F^4, and the attachment B, provided with side pieces B^1, end piece B^2, cleats B^3, and having an opening B' therethrough to admit a wash-bowl B^4, substantially as described, and for the purpose set forth.

407,825. PRICE-CALCULATING DEVICE. SILVESTER HOADLEY, Seaport, Ind. Filed Apr. 2, 1889. Serial No. 305,657. (No model.)



Claim.—1. A calculating device consisting of a suitable frame, a beam having the units of measure and fractional parts thereof indicated thereon, and a cylinder divided longitudinally into spaces, each of which represents a rate price per measure, and is divided into the number of spaces between each unit of measure, which is represented by the rate price represented on said space, substantially as set forth.

2. The combination, in a calculating device, of the scale-beam having the units of measure and fractional parts thereof indicated thereon, the cylinder having the rate price and multiples thereof indicated thereon in longitudinal lines, a holding and stopping device on the end of said cylinder for securing it in exactly the position desired, and the curtain A', arranged as described, substantially as set forth.

3. The combination, in a calculating device, of the scale-beam, the calculating-cylinder arranged in close proximity thereto, and a curtain extending over said cylinder to within about one space of said scale-beam, substantially as described, and for the purposes specified.

407,826. ART OF MAKING CUTLERY-HANDLES. ALLEN JOHNSON, Ottumwa, Iowa. Filed Feb. 18, 1889. Serial No. 300,232. (No model.)



Claim.—1. The improvement in the art or process of manufacturing cutlery-handles, consisting in first securing the rough handle-pieces to the shank; second, grinding the handle to the required shape and size, and, third, casting the soft-metal bolster upon such ground handle, substantially as specified.

2. The improvement in the art or process of manufacturing cutlery-handles, consisting in first securing the rough handle-pieces upon the shank; second, automatically grinding such handle to an exact predetermined size and shape, so that it will fit the bolster-casting mold, and, finally, casting a soft-metal bolster of the finished size and shape thereon, substantially as specified.

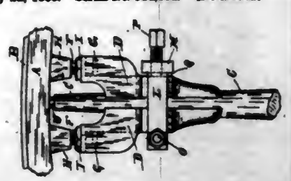
407,827. MACHINE FOR CUTTING CORN-FODDER. PETER J. JORDAN, Wakefield, Kans. Filed Nov. 16, 1888. Serial No. 291,050. (No model.)



Claim.—1. The combination of the platform, the knife secured to the front edge of the same, the reel erected on the platform adjacent to the knife, with its arms extending over the knife, the railing upon the platform extending across the front end of the same and along the sides, the railing on the side adjacent to the knife being inclined, as set forth.

2. The combination of the platform having the notch M in its front end, the hooks R, secured to the front edge of the platform at each side of the notch, and the knife having a shank bolted to the under side of the platform, and a U-shaped portion substantially registering with the notch and having loops at its end engaging the hooks R, the edge of said U-shaped portion being projected beyond the edge of the platform and sharpened, as set forth.

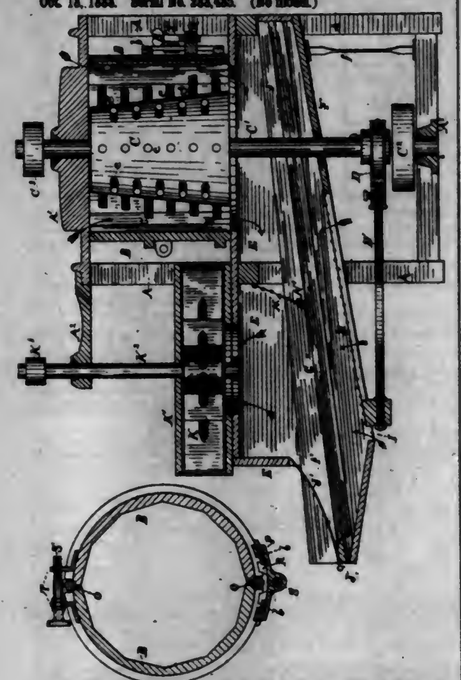
407,828. TIRE-TIGHTENER. ANDREW KNOX, Pewamo, Mich. Filed May 22, 1889. Serial No. 311,892. (No model.)



Claim.—1. In a tire-tightener, the combination, with a pair of jaws having transverse grooves in their sides registering with each other, of a clip formed with two parallel arms united by an enlarged integral portion and formed with lateral openings in their outer ends, a pin fitting in said openings, and a set-screw in the connecting portion, substantially as described.

2. In a tire-tightener, the combination, with two jaws having longitudinally-movable bolts in their outer ends and rectangular grooves formed in their sides, of a clip constructed with two rectangular arms united by an integral cross-piece and having lateral openings in their outer ends, a pin in said openings, and a set-screw in the cross-piece, substantially as described.

407,829. CORN-SHELLER. HENRY LEPPOLD, Jr., Corry, Pa. Filed Oct. 12, 1888. Serial No. 288,485. (No model.)



Claim.—1. In a corn-shelling machine, the combination of a horizontal screener-case, a screener operating within said case, a sheller which is mounted at one end of said case and discharges upon said screener, and a suction-fan which is mounted on the other end of said case and has its eye opening through the wall of said case into the space above said screener, whereby husks and other light particles mixed with the cobs on the top of said screener will be separated from said cobs by the action of said fan.

2. In a corn-shelling machine, the combination of a horizontal screener-case, a vertical sheller located above one end of the screener-case and mounted upon a vertical shaft, an exhaust-fan located above the opposite end of the screener-case, and mounted also upon a vertical shaft parallel to the beater-shaft and run by the latter, and having its eye opening directly into the screener-case above the screen, and a screen-frame mounted horizontally within the screen-case and reciprocated longitudinally by gearing from the beater shaft, substantially as and for the purposes described.

3. In a corn-shelling machine, the combination, with a toothed beater-case, of a toothed beater, as C, having a number of teeth of greater length than the remainder of the teeth, said longer teeth serving to break the conical contour of the beating-surface, substantially as and for the purpose specified.

4. In a corn-shelling machine, the combination of the beater C, the screener case or chamber E, the screener F, having fine and coarse screens H and G, as described, the curtain-screen N dividing the screener-chamber, as described, the curtain or apron J' over the cob-exit from said screener, and an exhausting-fan in position to draw air from said screener-chamber at a point above said screen G.

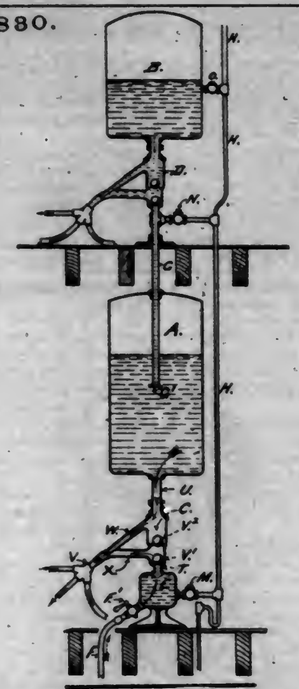
5. In a corn-shelling machine, the combination, with the two parts B of the beater-case, of the inclined bars *b*, the clasp P, block R, and screw S, as shown, and for the purposes specified.

407,830. WATER REGULATOR AND ACCUMULATOR FOR HOUSE PURPOSES. ARTHUR J. L. LORETT, Brooklyn, N. Y. Filed Sept. 19, 1887. Serial No. 250,068. (No model.)

Claim.—1. In combination with a supply-pipe F and accumulators A and B, provided with their respective regulators C and D, and connecting-pipe G, a chamber E, provided with valve M, inlet for pipe F, and outlet at T, substantially as and for the purpose herein set forth.

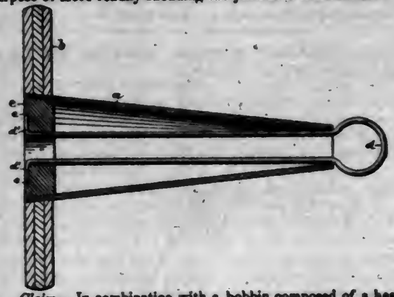
2. In combination with accumulators A and B, provided with regulators C and D, and chamber E, valves M N O, and fresh-air pipe H, substantially as and for the purpose described.

407,880.



407,881. BOBBIN. DWIGHT P. MILLS, Naugatuck, Conn. Filed Apr. 17, 1888. Serial No. 270,970. (No model.)

Brief.—The object of the invention is to provide a light, cheap, and serviceable bobbin of that class made conical or tapered for the purpose of more readily shedding the yarn as it is drawn off.



Claim.—In combination with a bobbin composed of a head-section with a tapered opening, a correspondingly-tapered body-section seated in said opening, and a correspondingly-tapered wedge seated in the large end of said body, as set forth, a supplemental lock or toggle formed of wire having one end spread to engage the small end of the barrel and the opposite ends bent to interlock with the said wedge, all being substantially as and for the objects specified.

407,882. SHOT-PROOF CAGE FOR RAILWAY-CARS. ANDREW W. MITCHELL, Detroit, Mich. Filed May 11, 1888. Serial No. 310,427. (No model.)



Claim.—1. The combination, with a car or other conveyance, of a shot-proof cage provided with glow-lights or bull's-eyes and port-holes for commanding both the interior and exterior of the car, said port-holes being protected on the inside by doors or slides, and the

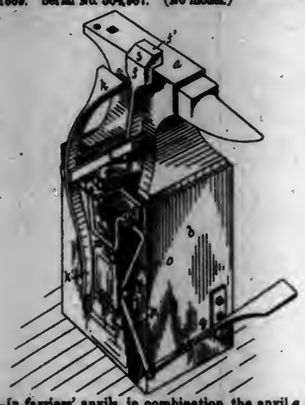
cage being provided with a door having an interior lock, substantially as described.

2. The combination, with a car, of a shot-proof cage projecting up through the top of the car and provided with port-holes commanding the surrounding area, said cage provided with an entrance-door through the bottom and with port-holes also commanding the interior of the car, substantially as described.

3. The combination, with a car provided with a cage C, of a car-door, a spring governed by a latch for violently closing the door, and a button or treadle located in the cage, whereby the latch may be released and the door thrust shut, substantially as described.

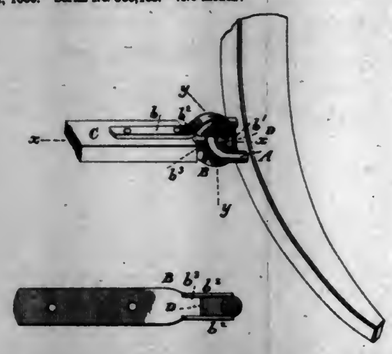
4. The combination, with the cage C, of glow-lights or bull's-eyes, cushions of rubber or equivalent embracing its edges, and screw-caps for holding them in place, substantially as described.

407,833. FARRIER'S ANVIL. JOHN T. HENDON, Decatur, Ill. Filed Mar. 27, 1889. Serial No. 304,967. (No model.)



Claim.—In farriers' anvils, in combination, the anvil *a*, the block *b*, the bar *c*, secured to the upper end of the block and carrying the plate *e*, the jaw *f*, pivotally connected with the bolt and adapted to the anvil, the jaw *k*, pivotally connected with the jaw *f* and having the downward extension *k'*, and the crank-shaft *m*, adapted to be operated by the treadle *q* to close the jaws, as set forth.

407,834. HAME-CLIP. PETER PERNER, McCook, Nebr. Filed May 1, 1889. Serial No. 309,185. (No model.)

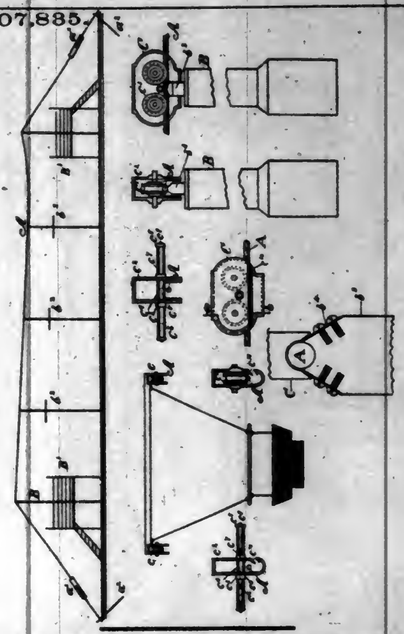


Claim.—A hame-clip constructed with the arms *b b*, curved part *b'*, plates b^2 b^3, and provided with the wearing-strip D, all arranged substantially as shown and described.

407,835. AERIAL CABLE RAILWAY. JAMES B. PERRY, Toronto, and JOHN MACKENZIE, Presqu'ile, Ontario, Canada; said Mackenzie assignor to said Perry. Filed Dec. 20, 1888. Serial No. 294,205. (No model.)

Claim.—An aerial cable A, supported on a series of standards B, with platforms B' and small platforms b^2 in one or more rows and tightened and secured by the screws *a'* and sloping stakes a^3, in combination with the car C, as shown in Figs. 2 and 4 of the drawings, having wheels c', sides c^2, bolt c^3, ferrule c^4, threaded nuts c^5, projecting ends c^6, rubber sleeves c^7, washers c^8, and screws c^9, constructed as shown and described, and operating as set forth.

407,835.



407,836. WHIFFLETREE. GEORGE REITER, Allegheny, assignor to the Pittsburg Tubular Steel Whiffletree Company, Pittsburg, Pa. Filed Feb. 15, 1889. Serial No. 300,045. (No model.)



Claim.—A whiffletree or draft-bar formed of wrought-metal tubing tapering from its middle portion toward the ends and having its ends cylindrical and its body flat or oval between the ends, substantially as and for the purposes set forth.

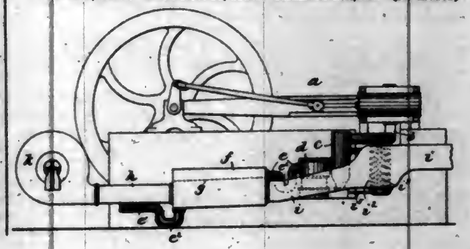
407,837. MANUFACTURE OF WHIFFLETREES AND DRAFT-BARS. GEORGE REITER, Allegheny, assignor to the Pittsburg Tubular Steel Whiffletree Company, Pittsburg, Pa. Filed Feb. 15, 1889. Serial No. 300,046. (No model.)



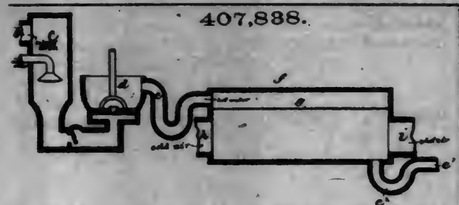
Claim.—1. The herein-described method of forming the bodies of whiffletrees or draft-bars, consisting in tapering a wrought-metal tube from its middle portion toward the ends and then flattening part or all of the blank so obtained, substantially as and for the purposes set forth.

2. The herein-described method of forming the bodies of whiffletrees or draft-bars, consisting in tapering a wrought-metal tube from its middle portion toward the ends and then flattening said blank between the ends thereof, leaving the ends cylindrical, substantially as and for the purposes set forth.

407,838. APPARATUS FOR UTILIZING WASTE HEAT FROM STEAM-ENGINES AND SIMILAR APPARATUS. HENRY S. ROBINSON, Andover, Mass. Filed Nov. 10, 1887. Serial No. 254,760. (No model.)



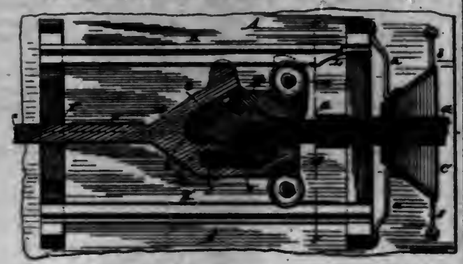
407,838.



Claim.—1. The combination of a steam-engine having a fly-wheel and condenser for exhaust-steam with a heater and a duct connecting the same with said condenser, and an air duct or passage leading from the fly-wheel to the said heater, as described, whereby the motion of the fly-wheel produces a current of air through the heater in which the said air is heated from the hot water conveyed to the heater from the condenser, substantially as described.

2. The combination of an engine having a condenser in which the exhaust-steam is condensed by water, which is thereby heated, with a heater and duct connecting the same with the condenser of the engine, and an air-duct communicating with the said heater by which air is conveyed through the said heater and heated by the hot water delivered thereto from the condenser, substantially as described.

407,839. AUTOMATIC AIR-BRAKE COUPLING. PETER G. ROGUEMORE, Marshall, Tex., assignor of one-half to J. H. Thompson, same place. Filed June 22, 1887. Serial No. 242,157. (No model.)



Claim.—1. The combination, in a pipe-coupling, of guide tracks or rods, a sliding coupling-head supported between and provided with guides operating upon said tracks or rods, a coupling or hose head, and a locking-latch whereby the hose-head is removably coupled to the sliding head, substantially as described.

2. In a hose or pipe coupling, the combination of guide tracks or rods, a sliding coupling-head provided with lateral guides operating upon said tracks or rods, a stationary yoke, a guide upon the coupling-head working in said yoke, a coupling or hose head adapted to engage the sliding head, and a latch carried by the sliding head, whereby the hose-head is removably locked to the sliding head, substantially as described.

3. The combination, in a pipe or hose coupling, of guide tracks or rods, a sliding coupling-head supported between said tracks or rods and provided with a locking-socket, a coupling or hose head adapted to enter said locking-socket, and a locking device to removably hold said hose-head in said socket, substantially as described.

4. In combination, guide tracks or rods, a sliding coupling-head supported between and having lateral guides operating upon said tracks or rods and provided with a locking-socket and coupling-latch bearing upon one of said tracks, and a coupling or hose head adapted to enter said socket and provided with a shoulder with which said latch engages, substantially as described.

5. In combination, guide tracks or rods, a sliding coupling-head supported between and operating upon said tracks or rods, a latch pivoted to said sliding head and bearing upon one of said tracks, and a coupling or hose head adapted to engage said sliding head, substantially as described.

6. The combination, in a hose or pipe coupling, with a sliding coupling-head provided with a locking-socket, a steam or air chamber communicating with the locking-socket, and a coupling-latch pivoted to the sliding coupling-head, of a hollow coupling or hose head adapted to be removably held in the locking-socket in communication with said chamber by the coupling-latch, substantially as described.

7. The combination, in a hose or pipe coupling, with guide tracks or rods one of which is provided with a recess, a sliding coupling-head, lateral guides carried by said sliding head and operating upon the tracks or rods, and a spring-actuated latch adapted to slide on the recessed track or rod, of a coupling or hose head adapted to engage the sliding head and be removably locked to the same by said latch, substantially as described.

8. In combination, a supporting-frame, a flaring mouth attached to the same, a sliding coupling-head, a spring-actuated latch pivoted to the sliding head, and a coupling or hose head adapted to engage the sliding head and be removably locked to the same by said latch, substantially as described.

9. In combination, a sliding coupling-head having a locking-socket and a steam or air chamber provided with inlet and outlet ports, one of said ports opening into the locking-socket, a spring-actuated locking-latch pivoted to the sliding head, and a hollow coupling or hose head adapted to enter and be removably held in the locking-socket by said latch, said hose-head being provided with a port which registers with the port from the steam or air chamber which opens into the locking-socket when the parts are locked together, substantially as described.

10. The combination, with a supporting-frame, a sliding coupling-head operating in said frame, a spring-actuated locking device pivoted to the sliding head, and a flaring mouth carried by the frame, of a coupling or hose head, the main conduit or hose, and the conduit or hose connecting the main conduit with the sliding head, substantially as described.

11. The combination, in an automatic pipe or hose coupling, with a sliding coupling-head provided with anti-friction guides and with an internal steam-chamber having induction and eduction ports and an automatic locking device, of a hose or coupling head adapted to engage the sliding head and guide tracks or rods between which the sliding coupling-head is supported and upon which the anti-friction guides operate, substantially as described.

12. In combination, guide tracks or rods, a sliding coupling-head operating upon said tracks or rods and provided with a locking-socket, a main pipe or conduit, a coupling or hose head carried by an end of the pipe or conduit and adapted to enter the locking-socket of the sliding coupling-head, and a locking device bearing upon one of said guide tracks or rods and adapted to removably hold the hose-head in the locking-socket, substantially as described.

13. In combination, guide tracks or rods, a sliding coupling-head supported between and operating upon said tracks or rods and provided with a locking-socket and a steam or air chamber in communication with the locking-socket, a main conduit or hose communicating with said steam or air chamber, a coupling or hose head carried by an end of the main conduit or hose and adapted to enter the locking-socket in the sliding coupling-head, and a locking-latch sliding upon one of said guide tracks or rods, whereby the hose-head is removably held in the locking-socket, substantially as described.

14. In combination, a supporting-frame, a sliding coupling-head operating therein and provided with a locking-socket having a port, a conduit or pipe communicating with the port opening into the locking-socket, a coupling or hose head adapted to enter the locking-socket, said hose-head being provided with a shoulder upon one side and a port upon another side to register with said port in the locking-socket, and a latch to engage said shoulder and removably hold the hose-head in the locking-socket, substantially as described.

15. In combination, guide tracks or rods, a sliding coupling-head supported between and operating upon said tracks or rods and provided with a locking-socket, a locking device carried by the coupling-head, a guide carried by the locking device and bearing upon one of said tracks or rods and by which the locking device is operated, and a coupling or hose head adapted to enter the locking-socket and be removably locked in the same by said locking device, substantially as described.

407,840. AUTOMATIC FEEDER FOR PRINTING-PRESSES. JOHN SCHAEFER, Hyde Park, assignor to himself, and Henry H. Windsor, Chicago, Ill. Filed Oct. 8, 1888. Serial No. 287,502. (No model.)

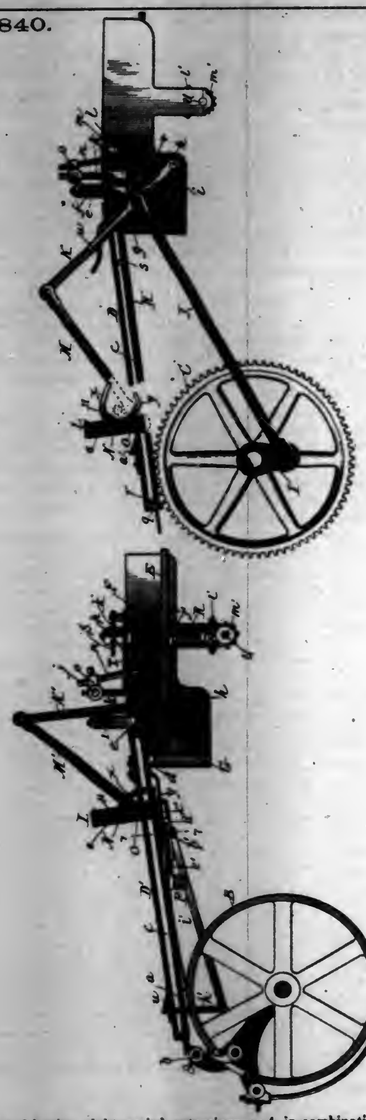
Claim.—1. The combination of the presser-bar *e*, having end rods *f*, the laterally and vertically movable uprights *k*, carrying a rod *j*, provided with pushers *p*, the rock-shaft *h*, having cams *i*, acting on the end rods of the presser-bar, and means, substantially as described, for rocking the shaft and moving the uprights.

2. The combination of the pressure-bar *e*, having end rods *f*, the rock-shaft *h*, having cams *i* to act upon and raise said rods with the pressure-bar, side bars D D', a sliding bar L, supported by the side bars and carrying grippers, the levers K K', connected to the rock-shaft, and arms M M', connecting the levers with the gripper-carrying bar, substantially as described.

3. A pressure-bar, as *e*, the ends of which are secured to vertical rods, as *f*, having right-angled extensions, as 4, in combination with a rod *j*, supported by uprights *k*, which pass through a piece, as *l*, upon a sliding bar *m*, rubbers or pushers, such as *n*, on the rod *j*, and a rock-shaft *h*, having cams *i*, substantially as and for the purposes specified.

4. A pressure-bar, as *e*, the ends of which are secured to vertical

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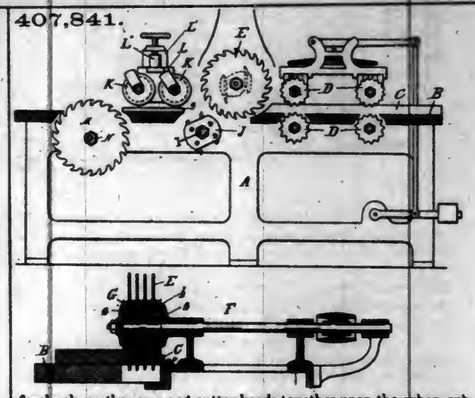
rods, as *f*, having right-angled extensions, as 4, in combination with a rod, as *j*, supported by uprights, as *k*, which pass through a piece, as *l*, upon a sliding bar *m*, a rock-shaft *h*, having cams *i*, rubbers or pushers, as *n*, and rods H H', provided with tappets *r s*, substantially as and for the purposes specified.

5. A pressure-bar, as *e*, supported by rods *f*, rubbers or pushers, as *n*, rock-shaft *h*, and cams *i*, in combination with the cylinder of a printing-press, crank-arm I, connecting-arm J, levers K K', and rods H H', provided with tappets *r s*, side bars D D', sliding bar L, shafts N O, carrying grippers, and connecting-arms M M', substantially as and for the purposes specified.

407,841. MACHINE FOR CUTTING HOOPS. OTTO SCHIRAMSKY, Sandusky, Ohio, assignor to Barney & Kilby and the D. J. Brown Manufacturing Company, both of same place. Filed Dec. 19, 1887. Serial No. 258,269. (No model.)

Claim.—1. In a hoop-cutting machine, a cutter-head consisting of a rotary arbor carrying rotary saws to divide the plank into strips, cutter-heads placed alternately between the saws and in the same relative position thereto and carrying cutters between the saws to plane and round the upper side of the strips, and clamping-collars to

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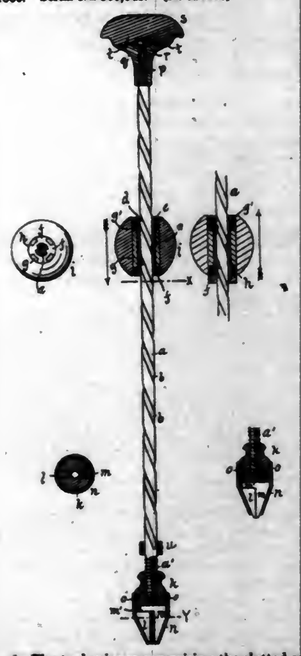


firmly clamp the saws and cutter-heads together upon the arbor, substantially as described.

2. The combination, with the frame and feeding devices, of a hoop-cutting machine wherein the hoops are manufactured from planks by sawing them into strips, a composite cutter-head consisting of an alternating series of circular saws and planer-heads secured upon a common arbor and arranged to cut a plank into strips and plane the upper edges of said strips, and a lower planer-head provided with cutters arranged to plane the lower edges of the strips, substantially as described.

3. In a machine for the purpose described, the combination of the main frame, feed-table, feed-rollers, combined saws and planer-heads, the set of inclined saws, and the guide-strips in the planer-bed, all arranged for joint operation, as set forth.

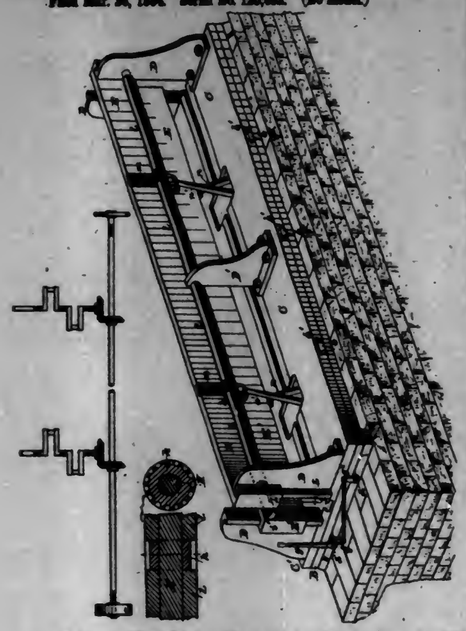
407,842. TOOL-DRIVER. ANTON SCHUERMANN, Decatur, Ill. Filed Apr. 29, 1889. Serial No. 308,043. (No model.)



Claim.—1. The tool-gripper comprising the slotted and threaded head *k*, the tapered shell *n*, the jaw *m*, having the lateral extension *m'*, the jaw *l*, adapted to the angle of jaw *m*, and the threaded shaft bearing against extension *m'*, as set forth.

2. The clutch comprising the shaft *a*, spirally grooved, the collar *c*, having the spiral ribs, the flange *e*, and the radial extensions *f*, the thimble *g*, having the enlarged bore *g'* and the recesses *h*, and the handle *i* on the thimble, as set forth.

407,843. MACHINE FOR STRAIGHTENING, ROUNDING, AND CONDENSING SHAFTS. GEORGE F. SIMONDS, Fitchburg, Mass., assignor to the Simonds Rolling Machine Company, of Massachusetts. Filed Mar. 26, 1884. Serial No. 125,692. (No model.)

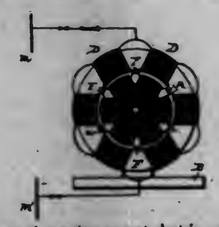


Claim.—1. The bed-plate B, provided with holes through which project pinions *e e'*, and the sliding plates C C', provided with rack-bars *f f'*, in combination with the brackets D D' and reciprocating platens E E', all constructed, arranged, and operated as set forth.

2. The shaft B', provided with the double cranks *a a'* and proper driving mechanism, and connecting-rods *n n'*, in combination with the reciprocating platens E E', brackets D D', plates C C', re-enforcing shafts H H', rack-bars *f f'*, and pinions *e e'*, provided with shafts *d d'*, all constructed, arranged, and operated as described.

3. The reciprocating platens and guides therefor, and actuating mechanism for reciprocating said platens simultaneously in opposite directions, combined with re-enforcing shafts extending substantially the whole length of said platens, substantially as and for the purpose described.

407,844. ALTERNATING-CURRENT ELECTRIC MOTOR. ELIHU THOMSON, Lynn, Mass. Filed Nov. 17, 1888. Serial No. 291,165. (No model.)



Claim.—1. In an alternating-current electric motor, the combination of a field-magnet having a series of poles, four or more, and wound with coils connected to an alternating-current source in a manner to produce poles alternately north and south at the same time, and an armature having a corresponding number of poles, said armature being wound with coils forming the seat of currents induced by the field-magnet and connected in a continuously-closed uncommuted local circuit, as and for the purpose described.

2. In an alternating-current electric motor, the combination of a field-magnet core, of ring form, having internal radial projections, coils wound in the spaces between said projections and connected in proper manner to produce poles alternately north and south with any given current, a single alternating-current source connected to said coils, and an armature in the form of a cylinder having polar projections, the same in number as those of the field, and provided with half as many coils as the field, each of said coils being on closed circuit, as and for the purpose described.

3. The combination, with an alternating-current electric motor composed of a multipolar alternating field-magnet, and an armature having a corresponding number of poles and wound with coils placed on continued locally-closed circuit while the motor is running, of a mechanical starting device, as and for the purpose described.

4. The combination, with an alternating-current motor, of a mechanical propelling or starting device geared thereto through a gear cut away or reduced, so as to become automatically disengaged from the motor when the latter has been brought to the desired speed.

5. The combination, with an alternating-current electric motor, of a propelling or starting power geared to the motor through a wheel or gear which is provided with a gap or cut-away portion, and a stop for bringing the gear to rest in position of disengagement, as and for the purpose described.

6. The combination, with an alternating-current electric motor, of a starting or propelling device for giving initial rotation to the same, and a switch controlled by said starting device for turning the energizing-current into the motor after the same has received its mechanical impulse, as and for the purpose described.

7. In an alternating-current electric motor, the combination of a field-magnet maintained by energizing-coils supplied with a single set of alternating currents, and an induced-current armature carrying coils which are kept on continually-closed circuit independent of the first set, and with their same ends continually connected to the same poles of the external conductor or circuit over which their closure is effected.

8. An alternating-current motor comprising a multipolar field-magnet having four or more poles alternately north and south maintained by a single alternating current in the field-magnet coils, and an armature wound with a set of coils of high self-induction on a separate local circuit continuously closed while the motor is running at speed, and having a number of poles or polar projections the same as the field, as and for the purpose described.

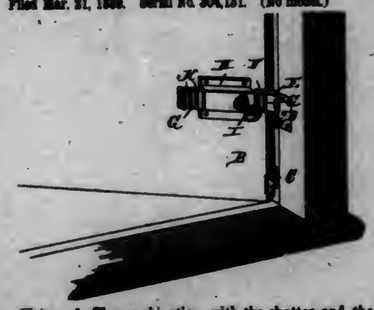
9. The combination, with an alternating-current motor, of a mechanical starting or propelling mechanism, and an electric switch controlled thereby for connecting the motor to the energizing source when the armature has been speeded.

10. The combination, with an alternating-current electric motor provided with starting devices, of a speed gage or governor, and mechanism controlled by said governor for throwing the work onto the motor when the same has reached the required speed, as and for the purpose described.

11. The combination, with an alternating-current electric motor, of a commutator connected with the local-circuit armature-coils for cutting them out of circuit at predetermined points, a speed gage or governor, and mechanism controlled by said governor for putting the armature-coils on continuously-closed circuit when the motor has reached the required speed.

12. In an alternating-current electric motor, the combination of an energizing field-magnet maintained by a series of energizing-coils supplied with a single set of alternating currents, and an armature having a set of poles alternately north and south at the same time under the influence of induced currents in armature-coils which are continually on closed uncommuted circuit while the armature is running.

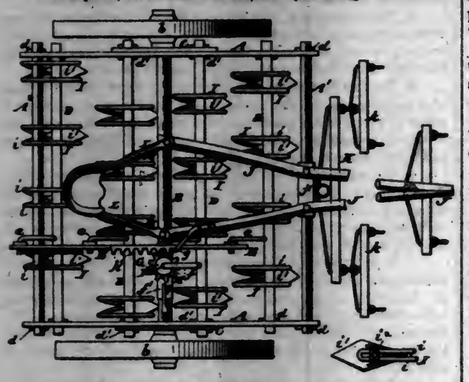
407,845. SHUTTER-FASTENER. THEODORE THEIS, St. Clair, Pa. Filed Mar. 21, 1889. Serial No. 304,131. (No model.)



Claim.—1. The combination, with the shutter and the window-frame, of the keeper-plate secured to the shutter, the fastening-bar hinged to the window-frame and passing through the keeper-plate and provided with a series of vertical ribs on its outer side, and the set-screw mounted in the keeper-plate and having its inner end engaging between the ribs on the fastening-bar, as set forth.

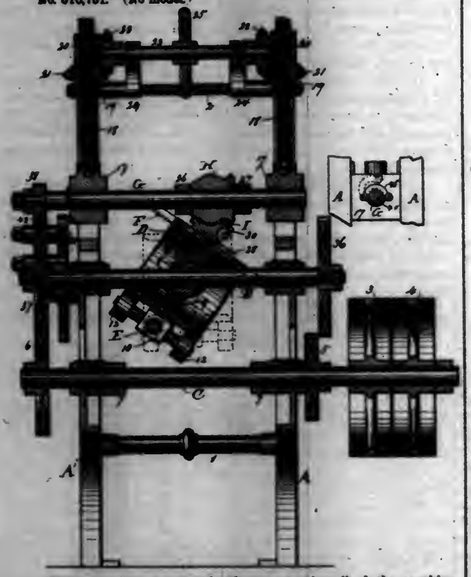
2. The combination, with the shutter having a rubber-lined recess J, and the window-frame, of the keeper-plate secured on the shutter, the fastening-bar pivoted to the window-frame, playing in the recess J and passing through the keeper-plate, and the set-screw mounted in the keeper-plate and bearing upon the fastening-bar, as set forth.

407,846. HARROW. ARVIL T. VAN SLYKE, Hermitage, N. Y. Filed Sept. 28, 1888. Serial No. 286,657. (No model.)



Claim.—The combination, with the harrow-frame and the tooth bars D, journaled in the said frame, of the operating racked bar E, parallel with the side bars of the frame, the arms *e*, connecting the tooth-bars with the bar E, the axle, the plate *f'* on the axle, the plate G, the brace-rods *g* therefor, and the vertical shaft F, journaled in the said plate *f'* and having a bearing in the plate G and carrying at its lower end a pinion H, meshing with the rack of the bar E, all substantially as and for the purpose set forth.

407,847. MACHINE FOR COATING AND EMBOSSING MOLDINGS. HERMANN ZITKEWITZ, Chicago, Ill. Filed May 14, 1889. Serial No. 310,781. (No model.)



Claim.—1. In a machine for the purpose described, the combination, with the vertically-adjustable shaft G, carrying the embossing-roller, of shaft B, having mounted thereon spherical collar 8, pulley D, pivotally mounted upon such collar to rotate therewith, and radial pins 9, engaging a laterally-circumferential groove of collar 8, whereby such pulley can assume any angular position relative to shaft B while rotating therewith, as set forth.

2. In a machine for the purpose described, the combination, with the vertically-adjustable shaft G, carrying the embossing-roller, of shaft E below shaft G and rectangular thereto, and having secured tables F to be angularly adjustable relative to shaft G, and a lever 13 for vibrating and securing shaft E, all substantially as set forth.

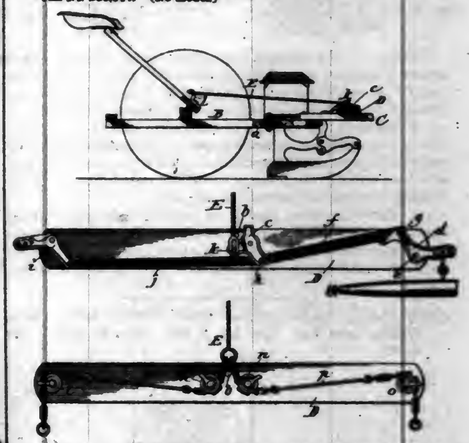
3. In a machine for the purpose described, the combination, with the vertically-adjustable shaft G, carrying the embossing-roller, of shaft B, having mounted thereon spherical collar 8, pulley D, pivotally mounted upon such collar to rotate therewith, radial pins 9, engaging a laterally-circumferential groove of collar 8, and a crank-shaft E, rectangular to shaft B and carrying wheels 12 for guiding pulley D to be held in any angular position to shaft B while rotating therewith, all substantially as set forth.

4. In a machine for the purpose described, the combination, with the vertically-adjustable shaft G, carrying the embossing-roller, of shaft B, feed-pulley D, pivotally mounted thereon, and crank-shaft E, rectangular to shaft B and provided with cross-heads 10 and 11, carrying guide-rollers 12 for pulley D, said shaft E also having secured by brackets mounted thereon feed-tables F and F', to be in line with the upper face of pulley D, and being angularly adjusted simultaneously with pulley D by a lever 13, also mounted on shaft E and secured in any desired position by bolt 14, all substantially as set forth.

5. In a machine for the purpose described, the combination, with the vertically-adjustable shaft G, carrying the embossing-roller, of shaft B, feed-pulley D, pivotally mounted thereon, and crank-shaft E, having guide-rollers for pulley D and carrying tables F and F', to be in line with the upper face of pulley D, transversely-adjustable guide-plate 28, having pivotal guide-strip 30, and the transversely-adjustable plate 31, for sustaining the strip 30 on the desired angular position, all substantially as set forth.

6. In a machine for the purpose described, the combination, with the vertically-adjustable shaft G, carrying the embossing-roller, of shaft B, feed-pulley D, pivotally mounted thereon, and crank-shaft E, having guide-rollers 12 for pulley D, carrying tables F and F', to be in line with the upper face of pulley D, and scraper 33, having V-shaped angle-plate 34, substantially as and for the purpose set forth.

407,848. CORN-PLANTER. ROBERT H. AVERY, Peoria, Ill., assignor to the Avery Planter Company, same place. Filed July 20, 1888. Serial No. 280,517. (No model.)



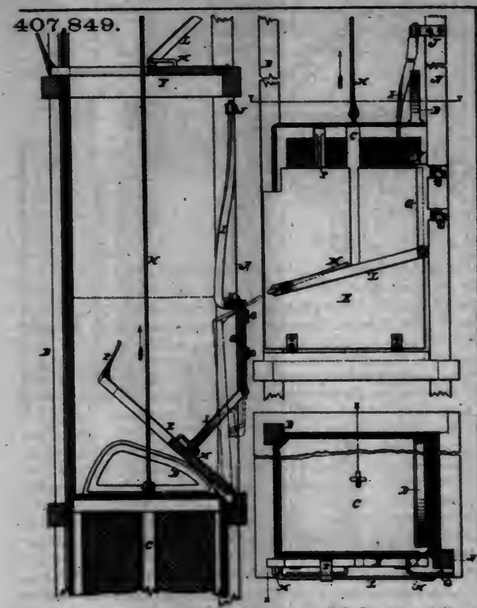
Claim.—In a corn-planter having two frames hinged together, a draft-rod E, connected at one end with the rear frame of the planter, in combination with an evener provided with a system of levers or bars or their equivalents, with which the front end of the rod E is connected, substantially as set forth, whereby a part of the power applied to the whiffletree will be exerted upon the rear frame, substantially as and for the purposes specified.

407,849. DEVICE FOR OPERATING ELEVATOR-HATCHWAYS. WILLIAM BARDSLEY, Kearney, N. J., and WARREN K. CRAWFORD, New York, N. Y. Filed July 2, 1888. Serial No. 278,797. (No model.)

Claim.—1. The hatchway-door provided with the spring-plate P, acting both as a cam and as a spring to give the door a slight impetus downward, combined with the twisted bar I, the arm H, the bracket G, and the link L, the latter being pivoted at one end to the bracket G and at the other end having a sliding connection with the door, substantially as set forth.

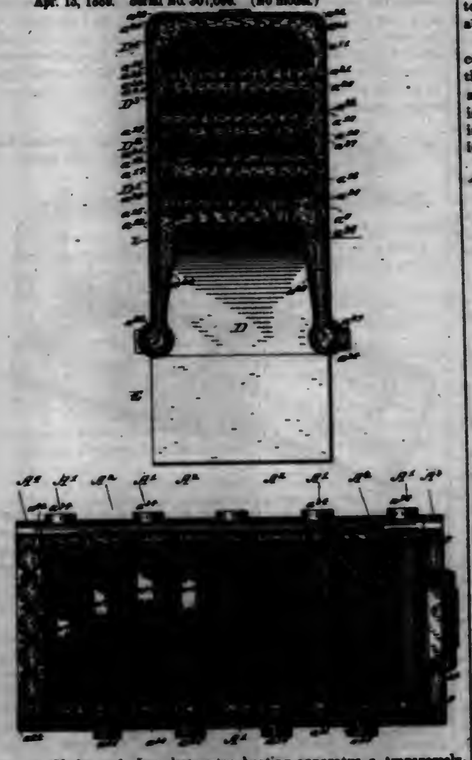
2. In operating devices for elevator-hatchways, the hinged bracket G, carrying the outwardly-extending arm H, having an upwardly-extending twisted bar I, and having a link L pivoted to the lower end of said bracket, combined with the guide-rod M, secured

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upon the hatchway-door and engaging the link L, substantially as and for the purposes set forth.

407,850. WATER-HEATER. NATHANIEL A. BOYNTON, New York, N. Y., assignor to the Boynton Furnace Company, same place. Filed Apr. 13, 1889. Serial No. 307,096. (No model.)



Claim.—1. In a hot-water heating apparatus, a transversely-placed water-section which extends from side to side of the heater, and which has two distinct sinuous water-passages, each of which extends from the lower to the upper extremity of such heating apparatus.

2. In a hot-water heating apparatus, a water-section which extends from side to side of such apparatus, which is provided with vertical water-passages and with horizontal water-passages, and which is provided, also, with right and left vertical partitions which separate such vertical and horizontal water-passages into two distinct series of passages, each series of which embraces both vertical and horizontal water-passages, substantially as described.

3. In a hot-water heating apparatus, the combination, with the intermediate water-sections, each having exterior vertical water-passages and each having horizontal water-passages, as a^{30} a^{31}, which extend inwardly from such exterior vertical water-passages, of the rear closing-section A^4, provided with eccentrically-placed smoke-exit opening a^9, substantially as and for the purposes set forth.

4. A hot-water heating apparatus in which the water-heater is composed, essentially, of a front closing-section, a rear closing-section, and a series of intermediate water-sections, each of which has right and left vertical water passages or legs, which constitute the side walls of the fuel-chamber, vertical passages above such side-wall passages, horizontal water-passages which extend inwardly from such higher vertical passages, and lateral, reduced, or cut-away portions beyond the inner extremity of such horizontal passages, which together constitute vertical smoke-passages between lower and upper smoke-spaces, the front and rear closing-plates and the sections between them being secured together, substantially as specified.

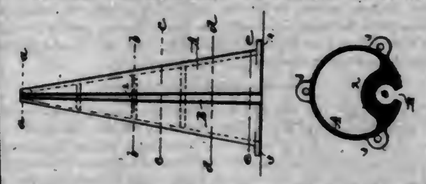
5. In a hot-water heating apparatus, the series of water-circulating sections A' and A^3, each provided with the web-like strengthening and retarding ribs a^{32} and a^{33}, extending along both the vertical and the transverse portions of such sections, as described and shown.

6. In a hot-water heating apparatus, the combination, with the intermediate water-sections, of the rear closing water-section, communicating on either side at top and bottom with such intermediate water-sections, and provided with a smoke-flue which extends longitudinally through such closing-section.

7. In a hot-water heating apparatus, the combination, with the intermediate water-sections, of the rear closing water-section having a transverse water-passage at top and at bottom, and a series of intermediate vertical tubular water-passages, which connect such top and bottom transverse water-passages.

8. In a hot-water heating apparatus, the combination, with the central or intermediate water-sections, of the front closing water-section, provided with a clearing-opening and with a fuel-supply opening, and having right and left vertical water-passages, top, bottom, and intermediate transverse or horizontal water-passages, and rear openings which are coincident with the longitudinal water-passages of the intermediate water-sections.

407,851. BLACKSMITH'S MANDREL. JAMES W. CHERRY, Indianapolis, Ind. Filed May 13, 1889. Serial No. 310,494. (No model.)



Claim.—1. A mandrel consisting of a tapering hollow block of metal having an opening through one side, substantially as set forth.

2. A mandrel consisting of a tapering hollow block of metal having an opening in one side extending its entire length, the edges of said opening being beveled, substantially as set forth.

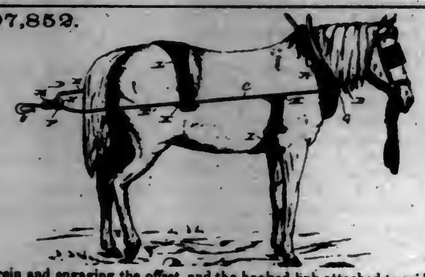
3. A mandrel consisting of a conical hollow block of metal having a straight opening in one side extending its entire length, the edges of said opening being beveled and thickened, substantially as set forth.

4. A mandrel consisting of a conical hollow block of metal having a straight opening in one side extending its entire length and strengthening-webs extending across the openings at proper intervals, substantially as set forth.

407,852. HARNESS. GEORGE G. CRAMBERG and JOHN H. RABOW, Dallas City, Ill. Filed Dec. 22, 1888. Serial No. 294,906. (No model.)

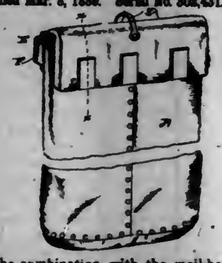
Claim.—In a harness, the hames having the rings B, the rigid tug bent in U form and having its arms provided with the hooks engaging the rings and with the loops H K, said tug having the offset P in its rear portion, the belly and back bands attached to the loops H K, respectively, and each provided with buckles, whereby they may be adjusted, the strap or band M, having the roller N journaled

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therein and engaging the offset, and the hooked link attached to said strap and band, substantially as described.

407,853. MAIL-BAG FASTENER. LA FAYETTE CREPS, Sheridan Lake, Colo. Filed Mar. 8, 1889. Serial No. 302,431. (No model.)



Claim.—1. The combination, with the mail-bag having a series of slots near its upper end and provided with a flap adapted to be folded over its mouth to cover the said slots, of the staples carried by the said flap and adapted to enter the said slots and pass through the bag and the lock secured to the outer side of the bag and engaging the said staples, as set forth.

2. The combination, with the bag having a flap carrying staples and the lock, of the sheath for the lock constructed of a single piece of leather provided at its ends with the tongues H and flaps I, the said flaps I having the slots J, all arranged substantially as described.

3. The combination of the mail-bag, the staples carried thereby, and the lock secured to the bag and having a series of spring-bolts adapted to engage the staples, a sliding bar to disengage the bolts from the staples, and a series of springs adapted to bear on the ends of the staples to project them from the lock, as set forth.

4. The combination of the bag having the slots B G and provided with a flap adapted to fold over the mouth of the bag and cover the slots, the lock secured to the bag and having a series of boxes containing bolts, the staples carried by the flap of the bag, passing through the slots B G and entering the boxes of the lock, and the sheath covering the lock and secured to the bag, as set forth.

407,854. FILTER FOR RAIN-WATER. JACOB DORFBIRER, Sandusky, Ohio. Filed Mar. 9, 1889. Serial No. 302,614. (No model.)

Claim.—1. In a water-filter, the combination of a stand-pipe containing filtering devices supplied from a receiving-basin in the upper end of said stand-pipe, an overflow-basin around the top portion of said stand-pipe and extending above the same, a dependent strainer-tube from the bottom of said basin, and a waste-pipe from said overflow-basin, substantially as described.

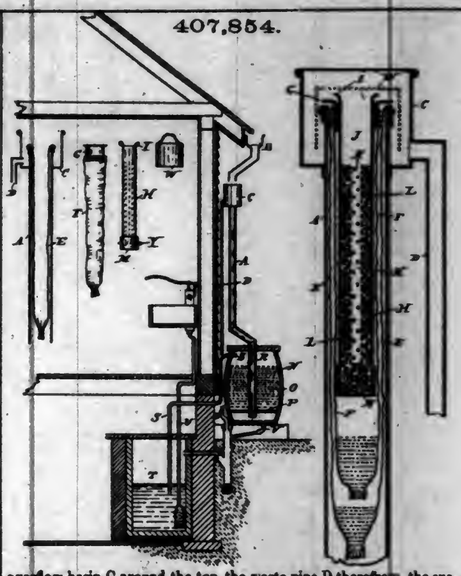
2. In a water-filter, the combination of a stand-pipe, one or more filtering-bags suspended therein, and strainer-tube similarly suspended within said bag or bags and provided with a receiving-basin in its top, and a dependent strainer-tube from the bottom of said basin, substantially as described.

3. In a water-filter, the combination of a stand-pipe, one or more filtering-bags suspended therein, a strainer-tube suspended within said bag or bags, a receiving-basin in the upper end of said strainer-tube and provided with a dependent strainer at its bottom and overflow-basin around the top of the stand-pipe, and a waste-pipe therefrom, substantially as described.

4. In a water-filter, the combination of a stand-pipe, one or more filtering-bags detachably suspended therein, a strainer-tube detachably suspended within said bag or bags and provided with a detachable cap at its lower end, a receiving-basin in the upper end of said strainer-tube, a strainer-tube depending from the receiving-basin within the aforesaid straining-tube, and a filtering material in the space between the two strainer-tubes, substantially as described.

5. In a water-filter, the combination of the stand-pipe A, the

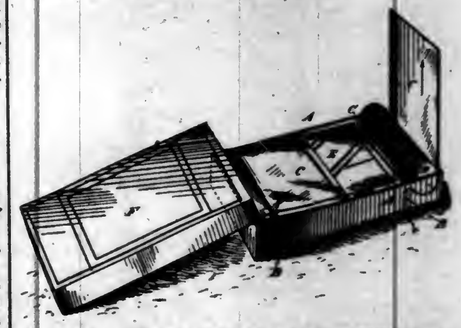
407,854.



overflow-basin C around the top, the waste-pipe D therefrom, the suspended filtering-bags E and F in the stand-pipe, the strainer-tube H, suspended within said bags, the receiving-basin J, formed in the upper end thereof, the strainer-tube K, dependent from the bottom of said basin, the filtering material L between the strainer-tubes, and the detachable cap M on the strainer-tube H, substantially as described.

6. In a water-filter, the combination of the filtering-tank O, containing the bed of filtering material N, the stand-pipe A, extending from near the bottom of said tank to a distance above the height of the same, the filtering devices suspended from the top within said stand-pipe and provided with the receiving-basin J, the overflow-basin C around the top of said stand-pipe and provided with the waste-pipe D, and the overflow-pipe S from the filtering-tank into a storage-reservoir, substantially as described.

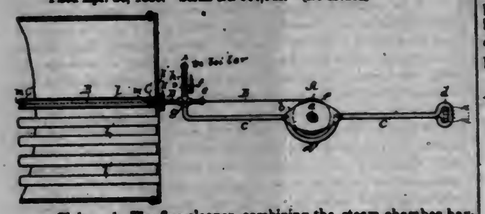
407,855. CARD AND CHECK BOX. BERNARD DREYFUSS, New York, N. Y. Filed Jan. 9, 1889. Serial No. 295,851. (No model.)



Claim.—1. In a card and check box having separate compartments for cards and checks, a flexible lifting device of nearly the same width as the box, having its end fastened to one side of the check-compartment and receiving the checks within the same, said flexible device being arranged to fold down upon the checks and cards to retain them, and to be raised to lift all the checks simultaneously from this compartment, all substantially as described.

2. As a new article of manufacture, a card and check box divided into separate compartments for cards and checks, and having a flexible lifting device of nearly the same width as the box fastened to one side of the check-compartment and receiving the checks within the same, the said flexible device being arranged to fold down upon the checks and cards to retain them, and to be raised to lift all the checks simultaneously from the compartment, said box being also provided with a separate detachable cover to close entirely over the entire face of the box with its contents, all substantially as described.

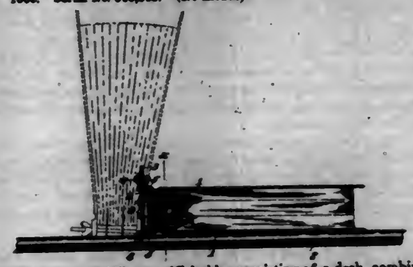
407,856. FLUE-CLEANER. JOHANNES ERICSON, Marion, Kans. Filed Apr. 20, 1889. Serial No. 307,949. (No model.)



Claim.—1. The flue-cleaner combining the steam-chamber having a valved steam-supply connection, a stuffing-box, a piston carrying a brush or cleaner, the support or handle connected to said steam-chamber, a spring-retracted drum or sheave carried by said handle and located at a distance and separate from said steam-chamber, and a flexible piston-rod having one end connected to said drum or sheave and the other passing through the stuffing-box on said steam-chamber and being connected to said piston, substantially as set forth.

2. The flue-cleaner consisting of the rod or handle having at one end a hand-hold and an offset at about the middle of its length, a steam-chamber mounted upon the end opposite said hand-hold and having a valved steam-supply connection, a stuffing-box, a piston carrying a brush or cleaner, the drum or sheave having coiled therein a spring engaging said drum, and a shaft upon which said drum or sheave independently revolves, said drum or sheave being located in the said offset of the rod or handle, plates connected to said rod forming bearings for said shaft, and the wire piston-rod passed through said stuffing-box on the steam-chamber and connected to said piston, substantially as set forth.

407,857. BILL OR TARIFF HOLDER. MATHEWS T. FREEMAN, JOSEPH S. POTTS, and STEPHEN G. COWAN, Richmond, Va. Filed May 4, 1889. Serial No. 309,595. (No model.)



Claim.—1. A bill or tariff holder consisting of a desk, combined with a clamping-bar, a fastening device, a guide bar or bolt, and a cover movable upon the fastening device and lengthwise of the same, substantially as specified.

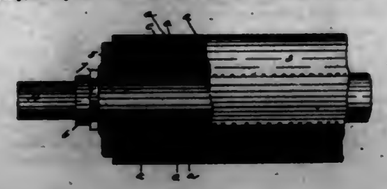
2. A bill or tariff holder adapted to be moved laterally to fold over piles of varying heights, combined with a clamping-plate, a fastening-bolt, and a desk, substantially as specified.

3. In a bill or tariff holder, the combination of the clamping-plates and fastening-bolts with intermediate vertically-movable plates, substantially as described.

4. A bill or tariff holder consisting of clamping-plates and a fastening device, combined with a table having slots to permit the fastening device to be manipulated in the same, substantially as specified.

5. A bill or tariff holder consisting of clamping-plates hinged or journaled to a table and a fastening device, combined with the table having a slot adjacent to the fastening to permit its lateral movement when the holder is turned to open the file.

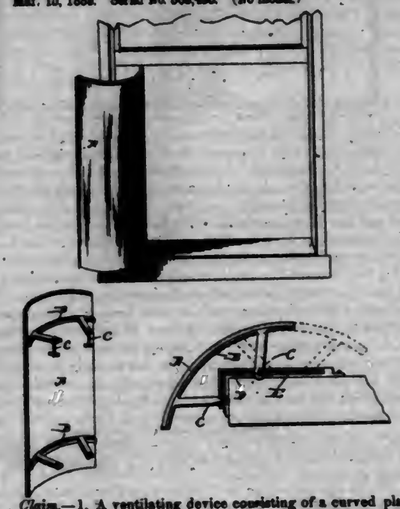
407,858. CLOTH-CALENDERING ROLL. WILLIAM S. GRANGER, Providence, R. I., assignor to the Granger Foundry and Machine Company, same place. Filed Sept. 12, 1888. Serial No. 285,208. (No model.)



Brief.—The cotton in the roll provides the requisite finishing and surface-polishing material and the husks provide an elasticity not possessed by cotton alone, so that the threads of the fabric are not injuriously flattened, since the face of the roll permits of certain indentations, but which, owing to the action of the husks, are only temporary.

Claim.—A calendering-roll for finishing cloth, consisting of commingled corn-husks and cotton, substantially as set forth.

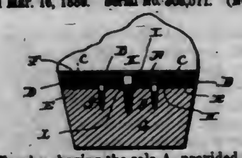
407,859. VENTILATOR. OSCAR B. GRANT, Austin, Minn. Filed Mar. 15, 1889. Serial No. 303,460. (No model.)



Claim.—1. A ventilating device consisting of a curved plate detachably secured to a window-frame and supported at a slight distance therefrom, and adjustable bodily along its supports, as set forth.

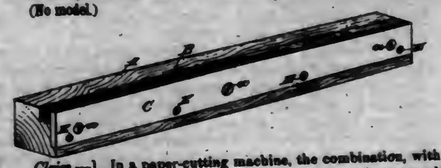
2. A ventilating device consisting of the brackets E, having slots D and secured to a window or door frame, the deflecting-plate, and the frames B, secured to the said plate and carrying bolts engaging the slots D, whereby the plate will be held out from the window, so as to leave an air-passage between the two, as set forth.

407,860. HEEL ATTACHMENT. CHARLES GRUNBACH, Houston, Tex. Filed Mar. 16, 1889. Serial No. 303,511. (No model.)



Claim.—The shoe having the sole A, provided with the plate B, having the stuck-up flange D, and U-plate E, the flange and plate forming the groove F, and the plate B being further provided with the perforation I, in combination with the heel G, provided at its upper end with the plate H, supported slightly above the same and adapted to fit the groove F, and provided with a perforation aligning with the perforation I, and the screw K, inserted downwardly through the perforation and terminating in the heel, substantially as specified.

407,861. CUTTING-STICK FOR PAPER-CUTTING MACHINES. JAMES R. HAMILTON, Two Rivers, Wis., assignor to the Hamilton Manufacturing Company, same place. Filed Apr. 2, 1888. Serial No. 197,402. (No model.)

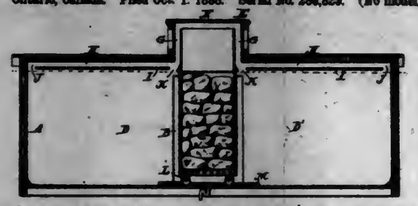


Claim.—1. In a paper-cutting machine, the combination, with a cutting-stick having a recess formed in its upper face, of a removable section fitted in said recess, and a clamping-plate secured directly to the side of the said stick for retaining said removable section in place, substantially as described.

2. In a paper-cutting machine, the combination, with a cutting-

stick recessed on its upper face, a clamping-plate, as C, secured directly to the side of the stick, a series of transverse bolts or screws passing through the stick and plate, and a removable portion fitted in said recess, substantially as described.

407,862. REFRIGERATOR-CAR. JOSEPH F. HANRAHAN, Ottawa, Ontario, Canada. Filed Oct. 1, 1888. Serial No. 286,829. (No model.)

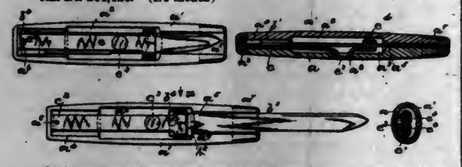


Claim.—1. In a refrigerator-car, the combination, with the body provided at or about the center with an upwardly-projecting box or hood E, of the ice-chamber C, supported upon the floor and extending upward into the box, but separated therefrom on all sides to form passages G, and diaphragms I set away from the roof of the car to form passages H, communicating with the passages G, whereby a perfect circulation of the air in both ends of the car is attained.

2. In combination with a car provided with an upwardly-projecting box or hood E, a two-part ice-chamber C, extending into said box and separated therefrom to form passages G, the upper part of said ice-chamber being fixed in position, and the lower part being movable relatively to the other part and to the car, all substantially as shown.

3. In combination with car A, having doors B in its sides midway between its ends, and also having a box or hood E, a track located in front of the doors, and a two-part ice box or chamber extending from the floor up into the hood, the upper part of the ice-box being fixed in position, all substantially as shown.

407,863. POCKET-KNIFE. HENRY C. HUNT, Newark, assignor of one-half to George B. Adams, Irvington, N. J. Filed Jan. 18, 1888. Serial No. 261,120. (No model.)



Claim.—1. A chambered tool-handle consisting of two sections held together by a ferrule or cap at one end and a rivet at the other end.

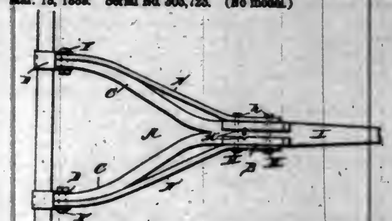
2. In combination, a hollow tool-handle having an open end and an opening in the side thereof, a tool moving through said open end and retained in said handle when not in use, and provided with a shoulder to prevent the tool from dropping out of the handle, and a stop or stops thereon, a spring-actuated plate having projections or flanges between which the tool passes when dropped within the handle, and a finger-piece projecting into the opening in the side of the handle and co-operating with the spring-plate, substantially as and for the purposes set forth.

3. In combination, a hollow tool-handle composed of sections held together by a ferrule and rivet at opposite ends thereof, one of said sections having an opening in the side thereof, and the end of said handle held together by the ferrule being open, a spring-plate arranged within said handle and extending toward the open end thereof, a finger-piece projecting into the opening in the side of the handle for operating said spring-plate, for the purposes specified, and a tool adapted to move through the open end of the handle and provided with a stop thereon with which said spring-plate engages when the tool is projected from the handle, said tool being permitted to drop within the handle and be retained therein by the pressure of the spring-plate against the same, substantially as set forth.

4. In combination, a hollow tool-handle composed of two sections held together by a ferrule and a rivet at opposite ends thereof, one of said sections having an opening in the side thereof, and the other end of said handle held together by the ferrule being open, a spring-tool holding-plate arranged within and secured to one of the sections of said handle and extending toward the open end thereof, a finger-piece on a spring-plate secured to the other of said sections and projecting into the opening in the side thereof and co-operating with the spring-tool holding-plate, for the purposes specified, and a tool adapted to move through the open end of the handle and provided with a stop thereon with which the spring-tool holding-plate engages when the tool is projected from the handle and retained therein by the pressure of the said spring-plate, substantially as and for the purposes set forth.

5. In combination, a chambered or hollow handle having an opening in the end thereof through which a tool may be projected, and an opening in the side thereof, a spring-actuated plate inclosed and secured within said handle and having a free end extending toward the opening in the end of the handle and provided with a loop thereon projecting toward the opening in the side of the handle, thereby providing an open space in said loop through which the tool can drop into the handle, a tool having a stop or notch thereon with which the free end of the spring-actuated plate engages automatically when said tool is projected from the handle, and a finger-piece arranged and working in the opening in the side of the handle, and when depressed engaging with the said loop on the spring-actuated plate, for the purposes set forth.

407,864. VEHICLE-TONGUE. JAMES P. JOHNSON, Girard, Ill. Filed Mar. 18, 1889. Serial No. 303,723. (No model.)



Claim.—1. The combination of the draw-iron provided at its front end with the box having a longitudinal slot extending its entire length, the adjusting-screws passing transversely through the box and adapted to engage the sides thereof and draw them tightly around a tongue, and the brace-rods secured to opposite sides of the box and extending along the sides of draw-iron and adapted to be connected to a thill-coupling, substantially as described.

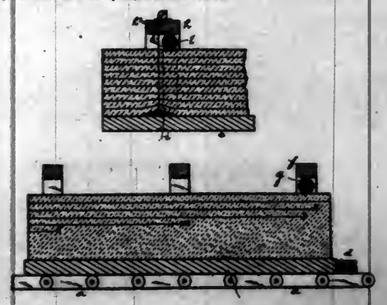
2. The combination, with a draw-iron provided at its front end with a box having a longitudinal slot in its lower side and a flat bearing-surface on the upper side, and the adjusting-bolts H H, engaging registering apertures in the opposite sides of the box and passing transversely through the box, whereby the size of the box may be varied, of the tongue or pole fitting at its rear end in the said box, substantially as specified.

3. As an improved article of manufacture, the draw-iron for vehicle-tongues, comprising the longitudinally-slotted box B, having an aperture in its upper side and notches M M in the opposite edges of its slot, the divergent arms integral with the rear end of the box, and the adjusting-bolts engaging registering apertures in opposite sides of the box, substantially as specified.

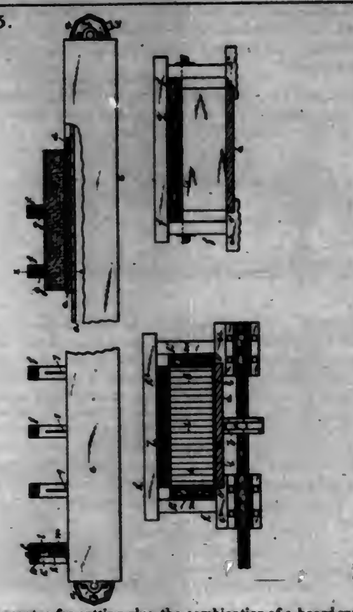
407,865. APPARATUS FOR CUTTING GLUE. CHARLES KELLER and JOHN COSLY, Springdale, Pa. Filed Aug. 14, 1888. Serial No. 282,743. (No model.)

Claim.—1. In apparatus for cutting glue, a combination, with a board supporting the block of glue, of a traveling carrier engaging therewith and a series of cutting-wires supported at different heights, the higher wires being arranged in front of the lower ones successively and adapted to engage with the block of glue supported on such board and cut the same into sheets, substantially as and for the purposes set forth.

2. In apparatus for cutting glue, the combination of an endless chain supported and driven by sprocket-wheels and having cross-bars arranged at intervals thereon, a board carrying a block of glue with which said cross-bars engage, and a wire supported in a suitable frame and extending across the course of the block of glue, substantially as and for the purposes set forth.

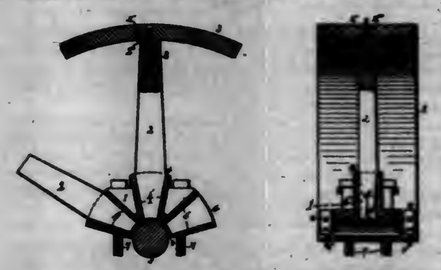


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3. In apparatus for cutting glue, the combination of a board supporting a block of glue, a traveling carrier engaging therewith, and a frame having a vertical wire arranged in the course of said block, a horizontal bar or plate extending across the frame on a higher level than the supporting-board and to which the lower end of the wire is secured and adapted to pass between said board and the block of glue, substantially as and for the purposes set forth.

407,866. PULLEY. P. V. LAWSON and WALLACE L. FIELD, Menasha, Wis. Filed Jan. 18, 1889. Serial No. 296,780. (No model.)



Claim.—1. In a separable pulley, the combination of a hub consisting of two equal parts having lugs thereon, bolts for clamping said parts together and upon a shaft, said hub having spoke-sockets formed therein, the sockets being rectangular in their cross-section, the two sides thereof lying parallel with the bore of the hub, converging rapidly as they approach said bore, and thereby limiting the entrance of said spoke, and one or both of the remaining sides being curved inwardly, whereby the sockets are made narrower in the direction parallel with the bore of the hub intermediate of their length than at either end thereof, spokes inserted in the sockets, and a wedge in the inner end of each spoke, and secured upon the outer end of the spokes a bent rim consisting of two semicircular sections, said sections being secured together at their ends with tie-plates and bolts, substantially as described.

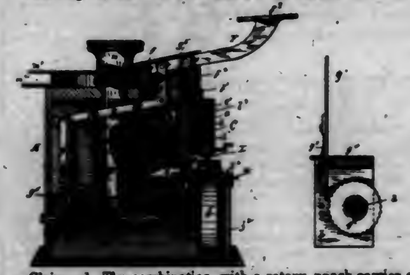
2. In a separable pulley, the combination of a hub consisting of two equal parts having lugs thereon, bolts for clamping said parts together and upon a shaft, a bushing of paper or other slightly-elastic material interposed between said hub and shaft, said hub having spoke-sockets formed therein, the sockets being rectangular in their cross-section, the two sides thereof lying parallel with the bore of the hub converging rapidly as they approach said bore, and thereby limiting the entrance of said spoke, and one or both of the remaining sides being curved inwardly, whereby the sockets are made narrower in the direction parallel with the bore of the hub intermediate of their length than at either end thereof, spokes inserted in the sockets, and a wedge in the inner end of each spoke, their being tenons upon the outer ends of the spokes and shoulders thereto, a bent rim consisting of two semicircular sections and having spoke-seats therein corresponding in position with the spoke-tenons aforesaid, there being a hole through each spoke-seat, a coach-screw therethrough and connecting a spoke therewith, the ends of said rim-sections meeting in a tongue-and-groove joint, and tie-plates and bolts near the ends of the rim-sections for connecting one rim-section to the other, substantially as set forth.

3. In a separable pulley, the combination of a hub consisting of two equal parts having lugs thereon, bolts for clamping said parts together and upon a shaft, said hub having spoke-sockets and spokes secured therein, upon the outer end of the spokes a bent rim consisting of two semicircular sections and having holes therein corresponding in position with the outer end of said spokes, the holes aforesaid being countersunk upon the outer surface of the rim, and a coach-screw inserted in each of said holes and engaging a spoke, thereby connecting the rim and spoke together, and tie-plates and bolts near the ends of the rim-sections for connecting one rim-section to the other, substantially as set forth.

4. In a separable pulley, the combination of a hub consisting of two equal parts having lugs thereon, bolts for clamping said parts together and upon a shaft, said hubs having spoke-sockets and spokes secured therein, said spokes having tenons upon their outer ends and shoulders thereto, a bent rim consisting of two semicircular sections having spoke-seats therein corresponding in position with the spoke-tenons aforesaid, there being a hole through each spoke-seat, a coach-screw therethrough and connecting a spoke therewith, the ends of the rim meeting in a tongue-and-groove joint, tie-plates upon each section, and bolts for securing one rim-section to the other, substantially as described.

5. A separable pulley comprising a hub consisting of two equal parts having lugs thereon, bolts for clamping said parts together and upon a shaft, a bushing of paper or other slightly-elastic material interposed between said hub and shaft, said hub having spoke-sockets formed therein, the sockets being rectangular in their cross-section, the two sides thereof lying parallel with the bore of the hub, converging rapidly as they approach said bore, and thereby limiting the entrance of said spoke, and one or both of the remaining sides being curved inwardly, whereby the sockets are made narrower in the direction parallel with the bore of the hub intermediate of their length than at either end thereof, spokes inserted in the sockets, and a wedge in the inner end of each spoke, their being tenons upon the outer ends of the spokes and shoulders thereto, a bent rim consisting of two semicircular sections and having spoke-seats therein corresponding in position with the spoke-tenons aforesaid, there being a hole through each spoke-seat, a coach-screw therethrough and connecting a spoke therewith, the ends of said rim-sections meeting in a tongue-and-groove joint, and tie-plates and bolts near the ends of the rim-sections for connecting one rim-section to the other, substantially as set forth.

407,867. CHECK-PUNCH. EDWARD L. LIEDER, Sandusky, Ohio. Filed Aug. 13, 1888. Serial No. 282,587. (No model.)



Claim.—1. The combination, with a rotary punch-carrier and a series of punches carried thereby, of pivotal punch-actuating lever F, and punch-engaging plunger f', pivoted to said lever, substantially as set forth.

2. The combination, with rotary vertical spindle B and sectors C C', rigid therewith, said sector C carrying punches c, said sector C' carrying dies c^3, said spindle having at its upper end the handle w, of pivotal lever F, leg f, in which the latter is fulcrumed, plunger f', pivoted to said lever, and spring f^3, substantially as set forth.

3. The combination, with rotary vertical spindle B, having knob s on its upper end, sector C, carrying punches c, and sector C', carrying dies c^3, both said sectors rigid with said spindle, of lever F, plunger f', index-finger x', rigidly secured to said spindle, and index-plate n^3, substantially as set forth.

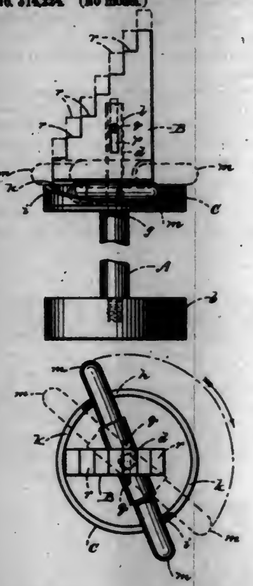
4. The combination, with pivotal lever F, rocking lever G, and link g, having its opposite extremities respectively pivoted to said two levers, of ratchet f', having its upper end pivoted to lever G by a joint which permits a certain independent play of said two parts, ratchet-wheel f^6, shaft h, and feed-wheel j', substantially as set forth.

407,868. BORING-BIT. JOSEPH C. MIDDLETON, Norristown, Pa. Filed May 20, 1888. Serial No. 275,444. (No model.)



Claim.—The herein-described bit, consisting of the straight semi-cylindrical shank A, provided with a clearance-groove *a*, extending from near the butt of the shank to its extremity, the edges of the groove being parallel for a portion of their lengths and converged to form an entering-point D, and semi-spiral threads B, formed in the convex surface of the shank and extending from near the upper end of the groove to near the tip and from edge to edge of the groove, substantially as specified.

407,869. CARRIAGE-JACK. LUTHER S. MOSS, Bridgeton, Me., assignor of one-half to Daniel J. Head, Hanover, Mass. Filed June 14, 1889. Serial No. 314,234. (No model.)



Claim.—1. In a carriage-jack, a standard, a vertical spindle thereon, a horizontal cam-plate, a lifting-bar working in the tracks thereof, and a lifting-block on said spindle actuated by said bar, substantially as described.

2. In a carriage-jack, the combination of a standard, a cam-plate thereon having two inclined tracks, the upper ends of which are horizontal, a lifting-block fitted to slide vertically on said standard, and a lifting-bar rotating on said standard and working in said tracks, substantially as and for the purpose set forth.

3. In a carriage-jack, the combination of a standard, a vertical spindle thereon, a horizontally-arranged two-track cam-plate on said standard, a lifting-bar rotating on the spindle and working in said tracks, and a lifting-block sliding vertically on the spindle in engagement with said bar, substantially as described.

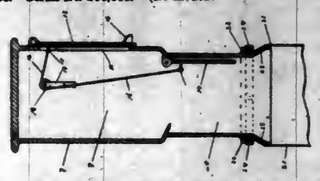
4. In a carriage-jack, a standard having a foot-piece and vertical spindle, a horizontally-arranged cam-plate on said standard provided with two inclined tracks having horizontal upper ends, a lifting-bar rotating on said spindle and working in said tracks, a lifting-block sliding vertically on the spindle and provided with axle-steps, and a pin for preventing said block from rotating, substantially as described.

5. In a carriage-jack, the standard A, in combination with the cam-plate C, bar *m*, and block B, substantially as described.

6. In a carriage-jack, the standard A, having the spindle *d*, in combination with the plate C, bar *m*, block B, provided with the chamber *l*, and slots *p*, and the pin *q*, arranged substantially as described.

7. In a carriage-jack, the standard A, foot-piece *b*, and spindle *d*, in combination with the cam-plate C, provided with tracks *h i* and horizontal portions *k*, the bar *m*, the block B, having steps *r*, chamber *l*, and slots *p*, and the pin *q*, all being arranged to operate substantially as described.

407,870. LETTER-BOX. EVERETT D. MOORE and THOMAS C. CHAPPELL, Baltimore, Md.; said Moore assignor to said Chappell. Filed Jan. 6, 1888. Serial No. 260,011. (No model.)



Claim.—In a mail-parcel box, the combination of a casing provided with a receiving-opening 11, the bottom of said casing being open and terminating in the swelled end 23, the flange 22, encircling the said casing near the bottom thereof, a door 12, hinged to the casing to protect the opening 11 and constructed to swing outward, the inner door 14, hinged on the inside of the casing below the opening 11 therein and swinging downward, the rope 16, connecting the doors 12 and 14, whereby when the door 12 is opened the inner door 14 will be closed, and a mail-sack provided with the hinged band 24 around the mouth thereof for securing said sack to the lower open end of said casing, substantially as shown, and for the purpose set forth.

407,871. LOOM SHUTTLE. GEORGE C. MOORE, Easthampton, Mass., assignor to Joseph W. Green, Jr., and the Glendale Elastic Fabric Company, both of same place. Filed Aug. 13, 1888. Serial No. 282,824. (No model.)

Brief.—The invention relates to the tension devices and to the devices for securing the cop-holding spindle to the shuttle-body.



Claim.—1. The combination, with the loom-shuttle body A, of the spindle B, having a tang B', provided with a hook *b* and a downwardly-extending projection *b'*, and the locking-plate D, having the recess or slot *d*, and the cross-bars *d'* and *d²*, bridging the front of said recess or slot, substantially as set forth.

2. The combination, with the loom-shuttle body A, of the wire support *g*, the tension bow-spring *e*, having notched or forked ends embracing said support, and the pin *h*, substantially as set forth.

3. The combination, with the loom-shuttle body A, of the tension device consisting of the wire support *g*, the bow-springs *e* and *f*, and the pin *h*, substantially as set forth.

407,872. NARROW-WARE LOOM. GEORGE C. MOORE, Easthampton, Mass., assignor to Joseph W. Green, Jr., and the Glendale Elastic Fabric Company, both of same place. Filed Aug. 13, 1888. Serial No. 282,825. (No model.)

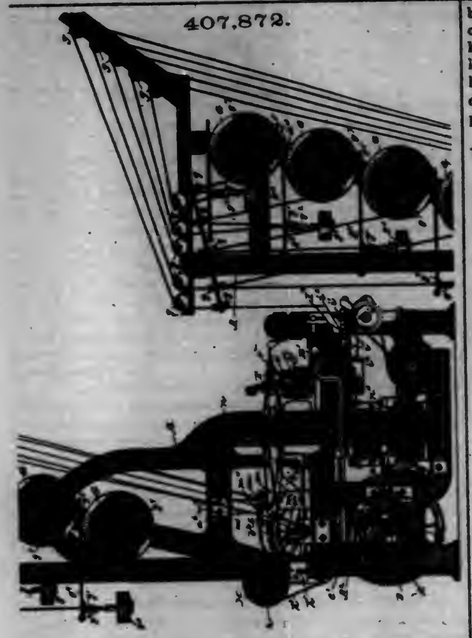
Brief.—The invention relates to the shuttle-driving mechanism, the let-off devices, and the means for actuating the harness-frames.

Claim.—1. The combination, with the lay and a shuttle-driving bar fitted to reciprocate therein, of a horizontal lever pivoted near its center, a pitman connecting the forward end of said lever with the said driving-bar, a cam at the rear end of said lever for operating the same, and a shaft by which the said cam is carried, substantially as set forth.

2. The combination, with the lay and a shuttle-driving bar fitted to reciprocate therein, of a horizontal lever pivoted near its center and provided at its rear end with bowls or anti-friction rolls, a pitman connecting the forward end of said lever with said driving-bar, a flange-cam the edge of which is received between said bowls or rolls, and a shaft by which said cam is carried, substantially as set forth.

3. The combination, with the lay and its operating mechanism, of a shuttle-driving bar fitted to reciprocate in the said lay, a lever having a roller-slide provided with bowls or anti-friction rolls, a pitman positively connecting said lever with said driving-bar, a plate or bracket having a guiding-slot in which said roller-slide works, a flange-cam the edge of which is embraced by said bowls or anti-friction rolls, and a shaft by which said cam is carried, substantially as set forth.

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4. The combination, with the lay provided with cam-slots and the shuttle-driving bar reciprocating in said lay, of the vibrating shuttle-driving pins having universal-joint connections with said driving-bar and flattened or elliptical portions working in said slots, substantially as set forth.

5. The combination, with the cam-slotted lay and its operating mechanism, of the shuttle-driving bar fitted to slide back and forth in the lay, operating mechanism for said driving-bar, the ball-headed shuttle-driving pins having flattened or elliptical portions, and the plates attached to said bar and having sockets to receive the heads of said pins and slotted projections for guiding said pins in their back-and-forth vibrations, substantially as set forth.

6. The combination, with the lay having the cam-slots *c'*, of the shuttle-driving bar C', having the plates c^3 c^3, the former having the slotted projections or standards c^5, the shuttle-driving pins c^3, having elliptical or flattened portions c^2 and ball-heads c^4, the latter socketed in said plates, and the shuttles F, having the open slots f^3 to receive the ends of said pins, substantially as set forth.

7. The combination, with the tension-pulleys g^4, having in their inner sides round holes to receive the stud on which they can turn and having in their outer sides square holes for the reception of square warp-beam shafts, of friction bands or straps passing around said pulleys and tension-levers with which said straps are connected, substantially as set forth.

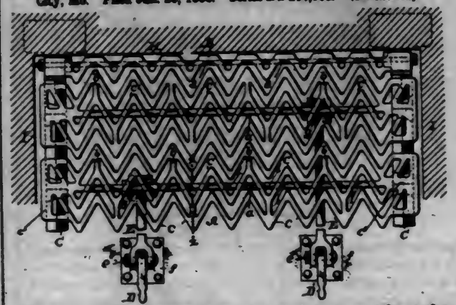
8. The combination, with the warp-beam-supporting standards provided with round studs, of the tension-pulleys having on their inner sides round holes to fit said studs and on their outer sides square holes, the square warp-beam shafts fitting in the said square holes, the tension-levers supported by said standards, the friction-bands connected with said levers and passing around said pulleys, the pulleys g', the weighted brackets or blocks g^3, by which said pulleys are carried and which are arranged below the longer or outer ends of said levers, and the overhead guide-pulleys g, over which the warps pass, substantially as set forth.

9. The combination, with the lay and its operating mechanism, of the sliding bar I^3, the bell-crank lever K, operatively connected with the said lay and sliding bar and having a series of collars i^3, the pawls i^4, pivoted to said collars, the shafts i^2, having ratchet-wheels i^3 and worms i^5, the worm-wheels i, the take-up rolls I', with which said worm-wheels are connected, and the pressure-rolls I, substantially as set forth.

10. The combination, with the machine-frame, of the bearing-plates *m*, having the curved slots m^2, the warp-guide rolls L, journaled in said plates, the brackets m', and the bolts m^4, passing through said curved slots and adjustably securing said bearing-plates to said brackets, substantially as set forth.

11. The combination, with the harnesses, of the rigid links or bars n', connected with the opposite ends of the harness-frames, each of said links or bars being formed in parts and having right and left hand screws, whereby said parts are adjustably joined together, the levers n^3 n^3, positively connected to each other at their inner ends and having the said links connected at their outer ends, and the grooved cams, with which engage projections on one lever of each connected pair of levers n^3 n^3, substantially as set forth.

407,873. FURNACE-GRATE. MAXIMILIAN H. MOSKOVITZ, Kansas City, Mo. Filed Jan. 28, 1888. Serial No. 297,903. (No model.)

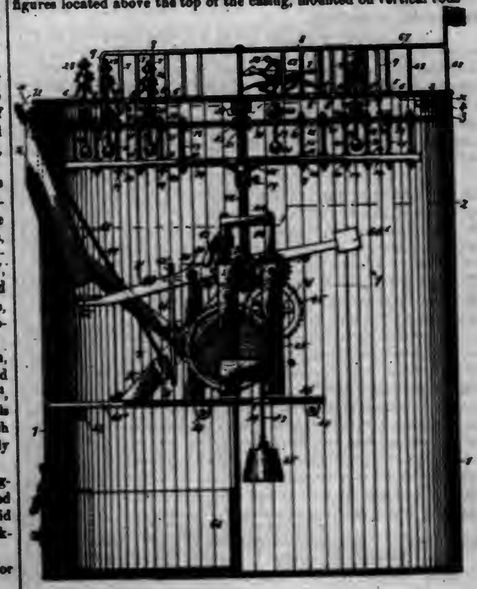


Claim.—1. The improved grate-bar having an upper fire-surface composed of a series of zigzag webs *c c*, which are united at their ends, the end web-pieces *c' c'*, and the lower straight longitudinal supporting-web cast integral with the upper zigzag webs and the end pieces, said supporting-web being connected with the series of zigzag webs by means of connecting-pieces *c'*, whereby a series of air-passages *h h* are formed between said upper series of webs and the said supporting-web, substantially as described.

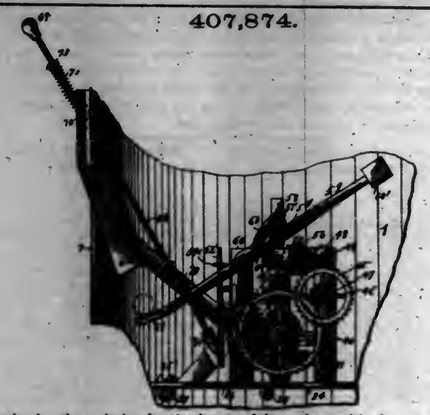
2. The improved grate-bar having an upper fire-surface composed of a series of zigzag webs *c c*, which are braced at points intermediate of their lengths by short transverse webs *b b* and united at their ends, the end web-pieces *c' c'*, and the lower straight longitudinal supporting-web cast integral with the upper zigzag webs and the end pieces, said supporting-web being connected with the series of zigzag webs by means of connecting-pieces *c'*, whereby a series of air-passages *h h* are formed between said upper series of webs and the supporting-web, substantially as described.

407,874. TOY RACE-TRACK. WILLIAM H. MCMAHON, New York, N. Y. Filed Nov. 14, 1888. Serial No. 290,626. (No model.)

Claim.—1. A toy race-track consisting of a casing having its top formed with a series of concentric slots, a rotary plate mounted on a vertical shaft beneath the top of the casing and having slots coinciding with the slots in the top of the casing, a number of miniature figures located above the top of the casing, mounted on vertical rods



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projecting through the slots in the top of the casing and in the rotary plate and having rollers loosely resting at their ends beneath the plate, and a driving mechanism consisting of the drum 32, with cord 33, having suspended weight 35, the large gear-wheel 40, loosely mounted on the shaft 36 of drum 32, and meshing with a pinion 47 on a shaft 46, a large gear-wheel 45 on shaft 46, meshing with a pinion 48 on a shaft 49, a gear-wheel 50 on shaft 49, meshing with a pinion 51 on a shaft 52, and a bevel gear-wheel 53, meshing with a bevel gear-wheel 54 on the vertical shaft 16, on which the rotary slotted plate is mounted, in combination with a ratchet-wheel 56 on shaft 52, a pawl adapted to engage with ratchet-wheel 56, and a tilting counter-weighted lever operated by a coin deposited upon it, substantially as described.

2. A toy race-track consisting of a casing having its top formed with a series of concentric slots, a rotary plate mounted on a vertical shaft beneath the top of the casing and having slots coinciding with the slots in the top of the casing, a number of miniature figures located above the top of the casing, mounted on vertical rods projecting through the slots in the top of the casing and in the rotary plate, and having rollers loosely resting on the plate and weights at their ends beneath the plate, a driving mechanism consisting of a drum with rope and suspended counter-weight connected by a train of gearing with the vertical shaft on which the rotary slotted plate is mounted, a ratchet and pawl for governing the train of gearing, a counterweighted coin-operated tilting lever for tripping the pawl out of engagement with the ratchet-wheel, and a spring-actuated hooked lever for holding the tilting lever and pawl in engagement with the ratchet, and a rod for moving the hooked lever out of engagement with the tiling lever, substantially as described.

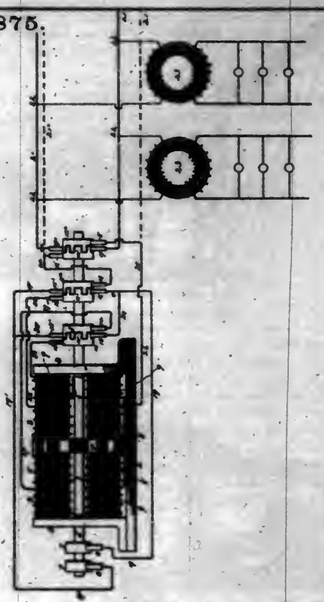
3. In a toy race-track, the casing 1, having removable top 2, with concentric slots 6, the vertical shaft 16, with arms 14, having their hub 15 detachably secured to shaft 16 by set-screw 17, a rotary plate 10, loosely mounted on shaft 16 and having a series of concentric strips 11 and slots 12 coinciding with the strips 5 and slots 6 above them in top 2, and the plate 10, mounted on bolts 13, connecting it with arms 14, and secured by nuts 19, substantially as described.

4. In a toy race-track, a driving mechanism consisting of a drum 32, with rope 33, having suspended counter-weight 35, and connected by a train of gearing, substantially as described, with vertical shaft 16, in combination with the ratchet-wheel 56 on one of the shafts of the train of gearing, the pawl 57, engaging the ratchet-wheel 56 and having an arm 63, and the tilting lever 59, having a counter-weight 60′ at one end, a plate 61 at the other located beneath a coin-chute 62, and a pin 64 on the lever 59 forward of its pivotal point and engaging arm 63 of lever 57, substantially as described.

5. In a toy race-track, a set of gearing consisting of a drum with rope and suspended counter-weight connected by a train of gearing with a vertical shaft, the ratchet-wheel 56 on one of the shafts of the train of gearing, a pawl 59, engaging ratchet-wheel 56 and having an arm 63, a tilting coin-operated lever having counter-weight 60′ at one end and plate 61 at the other, an inclined coin-chute 62, with its lower end projecting over plate 61, in combination with a pivoted spring-actuated lever 61′, having a hook 62′, adapted to engage lever 59, and a sliding rod 69, with retracting-spring 72, and a tapering head 71, adapted to engage the lower end of lever 61′ and move it out of engagement with lever 59, substantially as described.

407,875. ALTERNATING-CURRENT DYNAMO. GISBAY PFANNKUCHE, Cleveland, Ohio, assignor to the Brush Electric Company, same place. Filed Dec. 2, 1887. Serial No. 256,315. (No model.)

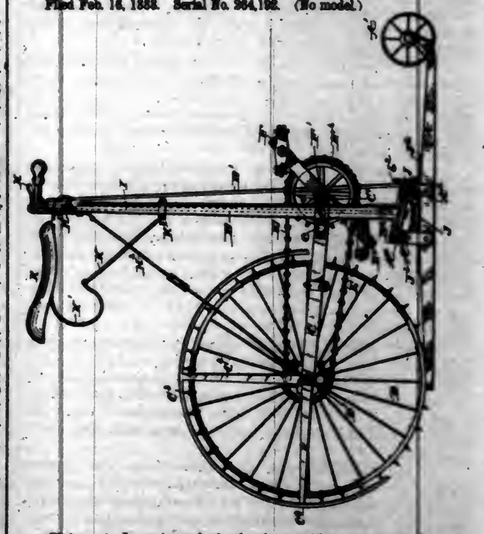
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Claim.—1. In a self-exciting alternating-current compound dynamo, the combination, with the armature, of field magnets having two sets of field-coils wound to act cumulatively in energizing the field, one coil being in series with the working-circuit and the other in a derived circuit, and a separate commutator for each set of coils, said commutators being constructed to straighten the alternating current generated by the dynamo and transform it into two continuous currents for use in energizing the two sets of field-coils, substantially as set forth.

2. In a self-exciting alternating-current dynamo, the combination, with a generating-armature and collectors for taking the alternating electrical impulses from the same, of two sets of field-coils and a separate commutator for each set for straightening the alternating exciting-currents to each coil, and an independent commutator for resolving the straightened current into alternating impulses to the line, substantially as described.

407,876. ICE-VELOCIPEDE. JOSEPH R. ROBINSON, Oil City, Pa. Filed Feb. 16, 1888. Serial No. 264,102. (No model.)



Claim.—1. In an ice-velocipede, the combination of a horizontal frame having runners, an upright frame, so as to turn horizontally

thereon, pivoted to said horizontal frame, a guiding apparatus pivoted in said upright frame and operating upon said horizontal frame, a propelling-wheel journaled in a frame pivoted to the said upright frame, a lifting device for lifting said driving-wheel frame, and a treadle device for imparting motion to said driving-wheel.

2. In an ice-velocipede, the combination of a horizontal frame having runners and an inclined disk or plate A^4, an upright frame having at its base an inclined plate or disk B^2, which sets upon and moves pivotally on the plate A^4, a universally-jointed stem I, extending from the plate A^4 to the top of said upright frame, and arms for working said stem I pivotally in said upright frame and turning the said horizontal frame pivotally upon the said upright frame.

3. In an ice-velocipede, the combination of a horizontal frame having runners, an upright frame carrying the propelling apparatus, which is pivoted to said horizontal frame so as to turn horizontally thereon, and a steering apparatus for turning said horizontal frame, which is pivoted longitudinally in said upright frame.

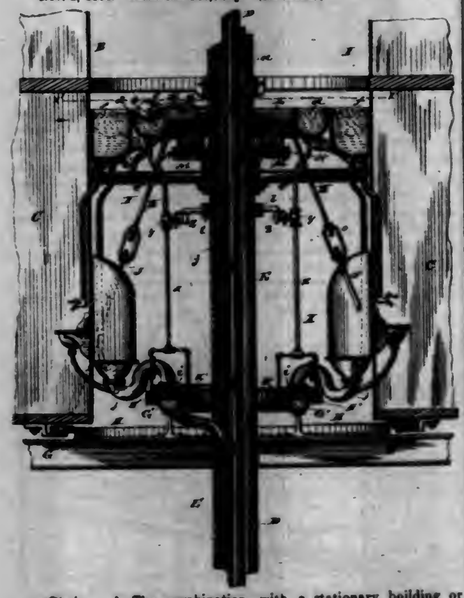
4. In an ice-velocipede, the combination of a horizontal frame having runners, wheels at the points of said runners, an upright frame pivoted to said horizontal frame, and a propelling apparatus mounted on said upright frame.

5. In an ice-velocipede, the combination of a horizontal frame having runners, a tilting frame having guard-runners pivoted to said horizontal frame between said runners, an upright frame pivoted to said horizontal frame, and gearing for tilting said tilting frame when the horizontal frame is moved pivotally on the upright frame.

6. In an ice-velocipede, the combination of a horizontal frame having runners, an upright frame mounted pivotally on said horizontal frame so as to turn horizontally thereon, a propelling-wheel mounted in a frame which is pivoted on said upright frame, and a lifting device for lifting said propeller-wheel.

7. In an ice-velocipede, the combination of a horizontal runner-frame, an upright frame supporting the rider's seat, which is pivoted to the said horizontal frame so as to turn horizontally thereon, a pedal apparatus supported by said upright frame, a driving-wheel supported in a frame which is pivoted to said upright frame, gearing for driving said drive-wheel from said pedal apparatus, and a lifting device for lifting said driving-wheel.

407,877. REVOLVING JAIL. EDWARD ROWE, Indiana, Pa. Filed Nov. 2, 1886. Serial No. 217,840. (No model.)

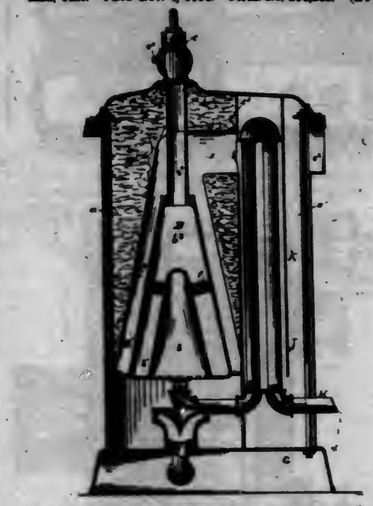


Claim.—1. The combination, with a stationary building or structure provided with a central ventilating-shaft, an incased smoke-flue and soil-pipes located in said ventilating-shaft, of the revolving cells, the flushing-tank, a service-tank having a valve-and-ball float, the down pipes, closet-basins having flushing-pipes, the water-sealed pans, and the connecting soil-pipes leading to the incased soil-pipes, substantially as specified.

2. The combination, with the building provided with the revolving cells, basins, and the incased soil-pipe, of the annular water-sealed pans, the caps i, the flushing-pipes connected to the closet-basins, the annular tank *d*, the service pipe and float, the branched pipe provided with a cock and lever, and the cam secured to the ventilator-pipe, substantially as specified.

3. The combination, with the stationary annular pan having a water-channel cast thereon, of a rotary cap for sealing the soil-pipe, substantially as specified.

407,878. HOT-WATER GENERATOR. PETER G. VAN WIE, Cleveland, Ohio. Filed Nov. 7, 1888. Serial No. 290,202. (No model.)



Claim.—1. In a water-heater, the combination, with water-reservoir B, having its lower portion *b′* made in conical ring form and having its upper portion b^3 made as a continuous chamber in horizontal plane, of the flue E^3, surrounding said reservoir, the lower portions of said flue E^3 being open and located substantially in the same horizontal plane with the bottom of said water-leg *b′*, said reservoir being provided with one or more cross-flues *f*, connecting interior central opening *b* with said flue E^3 in a cross-sectional plane passing through the upper portion of said water-leg *b′*, substantially as set forth.

2. In a water-heater, the combination, with water-reservoir B, having its lower portion formed as an annular conical water-leg *b′* and having its upper portion b^3 formed as a continuous chamber in cross-section, and central vertical outlet-pipe b^5, connecting with the central upper extremity of said central reservoir portion b^3, of flue E^3, surrounding said reservoir and connecting portion of said pipe b^5, and said water-leg *b′*, having upper cross-sectional portion provided with one or more cross-cutting flues *f*, connecting the upper portion of the central conical depression *b* with said flue E^3, substantially as set forth.

3. In a water-heater, the combination, with cone-shaped reservoir B and jacket E′, of non-radiating material, located intermediate of the reservoir and the outer wall of the heater, of flue E^3, formed intermediate of said jacket and the reservoir, said jacket inclosing said reservoir on the top and sides, substantially as set forth.

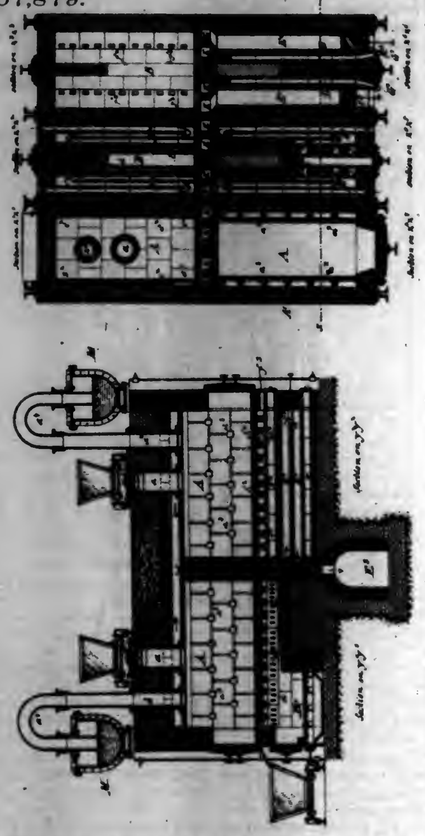
4. In a water-heater, the combination of cone-shaped reservoir B, provided with depending annular water-leg *b′*, vertical outlet-pipe b^5, connecting with said reservoir, jacket E′, formed intermediate of the stove-wall and the reservoir, said jacket inclosing said reservoir on the top and sides and surrounding said discharge-pipe b^5, the interior shape of said jacket and the exterior shape of said reservoir where lying in the same horizontal plane being substantially in counterpart of each other, and flue E^3, being formed intermediate of the jacket and the reservoir, whereby the products of combustion are caused to pass close to the reservoir, and are kept in contact with the same, substantially as set forth.

5. In a water-heater, the combination of cone-shaped reservoir B, shaper E, having its body portion of conical form and provided with the outlet-flue *c*, located above the top of the reservoir, and mineral-wool jacket E′, intermediate of the shaper and the outer wall of the heater, said jacket inclosing said reservoir at top and sides, substantially as set forth.

407,879. COKE-OVEN. ADAM WEBER, New York, N. Y. Filed Sept. 25, 1888. Serial No. 286,332. (No model.)

Claim.—1. The combination of a coking-chamber, a combustion-chamber provided with a grate, each side wall of the combustion-

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chamber having separate series of horizontal gas-heating flues, gas-supply pipes connecting with the front end of the lowermost gas-heating flue, and lateral channels connecting the uppermost gas-heating flues with the combustion-chamber, and means for supplying air to the combustion-chamber, substantially as set forth.

2. The combination of a coking-chamber, a combustion-chamber provided with a grate, each side wall of the combustion-chamber having separate series of gas-heating flues connected with a source of gas-supply and smoke-flues arranged side by side, a mantel having a flue therein extending around the coking-chamber, a rear wall for the oven provided with descending flues, and a chimney connecting with the smoke-flues, substantially as set forth.

3. The combination of a coking-chamber, a combustion-chamber provided with a grate the side walls whereof are provided with gas-heating flues and air-heating flues located side by side, and gas-supply pipes connecting with the lowermost gas-heating flues, the uppermost ones being provided with lateral eduction-channels connecting with the combustion-chamber, said air-heating flues having also eduction-channels communicating with the combustion-chamber, substantially as set forth.

4. The combination, with a coking-chamber, of a combustion-chamber located below the coking-chamber, each side wall whereof is provided with a series of gas-heating flues and a series of air-heating flues located side by side therein, gas-supply pipes connecting with the lowermost gas-heating flues, the uppermost gas-heating flues having lateral eduction-channels connecting with the combustion-chamber, said air-heating flues being also provided with eduction-channels communicating with the combustion-chamber, a mantel surrounding the bottom, sides, and top walls of the retort, having a flue therein, substantially as set forth, a rear wall for the oven having a descending flue therein, partition-walls between the several ovens having horizontal smoke-flues for the products of combustion and air-heating flues above them, and a chimney connecting with the smoke-flues, substantially as set forth.

5. The combination, with a coking-chamber, of a combustion-chamber located below the coking-chamber, each side wall whereof is provided with a series of gas-heating flues, the lowermost ones whereof connect with gas-supply pipes and the uppermost ones whereof are provided with lateral eduction-channels connecting with the combustion-chamber, the walls of the combustion-chamber being also provided with a primary series of air-heating flues located sidewise of and below the gas-heating flues, and provided with lateral eduction-channels communicating with the space below the grate of the fire, said walls being also provided with a second series of air-heating flues located sidewise of the uppermost gas-heating flues and provided with eduction-channels connecting with the combustion-chamber, said walls also having smoke-flues located between the primary and second series of air-flues, a mantel having a flue surrounding the coking-chamber, a rear wall to the oven having descending smoke-flues, and a chimney connected with the smoke-flues, substantially as set forth.

407,880. WITHDRAWN.

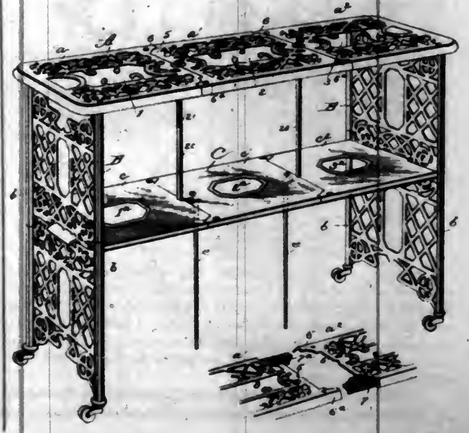
407,881. WASHING-MACHINE. WILLIAM WHITE, Westfield, Pa. Filed July 21, 1888. Serial No. 280,624. (Model.)



Claim.—1. The combination of the tub, the transverse roller journaled therein, the frame pivoted in the tub and carrying a presser-bar adapted to hold the clothes upon the roller, and a check-bar secured transversely in the tub above the roller and bearing on the same to prevent the clothes being carried around thereby, as set forth.

2. The combination of the tub, the roller journaled therein, the check-bar secured transversely in the tub above the roller, the frame pivoted in the tub, carrying a presser-bar having a concave under face, and provided with an arm projecting over the side of the tub, and a stirrup suspended from said arm, as specified.

407,882. OIL-STOVE RANGE. WILLIAM H. WILDER, Gardner, Mass. Filed Feb. 8, 1889. Serial No. 299,144. (No model.)



Claim.—1. The frame for supporting oil-stoves to make an oil-stove range, consisting of a top, the legs, and the shelf C, the said top and shelf being made up of detachable sections, whereby the length of the frame may be varied, substantially as described.

2. In combination, the sectional top, the sectional shelf, the legs, and the suspending-rods extending between the top and shelf, substantially as described.

3. In combination, the sectional top, the sectional shelf, the suspending-rods, and the supplemental legs secured to the sections of the shelf, substantially as described.

4. In combination, the top, the shelf, and the legs B B, formed in sections, the said shelf having projections adapted to fit between said sections, substantially as described.

5. In an oil-stove, the top, the supporting-shelf, and the legs, the said top and shelf both being made of detachable sections, the end sections of each part being made interchangeable, substantially as described.

6. In combination, the horizontal top grate, the horizontal supporting-shelf, the legs, and the connection between the legs and one of the horizontal parts, consisting of the notched flanges and the screws, substantially as described.

407,883. LIGHTING DEVICE. WILLIAM H. WILDER and HARLAN P. WILDER, Gardner, Mass. Filed Mar. 20, 1889. Serial No. 304,065. (No model.)



Claim.—1. A match-holder consisting of a handle and a socket at the end thereof formed of a coiled wire reduced or tapered from the front end, said end being open and free for receiving the match, substantially as described.

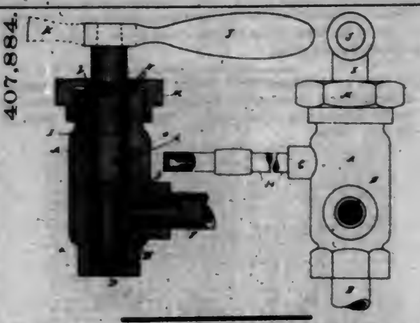
2. A holder for a match or the like, consisting of a socket of coil-wire which is tapered or reduced from the enlarged open front end, the wire at the narrow end of the coil being continued to form a handle, substantially as described.

407,884. COCK FOR SELF-LIGHTING GAS-FUEL BURNERS. LOUIS P. WILLING and CHARLES F. KIEWEL, Erie, Pa.; said Kiefer assignor to said Willing. Filed Dec. 1, 1888. Serial No. 292,413. (No model.)

Claim.—The combination, in a shut-off cock for self-lighting gas-burners, of a body A, having openings D, E, and G therein, with a hollow plug-valve I, having lateral openings *f* and *d*, and the groove *e* from the opening *d*, substantially as and for the purpose set forth.



407,884.



407,885. FEEDING-CRUSHER FOR CRUSHING AND GRINDING MILLS. JAMES F. WISHNELL, Springfield, Ohio, assignor to the Foos Manufacturing Company, same place. Filed Feb. 25, 1888. Serial No. 265,293. (No model.)



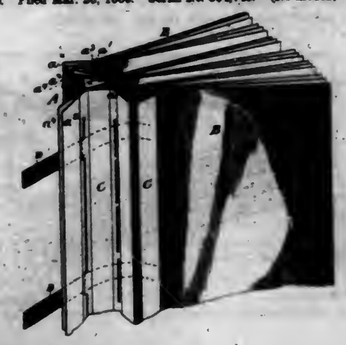
Claim.—1. In a crushing and grinding mill, a feeding-crusher consisting of a cylinder-like body having integral longitudinal peripheral ribs terminating in comparatively sharp edges, and integral radial protuberances, the latter projecting beyond the former.

2. In a crushing and grinding mill, a feeding-crusher consisting of a cylindrical body, longitudinal peripheral ribs approximately V-shaped in cross-section, and radial protuberances extending from the ribs.

3. In a crushing and grinding mill, a feeding-crusher constructed of a cast-iron cylindrical body and a shaft upon which it is secured, and having longitudinal peripheral ribs terminating in a reduced edge, and radial protuberances extending from the ribs, the said ribs and protuberances being integral with the body.

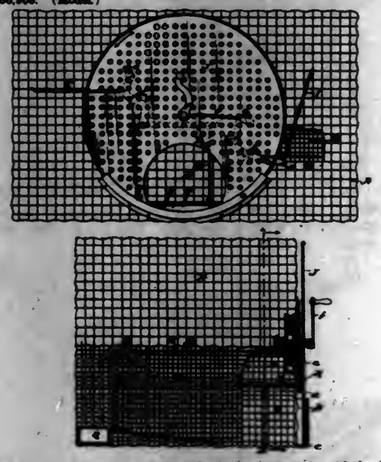
4. In a crushing and grinding mill, a feeding-crusher consisting of a body, longitudinal peripheral ribs terminating in reduced edges, and radial protuberances extending from the ribs, and so arranged that the protuberances at diametrical points stand in the same vertical plane with respect to each other, but out of the same plane with the next set of protuberances.

407,886. BLANK-BOOK. ROBERT A. W. WIEKENBURG, St. Louis, Mo. Filed Mar. 25, 1889. Serial No. 304,743. (No model.)



Claim.—A blank-book having the stubs A folded at a a' a^2, sewed to sections of the blank leaves at folds a' and to one another at folds a^2, as shown and described.

407,887. ANIMAL-TRAP. HENRY BARRY, Chicago, Ill., assignor of two-thirds, by direct and mesne assignments, to Dennis Norton and Charles Franke, both of same place. Filed Oct. 1, 1888. Serial No. 286,909. (Model.)

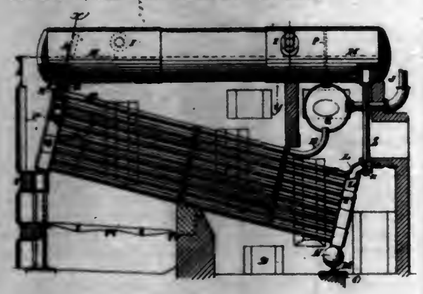


Claim.—1. In an animal-trap, the body thereof provided with a blind entrance-way projecting therein, and a spring-actuated revolving door provided with one or more openings and a corresponding number of blind portions between said openings, adapted and arranged to alternately register with said entrance, in combination with a passage leading from the entrance-way to the body of the trap, stops for alternately engaging the door, and triggers located in the entrance-way and passage, respectively, for operating said stops, substantially as described.

2. In an animal-trap, the body thereof provided with an entrance, a spring-actuated revolving door having one or more openings, and a corresponding number of blind portions between said openings, and a stop on said door, in combination with trips projecting into the path of said stop, an entrance-way for said body, an elevated passage connecting said entrance-way with the body of the trap, a platform-trigger located in the entrance-way for operating one of said trips, and a spring-supported trap-door in said passage for operating the other trip, substantially as described.

3. In an animal-trap, the body thereof provided with a blind entrance-way projecting therein, a spring-actuated revolving door provided with one or more openings, and a corresponding number of blind portions between said openings, adapted and arranged to alternately register with said entrance, stops upon said door, a shaft journaled on the body of the trap, a spring-controlled trip thereon projecting into the path of said stops, a pivoted platform in said entrance-way, and a rod and crank-arm connection between said platform and shaft, in combination with a passage leading from the entrance-way into the body of the trap, a pivoted trap-door in said passage, and a trip attached to the pivot thereof, also projecting into the path of said stops, substantially as described.

407,888. STEAM-BOILER. JOHN A. CALDWELL, Bay Ridge, N. Y. Filed Dec. 17, 1886. Serial No. 221,823. (No model.)





Claim.—1. In a sectional steam-boiler, the combination, with a box or header having tubes communicating with the same and an opening giving access to the said tubes, of a cover V, adapted to close the said opening and bolted to the said box from the outside by bolts passing through the said cover and the side castings at points outside of the said opening, substantially as and for the purpose set forth.

2. In a sectional steam-boiler, the combination, with a box or header having tubes communicating with the same and an opening giving access to the said tubes, of a cover V, adapted to close the said opening and bolted to the said box from the outside at points intermediate to the location of the said tubes by bolts passing through the said cover and the side casting at points outside of the said opening, substantially as and for the purpose set forth.

3. In a sectional steam-boiler, the combination, with a box or header having tubes communicating with the same and an opening giving access to the said tubes, and having exterior pockets adapted to receive and retain bolts e, inserted from the front of the said box, of a cover to close the said opening and having holes at its edge in front of the said pockets, and bolts e, held by their heads in the said pockets and passing through the holes in the said cover, for the purpose of tightening the latter against the box without the use of steam-packing around the bolts, substantially as specified.

4. In a sectional steam-boiler, the combination, with a box or header having tubes communicating with the same and an opening giving access to the said tubes, and having exterior pockets adapted to receive and retain bolts e, inserted from the front of the said box, of a cover adapted to close the said opening and having holes at its edge in front of the said pockets, a spider-frame W, bridging the said cover and secured to the box by the same bolts e which directly secure the cover, the said spider having a bolt or set-screw A pressing upon the said cover V, substantially as specified.

5. In a sectional steam-boiler, the combination, with the header L and with the steam and water drum H and circulating-tubes S, of the neck or extension K upon the said header, the said extension receiving the lower end of the said circulating-tubes and being provided opposite to the same with a removable plug or cover k, to gain access for cleaning of the said tubes, substantially as specified.

6. The superheater consisting in the combination of tubes E, steam-drum G, receiving one end of the said tubes, header C, receiving the other end of the said tubes, and steam-circulating pipes P and A, communicating with the steam-space in the steam and water drum H, the upper headers D of the water-leg Q being connected by nipples R directly to the water-space of the drum H, substantially as specified.

407,889. ANT-TRAP. EDWIN R. DAVIS, Bluff Dale, Tex. Filed Apr. 11, 1889. Serial No. 306,832. (No model.)



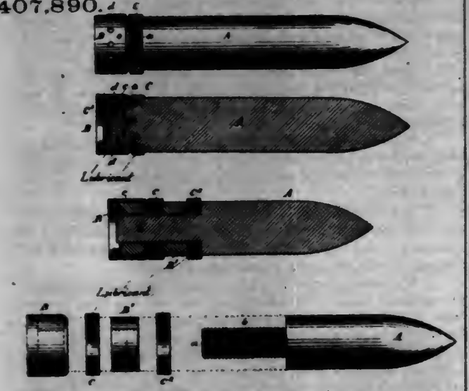
Claim.—1. An ant-trap consisting of an open endless curb having inclined sides and arranged in the upper end of an opening in the ground, the body arranged in the said opening in the ground beneath the open curb, and the hopper supported by the body and adapted to conduct the ants from the curb into the body, as set forth.

2. The curb for ant-traps having inclined sides and an annular horizontal flange, as set forth.

407,890. LUBRICATING-PROJECTILE. SELDEN A. DAY, Bowling Green, Ohio, assignor to the Day Projectile Company, New York, N. Y. Filed Mar. 6, 1889. Serial No. 302,175. (No model.)

Brief.—A base is connected to a projectile by means of a screw-thread. A lubricant is placed between the base and projectile, and the lubricant is squeezed out by the base, which is screwed up in the operation of firing.

Claim.—1. A projectile having a separate base or sabot connected to it through the medium of a screw-thread and normally



partly unscrewed, said base being adapted to engage the rifle-grooves in firing and to be rotated thereby, and by reason of such rotation and the inertia of the body of the projectile to be screwed up to the latter.

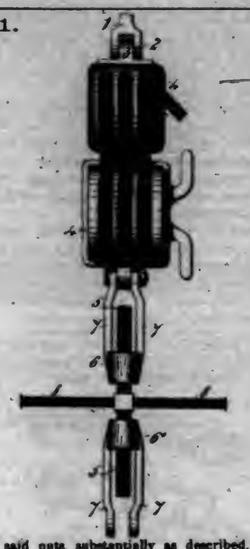
2. A projectile having a separate base or sabot connected to it through the medium of a screw-thread and normally partly unscrewed, and with a partially-resisting substance or filling between a shoulder or face on the front of said base, and a shoulder or face at the rear of the body of the projectile adapted to partially resist the screwing up of the base in the operation of firing, and by such resistance to communicate the rotary movement of the base gradually to the body of the projectile in order to gradually overcome the inertia of the latter and impart to it an accelerating rotation.

3. A projectile having a separate base or sabot connected to it through the medium of a screw-thread and normally partly unscrewed, and provided with a lubricating substance between said base and the body of the projectile adapted to be gradually squeezed out by the screwing up of the base during the operation of firing.

4. A projectile consisting of a body portion and a separate base or sabot, the one formed with a screw-threaded neck and the other with a screw-threaded socket engaging said neck, a cavity formed within the socket and provided with holes extending from said cavity to the exterior, combined with a filling of lubricating substance in said cavity, whereby it is adapted to be squeezed out through said holes by the screwing up of the base against the body portion of the projectile, and means for operating said base.

5. A projectile having its body portion formed with a contracted screw-threaded neck at its rear, and a separate base formed with internal screw-threads screwing upon said neck, normally partly unscrewed, and formed to project beyond the diameter of the body in order to engage the rifle-grooves, whereby it is adapted to be screwed up to the body during the operation of firing.

407,891. APPARATUS FOR RAISING AND LOWERING BOATS. FERDINAND A. L. DE GEUTTER, Amsterdam, Holland. Original application filed July 24, 1888, Serial No. 280,924. Divided and this application filed Jan. 2, 1889. Serial No. 295,917. (No model.) Patented in England May 24, 1888, No. 7,631; in France June 25, 1888, No. 191,415; in Sweden July 2, 1888, No. 1,582; in Norway July 9, 1888, No. 1,088; in Belgium July 10, 1888, No. 82,514; in Italy Sept. 30, 1888, XLVII, 119; in Spain Oct. 2, 1888, No. 2,482; in Austria-Hungary Oct. 26, 1888, No. 30,047, and in Canada Nov. 2, 1888, No. 30,061.

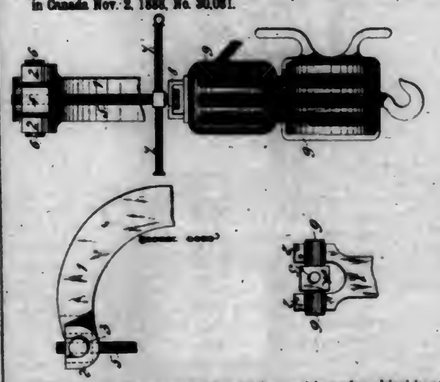


relatively to said nuts, substantially as described, for the purpose specified.

4. In apparatus for raising and lowering ships' boats, the combination of a davit, pulley-blocks adapted to raise and lower a boat and suspended from said davit, and screw-gearing carried by said blocks and provided with means for connecting said gearing to a boat, said gearing comprising a right-and-left-handed screw-threaded rod and correspondingly-formed nuts thereon, said rod being capable of rotation relatively to said nuts, substantially as described, for the purpose specified.

5. In apparatus for raising and lowering ships' boats, the combination of a davit, lowering-tackle suspended from said davit, a rod 5, formed with right-and-left-handed screw-threads, a lever for rotating the said rod, and nuts 6 6°, adapted to work on said rod, but prevented from turning with reference thereto, one of said nuts being connected to said lowering tackle and the other being adapted to be connected with a boat to be raised or lowered.

407,892. APPARATUS FOR RAISING AND LOWERING BOATS. FERDINAND A. L. DE GEUTTER, Amsterdam, Holland. Filed July 24, 1888. Serial No. 280,924. (No model.) Patented in England May 24, 1888, No. 7,631; in France June 25, 1888, No. 191,415; in Sweden July 2, 1888, No. 1,582; in Norway July 9, 1888, No. 1,088; in Belgium July 10, 1888, No. 82,514; in Italy Sept. 30, 1888, XLVII, 119; in Spain Oct. 2, 1888, No. 2,482; in Austria-Hungary Oct. 26, 1888, No. 30,047, and in Canada Nov. 2, 1888, No. 30,061.



Claim.—1. In apparatus for raising and lowering ships' boats, the combination of a tackle-block, a screw-threaded rod connected to said block by a swivel, a correspondingly-threaded nut through which said rod works, said nut being adapted to be pivotally connected to a support in such a manner as to permit said rod to swing in a vertical plane, for the purpose specified.

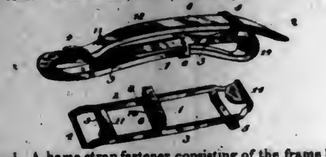
2. In apparatus for raising and lowering ships' boats, the combi-

nation of a davit, a screw-threaded rod, a correspondingly-threaded nut journaled to said davit, and through which said rod extends and in relation to which said rod is adapted to be turned, and lowering-tackle suspended from said rod by a swivel connection, substantially as herein described, for the purpose specified.

3. In apparatus for raising and lowering ships' boats, the combination, with a davit and a lowering-tackle, of a screw-threaded rod adapted to be turned about its axis, and a correspondingly-threaded nut or nuts journaled to said davit, prevented from turning relatively to said rod and through which said rod works, said lowering-tackle being suspended from said rod by a swivel-joint, substantially as described, for the purpose specified.

4. In apparatus for raising and lowering ships' boats, the combination of a davit; screw-gearing comprising a screw-threaded rod, a correspondingly-formed nut journaled to said davit, and pulley-blocks suspended from said rod by a swivel-joint and adapted to lower a boat, said rod being adapted to be turned relatively to said nut, substantially as described, for the purpose specified.

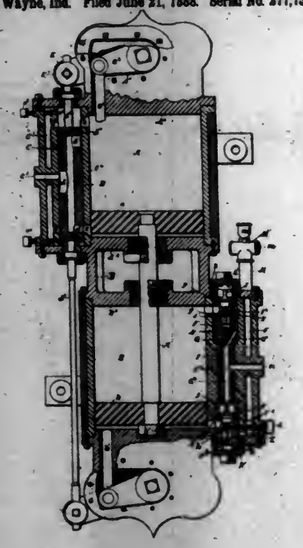
407,893. HAME-STRAP FASTENER. ROBERT M. DILLARD, Goodland, Kans., assignor of one-half to Calvin P. Russell, same place. Filed Apr. 12, 1889. Serial No. 306,926. (No model.)



Claim.—1. A hame-strap fastener consisting of the frame having the longitudinal side bars and the cross keeper-bars located at both ends of said longitudinal bars and at the middle thereof, the cross-bar 8, located close to the middle keeper-bar of the frame and having a stud which projects therefrom at right angles to the longitudinal axis of the frame, another cross-bar 9, arranged near one of the end keeper-bars of the frame and having a stud which projects therefrom at right angles to the axis of the frame and in an opposite direction from the stud on the other cross-bar 8, and a curved plate at the opposite end of the frame from the cross-bar 9, substantially as and for the purpose described.

2. A hame-strap fastener consisting of the longitudinal side bars having a curved plate at one end, the keeper-bars located at opposite ends and the middle of said side bars on different horizontal planes with respect to each other and the curved plate, a cross-bar 8, located at the middle of the side bars and having a stud which projects toward the upper keeper-bar 6, at the middle of the frame, and another cross-bar 9, located near one end of the side bars and the keeper-bar 4, and having a fixed stud which projects in the reverse direction from its bar 9 to that of the stud on the bar 8, all of said parts being cast in a single piece, substantially as and for the purpose described.

407,894. VALVE FOR STEAM-ENGINES. THEODORE H. HARRISON, Fort Wayne, Ind. Filed June 21, 1888. Serial No. 277,739. (No model.)



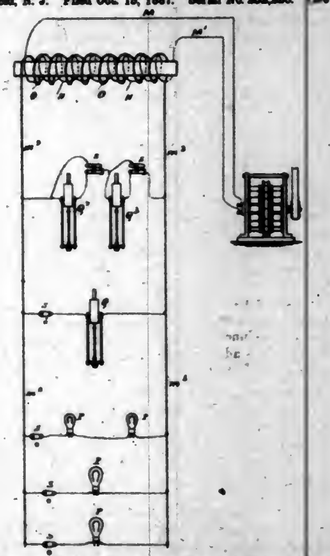
Claim.—1. The combination, with a steam-chest having a cylindrical bore and ports and a hollow plunger-valve fitting snugly within said bore and provided with ports, of valve-rods attached to the ends of the valve, and devices for shifting the valve-rods by the movement of the piston, the ports in the steam-chest being so arranged relatively to the valve whereby a continued movement of the valve to the end of its throw is caused by exhaust-steam admitted behind the valve, substantially as set forth.

2. The combination, with cylindrical steam-chamber, and hollow plunger-valve operating therein, with ports, substantially as indicated, of vent-holes c^3, arranged substantially as described, and for the purpose set forth.

3. The combination, with cylindrical steam-chamber, hollow plunger-valve operating therein, and ports, substantially as indicated, of vent-holes c^3, and means, substantially as shown, for graduating the openings of such vent-holes, substantially as set forth.

4. The combination of cylindrical steam-chamber, hollow plunger provided with steam-ports operating therein, with steam and exhaust ports in valve-chamber, and mechanism, substantially as described, for moving the valve part way of its throw, substantially as indicated, the arrangement of ports being substantially as described, whereby a continued movement of the valve to the end of its throw is caused by exhaust-steam admitted from the cylinder behind the valve, substantially as set forth.

407,895. ELECTRIC-LIGHTING SYSTEM. FRANK B. KIDDER, Plainfield, N. J. Filed Oct. 13, 1887. Serial No. 252,220. (No model.)



Claim.—1. The combination, with the primary and secondary circuits and the converter therewith connected, having a small wire in the primary and a large wire in the secondary, of an arc lamp having a carbon-holder, a helix in the secondary circuit, and a tubular core divided longitudinally and projecting below the helix, and mechanism for connecting the carbon-holder and core for regulating the carbon-holders, substantially as set forth.

2. The combination, with the primary and secondary circuits and a converter in such circuits, of an electric-arc lamp and regulating mechanism having an electro-magnet the helix of which is in the secondary circuit, and a tubular core for the same through which the carbon-holder passes, substantially as specified.

3. The combination, with the primary and secondary circuits and the converter therewith connected, having a small wire in the primary and a large wire in the secondary, of incandescent and arc lamps in the secondary circuit and a helix also in the secondary circuit, and a core and mechanism acted upon by the same for moving and regulating the carbon-holder of the arc lamp, substantially as specified.

407,896. INSULATING COMPOSITION. FRANK MARSHARD, New York, N. Y. Filed Dec. 3, 1888. Serial No. 292,510. (No specimens.)

Claim.—1. The insulating compound herein described, consisting of wood pulp, extract of logwood, bichromate of potash, sulphate of iron, animal glue, rosewood sawdust, an albuminous substance, and vegetable fiber, substantially as set forth.

2. The insulating compound herein described, the same consisting of the following ingredients, in about the following proportions: twenty pounds of wood pulp, one pound of extract of logwood, one-eighth of a pound of bichromate of potash, one-eighth of a pound of sulphate of iron, four pounds of animal glue, ten pounds of rosewood sawdust, and two and one-half pounds of an albuminous substance substantially as specified.

3. The insulating compound herein described, the same consisting of the following ingredients, in about the following proportions: twenty pounds of wood pulp, one pound of extract of logwood, one-eighth of a pound of bichromate of potash, one-eighth of a pound of sulphate of iron, four pounds of animal glue, ten pounds of rosewood sawdust, and two and one-half pounds of an albuminous substance, and a quantity of vegetable fiber, such as flax, hemp, &c., substantially as specified.

407,897. BURIAL-CASKET. THOMAS MCGOVERN, New York, N. Y. Filed Mar. 27, 1889. Serial No. 304,972. (No model.)



Claim.—1. The combination, with the casket, of the lid of the same, said lid having a fixed foot-section *a* and a sliding head-section *b*, and grooves in said lid, whereby the latter section slides over and above the former when displaced.

2. The combination, with the casket, of the removable lid or cover of the same, provided with a fixed foot-section, a sliding head-section, which slides over and above the foot-section when displaced, and guiding-grooves in said cover for said sliding section, said grooves being deepest at the head end of said cover to permit the sliding section to descend to a level with the fixed section when in place, as and for the purposes set forth.

407,898. HANDLE. EDWARD P. NORRIS, Waterbury, Conn., assignor to the American Ring Company, same place. Filed Mar. 6, 1889. Serial No. 302,113. (No model.)



Claim.—1. The combination, with the drawer handle or pull, of two eyes, each of which is formed of one piece of wire having a screw-threaded shank 3, an eye 2, and a stop 4, the latter being at one side of the shank and extending backwardly from the eye, and the end forming an abutment or a stop, substantially as set forth.

2. The combination, with the plate A and handle C, of the handle-eyes, each formed with a screw-threaded shank 3, an eye 2 for the reception of the handle, and a stop 4 entirely at one side of and parallel with the shank 3, there being recesses in the plate B for the reception of the ends of the stops 4, substantially as set forth.

3. The combination, with drawer-handles, of handle-eyes, each formed of one piece of wire screw-threaded on the shank and bent to form an eye, and a rearward stop parallel with and entirely at one side of the shank, and the plate B, against which the end of the stop rests, substantially as specified.

407,899. VEHICLE-SPRING. NAPOLEON B. PHELPS, New York, N. Y. Filed Apr. 9, 1889. Serial No. 306,560. (No model.)



Claim.—In a vehicle, a continuous spring E and a continuous metal cushion, each extending in one stretch across the vehicle, and each having a short central bearing attached to the body with the portions adjacent to such bearing extending outward and downward in straight inclines, and the outer portions curved upward, in combination with each other and with means for attaching the cushion ends to the carriage-body and the spring ends to shackles C, connecting to side bars B, all arranged to serve as herein specified.

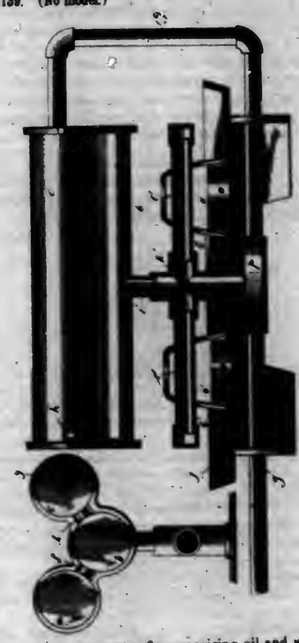
407,900. MANUFACTURE OF BRUSHES. JAMES A. READ, Arlington, N. J., assignor to the Rubber and Celluloid Harness Trimming Company, of New Jersey. Filed Sept. 15, 1888. Serial No. 285,561. (No model.) Patented in England Aug. 10, 1885, No. 9,502, and in France Aug. 16, 1886, No. 170,669.



Claim.—1. A brush having the interstices between the ends of its bristles filled with vulcanite, and having said bristles united to a handle by a section of vulcanite, substantially as described.

2. A brush having the interstices between the ends of its bristles filled with vulcanite, by means of which the individual bristles are cemented to each other, substantially as described.

407,901. APPARATUS FOR VAPORIZING OIL AND WATER AND SUPERHEATING AND BURNING THE SAME. NEWTON ROGERS and JAMES A. WHARRY, Terre Haute, Ind. Filed Mar. 21, 1889. Serial No. 304,139. (No model.)



Claim.—1. In an apparatus for vaporizing oil and water and superheating and burning the same, the combination of an oil-vaporizing retort provided with an oil-supply, a water-vaporizing retort provided with a water-supply, a separate and distinct mixing and superheating retort communicating directly by suitable means with said vaporizing-retorts and located in a lower plane than the vaporizing-retorts, whereby intervening spaces are formed for the flame, a gas-pipe leading from said mixing-retort, and one or more burners below the superheating-retort, substantially as described.

2. In an apparatus for vaporizing oil and water and superheating and burning the same, the combination of the parallel oil and water vaporizing retorts, a separate mixing and superheating retort located between and in a plane below said vaporizing-retorts, pipes connecting the superheating-retort and the vaporizing-retorts, a vapor-pipe extending down from the mixing-retort and provided with burners located beneath said retorts, and a base, substantially as described.

3. The combination, with the oil and water vaporizing retorts and a separate mixing and superheating retort located in a lower plane than and into which the gases from said vaporizing-retorts are passed, of a

vapor-pipe leading down from the bottom of said mixing-retort, burners supplied from said pipe, and a trap or reservoir removably secured on the lower end of said pipe, whereby the residuum is drained from said retorts into said reservoir, substantially as described.

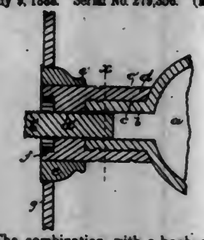
4. In an apparatus for vaporizing and burning oil and water, the combination of a base having air-supply openings therethrough, water and oil vaporizing retorts, a vapor mixing and superheating retort above the base and in communication with said vaporizing-retorts, a vapor-exit pipe leading from the mixing-retort to the base and provided with lateral burner-pipes extending therefrom over the base, and burner-caps straddling said burner-pipes, having their lower open ends resting on the base over said air-supply openings and having flame-openings above the burners, whereby mixing and combustion chambers are formed around the burners, substantially as described.

5. The combination of separate water and oil vaporizing retorts, supply-pipes for the same, a mixing-retort, pipes connecting the vaporizing-retorts with the mixing-retort, yokes securing said retorts together, a vapor-exit pipe extending down from the mixing-retort and provided with one or more burner-pipes extending from the same beneath the retorts, substantially as described.

6. The combination of an oil-vaporizing retort provided with a supply-pipe, a water-vaporizing retort provided with a supply-pipe, a mixing and superheating retort located between and parallel with said two retorts and in a plane below the same, pipes extending down from the vaporizing-retorts to the mixing-retort, a pipe extending downwardly from the bottom of the mixing-retort and having its lower end provided with a trap or chamber, and burners extending laterally from said pipe beneath the retort, substantially as described.

7. The combination of a pan, an oil-vaporizing retort provided with a supply, a water-vaporizing-retort provided with a supply, a mixing-retort in communication with the vaporizing-retorts, said retorts being secured together and supported above the pan, a gas-pipe extending down from the mixing-retort and provided with a removable trap or reservoir on its lower end, pipes extending laterally from the gas-pipe beneath the retorts and provided with apertures, and burner caps or hoods surrounding said apertures, substantially as described.

407,902. KNOB ATTACHMENT. JOHN SCHADE, Brooklyn, N. Y., assignor to the Hopkins & Dickinson Manufacturing Company, of New York. Filed July 9, 1888. Serial No. 279,356. (Model.)

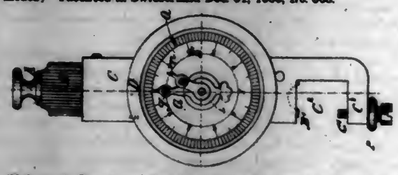


Claim.—1. The combination, with a knob and a spindle, of a sleeve held upon said knob and provided with lugs or pintles, an escutcheon-plate, and a rose-plate arranged upon said escutcheon and around said sleeve, the latter extending through said rose-plate, and said rose-plate being provided with recesses adapted to engage said pintle, said parts being arranged and combined substantially as and for the purposes set forth.

2. The combination, with an escutcheon-plate, of a rose-plate held in pivotal relation to said escutcheon, and provided with a burr *d*, substantially as and for the purposes set forth.

3. In combination with a knob, a threaded spindle and sleeve, an escutcheon-plate and pivoted rose-plate projecting through said escutcheon, and providing frictional bearings, substantially as and for the purposes set forth.

407,903. MICROMETER-GAGE. FRIEDERICH SCHLATTER, Madretsch, Switzerland. Filed Feb. 18, 1889. Serial No. 300,493. (No model.) Patented in Switzerland Dec. 31, 1888, No. 308.



Claim.—1. In a measuring-instrument, the combination of a casing provided with a dial, a slide in said casing provided with a rack, an arbor in said casing provided with a pinion which is engaged by said rack, an arm fixed on said arbor, a hand mounted on said arbor over the dial and provided with a pin which is engaged by said arm, and a spring disposed in a slot in said slide and connected at one end to said casing, substantially as described.

2. In a measuring-instrument, the combination, with a casing and a slide in the same, of a dial on the casing, an arbor in the casing, which arbor is rotated by the slide, an arm fixed on said arbor and provided with a swinging spring-finger, a hand mounted to swing over the dial and provided with a pin on which the spring-finger of the arm can act, and a spring abutting against a fixed point of the casing and pressing the slide upward, substantially as set forth.

3. In a measuring-instrument, the combination of the casing B and the slide C, having the slots B^4 and *b*, the latter having the rack *b*′ formed on one edge, the arbor L, the pinion K on the same engaging the rack *b*′, the spring M in the slot B^3, the dial E on the casing, the arm H on the arbor L, the finger *n*, pivoted on said arm, the spring *i*, secured to the arm H, acting on the finger *n*, and the hand G, mounted to rotate over the dial and provided with the pin *g*, on which the finger *n* can act, substantially as set forth.

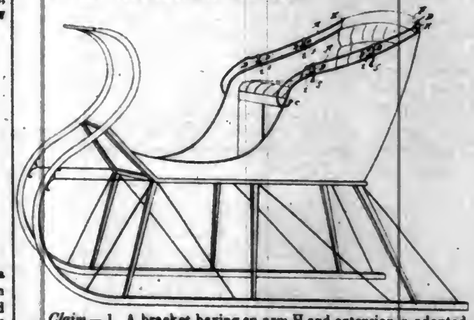
407,904. TOP-PROP NUT. ARBON SEARLS, Newark, N. J., assignor to the Searls-Randall Company, same place. Filed Apr. 9, 1889. Serial No. 306,630. (No model.)



Claim.—1. The combination of a nut B and a cap D, a covering E, and molding A, as and for the purpose set forth.

2. The nut B and cap D, in combination with coverings E and F and molding A, as and for the purpose set forth.

407,905. ARM-RAIL FOR SLEIGHS. ARBON SEARLS, Newark, N. J., assignor to the Searls-Randall Company, same place. Filed Apr. 19, 1889. Serial No. 307,768. (No model.)



Claim.—1. A bracket having an arm H and extension *g*, adapted to span a sleigh-panel molding, in combination with a sleigh-arm rail, substantially as set forth.

2. A bracket provided with a catch *i*, in combination with a sleigh-arm rail, substantially as set forth.

3. The cup C, in combination with a sleigh-rail A, substantially as and for the purpose set forth.

4. The combination of a socket E and stud F with a sleigh-rail, substantially as and for the purpose set forth.

5. The combination of the rail A, bracket B, and cup C with end finishers D and E, as and for the purpose set forth.

407,906. PROCESS OF MAKING PARAOXYBENZOIC ACID. BRUNO R. SEIFERT, Radebeul, near Dresden, Saxony, Germany, assignor to Dr. F. von Heyden Nachfolger, same place. Filed Nov. 27, 1888. Serial No. 292,006. (No specimens.)

Claim.—As an improvement in the process of manufacturing paraoxybenzoic acid, the heating of potassium phenate and dry carbonic acid in a closed vessel under a pressure above that of the atmosphere to 180° Celsius or more, substantially as herein described.

407,907. APPARATUS FOR DRAWING OFF AND MIXING THE GRAIN FROM ELEVATORS. WILLIAM H. SPRAGUE, Horwich, County of Lancaster, England. Filed Feb. 12, 1889. Serial No. 299,569. (No model.) Patented in England May 21, 1888, No. 6,940.

Claim.—1. Apparatus for drawing off and mixing grain, comprising a bin or vessel with vertical passage or passages having free openings or ports in the wall or walls thereof adapted to establish

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communication between the interior of said bin or vessel and said vertical passage or passages, a chute or delivery-tube, and an inclined converging passage or passages arranged to deliver grain from said vertical passage or passages to said chute or delivery-tube, substantially as herein described, for the purposes specified.

2. Apparatus for drawing off and mixing grain, comprising a bin or vessel provided at or near its lower end with one or more openings, one or more passages having free openings or ports adapted to place the interior of said bin in communication with said passages, one or more inclined passages arranged to converge toward the opening or openings in the lower part of said bin or vessel, and a delivery chute or tube in communication with said passages and with the interior of said bin at or near its lower end, substantially as herein described, for the purposes specified.

3. Apparatus for drawing off and mixing grain, comprising a bin, one or more passages having free openings or ports adapted to place the interior of said bin in communication with said passages, the bottom of said bin being formed with one or more openings and arranged to incline toward the delivery ends of said vertical passages, and a delivery chute or tube in communication with the outlets of said bin and passages, substantially as herein described, for the purpose specified.

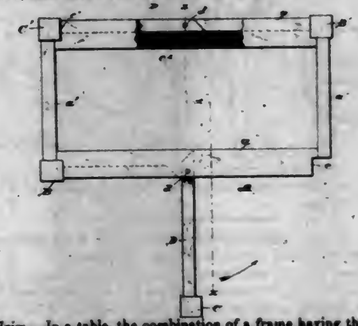
4. Apparatus for drawing off and mixing grain, comprising a bin or vessel, one or more passages therein with free openings out of same into said bin, a delivery-tube, and one or more tubes between said passages and said tube, substantially as herein described, for the purposes specified.

5. Apparatus for drawing off and mixing grain, comprising a bin or vessel open at or near its lower end, one or more passages in said bin with free openings into the same, a delivery-tube, and a tube or tubes between said passages and said delivery-tube, substantially as herein described, for the purpose specified.

6. Apparatus for drawing off and mixing grain, comprising a bin or vessel *a*, open at its lower end, passages *d*, partly formed by partitions *b*, provided with free openings or ports *c*, converging tubes *e*, and chute or delivery-tube *k*, all substantially as described.

7. Apparatus for drawing off and mixing grain, comprising a bin or vessel *a*, open at its lower end, passages *d*, partly formed by partitions *b*, provided with free openings or ports *c*, converging tubes *e*, a pyramidal structure *g*, with converging tubes *h* and *i*, and chute or delivery-tube *k*, all substantially as described, for the purposes specified.

407,908. TABLE. LAWRENCE STOCKMAN, Philadelphia, Pa. Filed Sept. 1, 1888. Serial No. 284,376. (No model.)

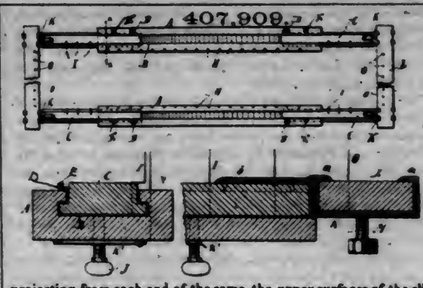


Claim.—In a table, the combination of a frame having the fixed legs B B′ at diagonally-opposite corners and the recesses *c c*′, formed therein at the remaining corners thereof, each side bar of said frame having a longitudinal slot extending from a point near the middle of said bar to one of said recesses, the tie-bars each pivoted at one end in one of said slots, at the inner end thereof, and adapted to be folded within the same to lie flush with the side bars of the frame, the adjustable legs fixed to the free unconfined ends of said tie-bars and adapted to fit in the recesses *c c*′ when said bars are folded in the slots, and a top fixed to the frame and having the hinged leaves, substantially as described.

407,909. FRAME FOR DRYING CURTAINS. JOHN C. TEMPS, New York, N. Y. Filed Apr. 6, 1889. Serial No. 306,241. (No model.)

Claim.—1. A curtain stretching and drying frame composed of grooved side bars, of sliding bars in the grooves of said side bars and

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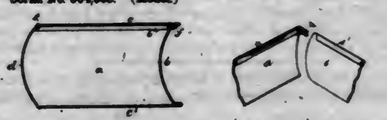


projecting from each end of the same, the upper surfaces of the sliding bars being slightly above the upper surface of the side bars, end bars uniting the outer ends of the sliding bars, rows of pins on the side bars and rows of bent pins on the sliding bars, and pins on the end bars, substantially as set forth.

2. In a curtain stretching and drying frame, the combination, with grooved side bars, of sliding bars in the grooves of said side bars and projecting from each end of the same, the upper surface of the sliding bars being slightly above the side bars, end bars uniting the outer ends of the sliding bars and held on the same by screw-clamps, rows of pins on the side bars, rows of bent pins on the sliding bars, pins on the end bars, and screws for locking the sliding bars in place on the side bars, substantially as set forth.

3. In a curtain stretching and drying frame, the combination, with longitudinally-grooved side bars, of sliding bars in said side bars and projecting from the ends of the same, the places of said sliding bars being slightly above the places of the side bars, cross-bars uniting the outer ends of the sliding bars, and rows of pins projecting from the upper surface of such side bars along the inner edge, a row of pins projecting from the inner edge of each sliding bar along the inner edge, said pins on the sliding bars being bent so as to be adjacent to and parallel with the pins on said bars and pins on the cross-bars, substantially as set forth.

407,910. UTILITY PACKAGE. ARTHUR B. WALLER, Kingsland, N. J., assignor to Burger & Lee, New York, N. Y. Filed Mar. 26, 1889. Serial No. 304,663. (Model.)



Claim.—As a new article of manufacture, a utility package in the form of a book with embossed sides and back and lacquered surfaces, one side *c* forming a lid hinged at *c* to the back and having a turned-over clamping-edge *f*, and the ends *a*, having tangs at *h*, adapted to be secured to the concave portion to strengthen the union of the edges at the angles, substantially as and for the purposes set forth.

407,911. SAFETY CHECK-VALVE. MARIUS WARREN, Rochester, N. Y. Filed Oct. 4, 1888. Serial No. 287,151. (No model.)



Claim.—1. In a safety check-valve, the closed case having an inlet and a separate outlet, a flexible diaphragm secured in said case and closing one end of the same, the valve-support secured directly to the diaphragm and provided with the spring-holding yoke, the stem 17, normally held against an inward lengthwise movement, and the spring between said stem and the movable yoke, the latter being connected to the valve-support, substantially as specified.

2. In a safety check-valve, the closed case having an inlet and a separate outlet, a flexible diaphragm secured in said case and closing one end of the same, the valve-support secured directly to the diaphragm and provided with the spring-holding yoke, an adjustable stem normally held against an inward lengthwise movement, guides for the inner end of the stem adapted to prevent its rotation, and the spring between said stem and the movable yoke, the latter being connected to the valve-support, substantially as specified.

3. In a safety-valve apparatus, the closed case, the flexible diaphragm secured between a valve-seat support and a clamping-plate,

the extension of the support having a screw-thread connection with said plate, and a washer resting in a recess in said plate and bearing against the diaphragm and adapted to protect the diaphragm from injury when the plate is screwed down upon the diaphragm and washer, substantially as specified.

4. In a safety-check-valve apparatus, the closed case, combined by means of an inlet or inlet-tube with a beer-cask or like vessel containing gas under pressure, the flexible diaphragm having fixed thereto the valve-seat and adapted to be exposed to gas-pressure within the case and cask in both the open and closed positions of the valve, the spring-holding yoke secured to the support, the outlet-tube entering the side of the case and bent near its inner end in the direction of the valve, the spring tending to move the diaphragm and valve toward the outlet, and a distinct gas-inlet, substantially as specified.

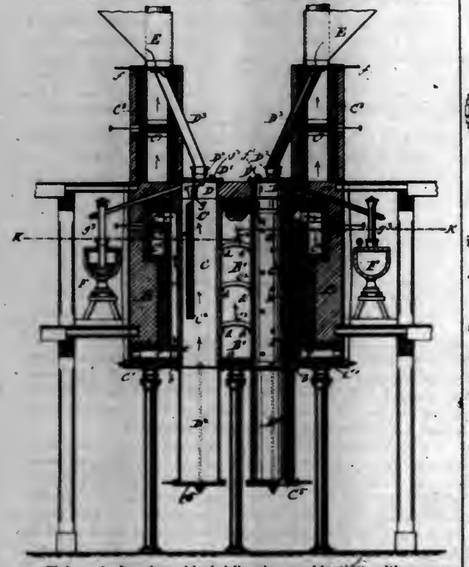
5. In a safety-valve apparatus, the combination of the closed case having an inlet and a separate outlet, a valve for the outlet, the flexible diaphragm having affixed thereto a valve-seat and adapted to be moved by gas-pressure, and also adapted to be exposed to the pressure in the case and in the inlet or inlet-tube in both the open and closed positions of the valve, and the spring adapted to move the diaphragm and valve toward the outlet to close the same, with a pipe provided with a relief-valve, substantially as specified.

6. In a safety-valve apparatus, the combination of the closed case having an inlet, a separate outlet, a valve for the outlet, the flexible diaphragm having affixed thereto a valve-seat and adapted to be moved by gas-pressure, and also adapted to be exposed to the pressure in the case and in the inlet or inlet-tube in both the open and closed positions of the valve, and the spring tending to move the diaphragm and valve toward the outlet to close the same, with a pipe provided with a relief-valve and a gage, substantially as specified.

7. In a safety-valve apparatus, the combination of the closed case having an inlet, a separate outlet, a valve for the outlet, the flexible diaphragm having affixed thereto a valve-seat and adapted to be moved by gas-pressure, and also adapted to be exposed to the pressure in the case and in the inlet or inlet-tube in both the open and closed positions of the valve, and the spring tending to move the diaphragm and valve toward the outlet to close the same, with a pipe provided with a relief-valve and a gage, said relief-valve and gage connecting with a cylinder or receiver, substantially as specified.

8. In a safety-valve apparatus, the combination of a cask, a main pipe having a safety or relief valve, a valve-seat secured to the diaphragm and inclosed in a case communicating with the cask, said diaphragm being exposed to gas-pressure from the cask in both the closed and open positions of the valve, and a spring adapted to close the valve in opposition to the gas-pressure, substantially as specified.

407,912. FURNACE FOR BURNING BONE-BLACK. ADAM WEBER, New York, N. Y. Filed Oct. 9, 1888. Serial No. 287,645. (No model.)



Claim.—1. In a bone-black kiln, the combination, with rows or series of retorts arranged in the same, said retorts being provided with projecting lugs at the sides and inner ends, of transverse saddle-tiles resting on the inner lugs and vertical division-blocks abutting against the opposite ends of the retorts, substantially as set forth.

2. In a bone-black kiln, the combination of the combustion-chamber, rows of retorts in the same, vertical division-blocks abutting against the ends of the retorts, projecting tiles near the bottom of the kiln for supporting said blocks, flues formed below said blocks, flues formed between the ends of the retorts and the division-blocks, and flues located in the side walls of the kiln and communicating with the flues between the division-blocks, substantially as set forth.

3. In a bone-black kiln, the combination of the combustion-chamber, rows of retorts in the same, said retorts having abutting side lugs, and transverse saddle-tiles resting on lugs at the inner ends of the retorts, substantially as set forth.

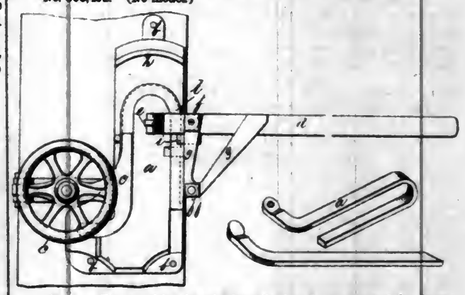
4. The combination of a bone-black furnace or kiln having cast-metal bottom plates provided with sockets or flanges integral therewith, retorts supported in said sockets, hoppers supported above the kiln, inclined feed-pipes connecting the bottom of the hoppers with the heads of the retorts, regulating-slides for said feed-pipes, and coolers located vertically below the retorts and provided with dampers at their lower ends, substantially as set forth.

5. The combination, in a bone-black furnace or kiln, of a series of retorts located in the same, mouth-pieces at the upper ends of the retorts, provided with transverse partitions forming spaces at one side thereof, inclined pipes communicating with said spaces, and hydraulic mains connected with said pipes, substantially as set forth.

6. In a bone-black kiln, the combination of the retorts located in the same, mouth-pieces at the heads of the retorts, transverse partitions in said mouth-pieces, forming spaces, perforated tubular pipes secured to the partitions of the mouth-pieces, inclined pipes communicating with the spaces formed in the partitioned mouth-pieces, and hydraulic mains connected with said inclined pipes, substantially as set forth.

7. The combination, with a bone-black furnace or kiln, of rows of retorts located in the same, a gas-generating furnace located in front of the kiln, provided with a rear channel or throat, hydraulic mains located at both sides of the kiln, tubes for connecting the mouth-pieces of the retorts with the said hydraulic mains, pipes leading from the hydraulic mains to a saturator, and gas-return pipes leading from the saturator to the kiln and connecting with supply-openings in the throat of the gas-generating furnace, substantially as set forth.

407,913. MACHINE FOR MAKING SIDE-BAR SPRINGS. MARQUIS D. L. WILLIAMS, Poughkeepsie, N. Y. Filed Apr. 24, 1889. Serial No. 308,492. (No model.)



Claim.—The machine herein described and represented for forming said springs.

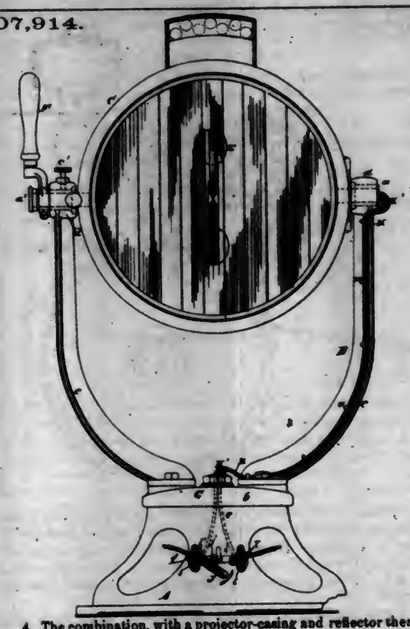
407,914. ELECTRIC PROJECTOR. JAMES J. WOOD, Brooklyn, N. Y. Filed Oct. 1, 1888. Serial No. 286,919. (No model.)

Claim.—1. The combination, with a projector casing, of a base supporting it and a swivel-joint between the base and casing having an axial opening, an electric lamp within the casing, and the circuit-leads thereof passing from the base through the axial opening in the swivel and into the casing, and stops on the respective members of the swivel adapted to limit the rotation of the casing on the base, and thereby prevent the excessive twisting of the leads.

2. The combination, with a projector-casing, of a base supporting it and a swivel-joint between the base and casing having an axial opening, and stop projections on the respective members of said swivel located normally diametrically opposite one another, whereby the rotation of the casing on the base is limited to half a revolution in either direction.

3. The combination of a projector-casing hung on trunnions, one of which is tubular, a supporting-frame having bearings for said trunnions, and stops to limit the rotation of the casing on said trunnions, with the circuit-leads entering the casing through said tubular trunnion.

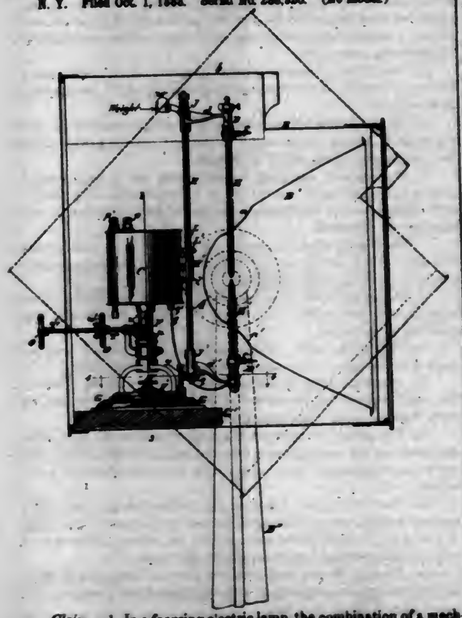
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4. The combination, with a projector-casing and reflector therein, of a fastening for the reflector, consisting of clamping-brackets engaging the periphery of the reflector at intervals around its circumference and connected to the casing through the medium of a longitudinally-sliding connection, whereby the adjustment of the reflector to the proper focal position within the casing is facilitated.

5. The combination, with a supporting-frame formed with a web and rib, of conducting-leads traversing said frame and arranged in the angles at the junction of the web and rib, and a fastening therefor consisting of pins fixed in transverse holes in said rib and their ends bent over and embracing the conductors.

407,915. FOCUSING ARC LAMP. JAMES J. WOOD, Brooklyn, N. Y. Filed Oct. 1, 1888. Serial No. 286,920. (No model.)



Claim.—1. In a focusing electric lamp, the combination of a mechanism-case, regulating mechanism inclosed therein, vertical guides borne by the case fastened to the exterior thereof and extending above and below the case, the positive and negative carbon-holders constructed to slide on said guides, racks exterior to the case attached to the respective carbon-holders and extending vertically past each other, pinions engaging said racks, and a feeding-shaft on which said pinions are fixed, extending into the case and forming part of the regulating mechanism.

2. In a focusing electric lamp, the combination of a mechanism-case, regulating mechanism inclosed therein, vertical guides borne by the case fastened to the exterior thereof and extending continuously from top to bottom above and below the case, positive and negative carbon holders constructed with slides engaging and sliding on said guides, the one engaging the upper part of the guides and the other the lower part of the same guides, and each slide movable from its end portion of the guides toward the other slide and to the middle portion of the guides, racks exterior to the case attached to the respective carbon-holders and extending vertically past each other, pinions engaging said racks, and a feeding-shaft on which said pinions are fixed, extending into the case and forming part of the regulating mechanism.

3. The combination, with the mechanism-case, fixed vertical guides, and carbon-holders constructed to slide on said guides and having brackets projecting outwardly and carrying the carbon-clamps, of a counter-weight for the carbon-holder mounted on an arm on the side of the slide opposite to the bracket and clamp.

4. The combination, with the mechanism-case C, of exterior vertical guides consisting of rods H H, fastened at their middle portion to the case, and fastened together by cross-heads at their top and bottom ends, and the positive and negative carbon holders D and D', formed with slides J and J', respectively, each of said slides engaging both rods H H, the slide J, movable over the portion of the rods above the fastening to the case, and the slide J', movable over the portion of the rods below such fastening, racks *e e'*, fastened at their ends to the respective holders and extending vertically past each other parallel with the guide-rods, and a feeding-shaft K, near the middle fastening of the guide-rods, having pinions *f f'* meshing with said racks.

5. In a focusing electric lamp, the combination, with the mechanism-case, and the positive and negative carbon holders and their racks arranged exterior to said case, of exterior pins engaging said racks, a feeding-shaft on which said pinions are fixed, which extends thence within the case and which is mounted in stationary bearings, a feeding-train having a terminal detent-wheel and arranged with its leading pinion meshing with a gear on said shaft and movable bodily up and down, and an electro-magnet having its movable member connected to said train and adapted to impart up or down movement thereto, whereby during said up or down movement the leading pinion of the train meshes tangentially with said gear-wheel and turns the latter after the manner of a rack.

6. The combination, with the mechanism-case and carbon-holders in an axis outside thereof, of a supporting-standard beneath said case terminating in a bottom plate, and a stationary base-plate beneath said bottom plate, with a concentric swiveled connection between said standard and base-plate, whereby the mechanism-case can be partially rotated axially to move the carbons laterally, in order to readjust their focal position, and a clamping-screw for tightening said standard after adjustment.

7. The combination, with a focusing electric lamp having the axis of its carbon-holders outside of the mechanism-case, of a vertical standard on which its mechanism-case is mounted, said standard terminating in a bottom plate, a stationary base-plate on which said bottom plate rests, and a combined swiveled and sliding connection between the standard and base-plate, consisting of a slot through the bottom plate extending in a direction toward and from the axis of the carbon-holders, and a clamping-screw passing through said slot and engaging the base-plate, whereby the standard may be slid bodily to move the carbons forward or back, or oscillated to displace them laterally, the focal adjustment of the axis of the carbons being thus adjustable by the manipulation of a single screw.

8. The combination, with a focusing electric lamp and its base-plate, of a horizontally-adjustable connection between them, whereby the axis of the carbons may be shifted, a vertical adjustment for the lamp, whereby the arc may be raised or lowered, a laterally-projecting shaft geared to the vertical adjusting devices for imparting motion thereto, and a supplemental shaft connected to said shaft through the medium of a universal joint, whereby the mechanism for effecting the vertical adjustment is not influenced by the horizontal adjustment of the lamp.

9. The combination, with a focusing electric lamp, of a telescopically-extensible vertical standard on which it is mounted, a nut turning on one section of said standard and engaging a screw-thread on the other for extending the standard and formed with bevel gear-teeth, and a laterally-projecting shaft having a bevel-pinion engaging the teeth on said nut for communicating rotary movement thereto

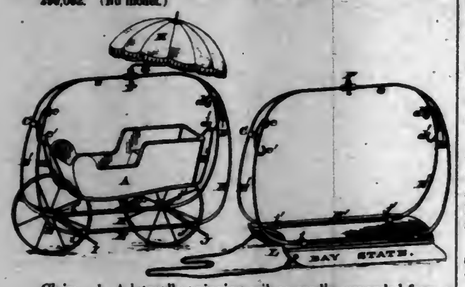
with a bearing-arm for supporting said shaft, and a clamping-sleeve embracing the fixed member of the telescopic standard, and adjustable around the latter in order to bring the laterally-projecting shaft to any position around the vertical axis.

10. In a focusing electric lamp, the combination, with the mechanism-case, of a telescopically-extensible vertical standard on which it is mounted, constructed with a stationary section, a vertically-movable section fixed to the mechanism-case, and a nut turning on one of said sections and engaging a screw-thread on the other, exterior guides for preventing the turning of the mechanism-case, constructed with one member fixed to the stationary section of the standard and the other member connected to the mechanism-case, and with stops in connection with said exterior guides for limiting the vertical adjustment of the mechanism-case.

11. In a focusing electric lamp, the combination, with the mechanism-case, the carbon-holders, and vertical guides therefor arranged exterior to the case and fastened thereto, of a telescopically-extensible standard on which the case is mounted, and guides for preventing the turning of the mechanism-case, constructed with one member fixed to the stationary section of the standard and the other member fixed to the lower portion of the carbon-holder guides.

12. In a focusing electric lamp, the combination, with the mechanism-case C, the carbon-holders, and vertical guides H H therefor fixed to the exterior of the case, of the telescopically-extensible standard F, on which the case is mounted, consisting of a movable upper member fixed to the case and a stationary lower member mounted on the bottom plate F', and guides for preventing the turning of the case, consisting of a pin *y*, fixed to said bottom plate, and a socket-piece *v*, fixed to the lower portion of the guides H H.

407,916. CHILD'S CARRIAGE. Abner Woodward, Shelburne Falls, Mass. Filed Nov. 23, 1886. Renewed Feb. 7, 1889. Serial No. 299,092. (No model.)



Claim.—1. A laterally-swinging crib or cradle suspended from a supporting-frame composed of a pair of side bars having rounded ends, said bars being drawn together at top to form a single central bar extending longitudinally of the vehicle, said frame having means for attachment either to a sleigh or to the running-gear of a child's carriage, substantially as described.

2. The frame E E', provided with means for attachment either to a running-gear or sleigh, and having an upper pair of hooks *c d* and a lower pair of hooks *c' d'*, upon either of which set the body A can be supported, substantially as described.

3. As a suspension device for mounting a vehicle-body either upon a sleigh or a pair of carriage-axles, the frame E E', having parallel horizontal members and rounded ends, and being united at top to form a single bar *e*, substantially as herein described.

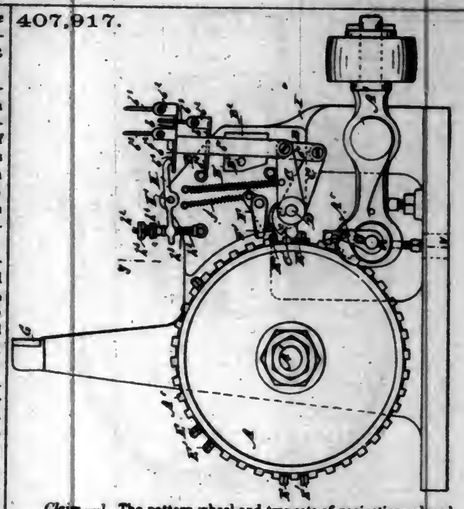
4. A laterally-swinging crib or cradle suspended from a supporting-frame composed of a pair of side bars having rounded ends, said bars being drawn together at top to form a single central bar extending longitudinally of the vehicle, said frame having means for attachment either to a sleigh or to the running-gear of a child's carriage, and said central bar being provided with an adjustable canopy, for the purpose described.

5. A supporting-frame for a laterally-swinging crib or cradle, which frame is composed of a pair of side bars having rounded ends, said bars being drawn together at top to form a single central bar extending longitudinally of the cradle, and said frame having means for attachment either to a sleigh or to the running-gear of a child's carriage, as herein described.

407,917. CIRCULAR-KNITTING MACHINE. Charles E. Dean, Scranton, Pa., assignor of one-half to the Lackawanna Mills, same place. Filed Jan. 14, 1889. Serial No. 296,308. (No model.)

Brief.—The invention relates particularly to the construction of the yarn-guides and the means for operating them, to the construction of the stitch-wheel, to the devices for cutting the yarn, and to the construction of the pattern-wheel and the means for locking and releasing the yarn-guides.

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Claim.—1. The pattern-wheel and two sets of projections placed therein out of line with each other, the levers C, having extensions C', and the yarn-guides B, attached to the said levers, in combination with the triggers F, adapted to lock the levers C and to be disengaged from said levers by the projections in the pattern-wheel, substantially as described.

2. The combination, with the guides B and means for moving them vertically, and the stitch-wheel J, having points *i*, of the finger or rod P', reaching to a lower level than the lower edge of the stitch-wheel, and the cutter K, arranged beyond the stitch-wheel, substantially as described.

3. The pattern-wheel A and pins E E', the levers C, notched at *c* and held in range of the pins E, and the triggers F, arranged to engage notch *c* and held in range of the pins E', in combination with the yarn-guides B, attached to levers C, tension-plates H, stitch-wheel J, having points *i*, and rotating cutter K, all arranged to operate substantially as described.

4. The guide-depressing levers and the notched extension thereof, and the spacing-pieces *c'*, in combination with the triggers, formed with a catch *f* and having an offset arm standing above the spacing-pieces between the said levers, and the pattern-wheel provided with pins to simultaneously operate the said levers and the said triggers, substantially as described.

5. The guide B, formed with the upright bar *b'* and beat plate *b*, having apertured lip b^2 and upwardly-projecting pin b^3, substantially as described.

6. The guide-block B^3, pivoted on the pin B^4, in combination with the guide B, having vertical bar *b'*, the lever C, and the pattern-wheel and pattern-pins, substantially as described.

7. The guide B, composed of the vertical bar *b'*, angle-plate *b*, having apertured lip b^2, and the pin b^3, in combination with the pivoted tension-plate H, overhanging the end of the angle-plate *b*, substantially as described.

8. The tension-plate H, pivoted on the rod H', in combination with the vertical rod h^3, spring h^5, nut h^4, and the vertically-movable guides B, substantially as described.

9. The tension-plate H, pivoted at H', and having slot *h*, in combination with the guide B and means for moving it vertically, substantially as described.

10. The stitch-wheel J, having inclined plates *j* formed with the teeth i^4 at the upper outer corner, substantially as described.

11. The stitch-wheel J, having plates *j* formed with the point *i* at the upper inner corner, the point *i'* at the lower outer corner, and the teeth i^4 at the upper outer corner, substantially as described.

12. The plate *j*, formed with the projection i^3 at the inner edge, the point *i* at the upper inner corner, the point *i'* at the lower outer corner, and the teeth i^4 at the upper outer corner, substantially as described.

13. The stitch-wheel J, having the inclined plates *j* and intermediate inclined plates *j'*, the latter formed with upper inclined edge j^2 and point j^3 at the lower outer corner, the plates *j* being formed with opposite points *i i'*, substantially as described.

14. The axle N, provided with the plate O, having the flange P secured thereto, in combination with the stitch-wheel placed on said axle, substantially as described.

15. The axle N, having pin *n* and plate O, provided with the flange P and finger P', in combination with the stitch-wheel placed on said axle, substantially as described.

16. The cutter-wheel K, having a cutting edge or blade and provided with a series of circularly-arranged inclined plates *k'*, substantially as described.

17. The cutter-wheel having the circular blade *k* and the circularly-arranged plates *k'*, in combination with the knitting-cylinder and its needles, substantially as described.

407,918. PACKING AND SALES CASE. Alvin E. Berlin and Parvin Wright, Denver, Colo. Filed Feb. 13, 1889. Serial No. 299,809. (Model.)



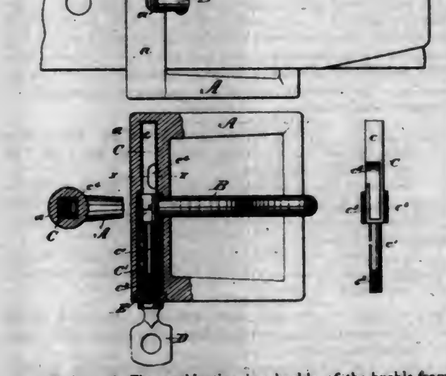
Claim.—1. A show and sales case having an opening therein, a door pivoted in said opening, and sectors or cheek-pieces attached to the side frame of said door and extending within said case to serve as guards in the withdrawal of its contents, substantially as described.

2. A show and sales case having a door pivoted in an opening therein, sectors or cheeks secured to the side edges of the said doors and extending within the case, and an auxiliary door hinged to the outer edge of the main door and provided with a glass through which the contents of the case may be observed, substantially as described.

3. A show and sales case having a door pivoted in an opening therein, sectors or cheek-pieces secured to the sides thereof, an auxiliary door-frame hinged to the outer edge of the main door and having a glass through which the contents of the case may be observed, a hinged flap located within the case to prevent the case overrunning of its contents, pivoted detent to bear against said flap to retain it in a vertical position, and a sliding bolt on the main door, and a recess in said door for the bolt-ring, substantially as described.

4. A show and sales case having a door, a sliding bolt therein, a recess in said door, and a ring attached to the bolt and falling in said recess to be protected by a sealing-sheet over said opening to prevent the contents of the case being tampered with while in transit, substantially as described.

407,919. BUCKLE. William Blum, Newark, N. J. Filed Apr. 20, 1889. Serial No. 308,016. (No model.)

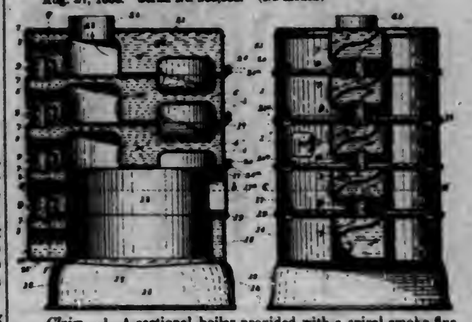


Claim.—1. The combination, in a buckle, of the buckle-frame provided with a pivoted tongue and having the front bar thereof made hollow, the spring-actuated locking-bar longitudinally movable in said bar, and formed with a longitudinal slot and with a notch or recess leading to said slot, for allowing entrance of the buckle-tongue, substantially as described.

2. In a buckle, the combination, with the buckle-frame having its front bar made hollow and its tongue pivoted to swing against said hollow bar, the latter having a notch for receiving the point of the tongue, of the longitudinally-movable spring-actuated locking-bar fitted in said hollow bar and having a round threaded end and made angular in cross-section for a portion of its length, and formed also with a longitudinal slot and a notch or recess leading to said slot and allowing entrance of the tongue thereto, substantially as described.

3. A buckle comprising the following elements in combination: a buckle-frame, a tongue pivoted thereto, the front bar of the frame being hollow, a longitudinally-movable spring-actuated locking-bar fitted in said hollow bar and held against rotation, one end of the said locking-bar being threaded, and a washer or ring secured at the open end of the hollow bar and acting to maintain the locking-bar and its spring in place, substantially as described.

407,920. SECTIONAL BOILER. Joseph Bond, Buffalo, N. Y. Filed Aug. 27, 1883. Serial No. 283,932. (No model.)



Claim.—1. A sectional boiler provided with a spiral smoke-flue surrounded on all sides by water for conducting the products of combustion from the fire-chamber to the outlet spirally up through the water within the boiler, substantially as described.

2. In a boiler composed of sections each having a spiral water-passage, the combination therewith of extension portions connected by screw-threaded nipples for connecting the spiral passage of each section, thereby forming a spiral passage in a continuous forward and upward direction around the boiler from the inlet to the outlet, substantially as described.

3. A sectional boiler provided with a spiral smoke-flue for conducting the products of combustion from the fire-chamber up through or around the boiler, in combination with a spiral water-passage for conducting the water between or around the heating-surfaces from the inlet to the outlet of the boiler, substantially as described.

4. In a sectional boiler, a series of sections, duplicates of each other, above the fire-chamber, forming a spiral smoke-flue within the boiler, in combination with a spiral water-way surrounding the smoke-flue on all sides, except the inlet and outlet, substantially as described.

5. In a sectional boiler, a boiler-section having a spiral recess on each side forming a portion of a spiral smoke-flue and an intermediate spiral water way or passage, in combination with an extension-chamber provided with a diaphragm interposed between the inlet and outlet openings to prevent the water from reaching the outlet until after it has made a circuit around the section, substantially as described.

6. In a sectional boiler, a series of sections having an annular water-chamber and extension water-chambers provided with diaphragms for causing a circulation of the water, a base portion carrying the grate, and screw-threaded tubular nipples for producing a water-tight joint and securing them together, the whole forming the combustion-chamber, in combination with a series of sections each having a spiral or half-spiral smoke-flue on opposite sides, and an intermediate spiral water-chamber communicating with an extension water-chamber having a diaphragm for causing the water when it enters the section to pass around it before it passes through the outlet, screw-threaded tubular nipples for securing the extension water-sections, and bolts for securing the main sections, whereby a combined spiral smoke-flue and water-way is provided, substantially as and for the purposes described.

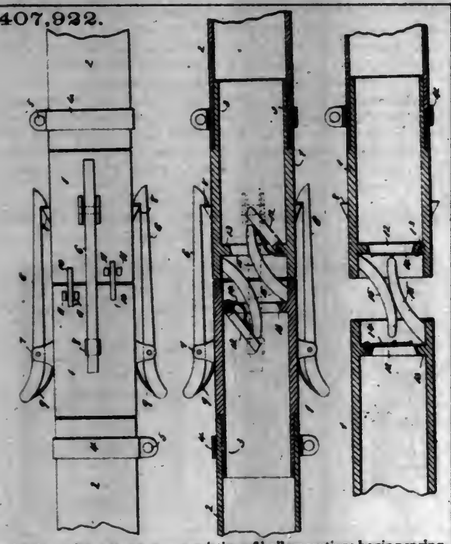
407,921. COMPOUND FOR PURIFYING IRON IN BLAST AND PUDDLING FURNACES. Nathaniel Booth, Hollidaysburg, Pa., administrator of Nathaniel Booth, Sr., deceased. Filed Mar. 20, 1889. Serial No. 304,041. (No specimens.)

Claim.—The herein-described composition of matter to be used for purifying iron in blast or puddling furnaces, consisting of red prussiate of potash, bichromate of potash, bicarbonate of soda, salt, and black oxide of manganese, substantially as specified.

407,922. PIPE-COUPLING. William M. Brown, Jr., Sacramento Cal. Filed Apr. 19, 1888. Serial No. 307,940. (No model.)

Claim.—1. A steam-pipe coupling for connecting the main sup-

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ply-pipes of passenger-cars, consisting of hollow sections having spring-actuated coupling-hooks pivoted to and projecting beyond the ends of the hollow sections, guide-bars and engaging-lugs, and spring-actuated inwardly-opening valves, and arms projecting from the open ends of the hollow sections to bear against and hold the valves open when the coupling is closed, substantially as shown and described.

2. In a steam-pipe coupling, hollow sections having spring-actuated coupling-hooks projecting beyond the ends of the hollow sections, inclined lugs on the sections with which the coupling-hooks automatically engage, inwardly-opening valves in the hollow sections, with springs for holding the valves in closed position, and arms projecting out of the ends of the hollow sections to bear against and hold the valves open when the hollow sections are coupled together, substantially as shown and described.

3. In a steam-pipe coupling as herein described, a hollow section 1, containing an inwardly-opening valve 12, with a closing-spring 14, a curved arm 15, projecting forward out of the end of hollow sections 1, hooked lever-coupling arms 6, projecting forward of the hollow section 1 and having an actuating-spring 9 located beneath their rear end, inclined lugs 8, guide-arms 10, projecting beyond the end of the hollow section, and sets of guide-lugs 11, located at the end of the hollow section, substantially as shown and described.

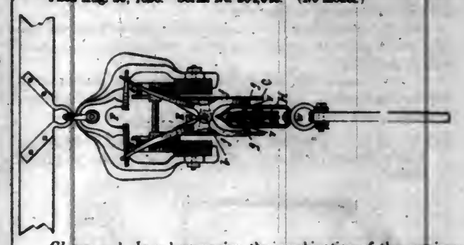
407,923. COVERING FOR INTERIOR WALLS. THEODORE W. BURGER, Dunellen, N. J. Filed Sept. 2, 1887. Serial No. 248,593. (No model.)



Claim.—1. The ornamental metallic sheet for walls or ceilings, having a varnished or lacquered surface, and designs or patterns printed upon the same and embossed in figures harmonizing with the previously-printed designs, substantially as set forth.

2. The ornamental metallic sheet for walls or ceilings, having a surface lacquered or varnished, and printed upon with designs or ornaments in two colors and embossed with patterns and figures harmonizing with the designs printed upon the surface of the sheet, substantially as set forth.

407,924. HAY-CARRIER. JEROME A. CROSS, Fultonville, N. Y. Filed Aug. 29, 1888. Serial No. 284,043. (No model.)



Claim.—1. In a hay-carrier, the combination of the carriage consisting of the frame C, supported by trolley-wheels resting on the track A, the pulley-wheels D D, and the latch E, having the legs *e e*, extending above the rest of the carriage, and also having the lower parts *f f*, the catch F, with inclined edges *k k*, throat *l*, and shoulders *m m*, supported above the track, the rope G, and the traveling pulley H, as and for the purpose described.

2. In a hay-carrier, the combination of the carriage consisting of the frame C, supported by trolley-wheels resting on the track A, the pulley-wheels D D, and the latch E, composed of the two jaws, the spring, and the pivot-bar *b*, whereby the jaws are united and secured to the frame C, said jaws having the legs *e e*, extending above the rest of the carriage, and the lower parts *f f*, the catch F, with inclined edges *k k*, throat *l*, and shoulders *m m*, located above the track, the rope G, and the traveling pulley H, as and for the purpose described.

3. In a hay-carrier, the combination of the carriage consisting of the frame C, trolley-wheels, pulley-wheels D D, and latch E, having the legs *e e*, extending above the rest of the carriage, and the lower parts *f f*, the rope G, the traveling pulley H, and the catch F, with inclined edges *k k*, throat *l*, and shoulders *m m*, pivoted to a support above the track, and in one position engaging with the latch E and in another position allowing the carriage to pass freely by it, substantially as and for the purpose described.

4. In a hay-carrier, the combination of the carriage having the frame C, pulley-wheels D D, and pawls *p p*, and the rope G, having the enlargements *y y*, constructed and operating substantially as described.

5. In a hay-carrier, the combination of the carriage consisting of the frame C, having the pawls *p p*, with stops *r r* and springs *s s*, the trolley-wheels, the pulley-wheels D D, and the latch E, having the legs *e e*, extending above the rest of the carriage, and the lower part *f f*, the catch F, with inclined edges *k k*, throat *l*, and shoulders *m m*, located above the track, the rope G, having the enlargements *y y*, and the traveling pulley H, constructed and operating substantially as shown and described.

6. In a hay-carrier, the combination of the carriage provided with pulley-wheels D D, the rope G, having the enlargements *y y*, the traveling pulley H, and the catch F above the track, the frame C of the carriage being constructed with lugs *a a*, to which are pivoted the pawls *p p*, having stops *r r* and springs *s s*, and which also form bearings for the pivot-bar *b* of the latch E, the legs *e e* of which extend above the rest of the carriage and engage with the catch F, substantially as and for the purpose described.

407,925. DOUBLE SULPHATE OF ANTIMONY. CARL J. E. DE HAEN, Linden, near Hanover, Prussia, Germany. Filed Sept. 9, 1887. Serial No. 249,259. (Specimens.)

Claim.—1. The herein-described process of manufacturing the double salt of fluoride of antimony, consisting in mixing fluoride of antimony and sulphate of ammonia and then evaporating the mixture, substantially as specified.

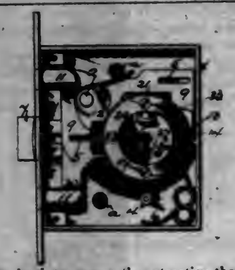
2. As a new article of manufacture, the double salt of fluoride of antimony and sulphate of ammonia having the formula $SbF_3(NH_4)_2SO_4$, substantially as described.

407,926. LOCK AND LATCH COMBINED. CHARLES W. FOLSOM and AUGUSTUS B. DAVIS, Wakefield, Mass. Filed Feb. 21, 1889. Serial No. 300,764. (Model.)

Claim.—1. A lock having a latch, a latch-locking slide, rotatable disks having bearing within the front and rear plates of the lock-case and connected together by transverse connections having bearing against the latch, so as to retract the latch upon the disks being rotated, and a slide supported in position in guideways upon one of said disks and adapted to engage the latch-locking slide and hold the same in projected position.

2. A lock having a latch, a slide having guide-bearing upon and adapted to reciprocate upon the latch, disks having rotary bearing within the respective face-plates of the lock-case, posts or pins connecting said disks to adapt them to rotate in unison, said posts having

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bearing against the latch to secure the retraction thereof upon the disks being rotated, a disk having independent rotary bearing centrally within one of said disks, a slide having bearing within guideways on said central disk and the disk surrounding the same, said slide and latch-locking slide having lugs on their respective faces to engage the one with the other, and a knob-spindle adapted to engage the central disk, substantially as and for the purposes set forth.

3. In a lock, the combination, with suitable latch and bolt or latch-locking mechanism, of a central disk adapted to rotate independently of the locking mechanism, a slide connected with the latch-locking mechanism and with said central disk and adapted to be slid into or out of engagement with said central disk and hold the same from rotation while the latch is unlocked and permit of the independent rotation thereof when the latch is locked, and a knob-spindle connected with said central disk, whereby said spindle may be freely rotated when the lock mechanism is locked without interfering with or straining the lock mechanism.

4. In a lock, the combination, with the latch and locking mechanism, of a pair of rotary disks having bearing, respectively, in the opposite faces of the lock-case and connected together to rotate in unison and thereby secure the retraction of the latch mechanism, a disk having independent rotary bearing centrally within one of said disks, guideways on or in the inner face of said central disk and the disk adjacent thereto, a slide adapted to slide within said guideways, suitable devices, as lugs, connecting said slide and the latch-locking mechanism, a hook on the outer face of said central disk and a hole or holes extending transversely through said disk, and a knob-spindle having a hook and pins on its inner end to engage the hook and holes in said central disk to connect said disk and spindle and secure the knob-spindle together and the free rotation of said spindle when the lock is locked, substantially as set forth.

5. In a lock, a pair of rotary disks having bearing within the lock-case and connected together to rotate in unison and to secure the retraction of the latch, a central disk carried by one of said disks, a slide connected with said central disk and the disk adjacent thereto and adapted to engage the lock mechanism and reciprocate therewith and thus alternately lock and unlock said central disk, and a knob-spindle adapted to engage said central disk and having a keyway longitudinally therethrough and a concaved knob, substantially as and for the purposes set forth.

407,927. UMBRELLA-TREE. JONATHAN HAIGHT, Pittsfield, Mass. Filed Feb. 9, 1889. Serial No. 299,292. (No model.)

Claim.—1. In an umbrella-tree, the combination, with a vertical body having a series of graduated disks attached thereto, provided with a series of openings therein, and a groove above the lower bearing-surface of each of the said disks, of a base in which the body of the tree is pivotally secured, whereby the said body may be revolved upon the said base, substantially as shown and described.

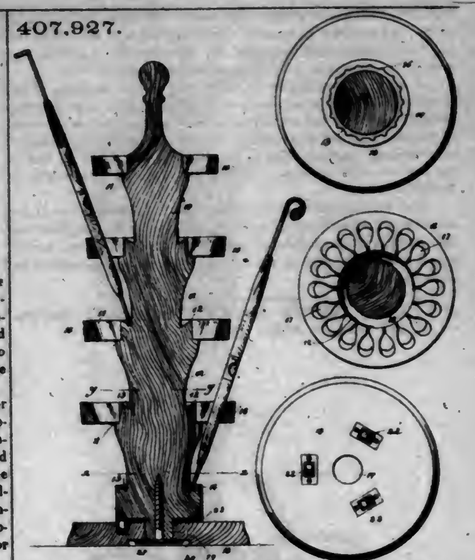
2. The combination, with a body provided with a series of shoulders graduated in diameter from the base upward, and a second series of shoulders having a groove produced in the upper face, of disks secured upon the first-named shoulders, provided with a series of openings therein having inwardly-inclined outer walls, substantially as shown and described.

3. The combination, with a body provided with a series of shoulders graduated in diameter from the base upward and a second series of shoulders having a groove produced in the upper face, of disks secured upon the first-named shoulders, provided with a series of openings therein having inwardly-inclined outer walls, and a base containing vertical rollers, in which the said body is pivotally held, substantially as shown and described.

4. The combination, with a vertical body provided with a series of graduated shoulders 11, and reduced shoulders 12 above the same, having a groove produced in the upper face, and a base grooved shoulder at or near the lower end, of a series of disks 16, supported upon the shoulders 11, having a series of openings therein, all combined for operation substantially as shown and described.

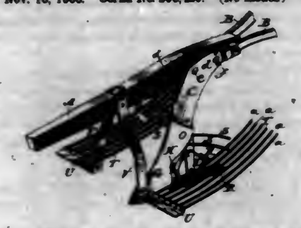
5. The combination, with a vertical body provided with a series

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of graduated shoulders 11, reduced shoulders 12 above the same, having grooves therein provided with vertical cavities in the upper wall, and a base-shoulder 14, of a series of graduated disks supported upon the shoulders 11, provided with a series of diagonal openings, and a base-plate having friction-rollers, in which the body is pivotally secured, substantially as shown and described.

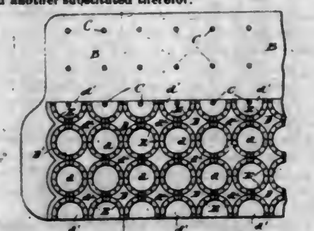
407,928. POTATO-DIGGER. DANIEL Y. HALLOCK, Southold, N. Y. Filed Nov. 10, 1888. Serial No. 290,429. (No model.)



Claim.—The combination, with the beam and plowshare of a potato-digger, of a supporting-bar V, attached to the beam, and a lateral horizontal screen T, suspended by said bar and extending alongside of the share above its lower edge and from the point thereof rearwardly, substantially in the manner and for the purpose herein set forth.

407,929. CRACKER-CUTTING DIE. CARL HERRMANN, New York, N. Y. Filed Apr. 24, 1889. Serial No. 308,434. (No model.)

Brief.—The die-face as a whole is built up of renewable sections, whereby if one of the sections be defaced or broken it may be removed and another substituted therefor.



Claim.—1. A cracker-cutting die provided with a face consisting of removable or renewable sections having their joints on lines bisecting the openings of the individual cracker-dies, and means for fastening the removable sections to the die box or body, substantially as herein set forth.

2. A cracker-cutting die provided with a face consisting of re-

movable or renewable sections each made with scrap-openings at its center, and provided at opposite edges with halves or sections of the individual cracker-dies, and means for fastening the removable sections to the die box or body, substantially as herein set forth.

3. A cracker-cutting die provided with a face consisting of removable or renewable sections having their joints on lines bisecting the openings of the individual cracker-dies, and provided at the walls of the individual dies with radial or projecting cutters giving scalloped or ornamental marginal form to the crackers, and means for fastening the removable sections to the die box or body, substantially as herein set forth.

4. A cracker-cutting die provided with a face consisting of removable or renewable sections having their joints on lines bisecting the openings of the individual cracker-dies, and fastening-screws passed through the walls of the die into the sections, substantially as herein set forth.

407,930. **BICYCLE.** LOUIS A. HILL, Philadelphia, Pa. Filed Dec. 11, 1888. Serial No. 293,261. (No model.)



Claim.—1. In a bicycle-fork, the combination of the fork A, provided with the inclined shoes *a*, the base-plates D, hinged to the shoes *a* and provided with the downwardly-projecting bearing-arms H, and the spring interposed between the shoes and base-plates, substantially as herein shown and described.

2. In a bicycle or similar machine, the combination, with a wheel-fork having its members terminating in a downwardly-inclined shoe projecting outward therefrom, of a base block or plate adapted for connection with the wheel-axle, hinged to one end of said shoe, and a spring uniting the opposite ends of the said shoe and plate, substantially as and for the purpose specified.

407,931. **GALVANIC BATTERY.** CHARLES J. HIRLIMANN, Fort Lee, N. J. Filed May 6, 1889. Serial No. 309,695. (No model.)



Claim.—1. In a galvanic-battery cell, a carbon element consisting of two rectangular carbon boxes, one placed within the other, and the two connected together at one end.

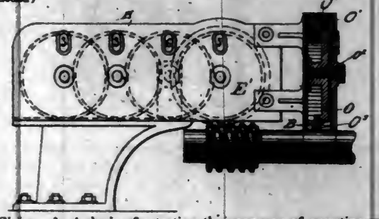
2. In a galvanic-battery cell, a carbon element consisting of two rectangular carbon boxes, one placed within the other, and the two connected together at one end, a free passage or chamber being provided throughout the inner box.

3. In a galvanic-battery cell, a carbon element consisting of two rectangular carbon boxes, one placed within the other, and the two connected together at one end, thus forming a chamber between the two boxes, in combination with a depolarizing agent placed within the chamber.

4. In a galvanic-battery cell, a carbon element consisting of two rectangular carbon boxes, one placed within the other, and the two connected together at one end, a free passage or chamber being provided throughout the inner box, in combination with a zinc element occupying said chamber.

5. In a galvanic battery, a carbon element having a rectangular shape, and provided with two ears extending above the mouth of the cell, in combination with an outer rectangular jar and a cover for the same, the latter having cut-away portions to accommodate the ears on the carbon element.

407,932. **TESTING DEVICE FOR COUNTING MECHANISMS.** PAUL C. ILLIES, Leipsic, Saxony, Germany, assignor of one-half to Paul Eduard Kürsten, same place. Filed Jan. 29, 1889. Serial No. 297,912. (No model.)

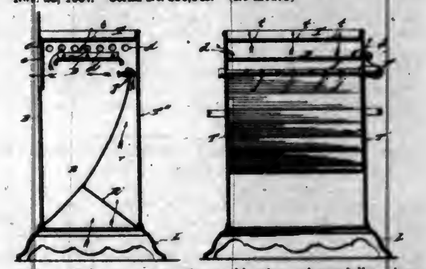


Claim.—1. A device for testing the accuracy of counting mechanism, comprising a moving part, as a rotating shaft, numbered counting-disks operated by said moving part to count the movements of said moving part, a numbered and divided supplementary disk moved at each movement of said moving part a distance corresponding to one of its divisions, whereby the accuracy of the number shown on the counting-disks may be determined by observing whether, after dividing the said number by the number denoting the sum of the divisions of the supplementary disk, the remainder, if any, is the same as the number exposed on the said supplementary disk, substantially as described.

2. The combination, with the driving-shaft of a counting mechanism and a finger carried by said shaft, of a supplementary counting-disk mounted to rotate at a right angle to said counting mechanism, and having a series of pins at its periphery adapted to be engaged by the finger on said shaft, substantially as shown and described.

3. The combination, with a series of counting-disks mounted and geared for rotation one with another, the units-disk having teeth at its periphery, and a driving-shaft having a worm thereon meshing with the teeth of said units-disk, of a supplementary counting-disk mounted to rotate at a right angle to the principal counting-disks and having a series of pins at its periphery, a casing open at its bottom and apertured at its front inclosing said supplementary disk, and a radial finger carried by the driving-shaft of the counting mechanism, adapted to engage the pins on the supplementary counting-disk, substantially as shown and described.

407,933. **GAS-STOVE.** LANDON KETCHUM, Saugatuck, Conn. Filed Nov. 25, 1887. Serial No. 256,043. (No model.)



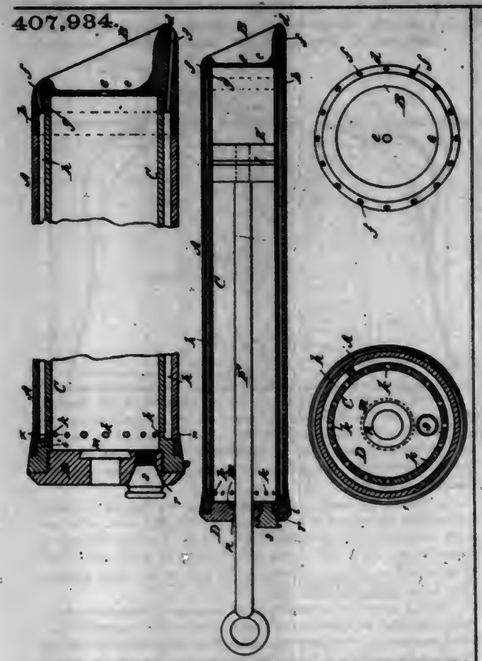
Claim.—1. In a gas-stove, the combination, substantially as hereinbefore set forth, of the radiating-plate R, extending the entire length of the stove, so that no air is admitted at either end of the same, the gas-pipe J, with the jets *j j* placed at the back of the stove and immediately above the plate R, with the jets directed outward, and the front plate C, provided with the openings *c*, directly in front of the gas-jets, for the purposes set forth.

2. In a gas-stove, the combination, substantially as hereinbefore set forth, of the radiating-plate R, extending the entire length of the stove, the passage *r*, whereby air is admitted at the rear only, the gas-pipe J, with the jets *j j* placed at the back of the stove and directly above the plate R, with the jets directed outward, the face-plate provided with the openings *c c* directly in front of the gas-jets the draft-plate D, placed above the jets, and the top and end walls provided with the openings *d d* and *f f*, for the purposes set forth.

407,934. **SYRINGE.** JAY W. KIRKWOOD, Silver Mountain, Idaho, assignor to himself and Edwin Bartsch, same place. Filed Feb. 26, 1889. Serial No. 301,181. (No model.)

Claim.—1. A medical syringe having inner and outer chambers connected with each other at or near their rear ends and both having

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openings through the forward end of the syringe, in combination with a piston fitted to work within the inner chamber, whereby said syringe operates simultaneously to discharge a diluting or medicated fluid and to remove by suction foreign matter adhering to the mouth or neck of the womb, also the inner chamber of the syringe serves as a vessel to carry off the foreign matter, substantially as specified.

2. In a medical syringe, the cup-shaped nozzle adapted to fit the mouth of the womb and provided with a series of discharge-apertures outside of the suction-cavity in the nozzle, and with a suction-aperture in the back of the nozzle, whereby a sucking action is combined with a discharging action of water or other fluid in jets, substantially as specified.

407,935. **MACHINE FOR MAKING CONFECTIONERY.** PHILLIP KNORPP and GUSTAV A. MAYER, Stapleton, N. Y. Filed Apr. 19, 1889. Serial No. 307,730. (No model.)

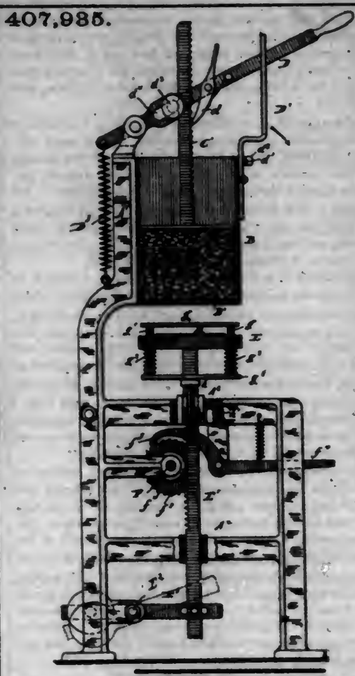
Claim.—1. In a machine for making confectionery, the combination of a paste-receptacle having a perforated bottom and a follower guided in said receptacle, a vertically-guided table below the receptacle, transverse and spring-actuated keepers at the ends of the table, and fixed stops below said keepers, so as to raise the same against the tension of the springs when the table is lowered, substantially as set forth.

2. In a machine for making confectionery, the combination, with a paste-receptacle having a perforated bottom, of a follower the follower-rod of which is provided with a rack-bar, a fulcrumed and spring-actuated lever, a hinged fork for guiding the front end of the lever, a pivoted and spring-actuated pawl on said lever for engaging the rack of the follower-rod, and means for guiding the follower-rod along the lever, substantially as set forth.

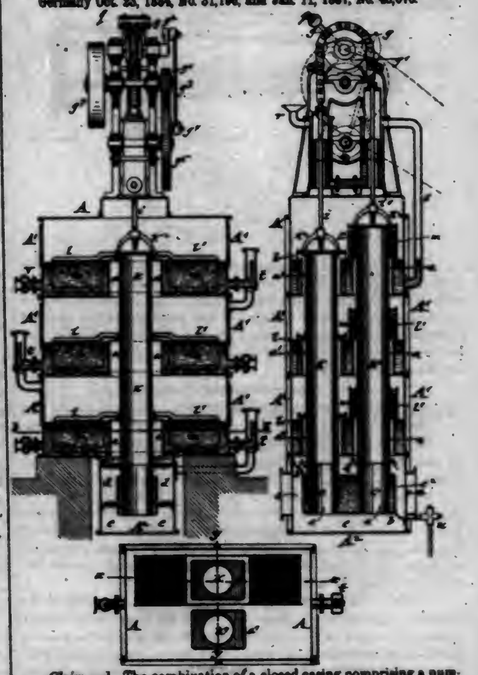
3. In a machine for making confectionery, the combination, with a vertically-guided table having a vertically-adjusting rack-bar, a fulcrumed and weighted lever connected with the lower end of said rack-bar, a pinion engaging said rack-bar, a hand-wheel on the shaft of the pinion for turning the shaft and lowering the table, and a pawl-and-ratchet device for locking the pinion and rack-bar in position, substantially as set forth.

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407,936. **GAS-WASHING APPARATUS.** ERNST LEUSE, Chemnitz, Saxony, Germany, assignor of one-half to Bruno Terno, Philadelphia, Pa. Filed Aug. 27, 1888. Serial No. 283,910. (No model.) Patented in Germany Oct. 23, 1884, No. 31,196, and Jan. 11, 1887, No. 40,070.



Claim.—1. The combination of a closed casing comprising a number of superimposed sections for containing water, said casing being provided at its lower end with inlet and outlet chambers for the pas-

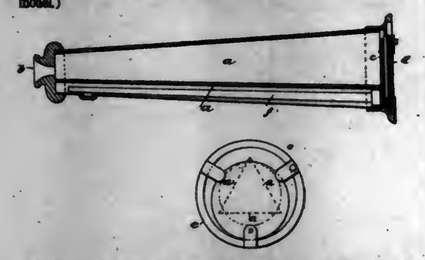
sage of gas, each of said sections having two vertical gas-channels, gas-conducting tubes passing through said vertical gas-channels of the sections and opening at their lower ends into one of said chambers, means for vertically reciprocating said tubes, and boxes attached to said tubes, said boxes being provided with a series of plates, substantially as set forth.

2. The combination of a closed casing comprising a number of superimposed sections for containing water, said casing being provided at its lower end with inlet and outlet chambers for the passage of gas, each of said sections having two vertical gas-channels, gas-conducting tubes passing through said vertical gas-channels of the sections and opening at their lower ends into one of said chambers, water seals at the lower ends of said tubes, means for vertically reciprocating said tubes, and boxes attached to said tubes, said boxes being provided with a series of plates, substantially as set forth.

3. The combination of a closed casing comprising a number of superimposed sections for containing water, said casing being provided at its lower end with inlet and outlet chambers for the passage of gas, each of said sections having two vertical gas-channels, gas-conducting tubes passing through said vertical gas-channels of the sections and opening at their lower ends into one of said chambers, boxes attached to said tubes, said boxes being provided with a series of plates, suspension-rods for said tubes, a link chain connected to said rods, a sprocket-wheel for said link chain, and a crank-motion for imparting oscillating motion to the sprocket-wheel and vertically-reciprocating motion to the gas tubes and boxes, substantially as set forth.

4. The combination of a closed casing comprising a number of superimposed sections for containing water, said casing being provided at its lower end with inlet and outlet chambers for the passage of gas, each of said sections having two vertical gas-chambers, gas-conducting tubes passing through said vertical gas-channels of the sections and opening at their lower ends into one of said chambers, boxes attached to said tubes, said boxes being provided with a series of plates, suspension-rods for said tubes, a link chain connected to said rods, a sprocket-wheel for said link chain, a crank-motion for imparting oscillating motion to the sprocket-wheel and vertically-reciprocating motion to the gas tubes and boxes, and water seals for said suspension-rods, substantially as set forth.

407,937. KALEIDOSCOPE. JOSEPH W. LOVIBOND, Salisbury, County of Wilts, England. Filed July 6, 1888. Serial No. 279,233. (No model.)



Claim.—The combination, with a kaleidoscope, of two or more disks placed in front of one another and independently movable by rolling, as described, in the field of view of the instrument, one or more of the disks being translucent and party-colored or made of differently-colored segments united together to form a solid disk, and one or more of the disks being opaque with through-apertures, as and for the purpose specified.

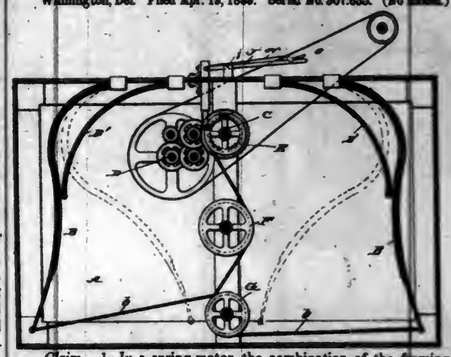
407,938. INSULATING COMPOSITION. FRANK MARQUARD, New York, N. Y. Filed Dec. 3, 1888. Serial No. 292,511. (No specimens.)

Claim.—1. The insulating compound herein described, composed of rosewood sawdust, extract of logwood, bichromate of potash, sulphate of iron, and an albuminous substance, substantially as set forth.

2. The insulating compound herein described, composed of the following ingredients, in about the following proportions: twenty pounds, by weight, of fine rosewood sawdust, one pound of extract of logwood, one-eighth of a pound of bichromate of potash, one-eighth of a pound of sulphate of iron, and five pounds of an albuminous substance, substantially as set forth.

3. The insulating compound herein described, composed of the following ingredients, in about the following proportions: twenty pounds, by weight, of fine rosewood sawdust, one pound of extract of logwood, one-eighth of a pound of bichromate of potash, one-eighth of a pound of sulphate of iron, and five pounds of an albuminous substance, and a vegetable fiber, such as hemp, flax, &c., substantially as set forth.

407,939. SPRING-MOTOR. LUDWIG MELCHIOR and GEORGE HAAS, Wilmington, Del. Filed Apr. 19, 1889. Serial No. 307,835. (No model.)



Claim.—1. In a spring-motor, the combination of the framing, the gear-train therein having a power-shaft, the spring-arms secured at one end to the framing, extended thence downward on opposite sides of the gear-train, cords or connections between said free ends and the power-shaft, and guides for said cords or connections, substantially as set forth.

2. In a spring-motor, the combination of the framing, a spring-arm secured at one end to the framing and adapted at its other end to be connected with the power-shaft, and the auxiliary spring-arm secured at one end to the framing and arranged at its free end to bear against the first spring-arm between the ends of the latter, substantially as set forth.

3. In a motor, the combination of the framing, the power-shaft, the spring-arms arranged on opposite sides of the power-shaft, secured at one end to the framing, and having their free ends arranged opposite each other, such free ends being movable inward toward each other and outward apart, and connections between said free ends and the power-shaft, substantially as set forth.

4. The improved spring-motor, substantially as described, comprising the framing, the power-shaft therein, the guide-pulleys F and G below such power-shaft, the spring-arms B, arranged on opposite sides of such shaft and pulleys, connections between the free ends of springs B and the power-shaft, such connections being disposed around pulleys F and G, and the auxiliary springs B', secured at one end to the framing and bearing at their opposite or free ends against the inner sides of the spring-arms B at about the centers of such arms, substantially as set forth.

5. In a spring-motor, the combination, with the power-shaft, the springs connected with such shaft, and the ratchet-wheel M, of the lever J, the link or bar K, connected with lever J, the pawl pivoted to bar K and arranged to engage the wheel M, the spring for holding such pawl normally out of such engagement, and the cord or connection by which the pawl may be drawn into engagement with the wheel M, substantially as and for the purpose specified.

6. In a spring-motor, the combination, with the framing and the spring-arm B, secured at one end to such framing, of the auxiliary spring-arm secured at one end rigidly to the framing, provided at its free end with an anti-friction roller, and arranged at such end to engage and bear against the spring-arm B at about the middle thereof, substantially as set forth.

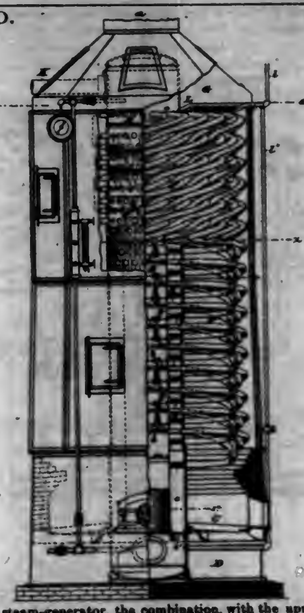
7. The combination, in a spring-motor, of the framing, the power-shaft, the guide-pulleys F and G, a spring bar or bars secured at one end rigidly to the framing, and a connecting cord or cords extended between the power-shaft and the free end of the spring or springs, substantially as set forth.

407,940. STEAM-GENERATOR. THOMAS F. MORRIN, Jersey City, N. J. Filed Aug. 1, 1888. Serial No. 281,677. (No model.)

Claim.—1. A steam-generator having an upright cylindrical generator, provided with tiers of double-branched radial obliquely-arranged generating-tubes, both branches of which enter the said generator, the upper ends extending farther into the interior of said cylinder than the lower ends, and said tubes being arranged about the whole periphery of the cylinder, whereby an upward current is established at the axis of the latter, as set forth.

2. In a steam-generator, the combination, with the upright generator-cylinder and the lesser inner cylinder E, closed at its bottom, of the double-branched generating-tubes arranged below the water-level, the lower branches of which enter the generator-cylinder, and the upper branches of which connect with the said inner cylinder, substantially as described and shown, and for the purposes set forth.

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3. In a steam-generator, the combination, with the upright generator-cylinder and the double-branched generating-tubes, of the inner cylinder E, constructed of sections provided with angle-pieces, as *b*, at their ends, whereby said cylinder may be conveniently built up within the generator-cylinder.

4. In a steam-generator, the combination, with the generator-cylinder provided with diaphragms or partitions arranged above the water-level, of the double-branched radial steam drying and superheating tubes arranged about the entire periphery of the cylinder, the lower ends of the tubes tapping said cylinder below one of said partitions and the upper ends tapping it above the same, as set forth.

5. The combination, with the upright generator-cylinder and the radial tubes connecting therewith, of the feed-water-supply pipe arranged in the form of a flat coil about the upper part of said cylinder above said radial tubes and communicating at one end with said cylinder, substantially as set forth, whereby it forms a baffle and is exposed to the heat of the ascending gases.

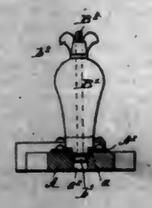
407,941. SAW FOR PLUMBERS' USE. ROBERT MCALPINE and CHARLES MCALPINE, Trenton, N. J. Filed Apr. 29, 1889. Serial No. 308,935. (No model.)

Claim.—1. The combination, in a saw, of a stock or frame and the reciprocating saw-blade held to said stock and arranged to be projected by its free end beyond the end of the same, substantially as described.

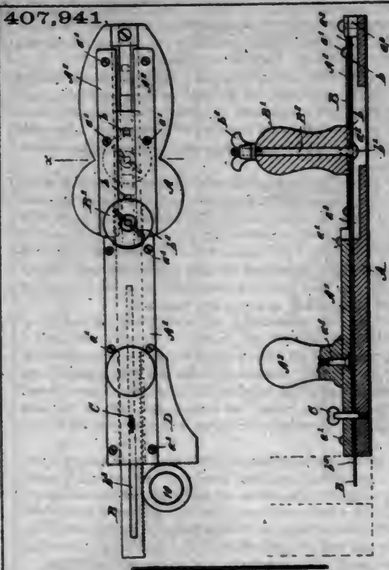
2. The combination, with the stock or frame, of the reciprocating saw-blade held thereto and an adjustable stop for regulating the extent of movement of the blade, substantially as described.

3. The combination, with the stock or frame provided with a handle, of a reciprocating blade held thereto and also provided with a handle, substantially as described.

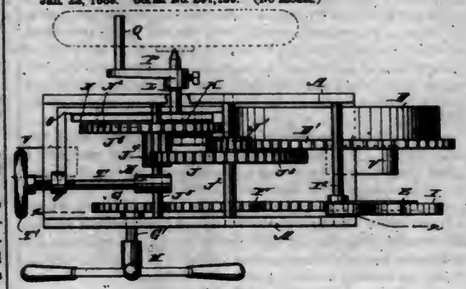
4. The combination, with the stock formed with a vertical slot, of a reciprocating saw-blade having a series of apertures therein, and a detachable handle formed with a vertical aperture, and a spindle fitting the aperture of the handle for securing the latter to the blade at any of the apertures therein, the vertical slot of the stock enabling the spindle to be withdrawn from the said handle to change its position, substantially as described.

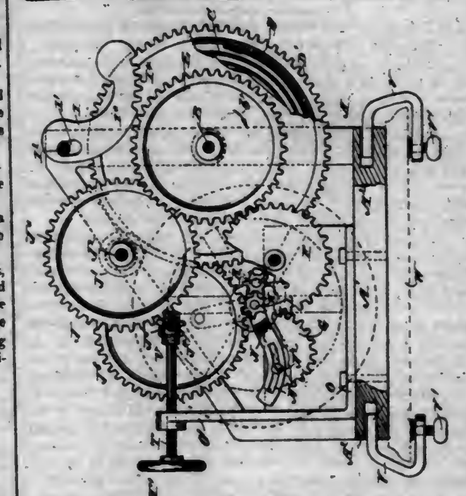


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407,942. MOTOR. EVANDER B. NEWCOMB, Parsons, Kans. Filed Jan. 22, 1889. Serial No. 297,139. (No model.)





Claim.—1. In a motor, the combination, with a spring-shaft and a gear-wheel secured thereon, of a segmental pawl held in contact at its periphery with the teeth of the said gear-wheel, said periphery being partly smooth and partly provided with gear-teeth adapted

to mesh into gear-teeth of the said gear-wheel, said pawl being provided with a slot through which passes the pin forming the fulcrum for the pawl, substantially as shown and described.

2. In a motor, the combination, with a spring-barrel and a coiled spring, of a shaft connected with the said spring, a gear-wheel held on the said shaft, and a segmental pawl having its contacting lower edge partly smooth and partly provided with gear-teeth adapted to mesh into the gear-teeth of the said gear-wheel, substantially as shown and described.

3. In a motor, the combination, with a spring-barrel and a coiled spring, of a shaft connected with the said spring, a gear-wheel held on the said shaft, a segmental pawl having its contacting lower edge partly smooth and partly provided with gear-teeth adapted to mesh into the gear-teeth of the said gear-wheel, said pawl being provided with a slot, and a fixed pin passing through the said slot and forming the fulcrum for the pawl, said slot permitting an upward motion of the said pawl, substantially as shown and described.

4. In a motor, the combination, with a shaft, a spring-barrel provided with a gear-wheel and held loosely on the said shaft, and a coiled spring secured by its ends to the said shaft and the said barrel, of a train of gear-wheels connected with the said barrel gear-wheel, a pinion engaging one of the wheels of the said train of gear-wheels, a shaft carrying the said pinion, and a crank-arm held on the said shaft and engaging the wheel to be driven, substantially as shown and described.

5. In a motor, the combination, with a shaft, a spring-barrel provided with a gear-wheel and held loosely on the said shaft, and a coiled spring secured by its ends to the said shaft and the said barrel, of a train of gear-wheels connected with the said barrel gear-wheel, an adjustably-pivoted frame carrying a pinion engaging one of the wheels of the said train of gear-wheels, and a second pinion meshing into the first-named pinion, substantially as shown and described.

6. In a motor, the combination, with a shaft, a spring-barrel provided with a gear-wheel and held loosely on the said shaft, and a coiled spring secured by its ends to the said shaft and the said barrel, of a train of gear-wheels connected with the said barrel gear-wheel, an adjustable frame carrying a pinion engaging one of the wheels of the said train of gear-wheels, a second pinion meshing into the first-named pinion, and a shaft interchangeable with the said pinions and provided with a crank at one end, substantially as shown and described.

7. In a motor, the combination, with a shaft, a spring-barrel provided with a gear-wheel and held loosely on the said shaft, and a coiled spring secured by its ends to the said shaft and the said barrel, of a train of gear-wheels connected with the said barrel gear-wheel, a pinion engaging one of the wheels of the said train of gear-wheels, a second pinion meshing into the first-named pinion, and an adjustable frame carrying the said shafts and serving to raise and lower the first-named pinion, at the same time holding it in mesh with its gear-wheel, substantially as shown and described.

407,948. CAN-FILLING MACHINE. FRANCIS M. NICHOLS, Chillicothe, Ohio. Filed May 10, 1888. Serial No. 273,435. (No model.)

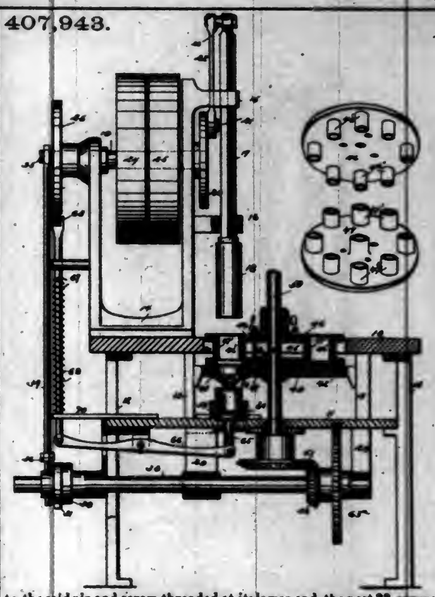
Claim.—1. In a can-filling machine, a measure-carrier consisting of the upper and lower disks secured together, each provided with a series of tubes or cylinders open at both ends, the tubes of one disk sliding within those of the other, substantially as set forth.

2. In a can-filling machine, the measure-carrier consisting of the upper and lower disks, their telescoping tubes or cylinders open at both ends, and the screws or bolts turning at their lower ends in the lower disk and passing at their threaded upper ends through screw-threaded apertures in the upper disk, and the binding-nuts on the upper ends of said bolts or screws, substantially as set forth.

3. A can-filling machine comprising the frame, the rotary horizontal measure-carrier, the vertical shaft 50, the horizontal main shaft 30, geared to shaft 50, the vertically-reciprocating plunger 18, operated by the upper shaft 19, having an eccentric 20, connected with the plunger, a cam-disk 26, also on said shaft 19, a rod 34, connected at its upper end to said cam-disk, a pawl-and-ratchet mechanism connecting the lower end of said rod with the shaft 30, the trough 53, the frame 44, the shaft 61 at right angles to the trough and geared to the shaft 30, the carriage 54 in the outer end of the trough, an eccentric and rod operating the carriage from the shaft 61, the vertically-rocking lever 66, the table 64 at the inner end thereof in the bottom of the trough under the funnel, the vertical rod 67, pivoted at its lower end to the outer end of lever 66, and a spring throwing the rod upward against the periphery of the cam-disk 26, all combined and operating substantially as and for the purpose set forth.

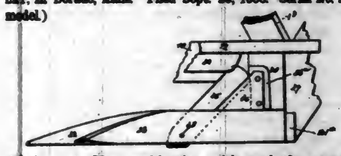
4. In a can-filling machine constructed substantially as set forth, the combination, with the shaft 50, measure-carrier 45, shaft 30, and connecting-gear, of the ratchet 31, fast on shaft 30, slotted arm 32, loose on said shaft and provided with a spring-pawl, the cam-disk 26, having pin 35, and the adjustable rod 34, connected at its upper end

407,943.



to the said pin and screw-threaded at its lower end, the post 33, secured in the slot of the arm 32, and having a transverse aperture through which the lower end of the rod 34 passes, and the nuts 36 37 on the screw-threaded end of the rod above and below the post, substantially as shown and described.

407,944. CORN OR SORGHUM HARVESTER. JOSEPH J. SIDELEY, El Dorado, Kans. Filed Sept. 29, 1888. Serial No. 286,724. (No model.)



Claim.—1. The combination, with a platform and vertically-aligning guide-fingers secured thereto at one side, the upper finger being laterally adjustable, of a knife detachably held between the lower finger and platform, substantially as shown and described.

2. The combination, with a platform, vertically-aligning guide-fingers secured thereto at one side, the upper finger whereof is adjustable, of a detachable knife passed diagonally through the lower finger, and a pin passing through the finger and knife, substantially as shown and described.

3. The combination, with a platform, vertically-aligning guide-fingers secured thereto at one side, and a detachable knife diagonally secured to the lower finger, and extending inward to the platform, of a bed inclined downward toward the rear and side, and supported upon the platform provided with a longitudinal opening, and a notched stacking-bar sliding in the bed-opening, substantially as shown and described.

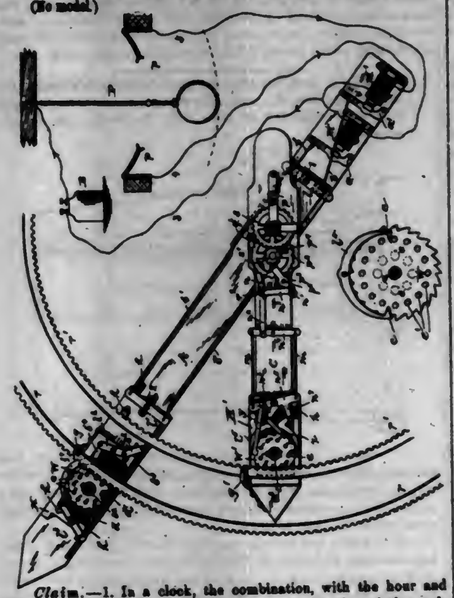
4. The combination, with a platform, vertically-aligning guide-fingers secured thereto at one side, and a detachable knife diagonally secured to the lower finger and extending inward to the platform, of a bed inclined downward toward the rear and side, supported upon the platform, and provided with a longitudinal opening, and a notched stacking-bar sliding in the bed-opening, substantially as set forth, a latch spanning the bed-opening, a rack-wheel engaged thereby and prevented by it from rotating, a foot-lever, and a spring-actuated lever connecting the foot-lever and latch, substantially as set forth.

5. The combination, with a platform, vertically-aligning guide-fingers secured thereto at one side, and a detachable knife diagonally secured to the lower finger and extending inward to the platform, of a bed supported on the platform and provided with a longitudinal opening, a notched stacking-bar sliding in said opening, a spring-actuated latch spanning the bed-opening, a rotary rack-wheel engaging the latch, and means, substantially as shown and described, for actuating the latch, as and for the purpose specified.

6. The combination, with a bed provided with a longitudinal

opening, a latch spanning the opening, and a notched stacking-bar sliding in the said bed-opening, of a rotatable rack-wheel engaging the latch, a foot-lever, and a spring-actuated lever connecting said latch and foot-lever, substantially as shown and described.

407,945. ELECTRIC CLOCK FOR USE IN EXPOSED PLACES. ALFRED SYDER, Passaic, N. J. Filed Sept. 22, 1888. Serial No. 286,115. (No model.)



Claim.—1. In a clock, the combination, with the hour and minute hands, of propelling mechanism attached to the pointing ends of the hands, substantially as specified.

2. In an electric-clock movement, the combination, with the clock hands and dial, of electrically-operated pawl-and-ratchet mechanism carried near the outer ends of the hands and tracks attached to the dial and adapted to be engaged by the hand-propelling mechanism, substantially as specified.

3. In an electric clock, the combination, with the hand A, of the magnets M M', attached to the hand A, the armature-levers *a a'*, the levers *l l'*, the levers l^2 l^2, the pawls *d d'*, the ratchet-wheel W, the studs *e*, carried by the ratchet-wheel, and the toothed circular rack *r*, attached to the pawl and adapted to be engaged by the studs *e*, substantially as specified.

4. In an electric clock, the combination, with the hand A, of the magnets M M', attached to the hand A, the armature-levers *a a'*, the levers *l l'*, the levers l^2 l^2, the pawls *d d'*, the ratchet-wheel W, the studs *e*, carried by the ratchet-wheel, the detent l^2, and the toothed circular rack *r*, attached to the dial and adapted to be engaged by the studs *e*, substantially as specified.

5. The combination, with the minute-hand A, provided with electro-mechanical propelling mechanism, of the spur-wheel p', carried by the hand A, the hand C, the pinion p^2, spur-wheel p^3, and pinion p^4, carried by the hand C, the crank *n'*, attached to the pinion p^3, the levers n^2 n^3, the toggle formed of the bars *n n*^{3}, the connecting-rod n^4, the pawls *x y*, pivotally attached to the lever n^3, the ratchet-wheel W', the studs *e'*, carried by the said ratchet-wheel, and the rods *m*, substantially as specified.

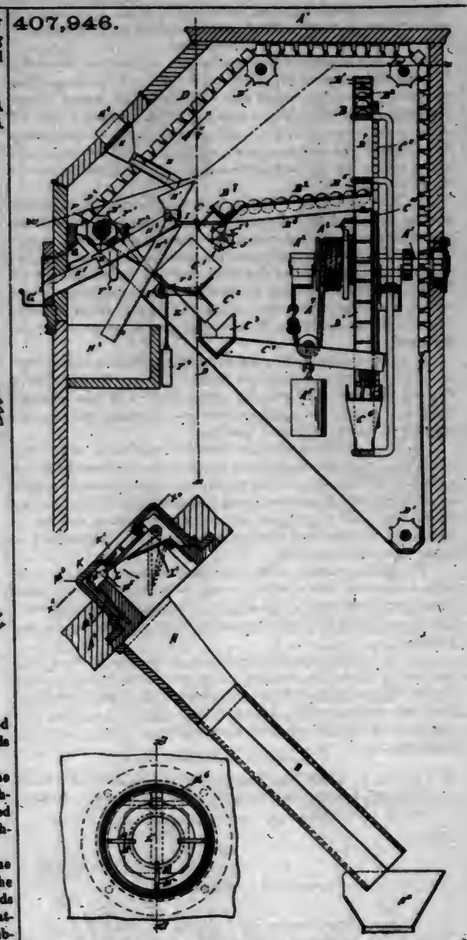
6. The combination, with a pair of clock-hands propelled electrically from their extremities, of a time electric-circuit maker and breaker, substantially as specified.

7. The combination, with the circular racks *r r'* and hands A C, of the rollers *g g'*, substantially as specified.

8. The combination, with a pair of clock-hands, of electro-magnetic driving mechanism carried by one of the hands and mechanism for communicating motion from the electrically-operated hand to propelling mechanism at the extremity of the other hand, substantially as specified.

407,946. AUTOMATIC SELLING-MACHINE. JOHN W. VARNEY, Jersey City, N. J. Filed July 13, 1888. Serial No. 279,205. (No model.)

Claim.—1. In an automatic selling-machine, the combination, with a ball-elevator and a motor for operating the same, of one or more independent box-link chains for receiving the articles to be delivered by the machine, motors for moving said box-link chains, and retaining devices for the said motors of the box-link chains, which retaining devices are to be operated by the balls raised by the ball-elevator, substantially as herein shown and described.



2. In an automatic selling-machine, the combination, with a ball-elevator and a motor for the same, of a box-link chain for receiving the articles to be delivered by the machine, a motor for moving said chain, a retaining device for said motor, and a coin-operated ball-retainer, substantially as herein shown and described.

3. In an automatic selling-machine, the combination, with a ball-elevator and a motor for the same, of a chute into which the balls can pass from the ball-elevator, a ball-outlet tube on said chute, a coin-operated ball-retainer, a box-link chain for receiving the articles to be delivered by the machine, a motor for said chain, and a chain-motor retainer operated by the balls released by the coin-operated ball-retainer, substantially as herein shown and described.

4. In an automatic selling-machine, the combination, with a ball-elevator and a motor for the same, of a chute into which the balls pass from the ball-elevator, an outlet-tube for the balls on said chute, a coin-operated ball-retainer at said outlet-tube, a box below said outlet-tube, a box-link chain for receiving the articles to be delivered by the machine, a motor for said chain, and a retaining-lever for said motor, the ends of said retaining-lever projecting into the box below the ball-outlet tube on the above-mentioned chute, substantially as herein shown and described.

5. In an automatic selling-machine, the combination, with a ball-elevator and a motor for the same, of a chute into which the balls can pass from the ball-elevator, a box-link chain for receiving the articles to be delivered by the machine, a motor for said chain, a retaining-lever for said motor, which lever is in the path of the dropping balls,

and a chute for conveying the dropped balls back to the ball-elevator, substantially as herein shown and described.

6. In an automatic selling-machine, the combination, with a box-link chain for receiving the articles to be delivered by the machine, of a series of sprocket-wheels over which said chain passes, a rope-drum on one sprocket-wheel, a rope and weight connected with said drum, an escapement-wheel on said sprocket-wheel, an escapement-fork engaged with said escapement-wheel, and a ball-elevator for elevating balls to operate said escapement-lever, substantially as herein shown and described.

7. In an automatic selling-machine, the combination, with a ball-elevator and a motor for the same, of a chute into which the balls can pass, a series of ball-outlet tubes on said chute, a spider-wheel at each outlet-tube, levers for locking the spider-wheels, coin-chutes into which said levers project, box-link chains for receiving the articles to be delivered, motors for operating the chains, and retaining-levers for said motors, which retaining-levers are operated by the balls as they drop from the guide-tubes of the chute, substantially as herein shown and described.

8. In an automatic selling-machine, the combination, with a chute, of an outlet-tube, a spider-wheel projecting into the outlet-tube, a disk on the same shaft with the spider-wheel with pins arranged singly or in groups, and a coin-actuated lever engaging said pins, substantially as herein shown and described.

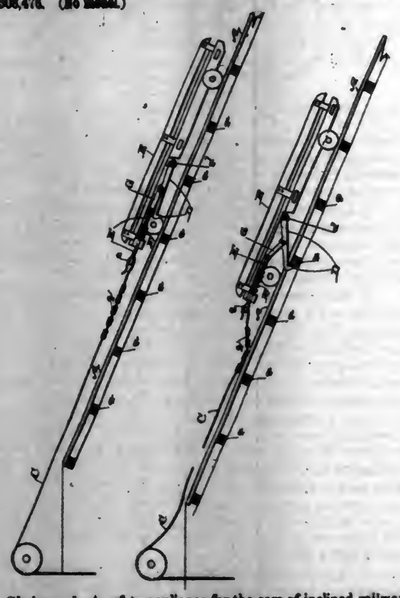
9. In an automatic selling-machine, the combination, with a ball-chute, of an outlet-tube on the same, a spider-wheel projecting through a slot of said outlet-tube, a disk secured on a sleeve mounted to slide on and turn with the shaft of the spider-wheel and having pins arranged singly and in groups in different circumferential rows on its rim, and a coin-actuated lever engaging said pins, substantially as herein shown and described.

10. In an automatic selling-machine, a mouth-piece for a coin-chute constructed with a casing having an opening in its top plate, sliding spring-actuated jaws in said top plate, and a spring-actuated gate hinged below said top plate, substantially as herein shown and described.

11. In an automatic selling-machine, a mouth-piece for a coin-chute constructed with a casing having an opening in its top plate, beveled sliding springs, actuated jaws in the edges of said plate, which jaws have bevels on their top and bottom edges, and a spring-actuated gate below said top plate, substantially as herein shown and described.

407,947. SAFETY-CATCH FOR CARS OF INCLINED RAILWAYS.

WILLIAM C. D. ROOT, Grass Valley, Cal. Filed Apr. 24, 1889. Serial No. 308,476. (No model.)

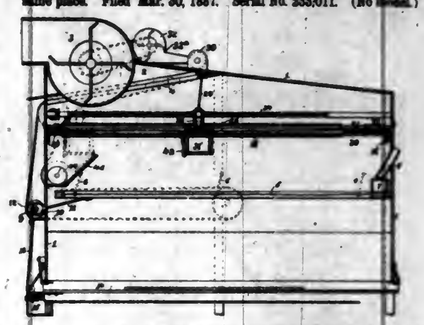


Claim.—1. A safety appliance for the cars of inclined railways, consisting of the combination of the pivoted gravity-hook D, carried by the car, the sliding draw-head bar E, carried by the car and to which the hoisting-cable is attached, and the pivoted link G, connecting the draw-head bar with the safety-hook, whereby when the cable is taut the hook is held up, and when the cable breaks the hook is dropped to its engagement, substantially as described.

2. A safety appliance for the cars of inclined railways, consisting of the combination of the pivoted gravity-hook D, carried by the car, the sliding draw-head bar E, carried by the car and to which the hoisting-cable is attached, the pivoted link G, connecting the rear head of the draw-head bar with the hook D, and the spring F about the draw-head bar for retracting it when the cable breaks and assisting the drop of the gravity-hook, substantially as described.

407,948. DUST-COLLECTOR FOR MIDDLINGS-PURIFIERS.

JOHN M. CASE, Columbus, Ohio, assignor to the Case Manufacturing Company same place. Filed Mar. 30, 1887. Serial No. 233,011. (No model.)



Claim.—1. In a dust-collector, the combination, with the dust-arresting cloth and means for dislodging the dust therefrom, of a dust-catching receptacle, means for moving it along the cloth, and rollers carried by the receptacle and bearing against the cloth, substantially as set forth.

2. In a dust-collector, the combination, with the flat dust-arresting cloth and means for dislodging the dust therefrom, of a dust-catching receptacle placed beneath and having continuous contact with the under side of the cloth, whereby the air is prevented from entering said receptacle except through the cloth, and means for moving said receptacle over the under surface of the cloth, substantially as set forth.

3. In a dust-collector, the combination, with the flat dust-arresting cloth, of a dust-catching receptacle placed beneath the cloth and having its open top side constantly in contact therewith, a cleaner in contact with the upper side of the cloth and immediately over the dust-receptacle for dislodging the dust, and means for moving the dust-receptacle and cleaner together, substantially as set forth.

4. In a dust-collector, the combination of a flat dust-arresting cloth, a dust-catching receptacle consisting of an open box having its open side in constant contact with the under side of the cloth, a pipe or tube having a minute jet-orifice in contact with the upper side of the cloth, a fan, and means for moving said tube and dust-receptacle together, substantially as set forth.

5. The combination of the flat cloth, a tube placed in contact with the upper side thereof and having a minute jet-orifice at the point of contact, a fan, suitable connections between said tube and fan, a dirt-receptacle having its open side in continuous contact with the under side of the cloth, so as to prevent the air from entering or leaving said receptacle except through the cloth, and means for moving said tube and receptacle together over the surface of the cloth, substantially as set forth.

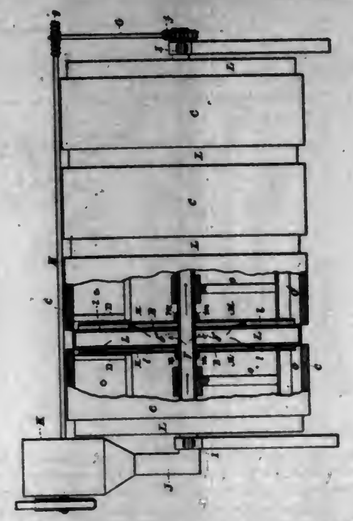
6. The combination, with the cloth, of a tube having a jet-orifice placed in proximity thereto, means for moving said tube, a fan, a flexible tube forming communication between said fan and tube, a drum upon which said tube is wound, and a spring actuating the drum in a direction to wind the tube thereon, substantially as set forth.

7. The combination, with the cloth, a blast-tube having a jet-orifice placed in proximity thereto, and means for moving said tube, of a fan, a hollow drum with which said fan communicates, a flexible tube communicating at one end with said drum and at the other with said blast-tube, and means for turning said drum in a direction to wind the tube thereon, substantially as set forth.

8. In a dust-collector, the combination of the cloth, a tube having a jet-orifice, a fan having connection therewith, a board placed transversely of the cloth and in proximity to the upper face thereof, having a central longitudinal slot for the reception of said tube and a slot at each side thereof, for the purpose set forth, a practically air-tight dust-receptacle placed in proximity to the under side of the cloth directly beneath said board, and means for moving the tube, board, and receptacle together along the cloth, substantially as set forth.

407,949. DUST-COLLECTOR.

JOHN M. CASE, Columbus, Ohio, assignor to the Case Manufacturing Company, same place. Filed June 21, 1887. Serial No. 242,080. (No model.)



Claim.—1. The combination, with the casing and dust-arresting cloth, of a shaft, an air-tube secured thereto so as to move in close proximity to the surface of the cloth and having a slit for projecting air against said cloth, a fan having communication with said air-tube, and a shield secured to the shaft inside the cloth and situated directly opposite the air-tube, substantially as and for the purpose set forth.

2. The combination, with the casing and the dust-arresting cloth, of a hollow shaft, a fan communicating with said shaft, an air-tube secured to said shaft and having communication with the interior thereof, said tube having an aperture through which air is directed against and through said cloth, and a shield secured to the shaft on the opposite side of the cloth and directly opposite the air-tube, substantially as set forth.

3. The combination, with a number of casings situated at suitable distances apart and having dust-arresting cloth arranged on their adjacent sides, of a hollow shaft passing through all of said casings, a fan communicating with said hollow shaft, a single air box or tube secured to the shaft between each two casings so as to have contact with the cloth on the adjacent sides of said casings, each box having openings in its opposite sides for directing a current of air against and through said cloth, and a shield located opposite each air-box on the insides of the casings, substantially as set forth.

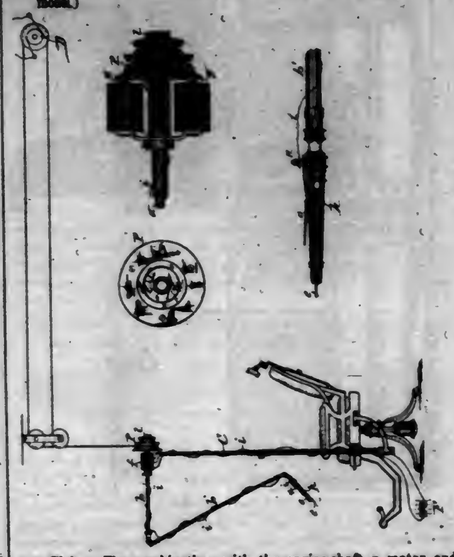
4. The combination, with a plurality of casings situated at suitable distances apart and having cloth arranged, substantially as described, for arresting the dust, of a hollow sectional shaft common to all of said casings, a fan communicating with said shaft, air boxes or tubes secured to said shaft so as to have contact with the dust-arresting cloth and having communication with the interior of said shaft, slits formed in the sides of said boxes which have contact with the cloth, shields situated inside the casings and secured to the shaft opposite the air-boxes, means for rotating said shaft, and means for disconnecting the sections of said shaft whereby the rotation of a portion of the shaft may be checked while the whole of it is available as an air-conduit, substantially as set forth.

5. The combination, with the drum C, having the discharge-aperture *c'*, and the end walls A, having openings for the egress of air, of the dust-arresting cloth secured over said openings, a shaft passing through the casing concentrically with the drum, means secured to said shaft for dislodging the dust from the cloth, and a scraper secured to said shaft for scraping the dirt to the discharge-aperture, substantially as set forth.

6. The combination, with the drum C and the dust-arresting cloth situated at the end thereof, of the shaft passing through said cloth concentrically with the drum, a cloth-cleaner secured to said shaft extending diametrically across the cloth, and a shield secured to the shaft and having contact with the cloth on opposite sides of the cleaner for preventing the egress of air through that portion of the cloth which is for the time being being operated upon, substantially as set forth.

407,950. STOP-MOTION FOR DENTAL ENGINES.

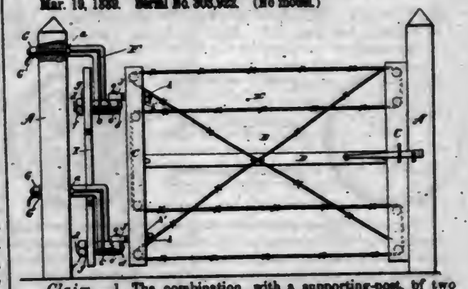
ANDREW R. COOKE, Syracuse, N. Y. Filed Apr. 8, 1889. Serial No. 306,331. (No model.)



Claim.—The combination, with the engine-shaft *a*, motor, and driving-belt, of a clutch member fixed to said shaft, a sliding pulley on the same shaft, a clutch member fixed to the side of the pulley, a spring forcing the two clutch members apart, an armature on the same side of the pulley to which the clutch member is affixed, electro-magnets facing said armature, an electric circuit, including said magnets, and a circuit maker and breaker connected to the handle of the dental instrument and normally in its open position, allowing the two clutch members to be held separated by the action of the spring, substantially as set forth.

407,951. GATE.

WILLIAM L. HAAS, Charles City, Iowa. Filed Mar. 19, 1889. Serial No. 303,922. (No model.)



Claim.—1. The combination, with a supporting-post, of two crank-arms journaled in the said post and clamped adjustably thereto, pintles secured adjustably to these arms, and a gate supported upon the pintles.

2. The combination of a post, crank-arms supported thereby and carrying eyes at their ends, pintles bolted to these eyes, the adjacent faces of the pintles and eyes being serrated to prevent turning, and a gate hung upon the said pintles.

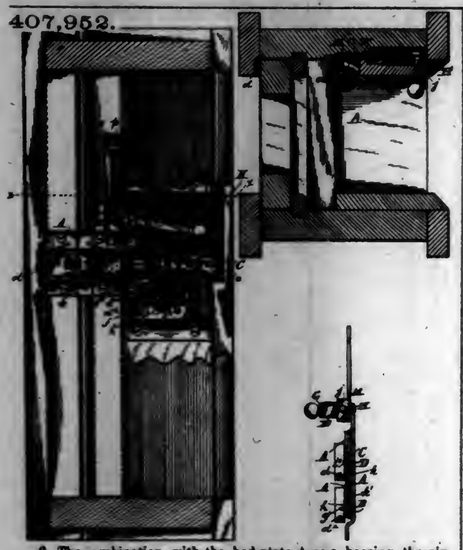
3. The combination of a post, crank-arms supported by the said post and provided with eyes *c c*, pintles, bolts for securing the pintles to the eyes *c*, spacing-sleeves on these bolts, nuts for clamping the spacing-sleeves, and a connecting-bar.

407,952. SASH-HOLDER.

SAMUEL R. HARRINGTON, North Amherst, Mass. Filed May 1, 1888. Serial No. 309,208. (No model.)

Claim.—1. The combination, with bar B, having jaw *d*, arm C, and the link connecting said bar and arm, and the bar B, provided with jaw *d'*, and upper and lower sashes of a window, of the lever D, pivoted to said bars B B', operated in the manner substantially as described, whereby the said sashes may be locked together against the parting-bead of the window, as and for the purpose specified.

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2. The combination, with the bed-plate A as a bearing, the pivoted lever D, the arm C, and clamp B, united by a compensating link, the clamp B', and pivots *i i'*, and the window-sashes, of the swivel-nut *j*, pivoted to said pivoted lever D, the crank F and G, and the screw-threaded arm H, as and for the purpose set forth.

3. The combination, with the holding device for the sashes and the square collar F, as described, of the locking device composed of the pivoted tumbler-plate, having slots at opposite ends, and the key to operate said tumbler, substantially as and for the purpose set forth.

4. The combination, with the double holding and locking device composed of clamps B *d* B' *d'*, arm C, linked to said clamp B *d* and lever D, of the bed-plate composed of parts A A', adjustably arranged with reference to each other and the window hanging-stile by slots and holding-screws, as and for the purpose set forth.

407,953. PROCESS OF ORNAMENTING GOLD SURFACES. LOUIS JAGIELKY, New York, N. Y. Filed Mar. 8, 1889. Serial No. 302,522. (No model.)



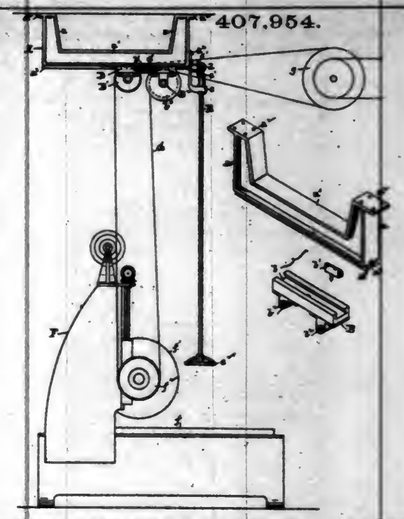
Claim.—The process herein described of ornamenting the surfaces of gold plates, which consists of the following steps successively performed: first, producing a raised design by cutting out the stock around the design; secondly, matting the cut-out ground; thirdly, gilding the entire surface; fourthly, polishing the surface of the raised parts, and, lastly, inserting precious stones into the raised parts and engraving the surface of the raised parts, substantially as set forth.

407,954. HANGER FOR PULLEYS. ELWIN R. HYDE and RICHARD C. HORNER, Springfield, Mass., assignors to the Springfield Glue and Emery Wheel Company, same place. Filed Aug. 27, 1888. Serial No. 283,923. (No model.)

Claim.—1. The compensating hanger for pulleys herein described, comprising two brackets adapted to be suspended parallel with each other from the ceiling or other suitable support, a block movably mounted upon each of said brackets, one or more pulleys located between said blocks and carried thereby, a screw-shaft mounted upon each of said brackets and engaging a threaded hub on each of said blocks, and a cross-shaft and suitable connecting-gear for revolving said shafts simultaneously, whereby said blocks can be caused to move in unison upon said brackets, substantially as and for the purpose set forth.

2. The compensating hanger for pulleys herein described, comprising two brackets adapted to be suspended parallel with each other from a suitable support, a sliding block mounted upon each of said

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brackets, one or more pulleys having their axes mounted in bearings upon said blocks, a screw-shaft mounted in such manner as to revolve without endwise progression upon each of said brackets, each of which screw-shafts operatively engages one of said blocks, at one end and is provided at its opposite end with a bevel-gear, a cross-shaft carrying at each end bevel-gears which mesh with the bevel-gears on said screw-shafts, whereby the three shafts are compelled to revolve in unison, and a manually-operated shaft and gear arranged, substantially as described, for imparting a revolving movement to one of said shafts, substantially as set forth.

3. The compensating hanger for pulleys herein described, consisting of two brackets suspended from the ceiling and parallel with each other, a block movably mounted upon each of said brackets, a pulley-shaft mounted at each end in one of said blocks, a pulley carried by said shaft, two screw-shafts having bearing in said brackets, each of which shafts operatively engages one of said blocks at one end and carries a bevel-gear at its opposite end, a cross-shaft carrying at each end bevel-gears which mesh with the gears on said screw-shafts, and a vertical shaft having at its upper end a gear which meshes with one of the gears on said screw-shafts and having at its lower end a hand-wheel, whereby it can be revolved manually, combined and operating substantially as and for the purpose described.

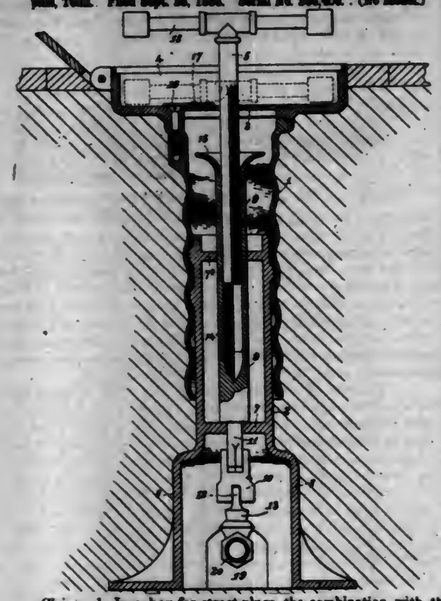
4. In a compensating hanger for pulleys, the brackets A A', having the dovetail ribs b^2, blocks B, having dovetail grooves *b*, shaft B^2, having its ends mounted in said blocks, and pulleys b^2 loosely mounted upon said shaft, combined and operating substantially as described.

5. The combination, with brackets A A', having dovetail ribs a^2 and grooves a^3, of blocks B, each having dovetail grooves *b* therein, and threaded hub *b'*, located within said groove, a pulley-shaft mounted at its ends on said blocks, and screw-shafts C C', mounted at or near one end in bearings on said brackets and engaging said hubs *b'* at their opposite ends, substantially as set forth.

6. The combination, with brackets A A', each having a dovetail rib a^2 extending along its lower edge and having groove a^3 within said rib, of blocks B, each having dovetail grooves *b* in its upper surface and having threaded hub *b'* located within said groove, a pulley-shaft carried at each end by one of said blocks, screw-shafts C C', mounted in bearings at one end of said brackets, each of said shafts entering one of said hubs *b'* at one end and having a gear *c'* at its opposite end, cross-shaft D, carrying gears *d* at its ends, which gears mesh respectively with one of the gears *c'*, and vertical shaft E, carrying at its upper end gear *d'*, which meshes with one of the gears *c'*, and having at its lower end hand-wheel e^2, arranged and operating substantially as set forth.

7. The combination, with brackets A A', of plate a^5, secured to said bracket A, said plate having the bearings *e d' e* thereon, plate a^5, secured to bracket A' and having bearings *e d'* thereon, shafts C C', mounted, respectively, in said bearings *e e*, and having gears *c'* at one end thereof, shaft D, mounted in said bearings *d' d'* and having at its ends gears *d*, meshing with said gears *c'*, and shaft E, mounted in said bearing *e* and having at its upper end gear *d'*, which meshes with the gear *c'* on said shaft C, arranged and operating substantially as and for the purpose described.

407,955. EXTENSION BOX AND KEY FOR STREET GAS OR WATER PLUGS. MICHAEL J. KALLAHER and JOHN MULROONEY, Memphis, Tenn. Filed Sept. 26, 1888. Serial No. 286,402. (No model.)



Claim.—1. In a box for street-plugs, the combination, with the lower section 2 and the plug-key 12, of a wrench adapted to engage the plug-key 12, a round handle for turning said wrench having an elongated prismatic key-socket, a flaring mouth on said handle for guiding an elongated prismatic key into said socket, and a collar in said section for restricting the vertical movement of said handle, as set forth.

2. In a box for street-plugs, the combination, with the upper and lower sections of the telescopic box and the plug-key 12, of a wrench for engaging the plug-key 12, a handle for turning said wrench journaled in the lower section and having an elongated prismatic key-socket, the perforated diaphragm of the upper section, a removable prismatic key, and a flaring mouth on said handle for guiding said key to said socket, as set forth.

3. In a box for street-plugs, the combination, with the upper and lower sections 1 2 and the plug-key 12, of the wrench, the upper and lower internal flanges or diaphragms in said lower section, the round handle projecting through the upper diaphragm and resting upon the lower diaphragm, the attenuated journal projecting through the lower flange and being secured to the wrench, said handle having an elongated prismatic key-socket with a flaring mouth, and a prismatic key for fitting in said socket, as set forth.

407,956. GRAIN-SEPARATOR. WILLIAM P. KERR, Mason City, Iowa. Filed Nov. 3, 1888. Serial No. 289,890. (No model.)

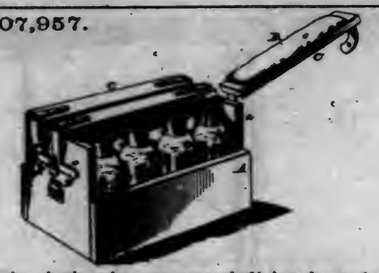


Claim.—The combination of the casing D, crank-shafts B B, the rising, falling, and reciprocating beams A A, tables C C, having forwardly-inclined slats on top and the two sets *c c'* of slats, said slats in each table being arranged at an obtuse internal angle, and uprights rigidly supporting said tables from the beams A, substantially as described.

407,957. SHIPPING-CASE. WILLIAM P. KOOKOGEY, Brooklyn, N. Y., assignor to the Kookogey Electric Company. Filed June 8, 1887. Serial No. 240,845. (No model.)

Claim.—In a shipping-case, the combination of a box or body A, divided by partitions B into cells or compartments, each adapted to

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receive a bottle, and a cover composed of independent sections, each section extending over one row of compartments and provided on its under face with a cushion having an impervious facing or covering to rest upon and close the mouths of the bottles in the row of compartments beneath.

407,958. LOOM-SHUTTLE. PLINY T. LITCHFIELD, Southbridge, Mass. Filed Apr. 2, 1889. Serial No. 305,690. (No model.)



Claim.—The combination, with a shuttle-spindle having a shoulder or stop to support one end of the cop-tube, of a cop-tube-holding finger to clamp the said cop-tube between itself and the shuttle-spindle, substantially as described.

407,959. CARRIAGE-BOW. GEORGE V. MONTGOMERY, Amsterdam, N. Y., assignor of one-half to Appleton S. Bridgman. Filed Mar. 1, 1889. Serial No. 301,721. (No model.)



Claim.—1. As an article of manufacture, a carriage-bow composed wholly of compressed paper-pulp, substantially as described.

2. A carriage-bow composed of an outer surface of paper-pulp, having its ends and exposed portions compressed to a high degree to receive a polish, and its upper unexposed surface of a less degree of compactness, for the purpose described.

407,960. KNITTING-MACHINE. EDWARD MURRY, Detroit, Mich. Filed Dec. 28, 1886. Serial No. 222,835. (No model.)

Claim.—1. The combination of a vibratory yarn-guide, a looper attachment comprising a stationary cam-grooved plate and a rotatable disk provided with a series of radiating points or fingers having heels that engage the cam-groove, and a central stem on which said guide and looper attachment are located, substantially as described.

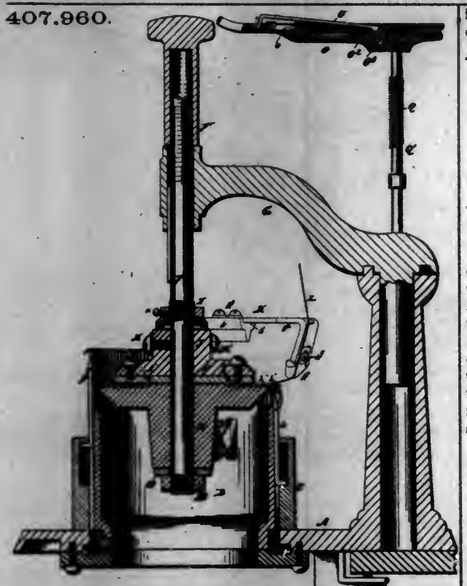
2. The combination, with the central stem F and a vibratory yarn-guide swiveled about said stem, of a looper attachment supported on said stem and comprising a stationary cam-plate provided with a cam-groove, a rotatable radially-grooved disk, and a series of radiating points or fingers having heels that engage the cam-groove, substantially as described.

3. The combination, with a centrally-supported looper attachment comprising a stationary cam-grooved plate, a rotatable disk, and a series of radiating points or fingers carried by said disk and having heels that engage the cam-groove, of a yarn-guide provided with a guide-point, means for adjusting said point in a vertical direction, and means for adjusting it in a direction toward and from the center of motion of the looper attachment, substantially as described.

4. The combination, with a looper attachment comprising a stationary cam-grooved plate and a rotatable disk having a series of radiating points or fingers engaged with the cam-groove, a vibratory yarn-guide, and the central stem on which said guide and looper attachment are located, of a collar surrounding said stem and provided with stops to limit the vibration of said guide, substantially as described.

5. The combination, with a looper attachment comprising a sta-

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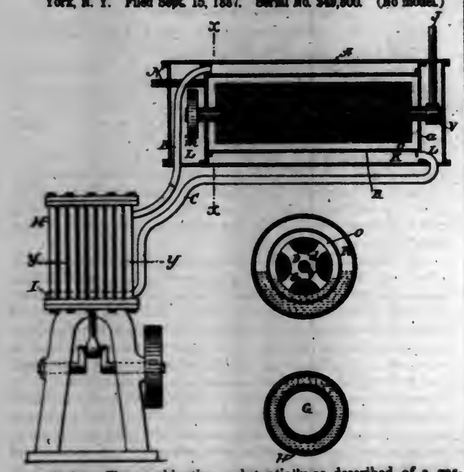
tionary cam-grooved plate, a rotatable disk, and a series of radiating points or fingers engaged with the cam-groove, of a vibratory yarn-guide and a take-up device, substantially as described.

6. The combination, with the central stem F and a vibratory yarn-guide located on said stem, of a binding device to hold said guide in any required position, substantially as described.

7. The combination, with the stem F, of a vibratory guide engaged thereon, said guide comprising an arm *k*, an arm k^3, adjustably mounted on the arm *k* by set-screws, and the point k^4, adjustably engaged upon the arm k^3 by a set-screw, substantially as described.

8 The combination, with the needles and a stationary yarn-guide E for feeding yarn to the needles, of a centrally-supported looper attachment comprising a stationary cam-grooved plate, a rotatable disk, and a series of radiating points or fingers carried by said disk and having heels that engage the cam-groove, and an independent vibratory yarn-guide K for feeding a separate looping-yarn to the needles, substantially as described.

407,961. COMBINED GAS-ENGINE AND CARBURETOR. LYMAN F. MCNETT, Yonkers, assignor to the American Motor Company, New York, N. Y. Filed Sept. 15, 1887. Serial No. 249,800. (No model.)



Claim.—The combination, substantially as described, of a gas-generator, a jacket therefor, a gas-engine having a cooling-jacket, and circulating-pipes, as described, for circulating a heating and cooling fluid through the jacket of the engine and the jacket of the generator.

407,962. MANUFACTURE OF TYPE-PLATES. CHARLES E. PERRY, Oneida, assignor of one-half to Thomas R. Proctor, Utica, N. Y. Filed Mar. 25, 1888. Serial No. 304,671. (No model.)



Claim.—1. The method of forming a pattern for a type-plate, consisting in preparing a block of the same diameter and contour as that of the type-plate to be made, then drilling through said block holes in the same relative position as the types are to be disposed on the type-plate, then supporting the said block over a suitable bed with a space between them equal in depth to the projection of letters or characters from the body of printers' types, then inserting printers' types in the holes in the block and causing the faces of said types to rest on the aforesaid bed, and finally, while holding the types in their requisite positions in the aforesaid block, fastening the types therein, substantially as set forth.

2. The method of forming a pattern for a concavo-convex spherical type-plate, consisting in preparing a concavo-convex block of the same diameter and contour on its convex side as that of the type-plate to be made, and of a thickness approximately equal to the length of printers' types, then drilling through the block holes in lines radiating from the center of the sphere of which the block is a segment, then supporting the said block over a bed with a space between them equal in depth to the projection of the letters or characters from the body of printers' types, then inserting printers' types in the holes in the block and causing the faces of said types to rest upon the aforesaid bed, and then, while holding the types in their requisite positions in the block, fastening the types therein, substantially as described.

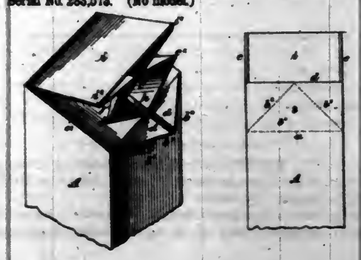
3. The method of constructing type-plates, consisting in first forming a pattern by preparing a block of the same diameter and contour as that of the type-plate to be made, then drilling through said block holes in the same relative positions as the types are to be disposed on the type-plate, then supporting the said block over a suitable bed with a space between them equal in depth to the projection of letters or characters from the body of printers' types, then inserting printers' types in the holes in the block and causing the faces of said types to rest on the aforesaid bed, then, while holding the types in their requisite positions in the said block, soldering the types therein, then impressing the face of said pattern in a mold of wax or analogous suitable material, and then removing the pattern from the mold, applying to the face of the mold a coating of plumbago or black-lead, and then depositing the said mold in an electric bath and depositing thereon the metal by electrolysis, substantially as set forth.

407,963. PRODUCTION OF INCANDESCENT MANTLES. FREDERICK L. RAWSON and WILLIAM S. RAWSON, London, England. Filed Aug. 21, 1888. Serial No. 283,360. (No model.) Patented in England Sept. 1, 1886, No. 11,161; in Germany July 24, 1887, No. 43,013, and in France Nov. 2, 1887, No. 186,722.

Claim.—1. The herein-described improvement in strengthening incandescent mantles, consisting in coating the completed mantle with paraffine or other suitable material, substantially as set forth.

2. In the manufacture of incandescent mantles, the method of forming said mantles, which consists of first stretching the impregnated knitted mantle upon a mandrel, then burning the mantle, then shaping the mantle against the mandrel by means of a blow-pipe flame, and finally coating the mantle with paraffine or other similar material, substantially as set forth.

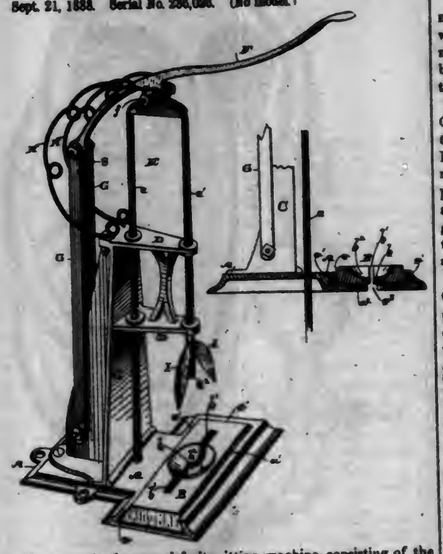
407,964. PAPER BOX. HUGO ROESNER, Habelschwert, Germany, assignor to August Schilling, San Francisco, Cal. Filed Aug. 23, 1888. Serial No. 283,573. (No model.)



Claim.—1. A box composed of the front *b*, having the crease-line *a*, and sides *c*, having crease-line *a*, and diagonal crease-lines *f* extending from opposite corners thereof, horizontal lines *h* and vertical lines *g*, both of which lines *g* and *h* meet in the line *f*, and the back *i*, having crease-line *a*, the sides *c* folding inward toward each other, the lines *g h* on said sides coming near each other, the back *i* folding upon the sides *c*, substantially as described.

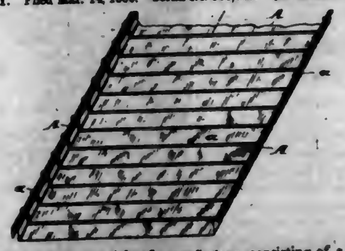
2. A box composed of the front *b*, having crease-lines *a* b^4, forming a triangular field or flap b^4, the sides *c*, having crease-line *a* and diagonal crease-lines *f*, extending from opposite corners thereof, horizontal lines *h* and vertical lines *g*, both of which lines *g* and *h* meet in the line *f*, and the back *i*, having crease-line *a*, the sides *c* folding inward toward each other, the lines *g h* coming near each other, the back *i* folding upon the sides *c*, and the flap b^4 folding over upon the back *i*, substantially as described.

407,965. FRUIT-PITTING MACHINE. JOHN ROSASCO, Healdsburg, assignor of one-half to Joseph Cuneo, San Francisco, Cal. Filed Sept. 21, 1888. Serial No. 286,026. (No model.)



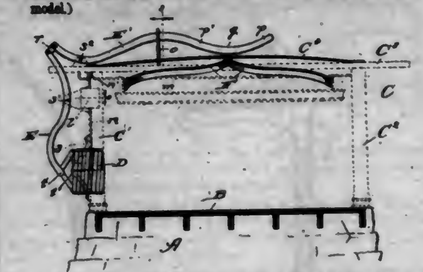
Claim.—An improved fruit-pitting machine consisting of the combination of a bed-plate having an apertured and slitted socket-seat with beveled surrounding flanges and a fixed standard with guide-arms, a cushion having beveled sides fitted in the socket-seat and having an aperture and side slits and a recess-seat for the fruit, a vertically-movable beat rod fitted in the guide-arms of the standard and having one end slitted and provided with a punch, and a beat winged knife fitted in the slitted end of said rod and having its wings projecting below the punch, a lever pivotally connected with the top of the beat rod, links pivoted at their lower ends to the standard and at their upper ends to the rear end of the lever, and springs secured to the standard and to the top of the beat rod, substantially as described.

407,966. METALLIC ROOFING-SHEET. LONGLEY L. SAGENDORPH, Cincinnati, Ohio, assignor of one-half to Charles N. Harder, Philmont, N. Y. Filed Mar. 14, 1888. Serial No. 306,325. (No model.)



Claim.—A new article of manufacture, consisting of a sheet of roofing provided with a series of continuous crosswise depressions and corresponding ribs *a* and side hooked flanges A, said ribs extending entirely across said sheet and flanges, substantially as set forth.

407,967. SAFETY-GATE FOR SWING-BRIDGES. NICHOLAS SCHLESSER, Chicago, Ill. Filed Apr. 23, 1889. Serial No. 308,238. (No model.)



Claim.—1. In combination with a swing-bridge and its abutment, a safety-gate comprising horizontally-disposed lazy-tongs, a weight connected with the lazy-tongs and tending to maintain it normally distended across the approach to the bridge, and an arm on the bridge operating with the closing thereof to lift the weight and fold the lazy-tongs, substantially as described.

2. In combination with a swing-bridge and its abutment, a frame C upon the abutment, a vertically-oscillating lever E', supported above the frame normally at the lowest limit of its oscillation, a safety-gate D upon the frame comprising horizontally-disposed lazy-tongs connected with the lever E' to be maintained distended by the normal position of the latter and become folded by the rise thereof, and an arm on the swing-bridge operated by the closing of the latter to engage and raise the lever E' to open the gate, and by the opening of the bridge to release the lever to close the gate, substantially as described.

3. In combination with a swing-bridge and its abutment, a frame C upon the abutment, vertically-oscillating lever E', pivotally supported above the frame, with its long arm normally at the lowest limit of its oscillation, a safety-gate D upon the frame comprising horizontally-disposed lazy-tongs, a lever E, pivoted to the frame and loosely connected toward opposite ends, respectively, to the short arm of the lever E' and gate D, whereby, when the long arm of the lever E' is down, the lazy-tongs are distended and become folded with the rise of the said arm, and an arm on the swing-bridge operated by the closing of the latter to engage and raise the lever E' to open the gate, and by the opening of the bridge to release the lever to close the gate, substantially as described.

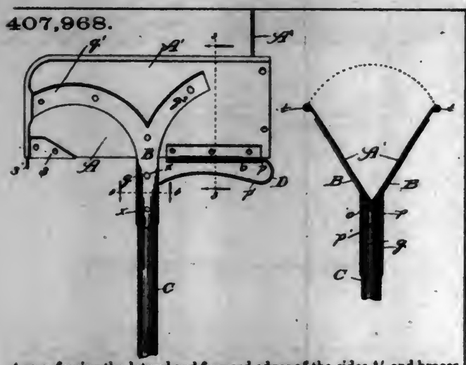
4. In combination with a swing-bridge and its abutment, a frame C upon the abutment, vertically-oscillating lever E', pivotally supported above the frame, having a long arm bent to afford a depressed part *q*, and elevated portions *p p'*, the said arm being normally at the lowest limit of its oscillation, a safety-gate D upon the frame, comprising horizontally-disposed lazy-tongs, a lever E, pivoted to the frame and loosely connected toward opposite ends, respectively, with the short arm of the lever E' and gate D, whereby, when the long arm of the lever E' is down, the lazy-tongs are distended and become folded with the rise of the said arm, a track C^6 upon the frame, and an arm F, pivotally supported on the swing-bridge and operated by the closing of the latter to slide toward its free end upon the track C^6 and engage and raise the long arm of the lever E' to open the gate, and by the opening of the bridge to release the lever to close the gate, substantially as described.

5. In combination with a swing-bridge and its abutment, a frame C upon the abutment, vertically-oscillating lever E', pivotally supported above the frame, having a long arm bent to afford a depressed part *q*, and upwardly-inclining portions *p p'*, the said arm being normally at the lowest limit of its oscillation, a safety-gate D upon the frame comprising horizontally-disposed lazy-tongs, a track *m* above the gate, a pulley *n'* upon the track connected with the lazy-tongs by a connecting medium *n*, carrying a lantern *l*, a housing *l'* for the lantern, a lever E, pivoted to the frame and loosely connected toward opposite ends, respectively, with the short arm of the lever E' and gate D, whereby, when the long arm of the lever E' is down, the lazy-tongs are distended and become folded with the rise of the said arm, a track C^6 upon the frame, and an arm F, pivotally supported on the swing-bridge and operated by the closing of the latter to slide toward its free end upon the track C^6 and engage and raise the long arm of the lever E' to open the gate, and by the opening of the bridge to release the lever to close the gate, substantially as described.

407,968. HOD. LOUIS L. SCHUBERT and FREDERICK MAIERHOFER, Chicago, Ill. Filed Apr. 23, 1889. Serial No. 308,246. (No model.)

Claim.—1. In a hod, the combination of the sheet-metal body portion A, formed with sides A', having flanged edges, a continuous spring

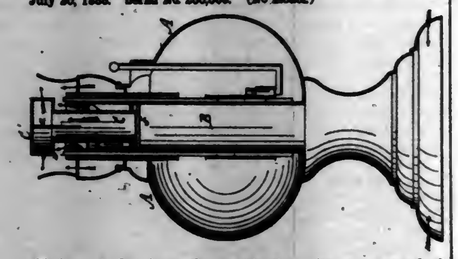
407,968.



f, re-enforcing the lateral and forward edges of the sides A', and braces B, terminating in a socket for the handle C and provided with curved arms *g'*, extending to the forward ends of the sides about midway between the upper and lower edges of the latter, and maintained against the spring *f* by the flanged edges of the sides, and arms g^2, extending toward the rear edges of the sides, substantially as described.

2. In a hod, the combination, with the body portion and handle, of a sheath *o*, extending longitudinally of the lower edge of the body portion toward the rear end thereof, and an adjustable and removable spring-rest D, having an arm *p* extending into the sheath at its rear end and a curved free arm *p'* extending below the sheath, with its free end toward the handle, substantially as and for the purpose set forth.

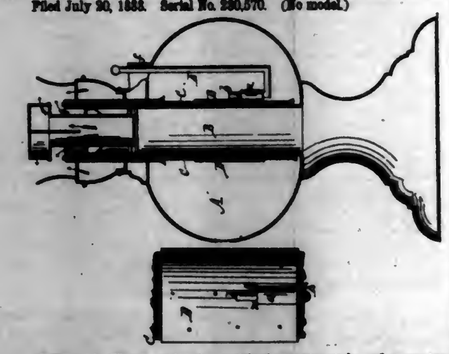
407,969. LAMP. HENRY R. SHAFFER, Rochester, N. Y. Filed July 30, 1888. Serial No. 280,569. (No model.)



Claim.—1. In a lamp, the combination, with the center-draft tube, of the attachment consisting of the tube C, the hollow perforated head C', projecting over the wick, and the divider *a*, extending up centrally through the interior of the head, as and for the purpose specified.

2. In a lamp, the combination, with the center-draft tube, of the attachment consisting of the tube C, the hollow head C', made separate from the tube and fitted therein, and the divider *a*, extending up centrally through the interior of the head, as and for the purpose specified

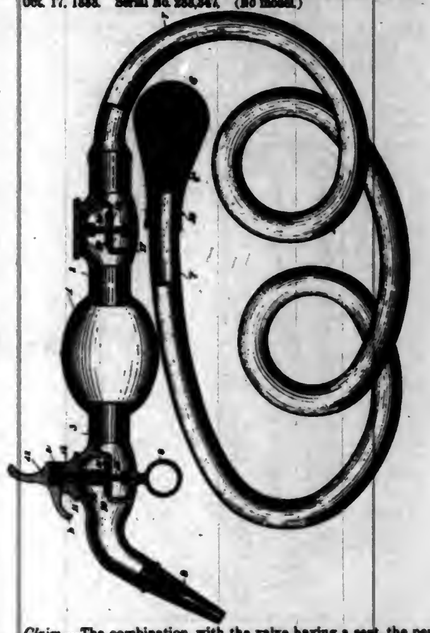
407,970. WICK-RAISER. HENRY R. SHAFFER, Rochester, N. Y. Filed July 30, 1888. Serial No. 280,570. (No model.)



Claim.—1. The combination, with the center tube of a center-draft lamp, of a handle located permanently inside the lamp and provided with an upwardly-turned stem at its lower end, a wick-holder sliding on the center tube and provided with an open socket on one side, said socket engaging with the stem when the wick-holder is forced down, and a suitable fastening device securing the socket to the stem, the whole so arranged, as herein described, that the wick-holder and wick can be removed from the lamp without removing the handle, as specified.

2. In a center-draft lamp, the combination of the center draft-tube B, the tubular holder D, provided with the socket *a*, the handle E, provided with the stem *b*, that engages with the socket, and the spring-pin *c*, passing through an elongated hole in the stem above the socket, securing the parts and making a tight connection, as shown and described.

407,971. SIPHON. MICHAEL STERNDORFER, Louisville, Ky. Filed Oct. 17, 1888. Serial No. 288,347. (No model.)



Claim.—The combination, with the valve having a seat, the perforated box 12, having a flat top and a spring for closing said valve, of the thumb-lever having a flat face resting upon said box 12 and a flat face *a*, projecting at an angle thereto, the valve-stem projecting through said box and pivoted to said lever at unequal distances from its said flat faces, and said lever being provided with two arms, whereby either of said faces may be thrown into contact with the top of said box, as set forth.

407,972. TOOL HOLDER AND REST FOR LATHES. LEWIS S. SPRINGER, Baltimore, Md. Filed May 31, 1889. Serial No. 312,667. (No model.)

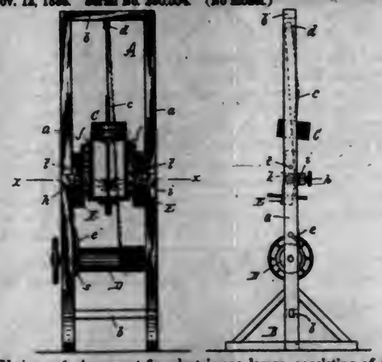


Claim.—1. The combination of the holder-block B, having a longitudinal channel and provided at one end with a tapped plate *l*, a tool occupying the channel and having at one end a yoke, and an adjusting-screw passed through the said tapped plate on the holder-block and engaging with the tool-yoke.

2. An attachment for lathes having, in combination, the tool-holder block provided with a channel for a tool and a back-rest attached to said holder-block and movable with it, so as to follow with the tool, as set forth.

3. An attachment for lathes having, in combination, the tool-holder block provided with a channel for a tool, a back-rest arm attached to the said holder-block, and bearings for the work to be turned adjustably attached to the said arm.

407,973. ELECTRIC-LAMP SUPPORT. ALBERT T. THOMPSON, Boston, Mass., assignor to Albert T. Thompson & Co., same place. Filed Nov. 12, 1888. Serial No. 290,504. (No model.)

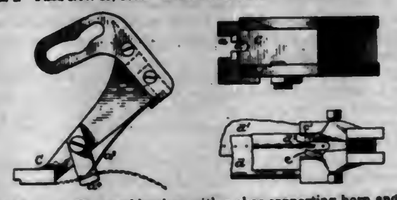


Claim.—1. A support for electric-arc lamps, consisting of two vertical standards, twin rocking guides pivoted to said standards, and a lamp-frame having a sliding connection with said guides and vertically adjustable therein, whereby the lamp and its pencil-carbons can be maintained in a vertical plane or inclined therefrom, substantially as set forth.

2. The combination of a supporting-frame, and an electric lamp and lamp-frame pendent therein, with a drum, pawl, ratchet, and chain for raising and lowering said lamp and lamp-frame to any required position, and rocking guides pivoted to said frame and arranged for sliding connection with said lamp-frame, whereby said lamp and its pencil-carbons can be maintained in an inclined or vertical position, substantially as set forth.

3. In a support for electric lamps, the supporting-frame A, in combination with a lamp and lamp-frame hung therein, guides pivoted to said supporting-frame and having sliding connection with said lamp-frame, the drum, pawl, ratchet, and chain, whereby said lamp-frame is raised and lowered and held in any desired position of adjustment, the sleeve-nuts *k k* within said guides, and the actuating screw-rods *h h*, the said guides allowing said lamp and its pencil-carbons to occupy either a vertical or an inclined position, substantially as set forth.

407,974. SHOE-WELT-SEWING MACHINE. JOSEPH S. TURNER, Rockland, Mass., assignor to the Campbell Machine Company, Pawtucket, R. I. Filed Nov. 15, 1888. Serial No. 290,834. (No model.)



Claim.—1. The combination, with a shoe-supporting horn and a welt-guide, of a feeder provided with two feed-points and having a space between said points to be occupied by the means employed in uniting a welt, an insole, and the upper of a shoe, substantially as described, whereby during the operation of uniting the said parts of a shoe the latter will be fed or moved upon the horn by the thrusting action of the feeder on both sides of the line of union and by engaging with the welt closely adjacent to that portion thereof which was last united to the upper and insole.

2. The combination, with a shoe-supporting horn, stitch-forming mechanism, and a welt-guide, of a feeder which is above said horn and has two feed-points for engaging with a welt and affords between them a space for the reception of a needle, substantially as described, whereby in securing welts to uppers and insoles said feed-points may be caused to engage with the welt at both sides of the stitch-line and closely adjacent to the stitch last formed during their thrusting action in moving a shoe on the horn.

3. The combination, with stitch-forming mechanism and a shoe-supporting horn, of a pair of feed-points affording a space between them for occupation by a needle and the thread carried thereby, and a presser-foot serving as a welt-guide and slotted for the reception of said feed-points and needle, substantially as described.

407,975. COVER FOR MILK-CANS. JOSEPH C. VAIL, Maple's Mill, assignor to himself, and Thomas M. Mercer, Lewistown, Ill. Filed Jan. 22, 1889. Serial No. 297,134. (No model.)



Claim.—1. In a milk-can cover, the combination, with an upper solid plate, of a lower apertured plate and spacing-strips arranged between the plates, substantially as described.

2. In a milk-can cover, the combination, with the upper plate, of a lower apertured plate and spacing-strips arranged between the plates at opposite sides thereof, the space between the plates being open upon the other sides, substantially as described.

3. In a milk-can cover, the combination, with an upper plate, of a lower plate formed with a central aperture *c*, spacing-strips 12, arranged between the plates upon opposite sides thereof, the other sides of the structure being open, and wire-netting secured to the lower plate to cover the aperture *c*, substantially as described.

407,976. KILN FOR BURNING BONE-BLACK. ADAM WEBER, New York, N. Y. Filed Feb. 9, 1889. Serial No. 299,275. (No model.)



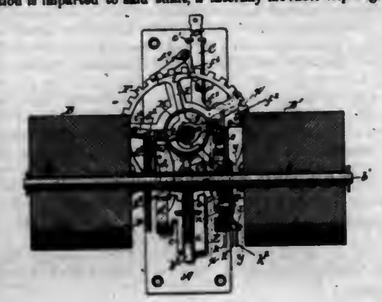
Claim.—1. In a bone-black kiln, the combination of two rows of coolers located below the retorts and provided with bottoms having openings, inclined discharge-spouts below said coolers, dampers having openings registering with the openings of the bottoms, a rotary shaft located intermediately between said coolers, grooved cams on said shaft connected to the dampers, and a rotary screw conveyer located below the discharge-spouts of the coolers, substantially as set forth.

2. In a bone-black kiln, the combination of two rows of coolers located below the retorts and provided with bottoms having openings, dampers having openings registering with the openings of the bottoms, inclined discharge-spouts below said dampers, a rotary shaft located intermediately between the coolers, grooved cams on said shaft connected to said dampers, a rotary screw conveyer below the discharge-spouts of the coolers, and a cooling-trough surrounding the screw conveyer, substantially as set forth.

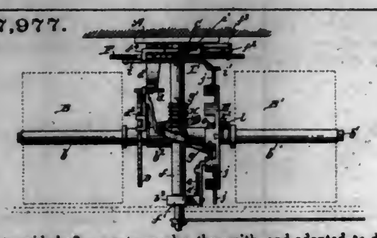
407,977. CALENDAR-CLOCK. HARRIS F. WELLS, Friendship, N. Y., administrator of Albert F. Wells, deceased. Filed Jan. 22, 1889. Serial No. 297,107. (No model.)

Claim.—1. The combination, with the revolving mouth-cylinder provided with a toothed actuating-wheel, of a detent whereby the same is held against turning, a revolving actuating-shaft, means whereby an intermittent rotary motion is imparted to said shaft, and a revolving trip-finger attached to said shaft and adapted to disengage said detent from said actuating-wheel, substantially as set forth.

2. The combination, with the revolving mouth-cylinder provided with a toothed actuating-wheel, of a detent engaging with said wheel, a revolving actuating-shaft, means whereby an intermittent rotary motion is imparted to said shaft, a laterally-movable trip-finger piv-



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oted to said shaft, so as to revolve therewith, and adapted to disengage the detent from said wheel, and a cam whereby said trip-finger is guided to said detent, substantially as set forth.

3. The combination, with the revolving mouth-cylinder provided with a toothed actuating-wheel, of a detent engaging with said wheel, a revolving actuating-shaft, means whereby an intermittent rotary motion is imparted to said shaft, a laterally-movable trip-finger pivoted to said shaft, so as to revolve therewith, and adapted to disengage the detent from said wheel, a cam whereby said trip-finger is guided to said detent, and a spring whereby said trip-finger is held against the cam and the finger and month-wheel are shifted when the trip-finger clears said cam, substantially as set forth.

4. The combination, with the revolving mouth-cylinder provided with a crown-wheel having twelve teeth, of a vertically-swinging detent engaging with said teeth, a revolving shaft provided with an actuating-wheel having thirty-one teeth, a laterally-movable trip-finger pivoted to said shaft, a spiral cam whereby said trip-finger is guided to the detent, and a spring whereby said trip-finger is held against the cam, substantially as set forth.

5. The combination, with a horizontal shaft, of a main actuating-wheel attached to said shaft and having thirty-one teeth, pawl mechanism, whereby an intermittent rotary motion is imparted to said wheel, a detent engaging with said wheel, a movable detent-releasing frame arranged on said actuating-wheel, a month-cylinder having an actuating-wheel, which is operated from said horizontal shaft, and pins arranged on said actuating-wheel, and with which said detent-releasing frame engages, substantially as set forth.

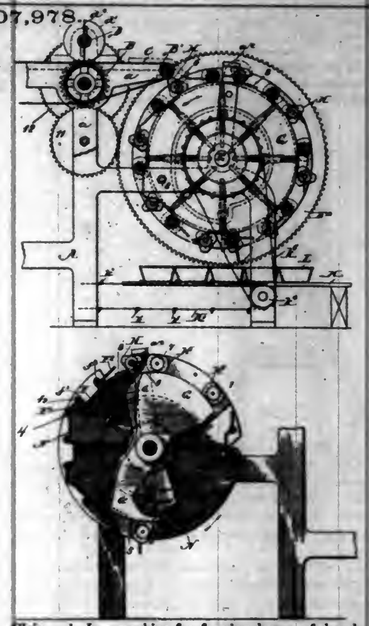
6. The combination, with a horizontal shaft, of a main actuating-wheel attached to said shaft and having thirty-one teeth, an actuating rod and pawl whereby an intermittent rotary motion is imparted to said wheel, a detent engaging with said wheel, a movable detent-releasing frame pivoted to said wheel and consisting of a segment adapted to cover several teeth of the actuating-wheel and a lifting foot or arm, a month-cylinder provided with an actuating-wheel having twelve teeth, pins attached to said actuating-wheel, whereby said lifting-foot is actuated, a detent engaging with said wheel, and a revolving trip-finger attached to said horizontal shaft, whereby said detent is disengaged from the actuating-wheel of the month-cylinder, substantially as set forth.

7. The combination, with a horizontal shaft, of a main actuating-wheel attached to said shaft and having thirty-one teeth, pawl mechanism whereby an intermittent rotary motion is imparted to said wheel, a detent engaging with said wheel, a movable detent-releasing frame pivoted to said actuating-wheel and consisting of a segmental plate and a lifting-foot, a month-cylinder provided with an actuating-wheel having twelve teeth and operated from said horizontal shaft, one or more stationary pins arranged on the actuating-wheel of the month-cylinder in the path of said lifting-foot, and a movable pin, also arranged on said actuating-wheel adjacent to said stationary pin or pins, substantially as set forth.

8. The combination, with a horizontal shaft, of a main actuating-wheel attached to said shaft and having thirty-one teeth, pawl mechanism whereby an intermittent rotary motion is imparted to said wheel, a detent engaging with said wheel, a movable detent-releasing frame pivoted to said actuating-wheel and consisting of a segmental plate and a lifting-foot, a month-cylinder provided with an actuating-wheel having twelve teeth and operated from said horizontal shaft, one or more stationary pins arranged on the actuating wheel of the month-cylinder in the path of said lifting-foot, a movable pin arranged on said actuating-wheel adjacent to said stationary pin or pins and capable of standing in line with one of said stationary pins when released, a revolving cam bearing against said movable pin, a revolving four-armed wheel connected with said cam and journaled on the actuating-wheel of the month-cylinder, and a stationary disk having a tooth or projection engaging with the arms or teeth of said four-armed wheel, whereby the latter is turned the distance of a tooth at every revolution of the month-cylinder, substantially as set forth.

407,978. MACHINE FOR FORMING LOAVES OF DOUGH. FREDERICK WESTERMAN, Chicago, Ill. Filed July 9, 1888. Serial No. 279,379. (No model.)

407,978.



Claim.—1. In a machine for forming loaves of dough, a receptacle for shaping the loaf having folding wings or portions adapted to double or fold over the layer of dough, substantially as described.

2. In a machine for forming loaves of dough, a series of movable receptacles having folding wings adapted to double or fold over the layer of dough, substantially as described.

3. In a machine for forming loaves of dough, a series of movable receptacles having centrally-folding wings adapted to double or fold over the layer of dough, substantially as described.

4. In a machine for forming loaves of dough, a series of movable receptacles having fixed bottoms and centrally-folding wings adapted to double or fold over the layer of dough, substantially as described.

5. In a machine for forming loaves of dough, a series of receptacles having fixed bottoms and having wings hinged to the sides of said receptacles, substantially as described.

6. In a machine for forming loaves of dough, the combination, with a suitable delivery-belt, of a series of movable receptacles having folding wings adapted to double or fold on the layer of dough, substantially as described.

7. In a machine for forming loaves of dough, the combination, with a series of movable receptacles having inwardly-folding wings or portions adapted to double or fold over the layer of dough, of a central shaft for bringing said receptacles successively into position to be filled, substantially as described.

8. In a machine for forming loaves of dough, a series of receptacles having folding wings adapted to double or fold over the layer of dough, in combination with a series of rods to which said wings are connected, cog-wheels fixed upon said rods, and suitable segmental racks for turning said cog-wheels, substantially as described.

9. In a machine for forming loaves of dough, the combination, with a series of movable receptacles having folding wings adapted to double or fold over the layer of dough, of pivot-rods on which said wings are fastened and guard-blocks for temporarily guarding said rods against rotation, substantially as described.

10. In a machine for forming loaves of dough, the combination, with a series of movable receptacles having folding wings adapted to double or fold over the layer of dough, of pivot-rods for turning said wings, guide-blocks affixed to said pivot-rods for temporarily checking the movement thereof, and suitable flanged plates whereon said guide-blocks will ride, said plates being provided with cut-away spaces to permit the guide-blocks to rotate, substantially as described.

407,979. DIP-NET FRAME. CHARLES E. WHEELER, Farmington, Me. Filed Mar. 1, 1888. Serial No. 265,964. (No model.)

Claim.—1. In a folding dip-net ring or bow, the combination of a ring or bow in two sections or pieces, with the two upper ends of the same connected and secured by a socket or slots around screw-heads, and the two lower ends of the ring or bow loosely riveted or

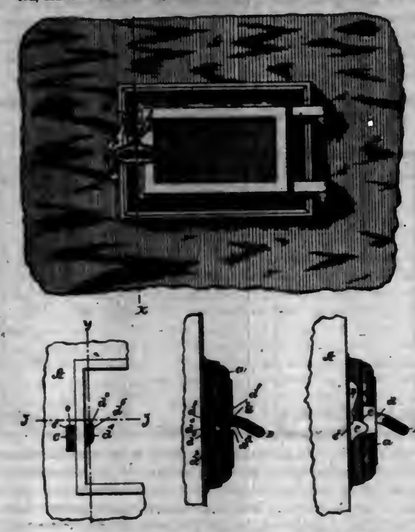
407,979.



bolted to the sides of a forked or short-armed head in such manner that the two lower ends of the sections or pieces of the ring or bow, when disconnected at the upper socket, may be turned back on the loosely riveted or bolted joints and rest in or upon slots on the sides of the staff or handle without removing the net from the rings or bows, thereby holding the said upper ends of the ring or bow in place upon the staff or handle, substantially as described.

2. In a dip-net, the combination of a socket or ferrule on the staff thereof, a sliding collar on said socket provided with an integral tabular enlargement or offset for clamping the inner extremities of the separable bows of said net, substantially as described.

407,980. FURNACE OR OTHER DOOR. GEORGE R. WILBUR, Taunton, Mass. Filed Jan. 28, 1889. Serial No. 297,764. (No model.)



Claim.—1. In combination with a door having a latch adapted to be disengaged from a catch by the vertical movement of the door, the catch and a door disengaging or unlatching device comprising a bar or lever pivoted to the door, one end of which extends to engage a lug and the other end of which to a position outside the door and said fulcrum-lug, substantially as described.

2. The combination, in a door adapted to be moved vertically to disengage its latch from its holding-catch, of said latch, the catch, and a handle attached to or connected with the door-lifting lever, said door-lifting lever, and a fulcrum or surface upon which said lever is caused to be brought into contact by the movement of the handle, substantially as described.

3. The combination, in a door adapted to be moved vertically to disengage its latch from its holding-catch, of said latch, said catch, a disengaging lever or bar, and a fulcrum-lug upon the frame of the door, as and for the purposes described.

4. The combination, in a door adapted to be moved vertically to disengage its latch from its holding-catch, of said latch, said catch, a disengaging lever or bar, and a fulcrum-lug upon the frame of the door having a surface slightly inclined and rounded at its front edge, the said surface being of sufficient extent to act as a bearing for the end of the said lifting lever or bar while the latch is being moved horizontally out of line with the catch, substantially as described.

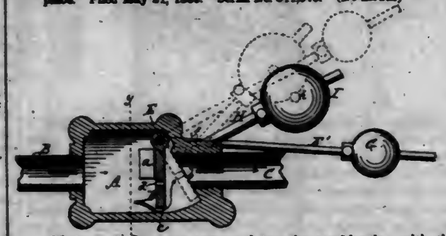
5. The combination, in a door adapted to be moved vertically to disengage its latch from the holding-catch, of said latch, the holding-catch, a fulcrum-lug, and a handle having an arm or bar pivoted to the door, the outer end of said arm or bar being heavier than the inner end, and the end of said bar extending into operative position with said fulcrum-lug when the door is closed, substantially as described.

6. The combination of the door having the hole or aperture *d* therein, the fulcrum-lug d^3, and the bar or lever *d*, pivoted in said hole or aperture, having the handle D, substantially as described.

7. The combination of the door *a*, the pivoted lever or bar *d*, having the handle D, the fulcrum-lug d^3, and the stop d^5, substantially as described.

8. The combination of the door having the latch B, catch C, the fulcrum-lug d^3, and the lifting bar or lever *d*, pivoted to the door, having the handle D and the stop d^5, substantially as described.

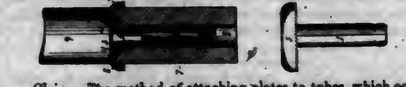
407,981. WATER-PRESSURE REGULATOR. HENRY R. WILLIAMS, Rochester, N. Y., assignor of five-eighths to Lemuel A. Jeffreys, same place. Filed May 21, 1888. Serial No. 311,573. (No model.)



Claim.—1. In a pressure-regulator, the combination, with the case A and induction and eduction pipes B C, of the valve D, adapted to close against a seat *b*, and provided with a hole *d*, and the weighted arm E', connected with the valve, as and for the purpose specified.

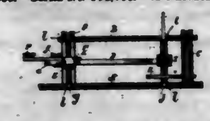
2. In a pressure-regulator, the combination, with the case A and induction and eduction pipes B C, of the swinging valve D, provided with the hole *d*, the weighted arm E', connected with the valve, and the supplemental weighted arm H, pivoted to the case and provided with a pin A, resting over arm E', the whole arranged to operate in the manner and for the purpose specified.

407,982. METHOD OF ATTACHING PLATES TO TUBES. SAMUEL R. WILMOT, Bridgeport, Conn., assignor to the Wilmot & Hobbs Manufacturing Company, same place. Filed Jan. 28, 1889. Serial No. 297,760. (No model.)



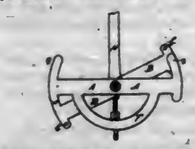
Claim.—The method of attaching plates to tubes, which consists in forming a bead at the end of a tube and a central opening in a plate, the metal around said opening being depressed, substantially as shown and described, then passing the tube through the opening in the plate until the bead rests upon the depressed portion thereof, and then closing the metal of said depressed portion inward upon the tube, substantially as described.

407,983. STEAM-GAGE. CHARLES WIETHER, Boston, Mass., assignor to the Star Brass Manufacturing Company, same place. Filed Mar. 1, 1888. Serial No. 301,718. (No model.)



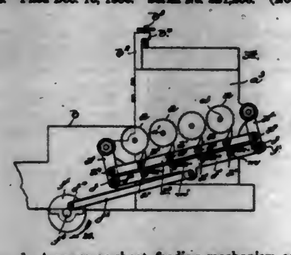
Claim.—A steam-gage, the staff, arbor, pinion, and pinion-spring whereof are composed of nickeline silver, and the bronze plates A B whereof are provided with staff and arbor bushings of nickeline silver, substantially as described.

407,984. FIFTH-WHEEL FOR VEHICLES. JAMES WOODS, Strathroy, County of Middlesex, Ontario, Canada, assignor of one-half to Alexander Johnston, same place. Filed Aug. 17, 1888. Serial No. 282,902. (No model.) Patented in Canada Apr. 5, 1888, No. 28,916.



Claim.—The combination, with the head-block, bed-piece, axle, and reach, of the top circle A F, provided with extended bearings *d d* and arcs *c c*, and the bottom plate B, provided with extended bearings *e e* and arcs *b b*, substantially as described.

407,985. MECHANISM FOR FEEDING PAPER OR OTHER SHEETS FROM A PILE. BRASTUS WOODWARD, Somerville, Mass., assignor to the Waters Wrapping and Mailing Machine Company, Portland, Me. Filed Dec. 10, 1888. Serial No. 291,208. (No model.)

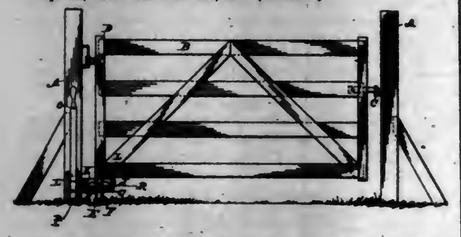


Claim.—1. A paper or sheet feeding mechanism comprising a box or receptacle to contain a pile of papers or sheets, and a series of feeding-rollers to act against a paper or sheet of the said pile, combined with pawl mechanism, substantially as described, adapted to rotate the feeding-rollers positively in one direction only to feed a sheet or paper but partially out of the box or receptacle, and adapted to thereafter become inactive with relation to the said feed-rollers, to permit the said rollers to be rotated by the paper or sheet as the latter is being drawn out of the said box or receptacle, substantially as described.

2. In a paper or sheet feeding mechanism, the combination, with the feed box or receptacle, of a series of independent feed-rolls constituting the supporting-bed for the pile of papers or sheets therein, pawl mechanism, substantially as described, to engage and rotate the said rolls in one direction only, and means, substantially as described, to disconnect the pawl mechanism and rolls, to thereby permit the rolls to be moved independently at a faster speed by the action of the paper against them as the paper is being drawn from the feed box or receptacle, substantially as described.

3. In a paper or sheet feeding mechanism, the combination, with a box or receptacle, of an inclined series of feeding-rollers constituting the supporting-bed for a pile of papers or sheets to be fed out of the box or receptacle, each roller of the said inclined series being adapted to be rotated in one direction only to feed the papers or sheets out of the box or receptacle, substantially as described.

407,986. GATE. ERNEST O. ALDRICH, Lock Haven, Pa. Filed Apr. 22, 1889. Serial No. 308,134. (No model.)



Claim.—1. The combination, with the rear post of a gate, of a pivotal support therefor, rollers upon the end of the said post and the top of said support, and a separate cam between the two, substantially as set forth.

2. The combination, with the rear post of a gate, of a pivotal support therefor, rollers upon the top of said support and the bottom of said post, and a cam between the two, said cam being provided with surfaces of alternate inclination, substantially as set forth.

3. The combination, with the rear post of a gate having rollers journaled in the lower end thereof, of a pivotal support beneath said post provided with rollers, a separate cam between said support and said post, hand-levers on each side of the gate, and connections between the levers and said cam, whereby the gate may be opened and closed, substantially as set forth.

4. In a gate-hinge, the combination, with a support and rollers journaled therein, of an upper part adapted to be secured to a gate, rollers journaled therein, and a separate cam provided with ways of alternate inclination, substantially as set forth.

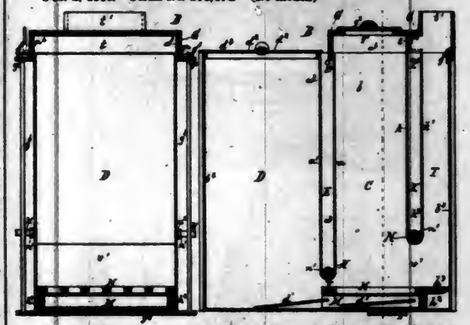
407,987. COMBINED WELT AND UPPER GUIDE. GEORGE AMBORN, Jr., Pawtucket, R. I., assignor to the Campbell Machine Company, same place. Filed Nov. 15, 1888. Serial No. 290,864. (Model.)



Claim.—1. The combined welt and upper guide consisting of a presser-foot provided at its base with a rigidly-projecting block containing an adjustable slide which affords a welt-guiding surface cooperating with a fixed welt-guiding surface on and beneath the presser-foot, and also containing a second slide or upper-gage, which affords a surface for gaging or guiding a boot or shoe during its movement on a supporting-horn by its contact with the upper opposite the edge of the insole, and a cam-lever mounted on said block for moving said upper-gage toward and from the presser-foot and welt-guide, substantially as described.

2. In a combined welt and upper guide, the combination, with a lever for moving the upper-guide toward and from the welt-guide, of an adjustable stop for variably restricting the movement of said upper-guide toward the welt-guide, substantially as described, whereby, while uniting a welt, an insole, and an upper, the line of union may be assuredly located at a distance never too near the edge of the insole.

407,988. TANK-HEATER. GEORGE ARMSTRONG, Elmira, Ill. Filed Feb. 2, 1888. Serial No. 298,474. (No model.)



Claim.—1. A tank-heater comprising in its construction an attendant's chamber having means for admission of air, a combustion-chamber having feed-door and draft-flue, one or more hollow water-heating partitions having a horizontal space or spaces beneath them, and circulation-pipes, in combination with a surrounding water-tank, in which it is partly immersed, substantially as and for the purpose described.

2. A tank-heater comprising a high vertical combustion-chamber having a fuel-supply door, an attendant's chamber, a draft-register applied to the attendant's chamber, a direct-draft flue, an indirect-draft flue-chamber, the partitions having horizontal spaces beneath them between said chambers, a sliding grate, and a draft-controlling damper applied to the combustion-chamber, substantially as and for the purpose described.

3. The combination, in a tank-heater, of the attendant's chamber, the combustion-chamber, a water-heating chamber between the attendant's and combustion chamber, and circulation-pipes, substantially as and for the purpose described.

4. The combination, in a tank-heater, of the attendant's chamber, a draft-register applied to the attendant's chamber, combustion-chamber, an indirect-draft flue-chamber, water-heating chamber between the combustion and indirect-flue chambers, the partitions between the attendant's, combustion, and indirect-flue chambers, having horizontal spaces beneath them, a grate, and a draft-controlling damper applied to the combustion-chamber, substantially as described.

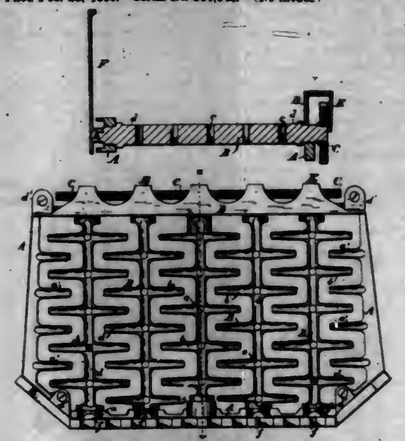
5. The combination, in a tank-heater, of the attendant's chamber, a draft-register applied to the attendant's chamber, a combustion-chamber, a direct-draft flue, an indirect-draft flue-chamber, water-heating chambers between the attendant's, combustion, and direct-draft flue-chambers, circulation pipes or tubes, the partitions of the chambers having horizontal spaces beneath them, a grate, and a draft-controlling damper applied to the combustion-chamber, substantially as described.

6. A tank-heater comprising the attendant's chamber, the combustion-chamber, the partition between said chambers with a space below it, draft-register, and the direct-flue passage, substantially as and for the purpose described.

7. A tank-heater comprising an attendant's chamber having means for admission of air, a combustion-chamber having a supply-door and a controlling-damper in its draft-flue, hollow water circulating and heating partitions having horizontal spaces beneath them, and circulation-tubes, substantially as described.

8. In a tank-heater, the combination, with the outer wall, of one or more hollow water-heating partitions, screw-threaded circulation and tie tubes, and binding-nuts, substantially as described.

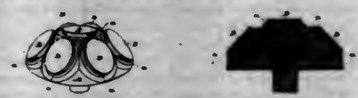
407,989. FIRE-PLACE GRATE. JAMES C. BARRY, Rochester, N. Y. Filed Feb. 25, 1889. Serial No. 301,043. (No model.)



Claim.—1. The combination, with the main frame having the open bearings having the angular rear ends, the intermeshing gears mounted on said ends, the rear plate secured to the frame co-operating with the grate-sections to hold them in their bearings, and having the fingers thereon extending over the gears and projecting in proximity to the ends of the sections for holding the gears in position on them, and the front plate secured to the frame, having the lugs co-operating with the sections to hold them in their bearings, substantially as described.

2. The combination, with the main frame having the open bearings, of the grate-sections resting in said bearings and geared together for simultaneous operation, the front plate covering the front of the frame, having the rearwardly-projecting lugs adapted to be secured to the frame, and the series of lugs projecting over the ends of the sections for holding them in their bearings, substantially as described

407,990. LENS-BLOCKING. JOHN J. RAUSCH, Rochester, N. Y. Filed Apr. 20, 1889. Serial No. 307,970. (No model.)



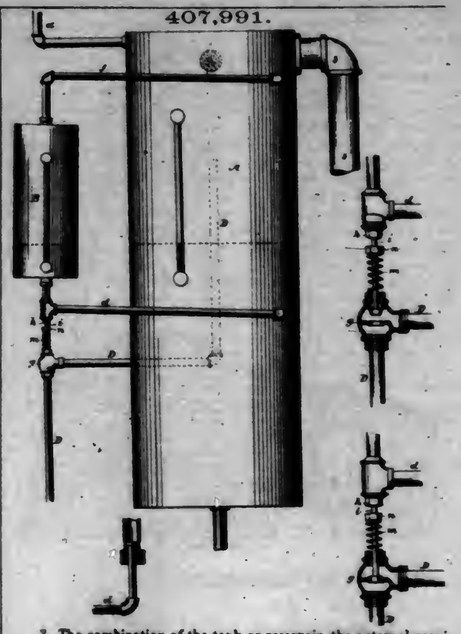
Claim.—1. A holder to support a series of lenses while being ground, the same having in general outline a spherical form with a series of facets *a* thereon to sustain the respective blanks or lenses.

2. A holder for lenses while grinding the same, consisting of a spherical body with a series of distinct elevated facets, each having its face formed to fit the surface of a corresponding lens.

407,991. WATER-REGULATOR FOR BOILERS. RICHARD B. BROWN, Philadelphia, Pa. Filed Apr. 19, 1889. Serial No. 307,681. (No model.)

Claim.—1. The combination of a tank or reservoir and an external gravitating vessel having a swinging pipe-connection with said tank or reservoir above and below the normal water-level therein, and a feed-controlling valve closing against the pressure and having a projecting stem supporting the regulating-vessel and its load, substantially as specified.

2. The combination of the tank or reservoir and the external gravitating vessel having a swinging pipe-connection with said tank or reservoir above and below the normal level of water therein, a pipe for supplying the tank with water under pressure, and a valve closing against the pressure in said pipe and having a projecting stem which supports the gravitating vessel and its load, substantially as specified.



3. The combination of the tank or reservoir, the external gravitating vessel having a swinging pipe-connection with said tank above and below the normal water-level of the same, a feed-pipe having a valve closing against the pressure in said pipe and having a projecting stem supporting said regulating-vessel, and a spring acting on said stem to aid in the support of the regulating-vessel, substantially as specified.

4. The combination of the tank, a vacuum-pipe communicating with the upper portion of the tank, an external gravitating vessel having a swinging pipe-connection with the tank above and below the normal level of liquid therein, and a supply-pipe communicating with the tank and having a valve closing against the pressure in the pipe, and having a projecting stem for supporting said external gravitating vessel, substantially as specified.

5. The combination of the tank, a pipe for returning water of condensation thereto, a vacuum-pipe communicating with the upper portion of the tank, an external gravitating vessel having a swinging pipe-connection with the tank above and below the normal level of water therein, and a water-supply pipe having a valve controlled by the rise and fall of the external gravitating vessel, substantially as set forth.

407,992. DANDY-ROLL FOR PAPER-MAKING MACHINES. ROBERT BROWN, Penicuick, County of Mid-Lothian, Scotland, assignor of one-half to George Dinwoodie, New York, N. Y. Filed Aug. 13, 1888. Serial No. 282,563. (No model.) Patented in England May 4, 1887, No. 6,563.



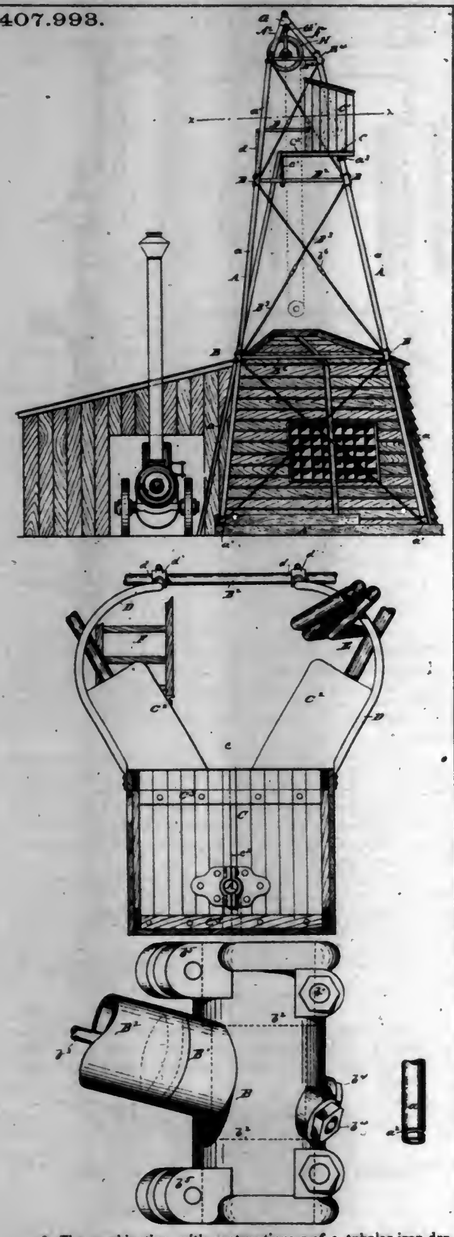
Claim.—1. A dandy-roll having a woven-wire cover over the frame and laid wires on this woven cover.

2. A dandy-roll having a woven cover on the frame, a wire wound spirally on the woven cover, and wires running longitudinally of the roll, substantially as set forth.

407,993. PORTABLE DERRICK. MILAN C. BULLOCK, Chicago, Ill. Filed Aug. 15, 1887. Serial No. 247,043. (No model.)

Claim.—1. The combination, with the post-sections of a tubular iron derrick and couplings joining said sections, of tubular cross-girts between opposite couplings and tie-rods passing through said cross-girts and engaged with the couplings, the latter being provided with nipples which project into the ends of said cross-girts, substantially as described.

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2. The combination, with post-sections *a* of a tubular iron derrick and couplings having a clear space therein between the ends of said sections, of tubular cross-girts between opposite couplings and tie-rods passing through said cross-girts and through said couplings between the ends of the post-sections, said couplings being provided with nipples which project into the ends of said cross-girts, substantially as described.

3. The combination, with the post-sections *a*, of vertically-split couplings joining said sections, whereby the sections and couplings are readily detachable, substantially as described.

4. The combination, with the sections *a* of the derrick-posts A, of longitudinally-split couplings B, provided with clamp-bolts, substantially as and for the purposes set forth.

5. The combination, with the sections *a* of the derrick-uprights A, of longitudinally-split couplings B, provided with interior shoulders to limit the entrance of the post-sections, and provided also with clamping devices, substantially as described.

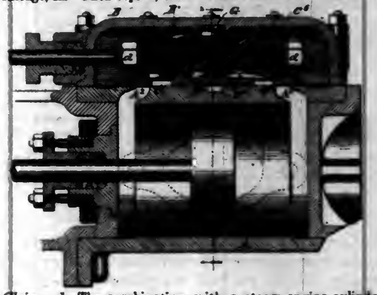
6. The combination, with a skeleton derrick having uprights A, of an elevated platform made in two parts removably joined to each other on opposite sides of one of said posts, substantially as described.

7. In combination with a skeleton derrick provided with a tool hoist or fall, an elevated platform extending on three sides of a space *c* in vertical line with a tool-hoist, substantially as described.

8. The combination, with a skeleton derrick provided with a hoist or fall for raising and lowering the drill-rods, and with an elevated platform, of a cradle or rail arranged to laterally support the upper ends of drill-rods, substantially as described.

9. The combination, with the uprights or posts A, connected at their upper ends by horizontal ties, of the converging members A^3, a single-branched coupling uniting the upper ends of said members, and a hoisting and lowering tackle suspended from said branched coupling, substantially as described.

407,994. VALVE FOR STEAM-ENGINES. MILAN C. BULLOCK, Chicago, Ill. Filed Sept. 6, 1887. Serial No. 248,942. (No model.)



Claim.—1. The combination, with a steam-engine cylinder provided with a flat valve-seat having transversely-arranged ports A^2 A^2 near the ends of the cylinder and a longitudinally-arranged exhaust-port A^3, located at one side of the valve-seat and communicating with an exhaust-passage cast in the metal of the cylinder, of a chambered slide-valve having a flat bearing-face in contact with the valve-seat, and provided in said bearing-face with ports C' C' and C^3, operating in connection with the ports A^2 A^2 A^3, substantially as described.

2. The combination, with a steam-engine cylinder provided with a flat valve-seat having transversely-arranged ports A^2 A^2 near the ends of the cylinder and a longitudinally-arranged exhaust-port A^3, located at one side of the valve-seat, of a chambered slide-valve having a flat bearing-face in contact with the valve-seat, provided in said bearing-face with transverse ports C' C' near its ends and an intermediate longitudinally-arranged port C^2 at one side, and having a central recess or chamber C^3, located in the flat face of the valve between said ports and in communication with the steam-space of the valve-chest at the side of the valve opposite the said port C^2.

3. The combination, with a steam-engine cylinder provided with a flat valve-seat having transversely-arranged ports A^2 A^2 near the ends of the cylinder and a longitudinally-arranged exhaust-port A^3, located at one side of the valve-seat, of a chambered slide-valve having a flat bearing-face in contact with the valve-seat, and provided in said bearing-face with transverse ports C' C' and with a longitudinally-arranged port C^2, located at one side of the valve-seat, said valve being also provided with a recess C^4, extending through the valve from top to bottom surface thereof in the side of the same opposite said port C^2, substantially as described.

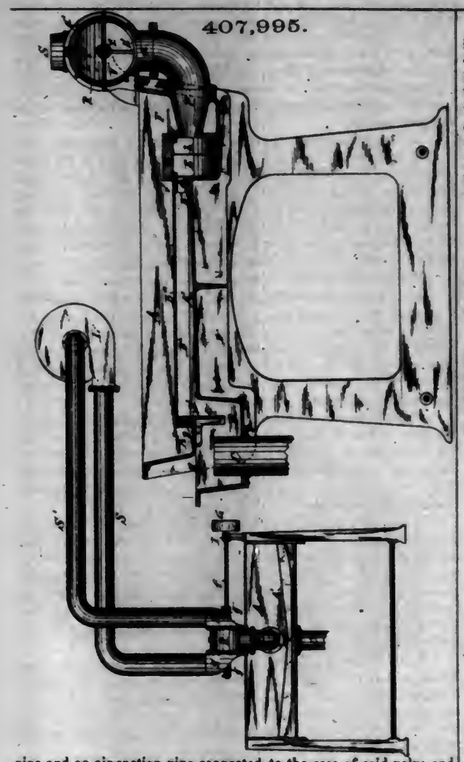
4. The combination, with a valve-seat provided with steam-ports A^2, a side exhaust-port A^3, and a central transverse recess A^4, of a slide-valve having a chamber C^3, and a passage C^4, communicating with said chamber and with the recess A^4, substantially as described.

407,995. PAPER-PULP SCREEN. CHARLES H. CAMPBELL, Watertown, N. Y., assignor to the Bagley & Sewall Company, same place. Filed Apr. 12, 1889. Serial No. 306,923. (No model.)

Claim.—1. The combination, with the pulp-vat and screen in said vat, of an air-space under the screen, an air-blast pipe and an air-suction pipe communicating with said air-space, and an air-blowing and air-exhausting apparatus connected to the aforesaid pipe, as set forth.

2. The combination, with the pulp-vat and screen in said vat, of an air-space under said screen, an air-pipe communicating with the said air-space, a two-way valve connected to said air-pipe, an air-blast pipe and an air-suction pipe connected to the case of said valve and respectively in communication with the two ways of the valve, and an air-blowing and air-exhausting apparatus connected to the said blast and suction pipes, as set forth.

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3. The combination, with the pulp-vat and screen in said vat, of an air-space under said screen, an air-duct extending along one side of the vat and having ports communicating with the aforesaid air-space, an air-blast pipe and an air-suction pipe communicating with the aforesaid air-duct, and an air-blowing and air-exhausting apparatus connected to the said blast-pipe and suction-pipe, substantially as set forth.

4. The combination, with the pulp-vat and screen, of an air-space under said screen, an air-duct extending along one side of the vat and having ports communicating with the said air-space, an air-pipe communicating with the aforesaid air-duct at the center of its length, a baffle-plate in front of the air-pipe, a two-way valve connected to said air-pipe, an air-blast pipe and an air-suction pipe connected to the case of said valve and respectively in communication with the two ways of the valve, and an air-blowing and air-exhausting apparatus connected to the said blast and suction pipes, substantially as described and shown.

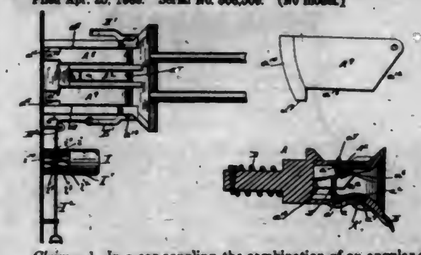
5. The combination of the pulp-vat formed with a bottom inclining from one side of the vat and with an air-duct along the elevated side of the bottom and a pulp-trough along the lower side of the same, the screen arranged over the inclined bottom with an air-space between them and communicating with the aforesaid air-duct, an air-blast pipe and an air-suction pipe communicating with the air-duct in the vat, and an air-blowing and air-exhaust apparatus connected to the said blast and exhaust pipes, as set forth.

6. The combination of the pulp-vat formed with a bottom inclining from one side of the vat and with an air-duct along the elevated side of the bottom and a pulp-trough along the lower side of the said bottom, the screen arranged over said bottom with an air-space between them and communicating with the aforesaid air-duct, an air-pipe communicating with the said air-duct at the center of its length, a baffle-plate in front of the discharge end of said air-pipe, a two-way valve connected to the air-pipe, an air-blast and an air-suction pipe connected to the case of the said valve and respectively in communication with the two ways of the valve, and an air-blowing and air-exhausting apparatus connected to the said blast and suction-pipes, substantially as described and shown.

7. In combination with the pulp-vat and screen arranged with an air-space under said screen, the air-pipe P, communicating with said air-space, the valve-case R, of cylindrical form, connected to the said pipe axially at right angles and having open ends and provided with the port *a*, communicating with the pipe P, the pipes S S', connected to the open ends of the valve-case, the valve V, consisting of a cylindrical shell arranged to rotate in the aforesaid case and having the diaphragm V' extended diagonally across the interior of the shell and ports *b b'* through the shell respectively at opposite sides of the diaphragm, and an air-blowing and air-exhausting apparatus connected to the pipes S S', substantially as described and shown.

8. In combination with the pulp-vat and screen arranged with an air-space under the screen, and the pipe P, communicating with said air-space, the valve-case R, of cylindrical form, connected to said pipe axially at right angles and having open ends, and provided with the port *a*, communicating with the pipe P and waste-port *a'*, diametrically opposite the port *a*, the blast and suction pipes S S', connected, respectively, to the two open ends of the valve-case, the valve V, consisting of a cylindrical shell arranged to rotate in the aforesaid case and having the diaphragm V' extended diagonally across the interior of the shell, and blast and suction ports *b b'* through the shell respectively at opposite sides of the diaphragm, said suction-port being longer in the direction of the circumference of the valve than the blast-port, and an air-blowing and air-exhausting apparatus connected to the pipes S S', substantially as described and shown.

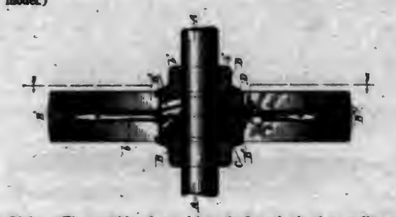
407,996. CAR-COUPLING. JOHN R. DAVIS, Jr., West Point, Miss. Filed Apr. 25, 1889. Serial No. 308,509. (No model.)



Claim.—1. In a car-coupling, the combination of an angular dog pivoted at the elbow to the bottom of the draw-head, a pivoted locking-cam projecting into the draw-head in front of the vertical arm of the dog, and the pivoted weights on each side of the locking-cam and having the inclined front ends to guide the link to the dog, substantially as described.

2. The combination of a draw-head, a guide-plate having arms and pivoted to the draw-head, a buffer having a passage provided with a spring and a slotted washer, a pull-rod having a cross-head and extending through said passage, and a chain passing over a pulley and connected with the guide-plate arms and the end of the pull-rod.

407,997. YIELDING CONNECTION FOR PULLEYS. WILLIAM E. DAVIS, Racine, Wis. Filed Apr. 4, 1889. Serial No. 305,944. (No model.)

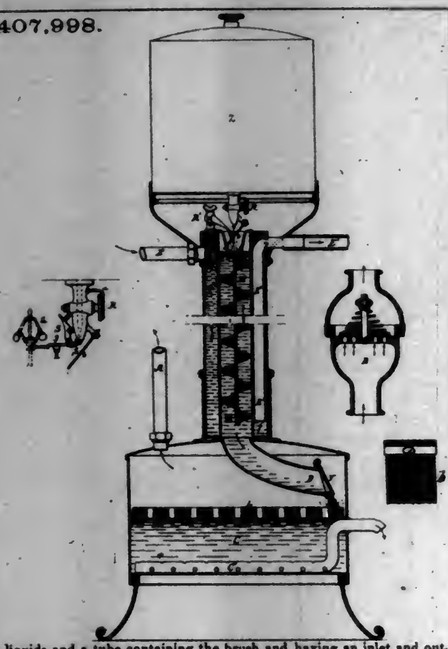


Claim.—The combination, with a shaft and wheel or pulley, of a hub surrounding the shaft and provided with a recess extending inwardly from one side of the hub to a point past the shaft-aperture, a gib inserted in said recess and bearing against the shaft, and a set-screw inserted through the side of the hub into the inner end of said recess and bearing against said gib, substantially as described.

407,998. APPARATUS FOR CARBURETING AIR. EDOUARD D. DESCOUTEVILLE and LEON P. G. MALANDIN, Fontaine-le-Bourg, France. Filed Oct. 5, 1888. Serial No. 215,384. (No model.) Patented in France June 29, 1886, No. 174,641; in England July 26, 1886, No. 9,506, and in Germany Nov. 4, 1886, No. 37,560.

Claim.—1. The combination of a hydrocarbon-supply vessel and hot-water-supply pipe with a dividing or distributing brush for the

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liquide and a tube containing the brush and having an inlet and outlet for the air to be carbureted, substantially as specified.

2. The combination of a hydrocarbon-supply vessel and hot-water-supply pipe with a jacketed tube having an inlet and outlet for the air and a distributing-brush within the tube, and onto which the hot water and hydrocarbon may be directed, substantially as set forth.

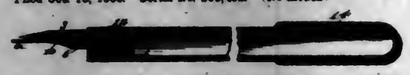
3. The combination of the hydrocarbon-supply vessel and hot-water-supply pipe with a jacketed tube containing a spiral brush, onto which the hot water and hydrocarbon may be directed, said tube having an inlet and outlet for the air, substantially as set forth.

4. The combination of the hydrocarbon-supply vessel, the hot-water-supply pipe having discharge-cocks, with a tube T open at opposite ends and containing a spiral brush M, and a brush *b*, onto which the hot water and hydrocarbon may be projected, substantially as described.

5. The combination of the hydrocarbon-supply vessel, having a discharge cock and valve S therefor, with a tube containing a distributing-brush, onto which the hydrocarbon may be projected, and with the governor of a carbureted-air engine controlling said valve, substantially as described.

6. The combination of the hydrocarbon-supply vessel and tube having a distributing-brush for the hydrocarbon, and a check-valve V at the lower end of the tube, with a receiving-tank, into which the check-valve end of the tube projects, and a pipe for the exit of the carbureted air from the tank, all substantially as set forth.

407,999. FOUNTAIN-PEN. DEWITT C. DEMAREST, Denver, Colo. Filed Oct. 18, 1888. Serial No. 288,462. (No model.)



Claim.—1. In a fountain-pen, the pen-holding plug having its central opening divided into the top ink-feeding openings 5 5 above the pen and into the bottom air-vent opening 6 below the pen, by means of the inner end of the pen and the inner bent end of the ink-feeding stem 10, in combination with the flat tongue 3, whereby to form two side passages 11 11, leading from the said top ink-feeding openings to the point of the pen and prevent the outflow of the ink at the air-vent, substantially as described, for the purpose stated.

2. The combination, in a fountain-pen, of a plug having a cylindrical and a semi-cylindrical part 1 2, a groove 4 passing through both parts open at the ends, and a tongue 3, with an ink-feeder 10, and a pen, both arranged to cross the outer end opening of the said plug at right angles to each other, substantially as described, for the purpose specified.

3. A fountain-pen provided with a pen-holding plug having a bevel joint-forming end 2, and a semi-cylindrical part 1, having a groove 4, which extends through and opens at the front end of the cylindrical part, a tongue 3, which extends from the latter over said opening, and an ink-feeder 10, placed beneath the tongue, arranged to pass through the upper part of the said opening and crossing the latter just back of the joint-bearing part 2, substantially as described, for the purpose specified.

4. In a fountain-pen, the combination, with a pen-holding plug having a semi-cylindrical part 1 and a cylindrical part 2, the latter forming the joint-bearing within the open end of the reservoir, and the former having a groove 4, open at both ends and extending through the joint-forming part, and a tongue 3, projecting from the latter, of an ink-feeder 10, placed beneath the tongue extending into said groove and turned down at its inner end to the bottom of said groove, thereby crossing the outer end, opening just back of the joint-forming part, substantially as described, for the purpose specified.

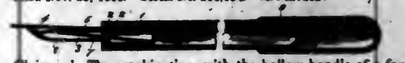
5. In a fountain-pen, the pen-holding plug provided with grooves 9 on each side, a central groove 4 and end opening, and a tongue 3, in combination with a pen having a bifurcated shank, and an ink-feeder 10, the rear edge 8 of the pen crossing the outer end of the plug-opening and the rear end of the feeder crossing said opening in the rear of the division edge of the pen, substantially as described, for the purpose stated.

6. In a fountain-pen, the combination, with a cylindrical plug having grooves 9 in its walls, and a central opening forming both a feed for the ink to the pen and an air-vent for the reservoir, of a pen having prongs 7, adapted to be secured within side grooves of the plug, and an edge 8, adapted to divide the central opening of the plug, substantially as described.

7. In combination, in a fountain-pen, the reservoir-handle, the plug or stopper 1 therefor, the feeder 10, and the pen, the said plug having its front end 2 perforated to form an air-vent and an ink-outlet, and the rear end of the pen and the rear end of the feeder arranged to cross each other and dividing the said front plug-opening into the lower air-vent 6, and into the upper side ink-passages 5 5, for the flow of the ink over the pen, substantially as described, and for the purpose specified.

8. An ink-feeding device for a fountain-pen, consisting of a plug having a central opening, a pen crossing said opening at the outflow, a feeding-stem extending from the outflow-opening over and back of the pen, and a tongue extending from said opening over the feeding-stem having a width and a length greater than that of the feeding-stem, substantially as described.

408,000. FOUNTAIN-PEN. DEWITT C. DEMAREST, Denver, Colo. Filed Nov. 23, 1888. Serial No. 291,654. (No model.)



Claim.—1. The combination, with the hollow handle of a fountain-pen, having its end beveled on its inner wall, of a hollow plug having its outer end conical to fit and close the said beveled end of the handle, and having a circular split from said conical end crossing its diameter to receive and hold the pen in connection with the hollow of said plug, whereby the pen is firmly clamped by the action of the beveled end of the handle upon said split conical end of the plug, substantially as herein set forth.

2. In a fountain-pen, the ink-feeding device herein described, consisting of the hollow plug 1, having a feed-tube of less diameter, provided with a top slit open at both ends and an air-vent on its under side, and a rod-feeder pinned to the outer open end of said tube, as herein set forth.

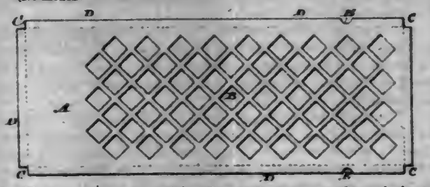
3. The combination, with the hollow handle of a fountain-pen, of a pen-holding ink-feeding device consisting of a hollow plug split diametrically a portion of its length from its outer end, and having a feed-tube provided with a top slit opening into said plug-split, whereby to form a clamp for the pen and a capillary feed for the ink, substantially as described.

4. An ink-feeding device for a fountain-pen, consisting of a hollow plug part 1 and a slitted tubular feed part 3 of less diameter, the said plug part being split lengthwise from its front to near its inner end with a circular cut on a level with the upper slitted side of the feed-tube, so that the said plug-split opens into said tube-slit, for the purpose stated.

5. An ink-feeding device for a fountain-pen, consisting of a hollow plug part split at its outer end by a circular cut opening into said plug, a feed-tube projecting from the split end of said plug, provided with a capillary top slit opening into said circular cut and into the flat open end of said tube, the latter having an air-vent on its under side, and a rod-feeder, in combination with the holder adapted to form a clamp for the split end of said feed-tube, for the purpose stated.

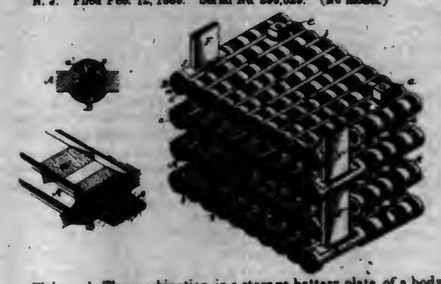
6. An ink-feeding device for a fountain-pen, consisting of a hollow plug part forming the stopper for the reservoir, having the interior end bevel 10, the exterior conical end 2, a feed-tube provided with a capillary top slit and a flat open end, and a rod-feeder, substantially as described.

408,001. METALLIC BOTTOM PLATE FOR PIGEON-HOLES. ISAAC L. DUNN, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Mar. 20, 1889. Serial No. 303,950. (No model.)



Claim.—As a new article of manufacture, a perforated sheet-metal bottom for pigeon-holes, provided with a downward projection on its side notched to receive a rod or pin for holding said bottom in place, substantially as set forth.

408,002. SECONDARY BATTERY. VICTOR H. ERNST, Jersey City, N. J. Filed Feb. 12, 1889. Serial No. 299,639. (No model.)



Claim.—1. The combination, in a storage-battery plate, of a body of active material indestructible by the acid of the battery, substantially as described.

2. The combination, in a storage-battery plate, of a body of active material with an absorbent core of material indestructible by the acid of the battery, substantially as described.

3. The combination, in a storage-battery plate, of a body of active material with a core of material indestructible by the acid of the battery and having a yielding and absorbent nature, substantially as described.

4. A storage-battery plate having a body of active material with a yielding or absorbent core of material indestructible by the acid of the battery, and having a series of fibrous ends or leaders projecting from the core into the active material of the plate, substantially as described.

5. A storage-battery plate having transverse openings or vents in portions of the plate, said openings or vents having tapered mouths, whereby the bubbles are carried from the under side of the plate through the openings, substantially as described.

6. A storage-battery plate having longitudinal grooves in one or both faces, with transverse openings or vents in said grooved portions of the plate, substantially as and for the purpose described.

7. The combination of a series of battery-plates, each having a terminal orifice at one side and a notch at the opposite side, the notches of the negative plates being above the orifices of the positive plates, with a single positive terminal adapted to be passed through and be secured to the positive plates and a single negative terminal adapted to be passed through and be secured to the negative plates, substantially as described.

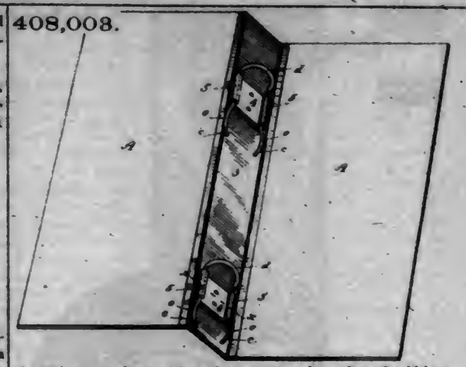
8. A battery-plate arched or convex in cross-section, substantially as and for the purpose described.

408,003. TEMPORARY BINDER. ALFRED G. FISHER, Springfield, Mass. Filed Aug. 13, 1888. Serial No. 282,633. (No model.)

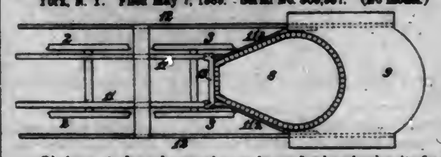
Claim.—1. A temporary binder consisting of a base having opposing turned-over lips at its sides, whereby grooves are formed, and a binder-yoke consisting of an intermediate arch-shaped portion and the spring-arms disposed in a plane at an angle to that of said intermediate portion and adapted to have a sliding engagement with the said groove-forming lips, substantially as and for the purposes described.

2. A temporary binder consisting of a base-plate having opposing turned-over lips at its sides, whereby grooves are formed, and a binder-yoke consisting of an intermediate arch-shaped portion and the spring-arms disposed in a plane at an angle to that of said intermediate portion and provided with the curved portions *c* near their extremities, and said arms adapted to have a sliding engagement with said groove-forming lips, substantially as and for the purpose described.

408,008.



408,004. LOCOMOTIVE-ENGINE. MATTHIAS N. FORNEY, New York, N. Y. Filed May 7, 1889. Serial No. 309,967. (No model.)



Claim.—1. In a locomotive-engine, a fire-box having its front end of less width than the distance between the tires of the driving-wheels, and its rear end of greater width than the distance between said tires, and having each of its sides outwardly inclined between its front and its rear end, substantially as set forth.

2. In a locomotive-engine, the combination of a fire-box having its front end of less width than the distance between the tires of the driving-wheels, and its rear end of greater width than the distance between said tires, and having each of its sides outwardly inclined between its front and its rear end, and inside frames extended rearwardly beyond the rear driving-axle, substantially as set forth.

3. In a locomotive-engine, the combination of a fire-box having its front end of less width than the distance between the tires of the driving-wheels, and its rear end of greater width than the distance between said tires, and having each of its sides outwardly inclined between its front and its rear end, main frames located between the driving-wheels, supplemental frames located outside of the wheels and fire-box, and diagonal connections extending along the sides of the fire-box and secured to the main and the supplemental frames, substantially as set forth.

4. In a locomotive-engine, the combination of a fire-box having its front end of less width than the distance between the tires of the driving-wheels, and its rear end of greater width than the distance between said tires, and having each of its sides outwardly inclined between its front and its rear end, main frames located between the driving-wheels, diagonal frames fastened to the rear ends of the main frames and extending rearwardly along the sides of and behind the fire-box, and transverse braces connecting the rearward extensions of the frames in front and in rear of the fire-box, respectively, substantially as set forth.

5. In a locomotive-engine, the combination of a fire-box having its front end of less width than the distance between the tires of the driving-wheels, and its rear end of greater width than the distance between said tires, and having each of its sides outwardly inclined between its front and its rear end, main frames located between the driving-wheels, and diagonal frames secured to the rear ends of the main frames and extending rearwardly along the sides of and behind the fire-box, and forwardly in X-shaped diagonal position between the main frames, to which the diagonal frames are secured at the opposite ends of the X-shaped diagonals, substantially as set forth.

408,005. ART OF BENDING AND COILING PIPE. HERBERT R. FOWLER, New Haven, Conn., assignor to the United States Pipe Bending and Coiling Company, Chicago, Ill. Filed Apr. 1, 1889. Serial No. 305,610. (No model.)

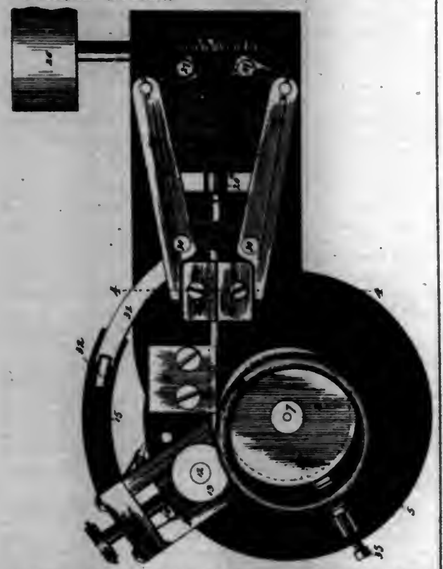
Claim.—The herein-described improvement in the art of bending and coiling pipe, which consists in intermittently pushing forward a continuous length of pipe through or between bending devices—each

408,005.



as rolls or dies—whereby the pipe is formed into a series of convolutions.

408,006. MACHINE FOR BENDING AND COILING PIPE. HERBERT E. FOWLER, New Haven, Conn., assignor to the United States Pipe Bending and Coiling Company, Chicago, Ill. Filed Apr. 1, 1889. Serial No. 305,611. (No model.)



Claim.—1. In a pipe bending and coiling machine, the combination, with suitable dies for forming the coil or bend, of means for feeding the pipe to the dies, comprising gripping-jaws adapted to engage the straight portion of the pipe and means for causing said engagement and for reciprocating the jaws to force the pipe between the bending-dies, substantially as described.

2. In a pipe bending or coiling machine, the combination, with suitable bending-dies, of means for forcing the pipe between said dies to form the coil, said means comprising, in combination, gripping-jaws carried by a sliding block and toggle-arms, and suitable gearing for operating said arms to cause them to impinge upon the gripping-jaws to secure its engagement with the pipe, and means for reciprocating the block to cause the jaws to advance the pipe, substantially as described.

3. In a pipe-bending machine, the combination, with dies for bending or coiling the pipe, of a pair of grooved gripping-jaws mounted upon a sliding block, a second block adapted to be moved by suitable gearing into engagement with the first, and a system of toggle-levers pivotally connecting said blocks and adapted to bear upon said gripping-jaws to cause their engagement with the pipe, substantially as described.

4. In a pipe-bending machine, the combination, with reciprocating clamping-jaws for feeding forward the pipe, of a rotatable bending-die, a second bending-die mounted upon a swinging plate, and means, substantially as described, connecting said plate with the feeding mechanism.

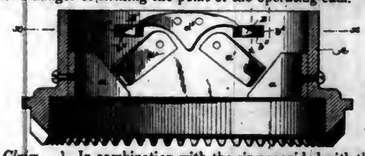
5. In a pipe-bending machine, the combination, with reciprocating clamping-jaws for feeding forward the pipe, of a rotatable bending-die, a second bending-die mounted upon a swinging plate, means, substantially as described, connecting said plate with the feeding mechanism, and means for locking said plate to a stationary part of the machine, substantially as described.

6. In a pipe-bedding machine, the combination, with the bending-dies, of a guide over which the forming-coil passes, said guide being vertically adjustable, whereby the pitch of the coils may be varied, substantially as described.

7. In a pipe-bending machine, the combination, with the bending-dies, of a guide for the forming-coils, said guide being vertically adjustable, whereby the pitch of the coils may be varied and laterally adjustable, whereby it is adapted for use with coils of varying diameters, substantially as described.

408,007. CIRCULAR-KNITTING MACHINE. CHRISTIAN FREDERICK, Wilmington, Del., and JOHN C. BEALY, Philadelphia, Pa.; said Bealy assignor to Thomas A. Pearce, Philadelphia, Pa. Filed Apr. 13, 1889. Serial No. 307,084. (No model.)

Brief.—The object of the invention is to provide an improved guard or safety cam designed to act upon the heels of such needles as are in danger of striking the point of the operating-cam.



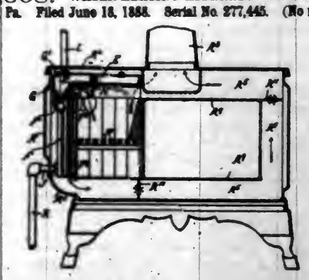
Claim.—1. In combination with the ring provided with the usual needle-operating cams, the spring and the spring-actuated guard-cam pivoted to swing outward and provided at the inner end with surfaces b^3 b^4, inclined one upward and the other downward in the direction of rotation.

2. In combination with the ring having the usual needle-operating cams, the outwardly-movable spring-pressed guard-cam having at its inner end an upwardly and a downwardly inclined surface, one having its forward end carried past the level of the other, whereby the outward motion of the cam is caused to expose to the needle-heels the surface which was previously guarded by the other surface.

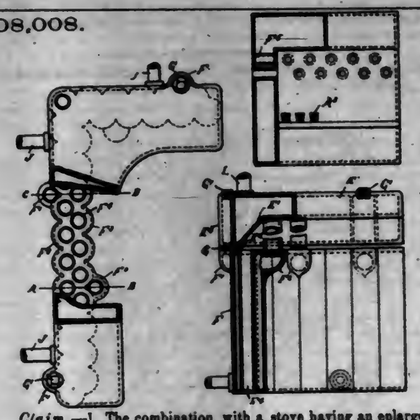
3. The ring having the usual needle-operating cams, in combination with the spring and the pivoted spring-pressed guard-cam having the surfaces b^3 b^4, shoulder b^5, and notch b^6.

4. In combination with the ring and the usual needle-operating cams, the pivoted spring-pressed guard-cam having, first, an upper inclined face normally in the path of those needle-heels which would abut against the point of the operating-cam; second, the shoulder against which said heels act to swing the cam outward, and third, the under inclined surface which is exposed to the heels by the outward motion.

408,008. WATER-HEATING APPARATUS. JACOB FRIES, Reading, Pa. Filed June 16, 1888. Serial No. 277,445. (No model.)



408,008.

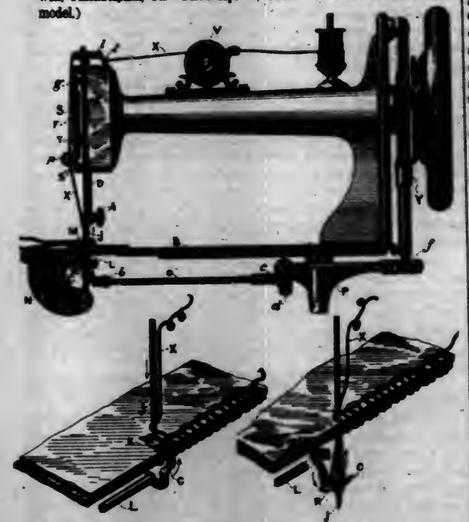


Claim.—1. The combination, with a stove having an enlarged fire-chamber, a smoke-outlet communicating directly with said fire-chamber, a damper between said chamber and outlet, and a smoke-flue underneath the fire-grate, all substantially as described, of a water-heating apparatus having a vertical water-chamber forming a wall or walls of the fire-pot and extending below the grate, the products of combustion being brought in contact with said water-chamber when diverted downward to pass through said lower smoke-flue, substantially as and for the purpose set forth.

2. The combination, with a stove having an enlarged fire-chamber, a smoke-outlet communicating directly with said fire-chamber, a damper between said chamber and outlet, and a smoke-flue underneath the fire-grate, all substantially as described, of a water-heating apparatus having a vertical section forming a wall or walls of the fire-pot and extending below the grate, a horizontal section overhanging the grate, and passage-ways below said horizontal section between the fire-box and said lower smoke-flue, whereby the products of combustion are brought in contact with said vertical section when diverted downward to pass through said lower smoke-flue, substantially as and for the purpose set forth.

3. The combination, with a stove having an enlarged fire-chamber, a smoke-outlet communicating directly with said fire-chamber, a damper between said chamber and outlet, and a smoke-flue underneath the fire-grate, all substantially as described, of a water-heating apparatus having a vertical tubular section connected to a separate horizontal section, the two being in contact on their outer edge and the horizontal section projecting over the open top of the tubular section, substantially as and for the purpose set forth.

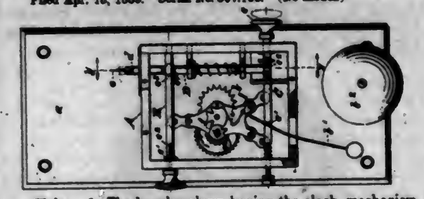
408,009. OVERSEAMING SEWING-MACHINE. JULIUS C. GOODWIN, Philadelphia, Pa. Filed Apr. 7, 1887. Serial No. 234,008. (No model.)



Claim.—1. In an overseaming sewing-machine, the combination, with a reciprocating eye-pointed needle and means for operating the same, of a horizontal shaft L, journaled in the bed-plate parallel with the direction of the feed, a single hook C, rigidly mounted on said shaft in front of and contiguous to the line of travel of the needle and provided with a laterally-projecting horn K, and means, substantially as described, for rotating the shaft, whereby the hook is reciprocated above and below the material to be operated on and in close proximity to the front side only of the needle, for the purpose specified.

2. In an overseaming sewing-machine, the combination, with a reciprocating eye-pointed needle carrying a single thread and means for operating the said needle, of a horizontal shaft L, journaled in the bed-plate parallel with the direction of the feed, a single hook C, rigidly mounted on one end of said shaft in front of and contiguous to the line of travel of the needle and provided with a laterally-projecting horn K, a pinion M, mounted on the other end of said shaft, a toothed segment N, meshing with said pinion, a bell-crank lever P, pivoted on the bed-plate, an adjustable rod O, connecting the bell-crank and the toothed segment, and means, substantially as described, for oscillating the bell-crank lever, for the purpose specified.

408,010. BURGLAR-ALARM. THOMAS J. GORDON, Olathe, Kans. Filed Apr. 13, 1889. Serial No. 307,100. (No model.)



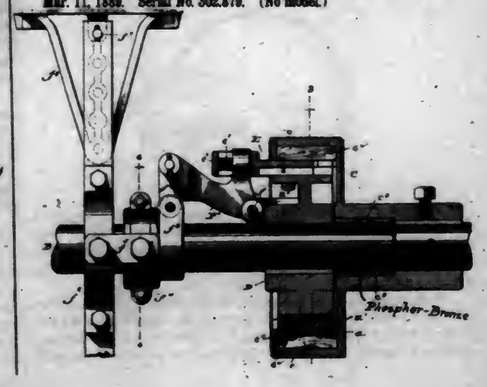
Claim.—1. The burglar-alarm having the clock mechanism, the bell or gong hammer and gong or bell, in combination with the plate or bar having a shoulder acting upon the hammer, and a slot or aperture, the spring-pressed locking bar or rod engaging with the said slot or aperture and having connection with the windows and doors of a dwelling, &c., substantially as specified.

2. The combination, with the spring-pressed locking-rod engaging a slot or aperture in the spring-pressed plate or bar engaging with the bell or gong hammer rod, of the rotary rod or bar having a notch or recess facing the aforesaid locking-rod, substantially as specified.

3. The combination, with the spring-pressed locking-rod engaging a slot or aperture in the spring-pressed hammer-locking bar or plate, of the rotary rod having a notch or recess facing the aforesaid locking-rod, said latter-referred-to rod also having a notch or recess receiving the convex or rounded portion of the rotary rod, substantially as set forth.

4. In a burglar-alarm, the combination, with the alarm mechanism, comprising the spring-pressed locking-rod, the spring-pressed slotted plate or bar engaged by said rod, the bell or hammer rod engaged by said plate, and the rotary rod or bar having a notch or recess facing said locking-rod, and the alarm-transmitting wire or medium, of the branch wire or its equivalent having a drop-hook engaging a catch or projection on the door and having connected to it a manipulating-cord, or its equivalent, passing over a suitably-disposed pulley, and means for holding the drop-hook away from the door, substantially as shown and described.

408,011. SHAFT-COUPLING. WILLIAM D. GRAY, Milwaukee, Wis., assignor to the Edward P. Allis & Company, of Wisconsin. Filed Mar. 11, 1889. Serial No. 302,879. (No model.)



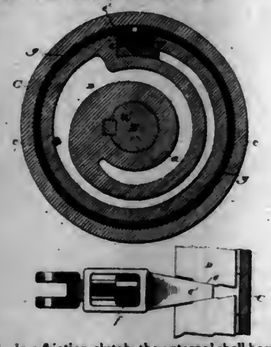
Claim.—1. The flanged shell and the independent internal hub having the grooves in its opposite sides, in combination with the expansible friction-ring encircling the hub and having the rib or key *d* seated loosely in one of the grooves and the wedge seated in the other groove and acting between the ends of the ring, whereby the ring is enabled to move radially and expand uniformly throughout its length.

2. The flanged shell, the independent hub, and the extensible ring, in combination with the wedge having the opening in its end, the lever, and the wedge operating and adjusting screw seated in the lever and bearing at its ends against the opposite walls of the wedge-opening, whereby the lever is enabled to positively advance and retract the wedge.

3. In a friction-clutch, the outside rim, the internal hub having the eccentric periphery, the tapered expansible ring, and means, substantially as shown, for expanding said ring.

4. In combination with the shell, hub-expanding ring, wedge, and wedge-operating lever, the sliding collar and link to operate said lever, the non-rotating ring f^4, the hand-lever to actuate the same, the hanger f^5, and the adjustable pivot connecting the hand-lever and hanger, whereby the parts are adapted for use with shafts at different distances from the ceiling or wall.

408,012. FRICTION-CLUTCH. William D. Gray, Milwaukee, Wis., assignor to the Edward P. Allis & Company, of Wisconsin. Filed Apr. 22, 1889. Serial No. 308,179. (No model.)

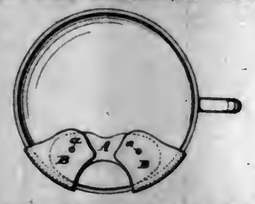


Claim.—1. In a friction-clutch, the external shell having the overhanging flange, the central shaft revoluble independently of the shell, the intermediate driving-spring fixed to the shaft and coiled in a plane at right angles to the axis, and an expanding device, substantially as shown, mounted between the outer convolutions of the spring, whereby the spring may be positively enlarged to frictionally engage the shell.

2. The external flanged shell and the central shaft revoluble independently of said shell, in combination with the intermediate driving-spring fixed at its inner end to the shaft and provided at the outside with the shoulder opposing its end, and the wedge acting between said shoulder and end.

3. In a friction-clutch, the combination of the shell C, the coiled expansible driving-spring with its central shaft-receiving hub *d* and ears f^3 thereon, the lever pivoted to said ears, and the wedge connected to the lever and acting within the spring to expand the same.

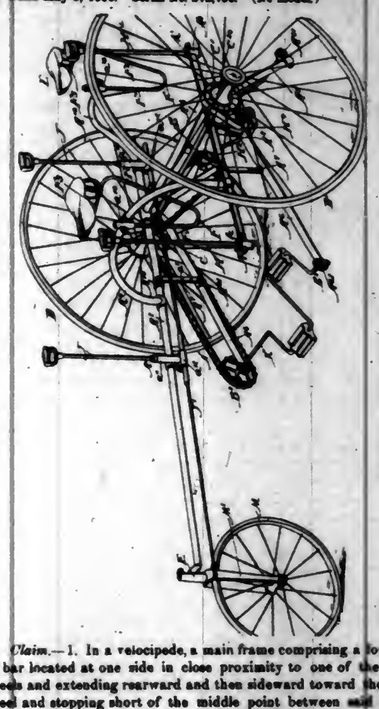
408,013. MUSTACHE-PROTECTOR. John O. Hibbard, Hartwell, Ohio. Filed Nov. 15, 1888. Serial No. 290,885. (No model.)



Claim.—1. A mustache-protector consisting of a central plate A, having circular slots *b* therein, and clamp-plates B B, having the lugs *a* pivotally connected thereto, said lugs projecting through said slots *b*, and suitable spring-connection between said central plate and lugs *a*, substantially as set forth.

2. A mustache-protector consisting of a central plate A, having the circular slots *b* and upturned flanges *b'*, the latter having the slots b^2 cut therein, and the clamp-plates B B, having the lugs *a* pivotally connected thereto, and downwardly-turned flanges b^3 and springs D, the latter being secured at one end in the slots b^2 and at the other end attached to the lugs *a*, substantially as set forth.

408,014. VELOCIPEDE. Thomas B. Jeffery, Ravenswood, Ill. Filed May 3, 1888. Serial No. 272,736. (No model.)



Claim.—1. In a velocipede, a main frame comprising a fore-and-aft bar located at one side in close proximity to one of the drive-wheels and extending rearward and then sideward toward the other wheel and stopping short of the middle point between said wheels, and a seat secured upon said sideward extension, substantially as set forth.

2. In a velocipede, a main frame comprising two side bars adjacent to the drive-wheels, respectively, the longer one of said side bars extending forward and constituting a reach to the steering-head, and extending rearward and then sideward and stopping short of the middle, a cross-bar connecting said side bars forward of the axle, and two seats, one supported upon the sideward extension of the said longer side bar nearer to the vertical plane of said longer bar than to the vertical plane of the shorter bar, and the other seat supported on said cross-bar nearer the vertical plane of the shorter side bar, substantially as set forth.

3. In a velocipede, a main frame comprising two side bars and a cross-bar connecting them in the vicinity of the axle, one of said side bars extending upward in the rear of the vertical plane of the axle and then sideward toward the vertical plane of the other side bar, but stopping short of the middle point between said bars and a second bar connecting said side bars forward of the axle and arched upwardly between them, and two seats, one secured on the elevated sideward extension of the first-mentioned side bar and located nearer said bar and the other secured upon the upwardly-arched cross-bar nearer to the other side bar, substantially as set forth.

4. In a velocipede, in combination, substantially as set forth, a pair of rear drive-wheels, a forward steering-wheel, a main frame, and two seats, the said seats being out of line fore and aft with each other, and the steering-wheel being out of line with both drive-wheels and both seats and being located between the vertical plane of one of the seats and the vertical plane of the drive-wheel which is nearest thereto.

5. In a velocipede, in combination with the main frame and the main axle journaled therein, the pedal-crank-shaft frame-bars A^2, pivoted to the main frame in the vicinity of the axle and extending thence forward, the pedal crank-shaft journaled at the forward part of said frame-bars, the sprocket-wheels on the main axle and crank-shaft, respectively, and the drive-chain connecting them, said frame-bars being adjustably secured to the main frame at a point other than their pivot, whereby the height of the pedal crank-shaft may be varied at will without materially changing its position fore and aft or materially slackening or tightening the drive-chain, substantially as set forth.

6. In a velocipede, in combination with the main frame comprising two side bars located in proximity to the drive-wheels, respectively, the forward pedal-crank-shaft frame-bars located in the vertical planes of said side bars, respectively, whereby said frame is rendered open front, substantially as set forth.

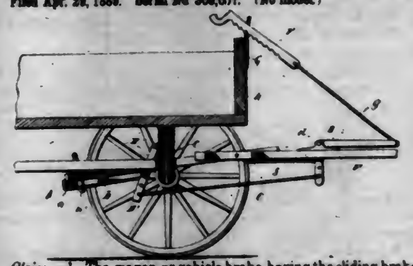
7. In a velocipede, in combination with the main frame having side bars located in proximity to the drive-wheels, respectively, the front and rear pedal-crank-shaft frame-bars located in the vertical planes, respectively, of the said side bars, whereby said frame is rendered open both front and rear, substantially as set forth.

8. In a velocipede, the seat-support consisting of a spring-rod having the vertical straight part F' and the oblique part F^2 extending upward and rearward from the lower end of the vertical part, and the part F^3 extending forward from the upper end of the oblique part and adapted to receive the saddle, substantially as set forth.

9. In combination with the frame having the vertical socket a^{10}, a seat-support having the vertical part F' inserted in said socket, oblique part F^2 extending upward and rearward from the lower end of the vertical part, and the part F^3 extending forward from the upper end of said oblique part, and the saddle secured upon said part F^3, substantially as set forth.

10. In a two-seated velocipede, in combination with the main frame and the main axle journaled therein, two brake handle-rods journaled in the main frame, cranks on said handle-rods, respectively, and a link or rod which connects said cranks, and a brake-lever and suitable brake operated thereby, said lever extending in proximity to the connecting-rod, and said rod being provided with adjustable stops to engage said lever upon both sides, substantially as set forth.

408,015. WAGON-BRAKE. Solomon Kauffman, Union Grove, Ill. Filed Apr. 29, 1889. Serial No. 308,677. (No model.)



Claim.—1. The wagon or vehicle brake having the sliding brake-bar provided with shoes or blocks, in combination with the suspended bail-lever, the right-angled lever having rod or chain connection with said bail-lever and the ratchet or notched hand-lever, substantially as set forth.

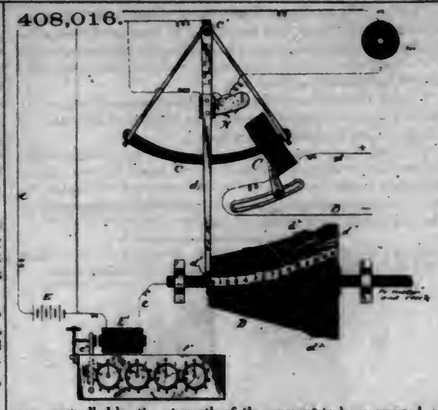
2. The wagon or vehicle brake having the sliding brake-bar provided with shoes or blocks, in combination with the bail-lever, the right-angled lever having adjustable rod or chain connection with the bail-lever, the hand-ratchet or notched slide-lever having rod or chain connection with said right-angled lever, and the spring to effect the automatic release of the brakes, substantially as specified.

408,016. ELECTRIC METER. Edward R. Knowles, Brooklyn, N. Y., assignor, by mesne assignments, to the Mutual Electric Manufacturing Company, of New York. Filed Oct. 20, 1888. Serial No. 289,414. (No model.)

Claim.—1. In an electric meter, a periodically-moving element provided with a series of continuous flanges or wings of regularly-graduated length, in combination with an element moved by the strength of the current to be measured, the movement of the last-mentioned element always being in a substantially parallel plane to the surface of the contacts upon the first-mentioned element, as set forth.

2. In an electric meter, a contact-arm moved by the strength of the current to be measured, in combination with a rotating drum bearing contact-points upon its surface whose axis is parallel to the plane of movement of said contact-arm, and whose surface is conical, whereby the space between the arm and the surface will be constant for all positions of the drum or arm, substantially as described.

3. In an electric meter, a rotating drum bearing upon its surface the division-marks of a scale, and also a series of continuous contact flanges or wings, the length of the flanges being graduated, so that the beginning of the first one is in line with the first mark on the scale, and the beginning of the succeeding ones, respectively, in line with the succeeding cardinal marks upon the scale, and all ending in line with the last division-mark, in combination with a moving contact-



arm controlled by the strength of the current to be measured and adapted to make contact with the flanges on the drum when the latter rotates, whereby an electric circuit is closed, for the purpose described.

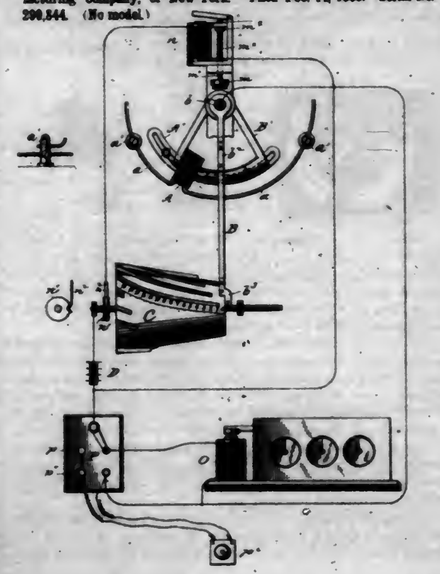
4. In an electric meter, the combination, with the drum D, having a fixed location, the solenoid-core *c*, and frame and arm *d*, connected therewith, of the solenoid-magnet C, adjustably mounted with respect to said core, frame, and arm *d*, for the purpose described.

5. In an electric meter, an element adapted to be moved by the strength of the measured current, another element adapted to be moved periodically, the said second element bearing contact points or flanges which are adapted to make contact with the first-mentioned element, all in combination with a device for preventing abnormal movement of one of the elements during the movement of the contact points or flanges past the first-mentioned element.

6. The combination, with the drum having inclined flanges and the arm *d*, moved by the strength of the measured current, of an armature attached to said arm, an electro-magnet in juxtaposition to said armature, and an electric circuit including said magnet.

7. The combination, with the periodically-rotating drum having inclined flanges and the arm *d*, moved by the strength of the measured current, of an armature attached to said arm, an electro-magnet in juxtaposition to said armature, an electric circuit, including said magnet, and a circuit-closer operated by the drum-motor when the drum rotates to close said circuit, substantially as described.

408,017. ELECTRIC METER. Edward R. Knowles, Brooklyn, N. Y., assignor, by mesne assignments, to the Mutual Electric Manufacturing Company, of New York. Filed Feb. 14, 1889. Serial No. 299,844. (No model.)

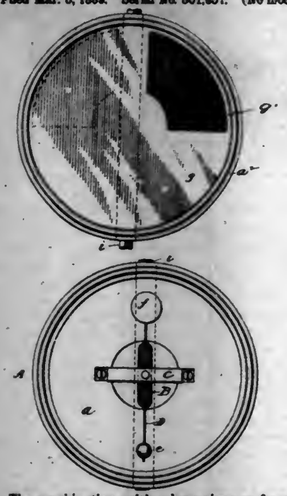


Claim.—1. In an electric meter, the terminals of the main solenoid formed of rigid metal and bent so as to form arc-shaped strips, in combination with binding-posts which adjustably support said strips, and also form the terminals of the circuit carrying the current to be measured, substantially as described.

2. In an electric meter, the main solenoid mounted upon an adjustable bracket, in combination with the arc-shaped terminals and the binding-posts in which they are held.

3. In an electric meter, an arm moved by the strength of the measured current hung upon a shaft, a brake-shoe located adjacent to said shaft, an armature-lever operatively connected with said brake-shoe, and an electro-magnet for causing said brake to bear upon said shaft, substantially as described.

408,018. ELECTRICAL INDICATOR. EDWARD R. KNOWLES, Brooklyn, N. Y. Filed Mar. 5, 1889. Serial No. 301,857. (No model.)



Claim.—1. The combination, with a base-piece or frame A, provided with a slot to receive the conductor in which the operating-current flows, of a magnetic needle mounted on pivots in said base-piece or frame.

2. In a current-indicator, the combination, with a casing provided with a slot passing vertically through its center for the accommodation of an electric conductor, of a needle or pointer pivoted centrally therein and adapted to swing in a vertical plane and a weight attached to one end of said needle tending to maintain it in a vertical position.

408,019. SEWING-MACHINE. ARTHUR M. LESLIE, Chicago, Ill. Filed Nov. 14, 1887. Serial No. 255,153. (No model.)



Claim.—1. In combination with a rotary shuttle and a shuttle-race for the same, a shuttle-driver disk provided on its face with a shuttle-driver movable thereon, and a stud upon which said driver is pivoted, the said stud occupying a re-entrant curve behind the nose of the shuttle, while the free end of the driver engages with the shuttle-heel, substantially as hereinbefore set forth.

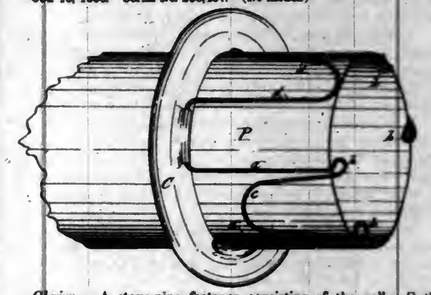
2. In combination with a rotary shuttle and a shuttle-race for the same, a shuttle-driver disk provided on its face with a shuttle-driver movable thereon and having a rearwardly-projecting stud-pin, and a stationary cam engaging with said stud-pin, whereby said shuttle-driver is periodically retracted as the shuttle rotates to release the needle-loops, in the manner set forth.

3. A rotary shuttle having in its face and back near its perimeter grooves concentric with its periphery, in combination with stationary race-guards having points which project into said grooves, substantially as hereinbefore set forth.

4. In combination with a rotary shuttle and a stationary shuttle-race having a groove which embraces the perimeter of the shuttle, a shuttle-race cap forming one side of said groove, screws which attach said cap, and springs interposed between the heads of said screws and said cap, substantially as hereinbefore specified, for the purpose set forth.

5. In combination, a loop-taker guide, a rigid segmental cap therefor, headed screws for securing the cap to the guide, and springs arranged between the cap and the heads of the screws, substantially as hereinbefore specified.

408,020. STOVE-PIPE FASTENER. JACOB LINDENMAYER, Syracuse, N. Y., assignor of one-half to Peter A. Kratz, same place. Filed Oct. 18, 1888. Serial No. 288,487. (No model.)



Claim.—A stove-pipe fastener consisting of the collar C, the spring-arms *a a*, secured to the collar and formed with overhanging loops *b b*, and united by the reversed and outwardly-inclined loop *c*; substantially as described and shown.

408,021. BRAKE-BEAM. EDWARD W. MACKENZIE HUGHES, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed Dec. 26, 1888. Serial No. 294,684. (No model.)



Claim.—1. A hollow box brake-beam pressed from a flat plate of steel directly into the form of a box having sides, ends, and back, substantially as described.

2. A hollow box brake-beam pressed from a flat plate of steel directly into the form of a box having sides, ends, and back, and having the closed sides of the box curved from G to F, as shown, substantially as described.

3. A hollow box brake-beam pressed from a flat plate of steel directly into the form of a box having sides, ends, and back, and a strap surrounding the same and in contact with the back of the box, substantially as described.

4. A hollow box brake-beam pressed from a flat plate of steel directly into the form of a box having sides, ends, and back, and a strap surrounding the same and in contact with the back of the box, and the brake-heads D and brake-shoes E, substantially as described.

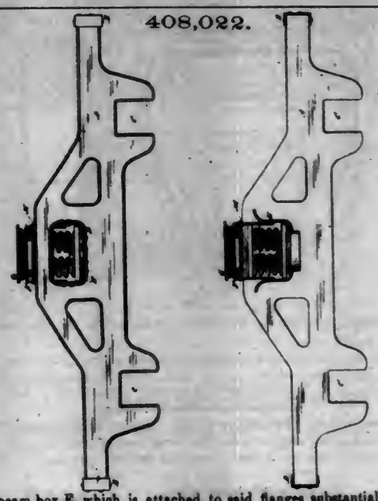
408,022. TRUCK FOR RAILWAY-CARRIAGES. EDWARD W. MACKENZIE HUGHES, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed Jan. 3, 1889. Serial No. 295,322. (No model.)

Claim.—1. The combination, in a railway-truck, of the pressed-steel truck-frames provided with a flanged opening for the reception of a bolster-beam box, a pressed-steel bolster-beam box fitting the flange of said opening and extending transversely from truck-frame to truck-frame and having its exterior ends supported by the flanges of said truck-frames and fastened thereto, and a pressed-steel bolster-beam vertically movable in said box, substantially as described.

2. The combination of the pressed-steel box, bolster-beam M, the pressed-steel bolster-beam box E, the spring-plates H H, and the springs inclosed in said pressed-steel box, and the truck-frames A, provided with flanges D, integral therewith and forming supports for the bol-



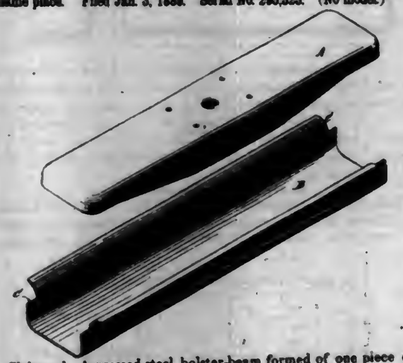
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ster-beam box E, which is attached to said flanges, substantially as described.

3. The combination of the pressed-steel truck-frames A A, the pressed-steel cross-pieces B B, having closed box ends surrounding and fitting the ends of the truck-frames A, the pressed-steel bolster-beam box E, the pressed-steel bolster-beam M, and the pressed-steel journal-plates F G, substantially as described.

408,023. BOLSTER-BEAM FOR CARS. EDWARD W. MACKENZIE HUGHES, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed Jan. 3, 1889. Serial No. 295,323. (No model.)



Claim.—1. A pressed-steel bolster-beam formed of one piece of metal and in the shape of an inverted box having sides and ends integral with the remainder of the box, substantially as described.

2. The combination of the pressed-steel bolster-beam A, formed of one piece of metal, and having sides and ends integral with the beam itself, and the pressed-steel bolster-beam box B, formed of one piece of metal and having sides and ends integral with the beam-box itself, adapted to receive the same, substantially as described.

3. The pressed-steel bolster-beam box B, cut away at the end C for passage through the truck-frame, substantially as described.

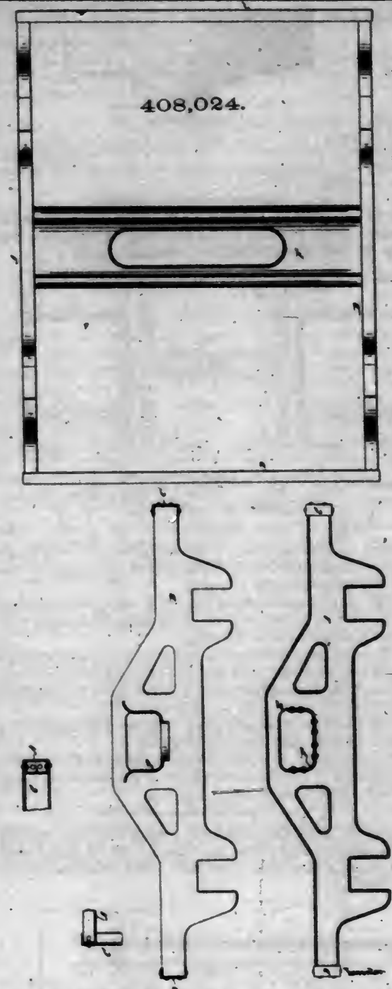
408,024. TRUCK-FRAME. EDWARD W. MACKENZIE HUGHES, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed Jan. 3, 1889. Serial No. 295,324. (No model.)

Claim.—1. The combination of the pressed-steel flanged side frames A and B and the pressed-steel flanged end frames C and D, the flanges of said frames accurately fitting against each other, so as to produce an accurately rectangular frame, substantially as described.

2. The combination of the pressed-steel side frames A and B, having flanges at right angles to their main plane, and the pressed-steel flanged end frames C and D, having their flanges at right angles, fitting accurately the flanges of the side frames A and B, and the whole firmly attached by riveting or welding, so as to insure a rectangular frame, substantially as described.

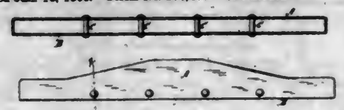
3. The combination of the pressed-steel side frames A and B, having flanges at right angles to their main plane, and the pressed-steel

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flanged end frames C and D, having their flanges at right angles, fitting accurately the flanges of the side frames A and B, and the bolster-beam box F, fitting the flanged side frames A and B, the whole firmly attached by riveting or welding, so as to insure a rectangular frame, substantially as described.

408,025. BRAKE-BEAM. EDWARD W. MACKENZIE HUGHES, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed Jan. 16, 1889. Serial No. 296,457. (No model.)



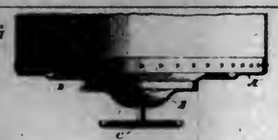
Claim.—1. The pressed-steel brake-beam A, having transverse rivets C, substantially as described.

2. The pressed-steel brake-beam A, having transverse rivets C and sleeves D, substantially as described.

408,026. SMOKE-BOX FRONT DOOR. EDWARD W. MACKENZIE HUGHES, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed Jan. 21, 1889. Serial No. 297,061. (No model.)

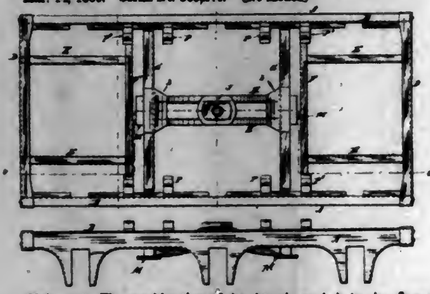
Claim.—The combination of a flexible corrugated front plate for locomotives, made of pressed steel pressed between dies, of a flexible door itself made of pressed steel pressed between dies and having an

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elastic action in connection with said front plate, thereby enabling a tight joint to be made between the door and the front plate, substantially as described.

408,027. TRUCK. EDWARD W. MACKENZIE HUGHES, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed Mar. 14, 1889. Serial No. 303,270. (No model.)



Claim.—1. The combination of the side pieces A A, having flanges B and C on alternate sides thereof, with the end boxes D D, substantially as and for the purposes described.

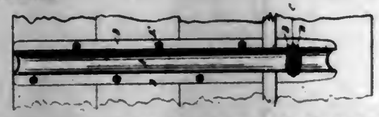
2. The combination of the side pieces A A, having internal flanges C, with the end box D, and the transverse framing F, supported upon the flanges C, substantially as described.

3. The combination of the side pieces A A, having internal flanges C, with the end box D, the transverse framing F, supported upon the flanges C, and the longitudinal beams E E, resting on the flanges of the parts F and D, substantially as described.

4. The side frames having flanges B C, the internal flange C being folded back, as at K, substantially as described.

5. The arch-beam connections shown, consisting of the two channel arch-beams H H, and the cross-pieces G G, attached to the beams H H by plates L M, substantially as described.

408,028. COMBINED STAKE AND POCKET FOR CARS. EDWARD W. MACKENZIE HUGHES, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed Mar. 14, 1889. Serial No. 303,271. (No model.)



Claim.—1. A stake for railroad-cars, made of one piece of pressed steel and having a semi-cylindrical central part, and two flat flanges on either side thereof for supporting the wood-work of the car, substantially as described.

2. The stake for railroad-cars herein shown, made of pressed steel and having corrugations B B for supporting a locking device, substantially as described.

3. The combination of the pressed-steel stake A, having flanges D and corrugations B B, with the locking-staple C, substantially as described.

408,029. PEDESTAL FOR RAILROAD-CARS. EDWARD W. MACKENZIE HUGHES, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed Apr. 2, 1889. Serial No. 305,654. (No model.)

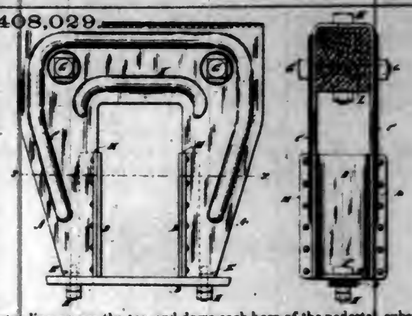
Claim.—1. The pressed-steel pedestal for railroad-cars, having plates A A approximately parallel and formed of the same piece of metal, and provided with outwardly-turned flanges for receiving the journal-box, substantially as described.

2. As a new article of manufacture, a pressed-steel corrugated pedestal for railroad-cars, substantially as described.

3. The pressed-steel pedestal shown, provided with flanges M M and wearing-plates B B, all of pressed steel and fitted thereto, substantially as described.

4. The corrugated pressed-steel pedestal A, provided with a corrugation K above the journal-box opening, and with a corrugation C

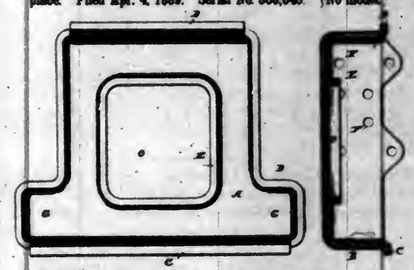
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extending across the top and down each horn of the pedestal, substantially as described.

5. The combination of the pressed-steel pedestal A, having wearing-plate B attached thereto, the said plate B having flange E, and the pedestal tie-bar D, bolted to the part B, substantially as described.

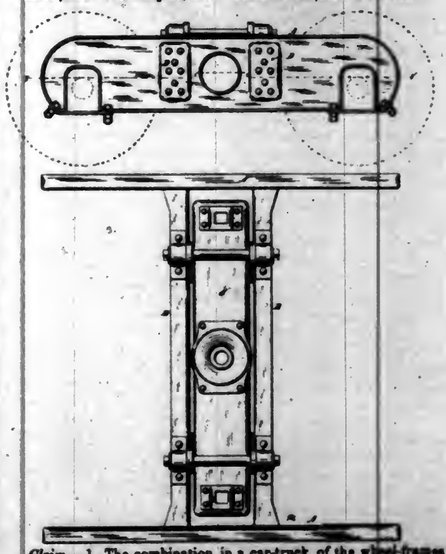
408,030. TRUCK-END PLATE. EDWARD W. MACKENZIE HUGHES, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed Apr. 4, 1889. Serial No. 306,040. (No model.)



Claim.—1. A truck-end plate made of one piece of pressed steel having a central opening and a flange surrounding the same, and having an exterior flange surrounding the plate, substantially as described.

2. The pressed-steel truck-end plate A, having an opening O and flange E surrounding the same, and having an external flange B and flanges D C, bent from said flange B, all made of one piece of pressed steel, substantially as described.

408,031. PRESSED-STEEL TRUCK. EDWARD W. MACKENZIE HUGHES, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed May 23, 1889. Serial No. 311,576. (No model.)



Claim.—1. The combination, in a car-truck, of the wheel-frames

A, having a pocket D, with the pressed-steel box-transom B, the end thereof fitting the pocket D, substantially as described.

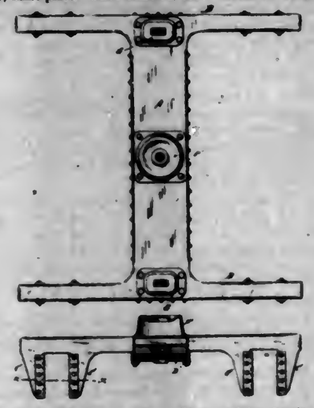
2. The combination of the wheel-pieces A A, having pockets D D D D, with the pressed-steel box-transom B B, having the ends of the boxes B B riveted in the pockets D D D D, substantially as described.

408,032. CENTER PLATE FOR RAILWAY-CARS. EDWARD W. MACKENZIE HUGHES, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed May 23, 1889. Serial No. 311,578. (No model.)



Claim.—The combination of the pressed-steel center plates A and B, having contact wearing-surfaces E C and cylindrical portions F D, the said cylindrical portions being separated by the space G, so as to allow the rocking of the plate A upon the plate B in any direction, substantially as described.

408,033. TRUCK FOR ROLLING VEHICLES. EDWARD W. MACKENZIE HUGHES, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed June 11, 1889. Serial No. 313,910. (No model.)



Claim.—1. A truck-frame for rolling vehicles, having the side frames and transom formed of one piece of metal, which affords the necessary strength and rigidity without the employment of end frames, substantially as described.

2. A truck for rolling vehicles, consisting of the box-shaped side frames and transom pressed from a single plate of metal, said transom affording sufficient strength and rigidity without the employment of end frames, substantially as described.

3. The combination of the side frames B B, the transom A, and the stiffener D, the said side frames being unprovided with end frames and relying for their support upon the transom A and stiffener D, substantially as described.

408,034. TRUCK. EDWARD W. MACKENZIE HUGHES, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed June 11, 1889. Serial No. 313,911. (No model.)



Claim.—1. A truck-frame for rolling vehicles, in which the side frames, end frames, and transom are formed of one piece of metal, substantially as described.

2. A truck for rolling vehicles, having the side frames, end frames, and transom all pressed of one piece of metal so as to form boxes, substantially as described.

3. The combination of the truck A, with the axle safety-bars G, formed of pressed steel, substantially as described.

4. The truck for vehicles herein shown, having the side frames, end frames, and transom and pedestals all pressed from one piece of metal, substantially as described.

408,035. BUCKLE. CHARLES A. MANN, Buffalo, N. Y., assignor to William R. Mann, same place. Filed Nov. 16, 1888. Serial No. 290,951. (No model.)



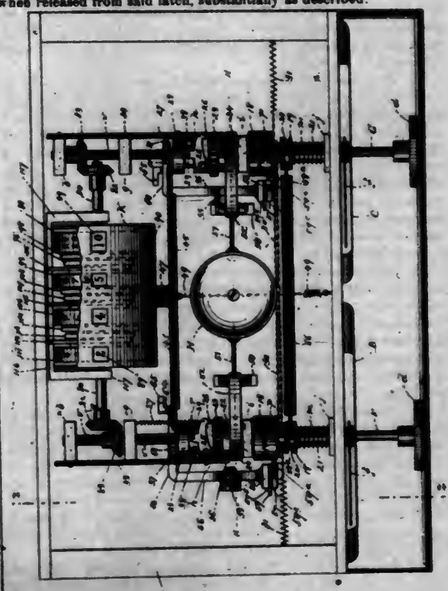
Claim.—The combination, with a rectangular buckle-frame composed of raised side bars and depressed cross-bars connecting both end portions of the side bars, and a tongue-frame pivoted between the side bars of the buckle-frame and provided with tongues or prongs, the points or outer ends of which rest upon one of the cross-bars of the buckle-frame when the buckle is closed, of locking teats or projections *d*, formed upon the inner sides of the side bars of the buckle-frame and engaging over the lateral edges of the buckle-frame when the buckle is closed, whereby the tongue-frame is locked with its prongs or tongues in contact with one of the cross-bars of the buckle-frame, substantially as set forth.

408,036. CASH INDICATOR AND REGISTER. HARRIS A. MILES, Boston, Mass. Filed Jan. 30, 1889. Serial No. 298,102. (No model.)

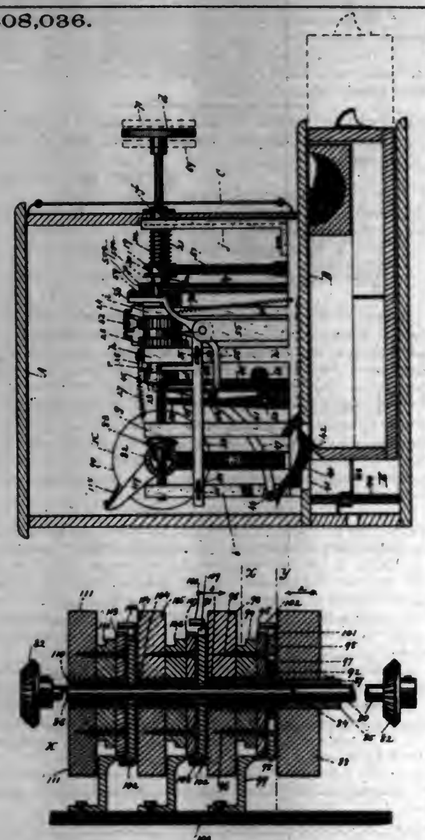
Claim.—1. In a cash-register, the combination, with a sliding shaft provided with a bunter and a toothed flange, of a sliding bar, as 33, provided with upright arms projecting into the path of the bunter on opposite sides thereof and with a stop-arm for engaging the toothed flange when said shaft is pushed inward to open the money-drawer.

2. In a cash-register, a pivoted rod, as 56, provided with an arm projecting into the path of a bunter on the indicator-shaft, whereby it is prevented from being pushed inward to open the drawer, and a pivoted plate on the opposite end of said rod in position to be engaged by a pin on said shaft when revolved, whereby said arm is removed from the path of said bunter, substantially as described.

3. In a cash-register, the pivoted rod 56, provided with the arm 68, projecting into the path of a bunter on the indicator-shaft, and a pivoted plate 59, adapted to be engaged by a pin on said shaft when rotated, in combination with the lever 61, having the latch 64, for securing said rod when depressed, and the spring 70, for returning it when released from said latch, substantially as described.



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4. In a cash-register, the combination of an indicator-shaft, a bunter on said shaft, a toothed flange on said shaft, a pivoted lever provided with a stud in the path of the bunter and with a lever-arm for engaging said flange, and a spring for disengaging said lever when released from the bunter.

5. In a cash-register, a case provided with two dials for respectively indicating the dollars and cents of a sale, a sectional shaft passing centrally through each dial, a sleeve on each shaft-section provided with a crown-gear, said gears intermeshing to form a separable clutch, an index-finger and grooved ring on each forward sleeve, a chain winding onto said sleeves as the shafts are rotated, a spring connecting each chain with the case, and a horizontal bar pivoted within the case, the ends of said bar projecting into the grooves of said rings, whereby said clutches may be simultaneously separated when either of said forward shaft-sections is pulled outward, substantially as described.

6. In a cash-register of the character described, an adding device comprising a sectional shaft and indicator-shafts, one section of which bears a wheel numbered peripherally to correspond with the numbers on the cent-dial of the register and the other section bearing wheels each provided peripherally with two sets of cardinal numbers arranged consecutively and adapted to display the gross amount of dollars which have been indicated on the dials, substantially as described.

7. In a cash-register, an adding device comprising a sectional shaft actuated by the indicator-shafts, a series of wheels on said shaft, one of which is provided with numerals corresponding with those on the cent-dial of the register and the remaining wheels provided, respectively, with two sets of cardinal numbers arranged consecutively, a cover for said wheels provided with slots for exposing a single number thereon, and connecting mechanism, substantially as described, whereby said wheels are so rotated that the numbers displayed in said slot represent the gross amount indicated on said dials.

8. An adding device for cash-registers, comprising a sectional shaft, one section of which is actuated by the indicator-shaft of the dollar-dial, a series of wheels on said shaft-section provided, respectively, with two sets of cardinal numbers, a ratchet on said shaft-section for actuating one of said wheels conjointly with said indicator-shaft, ratchets secured to the succeeding wheels of the series, and diametrical pallets on said wheels for engaging the ratchet of the succeeding wheel at each semi-revolution and advancing said wheel one numeral, substantially as and for the purpose set forth.

9. In an adding device for cash-registers, a sectional shaft, one section of which bears a wheel numbered to correspond with the cent-dial of the register and is actuated by the indicator-shaft thereof, and the other section bearing a series of wheels provided, respectively, with two sets of cardinal numbers, said section being actuated by the indicator-shaft of the dollar-dial, a ratchet secured to each wheel, the number of teeth in said ratchets corresponding with the spaces on said dials, fixed circular partitions separating said wheels and provided with a groove at their tops, a pawl pivoted to said cent-wheel, said pawl being adapted to enter the groove on the adjacent partition and move a dollar-wheel one space at every complete revolution, diametric pallets on the dollar-wheels for entering grooves in their adjacent partitions and moving the next wheel one space for each semi-revolution, and a cover for said device provided with slots for exposing a numeral on each wheel, whereby the sum total of the amounts which have been indicated on the dials will be displayed, substantially as described.

10. In a cash-register, the adding device K, comprising the sectional shaft 80, the wheel 88, secured to the section 85 thereof and numbered peripherally to correspond with the cent-dial of the register, the sleeve 91 on the section 86, provided with the ratchet 92, the wheel 93 on said sleeve, provided peripherally with two sets of cardinal numbers and the ratchet-wheel 95, the wheels 105 and 111, provided, respectively, with two sets of cardinal numbers and the ratchets 107 and 113, the pawl 97 on the ratchet 95, the partitions 98, 99, and 114, separating said wheels and having the grooves 101, and the pallets 102, for actuating adjacent wheels, all being arranged to operate substantially as described.

11. In an adding device for cash-registers, the cent-wheel 88, secured to the shaft-section 85 and provided with the pallet 102, in combination with the dollar-wheel 93, fitted to revolve on the shaft-section 86 and provided with the ratchet 95, and the partition 98, having the groove 101, whereby said pallet may be made to engage a tooth of said ratchet at each revolution of the cent-wheel, substantially as described.

12. In a cash-register, the combination of a case provided with a money-drawer, dials for indicating the dollars and cents of a sale, shafts passing centrally through said dials and provided with knobs and index-fingers, mechanism, substantially as described, disposed on said shafts for returning the index-fingers to the naught-point when said knobs are withdrawn, adjunctive mechanism actuated by said shafts for forcing out said drawer when the knobs are forced inward, a stop for preventing the drawer from being opened until a shaft is rotated, a stop for preventing the shafts from being rotated while being withdrawn, and an adding mechanism actuated by said shafts, whereby the sum total of the amounts indicated by the fingers thereon may be displayed, substantially as described.

13. In a cash-register, the sliding bar 33, provided with the arms 37 and 38, a bunter on the indicating-shaft between said arms, and the arm 36, also on said bar and adapted to engage the teeth of a flange on said shaft when pushed inward, whereby it is prevented from being rotated, substantially as described.

14. In a cash-register, the shaft F, comprising the sections *g v*, the sleeve *m* on the section *g* bearing the index-finger *f* and gear *p*, the sleeve *r*, fitted to slide on the section *v* and pinned to the section *g*, the sleeve 15, inclosing the sleeve *r* and pinned to the section *v*, the gear 18 on said sleeve intermeshing with the gear *p*, the spring 21 on the sleeve *m*, and the bunter 28 on the sleeve *r*, for actuating an adjunctive drawer-releasing mechanism, all being arranged to operate substantially as described.

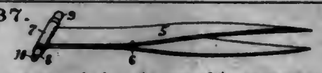
15. In a cash-register of the character described, an adding device comprising a series of wheels disposed on a sectional shaft actuated by the indicator-shafts of the register, one of said wheels being numbered peripherally to display the cents of the gross amount registered, and the succeeding wheels provided with numerals adapted to display the dollars of the gross amount registered as said wheels are consecutively rotated by their connecting mechanism, substantially as described.

408,037. WATCH-MAKERS' TWEEZERS. JOHN A. MILLER, Cairo, Ill. Filed June 23, 1888. Serial No. 277,986. (No model.)

Claim.—1. Watch-makers' tweezers provided with cylindrical projections extending beyond the plates of the tweezers at the union of the plates, adapted to push jewels into and out of their settings, as described.

2. As a new article of manufacture, tweezers provided with projecting tubes at the end where the arms of the tweezers are united to form jewel push-pieces, as described.

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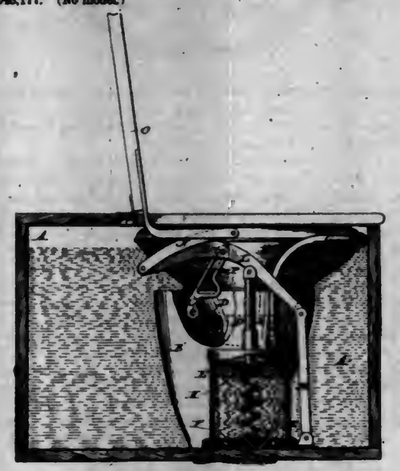


3. Watch-makers' tweezers provided with jewel push-pieces, consisting of projecting tubes, one of which tubes has a flattened side, as described.

4. Watch-makers' tweezers provided with jewel push-tubes, at the union of the tweezer-arms, said arms being also provided with cuts, as described.

5. A new article of manufacture, consisting of the tweezers 5, the V-shaped cut 6, and the tubes 8 and 9, as described.

408,038. WATER-CLOSET. GEORGE D. MOFFAT, Chicago, Ill., assignor to R. P. Pattison, same place. Filed Aug. 29, 1887. Serial No. 248,177. (No model.)



Claim.—1. In a water-closet, the combination, substantially as shown, of the tank, the bowl or hopper, the intermediate piston-pump, the spring applied to actuate the pump and deliver water to the hopper, and the piston-rod to advance the piston against the resistance of the spring, whereby the spring is enabled to deliver the water gradually in successive charges from the tank to the bowl.

2. In a water-closet, the combination, substantially as shown, of a tank, a bowl or hopper, an intermediate piston-pump, a spring applied to move the piston to deliver water to the bowl, a piston-rod, a hinged lid or cover, and arms and levers, substantially as shown, connecting the lid and rod to effect the compression of the spring as the lid descends.

3. In a water-closet, the flushing-pump having the cylinder and piston, in combination with the spring within the cylinder to actuate the piston, the disconnected rod D, to depress the piston and compress the spring, the lever acting on said rod, and the hinged lid connected to the lever to depress the same as the lid rises.

4. In a water-closet, the hopper, the hinged pan, the pump, and the pump-actuating spring, combined with the hinged lid and intermediate arms and levers, substantially as shown, connecting the lid with both the pan and pump.

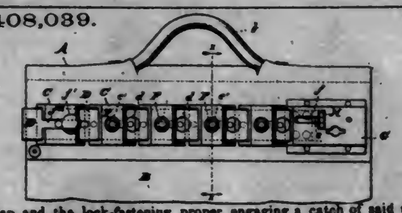
5. In a water-closet, and in combination with the spring, the valved piston-pump, the pump-operating lever, the hinged lid, the arm on the lid, and the connection between the arm and lever adapted to pass the center and thereby cause the operation of the pump as the lid rises and also as it falls.

6. In combination with the pump and its actuating-lever, the lid and its arm, the connecting-link N and the hinged pan, and the pan-operating arm P, having the irregular slot or opening into which a stud on the lever extends.

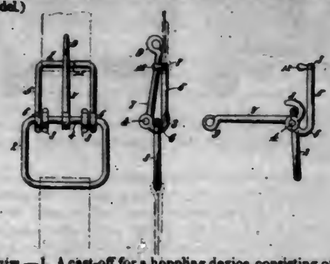
408,039. MAIL-BAG FASTENING. SETH M. MOORE, Harper, Kans. Filed Apr. 26, 1889. Serial No. 309,065. (No model.)

Claim.—The mail-bag fastening having a series of separate keepers having coincident apertures, the strap having a series of apertures provided with slots, and having the manipulating-buttons, one passing through a slot of the lock-case and the other passing through a slot of one of the keepers, the series of headed pins secured to the flap, and the lock-fastening proper engaging a catch of said strap, substantially as set forth.

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408,040. CAST-OFF DEVICE FOR HOPPLES. HENRY D. MCKINNEY, Janesville, Wis. Filed May 1, 1889. Serial No. 309,275. (No model.)



Claim.—1. A cast-off for a hoppling device, consisting of the cross-bar 8, having parallel arms 5, each formed at its extremity with a hook 6, a rock-shaft 4, journaled in the ends of the hooks on the parallel arms, a hook 3, rigidly fixed to each extremity of the rock-shaft, a lever 7, rigid on the rock-shaft and adapted to rest upon the cross-bar of the parallel arms, and a loop 2, for engaging the hooks, substantially as described.

2. In a hoppling device, the combination, with a strap or collar-band, of a rectangular metallic loop attached to one end, a pair of parallel hooked arms carried by a bar connected to the other end, a lever rigid upon said bar, and a post having a head or flange projecting from said bar in the path of the lever, the latter having an eye in its end to receive a cord, substantially as described.

408,041. CALENDAR. LOUIS H. ORR, Springfield, Mass. Filed May 3, 1889. Serial No. 309,515. (No model.)



Claim.—1. An envelope for containing therein calendar-tablets, having an opening in its front through which the face of a tablet is exposed, and provided with a flap for closing the mouth of the envelope, which also constitutes a supporting-leg, whereby the envelope may be maintained in an upright position, said flap having the folded end portions, substantially as described.

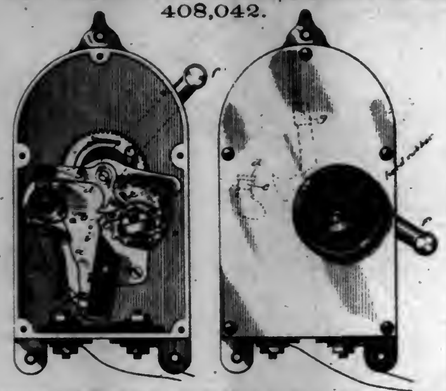
2. An envelope for containing therein calendar-tablets, having an opening in its front and provided with a flap for closing its mouth, and constituting a supporting-leg, said flap having an incision *m* therein, whereby a suspension-ear is formed, substantially as described.

3. An envelope having an opening in its front and provided with a flap for closing its mouth, and constituting a supporting-leg, combined with one or more calendar-tablets inclosed in said envelope and visible through said opening, substantially as described.

408,042. ELECTRIC SIGNAL-BOX. DON A. PALMER, Englewood, assignor of one-half to Bernard R. Sunny, Chicago, Ill. Filed Dec. 12, 1888. Serial No. 293,260. (No model.)

Claim.—1. The combination, in an electric signal-box, of a character-wheel consisting of two portions, each portion being provided with character-teeth, and one portion being fixed and the other removable, whereby on inserting the removable portion the number

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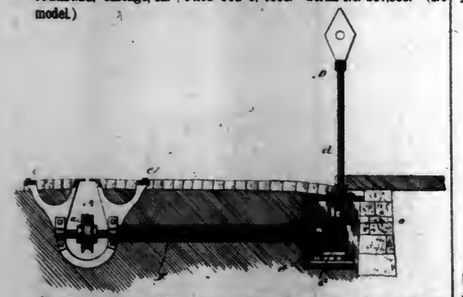
thereon and the number upon the fixed portion will be transmitted successively on turning in the box, substantially as and for the purpose specified.

2. In an electric signal-box, the combination, with the character device *k*, provided with a guide *l*, of the portable complemental segment *m*, adapted to be inserted upon said guide to act in conjunction with the portion *k*, said character device and complemental segment being each provided with character-teeth, and when united forming a disk, substantially as and for the purpose specified.

3. The character device *k*, insulated from its shaft, in combination with the complemental segment *m*, adapted to be temporarily joined to the segment *k*, whereby the character devices are insulated from the circuit and from the box, substantially as and for the purpose specified.

4. An electric signal-box provided with an insulated permanent character-segment *k* and a removable segment *m*, in combination with a bushing provided about the opening in the case of the box in front of said segments, substantially as shown and described.

408,043. AUTOMATIC SIGNAL FOR CABLE RAILWAYS. ADOLPH PFERDNER, Chicago, Ill. Filed Oct. 5, 1888. Serial No. 287,353. (No model.)



Claim.—1. In a cable-railway system, the combination, with the cable-pulley for one of two adjacent cables, of a rotary signal and a power-transmitting mechanism serving to operate the signal from said pulley, substantially as set forth.

2. In a cable-railway system, the combination, with the cable-pulley for one of two adjacent cables, of the rotary signal-rod gear connected with a rotary shaft which carries the cable-pulley, substantially as set forth.

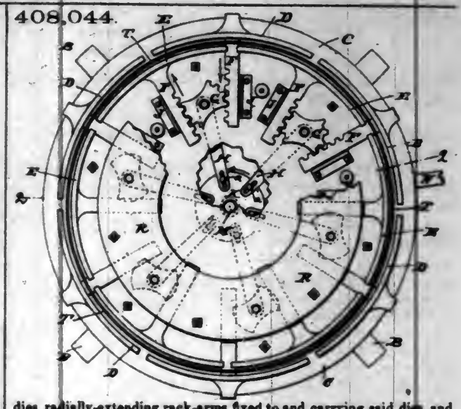
3. In a cable-railway system, the combination, with a cable-pulley for the purpose hereinbefore set forth, of a rotary-signal support, a power-transmitting connection by which said rotary-signal support is operated from the cable-pulley, and a brake applied to check the action of the signal device when the cable is lifted from the pulley, for the purpose described.

408,044. TIRE-TRUING MACHINE. THOMAS J. REID, Gananoque, Ontario, Canada. Filed Apr. 17, 1889. Serial No. 307,581. (No model.)

Claim.—1. In a tire-truing machine, the combination, with a circular series of segmental dies, of a like series of similar dies arranged concentrically and in the same plane therewith, with means—such as racks, pinions, and connections—for radially reciprocating each series of dies in opposite directions, in the manner and for the purpose described.

2. In a tire-truing machine, the combination, with a circular series of segmental dies, of a similar series of concentrically-arranged

408,044.

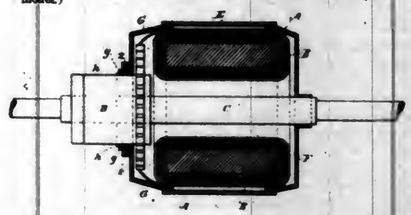


dies, radially-extending rack-arms fixed to and carrying said dies, and means—such as pinions, central disk, and connections—for simultaneously reciprocating the arms of each set in opposite directions, in the manner and for the purpose described.

3. In a tire-truing machine, the combination, with a circular series of segmental dies, of a similar series of concentrically-arranged dies, centrally-extending arms or racks fixed to and carrying said dies, racks of each series alternating with each other, pinions engaging each pair of alternating racks, and means—such as the disk K and rotating devices—for operating the pinions, in the manner and for the purpose described.

4. In a tire-truing machine, the combination, with a circular series of segmental dies, of a similar series of concentrically-arranged dies, centrally-extending racks fixed to and carrying said dies, racks of each series alternating with each other, pinions engaging each pair of alternating racks, levers operating said pinions having their inner ends slotted and fixed to a centrally-revolving disk, and means for revolving said disk, in the manner and for the purpose described.

408,045. PROTECTING-CASE FOR ARMATURES. ANDREW L. RICE, New York, N. Y. Filed Apr. 24, 1889. Serial No. 308,341. (No model.)



Claim.—1. A dynamo or motor having its armature protected by a hermetically-closed metallic case fitting closely around the armature, substantially as described.

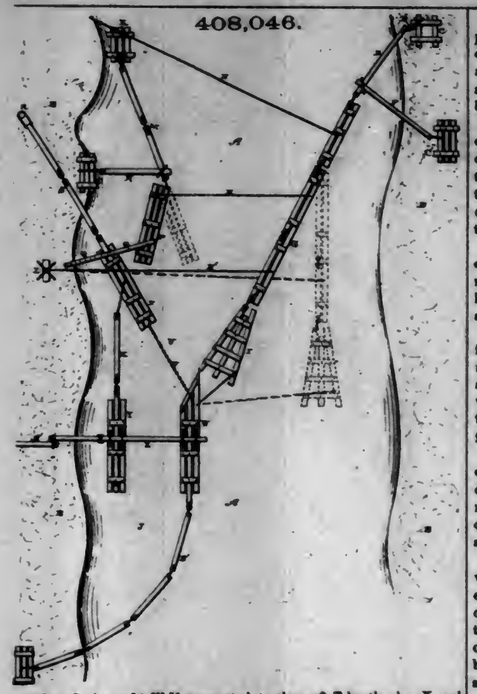
2. A dynamo or motor having its armature protected by a casing consisting of a thin metallic tube fitting closely around the armature, and caps or cups at each end, that on the side of the commutator being insulated therefrom, substantially as described.

408,046. LOG-BOOM. WILLIAM H. ROAN, Williamsburg, Ky. Filed Dec. 6, 1887. Renewed May 3, 1889. Serial No. 309,545. (No model.)

Claim.—1. The combination, with the rafts W Y, which form the mouth of the boom and which are connected together by the cross-piece or log Z, which extends across their tops at an angle, and which is connected at its inner end to suitable fastenings connected to the shore, the log X and chain V, which are connected to the upper ends of the rafts W Y and to the raft T, and the sheer G, which is made jointed near its upper end and which is adapted to be moved laterally, a chain or rope H', connected to the sheer, and the windlass, whereby the sheer can be moved laterally, substantially as shown.

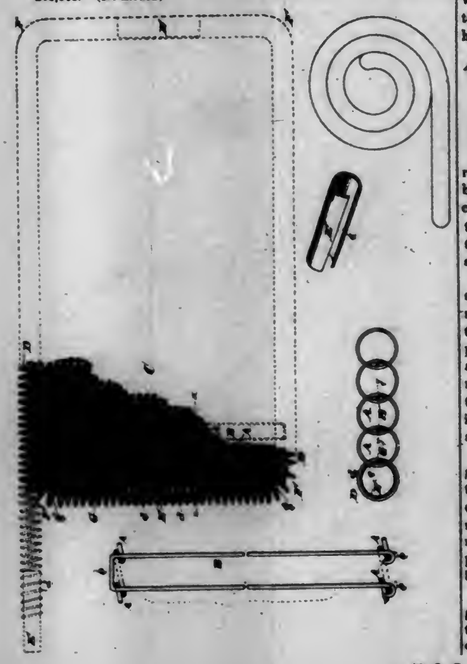
2. The combination of the sheer G, loosely connected at its upper end to the log E, which is suitably fastened and braced to suitable fastenings on shore, and which is jointed so that it can be adjusted laterally, the ropes or chains H H', for holding the sheer in position, the raft K, the logs M, extending therefrom and braced in position in the stream, the raft P, fastened to the lower end of the logs M, the brace Q, fastened to the rafts P T, the raft T, anchored by suitable con-

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nections S, the rafts W Y, connected to the raft T by the log X and chain V, the cross-piece Z, which extends across the tops of the rafts W Y, and the logs B', fastened to the raft W at one end and to the shore at the other, substantially as described.

408,047. WIRE MAT. SEYMOUR ROGERS, Beaver Falls, Pa., assignor to H. W. Hartman, same place. Filed July 5, 1888. Serial No. 279,063. (No model.)



Claim.—1. In a wire mat, a body part composed of a series of parallel coils united by hinge-rods, in combination with a bounding-coil made in one or more parts extending entirely around the mat and arranged transversely to the body-coils on two sides of the mat, and in which the hinge-rods are interlooped with the ends of such body-coils and bounding-coils, substantially as set forth.

2. In a wire mat, a body part formed of a series of parallel coils connected together, in combination with a bounding-coil made in one or more parts and arranged transversely to the body-coils and along their ends, and wire rods extending through the body-coils and entirely across the body of the mat and connecting the bounding-coils on diametrically-opposite sides of the mat to the body-coils, substantially as set forth.

3. In a wire mat, the body portion formed of a series of parallel coils of wire, combined with a series of staple-shaped hinge-rods connecting the adjacent coils together, and in which said staple-shaped hinge-rods are inserted from opposite sides of the mat, substantially as set forth.

4. In a wire mat, the flexible body part composed of wire coils, in combination with a bounding-coil made in one or more parts surrounding the edges of the body part and arranged partly parallel to and partly transverse with respect to the body-coils, and a hinge-wire located at the end of the mat for uniting the parallel portions of the bounding-coil to the end coil of the body part, substantially as set forth.

5. In a wire mat, the body part formed of a series of parallel coils, combined with staple-shaped hinge-rods connecting the parallel coils, and a flexible bounding-coil made in one or more parts and arranged transversely to the body-coils, interwoven both with the ends of the said body-coils and looped ends of the staple-shaped hinge-rods, substantially as set forth.

6. In a wire mat, a body part formed of wire-work, combined with bounding-coils D, extending along two diametrically-opposite edges of the body part and bent around the corners toward each other and made to meet, or substantially meet, on the other edge of the body part, a splice tube or piece E, arranged partly within each of the ends of the bounding-coils, and a connection between the said bounding-coils on each side of the splice-tube and the body part, substantially as set forth.

7. In a wire mat, the body part formed of parallel coils of wire united by hinge-rods, in combination with bounding-coils D, interlaced with the ends of the body-coils, and having their end portions parallel to the ends of the body part and secured thereto by connecting-rod or hinge-wire G, substantially as set forth.

8. In a wire mat, the body part formed of parallel coils of wire united by hinge-rods, in combination with bounding-coils D, interlaced with the ends of the body-coils, and having their end portions parallel to the ends of the body part and secured thereto by connecting-rod or hinge-wire G and united by a splice-tube E, substantially as set forth.

408,048. MACHINE FOR ROLLING THE THREADS ON SCREWS. JOHN SHELDON, Birmingham, County of Warwick, England. Filed Dec. 26, 1888. Serial No. 294,717. (No model.) Patented in England Mar. 1, 1888, No. 3,156; in France Dec. 3, 1888, No. 194,535, and in Belgium Dec. 3, 1888, No. 84,161.

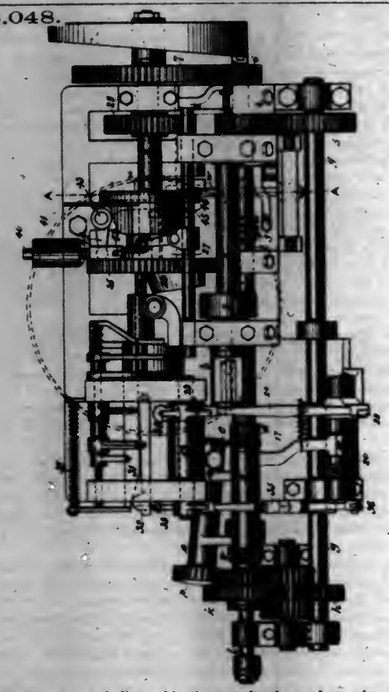
Claim.—1. In a screw-cutting machine, the combination, with a rotary gripping spindle and jaws for holding and rotating the screw-blank, of a pressing-disk having an annular sharp edge rotating in contact with the rotating screw-blank and moving in a line parallel to the axis of the rotating blank, so that the disk in its travel along the blank displaces portions thereof to constitute a screw-thread, substantially as described.

2. In a screw-cutting machine, the combination, with a gripping spindle and jaws rotating but immovable lengthwise for holding and rotating the screw-blank, of the disk-carrying spindles, inclined relatively to each other and arranged at opposite sides of the blank, the pressing-disks mounted, respectively, on the spindles, and each having a sharp annular edge rotating in contact with the rotating blank, and means, substantially as described, for slowly moving the disks and their shafts parallel to the axis of the rotating blank, so that the disks in their travel along the blank displace portions thereof to constitute a screw-thread, substantially as described.

3. In a screw-cutting machine, the combination, with a rotating gripping spindle and jaws for holding and rotating a screw-blank, of the disk-carrying spindles mounted in sleeves inclined relatively to each other at opposite sides of the blank, the pressing-disks mounted, respectively, on the spindles, and means for closing the disks upon the rotating blank, causing the disks, spindles, and sleeves to slowly move parallel to the axis of the blank, and opening the disks to release the blank when the thread is finished, substantially as described.

4. In a screw-cutting machine, the combination, with a rotating gripping spindle and jaws for holding and rotating a screw-blank, of the disk-carrying spindles mounted in sleeves inclined relatively to each other at opposite sides of the blank, the pressing-disks mounted,

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respectively, on the spindles and having annular sharp edges, a lengthwise-movable shaft carrying the sleeves, means for moving said shaft back and forth for causing the disks to travel in a line parallel to the axis of the rotating blank, and means for closing the disks on the blank and opening them when the screw-thread is finished, substantially as described.

5. In a screw-cutting machine, the combination, with a rotating gripping spindle and jaws for holding and rotating a screw-blank, of a pair of disk-carrying spindles located at opposite sides of the blank and inclined relatively to each other, the thread-forming disks having annular sharp edges and mounted, respectively, on the spindles, mechanism for moving the spindles and disks parallel to the axis of the rotating blank, and means for closing the disks on the blank and imparting additional pressure to the disks on approaching the point end of the blank, substantially as described.

6. In a screw-cutting machine, the combination, with a gripping spindle and jaws for holding and rotating a screw-blank, of a pair of disks having annular sharp edges rotating in contact with the rotating blank and moving in a line parallel to the axis of the blank, and means, substantially as described, for increasing the pressure of the disks on the blank as they approach the point end of the latter, substantially as described.

408,049. REVERSING BELT-GEAR. HAMILTON E. SMITH, New York, N. Y. Filed Sept. 20, 1887. Serial No. 251,069. (No model.)

Claim.—1. The combination of the main shaft, a speed-wheel P' thereon, the shaft K, having thereon the loosely-mounted speed-wheel P and cam J, the belt *p*, connecting the speed-wheel on the main shaft with the speed-wheel on the shaft K, and the clutch R, movable on the shaft K and adapted to engage with the hub of the speed-wheel P, whereby the shaft K and the cam J thereon are caused to revolve, substantially as described.

2. The combination of the main shaft, the speed-wheel P' thereon, the shaft K, having cam J and loosely-mounted speed-wheel P, the clutch R, movable on shaft K, gear *s*, meshing with the gear S on spindle *t*, gear *s'*, on the other end of said spindle, gearing with gear S', attached to the cam, whereby a slow motion is transmitted to said cam, substantially as described.

3. The combination of the main shaft A, provided with fast pulley I and speed-wheel P', the counter-shaft B, having loose pulleys D F and intermediate fast pulley E, the open belt G and crossed belt H, for alternately connecting the fast pulleys E and I, the shaft K, having mounted thereon a cam J, gears S' *s*, loose speed-wheel P, and clutch R, the belt *p*, connecting the speed-wheels P P', the spindle *t*, having

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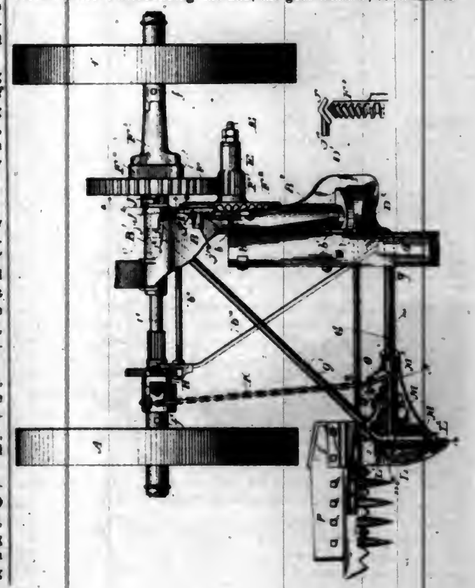


gears S *s'*, and the slides *n* and *o*, engaged with the cam J and with the belts G and H, respectively, substantially as described.

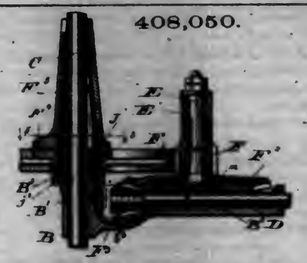
408,050. MOWING-MACHINE. JOHN F. STEWARD, Chicago, Ill. Filed Sept. 25, 1888. Serial No. 286,243. (No model.)

Claim.—1. In a mowing-machine, the axle, and the main frame mounted on the axle and provided with the eccentric hub surrounding the axle, in combination with the eccentric sleeve mounted to revolve on the hub, and the gear-wheel mounted to revolve on the eccentric, the eccentricity of the hub and the sleeve being approximately equal, whereby the rotation of the sleeve may be caused to adjust the gear-wheel concentric with the axle or eccentric thereto, as required.

2. In a mower, the frame having the hub B^3, and the axle passing eccentrically therethrough, in combination with the revoluble eccentric sleeve surrounding the hub, the gear-wheel F, revoluble on



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the sleeve, the pinion mounted on a fixed journal and engaging the gear-wheel, and a driving-connection between the wheel F and the axle.

3. The frame having the eccentric hub and shoulders j^3, in combination with the eccentric gear-sustaining sleeve mounted on the hub, and the lever pivoted to the sleeve and provided with lips j^3, substantially as shown, whereby the lever is adapted to turn the sleeve and lock the same.

4. In combination with the frame having shoulders j^3 and a cavity to receive the lever-stud, the rotary gear-sustaining sleeve mounted on the frame, the lever pivoted on the sleeve and provided with lips j^3 and stud j^3, and the spring j^3, acting to urge the stud into the cavity in the frame.

5. In combination with the rotary axle, the gear-wheel F, encircling the same, the intermediate eccentric sleeve to sustain and shift the gear, and the coupling-sleeve F^5, engaged loosely at one end with the gear-wheel and at the other end with the axle-collar *f*.

6. The frame having the hub B^3, the axle passed eccentrically through the hub, the eccentric sleeve surrounding the hub, the gear-wheel mounted on the sleeve and provided with the angular cavity in its side, the toothed collar *f*, secured to the axle, and the conical sleeve F^5, mounted on the axle with one end toothed to engage the collar *f* and the other enlarged to fit the cavity in wheel F, said elements constructed and combined substantially as described.

7. In a mowing-machine, the coupling-frame having the transverse hinge-bar *g* and thrust-bar *g'*, in combination with the hinge-piece having the sleeve to encircle the hinge-bar, and the rigid stud m^3, to engage the thrust-bar, said parts constructed, as shown, with a space between the sleeve and stud to admit of the hinge-piece being carried endwise to its place and then secured by a rotary motion.

8. In a mower, the combination of the coupling-frame comprising the arms *g* and *g'*, the hinge-piece M, journaled on the bar *g*, the main shoe connected to the hinge-piece by the fore-and-aft axis, and the gag-lever pivoted to the hinge-piece and adapted to be operated by contact with the coupling-frame as the latter is rocked upon the arm *g*.

9. In a mower, the coupling-frame having arms *g* and *g'*, in combination with the hinge-piece M, journaled on the arm *g* and provided with the tilting arm O, the lifting-chain connected to said arm, the lifting-lever connected to the chain, the main shoe pivoted to the hinge-piece M, and the gag-lever pivoted to the hinge-piece and arranged to act at one end against the shoe and at the opposite end against the arm *g'*, whereby the operation of the lifting-lever is caused first to effect the rocking motion of the shoe and finger-bar and thereafter the action of the gag-lever and the lifting of the cutting devices.

10. In a mower, and in combination with a hinge piece or support, the main shoe connected thereto by a horizontal pivot, the gag-lever mounted on the hinge-piece and arranged to act against the shoe, and a locking device, substantially as shown, adapted to fasten the gag-lever against the shoe at will, whereby the outer end of the finger-bar may be prevented from falling in relation to the shoe and hinge-piece.

11. In combination with the coupling-frame, the hinge-piece mounted thereon, the main shoe pivoted to the hinge-piece and provided with shoulder P, and the gag-lever pivoted to the hinge-piece adapted to engage said shoulder at one end and to engage the coupling-frame at the opposite end, whereby the gag-lever is caused to automatically lock the finger-bar in an upright position.

408,051. INCANDESCENT GAS-BURNER. JOHN L. STEWART, Philadelphia, Pa., assignor, by mesne assignments, to the Welsbach Incandescent Gas Light Company, Gloucester, N. J. Filed Dec. 27, 1887. Serial No. 258,026. (No model.)

Claim.—1. In an incandescent gas-burner, the combination of a burner-head having a number of fine perforations or gas-exits and provided with means for supporting a series of incandescent cylinders, a perforated crown-piece or cross-head supported above said burner-

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head, and a series of incandescing-cylinders supported by said crown-piece and burner-head, substantially as described.

2. In an incandescent gas-burner, the combination of a burner-head having a number of fine perforations or gas-exits *c'* and a series of projecting points b^m, a perforated crown-piece or cross-head supported above said burner-head, and a series of incandescing-tubes supported by said crown-piece and burner-head, substantially as described.

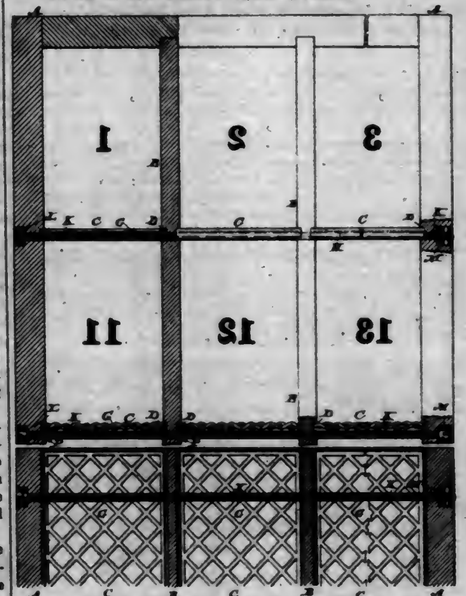
408,052. FINGER-NAIL GUARD OR PROTECTOR. JOHN J. STOLL, Brooklyn, N. Y. Filed Mar. 7, 1889. Serial No. 302,288. (No model.)



Claim.—1. A finger-nail protector consisting of the body A, having an attaching-strap and buckle and having its edge G shaped to correspond to the edge of the finger-nail, substantially as described.

2. A finger-nail protector consisting of the body A, having an attaching-strap and buckle and having its edge G shaped to correspond to the edge of the finger-nail, the attaching-strap being extended forward in front of the swell of the finger-joint to prevent the guard being pressed backward, substantially as described.

408,053. PIGEON-HOLE. WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Jan. 12, 1889. Serial No. 296,179. (No model.)



Claim.—1. A nest of pigeon-holes, with open-work partitions secured to the partitions that cross them by means of a rod or rods which pass through the pigeon-holes and engage with two or more of the open-work partitions to retain them in place, and which tend to hold them firmly together, substantially as set forth.

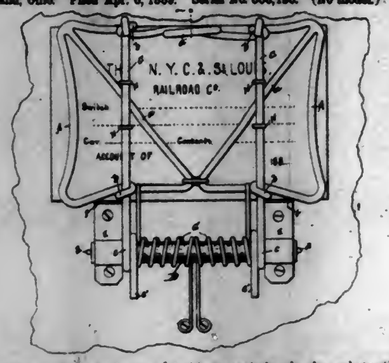
2. A nest of pigeon-holes provided with open-work partitions which are held or stayed in place by fastenings engaging with their under sides, so that the upper surface of said partitions is left flush and unobstructed, substantially as set forth.

3. A nest of pigeon-holes provided with open-work partitions which are loosely held in proper relation to partitions that cross them by grooves or projections, and secured against removal by fastenings

engaging with two or more open-work partitions, substantially as set forth.

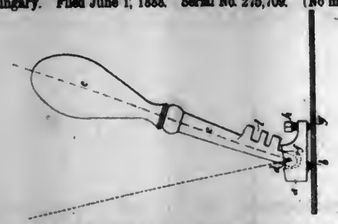
4. A nest of pigeon-holes, with partitions supporting their cross-partitions, which latter are loosely slid into place, and the whole nest held together by stiffening-rods, substantially as set forth.

408,054. CARD-HOLDER FOR CARS. WILLIAM H. THURBER, Cleveland, Ohio. Filed Apr. 6, 1889. Serial No. 306,186. (No model.)



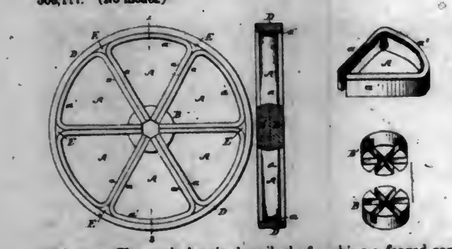
Claim.—A card clamp or holder consisting in the substantially rectangular frame A, having diagonal bars *a* and loops *b*, all formed in a single piece, in combination with rods C, extending over the back of frame A and rigidly fastened in loops *b* and provided with loops *c*, spindle D, on which the loops *c* are free to turn, forming a hinge for the frame, a spring, as G, to hold the frame A in working position, and teeth, as H, on the rods C, all constructed and arranged substantially as set forth.

408,055. GLAZIER'S DIAMOND. JOHANN URBANEK, Vienna, Austria-Hungary. Filed June 1, 1888. Serial No. 275,709. (No model.)



Claim.—A glazier's diamond consisting of a recessed head or block, a handle pivoted within said recess, and two diamonds or cutting-points, one of which is stationary and eccentrically disposed with reference to the pivot of the handle, while the other is adjustably secured to the block, substantially as described.

408,056. METHOD OF MAKING WROUGHT-IRON CAR-WHEELS. SAMUEL M. VAUCLAIN, Philadelphia, Pa. Filed Apr. 22, 1889. Serial No. 308,117. (No model.)

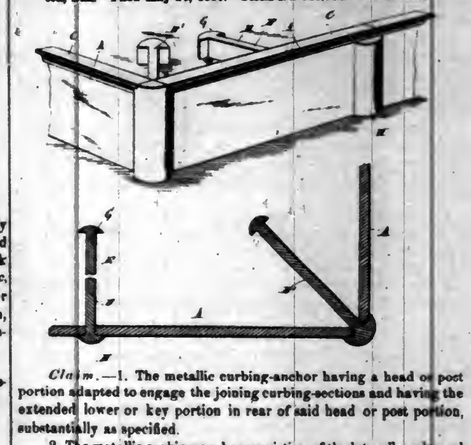


Claim.—1. The mode herein described of making a forged car-wheel, said mode consisting in first forming an outer rim-section, hub-sections, and spoke-sections, confining the inner ends of the spoke-sections by the hub-sections and the outer ends of the spoke-sections by the outer rim, heating the composite structure to a welding heat, and finally subjecting it to the action of dies, whereby it is welded into a solid mass, substantially as specified.

2. The mode herein described of making a forged car-wheel, said mode consisting in bending a series of bars so that each forms a spoke-section comprising a rim portion and spoke portions, confining the inner ends of the spoke portions by suitable hub-sections, confining the spoke-sections by an outer rim, filling the openings between the outer ends of the spoke-sections and the outer rim, and then heating the structure so formed to a welding heat and subjecting it to the action of dies, whereby its parts are welded into a solid mass, substantially as specified.

3. The mode herein described of making a forged driving-wheel, said mode consisting in bending a bar to circular form for the rim of the wheel, bending other bars to form rim portions and radiating spoke portions, forging opposite hub and crank sections and balance-weight sections, fitting the various parts together, and heating the composite structure, and then subjecting it to the action of dies, whereby the parts are welded together, substantially as set forth.

408,057. METALLIC CURBING-SECTION. HIRAM W. WHITE, Yankton, Dak. Filed May 20, 1889. Serial No. 311,381. (No model.)



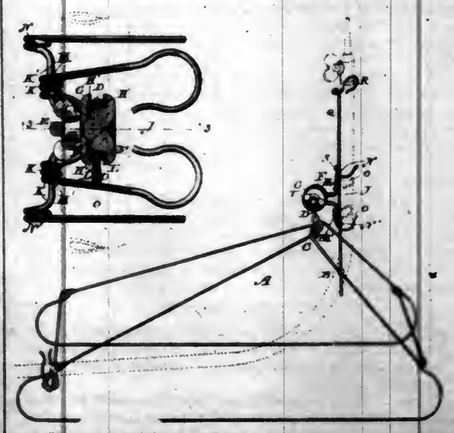
Claim.—1. The metallic curbing-anchor having a head or post portion adapted to engage the joining curbing-sections and having the extended lower or key portion in rear of said head or post portion, substantially as specified.

2. The metallic curbing-anchor consisting of the laterally-enlarged head or post having the reversely-beveled shoulder in rear below its upper edge, and the rearwardly-extending key portion extending from its lower portion and terminating in an enlargement or foot at its inner end, substantially as specified.

3. The combination, with metallic curbing-sections rabbeted at their ends and having acute-angled shoulders, of the anchors, their reversely-beveled shoulders, and rearwardly-extending key portion, substantially as specified.

4. The combination, with metallic curbing-sections, of the anchor-posts having rearwardly-extending key portions and adapted to engage and hold said curbing-sections in position, substantially as specified.

408,058. HOSE-HOLDER. WARREN C. WILLITS, Denver, Colo. Filed Mar. 23, 1889. Serial No. 304,421. (No model.)



Claim.—1. The combination, with a hose-supporter, of a hose clamp formed with two pieces of wire pivoted together, and mechanism for adjustably holding the jaws of said clamp in fixed relative position, substantially as set forth.

2. The combination, with a sled formed of a single piece of wire, of a hose-clamp formed of two pieces of wire pivoted together, and mechanism for adjustably securing the jaws of said clamp in fixed relative positions, substantially as set forth.

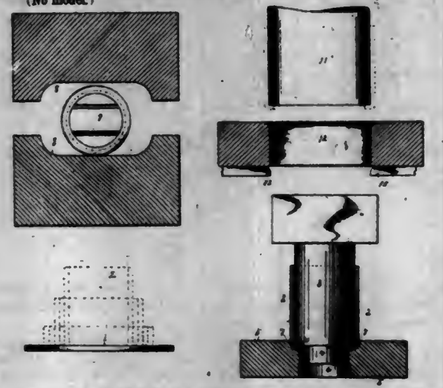
3. The combination of a sled formed of a single piece of wire and having at one end a loop D, with a wire hose-clamp provided with loops L L', the bolt E, cap H, and thumb-screw I, for attaching the hose-clamp to the sled, substantially as described.

4. The combination of a wire sled, a loop in one brace thereof, a wire hose-clamp pivotally secured to the sled, and loops N N' in the hose-clamp, with a separate removable standard Q, substantially as described.

5. The combination, with a hose-clamp composed of two parts, each of which is looped at one end, of a headed bolt and cap, said bolt passing through said loops, annular grooves and notches in the head of the bolt and cap, and a thumb-screw adapted to screw upon the bolt and bind the parts together, substantially as described.

6. In a hose-clamp, the combination of two pieces of wire pivotally joined together by twisting one around the other and extending outwardly to form jaws, and mechanism for holding said jaws in fixed relative positions, substantially as set forth.

408,059. METHOD OF MAKING FLATTENED TUBES. SAMUEL R. WILMOT, Bridgeport, Conn., assignor to the Wilmot & Hobbs Manufacturing Company, same place. Filed Jan. 28, 1889. Serial No. 297,756. (No model.)



Claim.—The method of forming flattened tubes, which consists in drawing a round tube from a disk of metal in the usual manner, then punching the bottom from said tube, leaving an inwardly-turned flange, then flattening said rounded tube to substantially the shape required, and finally placing the flattened tube upon a correspondingly-flattened punch, the end of said punch resting against said flange, and then forcing said tube through a correspondingly-shaped drawing-die, substantially as described.

408,060. WATER-TUBE BOILER. JOHN WOOD, Jr., Conshohocken, Pa. Filed Mar. 12, 1889. Serial No. 302,961. (No model.)

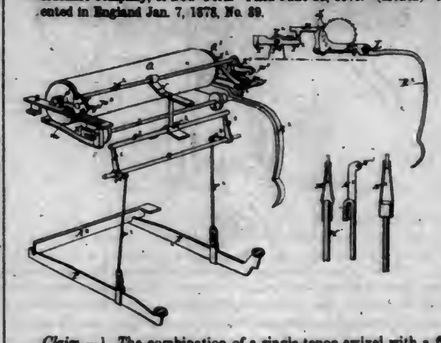


Claim.—1. The combination, in the water-section of a steam-boiler, of the cylinders having convex heads provided with man-holes, the tube-sheet having holes drilled therein in staggered form, the tubes connecting said cylinders having their ends expanded in said holes, and brace-rods extending through the inner surfaces of said tubes and connected to said heads, substantially as described.

2. The combination, in a steam-boiler, of the steam-drum, the cylinders having convex outer heads formed with man-holes in their centers, cover-plates for said man-holes, means for securing said plates to said convex heads, the inner tube-sheets having holes arranged in staggered series therein, tubular necks connecting said drum and cylinders, and a series of tubes having their ends expanded in said holes, substantially as described.

3. The combination, with a steam-drum having a convex head provided with a man-hole, a removable cover-plate therefor, and means for securing said plate to said head, of a steam-boiler proper consisting of the barrel, the convex heads having man-holes formed in the centers thereof, the removable plates for said man-holes, means for securing said plates to said heads, the tube-sheets forming the inner heads of said barrel and having holes arranged therein in staggered series, the tubes having their ends expanded in said holes and connecting said sheets, the stay-rods having crow-feet extending through a suitable number of said tubes and rigidly secured to the inner sides of said convex heads, and necks connecting said steam drum and boiler, substantially as described.

408,061. TYPE-WRITING MACHINE. GEORGE W. N. YOST, New York, N. Y., assignor, by mesne assignments, to the American Writing Machine Company, of New York. Filed June 28, 1879. (Model.) Patented in England Jan. 7, 1878, No. 89.



Claim.—1. The combination of a single-tenon swivel with a flat-strap connection-holder F^4, key-lever embraced by said strap, connecting-rod, and type-bar of a type-writing machine, substantially as and for the purpose set forth.

2. The combination of the type-bar of a type-writing machine, its journal D^4, secured thereto, with a connecting-rod H, and its spring-fork H^2, having bearings to receive and clasp said journal, substantially as and for the purpose described.

3. The combination, with the carriage and line-spacing apparatus of a type-writing machine, of a lever or handle extending in front of said machine and down toward the key-board, substantially as and for the purposes described.

4. The combination of two extra key-levers and connecting-rods with the platen transverse reciprocating apparatus of a type-writing machine and a series of key-levers for operating the type-bars located between said extra key-levers, substantially as and for the purpose described.

5. The combination of a trip-ratchet which has an elongated curved finger which surrounds the ratchet-bar hinge-hub with the ratchet-bar trip-pin of a type-writing machine, substantially as and for the purpose described.

6. The combination of the main spring of a type-writing machine, its shaft, and a shield loose on said shaft to prevent undue friction against said spring, as described.

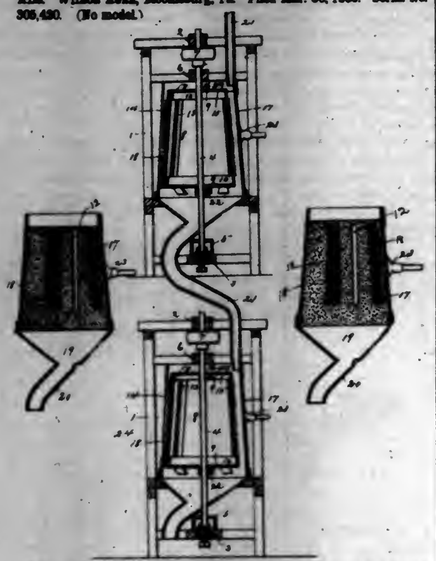
408,062. TOY GUN. THOMAS ADAMS, Highland, N. Y. Filed Mar. 6, 1889. Serial No. 302,062. (No model.)



Claim.—A toy gun consisting of the barrel having the yoke pivoted to the end thereof, the stock having the spring-hammer secured thereto, the piston arranged in the barrel and adapted to be engaged by the spring-hammer, and the trigger pivoted in the stock and bearing against the spring-hammer, the action of the trigger releasing the

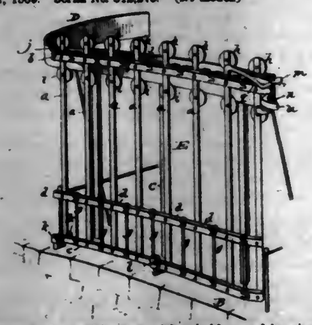
hammer from engagement with the piston, substantially as and for the purpose described.

408,063. METHOD OF SCOURING AND DECORTICATING CEREALS. WILSON AGER, Bloomsburg, Pa. Filed Mar. 30, 1889. Serial No. 305,430. (No model.)



Claim.—The art, method, or process herein set forth for cleaning and decorticating wheat and other cereals, consisting in first subjecting the grain to the action of a decorticator having an abrading-surface of Derbyshire stone, and then to a similar process in a mill having a facing of Seneca stone or Medina brown-stone of the character specified, substantially as described.

408,064. BRIDGE-GUARD. JAMES AYERS, Keokuk, Iowa. Filed May 27, 1889. Serial No. 312,273. (No model.)



Claim.—1. In combination with a bridge and its abutment, an elevated track or rail located upon the abutment, a flexible guard suspended from the track, and a locking device carried by the guard and adapted to engage the rail, all substantially as shown.

2. In combination with a bridge and its abutment, a track or rail secured in position upon the latter, a flexible gate or guard mounted upon the track and provided with a hook or projection, as *u*, and a hook or projection, as *t*, carried by the bridge, said parts being arranged in such manner that when the guard has reached the limit of its movement its hook or projection will be in such position as to permit the ready disengagement of the projection on the bridge.

3. In combination with a bridge and its abutment, curved as shown, a track or rail curved correspondingly and provided with a straight portion, and a flexible guard mounted thereon and provided with a hook or projection to be engaged by a projection upon the bridge.

4. In combination with a bridge and its abutment, a flexible guard or gate provided at one end with a projection, as *u*, and hooks or projections *s* and *t*, secured to the bridge, one of said projections *t* being adapted to engage the guard's lug *u* when the bridge is being opened, and the other lug *s* serving to return the guard to its position.

5. In combination with the abutment and the track or rail thereon, a flexible guard or gate mounted upon the track, an automatic locking-dog, a bridge provided with an upright, an inclined arm *g* carried by the upright, and projections *s t*, also carried by the upright to engage the guard.

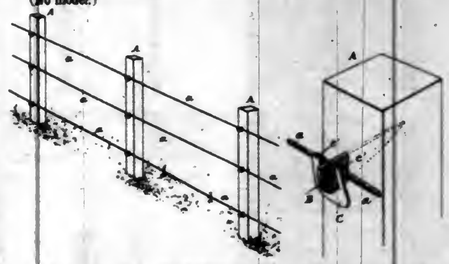
6. In combination with the abutment, the track or rail D thereon, flexible guard or gate E, provided with wheels *h* to run on the track, a guide-roller to steady the lower edge of the guard or gate, and a bridge adapted and arranged to actuate the guard.

7. A flexible guard composed of a series of hinged sections F, comprising upright rod or bar *a*, upper, lower, and intermediate cross-bars *b*, *c*, and *d*, perforated at their ends, as shown, and bolts or pins pivotally connecting the cross-bars of adjacent sections.

8. A flexible guard or gate for bridges and the like, comprising a series of connected sections F, each section being composed of an upright rod *a*, wheels *h* and *i*, to run on the upper and lower edges of the track to which the guard is applied, and a friction wheel or wheels *j*.

9. A flexible guard for bridges, &c., comprising a series of sections having upright *a* and cross-bars *b c d*, a pin connecting the cross-bars *b* of adjacent sections, a pin connecting the cross-bars *c d* of adjacent sections, and a supporting-wheel at the upper end of one of the sections.

408,065. WIRE-FASTENER. BENJAMIN T. BARRET and RICHARD RUMSICK, Henderson, Ky. Filed Apr. 20, 1889. Serial No. 307,935. (No model.)



Claim.—1. In a wire-fastener for wire fences, &c., the combination of steel nail B, having wire-supporting groove *b*, and U-shaped clamp C, having hooks *c'*, substantially as set forth.

2. In a wire-fastener for wire fences, &c., the combination of post A, steel triangular-shaped nail B, having upper groove *b* and lower series of grooves *b'*, with U-shaped clamp C, having groove *c* and hooks *c'*, all substantially as and for the purpose set forth.

408,066. ROOFING OR SHEATHING. JOHN W. BEAUMONT, Birmingham, Ala. Filed Feb. 16, 1889. Serial No. 300,156. (No model.)

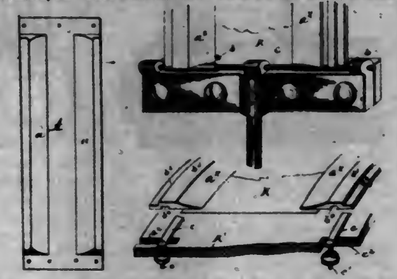


Claim.—1. A roofing or sheathing composed of similar strips laid edge to edge and connected by a tongue and groove intermediate of and at a distance from the two faces of the strip, each strip being provided with a concealed channel cut at the angle between the tongue and the edge from which it projects, substantially as described.

2. A roofing or sheathing composed of similar strips, each having a tongue projecting from one edge with an upward inclination, and a groove formed in the other edge, having a corresponding downward inclination, said tongue and groove being intermediate of and at a distance from the two faces of the strips, a concealed channel or gutter being formed in the strip at the angle between the inclining upper surface of the tongue and the edge from which it projects, substantially as described.

3. The combination, with a strip of roofing or sheathing having a tongue or tenon projecting with an upward inclination from one edge and provided with a channel formed at the angle between the upper surface of the tongue and the edge of the strip, of a similar strip provided with a groove or mortise having a suitable inclination to receive said tenon and provided with a channel formed at the lower angle of the mortise or groove, substantially as described.

408,067. APRON FOR CIGAR-MACHINES. JOHN J. BUCKER, Scranton, Pa. Filed June 24, 1887. Serial No. 242,433. (No model.)



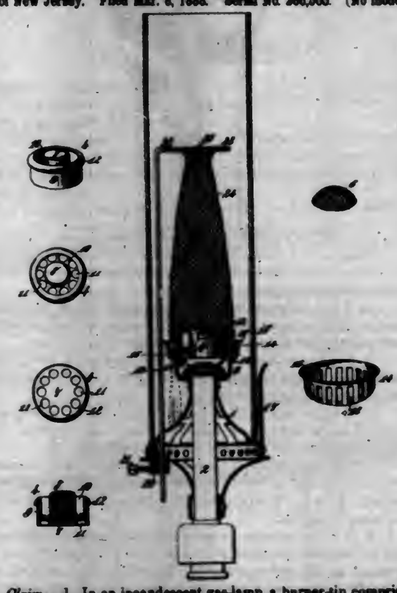
Claim.—1. The apron or belt for cigar-bunching machines, having upon its upper surface one or more removable or separable tapering ribs traversing its length, substantially as set forth.

2. The belt or apron for cigar-bunching machines, having upon its upper surface one or more adjustable tapering ribs, substantially as and for the purpose set forth.

3. The combination, with a belt or apron for a cigar-bunching machine, having upon its upper surface one or more longitudinal tapering flexible ribs, of the loop-forming rollers of the bunching-machine, each roller bearing upon a track or depression in the rib or ribs, substantially as and for the purpose set forth.

4. In a cigar-bunching machine, the combination, with one or more ribs having in its under side a groove or channel, of a cleat entering said groove or channel and adjustable along the table of the bunching-machine by means of nutted screws passed through a slot in the table and engaging the cleat or cleats, and an apron, substantially as specified.

408,068. INCANDESCENT GAS-LAMP. HAROLD J. BELL, Woodbury, N. J., assignor to the Wolsbach Incandescent Gas Light Company, of New Jersey. Filed Mar. 6, 1888. Serial No. 266,505. (No model.)



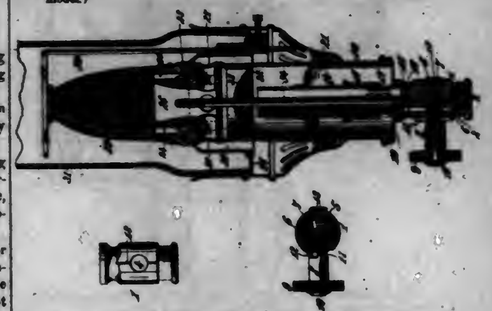
Claim.—1. In an incandescent gas-lamp, a burner-tip comprising a central cone, an outer rim or shell, an intervening annular flame-passage, and an annular series of gas-passages that perforate the base of the burner-tip around the central cone and below the annular flame-passage, said gas-passages being extended partly into the outer rim or shell, whereby the flame is deflected toward the center of the burner-tip, substantially as described.

2. In an incandescent gas-lamp, the combination, with a burner-tube, of a gallery supported on said tube, a cup at the upper end of said tube and gallery, and a burner-tip supported in said cup and provided with an annular flame-passage and with an annular series of gas-passages leading into said flame-passage, substantially as described.

3. In an incandescent gas-lamp, the combination, with a burner-tube and a gallery supported thereon, of a cup at the upper end of said gallery, a wire-gauze cone placed in said cup, and a burner-tip supported in said cup above the inclosed wire-gauze cone and provided with an annular flame-passage and with an annular series of gas-passages leading into said flame-passage, substantially as described.

4. In an incandescent gas-lamp, the combination, with an atmospheric gas-burner tube, of a gas and air expansion chamber at the upper end of said tube, a perforated diaphragm located in said chamber, and a burner-tip supported in said chamber above the perforated diaphragm, substantially as described.

408,069. INCANDESCENT GAS-LAMP. HAROLD J. BELL, Gloucester City, N. J., assignor to the Wolsbach Incandescent Gas Light Company, of New Jersey. Filed Sept. 6, 1888. Serial No. 284,726. (No model.)



Claim.—1. In an incandescent gas-lamp, the combination, with a main gas-passage and an auxiliary or independent gas-passage, of a gas-cock having a turn-plug provided with ports or passages located at an angle with each other, whereby one will be open when the other is closed, and a detachable and adjustable stop-button located at one end of said turn-plug, whereby its rotation can be limited to cut off the gas at a predetermined point, substantially as described.

2. In an incandescent gas-lamp, the combination, with a main gas-passage, an Argand burner, an incandescent device, and a central subsidiary gas-jet, of a gas-cock for controlling the main and subsidiary gas-passages and provided with a turn-plug having an adjustable stop-button, whereby the rotation of the plug in either direction can be limited to cut off the gas at a predetermined point and regulate the lowest point to which the subsidiary gas-jet can be turned after the stop-button has been set, substantially as described.

408,070. SHADE-HOLDER. HAROLD J. BELL, Gloucester City, N. J., assignor to the Wolsbach Incandescent Gas Light Company, of New Jersey. Filed Oct. 2, 1888. Serial No. 286,998. (No model.)



Claim.—1. A reversible shade-holder composed of a continuous piece of zigzagged wire united at its ends and comprising a series of flexible fingers joined by the bends at top and bottom and bowed in radial lines to form a series of shade-supporting ledges, substantially as described.

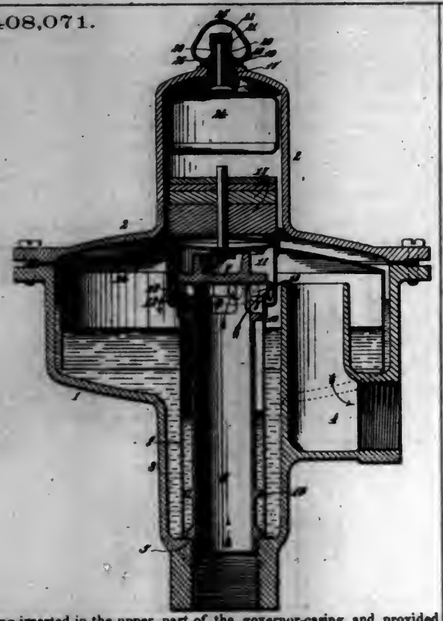
2. A reversible shade-holder composed of zigzagged wire and comprising a series of flexible duplex and U-shaped fingers bowed between the upper and lower bends of the wire to form a circle of ledges 4, and capable of being turned inside out to project said circle of ledges inward or outward, substantially as described.

408,071. GAS-GOVERNOR. HAROLD J. BELL, Gloucester City, N. J., assignor to the Wolsbach Incandescent Gas Light Company, of New Jersey. Filed Jan. 16, 1889. Serial No. 296,513. (No model.)

Claim.—1. In a gas-governor, the combination, with the governor-casing and a balanced gas-regulating valve inclosed in said casing, of a bushing 18 inserted in an opening in the upper part of the governor-casing, a perforated cap 25, attached to said bushing above the governor-casing, an air-valve 23, having its stem suspended in the bushing, and a float 24, attached to the under side of said valve, substantially as described.

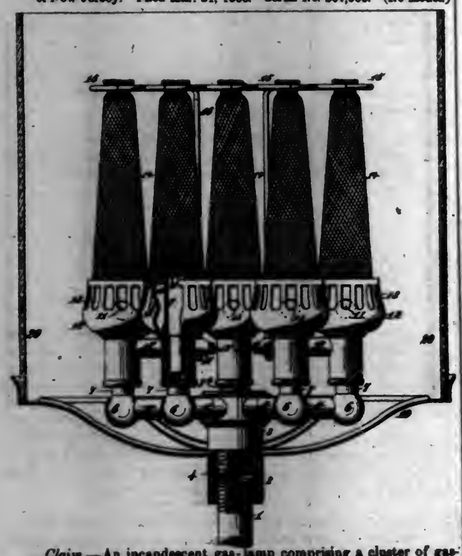
2. In a gas-governor, the combination, with the governor-casing and a balanced gas-regulating valve inclosed in said casing, of a bush-

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ing inserted in the upper part of the governor-casing and provided with air-openings 19 and 20, an air-valve suspended in said bushing, and a float attached to the under side of said air-valve, substantially as described.

408,072. INCANDESCENT GAS-LAMP. HAROLD J. BELL, Woodbury, N. J., assignor to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed Mar. 21, 1888. Serial No. 267,986. (No model.)



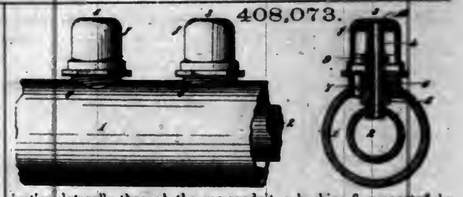
Claim.—An incandescent gas-lamp comprising a cluster of gas-burners, one of which is central, while the others are grouped around it, a number of incandescent mantles, each suspended separately above a single gas-burner, and a globe or chimney surrounding the entire cluster of burners and incandescent mantles, substantially as described.

408,073. GAS-HEATING BURNER. HAROLD J. BELL, Gloucester City, N. J., assignor to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed Feb. 3, 1889. Serial No. 299,163. (No model.)

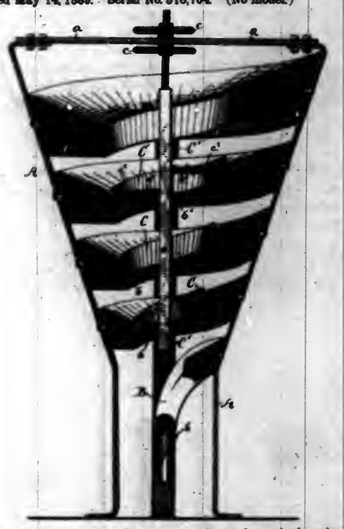
Claim.—1. The combination, with a gas-conduit and an air-conduit, of an air-nozzle 4, communicating with the air-conduit and projecting laterally through the gas-conduit, a bushing 6, supported by the gas-conduit and surrounding the air-nozzle, said bushing being provided with a gas-passage 7 and a burner-tip 8, surrounding the air-nozzle on the outside of said bushing, substantially as described.

2. The combination, with the plates 11, 12, and 13, forming a gas-conduit and an air-conduit, of stays 15 and bolts 16, connecting said plates, and a number of laterally-projecting burners 3, each having a central air-nozzle 4 and a surrounding burner-tip 8, substantially as described.

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408,074. DUST-COLLECTOR. EUGENE BRETNEY, Indianapolis, Ind. Filed May 14, 1889. Serial No. 310,764. (No model.)



Claim.—1. A dust-collector consisting of a spiral casing having an inlet-opening, a dust-outlet, and an air-outlet through its inner wall, substantially as set forth.

2. A dust-collector consisting of a spiral casing of contracting size, provided with an inlet-opening, a dust-outlet, and an outlet for the discharge of the purified air, substantially as set forth.

3. In a dust-collector, a spiral separating-chamber having an inlet-opening, a dust and air outlet, and a valve for regulating said air-outlet, substantially as set forth.

4. In a dust-collector, a spiral separating-chamber having an inlet-opening and a dust and air outlet, the top of said chamber being a tapered or deflecting wall, substantially as set forth.

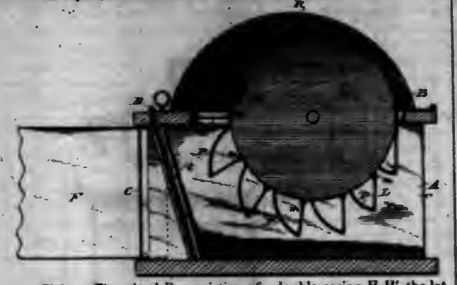
5. In a dust-collector, a spiral separating-chamber contracted in size from the inlet to the outlet opening and the tapered deflecting top or wall, and an air-discharge opening formed in the inner wall, substantially as set forth.

6. In a dust-collector, a spiral separating-chamber tapered from top to bottom, a top deflecting or tapered wall and inlet and outlet opening, an air-discharge opening formed in the inner wall, and an adjustable valve for said air-discharge opening, substantially as set forth.

7. A dust-collector consisting of the frame, the tapered spiral separating-chamber, the top wall of which is inclined from its outer to its inner edge, and an opening for the escape of the purified air formed in the inner wall and extending from near its top to near its bottom, substantially as set forth.

8. In a dust-collector, the combination of the frame, the spiral casing having inlet and outlet openings, the opening for the discharge of the purified air, and the valve C, supported on the adjustable rod C' and connected therewith by an adjustable connection, substantially as set forth.

408,075. WATER-MOTOR. HERMIAN BROWN, Brownsville, Kans. Filed Apr. 6, 1889. Serial No. 306,193. (No model.)



Claim.—The wheel B, consisting of a double casing H H', the latter forming an inner air-tight cylinder, with chambers I at the ends of the wheel formed between the heads of the inner and outer casing and the floats, said outer casing provided with slots o, the freely-moving rods P, extending into said chambers and to which the floats are secured, in combination with a frame to support the same, substantially as described.

408,076. FARE-BOX ATTACHMENT. FREDERICK R. BROWNELL, St. Louis, Mo. Filed Oct. 17, 1888. Serial No. 288,334. (No model.)



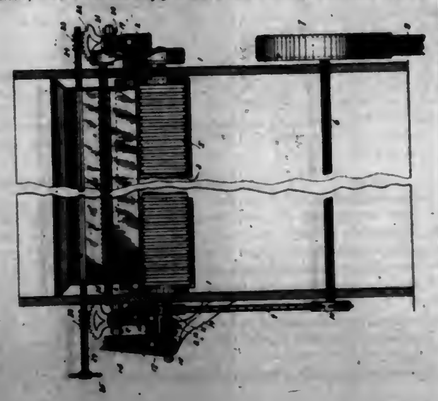
Claim.—1. The combination, with a fare-box, of a pin and a cap loosely fitted together, and adapted to separate when the fare-box is inverted, substantially as described.

2. The combination of a fare-box, a C-shaped bracket secured to the box, and a cap fitting on the lower end of the bracket and connected to the upper end of the bracket, substantially as and for the purpose set forth.

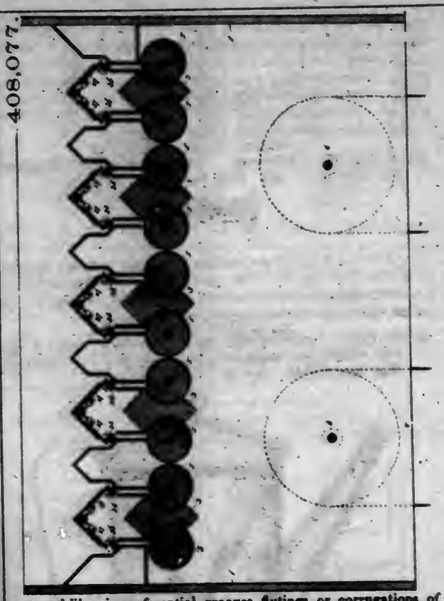
3. The combination of a fare-box having slides 2, and an attachment located beneath the lower slide, consisting of a pin and a removable cap loosely fitted together, substantially as and for the purpose set forth.

408,077. GRAIN HULLING AND REDUCING MACHINE. GUSTAV ADOLPH BUCHHOLS, Frankfort-on-the-Main, Prussia, Germany; Octavius Knight (administrator of said Gustav Adolph Buchhols, deceased) assignor of one-third to James Underhill Robertson, New York, N. Y. Filed Aug. 2, 1888. Serial No. 281,816. (No model.)

Claim.—1. In a hulling or grain-reducing machine, the combination, with a horizontally-journaled roller having numerous equidistant and like circumferential grooves, flutings, or corrugations, of a similarly-grooved longitudinally-reciprocated concave concentric or nearly concentric with and in near proximity to the descending side of said roller, substantially as and for the purposes set forth.

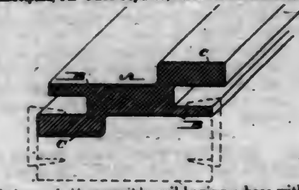


408,077.



2. In a hulling or grain-reducing machine, the combination of tapered circumferentially-grooved rollers and a longitudinally-reciprocated, correspondingly-grooved, and reversely-tapered concave between and concentric with said rollers, and means for producing such longitudinal reciprocation, as and for the purposes set forth.

408,078. REVERSIBLE RAILROAD-RAIL. ROBERT R. BURNS, Philadelphia, Pa. Filed Sept. 15, 1888. Serial No. 285,490. (No model.)

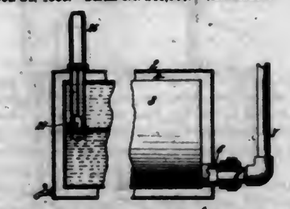


Claim.—1. A reversible rail having a base with treads on the upper and lower faces and side flanges, the treads extending laterally farther than the flanges, substantially as described.

2. A reversible rail having a base with treads on the upper and lower faces, the remaining portions of said faces being flat and having flanges extending laterally on the opposite sides at the upper and lower parts, respectively, substantially as described.

3. A reversible rail having a flat base adapted to rest on a suitable support, flanges on said base for securing the rail, and treads on the upper and lower faces of the base arranged diagonally opposite to each other, substantially as described.

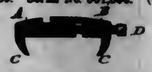
408,079. VAPOR-STOVE. JONATHAN S. BUTLER, Springfield, Ill. Filed Oct. 21, 1886. Serial No. 216,916. (No model.)



Claim.—A vapor-stove comprising a frame 1, supporting a top plate, an oil-containing tank secured to the lower part of said frame

below said top plate and having a pipe 5 projecting horizontally from one end, vapor-burners communicating with said oil-tank, a rotatable joint 6, fitted in the outer end of the horizontally-projecting pipe 5, a pipe 7, communicating with and supported on said rotatable joint 6, and a water-containing tank 8, mounted on and communicating with the pipe 7 for supplying water to the oil-tank to float the oil therein to the burners, substantially as shown and described.

408,080. HOOF-CLAMP. ALEXANDER H. CARROLL, Philadelphia, Pa. Filed Mar. 1, 1889. Serial No. 301,566. (No model.)



Claim.—A hoof-clamp consisting of sections each having prongs at its outer end, and one of the parts having a threaded socket, and a screw working through an opening in the other portion and in said socket, said parts combined substantially as described.

408,081. PERCOLATOR FOR COFFEE-POTS. JAMES M. CHADWICK, Gadsden, Ala., assignor of one-half to Amariah T. Fuller, same place. Filed Sept. 17, 1888. Serial No. 285,635. (No model.)



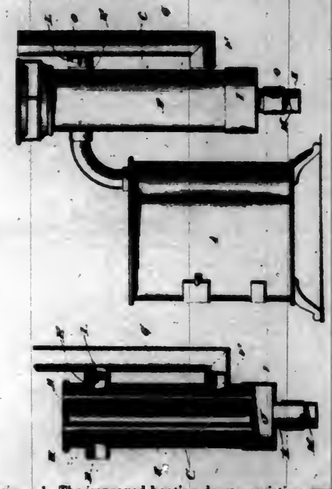
Claim.—A coffee-pot consisting of a longitudinally-tapered body decreasing in diameter from its upper open end toward the base thereof and having a removable cover *a*, a cone-shaped receptacle C, detachably suspended in the body by the upper edge thereof binding against the wall or body of the pot a short distance below the upper end and cover of said pot, and having an opening *c'* in its apex and a series of openings *d* near the edge of its upper open end, and a fabric sheath or jacket fitted closely around said receptacle over the openings *c' d* therein and lapping the upper edge of the open end of the receptacle, whereby the fabric sheath and receptacle are suspended within the pot below the top thereof solely by frictional contact with the wall of the pot, and a space is provided between said wall and the receptacle to secure a free circulation through the openings *c' d*, substantially as described.

408,082. WASHING-MACHINE. JAMES CHAMBERS, Rochester, Ind. Filed Aug. 9, 1888. Serial No. 282,305. (No model.)



Claim.—The combination of a table, a rigid support erected upon one end of this table, the two rearwardly-extending parallel bars E E, pivoted to the said rigid support, the two operating-levers G G, pivoted to the forward ends of the said bars E, the lower portions of both of these levers being extended below these bars, the depending links I I, pivoted to the bars E E between their pivotal points and their forward ends, the horizontal parallel bars K K, pivotally connecting the lower ends of the levers G G and the links I I, the connecting and bracing rounds F F' and H' J, and rubbers attached to the side bars K K, as and for the purpose described.

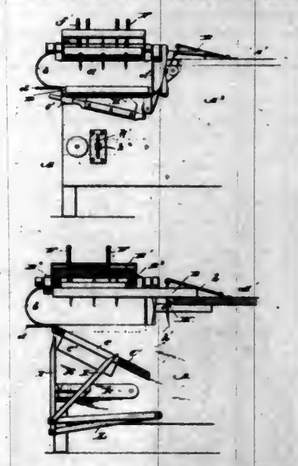
408,083. HEATING-DRUM FOR FRUIT-DRIERS. NATHANIEL C. CLEMENT and JAMES I. CLEMENT, West Plains, Mo. Filed June 12, 1888. Serial No. 276,855. (No model.)



Claim.—1. The improved heating-drum consisting, essentially, of the cylinder having the vertical air-tubes, the inlet-pipe D at the upper end of the cylinder, the escape-pipes E and F at the upper and lower ends of the cylinder, respectively, the pipe E being provided with a damper, and the pipe G, connecting and communicating with the pipes E F, as specified.

2. The combination of the cylinder having the air-flues, the cap secured thereto, the tube depending from the cap, the damper in said tube having a damper-rod provided with a crank-arm on one end, and the link secured to the tube and engaging the said crank-arm, as set forth.

408,084. BAND-CUTTER AND FEEDER. LEVI CLARK, Leona, Kans. Filed Mar. 7, 1889. Serial No. 302,259. (No model.)



Claim.—1. In a band-cutter and feeder for thrashing-machines, the combination, with the endless feeding-belt, of the vertical serrated band-cutting knife arranged transversely relative to said belt and in substantially the same horizontal plane, said knife being attached to a bar, and crank-connections therewith to impart a vertical horizontal reciprocation to said knife and intermittently project the serrated portion above the plane of the endless belt, substantially as set forth.

2. In a band-cutter and feeder for thrashing-machines, the combination, with the endless feeding-belt, of the vertical knife arranged transversely relative to said belt and in substantially the same horizontal plane, connections for imparting to said knife a vertical horizontal reciprocating movement to intermittently project the cutting portion above the plane of the belt, and a frame suspending a toothed feed-roller immediately above said knife, substantially as set forth.

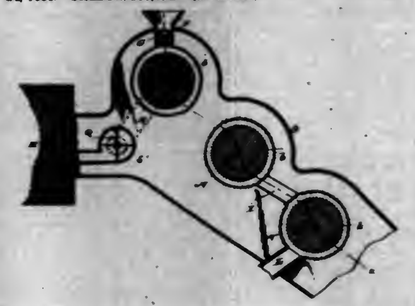
3. In a band-cutter and feeder for thrashing-machines, the combination of the endless belts on either side of the discharge, transverse knives arranged adjacent to the inner ends of the said belts and in substantially the same horizontal plane, connections for vertically and transversely reciprocating said knives, as described, toothed feed-rollers arranged immediately above said knives, and feeding-fingers and their operating devices between said knives, substantially as set forth.

4. In a band-cutter and feeder for thrashing-machines, the combination of the endless belts arranged at either side of the discharge, transverse knives arranged adjacent to the inner ends of said belts and in substantially the same horizontal plane, connections for vertically and horizontally reciprocating said knives, as described, toothed feed-rollers immediately above said knives, reciprocating feed-fingers to move the grain in the direction it is fed by the rollers, and a second set of reciprocating fingers operating at right angles to the fingers first mentioned.

5. In a band-cutter and feeder for thrashing-machines, the inclined slotted discharge-platform, the feeding-bars having their lower ends bifurcated and their upper extremities playing in the slot in the platform, a vertically-adjustable shaft provided with cranks connected to said bars, and a series of horizontal rods pivoted at one end to a fixed portion and having their other ends pivotally connected to the bifurcated ends of the bars, substantially as set forth.

6. In combination with a slotted inclined board C, a series of beveled strips *c'*, bars I, bifurcated at their upper ends to provide fingers which pass through the adjacent slots in the board C, said bars I being centrally connected alternately to opposed bends in a crank-shaft, and bars L, for limiting the movement of the lower ends of the feeding-bars I, substantially as shown, and for the purpose set forth.

408,085. COTTON-SEED CLEANER. ROBERT H. COLLYER, New Orleans, La., assignor to Edward A. Blakely, same place. Filed Sept. 24, 1888. Serial No. 286,154. (No model.)



Claim.—1. In a machine for delinting cotton-seed, the combination, with the main frame, of a plurality of conical gauze chambers arranged one above the other obliquely and having communication with one another, the small end of one being in a vertical transverse plane with the large end of another, brush-cones mounted on horizontal shafts and arranged within the gauze chambers, a lint-chamber communicating with the main frame, and a fan for drawing the cotton from the gauze conical chambers and discharging it into the lint-chamber, substantially as specified.

2. In a machine for delinting cotton-seed, the combination, with the main frame or case having a feed-hopper at its upper end, an inlet-aperture adjacent thereto, and a seed-discharge aperture at its lower end, of a plurality of conical gauze chambers arranged obliquely one above another and communicating with one another by the passages H I, and having the large end of one lying in a vertical transverse plane with the small end of another, brush-cones arranged upon horizontal shafts within the said gauze cones, a lint-chamber communicating with the main frame, and a suction-fan for delivering the lint into the said holder, substantially as specified.

408,086. DRY CLOSET. ANDREW M. COYLE, Washington, D. C. Filed Mar. 13, 1889. Serial No. 303,006. (No model.)

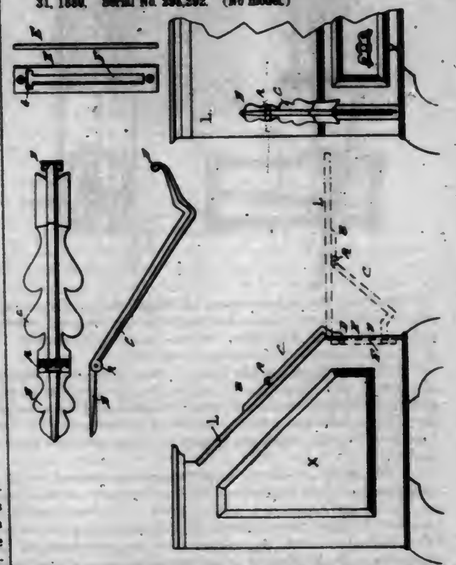
Claim.—1. In a dry closet such as described, the combination of a receptacle to hold the excrement, a draft-pipe connected to the said receptacle and opening into the body of the same and forming at the lower end a foot to receive and hold the lamp for creating the draft, and said lamp provided with a transparent guard to protect the flame and at the same time to allow for examination of the same, the said guard fitting against and forming part of the draft-pipe, substantially as described.

2. In a dry closet such as described, the combination of the receptacle A, the draft-pipe H and H', connecting-wires H^3, the T connection between the draft-pipe and receptacle, and a heater for creating a current of air in the said receptacle and draft-pipe, substantially as described.



3. In a dry closet such as described, the combination of the receptacle A, a draft-pipe, a T connection between the draft-pipe and receptacle, a lamp at the lower end of the draft-pipe, the diaphragm L, set in the draft-pipe below the junction of pipe leading from the receptacle, and a small pipe set in the said diaphragm and extending above the said junction, substantially as described.

408,087. BRACKET FOR DESKS. GEORGE P. DAVIS, Detroit, assignor to the Oriel Cabinet Company, Grand Rapids, Mich. Filed Jan. 31, 1889. Serial No. 298,292. (No model.)



Claim.—In combination with the desk X, having the inclined lid L, the hinge-bracket B C, jointed at A, the part B, fastened to the lid L, the part C, bent around the lower edge of said lid and terminating in a T-shaped end D, and the slotted plate E, substantially as shown and described.

408,088. SPREADER. NELSON R. DAVIS, Confluence, Pa. Filed May 9, 1889. Serial No. 310,184. (No model.)

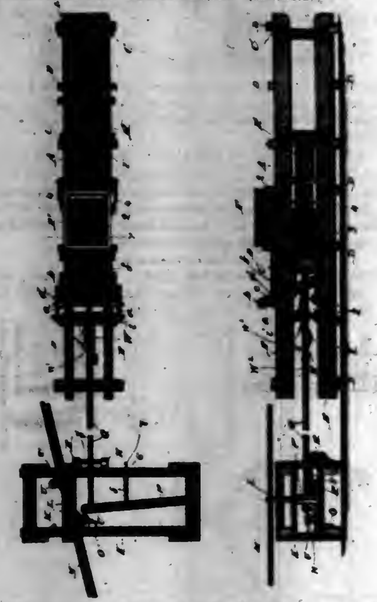


Claim.—1. The combination, in a whiffletree or spreader, of a round bar A, hooks pivotally attached to the ends thereof, the rear ends of said hooks being bent inwardly and provided with eyes, and the chains D D, connected to the eye of a swiveled hook, substantially as shown, and for the purpose set forth.

2. The combination, in a whiffletree or spreader, of a rounded bar A, provided at its ends with ferrules *a*, hooks having perforations

b, through which pass bolts for securing the hooks to the end of the bar A, the rear ends of said hooks being bent inwardly and provided with eyes *b'*, flexible connections D D, and a hook *c*, connected by a swivel to an eye or link *d*, substantially as shown, and for the purpose set forth.

408,089. BALING-PRESS. WILLIAM M. DENMAN, Lampasas, Tex.
Filed Oct. 10, 1888. Serial No. 287,715. (No model.)



Claim.—1. The combination of the frame, the plunger, the pitman connected to the plunger, mechanism for operating said pitman, the dogs pivoted on the pitman, the door, and devices connected to the door and operated by said dogs, as set forth.

2. The combination of the frame, the hopper mounted thereon, the door for said hopper, the pitman, mechanism for operating the pitman, the levers pivoted on the side of the frame and connected to the door, the cross-bar and links connected to said levers, and the dogs pivoted on the pitman and adapted to engage said cross-bar, as set forth.

3. The combination of the frame, the cross-bars secured thereto having inclined upper surfaces, the pitman, the hopper on the frame, the door for the hopper, the levers pivoted on the frame and connected to the door, the cross-bar J, the links connecting said cross-bar to the levers, and the dogs pivoted to the pitman and adapted to engage the cross-bar J and to be disengaged therefrom by the cross-bars having the inclined upper surfaces, as set forth.

4. The combination of the frame, the hopper, the door sliding in grooves in the frame, the levers pivoted on the sides of the frame, extending above the same, and connected to the door, a cross-bar connecting the upper ends of said levers, the pitman, the dogs pivoted on the pitman, and devices between the dogs and the levers whereby the levers will be operated by the dogs, as set forth.

5. The combination of the frame, the pitman, the hopper, the door, the stops or pins on the pitman, and the weighted dogs pivoted on the pitman and adapted to rest on said stops, and devices between said dogs and the door whereby the door is operated by said dogs, as set forth.

6. The combination of the main frame, the press-box thereon, the supplemental frame arranged adjacent to the front end of the main frame, the plunger working in the press-box, the pitman extending therefrom into the supplemental frame, the lever P, having one end pivoted to the end of the supplemental frame and its other end pivoted to the end of the pitman, the rod pivoted to said lever and extending through the side of the supplemental frame, the spring arranged around said rod between the lever and the side of the supplemental frame, the king-bolt in the supplemental frame, and the arms radiating therefrom and adapted to act on the end of said lever, as set forth.

7. The combination of the supplemental frame, the springs N O secured thereto, the pitman, the lever P, pivoted to the frame and to the pitman, the king-bolt, the arms radiating therefrom, and the rollers at the ends of the said arms, all arranged and operating substantially as set forth.

408,090. PAWL-AND-RATCHET MECHANISM. HENRY H. DILLE, Richmond, Ind. Filed Apr. 24, 1889. Serial No. 308,361. (No model.)



Claim.—1. In a pawl-and-ratchet device, in combination with the two parts movable with reference to each other, the one having a series of ratchet-teeth and the other having a series of cams, a rock-shaft having the two lugs or arms to engage, respectively, the ratchet-teeth and cams, substantially as and for the purpose specified.

2. In combination with an arbor or shaft and a piece surrounding the same, a longitudinally-arranged rock-shaft carried by one of the parts, provided with a lug on each end, and the ratchet-teeth and cams on the other part to engage the lugs, respectively, substantially as and for the purpose shown.

3. In combination with a shaft or arbor provided with the longitudinal groove, the rock-shaft in such groove, provided with the two lugs or arms, a sleeve or barrel surrounding the arbor and provided with a series of ratchet-teeth to engage one of the rock-shaft lugs, and a series of cams to engage the other lug, substantially as and for the purpose set forth.

4. In combination with the arbor and the longitudinally-arranged rock-shaft carried thereby, provided with oppositely-arranged lugs, and a barrel or sleeve around the arbor, provided at one end with a series of ratchet-teeth to be engaged by one of the lugs on the rock-shaft and at its other end with a series of cams to engage the other rock-shaft lug, substantially as and for the purpose described.

5. In combination with a shaft or arbor having the longitudinal groove, the rock-shaft in such groove, having the two lugs oppositely arranged, so that as the rock-shaft turns to swing one inward toward the arbor the other is swung outward, and a sleeve or barrel around the arbor having the series of ratchet-teeth to be engaged by one of the rock-shaft lugs and a series of cams to engage the other lug, substantially as and for the purpose specified.

6. In combination with the arbor having the longitudinal groove and the rock-shaft in such groove, having the pawl-lug, and a second lug or arm arranged with reference to the other, so that as one swings outward from the arbor the other is carried inward, the barrel or sleeve surrounding the arbor, having the series of inwardly-projecting ratchet-teeth for engaging the pawl-lug and the series of cams for engaging the other lug on the rock-shaft, such cams and ratchet-teeth being arranged with reference to each other so as to alternately engage their respective rock-shaft lugs, substantially as and for the purpose shown.

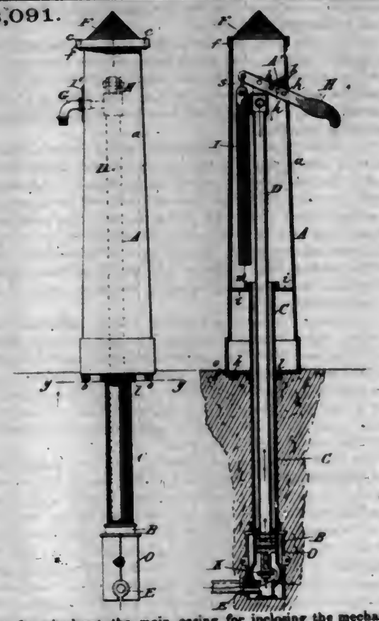
7. In a pawl-and-ratchet device, in combination with an arbor having the longitudinal groove, the rock-shaft in such groove, provided with the two lugs so arranged thereon that as one moves outward from the arbor the other moves inward, a barrel or sleeve on the arbor, a series of ratchet-teeth thereon adapted to be engaged by one of the rock-shaft lugs when swung outward, and a series of cams also on the barrel adapted to engage and force the other rock-shaft lug inward when the ratchet-teeth are out of engagement with their respective lugs, said arbor being provided with means for limiting the rotation of the rock-shaft when it has been turned to carry the ratchet-tooth-engaging lug outward, substantially as and for the purpose set forth.

8. In combination with the arbor and the longitudinally-arranged rock-shaft carried thereby, having the oppositely-projecting lugs, a barrel or sleeve around the arbor, having the series of inwardly-projecting ratchet-teeth in position to be engaged by one of the shaft-lugs, and a series of cams adapted to engage the other shaft-lug and force it inward when the other lug is out of engagement with the inclined faces of the ratchet-teeth, said arbor being provided with a suitable stop-face or bearing to be engaged by the cam-engaging lug when the latter has been swung inward, substantially as and for the purpose described.

408,091. SELF-CLOSING HYDRANT. CHARLES G. ETTE, St. Louis, Mo. Filed Dec. 14, 1888. Serial No. 293,608. (No model.)

Claim.—1. In a self-closing hydrant, the combination of the main casing having a perforated base, the perforated partition or diaphragm within the casing, and the main hydrant pipe or stem connected to said base and diaphragm, and at its lower end to the valve-body in the base of the hydrant, substantially as described.

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2. In a hydrant, the main casing for inclosing the mechanical parts, consisting of the two right-angled sections, the cap in the upper end of said casing, a sectional bottom integral with the right-angled sections and centrally perforated, the sectional centrally-perforated diaphragm in the casing, the main hydrant pipe or stem connected to the diaphragm and lower valve-body, and the main water-supply pipe within the hydrant-pipe, but independent thereof, substantially as described.

3. In a self-closing hydrant, the combination of the sectional main casing A, the sectional perforated base therefor, consisting of the parts *k k*, the partition within the casing, consisting of the plates *i i*, the main hydrant-stem C, passing through said base and partition of the main casing, the valve-body connected to the lower end of said stem, the valve within the valve-body, the vertical water-pipe D, the lever H, fulcrumed between lugs A' on the main casing, and the weight I, suspended on the inner end of the lever, substantially as described.

4. The combination, with the main casing A, consisting of the two right-angled sections *a a*, said casing having a base composed of plates *k k*, integral with the right-angled sections, and having also a partition consisting of the plates *i i*, also integral with the right-angled sections, the hydrant pipe or stem C, connected with the main casing, the valve-body B, containing the hydrant-valve, the water-pipe D, having spout or nozzle G, the operating-lever H, and the weight I, connected to said lever, substantially as described.

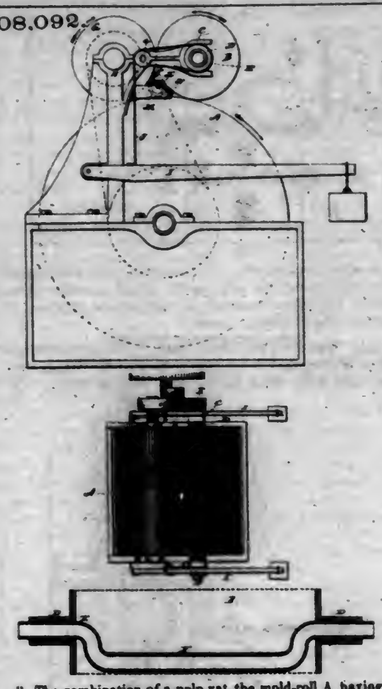
5. In a self-closing hydrant, the combination of the main casing, its perforated base, the perforated diaphragm within the casing, the main hydrant-pipe connected to said diaphragm and the lower valve-body, and the water-pipe connected to the valve and independent of the main hydrant-pipe, substantially as described.

6. The combination of the sectional casing A, its flanged pyramidal cap, sectional perforated base and sectional perforated partition, the main hydrant-stem C, connected to said base and diaphragm and having jam-nuts *l* and *m* thereon, which bear tightly against the base and diaphragm, and the valve, main water-supply pipe, and lever-handle, all arranged and operating substantially as described.

408,092. MACHINE FOR FORMING BODIES FROM SUCCESSIVE LAYERS OF PULP. HENRY FAIRBANKS and HOWARD PARKER, St. Johnsbury, Vt. Filed Dec. 24, 1888. Serial No. 294,530. (No model.)

Claim.—1. In a machine for making pulp into sheets or cylinders, the combination of a pulp-vat, a mold-roll arranged with a portion of its surface dipping into the vat of pulp, a couch-roll, the surface of which runs in contact with said mold-roll, the couch-roll presenting a porous surface in contact with the mold-roll, an exhaust applied to the interior of the couch-roll through one or both the gudgeons, and a press-roll, the said press-roll and couch-roll held in yielding contact, whereby the said rolls are permitted to separate, but still held under pressure toward each other, substantially as and for the purpose described.

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2. The combination of a pulp-vat, the mold-roll A, having a porous surface adapted to dip into said vat, a hollow couch-roll B, presenting a porous surface and so as to run in contact with said mold-roll A, a tubular axle extending through the hollow gudgeons of the couch-roll and bent down within the couch-roll, so as to stand stationary at the lowest point in the couch-roll, the said tubular axle within the couch-roll perforated and provided with a suitable exhaust, whereby an inward current may be produced through the porous surface of the couch-roll, and a press-roll G, arranged to run in substantial contact with the surface of the couch-roll, substantially as described.

3. The combination of the pulp-vat, the mold-roll A, the hollow porous surface couch-roll B, arranged to run in contact with the surface of the mold-roll A, the gudgeons of the said couch-roll hollow and provided with an exhaust from the inside of the roll, the press-roll G, and the pressure-roll N, substantially as and for the purpose described.

4. In a machine for forming layers of paper-pulp, the combination of a perforated hollow roll adapted to receive a layer of pulp upon its surface, a hollow axle running through one of the gudgeons of the roll, bent down upon the inside of the roll, so as to lie close upon the lowest point of the interior of the roll, the said hollow axle open near the said lower surface of the roll, and in connection with an exhaust, substantially as and for the purpose described.

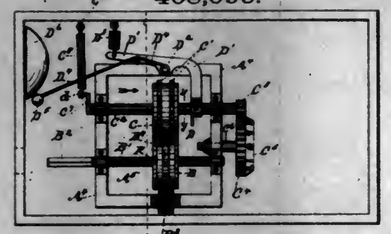
5. In a machine for forming layers of pulp, the combination of a hollow roll presenting a perforated surface adapted to receive a layer of pulp upon its said surface, a hollow axle extending into said roll and bent down within the roll to substantially the lowest point therein and open at such point into the roll, with means, substantially such as described, to produce exhaust through said hollow axle, and a press-roll presenting a hard surface arranged to work in contact with the said perforated roll and adapted to receive a layer of pulp from the said perforated roll, substantially as described.

408,093. REGISTERING AND CANCELING BALLOT-BOX. LUCIAN M. FOSTER, Troy, N. Y., assignor to Benjamin, Pecie, Topsfield, Mass. Filed Apr. 11, 1889. Serial No. 306,768. (No model.)

Claim.—1. In a ballot-box provided with ballot-canceling attachments, the combination, with a feed-wheel, type-wheel, and type-inker, of a register-roll, parallel toothed rims on such roll, and a peripheral lug on one of such rolls adapted to frictionally engage with the periphery of the other roll, substantially as described.

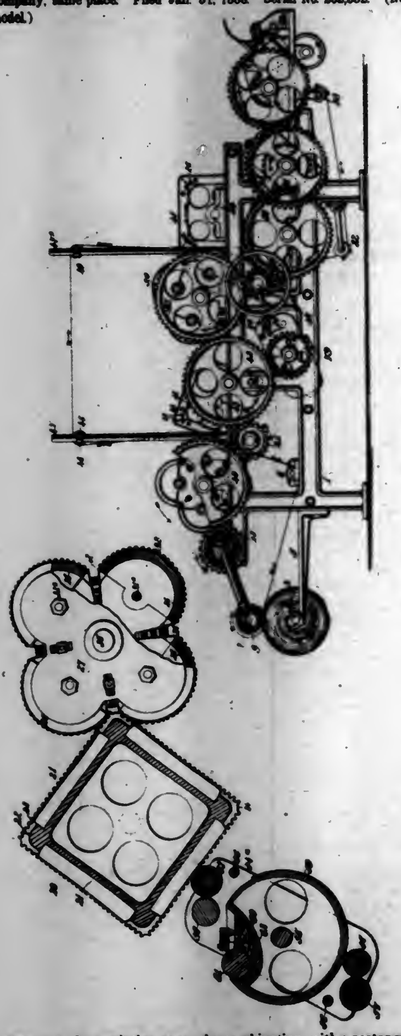
2. In a ballot-box provided with ballot-registering attachments, the combination, with a feed-roll, of a ballot-actuated registering-roll and spindle, spindle-crank, crank controlling and actuating spring, and a roll-and-spindle-actuated registering-dial, substantially as described.

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3. In a ballot-box provided with registering attachments, the combination, with the feed-roll and register-roll, of a peripheral lug on the feed-roll, adapted to frictionally engage with the periphery of the register-roll, substantially as described.

408,094. PRINTING-MACHINE. JOSEPH C. FOWLER and EDWARD A. HEWLE, Washington, D. C., assignors to the American Printing Press Company, same place. Filed Jan. 31, 1888. Serial No. 262,552. (No model.)



Claim.—1. In a printing-press, the combination, with a rectangular bed, of a positively-driven inking-frame having continuous movement, and form-rollers mounted upon said inking-frame and having uniform contact successively with the four plane faces of the rectangular bed, substantially as described.

2. In a printing-press, the combination, with a rectangular bed having constant rotation, of an inking-frame carrying form-rollers at both ends and rotating at double speed relatively to the bed, and an inking-table of substantially cylindrical form, with which said rollers have contact during a portion of each revolution of the inking-frame, substantially as described.

3. In a printing-press, the combination, with a rotary rectangular bed, of an inking-frame rotating on a central shaft, inking-rollers journaled in the ends of said frame, an inking-table of substantially cylindrical form rigidly mounted upon said shaft and having an ink pocket or font formed in the upper portion thereof, a font-roller journaled in said font, with its periphery in the cylindrical plane of the ink-table, and means for giving said font-roller an intermittent rotation and for rotating the rectangular bed and inking-frame in the same direction, the latter being driven at double the speed of the former, substantially as described.

4. In a printing-press, the combination, with the rectangular bed, of an inking-frame centrally journaled and having inking-rollers mounted in the ends thereof, an inking-table having cylindrical form and provided with a pocket or font roller revolving in said font and having a ratchet on the shaft of said roller, an eccentric mounted on the shaft of the inking-frame, and a ring running on said eccentric and having a pawl rigid thereon which engages with the ratchet of the font-roller, substantially as described.

5. In a printing-press, the combination, with a rectangular bed and with a continuously-rotating inking-frame having form-rollers journaled in its ends, of a cylindrical ink-table rigidly mounted on said shaft between the ends of the said frame and having a pocket or font in its upper part, a font-roller journaled to revolve in said pocket and having a ratchet on its shaft, an eccentric on the shaft of the inking-frame, a ring running on said eccentric and having a pawl rigid thereon, with its nose engaging the ratchet of the font-roller, a second pawl pivoted upon said ring, and a spring connecting the same to the pawl on the opposite side of the ratchet, substantially as described.

6. In a printing-press operating upon a continuous web, the combination, with the printing mechanism, of a spool resting upon the surface of the paper in the roll and carried by arms pivotally mounted on a shaft driven by the machine, said shaft having gears by which rotation is given said spool in a direction opposite to the feed of the paper through a shaft journaled in one of the pivoted arms, and having a gear meshing with a gear on the spool, substantially as described.

7. In a printing-press, the combination, with the printing mechanism, of a pair of arms pivotally mounted upon a shaft of said mechanism, a spool journaled in the ends of said arms and having a miter-gear in its shaft, and a counter-shaft carrying a miter meshing with that on the spool-shaft and driven by the shaft on which the arms carrying said spool are mounted, substantially as described.

8. In a printing-press, the combination, with a rectangular bed having continuous revolution, of a frame mounted upon a central axis and carrying inking-rollers upon opposite sides of said axis, and gearing driving said frame in the same general direction of rotation as the bed and at double the speed of the latter, whereby said inking-rolls sweep the flat faces of the square bed with substantially uniform contact, substantially as described.

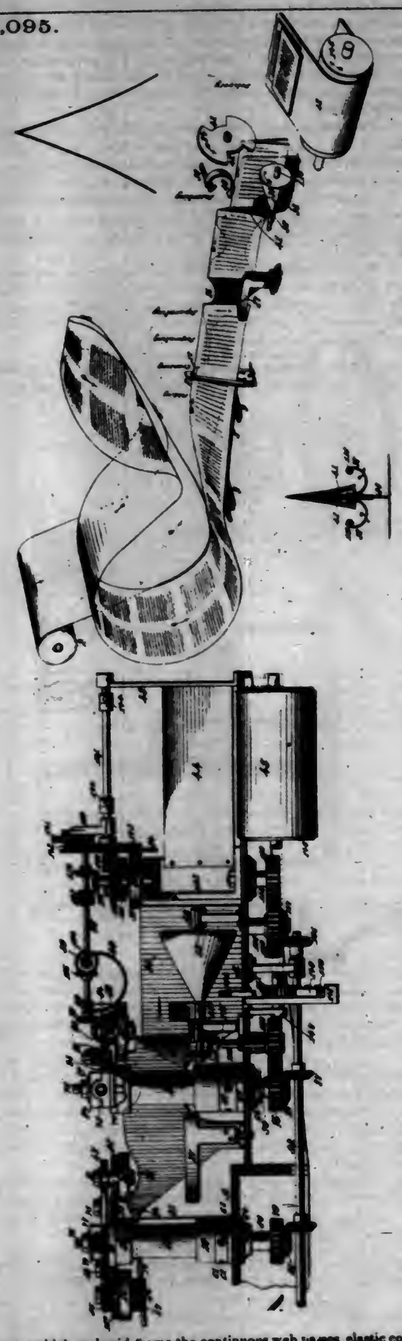
408,095. FOLDING-MACHINE. JOSEPH C. FOWLER and EDWARD A. HEWLE, Washington, D. C., assignors to the American Printing Press Company, same place. Filed Aug. 3, 1888. Serial No. 281,882. (No model.)

Claim.—1. The combination, with a perfecting-press, of a web-forming shell upon which the perfected web is received and over which it is drawn as it comes from the press, said shell comprising a flat receiving-surface passing gradually into a convex surface and terminating in an angular end to form a central bend in the moving web, and an upright frame supporting the shell and having an angular opening into which the angular end of the shell extends and arranged to provide a space between it and the edge of the angular opening for the passage of the web, substantially as described.

2. The combination, with a perfecting-press, of a web-former consisting of a shell or body having a surface which passes by regular graduations from flat to convex and thence to an angular form, a frame surrounding the angular portion, but leaving space for the passage of the web between the frame and former, and elastic compressors mounted upon said frame directly in front of the angular back of the former, between which the central portion of the web passes as the latter leaves the web-former, substantially as described.

3. The combination, with a perfecting-press, of a web-former having a surface passing from flat to angular by successive graduations, a frame surrounding the angular extremity of said web-former,

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between which and said frame the continuous web passes, elastic compressors mounted on said frame in line with the angular back of the web-former, a spine or support for the folded web in front of the web-former, and means for drawing the web over the latter and advancing it over said spine, substantially as described.

4. The combination, with a perfecting-press, of a web-former having a surface passing by successive graduations from flat to angular, a frame surrounding and having an inner surface parallel with the angular extremity of the web-former, elastic compressors arranged in front of the angular extremity of the former, a spine or support upon which the folded web is received as it leaves the compressors, continuously-revolving drawing-rolls advancing the folded web upon the spine and having a surface speed greater than the speed of the web, perforators operating upon the web at stated intervals, and separating-rolls traveling at a higher surface speed than the perforators and separating the web along the lines of perforation, said perforators and separators being arranged at intervals along the spine and acting upon the web as it is supported and advanced thereon, substantially as described.

5. The combination, with a perfecting-press, of a web-former having a surface which passes from flat to angular by imperceptible gradations, a frame surrounding the angular portion of said web-former, elastic compressors carried by said frame, and between which the crease or fold in the web is formed, drawing or feeding rolls which advance the web and also perfect the fold therein, a pair of perforators acting on the web at intervals and gripping the same during a partial revolution, a pair of separators running at a surface speed somewhat in excess of the perforators, and a pair of advancing rolls by which the separate sheets are thrown upon an inserter-section of a spine upon which the folded web is supported during its movement, substantially as described.

6. The combination, with a perfecting-press, of a web-former, elastic compressors acting upon the web as it comes from the former, a spine or support upon which the folded web is received as it comes from the compressors, means for successively perforating and separating the web and accelerating the advance of the separated sheets, an inserting-section of the spine upon which the sheets are thrown successively, a stile or gate preventing exit from the inserting-section save at stated intervals, intermittently-operating delivery-rolls which withdraw the signatures from the inserting-section, and a belt-carrier receiving the signatures, substantially as described.

7. The combination, with a perfecting-press, of the web-former, the elastic compressors, the drawing and folding rolls, the perforators, one of which has a section of increased diameter, the separators traveling at a higher surface speed than the perforators and gripping the web during a part of each revolution, a pair of rubber accelerating-rolls having a portion of the peripheral surface removed from each, a spine or support for the folded web, along which the several parts are arranged at intervals, said spine having an inserting-section arranged below the level of the preceding portion, a pair of cone-adjusters revolving one upon each side of said section, and an elastic striker or finger revolving above and in the vertical plane of the inserting-section, substantially as described.

8. The combination, with a perfecting-press, of a web-former, a spine connected to a suitable support adjacent thereto, upon which spine the folded web is carried, and feed-rolls arranged on opposite sides of the spine and engaging the folded edge of the web at a point where the edge of the spine is cut away to permit the rolls to meet, substantially as described.

9. The combination, with a perfecting-press, of a web-former, a spine connected to a suitable support adjacent to said former, and rolls drawing and advancing the folded web thereon during its perforation and separation, said spine being provided with an inserting-section and having spreaders immediately preceding said section to open the folded sheets, substantially as described.

10. The combination, with a perfecting-press, of a web-former, a spine receiving the web therefrom, compressors forming the fold therein as the web comes from the former, perforators, feed-rolls, and separators, the latter traveling at increased speed, acting upon the web successively as it is advanced on the spine, a pair of accelerating-rolls throwing the separate sheets, which are opened by spreaders upon the spine, upon an inserting-section and against a stile having one or more exit-openings, a pair of delivery-rolls, one of which is movable toward and from the other, and means for revolving the stile and throwing the delivery-rolls into engagement as the exit-opening in the stile comes opposite the inserting-section, substantially as described.

11. The combination, with a perfecting-press and with a web-former, of a spine upon which the folded web is received and advanced, drawing and creasing rolls acting upon and perfecting the fold of the web, perforators, one of which is adjustable and has a section of increased diameter extending over an arc on the perforator, rubber feed-rolls advancing the web upon the spine, separators traveling at an increased speed, one of which is adjustable at top and bottom independently, accelerating-rolls having portions of their peripheries removed, a pair of delivery-rolls, one of which is movable toward and from the other, a revolving stile having an exit-opening, a carrier-belt, and means for throwing the delivery-rolls together and giving alternately an advance movement to the delivery-belt, substantially as described.

12. The combination, with the inserting-section of the spine and with the intermittently-operating delivery-rolls, of the deflector-plate

arranged in front of the inserting-section, the carrier-belt moving beneath, and knocker-arms revolving above the deflector-plate, substantially as described.

13. The combination, with a perfecting-press and with a spine or similar support, of a web-former, devices for drawing and feeding, perforating, advancing, and separating the folded web while supported on the spine, accelerating-rolls throwing the sheets on an inserting-section of the spine, delivery-rolls acting at intervals on the signature, a stile having one or more openings for the removal of the signature, a carrier-belt having a crank operating the movable delivery-roll, a sleeve on said shaft having an arm advancing the belt-carrier, and a pressgear having cams actuating the shaft and sleeve successively, substantially as described.

14. The stile or gate herein shown and described, the same consisting of a metallic disk having one or more exit-openings formed in the edge, in combination with the inserting-section of the spine, substantially as described.

15. The combination, with a perfecting-press, of a web-former 5, a frame 8, surrounding the angular end thereof, and a spine 14, connected to a bracket carried by said frame, substantially as described.

16. The combination, with a perfecting-press, of a web-former 5, a frame 8, a spine 14, elastic compressor 15, and drawing-rolls 16, advancing the web as it comes from the former upon the spine, substantially as described.

408,096. **CAP FOR FUSES.** WILLIAM H. FRAZER, Mullan, Idaho, assignor of one-half to John Mullan, Washington, D. C. Filed Apr. 1, 1889. Serial No. 305,549. (No model.)

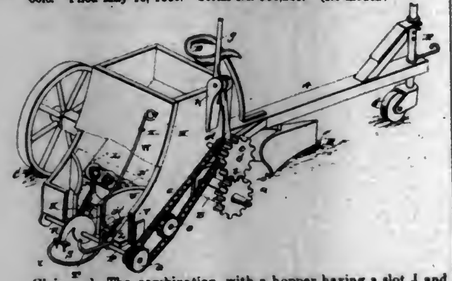


Claim.—1. A flexible fuse-cap made of rubber and provided on its interior surface with raised annular portions, substantially as specified.

2. A flexible fuse-cap made of rubber and having its outer surface unbroken or straight, and being provided on its interior surface with raised annular portions, substantially as specified.

3. The combination, with a fuse, of a flexible cap fitting over said fuse, the cap being made of rubber and provided on its interior surface with raised annular portions, whereby a dead-air chamber is formed in the interior of the cap between the raised annular portions, substantially as and for the purpose specified.

408,097. **POTATO-PLANTER.** CARL W. PRETER, Walsenburg, Colo. Filed May 10, 1889. Serial No. 310,223. (No model.)



Claim.—1. The combination, with a hopper having a slot J and a discharge-opening I at its rear end, of a rotary shaft mounted in the hopper at the rear end of the same, a picker secured on said shaft and moving through the slot J and discharge-opening I, and mechanism for rotating said shaft, as set forth.

2. The combination of the hopper, the rotary shaft mounted in the hopper, mechanism for rotating said shaft, a picker carried by said shaft and adapted to remove the potatoes from the hopper, a discharging-rod secured on the hopper and adapted to remove the potatoes from the picker, and a crank-arm on the said shaft adapted to actuate the discharging-rod, as set forth.

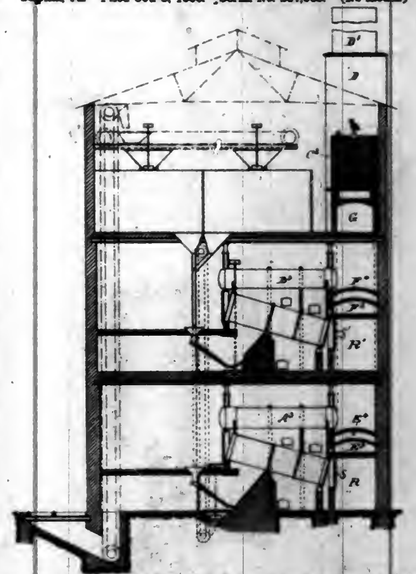
3. The combination, with a hopper, of the rotary shaft mounted in the hopper, mechanism for rotating said shaft, a picker carried by said shaft and adapted to remove the potatoes from the hopper, a spring discharging-rod secured on the side of the hopper and having its lower end bent toward the picker and adapted to remove the potatoes from the same, the said rod being provided with an offset Z, and the crank-arm on the rotary shaft adapted to act on said offset, as set forth.

4. The combination of the hopper having the longitudinal groove K and the transverse slot M at the front end of the said groove, the roller arranged in said transverse slot and having an irregular surface, the rotary shaft mounted in the hopper, the picker carried by said shaft and adapted to enter the groove K and remove the potatoes from the hopper, and mechanism for rotating the said roller and the shaft, as set forth.

5. The combination of the hopper having the slot J, the discharge-opening I, the groove K, registering with said slot and discharge-opening, and the transverse slot M at the front end of said groove, the plate L, covering the groove K, the roller arranged in the slot M and having an irregular surface, the rotary shaft mounted on the hopper and carrying a picker adapted to move through the slot J, groove K, and opening I, and mechanism for rotating the roller and the said shaft, as set forth.

6. The combination, with the hopper having the longitudinal groove K and the transverse slot M at the front end of the said groove, of the roller arranged in said transverse slot and having an irregular surface composed of an alternate series of depressions and bulbous-shaped elevations, as set forth.

408,098. **STEAM-BOILER FURNACE.** JOHN L. GILL, Jr., Philadelphia, Pa. Filed Oct. 3, 1888. Serial No. 287,085. (No model.)

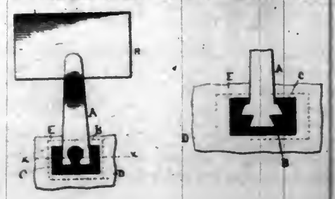


Claim.—1. In steam-boiler furnaces, the combination of the chimney D, having a partition D^a, dividing the same to a point above the highest boiler-setting, with lateral flues leading from each furnace and terminating in a vertical flue in the chimney D, substantially as set forth and shown.

2. In steam-boiler furnaces, the chimney D, in combination with lateral flues E' E^2 and F' and F^2, terminating vertically in the chimney D, with the economizer C, located above the boiler-furnaces and provided with a damper H, arranged to alternately direct the products of combustion through the economizer in one adjustment or to discharge them directly through the chimney, substantially as shown and described.

3. In steam-boiler furnaces, the combination of a series of lateral flues E' E^2 E^3 E^4 and F', F^2, F^3, and F^4 with the passage-ways R and R' under said flues for access to the rear of the boiler tubes and settings, arranged substantially as shown and described.

408,099. **LABEL OR CARD HOLDER.** JOHN J. GOULD, Washington, D. C. Filed Mar. 6, 1886. Serial No. 194,360. (No model.)



Claim.—1. The within-described improved device, consisting in a thin metal strip shaped at one end to form a recess in it or a projection upon it, a card-board of the same thickness as the said metal strip, having a recess or slot in it the counterpart of the said recess or projection in the metal strip, said card-board secured to a base-piece, the said metal strip fitted into the said recess or slot of the card-board, and a covering placed over the card-board and strip and secured to the base-piece, all as specified.

2. The within-described improved card and label holder having a base upon which is cemented a circular disk, in combination with a strip having a circular aperture through it and a covering-piece.

408,100. **MOWER.** ALVARO B. GRAHAM, Chicago, assignor to Lewis C. Tallmadge, Evanston, and Charles J. Haines, trustee, Chicago Ill. Filed Aug. 11, 1887. Serial No. 246,673. (No model.)



Claim.—1. The combination, substantially as set forth, of the shoe having recesses for the spring, the knife, the vertical lugs thereof, the spring connected to both said parts by being seated at its ends in the recesses and passing between the lugs, and the lugs having a greater space between them than is required by the spring, whereby the spring is passive at the middle of each stroke.

2. The combination, substantially as set forth, of the finger-beam, the knife, the pitman, and the bar-spring having its ends resting in V-shaped notches on the shoe and passing between lugs on the knife.

3. The combination, substantially as set forth, of the spider-frame, the shoe suspended at its heel from the spider-frame independently of the lifting-lever, the swivel-jointed links connecting the shoe and the gearing-carriage, and the lever for rocking the shoe connected to the forward end of the shoe.

4. The combination, substantially as set forth, of the floating finger-beam, the gearing-carriage, the drive-rim at the grass side of the gearing-carriage, and the swivel-jointed links connecting the finger-beam with the gearing-carriage and extending through the drive-rim, and the lever for rocking the beam.

5. The combination, substantially as set forth, of the finger-beam the gearing-carriage, a draft-rod connecting the shoe with the tongue, a swivel-jointed link at the front of the shoe, and a similar link at the heel of the shoe, and the lever for rocking the beam.

6. The combination, substantially as set forth, of the shoe, the gearing-carriage, the links connecting the shoe and the carriage, and the draft-rod jointed to the heel of the shoe and passing above the forward link to limit the upward play of the finger-points, and the lever connected to the forward part of the shoe for raising the same.

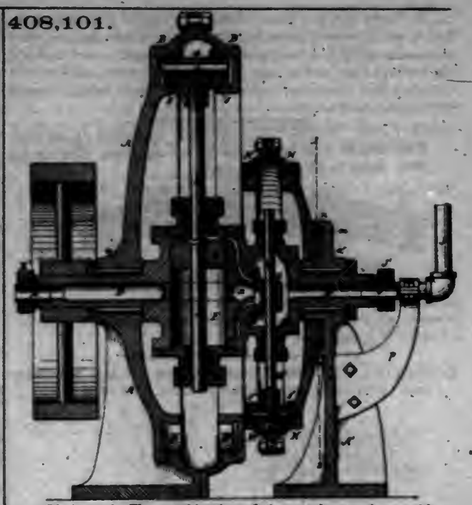
7. The combination, substantially as set forth, of the finger-beam, the gearing-carriage, two swivel-jointed links connecting the beam and carriage, and the lever having a single connection with the beam to rock it and to raise it from the ground.

8. The combination, substantially as set forth, of the finger-beam, the lever to rock the same, the chain connecting the lever and the shoe having an elongated link near its attachment to the shoe, and the draft-rod passing through said elongated link and attached at one end to the shoe and at its other end to the tongue.

9. The combination, substantially as set forth, of the finger-beam, the gearing-carriage, the two swivel-jointed links connecting the finger-beam and gearing-carriage, and the pitman located between said two links, whereby the finger-beam is always in line with the pitman, though free to rise or fall at either end and to rock forward or back.

408,101. **ROTARY ENGINE.** WILLIAM M. GIBSON, Berlin, Germany. Filed May 16, 1888. Serial No. 311,067. (No model.)

408,101.



Claim.—1. The combination of the annular track or guide, a cylinder hung eccentrically in respect thereto and having a piston and piston-rod, with rollers engaging said annular track or guide, a slide-valve for controlling the flow of the motive fluid to and from the cylinder, and a supplementary eccentric track or guide for effecting the operation of the slide-valve as the cylinder rotates, substantially as specified.

2. The combination of the cylinder, its opposite hollow trunnions, valve-chest, and slide-valve, the fixed frame of the engine having bearings for said trunnions, the eccentric tracks or guides for controlling the outer ends of the piston-rod and valve-rod, a steam-inlet pipe communicating with the steam-chest of the engine through one hollow trunnion, and an exhaust-pipe communicating with the exhaust-passage of the engine through the other hollow trunnion, substantially as specified.

3. The combination of the cylinder, its valve-chest and slide-valve, the eccentric track or guide controlling the piston-rod of the cylinder, and an eccentric track or guide controlling the valve-rod, said valve-controlling track or guide being movable to effect the shifting of the valve and the reversal of the engine, substantially as specified.

408,102. **TRAY.** ZACHARY T. HALL, Philadelphia, Pa. Filed Feb. 16, 1889. Serial No. 300,164. (No model.)



Claim.—1. A tray having a foot connected with an overhanging rim thereof, said foot consisting of a vertical plate and a laterally-projecting base, said parts being combined substantially as described.

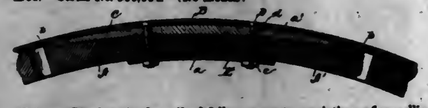
2. A tray having a foot consisting of a vertical plate depending from the front of the overhanging rim of the said tray, and provided with a base projecting laterally from the base thereof toward the bottom of the tray, said parts being combined substantially as described.

3. A tray having a foot secured to its rim and provided with a laterally-projecting base, a keeper rising from said base, and a holding-spring below said base and with ends secured in said keeper, said parts being combined substantially as and for the purpose set forth.

4. A tray with a foot secured to its rim and having a laterally-projecting base, a keeper rising from said base, and a spring with hooked ends secured in said keeper, said parts being combined substantially as and for the purpose set forth.

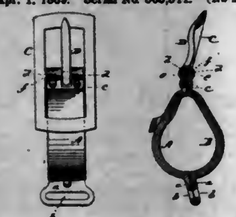
5. A tray having a foot consisting of a vertical plate with a slot therein, and a laterally-projecting base with a keeper thereon, and a spring with uprights 3, hooked ends 4, and connecting portions 5, the said portions 5 adapted to enter the slots of the vertical plate and the hooked ends to be secured in said keeper, said parts being combined substantially as described.

408,103. WHEEL-FELLY SUPPORT. LAFAYETTE HARRIS, Pony, Mont., assignor of one-half to Orson W. Jay, same place. Filed Apr. 10, 1889. Serial No. 306,684. (No model.)



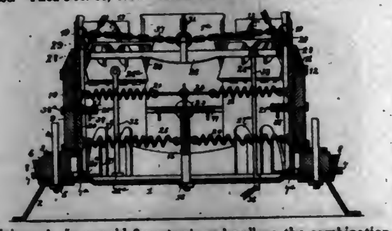
Claim.—The herein-described felly-support, consisting of an elliptical-shaped piece of metal flat on its upper surface and semicircular beneath, and provided at each end with a downward-extending toe, substantially as described.

408,104. HARNESS-TUG LOOP. SAMUEL D. HARRIS, Middletown, Conn. Filed Apr. 1, 1889. Serial No. 305,511. (No model.)



Claim.—The combination of a buckle having a central cross-bar made as an integral part thereof, a tongue hinged to the bar and so as to bear upon one end of the buckle-frame, a metal tag-loop composed of two parts A B, each part constructed at its upper end with an upward projection *c*, the said projections each having two upwardly-projecting arms alike on both parts, each of said arms constructed with a horizontal semicircular groove upon the adjacent faces of the two parts and adapted to embrace the cross-bar of the buckle as a hinge and each side the tongue, the said two parts of the loop constructed with a like downward projection *a* on each part, and each of said projections *a* having a like transverse slot through it, which together form the loop for the strap, the said two parts of the loop set and riveted together, substantially as described.

408,105. MOLD FOR CASTING WHEELS. JAMES W. HILL, Peoria, Ill., assignor to the Peoria Pulley and Wheel Company, same place. Filed Feb. 18, 1889. Serial No. 300,362. (No model.)



Claim.—1. In a mold for wheels and pulleys, the combination of the internal parts and the built-up casing composed of upper and adjustable lower and intermediate interchangeable rings, said lower ring having means of vertical adjustment, whereby rims of different widths may be cast, substantially as set forth.

2. In a mold apparatus, the combination, with the bed-plate and internal parts, of the outer interchangeable rings of different widths constituting the casing, interposed block or blocks between the lower ring and the base-plate, and a fastening for securing the lower ring, blocks, and base-plate together, substantially as set forth.

3. In a mold apparatus for wheels and pulleys, the combination, with the bed-plate and internal removable segments, of the casing made up of a series of interchangeable rings of different widths, and interposed interchangeable blocks between the lower ring and the base-plate, whereby rims of different widths may be cast, substantially as set forth.

4. In a mold apparatus, the combination, with the bed-plate and the internal parts, of the casing consisting of upper and lower rings and interchangeable intermediate rings and interchangeable blocks interposed between the lower ring and the base-plate, substantially as and for the purpose set forth.

5. In a mold apparatus, the combination, with the bed-plate and the internal parts, of the outer interchangeable rings constituting the casing, interchangeable interposed blocks between the lower ring and the bed-plate, bolts passing through the bed-plate, blocks, and the lower ring, and nuts screwed onto the lower ends of the bolts, substantially as set forth.

6. In a mold apparatus, the combination of the casing and the internal segments, a series of alternate sections being divided horizontally and provided with grooves to receive the spokes, substantially as set forth.

7. In a mold apparatus, the combination of the casing, the bed-plate, the internal segments, each alternate one being divided horizontally and provided with grooves to receive the spokes, interposed blocks between the casing and the bed-plate, suitable means for securing the blocks to the bed-plate, collars fitting over said blocks and having screw-threaded pins screwing into the lower sections of the divided segments, and wedges driven between the collars and blocks, substantially as and for the purpose set forth.

8. In a mold apparatus, the combination of the casing consisting of upper and lower rings and interchangeable intermediate rings, means for supporting the casing at different heights, and the intermediate segments, every alternate one of which is horizontally divided and provided with grooves to receive the spokes, substantially as and for the purpose set forth.

9. In a mold apparatus, the combination of the casing, the wedge-segments, the alternately-arranged divided segments provided with grooves to receive the spokes, and means for engaging the inclined portions of said wedge-segments and expanding all the segments outwardly, substantially as set forth.

10. In a mold apparatus, the combination of the casing, the wedge-segments, the alternate divided segments provided with grooves to receive the spokes, the upper and lower wedge-rings adapted to engage the inclined portions of the wedge-segments, and devices for forcing said wedge-rings toward each other, substantially as set forth.

11. In a mold apparatus, the combination of the casing, the whole segments, and the alternate divided segments provided with grooves to receive the spokes, a central standard, and springs connecting the lower portions of the divided segments to said standard, substantially as set forth.

12. In a mold apparatus, the combination of the casing, the whole segments, the alternate divided segments provided with grooves to receive the spokes, a central standard having a socket at its upper end, a disk at its top, an upper disk having a post projecting downwardly and fitted loosely in said socket, and springs connecting said standard and upper disk to the divided segments, substantially as set forth.

13. In a mold apparatus, the combination of the casing, the whole segments, the alternate divided segments provided with grooves to receive the spokes, a central standard having a socket or bore extending downwardly and out through its side, a disk at the top of the standard, an upper disk having a post projecting downwardly and fitted loosely in said socket or bore, and devices connecting said standard and upper disk to the divided segments, substantially as set forth.

14. In a mold apparatus, the combination of the casing, the whole segments, the alternate divided segments provided with grooves to receive the spokes, the upper and lower inner rings having means for securing them together and forcing said segments outwardly, projections on the upper ring, and projections on said segments, with which the latter engage, substantially as and for the purpose set forth.

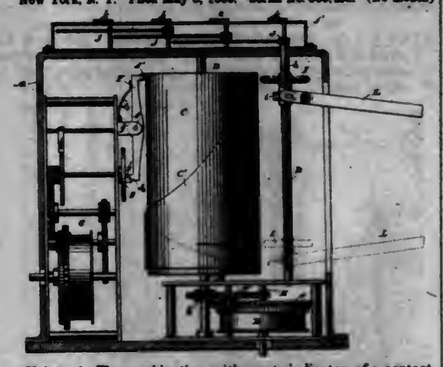
15. In a mold apparatus, the combination of the casing, the inner segments having projections, the lifting-chains, a ring suspended thereby, and projections on said ring engaging the projections on the segments, substantially as set forth.

16. In a mold apparatus, the combination of the casing, the whole segments, the alternate divided segments provided with grooves to receive the spokes, the lower portions of which are fixed, a chain connecting the upper ends of the whole segments and the upper divided segments together, and means for lifting the former and latter, substantially as set forth.

17. In a mold apparatus, the combination of the casing, the inner segments, alternate ones of which have wedge-shaped ends, wedge-rings engaging said ends, hooked rods secured at their upper ends to the upper wedge-ring, the hooked ends engaging the under side of the lower wedge-ring, and means for releasing the hooks of said rods from the lower wedge-ring, substantially as and for the purpose set forth.

18. In a mold apparatus, the combination of the casing, the inner segments, alternate ones of which have wedge-shaped ends, wedge-rings engaging said ends, hooked rods secured at their upper ends to the upper wedge-ring, the hooked ends engaging the under side of the lower ring, a sliding bar having a projection engaging one of the hooks, and a bell-crank, to one end of which said bar is pivoted, the other end of said bell-crank having engagement with the other hook, substantially as and for the purpose set forth.

408,106. INTEGRATING APPARATUS. HERMAN HOLLERITH, New York, N. Y. Filed May 3, 1889. Serial No. 309,432. (No model.)



Claim.—1. The combination, with a rate-indicator, of a contact-surface shaped to correspond with the curve representing the law of the rate-indicator, mechanism adapted to traverse said contact-surface periodically, mechanism adapted to vary the relative positions of said contact-surface and said traversing mechanism to correspond with the varying rates of flow through the indicator, and a registering device adapted to be actuated while said traversing mechanism is passing across said contact-surface, substantially as and for the purposes set forth.

2. The combination, with a rate-indicator, of a contact-surface shaped to correspond with the curve representing the law of the rate-indicator, a wheel adapted to traverse said contact-surface, mechanism for varying the relative positions of said contact-surface and said wheel to correspond with the rate of flow through the indicator, and registering mechanism adapted to be actuated by the rotation of said wheel, substantially as and for the purposes set forth.

3. The combination, with a rate-indicator, of a revoluble contact-surface shaped to correspond with the curve representing the law of the rate-indicator, a wheel adapted to traverse said contact-surface periodically, mechanism for varying the relative positions of said contact-surface and said wheel to correspond with the rate of flow through the indicator, and registering mechanism adapted to be actuated by the rotation of said wheel, substantially as and for the purposes set forth.

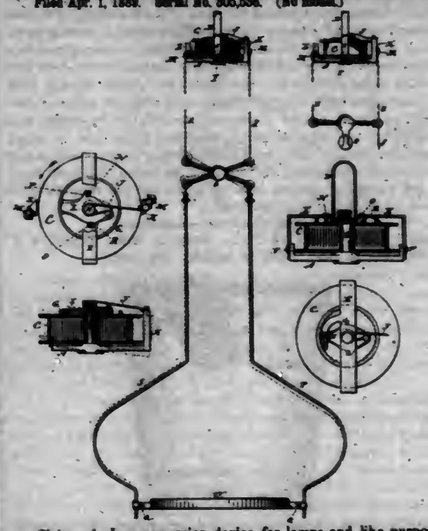
4. The combination, with a rate-indicator, of a revoluble drum having a portion of its surface shaped to correspond with the curve representing the law of the rate-indicator, a wheel adapted to traverse such portion of said surface periodically, an index-arm carrying said wheel and adapted to vary the position thereof relatively to the drum in accordance with the rate of flow through the indicator, and registering mechanism adapted to be actuated by the rotation of said wheel, substantially as and for the purposes set forth.

5. The combination, with a rate-indicator, of a revoluble drum having a raised surface shaped to correspond with the curve representing the law of the rate-indicator, mechanism for revolving said drum at regular intervals, a wheel adapted to engage with and be rotated by said raised or contact surface of the drum as the latter revolves, an arm carrying said wheel and adapted to vary the position thereof relatively to said contact-surface in accordance with the rate of flow through the indicator, and a registering-train adapted to be actuated by the rotation of said wheel, substantially as and for the purposes set forth.

6. The combination, with a rate-indicator, of a revoluble drum having a raised surface shaped to correspond with the curve representing the law of the rate-indicator, mechanism for revolving said drum continuously at a uniform speed, a wheel adapted to engage with and be rotated by said raised or contact surface as the drum revolves, an arm carrying said wheel and adapted to vary the position thereof relatively to said contact-surface in accordance with the rate or flow through the indicator, and a registering-train adapted to be actuated by the rotation of said wheel, substantially as and for the purposes set forth.

7. The combination, with a rate-indicator, of a spring-actuated revoluble drum having a raised or contact-surface shaped to correspond with the curve representing the law of the rate-indicator, a wheel adapted to engage with and be rotated by said raised or contact surface as the drum revolves, an arm carrying said wheel and adapted to vary the position thereof relatively to said contact-surface in accordance with the rate of flow through the indicator, a latch adapted to release said drum and permit it to revolve at regular intervals, a stop to arrest the movement of said drum upon the completion of one revolution, and a registering-train adapted to be actuated by the rotation of said wheel, substantially as and for the purposes set forth.

408,107. SUSPENSION DEVICE FOR LAMPS. WILLIAM C. HOMAN, Meriden, Conn., assignor to Edward Miller & Company, same place. Filed Apr. 1, 1889. Serial No. 305,536. (No model.)



Claim.—1. In a suspension device for lamps and like purposes, the combination of a principal frame, a spring-drum hung upon an axle in said principal frame, an auxiliary frame by which the said device is adapted to be suspended, the said principal frame hung to the auxiliary frame upon an axis at right angles to the axis upon which the drum revolves, and whereby the said drum and its axle are permitted a rocking movement, and an engaging device between said auxiliary frame and the said drum, substantially as described, whereby under such rocking movement of the drum the said engaging device is brought into action with the drum to prevent the reactive force of the spring-drum.

2. In a suspension device for lamps and other articles, the combination of a principal drum, an axle stationary in said frame, a spring-drum arranged to revolve upon said axle, the axle extending through the drum and constructed at its projecting end with an eccentric, an auxiliary frame to which the principal frame is pivoted upon an axis at right angles to the axis upon which the drum revolves, the said auxiliary frame serving as a means for suspending the device, the head of the drum around the eccentric end of the axle constructed with a concentric engaging-surface, a locking-dog between said engaging-surface and said eccentric, the said locking-dog constructed with one or more shoulders, and the auxiliary frame with bearing-points corresponding to said shoulder or shoulders, and with which points said shoulders are adapted to engage under a rocking movement imparted to said drum, with a spring arranged to yieldingly hold the said dog out of engagement with the drum, substantially as described.

3. The combination of the principal frame A, carrying a stationary axle B, the spring-drum C, hung upon said axle, the axle extending through the drum and terminating above in an eccentric H, an auxiliary frame E, hung to said principal frame upon pivots forming an axis upon which the said drum may swing at right angles to the axis upon which the drum revolves, a dog I, hung upon said eccentric H, the end of the drum constructed with a concentric flange G, within which said dog is arranged, the dog constructed with one or more shoulders, and the auxiliary frame with corresponding bearing-points with which said shoulders of the dog are adapted to engage as the drum is rocked, with a spring applied to said dog, the reactive force of which is adapted to hold the said dog yieldingly out of engagement with the drum, but permit its engagement with the drum under a rocking movement of the drum, substantially as described.

4. The combination of a frame provided with an axle, a spring-drum arranged to revolve on said axle, an auxiliary frame by which the said drum may be suspended, the frame of the drum hung to the said auxiliary frame on an axis at right angles to the axis on which the drum revolves, and whereby the drum is permitted a rocking movement at right angles to the axis of its revolution, an engaging device between the said drum and auxiliary frame adapted to interlock with the drum under such rocking movement, and two chains running from the said drum to an evener, and to which evener the thing to be suspended may be hung, substantially as described.

5. The combination of a frame provided with an axle, a spring-drum arranged to revolve on said axle, an auxiliary frame by which the said drum may be suspended, the frame of the drum hung to the said auxiliary frame, and whereby the drum is permitted a rocking movement at right angles to the axis of its revolution, an engaging device between the said drum and auxiliary frame adapted to interlock with the drum under such rocking movement, two chains running from said drum downward, an evener constructed with two points of connection, and to which said chains are attached, and the evener constructed with two other points of connection below said two-chain points of connection, and a harp for suspending a lamp composed of two sides and a fount-ring, the said two sides hinged to the said fount-ring and, extending upward, attached to the said two other points on the evener, substantially as described.

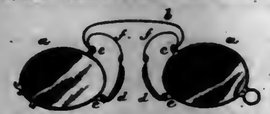
408,108. SHIPPING-PAIL. HERMAN HOWE, Cortland, N. Y. Filed May 26, 1888. Serial No. 312,054. (No model.)



Claim.—1. In a pail for shipping and preserving butter and other dairy products, the combination, with an inner and outer vessel provided with suitable air-passages, of a cover or lid consisting of two sections suitably connected by uprights or pillars, the lower section thereof adapted to fit within the inner vessel and to be supported on a plane below the upper rim or edge thereof, and the upper section adapted to cover the outer vessel and provided with a series of outlet-holes or air-passages, substantially as set forth.

2. The combination of an outer casing having perforations at its bottom, and provided at its upper inner face with a surrounding ridge or supporting-shoulder, an inner containing-vessel provided at its top with a circular flange adapted to bear against and be supported upon the supporting-shoulder of the outer casing, also provided near its top edge with a series of perforations and on its inner face below said perforations with a surrounding flange or ridge, said inner containing-vessel being of such diameter and length as to form a circular air-chamber between the same and the outer casing, and an air-space between the bottom thereof and the base-piece of said outer casing, a double-headed cover or lid made of two sections with an intervening space between said sections, so as to form an upper air-chamber, the upper section thereof provided with a series of exit-openings, and the depending hasps adapted to fit over suitable staples and to be secured thereto by pins or keys, substantially as set forth.

408,109. EYEGLASSES. ROBERT C. KENNEDY, New York, N. Y. Filed Mar. 29, 1889. Serial No. 305,302. (No model.)

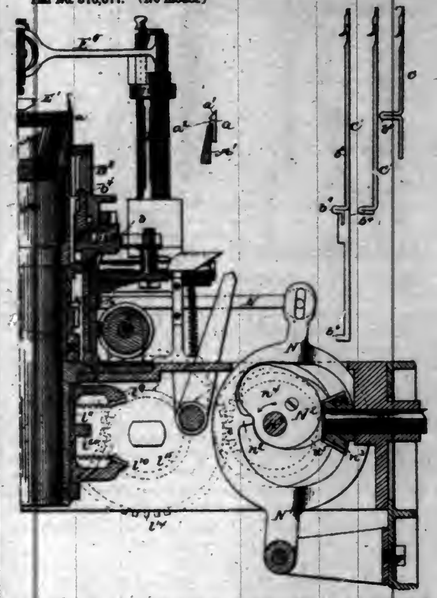


Claim.—1. The combination, with the lens-frames and the connecting bow-spring, of nose-pieces pivoted at their lower ends on the lower portions of the lens-frames, and springs independent of the bow-spring connected at their lower ends to the upper ends of the nose-pieces and at their other ends to the upper portions of the lens-frames, substantially as specified.

2. The combination, with the lens-frames and the connecting bow-spring, of nose-pieces detachably pivoted at their lower ends to posts on the lower portions of the lens-frames, and springs, independent of the bow-spring, detachably connected at their lower ends to the upper ends of the nose-pieces and at their other ends to posts on the upper portions of the lens-frames, substantially as specified.

3. The combination, with the lens-frames and the bow-spring connecting the same, of nose-pieces pivoted to the lower portions of the lens-frames, and automatically-acting springs curved upward and outward from the upper ends of the nose-pieces to the upper portions of the lens-frames at the points at which the ends of the bow-spring are attached, substantially as described.

408,110. CIRCULAR-KNITTING MACHINE. EDWARD R. KILBOURN, New Brunswick, N. J. Original application filed June 14, 1887, Serial No. 241,243. Divided and this application filed May 9, 1888. Serial No. 310,077. (No model.)



Claim.—1. The combination, substantially as before set forth, of the knitting-cylinder, the cam which operates the gang of fashioning-needles for both circular work and reciprocating work, the cam which operates the other gang of needles for circular work, the gang of fashioning-needles having their nibs arranged to be operated by the said first cam, the other gang of needles having their nibs arranged to be operated only by the said second cam, and the hook-partitions of the nosing by which the work is prevented from rising.

2. The combination, substantially as before set forth, of the needle-cylinder, the cam-cylinder for operating the needles for reciprocating work, the needles, the picker, the carrier, and the hook-partitions of the needle-cylinder, which not only hold down the work during narrowing, but which press the stitches forward out of the way of the needles.

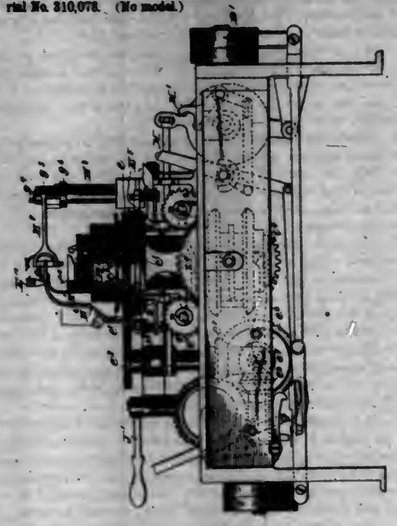
3. The combination, as before set forth, of a needle-cylinder, and cams for both circular and reciprocating work, with a gang of needles all of which are operated for circular work, but a portion of which are thrown out of operation for narrowing during reciprocating work, but which retain their stitches while out of operation, the said needle-cylinder being provided with stationary hook-partitions, which not only hold down the work during narrowing, but press the stitches forward out of the way of the needles.

4. The combination, with a needle-cylinder, of needles a part of which are thrown out of operation for narrowing during reciprocating work, but which retain their stitches while out of operation, and cams for operating the needles for circular and reciprocating work, the said needle-cylinder being provided with stationary hook-partitions between its needle-grooves, said partitions having inclines below the hooks to assist in casting off the stitches, and a part above said inclines and below the hooks for holding the stitches inward out of the way of the needles, substantially as described.

5. The combination, substantially as before set forth, of a needle-cylinder provided at the top with stationary hook-partitions between the needle-grooves, each of said hook-partitions having an outwardly-inclined point at its upper end, the extreme point extending outside of the needles and having all parts of its inner edge below the hook extending as far as or farther inwardly than the outer face of the body of the needle, a series of needles, including narrowing-needles, needle-operating devices, and devices for narrowing and widening.

6. The combination, substantially as before set forth, of two cam-cylinders, one of which only operates during circular work, the gang of fashioning-needles for both circular and reciprocating work having nibs arranged to be operated by the reciprocating cam for reciprocating work, the other gang of needles having nibs arranged to be operated by the first-named cam for circular work, and the hook-partitions, whereby the work is prevented from rising.

408,111. CIRCULAR-KNITTING MACHINE. EDWARD R. KILBOURN, New Brunswick, N. J. Original application filed June 14, 1887, Serial No. 241,243. Divided and this application filed May 9, 1888. Serial No. 310,078. (No model.)



Claim.—1. The combination, substantially as before set forth, of the knitting-cylinder, two cam-cylinders for operating the needles thereof for circular work, the thread-guide for circular work, and a locking device for holding said thread-guide out of its operative position.

2. The combination, substantially as before set forth, of the knitting-cylinder, the two cam-cylinders for operating the needles thereof for circular work, the thread-guide for circular work, and a reciprocating thread-guide, which is reciprocated in combination with one of said cam-cylinders for reciprocating work.

3. The combination, substantially as before set forth, of the reciprocating thread-guide, the stop therefor, and the picker-carrier.

4. The combination, substantially as before set forth, of the needle-cylinder, the needles, the cam by which the needles are operated for reciprocating work, the picker, the picker-carrier, the thread-guide which is operated for reciprocating work, and means for transferring said thread-guide from one side of said cam to the other side thereof, including a stop for said thread-guide moving in a determined relation with the picker-carrier.

5. The combination, substantially as before set forth, of the needle-cylinder, the needles, the cam by which the needles are operated for reciprocating work, the pickers, the picker-carriers, the thread-guide which is operated for reciprocating work, and means for transferring said thread-guide from one side of said cam to the other thereof, including stops mounted on and moving with said picker-carriers.

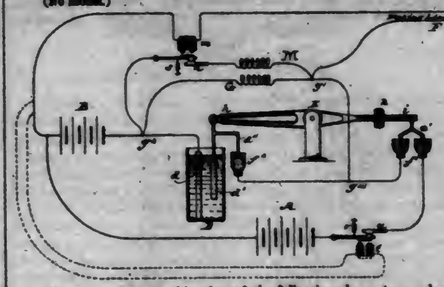
6. The combination, substantially as before set forth, of a knitting-cylinder, the needles, two cam-cylinders, one of which is in operation only during circular work, means for imparting motion to one cam-cylinder for reciprocating work, thread-supplying devices, and means for operating said thread-supplying devices for circular and reciprocating work.

7. The combination, substantially as before set forth, of the knitting-cylinder, the needles, a cam-cylinder which only works during circular work, a reciprocating cam-cylinder, thread-supplying devices for circular work, a separate thread-guide for reciprocating work, and means for operating the latter thread-guide in connection with the reciprocating cam-cylinder.

8. The combination, substantially as before set forth, of a knitting-cylinder and its needles, two cam-cylinders, one of which only works during circular work, and thread-supplying devices, the thread-supplying devices for reciprocating work moving in engagement with the reciprocating cam-cylinder.

9. The combination, substantially as before set forth, of a needle-cylinder and its needles, two cam-cylinders, one of which only works during circular work, and thread-supplying devices, the thread-supplying device for reciprocating work moving in unison with the reciprocating cam through the whole or a part of its movement.

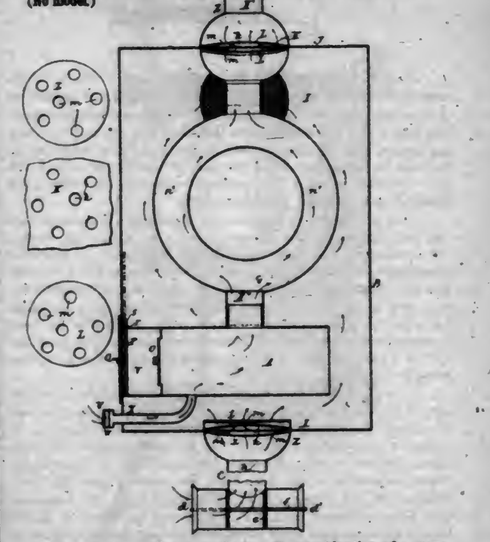
408,112. MEANS FOR MEASURING AND REGULATING THE CHARGE AND DISCHARGE OF SECONDARY BATTERIES. WILLIAM P. KOOKOGEY, Brooklyn, N. Y. Filed July 5, 1888. Serial No. 279,110. (No model.)



Claim.—1. The combination of the following elements: a charging-circuit, a storage-battery, a working-circuit, an electro-depositing cell forming part of both the working-circuit and of the charging-circuit and having one plate movable, and a balance attached at one end to the movable plate and actuating at its other end circuit-connections in the charging-circuit, and a permanent connection between the cell and the working-circuit, substantially as described.

2. The combination of the following elements: a charging-circuit, a storage-battery, a working-circuit, an electro-depositing cell forming part of both the working-circuit and of the charging-circuit and having one plate movable, a balance attached at one end to the movable plate and actuating at its other end circuit-connections in the charging-circuit, and a compensating shunt with a circuit-breaker, such shunt passing around the electro-depositing cell, taking such proportion of the charging-current as will balance the loss by local action in the storage-battery during the discharge, substantially as and for the purpose described.

408,118. RAILROAD-CAR HEATER. FERDINAND KRAFWENKAL and WILLIAM KELLEY, Aurora, Ill. Filed Feb. 1, 1888. Serial No. 262,361. (No model.)

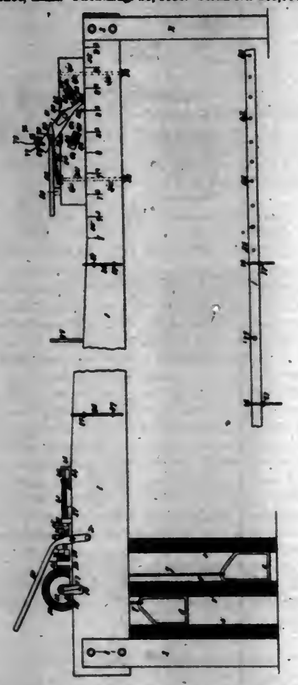


Claim.—1. In a railway-car heater, the combination of a stove-surrounding drum having the openings therein and the two concave or disk-shaped plates L, secured over the same, as set forth, such plates also having openings therein, but lapping or not registering with those in the drum, substantially as and for the purposes set forth.

2. In combination, the perforated drum, concave perforated plates L, applied thereto, as set forth, the wire-netting n, and exterior hemispherical protectors, all substantially as described.

3. The combination of the drum provided with a doorway, guides on its inner surface, and a hole near the doorway, a vertically-sliding door operating in said guides adapted to close the doorway when in its normal position, and having a hole registering with the hole in the drum when in said position, and a swinging door provided with a latch-pin adapted to enter the holes in the drum and sliding door when the doors are in their normal or closed position, substantially as described.

408,114. WIRE-BALE-TIE MACHINE. WILLIAM A. LAIDLAW, Cherokee, Kans. Filed Aug. 23, 1888. Serial No. 283,967. (No model.)



Claim.—1. In a wire-bale tie machine, the combination of the cross-head rest that supports the wire when twisting, the dovetail lug that projects from said cross-head, and the bifurcated clamping-lever provided with a recess between its forks flaring downwardly and having beveled sides, the sides of which clutch the dovetail lug projecting from the cross-head and clamp the same to hold the cross-head with the wire it carries while the strands of the tie-loop are twisting, substantially as and for the purpose set forth.

2. In a wire-bale-tie machine, the combination of the cross-head rest that supports the wire in front of the twister-shaft while twisting, the dovetail lug that projects from said cross-head, the bifurcated clamping-lever provided with a recess 48 between its forks, the sides of which clutch the lug projecting from the cross-head, the shaft that is carried by the cross-head at one end and in bearings in the pedestals 43 at the other end, and the spiral spring mounted on said shaft that allows the cross-head to retreat before the clamping-lever and springs it back again to its work, substantially as and for the purpose set forth.

3. In a wire-bale-tie machine, the combination of the cross-head rest 39, provided with a slotted base, the lug that projects from said cross-head rest, the clamping-lever, the clutch-hold provided in the crotch of said lever to clasp said lug, the spring-mounted shaft integral with the cross-head, having bearings within the pedestals 43, which are secured to the head-block, the twister-frame, the rotary twister-shaft, the former on the end of said shaft, and the tongue that projects forward from the twister-frame on which the slotted base of the cross-head slides, substantially as and for the purpose set forth.

4. In a wire-bale-tie machine, the combination of the head-block and bench-beam of the machine to which said head-block is secured, the bolted connection of the head-block to the beam adjustable to the length of the bale-ties, the combined stretcher and cutter lever, the cutter-edged point of said lever, the pivot on which said lever works, a set-screw for adjusting said lever, and the anvil-bar on which the cutter end of said lever operates, substantially as and for the purpose set forth.

5. In a wire-bale-tie machine, the combination of the head-block, the combined stretcher and cutter lever, the cutter-edged point of said lever, the anvil-bar, the yoke 57, the pivotal connection of said yoke to the head-block, and the pivotal connection of said lever to said yoke, substantially as and for the purpose set forth.

6. In a wire-bale-tie machine, the combination of the adjustable head-block, the yoke pivoted to said head-block, the combined stretcher and cutter lever pivoted to said yoke, the anvil-bar, and the fulcrum set-screw that works in the projecting lug of the yoke, arranged to adjust the presentation of the edged point of said stretcher and cutter-lever, substantially as and for the purpose set forth.

7. In a wire-bale-tie machine, the combination of the pivoted yoke, the combined stretcher and cutter lever pivoted to said yoke, the fulcrum set-screw by means of which said lever is adjusted to its work, and the anvil-bar that rocks on the pivot-bolt of said yoke, substantially as and for the purpose set forth.

8. In a wire-bale-tie machine, the combination of the pivoted yoke, the combined stretcher and cutter lever pivoted to said yoke, the rocking anvil-bar that is self-adjusting on the pivot-bolt of said yoke, the steel face of said anvil-bar that carries the bale-wire at the point of intended severance, and the pendent arm of said bar, substantially as and for the purpose set forth.

9. In a wire-bale-tie machine, the combination of the pivoted yoke, the combined stretcher and cutter lever pivoted to said yoke, the fulcrum set-screw by means of which said lever is adjusted, the self-adjusting anvil-bar that rocks on the pivot-bolt of said yoke, the pendent arm of the anvil-bar, the adjustable buffer-plates that relatively stay the rock of said arm to present the face of the anvil at the position for the grip on the wire of the edge of the stretcher and cutter lever and at the position for said edge to commence to effect its cut, and the set-screws that fasten said adjustment of the buffer-plates, substantially as and for the purpose set forth.

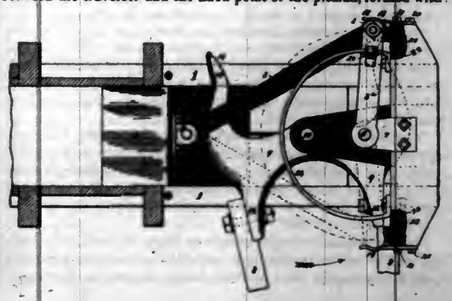
10. In a wire-bale-tie machine, the combination of the pivoted yoke, the combined stretcher and cutter lever, the fulcrum set-screw by means of which said lever is adjusted, the self-adjusting anvil-bar, the adjustable buffers that limit the movement of said anvil-bar, and the buffer-plates secured on top of the head-block that limit the movement of said yoke, substantially as and for the purpose set forth.

11. In a wire-bale-tie machine, the combination of the adjustable head-block, the yoke pivoted to said head-block, the combined stretcher and cutter lever pivoted to said yoke, the fulcrum set-screw by means of which said lever is adjusted, the self-adjusting anvil-bar, the adjustable buffers that limit the movement of said anvil-bar, the reactionary spring 72, that after the elevation of the pivoted yoke withdraws it to its normal position, and the rest-block 80, on which the said lever reclines when inoperative, substantially as and for the purpose set forth.

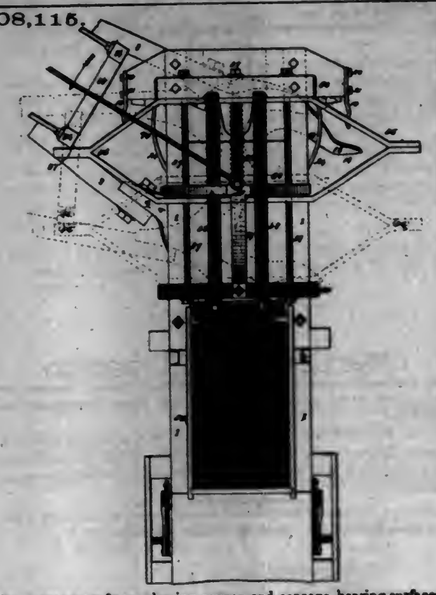
12. In a wire-bail-tie machine, the combination of the adjustable head-block, the graduated scale to which said head-block is adjusted, the combined stretcher and cutter lever pivoted to said head-block, the fulcrum set-screw against which said lever is adjusted, the self-adjusting anvil-bar, the vertical stop-rod that prevents the falling of the bale-ties on the wrong side of the machine, the folding depository-hooks that catch and hold the finished bale-ties as they fall from the machine, and the top hooks that lock the depository-hooks, respectively, in their operative and folded positions, substantially as and for the purpose set forth.

408,115. BALING-PRESS. WILLIAM A. LAIDLAW, Cherokee, Kans. Filed Nov. 14, 1888. Serial No. 290,772. (No model.)

Claim.—1. The combination, with a traverser and a jointed pitman connected at its inner end to the traverser and at its outer end to a fixed point, of a sweep having a head connected to a fixed point between the traverser and the fixed point of the pitman, formed with



408,115.



inner prongs or fingers having convex and concave bearing-surfaces, substantially as described.

2. The combination, with a traverser, of the jointed pitman having a friction-roller at the joint, and the sweep having a head connected to a fixed point between the traverser and the outer fixed point of the pitman, formed with inner prongs or fingers adapted to bear on the roller of the pitman, substantially as described.

3. The combination, with the frame, the traverser, and the jointed pitman, of the plates 18, bolts 20 and 21, and springs 23, substantially as described.

4. The combination, with a frame and a traverser, of the jointed pitman having bent upper and lower links P, provided with rollers 25, and the upper and lower semicircular tracks 24, supported on the frame, forming guides for the outer part of the pitman and extending between the bent portions of the links and the joint of the pitman, substantially as described.

5. The combination, with a frame and a traverser, of the returning device for the traverser, consisting of the rope 27, passed through the frame, the cross-piece 30, the sleeve 33, the rod 26, sliding in the cross-piece and in the sleeve, having a projection 31, and a spring 32 between the cross-piece and the projection, substantially as described.

6. The combination, with a frame and a traverser, of the returning device for the traverser, consisting of the rope 27, passed through the frame, the pulley 28, the cross-piece 30, the sleeve 33, the rod 26, sliding in the cross-piece and in the sleeve, having a projection 31, and a spring 32 between the cross-piece and the projection, substantially as described.

7. The combination, with a frame having a baling-chamber formed with a yielding delivery end, of the rods 35, cross-heads 36 and 37, blocks 39 and 40 on the cross-heads, screw 38, turning on the lower block and working in the upper block, provided with a ratchet-wheel 41, lever 42, pivoted to the screw, double pawl 43, pivoted to the lever, plate 45, pivoted to the lever, having hand-pieces 47, and the rods 44 on opposite sides of the lever connecting the double dog with the plate, substantially as described.

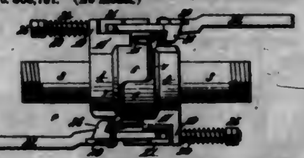
8. The combination, with a frame having a hopper over the baling-chamber formed with a movable front end, of the sweep having a head, the posts on the sweep, the guide-rods, the frame 56, sliding on the guide-rods, the strips connecting the front end of the hopper with the sliding frame, and means for returning the latter, substantially as described.

9. The combination of a traverser, a sweep having a head for operating the traverser, a hopper having a bottom 52 and a movable end 53, and a frame 56, against which the sweep impinges and which is connected to the movable end of the hopper, substantially as described.

10. The combination of a sweep having a head, a hopper having a bottom 52 and a movable end 53, and a frame 56, against which the sweep impinges and which is connected to the movable end of the hopper, substantially as described.

11. The combination of a traverser, a sweep having a head for operating the traverser, having posts 54, a hopper having a bottom 52 and movable end 53, a frame 56, connected to the movable end 53, guide-rods 59, and spring 62, substantially as described.

408,116. BRAKE-HOSE COUPLING. EDWIN A. LELAND, Brooklyn, N. Y., assignor to Leonard Richardson, same place. Filed Apr. 11, 1889. Serial No. 306,787. (No model.)



Claim.—1. In a brake-hose coupling, the combination, with two separable coupling-sections, of levers pivoted thereon in bearings, which yield against the tension of springs, each lever having a cam engaging a cam projection on the opposite section, a latch on each coupling-section, and a spring-actuated dog pivoted on each locking-lever and having a catch to engage a latch, substantially as described.

2. In a brake-hose coupling, the combination, with two separable coupling-sections, of locking-levers pivoted thereon and having cams engaging with cam projections on the opposite section, and spring-actuated dogs pivoted on the levers and automatically engaging latch-pieces on the coupling to hold the two levers in locking position, substantially as described.

3. In a brake-hose coupling, the combination of the two sections of a coupling, each having at one side a bracket provided with a hole and at the opposite side a cam projection, a headed bolt extending through and lengthwise movable in the hole of each bracket, a spring encircling each bolt between its head and the bracket, a locking-lever pivoted to each bolt at the side of the bracket opposite the spring, a latch on each coupling-section, and a spring-actuated dog pivoted on each lever in advance of the pivot-point of the latter and having a catch to engage a latch, substantially as described.

4. In a brake-hose coupling, the combination, with two separable coupling-sections, each having upon one side a cam projection, and upon the other side a pivoted locking-lever, of dogs pivoted upon said levers and having inwardly-turned catches beveled upon their lower surfaces, and springs housed in the levers and drawing upon rods connected to said levers having cams engaging the cam projections, and the latter being provided with latch-pieces for the catches on the dogs, substantially as described.

408,117. GATE. JOHN R. LITTLE, Princeton, Ind. Filed Mar. 19, 1889. Serial No. 303,836. (No model.)



Claim.—1. The combination of a gate and posts, a reciprocating

bar mounted upon these posts, suitable operating-levers connected to this bar, an arm H, pivoted to one of the posts, and pivotal links connecting this arm to the gate and bar, substantially as described.

2. The combination of a gate and suitable posts, a reciprocating bar and operating-levers, a latch-bar on the gate, an arm H, pivoted to one of the posts and connected to this latch-bar by means of a link, and a pivotal link connecting this arm to the reciprocating bar, substantially as and for the purpose set forth.

408,118. CHAIR. GEORGE E. LORD, Utica, N. Y. Filed Mar. 6, 1889. Serial No. 302,092. (No model.)



Claim.—1. The combination, with a chair, of a back hinged thereto, a horizontal reciprocating lever pivoted at one end to the chair-back, a plate secured to the frame-work and provided with a perforation, a pin projecting from the plate, and a spring attached at one end to the free end of the horizontal reciprocating lever and at its other end coiled about the pin on the plate, the free end of said spring being inserted in the perforation in said plate, substantially as set forth.

2. The combination, with a chair, of a back hinged thereto, a notched lever pivoted at one end to the back and extending beneath an arm of the chair without contact therewith, a bar secured to the frame, a shell passing through said bar, a spring incased within the shell, a bolt passing through the shell in engagement with the spring and adapted to engage the notches of the lever, and a spring connecting the lever and chair-frame, substantially as set forth.

3. The combination, with a chair, of a back hinged thereto, a lever having notches pivoted to said back, an upright bar secured to the frame, a shell passing through said bar, a spring-sustained bolt passing through said shell and adapted to engage the notches of the lever, a plate secured to said upright bar having a slot to receive the head of the bolt, and a spring secured at one end to the lever and at the other end to the chair-frame, substantially as set forth.

4. The combination, with a chair-frame, of a block mounted to slide in ways beneath the seat, a hanger having laterally-projecting curved arms secured to one end of said block and projecting below the under face thereof, a yoke adapted to slide upon said arms of the hanger and bear against the under face of the sliding block, and a foot-rest pivoted to the free end of the yoke, substantially as set forth.

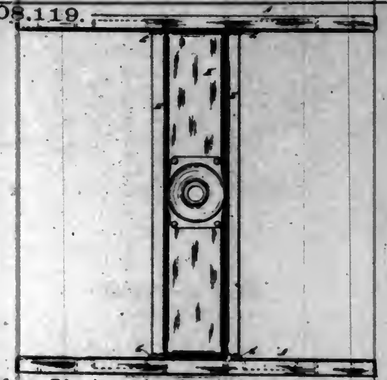
5. The combination, with a chair-frame, of a sliding block mounted therein, a notched plate secured to said block, a yoke carried by the block and adapted to engage the notched plate, and a foot-rest attached to said yoke, substantially as set forth.

6. The combination, with a chair-frame, of a sliding block mounted therein, a curved notched plate secured to said block, a yoke carried by the block and adapted to engage the notches of the curved plate, and a foot-rest attached to said yoke, substantially as set forth.

7. The combination, with a chair-frame, of a sliding block carried thereby, a notched plate secured to the under side of said block, a yoke carried by the block and adapted to engage the notched plate, guide-pins on said yoke and embracing a portion of the plate, and a foot-rest pivoted to said yoke, substantially as set forth.

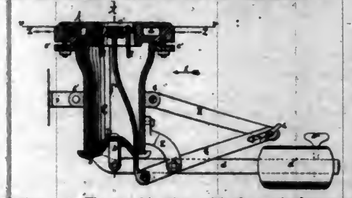
408,119. PRESSED-STEEL TRUCK. EDWARD W. M. HOUSER, Chicago, Ill., assignor to the Fox Solid Pressed Steel Company, same place. Filed May 23, 1889. Serial No. 311,877. (No model.)

Claim.—1. The combination of the wheel-pieces A A, formed of pressed steel and flanged at C, with the pressed-steel transom D, having flanges E bearing against the side frames, thereby insuring the parallelism of the side frames without end frames, substantially as described.



2. The combination of the side frames A A, of pressed steel, and having flanges C, with the transom D, of pressed steel, having flanges E, and lugs G G G G, pressed from the flanges E, substantially as described.

408,120. FORGE-TUYERE. JOHN MALQUIST, Salt Lake City, Utah. Filed Mar. 12, 1888. Serial No. 266,902. (No model.)



Claim.—1. The combination, with the conical tuyere-nozzle, of the perforated circular sliding valve and the valve-guides controlling the sliding valve, substantially as described.

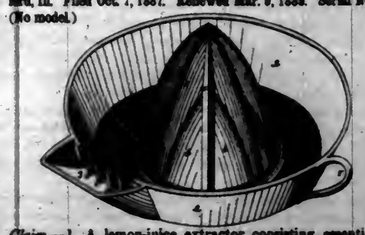
2. The combination, with a conical tuyere-nozzle, of a circular valve having outward tapering aperture and guided to slide centrally within the said nozzle and adapted to close the outer end thereof, for the purpose set forth.

3. The combination, with a conical tuyere-nozzle, of a circular valve having two diametrically-opposite crescent-shaped apertures, and guided to slide centrally within the said nozzle and adapted to close the outer end thereof, for the purpose set forth.

4. The combination, with a tuyere-plate having conical nozzle and a downwardly-projecting hollow body attached to said plate, of a circular valve guided to slide centrally in the said nozzle, a lever G, fulcrumed to the said body and pivoted to the valve-rod, and an arm pivoted to the said body, the free ends of the said arm and lever being adjustably secured together to vary and maintain the elevation of the said valve, substantially as specified.

5. The combination, with a tuyere-plate having conical nozzle and a downwardly-projecting hollow body attached to said plate, of a circular valve guided to slide centrally in the said nozzle, a lever fulcrumed to the said body and pivoted to the valve-rod, and an arm pivoted to the said body, the free ends of the said arm and lever being provided with thumb-screw and slot to adjustably secure them together for varying and maintaining the elevation of the said valve.

408,121. LEMON-JUICE EXTRACTOR. JOHN P. MANEY, Rockford, Ill. Filed Oct. 7, 1887. Renewed Mar. 9, 1889. Serial No. 302,744. (No model.)

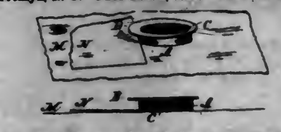


Claim.—1. A lemon-juice extractor consisting, essentially, of a reservoir-base having a strainer located at the side of the reservoir, a tapered extractor uprising from and formed integral with the bottom of the reservoir-base, the exterior surface of the extractor provided with projections, substantially as set forth.

2. A lemon-juice extractor consisting, essentially, of a reservoir-base having a spout, a strainer located at the side of the reservoir, a handle, and a tapered extractor uprising from and formed integral with the bottom of the reservoir-base, the exterior surface of the extractor provided with projections, substantially as set forth.

3. A juice-extractor consisting, essentially, of a ribbed extractor, a reservoir-base forming a support for the extractor, a discharge-spout connected with the side walls of the reservoir, and fingers rising within the discharge-spout to operate as a strainer, substantially as set forth.

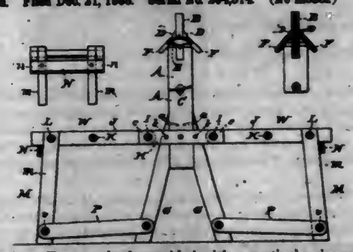
408,122. FEED-GAGE FOR PRINTING-PRESSES. EDWARD L. MERRILL, Brooklyn, N. Y. Filed Nov. 2, 1885. Serial No. 181,502. (No model.)



Claim.—1. A metallic gage for printing-presses, provided with a filling or wafer of fibrous or other material having affinity for gum or paste, substantially as herein described.

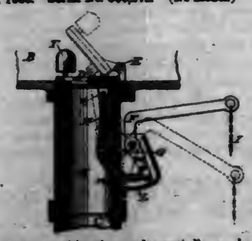
2. A metallic gage A, having ledge B and lugs D, and provided with a filling or wafer of fibrous or other material having affinity for gum or paste, substantially as herein described.

408,123. FOLDING WASH-BENCH. JAMES R. MERRIMAN, La Grange, Ind. Filed Dec. 21, 1888. Serial No. 294,314. (No model.)



Claim.—The standard provided with a vertical wringer-attachment board B, having the cover-joint ribs D, the extended hinge-brackets, and the drip-boards F, pivoted to said brackets, substantially as specified.

408,124. FLUSHING-VALVE. GILBERT MICHAUD, New York, N. Y. Filed Apr. 6, 1889. Serial No. 306,372. (No model.)

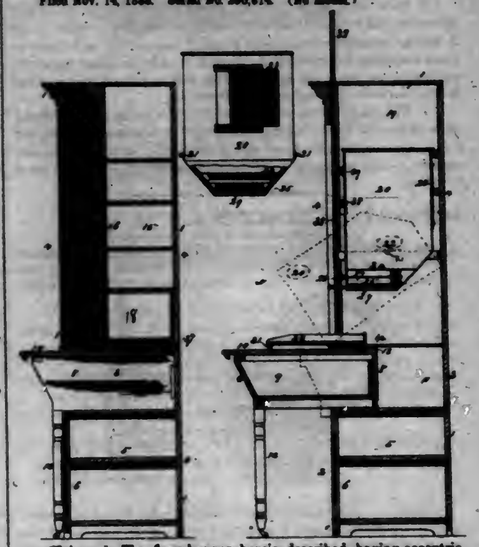


Claim.—1. The combination, substantially as described, with a pipe and a valve automatically closing the same transversely to its bore, of a lever pivoted upon the outer periphery of the pipe, an arm actuated thereby and curved to extend through the peripheral wall of the pipe upon an arc having the pivot of the lever as its center, and an intermediate link extending longitudinally within the pipe substantially parallel with its bore.

2. The combination, with a pipe, a valve closing the same, and a lever pivoted laterally upon the outer face of the pipe having an arm extending into the pipe upon a curve, having the pivot as its center, and which is coupled to the valve to move it, of an outer case or safe secured to or formed upon the pipe to inclose the lever and its arm below the pivot, substantially in the manner and for the purpose herein set forth.

3. The combination, with a water-closet bowl or hopper, a service-box connected with a water-main under pressure, and an intermediate connecting-pipe, of a valve closing said pipe and opening toward the tank, a lever pivoted upon the outer periphery of the pipe and having an arm curved to extend and move with a close joint through the peripheral wall of the pipe upon an arc having the pivot of the lever as its center, a link extending longitudinally within the pipe and coupling the arm and valve, and a device for operating the lever from the closet, substantially in the manner and for the purpose herein set forth.

408,125. KITCHEN-CABINET. GEORGE E. MILLER, St. Louis, Mo. Filed Nov. 14, 1888. Serial No. 290,814. (No model.)



Claim.—1. The flour-hopper herein described, having eccentric trunnions, its upper end being closed and having an opening at its back, in combination with a frame having bearings for said trunnions, said frame being open at the front a considerable distance above and below the trunnions to permit said hopper to move a distance of more than a quarter of a circle, whereby one of its edges is adapted to come in contact with said frame and bring the opening to the top, substantially as set forth.

2. In combination with an outwardly-swinging flour-hopper mounted in a suitable frame, a removable cross-bar to keep the hopper in upright position, substantially as set forth.

3. In combination with a flour-hopper supported on trunnions, a flour-drawer beneath having feet at its front end and a sliding table beneath the drawer, upon which the drawer is supported when the table is drawn out, substantially as set forth.

4. The combination, with a flour-hopper, of a coarser and finer sieve secured to the hopper, with a chamber between them, and movable brushes in said chamber and bearing on both of said sieves, substantially as and for the purpose set forth.

5. The combination, in a flour-hopper, of the described coarser upper sieve and finer lower sieve at the discharge of the receptacle, brushes between the sieves bearing upon the sieves, and slide-valve controlling the discharge of the receptacle, substantially as set forth.

6. The combination, in a kitchen-cabinet, of a sliding table having a projection at the rear and a projection above the table, with which aforesaid projection comes in contact to limit the movement of the table, substantially as set forth.

408,126. CHURN. BUTLER MITCHUM, Hammondsville, Ky. Filed July 5, 1888. Serial No. 278,140. (No model.)



Claim.—1. In a churn, the combination, with the top thereof and a dasher-rod having a flange or extension, of a spiral spring mounted

on said churn-top and having a ring or collar at its upper extremity serving as a rest for said flange, and a sack or cover having angular projections to receive the coils of the spring and having, also, a ring or collar at its top, for the purpose set forth.

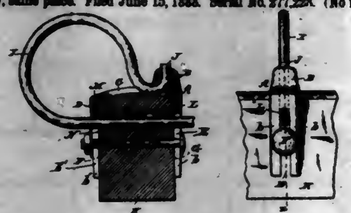
2. In a churn, the combination, with the top thereof and a dasher-rod, of a ring or disk D, having depending spring-arms E, and a ring or disk J, likewise having spring-arms J', all substantially as and for the purposes herein set forth.

3. In a churn, the top thereof, a spiral spring mounted on said churn-top, and a dasher-rod, in combination with rings or disks D and J, having depending spring-arms E and J', respectively, and a sack or cover encircling the spiral spring formed to move in unison therewith and having its upper end secured to the dasher-rod and its lower end located between the rings or disks D and J.

4. The combination, with a churn-top, of a spring mounted thereon, a dasher-rod having a flange adapting it to rest on said spring, and a sack or cover encircling said spring and having its upper extremity secured to said spring, whereby the latter and said cover will move in unison.

408,127. WITHDRAWN.

408,128. CLIP OR SADDLE RAKE-TOOTH HOLDER. LEONARD W. O'BRIAN, Bellevue, Ohio, assignor to the Fremont Cultivator Company, same place. Filed June 15, 1888. Serial No. 277,228. (No model.)



Claim.—1. A tooth-fastening of the character described, consisting of a clip provided with a socket and a slot at the top, and having fingers which extend below the plane of the top of the clip, forming U-shaped openings, in combination with a rake-head having a transverse perforation and a rake-tooth extending through said perforation in the rake-head and through the U-shaped openings in the clip, all constructed and combined to operate substantially as and for the purposes specified.

2. A tooth-fastening of the character described, consisting of a clip provided with a socket and a slot at the top, and having fingers which extend below the plane of the top of the clip, forming inverted-U-shaped openings open at the bottom, in combination with a rake-head having a transverse perforation small at the front and larger at the rear, and a rake-tooth extending through said perforation in the rake-head and the U-shaped slots and fitting within the socket at the top of the clip, all constructed and combined to operate substantially described.

3. A tooth-fastening of the character described, consisting of a clip provided with a socket and a slot at the top, and having fingers which extend below the plane of the top of the clip, forming inverted-U-shaped openings, in combination with the rake-head having a transverse perforation small at the front and larger at the rear, and a rake-tooth extending through said perforation in the rake-head and fitting within the socket at the top of the clip and extending through the U-shaped openings in the clip and abutting against a portion of the rake-head above the small end of the perforation in the front of the rake-head, substantially as and for the purposes specified.

408,129. WASTE-BASKET. JOHN H. OSBORN, Auburn, N. Y. Filed Jan. 26, 1889. Serial No. 297,631. (No model.)



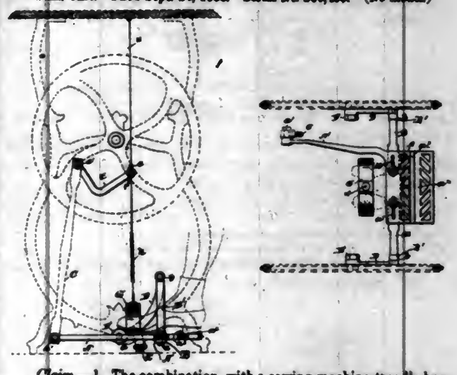
Claim.—1. In combination with a writing-desk, an angular waste-basket hinged to the outside corner and arranged to swing from an exposed position in front of the desk to a position beyond the end of the same.

2. The desk having hinges on its outer corner, in combination with the basket or receptacle mounted on said hinges to swing wholly outside of the desk from a position beyond the end to a position at the front, said hinges adapted, as described and shown, to permit the disconnection of the receptacle.

408,130. NON-MAGNETIC ALLOY. HENRICH OTTENBAHN and CHARLES LACROIX, Geneva, Switzerland, assignors to the Usine Genevoise de Dégrossissage d'Or, same place. Filed May 13, 1889. Serial No. 310,634. (No specimens.)

Claim.—A non-magnetic alloy composed of nickel, chromium, platinum, copper, zinc, lead, and tin, in the proportions and substantially as described.

408,131. SEWING-MACHINE TREADLE. WILLIAM F. OTIS, Norwalk, Ohio. Filed Sept. 27, 1888. Serial No. 286,496. (No model.)



Claim.—1. The combination, with a sewing-machine treadle having a longitudinal rib or flange thereon, of upwardly-projecting arms adjustably attached to the treadle and located in front of said rib, and pivoted to the machine-supports, and a pitman connecting the front end of the treadle with the crank of the machine, substantially as set forth.

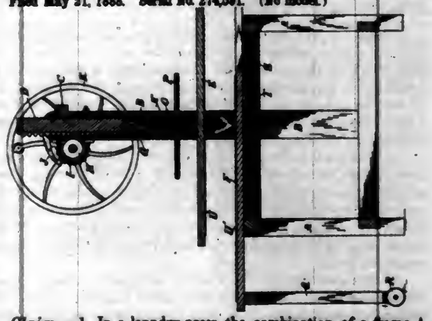
2. The combination, with a sewing-machine treadle having upwardly-projecting arms pivotally mounted, substantially as indicated, of a swinging stirrup for supporting the forward part of the foot of the operator, substantially as set forth.

3. The combination, with a sewing-machine treadle having a seat for engaging the heels of the operator, of a stirrup for supporting the forward parts of the feet, such stirrup being suspended from above, so as to swing with the movement of the treadle, substantially as set forth.

4. The combination, with a treadle having arms pivoted substantially as indicated, of brackets connected by bolts with the legs of the machine, such brackets pivotally supporting the said arms and treadle, lateral arms connected with such brackets, and adjusting-screws connected with such lateral arms, said adjusting-screws engaging the floor, substantially as set forth.

5. The combination, with a treadle substantially as indicated, of a pitman for connecting the treadle with the crank of the sewing-machine and a link mounted on the crank and adjustably secured thereto, such link having a wrist for connecting with the pitman, substantially as set forth.

408,132. LAUNDRY-PRESS. ADRIAN OTTE, Grand Rapids, Mich. Filed May 21, 1888. Serial No. 274,591. (No model.)



Claim.—1. In a laundry-press, the combination of a frame A with a horizontally-movable board F, having the leg Q, provided with a roll R, and the vertically-movable board E, provided with means for raising, lowering, and pressing upon the same, substantially as described.

2. In a laundry-press, the combination of a frame A, provided with strips S, with a horizontally-movable board F, having hooks T, engaging with said strips, and a vertically-movable board E, provided with means for raising, lowering, and pressing upon the same, substantially as described.

3. In a laundry-press, the combination of a frame A, having strips S, with a board F, having hooks T and leg Q, and a vertically-movable board provided with means for raising, lowering, and pressing upon the same, substantially as described.

4. In a laundry-press, the combination of a frame A with a horizontally-movable board or top F, the post B, shaft L, having a hand-wheel K, ratchet I, pawl J, and pinion H, the post D, having the rack G and latch M, and the board E, attached by the screw O, substantially as described.

408,133. MOWING-MACHINE. GARDNER B. PARKER, Worcester, Mass., assignor to the Richardson Manufacturing Company, same place. Filed June 11, 1888. Serial No. 276,712. (No model.)



Claim.—In a mowing-machine, the combination, with a stand supported on the frame of the machine, having a stop-notch 6 and a holding-notch 6' in its upwardly-projecting edge and a smooth rim between the notches, and a stud 12, on which is supported a spiral spring 13, bearing at one end against the lifting-lever pivoted concentrically with the stud and bearing at the other end on said stand, of the lifting-lever carrying a sliding dog to engage said notches, a chain-cam secured to said lever, and a chain 8, secured to said cam and to the hinged bar 9, and said bar hinged at its lower end to the inside shoe, the finger-bar 19, secured at its inner end to the shoe, and said shoe having an inwardly-projecting part carrying a stud, and a spiral spring 18, supported on said stud and interposed between the lower end of the hinged bar 9 and the projecting part of the shoe, for the purpose stated, substantially as set forth.

408,134. SCHOOL-FURNITURE. JOHN PEARD, Brooklyn, N. Y. Filed Apr. 19, 1889. Serial No. 307,641. (No model.)



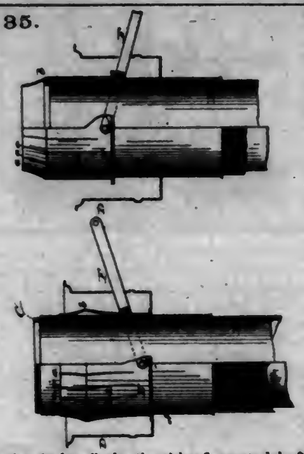
Claim.—1. A school-desk comprising the following elements: the end legs A, the back B, the back board H, the brackets I, secured to the outside of the back board and carrying the seat-arms G, and the separate brackets K, secured to the inside of the back board and to the inside of the desk-back, substantially as described.

2. A school-desk comprising the following elements: the end legs A, the back B, the book-rack J, having the rigid back board H, the brackets I, secured to the outside of the back board and carrying the seat-arms G, the separate brackets K, arranged on the inside of the back board and rising along the desk-back, and the bolts M, passing through the seat-carrying brackets, the back board, and the back-sustaining brackets, substantially as described.

408,135. CENTRAL-DRAFT LAMP. EUGENE H. PECK, Meriden, Conn., assignor to the Meriden Bronze Company, same place. Filed Feb. 4, 1889. Serial No. 298,609. (No model.)

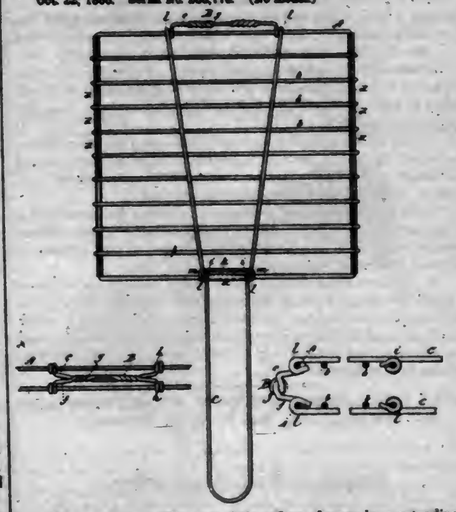
Claim.—1. In a central-draft lamp, a sleeve arranged upon the tube which surrounds the wick and so as to slide vertically thereon, the upper end of the said sleeve forming a series of vertical springs around the tube, their upper ends bent inward, so that when the sleeve is raised the upper ends of the springs will close inward around and above the upper end of the wick, and on the descent of the sleeve the said springs will spread and pass onto the outside of the tube, substantially as described.

408,135.



2. The herein-described extinguisher for central-draft lamps, consisting of a sleeve E arranged upon the outside of the tube and so as to move vertically thereon, the upper end of the said sleeve slit to form a series of vertical springs integral with the sleeve, the upper ends of the springs bent inward, so as to close over the wick when the sleeve is raised, and a lever hung to the sleeve and extending through the burner, substantially as described.

408,136. GRIDIRON. WILLIAM C. PERKINS, New Haven, Conn., assignor to the New Haven Wire Goods Company, same place. Filed Oct. 22, 1888. Serial No. 288,773. (No model.)

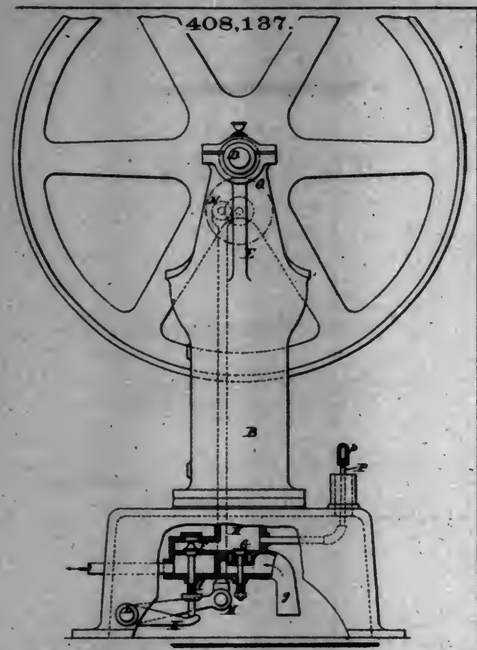


Claim.—A wire gridiron consisting of two frames, bars extending across each frame and secured to opposite sides, a hinge B, connecting the two frames and consisting of two wires twisted about each other, the ends of the wires bent around the adjacent sides of the respective frames, substantially as described.

408,137. GAS-MOTOR ENGINE. JOHN J. PURNELL, Lambeth, County of Surrey, England. Filed May 15, 1889. Serial No. 310,860. (No model.) Patented in England July 12, 1888, No. 10,105.

Claim.—A gas-motor engine having a vertical cylinder made with brackets projecting up therefrom to carry the crank-shaft, and having in a hollow base under the cylinder a valve-box containing a self-acting air and gas supply valve and an exhaust-valve closed by a spring and opened at every alternate revolution of the crank-shaft by a lever worked by a crank eccentric or cam caused to revolve by gear at half the speed of the shaft, having also in communication with the cylinder-bottom an igniting-pipe heated by a burner, this pipe being adjustable in length, all substantially as described.

408,137.



408,138. METHOD OF GELATINIZING ELECTROLYTES FOR GALVANIC BATTERIES. PAUL SCHOOP, Zürich, Switzerland. Filed Mar. 30, 1889. Serial No. 305,443. (No model.)

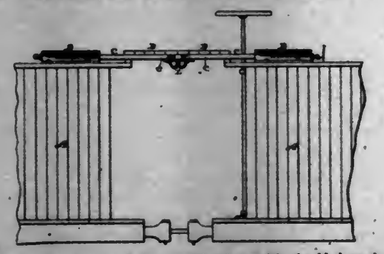
Claim.—1. The herein-described method of converting the electrolyte of a galvanic battery or pile into a gelatinous mass by the addition to said electrolyte of a sufficient quantity of water-glass, substantially as specified.

2. The herein-described method of converting the electrolyte of a galvanic battery or pile into a gelatinous mass by adding to said electrolyte a sufficient quantity of water-glass and a mineral acid, (such as sulphuric acid,) substantially as specified.

3. The herein-described method of converting the electrolyte of a galvanic battery or pile into a gelatinous mass by the addition thereto of a sufficient quantity of water-glass and the sulphate of alumina, substantially as specified.

4. The herein-described method of preparing the electrolyte of a galvanic battery or pile by converting said electrolyte into a gelatinous mass by the addition thereto of sufficient quantities of water-glass and a mineral acid (such as sulphuric acid) and covering or coating said mass with a bland soft material, such as wax or paraffine, substantially as specified.

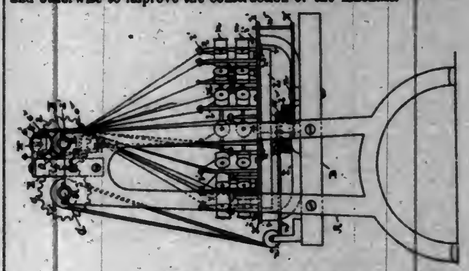
408,139. CAR-ROOF ATTACHMENT. WILLIAM P. SETTLES, La Due, Mo. Filed Jan. 14, 1889. Serial No. 296,328. (No model.)



Claim.—In a car-roof, the combination, with the U-shaped supporting-rods, the castings secured to the roof of the car, into which the ends of the said supporting-rods move back and forth, springs within the said castings which engage the ends of the rods and force them outward, and a flooring secured to the outer end of the support, of a bracket secured to the under side of the said support at its outer extremity, having a vertical bearing-surface for engaging a similar bracket upon the roof of the adjacent car, for the purpose shown and described.

408,140. DOUBLING-MACHINE. JOSEPH H. SEARS, Lenox, assignor to himself, and the Housatonic Silk Company, Florence, Mass. Filed Aug. 27, 1888. Serial No. 283,969. (No model.)

Brief.—The objects of the invention are to provide a doubling-machine in which the strain upon the filaments will be uniform and which will enable any desired number of supply-bobbins to be used, and otherwise to improve the construction of the machine.



Claim.—1. In a doubling-machine, the combination of the following instrumentalities, viz: a spindle adapted for carrying a receiving-bobbin, a revoluble frame carrying a rack, which rack supports a series of supply-bobbins, means, substantially as described, for revolving said spindle and frame, a series of vertical rods mounted upon said frame adjacent to said supply-bobbins, an annulet loosely mounted upon each of said rods, which annulets serve as guides for the filaments from said supply-bobbins as they pass to the receiving-bobbin, and which are retained at or near the upper ends of the rods by said filaments, a shipping-ring located adjacent to and circumscribed about said frame, said shipping-ring being supported in such manner as to be capable of a limited revolving movement, and having a series of lugs projecting into the path of movement of said annulets when the latter are at the bottom of their supporting-rods, a lever governing the application of power to said frame, whereby the latter is revolved, and intermediate connections, substantially as described, between said shipping-ring and said lever for disconnecting the power by the movement of said ring, whereby the descent of one of said annulets to the bottom of its rod will effect the stoppage of the movement of the frame, substantially as set forth.

2. In a doubling-machine, a spindle adapted for carrying a receiving-bobbin, a revoluble frame supporting a series of supply-bobbins, means, substantially as described, for revolving said spindle and frame, releasing devices, substantially as described, for disconnecting the power from said spindle and also from said frame, a series of annulets held in an elevated position upon said frame by the filaments passing from said supply-bobbins to said receiving-bobbin, a shipping-ring, suitable intermediate connections between said ring and both of said power-releasing devices, whereby the latter are operated by the former, and a series of contact devices projecting from said ring over said frame to a point beneath the plane of revolution of said annulets, whereby, upon the release of either of said annulets by its filament, it will descend to a position to engage one of said contact devices and impart movement to said shipping-ring, combined and operating substantially in the manner described.

3. In a doubling-machine, a frame supporting at its upper end the revolving receiving-bobbin H and having a bed, as B, located beneath said bobbin, shipping-ring K, supported upon said bed in such manner as to have a limited revolving movement, and having the inwardly-projecting lugs k^3, circular frame L, having a revolving movement upon said bed within said shipping-ring, the upper surface of said frame being located in a plane slightly below that of the lower surface of said lugs k^3, rods l, mounted upon said frame and supporting loosely thereon annulets l', bobbin-rack M, secured upon said frame and having pegs m projecting radially therefrom, gear l^3, secured to said frame, lever N, pivotally mounted upon said bed, said lever carrying at one end pinion n' and pulley n^3, intermediate connections between said lever and said shipping-ring, and a belt connecting said pulley n^3 with a suitable source of power, combined and operating substantially as described.

4. In a doubling-machine, a frame supporting at its upper end revolving shaft D, carrying wheel d', spindle G, carrying receiving-bobbin H and having drum g, resting by gravity upon the periphery of said wheel d', lever O, pivoted to said frame and having arm o' adapted to be moved against said drum g to elevate the latter, rock-shaft P, having an arm engaging said lever, revolving bobbin-rack M, mounted upon said frame near the lower end of the latter, means for imparting motion to said rack, lever N, governing the means by which motion is transmitted to said bobbin-rack, shipping-ring K, intermediate connections between said ring and said lever N, and also between said ring and said rock-shaft P, and intermediate connections, substantially as described, between said bobbin-rack and said shipping-ring, whereby movement will be imparted to the latter from the former upon the breaking of a filament in its passage from one of the bobbins carried by said rack to the receiving-bobbin H, combined and operating substantially as set forth.

5. In a doubling-machine, support I, having arms i, terminating in horizontal faces, in combination with shipping-ring K, adjustably secured upon said arms by screws i', passing through slots k in said ring, said ring having the inclines k^2 upon its lower side adjacent to said arms, arranged and operating substantially as and for the purpose set forth.

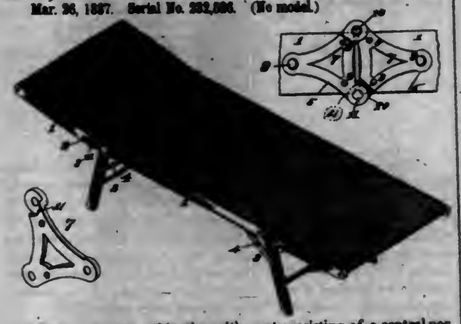
6. In a doubling-machine, support I, having arms i, shipping-ring K, adjustably mounted upon said arms, frame L, having a central hub revolubly supported upon said support I, said frame having the series of rods l, provided with annulets l', means for revolving said frame, bobbin-rack M, secured to said frame and having pegs m radially projecting therefrom, and lugs k^3, projecting from said shipping-ring into the path of movement of said annulets l' at the bottom of said rods l, combined and operating substantially as and for the purpose set forth.

7. In a doubling-machine, the combination, with the spindle adapted for carrying the receiving-bobbin H, frame L, carrying bobbin-rack M, and shipping-ring K, said frame also carrying gear l^3, of shaft C, carrying band-pulley c', lever N, carrying at one end pinion n' and pulley n^3 and having at its opposite end pin n^5, engaging a portion of said shipping-ring, and belt n^4, connecting said pulley c' with pulley n^3, substantially as described.

8. In a doubling-machine, the combination, with revolving frame L, of bobbin-rack M, mounted thereon, said rack consisting of standards m', secured to said frame, a plurality of rings having radially-projecting pegs m, supported upon said standards, and sleeves m^2, located upon said standards between said rings, substantially as set forth.

9. In a doubling-machine, a frame composed of end pieces A A, supporting between them bed B and united at their upper ends by cross-piece E, shafts C D, carrying intermeshing gears c d, mounted in bearings at the upper end of said frame, spindle G, hung in brackets projecting from said cross-piece E and having drum g resting by gravity upon a wheel d' on said shaft D, frame L, mounted upon said bed B and carrying bobbin-rack M, pinion n', engaging a gear l^3 on said frame, pulley n^3, connected with said pinion, and a belt connecting said pulley n^3 with a pulley c' on said shaft C, substantially as described.

408,141. FOLDING COT. JOHN G. SMITH, St. Louis, Mo. Filed Mar. 26, 1887. Serial No. 232,226. (No model.)



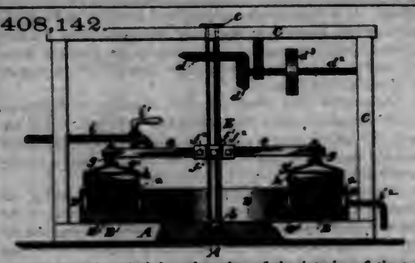
Claim.—1. In combination with a cot consisting of a central portion and end wings, the hinges fixed to the sides and connecting the end wings to the central portion, so that they may be folded thereon, said hinges consisting of two parts, each connected at the top of the cot at 10 and having abutting ends at the bottom of the cot, whereby the ends are adapted to fold over on top of the cot, substantially as set forth.

2. In combination with a cot consisting of a central portion and end wings having spaces between the contiguous ends, the hinges connecting the end wings to the central portion, so that they may be folded thereon, said hinges consisting of two triangular pieces having openings at 10 and 11 to receive pivot-pins, depending on which side of the cot the hinges are placed, said pieces being pivoted together at the top of the cot and having abutting lower ends, substantially as set forth.

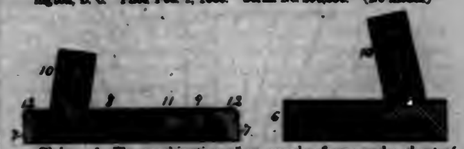
408,142. MILL FOR TREATING FIBER-YIELDING MATERIALS. JAMES D. STANLEY, Rustover, S. C. Filed Jan. 5, 1889. Serial No. 295,809. (No model.)

Claim.—An annular trough and a series of corrugated segments forming an annulus resting on the bottom of said trough, said segments being of a width less than that of the interior of the trough, for the purpose specified, combined with a series of corrugated rollers engaging the corrugated segments, a rotating shaft and arms projecting therefrom for moving the said rollers, a pipe for conveying water to the trough, and an outlet-pipe leading from the bottom of the trough to carry off water and dross, substantially as set forth.

408,142.



408,143. INK-GRINDING SLAB. WILLIAM X. STEVENS, Washington, D. C. Filed Feb. 1, 1889. Serial No. 298,330. (No model.)



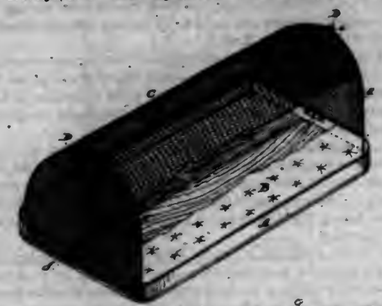
Claim.—1. The combination of an annular frame and a sheet of flexible material secured thereon, and shaped as a grinding-dish therein and having the impervious character described.

2. The combination of an annular frame and a sheet of flexible material thereon formed into two dishes, one of which is a grinding-surface and the other an ink-well, substantially as shown and described.

3. The combination of an annular frame and a sheet of flexible material thereon formed into two dishes, and a channel connecting them, substantially as shown and described.

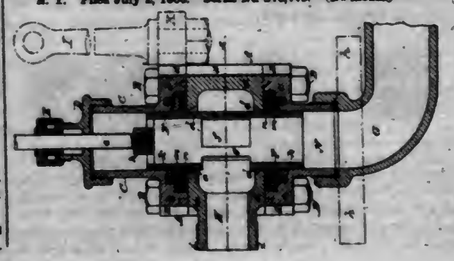
4. An ink-grinding slab of flexible impervious material shaped in dish form, substantially as shown and described.

408,144. PORTABLE FOLDING BED. WILLIAM W. ST. JOHN, Brooklyn, N. Y. Filed July 2, 1888. Serial No. 278,772. (No model.)



Claim.—A folding bed consisting of the bottom formed of two sections hinged together, in combination with the folding screen consisting of the wires c and d, hinged to the folding frame and divided at their centers, where they are connected by a hinge, and the rod D, all arranged as shown and specified.

408,145. THROTTLE-VALVE. WILLIAM W. ST. JOHN, Brooklyn, N. Y. Filed July 2, 1888. Serial No. 278,773. (No model.)



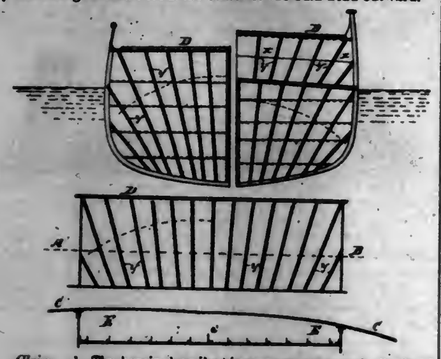
Claim.—1. A throttle-valve consisting of a central part and two end parts secured together, as shown, in combination with a hollow piston-valve having openings for the passage of the fluid and its periphery packed by suitable packing-rings, arranged in the manner herein shown and set forth.

2. The throttle-valve herein described, consisting of the central part *a*, the end parts *b* and *c*, secured together by bolts B, in combination with the hollow piston-valve F, provided with openings *f*, and the packing-rings *m* and *n*, arranged in the manner shown, and for the purpose set forth.

3. The combination of the parts *a b c*, forming the shell A, the part *b* having a stuffing-box E, and the part *c* having the neck N, for attachment with the piston-valve F, having openings through its periphery, which moves through packing-rings *m n*, placed in recesses in the shell, as herein shown and set forth.

408,146. BULK-HEAD. WALFRID T. SYLVÉN, Washington, D. C. Filed Oct. 9, 1888. Serial No. 287,700. (No model.)

Brief.—A ship's bulk-head has stiffening-ribs placed closer together at the bottom than at the top and the ribs spaced at gradually-increasing intervals from the center of the bulk-head outward.



Claim.—1. The herein-described improvement in vertically-fitted bulk-heads, consisting of stiffening-ribs placed diagonally across the bulk-head and secured thereto and diverging from a central line, substantially as and for the purposes specified, whereby the varying degrees of statical pressure are resisted by correspondingly varied or graduated stiffeners, as set forth.

2. In a bulk-head, diagonal stiffening-ribs converging toward the bottom, placed closer together at the center line of the ship and the bulk-head than at the sides of the ship, the lower elongation of said stiffeners to intersect with said center line or its downward elongation, substantially as described.

3. In a bulk-head, diagonal stiffening-ribs fastened to the bulk-head, placed in a vertical plane closer at the bottom than at the top of the bulk-head, in order to conform with the different statical pressures acting on the bulk-head when laid open to the sea, the stiffeners as a whole having the appearance of a modified vertical fan, substantially as described.

4. In a bulk-head, a water-tight partition having stiffening-ribs arranged in pairs and extended obliquely from points on a vertical line drawn in the middle of the bulk-head or partition or on the downward elongation of said middle line, the stiffening ribs or stays as a whole having a resemblance of a vertical fan with its lower part cut off, the stiffeners fastened to the bulk-head or partition, and the distance between the stiffeners increasing upward and the same distance also increasing toward the sides of the vessel, substantially as and for the purpose set forth.

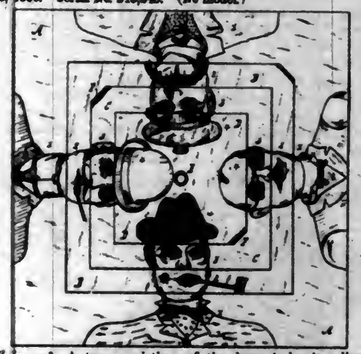
408,147. LOCK. THOMAS TAYLOR, South Norwalk, Conn., assignor to the Norwalk Lock Company, same place. Filed Mar. 25, 1889. Serial No. 304,637. (No model.)



Claim.—1. In a tubular lock, the combination of the tube D, constructed with a cylindrical longitudinal recess, a cylinder E, arranged longitudinally therein, having a key-hole opening at its outer end and its inner end adapted to engage the lock-bolt mechanism, the cylinder constructed with one or more transverse recesses cutting across the key-hole, a tumbler hung in each of said transverse recesses, and so as to swing in a plane across the plane of the key-hole, each tumbler constructed with an opening corresponding to the key-hole and through which the key may pass, the tumblers each provided with a spring to yieldingly hold it in its normal position, each tumbler constructed with a gate upon its periphery, radial pins arranged in openings through the cylinder onto the periphery of the tumblers, springs between the pins and the tumblers, the tendency of which is to force the pins outward, the tube constructed with seats corresponding to the outer end of said pins, the said pins and seats of cam shape, and a key adapted to be inserted longitudinally into the key-hole, its edge irregular and adapted to swing the tumblers to bring their respective gates into line with their respective pins, substantially as described.

2. In a tubular lock, the combination of the tube D, constructed with a longitudinal cylindrical recess, a cylinder E, arranged in the recess of said tube, extending through the tube, constructed with a longitudinal key-hole, the cylinder constructed with two or more transverse recesses cutting across the key-hole, tumblers arranged in said recesses and hung upon a pivot, so as to swing therein across the plane of the key-hole, the tumblers each constructed with an opening in line with the key-hole, but of a length greater than the width of the key, a spring for each tumbler, and a bearing for the said spring, with a bearing upon the opposite side against which the tumblers may rest and there yieldingly held by said springs, the periphery of the tumblers, each constructed with a gate *a*, pins I, corresponding to the said tumblers and arranged in openings through the cylinder onto the tumblers, each pin provided with a spring the tendency of which is to force the pin outward, the cylinder constructed with seats K, adapted to receive the said pins when in normal position, and a key having its edges constructed of irregular shape and adapted to work against the end of the tumbler-openings toward the said springs, substantially as described.

408,148. TOY. GEORGE B. THROOP, New York, N. Y. Filed Sept. 10, 1888. Serial No. 213,945. (No model.)



Claim.—1. A toy consisting of the base A, having distributed thereon at various points fragmentary portions or sections of pictorial representations, and a series of revoluble plates B C D, supported by said base and decreasing in size, as shown, each of said plates having arranged thereon other fragmentary portions of the pictorial representations in such manner as to form with the fragmentary representations on the base and other plates of the series a complete and variable picture at every point occupied by the sectional or fragmentary representations, substantially as shown and described.

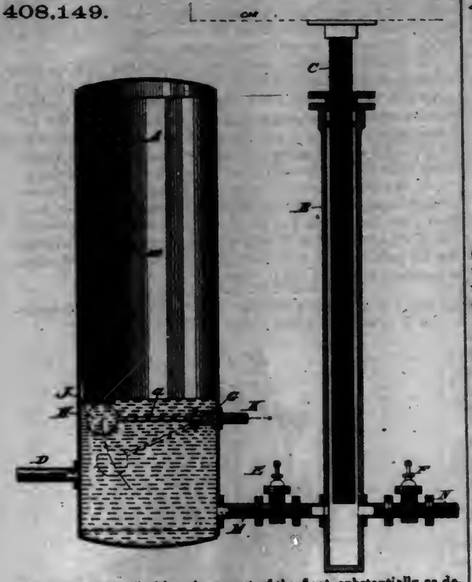
2. The combination of a stationary base A, having fragments of pictorial representations distributed thereon, and a series of flat revoluble plates B C D, provided with finger-pieces F, said plates having distributed thereon other fragments of pictorial representations arranged to form a number of complete and variable pictures when the several plates are turned to bring the fragments on the base and plates in line, substantially as described.

3. The combination, with a stationary base A, having distributed thereon near its edges sections of pictorial representations, of a series of revoluble plates B C D, nested one within the other, the faces of the plates and base being flush or on the same plane, and said plates having sections of the representations arranged thereon to form a number of complete pictures with the portions on the base, substantially as described.

408,149. HYDRAULIC ELEVATOR. WILLIAM F. TOOTHAKER, San Francisco, Cal. Filed Mar. 23, 1888. Serial No. 304,492. (No model.)

Claim.—1. In safety appliance for hydraulic elevators, the combination, with the pneumatic hydraulic accumulator, of a safety-valve, the air-exit pipe, the float for operating the valve connected thereto,

408,149.



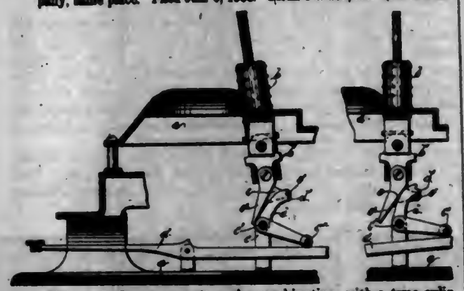
and the stop for limiting the ascent of the float, substantially as described.

2. In a hydraulic elevator, the combination, with the pneumatic hydraulic accumulator, the hydraulic cylinder, the ram within the latter, and the inlet and outlet valves for the hydraulic cylinder, of the safety appliance consisting of an air-escape valve within the accumulator and a float connected thereto by a lever, and the stop for limiting the ascent of the float, substantially as described.

3. The combination of the accumulator A, having air-escape valve G and air-outlet K, and the float H, connected to valve G by lever *a*, substantially as described.

4. The combination, with accumulator A, of the safety-valve G, air-outlet K, water-supply D, float H, connected to valve G by lever *a*, and the stop J, all substantially as described.

408,150. CAM-MOTION FOR TYPE-WRITING MACHINES. FREEMAN L. TWEED, Groton, N. Y., assignor to the Crandall Type-Writer Company, same place. Filed Jan. 9, 1888. Serial No. 260,157. (No model.)



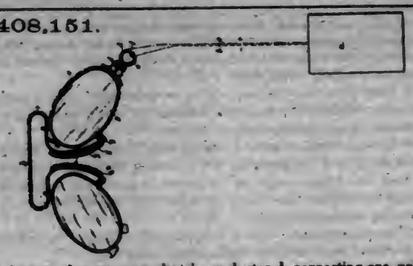
Claim.—1. In a type-writer, the combination, with a type-cylinder and a pivoted yoke for carrying said cylinder, provided with a stop-pin and an inclined bearing-face, of a cam-arm having its face formed with a gradually-increasing curve, and its end adapted to lie between the stop-pin and inclined bearing-face at the end of the stroke to prevent recoil, substantially as and for the purpose set forth.

2. In a type-writer, the combination, with the main frame *a*, key-lever *d'*, type-cylinder *b*, and its pivoted carrier *b'*, provided with the arm *c*, having the bearing-face *c²* and pin *c'*, of the rock-shaft *d'*, its yoke *d²*, and the notched cam-faced arm *d*, all constructed and arranged to operate substantially as and for the purpose set forth.

408,151. ELECTRIC EYEGLASSES. HERMANN WILCKE, Berlin, Germany. Filed Apr. 26, 1889. Serial No. 308,508. (No model.)

Claim.—1. The combination, with an eyeglass-frame comprising a bow-spring A, of the opposite nose-plates A' A², insulated from each other by an insulating-plate *g* between one nose-plate and the frame,

408,151.

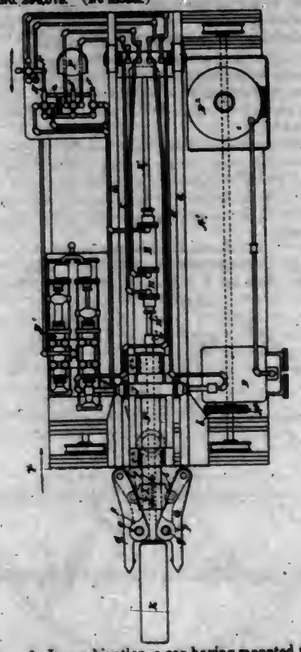


a battery element *a*, an electric conductor *b*, connecting one pole of the battery with one nose-plate, and an electric conductor *c*, connecting the other pole of the battery with the opposite nose-plate, substantially as described.

2. The combination, with an eyeglass-frame comprising the bow-spring A, of two opposite nose-plates carried by said spring and insulated from each other, an electric conductor *c*, passing along the upper side of the frame and along the bow-spring to one nose-plate, and an electric conductor *b*, passing along the lower side of the frame direct to the opposite nose-plate, substantially as described.

3. In eyeglasses, the combination, with a sectional frame, of insulating-plates *f f'*, the bow-spring A, in metallic connection with one of the frame-sections, the nose-plate A', insulated from the bow-spring, the nose-plate A², in metallic connection with the bow-spring, and the electric conductors *b c*, substantially as described.

408,152. APPARATUS FOR CHARGING AND DRAWING FURNACES. SAMUEL T. WELLMAN, Cleveland, Ohio. Filed Dec. 26, 1888. Serial No. 294,578. (No model.)



Claim.—1. In combination, a car having mounted thereon apparatus for charging and drawing furnaces, a steam-pump for operating the different motors of such apparatus, and a steam-generator for supplying motive power to such pump, substantially as and for the purpose set forth.

2. In combination, a traction-car having mounted thereon an engine for propelling the car, steam-generator, and apparatus for charging and drawing furnaces, substantially as set forth.

3. In combination, a traction-car having mounted thereon engine for propelling the car, steam-pump, steam-generator, and mechanism for charging and drawing furnaces, the different devices being operatively connected, substantially as set forth.

4. In combination, a traction-car having mounted thereon engine for propelling the car, steam-pump, steam-generator, and apparatus

for charging and drawing furnaces, these devices being operatively connected, and the levers for operating the different motors being assembled within reach of the operator when occupying his seat on the car, substantially as set forth.

5. Reversible tongs, the same being mounted on a rotating shaft or trunnion, whereby the tongs are reversed by turning such shaft or trunnion on its axis, substantially as set forth.

6. The combination, with reversible tongs mounted on a hollow rotating shaft, of a reciprocating rod operating in the bore of such shaft, such rod being connected by means of sleeve and links with the tongs for opening and closing the latter with reverse movements of such rod, substantially as set forth.

7. The combination, with a reciprocating frame, of reversible tongs mounted on such frame, substantially as set forth.

8. The combination, with reciprocating tilting frame, of reversible tongs mounted on such frame, substantially as set forth.

9. The combination, with reciprocating frame, tongs, and water-motors mounted on such frame for operating the tongs, of jointed so-called walking-pipes connected with such motors, the arrangement being substantially as indicated, whereby the jointed pipes may accommodate themselves to the movements of such motors by distending and collapsing the legs of such jointed pipes, substantially as set forth.

10. The combination of reversible tongs mounted on a hollow rotating shaft with hydraulic ram set in line with such shaft and connecting mechanism, substantially as indicated, whereby the tongs are opened and closed by reverse action of such ram, substantially as set forth.

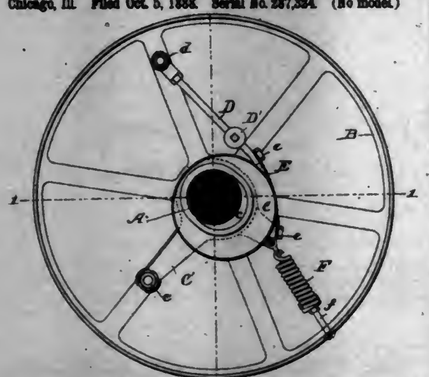
11. The combination of reversible tongs mounted on a rotating shaft or trunnion with motor operatively connected with such shaft for rotating the latter, substantially as set forth.

12. The combination, with reversible tongs mounted on a rotating shaft, such shaft bearing a spur gear or pinion, of water-motor operatively connected with a rack, the latter engaging such gear or pinion for rotating the shaft, substantially as set forth.

13. The combination, with rotating shaft having mounted thereon tongs and toothed wheel, substantially as indicated, of water-cylinder bearing a rack for engaging such toothed wheel, such cylinder being mounted and adapted to reciprocate on a stationary piston-rod, substantially as set forth.

14. In combination, a rotating shaft bearing tongs and toothed wheel, reciprocating water-cylinder bearing a rack for engaging such toothed wheel, a hollow piston-rod for supporting such cylinder, a piston mounted on such hollow rod and operating inside the cylinder, and the ports in the rod located on either side of the piston, substantially as set forth.

408,153. STEAM-ENGINE GOVERNOR. EDWIN F. WILLIAMS, Chicago, Ill. Filed Oct. 5, 1888. Serial No. 287,324. (No model.)



Claim.—1. In a steam-engine governor, the combination, with the shaft and wheel fixed thereon, of a shifting eccentric on the shaft, a weighted governor-arm secured to the wheel, and a strap-spring connecting the governor-arm to the eccentric, substantially as and for the purposes specified.

2. In a steam-engine governor, the combination, with the shaft and wheel, of the slotted eccentric and its supporting-arm pivoted to said wheel, the weighted governor-arm pivoted to the wheel, and a strap-spring connecting the governor-arm and eccentric, said governor-arm furnishing the centrifugal force and said spring furnishing the centripetal force, substantially as and for the purposes specified.

3. In a steam-engine governor, the combination, with the shaft and wheel, of the slotted eccentric and its supporting-arm, the governor-arm connected to said eccentric by a centripetally-acting flat spring, and a spiral spring of adjustable tension connecting the eccentric and wheel and supplementing the centripetal action of the flat spring, substantially as and for the purposes specified.

4. In a steam-engine governor, the combination, with the shaft A and wheel B fixed thereon, of the eccentric C, slotted at c and provided with hub C^2, having arm C', pivoted to the wheel at c', and arm c^3, the weighted governor-arm D, the spring E, connecting said governor-arm and the arm c^3, and the coiled spring F, connected to the arm c^3 at one end and adjustably connected to the wheel by a bolt f at the other end, substantially as and for the purposes specified.

5. In a steam-engine governor, the combination, with the main eccentric fixed on the shaft, of the cut-off eccentric capable of movement across the shaft and having its center of motion at a point outside of the axis of the shaft, said cut-off eccentric being so arranged that the path of motion of its center is substantially radial to the shaft, substantially as and for the purposes specified.

408,154. STEAM-ENGINE. SILAS S. WILLIAMS, East Randolph, N. Y. Filed Dec. 22, 1888. Serial No. 294,371. (No model.)

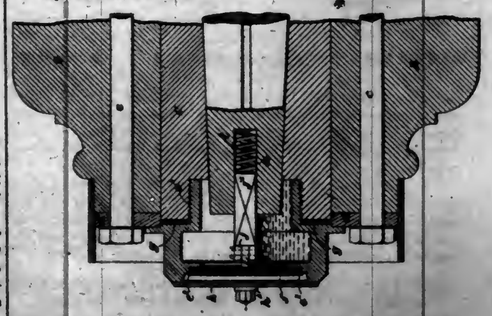


Claim.—1. In a steam-engine, the combination of the base, the cylinders mounted thereon, having a flange on their lower ends, the standards below the base, bolts extending through the standards and engaging the flanges on the cylinder, a crank-shaft mounted in the standards, a cross-head, and a connecting-rod connecting the cross-head and crank-shaft, substantially as described.

2. In a steam-engine, the combination of the base, the cylinders mounted thereon, the guides secured to the cylinders, the cross-head mounted on the guides, and the piston-rods secured to the cross-head, substantially as described.

3. In a steam-engine, the combination of the base, the cylinders mounted thereon, the guides secured to the cylinders, the yoke connecting the guides, the cross-head mounted on the guides, the piston-rods secured to the cross-head, the standards below the base-plate, and bolts extending through the standards and engaging the cylinder, the crank-shaft journaled in the standards, and the connecting-rod connecting the cross-head and crank-shaft, substantially as described.

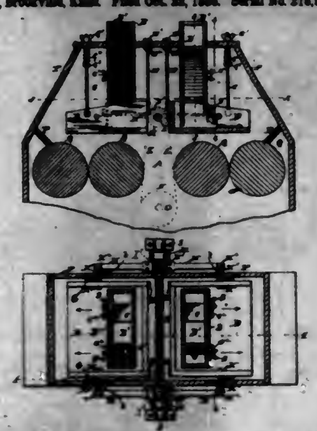
408,155. CARRIAGE-AXLE LUBRICATOR. JOHN A. WILSON, Dundee, Scotland, assignor to Dan Rylands, Barnsley, England. Filed Dec. 27, 1888. Serial No. 294,835. (No model.) Patented in England Sept. 14, 1888, No. 13,279.



Claim.—1. The combination, with an axle box or bearing, of the cap, cap, or cover formed wholly or partially of glass or other suitable transparent material and provided with a movable external protecting guard or shield on the outside of the cap, substantially as and for the purposes set forth.

2. The combination, with the cap, cap, or cover formed wholly or partially of glass or other suitable transparent material, of means for automatically cleaning the said glass or other material, substantially as and for the purpose set forth.

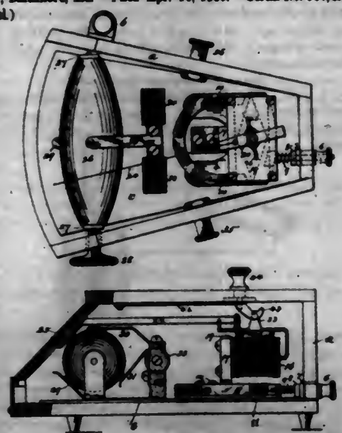
408,156. FEED-REGULATOR FOR ROLLER-MILLS. JOSEPH W. WILSON, Brookville, Kans. Filed Oct. 22, 1888. Serial No. 288,961. (No model.)



Claim.—1. The combination, with a pair of vibratory shoes D D, of a shaft I, and eccentric I', near each extremity of said shaft, and a pair of flexible rods, each having at an intermediate point a yoke embracing one of said eccentrics and each rod connected at its ends to the respective shoes.

2. A feeding device for roller-mills, consisting of the supply-box B, having feed-opening B', the deflectors C, having pivots C', by which they are journaled within the supply-box, the thumb-nuts C^2, by which the deflectors are adjusted to the desired inclination, the valve R, having serrations or teeth R' and mounted on the front side of the supply-box and forming the lower edge of the side, thumb-nuts S, by which the valve is adjusted in keeping with the position of the deflectors, the shoe D, the spring-rod E, and nuts E', supporting one end of the shoe, and the rods G, having collars G^2, the springs G^3, and thumb-nuts G', supporting the other end of the shoe, substantially as described.

408,157. ELECTRIC MEASURING-INSTRUMENT. JOHN A. BARRETT, Brooklyn, N. Y., assignor to the John A. Barrett Battery Company, Baltimore, Md. Filed Apr. 16, 1889. Serial No. 307,451. (No model.)



Claim.—1. An electric measuring-instrument provided with an index or pointer and its deflecting-coil, two or more scales adapted for use separately therewith, and a cover or shield arranged to permit the exposition of only one scale at a time.

2. An electric measuring-instrument provided with an index or pointer and its deflecting-coil, two or more scales adapted for use separately therewith, a cover or shield arranged to permit the exposition of only one scale at a time, and means for simultaneously exposing one scale and controlling the current through said deflecting-coil.

3. In an electric measuring-instrument, the combination, with a needle and its deflecting-coil, of two or more scales and corresponding shunts, and means for mechanically bringing one of the scales into view and connecting the appropriate shunt into the circuit.

4. In an electric measuring-instrument, the combination, with an index or pointer and its deflecting-coil, of two or more scales and corresponding shunts, and means for mechanically bringing one of the scales into view and connecting the corresponding shunt across the terminals of the deflecting-coil.

5. In a galvanometer having a deflecting-coil and one or more shunts therefor, the combination therewith of two or more scales, respectively corresponding to the deflections of said coil direct and shunted, and means for exposing only one of said scales at a time.

6. In a galvanometer having an inclosing-case provided with an opening or window, and having a deflecting-coil and an index therefor projecting in proximity to said window, the combination therewith of a scale-carrier adapted to manual rotation, so as to present different sides to the window, and having two or more scales on its surface.

7. In a galvanometer having an index or pointer, a deflecting-coil therefor and a shunt or shunts thereto, and a rotary scale-carrier adapted for manual rotation and having separate scales for the deflecting-coil and each shunt, in combination with circuit-closing devices connected to said coil and shunts and controlled by said rotating scale-carrier.

8. In a galvanometer, the rotating scale-carrier having two or more different scales located inside the case opposite a window or opening therein, and having two or more contacts, in combination with two or more switch-springs in the path of said contacts and forming the terminals of the shunts of the instrument, substantially as described.

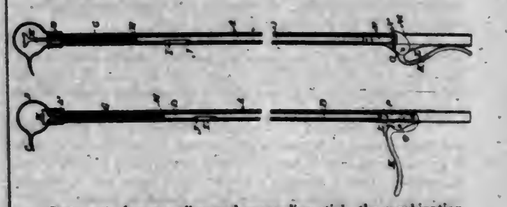
9. In a galvanometer, a stationary deflecting-coil and deflecting-needle, in combination with a directing-magnet pivoted below the coil on the same vertical axis as the needle.

10. In a galvanometer, a stationary deflecting-coil and deflecting-needle, in combination with a directing-magnet provided with an independently-adjustable armature.

11. In a galvanometer, the combination of the stationary deflecting-coil 15, the cover-plate 19, applied to the upper surface of said coil and provided on top with the needle-bearing 18, with the two needles suspended on said bearing, one outside said coil and the other inside, and connected by the extension 22, the relation being such that the needles can be removed from the coil only by removing with them the cover-plate 19, as described.

12. In a galvanometer, the combination, with the magnetic needle having the wings 23, of the spring-blade 42, having the hooks 43 extending under the needle-wing 23 and adapted by upward pressure on the same to lift the needle from its bearing, said plate 42 being fixed at one end to the cover and at the other bearing in an adjusting-screw projecting through the cover.

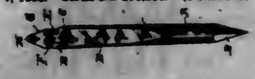
408,158. COUPLING AND UNCOUPLING STICK. FLETCHER W. BEALL, Birmingham, Ala. Filed June 20, 1889. Serial No. 314,942. (No model.)



Claim.—1. In a coupling and uncoupling stick, the combination of a tube A, provided with a ring at one end, a longitudinally-moving rod provided with a grip within said tube, a slide P, a pin O, a trigger K, loosely pivoted to the slide, and a spring G, substantially as set forth.

2. In a coupling and uncoupling stick, the combination, with the tube A, ring B, and projection C, of the rod D, trigger K, having the slot N therein, slide P, and pin O, substantially as set forth.

408,159. WIRE SHOE-NAIL. ADELBERT BRIGGS, Taunton, Mass. Filed Nov. 7, 1888. Serial No. 290,216. (No model.)

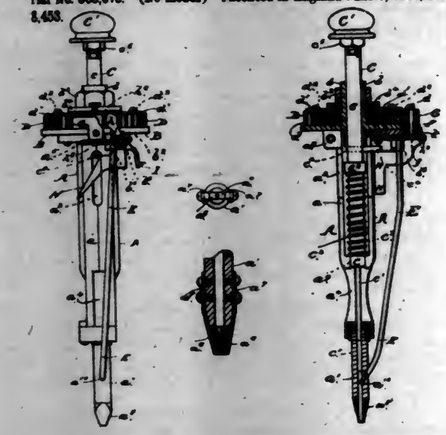


408,159.



Claim.—As an improved article of manufacture, the wire shoe-nail described, having an elongated body, laterally-projecting shoulders, cruciform neck, and wedge-pointed head, substantially as set forth.

408,160. TACKING-TOOL FOR BOOTS OR SHOES. THOMAS BRINING, Leeds, County of York, England. Filed Mar. 18, 1889. Serial No. 303,675. (No model.) Patented in England June 9, 1888, No. 8,453.



Claim.—1. In a boot and shoe tacking tool, the combination, with a divided and slotted case A; formed in two portions a a', spring dies a^4, table B, boss b, and reciprocating plunger C, of a ratchet-wheel D, mounted upon said table and provided with holes d for the reception of the fastening-nails, and mechanism for actuating the same, substantially as herein described.

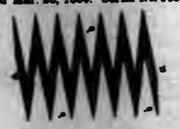
2. In a boot and shoe tacking tool, the combination of a divided and slotted case A, formed in two portions a a', spring-dies a^4, table B, provided with hole b^3, and reciprocating plunger C, with ratchet-wheel D, mounted to revolve freely upon said table and provided with holes d for the reception of the fastening-nails, cover d', mechanism, substantially as described, for actuating said ratchet-wheel, and tube E, through which the fastening-nails pass one at a time to the driving-tool, substantially as herein set forth.

3. In a boot and shoe tacking tool, the combination, with a divided and slotted case A, formed in two portions a a', armed with spring-dies a^4, and with a vertically-reciprocating plunger formed in two diameters, the larger and upper of which is armed with a handle C, boss c^3, and spring c^2, of a table B, provided with hole b^3, boss b, tube E, ratchet-wheel D, having holes d and cover d', and mechanism, substantially as described, for actuating and regulating the tension of said ratchet-wheel, all substantially as set forth.

4. In a boot and shoe tacking tool, the combination of table B, provided with holes b^3, reciprocating spindle C, ratchet-wheel D, having holes d and b^3, tube E, pin c^4, cam-lever H, pivot b^4, adjusting-screw h', spring h^2, lever F, and pawl G, all operating substantially as described.

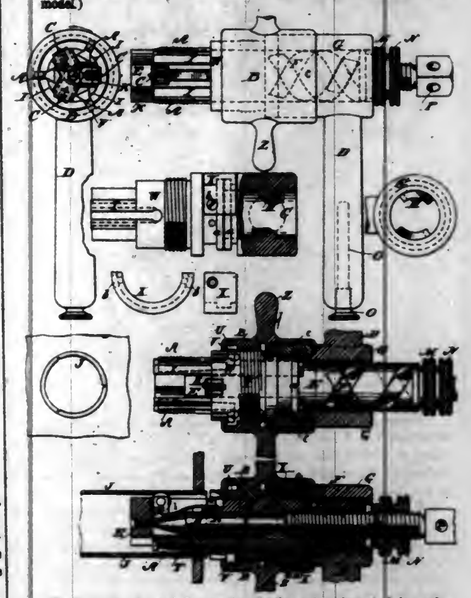
5. The combination, in a boot and shoe tacking tool, of a divided and slotted casing A, formed in two portions a a', spring-dies a^4, table B, provided with hole b^3, boss b, wheel D, having holes d, cover d', nut b^3, washer b^4, tube E, entering a hole a^{10} in the lower part of the casing, reciprocating spindle C, formed in two diameters, handle C', nut c^5, spring c^2, bearing a^4, boss c^3, pin c^4, cam-lever H, pivoted to said table at b^4, adjusting-screw h', lever F, working in slot a^9, spring-pawl G, and spring h^2, all operating together substantially as herein set forth and illustrated.

408,161. BELT-FASTENER. WILLIAM H. BRISTOL, Hoboken, N. J., assignor to himself, and Benjamin H. Bristol and Franklin R. Bristol, Naugatuck, Conn. Filed Mar. 28, 1888. Serial No. 305,079. (No model.)



Claim.—As an improved article of manufacture, an elastic belt-fastener formed of metal into a continuous zigzag or sinuous body having spurs alternating on opposite sides of a longitudinal center line, said spurs being bent so as to extend at right angles or in parallel planes all in the same direction, as set forth.

408,162. TOOL FOR CUTTING OUT BOILER-TUBES. SAMUEL R. CONDON, Brooklyn, N. Y., assignor to himself, M. Hickborough, and N. W. Pratt, same place. Filed May 23, 1888. Serial No. 275,369. (No model.)



Claim.—1. A tool for cutting boiler-tubes inserted in and secured to the tube to be cut, having an internal tool-stock capable of reciprocation, and provided with cutters operating longitudinally against the interior surface of said tube.

2. A tool for cutting boiler-tubes, consisting of a body bearing expansive grippers to seize upon the interior of a tube, and a stock capable of reciprocation bearing expanding cutters that operate in a direction parallel with the length of the tube.

3. In a tool for cutting boiler-tubes, the combination of a sleeve connected to the interior of a tube, a cutter-stock capable of reciprocation within said sleeve, and a lever-collar rotating upon said sleeve and engaging with said stock by means of spiral teeth and grooves, as described.

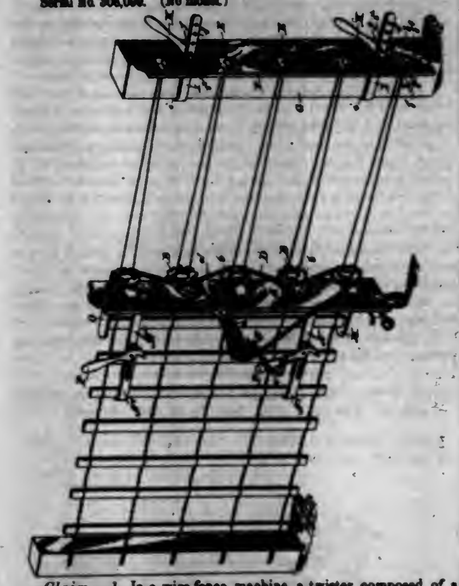
408,163. GRAIN-BINDING HARVESTER. ORVILLE COOLEY and EDWARD PRIDMORE, Batavia, N. Y., assignors to the Johnston Harvester Company, same place. Filed Jan. 5, 1888. Serial No. 259,918. (No model.)



Claim.—1. The combination, with the single right-angled finger-bar having the guard-fingers bolted to the under side of the horizontal flange at the bottom of the vertical flange of the bar, of the metallic supplementary angle-bar made from a single piece of metal, the front vertical face of which is secured to the rear face of the vertical flange of the finger-bar, and therefrom extending downward sufficiently far to permit the attachment of the front side of the platform, which rests upon and is secured to the rearwardly-extending bend, forming a part of the said supplementary bar, in the manner substantially as described, and for the purpose hereinbefore set forth.

2. The combination, with the elevating-apron roller and binder-deck, of the slotted adjustable cleat-bar for regulating the opening between the elevating-apron roller and the upper edge of the binding-deck, for the purpose described, and substantially as hereinbefore set forth.

408,164. WIRE-FENCE MACHINE. JOHN DRIEKER, Cockpert, Pa., assignor of one-half to L. D. Musman, same place. Filed Apr. 22, 1889. Serial No. 308,009. (No model.)



Claim.—1. In a wire-fence machine, a twister composed of a holder b^3, a part b', fitting into the same and having pinions in its flanged end and tenons at the other, and a cylinder b^3, slotted at b^4 and fitting over the tenoned end of part b' and having holes for the wires to pass through, substantially as described.

2. In a wire-fence machine, and combined with the twister-frame and twisting mechanism, the supporting-arm M and weighted lever m^2, substantially as described.

3. In a wire-fence machine, the combination of the arm M and lever m^2, to which said arm is attached, with the twister-frame A and twisting mechanism secured thereto, and the arm O at the top of the post, substantially as and for the purposes set forth.

4. In combination with the board carrying the tension devices, a hooked arm passing through said board and a cam-lever operating on said arm and against the board, whereby the board can be readily clamped to the fence-post.

5. The tension device consisting of the plate L, having wire-holes, the angular part l', and a flanged cover l^3, having wire-holes therein, and the screw and nut by which the tension can be adjusted at will, substantially as described.

6. The spacing device consisting of the pieces N and N', bent and hooked at their ends, as described, and the moving and locking cam-lever P, in combination with the twister-frame, as and for the purposes described.

7. In a fence-machine, the slotted pieces N and N', bent, respectively, at n^2 and n^4 and hooked at n^5, combined with the bolt and nut, and the cam-lever P, operating on the shoulder n^4, substantially as set forth.

408,165. SUPPORT FOR SPINNING-SPINDLES. GEORGE O. DRAPER, Hopedale, Mass. Filed June 5, 1889. Serial No. 313,179. (No model.)



Claim.—The combination, with a sleeve-whirl spindle, a step-block a to constitute a lateral bearing for the lower end of the spindle and having a tubular extension a' rigidly connected thereto, and a supporting-case in which the said step-block is mounted loosely, of a bolster-tube placed loosely in the tubular portion of the step-block, substantially as described.

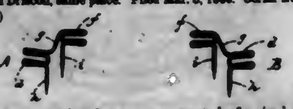
408,166. SUPPORT FOR SPINNING-SPINDLES. WILLIAM F. DRAPER, Hopedale, Mass. Filed May 17, 1889. Serial No. 311,176. (No model.)



Claim.—1. The combination, with a supporting-case or holder, a spindle, a step-bearing loose in the said supporting-case, and a spring to support it, of a bolster-bearing and a spring acting upon it, to operate substantially as described.

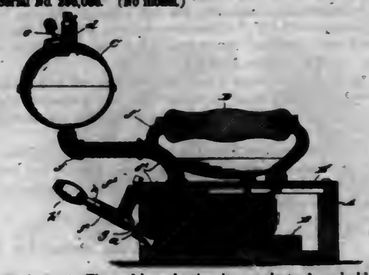
2. A supporting-case or holder, a step-bearing mounted therein loosely, and a spring to sustain the step-bearing, combined with a bolster-bearing mounted loosely therein and a spring surrounding the said bolster-bearing and forcing it normally against the upper end of the step-bearing, to operate substantially as described.

408,167. SHOE-STRING FASTENER. JEREMIAH DRISCOLL, Taunton, Mass., assignor to himself and Richard Caffrey, M. F. Fitz Gibbons, and William Driscoll, same place. Filed Mar. 5, 1889. Serial No. 301,836. (No model.)



Claim.—A shoe-string fastener constructed of a single piece of wire bent to form vertical U-shaped loops d f, opening in diametrically-opposite directions, said loops being connected at their inner ends by a middle piece g and respectively provided with a downwardly-projecting attaching-prong h i, substantially as described.

408,168. SAD-IRON. JOHN H. DUNROW, Cleveland, Ohio, assignor to Wm. A. Smith and Robt. S. West, same place. Filed Jan. 11, 1889. Serial No. 296,093. (No model.)



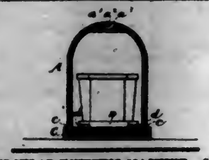
Claim.—1. The sad-iron having its supply tank or holder connected thereto by a pipe passing through the top of the iron, and having an arm within the iron extending out beyond one end or edge of the iron and outward and downward, and uniting at its lower end with an upward and outward inclined arm having a plug-valve closing a jet-opening in its lower end, and the burner having an upward and outward inclined tube, the upper end of which stands opposite and slightly away from the jet-opening of said latter pipe-arm, substantially as set forth.

2. The sad-iron having its supply tank or holder connected thereto by a pipe passing through the top of the iron, and having an arm within the iron extending out beyond one end or edge of the iron and outward and downward, and uniting with an upward and outward inclined arm having a plug-valve closing a jet-opening in the lower end of the latter pipe-arm, and the burner having an upward and outward inclined tube, the upper end of which stands opposite and slightly away from the jet-opening of said latter pipe-arm, the said tank having a valved air-tube in its upper end, substantially as specified.

408,169. COFFIN. JAMES H. DUNN, Dubois, Pa. Filed Dec. 5, 1888. Serial No. 292,750. (No model.)

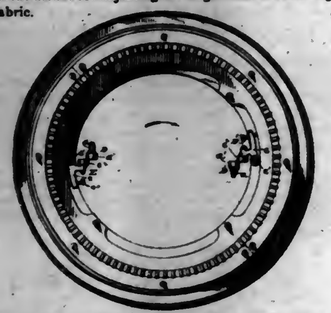
Claim.—The described burial-casket, consisting of the hollow cover A, having cord-holes at the top, and the base-plate C, having cross-ribs, and rabbeted at d, the said plate being also provided with the cement-groove e, as set forth.

408,169.



408,170. CIRCULAR-KNITTING MACHINE. CHRISTIAN FREDERICK, Wilmington, Del. Filed Apr. 13, 1889. Serial No. 307,108. (No model.)

Brief.—The objects of the invention are to lessen the friction of the dial-driving dogs upon the fabric which descends between them and to provide means for adjusting the dogs without removing or cutting the fabric.



Claim.—1. In a knitting-machine and in combination with the cylinder and dial-plate, the arm attached to the dial and provided with the roller, the arm attached to the cylinder and provided with a roller, and means, substantially as described, for adjusting the last-named arm in a horizontal direction.

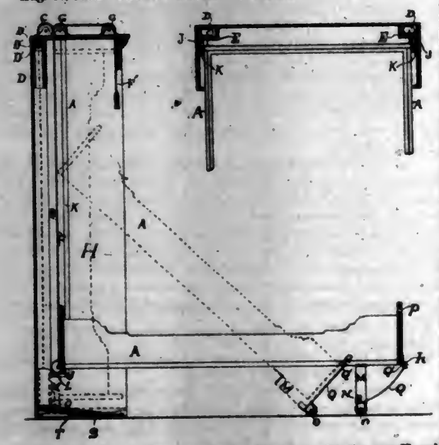
2. In a knitting-machine and in combination with the dial and cylinder, the arm attached to the dial and provided with the roller, the arm pivoted to the cylinder and provided with a roller, and a screw or like device for adjusting said pivoted arm.

3. In combination with the dial and cylinder, the arm slotted and connected to the dial as described, that it may be radially adjusted, the roller attached to said arm, the second arm pivoted to the cylinder, its roller, and its adjusting-screw.

4. In combination with a dial and cylinder, the two co-operating-rollers, supporting-arms by which they are connected, respectively, to the dial and cylinder, and the balls applied, substantially as described, to sustain said rollers.

5. In a knitting-machine and in combination with a cylinder and dial, the overlapping rollers connected to the cylinder and dial, respectively, and the balls applied to support said rollers on the rear sides behind the points at which they overlap.

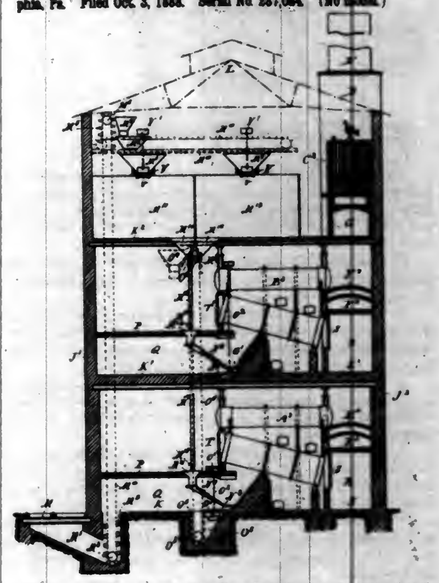
408,171. FOLDING BED. CLARK L. GILL, Madison, Wis. Filed Aug. 17, 1888. Serial No. 283,035. (No model.)



Claim.—1. In a folding bed, the combination, with the case H and bed-frame A, the foot-board of said bed-frame being provided with the opening P near the upper edge thereof, of the catch R on the lower edge of said foot-board, foot-legs M, hinged to the bed-frame so as to fold flush with the foot thereof, bar N, connecting said foot-legs, and the flexible catch-brace Q, attached to the middle of said bar N and passing through said catch R and having the direct offset Q′, whereby said foot-legs may be retained in a folded position by the lower side of said offset clasping over the edge of the foot-board within the opening P and in an unfolded position by the upper side of said offset engaging with said catch R, substantially as set forth.

2. In a folding bed, the combination, with the case H and bed-frame A, of the rollers J on the front end of said bed-frame, connecting same with said case, pulleys C and G in the top of the case, cords B, attached to the head of said bed-frame and passing over said pulleys C, boxes E in the corners of the case, variable weights D D′, attached to said cords B and moving in said boxes E, whereby the head of the bed-frame is drawn upward into the case, foot-legs M, hinged to the bed-frame, as described, and provided with the connecting-bar N, catch-brace Q, and rollers O, foot-shelves S, pivots T, connecting said foot-shelves to the sides of the case near the bottom thereof, said pivots being placed near enough to the inner ends of said foot-shelves to cause their outer ends to drop to the floor, thereby forming an incline for the rollers O to mount when the foot-legs are folded and when the bed-frame is being drawn into the case, and the cord F F′, attached to the middle of the head-board of the bed-frame and passing over the pulley G, substantially as set forth.

408,172. STEAM-BOILER HOUSE. JOHN L. GILL, Jr., Philadelphia, Pa. Filed Oct. 3, 1888. Serial No. 287,084. (No model.)



Claim.—1. The described boiler-plant having superposed fuel-storage bins and elevators, and horizontal conveyers arranged to raise and distribute fuel to said bins, combined with hoppers located at a lower level and pipes provided with adjustable gates for distributing fuel by gravitation and regulating the supply thereof from said storage bins and hoppers into the several furnaces, substantially as set forth and shown.

2. The described boiler-plant having fuel-storage bins provided with hoppers and pipes having adjustable gates therein for distributing fuel to the several furnace-hoppers inclosed within a building having floors affording access to the furnace-hoppers located intermediately between the boiler-supporting floors and covering air-conduits to the ash-pits, substantially as set forth.

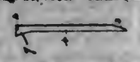
3. In a boiler-plant, the combination of the furnaces, provided with feeding-hoppers, with the described fuel elevating and distributing apparatus and storage-bins located above the furnace-levels, with tubes leading to the several furnace-hoppers, and ash-conveyers arranged to continuously remove ashes from the several furnaces, substantially as set forth and described.

4. The combination of self feeding and stoking furnaces arranged in series horizontally, with conveyers to continuously remove the ashes from the ash-pits of the several furnaces, floors located intermediately between the supporting-floors and ceilings of the boiler-rooms, arranged to afford access to the fuel-feeding hoppers of the furnaces and to form conduits for air to the ash-pits excluding ash-dust from the furnace and boiler rooms, substantially as set forth.

5. In a boiler-plant, the combination of the described fuel elevating and distributing apparatus with one or more series of boilers arranged in a line and provided with a horizontally-operating ash-conveying mechanism, which continuously removes the ashes from the entire line of furnaces at the same level, and an ash elevating and discharging apparatus arranged substantially as and for the purpose set forth.

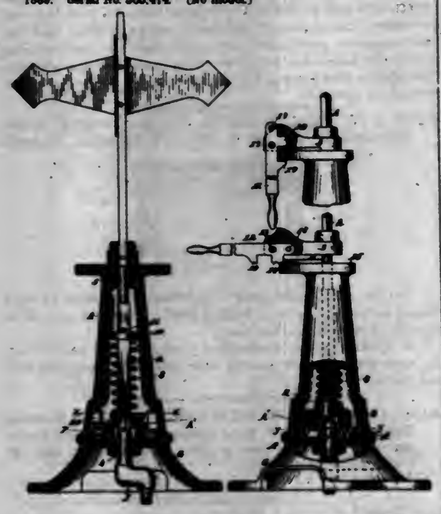
6. The combination, in the boiler-plant, of several boilers arranged in parallel positions, with a single horizontally-operating ash-conveyer for continuously removing the ashes from the ash-pits of the entire series, with an elevator for removing the ashes from the conveyer to an ash-storing bin, substantially as set forth and shown.

408,173. NAIL FOR BOOTS OR SHOES. CHARLES W. GLIDDEN, Lynn, Mass. Filed Aug. 20, 1888. Serial No. 283,194. (No model.)



Claim.—The herein-described cut nail, it comprehending a metal body of uniform thickness from end to end, including the flat head and point, the said body being tapered outwardly at one end, as at 7, along one edge thereof, to form a head, and being tapered inwardly, as at 8, near its opposite end along one edge to form a point, all substantially as described.

408,174. SWITCH-STAND. NATHANIEL O. GOLDSMITH, Cincinnati, Ohio, assignor to the Weir Frog Company, same place. Filed Mar. 30, 1889. Serial No. 305,414. (No model.)



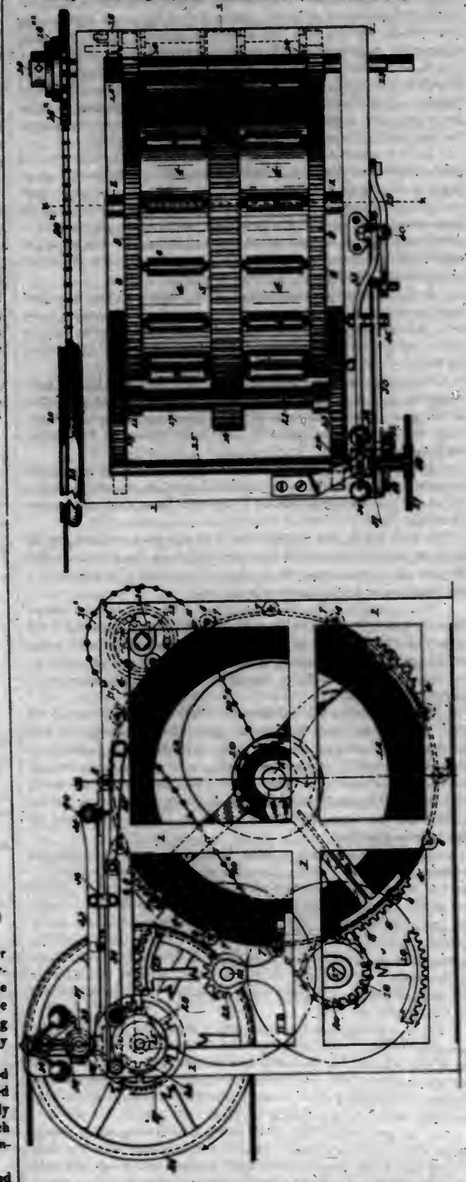
Claim.—1. The combination of a sectional switch-stand the lower part of which is provided with a stationary toothed clutch 7, the vertically-movable crank-shaft 2, the toothed clutch 9, adapted to slide vertically upon the crank-shaft, a spring 8, movable bodily with the crank-shaft and compressed by the upward movement of the sliding clutch, and a lever 12, connected with the crank-shaft, substantially as described.

2. The combination of a switch-stand having a stationary toothed clutch, the vertically-movable crank-shaft, the toothed clutch arranged to slide vertically on the crank-shaft, and a spring movable bodily with the crank-shaft and located thereupon above the sliding clutch to press the latter in engagement with the stationary clutch, substantially as described.

3. The combination of a switch-stand having a stationary toothed clutch, the vertically-movable crank-shaft, the toothed clutch arranged to slide vertically on the crank-shaft, a spring located on and movable bodily with the crank-shaft and acting to press the sliding clutch in engagement with the stationary clutch, and a vertically-swinging lever which in its vertical movement acts on the switch-stand to raise the crank-shaft and spring, substantially as described.

4. In combination with the switch-stand, the clutch 7, attached to the stand, the clutch 9, attached to the crank-shaft, the compressing-springs 8, the crank 3, the lock-lever 12, and the stops 20 and 21, substantially as herein specified.

408,175. SPRING-MOTOR. WILLIAM J. GORDON, EDMUND D. GILBERT, and DANIEL M. PRAUTZ, Philadelphia, Pa., assignors to the Philadelphia Locomotive Vehicle and Stationary Motor Company, of New Jersey. Filed Aug. 30, 1888. Serial No. 284,132. (No model.)



Claim.—1. In a motor, the combination of a frame, a shaft rigidly mounted thereon, a casing or drum on said shaft, wheels mounted on said shaft and having their hubs recessed or socketed to receive the hub of the casing or drum, and springs having one end connected to the hubs of the wheels and their other ends connected to the casing, whereby motion is imparted by the springs to the casing, in the manner and for the purpose described.

2. In a motor, the combination of the casing or drum having friction-rollers journaled in the periphery thereof, the wheels having their hubs recessed to receive the hub of the casing, and the springs on each side of the casing having one end attached to the hubs of the wheels, and the other end connected to the casing, substantially as and for the purpose set forth.

3. In a motor, the combination of a shaft, a casing or drum mounted on said shaft, wheels mounted on said shaft and having gear-teeth, springs connected to the wheels and casing, and a shaft having gear-wheels meshing with the gear-teeth on the wheels for winding the springs, substantially in the manner and for the purpose described.

4. In a motor, the combination of the casing having gear-teeth, wheels having gear-teeth, springs connected with the wheels and casing, a shaft having gear-wheels meshing with the gear-teeth on the wheels, and a gear-wheel meshing with the teeth on the casing, substantially in the manner and for the purpose described.

5. In a motor, the combination of the winding-shaft having the gear-wheels and sprocket-wheels thereon, the wheels having gear-teeth meshing with said gear-wheels, the casing having gear-teeth, the springs connected with the wheels and casing, the shaft having the gear-wheel meshing with the gear-teeth on the casing, the sprocket-wheel on said shaft, and the sprocket-chain passing over said sprocket-wheel and sprocket-wheel of the winding-shaft to revolve said shaft, substantially as and for the purpose described.

6. In a motor, the combination of the casing having the gear-teeth on the outer surface thereof, the gear-wheel 18, meshing therewith, and the gears 19, 22, 23, 24, and 27, for operating the driving-pulley and governor, substantially in the manner and for the purpose set forth.

7. In a motor, the combination of the gear-wheel 23, the gear-wheel 24, meshing therewith, the shaft 25, carrying said gear-wheel 24, the gear-wheel 27, the gear-wheel 29, meshing therewith for operating the governor, the roller 28, and the friction-roller 31, substantially as described.

8. In a motor, the combination of the lever 29, the lever 30, connected therewith and carrying a friction-roller 31, the friction-roller 28, and the screw 40, operating in the manner and for the purpose described.

9. In a motor, the combination, with the governor-shaft, of the lever 33, lever 30, connected therewith and carrying a friction-roller 31, and the friction-roller 28 on shaft 25, operating substantially in the manner and for the purpose described.

10. In a motor, the casing or wheel 4, having slots 7 in its periphery, rollers journaled in the walls of said slots and extending transversely of the diameter of the casing or wheel, and a coil-spring within said casing and bearing against the said rollers, said parts being combined substantially as described, whereby the binding of the spring is prevented.

11. In a motor, the combination, with the casing having the gear-teeth, of the shaft having the gear-wheel meshing with said gear-teeth, the sprocket-wheel on said shaft, the winding-shaft having a sprocket-wheel and a chain passing over said sprocket-wheels, whereby the rotation of the gear-wheel which meshes with the casing turns the winding-shaft, and a friction-clutch on said shaft to prevent a retarding movement of the winding-shaft, in the manner and for the purpose described.

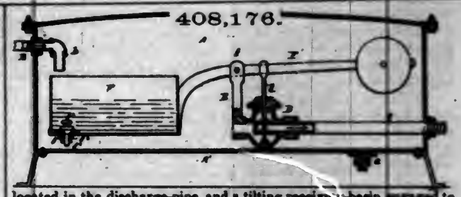
12. In a spring-motor, a shaft having a drum loosely mounted thereon, the said drum being provided with teeth on its periphery, a toothed wheel loosely mounted on said shaft, a spring secured at one end to the hub of the wheel and at the other end to the inner face of the casing of the drum, and mechanism consisting of rotary shafts, meshing gear-wheels, and sprocket-wheels with chain-connections, substantially as described, connected to said drum and wheel, whereby the rotation of the drum in one direction revolves the wheel in the same direction, said parts being combined substantially as and for the purpose set forth.

13. In a spring-motor, a shaft with a drum and a wheel loosely mounted thereon, a coil-spring connected at one end to the inner casing of the drum and at the other end with the hub of the wheel, and gearing connected with said drum and wheel, whereby different rates of speed are communicated to said drum and wheel, respectively, substantially as and for the purpose set forth.

14. An automatic differential spring-motor having an operating-spring with drum and wheel, respectively connected with the ends thereof, and freely mounted on a shaft, gearing connected with said drum and wheel and adapted by the unwinding of the spring to rotate the said wheel in the same direction, but at a less rate of speed than the drum, said parts being combined substantially as described.

408,176. STEAM-TRAP. GUSTAV J. GRABBERT, Detroit, Mich. Filed Nov. 20, 1888. Serial No. 291,395. (No model.)

Claim.—1. In a steam-trap, the combination, with the condensing-chamber provided with an inlet and a discharge pipe, of a valve



located in the discharge-pipe, and a tilting receiving-basin engaged to operate said valve, substantially as described.

2. In a steam-trap, the combination, with the condensing-chamber provided with an inlet and a discharge pipe, of a valve controlling communication through the discharge-pipe and provided with a valve-stem, and a tilting receiving-basin provided with a weighted arm engaged with said valve-stem, said basin provided with an outlet and controlling valve, substantially as set forth.

3. In a steam-trap, the combination, with a condensing-chamber provided with an inlet and a discharge pipe, of a valve D, to control communication through the discharge-pipe, a tilting receiving-basin engaged to operate said valve, a live-steam pipe communicating with the discharge-pipe through said valve, and a check-valve G, located in the discharge-pipe, substantially as set forth.

4. In a steam-trap, the combination, with the condensing-chamber provided with an inlet and a discharge pipe, of a valve D, to control communication through the discharge-pipe, a tilting receiving-basin engaged to operate said valve, check-valves G and H, located in the discharge and inlet pipes, respectively, and a live-steam pipe communicating with the discharge-pipe through the valve D, substantially as set forth.

5. In a steam-trap, the combination, with the condensing-chamber provided with an inlet and a discharge pipe, of a valve D, to control communication through the discharge-pipe, a tilting receiving-basin engaged to operate said valve, a live-steam pipe communicating with the discharge-pipe through the valve D, said discharge-pipe provided with an inlet-opening, a conical point, and a check-valve G, substantially as described.

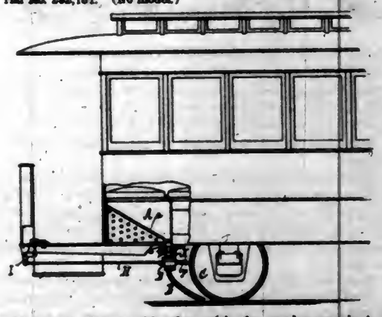
408,177. SEALING-DISK FOR JARS, &c. DANIEL W. JOHNSON, Philadelphia, Pa. Filed Feb. 16, 1889. Serial No. 300,095. (No model.)



Claim.—1. A sealing-gasket for jars or other vessels, having a base of water-proof material backed with and secured to a felted material, substantially as described.

2. A sealing-gasket consisting of a body of felted material having water-proof material secured to its opposite faces, substantially as described.

408,178. SAND-BOX FOR RAILWAY-CARS. HENRY W. JORDAN, Hoboken, and GEORGE W. MILLS, Elizabeth, N. J., and LOUIS JORDAN, New York, N. Y. Filed June 12, 1886. Renewed Nov. 28, 1888. Serial No. 292,131. (No model.)



Claim.—1. The combination, with the sand-reservoir A and its discharge-tube B B', of the valve E, the port or opening e therein, the yoke or staple shaped stirrer J, carried by the valve, and mechanism, as described, for operating the valve, substantially as set forth.

2. The combination, with the platform *j*, push-rod *i*, bell-crank lever I, link H, valve E, and spring F, of a locking device consisting

of the hook-shaped block *l*, centered on the bolt *m*, substantially as and for the purpose hereinbefore shown and described.

3. The combination of a sand-hopper having a tubular opening in its bottom leading down to a valve, and a slide-valve provided with a rod or stirrer which extends upward in said tubular opening, substantially as described.

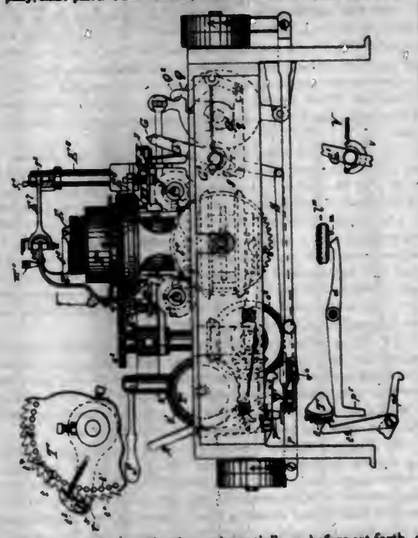
4. In a sanding apparatus for street-cars, the combination, with a headed push-pin for operating the valve, of a detent pivoted to the platform of the car and adapted to be moved under the head of the pin to prevent its operation, substantially as described.

408,179. GARTER. JACOB KATZENBERG, New York, N. Y. Filed Jan. 8, 1889. Serial No. 296,764. (No model.)



Claim.—As an improved article of manufacture, a garter composed of an elastic tape A, having its ends united by a metal clasp B, applied to the tape a short distance from its extremities, the ends being left free to form the bow-pieces *a a*, which cover the clasp at the front, substantially as described.

408,180. CIRCULAR-KNITTING MACHINE. EDWARD R. KILBOURN, New Brunswick, N. J., assignor to the Kilbourn Knitting Machine Company, same place. Filed June 14, 1887. Serial No. 241,243. (No model.)



Claim.—1. The combination, substantially as before set forth, of the stationary knitting-cylinder, the sliding nosing for said cylinder and the screw-ring which holds said nosing.

2. The combination, substantially as before set forth, of the knitting-cylinder, two cam-cylinders fitted to turn simultaneously around it, and the disconnectible drivers by which one cam-cylinder is driven from the other for continuous circular work, but which automatically permit one cam-cylinder to be reciprocated independently of the other for reciprocating work.

3. The combination, substantially as before set forth, of the knitting-cylinder, two cam-cylinders fitted to turn around it, and disconnectible drivers connecting the two cam-cylinders, whereby, when power is applied to move one of said cylinders continuously in the same direction, the two cylinders are caused to revolve simultaneously for circular work, and whereby one of them is permitted to remain at rest while said other cam-cylinder is reciprocated a complete revolution for reciprocating work.

4. The combination, substantially as before set forth, of the knitting-cylinder, the two cam-cylinders for operating the needles of the knitting-cylinder for knitting circular work, and the locking device for locking one of said cam-cylinders and rendering it temporarily inoperative while the other cam-cylinder is being caused to reciprocate.

5. The combination, substantially as before set forth, of the knitting-cylinder, two cam-cylinders for operating the needles thereof for circular work, the locking device for locking one cam-cylinder and rendering it inoperative during reciprocating work, and the lever-handle by means of which said locking device is controlled.

6. The combination, with a knitting-cylinder, of two cam-cylinders operating in connection therewith, two driving-shafts, gearing intermediate one of said shafts, and the cam-cylinders for imparting a circular movement to the latter, reciprocating gearing operated from the other driving-shaft, and means for throwing said reciprocating gearing into operative connection, whereby one of the cam-cylinders may be reciprocated.

7. The combination, substantially as before set forth, of the knitting-cylinder, two cam-cylinders for operating the needles thereof, a driving-shaft, and gearing for operating the cam-cylinders from said shaft for circular work, said gearing having drivers with provision for lost motion or play to permit reciprocating movement to be given to one of the cam-cylinders without reciprocating the driving-shaft.

8. The combination, substantially as before set forth, of the driving-shaft for circular work, the driven wheel caused to revolve thereby, the disconnectible drivers, the notched hub with which one of said drivers is connected, and the pin in said driven wheel.

9. The combination, substantially as before set forth, of the knitting-cylinder, the two cam-cylinders for operating the needles thereof for circular work, the driving-shaft for circular work, the supplementary driving-shaft for reciprocating work, the gearing which is used for both circular work and reciprocating work, and the clutch and reciprocating mechanism through the intervention of which said gearing is connected with and disconnected from said supplementary driving-shaft.

10. The combination, substantially as before set forth, of two driving-shafts which are operated successively, the two belt-shippers for the same, and a single shipping-lever and means for putting the same into operative connection with either of said shippers when desired.

11. The combination, substantially as before set forth, of two driving-shafts, two belt-shippers for the same, a single shipping-lever, and a shifting device by which but one of the two belt-shippers at a time is subjected to the control of the shipping-lever.

12. The combination, substantially as before set forth, of the knitting-cylinder, the cam-cylinder for operating a part of the needles thereof for reciprocating work, operating devices whereby said cylinder is reciprocated, and the stop-lever and cam-tooth for stopping the reciprocating movement of said cam-cylinder at a particular part of its movement.

13. The combination, substantially as before set forth, of a knitting-cylinder, two cam-cylinders for operating the needles of the same, operating devices whereby one of said cylinders may be reciprocated, and whereby, when desired, the two cylinders may be caused to rotate together continuously in one direction, a stop-lever and cam-tooth for stopping the reciprocating movement of one of said cam-cylinders at a particular part of its movement, devices for locking one of said cylinders in a stationary position during the reciprocating movement of the other, and the lever which controls the locking and unlocking of the said cam-cylinder.

14. The combination, as before set forth, of the knitting-cylinder, a circular series of needles divided into two gangs, two cam-cylinders for operating the needles for circular work, one of said cam-cylinders operating one of said gangs of needles for reciprocating work, and the counting device which indicates the number of circular rows of stitches which have been knitted.

15. The combination, substantially as before set forth, of the knitting-cylinder, two cam-cylinders by which the needles thereof are operated for circular work, the counting devices which indicate the number of circular rows of stitches which have been knitted, the driving-shaft for circular work, the belt-shipper appertaining to said driving-shaft, and the belt-shipper latch of the driving-shaft for circular work.

16. The combination, substantially as before set forth, of the picker and its carrier, a revolving shaft, and intermediate mechanism, including the change-wheels and segments, through the intervention of which the carrier is caused to move in reverse directions, the latch of the belt-shipper appertaining to said shaft, and a stop through the intervention of which the said latch is disengaged.

17. The combination, substantially as before set forth, of the picker and its carrier, a driving-shaft, gearing intermediate said shaft and said carrier, including the change-wheels and segments among its members, a belt-shipper for said shaft and its connected latch, and a stop moving with the change-wheels and adapted to release said latch.

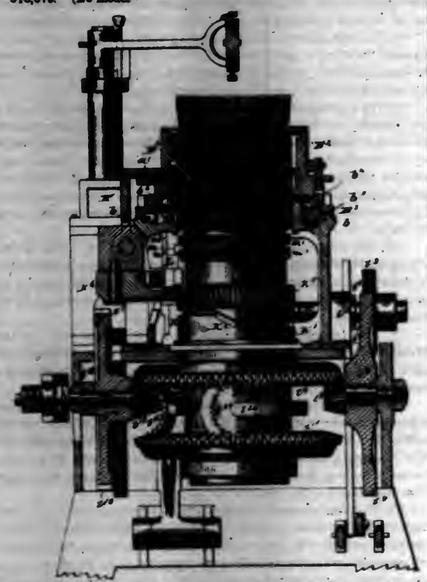
18. The combination, substantially as before set forth, of a needle-cylinder with two cam-cylinders, devices whereby said cam-cylinders are given a common operative rotation for knitting circular work, and devices whereby one of said cam-cylinders is given a reciprocat-

ing movement independently of the other for operating the needles during the widening and narrowing of the work.

19. The combination, substantially as before set forth, of a knitting-cylinder having needles divided into two gangs, independently-movable cam-rings for operating each gang of needles, the operative portion of each cam being on one side of its cam-ring, whereby an independent movement of one of said cams in relation to the other will throw all of the needles into an elevated position.

20. The combination, substantially as before set forth, of the lower knitting-cylinder with the upper knitting-cylinder, constructed of larger internal diameter than the lower cylinder.

408,181. CIRCULAR-KNITTING MACHINE. EDWARD R. KILBOURN, New Brunswick, N. J. Original application filed June 14, 1887, Serial No. 241,343. Divided and this application filed May 9, 1889. Serial No. 310,079. (No model.)



Claim.—1. The combination, substantially as before set forth, of the picker-carrier, with the frame of the machine by means of grooves which are concentric with the needle-cylinder and which hold and guide the upper and lower edges of said picker-carrier.

2. The combination, substantially as before set forth, of the picker, the needle-holder, and the carrier, by means of which the first two are held and moved.

3. The combination of a driving-shaft and a picker-carrier with intermediate gearing, through the intervention of which the picker-carrier is operated from the driving-shaft, the members of the said gearing being inseparable during operation.

4. The combination, substantially as before set forth, of the knitting-cylinder, a cam-cylinder for operating the needles for reciprocating work, the picker for acting on the needles which are to be put out of operation with said cam-cylinder, the carrier for said picker, and the needle-holder by which the needles are held positively out of their operating positions.

5. The combination, substantially as before set forth, of the knitting-cylinder, two cam-cylinders for operating the needles of the same for circular work, the picker for acting on the needles which are to be put out of or into operation with one of said cam-cylinders for reciprocating work, and the movable carrier for said picker.

6. The combination, substantially as before set forth, of the circular series of needles, the picker, a cam operated independently of the needle-cams for moving the picker positively in both directions, the carrier, and the worm-segment and screw whereby said carrier is moved partially around the circular series of needles positively without the possibility of overmovement by momentum.

7. The combination, substantially as before set forth, of the knitting-cylinder, the two cam-cylinders for operating the needles thereof for circular work, the picker, and the carrier, which operates in combination with one of said cam-cylinders for reciprocating work.

8. The combination, substantially as before set forth, of a circular series of needles, the cam-cylinder for operating the same for reciprocating work, the picker, the carrier, the worm-segment and screw, and the cams by which the said screw is moved endwise while being caused to turn.

9. The combination, substantially as before set forth, of the knitting-cylinder, two cam-cylinders for operating the needles thereof for circular work, the picker, the carrier, the worm-segment and screw, and the cams by which said screw is caused to move endwise.

10. The combination, substantially as before set forth, of the circular series of needles, the cam-cylinder for operating the same for reciprocating work, the picker, the carrier, the change-wheels and segments, whereby the number of times the carrier is to be moved in opposite directions is determined, devices intermediate said change-wheels, and the carrier for moving the latter, and the driving-gearing engaging with said change-wheels and segments.

11. The combination, substantially as before set forth, of the change-wheels and the curved segments set behind the teeth of the said change-wheels.

12. The picker, substantially as described, having a lug for engaging the nibs of the fashioning-needles from the under side, and a lug for engaging such nibs on their upper side, said lugs being located upon the picker in different vertical planes, substantially as described.

13. The combination, herein described, of a knitting-cylinder having a gang of needles for reciprocating work, a cam for operating said needles, a picker having two lugs in different horizontal and vertical planes, and a single cam-grade for actuating said picker.

14. The combination, substantially as before set forth, with the frame of the machine and a knitting-cylinder, said frame being provided with annular grooves outside of said cylinder, of picker-carriers of segmental form mounted in said grooves.

15. The combination, substantially as before set forth, of the knitting-cylinder having a gang of needles for reciprocating work provided with nibs for engaging the operating-cam, a portion of which are provided with supplemental nibs, a cam for operating said needles for circular and reciprocating work, pickers for engaging the supplemental nibs of said needles, and mechanism operated independently of the needle-cam for operating said pickers positively in both directions.

16. The combination, with a knitting-cylinder and needles, of two pickers, two picker-carriers, and the worm-segments and screws for moving the carriers, the movable parts of said pickers intersecting the planes of said segments and screws, substantially as described.

17. The combination, substantially as before set forth, of a knitting-cylinder and a circular series of needles, including a gang for reciprocating work, a portion of said reciprocating needles being provided with supplemental nibs, cams for operating said needles for circular or reciprocating work, pickers for engaging the supplemental nibs of the needles, and a cam for operating said pickers having motion independent of the needle-operating cams.

18. The combination, substantially as before set forth, of a knitting-cylinder having a gang of needles for reciprocating work, a portion of said needles being provided with supplemental nibs, a cam for operating said needles for circular and reciprocating work, pickers for acting on the supplemental nibs, and an independently-operated cam for moving said pickers positively in both directions.

19. The combination, substantially as before set forth, of a knitting-cylinder having needles divided into gangs, one of said gangs being for reciprocating work, and a portion of said reciprocating gang being provided with supplemental nibs, pickers for engaging the supplemental nibs of said needles, a cam for operating the reciprocating gang for both reciprocating and circular work, a cam for operating the other gang for circular work, and a cam for operating said pickers positively in both directions.

20. The combination, substantially as before set forth, of a knitting-cylinder having a gang of needles for reciprocating work, a cam for operating said needles, two pickers, and a separate cam-grade for operating each of said pickers having motion independent of the needle-operating cam.

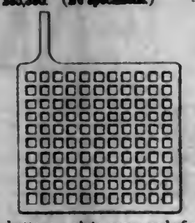
21. The combination, substantially as before set forth, of a knitting-cylinder having a gang of needles for reciprocating work, a cam for operating said needles, two pickers, and a cam-ring having motion independent of the needle-operating cam and having a separate cam-grade for operating each of said pickers.

22. The combination, substantially as before set forth, of a knitting-cylinder having a gang of needles for reciprocating work, a cam for operating said needles, two pickers, and a grooved cam having a separate grade for operating each of said pickers.

23. The combination, substantially as before set forth, of a knitting-cylinder having a gang of needles for reciprocating work, a cam for operating said needles, two pickers having each two lugs in different vertical and horizontal planes, two picker-carriers having alternate movements from needle to needle, and a cam for operating said pickers.

24. The combination, substantially as before set forth, of a needle-cylinder with needles, all of which are in operation during circular work and a part of which constitute a gang for reciprocating work, a thread-guide for reciprocating work, narrowing and widening devices, including both means for throwing a portion of the reciprocating gang of needles out of operative position, and a stop for said thread-guide, and screws for moving said narrowing and widening devices in proper relation to the needles during the narrowing and widening.

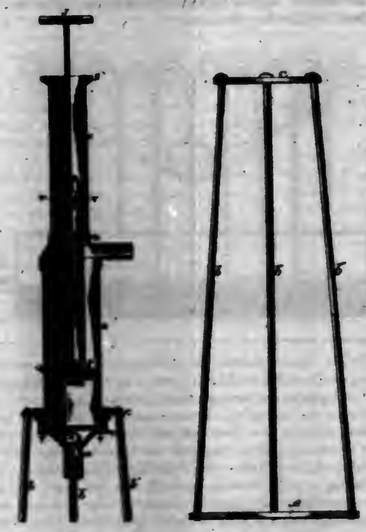
408,182. ALLOY FOR SECONDARY-BATTERY PLATES. EDWARD R. KNOWLES, Brooklyn, N. Y., assignor, by mesne assignments, to the Mutual Electric Manufacturing Company, of New York. Filed Sept. 29, 1888. Serial No. 285,980. (No specimens.)



Claim.—1. In a battery, a plate composed of an alloy of lead, tin, and antimony, substantially as set forth.

2. A plate for electric batteries, composed of an alloy of about eighty-two parts lead, sixteen parts tin, and two parts antimony.

408,183. HAND FORCE-PUMP. PETER KOONS, Avon, Ohio. Filed Jan. 10, 1889. Serial No. 296,080. (No model.)

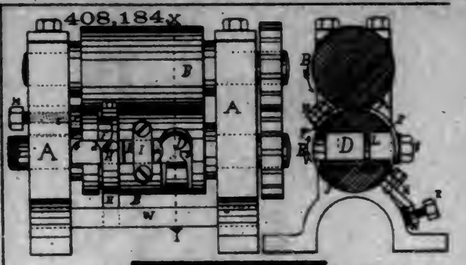


Claim.—In a pump, the combination, with the piston and a cylinder therefor, of a collar placed around its lower end having a flange at its upper edge, and an external screw-thread below said flange, a cap which closes the lower ends of the collar and cylinder, provided with a flange at its upper edge, an internal screw-thread engaging the thread upon the collar, an inwardly-extending horizontal rest for the lower end of the cylinder, and a valve-seat, whereby a support is clamped between the flanges upon the cap and collar and the pump-cylinder within both, substantially as shown and described.

408,184. MACHINE FOR MAKING PLUMBERS' HOOKS. HENRY LILLEY, Philadelphia, Pa., assignor to Lilley & Hillsley, same place. Filed May 6, 1889. Serial No. 309,793. (No model.)

Claim.—1. In a machine for rolling pipe-hooks, a pair of rolls mounted in a pair of housings, the lower roll constructed with a transverse opening D, in which is fixed a die J below the transverse center of the roll, as shown, and for the purpose specified.

2. The combination of die J, sliding bar K, band-cam H, fixed cam P, rolls B, and housings A, all substantially as shown and described.



408,185. SUPPORT FOR SPINNING-SPINDLES. THOMAS H. LOGAN, Lowell, Mass. Filed Jan. 22, 1889. Serial No. 297,143. (No model.)



Claim.—1. The yielding or elastic bolster, the tube in which it is held, and a holder to support the said tube loosely, combined with a sleeve-whirl spindle, the exterior of the said tube coming next the interior of the said sleeve-whirl, substantially as described.

2. The spindle, the elastic bolster, and the tube interposed between the said bolster and whirl, and a holder to receive the said tube, the said holder having a detachable cap, which engages the lower end of the tube to keep it down in the holder, substantially as described.

3. The spindle, the elastic bolster, the tube in which it is held, the holder in which the said tube is mounted loosely, and the spring to support the weight of the said tube and permit it to yield vertically, substantially as described.

4. The described bolster and step, consisting of a short tube e', closed at its bottom to hold oil, and a tubular or sleeve-like bolster open at both ends and having a series of independently-yielding flexible arms, a rigid portion of the said bolster coming in contact with the interior of the said tube, while the said flexible arms bear directly against the spindle at opposite sides and yield independently to the requirements of the foot of the spindle as the latter moves, due to an unbalanced load.

5. The described bolster and step, consisting of a tube e' and the bolster secured in the upper end of the step-tube and having flexible arms f^2 extended within the said tube, combined with a spindle and a holder for the said tube, and with a pin or projection to prevent the rotation of the tube with the spindle, substantially as described.

408,186. RAILWAY-TRACK LAYER. DAILY S. MOORE, Chicago, Ill., assignor of two-thirds to Abner Price and Alexander Price, same place. Filed Sept. 11, 1888. Serial No. 285,110. (No model.)

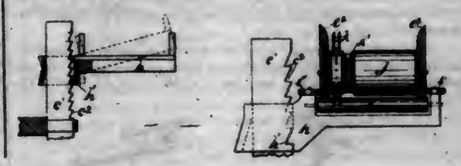
Claim.—1. In a railway-track layer, in combination with the carriers g, the brackets h and stakes i', provided with notches i^2, substantially as specified.

2. In a railway-track layer, the combination of the notched stake i' with a bracket provided with lip h', substantially as specified.

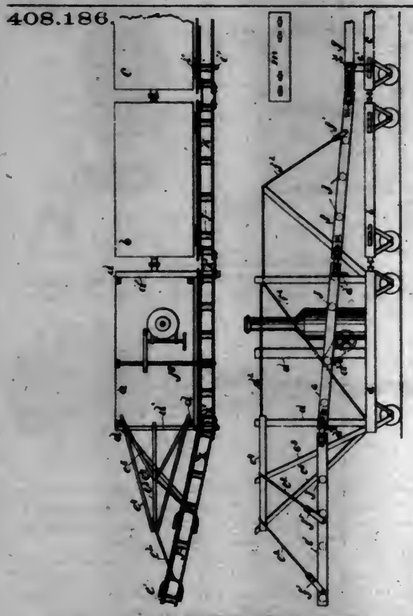
3. In a railway-track layer, in combination with the carrier g, the adjustable carriers f i', fixed carrier c, and car a, substantially as specified.

4. In a railway-track layer, in combination with the car a, provided with posts d and fixed carrier c outside of said posts, the adjustable carrier i', attached to the front of said fixed carrier, whereof the front is over the center line of the car, posts i^2, braces i^3, and ropes i^4, substantially as specified.

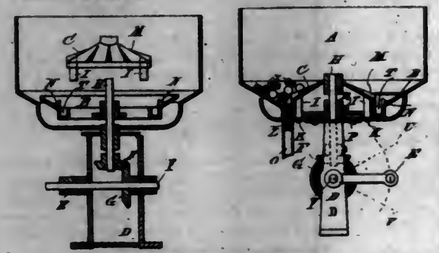
5. In a railway-track layer, in combination with the car a, provided with posts d and fixed carrier c outside of said posts, the adjustable carrier i', provided with brace i^3, posts i^2, and braces i^3, substantially as specified.



408,186.



408,187. FEEDER FOR BRAID-ROLLS AND SMALL SPOOLS. JOHN H. MORRISON, Pawtucket, R. I. Filed May 15, 1888. Serial No. 274,007. (No model.)



Claim.—1. In combination, hopper A, having opening L, agitator B, having concentric channel T and lugs N, the conical cap C, having lugs M, and projections I I, all substantially as described.

2. The combination, in a braid-roll and small-spool feeder, of a stand D, bearing a hopper A, having an opening L, the agitator B, having a concentric channel T, and means for imparting a vibratory movement to said agitator, substantially as described, for the purpose specified.

3. In a braid-roll and small-spool feeder, in combination, the hopper A, bearing on the inside a conical cap C, provided with means for fastening rigidly to bottom of said hopper, or to shaft H, substantially as described, the vertical shaft H, bearing agitator B and gear F, the stand D, bearing shaft Y, gear G, arm E, and operating mechanism, whereby blanks poured promiscuously into the hopper are delivered one by one through the exit, all substantially as described.

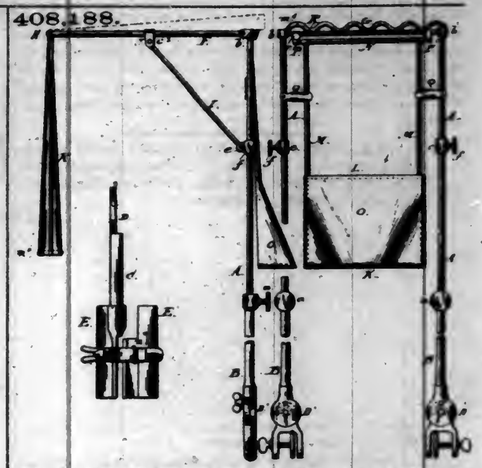
408,188. FAN FOR ROCKING FURNITURE. ARTHUR W. MCCOMAS and HENRY A. FITZHUGH, Austin, Tex. Filed Nov. 4, 1887. Serial No. 254,270. (No model.)

Claim.—1. The combination, with the fan-supporting frame having a bar G, with one fixed loop and a corresponding loop secured by a thumb-screw, of the back fan and its frame journaled in said loop, as set forth.

2. The combination, with the fan-supporting frame, substantially as described, the fan O, adjustably journaled to the bar G, and the holding-forks Q, pivoted to uprights A, of the fan R, pivoted to the

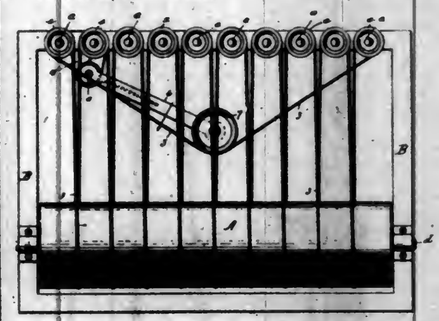


408,188.



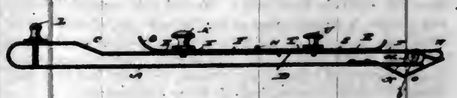
ends of the horizontal arms of the frame, all arranged to form a set of fans for front and rear service, as set forth.

408,189. TENSION-REGULATING DEVICE FOR SPINDLE-DRIVING BANDS. ARTHUR MCDONALD, Scotland, Conn. Filed Mar. 26, 1889. Serial No. 304,666. (No model.)



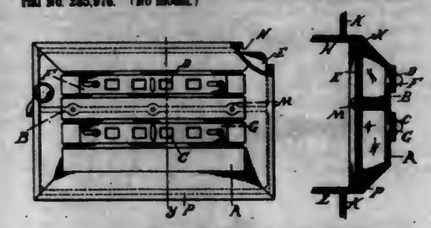
Claim.—In combination, the driving-drum and the spindles of a spinning and twisting machine, an endless driving-band engaging said drum and spindles and having a long horizontal loop thereof extending between the ends of the machine under that portion of the band extending between the drum and the spindles, a vertical post supported in bearings in said machine and free to rotate reciprocally therein, an arm attached to and extending at right angles from said post, having a pulley thereon engaging with said band, and a spiral spring surrounding said post and acting to swing said post and arm and force said pulley against the band, substantially as set forth.

408,190. TUCKING-GUIDE FOR SEWING-MACHINES. HENRY L. SICK, New Orleans, La. Filed Sept. 3, 1888. Serial No. 284,414. (No model.)



Claim.—In a tucking-guide for sewing-machines, the combination, with the base-plate having an overhanging portion C, of a set-screw for regulating the distance between the free end of the same and the frame, the gage-arm having the slot F and a flange at its forward end, a guide-lug entering the slot, and the set-nut passing into a threaded aperture in the branch C of the tucking-guide frame and through the guide-lug and the shoulder bearing on the gage-arm to hold the latter in position, the arm P, hinged to one end of the guide-frame and having a projecting tongue W, the spring secured to the guide-frame and bearing against said tongue to depress the inner end of the arm P, and the pressure-plate adjustably secured to said arm by means of a set-nut, substantially as specified.

408,191. DOOR FOR STOVE-OVENS. JESSE ORR, Reading, Pa., assignor to Orr, Painter & Co., same place. Filed Sept. 21, 1888. Serial No. 285,976. (No model.)



Claim.—An oven-door constructed with upper and lower chambers separated by a horizontal solid partition, substantially as described, the lower chamber having air-inlet openings C in its outer wall immediately below said partition, and the upper chamber having similar outlet-openings D, the inner wall of said chambers being formed by a solid vertical deflector-plate E, arranged to leave top and bottom openings N and P to said upper and lower chambers, respectively, substantially as set forth.

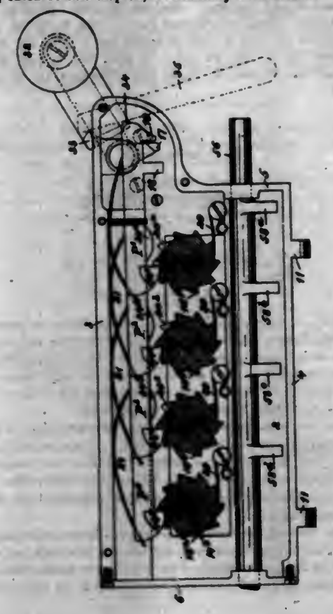
408,192. STOP-MOTION REGISTER FOR GRAIN-SCALES. FRANCIS H. RICHARDS, Hartford, Conn., assignor to the Pratt & Whitney Company, same place. Filed Oct. 15, 1888. Serial No. 288,152. (No model.)

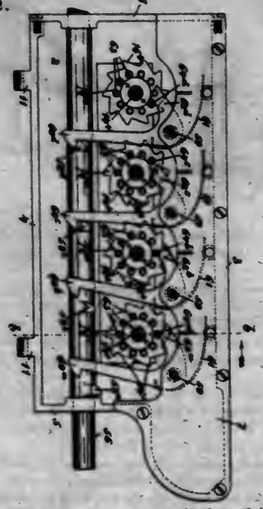
Claim.—1. In a register mechanism, the combination of a series of toothed wheels carrying register-dials and a corresponding series of reciprocatable pawls lying contiguous to said wheels for actuating said wheels, respectively, said wheels each having a space therein under each pawl except its own, all substantially as described.

2. In a register mechanism, the combination of the toothed wheels N and of a corresponding series of pawls P, for actuating said wheels, respectively, and a reciprocating arm for actuating said pawls, said wheels each having a space underneath each pawl except its own, all substantially as described.

3. In a register mechanism, the combination of the wheels N' and N², driving-arm 17, pawl P', connected with said arm for actuating wheel N', and pawl P², adapted to be engaged with said arm for actuating wheel N², said wheel N' having a space at one point in its circumference under said pawl P², whereby the latter is let into engagement with said driving-arm once during each revolution of wheel N', substantially as described.

4. In a register mechanism, the combination of the vertically-reciprocating beam 40, driving-arm 35, connected thereto, and lever 31, having catch 33 and stop 34, substantially as described.





5. The combination, with register mechanism, of the driving-arm 17, lever 31, operating said arm and provided with catch 33 and stop 34, and having a weight for performing the work of moving forward the dials, and the arm 35, engaging with and lifting said lever by said catch, and then detaching therefrom by said stop, substantially as described.

6. In a stop-motion register, the combination of the intermittingly-revolving stop-cylinder, stop-pins set in said cylinders, a corresponding series of hooks operated by said pins, respectively, and a stop-shaft having stop-arms engaging with said hooks, all substantially as described.

7. In a stop-motion register, dials carrying stop-pins, hooks actuated from said pins, and a series of stop-arms engaging with said hooks, said arms projecting from one movable part and being set at a gradually-increasing height, all being organized and coacting substantially as described.

8. In a stop-motion and register for grain-scales, the combination of the supply-chute, the stop-valve, hooks operatively connected to lock said valve open, and register-dials carrying stop-pins located therein to detach said hooks at a predetermined time, all substantially as described.

9. In a stop-motion and register for grain-scales, the combination of the supply-chute, the stop-valve, a lever actuating said valve to open the same, cam-arm 55, hooks locking said cam-arm in position to hold the valve open, and register-dials carrying stop-pins set to detach said hooks at a predetermined time, all substantially as described.

10. In a stop-motion register, the register-dials figured and intermittingly revolved, substantially as described, and having circumferentially thereof stop-pin holes corresponding to the figures thereon, in combination with stop-pins insertible in said holes and valve-locking hooks constructed to be detached by cam-arms operated by said pins, all substantially as described.

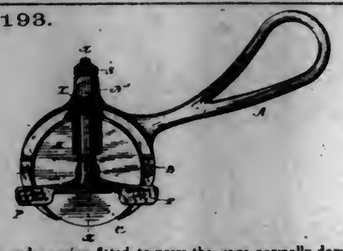
11. In a register mechanism, the combination of the dial D, perforated as set forth, cylinder N, carrying said dial and correspondingly bored, a stop-pin insertible in the holes of said dial and cylinder, and the hook having a cam-arm normally standing in the path of said pin between said dial and cylinder, all substantially as described.

12. In a stop-motion register, the combination of cylinders N, carried by toothed wheels and carrying stop-pins, substantially as described, the rock-shaft having stop arms 58, and hooks 60, pivotally supported on the frame and having cam-arms 62, all organized and coacting substantially as described.

408,193. TOOL FOR CUTTING PAPER, TRIMMING SHADES, &c. CHARLES T. RINGLEY, Springfield, Ohio, assignor of one-half to Mark A. Smith, same place. Filed Sept. 6, 1888. Serial No. 284,714. (No model.)

Claim.—1. In a paper-cutting tool, the combination, with a head having a receding face at one side thereof to receive the blade, whereby surfaces are left at each side of the blade to act against the guide-strip, and a fixed arbor mounted in the head and projecting into the said recess, of a disk-blade mounted upon said arbor and within the said recess, a gage extending across the head and having a vertical shank, a channel in the head in which said shank is slidingly

408,193.



mounted, and a spring fitted to press the gage normally downward, and a device to prevent the spring from forcing the shank out of the channel.

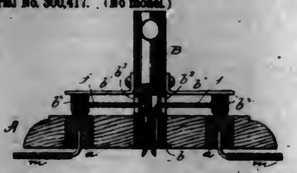
2. In a paper-cutting tool, the combination, with a head having a shouldered channel in it, of a gage having a shouldered shank slidingly mounted in said channel, screw-threaded at its upper end and provided with a nut, and a spiral spring inclosed in the channel and around the shank and pressing at its ends against said shoulders respectively.

3. In a paper-cutting tool, the combination, with a head and a blade mounted therein, of a gage which extends across the said blade and is mounted in said head and provided with dependent lips, and a flange extending laterally beyond the said lips.

4. In a paper-cutting tool, the combination, with a head, of a disk-blade having a central bore constructed with a seat, and an arbor fitted to said bore and secured to the tool-head and extending beyond the outside thereof, and a jam-nut screwed on the said projecting end of the arbor.

5. In a paper-cutting tool, the combination, with a head having a screw-threaded arbor-hole, a recess round said hole, and a washer fitted to said recess and extending beyond the adjacent surface of the head, of a disk-blade having a central bore and fitted upon said washer, and an arbor fitted to said bore in the blade and secured in the head and provided with a jam-nut.

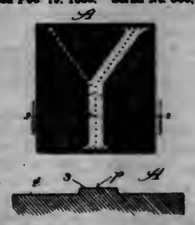
408,194. ELECTRIC SWITCH. HARRY T. RIGGS, Farmington, Me., assignor of one-half to Alvin S. Riggs, same place. Filed Feb. 19, 1889. Serial No. 300,417. (No model.)



Claim.—1. In an electric switch, a center rotating post having attached thereto by means of lateral arms two contact pieces or lugs, the said post being hollow and the two terminals of the circuit entering the structure of the switch through the hollow post and extending through lateral openings in said post to the contact pieces or lugs mentioned, all in combination with a base-piece, which supports the said post, and also two terminals of a circuit corresponding to the terminals fixed to the post, substantially as described.

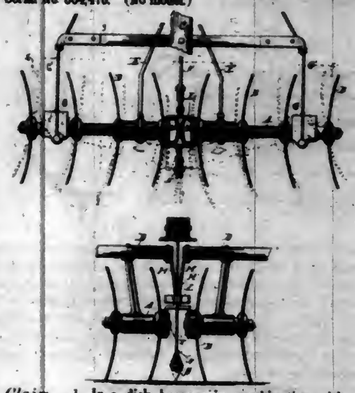
2. In an electric switch, a rotating hollow post having attached thereto two spring-arms bearing at their outer ends metallic circuit-terminals, the spring-arms being insulated from the terminals, and the circuit-wires leading in through the hollow post and connecting, respectively, with the insulated terminals.

408,195. TYPE. AMOS D. ROOD, Chicago, Ill., assignor, by direct and mesne assignments, to Netta G. Rood and Thomas B. Bryan, both of same place. Filed Feb. 19, 1889. Serial No. 300,422. (No model.)



Claim.—A type provided with puncturing-points extending beyond the face of its character and producing, when the type is used for printing, an outline of the character by perforations in addition to the ink-impression thereof, substantially as described.

408,196. DISK HARROW. CHARLES S. RUSH, Dixon, Ill., assignor to the Grand Detour Plow Company, same place. Filed Mar. 23, 1888. Serial No. 304,476. (No model.)



Claim.—1. In a disk harrow, in combination with the gang-planks D D and disk-gangs A A, the bumpers H H, attached at their upper ends to said gang-planks and collared at their lower ends on the inner ends, respectively, of said disk-gangs, and provided intermediately with the opposing faces H', substantially as shown, and for the purpose described.

2. In a disk harrow, the combination of the gang-planks D D, disk-gangs A A, the bumpers H H, attached at their upper ends to said gang-planks and collared at their lower ends on the inner ends, respectively, of said disk-gangs, and provided intermediately with the opposing faces H', and the link L, adapted to loosely inclose said bumpers and limit the separation of said gangs, substantially as shown, and for the purpose described.

3. In combination with the gangs of a disk harrow, the bumpers H H, formed, respectively, upon the inner ends thereof, the shovel M, the pivotally-seated arm N, the rod K, provided with the link L, encircling said bumpers, and the actuating and adjusting lever F, substantially as shown, and for the purpose described.

4. In combination with the gangs of a disk harrow, the bumpers H H, attached, respectively, to the inner ends of said gangs, the rod K, provided with the link L, encircling said bumpers, and the actuating and adjusting lever F, substantially as shown, and for the purpose described.

408,197. REGENERATIVE LAMP. JOHANN F. E. W. SCHMIDT, Dresden, Saxony, Germany. Filed Jan. 21, 1888. Serial No. 297,031. (No model.) Patented in England Dec. 11, 1888, No. 18,066; in Switzerland Dec. 15, 1888, No. 184; in France Dec. 17, 1888, No. 194,818; in Belgium Dec. 17, 1888, No. 84,316; in Spain Dec. 21, 1888, No. 9,000; in Italy Dec. 31, 1888, No. 24,500, and in Denmark Apr. 25, 1889, No. 1,266.



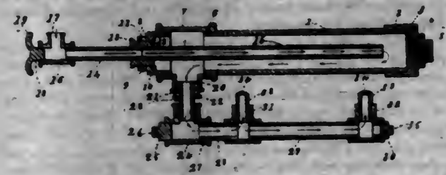
Claim.—1. The combination of a lamp-frame, a transparent burner-globe having imperforate bottom and side walls and suspended from the lamp-frame, a pendent burner in the burner-globe, and a translucent shade-globe, also suspended from the lamp-frame and inclosing within it the burner-globe for enlarging the circle of downwardly-radiating light, substantially as described.

2. The combination of a lamp-frame, a pendent burner, a burner-globe suspended from the lamp-frame, and a translucent shade-globe suspended from the lamp-frame, inclosing within it the burner-globe and having its curved walls eccentric to the curved walls of the burner-globe for enlarging the circle of downwardly-radiating light, substantially as described.

3. The combination, with a lamp-frame, a burner-globe suspended therefrom and having imperforate bottom and side walls, and a pendent burner in the burner-globe, of the translucent shade-globe, inclosing the burner-globe and detachably connected at its open top with the lamp-frame for enlarging the circle of downwardly-radiating light, substantially as described.

4. The combination of a lamp-frame, a burner-globe suspended therefrom and having imperforate bottom and side walls, a pendent burner in the burner-globe, and a translucent shade-globe suspended from the lamp-frame, inclosing the burner-globe and provided at its bottom with an unobstructed air-inlet orifice for the constant admission of ascending currents of cool air, which rise between the globes and discharge at the open top of the shade-globe, substantially as described.

408,198. HYDROCARBON-OIL VAPORIZER AND BURNER. JACOB S. SIMON, Buffalo, N. Y., assignor of one-half to Cheeseman Dodge, same place. Filed Sept. 1, 1888. Serial No. 284,273. (No model.)



Claim.—In a hydrocarbon-oil vaporizer and burner, a removable retort portion 1, having an inlet-tube consisting of the tubes 14 and 15, secured by a reducer to the retort, the portion 15 forming a straight tube projecting and opening into and extending lengthwise of the body of the retort without coming in contact with the sides of the same, in combination with a burner-tube extending parallel with it, consisting of the pipes 28 and 29, connected together by T portions carrying gas-burners and by a T and connecting parts to the T portion 7, substantially as described.

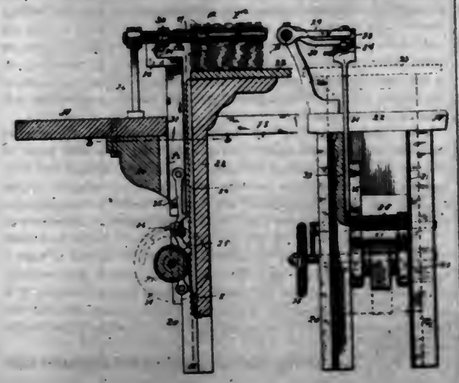
408,199. STREET-LAMP SIGN. JOHN STEWART, Chicago, Ill. Filed Apr. 18, 1889. Serial No. 307,773. (No model.)

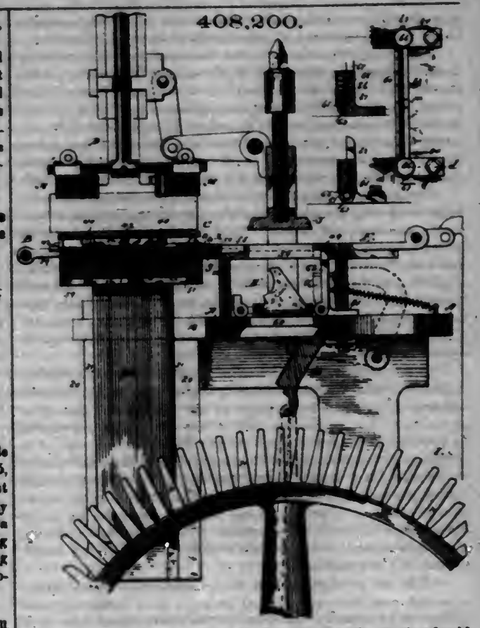


Claim.—A street-lamp sign composed of the wires *a a*, connected together by stripe *b*, in combination with the pieces *c c*, secured one to each wire *a*, and provided with projections *d*, and the glass pieces *e*, fitted therein, substantially as specified.

408,200. ENVELOPE-MACHINE. ALVIN D. TYRRELL, South Hadley Falls, assignor of one-half to H. L. Newell, Springfield, Mass. Filed Feb. 17, 1888. Serial No. 264,441. (No model.)

Claim.—1. In an envelope-machine, the combination, with suitable fixed guiding-ways thereof, of a movable upright 22, carrying the blank-supporting table and having a ratchet-bar 24, a slide-bar





provided with a spring-pawl adapted to engage the teeth of said ratchet-bar, a rock-shaft, and a connection, substantially as described, between the same and said pawl-carrying slide-bar, whereby the latter is reciprocated on a rocking of said rock-shaft, and a detent 25, for the purpose set forth.

2. In an envelope-machine, the combination, with a fixed standard 20, having suitable guiding-ways therein provided with the cam-shaft 36, and having the roller 37, of a movable upright 22, carrying the blank-supporting table, and having a ratchet-bar 24, the detent 25, and a flexible connection, substantially as described, by its one end secured to said upright and by its other to said roller, a slide-bar 31 provided with the spring-pawl 35, adapted to engage the teeth of said ratchet-bar, the rock-shaft B, and a connection between same and said slide-bar, for the purpose set forth.

3. In an envelope-machine, the combination, with the upright D having the lugs 41 41, and a movable envelope-blank-supporting table, of a pair of clamp-frames C C, pivoted to said lugs 41, the rock-shaft B, having radial arms, as 29 39, and the links 43, connecting said radial-arms and said clamp-frames, substantially as and for the purpose described.

4. In an envelope-machine, the combination, with the envelope-blank carrier F, having the cross-bar 59 and its stationary support and guideway 49, provided with the forwardly-extending headed studs *g*, of the frame K, comprising the arms 52, with apertured lugs 51, the fingers 56, and the rearwardly-disposed joining-web 58, and the springs surrounding said stud *g* between said lugs and the front of the carrier-support, acting to project said frame K to its forward extent, substantially as and for the purpose described.

5. In an envelope-machine, a flap-folder wing supported in the bed on spring journal-bearings, whereby it is capable of a yielding pressure, for the purpose described.

6. In an envelope-machine, the combination, with a flap-folder having the trunnions or pintles 63, of the boxes or end bearings comprising the bearing-blocks 64, having vertically-extended slots 65, with upper chambered extensions or boxes 66, and the springs 68, for the purpose described.

7. In an envelope-machine, the combination, with the vibrating folder-wing, of the tubular spindle having the extended peripheral surface *j*, arranged with its axis in the pivotal line of the folder-wing, and said folder-wing and tubular spindle operated to simultaneously roll in opposite directions, substantially as and for the purpose set forth.

8. In an envelope-machine, a flap-folder wing *f*, pivoted on a longitudinal journal-rod *h*, and having a recessed shank *k*, a tubular spindle *i*, surrounding said journal-pin, having a longitudinal peripheral extension *j* and a radial lever *n*, in combination with a pivotally-hung and suitably-actuated angular lever *m*, and connecting-rod *l* between one end of said angular lever and an outer portion of said pivoted

wing *f*, and a connecting-rod *p* between said radial arm *n* and the arm of said angular lever, all substantially as shown and described.

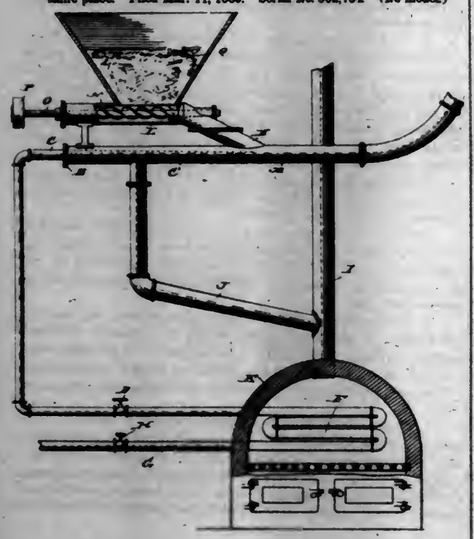
9. In an envelope-machine, the combination, with a stationary frame 91, comprising side boards 92, having suitable opposing guiding slots or ways 93, and the cross-rod 101, of the carrier-frame Q, comprising the side walls 98, having the opposing angular slots 100, and the studs 94, extending laterally therefrom through said slots 93, said carrier-frame being provided with suitable envelope clasping and releasing devices, substantially as described, and the reciprocating connecting-rods 95, connected to said studs, for the purpose set forth.

10. In an envelope-machine, the combination, with the stationary frame comprising the side boards 92, having the opposite slots or ways 93, the abutments 108 108 and 115 115, the cross-rod 101, and the cam-edged spring-catches 110, of the carrier-frame Q, comprising the side walls 98, having the opposing angular slots 100, the cross-bracing strips 99, and the studs 94, extending laterally from said side walls through said slots 93, said carrier-frame having at its forward portions spring-fingers 104, with notched hubs having radial arms 106, provided with studs 107, and the reciprocatory connecting-rods 95, substantially as and for the purpose described.

11. In an envelope-machine, the combination, with a suitably-supported rotatable ratchet-wheel having a fixed number of teeth adapted to be rotated to the extent of one tooth at each delivery of an envelope from the machine, said ratchet-wheel being provided at its one side with a disk secured thereto, having at one edge of its periphery an extended or cam face, and having on the other edge of its periphery, at a certain distance around said periphery, another extended or cam face, of a laterally-movable delivery box 90, the Y-lever pivoted in a suitable stationary bracket and having its branch legs arranged to extend into the plane of rotation of said cam-faces, and a connecting-rod between said Y-lever and said delivery-board, substantially as described.

12. In an envelope-machine, the combination, with a suitably-supported rotatable ratchet-wheel having a fixed number of teeth adapted to be rotated to the extent of one tooth at each delivery of an envelope from the machine, said ratchet-wheel being provided at its one side with a disk secured thereto having at one edge of its periphery an extended or cam face, and having on the other edge of its periphery, at a desired distance around said periphery from said cam-face, another extended or cam face, of a laterally-movable envelope delivery-box, a rock-shaft 121, supported in suitable fixed bearings having radial lugs which extend across the path of travel of the envelopes when the same are discharged from the machine, and having the offset arc-shaped guard-arm 124, adjusted normally to lie opposite the peripheral line of said ratchet-wheel, the Y-lever pivoted in a suitable stationary bracket and having its branched legs arranged to extend into the plane of rotation of said cam-faces, and a connecting-rod between said Y-lever and said movable delivery-board, substantially as and for the purpose described.

408,201. REFUSE-EJECTOR. JOHN S. WALLACE, Nelsonville, Ohio, assignor to himself, William B. Brooks, Jr., and Frank A. Prendergast, same place. Filed Mar. 11, 1889. Serial No. 302,734. (No model.)



Claim.—1. In a refuse-ejector, the combination, with a discharge-pipe closed at one end, of a steam-pipe carrying superheated steam and opening into the said discharge-pipe, a refuse feed-pipe held at an angle and discharging into the said discharge-pipe at the nozzle end of the said steam-pipe, and a gas-pipe also opening into the said discharge-pipe between its closed end and the said inner end of the said refuse feed-pipe, substantially as shown and described.

2. In a refuse-ejector, the combination, with a discharge-pipe closed at one end, of a steam-pipe carrying superheated steam and opening into the said discharge-pipe, a refuse feed-pipe held at an angle and discharging into the said discharge-pipe at the nozzle end of the said steam-pipe, a gas-pipe also opening into the said discharge-pipe between its closed end and the said inner end *b*[7] of the said refuse feed-pipe, and a furnace discharging into the said gas-pipe and serving to superheat the steam passing through the said steam-pipe, substantially as shown and described.

3. In a refuse-ejector, the combination, with a discharge-pipe closed at one end, of a steam-pipe carrying superheated steam and opening into the said discharge-pipe, a refuse feed-pipe held at an angle and discharging into the said discharge-pipe at the nozzle end of the said steam-pipe, a gas-pipe also opening into the said discharge-pipe between its closed end and the said inner end of the said refuse feed-pipe, and a feed-screw held in the said feed-pipe to discharge the refuse from the said feed-pipe to the nozzle end of the said steam-pipe, substantially as shown and described.

4. In a refuse-ejector, the combination, with a discharge-pipe closed at one end, of a steam-pipe carrying superheated steam and opening into the said discharge-pipe, a refuse feed-pipe held at an angle and discharging into the said discharge-pipe at the nozzle end of the said steam-pipe, a gas-pipe also opening into the said discharge-pipe between its closed end and the said inner end of the said refuse feed-pipe, a feed-screw held in the said feed-pipe to discharge the refuse from the said feed-pipe to the nozzle end of the said steam-pipe, and a hopper containing the refuse and opening on the said feed-screw, substantially as shown and described.

5. In a refuse-ejector, the combination, with a discharge-pipe closed at one end, of a steam-pipe provided with a nozzle extending into the closed end of the said discharge-pipe, a coil of pipe connected with the said steam-pipe and also connected with the boiler, a furnace containing the said coil of pipe and serving to superheat the steam in the said coil of pipe, a feed-pipe discharging into the said discharge-pipe at the end of the nozzle of the said steam-pipe, a chimney extending from the said furnace, and a branch pipe leading from the said chimney into the said discharge-pipe between its closed end and the end of the nozzle, substantially as shown and described.

6. In a refuse-ejector, the combination, with a discharge-pipe closed at one end, of a steam-pipe provided with a nozzle extending into the closed end of the said discharge-pipe, a coil of pipe connected with the said steam-pipe and also connected with the boiler, a furnace containing the said coil of pipe and serving to superheat the steam in the said coil of pipe, a feed-pipe discharging into the said discharge-pipe at the end of the nozzle of the said steam-pipe, a chimney extending from the said furnace, a branch pipe leading from the said chimney into the said discharge-pipe between the closed end and the end of the nozzle, and a feed-screw connected with a hopper and discharging into the said feed-pipe, substantially as shown and described.

408,202. MAILING-MACHINE. ERASTUS WOODWARD, Somerville, Mass., assignor to the Waters Wrapping and Mailing Machine Company, Portland, Me. Filed Apr. 21, 1888. Serial No. 271,447. (No model.)

Claim.—1. The paper-receiving box, the independent freely-rotating rolls forming the bottom thereof and on which rests the pile of papers, and means to rotate the said rolls in a direction to feed the papers from the said box, combined with the nippers to engage the undermost paper of the pile and draw it from the said box, the paper being pulled out by the nippers causing the rotation of the feed-rolls in the same direction and at a speed determined by the movement of the nippers, and with the first folding-blade and its co-operating roll, substantially as described.

2. A paper-receiving feed-box having in its bottom two or more independently-movable loose rolls to support the lowermost paper of the pile of papers, a pair of rolls located outside of the said feed-box, and the first folding-blade, combined with the nippers adapted to pass between the said folding-blade and the rolls under it to engage the paper and pull it from the said feed-box, substantially as described.

3. The paper-receiving box having a series of independent feeding-rolls, upon which rests the undermost paper of the pile of papers to be folded, a ratchet-wheel for each roll, a pawl for each ratchet, and means to actuate the said pawls to rotate the said feeding-rolls positively and independently in but one direction, combined with the first folding-blade and its co-operating rolls, to operate substantially as described.

4. The paper-receiving box having a series of independent feeding-rolls, upon which rests the undermost paper of the pile of papers to be folded, a ratchet-wheel for each roll, a pawl for each ratchet, means to actuate the said pawls to rotate the said feeding-rolls positively and independently in but one direction, and a presser to impinge the lowermost paper of the pile against that feeding-roll of the paper-receiving box nearest the first folding-blade, combined with the first folding-blade and the nippers to carry the paper from the said receiving-box to the said blade, substantially as described.

5. The bed-plate, the track, the nipper-carriage mounted on the said track at the rear of the first feed-rolls in the direction of the feed of the paper, the link g^{17}, the arm g^{16}, to which it is connected to move the said slide on the said track, the box to receive the paper to be folded, the first feeding-rolls, the first folding-blade, the rock-shaft g', mounted in the said carriage, the movable nipper member g^6, attached to an arm at one end of the said rock-shaft, and the elbow-lever g^8, attached to the opposite end of the said rock-shaft, and having projection g^9 extended over the said carriage, combined with an independent link jointed to the said elbow-lever, and with means, substantially as described, to actuate the said link to positively move the jaw g^6 toward and from the jaw g^5, as and for the purpose set forth.

6. The paper-receiving box, independent loose rolls in the bottom of the box to support the papers, the pressure-finger f^{10}, the first folding-blade, its co-operating rolls, the nippers having stationary and movable members, a carriage supporting the said nippers, and a track upon which the said carriage is adapted to slide, combined with means to move the carriage on the track and means to rock the movable member of the nippers on the carriage, substantially as described.

7. In a mailing-machine, the rolls 101 and 102 and folding-blades and the bed-plate 94, provided at one edge with a track, a nipper-carriage thereon, the rocking or movable member g^6 thereof, and the connecting-link and lever to reciprocate the said carriage, combined with a link and lever and friction device and means to move the said lever to rock the movable member of the nippers upon the carriage, substantially as described.

8. The rolls 105 and 106, for feeding the paper forward, and the jaws to grasp the folded leading end of the paper as it leaves the said rolls, combined with the second folding-blade and rolls, the jaws carrying the paper forward to be folded squarely across the same, substantially as described.

9. The folding-blade A^{17} and its co-operating rolls, combined with the spring-jaws to grasp the folded end of the paper and carry it positively and squarely under the said folding-blade, and with stops to arrest the folded end of the paper held by the said jaws, substantially as described.

10. The feeding-rolls b^2 b^4 and the cross-bar b^5, having fingers b^5, combined with the bed B^3, having the fingers $a^{\times}$, the knife-carrying yoke in the said bed, and with means to adjust the said bed toward and from the said feeding-rolls, substantially as described.

11. The feeding-rolls b^2 b^4, the cross-bar b^5, having the fingers b^5, and the adjustable bed B^3, having rearwardly-extended fingers $a^{\times}$, combined with the cross-plates b^{12} and a^2, and with their attached fingers located above the fingers b^5 and $a^{\times}$, to operate substantially as described.

12. The second folding-blade, its co-operating rolls, and the jaws to grasp the folded paper and draw it underneath the said folding-blade, combined with the elevated supporting-plate 79, located near the said rolls, and with feeding-rolls to feed the wrapper-web underneath the said supporting-plate and across the path of movement of the said folding-blade, substantially as described.

13. The bed B^3, the knife-carrying yoke therein, its attached knife for severing the wrapper-web, and the cutter member $B^{\times}$, combined with the adjusting-rod, its pinions, and the rack-bars to adjust the said bed horizontally upon the frame of the machine, and with the slotted levers A^{16} and the blocks *a*, and with means to move the said levers to reciprocate the knife-carrying yoke, substantially as described.

14. The second folding-blade and its co-operating rolls, combined with the transferring mechanism located below the said rolls and adapted to receive the folded paper within them, and with the jaws to which the said transferring mechanism delivers the folded paper, substantially as described.

15. In a paper-folding mechanism, the folding-blade and rolls, combined with the transferring device, including the shaft H^3, the arm H^5, its attached spring-jaw 78, arm H^4, means to move the said arm, and the shield 77, loose on the said shaft, substantially as described.

16. The cylinder composed of a shaft, the heads m^3, and bars m^5 combined with the jaws composed, essentially, of the pivoted arms m^4, the rocker-plates m^2, pivoted thereon, and the pads m^7, substantially as described.

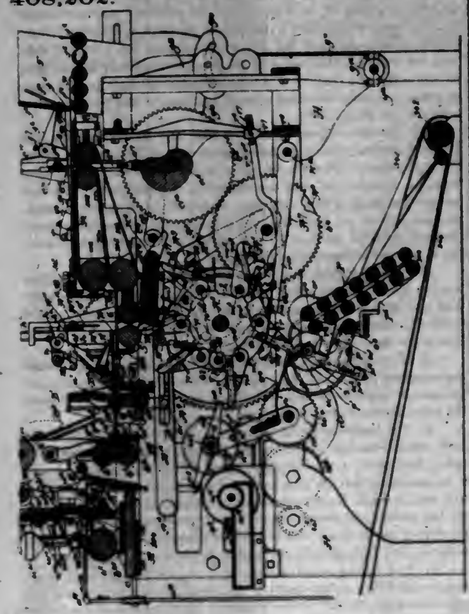
17. The shaft A^5, its heads, the shafts m^3, arms m^4, plates m^2, pivoted thereon, and arms 67 and 71, connected by a spring, and a cam to move the arms 71, combined with the pads m^7, substantially as described.

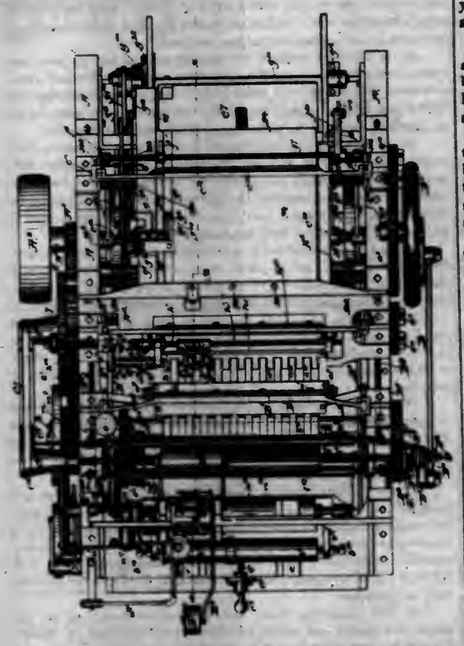
18. The shaft A^5, its heads, the rods m^5, and plates m^2, slotted at 75, combined with the stops 74, made movable in the said slots, substantially as described.

19. The shaft A^5, its heads, the rods m^5, and plates m^2, slotted at 75, combined with the stops 74, made movable in the said slots, and with the pads m^7, substantially as described.

20. The shaft A^5, its heads, the rods m^5, and plates m^2, slotted at 75, combined with the stops 74, made movable in the said slots, and

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the pads m^7, and with cams P, to simultaneously adjust the bars 65, carrying the said stops, substantially as described.

21. The shaft A^5, heads m^3, rods m^4, plates m^6, having slots 73, and pad m^7, combined with the bunter r, substantially as described.

22. The shaft A^5, heads m^3, rods m^4, plates m^6, having slots 73, and pads m^7, combined with the bunter r and with the lip-lappers, to operate substantially as described.

23. The roll carrying the wrapper-web and means to rotate it to deliver the wrapper-web at a speed faster than it is required by the feed-rolls, thus accumulating slack in the web, combined with the feed-rolls, the web-cutting mechanism, means, substantially as described, to adjust the same toward and from the said feed-rolls, and folding blade and rolls, between which the wrapper-web is fed before being cut off, substantially as described.

24. The roll carrying the wrapper-web, means to rotate it to form slack in the said web, and the feed-rolls b^2 and b^3, combined with the intermediate guide-roll b^4, means to feed the addressing-strip, sever therefrom a single address, and stick it to the wrapper-web, and with means to adjust the said roll b^4 to insure the application of the address to the face of the wrapper, substantially as described.

25. The support 204 for the addressing-strip and the shaft w^{12}, provided with the arm w^{14}, combined with the feeding-finger frictionally connected thereto, and having a feed-point to engage a hole or depression in the addressing-strip, substantially as described.

26. The support 204, its rod 217, the upright w^9, in which it is free to slide, and the spring 218, combined with the clamping-plate 213, the rod 216, the carriage w^8, its rod 210, and friction device attached to the said rod 210 and engaging the rod 216, to operate substantially as described.

27. The vertically-movable supporting-plate 204 and the carriage w^5 and its attached knife, combined with means, substantially as described, to reciprocate the said carriage and knife, substantially as described.

28. The spring-supported supporting-plate 204, its attached blade, the carriage w^5, and attached knife or cutter w^6, combined with means to raise and lower the said carriage and supporting-plate, and with wetting mechanism to travel under and wet the gummed end of the addressing-strip when the same is elevated, substantially as described.

29. The supporting-plate 204, located above the wrapper-web and supporting the under side of the addressing-strip provided with addresses and with a series of holes or recesses, one for each address, a feeding-finger to enter each hole or depression in succession, the arm w^{14}, to which it is jointed frictionally, the rock-shaft w^{13}, and means to actuate the said rock-shaft to cause the feeding-finger to positively feed the said addressing-strip the distance of one address and leave one address projecting beyond the knife at the delivery end of the said supporting-plate, and a stop to limit the upward movement of the feeding-finger, combined with a knife n^9 and means to actuate it to cut off the said addressing-strip substantially in line with the hole or depression engaged by the feeding-finger, thus insuring correct placing and cutting of the addressing-strip, substantially as set forth.

30. The adjustable roll b^3, over which is extended the wrapper-web, the rest 220 for the wrapper-web, the supporting-plate 204, to support the addressing-strip, its connected knife, the slide or carriage w^5, and its attached knife or cutter, combined with means for reciprocating the slide or carriage w^5, and with it the said supporting-plate, and with a feeding-finger to engage holes or recesses in the addressing-strip and feed it positively just the distance for one address at each stroke, substantially as described.

31. The roll for supporting the addressing-strip and the feeding-finger for engaging holes or recesses in the said strip to feed it intermittingly, combined with drawing-off mechanism, substantially as described, to make slack in the addressing-web in advance of the requirements of the feeding-finger, substantially as described.

32. The supporting-plate 204, to support the gummed addressing-strip, the bar w^{17}, means to reciprocate it, the box attached to the said bar, and the roll in the said box, combined with a water-supply and with an overflow-pipe, to operate substantially as described.

33. The addressing-strip-supporting plate having a ledge at one side, under which passes the edge of the addressing-strip, combined with the feeding-finger having a point, a stop to limit the upward movement of the feeding-finger, and with means to operate the said finger, the said ledge supporting the said finger to insure the movement of the point of the finger in a horizontal line, substantially as described.

34. The jaws to hold the wrapper and paper, the swing-frame n^3, its rotating shaft n^7, having pasting-bars, and the paste-roll, combined with the shaft n' and gears n^3 n^5 n^6, the cam n^{19}, gear n^{20}, and sector n^{21}, to operate substantially as described.

35. The shaft n^7 and the attached pasting-bars, combined with the yoke n^3, the gears n^5 n^4 n^2, and shaft n', the said yoke resting on the said shaft loosely, and with means to rotate the gear n^2, substantially as described.

36. The jaws to carry the wrapper and paper, the paste-box mounted in guides on the frame-work, the paste-roll shaft in the said box, the yoke n^3, the shaft n', to support the yoke, the shaft n^7, its attached pasting-bars, and the link n^{13}, to connect the paste-roll shaft with the shaft n^7, combined with the gears, substantially as described, to rotate the said shaft n^7 at a variable speed, the said gearing being operative to rotate the shaft n^7 in all positions of the said paste-box, substantially as described.

37. The feed-roll shaft b^2, the ratchet D^{20} fast thereon, the stud D^7, pawl thereon, the loose slotted plate or hub D^4, having a pinion D^6, and a stud to act upon one end of the said pawl and disengage it from the teeth of the said ratchet-wheel, combined with a rack to reciprocate the said gear and plate or hub D^4 to effect the intermitting rotation of the feed-roll in one direction and remove the point of the pawl from the teeth of the said ratchet in the backward stroke of the said pawl, substantially as described.

38. The plate 204 and the spring-clamp 203, combined with a wetting device having a roll and a box in which the roll is partially held, and with means, substantially as described, to operate the said wetting device and cause it to travel but once across the wetting-strip before the same is severed, substantially as described.

39. The combination, with the clamping-jaws to hold the folded and wrapped papers and the bunter, of a series of rolls and supports therefor to conduct the said folded and wrapped papers away from the jaws, substantially as described.

40. The paper-receiving box, a series of rolls therein provided with ratchet-toothed wheels, a bar 102, provided with a series of spring-held pawls, arms 116, upon which the said bar is pivoted, and a reciprocating slide-bar 115, combined with the nippers and with the first folding-blade, loosely connected to the said arms 116, to provide for lost motion and enable the pawls to be disengaged from the ratchets during one stroke of the bar 115, combined with the nippers and with the first folding-blade, to operate substantially as described.

41. In a folding-machine, the rolls r' r^2 and their supports, combined with means, substantially as described, to open or separate the said rolls intermittingly for the reception between them of the folded and wrapped papers, and with a series of rolls to carry the wrapped papers from the rolls r' r^2 first to receive between them the papers, substantially as and for the purpose set forth.

42. In a folding-machine, the rotating cylinder having jaws, and means, substantially as described, to open and close the said jaws, combined with a bunter to enter slots in the jaws and dislodge the folded and wrapped papers therefrom in succession, the same bunter co-operating with all the sets of jaws, substantially as described.

43. In a folding-machine, the roll to support the addressing-web, means to feed the said web, the blade to support the wrapper-web, and means, substantially as described, to feed the wrapper-web, combined with the frame carrying the said roll b^2, and with adjusting devices for the said frame to enable the addressing-slip to be applied to any part of the wrapper-web, substantially as described.

44. In a folding-machine, a rotating cylinder containing jaws composed of pads, as m^7, and of plates, as m^6, arms m^4, on which the said plates are pivoted, shafts carrying the said arms, and springs to normally press the plates toward the said pads, substantially as described.

45. In a folding-machine, the rods m^2, arms m^4, a paste-roll, and plates m^5, pivoted thereon, to support the end of the wrapper-web to be pasted, combined with a vibrating frame and its attached paster to transfer paste from the paste-roll to the wrapper, substantially as described.

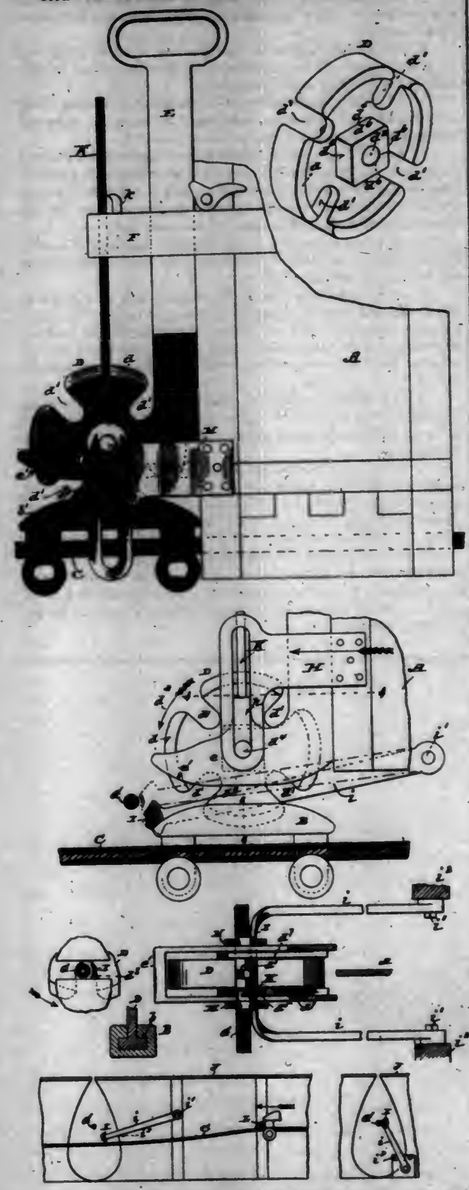
46. In a folding-machine, jaws to hold the assembled paper and wrapper, and pasting mechanism, substantially as described, to paste the wrapper, combined with the lip-lapper to meet and lay the lip of the wrapper over upon the pasted part thereof, substantially as described.

47. In a folding-machine, jaws to hold the assembled paper and wrapper, and pasting mechanism, substantially as described, to paste the wrapper, combined with the lip-lapper to meet and lay the lip of the wrapper over upon the pasted part thereof, and with means, substantially as described, to move the lip-lapper bodily and cause it to follow the jaws for a slight distance and meet the rolls r' r^2, substantially as described.

48. The rotating cylinder and its attached jaws, and the lip-lapper, the bunter, and means, substantially as described, to operate the said lapper and the bunter, combined with the rolls between which the folded and wrapped paper is delivered, substantially as described.

49. The feed-box and its series of independent rolls, on which rests the pile of papers, and means, substantially as described, to rotate the said rolls to project the end of the paper next to be fed out of the box, combined with nippers to engage the paper so projected forward and draw it from the said feed-box, the said rolls during such operation being turned only by the moving paper, and only so long as the said paper is in contact with the roll, and then coming to rest, and with the first folding-blade and parts co-operating therewith to fold the paper, to operate substantially as described.

408,208. CABLE-GRIP DEVICE. JOHN T. HODGINS, St. Louis, Mo., assignor, by direct and mesne assignments, of five-sixths to Samuel G. Hodgins and William Stromberg, both of same place. Filed July 30, 1888. Serial No. 281,496. (No model.)



Claim.—1. The combination of the adjustable guard and the holder B and part D, substantially as described.

2. The combination of the holder B, the part D, and the handle E, having the curve e', substantially as described.

3. The combination of the grip, the handle, the guides, the part D, and the holder, substantially as described.

4. The combination of the grip, the two cables, the holder B, the circular part D, as described, the handle E, and the guard, substantially as described.

5. The combination of the indicator K, the part D, and the holder B, substantially as and for the purpose set forth.

6. The fixed rope F, extending across the conduit, as and for the purpose described.

7. The combination of the conduit, the cables C G, the rope F, the guard I, the grip A, the holder B, and the part D, substantially as described.

REISSUES.

11,016. COMPOUND ORCIN DYE. RUPERT GRENVILLE-WILLIAMS, Albany, N. Y., assignor to the Albany Coal Tar Dye and Chemical Company, same place. Filed July 3, 1889. Serial No. 316,494. Original No. 404,231, dated May 28, 1889.

Claim.—The process of producing new coloring-matters, which consists in combining one molecule of tetrazo-diphenyl or tetrazo-ditolyl or their sulpho-acids with first one molecule of naphthylamine or one of the present known sulpho-acids of naphthylamine, and then combining this intermediate product with one molecule of orcin or sulpho-acids of the same, substantially as set forth.

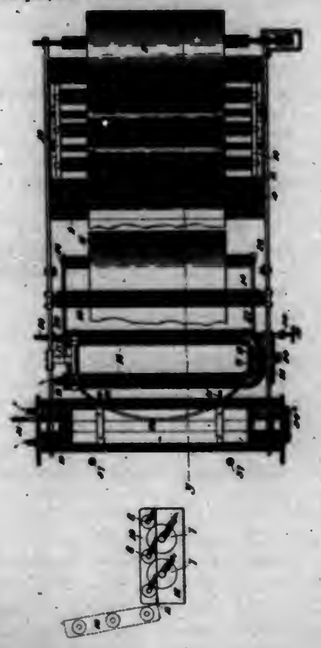
11,017. MACHINE FOR THE MANUFACTURE OF ROOFING. JOHN A. MCGRAW, HENRY L. MCGRAW, GEORGE W. MCGRAW, Jr., and CHARLES B. MCGRAW, Allegheny, Pa., assignees of GEORGE W. MCGRAW, deceased. Filed June 5, 1889. Serial No. 312,239. Original No. 366,857, dated July 19, 1887.

Claim.—1. In a roofing-machine, the combination of the tank 4, parallel rollers 7, arranged therein and immersed in the liquid thereof, and the rollers 8, arranged above the rollers 7, one of said rollers 8 being between the rollers 7 and the others at the outer sides thereof, substantially as and for the purposes described.

2. In a roofing-machine, the combination of the tank 4, rollers 7, arranged therein and immersed in the liquid of the tank, rollers 8, arranged above the rollers 7, and a hinged frame 10, within which the rollers 8 are mounted, substantially as and for the purposes described.

3. An improvement in the art of making roofing-paper, which consists in passing a web of paper in contact with a spreading-roller of less width than the paper, whereby the paper is coated with adhesive material and the margins are not coated, and then compressing said paper in contact with a second web of paper, whereby the adhesive material is caused to spread out to the edges of the two webs, substantially as and for the purposes described.

4. In a paper-roofing machine, the compression device consisting in a longitudinally-pivoted frame having side bars 16, substantially as and for the purposes described.



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5. In a paper-roofing machine, the compression device consisting in a longitudinally-pivoted frame having hollow side bars 16, provided with steam-connections, substantially as and for the purposes described.

6. In a paper-roofing machine, the compression device consisting in a longitudinally-pivoted frame having side bars 16, in combination with a lever fixed to the axis of the frame and a rack, substantially as and for the purposes described.

7. The combination of the horizontal compression-cylinders 19 and a weight 20, resting thereupon, substantially as and for the purposes described.

8. In a roofing-machine, the sand-pipes 37, whose discharge ends are arranged over the roofing-sheet at the margins thereof, substantially as and for the purposes described.

9. In a roofing-machine, a paper-roll mounted in a tilting frame, in combination with adjusting mechanism for shifting the frame endwise, substantially as and for the purposes described.

10. In a roofing-machine, a primary receiving-table 46, situate at the delivery end of the machine, and a second table situate below the table 46, said table 46 having a bottom which is removable from under the roofing-sheets, whereby the latter are dropped upon the table below, substantially as and for the purposes described.

11. In a roofing-machine, a receiving-table consisting of portible pivoted slats 47, and bars 61, connecting said slats, substantially as and for the purposes described.

12. In a roofing-machine, the combination of a table situate at the delivery end thereof, gripping-tongs arranged to grasp the paper, a traveler supporting the tongs, a drum connected with the tongs for drawing it over the table, and a second drum 56, connected with the tongs for retracting them, substantially as and for the purposes described.

13. In a roofing-machine, the combination, with the web-coating mechanism, of a compression device consisting of bars 16, over and under which the web passes, substantially as and for the purposes described.

14. In a roofing-machine, the combination, with the web-coating mechanism, of a compression device consisting of bars 16, over and under which the web passes, said bars being hollow and provided with connections for the circulation of a heating medium, substantially as and for the purposes described.

15. In a roofing-machine, the combination, with the web-coating mechanism, of a compression device situate in the path of the web and constructed to exert a rubbing and compressing action thereon and to smooth or iron the layers thereof, substantially as and for the purposes described.

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DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

BECHMAN *v.* JOHNSON.

Decided July 24, 1889.

APPEAL ON MOTION TO DISSOLVE AN INTERFERENCE BETWEEN AN APPLICATION AND A PATENT ISSUED INADVERTENTLY DURING THE PENDENCY OF THAT APPLICATION.

1. When an interference is declared between an application and a patent issued inadvertently during the pendency of that application, and the applicant files a motion to dissolve the interference and to stay proceedings without having made any proof of service of notice of said motion upon the opposite party, said motion will not be entertained. (Rule 158.)
2. The case is the same as if the interference had been declared between two pending applications, and the interference is rightly declared when declared under Rule 94, paragraph 1, without the affidavit called for by Rule 94, paragraph 2.
3. While a motion to dissolve the interference and suspend proceedings will be refused if made without notice to the opposite party, *Quære*, whether in a case like the present a petition, without notice to the opposite party, to *vacate* the order establishing the interference might not be sustained.

AMENDMENT PENDING THE INTERFERENCE.

4. Pending the interference in such case an amendment which does not come within the terms of Rules 106, 107, 109 will not be received or considered. (Rule 130.)

FAILURE TO DECLARE INTERFERENCE.

5. The fact that in such case the Office failed to declare an interference prior to the issue of the patent does not establish the fact that there is no conflict between the application and the patent.

APPEAL on motion.

INKING DEVICES FOR PRINTING-MACHINES.

Patent granted Henry F. Bechman July 20, 1886, No. 345,760. Application of Henry Johnson filed November 6, 1885, No. 182,058.

Mr. John G. Elliott for Bechman.
Mr. James A. Skilton for Johnson.

MITCHELL, *Commissioner:*

An interference was declared in this case between certain claims of the Bechman patent and certain claims of Johnson's application. Pending the interference Johnson filed a proposed amendment to his application. Thereafter Johnson filed a motion to dissolve the interference and a further motion to suspend the interference proceedings pending the determination of the motion to dissolve. The Examiner of Interferences dismissed the motions for the reason that no proof of service thereof upon said Bechman had been made. From this action of the Examiner of Interferences Johnson appeals to the Commissioner. Applicant insists that no conflicting claims are in issue, and that therefore the interference has been improperly declared; that the question whether there is a conflict between his case and that of Bechman is *res adjudicata*, the Patent Office having already decided that no interference in fact exists by failing to declare an interference prior to the issue of Bechman's patent; that no affidavit was filed, as required by Rule 94, paragraph 2, and that consequently the interference was improperly declared; that therefore this is not a contested case and ought to be considered *ex parte*, and that the rules relating to the giving of notice in contested cases should not apply.

It appears that applicant Johnson was first in the Office, and that while the applications of both parties were pending Bechman's application went to patent without an interference having been declared. Either the Bechman patent must have been issued inadvertently without a declaration of interference, or the examiner, after its issue, must have changed his mind and decided that the cases did in fact conflict. It is perhaps a hardship upon applicant in this case; but there is nothing improper in the action of the examiner in declaring this interference, if an interference in fact exists, for it is the duty of the Office to see that two patents do not issue for the same invention. (Rev. Stats., sec. 4904.)

In the case of *Brookfield et al.* v. *Brooke* (4 O. G., 81) it was held that when two conflicting applications are pending in the Office at the same time and a patent is issued upon one of them by mistake, without declaring an interference between them, the rights of the parties will be determined upon the same ground as if both were applicants. The one who has obtained a patent will derive no advantage from it in the controversy, neither will the other be prejudiced by it. The case of *Goodman* v. *Scribner* (C. D., 1872, 254) is to the same effect. (See, also, *ex parte Frick*, C. D., 1872, 124.) In such a case the second clause of Rule 94 does not apply, the patent there referred to being one which was granted before the pending application was filed. (*Ex parte Marston*, 21 O. G., 633.) The same principle was recognized in *ex parte Green and Ryer*, (MS. Dec., vol. 39, 137,) in which it was held that when during the pendency of an application a patent inadvertently issued to another and later applicant an interference should be declared between the application and the patent without requiring the affidavit called for by Rule 75, and that the oath to the application was sufficient. Therefore it must be held in the present case that the oath in Johnson's application is sufficient without the affidavit called for by the second clause of Rule 94; that the question whether or not there is a conflict between the two

inventions is not *res adjudicata*, and that the present case is the same as if the interference had been declared between two pending applications.

If, in the opinion of the Primary Examiner, there really exists a conflict between two pending applications, or between an application and an unexpired patent, the application for which was pending at the same time with the other application, there is nothing left for him to do but to declare an interference under Rule 94, section 1, and an interference having been declared the case becomes a contested one under the provisions of Rule 101 and subject to all the rules governing interference cases. (See *Gray* v. *Bell*, 15 O. G., 385 and 776; *ex parte Shinn*, 16 O. G., 458.)

Inasmuch as no proof of service of notice of the motions of applicant upon the opposing party has been made, as called for by Rule 153, the action of the Examiner of Interferences is sustained in refusing to entertain the said motions.

Rule 130 provides that amendments to the specification shall not be received during the pendency of an interference, except as provided for in Rules 106, 107, and 109, and, as the proposed amendment is not such a one as is contemplated by any of the rules last mentioned, the examiner was right in refusing to receive or consider such amendment. (See *ex parte Shinn*, 16 O. G., 458.)

The decision of the Examiner of Interferences is therefore affirmed. The conclusion thus announced is the inevitable result of the application of the rules relating to the dissolution of interferences, and it is demanded by the necessity of so administering the law of the Office that practitioners may be intelligently guided as to the proper course to be pursued. At the same time it is difficult to see why in a case like the one under consideration the applicant is not entitled to "the opinion of the Commissioner" (Rev. Stats., sec. 4904) upon the question whether an interference in fact exists before the interference is irrevocably declared. It may be therefore that a petition, without notice to the opposite party, to vacate the order establishing the interference would be permitted to prevail. Such a petition could only lie in the exceptional case of an interference between an application and a patent granted during the pendency of such application. When such a petition shall be brought in this case or in any similar one, it will receive the attention to which it will be entitled. Proceedings will be stayed for twenty days in this case to enable such a petition to be brought, if the attorney for Johnson shall so elect.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Southern District of New York.

ROOT v. THIRD AVENUE RAILROAD COMPANY.

Decided July 9, 1889.

1. EPPELSHEIMER—CLAMP APPARATUS FOR CONNECTING STREET-CARS, &c.

Letters Patent No. 160,757, granted March 16, 1875, to William Eppelsheimer, for an improvement in clamp apparatus for connecting street-cars, &c., *Held* to be infringed by the defendant's device.

2. SAME—INFRINGEMENT.

The only difference between the two gripping devices is that the pulleys in the defendant's device are connected with the movable jaw, while in the device of the patent they are connected with the fixed jaw; and in the patented devices the movement of the lower jaw to release the cable is a vertical movement both as respects the fixed jaw and the pulleys, while in the defendant's apparatus the movement of the lower jaw is a vertical movement as respects the fixed jaw, but not as respects the pulleys. These are merely formal differences. They do not involve any inventive thought and are immaterial as respects the function and mode of operation of the parts of the combination.

Mr. George Harding and *Mr. George J. Harding* for the complainant.

Messrs. Frost & Coe and *Mr. Harry E. Knight* for the defendant.

WALLACE, *J.*:

The patent in controversy in this suit is No. 160,757, granted to William Eppelsheimer March 16, 1875, for improvement in clamp apparatus for connecting street-cars, &c., with endless traveling devices. The complainant alleges that the defendant has infringed the second claim of this patent. The claim is as follows:

2. In combination with the lower jaw *l*, the transverse bar *o*, with its vertical rope-supporting pulleys *p*, substantially as described.

This claim is for a combination in a gripping device for connecting a street-car or other vehicle with an endless moving rope or cable for propelling the vehicle along the track, which consists of two elements, (1) a movable jaw, and (2) a transverse bar carrying pulleys.

The specification describes and the drawings show a gripping device provided with two jaws, one fixed and one movable, the lower one of which is caused by suitable mechanism operated from the car to advance toward the other and grip a cable moving upon pulleys between them and to recede and release the cable. The transverse bar *o*, described and illustrated, has vertical rope-supporting pulleys, one at each end, so located and arranged that the movable jaw can be raised and lowered between them and carry the cable resting on the pulleys into contact with the fixed jaw when it is raised and release it when the jaw is lowered, so that the cable will rest upon the pulleys. The bar is a longitudinal frame to which the pulleys are journaled and held in a fixed relation to the movable jaw. This bar may be connected with the movable jaw so as to be partially rotated by the movement of the jaw as it advances to or recedes from the upper jaw; but this feature may be dispensed with, and it may be secured immovably to the fixed jaw. The lower movable jaw and the transverse bar with the pulleys, constructed and arranged substantially as thus described, are the elements of the claim. The function of the devices in this combination is to enable the pulleys to support and carry the cable when the jaw is lowered and hold the cable in such a relation to the two jaws that the lower jaw when raised again will restore its contact with the upper or fixed jaw. The combination is confined to parts which coact when the movable jaw is lowered.

The patentee was not the first to employ a jaw and pulleys as parts of a gripping device for propelling the vehicle by an endless cable, constructed and arranged so that the pulleys support and carry the cable when the jaw is opened and hold the cable in such relation to the jaw that it is removed from the pulleys to the jaw by the closing of the jaw. A combination of these parts having these functions is described and shown in the patent to Andrew S. Hallidie, No. 129,130, granted July 16, 1872. The gripping-jaws of this patent are moved toward or from each other by means of a wedge actuated by a hand-wheel. The pulleys are oblique, two at each end of the jaws, operate in pairs, and are carried by a transverse bar. When it is desired to stop the vehicle, the wedge is lowered sufficiently to free the jaws from the rope without dropping it from the pulleys. The rope will then be carried by the pulleys at its ordinary speed, ready to be gripped when the wedge is lifted by turning the hand-wheel and the jaws are forced together.

The Hallidie patent is the nearest anticipation of the invention claimed, which is shown in the prior state of the art as exhibited in the record. Except as showing devices which perform in combination the function of the combination of the claim it is of no value. The other patents in the record, which have been adduced by the defendant for the purpose of negativing novelty, do not merit attention. It is apparent from the Hallidie patent alone that the claim in controversy does not extend to every combination of pulleys and releasing-jaw which will perform the functions mentioned. Consequently the claim is limited by the construction impressed upon it by the prior state of the art, as well as by its reference to the specification, to a combination in which the jaw and transverse bar are substantially such as are described, and in which the pulleys and jaw coact by the same mode of operation to discharge the function assigned to them.

The real question in the case is whether the gripping devices of the defendant which discharge the same functions are substantially those of the patent. The gripping device of the defendant has no transverse bar as a distinct and independent element of the combination, but the lower jaw itself supports the pulleys. The lower jaw is the movable jaw, and when raised or lowered carries the pulleys with itself toward or from the fixed jaw. The pulleys are one at each end of the jaw, and have their upper faces on a plane above the jaw. When the two jaws are in contact, the fixed jaw rests upon the lower jaw between the two pulleys, and the seat of the fixed jaw is below the plane of the upper faces of the pulleys. When the movable jaw is lowered, the cable is released from the grip of the fixed jaw and rests wholly upon the pulleys, and when the jaw is raised again the cable resting on the pulleys is held by the grip of the two jaws. Plainly, the lower jaw does the work of the transverse bar and also of the lower jaw of the complainant's patent. The doubt is whether it should be considered as embodying both a jaw and a transverse bar, or should be deemed a single device which dispenses with one element of the combination claimed. If the claim had been one for the lower jaw and the pulleys, substantially as described, it would have appropriately specified the combination described in the patent, and would have covered in terms the combination of the defendant. The transverse bar of the patent is nothing but a pulley-carrier. The movable jaw of the defendant's apparatus is a pulley-carrier besides being a jaw. It supports the pulleys in the requisite location as respects the fixed jaw, which is the only office of the transverse bar of the patent. If the transverse bar of the patent had been called a pulley-carrier in the claim, the movable jaw of the defendant's apparatus would answer the descriptive term. The lower jaw of the defendant's combination does the work of transferring the cable from the gripping-jaws to the pulleys, and enables the pulleys to support and carry the cable when the jaw is lowered and hold it in such a relation to the two jaws that the lower jaw when raised again will restore the contact of the cable with the upper or fixed jaw precisely as does the lower jaw of the combination of the patent. The only difference between the two gripping devices is that the pulleys in the defendant's device are connected with the movable jaw, while in the device of the patent they are connected with the fixed jaw; and in the patented devices the movement of the lower jaw to release the cable is a vertical movement both as respects the fixed jaw and the pulleys, while in the defendant's apparatus the movement of the lower jaw is a vertical movement as respects the fixed jaw but not as respects the pulleys. These are merely formal differences. They do not involve any inventive thought and are immaterial as respects the function and mode of operation of the parts of the combination.

The usual decree for an injunction and accounting is ordered for the complainant.

U. S. Circuit Court—Eastern District of New York.

UNDERWOOD *et al. v.* GERBER *et al.*

Decided March 6, 1889.

SUITS FOR INFRINGEMENT—AMENDED BILL.

In a suit to restrain the infringement of a patent complainant was defeated because he sued on one only of two patents relating to the same invention. (48 O. G., 116.) The evidence introduced would be necessary under a bill based on the omitted patent. *Held* that he should be permitted to amend by bringing in the other patent, and alleging its infringement, and that the case should be opened for taking additional testimony, but that relief should be granted only on condition that complainant give an undertaking to pay the expense of such additional testimony, including witness fees, mileage, master's or examiner's fees, and printing.

MOTION for leave to amend and take further proofs.

STATEMENT OF THE CASE.

The complainants in this case were defeated at final hearing because they declared only on one of the patents granted for their invention. (48 O. G., 116.) Thereupon complainants moved for leave to amend the bill by declaring also upon the other patent, and charging infringement thereof, and to reopen the case for the purpose of letting in such further evidence as may be necessary.

Mr. James A. Hudson, for the complainants, cited *Neale* v. *Neales*, (9 Wall., 9;) *Tremaine* v. *Hitchcock*, (23 Wall., 518;) *Hamilton* v. *Gold Co.*; *U. S.* v. *Parrott*, (McAll., 447;) *Hardin* v. *Boyd*, (113 U. S., 761; 5 Sup. Ct. Rep., 771.)

Messrs. Briesen, Steele & Knauth, for the defendants, cited, (in addition,) *Shields* v. *Barrow*, (17 How., 144;) *Battle* v. *Insurance Co.*, (10 Blatchf., 426;) *Snead*

v. *McCoull*, (12 How., 453;) *Clifford* v. *Coleman*, (13 Blatchf., 210.)

LACOMBE, *J.*:

The amendment asked for does not involve an entire change of the character of the action. It is still a suit for the infringement of the same invention as that touching which the evidence already taken was introduced. So much of that evidence as was properly taken under the original bill would be necessary under the bill if amended as complainants pray. It would certainly be very unreasonable to require the parties at great additional expense to take it over again, after both patents are declared upon. No good reason is shown why the court, if it has the power, should not also allow the record to be supplemented by such additional testimony as may be rendered necessary in consequence of the amendment. An early disposition of the case upon its merits at the least possible expense, and, so far as appears, without doing injustice to either party, would be thus secured. The authorities cited by counsel show that the granting of the relief now asked for is a matter of discretion and within the power of this court at this stage of the case. The complainants may amend their bill by the insertion of apt words, so that the same shall declare on the omitted patent, (No. 348,072,) and also charge infringement of the invention therein set forth. Upon service of the amended bill defendants may amend their answer as they may be advised, or may plead or demur to the amended bill. Upon the raising of an issue as to the omitted patent the case is reopened, and additional testimony pertinent to that issue may be taken before a master or examiner. This relief is granted only upon the complainants undertaking to pay the expenses of taking all such additional testimony, (whether introduced by complainants or defendants.) Such expense to include witness fees, mileages, master's or examiner's fees, and printing.

U. S. Circuit Court—Western District of Pennsylvania.

THE PENNSYLVANIA DIAMOND DRILL COMPANY *v.* SIMPSON *et al.*

Decided June 13, 1889.

PRACTICE IN THE COURTS.

Upon a motion for an attachment against the defendants for contempt in violating an injunction granted at final hearing, *Held* that as the present alleged infringing device differs from that adjudged to be an infringement, and also from the patented device, the question presented ought not to be determined upon such a motion as this, but only by an original suit.

SUR motion for an attachment against the defendants for contempt in violating the injunction granted at final hearing.

Mr. G. G. Frelinghuysen for the motion.

Mr. E. T. Rice opposed.

ACHESON, *J.*:

The claim of the patent sued on (the Frisbee patent) is in these words:

The combination, operating substantially as described, of an annular core-lifter, and a tube or ring constructed with a tapering recess in its inner surface.

The described operation is this:

In operation, as the bit excavates the rock and the core enters D (*i. e.*, the core-lifter) the latter first becomes stationary on the core, and is then forced over it by the shoulder of the recess C, the tube B revolving around D till the required depth is reached. When the drill-rod is withdrawn, D is forced toward the small end of the recess, clamping the core more firmly as the tube B recedes until it detaches the core from the solid rock.

The court has heretofore adjudged that the defendants infringed this patent by the use of the Case core-lifter, in which the court found a combination substantially the same as Frisbee's, operating substantially in the manner described in his patent.

Upon reference to the opinion of the court (29 Fed. Rep., 288) it will appear that this decision was put not simply upon the ground that the two devices when in position to act as core-lifters operated in the same way, but in part upon the additional facts that during the operation of boring each device clasped or hugged the core, and was forced over it by the shoulder of the recess; that in each the tubular rod revolved freely round the core-lifter until the desired depth was reached, and that each was wedged tightly in the tapering recess by the upward pull of the drill-rod. But the core-lifter now employed by the defendants, and the use of which the plaintiff insists is a violation of the injunction, is a device described in and covered by Letters Patent subsequently granted to Albert Ball, being No. 366,913, dated July 19, 1887, upon application filed November 13, 1886.

In mode of operation this latter device differs from the Frisbee core-lifter and also from the Case device in two particulars: First, during the work of boring the Ball device does not embrace or come in contact with the core, but by an outward spring-pressure clings to the tube or core-barrel and partakes of its rotary motion; secondly, the Ball core-lifter is not forced toward the small end of the recess by the withdrawal of the drill-rod, but is driven into the conical chamber, and thus made to grasp the core by hydraulic devices brought into action by the operator in charge of the boring-machine. Now, I am not prepared to declare that these differences are colorable or immaterial. They are not obviously so. The decision of the question of infringement here for the first time raised demands an inquiry into the state of the art prior to Frisbee's invention, and involves, too, the construction of the claim of his patent as limited by the phraseology "operating substantially as described." In cases of this kind a motion for an attachment is not granted unless the violation of the injunction is plain and free from doubt. (*Bate Refrig. Co.* v. *Eastman*, 11 Fed. Rep., 902; *Smith* v. *Halkyard*, 19 Id., 602.) Upon the whole I am of opinion that the question whether Ball's patented device infringes the Frisbee patent ought not to be determined upon such a motion as this, but only by an original suit. (*Temple Pump Co.* v. *Goss Pump, &c., Co.*, 31 Fed. Rep., 292.)

And now, June 13, 1889, the motion for an attachment for contempt is denied, without prejudice to any suit the plaintiff may bring to test the question of infringement involved in this motion.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 48—No. 6. TUESDAY, AUGUST 6, 1889. PRICE—$5 per year.

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The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

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Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1887, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

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Bound half-turkey	2 50
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Issue of August 6, 1889.

Patents	477	No. 408,304 to No. 408,680, inclusive.
Designs	14	No. 19,347 to No. 19,360, inclusive.
Trade-Marks	15	No. 16,895 to No. 16,909, inclusive.
Labels	4	No. 5,991 to No. 5,994, inclusive.
Reissues	3	No. 11,018 to No. 11,020, inclusive.
Total issue	513	

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Maryland	6	....	Wyoming Territory	....	....
Massachusetts	44	2	United States Army	....	....
Michigan	12	1	United States Navy	....	....
Minnesota	7	....			
Mississippi	....	....	Total to citizens of the United States	451	19
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Costa Rica	....	....	Spain	1	....
Cuba	1	....	Sweden	1	....
Curaçoa	....	....	Victoria	2	....
Denmark	....	....			
England	19	....	Total to citizens of foreign countries	40	
France	1	....			

DESIGNS.

19,247 to 19,250, inclusive.—DISH-COVER.—*Thomas B. Atterbury*, Pittsburg, Pa. Applications filed July 2, 1889. Serial Nos. 316,338 to 316,341, inclusive. Term of patents 7 years.

19,251 and 19,252.—WALL-PAPER.—*Charles Booze*, Buffalo, N. Y., assignor to *M. H. Birge & Sons*, same place. Applications filed July 2, 1889. Serial Nos. 316,342 and 316,343. Term of patents 7 years.

19,253.—FIRE-PLACE GRATE.—*Edward L. Calely*, Philadelphia, Pa., assignor to *Gilbert Combs*, *John Bawden*, and *John H. Bawden*, Freehold, N. J. Application filed January 9, 1889. Serial No. 295,884. Term of patent 7 years.

19,254.—STREET-CAR DASH.—*John W. Fowler*, Brooklyn, N. Y. Application filed January 17, 1889. Serial No. 296,654. Term of patent 14 years.

19,255.—MARINER'S CLOCK-DIAL.—*Silas H. Harding, Jr.*, New Castle, N. H. Application filed May 18, 1889. Serial No. 311,341. Term of patent 7 years.

19,256.—TEA-POT.—*John E. Jeffords*, Philadelphia, Pa. Application filed July 12, 1889. Serial No. 317,333. Term of patent 7 years.

19,257.—FONT OF PRINTING-TYPE.—*George Frederick Jordan*, Philadelphia, Pa., assignor to *The MacKellar, Smiths & Jordan Company*, same place. Application filed May 6, 1889. Serial No. 309,822. Term of patent 14 years.

19,258.—FENCE-GATE.—*Roger B. McMullen*, Chicago, Ill. Application filed May 21, 1889. Serial No. 311,596. Term of patent 7 years.

19,259.—ROTARY-FAN APPLIANCE.—*Charles E. Waldeck*, Paterson, N. J. Application filed May 21, 1889. Serial Nos. 311,622. Term of patent 14 years.

19,260.—DRUGGIST'S SIGN.—*William G. Walter*, Pittsburg, Pa. Application filed March 26, 1889. Serial No. 304,893. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,895.—CANNED VEGETABLES, FRUITS, FISH, OYSTERS, AND MEATS. *James H. Brookmire & Co.*, St. Louis, Mo. Application filed June 26, 1889. Used since April 1, 1889.

"A representation of the White House with the words 'THE WHITE HOUSE.'"

16,896.—DRY HOP YEAST.—*Chicago Yeast Company*, Chicago, Ill. Application filed May 13, 1889. Used since May 15, 1889.

"A colored circle from the sides of which extend two American flags and around the rim of which the words 'NICKEL YEAST' appear, inclosing the picture of a nickel having 'V CENTS' on it."

16,897.—PREPARATION FOR THE COMPLEXION.—*Hattie R. Eaton*, Springville, N. Y. Application filed June 28, 1889. Used since June 25, 1880.

"The words 'OCEAN SPRAY.'"

16,898.—STEAM-VALVES AND WATER-VALVES.—*Fairbanks & Co.*, New York, N. Y. Application filed June 17, 1889. Used since December 10, 1888.

"The letters 'X L' surrounded by or inclosed in a circle."

16,899.—STEAM-VALVES AND WATER-VALVES.—*Fairbanks & Co.*, New York, N. Y. Application filed June 17, 1889. Used since December 10, 1888.

"The letters and character 'F. & Co.' inclosed in or surrounded by a triangle."

16,900.—SHOE-BUTTONS.—*Felix Fournier & Knopf*, New York, N. Y. Application filed November 2, 1888. Used since May 1, 1886.

"The letters 'F. F. K.'"

16,901.—REMEDIAL AND COSMETIC CREAM.—*Nancy Kate Gentry*, Denver, Colo. Application filed July 1, 1889. Used since January 1, 1888.

"The word 'KA-TI-LA.'"

16,902.—CREAMERY BUTTER.—*The Grocers Supply and Storage Company*, Pittsburg, Pa. Application filed April 12, 1889. Used since May 15, 1889.

"A domestic dairy scene having in the foreground several cows and a calf, a woman sitting on a stool milking a cow, and a small boy with a cup in his hand at her side, and in the background mountains, fields, and a farm-house."

16,903.—MEN'S SHOES.—*John Meier*, St. Louis, Mo. Application filed April 8, 1889. Used since April, 1886.

"The representation of a man's shoe on a railroad-truck."

16,904.—PAPER CLOTHING.—*Richard C. Mudge* and *Edgar M. Wasson*, Detroit, Mich. Application filed April 5, 1889. Used since October 9, 1888.

"A disk having lines radiating therefrom and the word 'WARMTH.'"

16,905.—SHOES FOR MEN, WOMEN, AND CHILDREN.—*Peters & Miller Shoe Company*, St. Louis, Mo. Application filed June 24, 1880. Used since January 1, 1889.

"The words 'DIAMOND LINE' and the representation of a diamond-shaped figure."

16,906.—MEDICINAL PLASTERS.—*Potter Drug and Chemical Co.*, Boston, Mass. Application filed October 6, 1888. Used since January, 1887.

"The representation of one or more diamond-shaped spots."

16,907.—BOOTS AND SHOES.—*Bemis & Fletcher*, Worcester, Mass. Application filed June 15, 1889. Used since May 1, 1889.

"The representation of a boot or shoe with its sole turned toward the beholder and split open from the toe to the heel."

16,908.—FINGER-RINGS.—*Sinnock & Sherrill*, New York, N. Y. Application filed June 4, 1889. Used since January 1, 1889.

"The representation of a crucible—such as issued for the melting of gold in the manufacture of jewelry."

16,909.—CLOTHES-WRINGERS.—*Colby Wringer Company*, Montpelier and Berlin, Vt., Chicago, Ill., and Boston, Mass. Application filed June 13, 1889. Used since December, 1860.

"The word 'COLBY.'"

LABELS.

5,891.—Title: "GREFF'S RUATAN CHEWING GUM."—*Henry Greff*, New Orleans, La. Application filed April 2, 1889.

5,902.—Title: "DUNDEE CREAMERY BUTTER."—*The Grocers Supply and Storage Company*, Pittsburg, Pa. Application filed April 12, 1889. (Trade-Mark Registered.)

5,903.—Title: "GOLDEN SEAL CATARRH CURE."—*Mary Miller and Elizabeth Gundacker*, Deer Lodge, Mont. Ter. Application filed July 9, 1889.

5,904.—"GLASGO LACE THREAD CO."—*Glasgo Yarn Mills Company*' Glasgo, Conn. Application filed July 15, 1889.

DISCLAIMERS.

10,088, (Reissue.)—*Mark L. Deering*, Cleveland, Ohio, assignor to *The Union Paper Bag Machine Company*, Philadelphia, Pa. IMPROVEMENT IN MANUFACTURE OF PAPER BAGS. Original Patent No. 227,350, dated May 11, 1880. Reissue dated April 11, 1882. Disclaimer filed July 29, 1889, by the assignee.

Enters his disclaimer to claim 2, which is in the following words, to wit:

"2. A bag consisting of a bellows-sided tube having a satchel-bottom and inward triangular folds, which form part of its two sides when distended."

293,740.—*Isaac Smith Hyatt*, Morristown, N. J. IMPROVEMENT IN METHODS OF PURIFYING WATER. Patent dated February 19, 1884. Disclaimer filed July 27, 1889, by the present assignee, *The Hyatt Pure Water Company*, Newark, N. J.

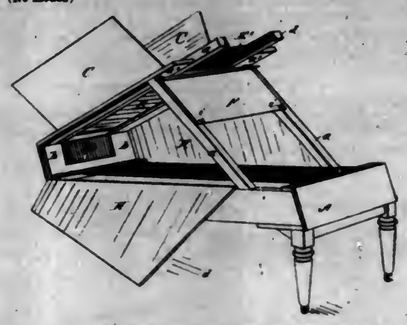
Enters its disclaimer to the paragraph in the specification which is in the following words, to wit:

"I do not confine myself to the employment of persulphate or perchloride of iron or permanganate of potassa, but make use of any other suitable agent which is capable of coagulating the impurities of the liquid and preventing their passage through the filter-bed. Neither do I limit myself to any particular proportions or quantities of the coagulating agent, as they may be varied according to circumstances and the character of the liquid to be treated. Nor do I confine myself to any particular liquid, although I contemplate chiefly the purification of water in large quantities."

PATENTS

GRANTED AUGUST 6, 1889.

408,204. SUN AND VAPOR BATH. EDWIN D. RABBITT, New York, N. Y. Filed Sept. 6, 1888. Renewed Jan. 12, 1889. Serial No. 296,210 (No model.)



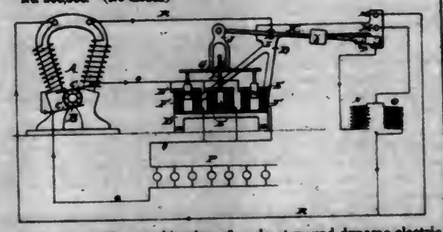
Claim.—1. A sun bath or box having an opening in the same admitting light, in combination with external reflectors for increasing or intensifying the amount thereof passing through said opening, as set forth.

2. A sun-bath box or case inclined upon the front and having two doors, a glass extending from top to bottom of the slope, the adjustably-arranged glasses thereon, a reflector on each side of the glass and inclined toward the edges of said glass, and a grooved frame projecting upward carrying a blue pane, all substantially as shown and described.

3. The combination, with a bath-box, of a wire mattress, having adjustably suspended therefrom a heating-plate apertured to receive a steaming-pan, operating substantially in the manner and for the purpose herein set forth.

4. The combination, with a bath-box, of a detachable inclined wire couch extending out therefrom, substantially in the manner and for the purpose herein set forth.

408,205. REGULATOR FOR DYNAMO-ELECTRIC MACHINES. HERMANN B. DOBBINS, New York, N. Y. Filed Oct. 17, 1888. Serial No. 288,366. (No model.)



Claim.—1. The combination of a shunt-wound dynamo-electric machine, a line-circuit leading therefrom, translating devices in said line-circuit, a circuit in series with the shunt-coils of the dynamo, one or more resistances, a switch having an adjusting-weight to insert or remove said resistances in the shunt-circuit of the dynamo, and an automatic electro-magnetic regulator, consisting of two or more helices in parallel circuit having movable and separate cores connected to the switch for actuating said switch upon varying the line resistance arranged in circuit with the line.

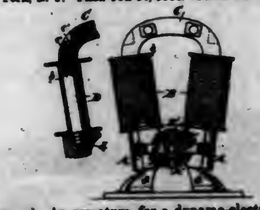
2. The combination of a shunt-wound dynamo-electric machine, a line-circuit leading therefrom, translating devices in said line-circuit, a circuit in series with the shunt-coils of the dynamo, one or more resistances, a switch to insert or remove said resistances in the shunt-circuit of the dynamo, and an automatic electro-magnetic regulator, consisting of two separate helices, and separate relatively-adjustable cores therefor connected with the switch for actuating said switch upon varying the line-resistance arranged in series with the line.

3. The combination of a shunt-wound dynamo-electric machine, a line-circuit leading therefrom, translating devices in said line-circuit, a circuit in series with the shunt-coils of the dynamo, one or more resistances, a switch to insert or remove said resistances in the shunt-circuit of the dynamo, and an automatic electro-magnetic regulator, consisting of two or more helices having two or more cores connected to the same support and in which one of said cores is arranged lower down into its helix than the others.

4. A regulator for a shunt-wound dynamo-electric machine and line-circuit with a varying resistance, consisting of three helices in circuit with the line, three cores therefor, one of which enters its helix to a greater extent than the others, and a switch actuated by said three cores to insert or remove a resistance into or out of the shunt-circuit of the dynamo-electric machine.

5. A regulator for a shunt-wound dynamo-electric machine and line-circuit with a varying resistance, consisting of three low-resistance helices in parallel circuit with the line, three cores therefor, one of which enters its helix to a greater extent than the others, and a switch actuated by said three cores to insert or remove a resistance into or out of the shunt-circuit of the dynamo-electric machine.

408,206. DYNAMO-ELECTRIC MACHINE. HERMANN B. DOBBINS, New York, N. Y. Filed Oct. 17, 1888. Serial No. 288,369. (No model.)

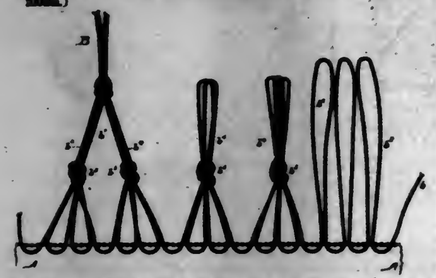


Claim.—1. An armature for a dynamo-electric machine or motor, consisting of a suitable magnetic core wound with four complete coils of wire, in which all active parts of the same coil are located upon the core to one side of a plane passed through its axis, a commutator made in four sections, and connections for coupling the coils in series and uniting their terminals in pairs to separate sections of the commutator.

2. An armature for a dynamo-electric machine or motor, consisting of a suitable magnetic core wound with four complete coils of wire, in which all active parts of the same coil are located upon the core to one side of a plane passed through its axis, and in which a terminal from each coil is connected to a terminal of other coils separated from the coils of the first-mentioned terminals by intermediate coils, a commutator and connections between the coil, terminal connections, and sections of the coil.

3. An armature having its coils wound substantially as set out, and consisting of a core with four coils d d^2 d^3 d^4, arranged in pairs side by side, in which one terminal of coil d is connected with one terminal of coil d^2 perpendicular thereto and with one commutator-section, the other terminal of coil d^2 connected with one terminal of coil d^3, parallel with coil d and with the next section of the commutator, the remaining terminal of coil d^3 connected with one terminal of coil d^4, parallel with coil d^2, and to the next section of the commutator, and, finally, the remaining terminal of the coil d^4 connected with the remaining terminal of coil d and the last section of the commutator.

408,207. METHOD OF MAKING HAMMOCKS. JAMES BRAITHAW, North Weymouth, Mass. Filed Aug. 26, 1888. Serial No. 283,782. (No model.)

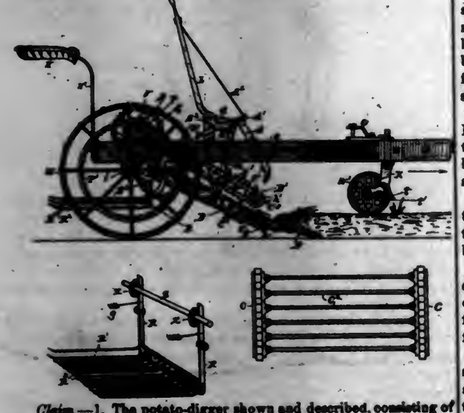


Claim.—1. The herein-described method of connecting suspension-cords to woven hammocks, said method consisting, first, in passing a single cord beneath the extended warp-threads of the hammock fabric, then in pulling up loops of said cord between certain of said warp-threads, then in weaving a short section of fabric beyond said cords, and finally in folding over said short section and sewing it to the hammock fabric, substantially as set forth.

2. The method of connecting suspension-cords to woven hammocks, consisting in first passing a single cord beneath the extended warp-threads of the hammock, next in pulling up loops of said cord between certain of said warp-threads, then in tying together sets of said loops; fourth, in weaving a short section of fabric beyond said loops; fifth, in folding over said short section and sewing it to the hammock-body, and finally in securing the suspension-cords to said loops and to the suspension-eyes, substantially as set forth.

3. The method of forming hammocks, consisting in weaving the desired length of hammock-body, then passing a single cord beneath the warp-threads and pulling up loops of said cord between said warp-threads, next in weaving a short section of hammock fabric, then inserting another series of loops and weaving a second length of hammock fabric, inserting another series of loops, and so on until a desired number of hammocks has been woven, separating the same by cutting through said short sections, and finally folding over and sewing said short sections to the hammocks, substantially as described.

408,208. POTATO-DIGGER. FRANK M. DUBBEE, Joliet, Ill. Filed Mar. 26, 1889. Serial No. 304,586. (No model.)



Claim.—1. The potato-digger shown and described, consisting of the combination, with the main frame and its traveling wheels and the caster-wheel, of the lower endless carrier having its cross-bars arranged to be lower at their central part than at their ends, and having the plow secured to the forward part of its frame, the upper carrier arranged to be parallel with the lower carrier and having its forward end free to be elevated and lowered by material passing between the carriers, and having its cross-bars terminate in teeth or arms for engaging such material, and the shaker arranged at the rear of said carriers and to receive material therefrom, all arranged to operate substantially as and for the purpose set forth.

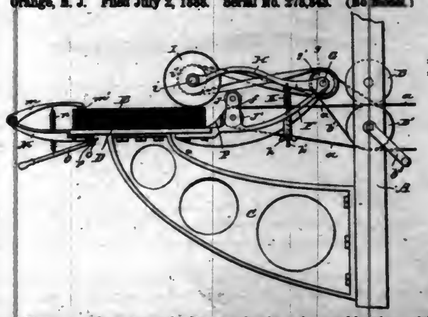
2. In the potato-digger shown and described, the lower endless carrier having its cross-bars arranged to be higher at each end than at their parts between their ends, in combination with the upper endless carrier having its cross-bars arranged wider apart than those of the lower carrier and extending at each end to form teeth or arms for engaging material between the carriers, the plow for delivering material to and between the carriers, and the means shown for driving and adjusting said carriers, substantially as and for the purpose set forth.

3. In the potato-digger shown and described, the combination, with the main frame, of the two endless carriers arranged to be parallel with each other and vertically adjustable at their forward ends, the lower carrier having a plow secured to its forward end and having its cross-bars formed to be lower at their central parts than at their ends, and the upper carrier having its cross-bars project to form teeth or arms to carry material along between the carriers to the rear of the machine, substantially as and for the purpose set forth.

4. In the potato-digger shown and described, and in combination with the endless carriers, the shaker consisting of the frame R and double row of teeth R' R², the shaft S, cams Z Z, and coil-springs *g g*, substantially as and for the purpose set forth.

5. In the potato-digger shown and described, in combination with the lower endless carrier having a plow secured to its forward end, the upper endless carrier, the rock-shaft S', having the arms *a a* and *a²*, ratchet-pawl *d*, and hand-lever L, and the links *m m*, for connecting said arms *a a* and lower carrier and for supporting the forward end of the upper carrier, substantially as and for the purpose set forth.

408,209. PAPER-FEEDING MACHINE. ROBERT DURRET, East Orange, N. J. Filed July 2, 1888. Serial No. 278,843. (No model.)



Claim.—1. In a paper-feeding mechanism, the combination, with a table or support for the paper, of a rotating frictional paper-feeding roll to engage the forward ends of the sheets of paper, pivoted arms by which the said roll is carried, a spring-pressed frictional holdback-bar arranged to bear on the rear ends of the sheets of paper, and feeding-rolls to which the paper is presented by the said frictional roll, substantially as set forth.

2. In a paper-feeding mechanism, the combination, with the rolls B and B' and the pulley *b*, of the shaft G, having the pulleys *g* and *g'*, the feeding-roll I, its shaft *i*, the pulley *i'*, the belt *b'*, and the cross-belt *b²*, connecting said pulleys, the paper table or support, and the spring-pressed frictional holdback-bar, substantially as set forth.

3. In a paper-feeding mechanism, the combination, with the frictional feeding-roll I, the arms H, by which said roll is carried, and the brackets F, of the adjustable springs K, connecting said arms and brackets, substantially as set forth.

4. In a paper-feeding mechanism, the combination, with a paper-supporting table and a rotating frictional roll I, having a sand or emery feeding-surface, of a spring-pressed holdback-bar having a frictional surface of rubber, substantially as and for the purpose set forth.

5. In a paper-feeding mechanism, the combination, with the paper-supporting table and the frictional feeding-roll I, of the connected arms *m*, the frictional holdback-bar *m'*, attached thereto, the bar N, the spring *n*, the hand-lever O, the rod *o*, and the thumb-nut *p*, substantially as set forth.

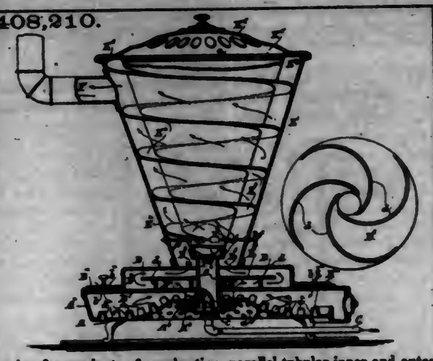
6. In a paper-feeding mechanism, the combination, with a table or support for the paper, of a rotating frictional paper-feeding roll to engage the forward ends of the sheets of paper, pivoted arms by which the said roll is carried, a spring-pressed frictional holdback-bar arranged to bear on the rear ends of the sheets of paper, a carrying-belt to receive the paper, feeding-rolls between which the said belt passes, and an upwardly-inclined guide, as P, interposed between the pile of paper and the said feeding-rolls, substantially as set forth.

408,210. OIL-STOVE. ALBERT H. CALKINS, Chicago, Ill. Filed Feb. 10, 1888. Serial No. 263,632. (No model.)

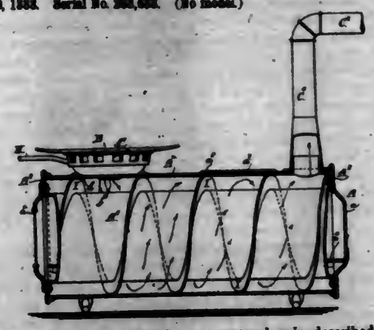
Claim.—1. An oil stove or heater embracing an oil-burner having a combustion-chamber, air-inlet openings thereto, and an exit-opening for products of combustion, parallel tubular inner and outer walls, a spiral partition between the same forming a spiral frame-passage communicating at one end with the said exit-opening of the combustion-chamber, and a smoke-pipe connected with the opposite end of said flame-passage, substantially as described.

2. An oil stove or heater comprising a combustion-chamber having a bottom plate provided with a central upwardly-projecting tubular part A⁴, a drum comprising an exterior wall E, and an inner tubular wall E', parallel with said outer wall and resting upon the tubular projection A⁴, substantially as described.

408,210.



408,211. OIL-STOVE. ALBERT H. CALKINS, Chicago, Ill. Filed Feb. 10, 1888. Serial No. 263,633. (No model.)



Claim.—1. The novel heating apparatus herein described, consisting of a drum comprising inner and outer tubular walls and provided with a partition between said walls, forming a tortuous smoke-passage, and with a smoke-flue communicating with one end of said passage, and an opening in the said drum communicating with the other end of said passage, and a separate burner having an exit-opening in its bottom for flames and products of combustion and adapted to fit into said opening, substantially as described.

2. The novel heating apparatus herein described, consisting of a drum comprising inner and outer tubular walls and provided with a partition between said walls, forming a tortuous smoke-passage, and with a smoke-flue communicating with one end of said passage and an opening in its top communicating with the opposite end of said passage, a separate burner having an exit-opening in its bottom for flames and products of combustion and adapted to fit into said opening, the space inclosed by the inner tubular walls being provided with a horizontal flooring, thereby forming an oven, substantially as described.

408,212. LABEL-HOLDER FOR BOTTLES. JOHN H. CARNEGHAM, Rennselaer, Iowa. Filed Mar. 26, 1889. Serial No. 304,704. (No model.)



Claim.—In combination with a bottle, a label-holder having the back A coated with adhesive cement B, the lower rim C, projecting hooks D D, and the spring-clasp F, substantially as described.

408,213. BRICK-MOLD. EDWARD R. CARTER, Huntsville, Ala. Filed Apr. 19, 1888. Serial No. 271,127. (No model.)



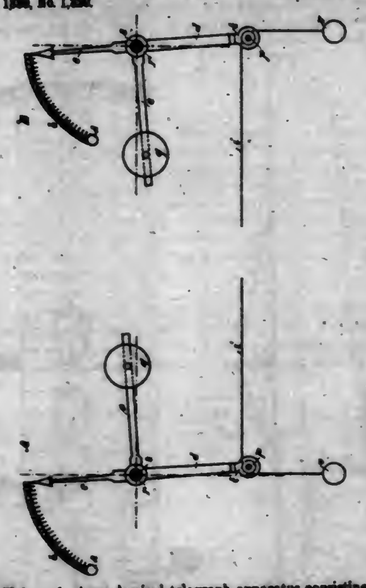
Claim.—1. A convertible brick-mold, comprising an ordinary mold having conical blocks removably secured to its bottom, as set forth.

2. The combination of the mold having slots in its bottom, and the conical blocks having T-shaped studs on their bottoms, adapted to be inserted through said slots and engage the edges of the same, as set forth.

3. The combination of the mold, the conical blocks removably secured therein, and the cleats secured to the bottom of the mold, as set forth.

4. The combination of the mold having slots in its bottom, the cleats secured to the under side of the bottom near the ends of the same, and the frusto-conical blocks having studs in their bases adapted to pass through the slots in the bottom of the mold and engage the edges of the said slots, substantially as described.

408,214. MECHANICAL TELEGRAPHIC APPARATUS. ADRIAN CASARA, Madrid, Spain. Filed Feb. 16, 1889. Serial No. 300,068. (No model.) Patented in Spain Dec. 1, 1888, No. 8,966, and in England Feb. 1, 1889, No. 1,880.



Claim.—1. A mechanical telegraph apparatus consisting of two instruments each having an indicating-dial and a pivoted pointer provided with a counter-weight, and a wire connecting said instruments for transmitting motion from one to the other, provided with weights at each end for maintaining the proper tension of the wire under varying conditions of temperature, substantially as described.

2. A mechanical telegraphic apparatus consisting of two instruments A and B, each having a dial *b*, a pivoted pointer *c*, arms *c d*, counter-weights *g*, mounted on arms *c*, and pulleys *p* on arms *d*, and the wire *i*, passing over pulleys *p* and having weights *u* connected to the ends, substantially as and for the purpose specified.

408,215. BOTTLE-TRAP. ROBERT CLARKE, Gravesend, N. Y. Filed Oct. 12, 1888. Serial No. 287,808. (No model.)



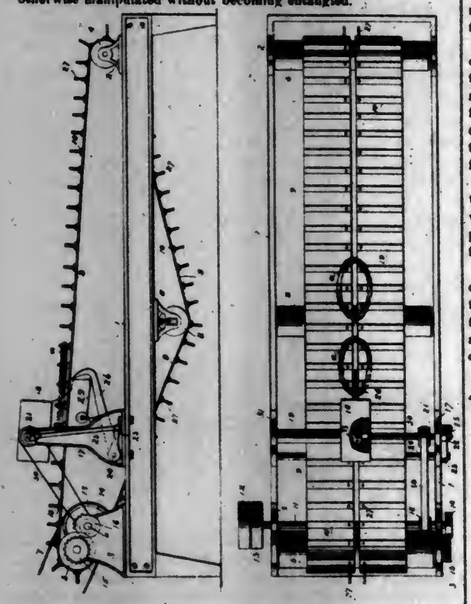
408,215.



Claim.—The within-described improved trap, provided with a body contracted at the upper end, and the lower end of which is equal to or greater in diameter than the remaining portion, with a bottom consisting of a ring secured to the lower end of the body, and a cap connected detachably to the ring, and with an outlet-pipe and an inlet-pipe increasing in diameter toward the lower end, substantially as set forth.

408,216. **MACHINE FOR TYING SKEINS OF YARN, &c.** ROBERT H. COMEY, Camden, N. J. Filed Dec. 31, 1888. Serial No. 295,102. (No model.)

Brief.—The object of the invention is to provide an improved machine for tying skeins of yarn, &c., so that they may be dyed and otherwise manipulated without becoming entangled.



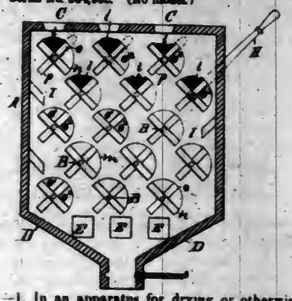
Claim.—1. The combination, with the needle, the knotter, and their actuating devices, of a movable carrier constructed to support a series of open loops of material, and extending between the knotter and the needle and past the same, whereby it serves to support the material during the knot-tying operation, substantially as set forth.

2. The combination, with the needle, the knotter, and their actuating devices, of a movable carrier formed of two parts, separated for the passage of the needle and constructed to support a series of open loops of material, and extending between the needle and knotter and past the same, substantially as set forth.

3. The combination, with the needle, the knotter, and their actuating devices, of an endless carrier extending between and past the needle and the knotter, and constructed to support open loops of material, and a driver for the carrier having a step-by-step motion arranged to move the carrier in one direction, substantially as set forth.

4. The combination, with the needle and the knotter, of the carrier extending between the knotter and the needle and past the same, and constructed to support a series of open loops of material, the intermittent driver for the carrier, and the continuous driver for the needle and knotter, substantially as set forth.

408,217. **APPARATUS FOR DRYING OR OTHERWISE TREATING MATERIALS.** EDWARD M. COOK, New York, N. Y. Filed Sept. 10, 1888. Serial No. 284,962. (No model.)



Claim.—1. In an apparatus for drying or otherwise treating material, a series of receptacles provided each with a series of open troughs arranged longitudinally around a common axis and adapted for receiving and discharging the contents of the troughs intermittently by a partial rotation, substantially as herein set forth.

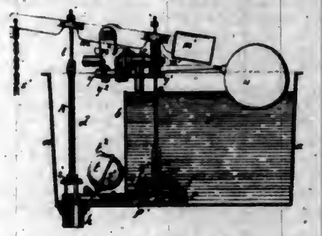
2. In an apparatus for drying or otherwise treating material, a series of receptacles having each a partition forming longitudinal chambers or troughs at its adjacent sides, and cranks attached to the receptacles and united in one system to actuate the same intermittently, as and for the purpose set forth.

3. In an apparatus for drying or otherwise treating material, the combination, with a suitable casing, of several series or tiers of receptacles consisting each in a number of open troughs or chambers arranged around a common axis, all the receptacles being separated from one another to permit the passage of treating-currents, and cranks connected with the several receptacles and united in one system for simultaneously tilting the receptacles to discharge the contents from one tier into another, as and for the purpose set forth.

4. In an apparatus for drying or otherwise treating materials, the combination, with several series of oscillating receptacles having vertical partitions extended upward from their bottoms, of deflectors projected from the bottom of the receptacles and operating substantially as shown and described.

5. In an apparatus for drying or otherwise treating material, the combination, with several series or tiers of receptacles having partitions forming chambers at their adjacent sides, of cranks attached to the respective receptacles and a frame applied to all the crank-pins and connected with a lever-arm to actuate the frame for simultaneously oscillating all the receptacles, substantially as herein set forth.

408,218. **WATER-CLOSET TANK.** HUGH H. CRAIGIE, Stamford, Conn. Filed Nov. 17, 1887. Serial No. 255,451. (No model.)



Claim.—1. In a water-closet tank, the combination, with a service box or chamber, of a flushing-pipe leading therefrom having a main and a minor orifice communicating with the service-box, with a manually-controlled valve governing the main orifice, and an auxiliary valve controlling the minor orifice governed by a perforated submergible air-chamber, substantially as herein shown and described.

2. In a water-closet tank, the combination, with a reservoir-chamber and a service-chamber, a valve controlling the passage of the water from one to the other, a flushing-outlet extending from the service-chamber to connect to the closet, and a main flushing-valve controlling said outlet, of an auxiliary flushing-outlet, a valve controlling the same, and a hollow submergible air chamber or float connected to said valve and having a leak-hole to permit the escape of air therefrom, substantially as and for the purpose set forth.

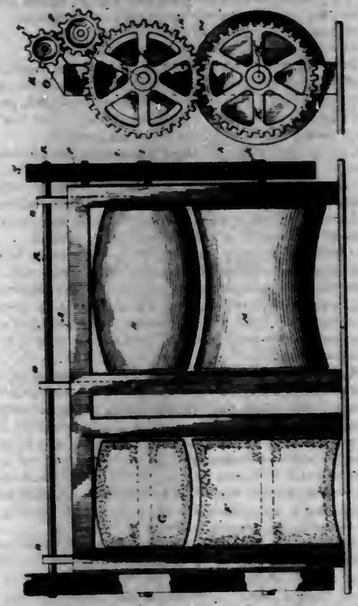
3. In a water-closet tank, the combination, with a flushing or service chamber, of the flushing-outlet *h*, having the main valve *i*, with the auxiliary outlet *r*, valve *s*, and perforated float *t*, substantially as and for the purpose set forth.

4. In a water-closet tank, the combination, with the chambers *c d*, having a communicating passage at the base, of a valve *g*, controlling said passage, a flushing-outlet *h* from chamber *d*, and valve *i* controlling the same, operative connections between said valves arranged to close one when the other is opened, auxiliary outlet *r*, valve *s*, and perforated float *t*, substantially as and for the purpose set forth.

5. In a water-closet tank, the combination, with a reservoir-chamber and a flushing-chamber, a valve for controlling the passage of water from one to the other, a flushing-outlet from the service-chamber and a main flushing-valve controlling said outlet, of an auxiliary valve for producing a forewash, consisting of an outlet leading from the flushing-chamber to the flushing-pipe, with a hinged flap *s* covering said outlet, and a perforated air chamber or float *t* directly attached to said flap, substantially as herein shown and described.

6. In a water-closet tank, the flushing-outlet *h*, having its top adapted as a seat for the main flushing-valve, with the lateral auxiliary outlet *r*, an auxiliary valve controlling said outlet, and a perforated air-chamber connected to said auxiliary valve, substantially as set forth.

408,219. **ROLL.** CORNELIUS J. CURTIN, High Falls, N. Y. Filed Jan. 30, 1888. Serial No. 262,157. (No model.)



Claim.—1. The rolls having the concave peripheral surfaces, in combination with the proximate rolls having the convex peripheral surfaces, for the purpose set forth, substantially as described.

2. The pairs of rolls geared together and adapted to rotate in unison, and the driving-shaft R, geared to said rolls, all in combination, substantially as described.

3. The combination of the frame or housing, the two pairs of rolls mounted in opposite ends thereof, each pair of rolls having meshed gear-wheels of the same diameter, and the driving-shaft journaled on the housing or frame and having the gears or pinions engaging the roll-gears, substantially as described.

4. The combination of the two pairs of rolls having the gear-wheels engaging each other, the idle gear-wheels engaging the roll-gears, and the driving-shaft having the gears engaging said idle-gears, substantially as described.

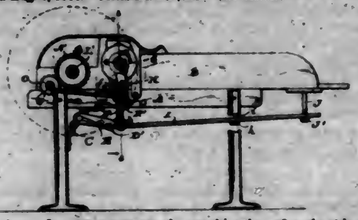
408,220. **FUEL-CARTRIDGE.** WILLIAM DALY, New York, N. Y. Filed June 8, 1888. Serial No. 276,488. (No model.)

Claim.—As an improved article of manufacture, a fuel-cartridge consisting of a metal casing 10, having an annular inwardly-projecting portion 20 in its bottom forming a drip-chamber, a central opening 11, formed in the portion 20, said casing formed with a horizontal annular inwardly-projecting bead 12 near the bottom, an asbestos filling provided with a central bore, the lower edge of said filling supported upon the bead 12, whereby a chamber 14 is formed between it and the bottom, and a detachable cover 16, provided with a central opening 17, aligning the bore in the filling, all arranged substantially as shown and described.

408,220.



408,221. **STRAW-CUTTER.** WILLIAM E. DAVIS, Racine, Wis., assignor to the S. Freeman & Sons Manufacturing Company, same place. Filed Aug. 6, 1888. Serial No. 282,031. (No model.)

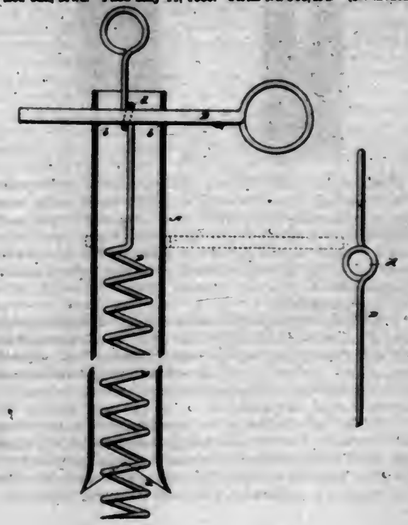


Claim.—In a straw-cutter, the combination of a shackle journaled in the machine-frame, vertical arms pivotally connected to the shackle and slotted to have loose play on the journals of the lower feed-roller, the upper feed-roller journaled to the arms, a spring-board fulcrumed on a cross-brace of the machine, a rod arranged to hold the spring-board in contact with said cross-brace, a stem depending from the feed-box to pass through the rear end of the spring-board, and a set-nut arranged on the stem to impinge against said spring-board, substantially as set forth.

408,222. **COMPOSITION OF MATTER.** MARK L. DERRICK, Cleveland, Ohio. Filed June 21, 1888. Serial No. 277,230. (No specimens.)

Claim.—A new composition of matter, consisting of fibrous material, blood, water-proof gum, and creosote, substantially as set forth.

408,223. **DEVICE FOR SAMPLING HAY.** THOMAS R. DRAPER, Red Oak, Iowa. Filed May 11, 1888. Serial No. 310,431. (No model.)



Claim.—1. A hay sampling and ventilating device comprising a tube having one end provided with a cutting-edge and an auger adapted to enter said tube, substantially as specified.

2. The combination, with a tube having one end provided with a cutting-edge, of an auger adapted to enter said tube and suitable means for fixing the auger to the tube, substantially as specified.

3. The combination, with a tube having one end provided with a cutting-edge and its opposite end provided with diametrically-arranged apertures, of an auger adapted to enter said tube and having an *eye* or aperture adapted to coincide with those of the tube, and a key or pin adapted to enter the respective apertures, so as to fix the auger with respect to the tube, substantially as specified.

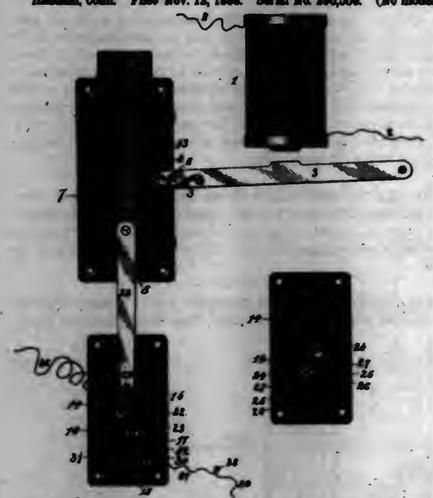
4. The combination, with a tube having one end provided with a cutting-edge and its opposite end provided with registering apertures, of an auger adapted to enter said tube and having an eye or aperture to coincide with those in the tube, and a round or pin passing through the respective apertures and extended from the tube to form handles, substantially as specified.

5. The combination, with the tube having one end provided with a cutting-edge and its opposite end provided with a removable handle or arm, of an auger adapted to enter said tube and be fixed by said handle, substantially as specified.

6. A hay-sampling device comprising a tube having one end provided with a cutting-edge, an auger arranged in said tube, and a round or rod having an eye at one end and adapted to serve the functions of removably fixing the auger in the tube, of serving as a handle, and of staying the tube while the auger and core are being withdrawn, substantially as specified.

7. A hay-sampling device comprising a tube having one end provided with a cutting-edge, an auger arranged in said tube, and a handle for removably fixing the auger in the tube, so as to have the entering point of the auger project slightly beyond the cutting-edge of the tube, substantially as specified.

408,224. ELECTRIC SIGNALING APPARATUS. WILLARD EDDY, Haddam, Conn. Filed Nov. 12, 1888. Serial No. 290,558. (No model.)



Claim.—1. In a differentiating switch, a switch-pin and mechanism for imparting to said switch-pin variable reciprocating movements, in combination with a system of three channels or mechanically-defined courses determining the lateral movements of said pin, and having a common terminal pocket and gates of intercommunication between one of said channels and each of the other of said channels at unequal distances from said common pocket, substantially as and for the purpose specified.

2. In a differentiating switch, a switch-pin and mechanism for imparting a variable reciprocating motion to said switch-pin, in combination with a switch-plate having for the guidance of said switch-pin a main channel, and two lateral channels branching from said main channel and returning to different portions of the same, substantially as and for the purpose specified.

3. A switch-pin, mechanism for imparting reciprocating motion to said switch-pin, a switch-plate having three channels of unequal length, which are provided with a common terminal pocket and with two movable gates between one of said channels and each of the other of said channels, in combination with alarm mechanism which is connected with the shortest of said channels, substantially as and for the purpose specified.

4. A switch-pin and mechanism which imparts to said switch-pin reciprocating movements of greater or less amplitude, as desired, in combination with a switch-plate having three intercommunicating channels of unequal lengths, said channels being provided with a common terminal pocket and with gates located at unequal distances from said common pocket and determining the course of said pin in and among said channels, according to the amplitude of said reciprocating movements, substantially as and for the purpose specified.

5. A switch-plate which has a system of intercommunicating channels, consisting of a main channel and two lateral channels, all said channels having a common terminal pocket, and said lateral channels having gates or apertures of intercommunication with said main channel at points unequally distant from said common pocket, in combination with an electric motor, and intermediate mechanism, whereby motion may be communicated from said motor to said switch-pin, substantially as and for the purpose specified.

6. A reciprocating switch-pin, an electric motor, and a connection between said motor and said pin, in combination with a system of guides and gates limiting the reciprocating movements of said pin to three intercommunicating courses of unequal lengths, and an alarm which is connected with the shortest of said courses, substantially as and for the purpose specified.

7. A system of guides, a switch-pin which is movable therein through three separate courses of unequal lengths, and an electric motor actuating said pin, in combination with an alarm which is excited when said pin reaches a certain position in the shortest of said courses, substantially as and for the purpose specified.

8. An electric motor, a sliding bar which is actuated thereby, and a switch-plate which has three intercommunicating channels of unequal lengths, in combination with a switch-pin which is movable in said channels, and a connecting-link between said sliding bar and said switch-pin, substantially as and for the purpose specified.

9. A switch-plate which has three intercommunicating channels of unequal lengths, a switch-pin which is adapted to circulate in said channels, an electric motor, and intermediate mechanism whereby motion may be communicated from said motor to said switch-pin, in combination with an alarm which is connected with the shortest of said channels, substantially as and for the purpose specified.

10. A switch-plate which has three intercommunicating channels of unequal lengths, a switch-pin fitted to slide in and among said channels, an electric motor, an intermediate mechanism which actuates said switch-pin, in combination with an alarm, and mechanism whereby said alarm is brought into action whenever said switch-pin reaches a predetermined point in the shortest of said channels, substantially as and for the purpose specified.

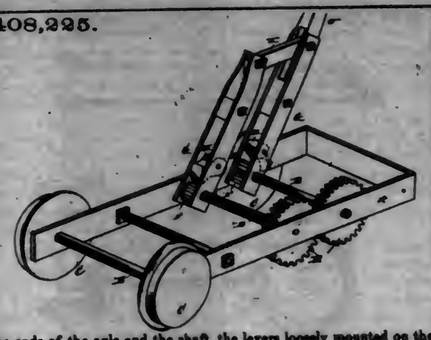
11. A switch-pin which has a system of intercommunicating channels of unequal lengths provided with gates, a switch-pin which is fitted to slide in and among said channels, an electric motor, intermediate mechanism whereby said motor may impart to said switch-pin reciprocating movements of variable amplitude, as desired, and an alarm, in combination with mechanism for working said alarm, and mechanism whereby said switch-pin is brought into connection with said alarm-working mechanism whenever said switch-pin reaches a predetermined position in said system of intercommunicating channels, substantially as and for the purpose specified.

12. A switch-plate which has a system of three intercommunicating channels—namely, a central or main channel and two lateral channels of unequal lengths—a switch-pin which is movable in said channels, an electric motor, intermediate mechanism whereby said motor can move said switch-pin, an alarm, and mechanism whereby said alarm is brought into action whenever said switch-pin reaches a predetermined point in the shortest of said lateral channels, all located at one of several stations on a single line, in combination with a similar equipment of like elements similarly connected to said line and located at each other of said stations, substantially as and for the purpose specified.

13. A system of channels which have local apertures of intercommunication, a switch-pin which is movable in said system, an alarm which is brought into action when said switch-pin reaches a predetermined point in said system, and an electric motor which may actuate said switch-pin, all located at one of several stations on a single-line wire, in combination with a system of channels which have differently-located apertures of intercommunication, a switch-pin, an alarm, and an electric motor, all located at another of said stations, said motors being connected in series with each other and with a central office which is provided with a generator and circuit-closer, substantially as and for the purpose specified.

408,225. HAND-CAR. WILLIAM H. BRIMA, Farmington, Ark. Filed May 11, 1889. Serial No. 310,416. (No model.)

Claim.—The combination, with the axle and the transverse shaft, of the intermeshing gear-wheels secured thereon, the spur-pinions at the ends of the axle and the shaft, the levers loosely mounted on the axle and the shaft and having their lower ends bifurcated, the connecting-rod between the upper ends of the levers, and the reversible pawls pivoted within the bifurcations at the lower ends of said levers and engaging the spur-pinions, as specified.



408,226. HORSESHOE-BLANK-CUTTING MACHINE. ERWIN PIEPER, Troy, N. Y. Filed Nov. 24, 1888. Serial No. 291,787. (No model.)



Claim.—1. In a horseshoe-blank-cutting machine, the combination of a set of coacting creasing-rolls and a single rotatable saw arranged at right angles to the axes of the rolls, and at one side thereof, to sever a bar of metal longitudinally as it emerges from said rolls, as set forth.

2. In a horseshoe-blank-cutting machine, the combination of a set of coacting creasing-rolls, one having a V-shaped periphery and a single vertical rotatable saw arranged in rear of said rolls at right angles to the axes of the rolls in the path of the bar of metal as it emerges from the latter to sever or divide said bar longitudinally in the middle of the crease formed by the rolls, substantially as described.

3. In a horseshoe-blank-cutting machine, the combination of a set of coacting creasing-rolls, one having a V-shaped periphery, and a single vertical rotatable saw arranged at one side of said rolls at right angles to the axes thereof and in the vertical plane of the apex of the periphery of the V-shaped roll, substantially as and for the purpose described.

4. In a horseshoe-blank-cutting machine, the combination of a set of creasing-rolls, a single rotatable saw arranged at one side of said rolls and at right angles to the axes thereof, and a fixed guide intermediate of the rolls and saw, with one end terminating in close proximity to the pass of the rolls, and having a longitudinal passage therein through which the bar of metal passes as it emerges from the rolls, substantially as and for the purpose described.

5. In a horseshoe-blank-cutting machine, the combination of a set of creasing-rolls, a horizontal fixed guide located at one side of said rolls and having a longitudinal passage extending therethrough and a vertical slot, and a rotatable vertical saw operating in the slot of said guide, substantially as and for the purpose described.

6. In a horseshoe-blank-cutting machine, the combination of a longitudinal receptacle or box having a movable bottom, a fixed support arranged below said receptacle to receive the bar of metal therefrom, a crescent rotatable saw arranged to cut said bar of metal transversely as it rests on said support, and mechanism for reciprocating said bottom of the receptacle laterally, substantially as and for the purpose described.

7. In a horseshoe-blank-cutting machine, the combination of a horizontal receptacle or box having a movable bottom, a series of fixed horizontal supports arranged transversely across the receptacle beneath the same to receive the bar of metal therefrom when the bottom is withdrawn from the receptacle, a series of rotatable crescent-saws arranged in relation to said supports to cut the bar of metal transversely as it rests on the supports, and mechanism for reciprocating said bottom of the receptacle laterally, substantially as and for the purpose described.

8. In a horseshoe-blank-cutting machine, the combination of a longitudinal box or receptacle having an open lower side, a laterally-reciprocating bottom arranged to move beneath said receptacle to alternately open and close the latter throughout its entire length, a series of horizontal supports below said movable bottom, a series of crescent-saws located in relation to said supports to cut the bar of metal transversely when it rests on said supports, and mechanism for reciprocating said bottom of the receptacle laterally, substantially as and for the purpose described.

9. In a horseshoe-blank-cutting machine, the combination of a longitudinal receptacle or box having an open lower side, a laterally-reciprocating bottom arranged to close and open the lower side of the receptacle, a series of horizontal fixed supports below the receptacle, a series of rotatable crescent-saws arranged in line with the supports, and means, movable with said reciprocating bottom, for forcing the bar of metal laterally on the supports toward the saws, substantially as and for the purpose described.

10. In a horseshoe-blank-cutting machine, the combination of a longitudinal receptacle or box, a series of fixed horizontal supports arranged transversely below said receptacle, a laterally-reciprocating bottom arranged to close and open the receptacle and having the depending flanges or ribs, which ride on said supports, and a series of rotatable crescent-saws arranged in line with the supports, substantially as and for the purpose described.

11. In a horseshoe-blank-cutting machine, the combination of a longitudinal receptacle or box, a laterally-reciprocating bottom arranged close to the bottom of the receptacle to alternately open and close the same, a series of horizontal supports located transversely below the receptacle and adjustably fixed at one end to a rigid supporting-bar, and a series of rotatable crescent-saws adjustably fixed to a common shaft or arbor to be movable lengthwise thereon, substantially as and for the purpose described.

12. In a horseshoe-blank-cutting machine, the combination of a longitudinal receptacle or box, a laterally-reciprocating bottom having a depending flange, a series of transverse supports fixed at one end and having a longitudinal open slot in its other end, and a series of rotatable crescent-saws arranged to enter the slots in the free ends of said supports, substantially as and for the purpose described.

13. In a horseshoe-blank-cutting machine, the combination of a longitudinal receptacle or box, a laterally-reciprocating bottom arranged close to the lower side thereof, a series of horizontal fixed supports, a longitudinal saw-arbor carrying a series of rotatable crescent-saws, an eccentric-shaft connected by pitmen with said reciprocating bottom, and a counter-shaft geared to the saw-arbor and eccentric-shaft, substantially as and for the purpose described.

14. In a horseshoe-blank-cutting machine, the combination of a suspended longitudinal receptacle or box, a laterally-movable bottom, a series of horizontal supports arranged transversely below said receptacle, a longitudinal saw-arbor carrying a series of rotatable crescent-saws, an eccentric-shaft having its eccentric-straps connected by intermediate pitmen with the reciprocating bottom, a sectional counter-shaft geared to the saw-arbor and eccentric-shaft, and a clutch controlled by a treadle for coupling said sectional counter-shaft, substantially as and for the purpose described.

15. In a horseshoe-blank-cutting machine, the combination of a set of coacting creasing-rolls, a longitudinal receptacle or box arranged in line with said rolls to receive the bar of metal therefrom, a rotatable rip-saw intermediate of said receptacle and the creasing-rolls for dividing said bar of metal longitudinally, and a series of rotatable crescent-saws for cutting the bar of metal transversely into

suitable lengths before said bar is discharged from the machine, substantially as described, for the purpose set forth.

16. In a horseshoe-blank-cutting machine, the combination of a set of coacting creasing-rolls, a longitudinal receptacle arranged at one side thereof to receive the bar of metal after it passes through the rolls, a rip-saw intermediate of said receptacle and the rolls, and a guide between the saw and receptacle for directing the bar of metal into the receptacle after it is split or divided longitudinally by the rip-saw, substantially as and for the purpose described.

17. In a horseshoe-blank-cutting machine, the combination of a set of creasing-rolls for forming a longitudinal crease or groove in a bar of metal, a vertical rotatable rip-saw for dividing said metal bar longitudinally along the middle of the crease therein, and a series of rotatable crescut-saws rotating in a plane at right angles to the rip-saw for cutting said metal bar transversely into suitable lengths, substantially as and for the purpose described.

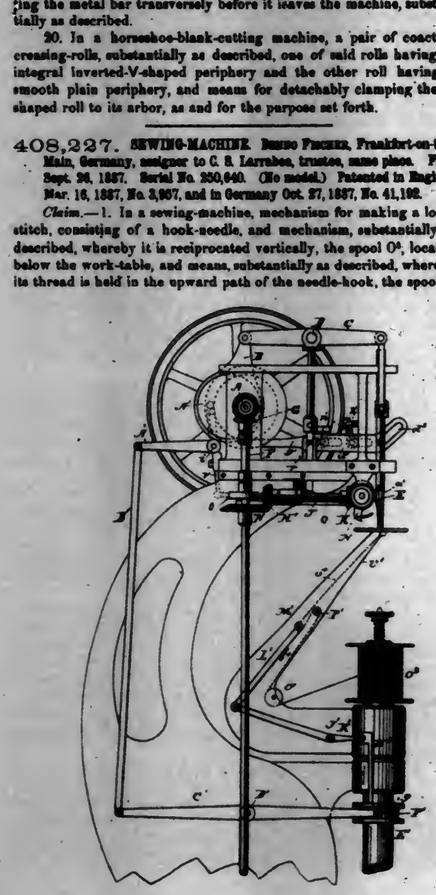
18. In a horseshoe-blank-cutting machine, the combination of a set of coacting creasing-rolls, an open receptacle or box arranged in line with said rolls for receiving the metal bar as it emerges therefrom, a vertical rip-saw between the rolls and receptacle, an open-ended conical guide fixed to the receiving end of said receptacle and terminating close to the saw, and a series of rotatable crescut-saws for cutting the metal bar transversely after it leaves the receptacle, substantially as and for the purpose described.

19. In a horseshoe-blank-cutting machine, the combination of a set of coacting creasing-rolls, a horizontal fixed guide arranged close up to said rolls and having a longitudinal passage and a vertical slot, a vertical rip-saw operating in said slot of the guide, a longitudinal receptacle or box in rear of and in line with said guide, an open-ended conical guide intermediate of the rip-saw and receptacle to receive the metal bar from the horizontal guide and direct the same into the receptacle, and a series of rotatable crescut-saws for cutting the metal bar transversely before it leaves the machine, substantially as described.

20. In a horseshoe-blank-cutting machine, a pair of coacting creasing-rolls, substantially as described, one of said rolls having an integral inverted-V-shaped periphery and the other roll having a smooth plain periphery, and means for detachably clamping the V-shaped roll to its arbor, as and for the purpose set forth.

408,227. SEWING-MACHINE. Bruno Fischer, Frankfort-on-the-Main, Germany, assignor to C. S. Larrabee, trustee, same place. Filed Sept. 26, 1887. Serial No. 250,040. (No model.) Patented in England Mar. 16, 1887, No. 3,967, and in Germany Oct. 27, 1887, No. 41,192.

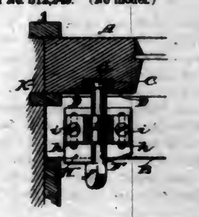
Claim.—1. In a sewing-machine, mechanism for making a lock-stitch, consisting of a hook-needle, and mechanism, substantially as described, whereby it is reciprocated vertically, the spool O^2, located below the work-table, and means, substantially as described, whereby its thread is held in the upward path of the needle-hook, the spool Z, located between the jaws *l m*, in close proximity to the path of the needle above the work-table, the bolt *y*, one end of which bears against the spool Z, and means, substantially as described, whereby said bolt is reciprocated intermittently, and the loop-carrier N, located upon the squared shaft L and capable of a sliding movement thereon, mechanism, substantially as described, for rotating the shaft, the lever Q, pivotally connected to the loop-carrier N, and mechanism, substantially as described, whereby said lever is oscillated, all as set forth.



2. In a sewing-machine, mechanism for making and tightening a lock-stitch, consisting of a hook-needle, and mechanism, substantially as described, whereby it is reciprocated vertically, the spool O^2, located below the work-table, and means, substantially as described, whereby its thread is held in the upward path of the needle-hook, a take-up mechanism, whereby said thread is tightened after the stitch is made, said mechanism consisting of the rollers O P, connecting-rod L', roller M, the lever K', sleeve F, mounted on shaft E, and mechanism, substantially as described, whereby said sleeve is reciprocated, in combination with the spool Z, located between the jaws *l m*, in close proximity to the path of the needle above the work-table, the bolt *y*, one end of which bears against the spool Z, and means, substantially as described, whereby said bolt is reciprocated intermittently, a loop-carrier N, and mechanism, substantially as described, whereby said loop-carrier is rotated across the line of said thread, and mechanism whereby it is reciprocated during its rotation toward and from the spool Z, all substantially as and for the purposes set forth.

3. In a sewing-machine, mechanism for making a lock-stitch, consisting of a hook-needle, and mechanism, substantially as described, whereby it is reciprocated vertically, the spool O^2, located below the work-table, and means, substantially as described, whereby its thread is held in the upward path of the needle-hook, the spool Z, the loop-carrier N, located upon the squared shaft L and capable of a sliding movement thereon, mechanism, substantially as described, for rotating the shaft, the lever Q, pivotally connected to the loop-carrier N, and mechanism, substantially as described, whereby said lever is oscillated, said spool Z being located between the jaws *l m* and in combination with the clamping-bolt *y*, with its spring, the bracket X, attached to the frame of the machine, the beveled piece O^3, located upon the farther end of the bolt *y*, the bell-crank V, provided with the beveled end located in contact with the beveled piece O^3, and means, substantially as described, whereby the beveled end of said bell-crank is reciprocated, as and for the purposes set forth.

408,228. FASTENER FOR THE MEETING-RAILS OF SASHES. Grant Fitch and Robert W. Williams, Milwaukee, Wis. Filed May 27, 1889. Serial No. 312,249. (No model.)



Claim.—1. In a sash fastener and tightener, the combination of the sash A, having a longitudinal groove C, with the facing-plate D, provided with a longitudinal slot having an enlargement *d* and a covering-plate E, and a sash B, having a shank or pin F, provided with a disk or projection G, fitting within the groove C, substantially as described.

2. In a sash fastener and tightener, the combination, with the sash A, having a longitudinal groove C, of a slotted facing-plate D, and the sash B, having a shank or pin F, provided with a disk or projection G, fitting within the groove C, and having a thumb-piece *f*, a plate H, having at its forward end a cam-shaped edge, and a saddle I, substantially as described.

3. In a sash fastener and tightener, the combination, with the sash A, having a longitudinal groove C, of a slotted facing-plate D, the sash B, having a shank or pin F, provided with a disk or projection G, fitting within the groove C, and having a thumb-piece *f*, a plate H, having at its forward end a cam-shaped edge, said plate being provided with slots *h*, and a saddle I, provided with lateral lugs and screws *i*, substantially as set forth.

4. In a sash fastener and tightener, the combination of the sash A, having a longitudinal groove C, with the facing-plate D, provided with a longitudinal slot having an enlargement *d* and covering-plate E, a sash B, having a shank or pin F, provided with a disk or projection G, fitting within the groove C, and having a thumb-piece *f*, a plate H, provided at its forward end with a cam-shaped edge and having slots *h*, and a saddle I, provided with lateral lugs and screws *i*, substantially as described.

408,229. STEAM-MOTOR. Thomas J. Framer, Lyons, Iowa. Filed Sept. 27, 1888. Serial No. 286,616. (No model.)



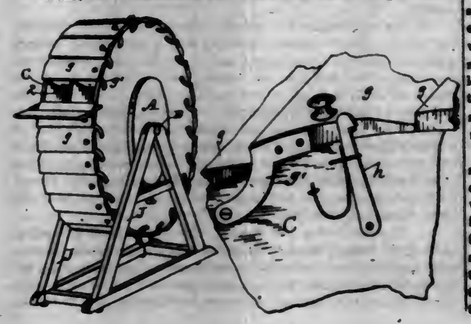
Claim.—1. The combination of the front frame C, provided with the circular rear plate D and plate H, the carrying-wheels G, axle G', rear frame A, provided with ways J, carrying-wheels E', axle F, reach D', and pivot E, substantially as shown, and for the purpose described.

2. The combination of the front frame C, suitably supported upon carrying-wheels G and provided with the rear transverse circular rack H, the rear frame A, suitably supported upon the carrying-wheels E' and provided with the pinion I, means for rotating said pinion, reach D', and pivot E, substantially as shown, and for the purpose described.

3. The combination of the front frame C, suitably supported upon carrying-wheels G and provided with the rear circular rack H, and adapted to carry the boiler L, cylinders L' and their adjunctive parts, the rear frame A, suitably supported upon carrying-wheels E', pinion I, adapted to engage and move the rack H, means for rotating said pinion, transverse rack T', pinion W, and means for locking and means for actuating said last-named pinion, reach D', and pivot E, substantially as shown, and for the purpose described.

4. The combination of frame C, axle G', wheels G, provided with internal gear P, braces O O, seated on said frame, driving-shaft N', journaled on said braces and provided with elbow-crank N, pinions R, seated on shaft N' and adapted to engage gear P at or near the top of wheels G, respectively, inclined cylinders L', and pistons M, pivotally attached to said elbow-crank, substantially as shown, and for the purpose described.

408,230. ROTATING PIGEON-HOLE CASE. George A. Goodenow, Cedar, Iowa. Filed Nov. 5, 1888. Serial No. 289,965. (No model.)



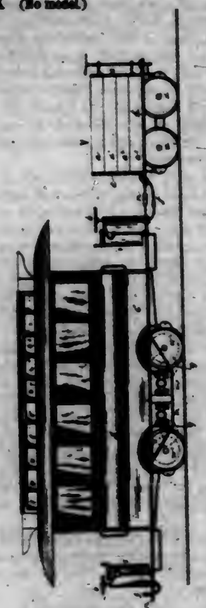
Claim.—1. In combination with a cylindrical and vertically-rotative pigeon-hole case having radial partitions and pockets, hinged doors or pocket-covers that are thicker at their hinged edges than at the free front edges, and thereby adapted to be utilized as shelves when open.

2. The hinge-irons *g'*, in combination with the doors *g* and the sides C of a vertically-rotating case having radial partitions and pockets, for the purposes stated.

3. A vertically-rotating case having an annular shoulder on its side in concentric position with its axis, in combination with a stand having an adjustable brake device adapted to engage the said shoulder, in the manner set forth, for the purposes stated.

4. A cylindrical vertically-revolving case having radial pockets and covers hinged to its sides to close the pockets and to project radially when the pockets are open to serve as shelves, in combination with a portable stand, and mechanism for holding the case stationary at any point desired.

408,231. MEANS FOR PROPELLING VEHICLES BY SECONDARY BATTERIES. William W. Gibbon, Haverford College, assignor to the Electro Dynamic Company, Philadelphia, Pa. Filed Apr. 5, 1889. Serial No. 306,114. (No model.)



Claim.—1. The combination of a wheeled vehicle having seats for passengers, one or more electric motors located on said vehicle and mechanically connected with a wheel or axle thereof, a second wheeled vehicle mechanically connected with the first vehicle, a series of secondary batteries or accumulators located thereon, an electric circuit uniting the motors on one vehicle with the batteries on the other, and a switch or circuit-changer for varying the connection of the batteries with respect to said circuit, substantially as described.

2. The combination of a wheeled vehicle having seats for passengers, means for propelling said vehicle, consisting of one or more electric motors located thereon and mechanically connected with a wheel or axle thereof, a second wheeled vehicle mechanically connected with the first and moved thereby, a series of cells of battery located upon the second vehicle, an electric circuit uniting the batteries on one vehicle with the motors on the other, and suitable switches for varying the connection between said circuit and the motor and batteries, substantially as described.

3. The combination of a wheeled vehicle having seats for passengers, means for propelling said vehicle, consisting of one or more electric motors located thereon and mechanically connected with a wheel or axle thereof, a second wheeled vehicle connected with the first and moved thereby, superposed rows of cells of secondary battery located upon said second vehicle inside the plane of the wheels, an electrical circuit uniting the batteries on one vehicle with the motors on the second, and one or more switches for varying the connection between the said circuit and the batteries and motors, substantially as described.

4. The combination of a vehicle having four or more wheels, suitable bearings or axles therefor, means for propelling said vehicle, consisting of two electric motors located thereon and mechanically connected to the wheels or axles, respectively, seats for passengers upon said vehicles, a second wheeled vehicle mechanically connected with the first vehicle and moved thereby, a series of cells of secondary battery located thereon, an electric circuit uniting the motors on one vehicle with the batteries on the other, and a switch or circuit-changer for varying the connection between said circuit and the motors and batteries, substantially as described.

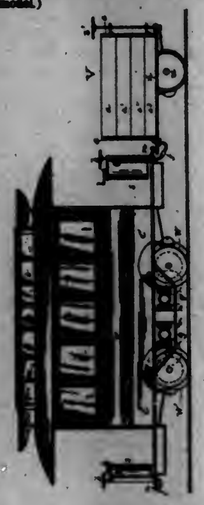
5. The combination of a vehicle having four or more wheels, suitable bearings or axles therefor, means for propelling said vehicle, consisting of two electric motors located thereon and mechanically connected to the wheels or axles, respectively, seats for passengers upon said vehicle, a second wheeled vehicle mechanically connected with the first vehicle and moved thereby, a series of cells of secondary battery located upon said vehicle in superposed rows, an electrical circuit uniting the motors on one vehicle with the batteries on the other, and a switch or circuit-changer for varying the connection between said circuit and the motors and batteries, substantially as described.

6. The combination of a wheeled vehicle having seats for passengers and entrances thereto from opposite ends, one or more series-wound electric motors located on said vehicle and mechanically connected with a wheel or axle thereof, a second wheeled vehicle mechanically connected with the first vehicle and moved thereby and therewith, a series of cells of secondary battery located thereon, an electric circuit uniting the motors on one vehicle with the batteries on the other, and a switch or circuit-changer for varying the connection of the circuit, batteries, and motors with respect to each other, substantially as described.

7. The combination of a wheeled vehicle, one or more series-wound electric motors located on said vehicle and mechanically connected with a wheel or axle thereof, a second wheeled vehicle mechanically connected with the first vehicle and moved thereby and therewith, a series of cells of secondary battery located on said second vehicle, an electrical circuit uniting the motors on one vehicle with the batteries on the other through the medium of a flexible electrical connection between the two said vehicles, and suitable switching apparatus for varying the connection of said circuit with respect to the batteries and motors, substantially as described.

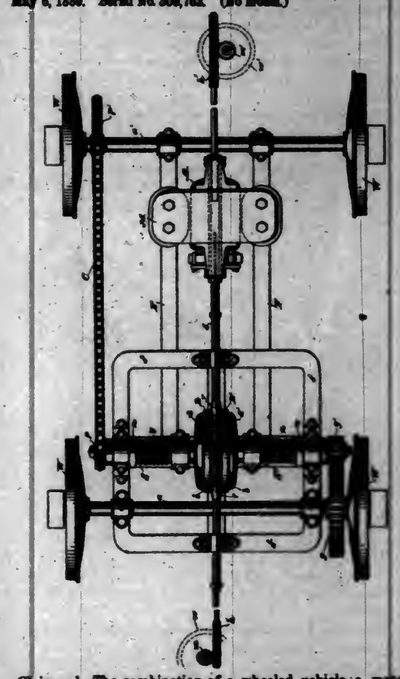
8. The combination of a wheeled vehicle having seats for passengers and entrances at opposite ends, one or more electric motors located thereon and mechanically connected with a wheel or axle thereof, a second wheeled vehicle mechanically connected with the first vehicle and moved thereby and therewith, a series of cells of secondary battery located thereon, an electric circuit uniting the motors on one vehicle with the batteries on the other, and suitable switching apparatus for varying the number of cells in circuit for connecting said cells in parallel and for reversing the polarity of the motor, field, and armature coils with respect to each other, substantially as described.

408,282. MEANS FOR PROPELLING VEHICLES BY SECONDARY BATTERIES. WILLIAM W. GIBSON, Haverford College, assignor to the Electro Dynamic Company, Philadelphia, Pa. Filed Apr. 12, 1889. Serial No. 306,922. (No model.)



Claim.—The combination of a wheeled vehicle having seats for passengers, one or more electric motors located on said vehicle and mechanically connected with a wheel or axle thereof, a second vehicle having two wheels mechanically connected to and partially supported by the first vehicle, a series of cells of secondary batteries or accumulators located thereon, an electric circuit uniting the motors on one vehicle with the batteries on the other, and suitable switching apparatus for varying the connection of the batteries with respect to said circuit, substantially as described.

408,283. VEHICLE-MOTOR. WILLIAM W. GIBSON, Haverford College, assignor to the Electro Dynamic Company, Philadelphia, Pa. Filed May 6, 1889. Serial No. 309,762. (No model.)



Claim.—1. The combination of a wheeled vehicle, a motor for propelling said vehicle located thereon, and means for applying the movement of said motor to the running-gear of said vehicle, consisting of two parallel friction-disks mechanically connected with said running-gear, one or more friction-rollers operating upon the faces of said disks and connected with the moving parts of the motor, and means for varying the radial point of contact between said roller and disks, substantially as described.

2. The combination of a wheeled vehicle, a motor for propelling said vehicle located thereon, and means for connecting said motor to the running-gear of said vehicle, consisting of two parallel friction-disks mechanically connected to said running-gear, two friction-rollers mechanically connected with the moving part of said motor, and means for bringing either roller into contact with said friction-disks to produce movement in either direction, substantially as described.

3. The combination of a wheeled vehicle, a motor for propelling said vehicle located thereon, operating with a substantially uniform speed and direction of movement, and means for communicating the movement of said motor to the running-gear of said vehicle to produce a variation in speed of movement in either of two directions, said means consisting of two parallel friction-disks mechanically connected to the running-gear of the vehicle, two friction-rollers fixed to a shaft located between said friction-disks and adjustably connected with the moving part of said motor, and means for bringing either of said friction-rollers into contact with the opposing faces of said friction-disks at varying but equidistant radial points on both said disks, substantially as described.

4. The combination of a wheeled vehicle, a motor for propelling said vehicle located thereon, operating with a substantially uniform speed and direction of movement, and means for communicating the movement of said motor to the running-gear of said vehicle to produce a variation in speed of movement in either of two directions, said means consisting of two parallel friction-disks mechanically connected to the running-gear of the vehicle, a spring for each disk acting to force said disks toward each other, a supplemental disk and ball bearings between each spring and friction-disk, two friction-rollers fixed to a shaft located between said friction-disks and adjustably connected with a moving part of said motor, and gear-teeth and gear-wheels at each end of said shaft for imparting a longitudinal movement to said shaft, substantially as described.

5. The combination of a wheeled vehicle, a motor for propelling said vehicle located thereon, and means for connecting said motor to the running-gear of said vehicle, consisting of one or more friction-disks mechanically connected to said running-gear, two friction wheels or rollers mechanically connected with the moving part of said motor, and means for bringing either roller into contact with said friction-disk to produce movement in either direction, substantially as described.

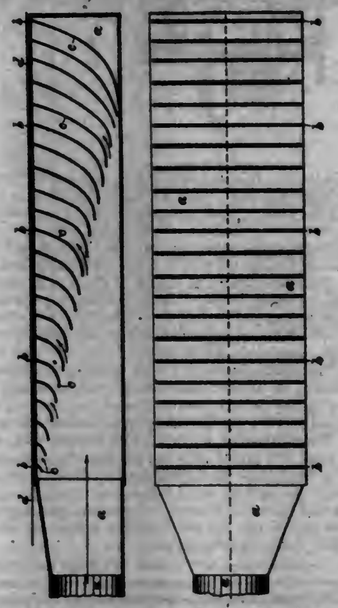
408,284. HARROW. JAMES T. HAMILTON, Council Bluffs, Iowa. Filed Nov. 20, 1888. Serial No. 292,247. (No model.)



Claim.—1. A tooth-bar for harrows, consisting of a tubular bar that has a longitudinal opening extending from one end to the other and coinciding perforations or notches at intervals adapted to admit teeth to be clamped fast therein by clamping the bar.

2. In a harrow, the combination of a clip B and a tooth with a tubular tooth-bar A, having an opening extending its entire length and coinciding perforations or notches, substantially as shown and described, for the purposes stated.

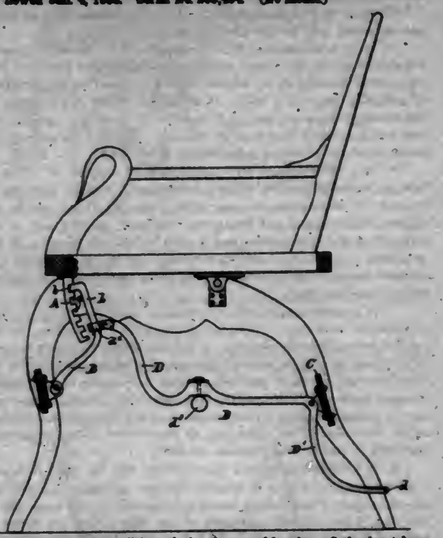
408,285. DEVICE FOR DRYING WARPS, PIECE GOODS, &c. FRANK HASKELL, Westbrook, Me. Filed Apr. 27, 1887. Serial No. 236,209. (No model.)



Claim.—1. A chamber or pipe closed at one end and open at the other, having in one of its sides narrow transverse openings, from the edges of which openings, nearer the closed end of the chamber, extend downward within the chamber curved pieces or wings, which gradually increase in length as they approach said closed end, substantially as described.

2. The rectangular box *a*, adapted to be connected at one end with a hot-blast pipe and closed at the other end, and having in one of its broader sides transverse openings *b* at suitable intervals from end to end, and within the chamber the curved pieces *c*, placed, respectively, at the rear of said openings *b*, and increasing in length from front to rear, substantially as set forth.

408,286. BARBER'S CHAIR. FREDERICK HEER, Cincinnati, Ohio, assignor to A. Gumbiteh & Co., same place. Filed Mar. 13, 1887. Renewed Jan. 4, 1889. Serial No. 295,654. (No model.)



Claim.—1. In a tilting chair, the combination of the boot lever D', journaled at the back of the chair and provided with foot-piece *d*, and loop d^3, pawl B, journaled at the front of the chair and extending through the said loop and provided with tooth *b*, and ratchet A, attached to the movable part of the chair and provided with notches *a*, substantially as and for the purposes specified.

2. In a tilting chair, the combination of the rack-bar attached to the chair, the pawl pivoted to the frame and engaging with the rack-bar and having an approximately vertical portion, and a lever having an approximately horizontal weighted portion having a sliding connection with the vertical portion of the pawl, whereby the pawl is normally locked by the lever, but may be withdrawn from the rack by moving the lever, substantially as set forth.

408,287. ROLLER-BEARING. RUDOLF W. HERZ, San Francisco, Cal. Filed Dec. 12, 1888. Serial No. 294,044. (No model.)



Claim.—1. In a roller-bearing, the combination, with a series of bearing-rollers, a series of separating-rollers bearing only on the bearing-rollers, and a ring bearing at its periphery on journals of the separating-rollers and at its inner side on journals of the bearing-rollers, of a smaller ring bearing at its periphery on the latter journals, substantially as set forth.

2. In a roller-bearing, the combination, with the series of bearing-rollers B, having journals B^3, the series of rollers C, bearing only on the rollers B and having journals C^3, and the ring H, bearing at its periphery on the journals C^3 and at its inner side on the journals B^3, of the ring J, bearing at its periphery on the journals B^3, substantially as shown and described, and for the purposes set forth.

3. In a roller-bearing, the combination, with a series of bearing-rollers, a series of separating-rollers bearing only on the bearing-rollers, a ring bearing at its inner side on journals of the separating-rollers, and a ring bearing at its periphery on said journals and at its inner side on journals of the bearing-rollers, of a smaller ring bearing at its periphery on the latter journals, substantially as set forth.

4. In a roller-bearing, the combination, with the series of rollers B, bearing on and projecting beyond the sleeves A' and D' and having journals B^3, the series of rollers C, bearing only on the rollers B at their projections and having journals C^3, the ring I, bearing at its inner side on the journals C^3, and the ring H, bearing at its periphery on the journals C^3 and at its inner side on the journals B^3, of the ring J, bearing at its periphery on the journals B^3, substantially as shown and described, and for the purposes set forth.

5. In a roller-bearing, the combination of a series of bearing-rollers bearing on the central journal and the bearing-casing and having journals bearing on the inner side of a ring and on the periphery of a smaller ring, and a series of separating-rollers bearing only on the bearing-rollers and having journals bearing on the periphery of said first-mentioned ring and on the inner side of a larger ring, all constructed and arranged substantially as set forth.

6. In a roller-bearing, the combination of a series of rollers B, bearing on and projecting beyond the sleeves A' and D', and having journals B^3, bearing on the inner side of the ring H and on the periphery of the ring J, and the series of rollers C, bearing only on the rollers B at their projections, and having journals C^3, bearing on the periphery of the ring H and on the inner side of the ring I, all constructed and arranged substantially as shown and described, and for the purposes set forth.

7. In a roller-bearing, the combination, with three coaxial rings of different diameters, of a series of bearing-rollers bearing on the central journal and the bearing-casing and having journals bearing on the inner side of the intermediate ring and on the periphery of the inner ring, and a series of separating-rollers keeping the bearing-rollers separate from each other and bearing only on the bearing-rollers and having journals bearing on the periphery of the intermediate ring and on the inner side of the outer ring, all constructed and arranged substantially as and for the purposes set forth.

8. In a roller-bearing, the combination, with the rings H, I, and J, of the series of rollers B, bearing on and projecting beyond the sleeves A' and D' and having journals B^3, bearing on the inner side of the ring H and on the periphery of the ring J, and the series of rollers C, bearing only on the rollers B at their projections, and keeping the rollers B separate from each other, and having journals C^3, bearing on the periphery of the ring H and on the inner side of the ring I, all constructed and arranged substantially as shown and described, and for the purposes set forth.

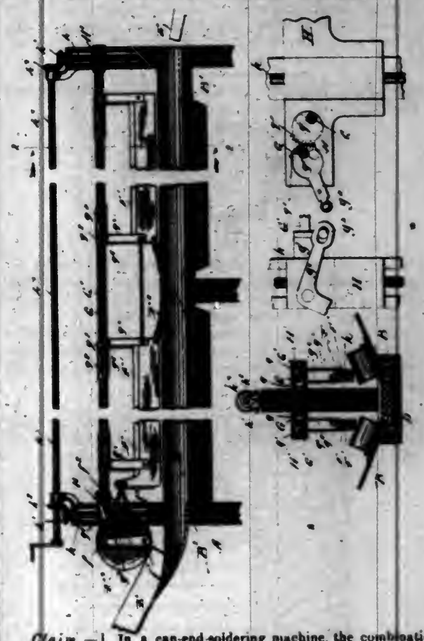
9. In a roller-bearing, the combination, between the shaft and casing, of sleeves upon the shaft and sleeves within the casing, three coaxial rings of different diameters, a series of bearing-rollers bearing on and projecting beyond said sleeve and having journals bearing on the inner side of the intermediate ring and on the periphery of the inner ring, and a series of separating-rollers bearing only on the bearing-rollers at their projections, each separating-roller on and between two bearing-rollers to keep the latter rollers separate from each other, and having journals bearing on the periphery of the intermediate ring and on the inner side of the outer ring, keeping the separating-rollers from contact with the casing, all constructed, arranged, and operating substantially as and for the purposes set forth.

10. In a roller-bearing, the combination, between the shaft A and the casing D, of the sleeves A' and D', located between the same planes, the rings H, I, and J, the series of rollers B, bearing on and projecting beyond the sleeves and having journals B^3, bearing on the inner side of the ring H and on the periphery of the ring J, and the series of rollers C, bearing only on the rollers B at their projections, each roller C on and between two rollers B to keep the latter rollers separate from each other, and having journals C^3, bearing on the periphery of the ring H and on the inner side of the ring I, keeping the rollers C from contact with the casing, all constructed, arranged, and operating substantially as shown and described, and for the purposes set forth.

11. A roller-bearing comprising the central journal, the bearing-casing, three coaxial rings of different diameters, a series of bearing-rollers bearing only portions of their lengths on the central journal and the bearing-casing and having journals bearing on the inner side of the intermediate ring and on the periphery of the inner ring, a series of separating-rollers keeping the bearing-rollers separate from each other and bearing only on the portions of the bearing-rollers not bearing on the central journal and the bearing-casing, and having journals bearing on the periphery of the intermediate ring and on the inner side of the outer ring, keeping the separating-rollers from contact with the casing, all constructed, arranged, combined, and adapted to operate substantially as and for the purposes set forth.

12. A roller-bearing comprising the shaft A, the casing D, the sleeves A' and D', located between the same planes, the series of rollers B, bearing on and projecting beyond the sleeves and having journals B^3, bearing on the inner side of the ring H and on the periphery of the ring J, the rollers C, keeping the rollers B separate from each other and bearing only on the rollers B at their projections beyond the sleeves, each roller C on and between two rollers B and having journals C^3, bearing on the periphery of the ring H and on the inner side of the ring I, the said ring H interposed between and bearing on the journals C^3 at its periphery and on the journals B^3 at its inner side, the said ring I bearing at its inner side on the journals C^3 and keeping the rollers C from contact with the casing, and the said ring J bearing at its periphery on the journals B^3, all constructed, arranged, combined, and adapted to operate substantially as shown and described, and for the purposes set forth.

408,238. SOLDERING-MACHINE. John G. Hodgson, Maywood, Ill., assignor to Edwin Norton, same place, and Oliver W. Norton, Chicago, Ill. Filed Oct. 15, 1888. Serial No. 288,061. (No model.)



Claim.—1. In a can-end soldering machine, the combination, with a solder bath and a track for supporting the cans as they roll through the same, of a pair of alternately rising and falling reciprocating devices for rolling the cans along said track, said can-rolling devices operating alternately upon the cans, so that the cans are rolled continuously through the bath of solder, substantially as specified.

2. The combination, with a track, of a pair of alternately reciprocating can-rolling devices, means for reciprocating said devices, and means for moving said devices out of contact with the cans as they make their backward movement, whereby the cans are rolled continuously, substantially as specified.

3. The combination, with a track having a raised portion, of a reciprocating can-holding device having a flexible portion to permit the cans to pass over the raised portion of the track, and means for raising and lowering said can-rolling device, substantially as specified.

4. The combination, with a flux bath, a solder bath, and a can-rolling track, of a pair of rising and falling bodily-reciprocating can-rolling devices, means for reciprocating said devices, and means for alternately moving them out of contact with the cans as each makes its backward movement, said can-rolling devices operating alternately upon the cans, so that the cans are rolled continuously through said solder bath, substantially as specified.

5. The combination, with a track, of a rising and falling bodily-reciprocating flexible can-rolling device, substantially as specified.

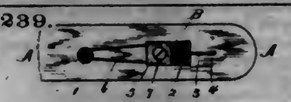
6. The combination of a solder bath, a track, and a pair of alternately rising and falling reciprocating flexible can-rolling devices, substantially as specified.

7. The combination, with a solder bath, of a track, a rising and falling reciprocating can-rolling device, means for reciprocating said can-rolling device in a rectilinear path in contact with the cans, and means for raising and lowering it, whereby said can-rolling device is given a four-motion movement, substantially as specified.

408,239. TRACE-HOLDER. George L. Hydorn, Lacona, N. Y. Filed June 6, 1889. Serial No. 313,377. (No model.)

Claim.—1. A trace-holder consisting of a wire coiled, then bent

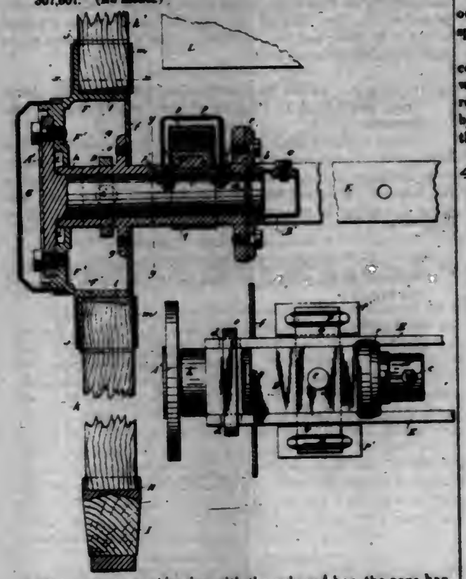
408,239.



to form an arch, and then bent to form a handle, and means for securing the same to the whiffletree, substantially as described.

2. A trace-holder consisting of a handle, an arch adjacent to the handle, a spring adjacent to the arch, and rearward arms, all constructed from a single piece of wire, and means for securing the arms to the whiffletree.

408,240. VEHICLE WHEEL AND AXLE. George Johnson, Battersea, County of Surrey, England. Filed Apr. 17, 1889. Serial No. 307,007. (No model.)



Claim.—1. In combination with the axle and box, the nave having the vertical flange F secured to the axle, and a horizontal flange extending inwardly toward the vehicle, said horizontal portion having bearings or sockets for the spokes.

2. In combination, the box, the axle having the head A', and the nave having the flange F secured thereto.

3. In combination, the box, the axle having the head A' and the nave, the nave having the vertical flange F secured thereto, the said parts being arranged and constructed with the oil-chamber at the outer end of the box, substantially as described.

4. In combination, the box, the axle, and the nave secured thereto, said axle having an oil-chamber at its front and rear end, substantially as described.

5. In combination, the axle, the nave secured thereto, the box for the axle, and an oil-chamber B', secured to the rear end of the box and over the end of the axle, substantially as described.

6. In vehicle-wheels, the combination, with spokes and suitable wedges, of half-sockets in which said spokes are held and ferrules or collars by which they are secured, substantially as described.

7. In the mounting of vehicle-wheels, the combination, with the nave and axle-box, of an axle-tree composed of two parallel bars adapted to hold said axle-box, substantially as set forth.

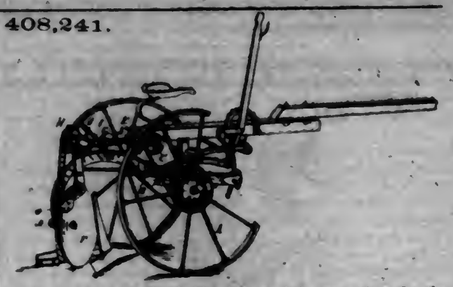
408,241. PLOW. John P. Kirk, Austin, Tex. Filed Nov. 10, 1888. Serial No. 290,456. (No model.)

Claim.—1. The combination, with a plow-carriage having a sprocket-wheel attached to the driving-wheel, and a rotary mold-board provided with a sprocket-hub having bearings in the plow-beam, of a shaft journaled upon the carriage-frame and provided with toggle





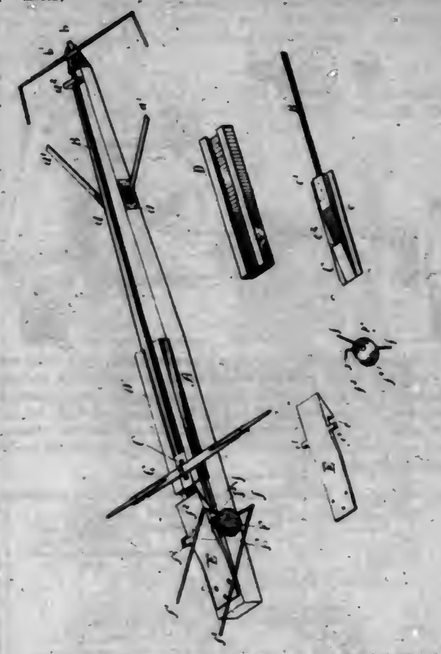
408,241.



or universal joints, and suitable chain or belt connections for the sprocket-wheels, as and for the purpose set forth.

2. A jointed shaft journaled upon a beam of a plow-carriage, composed of parts I G F C, the said parts I and C being provided with sprocket-wheels, the part F being in the form of a socket to receive the shaft G, and the said parts I G and F C being connected by knuckles and pins to form universal joints, substantially as and for the purpose set forth.

408,242. SAFETY POLE OR SHAFTS FOR VEHICLES. John P. Kleis, Texarkana, Ark. Filed May 18, 1889. Serial No. 311,325. (No model.)

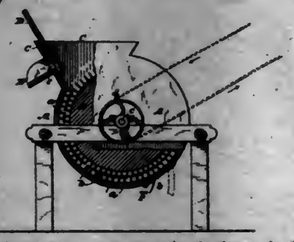


Claim.—1. The combination of the pole A, provided with the hitch-rein holders *a*, hitch-reins *a'*, perforated elevation or staple a^3, and the guide D, rod B, passing through perforated elevation a^3 and having on its front end the cap *b*, fitting over the front end of said pole, its rear end screwed into or otherwise secured to the lock-plate C, lock-plate C, having the base *c*, elevation *c'*, and lock-notch c^2, spring-plate E, having the catch projection *e* and lugs *e'*, wheels F, having their peripheries partly concentric and partly eccentric and provided with the upper and lower arms *f*, and lock-hooks f^3, said wheels being pivoted immediately under said lugs, said arms being provided with straps *f'*, substantially as shown and described.

2. The combination of the pole or shafts A, provided with hitch-rein holders *a*, hitch-reins *a'*, and guides D, rods B, having on their front ends the caps *b*, fitting over the front ends of said pole or shafts A, their rear ends attached to the lock-plate C, lock-plate C, having the base *c*, elevations *c'*, and lock-notches c^2, spring-plates E, having the catch projection *e* and lugs *e'*, wheels F, having their peripheries partly concentric and partly eccentric and provided with the upper and lower arms *f*, and lock-hooks f^3, said wheels being pivoted im-

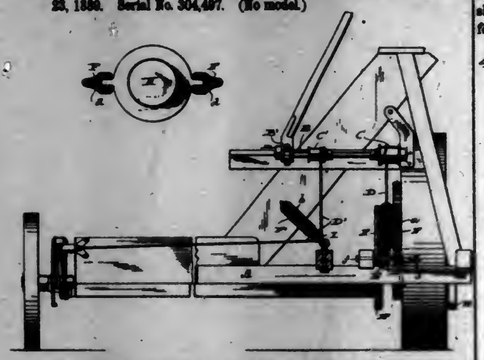
mediately under said lugs, and said arms being provided with straps *f*, substantially as shown and described.

408,243. MACHINE FOR SEPARATING SEED FROM PULP. LAFAYETTE LARD, Adrian, Mich. Filed Feb. 20, 1889. Serial No. 300,573. (No model.)



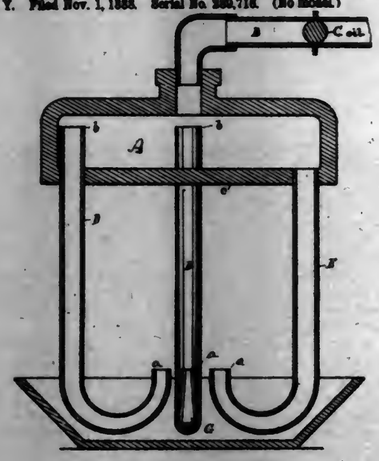
Claim.—A water-tight concave casing having projecting teeth and a rotating cylinder within said casing having projecting teeth, in combination with a hopper on the upper front part of said casing, said hopper having a port in its front side, and a sliding valve or gate closing said port, substantially as set forth.

408,244. HARVESTER. JOHN W. LATHER, Milwaukee, Wis., assignor to the Milwaukee Harvester Company, same place. Filed Mar. 23, 1889. Serial No. 304,497. (No model.)



Claim.—The combination, in a harvester, of the main wheel and its axle and sheave, a keeper hinged to the harvester-frame, a spring confined in the keeper, and a follower confining the spring therein, a sheave carried by the follower, and a lifting-shaft and cable, the latter extending from the lifting-shaft under the sheave of the follower and connected at its lower end to the periphery of the sheave on the main-wheel axle.

408,245. PETROLEUM-BURNER. FRANCIS G. LILLY, Jamestown, N. Y. Filed Nov. 1, 1888. Serial No. 289,716. (No model.)



Claim.—In a petroleum-burner, a vaporizing-retort provided with outlet burner-tubes having their outlet-openings from the retort situated above the bottom of the retort, and one outlet burner-tube having its outlet-opening from the retort flush with or below the bottom of the retort, substantially as set forth

408,246. CARTRIDGE-SHELL. WILLIAM R. LIDDELL, Arcata, Cal. Filed Dec. 27, 1888. Serial No. 294,792. (No model.)

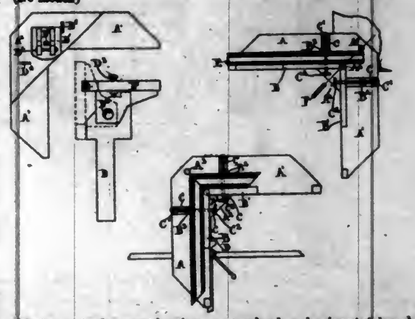


Claim.—As a new article of manufacture, a cartridge-shell made wholly of metal, the base thereof having a recess in its outer face and a projection on its inner face, and a block located within the shell and provided on its rear face with a recess adapted to receive the projection on the inner face of the base, and provided with a conical cavity in its front face, the said block being rigidly secured to the shell, substantially as set forth.

408,247. ART OF MANUFACTURING BINDER-TWINE. JAMES LYALL, New York, N. Y. Filed Aug. 30, 1888. Serial No. 284,166. (No specimens.)

Claim.—The method herein specified of manufacturing jute binder-twine, consisting in giving to the roving or thread a preliminary twist, flattening the same longitudinally and rolling up and twisting the flattened thread and winding it on spools or bobbins, and then sizing and drying the same to form binder-twine, substantially as set forth.

408,248. COMBINED MITER-BOX AND PICTURE-FRAME CLAMP. HORACE C. MARSH, Rockford, Ill. Filed Oct. 27, 1888. Serial No. 289,327. (No model.)

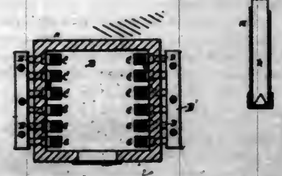


Claim.—1. In combination, a standard, a horizontal bracket jointed to the upper end thereof, as shown, and capable of being turned perpendicularly downward, a turn-table pivotally mounted upon said bracket, and a miter-box secured to said turn-table, substantially as described, and for the purpose specified.

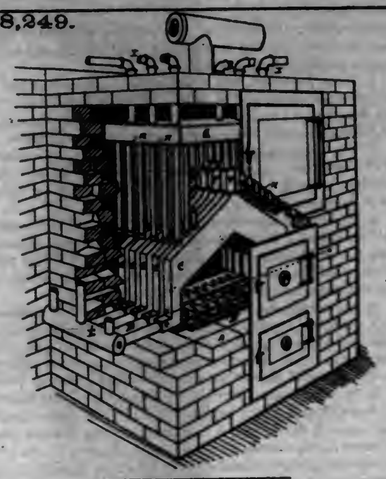
2. The herein-described combination miter-box and picture-frame vise, consisting essentially of a standard, a horizontal bracket jointed to the upper end thereof and capable of being turned perpendicularly downward, a turn-table pivotally mounted upon said bracket, as shown, and a miter-box rigidly secured to said turn-table and provided with saw-guide pins and vises, substantially as described, and for the purpose set forth.

408,249. WATER-HEATER. THOMAS G. G. MOJAT, Detroit, Mich. Filed Mar. 15, 1889. Serial No. 303,391. (No model.)

Claim.—A hot-water heater consisting of a series of cross-sections C, extending over the fuel-bed, having inflow and return pipes communicating therewith, a water-chamber G, located over said sections, pipes F, leading from the middle of said sections to said chamber, and drop-tubes leading downward from said chamber, substantially as set forth.



408,249.



408,250. VULCANITE PAVEMENT. WILLIAM C. MURDOCK, Washington, D. C., assignor to the National Vulcanite Company, New York, N. Y. Original application filed May 16, 1888. Serial No. 274,093. Divided and this application filed Nov. 5, 1888. Serial No. 290,083. (No specimens.)

Claim.—The hereinbefore-described improvement in the art of forming and laying vulcanite pavements, which consists in first preparing a base or substratum of broken stone, filling the interstices with coal-tar distillate, and rolling; secondly, preparing a binder course of smaller stone heated and thoroughly mixed with asphaltic cement prepared by subjecting asphalt and coal-tar distillate to a temperature of about 450° Fahrenheit and not exceeding 500° Fahrenheit, laying said binder course evenly upon the base, and rolling, and, finally, applying and rolling a top coating or surface prepared by mixing comminuted mineral substances, of which one ingredient is sulphur, with asphalt and coal-tar previously subjected to a temperature of about 450° Fahrenheit, but less than 500° Fahrenheit, and protecting the top surface by applying thereto dry hydraulic cement and powdered sulphate of calcium, substantially as set forth.

408,251. EXERCISING-MACHINE. JOHN P. NEMOCA, Marion, Ind. Filed Apr. 27, 1889. Serial No. 308,807. (No model.)



Claim.—1. An exercising-machine for receiving blows, comprising a base, a blow-receiving rock-arm mounted on a rock-shaft journaled on the base, a rearwardly-extending rock-arm, a movable pointer mounted over a dial, and devices connecting the arm and pointer and adapted to rotate the latter by the oscillation of the former, substantially as specified.

2. An exercising-machine for receiving blows, comprising a base, a depressible rock-arm, a dial-case mounted above the rock-arm and carrying a movable pointer, a sector mounted in the case and adapted to mesh with a toothed wheel mounted on the dial-shaft, and a rod connecting the sector and the rock-shaft, substantially as specified.

3. In an exercising-machine, the combination, with a base provided at its forward end with a rock-shaft carrying an upwardly-projecting blow-receiving rock-arm and a rearward rock-arm, of a dial-case mounted above the rock-arm and provided with a pointer-shaft carrying a gear, a sector mounted at one side of the gear and meshing therewith, and a loosely-pivoted connecting-rod connecting the inner end of the sector with a pin projecting from the rock-arm, substantially as specified.

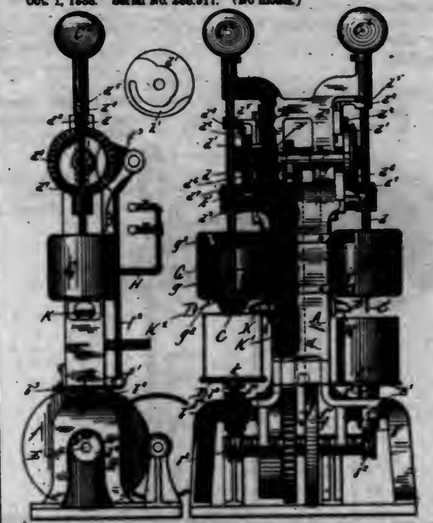
4. In an exercising-machine, the combination, with blow receiving and transmitting mechanism, of blow-registering mechanism connected therewith and independent means for returning each to its normal position irrespective of the movement of the other, substantially as specified.

5. In an exercising-machine, a base provided at its forward end with a rock-shaft having upwardly-projecting and rearwardly-projecting rock-arms suitably braced, and a spring for returning the rear rock-arm to position, in combination with a dial-case mounted above the rearwardly-projecting rock-arm and provided with a pointer-shaft having a gear, a sector mounted to the side of the gear and meshing therewith, a spring for returning the sector to its normal position, a ratchet-plate mounted on the sector, and a pawl for engaging the teeth of the ratchet, substantially as specified.

6. The base-sills 2, 3, and 4, arranged as described, in combination with the standards 7, mounted upon the sill 3, and provided with bearings 8, carrying a rock-shaft 9, and the rock-arms 10 and 14, the former provided with the blow-receiving device 11, having opposite guide-arms 12 and buffer 13, and the spring 29, mounted on the sill 2 and under the rear end of the rock-arm 14, substantially as specified.

7. The combination, with the base having the rock-shaft 9 and arms 10 and 14, the former provided with the blow-receiving device and the latter having the spring 29, of the supports 5, having the cross-bar 6 and buffer, and the standard 16, having the casing 17, provided with the dial 18, transverse dial-shaft 19, carrying the dial 20 and gear 21, and the sector-shaft 23, mounted in bearings 22, carrying the sector 24, meshing with the gear and having the return-spring 28 and ratchet-plate 25, and the spring-pressed pawls 26, substantially as specified.

408,252. CAN-CAP-SOLDERING MACHINE. EDWIN NORTON, Maywood, assignor to himself, and Oliver W. Norton, Chicago, Ill. Filed Oct. 1, 1888. Serial No. 286,917. (No model.)



Claim.—1. The combination, with a pair of alternately vertically-movable can-holders, of a pair of alternately vertically-movable soldering-irons, substantially as specified.

2. The combination, with a pair of alternately vertically-movable can-holders, of a pair of alternately vertically-movable soldering-irons and a pair of cap-holder rods extending through said soldering-tools, substantially as specified.

3. The combination, with a pair of rotatable soldering-tools, of a pair of alternately vertically-reciprocating can-holders, substantially as specified.

4. The combination, with a pair of can-holders, of a pair of alternately vertically-reciprocating soldering-tools, substantially as specified.

5. The combination, with a pair of can-holders, of a pair of alternately vertically-reciprocating soldering-tools and a pair of cap-holder rods extending down through the soldering-tools, substantially as specified.

6. The combination, with a pair of can-holders, of a pair of alternately vertically-reciprocating soldering-tools, a pair of cap-holder rods extending down through the soldering-tools, a pair of cooling-nozzles, and a pair of alternately-operated valves for opening and closing said cooling-nozzles, substantially as specified.

7. The combination, with a stationary heating-chamber and a stationary cooling device on the frame of the machine, of a reciprocating can-holder, a hollow reciprocating revolving soldering-tool adapted to move in and out of said heating-chamber and revolve within it, and a cap-holder rod extending through said heating-chamber and hollow soldering-tool, substantially as specified.

8. The combination of a stationary heating-chamber with a hollow reciprocating revolving soldering-tool adapted to move in and out of said heating-chamber and revolve within it, a reciprocating can-holder, and a cap-holder rod extending through said heating-chamber and said hollow soldering-tool, the movement of the can-holder serving to clamp the can-cap in place, substantially as specified.

9. The combination, with a pair of can-holders, of a pair of heating-chambers and a pair of rotatable alternately-reciprocating soldering-tools, substantially as specified.

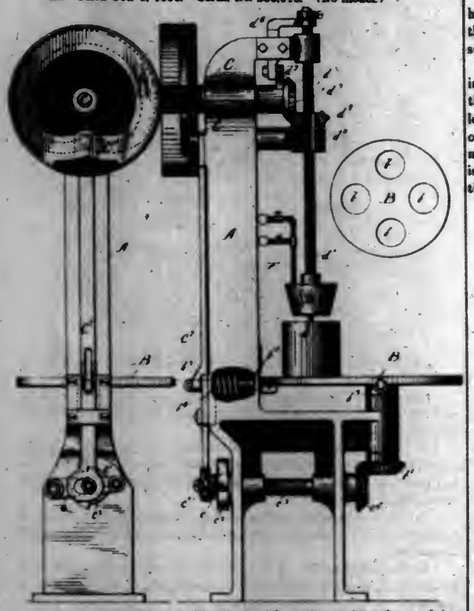
10. The combination, with a pair of can-holders, of a pair of air-blowing cooling-nozzles and a pair of alternately-operated valves for opening and closing said nozzles, substantially as specified.

11. The combination, with a can-holder, of a cooling nozzle or pipe, a valve for opening and closing the same at intervals, a revolving reciprocating soldering-tool, means for automatically reciprocating and revolving said tool, and means for automatically operating said valve at intervals when the reciprocating soldering-tool is withdrawn from contact with the can, substantially as specified.

12. The combination, with a reciprocating can-holder, of a revolving reciprocating soldering-tool, a cooling-pipe, a valve for opening and closing said pipe, means for automatically reciprocating said can-holder, means for automatically revolving and reciprocating said soldering-tool, and means for automatically operating said valve at intervals when the soldering-tool is withdrawn from contact with the can, substantially as specified.

13. The combination, with a pair of soldering-tools, of a pair of alternately vertically-reciprocating can-holders, substantially as specified.

408,253. MACHINE FOR SOLDERING VENT-HOLES. EDWIN NORTON, Maywood, assignor to himself, and Oliver W. Norton, Chicago, Ill. Filed Oct. 1, 1888. Serial No. 286,918. (No model.)



Claim.—1. The combination, with an intermittently-revolving turret furnished with can-holders, of mechanism for intermittently revolving said turret, a revolving vertically-reciprocating soldering-tool provided with an annular cavity in its upper end to receive and confine the flame, the walls of said cavity being imperforate, so that the flame will not be projected through the soldering-tool, mechanism for reciprocating and revolving said tool, and a burner F, for projecting the flame into said annular cavity and heating said tool as it revolves, substantially as specified.

2. The combination, with a can-holder, of a soldering-tool having a revolvable sliding shaft d', gears d^3 d^4, shaft C, and cam d^5, said shaft d' having an arm or projection engaging said cam for revolving and reciprocating said soldering-tool, substantially as specified.

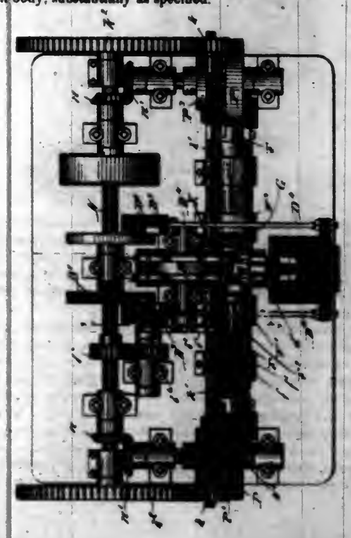
3. The combination, with shaft C, having cam C', of connecting-rod C^2, pawl-lever c, pawl c', ratchet c^3, shaft c^4, bevel-gear c^5, and can-holder turret B, having gear b' on its shaft meshing with said gear c^5, substantially as specified.

4. The combination, with shaft C, having cam C', of connecting-rod C^2, pawl-lever c, pawl c', ratchet c^3, shaft c^4, bevel-gear c^5, and can-holder turret B, having gear b' on its shaft meshing with said gear c^5, said turret having recesses b^3, a locking-bolt b^3, spring b^4, and a cam b^5 on said connecting-rod C^2, substantially as specified.

5. The combination, with shaft C, having cam C', of connecting-rod C^2, pawl-lever c, pawl c', ratchet c^3, shaft c^4, bevel-gear c^5, and can-holder turret B, having gear b' on its shaft meshing with said gear c^5, soldering-tool D, its sliding shaft d', gear d^3, gear d^4 on said shaft C, cam d^5, and arm d^6, secured to said shaft d', substantially as specified.

6. The combination, with shaft C, having cam C', of connecting-rod C^2, pawl-lever c, pawl c', ratchet c^3, shaft c^4, bevel-gear c^5, and can-holder turret B, having gear b' on its shaft meshing with said gear c^5, said turret having recesses b^3, a locking-bolt b^3, spring b^4, a cam b^5 on said connecting-rod C^2, soldering-tool D, its sliding shaft d', bevel-gear d^3, bevel-gear d^4 on said shaft C, cam d^5, and arm d^6, secured to said shaft d', substantially as specified.

408,254. CAN HEADING AND CRIMPING MACHINE. EDWIN NORTON, Maywood, assignor to himself, and Oliver W. Norton, Chicago, Ill. Filed Oct. 15, 1888. Serial No. 288,101. (No model.)



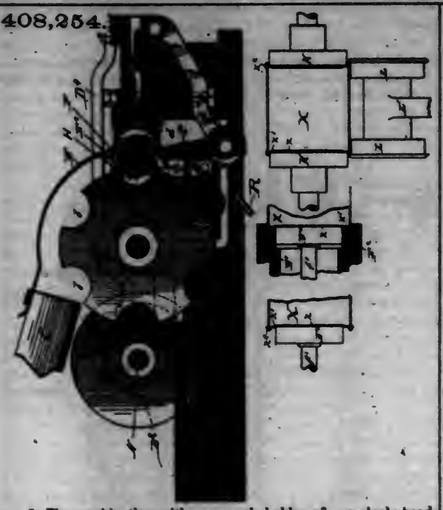
Claim.—1. The combination, with a can-body-holding device, of can-head-applying plungers, a pair of reciprocating can-revolving chucks and a pair of crimping rollers or devices, and a can-body carrier for conveying the can from said plungers to said crimping devices, substantially as specified.

2. The combination, with a can-body-heading mechanism, of a reciprocating revolving chuck and an opposing revolving chuck, a crimping roller or device, and a can-body carrier for conveying the can from said heading mechanism to said crimping device, substantially as specified.

3. The combination, with a can-body holder, of a reciprocating hollow heading-plunger, and a follower inside the same for holding the can-head upon the body as the heading-plunger is withdrawn, substantially as specified.

4. The combination, with a can-body holder, of a can-body-heading plunger and a reciprocating sleeve surrounding said plunger, and the rod H', passing through a hole in the bracket H^3, in which it fits loosely, the rod H' being provided with collars or shoulders A^3 A^4, one on each side of the bracket H^3, so that the rod H' will be given a more limited movement than the plunger F, to which said bracket H^3 is secured for bending or squeezing the flange of the can-head upon the can-body, substantially as specified.

408,254.



5. The combination, with a can-body holder, of a can-body-heading plunger and a reciprocating sleeve surrounding said plunger for bending or squeezing the flange of the can-head upon the can-body, said heading-plunger being hollow and provided with a follower inside the same for holding the can-head upon the can-body as the heading-plunger and its surrounding sleeve are withdrawn, substantially as specified.

6. The combination, with a can-body holder, of a can-body-heading plunger and a reciprocating sleeve surrounding said plunger for bending or squeezing the flange of the can-head upon the can-body, said heading-plunger being hollow and provided with a follower or holding-plunger inside the same for holding the can-head upon the can-body as the heading-plunger and its surrounding sleeve are withdrawn, and a spring for actuating said holding-plunger, substantially as specified.

7. The combination, with an intermittently-revolving can-body carrying turret B, of a can-holder slide D, a curved guard E, a can-head-applying plunger, a pair of revolving chucks for revolving the can, and a crimping-roller, substantially as specified.

8. The combination, with turret B, of can-holder slide D, heading-plunger F, its surrounding sleeve F^2, reciprocating revolving chucks K K, and crimping-rollers L L, substantially as specified.

9. The combination, with turret B, of can-holder slide D, heading-plunger F, its surrounding sleeve F^2 and its spring-actuated holding-plunger F', reciprocating revolving chucks K K, and crimping-rollers L L, substantially as specified.

10. The combination, with a can-body holder, of a can-head-supply chute, a can-head-applying plunger, and a can-head guide-ring having two opening and closing parts H H, substantially as specified.

11. The combination, with a can-body holder, of a can-head-applying plunger, a reciprocating sleeve surrounding the same, and a guide-ring made in two opening and closing parts to permit said surrounding sleeve to advance, substantially as specified.

12. The combination, with a can-body holder, of plunger F, two-part opening and closing guide-ring H, mounted on a slide connected with said plunger, and reciprocating sleeve F^2, surrounding said plunger and provided with a pin or wedge for opening the parts of said ring H, substantially as specified.

13. The combination, with a can-body holder, of plunger F, two-part opening and closing guide-ring H, mounted on a slide connected with said plunger, reciprocating sleeve F^2, surrounding said plunger and provided with a pin or wedge for opening the parts of said ring, and a can-head-supply chute, substantially as specified.

14. The combination, with a can-body holder, of plunger F, two-part opening and closing guide-ring H, mounted on a slide connected with said plunger, reciprocating sleeve F^2, surrounding said plunger and provided with a pin or wedge for opening the parts of said ring, a can-head-supply chute, a can-body carrier, and a crimping device substantially as specified.

15. In a can heading and crimping machine, the combination with a can-body holder, of a heading-plunger, a reciprocating sleeve surrounding said plunger for bending or squeezing the flange of the can-head upon the can-body, a can-body carrier, and means for crimping the seam, substantially as specified.

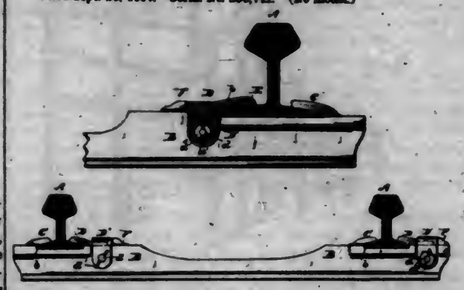
16. In a can heading and crimping machine, the combination, with means for bending or squeezing the flange of the can-head upon the can-body, and a can-body carrier, of a seam crimping or rolling device, substantially as specified.

17. In a can heading and crimping machine, the combination, with a can-body carrier, of a can-body holder, a heading-plunger, a flange-closing device, and a crimping-roller, substantially as specified.

18. The combination, with a can-carrier, of a can-body holder, a heading-plunger, a flange-closing sleeve surrounding the same, can-revolving chucks, and a crimping-roller, substantially as specified.

19. In a can heading and crimping machine, the combination, with a can-body carrier, of a can-body holder, a heading-plunger, a flange-closing device, a crimping-roller, and reciprocating revolving chucks for revolving the can during the crimping operation, substantially as specified.

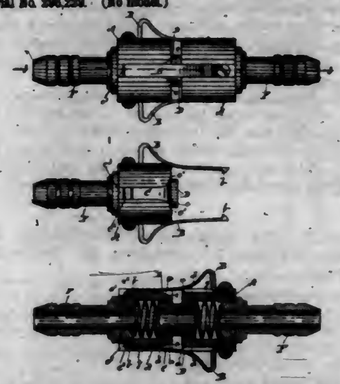
408,255. RAILROAD-TIE. CORYDON R. PALMER, Detroit, Mich. Filed Sept. 26, 1887. Serial No. 250,741. (No model.)



Claim.—1. The combination, with the tie having the longitudinal rib, of the removable lug and its retaining-strap secured thereto by a bolt, and a resisting knob or shoulder upon said rib adapted to prevent pivotal movement of the strap upon the bolt and hold the lug to its place, substantially as described.

2. The combination, with the rail and removable lugs for securing the same to the tie, of a metallic tie having the recess *b*, the recess *b'*, and the knob or shoulder F, the latter cast integral with the tie, substantially as described.

408,256. HOSE-COUPLING. CHARLES PARENT, Boston, assignor of one-half to Charles R. Sawyer, Braintree, Mass. Filed Jan. 14, 1888. Serial No. 296,229. (No model.)



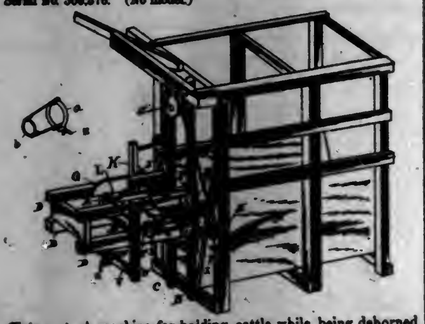
Claim.—1. The combination of a shell A, open throughout its length, a spring-seated gasket inside the shell and projecting beyond its face, grooved longitudinal guideways formed in the rim of the shell and extending from the front face rearward, each groove having in the bottom a beveled notch c^2, and spring-latches B on the side of the shell between the grooves, adapted to be received in similar grooves and notches on another like shell, substantially as described.

2. A coupling consisting of two shells A, each having an open passage throughout its length, a spring-seated gasket inside the shell and projecting beyond its face, grooved longitudinal guideways formed in the rim of the shell and extending from the front face rearward, each groove having in the bottom a beveled notch c^2, and spring-latches B on the side of the shell between the grooves, adapted

to enter the grooves and engage in the notches of the other shell, the two gaskets being thus compressed together and forming a tight joint, substantially as described.

3. A coupling consisting of two shells A, each having an open passage throughout its length, a spring seated gasket inside the shell and projecting beyond its face, and grooved longitudinal guideways formed in the rim of the shell and extending from the front face rearward, each groove having in the bottom a series of beveled notches, in combination with spring-latches B on the side of the shell between the grooves, adapted to enter the grooves and engage in the notches of the other shell, substantially as described.

408,257. DEVICE FOR HOLDING CATTLE WHILE BEING DEHORNED. ALBERT C. PATTEN, Brookville, Kans. Filed May 2, 1889. Serial No. 309,376. (No model.)



Claim.—1. A machine for holding cattle while being dehorned, consisting of a fixed support and a head-supporting frame hinged thereto and adapted to swing in a horizontal frame, substantially as set forth.

2. A machine for holding cattle while being dehorned, consisting, essentially, of a vertically-adjustable horizontally-swinging frame and the head-rest adjustably supported on said frame, as set forth.

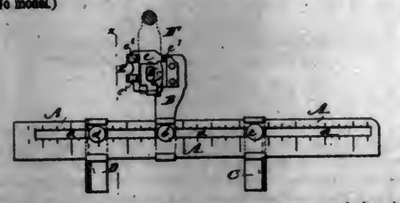
3. The combination, with a fixed support, of a horizontally-swinging frame mounted thereon and having a laterally-projecting arm, and a bail arranged at one side of the swinging frame and adapted to engage said lateral arm, as set forth.

4. The combination, with a fixed support, of a horizontally-swinging frame mounted thereon, a head-rest mounted on the said swinging frame and adapted to slide longitudinally thereon, and the cheek-supports mounted on the said head-rest, as set forth.

5. The combination, with a fixed support, of a horizontally-swinging frame, an adjustable head-rest mounted thereon, a stationary cheek-support secured on the head-rest, a carrier mounted on the head-rest, a movable cheek-support secured to said carrier, and means for moving the carrier, as set forth.

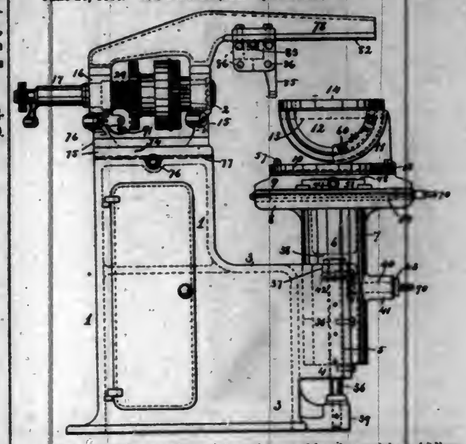
6. The combination, with a fixed support, of a horizontally-swinging frame, a head-rest adjustably mounted on said swinging frame, hangers depending from the head-rest, a windlass mounted in said hangers and provided with a radial pin, and a securing-rope having a long loop at one end adapted to pass over the neck of the animal and engage the said radial pin and provided with a nose-band, as set forth.

408,258. TUCK-FOLDER FOR SEWING-MACHINES. LUCY J. PEARSALL, Fort Edward, N. Y. Filed Feb. 4, 1887. Serial No. 226,551. (No model.)



Claim.—In a tuck-folder for sewing-machines, a main bar A, made of a single flat plate and having a continuous longitudinal slot *a*, extending from end to end thereof, in combination with a plate or guide B, arranged at right angles to said main bar, and on which the main bar is adjustable longitudinally, means for clamping said main bar to the plate or guide at any desired longitudinal adjustment, a sheath at the inner end of the plate or guide for detachably connecting said plate and main bar to the presser-foot of a sewing-machine, and gages adjustably connected to the main bar on opposite sides of the plate or guide, substantially as described, for the purpose set forth.

408,259. BORING-MACHINE. ALBERT D. PRATT, Elizabeth, N. J., assignor of one-half to Abraham Vanderbeek, New York, N. Y. Filed June 20, 1888. Serial No. 277,621. (No model.)



Claim.—1. In a boring-engine, the combination, with a hollow spindle and a hollow sleeve movable longitudinally through the same, of an arm projected from the upper side of the spindle-bearing and a boring-bar guide adjustable thereon, as and for the purpose set forth.

2. In a boring-engine, the combination, with a hollow spindle and a hollow sleeve movable longitudinally through the same, of an arm projected from the upper side of the spindle-bearing, a carriage movable on such arm, and a boring-bar guide detachably held on such carriage, as and for the purpose set forth.

3. In a boring-engine, the combination, with a hollow spindle and a hollow sleeve movable longitudinally through the same, of a head to sustain such hollow spindle and a hollow arm bolted upon such head and projected above the line of the boring-bar, a carriage movable on such arm, and a boring-bar guide detachably held on such carriage, as and for the purpose set forth.

4. In a boring-engine, the combination, with a hollow spindle and a hollow sleeve movable longitudinally through the same, of an arm projected from the upper side of the spindle-bearing, a carriage movable on such arm, and a boring-bar guide held reversibly on such carriage, as and for the purpose set forth.

5. In a boring-engine, the combination, with a hollow spindle and a sleeve movable longitudinally in the hollow spindle and provided with an annular groove open at one side, of a socket projected from the spindle-bearing, a nut movable longitudinally in such socket and provided with a collar fitted to such annular groove, and a screw rotated to feed the nut and sleeve through the spindle, substantially as herein set forth.

6. In a boring-engine, the combination, with a hollow spindle and a sleeve movable longitudinally in the hollow spindle and provided with an annular groove open at one side, of a socket projected from the spindle-bearing, a nut movable longitudinally in such socket and provided with a collar fitted to such annular groove, a screw journaled in such socket, and an inclined shaft extended from the bearing of the screw-journal to the front of the head and connected by suitable gearing with the screw and with the spindle, as and for the purpose set forth.

7. In a boring-engine, the combination, with the rotary work-table, of the carrier provided with vertical cheeks fitted to segmental guides, the carrier being adjustable in the guides about a horizontal axis, and the table rotary in various inclined planes, as and for the purpose set forth.

8. In a boring-engine, the combination, with the rotary work-table, of a carrier adjustable about a horizontal axis and the carrier-clamps mounted upon a rotary plate to turn the inclined plane of the work-table in every direction, as and for the purpose set forth.

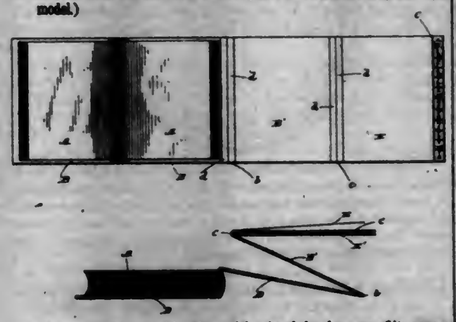
9. In a boring-engine, the combination, with the rotary work-table, of a carrier adjustable about a horizontal axis, carrier-clamps mounted upon a rotary plate to turn the inclined plane of the work-table in every direction, the block 9 and bed 8, provided with the seats 48 and 45 at right angles, as described, and the cruciform slide 51 and 52, fitted to such seats and held adjustably therein, as and for the purpose set forth.

10. In a boring-engine, the combination, with the rotary work-table, of a carrier adjustable about a horizontal axis, carrier-clamps mounted upon a rotary plate to turn the inclined plane of the work-table in every direction, the block 9 and bed 8, provided with the seats 48 and 45 at right angles, as described, the cruciform slide 51 and 52, fitted to such seats and held adjustably therein, the frame 1, carrying the spindle-head and spindle 2, the vertical grooves 5 in the frame, and the column 7, having tongues 6, fitted to such grooves, and having the bed 8 affixed to its upper end, as and for the purpose set forth.

11. In a boring-engine, the combination, with the rotary work-table, of a carrier adjustable about a horizontal axis, carrier-clamps mounted upon a rotary plate to turn the inclined plane of the work-table in every direction, the block 9 and bed 8, provided with the seats 48 and 45 at right angles, as described, the cruciform slide 51 and 52, fitted to such seats and held adjustably therein, the frame 1, carrying the spindle-head and spindle 2, the vertical grooves 5 in the frame, the column 7, having tongues 6 fitted to such grooves and having the bed 8 affixed to its upper end, screws 54, for adjusting the cruciform slide in the block and bed, a stationary screw 36, supported in the column, a rotary nut 37, fitted to the screw and to a bearing 38 upon the column, a hand-shaft 40 and gears 42, retaining such nut, and annular micrometer-scales fitted to the said shaft and to the screws of the cruciform slide, as and for the purpose set forth.

12. In a boring-engine, the combination, with a hollow spindle and a hollow sleeve movable longitudinally through the same, of an arm projected from the upper side of the spindle-bearing, a carriage and boring-bar guide movable upon such arm, a rotary work-table and a carrier for the same adjustable about a horizontal axis, as and for the purpose set forth.

408,260. COMBINED BOOK AND INDEX. HENRY E. PRATT, Lambertville, N. J. Filed Feb. 23, 1889. Serial No. 301,462. (No model.)

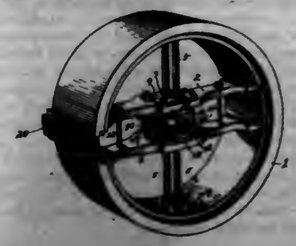


Claim.—1. The combination, with a book having one of its covers extended to form a folding extension, of an index hinged at its back to the free edge of the extension, substantially as set forth.

2. The combination, with a book having its cover extended beyond the edge of the book, of an index having its back hinged to the free edge of the cover-extension and provided with a cover of less width than the said cover-extension, substantially as set forth.

3. In combination, a book, an index provided with a back and front cover, the front cover being narrower than the back cover to expose a column of initial-letters, and a projecting portion of the book-cover connecting the index with the book and forming flexible joints at the front edge of the book and at the back edge of the index, whereby the index may be folded within the cover of the book with its column of initial-letters at all times exposed, substantially as set forth.

408,261. PULLEY. ALBION E. PRESTON, Battle Creek, Mich. Filed May 7, 1889. Serial No. 309,910. (No model.)



Claim.—1. In a pulley, the combination of a rim, the parallel adjustable arms or bars, the spokes intermediate of the arms and rim, and a sectional hub arranged between said arms and adjustable thereon in a line at right angles to the adjustment afforded by the arms and spokes, substantially as and for the purpose described.

2. In a pulley, the combination of a rim, the arms or bars extending across the rim near its center and connected at their ends thereto in such a manner that they can move a limited distance on the same, the adjustable spokes intermediate of the rim and arms, and the sectional hub adjustably connected to the arms and arranged between the same, substantially as and for the purpose described.

3. In a pulley, the combination of a rim, the adjustable arms or bars arranged across the rim, the bolts connecting said bars, the radial spokes intermediate of the rim and the arms, and a sectional hub arranged between the arms or bars substantially in line with the radial spokes and adjustable on said arms longitudinally thereof, substantially as and for the purpose described.

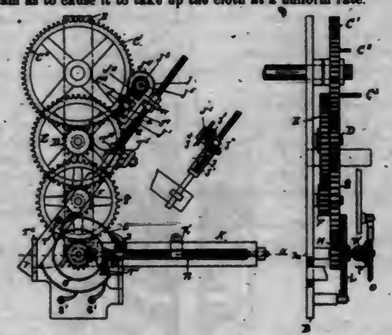
4. In a pulley, the combination, with the arms or bars, of the stationary supporting-plates, the divided hub having one of its members fitted in each of said plates, and the adjusting-screws working in the plates and adapted to bear upon the member of the hub fitted therein, substantially as and for the purpose described.

5. In a pulley, the combination of a rim, the parallel arms or bars, the plates secured to the rim at diametrically-opposite points thereof and having the threaded bosses, the plates arranged on the outer faces of the arms and each having a threaded boss, the radial threaded spokes tapped in the bosses of said plates on the rim and arms, the bolts passing through the arms and plates thereon, and a hub supported between said arms or bars, substantially as and for the purpose described.

6. In a pulley, the combination of a rim, the adjustable arms or bars, the radial spokes intermediate of the arms and rim, the bolts connecting the arms to each other, the stationary plates secured to the arms between the opposing faces thereof, the sectional hub having its members provided with flanges, which are fitted in said plates, and regulating-screws fitted in the supporting-plates and adapted to bind on the flanges of the hub-sections, all arranged and combined for service substantially as herein shown and described.

408,262. TAKE-UP MECHANISM FOR LOOMS. RUDOLF RIECHENBACHER, Paterson, N. J. Filed June 1, 1888. Serial No. 275,701. (No model.)

Brief.—The object of the invention is to so actuate the cloth-beam as to cause it to take up the cloth at a uniform rate.

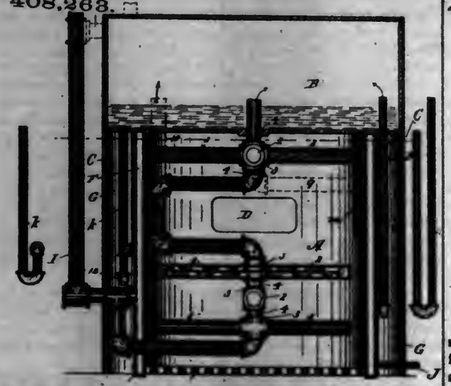


Claim.—The combination, with the cloth-beam and the gear C thereon, ratchet L, the gearing intermediate said ratchet and the gear C', the lever N, a pawl or pawls thereon, and means for vibrating said lever, of screw R, nut R', to which said vibrating means are connected, the bevel-gear on said screw, the bevel-gear P, the ratchet O, to which gear P is connected, the bar T, pawls carried thereby and engaging said ratchet O, the frame B, the spring Z, the bracket carried by said bar T, the screw-threaded rod mounted in said bracket, the bevel-gears J^2 J^3, the ratchet J^4, the pins C^2 C^3, and the nut J^5, carrying pin J, all arranged and operating substantially as described.

408,263. HEATING APPARATUS. CHARLES A. SEWIS, Waltham, Mass., assignor of one-half to Herschel A. Bacon, same place. Filed Feb. 26, 1889. Serial No. 301,194. (No model.)

Claim.—1. In a steam-generating or hot-water circulating apparatus, the combination of the fire-box or furnace, a hot-water or steam receptacle adjoining the same, a conduit or receptacle for return-water, a series of substantially horizontal pipes of small diameter internally subdivided into lower and upper flues or passages by horizontal diaphragms, a series of vertical pipe sections or couplings, also

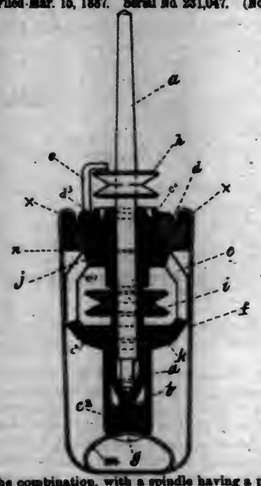
408,263.



of small diameter, connecting the horizontal pipes, the said horizontal pipes and the connections between them being located in the fire-box and constituting a conduit for the passage of small streams of water through the fire-box, and pipes connecting the lower and upper ends of said conduit, respectively, with the return-water conduit or receptacle and the hot-water or steam receptacle, as set forth.

2. In a steam or hot-water heating apparatus, the combination, with the fire-box or furnace and the steam or water circulating system, including a return-pipe I, and a receptacle B, located over the fire-box, of a water-conduit extending from said return-pipe to the receptacle B through the fire-box, said conduit consisting of a series of horizontal pipes 2, internally subdivided by horizontal partitions or diaphragms 5, and coupling or connecting pipe-sections adjustably connecting said pipes 2 with each other and with the said return-pipe and receptacle, whereby the pipes 2 may be adjusted or set at various angles, as set forth.

408,264. SUPPORT FOR SPINNING-SPINDLES. FRANCIS SEYMOUR, Paterson, N. J., assignor of one-half to John J. Heywood, Fall River, Mass. Filed Mar. 15, 1887. Serial No. 231,047. (No model.)

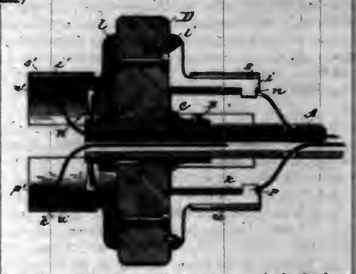


Claim.—1. The combination, with a spindle having a pintle, of a revoluble bearing provided with a step for receiving and supporting the pintle of the spindle, a support for said revoluble bearing, and a spring for suspending said support from a rail or holder, substantially as herein shown and described.

2. The combination, with a rail or holder, of a frame under said rail, a foot-piece below said frame and supporting the same, and a spring supporting the foot-piece, said spring being held on the rail or holder, substantially as herein shown and described.

3. The combination, with a rail or holder, of a frame-piece below it, a foot-piece supporting the frame, a spring supporting the foot-piece and held on the rail, a revoluble bearing in the frame and foot-piece, and a spindle having a pintle which rests upon a step in the revoluble bearing, substantially as herein shown and described.

408,265. COMMUTATOR FOR ELECTRIC MACHINES. SIDNEY H. SHORT, Columbus, Ohio. Filed Oct. 9, 1888. Serial No. 287,613. (No model.)



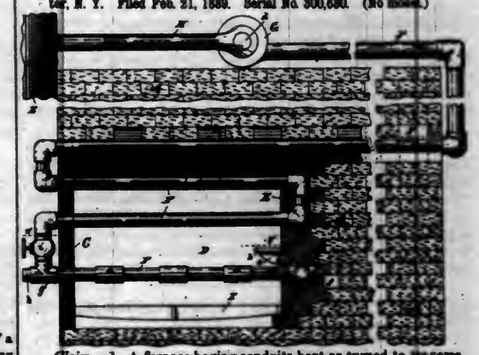
Claim.—In combination, with an armature-shaft of a dynamo or motor, an insulating-disk D, angular segments *h i j k*, secured to each face alternating in position, each segment having a horizontal extension and a depending lug for attachment to the wires, and wearing-segments secured to the horizontal extensions, substantially as described.

408,266. CAR-WHEEL. WHEELER B. SMITH, Little Rock, Ark. Filed Apr. 20, 1889. Serial No. 307,990. (No model.)



Claim.—The combination, with a rim of a wheel having shoulders on its inner periphery, some of which are grooved transversely, of a web provided with lugs grooved on their periphery to receive the shoulders on the rim, and slotted transversely, and retaining-means passed through said slots and into the grooves in the shoulders on the rim, substantially as shown and described.

408,267. STEAM-BOILER FURNACE. ANTHONY SHELL, Rochester, N. Y. Filed Feb. 21, 1889. Serial No. 300,680. (No model.)



Claim.—1. A furnace having conduits bent or turned to traverse its side walls in parallel sections backward and forward between the front thereof and the bridge-wall, the last or lowest section at each side being turned into the bridge-wall and joined, the said lowest section being provided with jet-tubes turned within the furnace, the forward couplings of the sections reaching beyond the front of the furnace and provided with gates to open or close the passages to said lowest sections, substantially as shown.

2. A furnace having conduits at its sides and extending through the bridge-wall to complete the communication between the sides, in combination with recesses *k k* in the outer faces of the respective side walls, the said conduits being formed with openings in front and in said recesses, for the purpose specified.

3. A furnace for a steam-boiler having smoke or air conduits at its sides, and jet-tubes joined to the conduits and turned toward the interior of the furnace, in combination with scattering-plates for the air or smoke issuing from said jet-tubes, and means for driving the air or smoke through the conduits, substantially as described.

4. A furnace for a steam-boiler having smoke or air conduits at its sides, and jet-tubes joined to said conduits, in combination with scattering-surfaces for the smoke or air issuing from said jet-tubes, and a fan for driving the smoke or air through said conduits, said jet-tubes being directed toward the interior of the furnace and in an upward direction, substantially as and for the purpose specified.

408,268. EYEGLASS-HOLDER. SIMON R. STEIGER, Marietta, Pa. Filed Apr. 17, 1889. Serial No. 307,621. (No model.)



Claim.—1. An eyeglass-holder having a construction for holding the glass, and having also a mouth-piece, substantially as described.

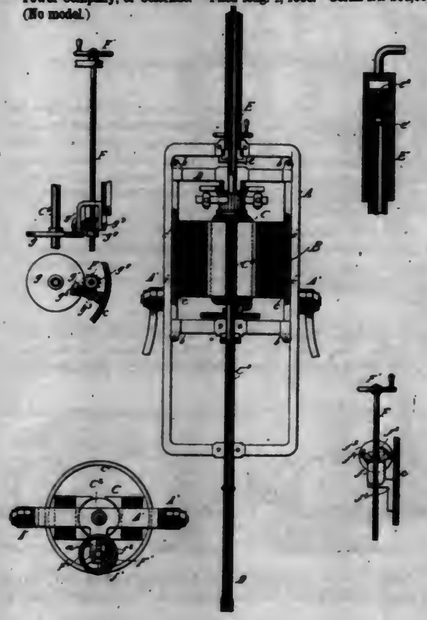
2. An eyeglass-holder adapted to be held in the mouth and provided with an elastic spring-joint, substantially as specified.

3. The combination, with an eyeglass, of a holder having an elastic spring-joint and a mouth-piece or tooth-plate, substantially as specified.

4. As an improved article of manufacture, an eyeglass-holder formed of wire having one end bent into an annular form, with a hook for holding the glass, the other end bent to hold a mouth piece or plate and between its ends formed into a spiral spring, substantially as described.

5. An eyeglass-holder formed of a single piece of metal and comprising a lateral portion provided with a mouth-piece, a substantially vertical portion having provisions for holding the glass, and an elastic spring-joint at the junction of the lateral and vertical portions, substantially as described.

408,269. ELECTRIC DRILL. ISLE E. STOREY, Boulder, assignor, by direct and mesne assignments, to the Storey Electric Drill and Power Company, of Colorado. Filed Aug. 1, 1888. Serial No. 281,609. (No model.)



Claim.—1. In an electric drill, a main frame provided with tracks or ways and having an upwardly-extending water-reservoir, a supplemental frame mounted within the main frame and adapted to slide back and forth the full length of the main frame, an electric motor and its main shaft mounted in said supplemental frame, the said shaft of the motor being hollow and extending through both ends of the main and supplemental frames and entering the water-chamber, and a drill-tool attached to the end of the shaft opposite the water-chamber, substantially as described.

2. A main frame provided with a water-chamber, in combination with a supplemental frame adapted to slide within said main frame, and an electromotor mounted within said supplemental frame, the main shaft of the motor being hollow and extending beyond said supplemental frame and entering the water-chamber in said main frame.

3. The combination, with a sliding frame carrying the rotating tool, of a pair of friction-disks and suitable worm-gearing geared to the rotary shaft and to the sliding frame in such a manner that the rotation of such shaft will cause the sliding movement of said frame, as set forth.

408,270. SINKER-SUPPORTING DEVICE FOR STRAIGHT-KNITTING MACHINES. ELI TIFFANY, Bennington, Vt. Filed Feb. 1, 1887. Serial No. 226,143. (No model.)

Brief.—The invention relates to provisions connected with the sinker-bar of a straight-knitting machine for more effectually holding, guiding, and supporting the sinkers of such machines in the various positions they assume while in operation.

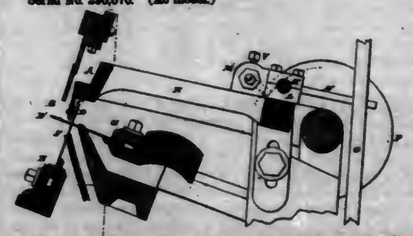


Claim.—1. The combination, with sinkers A, of the springs R and bar D, having the vertical grooves *p q*, substantially as described, and for the purposes specified.

2. A back guiding and supporting grooved bar for sinkers in straight-knitting machines attached to the main sinker-bar, in combination with a series of sinkers and supporting-springs arranged above said sinker-bar and adapted to sustain the sinkers in position when elevated, substantially as described, and for the purposes specified.

3. The combination, with a series of sinkers in a straight-knitting machine, of a horizontal grooved sinker-bar, a series of springs arranged above said bar adapted to impinge against and support the sinkers when elevated, and a back support for the lower ends of said sinkers grooved for their reception and attached to the under side of said sinker-bar and detachable therefrom, substantially in the manner described, and for the purpose specified.

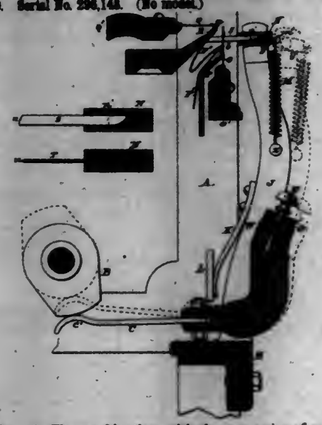
408,271. STRAIGHT-KNITTING MACHINE FOR MAKING FIGURED KNIT GOODS. ELI TIFFANY, Bennington, Vt. Filed Nov. 6, 1883. Serial No. 290,070. (No model.)



Claim.—1. The bar C, provided with slots *d d*, in combination with a presser-bar and two sets of knitting-needles, arranged to operate substantially in the manner described, and for the purposes set forth.

2. The combination, in a straight-rib-knitting machine, of two sets of needles arranged to co-operate transversely, a presser-bar for pressing the barbs of both sets of needles, provided with a series of notches upon that part of its pressing-edge which in action bears against the upper set of needles, and a pattern mechanism, substantially as shown, for imparting to the bar containing said notches a predetermined intermittent reciprocatory movement, substantially in the manner described, and for the purpose set forth.

408,272. WELT OR HEM FORMING DEVICE FOR STRAIGHT-KNITTING MACHINES. ELI TIFFANY, Bennington, Vt. Filed Jan. 12, 1889. Serial No. 296,148. (No model.)



Claim.—1. The combination, with the two series of needles of a flat-rib-knitting machine, of a longitudinal finger-bar provided with a series of fingers which alternate with the needles of one of the said series, a back-stop in proximity to the other series of needles, and means for vibrating the said finger-bar and carrying the ends of the said fingers against the back-stop, substantially as described, and for the purposes set forth.

2. The combination, with the front and rear needles of a flat-rib-knitting machine, of an inclined back-stop in proximity to the rear set of needles, a series of fingers alternating with the front needles, a finger-bar carrying said fingers, bearings for said bar, in which it is permitted to have a movement about its own longitudinal axis, and means for oscillating said bearings, substantially as described, and for the purposes set forth.

3. The combination, with the vertical and horizontal needles of a flat-rib-knitting machine, of a back-stop beneath the horizontal needles, a series of fingers or blades arranged in a horizontal plane, a finger-bar to which said fingers or blades are secured, pivoted supports in bearings on which said bar is mounted, with capacity for movement about its longitudinal axis, and means for vibrating said supports, substantially as described, and for the purposes set forth.

4. The combination of rock-shaft D, elbow-coupling F C W, and spring-actuated bolt H, and arms J J, carrying the finger-bar N and fingers S, with the inclined back-stop R, substantially as described, and for the purposes set forth.

408,273. VALVED PIPE-COUPLING. HARRY TRASK, Brooklyn, and WILLIAM H. CARMICHAEL, New York, N. Y. Original application filed June 11, 1888, Serial No. 276,669. Divided and this application filed Nov. 21, 1888. Serial No. 291,438. (No model.)



Claim.—1. In a valved pipe-coupling, in combination with the two portions of the piping to be coupled, a pipe-strap *t*, secured to one of said portions, a valve K, secured to the same portion, a hooked lever hinged to said pipe-strap and connected to the stem of said valve K, a coupling-piece secured to the second of said pipe portions to be coupled and having a projecting lug provided with a slot, into which the said hooked lever enters to complete the connection, and the male and female portions A^3 and A^3, forming the joint of the connection, substantially as and for the purposes set forth.

2. In a valved pipe-coupling, in combination with the two portions of piping to be coupled, a pipe-strap *t*, secured to one of said portions, a valve K, secured to the same portion, a hooked lever hinged to said pipe-strap and connected to the stem of said valve K, a coupling-piece secured to the second of said pipe portions to be coupled and having a projecting lug provided with an inclined slot, into which the said hooked lever enters and up the incline of which it moves to open the valve and complete the connection, and the male and female portions A^3 and A^3, forming the joint of the connection, substantially as and for the purposes set forth.

408,274. STEM WINDING AND SETTING WATCH. ALBERT THELLER, Rockford, Ill., assignor to the Rockford Watch Company, same place. Filed Mar. 30, 1889. Serial No. 305,435. (No model.)



Claim.—1. In a stem winding and setting watch, a lever *a* acting at right angles to and adapted to be acted on by a stem-key, in combination with a pin *f* on the yoke F, which pin *f* passes through a slot or hole in the plate B, and is arranged to be acted on by the shifting-lever, substantially as and for the purpose specified.

2. In a stem winding and setting watch, a stem-key having a beveled point, in combination with shifting-lever *a*, with one edge of which the stem-key engages, a spring *s*, and a pin *f*, connected with the yoke F, which pin passes through the plate B, and is arranged to be acted on by the shifting-lever *a*, substantially as and for the purpose specified.

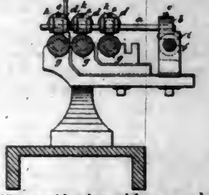
3. In a stem winding and setting watch, the combination of a switch-arbor *h* with the shifting-lever *a*, for the purpose of holding the lever *a* out of action when desired, whereby the same movement is adapted to be used either in a pendant-set case or in an exclusively lever-set case, substantially as specified.

4. In a stem winding and setting watch, a switch-arbor *h*, provided with a pin *i*, in combination with a shifting-lever *a*, provided with a groove *d*, substantially as and for the purpose specified.

5. In a stem winding and setting watch, a shifting-lever *a*, in combination with a switch-arbor *h*, constructed and arranged as described, whereby such switch-arbor can be operated from the outside of the plate B, substantially as specified.

408,275. SUPPORT FOR THE ROLLERS OF SPINNING-FRAMES. EDMUND TWEEDALE, Accrington, County of Lancaster, England. Filed Apr. 17, 1889. Serial No. 307,596. (No model.)

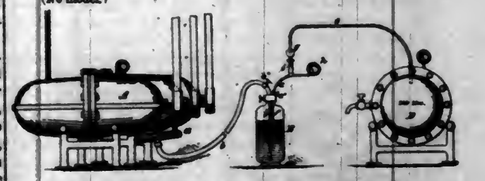
Brief.—The object of the invention is to secure and preserve a correct alignment of the drawing-rollers.



Claim.—1. The combination, with an angular-faced finger and bearing-blocks having holes with angular-bearing sides therein, means for securing the same to said finger, the grooved shaft, the bracket having a hole adapted to receive the angular finger, means for securing the finger in the bracket, and means for securing the bracket to the shaft, consisting of the pin fitting in the groove of the shaft, substantially as described.

2. In combination, the bearing-blocks, the finger for supporting the same, the bracket for holding the finger, a shaft for supporting the bracket, said shaft being grooved transversely, and the pin inserted in the groove and between the bearing-block and shaft, substantially as described.

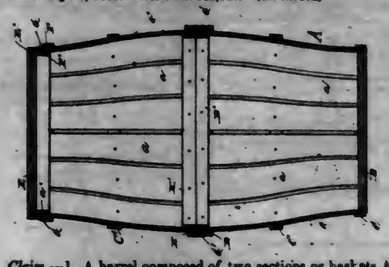
408,276. APPARATUS FOR CHARGING SODA-WATER FOUNTAINS. FRANCIS S. WALDO, New York, N. Y., assignor to The Firm of John Matthews, same place. Filed May 28, 1888. Serial No. 275,375. (No model.)



Claim.—1. The fountain B, having a separate liquid-inlet extending nearly to the bottom of the fountain, serving also as a final discharge-pipe, and a gas-nipple *f*, extending to the level of the water in the fountain when filled, both carried as fixtures by the walls of the fountain, combined with the pipe *c*, having float-valve *g*, substantially as described.

2. The fountain B, carrying as fixtures the liquid-inlet pipe b^3 and the gas-nipple *f*, the liquid-inlet pipe extending nearly to the bottom of the fountain, to serve also as a final discharge-pipe, and the gas-nipple extending to the level of the liquid in the fountain when filled, as specified.

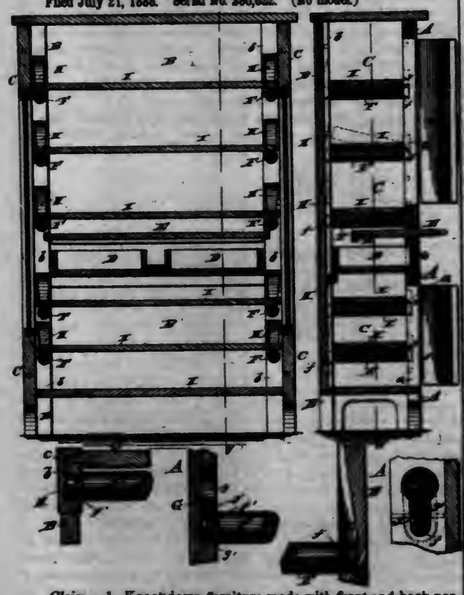
408,277. BARREL. JACOB W. WHEATLEY, Pocomoke City, Md. Filed May 20, 1889. Serial No. 312,027. (No model.)



Claim.—1. A barrel composed of two sections or baskets A and A', the section A having its staves secured between the hoops D and D', the hoops D' projecting beyond the ends of the staves, and the section A' provided with the hoops H and H', the hoop H' being arranged a short distance within the ends of the staves, whereby, when the sections are brought together, the hoop D' will lap over the joint at the inside of the barrel, and the metal plates securing the sections together, substantially as described.

2. A barrel composed of the section or basket A, having a stationary bottom and provided with the hoops D and D', the latter projecting beyond the staves and the former being arranged flush with their upper ends, and the section or basket A', having a removable bottom forming the upper head or cover of the barrel, and provided with the hoops H and H', the former being flush with the upper ends of the staves and the latter being arranged a short distance within their ends, said sections being secured together by the metal plates G', substantially as described.

408,278. KNOCKDOWN FURNITURE. ARTHUR WHITE, Sheboygan, Wis., assignor of one-half to Charles Van Nostrand, same place. Filed July 21, 1888. Serial No. 280,622. (No model.)



Claim.—1. Knockdown furniture made with front and back portions provided with dovetail-shaped recesses, combined with round cross-bars having round dovetail-shaped end tenons adapted to said recesses, substantially as herein set forth.

2. In knockdown furniture, the combination, with a front A and back D, of opposing recesses G H in said parts, said recesses G having a contracted dovetail-shaped lower portion *g'*, and the inclined recesses H, having a contracted and dovetail shape at the lower portion, and cross-bars F, having dovetail end tenons *f* fitting said recesses, substantially as herein set forth.

408,279. ZINC ELECTRODE FOR GALVANIC BATTERIES. JAMES R. WILLIAMS, Oakland, Cal. Filed Dec. 12, 1885. Serial No. 185,534. (No model.)



Claim.—1. A zinc for galvanic batteries, provided with a cavity to contain mercury entirely within the zinc and having a canal extending obliquely in an upward direction from near the bottom of the cavity to a point on the surface of the zinc which is below the level of the battery-fluid, and a canal extending in an upward direction from the upper portion of the cavity to a point on the upper surface of the zinc which is outside the battery-fluid, substantially as specified, and for the purpose set forth.

2. A body composed of zinc which can be securely fastened to a battery-zinc, said body being provided with a cavity to contain mercury entirely within the lower portion of the body and having a canal extending obliquely in an upward direction from near the bottom of the cavity to a point on the surface of the body a short distance above the bottom of the cavity, and a canal extending in an upward direction from the upper portion of the cavity to a point on the upper portion of the surface of the zinc, and when the body is joined to the zinc the opening of the lower canal to be below the level of the battery-fluid and the opening of the upper canal to be above the level of the battery-fluid, substantially as specified, and for the purpose set forth.

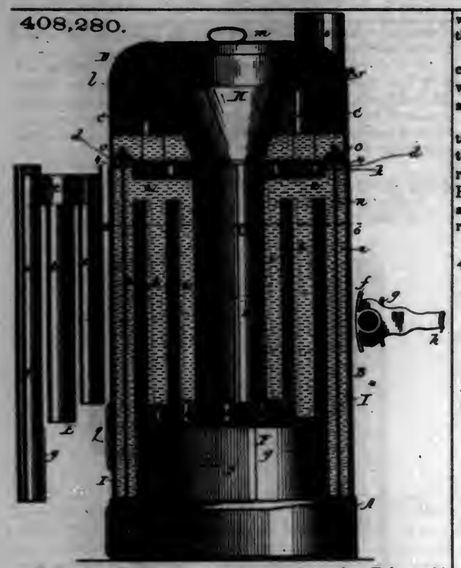
3. The combination of a battery-zinc and a body composed of zinc, said body being provided with a cavity to contain mercury entirely within the lower portion of the body and having a canal extending obliquely in an upward direction from near the bottom of the cavity to a point on the surface of the body a short distance above the bottom of the cavity, and a canal extending in an upward direction from the upper portion of the cavity to a point on the upper portion of the surface of the zinc, and when the body is joined to the zinc the opening of the lower canal to be below the level of the battery-fluid and the opening of the upper canal to be above the level of the battery-fluid, substantially as specified, and for the purpose set forth.

408,280. STEAM-BOILER. GEORGE P. WILSON, Monroe, Wis. Filed Apr. 17, 1889. Serial No. 307,632. (No model.)

Claim.—1. In a steam-boiler, a series of water-tube sections, each consisting of three tubes *a b c*, communicating with each other, each tube *a* being provided with the parts *f* and *g*, the parts *f* forming an outer wall and the parts *g* forming the wall of the fire-chamber, substantially as and for the purposes specified.

2. In a steam-boiler, a series of water-tube sections, each consisting of three tubes communicating with each other, and each section being provided with the parts *f g h*, substantially as and for the purposes specified.

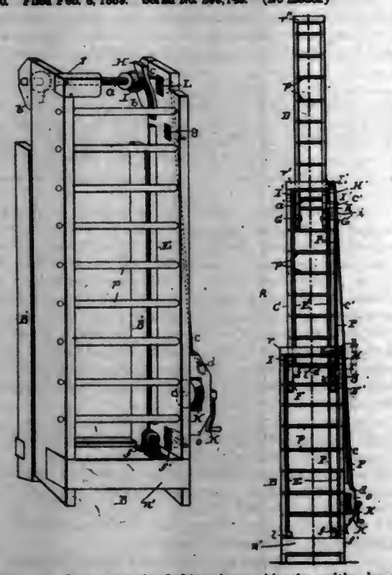
408,280.



3. In a steam-boiler, a series of water-tube sections E, in combination with a water-chamber C above, and combined with the tube-sections E, a smoke-passage *k* between the sections E and water-chamber C, a smoke-chamber above the water-chamber, and flues *j*, communicating at their lower ends with the smoke-passage *k* and at their upper ends with the smoke-chamber above the water-chamber C, substantially as and for the purposes specified.

4. In a steam-boiler, a series of water-tube sections E, each provided with an inside piece *h*, which parts *h* form the wall of the lower part of the fuel-magazine, in combination with a fire-chamber F, water-chamber C, smoke-passage *k*, a smoke-chamber above the water-chamber C, flues *j*, which pass through the smoke-chamber C, and a fuel-magazine G H, substantially as and for the purposes specified.

408,281. EXTENSION-LADDER. GEORGE L. WRIGHT, Kansas City, Mo. Filed Feb. 8, 1889. Serial No. 299,142. (No model.)

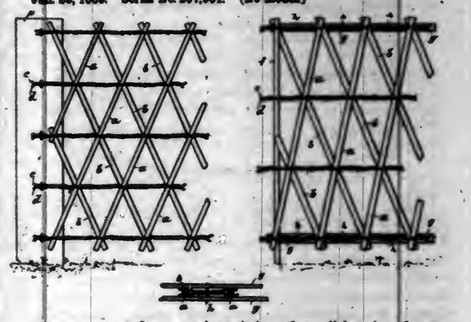


Claim.—1. In an extension-ladder, the combination, with a lower section carrying a track upon its inner sides, the cross-piece *r*, and flanged rollers I at its top portion, of a narrower upper section sliding within the lower section and provided with rollers adapted to run on the track, substantially as shown and described.

2. In an extension-ladder, the combination, with the sections constructed as shown, of the sheaves *f f' g h h' i*, the rope P, and windlass K, all arranged and adapted to operate substantially as shown and described.

3. An extension-ladder consisting of two or more folding sections, the lower sections provided with tracks E E' and guides *r r'* I I', the supporting-arms H H', the upper sections being provided with rollers F F' G G', adapted to run upon the tracks E E', and recesses H'' H''', to receive the supporting-arms H H', the sheaves *f f' h h' i*, arranged as shown, the windlass K, rope P, and cords *c* and *c'*, all arranged and adapted to operate substantially as shown and described.

408,282. WIRE FENCE. DAVID H. ALLEN, Miamisburg, Ohio. Filed Jan. 29, 1889. Serial No. 297,901. (No model.)



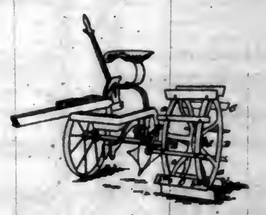
Claim.—1. A fence-panel consisting of parallel series of pales crossing each other at points intermediate their lengths and secured at their junctions by parallel wires twisted together intermediate adjacent junctions, substantially in the manner specified.

2. A fence composed of two parallel series of pales crossing each other at various points and two or more continuous series of parallel wires, those of each series being twisted together intermediate the junctions for binding said bales together at their junctions, substantially in the manner specified.

3. In a wire fence, the combination, with two parallel series of pales crossing each other at various intervals in their lengths, of two continuous wires twisted from a point intermediate two adjacent junctions in opposite directions or toward each junction, substantially in the manner specified.

4. A fence-panel composed of two parallel series of pales crossing each other at various points, and two or more continuous series of parallel wires binding said pales together at their junctions, in combination with the end and horizontal pales or slats secured thereto in the manner substantially as and for the purpose described.

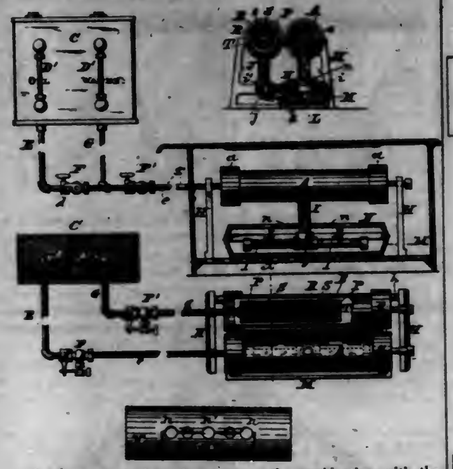
408,283. STALK-CUTTER WHEEL FOR SULKY-PLOWS. BION A. BAKER, Greeley, Iowa. Filed Dec. 18, 1888. Serial No. 294,009. (No model.)



Claim.—1. The combination, with a plow, substantially as described, of a stalk-cutter composed of a wheel having a central hub adapted for mounting on the axle of the plow-sulky, and having a felly with a continuous tread and lugs for the attachment of stalk-cutter knives, and a series of radial knives secured transversely thereto of a length corresponding to practically the width of a furrow, whereby it is adapted to serve as a carrying-wheel for the landward side of the plow and as a stalk-cutter, substantially as set forth.

2. The herein-described stalk-cutter, adapted to be mounted on the axle of a sulky-plow, and consisting of a double-flilled wheel with a single hub, the felly provided with lugs for the attachment of stalk-cutter knives, and knives secured to said lugs, substantially as and for the purpose set forth.

408,284. HYDROCARBON-BURNER. STEPHEN BARNETT, Buffalo, N. Y. Filed Oct. 29, 1888. Serial No. 289,369. (No model.)

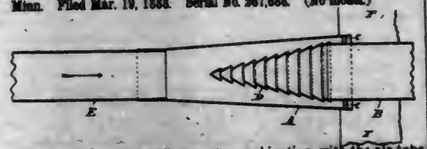


Claim.—1. In hydrocarbon-burners, the combination, with the standard H, of the two cylindrical generators A B, having caps and pipes to support them in bearings in said standards, the steam and vapor pipes leading to and from said generators, and the steam-expansion chamber, the latter having the removable cover and lid provided with apertures for the escaping gases, in the manner as and for the purpose stated.

2. The combination, with the standard H, having the tie-rod *h*, of the generators A A, having caps and pipes to support them between said standards, the pipe J, T *i*, pipes V V, elbows *j*, and nozzles *k*, terminating within the steam-expansion chamber M, the latter being provided with a removable cover having detachable lid and escape openings *n*, the pipe I, T *i*, and pipes L, having upwardly-projecting discharge-apertures *l l*, the whole being combined and constructed in the manner as and for the object stated.

3. In hydrocarbon-burners, the steam-expansion chamber M, having two apertures in its side for the passage of the nozzles *k k*, the removable cover N, provided with an excision for the passage of the pipe I and further excisions *n*, and the detachable lid N' in said cover, said lid having excisions corresponding with those in the cover, the whole being combined with suitable generators, in the manner as and for the purpose set forth.

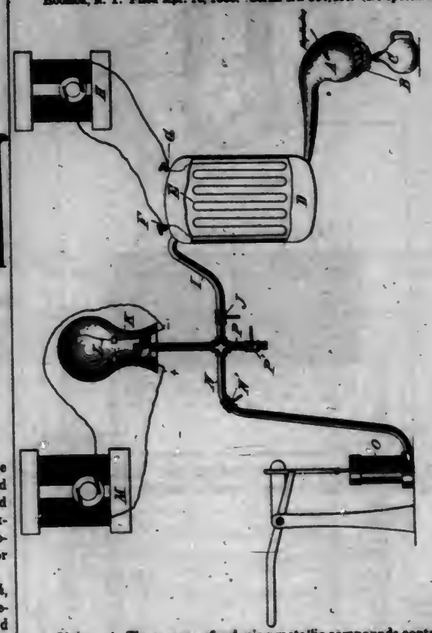
408,285. DUST-COLLECTOR. WILLIAM F. BOEHNING, Minneapolis, Minn. Filed Mar. 19, 1888. Serial No. 267,688. (No model.)



Claim.—1. In a dust-collector, the combination, with the air-tube A, of the air-tube B, having a smaller diameter than the tube A, projecting into the tube A from the direction opposite to the current of air and arranged with an annular space between the tubes, a series of hollow conical sections secured to the end of the tube B, having their smaller ends toward the interior of the tube A and their larger ends inclosing and overlapping each the one next in the series, the annular spaces between them communicating with the interior of said tube B, and a suitable chamber or dead-air space communicating with said tube A, adapted to receive the dust and other impurities deposited therein from said tube, substantially as described.

2. The combination, with the flaring air-tube A, of the air-tube B, projecting into the larger end of the tube A, with an open space between said tubes, and a series of hollow conical sections arranged within the tube A, with open spaces between them communicating with the interior of said tube B, said sections covering the end of the tube B, the smaller end of one being inclosed and overlapped by the larger end of the next of the series, by means of which the dust and other impurities are carried out of said tube A through the space between the tubes, while the air passes between the conical sections and outward through the tube B, substantially as described.

408,286. MANUFACTURE OF INCANDESCENT-LAMP FILAMENTS. TURNER D. BOTTOMS, New York, assignor to John B. Tibbits, Hoosick, N. Y. Filed Apr. 16, 1888. Serial No. 307,660. (No specimens.)



Claim.—1. The process of reducing metallic compounds contained in carbon filaments to the metal, consisting in electrically heating the said carbon in an atmosphere of pure dry and heated hydrogen, substantially as described.

2. The method of treating incandescent filaments, consisting in heating them by electrical means to a temperature at which the carbons become soft in an atmosphere of pure hot dry hydrogen.

3. The method of regulating the electrical conductance of a filament for an incandescent electric lamp, consisting in alternately submitting the same to a treatment incorporating a metallic compound and subjecting the same to a high temperature by electrical means in an atmosphere of heated hydrogen obtained as a product from the destructive distillation of a hydrocarbon, substantially as herein described.

4. The method of treating filaments, consisting in toughening them throughout their structure by electrically heating them until they become soft while inclosed in a chamber containing pure dry and heated hydrogen, as described.

408,287. SECONDARY BATTERY. TURNER D. BOTTOMS, New York, assignor to John B. Tibbits, Hoosick, N. Y. Filed May 28, 1889. Serial No. 312,477. (No model.)

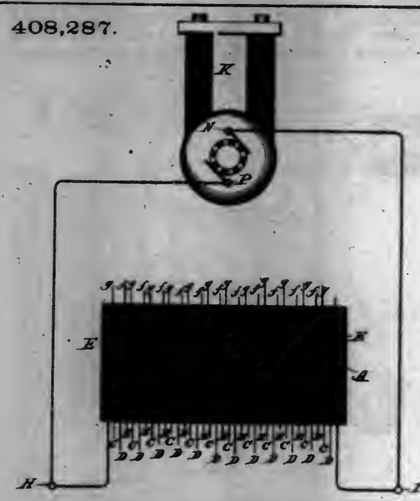
Claim.—1. A storage-pile consisting of a vessel composed of non-conducting material, wherein are placed alternate layers of a paste containing a large proportion of lead crystals, a paste of conductive non-soluble glue, and a metallic plate coated on one side with palladium and on the other with platinum or carbon, substantially as described.

2. A storage-pile consisting, when charged, of alternate layers of a mass of lead peroxide, an insoluble mass of glue, and an alloy of palladium and hydrogenium supported by a metallic plate of lead or zinc coated with platinum or carbon on its reverse side, substantially as herein described.

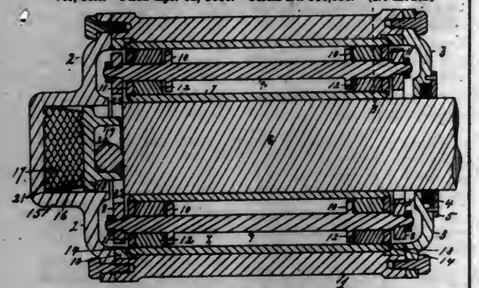
3. A storage-pile consisting in a number of battery elements arranged in series by simple contact, and composed, essentially, each of a positive paste containing lead or a lead compound and a negative paste not containing lead, but in contact with a body that is a good absorbent of hydrogen and forming an alloy therewith in the form of hydrogenium.

4. A storage-pile consisting in elements composed, essentially, of glue, nitric acid, and aluminium sulphate in varying proportions, one portion of such mass rendered positive by the addition of a quantity of lead crystals to form a heavy good conducting mass, substantially as described, and for the purpose herein specified.

408,287.



408,288. ANTI-FRICTION JOURNAL-BOX. JAMES BREWER, Denver, Colo. Filed Apr. 12, 1888. Serial No. 306,950. (No model.)



Claim.—1. A journal-box consisting of a shell or casing, a plural number of main rollers located therein, an equal number of bolts, one for and passing through each main roller, traveling rings secured to the ends of the bolts and holding the main rollers in a cage-like structure, and two series of a plural number of small rollers within each main roller, one series at each end thereof and surrounding the bolt therein, substantially as set forth.

2. A journal-box consisting of a shell or casing, a plural number of main rollers therein, a cap at one end of the casing apertured for the passage of a shaft, and a closed cap at the other end thereof having an interior central recess or chamber, a spring seated therein, a cage or chamber located upon the spring, and a ball-bearing in and of less diameter than the cage or chamber, substantially as set forth.

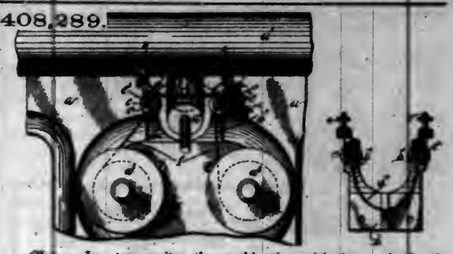
3. A journal-box consisting of a shell 1, tubular rollers 7, having rounded ends engaging with correspondingly-concaved seats in the shell, traveling rings 8 8, bolts passing through rollers 7 and secured to the rings, smaller rollers within the rollers 7, and a cap or caps apertured for the passage of a shaft, substantially as set forth.

4. A journal-box consisting of a shell 1, tubular rollers 7, traveling rings 8 8, bolts 9, having shoulders or collars 10 and passing through the rollers and secured to the rings, smaller rollers 12 within the tubular rollers, a cap 3, apertured for the passage of a shaft 6, a closed cap 2, having chamber 16 on its interior, a spring seated in such chamber, a cage or chamber composed of base 18 and wall 19, seated on the spring, and a ball-bearing 20 in and of less diameter than its cage or chamber, substantially as set forth.

408,289. RIBBON MOVEMENT FOR TYPE-WRITING MACHINES. LOUIS A. BROTT, Groton, N. Y., assignor to the Crandall Type-Writer Company, same place. Filed Jan. 9, 1888. Serial No. 260,171. (No model.)

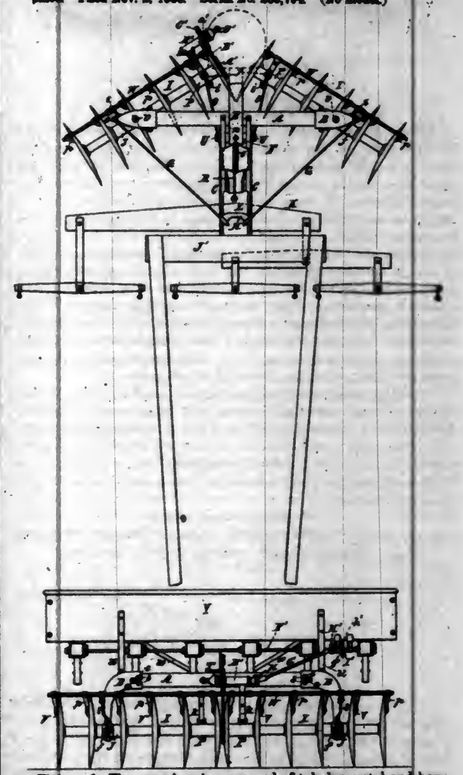


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Claim.—In a type-writer, the combination, with the spools a^2 and inking-ribbon f, of the forked holder b, provided with the studs c, the oscillating hubs d', pins d, extended through slots in the holder b, and the spring d', substantially as and for the purpose set forth.

408,290. COMBINED SEEDER AND HARROW. ARTHUR P. BROWN, Dayton, Ohio, assignor to the Stoddard Manufacturing Company, same place. Filed Nov. 2, 1888. Serial No. 288,794. (No model.)



Claim.—1. The cross-bar A, composed of tubular metal and having secured upon its ends the curved tubular castings B, provided with the slots a and clamping-bolts c, in combination with the main frame and the disk-gangs hinged to the vertical spindles of the castings B, substantially as and for the purpose specified.

2. The main frame composed of the tubular cross-bar A, having secured upon its ends the curved tubular castings B, the L-bars C, bolted to the cross-bar A and united at their forward ends by the bar D, and the brace-rods G, extending from the forward ends of the bars C to the castings B, in combination with the disk-gangs hinged to the castings B, substantially in the manner and for the purpose specified.

3. The combination, with the sliding doubletree and its slide L, of the casting N, having vertical slots h, the draw-bars O, having their forward ends inserted through and confined in said slots and their rear ends bent down and hinged to the inner ends of the disk-gangs, the hooks j, uniting the elbows of the draw-bars to upward extensions from the gang-axles, the main frame, and the disk-gangs hinged thereto, substantially as described.

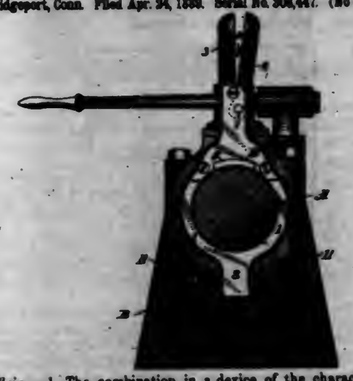
4. The combination, with the seed-box, its feed-shaft, and distributing mechanism, of the main frame, the disk-gangs hinged thereto, a sprocket-wheel upon the convex side of the inner disk of one gang, a second sprocket-wheel carried by said gang, a drive-chain uniting the sprockets, a spindle driven by said sprockets and carried by said gang, and a drive-rod with universal joints uniting said spindle and the feed-shaft, substantially as and for the purpose specified.

5. The combination, with the seed-box, its feed-shaft, and distributing mechanism, of the main frame, the disk-gangs hinged thereto, a sprocket-wheel upon the convex side of the inner disk of one gang, a second sprocket-wheel carried by said gang, a drive-chain uniting the sprockets, a spindle driven by said sprockets and carried by said gang, clutch mechanism uniting said spindle and second sprocket, and a drive-rod with universal joints uniting said spindle and the feed-shaft, substantially as and for the purpose specified.

6. The combination of the doubletree K, slide L, bars C, lever Q, link R, uniting the lever to the slide-rack o, dog n, pivoted to the lever and engaging with the rack, the rear extension T from said dog, and the draw-bars O, connected at their forward ends to the doubletree and at their rear ends to the inner ends of the disk-gangs, substantially as and for the purpose specified.

7. The combination, with the hinged disk-gang shafts, of arms projecting upwardly therefrom and movable therewith and carrying scraper-bars adjustable in said arms and provided with independently-adjustable scrapers, substantially as and for the purpose specified.

408,291. BRAKE FOR LATHE-SPINDLES. EDWARD P. BULLARD, Bridgeport, Conn. Filed Apr. 24, 1889. Serial No. 308,447. (No model.)



Claim.—1. The combination, in a device of the character described, with a collar adapted to surround the shaft, of a movable brake-shoe whose operative face forms a part of the bearing-surface of the collar, a rigid handle upon the collar, a complementary handle pivoted to the rigid handle, and a link interposed between the last-named handle and the shoe and whereby the latter is actuated, substantially as set forth.

2. In a device of the character described, the combination, with the collar adapted to surround the shaft or spindle, of a projection on said collar, and stops against which said projection may abut, a brake-shoe arranged and movable in the bearing-surface of said collar, and a pair of handles whereby said shoe is actuated relative to the collar, substantially as set forth.

3. The combination, with the collar adapted to surround the shaft, of the brake-shoe arranged and movable in the bearing-surface of said collar, a pair of handles whereby said shoe is operated, and means, as a stop, for limiting the movement of the collar around the shaft, substantially as specified.

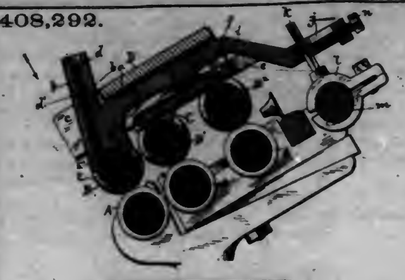
408,292. SADDLE FOR TOP ROLLS OF SPINNING-MACHINES. WILLIAM T. CARROLL, Worcester, Mass. Filed Mar. 7, 1889. Serial No. 302,257. (No model.)

Brief.—The objects of the invention are to facilitate lubrication and to improve the means for holding and adjusting the front roll.

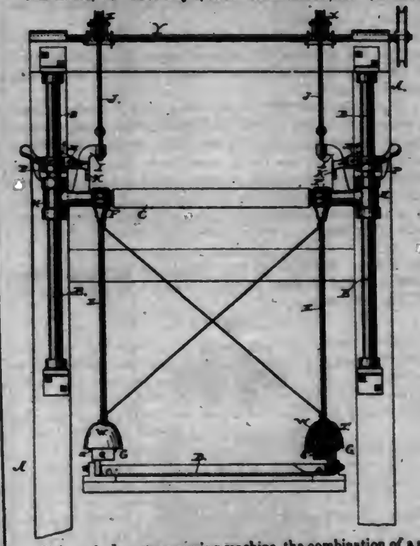
Claim.—1. In saddles for spinning-machines, the combination of the upper saddle having an oil-duct projecting upwardly from its hub or bearing, the clearer having a slot adapted to said oil-duct, and the under saddle having its oil-duct lengthened out beyond the clearer, substantially as shown and described, and for the purpose specified.

2. In combination, the front top roll, the upper saddle having a journal-box formed in its hub, which is the sole journal-box of said roll, and having its stem lengthened out in the rear and formed with a slot, the cap-bar having a pin to enter said slot, and an adjusting set-screw, substantially as shown and described, and for the purpose specified.

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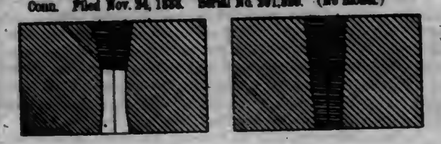
408,293. MACHINE FOR SAWING STONE. GEORGE DALRYMPLE, Fair Haven, Vt. Filed May 1, 1889. Serial No. 308,199. (No model.)



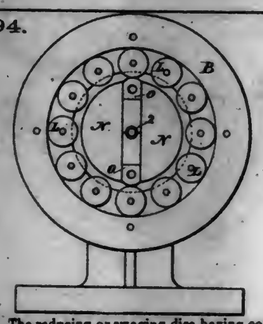
Claim.—1. In a stone-sawing machine, the combination of a saw-frame having a horizontal reciprocating motion in an endwise direction, said saw-frame being suspended by pendulous rods from cross-heads which are fitted to move vertically on guide-rods fixed at opposite ends of the machine, and clamping mechanisms which consist of collars fitted to slide loosely on said guide-rods, and each collar having a lever that is loosely pivoted thereto, one end of said lever being fitted to bear upon a lug projecting from said cross-head and the opposite end of said lever being provided with a cam-face that will bite against a guide-rod and resist a rising movement of said saw-frame, as and for the purpose herein specified.

2. In a stone-sawing machine, the combination of a saw-frame suspended by pendulous rods from cross-heads which are fitted to receive a vertical movement on guide-rods at the opposite ends of the machine, said pendulous rods being journaled on said cross-heads and to said saw-frame, the joints of said pendulous rods with said saw-frame being formed by each having a longitudinally-grooved and radially-perforated sleeve which is inserted in the lower head of said pendulous rods, a box for containing lubricant secured to said saw-frame and provided with a wrist-pin which fits the bore of said sleeve, the latter being submerged, either partially or entirely, in said lubricant, so that the latter will flow into the grooves and perforations of said sleeve, as and for the purpose herein specified.

408,294. SWAGING-MACHINE. WILLIAM H. DAYTON, Torrington, Conn. Filed Nov. 24, 1888. Serial No. 291,289. (No model.)



408,294.

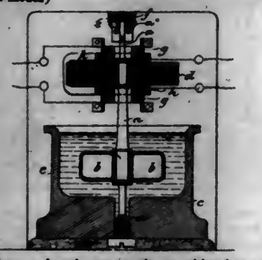


Claim.—1. The reducing or swaging dies having corrugations or ribs at the conical or flaring portion of the opening between the dies, substantially as set forth.

2. The swaging or reducing dies having an opening through between them and provided with screw-threaded ribs or corrugations in the surface of the metal at the tapering portion of the opening, substantially as set forth.

3. The combination, with the revolving head N, having a transverse groove, of the dies C within such groove, there being a central opening through between the said dies, which opening is tapering or flaring at the entrance side for the article to be operated upon, and the screw-threaded corrugations or ribs provided in the surface of the metal of the dies, at the flaring portion thereof, for feeding in the wire or rod to be reduced automatically by the revolution of the dies, substantially as set forth.

408,295. ELECTRIC METER. SEBASTIAN Z. DE FERRANTI, Hampstead, County of Middlesex, England. Filed Oct. 10, 1888. Serial No. 287,735. (No model.)



Claim.—1. In an electric meter, the combination, substantially as set forth, with the stationary coils, of an unwound rotating armature magnetized thereby, said armature being built up of insulated lamine of iron or magnetic metal, and the mass of metal being so related to the resistance of the coil, as herein described, that the current in the coil cannot magnetically saturate the armature.

2. In an electric meter, the combination, substantially as set forth, of the stationary coils and an unwound rotating armature magnetized thereby, the mass of metal in the armature being so related to the resistance of the coil, as herein described, that the current in the coil cannot magnetically saturate the armature.

3. In an electric meter, the combination of an unwound rotating disk-armature, stationary coils in planes at right angles to the plane of the disk, said coils magnetizing the disk, and a body of fluid in which the weight of the armature is floated or partly floated to lessen the weight upon its pivot.

4. In an electric meter, a rotating armature mounted on a spindle, which also carries a float immersed in liquid, whereby the weight of the armature upon its pivot is lessened.

408,296. CONDENSER-HEAD FOR THE EXHAUST-PIPES OF STEAM-ENGINES. ASADORE M. DOANE, Chicago, Ill., assignor to the Leeds-Barratt Supply Company, same place. Filed Feb. 11, 1889. Serial No. 299,523. (No model.)

Claim.—1. In condenser-heads, the combination, with the expanded case and with the steam-inlet pipe joined tightly thereto and discharging therein, of the hood located within said case, inclosing the terminal of the inlet-pipe and open at both of its ends to constitute a mixing-chamber, whereby air may be freely drawn through the space between said terminal and its surrounding hood and be commingled with the steam within the hood to effect the rapid condensation thereof, substantially as described.

2. The combination, with the inclosing-case and its outlet, of the

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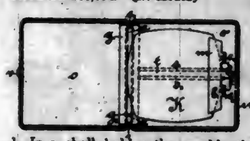


union inlet-pipes and the open hoods encompassing the same, substantially as described.

3. The combination, with the inclosing-case and its outlet-pipe projecting thereinto, of the union inlet-pipes and the open hoods therefor, having their lower edges at about the level of the inner end of the outlet-pipe, substantially as described.

4. The combination, with the inclosing-case and its outlet-pipe projecting thereinto, of the union inlet-pipes, the open hoods therefor, and the deflector extending from the outlet-pipe about said hoods and case, the lower edges of the hoods being about level with the inner end of the outlet-pipe, substantially as described.

408,297. CHALK-HOLDER. CARL DUBSICKER, Minden, Westphalia, assignor to Wilhelm Dörge, Braunschweig, Germany. Filed Oct. 13, 1888. Serial No. 288,094. (No model.)



Claim.—1. In a chalk-holder, the combination of sections *o o'*, having a catch at one edge and a slot and hinges at the other, with a clamp attached to the inside of one of said sections but movable toward or from said slot, for the purpose set forth.

2. A pair of sections *o o'*, hinged together to form a casing or holder for the chalk, provided with slot *a*, for allowing the protrusion of the chalk and having rubber strips attached to it at the edge of the slot, for the purpose set forth.

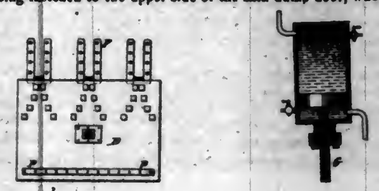
3. The spring-clamp *m*, having an outwardly-extending part, in combination with a spring-catch attached to said part, an inclosing-case provided with a slot for allowing the protrusion of the chalk, a slot at an angle thereto for allowing such outward extension of said part, and a series of perforations parallel to the latter slot for engaging said spring-catch, substantially as set forth.

4. In combination with a casing slotted to allow the protrusion of the chalk and having the edge of the slot lined with rubber, a spring-clamp arranged within said casing and movably attached thereto, the jaws of said clamp being also lined with rubber in order that the chalk may be protected at each point of contact against being crushed by the devices which hold it, substantially as set forth.

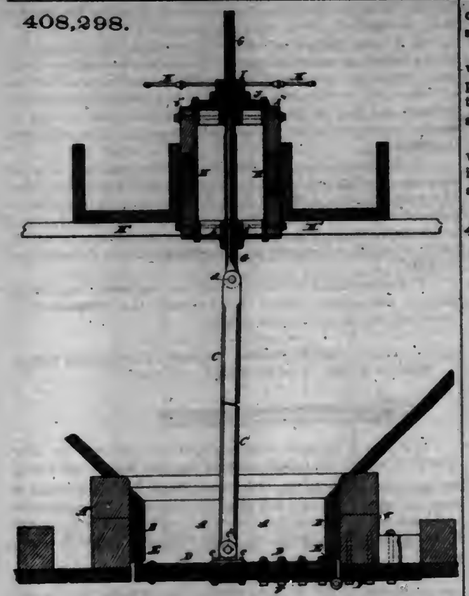
5. The section *o*, provided with catch *v*, in combination with section *o'*, provided with slots *s' s²*, and plate *t*, having a series of perforations *e*, the clamp-jaws *b' b²*, one of which has two curved pieces *r' r²* extending outward through said slots, the spring *f*, which forces said jaws against the chalk, and the spring-catch *g*, attached to said curved pieces between them and having a stud *i* adapted to enter any one of said perforations, the said sections *o o'* being hinged together at *c' c²* and having a slot *a* between the hinges, substantially as set forth.

408,298. DUMPING-SCOW. JOSEPH EDWARDS, Brooklyn, N. Y. Filed Dec. 21, 1888. Serial No. 294,335. (No model.)

Claim.—1. In a dumping-scow, the combination of the rigid sliding rod G G, connecting-rod C, and swinging dump-door D D, the upper end of the said connecting-rod being fastened to the lower end of the said sliding rod, and the lower end of the said connecting-rod being fastened to the upper side of the said dump-door, whereby the



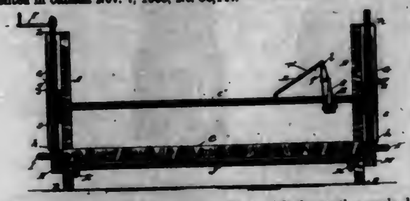
408,298.



dump-door can be forced open or closed by the vertical movement of the laterally-rigid rod, in the manner and for the purpose set forth.

2. In a dumping-scow, the combination of the rigid sliding rod G G, having a screw-thread and a vertically-stationary threaded nut I thereon, connecting-rod C, and swinging dump-door D D, the said connecting-rod having its upper end fastened to the lower end of the said sliding rod and its lower end attached to the upper side of the said dump-door, whereby the rotating of the said nut will give a vertical movement to the sliding rod and force down or draw up the connecting-rod and open or close the dump-door, according to the direction in which the said nut is rotated, substantially as and for the purpose described.

408,299. BEDSTEAD. CALLISTE ESTHIER, St. Jérôme, Quebec, Canada. Filed Dec. 17, 1888. Serial No. 293,870. (No model.) Patented in Canada Nov. 7, 1888, No. 30,147.



Claim.—In a bedstead, the combination, with the stationary bed-frame, provided with legs and with end pieces A and B, of the guard-pieces *g*, secured to the end pieces, the revoluble screws G, journaled in said guard-pieces and provided with bevel-toothed wheels I, the pieces H, secured to the said end pieces and supporting the lower ends of the said screws, the shaft J, journaled in said pieces H and provided with beveled-toothed wheels K, gearing with said wheels I, and a vertically-movable frame for supporting the patient, provided with cross-pieces *c²*, engaging with the said revoluble screws, the whole being supported by the said bedstead legs and adapted to be moved about to any part of the sick-room, substantially as set forth.

408,300. WAISTBAND-FASTENER. JOHN BUTZ, Washington, D.C., assignor to Ottomar Monger, Philadelphia, Pa. Filed Nov. 9, 1887. Renewed July 1, 1889. Serial No. 316,106. (No model.)

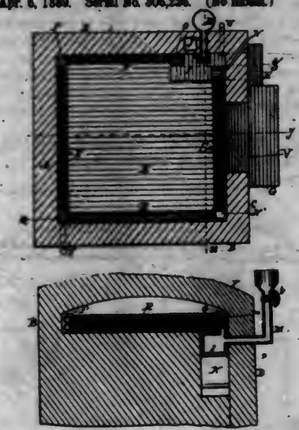


Claim.—1. In a garment-fastening, the combination, with a catch C, of the plate A, having the rounded hook B, provided with a semi-circular slot and the shoulders *c c*, said plate A being perforated at *a a*, substantially as shown and described, and for the purpose specified.

2. In a garment-fastening, the combination, with the plate A, provided with the hook B, of the catch C, consisting of two plates having prongs at each end, said plates being secured one to the other and the prongs bent at right angles thereto, substantially in the manner shown and described, and for the purpose specified.

3. In a garment-fastening, the combination, with the plate A, provided with the hook B, of the catch C, consisting of the body *c*, having prongs *d'* at each end, said prongs being provided with ears *a²*, substantially as shown and described

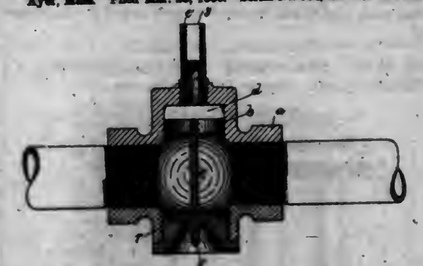
408,301. HEATING APPARATUS. PETER FOX, Englewood, Ill. Filed Apr. 6, 1889. Serial No. 306,236. (No model.)



Claim.—1. A heating apparatus consisting of a tank with a furnace thereunder, in combination with a series of pipes communicating therewith, a supply-pipe leading into the tank, a gas-discharge pipe communicating with said pipes at a point about midway of their length from the tank in either direction from it, and tank and pipes filled with oil, as and for the purpose specified.

2. A heating apparatus for ovens, consisting of the tank I, placed in one corner thereof and on a level with the oven-bottom, the heads N' N, communicating with it, the pipe S, lying above the pipes R and the latter pipes communicating with the vertical heads O, P, Q, and N', the tank having a supply-pipe and discharge-pipe, and the tank and pipes filled with oil, in combination with an oven, as and for the purpose specified.

408,302. AUTOMATIC FIRE-EXTINGUISHER. JAMES R. GRAY, Ayer, Mass. Filed Mar. 26, 1889. Serial No. 304,785. (No model.)



Claim.—1. In an automatic fire-extinguisher, a casing adapted to be connected to the water-pipes, and provided with a valve-seat having an opening for the escape of water and with a chamber located in line with the valve-seat, said chamber having an outlet closed by means of a fusible joint, combined with a valve provided with a head connected with and having an area greater than that of the valve and fitted loosely within said chamber, substantially as set forth.

2. In an automatic fire-extinguisher, a vent or outlet and a plug or cap to close the same, the walls of both of such parts being grooved or indented to receive the fusible material which unites them and tapered to release such cap or plug more promptly, substantially as set forth.

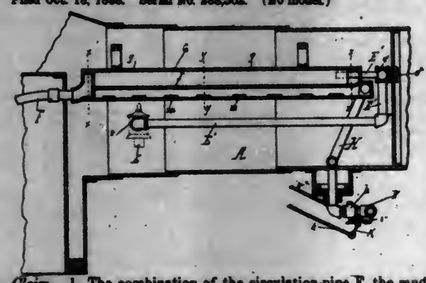
3. In an automatic fire-extinguisher, a vent or outlet and a plug

or cap to close the same, the walls of both such parts being grooved or indented and sealed together by means of fusible material imposed between them and received into the said grooves or indentations, combined with a section of fusible material of a less degree of hardness imposed between the harder fusible material and the internal pressure to prevent the escape of such pressure, substantially as described.

4. The nipple or outlet *i*, having its walls grooved or indented, and the plug *g*, having its walls grooved or indented, the said plug being counterbored to expose its interior to the action of heat, and sealed to the said nipple by means of fusible material imposed between them and received into the said grooves or indentations, substantially as set forth.

5. A casing adapted to be connected with the water-pipes, a valve-seat within the casing having an opening for the escape of water, a chamber located in line with the valve-seat and communicating with the interior of the casing, a valve held to the valve-seat by the internal pressure, a head connected with and having an area greater than that of the valve and fitted within the said chamber, and which permits the pressure to pass freely from the casing into the chamber above the head, and a vent or outlet from the chamber whose area exceeds the leakage into the chamber, substantially as set forth.

408,303. STEAM-BOILER. HERBERT HACKNEY, Topeka, Kans. Filed Oct. 18, 1888. Serial No. 288,502. (No model.)



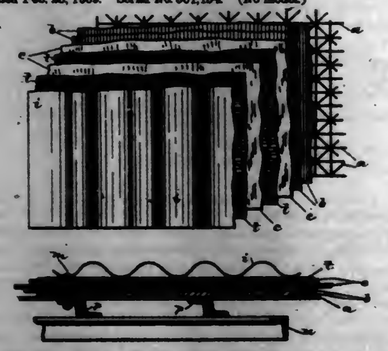
Claim.—1. The combination of the circulation-pipe F, the mud-drum G, provided with means for blowing it out with the pipe E', which discharges the feed-water into said mud-drum at a point intermediate between the opening through which the circulating water enters and that through which it leaves said mud-drum, as and for the purpose stated.

2. The combination of the mud-drum G, containing the three compartments M M' N, with the circulation-pipe F, the feed-water pipe E', and the discharge-pipe H, as and for the purpose stated.

3. The combination of the boiler A, the circulation-pipe F, and the mud-drum G with the three-winged partition I, dividing said mud-drum into a discharge-passage N, and two circulation-passages M M', connected at one end and opening, respectively, into the circulation-pipe F and the water-space of the boiler, substantially as set forth.

4. The combination of the mud-drum G, the discharge-pipe H, the feed-water pipe E', and the screw-plug e^3, as and for the purpose stated.

408,304. ROOF-COVERING. JOHN T. HEWTHORN, Providence, R. I. Filed Feb. 25, 1889. Serial No. 301,154. (No model.)



Claim.—1. A composite roof composed of an inner lining or surface of non-conducting incombustible materials, of which asbestus forms the base thereof, purlins or other suitable supports therefor, and an outer covering of metal secured to said lining and purlins, substantially as described, and for the purpose specified.

2. A composite roof consisting of a corrugated-iron exterior surface, a surface of impervious material, as tar-paper, contiguous to the under side of the corrugated iron, an asbestus lining upon which the said impervious surface rests, a surface of wire-netting to support the asbestus, and fixed purlins for supporting the whole, and to which the several surfaces or layers are secured, substantially as hereinbefore described.

3. The combination, with suitably-supported metallic purlins and an outer covering *i* of corrugated iron separated from said purlins, of a metallic netting *a*, resting directly upon the purlins, a surface of asbestus board supported by the netting, and one or more layers of tar-protected impervious material laid upon the asbestus board, the whole arranged and secured together, substantially as described and set forth.

4. A corrugated-iron roof having a lining composed of impervious material and asbestus resting upon a metallic base, substantially as described, and for the purpose specified.

408,305. ERASER-HOLDER. CHARLES A. HOLMES, Irving Park, Ill. Filed Apr. 9, 1889. Serial No. 306,566. (No model.)

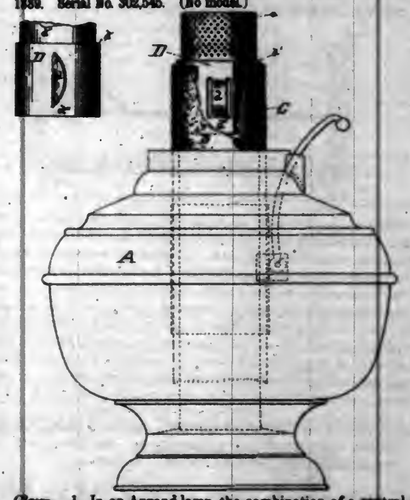


Claim.—1. In eraser-holders, the combination, with the tube, open at its end, of the spindle inserted movably therein and having the spring-fingers projecting therefrom beyond the tube-terminal to clasp the rubber, said tube and spindle being in threaded engagement with each other, whereby the tube may be shifted adjustably against the spring-fingers to regulate the grasp thereof, substantially as described.

2. In eraser-holders, the combination, with the threaded tube, open at its end, of the threaded spindle fitted movably therein, and having the outwardly-bent spring-fingers in piece therewith and projecting therefrom beyond the tube-terminal, the shifting engagement of said tube and spindle causing the tube to bear adjustably against the spring-fingers and regulate the grasp thereof upon the rubber, substantially as described.

3. As a new article of manufacture, an eraser-holder consisting of an open-ended tube having at one terminal a reversible plug furnished with a knife-blade, and threaded at its opposite terminal to engage with a threaded spindle having outwardly-bent spring-fingers projecting therefrom and beyond the tube-terminal to grasp the rubber, the screw-shift of said spindle and tube causing the tube end to bear adjustably against the fingers, substantially as described.

408,306. ARGAND LAMP. WILLIAM C. HOMAN, Meriden, Conn., assignor to the Edward Miller & Company, same place. Filed Mar. 2, 1889. Serial No. 302,545. (No model.)

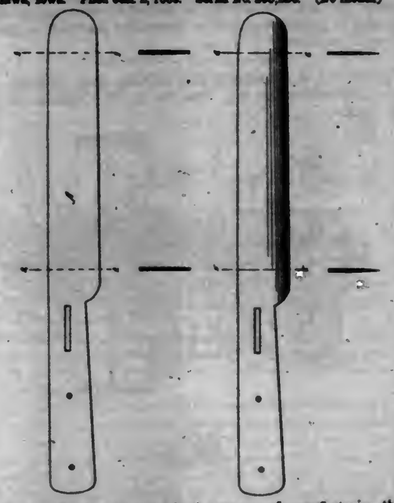


Claim.—1. In an Argand lamp, the combination of a central air-supply tube, an inner air-distributer, the lower portion of which is of an interior diameter slightly greater than the exterior diameter of said central tube, and one or more springs formed in said lower portion, substantially as described.

2. In an Argand lamp, the combination of a central air-supply tube, an inner air-distributer, the lower portion of which is of an interior diameter slightly greater than the exterior diameter of said central tube, and one or more springs formed in said lower portion by the indentation of a strip of metal between two parallel slots, substantially as described.

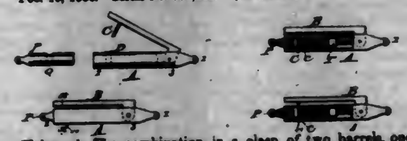
3. In the inner air-distributer of an Argand lamp, the combination of a perforated cylindric portion of an exterior diameter less than that of the central air-supply tube of the lamp, an annular shoulder, a cylindric lower portion of an interior diameter slightly greater than the exterior diameter of said central air-supply tube, and one or more springs in said lower portion adapted to frictional engagement with said central tube, substantially as described.

408,307. MANUFACTURE OF CUTLERY. ALLEN JOHNSON, Ottumwa, Iowa. Filed Jan. 2, 1889. Serial No. 295,220. (No model.)



Claim.—The improvement in the process of manufacturing the blades of table-cutlery, &c., consisting in the following steps: first, stamping from sheet or ribbon metal a blank having the length and greatest thickness requisite in the finished blade, and then wholly shaping said blank by grinding, substantially as specified.

408,308. CLASP FOR NECKLACES. ADAM KELLER, New York, N. Y., assignor to himself, and John C. Downing, Newark, N. J. Filed Feb. 16, 1889. Serial No. 300,205. (No model.)



Claim.—1. The combination, in a clasp, of two barrels, one of which fits within the other, having corresponding holes through each, and a pin on a pivoted arm, which passes through the two barrels and holds them together, substantially as specified.

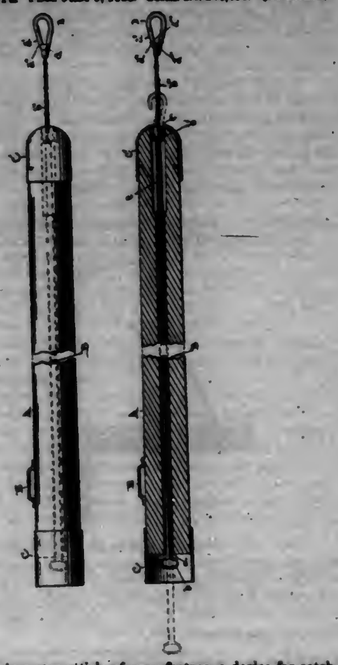
2. The combination, in a clasp, of two barrels, one of which fits within the other, and having corresponding holes through each, a pin on a pivoted arm, which passes through the two barrels, and a spring to retain the pin in the hole, substantially as specified.

3. The combination, in a clasp, of an outer barrel having a hole through it at right angles to the axis, and a buffer T on a spiral spring within the same, which normally closes the hole, substantially as described.

4. The combination, in a clasp, of an outer barrel provided with a buffer and spring and an inner barrel fitting within the outer barrel, the two barrels having corresponding holes through each, and a pin C on a pivoted arm, substantially as specified.

5. The combination, in a clasp, of two barrels, one of which fits within the other, having corresponding holes through each, the outer barrel having a longitudinal slot and the inner barrel a feather to fit into the slot, and a pin on a pivoted arm, and a spring to retain the pin in the corresponding holes through each barrel, substantially as specified.

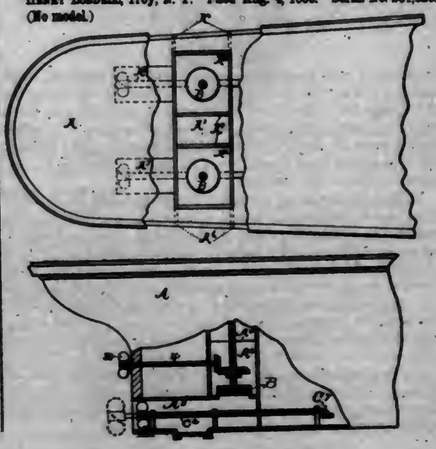
408,309. DEVICE FOR CATCHING ANIMALS. IRWIN S. KNOX, Connellsville, Pa. Filed June 9, 1888. Serial No. 276,658. (No model.)



Claim.—1. As a new article of manufacture, a device for catching and holding animals, consisting of an axially-bored handle provided with a centrally-apertured ferrule at each end, one of said ferrules having its opening inwardly tapered or cone-shaped, a rod longitudinally adjustable in said handle, a snap-hook provided with a spring-actuated pivot-tongue adapted to enter the cone-shaped opening in said ferrule, and a flexible connection between said snap-hook and the adjustable rod, substantially as shown and described.

2. In a device for catching and holding animals, the combination, with the handle A, axially bored at *a* and provided with the ferrules C C, the ferrule C having the tapered or cone-shaped tubular projection *c'*, and the rod B, longitudinally adjustable in said handle, of the snap-hook D, normally closed by the spring d^2, and having its upper edge beveled to adapt it to the said cone-shaped tubular projection *c'* of the ferrule C, and the cord or chain b^2, connecting said snap-hook and the rod B, substantially as shown and described.

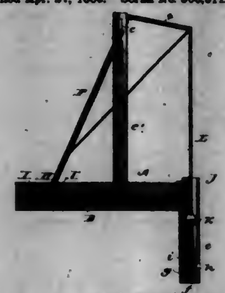
408,310. WATER-POWER VESSEL-PROPELLING MECHANISM. HENRY LOSDELL, Troy, N. Y. Filed Aug. 4, 1888. Serial No. 281,229. (No model.)



Claim.—1. In a vessel, the combination, with a water way or trunk below the water-line of the vessel, having supply and discharge openings leading from a higher to a lower level, of a water-displacing and vessel-propelling wheel or screw located in or near the discharge-opening and operative by suitable power, and a water-motor located in said water way or trunk.

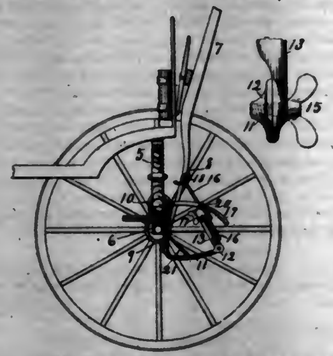
2. In a vessel, the combination, with a water way or trunk below the water-line of the vessel, having supply and discharge openings leading from a higher to a lower level, of a water-displacing and vessel-propelling wheel or screw located in or near the discharge-opening and operative by suitable power, a water-motor located in said water way or trunk, and an auxiliary vessel-propelling screw or wheel connected to and actuated by such motor

408,311. CLOTHES-POUNDER. THOMAS MAITLAND, Williamsport, Pa. Filed Apr. 27, 1889. Serial No. 308,811. (No model.)



Claim.—In a washing-machine, the combination of a body having a corrugated bottom, a frame mounted above said body, a pair of rocker-arms carrying rollers and pivotally mounted in said frame, a throw-arm M, hinged to said frame, a piston-rod L, pivoted to said throw-arm and actuating a pump J, and connecting-rods connecting said throw-arm with said rocker-arms.

408,312. TONGUE-SUPPORT FOR VEHICLES. W. W. MAYNE, Huron, Dak. Filed Nov. 24, 1888. Serial No. 291,798. (No model.)



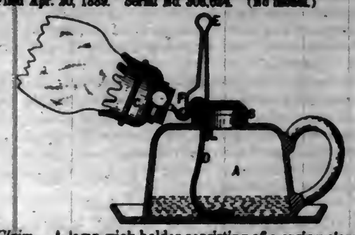
Claim.—1. The combination, in carriage-tongue supports, of the shank 9, provided with the hook 10 and the forward arm 11, having half a hinge-joint 12 formed on it, the brace 13, provided with half a hinge 12 and with a longitudinal bore and a binding-screw 17, a forked extension brace 16, fitted to the bore of the brace 13, and a binding-screw 15, adapted to secure the brace 13 rigidly to the arm 11, substantially as shown and described.

2. The combination of the shank 9, provided with the hook 10 and the arm 11, the brace 13, hinged to the arm 11 and longitudinally bored and provided with a stud 20, the forked extension-brace 16, fitted to the said bore in the brace 13, the binding-screw 17, fitted in the brace 13, and the stay-bar 19, hung at one end to the shank 9 and notched to engage the said stud, substantially as shown and described.

3. The combination of the shank 9, provided with the hook 10 and arm 11, the brace 13, hinged to said arm and provided with a forked adjustable extension 16, and the stay 21, permanently connecting the arm 11 and shank 9, substantially as shown and described.

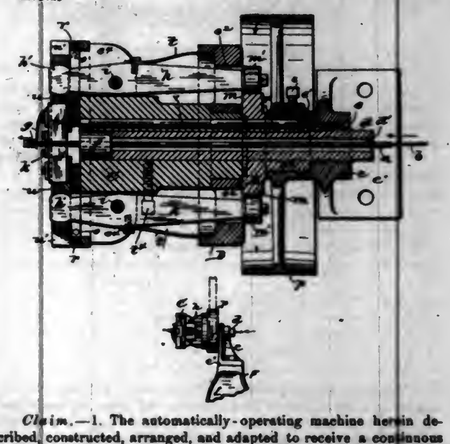
4. The combination of the shank 9, provided with the hook 10 and arm 11, the brace 13, hinged to the said arm, and a curved or flexible support adapted to connect the brace 13 with the vertical portion of the shank, substantially as shown and described.

408,313. LAMP-WICK HOLDER. GEORGE B. MEEKER, Boston, Mass. Filed Apr. 20, 1889. Serial No. 308,024. (No model.)



Claim.—A lamp-wick holder consisting of a spring-clamp having one of its jaws provided with an offset or shoulder and the other jaw having a parallel extension, as shown and described, as and for the purposes set forth.

408,314. MACHINE FOR MAKING BEAD-CHAINS. SAMUEL MOREY, Providence, R. I. Filed Mar. 12, 1889. Serial No. 302,973. (No model.)



Claim.—1. The automatically-operating machine herein described, constructed, arranged, and adapted to receive a continuous piece of hollow wire or tubing *a*, having therein a continuous piece of prepared wire *b*, adapted to be easily severed at regular intervals and intermittingly present them to the action of dies, which transforms the tube into segregated units connected by the internal wire.

2. In a machine of the character hereinbefore described, the combination of a hollow arbor or spindle, a series of dies *w*, having formed in their working-faces a series of progressive die cavities or molds, mechanism for intermittingly reciprocating the dies in a radial direction, and a feeding device working conjointly with one or more of said dies, substantially as set forth.

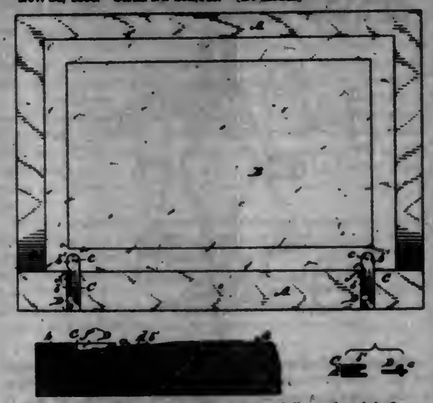
3. The combination and arrangement, in a single machine for producing bead-chain, of a stationary hollow arbor or spindle, a die-actuating cam-disk and pulley mounted to revolve upon the arbor, a head secured to the arbor, a series of radially-arranged die-blocks mounted to reciprocate in the head, levers engaging said cam-disk and die-blocks, an intermittingly-actuated rod engaging a pivoted die-holder carrying a die-block, and a combined guide and check lever to prevent the work from moving rearwardly, substantially as hereinbefore described.

4. In a single machine for producing bead-chain, the combination, with a stationary hollow spindle, and a pulley and cam-disk provided with an adjustably-mounted feed-actuating rod or pusher mounted to revolve around said spindle, of a stationary head having a series of radially-arranged die-blocks mounted in its face, pivoted levers engaging the die-blocks and cam-disk, a pivoted holder *r*, intermittingly actuated by said pusher, and a check-lever arranged to restrain the work from rearward movement, substantially as hereinbefore described.

5. In a machine for producing bead-chain, the combination, with driving and feeding mechanism, substantially as described, of intermittingly-operating bead-forming dies *w*, a stationary head having said dies mounted therein, a hollow spindle through which the stock is intermittingly fed to be acted upon by the dies, and a central guide *g*, mounted at the front of the head to receive the work after its passage through the dies, substantially as hereinbefore set forth.

6. The combination of a series of intermittingly-operating bead-forming dies *w*, a check or restraining device to prevent the stock-tube *a* from rearward movement, and intermittingly-operating stock-feeding mechanism, substantially as hereinbefore set forth.

408,315. DRAWING-BOARD. ERWIN A. NEWMAN, Washington, D. C., assignor of one-half to David L. Smeltzer, Emporia, Kans. Filed Nov. 26, 1888. Serial No. 292,146. (No model.)



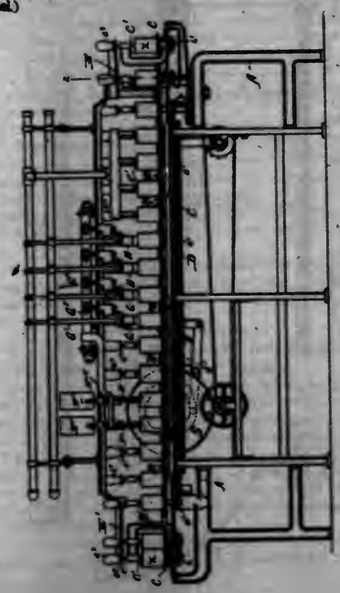
Claim.—1. The combination, substantially as hereinbefore set forth, of the drawing-board having a recess on one side and the pin-carrying fingers arranged in recesses in the edge of the board.

2. The combination, substantially as hereinbefore set forth, of the drawing-board having a recess on one side, the pin-carrying fingers arranged in recesses in the edge of the board, and the catches for holding the fingers in position.

3. The combination, substantially as hereinbefore set forth, of a drawing-board having a recess on one side inclined downwardly toward the edge of the board, a ridge along the margin of the board, the spring-metal pin-carrying fingers arranged in recesses in the edge, and the spring-catches for holding the pin-carrying fingers in position.

4. A drawing-board having a recess on one side inclined downwardly toward the edge of the board and devices for securing the edge of the drawing-paper in the recess.

408,316. CAN-CAP-SOLDERING MACHINE. ERWIN HORTON and JOHN G. HOOSNER, Maywood, assignors to said Erwin Horton, and Oliver W. Horton, Chicago, Ill. Filed Oct. 1, 1888. Serial No. 286,916. (No model.)



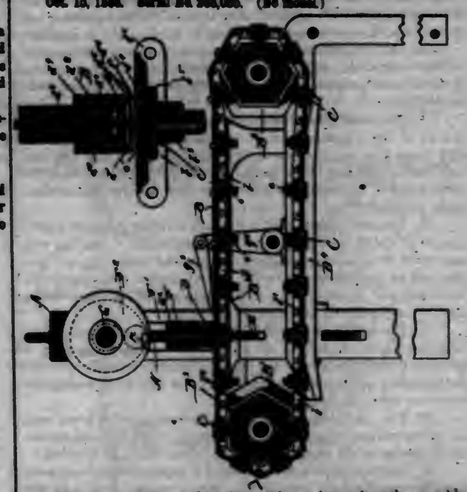
Claim.—1. The combination, with a number of series of two or more soldering devices arranged in a line one after another, of an intermittently-moving can-carrier furnished with can-holders and mechanism for moving the can-carrier the space of two or more can-holders at a time, so that two or more cans will be simultaneously presented to said series of soldering devices, and each can successively to two or more of said soldering devices, substantially as specified.

2. The combination, with a series of two or more fluxing devices with a number of series, of two or more soldering devices arranged in a line one after another, an intermittently-moving carrier for presenting two or more cans at a time to each of said series, and a mechanism for moving said carrier the space of two or more can-holders at a time, so that two or more cans will be simultaneously presented to said series of soldering devices and each can successively to two or more of said soldering devices, substantially as specified.

3. The combination, with a series of two or more fluxing devices, of a series of two or more soldering devices arranged in a line one after another, a second series of two or more soldering devices, an intermittently-moving carrier, and a mechanism for moving said carrier a space of two or more can-holders at a time, so that two or more cans will be simultaneously presented to said series of soldering devices and each can successively to two or more of said soldering devices, substantially as specified.

4. The combination, with a number of series of two or more soldering devices arranged in a line one after another, of an intermittently-moving carrier having revoluble can-holder disks C, sliding weighted can-holder disks C' thereon and a stationary cam for raising said weighted disks, and a mechanism for moving said can-carrier a space of two or more can-holders at a time, so that two or more cans will be simultaneously presented to said series of soldering devices and each can successively to two or more of said soldering devices, substantially as specified.

408,317. MACHINE FOR HEMMING CAN-CAPS WITH SHEET-SOLDER RINGS. JOHN G. HOOSNER and ERWIN HORTON, Maywood, assignors to said Erwin Horton, and Oliver W. Horton, Chicago, Ill. Filed Oct. 15, 1888. Serial No. 288,035. (No model.)



Claim.—1. The combination, with an intermittently-movable flexible die-carrier furnished with dies, of an opposing reciprocating die and a guide B^3, for supporting and guiding said die-carrier, substantially as specified.

2. The combination of an intermittently-movable flexible die-carrier furnished with dies, rollers or wheels upon which said carrier is mounted, and an opposing reciprocating die, substantially as specified.

3. The combination of an intermittently-moving endless link chain die-carrier furnished with dies, rollers upon which it is mounted, and an opposing die, substantially as specified.

4. The combination of a movable die-carrier having independently-movable dies mounted thereon, an opposing die, and means for supporting the dies in said carrier against the thrust of said opposing die, substantially as specified.

5. The combination, with an intermittently-movable die-carrier having independently-movable dies mounted thereon, of an opposing reciprocating die mounted on the frame of the machine and means for automatically moving or reciprocating the dies in said carrier to discharge the work therefrom, substantially as specified.

6. The combination, with an endless link chain die-carrier furnished with independently-movable dies, of rollers upon which said carrier is mounted, one of said rollers being furnished with a projection or rim for moving the dies in said carrier to discharge the work therefrom, substantially as specified.

7. The combination, with an intermittently-moving flexible die-carrier having gangs of dies arranged transversely to its line of movement, of a corresponding gang of opposing reciprocating dies and a guide or way B^3, for supporting and guiding said die-carrier, substantially as specified.

8. The combination of an intermittently-movable link chain gang die-carrier having gangs of dies in the links thereof, rollers upon which said carrier is mounted, and an opposing gang of reciprocating dies mounted on the frame of the machine, substantially as specified.

9. The combination, with the gang of reciprocating dies mounted on the frame of the machine, of an intermittently-moving die-carrier furnished with gangs of dies mounted movably thereon and a bar or support to sustain said movably-mounted dies, substantially as specified.

10. The combination, with the gang of dies mounted on the frame of the machine, of an intermittently-moving die-carrier furnished with gangs of dies mounted movably thereon and a movable cross-head or bar for simultaneously actuating the gang of dies on the carrier, substantially as specified.

11. The combination, with an intermittently-moving link-chain die-carrier having gangs of dies mounted movably thereon, of rollers upon which said carrier is mounted, one of said rollers being furnished with rings or projections for simultaneously operating each gang of movable dies to discharge the work therefrom as the same pass around the roller, substantially as specified.

12. The combination, with a reciprocating die mounted on the frame of the machine, of an intermittently-movable die-carrier having movable dies mounted thereon, means for automatically moving said dies to discharge the work therefrom, and a discharge-chute, substantially as specified.

13. The combination, with a gang of reciprocating dies mounted on the frame of the machine, of an intermittently-moving flexible die-carrier furnished with gangs of dies, a guide B^3, for supporting and guiding said die-carrier, and a conveyer K, substantially as specified.

14. The combination, with a gang of reciprocating dies mounted on the frame of the machine, of an intermittently-moving die-carrier furnished with gangs of dies, a conveyer K, and chute K', substantially as specified.

15. The combination, with a die-plate *b*, having guide b^3 and recess b^4, of die C, having shank *c* and bevel-corner *c'*, forming with said recess b^4 an annular groove to receive the solder ring and can-cap, and an opposing die D, having central portion *d*, provided with bevel-flange *d'* for closing the solder ring upon the can-cap, substantially as specified.

16. The combination, with a die-plate *b*, having guides b^3 and recess b^4, of die C, having shank *c* and bevel-corner *c'*, forming with said recess b^4 an annular groove to receive the solder ring and can-cap, and an opposing die D, having central portion *d*, provided with bevel-flange *d'* for closing the solder ring upon the can-cap, sliding stem d^3, and spring d^5, substantially as specified.

17. The combination, with a gang of dies, of a reciprocating cross-head upon which they are mounted, a corresponding gang of movable ejector-pins, a cross-bar mounted movably on said cross-head for actuating said ejector-pins, and a movable cam for operating said cross-bar, substantially as specified.

18. The combination, with a die, of a reciprocating cross-head, an ejector-pin and a movable cam for positively operating said ejector-pin to discharge the blank from the die, substantially as specified.

19. The combination, with a die, of a reciprocating cross-head, cams for operating said cross-head, an ejector-pin, and a movable cam or projection *n*, for operating said ejector-pin, substantially as specified.

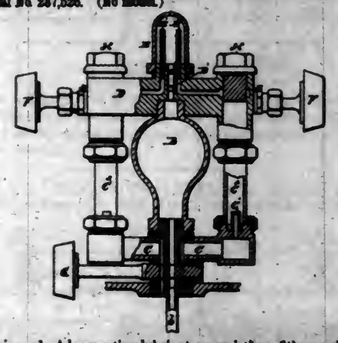
20. The combination, with a gang of dies D, of cross-head F, cams F^3, ejector-pins d^3, cross-bar N, and cams or projections *n* on said cam, and wheels F^2, for operating said ejector-pins, substantially as specified.

21. The combination, with die-plate *b*, having guides b^3 and recess b^4, of dies C, having shank *c* and bevel-corner *c'*, forming with said recess b^4 an annular groove to receive the solder ring and can-cap, and an opposing die D, having central portion *d*, provided with bevel-flange *d'* for closing the solder ring upon the can-cap, sliding stem d^3, and spring d^5, said sliding stem d^3 being hollow and furnished with an extractor-pin d^7, substantially as specified.

22. The combination, with a link chain die-carrier B, composed of hinged die-plate links *b*, having guides b^3 to receive the die-shanks, of movable dies C, having shanks *c*, and rollers B' B^3, said roller B' having a rim B^3, against which the shanks of said dies impinge as the link chain passes around said roller, substantially as specified.

23. The combination, with a die mounted on the frame of the machine, of a movable die-carrier and series of dies mounted thereon, the opposing dies having bevel or conical centering surfaces to insure the proper register of the dies on the carrier with the opposing die on the frame, substantially as specified.

408,318. LUBRICATOR. CHARLES H. FARNHAM, Sr., Detroit, Mich., assignor of one-half to Edward Gruce, same place. Filed Oct. 3, 1888. Serial No. 287,326. (No model.)



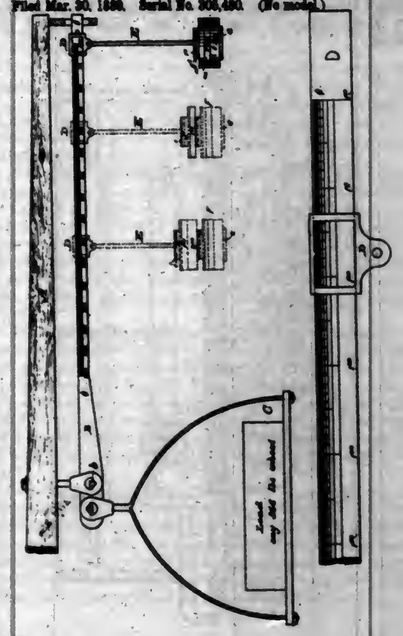
Claim.—1. A locomotive-lubricator consisting of the combination, with an oil-reservoir and condenser, of sight-feed glasses located at the sides of the condenser, and in connection therewith the arm D, steam-inlet pipe, equalizing-conduits, and dome E, substantially as described.

2. The combination, with the condenser and sight-feed glasses arranged as described, of the arm D, dome E, equalizers E', and valves F, substantially as described.

3. The combination of the condenser, the dome, a steam-inlet pipe, one or more equalizing-conduits, one or more sight-feed glasses located at the side or sides of the condenser, the oil-reservoir, one or more oil-exit conduits, and the valves F and G, substantially as described.

4. In a lubricator, the combination, with the steam-admission and oil-exit conduits, of equalizing-conduits terminating in a steam-dome above the condenser, said dome made in the form of a screw-cap adapted to be readily removed for gaining access to said equalizing-conduits, substantially as and for the purposes described.

408,319. WEIGHING-SCALES. GEORGE I. PHELPS, Chicago, Ill. Filed Mar. 30, 1889. Serial No. 305,490. (No model.)



Claim.—1. The combination, with a scale-beam, of weights representing both units of money value and units of weight.

2. A scale-beam graduated as described, combined with weights or counterpoises representing units of weight and units of value.

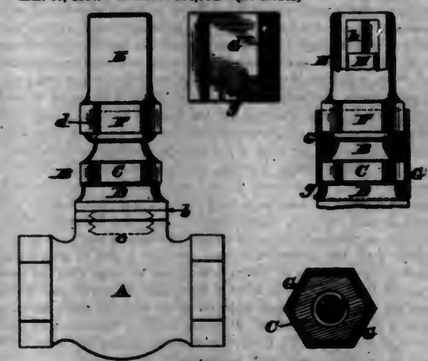
3. A scale-beam graduated up from the outer end to represent units of value, combined with a sliding marker and weights or counterpoises representing both units of value and units of weight.

4. A scale-beam having longitudinal divisions marked with a list of cereals or other articles of trade and their respective weights for given quantities, and having opposite the name of each of said articles an inwardly-running scale graduated from zero up to the given weight for said article, combined with a sliding marker and with poises representing units of value and units of weight, as described.

5. A scale-beam graduated from the inner to the outer end with units of pounds and having longitudinal divisions, each containing the name of a cereal or other article of trade, with its corresponding weight for a given quantity, and an inversely-running scale to each division marked from zero up to said weight, combined with a sliding marker and poises representing at once units of weight and units of value.

6. The longitudinally-slotted scale-beam herein described, having scales running from the inner to the outer end and graduated to represent units of weight, and scales running from the outer to the inner end and graduated as described, with the names, and giving weights of cereals or other articles opposite said inverted scales, combined with a sliding marker and counterpoises indicating units of value and weight and with a sliding poise or poises on the beam itself.

408,320. COCK OR VALVE. JAMES POWELL, Cincinnati, Ohio. Filed Mar. 20, 1887. Serial No. 232,344. (No model.)



Claim.—1. A cock or valve having a collared neck and a collared stuffing-box screwed thereto, which collars are practically of the same shape in transverse section, in combination with a longitudinally-sliding tube that bears on all sides against the various faces of said collars and locks the stuffing-box when engaged with the neck-collar, substantially as herein described.

2. In combination with a cock or valve having a stuffing-box screwed to its annularly-grooved neck, a tube provided with an inwardly-bent spring tongue or section at one end, which tube completely surrounds the collars of said neck and box, and thereby locks the latter when said tube is shifted longitudinally for the purpose of causing said tongue to engage with the annular groove, said collars being practically of the same shape in transverse section, as herein described.

3. A cock or valve provided with a shiftable tube that surrounds the neck and stuffing-box and locks the latter, said tube having a yielding section and a peripheral flange or rib, as *g'*, for the purpose described.

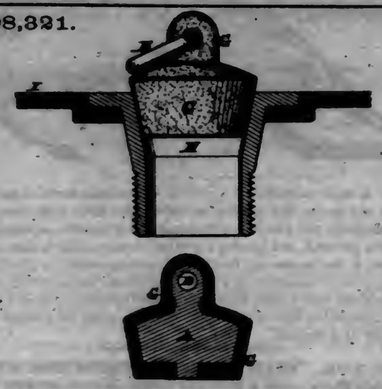
408,321. WASTEWAY-VALVE. JAMES POWELL, Cincinnati, Ohio. Filed Mar. 27, 1888. Serial No. 268,048. (No model.)

Claim.—1. A non-floating valve or stopper for the wasteways of basins, &c., which valve consists of a light envelope of india-rubber or equivalent material surrounding a relatively heavier core, the latter being provided with a lifting device, substantially as herein described.

2. A non-floating valve or stopper for the wasteways of basins, &c., which valve consists of a light envelope of india-rubber or equivalent material surrounding the body, neck, and perforated head of a relatively heavier core, the latter having a pull or ring attached to it, substantially as herein described.

3. The combination, in a non-floating valve of the class specified, of the heavy core A, having a head C, eye D, and flutes E, said core

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and head being surrounded by a relatively-lighter envelope G of india-rubber or equivalent material, all as herein described, and for the purpose stated.

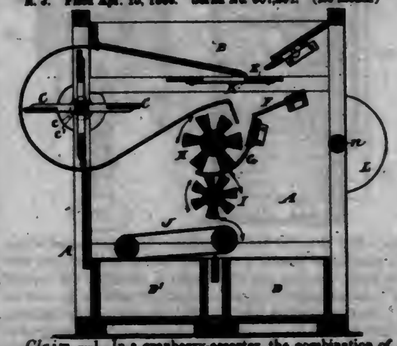
408,322. DIE FOR COMPRESSING VALVE-SEAT BLANKS. JAMES POWELL, Cincinnati, Ohio. Filed May 10, 1887. Renewed May 1, 1889. Serial No. 309,312. (No model.)



Claim.—1. A valve-seat-hardening appliance consisting of the swage-block T, having a pair of communicating bores U U', of unequal diameters, separated by an annular ledge V, in combination with the punch R, having a cylindrical shank S and tapering fillet S', which fillet operates against the counterbore of the valve-seat, as herein described.

2. A valve-seat-hardening appliance consisting of the swage-block T, having a pair of communicating bores U U', of unequal diameters, separated by an annular ledge V, in combination with the punch R, having a cylindrical shank S and tapering fillet S', and an auxiliary punch W, provided with a shank X and side pockets Y Y', as described.

408,328. CRANBERRY-SORTER. ALFRED S. PRICKITT, Red Lion, N. J. Filed Apr. 15, 1889. Serial No. 307,391. (No model.)



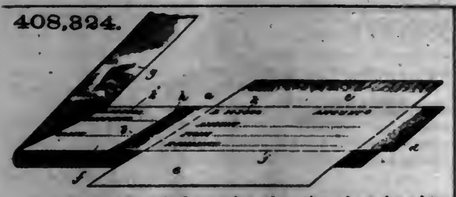
Claim.—1. In a cranberry-assorter, the combination of a concave screen G and two opposite rotary brushes H I, one brush rotating on the inside and the other on the outside of said screen, as and for the purpose set forth.

2. In a cranberry-assorter, the combination, with the concave screen G and brushes H I, of the traveling apron J and drawers D D', arranged substantially as and for the purpose specified.

408,324. STUB ENVELOPE-BOOK. WILLIAM A. RADFORD, Washington, D. C., assignor of one-half to Eric M. Noble, same place. Filed Feb. 13, 1889. Serial No. 300,242. (No model.)

Claim.—1. An envelope-sheet having a body portion provided with a number or similar mark, in combination with a stub having a corresponding mark, said sheet being detachable from said stub and provided with flaps upon all sides, for the purpose substantially as described.

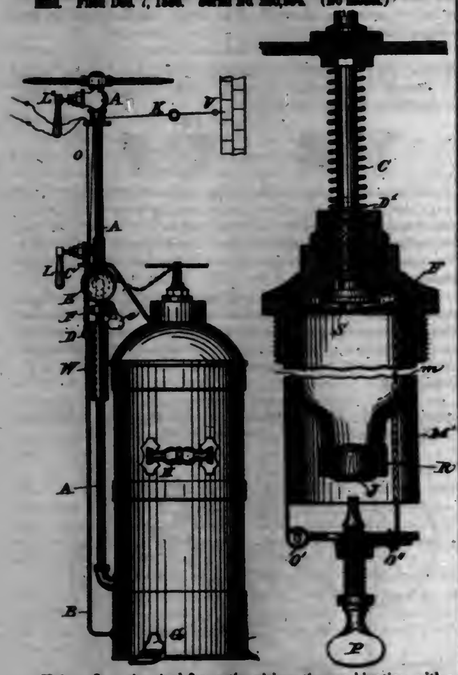
408,824.



2. A book composed of a number of envelope-sheets bound together and having like numbers imprinted upon them, each sheet being detachable and provided with a stub which remains permanently bound in the book, and bearing a number corresponding to that upon the stub, in the manner and for the purpose substantially as described.

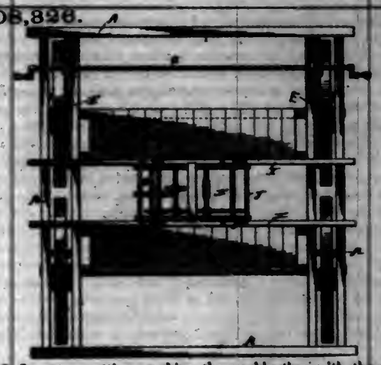
3. A book composed of a number of sheets having a body portion provided with folding flaps upon all sides thereof, one of said flaps being extended to form a stub, in the manner and for the purpose substantially as described.

408,825. APPARATUS FOR EXTINGUISHING FIRES, GIVING ALARMS, &c. JACOB H. RADCLIFFE, Oldham, County of Lancaster, England. Filed Dec. 7, 1888. Serial No. 292,994. (No model.)



Claim.—In a chemical fire-extinguisher, the combination, with a receptacle adapted to contain a chemical solution and provided with a screw-threaded aperture and a valve-seat at the inner end thereof, of a glass vessel adapted to contain an acid and inverted in said receptacle, a crusher provided with a screw-threaded spindle engaging said aperture and a valve engaging said valve-seat, a spring applied to said spindle so that its resilience will tend to rotate it in a direction to close the valve, a wheel on the spindle, a weight suspended by a flexible support, and a chain detachably connected at one end to the wheel and at the other end to the weight, substantially as described.

408,826. STONE-SETTING MACHINE. CHARLES REYNOLDS, Chicago, Ill., assignor of one-half to James McGuire, same place. Filed May 1, 1888. Serial No. 308,223. (No model.)



Claim.—1. In a stone-setting machine, the combination, with the carrying-frame, the ground-wheels thereof, and the transverse parallel tracks on said frame, of a carriage working on said track, a drum loosely journaled in said carriage, a slidable shaft also journaled on said carriage, cog-wheels on said drum and an axle of the carriage, and cog-wheels on said slidable shaft, adapted and arranged to alternately engage the cog-wheels on said axle and drum, substantially as described.

2. In a stone-setting machine, the combination, with the carrying-frame, the ground-wheels thereof, and a pair of transverse tracks upon said frame, of a carriage working upon said track, a drum journaled on said carriage, a supplemental shaft also journaled in said carriage, a permanent gear-connection between said supplemental shaft and drum, a slidable shaft also journaled on said carriage, and a gear-wheel thereon adapted and arranged to alternately mesh with cog-wheels upon said supplemental shaft and an axle of the carriage, substantially as described.

3. In a stone-setting machine, the combination, with the carrying-frame, the ground-wheels thereof, and a pair of transverse tracks upon said frame, of a carriage working upon said track, a drum journaled on said carriage, a supplemental shaft also journaled on said carriage, a permanent gear-connection between said supplemental shaft and drum, a slidable shaft also journaled on said carriage, and a pair of gear-wheels mounted thereon, one of which is arranged to mesh with a gear-wheel on the drum and the other to alternately mesh with gear-wheels upon the supplemental shaft and axle when the other wheel is out of gear with the drum cog-wheel, substantially as described.

4. In a stone-setting machine, the combination, with the carrying-frame, the ground-wheels thereof, and a pair of transverse tracks upon said frame, of a carriage working upon said track, a drum journaled on said carriage, a supplemental shaft also journaled on said carriage, a permanent gear-connection between said shaft and drum, a slidable shaft also journaled on said carriage, a pair of gear-wheels mounted thereon, one of which is arranged to mesh with the gear-wheel on the drum and the other to alternately mesh with gear-wheels upon the supplemental shaft and axle of the carriage when the other wheel is out of gear with the drum cog-wheel, a friction-pulley upon the supplemental shaft, a friction-band encompassing the same, and a lever for operating said band, substantially as described.

5. In a stone-cutting machine, the combination, with the carrying-frame, the ground-wheels thereof, cog-wheels attached to said ground-wheels, a supplemental shaft journaled in said frame, cog-wheels thereon meshing with the cog-wheels on the ground-wheels, and a pair of transverse tracks upon said frame, of a carriage working upon said tracks, a drum journaled on said carriage, a supplemental shaft also journaled on said carriage, a permanent gear-connection between said shaft and drum, a slidable shaft also journaled on said carriage, and a pair of gear-wheels mounted thereon, one of which is arranged to mesh with a cog-wheel on the drum and the other to alternately mesh with gear-wheels on the supplemental shaft and an axle of the carriage when the other wheel is out of gear with the drum cog-wheel, substantially as described.

408,827. TELEPHONE SYSTEM. JOHN R. SMITH, Bonne Terre, Mo., assignor of three-eighths to Luther A. Young and Henry J. Curtice, both of same place. Filed Feb. 16, 1888. Serial No. 264,208. (No model.)

Claim.—1. The combination, with a battery and a coil-magnet, of an armature B, pivoted lever C, spring-pawl E, ratchet-wheel F, cylinder G, having notches g g^2 and a groove g^3, fingers I, insulating-frame J, a telephone-wire, and wires for connecting and disconnecting the fingers with and from other telephones, substantially as shown and described.

2. The combination, with a battery, magnet, and movable armature, of a pivoted lever C, a hinged pawl E, provided with a spring D, a ratchet-wheel F, cylinder G, having a groove and notches, fingers I, having projections i^4, a telephone-wire, and insulated wires for connecting and disconnecting said fingers with and from other telephones, substantially as and for the purpose specified.

3. In a telephone system, the combination of ordinary telephone-batteries, line-wires terminating at the central office in fingers I and switch line-wires Q, switch-batteries, temporary magnets A, armature B, lever C, pawls E, ratchets F, cylinders G, with notches g g^2, grooves g^3, for operating fingers I, and telephone ground or earth wires at each telephone-station completing the circuit between the telephones when their respective fingers I touch their connecting and disconnecting wires k k^2, substantially as and for the purpose set forth.

4. The combination, with ordinary telephones, telephone line-wires coming to a central office, said line-wires having ground or earth wires at the local stations, of a switching mechanism consisting of a ground-wire A^2, coil-magnet A, armature B, pivoted lever C, spring-pawl E, ratchet-wheel F, cylinder G, having notches g g^2, a groove g^3, fingers I, and wires k k^2, which are alternately connecting and disconnecting wires, substantially as and for the purpose set forth.

5. A telephone system in which every telephone has a connecting-wire k and a disconnecting-wire k^2 for each other telephone in the system, combined with ordinary telephones, batteries, telephone line-wires terminating at the central office in fingers I, telephone ground-wires at each local station, and switch-dials O, with ground-wires Q^2, switch line-wires Q, and ground-wires A^2, switch-batteries, temporary magnets A, armature B, levers C, pawls E, ratchets F, and cylinders with grooves g^3, notches g g^2, for connecting and disconnecting the fingers I with and from the connecting and disconnecting wires k k^2, substantially as and for the purpose set forth.

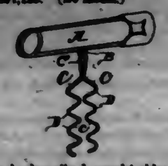
6. The combination, with a switch-battery for each telephone in a system, of a ground-wire, a coil-magnet A, armature B, pivoted lever C, spring-pawl E, ratchet-wheel F, cylinder G, having notches g g^2 and a groove g^3, fingers I, connecting and disconnecting wires k k^2, insulating-frame J, a switch line-wire Q, a dial O, crank P, a ground-wire Q^2, and an ordinary telephone, substantially as shown and described.

7. The combination of a dial O, having a rim o^2, and points o^3, connecting crank P, ground-wire Q^2, switch line-wire Q, temporary magnet A, an ordinary battery, a ground-wire A^2, a movable armature for operating a cylinder, which is provided with conducting and connecting fingers I, and connecting and disconnecting wires k k^2, substantially as and for the purpose specified.

8. The combination, with an ordinary battery, a temporary magnet A, and movable armature B, of a pivoted lever C, having a spring for holding the armature up, a hinged pawl E, provided with a spring D, a ratchet-wheel F, cylinder G, fingers I, having projections i^4, a telephone-wire, and connecting and disconnecting wires k k^2, substantially as and for the purpose set forth.

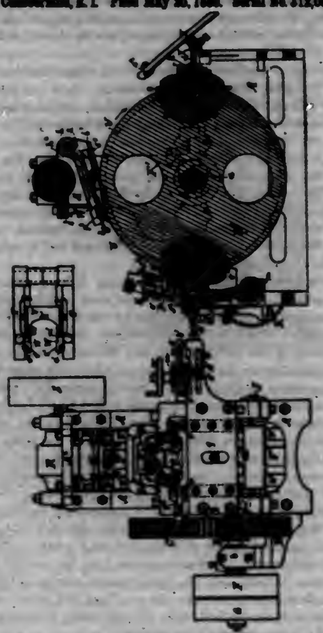
9. In a telephone system, the combination, with ordinary telephones and telephone-wires having their batteries with ground-wires at the local stations, of a switching apparatus consisting of ground-wires Q^2, cranks P, dials O, having a rim o^2 and points o^3, switch line-wires Q, a switch-board having a temporary magnet A, batteries, and ground-wires A^2, cylinders having grooves and notches operated by the said mechanism, and armature B, levers C, having pawls and ratchet-wheels, fingers I, insulating-frames, and insulated connecting and disconnecting wires k k^2, all substantially as and for the purpose specified.

408,828. SPOOL-HOLDER. HENRY W. STRAUSS, Easton, Pa., assignor of one-half to Uzu W. Rubenbush, same place. Filed Jan. 28, 1889. Serial No. 297,135. (No model.)



Claim.—The herein-described spool-holder, the same comprising the pin A, having an eye B in its lower stationary bar, and the loop-shaped wire spring C, bent into an eye at its upper end, loosely engaging said eye B in the pin, side arms c c of said spring being oppositely corrugated and standing in the same plane, the whole adapted for use substantially as and for the purpose set forth.

408,829. HORSESHOE-MACHINE. JAMES H. TAYLOR and CHARLES PUVEY, Archbald, Mass., assignors of one-third to James E. Jones, Cumberland, R. I. Filed May 25, 1888. Serial No. 313,068. (No model.)



Claim.—1. In a horseshoe-machine, the combination, substantially as described, of the bed-plate rotative on a horizontal axis, the series of forming-dies, the die supporters and rockers sustained in circular arcs in the periphery of said bed-plate, the rotary hammer, the gravitating arms, the slide movable in said arms, and the nippers pivoted to said slide, all arranged and to operate essentially as shown.

2. In a horseshoe-machine, the combination, substantially as described, of the bed-plate rotative on a horizontal axis, the series of forming-dies, the die supporters and rockers sustained in circular arcs in the periphery of said bed-plate, the rotary hammer, the gravitating arms, the slide movable in said arms, the nippers pivoted to said slide, and the revolvable auxiliary bed-plates, all essentially as shown.

3. In a horseshoe-machine, the combination, substantially as described, of the bed-plate rotative on a horizontal axis, the series of forming-dies, the die supporters and rockers sustained in circular arcs in the periphery of the bed-plate, the levers P P, fulcrumed to the frame, the bending-rolls pivoted to said levers, the gravitating arms, the slide movable in said arms, the nippers pivoted to said slide, which, together with the said slide, hold the shoe firmly to the die while operated on by the hammer, the revolvable auxiliary bed-plates, and the rotary hammer, all essentially as shown.

4. In a horseshoe-machine, the combination, substantially as described, of the bed-plate rotative on a horizontal axis and provided with peripheral circular arcs, the rockers sustained and movable in said arcs, the forming-dies and supporters connected to said rockers, the swaging devices consisting of the abutments *p p'* and the vertically-movable dies *o o'*, the slide N, operating the said dies *o o'*, the levers P P, the bending-rolls *f' f²*, tapering as set forth and pivoted to said levers, the spring *g'*, connecting them, the gravitating arms, the slide movable in said arms, the nippers pivoted to said slide, the revoluble auxiliary bed-plates, and the rotary hammer sustained and revoluble on an eccentric-supporting shaft, all essentially as shown and set forth.

5. In a horseshoe-machine, the combination, substantially as described, of the bed-plate rotative with a horizontal shaft and having in its periphery circular arcs, the rockers sustained and movable in said arcs, the forming-dies and the supporters connected to the rockers and having pivots *i i*, the spring-cases *k*, fixed to the bed F, the rods *j*, connected to the pivots of the supporters and having heads within the spring-cases, the springs bearing between said heads and the heads of the cases, the auxiliary beds revoluble on hub of the main bed and bearing at their periphery against the die-supporters, the levers P P, the bending-rolls tapered, as explained, and pivoted to the levers, the abutments *p p'*, swaging-dies *o o'*, shears *o² p¹*, passage *x'*, the vertically-movable slide operating the swaging-dies and shears and connected by mechanism with the shaft of the main bed-plate, the gravitating arms, the slide movable in said arms, the nippers pivoted to said slide, and the rotary hammer, essentially as shown and set forth.

6. In a horseshoe-machine, the combination, substantially as described, of the bed-plate rotative with a horizontal shaft and having in its periphery circular arcs, the rockers sustained and movable in said arcs, the shoe-forming dies and supporters connected to the rockers and to the bed-plate, the auxiliary bed-plates revoluble on the axis of the main bed, the feeding mechanism for advancing the bar into the machine, the abutments *p p'*, the swaging-dies and shears having mechanism for operating them, the levers P P and their tapered bending-rolls, the spring *g'*, the gravitating arms, the slide movable in said arms, the nippers pivoted to the slide, and the hammer revoluble on an eccentric-shaft, all arranged and supported and to operate essentially as shown and set forth.

7. In a horseshoe-machine, the die-supporter H and rocker G, detachably connected to each other and constructed substantially as described, in combination with the bed-plate having peripheral circular arcs and rotative with a horizontal shaft, the rods, spring-cases, and springs connecting the bed-plate and said die-supporter, the auxiliary bed-plates rotative on the axis of the main bed, the levers provided with the tapering bending-rolls and having means for resisting the spread of said rolls while the forming-die with a blank for forming a shoe thereupon is forced between them, the gravitating arms, the slide movable in said arms, the nippers pivoted to the slide, and the hammer revoluble on an eccentric-shaft, all essentially as set forth.

8. In a horseshoe-machine, the gravitating arms independent of each other, and each pivoted at one end to the frame and grooved, notched, and arranged to support the slide V and operate the nippers pivoted to said slide to grip a shoe to the die when moved within said arms, as set forth, in combination with the bed-plate rotative with a horizontal shaft, and having peripheral circular arcs, the rockers sustained and movable in said arcs, the die-supporter connected to the rocker and bed-plate, the forming-die, the auxiliary bed-plates revoluble on the axis of the main bed-plate, and the rotary hammer, all arranged and to operate essentially as set forth.

9. In a horseshoe-machine, the levers P P, with the tapering bending-rolls *f' f²*, said levers having means of resisting the spread of the rolls to cause them to fold the blank against the forming-die when forced between them, substantially as described, in combination with the forming-die, the die-supporter and rocker, the main bed-plate and the auxiliary bed-plates, both revoluble on a horizontal axis, the former having peripheral circular arcs, for the purpose set forth, the gravitating arms, the slide movable in said arms, the nippers pivoted to the slide, and the revoluble hammer, all essentially as shown and set forth.

10. In a horseshoe-machine, the rotary hammer having a body circular in cross-section and supported on a shaft provided with a bearing for said body which is eccentric to the journals of said shaft, substantially as described, in combination with the forming-die, the die supporter and rocker, the main bed-plate and the auxiliary bed-plates, having a common axis, the former having peripheral circular arcs which receive the said rocker and support the same with the supporter and die, the gravitating arms, the slide movable in said arms, and the nippers pivoted to said slide, all essentially as shown and set forth.

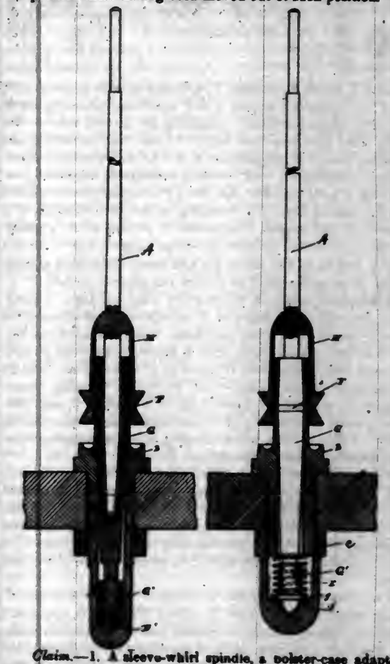
11. In a horseshoe-machine, the chute X, adjustably connected to a shaft pivoted to the machine and provided with an arm connected to a spring secured to the frame, said arm having a set-screw to operate it in a direction against the spring, and the chute having clearers adjustable therein to disengage the shoe from the die, in combination with the die, the die supporter and rocker, and the main bed-plate and the auxiliary bed-plates revoluble on a common axis, the former having peripheral circular arcs to receive the said rocker and support the same with the die-supporter and die, all essentially as set forth.

12. In a horseshoe-machine, the mechanism for feeding the bar into the machine, substantially as described, it consisting of the rolls *s*, the gear *t*, connected to one of said rolls, the gear *u*, engaging the gear *t*, and fixed to an arbor provided with a hand-wheel and a roll *v*, the latter in the same horizontal plane with the rolls *s*, and the slides *x* and *z*, provided with means of adjusting them horizontally, in combination with the passage *x'* and gage p^{13}, and the dies *o o'*, for supporting the bar when fed into the machine, all essentially as shown and set forth.

13. In a horseshoe-machine, the rotary hammer having a body circular in cross-section and supported on a shaft provided with a bearing for said body which is eccentric to the journals of said shaft, substantially as represented, in combination with the forming-die and movable bed, essentially as shown and set forth.

408,830. SUPPORT FOR SPINNING-SPINDLES. HENRY TORRENCE, Fitchburg, Mass. Filed Jan. 10, 1889. Serial No. 295,962. (No model.)

Brief.—The invention relates to self-centering spindles, and has for its object to provide a construction in which the spindle shall not be drawn from concentric position by the pull of the band, shall have the proper degree of resistance to lateral motion under the influence of an unequally-balanced load, and shall be returned promptly to its true position after having been moved out of such position.



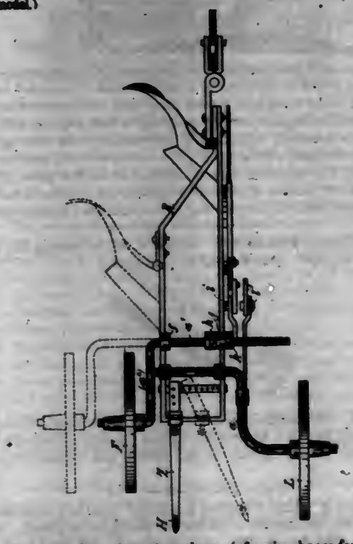
Claim.—1. A sleeve-whirl spindle, a bolster-case adapted to be attached to the bolster-rail, and a bearing-tube which receives the spindle and which fills the bolster-case at or near the plane of the band-pull only, and which rests against a conical surface adapted to permit the foot of the bearing-tube to move laterally thereon, and operating to return the tube to its normal position, substantially as described.

2. A sleeve-whirl spindle, a bolster-case adapted to be attached to the bolster-rail, and a bearing-tube which receives the spindle and which fills the bolster-case at or near the plane of the band-pull only and rests against a conical surface adapted to permit the bearing-tube to move laterally thereon, combined with a spring adapted to co-operate with the conical surface to return the bearing-tube to its normal position, substantially as set forth.

3. A sleeve-whirl spindle, a bolster-case adapted to be attached to the bolster-rail, a bolster-bearing for the spindle, which fills the bolster-case at or near the plane of the band-pull only and adapted to be held against a conical surface, a step-bearing for the foot of the spindle resting against a conical surface, and a spring interposed between the said bearings and adapted to operate upon each of the bearings and to co-operate with the conical surfaces to return the bearings to their normal position, substantially as set forth.

4. A sleeve-whirl spindle, a bolster-case adapted to be attached to the bolster-rail, as usual, a bolster-bearing which fills the bolster-case at one point only, and a step-bearing which permits the foot of the spindle to move laterally, one or both of such bearings resting against a conical surface, which permits the bearing to move laterally thereon, combined with a spring to co-operate with the conical surface to resist deflection of the spindle and to return it to its normal and concentric position, substantially as set forth.

408,831. PLOW. AUGUST J. VIETZKI, Grandenz, Prussia, Germany. Filed Apr. 2, 1888. Renewed June 26, 1889. Serial No. 315,909. (No model.)



Claim.—1. In a plow, the axles *c d'*, forming knees for the two fore wheels L F, which can be moved by an angle-lever W, provided with two arms, by means of adjustable driving-rods S S', so that the different large adjustments of the two wheels enable the determination of the depth of the furrow, whereby the arm of the angle-lever which places the furrow-wheel in position stands on the dead-point as soon as the wheel has obtained its correct position, in order to enable the placing and displacing of the plow by means of one single lever.

2. The combination, in a plow of the axle *d'*, adjustable in the direction of its length, and the axle *a* of the furrow-wheel, for the purpose of changing the distance of the two fore wheels as may be necessary, and a frame adapted to carry one or two plows, and thus to transform a one-shared plow into a two-shared plow in such manner that the furrow-wheel can in each case be placed in the last furrow and can be kept by this in its correct position.

3. In a plow such as described, the combination, with the furrow-wheel F, the bearings *f*, the regulating-ring *h*, and the arm *h'*, of an axle *d'*, which is capable of being adjusted in the direction of its length within said bearings and ring, for the purpose of using the plow as a single or double share plow, in such a manner that in both modes of working the furrow-wheel can always be placed in the furrow last made, so as to be guided by it, substantially as set forth.

4. In a plow such as described, the connecting-rods S', which can be adjusted as regards their length and made to transmit the motion of the lever W to the axles *a d'*, for the purpose of adjusting the position of the wheels with respect to each other, in combination with said lever and its differently-located arms *s s'*, substantially as set forth.

408,832. CLASP. JULIUS WEBBER, Bridgeport, Conn., assignor to James Alfred Howe, same place, and Parkhurst S. M. Hunt, New York, N. Y. Filed Apr. 24, 1888. Serial No. 306,260. (No model.)

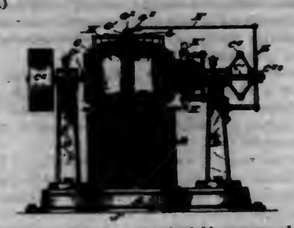


Claim.—1. In a clasp of the character described, the combination, with the staple, the same constituting the female member of the clasp, of a stationary tongue arranged to enter the staple, and a locking-hook having a cam-surface at the outer side of the beak, and a cam-surface at its back, said hook being pivoted and lying parallel with the tongue, substantially as set forth.

2. In a clasp, the combination, with the staple forming the female member and mounted upon one of the edges to be fastened, of the tongue secured upon the complementary edge and adapted to freely enter the staple, and the locking-hook pivoted at its rear end and lying alongside the tongue, said hook having at its under and forward end a cam-surface adapted to engage the lower side of the staple, and thereby raise said hook, and having also a cam-surface at its back adapted to engage the upper side of the staple, and thereby depress said hook after the beak has passed through said staple, substantially as set forth.

3. In a clasp of the character described, the combination, with the plate having the projecting tongue, said plate being curved upwardly from the base to which it is attached, of the locking-hook pivoted beneath the plate substantially in the line with the tongue, the inclined surfaces upon said hook, and the staple arranged upon its complementary meeting edge and adapted to be engaged by the tongue and hook, substantially as specified.

408,833. GOVERNOR FOR ELECTRIC MOTORS. GEORGE H. WHITTINGHAM, Baltimore, Md. Filed Oct. 2, 1888. Serial No. 287,057. (No model.)



Claim.—1. The combination, with the field-magnet and armature of an electric motor, of a series of contact-plates arranged on each pole of the field-magnet and electrically connected with the layers of the coils thereof, and an intermediate shunt-arm electrically connected with the opposite series of plates and mechanically connected with a governor arranged to receive motion from the shaft of the armature, substantially as specified.

2. The combination, with each pole of the field-magnet of an electric motor, of a series of insulated contact-plates, each electrically connected with the coils of one side of the magnet, and an interposed shunt-arm having contact-plates adapted to bear upon opposite surfaces of said contact-plates, and means for moving the shunt-arm plates along the series of contact-plates, substantially as specified.

3. The combination, with the field-magnet of an electric motor, of an insulated bridge, a series of insulated plates at each end of the bridge terminating in a curved line and electrically connected with the coils of the field-magnet, a shunt-arm pivoted on the bridge and terminating in contact-plates, and stops projecting from the bridge to limit the movement of the arm, substantially as specified.

4. The combination of the magnet B, bridge H, having the blocks H^3, the insulated projecting strips J, electrically connected with the coils of the field-magnet, and the shunt-arm G, mounted on the pivot G^3, seated on the bridge and having the contact-plates I, arranged to embrace the plates J, substantially as specified.

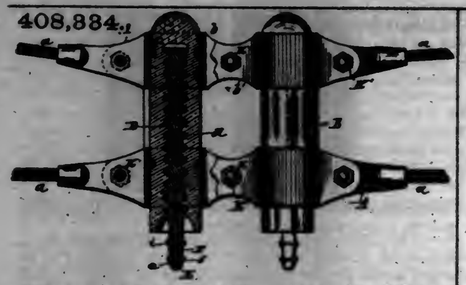
5. The combination, with the magnet B, bridge H, and plates J, mounted on said bridge, of the shunt-arm G, pivoted on said bridge and having the plates I, pivot G^3, and the stops H', projecting from said bridge, substantially as specified.

6. The combination of the insulated plates J, the shunt-arm G, pivoted between them, the rock or crank arm G^2, attached thereto, rod F, and lever E, connecting said arm G^2 with the governor C^3, substantially as specified.

408,834. DEVICE FOR SUSPENDING ELECTRIC CONDUCTORS. THOMAS E. ADAMS, Cleveland, Ohio. Filed Jan. 9, 1889. Serial No. 296,231. (No model.)

Claim.—1. In a device for supporting electrical conductors, an insulator-pin constructed with a recess or depression for the reception

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and attachment of a bent portion of the conductor, substantially as set forth.

2. The combination, with an insulator-pin provided with a recess or depression in its lower end, of a conductor provided with a bend which is fitted into said recess or depression, substantially as set forth.

3. An insulator-pin constructed with a recess or depression for the reception and attachment of a bent portion of the conductor, and a clip that extends beneath said recess or depression, substantially as set forth.

4. The combination, with an insulator-pin constructed with a recess or depression in its lower end and a conductor provided with a bend that fits within said recess or depression, of a clip that encircles the bent portion of the conductor, the lower surface of the clip being in a plane parallel with that of the under side of the straight portions of the conductor, substantially as set forth.

5. The combination, with an insulator-pin constructed with a recess or depression in its lower end, of a clip the opposite ends of which are riveted to the insulator-pin, substantially as set forth.

6. The combination, with an insulator-pin constructed with a recess or depression in its lower end, of a clip provided with laterally-projecting ears, substantially as set forth.

7. The combination, with an insulator-pin provided at its lower end with an elongated concave seat having a recess or depression formed between the ends of said seat, of a clip constructed and arranged to encircle the seat and retain a conductor in contact therewith, substantially as set forth.

8. The combination, with an insulator and a clip for securing a conductor thereto, of an electrical contact inserted through the pin and adapted to engage the upper surface of the conductor, substantially as set forth.

9. The combination, with an insulator-pin and a clip for securing a conductor thereto, of a rivet inserted through the clip and insulator-pin and forming an electrical contact with the conductor, substantially as set forth.

10. The combination, with a clamp, of an insulator secured thereto by yielding or elastic material interposed between the clamp and insulator, substantially as set forth.

11. The combination, with a clamp, of an insulator constructed with a groove or recess on its outer surface, and yielding or elastic material interposed between the clamps and insulator, substantially as set forth.

12. The combination, with a two-part clamp, of an insulator secured between the two parts of the clamp, and yielding or elastic material interposed between the clamp and insulator, substantially as set forth.

13. The combination, with a clamp, of two insulators secured between the two parts of the clamp, each insulator having yielding or plastic material interposed between its outer surface and the surface of the clamp, substantially as set forth.

14. The combination, with two insulators and clamps constructed and arranged to engage the insulators at their upper and lower ends, of two suspending-wires attached to the opposite ends of each clamp, substantially as set forth.

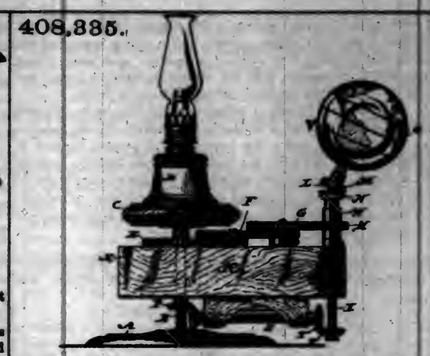
15. The combination, with the insulator-pin and its clip, of the conducting-wire formed with an offset or bent portion fitted to the clip, substantially as set forth.

16. The conduction-wire formed with an offset or bent portion and the clip fitted thereto, the clip being provided with a hole at its upper end for connection with the insulator-pin, substantially as set forth.

408,835. TELLURIAN. JAMES A. BOTOS, Wellsborough, Pa. Filed July 31, 1888. Serial No. 281,808. (No model.)

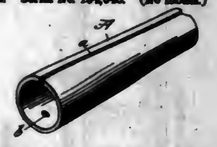
Claim.—A tellurian consisting of a standard A, a fixed post B, mounted thereon and provided with cog-disks P and E, a platform C, mounted on said post for the reception of a lamp D, a swinging-arm K, mounted loosely upon the post B intermediate between the cog-disks P and E, a shaft S, mounted in journals connected with said

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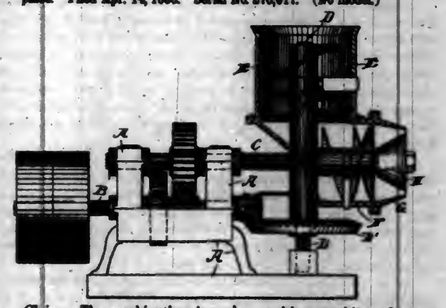
swinging arm K and provided with cog-wheel R, intermeshing with cog-wheel P and a cog-wheel T, a vertical shaft I, mounted in the outer end of the swing-arm K, said shaft being bent at its upper portion to form an angle of twenty-three and a half degrees, and provided at its lower end with a cog U, intermeshing with the cog T, a sleeve W, provided with a cog H and a crown-wheel N, gearing F G, connecting the cog-wheel H with the cog-wheel E, a globe C, into which the bent portion of the shaft I passes, and a crown-wheel M, intermeshing with the crown-wheel N and connected to said globe.

408,836. TOOL-SOCKET. RICHARD R. REED, Pittsburg, Pa. Filed June 12, 1884. Serial No. 134,640. (No model.)



Claim.—The herein-described metallic spring-socket for the handles of tools, having a longitudinal split or opening on one side and adapted for use substantially in the manner and for the purposes described.

408,837. CLAY-WORKING MACHINE. WILLIAM R. CUNNINGHAM, Frankfort, Ind., assignor to the Wallace Manufacturing Company, same place. Filed Apr. 14, 1888. Serial No. 270,617. (No model.)



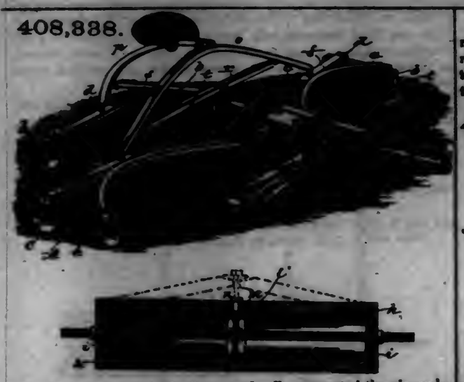
Claim.—The combination, in a clay-working machine, of a casing consisting of the vertical part E and the horizontal part F, said part E being formed open at the bottom and secured to said part F over a corresponding opening formed therein, the horizontal shaft C, extending into said horizontal casing, carrying the forcing-screw and geared to suitable driving mechanism, the vertical shaft D, extending up into the part E, through the horizontal part F of said casing, at right angles with said horizontal shaft, and provided with a gear-wheel beneath said casing, which is geared to the same driving mechanism that drives said horizontal shaft, all substantially as set forth.

408,838. ROLLER. SPENCER R. DAVIS, Horicon, Wis., assignor to the Van Brunt & Davis Company, same place. Filed Feb. 16, 1889. Serial No. 300,063. (No model.)

Claim.—1. The combination, with a series of independent roller-sections, each consisting of a frame and roller mounted therein, and a seat-supporting frame connecting said sections, of draft attachments connected directly with the several sections, substantially as set forth.

2. The combination, with a series of independent roller-sections,

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each section consisting of a frame and rollers mounted therein, and a seat-carrying frame supported alike on all of said sections, of draft attachments connected directly to the several sections.

3. The combination, with a series of independent roller-sections, each section consisting of a frame and rollers mounted therein, of a seat-carrying frame pivotally connected to the several sections, and draft attachments connected directly to the several sections.

4. The combination, with roller-sections, each section consisting of a frame and rollers mounted therein, arched supports resting on the sections, braces on the supports, and a seat, of means for applying draft directly to the roller-sections, substantially as set forth.

5. The combination, with roller-sections and seat-frame, of a pole and a whiffletree loosely supported by the pole and connected loosely to the forward roller-sections, substantially as set forth.

6. The combination, with the roller-sections, arched supports resting on said sections, braces connecting the supports, and chains or similar devices connecting the forward end of the rear section with one of said braces, of a pole hooked to this brace, said pole having a slot, hangers or loops thereon, a whiffletree extending through the latter, and chains or similar devices connecting the forward ends of the front sections with the ends of the whiffletree, substantially as set forth.

7. A hollow roller having a removable portion, the latter being made in sections, and means adapted to pass between the adjacent ends of the sections, whereby the removable portion is held in place, substantially as set forth.

8. In a roller, the combination, with the heads, staves, and center-brace, of a removable sectional stave and a screw or similar device adapted to pass between the adjacent ends of the sectional removable stave and into the brace, whereby the sections of this stave are forced outward and against the brace and held in place, substantially as set forth.

408,839. CLOTHES-LINE STRETCHER. SAMUEL DOBBS, Rochester, N. Y. Filed July 23, 1888. Serial No. 280,776. (No model.)



Claim.—The combination, with a set of clothes-lines A A, of the rings C C at one end and the cranked shaft B, the spools a a, the ratchet g, pawl h, and hangers b b, forming the winding-fixture, at the other end, the whole arranged to operate in the manner and for the purpose specified.

408,840. CRUPPER. LEWIS S. BLAIR, Rainsboro, Ky. Filed May 3, 1888. Serial No. 272,502. (No model.)



Claim.—1. In a crupper, the combination, with a bridge-piece and means of attachment to a harness, of a pair of curved brace-plates pivoted to the bridge-piece, ribs secured to the brace-plates, and straps or similar devices for confining the tail of an animal in place in the ribs, substantially as set forth.

2. In a crupper, the combination, with a bridge-piece hollowed out, padded, and covered, substantially as described, and a branched strap by which the bridge-piece is fastened to a harness, of a pair of split bolts, brace-plates pivoted thereto, slotted U-shaped ribs pivoted to said brace-plates, and straps extending around the ribs and through the slots, substantially as set forth.

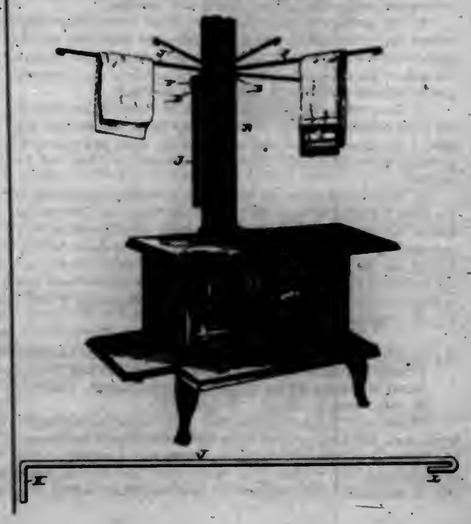
408,841. TOBACCO-PIPE. HERBERT C. W. BENNETT and EDWARD CHESHIRE, London, England. Filed Nov. 6, 1888. Serial No. 290,196. (No model.) Patented in England Sept. 6, 1888, No. 12,883.



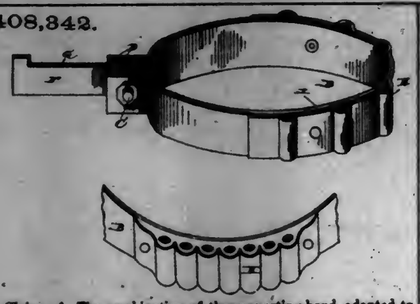
Claim.—1. A pipe-bowl open at top and bottom and provided with pins extending across it near the latter, in combination with the tube b, leading to the mouth-piece, a movable top cover, and a movable perforated bottom cover, for the purpose set forth.

2. A pipe having a bowl provided with a movable perforated bottom, and pins extending across said bowl a little above the same, substantially as set forth.

408,842. CLOTHES-DRIER. GEORGE L. GERARD, New Haven, Conn. Filed Jan. 28, 1889. Serial No. 297,515. (No model.)



408,842.



Claim.—1. The combination of the supporting-band adapted to be clamped around a stove-pipe and provided with a horizontal supporting-arm having a longitudinal notch in its upper edge and the drier-arms removably supported by the said band or ring, as set forth.

2. The combination of the band or ring adapted to be clamped around the stove-pipe and having vertical corrugations, the guard-plate secured to the inner side of the band and extending over the corrugations, and the drier-arms having their ends engaging said corrugations, as set forth.

3. The drier-arm consisting of a cylindrical rod having one end bent at right angles to its length and its other end bent back or doubled on itself, as and for the purposes set forth.

4. The combination of the band or ring adapted to be clamped around a stove-pipe and provided with a series of vertical bearings H and an arm F, and the removable drier-arms, each consisting of a rod having one end bent at a right angle to form a spindle K, adapted to engage one of the bearings H, and having its other end doubled on itself to form the hook L, adapted to engage the arm F, as set forth.

408,843. STEAM-BOILER. WILLIAM M. GLASSON, Socorro, N. Mex. Filed May 8, 1889. Serial No. 309,963. (No model.)



Claim.—1. The combination, with the boiler and its tubes, of the water-compartment surrounding the same and extending below the water-line, the upper row of tubes being extended through said water-compartment, substantially as shown and described.

2. The combination, with the boiler, of the water-compartment around said boiler and secured thereto below the water-line, and the upper set of tubes extended through the ends of the boiler and through the ends of the water-compartment and one inch from the horizontal portion thereof, substantially as shown and described.

3. The combination of the boiler with its water-compartment, of the tubes extended through the end of the boiler and through the ends of the water-compartment, and the outer water jacket or compartment surrounding said boiler and the furnace, as shown and described.

4. The combination of the boiler with its water-compartment, of the tubes extended through the ends of the boiler and through the ends of the water-compartment, and the outer water jacket or compartment surrounding said boiler and the furnace, as shown and described, and the blow-off pipe extending the full length of boiler and one inch from the bottom of same, with holes in bottom of said pipe to receive the sediment that may be lying on the bottom of boiler and the boiler surrounded by water.

408,844. SUBSTITUTE FOR IVORY, &c. FREDERICK GREENING, Uxbridge, England, assignor of two-thirds to Ogle Robert Peck, Toronto, Canada, and Thomas William Taylor Potts, London, England. Filed Nov. 30, 1888. Serial No. 292,242. (No specimens.)

Claim.—1. The described method of producing substitutes for ivory, horn, and other articles, as set forth, consisting in first preparing fibrous or cellulose substances to constitute a base by treating said substances with a mixture of fuming nitric acid and sulphuric acid in substantially the proportions described, then washing this product and submitting it to a bath of sodium chloride and ammonia-alum, and then dissolving such base in a solvent composed of a distillation of acetate of lead and anhydrous lime mixed with fusel-oil, in substantially the proportions above named, and purified, as set forth.

2. In the manufacture of substitutes for ivory, horn, or other articles, as set forth, the described method of treating a base made from fibrous or cellulose material, consisting in dissolving the same in a solvent composed of a distillation of acetate of lead and anhydrous lime mixed with fusel-oil, in substantially the proportions above named, and purified, as set forth.

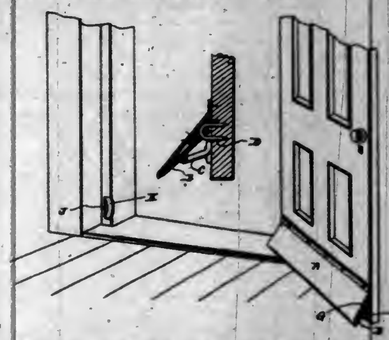
408,845. CAR-COUPLING. ANDREW J. GEER, Valley Falls, Kans. Filed June 8, 1889. Serial No. 313,547. (No model.)



Claim.—1. The draw-head D, having a longitudinal slot S in its upper face, a transverse recess R in its front face, having a slot *r* in its bottom, and a vertical slot U, connecting said slot and recess, in combination with the hook H, having a transverse slot *o* near the rear end of its body, the pin P in said longitudinal slot S engaging said transverse slot *o*, and the integral head E of said hook, said head having a beveled front face F, provided with a notch *j*, and also having an upward projection C, for the purpose set forth, the rear end of said transverse slot *o* engaging said pin P, the front face of said upward projection C engaging the front end of said longitudinal slot S, and the notch *j* engaging the bottom slot *r* simultaneously when the hook is drawn forward by the link, as herein specified.

2. The draw-head D, having a longitudinal slot S in its upper face, said slot being provided with a lateral notch *s* in its rear vertical wall, said draw-head also having a transverse recess R in its front face, connected to said slot S, and having a slot *r* in its bottom, in combination with the hook H, having a transverse slot *o* near the rear end of its body, a pin P within said longitudinal slot S, engaging the slot *o* in the hook, whereby the latter is pivoted thereon and may be set in elevated position by engaging its rear end within the lateral notch *s*, and the integral head E of said hook, having a beveled front face F, provided with a notch *j*, adapted to engage said slot *r* in the bottom of the transverse recess R, the whole substantially as shown and specified.

408,846. WEATHER-STRIP. OLIVER B. HATHAWAY, Edison, Ohio. Filed Mar. 8, 1889. Serial No. 302,476. (No model.)



Claim.—The combination, with the door, of the strip B, loosely hung on the door, the spring secured at one end to the door and having its other end projecting beyond the edge of the door, the intermediate portion of the spring bearing on the strip B, the packing-strip secured to the door and extending over the upper edge of the strip B, and the cap secured to the door and covering the strip B and the packing-strip, as set forth.

408,847. FISHING-HOOD. FREDERICK HUBBARD, Berlin, assignor of one-half to F. L. Hungerford, New Britain, Conn. Filed Feb. 28, 1888. Serial No. 301,577. (No model.)

Claim.—1. The combination of the line *a*, hook or hooks *b*, attached thereto, a spring attached by one end to said line, and a hook or hooks attached to the other end of said spring the length of said

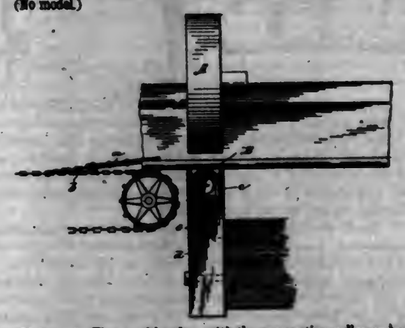
408,847.



spring, and the point of its attachment being such that when the spring is contracted the hook or hooks attached thereto are separated from the hook or hooks attached directly to the line, substantially as described, and for the purpose specified.

2. The combination of a fishing-line, a hook or hooks at its end, a spring attached by one end to said line, a fish-hook *c* at the other end of said spring, the length of said spring and the point of its attachment being such that when the spring is contracted the hook or hooks attached thereto are separated from the hook or hooks attached directly to the line, and a sliding collar or guide for keeping the hook on the end of the spring close to the line, substantially as described, and for the purpose specified.

408,848. SHARPENER FOR NAIL OR SPIKE BLANKS. JOHN F. JONES, Iron Mountain, Mich. Filed Nov. 30, 1888. Serial No. 292,313. (No model.)



Claim.—1. The combination, with the supporting roller or bearer for the blank, of the oppositely-placed power-driven cutting-disks revolving continuously in a direction which will tend to press the blank toward the supporting-roller, substantially as and for the purpose set forth.

2. The combination, with the blank-supporting roller or bearer and adjustable bearings or boxes in which the journals of said roller are yieldingly supported, of the oppositely-placed power-driven cutting-disks revolving continuously in a direction which will tend to press the blank toward the roller or bearer, substantially as and for the purposes hereinbefore set forth.

408,849. TIRE-HEATING FURNACE. JOHN KIRWIN, Cleveland, Ohio. Filed Mar. 13, 1889. Serial No. 303,092. (No model.)



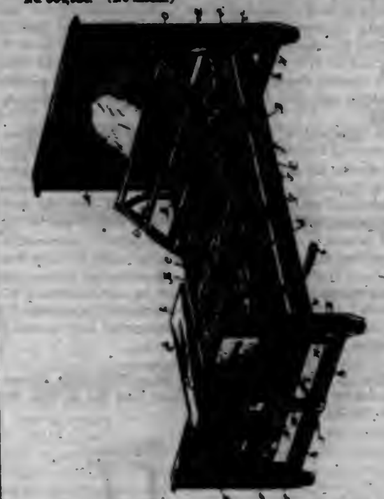
Claim.—1. A tire-heating furnace having a concentric vapor-distributing compartment, and a combustion-chamber for heating the tire adjoining said compartment, with a plate between said compartment and said chamber perforated to pass the vapor to the combustion-chamber, in combination with a vapor-generator and a series of pipes extending radially therefrom into the vapor-distributing compartment, substantially as set forth.

2. In a tire-heating furnace, a walled and covered combustion-chamber in which the tire is heated, and a vapor-distributing compartment adjoining said chamber, with a perforated plate separating it from the combustion-chamber, in combination with a series of supply-pipes provided with openings, through which the vapor enters the said distributing-compartment, substantially as set forth.

3. In a vapor-burning tire-furnace, a series of vapor-distributing compartments, vapor-supply pipes passing through said compartments and provided with openings into each compartment, and a tubular switch extending into each supply-pipe and having openings out of alignment with each other to register with openings in the supply-pipe, whereby when the openings to one compartment are opened those to another compartment are closed, substantially as set forth.

4. In a tire-heating furnace, concentric vapor-distributing compartments, a series of radial pipes traversing the compartments at intervals and extending through the outer compartment, tubular switches seated in the outer extremities of said pipes and each provided with a rigid arm, and a ring extending around the furnace, to which said arms are attached, whereby all the switches may be simultaneously operated, substantially as set forth.

408,850. FAMILY OR INVALID BEDSTEAD. JOHN LEGGETT and JASPER H. LEGGETT, Hagerstown, Md. Filed Mar. 27, 1888. Serial No. 304,926. (No model.)



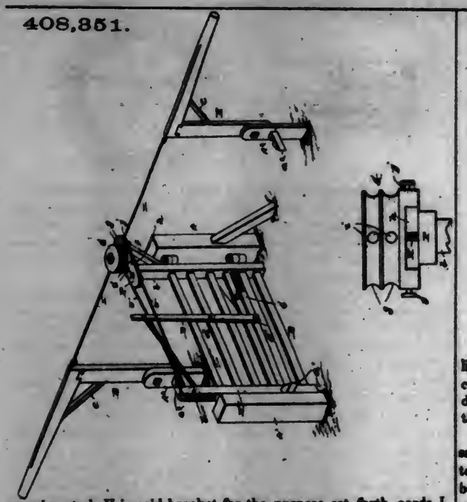
Claim.—1. A bedstead and a sheet supported thereby, in combination with a mattress-carrying frame adjustable vertically on said bedstead beneath said sheet, springs on which said mattress-carrying frame is supported, said springs normally holding said mattress in its uppermost position, and a lever for depressing said mattress-carrying frame, substantially as set forth.

2. A bedstead and a sheet supported thereby, in combination with a mattress-carrying frame adjustable vertically on said bedstead beneath said sheet, springs on which said mattress-carrying frame is supported, said springs normally holding said mattress in its uppermost position, a lever for depressing said mattress-carrying frame, and a locking-catch co-operating with said lever to hold said mattress-carrying frame in its lowermost position, substantially as set forth.

408,851. GATE. LAFAYETTE W. LOOMARY, Monmouth, Oreg. Filed Apr. 27, 1889. Serial No. 308,806. (No model.)

Claim.—1. The gate B, having a bracket F on its rear vertical bar, and the latch-bar C in said gate, in combination with the pulley G, pivoted on said bracket, said pulley having arc-shaped recesses A,

408,351.

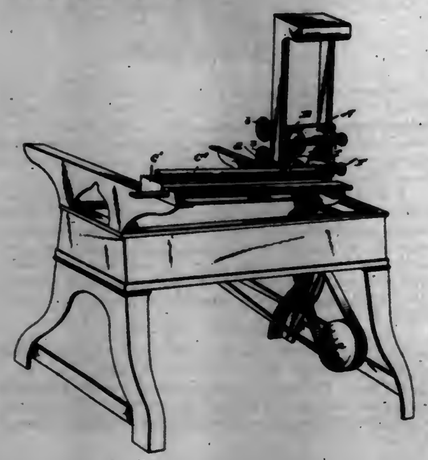


engaging studs H in said bracket for the purpose set forth, cords J, connecting said pulley with said latch-bar and adapted to unlatch it, cords I, wound around said pulley in opposite directions and led therefrom, and levers for drawing on said last-mentioned cords, substantially as described.

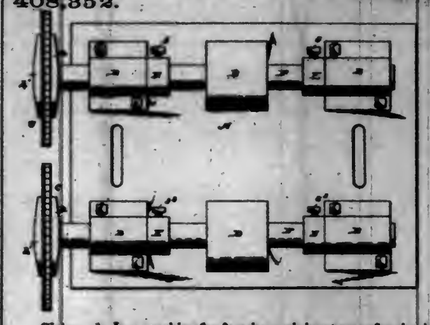
2. The pulley G, having the grooves *g*, with pins *i* in the front face thereof, and the arc-shaped recesses A, in combination with the gate B, the bracket F thereon, to which said pulley G is pivoted, studs H on said bracket engaging said recesses A, the latch C, the cords J, connecting said latch to side points of said pulley, levers E, and cords I, wound in opposite directions around said pulley within said grooves and attached to said pins, the whole adapted to operate substantially as described.

3. The latch-post A', carrying the two-way latch *a*, the lever-posts A^3, carrying the one-way latches a^3, the main post A, the gate B, hinged thereto, the spring-operated latch-bar C, sliding in said gate, and the arm D, pivoted to said gate and latch-bar, in combination with the bracket F on the rear vertical bar of said gate, the studs H on said bracket, the pulley G, pivoted on said bracket and having arc-shaped recesses A, engaging said studs, the pulley *b'*, journaled in the front vertical bar of said gate, the cords J, leading from the free end of said arm D around said pulley *b'* and connected to opposite sides of said pulley G, the levers E, pivoted to said lever-posts A^3, and the cords I, leading from said levers and wound in opposite directions around said pulley G, the whole constructed and operating substantially as hereinbefore described.

408,352. TENONING-MACHINE. OSCAR MCCULLOUGH, Winona, Minn., assignor to C. F. Schroth, same place. Filed Mar. 23, 1888. Serial No. 268,780. (No model.)



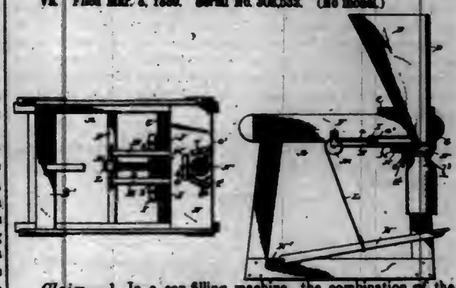
408,352.



Claim.—1. In a machine for forming sash-bar tenons for check or lip rail sash, the combination of the rotative cutters *b b* and rotative cutters C C, with the interposed cope-head *d*, arranged in the relation described, and a reciprocating carriage adapted to support and guide the stuff, as specified.

2. In a machine for forming sash-bar tenons for check or lip rail sash, the combination of the rotative cutters *b b*, the rotative cutters C C, having endwise-adjustable shafts, the vertically-adjustable bracket-bearings for said shafts, the cope-head *d*, arranged as described, and a reciprocating carriage adapted to support and guide the stuff, substantially as specified.

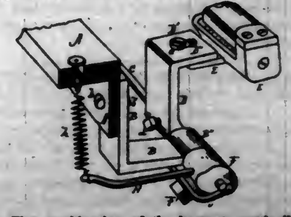
408,353. CAN-FILLING MACHINE. SAMUEL MORRIS, Kinsale, Va. Filed Mar. 2, 1889. Serial No. 302,532. (No model.)



Claim.—1. In a can-filling machine, the combination of the main frame and the hopper, the strip N, secured beneath the feed end of the hopper and having an opening registering with the outlet of the hopper, and the strips O, O', and O^2, adjustably secured to the lower face of the strip N, adjacent to the opening therein at different angles, and adapted to secure and hold the can while being filled, substantially as and for the purpose described.

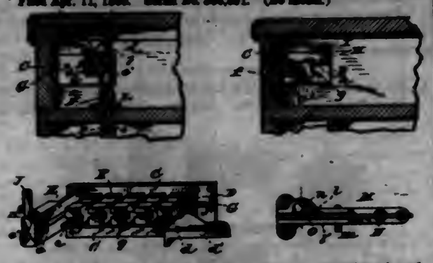
2. The herein-described can-filling machine, the same comprising, in combination, a main frame, a hopper having one of its sides flattened and extending in a vertical line from the top to its outlet, a strip arranged beneath the hopper and having an opening coincident with the outlet of the same, the adjustable strips O, O', and O^2, secured to the lower face of the said strip adjacent to the opening therein and formed with groove O^x, a spring-actuated feed-regulating slide at the bottom of the hopper, and means, substantially as described, for withdrawing the slide and uncovering said feed-opening against the tension of the springs actuating the feed-regulating slide, substantially as described.

408,354. LOOM-TEMPLE. THOMAS HORTON, Fall River, Mass. Filed May 20, 1889. Serial No. 312,563. (No model.)



Claim.—The combination of the beam A, vertically-adjustable bracket B, provided with the slot B' and screw *b*, rod C, bracket D, held adjustably on said rod by set-screws *d* and provided with the slot D' for adjustably holding the case E, sleeve F, rod and spring H A, and stop-rod K, substantially as and for the purpose set forth.

408,355. COMBINATION-LOCK. ARTHUR B. PEIRCE, Cortland, N. Y. Filed Apr. 11, 1888. Serial No. 270,251. (No model.)



Claim.—1. In a combination-lock for drawers, a series of rocking tumblers on a journal having one of their ends notched, said notches being adapted to register with each other and to receive an oscillating bar, as set forth.

2. In a lock, a series of reversible tumblers having one end journaled in a frame and the other end with a notch at one side the center of its end face, said tumblers adapted to be rocked to bring the notches in alignment to receive an oscillating bar, as set forth.

3. The combination, with a rectangular frame or bracket having a cross-bar or floor therein, of a series of rocking tumblers journaled at one end in the frame, the other end resting on its floor, said tumblers having notches in one end adapted to register and to receive an oscillating bar, as set forth.

4. In a lock-frame, a series of reversible tumblers journaled at one end therein, the other end having a notch at one side the center of its face with one inwardly-inclined wall, part of the tumblers arranged on the journal with the notches below the center and adapted to be rocked to bring all the notches in line with the inclined wall of the rocked tumblers on the same plane with the straight walls of the notches of the stationary tumblers arranged with the notches above the center, and to receive an oscillating bar in said notches, as set forth.

5. The combination, with a lock frame or bracket composed of a side or securing plate, an open slotted end plate extending from one end of the securing-plate, having an arm at right angles thereto, and a closed slotted end plate on the other end of the securing-plate, of a bar pivoted on the right-angled arm and working in the slots of the plates and adapted to take into notches in rocking tumblers journaled in the bracket, as set forth.

6. The combination, with a lock frame or bracket having slotted end pieces with a cross-bar or floor between them, and an arm at right angles from one of said ends pieces, having the end of a bar pivoted thereon that oscillates in the slots and in notches of the rocking tumblers journaled in the frame, of a sleeve on the other end piece provided with a spring-actuated locking-bolt, said bolt being connected with the free end of the bar by a link limiting the movement of the bolt, as set forth.

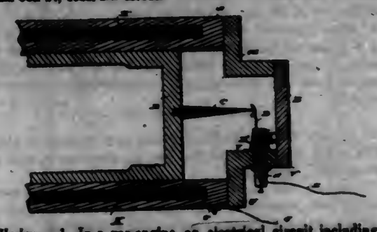
7. The combination, with a desk having a lock frame or bracket secured on its inner side with a series of end-notched rock-tumblers journaled within one side of the frame, and an oscillating pivoted bar on the other side of the frame working in the notches of the tumblers and having its free end connected with a vertical locking-bolt, of a series of spring push-buttons on the side of the desk for rocking the tumblers and a push-button on top the desk for operating the locking-bolt, as set forth.

8. The combination, in a lock-frame, with a series of rocking tumblers having notches in their ends adapted to register and to receive a pivoted oscillating bar, of one of the end plates of the frame re-enforced at one end, with a cut-away sleeve therein, having a vertical locking-bolt recessed in its side, and a link pivoted in said recess and to the free end of the oscillating bar, as set forth.

9. The combination, with a desk having a lock-frame secured on its inner side with reversible rocking tumblers therein having notched ends receiving an oscillating bar, the free end of the bar connected with a vertical bolt in the end plate of the frame, of a shoe secured to the floor of the desk having a pivoted spring-lever therein and underneath said bolt, one end of said lever connected with a bolt extending through the floor and adapted to take into the edge of a spring-actuated drawer beneath, as set forth.

10. The combination, with a desk having a reversible tumbler lock mechanism connected with a vertical bolt, of a shoe beneath the bolt having side plates at one end with a lever pivoted between them, one of said plates having a semicircular recess, a locking-bolt in said recess extending through a sleeve beneath the shoe, the upper part of the locking-bolt having a notch therein to receive one end of the lever and the other end supported by a spring beneath the vertical bolt of the lock, as set forth.

408,356. GAS-ENGINE. RAINER S. RUMAN, San Francisco, Cal. Filed Apr. 9, 1888. Serial No. 269,756. (No model.) Patented in England Oct. 27, 1888, No. 15,468.

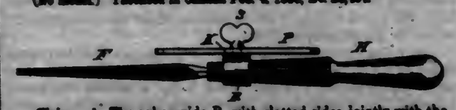


Claim.—1. In a gas-engine, an electrical circuit including the engine-piston, an electrode fixed to the piston and reciprocating with it, and a second electrode fixed within the explosive chamber of the engine and insulated therefrom, whereby the electrical circuit is closed and broken at each stroke of the piston, as described.

2. In a gas-engine, an electrical circuit including the engine-piston and electrode fixed to and reciprocating with the piston, in combination with a second insulated flexible electrode fixed within the engine-cylinder, so that contact is made and broken between the two electrodes at each stroke of the piston, as herein described.

3. In a gas-engine, the spring D, the insulated spring-holder E, having the clamp-block F and the set-nut H, connected with one pole of an electric battery, in combination with a connecting-finger C, attached to the piston B, and the cylinder A, connected with the battery by means of the electric wire J, for the purpose of making the circuit by direct connection with the piston at each stroke of the same, constructed and operated substantially as and for the purpose set forth.

408,357. DEVICE FOR SHARPENING SAWS. WILLIAM ESTEN, Picton, Ontario, Canada. Filed Nov. 20, 1888. Serial No. 292,237. (No model.) Patented in Canada Feb. 4, 1886, No. 28,464.



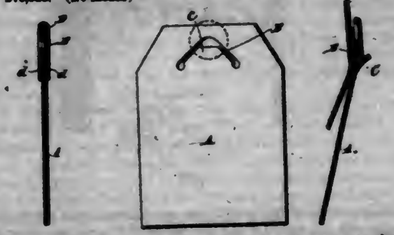
Claim.—1. The rake-guide B, with slotted sides, jointly with the bevel-guide P, substantially as described.

2. The bevel-guide P, secured as above described, jointly with the rake-guide B, substantially as described.

408,358. CARBON FOR ELECTRIC LIGHTING. CARL A. J. H. BERNHARDI, London, England. Filed May 15, 1888. Serial No. 273,978. (No specimens.) Patented in England Apr. 26, 1888, No. 6,191; in Germany May 12, 1888, No. 47,490; in France May 30, 1888, No. 190,760, and in Belgium June 30, 1888, No. 82,908.

Claim.—The process of treating carbon electrodes for arc lights, which consists in first impregnating the carbons with a dilute solution of calcic chloride and then treating the same with a potassium compound which is soluble in water or its described equivalents, this being done partly with wet solutions, but principally with fused materials, as set forth.

408,359. TAG. WALTON B. SMITH, Prophetstown, Ill., assignor of one-half to George Seyller, same place. Filed Apr. 11, 1888. Serial No. 270,233. (No model.)



Claim.—1. As an improved article of manufacture, a tag having a tongue therein of truncated triangular form whose free edge pro-

jects toward the top of the tag, to provide a bearing-shoulder and an opening between the upper cut end thereof and the adjacent wall of the slot, which opening is adapted to receive and retain a headed fastening device, as set forth.

2. As an improved article of manufacture, a tag having a substantially triangular slit formed therein to provide a flexible tongue whose upper reduced end is cut away, providing an opening for the reception of the head of a fastening device whose free edge projects toward the top of the tag, as set forth.

3. As an improved article of manufacture, a tag having an inverted-V-shaped slit cut therein to form a tongue whose upper angular end is cut away to form a bearing-shoulder and aperture, for the purpose set forth, and provided with a re-enforcement, substantially as described

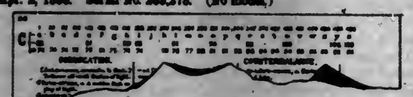
408,860. WATER-PROOF LEATHER AND PROCESS OF MAKING THE SAME. Adolph Sohrer, Berkeley, Cal. Filed July 15, 1882. Serial No. 260,320. (Specimens.)

Claim.—1. The improvement in waterproofing and preserving leather and hide, consisting in impregnating the leather or hide with sulphochlorinated fatty bodies, substantially as described.

2. The improvement in waterproofing and preserving leather and hide, consisting in impregnating the leather or hide with a solution of the sulphochlorinated fatty bodies in oils, fats, resinous substances, or hydrocarbons, substantially as described.

3. Leather and hide impregnated with sulphochlorinated fatty bodies, as set forth.

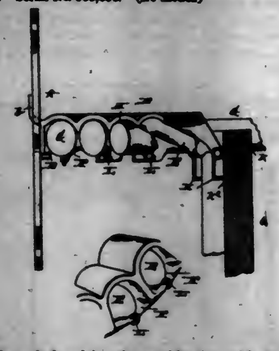
408,861. INDEX. Harvey A. Stephenson, Allegheny, Pa. Filed Apr. 2, 1888. Serial No. 269,573. (No model.)



Claim.—1. A book having on one or more of its pages a marginal index comprising, first, an initial character or characters; second, a line of letters alphabetically arranged; third, a line of number characters arranged with relation to the letters in the first-named line to indicate the page on which the combination of the initial character and the letter of the first line appear, and, fourth, a line of number characters arranged with relation to the alphabet-line to indicate the page where each alphabet letter becomes an initial letter, substantially as and for the purposes set forth.

2. A book having on one or more of its pages a marginal index comprising, first, an initial character or characters; second, a line of letters alphabetically arranged; third, a line of number characters arranged with relation to the letters in the first-named line to indicate the page on which the combination of the initial character and the letter of the first line appear; fourth, a line of number characters arranged with relation to the alphabet-line to indicate the page where each alphabet letter becomes an initial letter, and, fifth, a line of numerals arranged in relation to the alphabet-line to indicate in succession the pages where combinations of the initial letter and two or more letters of the alphabet-line will appear, substantially as and for the purposes described.

408,862. CLOTHES-DRIER. Judson R. Story, Bloomington, Ill. Filed Mar. 19, 1889. Serial No. 303,853. (No model.)



Claim.—1. In a clothes-drier, the combination, with a wall-plate provided with the slots C C and the detents D D, arranged below the slots, of the arc-shaped socket-plate provided at its free ends with ears or lugs which engage the slots C C, so that the plate bears on the detents D, and the drying-arms fitting in the sockets in the socket-plate, substantially as specified.

2. In a clothes-drier, the arc-shaped socket-plate provided with a series of sockets to receive the ends of the drying-arms, the sockets being provided at their lower sides with rests F F, having reduced portions or necks L L, and the drying-arms being provided with loops or keepers to engage the said necks to hold the ends of the arms in alignment with their respective sockets, substantially as and for the purpose specified.

408,863. FALLING BAR FOR STRAIGHT-KNITTING MACHINES. Eli Tiffany, Bennington, Vt. Filed Feb. 1, 1887. Serial No. 226,142. (No model.)

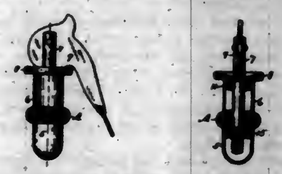


Claim.—1. A falling bar for straight-knitting machines, composed of a main bar, a parallel longitudinally-sliding impact-bar provided with two or more sets of cam-ledges disposed on different horizontal planes, and rotatably-adjustable keys connected with the main bar, said keys being each provided with an index-finger, which is adapted to register the position of the key on a scale on the face of the main bar, substantially as described, and for the purpose set forth.

2. The combination, with the main bar, of the longitudinally-sliding impact-bar provided with contact-ledges, and the interposed adjusting-keys fitted to co-operate independently with said contact-ledges as a means for regulating the lengths of the web and welt stitches independently of each other, substantially as described and set forth.

3. The combination of a series of stakers A, having shoulders *m* and *n*, with a falling bar composed of two parallel pieces, the upper one of which is vertically adjustable with reference to the under one by means of cam-ledges on the under side of the upper bar, and lugs or keys on the lower bar, substantially as shown, and means connected with the upper bar, substantially as shown, for imparting to it an endwise movement to force the cam-ledges up onto the tops of the keys or lugs aforesaid, substantially in the manner described, and for the purposes set forth.

408,864. BOTTLE-STOPPER. Justus A. Trave, New Britain, Conn. Filed May 16, 1889. Serial No. 310,942. (No model.)

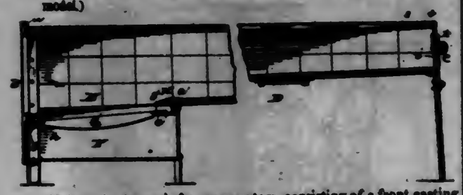


Claim.—1. The combination of an expansible block, a central bolt extending through said block, devices for operating said bolt, a cap-plate extending laterally beyond the adjacent parts for resting upon the mouth of the bottle, and the block 6, consisting of sheet metal in the form of a tube open at its upper end and with the lower end rounded and perforated to receive the body of said central bolt, the confronting faces of said cap and the block 6 being provided with a centering projection and recess, respectively, substantially as described, and for the purpose specified.

2. The combination of an expansible block, a central bolt extending through said block, devices for operating said bolt, a cap-plate 8, extended laterally beyond the adjacent parts for resting upon the mouth of the bottle, and having also the central inwardly-projecting tenon 11, and the block 6 of sheet metal, having a rounded and perforated lower end and an open upper end, which receives and is fitted to the tenon on said cap, substantially as described, and for the purpose specified.

3. The combination of an expansible block, a central bolt extending through said block and having a threaded lower end, devices for operating said bolt, the cap-plate adapted to rest on the mouth of the bottle, the perforated block 6, and the adjusting-nut 5, consisting of the sheet-metal shell and internal nut 15 at its upper end, the end of the shell and upper face of said nut confronting the expansible block, substantially as described, and for the purpose specified.

408,865. EVAPORATOR. William Wilson and William A. Wilcox, Garrettsville, Ohio. Filed Jan. 23, 1887. Serial No. 225,215. (No model.)



Claim.—1. An arch for evaporators, consisting of a front casting B, having flanges *c*, *d*, and *e*, and a rear casting C, provided with flanges *l*, *m*, and *n*, in combination with a sheet-metal body D, secured to the flanges of both castings, provided with inclined walls and a flat bottom contracted vertically, and a lining of refractory material, substantially as described.

2. An arch for evaporators, consisting of a front casting B, having flanges *c*, *d*, and *e*, openings *a* and *b*, and a rear casting C, having flanges *l*, *m*, and *n* and transverse opening *i* and door *k*, in combination with a sheet-metal body D, secured to the flanges of both castings and provided with inclined walls and a flat bottom contracted vertically, and a lining of refractory material, substantially as described.

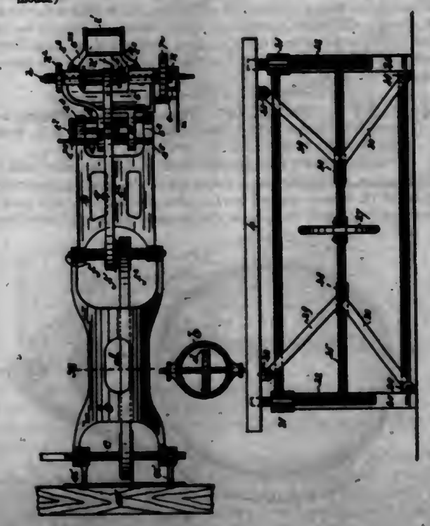
3. An arch for an evaporator, consisting of a front casting B, having flanges *c*, *d*, and *e* and vertical projection *u*, and a rear casting C, provided with flanges *l*, *m*, and *n*, in combination with a sheet-metal body D, secured to the flanges of both castings, provided with inclined sides terminating in horizontal flanges *p q* and vertical flange *v*, and a transverse bar arranged to support one end of an evaporating-pan, substantially as described.

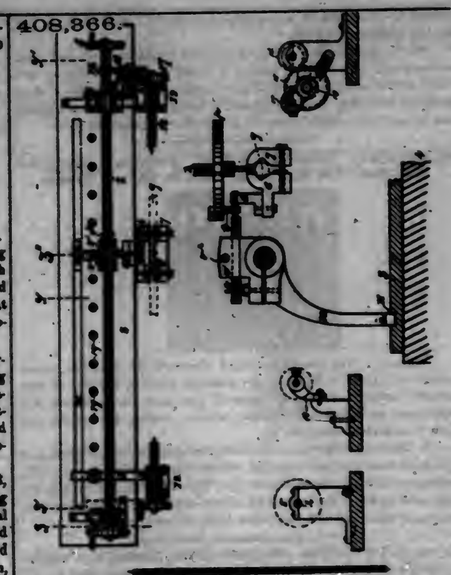
4. An arch for evaporators, consisting of a front casting B, having flanges *c*, *d*, and *e*, and a rear casting C, provided with flanges *l*, *m*, and *n*, in combination with a sheet-metal body D, secured to the flanges of both castings, provided with inclined sides having flanges *p* and *q*, transverse supporting-bar *r*, and plate *s*, constructed to support one end of a heater, and a smoke-stack, substantially as described.

5. An arch for evaporators, consisting of a front and rear casting having flanges *c*, *d*, *e*, *l*, *m*, and *n*, a furnace, and a combustion-chamber contracted vertically from the furnace to the rear end thereof and having inclined sides, in combination with a smoke-opening on top of the arch and a door in the rear casting, substantially as described.

6. An arch for evaporators, consisting of a front casting B, having flanges *c*, *d*, and *e*, transverse bearing-bars *g h* and openings *a* and *b*, a furnace provided with casting H, having flange *e'*, and bearing-bars *b' c'*, in combination with longitudinal grate-bars adjustable upon said bearing-bars, substantially as described.

408,866. ROUTING AND WOOD-WORKING MACHINE. Hosmyn M. Allen, Newark, N. J. Filed Aug. 16, 1888. Serial No. 283,138. (No model.)





Claim.—1. In a routing-machine, the combination, with a routing-tool arranged in bearings formed on vibrating arms, of a lathe, a screw-shaft, and a head *v*, connected with said tool for feeding the routing-tool forward, substantially as and for the purposes set forth.

2. In a routing-machine, the combination, with the routing-tool movable horizontally, as described, of a screw-shaft 2, a head *v*, movable on said shaft and connected with said routing-tool, and means, substantially such as described, for turning the rod or bar worked upon, substantially as and for the purposes set forth.

3. In combination with a lathe, a screw-shaft, a head *v*, and jaws 6 and 7, secured thereto and movable therewith, and a routing-tool having a lateral vibration on arms *b c*, substantially as and for the purposes set forth.

4. The combination, with arms *b c*, pivoted to vibrate horizontally, belts and pulleys arranged on said arms, and a shaft A, having its bearings at the outer end of said arms and having a cutting-tool thereon, of a lathe, a screw-shaft, and means adapted to move said cutting-tool longitudinally in connection with said shaft, substantially as and for the purposes set forth.

5. In combination with vibrating arms *b c*, belts and pulleys, and a shaft *h*, arranged on said arms and having a cutting-tool, a slotted bed, head and tail stocks, a screw-shaft, a feeding-head carried by said screw-shaft, a leg 10, for preventing said head from turning on said shaft, and means for connecting said head with the arm *c*, substantially as and for the purposes set forth.

6. In combination with pivoted arms *b c*, belts and pulleys, and a shaft carrying a routing-tool arranged on said arms, a grooved frame *p*, carrying holding-jaws for steadying the bar to be routed and turned, and a lathe, substantially as and for the purposes set forth.

7. In combination with vibrating arms, pulleys, belts, and shaft carrying a routing-tool, an annular frame secured upon one of said arms, an arm *q*, secured upon said shaft and bearing on said frame, an arm *t*, adjustable on said arm *q*, an arm *w*, head *v*, arm 10, shaft 2, and lathe, all arranged and adapted to operate substantially as and for the purposes set forth.

8. In combination, arms *b c*, belts and pulleys, a shaft carrying a routing-tool, a steadying-frame *p*, secured upon the arm *c*, an arm *q*, secured upon the shaft and engaging said steadying-frame, and a lathe for turning the bar while the same is being routed by the said tool, a screw-shaft, and a head connected with said steadying-frame, substantially as and for the purposes set forth.

9. The improved routing-machine combining therein the cylindrical arm *b*, a belt *d* therein, arm *c*, pulleys and belt *g*, shaft *h*, and routing-tool, all arranged and combined substantially as set forth.

10. In a wood-working machine, the combination, with a vibrating arm *b*, an arm *c*, pivoted on said arm *b* and consisting of parts *c' c''* shafts *c' c''*, and an adjusting-screw *c''*, of belts, pulleys, shaft *h*, and tool, all arranged and combined substantially as and for the purposes set forth.

11. In a wood-working tool, the combination, with arms *b c*, carrying a wood-working tool, of a gage 32, having a slotted arm 33,

carried by braces 34 34, and clamping-screw 36, substantially as and for the purposes set forth.

12. In combination with a rooting-tool arranged on pivoted arms and actuated by belts and pulleys, a frame secured on one of said arms, a screw-shaft 2, feeding-head *v*, rods u and *t*, adjustable in their bearings, and jaws 6 and 7, adjustable in their relation to one another and to said rods, substantially as and for the purposes set forth.

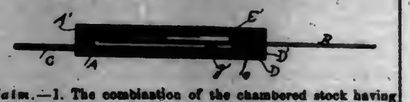
408,367. SECONDARY BATTERY. NATHANIEL B. ALDRICH, Fall River, Mass. Filed Aug. 26, 1886. Serial No. 213,718. (No model.)



Claim.—1. The herein-described electrode for batteries, which consists of a plate or frame of any material, whether metallic or non-metallic, having a coating or layer of iron, zinc, tin, or copper, and superposed upon said layer another layer or coating of lead, the said plate then being formed for use.

2. The herein-described electrode for batteries, which consists of a plate or frame of any material, whether metallic or non-metallic, having a coating or layer of iron, zinc, tin, or copper, and superposed upon said layer by the process of electro-deposition another layer or coating of lead, the said plate then being formed for use.

408,368. REVEL. WILLIAM G. AVERY, Cleveland, Ohio, assignor to the W. G. Avery Manufacturing Company, same place. Filed Jan. 31, 1889. Serial No. 298,206. (No model.)



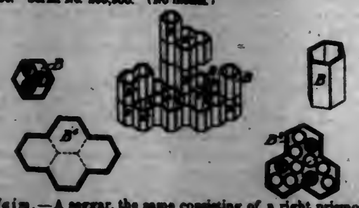
Claim.—1. The combination of the chambered stock having within the chamber an elevated rounded surface D, and a lug *g* within said chamber pierced and threaded to receive the rod C, and the slotted blade B, pivoted within one end of the stock, with the rounded washer D' within the stock and held in place by the pivot-screw *e*, and bearing its flat surface against the blade B and its rounded face opposing the rounded surface D of the stock, and said rod C adapted to have its inner end enter between said rounded surface D and the washer D', substantially as set forth.

2. The combination of the dial-protractor E, the chambered stock having an elevated rounded surface D and a lug *g* within the chamber pierced and threaded to receive the rod C, and the slotted blade B, pivoted within one end of the stock, with the washer D' within the stock, rounded on one of its faces and held in place by the pivot-screw *e*, and bearing its flat surface against the blade B and its rounded face opposing the rounded surface D of the stock, and said rod C adapted to have its inner end enter between said rounded surface D and the washer D', substantially as set forth.

3. The combination, in a bevel, of the rod C, the washer D', having one face rounded, and the chambered stock provided with the rounded elevation D within the chamber, the inner end of said rod C being adapted to enter between said washer D' and the rounded surface D, substantially as set forth.

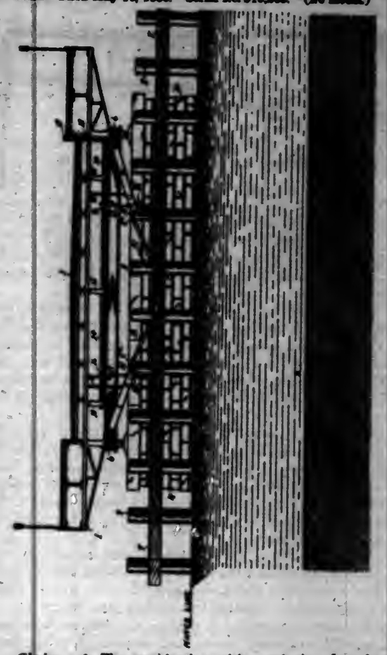
4. The combination, in a bevel, of the dial-protractor E, the rod C, and the washer D', rounded on one side, with the chambered stock having the rounded elevation D within the chamber, the inner end of the rod C being adapted to enter between said washer D' and the elevated rounded surface D, substantially as set forth.

408,369. SEGGAR. THOMAS A. BELL, Trenton, N. J. Filed Jan. 12, 1889. Serial No. 296,955. (No model.)



Claim.—A seggar, the same consisting of a right prismoid the motive of whose exterior form is the hexagon, substantially as above described.

408,370. DRAW-BRIDGE. CHARLES R. BROTHWELL, Bridgeport, Conn. Filed May 10, 1888. Serial No. 310,988. (No model.)



Claim.—1. The combination, with a swinging draw having a suitable stop projection, of a yielding abutment independent of the bridge, which is adapted to be engaged by said projection, as and for the purpose set forth.

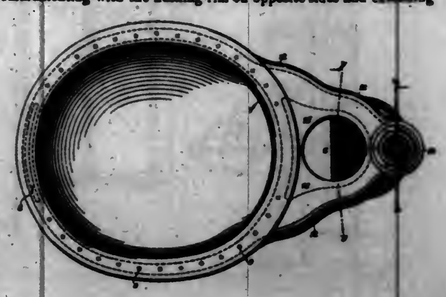
2. The combination, with a swinging draw having stop-latches, of a series of guard-spiles suitably connected together, two of said spiles being engaged by the stop-latches when the draw reaches the closed position.

3. The combination, with a swinging draw having stop-latches pivoted thereto and means, substantially as described, for raising and lowering the stop-latches, of a series of guard-spiles connected together, two of said spiles being engaged by the stop-latches when the draw reaches the closed position.

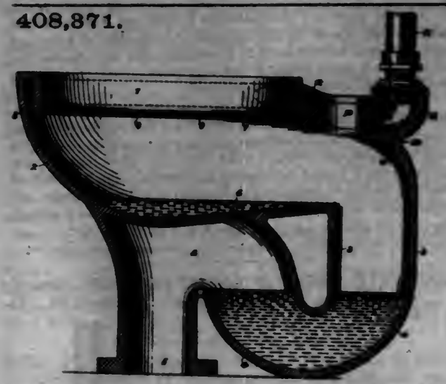
4. The draw having stop-latches with rollers at their outer ends, in combination with a series of guide-spiles connected together, two of said spiles having shoulders 10 and inclines 11, so that as the draw is swung to the closed position one of said latches will ride up one of the inclines and then drop to the engaged position and the other latch will strike the other shoulder squarely, thereby stopping the movement of the draw.

408,371. WATER-CLOSET. WILLIAM BOSTING, Jr., Plumbing, assignor to the Meyer-Griffin Company, (Limited,) New York, N. Y. Filed Nov. 30, 1888. Serial No. 292,175. (No model.)

Claim.—1. In a water-closet having a bowl provided with a flushing-rim, and having also a trunk, the two rearwardly-projecting conduits 12, formed integral or of a piece with the bowl and trunk, communicating with the flushing-rim on opposite sides and extending



408,371.



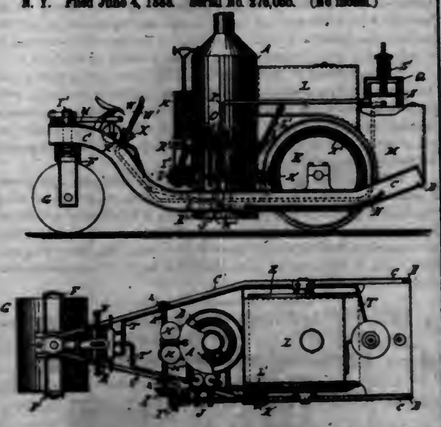
therefrom around the trunk to a common inlet-nozzle, substantially as shown and described.

2. In a water-closet having a bowl provided with a flushing-rim, and having also an open trunk, the two rearwardly-projecting conduits 12, formed integral or of a piece with the bowl and trunk, communicating with the flushing-rim on opposite sides, extending therefrom around the trunk-opening to a common inlet-nozzle, and connected to each other at the front side of said opening by a web or ligament 15 made integral therewith, substantially as shown and described.

3. In a water-closet having a bowl provided with a flushing-rim, and having also a trunk, the two rearwardly-projecting conduits 12, joined to the bowl and the trunk, and communicating with the flushing-rim on opposite sides, and extending to and communicating with a vertically-terminating inlet-nozzle, the bowl, the flushing-rim, the trunk, the conduits, and the inlet being all made from a single piece of earthenware, substantially as shown and described.

4. A water-closet consisting of a bowl provided with a flushing-rim and a dish or basin, a vertical trunk in rear of the bowl, two rearwardly-projecting conduits formed integral with the bowl and trunk and extending from the flushing-rim on opposite sides, and a vertically-terminating inlet-nozzle at the junction of said conduits provided with one or more perforations extending to the inner vertical wall of the trunk above the plane of the bowl's dish, whereby a stream or streams of water may be discharged upon said wall for the purpose of removing any matter which in the washout of the basin may have lodged thereon, substantially as shown and described.

408,372. STEAM ROAD-ROLLER. CHARLES A. CASE, New York, N. Y. Filed June 4, 1888. Serial No. 276,055. (No model.)



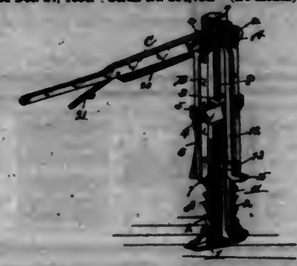
Claim.—1. In a road-roller, the combination of the boiler A, frame C, roller E, water-tank M, oil-tank L, and guide-roller G, in supporting-frame F, operatively connected therewith, substantially as shown and described.

2. In a road-roller, the combination of the boiler A, frame C, roller E, tanks M and L, guide-roller G, and steering engine or cylinder R, operatively connected therewith, substantially as set forth.

3. In a road-roller, the combination of the trap Q, provided with a piston S, tank M, engine or cylinder R, pumps O, operatively connected with the trap Q and cylinder R by pipes T, P, N, N', and R', when arranged substantially as shown and described.

4. In a road-roller, the combination of frame C, having its end turned up at D, engine or cylinder R, guide-roller G, supporting-frame F, tiller U, and frame V, as shown and described.

408,373. LIFTING-JACK. HENRY H. CLEVER, Greensburg, Pa. Filed Dec. 27, 1888. Serial No. 294,722. (No model.)



Claim.—1. The combination of the standard A, having a base-piece and formed with racks 2 on its side edges, and a vertical central hole 3, and provided with a casing 4, having vertically-arranged ways therein, the operating-lever C, having a pivotally-attached weight-block mounted thereon, the lifting-bars B, connected to the operating-lever and projected through the ways in the casing of the standard, with their lower ends formed and arranged to engage the racks of the standard, a guide-rod S, connected to the operating-lever and arranged in the vertical hole of the standard, and springs 6 on the casing to press the lifting-bars in the racks, substantially as described.

2. The combination of the standard A, having a base-piece, and formed with racks on its edges and a vertical hole 3, and a casing 4 mounted thereon, having vertical ways, the operating-lever C, having a pivotally-attached weight-block mounted thereon, the lifting-bars B, connected to the operating-lever and projected through the ways of the casing, with their lower ends formed and arranged to engage the racks of the standard, a guide-rod connected to the operating-lever and arranged in the vertical hole of the standard, springs on the casing to press the lifting-rods in the racks, a bell-crank lever fulcrumed to the operating-lever, having one end connected to a rod provided with spreading-bars at its lower end, said spreading-bars being connected to the lower ends of the lifting-bars, and the other end of the bell-crank lever being connected to a hand-lever, substantially as described.

3. The combination, with the standard having racks on its edges, the lifting-rods arranged in engagement with said racks, and the operating-lever, of levers to disengage the lower ends of the lifting-bars from the racks, consisting of a hand-lever fulcrumed to the operating-lever, a bell-crank lever fulcrumed to the operating-lever and having one end connected to the hand-lever, a connecting-rod jointed to the bell-crank lever, and two spreading-bars pivotally fastened to the lower end of the connecting-rod and their other ends fastened to the ends of the lifting-rods.

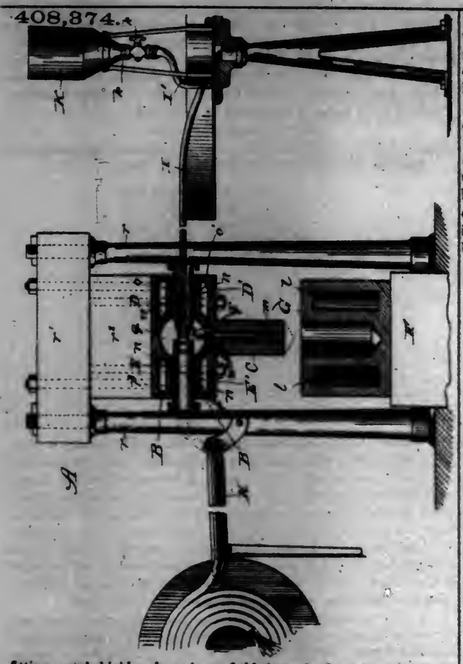
4. The combination of the standard, formed with racks on its edges and having a casing with vertical ways on its upper end and a guide-flange on its side, the lifting-bars arranged in the ways of the casing to engage the racks with their lower ends, the operating-lever fulcrumed to the lifting-rods, and the auxiliary lifting-rod connected to the operating-lever and formed with a foot and provided with a guide-piece to engage the guide-flange on the standard, substantially as described.

5. The lifting-jack herein described, composed of the standard formed with racks on its edges, a central vertical hole, and a guide-flange on its side, a casing having ways to receive the lifting-rods and provided with springs to press the lifting-rods in engagement with the racks on the standards, the operating-lever fulcrumed to the lifting-rods, a weight-block on the operating-lever, the levers, substantially as described, to engage the lifting-bars from the racks, a guide-rod connected to the operating-lever and arranged in the hole of the standard, an auxiliary lifting-rod connected to the operating-lever and provided with a guide-piece to engage the guide-flange on the standard, all arranged and combined substantially as described, and for the purposes specified.

408,374. METHOD OF INCASING TUBING COMPOSED OF PLASTIC MATERIALS. HENRY R. CORE, Wilmington, Del. Filed Oct. 5, 1888. Serial No. 287,369. (No model.)

Claim.—1. The method of coating the exterior surface of tubing formed of plastic material, which consists in molding upon it a close-

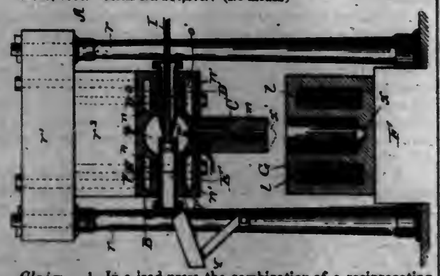
408,874.



fitting metal shield and passing a fluid through the tubing while the shield is being formed thereon, substantially as described.

2. The method of coating with metal the exterior surface of tubing formed of plastic material, which consists in melting the metal, passing the tubing through a suitable die, forcing the metal into the die around the tubing, and passing a suitable fluid through the tubing while the coating is being formed thereon, substantially as described.

408,875. LEAD-PRESS. HENRY R. COBB, Wilmington, Del. Filed Oct. 5, 1888. Serial No. 287,270. (No model.)



Claim.—1. In a lead-press, the combination of a reciprocating lead-cylinder, a stationary hollow plunger in line with and above the lead-cylinder, and a stationary mold above the plunger and communicating therewith, substantially as described.

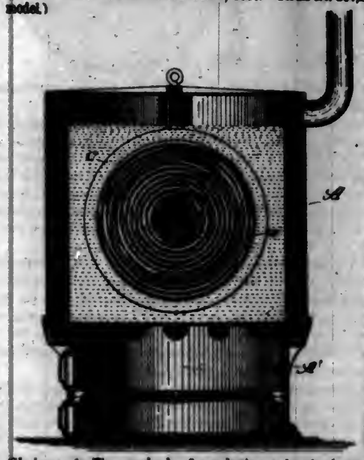
2. In a lead-press, the combination of a reciprocating lead-cylinder having a synclinal bottom, a stationary hollow plunger in line with and above the lead-cylinder, and a stationary mold above the plunger and communicating therewith, substantially as described.

3. In a lead-press, the combination of a reciprocating lead-cylinder G, a stationary hollow plunger C in line with and above the lead-cylinder, a stationary chamber $q\ q'$ above the hollow plunger and communicating therewith, tubes D and E, leading horizontally into the sides of the said chamber and coinciding at their bores near the center thereof, the tube D extending into the adjacent end of the tube E, and a bridge m' in the chamber $q\ q'$ over the opening in the plunger, substantially as described.

4. In a lead-press, the combination of a reciprocating lead-cylinder G, a stationary hollow plunger C in line with and above the lead-cylinder, a stationary chamber $q\ q'$ above the hollow plunger and communicating therewith, tubes D and E, containing each a tube A, surrounded by material g non-conductive of heat and leading horizontally into the sides of the said chamber and coinciding at their bores near the center thereof, the tube D extending into the adjacent end of the tube E, and a bridge m' in the chamber $q\ q'$ over the opening in the plunger, substantially as described.

5. In a lead-press, the combination of a reciprocating lead-cylinder G, having a synclinal bottom, a stationary hollow plunger C in line with and above the lead-cylinder, a stationary chamber $q\ q'$ above the hollow plunger and communicating therewith, tubes D and E, containing each a tube A, surrounded by material g non-conductive of heat and leading horizontally into the sides of the said chamber and coinciding at their bores near the center thereof, the tube D extending into the adjacent end of the tube E, and a bridge m' in the chamber $q\ q'$ over the opening in the plunger, substantially as described.

408,876. METHOD OF MANUFACTURING TUBING. HENRY R. COBB, Wilmington, Del. Filed Oct. 5, 1888. Serial No. 287,271. (No model.)



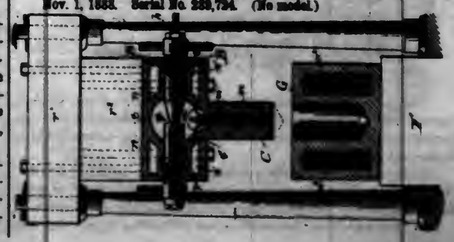
Claim.—1. The method of producing vulcanized-gum tubing, which consists in incasing the plastic-gum tube, combined with a vulcanizing substance, in a flexible metal tube, introducing and retaining an expansible fluid in the bore of the tube, and thereupon coiling and immersing the whole in an open bath having a proper vulcanizing temperature, as set forth.

2. The method of producing vulcanized-gum tubing, which consists in incasing the plastic-gum tube, combined with a vulcanizing substance, in a flexible metal tube, introducing and retaining an expansible fluid in the bore of the tube, and thereupon coiling and immersing the whole in a bath of paraffine or similar oil, maintained at a vulcanizing heat, contained in an unsealed vessel, as set forth.

3. The method of producing vulcanized-gum tubing with a permanent continuous coating of metal, which consists in forming a tube of plastic gum in the usual manner, applying a vulcanizing substance thereto, covering the tube, while soft, with a flexible continuous casing of metal, and immersing the whole in an open bath having a proper vulcanizing temperature, as set forth.

4. The method of producing flexible vulcanized-gum tubing with a permanent continuous coating of metal, which consists in covering the formed plastic-gum tube, provided with a vulcanizing substance, with a flexible continuous casing of metal, introducing and confining an expansible fluid in the bore, and thereupon coiling the tubing and immersing it, while coiled, in an open bath having a vulcanizing temperature, as set forth.

408,877. LEAD-PRESS. HENRY R. COBB, Wilmington, Del. Filed Nov. 1, 1888. Serial No. 289,794. (No model.)



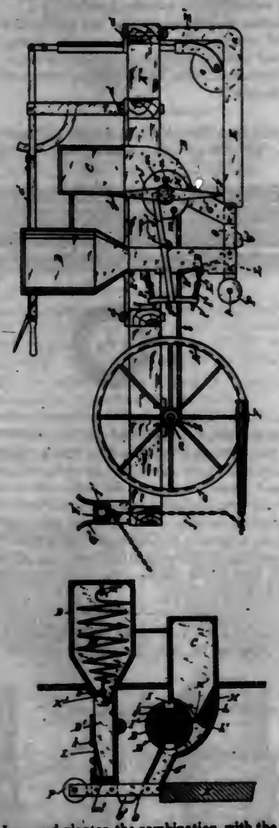
Claim.—1. In a lead-press, the combination of a core-tube and a die, having a passage w between them, and a perforated tube c, surrounded by a water-jacket within the die, substantially as described.

2. In a lead-press, the combination of a core-tube and a die, having a passage w between them, and a tube c within a water-jacket surrounded by non-heat-conducting material within the die, substantially as described.

3. In a lead-press, the combination of a core-tube and a die, having a passage w between them, a tube k within a water-jacket surrounded by non-heat-conducting material within the core-tube, and a tube c, surrounded by a water-jacket within the die, substantially as described.

4. In a lead-press, the combination of a core-tube and a die, having a passage w between them, a tube k, surrounded by a water-jacket D^2, comprising chambers $f'\ f^2$, with an opening f^3 between them within the core-tube, a water-supply pipe H, leading into the chamber f', and a drain H', leading from the chamber f^2, substantially as and for the purpose set forth.

408,878. SEED-PLANTER. WILLIAM F. CUMMINGS and HENRY C. MCDUFFEE, Bradford, Vt. Filed Oct. 19, 1888. Serial No. 288,505. (No model.)



Claim.—1. In a seed-planter, the combination, with the fertiliser-box provided with a spout at the bottom, of the upper and lower valves pivoted to the spout, a spring secured to the upper part of said box for agitating its contents and normally holding the upper valve closed, and a pivoted trip-lever provided with a T-head and connected to the said valves by adjustable rods for operating them alternately, substantially as set forth.

2. In a seed-planter, the combination, with the delivery-spout of the fertiliser-hopper, of the upper and lower valves pivoted to said spout, the pivoted trip-lever provided with a T-head, and the adjustable rods hinging the valves to the said head, substantially as set forth.

3. In a seed-planter, the combination, with the fertiliser-box provided with a spout at the bottom, of the upper and lower valves pivoted to the spout, a spring normally holding the upper valve closed, a pivoted lever provided with a T-head, rods connecting said head with the valves, and a revolving disk provided with projecting pins for tripping the free end of the said lever and causing the valves to open and shut alternately, substantially as set forth.

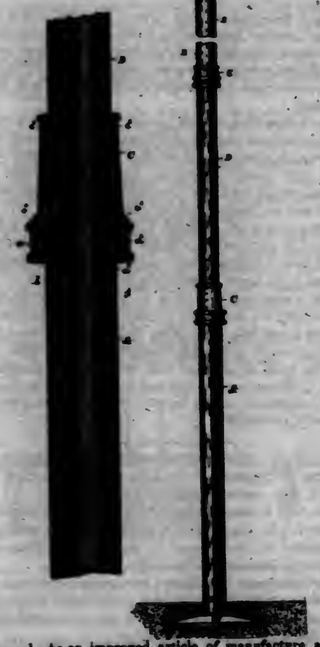
4. In a seed-planter, the combination, with a seed-dropping device provided with a spout, of a fertiliser-distributer located behind the said seed-dropper and provided with a vertical spout divided by a central triangular bar or partition at its lower end, whereby the fertilizer is dropped on each side of the seed, and a wedge-shaped furrow-opener sharp in front and having its rear end bifurcated and secured to the said spouts, substantially as and for the purpose set forth.

5. In a seed-planter, the combination, with a seed-dropping device provided with a spout, of a fertiliser-distributer also provided with a spout having a triangular longitudinal dividing bar or partition across its lower end and located behind the seed-dropper, a wedge-shaped furrow-opener provided with a bifurcated rear end and having the bottoms of said spouts secured thereto, the blades secured to the under side of the bifurcated end of the furrow-opener in front of the fertilizer-spout for covering the seed, and the revolving blades journaled at the extreme end of said bifurcated portion of the furrow opener for covering the fertiliser, substantially as set forth.

6. In a seed-planter, the combination, with the frame, of the concave-faced wheel journaled at the rear of the machine, the seed-dropping device provided with a revoluble seed-drum and a spout, the fertiliser-distributer provided with a spout and with delivery-valves and trip mechanism for operating them, and the wedge-shaped furrow-opener having its front end supported by the frame and its rear end bifurcated and secured to the said spouts in line with the concave-faced wheel, substantially as and for the purpose set forth.

7. The combination, with the revoluble axle, of the wheel provided with ratchet-teeth on one end of its hub and adapted to slide longitudinally upon the axle, a clutch-jaw secured to the axle and provided with ratchet-teeth engaging with the teeth on the wheel-hub, a collar secured to the axle, and a spring interposed between the said collar and the plain end of the wheel-hub, whereby the ratchet-teeth are held in gear during the forward motion of the wheel and adapted to disengage automatically during its rearward motion, substantially as set forth.

408,879. SECTIONAL METAL POLE. JOHN H. CUNNINGHAM, Chelsea, Mass. Filed Mar. 23, 1889. Serial No. 304,489. (No model.)



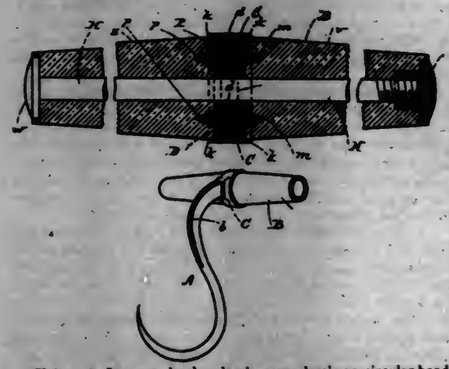
Claim.—1. As an improved article of manufacture, a hollow metal pole made of two or more sections, which are united by screwing one into the other and by a coupling screwed upon the end of one

and provided with a long sleeve to embrace or receive the end of the other, substantially as described.

2. The combination of the pipe or tube, having at its upper end an interior thread *a'* and an exterior a^2, with the pipe or tube B, having the exterior thread *b* to fit the interior thread of the section A, the sleeve C, having the interior thread *c* to fit the exterior thread a^2 of the section A, and the long section c^2 of a size to receive and sustain the lower part of the said section B, substantially as described.

3. As an improved article of manufacture, a metal pole made of two or more sections, which are united by screwing one into the other and by a coupling screwed upon the end of one and provided with a long sleeve to embrace or receive the end of the other, and the cavity of which sections is packed or filled with a substance of a stiffening character, substantially as described.

408,380. CASE-HOOK. GEORGE B. DUTTON, Medford, assignor of one-half to John Burrill, Boston, Mass. Filed May 20, 1889. Serial No. 312,575. (No model.)



Claim.—1. In a case-hook, a hook proper having a circular head and rectangular shank, in combination with a plate having a face grooved to receive said head and shank, handle-sections, and a bolt secured in bolt-holes in said sections, head, and plate, substantially as described.

2. In a case-hook, a hook proper provided with a rectangular shank and circular head having a bolt-hole, in combination with a plate having a bolt-hole, grooved face for said head and shank, a peripheral flange on each face, and spurs for entering handle-sections secured to said plate by a longitudinally-disposed bolt, substantially as described.

3. In a case-hook, a hook proper, a plate having a face grooved to receive the head thereof, peripheral flanges on each face of said plate, a cap-plate having a lip to enter said groove, said plates being provided with laterally-projecting spurs and bolt-holes registering with a hole in said head, and a sectional handle secured to said plates by a bolt and nut, substantially as described.

4. In a case-hook, the hook A, having the shank *b*, head *d*, and bolt-hole *f*, in combination with the plate C, provided with the lip *g*, groove *h*, hole *i*, flanges *k*, and spurs *m*, the handle-sections *v z*, bolt H, and nut *y*, arranged substantially as described.

5. In a case-hook, the hook A, provided with the shank *b* and head *d*, having the hole *f*, in combination with the plate C, having the groove *h* and hole *i*, the plate D, having the hole *l*, the handle-sections *v z*, bolt H, and nut *y*, substantially as described.

6. The hook A, provided with the hole *f*, in combination with the plate C, having studs *m* and hole *i*, the plate D, having hole *l* and studs *p*, the sections *v z*, the bolt H, and nut *y*, arranged to operate substantially as described.

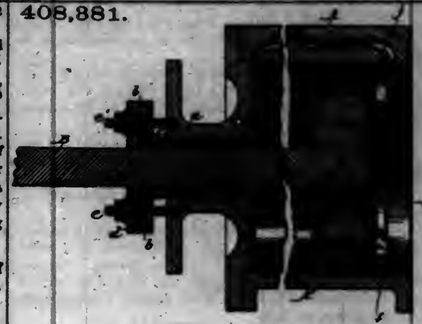
408,381. DEVICE FOR ADJUSTING PISTON-RODS AND PISTON-HEADS IN CYLINDERS. LEONARD FIERAY, Little Rock, Ark. Filed May 7, 1889. Serial No. 309,870. (No model.)

Claim.—1. A cone-shaped ring divided into two or more sections and adapted to be placed upon a piston-rod in the stuffing-box of a steam-cylinder for the purpose of centering the piston-rod in the stuffing-box, substantially as specified.

2. A cone-shaped ring divided into two or more sections, in combination with a divided ring beveled on the inside for the purpose of centering the piston-rod and piston-head in the stuffing-box of a steam-cylinder, substantially as specified.

3. A cone-shaped ring divided into two or more sections for the purpose of centering the piston-rod in the stuffing-box of a steam-cylinder, in combination with a piston-rod and stuffing-box of a steam-cylinder, substantially as and for the purpose specified.

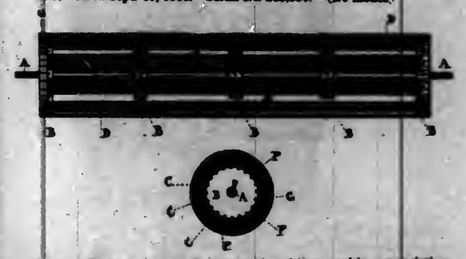
408,881.



4. A cone-shaped ring divided into two or more sections for the purpose of centering the piston-rod in the stuffing-box of a steam-cylinder, in combination with a forked gland *b* and a follower *c*, substantially as and for the purpose specified.

5. A cone-shaped ring divided into two or more sections for the purpose of centering the piston-rod in the stuffing-box of a steam-cylinder and a divided bevel-ring *f*, in combination with the piston-rod and piston-head of a steam-cylinder, substantially as and for the purpose specified.

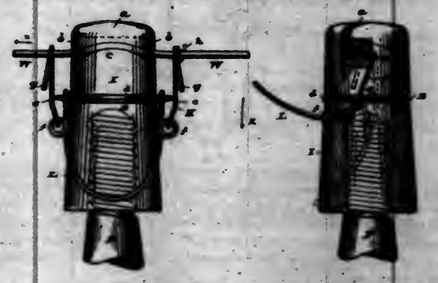
408,382. THRASHING-MACHINE. ALBERT L. GILL, Allentown, N. J. Filed Sept. 15, 1888. Serial No. 285,530. (No model.)



Claim.—1. A skeleton cylinder for thrashing-machines, consisting of the flanged heads B, longitudinal staves C, connected to said heads and separated from each other by intervening spaces, metallic plates D, fastened to said staves, and adjustable wedge-shaped bracing-blocks E, interposed between the staves and connected to the heads.

2. A skeleton cylinder for thrashing-machines, consisting of heads B, longitudinal wooden staves C, separated from each other by intervening spaces, adjustable wedge-shaped bracing-blocks interposed between the staves and connected to the heads, and metallic facing-plates D, provided with lips or flanges *d*, for protecting the forward faces of the staves from wear.

408,383. LINE-WIRE INSULATOR. CARROLL G. CHARLES, Marion, Iowa. Filed Jan. 26, 1889. Serial No. 297,701. (No model.)



Claim.—1. In combination with an insulator having an internal convex surface and a notch in its top admitting the line-wire thereto, and provided with a pair of pivots below said convex surface, a bifurcated lever turning on said pivots and a pair of hooks pivotally attached to said lever and engaging with the line-wire at the respective sides of the insulator, substantially as hereinbefore specified.

2. The combination, with an insulator having an internal convex surface and a notch in its top admitting the line-wire thereto, and provided with a pair of pivots below said convex surface, and a self-locking lever turning on said pivots, of a pair of hooks pivotally attached to said lever and engaging with the line-wire at the respective sides of the insulator, and having elongated extremities, either of which may be wrapped around the line-wire to secure the fastening, substantially as hereinbefore specified.

3. An insulator having an internal convex surface, a diametrical notch in its top admitting the line-wire thereto, diagonally-opposite recesses forming an oblique passage through the insulator below solid overlying portions thereof, and provided with a pair of pivots below said convex surface and in line vertically with said recesses, respectively, substantially as hereinbefore specified.

4. The combination, with the ledge, cover, lifting-rods, and slides, to which the lifting-rods are loosely connected, of a bed carried by the slides which move obliquely upward and forward when the cover is raised, and a table carried by the bed, which is adapted to slide forward over the ledge which supports it, thereby permitting the cover and lifting-rods to be lowered independently of the bed, table, and slides.

5. The combination, with the cover, lifting-rods, and slides, of a bed carried by the slides which move obliquely upward and forward when the cover is raised, a table having a slot 13, and a screw passing through said slot and engaging the bed, so that the table may be drawn forward when in the raised position, substantially as described.

6. In a type-writer cabinet, compartment 3, ledge 7, and a cover adapted to close the compartment, in combination with slides carrying the bed, lifting-rods connected to the cover and to said slides, and a sliding table connected to the bed and adapted to be drawn forward over the ledge.

7. In a type-writer cabinet, ledge 7, the cover and lifting-rods hinged thereto and having enlargements at their lower ends, in combination with slides having keepers 23, through which the guide-rods slide and which are engaged by said enlargements, oblique slots 18, blocks engaging said slots, a bed carried by said slides, and a sliding table secured to the bed, said parts operating as described, and for the purpose set forth.

8. The ledge, sliding table, and bed, constructed as described, in combination with the cover, the lifting-rods hinged thereto, and the slides, which are connected to said lifting-rods and carry the bed, whereby, when the cover is raised, the bed is lifted obliquely upward and forward and the table may be slid forward over the ledge.

9. The cover, and the lifting-rods hinged thereto and having enlargements at their lower ends, in combination with the slides having keepers through which the lifting-rods pass and which are engaged by said enlargements, and oblique slots 19, blocks lying in said slots, a bed carried by the slides, and a sliding table connected to the bed, whereby, when the table is moved forward and the lifting-rods lowered, the slides and bed will be tilted forward, causing the blocks to bind in the slots and retaining the bed at the raised position.

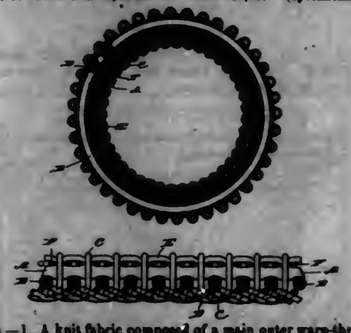
10. The two-part cover, constructed as described, and the lifting-rods pivoted to the back portion thereof and having enlargements at their lower ends, in combination with slides having keepers through which the lifting-rods pass and which are engaged by the enlargements, the bed carried by the slides, and the sliding table connected to the bed.

11. The combination, with the slides, lifting-rods, bed, and sliding table, of a cabinet having a compartment 3, adapted to receive the table, and a type-writer carried thereby, a ledge 7, and a two-part hinged cover, to the back portion of which the lifting-rods are hinged, the front portion being provided with a piece 6, which engages the ledge in the closed position.

12. The combination, with the slides, the lifting-rods loosely connected thereto, and the bed and sliding table, of a cabinet having a compartment 3, adapted to receive the table and a type-writer carried thereby, compartments 17, which inclose the slides, and a cover to which the lifting-rods are hinged, said cover acting, when raised, to lift the bed, sliding table, and type-writer obliquely upward and forward, and when lowered to close compartment 3.

13. The combination, with the cabinet having compartments 3 and 17, ledge 7, and cover 4 4', of the slides having oblique slots, screws having washers wider than the slots, whereby the blocks and slides are held in position, the bed and sliding table carried by the slides, and lifting-rods pivoted to the cover and connected to the slides.

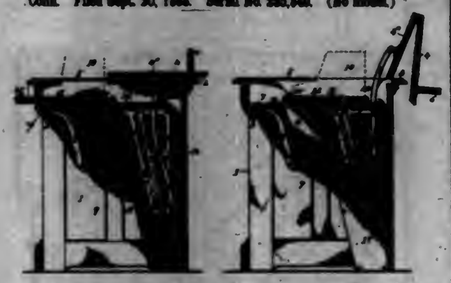
408,384. KNIT FABRIC FOR HOSE. HENRY F. HERRMANN, Brooklyn, N. Y. Filed Dec. 28, 1887. Serial No. 259,209. (Specimens.)



Claim.—1. A knit fabric composed of a main outer warp-thread, a main outer filling-thread, a smaller inner warp-thread, and two smaller inner filling-threads, which are forced down one on each side of the larger filling-thread, all bound together by a continuous binding-thread, which on the inside of the fabric passes around the inner warps, substantially as shown and described.

2. A knit fabric composed of a main outer warp-thread, a main outer filling-thread, a smaller inner warp-thread, two smaller inner filling-threads, which are forced down one on each side of the larger filling-thread, all bound together by a continuous binding-thread, which on the inside of the fabric passes around the inner warps, and a cover-thread, substantially as shown and described.

408,385. TYPE-WRITER CABINET. JAMES KEMPE, Bridgeport, Conn. Filed Sept. 20, 1888. Serial No. 285,849. (No model.)

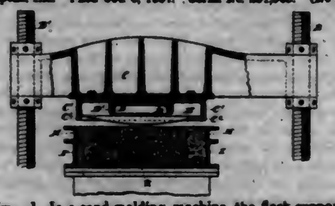


Claim.—1. In a type-writer cabinet, the combination, with the cover, of lifting-rods hinged thereto, slides engaged by said rods and carried obliquely upward and forward when the cover is raised, a bed carried by the slides, and a sliding table carried by the bed, said parts being so arranged that when the cover is raised the bed and table are lifted upward and forward but retain the horizontal position, and when the table is slid to its extreme forward position the cover may be lowered independently of the bed and table.

2. The combination, with the cover and the lifting-rods hinged thereto, of slides loosely engaged by said lifting-rods and having oblique slots and blocks 19 engaged by said slots, whereby the slides are retained in position and are caused to move upward and forward obliquely when the cover is raised, a horizontal bed carried by said slides, and a sliding table carried by the bed, as and for the purpose set forth.

3. The combination, with the cover and the lifting-rods hinged thereto and having enlargements at their lower ends, of the slides having keepers through which the lifting-rods slide and which are engaged by said enlargements, and a bed carried by the slides.

408,386. SAND-MOLDING MACHINE. MATTHEW B. MOORE, Indianapolis, Ind. Filed Oct. 6, 1887. Serial No. 251,565. (No model.)



Claim.—1. In a sand-molding machine, the flask-support P and platen C, with suitable means for moving them forcibly together, in combination with each other and with the flask I and sand-box H, having flush interior surfaces, and with a rim C', rigidly attached to the platen and arranged to be received within the sand-box, and a yielding presser E, covering the area within such rim and adapted to yield irregularly to conform to the pattern, all substantially as and for the purpose herein specified.

2. In a sand-molding machine, the supplementary removable tucking-pieces C^3 C^3, in combination with the tucking-rim C', the yielding presser E, and the platen C, the parts being arranged, as shown, so that the tucking-pieces C^3 C^3 will extend down and depress the surface of the sand beneath them sooner or to a greater depth than the adjacent portions of the surface, as herein specified.

3. In a sand-molding machine, the interior tucking-piece D', in combination with the platen C and yielding presser E, said interior tucker being arranged to depress predetermined portions of the surface of the sand to positive extents while other parts are subjected to the yielding presser, as herein specified.

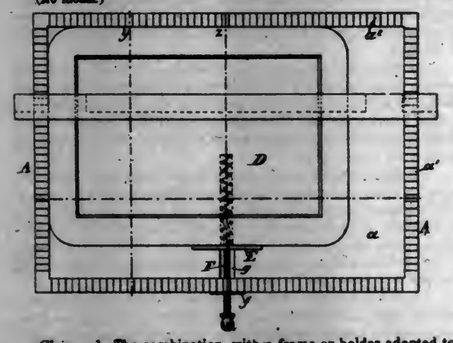
4. In a sand-molding machine, a rigid platen C, rim C', supplementary tucking-pieces C^3, and an interior tucker D', in combination with each other and with a yielding presser E, arranged substantially as shown, whereby the relative pressures on different parts of the surface of the flask may be adjusted by varying the quantity of fluent material between the yielding presser and the platen, as herein specified.

5. In a sand-molding machine having a yielding presser acting over a portion of the sand, combined with unyielding pressers exerting a greater pressure on certain portions, the cock N, controlling the communication to the space above the yielding presser, adapted to admit or discharge the fluent material and afterward confine a fixed quantity to act through the medium of the yielding presser, substantially as herein specified.

6. In a sand-molding machine, the post B, sleeve J, sand-box H, supported by the two sets of levers F and G, pivoted to said sleeve, and a balancing-weight K, combined and arranged, as shown, so that the sand-box may be moved vertically and laterally while preserving a horizontal position, as herein specified.

7. In a sand-molding machine, the post B, revolving sleeve J, sand-box H, and weight K, in combination with the two levers F G, pivoted at different levels at one end to said sand-box, at the other end to the weight, and intermediately to said sleeve, one of said levers being provided with the screw *g* and nut *g'*, for adjusting its length, as and for the purpose specified.

408,387. FRAME FOR RULING SLATES. OTTO OETHLL and WILLIAM ROTTMANN, Union, N. J. Filed Nov. 9, 1888. Serial No. 290,373. (No model.)



Claim.—1. The combination, with a frame or holder adapted to receive a slate or similar article, of a retaining device for securing the slate or similar article in the frame, and an adjustable ruler adapted to engage the said frame or holder upon the side edges thereof and above the slate or similar article, substantially as specified.

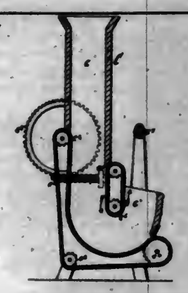
2. The combination, with a frame or holder adapted to receive a slate or similar article, of a retaining device for securing the slate or similar article in the frame, said frame being provided with raised sides and ends notched upon their upper surfaces, and an adjustable ruler adapted to engage said notches, substantially as specified.

3. The combination, with a frame or holder adapted to receive a slate or similar article, of a retaining device for securing said slate or similar article in the frame, said frame having raised sides and edges provided with notches upon their upper surfaces and a ruler adapted to engage said notches, said ruler being provided with stops for preventing its longitudinal movement when in position on the frame, substantially as specified.

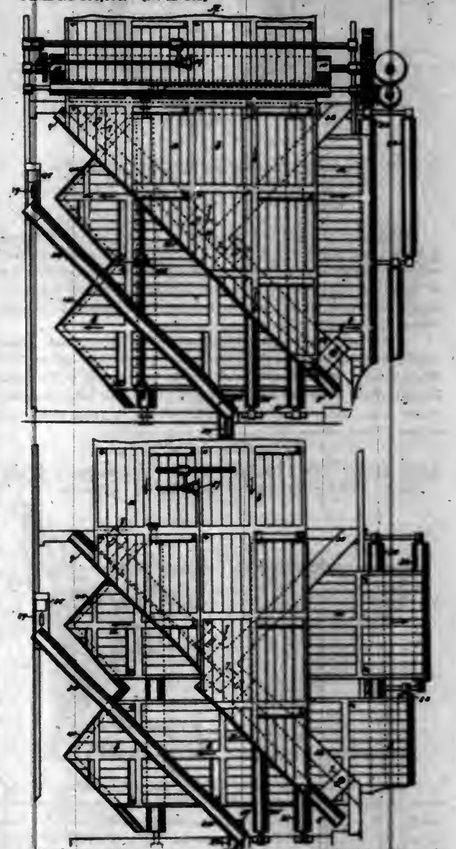
408,388. APPARATUS FOR DYEING. ISAAC R. PALMER, Middletown, Conn. Filed Jan. 20, 1888. Serial No. 261,205. (No model.)

Claim.—A receptacle for receiving fabrics, composed of a J-shaped or U-shaped casing open at both ends and having upper and lower inner curved surfaces, consisting of or formed by traveling aprons, substantially as specified.

408,388.



408,389. DELIVERY APPARATUS FOR WEB-PRINTING MACHINES. STEPHEN D. TUCKER, New York, N. Y. Filed Oct. 29, 1887. Serial No. 253,096. (No model.)



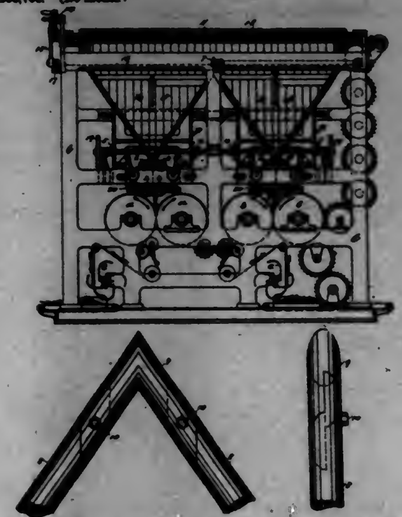
Claim.—1. The combination, with a longitudinal folder, of a pair of turning-bars made adjustable to and from each other, whereby webs of different widths may be turned and properly presented to said longitudinal folder, substantially as described.

2. The combination, with a plurality of folders, of a turning-bar 31, made in sections, which are adjustable with relation to each other, whereby webs of different widths may be turned and properly presented to said folders, substantially as described.

3. The combination, with a pair of folders, of a pair of turning-bars which are adjustable to and from each other, one of said bars being made in sections, which are adjustable with relation to each other, substantially as described.

4. The combination, with a pair of turning-bars 30 31, of the rods 30, having the right and left hand screws for adjusting said bars to and from each other, substantially as described.

408,390. DELIVERY MECHANISM FOR PRINTING-MACHINES. STEPHEN D. TUCKER, New York, N. Y. Filed Jan. 14, 1889. Serial No. 296,708. (No model.)



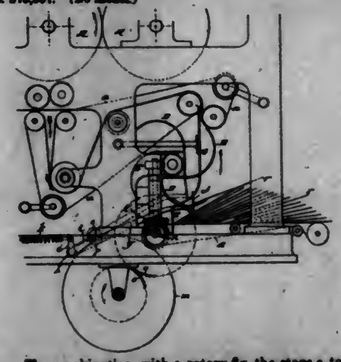
Claim.—1. The combination of a plurality of longitudinal folders composed of internal guides and external turners, said folders being arranged side by side and adjustable to and from each other, substantially as described.

2. The combination of a plurality of longitudinal folders composed of internal guides and external turners, said folders being arranged side by side, and each mounted in an adjustable supplemental frame D, whereby they can be adjusted to and from each other, substantially as described.

3. The combination, with the stationary cutting and folding mechanisms *a b*, of the longitudinal folders A B, composed of internal guides and external turners, said folders being arranged side by side and adjustable to and from each other, substantially as described.

4. The combination, with the longitudinal folders A B, arranged side by side and adjustable to and from each other, of the removable supplemental piece 9, forming extensions of the two inner internal guides of the folders, substantially as described.

408,391. SHEET-COUNTING MECHANISM FOR PRINTING-MACHINES. STEPHEN D. TUCKER, New York, N. Y. Filed June 4, 1888. Serial No. 276,267. (No model.)



Claim.—The combination, with a rotary fly, the stops *c*, to arrest the sheets as they are delivered by the fly, and moving tapes or aprons *d*, to carry the sheets from the fly, of the supplemental stops *f*, mounted to swing to the front of the stops *c* to arrest one or more sheets, and the notched disk *m*, for periodically operating the supplemental stops, substantially as described.

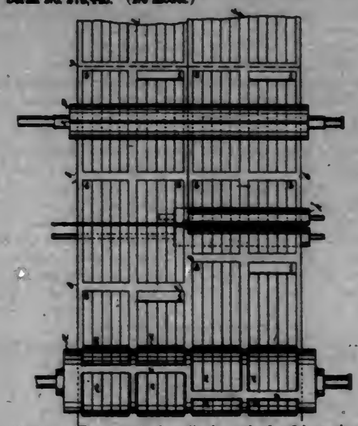
408,392. INKING MECHANISM FOR PRINTING-MACHINES. STEPHEN D. TUCKER, New York, N. Y. Filed June 7, 1888. Serial No. 276,579. (No model.)



Claim.—1. The combination, with the fountain-roll, of the ratchet 28 and pawl 9 for advancing the roll, and the pawl 7, periodically engaging with the ratchet to lock the roll against advancement, substantially as described.

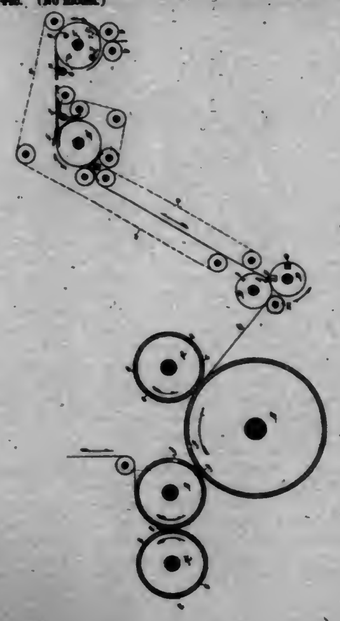
2. The combination, with the fountain-roll, of the ratchet 28 and pawl 9 for advancing the roll, the pawl 7, for locking the roll against advancement, and the bar 30, for operating the two pawls, substantially as described.

408,393. METHOD OF IMPOSING FORMS UPON PRINTING-CYLINDERS. STEPHEN D. TUCKER, New York, N. Y. Filed June 28, 1888. Serial No. 278,445. (No model.)

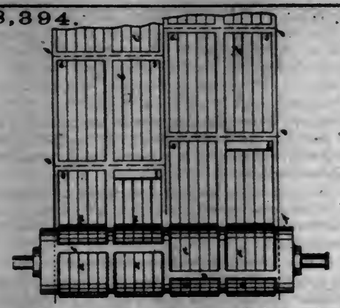


Claim.—The herein-described method of imposing the forms upon a printing-cylinder to secure uniformity in the printing, which consists in placing the forms upon the cylinder so that they break joints longitudinally of the cylinder, substantially as described.

408,394. WEB PRINTING AND DELIVERY MECHANISM. STEPHEN D. TUCKER, New York, N. Y. Filed June 28, 1888. Serial No. 278,446. (No model.)



408,394.

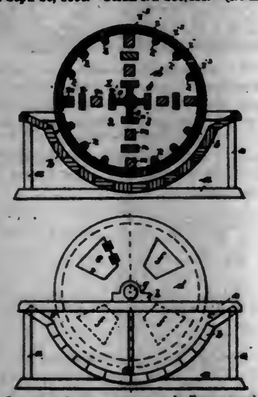


Claim.—1. The combination, with a form-cylinder carrying forms which break joints longitudinally of the cylinder, of a pair of cutting-cylinders having a plurality of blades and grooves, each extending a part of the length of the cylinders and located in different positions circumferentially of the cylinders, substantially as described.

2. The combination, with a form-cylinder carrying forms which break joints longitudinally of the cylinder, of a pair of cutting-cylinders having a plurality of blades and grooves, each extending a part of the length of the cylinders and located in different positions circumferentially of the cylinders, and a sheet-collecting mechanism having its sheet-directing devices timed to direct the sheets from different portions at different times, substantially as described.

3. The combination, with a form-cylinder carrying forms which break joints longitudinally of the cylinder, of a pair of cutting-cylinders having a plurality of blades and grooves, each extending a part of the length of the cylinders and located in different positions circumferentially of the cylinders, and a sheet-folding mechanism having its blades timed to conform to the cutting mechanism, substantially as described.

408,395. TANNING APPARATUS. GEORGE S. TUBSTEAD, Newark, N. J. Filed Sept. 26, 1888. Serial No. 286,416. (No model.)



Claim.—1. In a tanning apparatus, a hollow rotating drum with obliquely-perforated covering, and having longitudinally-extending slats *k* secured to its inner periphery, said drum being also divided into two or more sections by means of bars *m* and *n*, forming perforated partitions with uneven surfaces, each section being provided with a door in the side, as described, and for the purposes set forth.

2. In a tanning apparatus, the combination, with a base and a driving-shaft running in bearings on said base, of a tank adapted to receive the tanning-liquid, and a hollow drum secured to said driving-shaft having an obliquely-perforated covering, and longitudinally-extending slats *k*, secured to its inner periphery, said drum being also divided into two or more sections by means of bars *m* and *n*, forming perforated partitions with uneven surfaces, each section being provided with a door in the side, all as set forth.

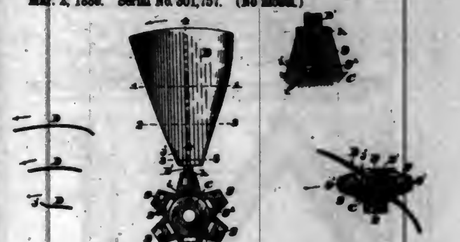
408,396. WINDING-SPINDLE. JOSEPH R. TYRAN, Paterson, N. J. Filed Feb. 7, 1889. Serial No. 299,057. (No model.)

Brief.—The invention relates to spindles for carrying bobbins onto which silk is wound for the purpose of being afterward spun or twisted, and its object is to provide for supporting the spindle concentrically throughout its length and in such manner that the holding-springs shall not come in contact with and injure the conical bearing of the bobbin.



Claim.—The combination, with a winding-spindle, of a head, a portion of which constitutes a friction-roller for driving the same and another portion of which is concentric with but of less diameter than the said roller and is longitudinally slotted, and a spring which is secured to the spindle, and a part of which lies within the said slot, substantially as and for the purpose herein set forth.

408,397. EXHAUST-FAN. JEFFERSON YOUNG, Chelsea, Mass. Filed Mar. 2, 1889. Serial No. 301,757. (No model.)



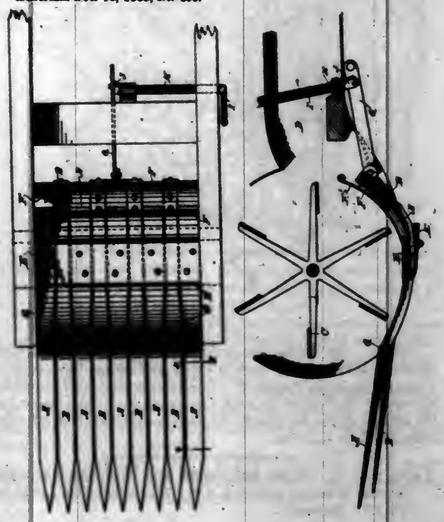
Claim.—1. In an exhaust-fan, a blade having its operating-face concaved transversely and increasing in curvature from the center of its width to its posterior edge and from a point about one-third of its length from its inner end to its outer posterior corner.

2. In an exhaust-fan, a blade having its operative face concaved transversely and increasing in curvature from the center of its width to its posterior edge and from a point about one-third of its length from its inner end to its outer posterior corner, and having its inner anterior corner curved in an opposite direction.

3. In an exhaust-fan, a series of screw-blades concaved transversely and having a progressively-increasing pitch for about two-thirds (more or less) of their lengths from their outer or peripheral ends inward, and having their inner anterior corners curved in the reverse directions.

4. In an exhaust-fan, the combination of the hub C *g*, provided with the radial holes *g'* and the slots *g*², the blade D, provided with a threaded shank, a collar firmly secured to the inner end of said shank within a slot *g*², and a nut fitted upon said shank and arranged to bear upon said hub C *g* to clamp said blade in position.

408,398. HARVESTING-MACHINE. JAMES H. ADAMSON, North Melbourne, Victoria. Filed Sept. 21, 1888. Serial No. 286,044. (No model.) Patented in Victoria Aug. 9, 1882, No. 3,280, and in South Australia Dec. 10, 1883, No. 409.



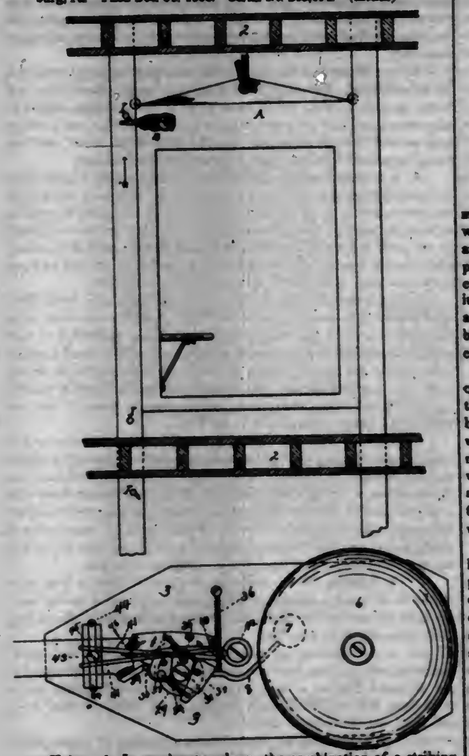
Claim.—1. The harvester-comb composed of alternate fixed and movable teeth, one set diminishing in width toward the rear end and the other set placed alternately with the first and increasing in width toward the rear end, in combination with a mechanism whereby the second set may be drawn backward or moved forward with relation to the first set, substantially as herein described.

2. The alternate teeth A A of the harvester-comb, having their rear ends made broader and fixed to a stationary bar, in combination with the teeth B B, placed alternately between the teeth A, having their rear ends tapering or made narrower than the forward ends and fixed to a movable bar, a lever, and connecting-link by which this bar may be moved forward or backward to close or open the spaces between the teeth A and B, substantially as described.

3. The teeth A, made broader toward their rear end than at the knee or central portion, in combination with the alternate teeth B, narrowing from the center toward the rear, the two-part fixed transverse bar E, the movable bar to which the teeth B are secured, and means for operating said bar, substantially as described.

4. The horizontal two-part fixed guide-bar E, having the upper part made with a cutting forward edge and the teeth A fixed between the upper and lower portions of said bar, in combination with the intermediate teeth B, sliding through said guide-bar, and a mechanism whereby they are reciprocated, substantially as herein described.

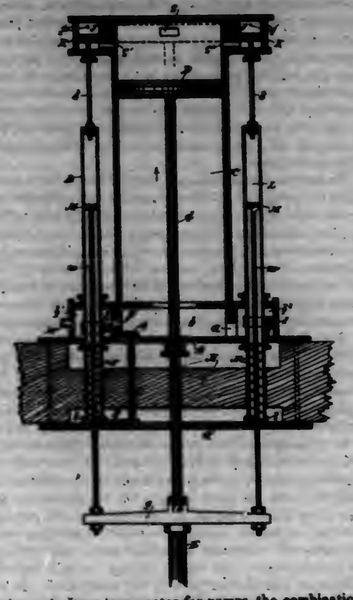
408,399. ELEVATOR ALARM-INDICATOR. HENRY AXTHELM, Pittsburg, Pa. Filed Dec. 31, 1888. Serial No. 295,094. (Model.)



Claim.—1. In an elevator-alarm, the combination of a striking-arm, having two contact-plates thereon, two spring-retracted cams adapted to be engaged by said contact-plates, a swiveled turning piece upon which said cams are pivoted, a base upon which said turning piece turns, a spring-retracted bell-hammer arm secured to said turning piece, and a gong, all substantially as shown and described.

2. In an elevator-alarm, the combination of a striking-arm having two contact-plates thereon, two spring-retracted cams adapted to be engaged by said contact-plates, a swiveled turning piece upon which said cams are pivoted, a plate upon which said turning piece turns, a base upon which said plate is set, a spring-retracted bell-hanger arm secured to said turning piece, a gong, a stop set in the base to keep the turning piece from moving too far, and a double-armed spring with guard and cross-piece, all substantially as shown and described.

408,400. STEAM-MOTOR FOR PUMPS. HENRY O. BEATTY, Sacramento, Cal. Filed May 2, 1888. Serial No. 309,267. (No model.)



Claim.—1. In a steam-motor for pumps, the combination of a main cylinder, a piston mounted therein and having its rod connected with the pump-plunger, a steam-inlet port and a steam-exhaust port at the lower end of the cylinder and communicating therewith, supplementary cylinders communicating with the upper end of said main cylinder, pistons in said supplementary cylinders, downwardly-extending valve-rods connected therewith, a valve carried by one of said rods and controlling the inlet-port of the main cylinder, and a valve carried by the other of said rods and controlling the exhaust-port of said main cylinder, substantially as described.

2. In a steam-motor for pumps, the combination of the main cylinder, a piston mounted therein and having a rod connected with the pump-plunger, a steam-inlet port and a steam-exhaust port at the base of said main cylinder, supplementary cylinders communicating with the top of said main cylinder, pistons mounted in said supplementary cylinders and having downwardly-extending valve-rods, valves carried by said rods for controlling the inlet and exhaust ports at the base of the main cylinder, and connections from the rod of the piston of the main cylinder to the valve-rods for returning said valve-rods and reversing their valves, substantially as described.

3. In a steam-motor for pumps, the combination of a steam-chest having a steam-inlet, a steam-exhaust and a central receiving-compartment, an inlet-port connecting the inlet-compartment with the central compartment, an open communication between the central compartment and the exhaust-compartment and an exhaust-port for said exhaust-compartment, and main cylinder mounted upon the steam-chest and communicating with the central compartment thereof, a piston in said cylinder, having a rod connected with the pump-plunger, supplementary cylinders communicating with the top of the main cylinder, pistons in said supplementary cylinders, having downwardly-extending valve-rods passing through the inlet and exhaust compartments of the steam-chest, and valves carried by said rods for controlling the inlet-port and the exhaust-port of said compartments, substantially as described.

4. In a steam-motor for pumps, the combination of a valve-chest having an inlet-port and an exhaust-port, a main cylinder communicating with the steam-chest, a piston in said cylinder, having a rod connected with a pump-plunger, supplementary cylinders communicating with the top of the main cylinder, pistons in said supplementary cylinders, having stems, tubular valve-rods connected with said stems and passing down through the steam-chest, valves on said rods for controlling the inlet-port and exhaust-port of said steam-chest, vertically-movable stems in the tubular valve-rods and connected at their lower ends with a pump-plunger, and a contact-connection between said movable stems and tubular valve-rods, whereby the latter are returned and the valves reversed, substantially as described.

5. In a steam-motor for pumps, the combination of a steam-chest having an inlet-port and an exhaust-port, a main cylinder communi-

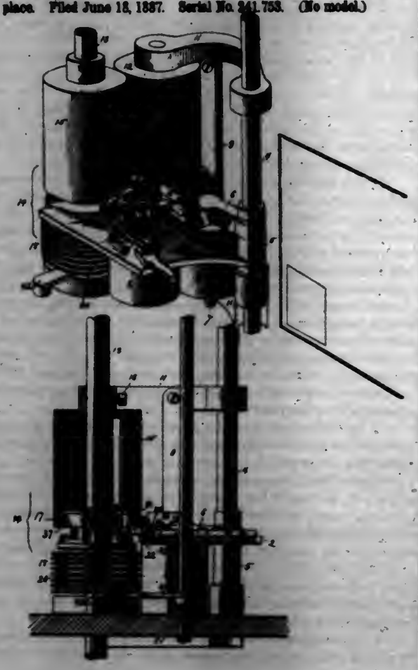
cating with said steam-chest, a piston mounted in said cylinder and having a rod connected with the pump-plunger, supplementary cylinders communicating with the top of the main cylinder, pistons in said supplementary cylinders, having downwardly-extending stems, tubular valve-rods connected with said stems and passing down through the steam-chest, valves carried by said tubular rods for controlling the inlet and exhaust ports of the steam-chest, movable stems with collars within the tubular valve-rods and passing down through them and connected with the pump-plunger at their lower ends, and springs within the lower ends of the tubular valve-rods, with which the collars of the movable stems come in contact to reverse the valves, substantially as described.

6. In a steam-motor for pumps, the combination of a steam-chest having an inlet-port and an exhaust-port, a main cylinder communicating with said steam-chest, a piston mounted in said cylinder and having a rod connected with the pump-plunger, supplementary cylinders communicating with the top of the main cylinder, pistons in said supplementary cylinders, having downwardly-extending stems, tubular valve-rods connected with said stems and passing down through the steam-chest, valves carried by said tubular rods for controlling the inlet and exhaust ports of said chest, movable stems with collars within the tubular valve-rods and passing down through them and connected with the pump-plunger at their lower ends, springs within the lower ends of the valve-rods, with which the collars of the movable stems come in contact to reverse the valves, and a fixed stirrup or stop-bar against which the lower ends of the valve-rods come in contact to limit their downward movement, substantially as described.

7. In a steam-motor for pumps, the combination of the steam-chest having an inlet-port and an exhaust-port, the main cylinder communicating therewith, the piston in said main cylinder, having a rod connected with the pump-plunger, the supplementary cylinders communicating with the top of the main cylinder, the pistons in said supplementary cylinders, having downwardly-extending stems, the tubular valve-rods connected with said stems and passing down through the steam-chest, the valves carried by said rods for controlling the inlet and exhaust ports of the steam-chest, the movable sliding stems with collars in the tubular valve-rods, the lower ends of which are connected with the pump-plunger, the spring forming the contact between the collars of the stems and tubular valve-rods for reversing the valves, the sliding piston O within the steam-chest, the arm on one of the valve-rods, with which the piston O is adapted to coms in contact, and the stirrup or stop-bar for the lower ends of the valve-rods, substantially as described.

408,401. LETTER POSTMARKING AND CANCELING MACHINE.

AUGUST BERTRAM, Brooklyn, N. Y., assignor to Matthew J. Dolphin, same place. Filed June 18, 1887. Serial No. 241,753. (No model.)



Claim.—1. The combination, with the rotating drum, of a marking device, and a clutch mounted on the marking device and engaging the drum, said clutch consisting of pawls pivoted to the marking device, a bar connecting the pawls, springs tending to hold the pawls in engagement with the drum, and a lug secured to one of the pawls, whereby they may be released, substantially as described.

2. In a letter-marking device, the combination of a letter-feed, an intermittingly-operating letter-marker, a pivoted pawl which stops said letter-marker, a pivoted trip having an arm projecting into the path of the letter and connected with said pawl, said trip and pawl being movable on their respective pivots to permit the stopping of the letter-marker before the letter has completely passed the arm of the trip, substantially as described.

3. In a letter-marking device, the combination of a letter-feed, an intermittingly-operated letter-marker, a pivoted pawl which stops said letter-marker, and a pivoted trip connected with said pawl to withdraw it from engagement with the marker and having a sliding arm permitting the pawl to come into position for stopping the marking device before the letter has passed the arm, substantially as described.

4. In a letter-marking device, the combination of a letter-feed and intermittingly-operated letter-marker, a pivoted pawl which stops the letter-marker, a spring which tends to force said pawl into position to stop the marker, and a pivoted trip connected with said pawl to withdraw it from engagement with the marker, having a sliding arm projecting into the path of the letter, said sliding arm permitting the pawl to be moved by the spring into position for stopping the marking device before the letter has passed the arm, substantially as described.

5. In a letter-marking device, the combination of a letter-feed, an intermittingly-operating letter-marker, a pawl which stops said letter-marker, a spring which tends to force the pawl into position to stop the marker, and a trip consisting of a pivoted portion, and a sliding arm secured thereto extending into the path of the letter, said trip being connected with the pawl, substantially as described.

6. In a letter-marking device, the combination of a letter-feed, an intermittingly-operating letter-marker, a pivoted pawl which stops the letter-marker, a spring which tends to hold said pawl in position to stop the marker, a trip consisting of a pivoted portion connected to the pawl, and a sliding portion extending into the path of the letter, and a spring bearing against said sliding portion of the trip to force it into the path of the letter, substantially as described.

7. In a letter-marking device, the combination of a letter-feed, an intermittingly-operating letter-marker, a pivoted pawl which stops the letter-marker, a trip having a pivoted portion connected to said pawl, and a sliding arm projecting into the path of the letter, a spring connected to the sliding portion of the trip and tending to force the pawl into position to stop the marker, and another spring bearing against the end of the sliding arm and tending to force it into the path of the letter, substantially as set forth.

8. In a letter-marking device, the combination of a letter-feed, a continuously-rotating shaft, a letter-marking cylinder loosely mounted thereon, a clutch interposed between said shaft and cylinder having friction-faces, a spring which tends to force said friction-faces into engagement with the opposing bearing-faces, a stopping-pawl adapted to engage with a projection carried by the clutch to compress said spring and release the frictional faces, and a trip operated by the letters for withdrawing the pawl, substantially as described.

9. The tripping device consisting of a pivoted pawl, a lever connected to the pawl, a sliding arm mounted on the lever, a spring bearing upon the end of the lever, and a spring connected to the sliding arm, substantially as described.

10. In a letter-marking device, the combination of a letter-feed, a continuously-rotating shaft and intermittingly-rotated printing-cylinder mounted thereon, a stop projecting from said cylinder, and a catch-pawl with which said stop engages after being released from said shaft, substantially as described.

11. In a letter-marking device, the combination of a letter-feed, a continuously-rotating shaft, a marking-cylinder mounted thereon, a clutch device interposed between the shaft and cylinder, a pin carried by the cylinder, a catch-pawl with which said pin engages after the cylinder is released from the clutch, and a spring which forces said pawl into the path of the pin, substantially as described.

12. In a letter-feeding device for a letter-marker, a movable frame provided with a feed-roller, a guide-plate carried by said frame, and a trip having an arm resting adjacent to said guide-plate, substantially as and for the purpose set forth.

13. In a feed for a letter-marking device, a movable frame provided with a feed-roller, and a guide-plate carried by said frame and having formed therein a groove, in combination with a letter-trip having an arm resting in said groove, substantially as and for the purpose set forth.

14. The combination, with separable feed-rollers, of separable impression and printing cylinders, and a controller between the feed-rollers and the impression and printing cylinders, whereby the position of the feed-rollers controls the position of the impression and printing cylinders, substantially as described.

15. The combination, with a marking-roller, an impression-roller having spring-actuated journals, and a feed-roller journaled in a swinging spring-actuated frame, of a lever actuated by the swinging feed-roller, and another lever connected thereto and arranged between said lever and the impression-roller for pressing the latter back from the marking-roller as the feed-roller swings aside, substantially as and for the purpose set forth.

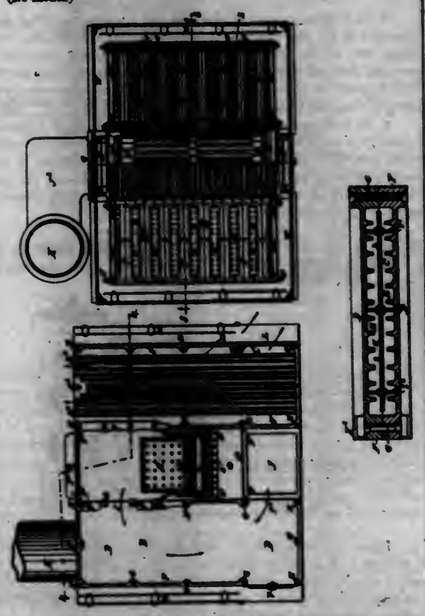
16. In a letter-marking device, the combination of a printing-roller and impression-roller held toward the printing-roller by a spring, feeding-rollers, a lever adapted to be operated when the feeding-rollers are unusually separated, as by a letter of unusual thickness, another lever bearing against the support of the impression-roller, and a link connecting said levers, whereby the printing and impression rollers are separated by the separation of the feeding-rollers.

17. In a letter-marking device, the combination of the stationary portion of the printing-surface, the removable portion seated in the stationary part, a catch for confining said removable portion in its seat, and a spring under compression when the removable portion is in place and tending to force it out of its seat when released, substantially as described.

18. A removable type-holder having a type-cell, the inner wall of the type-cell being grooved and the side wall being perforated, and a key seated in said groove and in corresponding grooves in the types, and having an end projecting through said aperture by which it may be easily withdrawn, substantially as described.

408,402. STOVE OR AIR-HEATING APPARATUS.

SAMUEL C. DAVIDSON, Belfast, Ireland. Filed Mar. 18, 1889. Serial No. 303,707. (No model.)



Claim.—1. In a stove or air-heating apparatus having two series of flat vertical chambers on the right and left sides of the fire-place, said chambers presenting their edges to the fire-place and said chambers constituting alternate air and smoke flues, the combination of metal plates each having on both vertical edges two oppositely-projecting flanges, (each plate thus having four projecting flanges,) said plates being fastened together in pairs with their adjacent flanges in contact, whereby the vertical air-chambers are formed between the two plates forming a pair of plates, and said pairs of plates, and said pairs of plates being fastened together with the adjacent outer flanges of adjacent pairs of plates in contact, whereby the smoke-chambers are formed, the flanges, however, which constitute the end walls of the smoke-chambers next the fire-place being cut wholly or partially away above the grate, substantially as set forth, whereby openings are formed for the passage of smoke from said fire-place into said smoke-chambers and space is provided for the expansion of said metal plates.

2. In a stove or air-heating apparatus, a fire-place, with its grate and ash-plate, in combination with metal plates D D, fastened together in pairs, and said pairs of plates being also fastened together, said plates being arranged vertically on opposite sides of said fire-place with their edges next to the fire-place, each plate having on each vertical edge oppositely-projecting flanges F F, the flanges on adjacent plates being in contact with each other, whereby air-chambers are formed between the plates constituting a pair and smoke-chambers are formed between the adjacent pairs of plates, the said flanges constituting the end walls of said air and smoke chambers, the flanges, however, which constitute the inner walls of said smoke-chambers next the fire-place being cut away to form openings I I above the grate for the passage of smoke from said fire-place into said smoke-chambers, and being also cut away below the ash-plate to form openings I^2 I^2 for the passage of the smoke from said smoke-chambers to the chimney, substantially as set forth.

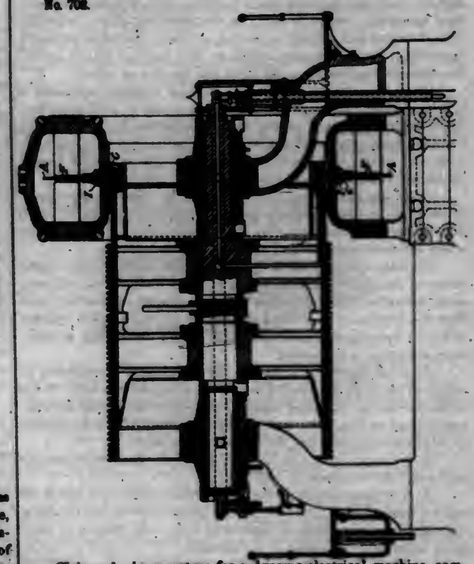
3. In stoves or air-heating apparatus which comprise two series of flat vertical chambers at the respective sides of the fire-place, such chambers being led onto the fire-place and forming alternate air and smoke flues with inlet and outlet openings, the combination, with the plates which form the flues, of thin metal plates or diaphragms which divide the air-flues vertically, whereby the air-heating surface in same is increased, substantially as set forth.

4. In a stove or air-heating apparatus, the combination, with the fire-place A, cast-iron plates D D, flanges F F on said plates, bolted together so as to form with said plates alternate smoke-flues B B and air-flues C C, openings I I at upper part of said flanges, openings I^2 I^2 at lower part of said flanges, and air-inlets L L, of the thin metal plates or diaphragms Z in said air-flues C C, dividing the same vertically, substantially as and for the purpose set forth and shown.

5. In a stove or air-heating apparatus, the combination of the following parts, viz: the fire-place A, cast-iron plates D D, flanges F F, cast on said plates, bolts H H, securing said flanges together, openings I I, I^2 I^2, and I^4 I^4 in said flanges, air-inlets L L, ribs or gills E E, vertical diaphragms or plates Z, and smoke-flue J, substantially as set forth and shown.

408,403. DYNAMO-ELECTRIC MACHINE.

SEBASTIAN Z. DE FERRANTI, Hampstead, County of Middlesex, England. Filed Nov. 30, 1888. Serial No. 292,269. (No model.) Patented in England Jan. 15, 1887, No. 702.



Claim.—1. An armature for a dynamo-electrical machine, composed of a number of coils ranged around the circumference of a disk or wheel, and each formed from a corrugated or interlocking strip of metal, so that the several layers of the coil interlock with one another.

2. An armature for a dynamo-electric machine, having the center of each of its coils of insulated conductor filled in with a composite structure of non-magnetic metal and insulation so arranged as to be free from induced currents.

3. An armature for a dynamo-electrical machine, composed of a number of coils ranged around the circumference of a disk or wheel, and each formed from a corrugated or interlocking strip of metal, so that the several layers of the coil interlock with one another and with

the center of the coil filled in with a filling of strips of metal separated by insulating material—such, for instance, as asbestus.

4. An armature for a dynamo-electrical machine, composed of a number of coils or bobbins of insulated conductor held in metal shoes, which are ranged around the circumference of a disk or wheel with insulating material interposed between the wheel and shoes.

5. An armature for a dynamo-electrical machine, composed of a number of coils or bobbins of insulated conductor held in metal shoes, which are ranged around the circumference of a disk or wheel, and, which are formed with radial stems which pass into radial holes formed in the circumference of the wheel, and insulating material interposed between the wheel and shoes.

6. An armature for a dynamo-electrical machine, composed of a disk or wheel having holes formed radially into its circumference and other holes formed at the side, near the circumference, into which the radial holes enter, and of metal shoes carrying coils or bobbins and formed with stems to pass into the radial holes, and of nuts or collars contained in the side holes and screwed or secured onto the radial stems, and of a filling of insulating substance interposed between the sides of the holes and the stems and nuts or collars.

7. An armature for a dynamo-electrical machine, composed of a disk or wheel having metal shoes ranged around its circumference and separated from it by thickly-interposed insulating material, coils of insulated conductor held in pairs in the shoes, and filling-blocks placed between the coils and the bottom of the shoes, lying with one half in one shoe and the other half in the shoe next to it, and insulated from them both.

8. An armature for a dynamo-electrical machine, composed of a disk or wheel having holes formed radially into its circumference, other holes formed at the side, near the circumference, into which the radial holes enter, metal shoes formed with stems to pass into the radial holes, nuts or collars contained in the side holes and screwed or secured onto the radial stems, and a filling of insulating substance—such, for instance, as sulphur—interposed between the sides of the holes and the nuts or collars and stems, coils of insulated conductor held in pairs in the shoes, filling-blocks placed between the coils and the bottom of the shoe, lying with one half in one shoe and the other half in the adjacent shoe, and insulated from them both.

9. An armature for a dynamo-electrical machine, composed of a disk or wheel having metal shoes carrying coils or bobbins of insulated conductor ranged around its circumference, stems projecting from the shoes and secured to the disk or wheel, interposed insulating material, and insulators of porcelain or like material placed around the stems to come between the shoes and the disk or wheel.

10. An armature for a dynamo-electrical machine, composed of a disk or wheel having metal shoes carrying coils or bobbins of insulated conductor ranged around its circumference, stems projecting from the shoes, interposed insulating material interposed between the stems and wheels, and blocks I of insulating material placed around the stems to come between the shoes and the disk or wheel.

11. In the armature of a dynamo-electric machine, the combination of the insulated bobbins and their supports, the disk or wheel that carries them, and insulating material poured or cast between the wheel and bobbin supports.

12. In an armature for a dynamo-electric machine, the combination of the supporting-disk, wheel, or body, the bobbins, and interposed insulation of less thickness between adjacent conducting parts than the distance over or along the surface of the insulation exposed to the air between the parts which it is desired to insulate, whereby surface-leakage is diminished.

13. An armature for a dynamo-electrical machine, composed of a disk or wheel having ranged around its circumference coils of flat conductor having insulating material between adjacent flat surfaces, and covered at their sides with separately-applied insulating material to come between them and the magnet pole-pieces.

14. A dynamo-electrical machine having the fixed field-magnets insulated from the frame of the machine.

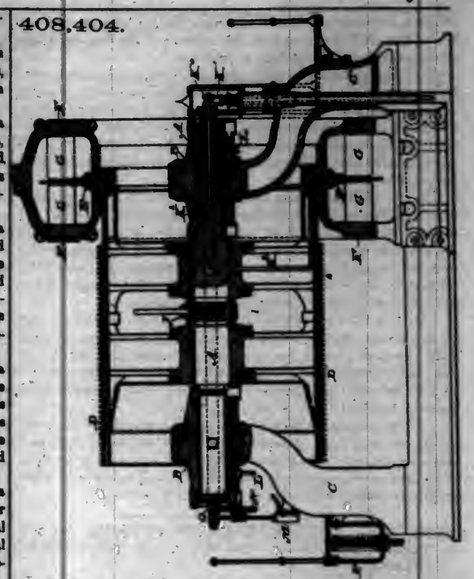
15. A dynamo-electrical machine in which there is a circle of magnet pole-pieces of alternate polarity at the side of the revolving armature, coupled in pairs at their rear ends, and secured by insulating material to the frame of the machine.

408,404. DYNAMO-ELECTRIC MACHINE. SEBASTIAN Z. DE FERRANTI, Hampstead, County of Middlesex, England. Filed Jan. 14, 1889. Serial No. 296,226. (No model.) Patented in England Feb. 15, 1888, No. 2,316.

Claim.—1. A dynamo-electric machine having a driving-pulley carried between two bearings in which the wheel-shaft is supported, and an armature carried by the rim of said pulley at one side of its driving-surface, substantially as set forth.

2. In a dynamo-electric machine, the combination, with the driving-pulley having a surface for the driving-belt, of the armature carried by the rim of the pulley at one side of said surface and projecting outwardly radially from the rim of the pulley.

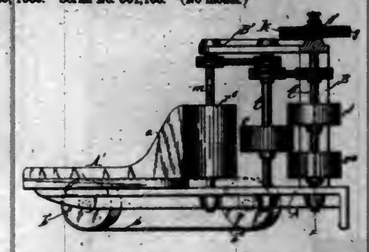
408,404.



3. In a dynamo-electric machine, the combination of an armature carried by the rim of a driving-wheel, two standards, one on either side of the driving-wheel, leaning one toward the other and carrying the bearings for the wheel-shaft, frames carrying the fixed field-magnets at the sides of the armature, and connecting-pieces tying the magnet-frames to the standards.

4. In a dynamo-electric machine, the combination of a revolving armature, a circle of field-magnet pole-pieces of alternate polarity on either side of it, an annular frame somewhat of a U shape in cross-section carrying the circle of pole-pieces on each side of the armature, and bolts or other connections securing the outside circumference of the two frames together.

408,405. LETTER FEEDING AND SEPARATING MACHINE. MATTHEW J. DOLPHIN, Brooklyn, N. Y. Filed June 3, 1887. Renewed Feb. 25, 1889. Serial No. 301,163. (No model.)



Claim.—1. An automatic letter-feeding receptacle consisting of a straight wall, a wall partially curved, and an obliquely-moving bottom feed-belt, whereby letters placed in the receptacle are guided, one slightly in advance of the other, and deflected toward feeding-rollers, substantially as specified.

2. The combination, with a letter-separator and feed-rollers, of an automatic letter-feeding receptacle consisting of a straight wall, a wall partially curved, and a moving bottom belt, whereby the moving letters are automatically arranged, one slightly in advance of the other, and are guided and deflected toward and into contact with the feed-rollers, substantially as specified.

3. The combination, with a letter-separator, of an automatic letter-feeding receptacle having a wall partially curved for guiding the letters, one a little in advance of the other, an obliquely-moving bottom feed-belt for deflecting the letters toward the feeding-rollers, and a supporting feed-roller, substantially as specified.

4. In an intermittent letter feeding and separating machine, the combination of the feed-roller r and rollers r' r^2, the roller r arranged to interlap between the rollers r' and r^2, all of said rollers rotating in the same direction, substantially as and for the purpose set forth.

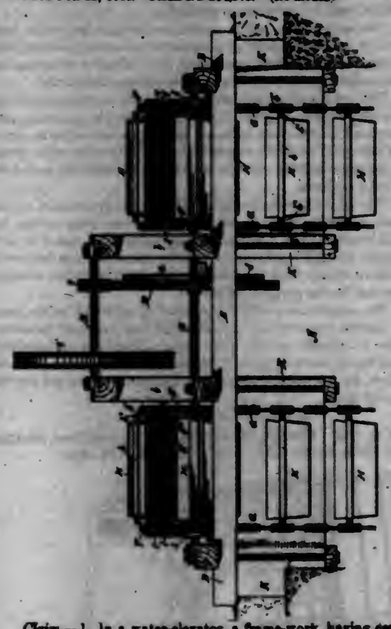
5. In a letter-separating machine, the combination, with the feed-rollers r' r^2, mounted on a shaft journaled in stationary bearings, of the separating-rollers mounted on a shaft journaled in yielding bearings, said shaft connected by a universal joint to a shaft journaled in stationary bearings, substantially as specified.

6. The combination of the stationary journaled feed-rollers, the separating-rollers journaled in yielding bearings and connected by a universal joint to the driving-shaft s, the pulleys g g', and spring-belt k, substantially as specified.

7. The combination, with an automatic letter-feeding receptacle, of a yieldingly-journaled hinderance or check and pressure roller and interlapping feed-rollers, substantially as specified.

8. The combination, with an automatic letter-feeding receptacle, a check and pressure roller, and an interlapping feed-roller, of a letter-separator and feed-rollers, substantially as specified.

408,406. WATER-ELEVATOR. ANDREW H. HAPKE, Phœnix, Arizona. Filed Dec. 22, 1888. Serial No. 294,573. (No model.)



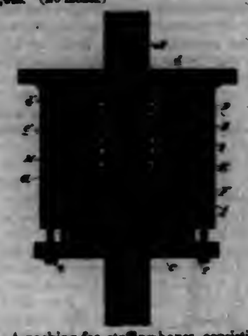
Claim.—1. In a water-elevator, a frame-work having centrally-disposed power receiving and transmitting gearing and shafting and water-troughs located under each end thereof, in combination with a pair of sprocket-wheels over each trough, endless chains passing over said sprocket-wheels, each pair of chains forming a carrier, a succession of pivotally-suspended buckets carried by the chains, and anti-friction rollers on the buckets adapted to come in contact with the sprocket-wheels and turn said buckets through a complete revolution at the top of their movement, whereby they discharge their water into the underlying troughs, substantially as herein described.

2. In a water elevator, the rotary sprocket-wheels F and the endless chains engaged and caused to travel by said wheels, said chains having double links g, the inner one of which is provided with a hole or socket, in combination with the cradles having the end pins or gudgeons k' fitting in the holes or sockets of the inner links of endless chains, whereby said cradles are pivotally suspended and locked in the chains and the buckets secured in the cradles, substantially as herein described.

3. In a water-elevator, the rotary sprocket-wheels F and the endless chains G, engaged and caused to travel by said wheels, in combination with the cradles A, pivotally suspended in the chains, the buckets H in the cradles, and the anti-friction rollers h^3 on the projecting ends of the cradle-sides, adapted to come in contact with the sprocket-wheels, whereby said buckets are made to turn through a complete revolution at the top of their movement, substantially as herein described.

4. A water-elevator comprising a frame-work over the well or other source of water-supply, having a centrally-disposed power receiving and transmitting mechanism, a longitudinal shaft C, with spur-gear D, having a flange d, and a strap-brake L, acting on said flange, sprocket-wheels F at each end of the shaft C, the outer one of which has ratchets I, and retaining-pawls J, engaging the ratchets, endless chains G, passing over said sprocket-wheels and down into the source of water-supply, pivotally-suspended buckets H, carried by the chains, and having anti-friction rollers h^3 at each end for coming in contact with the sprocket-wheels and reversing the buckets to discharge their water, and underlying troughs K at each end into which the water is discharged by the buckets, substantially as herein described.

408,407. PACKING FOR STUFFING-BOXES. CHARLES H. ESSEX, Temescal, and PERE B. WRIGHT, Berkeley, Cal. Filed Mar. 30, 1889. Serial No. 305,662. (No model.)



Claim.—1. A packing for stuffing-boxes, consisting of the combination of the contractible metal rings D and E, fitted about the moving rod and forming a tight joint between them, the movable metal ring F, also fitted about said rod, and the encircling band or ring of compressible or elastic material binding upon said metal rings, and adapted by the movement of ring F to be compressed, so as to hold the rings to place on the rod, substantially as described.

2. A packing for stuffing-boxes, consisting of the combination of the flanged contractible metal rings D and E, fitted about the moving rod and forming a tight joint between them, the movable metal ring F, also fitted about said rod and having a flange, and the band or ring G of compressible or elastic material fitted about said metal rings and confined by their flanges, said band or ring G being compressed by the movement of the ring F to hold said metal rings to place on the rod, substantially as described.

3. In a stuffing-box packing, the combination of the contractible metal rings D and E, having grooves on their inner surfaces for a lubricant, the movable metal ring F, and the compressible or elastic band or ring G, encircling said metal rings and holding them to place, substantially as described.

408,408. SOLDERING-IRON. THEODORE W. EVERSOLE, Garrett, Ind. Filed Jan. 28, 1889. Serial No. 297,495. (No model.)



Claim.—1. The combination, with a tip-holder provided with a hole having a lateral notch, of a tip having a stud to enter the hole, a feather to engage with the notch, and means for fastening the stud to the holder, substantially as described.

2. The combination, with the perforated shield A, of the detachable tip-holder B, closed at one end and having lateral openings b' and end openings b^4, and the tip C, detachably secured against the end of the tip-holder, substantially as described.

3. The combination, with the tip-holder B, having the holes b^4 in its end, of the tip C, detachably secured to the holder and having a chamber c^4, with which the holes b^4 communicate, substantially as described.

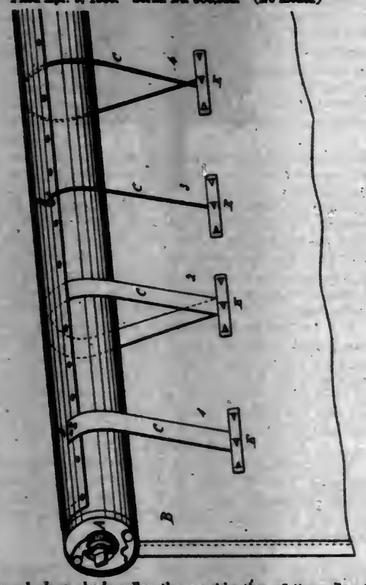
408,409. HOSE-COUPLING. ANNIE F. HANSON, San Francisco, Cal., (executrix of WILLIAM W. HANSON, deceased,) assignor to H. D. BOSSE, same place. Filed Mar. 20, 1889. Serial No. 304,094. (No model.)



Claim.—1. A connection for hose-sections, consisting of flanged collars secured upon the ends of the hose-sections, having levers fulcrumed thereon, said levers having hooks upon the outer ends to engage the flanges of the opposing collar, and having the inner ends extended rearwardly behind the collar and bent so as to press upon the surface of the hose and be separated thereby, substantially as herein described.

2. A hose-coupling consisting of the rigid collars fitted into the ends of the hose, with flexible collars fitting the outside of the hose, having the inwardly-projecting flanges, in combination with the exterior rigid collars clamped upon the ends of the hose and the flexible collars and having outwardly-turned flanges, and the hooked levers fulcrumed upon said exterior collars, so that the hooks will engage the flanges of the opposing coupling, while the inner ends of the levers are acted upon by the elastic hose-sections which are coupled thereby, substantially as herein described.

408,410. SHADE-FASTENER. PHILANDER A. HARRIS, Paterson, N. J. Filed Apr. 9, 1889. Serial No. 306,882. (No model.)



Claim.—1. In a shade-roller, the combination of the roller, the shade attached thereto, and a flexible band or cord attached to the roller and also to the shade, the point of attachment of said cord to the shade being just before the shade is entirely unwound nearer perpendicularly to its point of attachment to the roller than to the point measured along the shade where the shade is attached to the roller, whereby the cord is drawn taut and strain upon the shade at its points of attachment to the roller is prevented, substantially as shown and described.

2. In a shade-roller, the combination of the roller A with its attached shade B and the band or cord C, which latter is hung upon the roller A and has its ends attached to the shade, the points of attachment to the shade being just before the shade is entirely unwound nearer perpendicularly to the points where the said cord is tangent to the sides of the roller than to the point measured along the shade where the shade is attached to the roller, whereby the cord is drawn taut and strain upon the shade at its points of attachment to the roller is prevented, substantially as shown and described.

408,411. STAMP-CANCELING AND POSTMARKING MACHINE. GEORGE W. HEY, Syracuse, N. Y., assignor, by direct and mesne assignments, to the International Postal Supply Company of New York. Filed Apr. 14, 1887. Serial No. 234,836. (No model.)

Claim.—1. The combination of a marking-roller normally at rest, a continuously-revolving roller mounted on the marking-roller shaft, a clutch between the two rollers, and a trigger in the letter-path connected to the clutch and actuated by letters fed over the letter-supporting bed, substantially as and for the purpose set forth.

2. The combination of the marking-roller with the revolving roller, both mounted on a common shaft, a clutch for connecting the two rollers, and a trigger for operating the clutch, substantially as and for the purpose set forth.

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3. The combination, with a marking-roller and a revolving roller, both mounted on a common shaft and detachably connected together, of a stop for stopping the marking-roller after it has registered, substantially as and for the purpose set forth.

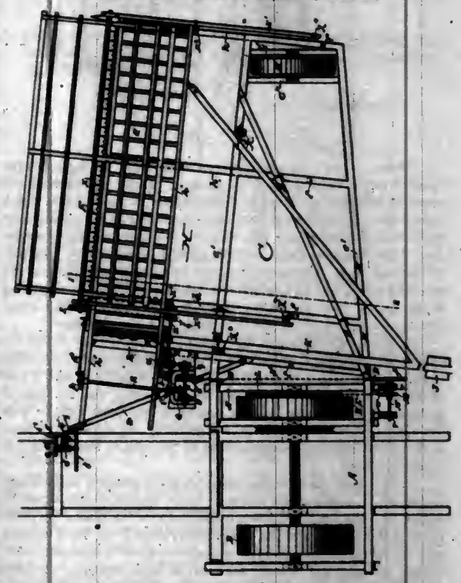
4. The combination, with a marking-roller and a feed-roller both mounted on a common shaft, of a clutch for connecting the two rollers, a trigger for operating the clutch, and a stop for stopping the marking-roller, substantially as and for the purpose set forth.

5. The combination, with an intermittently-revolving marking-roller, a trigger projecting into the letter-path, and a connection, substantially such as described, between the trigger and roller for starting the latter, of a stop for engaging and holding said roller at the proper point for registry with the next letter, substantially as and for the purpose set forth.

6. The herein-described trigger, consisting of the pivoted adjustable lever extending into the letter-path, provided with springs for resetting it to its normal position after the letters have passed its end, said trigger through a suitable connection, substantially as described, transmitting motion from the letters to the marking-roller, substantially as and for the purpose set forth.

7. The combination, with the rollers F F', mounted on the same shaft S, and the pressure-roller against which they rotate, of the marking-roller B, normally at rest, and means, substantially as described, for bringing the marking-roller B into action when the letter in transit encounters the trigger, and the trigger *t*, substantially as and for the purpose set forth.

408,412. HEADER AND THRASHER. BENJAMIN HOLT, Stockton, Cal. Filed July 29, 1887. Serial No. 245,630. (No model.)

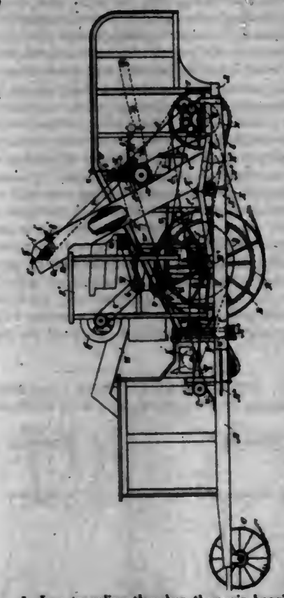


Claim.—1. The thrashing-machine frame A, having a frame C hinged to one side in a line parallel to the line of travel of the machine, but having a rearwardly-inclined front timber, in combination with the pulley L, secured to one of the main driving-wheels, the shaft M behind the pulley L, parallel to its axis, the pulley M on the shaft M', chain L', connecting pulleys L and M, the counter-shaft P on the forward part of the machine parallel to shaft M' and driven thereby, the shaft R at right angles to the front timber of the frame C, the bevel gear-wheels U and T between said shafts P and R, the sickle parallel to the front timber of the frame C, and the crank-wheel and pitman connecting the shaft R with the sickle, substantially as herein described.

2. In a combined header and thrasher, the header-frame C, hinged to the thrasher-frame and extending outwardly, with its front timber having a rearward inclination, the supplemental frame H, carrying the sickle and grain-belt and hinged to the frame C at right angles to its front timber, the reel mounted on a shaft parallel to said front timber, and the shaft Z, driving said reel-shaft and parallel thereto, in combination with the main driving-wheels, the shaft M behind said wheels, driven thereby and parallel to their axle, the shaft P in front of said driving-wheel, parallel to shaft M' and driven thereby, and the chain-and-pulley connection between shafts P and Z, substantially as herein described.

3. The thrashing-machine frame A, the header-frame C, hinged to it and extending outwardly therefrom, with the wheel E at the outer end, and the supplemental frame H, hinged to frame C on a line parallel with its front timber and carrying the sickle and grain belt or draper, in combination with the chain-pulleys *e* and *e'* and the chain *e²* upon the thrashing-machine frame, the diagonal bar *m*, extending beneath the timbers of the supplemental frame H, and the link *i*, connecting said bar with the chain *e²*, substantially as herein described.

408,413. TRAVELING THRASHER. BENJAMIN HOLT and JAMES DRAPER, Stockton, Cal. Filed Apr. 3, 1889. Serial No. 305,886. (No model.)



Claim.—1. In a traveling thrasher, the main bearing and driving wheel, the counter-shaft with a sprocket-wheel to which power is transmitted from the driving-wheel by a driving-chain, a second sprocket-wheel fixed to said shaft, and a chain J passing around said wheel and around the sprocket-wheel K upon the counter-shaft L and returning in contact with the sprocket-wheel M upon the grain-carrier shaft, in combination with the vertical movable bracket *s*, in which the counter-shaft L is journaled, whereby the tension of said belt may be regulated, substantially as herein described.

2. The counter-shaft L, journaled in the bracket *s*, and having the sprocket-wheel K, through which power is transmitted to it from the primary counter-shaft G, and the sprocket-wheel O, through which power is transmitted from it through the belt S to the beater-shaft, pulley U, and the cleaner-fan, in combination with the guide and holding-bolts of the bracket *s*, the adjusting-screw X, and the locking-bolt Y, substantially as herein described.

3. The grain-elevator case R, having its sides slotted at the upper end, the journal-boxes *i'*, fitting in said slots, and the sliding plates *f'*, to which said boxes are secured, said slides fitting and covering the slots in the case R, in combination with the adjusting screws and nuts attached to the slides, and the bolt *f'*, passing through the elevator-case and through slots in the lower ends of the slides, substantially as herein described.

4. The main driving-wheel D, the sprocket-wheel F, fixed upon the counter-shaft G and receiving power through a chain from the main driving-wheel, the sprocket-wheel I, fixed to the counter-shaft G, the counter-shaft *j*, having the sprocket-wheel *i'*, and the belt *h*, by which power is transmitted from the wheel I to the wheel *i*, in combination with the bracket *y* and the journal-boxes *a'*, in which the shaft *j* turns, said boxes being adjustable upon said bracket, substantially as herein described.

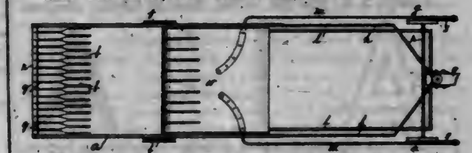
5. The main bearing and driving wheels supported upon a single journal-shaft, and the counter-shaft G, carrying the sprocket-wheels F, H, and I and journaled upon the rear portion of the thrashing-machine frame, in combination with the timbers *c'*, abutting against each other at an angle and against the journal-boxes of the shafts, and the adjusting-screw bolt *q'*, passing through the meeting angle of the brace-timbers and having a nut fitted upon its upper end, substantially as herein described.

6. In a traveling thrasher, the main bearing-wheels and the main driving sprocket-wheel D, the counter-shaft G, journaled in boxes upon the rear of the frame and having the sprocket-wheels F, H, and I, the supplemental chains J and *h*, driving, respectively, the counter-shafts L and *j*, and the supplemental wheels and chains whereby the power is distributed from one of these counter-shafts to the grain-elevator, the beater-shaft and cleaning mechanism, and from the other to the thrashing and feeding mechanism, substantially as herein described.

7. The counter-shaft *j*, having a sprocket and pulley upon its opposite ends, one of which receives power from the main counter-shaft G from one side of the shaft, while the other transmits power to the cylinder at the opposite side of the shaft, in combination with the horizontally-adjustable journal-boxes, whereby the ends of the shaft may be moved in opposite directions, substantially as herein described.

8. The main bearing-wheel and sprocket driving-wheel D, the counter-shaft G, receiving power therefrom, a second counter-shaft L, to which power is transmitted from the shaft G, as described, the chain elevator-belt and buckets, an adjustable shaft and pulley driving said elevator, and an independent adjustable chain transmitting power to drive the elevator from the counter-shaft L, in combination with the auger R', delivering grain into the bottom of the elevator-case, and a sprocket-wheel fixed to the end of the auger-shaft within the elevator-case and around which the elevator-belt passes, substantially as and for the purpose described.

408,414. CRANBERRY-PICKER. JOSEPH R. JEWETT, Mattapoisett, Mass. Filed Jan. 18, 1889. Serial No. 296,751. (No model.)



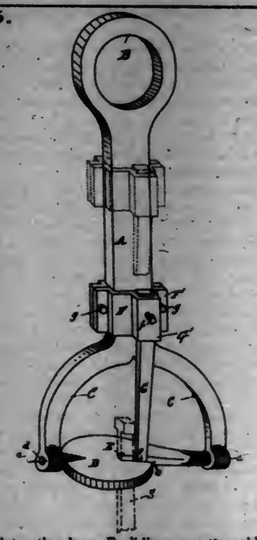
Claim.—1. A cranberry-picker consisting of a box provided with suitable teeth at its forward end for stripping the berries from the plants, mounted on a driving-wheel and having a lateral vibratory motion when propelled along the ground, in combination with a rake working longitudinally in said box, and mechanism connected with said driving-wheel for operating said rake, and a suitable receptacle for holding the fruit after it is drawn backward by said rake, substantially as shown and described

2. A cranberry-picker consisting of the box *a*, having its front end provided with the slats *b* and teeth *g*, and having slots *i* in its sides, mounted on the bearer *y* by means of the bolts *t*, provided with springs *u*, the bearer *y*, provided with the fixed rollers *e* and resting on the axle of the driving-wheel *c*, the drive-wheel *c* having its periphery provided with projections *d*, the grooved pulleys *f*, fixed on the outer ends of the drive-wheel axle, the push-bars *l*, with their front ends inclosing said axle and extending to the rear and secured to the handle *o* and carrying the box *z*, and shaft *p*, the shaft *p* having the grooved pulleys *g*, provided with arms *s* fixed to its ends, the rods *m*, pivoted to the arms *s* and extending forward and through the slots *i* in the sides of the box *a* and rigidly secured to the rake *w*, the rake *w*, the rods *h*, rigidly secured to the rear end of the box *a* and extending to and pivoted on the handle *o*, and the bands *n*, connecting the pulleys *f* and *g*, all as shown, and for the purpose described.

408,415. SUCKER-ROD ELEVATOR. HARVEY KNOX, Rixford, Pa. Filed Sept. 20, 1888. Serial No. 286,094. (No model.)

Claim.—1. In a sucker-rod elevator, the combination, with the rectangular lifting-stem A, provided with a yoke at its lower end, of the jaw D, pivoted between the ends of said yoke and provided with

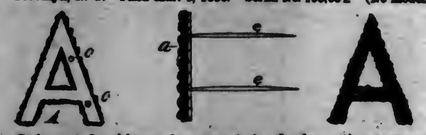
408,415.



the open-ended slot *e*, the sleeve F, sliding upon the said rectangular stem, and the tongue G, secured to one side of the said sleeve and adapted to enter the open end of slot *e*, substantially as and for the purpose set forth.

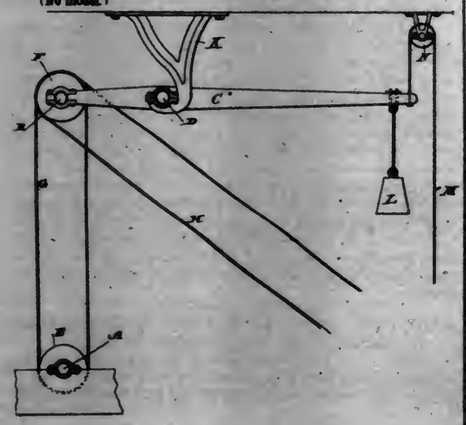
2. In a sucker-rod elevator, the combination, with the rectangular lifting-stem A, provided with a yoke at its lower end, of the jaw D, pivoted between the ends of said yoke and provided with the open-ended slot *e*, the sleeve F, formed in halves and provided with the flanges F', the bolts *g*, and the boss G', the tongue G, adapted to enter the open end of slot *e*, and having its upper end square and inserted in boss G', and a set-screw for securing the said tongue in the boss, substantially as and for the purpose set forth.

408,416. FLORAL LETTER OR DESIGN. WILLIAM C. KRUG, Brooklyn, N. Y. Filed Mar. 1, 1888. Serial No. 265,634. (No model.)



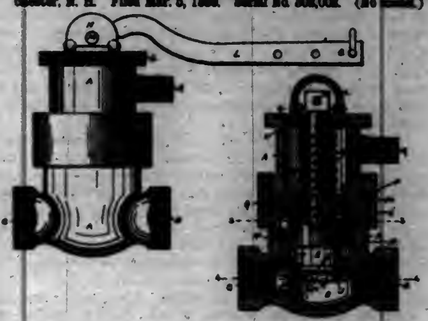
Claim.—A floral letter, figure, or design for decorating purposes, consisting of the flowers *a*, secured to the foundation-piece A, which is formed to create the letter or figure desired, and provided with the holes *c*, in combination with the picks *c*, all as herein described.

408,417. COUNTER-SHAFT AND BELT-TIGHTENER. PETER H. KNOCKER, Santa Rosa, Cal. Filed Apr. 15, 1889. Serial No. 307,321. (No model.)



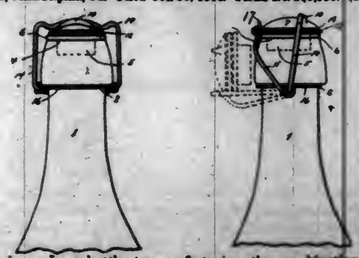
Claim.—The combination of the main driving-shaft, a pivoted frame having a counter-shaft journaled upon its short arm, pulleys on the main shaft and counter-shaft, and a belt-connection between said pulleys, a second belt leading from the pulley on the counter-shaft to the mechanism to be driven, a counter-weight connected with the long arm of the pivoted frame, and the connection for tilting the frame, substantially as and for the purpose described.

408,418. SELF-CLOSING STOP-COCK. JOHN F. LARKIN, Manchester, N. H. Filed Mar. 5, 1889. Serial No. 302,032. (No model.)



Claim.—In a self-closing stop and waste cock, consisting of a shell or case A, having water inlet and outlet passages B C, and interiorly a water-passage D, connecting said passages B C, of a valve-seat J, of water-passage D, of a valve E, having at one end portion a face to seat on valve-seat J and to open and close water-passage D, and at its opposite end portion a stem passing, suitably packed, to the outside of the valve-case, of a spiral spring coiled about valve-stem and confined so as to hold the valve closed and to allow it to be opened, and of means outside the valve-case to open the valve against and to allow the valve to close with the action of said spring, the combination of a water-chamber A^2, surrounding said valve-stem and its spring, an outlet R, for waste water, leading from said chamber, a fixed cross-partition Q, of and located within the valve-case A, between said waste-water outlet R and said valve E, a water-communication P^2, through said partition and connecting water-chamber A^2 with water-passage D and receiving the valve-stem and its spring, a seating-face P of said partition toward the valve E, and a seating-face E^2 of the valve to seat on said face P of partition Q, and located at the opposite end portion of the valve to that of its seating-face E^3 for the seat of water-passage D, substantially as described, for the purposes specified.

408,419. BOTTLE-STOPPER FASTENING. ALEXANDER LEPORTIER, Philadelphia, Pa. Filed Oct. 30, 1888. Serial No. 289,555. (Model.)

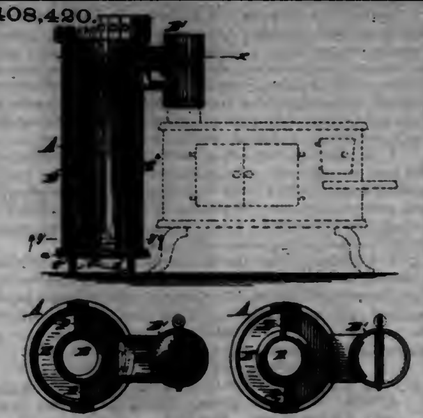


Claim.—In a bottle-stopper fastening, the combination, with the bail 15, provided with an upwardly-projecting stop and pivoted to the bottle-neck, of a cap pivoted to said bail and provided with an upwardly-projecting stop at the opposite extremity of the cap from the pivot, and a second bail pivoted to the bottle-neck and adapted to operate between said stops and to secure the cap to the bottle, substantially as described and shown.

408,420. RADIATOR. JOSEPH LIBBY, Fergus Falls, Minn. Filed Sept. 13, 1888. Serial No. 285,673. (No model.)

Claim.—1. A radiator consisting of the inner and outer spaced casings A B, the inner casing being open at both ends, the opposite partitions D, between the two casings, spaces being formed between the ends of the partitions and the upper and lower ends of the chamber formed between said casings, the ⊣-shaped pipe B', the horizontal arm of which communicates with the upper end of said chamber about at right angles to the partitions D, and is provided with a horizontal portion *d*, the horizontal partition E', extending from the partitions

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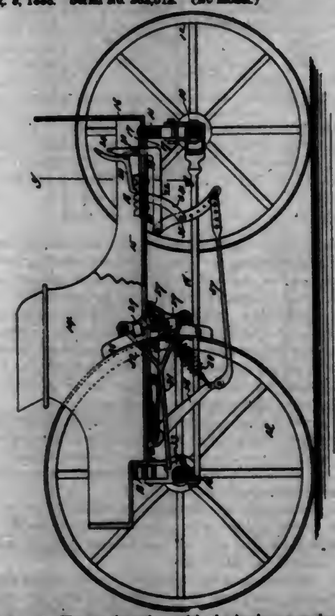


D to partition *d*, and the damper in the vertical arm of said pipe to close it at the partition *d*, whereby the products of combustion may be directed under partitions *d* E' downward under partitions D, thence upward and over partitions E' *d* and the damper, substantially as set forth.

2. A radiator consisting of a hollow body having apertured top and bottom, a longitudinal conical tube opening through the top and bottom of the body, with its smaller end down, an inlet-tube attached to one side, a horizontal partition dividing said inlet-tube, vertical partitions partially dividing the body into two compartments, and a horizontal partition connected with the vertical partitions, substantially as shown and described.

3. A radiator consisting of two spaced tubes or casings, the outer casing having a single horizontally-partitioned opening in one side, and partitions dividing the space between the two tubes or casing above and below the said horizontal partition, whereby the single divided opening will serve for the inlet and outlet of the products of combustion, substantially as set forth.

408,421. VEHICLE-BRAKE. JOHN MAHI, French Gulch, Cal. Filed Aug. 2, 1888. Serial No. 282,312. (No model.)



Claim.—1. The combination, with the brake-operating slide and an adjacent rack, of a latch lever or pawl pivoted to the slide and adapted to engage the rack, the vertical members of said slide and latch-lever having foot-pieces one above the other, substantially as set forth.

2. In a wagon-brake, the combination, with the wagon-body, of an angle brake-lever having a rolling bearing upon the said wagon-body bottom and provided with a foot-rail integral with the upper end, as and for the purpose specified.

3. The combination, with a vehicle-body, a rock-shaft journaled to said body, and brake-shoes secured to said rock-shaft, of a ratchet-plate secured to the body-bottom, an angle brake-lever having a rolling bearing upon the vehicle-bottom and provided above said bottom with an integral foot-rail, a retaining-lever pivoted to said brake-lever, engaging the ratchet-plate, and connections, substantially as shown and described, between the brake-lever and the rock-shaft, as and for the purpose specified.

4. In a wagon-brake, the combination, with a brake-shoe provided with a transverse groove or channel and side recesses above and below the said groove, of a brake-shaft, sectional and detachable keepers secured to said shaft, provided with transverse ribs adapted to enter the grooves or channels, and an inwardly-projecting hook adapted to enter the side recess of the brake-shoe, substantially as shown and described.

5. The combination, with the vehicle-body and a longitudinally-slotted ratchet-plate secured to the upper face of the bottom of said body, of a sliding brake-lever fulcrumed upon said ratchet-plate, having a foot-rail integral with the upper end, a retaining-lever fulcrumed upon the brake-lever and engaging the ratchet-plate, a rock-shaft journaled beneath the body, brake-shoes secured to the extremities of said rock-shaft, and connections, substantially as shown and described, between the said rock-shaft and brake-lever, as and for the purpose specified.

6. The combination, with a vehicle-body and a longitudinally-slotted ratchet-plate secured to the upper face of the bottom of said body, a brake-lever adjustably fulcrumed upon the said ratchet-plate, and a retaining-lever fulcrumed upon said brake-lever engaging the said ratchet-plate, of a rock-shaft journaled beneath the body, keepers secured upon the outer ends of the said rock-shaft, and a brake-shoe detachably secured within said keepers, substantially as and for the purpose specified.

7. The combination, with a vehicle-body and a longitudinally-slotted ratchet-plate secured to the upper face of the bottom of said body, an angle brake-lever provided with a rolling bearing upon the ratchet-plate, a retaining-lever pivoted to said brake-lever engaging the ratchet-plate, and a rock-shaft journaled beneath the body, provided with an attached downwardly-extending spring-actuated arm, of keepers secured to the outer extremities of the rock-shaft, brake-shoes detachably secured in said keepers, and connections, substantially as shown and described, between the brake-lever and the rock-shaft arm, as and for the purpose specified.

8. The combination, with the vehicle-body and the axles, a longitudinally-slotted ratchet-plate secured to the upper face of the bottom of said body, an angle brake-lever having a rolling bearing upon the ratchet-plate, an angle retaining-lever pivoted upon the brake-lever, engaging the said ratchet-plate; a rock-shaft journaled transversely beneath the body, and a spring-actuated downwardly-extending arm rigid with the rock-shaft, of brake-shoes held on the extremities of the said rock-shaft, bifurcated guide-rods pivoted to the rear axle, passing through and secured to the brake-shoes, and connections, substantially as shown and described, between the rock-shaft arm and the brake-lever, as and for the purpose specified.

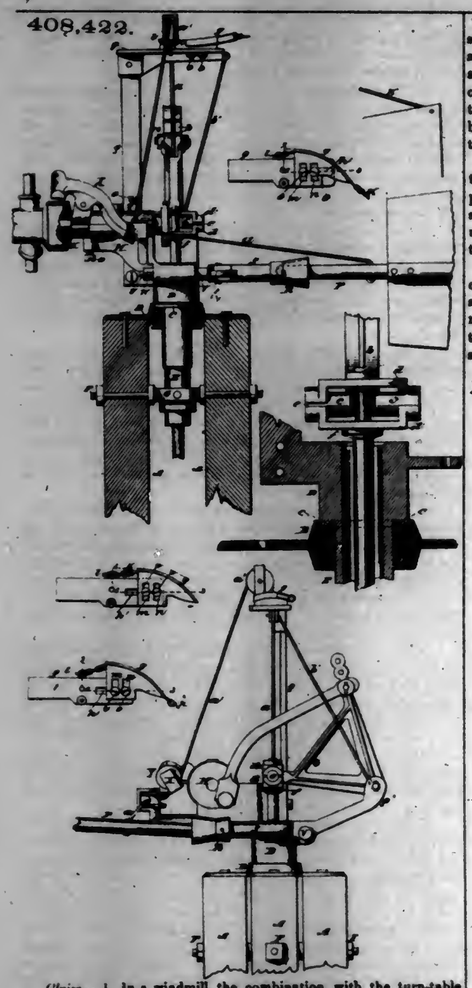
9. The combination, with the vehicle-body and the axles, a longitudinally-slotted ratchet-plate secured to the upper face of the bottom of said body, an angle brake-lever having a rolling bearing upon the ratchet-plate, an angle retaining-lever pivoted upon the brake-lever engaging the said ratchet-plate, a retaining-shaft journaled transversely beneath the body, a spring-actuated downwardly-extending arm rigid with the rock-shaft, and toothed sectional keepers secured to the extremities of the said rock-shaft, of brake-shoes detachably held by said keepers, bifurcated guide-rods pivoted to the rear axle, passing through and clamping the sections of the keepers upon the brake-shoes, and connections, substantially as shown and described, between the rock-shaft arm and the brake-lever, as and for the purpose specified.

10. The brake-shoe keeper or holder consisting of the horizontal plate 27, having transversely-apertured lugs or ears 29^a, the parallel plates 29, having transverse apertures between their ends, a transverse rib 29^c, and inwardly-projecting hooks 29^b above and below said rib, and the bolt passed through the apertured ears and the apertures in the plate, substantially as set forth.

11. The combination, with the brake-shoe or keeper and the attaching-plate to which it is pivoted, of a guide-rod having a forked end connected to the said shoe above and below the pivot, substantially as set forth.

408,422. WINDMILL. FREEMAN P. MAST and HERBERT CRAFT, Jr., Springfield, Ohio, assignors to the MAST, FOOS & COMPANY, same place. Filed June 4, 1887. Serial No. 240,288. (No model.)

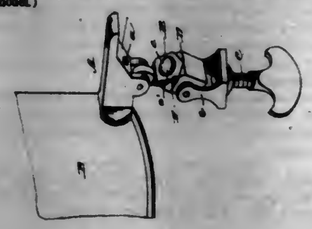
408,422.



Claim.—1. In a windmill, the combination, with the turn-table and a standard extending therefrom, of a cam-arm connected to said standard by a laterally and longitudinally adjustable connection, the tail-vane, and the rod or chain connecting the vane and cam-arm together, for the purpose set forth.

2. In a windmill, the combination, with the turn-table, the tail-vane pivotally connected thereto, and a standard extending upwardly from the table and having a slotted rearwardly-projecting portion at its upper end, of a cam-arm having one end curved and grooved and having two slots at an angle to the slot in the standard, fastening-screws in said slots, and a rod-and-chain connection between the vane and the cam-arm, substantially as described.

408,423. DISCHARGE-COCK FOR FIRE-EXTINGUISHERS. JOSEPH M. MILLER, Chicago, Ill. Filed Apr. 3, 1889. Serial No. 305,881. (No model.)

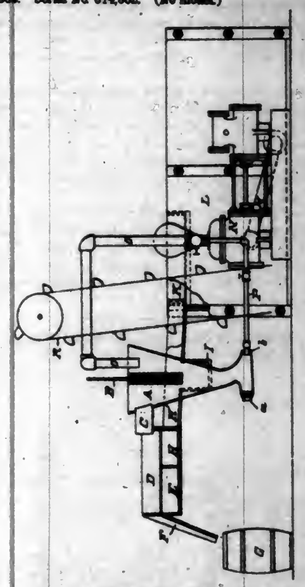


Claim.—1. A discharge-cock for fire-extinguishers, such as described, the same comprising a head containing a discharge-orifice, a swinging jaw provided with a fastening device, a packing-strip having a protuberant convex-faced portion co-operating with the discharge-orifice, a perforated plate resting upon the packing-strip with the protuberant portion of the latter projecting through the perforation and beyond the surface of the plate, and means for securing the said plate to the movable jaw to hold the packing in place, as set forth.

2. In a discharge-cock such as described, and in combination with the head containing the discharge-orifice and the pivoted block, a packing provided with a protuberant portion, and a plate embracing said packing surrounding the protuberant portion and encircling the movable jaw to sustain the packing in position thereon and support the protuberant portion, substantially as described.

3. A discharge-cock such as described, provided with a head containing a discharge-orifice, a block pivoted to said head so as to swing toward and away from the discharge-orifice, an elastic packing mounted upon the movable block, and a perforated strip overlying the packing and having its ends bent around the movable jaw and secured to the latter, as and for the purpose set forth.

408,424. APPARATUS FOR WASHING AND SEPARATING RUBBER. NATHANIEL C. MITCHELL, Philadelphia, Pa. Filed June 19, 1889. Serial No. 314,902. (No model.)



Claim.—1. The combination, with the separator having a diaphragm partially dividing the same, of a rubber-feeding device and water-supply pipe on one side of said diaphragm and an overflow-pipe on the other side thereof, substantially as described.

2. The combination, with the separator having a diaphragm extending part way down the same, of rubber-feeding devices and a main water-pipe on one side of said diaphragm, an overflow-pipe on the other side of said diaphragm, and a smaller water-pipe discharging into said separator below the diaphragm and at the side opposite said overflow-pipe, substantially as described.

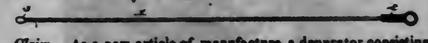
3. In a rubber-cleansing apparatus, the combination of the separator, the rubber-feeding device, the water-pipe discharging into said separator, the overflow-pipe for the rubber, the return water-passage, and the pump for maintaining a constant circulation of water through the separator, substantially as described.

4. The combination, with the separator, feeding device, and water-supply pipe, of the overflow-pipe, a screen for receiving the matters discharged by said pipe, and the return water-passage under said screen, substantially as described.

5. The combination of the separator, the water-supply pipe therefor, the reservoir, the pump, the overflow-pipe from the separator, the screen onto which said overflow discharges, and the return-passage leading from beneath said screen to said reservoir, said return-passage being provided with means for purifying the water, substantially as described.

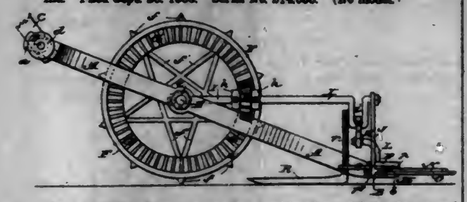
6. In a rubber-cleansing apparatus, the combination, with rubber-feeding mechanism and a water-supply, of a separator consisting of a vessel tapering from the top downward, a vertical diaphragm extending across said vessel and terminating some distance from the bottom thereof, said vessel having an overflow-opening on the side of said diaphragm opposite to the feeding mechanism, a main water-pipe discharging downward on the same side as the feeding mechanism, and a small water-pipe discharging into said vessel near the bottom thereof and in the direction of the overflow, substantially as described.

408,425. ROUGH. GEORGE MOSLEY, Paterson, N. J. Filed Mar. 22, 1889. Serial No. 304,260. (No model.)



Claim.—As a new article of manufacture, a deparator consisting of a flexible core formed of whalebone, with a handle, a rounded head, and a medicated composition extending over the core and head, substantially as shown and described.

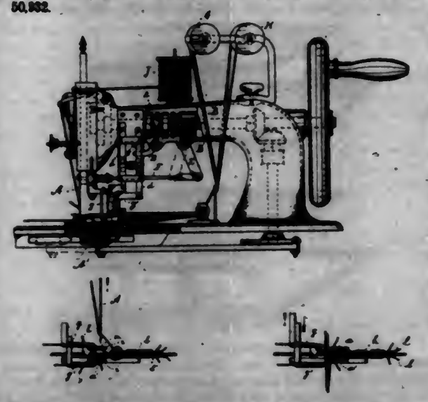
408,426. LAWN-MOWER. CHARLES A. OLCOTT, North Vernon Ind. Filed Sept. 20, 1886. Serial No. 214,083. (No model.)



Claim.—1. In a lawn-mower, the combination, with the frame and the bracket-plates secured thereto and having screw-threaded holes therein, of the rearwardly-extending flat shoes having fixed upwardly-projecting threaded stems *r* forward of their centers working loosely in said threaded apertures to allow the stems and shoes free horizontal movement and vertical adjustment, substantially as set forth.

2. The combination, with the L-shaped bar B, carrying the fixed cutters, the reciprocating cutter-bar M, having cutters N secured thereto and resting on said fixed cutters, and the cutter-bar guides P P, having downward-extending front and rear legs overlapping the rear and front edges of the cutter-bar and the rear and top edges of the vertical flange of the bar B, of the side bars A, secured to the bar B at their forward ends, a single drive-wheel journaled between the side bars and having a gear-wheel on one side, a longitudinally-extending crank-shaft I, journaled in the axle of said drive-wheel and in an arm extending up from the bar B, a pinion on said shaft meshing with the gear on the drive-wheel, and a pitman connecting the said crank-shaft and cutter-bar, substantially as set forth.

408,427. SEWING-MACHINE. RICHARD OTTO, Plauen, Saxony, Germany. Filed Nov. 23, 1888. Serial No. 291,730. (No model.) Patented in Germany Mar. 1, 1887, No. 41,227; in England May 11, 1887, No. 6,936, and in Austria-Hungary Nov. 13, 1887, No. 34,963 and No. 50,932.



Claim.—The combination, with a sewing-machine having needle and shuttle, of the horizontally-oscillating loopers *a a'*, the one above and the other below the work-plate, and with a vertically and independently reciprocating thread-carrying guide *g*, substantially as specified.

408,428. BOOK OR MUSIC HOLDER. SUSAN M. PERKINS, Lansing, Kans. Filed Sept. 15, 1888. Serial No. 285,542. (No model.)



Claim.—In a book or music holder, the combination, with the stretched two-strand wire support B, having looped ends, of the clamps, each consisting of the spring-actuated lever *d* and the base-plate *a*, pivoted to said lever and provided with loops *c*, which are formed of inwardly-bent portions of said plate and embrace the wire strands, thus attaching the clamps adjustably to the latter, as shown and described.

408,429. HAY-STACKER. ARTHUR E. PLATT, Ottumwa, Iowa. Filed Apr. 9, 1889. Serial No. 306,877. (No model.)



Claim.—1. In a hay-stacker, the combination, with the horizontal and upright frames, of the beam having the axle and the reduced curved forward part, the fork formed with the shank-frame F' and having the curved and straight teeth, and the operating-rope, substantially as set forth.

2. In a hay-stacker, the combination, with the horizontal and upright frames, of the beam having the axle, the spring, and the reduced forward part formed with the shoulders and having the pulley in its forward end, the fork having the curved and straight teeth, and the operating-rope, substantially as set forth.

3. In a hay-stacker, the combination, with the horizontal frame having the pulleys and the upright frames, of the beam having the axle, the reduced forward part, and the shoulders, and having the pulley in its forward end, and the recessed rear end, the spring and guides, the fork having the curved and straight teeth, and the operating-rope, substantially as set forth.

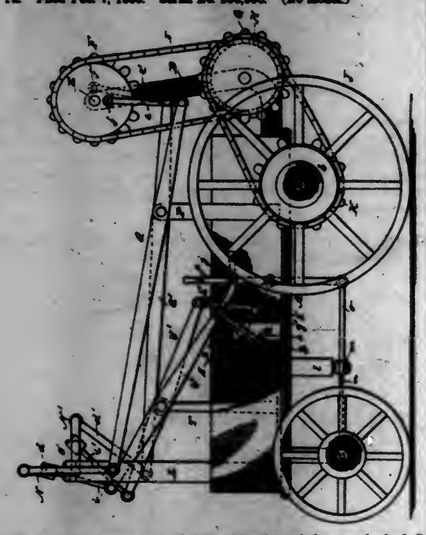
4. In a hay-stacker, the combination, with the horizontal and upright frames, of the beam having the axle, the spring, and the reduced forward part having the shoulders, the notched front end, and the pulley in its front end, the pivoted catch and the sliding plate, the fork having the curved and straight teeth, and the operating-cord, substantially as set forth.

5. In a hay-stacker, the combination, with the horizontal and upright frames, of the swinging beam having the axle and carrying the fork, and the check-springs I and I', secured at their lower ends to the upright frames and connected at their upper ends to the beam-axle by the ropes J and J', substantially as set forth.

6. In a hay-stacker, the combination, with the swinging beam having the flat staple on the side of its rear end, of the L-shaped catch adapted to engage with the same when the beam is elevated, and the rope L', substantially as set forth.

7. In a hay-stacker, the combination of the horizontal frame having the staples at its forward end, the upright frames, and the swinging beam, the fork, and the operating-rope, substantially as set forth.

408,430. MOTOR FOR VEHICLES. JONAS POTTER, Johnstown, Pa. Filed Feb. 7, 1889. Serial No. 299,260. (No model.)

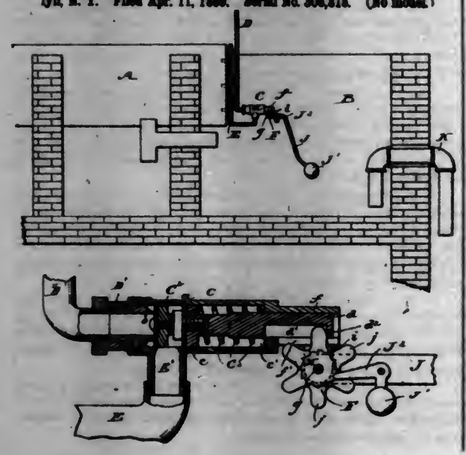


Claim.—1. In a motor, the combination of the crank-shaft S, provided with the cranks *g g'* and foot-pedals *k k'*, the levers U U', the crank-shaft M, having the cranks N N' O O', the levers Q Q', the sprocket-wheels F F', provided with the crank-pins *f f'*, the sprocket-wheels H H', the chains I I', the sprocket-wheels G G', the chains *c c'*, and the sprocket-wheels K K', substantially as specified.

2. In a motor, the combination of the crank-shaft S, provided with cranks G G', the levers U U', the lever U being provided with the prolongation *j*, the crank-shaft M, having the cranks N N' O O', the levers Q Q', the sprocket-wheels F F', provided with the crank-pins *f f'*, the sprocket-wheels H H', the chains I I', the sprocket-wheels G G', the chains *c c'*, and the sprocket-wheels K K', substantially as specified.

3. The combination, with the body A and front axle C, of the lever *m*, pivoted to the under surface of the body, the hand-lever *p*, the rod *n*, connecting one end of lever *m* to the axle, and the rod *o*, connecting the other end of the said lever *m* to the hand-lever *p*, substantially as described.

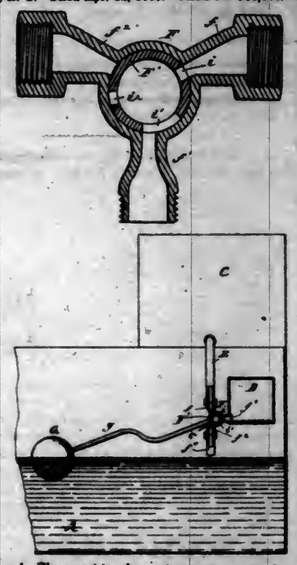
408,431. AUTOMATIC RATCHET-COCK. JAMES J. POWERS, Brooklyn, N. Y. Filed Apr. 11, 1889. Serial No. 306,818. (No model.)



Claim.—1. The combination, with the plug or valve of the cock, of a lever, pawl and ratchet, and a star-wheel arranged to withdraw the cock or plug, substantially as described.

2. The main casing *a*, having inlet and outlet connections, and a valve-seat *b*, and the spring-actuated cock or plug C', having the projection d^3, in combination with the star-wheel F, ratchet-wheel H, lever J, and pawl J^3, all arranged to operate substantially as described.

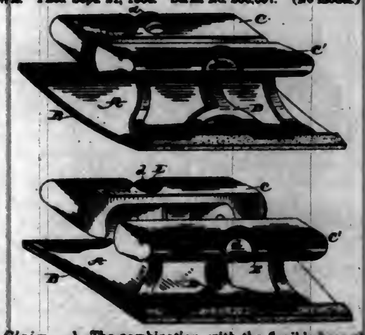
408,432. AUTOMATIC DISINFECTING-TANK. JAMES J. POWERS, Brooklyn, N. Y. Filed Apr. 12, 1889. Serial No. 306,977. (No model.)



Claim.—1. The combination, with a sewage-tank, an elevated reservoir, and a measuring-box connected to the reservoir by a conduit and valve-casing, of a cock fitted in the valve-casing, formed with three passages and provided with a float-arm, whereby the rise and fall of the sewage in the sewage-tank automatically admits chemicals to the measuring-box and automatically empties the same and cuts off the supply, substantially as described.

2. The casing F, having the branches *f f'* and spout f^2, in combination with the cock F', fitted in said casing, and formed with passages $f f' f^2$, substantially as described.

408,433. HAND-PAPER HOLDER. THOMAS L. PRETTYMAN, Racine, Wis. Filed Sept. 21, 1888. Serial No. 286,057. (No model.)

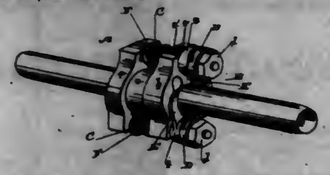


Claim.—1. The combination, with the flexible base-plate, of a hand-grasp consisting of two parts attached near opposite edges to said plate, and pivoted clamping-jaws, substantially as described.

2. The combination, with the flexible base-plate, of a hand-grasp consisting of two parts attached near opposite edges to said plate, substantially as described.

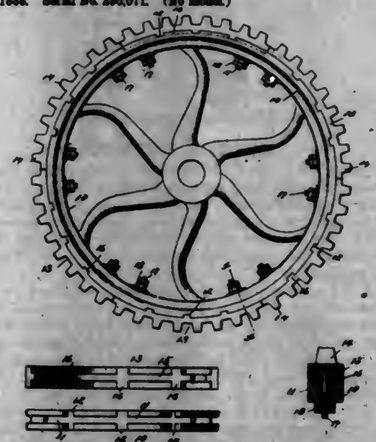
3. The combination, with the flexible base-plate, of a hand-grasp attached thereto, and the pivoted clamping-jaws having operating-extensions in close proximity to the said hand-grasp, said extensions being rigidly connected with said clamping-jaws, substantially as described.

408,434. HOSE-COUPLING. JAMES PRINGLE, Silver King, Ariz., assignor of one-half to Robert Bowen, same place. Filed Mar. 6, 1889. Serial No. 302,143. (No model.)



Claim.—In a hose-coupling, the opposing coupling-heads, one of which is provided with the grooves or bolt-seats *c*, in combination with the bolts C, pivoted in the opposing head, the cam-faced disks on the ends of the bolts, the levers having the cam-faced heads bearing against the disks, the sleeves of said heads, and the springs acting against the sleeves to hold the lever-heads to place, substantially as described.

408,435. TOOTHED WHEEL. JOHN T. REDINGTON, Ambler, Pa., assignor of one-half to Thomas Redington, Jr., same place. Filed Nov. 6, 1888. Serial No. 290,071. (No model.)



Claim.—1. The combination, with a wheel provided with a peripheral groove and diametrical grooves crossing the same, of a series of segmental blocks of a width corresponding to the width of the wheel-rim, and having teeth or sprockets upon the outer face and longitudinal and transverse ribs upon the inner face adapted to enter the corresponding grooves of the wheel, substantially as and for the purposes specified.

2. The combination, with a wheel provided with a peripheral groove and diametrical grooves crossing the same, of a series of segmental blocks of even width with the periphery of the wheel, having teeth or sprockets upon the outer face and longitudinal and transverse ribs upon the inner face adapted to enter the corresponding grooves of the wheel, and means, substantially as shown and described, for locking the segmental block to the wheel, as and for the purposes specified.

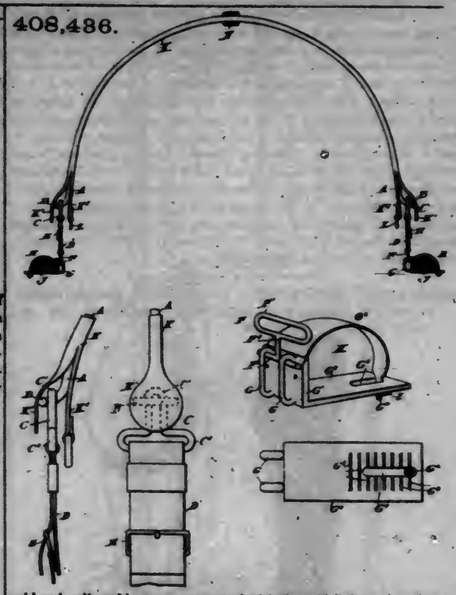
408,436. SAFETY-HARNESS FOR VICIOUS HORSES. ROBERT M. REID, Ann Arbor, Mich. Filed Jan. 3, 1889. Serial No. 295,902. (No model.)

Claim.—1. A harness attachment comprising a metallic rod provided on each end with a T, links adapted to be hooked onto the T ends of the said rod, straps connected with the said links and adapted to be secured to the shafts, substantially as shown and described.

2. A harness attachment comprising a metallic rod provided on each end with a T, links adapted to be hooked on the T ends of the said rod, adjustable straps connected with the said links and each carrying a second link, and a clip secured to each shaft and onto which is hooked the said second link, substantially as shown and described.

3. A harness attachment comprising a metallic rod provided on each end with a T, links adapted to be hooked on the T ends of the

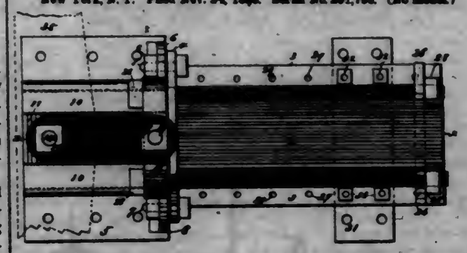
408,436.



said rod, adjustable straps connected with the said links and each carrying a second link, a clip secured to each shaft and provided with parallel vertical rods adapted to be engaged by a T formed on the said second link, substantially as shown and described.

4. In a safety-harness, the combination of a metallic rod adapted to pass through the back-strap of the harness and provided on each end with a T, a leather covering formed on the said rod and split on each end to form straps adapted to be connected with the back band of the breeching, links adapted to be hooked onto the said T ends of the rod, adjustable straps carrying the said links, a second link secured on each of the said straps, and clips secured to the shafts and onto which hook the said second links, substantially as shown and described.

408,437. DRAFT-SPRING FOR VEHICLES. JAMES A. ROSSER, New York, N. Y. Filed Nov. 24, 1888. Serial No. 291,796. (No model.)



Claim.—1. A draft-spring attachment for vehicles, comprising a support, a sliding plate mounted in said support and adapted to carry a whiffletree, a casing projecting from the support, a spring in said casing, a sliding plate in the casing and against which one end of the spring rests, and a connection between the sliding plate carrying the whiffletree and the sliding plate in the casing, substantially as described.

2. In a draft-spring attachment for vehicles, the combination, with a recessed support and a slotted casing secured to the said support, of a sliding whiffletree-carrying plate in the support, a spring arranged in the casing, a sliding plate provided with projections extending through the slots of the casing, and rods secured to the projections of the said sliding plate and to the sliding plate in the support and carrying the whiffletree, substantially as herein shown and described.

3. In a draft-spring attachment for vehicles, the combination, with a recessed support, of a sliding plate in said support and provided with a bolt at its forward end and with a vertical plate at its rear end, and having at its top a stud and a plate secured to the said bolt and stud, substantially as described.

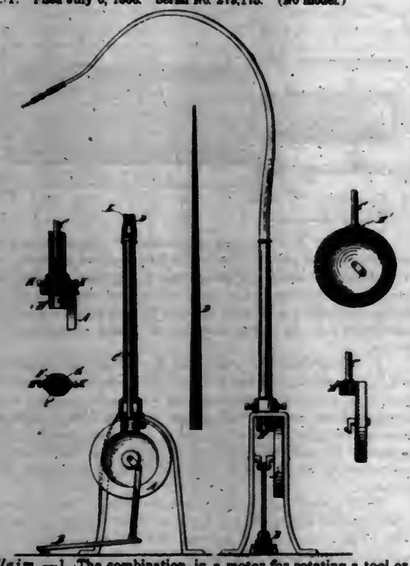
4. A draft-spring attachment for vehicles, consisting of plate 5, having vertical lugs 6 and ribs 10, forming recess 9, a sliding plate 11, located in recess 9, a vertical bolt 13 on the forward part of plate 11, and a vertical plate 15 on the rear end, with a screw-threaded stud 16, a plate 17, engaging bolt 13 and stud 16 and secured by nuts 19, a casing 2, with transverse plate 4 at its forward end bolted to lugs 6, lateral openings 25 at its rear end and lateral horizontal flanges 3, with bolt-holes 29, a coiled spring 1, located in casing 2, and a sliding plate 24, extending laterally through openings 25 and having a projection 23 engaging the end of spring 1, rods 27, secured at one end to plate 24 and at the other projecting through plates 4 and 15 and secured to the latter, and a plate 31 transverse to and adjustable on casing 2 and secured thereto by bolts 32 passing through holes 29 in flanges 3 and holes 30 in plate 31 and held by nuts 33, substantially as shown and described.

408,438. BICYCLE-TIGHTS. ROBERT G. ROPER, Needham, assignor to George W. Simmons & Co., Boston, Mass. Filed May 16, 1889. Serial No. 311,088. (No specimens.)



Claim.—As a new article of manufacture, a garment forming trousers and stockings of a continuous fabric, having an overlay D D' D² at the junction of the trousers and stockings, substantially as and for the purpose set forth.

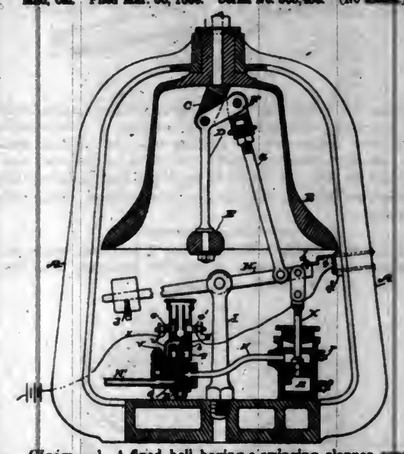
408,439. DENTAL ENGINE. LUCIUS T. SHEFFIELD, New York, N. Y. Filed July 6, 1888. Serial No. 279,175. (No model.)



Claim.—1. The combination, in a motor for rotating a tool or drill, of a driving-shaft, a cable tapering from said driving-shaft toward the tool-holder, and a tool-holder rotated by said tapering cable, substantially as described.

2. The combination, in a motor for rotating a tool or drill, of a driving-shaft, a cable tapering from said driving-shaft toward the tool-holder, a flexible tapering sheath or cover inclosing said cable, and a tool-holder rotated by said tapering cable, substantially as described.

408,440. AUTOMATIC BELL-RINGER. WILLIAM W. SLATER, Oakland, Cal. Filed Mar. 30, 1889. Serial No. 305,453. (No model.)



Claim.—1. A fixed bell having a swinging clapper connected with the piston-rod and a piston reciprocating within a cylinder, an air-supply pipe admitting air to one side of said piston, so as to force it to the end of its stroke, and an escape-passage with a controlling screw or cock of smaller capacity than the air-supply pipe, through which the air may escape after the supply has been cut off, substantially as described.

2. The cylinder having the reciprocating piston, the rod of which is connected with the swinging clapper of a fixed bell, said cylinder having an inlet-pipe through which air is admitted to force the piston to one end of its stroke, an air-escape passage of smaller capacity than the supply-pipe, with a regulating cock or screw, and a second escape-passage below the piston, with a regulating cock or screw, substantially as and for the purpose as herein described.

3. The fixed bell with the swinging clapper and the cylinder having the reciprocating piston and piston-rod, whereby the clapper is actuated, and an air-supply pipe leading into said cylinder, in combination with a valve closing said pipe, a second piston moving within its cylinder and acting to open said valve, a passage through which air is continuously supplied above said secondary piston and a second passage through which it is allowed to escape without acting upon the piston, and a valve controlling the escape-passage and operated by an armature of an electro-magnet so as to close said escape-passage and allow the air to act upon the piston in the secondary cylinder so as to open the main air-valve, substantially as herein described.

4. The bell-swinging clapper-piston moving within a cylinder and connected with said clapper so as to actuate it, an air-supply pipe connected with the cylinder and having a valve by which a supply is cut off, a second cylinder with a piston, whereby said valve is opened, and passage through which air is supplied to and escapes from the secondary cylinder without acting upon its piston, in combination with a valve by which said passage may be closed so as to imprison the air within the cylinder, an electro-magnet by which said valve is actuated and contact-point whereby the circuit is closed, one of said points being stationary and the other connected with the upper end of the clapper-actuating piston-rod, so that the clapper returns to its normal condition after contact is made and the valve opened to supply air to the cylinder, substantially as herein described.

408,441. LOCK-HINGE. HENRY W. STEINER, Easton, Pa., assignor of one-half to Thomas T. Miller, same place. Filed Jan. 12, 1889. Serial No. 296,302. (No model.)

Claim.—In a hinge, the leaf A, having its knuckle provided with the projection D, having an inclined shoulder, and the leaf F, provided with a rectangular notch H, the upper shoulder of which is adapted to ride over the inclined shoulder of the projection, and the lower

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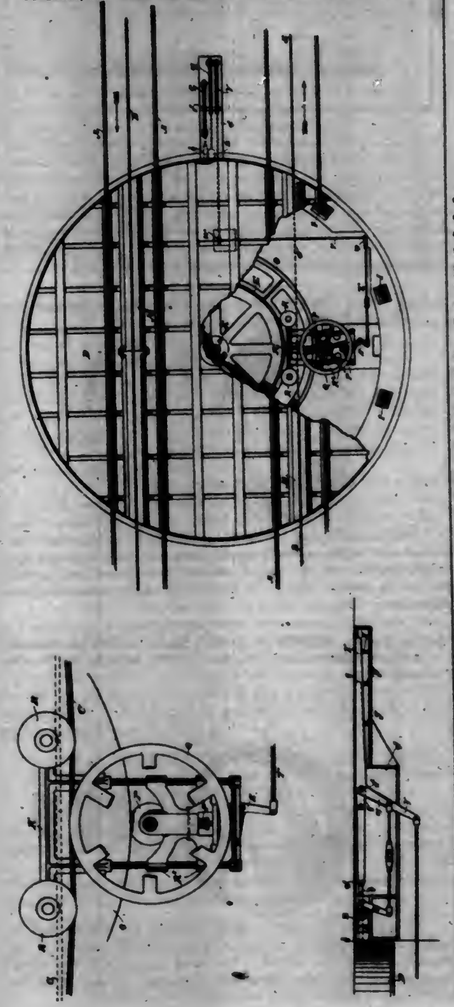
shoulder contacting with the straight under side of the projection, thereby preventing the separation of the parts of the hinge, as set forth.

408,442. CIGAR. JOHN H. STEVENS, Newark, N. J., and JOHN E. H. HYDE, New York, N. Y. Filed Aug. 2, 1888. Serial No. 281,766. (Specimens.)

Claim.—1. A cigar having its lighting end impregnated with a non-inflammable solution of substances, substantially as described, which, while not inflammable alone, when combined with the tobacco forms therewith a tinder.

2. A cigar having its lighting end impregnated with nitrate of potash and dextrine to form, in combination with the tobacco, a tinder at the end of the cigar, substantially as set forth.

408,443. CABLE-RAILWAY TURN-TABLE. JOHN C. H. STUT, San Francisco, Cal. Filed Jan. 19, 1889. Serial No. 296,905. (No model.)



Claim.—1. The horizontal rotating turn-table having its center of motion between the lines of two cable-railway tracks, a central cylindrical flanged portion extending downwardly between the main cables and below their plane of travel, and bearing wheels or rollers, upon which the flange is supported on a circular track, upon which the said wheels travel when the table is rotated, in combination with wheels or rollers around the circumference of the table and journaled upon stationary radial axes beneath the periphery of the table, substantially as described.

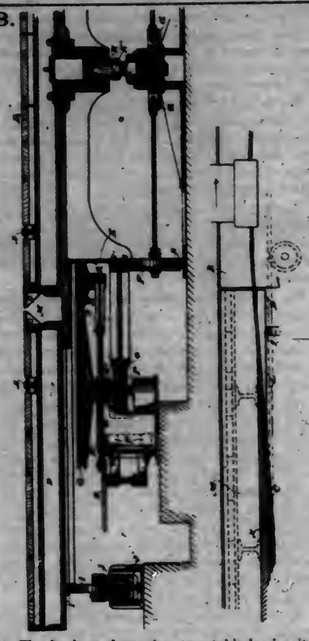
2. The steel or iron turning table, with its center of motion central between two lines of cable-railway tracks, a central cylindrical flanged portion extending downward between and below the line of travel of the cables, and wheels upon which said cylinder rests and turns, and a second set of wheels or rollers journaled upon radially-fixed axes beneath the periphery of the table, in combination with the horizontal troughs or channels built in the table in lines which correspond with the cable tube or channel of the road-bed, and having slots corresponding with the slot therein, whereby the grip may enter said channels when disengaged from the cable, substantially as described.

3. The horizontal rotating table having its axis between the two parallel lines of cable-railway track, corresponding tracks upon its surface upon which the cars can be received from either of the lines of track, and tubes or channels with slots in the top through which the grip-shank and grip may pass as the car passes over the table, and the exterior and interior sets of wheels or rollers upon which the table is supported in its rotation, in combination with the horizontal driving-wheel connected with the central portion of the turn-table beneath the line of travel of the cables, the corresponding pinion through which power is transmitted to the driving-wheel, a grooved pulley fixed upon the shaft of said pinion in the horizontal plane of travel of the cable, and grooved sheaves supported upon a frame or cross-head upon the opposite side of the cable, said cross-head being movable, so that the movable sheaves will force the cable into contact with the grooved driving-pulley, substantially as described.

4. The driving gear-wheel fixed to the lower part of the turn-table beneath the line in which the cables travel, the vertical driving-shaft, grooved wheel, and the movable sheaves, whereby the cable is forced into contact with the wheel, in combination with the pinion through which power is transmitted to the driving-wheel, said pinion being mounted so as to have a vertical or self-adjusting movement upon its shaft to compensate for irregularities in the movement of the driving-wheel with which it contacts, substantially as described.

5. A cable railway and the cable thereof, the turn-table mounted upon bearing wheels and rollers, with channels or troughs through which the grip of the car may pass above the plane of travel of the cable, and the driving-wheel and pinion situated below the plane of travel of the cable and outside thereof, in combination with the sheaves

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journaled to a movable cross-head upon the opposite side of the cable, rocker-arms, levers, and connecting-rods, whereby said frame or cross-head may be moved so that the sheaves force the cable into contact with the grooved pulley or allow it to travel independent thereof, substantially as described.

6. The horizontally-rotating turn-table, with its grip channels or troughs, the supporting wheels or rollers upon which it rotates, and the driving-pulley and pinion through which power is transmitted to rotate the turn-table, in combination with the rubber or other elastic springs whereby the contact between the pinion and the wheel is maintained, substantially as described.

7. The horizontally-rotating table, with the U-shaped troughs or strengthening grip-channels, the supporting wheels or rollers, and the corresponding tracks, in combination with the central step and screw-threaded adjustable cone fitting said step supporting the center of the table, substantially as described.

8. The horizontally-rotating turn-table, with central wheels or rollers and cylindrical ring or flange projecting downwardly from the table and resting upon said wheels, in combination with the exterior rollers around the circumference of the table and turning upon stationary shafts, and the vertically-adjustable standards or supports in which said shafts are journaled, substantially as described.

9. The horizontally-rotating table, with the supporting wheels and rollers, the troughs or grip-channels extending across the table in line with the slots and tubes of the roadway, and having the channel for the grip-shank upon the upper sides and the open space or slot near the ends of the lower sides, substantially as described.

10. The U-shaped grip-channels having slots for the shanks upon the upper surface extending across the turn-table in line with the tubes and slots of the railway, having the openings made in the lower sides at the ends toward which the car departs from the table, in combination with depression-pulleys upon the table, whereby the cable is prevented from striking the bottom of the channel when it is taken by the grip, substantially as described.

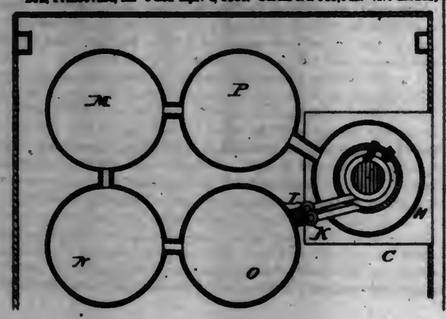
11. The horizontally-rotating table, with the supporting wheels or rollers, the frictional sheaves whereby power is transmitted from the endless traveling cable to rotate the table, a friction-brake acting against the periphery of the table, a latch whereby the table is locked in place when the rails are in line with those of the road, the levers operating the said latch, brake, and also the friction-gearing being journaled upon a single fulcrum-shaft and contained within a box in the road-bed at the side of the table, substantially as herein described.

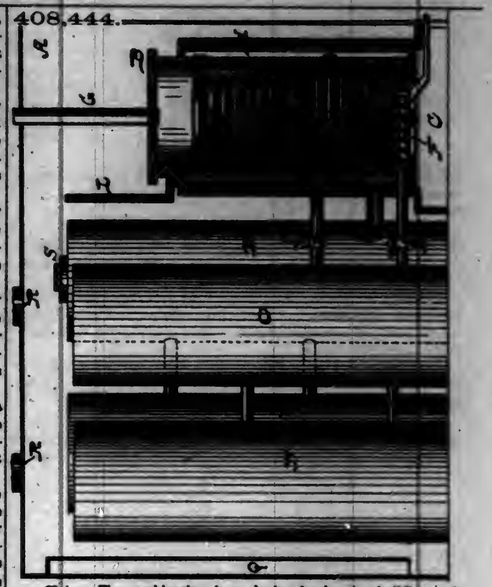
12. The lever-box fixed in the roadway at one side of the turn-table, with a common fulcrum-shaft for the levers, and having the slots in the top in which the levers lie and the supporting-ribs in the bottom, substantially as described.

13. The parallel moving ropes of a cable railway, a circular turning table pivoted centrally between the ropes and exteeding horizontally above and beyond the cables, and a driving-gear having a common center with the table and projecting horizontally beyond the line of the cables and below them, in combination with a central cylindrical drum extending downward from the table, uniting it with the driving-wheel, and having a diameter less than the distance between the cables, substantially as herein described.

14. The turn-table with the downwardly-projecting central portions, upon each side of which one portion of the cable travels beneath the table, a driving-wheel of greater diameter extending from this central portion beneath the cables, a corresponding pinion engaging said wheel, and a grooved wheel upon the pinion-shaft in the longitudinal plane of the cable and exterior thereto, in combination with sheaves by which the cable is forced into contact with the grooved wheel, said sheaves being mounted between the cable and the central portion of the turn-table, substantially as herein described.

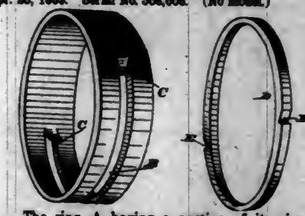
408,444. DEVICE FOR HEATING BUILDINGS. CHARLES M. TAYLOR, Princeville, Ill. Filed Apr. 4, 1888. Serial No. 305,942. (No model.)





Claim.—The combination, in a device for heating buildings, of the following instrumentalities: an inclosure A, a stove having a base C, the two coils of pipes arranged in this stove, the upper coil forming the magazine and the lower coil the fire-box, the grate F, the outlet or chimney G, the surrounding shield H, the tank O, with which said coils communicate, valves I K, safety-vent L, tanks connected together and with the tank O, the cold-air ducts Q, applied to the said inclosure A, the eduction-passage R, and the cover S, applied to tank P, all as specified, and arranged as shown.

408,445. VEIL-FASTENER. PHILO B. TETON, San Francisco, Cal. Filed Apr. 25, 1888. Serial No. 308,606. (No model.)



Claim.—The ring A, having a portion of its circumference slotted, and having inwardly-turned catches at the ends of the slot, in combination with the ring B, adapted to be passed into the slot, and having notches with which the catches engage, substantially as described.

408,446. METHOD OF MAKING MILLING-CUTTERS. CHARLES G. TYLER, Cheshire, Conn. Filed Nov. 17, 1888. Serial No. 291,187. (No model.)



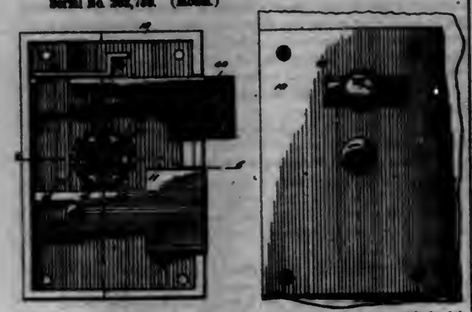
Claim.—1. The process herein described for making toothed cutters, which consists in displacing by compression the metal of the blank in a direction crosswise to the line of the points of the cutting-teeth and parallel to the cutting-face of the tooth formed to form the relief-space of another tooth, substantially as described.

2. The process herein described for making toothed cutters having a series of relieved cutting-teeth, which consists in displacing by successive compressions the metal of the blank in a direction crosswise to the line of the points of the cutting-teeth and parallel to the cutting-face of the tooth formed to form the relief-spaces of the teeth, each successive compression being made forward of the previously-formed tooth, substantially as described.

3. The process herein described for simultaneously sizing and toothing milling-cutters, which consists in reducing an oversize blank by successive compressions in a direction crosswise to and advancing along the line of the points of the cutting-teeth, the compressions being made each parallel to the cutting-face of a preceding tooth, substantially as described.

4. The process herein described for making toothed cutters having a series of relieved cutting-teeth, which consists in the reducing of an approximately-shaped and oversize blank to an accurately-sized cutter by successive tooth-forming compressions made, respectively, in directions that are in substantial alignment with the cutting-faces of the cutting-teeth, each compression being made in advance of the preceding one to simultaneously form the relief of one tooth and the cutting-face of the next preceding tooth, all substantially as described.

408,447. LOCK. OLOF VOLKERTS, Sac City, Iowa. Filed Feb. 2, 1888. Serial No. 262,730. (Model.)



Claim.—1. In a lock, the combination, with a bolt provided with a rack, of a tumbler-case provided with teeth which engage said rack, tumblers mounted within the case, adjustable plugs mounted within the tumblers, stems which engage said plugs, springs arranged in connection with the stems, and keepers, substantially as described.

2. In a lock, the combination, with a bolt provided with a rack, of a tumbler-case provided with teeth which engage said rack, tumblers mounted within said case, threaded plugs mounted within the tumblers, stems which engage said plugs, springs arranged in connection with the stems, and keepers mounted at each side of the tumbler-case, substantially as described.

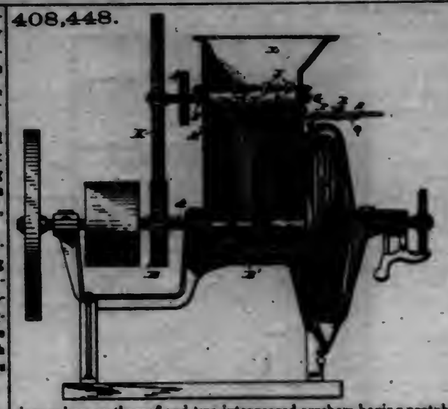
3. In a lock, the combination, with a bolt provided with a rack, of a tumbler-case provided with teeth arranged to engage said rack, tumblers adjustably mounted within said case, stems arranged in connection with the tumblers, springs arranged in connection with the stems, an escutcheon, and a sleeve mounted within said escutcheon and provided with apertures adapted to receive the stem, substantially as described.

4. In a lock, the combination, with a bolt provided with a rack, of a tumbler-case provided with teeth which engage said rack, tumblers mounted within the case, stems connected to the tumblers, springs arranged in connection with the stems, a sleeve surrounding the springs, limit projections carried by the stems and arranged to strike against the edge of the sleeve, an escutcheon, and a sleeve mounted within the escutcheon and arranged to receive the extending ends of the stems, substantially as described.

408,448. CRUSHING AND GRINDING MILL. JAMES F. WHEMELL, Springfield, Ohio, assignor to the Foos Manufacturing Company, same place. Filed Apr. 2, 1888. Serial No. 269,304. (No model.)

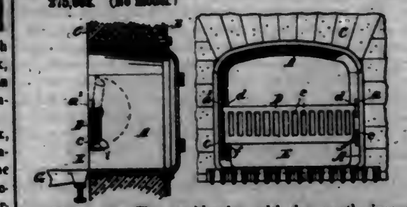
Claim.—1. In a mill, the combination, with the upper portion of the casing or hopper thereof, and crushing and feeding mechanism rotatably mounted therein and provided with a peripheral construction whose sides are at an angle to the axis of rotation, of a cut-off mounted below and near said mechanism and, in the same general direction as the axis thereof and adjustable in said direction to more or less reduce the area of the cut-off, which coacts with said mechanism, the said peripheral construction acting to feed the material in conjunction with the cut-off and to crush the escaped material which is caught by the cut-off.

2. In a mill, the combination, with the upper portion of the casing or hopper thereof and two intergeared crushers having protuberances which extend approximately in line with each other, of a cut-off mounted below and close to said crushers and adjustable to expose more or less of the length thereof, so as to increase the amount of material passing downward from said mechanism.



3. In a mill, the combination, with a casing, a main shaft and grinders, and a crushing-conveyer, of a plurality of crushers mounted in the casing to crush and feed the material to the conveyer, and having protuberances which extend approximately in line with each other and whose sides are at an angle to their axis of rotation, whereby they also act as a conveyer, a cut-off mounted between the said feeding-crushers and the crushing-conveyer substantially in line with the axis of the crushers and adjustable in said direction, and suitable gearing connecting the main shaft with the feeding-crushers.

408,449. ARCH-FENDER FOR STEAM-BOILER FURNACES. GEORGE L. ALLEN, Worcester, Mass. Filed May 31, 1888. Serial No. 275,062. (No model.)



Claim.—1. The combination, with the mouth-piece arch in a steam-boiler furnace, of the perforated feeder-plate extending across the inner end of the arch, as shown, and having its ends rigidly supported in connection with said arch by interlocking lugs that maintain said feeder in upright position, substantially as and for the purposes set forth.

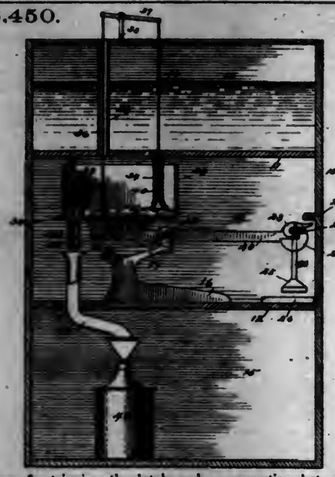
2. The combination of the mouth-piece arch provided with the ears *a a'* and latch-lugs *c*, formed on the inner end thereof, as shown, and the feeder-plate arranged as a barrier across the interior of the arch and furnished at its ends with projections *d*, that engage said ears *a a'* and form hinges on which said feeder is adapted to be inverted within the upper part of the arch, and projections *f*, that latch into the latch-lugs *c* and sustain the lower edge of said feeder when in normal position, substantially as and for the purpose set forth.

3. The combination, with the grate G and arched mouth-piece A, having the closed supporting-ear *a*, an open ear *a'*, formed on the opposite inner sides thereof at central position of its height, and the latch-lugs *c c* below said ears, of the removable feeder-plate having at its upper corners projecting studs *d*, that engage with said ears, and at its lower corners lugs *f*, that engage said latch-lugs, as set forth, whereby said feeder-plate is sustained across the lower part of the mouth-piece, with the open spaces above and beneath the feeder, substantially as shown and described.

408,450. WEIGHING OIL-TANK. REMIE H. RACHELDER and FRED H. LOVEJOY, Portland, Me. Filed Mar. 8, 1889. Serial No. 302,605. (No model.)

Claim.—1. The combination, with a reservoir, of a scale-beam fulcrumed below the reservoir, a weighing-tank supported upon one arm of the scale-beam, a latch pivoted upon the extremity of the other arm of the scale-beam, a weight-carrier engaging with the said

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latch; means for tripping the latch, and a connection between the reservoir and the weighing-tank, substantially as shown and described.

2. The combination, with a reservoir and a scale-beam fulcrumed below the said reservoir, a latch pivoted upon the outer extremity of the longer arm of the said beam, and a weight-carrier supported by said latch, of a tank attached to the other arm of the scale-beam, provided with a valved opening in its bottom and a valve-connection between the reservoir and the weighing-tank, and means, substantially as shown and described, for tripping the pivoted latch, as and for the purpose specified.

3. The combination, with a reservoir, a scale-beam fulcrumed below the same having its longer arm provided at the extremity with an essentially hook-shaped pivoted latch, and a weight-carrier notched to receive one end of the said latch, of a tank supported upon the short arm of the weighing-beam, provided with an outlet-aperture in its bottom, a valve adapted to close the said outlet-aperture, having a jointed stem hinged to the lower surface of the reservoir, a trip post or stud held horizontally above the latch of the scale-beam, an outlet-tube extending from the reservoir into the weighing-tank, a valve adapted to close the lower end of the said outlet-tube, and a connection, substantially as shown and described, between the weighing-tank and the said valve of the outlet-tube, all combined for operation, as and for the purpose specified.

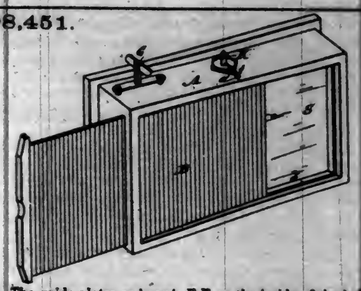
4. The combination, with a reservoir, a scale-beam fulcrumed beneath the same, having an essentially hook-shaped latch pivoted to the outer extremity of its longer arm, a weight-carrier provided with a notch in its vertical rod capable of engagement with the inner end of the latch, and a trip post or stud horizontally supported above the outer end of the said latch, of a tank supported upon the shorter arm of the scale-beam, provided with an outlet-aperture in its bottom, a valve adapted to close said outlet-aperture, provided with a jointed stem hinged to the under surface of the reservoir, an outlet-tube projected from the reservoir and extending downward within the tank, a valve capable of closing the lower end of the said outlet-tube, a lever fulcrumed upon the top of the reservoir, a stem connecting one end of the lever and the valve of the reservoir outlet-tube, and a pitman pivoted to the other end of the lever and hinged to the bottom of the weighing-tank, all combined for operation, substantially as shown and described.

408,451. ROLL-HOLDER FOR PHOTOGRAPHIC CAMERAS. ERASTUS B. BARKER, New York, N. Y., assignor to the E. & H. T. Anthony & Company, same place. Filed Oct. 19, 1888. Serial No. 216,645. (No model.) Patented in England Nov. 3, 1885, No. 13,361.

Claim.—1. The combination, with the plate or sensitized sheet holder, of the independent removable light-tight boxes constructed, as described, to carry the sensitized paper and permit the same to be rolled and unrolled and passed from one box to the other in front of the opening of the holder, substantially as specified.

2. In combination with the holder A, having a front opening *b*, and a shutter controlling said opening, the removable light-tight cases or boxes D D, adapted to fit within opposite ends of said holder and provided with light-tight openings *d* for passage of the sensitized sheet in and out of said boxes, also fitted with supply and take-up rollers *c*, adapted at their end or ends to receive a key, essentially as and for the purpose herein set forth.

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3. The guide plates or boards E E on the inside of the holder A, in combination with the removable boxes D D, for carrying and supplying the sensitized sheet or roll, substantially as specified.

4. The combination, with the holder A and boxes D D, of the back C, provided with an inner board or plate F, flush on its front surface with the faces of said boxes and adapted, in conjunction with the boxes, to support the sensitized sheet at its back in rear of the exposing-opening in the holder, essentially as described.

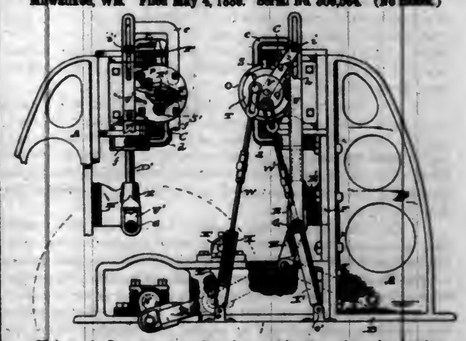
5. In roll-holders for photographic cameras, provided with a registering and marking wheel adapted to engage with the sensitized paper or film, the registering wheel or rollers I, arranged intermediately of the supply and take-up rollers of the holder and having teeth *n*, and a pricker or marker *o* at one side of the teeth, in combination with a spring applied to said registering wheel or roller and operating to force the latter outward against the sensitized paper or film, substantially as specified.

6. In roll-holders for photographic cameras, provided with an exterior rotating indicator actuated by the sensitized paper or film when in motion for determining the extent of movement and final of the sheet, the rotary indicator K, having also a sliding movement in direction of the length of the axis, in combination with the casing A and marking-wheel I, as shown and described, whereby on longitudinally operating the indicator the removal and insertion of the back C is effected, as set forth.

7. The combination, with a photographic roll-holder, of an indicator capable of longitudinal movement in its bearings and provided with a recess in its end and with a spring and a marking-wheel.

8. In combination with a photographic plate and roll holder, detachable boxes or cases containing rollers for holding the sensitized paper.

408,452. VALVE-GEAR FOR STEAM-ENGINES. ANTON NAHA, Milwaukee, Wis. Filed May 4, 1889. Serial No. 309,564. (No model.)



Claim.—1. In a steam-engine, the combination of a valve having a stem provided with a notched disk rigid thereon, a slotted casing surrounding the disk and provided with spring-controlled dogs for alternate engagement with the same, an arm projected into the casing to come in the path of the dogs, and suitable means for actuating said casing alternately in opposite directions and for returning the valve to its normal position after the disengagement of either dog from the notched disk, substantially as set forth.

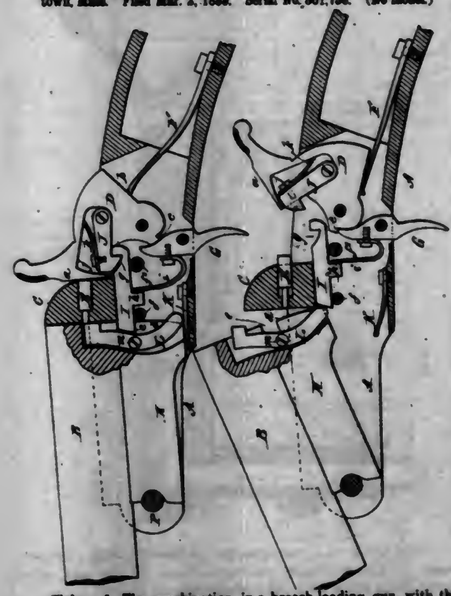
2. In a steam-engine, the combination of a valve having a stem provided with a notched disk rigid thereon, a slotted and toothed casing surrounding the disk and provided with spring-controlled dogs for alternate engagement with the same, an arm projected into the casing to come in the path of the dogs, a rack-bar connected to the piston-rod of the engine to mesh with the teeth on said casing, and suitable means for returning the valve to its normal position after disengagement of either dog from the notched disk, substantially as set forth.

3. In a steam-engine, the combination of a cylinder, its valve-chambers and ports, an inlet-valve having a stem provided with a notched disk rigid thereon, a slotted casing surrounding the disk and provided with spring-controlled dogs for alternate engagement with the same, an arm projected into the casing to come in the path of the dogs, suitable means for partially rotating said casing alternately in opposite directions, opposing dash-pot plungers connected to said valve-stem, an exhaust-valve and suitable means for actuating the latter valve, substantially as set forth.

4. In a steam-engine, the combination of a cylinder, its valve-chambers and ports, an inlet-valve having a stem provided with a notched disk rigid thereon, a slotted and toothed casing surrounding the disk and provided with spring-controlled dogs for alternate engagement with the same, an arm projected into the casing to come in the path of the dogs, a rack-bar connected to the piston-rod of the engine to mesh with the teeth on said casing, suitable means for returning said inlet-valve to its normal position after disengagement of either dog with the notched disk, an exhaust-valve also provided with a stem, a finger projecting from the latter stem, and a bar also actuated by said piston-rod and provided with fingers to operate alternately upon the valve-stem finger, substantially as set forth.

5. In a steam-engine, the combination of a piston-rod, crank-shaft, links depending from the piston-rod; links pivoted to the engine-standards and said depending links, another link pivotally united to those aforesaid and likewise connected to other links pivotally suspended from said standards, and another link connecting said suspension-links and the one immediately adjacent thereto with said crank-shaft, substantially as set forth.

408,453. BREECH-LOADING GUN. GUSTAVE S. BOMER, Providence, Mass. Filed Mar. 2, 1889. Serial No. 301,736. (No model.)



Claim.—1. The combination, in a breech-loading gun, with the stock, the barrel, and the sliding locking-bolt, of a hammer provided with a catch separate and independent from the bolt and adapted to engage it when thrown forward and to retract it and become disconnected therefrom when raised into the firing position, substantially as set forth.

2. In a breech-loading gun, the combination of the tilting barrel B, provided with the rib H, having the notch *e* and the convex surface *d*, the breech-piece C, the firing-pin E, inserted in the said breech-piece, the hammer D, provided with the spring-actuated catch J, and the spring-pressed bolt I, adapted to be engaged by the catch J, substantially as specified.

3. The combination, with the hammer D, provided with the notch *c*, of the trigger G, adapted to enter the said notch, the barrel B, having the notched rib H, and the double-acting spring *i*, attached to the trigger and adapted to press forward the bolt I, substantially as specified.

4. The combination, with the stock and the tilting barrel, of the transverse screws *f f'*, the locking-bolt sliding thereon, a spring throwing said bolt, and mechanism for retracting the bolt, substantially as set forth.

5. The combination, with the stock and the tilting barrel, of the sliding locking-bolt having a lug on its under side, transverse screws supporting the bolt at opposite sides of its lug, a spring engaging said lug and throwing the bolt into engagement with the barrel, and mechanism for retracting the bolt, substantially as set forth.

6. The combination, with the stock having the breech-piece C, provided with the firing-pin E, the longitudinally-sliding bolt I thereunder, having a notch in the rear end of its upper side, and the tilting barrel, of the hammer D, provided with a notch *c*, a spring-actuated catch mounted upon the hammer and adapted at its free or outer end to enter the bolt-notch, a trigger G, engaging the hammer, a spring *f'*, bearing at its lower end against the front edge of the trigger above its pivot and at its upper end against the said bolt to throw it forward, and the spring for throwing the hammer, substantially as set forth.

7. The combination, with the stock, the tilting barrel having a rib on its breech end, the firing-pin, and the hammer, of a sliding locking-bolt extending through the breech-piece and in the path of the forward edge of the hammer and the rear face of said rib, whereby, when the barrel is tilted and the hammer cocked, the rib will force the rear end of the locking-bolt into the path of the hammer and prevent it from descending and striking the firing-pin, substantially as set forth.

408,454. DISINFECTANT. CHARLES F. BOND, Chicago, Ill., assignor to William Bannerman, same place. Filed May 16, 1889. Serial No. 311,061. (No specimens.)

Claim.—The within-described compound to be used for disinfecting and deodorizing purposes, the same consisting of slaked lime, red ocher, carbolic acid, creosote, bichloride or mercury, salicylic acid, sulphate of iron, and water, substantially in or about the proportions specified.

408,455. WATER-HEATING APPARATUS. NATHANIEL A. BOYNTON, New York, N. Y., assignor to the Boynton Furnace Company, same place. Filed June 15, 1889. Serial No. 314,496. (No model.)

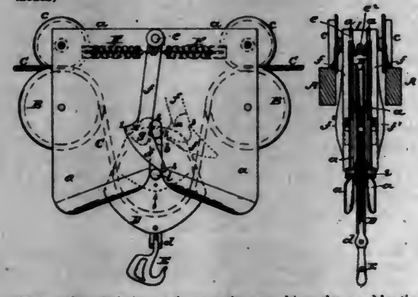


Claim.—1. In a hot-water heating apparatus, a series of transversely-extending water-sections, each of which has vertical water-passages, and horizontal water-passages which connect with the vertical water-passages and the walls of which are at one extremity indrawn or recessed at either side to form a portion of a vertical smoke-passage, substantially as specified.

2. In hot-water heating apparatus, a series of transversely-extending water-sections, each of which has a water-passage which is provided with a horizontal longitudinal bottom protuberance which extends from side to side of the section, and transversely-extending water-passages which have a plain flat top and bottom surface, each of such transverse passages having lateral walls which at one extremity are recessed or indrawn to form on either side a half-flue for the upward passage of smoke, substantially as set forth.

3. In a hot-water heating apparatus, a series of transversely-extending water-sections, each of which has vertical water-passages at the sides of the apparatus, a top horizontal transverse water-passage which has a flat top surface and a tapered or V-shaped bottom surface, a series of horizontal transversely-extending water-passages which are flat at top and bottom and which are curved at their sides, and a horizontal transversely-extending passage which is flattened at its top and which has a longitudinal downwardly-extending protuberance or corrugation which extends from end to end of each passage, substantially as shown and described.

408,456. HOISTING AND CONVEYING MACHINE. ALEXANDER R. BROWN, Cleveland, Ohio. Filed Jan. 2, 1889. Serial No. 295,230. (No model.)



Claim.—In a hoisting and conveying machine, the combination, with the hoist-block or load-supporting device and with the trolley or carriage, of an automatic contrivance for effecting an engagement between said load-supporting device and said trolley, and for also permitting a disengagement of these parts, composed of the following instrumentalities, viz: first, projecting engaging devices on one of the parts to be brought into and thrown out of engagement with each other; second, suitable seats or depressed bearings on the other one of said parts for the accommodation of said engaging devices; third, suitable stops which operate to insure the descent of said engaging devices into said bearings or seats whenever said devices are lowered immediately after having been elevated to or above a proper point, and, fourth, means which insure a complete separation of the said engaging devices and the said seats whenever the former are elevated from engagement with said seats to or above a proper point, all substantially as hereinbefore set forth.

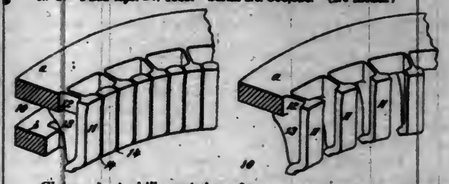
408,457. REVOLVING FIRE-ARM. HOSEA M. CALDWELL, Worcester, Mass., assignor to the Harrington & Richardson Arms Company, same place. Filed Mar. 26, 1889. Serial No. 304,615. (No model.)



Claim.—1. The hand I and spring J, said spring being attached to the hand and extending downward in front of the same to a point below its hinging-axis, in combination with the cylinder-ratchet, the hammer-lifter, and the trigger carrying the lifter-hinge at its upper rear corner, and provided with a notch in front of the lifter-hinge, into which the end of said spring engages, all substantially as and for the purpose set forth.

2. In a revolver, the combination, substantially as described, of the trigger having the notch *m* in its top, the hammer-lifter hinged to said trigger, as shown, and provided with the laterally-projecting integral stud 2 on its side, the hand pivoted on said stud and engaging the cylinder-ratchet, and the flat spring disposed in front of said hand with its lower end supported in the notch on the top of the trigger, said spring being strained in a manner to press the engaging end of the hand toward the ratchet and to force backward its pivot end together with the lifter, as and for the purpose set forth.

408,458. CAR-WHEEL CHILL. FERDINAND R. CANDA, New York, N. Y. Filed Apr. 27, 1889. Serial No. 308,898. (No model.)



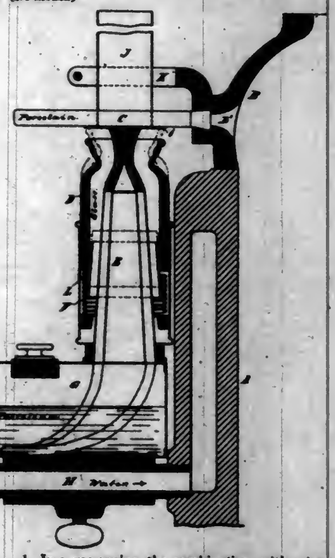
Claim.—1. A chill consisting of two or more outer rings and an inner ring comprising segments, some of which segments are connected to one of the outer rings, and the others of which are connected to the remaining outer ring or rings, substantially as described.

2. A chill consisting of an outer ring made up of auxiliary rings arranged substantially at right angles to the chill-axis, and an inner ring made up of sections or blocks that are alternately connected to the outer rings, substantially as described.

3. In a car-wheel chill, the combination, with an outer compound ring 10, of blocks 11, constituting an inner ring, and webs that are integral with the blocks and with alternate members of the compound ring, substantially as described.

4. In a car-wheel chill, the combination, with an outer compound ring made up of auxiliary rings *a* and *b* and struts or separators 15, of an inner ring made up of blocks or sections 11, webs 12, and brackets 13, substantially as described.

408,459. IGNITING DEVICE FOR PETROLEUM-GAS ENGINES. EMIL CAPITAINE, Berlin, Germany. Filed Nov. 14, 1888. Serial No. 290,789. (No model.)



Claim.—1. In a gas-engine, the combination, with a kerosene-burner, of a glass chimney, a spring bearing on said chimney, and an igniting-tube above the burner, substantially as set forth.

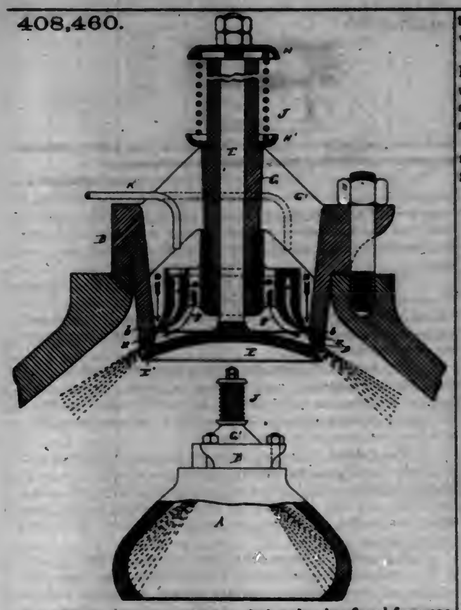
2. In a gas-engine, the combination, with a kerosene-burner, of a glass chimney, a spring acting on said chimney, a draft-tube against one end of which the glass chimney is pressed by the spring, and an igniting-tube held in said draft-tube, substantially as set forth.

408,460. ATOMIZER FOR PETROLEUM-GAS ENGINES. EMIL CAPITAINE, Berlin, Germany. Filed Nov. 14, 1888. Serial No. 290,791. (No model.)

Claim.—1. In a petroleum-engine, the combination, with an explosion-chamber flared from one end to the other and slightly contracted at the larger end, of an atomizer for atomizing oil located at the smaller end of said chamber, substantially as set forth.

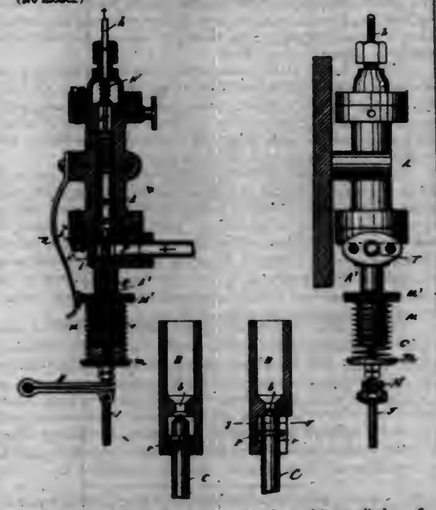
2. In a petroleum-engine, the combination, with an explosion-chamber, of a bushing in an opening of said chamber, a valve fitting against a seat formed at the inner end of said bushing, and a nozzle located within said casing so as to form air-passages on the inner and outer surfaces of said nozzle, substantially as set forth.

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3. The combination, with an explosion-chamber flared from one end to the other, of a bushing located in an opening in the smaller end of the explosion-chamber, a valve seating against the bottom edge of said casing, an annular nozzle within said bushing having its bottom flared outward to be in close proximity to the bottom edge of the inner surface of said bushing, said nozzle being so located as to form air-passages on its inner and outer surfaces, substantially as set forth.

408,461. FUEL-INJECTOR FOR EXPLOSIVE ENGINES. EMIL CAPITAINE, Berlin, Germany. Filed Nov. 14, 1888. Serial No. 290,792. (No model.)



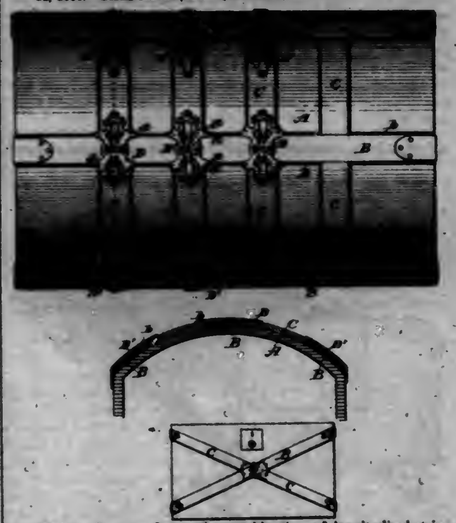
Claim.—1. In a pump, the combination, with a cylinder, of a tubular piston having a port in its lower end and a rod movable in the direction of the length of the piston and serving to move said piston and close the port in the lower end of the same, substantially as set forth.

2. The combination, with a cylinder, of a tubular piston mounted to work in the same and provided with a port in its lower end, a longitudinally-movable rod for moving said piston and closing the port in the lower end of the same, and a spring pressing said spindle downward and a lever for pressing it upward, substantially as set forth.

3. The combination, with the cylinder A, of the tubular piston B, provided with the port *b* in its lower end, the spindle C, having its upper end shaped to close the port *b*, the adjustable sleeve M, the spring *c*, the plate *m* on the spindle C, and the lever N, acting on said spindle, substantially as set forth.

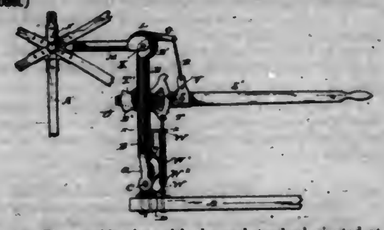
4. The combination, with the cylinder A, of the piston B, having the bottom port *b*, the spring *a*, and the spindle C, substantially as set forth.

408,462. TRUNK. PHILIP CARPMILL, Milwaukee, Wis. Filed May 11, 1888. Serial No. 301,801. (No model.)



Claim.—In a trunk-top, the combination of longitudinal strips, one at each edge and one in the center, extending the entire length of the top and beveled at each edge with series of intermediate cross-strips intersecting the longitudinal strips and likewise beveled at each edge and having their ends beveled in a contrary direction to the bevel of the side edges to form a close joint with the longitudinal strips, and a series of central covering-plates provided with downwardly-projecting lips, whereby the different sets of strips are clamped together, and the joints at their points of contact are covered, and other series of covering-plates arranged at the intersection of the front and rear edge longitudinal strips, with the cross-strips having similar downwardly-projecting lips at the described points of junction of the said different series of strips, and downturned ends extending over and secured to the front and rear side edges of the trunk-top, substantially as set forth.

408,463. REEL-ADJUSTING MECHANISM FOR HARVESTERS. HENRY F. CRANDALL, Milwaukee, Wis., assignor to the Milwaukee Harvester Company, same place. Filed Nov. 14, 1887. Serial No. 255,064. (No model.)

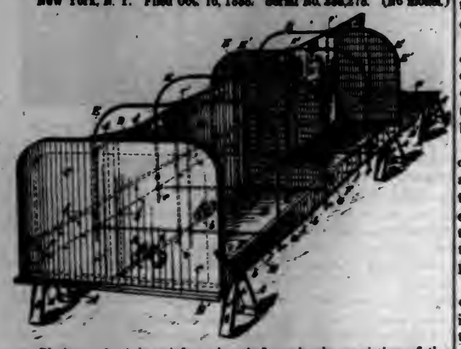


Claim.—1. The combination, with the reel-standard pivoted at its base and casting pivoted to said standard on a pivot parallel to the pivot of the standard, of a link connecting said casting with the seat-plank, a spring surrounding said link and suitably supported at its lower end, and a slotted horizontal flange projecting from the standard and straddling the link above the spring and bearing against the upper end thereof, and means for locking the casting in adjustment relatively to the reel-standard, substantially as set forth.

2. The combination, with the reel-standard pivoted at its base and a flange fixed to the reel-standard and projecting in the plane of motion of the standard and having horizontal indentations one above another, of two castings parallel to said flange, a bolt pivoting them to the standard and to each other, a spring surrounding said bolt and interposed between the head of said bolt and the outer casting, an operating-lever connected to the outer casting, a link connecting the rear end of the inner casting to the seat-plank, and a latch located in the front end of the inner casting and controlled by the outer casting for engagement with said indentations, and thereby locking the inner casting to the said flange of the standard, substantially as described.

3. The combination, with the reel-standard pivoted at its base and the arm of the reel-shaft pivoted to said reel-standard, of two castings pivoted side by side on said reel-standard, one casting provided with a lever and linked to an extension on the rear end of the arm of the reel-shaft and the other casting linked to the seat-plank, and connecting mechanism, substantially as described, between the two castings, whereby the reel-standard and arm of the reel-shaft may be adjusted either separately or together by one and the same lever, as set forth.

408,464. KNOCKDOWN BENCH FOR DOGS, &c. CHARLES A. CRUFT, London, England, assignor to the Spratts Patent, (America,) Limited, New York, N. Y. Filed Oct. 16, 1886. Serial No. 216,276. (No model.)



Claim.—1. A knockdown bench for animals, consisting of the floor B, the ends C, the partition or back D, the side partitions E, and the front board F, erected on the floor B and connected together, substantially as described, and for the purpose set forth.

2. The bench for animals, consisting of the floor B, having the holes *b*, the ends C, and central partition D, erected on the floor B, the partitions E, connected to the floor B by the holes *b* and to the partition D, and the front board F, secured to the partitions E, all constructed and connected together substantially as described, and for the purpose set forth.

3. The bench for animals, consisting of the floor B, having the holes *b*, the ends C, and partition D, erected on the floor B, the partitions E, connected to the floor B by the holes *b* and to the partition D by the hooks *c'*, and the front board F, secured to the partitions E by the hook G and the ring-clamp H, all constructed and connected together substantially as described and supported by the horses A A', as and for the purpose set forth.

4. In a knockdown bench for animals, the combination, with the floor B, central partition or back D, and front board F, of the wire partitions E, as and for the purposes set forth.

5. In a bench for exhibiting animals, having stalls divided by partitions, the attaching device H, formed to lie under and on each side of the partition and having the ends *h*, adapted to receive the chain-rings, and thereby fastened to the bench, as and for the purpose set forth.

6. In a knockdown bench for animals, the combination of the floor B, ends C, partition or back D, and movable partitions E, arranged and connected together substantially as and for the purpose set forth.

408,465. METHOD OF MAGNETICALLY REDUCING FRICTION. MARK W. DEWEY, Syracuse, N. Y., assignor to the Dewey Corporation, same place. Filed June 6, 1889. Serial No. 313,363. (No model.)

Claim.—1. The method of decreasing friction between the bearings of two magnetic parts, consisting in subjecting the bearing parts to magnetism of like polarity to separate the parts or reduce the pressure between the bearings.

2. The method of decreasing friction between the bearings of two paramagnetic parts, consisting in subjecting the bearing parts to magnetism of like polarity and subjecting to magnetism of unlike polarity another paramagnetic part in proximity to one of the said

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parts and diametrically opposite the other of said parts to separate the parts or reduce the pressure between their bearings.

3. The method of decreasing friction between the bearings of a magnetic part upon a non-magnetic part, consisting in subjecting to magnetism of a certain polarity another part in proximity to the magnetic part and diametrically opposite the non-magnetic part to separate the latter two parts and reduce the pressure between their bearings.

4. The method of decreasing friction between the bearing parts of a vehicle, consisting in establishing an electric circuit on the vehicle, including the coils of electro-magnets, and subjecting the bearing parts to magnetic force tending to separate the bearings or reduce the pressure between them.

5. The method of decreasing friction between the bearing parts of a vehicle, consisting in establishing an electric circuit on the vehicle, including the coils of electro-magnets wound to produce in the bearing parts magnetism of like polarity to separate the bearings or reduce the pressure between them.

6. The method of decreasing friction between the bearing parts of an electrically-propelled vehicle, consisting in establishing a shunt-circuit around the electric motor on the vehicle, including the coils of electro-magnets, and subjecting the aforesaid bearing parts to magnetic force tending to separate the bearings or reduce the pressure between them.

7. The method of decreasing friction between the bearing parts of an electrically-propelled vehicle having line-working conductors along its path and a conductor passing through the motor, with its terminals in movable contact with the line-conductors, consisting in establishing a shunt-circuit around the motor on the vehicle, including the coils of electro-magnets, and subjecting the aforesaid bearing parts to magnetic force tending to separate the bearings or reduce the pressure between them.

8. The method of decreasing friction between the bearing parts of a vehicle, consisting in establishing an electric circuit on the vehicle, including the coils of electro-magnets, subjecting the bearing parts to magnetic force tending to separate the bearings or reduce the pressure between them during the movement of the vehicle, and arresting said force when the vehicle is at rest.

9. The method of decreasing friction between the bearing parts of a vehicle, consisting in establishing an electric circuit on the vehicle, including the coils of electro-magnets, and subjecting the bearing parts to variable magnetic force tending to separate the bearings or reduce the pressure between them.

10. The method of decreasing friction between the bearing parts of a vehicle, consisting in establishing an electric circuit on the vehicle, including the coils of electro-magnets, subjecting the bearing parts to variable magnetic force tending to separate the bearings or reduce the pressure between them during the movement of the vehicle, and arresting said force when the vehicle is at rest.

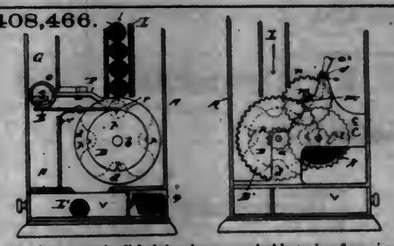
11. The method of decreasing friction between the bearing parts of an electrically-propelled vehicle having line-working conductors along its path and a conductor passing through the motor, with its terminals in movable contact with the line-conductors, consisting in establishing a shunt-circuit around the motor on the vehicle, including the coils of electro-magnets, subjecting the aforesaid bearing parts to magnetic force tending to separate the bearings or reduce the pressure between them during the movement of the vehicle, and arresting said force when the vehicle is at rest.

12. The method of decreasing friction between the bearing parts of an electrically-propelled vehicle having line-working conductors along its path and a conductor passing through the motor with its terminals in movable contact with the line-conductors, consisting in establishing a shunt-circuit around the motor on the vehicle, including the coils of electro-magnets, subjecting the aforesaid bearing parts to variable magnetic force tending to separate the bearings or reduce the pressure between them during the movement of the vehicle, and arresting said force when the vehicle is at rest.

408,466. COIN-OPERATED VENDING APPARATUS. CASPAR DREHMILLER, Brooklyn, N. Y., and JOHN BOYD, West Hoboken, N. J. Filed Dec. 5, 1888. Serial No. 292,690. (No model.)

Claim.—1. A coin-actuated vending apparatus constructed, substantially as herein shown and described, with a spring-actuated vertically-revoluble drum provided with surface grooves or depressions for holding and delivering articles to be vended, with peripheral sockets for the engagement of the coin-actuated lever, and with a ring having bosses for operating the coin-dislodging lever, a coin-actuated drum-

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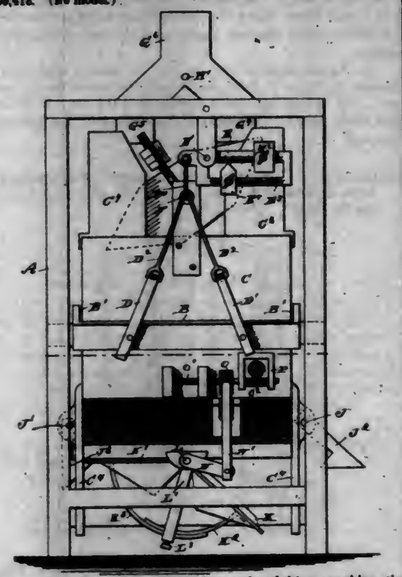
releasing lever, a coin-dislodging lever, a suitable train of gearing, an actuating-spring, and a regulating-fan, all arranged and operating substantially as set forth.

2. In a coin-actuated vending apparatus, the combination, with a coin-actuated lever, of a lever adapted and arranged to be moved to dislodge the coin from the first-named lever, substantially as herein shown and described.

3. The combination, with the spring-actuated revolable drum B, having grooves *d*, adapted to receive and deliver articles to be vended and provided with sockets *p* and bosses *f*, of arresting-lever E and dislodging-lever F, all constructed and arranged substantially as herein shown and described.

4. In a coin-operated vending apparatus, the spring-actuated revoluble drum having grooves *d*, adapted to receive and deliver articles to be vended and provided with sockets *p* and bosses *f*, substantially as herein shown and described.

408,467. GRAIN WEIGHING AND REGISTERING MACHINE. ADDUT H. W. DUCETT, St. Charles, Mo. Filed May 3, 1889. Serial No. 309,418. (No model.)



Claim.—1. In a grain registering and weighing machine, the combination, with a grain-receptacle mounted to slide vertically and provided with a vertical central partition forming two compartments, and a tilting grain-bucket discharging alternately into said compartments and mounted in bearings on the said receptacle, of a U-shaped pivoted arm pivotally connected with the said grain-receptacle and a weighing-beam connected with the said U-shaped arm, substantially as shown and described.

2. In a grain registering and weighing machine, the combination, with a grain-receptacle mounted to slide vertically and provided with two compartments, of a U-shaped pivoted arm pivotally connected with the said grain-receptacle, a weighing-beam connected with the said U-shaped arm, a grain-bucket mounted to turn, two fixed spouts discharging into the two ends of the said bucket, and a fixed inlet-spout opening into the said two spouts, substantially as shown and described.

3. In a grain registering and weighing machine, the combination, with a grain-receptacle mounted to slide vertically and provided with two compartments, of a U-shaped pivoted arm pivotally connected with the said grain-receptacle, a weighing-beam connected with the said U-shaped arm, a grain-bucket mounted to turn, two fixed spouts discharging into the two ends of the said bucket, a fixed inlet-spout opening into the said two spouts, a gate held at the upper ends of the said two fixed spouts to alternately connect the latter with the said inlet-spout, substantially as shown and described.

4. In a grain registering and weighing machine, the combination, with a grain-receptacle mounted to slide vertically and provided with two compartments, of a U-shaped pivoted arm pivotally connected with the said grain-receptacle, a weighing-beam connected with the said U-shaped arm, a grain-bucket mounted to turn, two fixed spouts discharging into the two ends of the said bucket, a fixed inlet-spout opening into the said two spouts, a gate held at the upper ends of the said two fixed spouts to alternately connect the latter with the said inlet-spout, and means, substantially as described, for operating the said gate by the oscillating motion of the said grain-bucket, substantially as shown and described.

5. In a grain weighing and registering machine, the combination, with a grain-receptacle provided with two compartments, of a grain-bucket mounted to turn, two spouts discharging into the ends of the said bucket, a fixed inlet-spout supporting and opening into the said two spouts, and a gate for connecting the said inlet-spout alternately with the other spouts, substantially as shown and described.

6. In a grain weighing and registering machine, the combination, with a grain-receptacle provided with two compartments, of a grain-bucket mounted to turn, two spouts discharging into the ends of the said bucket, a fixed inlet-spout supporting and opening into the said two spouts, a gate for connecting the said inlet-spout alternately with the other spouts, and bottoms mounted to swing on the under side of the said grain-receptacle and adapted to alternately close the lower openings of the said compartments, substantially as shown and described.

7. In a grain weighing and registering machine, the combination, with a grain-receptacle provided with two compartments, of a grain-bucket mounted to turn, two spouts discharging into the ends of the said bucket, a fixed inlet-spout supporting and opening into the said two spouts, a gate for connecting the said inlet-spout alternately with the other spouts, bottoms mounted to swing on the under side of the said grain-receptacle, adapted to alternately close the lower openings of the said compartments, and means, substantially as described, for locking the said bottoms by the oscillation of the said grain-bucket, substantially as shown and described.

8. In a grain weighing and registering machine, the combination, with a grain-receptacle provided with two compartments, of a shaft extending transversely between the said compartments at their lower ends, bottoms pivotally connected to the said shaft and adapted to open and close the lower ends of the said compartments alternately, an arm secured on the said shaft and extending between the said two bottoms, and segmental arms extending from the said bottoms and adapted to be locked in place on the said arm, substantially as shown and described.

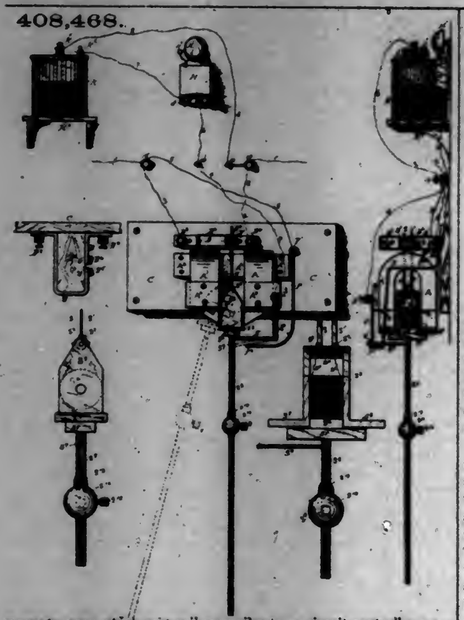
9. In a grain weighing and registering machine, the combination, with a grain-receptacle provided with two compartments, of a shaft extending transversely between the said compartments at their lower ends, bottoms pivotally connected to the said shaft and adapted to open and close the lower ends of the said compartments alternately, an arm secured on the said shaft and extending between the said two bottoms, segmental arms extending from the said bottoms and adapted to be locked in place on the said arm, a crank-arm secured to the said shaft, and a registering apparatus operated from the said crank-arm and serving to register the opening and closing of the said bottoms, substantially as shown and described.

10. In a grain weighing and registering machine, the combination, with a grain-receptacle mounted to swing up and down, of an oscillating grain-bucket discharging alternately into two compartments of the said receptacle, a gate controlling the inlet of grain to the said grain-bucket, an arrow-head held on the shaft of the said gate, an arm fulcrumed on the said grain-receptacle and provided with two pins engaging the said arrow-head, and a weighted rod pivoted on the said arrow-head and guided on the said arm, substantially as shown and described.

408,468. MAGNETO-ELECTRIC INDIVIDUAL SWITCHING APPARATUS. JOHN W. DUNLAP, Sr., Pittsburg, Pa., assignor, by direct and mesne assignments, of part to Robert J. Shaw, Charles R. Mair, and Willis H. Rowe, all of same place. Filed Aug. 1, 1888. Serial No. 281,673. (No model.)

Claim.—1. The combination, in an electric circuit, of several call receiving and transmitting devices, each comprising a pendulum, with an adjustable bob normally at a fixed point, differing for each pendulum or station, a coil in the line-circuit, carried by the pendulum,

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magnets, near which said coil may vibrate, a circuit-controller operated by the pendulum on reaching a certain extent of motion to close a local alarm-circuit, whereby one station may call another by adjusting its pendulum-bob to a position corresponding to that of the station to be called, and vibrating a pendulum to generate a current on the line, as set forth.

2. A combined transmitter and receiver pendulum consisting, essentially, of a pair of springs, the lower ends connected with the respective end wires of a wire-wound bobbin provided with suitable cheeks supporting a graduated rod with needle and sliding weight, in combination with a pair of magnets with equal poles, and lever-contacts constructed to fall on the oscillation of the pendulum, all substantially as and for the purposes described.

408,469. PORTABLE HEATER. WILLIAM EARLEY, Philadelphia, Pa. Filed Aug. 22, 1888. Serial No. 283,418. (No model.)

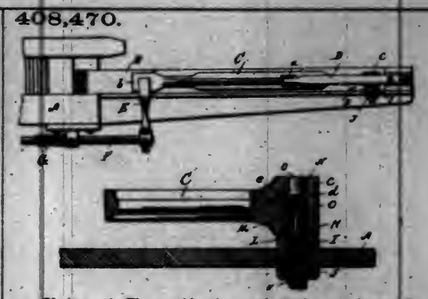


Claim.—In a portable heater, the combination, with the fire-box B in the casing C, having the dome C', with hot-air outlets, mounted on the base A, with the cold-air inlet *a*, of the pipe D, with the partition *d* therein, leading from the rear of said fire-box and communicating with the branches E E of the pipes F F, which pipes communicate with the branches G G of the pipes H H, which latter communicate with the smoke-outlet L through the pipe I and its branch K, the plate A', mounted on the base A, and the plates M M', sustained in the casing C, having the inlets a^3, *m*, and *m'* at alternate ends, as and for the purpose described.

408,470. SHUTTLE-BINDER FOR LOOMS. ELIJ EARNSHAW, Grafton, Mass., assignor of one-half to George W. Fisher, same place. Filed May 22, 1889. Serial No. 311,677. (No model.)

Brief.—The object is to improve the manner of hinging the binder to the lay in order to secure a uniform and regular action of the shuttle and to cause the protector-finger to be moved uniformly by the motion of the binder.

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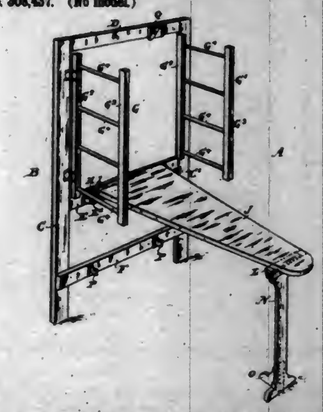
Claim.—1. The combination, with the lay of a loom, of a stud attached to said lay and forming a pivot upon which the binder is hinged, said stud being provided with an interior chamber to contain lubricating material, and a binder hinged upon said stud, the hinged end of said binder having a chamber to receive said stud and forming a cap over the end of said stud, in order to prevent the lubricating material from being thrown at each swing of the lay, substantially as described.

2. The combination, with the lay of a loom, of a stud attached to said lay and provided with a longitudinal concentric chamber open at the upper end of the stud, a binder hinged upon said stud and provided with a chamber fitting said stud, and a pin held in said chamber and concentric therewith and fitting the chamber in the stud, substantially as described.

3. The combination, with the lay of a loom, of a stud attached to said lay and provided with a longitudinal concentric chamber open at the upper end of the stud, a binder hinged upon said stud, a pin held in said binder fitting the chamber in said stud and provided with a shoulder resting upon the upper end of the stud, substantially as described.

4. The combination, with the lay of a loom, of stud H, having a chamber L, binder C, pin O, held in said binder and fitting the chamber L, and having shoulder *d* resting upon the end *e* of the stud H, said binder having a chamber M fitting the stud H, substantially as described.

408,471. COMBINED CLOTHES-HORSE AND IRONING-BOARD. LYDIA FAIRWEATHER, Richmond Hill, N. Y. Filed Apr. 24, 1889. Serial No. 308,437. (No model.)



Claim.—1. A combined clothes-horse and ironing-board comprising a main frame provided with upper and lower brackets, clothes-frames hinged on the said main frame, and an ironing-board having pins at its inner end adapted to be hooked on the upper and lower brackets and provided with a leg, substantially as shown and described.

2. A combined clothes-horse and ironing-board comprising a main frame, an ironing-board hooked at one end to the said main frame and provided at its outer end with dovetailed cleats, a dovetail held to slide in the said cleats, a leg pivoted on the said dovetail, and a foot hinged on the lower end of the said leg, substantially as shown and described.

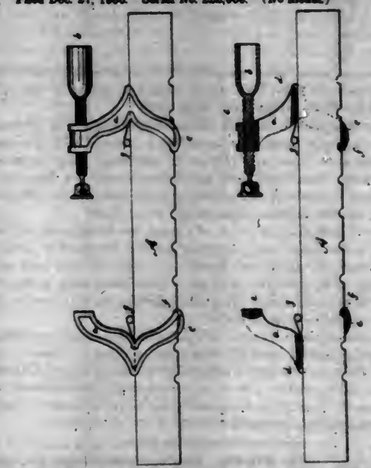
3. A combined clothes-horse and ironing-board comprising a main frame provided with two sets of brackets, clothes-frames hinged on the said main frame, an ironing-board provided with pins adapted to engage either set of brackets, and a leg held removably on the outer end of the said ironing-board, substantially as shown and described.

4. A combined clothes-horse and ironing-board comprising a main frame provided with two sets of brackets, clothes-frames hinged on the said main frame, an ironing-board provided with pins adapted to engage either set of brackets, a leg held removably on the outer end of the said ironing-board, and a button held on the said main frame to lock the said clothes-frames and ironing-board in place, substantially as shown and described.

408,472. PROCESS OF REFINING MINERAL OIL. JOHN K. FIELD, London, England. Filed Sept. 5, 1887. Serial No. 248,859. (No specimens.) Patented in England Aug. 27, 1885, No. 10,139, and in Austria-Hungary May 31, 1888, No. 36/1,562.

Claim.—The method of refining mineral oil, which consists in acidifying the oil with fuming sulphuric acid, then subjecting it to agitation in connection with bleaching material, then again acidifying with sulphuric acid, and again subjecting to agitation in connection with bleaching material.

408,473. JOINER'S CLAMP. HERMANN POCKEL, New York, N. Y. Filed Dec. 27, 1886. Serial No. 222,606. (No model.)



Claim.—The improved joiner's clamp, consisting of the notched bar A, the two longitudinally-movable clamps thereon having the V form described and straddling said bar, each clamp being provided with a bridge or rocker *d*, convex on its bottom and having a spring secured thereto, terminating in an eye-bearing, the transverse bottom piece *e*, convex on its top and provided with a rounded rib *f*, and the clamping-screw *b*, tapped through the upper part of one of the clamps, all constructed and adapted to operate substantially as described.

408,474. CAR-SEAL. LEWIS A. FOOTE, Lansing, Minn. Filed Mar. 28, 1889. Serial No. 304,532. (No model.)

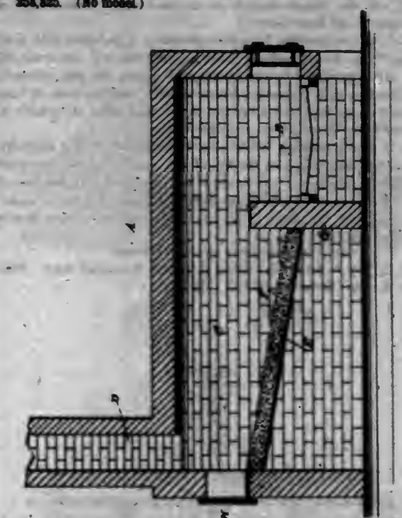


Claim.—1. A sealing-disk consisting of horizontal upper and lower portions held at an equal distance apart throughout their entire length by uniting portions at the end and sides, the end of said disk being formed into a neck of less width than that of the shackle-orifice in the main part of said disk, and the said main part having opposing transverse openings, in combination with a shackle secured at one end to said disk, substantially as set forth.

2. A sealing-disk provided with a central longitudinal orifice and opposing transverse openings, in combination with a shackle, one end of which is inserted in said orifice and secured to said disk, and a sealing-rivet, substantially as set forth.

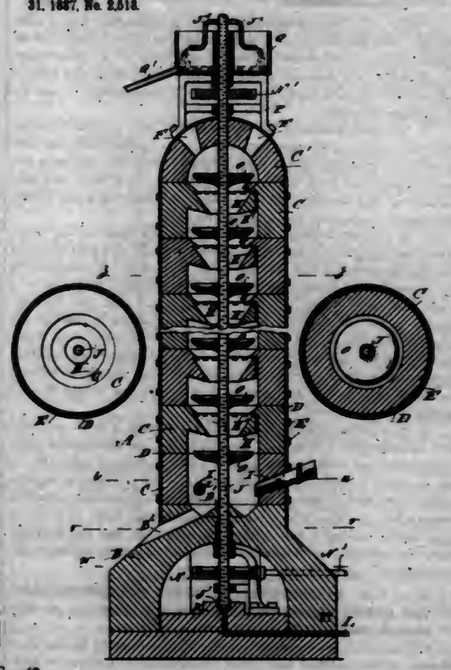
3. A sealing-disk provided with a central longitudinal orifice and opposing transverse openings, in combination with a shackle inserted in said orifice and having openings near its ends registering with said transverse openings in the disk, and a sealing-rivet, substantially as set forth.

408,475. SHEET-HEATING FURNACE. EVAN J. FRANCIS and CHARLES RANFIELD, Locshburg, Pa. Filed Dec. 23, 1887. Serial No. 258,825. (No model.)



Claim.—A bottom for heating furnaces formed of segregated masses, broken pieces or fragments of non-combustible material having interstitial passages, and presenting a broken or uneven surface, substantially as set forth.

408,476. ORE-ROASTING FURNACE. DAVID R. S. GALBRAITH, Auckland, New Zealand. Filed Mar. 5, 1888. Serial No. 266,150. (No model.) Patented in New Zealand Aug. 22, 1887, No. 2,507, and Aug. 31, 1887, No. 2,518.



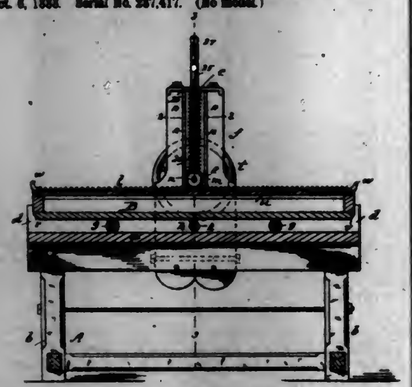
Claim.—1. In an ore-roasting furnace, the combination, with a shaft-furnace provided with feed-openings F at the top, the inclined offsets G, the inclined and apertured offsets H, under the offsets G, and the gas-inlet openings I, near the bottom, of the rotary shaft J, and the dished disks O on the shaft, substantially as described.

2. In an ore-roasting furnace, the combination, with the sectional furnace A, provided with the openings F, the inclined offsets G H, the gas-inlet openings I, and the exit-opening B², of the rotary hollow shaft J, and the dished disks O on the said shaft, substantially as herein shown and described.

3. In an ore-roasting furnace, the furnace A, provided with feed-openings F, the inclined offsets G, the inclined offsets H, below the offsets G, and provided with the openings H', under the said offsets G, in combination with the rotary hollow shaft J, and the disks O, having dished upper faces and arranged on the shaft under the offsets H, substantially as herein shown and described.

4. In an ore-roasting furnace, the combination, with a shaft-furnace and the reservoir Q on the top of the same, of the hollow shaft J, mounted to rotate in the furnace and provided with the branch pipes J² at its upper end and connected at its lower end with a water-supply pipe, and the disks O on the shaft, substantially as herein shown and described.

408,477. MANGLE. George K. Green, Springfield, Mass. Filed Oct. 6, 1888. Serial No. 287,417. (No model.)



Claim.—1. In a clothes-mangle, the combination, with a table provided with the side rails *d d*, and a transverse roller *h*, supported for rotation from said side rails midway of said table, of an independent mangle-roll *g*, of a diameter slightly greater than that of said median roll, and the longitudinally-movable box B, substantially as and for the purpose described.

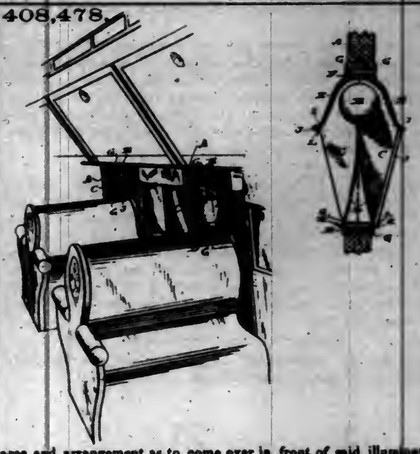
2. In a clothes-mangle, the combination, with a table provided with side uprights, of mangle-rollers *g g*, a longitudinally-movable pressure-box provided with a rack, a transverse shaft *n*, having a pinion engaging said rack, the bearing-blocks for said shaft vertically movable on said uprights, and the springs above and below said blocks, substantially as and for the purpose described.

3. In a clothes-mangle, in combination, the table having bifurcated side uprights *f f*, having the base-sockets 22, and provided with the guide-tongues 12 and the apertured cross-webs 15, mangle-rolls, and a longitudinally-movable pressure-box provided with a rack, a transverse shaft having a pinion engaging said rack, the bearing-blocks *p p* for said shaft having the vertical aperture 29 therein, and provided with the edge-runner grooves and the horizontal ways 30 30, leading thereto, the plunger-rods 20 below said guide-blocks playing in said sockets 22, the springs 23, the tubular guide-rods 25 above said blocks playing through said apertured web, and the springs 26, substantially as shown and described.

4. In a clothes mangle, the combination, with a table provided with side uprights *f f* and with the side rails *d*, and a transverse roller *h*, suspended for rotation from said side rails midway of said table, of one or more independent mangle-rolls *g g*, of a diameter slightly greater than that of said median roll, and the longitudinally-movable pressure-box provided with a rack having the end stops *w*, a transverse shaft *n*, having a pinion engaging said rack, and the bearing-blocks for said shaft vertically movable on said uprights, substantially as described.

408,478. SHIELD AND REFLECTOR FOR INCANDESCENT ELECTRIC LAMPS. George Gibbs, Milwaukee, Wis. Filed Dec. 10, 1888. Serial No. 293,196. (No model.)

Claim.—1. The combination, with an illuminating device, of a reflector having vertical side pieces surmounted by a cover of such



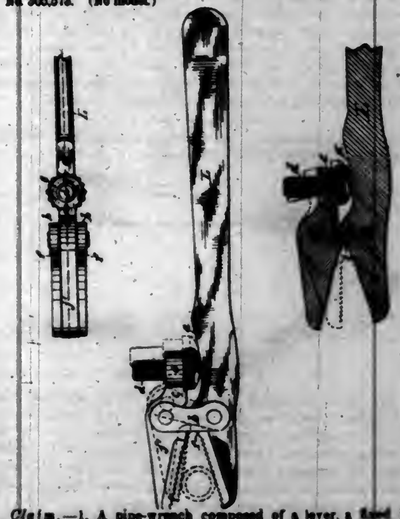
area and arrangement as to come over in front of said illuminating device to shield the latter from direct vision and deflect its rays in a downward direction, substantially as set forth.

2. The combination, with an illuminating device, of a reflector having vertical side pieces surmounted by a cover of such area and arrangement as to come over in front of said illuminating device to shield the latter from direct vision and deflect its rays in a downward direction, and a curtain or analogous device connected to the reflector to shut off the illumination, substantially as set forth.

3. The combination, in a car, of a panel, an illuminating device connected to the panel, and a reflector for the illuminating device, having vertical side pieces surmounted by a cover of such area and arrangement as to come over in front of said illuminating device to shield the latter from direct vision and deflect its rays in a downward direction, substantially as set forth.

4. The combination, in a car, of a panel having an opening therein, an illuminating device arranged within the opening, a reflector arranged to distribute the light in opposite directions, and provided with side pieces surmounted by a cover of such area and arrangement as to come over in front of the illuminating device on both sides of said panel, substantially as set forth.

408,479. PIPE-WRENCH. Julian A. Giles, Oswego, N. Y., assignor to Chauncey C. Place, same place. Filed Apr. 1, 1889. Serial No. 305,573. (No model.)



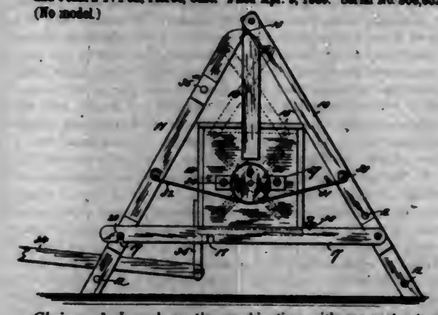
Claim.—1. A pipe-wrench composed of a lever, a fixed jaw integral with one end of said lever, links pivoted at one end to opposite sides of the jaw-carrying end of the lever, a jaw pivoted to the opposite end of said links and formed with a rearward extension, a spring holding the latter jaw in its open position, and a stop between the aforesaid rearward extension and lever and adjustable in length to control the opening of the jaw, as set forth.

2. A pipe-wrench composed of a lever, a fixed jaw integral with one end of said lever, links pivoted to opposite sides of the jaw-carrying end of the lever, a jaw pivoted to the opposite end of said links and formed with a rearward extension and with a screw-threaded eye in said extension and facing the lever, a spring holding the said jaw in its open position and crowding the same forward, a set-screw in said eye bearing on the lever, and stops on the fixed jaw in front of the links, substantially as described and shown.

3. The combination of the lever *l*, formed at one end with the jaw *j*, and with the inclined bearing *a* extending from said jaw rearward, the links *b b*, pivoted at one end to opposite sides of the lever at its junction with the jaw, the jaw *j'*, pivoted to the opposite end of the links and formed with the rearward extension *e*, and screw-threaded eye *c* in said extension and facing the bearing *a*, and the set-screw *d* in the said eye, substantially as described and shown.

4. The improved pipe-wrench, consisting of the lever *l*, formed at one end with the jaw *j*, and with the inclined bearing *a* extending from the jaw rearward, the links *b b*, pivoted at one end to opposite sides of the lever at its junction with the jaw, the jaw *j'*, pivoted to the opposite end of the links and formed with the rearward extension *e*, and with the eye *c* in said extension facing the bearing *a*, the set-screw *d* in said eye, the spring *t*, crowding the jaw *j'* forward and into its open position, and the stops *f* on the jaw *j* in front of the links, all combined to operate substantially as set forth.

408,480. CHURN. Hale H. Hawk, Bucyrus, and Wesley Smith and Joseph P. Fox, Pierce, Ohio. Filed Apr. 9, 1888. Serial No. 306,632. (No model.)



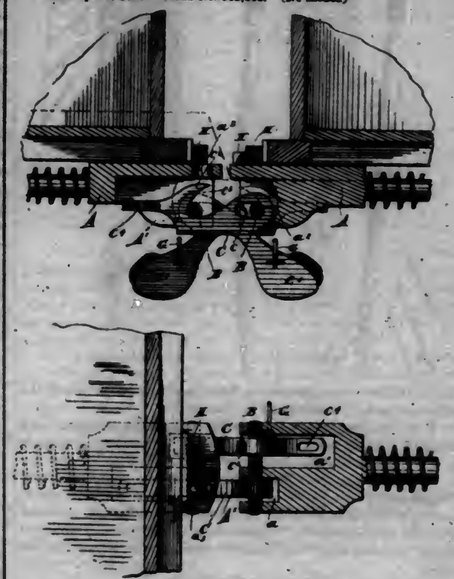
Claim.—1. In a churn, the combination, with opposed sets of connected standards hinged together at the top, and rods or bars projected downward from the upper end of the united standards, of a churn-body connected to the lower extremity of the said downwardly-projecting bars, a dash held to rotate within the churn-body, having attached to one trunnion outside of the body a disk or wheel, and straps attached to the said disk or wheel at one end, the said straps being carried in opposite directions and secured at the other end to the opposed side standards of the frame, substantially as shown and described.

2. In a churn, the combination, with opposed side standards hinged together at their upper ends, and bars or hangers projected downward from the upper extremity of the said united standards, of a churn-body attached at the ends to the lower extremity of the said bars or hangers and provided with a rotary dash, and means, substantially as shown and described, for imparting to the said dash a rotary reciprocating movement when the churn-body is laterally reciprocated, as set forth.

3. In a churn, the combination, with opposed standards hinged together at the upper extremity, cross-bars provided with notches in the lower edge pivoted to one set of standards, and pins projected from the opposed set of standards adapted to engage with the said cross-bars, and connecting bars or hangers pivotally secured to the upper connected ends of the standards, of a churn-body provided with a revolvable dash journaled transversely therein, a lever secured to one side of the churn-body projecting outward beyond one of the standards, and means, substantially as shown and described, for imparting to the dash a rotary reciprocating movement when the body of the churn is laterally reciprocated, as set forth.

4. In a churn, the combination, with opposed sets of standards hinged together at the upper ends, cross-bars provided with notches or recesses in their lower edges pivoted to one set of standards, pins or studs projected from the opposed standards, adapted for engagement with the said cross-bars, and connecting rods or hangers pivoted at the upper extremity to the hinged upper ends of the standards, of a churn-body secured at the ends to the lower extremity of the said hangers, a dash located within the said body, a set-screw passing through one end of the body into one end of the dash, a shaft held to revolve in the opposite end of the body provided with a rectangular inner end capable of entering a similar socket in the corresponding end of the dash, a disk or wheel secured to the outer end of the said shaft, bands attached at one end to the said disk or wheel and wound thereon in opposite directions, and having their outer ends secured to the opposed standards of the frame, all combined for operation, substantially as shown and described.

408,481. CAR-COUPLING. Alfred R. Heath, Covington, Ind. Filed Apr. 3, 1889. Serial No. 305,615. (No model.)



Claim.—1. In a car-coupling, the combination, with the draw-head formed with a recess having a concaved rear wall c^6, of a coupling-hook C, having an oblong slot *c* and pivoted in said recess by a pivot-pin passing through said oblong slot, substantially as described.

2. In a car-coupling, the combination, with the draw-head formed with a partition, forming recesses *a a'*, open at top and bottom, of a pin B, extending across said recess, and a coupling-hook pivoted in recess *a* by the pin B, the portion of said pin in recess *a'* affording an engagement for the hook of an opposing coupling-hook, substantially as described.

3. The coupling-hook C, formed with an oblong transverse slot *c*, weighted rear end c^2, rearwardly-projecting hook portion c^3 on its upper edge, and with a vertical oblong slot c^4 in its forward end, substantially as described.

4. In a car-coupling, the combination, with a recessed draw-head having a pin extending across the recess thereof, of a coupling-hook pivoted in the recess of the draw-head and having a weighted rear end and a vertical slot in its forward end, the hook being adapted to engage the pin of the opposing draw-head and the slot to receive the coupling-pin of an ordinary link, substantially as described.

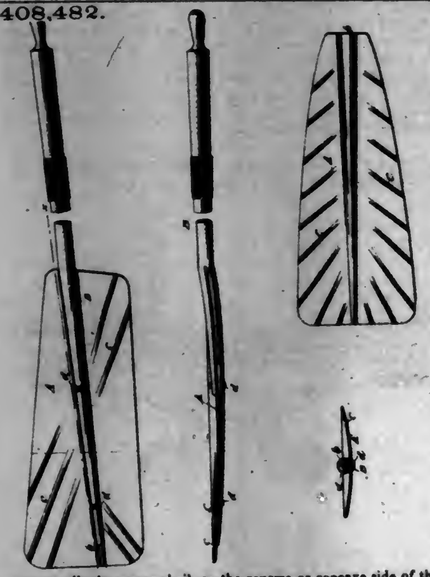
5. In a car coupling, a recessed draw-head having the pin B extending across the recess thereof, and the coupling-hook C, provided with the slot *c*, through which the pin B passes, the weighted rear end c^2, and the vertical slot c^4 in its forward end, the hook being adapted to engage the pin of the opposing draw-head, and the slot c^4, to receive the coupling-pin of an ordinary link, in combination with means for lifting the said hook, substantially as herein shown and described.

6. The combination, with a draw-head, of a weighted coupling-hook pivoted to said draw-head and operating devices for said hook, consisting of the rod G, united thereto and formed with an oblong loop, the said rod being fulcrumed at said loop portion, substantially as described.

408,482. OAR. Horatio F. Hiser, Ashland, Oreg. Filed Feb. 7, 1889. Serial No. 299,266. (No model.)

Claim.—1. In oars having metal blades, the metal blade of dish shape on its face, constructed with a longitudinal channel adapted to receive the handle within it on its convex side, said channel forming

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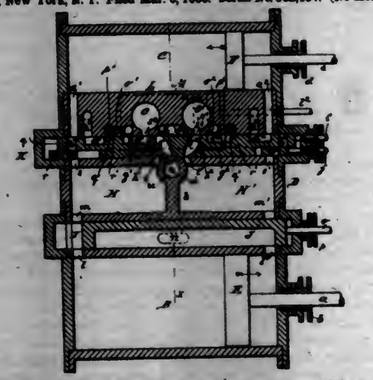


a correspondingly-arranged rib on the reverse or concave side of the blade, substantially as specified.

2. A metal oar-blade provided with corrugations on its face, said corrugations being at an angle relatively to the longitudinal axis of the blade, substantially as shown and described.

3. A metal oar-blade of dish shape on its face, constructed with a longitudinal channel in its convex side, forming or leaving a correspondingly-arranged rib upon its reverse or concave side, and with transverse corrugations on opposite sides of said channel arranged angling in relation with the channel, essentially as shown and described.

408,483. METHOD OF OPERATING GAS-ENGINES. HENRY HOELLJES, New York, N. Y. Filed Mar. 6, 1888. Serial No. 302,137. (No model.)



Claim.—1. The method of operating a gas-engine, which consists in compressing a certain charge of air or neutral gas into a heating-chamber, compressing a certain charge of explosive mixture, consisting of inflammable gas or vapor and air, igniting this explosive mixture, and causing it to enter in an ignited state into the said heating-chamber, in which the whole charge of compressed air or neutral gas is already contained, thereby heating the air or neutral gas, and finally discharging the heated compressed air or neutral gas and the products of combustion into a power-cylinder, causing them to move a piston, substantially as specified.

2. The method of heating a charge of compressed air or neutral gas by introducing the charge of compressed air or neutral gas into a heating-chamber and causing an ignited explosive mixture, consisting of inflammable gas or vapor and air, to enter into said heating-chamber, in which the whole charge of compressed air or neutral gas is already contained, substantially as specified.

3. The method of preventing the dilution of the explosive mixture in a gas-engine, which consists in compressing a charge of air or neutral gas into a heating-chamber and introducing an ignited explosive mixture into said heating-chamber, in which the whole charge of compressed air or neutral gas is already contained, substantially as specified.

4. The method of operating a gas-engine, which consists in compressing a certain quantity of air or neutral gas into a heating-chamber or the motor-cylinder, introducing an explosive mixture into another chamber or the motor-cylinder, separated from the body of the compressed air or neutral gas by the motor-piston, establishing a communication between the compressed air or neutral gas and the explosive mixture by moving the motor-piston, in the meantime igniting the whole charge of said explosive mixture instantaneously, the exploding gases heating the body of the compressed air or neutral gas, and finally causing the so-heated compressed air or neutral gas and products of combustion to move a piston, substantially as specified.

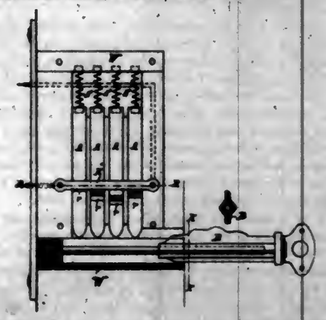
5. The method of operating a gas-engine, which consists in compressing a certain quantity of air or neutral gas into a heating-chamber or the motor-cylinder, introducing an explosive mixture into a chamber separated from the body of the compressed air or neutral gas, igniting the whole charge of said explosive mixture instantaneously and causing the exploding gases to enter through automatic valves, or valves moved by the engine, into the body of the compressed air or neutral gas, thereby heating the same, and finally causing the so-heated compressed air or neutral gas and products of combustion to move a piston, substantially as specified.

6. The method of operating a gas-engine, which consists in compressing a certain quantity of air or neutral gas into a heating-chamber, causing a compressed charge of explosive mixture to flow in a state of flame gradually into the chamber in which the whole charge of compressed air or neutral gas is contained, then heating the body of compressed air or neutral gas, the quantity of which latter being constant and not augmented while being heated, except by the products of combustion of the explosive mixture, and, finally, after the complete combustion of the explosive charge, discharging the heated compressed air or neutral gas and products of combustion into a power-cylinder, causing it to move a piston, substantially as specified.

7. The method of operating a gas-engine, which consists in compressing a certain quantity of air or neutral gas into a heating-chamber or the motor-cylinder, causing a compressed charge of explosive mixture to flow in a jet gradually into the chamber or motor-cylinder in which the whole charge of air or neutral gas is contained, said jet of explosive mixture being ignited when flowing into and thus heating the body of the compressed air or neutral gas, the quantity of which latter being constant and not augmented while being heated, except by the products of combustion of the explosive mixture, the compressed air or neutral gas and products of combustion being caused to move a piston, while the explosive mixture flows into the compressed air or neutral gas and heats the same, substantially as specified.

8. The method of using heating-chambers communicating with the motor-cylinder by suitable valves, into which heating-chambers charges of compressed air or neutral gas and charges of an ignited explosive mixture are introduced intermittingly and successively to each other, each charge of air being first admitted and then being heated by a charge of an ignited explosive mixture, the so-heated air or neutral gas and the products of combustion then being discharged into the power-cylinder to move a piston, substantially as specified.

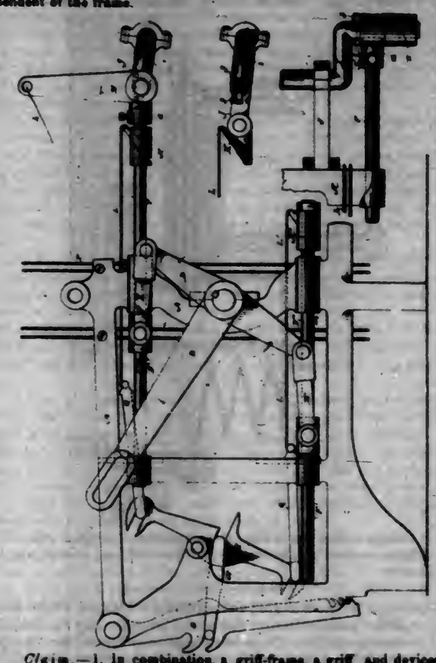
408,484. ELECTRIC LOCK. LOUIS HUSSNER and RUDOLPH BOSSE, Schweidnitz, Germany. Filed Nov. 23, 1888. Serial No. 291,691. (No model.) Patented in Germany Jan. 3, 1888, No. 44,309.



Claim.—The combination of the tumblers A, bar K', terminals q q', and battery T with the key B, as and for the purpose set forth.

408,485. DOBBY AND JACQUARD MACHINE FOR LOOMS. ALFRED DARLINGTON, Philadelphia, Pa. Filed Sept. 21, 1888. Serial No. 286,036. (No model.)

Brief.—If for any reason it is desired to level the warps when the griff-frame is in its outermost position, this can be accomplished through the described devices by giving the knife a movement independent of the frame.



Claim.—1. In combination, a griff-frame, a griff, and devices whereby said griff is connected with said frame, substantially in the manner described, and whereby the griff is normally operated by said frame, but whereby said griff may be given a movement independent of the movement of the frame.

2. In combination, a griff-frame or plungers, a crank-shaft journaled on the griff-frame or plungers, a griff, and a connection between said griff and said crank-shaft, whereby when the crank-shaft is turned the griff moves independently of the movement of the griff-frame.

3. In combination, a griff-frame or plungers, a griff, a crank-shaft, journal-boxes carried by the griff-frame or plungers, within which said shaft is loosely journaled, connections between said griff and crank-shaft, projections upon the journal-box of said crank-shaft at each side of the shaft, and a projection upon said crank-shaft.

4. In combination, a griff-frame or plungers, a griff, a crank-shaft, journal-boxes carried by the griff-frame or plungers, within which said shaft is loosely journaled, a crank connected to said shaft, and a cord or other connection secured to and extending from said crank to the desired point, and connections between the crank-shaft and the griff and the griff-frame or plungers.

5. In combination, a griff-frame or plungers, a crank-shaft journaled on said griff-frame or plungers, a griff supported on said frame or plungers, and a connection between said griff and said crank-shaft, whereby when the crank-shaft is turned the griff can have a movement independent of the movement of the frame or plungers.

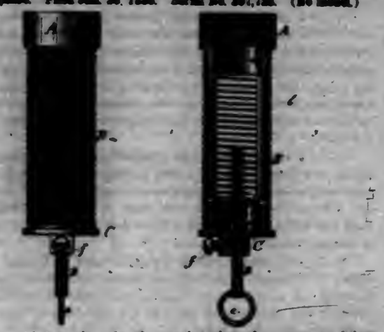
6. In combination, a griff-frame or plungers, boxes on the ends of said griff-frame or plungers, within which said plungers are secured, a crank-shaft loosely journaled within said boxes, a griff, and links connecting said crank-shaft and the griff or knife.

7. In combination, a griff-frame or plungers, boxes on the ends of said griff-frame or plungers, within which said plungers are secured, a crank-shaft loosely journaled within said boxes, projections on one box at each side of said shaft, and a projection on said shaft, a griff the ends of which are supported by said griff-frame or plungers, and links connecting said crank-shaft and the griff or knife.

408,486. COUGH-SIRUP. FRANCIS M. JAGUES, New London, Conn. Filed Apr. 22, 1889. Serial No. 308,314. (No specimens.)

Claim.—The herein-described cough-sirup, consisting of rock polypody, licorice, wild-cherry bark, hoarhound-herb, rock-candy, granulated sugar, glycerine, and rye whisky, in the proportions specified.

408,487. STRAINER FOR SUCTION-PIPES OF PUMPS. OMAR H. JEWELL, Chicago, Ill., assignor to William H. Jewell and Ira H. Jewell, same place. Filed Jan. 26, 1889. Serial No. 297,722. (No model.)



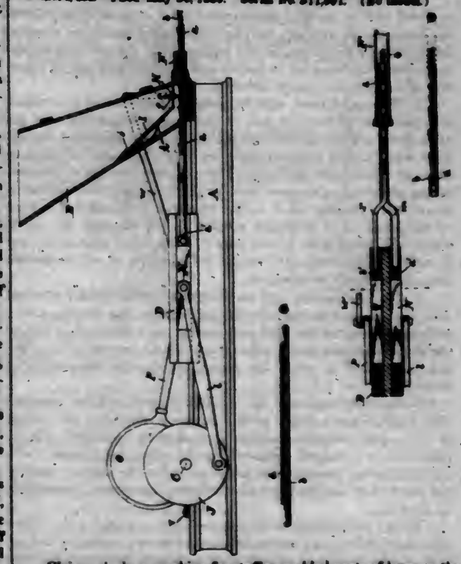
Claim.—1. A strainer for the suction-pipe of a pump or siphon, consisting of a wire spiral secured with one end to a coupling-nozzle provided with a guide-yoke that extends into the spiral, and with its other end to a cap having an eye for the collared shank of an adjusting-screw tapped into the guide-yoke for elongating or contracting said spiral, substantially as and for the purpose set forth.

2. A strainer for the suction-pipe of a pump or siphon, consisting of a wire spiral secured with one end to a coupling-nozzle that extends into the spiral, and with its other end to a cap having an eye for the collared shank of an adjusting-screw tapped into the screw-nozzle for elongating and contracting the spiral, said screw being provided at its lower projecting end with a handle for turning said screw, all substantially as set forth.

408,488. REMEDY FOR CORNS. AMELIE LABOUCHELLE, Hoboken, N. J. Filed May 15, 1889. Serial No. 310,866. (No specimens.)

Claim.—A medicinal compound for corns, resulting from the soaking of ivy-leaves, cherry-stems, and pine-buds in vinegar, substantially as herein set forth.

408,489. HARNESS-STUFFING MACHINE. HUGO LEESE, Baltimore, Md. Filed May 20, 1889. Serial No. 311,391. (No model.)



Claim.—1. In a machine for stuffing padded parts of harness, the combination of a hopper, a stuffing-tube leading from the hopper, and two alternately-reciprocating rods, both in the said tube.

2. In a machine for stuffing padded parts of harness, the combination of a hopper, a stuffing-tube leading from the hopper, and two

reds in said tube, each provided with teeth and each having a reciprocating movement independent of the other.

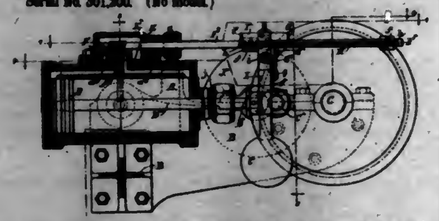
3. In a machine for stuffing padded parts of harness, the combination of a hopper, a stuffing-tube leading from the hopper, a drive-shaft having a crank-head and an eccentric, and two independently-movable rods, both in the said stuffing-tube, one of these rods receiving motion from the crank-head and the other from the eccentric.

4. In a machine for stuffing padded parts of harness, the combination of a hopper, a stuffing-tube leading from the hopper, a drive-shaft having a crank-head, an eccentric loose on the drive-shaft and engaged therewith by a clutch device, a slide having two reciprocating heads, rods connecting the crank-head and the eccentric with different reciprocating heads, and two independently-movable rods, both in the said stuffing-tube and each connected to a different reciprocating head.

5. In a machine for stuffing padded parts of harness, the combination of a hopper, a stuffing-tube leading from the hopper, a slide D, two reciprocating heads, each on an opposite side of the slide, and two independently-movable rods, both in the said stuffing-tube, and each rod having near its end a curve and attached to a different one of the said reciprocating heads.

6. In a machine for stuffing padded parts of harness, the combination of a hopper, a stuffing-tube leading from the hopper, a reciprocating rod longitudinally concave, and a second reciprocating rod fitting in the concavity of the first rod, and both of said rods occupying the said stuffing-tube.

408,490. STEAM-ENGINE. GEORGE W. LEWIS, La Salle, Ill., assignor of one-half to Charles Brunner, same place. Filed Feb. 26, 1889. Serial No. 301,300. (No model.)



Claim.—1. The combination, with the piston-cylinder and a steam cut-off valve operated by oscillation of the valve-rod, of a pendulum carried by the piston-rod and engaged with the valve-rod, whereby the latter is oscillated by the inertia of the pendulum.

2. The combination, with the piston-cylinder and its slide-valve provided with an auxiliary steam cut-off valve, of an oscillating valve-rod operating the auxiliary valve by its oscillating movement, a pendulum carried by the piston-rod and engaged with the valve-rod to partially rotate the latter by its inertia, and a spring arranged to rotate the valve-rod in an opposite direction.

3. The combination, with the piston-cylinder having a valve-seat provided with ports a', a^2, and a^3 and with a steam-inlet into the valve-chest, a slide-valve provided with a central steam-port and exhaust-ways, and an auxiliary valve for said steam-port of the main valve, of a prolonged oscillatory valve-rod provided with tappets and having actuating engagement with the auxiliary valve in its oscillating movement, a parallel rod H on the valve-rod, a standard G, carried by the piston-rod, a pendulum pivoted on the standard, the rod of which is provided with lateral arms i^3, arranged to bear on the rod H, and a spring arranged to oppose the pressure of said pendulum-arms, substantially as described.

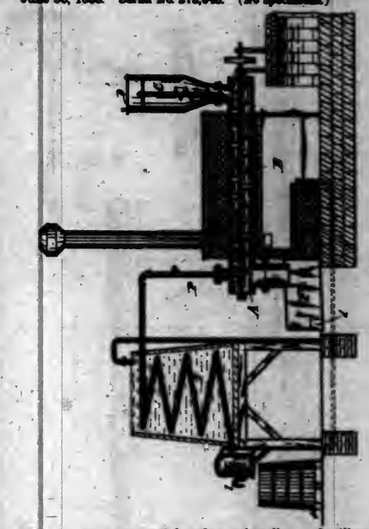
4. The combination, with the oscillating piston-cylinder provided with a slide-valve on the side thereof between the trunnions, of a prolonged valve-rod provided with tappets and a standard or arm on the piston arranged to strike the tappets for the reversal of the valve and constructed to guide the prolonged valve-rod, substantially as described.

5. The combination of the oscillating piston-cylinder provided with a valve-chest and with a valve and ports adapted to the running of the engine in either direction, a crank-shaft connected with the piston-rod, a prolonged valve-rod having adjustable tappets, and a standard on the piston-rod arranged to strike the tappets, whereby the crank-shaft may be given an oscillatory movement, substantially as described.

6. The combination of the piston-cylinder provided with a valve-chest and with a valve and ports adapted to the running of the engine in either direction, a crank-shaft connected with the piston-rod, an arm or disk having an arm or projection driven by the crank-shaft, and a spring-stop arranged to strike and arrest the arm or projection when the crank-shaft is on or near a dead-center.

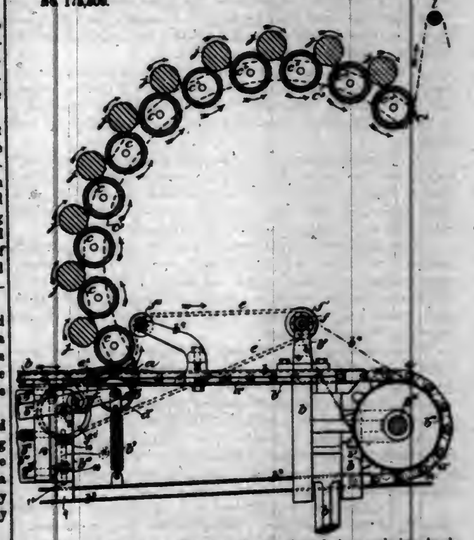
7. In combination, the piston-cylinder, its valve, the valve-actuating mechanism, the crank-shaft, the disk actuated by the crank-shaft and having a projection, and the spring-stop arm for engaging the projection on the disk, and mechanism for detachably locking the spring-arm, substantially as described.

408,491. FERTILIZER. JOHN A. LIGHTHALL, Syracuse, N. Y. Filed June 30, 1888. Serial No. 278,642. (No specimens.)



Claim.—As a new article of merchandise, a fertilizer consisting of tobacco-stems reduced to dry granular charcoal, substantially as set forth.

408,492. MACHINE FOR FINISHING LACE OR OTHER FABRICS. LEONARD LUDLEY, Nottingham, England. Filed Nov. 23, 1887. Serial No. 256,462. (No model.) Patented in England Mar. 19, 1884, No. 5,160, and Sept. 19, 1885, No. 11,152, and in France Feb. 2, 1887, No. 178,809.



Claim.—1. The combination of tentering-chains *a*, chain-wheels for driving said chains, a series of ironing-rollers arranged in an arc, pinions on said rollers, a gear-wheel engaging said pinions, and gearing connecting said gear-wheel with said chain-wheels, whereby the latter and said rollers will operate in unison, substantially as and for the purposes set forth.

2. In combination with the driving-shaft, tentering-chains *a*, and chain-wheels for driving said chains geared to said shaft, a series of ironing-rollers, gearing connecting said rollers with said chain-wheels, whereby the latter and said rollers will operate in unison, pulleys, endless belts *e*, running over said pulleys and bearing against one of said ironing-rollers, and gearing connecting said pulleys with said driving-shaft, substantially as set forth.

3. In combination with the tentering-chains *a* and chain-wheels for driving said chains, a series of ironing-rollers, gearing connecting said rollers with said chain-wheels, so that the latter will operate in unison with said rollers, endless chains *c*, arranged to run against the first roller of the series, pulleys over which said chains *c* travel, and a belt imparting motion from one of said chain-wheels to one of said pulleys, substantially as set forth.

4. The combination, with the tentering-chains *a* and chain-wheels for driving said chains, of a series of ironing or drying rollers, pinions on said rollers, a common gear-wheel meshing with said pinions, and said gear-wheel being geared to one of said chain-wheels, the endless chains *c*, bearing upon one of said ironing-rollers, pulleys over which said chains *c* travel, a belt connecting one of said pulleys with one of said chain-wheels, and the conducting-rollers *j*, substantially as set forth.

5. The combination, with the driving-shaft, the tentering-chains *a*, and chain-wheels for driving them geared with said driving-shaft, of a series of ironing-rollers of different diameters, pinions on said rollers, a common gear-wheel meshing with said pinions, and said gear-wheel being geared to one of said chain-wheels, the belts *e*, running against one of said rollers, pulleys over which said belts travel geared with said driving-shaft, and the conducting-rollers *j*, as set forth.

6. The combination, with the driving-shaft, the tentering-chains *a*, and chain-wheels for driving them geared with said shaft, of a series of ironing-rollers of different diameters increasing successively, gears for driving said rollers, a common gear-wheel meshing with said gears, and said gear-wheel being geared with one of the said chain-wheels, the conducting-rollers *j*, the endless chain belts *c*, bearing upon one of said ironing-rollers, and pulleys over which said chains travel, geared with said driving-shaft, as set forth.

7. The combination, with the driving-shaft, the tentering-chains *a*, and chain-wheels for driving them geared with said driving-shaft, of two series of ironing-rollers c c^2, respectively, pinions for driving both of said series, the pinions of one series being smaller than those of the other, a common gear-wheel, and all of said pinions being geared with said common gear-wheel, and said gear-wheel being geared to said chain-wheels, the conducting-rollers *j*, the endless belts *c*, bearing upon one of said ironing-rollers, and pulleys over which said belts *c* travel, geared with said driving-shaft, as set forth.

8. The combination, with the driving-shaft, the tentering-chains *a*, and chain-wheels for driving them geared with said shaft, of two series of ironing-rollers c c^2, respectively, arranged above said tentering-chains, pinions for driving said rollers, the pinions of the series remote from the tentering-chains being smaller than the others, gearing connecting said pinions with one of said chain-wheels, the conducting-rollers *j*, the endless belts *c*, bearing upon the end ironing-roller of the series, and pulleys over which said belts *c* travel, geared with said shaft, as set forth.

9. The combination, with the driving-shaft, the tentering-chains *a*, and chain-wheels for driving them geared with said shaft, of two series of ironing-rollers c c^2, respectively, arranged in an arc above said tentering-chains, said rollers being of increasing diameters throughout the series, pinions for driving said rollers, the pinions of the series remote from the tentering-chains being of smaller diameter than the others, gearing connecting said pinions with one of the said chain-wheels, the conducting-rollers *j*, arranged alternately with the ironing-rollers, the chains *c*, bearing upon one of the ironing-rollers, and pulleys over which said chains *c* travel, geared with said shaft, as set forth.

10. The combination, with the driving-shaft, the tentering-chains *a*, and chain-wheels for driving them geared with said shaft, of a series of ironing-rollers, gear-wheels for driving said rollers geared with said chain-wheels, endless belts *c*, bearing against one of said rollers, pulleys for driving said belts *c*, geared with said shaft, conducting-rollers *j*, guide-roller *l*, and winding-on roller *m*, substantially as set forth.

11. The combination, with the driving-shaft, the tentering-chains *a*, chain-wheels for driving them geared with said shaft, and a series of ironing-rollers geared to said chain-wheels, of endless chain belts *c*, bearing against one of said ironing-rollers and having roughened surfaces c' c^2, and pulleys for driving said chain belts *c*, geared with said shaft, substantially as and for the purposes set forth.

12. In combination with the driving-shaft, the tentering-chains *a*, and chain-wheels for driving them geared with said shaft, of a number of ironing-rollers of different diameters, pinions of different diameters for driving said rollers, gearing connecting said pinions with one of said chain-wheels, the endless chains *c*, bearing against one of said chain-wheels for driving said chains geared to said shaft, a series of ironing-rollers, gearing connecting said rollers with said chain-wheels, whereby the latter and said rollers will operate in unison, pulleys, endless belts *c*, running over said pulleys and bearing against one of said ironing-rollers, and gearing connecting said pulleys with said driving-shaft, substantially as set forth.

3. In combination with the tentering-chains *a* and chain-wheels for driving said chains, a series of ironing-rollers, gearing connecting said rollers with said chain-wheels, so that the latter will operate in unison with said rollers, endless chains *c*, arranged to run against the first roller of the series, pulleys over which said chains *c* travel, and a belt imparting motion from one of said chain-wheels to one of said pulleys, substantially as set forth.

4. The combination, with the tentering-chains *a* and chain-wheels for driving said chains, of a series of ironing or drying rollers, pinions on said rollers, a common gear-wheel meshing with said pinions, and said gear-wheel being geared to one of said chain-wheels, the endless chains *c*, bearing upon one of said ironing-rollers, pulleys over which said chains *c* travel, a belt connecting one of said pulleys with one of said chain-wheels, and the conducting-rollers *j*, substantially as set forth.

5. The combination, with the driving-shaft, the tentering-chains *a*, and chain-wheels for driving them geared with said driving-shaft, of a series of ironing-rollers of different diameters, pinions on said rollers, a common gear-wheel meshing with said pinions, and said gear-wheel being geared to one of said chain-wheels, the belts *c*, running against one of said rollers, pulleys over which said belts travel geared with said driving-shaft, and the conducting-rollers *j*, as set forth.

6. The combination, with the driving-shaft, the tentering-chains *a*, and chain-wheels for driving them geared with said shaft, of a series of ironing-rollers of different diameters increasing successively, gears for driving said rollers, a common gear-wheel meshing with said gears, and said gear-wheel being geared with one of the said chain-wheels, the conducting-rollers *j*, the endless chain belts *c*, bearing upon one of said ironing-rollers, and pulleys over which said chains travel, geared with said driving-shaft, as set forth.

7. The combination, with the driving-shaft, the tentering-chains *a*, and chain-wheels for driving them geared with said driving-shaft, of two series of ironing-rollers c c^2, respectively, pinions for driving both of said series, the pinions of one series being smaller than those of the other, a common gear-wheel, and all of said pinions being geared with said common gear-wheel, and said gear-wheel being geared to said chain-wheels, the conducting-rollers *j*, the endless belts *c*, bearing upon one of said ironing-rollers, and pulleys over which said belts *c* travel, geared with said driving-shaft, as set forth.

8. The combination, with the driving-shaft, the tentering-chains *a*, and chain-wheels for driving them geared with said shaft, of two series of ironing-rollers c c^2, respectively, arranged above said tentering-chains, pinions for driving said rollers, the pinions of the series remote from the tentering-chains being smaller than the others, gearing connecting said pinions with one of said chain-wheels, the conducting-rollers *j*, the endless belts *c*, bearing upon the end ironing-roller of the series, and pulleys over which said belts *c* travel, geared with said shaft, as set forth.

9. The combination, with the driving-shaft, the tentering-chains *a*, and chain-wheels for driving them geared with said shaft, of two series of ironing-rollers c c^2, respectively, arranged in an arc above said tentering-chains, said rollers being of increasing diameters throughout the series, pinions for driving said rollers, the pinions of the series remote from the tentering-chains being of smaller diameter than the others, gearing connecting said pinions with one of the said chain-wheels, the conducting-rollers *j*, arranged alternately with the ironing-rollers, the chains *c*, bearing upon one of the ironing-rollers, and pulleys over which said chains *c* travel, geared with said shaft, as set forth.

10. The combination, with the driving-shaft, the tentering-chains *a*, and chain-wheels for driving them geared with said shaft, of a series of ironing-rollers, gear-wheels for driving said rollers geared with said chain-wheels, endless belts *c*, bearing against one of said rollers, pulleys for driving said belts *c*, geared with said shaft, conducting-rollers *j*, guide-roller *l*, and winding-on roller *m*, substantially as set forth.

11. The combination, with the driving-shaft, the tentering-chains *a*, chain-wheels for driving them geared with said shaft, and a series of ironing-rollers geared to said chain-wheels, of endless chain belts *c*, bearing against one of said ironing-rollers and having roughened surfaces c' c^2, and pulleys for driving said chain belts *c*, geared with said shaft, substantially as and for the purposes set forth.

12. In combination with the driving-shaft, the tentering-chains *a*, and chain-wheels for driving them geared with said shaft, of a number of ironing-rollers of different diameters, pinions of different diameters for driving said rollers, gearing connecting said pinions with one of said chain-wheels, the endless chains *c*, bearing against one of said rollers, and pulleys for said chains *c*, geared with said driving-shaft, as and for the purposes set forth.

13. The combination, with the ironing-rollers, of tentering-chains *a*, provided with non-metallic blocks a^2 a^4, adapted to bear against one of such rollers, substantially as set forth.

14. The chain *a*, having the points a^3, and the non-metallic blocks a^2 a^4, projecting above said points, as set forth.

15. The combination, with the driving-shaft and the lowermost ironing-roller having suitable driving mechanism, of the endless belts *c*, pulleys over which said belts travel, geared with said driving-shaft, adjustable brackets in which a pulley of each chain is mounted, and a screw for adjusting said brackets, substantially as set forth.

16. The combination, with the lower roller *c*, gearing for driving said roller, the tentering-chains *a*, having links and extensions a^3, and chain-wheels for driving said chains geared with said gearing, of levers, springs attached to said levers, and rollers d d', journaled to said levers, all adapted to support said links and extensions of the chains, respectively, and bear said chains against the roller *c*, substantially as set forth.

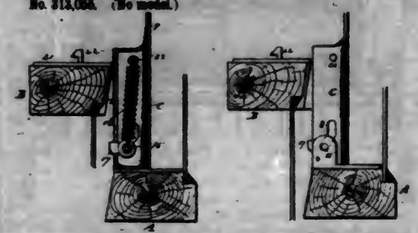
17. The combination, with the lower ironing-roller *c*, having suitable means for driving it, of the pulleys f' f^3, chain belts *c*, running over said pulleys f' f^3, the brackets b^2, rollers f^3, mounted in said brackets and bearing chains *c* against roller *c*, and suitable means for driving said belts *c*, substantially as set forth.

18. The combination, with the driving-shaft, the tentering-chains, chain-wheels for driving said chains geared with said shaft, the ironing-rollers having gear-wheels geared with said chain-wheels, and the frame *b*, of the endless chain belts *c*, bearing against one of said rollers, pulleys over which said chains *c* travel, a belt connecting one of said pulleys with the chain-wheels, and brackets in which said pulleys are mounted, secured to the frame *b*, substantially as set forth.

19. The combination, with the ironing-rollers arranged in an arc, and pinions on said rollers, of a gear-wheel g', engaging said pinions, the shaft *h*, a pinion on said shaft for revolving said wheel g', a worm, a worm-wheel on said shaft *h*, engaged by said worm, tentering-chains *a*, chain-wheels over which said chains travel, a gear-wheel b^{15}, means, substantially as described, whereby said wheel b^{15} is detachably connected to one of said chain-wheels, and a pinion on shaft *h* engaging wheel b^{15}, as set forth.

20. The combination, with the ironing-rollers arranged in an arc, and pinions on said rollers, of a gear-wheel g', engaging said pinions, the shaft *h*, geared with the wheel g', for revolving it, a worm, a worm-wheel on said shaft engaged by said worm, tentering-chains *a*, shaft b^{15}, chain-wheels on said shaft b^{15}, over which said chains travel, a projecting pin affixed to the shaft b^{15}, a pinion h^3 on the shaft *h*, and a gear-wheel b^{16}, movable longitudinally on the shaft b^{15} and adapted to engage said projecting pin and pinion h^3, substantially as and for the purposes set forth.

408,498. FASTENER FOR THE MEETING-RAILS OF SASHES. WILLIAM LIVINGSTONE, Jersey City, N. J. Filed June 4, 1888. Serial No. 313,058. (No model.)



Claim.—1. The combination, with window-sashes, of a box pivoted to one of said sashes and having a longitudinal movement, and a pivoted toe located within said box and adapted to be engaged by the other sash, substantially as set forth.

2. The combination, with window-sashes, of a box having slots pivoted to one of said sashes, the pivot-pin passing through said slots, and a toe projecting from said box to be engaged by the other sash to tilt the box and lock the sashes, substantially as set forth.

3. The combination, with window-sashes, of a box having inclined slots pivoted on one of said sashes, the pivot-pin passing through said inclined slots, and a toe projecting from said box to be engaged by the other sash, substantially as set forth.

4. The combination, with window-sashes, of a box having inclined slots pivoted on one of said sashes, the pivot-pin passing through said inclined slots, a spring connected to the box at one end and to said pivot-pin at the other end, and a toe projecting from the box to be engaged by the other sash, substantially as set forth.

5. The combination, with window-sashes, of a plate having ears secured to one of said sashes, a box pivoted between said ears and

provided with slots in three of its faces, a toe projecting through one of said slots, and a plate on the other sash to engage said toe, substantially as set forth.

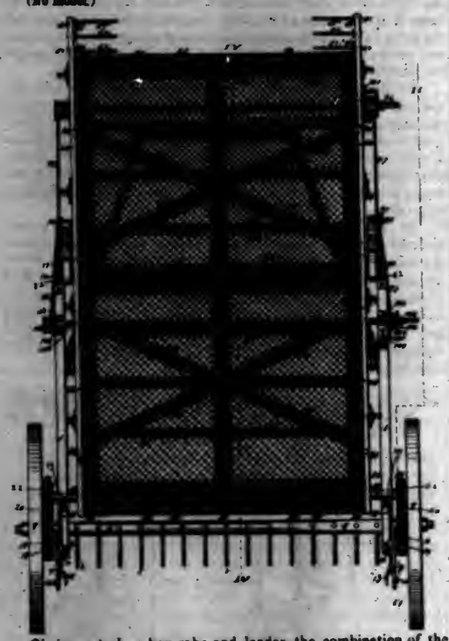
6. The combination, with window-sashes, of a plate having ears secured to one of said sashes, a box pivoted between said ears and provided with slots on three of its faces, a toe projecting through one of said slots, a plate on the other sash to engage said toe, and a hook projecting from said plate to enter a slot in the box and engage one wall of said slot, substantially as set forth.

7. In a sash-fastener, the combination, with the sashes, of a pivoted box made of sheet-metal blanks and provided with slots, the pivot-pin passing through said slots, a toe projecting from said box, a sheet-metal plate on the other sash to be engaged by said toe, and a hook-shaped projection extending upwardly from said plate to engage the box, substantially as set forth.

8. The combination, with window-sashes, of a hook secured to one sash, a longitudinally-movable box pivoted to the other sash and provided with a slot to receive said hook, a pivoted toe located within the box, and a spring for moving the box longitudinally.

9. The combination, with window-sashes, of a hook secured to one sash, a box having slotted sides and adapted to engage the hook, a toe pivoted in bearings outside of the box, and a spring for moving the box longitudinally, substantially as set forth.

408,494. COMBINED HAY RAKE AND LOADER. HENRY C. LONG and IRVIN B. WALKER, Salem, Mo. Filed Mar. 20, 1888. Serial No. 268,784. (No model.)



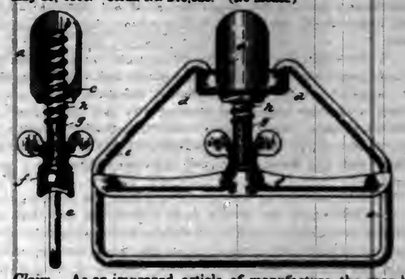
Claim.—1. In a hay rake and loader, the combination of the main wheels, the sprocket-wheels 18, shaft 16, having flanged sprocket-disks 26 mounted loosely thereon, drive-chains 20, passing around sprocket-wheels 18 and flanged sprocket-disks 26, a circular series of ratchet-teeth on the inner sides of the latter, disks 23, fixed rigidly to shaft 16, pawls 30, pivoted to said disks, and springs 32, of one piece of wire, coiled around shaft 16, and having tangential ends engaging said pawls to throw them in engagement with the ratchets, substantially as set forth.

2. In a hay rake and loader, the combination of sprocket-wheels 18, shaft 16, flanged sprocket-disks 26, mounted loosely thereon, having ratchet-teeth on the inner sides of the flanges, slotted disks 23, having hubs 24, keys 25, securing disks 23 to shaft 16, pawls 30, pivoted to the slotted disks, the integral double-coil loop-attached springs 32, the two arms of said springs engaging said pawls to engage them with the ratchet-teeth, pins on said pawls projecting through the slots of disks 23, and spring-catches 38, engaging said pins when the pawls are disengaged, substantially as set forth.

3. In a hay rake and loader, an elevator-frame, rollers 50 and 52 52, hangers 8, in which roller 50 is mounted, endless belts 51, and an endless belt of wire-netting passing around said rollers, cross-slats 58, secured to the endless belts and having teeth projecting from them, and inwardly-projecting strips 113, supported by the sides of the elevator-frame on which the lower portion of the endless belt is supported and has bearing, substantially as set forth.

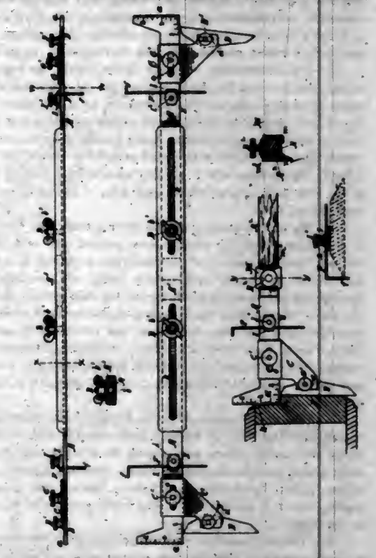
4. In a hay-rake and loader, the combination of the adjustable rake, the sprocket drive-gear, and sectional sprocket drive-wheel that transmits the movement from the ground-wheels to the elevator, the pivoted standard 80, that is provided with the elongated slot 111, the sheaves 88 on the sides of the elevator-frame, and secondary sheaves 91 at the top of the standards, the rotary shafts 93 and 107, journaled, respectively, in the elevator and main frames, the windlass-drums they carry, the hand-cranks that work them, and the ropes 97, arranged to adjust the discharge height of the elevator, substantially as and for the purpose set forth.

408,495. MOP-HEAD. HAMILTON P. LOW, Manchester, N. H., assignor to the Triumph Self-Wringing Mop Company, same place. Filed May 25, 1888. Serial No. 275,025. (No model.)



Claim.—As an improved article of manufacture, the mop-head herein described, comprising the socketed base having apertured ears and a lower spirally-formed lip, the frame having its ends secured to said ears, the follower moving in said frame, and the rod swiveled to said follower and having a threaded portion engaging said spirally-formed lip, and provided with lower wings, substantially as set forth.

408,496. THRESHOLD-MEASURING GAGE. DEAN W. MACKER, Grafton, Mass. Filed Apr. 10, 1889. Serial No. 306,671. (No model.)

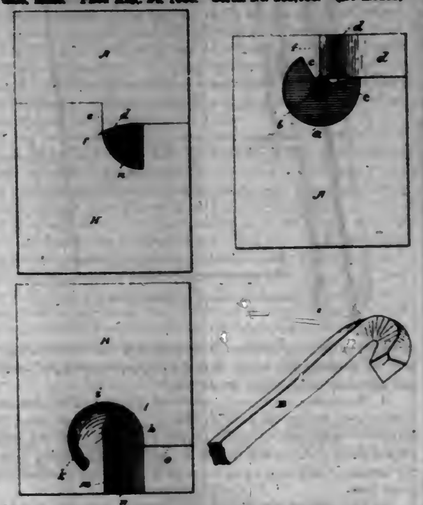


Claim.—1. A gage for the purpose specified, consisting of the extensible bars having squared outer ends, the adjustable laterally-projecting arms fitted to slide longitudinally on the extensible bars and carrying swinging bevel-plates, the inner ends of which are adjustable against the side of said bars, as set forth, with thumb-screws or clamp devices for retaining the several parts at positions of adjustment, all arranged for operation substantially as described.

2. The combination of the slotted center bar A', the extension-pieces A, provided with square end having graduations thereon, the adjustable arms C, the swinging plates D, adjustably attached to said arms, and thumb-screws for retaining the several parts at position of adjustment, substantially as set forth.

3. In a gage for the purpose specified, the combination, with the extension-rod having the end squares a, arms C, and the adjustable bevel-plates D, of the laterally-disposed adjustable gage-fingers F, and clamp devices for retaining the same, substantially as and for the purpose set forth.

408,497. DIE FOR THE MANUFACTURE OF AUGERS. JOHN A. MAGRILL, Brimfield, assignor to the Snell Manufacturing Company, Fiskdale, Mass. Filed Aug. 24, 1888. Serial No. 283,698. (No model.)

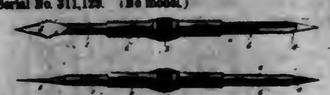


Claim.—1. The herein-described dies for making the heads of single-twist augers, having the neck-opening formed by the parts *d* and *n*, said part *d* having the cutting-edge *f* for completing the neck, as set forth.

2. The herein-described dies for making single-twist augers, which consist in the head-cavity *a*, of substantially the form shown, and the semi-elliptical neck-opening lying without the plane of the head-cavity, whereby the article is made ready for the twisting-machine without beading, chiseling, or filing, as described.

3. The herein-described dies for making single-twist augers, which consist in the dies A and H, said die A having the segmental depression *a*, conical hollow *b*, projection *c*, and lug *d*, and the die H having the depression *h*, bevel projection *i*, circling channel *k*, and channel *n*, whereby the cutting-edge *a'*, opening *c'*, screw-nib *b'*, hollow *i'*, cutting-lip *k'*, and neck *d'* are formed at a single operation and the auger ready for the twisting-machine and lathe without beading, chiseling, or filing, as explained.

408,498. ENGRAVER'S TOOL. GEORGE A. MASON, Washington, D. C., assignor to John Sellers & Sons, New York, N. Y. Filed May 17, 1889. Serial No. 311,129. (No model.)



Claim.—1. An engraver's tool having a burnishing-edge and a scraping-edge, both of metal, on opposite ends of the same handle or stock and provided with a cap or hood to protect either edge when not in use, said cap fitting on a suitable co-operating shoulder on the tool.

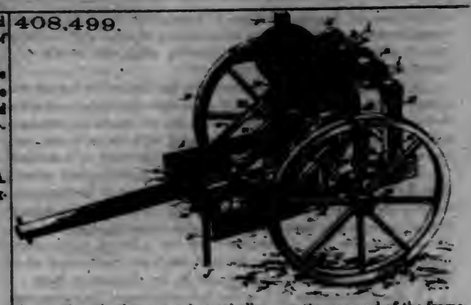
2. An engraver's tool consisting of a single piece of steel having one end shaped into a scraper and the other end into a burnisher, and a protecting cap or caps to cover the ends, said cap or caps fitting on co-operating shoulders on the tool, as and for the purpose set forth.

408,499. REEL-CARRIAGE. JOSEPH F. MILLER, Hamburg, Iowa. Filed Apr. 26, 1889. Serial No. 308,705. (No model.)

Claim.—1. The combination, with the frame having reel-standards and the reel having a crank, of the handle M, projecting from a reel-standard and suitably braced from the frame, substantially as described.

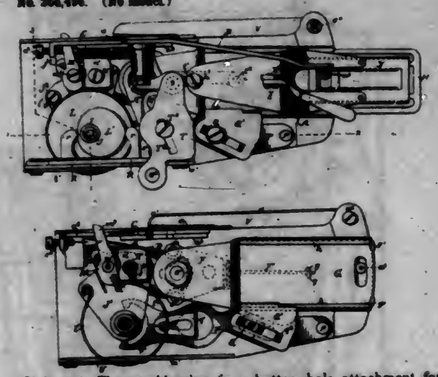
2. The herein shown and described reel-carriage, composed of the

408,499.



frame, the wheels mounted on spindles near the rear end of the frame, the standards N, the shaft *k*, supported by standards N and having adjustable stops L, the guide-pulley K, mounted on shaft *k*, the reel-standards having notches in their upper ends, pins G, the reel, the shaft H, the brake-wheel on the shaft H, having the arm *i*, the strap or cable J, and the handle M, extending from a reel-standard and suitably braced, substantially as and for the purpose described.

408,500. BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES. DANIEL MILLS, Philadelphia, Pa. Filed Mar. 6, 1888. Serial No. 266,496. (No model.)



Claim.—1. The combination, in a button-hole attachment for sewing-machines, of the vibrating plate carrying the cloth-clamp, two former-cams, one above the other, mounted substantially as described, and mechanism for operating said cams, and a single former-lever pivoted to the base-plate and connected to the vibrating plate, and having two working-faces on different horizontal planes, one face being acted upon by one cam and the other by the other cam, substantially as set forth.

2. The combination, in a button-hole attachment for sewing-machines, of the vibrating plate carrying the cloth-clamp, two former-cams, one above the other, mounted substantially as described, mechanism for operating said cams, and a single former-lever pivoted to the base-plate and connected to the said vibrating plate, said lever having two arms adjustable toward and from each other and in different horizontal planes, whereby one may be acted upon by one cam and the other by the other cam, substantially as set forth.

3. The combination, in a button-hole attachment for sewing-machines, of the vibrating plate carrying the cloth-clamp, a single former-lever pivoted to the base-plate and having a slot, and a block on the vibrating plate adjustable in said slot for varying the bight of the stitch with a revolving former-cam and arms on the lever spanning said cam and adjustable to alter the width of cutting-space, substantially as and for the purpose set forth.

4. The combination, in a button-hole attachment for sewing-machines, of the feed-disk, a feed-lever J, a grip-lever mounted thereon, and a feed-band for the feed-disk attached at one end to the feed-lever J and at the other end to the grip-lever with a friction-disk acting to retard said feed-lever both on its feed and return movement, substantially as and for the purpose described.

5. The combination, in a button-hole attachment for sewing-machines, of the vibrator-plate pivoted to a stud on the base of the attachment and cloth-clamp carried thereby, with a vibrator acted upon by a cam and having a flexible arm engaging with said vibrating plate, substantially as set forth.

6. The combination of the pivoted vibrating plate, cloth-clamp

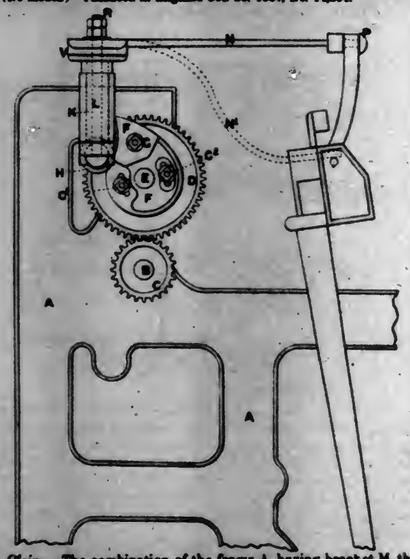
carried thereby, the pivoted plate F, having two arms F', a three-cornered cam *e*, and mechanism for operating said cam with a spring-arm F', extending under the said vibrating plate and loosely connected thereto, substantially as set forth.

7. The combination, in a button-hole attachment for sewing-machines, of the cloth-clamp, a lever S, means for connecting said lever to the clamp, a heart-cam L' and mechanism for operating the same, and a bar R, having two arms *r r*, engaging with the said cam, and two arms *r' r'*, engaging with the lever S, substantially as described.

8. The combination, in the cloth-clamp of a button-hole attachment for sewing-machines, of the lower cloth-clamp H, having a central opening for the button-hole and two ribs *y y* on each side thereof, with an upper cloth-clamp having a similar central opening and two ribs *y'* upon each side thereof, the said ribs *y'* of the upper cloth-clamp projecting between the ribs *y* of the lower cloth-clamp when the clamp is closed, substantially as and for the purpose set forth.

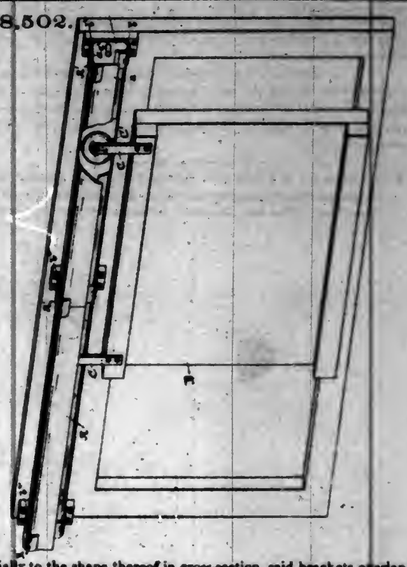
9. The combination, in a button-hole attachment for sewing-machines, of the base-plate and the plate V on the under side thereof, having two arms *v' v''*, one of said arms being permanently secured to said base-plate and the other arm being in the form of a spring secured to the base-plate by means of a set-screw, substantially as set forth.

408,501. PICKING-MOTION FOR LOOMS. JOHN MOSS, Preston, County of Lancaster, England. Filed July 11, 1888. Serial No. 278,817. (No model.) Patented in England Oct. 20, 1887, No. 14,391.



Claim.—The combination of the frame A, having bracket M, the wheel D, the picking-tappet F, the vertically-swiveling bush K, the bracket L, in which the bush is carried, said bracket L having an adjustable connection with the bracket M, the picking-arm N, the stud J, carrying the picking-bowl H, and the bolt E, passed through and connecting said picking-arm, bush, and stud, substantially as shown and described.

408,502. SLIDING DOOR. JAMES H. MOSLEY, Florence, assignor of one-half to George Nightingale, Holyoke, Mass. Filed Dec. 3, 1888. Serial No. 292,572. (No model.)



Claim.—1. The trolley-track herein described, of substantially tubular form, having a longitudinal opening in one side thereof, and having a single trough-shaped tread located at one side of said opening, substantially as set forth.

2. The trolley-track herein described, having one side thereof arranged at substantially a right angle to its top and bottom, said track having a longitudinal opening therein, and having a single trough-shaped tread located at one side of said opening, in combination with a hanger extending through said opening and carrying at its upper end a roller the periphery of which in cross-section corresponds substantially with the transverse contour of said tread, arranged and operating substantially as set forth.

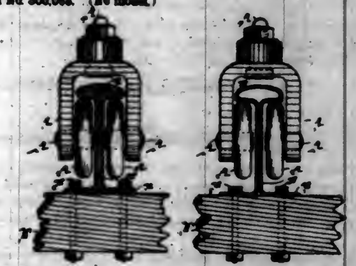
3. The combination, with the trolley-track herein described, the same consisting of a substantially tubular body having a longitudinal opening therein and having at one side of said opening a trough-shaped tread, of supporting brackets for said track conforming substantially to the shape thereof in cross-section, said brackets overlapping the meeting ends of the several sections of said track, arranged and operating substantially as set forth.

4. The trolley-track herein described, consisting of a substantially tubular body having the parallel sides *a b* and top *c*, said side *b* being curved inwardly and upwardly at the bottom to form the trough-shaped tread *b'*, said track having an unobstructed opening between the bottom of said side *a* and the edge of said tread *b'*, substantially as set forth.

5. The combination, with the track A, having the parallel sides *a b* and top *c*, and having said side *b* curved inwardly and upwardly to form tread *b'*, of hanger C, projecting within said track between side *a* and said tread *b'*, said hanger being provided at its upper end with the laterally-projecting stud *c'* and having journaled upon said stud roller C', adapted to travel within said tread, arranged and operating substantially as and for the purpose set forth.

6. The combination, with track A and its supporting-bracket A', said track having the straight side *b*, top *c*, and curved tread *b'*, of hanger C, carrying at its upper end roller C', moving within said track, and a weight, as door D, secured to said hanger, near the lower end of the latter, in such manner that the center of gravity of said weight will lie in the vertical plane of the transverse center of said roller, substantially as and for the purpose set forth.

408,503. TROLLEY-TRACK. JAMES H. MOSLEY, Florence, assignor of one-half to George Nightingale, Holyoke, Mass. Filed Feb. 15, 1889. Serial No. 300,068. (No model.)



Claim.—1. The combination, with the track consisting of a rail having a base by which it is secured to an overhead support, a head, and a connecting-web uniting said head and base, of a carrier consisting of a yoke having between its ends means for attaching a weight thereto, and having connected thereto near each end by a swivel-joint a substantially U-shaped hanger, said hangers having at or near their upper ends inwardly-projecting studs, upon which are journaled wheels or rollers which bear upon the inner side of the head of said rail upon opposite sides of the connecting-web, substantially as and for the purpose described.

2. The trolley-track herein described, composed of a rail of sheet metal bent to form head *a*, base *a'*, and intermediate web *a²*, substantially as set forth.

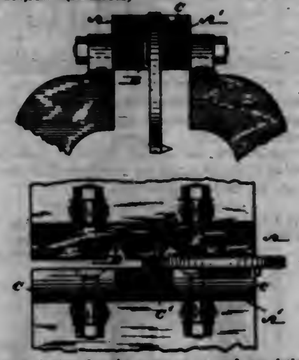
3. The trolley-track herein described, having the substantially tubular head *a*, web *a²*, and base *a'*, combined with the cores *a³*, inserted within said tubular head and connecting the meeting ends of separate sections of said track, substantially as and for the purpose set forth.

4. The combination, with two track-sections, as A A², each consisting of a base by which they are secured to an overhead support, a head, and an intervening web, of a third track-section, as A³, corresponding in size and shape with said first-mentioned sections, said last-mentioned section being secured by its base to a pivoted switch-block, whereby one end thereof is adapted to be moved into alignment with the ends of either of said first-mentioned sections, means, substantially as described, for imparting movement to said switch-block, and a carrier suspended from wheels which bear upon the inner side of the head of said track-sections and upon opposite sides of the intervening web, substantially as set forth.

5. The combination, with track-sections A A², suspended from an overhead support, of block B', pivotally suspended from said support near one end by means of bolt *a⁴*, and having its opposite end resting upon plates *a⁵*, secured to said support, stop-pins *a⁷*, projecting from said support into slots *a⁶* in said block, track-section A³, suspended from said block, and means, as the cords *a⁸*, passing over pulleys *a¹⁰*, for moving the free end of said block in opposite directions, arranged and operating substantially as and for the purpose described.

6. The combination, with track A, composed of the head *a*, base *a'*, and web *a²*, of the substantially U-shaped hanger *b'*, having near the outer end of each of its arms an inwardly-projecting stud *b²*, said studs being located in one and the same straight line, and the distance between their adjacent ends being slightly greater than the width of said web *a²* of the track, and wheels *b³*, journaled upon said studs and bearing upon the inner side of the head *a* of the track, substantially as and for the purpose set forth.

408,504. BLACKSMITH'S DEVICE FOR FINISHING HORSE-SHOES. ALBERT R. HUMPHEY, Philadelphia, Pa. Filed Jan. 25, 1889. Serial No. 297,517. (No model.)



Claim.—1. A device for the purpose named, consisting of two members, one having on its inner face depressions adapted to receive the clip of the shoes, and the other member having its upper edge sloping on the ends with an intermediate flat portion, substantially as described.

2. A device for the purpose named, consisting of two clamping members, one of which has its upper face sloping at the sides with an intermediate flat portion, substantially as described.

408,505. SCYTHE-SHEATH FASTENING. ADDISON D. MYERS, Geneva, Ohio. Filed Feb. 26, 1889. Serial No. 301,108. (No model.)

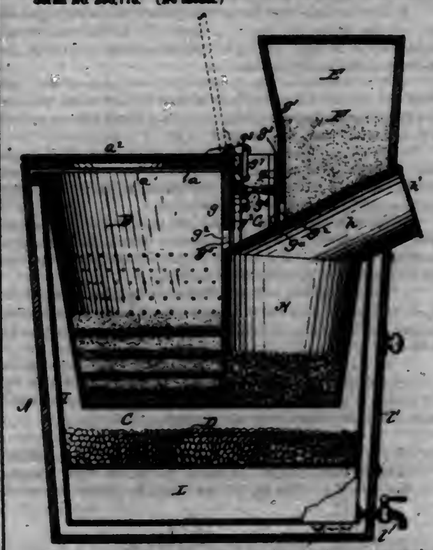


Claim.—1. The heel-ring or band A, formed with a projecting lip *a* at its upper side, in combination with the swinging socket-plate D, pivoted on the under side, and clamping-bolt *c*, the said clamping-bolt passing through said lip *a* and through the swinging end of the socket-plate to connect said parts, whereby both the head and nut of said bolt are provided with metallic bearings, substantially as shown and described.

2. The heel-ring A, formed with a projecting lip *a* at its upper side, in combination with the swinging socket-plate D, pivoted at its upper end to the snath and having at its swinging end a transverse segmental slot, and with the clamping-bolt *c*, the said bolt passing through the socket-plate and through the lip *a* and serving to connect said parts and clamp and hold them to the snath, substantially as shown and described.

3. The combination of the heel-ring A, formed with a projecting lip *a* at its upper side, a swinging socket-plate D, pivoted at its upper end to the under side of the snath and having at its lower end a transverse segmental slot *d⁵* and holding-teeth *d⁶*, a holding-plate E, set into the snath and having teeth *e'* to engage the teeth of the socket-plate, and a clamping-bolt *c*, passing through said lip *a* and through the segmental slot of the socket-plate to clamp and hold said parts to the snath, substantially as shown and described.

408,506. FECULENT RECEIVER. OMAR D. MCCLELLAN, Philadelphia, Pa., assignor, by mesne assignments, to the Sanitary and Fertilizer Company of the United States, same place. Filed Nov. 14, 1888. Serial No. 290,778. (No model.)



Claim.—1. A feculent-matter receiver having a receptacle for receiving and separating the liquid from the solid matter and for detaining the solid matter and decomposing its organic ingredients, a chamber for such separated liquid having a precipitating and decomposing compound for the organic matter in such liquid, and an outlet from said liquid-receiving chamber, substantially as set forth.

2. A feculent-matter receiver having a receptacle for receiving and separating the liquid from the solid matter and for detaining the solid matter and decomposing its organic ingredients, a chamber for such separated liquid having a precipitating and decomposing compound comprising alum as an ingredient thereof, and an outlet from said liquid-receiving chamber, substantially as set forth.

3. A feculent-matter receiver comprising a perforated receptacle B, a chamber C below said receptacle, a precipitating and decomposing compound in chamber C, and an outlet pipe having a coupling-connection for attachment to and detachment from a sewer or other drain-pipe, substantially as set forth.

4. The casing or receiver A, having a seat *e*, seat-lid *e'*, and chambers E and G, with openings and valves for said openings controlled by the movement of lid *e'*, a perforated receptacle B, a chamber C below receptacle B, a precipitating and decomposing compound in chamber C, and an outlet-pipe for the latter, substantially as set forth.

5. A feculent-matter receiver having a chamber for holding a charge of deodorizing and absorbing compound, a perforated receptacle, mechanism for ejecting said compound into said receptacle, a

chamber C below receptacle B and within the receiver, a precipitating and decomposing compound in chamber C, and an outlet-pipe for the latter, substantially as set forth.

6. The combination, with receiver A, having lid a^3 and seat a, of chamber E, valved mechanism between said chamber and lid, perforated receptacles B and H, receptacle I, having chambers C and L, and outlet for the latter, substantially as set forth.

7. In a feculent-matter receiver, a receptacle divided into two chambers by a perforated partition, the upper chamber containing a polyvalent material and the lower chamber a precipitating and decomposing compound, and provided with a drain or outlet, substantially as set forth.

408,507. CASE FOR ROTARY WATER-METERS. LEWIS H. HASH, Brooklyn, assignor to the National Meter Company, New York, N. Y. Filed Jan. 13, 1886. Serial No. 188,462. (No model.)



Claim.—1. A water-meter case formed of a series of alternate projections and recesses having the bearing-surfaces of its chamber-wall formed of hard metal, and a backing of cementing metal or material, substantially as described.

2. A water-meter case formed of a series of alternate projections and recesses, having the bearing-surfaces of its chamber-walls formed of hard-metal facing, a backing of cementing metal or material, and wall-locks, substantially as described.

3. In a water-meter, the combination of an inclosing-case, separated and isolated bearing-surfaces formed of hard metal, and a cementing metal or material uniting said hard-metal bearing-surfaces and case, substantially as described.

4. In a water-meter, the combination of an inclosing-case, separate and isolated bearing-surfaces formed of hard metal, and a cementing metal or material uniting and locking to said metal bearing-surfaces and case, substantially as described.

5. The water-meter case formed with inner wall dovetail projections, in combination with a bearing-surface of hard metal, and a cementing material cast over the wall projections and locked with said hard-metal facings, substantially as described.

6. The combination, with the chamber-forming body cast, in one piece, of interior chamber-wall projections formed of hard-metal facings, and a backing of cementing substance, substantially as described.

7. In a water-meter, the combination of the piston having circumferential projections, with a chamber-forming case having wall projections of soft metal, and a facing of hard metal permanently fastened thereto, substantially as described.

408,508. APPARATUS FOR CONSTRUCTING WATER-METERS. LEWIS H. HASH, Brooklyn, assignor to the National Meter Company, New York, N. Y. Filed Jan. 13, 1886. Serial No. 188,463. (No model.)



Claim.—1. The means substantially herein described for attaching separate and isolated facings to the chamber-walls of a water-meter, which consists of a core having a surface conformation adapted to hold said isolated facings in proper relative position to said chamber-walls during the operation of attaching them thereto, combined with a suitable molding-surface for confining the sides of the facings, the spaces to be filled by cementing material, and for separating said surfaces from each other.

2. The means for attaching a plurality of separate and isolated facings to the chamber-walls of a water-meter, which consists of a core having a surface conformation adapted to hold said facings in the proper relative position and having grooves therein at the sides of said facings, in combination with removable strips adapted to be set in said grooves, which with said facings form spaces to receive a suitable backing, substantially as described.

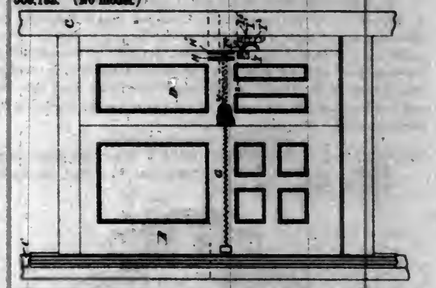
3. The means for attaching facings to the chamber-walls of a water-meter, which consists of a core having a surface conformation adapted to hold said facings in the proper relative position and having seats at the sides of said facings, in combination with removable strips and springs g', the strips being adapted to be set in said seats, which with said facings form spaces to receive a cement backing, substantially as described.

4. The means substantially herein described for centering metal facings and supporting them concentrically within the chamber of a water-meter case for securement to the radial projections of the wall thereof, which consists of a core corresponding to the said metal facings, whereby the latter are supported in proper relation to wall projections in the operation of fixing said facings to form a durable wearing-surface, combined with a suitable molding-surface for confining at their sides the spaces to be filled by cementing material and for separating said surfaces from each other.

5. A cylindrical centering-core having circumferential recess-surfaces d, the counterpart of the chamber-wall projections of a water-meter, and having vertical grooves h on each side of said recess-surfaces d, in combination with removable strips adapted to be set in said core-grooves, whereby to form with the said facings closures for spaces to receive a cement backing in the operation of fixing said facings, substantially as described.

6. The combination of a core B, placed within the chamber of a water-meter, the hard-metal facings placed vertically within and upon said core opposite the chamber-wall projections, leaving an intermediate space, and the vertical strips g, arranged to inclose said space to receive a cementing filling, whereby to permanently secure said facings to said wall projections, as described.

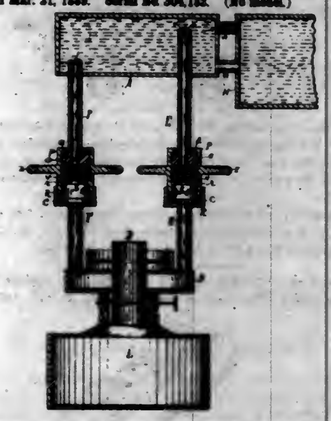
408,509. DEVICE FOR OPERATING ELEVATOR-DOORS. WILLIAM E. NICHERSON, Cambridge, Mass. Filed May 1, 1889. Serial No. 309,182. (No model.)



Claim.—1. In an elevator, the carriage A, its door E, the well-room door D, the spring G, and cleats H H' H^2, substantially as and for the purpose set forth.

2. In an elevator, the carriage A, its door E, the well-room door D, the spring F, the spring G, and the cleats H, H', and H^2, substantially as and for the purpose set forth.

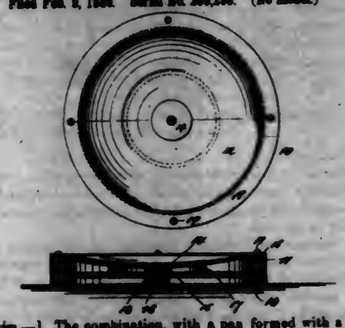
408,510. LAMP-BURNER. LUCIAN R. OAKES, Valparaiso, Ind. Filed Mar. 21, 1889. Serial No. 304,182. (No model.)



Claim.—1. In a lamp, and in combination with its wick-tube D, the water-jacket B, arranged to inclose said wick-tube immediately below its upper end, so the water will be in contact with said tube to keep it cool, and a reservoir for holding water connected with said jacket, substantially as and for the purpose set forth.

2. In a lamp, in combination with its wick-tube D, the water-jacket B, arranged to inclose said wick-tube near its upper end, the tubes E and F, for connecting said jacket with reservoir A, the reservoir A, and the couplings in said tubes, consisting of the nut P, cup R, packings a c, valve V and seat r, and flange-head O, having its periphery screw-threaded, all arranged to operate substantially as and for the purpose set forth.

408,511. ASTRONOMICAL MIRROR. DENNIS O'BRIEN, Oswayo, Pa. Filed Feb. 9, 1888. Serial No. 263,296. (No model.)



Claim.—1. The combination, with a pan formed with a mirror-seat, of a centrally-apertured mirror, a threaded sleeve passed through said aperture and held therein, and a retaining device engaging the sleeve and passing through the pan, substantially as described.

2. The combination, with a pan formed with a mirror-seat, of a centrally-apertured mirror, a sleeve passed through the mirror-aperture, disks engaging the sleeve and arranged upon opposite sides of the mirror, and an externally-threaded and headed sleeve which passes through the pan and engages an internal thread formed upon the mirror-sleeve, substantially as described.

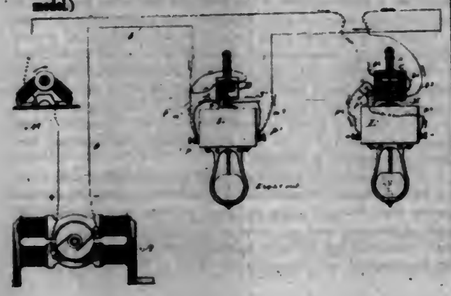
3. The combination, with a pan formed with a mirror-seat, a central aperture, and an annular flange 17, of a mirror seated upon the pan and formed with a central aperture, a sleeve 13, which passes through the mirror-aperture, disks engaging the sleeve, and an externally-threaded and headed sleeve 16, which passes through the pan-aperture and engages an internal thread formed upon the sleeve 13, substantially as described.

408,512. METHOD OF MAKING HATS. HAWLEY PARTRIDGE, Danbury, Conn. Filed Nov. 16, 1888. Serial No. 291,001. (No model.)



Claim.—The herein-described improvement in the art of making hat-bodies, the same consisting in the forming, sizing, and shaving the bodies in the usual manner, then applying an oil-stiff, and then steaming the bodies in the usual manner, after which they are ready to be stretched, colored, and blocked.

408,513. SYSTEM OF ELECTRICAL DISTRIBUTION. FRANK L. PERRY, Chicago, Ill. Filed Aug. 27, 1888. Serial No. 283,904. (No model.)



Claim.—1. The combination, substantially as set forth, of a single main-line circuit having various devices for electrical translation connected up therewith, and a station-switch in connection with any such device or a group thereof to automatically control the electrical supply thereto by reversal of the line-current, the same comprising an electro-magnet closed to line and having terminals of like polarity, an isolated polarized armature in the field thereof, and a bridge-piece controlled by said armature to make and break the line-connection of the translating device or group.

2. The combination, substantially as set forth, of a single main-line circuit having various devices for electrical translation connected up therewith, and a station-switch in connection with any such device or a group thereof to automatically control the electrical supply thereto by reversal of the line-current, the same comprising an electro-magnet closed to line and having terminals of like polarity, an isolated polarized armature pivoted in the field thereof, and a bridge-piece controlled by said armature to make and break the line-connection of the translating device or group.

3. The combination, substantially as set forth, of a single main-line circuit having various devices for electrical translation connected up therewith, and a station-switch in connection with any such device or a group thereof to automatically determine the electrical supply thereto under reversal of the line-current, the same comprising an electro-magnet closed to line and having terminals of like polarity, a polarized armature in field thereof, and double bridge-pieces actuated alternately by shift of said armature to respectively make and break the dual terminal connections of the translating device or group with the main-line circuit.

4. The combination, substantially as set forth, of a single main-line circuit having various devices for electrical translation connected up therewith, and a station-switch in connection with any such device or a group thereof to automatically determine the electrical supply thereto under reversal of the line-current, the same comprising an electro-magnet closed to line and having its wire coils wound to form terminals of like polarity, an isolated polarized armature pivoted in the field of said magnet, and a bridge-piece shifting with said armature to make and break the line-connection of the translating device or group.

5. The combination, substantially as set forth, of a single main-line circuit having various devices for electrical translation connected up therewith, and a station-switch in connection with any such device or a group thereof to automatically control the electrical supply thereto by reversal of the line-current, the same comprising an electro-magnet included in the main circuit and having terminals of like polarity, a polarized armature in the field thereof, and a bridge-piece controlled by said armature to make and break the line-connection of the translating device or group.

6. In a system of electrical distribution, the combination, with a single main-line circuit, of a switch appliance connected up therewith to automatically determine the direction of electrical supply under reversal of the line-current, the same comprising an electro-magnet included in main circuit, and having terminals of like polarity, a polarized armature in the field thereof, and a bridge-piece controlled by said armature to change the direction of the main current, substantially as described.

408,514. CAN FOR DISTRIBUTING INSECT-DESTROYERS. ROBERT S. PETTUS, Pinckneyville, Ill. Filed Apr. 11, 1889. Serial No. 306,777. (No model.)

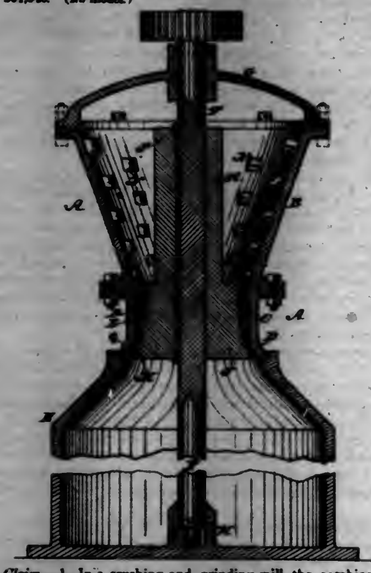


Claim.—1. The combination, with a can adapted to contain liquid insect-destroying compounds, of a heating-furnace secured to the bottom of the can and provided with a vertical partition-plate, the space between the rear wall and partition-plate having perforations, so that air may circulate in said space, substantially as shown, and for the purpose set forth.

2. The combination, with a can or vessel constructed substan-

tially as shown, of a removable furnace G, having a rear wall and partition-plate located in front of said rear wall, the bottom and sides of said furnace having perforations and a sliding door, substantially as described, whereby the insect-destroying compounds can be applied in a heated condition.

408,515. MILL FOR CRUSHING BONES, MINERALS, &c. CALVIN C. PHILLIPS, Philadelphia, Pa. Filed Nov. 20, 1888. Serial No. 291,240. (No model.)



Claim.—1. In a crushing and grinding mill, the combination of the elliptical hopper provided with teeth, the cylindrical casing having the rows of spirally-arranged teeth, the flaring rim on said casing, provided with teeth, the runner having the scroll-shaped teeth for operating in conjunction with the teeth of the hopper, and the teeth for operating in conjunction with the teeth of the casing and rim thereof, substantially in the manner and for the purpose described.

2. In a grinding-mill, a hopper, in combination with a cylindrical casing, the latter having a flaring lower rim, the said hopper being provided with horizontal teeth and the casing with spirally-arranged teeth, a runner having a cylindrical portion with scroll-shaped teeth, and the conical portions L and M, said conical portions having teeth, all substantially as and for the purpose set forth.

3. In a crushing and grinding mill, the combination of the elliptical hopper having a series of horizontally-arranged teeth, the cylindrical casing having the rows of spirally-arranged teeth, and the flaring rim having teeth, with the runner having the scroll-shaped teeth for operating in conjunction with the teeth of the rim, and the inclined teeth for operating in conjunction with the teeth of the casing and rim thereof, substantially in the manner and for the purpose described.

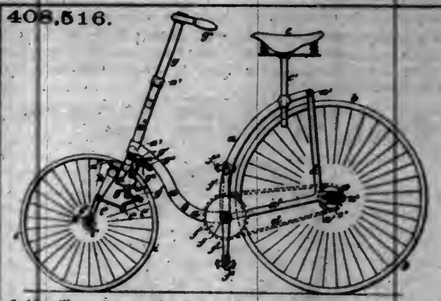
4. In a grinding-mill, the combination of an elliptical hopper provided with teeth on its inner surface, a casing with teeth, and a runner with teeth, substantially as described.

408,516. VELOCIPEDE. WALTER PHILLIPS and ROBERT W. SMITH, Coventry, County of Warwick, England. Filed Apr. 10, 1889. Serial No. 306,642. (No model.)

Claim.—1. In a velocipede of the sociable class, the framing constructed with longitudinal frames a a^4 a^5, the parts a extending rearwardly and upwardly, parts a^4 rearwardly, and the parts a^5 extending vertically and connecting the rear ends of parts a and a^4, cross-pieces a^2 and a^3, steering-pillars a^6, cross-frames a^7, connecting them, central vertical pillar a^8, and front cross-frame A, supported by the latter, for carrying the front wheels, the frames a, a^4, and a^5 carrying the back wheels, substantially as shown and described.

2. The side frames of a velocipede of the sociable class, consisting of backbones a, rearwardly-extending parts a^4, curved inwardly, vertical limbs a^5, connecting the rear ends of parts a and a^4, and brackets a', at the juncture of parts a^4 and a^5, in which the axles of the rear wheels are journaled, substantially as set forth.

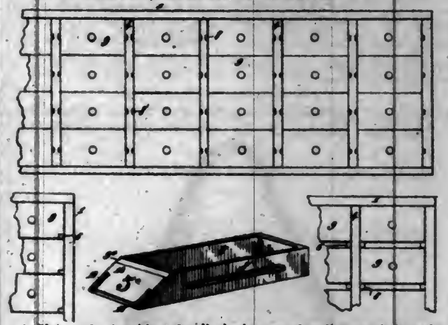
3. In combination with the frame and wheels of a velocipede of the sociable class, the steering or front portion of the same consisting



of side pillars a^6, to receive the steering spindle or spindles, a central pillar a^8, frame a^7, connecting the pillars, and front cross-frame A, pivotally connected with the central pillar and carrying the front wheels, substantially as set forth.

4. A four-wheeled two-track velocipede of the sociable class, constructed with longitudinal frames a a^4 a^5, connected together by cross-frames a^2 a^3 a^7 a^9 a^8 and supporting-saddles c, over or in line or nearly in line with the wheels b, chain-wheels f^2, receiving motion from pedal-cranks f', and communicating motion by chains d to chain-wheels c', fixed on the hubs of the driving-wheels b, front cross-frame A, carrying the steering-wheels i and mounted upon a horizontal axis a^9, carried by the central vertical pillar a^8, such steering-wheels receiving the necessary steering movement through handle-bar g^2, steering-spindle g, lever g', connecting-rod g^3, lever or levers g^4 g^5, central vertical spindle g^6, and connecting-rods i^2 i^3, all in manner substantially as herein shown and described.

408,517. CABINET SHOW-CASE. EMANUEL PFFERLING, Washington, D. C., assignor to Henry F. Sinsteg and Felix L. Rosenthal, both of New York, N. Y., and Emanuel Pfferling, Washington, D. C. Filed Nov. 1, 1888. Serial No. 289,773. (No model.)



Claim.—1. A cabinet for displaying merchandise, consisting of a series of horizontally-sliding open-top compartments arranged in tiers, the compartments of each upper tier being successively shorter in length than the next underlying one, in combination with upright partitions dividing the compartments of each tier, said partitions being cut away at their front edges in successive steps equal, or substantially so, to the length of the respective compartments when extended upon cleats attached to the side surfaces of the partitions, substantially as described.

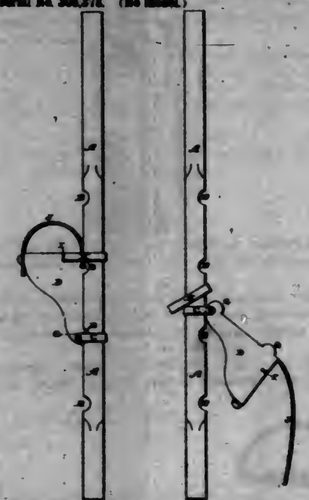
2. In a cabinet for displaying merchandise, the combination of the following elements: a show-case having transparent top, sides, and front, and rigid bottom and back frame, a series of transverse parallel partitions 4, firmly adjusted to the back and floor of the case, each of said partitions being cut away forwardly into a series of steps, cleats 6, extending horizontally along the sides of the partitions, and tiers of sliding open-top compartments 9, arranged to be moved forward and backward upon the cleats, each tier of said compartments being successively shorter in length than the next underlying tier of compartments and arranged as described, whereby when said compartments are introduced their full length forwardly between the partitions 4 their front panels 9^a will be in line with the respective risers 5 of said partitions, substantially as described.

3. In a cabinet for exhibiting goods, the combination, with a casing having transparent panels and provided with a series of partitions having their forward edges cut away to form steps separated by inclined or sloping risers, of a series of compartments arranged in tiers, each underlying tier being of greater length than the one above it, the front ends of said compartments being in line with the risers of

the partitions and provided with suitable clips for detachably affixing advertising or other cards, substantially as described.

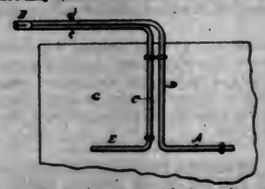
4. In a cabinet for exhibiting goods, the combination, with a case having transparent panels and provided with partitions cut away at their forward edges to form a series of steps separated by sloping risers, of a series of compartments sliding between said partitions and arranged in tiers, each underlying tier being of greater length than the one next above it, the forward end panels of said compartment being sloped to correspond with the inclines of the risers and provided with elastic strips fastened at one end beneath the end of the compartment and having their other ends lying upon the sloping front panel, substantially as described.

408,518. STILT. JAMES M. PORTER, Marietta, Ohio. Filed Apr. 8, 1889. Serial No. 306,378. (No model.)



Claim.—The combination of the leg provided with recesses, with the block provided with corresponding projections, a slide in which the lower end of the block is pivoted, and a holding device applied to the upper corner of the block, the block being adapted to turn upon its pivot at its lower end so as to disengage its projections from the recesses B, substantially as set forth.

408,519. VEHICLE-SPRING. WILLIAM E. POWERS, Hastings, Mich. Filed May 7, 1888. Serial No. 308,963. (No model.)



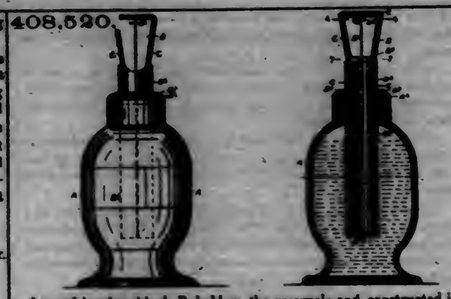
Claim.—1. The combination, with the spring composed of the member C and the arm c, of the re-enforcing spring composed of the member D, the arm d, connected at its outer end with arm c and the arm E, the latter adapted to normally stand at an angle to the support to which the spring is secured, substantially as and for the purpose described.

2. The combination, with the member C, having the spring-arm c, of the member D, having the arm d, which is connected with the arm c, and having the arm E, which stands at an angle to the support to which the spring is secured, substantially as set forth.

3. The herein-described spring, composed of the parallel members C and D, the arms c and d at the outer ends of the members C and D, respectively, extending in the same direction and connected together, and the arms A and E at the inner ends of said members, the arm E extending in an opposite direction to the arm A and projecting up at an angle, substantially as described, for the purpose specified.

408,520. MOISTENER-PAD. CHARLES A. PRATT, Boston, Mass. Filed Feb. 25, 1889. Serial No. 301,147. (No model.)

Claim.—1. A moistener-pad composed of a reservoir for liquid

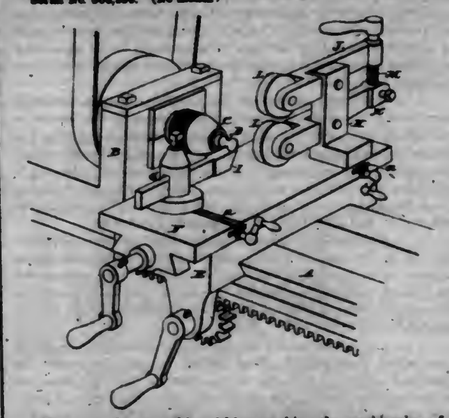


and a pad head or block B, held on the reservoir and constructed in parts, one made of non-absorbent material, having a chamber B^2, with openings B^3 on the opposite sides of the head and in communication with the reservoir, and the other made of absorbent material, which extends across and passes through said side openings of said chamber of the head, and into and thence through said chamber to the reservoir, substantially as described, for the purposes specified.

2. A moistener-pad composed of a reservoir for liquid and a pad head or block B, held on the reservoir and constructed in parts, one made of non-absorbent material in longitudinal sections, at one end portion hinged together, and having a chamber B^2, with openings B^3 on the opposite sides of the head and in communication with the reservoir, and the other made of absorbent material, which extends across and passes through said side openings of said chamber of the head, and into and thence through said chamber to the reservoir, substantially as described, for the purposes specified.

3. A moistener-pad composed of a reservoir A for liquid, having a mouth A^1 and a chambered pad head or block B, held on and attachable and detachable from the mouth of the reservoir, and having a tubular continuation leading into the reservoir, and all made of non-absorbent material and in longitudinal parts or sections hinged together at the head, in combination with a covering C for said head, having an exposed face or faces, and a continuation leading into said head on its opposite sides and the tubular continuation, and in communication with the liquid in the reservoir and made of absorbent material, substantially as described, for the purpose specified.

408,521. MACHINE FOR FINISHING AND ORNAMENTING METAL. HENRY M. QUACKENBOSS, Herkimer, N. Y. Filed Apr. 12, 1889. Serial No. 306,990. (No model.)



Claim.—1. In a metal-burnishing machine, the combination of a work holder or support and a smooth burnishing-roller conforming to the contour of the portion to be burnished, the roller being free to rotate upon its own axis, and the work or the roller being arranged to travel about the axis of the work.

2. The herein-described apparatus for ornamenting metal, consisting of a rotary spindle provided with a chuck, a tool-carriage, a cutting-tool carried by said carriage, and a pair of levers, also carried thereby and provided with rollers, the tool and the rollers being fashioned to conform in shape and size to the ornament to be produced.

3. In a machine for ornamenting metal, the combination of a chuck, a cutting-tool of the required pattern, and a pair of compressing and burnishing rollers arranged to act on opposite sides of the ornament simultaneously, the cutting-tool and the rollers being car-

ried by a common support and adapted to be moved one into and the other out of operative position simultaneously, in whichever order desired.

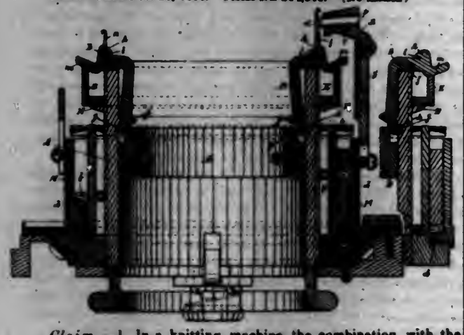
4. In combination with a rotatable chuck or holder, a pair of compressing and burnishing rollers adjustable relatively thereto and to each other, and means, substantially such as shown, for forcing said rollers toward each other.

5. In a machine for ornamenting metal, the combination of post H, levers J K, pivotally supported thereon, rollers L, carried by said levers, and a screw M, or its equivalent, for forcing the rollers toward each other.

6. In a machine for ornamenting metal, the combination of a pattern-cutting tool and a pair of burnishing-rollers having circumferential grooves of a pattern corresponding to that of the cutting-tool, said cutting-tool and rollers being arranged to be brought into action alternately.

7. In a machine for ornamenting metal rods, stems, &c., the combination of a holder for the rod or stem, rollers for burnishing the same, and means, substantially such as described and shown, for causing a rolling contact between the rollers and the stem circumferentially.

408,522. CIRCULAR-KNITTING MACHINE. JAMES H. REED, Lynn, Mass. Filed Feb. 20, 1888. Serial No. 264,613. (No model.)



Claim.—1. In a knitting-machine, the combination, with the needle-cylinder provided on its inside with an annular groove *h*, and a series of needles carried by said cylinder, of a series of jacks B, placed between said needles and having rounded lower ends *g* to enter said groove, and projections *m*, the ring D, secured within said cylinder with its upper edge above the bottom of said groove, the revoluble flanged ring E outside of said cylinder, to be engaged by said projections, and having a cam-depression in its upper edge and a stop or projection N, the cam-ring M, and the upright P, substantially as set forth.

2. In a knitting-machine, the combination, with the needle-cylinder having the interior groove *h*, and a series of needles carried by said cylinder, of a series of jacks B, placed between said needles and having rounded lower ends fitting in said groove, outwardly-extending projections *m*, and inwardly-extending projections *j*, the ring D, adjustably secured within said cylinder, the revoluble ring E, having a cam-depression in its upper edge and a stop or projection N, the cam-ring M, and the upright P, substantially as set forth.

3. In a knitting-machine, the combination, with the needle-cylinder having the support H, of the revoluble ring E, sustained on said support and having a cam-depression in its upper edge, the needles, the jacks B, having the projections *m*, one or more stops secured to the exterior of the ring E, the upright P, and the cam-ring M, substantially as set forth.

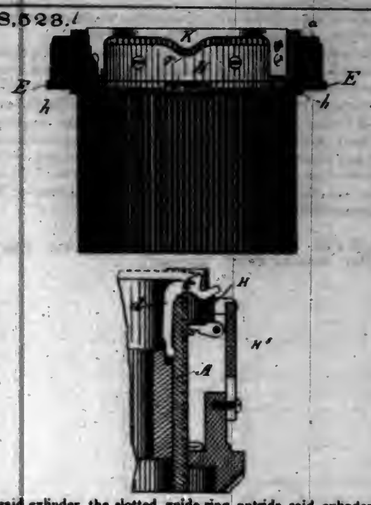
4. In a knitting-machine, the combination, with the needle-cylinder having the support H, of the needles, the jacks B, arranged between said needles and having the outwardly-extending projections *m*, the ring E, resting on said support and having one or more stops, as N, the upright P, the cam-ring M, and the rider K, arranged above the said projections *m* and serving to force the said jacks outward positively, substantially as set forth.

408,523. CIRCULAR-KNITTING MACHINE. JAMES H. REED, Lynn, Mass. Filed June 26, 1888. Serial No. 278,136. (No model.)

Claim.—1. A knitting-machine provided with jacks seated inside the needle-cylinder and extending upwardly and outwardly over said cylinder, and having a guide-ring outside of said cylinder provided with slots which receive the outer ends of the jacks, whereby the jacks are guided and their free movement insured, substantially as shown and described.

2. The combination, with the needle-cylinder, of the jacks seated inside the needle-cylinder and extending upwardly and outwardly

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over said cylinder, the slotted guide-ring outside said cylinder, and the cam-ring and its rider, which actuate the jacks, substantially as set forth.

3. The combination, with the needle-cylinder, of the jacks, the slotted guide-ring placed outside the cylinder and resting on the clamping-ring, and the clamping-ring, substantially as shown and described

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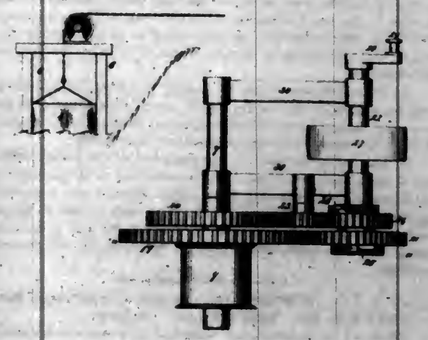
408,524. LAST FOR BOOTS OR SHOES. GEORGE A. REYNOLDS, Utica, N. Y. Filed Mar. 3, 1888. Serial No. 266,047. (No model.)



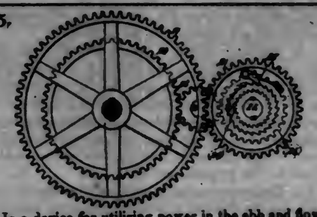
Claim.—1. In a shell last, the combination of the shell body having recess 4, the sole-piece of less width than the bottom of the shell body and arranged substantially as described with reference thereto, leaving the slotted opening into the interior of the last, except at the point where it is connected at the heel portion, and the supporter pivoted to the toe portion of the sole and having sprockets spanning the opening between the sole-piece and shell and engaging the shell body.

2. The combination, in a last, of the shell body having recesses adjacent to the lower inner edge thereof, the sole-piece having a slotted opening beginning at the breast of the heel and extending from the last to a point near the heel opposite the place of beginning, and the pivoted sprocket-supporter on the toe portion of the sole-piece, substantially as set forth.

408,525. DEVICE FOR UTILIZING TIDE-POWER. JOHN RIDGE, Coronado, Cal. Filed Nov. 26, 1888. Serial No. 292,069. (No model.)



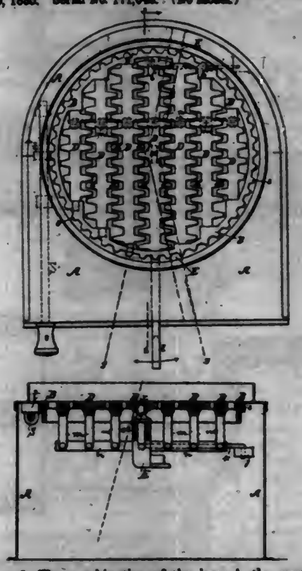
408,525.



Claim.—1. In a device for utilizing power in the ebb and flow of the tide, the pivoted lever, the float connected to the short end of the lever, and mechanism for transmitting the power connected to the long end of the lever, consisting, essentially, of a cable mounted on a drum and connected to the lever, and pulleys over and under which the cable passes, substantially as set forth.

2. In a device for utilizing tide-power, the combination of a pivoted lever, a weighted float connected to one end of said lever, a power-transmitting device, and block and tackle connecting said power-transmitting device to the other end of the lever, substantially as set forth.

408,526. GRATE. THOMAS T. ROCKETT, Philadelphia, Pa. Filed July 9, 1888. Serial No. 171,040. (No model.)



Claim.—1. The combination of the base A, the grate-frame B, and a pivot for said frame, with bars D, pivoted to the frame B and having arms *m*, a rod *n*, connecting said arms together, and a rod connecting the bars to the base, substantially as and for the purpose described.

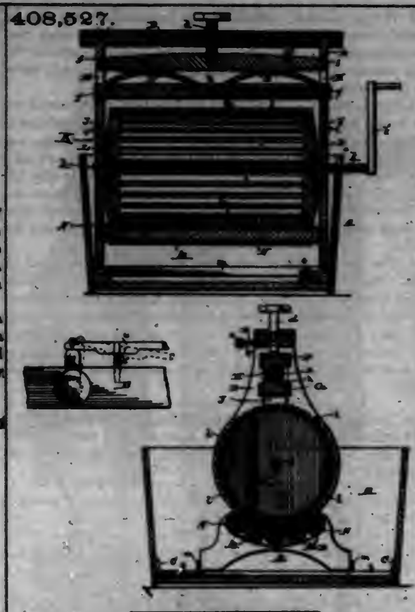
2. The combination of the base A, grate-frame B, and bar E, with the bars D, hung to the frame B and pivoted at *x* to the bar E, a leg *i*, a rod *k*, connected to the base A, arms *m*, projecting from each bar D, and a bar *n*, connecting said arms, all substantially as shown and described.

408,527. WASHING-MACHINE. PETER W. ROUSSEAU, Sidney, Ohio. Filed May 11, 1888. Serial No. 273,560. (No model.)

Claim.—1. The combination of the slotted uprights, the journal-blocks moving in the slots thereof, and the drum journaled therein with the bar G, resting on said blocks, the springs I I on said bar, the bar F, resting on springs I I, the serrated pin *d*, catch-block E, lever *c*, and spring-rod *d'*, all substantially as and for the purpose specified.

2. A washing-machine consisting of the uprights B B, vertically slotted at H H, the blocks J, moving in said slots, the drum K, constructed substantially as described, mounted on a shaft journaled in blocks J, the series of rollers M, concentric to and below the drum, the apron N thereon, the horizontal bar G, springs I I, bar F, and serrated pin *d*, catch-block E, lever *c*, and spring-rod *d'*, all substantially as and for the purpose set forth.

408,527.

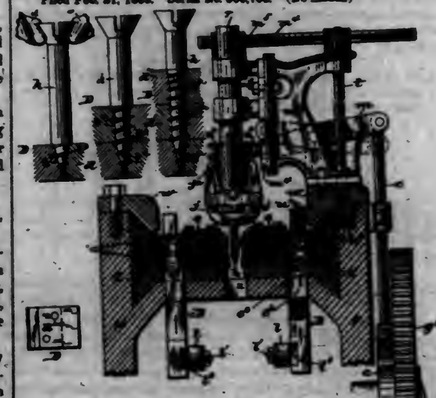


408,528. DIE FOR ROLLING DRIVE-SCREWS. CHARLES D. ROGERS, Providence, R. I., assignor to the American Screw Company, same place. Filed Feb. 13, 1888. Serial No. 263,869. (No model.)



Claim.—A die for rolling screws, provided with diagonal ribs and grooves for impressing a spiral groove into the metal of a screw-blank and raising the metal at the edges of the groove above the normal surface of the blank to form the threads of a screw, and with plane surfaces between the ribs corresponding to the normal surface of the blank to preserve such surface from distortion by the action of the ribs in forming the groove and thread.

408,529. SCREW-SWAGING MACHINE. CHARLES D. ROGERS, Providence, R. I., assignor to the American Screw Company, same place. Filed Feb. 21, 1888. Serial No. 300,708. (No model.)



Claim.—1. A swaging-die for forming threads upon screw-blanks, made up of parallel sections which are successively brought into action to compress the metal to form the thread and elongate the blank.

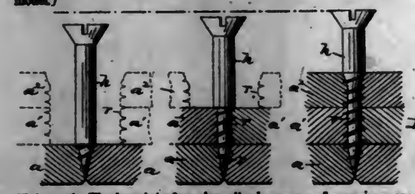
2. The combination, substantially as hereinbefore described, of oppositely-reciprocating cross-heads, sectional screw-threading dies, and simultaneously-moving backing-plates for forcing successively the several sections of the dies into engagement with the screw-blank while the thread is being formed.

3. The combination of revolving gripping-jaws which receive the blank from a feeding mechanism, and hold it while thus revolving in the proper position to be acted upon by the dies, reciprocating sectional threading-dies arranged to simultaneously engage opposite sides of the blank and alternately revolve it repeatedly in forming the thread, and mechanism for forcing the traveling dies into engagement with the revolving blank, and for withdrawing them therefrom after they have completed their work, substantially as hereinbefore described.

4. The combination of revolving gripping-jaws arranged to receive, retain, and release the blank, two oppositely-arranged reciprocating cross-heads, each having mounted therein a thread-forming die divided horizontally into two or more parallel sections, and a cam bar or plate mounted at the back of each die and reciprocating in unison therewith, and means for vertically actuating said cam-plate to successively operate the die-sections, substantially as hereinbefore set forth.

408,530. MODE OF FORMING SCREW-THREADS UPON SCREWS.

CHARLES D. ROGERS, Providence, R. I., assignor to the American Screw Company, same place. Filed Feb. 21, 1889. Serial No. 300,709. (No model.)



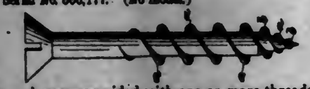
Claim.—1. The hereinbefore-described process of swaging screw-threads upon screw-blanks, which consists, first, in forming the thread on the point portion by forcing reciprocating swaging-dies into engagement therewith; next, continuing the forming of the thread upon the shank portion by one or more sections of swaging-dies moving to and fro, and, finally, finishing the thread by the joint action of all the said dies.

2. The hereinbefore-described process of swaging screw-threads upon screw-blanks, which consists in forming the thread in connected sections, first producing the thread upon the point portion; next, continuing the thread therefrom upon the shank in one or more successive sections by swaging, and, finally, subjecting the entire threaded portion to the simultaneous action of the swaging mechanism to reduce and finish the threads.

3. The hereinbefore-described process of swaging screw-threads upon screw-blanks, the same consisting in, first, swaging a thread upon the point portion of the mechanically-revolving blank; next, continuing the said thread therefrom upon the cylindrical portion of the shank of the revolving blank by swaging the thread thereon in one or more connected sections, and, finally, subjecting the entire threaded portion to a simultaneous action of the swaging mechanism to finish the threads.

408,531. WOOD-SCREW.

CHARLES D. ROGERS, Providence, R. I., assignor to the American Screw Company, same place. Filed Apr. 6, 1889. Serial No. 306,177. (No model.)



Claim.—A screw provided with one or more threads about its body or cylindrical portion and with one or more auxiliary threads upon its pointed or conical portion between the threads extending from the body.

408,532. PROCESS OF MANUFACTURING GAS.

JAMES M. ROSS, Allegheny, Pa. Filed May 9, 1888. Serial No. 273,279. (No specimens.)

Claim.—1. The improvement in the art of forming gas, consisting in blasting a mass of carbon to incandescence, passing the products therefrom through a mass of refractory material containing hydrocarbon and the resultant products over a bed of heated carbon and burning them to heat a body of fixing material, and then passing a current of steam through said first body of incandescent carbon, a current of steam over said incandescent carbon to superheat it, and the mixed superheated steam and gases through the hydrocarbon-bearing material, and then mixing with the resultant gases a liquid hydrocarbon, and passing the gases and vapors first through the heated fixing material, and then through the second body of incandescent carbon, substantially as and for the purpose set forth.

2. The improvement in the art of making gas, consisting in blasting a mass of carbon in one chamber to incandescence and passing the resultant products through a mass of refractory material containing hydrocarbon, and subsequently passing a current of steam through the incandescent carbon and a current of steam over said incandescent carbon to superheat the same, and the mixed superheated steam and gases through the heated hydrocarbon-bearing material, substantially as and for the purposes set forth.

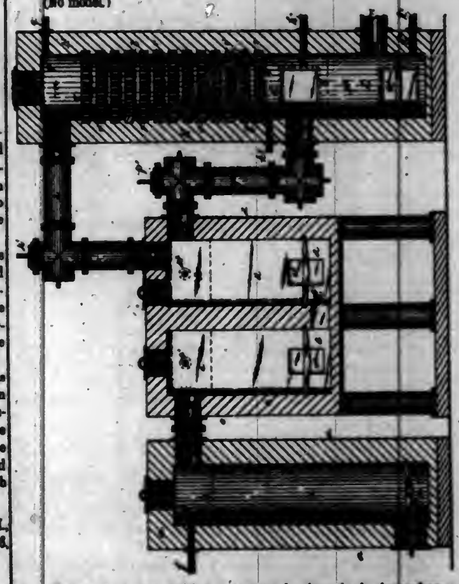
3. The improvement in the art of forming gas, consisting in passing water-gas through a mass of refractory material containing hydrocarbon and the resultant gases through a mass of heated fixing material, and then through a mass of incandescent carbon, substantially as and for the purpose set forth.

4. The improvement in the art of forming gas, consisting in passing water-gas through a heated mass of refractory material containing hydrocarbon, then spraying into the resultant gases steam and liquid hydrocarbon, and then passing the gases and vapors through a heated mass of fixing material and the resultant gases through a mass of incandescent carbon, substantially as and for the purposes set forth.

5. The improvement in the art of forming gas, consisting in passing water-gas through a heated mass of refractory material containing hydrocarbon, then spraying into the resultant gases steam and liquid hydrocarbon, and then passing the gases and vapors through a heated mass of fixing material, substantially as and for the purposes set forth.

408,533. APPARATUS FOR THE MANUFACTURE OF GAS.

JAMES M. ROSS, Allegheny, Pa. Filed May 9, 1888. Serial No. 273,280. (No model.)



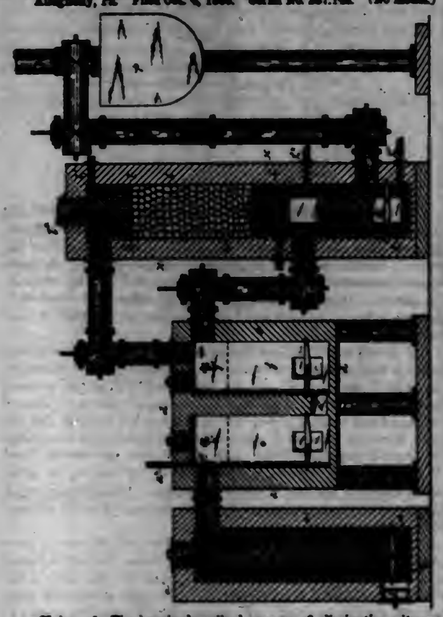
Claim.—1. A gas-making apparatus having the hydrocarbon or treating chamber *c*, containing refractory material, the casing N, having a combustion-chamber therein, a fixing-chamber containing checker-work or like heat-retaining material above the combustion-chamber, and a mixing-chamber at the top of the casing above the fixing-chamber, and separate flues leading from the discharge end of the treating-chamber *c* to said combustion-chamber and said mixing-chamber, respectively, substantially as and for the purposes set forth.

2. A gas-making apparatus having the casing N, provided at the base thereof with the carbon-chamber A, for containing incandescent carbon, the fixing-chamber *l* above the same, a purge-outlet above the fixing-chamber, an inlet *p*, for products of combustion, between the carbon-chamber and fixing-chamber, and inlet *r*, for gases, above the fixing-chamber, and a gas-outlet leading to the receiver below the top of the carbon-chamber, substantially as and for the purposes set forth.

3. A gas-making apparatus having a cupola generator, a casing having one or more treating-chambers containing refractory material and provided with an oil-inlet with which said generator communicates, and a casing having a combustion-chamber therein, a fixing-chamber containing checker-work or like heat-retaining material above the combustion-chamber, a mixing-chamber at the top of the casing above the fixing-chamber, and a purge-valve above said mixing-chamber, and separate flues leading from the discharge end of the treating-chamber to said combustion-chamber and said mixing-chamber, respectively, substantially as and for the purposes set forth.

408,534. PROCESS OF MANUFACTURING GAS.

JAMES M. ROSS, Allegheny, Pa. Filed Oct. 4, 1888. Serial No. 287,142. (No model.)



Claim.—1. The herein-described process of eliminating nitrogen from and enriching producer-gas, consisting in introducing steam into the heated producer-gas in the presence of an excess of hydrocarbons, and thereby causing the oxygen of the steam to unite with the carbons present and the nascent hydrogen to unite with the heated nitrogen, forming ammonia-gas or like compound, and enriching the producer-gas through the hydrocarbons, and subsequently absorbing the ammonia-gas from the gases formed, substantially as set forth.

2. The herein-described process of eliminating nitrogen from and enriching generator or producer gas, consisting in introducing steam into the heated producer-gas in the presence of an excess of hydrocarbon and passing the gases or vapors through a heated mass of refractory material, which gradually reduces in temperature from the entrance end toward the delivery end thereof, and wherein the nascent hydrogen unites with the heated nitrogen, forming ammonia-gas or like compounds, and subsequently absorbing the ammonia-gas from the gases formed, substantially as and for the purposes set forth.

408,535. MANUFACTURE OF GAS.

JAMES M. ROSS, Allegheny, Pa. Filed Oct. 16, 1888. Serial No. 288,208. (No model.)

Claim.—1. The herein-described process of forming gas, consisting in passing air through a mass of heated carbon and introducing into the gases so formed heated waste products of combustion, (such as formed in burning carbonaceous materials to heat a body of water,) then passing such gases and waste products through or in contact with heated hydrocarbons and admitting thereto a limited quantity of air, and subsequently passing the resultant gases through a body of heated fixing material, substantially as and for the purposes set forth.

2. The herein-described process of forming gases, consisting in passing air through a body of incandescent carbon and the resultant gas through or in the presence of heated hydrocarbons and during such passage admitting to such gases a limited quantity of air, whereby the oxygen unites with the hydrogen and the carbon is set free to enrich the gas, substantially as and for the purposes set forth.

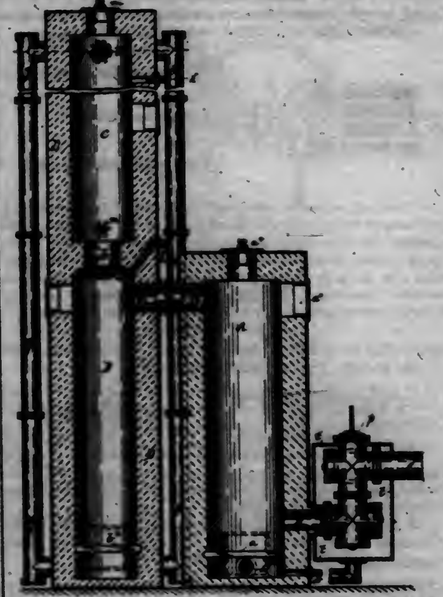
3. The herein-described process of forming gas, consisting in admitting a limited quantity of air to a body of gases passing through or in the presence of heated hydrocarbons, whereby the oxygen of the air unites with the hydrogen of the hydrocarbons and carbon is set free to enrich the gases, substantially as and for the purposes set forth.

4. The herein-described process of forming gas, consisting in admitting a limited quantity of air to a body of gases passing through or in the presence of heated hydrocarbons, whereby the oxygen unites with the hydrogen and the carbon is set free to enrich the gases, and subsequently passing such gases through heated fixing material to render them stable, substantially as and for the purposes set forth.

5. The herein-described process of forming gas, consisting in passing air through a mass of heated carbon and introducing into the gases so formed heated waste products of combustion, (such as formed in burning carbonaceous materials to heat a body of water,) commingling the gases, and subsequently recarburizing said waste products of combustion, substantially as and for the purposes set forth.

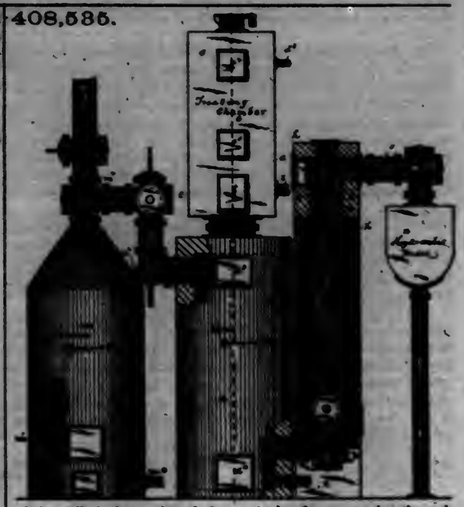
408,536. APPARATUS FOR THE MANUFACTURE OF GAS.

JAMES M. ROSS, Allegheny, Pa. Filed Dec. 3, 1888. Serial No. 292,960. (No model.)



Claim.—1. An apparatus for making gas, having two cupola generators, casings, each having a chamber at the base thereof provided with an oil-entrance for treating the gases, a chamber in the upper part thereof containing refractory material for fixing the gases, and pipes connecting the lower end of the lower or treating chamber of one casing with the upper end of the upper or fixing chamber of the

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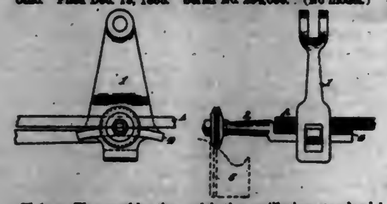
other casing, respectively, substantially as and for the purposes set forth.

2. An apparatus for the manufacture of gas, having the cupola generator, the casing having the chamber in the lower part thereof provided with an oil-entrance for treating the gases, with the upper end of which the cupola generator communicates, and the chamber above the said lower chamber containing refractory material for fixing the gases and communicating with said lower chamber through a flue in the base thereof, substantially as and for the purposes described.

3. An apparatus for the manufacture of gas, having two casings, each having a chamber in the lower part thereof provided with an oil-entrance, and a chamber in the upper part thereof containing refractory material for fixing the gases, said chambers communicating through a flue, and pipes connecting the base of the lower or treating chamber in one casing with the upper end of the upper or fixing chamber in the other casing, respectively, substantially as and for the purposes set forth.

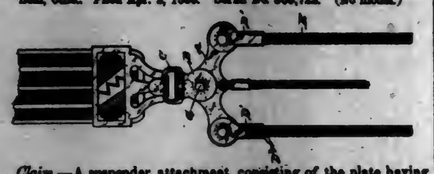
4. An apparatus for the manufacture of gas, having two casings, each having a chamber in the lower part thereof provided with an oil-entrance for treating the gases, and a chamber in the upper part thereof containing refractory material for fixing the gases, and a valve-controlled flue connecting the upper or fixing chambers in each casing, and two cupola generators communicating with the upper ends of the lower or treating chambers, substantially as and for the purposes set forth.

408,537. SHOE-BEADING MACHINE. SIMON ROSE, Jr., Linwood Ohio. Filed Dec. 19, 1888. Serial No. 294,089. (No model.)



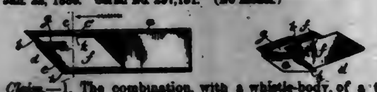
Claim.—The combination, with the oscillating standard 1, of the non-rotating arm 2, rigidly secured to, oscillating with, and projecting from the standard and provided with the beader 6, substantially as described.

408,538. SUSPENDER ATTACHMENT. JOSEPH P. RUSSELL, Mansfield, Ohio. Filed Apr. 2, 1889. Serial No. 305,722. (No model.)



Claim.—A suspender attachment consisting of the plate having the enlarged central and end openings, the disks arranged in said openings, the rise-clamp pivoted to the central disk, the braid-clamps pivoted to the end disks and having depending casings provided with barbs for engaging the braid and securing the same, and the disks connected to the pivots of the braid-clamps for securing them in position, substantially as and for the purpose described.

408,539. WHISTLE. EDWARD S. RUSSELL, Worcester, Mass. Filed Jan. 22, 1889. Serial No. 297,131. (No model.)



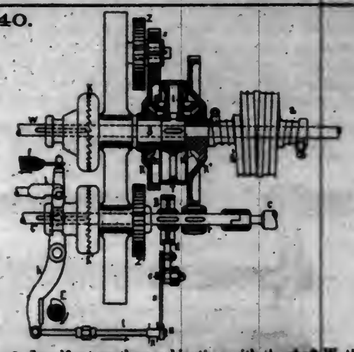
Claim.—1. The combination, with a whistle-body, of a tongue formed from a single piece of sheet metal, and having the elastic wings *f f* to press against the walls of the body and hold said tongue in place, substantially as described.

2. The combination, with the tubular body of a whistle, of the sheet-metal tongue *d*, having oblique body *c*, flanges *g h*, and elastic wings *f f*, substantially as shown and described.

408,540. SPINNING-MULE. OSCAR SCHIMMEL, Chemnitz, Saxony, Germany. Filed Jan. 12, 1889. Serial No. 296,196. (No model.) Patented in France Sept. 6, 1888, No. 192,515, and in Belgium Sept. 6, 1888, No. 82,158.

Brief.—The invention relates to the carriage driving-gear, and consists in the improved means for imparting to the drawing-out pulley or scroll two different speeds during the outward run of the carriage.

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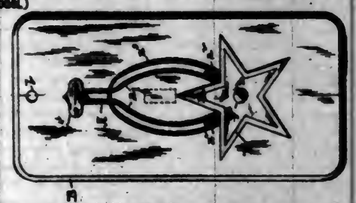


Claim.—1. In self-actors, the combination, with the shaft W, the run-out pulley S, fixed thereon and having two portions of different diameters, the roller C, the shaft C', and the spur-wheels Z Z', of the pinion *z*, fixed to the wheel Z, the disengaging-coupling K', the parts whereof are connected, respectively, to the shaft C and the wheel Z', the pinion *r*, keyed on the shaft C', and a differential wheel-work gearing with the pinions *z* and *r* and connected to the shaft W, substantially as specified.

2. In self-actors, the combination, with the shaft W, the run-out pulley S, fixed thereon and having two portions of different diameters, the roller C, the shaft C', and the spur-wheels Z Z', of the pinion *z*, fixed to the wheel Z, the disengaging-coupling K', the parts whereof are connected, respectively, to the shaft C and the wheel Z', the pinion *r*, keyed on the shaft C', and a differential wheel-work comprising the sleeve *g*, connected to the shaft W, the loose spur-wheels R and R', gearing with the respective pinions *z* and *r*, and having the bevel-wheel teeth *k k'*, the disk T, keyed to the sleeve *g*, and the bevel-wheel U, pivoted to the disk T and gearing with the teeth *k* and *k'*, substantially as set forth.

3. In self-actors, the combination of the shaft W, two or more pulleys S S' fixed thereon, each having two portions of different diameters, the roller C, the shaft C', the spur-wheels Z Z', the pinion *z*, the disengaging-coupling K', the pinion *r*, a differential wheel-work gearing with the pinions *z* and *r* and connected to the shaft W, ropes *s s'*, connecting the said pulleys with the carriage, and guide-rollers *r'*, substantially as described.

408,541. HOLDER FOR LETTERS, PAPERS, CARDS, &c. DANIEL A. SMITH, Boston, Mass. Filed Apr. 26, 1889. Serial No. 308,761. (No model.)



Claim.—1. The holder for letters, papers, cards, &c., herein described, comprising a substantially horseshoe-shaped bow, of wire, terminating at or near one end in spring-coils and at its opposite or receiving end in an upwardly and outwardly flaring lip, to facilitate the insertion of articles within the holder, in combination with means for securing said holder to a suitable support, substantially as set forth.

2. In a holder for letters, papers, cards, &c., a base or support, a bow, formed from wire, secured at one end to said base and having its opposite end held against said base by spring-pressure, and a center piece projecting from said base between the two sides of said bow, combined and operating substantially as and for the purpose set forth.

3. In a holder for letters, papers, cards, &c., a base or support, a bow, of wire, bent at one end to form an outwardly-flaring lip and being bent near its opposite end into spring-coils, whose axis is parallel with the face of said base, and an independent plate for securing the end of said bow opposite to said lip to said base, said plate having a screw passing therethrough into the base, combined and operating substantially as described.

4. The holder for letters, papers, cards, &c., herein described, consisting of center piece *a*, loops *a'*, coils a^3, and bow a^2, formed from a continuous piece of wire, substantially as described.

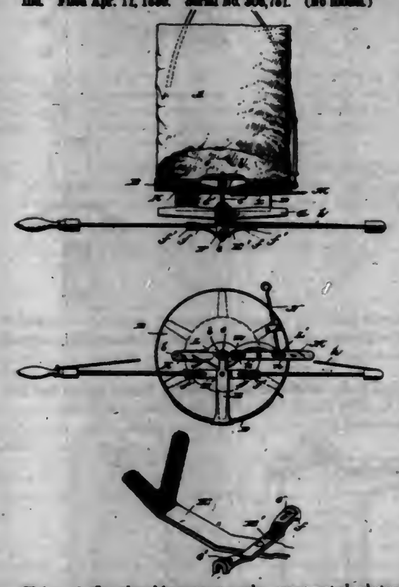
5. In a holder of the kind described, base B, bow a^2, having lip a^4, and having coils a^3 and loops *a'* made integrally therewith, and

plate *b'*, covering said loops and having a portion thereof projecting within the latter, substantially as described.

6. In a holder of the kind described, base B, holder A, having loops *a'* at one end thereof, plate *b'*, having within its inner side recesses to receive said loops, and spurs b^3, projecting within the latter, and a centrally-located screw passing through said plate into said base, combined and operating substantially as described.

7. In a holder of the kind described, the combination, with base B, of holder A, composed of center piece *a*, loops *a'*, coils a^3, and bow a^2, formed from a single piece of wire, plate *b'*, covering said loops *a'*, and plate b^4, covering the ends of said wire, substantially as described.

408,542. BROADCAST SEED-SOWER. SAMUEL BRICKER, Goshen Ind. Filed Apr. 11, 1889. Serial No. 306,781. (No model.)



Claim.—1. In a hand broadcast-seeder, constructed substantially as shown and provided with a distributing-wheel and operating means, of a pin C, which forms an upper bearing for the hub of the distributing-wheel, said pin having formed thereon above the seed-discharge opening an enlargement, one side of which is inclined, while the opposite side is rounded, and a transverse metal bearing secured to the upper face of the hopper-bottom and receiving the end of the pin above the enlargement, substantially as shown, and for the purpose set forth.

2. The combination, in a broadcast seed-sower adapted to be operated by hand, substantially as shown, of the castings K and L, pivoted to the under side of the disk, said castings being provided with projecting pins *k'* and *l'*, one of said castings having a circular flange *k*, and a pivoted operating-lever M, having slots *m* and *n*, with which the pins engage, substantially as shown, and for the purpose set forth.

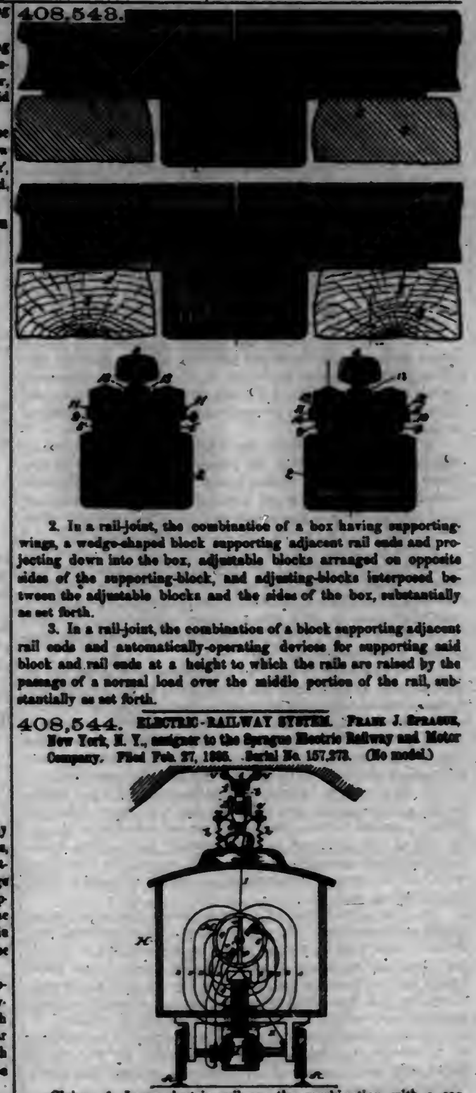
3. In a hand broadcast-seeder, a bow-guide pivoted to the supporting-arm E, said bow-guide having V-shaped openings *e'*, with projecting lugs *f f*, and through which the bow passes, said lugs holding thereon the spiral springs *f'*, substantially as shown, and for the purpose set forth.

4. In combination with a hand seed-sower of the class described, a flexible container A, disk B, having a central concave and opening *b*, seed-regulating slides K and L, pivoted to the under side of the disk B, a hub carrying a seed-distributing wheel, said hub having an upwardly-projecting pin C, with an enlarged portion C', an arm E, carrying a pivoted bow-guide and forming a support for the lower portion of the hub, and a shield D, attached to the disk B, the parts being organized substantially as shown, and for the purpose set forth.

408,543. RAIL-JOINT. RICHARD H. SOLES, Pittsburg, Pa. Filed May 15, 1889. Serial No. 310,899. (No model.)

Claim.—1. In a rail-joint, the combination of a supporting-block arranged beneath adjacent rail ends, plates having inclined engaging-ribs, fish-plates arranged along the webs of the rails, and a U-shaped bolt, substantially as set forth.

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2. In a rail-joint, the combination of a box having supporting-wings, a wedge-shaped block supporting adjacent rail ends and projecting down into the box, adjustable blocks arranged on opposite sides of the supporting-block, and adjusting-blocks interposed between the adjustable blocks and the sides of the box, substantially as set forth.

3. In a rail-joint, the combination of a block supporting adjacent rail ends and automatically-operating devices for supporting said block and rail ends at a height to which the rails are raised by the passage of a normal load over the middle portion of the rail, substantially as set forth.

408,544. ELECTRIC-RAILWAY SYSTEM. FRANK J. SPRAGUE, New York, N. Y., assignor to the Sprague Electric Railway and Motor Company. Filed Feb. 27, 1889. Serial No. 301,273. (No model.)

Claim.—1. In an electric railway, the combination, with a car provided with an electric motor mounted upon and propelling it, of an overhead conductor, a contact device carried by the car and traveling on the under side of said conductor, and a rocking support for said contact device, whose normal position is vertical, substantially as set forth.

2. In an electric railway, the combination, with a car provided with an electric motor mounted upon and propelling it, of an overhead conductor, a contact device carried by the car and traveling on the under side of said conductor, and a laterally-rocking support for said contact device, substantially as set forth.

3. In an electric railway, the combination, with a car and an electric motor mounted upon and propelling it, of an overhead conductor, a contact device carried by the car and traveling on the under side of said conductor, and a hinged support for said contact device, whose normal position is vertical, substantially as set forth.

4. In an electric railway, the combination, with a car and a motor mounted upon and propelling it, of an overhead conductor, a contact device carried by the car and traveling on the under side of said conductor, and a normally vertical support for said contact device hinged on an axis longitudinal of the car, substantially as set forth.

5. In an electric railway, the combination, with a car and an electric motor mounted upon and propelling it, of an overhead conductor, a contact device carried by the car and traveling on the under side of said conductor, and a rocking support for said contact device, whose normal position is vertical and which is provided with a spring tending to maintain said support in a vertical position, substantially as set forth.

6. In an electric railway, the combination, with a car and an electric motor mounted upon and propelling it, of an overhead conductor, a contact device carried by the car and traveling on the under side of said conductor, and a hinged support for said contact device, whose normal position is vertical and which is provided with a spring tending to maintain said support in a vertical position, substantially as set forth.

7. In an electric railway, the combination, with a car and an electric motor mounted upon and propelling it, of an overhead conductor, a contact device carried by the car making an underneath contact with said conductor and in lateral engagement therewith, and a rocking support for said contact device, substantially as set forth.

8. In an electric railway, the combination, with a car and an electric motor mounted upon and propelling it, of an overhead conductor, a contact device carried by the car making an underneath contact with said conductor and in lateral engagement therewith, and a laterally-rocking support for said contact device, substantially as set forth.

9. In an electric railway, the combination, with a car and an electric motor mounted upon and propelling it, of an overhead conductor, a contact device carried by the car making an underneath contact with said conductor and in lateral engagement therewith, and a rocking support for said contact device, and springs tending to maintain said support in a vertical position, substantially as set forth.

10. In an electric railway, the combination, with a car and an electric motor mounted upon and propelling it, of an overhead conductor, a contact device carried by the car and traveling on the under side of said conductor, a support for said contact device adapted to yield downwardly on either side of a center in the direction of length of the car, and a spring tending to raise said support toward a vertical position, substantially as set forth.

11. In an electric railway, the combination, with a car and an electric motor mounted upon and propelling it, of an overhead conductor, a contact device carried by the car and traveling on the under side of said conductor, a support for said contact device adapted to yield downwardly in the direction of length of the car and also in the direction of width thereof, and a spring or springs tending to raise said support toward a vertical position, substantially as set forth.

12. In an electric railway, the combination, with a car and an electric motor mounted upon and propelling it, of an overhead conductor, a contact device carried by the car and traveling on the under side of said conductor, and a support for said contact device made flexible at two points, so as to yield downwardly laterally of the car at one point and longitudinally of the car at another point, substantially as set forth.

13. In an electric railway, the combination, with a car and an electric motor mounted upon and propelling it, of an overhead conductor, a contact device carried by the car and traveling on the under side of said conductor, a support for said contact device, whose normal position is vertical and which is adapted to yield downwardly in any direction from such vertical position, and a spring or springs opposing such yielding of the support, substantially as set forth.

14. In an electric railway, an overhead conductor for receiving an underneath traveling contact, consisting of a flat web having downwardly-extending side ribs or flanges for guiding the contact, substantially as set forth.

15. In an electric-railway system, the combination of a divided source of electricity, main conductors, and a compensating or balance conductor, dividing the system into two parts, and one or more overhead conductors and one or more other working-conductors for each of said parts of the system, substantially as set forth.

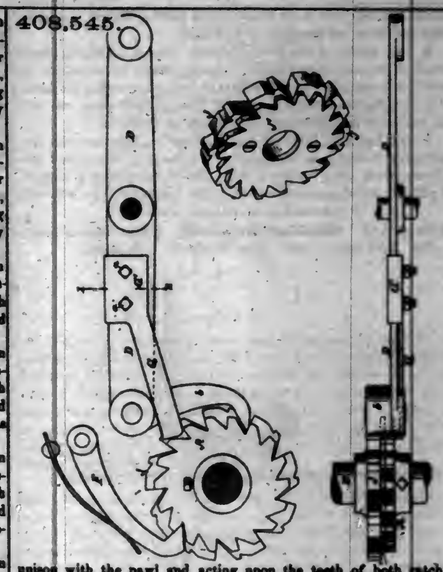
16. In an electric-railway system, the combination of a divided source of electricity, main conductors, and a compensating or balance conductor dividing the system into two parts, two railway-tracks, two conductors situated above each track, each connected with one of said main conductors, and the rails of both tracks connected with the middle or balance conductor, substantially as set forth.

408,545. RATCHET MECHANISM. CHARLES STEVENSON, Philadelphia, Pa. Filed Aug. 24, 1887. Serial No. 247,708. (No model.)

Claim.—1. The combination of the ratchet-wheel, the operating-pawl, its lever, and the stop-finger having jaws embracing the lever and provided with clamping-screws, all substantially as specified.

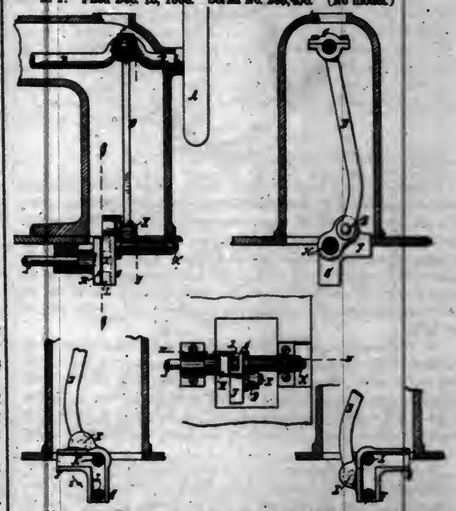
2. The combination of the fast ratchet-wheel A, its operating-pawl, a supplementary loose ratchet-wheel J, having secured thereto a ratchet J', similar to the wheel A, and a stop-finger operating in

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unison with the pawl and acting upon the teeth of both ratchet-wheels to prevent overrunning of the same, all substantially as specified.

408,546. MECHANICAL MOVEMENT. JAMES P. STILES, New York, N. Y. Filed Dec. 13, 1888. Serial No. 293,450. (No model.)



Claim.—1. The combination, with an oscillating bracket and an oscillating actuating rod or connection for actuating said bracket, of a rock-shaft, and an angular stud-and-groove connection between said bracket and rock-shaft, substantially as described.

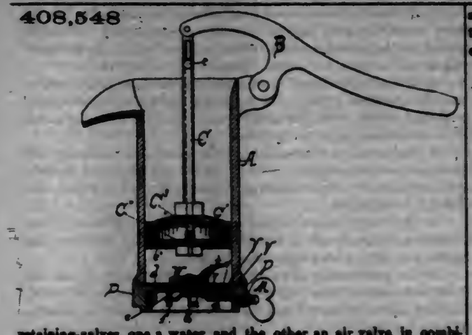
2. The combination, with an oscillating bracket having grooves placed at an angle to one another, and an oscillating actuating rod or connection for actuating said bracket, of a rock-shaft having studs made to engage said grooves, substantially as described.

3. The combination, with a bracket consisting of two grooved arms placed at an angle to one another and supported on a pin or pivot, of an actuating rod or connection for oscillating said bracket, and a rock-shaft having studs made to engage the grooved arms, substantially as described.

408,547. PUMP. IRA C. H. SWEET, Sandwich, Ill. Filed Aug. 27, 1888. Serial No. 283,915. (No model.)

Claim.—In a lift or force pump operated by a plunger, two

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retaining-valves, one a water and the other an air valve, in combination with a key or arm extending through the pump tube or cylinder and adapted to lock either valve at will out of action as a valve while leaving the other free to act, substantially as described.

408,548. PROCESS OF PREPARING GELATINOUS MATTER FROM HIDES OR SKINS. FREDERICK W. P. SWINBURNE and LATIMER P. SWINBURNE, London, England. Filed Nov. 26, 1888. Serial No. 292,129. (No model.)



Claim.—1. In the process of preparing gelatine from hide or skin, the improvement which consists in cleansing the hide or skin, subdividing it into thin leaves or pieces, and drying it before decomposition commences.

2. In the process of preparing gelatine from hide or skin, the improvement which consists in removing the superficial layers of the hide or skin and drying its middle portion thoroughly before decomposition commences.

3. In the process of preparing gelatine from hide or skin, the improvement which consists in removing the superficial layers of the hide or skin, subdividing the middle portion into thin leaves or pieces, and thoroughly drying it before decomposition commences.

4. In the process of preparing gelatine from hide or skin, the improvement which consists in cleansing the hide or skins, subdividing it into thin leaves or pieces, drying it thoroughly before decomposition commences, and afterward submitting it to the action of hot water to extract a solution of gelatine therefrom.

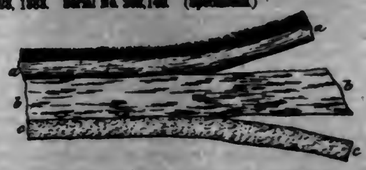
5. In the process of preparing gelatine from hide or skin, the improvement which consists in removing the superficial layers of the hide or skin and submitting its middle portion to the action of hot water before decomposition commences.

6. In the process of preparing gelatine from hide or skin, the improvement which consists in removing the superficial layers of the hide or skin, subdividing its middle portion into thin leaves or pieces, and submitting them to the action of hot water before decomposition commences.

7. In the process of preparing gelatine from hide or skin, the improvement which consists in removing the superficial layers of the hide or skin, drying its middle portion thoroughly before decomposition commences, and afterward submitting it to the action of hot water.

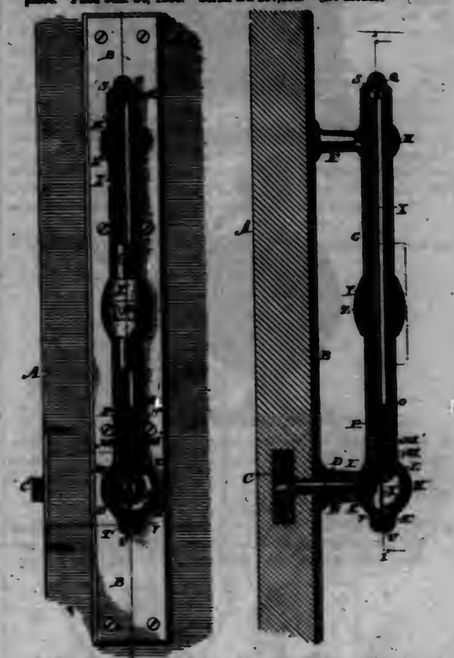
8. In the process of preparing gelatine from hide or skin the improvement which consists in removing the superficial layers of the hide or skin, subdividing the middle portion into thin leaves or pieces, drying it thoroughly before decomposition commences, and afterward submitting it to the action of hot water.

408,549. PROCESS OF MAKING GELATINE. FREDERICK W. P. SWINBURNE and LATIMER P. SWINBURNE, London, England. Filed Nov. 28, 1888. Serial No. 292,149. (Specimens.)



Claim.—The herein-described process of obtaining gelatinous matter, consisting in first removing superficial layers from the hair side and from the flesh side of hide or skin, treating the middle portion (cut into small pieces or otherwise) with hot water, and then evaporating the odust.

408,550. ROD-HANDLE FOR LOCKS. WARREN H. TAYLOR, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Jan. 24, 1889. Serial No. 297,302. (No model.)



Claim.—1. A combined lock and door-handle consisting of a rotary rod or bar turning in one or more guides secured to the door, in combination with one or more locks and a spindle and gearing for transmitting motion from the rod to the lock or locks, substantially as set forth.

2. In combination with a rotary-rod door-handle, a bracket which guides the rod and mechanism contained therein for transmitting motion of the rod to a lock, substantially as set forth.

3. The combination, in one structure, of a door-plate, two or more brackets rigidly secured thereto, a rotary-rod door-handle guided and supported in said brackets, and a spindle and gearing for transmitting motion of the rod to a lock, substantially as set forth.

4. The combination of a rotary rod or handle G with one or more brackets E, a rotating sleeve I, and gearing K and L for communicating motion of the handle to a lock, substantially as set forth.

5. The combination of a rotary rod or handle G, one or more brackets for guiding and supporting the same, the rotary sleeve I, gearing K and L, and the spring X, substantially as set forth.

6. The combination of a rotary rod or handle G, one or more brackets E for guiding and supporting the same, the rotary sleeve I, gearing K and L, spring X, and adjusting device U, whereby the action of the spring may be controlled as desired, substantially as set forth.

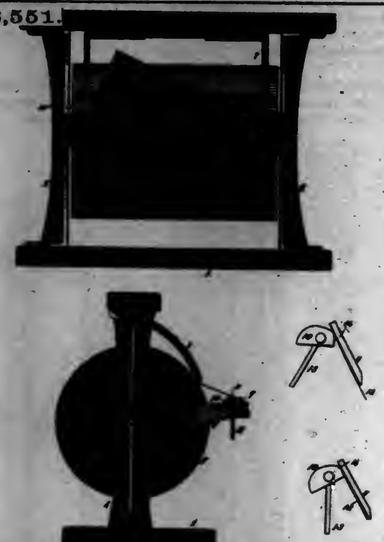
408,551. ROLL-PAPER HOLDER AND CUTTER. WILLIAM H. TIVY and LEO EHRLICH, St. Louis, Mo., assignors to the American Roll Paper Company, same place. Filed May 22, 1888. Serial No. 274,708. (No model.)

Claim.—1. In a roll-paper cutter, the combination of a suitable support for the roll, knife secured to the support, and a cam pivoted to the support behind the knife and bearing on the latter for confining the end of the paper after cutting, substantially as and for the purpose set forth.

2. In a roll-paper cutter, the combination of a suitable support for the roll, knife secured to the support, and a serrated cam journaled in the support back of the knife and bearing on the latter for confining the end of the paper after cutting, substantially as and for the purpose set forth.

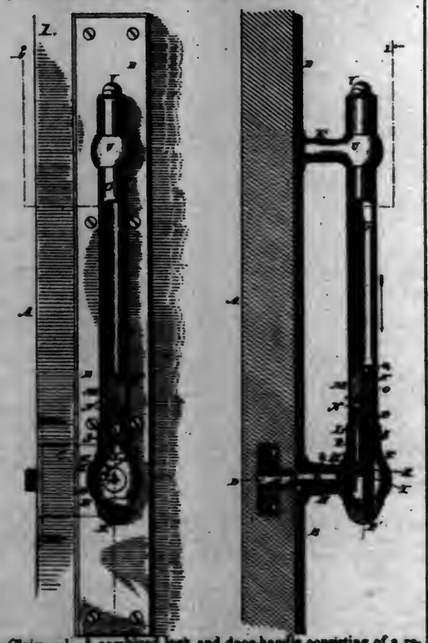
3. In a roll-paper cutter, the combination of a suitable support

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for the roll, knife secured to the support, cam journaled in the support back of the knife and bearing on the latter for confining the end of the paper after cutting, and an arm 13 on the cam, substantially as and for the purpose set forth.

408,552. ROD-HANDLE FOR LOCKS. HENRY R. TOWNE, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Jan. 22, 1889. Serial No. 297,771. (No model.)



Claim.—1. A combined lock and door-handle consisting of a reciprocating rod-handle moving in a guide or guides attached to the door, in combination with one or more locks, and mechanism connecting said rod with said lock or locks for transmitting motion of the rod to the lock or locks, substantially as set forth.

2. In combination with a reciprocating-rod door-handle, a bracket which guides and supports the rod, and mechanism within said bracket for transmitting motion of the rod to a lock, substantially as set forth.

3. The combination, in one structure, of a door-plate, two or more brackets rigidly secured thereto, a reciprocating rod-handle guided and supported in said brackets, and mechanism for transmitting motion of the rod to a lock, substantially as set forth.

4. The combination of a reciprocating-rod door-handle, one or more brackets for guiding and supporting the same, and an arm or projection rigidly secured to said rod and extending from it to a lock to communicate motion to the latter.

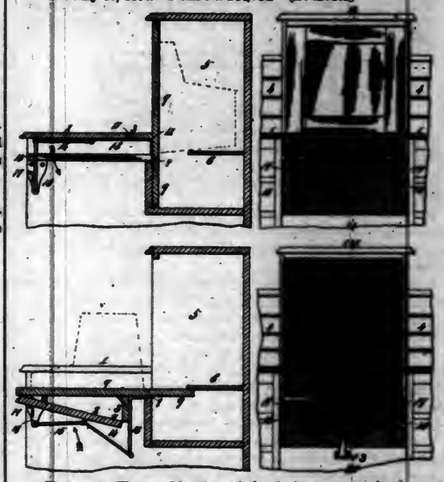
5. As a new article of manufacture, a door-handle consisting of a bracket, a reciprocating rod or slide guided and supported therein, and mechanism for communicating motion of the rod to a lock, substantially as set forth.

6. The combination of a reciprocating rod or handle G with one or more brackets E, and an arm for communicating motion of the handle to a lock, substantially as set forth.

7. The combination of a reciprocating rod or handle G with one or more brackets E, the rotary sleeve H, crank I, and crank-pin K, whereby motion of the rod may be communicated to a lock, substantially as set forth.

8. The combination of reciprocating rod or handle G with one or more brackets E, the spring P, and mechanism for communicating motion of the rod to a lock, substantially as set forth.

408,553. TYPE-WRITER DESK. CHARLES H. TYLER, St. Louis, Mo. Filed July 19, 1887. Serial No. 244,744. (No model.)



Claim.—1. The combination of the desk, a receptacle above the same, a machine-support hinged at the bottom of the receptacle, and a table attached to the machine-support and constructed to be brought into position for use as a desk-top when the machine-support is raised to close the receptacle, substantially as set forth.

2. The combination, in a type-writer desk, of the body portion provided with an elevated receptacle, a machine-support hinged at the bottom of the receptacle, and a table hinged to the machine-support, and mechanism to move the same into a horizontal position when the machine-support is raised to close the receptacle, substantially as set forth.

3. The combination, in a type-writer desk, of the body portion, an elevated receptacle, a machine-support hinged at the bottom of the receptacle and adapted to close the receptacle, a folding table 2 3, attached to the machine-support, mechanism to raise the same into position for use as a desk-top when the machine-support is raised, as explained, and suitable devices for supporting the machine-support and table in either of their positions, substantially as set forth.

4. The combination, with a table having an open receptacle and a projection in the rear of said receptacle, of a machine-support hinged intermediate of its ends at the front of said receptacle, one of the ends of said support being adapted to engage the said projection when the support is opened and said support closing said receptacle when raised, substantially as set forth.

5. The combination, in a type-writer desk having a movable table formed of two pieces hinged together, of a machine-support hinged near the back of the table and having one of said movable pieces rigidly secured thereto, and projections for supporting the movable portion when the machine-support is lowered, substantially as set forth.

6. The combination, with a table having a movable portion hinged in two parts and a machine-support hinged to the table and to which one of said parts is secured, of an arm secured rigidly to the machine-support, a crank-shaft, brackets on the table, in which the crank-shaft has bearing, a link connecting the crank-shaft and said arm, and projections for supporting the movable portion of the table when the machine-support is opened, the movable portion being thereby automatically lowered, substantially as set forth.

7. In combination with a desk having parts 1 and 5, the portion 6 in the back of part 5, machine-support 7, hinged to the body of the desk, near the bottom of part 5, a table made in two parts 2 3, hinged together, part 3 being rigidly secured to the machine-support 7, arm 13, secured to the latter below part 3, link 14, connected with said arm, crank-shaft to which it is also connected, and brackets 16 on the table, provided with projections 17, in which brackets the crank-shaft has bearings, said projections supporting the part 2 of the table in its lower portion, all substantially as and for the purpose set forth.

8. In combination with a desk having a receptacle 5, a machine-support 7, hinged in front of said receptacle, having a downward extension 9, a partition 6 at the rear of said receptacle with which the extension engages, a movable portion in front of said receptacle divided into two parts 2 3, hinged together, part 3 being rigidly secured to the machine-support, projection 17 of bracket 16, on which the movable portion is adapted to be supported in its lower position, and connections for supporting it in and releasing the movable portion from its upper position, consisting of an arm 13 on the machine-support, crank-shaft 15, having bearing in brackets 16 on the table, and a link connecting the arm 13 and crank-shaft 15, substantially as and for the purpose set forth.

9. In a type-writer desk, the combination of the receptacle for receiving the machine when not in use, a door to the receptacle, which serves as a base or support for the machine when the latter is in using position, a jointed table secured to the door and having arms projecting therefrom, brackets fixed to the desk, and stops for limiting the movement of the jointed table, substantially as and for the purpose set forth.

408,554. LATCH. CHARLES C. VAN BROCKLIN, Hills, Ill. Filed Mar. 30, 1888. Serial No. 305,492. (No model.)

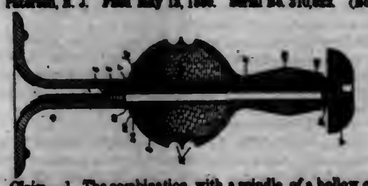


Claim.—1. The combination, with the latch-casing provided with the lateral stud near its rear end and intersecting openings at its front end, of the spring-pressed latching-lever provided with the laterally-projecting finger-pieces, the cross-head formed in one piece and provided with beveled ends and notches on opposite sides of said latching-lever, and a keeper having a beveled end slot for receiving the cross-head of the latch, substantially as specified.

2. The combination, with the latch-casing and the latch having a cross-head provided with notches in its face and a hasp-opening above them, of a keeper-plate having a slot bounded by beveled ends, and an interchangeable ball removably seated in the outer flange of said keeper-plate, substantially as specified.

3. The combination, with the reversible latch-casing having openings at its front end and a pivot-stud near its rear end, of the latch-lever provided at its rear end with a depending hook, near its front end with laterally-projecting finger-pieces, at its front end with a notched and bevel end cross-head having a hasp-opening, and a keeper-plate provided with a latch-opening having beveled ends, and a removable reversible ball seated in the flange of the keeper, substantially as specified.

408,555. APPLIANCE FOR ROTARY FANS. CHARLES E. WALDON, Paterson, N. J. Filed May 13, 1889. Serial No. 310,922. (No model.)



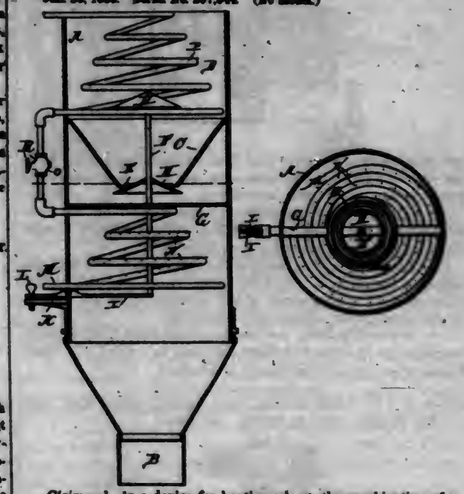
Claim.—1. The combination, with a spindle, of a hollow or chambered drive-pulley loose on the spindle and a loose tubular shaft or hub having fan-blades mounted thereon and driven by the said pulley, the hollow of the pulley acting as a reservoir for supplying lubricant to the bearings of the pulley and the said fan-blade-carrying shaft or hub, substantially as and for the purpose set forth.

2. The combination, with a spindle, of a drive-pulley 8, having an integral tubular extension 11 12 for carrying the fan-blades, substantially as and for the purpose set forth.

3. The combination, with the fixed spindle 7, of the single hollow casting comprising the globe-shaped pulley 8, having hollow interior 9 and one or more circumferential grooves 15, the hub or extension 11, aperture 22, and the fan-carrier 12, for carrying the fan-blades 14 14, and means for holding the casting in position on the spindle, the hollow interior 9 of the pulley serving as an oil-reservoir, substantially as and for the purpose set forth.

4. The combination, with the attaching-stand 4 and the vertical spindle 7, fixed thereto, of the single casting comprising the globe-shaped drive-pulley 8, formed with hollow interior 9, and having the radial tubular extension or hub 11 prolonged into the fan-hub 12, the aperture 22, diametrically opposite the extension 11, the exterior of the globe-like pulley being formed with one or more circumferential belt-grooves 15, the collars 16 and 19, for mounting the parts on the spindle, and the hollow interior 9 of the pulley acting as an oil-reservoir, substantially as and for the purpose set forth.

408,556. GRAIN-HEATER. ADOLF WAGNER, Cologne, Minn. Filed Jan. 26, 1889. Serial No. 297,844. (No model.)



Claim.—1. In a device for heating wheat, the combination of a hopper or casing having a hopper-shaped diaphragm, a vertically-movable adjustable stem carrying a conical valve adapted to regulate the opening in said hopper-shaped diaphragm, a perforated steam-pipe coiled in said casing below said diaphragm, and means for retaining said valve-carrying stem in any position to which it may be adjusted, substantially as set forth.

2. In apparatus for heating wheat, the vessel A, having the diaphragm C, with opening E, the valve to regulate the said opening, the live-steam coil in the lower part of the vessel and having the perforations, and the heating non-perforated coil in the upper part of the vessel, substantially as described.

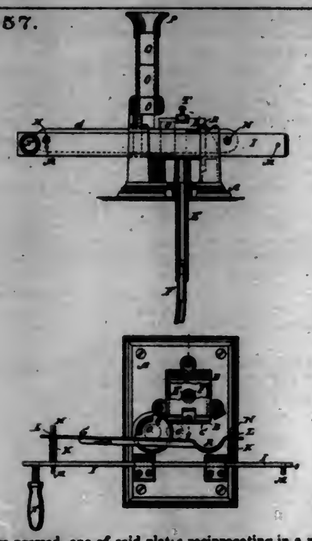
3. In apparatus for heating wheat, the vessel having the diaphragm with opening E, the perforated steam-pipe M, coiled in the lower part of the vessel, the non-perforated pipe P, coiled in the upper part of the vessel and communicating with the coil M, and the valve R, to establish and cut off communication between the said coils, for the purpose set forth, substantially as described.

4. An apparatus for heating grain, comprising a casing or hopper having a funnel-shaped diaphragm open at its lower end, the perforate steam-pipe coiled in the lower part of the casing, a non-perforated steam-pipe coiled in the upper part of the casing, a central vertical rod having a deflector at its upper end and carrying a conical valve arranged below the opening in the funnel-shaped diaphragm, a lever mounted in the side of the casing and supporting said vertical rod, and a set-screw arranged in the outer end of said lever and engaging a bracket extending laterally from the side of the casing, substantially as and for the purpose set forth.

408,557. CORK-BRANDING DEVICE. ALBERT R. WEBB, Brooklyn, assignor to Budde & Westermann, New York, N. Y. Filed Jan. 31, 1889. Serial No. 298,508. (No model.)

Claim.—1. The combination, in a cork-branding machine, of a chute for feeding the corks, with two pressure-plates between which

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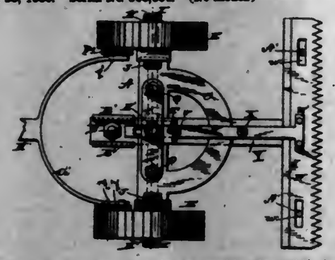
the corks are pressed, one of said plates reciprocating in a right line and yielding to and from the other plate, and a heater for one of said pressure-plates, substantially as described.

2. In a cork-branding machine, the combination, with two pressure-plates, one of which is provided with a receiving-recess, of a heater for one of said plates, substantially as described.

3. In a cork-branding machine, the combination, with the pressure-plates, one of which is provided with a receiving-recess, of a funnel or chute for guiding a cork to said receiving-recess, and a heater for one of said plates, substantially as described.

4. In a cork-branding machine, the combination, with two pressure-plates, one of which is yieldably connected to a slide I, of a heater for one of said plates, substantially as described.

408,558. LAWN-MOWER. LOUIS WEBBER, Preston, Minn. Filed Feb. 23, 1889. Serial No. 300,661. (No model.)



Claim.—1. In a lawn-mower, in combination with the herein-described pivoted operating-bar provided with an elongated slot near its rear end and a slot intersecting the same centrally, the rotating cross-head provided with downwardly-projecting pin or stud, said pin or stud carried by the cross-head, and by this means imparting a reciprocating motion to the sickle-bar, and the vertical shaft passing centrally through the cross-head and imparting rotary motion thereto, substantially as set forth.

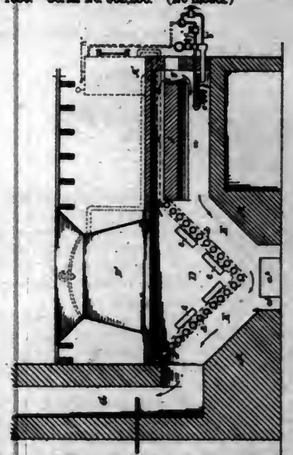
2. In a lawn-mower, the combination of the inwardly-flanged drive-wheels, said flanged portion being provided with inner cogs, circular plates or disks provided with apertured hubs adapted to pass through central openings in the drive-wheels, and also having upper bulged portions forming recesses or chambers, the transverse shaft, the outer half-clutches mounted loosely upon opposite ends of said shaft, pinions keyed to said half-clutches, inner half-clutches sliding upon feathers on the transverse shaft, and the springs, said springs and inner half-clutches located within the upper bulged portions of the disks, substantially as herein shown and described.

3. In a lawn-mower, the combination of the frame, the sickle-supporting stationary bar, the operating-bar oscillating thereon and provided in the rear end thereof with an elongated slot, and having a cross-slot intersecting said elongated slot centrally, the rotating cross-head provided with flanged portion, said flanged portion carrying a pin or stud, the latter describing a circle with the cross-head, and thereby imparting oscillating movement to the operating-bar, and the vertical shaft passing centrally through the cross-head, substantially as set forth.

4. In a lawn-mower, the combination of the stationary sickle-supporting bar, the stationary sickle secured to the upper face of said bar and provided with upwardly-extending pins or bolts, the hangers secured to the rear end of the stationary sickle-supporting bar and having a wheel journaled thereon, the operating-bar, and the upper sickle or cutter provided with elongated slots within which the pins or bolts work, and also having a central keeper for the reception of the end of the operating-bar, substantially as set forth.

5. The combination of the drive-wheels having inwardly-extending toothed flanges, the circular plates or disks provided with apertured hubs extending through the central openings of the drive-wheels and provided with the bulged portion and upper chambers or recesses, the main bar or plate provided with upwardly-extending flanges, the bolts for securing the latter to the circular plates or disks, the transverse shaft carrying the central bevel-gear, the clutch mechanism located on each end of the transverse shaft, the pinion keyed to the outer section of the clutch, the springs, the inner plate, the blocks disposed beneath each end of said plate, the bolts for securing the same to the main bar or plate, the vertical shaft carrying on its upper end the bevel-gear, the rotating cross-head provided with flanged portion, the pin or stud passing through said flanged portion into the slots of the operating-bar, the pivoted operating-bar provided in its rear end with an elongated slot, said slot intersected by a curved cross-slot, into which the vertical shaft passes, and on its forward end with a sickle or cutter, and the supporting-bar and sickle located beneath the main cross-bar of the machine, substantially as set forth.

408,559. REFUSE-FURNACE. HENRY W. WHITING, Philadelphia, Pa., assignor of one-half to Albert E. Peterson, same place. Filed Mar. 7, 1888. Serial No. 302,258. (No model.)



Claim.—1. The combination, in a garbage-furnace, of the combustion-chamber *a*, and the main chamber E, and garbage-chamber D, and grates separating the chambers E and D, with a flue connecting the garbage-chamber with the front of the combustion-chamber, substantially as and for the purpose described.

2. The combination, in a garbage-furnace, of the combustion-chamber and the main chamber with the garbage-chamber above the main chamber, having a tapered bottom formed of a series of transverse tubes, substantially as described.

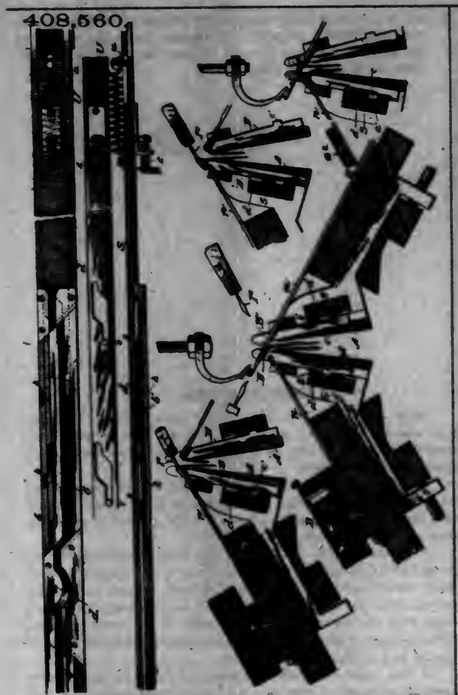
3. The combination, in a garbage-furnace, of the combustion-chamber and the main chamber with the garbage-chamber having a tapered bottom composed of a series of tubes communicating with each other, and with a water-supply pipe and a steam-dome, substantially as described.

408,560. STRAIGHT-KNITTING MACHINE. FRANK WILCOMB, Providence, R. I., assignor to the Wilcomb Knitting Machine Company, Jersey City, N. J. Filed Nov. 10, 1888. Serial No. 290,494. (No model.)

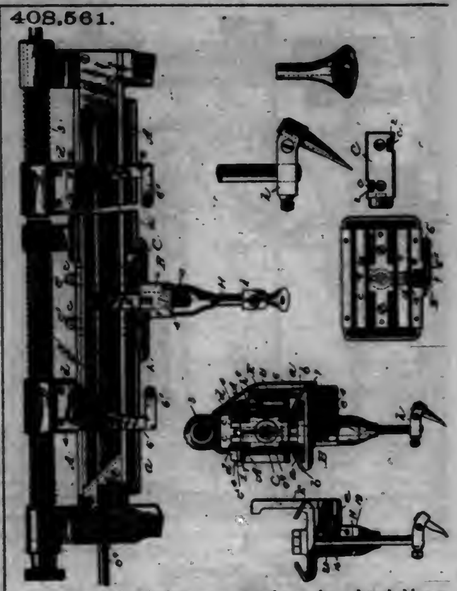
Brief.—The object of the invention is to provide improved means for drawing down the fabric as the knitting progresses.

Claim.—1. In combination, the row of needles, operating means and a row of sinkers therefor, a second row of sinkers arranged opposite the first, said sinkers being movable across the path of the needles, each of said second sinkers being in position across the path

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of the opposite needle to force back the loop thereon as said needle moves forward, and means for moving the sinkers, substantially as described

2. In combination, a row of needles, operating means and a row of sinkers therefor, a second row of sinkers arranged opposite and normally across the path of the needles and in position to force back the loops thereon, said sinkers being movable, and means for moving them, substantially as described.

3. In combination, a row of needles, the stitch-cam, a row of sinkers therefor, a second row of sinkers arranged opposite the first, said sinkers being movable across the path of the needles, each of said sinkers being in position to force back the loops on the opposite needles as said needles move forward to take the thread, and means for moving said sinkers from across the path of the needles, consisting of a slide-bar and a fixed cam *a'*, substantially as described.

4. In combination, two rows of needles, operating means and two rows of sinkers for forming loops, the sinkers on each side being movable across the path of the opposite needles for forcing back the stitches thereon as they move forward, and means for operating the sinker, substantially as described.

5. In combination, a row of needles, operating means and a row of sinkers therefor, a second row of sinkers extending across the path of the needles to force back the loops thereon, stitch-transferring mechanism, and means for moving the second row of sinkers, substantially as described.

6. In combination with the needles and stitch-cam of a knitting-machine, and with the mechanism for transferring stitches on said needles, vertically-movable sinkers, a slide-bar therefor, a fixed cam on the slide-bar and a shifting cam or cams also on the slide-bar, and means for operating these parts, all substantially as described.

408,561. STRAIGHT-KNITTING MACHINE. FRANK WILCOMB, Providence, R. I., assignor to the Wilcomb Knitting Machine Company, Jersey City, N. J. Filed Apr. 11, 1889. Serial No. 306,898. (No model.)

Claim.—1. In combination, the reversible thread-carrier, supporting and guiding ways therefor, a driving-block, guideways for said block arranged parallel to the guideways of the carrier, to one side of the same, to permit the block to move past the carrier, a detachable connection between the block and the carrier, means for detaching said connection, and means for reversing the carrier at any point in its stroke, substantially as described.

2. In combination, the reversible thread-carrier, supporting and guiding ways therefor, a driving-block, guideways for said block arranged parallel to the guideways of the carrier, to one side of the same, to permit the block to move past the carrier, a detachable connection between the block and carrier, operating means for said connection, a device for moving said operating means, and means for reversing the carrier at any part of its stroke, substantially as described.

3. In combination, the guide-bars, the carrier supported by the lower portion of said bars, the driving-block between the bars and above the carrier, the detachable connections, and operating means therefor, substantially as described.

4. In combination, the guide-bars, the carrier, and the detachable driving-block, both of said parts being supported by the guide-bars, and means for operating the detachable driving-blocks to release the carrier, substantially as described.

5. In combination, the guide-bars, the reversible carrier, the operating means for reversing the carrier, and the detachable sliding block, all of said parts being supported by the guide-bars, substantially as described.

6. In combination, the guide-bars, the carrier, the detachable driving-block between the bars, means for operating the detachable driving-block to release the carrier, and the thread-guide-reversing mechanism on the outside of the bars, substantially as described.

7. In combination, the carrier, the reversible guide, the detachable driving-block arranged to move past the carrier, means for operating the same, the bar A^3, the operating connections between the same and the guide, and means for operating the bar A^3, substantially as described.

8. In combination, the guide-bars, the driving-block, the reversible carrier, the means for reversing said carrier, the arm E, and means for moving the arm, substantially as described.

9. In combination, the guide-bars, the reversible carrier with operating means for reversing it, the driving-block, the sliding spring-pin for connecting the block and carrier, and the means for operating said pin to release the carrier, substantially as described.

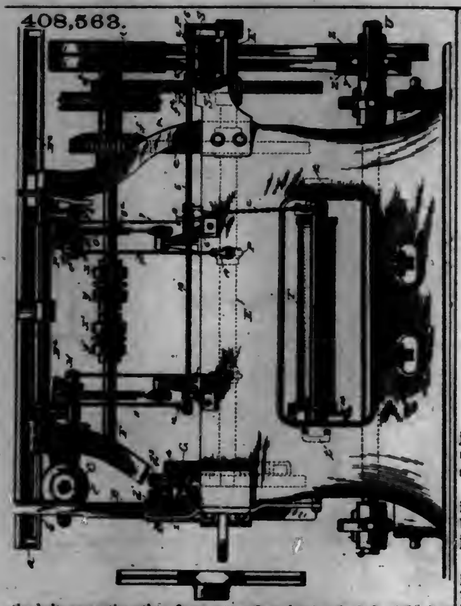
10. In combination, the carrier with its spindle and the guide, said guide consisting of a tubular bar flattened at its lower end and having the opening for the thread extending to the upper end, and a bracket on the spindle, said bracket having the guide secured thereto, substantially as described.

408,562. STRAIGHT-KNITTING MACHINE. FRANK WILCOMB, Providence, R. I., assignor to the Wilcomb Knitting Machine Company, Jersey City, N. J. Filed Apr. 22, 1889. Serial No. 308,107. (No model.)

Claim.—1. In a knitting-machine adapted to fashion, means for driving the same at a normal rate of speed for plain knitting, means for driving at a lower rate of speed for fashioning, a pawl for holding the high-speed connections in operation, a pattern mechanism and connections between the pawl and said mechanism for releasing the high-speed connection, and an automatically-operating clutch for driving the low-speed connection when the high-speed is released, substantially as described.

2. In a fashioning knitting-machine, the fast and loose pulleys,

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the belt-connections therefrom, means for releasing the belt of the fast pulley, and an automatic clutch in engagement with the loose pulley for driving the same, substantially as described.

3. In combination with a high-speed driving-connection, a low-speed driving-connection, a pawl for holding the high-speed connection to work, a rock-shaft carrying said pawl, pattern mechanism, and operating connections from the rock-shaft to the pattern mechanism, substantially as described.

4. In combination, in a fashioning-machine, high and low speed driving-connections, a pawl for holding the high-speed connection to work, a pattern mechanism for setting in motion the fashioning devices, and connections between said pawl and the same pattern mechanism which operates the fashioning devices.

5. In combination, the two pulleys, the belt-connections to impart different rates of speed to the machine, means for releasing one belt-connection, automatic means for rendering the other belt-connection operative, and automatic means for releasing said last-named belt-connection, substantially as described.

6. In combination, the driving-connections, the movable roller for the fabric, a pawl for holding the driving-connections to their work, and a connection between said movable roller and said holding-pawl, whereby the machine is stopped when the fabric is removed from the needles, substantially as described.

7. In combination, the two driving-connections, the pawls for holding said connections to their work, pattern mechanism and connections to one pawl for rendering one set of driving-connections inoperative, an automatic clutch for rendering the other set operative, the movable roller for the fabric, and connections therefrom to the pawls for releasing both sets of driving means when the thread is removed from the needles.

8. The tension device for the widened portion of the fabric, consisting of the band *b'*, the drum *y*, the pulley *x'*, and the spring, and the connection between the spring and pulley *x'*, substantially as described.

9. In combination, the slides, the cross-head having a channel, connections between the cross-head and slides, the slotted face-plate, the sliding connection between the face-plate and cross-head, and a cam having a groove G, said groove being adapted to receive the projecting portion of the sliding connection, substantially as described.

10. In combination, the slides, the face-plate, the cross-head, the connections from the cross-head to the slides, the bar D, sliding through the cross-head, the multiplying mechanism, the said cross-head having a channel to one side of the bar D, and the direct connection 4 between the cross-head and the face-plate.

11. In combination, the movable roller for the fabric, the two driving-connections, the pawls for holding said driving-connections to their work, and connections between the movable roller and the holding-pawls for releasing both driving-connections when the thread is removed from the needles.

408,563. COMBINED ROLL-PAPER HOLDER, CUTTER, STAMPER, AND MEASURER. CHARLES R. WILLIAMSON, Kansas City, assignor to the American Roll-Paper Company, St. Louis, Mo. Filed Aug. 3, 1888. Serial No. 281,852. (No model.)



Claim.—1. In combination, a roll of paper, a pair of clamping-jaws between which the paper is fed, the said jaws forming at the same time a brake to stop the unrolling of the paper, and a knife, substantially as set forth.

2. In combination, a roll of paper, a pair of clamping-jaws having a free movement toward and away from the surface of the roll, both together and independently, and a knife secured to one of the jaws, substantially as set forth.

3. In combination, a roll of paper journaled between two supports, a lower clamping-jaw loosely secured to the supports to move freely toward and away from the roll, a knife secured to the lower jaw, an upper jaw secured to the support to slide freely toward and away from the lower jaw, the front edge of the lower jaw being above the face of the jaw back of it to give the end of the paper an upward cant, substantially as set forth.

4. The herein-described end holder and clamp for paper-cutters, consisting of a pair of jaws having a free lateral movement relatively to the paper and to each other, substantially as set forth.

5. In combination, a roll of paper, a pair of end supports for the roll, a pair of jaws secured to the end supports and having a free movement toward and away from the roll, and a knife, the said jaws being actuated toward the roll by gravity to form a clamp for the end of the paper and a brake for the roll, substantially as set forth.

6. In combination, a roll of paper suitably suspended, a knife to sever the paper, a knife-support bearing on the roll of paper, and a stamp supported in proximity to the paper, substantially as set forth.

7. In combination, a roll of paper suitably suspended, an end clamp and feed supported above and in proximity to the roll, a knife, and a stamp supported upon the end clamp and feed in position to imprint the paper on the roll, substantially as set forth.

8. In combination, a roll of paper suitably suspended, an end clamp and feed supported in proximity to the roll, a knife, and a tape-measure supported with its end normally in proximity to the end of the paper, substantially as set forth.

9. In combination, a roll of paper suitably suspended, a knife to sever the paper, a stamp to imprint the paper, and a tape-measure to indicate the length to be severed, arranged substantially as set forth.

10. The combination, with a roll of paper, of a knife supported above the roll, the knife exerting its weight upon the roll, the edge of the knife being in position to sever the paper as the same is drawn across it at an abnormal angle, and a guide for conducting the paper over the edge of the knife, said guide formed by a portion of the knife-support and a movable part located above the knife-support, substantially as set forth.

11. The combination, with a roll of paper, of a knife and a pair of clamping-jaws, the latter forming an end-holder to retain the end of the paper in position to be drawn into engagement with the edge of the knife, substantially as set forth.

408,564. FORCE-PUMP. JOHN M. WISNER, Springfield, assignor to the Superior Machine Company, New Carlisle, Ohio. Filed Oct. 8, 1888. Serial No. 287,488. (No model.)

Claim.—1. The combination, with the pump tube or stock A and the outer main cylinder D, of the cup-shaped casting B, provided at top and bottom with internal screw-threads for receiving the stock A and cylinder D, and the inner cylinder E, diaphragm C, and screw-threaded flange F, formed in one piece and arranged substantially as described.

2. The pump-stock A, the outer main cylinder D, and the internally-screw-threaded coupling B, provided with the annular groove

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b^3, for the reception of and in combination with the diaphragm C, and its integrally-formed inner cylinder E and screw-threaded flange F, all arranged to operate as specified.

3. The pump-stock A, the outer main cylinder D, and the internally-threaded coupling B, provided with the annular groove or recess b^3, for the reception of and in combination with the diaphragm C, whose diameter is less than the diametrical measurement of the groove or recess b^3, whereby space is provided between the periphery of the diaphragm C and the wall of the groove or recess b^3 for the passage of water, said diaphragm being provided with the perforation or vent *d'*, and having the integrally-formed inner cylinder E, substantially as and for the purpose specified

408,565. CIGAR-BOX OPENER. GEORGE D. WOODWORTH, Brooklyn, N. Y. Filed Apr. 4, 1888. Serial No. 269,082. (No model.)



Claim.—1. A cigar-box opener consisting of a handle attached to a shank B, and a semicircular blade springing from one edge of said shank and extending substantially at right angles or laterally thereto and returning or curving back into the opposite edge of the shank, as set forth.

2. A cigar-box opener composed of a handle attached to shank B, a circularly-shaped blade C, extending substantially at right angles or laterally thereto, and a hammer-head E, provided with claw F, as set forth.

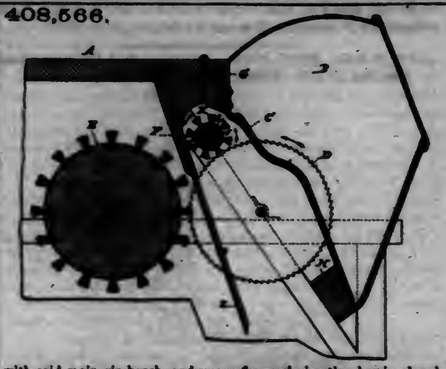
3. A cigar-box opener composed of a handle attached to a shank B, a circularly-shaped blade C, extending substantially at right angles or laterally therefrom, and a hammer-head arranged oppositely to the cutting edge of said blade C, and having a claw F, as set forth.

4. A cigar-box opener composed of a handle attached to a shank B, a semicircular blade C, extending substantially at right angles therefrom, a slot G, formed in said blade at some suitable point, and hammer-head E, arranged oppositely to the cutting-edge of said blade C, and having a claw F, as set forth.

408,566. COTTON-GIN. CORNELIUS YOUNG, Selma, Ala. Filed Nov. 27, 1888. Serial No. 291,966. (No model.)

Claim.—1. In a cotton-gin, the combination of the adjustable cleaning-brush, the gang of saws, the gin-ribs, and the main gin-brush, said adjustable cleaning-brush being arranged between the upper portions of the said saws and above the line of engagement of said saws

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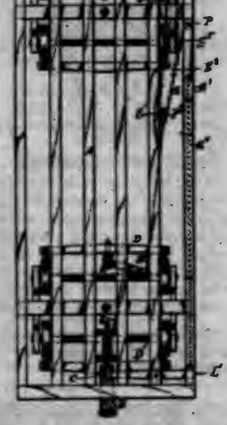


with said main gin-brush, and means for rendering the cleaning-brush adjustable consisting of the bearing-plates and their tangentially-adjusting-plates, substantially as and for the purpose set forth.

2. In a cotton-gin, the combination, with the gang of saws and the gin-ribs, the main gin-brush, and the inclined feeder, of the endwise and tangentially adjustable cleaning and smoothing brush between said feeder and the upper portion of said gang of saws and above the line of engagement of said gang of saws with the main gin-brush, and the means for effecting the tangential and endwise adjustment of said cleaning and smoothing brush, consisting of bearing-plates and their tangentially-adjusting plates, and the collars having set-screws and fitted upon the journals of said brush, substantially as specified.

3. In a cotton-gin, the combination, with the gang of saws and the gin-ribs, the main gin-brush, the feeder, and the grooved ribs, of the endwise and tangentially adjustable cleaning and smoothing brush between said feeder and the upper portion of the gang of saws and above the line of engagement of said gang of saws with the main gin-brush, and the means for effecting the tangential and endwise adjustment of said cleaning and smoothing brush, consisting of bearing-plates and their tangentially-adjusting plates, and the collars having set-screws and fitted upon the journals of said brush, substantially as specified.

408,567. AUTOMATIC CAR-BRAKE. CHESTER I. ARMS, Calvary, assignor of one-half to Charles Brunner, Peru, Ill. Filed June 10, 1889. Serial No. 313,717. (No model.)

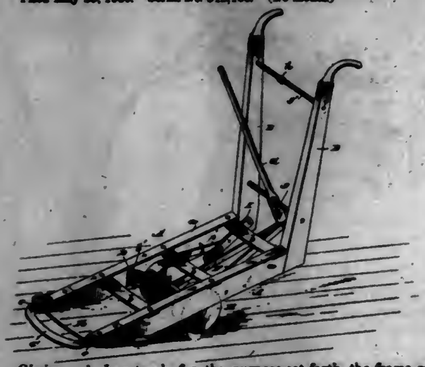


Claim.—1. In combination with the frame and brakes of a car, the chains S S' S^2 S^3, rods S^4 and R, levers L L', draw-bars B, brake-lever K, coil-spring S^5, pulleys P P', and brake-rod *a*, all arranged substantially as and for the purpose set forth.

2. In a car-brake, in combination with the brakes of a truck, brake-rod, and the reciprocating draw-bars, the levers L L', chains S

S^2 S^3, coil spring S^4, rods S^5 and R, brake-lever K, pulley P, and pulley-block P', substantially as and for the purpose set forth.

408,568. STOVE-TRUCK. GEORGE W. ARMS, Burlingame, Kans. Filed May 25, 1889. Serial No. 312,103. (No model.)



Claim.—1. In a truck, for the purpose set forth, the frame or side pieces A A, having handles B B rigidly secured thereto, rollers mounted on an axle connected to the side pieces by links D D, and with the lower end of a pivoted lever by connecting-rods F F, the said lever being pivoted between the handle-bars, and means for securing the lever in place between the handle-bars, substantially as shown, and for the purpose set forth.

2. The combination, in a truck, for the purpose set forth, of the side pieces A A, connected to each other at their forward ends by a cross-piece C, having recesses *c c*, whereby the truck is adapted to be used in connection with a U-shaped bail, substantially as and for the purpose set forth.

3. The combination, in a stove-truck constructed substantially as shown and provided at its forward end with recesses or indentations, of a bail K, having a curved central portion and end members which extend at right angles from the central portion, said members being of a greater width or distance from each other than the outer edges of the side frame, substantially as shown.

4. In combination with a truck, the frame A, having rollers pivotally connected thereto, and a lever connected with the axle of said rollers, said lever being pivoted between the handles, pivoted legs I I, having notched braces *i i*, said braces passing through staples or guides, substantially as and for the purpose set forth.

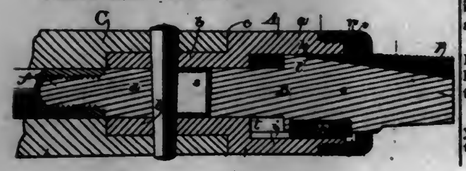
408,569. FEED-TROUGH. WILLIAM ANDERS, Reedsburg, Wis. Filed Mar. 26, 1889. Serial No. 304,796. (No model.)



Claim.—1. The feed-trough and its limiting-stops, in combination with the oscillatory hopper or bin, the shaft-like rod or bar forming a bearing for said hopper and having fingers extending downward in said hopper toward its discharge-opening, substantially as specified.

2. The feed-trough, in combination with the oscillatory hopper or bin, the vertically-adjustable shaft or rod upon which said hopper is suspended, and the agitator-fingers of said shaft or rod extending into said hopper, substantially as and for the purpose set forth.

408,570. COLLAPSIBLE TAP. ARTHUR B. BARRETT, Boston, Mass., assignor to Caleb C. Walworth, same place. Filed Mar. 18, 1889. Serial No. 303,796. (No model.)



Claim.—1. The combination of a hollow arbor, a tap-body arranged axially in said arbor and interlocked therewith to insure coincident rotation, but allowing a free endwise movement of said tap, a series of tapering threaded cutters interlocked in grooves that are oblique to the axis of said tap to allow a sliding movement thereof, said cutters having an external projection interlocked in said hollow arbor, all substantially as specified.

2. The combination of hollow arbor A, with its cap *u* and space *v*, tap-body B, arranged axially in and interlocked therewith and having the radial tapering grooves *k* formed therein, and tapering cutters *j*, interlocked in said grooves by rib *m*, and also interlocked in arbor A by studs *n*, seated in space *v*, all substantially as specified.

408,571. MOP. CHARLES A. RAGON and HAMILTON F. LOW, Manchester, N. H. Filed Aug. 7, 1888. Serial No. 280,336. (No model.) Patented in England Nov. 1, 1888, No. 14,042.

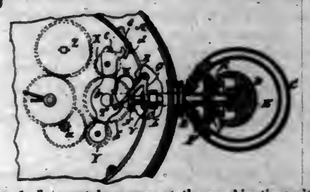


Claim.—A mop composed of roving loosely knitted, as described, having the widened portions 2 2, the intermediate narrowed portion 3, and the narrowed ends 4 4, as set forth.

408,572. BASIC PROCESS OF MAKING STEEL. RUDOLF REITMAIR, Kladno, Bohemia, Austria-Hungary, assignor to the Pottstown Iron Company, Pottstown, Pa. Filed July 19, 1883. Serial No. 260,440. (No model.)

Claim.—As an improvement in the basic process of making steel, the mode herein described of determining during the progress of the blow the amount of lime necessary to be added to the charge to exactly neutralize, combine with, or remove the silica present in the molten metal, said mode consisting in measuring the amount of air blown into the charge during the fore-blow and then proportioning the lime to the said amount of air so blown in.

408,573. STEM WINDING AND SETTING WATCH. EDWARD E. BOYD, Chicago, Ill. Filed Jan. 31, 1889. Serial No. 298,171. (No model.)



Claim.—1. In a watch-movement, the combination, with an actuating-arbor made adjustable to and from the winding and setting position and provided with shoulders or stops H H, of a spring adapted to engage said stops to hold the arbor in position, said spring being formed of a single piece of wire and having an eye for the reception of the arbor, substantially as described.

2. In a watch-movement, the combination, with a stem-arbor E and intermediate shifting head L, having an angular opening for the shank of the stem-arbor and provided with an angular shank M, passing into the winding-pinion N, of a lever comprising two arms Q and R, one of which engages the shifting head, and the swinging yoke T, having the tooth U to engage the other arm of the lever, substantially as described.

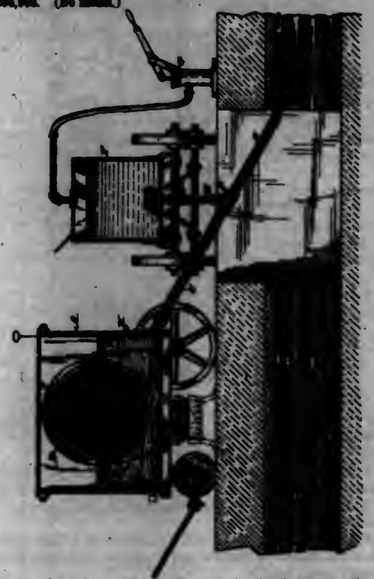
3. In a watch-movement, the combination, with a stem-arbor E, an intermediate shifting head L, a winding-pinion N, and a lever comprising two arms Q and R, one of which engages the shifting head, of the spring V for the lever and the swinging yoke T, having a tooth U to engage the other arm of the lever, substantially as described.

4. In a watch-movement, the combination, with a stem-arbor E, an intermediate shifting head L, a winding-pinion N, and a lever comprising two arms Q and R, one of which engages the shifting head, of the spring V for the lever, a swinging yoke T, having a tooth U to engage the other arm of the lever, and the curved spring W, extending from the yoke and acting on one arm of the lever, substantially as described.

5. In a watch-movement, the combination, with the stem-arbor E and swinging yoke T, of an intermediate shifting head L and the lever comprising the two arms Q and R, for transmitting motion from the stem-arbor to the yoke, substantially as described.

6. In a watch-movement, the combination, with a handle and a yoke for transmitting motion from the handle to the winding and setting mechanism, said yoke being provided with a tooth U, of a lever Q R, connected to the handle and adapted to engage the tooth U to move the yoke to the setting position, and a spring W, extending from the lever to the yoke, said spring when under tension tending to move the yoke to the winding position, substantially as described.

408,574. METHOD OF INTRODUCING MOLTEN INSULATING MATERIAL INTO UNDERGROUND CONDUITS. DAVID RESSER, Jr., Philadelphia, Pa., assignor to the Electric Cable Construction and Maintenance Company, of Pennsylvania. Filed Jan. 21, 1889. Serial No. 296,993. (No model.)

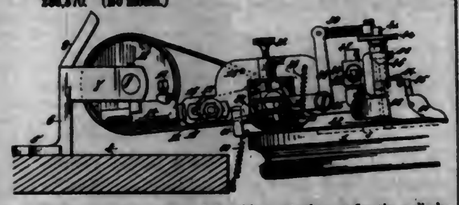


Claim.—1. The method of introducing insulating or other material into a conduit for electric wires or cables, consisting in first heating the conduit and then passing said material simultaneously with the wire or cable from the containing-tank into the conduit, substantially as described.

2. The method of insulating and laying cable or electric wires, consisting, first, in heating the conduit by passing heated air under pressure through said conduit; second, passing the cable into said conduit, and, third, simultaneous with the passage of the cable to the conduit coating the same with a suitable insulating substance under pressure, substantially as described.

3. The method of preparing conduits and introducing cables or wires therein, consisting in first heating the conduits and then passing the cable into the said conduit, and simultaneously passing therein under pressure the insulating material, substantially as described.

408,575. TRIMMING ATTACHMENT FOR LOOPING-MACHINES. NORMAN H. BROWN, Waterford, N. Y. Filed Sept. 26, 1888. Serial No. 286,370. (No model.)



Claim.—1. A cutting and brushing attachment for the cylinder of a turning-off machine, consisting of a supported arm having a brush-shaft bearing, a brush-carrying shaft arranged in said bearing and having a crank-pin, means for revolving the brush-shaft, a cutter-carrying shaft having a wrist-pin, and devices connecting the wrist-pin with the crank-pin of the brush-shaft for oscillating the cutter, substantially as described.

2. A cutting and brushing attachment for the cylinder of a turning-off machine, consisting of a supported arm having a brush-shaft bearing, a brush-carrying shaft arranged in said bearing and having a crank-pin, means for revolving the brush-shaft, a pivoted bell-crank lever connected with and oscillated by the crank-pin, a rock-shaft carrying a cutter and a wrist-pin, and a pitman connecting the latter with the bell-crank lever, substantially as described.

3. A cutting and brushing attachment for the cylinder of a turning-off machine, consisting of a supported arm having a brush-shaft bearing, a brush-carrying shaft journaled in said bearing, means for revolving the brush-shaft, a pivoted bell-crank lever connected with and oscillated by the crank-pin, a rock-shaft carrying a cutter and provided with a wrist-pin, and a flexible and elastic pitman connecting the wrist-pin with the bell-crank lever, substantially as described.

4. A cutting and brushing attachment for the cylinder of a turning-off machine, consisting of a supported arm 15, an arm 19, pivoted to the latter and provided with a brush-shaft bearing, a brush-carrying shaft 23, journaled in said bearing and having a crank-pin 38, a spring 36, for raising the arm carrying the brush-shaft bearing, a set-screw 32, for depressing said arm, means for revolving the brush-shaft, a vertical rock-shaft 41, carrying a cutter 42 and provided with a wrist-pin 44, and connections between the wrist-pin and the crank-pin of the brush-shaft, substantially as described.

5. A cutting and brushing attachment for the cylinder of a turning-off machine, consisting of a supported arm 15, an arm 19, pivoted thereupon and having a brush-shaft bearing, a brush-carrying shaft 23, journaled in said bearing and having a crank-pin 38, a spring 36, for raising the said pivoted arm, a set-screw 32, for depressing the latter, means for revolving the brush-shaft, a pivoted bell-crank lever 36, connected with and oscillated by the crank-pin of the brush-shaft, a rock-shaft 41, carrying a cutter 42, and provided with a wrist-pin 44, and a pitman 39, connecting the wrist-pin with the bell-crank lever, substantially as described.

6. A cutting and brushing attachment for the cylinder of a turning-off machine, consisting of a supported arm provided with a brush-shaft bearing, a brush-carrying shaft having a crank-pin, means for revolving the brush-shaft, a bell-crank lever connected with and oscillated by the crank-pin, a rock-shaft carrying a cutter and having a disk provided with a series of openings arranged at intervals, a wrist-pin adapted to be fitted to any one of said openings, and a flexible and elastic pitman connecting the wrist-pin with the bell-crank lever, substantially as described.

408,576. JEWELRY-TRAY. LOU BURT, Detroit, Mich., assignor to the Burt & Herbst Company, same place. Filed May 1, 1889. Serial No. 309,264. (No model.)



Claim.—1. A jewelry-tray consisting of side pieces and a bottom board, the said bottom board slotted in the direction of the grain by slots which lap past each other, whereby it is prevented from warping, substantially as described.

2. A jewelry-tray consisting of side pieces and a bottom board, said bottom board provided with slots b^1 b^2, lapping past each other, and with unbroken sections b^3, substantially as and for the purpose described.

408,577. SADDLE-TREE. CHARLES F. BOSTON, Boston, Mass. Filed Aug. 29, 1888. Renewed May 23, 1889. Serial No. 311,883. (No model.)

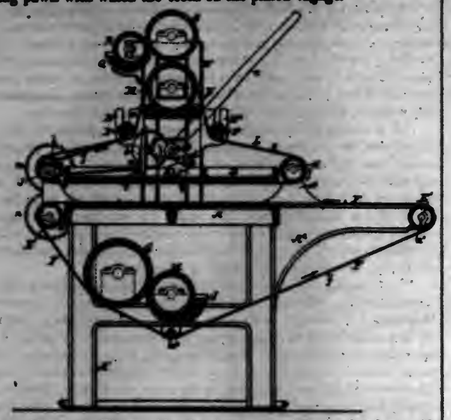


Claim.—The combination of the saddle-tree for harness, composed of pulp, the pulp cheek-rest having embedded therein a bolt, and the cruciform opening, the bolt square in cross-section and having the lateral lugs, and the curved plate having the loop and flange, substantially as specified.

408,578. PRESS FOR KNITTED OR WOVEN FABRICS. WALTER D. BOYD, Norristown, Pa. Filed Sept. 15, 1888. Serial No. 285,458. (No model.)

Brief.—The movable platen has a vertical rack engaging a pinion provided with ratchet-teeth on its side and turning loosely on the shaft of a driving-pulley connected with one of the drums of one of

the dampening-belts, said drum being geared to a corresponding drum of the lower belt. Said shaft is provided with a clutch member having pawls with which the teeth on the pinion engage.



Claim.—1. The combination, in a press, of the fixed and movable platens, operating devices for said movable platen, with upper and lower dampening belts or aprons between said platens, and means for driving said belts, substantially as described.

2. The combination, in a press, of the stationary and movable platens, and operating devices for said movable platen, with a dampening-belt between said platens, driving-gear for said movable belt, and an operating device for said driving-gear attached to the movable platen, substantially as described.

3. The combination, in a press, of the fixed and movable platens, operating devices for said movable platen, moistening-belts passing between said platens, operating devices for the belts, liquid-tanks, and rollers for distributing the liquid upon the moistening-belts, substantially as described.

4. The combination, in a press, of the fixed and movable platens, and operating devices for said movable platen, with an endless belt passing between said platens and carrying type, and inking mechanism for said type, substantially as described.

5. The combination, in a press, of the fixed and movable platens, operating devices for said movable platen, upper and lower endless belt-drums geared together, and devices whereby said drums are actuated from the movable platen, so that on the operation of the platen the belts will be moved simultaneously, substantially as described.

408,579. PROCESS OF MOLDING. JOSEPH J. CARR, Wilkes-Barré Pa., assignor to the Wilkes-Barré Molding Machine Company, same place. Filed Apr. 19, 1888. Serial No. 307,699. (No model.)



Claim.—1. The within-described process of molding, said process consisting in pressing against the sand a succession of patterns, the preparatory patterns having their projecting portions so shaped in respect to the corresponding projecting portions of the finished pattern that the recesses will be formed in the mold by gradually displacing the material until it assumes the finished form, substantially as specified.

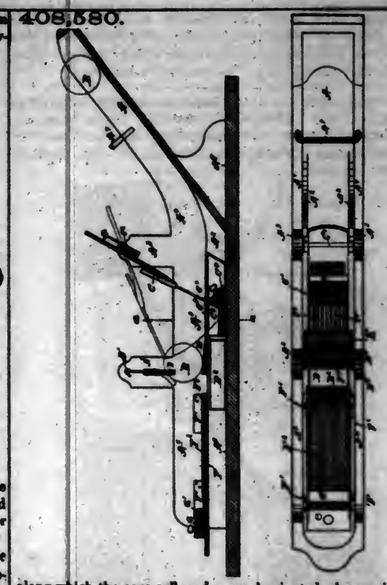
2. The mode described of forming molds for casting, said mode consisting in pressing against the sand a series of patterns acting successively upon the mold, the projecting portions of the preliminary or preparatory patterns being tapered, so as to effect the gradual displacement of the sand and the formation of recesses therein for the reception of the projections of the finished pattern, substantially as specified.

3. The within-described process of molding car-wheels, said process consisting in first pressing against the sand a pattern in which the ribs of the wheel are tapered in cross-section, and then subjecting the sand, after the action of the preliminary pattern, to the pressure of the finished pattern, having ribs of the finished shape, which enter the tapering recesses previously formed in the mold by the ribs of the preliminary pattern, substantially as specified.

408,580. MACHINE FOR LABELING CANS. MALCOLM R. CHARTERS, Glenferrie Road, Malvern, Victoria. Filed July 10, 1888. Serial No. 307,681. (No model.) Patented in Victoria Aug. 11, 1884, No. 3,514.

Claim.—1. The combination, in a labeling-machine, of a race

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along which the cans roll, and a comb pivoted above said race and depending into the paste-box to be lifted therefrom by the contact of the cans, substantially as set forth.

2. The combination, in a labeling-machine, of an inclined and horizontal race, a paste-box, a paste-applying comb pivoted above said race and depending into the paste-box, and a spreading-brush D, substantially as set forth.

3. The combination, in a labeling-machine, of a paste-box, a pivoted comb depending therein, and a yielding spreading-brush, substantially as set forth.

4. The combination, in a labeling-machine, of the paste-box and pivoted comb depending therein, and springs for maintaining the labels in proper position, substantially as set forth.

5. The combination, in a labeling-machine, of a paste-box and pivoted comb depending therein, and a piece F^2, for elevating the ends of the labels, substantially as set forth.

6. The combination, with the race, paste-box below the same, and pivoted comb depending therein, of a supplemental device G', substantially as set forth.

7. The combination, in a labeling-machine, of the paste-box having bars C^2 at its top, and a pivotal comb having its teeth depending into said box between said bars C^2, substantially as set forth.

408,581. SUPPORT FOR SPINNING-SPINDLES. CHARLES H. CHAPMAN, Groton, Mass. Filed Apr. 16, 1888. Serial No. 307,440. (No model.)

Brief.—The object of the invention is to provide improved means for supporting the spindle so that it may yield both vertically and laterally while being held against excessive gyration.



Claim.—1. A support for the bolsters of spinning-spindles, consisting of the base or thimble *o*, ring *q*, springs *p*, connecting the thimble and ring, and rigid guard *r*, as set forth.

2. A support for the bolsters of spinning-spindles, consisting of the base or thimble *o*, ring *q*, springs *p*, provided with the V-shaped portions *s*, and rigid guard *r*, as set forth.

3. A spindle and its sleeve-whirl and a bolster-case, combined with a bolster and step support, a support for the bolster and step support, elastic both vertically and laterally, and a rigid guard to prevent undue deflection and gyration of the spindle-support and spindle, as set forth.

4. A support for bolsters of spinning-spindles, consisting of a support proper, elastic both vertically and laterally, and a rigid guard, as set forth.

408,582. SUPPORT FOR SPINNING-SPINDLES. CHARLES H. CHAPMAN, Groton, Mass. Filed Apr. 16, 1888. Serial No. 307,447. (No model.)

Brief.—The object of the invention is to provide improved means for supporting the spindle, which will permit it to yield and at the same time will prevent too great motion, and to facilitate lubrication.



Claim.—1. A spindle and bolster-case, combined with a shell arranged in said bolster-case, a step-bearing supported by said shell, a bolster-bearing arranged in said shell, and an elastic support attached to the bolster-case and secured to the shell and bolster-bearing, as set forth.

2. A spindle and its sleeve-whirl and a bolster-case provided with a shell having a bolster and step bearing, and an elastic support attached to the bolster-case and secured to the bolster-bearing and shell at a point substantially on a line centrally of the whirl, as set forth.

3. A spindle and its sleeve-whirl and a bolster-case provided with a shell having a step-bearing in its lower end and a bolster-bearing in its upper end, and a rigid guard to prevent undue deflection of the shell and spindle attached to the bolster-case, and having an elastic support secured to the bolster-bearing and shell, as set forth.

4. A spindle and its sleeve-whirl and a bolster-case, combined with a bolster and step support, a rigid guard, and an elastic support for the bolster and step support, as set forth.

5. A support for the bolsters of spinning-spindles, consisting of a rigid guard and an elastic support, as set forth.

6. The combination, with the open bolster-case and a bolster and step supporting shell suspended therein and extending therethrough, of the nut *d*, provided with ears *q*, and an open sheet-metal oil-cup adapted to be sprung upon and held by said ears, as set forth.

7. The combination, with the open bolster-case, of the nut for securing the bolster-case to the rail, an open sheet-metal oil-cup adapted to be sprung upon and held by said nut, and the covering-rim arranged upon said nut over said cup, as set forth.

408,583. RECTIFICATION OF ALCOHOL. ANDRÉ T. CHRISTOPH, Paris, France. Filed Dec. 10, 1888. Serial No. 293,171. (No specimens.) Patented in France Aug. 9, 1888, No. 192,321, and in Belgium Aug. 10, 1888, No. 82,861.

Claim.—1. The process herein described, which consists in mixing the impure spirit of alcohol with sodium-tin alloy and then rectifying it.

2. The process herein described, which consists in mixing the impure spirit of alcohol with an alloy or amalgam of sodium and a hypochlorite—such as bleaching-powder—and then rectifying it.

3. The hereinbefore-described process for the rectification of alcohol, which consists in mixing the impure spirit, containing about forty per cent. of absolute alcohol, with sodium-tin alloy, in the manner specified, in the proportion of about fifteen or twenty grams of sodium for each one hundred liters of liquid, and distilling the mixture, as set forth.

4. The hereinbefore-described process for the rectification of alcohol, which consists in successively diluting the impure spirit to about forty per cent. of absolute alcohol, adding hypochlorite of lime (bleaching-powder) in about the proportion of one gram per liter of the diluted spirit, stirring the mixture, and then adding sodium-tin alloy in about the proportions specified, and then distilling the mixture, as set forth.

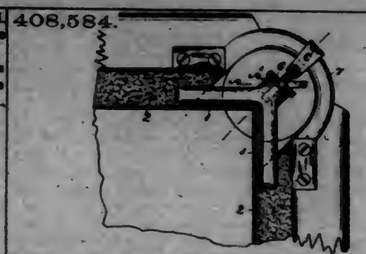
5. The hereinbefore-described process for the rectification of alcohol, which consists in mixing hypochlorites with cold diluted impure spirit, adding sodium-tin alloy, agitating the mixture, allowing it to stand, and then distilling it, all substantially as set forth.

6. The hereinbefore-described process for the rectification of alcohol, which consists in successively diluting the impure spirit to about forty per cent. of absolute alcohol, mixing it with hypochlorite of lime (bleaching-powder) in about the proportion of one gram per liter of the diluted spirit, stirring the mixture, allowing it to stand, then adding an alloy of alkaline metal in such proportion as to have present about fifteen to twenty grams of alkaline metal for each one hundred liters of liquid, then agitating and distilling, substantially as specified.

408,584. CORNER-BLOCK FOR BILLIARD AND POOL TABLES. THOMAS CLARK, Philadelphia, Pa. Filed Dec. 5, 1888. Serial No. 292,731. (No model.)

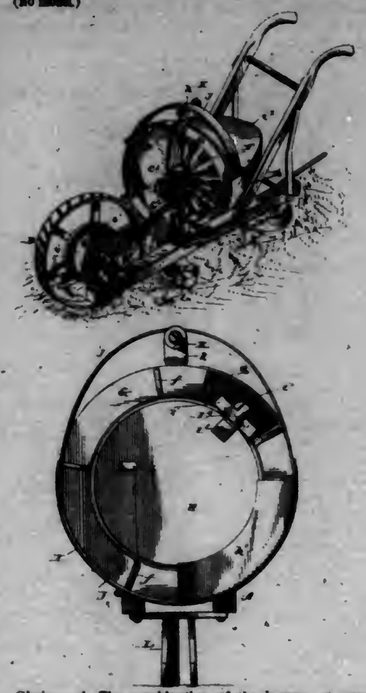
Claim.—A corner-block for the purpose stated, consisting of an angular plate with a boss projecting from the angle thereof, a nut

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having a neck with a peripheral groove and provided with a head, a screw passing through the boss into said groove, and a screw working in said nut and having a hook connected therewith, the head of the nut being between the boss and hook, said parts being combined substantially as described.

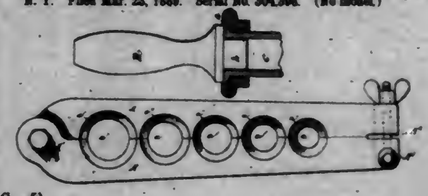
408,585. POTATO-PLANTER AND SEED-DRILL. WILLIAM I. COFFIN, Bloomingport, Ind. Filed Sept. 28, 1888. Serial No. 286,675. (No model.)



Claim.—1. The combination of the hopper, an annular rim secured thereto, a discharge-spout secured to the annular rim, a feed-wheel within the hopper, a shield, and a guard secured to the shield to regulate the flow of the material with which the hopper is filled to the feed-wheel, substantially as described.

2. The combination of the hopper, an annular rim secured thereto, a pulley journaled on the rim, a feed-wheel journaled in the hopper, and a flexible band moving in the hopper and over the pulley, substantially as and for the purpose specified.

408,586. FLANGING-APPARATUS. ISAIAH B. COLEMAN, Elmira, N. Y. Filed Mar. 23, 1889. Serial No. 304,306. (No model.)



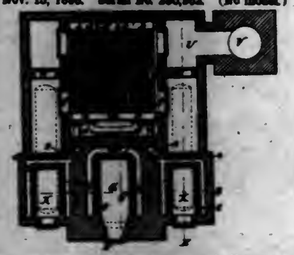
Claim.—1. In pipe-flanging apparatus, the combination, with portable clamp having a series of holes for holding different-sized pipes, each hole having a counterbore for flanging purposes, of hand-tools adapted, respectively, to distend and flange the respective pipes into the counterbores of the clamp by means of blows applied to such hand-tools, substantially as set forth.

2. In pipe-flanging apparatus, the combination, with clamp for holding the pipe, of a reversible hand-tool having a conical or tapering end for distending the pipe end, the reverse end of the tool having a head adapted to fit in the counterbore of the clamp, and having a center-pin adapted to fit the bore of the pipe, substantially as set forth.

3. In pipe-flanging apparatus, the combination, with clamp-jaws pivoted together at the one end thereof, and having a pivoted securing-bolt operating in transverse slots in the free ends of the jaws, a series of holes located along the line of intersection of the jaws, for holding different sizes of pipes, each hole having a counterbore, of hand-tools for distending and flanging the respective pipe ends into the respective counterbores of the clamp, substantially as set forth.

4. A portable pipe-flanging apparatus consisting of clamp-jaws adapted to be opened or closed and having a series of different-sized holes along the contact-line of the jaws, each hole having a counterbore, a series of reversible hand-tools, respectively, for each hole of the clamp, each hand-tools having respectively a tapering end adapted to enter the end of the pipe, and having a head adapted to enter the counterbore of the clamp, and having a center-pin adapted to enter the bore of the pipe, substantially as set forth.

408,587. BAGASSE-FURNACE. FREDERIC COOK, New Orleans, La. Filed Nov. 15, 1888. Serial No. 290,963. (No model.)



Claim.—1. A bagasse-burner having a boiler upon the side thereof, said boiler-furnace being without grate-bars and provided with tuyeres in its side walls, the bagasse-burner having openings in its side walls communicating with the boiler-furnace and provided with dampers or gates adapted to close said openings, substantially as described.

2. In an apparatus to burn damp bagasse, the combination of a bagasse-furnace between the boilers, auxiliary furnaces under the boilers, having side tuyeres in the furnace-walls, a draft-door and furnace-door, an air-heater, and dampers to turn on or off the waste heat from heater, and thereby change the blast from hot to cold, or the reverse.

3. In a bagasse-burner having openings in its side walls, in combination with boiler-furnaces, with which said openings communicate, said boiler-furnaces being arranged each beneath a battery of boilers and having no grate-bars, all of said furnaces being supplied with tuyeres in their side walls, an air-heater, and dampers whereby the waste heat may be driven over said heater or diverted therefrom and carried directly to the stack, substantially as described.

4. The combination of a bagasse-furnace with auxiliary furnaces for forced blast, each furnace being connected by distinct air-passages to a reservoir of compressed air provided with blast-gates to regulate supply of air to each furnace, substantially as described.

408,588. BAGASSE-FURNACE. FREDERIC COOK, New Orleans, La. Filed Nov. 15, 1888. Serial No. 290,963. (No model.)



Claim.—1. A central furnace for burning bagasse, situated between a divided battery of steam-boilers and supplying heat from one furnace to each divided part of the battery, as described.

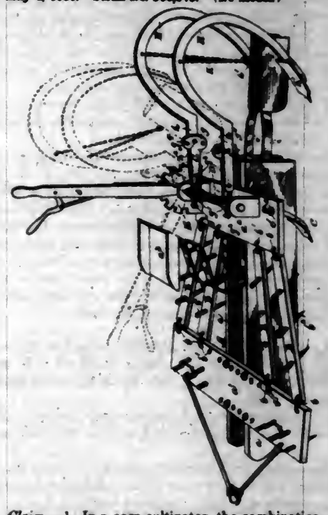
2. A central furnace for burning bagasse, situated between a divided battery of steam-boilers, part being each side of the bagasse-furnace, the boiler-setting arranged with exit-holes and dampers to admit and regulate the waste heat from boilers to air-heating pipes, and exit-holes with dampers leading direct to chimney.

3. The combination of a central bagasse-furnace with steam-boilers each side of the furnace-openings and dampers in the boiler-walls to admit or close off the waste heat from an air-blast heater or turn it direct to the smoke-stack, an air-blast heater, and an air-forcer.

4. An air-heater without bends or turns, composed of straight tubes connected to air-boxes and provided with dividing or heat-diverting plates through which the tubes pass for the purpose of deflecting the heat, substantially as described.

5. A bagasse-furnace arranged, as described, to receive a cold or hot blast by means of regulating-dampers to let on or shut off waste heat from an air-blast heater, or to let the heat pass direct to chimney without passing through the heater.

408,589. CULTIVATOR. FRANK P. CRAIG, Holton, Kans. Filed May 4, 1889. Serial No. 309,575. (No model.)



Claim.—1. In a corn-cultivator, the combination, with the main frame composed of the runners and the transverse beams a' a^2, of the removable bars B, extending inward and rearward, provided with the harrow-teeth b^2, and connected to the beams a' a^2 by flexible joints, so that the said teeth can turn laterally out of the way of obstructions, substantially as specified.

2. In a corn-cultivator, the combination, with the shaft D and means, substantially as described, for rotating the same to and holding it in a desired position, of the arms G, provided with the heads g, having the openings g^4, having the openings g^3 at proper points, and provided on their inner ends with the sleeves g', the set-screws g^5, to hold the sleeves in proper position on the shaft D, the plow-beams having in their straight portions A openings registering with the openings g^3, and the pivotal pins or bolts A^3, substantially as specified.

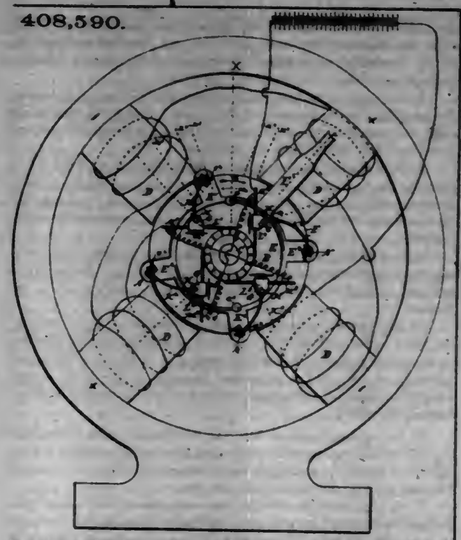
3. In a corn-cultivator, the combination, with the main frame provided with the runners a, of the arms G, turning on the shaft D, the plow-beams H, vertically adjustable on the arms G, the shield I, with its arms i pivoted on the rear ends of the runners, and the chain K, connecting the beams H and shield I, so that the latter will rise with the former, substantially as specified.

408,590. ELECTRIC MOTOR. STANLEY G. C. CURRIE, Philadelphia, Pa., assignor to the United Electric Improvement Company, Gloucester City, N. J. Filed Oct. 9, 1888. Serial No. 287,614. (No model.)

Claim.—1. In an electric motor, the combination, with a commutator, of a movable section arranged to turn concentrically with said commutator, and four or more brushes connected to said section and adapted to be successively or at intervals raised out of contact with the commutator by the movement of the said section, substantially as described.

2. In an electric motor, the combination, with a commutator and

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four or more brushes, each secured in pivotal brush-holders adjacent to said commutator and with their free ends in contact therewith, of a movable section connected to each brush-holder by a spring, the springs being each strained to a greater degree than the preceding one, whereby as such section is moved the brushes will be successively raised from contact with the commutator, substantially as described.

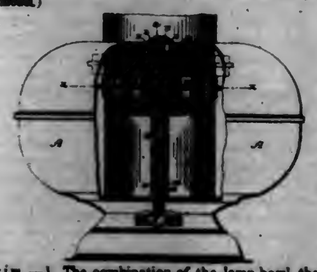
3. In an electric motor, the combination of a commutator, a series of brushes, pivotal brush-holders, springs connected to said brush-holders, a movable section, and jaws or rollers carried by said section and adapted to embrace said springs, the jaws being arranged at variable intervals on a circular line concentric with said commutator, substantially as described.

4. In an electric motor, the combination, with a commutator and four or more double-ended brushes attached at the center to swiveled brush-holders, of a movable section carrying clamping-jaws arranged concentrically to said commutator at unequal distance apart, and springs projected through said jaws and connected to said holders, whereby the brushes may be successively raised from contact with the commutator and their opposite ends successively brought into contact therewith by a progressive movement of said movable section, substantially as described.

5. In an electric motor, the combination, with a commutator, brushes adapted to contact therewith, swiveled brush-holders, and a movable ring or section carrying clamping-jaws or rollers secured in swiveled frames adjustably secured to said movable section, of springs having one end attached to the brush-holders and the other end projected through said clamping-jaws, substantially as described.

6. In an electric motor, the combination, with commutator B, brushes M' M^3 M^4, and swiveled brush-holders L' L^3 L^4, of movable ring E, carrying swiveled frames N N, with clamping-rollers n n, and flat springs K' K^3 K^4, attached to said brush-holders and passing between said rollers, all constructed and arranged substantially as described.

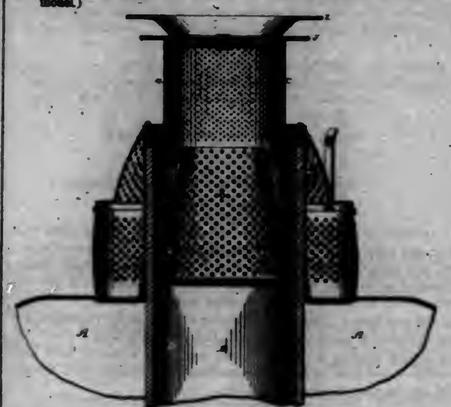
408,591. WICK-RAISER FOR CENTRAL-DRAFT LAMPS. ZENOLON DAVIS, Cleveland, Ohio. Filed Aug. 15, 1888. Serial No. 282,762. (No model.)



Claim.—1. The combination of the lamp-bowl, the stationary tube placed inside thereof, an operating-rod which extends through this tube, a metallic connection which is so shaped as to form a chamber and connected to the operating-rod, a screw-threaded operating-tube which surrounds the stationary tube and is attached to the metallic connection, and the wick-raising devices which are placed upon and operated by the screw-threaded tube, substantially as shown.

2. The combination of the lamp-bowl A, the stationary tube D, placed inside of the bowl for making a tight joint therewith at its lower end, an operating-rod E, which passes through the stationary tube, the metallic connection H, so shaped as to form a chamber around the upper end of the tube D, a screw-threaded operating-tube which incloses the stationary tube, and the spring-actuated wick-raising devices provided with screw-threads engaging said operating-tube, substantially as described.

408,592. BURNER FOR CENTRAL-DRAFT LAMPS. ZENOLON DAVIS, Cleveland, Ohio. Filed Aug. 15, 1888. Serial No. 282,763. (No model.)



Claim.—1. The combination of the lamp-bowl and the central-draft tube with a burner-tube consisting of the lower imperforate portion which snugly fits the draft-tube and the smaller upper perforated portion, the tube being provided with a series of perforations H, which extend around the side of the burner below the small openings in its upper end, so that the air which rises through the perforations H will be heated between the outer side of the perforated part of the burner-tube and the inner side of the upper end of the central-draft tube, substantially as shown.

2. The combination of the lamp-bowl and the central-draft tube with the perforated burner-tube provided with a series of openings H below the fine perforations in its upper end and the open-ended conical tube which is secured in the lower end of the burner-tube and in a different vertical plane from the fine perforations in the burner-tube, substantially as described.

3. In a burner for a central-draft lamp, the combination of the burner-tube provided with perforations at its upper end and a series of larger perforations H near its center with a conical open-ended perforated tube which has its upper end to project to a point at or below the lower line of the smaller perforations through the upper end of the burner-tube, substantially as set forth.

408,593. CAR-COUPLING. ALEXANDER H. S. DAVIS, Washington, D. C., assignor of one-fourth to William T. Arrick, same place. Filed Nov. 22, 1888. Serial No. 291,576. (No model.)



Claim.—1. In a car-coupling, the combination of a draw-head notched upon its upper surface and having a ledge upon the inner surface of its aperture, a coupling-pin having a projection adapted to fit into the notch in draw-head, and a coupling-link having a flange which trips the pin into its locked position, substantially as described.

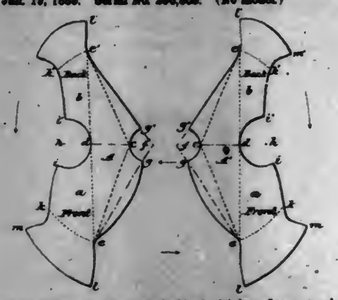
2. In a car-coupling, the combination, with a draw-head notched upon its upper surface, of flanges or lugs upon each side of the notch, a coupling-pin having a projection adapted to fit into the notch in draw-head, and a coupling-link having a flange which trips the pin into its locked position, substantially as described.

3. The combination, with a car provided with shoulders or abutments, as described, of: a draw-head having flanges described, interposed springs, and bands or straps, substantially as described.

4. The combination of a car, a draw-head of the form described, and springs and bands flexibly connecting the car and draw-head, substantially as described.

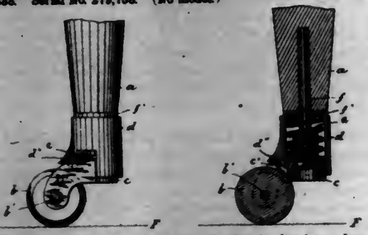
5. A car-coupling link slotted at d' and d^3, and having a flange d^4 and enlarged or weighted portion d^5, as and for the purpose described.

408,594. **DRESS-WAIST.** JOSEFA O. DE CARACHEA, New York, N. Y. Filed Jan. 19, 1889. Serial No. 296,803. (No model.)



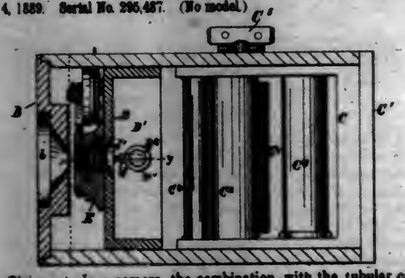
Claim.—A dress-waist each half of which is formed solely of a front and back of one piece, the two pieces having the same configuration and each consisting of two lengths *a* and *b*, of varying widths, diverging at an angle more or less obtuse from opposite neck and arm curves *g c g'* and *i d i'*, the wider front length *a* having outwardly-curved side lines *n e* and *i k*, converging slightly to the waist-line, and the narrower or back length *b* having straight side lines *g' e'* and *i' k'*, converging slightly to the waist-line, and both widening with outwardly-curved lines beyond the waist-line, substantially in the manner and for the purpose herein set forth.

408,595. **CASTER.** LEON O. DION, Natick, Mass. Filed July 12, 1888. Serial No. 279,738. (No model.)



Claim.—A caster consisting of a pin *f* to be fixed in a leg, a hollow case *d*, swiveled at its upper end upon the pin to rotate thereupon and provided with a lateral brake projection d^2, and a vertically-yielding spring-pressed hub *e*, rotatable axially on the pin and arranged in and rotating with the swiveled case and having the wheel *b*, so that the hub and case can rotate axially, and when the case descends its lateral brake projection comes in direct contact with the wheel to prevent the latter turning, substantially as described.

408,596. **CAMERA.** GEORGE EASTMAN, Rochester, N. Y., assignor to the Eastman Dry Plate and Film Company, same place. Filed Jan. 4, 1889. Serial No. 295,487. (No model.)



Claim.—1. In a camera, the combination, with the tubular casing having the fixed front and the small aperture therein, of the frame carrying the lens and shutter adapted to be inserted from the rear, securing devices for fastening the frame to the casing operated only from the interior of the casing, and a holder for sensitized material fitting the casing and forming the rear end of the camera, substantially as described.

2. In a camera, the combination, with the tubular casing having the small aperture in the end, of the frame carrying the lens fitting inside the casing, having the slotted sides, and the screws for securing it to the casing, substantially as described.

3. In a camera, the combination, with the casing, of the frame carrying the lens and shutter capable of adjustment therein, a latch for the shutter having a laterally-extended end, and a releasing-pin for operating the latch supported in the casing, substantially as described.

4. In a photographic shutter, the combination, with a lens-opening and a perforated movable shutter, of an auxiliary shutter and a latch for holding it in line with the lens-opening, substantially as described.

5. In a photographic shutter, the combination, with a lens-opening and a perforated movable shutter, of an auxiliary shutter adapted to be moved in line with the lens-opening, a latch for holding said auxiliary shutter, and a projection operated by the main shutter adapted to engage the latch and release the auxiliary shutter, substantially as described.

6. In a photographic shutter, the combination, with a lens-opening and a perforated movable exposing-shutter, of an auxiliary opaque shutter, a spring for moving it, and a latch for holding it in line with the lens-opening, substantially as described.

7. In a photographic shutter, the combination, with a lens-opening and a perforated movable exposing-shutter, of an auxiliary opaque shutter and connections between it and the main shutter whereby it is moved in line with the lens-opening when the main shutter is moved in one direction, substantially as described.

8. In a photographic shutter, the combination, with a lens-opening and a perforated movable exposing-shutter, of an auxiliary shutter and connections between it and the main shutter for moving it in line with the lens-opening by the movement of the latter, a spring for moving the auxiliary shutter independently, and a latch operated by the exposing-shutter releasing the auxiliary, substantially as described.

9. In a photographic shutter, the combination, with a lens-opening and a perforated exposing-shutter, of an auxiliary shutter, a spring connecting the two shutters, and connections between them for moving the auxiliary over the lens-opening by the movement of the main exposing-shutter, and a latch for holding the auxiliary adapted to be released by the main shutter, substantially as described.

10. In a photographic shutter, the combination, with the perforated exposing-shutter, of an auxiliary shutter arranged to cover the exposing-aperture in the main shutter while passing the lens-opening moving in one direction, a catch for holding the auxiliary in this position, and devices for releasing the catch after the exposing-aperture has passed the lens, substantially as described.

11. In a photographic shutter, the combination, with the perforated shutter having a stop thereon, of an auxiliary shutter and connections between them for causing their simultaneous movement when operated in one direction and a latch engaging the stop on the main and the auxiliary shutters, substantially as described.

12. In a photographic shutter, the combination, with the perforated exposing-shutter having a stop thereon, an auxiliary shutter, and connections between them for causing their simultaneous operation when operated in one direction, of a latch for engaging the stop on the exposing and the auxiliary shutter, said stop on the exposing-shutter operating to release the auxiliary shutter before being itself engaged by the latch, substantially as described.

13. The combination, with the perforated exposing main shutter having a stop thereon, an auxiliary shutter, and connections between them for causing their simultaneous movement when operated in one direction, of a catch for engaging the stop on the exposing and the auxiliary shutter, said stop on the exposing-shutter operating to release the auxiliary shutter before being itself engaged by the latch, and a manually-operated portion co-operating with the latch to cause the release of the exposing-shutter, substantially as described.

14. In a photographic shutter, the combination, with the base or support, of the exposing-shutter having the flange on one side, the auxiliary shutter operated by the main shutter, and the spring for holding it against the said flange, substantially as described.

15. In a photographic shutter, the combination, with the base or support, of the exposing-shutter having the laterally-projecting flange adapted to engage the side of the support and constitute a stop to limit the movement in one direction, substantially as described.

16. In a photographic shutter, the combination, with the base or support, of an exposing-shutter having the flanges on opposite sides adapted to engage the support and constituting stops for limiting the movement in opposite directions, substantially as described.

17. The combination, with the base or support constructed of a single piece of material having two coincident apertures for the lenses and a slit between them, of a pivoted shutter operating in the slit and a latch for operating on the shutter, substantially as described.

18. In a photographic shutter, the combination, with the base or support constructed of a single piece of material having two coincident apertures for the lenses and a slit between them, of a pivoted oscillating shutter operating in the slit and a latch for operating on the shutter, substantially as described.

19. In a photographic shutter, the combination, with the base or support having the boss, of the exposing-shutter, the stud passing through it, the spring connected to the shutter and the stud, and the slotted disk pivoted on the boss arranged to connect with and move the shutter when rotated in one direction, substantially as described.

20. In a photographic shutter, the combination, with the base or support, the exposing-shutter, and a spring for operating it in one direction, of a pivoted plate arranged concentric with the shutter-pivot, a slot-and-pin connection between the said plate and shutter, a spring for rotating the plate, and the flexible cord connected to the plate, substantially as described.

21. As a means for operating a pivoted oscillating photographic shutter to set it, the combination of a plate pivoted on the pivotal center of the shutter, a spring for oscillating said plate in one direction, and a flexible cord connected to the plate and moving the shutter, substantially as described.

22. In a photographic shutter, the combination, with the base or support and a latch, of the pivoted shutter having a pin and a flange or casing, a spring connected to the shutter inside the casing, a plate having a slot in which the pin on the shutter operates, a spring connected to the plate, and a flexible cord also connected to the plate for operating it against its spring, substantially as described.

23. In a photographic shutter, the combination, with the base having the boss and the stud thereon, of the shutter pivoted on the stud having a flange or casing and projecting pin, the spring connected to the shutter and stud inside the casing, the plate pivoted on the boss having the segmental slot, the spring connected to the plate and boss, and the flexible cord connected to said plate, substantially as described.

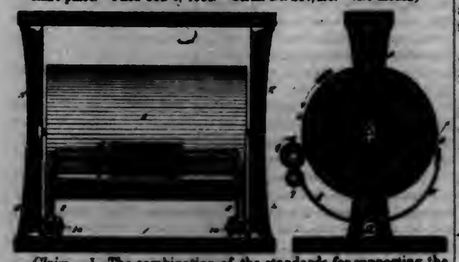
24. The combination, with the lens-opening and a reciprocating shutter provided with an exposing-aperture, of a reciprocating auxiliary shutter arranged to co-operate with the lens-opening when the main shutter is moved in one direction and to remain out of position when moved in the other, substantially as described.

25. In combination with the camera-box, the lens, and a reciprocating shutter provided with an exposing-aperture, a reciprocating auxiliary shutter arranged to co-operate with the lens and devices connected to the main and auxiliary shutters for moving both of them in one direction, with the auxiliary shutter covering the exposing-aperture, substantially as described.

26. In combination with a camera-box, a lens, and a reciprocating exposing-shutter, an auxiliary shutter co-operating with the lens to cover the exposing-aperture as the main shutter is operated in one direction, said auxiliary shutter being connected to the devices for operating the main shutter and operated thereby to insure the exclusion of light from within the camera-box during the movement of the main shutter in one direction, substantially as described.

27. In combination with the camera-box, the lens, and a reciprocating shutter provided with an exposing-aperture, an auxiliary shutter held removed from the lens-opening in one position, devices for operating the main shutter connected to the auxiliary shutter to automatically move the latter in line with the lens-opening during the passage of the aperture in the main shutter, and means for retracting the auxiliary shutter after the passage of the exposing-aperture in the main shutter, substantially as described.

408,597. **COMBINED PAPER PRINTER AND CUTTER.** LEO EHRLICH, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed Oct. 6, 1888. Serial No. 287,430. (No model.)



Claim.—1. The combination of the standards for supporting the paper roll, the pair of spring-pieces—one at each end of the machine—having arms 5 and 8, a knife mounted on the ends of the arms 5, and a roller mounted on the ends of the arms 8, substantially as described.

2. The combination of the standards for supporting the paper roll, the pins—one at each end of the machine—the pair of spring-pieces coiled around the pins having arms 5 and 8, a knife mounted on the ends of the arms 5, and a roller mounted on the ends of the arms 8, substantially as described.

3. The combination of the standards for supporting the paper roll, the pair of spring-pieces—one at each end of the machine—having arms 5 and 8, a knife mounted on the ends of the arms 5, and a printing-roller and an inking-roller mounted on the ends of the arms 8, substantially as described.

4. The combination, with the base and the standards, of the pins 10, located at the lower ends of the standards, the pair of spring-pieces having coils 9 around the pins and provided with arms 5 and 8, the knife 4, secured to the ends of the arms 5, the printing-roller 6, journaled to the ends of the arms 8, and the inking-roller 7, journaled to the arms 8 beneath the printing-roller, substantially as described.

408,598. **ROLL-PAPER HOLDER AND CUTTER.** LEO EHRLICH, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed Oct. 6, 1888. Serial No. 287,427. (No model.)



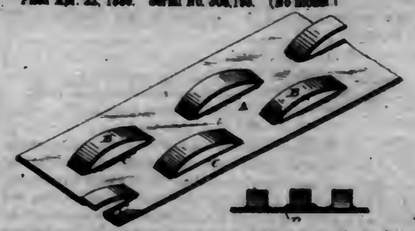
Claim.—1. The combination of the paper-roll, support for the roll, a knife fitting on the roll, rods extending upwardly from the knife, and a cross-piece through which the rods pass, substantially as set forth.

2. The combination of the paper-roll, support for the roll, a knife fitting on the roll, rods extending upwardly from the knife, cross-piece through which the rods pass, and sleeves on the cross-piece, substantially as set forth.

3. The combination of the roll, support for the roll, knife resting on the roll, rods extending upwardly from the knife, cross-piece through which the rods pass, sleeves secured to the cross-piece, and heads on the upper ends of the rods, substantially as set forth.

4. The combination of the paper-roll, support for the roll, knife resting on the roll, rods extending upwardly from the knife, cross-piece through which the rods pass, and sleeves on the cross-piece, the sleeves being slightly inclined to give an inclination to the knife, substantially as set forth.

408,599. **METAL LATHING.** IRA S. BLAKE, New York, N. Y. Filed Apr. 22, 1889. Serial No. 308,193. (No model.)



Claim.—1. A metal lath consisting of a piece of metal formed with a series of pairs of parallel slits arranged at suitable intervals, and having the body of the metal between the slits of each pair drawn forward or upward to form loops, all upon the same side of the sheet, and the edges of the slits adjacent to the loops being provided with forwardly or upwardly turned flanges.

2. A sheet-metal lath having loops made in its face, arching over the openings thus formed, the edges of the openings having upward flanges, substantially as specified.

3. As a new article of manufacture, a sheet-metal lath having loops made at regular intervals over its entire surface on one side only, and upwardly or forwardly turned flanges along the edges of the said openings, substantially as described.

4. A metal lath having expanded loops on one side only, the said loops covering or arching over the openings from which the loops are formed, substantially as described.

408,600. **INSULATING-COUPLING FOR PIPES.** ERSKINE R. BRICKSON, Boston, Mass., assignor of one-half to Winthrop Thayer, same place. Filed Mar. 5, 1888. Serial No. 301,902. (No model.)

Claim.—1. An insulating pipe-coupling consisting of two inter-

408,601.

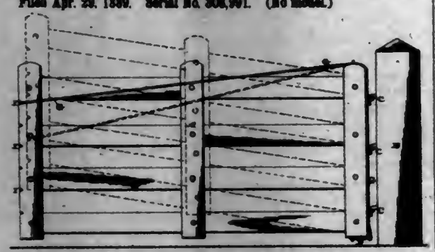


nally-threaded metallic sleeves a^4, and a connecting-piece b, of hardened plastic insulating material, in which said metallic sleeves are embedded separated from each other, said insulating connecting-piece having a hole b^2 between said sleeves.

2. An insulating pipe-coupling consisting of two internally-threaded metallic sleeves a^4 and a connecting-piece b, of hardened plastic insulating material, in which said metallic sleeves are embedded separated from each other, said insulating connecting-piece having the hole b^2 between said metallic sleeves and a polygonal exterior, substantially as set forth.

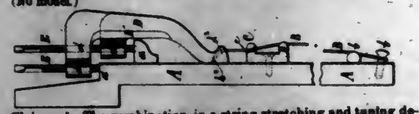
3. The insulating-coupling herein described, comprising the metal sleeves a^4, having shoulders a^5 and longitudinal recesses a^6, with the compressed insulating-connection b of formative material, having the interposed section b', and surrounding and firmly united to the said sleeves a^4, substantially as described.

408,601. GATE. ALEXANDER FAWCETT, Mount Vernon, Ohio. Filed Apr. 29, 1889. Serial No. 308,991. (No model.)



Claim.—The combination of the gate with the clevis secured to its lower inner corner, and the brace-wire, which extends along up the outer edge of the inner stile, over its top and along over the top of the gate, so as to engage with notches formed in the free end of the gate, substantially as shown and described.

408,602. STRING STRETCHING AND TUNING DEVICE. ABRAHAM PELLER, Auburn, N. Y. Filed May 23, 1888. Serial No. 275,276. (No model.)



Claim.—1. The combination, in a string stretching and tuning device, of a string-frame, as A, having the string-holding studs b, bridges b' D, agraffe C, and shoulder or shoulders c, for the stretching-screws, the suspender-yokes and stretching-screws, said yokes bridging said shoulders and having toes of the string ends bearing at one side of the shoulders on the surface of the string-frame, and heads for the adjusting-screws on the other side of the shoulders and in line with the surface of the string-frame or thereabout, substantially as described.

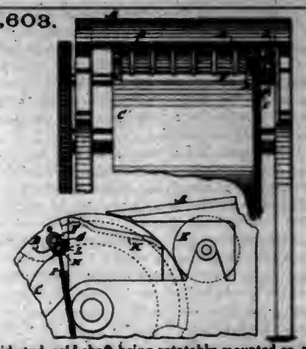
2. The combination, in a string-stretching device, of a string-frame, as A, having the string-holding studs b, bridges b' D, agraffe C, and upper and lower shoulders c, for the stretching-screws, the suspender-yokes and stretching-screws, said yokes bridging said shoulders and having toes of the string ends bearing at one side of the shoulders on the surface of the string-frame, and heads for the adjusting-screws on the other side of the shoulders gaged for the bearing of the adjusting-screws on the upper and lower shoulders alternately, substantially as described.

3. The combination of an agraffe C, having vertical slots c', provided with side notches c, with a bridge D, said bridge and agraffe being both rigid upon a common bar G, securable to the string-frame.

408,603. GRIPPER-MOTION FOR PRINTING-MACHINES. GEORGE P. FRISBEE, New London, Conn. Filed Mar. 14, 1889. Serial No. 303,283. (No model.)

Claim.—1. The combination, with the gripper-shaft F, having fingers or grippers, and an arm G, provided with a stud H, of a cam

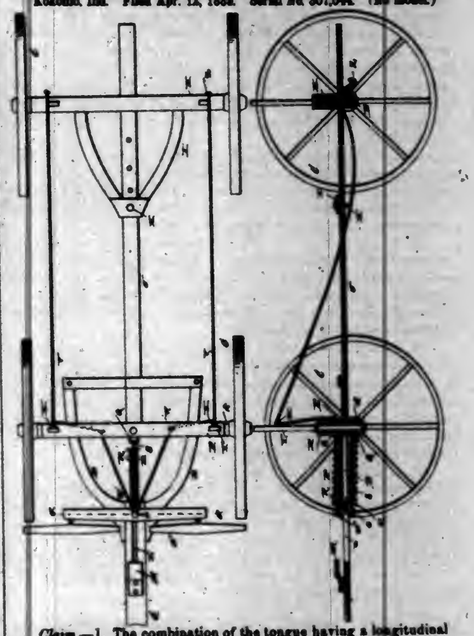
408,603.



K for said stud, said shaft being rotatably mounted so that the stud H can be swung out of action while the cylinder is rotating, and means, substantially as described, for holding the stud out of action.

2. The combination, with the gripper-shaft F, having fingers or grippers, and an arm G, provided with a stud H, of a cam K for said stud, a spring-rod I, and a stop L, for holding the stud in position out of reach of the cam, substantially as described.

408,604. RUNNING-GEAR FOR VEHICLES. JOHN H. FRANCIS, Kokomo, Ind. Filed Apr. 12, 1889. Serial No. 307,044. (No model.)



Claim.—1. The combination of the tongue having a longitudinal slot at its rear end, the stop or bracket at the front end of said slot, the longitudinally-sliding doubletree, the hammer-bolt extending through the doubletree and through the slot in the tongue, and springs connecting the upper and lower ends of the hammer-bolt with the front axle and sand-board, respectively, and serving to draw the hammer-bolt and doubletree in a rearward direction, substantially as and for the purpose set forth.

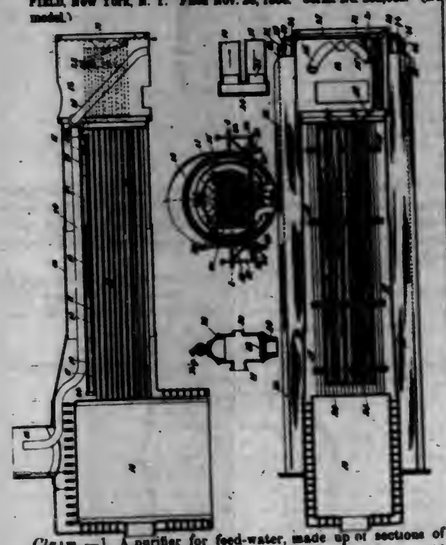
2. The combination of the front axle and sand-board, the staples secured to the front sides of the same, the hounds, the tongue mounted pivotally between the front ends of the latter and having a longitudinal slot at its rear end, a stop or bracket at the front end of said slot, the doubletree connected to the tongue by means of the hammer-bolt arranged to slide in the longitudinal slot on the tongue, and the spring-connections between the upper and lower ends of the hammer-bolt and the staples of the front axle and sand-board, said spring-connections comprising the bails arranged in pairs, connected, respectively, to the said staples and to the upper and lower ends of the hammer-bolt, and the springs coiled around the said bars and confined by the

hooked ends of the legs of the latter, substantially as and for the purpose set forth.

3. The combination of the longitudinally-sliding doubletree, springs arranged to force the latter in a rearward direction, and wire ropes attached to the rear side of the doubletree, passing through suitably-arranged guides, and provided with hooks at their free ends, substantially as and for the purpose set forth.

4. The combination of the tongue having a longitudinal slot at its rear end, the hammer-bolt moving in said slot and carrying the doubletree, springs connecting the upper and lower ends of the hammer-bolt with the front axle and sand-board, respectively, and serving to draw the said hammer-bolt and doubletree in a rearward direction, a staple attached to the rear side of the doubletree, and wire ropes attached to the said staple, passing through suitable guides upon the sand-board and front wagon-stakes, and provided with hooks at their free ends adapted to engage the spokes of the hind wheels, substantially as and for the purpose hereinbefore specified.

408,605. FEED-WATER HEATER AND PURIFIER. GEORGE B. FIELD, New York, N. Y. Filed Nov. 26, 1888. Serial No. 292,062. (No model.)



Claim.—1. A purifier for feed-water, made up of sections of sheet-metal pipe joined together and having in one or more of said sections a coil of sheet metal for arresting the sediment.

2. A feed-water purifier for boilers, made up of sections of sheet-metal pipe, having in one or more sections a coil of sheet metal and scrap-iron for arresting the sediment.

3. The combination to form a feed-water purifier, located wholly within the boiler, of cylindrical sheet-metal pipes 18, joined together in the manner described, one or more coils of sheet metal located in the sections of said purifier, and castings 24, joining the adjacent lengths of the feed-water purifier together, in the manner described.

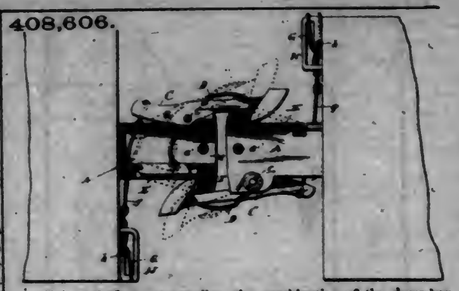
4. A feed-water heater consisting of a coil of pipe arranged within the smoke-box of a locomotive and having a water-circulating pipe 38 connected to the upper and lower parts of the coil, for the purpose described.

5. The combination, with a locomotive-boiler, of a feed-water purifier located wholly within said boiler, a coil of pipe communicating with said purifier arranged in the smoke-box of said locomotive in the direction of the length of the same between one of the steam-pipes and the shell of the smoke-box, a water-circulating pipe 38, connecting the upper and lower part of said coil of pipe together, and a feed-water connection, substantially as and for the purpose described.

6. The combination, with a locomotive-boiler, of a feed-water purifier located wholly within said boiler and made up of sheet-metal pipes having one or more coils of sheet-iron therein, together with scrap-iron, a coil of pipe located within the smoke-box communicating with said purifier, a circulating-pipe connecting the upper and lower part of the coils together, a pump and injector connection opening into said coil, and blow-offs controlled in the manner described.

408,606. CAR-COUPLING. JAMES A. FLEMING, Hoopeston, Ill. Filed May 1, 1889. Serial No. 309,196. (No model.)

408,606.



Claim.—1. In a car-coupling, the combination of the draw-bar having a lateral projection F at one side, the releasing-plate E on the same side of the draw-bar as projection F, the hook C, pivoted between its ends to the side of the draw-bar opposite the plate E and projection F, and the link e, connecting the hook C with the plate E, substantially as and for the purpose described.

2. The combination, with the draw-bar and the coupling-hook, of the lever G, pivoted between its ends and connected with the said hook, the ends of the said lever being yielding, and the notched keepers, substantially as and for the purpose described.

3. The herein shown and described coupling, composed of a draw-bar having a throat a, vertical opening a', and a lateral extension F, the coupling-hook C, pivoted to the draw-bar between its ends, the releasing-plate E, connected by link e with the hook C, the spring D, the operating-lever G, and the notched keepers H, substantially as and for the purpose described.

408,607. ELECTRIC DRINKING-VESSEL. FREDERICK W. PLANT, Mount Airy, Ga. Filed May 6, 1889. Serial No. 309,703. (No model.)



Claim.—1. A drinking-vessel constructed partly of a non-conducting and partly of a conducting material, and provided with a suitable battery-connection, the said vessel being adapted to contain a beverage or liquid, which will serve in connection with the said vessel as an electrode for establishing a circuit through the body or system of the drinker when imbibed, substantially as specified.

2. A drinking-vessel constructed partly of non-conducting and partly of conducting material, the latter having a suitable battery-connection, in combination with an electrode applied to the handle thereof, whereby an electric current may be established through the body or system of the drinker during the act of drinking from said vessel, substantially as specified.

3. A drinking-vessel constructed of non-conducting material having an internal electrode adapted to be brought into contact with the contents of the vessel, and an external electrode to be grasped by the hand during the act of drinking to complete the circuit through the body of the drinker, substantially as specified.

408,608. PROCESS OF REMOVING VERMIN OR SCALES FROM PLANTS. EDWIN P. FOWLER, National City, Cal. Filed Jan. 24, 1889. Serial No. 297,436. (No specimens.)

Claim.—1. The process of removing vermin or scale from plants or trees, which consists in exposing the plants or trees to an artificial current of air charged with sand, substantially as set forth.

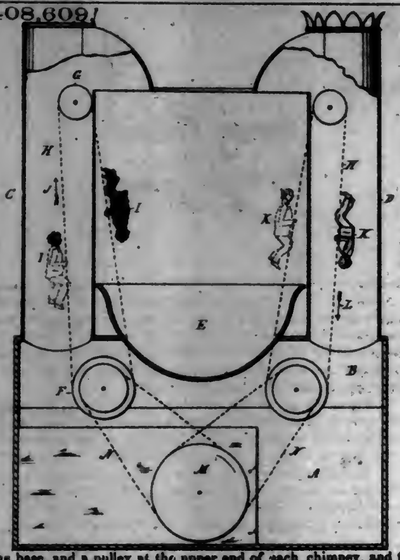
2. The process of removing vermin or scale from plants or trees, which consists in exposing the plants or trees to an artificial current of heated air charged with sand, substantially as set forth.

3. The process of removing vermin or scale from plants or trees, which consists in exposing the plants or trees to an artificial current of air charged with hot sand, substantially as set forth.

408,609. ADVERTISING DEVICE. ROBERT FREELAND, Cincinnati, Ohio. Filed Mar. 5, 1889. Serial No. 301,993. (No model.)

Claim.—1. An advertising toy consisting of the house A, having a chimney at each end, the basin E between the chimneys, the drum

408,609.

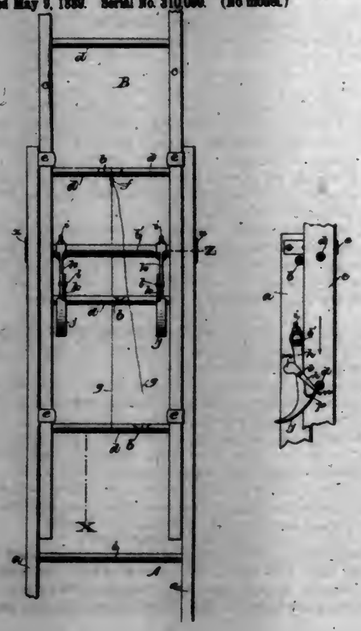


at the base, and a pulley at the upper end of each chimney, and the chain H, having the figures I and K attached thereto, substantially as and for the purposes set forth.

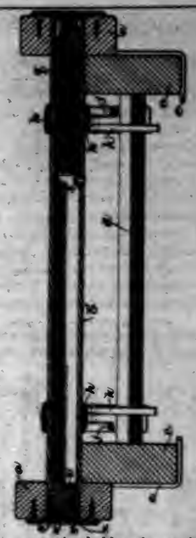
2. An advertising toy in representation of a house or factory, having mounted thereon two chimneys and a basin between them, in combination with an endless belt or chain having a figure thereon, which passes down into the basin, and a similar figure of a different color placed on a similar chain on the other side of the basin, which emerges from the basin, substantially as herein set forth.

3. In an advertising device, the combination, with belts having figures attached thereto and drums and pulleys over which said belts pass, of smoke-stacks up and down through which said figures can be caused to move alternately and a representation of a water-basin through which said figures appear to pass down and up, substantially as and for the purposes described.

408,610. EXTENSION-LADDER. CHARLES FERRELL, Boston, Mass. Filed May 9, 1888. Serial No. 310,069. (No model.)



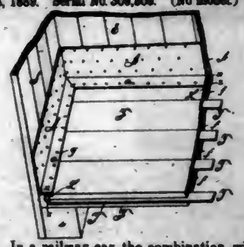
408,610.



Claim.—1. In an extension-ladder, the combination of a hollow rung, a pair of hooks secured on said rung, a spring arranged in the rung to actuate the same and the hooks thereon, and a clutch interlocked with the rung, all combined and arranged to operate substantially as specified.

2. The combination, in an extension-ladder, of a hollow rung *b*, hooks *h*, secured on said rung, spring *g*, arranged in the rung to actuate it, and cam-plate *x*, interlocked with the rung to control the rotation thereof, all substantially as specified.

408,611. RAILWAY-CAR. MYERS A. GARRETT, Englewood, Ill. Filed May 6, 1889. Serial No. 309,809. (No model.)



Claim.—1. In a railway-car, the combination, with a water-tight floor, of a water-tight strip extending around the outer edge of said floor, one edge of said strip being secured water-tight to the top surface of said floor and the other edge carried upward therefrom and secured to the car, substantially as set forth.

2. In a car, the combination, with a water-tight floor having a groove extending around the outer edge thereof, of a water-tight strip secured water-tight around the outer edge of said floor, said strip having a lip projecting into said groove, substantially as set forth.

3. In a car, the combination, with the water-tight floor having the groove *g* extending around the outer edge thereof, of the strip A, having the lip L projecting downward into said groove, so as to form a water-tight joint, said strip being extended up and secured to the sides of the car, substantially as set forth.

4. In a car, the combination, with a water-tight floor having a groove around the outer edge thereof, of the continuous water-tight strip A, extending completely around the interior of the car save at the doorways, said strip being bent to fit the angle formed by the sides and floor and secured therein and provided with a lip projecting into said groove, substantially as set forth.

5. In a car, the combination, with the floor F and the strip A, secured water-tight around the outer edge thereof, of the tongues T, interposed between the strips of flooring, forming water-tight joints and extending outward beyond the inner edges of strip A, substantially as set forth.

6. In a car, the combination, with the floor having the groove *g* around its outer edge, and the strip A, secured water-tight around the outer edge of the floor and having the lip L projecting downward into said groove, of the separate tongues T, fitted water-tight between the strips *f* and extending outward beyond the lips L, substantially as set forth.

7. In a car, the combination, with the floor having the groove *g* extending around its outer edge, and the strip A, secured water-tight around the outer edge thereof and having the lip L projecting down into said groove, of the tongues T, fixed water-tight between the strips of flooring, extending outward beyond the lips L and having their ends bent upward, terminating above the lower edges of said lips, substantially as set forth.

8. In a car, the combination of the floor F, having the groove *g* extending around its outer edge, the strip A, extending around the interior of the car save at the doorways, bent to fit the angle formed by the floor and sides of the car and there secured water-tight, said strip having the lip L extending down into said groove, and the separate tongues T, fixed water-tight between the strips of flooring, extending outward beyond the lips L and bent upward, terminating above the lower edges of said lips, substantially as set forth.

9. In a car, the combination of the floor F, formed of strips *f*, having grooves O in their meeting edges, said floor having the groove *g* extending around the outer edge thereof, the strip A, bent to fit the angle formed by the floor and sides of the car, secured therein water-tight, and having the lip L extending down into said grooves *g*, and the separate tongues T of slightly greater thickness than the width of grooves O, having their opposite edges forced into said grooves, so as to form water-tight joints, said tongues extending outward beyond the lips L, and having their ends bent upward, terminating above the lower edges of said lips, substantially as set forth.

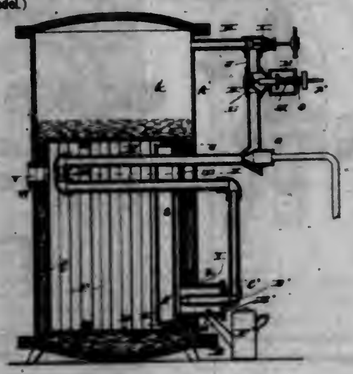
408,612. CHILD'S ADJUSTABLE CHAIR. CYRUS P. GIFFORD and CHARLES A. ALLEN, North East, Pa., assignors to Robert J. Moorhead and Marvin A. Caldwell, same place. Filed Sept. 21, 1888. Serial No. 286,032. (No model.)



Claim.—1. In a convertible chair, the combination, with the outer rockers pivoted to the front legs of the chair, of the inner rockers pivoted centrally to the outer rockers and forming a double rocking surface at the base of the chair, a round journaled in the rear ends of the said inner rockers, and sliding links pivoted to the rear legs of the chair and engaging with the said round, substantially as and for the purpose set forth.

2. In a convertible chair, the combination, with the outer rockers provided with ears *e e*, pivoted to the front legs of the chair, of the inner rockers pivoted centrally to the outer rockers and provided with grooves *h* in their ends for engaging with the rounds *d* of the chair, the revoluble round E, journaled in the inner rockers, and the links F F, pivoted to the rear legs of the chair and free to slide back and forth in holes formed through the said round E, substantially as and for the purpose set forth.

408,613. STEAM-GENERATOR. OLIVER F. GILBERT and GILBERT W. FARRAR, East Saginaw, Mich. Filed Mar. 5, 1889. Serial No. 301,996. (No model.)



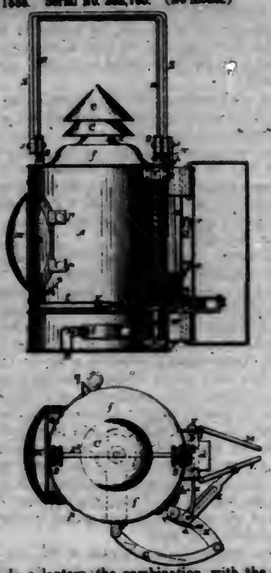
Claim.—1. In a steam-generator, the combination, with an outer shell or casing, of an interior shell or casing constituting the fire-box, said inner casing having openings near its upper and lower ends connected with corresponding openings in the outer casing by steam-tight flanges or collars, a refractory tube arranged vertically in the inner casing and provided at its upper end with an opening registering with the openings in the shells or casings and at its lower end with a transverse perforation, and the fuel-supply pipe entering through a tube adjusted in the lower openings of the casings, substantially as set forth.

2. The combination of the outer casing constituting the boiler, the inner casing constituting the fire-box, the steam-pipe equipped with a globe-valve and a check-valve, an injector connected with said steam-pipe and supplying liquid hydrocarbon, a refractory air-supply pipe located in the fire-box, and a torch arranged below the burner of the fuel-supply pipe, substantially as set forth.

3. The combination of the outer casing or boiler, the inner casing or fire-box, and the fuel-supply pipe extending through the tube-casings and having a return-bend in the fire-box, substantially as set forth.

4. The combination of the outer shell or boiler, the inner shell or fire-box, the vertical water-flues connecting the heads of the latter, the refractory air-supply pipe located in the fire-box, the fuel-supply pipe having a check-valve adapted to regulate the steam-supply, said fuel-supply pipe extending through the upper portion of the fire-box, a torch arranged to ignite the fuel, and suitably-arranged pipes to carry off the products of combustion, all arranged and operating substantially as and for the purpose set forth.

408,614. LANTERN. HUMPHREY G. GRIFFITH, Indianapolis, Ind. Filed Aug. 15, 1888. Serial No. 282,765. (No model.)



Claim.—1. In a lantern, the combination, with the outer case adapted to receive a lamp and provided with an opening in its side through which the light passes, and a slot, of a revolving shutter placed therein, provided with an operating-pin which projects through the slot, a handle pivoted upon the lantern, and a rod connecting the handle and the shutter, whereby the shutter is operated by the movement of the handle, for the purpose set forth.

2. In a lantern, the combination, with a slotted case adapted to receive a lamp and provided with an opening through its side through which the light passes, and the disk Q, having a central aperture the edge of which is turned up to form a bearing, and through which opening the wick-tube passes, of a cylindrical revolving shutter having an opening to register with the opening in the side of the case, a disk at its lower end having a central aperture fitting over the upturned edge of the aperture in the disk Q, and a pin which projects through the slot in the case for operating the shutter, whereby a simple bearing is formed for the shutter, substantially as shown.

3. In a lantern, the combination of the slotted case having an opening in its side through which the light passes and adapted to receive a lamp, a revolving shutter placed therein having an opening, a pin upon the shutter extending through the slot in the case, a handle pivoted to the case, connections between the handle and the pin, and

a second handle pivoted near the said first handle having a limited movement, whereby, when the two handles are brought together, the shutter is caused to partially revolve, substantially as set forth.

4. In a lantern, the combination of the slotted case having an opening in its side, a revolving cylindrical shutter placed therein, having an opening in its side, an operating-pin which passes through the slot formed in the case, a handle pivoted upon the case, and a spring-actuated rod connecting the shutter and the handle, whereby the shutter is made to close the opening in the case when the handle is not operated, substantially as specified.

5. The combination of the case A, shutter B, journaled therein, having pin F, the vertical spring-actuated rod Y, journaled upon the case, the arm H, secured thereto, the handles M L, pivoted to the case, and the levers K G, for connecting the handles and the pin F together, whereby, when the handle L is operated, the shutter is given a partial revolution, substantially as described.

6. The combination of the case having an opening for the passage of light, a revolving shutter placed therein having an opening for the passage of light, the slot *t* in the case, pin F, connected to the shutter, vertical rod Y, lever G, arm H, secured to the rod Y, lever K, connecting the arm H and the handle L, the handles L M, pivoted to the case, and the spiral spring Z, surrounding the rod Y, having its upper end bearing upon the case and its lower end formed into a lever *a* and bent downward so as to engage the arm H, for returning the shutter to position when the grasp upon the handles L M is released, substantially as set forth.

7. The combination of a case having an opening through its side, a revolving shutter placed therein, having an opening in its side, the pin F, slot *t*, lever G, spring-actuated rod Y, arm H, lever K, the handle M, pivoted to the case and having a limited movement, and the handle L, pivoted to the case and having its lower end formed into a crank X and engaging the lever K, whereby, when the handle L is operated, the shutter is caused to partially revolve, for the purpose specified.

8. The combination of the slotted case having an opening in its side, a revolving shutter placed therein, provided with an operating-pin which projects through the slot made in the lower end of the case and an opening in its side, the handles L M, pivoted to the back side of the case, the lever G, spring-actuated rod Y, arm H, and the lever K, connecting the arm H and handle L, said lever provided with a longitudinal slot, whereby the handle L can be separated from the one M and folded against the side of the case, out of the way, substantially as described.

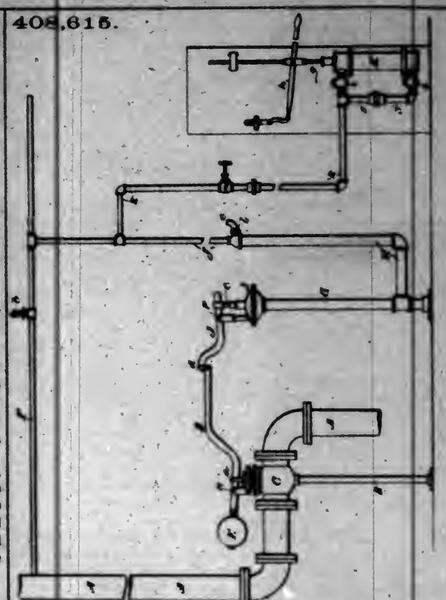
9. In a lantern, the combination of the slotted case provided with an opening in its side, a revolving shutter placed therein, having an opening, and an operating-pin which projects through the slot in the lower end of the case, the operating-bail R, engaging the lever T, the bail S, having a limited movement, and the lever T, connecting-rod I, arm H, spring-actuated rod Y, and the lever Q, connecting the arm H and operating-pin F, whereby, when the bail R is operated, the shutter is given a partial revolution, for the purpose specified.

10. In a lantern, the combination of a slotted case having an opening for the passage of light, a revolving shutter placed therein, provided with an opening in its side, and an operating-pin projecting through the slot, the lever G, arm H, spring-actuated rod Y, connecting-rod I, pivoted to the lower end of the lever T, the lever T, pivoted upon the upper end of the case, and the bails R S, pivoted to the upper end of the case, the bail R engaging the lever T, whereby, when it is operated, the shutter is given a partial revolution, for the purpose substantially as set forth.

11. In a lantern, the combination of the case provided with a revolving shutter for the purpose described, the frame *d*, secured to its rear side, the disks P Q, secured in the shutter and case, respectively, the case having a slot or opening opposite the space between the two disks, and perforations in its bottom for the admission of air to the opening, whereby air for combustion is fed directly to the flame, substantially as shown and described.

12. In a lantern, the combination of the case provided with a revolving shutter for the purpose described, an operating-pin secured to the shutter and which projects through an opening in the case, the lever G, arm H, spring-actuated rod Y, connecting-rod I, lever T, ears *g g*, secured to the top of the case, and the bails R S and lever T, journaled upon the same bearing which passes through the ears, the bail S having its lower ends extending below its pivotal point to form a stop, the bail R having one of its lower ends to extend below its pivotal point and which engages the lever T, whereby, when the bail R is operated, the shutter is given a partial revolution, for the purpose specified.

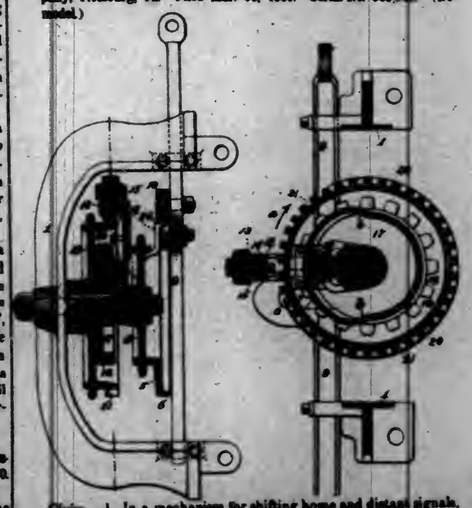
408,615.



valve which seats against the fluid-pressure, and a stem extending above it, a lever pivoted at one side of said stem so as to bear thereon, a diaphragm-motor actuated by a water-column subjected to the air-pressure in the distributing-pipes, and a lever engaged and actuated by the piston of said motor and connected with the valve-controlling lever to thereby hold the valve to its seat, substantially as specified.

2. In fire-extinguishing apparatus, the combination of supply-pipe A, having a water-distributing system therewith connected, valve C, having stem *a* extending above the valve, lever D, pivoted at one side of said stem and engaging it, diaphragm-motor I, its stand-pipe G, closed at the bottom and having branch pipe H, air-pump K, connected by a conduit with pipe H and the distributing system, and pivoted lever J, connected at one end with stem *e* of the motor and at the opposite end connected with lever D, to control the same, and thereby the valve, substantially as specified.

408,616. MECHANISM FOR OPERATING SIGNALS. JAMES T. HANRAY, Wilkinsburg, assignor to the Union Switch and Signal Company, Pittsburg, Pa. Filed Mar. 30, 1889. Serial No. 305,340. (No model.)



Claim.—1. In a mechanism for shifting home and distant signals, the combination of a wheel provided with means for operating the

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408,615. AUTOMATIC FIRE-EXTINGUISHING APPARATUS. OSBORN B. HALL, Malden, Mass. Filed Feb. 26, 1889. Serial No. 301,570. (No model.)

Claim.—1. In an automatic fire-extinguishing apparatus, the combination of a main supply-pipe provided with an intercepting-

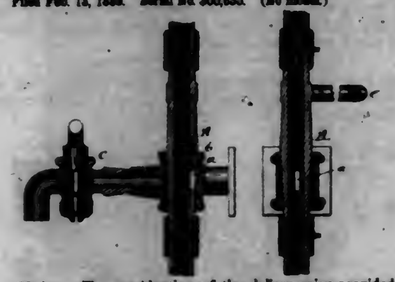
home-signal, a wheel provided with means for operating the distant signal, and a lock for so connecting said wheels as to cause them to rotate together, substantially as set forth.

2. In a mechanism for shifting home and distant signals, the combination of a wheel provided with means for operating the home signal, a wheel provided with means for operating the distant signal, and a lock operated by the home signal wheel for locking said wheels together, substantially as set forth.

3. In a mechanism for shifting home and distant signals, the combination of a horizontally-slotted signal-bar having a friction-roller 10 mounted thereon, a wheel provided with a pin for engaging the slot in the signal-bar and with a flange for engaging the friction-roller 10, a wheel provided with means for operating the distant signal, and a lock for connecting said wheels, substantially as set forth.

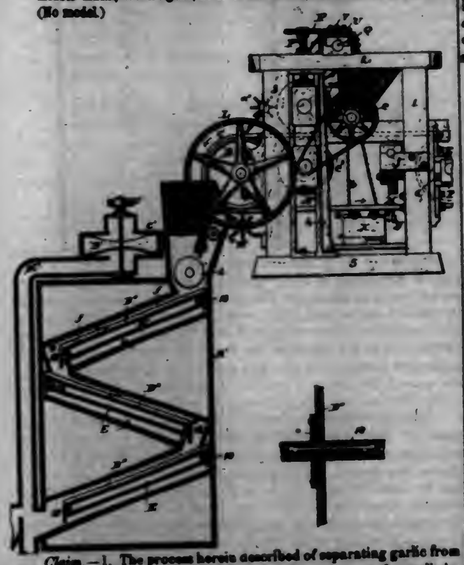
4. In a mechanism for shifting home and distant signals, the combination of a wheel for operating the home signal, a radially-moving slide having a latch mounted on said wheel, a stationary disk having a cam-groove formed therein adapted to engage and operate the slide, and a sprocket-wheel for operating the distant signal having pockets for the reception of the latch, substantially as set forth.

408,617. SUPPLY AND WASTE COCK. CLARK HAY, Portland, Oreg. Filed Feb. 13, 1889. Serial No. 300,035. (No model.)



Claim.—The combination of the delivery-pipe provided with faucets at intervals on the same for supplying water to the different floors of a building, said delivery-pipe being provided with openings and having the supply and waste valve connected therewith, and means for turning said pipe to admit water and allow the same to be drained to prevent freezing, as and for the purposes set forth.

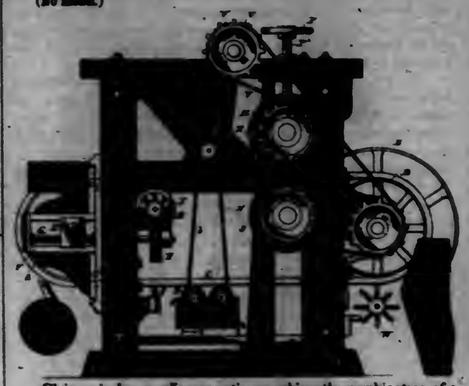
408,618. METHOD OF SEPARATING GARLIC FROM WHEAT. AUSTIN HERR, Washington, D. C. Filed Dec. 20, 1886. Serial No. 222,911. (No model.)



Claim.—1. The process herein described of separating garlic from wheat, which consists in first crushing or flattening out the garlic by pressure sufficient to crush the garlic but not the wheat, then separating the hulls, and finally drying the material by evaporating the juices therefrom, substantially as described.

2. The process herein described of cleaning and separating garlic from wheat, which consists in crushing or flattening out the garlic without injuring the wheat, then drying or evaporating what remains of the garlic and juices of same, and finally completing the separation by induced air currents or blasts.

408,619. MACHINE FOR SEPARATING GARLIC FROM WHEAT. AUSTIN HERR, Washington, D. C. Filed Mar. 20, 1886. Serial No. 262,944. (No model.)



Claim.—1. In a garlic-separating machine, the combination of a traveling band of partially-vulcanized india-rubber, two or more hard-faced rolls operating upon the surface of said band, and means for operating the band and rolls, substantially as described.

2. In a garlic-separating machine, the combination of the upper roll, having movable bearings and means for adjusting the same, the lower roll having stationary bearings, the intermediate traveling elastic resilient band, and means for operating the whole, substantially as described.

3. In a garlic-separating machine, the combination of two rolls, a revolving cylinder at each end of the machine beyond the rolls, means for adjusting one of said cylinders longitudinally of the belt, a resilient elastic band passing around the cylinders and between the rolls, and means for operating the parts, substantially as described.

4. In a garlic-separating machine, the combination of two rolls supported in bearings one above the other, means for adjusting the said rolls with relation to each other, two cylinders supported in bearings at opposite ends of the machine, means for adjusting said cylinders with relation to each other, an elastic band passing around the cylinders and between the rolls, and means for operating the parts, substantially as described.

5. In a garlic-separating machine, the combination, with the traveling resilient elastic band, of the tank and washing-rolls located beneath the same, and means for revolving the said rolls against the surface of the band, substantially as described.

6. In a garlic-separating machine, the combination of the hopper feed-roll bearing at one end a sprocket-wheel, the tank X, and the sponge-rolls Z Z, each bearing also a sprocket-wheel, and the sprocket chain or belt passing around these wheels, substantially as shown, and for the purpose described.

7. In a garlic-separating machine, the combination, with the traveling resilient elastic band or belt, of the scraper W, and the tank and washing-rolls, and means for operating said rolls, substantially as described.

8. In a garlic-separating machine, the combination, with the traveling resilient elastic belt, of the tank and washing-rolls, the squeegee *g*, and the blower following thereafter, substantially as shown, and for the purpose described.

9. In a garlic-separating machine, the combination of the two rolls, each bearing a sprocket-wheel at one end of its shaft, the two cylinders arranged at opposite ends of the machine, the shaft of one having a corresponding wheel, the idler U and sprocket-chain, and the resilient elastic band passing around the cylinders and between the rolls, the whole adapted to operate substantially as described.

10. In a garlic-separating machine, the combination, with the frame having slotted extensions F, of the cylinder A, supported in bearings movable in said slotted extensions, the screws G, carrying worm-wheels H, the shaft J, having hand-wheel and provided with worms engaging said wheels H, the opposite cylinder B, having fixed bearings, and the resilient elastic belt passing and traveling around the two cylinders, substantially as shown and described.

11. In a garlic-separating machine, the combination, with the rolls M N, of the hopper feed-roll *d*, bearing at one end a sprocket-wheel

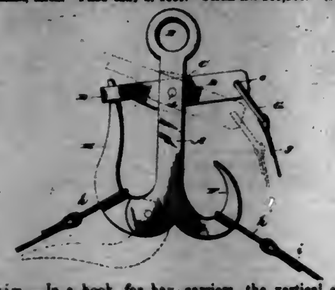
and at the other the pulley *c*, the tank, and the sponge-rolls having sprocket-wheels corresponding to *d*, the sprocket-belt *b*, and the belt c^2, connecting the pulley *c* with the shaft of roll N, substantially as shown, and for the purpose described.

12. In a garlic-separating machine, the combination, with the elastic traveling band, of a scraper, washer, and drier for said band, the same being successively arranged beneath the band and operated by suitable means, substantially as described.

13. In a garlic-separating machine, the combination, with the rolls, the cylinders, and the traveling elastic band passing around the cylinders and having its surfaces operated upon by the rolls, of a hopper for feeding the material to the band at the bite of the rolls, substantially as described.

14. In a garlic-separating machine, the combination, with two or more hard-faced rolls, an intermediate traveling elastic band, and means for operating said band and rolls, of a suitable drying or evaporating apparatus for the grain or material, substantially as described.

408,620. **HOOK FOR HAY-CARRIERS.** THOMAS J. HITCHCOCK, Portland, Mich. Filed May 2, 1889. Serial No. 309,379. (No model.)



Claim.—In a hook for hay-carriers, the vertical shank A, provided with intermediate horizontal recess C, having inclined walls, an eye B at its upper end, and with oppositely-extending integral complete and incomplete hook portions at its base, an extended member E, having its inner extremity pivotally connected to said incomplete portion, and a latch-bar D, centrally pivoted in said recess and having a vertically-perforated end to engage the upper extremity of said member E to form a closed hook, and perforated at its other end for the attachment of an operating-cord, substantially as set forth.

408,621. **ROLL-PAPER HOLDER AND CUTTER.** EDWARD HOFFMAN, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed June 20, 1888. Serial No. 278,013. (No model.)



Claim.—1. In a roll-paper holder and cutter, the combination of the posts or standards, a roll of paper, and vertically-movable bearings for securing the roll of paper to the standards, substantially as and for the purpose set forth.

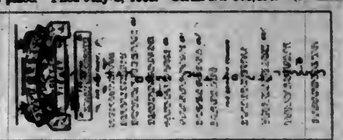
2. In a roll-paper holder and cutter, the combination of the posts or standards, a roll of paper, and vertically-movable bearings consisting of slotted sleeves and tightening screws, substantially as and for the purpose set forth.

3. In a roll-paper holder and cutter, the combination, with a roll and frame supporting the roll, of a horizontal knife mounted on the frame by bearings that will prevent its rocking, feeding by gravity, resting upon the roll, and having an edge against which the paper is cut in an upward direction and which projects beyond the point of contact of the knife with the roll, whereby cutting-pressure on the knife binds it to prevent its removal from the roll, as explained.

4. The combination, with the freely-suspended roll of paper, of a floating weighted cutter-bar held by gravity alone against the periphery of said roll and having a cutting-edge removed from the point of contact between said bar and roll, whereby said cutter-bar is caused to act as a friction-brake to the roll to adapt itself automatically to the size and contour of the roll and to serve as means for severing the free end of the paper when the latter is pulled upward against it, substantially as described.

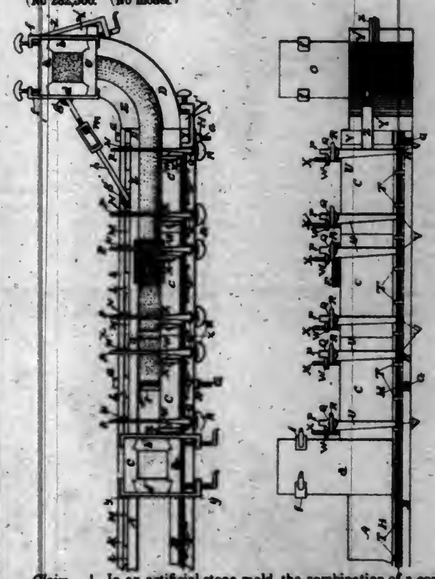
5. A roll-paper holder and cutter embodying supports in which to suspend a roll of paper, a weighted cutter-bar for bearing by gravity alone upon the suspended roll of paper and having a cutting-edge removed from its contact or bearing point against which the paper is adapted to be separated by an upward draw upon it, and guides on which the cutter-bar works, substantially as described.

408,622. **METHOD OF CANCELING BALLOTS.** SILAS J. HOWELL, Boston, Mass., assignor to the American Ballot Box Association, same place. Filed July 2, 1885. Serial No. 170,490. (No model.)



Claim.—The method of canceling ballots voted upon in a voting-machine by printing a line of characters across the face of said ballots from end to end as they are passed one by one through the machine, so as to cross and mark every material thing or name or statement upon such ballot, whether there originally or applied thereto before voting, substantially as set forth.

408,623. **MOLD FOR ARTIFICIAL-STONE FENCES.** JOHN JENSEN and HENRY JENSEN, Santa Ana, Cal. Filed Aug. 9, 1888. Serial No. 282,300. (No model.)



Claim.—1. In an artificial-stone mold, the combination of a continuous facing-wall, as A, provided with sockets, as M, a continuous wall-sill, as B, provided with the rod S, removable means for securing the sill and wall to each other, with an intervening space between them, segmental facing-walls, as C, and the clamps comprising the upright arm N, the horizontal arm P, pivoted thereto at one end and being bent downward at the other end to form the depending arm Q, the screw R, the clamp U, provided at one end with the hook V and at the other end with the screw-seat W, and screw X.

2. In an artificial-stone mold, substantially such as set forth, the means for securing the segmental walls of the mold to the continuous wall thereof, comprising the combination of the sill, the rod S, secured thereto, the clamp U, provided with a hook at one end and the screw-seat W at the other end, the screw X, the horizontal arm P, provided with the depending arm Q and the screw R, the arm N, pivoted to the arm Q, the sockets M, and means for securing the sill and continuous wall to each other, with an intervening space between.

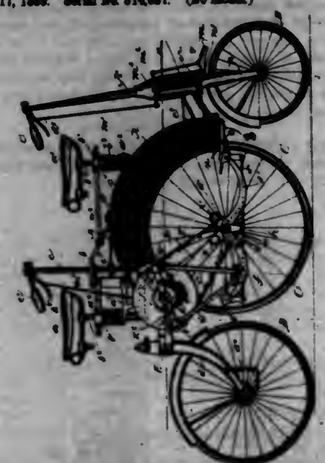
3. The combination of the continuous wall-facing provided with the sockets M, the sill B, the rod S, secured thereto, the segmental walls, the rods and nuts G H, bars I O, block J, clamps U, provided with the hook V, screw-seat W, and screw X, the arm N, the horizontal arm P, pivoted thereto and provided with the depending arm Q, and screw R.

4. In an artificial-stone mold, the combination of a continuous facing-wall, as A, a continuous wall-sill, as B, secured thereto, with an intervening space between the sill and the wall, segmental walls, clamps for securing the segmental walls to the sill, and the intermediate-post molds having three short sides extending upward from the top of the wall A and one long side extending upward from the top of the sill B.

5. The combination of the continuous wall-facing A, provided with the strip K and blocks L, the sill B, rod S, and staples T, segmental walls C, the clamps N P Q R and U V W X, and means for securing the sill B to the wall A, with an intervening space between them.

6. The combination of the continuous wall-facing A, provided with the strip K and the blocks L, the sill B, rod S, and staples T, segmental walls C, the clamps N P Q R and U V W X, the bars I blocks J, bolts G, and nuts H.

408,624. **TRICYCLE.** GOTTFRIED JOHNSON, Chicago, Ill. Filed June 17, 1889. Serial No. 314,637. (No model.)



Claim.—1. In a tricycle, the combination of three wheels placed one before the other, a main frame connecting said wheels, the steering-shafts, the drums having a connecting-chain provided with lugs, ratchet-wheels, the pawl-bearing levers, and the connecting-rods, all arranged and operating substantially as and for the purpose set forth.

2. In a tricycle, the combination of the main frame A, forked piece E, the drums *c c'*, chain F, ratchet c^3, pawls *h h*, levers *g g'*, connecting-rods *i i'*, treadle-arms *f f'*, having pedals *e e*, steering-shaft A', and wheels B C D, substantially as shown and described, and for the purpose set forth.

3. In a tricycle, the steering-shaft A', having the handle *c'*, brake *m*, lever m^2, rod *m'*, grip c^5, and a fork *n* at its lower end, in combination with the wheel B and the frame A, having connected thereto the wheels C D, substantially as and for the purpose set forth.

4. In a tricycle, the steering-shaft A', having the handle *c'*, brake *m*, lever m^2, rod *m'*, grip c^5, the hollow piece n^4, provided with plate n^5, having a square hole n^6, the shank *o'*, having shoulders o^2, fork *n*, and the spring *o*, encircling the shank *o'* and resting between the plate n^5 and shoulders o^2 within the hollow piece n^4, in combination with the wheel-bearing frame A, having sleeve n^3, and the wheel B, all constructed, arranged, and operating substantially as shown and described, and for the purpose set forth.

5. In a tricycle, the steering-shaft A', having handle *c'*, brake *m*, lever m^2, rod *m'*, grip c^5, the hollow piece n^4, having hole n^6 in plate n^5 and arm c^6, the compensating spring *o*, encircling the shank *o'*, having shoulders o^2, and fork *n*, carrying wheel B, in combination with the frame A, having the sleeve n^3, wheels C D, pulleys c^4 c^3, chains c^3, connected at one end to the arms c^6 and at the other end to arms c^4 on standard *c*, the standard *c*, having handle *c'*, brake, grip, and connecting-rods, substantially as shown and described, and for the purpose set forth.

6. In a tricycle, the combination of the seat *a'*, standard b^4, collar b', spring b^3, brace-bearings a^3 c^2, the frame A, having bracket-arms *b*, and wheels B C D, substantially as shown and described, and for the purpose set forth.

408,625. **PACKAGE OF SURGEON'S SILK OR CATGUT.** ROBERT W. JOHNSON, Elizabeth, N. J. Filed May 27, 1889. Serial No. 312,175. (No model.)



Claim.—The herein-described package of surgeon's silk or catgut, consisting of a bottle containing antiseptic liquid, a spool-holder consisting of non-metallic plates having perforations for the reception of the flanged ends of the bobbins and sewing material wound thereon, in combination with a disk, a tightly-compressed flexible tube passing therethrough and receiving said sewing material, and a flexible seal surrounding the flexible tube, substantially as described.

408,626. **STEP FOR RAILWAY-CARS.** FRANCIS W. JOHNS, near Perryville, Md. Filed June 26, 1889. Serial No. 315,505. (No model.)



Claim.—1. Steps for a railway-carriage, comprising a fixed frame and movable treads adapted to be folded so as to present a substantially plane surface, or opened to offer a foot-hold, the frame and treads constituting a close or tight surface in either position, whereby the circulation of air-currents through the steps is prevented.

2. Steps for a railway-carriage, comprising a fixed frame and a series of treads pivotally mounted so as to rock therein, fixed stops on the frame to limit the movement of the treads in either direction, and a shifting-lever accessible to an operator on the platform, adapted to rock all of the treads simultaneously in either direction.

3. Steps for a railway-carriage, comprising a fixed frame, a series of treads pivotally mounted so as to rock therein, dust bars or walls between the treads shaped to permit an opening and closing movement of the treads, the surface of the steps being closed at all points to prevent air-currents passing through in either position, and a controlling-lever for shifting the treads.

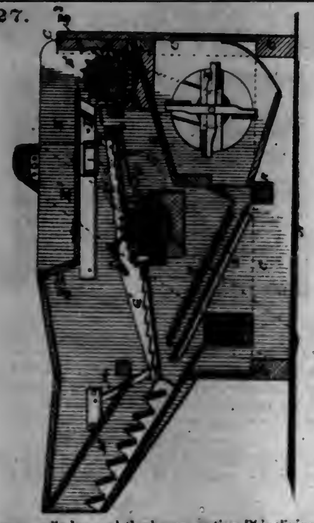
4. Steps for a railway-carriage, comprising a fixed frame having a series of pivoted treads, as 4, a series of dust-bars and stops, as 11 14, between the treads, a controlling-lever, as 9, connecting-rods, as 7, and a lock-piece for the lever in its extreme positions.

5. Steps for a railway-carriage, comprising a fixed frame, a series of treads pivotally mounted so as to rock therein, the frame and treads forming a substantially plane surface when closed and offering a foot-hold when opened, a gate on the platform leading to the steps, and a controlling device for simultaneously opening or closing the gate and the treads, as and for the purpose set forth.

408,627. **MACHINE FOR HULLING PEAS.** WILLIAM K. JOHNS, Trenton, Tenn. Filed May 2, 1888. Serial No. 308,830. (No model.)

Claim.—1. In a machine for hulling and separating peas, the combination of the primary toothed cylinder and its toothed concave, and the secondary toothed cylinder and its toothed concave arranged at a lower level, with the reciprocating separator composed of two perforated sections G and G', each provided with suitable surface-feeders, and connected by side bars *g g*, leaving a cross-opening F between the sections and the bars, the upper section G inclining downward

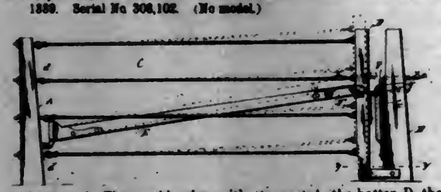
408,627.



from the primary cylinder, and the lower section *D'* inclining downward from the said second cylinder, and suitable means for suspending and for vibrating the said separator in relation to the two concaves and their cylinders, for operation as described.

2. In a machine for hulling and separating peas, the separator composed of two perforated sections G G', connected by side bars *g g*, leaving a cross-opening F between the latter and the sections, the section G' being on a plane below the other section, and each provided with suitable surface-feeders, in combination with the primary cylinder D and its concave, and the secondary cylinder H, arranged to operate within the opening F, the toothed concave of said second cylinder, the dash-boards I I, and the links *a a*, suspending the separator in a downwardly-inclined relation to each cylinder, as described.

408,628. GATE. EDWIN KEMBY, Calvert, Kans. Filed Apr. 22, 1889. Serial No. 308,102. (No model.)



Claim.—1. The combination, with the post A, the batten D, the wire C, connecting the post A and batten D, and the oblique brace E, extending from the post A to batten D and adapted to swing horizontally and vertically, of the stop H on batten D, having arms *h h*, the post B, and the latch G, having the hook *g* to engage with the stop H, and having the bent end *q*, substantially as and for the purpose described.

2. The combination of the posts A and B, the batten D, the wires C, connecting the post A and the batten D, the oblique brace E, extending from post A to batten D and adapted to swing horizontally and vertically, the stop H, having arms *h h*, the latch G, having the hook *g*, and having the bent end *q*, and the keeper I, secured to the post B and adapted to embrace the foot of the batten D, substantially as and for the purpose described.

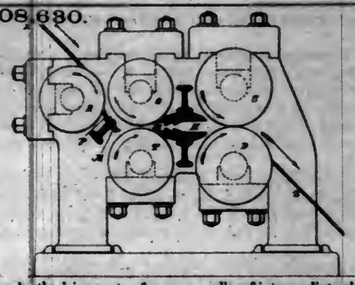
408,629. METHOD OF PRODUCING BATTERY SOLUTIONS. WILLIAM P. KOOKOGEY, Brooklyn, assignor to the Kookogey Electric Company, New York, N. Y. Filed June 7, 1887. Serial No. 240,534. (No model.)

Claim.—The herein-described method of producing chromic battery solution, which consists in adding to water (preferably heated) bichromate of soda, and adding to this mixture sulpheric acid, allowing the mixture to stand until the sulphate of soda is precipitated, and then siphoning off the liquid, the ingredients being combined in substantially the proportions stated.

408,630. SUGAR-CANE MILL. ALFREDO LEBLANC, Havana, Cuba. Filed Oct. 20, 1888. Serial No. 288,094. (No model.)

Claim.—1. In a cane-mill, the combination, with two or more in-

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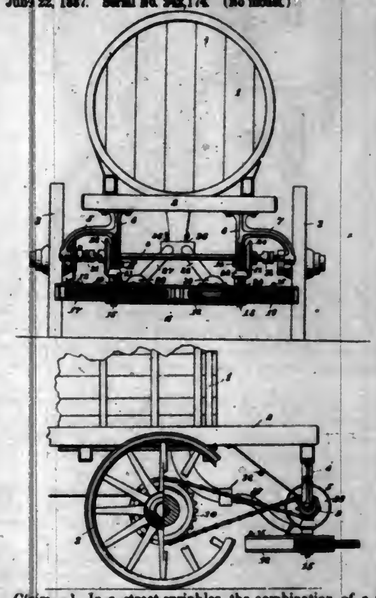


dependently-driven sets of pressure-rolls, of intermediate closed boxes or conduit-chambers for confining and conducting the bagasse as it passes from one set of rolls to the next, as herein set forth.

2. In a cane-mill, the combination, with independently-driven sets of pressure-rolls, of intermediate closed conduits having teeth or projections on their inner surfaces for tearing and dividing the bagasse forced through said conduits from one set of rolls to the next.

3. In a cane-mill, the combination, with two or more sets of pressure-rolls, of closed guides or conduits for confining the bagasse as it passes to and from said rolls, and having teeth or projections on their faces for dividing and tearing the bagasse forced through them, as herein set forth.

408,631. SPRINKLING APPARATUS. ANTON MAYER and HENRY G. STIEBEL, Cincinnati, Ohio; said Mayer assignor to said Stiebel. Filed June 22, 1887. Serial No. 242,174. (No model.)



Claim.—1. In a street-sprinkler, the combination of a wheeled reservoir, one or more circular brushes arranged to rotate horizontally at the rear of the same, driving-connections with the bearing-wheels and water-connections with the reservoir, whereby the forward travel of the vehicle distributes the water to the rear and sides in a horizontal expanding shower of finely-divided particles from the brushes, substantially as set forth.

2. The combination, in a street-sprinkler, of a wheeled reservoir-cart, a containing-casing arranged behind the same and open at the rear, a circular brush arranged to rotate horizontally in said casing and through the opening of the same as a distributer, driving-connections with the bearing-wheels of the cart for the rotation of said distributer, and water-connections with the reservoir entering the casing, arranged and operating to distribute the water horizontally in an expanding shower of finely-divided particles rearward and laterally across the path of the vehicle, substantially as set forth.

3. In a street-sprinkler, the combination, with the wheeled reservoir and its bearing-wheels, a double casing carried at the rear of the reservoir and having two independent adjacent semi-cylindri-

cal compartments open at the rear, two brushes revolving horizontally in said compartments and through the rear openings, respectively, in opposite directions, and a branched supply-pipe from the reservoir entering the casings, respectively, and driving-connections with the wheels for the rotation of the distributers, substantially as set forth.

4. The combination, in a street-sprinkler, of a semi-cylindrical casing to and through which water is distributed, a circular distributer or sprinkler mounted and rotated axially within the same, and one or more adjustable partitions extensible rearwardly across the radial lines of sprinkling action, substantially as set forth.

5. In a street-sprinkler of the character described, the combination, with a rotating sprinkler driven from the bearing-wheel of the cart, an adjustable clutch to determine the rotation or non-rotation of the rotating sprinkler, and a cock or valve governing the water-supply to said sprinkler, of connecting mechanism between said stop-cock and the clutch-actuating devices, whereby the movement of the clutch out of action closes the water-supply to the sprinkler, and vice versa, substantially as set forth.

408,632. PULLEY. JOSEPH T. MITCHELL, Shelbyville, Tenn., assignor of two-thirds to John H. Sullivan and John R. Wallace, trustee, same place. Filed Sept. 4, 1888. Serial No. 284,534. (No model.)

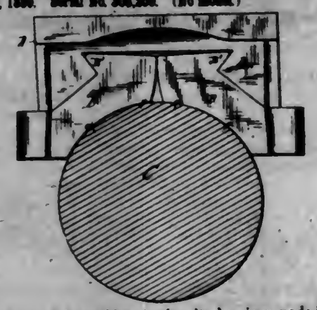


Claim.—1. The combination, with a pulley having a pin O', of a balance-cup having points *i* and adapted to contain metal and secured to pin O', substantially as set forth.

2. A pulley having a hub, a rim of cast metal, and wrought-iron spokes, such spokes being formed with loops or bends *a* in a common plane with the body of the spokes and with the rim, substantially as set forth.

3. The improved pulley herein described, having its hub and rim provided with socketed bosses, and the spokes held at their ends in said sockets and formed with loops or bends *a*, such bends or loops being arranged in a common plane with the body of the spokes and with the rim, substantially as and for the purposes specified.

408,633. AXLE-BOX. PETER PFEIFER, Durhamville, N. Y. Filed Mar. 14, 1889. Serial No. 303,250. (No model.)



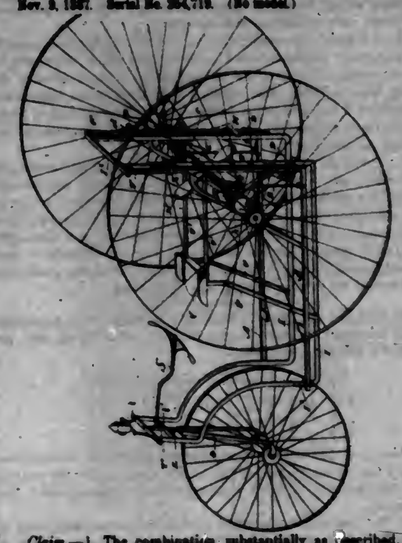
Claim.—1. A journal-box having its bearings made in halves, the abutting faces of which are slightly convex, so as to form a V-shaped opening between said abutting faces, whereby the said bearings are automatically adjusted to the axle, substantially as specified.

2. The combination, with the cap or shell of an axle-box provided with dovetailed recesses, of the bearings formed in halves having convex abutting faces and provided with dovetail projections engaging the grooves, whereby the bearings are permitted to yield while being held securely in the shell, substantially as specified.

3. In an axle-box, the combination, with the shell thereof, of the bearings having convex abutting faces and the glass blocks set in recesses in the said bearings, substantially as and for the purposes specified.

4. The combination, with the cap or shell, of the bearings having convex abutting faces and dovetail projections, the latter fitting in grooves in the cap, and the glass blocks set in recesses in the bearings, substantially as and for the purposes specified.

408,634. VELOCIPEDE. WILLIAM H. RUBY, Hagerstown, Md. Filed Nov. 9, 1887. Serial No. 254,719. (No model.)



Claim.—1. The combination, substantially as described, of the side bars of the frame, bridges *i i'*, carrying bearings, the center pin journaled in said bearings, a coiled spring interposed between the top of the fork and the lower bridge, and a steering-bar secured at its forward end to the center pin between the bridges.

2. The combination, substantially as set forth, of the steering-wheel, the crank-axle and its wheels, the frame supported by the wheels, the pedal-bars sliding vertically on the frame, and the guide-loops secured to the pedal-bars and embracing the frame.

3. The combination, substantially as described, of the steering-wheel, the crank-axle and its wheels, springs interposed between wheels and frame, the vertically-sliding pedal-bars and their pitmen, and guide-loops secured to the pedal-bars and embracing the frame.

4. The combination, substantially as described, of the steering-wheel, the crank-axle and its wheels, the frame, the guide-bars secured to the frame, the vertically-sliding pedal-bars and their pitmen, and guide-loops secured to the pedal-bars and embracing the guide-bars of the frame.

5. The combination, substantially as described, of the wheels and their axles, the frame mounted thereon and provided with vertical guide-bars, the pedal-bars and their pitmen, guide-loops secured to the pedal-bars to embrace the guide-bars of the frame, and friction-rolls journaled in the guide-loops to run in contact with the guide-bars.

6. The combination, substantially as described, of the wheels and their axles, the frame, the vertically-sliding pedal-bars and their pitmen, and springs connecting the pedal-bars with the side bars of the frame.

7. The combination, substantially as described, of the steering-wheel, the crank-axle and its wheels, a weighted arm secured to the crank-axle at an angle to the cranks, the frame, the vertically-sliding pedal-bars, and the pitmen and springs connecting the pedal-bars with the side bars of the frame.

408,635. MUSICAL TOY. FELIX A. SOMERS, Hammersmith, County of Middlesex, England. Filed Apr. 28, 1888. Serial No. 308,944. (No model.) Patented in England Aug. 21, 1888, No. 12,077.



Claim.—1. A musical toy consisting of a vertical column having side walls which are provided with slots, a series of alternating inclined musical plates, and vertical cords running continuously through the column from top to bottom thereof at each end of all the plates

and freely suspending both ends of every plate, so that the entire plate can freely vibrate free from supporting contact with every portion of the column, substantially as described.

2. A musical toy consisting of a column having two opposite side walls each provided with a series of slots which alternately incline in reverse directions, the musical plates inclined sidewise and having their opposite ends arranged alternately at the highest and lowest ends of the slots, and a flexible support for each end of every plate to freely suspend the same from contact with the column, substantially as described.

3. A musical toy consisting of a column having side walls provided with slots, a series of vertical cords extending continuously through the column from top to bottom thereof, a series of transverse cords connected with the vertical cords at each of two opposite sides of the column, and musical plates inclined sidewise and alternately arranged at opposite sides of the column, and having each of their ends supported by a transverse cord to freely suspend the plates from contact with the column, substantially as described.

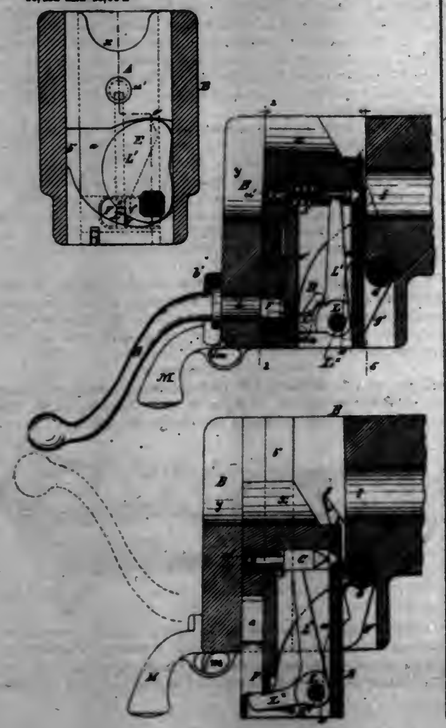
408,636. GELATINOUS PRODUCT. FREDERICK W. P. SWINBORNE and LATIMER P. SWINBORNE, London, England. Filed Nov. 26, 1888. Serial No. 292,141. (Specimens.)



Claim.—1. The hereinbefore-described gelatinous product, consisting of the middle portion of hide or skin remains after the removal of its superficial layers, dried thoroughly before decomposition has commenced.

2. The hereinbefore-described gelatinous product, consisting of the middle portion of hide or skin remaining after the removal of its superficial layers, subdivided into thin leaves or pieces, and dried thoroughly before decomposition has commenced.

408,637. BREECH-LOADING ORDNANCE. HARALD T. J. THRONEN, Finspong, Sweden, assignor to the Aktiebolaget Finspongs Styckebruk. Filed July 7, 1888. Serial No. 279,234. (No model.) Patented in Sweden May 3, 1888, No. 1,696; in France June 16, 1888, No. 191,273; in Norway June 16, 1888, No. 957; in Belgium June 18, 1888, No. 83,230; in England June 19, 1888, No. 8,974, and in Germany June 20, 1888, Nos. 46,432 and 46,994.



Claim.—1. The combination, with the gun having a vertically-arranged mortise in its breech, of the breech-block A in said mortise and adapted to play vertically in a right line in said mortise, the cam-shaft A, mounted in the rear wall of the breech with its axis parallel with the bore of the gun, the cam E, fixed on the inner end of said cam-shaft and engaging the recess *a* in the breech-block, and the weighted counterbalancing-crank H, fixed on the outer end of the cam-shaft and standing opposite to the higher part of the cam, whereby the breech-block is embraced at all times by the walls of said mortise and is held in its elevated position by said crank, substantially as set forth.

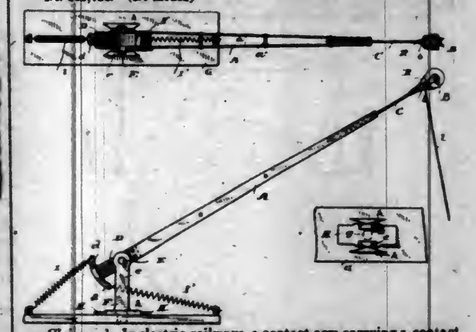
2. The combination, with the gun having a vertically-arranged mortise in its breech, of the breech-block A, mounted in and adapted to play vertically in said mortise and provided with cam-faces *a' a''*, the cam-shaft A, mounted in the rear wall of the breech with its axis parallel with the bore of the gun, the cam E, fixed on the inner end of said shaft and engaging a recess in the breech-block, the weighted crank H, fixed on the outer end of said cam-shaft, and the cartridge-shell extractor G, pivotally mounted in a recess in the gun in front of the breech-block, said extractor having an arm *g'*, with a shoulder *g''*, to engage the cam-faces on the breech-block, and also having arms which embrace the shell in the cartridge-chamber, substantially as and for the purposes set forth.

3. The combination, with the gun having a mortised breech-piece, of the breech-block A, the recessed firing-pin and its spring mounted in said block, the tumbler having an upright arm that engages the firing-pin and a rearwardly-projecting arm L^1, the sear D and its spring, the cam E, provided with a notch to engage arm L^2 of the tumbler and the cam-shaft A, the crank H on said shaft, and the trigger, all arranged to operate substantially as set forth.

4. The combination, with the gun having a mortised breech and the breech-block, of the firing-pin, tumbler, and sear or spring-dog mounted in said block, the notched slide-plate F, mounted in said block and provided with a lug *f*, the trigger, the cam E, provided with the shoulder *e' e''*, whereby said slide-plate is moved, the cam-shaft A, and the handle H, all arranged substantially as and for the purposes set forth.

5. The combination, with the gun having a mortised breech-piece and the breech-block, of the firing-pin, the tumbler, the sear and its spring, all mounted in said block, the cam and its crank for moving said block, the trigger mounted in the breech-piece, and the flat-sided bolt *n*, arranged over the trigger, whereby the trigger may be depressed, for the purpose set forth.

408,638. CONTACT-ARM FOR ELECTRIC-RAILWAY MOTOR-CARS. CHARLES J. VAN DEPOELE, Lynn, Mass. Filed Apr. 2, 1889. Serial No. 305,728. (No model.)



Claim.—1. In electric railways, a contact-arm carrying a contact device at its free extremity and hinged at or near its lower end in a support adapted to be mounted upon the roof of a car or vehicle, and a plurality of tension-springs connected to the lower part of the arm and to its support and coacting under tension to impart upward pressure to the free end thereof, substantially as described.

2. In electric railways, a contact-arm carrying a contact device at its free extremity and hinged at or near its lower end in a support adapted to be mounted upon the roof of a car or vehicle, and two sets of tension-springs connected to the arm and to its support and coacting under tension to press the outer end of the arm upward from either direction, substantially as described.

3. In electric railways, a car provided with a contact-carrying arm having a contact device at its free extremity and mounted at or near its lower end upon a support located upon the top of the car, and tension-springs connected to the lower part of the said arm and to its support from opposing directions and coacting under tension to impart upward pressure thereto, substantially as described.

4. The combination, with an electric-railway car, of a contact-carrying arm extending upwardly therefrom and pivotally supported near its lower end, and oppositely-acting tension-springs connected to the lower part of the arm and to its support and arranged to coact under tension to impart upward movement to the free end thereof, substantially as described.

5. In electric railways, a contact-arm carrying a contact device at its free extremity and hinged at or near its lower end in supports adapted to be mounted upon the roof of the car, pressure-equalizing devices at the lower end of said arm below its support, and tension-springs connected to said lower extremity and to the support from opposite directions and coacting under tension to impart upward movement to the free end thereof, substantially as described.

6. In electric railways, an upward-pressure contact device comprising a suitable base, a bifurcated support pivoted upon said base, an arm having a contact device at its free extremity and pivoted near its lower end in the bifurcated support, and tension-springs connected to the lower portion of the arm below its pivot and from opposing directions, said springs coacting to impart upward movement to the free extremity of the arm, substantially as described.

7. A contact-wheel or trolley having metal contact-surfaces and non-metallic anti-friction bearings supporting each end of the axis thereof.

8. A contact-wheel having a grooved metallic periphery, a metallic hub, and non-metallic bearings supporting each end of the axis thereof, and contact-making devices electrically connecting the contact-wheel and its supports, substantially as described.

9. A contact-wheel having a grooved metallic outer portion to receive the conductor, non-metallic anti-friction bearings rotatively sustaining said metallic portion, and electrical connections between the metallic portions of the wheels and suitable connections for carrying the current collected thereby, substantially as described.

10. The combination, with a bifurcated support, of non-metallic anti-friction bearings therein, a metallic grooved contact-wheel mounted between said bearings, and contact devices carried by the support and engaging the exterior of the contact-wheel, substantially as described.

11. The combination, with a metallic support, non-metallic bearings therein, and a grooved metallic contact-wheel mounted in the non-metallic bearings and insulated thereby from its support, of contact devices connected to the support and in electrical connection with the metallic contact-wheel, substantially as described.

12. A contact-wheel having a solid metallic hub and removable flanges adapted to be secured to said hub and having a groove between their upper edges, substantially as described.

13. The combination of a metallic contact-wheel, anti-friction supports or bearings therefor, and carbon-contacts spring-pressed upon the exterior of the hub of the wheel, substantially as described.

14. The combination of a bifurcated support, a contact-wheel mounted therein, and guides R, for deflecting the wheel and protecting it from injury, substantially as and for the purpose set forth.

408,639. UNDERGROUND CONDUIT FOR ELECTRIC RAILWAYS. CHARLES J. VAN DEPOELE, Lynn, Mass. Filed June 24, 1889. Serial No. 315,266. (No model.)

Claim.—1. A conduit for electric-railway conductors, comprising a slotted exterior conduit, an interior insulating conductor-support, and a slitted flexible casing or cover attached to the conductor-support and within the conduit, substantially as described.

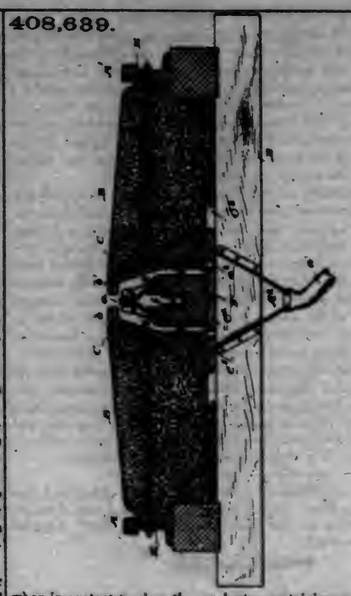
2. A conduit for electric-railway conductors, comprising a slotted exterior conduit, an interior insulating conductor-support, and a slitted flexible casing or cover attached to the conductor-support and within the conduit, and a traveling contact device adapted to enter through the slot of the conduit and to open the conductor-inclosing casing during its passage, the said casing closing behind it, substantially as described.

3. A conduit for electric-railway conductors, comprising an exterior slotted protective conduit, an insulated or insulating conductor-support, a longitudinally-slitted flexible or yielding casing or cover inclosing the conductor within its support, and a series of springs acting against the flexible material to normally close the conductor-chamber, substantially as described.

4. A conduit for electric-railway conductors, comprising an exterior slotted protective conduit, an insulated or insulating conductor-support, a longitudinally-slitted flexible or yielding casing or cover inclosing the conductor within its support, and a series of springs acting against the flexible material to normally close the conductor-chamber, and re-enforcing strips along the edges of said flexible material, substantially as described.

5. A conduit for electric-railway conductors, comprising an exterior metallic conduit having a continuous surface-slot therein, a continuous grooved support of wood or other insulating material, a main supply-conductor contained within the groove in the support, flexible non-conducting strips carried by the conductor-support and arranged

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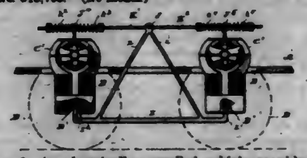
when in contact to close the conductor-containing groove or channel, and springs acting against the flexible material to keep said strips in contact and the channel closed, substantially as described.

6. In electric railways, a conduit comprising metallic side walls formed or provided with surface or capping plates at their upper edges and with extended feet or flanges at intervals along their lower edges, said feet or flanges being formed to sustain the side walls in relatively-sloping positions, cross-ties for sustaining the feet of the side walls of the conduit, rails sustained upon the cross-ties, and tie-rods extending from the rails to the side walls of the conduit for laterally sustaining the same and preventing closure of the surface-slot under pressure, substantially as described.

7. A conduit for electric-railway conductors, comprising an exterior metallic casing, an interior insulating conductor-support and projections or extensions extending inwardly from the walls of the exterior casing and engaging and sustaining the conductor-support out of contact with the walls of the casing, substantially as described.

8. A conduit for electric railways, comprising an exterior metallic casing, an interior insulating conductor-support, and adjustable extensions, as screws, extending through the walls of the casing and engaging and sustaining the conductor-support, whereby the same may be positioned or aligned, substantially as described.

408,640. MULTIPLE-MOTOR ELECTRIC LOCOMOTIVE. CHARLES J. VAN DEPOELE, Lynn, Mass. Original application filed Mar. 7, 1889, Serial No. 302,981. Divided and this application filed June 27, 1889. Serial No. 315,705. (No model.)



Claim.—1. An electrically-propelled vehicle provided with sets of driving-wheels rigid upon their axles, electric motors vertically mounted directly upon said axles and extending upwardly therefrom and radially movable thereon, driving-gears upon the axles, driving-pinions upon the armature-shafts of the motors in connection with the driving-gears upon the axles, and buffer-springs for limiting the oscillations of the free ends of the motors, substantially as described.

2. An electrically-propelled vehicle provided with one or more sets of driving-wheels rigidly secured upon their axles, electric motors vertically journaled upon said axles and extending upwardly therefrom, driving-gears upon the axles, driving-pinions upon the armature-shafts of the motors in mesh with the driving-gears upon the axles, and buffer-springs and connections upon the upper ends of the motors, substantially as described.

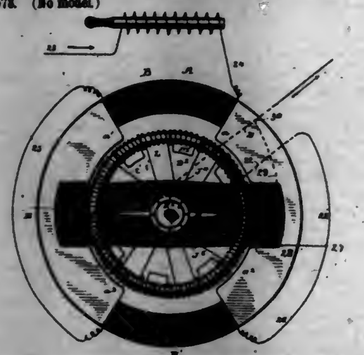
3. In an electrically-propelled vehicle, a plurality of sets of driv-

ing-wheels mounted rigidly upon transverse axles, electric motors journaled upon and radially movable upon said axles, driving-gears upon the axles and driving-pinions upon the armature-shafts of the motors in mesh with the driving-gears upon the axles, a longitudinally-rigid connection between the free extremities of the motors, a rigid or stationary brace or support connected to the axles and formed with an upward extension for guiding the connection extending between the motors, and buffer-springs bearing against the upward projection of the brace and attached to the connection uniting the free ends of the motors, substantially as described.

4. In an electrically-propelled vehicle, two sets of driving-wheels, electric motors journaled upon the axles thereof and radially movable thereon, driving-gears upon the axles to be driven and driving-pinions upon the armatures of the motors in mesh with the said driving-gears, a brace or support extending between and journaled at its extremities upon the driving-axles and extending upwardly between the free ends of the motors, a longitudinally-rigid connection attached to the free ends of the motor and passing through and guided between the upwardly-extending support, and buffer-springs secured to the support and to the motor-connection, substantially as described.

5. In an electrically-propelled vehicle, the combination, with the driving-axle, a motor supported thereon and radially movable with respect thereto, a driving-gear upon the axle and a driving-pinion upon the armature-shaft of the motor in mesh with the driving-gear, and a supporting-link journaled upon the armature-shaft at one end and upon the driving-axle at the other, substantially as described.

408,641. **ALTERNATING-CURRENT MOTOR.** CHARLES J. VAN DEPOELE, Lynn, Mass. Original application filed Mar. 8, 1889, Serial No. 302,544. Divided and this application filed July 5, 1889. Serial No. 316,573. (No model.)



Claim.—1. An electro-dynamic motor comprising a wire-wound armature, means for connecting the armature-conductor into one or more closed circuits, an adjustable resistance in the circuit or circuits across the armature, a stationary coil for inducing currents in the armature, and a suitable field-magnet for reacting upon the resultant armature-poles, substantially as described.

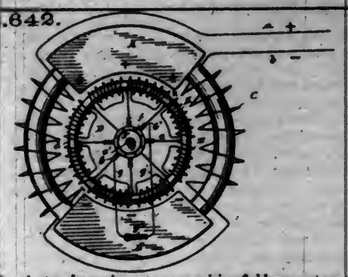
2. In an electro-dynamic motor, a wire-wound armature, a commutator to which sections thereof are connected, adjustable commutator-brushes therefor, a stationary field-magnet, a non-rotating coil inclosing the armature and adjustable relatively with respect to the poles of the field-magnet and acting inductively upon the armature to produce magnetizing-currents therein upon the line of the axis of the said coil, and connections for maintaining a fixed relation between the inducing system and the commutator-brushes, substantially as described.

3. In an electric motor, an armature-core with a plurality of circuits all independent of each other and closed upon themselves, a stationary induction system therefor, a field-magnet for the armature, a single source of current, and means for adjusting the phase of the divided circuit with relation to each other, substantially as described.

408,642. **INDUCTIONAL ELECTRIC MOTOR.** CHARLES J. VAN DEPOELE, Lynn, Mass. Original application filed Apr. 23, 1889, Serial No. 308,241. Divided and this application filed July 13, 1889. Serial No. 317,432. (No model.)

Claim.—1. An electro-dynamic motor comprising a suitable field-magnet system energized by alternating or intermittent currents, and an armature rotatively mounted within the field of force and having a plurality of windings upon its core, a sectional commutator and connections between the sections of said commutator and a portion of the armature-coils, and a suitable circuit spanning the commutator-brushes, the remaining armature-coils forming a circuit or circuits closed upon themselves, substantially as described.

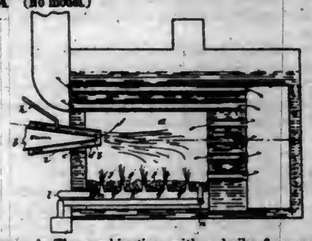
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2. An electro-dynamic motor comprising field-magnets energized by alternating or intermittent currents, and an armature rotatively mounted within the field of force and having two windings upon its core, the alternate coils being connected to a sectional commutator provided with contact-brushes spanned by a suitable conductor, the remaining coils forming local circuits closed upon themselves, substantially as described.

3. An electro-dynamic motor comprising suitable field-magnets energized by alternating or intermittent currents, an armature rotatively mounted within the field of force of said magnets and provided with conductors upon its core, a portion thereof being connected to a sectional commutator provided with contact-brushes connected in closed circuit, the remaining conductors upon the armature-core being arranged and connected to form a plurality of separate closed circuits therefor, substantially as described.

408,643. **APPARATUS FOR BURNING PETROLEUM.** JOHN WILSON, New York, and ALLAN MASON, Brooklyn, assignors to Herbert H. Sanderson, trustee, New York, N. Y. Filed Mar. 8, 1888. Serial No. 266,564. (No model.)

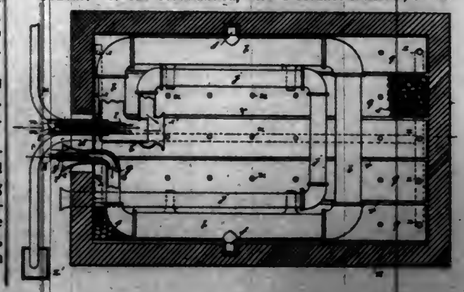


Claim.—1. The combination, with a boiler-furnace, of the injector-nozzle having the laterally-expanded and vertically-contracted issue and provided with a series of troughs for distributing oil laterally in said injector, pipes for supplying oil thereto, a series of oil-burners and supply-pipes, and an absorbent bed of non-combustible material in the lower portion of the furnace-chamber, said burners forming a grate to hold the absorbent material, substantially as described.

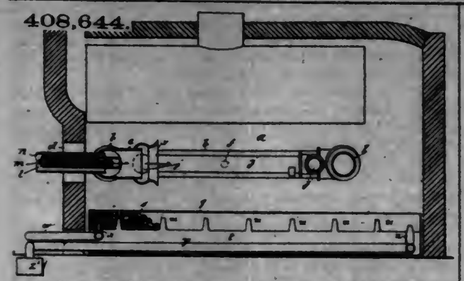
2. The combination, with a boiler-furnace, of the injector-nozzle having the laterally-expanded and vertically-contracted issue, orifices *e*, connected by narrower slits *f*, and provided with a series of troughs for distributing oil laterally in said injector, and pipes for supplying oil thereto, said nozzle being detachably fitted in the fire-doorway, substantially as described.

408,644. **APPARATUS FOR VAPORIZING AND BURNING PETROLEUM AND OTHER HYDROCARBONS.** JOHN WILSON, New York, and ALLAN MASON, Brooklyn, assignors to Herbert H. Sanderson, trustee, New York, N. Y. Filed Mar. 8, 1888. Serial No. 266,565. (No model.)

Claim.—1. The combination, with a furnace-chamber, of the



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vaporizing or gasifying pipe-retort and an injector for feeding it, said retort located and suitably coiled in the furnace-chamber, and arranged for the resultant vapors to pass out of the unobstructed inner terminal of the retort into the chamber, and also mounted on trunnion-pivots for varying and adjusting the inclination, substantially as described.

2. The combination, with a furnace-chamber, of the vaporizing or gasifying pipe-retort, an injector for feeding it, and the air-heating pipe-retort, said retorts located and suitably coiled in the furnace-chamber, and connected together by the annular injector K at the issue-nozzle *e*, for discharging the resultant vapors and the hot air, so as to combine at and pass out of the inner terminals of the retorts *en masse* into the combustion-chamber, substantially as described.

3. The combination, with a furnace-chamber, of the vaporizing or gasifying pipe-retort located and suitably coiled in the furnace-chamber, and arranged for the resultant vapors to pass out of the inner terminal of the retort into the combustion-chamber at or near the front of the same, an injector for primarily feeding the retort, and another injector feeding fresh air, oil, and steam at the inner terminal of said retort, substantially as described.

4. The combination, with a furnace-chamber, of the vaporizing or gasifying pipe-retort located and suitably coiled in the chamber, and arranged for the resultant vapors to pass unobstructedly out of the inner terminal, an injector for feeding the retort, the air-heating pipe-retort, also located and coiled in the furnace-chamber and connected with the vaporizing-retort at its inner terminal, and the bed of refractory, or refractory and absorbent, material and oil-burners located below the retorts, substantially as described.

408,645. **KNOTTER FOR GRAIN-HARVESTING MACHINES.** JOHN S. WOODHOUSE, Amberley, Canterbury, New Zealand. Filed June 25, 1889. Serial No. 315,515. (No model.)

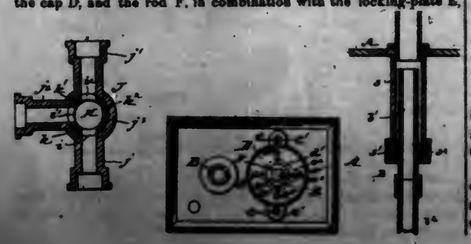


Claim.—1. A knotter consisting of a cylindrical body projecting laterally from a revolving shaft and having a transverse opening, and a slot extending from said opening in an inclined direction to the top edge, leaving a solid outer end having an inclined upper face, substantially as set forth.

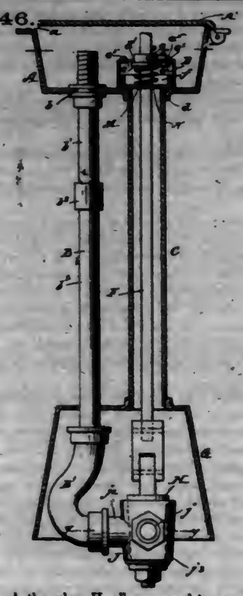
2. A knotter consisting of a cylindrical body or head projecting laterally from a revolving shaft, with a transverse opening through the body thereof, and an inclined slot extending from the opening to the top edge, and having a solid end inclined at the top, with grooves at the opposite sides of the latter, substantially as set forth.

408,646. **STREET-WASHER.** JUAN R. ARCI, Brooklyn, N. Y., assignor to Thekla C. Arci, same place. Filed Feb. 18, 1889. Serial No. 300,447. (No model.)

Claim.—1. The surface-box A and shell C, connected therewith, the cap D, and the rod F, in combination with the locking-plate E,



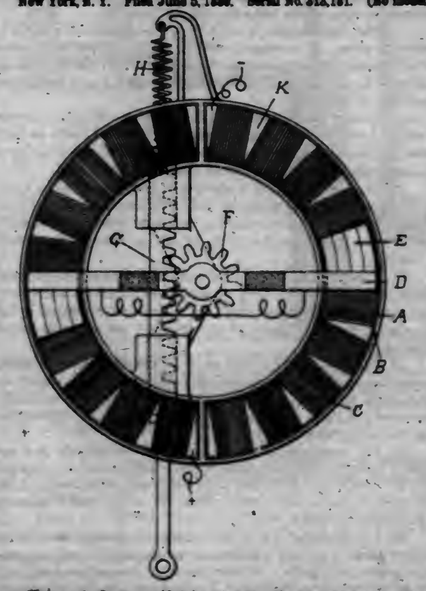
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spring M, and the plug H, all arranged to operate substantially as and for the purposes set forth.

2. The rod F, connected to the plug, the top box A, and the cap D, formed with sockets or detents d^2, in combination with the locking plate or tumbler E, placed on the rod and adapted to engage with the detents, substantially as described.

408,647. **ELECTRICAL RESISTANCE.** FRANCIS O. BLACKWELL, New York, N. Y. Filed June 5, 1889. Serial No. 313,181. (No model.)



Claim.—1. In an artificial resistance, the combination, with an inclosing-box, of a circular series of plates in contact with one another, and one or more filling-pieces to compensate for the difference between the internal and external peripheries of the series.

2. In an artificial resistance, the combination of a box or frame containing a circular series of plates in contact with one another, and an arm journaled to said frame and provided at its extremity with a contact-piece adapted to move over the surface of the plates.

3. The combination, in an artificial resistance, of a circular series of plates, an electrical connection to one end of the series, and a contact-arm concentric to the plates and provided with an electrical connection, whereby the current may pass along said arm through more or less of the series of plates.

4. The combination, with a series of resistance-plates, of a box or frame therefor, and a contact-arm for the said plates pivoted to the said frame.

5. The combination, with a series of resistance-plates, of a pivoted contact-arm therefor, a pinion or wheel concentric to the said arm, and an actuating device therefor moving substantially in a straight line.

6. The combination, with a series of resistance-plates and a centrally-pivoted contact-arm, of an actuating-rod for said arm, moving substantially in a straight line longitudinally with its axis.

7. The combination, with two series of resistance-plates oppositely placed, of an intermediate pivoted contact-arm having a moving connection at each end with the two series of plates, respectively.

8. The combination, with a series of resistance-plates, of a frame or support therefor, having a contact-arm pivoted to the said frame but insulated therefrom, and an electrical connection to the series of plates along said arm.

9. The combination, with a circular series of resistance-plates, of a pivoted contact-arm, an inclosing-case insulated from said arm, an electrical connection to one end of the series of plates, and the opposite electrical connection extending along the said arm.

10. The combination of two circular series of resistance-plates and an intermediate pivoted contact-arm connecting its opposite ends with the two series of plates, respectively, an inclosing box or frame for the plates insulated from the said arm, an electrical connection to each of the said series of plates, and an intermediate electrical connection between them through the said contact-arm.

11. In an electrical resistance, the combination of inclosing-box A, insulating material B, the centrally-pivoted contact-arm D, having at its outer end a contact-piece E, and an electrical connection therefrom extending radially toward a fixed center.

12. The combination, in an electrical resistance, of the box or support A, insulation B, plates C, pivoted contact-arm D, a wheel concentric with the contact-arm, and a longitudinally-moving actuating device for the said wheel.

13. The combination, with a series of resistance-plates, of an inclosing box or frame therefor, a pivoted contact-arm, and a longitudinally-moving device actuating the said arm.

14. The combination, in an artificial resistance, of a series of resistance-plates, and a contact-piece adapted to move over the surface of said plates, with an actuating device for positively moving the contact-piece in one direction and a spring for moving it in the reverse direction, as described.

15. In an artificial resistance, the combination of a box or frame, a series of resistance-plates, and a pivoted contact-arm, with an actuating device for moving the arm in one direction and a spring to automatically restore the arm to its normal postion.

16. The combination of a plurality of resistances and a corresponding set of contact-pieces for cutting the resistances into and out of circuit, with a common actuating device for moving the contact-pieces in one direction and a spring for moving them in the reverse direction.

17. The combination of two series of radially-arranged resistance-plates, with two corresponding contact-pieces adapted to sweep over said series of plates, respectively, and a common actuating device therefor, whereby the plates are cut into and out of circuit simultaneously.

18. The combination of two series of resistance-plates arranged adjacent to each other and connected to the line-circuit at their opposite ends, respectively, with two contacts sweeping over said resistances and moving in opposite directions and a common actuating devices for both contacts, substantially as described.

19. The combination of a box or frame divided into two sections, a series of resistance-plates in each section, and a connection with an electric circuit situated at opposite ends, respectively, of the said series of plates, and contact-pieces for cutting said resistances into and out of circuit.

20. The combination of a box or frame, a circular series of resistance-plates, a pivoted contact-arm, an actuating device therefor moving in substantially a straight line, and mechanism within the box for converting the rectilinear motion of the actuating device into the circular movement of the arm.

21. The combination of a series of radially-arranged resistance-plates with a contact-arm adapted to sweep over said plates, pivoted substantially at the center from which the plates radiate.

22. The combination, with a curved series of plates forming an electrical resistance, of a concentric contact-arm moving over the plates in connection with their edges, and an operating device extending therefrom in diametrically-opposite directions.

23. The combination of a resistance composed of a series of plates in contact with one another, an arm or traveler for the plates passing along their contact-surfaces, and an actuating device for said arm extending therefrom in opposite directions.

24. The combination, with a curved series of plates forming an artificial resistance, of a concentric arm or traveler passing over their contact-surfaces and a positive operating-connection in engagement with said arm or traveler.

25. The combination, with a series of plates forming an artificial resistance, of a centered arm or traveler passing over their contact-surfaces, a wheel concentric with said arm, and a longitudinal operating-connection in engagement with said wheel.

26. As an article of manufacture, an electrical resistance consisting of an inclosing-box having an insulating fire-proof lining, with a series of metallic plates inclosed therein, and a centered contact-arm or traveler pivoted on said box.

27. As an article of manufacture, an electrical resistance consisting of an inclosing-box having an insulating and fire-proof lining, with a series of metallic plates inclosed therein, and a movable contact-piece having bearings on the inclosing-box but insulated therefrom.

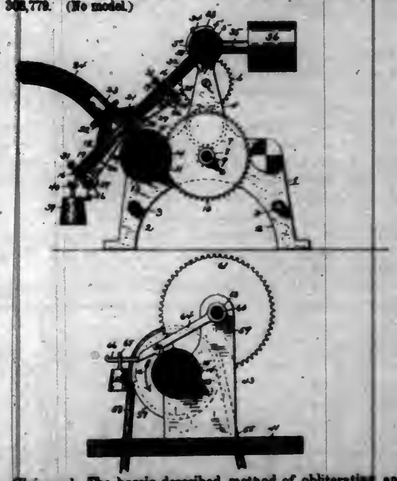
408,648. PUMP AND SIPHON. JOHN G. BRUNER, Albany, N. Y. Filed Sept. 21, 1888. Serial No. 286,055. (No model.)



Claim.—1. In a combination with the cylinder of a pump having at its lower end openings, and a bar across its diameter, as described, a discharge-orifice near its upper end, terminating with a pipe and petcock, and a plunger with valve, as described, closely fitting said cylinder, and a hollow plunger-rod passing through upper end of cylinder, with handle adapted to raise or depress plunger, and surrounded by suitable packing at upper end of cylinder above discharge-orifice, with a small rod or valve-lock with knob at upper end passing down through hollow plunger-rod, as described, with suitable packing at lower end of said rod or valve-lock H, within said hollow plunger-rod E E', adapted to lock said valve, as and for the purposes set forth.

2. The combination, in a siphon, of a cylinder A A', having at its lower end openings and a bar *m* across its diameter, as described, a discharge-orifice B near its upper end, terminating in a pipe K K' with petcock L and plunger F with valve G, as described, closely-fitting cylinder A A', a hollow plunger-rod E E', passing through upper end of cylinder, with handle at upper end suitable to raise or depress plunger, surrounded by suitable packing at upper end of cylinder above discharge-orifice B, and a small rod or valve-lock H H', with knob I at its upper end passing down through hollow piston-rod, surrounded by suitable packing adapted to lock said valve, all substantially as set forth.

408,649. METHOD OF REPREPARING GRAPHOPHONE-TABLETS. DAVID W. BROWN, Washington, D. C. Filed Apr. 27, 1889. Serial No. 308,779. (No model.)



Claim.—1. The herein-described method of obliterating an engraved or indented sound-record from a waxy or other plastic surface, which consists in forcing the ridges of material between the record-grooves into the said grooves, substantially as described.

2. The herein-described method of obliterating an engraved or indented sound-record from a waxy or other plastic surface, which consists in forcing the ridges of material between the record-grooves into the said grooves by external mechanical pressure and solidifying and smoothing the surface by such pressure, substantially as described.

3. The herein-described method of repreparing a graphophone or phonograph tablet having a sound-record in plastic material for the reception of a new record, which consists in obliterating the old record by forcing the material of the ridges which separate the record-grooves into such grooves by the forcible application thereto of a tool, substantially as described.

4. The herein-described method of repreparing a cylindrical graphophone or phonograph tablet having a grooved sound-record upon a surface of plastic material for the reception of a new sound-record, which consists in rotating the tablet and feeding a pressure-tool bearing upon a portion of the surface of the tablet along the same, substantially as described.

5. The method of recording sounds upon a plastic surface having a grooved sound-record already formed thereon, which consists in successively obliterating the successive portions of the old record by forcing the ridges of material between the record-grooves into the said grooves, and simultaneously therewith producing a new record upon the reprepared portion of the surface, substantially as described.

408,650. GLOVE. PAUL BOWLEY and HARLE H. DICKER, Chicago, Ill. Filed Mar. 21, 1888. Serial No. 304,173. (No model.)



Claim.—1. In a catcher's glove having the front of its palm and finger portions provided with padding *g*, the inner cover *c'*, extending continuously across the finger portion, the back portion A', also extending continuously across the finger portion, secured at intervals to the cover *c'*, and affording separate compartments for the fingers, and a protuberance *y* at the base of the thumb and palm portions, formed with additional padding *g'*, substantially as and for the purpose set forth.

2. In combination with a catcher's glove, a shield B, of stiff material, secured to the glove and extending continuously across the back of the finger portion thereof, substantially as and for the purpose set forth.

3. In combination with a catcher's glove, a shield B, of stiff material, secured to the glove and extending continuously across the back and beyond the extremity of the finger portion thereof, substantially as and for the purpose set forth.

4. In a catcher's glove, the combination of a front A^2, padded throughout and having additional thickness of padding at the bases of the thumb and palm portions, a back A', and a shield B, of stiff material, secured to the glove and extending continuously across the back of the finger portion thereof, substantially as and for the purpose set forth.

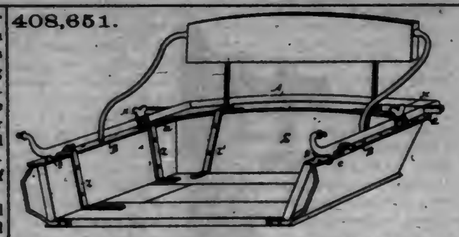
5. In a catcher's glove, the combination of a front A^2, padded throughout and having additional thickness of padding at the bases of the thumb and palm portions, a back A', secured at intervals to the inner side of the front portion to afford separate compartments for the fingers, and a shield B, of stiff material, secured to the glove and extending continuously across the back and beyond the extremity of the finger portion thereof, substantially as and for the purpose set forth.

408,651. SHIFTING RAIL FOR VEHICLES. STEPHEN BUSHNELL, Fremont, Ohio, assignor to John V. Beery and David Davis, same place. Filed Apr. 25, 1889. Serial No. 308,614. (No model.)

Claim.—1. In a combination with the seat-irons having open slots at their forward ends, and the raised supports, the detachable rail adapted to encircle the seat, its forward ends having hooks to engage with the seat-irons, and screws passing through the detachable rail at a point midway between the raised supports, substantially as specified.

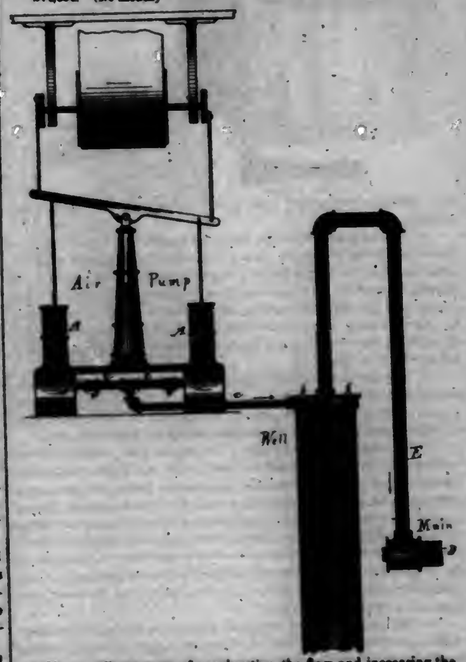
2. In combination with the seat-iron having the slot at the forward end, and the raised supports, the detachable rail having a hook at the free end, said detachable rail adapted to engage with the seat-iron at the back of the seat, and screws passing through the rail into the seat-iron, as and for the purposes specified.

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3. In combination with the seat-irons having the open slots at their forward ends, and the raised supports, the detachable rail adapted to encircle the seat, its forward ends having hooks to engage with the seat-irons, its back portion having ears to engage with the legs of the brace-irons, and screws passing through the detachable rail into the seat-irons, substantially as set forth.

408,652. PROCESS OF ACCELERATING THE FLOW OF NATURAL GAS FROM GAS-WELLS. HEWIS A. COOK, McComb, assignor of one-half to H. Walter Doty, Findlay, Ohio. Filed May 29, 1888. Serial No. 274,856. (No model.)



Claim.—The process of accelerating the flow and increasing the fuel and illuminating capacity of natural gas from gas-wells, which consists of injecting air into said wells in sufficient quantities to make it intermix with the natural gas therein and impart to said gas sufficient pressure and volume to cause the same to flow readily from the well, substantially as described and set forth.

408,653. HYDRAULIC PRESS. CHARLES D. DAVIS, Washington, D. C., assignor to Lewis Miller, Philadelphia, Pa. Filed Jan. 28, 1888. Serial No. 267,902. (No model.)

Claim.—1. The combination of a pair of rams, abutting or head blocks, rods connecting these abutting blocks with the ram-cylinders, the toggle-levers pivotally connected at their ends to the piston-rods of the rams and the stationary abutting blocks, the main driving-shaft provided with sliding clutches and loose pinions, and the rack-bars engaging these loose pinions and pivotally connected to the said toggle-levers, as described.

2. The combination, with the rams and stationary head-blocks, of the toggle-levers pivotally connected at their ends to the piston-rods of the rams and the head-blocks, the inwardly-extending rack-bars, links connecting the outer ends of the rack-bars to the joints of the toggles, guides for the rack-bars, and a main shaft provided

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with sliding clutches and loose pinions, as and for the purpose described.

3. The combination of the rams and toggle-levers, the rack-bars connected to the toggles by means of pivoted links, a main shaft located between the toggle-levers and provided with loose pinions and clutches, one of the said rack-bars passing over the top of one of these pinions and the other bar passing below the other pinion, and guides for the rack-bars, whereby the said main shaft may be revolved continuously in one direction and the toggles drawn in from both sides, substantially as described.

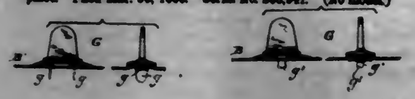
4. The combination, with the rams and toggle-levers, of the rack-bars connected to joints of the toggle-levers by means of pivotal links, a main shaft provided with pinions, and guides for the rack-bars set at right angles to the said shaft, substantially as described.

5. The combination of a pair of rams, the head-blocks and connecting-rods, the toggle-levers connecting the ram-piston rods to the head-blocks, a main driving-shaft journaled in bearings between the said toggle-levers, a pair of loose pinions on this main shaft, sliding clutches also upon this shaft, these clutches being adapted to engage the said pinions, rack-bars engaging the said loose pinions, links R, pivotally connecting the outer ends of the rack-bars to the joints of the respective toggle-levers, spur-wheels J J upon the ends of the main shaft, and motors K K, for imparting motion to the shaft, substantially as herein set forth.

6. The combination of a pair of rams, head-blocks, connecting-rods connecting the head-blocks to the rams, toggle-levers connecting the head-blocks and ram-pistons, bearings H H, located between the said connecting-rods, transverse bracing-rods F', connecting the said bearings H H to the respective connecting-rods, a main shaft provided with sliding clutches and loose pinions, means for operating these sliding clutches, and rack-bars engaging the pinions and pivotally connected to the toggle-levers, as and for the purpose set forth.

7. The combination of a pair of rams, toggle-levers connected to the pistons of the rams, a main driving-shaft journaled between the toggle-levers and provided with loose pinions, clutches upon this shaft, outwardly-inclined grooved ways or bed-plates located opposite sides of this main shaft, rack-bars working in these inclined grooved ways and engaging the said pinions constantly, and pivotal links R, connecting the outer ends of the rack-bars to the toggle-levers, substantially as described.

408,654. CARRIER-BELT FOR HARVESTERS. JOHN S. DAVIS, Cleveland, Ohio, assignor to the Davis Platform Binder Company, same place. Filed Mar. 30, 1888. Serial No. 268,941. (No model.)



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Claim.—The combination of a carrier-belt with metal spurs attached at suitable intervals along its length, said spurs being formed with a thin or pointed top and a broad base, which is concaved on its under side and has a ductile-metal pin projecting therefrom, said pin passing through the belt fabric and clinched or riveted on its under side, substantially as hereinbefore set forth.

408,655. MUSICAL INSTRUMENT. JOHN C. DEAGAN and JOSEPH CARROLL, St. Louis, Mo.; said Carroll assignor to said Deagan. Filed May 7, 1888. Serial No. 273,113. (No model.)



Claim.—1. In a musical instrument, the combination of a supporting-frame with a series of metallic tubes laid thereon and movable endwise, substantially as set forth.

2. In a musical instrument, the combination of a supporting-frame with a series of tubes which are movable endwise thereon, and pins *a*, which separate said tubes, substantially as set forth.

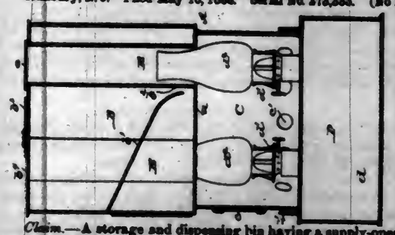
408,656. CASTER FOR FURNITURE. WILHELM H. DICKE, St. Louis, Mo., assignor of one-half to August H. Gaertner, same place. Filed Mar. 12, 1889. Serial No. 303,033. (Model.)



Claim.—1. The combination of the main wheel, the grooved body, the top plate, and the anti-friction wheel, said anti-friction wheel having journals rollable upon bearings in or upon said body, and said top plate turning upon said body and bearing upon said anti-friction wheel, substantially as described.

2. The combination, in a caster, of the caster-body, the top plate, and the anti-friction wheel, said body having a curved groove and bearings at the sides, respectively, thereof, said anti-friction wheel having tapering journals rollable upon said bearings, and said top plate being pivoted to said body and bearing upon said anti-friction wheel, substantially as described.

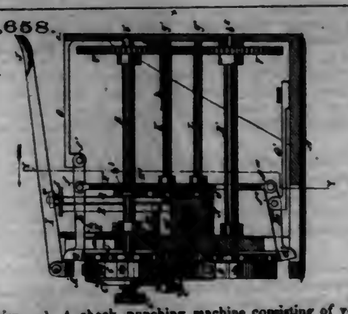
408,657. CAN FOR COFFEE, GRAIN, &c. STEPHEN A. FRENCH, Cranbury, N. J. Filed May 10, 1888. Serial No. 273,333. (No model.)



Claim.—A storage and dispensing bin having a supply-opening at the top, a delivery-door in front, an inclined partition extending from the front toward the rear side, and the vertical heating-flues traversing said bin and connecting the top and bottom thereof, substantially as and for the purpose set forth.

408,658. CHECK-PUNCHING MACHINE. ROBERT GARNER, Jersey City, N. J. Filed July 3, 1888. Serial No. 278,948. (No model.)

408,658.

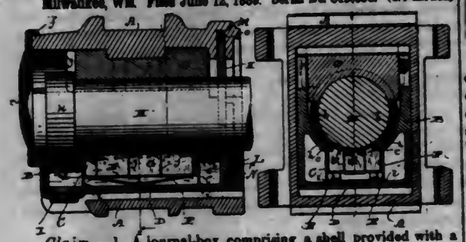


Claim.—1. A check-punching machine consisting of vertical rotary disks C D, arranged upon shafts B B' in a frame A, and standard A' *a a'*, said disks C D having punches *b b* and dies *d d* upon their respective peripheries, and being adapted to be brought into contact at their said peripheries, so that when in contact a punch of the one disk will be in cutting correspondence with a die of the other disk, a mechanism having suitable lever, and indicating-disk, slotted slide, and shoe H *h*, spring *h'*, locking-disks C' D' revolving upon the same shafts as the disks C D, locking-arms E *e* E' *e'*, and connecting-rod F for bringing and holding said disks C D in contact at their peripheries in position for punching, and a feed device in connection with the shaft B, having rollers M N, ratchet O, regulating-arm Q, slotted slide S, hooked lever B^3 b^3, pawl P, and spring *p*, all substantially as described.

2. In a check-punching machine with suitable supporting-frame and shafts, hand-lever, and indicating-disk, the combination of vertical rotary disks C D, having punches *b b* and corresponding dies *d d* upon their respective peripheries, locking-disks C' D', having cuttings b^3 *d'*, and revolving with the same shafts as the disks C D, together with a slotted slide and shoe H, a spring *h'*, a locking-arm E *e*, pivoted upon a stiff spring G, a connecting-rod F, and a locking-arm E' *e'*, pivoted upon a stiff spring G', all substantially as set forth.

3. In a check-punching machine, substantially as described, the combination, with the shaft B, of feed-rollers M N, a ratchet O, a regulating-arm Q, a slotted slide S, a hooked lever B^3 b^3, a pawl P, and a spring *p*, all substantially as set forth.

408,659. JOURNAL-BOX. THOMAS R. HAYES and ALBERT J. READ, Milwaukee, Wis. Filed June 12, 1889. Serial No. 313,863. (No model.)



Claim.—1. A journal-box comprising a shell provided with a bearing, a hollow casting supported in the shell, a spring-controlled tray having a perforated bottom and arranged to depend into said casting, and a wick carried by the tray, substantially as set forth.

2. A journal-box comprising a shell provided with a bearing, a hollow casting supported in the shell, a frame arranged to depend into said casting, a spring-controlled perforated tray arranged within the frame, and a wick carried by the tray, substantially as set forth.

3. A journal-box comprising a shell provided with a bearing, a hollow casting supported in the shell and having its front of such area as to entirely close the front of said shell, and a spring-controlled wick-carrying tray having a perforated bottom and arranged to depend into said casting, substantially as set forth.

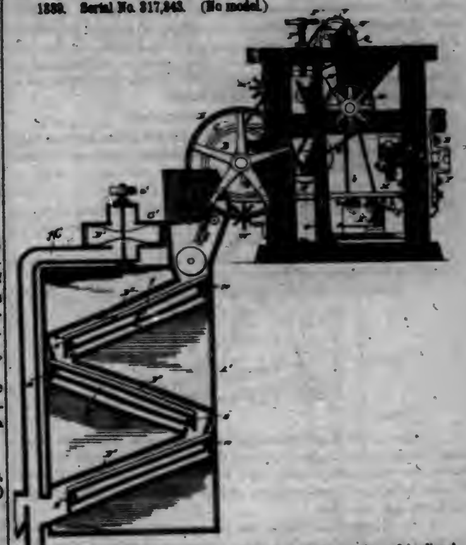
4. A journal-box comprising a shell provided with a bearing, a hollow casting supported in the shell and having its front of such area as to entirely close the front of said shell, a spring-controlled wick-carrying tray having a perforated bottom and arranged to depend into said casting, and spring-controlled non-absorbent plates arranged in the shell and casting to fit around a journal and overlap each other, substantially as set forth.

5. A journal-box comprising a shell provided with a bearing, a hollow casting supported in the shell and having its front of such area as to entirely close the front of said shell, a frame arranged to depend into the casting, and a spring-controlled wick-carrying tray having a perforated bottom and arranged in the frame, substantially as set forth.

6. A journal-box comprising a shell provided with a bearing, a hollow casting supported in the shell and having its front of such area as to entirely close the front of said shell, a frame suspended in the casting and provided with a transverse brace, one or more springs secured to the brace, and a perforated wick-carrying tray supported on the spring or springs, substantially as set forth.

7. A journal-box comprising a shell provided with a bearing, a hollow casting having a concave upper face provided with a central opening and concave recess, a flanged circular plate extended above said concave face, an arch adjacent to the plate and a groove in the bottom of said casting, a pin passed through the sides of the shell to engage the groove in the casting, and a spring-controlled wick-carrying tray having a perforated bottom and arranged to depend into the casting, substantially as set forth.

408,660. DRYING OR EVAPORATING APPARATUS. ARMIN HERR, Washington, D. C. Filed Mar. 20, 1888. Renewed July 16, 1889. Serial No. 317,843. (No model.)



Claim.—1. In a drier, the combination of the series of inclined chutes, the pans E', located in said chutes, the steam-supply pipes entering the pans in one side at or near their upper ends, and the discharge or exhaust pipes entering the same in like manner on the opposite sides at near their lower ends, openings *g* in one side of the chutes beneath the pans, and similar openings *i i'* in their opposite sides, an air-trunk communicating with the chutes above the pans, and a fan for inducing air-currents, substantially as shown and described.

2. In a drier, the housing A', constructed of an outer wall F', and a series of inclined chutes D', having in one side the openings *i i'* and in the other the inlet *g'*, controlled by slides *h'*, in combination with the hollow pans E', arranged as shown, and having upper side flanges *f f*, an air-trunk communicating with the chutes above the pans and with a fan-case, and valve-controlled inlet and discharge pipes entering the sides of the pans at near their opposite ends, which also serve as supports for the said pans, substantially as described.

3. The combination, with the inclined chutes having in one side the openings *i i'* and in the other the inlets *g'*, of the hollow pans E' and the outer wall F', whereby air entering beneath the pans will be induced to pass up and over the tops thereof, substantially in the manner described and indicated.

408,661. HARNESS-D. JOHN R. KNEBLY, Syracuse, N. Y. Filed Mar. 16, 1889. Serial No. 303,549. (No model.)



Claim.—1. In a harness-D, the integral frame *a*, comprising the vertical bar *a*, horizontal bars *b c*, projecting from its lower portion and connected by a forward vertical cross-bar *d* and forming the horizontal opening 1, the horizontal bar *c*, projecting from the upper portion of the bar *a* diametrically over the bar *b* and forming a horizontal slotway 2, in which is mounted a roller *f*, the cross-bar *i*, projecting laterally from upper portion of bar *a* and linearly opposite the bar *c*, the upward parallel projections *k k'*, rising therefrom and conjointly forming the slotway 3, in which is mounted a transverse roller *l*, the curvilinear bar *o*, extending downward from the bar *i* and terminating at the base of the vertical bar *a* and conjointly creating the vertical opening 4, all combined substantially as described.

2. An integral harness-D frame comprising the vertical bar *a*, horizontal bars *b c*, projecting from its lower portion and connected by a forward vertical cross-bar *d* and creating the horizontal opening 1, the horizontal bar *c*, projecting from the upper portion of the bar *a* directly over the bar *b* and creating a horizontal slotway 2, the cross-bar *i*, projecting laterally from the upper portion of the bar *a* and longitudinally opposite the bar *c*, the upward parallel projections *k k'*, rising therefrom and conjointly creating the slotway 3, the curvilinear bar *o*, extending downwardly from the bar *i* and terminating at the base of vertical bar *a* and conjointly creating the vertical opening 4, all combined substantially as described.

408,662. GRINDSTONE-FRAME. ROBERT KIRK, Hartwell, Ohio, assignor of one-half to Oliver J. Bailey, same place. Filed Apr. 19, 1889. Serial No. 307,798. (No model.)

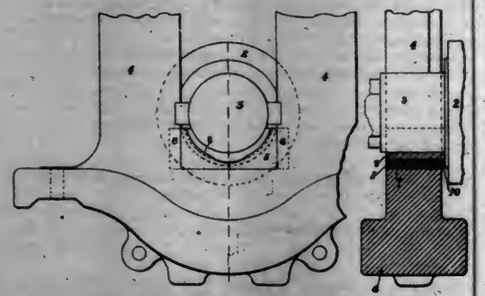


Claim.—1. In a grindstone-frame, a bifurcated stock with wide base having prongs at the upper end provided with bearings between which the grindstone revolves, and having lugs to pivotally receive the seat attachment, seat-support, and forward support, substantially as shown and described.

2. In a grindstone-frame, the combination, with a bifurcated stock, of a pivotally-attached forward support, a shield, a pivotally-attached seat, a pivotally-attached seat-support, and a treadle-bar carrying forwardly-extending treadles to operate the stone, substantially as described.

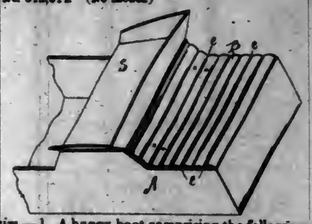
3. In a grindstone-frame, the bifurcated stock carrying the grindstone in the bifurcation and the seat and the seat-support each pivotally attached to the stock, substantially as and for the purposes set set forth.

408,663. SHAFT COOLING-BOX. HENRY KLEMAN, Pittsburg, Pa., assignor of one-half to Richard Morgan and James Evans, both of same place. Filed Aug. 30, 1888. Serial No. 284,157. (No model.)



Claim.—The combination, with the roll and its neck or journal and the housing, of the concave-faced block set in the housing and a lining for said block removably arranged therein and constituting the bearing for the roll, the block being provided next to and beneath the lining with grooves or channels 7 open from end to end, substantially as and for the purpose described.

408,664. BUGGY-BOOT. JAMES K. LORER, Ionia, Mich., assignor of one-half to John M. Bradley, same place. Filed May 31, 1888. Serial No. 312,314. (No model.)

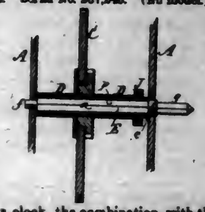


Claim.—1. A buggy-boot comprising the following elements: the outer water-proof covering, the inner textile facing, the series of interposed stiffening-blades, and the stitching of the covering fabrics between the blades, substantially as specified.

2. In a buggy-boot, the combination of the leather covering, the inner textile fabric lining, the interposed series of ribs round on their upper faces and flat on their under faces, said coverings being made fast to said ribs, and the angle-iron attached to the under face of the boot, as and for the purposes specified.

3. A buggy-boot comprising the following elements: the outer water-proof covering and the series of ribs, said ribs being made fast to the covering, the rib at the rear end of the boot being L-shaped in cross-section, whereby it is adapted to embrace the rear corner of the vehicle-box.

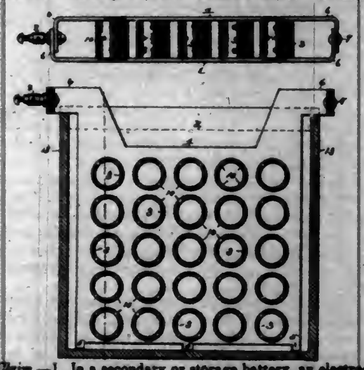
408,665. CLOCK. EDWARD M. MOULTON and MARK MOULTON, Rochester, N. Y.; said Mark Moulton assignor to said Edward M. Moulton. Filed Oct. 4, 1888. Serial No. 287,243. (No model.)



Claim.—1. In a clock, the combination, with the main wheel and spring, of a sleeve fitting between the sides of the clock-frame and provided with a smooth interior, a winding-arbor fitting loosely in said sleeve, the ends forming journals resting in the frame and one end projecting, forming a winding-stem, and a fastening device locking said parts together, as shown and described, and for the purpose specified.

2. In a clock, the combination, with the main wheel and spring, of a sleeve fitting between the sides of the clock-frame and provided with a smooth interior, a winding-arbor fitted in said sleeve, the ends forming journals resting in the frame and one end projecting, forming a winding-stem, and a nut screwing on a beveled screw-thread on one end of the sleeve to clamp the sleeve and arbor together, as herein shown and described.

408,666. SECONDARY BATTERY. JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed Apr. 29, 1889. Serial No. 308,968. (No model.)



Claim.—1. In a secondary or storage battery, an electrode consisting, essentially, of plates of lead or other suitable material held a

distance apart by a series of lead tubes extending between and through the plates, and spaced, as shown, to leave a clear passage between the tubes, substantially as described.

2. In a secondary or storage battery, an electrode composed of plates of lead or other suitable material held a distance apart by a series of perforated tubes extending between and through the plates, and spaced, as shown, to leave a clear passage between the tubes, substantially as described.

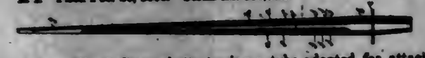
3. In a secondary or storage battery, an electrode composed of plates of lead or other suitable material held a distance apart by a series of tubes extending between and through the plates, said tubes being spaced, as shown, to leave a clear passage between them to expose their whole surface to the electrolyte, and filled with active material, substantially as described.

4. In a secondary or storage battery, an electrode composed of plates of lead or other material held a suitable distance apart, with lead tubes extending between and through the plates, and a core of baked active material within each tube, substantially as described.

5. In a secondary or storage battery, an electrode composed of plates of lead or other material held a suitable distance apart, with perforated lead tubes extending between and through the plates, a core of baked active material in each tube, and a plug of plastic active material in each end of the tubes, substantially as described.

6. In a secondary or storage battery, an electrode consisting of the combination of two lead plates arranged parallel to and at a suitable distance from each other, with perforated lead tubes extending between and through the plates, a core of baked red oxide of lead within each tube, and a plug of pasty red lead for each end of each tube, substantially as described.

408,667. HOLLOW SPINDLE FOR DYEING YARN IN COPS. IRA F. PERK, Providence, assignor to W. P. & F. C. Sayles, Pawtucket, R. I. Filed Feb. 20, 1889. Serial No. 300,869.



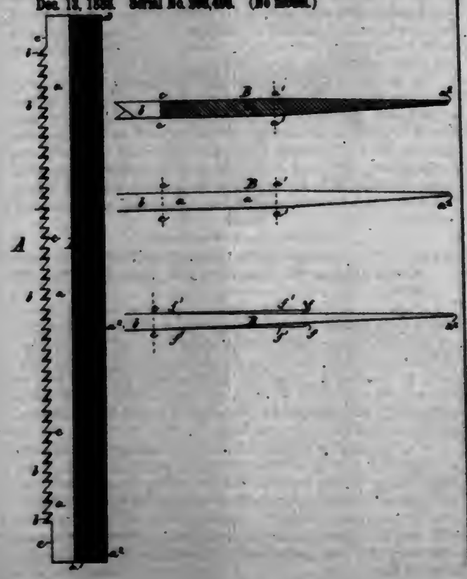
Claim.—The hollow spindle having a tube adapted for attachment, the terminating tip, the longitudinal ribs, and the inner wire coil, substantially as and for the purpose specified.

408,668. HOLLOW SPINDLE FOR DYEING YARN IN COPS. WALTER L. PERK, Providence, assignor to W. P. & F. C. Sayles, Pawtucket, R. I. Filed Mar. 6, 1889. Serial No. 301,973. (No model.)



Claim.—The hollow spindle having a tube adapted for attachment, a terminating tip, and a reticulated wire body, which connects the tube and tip, substantially as described.

408,669. SAW. GEORGE W. PRESCOTT, Eau Claire, Wis. Filed Dec. 12, 1888. Serial No. 293,490. (No model.)



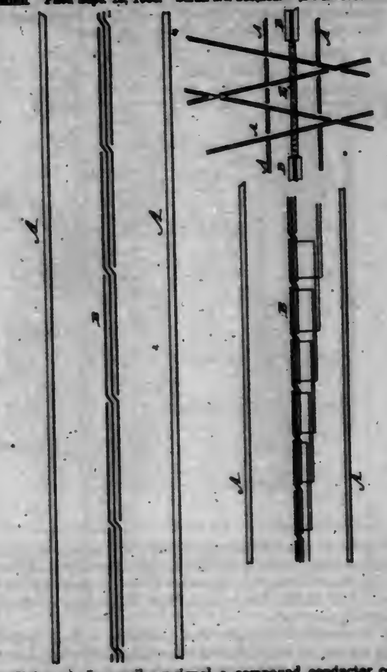
Claim.—The within-described new article of manufacture, consisting of a straight-cut saw-blade adapted to saw lumber with a reciprocating up-and-down movement, said blade being formed with its sides, back, and teeth in one piece, and having an even thickness of metal from the base-line of the teeth rearwardly for a proper distance—say about two or four inches—according to the width of the blade, and tapered from the rearward termination of said portion of even thickness to its back edge, substantially as described.

408,670. POTATO-DIGGER. ARTEMAS REMY, Old Town, Me. Filed Apr. 12, 1889. Serial No. 307,192. (No model.)



Claim.—In a potato-digger, the combination of a sifting-plow, on each side and a little in advance thereof a turning-plow H, running not quite so deep as the sifting-plow, and the turning-plows I in front of plows H, and not running so deep, but closer to the potatoes, whereby so little earth will be left to go over the sifter that all the potatoes, large and small, will be made plainly visible on the surface of the ground.

408,671. RAILWAY-SIGNAL. JOSEPH W. RIGGS, St. Paul, assignor to the Riggs Electric Traveling Danger Signal Company, Minneapolis, Minn. Filed Sept. 13, 1888. Serial No. 285,262. (No model.)



Claim.—1. In a railway-signal, a compound conductor consisting of three parallel flat bars or plates placed edgewise in sections and embedded of an insulating material except at their upper exposed edges, one bar or plate of each section having its terminal at the end of said section, the second bar or plate having its terminal at the end of the second section, and the third bar or plate having its terminal at the end of the third section, substantially as set forth.

2. In a railway-signal, a compound conductor consisting of a support provided in its top with a longitudinal vertical groove having a filling of insulating material, and the flat parallaled spaced plates embedded edgewise in said material in sections, with their upper

edges only exposed, one bar or plate of each section having its terminal at the end of said section, the second bar or plate having its terminal at the end of the second section, and the third bar or plate having its terminal at the end of the third section, substantially as set forth.

3. In a railway-signal, the combination, with the car and the compound conducting-rail B, of the brush E, formed of the metallic back A, the wires *i*, the insulating-sleeve *f*, the metallic sleeve *g*, and the loop *e*, suspended from the bottom of the car and adapted to support the brush in the position of use, substantially as specified.

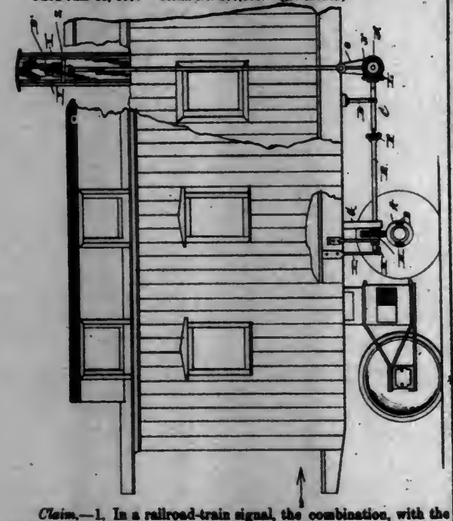
4. In a railway-signal, the combination of the compound conductor having three parallel conductors arranged in sections connected together, as described, a metallic brush E', the pivoted switch-arms *m m'*, connected together and one of them connected to the brush, the contact-points *k k' l l'*, the points *k k'* and *l l'* being connected together, the battery F, connected to the contact-points *k l*, and the bell G, connected to the battery, substantially as described.

5. In a railway-signal, the combination of the compound conducting-rail B, having three parallel conductors in each section connected by diagonal connections, as described, the metallic brush E', the switch-arms *m m'*, the contact-points *k l k' l'*, the battery F, the alarm-bell G, the contact-springs *o o'*, and the circuit-opening wedge J, provided with the insulating-surface *p*, substantially as specified.

6. In a railway-signal, the combination, with the circuit-wires, of the springs *o o'*, insulated from each other, the throttle-valve lever I, and the wedge J, provided with the insulating-surface *p*, the springs *o o'* being arranged in the path of the wedge J, substantially as specified.

7. In a railway-signal, the combination, with the electrical conducting-rail B and switch-stand O, of the branch conductors *s' f'*, shaft *g'*, provided with the arm *t'*, the arm *r'*, the rod *u'*, and arm *v'*, attached to the switch-stand, substantially as specified.

408,672. SIGNAL FOR RAILWAY-CARS. ALFRED A. ROBINSON, Lynchburg, Va., assignor of two-thirds to John R. Parrott, same place. Filed Jan. 11, 1889. Serial No. 296,065. (No model.)



Claim.—1. In a railroad-train signal, the combination, with the vertically-moving signals, of an independent crank-shaft connected to each signal and to the car-axle, and a device for connecting or disconnecting the shafts, whereby one or both signals may be operated, substantially as specified.

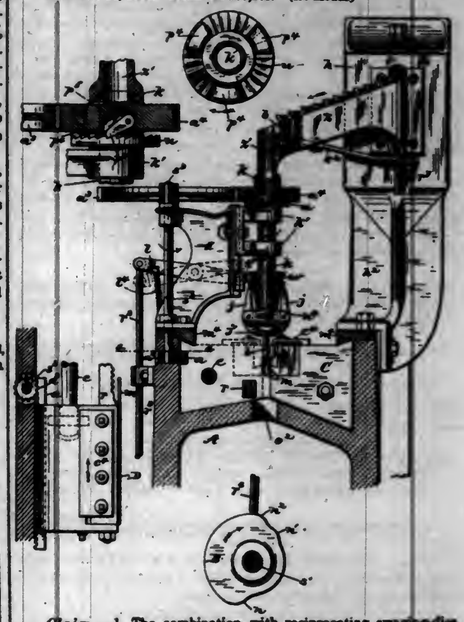
2. In a railway-train signal, the combination, with the vertically-moving signals, of independent rotary crank-shafts connected with the car-axle, and of a coupling device adapted to automatically couple the shafts when the train is moving in one direction and to uncouple the same when moving in a reverse direction, substantially as specified.

3. The combination, in a railway-car signal, of the shafts M P, having the cranks, the vertically-movable lamp-brackets, the pitmen connecting the same to the cranks, and the gears connecting the shaft M to one of the car-axles, for the purpose set forth, one of said shafts being provided with a ratchet-wheel and the other with a double pawl for operating in the teeth of the ratchet, substantially as described.

4. In a car-signal, the combination of the movable lamp, the crank-shaft connected to and vertically operating the lamp, the shaft C, geared thereto, and the shaft E, flexibly jointed to shaft C and having the worm-wheel H and the worm B secured to one of the car-axles and engaged by the wheel H, substantially as described.

5. The combination, in railway-car signals, of the vertically-movable signal-lamp, the crank-shaft M, connected to and rotated by one of the car-axles, connections between said shaft and lamp, the plate T, secured to said shaft, the shaft P, in line with shaft M and carrying the rack-wheel S, and the detent U, pivoted to plate T and having the engaging-points V, adapted to engage the rack-wheel S and to disengage the same, substantially as described.

408,673. SCREW-SWAGING MACHINE. CHARLES D. ROGERS, Providence, R. I., assignor to the American Screw Company, same place. Filed Dec. 11, 1888. Serial No. 293,269. (No model.)



Claim.—1. The combination, with reciprocating swaging-dies which roll threads upon a screw-blank by rotating it between them and expanding the metal radially, of a revolving blank-carrying spindle and mechanism, substantially as described, which permits the spindle to be independently revolved by the action of said swaging-dies upon the blank, substantially as hereinbefore set forth.

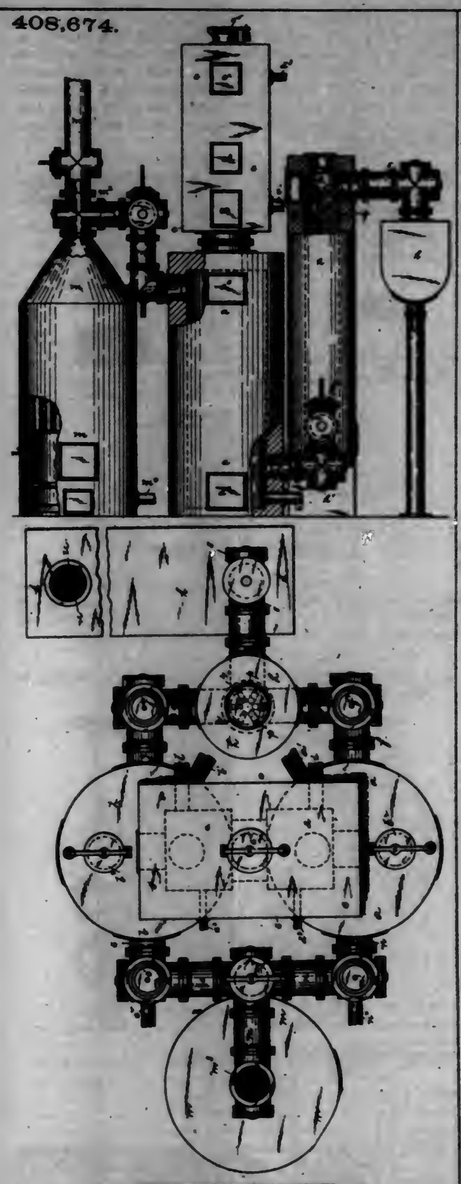
2. In a screw-swaging machine, the combination, with swaging-dies for rolling threads upon a screw-blank, of a revolving blank-carrying spindle provided with a pawl-and-ratchet gearing which permits the spindle to be revolved by the action of said swaging-dies upon the blank at a greater speed than that which is normally due to the gearing, but which comes into action to compel the spindle to rotate the blank if the engagement of the dies with the blank fails to insure its rotation at the required rate, substantially as hereinbefore set forth.

408,674. APPARATUS FOR THE MANUFACTURE OF GAS. JAMES M. ROSS, Allegheny, Pa. Filed Oct. 4, 1888. Serial No. 287,349. (No model.)

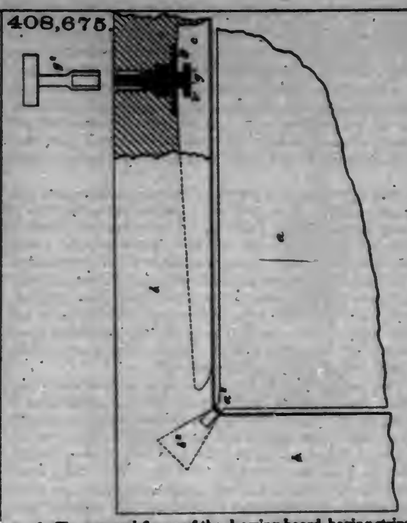
Claim.—1. A gas-making apparatus having a cupola gas-generator, a steam-generator containing a grate and fire-chamber and having its chimney-flue opening into the upper end of the gas-generator, and a casing having one or more chambers containing refractory material for treating the gases and provided with an oil entrance or entrances through which the resultant waste products of combustion and gas from the gas-generator are carried to treat the same, substantially as and for the purposes set forth.

2. A gas-making apparatus having two vertical gas-generators each provided with an air-blast pipe and a gas-eduction pipe at the base, a casing having a double chamber resting on said generators and containing refractory material for treating the gas, the compartments of said double chamber being connected to said generators and with each other, and a steam-generator having its chimney-flue communicating with each gas-generator, substantially as and for the purpose set forth.

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408,675.



408,675. ARTIST'S DRAWING-BOARD. THEODORE C. ROUSSEL, Chelsea, County of Middlesex, England, assignor to Benjamin Rouxel, Legué, France. Filed May 3, 1887. Serial No. 236,925. (No model.) Patented in England Apr. 6, 1886, No. 4,733; in Belgium Dec. 11, 1886, No. 68,980, and in France Dec. 11, 1886, No. 167,416.

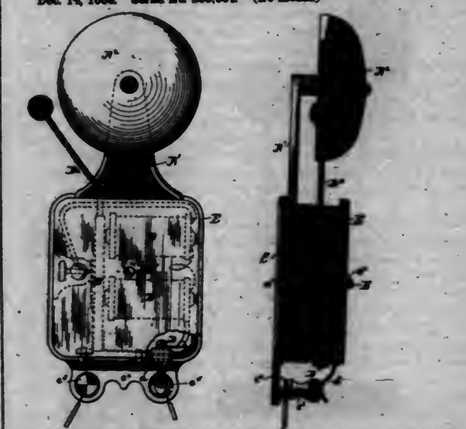
Claim.—1. A drawing-board adapted for stretching paper, and consisting of a board with grooved edges, and a surrounding frame furnished with strips capable of being advanced into the grooves and operating to extend the paper therein, substantially as herein described.

2. A drawing-board adapted for stretching paper, and consisting of a board having recessed edges, and a frame formed with projections for entering the several recesses, the parts being so arranged in relation to one another that during the operation of applying the frame to the board the sheet of paper becomes gripped and then extended, substantially as described.

3. The recessed frame of the drawing-board, having stripe—such as *c*—mounted in its recesses, and having also means whereby said strips may be advanced and retracted, substantially as set forth.

4. A drawing-board adapted for stretching paper, provided with studs or supports *h* on one of its faces, substantially as and for the purpose set forth.

408,676. ELECTRIC CALL-BELL. THOMAS J. SMITH, Brooklyn, N. Y., assignor to the E. S. Greeley & Company, of New York. Filed Dec. 14, 1888. Serial No. 293,604. (No model.)



Claim.—In an electric call-bell, the inclosing-case thereof composed of the back plate C, adapted to be permanently secured to the place of support and carrying the described binding-posts c^3 and c^4, the skeleton frame A, containing the magnet, armature, and its bell-striker, and provided with the standard A', supporting the bell A^2, the post D and its spring *d*, adapted to engage said post c^4, and the front plate or cover E, said frame and cover being detachably mounted upon said back plate, substantially as and for the purpose specified.

408,677. ART OF MAKING METAL-FOUNDERS' PATTERNS. HARRIS TABOR, New York, N. Y., assignor to the Tabor Manufacturing Company, same place. Filed Sept. 22, 1888. Serial No. 286,103. (No model.)

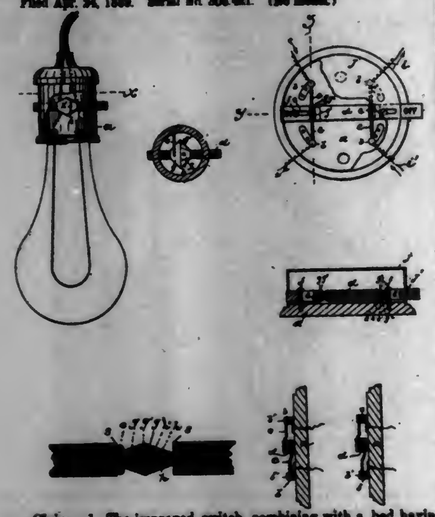


Claim.—1. That improvement in the art of making metal-founders' patterns which consists in, first, producing a pattern having the form of the casting desired; second, producing a doweled two-part sand mold therefrom; third, laying the two mold parts upon their backs; fourth, fitting dowel elements to the dowel elements of said separate mold parts, and, fifth, pouring a suitable pattern-forming material into said separate mold parts and into connection with said fitted dowel elements, whereby are produced two pattern parts each fitting the mold portion and dowel elements of its respective mold part.

2. That improvement in the art of making metal-founders' patterns which consists in, first, producing a pattern having the form of the casting desired; second, producing a doweled two-part sand mold therefrom; third, laying the two mold parts upon their backs; fourth, fitting the dowel elements to the dowel elements of said separate mold parts; fifth, pouring a suitable pattern-forming material into said separate mold parts and into connection with said fitted dowel elements, and, sixth, securing the two pattern parts thus produced side by side with their backs against a bed or platen, whereby is produced a pattern adapted, by one impression in one direction, to produce two half-molds which will join and form a perfect mold.

3. That improvement in the art of making metal-founders' patterns which consists in, first, producing a pattern having the form of the casting desired; second, producing a doweled two-part sand mold therefrom; third, laying the two mold parts upon their backs; fourth, laying a proper stripping-plate upon the mold-faces in dowel engagement with the dowel elements of the mold parts; fifth, fitting dowel elements to the dowel elements of said separate mold parts, and, sixth, pouring a suitable pattern-forming material into said separate mold parts and said stripping-plates and into connection with said fitted dowel elements, whereby are produced two pattern parts each fitting the mold portion and dowel elements of its respective mold part and stripper-plate.

408,678. ELECTRIC SWITCH. WALTER THOMPSON, Orange, N. J. Filed Apr. 24, 1889. Serial No. 308,421. (No model.)



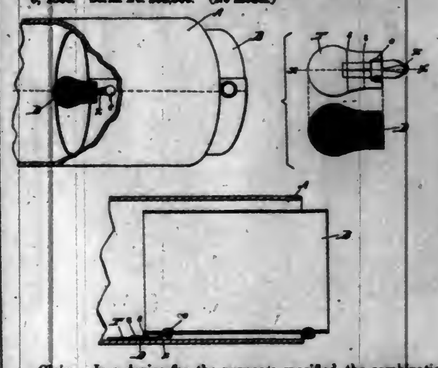
Claim.—1. The improved switch, combining with a bed having terminals an electric circuit secured thereon and projecting toward one another at approximately right angles to a sliding bar and overlapping one another, as shown, said sliding bar interposed between said overlapping terminals and provided on opposite sides thereof with opposite inclines $g\,g^5\,g\,g^5$, which unite at a point or apex g', and a connection K', substantially as and for the purpose set forth.

2. The improved switch, combining with a bed having springs $e\,e$, serving as terminals, secured thereto, a sliding bar having opposite inclines $g\,g^5$, forming an apex g', and a connection K', for connecting the terminals $e\,e$, said connection having inclined contact-surfaces over which said springs may slide, substantially as and for the purpose set forth.

3. In combination with the disk or bed-plate a, having screws or pins $f\,f$ and a cap j, a slotted bar d, of non-conducting material, extending at its opposite extremities through said cap, the said bar being provided with opposite inclines $g\,g^5$, the latter being provided with an inclined contact-plate serving as a terminal of a circuit, and a spring-arm e, serving as a co-operating terminal, substantially as and for the purpose set forth.

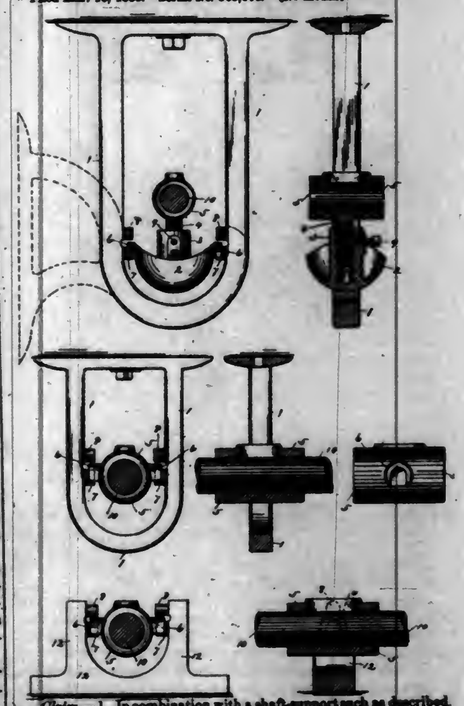
4. In combination with the disk or bed-plate a, having screws or pins $f\,f$ and a cap j, a slotted bar d, of non-conducting material, extending at its opposite extremities beyond the limits of said cap, the said bar being provided with opposite inclines $g\,g^5$, which unite at point g' and extend therefrom to shoulders or stops s, said inclines and stops being on opposite sides thereof, and spring-arms $e\,e$, extending into engagement with the opposite sides of said bar, substantially as set forth.

408,679. CUFF-HOLDER. HARRY B. WILLIAMS, Brooklyn, assignor to the Self-Attaching Cuff Holder Company, New York, N. Y. Filed Dec. 3, 1888. Serial No. 292,509. (No model.)



Claim.—In a device for the purposes specified, the combination of the textile-fabric body T, the elastic-tape loop Z, having its ends attached to said body, and the coating of gutta-percha made adherent to the textile-fabric body, substantially as specified.

408,680. SHAFT-SUPPORT. GEORGE RIEMER, Allegheny, Pa. Filed Mar. 18, 1889. Serial No. 303,808. (No model.)



Claim.—1. In combination with a shaft-support such as described, the frame having formed thereon the lugs or projections 7 8, and the drip-pan 2, provided with the hollow lugs 6, adapted to engage with the projections 7 8, whereby the said drip-pan may oscillate in its bearings, as and for the purpose set forth.

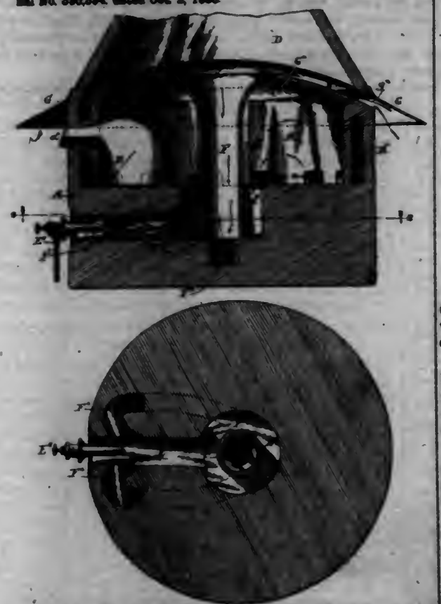
2. In a shaft-support, the combination of the frame 1, provided with the two sets of lugs 7 8, the drip-pan 2, having formed thereon two hollow lugs 6, adapted to engage with the said projections 7 8, the socket 3, and pivoted bearing 5, having stem 4, and the set-screw 9, for adjusting the said bearing 5, substantially as set forth.

3. In a shaft-support such as described, the drip-pan 2, detachably pivoted to the frame 1, provided with the socket 3, formed integral therewith, the bearing 5, having stem 4, pivoted in the said socket 3, and a set-screw 9, for adjusting the bearing 5, whereby the said bearing 5 may be adjusted vertically and horizontally.

4. In a shaft-support, the frame having formed integral therewith the projections 7 8, and the bearing provided with two semicircular lugs 6, adapted to engage with the projections 7 8 on the frame to confine the bearing in position and permit the same to adjust itself to to the shaft 10.

REISSUES.

11,018. GLASS-FURNACE. ERNEST DE LA CHAPELLE and JOHN PEARCE, Ottawa, Ill. Filed May 20, 1889. Serial No. 311,475. Original No. 390,394, dated Oct. 2, 1888.



Claim.—1. The combination, with a glass or other furnace, of a projecting canopy extending outwardly from the furnace-wall at or near the top of the latter, and an air passage or passages arranged to take heated air from the exterior of the furnace below the canopy and to conduct the same into the fire-box of the furnace.

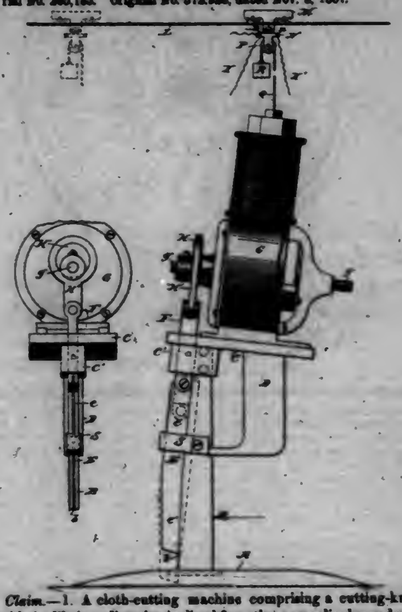
2. The combination, with a glass or other furnace, of a central air-flue F, leading from above the crown of the furnace, a passage or passages leading from the exterior of the furnace to the top of said flue, and a passage or passages leading from the lower part of said flue to the fire-box of the furnace.

3. The combination, with a glass or other furnace provided with a fire-box and a heating-chamber, of a canopy extending outwardly from the furnace-wall at or near the top of the latter, and an air flue or flues leading from beneath the canopy through the heating-chamber into the fire-box.

4. The combination, with a glass or other furnace, of a central air-flue F, leading from above the furnace-crown, and provided with a branch or branches leading into the fire-box, a sheet G', arranged over the crown and providing an air-space g, a canopy exterior to the furnace-wall at or near the top of the latter, and passages leading from beneath the canopy to the space g.

5. The combination, with a glass or other furnace provided with a fire-box and a fluid-burner within the fire-box, of a central flue F, communicating at its upper end with the exterior of the furnace, and provided with one or more branch flues leading from the lower end of said flue F to the fire-box and having their delivery ends directed toward the rear of the fire-box.

11,019. CLOTH-CUTTING MACHINE. FRANK W. NEVERS, Minneapolis, Minn., assignor, by direct and mesne assignments, to the Electric Cutting Machine Company, Chicago, Ill. Filed Feb. 24, 1888. Serial No. 265,183. Original No. 372,926, dated Nov. 8, 1887.



Claim.—1. A cloth-cutting machine comprising a cutting-knife movable bodily in a direction inclined from the perpendicular and provided with a vertical cutting-edge, and means giving longitudinal reciprocatory motion to said knife, substantially as described.

2. A cloth-cutting machine comprising a disk for lifting the lower layer of cloth, a motor sustained upon the disk, and a knife movable bodily in a direction inclined to the lower bearing-surface of the disk and provided with a cutting-edge which is perpendicular to the said lower surface of the disk, substantially as described.

3. The combination, with a table or horizontal cloth-support and a cutting-machine movable thereon, of an elevated track, and a traveler upon the track connected with and partially supporting the cutting-machine, substantially as described.

4. In a cloth-cutting machine, in combination with a disk adapted to lift up the lower layer of cloth, a vertical standard rigidly attached to said disk and provided with a knife guide or groove at a slightly obtuse angle to said disk, a knife or cutter reciprocating in the vertical plane provided with a straight-edged back adapted to fit into said groove and with a cutting-edge set on an incline upward and outward from said back, and an electromotor located on said carriage and coupled to said cutter, substantially as described, for imparting motion to said knife, whereby said knife operates with a drawing or shear-like cut.

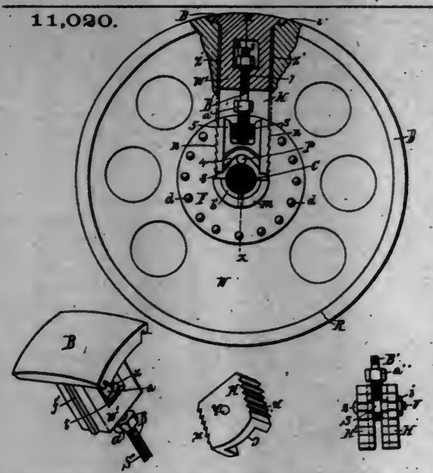
5. In combination with a cloth-cutting machine, an elevated track, a traveler movable to and fro along said track, a pendent block swiveled to said traveler, a sheave attached to said block, and a chain or cord passing over said sheave carrying a counter-weight at one end and attached to said cloth-cutting machine at the other, substantially as described, whereby the work of moving the said machine about the table in cutting the cloth is greatly lessened.

6. In combination, the disk A, the standard B, provided with a knife-groove b, cap-plate or motor-seat C at an acute angle to said standard and provided with the cross-head slot or guide c, the electric motor G, having a driving-shaft g set at an acute angle to the groove b when the motor is in position on the seat C, and the vertical plane passing through the axis of the driving-shaft cutting the groove b, the cutting-knife E e e', as described, working in the groove b, eccentric H on shaft g, eccentric-rod H', cross-head F, working in said slot c and connecting said eccentric-rod and knife, and an electric circuit connecting said motor with a source of electricity, substantially as and for the purpose set forth.

11,020. DRIVE-PULLEY. GEORGE C. COWLES, East Saginaw, Mich., assignor of one-half to Edward Germain, same place. Filed June 8, 1889. Serial No. 313,080. Original No. 406,460, dated May 14, 1889.

Claim.—1. In a pulley having an opening from the center out

11,020.



through the periphery, the combination, with a removable hub-section adapted to be placed in the opening in the web and means for engaging it in place, of a removable rim-section adapted to fill the opening in the rim, and intermediate adjusting mechanism, whereby the parts have a relative adjustment toward or from each other, substantially as described.

2. In a pulley having a portion of the hub and rim made removable, the combination, with the main body of the wheel, of a hub within said opening engaged with said main body by a notched or ratchet engagement, and in connection therewith separate rim and hub sections with adjusting mechanism, whereby said sections may be adjusted toward or from each other, substantially as described.

3. In a pulley having an opening from the center out through the periphery, the combination, with a removable hub-section and means for securing it in the opening in the web, a removable rim-section adapted to fill the opening in the rim, and intermediate adjusting mechanism whereby the parts have a relative adjustment toward or from each other, of flanges secured to each side of the web adjacent to the center, said flanges carrying the journal-bearing, substantially as described.

4. In a drive-pulley having an opening from its center to its periphery, the combination, with flanges secured to the web and carrying the journal-bearing, of a saddle, with means for securing it in said opening, said saddle being of greater concavity than the convexity of the shaft, and a roller between the shaft and saddle adapted to lock the pulley firmly to the shaft when the former is partially revolved, substantially as described.

PHOTO LITH. NORRIS PETERS WASHINGTON D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

BEACH *v.* FOWLER.

Decided July 18, 1889.

1. PRIORITY OF INVENTION—LACHES.

When one of the parties to an interference has made the invention independently of the other party and has reduced it to practice upon an extended commercial scale, and has obtained a patent which he has held unchallenged for nearly a year, he must be adjudged the prior inventor as against the other who, though he may have been the first to conceive the invention, without any excuse for his non-action, never did anything toward reducing it to practice, but who bases his claim to priority on a previous application filed by him which contained claims for the invention in controversy, which claims were rejected and positively and deliberately abandoned nearly four years before the filing of the application involved in this interference.

2. SAME—EFFECT OF ALLUSION IN A PATENT TO ABANDONED CLAIMS IN A FORMER APPLICATION ON QUESTION OF DILIGENCE.

When an applicant, who is also patentee of an invention other than that involved in controversy, alludes in his patent to abandoned claims in a former application, the only effect that can be given to such reference is as evidence of continued interest in the subject-matter of the earlier application and of diligence in seeking to perfect and patent the invention; but such an allusion can have no effect whatever in that direction when the former application had been for nearly two years unprosecuted, and all the claims therein which had any relationship to his pending application had been deliberately stricken out and positively abandoned at the time the patent was issued.

3. SAME—ABANDONED APPLICATION NOT A BAR TO SUBSEQUENTLY GRANTED PATENT.

An abandoned application cannot of itself constitute a bar to a subsequently granted patent.

SAME—PROOF OF DATE OF CONCEPTION BY ABANDONED APPLICATION.

If the thing described in the abandoned application is the same invention that is subsequently patented, it certainly does establish conception of the invention as of its own date, and if proof *dehors* the patent establishes reduction to practice or introduction into public use, and the time of the reduction to practice or of public use is in dispute, then the application shows that reduction to practice *might* have taken place at any time subsequent to its date; but when, as in the present case, there is no proof even of experiment, it can have no other effect than to establish the date of conception of the invention which it discloses.

5. SAME—DECLARING ISSUE.

When it appears that one party to an interference cannot be allowed a method claim while the other party bars the way, the issue covering the method practiced is properly declared, in spite of minor differences in the conflicting claims.

APPEAL from Examiners-in-Chief.

MANUFACTURE OF CAR-WHEELS.

Application of Clifton B. Beach filed September 27, 1887, No. 250,791. Patent granted Hervey W. Fowler October 26, 1886, No. 200,683.

Mr. George H. Christy, Mr. J. Snowden Bell, and *Mr. William Bakewell* for Beach.

Mr. William C. Wood and *Mr. R. H. Parkinson* for Fowler.

MITCHELL, *Commissioner:*

The issues in controversy are as follows:

1. The method of manufacturing cast-steel car-wheels, which consists, first, in casting a solid integral wheel-blank having a rudimentary flange, a hub and a web substantially complete as to dimensions and form, and a rim which at the tread and flange is larger in diameter than the finished wheel; and, secondly, in peripherally rolling the rim and concentrically reducing the diameter of said blank to the diameter desired in the finished wheel, and thereby evenly condensing the metal at the outer portion of the rim in radial and peripheral lines and developing the flange and hardening the tread of the wheel.

2. As an improved article of manufacture, an integral cast-steel car-wheel having its hub, its web, and the main portion of its rim composed of the metal in its normal soft and tough condition, and a flange and tread composed of metal which is hardened and condensed in radial and peripheral lines.

These issues are embraced in substantially the same language as the claims of the Letters Patent to Fowler. The gist of the invention resides in the peripheral rolling by which the rim of a car-wheel is evenly condensed in radial and peripheral lines, thereby developing the flange and hardening the tread of the wheel.

The first count or subdivision of the issue emphasizes the method by which the car-wheel is produced, while the second emphasizes the characteristics possessed by the wheel itself. It is questioned by Beach whether the interference is properly declared as to the first issue, and therefore it may be the more satisfactory manner of proceeding to the discussion to consider the testimony bearing upon the second count and to afterward attend more particularly to the first issue, with reference to which the question before mentioned has been raised.

There seems to be no doubt that Fowler conceived of the invention in controversy in 1884; that he reduced it to practice as early as August or September, 1885; that he took steps immediately to demonstrate the practicability of his invention; that he practiced it upon an extensive scale, involving great expense in establishing a plant, and that wheels embodying the invention immediately went into extensive public use. His application for a patent bears date April 30, 1886. That he was an original inventor there is no question, and there is no room for doubt that in all respects demanding diligence he fully complied with the most rigid requirements of the law. Under these circumstances the material question in the case is whether the testimony introduced on behalf of Beach is sufficient to establish the invalidity of the patent already granted to Fowler, for, as has been abundantly decided, the Office would not be warranted in issuing a second patent except upon proof which would render the first

patent invalid and would warrant its cancellation if jurisdiction existed for that purpose.

It seems to be clear that Beach never practiced the invention or in any way tested its practicability; that he never experimented with relation to it to any extent whatever; nor did he ever make any models or drawings, excepting that a certain rejected application contains drawings which are claimed to exhibit the invention in controversy. This rejected application was originally filed April 20, 1882, and it is this application which is principally relied upon to establish priority on behalf of Beach. In other words, it is claimed that the pending application of Beach, filed September 27, 1887, is in such sense a continuation of the application filed April 20, 1882, as to establish the right of Beach to the date of the first application as the date of his invention, and thus entitle him to an award of priority.

It is agreed that the method claims embraced in this first application were abandoned by amendment filed December 28, 1883, canceling the same and substituting three new claims for certain chuck-rolls, either alone or in combination with associated devices. It will be observed also that an interval of nearly four years elapsed between the abandonment of the method claims of the first application and the filing of the application involved in this interference, and that meanwhile Fowler had conceived the invention in controversy, reduced it to practice, entered upon the use of it on an extensive scale, and applied for and obtained a patent, and that nearly a year had elapsed after the patent was published to the world before Beach filed the application now in controversy.

That an abandoned application cannot of itself constitute a bar to a subsequently-granted patent is abundantly established. If the thing described in the abandoned application is the same invention that is subsequently patented, it certainly does establish conception of the invention as of its own date, and if proof *dehors* the patent establishes reduction to practice or introduction into public use, and the time of the reduction to practice or of the public use is in dispute, then the application shows that reduction to practice *might* have taken place at any time subsequent to its date; but when, as in this case, there is no proof even of experiment, it can have no other effect than to establish the date of conception of the invention which it discloses. (*Webster* v. *Sanford*, 44 O. G., 567; *Brown* v. *Guild et al.*, 23 Wall., 181.) If, then, it be assumed that the invention disclosed in the abandoned application is identical with the invention in controversy, it follows that Beach is entitled to have his date of conception established as early as April 20, 1882.

It remains to be considered whether Beach used due diligence in adapting and perfecting his invention, so as to be entitled to the date mentioned as the date of his invention, in spite of the fact that Fowler was the first who actually reduced the invention to practice and put it in public use. Upon this subject there is no room for doubt. Beach neither did anything, nor does his testimony afford any excuse for his failure to take suitable action in embodying and testing his intellectual conception. It appears that he possessed sufficient pecuniary ability so that the excuse of poverty could not avail him. Indeed, the excuse of poverty is not even made in his behalf. Beach therefore shows no diligence and no excuse for want of diligence.

In this state of the facts it would probably be conceded that Beach has no title to ask that the Government grant a second patent for the invention in controversy. But Beach filed a subsequent application for another invention relating to car-wheels on the 26th day of February, 1883, and obtained a patent thereon November 3, 1885, in which he referred to the method set forth and illustrated in his first application. In this second application is contained an allusion to the application then pending in the following language:

> The blank A may be cast in the first instance approximately to the form shown in Fig. 3, and its rim be worked by periphery hammering or rolling, or by both, into the base of the chuck-groove *d*, to form a wrought tire integral with the cast metal of the web and hub, the step or operation illustrated in Fig. 2 being omitted; but such method of working is not claimed herein, as it forms in part the subject-matter of a separate application for patent, which was filed by me April 20, 1882, Serial No. 58,873.

The only effect that can be given to this allusion in the published patent is as evidence of continued interest in the subject-matter of the earlier patent and of diligence in seeking to perfect and patent the invention; but, although when the second patent was applied for these words had significance in that relation, they had no significance whatever in that direction when the patent was actually issued, November 3, 1885, for, as has been already said, the first application had been for nearly two years unprosecuted, and the method claims, which alone have any relationship to the pending application of Beach, had been deliberately stricken out and positively abandoned. Besides, it will be noticed that before the publication to the world in the patent of November 3, 1885, of the reference to the abandoned method claims of the first application, Fowler had made his invention and fully reduced it to practice. It is very clear that this allusion in the patent of November 3, 1885, to an application which had been abandoned by failure to prosecute within two years could in no way alter the fact that the method claims had been deliberately stricken out of the application, and that the application had been deliberately abandoned, and that no steps had been taken or were in contemplation to revive it. Thus matters remained without an effort on Beach's part to test his conception or put it to practical use or build a machine or do anything else whatever tending in the direction of giving the world the benefit of his invention until nearly a year after the date of the patent to Fowler, when he filed the application now in interference.

Since it is true, as we have seen, that the rejected and abandoned application can have no other effect than to establish the fact and date of conception, it clearly follows, in the absence of all effort during the intervening years while his rival was making the invention, patenting it, and giving it to the world, that Beach cannot be heard to say that the patent issued to Fowler is null and void, and that he is the one who is entitled to a patent. Indeed, there is much in the case which tends to show that, if Fowler had not made and perfected and tested the invention and demonstrated its value, Beach would never have attempted to revive his old claims nor sought to secure a patent.

It follows that Fowler having made the invention independently of Beach and having reduced it to practice upon an extended commercial scale, and having obtained a patent which he held unchallenged for nearly a year, must be adjudged the prior inventor as against Beach, who, though he may have been the first to conceive the invention, was utterly lacking in diligence under circumstances which afford him no excuse.

I have thus far assumed that the method described in the abandoned application of Beach is the same as that covered by the interference issue. It is not absolutely clear, however, that Beach is entitled to this assumption in view of the fact that in the abandoned application the tread of the wheel seems to be subjected—at least to some extent—to lateral expansion. Whether or not such is the case, however, is not material to this decision, in view of what has been already said.

I agree with the Examiners-in-Chief that the gist of the invention in controversy resides in the "peripheral rolling by which the rim is evenly condensed in radial and peripheral lines," and that, since Beach cannot be allowed a method claim while Fowler bars the way, the issue covering the method practiced is properly declared.

The decision of the Examiners-in-Chief awarding priority to Fowler is affirmed.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—District of Connecticut.

ADEE *v.* PECK BROTHERS & CO.

Decided June 27, 1889.

1. USE OF A PATENTEE'S NAME IN CONNECTION WITH A PATENTED ARTICLE AS DESCRIPTIVE THEREOF DOES NOT CONSTITUTE A TRADE-MARK.
   The name which is given to a patented device to distinguish it as a patented article from other articles of the same character is not, properly speaking, a Trade-Mark.
2. SAME—IT DESIGNATES STRUCTURE BUT NOT WORKMANSHIP OR MANUFACTURER.
   It designates nothing except that the structure has a definite character as the structure that was patented, and indicates nothing in regard to the character of the workmanship or the person by whom it was manufactured.
3. TRADE-MARK DEFINED.
   A Trade-Mark is something different from the article itself, which the mark designates, and is a name, mark, or device attached to the article to indicate its origin.
4. INFRINGEMENT OF PATENT, NOT OF TRADE-MARK.
   The selling by the defendant of valves under the name of "Foley's," or "Foley's Patent Valves and Overflows," signifies that they are the kind of valves invented and patented by Foley, but not that they are the valves which he or his successor is manufacturing.

Mr. Arthur v. Briesen for the complainant.
Mr. Edward H. Rogers for the defendant.

SHIPMAN, *J.*:

This is a bill in equity, which is brought by a citizen of the State of New York, against a corporation created under the laws of the State of Connecticut.

The bill alleges, with the usual and necessary averments in such cases, that the defendant has infringed upon reissued Letters Patent No. 6,789, dated November 16, 1875, which were granted to James Foley and George C. Gunning, for an improvement in waste valves and overflows, and are now owned by the complainant. The original patent was issued to James Foley as inventor. The bill also alleges that the complainant has sold said valves under the trade name and style of "Foley's" and "Foley's Patent;" that by such name they are recognized by the public; that said trade-name, during the life of said Letters Patent, is identified therewith and of great value to your orator in describing said patented valves as a trade-mark, and that the defendant has sold his infringing valves under the trade-name of "Foley's Patent Valves." The bill prays, among other things, that the defendant may be enjoined against selling "any waste valves or overflows known as or under the name of 'Foley's' or 'Foley's Patent Valves and Overflows.'"

The defendant has demurred because the bill exhibits distinct, separate, and unconnected matters, viz—"the infringement of Letters Patent of the United States and the infringement of a trade-name or Trade-Mark."

In my opinion, the bill shows upon its face that an infringement of patented rights only was committed. It will be observed that the defendant is not charged with having done anything which is prohibited by section 4901 of the Revised Statutes, and that the alleged Trade-Mark is simply the name which is usually or properly given to the patented article. It is not any peculiar form, label, brand, or device which is put upon the article to designate its origin or the person by whom it is manufactured, and it is not the patent mark which is required to be stamped upon patented articles by section 4900. The name which is given to a patented device to distinguish it as a patented article from other articles of the same character is not, even during the life of the patent, properly speaking, a Trade-Mark. It designates nothing except that the structure has a definite character, as the structure which was patented, and indicates nothing in regard to the character of the workmanship or the person by whom it is manufactured. A Trade-Mark "is something different from the article itself which the mark designates," (*Fairbanks* v. *Jacobus*, 4 Blatchf. C. C. R., 337,) and is a name or a mark or a device which is attached to the article to point out its origin. This alleged Trade-Mark, "Foley's Patent Valves," signifies that they are the kind of valves which Foley invented and patented, and not that they are the valves which he or his successor is manufacturing.

> In all cases where rights to the exclusive use of a Trade-Mark are invaded it is invariably held that the essence of the wrong consists in the sale of the goods of one manufacturer or vender as those of another, and that it is only when this false representation is made that the party who appeals to a court of equity can have relief. (*Canal Co.* v. *Clark*, 13 Wall., 311.)

By this bill it appears that the defendant is deceiving no one in regard to the origin of the goods. It is infringing upon the complainant's patent rights by making a valve substantially like his, and it is asserting that its valve is the complainant's patented invention. Thus far no false representation is made, but the truth is asserted. But if it is said that the assertion is that the defendant has a right to make Foley's patent valve, and that thus the public is deceived, this assertion and the act of sale are nothing

more than an infringement of the exclusive patent rights of the complainant. It is not intended to be asserted that if a person manufactures and sells an article which is not an infringement, but which he falsely brands as the patented device, that for such fraud and consequent injury a bill for an injunction may not lie—not upon the ground that he is simulating a Trade-Mark, but because he is committing a continuous fraud for which the preventive remedy by injunction affords the only adequate relief. (*Washburn & Moen Mfg. Co.* v. *Haish*, 9 Biss., 141; 4 Bann. & Ard., 571.) Neither is it intended to be asserted that the owner of a patented device may not have a Trade-Mark affixed to his articles which distinctively declares the origin, in point of manufacture, of his goods. The imitation of the patent-mark is another and separate act from the one which is alleged to have been committed.

It is evident that the pleader intended in the bill to treat the name as a Trade-Mark and to aver that the defendant had not only infringed the complainant's patent rights but his rights as the owner of a Trade-Mark. His theory is that the defendant, by the sale of its valve under this name, has by one act infringed two rights of the complainant—his patent right and his right to the undisturbed use during the life of the patent of the Trade-Mark which he has adopted. If his theory was true, his bill perhaps would not be open to the charge of misjoinder upon the ground that if two good causes of complaint grow out of one transaction for which the same character of relief is sought, and in regard to which all the defendants have the same claim of right, such causes may be included in one bill, (Story's Eq. Pl., sec. 284;) but the bill in this case shows only one good cause of complaint.

The demurrer is overruled.

U. S. Circuit Court—District of Massachusetts.

THE UNITED STATES OF AMERICA *v.* THE AMERICAN BELL TELEPHONE COMPANY AND ALEXANDER GRAHAM BELL.

Decided July 2, 1889.

PRACTICE IN THE COURTS—TESTIMONY BEFORE EXAMINER.

On a motion for the appointment of an examiner to take testimony in an equity cause the court will not limit or restrict the taking of testimony or determine what is proper testimony. Objections taken to evidence on the ground of incompetency or irrelevancy properly come before the court at the final hearing.

MOTION for the appointment of an examiner to take testimony.

Mr. George A. Jenks, Mr. Charles S. Whitman, Mr. W. C. Strawbridge, and *Mr. G. P. Lowrey* for the complainant.

Mr. Chauncey Smith and *Mr. B. F. Thurston* for the defendants.

COLT, *J.*:

The plaintiff moves the court for the appointment of an examiner to take testimony. The defendant Bell also moves for the appointment of an examiner to take testimony upon the issue raised by his plea filed in this case. The defendant company have answered generally to the bill. The defendant Bell has filed a plea and an answer in support of the plea. To the answer of the defendant company and to the plea the plaintiff has filed replications. The cause therefore is at issue, and it is proper for the court to appoint an examiner to take testimony. The defendants' motion seeks in effect to restrict the testimony by order of court to the single issue of fraud which is raised by the plea.

It is certainly unusual upon a motion made in the ordinary way for the appointment of an examiner to ask the court by an interlocutory order to limit in advance the scope of the testimony to be taken. It is probable that no appeal would lie from such an order. But however this may be, such action on the part of the court seems to be contrary to established equity practice. Objections may be taken to the evidence on the grounds of incompetency or irrelevancy, and these objections properly come before the court at the final hearing of the cause; but I find no precedent for limiting or restricting the taking of testimony in advance. The court should not be called upon at this stage of the case to determine what is proper testimony and what is not, nor to determine the scope of the decision of the Supreme Court upon the demurrer in this case. Upon a motion in the ordinary way for the appointment of an examiner it is not for the court to settle questions which cannot be properly and intelligently passed upon at this time. The fact that this is an important, and in some respects an exceptional, case should not prevent the court from following the usual and ordinary course of equity practice.

The defendants' motion is denied and the plaintiff's motion is granted, and Henry L. Hallett is hereby appointed examiner.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 48—No. 7. TUESDAY, AUGUST 13, 1889. PRICE—$5 per year.

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The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months.

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Trade-Marks	26	No. 16,910 to No. 16,935, inclusive.
Labels	4	No. 5,995 to No. 5,998, inclusive.
Reissues	3	No. 11,021 to No. 11,023, inclusive.
Total issue	519	

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Minnesota	7	1	U. S. Navy	.....	.....
Mississippi	1	.....			
Missouri	23	1	Total to citizens of the United States	448	26
Montana Territory	1	.....			

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Bermuda	1	.....	New South Wales	.....	.....
Brazil	.....	.....	Queensland	.....	.....
Canada	3	.....	Russia	.....	.....
Canary Islands	.....	.....	Scotland	1	.....
Colombia, U. S. of	.....	.....	Sweden	1	.....
Cuba	.....	.....	Switzerland	.....	.....
Denmark	.....	.....	Victoria	.....	.....
Ecuador	.....	.....			
England	17	3	Total to citizens of foreign countries	38	4
France	1	1			

DESIGNS.

19,261.—BACK FOR BRUSHES, &c.—*Henry Berry*, Shelton, Conn. Application filed July 17, 1889. Serial No. 317,809. Term of patent 7 years.

19,262 and 19,263.—CURTAIN AND COVER.—*Josef Daubek*, Vienna, Austria-Hungary, assignor to *Mills & Gibb*, New York, N. Y. Applications filed July 22, 1889. Serial Nos. 318,326 and 318,327. Term of patents 3½ years.

19,264.—MEMORIAL TABLET.—*John W. Dowling*, Evanston, Ill. Application filed April 26, 1889. Serial No. 308,723. Term of patent 14 years.

19,265.—FOUNTAIN-PEN NOZZLE.—*Noyes F. Palmer*, Brooklyn, N. Y. Application filed June 26, 1889. Serial No. 315,641. Term of patent 14 years.

19,266.—ORNAMENTATION OF KNITTED SHIRTS.—*Thomas A. Pearce*, Philadelphia, Pa. Application filed July 3, 1889. Serial No. 316,443. Term of patent 7 years.

19,267.—CLOCK-CASE.—*Edward C. Stoddard*, Plymouth, Conn. Application filed July 18, 1889. Serial No. 317,947. Term of patent 7 years.

19,268.—SUSPENDER-END.—*Edward W. Whittaker*, New York, N. Y. Application filed July 1, 1889. Serial No. 316,237. Term of patent 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,910.—STOMACH REMEDY.—*Henry Asthalter*, Pittsburg, Pa. Application filed June 27, 1889. Used since October 7, 1887.

"The representation of a serpent feeding from a vessel, an open book resting upon closed volumes located at the rear of the serpent, and a lighted lamp at the rear of the open book."

16,911.—CERTAIN REMEDY FOR INDIGESTION.—*George Batten*, New York, N. Y. Application filed July 16, 1889. Used since April 12, 1889.

"The words 'HENRY'S EUPEPSIA.'"

16,912.—[Withdrawn.]

16,913.—SOAP.—*Joseph Crosfield & Sons*, Warrington, county of Lancaster, England. Application filed July 5, 1889. Used since February 1, 1889.

"The word 'PRESIDENT.'"

16,914.—VARNISHES, STAINS, JAPANS, SURFACERS, AND KINDRED GOODS.—*The Watts Le Golyer Company*, Chicago, Ill. Application filed July 5, 1889. Used since March 15, 1889.

"The word 'ROCK.'"

16,915.—COMPOSITION WATCH-CASES.—*The Dueber Watch Case Manufacturing Company*, Cincinnati and Canton, Ohio; Newport, Ky.; Chicago, Ill.; New York, N. Y.; Boston, Mass., and San Francisco, Cal. Application filed May 6, 1889. Used since April 25, 1884.

"The word 'SILVERINE.'"

16,916.—TAPE-WORM REMEDY.—*Jennie G. Egersdorff*, Kansas City, Mo. Application filed February 18, 1889. Used since July 1, 1872.

"The representation of a tape-worm and the word 'EGERSDORFF'S.'"

16,917.—MEDICAL COMPOUND FOR DESTROYING MICROBES.—*Simon E. Gillett*, San Antonio, Tex. Application filed January 19, 1889. Used since January 1, 1889.

"The words 'GILLETT'S MICROBE DESTROYER,' arranged over a cut showing a shield-shaped device having depressions at or near its top and on opposite sides thereof, within which depressions are located herbs, and within the shield-shaped device is located a man with a scythe in his hand in the act of defending himself against a several-headed serpent."

16,918.—BLACK SHOE-BUTTONS WITH METAL LOOPS OR EYES.—*Louis Joseph Emile Gourdé*, Paris, France. Application filed July 1, 1889. Used since October, 1878.

"The letters 'J. P.'"

16,919.—GOITER AND TUMOR OINTMENT.—*Henry H. Haysen*, New Holstein, Wis. Application filed May 22, 1889. Used since April 1, 1889.

"The representation of a bust picture of a woman, showing goiter, and the words 'SURE-GOITER-CURE.'"

16,920.—MEDICINAL AND TOILET CREAM.—*F. Harwood Hillard* and *Silas S. Stewart*, Verndale, Minn. Application filed May 13, 1889. Used since November 1, 1888.

"The word 'RECHERCHE' and the initial script letters 'F. H. H.'"

16,921.—STOMACH-BITTERS.—*The Hostetter Company*, Pittsburg, Pa. Application filed July 18, 1889. Used since July 4, 1850.

"The representation of St. George and the dragon and the symbol of a shield."

16,922.—MEDICINES FOR DISEASES OF THE AIR-PASSAGES OF THE HEAD, THROAT, AND LUNGS AND APPLIANCES USED IN CONNECTION WITH THE SAME.—*William J. Keefe*, Boston, Mass. Application filed June 29, 1889. Used since June 10, 1889.

"The representation of the upper portion of a man holding in close proximity to his nose a device for discharging medicated powder for the cure of disease and having on his head a crown, the whole imposed upon a shield."

16,923.—EXTRACTS FOR BEVERAGES.—*P. B. Knapp & Sons*, New York, N. Y. Application filed June 25, 1889. Used since March 1, 1889.

"The representation of a human figure clothed in the costume of the eighteenth century and presenting a glass."

16,924.—DETERGENTS OR WASHING COMPOUNDS.—*Laundrine Manufacturing Co.*, Rochester, N. Y. Application filed June 10, 1889. Used since April 15, 1889.

"The word 'LAUNDRINE.'"

16,925.—SALVE.—*George Fickett Leighton*, Waterville, Me. Application filed July 13, 1889. Used since 1881.

"The representation of a pine-tree with a moose reclining at its base and the words 'FOREST SALVE.'"

16,926.—SUGAR AND OTHER PACKED CONFECTIONERY.—*M. Lippman & Bro.*, Philadelphia, Pa. Application filed April 3, 1889. Used since December 2, 1888.

"'PISTOL,' whether expressed pictorially or in word."

16,927.—HARNESS OIL-SOAP.—*Reuben K. Miller*, Pawtucket, R. I. Application filed June 19, 1889. Used since April 6, 1887.

"The word 'CHAMPION.'"

16,928.—OLIVE-OIL AND JAPAN, BLACK, AND GREEN TEAS.—*McCulloch & Co.*, New York, N. Y. Application filed June 25, 1889. Used since February 1, 1869.

"The words 'MCCULLOCH AND COMPANY, GOLDEN SEAL, NEW YORK.'"

16,929.—PULP MADE OF PULVERIZED, POWDERED, AND PREPARED MINERALS.—*Natural Dam Pulp Company*, New York and Gouverneur, N. Y. Application filed June 22, 1889. Used since September 4, 1884.

"The words 'ASBESTINE PULP.'"

16,930.—LIQUID ANTISEPTIC PREPARATIONS.—*Marie Juliette Pinault*, Boston, Mass. Application filed July 19, 1889. Used since December, 1887.

"The word 'PINUSINE.'"

16,931.—INGRAIN CARPETS AND RUGS.—*Van Deventer & Co.*, Plainfield, N. J. Application filed April 9, 1889. Used since March, 1888.

"The word 'WESTMINSTER.'"

16,932.—ILLUMINATING-OILS.—*Roughsedge Wallwork* and *Arthur Collinge Wells*, Manchester and London, England. Application filed July 1, 1889. Used since January, 1888.

"The words 'WELLS OIL.'"

16,933.—FERMENTED MALT AND DISTILLED LIQUORS.—*Charles Watkins & Son*, Hereford, county of Hereford, England. Application filed May 25, 1888. Used since February 1, 1886.

"The word 'SUNLIGHT.'"

16,934.—LEATHER, UPHOLSTERY LEATHER, AND ARTICLES MANUFACTURED THEREFROM, SUCH AS FOOT-WEAR, HAND-BAGS, POCKET-BOOKS, AND THE LIKE.—*White Bros. & Co.*, Boston and Lowell, Mass. Application filed July 5, 1889. Used since June 1, 1882.

"The word 'OOZE.'"

16,935.—PHOSPHATED PREPARATIONS OF GELATINE.—*Charles O. Whitten*, Cambridge, Mass. Application filed July 1, 1889. Used since June 1, 1880.

"The words 'PLYMOUTH ROCK.'"

LABELS.

5,995.—Title: "CYCLE-CHAIN GRAPHITE," (FOR A LUBRICANT FOR TRICYCLE AND BICYCLE CHAINS.)—*James P. Dowse*, New York, N. Y. Application filed July 19, 1889.

5,996.—Title: "SURE CURE, (NEVER FAILS)," (FOR A MEDICINE.)—*Belle F. Hamilton*, Chicago, Ill. Application filed December 10, 1888.

5,997.—Title: "BROMO CELERY COMPOUND," (FOR A MEDICINAL PREPARATION.)—*John H. Hancock*, Baltimore, Md. Application filed June 27, 1889.

5,998.—Title: "POMEROY'S QUINTESSENCE OF CELERY."—*Henry R. Pomeroy*, Indianapolis, Ind. Application filed October 8, 1888.

PATENTS

GRANTED AUGUST 13, 1889.

408,681. SLED. SAMUEL L. ALLEN, Commissioner, N. J. Filed Feb. 14, 1889. Serial No. 300,004. (No model.)



Claim.—1. A sled having laterally-bending runners, substantially as and for the purposes described.

2. A sled having laterally-bending runners elastic in a horizontal plane, substantially as and for the purposes described.

3. In a sled, the combination, with laterally-bending runners, of standards secured to said runners, cross-benches secured to said standards, and a sled-body secured to the rearmost cross-bench, but free to slide over the forward bench, substantially as described.

4. In a sled, a laterally-bending runner-frame, in combination with a sled-body secured to said runner-frame near the rear of the same, substantially as and for the purposes described.

5. In a sled, a laterally-bending runner-frame, in combination with a sled-body secured to said runner-frame near the rear of the same, and a suitable steering device, whereby the lateral bending of the runner-frame is accomplished either by the hands or feet, substantially as described.

6. In a sled having laterally-bending runners, a steering device consisting of a connecting-bar secured to said runners, in combination with a steering-bar pivoted to the sled-body and connected with the said connecting-bar, and a foot or handle bar secured to the steering-bar, substantially as described.

7. In a sled having laterally-bending runners, a steering device consisting of a connecting-bar secured to said runners, in combination with a steering-bar pivotally secured to the sled-body and to the said connecting-bar, and a foot or handle bar, substantially as described.

8. In a sled, a laterally-bending runner-frame, in combination with a sled-body secured to said frame near the rear end of the same, a connecting-bar G, a steering-bar pivoted to the sled-body and to the connecting-bar, and a foot or handle bar R, secured to the steering-bar, substantially as described.

9. In a sled having laterally-bending runners, a steering device consisting of a connecting-bar, a steering-bar pivoted to the body of the sled and to the connecting-bar, and a foot or handle bar secured to the steering-bar, substantially as described.

10. A sled provided with a detachable oscillating seat pivoted near its center, substantially as described.

11. A sled provided with an oscillating spring-seat supported near its center on elastic sleeves K and held by regulating-bolts *k*, substantially as and for the purposes described.

12. A sled provided with one-piece runners having the bent portion *a'*, substantially as and for the purposes described.

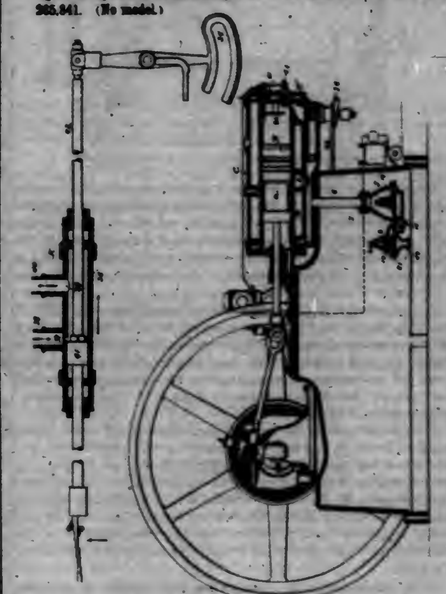
13. In a sled having a laterally-movable cross-bench, the straps *O'*, in combination with the bar O and the said cross-bench, substantially as and for the purposes described.

408,682. GRAIN-STEAMER. LEROY ATKINS, Trenton, Mo. Filed Aug. 5, 1887. Renewed Mar. 16, 1889. Serial No. 303,822. (No model.)



Claim.—In a grain-steamer, a grain-chamber open at both ends, a steam-chamber under the grain-chamber, and a horizontal foraminous partition between said chambers, in combination with a steam-supply pipe and a pipe for conducting water of condensation from the steam-chamber, both of said pipes being at one end of the steamer, and a baffle-plate in the plane of the foraminous partition and constructed to direct steam along the under side of said partition, substantially as described.

408,683. GAS-ENGINE. CYRUS W. BALDWIN, Yonkers, N. Y., assignor to William E. Hale, Chicago, Ill. Filed Mar. 1, 1888. Serial No. 265,841. (No model.)



Claim.—1. The valve-casing of a gas-engine, provided with a single valve-plate covered by two casings for the air and the air and gas mixture, with a valve upon the upper side within each casing, a casing below the said plate containing the mixing-chamber, and a port in the plate between the latter chamber and the air-chamber, substantially as set forth.

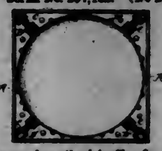
2. The combination, in a gas-engine, of a rod 42, connected with the regulating-wedge 34 and with the governor, and a valve 41, carried by said rod, and a valve-case containing said valve and provided with gas inlet and outlet ports, substantially as set forth.

3. The combination, with the cylinder and electrodes of a gas-engine having their contactings ends within the cylinder, of a rod independent of the electrodes sliding in the cylinder-head in position to contact with the piston and connected by connections outside the cylinder with the movable electrode, substantially as set forth.

4. The combination, with the cylinder of a gas-engine, of a plug extending into the explosion-chamber and carrying a yoke or bearing constituting one of the electrodes, and a rod constituting the other electrode sliding in insulated bearings in the plug, and movable connections between the rod and the piston, whereby the rod is moved by the

action of the piston in one direction, and a spring for moving the rod in the opposite direction, substantially as set forth.

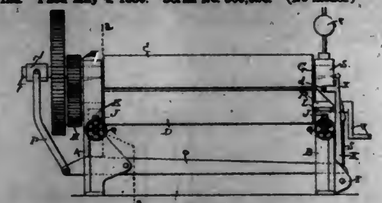
408,684. PACKING-CASE. GEORGE W. BARKER, Brooklyn, N. Y. Filed Jan. 22, 1889. Serial No. 297,182. (No model.)



Claim.—1. The above-described buffer for a packing-case, comprising, essentially, a fixed bar, a movable bar, guiding and holding devices whereby the movable bar is held in proper position and compelled to move in proper directions, and springs interposed between the two bars, substantially as set forth.

2. In combination with a case or box of angular cross-section, a plurality of spring-buffers fastened in the interior of the box and located in the corners thereof, the buffers comprising, essentially, a fixed bar, a movable bar, guiding and holding devices for the movable bar, and springs interposed between the two bars, substantially as set forth.

408,685. BENDING-ROLL. CHARLES A. BERTSCH, Cambridge City, Ind. Filed May 4, 1889. Serial No. 309,626. (No model.)



Claim.—1. In bending-rolls, the combination, substantially as set forth, of a pair of housings, top and bottom pinching-rolls journaled therein, a removable buckle-bearing at the tail end of the top pinching-roll, an outboard-bearing at the head end of the pinching-roll, and mechanism connecting said buckle-bearing and outboard-bearing in such manner that the disengagement of the buckle-bearing will cause the depression of said outboard-bearing.

2. In bending-rolls, the combination, substantially as set forth, of a pair of housings, top and bottom pinching-rolls journaled therein, a buckle-bearing engaging the tail-journal of the top pinching-roll, a vertically-movable support for the head-bearing of the bottom pinching-roll, and mechanism connecting said buckle-bearing and supported in such manner that the disengagement of the buckle-bearing will permit the descent of said support.

3. In bending-rolls, the combination, substantially as set forth, of a pair of housings, top and bottom pinching-rolls journaled therein, a buckle-bearing engaging the tail-journal of the top pinching-roll, an outboard-bearing at the head end of the top pinching-roll, a vertically-movable support for the head-bearing of the lower pinching-roll, and mechanism connecting said buckle-bearing and outboard-bearing and movably supported in such manner that the disengagement of the buckle-bearing causes the descent of said outboard-bearing and movable support.

4. In bending-rolls, the combination, substantially as set forth, of a pair of housings, top and bottom pinching-rolls journaled therein, a buckle-bearing engaging the tail-journal of the top pinching-roll, an outboard-bearing at the head of the top pinching-roll, a roll-opening lever, and mechanism connecting said lever with said outboard-bearing in such manner that the manipulation of said lever may serve in elevating and depressing said outboard-bearing.

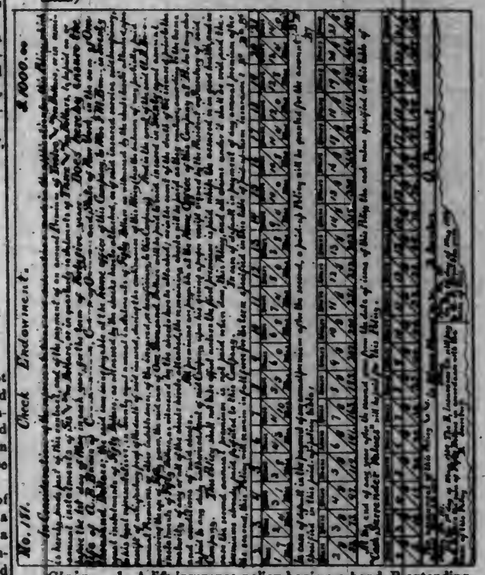
5. In bending-rolls, the combination, substantially as set forth, of a pair of housings, top and bottom pinching-rolls journaled therein, a buckle-bearing engaging the tail-journal of the top pinching-roll, a vertically-movable support for the head-bearing of the lower pinching-roll, a roll-opening lever, and mechanism connecting said lever with said movable support in such manner that the manipulation of said lever produces vertical movement of said vertical support.

6. In bending-rolls, the combination, substantially as set forth, of a pair of housings, top and bottom pinching-rolls journaled therein, a buckle-bearing engaging the tail-journal of the top pinching-roll, an outboard-bearing at the head of the top pinching-roll, a vertically-movable support for the head-bearing of the lower pinching-roll, a roll-opening lever, and mechanism connecting said lever with said outboard-bearing and said movable support in such manner that the manipulation of the lever will elevate or depress said outboard-bearing and movable support.

7. In bending-rolls, the combination, substantially as set forth, of a pair of housings, top and bottom pinching-rolls journaled therein, a vertically-moving bearing for the head-journal of one of said pinching-rolls, a buckle-bearing engaging the tail-journal of the top pinching-roll, mechanism connecting said buckle-bearing with said vertically-moving bearing in such manner that the disengagement of the buckle-bearing causes a roll-opening movement of said vertical bearing, and an adjustable counterbalance-weight on said buckle-bearing.

8. In bending-rolls, the combination, substantially as set forth, of a pair of housings, top and bottom pinching-rolls journaled therein, a crank at the tail of the lower pinching-roll, and a buckle-bearing engaging the tail-journal of the top pinching-roll and vertically slotted at said crank.

408,686. LIFE-INSURANCE POLICY. ALEXANDER R. READ, Cambridge, N. Y. Filed July 2, 1888. Serial No. 278,573. (No specimens.)



Claim.—1. A life-insurance policy having a band B extending across the face thereof, provided with a longitudinal dividing-line B', forming upper compartment B^2 and lower compartment B^3, subdivided by vertical lines B^4 into oblong compartments B^5 and square compartments B^6, substantially as described.

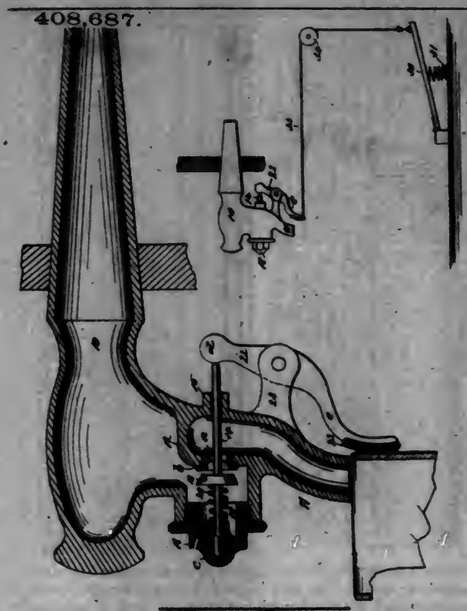
2. A life-insurance policy having a band B extending across the face thereof, provided with a longitudinal dividing-line B', forming upper compartment B^2 and lower compartment B^3, subdivided by vertical lines B^4 into oblong compartments B^5 and square compartments B^6, having diagonal lines B^7, substantially as described.

408,687. FAUCET. AL. R. BRADLY, New York, N. Y. Filed Nov. 28, 1888. Serial No. 292,051. (No model.)

Claim.—1. The combination, with the faucet-barrel 10, having a downward-extending nozzle 11, provided with a vertical partition 12, having a transverse opening *a* and a valve-seat *b* around the same, of the transverse valve-stem 14, extending through the opening *a* and through the rear wall of the nozzle, as at 15, a spring pressing the valve against its seat, a vertically-rocking lever pivoted between its ends to the rear side of the nozzle, bearing at its upper end against the exposed end of the transverse stem 15 and at its lower end extending adjacent to and below the discharge end of the nozzle, substantially as set forth.

2. A faucet consisting in the barrel 10, having a downward-projecting nozzle 11, provided with a partition 12, and horizontally-aligned openings in the partition, the front end of the barrel and rear wall of the nozzle, respectively, the valve-seat *b* around opening *a*, and the plug 18 in the latter opening and provided with a recess *c*, the valve 13 closing against the seat and having a horizontal stem 16 entering recess *c*, and a similar stem 14 extending through the other two openings, the lever 22, pivoted between its ends to the sides of the nozzle with the upper end bearing against the exposed end of the stem 15 and its lower end projecting below and adjacent to the lower end of the faucet, and a pad 23 on the lower end of the said lever, substantially as set forth.

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408,688. LOCK-CASE. CHARLES M. BURDSAL, New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company, same place. Filed Mar. 26, 1889. Serial No. 304,815. (No model.)



Claim.—A sheet-metal lock-case having the projecting wards for the key swaged or struck up integral with a lock-plate that forms the side of the lock-case, said wards being formed by projections on one side of said plate and corresponding depressions upon the other side, substantially as described, and for the purpose specified.

408,689. WHIFFLETREE-CLIP. WILLIAM W. BURSON, Chicago, Ill. Filed June 6, 1888. Serial No. 313,250. (No model.)

Claim.—1. A whiffletree-clip provided with deflecting points at its inner end, which are adapted to pass over the wood of the whiffletree until nearly "home," and then to be inclined inward and to pierce the wood, whereby it is held securely in position, substantially as set forth.

2. A whiffletree-clip provided with a clasping-finger extending outward from one end of said clip, said finger having a longitudinal extension substantially parallel with the side of said clip when cast, adapted to be bent about and to hold a draft hook or ring, in combination with a draft hook or ring, operating substantially as and for the purpose set forth.

3. The combination of a whiffletree-clip provided with the deflecting points *b* at its inner end, adapted to pierce the wood of the whiffletree, and having the hook-clasping finger B^2, with a draft-hook or ring held by said finger, substantially as specified.

4. The combination of a whiffletree-clip provided with the deflecting points *b* at its inner end, and having the hook-clasping finger B^2 and the stop-flanges B^3 B^3, with a draft hook or ring, operating substantially as and for the purpose set forth.

5. The combination of a whiffletree-clip provided at its inner end with the points *b*, and a fastening-ring held in close contact with the wood and operating to deflect the points and cause them to enter into the wood, substantially as set forth.

6. The combination of a whiffletree-clip provided at its inner end with the points *b*, and the fastening-ring B^3, operating to deflect points *b* and cause them to enter the wood as the clip is driven into place, substantially as specified.

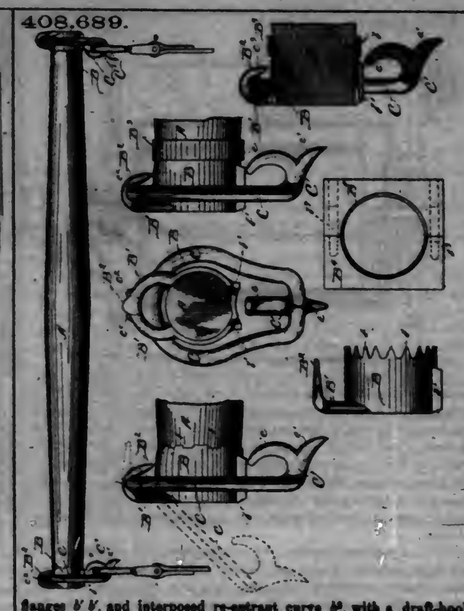
7. The combination of a whiffletree-clip provided with the clasping-finger B^2 to hold the draft hook or ring, and provided with the flanges b' b', and interposed re-entrant curve b^3, with a draft-hook having a return-point *c* operating to securely hold the tug in working position, substantially as specified.

8. The combination of a whiffletree-clip provided with the clasping-finger B^2 to hold the draft hook or ring, and a hook provided with a point *c*, extending backward toward the whiffletree, and a safety-spur *c'* extending forward, operating to hold the tug in working position, substantially as described.

9. The combination of a whiffletree-clip provided with the clasping-finger B^2, and a draft-hook C held therein, provided with the lugs c^2 c^2, operating to prevent the said hook from turning axially in said clasping-finger, substantially as specified.

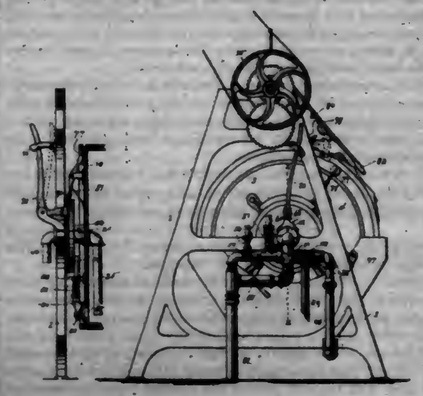
10. The combination of a whiffletree-clip provided with the deflecting points *b*, the clasping-finger B^2, and the stop-flanges B' B', with a draft-hook held by said clasping-finger and provided with the lugs c^2 c^2, the hook C, having the return-point *c*, and safety-spur *c'*, operating substantially as and for the purpose set forth.

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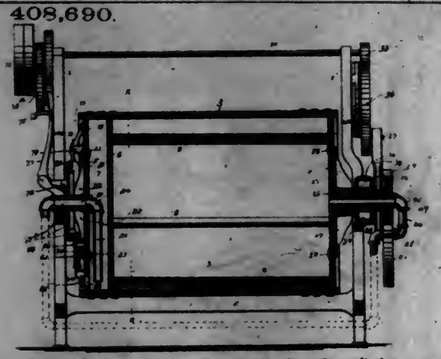


408,690. WASHING-MACHINE. CHARLES C. BURTON and DANA H. BENJAMIN, Utica, N. Y. Filed June 23, 1886. Serial No. 206,081. (No model.)

Claim.—1. In a washing-machine, the combination of a cylinder provided with bearings at each end having openings or passage-ways into the cylinder, a connecting-pipe or passage-way connecting the said openings, a chamber in a pipe connecting with said passage-way and having steam and fluid pipes entering the same, the steam-pipes projecting into the chamber at or beyond the entrance of the fluid-pipe, and valves for controlling the passage-ways.



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2. In a washing-machine, the combination of a cylinder, a perforated partition forming a chamber in one end of the cylinder, hollow bearings at each end of the cylinder, a connecting-pipe or passage-way connecting the hollow bearings outside of the cylinder, a pipe connecting one hollow bearing with the chamber in the cylinder formed by the perforated partition below the entrance, the steam and fluid pipes entering chambers connected with said passage-way, the steam-pipe extending into the chambers at or beyond the entrance of the fluid-pipes, and valves in the pipes or passage-ways for controlling the same.

3. In a washing-machine, the combination of a cylinder and a perforated partition in one end thereof, hollow bearings at each end of the cylinder, one hollow bearing having a pipe opening into the end of the cylinder provided with the perforated partition at or near the bottom of said chamber, the outer end of the other bearing being connected with the pipe or passage-way having chamber a^{27} therein, into which chamber a steam-pipe projects, said passage-way having its discharge end open below the bottom of the cylinder, the hollow bearing at the opposite end of the cylinder being connected with a fluid-supply pipe, and valves for controlling the pipes, whereby water may be passed through the cylinder of the machine and discharged by atmospheric pressure after the steam is shut off.

4. In a washing-machine, the combination of the rotating cylinder, the hollow bearings opening into the cylinder and connected at their outer ends with a passage-way for the admission of steam and water, the cylinder-head having an opening for the passage of the fluid, and an automatically opening and closing valve for relieving the steam-pressure in the cylinder while the same is in motion.

5. In a washing-machine, the combination, with a rotating cylinder provided with an opening for the reception of the clothing, of the frame surrounding the opening, the door hinged to the frame, the elastic packing in the frame, the pivoted lever on the door, and the cam and spring-catches on the frame, substantially as set forth.

6. The combination of the cylinder having an opening in one end for the passage of the fluid, the pivoted lever attached to the cylinder-head, a cam, one end of the lever carrying a stop to fit said opening and the opposite end constructed to engage said cam for automatically opening the stop, substantially as set forth.

7. In a washing-machine, the combination, with a rotating cylinder having an opening through the cylinder-head, the automatically opening and closing valve fitting said opening, the connecting-rod connecting with the valve at one end and the opposite end carrying a roller engaging the movable circle, the movable circle, and the lever for moving the circle, whereby the same may be used concentrically and eccentrically, for the purposes stated.

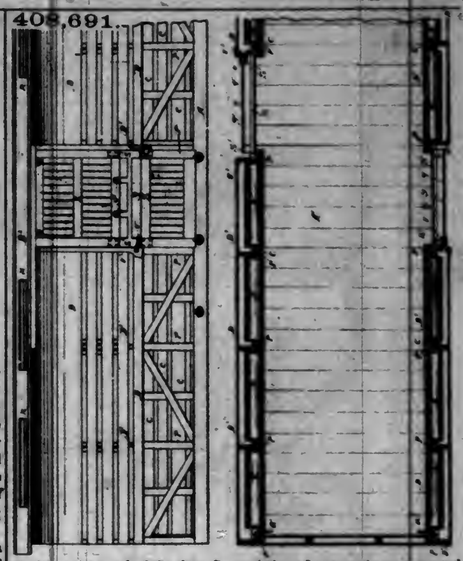
8. In a washing-machine, the combination, with an alternately-reversing cylinder, of a plate with a circular groove formed therein, a corresponding groove formed in the transmitting-wheel, anti-friction rollers fitted in the groove, the wheel-plate being attached to the frame, substantially as described.

9. In a washing-machine, the combination, with the rotating cylinder having pin 90, of the catch 87, having notch 89, and the belt-shifting lever 82, having lug 91, substantially as described.

408,691. STOCK-CAR. John M. Burton, Wichita, Kans. Filed Sept. 24, 1888. Serial No. 286,149. (No model.)

Claim.—1. The combination, in the stock-car described, provided with the side posts P, of the hoods D, having the ribs D' secured to said posts and arranged dividing the said hoods into separate sections, of the folding racks G, hinged at their lower part to the inner part of said posts, of the cranked tie-bolt V, connecting the depending corner of said hood adjacent the doorway at the side where the door slides back with the door-post, of the connected pivoted watering-troughs E, arranged between said side posts adjacent the doorways

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at either side, and of the door S, consisting of two sections connected together by means of the bent straps S', a strap either side of said cranked tie-bolt, thus forming a recess across the body of said door parallel with said troughs and adapted to slide open within said hood and pass said troughs, wherein the bent straps of said door will engage the hollow of the crank of said tie-bolt to turn said bolt and permit the door to slide its full distance either way, substantially as specified.

2. The combination, in the stock-car described, provided with the side posts P, of the hoods D, having the ribs D' secured to said posts and arranged dividing the said hoods into separate sections, of the connected pivoted troughs E, arranged between said side posts from adjacent the doorways either way, of the door S, consisting of two sections connected together by means of the bent straps S', thus forming a recess across the body of the door parallel with said troughs, and of the cranked tie-bolt V, arranged between the bent straps of said door and connecting the depending corner of said hood adjacent said door to the door-post, wherein said door is adapted to slide back within said hood and pass the extending troughs E, and its said straps engage the hollow of the crank of said bolt to turn said crank to provide a recess therein to permit said door to slide its full distance either way, substantially as specified.

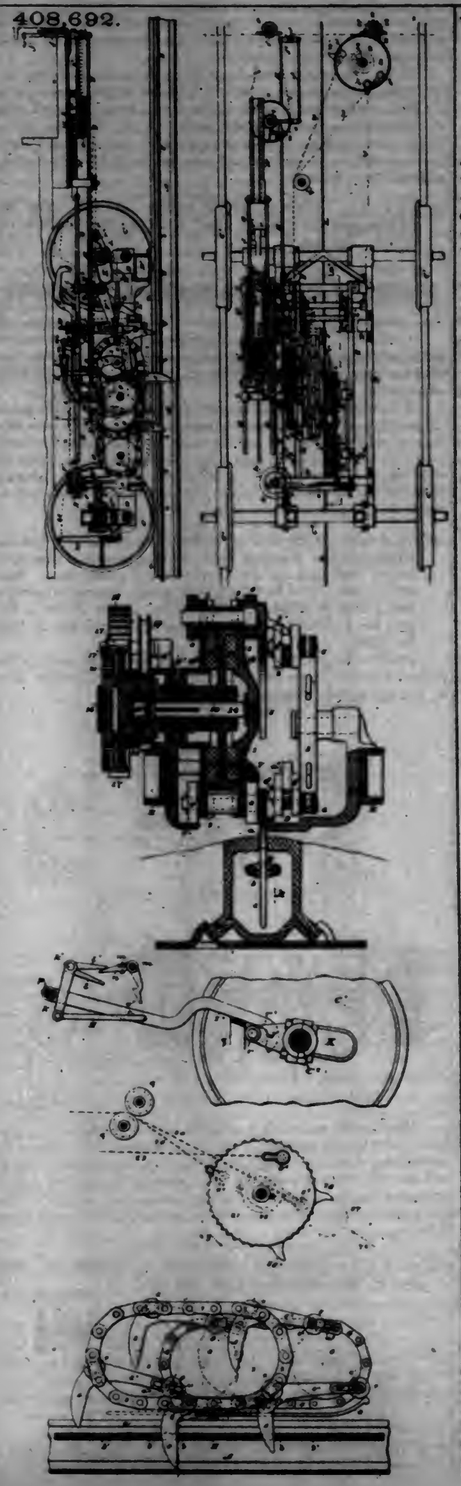
3. The combination, in the stock-car described, provided with the side posts P, of the hoods D, having the ribs D', securing them to said posts, and arranged to divide said hoods into separate sections, the end ribs thereof adjacent the doorways where the doors slide back arranged a distance from the door-posts to admit the passage of doors S within the hoods adjacent the side posts, the pivoted cranked tie-bolt V, arranged to connect the lower part of said end ribs to the door-posts, and the doors S, consisting of two sections connected together by the bulging side straps S', arranged to inclose said tie-bolts between said straps, wherein the hollow of the crank of said bolts is engaged by said door-straps to turn and reverse the crank of said bolts to permit the doors to slide their full distance either way, substantially as set forth.

4. The combination, in the stock-car described, of the side posts P, the hoods D, having the ribs D' secured to said posts adjacent the door or other side, the end ribs thereof adjacent the door on the side that the door slides, arranged at a distance from the door-post, to admit the passage of the door within the hood, and door S, consisting of the two sections connected together by means of the bulging side straps S', whereby said door is permitted to slide within said hood and pass the watering-troughs and feed-racks adjacent thereto, substantially as described.

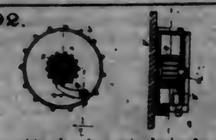
408,692. GRIP AND APPLIANCE FOR CABLE-ROAD CARS. Andrew Campbell, Brooklyn, N. Y. Filed Feb. 18, 1888. Renewed June 21, 1889. Serial No. 315,049. (No model.)

Claim.—1. A grip for a cable-road car, comprising two endless chains and their sprocket-wheels, and L-shaped teeth to engage the cable, said teeth being pivotally mounted in the main endless chain, with their tails pivotally connected to the auxiliary endless chain, substantially as set forth.

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2. The combination, in a grip device for a cable-road car, of two endless chains, as 2 and 4, arranged side by side, two pairs of sprocket-wheels on which said chains are mounted, L-shaped teeth, as 5, pivotally mounted in the chain 2, and having slotted tails $5^{\times}$, pivotally connected to the chain 4, friction-rollers, as 6 and 8, mounted in said chains, respectively, at the points where the teeth are pivoted, and the tracks on which said rollers run, substantially as set forth.

3. A brake for a grip for a cable-road car, consisting of brake-disks 13 and $13^{\times}$ and their brake-blocks, said blocks being arranged on opposite sides of the web of the grip-wheel, a screw 15, connected rigidly to one of said disks, a nut $15^{\times}$, connected rigidly to the other of said disks, and a nut 16, screw-threaded externally and internally and intermeshing with the screw 15 internally and the nut $15^{\times}$ externally, whereby rotation of said nut serves to operate both brake-disks simultaneously, as set forth.

4. The combination, with a sprocket-wheel 1 of a grip device, of the brake-disk 13, furnished with a block 12, a stem 14, and a male screw 15, said stem extending through the tubular journal of the wheel 1, the brake-disk $13^{\times}$, furnished with a block $12^{\times}$, stems $14^{\times}$, and a nut or female screw $15^{\times}$, a nut 16, furnished with a male screw which engages nut $15^{\times}$ and a female screw which engages screw 15, and an operating-wheel 17, secured to said nut 16 concentrically, substantially as set forth.

5. The combination, with the grip-carrying frame E, its supporting-chains and their sheaves, of the carriage G, a hooked draw-bar, as I, pivoted therein, a supporting-hook which holds up said draw-bar, a trip, as l, for releasing said hook, an operating-rod H, a crank-arm k, connecting said rod H with said trip, the car-axle, the crank J thereon provided with a crank-pin r, and the cam on the axle for raising said draw-bar, substantially as set forth.

6. The combination, with the rod H, the crank-arm k, to which it is coupled, the rock-shaft k', and the toes l $l^{\times}$, forming trips, of the carriage G, the hooked draw-bars I $I^{\times}$, of unequal length, mounted in said carriage, the elbow-levers n $n^{\times}$, mounted on said carriage and having pendent hooks which engage pins o $o^{\times}$, respectively, in said draw-bars, the axle of the car and the crank J thereon, provided with two crank-pins r $r^{\times}$, arranged at different distances from the axle, substantially as and for the purposes set forth.

7. The combination, with the frame D, carried by the car-axles, and the grip-carrying frame E, suspended in said frame D, of the rock-shaft F in frame D, provided with arms F', and the links F^3, connecting said arms with the frame E, substantially as and for the purposes set forth.

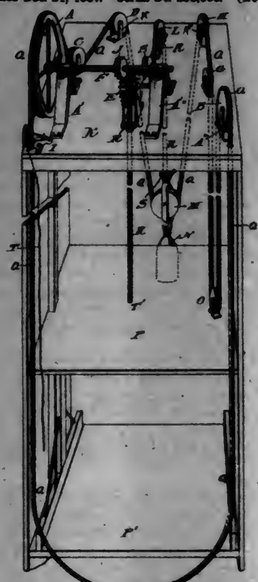
8. The combination, with the frame D and the grip-carrying frame E suspended therein, of the rock-shaft L, provided with an arm $L^{\times}$, that takes over some part of frame E normally, a weighted arm L' and an operating-arm L^2, having a pin or bowl s, of the pendent bar M, having two cams on its lower end, adapted to act on said pin or bowl, whereby the shaft L is rocked by the swinging of said bar M, as set forth.

9. The combination, with the grip-carrying frame, its supporting and elevating chains and sheaves, and the carriage G, of the rack N coupled to said carriage, the pinion t, engaging said rack, the dog or pawl w, engaging said pinion, said dog being provided with a tail $w^{\times}$, the lever x, the upright shaft j, the cross-head j^3 on said shaft, the connecting-rod x', which couples one end of said cross-head to said lever x, the wheel O, mounted loosely on the same axis with pinion t, the pawl y, carried by said wheel and engaging said pinion, the upright shaft P, its pinion $z^{\times}$, and the chain or belt connecting wheel O with pinion $z^{\times}$, substantially as set forth.

10. The brake-applying device for the grip-brake, comprising the upright operating-shaft 26, a pinion carried thereby intermeshing with a spur-wheel, the said spur-wheel, and the brake-chain 20, its ends connected to studs in the face of the said wheel at opposite sides of its center, whereby the said chain is slackened on one side to the same extent that it is taken up on the other, and whereby the braking-leverage is increased, as set forth.

11. The brake-applying device comprising the combination of the spur-wheels 21 and $21^{\times}$, connected together by a spring 25 and provided, respectively, with stops 28 and $28^{\times}$, the car-brake chain 23, connected with wheel 21, the grip-brake chain 20, connected at its ends with wheel $21^{\times}$, the nut 31, the operating-shaft 26, provided with a screw 30 in said nut and a short spline, and the pinions 27 and $27^{\times}$ on said shaft, meshing, respectively, with said wheels 21 and $21^{\times}$ and provided with spline-grooves and spiral spline-recesses, whereby both brakes may be operated successively from the same shaft.

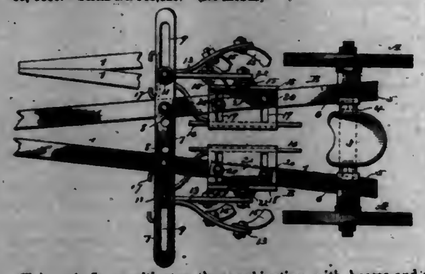
408,693. HAND-ELEVATOR. GEORGE W. CARSON, Poughkeepsie, N. Y. Filed Dec. 21, 1887. Serial No. 258,606. (No model.)



Claim.—1. The combination of an elevator-car with a hoist-wheel A, axle F, cog-wheels J and E, and groove-wheel *e*, counterpoise-weight N, brake I, pulleys M, L, B, C, D, H, G, and S, hoist-rope R, and power-rope Q, as shown and described.

2. The combination of the elevator-car with the hoist-wheel A, axle F, cog-wheels J and E, wheel *e*, counterpoise-weight N, pulleys M, L, B, C, D, H, G, and S, the hoist-rope R, and endless power-rope Q, as shown and described.

408,694. CULTIVATOR. JOHN CLARK, Imogene, Iowa. Filed Mar. 19, 1889. Serial No. 303,825. (No model.)



Claim.—1. In a cultivator, the combination, with beams and a cross-bar secured thereto, of teeth or blade supports adjustable laterally toward and away from the beams, and levers also adjustable toward and away from the beams for elevating the teeth or blade supports.

2. In a cultivator, the combination, with beams, a cross-bar adjustably secured thereto, and teeth-supports adjustably connected to said cross-bar, of plates adjustably secured to the beams, and levers pivoted to said plates and connected to the teeth-supports, substantially as set forth.

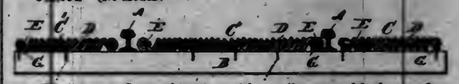
3. The combination, with a beam, of a cross-bar thereon, teeth-carrying arms and guards adjustably connected to the cross-bar, and levers for raising and lowering the teeth-carrying arms, substantially as set forth.

4. The combination, with the beams and a cross-bar secured thereto, of knuckles adjustably secured to the latter, pendent arms pivoted to the knuckles, forked arms connected with the pendent arms, teeth adjustably secured to the forked arms, and means for raising and lowering the arms, substantially as set forth.

5. The combination, with beams and a cross-bar secured thereto, of knuckles adjustably secured to the cross-bar, pendent arms pivoted to the knuckles, means for applying the draft thereto, and shields extending from the knuckles and teeth-carrying arms from the pendent arms, substantially as set forth.

6. The combination, with a pair of beams and cross-bar, the latter having elongated slots therein, of knuckles adjustably secured in the slots, arms pivoted to the knuckles, forked arms connected with the pivoted arms, teeth adjustably secured to the branches of the forked arms, segments adapted to be shifted on the beams, and latch-levers pivoted on the segments and connected with the forked arms, substantially as set forth.

408,695. SURFACE CATTLE-GUARD. EDWIN M. CLARK and CHARLEMAGNE CLARK, Detroit, Mich. Filed May 29, 1889. Serial No. 312,664. (No model.)



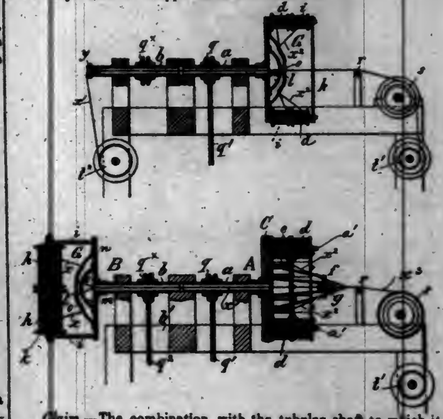
Claim.—1. In combination with a railway road-bed, a surface cattle-guard secured thereto and constructed of sections of wire web-bing having an upward presentation of loops or bends, substantially as described.

2. In combination with a railway road-bed, a surface cattle-guard secured thereto and constructed in sections, consisting of a wire web-bing of interlocking spirals and the frame, substantially as described.

3. In a surface cattle-guard, the combination of the following elements: a rectangular frame, a web of interlocking wire coils connected at the sides and ends to the rectangular frame, and spools or blocks G, substantially as described.

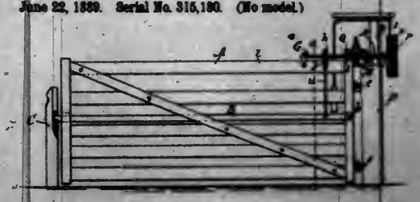
408,696. MACHINE FOR TWISTING AND COVERING CORDS, &c. WILHELM CLOSER, Mannheim, Baden, Germany, assignor to Hugo Levi, Leopold Oestreicher, and Daniel Oestreicher, all of same place. Filed Jan. 16, 1889. Serial No. 296,500. (No model.) Patented in Germany Sept. 3, 1888, No. 47,228; in France Nov. 30, 1888, No. 194,454; in Belgium Dec. 14, 1888, No. 84,292, and in Austria-Hungary Mar. 21, 1889, No. 62,525.

Brief.—The object of the invention is to improve the construction of the flier which carries the strands to be twisted to form the core, or, it may be, to be wrapped around a core.



Claim.—The combination, with the tubular shaft to which it is fixed, of the flier G, consisting of the bar *n*, furnished with a socket at its middle to receive said shaft, the arms *i i* on the respective ends of said bar, the removable spool-carrying stretcher *k*, mounted in said arms, and the two arched tension-bars mounted on the face of the bar *n* and provided with holes *o* for the passage of the strands, as set forth.

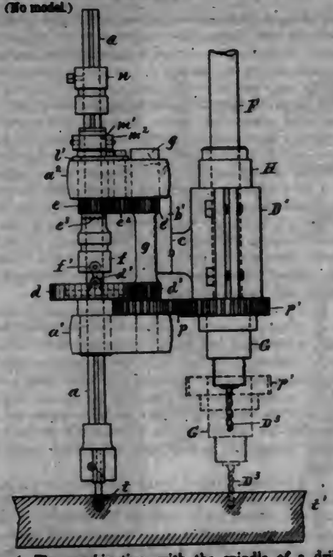
408,697. ROAD-GATE. THOMAS DOUP, Jr., Columbus, Ind. Filed June 22, 1889. Serial No. 315,180. (No model.)



Claim.—1. The combination, with the post D and the gate hinged thereto and having a latch-bar, of the shaft G, mounted in bearings on the gate, segment-wheel *h*, having arms *k* and *j*, and secured to said shaft, cord *u*, connecting the arms to the latch-bar, shaft N, mounted in bearings on the post and having pulley *p* secured thereto, a cord attached to the periphery of the pulley, and intermediate connecting mechanism connecting shafts N and G, whereby the latch-bar is raised by the rotation of the shafts, substantially as specified.

2. The combination of the gate-post, the gate hinged thereto and having the latch-bar, the shaft mounted in bearings on the gate and carrying the pinion, and the segment-wheel having a pair of arms which embrace loosely the top edge of the gate, the cord connecting said arms with the latch-bar, the horizontal shaft mounted in bearings on the post and carrying the gear-wheel and the pulley, the cords attached to the periphery of the pulley, the vertical shaft mounted on the post, and the crown-wheel mounted on the vertical shaft and arranged to engage the gear-wheel and the pinion, all combined and arranged to co-operate as specified, whereby the latch is first raised and the gate then swung on its hinges, as set forth.

408,698. TAPPING ATTACHMENT FOR DRILLING-MACHINES. ULRICH ERSENHARDT, Newark, N. J. Filed Feb. 16, 1889. Serial No. 300,154. (No model.)



Claim.—1. The combination, with the spindle of a drilling-machine and the gearing for rotating the same, of a tap-spindle mounted in a head sustained adjacent to the drill-spindle, gearing for driving such tap-spindle in opposite directions, and gearing connected with the same and with the gearing of the drill-spindle, and a movable table for applying the work in succession to the drill and tap, substantially as herein set forth.

2. The combination, with the spindle of a drilling-machine and the gearing for rotating the same, of a tap-spindle mounted in a head sustained adjacent to the drill-spindle, gearing for driving such tap-spindle in opposite directions, and gearing connected detachably with the same and with the gearing of the drill-spindle, and a movable table for applying the work in succession to the drill and tap, substantially as herein set forth.

3. The combination, with a column-drill, of a table, a table-arm supporting the same and movable around the column, a drill-spindle and tap-spindle sustained by the column of the drill, gearing for driving the drill-spindle to drill holes, gearing for driving the tap-spindle in opposite directions, and gearing connected with the same and with the gearing of the drill-spindle, substantially as herein set forth.

4. The combination, with the spindle of a drilling-machine and the gearing for rotating the same, of a tap-spindle, a head affixed to the lower drill-spindle bracket, gearing to reverse the tap-spindle, a toothed coupling-wheel inserted in such gearing adjacent to the lower side of the drill-spindle bracket, and a cog-wheel fixed upon the drill-spindle and movable therewith to mesh at pleasure with the coupling-wheel, as and for the purpose set forth.

5. The combination, with a column-drill having a table and a table-arm movable around the column and having a drill-spindle bracket adapted to sustain the drill concentric with the table, of a tap-spindle head sustained adjacent to the drill-spindle and adapted to sustain the tap-spindle concentric with the table when the latter is moved around the column, and gearing for reversing the drill-spindle, as and for the purpose set forth.

6. The combination, with a tap-spindle and suitable bearings for sustaining the same, of two gear-wheels fitted loosely upon the spindle and rotated in opposite directions, a clutch-block feathered upon the spindle and movable between the gear-wheels, teeth upon the clutch-block and upon one of the gear-wheels for driving the spindle in one direction, and rollers affixed to the clutch-block and the other gear-wheel and moved into contact with one another past their respective centers for driving the spindle in the opposite direction, substantially as herein set forth.

7. The combination, with a tap-spindle and suitable bearings for sustaining the same, of two gear-wheels fitted loosely upon the spindle and rotated in opposite directions, a clutch-block feathered upon the spindle and movable between the gear-wheels, teeth upon the clutch-block and upon one of the gear-wheels for driving the spindle in one direction, rollers affixed to the clutch-block and the other gear-wheel and adapted to engage past their respective centers for driving the spindle in the opposite direction, a lever having a fixed fulcrum and pivoted at one side of the fulcrum to the clutch-block and provided at the other side of the fulcrum with a sloping face, a spring-dog adapted to press the lever laterally when engaged with such face, and a handle applied to the lever for shifting the clutch-block toward either of the gear-wheels, substantially as herein set forth.

8. The combination, with a tap-spindle and suitable bearings for sustaining the same, of two gear-wheels fitted loosely upon the spindle and rotated in opposite directions, a clutch-block feathered upon the spindle and movable between the gear-wheels, teeth upon the clutch-block and upon one of the gear-wheels for driving the spindle in one direction, rollers affixed to the clutch-block and the other gear-wheel and adapted to engage past their respective centers for driving the spindle in the opposite direction, a lever having a fixed fulcrum and pivoted at one side of the fulcrum to the clutch-block and provided with a handle, the link *m*, pivoted to the lever at the opposite side of the fulcrum, the depth-collar *m'*, the arm m^2, pivoted to the link and actuated by such collar, and the collar *n*, fixed upon the spindle above the depth-collar *m'* and adapted when moved downward into contact with the latter to raise the clutch-block into contact with the reversing gear-wheel, substantially as herein set forth.

9. The combination, with a tap-spindle and suitable bearings for sustaining the same, of two gear-wheels fitted loosely upon the spindle and rotated in opposite directions, a clutch-block feathered upon the spindle and movable upon the gear-wheels, teeth upon the clutch-block and upon one of the gear-wheels for driving the spindle in one direction, rollers affixed to the clutch-box and the other gear-wheel and adapted to engage past their respective centers for driving the spindle in the opposite direction, a lever having a fixed fulcrum and pivoted at one side of the fulcrum to the clutch-block and provided with a handle, the link *m*, pivoted to the lever at the opposite side of the fulcrum, the collar *m'*, the arm m^2, pivoted to the link and actuated by such collar, the collar *n*, fixed upon the spindle, the tap-lever *n'*, actuated by such fixed collar, the weight n^2, for moving the lever to normally raise the spindle, and the handle n^3, for pressing the spindle downward, as and for the purpose set forth.

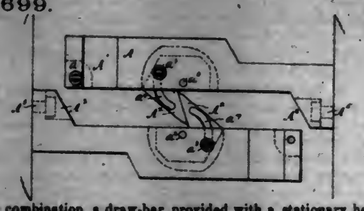
10. The combination, with the spindle of a drilling-machine and the gearing for rotating the same, of a tap-spindle mounted in a movable frame adjacent to the drill-spindle, and gearing for driving such tap-spindle in opposite directions, connected with the gearing of the drill-spindle, the movable frame being adapted by its movement to detach the gearing of the tap-spindle from the gearing of the drill-spindle, as and for the purpose set forth.

11. The combination, with a tap-spindle and suitable bearings for sustaining the same, of two gear-wheels fitted loosely upon the spindle and rotated in opposite directions, a clutch-block feathered upon the spindle and movable between the gear-wheels and adapted to engage with either of such gear-wheels, a depth-collar fitted loosely to the tap-spindle above its bearings and connected by a link and suitable levers with the clutch-block to raise the same by the depression of the depth-collar, an adjustable collar fixed upon the tap-spindle to press upon the depth-collar, and a scale upon the tap-spindle for setting the adjustable collar, as and for the purpose set forth.

408,699. CAR-COUPLING. JOHN V. D. ELSAMSER, Detroit, Mich., assignor of one-half to Curtis B. Eldridge, same place. Filed May 27, 1889. Serial No. 312,271. (No model.)

Claim.—1. A draw-bar provided with a head having an upward projection and adapted to come to a bearing against the sill of an adjacent car and having a pivoted hook projecting from its side at a point some distance back of the head adapted to engage a corresponding hook on a similar bar, substantially as described.

408,699.

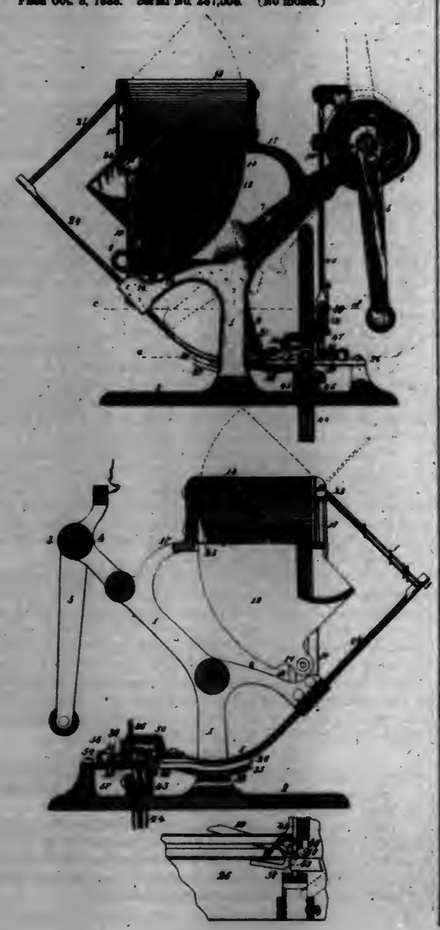


2. In combination, a draw-bar provided with a stationary head adapted to engage an ordinary link-and-pin coupler, said bar having at a distance back of the stationary head a pivoted hook housed in and projecting from its side, a locking-pin to lock said hook, and means for readily disengaging the pin to uncouple the cars, substantially as described.

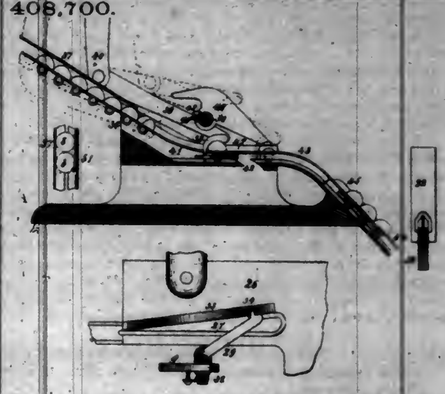
3. The combination, with the draw-bar having a head adapted to engage a link-and-pin coupler, of the coupling-hook housed in and projecting from the side of the draw-bar and having a groove in its upper side, and a locking-pin adapted to ride in said groove when the hook is released and to limit its movement, substantially as described.

4. In combination, a draw-bar having a stationary head at its forward end projected upward to bear against the sill of an adjacent car, a pivoted hook projecting from its side at a distance back from this head, and a sidewise projection at the rear end of the bar adapted to engage a center draft-rod, substantially as described.

408,700. BUTTON-MACHINE. WILLIAM R. ELLIOTT, Marion, Iowa. Filed Oct. 8, 1888. Serial No. 287,558. (No model.)



408,700.



Claim.—1. In a button-machine of the class specified, the combination of the tilting blade thickened on the side from which the fasteners escape for the purpose of righting them, and having a recess therein to receive the upper end of an abutting raceway, and a raceway the upper end of which extends practically to the adjacent end of the blade in its vertical movement and enters the recess therein when tilted, substantially as and for the purpose set forth.

2. In a button-machine of the class specified, the combination of the hopper 13, blade 12, and gate 22, having an aperture therein for the escape of fasteners, substantially as and for the purpose set forth.

3. In a button-machine of the class specified, the combination of the fastener-chute 24, having a slot in its under side to receive the push-pin of a feed-finger the table 26, having slot 27 and cam 33, and the reciprocating feed-finger 29, having push-pin 28, and the lug 34, whereby the fastener is fed through the shank of a button and turned partly around and the feed-finger returned to its normal position in a different path, substantially as set forth.

4. In a button-machine of the class specified, the combination of a chute adapted to convey fasteners to a position for insertion in the shanks of buttons, a feed-finger, substantially as described, adapted to engage a fastener and feed it to said position, a table upon which said fasteners rest and fed forward, said table being provided with a shoulder to engage one of the tangs of the fastener, and a slot for the push-pin of the feed curved at the terminus nearest the said point of insertion of the fastener in the button-shank, whereby the fastener is thrust through the button-shank and turned partially around, as specified.

5. In a button-machine of the class specified, the doubly-jointed feed-finger 29, provided with springs 31 and 32, in combination with the table 26, having slot 27 and cam 33, substantially as described.

6. In a button-machine of the class specified, the combination of a chute adapted to convey buttons to a position for inserting fasteners in their shanks, a button-holder connected with a reciprocating arm and adapted to cut out and carry forward a single button from a row in said chute and hold the same in position while the fastener is inserted in its shank, and a cam adapted to tilt and allow the holder to pass under it in pushing the connected button and fasteners from the machine and to carry said holder over it in returning for a new button, substantially as described.

7. In a machine of the class specified, the combination of a button-chute in which buttons are conveyed to a point for insertion of fasteners, a feed-finger having a button-holder thereon connected with a reciprocating arm, a detent adapted to serve as a stop for the shank of the button in its forward movement, and a supplemental finger connected with said reciprocating arm adapted to push said detent forward in advance of the button after the fastener is connected therewith, substantially as set forth.

8. In a machine of the class specified, the combination of a reciprocating arm, a button-feed finger having a slotted connection therewith, whereby said finger is adapted to yield somewhat according to the size of the button, and a spring adapted to press the button-holder of said feed upon the button, substantially as and for the purpose set forth.

9. In a button-machine of the class specified, the combination, with feed mechanism, substantially as described, of a button-chute having a lateral spring near its lower end to retain the lower button, said chute being open on its upper side from a point slightly above said lower button to its lower end to admit the button-holder of said feed, substantially as set forth.

10. In a button-machine of the class specified, the combination, with the table 26, having the groove 41, of a button-holder 38, having a narrow portion entering and adapted to drag said slot to clear the same, substantially as described.

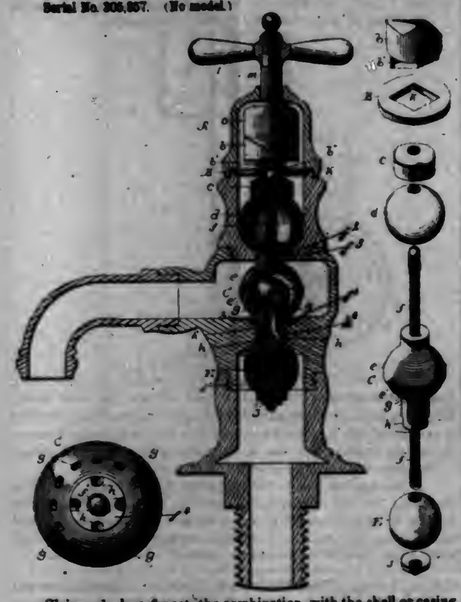
11. In a button-machine of the class specified, the combination of the slotted feed-finger 30, spring 52, detent 53, finger 56, and spring 54, substantially as and for the purpose set forth.

12. In a button-machine of the class specified, the combination, with actuating mechanism, substantially as described, of the fastener-catching blade 12, bell-crank lever 8 9, and finger 20, doubly jointed thereto, substantially as and for the purpose set forth.

13. In a button-machine of the class specified, the combination, with feed mechanism, substantially as described, of the oscillating arm 7, eccentric 6, mounted on shaft 4, oscillating arm 40, having traveler 59, and cam 60, mounted on said shaft, all substantially as and for the purpose set forth.

14. In a button-machine of the class specified, the combination, with a hopper for fasteners, substantially as described, of a fastener-catching blade adapted to move vertically for a limited distance in said hopper and then tilt to discharge the fasteners from one end thereof, the discharge end of said blade being extended at an angle to the vertical corresponding to the angle of tilt, whereby the opening in the end of the hopper is kept closed when said blade is tilted, as described.

408,701. SELF-ACTING FAUCET. PIERCE R. EVERETT, Kansas City, Mo., assignor to Charles Doherty, same place. Filed Apr. 3, 1889. Serial No. 305,857. (No model.)



Claim.—1. In a faucet, the combination, with the shell or casing, of a stem and valve operating therein, the lower cam *b*, having the rectangular lug *b'* upon its under side, and detachably connected to the upper end of the stem, the guiding-partition B, removably clamped in position and having a rectangular opening K, in which the rectangular lug operates, and a handle and connections, substantially as set forth.

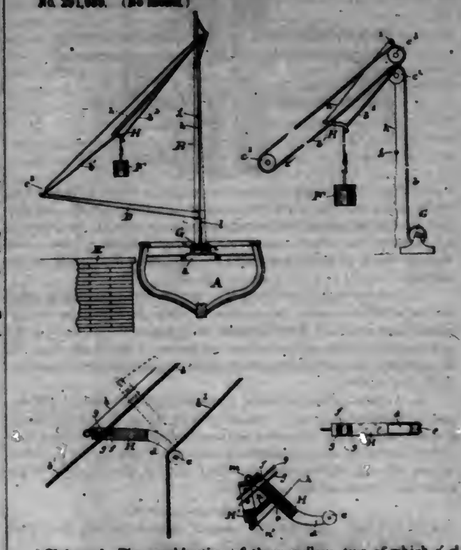
2. In a faucet, the combined valve and stem formed of two hollow hemispheres connected together, and each having a stem section or extension in combination with a shell, handle, and connections, substantially as set forth.

3. In a faucet, the combined valve and stem consisting of two hollow hemispheres or sections connected together, and each having a stem section or extension, one valve section or hemisphere having an enlargement provided with a central passage connecting with the chamber of the valve and branching out through said enlargement into lateral passages, in combination with a shell, handle, and connections, substantially as set forth.

4. In a faucet, the hollow apertured upper valve having an enlargement at one side provided with a central passage branching into lateral passages through the corner edges of said enlargement, a stem-extension projecting from said enlargement, the lower valve E, fitted upon said stem-extension, in combination with a shell, handle, and connections, substantially as shown and described.

5. In a faucet, the hollow valve and the solid elastic ball or cushion D, loosely arranged within said hollow valve, in combination with a shell, handle, and connections, substantially as set forth.

408,702. APPARATUS FOR LOADING OR UNLOADING VESSELS. JOHN D. FISHER, Baltimore, Md. Filed Nov. 23, 1888. Serial No. 291,699. (No model.)

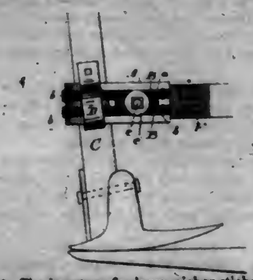


Claim.—1. The combination of three pulleys, two of which c' c^2 are near together and the other c^3 at a lateral point therefrom, one winch, rope arranged over said pulleys to form a lateral carrier-stretch b', and a lift-stretch b^3, a clutch coacting with said two stretches of rope, and a cord A, attached to the clutch for actuating it, as set forth.

2. The combination of three pulleys, two of which c' c^2 are near together, and the other c^3 at a lateral point therefrom, one winch, a rope passing from the winch to the first pulley c', then laterally to the second pulley c^2, thereby forming a carrier-stretch b', thence to the third pulley c^3, and then down to form a lift-stretch b^3, and a clutch coacting with said carrier-stretch and lift-stretch, for the purpose set forth.

3. The combination of a rope lift-stretch b^3, a carrier-stretch, both of said stretches passing over pulleys, a rope-clutch having a body provided with a slot through which the lift-stretch passes freely, and having two pivoted clutch-plates *g*, between which the carrier-stretch b' passes, and a cord *h*, attached to the said clutch for actuating it, as set forth.

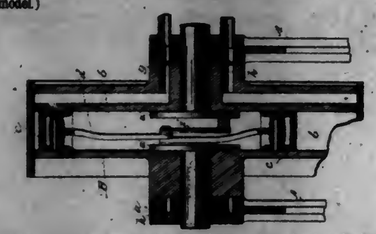
408,703. LUG-STRAP FOR LOOM PICKER-STICKS. CHARLES C. FOLLETT, Waterville, Me. Filed Jan. 26, 1889. Serial No. 297,943. (No model.)



Claim.—1. The lug-strap for loom picker-sticks, consisting of a metal bar bent or folded to form a loop, combined with a leather or other elastic lining for said strap extending from end to end thereof, substantially as shown.

2. The lug-strap for loom picker-sticks, consisting of a pair of metal bars bent or folded on their centers and embracing a single inner strap or lining of elastic material having longitudinal slots in its ends, said metal strap being secured to said inner strap, one at each side of said longitudinal slots, substantially as shown.

408,704. STEAM-ENGINE. ALFRED J. FOULDS and HENRY A. FOULDS, Philadelphia, Pa. Filed Oct. 8, 1888. Serial No. 287,501. (No model.)

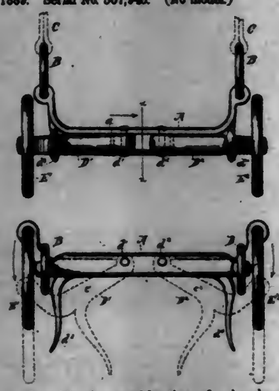


Claim.—1. A steam-engine consisting of a wheel, cylinders carried thereby extending inwardly eccentrically, pistons in the said cylinders, rods having pivoted connections with the pistons, and a stationary shaft for the ends of each pair of rods of opposite cylinders, said rods having a pivoted connection at each end, substantially as described.

2. A steam-engine consisting of a wheel, cylinders carried thereby, pistons within the same, two stationary shafts having a supporting-plate i between them, the said shafts being placed eccentrically to the center of the wheel, and rods from the pistons to the shafts, the rods of oppositely-placed cylinders being pivoted on the same shaft, substantially as described.

3. A steam-engine consisting of a wheel, cylinders carried thereby, pistons within the same, a stationary shaft for each pair of pistons, piston-rods pivotally connected between the stationary shafts and their pistons, and induction and eduction ports at one side for the cylinders of one pair and like ports on the other side for the cylinders of the other pair, substantially as described.

408,705. BRIDLE-BIT. AMOS F. GERALD, Fairfield, Me. Filed Apr. 20, 1889. Serial No. 307,945. (No model.)



Claim.—1. In a bit, the combination of a bar having a trough-shaped middle portion, and the upwardly-turned ends provided with rings, and two other bars having their ends fitted in said trough-shaped portion and pivotally secured in place, substantially as specified.

2. In a bit, the combination of a bar, two other bars pivotally connected at the inner end thereto, provided with rearward projections between their inner and outer ends, and having their outer ends forwardly curved, substantially as specified.

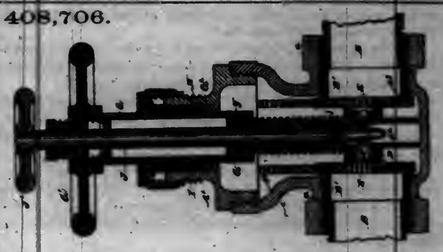
3. In a bit, the combination of a bar A, having a trough-shaped middle portion, and the bars D' D^2, pivotally connected within the trough-shaped middle portion of the bar A, provided with projections d^3 d^4, and having their outer ends forwardly curved, substantially as specified.

408,706. STOP-VALVE. RICHARD S. GILLESPIE, Hamilton, Bermuda. Filed Apr. 29, 1889. Serial No. 309,034. (No model.)

Claim.—1. In a valve, the casing A, carriage D, and disks E, carried by the carriage, but free to move apart and together, in combination with each other and with the separately-operated screw J, provided with a tapering portion J^3, arranged to force the disks apart or to relax such force, all substantially as herein specified.

2. In a valve having a carriage D, with disks E, carried thereby, but capable of movement apart and together, and also of revolving on their axes, the tapering rod J, screw-threaded at *j*, and means J'

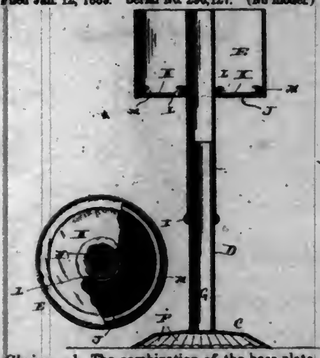
408,706.



for turning it at will, in combination with each other and with the racks A^3, arranged to revolve the disks as they are raised and lowered, all substantially as herein specified.

3. In a valve having a carriage D, with disks E, carried thereby, and means, as the screw-threaded tapering rod J J^2 *j* and hand-wheel J', for forcing the disks apart and relaxing the force at will, the bushings B', of yielding and incorrodible material, arranged to serve the double function of seats for the disks and of an incorrodible connection between the casing A and the pipes B, as herein specified.

408,707. COFFEE-POT. HANSON GOODRICH, McLeansborough, Ill. Filed Jan. 12, 1889. Serial No. 296,127. (No model.)

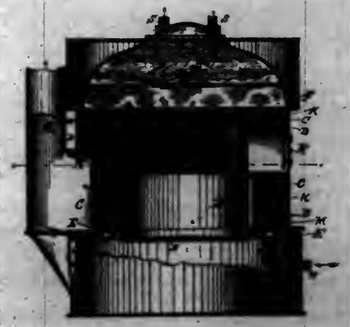


Claim.—1. The combination of the base-plate, the tube rising from the base-plate and composed of two sections, the lower section being secured to the base-plate and the upper section fitting over the lower section, the spring-collar mounted on the lower section and supporting the upper section, and the cup secured upon the upper section of the tube and having a perforated bottom, as set forth.

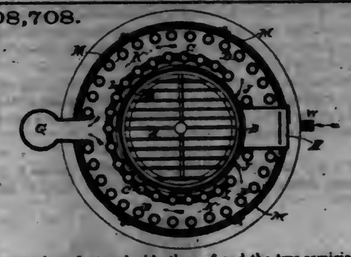
2. The combination of the base-plate, the telescopic tube rising therefrom, the cup secured to the said tube and having a perforated bottom, the straining-cloth covering the said perforated bottom, and the clamping-rings binding the edges of the said cloth around the tube and against the sides of the cup, as specified.

408,708. STEAM-GENERATOR. EDWARD F. GORDON and HORATIO HOBBS, Concord, N. H.; Armenia W. Hobbs administratrix of said Horatio Hobbs, deceased. Filed Nov. 24, 1886. Serial No. 219,735. (No model.)

Claim.—1. In a steam-generator, the water-ring E and water and steam space F, united by the two series of vertical water-pipes C D surrounding the fire-pot, in combination with the lateral feed-door



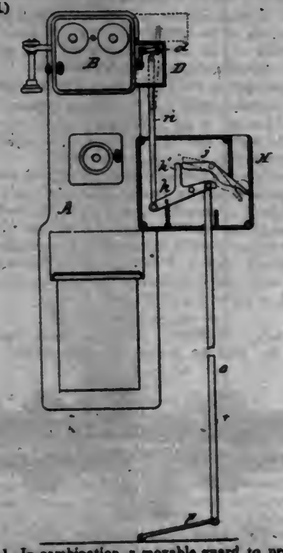
408,708.



H, the openings J at each side thereof, and the two semicircular flues K, leading thence to the funnel G, substantially as set forth.

2. In a steam-generator, the water-ring E and water and steam space F, connected by the two series of vertical water-pipes C D, and having a suitable feed-opening, in combination with the fire-pot surrounded by said pipes, with flue-opening J and funnel G on opposite sides of the fire-pot, and with semicircular flues K K connecting them, substantially as set forth.

408,709. COIN-CONTROLLED APPARATUS FOR TELEPHONES. WILLIAM GRAY, Hartford, Conn. Filed Aug. 13, 1888. Serial No. 282,676. (No model.)



Claim.—1. In combination, a movable guard to prevent access to the crank or button of the telephone, a tilting lever having an arm, a rod connecting the lever and guard, a coin-controlled lever arranged to engage the arm of the tilting lever and to project into the coin-channel, an inclosing-box having a coin-channel, and a rod to operate the tilting lever, substantially as described, and for the purpose specified.

2. The combination of the hinged cover D, the rod *n*, the coin-box H, having fulcrumed therein the tilting lever A, having projection *k'* and the coin-controlled lever *j*, and the rod *e*, having a treadle *p*, substantially as described.

408,710. METHOD OF ORNAMENTING OPEN-MESH WOVEN MATERIAL WITH PLASTICS. JOHN H. HARDING, New York, N. Y. Filed Mar. 10, 1888. Serial No. 266,916. (No specimens.)



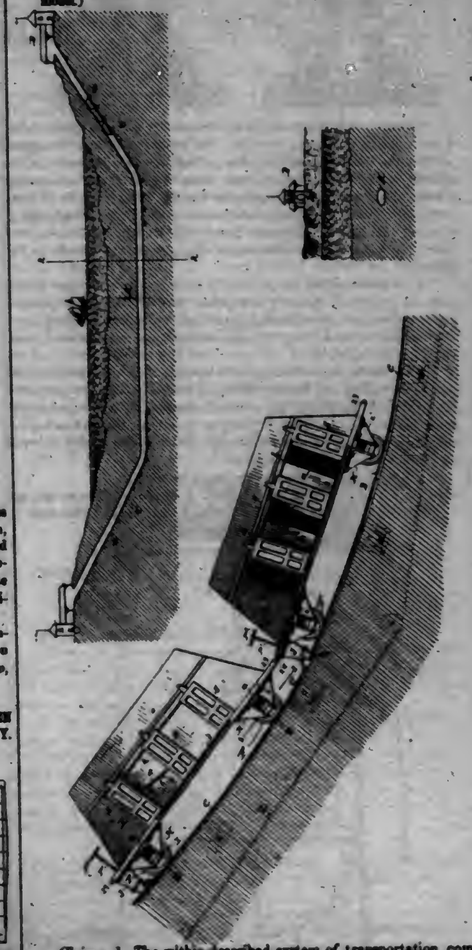
Claim.—1. The method of ornamenting coarse or fine open-meshed material, the same consisting in placing beneath the open-meshed material absorbent paper or like absorbent material, and pouring over the open-meshed material a semi-liquid plastic in any desired form, which adheres to the open-meshed material and absorbent paper beneath, substantially as set forth.

2. The method of ornamenting coarse or fine meshed material, the same consisting in placing beneath the open-meshed material absorbent paper or other absorbent material, and pouring over the open-meshed material a semi-liquid plastic in any desired form, which adheres to the open-meshed material and absorbent paper beneath, and then finishing the same in bronze while the plastic is soft, then removing the absorbing material, and leaving the ornamentation upon the open-meshed fabric, substantially as set forth.

3. The method of ornamenting coarse or fine open-mesh material, the same consisting in placing woven-wire fabric or like material upon absorbent paper or similar absorbent material, and then placing over the wire fabric or other open-mesh material a stencil pattern or design of desired form, and pouring over and through the same a semi-liquid plastic which fastens itself into and around the meshes of the wire fabric or other open-woven material, substantially as set forth.

4. The method of ornamenting coarse or fine open-mesh material, the same consisting in applying thereto a semi-liquid plastic material and bronzing the same while the plastic is soft and adhesive, substantially as set forth.

408,711. SYSTEM OF TRANSPORTATION. BENJAMIN S. HEMMING, New York, N. Y., assignor to the Hemming Gravity Tunnel Company, of West Virginia. Filed May 1, 1888. Serial No. 272,496. (No model.)

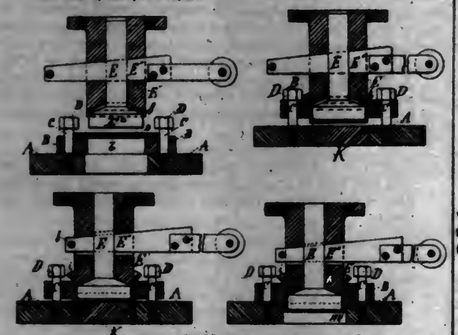


Claim.—1. The within-described system of transportation, comprising a single track inclined at both ends from an intermediate lower

portion, two traveling cables moving upwardly in opposite directions, each at one of the inclined ends of the track, and cars provided with cable-grips constructed to pass each cable without engaging when the car is moving downward on either incline and to automatically engage the cable when the car is moving upward on either incline, substantially as described.

2. The combination, with the track inclined at the ends and with the cables moving in opposite directions, of cars provided with grips, each constructed to grip automatically one only of the said cables, substantially as described.

408,712. PAPER-BOX-MAKING MACHINE. HERMANN HENSCHEL, Luckenwalde, Prussia, Germany. Filed Aug. 8, 1887. Serial No. 246,471. (Model.) Patented in Germany Jan. 27, 1887, No. 40,405, and in England Oct. 4, 1887, No. 13,416.

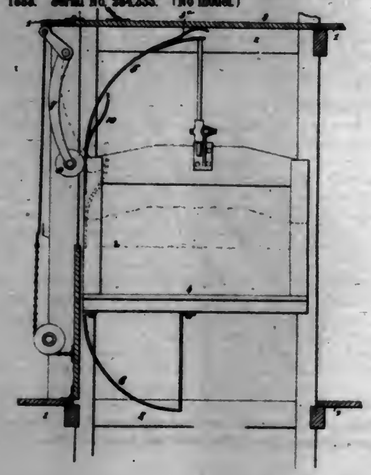


Claim.—1. In combination, the female die having a plain cylindrical opening extending through it to a point at or near its upper surface, the cutting-plunger E', having cutting-edges to pass into the opening in said die and cut a blank from the body of the material when it reaches said upper surface of the die, and a male die E^2, carried by the plunger projecting at all times beyond the cutting-edge *f*, whereby the body of the material will first be pressed to form the box by the male die and then cut by the edge *f*, substantially as described.

2. In combination, the female die B, the cutting-plunger E, the male die projecting normally beyond the cutting-edge of said plunger and arranged movably in said plunger, the said female die being movable, means for controlling the male die, and an anvil or plate K, substantially as described.

3. In combination, the female die having an opening therethrough, means for cutting and forming the blank and for forcing the same partially through the female die, so that its lower edge will project therefrom, and the anvil or plate K, adapted in size to afford a bearing for the projecting edge of the box, the said female die and anvil K being movable, substantially as described.

408,713. HATCHWAY. EMILE J. HERMAN, St. Louis, Mo., assignor to the Safety Hatch Door Company, same place. Filed Sept. 1, 1888. Serial No. 284,333. (No model.)



Claim.—1. The combination, with a series of tooth-bars, of distance-pieces separating the said bars and a continuous wire rope at the front and rear of the narrow passing through and fitting closely in holes in each of the tooth-bars and having its ends rigidly secured to the end bars of the series, substantially as and for the purpose set forth.

2. In a narrow, the combination, with a series of tooth-bars, of castings secured in the said bars and provided with a socket at each end, the distance-pieces having their ends inserted loosely in the said sockets and keeping the bars apart, and a continuous wire rope at the front and rear of the narrow passing through holes in each of the tooth-bars and having its ends rigidly secured to the end bars of the series, substantially as and for the purpose set forth.

408,718. VELOCIPEDE-SADDLE. THOMAS B. JEFFERY, Chicago, Ill. Filed Dec. 4, 1886. Serial No. 220,686. (No model.)



Claim.—1. In combination with the perch, an elastically-tensile seat and its support at one end secured to the perch, the spring-support at the other end pivoted to the perch at a point below the seat and between the vertical planes of its ends, and a stop to limit the motion of said support toward the other end, substantially as set forth.

2. In combination with the perch, an elastically-tensile seat and its spring-support at one end secured to the perch and yielding longitudinally with respect to the seat, the spring-support at the other end pivoted to the perch at a point below the seat and between the vertical planes of its ends, and a stop to limit the motion of said support toward the other end, substantially as set forth.

3. In combination with the perch, the clip pivoted thereto and having sockets d^3, and the spring bowed and secured above to the seat and having its ends secured by being inserted in said sockets, said clip being provided with the extension d^{30}, which projects forward of its pivot and is stopped against the perch, substantially as set forth.

4. In combination with the perch, the seat and its support at one end secured to the perch, the support at the other end also secured to the perch and adapted to oscillate in a vertical plane, and the yielding stop secured to the perch and extended above said oscillating seat-support to limit yieldingly its upward movement, substantially as set forth.

5. In combination with the perch, the seat and its support at one end secured to the perch, its support at the other end pivoted to the perch at one end and at the other end secured to the seat and adapted to oscillate vertically, and the yielding stop secured to the perch and extended above said oscillating support to limit yieldingly the upward movement, substantially as set forth.

6. In combination with the perch, the seat and its support at one end secured to the perch, the support at the other end also secured at one end to the perch and at the other end to the seat and adapted to oscillate vertically, and a yielding stop secured to the perch and located below said oscillating support to limit yieldingly its downward movement, substantially as set forth.

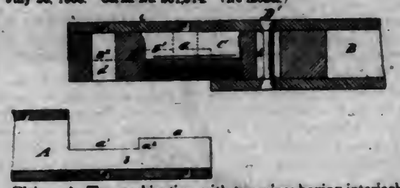
7. In combination with the perch, the seat and its support at one end secured to the perch, its support at the other end also secured at one end to the perch and at the other end to the seat and yielding intermediately, and a stop to limit the downward movement of said support, substantially as set forth.

8. In combination with the perch and the seat, the spring comprising the spiral coil C, the wire running from one end of it being stopped on the seat and that running from the other end being stopped on the perch, and the entire spring being secured to the perch on a pivot passing through the spiral coil, substantially as set forth.

9. In combination with the perch and the seat, the spring comprising the two spiral coils C C, stopped above against the seat and connected below by the yoke C^3, which constitutes a means of stopping the lower ends on the perch, substantially as set forth.

10. In combination with the perch and the seat, the spring comprising the spiral coils C C, formed of one piece of wire and joined by the loop C' and having said loop connected to the seat, and the yoke C^3, connecting the ends of the wire of which the coils are formed and serving to stop the spring on the perch, said spring being secured to the perch on a pivot through the coils, substantially as set forth.

408,719. PIPE-JOINT. HENRY JOHNSON, Jersey City, N. J. Filed July 23, 1888. Serial No. 281,314. (No model.)



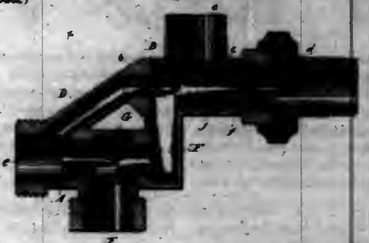
Claim.—1. The combination, with two pipes having interlocking end portions, of a plug arranged within the pipes and extending across said interlocking end portions, and rivets or bolts extending through the pipes and the plug, substantially as herein described.

2. The combination, with two pipes having interlocking end portions, of a plug arranged within said pipes and extending across said interlocking end portions, said plug being provided with transversely-extending apertures, and rivets or bolts extending through said pipes and the apertures in the plug, said apertures being larger than the exterior of the rivets or bolts, substantially as and for the purpose herein described.

408,720. METHOD OF ROLLING AXLES. JOHN B. JOHNS, Philadelphia, Pa. Filed Apr. 10, 1889. Serial No. 306,947. (No model.)

Claim.—1. The herein-described method of making axles, which consists in first passing a bar of metal between a pair of rolls provided with grooves constructed to form a tapering passage; secondly, giving said bar a partial rotation, and, thirdly, again passing it between the rolls, in the manner and for the purpose specified.

408,714. INJECTOR FOR STEAM-BOILERS. LOVREN R. HOGUE, Greenville, Mercer County, Pa. Filed Mar. 15, 1889. Serial No. 303,490. (Model.)



Claim.—1. In an injector, the combination, with the shell formed with two barrels, of the inclined tube D, the chamber F, connecting the two barrels, and the nozzle *b* and valve J upon opposite sides of the overflow, substantially as shown and described.

2. In an injector, the combination, with the shell formed with two barrels and the inclined tube D, arranged as shown, of the forcing-tubes H and I in one of said barrels, the nozzle *b* in the other, and the valve *f* in the barrel with said nozzle upon the opposite side of the overflow, substantially as shown and described.

3. In an injector, the combination of the shell formed with two barrels, the tubes H and I, the nozzle *b*, the seats *c* and *e*, and the valve J, having valve *f*, substantially as shown and described.

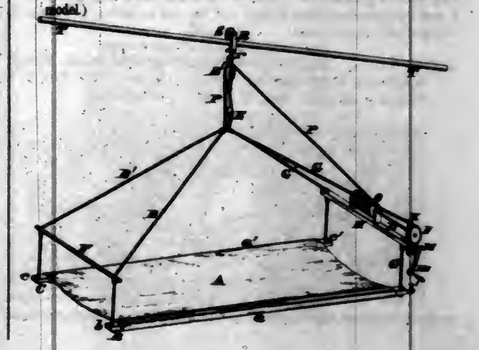
4. In an injector, the combination of the shell formed with two barrels, the inclined tube D, the chamber F, connecting said barrels, the tubes H and I in one of said barrels, the nozzle *b* in the other barrel, the seats *c* and *e*, the valve J, and the valve *f* on said valve J, substantially as shown and described.

408,715. INJECTOR. LOVREN R. HOGUE, Greenville, Mercer County, Pa. Filed Mar. 15, 1889. Serial No. 303,491. (No model.)



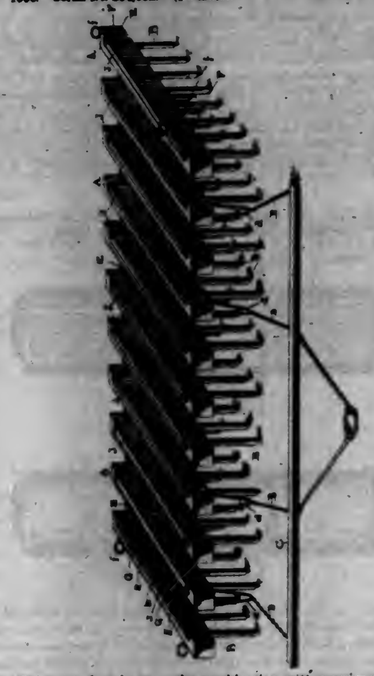
Claim.—In an injector, the combination, with the shell A, formed with the seat *h*, of the nozzle *c*, the tube F, extended through said nozzle and having tapered end, as shown, with a passage *i* around the tube at the end of the nozzle *c*, the tube H, having its inner end embracing the tapered end of the tube F and guided by the walls forming said seat *h*, and the valve on the other end of the tube H and bearing on said seat, substantially as shown and described.

408,716. INVALID ELEVATOR AND CONVEYER. TYREE L. HOLTON, Maysville, Ky. Filed Apr. 22, 1889. Serial No. 308,073. (No model.)



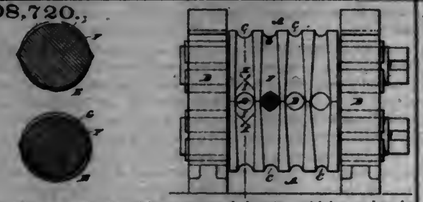
Claim.—The combination, in an invalid elevator and conveyer, of the flexible sling A, slotted side rails B *b* B' C *c*, suspenders D D' G G', engaged with the slots of said rails and attached to a common elevated support, as the sheave E, a spreader H, carried by the suspenders G G' and having a drum O, a hoisting-rope P, coiled around said drum, an upper sheave E', through which said rope is passed before being attached to said common support, a traveler R, that carries said upper sheave E', and an elevated track T, upon which said traveler runs, as herein described.

408,717. HARROW. MARSHALL E. HOWE, Davenport, Iowa, assignor of one-half to HIRAM P. Goodwin, same place. Filed Aug. 26, 1888. Serial No. 284,002. (No model.)



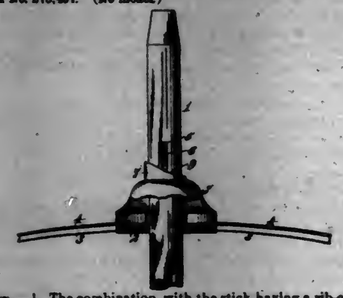
Claim.—1. In a harrow, the combination, with a series of tooth-bars, of distance-pieces separating the said bars and a continuous wire rope at the front and rear of the harrow passing through and fitting closely in holes in each of the tooth-bars and having its ends rigidly secured to the end bars of the series, substantially as and for the purpose set forth.

408,720.



2. The method of making taper-rolled axles, which consists in first passing a bar of metal into tapering passages; secondly, giving the bar a partial rotation; thirdly, reversing the rolls in the opposite direction, and, fourthly, passing the bar into or through the rolls, in the manner and for the purpose substantially as described.

408,721. UMBRELLA OR PARASOL. HERMANN A. L. C. KAHLE and FREDERICK W. KIRCHHOFF, New Orleans, La. Filed May 29, 1888. Serial No. 275,467. (No model.)



Claim.—1. The combination, with the stick having a rib-carrying disk and a vertically-sliding sleeve for binding the cover in place, of a laterally-projecting spring-pin connected with the stick and springing into engagement with the sleeve when the latter is moved down upon the cover, substantially as described.

2. An umbrella or parasol consisting of a stick having a stationary rib-carrying disk, a vertically-sliding sleeve mounted on the stick above said disk to clamp the cover thereupon, tips stitched to the cover and detachably engaging the ribs, and a spring secured to the stick and provided with a laterally-projecting pin which springs into engagement with the sleeve when the latter is moved down upon the cover, substantially as described.

3. An umbrella or parasol consisting of a stick having a rib-carrying disk and provided with a spring having a lateral pin, a rotating and vertically-sliding sleeve having an inclined upper end and a collar at its lower end, the cover and tips stitched to the cover and detachably engaging the ribs, substantially as described.

408,722. JOINT FOR UMBRELLA RIBS AND STRETCHERS. HOWARD R. KEMP, Gloucester City, N. J., and HERBERT E. MARSDEN, Philadelphia, Pa., assignors of one-third to Charles T. Schoen, Philadelphia, Pa. Filed Feb. 19, 1888. Serial No. 300,413. (No model.)

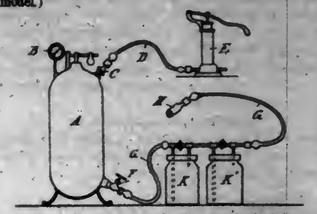


Claim.—1. A joint for connecting the ribs and stretchers of umbrellas and the like, constructed of sheet metal bent to conform to the shape and size of the inside of the rib and arranged within the trough of the rib, and having outwardly-projecting ears for connection of the stretcher, substantially as described.

2. A joint for connecting the ribs and stretchers of umbrellas and the like, constructed with a trough-like body b', arranged wholly within the trough of the rib and secured by coincident indentations in its sides and the sides of the rib, and having the upwardly and outwardly projecting ears b^2, substantially as described.

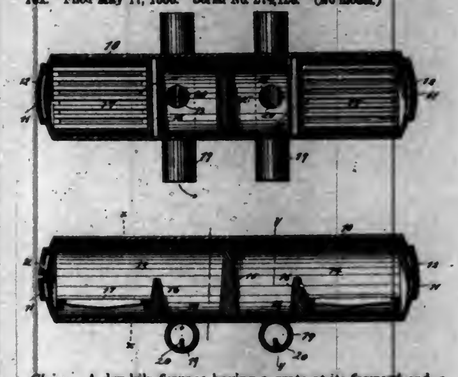
3. The combination, with the rib and stretcher of an umbrella-frame, of a joint having a trough-like body b', of sheet metal, arranged wholly within the trough of the rib and secured by coincident indentations, and having ears b^2 projecting upwardly and outwardly from opposite edges of the body to receive the stretcher and its connecting device, substantially as described.

408,728. PROCESS OF ADMINISTERING AERIFORM FLUIDS. JOHN C. KENNEDY, Detroit, Mich. Filed Dec. 13, 1888. Serial No. 292,443. (No model.)



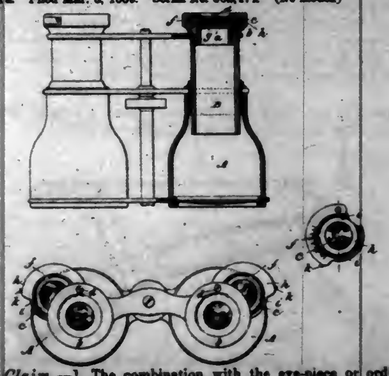
Claim.—As an improvement in the art of administering aeriform fluids for the treatment of pulmonary disease and diseases of the air-passages, the herein-described method, which consists in first compressing the air or gas in a suitable receiver to a tension sufficiently great to forcibly fill and expand the air-cells of the lungs by its own elasticity, and then forming a communication with the lungs through the mouth or nose by suitable tubing in such manner as to allow of the escape of the surplus gas from the mouth, substantially as described.

408,724. DRY-KILN FURNACE. WILLIAM KETCHAM, Gladewater, Tex. Filed May 17, 1888. Serial No. 274,128. (No model.)



Claim.—A dry-kiln furnace having a grate at its forward end, a bridge-wall extending upwardly from the lower side at the rear end of the grate, a smoke-outlet in the bottom between the rear end and bridge, and a transverse flue under the furnace, open at each end and dividing the draft at the smoke-outlet, said flue communicating with the interior of the drying-chamber, and having a vertical baffle-plate under the smoke-outlet extending longitudinally along its bottom in each direction from said outlet, arresting the rotary motion of the products of combustion, substantially as set forth.

408,725. ASTIGMATIC EYE-PIECE FOR OPTICAL INSTRUMENTS. JOSEPH KORNBLUH, JOHN A. BRASHEAR, and PARK PAINTER, Allegheny, Pa. Filed Mar. 8, 1889. Serial No. 302,474. (No model.)



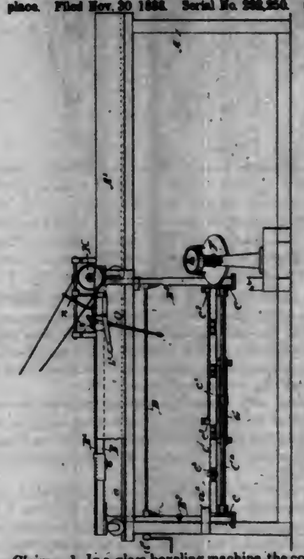
Claim.—1. The combination, with the eye-piece or ordinary primary lens of optical instruments—such as telescopes, opera-glasses, &c.—of a semi-cylindrical secondary lens capable of rotation on its axis within the secondary-lens holder, substantially as and for the purposes described.

2. The combination, with the eye-piece or ordinary primary lens of a telescope, opera-glass, or similar optical instrument, of a secondary lens or eyeglass, of semi-cylindrical shape, set in a frame or secondary-lens holder so as to be rotatable on its axis therein, such secondary-lens holder being pivoted to the instrument to permit of the secondary lens being turned in or out of the line of vision, substantially as described.

3. In a binocular telescope, lorgnette, or opera-glass, the combination, with the ordinary object-glass and eyeglass at each end of the instrument, of a semi-cylindrical lens set near to and substantially parallel with the eyeglass and set in a circular frame capable of rotation on its axis in an annular frame or auxiliary-lens holder, which is pivoted to the frame of the instrument so as to be readily turned into or out of the line of vision of the instrument, as and for the purposes described.

4. In combination with the eye and object glasses of a telescope or similar optical instrument and the frame carrying the same, an annular lens-holder for carrying a secondary astigmatic lens, within which frame said lens is capable of being turned on its axis, and a graduated scale for indicating the angle of astigmatism when the primary and secondary lenses are adjusted in use, substantially as described.

408,726. GLASS-BEVELING MACHINE. ALCIDE LAPERLE, Montreal, Quebec, Canada, assignor of one-half to A. Ramsay & Son, same place. Filed Nov. 20, 1888. Serial No. 292,250. (No model.)



Claim.—1. In a glass-beveling machine, the combination of frame-work supporting tracks, a movable carriage adapted to travel along same, hangers suspended from such carriage, a table carried in such hangers, on which glass plates are placed, a grinding-disk in stationary bearings, driving mechanism and automatic reversing mechanism controlling same for giving said carriage reciprocal motion, whereby the glass plates are subjected to the action of such disk.

2. In a glass-beveling machine, the combination of frame-work supporting tracks, a movable carriage adapted to travel along same, hangers suspended from such carriage, a table supporting the glass plates carried axially in such hangers and being capable of adjustment at various angles, screws for securing such adjustment, a grinding-disk in stationary bearings, and driving mechanism and automatic reversing mechanism controlling same for giving the aforesaid carriage reciprocal motion, whereby the glass plates are subjected to abrasion from the under surface of said disk.

3. In a glass-beveling machine, the combination, with a frame-work supporting tracks, a movable carriage traveling on same, and hangers suspended from said carriage, a shaft carried in movable blocks capable of adjustment in said hangers, and screw mechanism for obtaining such adjustment, of a table for supporting the glass plates mounted eccentrically on such shaft, and an adjustable counterpoise adapted to counterbalance the preponderance of table on one side of its axis and secure the pressure of the glass plates against the face of the grinding-disk.

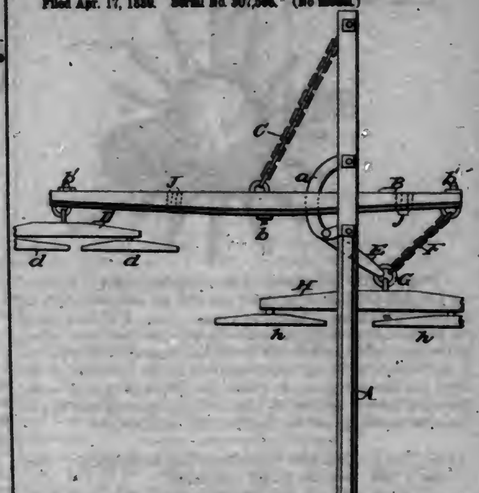
4. In a glass-beveling machine, the combination of a frame A, tracks a a, carriage B, hangers B^2, and blocks c c, working in same, screws for adjusting said blocks, shaft C, carried by said blocks, table C, mounted on such shaft, driving mechanism and automatic reversing mechanism for controlling same for imparting to said carriage reciprocal motion, and means for governing such reciprocal motion, all substantially as herein shown and described.

5. In a glass-beveling machine, the combination, with carriage B, driving mechanism and automatic reversing mechanism controlling same for imparting to such carriage reciprocal motion, and hand-lever for governing such motion, of cut-off mechanism, substantially as shown and described, consisting of dog M, lever O, and pin O' on same.

6. In a glass-beveling machine, a grinding-disk with grinding-face on its under side, a rotary shaft and bearings carrying such shaft at an angle both to the longitudinal and transverse axes of the machine, the grinding-face on the under side of such disk being beveled to compensate for the inclination of the shaft out of the transverse vertical axis.

7. In a glass-beveling machine, the combination, with the rotating shaft c, mounted in bearings, of recessed shield H cast on it, as and for the purpose described.

408,727. DRAFT-EQUALIZER. WILLIAM LEWIS, Sauk Centre, Minn. Filed Apr. 17, 1888. Serial No. 307,866. (No model.)



Claim.—1. The combination of a tongue, a draft-bar connected to the tongue by a chain or link which receives the pull, the said bar being of unequal lengths on the opposite side of the tongue, a chain attached to the rear end of the said bar and to the tongue and having single and double trees attached thereto, and single and double trees on the far end of the bar, as and for the purposes described.

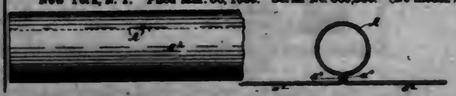
2. In a draft-equalizer, the combination, with a tongue, of a bracket on the bottom thereof, a draft-bar passing between them, a draft-chain connecting the said bar to the tongue, a chain and plate, one end of which is attached to one end of the bar and the other to the tongue, and traction devices attached to the said chain and plate and to the other end of the bar, as and for the purposes described.

408,728. TUBING. ALEXANDER H. LIBOUT, Waterbury, Conn., assignor to Holmes, Booth & Haydens, New York, N. Y. Filed Dec. 24, 1888. Serial No. 294,474. (No model.)



Claim.—Tubing having two ducts, one within the other, and made from one sheet or strip of metal, substantially as specified.

408,729. PROCESS OF MAKING DUPLEX TUBING. ALEXANDER H. LIBOUT, Waterbury, Conn., assignor to Holmes, Booth & Haydens, New York, N. Y. Filed Mar. 30, 1889. Serial No. 305,280. (No model.)



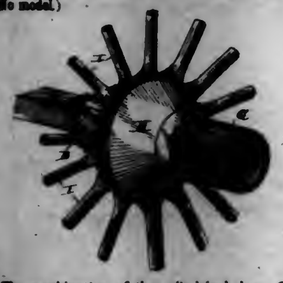
Claim.—1. The process of making duplex tubing, consisting in taking a strip of metal, bending it at about midway between the side edges, and also bending it at two points intermediate of the middle portion of the side edges back upon itself, substantially as specified.

2. The process of making duplex tubing, consisting in taking a strip of metal, bending it at the middle longitudinal portion into the form of a semicircle, with tangential portions extending from said semicircle, then bending the tangential portions into a continuation of the curve of the semicircle, so as to complete the circle, and subsequently bending the edge portions of the strip back to form a larger circle surrounding the circle or duct first completed, substantially as specified.

3. The process of making tubing, consisting in forming two ducts, one within the other, the outer being extended from and formed around the inner, substantially as specified.

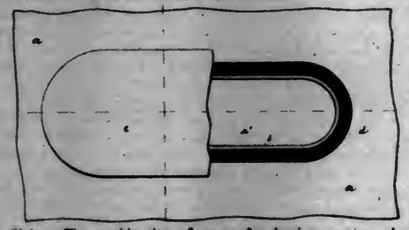
4. The process of making tubing, consisting in forming two ducts, the inner being made by bending the middle portion of a sheet or strip of metal into form, and the outer being made by bending the side portions of the metal outwardly in opposite directions around the inner duct until the edges meet, substantially as specified.

408,730. VEHICLE-HUB. JOHN M. LINGLE, Sedalia, Mo., assignor of one-half to P. F. Brashear, same place. Filed May 17, 1889. Serial No. 311,122. (No model.)



Claim.—The combination of the cylindrical sleeve C, fitted on the axle and provided at its inner end with an annular plain-faced flange D, the said flange having an annular groove E at the angle of the flange and the sleeve, the spokes having their inner ends resting on the sleeve and provided with lateral lips engaging the said groove E, the smooth-faced ring loosely mounted on the outer end of the sleeve and bearing against the spokes, and the collar secured on the sleeve and bearing against the ring, so as to cause the said ring to clamp the spokes against the annular flange, as specified.

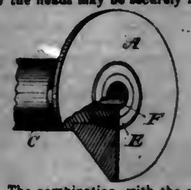
408,731. CAR-ROOF. JOHN MARTHALER, Jersey City, N. J. Filed Jan. 4, 1889. Serial No. 295,426. (No model.)



Claim.—The combination of car-roof *a*, having openings *a'* and flanges *b*, with the dome *c* and with the hinged bars *e*, having bent ends *e' e²*, and with the hinged link *f*, staple *g*, and pin *h*, substantially as specified

408,732. SPOOL. HERVEY D. MELENDY, Nashua, N. H. Filed June 13, 1888. Serial No. 277,002. (No model.)

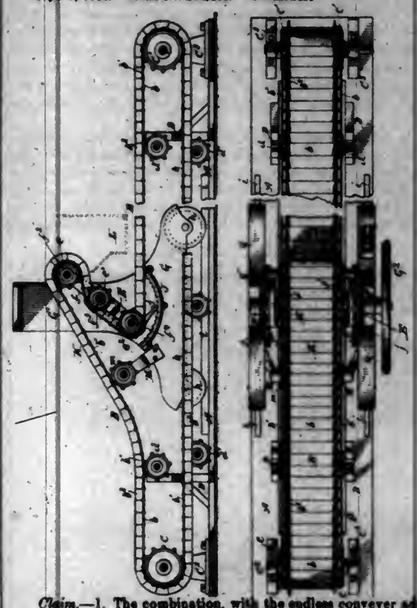
Brief.—The invention consists in the improved construction of spools, whereby the heads may be securely fastened to the body.



Claim.—1. The combination, with the cylinder having an annular groove in its end, of the head having a tapering hole therethrough, and the annular wedge entering the groove in the cylinder end and expanding the cylinder end to fill the hole in the head, substantially as described.

2. The combination of the head A, having the tapering hole B, the cylinder C, having the annular groove D, and the annular wedge E, substantially as and for purposes described.

408,733. CONVEYER. FREDERICK H. C. MEY, Buffalo, N. Y. Filed Sept. 3, 1888. Serial No. 284,460. (No model.)



Claim.—1. The combination, with the endless conveyer adapted to run around guide or sprocket wheels mounted in stationary supports, of a carriage, an elevated tightener-frame pivoted at or near its center to said carriage, and guide or sprocket wheels journaled at opposite ends of said tightener-frame, around which the upper portion of the endless conveyer runs, substantially as set forth.

2. The combination, with the endless conveyer adapted to run around guide or sprocket wheels mounted in stationary supports, of a carriage G, a swinging tightener-frame E, mounted on said carriage, and guide or sprocket wheels *c c' c²*, arranged in said tightener-frame, substantially as set forth.

3. The combination, with the endless conveyer adapted to run around guide or sprocket wheels mounted in stationary supports, of a carriage, an elevated tightener-frame pivoted at or near its center to said carriage, guide or sprocket wheels journaled at opposite ends of said tightener-frame, around which the upper portion of the endless conveyer runs, and means whereby said tightener-frame is held in position after being adjusted, substantially as set forth.

4. The combination, with the endless conveyer adapted to run around guide or sprocket wheels mounted in stationary supports, of a carriage, an elevated tightener-frame pivoted at or near its center to said carriage, guide or sprocket wheels journaled at opposite ends of said tightener-frame, around which the upper portion of the endless conveyer runs, and a pawl and ratchet, whereby said tightener-frame is held in position after being adjusted, substantially as set forth.

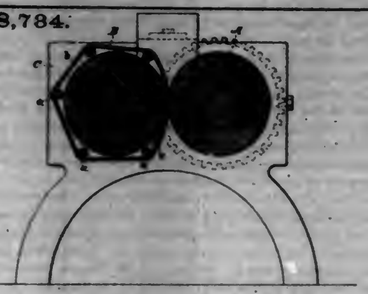
408,734. MILL FOR GRINDING AND SHEETING RUBBER. NATHANIEL C. MITCHELL, Philadelphia, Pa. Filed May 23, 1889. Serial No. 311,375. (No model.)

Claim.—1. In a rubber grinding or sheeting mill, the combination, with the rolls, of guides for conducting the rubber sheet around one of said rolls out of contact therewith, substantially as described.

2. The combination, with the grinding and sheeting rolls, of guiding devices for conducting the rubber sheet around one of said rolls, said guiding devices comprising rollers placed, respectively, above and beneath the nip of the rolls, and a curved smooth-surfaced sheet behind one of said rolls, substantially as described.

3. The combination of the grinding and sheeting rolls, the guides arranged around one of said rolls, and the doctor-blade for guiding the sheet over the first of said guide-rollers, substantially as described.

408,784.

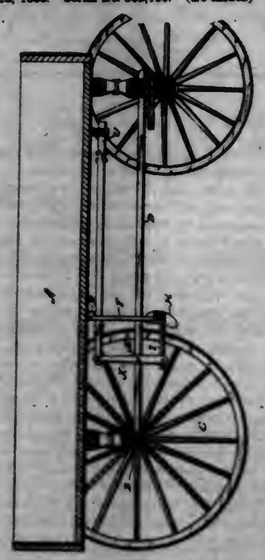


408,785. DEVICE FOR PRESERVING CUT FLOWERS. THEOPHILUS W. MOORE, Fruit Cove, Fla. Filed Dec. 31, 1888. Serial No. 295,057. (No model.)



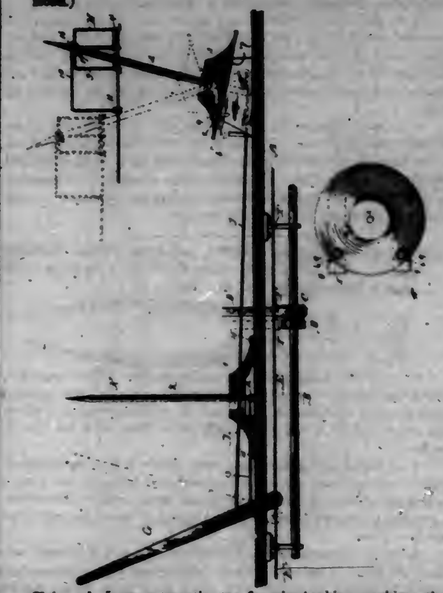
Claim.—The flower-preserving device herein described, the same comprising a bulb A, having an elastic neck B at its upper end, grasping the stem of the flowers and making a water-tight connection therewith, a neck C at its lower end, adapted to be closed by a cord c or the like, the bulb being filled with an amount of water sufficient to distend the same, whereby the elasticity of said bulb will press upon the water and force it into the stem of the flower, substantially as described.

408,736. VEHICLE-BRAKE. JOSEPH C. MORTON, Hamilton, Mo. Filed Mar. 13, 1889. Serial No. 303,186. (No model.)



Claim.—The combination, with the rear wheels of a vehicle, of the transverse brake-bar carrying the brake-shoes, the spring-hangers supporting said brake-bar, and the operating-levers and connections whereby the brake-bar is operated to apply the brakes, substantially as and for the purpose specified.

408,737. AUTOMATIC STOP FOR BARBING-MACHINES. ANDREW M. MUNSON, Lee, Ill. Filed Dec. 13, 1888. Serial No. 293,087. (No model.)



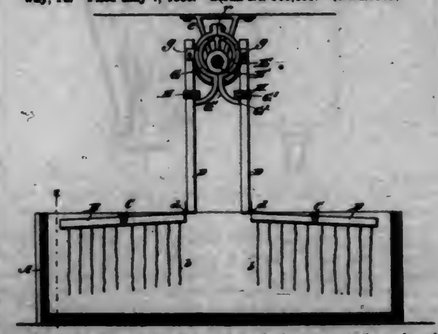
Claim.—1. In an automatic stop for wire-barbing machines, the combination of the standard 2, inclined from said machine and provided with the frame 3, the base-plate 1, and the block 5, interposed between said plate and the floor A, substantially as shown, and for the purpose described.

2. In an automatic stop for wire-barbing machines, the combination of the base-plate 1, standard 2, seated in said plate and provided with rotating frame 3, and block 5, interposed between said plate and floor A, and provided with upper face 7, sloped downward and from said machine, and adapted to support said plate and normally incline it from said machine, substantially as shown, and for the purpose described.

3. In an automatic stop for wire-barbing machines, the combination of a rocking wire-reel H, a feed-arm 10, provided with slot 11, a shifting-lever G, and means, substantially as shown, for communicating the oscillations of said reel to said lever, substantially as shown, and for the purpose described.

4. In an automatic stop for wire-barbing machines, the combination of a wire-bearing reel H, provided with a rocking base 1, a guide-arm 10, provided with slot 11, a belt-shifting lever G, suitably connected to driving-belt D', and a rod or rope J, connecting said reel to said lever, substantially as shown, and for the purpose described.

408,788. ECCENTRIC-CONNECTION. JAMES H. MCELWEE, Ridgeway, Pa. Filed May 7, 1888. Serial No. 309,235. (No model.)



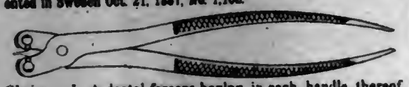
Claim.—1. In combination with a shaft, an eccentric, and a pitman, an eccentric-strap surrounding said eccentric and provided with a lug at the side of said strap, and an arm extending laterally from a

lower point of said strap, said lug and arm being attached to said pitman independently at different points of its length, the one being directly below the other, substantially as described.

2. In combination with a shaft, an eccentric, and a pitman, an eccentric-strap having a lug which is detachably fastened to said pitman, and having also an arm G', which is provided with an upward extension G^2, and a collar which is movable up and down on said pitman to cover and uncover said extension at will, for the purpose set forth.

3. A pair of pitmen in combination with an eccentric-strap attached removably to each of them at two different points and set between them, an eccentric within said strap, and the shaft on which said eccentric is mounted, the said pitmen being adapted to be attached to hide-suspending frames oscillating in vats and actuated by said shaft and eccentric, substantially as set forth.

408,739. DENTAL FORCEPS. ANDERS G. NYBLIN, Stockholm, Sweden. Filed Oct. 3, 1888. Serial No. 287,122. (No model.) Patented in Sweden Oct. 21, 1887, No. 1,102.

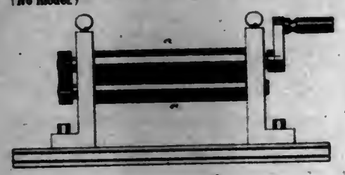


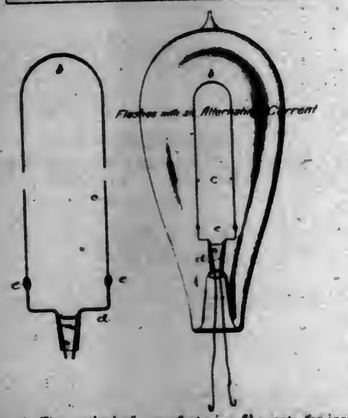
Claim.—1. A dental forceps having in each handle thereof a cylindrical socket to receive the shank of the removable jaw, a spring-latch mounted on the handle, and a jaw the cylindrical shank of which has a recess which is engaged by said spring-latch when said jaw is in place.

2. A dental forceps having in each handle thereof a cylindrical socket furnished with a recess or keyway, and having a jaw with a cylindrical shank that fits said socket, said shank being furnished with a projection adapted to engage said keyway in the socket when the jaw is in place.

3. As an improved article of manufacture, a pair of forceps, each handle of which is provided with two obliquely-arranged intersecting sockets to receive removable jaws, which latter have shanks that fit into said sockets, and retainers for said jaws, substantially as set forth.

408,740. FILAMENT FOR INCANDESCENT ELECTRIC LAMPS. ADOLF F. OPPERMANN, Chicago, Ill. Filed Apr. 11, 1889. Serial No. 306,848. (No model.)





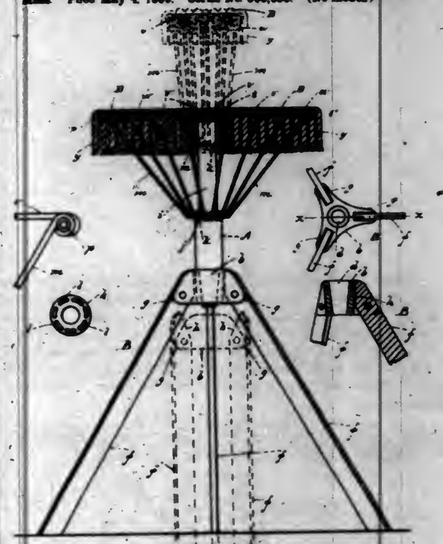
Claim.—1. The method of manufacturing filaments for incandescent lamps, which consists in crushing the twisted fiber of the filament, carbonizing the same, and then subjecting the filament thus carbonized to the action of an alternating current while surrounded by hydrocarbon gas, substantially as and for the purpose specified.

2. The process of manufacturing filaments for incandescent lamps, which consists in crushing the twisted fiber before it is carbonized, then carbonizing the filament and subjecting the same to an alternating current while surrounded by hydrocarbon gas, the gas being denser at the upper or curved portion of the filament, substantially as and for the purpose specified.

3. In the manufacture of a filament for an incandescent lamp, the process consisting of subjecting the carbonized filament to the action of an alternating current while surrounded by hydrocarbon gas, the exposure to the hydrocarbon gas at the curved portion thereof or central portion of the resistance thereof being continued for a greater time than the exposure of the other portions thereof, whereby the coating is made thicker at the said central or curved portion thereof, substantially as and for the purpose specified.

4. The method of manufacturing filaments for incandescent lamps, which consist in crushing the twisted fiber of the filament, carbonizing the same, and then subjecting the filament thus carbonized to the action of an electric current while surrounded by hydrocarbon gas, the curved portion or center of resistance of the filament being exposed longer to the gas than the other portions of the filament.

408,741. CAMP-STOOL. JAMES W. OSLTON, Cambridge, and DAVID A. MEISTER, Boston, assignors of one-half to Charles A. Morse, Boston, Mass. Filed May 4, 1889. Serial No. 309,638. (No model.)



Claim.—1. In a camp-stool, a tripod provided with a socket and hinged legs, a standard, a ring fitted to slide thereon, a collar secured to the upper end thereof, and two series of rods hinged, respectively, to said collar and ring and to each other, substantially as described.

2. In a camp-stool, the combination of a standard provided with a shoulder, a tripod having a body provided with hinged legs and a socket for said standard, a ring fitted to slide on the standard above said shoulder, and a seat comprising two series of rods hinged, respectively, to said ring and collar, the outer ends of corresponding rods of each series being hinged together, substantially as described.

3. In a camp-stool, the combination of a standard provided with a shoulder, a socketed tripod for said standard having hinged legs, a ring fitted to slide on said standard, a collar secured thereto, two series of rods hinged, respectively, to said collar and ring, the outer ends of corresponding rods being pivoted on a sleeve, and a flexible cord supporting said sleeve, substantially as described.

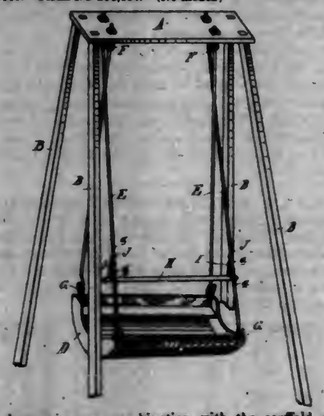
4. In a camp-stool, a standard having its upper portion reduced to form a shoulder and provided with a fixed collar, a ring fitted to slide on said reduced portion, a tripod having pivoted legs and a socket for said standard, two series of rods hinged, respectively, to said ring and collar, the outer ends of corresponding rods in each series being pivoted on a sleeve, a flexible cord supporting said sleeve, and a flexible cover on the upper series of rods, substantially as described.

5. A folding stool consisting of a standard detachably supported by a tripod having hinged legs and a collapsible seat comprising two series of rods hinged, respectively, to said standard and a ring sliding thereon, the outer ends of corresponding rods in each series being pivoted together, substantially as described.

6. In a camp-stool, the tripod B, having the hinged legs *f* and socket *d*, in combination with the standard A, provided with the shoulder *j* and collar *l*, the ring *k*, the wires *m n*, hinged, respectively, to said ring and collar and to each other, and the cord *w*, arranged to operate substantially as described.

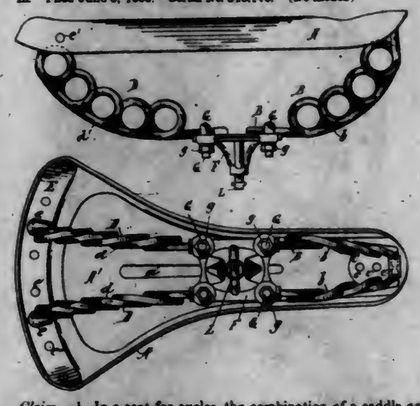
7. In a camp-stool, the combination of the tripod B, the standard A, having the shoulder *j* and collar *l*, the ring *k*, sliding on said standard, the wires *m v*, pivoted, respectively, to said ring and collar and to the sleeves *p*, the cord *w*, supporting said sleeves, and the cover D, all being arranged substantially as described.

408,742. SWING. SAMUEL W. PARSONS, Ypsilanti, Mich. Filed Feb. 7, 1889. Serial No. 299,057. (No model.)



Claim.—In a swing, the combination, with the scaffold, of the suspension-rods crossed, as shown, the vehicle carried by the lower ends of said rods, the projections *s* on said rods, the bar H, arranged transversely of the vehicle, and the chains I, attached at one end to said bar and at the other provided with links loosely engaging the rods and adjustable vertically thereon, substantially as and for the purpose specified.

408,743. SEAT FOR BICYCLES. CHARLES H. PHELPS, Cuyahoga Falls, Ohio, assignor to Edwin Lee Brown and Edwin F. Brown, Chicago Ill. Filed June 5, 1889. Serial No. 313,170. (No model.)



Claim.—1. In a seat for cycles, the combination of a saddle and spiral springs having the general contour of semi-elliptic springs, substantially as set forth.

2. In a seat for cycles, the combination of a saddle of flexible material, the spiral springs having the general contour of semi-elliptic springs, and a spring-seat provided with adjustable clips, substantially as set forth.

408,744. STATIONARY SWITCH FOR HORSE-RAILWAYS. ARTHUR L. PLIMPTON and EPHRAIM HARRINGTON, Boston, Mass. Filed Dec. 6, 1888. Serial No. 292,804. (No model.)

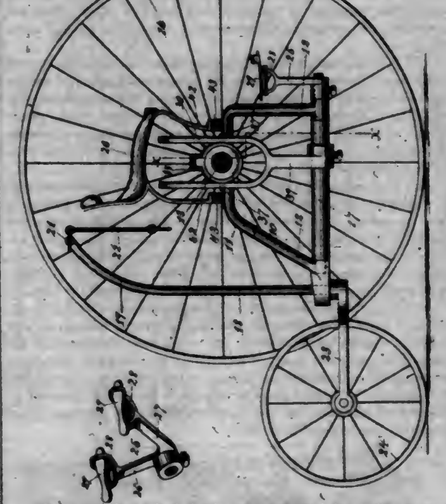
Claim.—1. In a horse-railway switch, the combination of the outside rail 2 with the stationary tongue 1 and the filling-in part 4 5,



the latter having a dropping-off edge A B, extending diagonally from the point of the tongue to the outside rail.

2. The combination of the rail 2, tongue 1, guard 3, and filling-in part 4 5, having the diagonal drop edge A B, substantially as and for the purpose set forth.

408,745. TRICYCLE. FRANCIS W. POOT, St. Paul, Minn. Filed Feb. 18, 1889. Serial No. 300,304. (No model.)

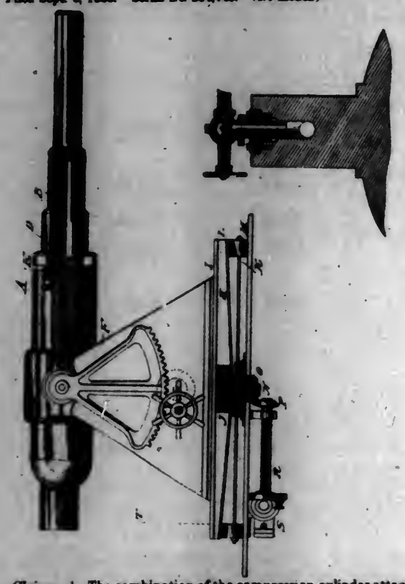


Claim.—1. In a tricycle having a right and left spirally-grooved axle, and a rock-shaft at right angles to said axle, provided with suitable pedals secured thereto, the combination, with a sleeve traveling upon the said axle having rings loosely held in the sleeve provided with lugs entering the grooves, of a grooved guide-bar arranged parallel with said axle and engaging lugs upon said sleeve, and a connection between the rock-shaft and sleeve, substantially as shown and described.

2. In a tricycle having a right and left spirally-grooved axle, and a rock-shaft at right angles to the axle, the combination of a sleeve reciprocating upon the axle provided with toothed rings centrally and loosely held within it having lugs entering the axle-grooves, and

toothed rings secured to the sleeve adapted to engage said loose rings, and an upright forked bar secured to said rock-shaft and having its members slotted to engage with pins upon said sleeve, substantially as and for the purposes set forth.

408,746. GUN-CARRIAGE. HENRY A. RAMSAY, Baltimore, Md. Filed Sept. 6, 1888. Serial No. 284,746. (No model.)



Claim.—1. The combination of the compression-cylinder attached to the barrel of a gun, with hollow plunger-rods which enter the cylinders and are secured to the trunnions, which are independent of the longitudinal movement of the barrel, said trunnions being hollow, and a suitable valve governing communication through the passage in the trunnions.

2. The combination, with a gun and compression-cylinders secured to the barrel thereof, of a re-enforcing band encircling but permitting free movement of the barrel, said band having hollow trunnions rigidly secured thereto and carrying hollow plunger-rods, which operate in the compression-cylinders, and a valve connected to and governing the passage in the hollow trunnions, whereby access of air to or from the compression-cylinders may be regulated.

3. The combination, with a gun and compression-cylinder secured to the barrel thereof, of a re-enforcing band encircling but permitting free movement of the barrel, said barrel having hollow trunnions rigidly secured thereto and carrying hollow plunger-rods, which operate in the compression-cylinders, an accumulator, conduits connecting the accumulator and the hollow trunnions, and a three-way valve in the conduit, such valve having also communication with the open air.

4. The combination of the compression-cylinders attached to the barrel of a gun, hollow plunger-rods entering the cylinders and secured to the trunnions independent of the longitudinal movement of the barrel, said trunnions being hollow, and a suitable valve governing communication through the passage in the trunnions, all combined with a rack-sector secured to the trunnions, whereby the gun may be elevated or depressed and its longitudinal movement governed at any elevation, substantially as set forth.

408,747. PRINTER'S STAND. STEPHEN W. RATHBUN, Marion, Iowa. Filed Aug. 13, 1888. Serial No. 282,682. (No model.)



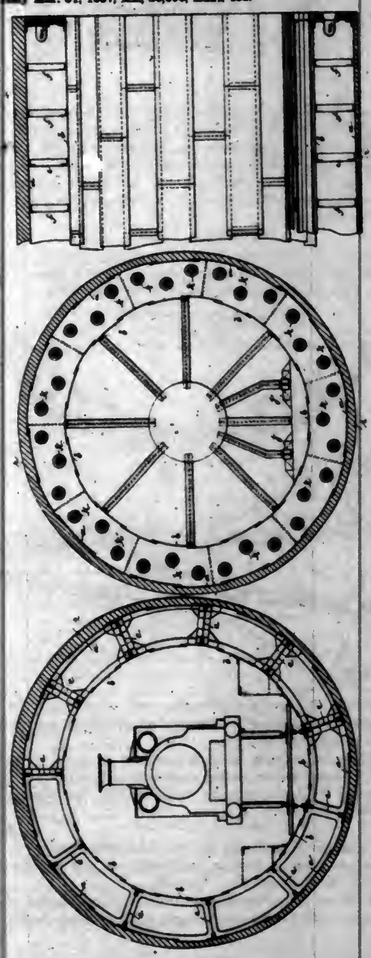
Claim.—1. In a printer's stand, the combination of the body A, having a front upper piece A′ and the ends A″ A″, inclined at the top, said front piece extending slightly above said inclination, whereby the lower case is supported, and the arms B B hinged to said stand and adapted to support the upper case, substantially as and for the purpose set forth.

2. The combination, in a printer's stand, of the stand A A′ A″, adapted to support the lower case, the arms B B, connected board D, supporting-blocks C C, and double-jointed hinges *a a*, substantially as and for the purpose set forth.

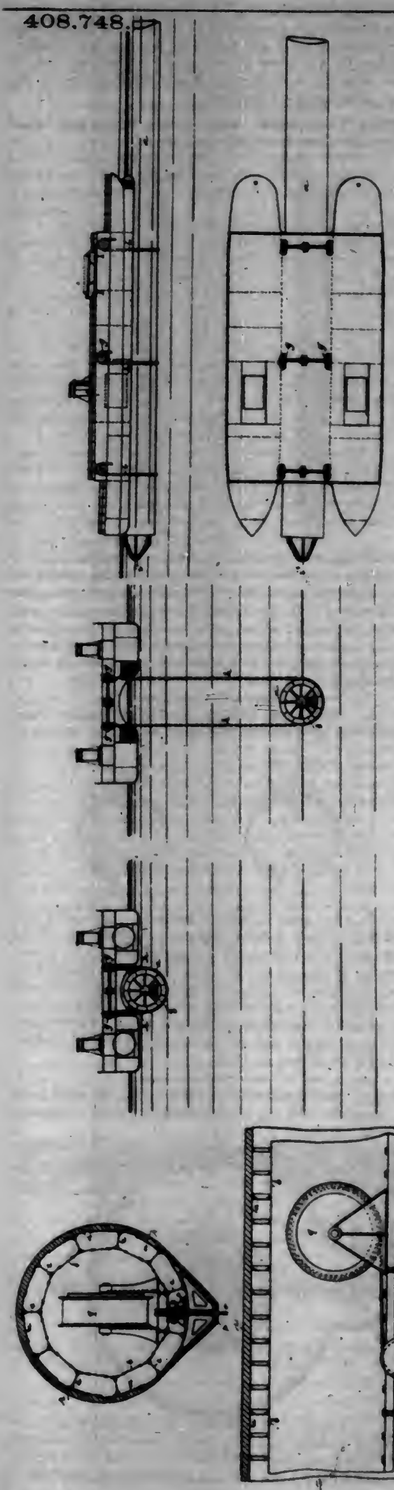
3. In a printer's stand, the combination, with the stand, substantially as described—that is to say, having a support for the lower case and the hinged support for the upper one adapted to fold downward when not in use—of the supplemental stand connected to said main stand by telescoping arms, and having a hinged support for the upper case, substantially as described, whereby said supplemental stand is adapted to be closed against the main stand, or drawn outward to form a double stand, as specified.

4. In a printer's stand, the combination of a main stand, substantially as described, having supports for upper and lower type-cases, the mortises *b b*′, adapted to allow limited backward and forward movement of bars E′ E″, and supplemental stand E, having connected bars F E′ and F F, extending through mortises in the main stand, the forward bar E′ having a gain *c*, matching a similar gain in the board A′ of the main stand, all substantially as and for the purpose set forth.

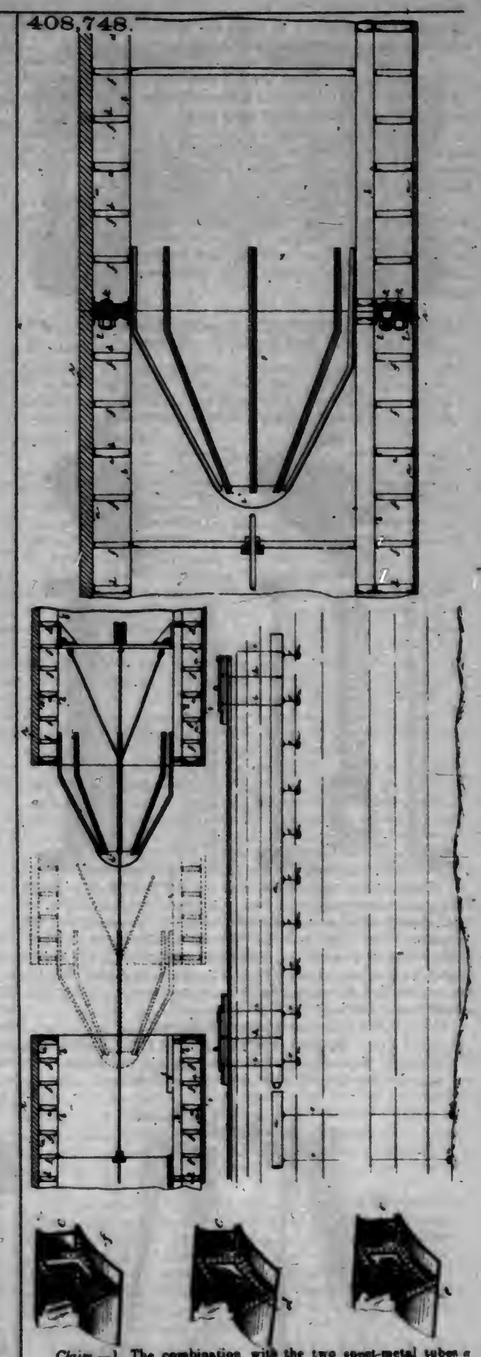
408,748. BUOYANT SUBAQUEOUS TUNNEL FOR RAILWAYS, &c. EDWARD J. REED, London, England. Filed Dec. 13, 1886. Serial No. 221,376. (No model.) Patented in England July 23, 1886, No. 9,558; in France Oct. 21, 1886, No. 173,106; in Belgium Oct. 26, 1886, No. 74,995; in Germany Oct. 26, 1886, No. 41,263; in Denmark Nov. 6, 1886; in Spain Nov. 26, 1886, No. 6,383; in Canada Mar. 10, 1887, No. 26,192, and in Italy Mar. 31, 1887, XX, 20,696, XLII, 156.



408,748.



408,748.



Claim.—1. The combination, with the two sheet-metal tubes *a* and *b*, arranged concentrically, of the tight partitions *c*, extending longitudinally, the apertured transverse partitions *e*, the water-tight transverse partitions *d*, and the angle-irons *f*, all arranged within the annular space between tubes *a* and *b* and connecting the latter, as set forth.

2. The tube-section having tight partitions near its ends to prevent the entry of water into its interior, and having at one end a coni-

cal projection or nose, as *i'*, to enable said tube to be axially aligned with the adjacent section while submerged.

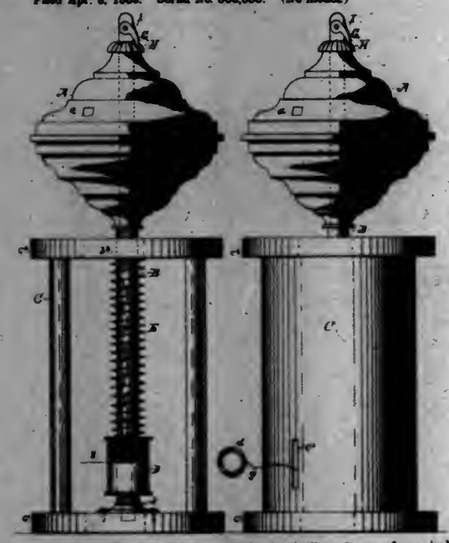
3. The tube-section having at one end a projecting conical nose *i'* for axially aligning it with the adjacent section, and having at its other end guides *j j* to effect the proper coincidence of the bolt-holes in the two sections, substantially as set forth.

4. In a subaqueous tunnel, the combination of two tube-sections, one of which is provided with conical bolt-holes and the other with conical bolts *k k*, secured in the said section in position to engage said bolt-holes in the abutting or adjacent section, as set forth.

5. The combination, with the tube provided with windlasses or winding apparatuses in its interior and with stuffing-boxes in its bottom for the passage of chains, of the said chains, connected each to the barrels of one of said windlasses and passing out through said stuffing-boxes, and anchor-weights, one connected to each chain, substantially as set forth.

408,749. SPINNING TOP. WALSTEIN H. ROBINSON, Bellport, N. Y.

Filed Apr. 8, 1889. Serial No. 306,355. (No model.)

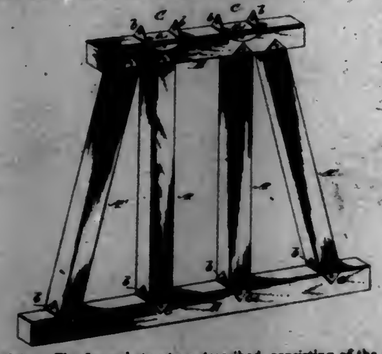


Claim.—The combination, with the hollow base, of a spindle having journal-bearings in the base, a drum on the spindle within the base, a spring coiled around the spindle within the base, having one end secured to the base and the other end secured to the spindle, a cord secured to the drum, a top loosely mounted on the spindle, a ratchet on the top, and a pawl on the spindle engaging with the ratchet, the said top being rotated by the action of the spring, substantially as specified.

408,750. TIMBER-COUPLING FOR FRAMED STRUCTURES.

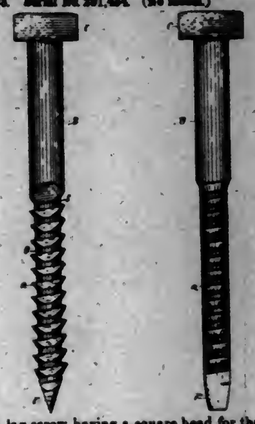
MORGAN P. ROCKWELL and GEORGE W. PEARSALL, Chattanooga, Tenn.

Filed Nov. 28, 1888. Serial No. 292,059. (No model.)



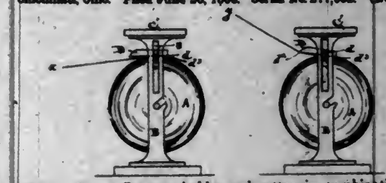
Claim.—The framed structure described, consisting of the cross-timbers B B and the metallic couplings C, having binding-flaps *c* secured to the sides of said cross-timbers, and the longitudinal timbers of the same dimensions in cross-section as the plate *a* of the couplings and resting directly thereon, and having the flaps *b* of said couplings extending upon the outer faces thereof and secured to said longitudinal timbers upon the sides thereof, substantially as shown and described, and for the purposes specified.

408,751. LAG-SCREW. GEORGE P. ROSS, Pontoo, Mich. Filed Nov. 21, 1888. Serial No. 291,494. (No model.)



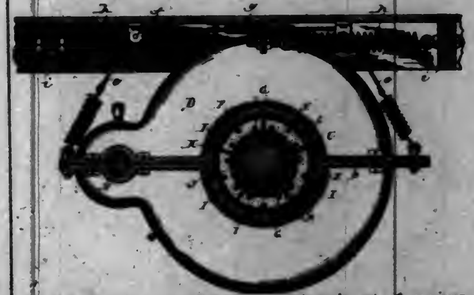
Claim.—A lag-screw having a square head for the attachment of a wrench thereto, said screw being flattened and having threads on two opposite sides, the upper sides of said threads being at right angles to the screw-body and having vertically-straight intermediate surfaces between the threads, a cross-section of the body through said surfaces being circular in cross-section, and the body having a bearing portion between the upper thread and the head circular in cross-section, substantially as set forth.

408,752. ROLL-PAPER HOLDER AND CUTTER. ABBOTT G. ROSS, Cincinnati, Ohio. Filed June 20, 1888. Serial No. 277,602. (No model.)



Claim.—In a roll-paper holder and cutter, in combination with the roll and the vertically-slotted side supports, a friction-bar resting tangentially upon the roll by gravity and guided in the slots by vertically-elongated projections, the bar being formed to a tearing-edge forward of said projections and to a friction-edge in rear thereof, and adapted by the pull of the paper outward and upward against said tearing-edge to clamp the projections diagonally in the guide-slots and depress the rear or friction edge of the bar against the roll, substantially as and for the purpose set forth.

408,753. ELECTRIC MOTOR FOR STREET-CARS. WILBER S. SALISBURY, Chicago, Ill. Filed Aug. 22, 1888. Serial No. 283,323. (No model.)



Claim.—1. In a motor for street-cars, the axle and a frame journaled thereon, in combination with an electric motor supported in said frame, the field-magnet cores of which straddle the axle, and a gear-connection between said motor and axle, substantially as described.

2. In a motor for street-cars, the axle and a metallic frame journaled thereon, in combination with an electric motor supported on said frame, the field-magnet cores of which straddle the axle, a yoke therefor constituting a portion of said frame, and a gear-connection between said motor and axle, substantially as described.

3. In a motor for street-cars, the axle, a metallic frame journaled thereon, and a shaft journaled in said frame, extending parallel with the axle in combination with an electric-motor armature on said shaft and field-magnet cores attached to said frame astride the axle, extending at a right angle and in the same direction from the armature, and a gear-connection between said shaft and axle, substantially as described.

4. In a motor for street-cars, the axle and a frame journaled thereon, in combination with an electric motor supported in said frame, the armature of which extends parallel with and in the same plane as the axle, and the field-magnet cores of which straddle the axle, and a gear-connection between said motor and axle, substantially as described.

5. In a motor for street-cars, the axle, gears mounted thereon near the ends thereof, and a frame journaled on said axle, in combination with an electric motor supported on said frame, the field-magnet cores of which straddle the axle, and the armature-shaft of which extends parallel with the axle, and gears on said shaft meshing with the gears on the axle, substantially as described.

6. In a motor for street-cars, the axle, gears mounted thereon near the ends thereof, and a frame journaled on the axle in combination with an electric motor supported upon said frame, the field-magnet cores of which straddle the axle, a shaft journaled in said frame parallel with and in the same plane as the axle upon which the armature of the motor is mounted, and gears on said shaft meshing with the gears upon the axle, substantially as described.

7. In a motor for street-cars, the axle-gears mounted thereon and a frame journaled on said axle, in combination with an electric motor supported on said frame, the field-magnet cores of which straddle the axle, a three-part shaft journaled in said frame extending parallel with and in the same plane as the axle, the motor-armature mounted on the central portion of said shaft, gears mounted on the end portions of the shaft meshing with the gears on the axle, adjustable coupling-plates for uniting the parts of the shaft, and casings attached to said frame for covering said gears, substantially as described.

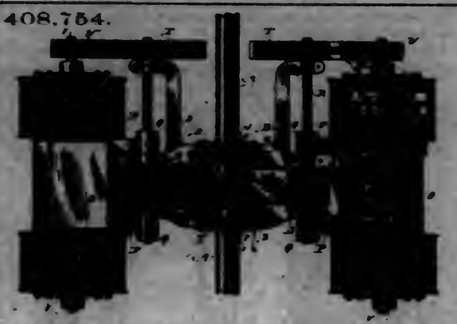
8. In a motor for street-cars, the axle, a frame journaled thereon, an electric motor supported on said frame, the armature-shaft of which extends parallel with and to one side of the axle and the field-magnet cores of which straddle the axle from the opposite side thereof, in combination with pulleys attached to the car-body and a flexible guy secured at its ends, respectively, to said frame on each side of the axle and working over said pulleys, substantially as described.

9. In a motor for street-cars, the axle and gears mounted thereon near the ends thereof, provided with elongated hubs, in combination with a frame supporting the electric motor for operating the axle, a ring provided with bearing-sockets on the inner and outer peripheries thereof, and anti-friction rollers having contracted central portions constituting journals therefor and working in said sockets, the inner and outer sets of rollers bearing, respectively, upon the hubs of the gears and bearing-walls of the frame, substantially as described.

10. In a motor for street-cars, the axle, a frame journaled thereon, an electric motor supported on said frame, the armature-shaft of which extends parallel with and to one side of the axle and the field-magnet cores of which straddle the axle from the opposite side thereof, in combination with pulleys attached to the car-body, a flexible guy attached at its ends, respectively, to said frame at each side of the axle and working over said pulleys, and a turn-buckle in said guy between the pulleys, substantially as described.

11. In a motor for street-cars, the axle and gears mounted thereon near the ends thereof, provided with elongated hubs, in combination with a frame for supporting the electric motor operating the axle, a casing mounted thereon having a hub of larger bore than the hub of the gears, a sectional ring working freely between the hubs of the gears and casings, each section of which is provided with bearing-sockets in the inner and outer peripheries thereof, and anti-friction rollers having contracted central portions constituting journals therefor and working in said sockets, the inner and outer sets of rollers bearing, respectively, upon the hubs of the gears and casings, substantially as described.

408,754. MOTOR FOR STREET-CARS. WILBER S. SALISBURY, Chicago, Ill. Filed Mar. 1, 1889. Serial No. 301,710. (No model.)



Claim.—1. In a motor for street-cars, the combination, with the axle and a gear-wheel mounted thereon, of a balanced casing-frame journaled on said axle, a pair of supplemental frames pivotally connected with said casing-frame at each side of the axle, a yielding connection between said frames, electric motors mounted on said frames, and gear-connection between both of said motors and the axle gear-wheel, substantially as described.

2. In a motor for street-cars, the combination, with the axle and a gear-wheel mounted thereon, of a casing-frame journaled upon the axle, a counter-shaft journaled in said frame, a supplemental frame journaled upon said shaft, an electric motor mounted upon said frame, a gear-connection between said motor and shaft and between said shaft and the axle gear-wheel, and a yielding connection between said supplemental and casing frames, substantially as described.

3. In a motor for street-cars, the combination, with the axle and a gear-wheel mounted thereon, of a casing-frame journaled upon the axle, a counter-shaft journaled in said frame, a supplemental frame journaled upon said shaft, an electric motor mounted upon said frame, a gear-connection between said shaft and motor and between said shaft and the axle gear-wheel, a bracket projecting from the casing-frame, a depending bar from the supplemental frame working through said bracket, and coiled springs sleeved on said bar and confined between the supplemental frame and said bracket on the upper side thereof and between a washer on the end of said bar and the bracket on the under side thereof, substantially as described.

4. In a motor for street-cars, the combination, with the axle and a gear-wheel mounted thereon, of a casing-frame journaled upon the axle, a counter-shaft journaled in said frame, a supplemental frame journaled upon said shaft, an electric motor mounted upon said frame, a gear-connection between said shaft and motor and between said shaft and the axle gear-wheel, a bracket projecting from the casing-frame, a depending bar from the supplemental frame working through said bracket, and coiled springs sleeved on said bar and confined between the supplemental frame and said bracket on the upper side thereof and between a washer on the end of said bar and the bracket on the under side thereof, substantially as described.

5. In a motor for street-cars, the combination, with the axle, a gear-wheel mounted thereon, a casing-frame balanced upon the axle, and yielding cushions connecting said frame with the car-superstructure and directly opposing the oscillation of said casing on the axle, of supplemental frames yieldingly supported upon said casing-frame, electric motors mounted on said supplemental frames, gear-connections between said motors and the axle gear-wheel, and a yielding connection between said supplemental and casing frames, substantially as described.

6. In a motor for street-cars, the combination, with the axle, a gear-wheel mounted thereon, a casing-frame journaled upon said axle, and coil-springs attached at their ends, respectively, to said frame and the car-superstructure, extending in opposite directions from said frame, of supplemental frames pivotally connected with the casing-frame, electric motors mounted on said supplemental frames, gear-connections between said motors and the axle gear-wheel, and yielding connection between said supplemental and casing frames, substantially as described.

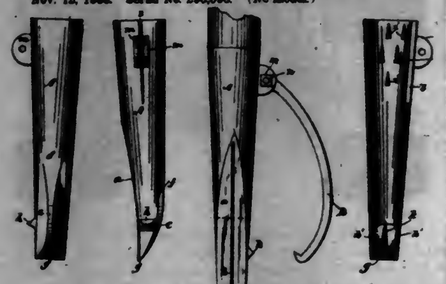
7. In a motor for street-cars, the combination, with the axle, a gear-wheel mounted thereon having elongated hubs, and a casing-frame balanced on said axle constituting a support for electric motors operating said wheel, of anti-friction rollers bearing on said hubs, having contracted portions, and a bearing-ring provided with recesses for reception of said contracted portions of the rollers interposed between said rollers and the bearing-walls of the casing-frame, substantially as described.

8. In a motor for street-cars, the combination, with the axle, a gear-wheel mounted thereon having elongated hubs, and a casing-frame balanced on the axle constituting a support for electric motors operating said wheel, of anti-friction rollers bearing on said hubs having contracted portions, and adjustable segmental bearing-plates provided with recesses for reception of said contracted portions of the rollers interposed between said rollers and the bearing-walls of the casing-frame, substantially as described.

9. In a motor for street-cars, the combination, with the axle, a gear-wheel mounted thereon having elongated hubs, and a casing-frame balanced upon the axle and constituting a support for electric motors operating said wheel, of anti-friction rollers, removable bearing-sleeves on the hubs of said gear-wheel on which the rollers bear, said rollers having contracted central portions, and adjustable segmental bearing-plates provided with recesses on the inner faces thereof in which said contracted portions of the rollers bear, said plates be-

ing interposed between the rollers and the bearing-walls of the casing-frame, substantially as described.

408,755. CANT-HOOK. ALBERT SANFORD, Oshkosh, Wis. Filed Nov. 12, 1888. Serial No. 290,563. (No model.)



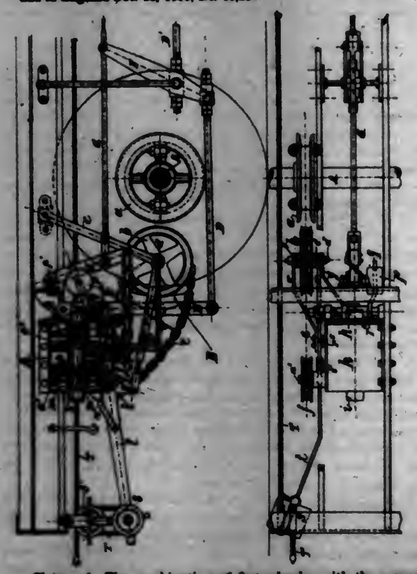
Claim.—1. The combined socket and pick formed of a single piece hollow down to the point to receive the wooden handle, having the flattened face *a* extending up on the outside of the hollow portion, and the convexed back portion terminating in the chisel-shaped edge, substantially as described.

2. The combined socket and pick formed of a single piece made hollow to receive the wooden handle and having the flattened face *a* on the outside provided with the rib or ribs *b*, and the convex back portion terminating in a chisel-shaped edge, substantially as described.

3. The combined socket and pick made hollow to receive the wooden handle and having the flattened face *a*, with the rib or ribs *b* thereon, the convex back portion terminating in a chisel-shaped edge, the pointed projection on the side, and the hook co-operating therewith, substantially as described.

4. The combined socket and pick formed in a single piece made hollow to receive the handle having the split upper end, the wedge-shaped ribs at the upper end and the wedge at the lower end of the hollow portion, the flattened face *a*, the convexed back portion *c*, and terminating in the chisel-shaped edge, substantially as described.

408,756. BRAKE. WOLFGANG SCHMID, Munich, Bavaria, Germany. Filed Mar. 15, 1889. Serial No. 303,441. (No model.) Patented in Germany Aug. 26, 1884, No. 32,465; in Belgium Feb. 15, 1886, No. 71,731; in Italy Mar. 6, 1886, No. 19,413; in France May 3, 1886, No. 173,661, and in England Dec. 13, 1888, No. 16,267.



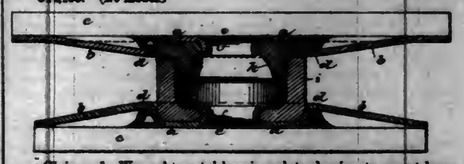
Claim.—1. The combination of fast wheel *a* with the suspended swinging wheel *b* and with chain *c*, pulley *f*, worm *l*, worm-wheel *m*, and friction-wheels *c' c² c³*, and with chain E, connected with the brake-operating device, substantially as specified.

2. The combination of swinging wheel *b* with rod *v*, arm r^6, lever *t*, pulleys *c* and *c'*, and rope T, as and for the purpose described.

3. The combination of wheel c^3 with fork *r*, rod *r'*, lever r^5, shaft r^3, and with weighted lever *g*, as and for the purpose described.

4. In combination with wheel c^3, fork *r*, rod *r'*, lever r^5, shaft r^4, the lever r^4, rod r^2, arm *t'*, lever *t*, pulley *c c'*, and rope T, substantially as specified.

408,757. CENTER-BEARING PLATE FOR RAILWAY-CARS. CHARLES T. SCHOEN, Philadelphia, Pa. Filed June 13, 1889. Serial No. 314,135. (No model.)



Claim.—1. Wrought-metal bearing-plates having two-part bearing-rings interposed between them and held in place, substantially as described.

2. Pressed-steel bearing-plates having annular ribs and central flanged openings, combined with rings arranged between the ribs and flanged openings, the flanges of said openings being turned over upon said rings to hold them in place, substantially as described.

3. Center-bearing plates of wrought metal having strengthening-ribs and central flanged openings, combined with two-part rings held in place between the ribs by the overturned flanges of the central openings and riveted or clinched lugs, substantially as described.

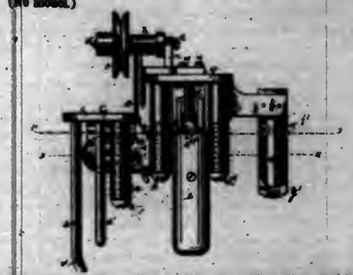
4. The bearing-plates, the two-part outer bearing-ring secured thereto, and the two-part central ring, also secured to the plates and adapted to resist concussion, substantially as described.

5. The bearing-plates provided with ribs, combined with a two-part bearing-ring, one part of which ring is provided with a trough to receive the other, substantially as described.

6. The bearing-plates provided with ribs, combined with a bearing-ring made in two sections, each section applied to the rib of its plate by straddling the same, substantially as described.

7. Inner and outer rings made in sections fitted to one another, substantially as described, combined with bearing-plates, to which said sections are secured, substantially as set forth.

408,758. DEVICE FOR GUIDING THE EDGES OF FABRICS. JOSEPH J. SCHOLFIELD, Providence, R. I. Filed Apr. 12, 1889. Serial No. 307,093. (No model.)



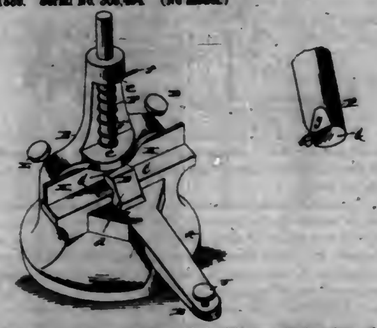
Claim.—1. In a cloth-guiding machine, the combination, with the ratchet member adapted for reverse movement, the slide frictionally holding the same, and reciprocating means therefor, which together constitute a power-dispensing mechanical movement, as set forth, of a detector the movement of which serves to cause the required movement of the ratchet member, a guide-roller held upon a pivoted head or frame at that side of the axis of the pivot which is toward the outgoing portion of the web, and the pivoted head or frame supporting the guide-roller and geared with the ratchet member, whereby the guide-roller will have a greater or less endwise movement in the same direction as that of the required movement of the edge of the web to correct a specific variation from the true line, substantially as described.

2. In a cloth-guiding machine, the combination, with the ratchet member adapted for reverse movement, the slide frictionally holding the same, and reciprocating means therefor, which together constitute a power-dispensing mechanical movement, as set forth, of a detector the movement of which serves to cause the required movement of the ratchet member, a guide-roller held upon a pivoted head or frame at that side of the axis of the pivot which is toward the outgoing portion of the web, the pivoted head or frame supporting the guide-roller and geared with the ratchet member, and the two guide-fingers at one side of the guide-roller, the outer being the longer, substantially as described.

3. In a cloth-guiding machine, the combination, with the ratchet member adapted for reverse movement, the slide frictionally holding the same, and reciprocating means therefor, which together constitute a power-dispensing mechanical movement, as set forth, of a detector the movement of which serves to cause the required movement of the ratchet member, a guide-roller held upon a pivoted head or frame at that side of the axis of the pivot which is toward the outgoing portion of the web, the pivoted head or frame supporting the guide-roller and geared with the ratchet member, the curved guide-plate for guiding the edges of the web to the detector, and the rollers at opposite sides of the curved guide-plate, substantially as described.

4. In a cloth-guiding machine, the combination, with the ratchet member adapted for reverse movement, the slide frictionally holding the same, and reciprocating means therefor, of the overbalanced detector provided with a frictional engaging-surface, and an attached guide for holding the edge of the web against the said surface, substantially as described.

408,759. SAW-SET. SIMON SNOUP, Fish Lake, Ind. Filed Mar. 15, 1889. Serial No. 303,464. (No model.)

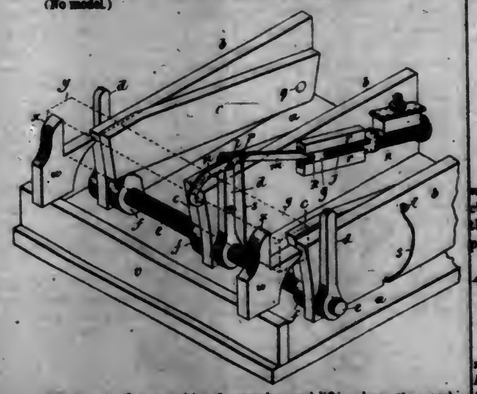


Claim.—1. In a saw-set provided with opposite bearings, the reciprocating punch F, having the face G and opposite inclined faces *g g* and intermediate inclined face G', and provided with the pin *f* for rotating the punch, substantially as specified.

2. In a saw-set provided with opposite bearings, the reciprocating punch F, having the face G and opposite inclined faces *g g* and intermediate inclined face G', substantially as specified.

3. In a saw-set having a standard provided with opposite perforations, the opposite T-shaped guides H, mounted on the base and having stems *h* inserted in the openings in the standard, and set-screws L, inserted through the standards and bearing upon the stems *h*, substantially as specified.

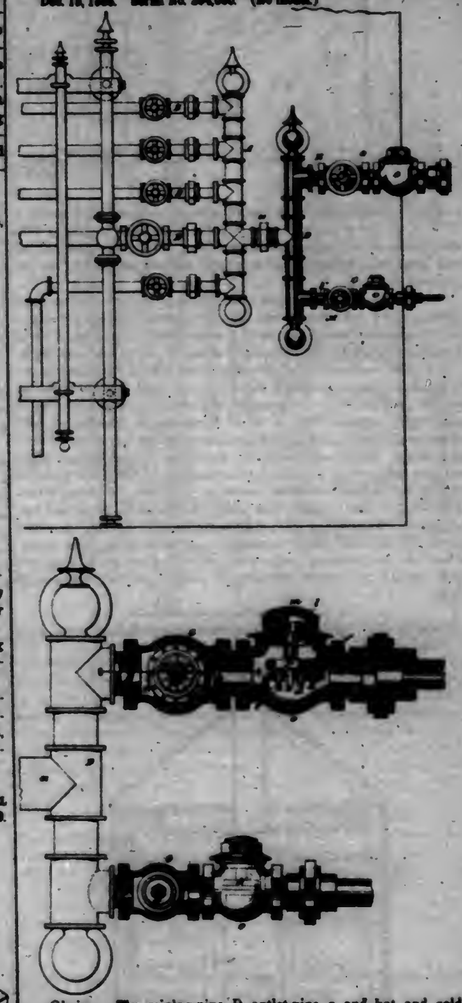
408,760. LOG LIFTING AND TURNING MACHINE. FLAVEL RIDGDELL, Batesville, Ark. Filed Dec. 17, 1888. Serial No. 293,929. (No model.)



Claim.—1. In a machine for turning and lifting logs, the combination, with an engine, a rock-shaft, an arm secured to the shaft, a hook pivoted to the free end of the arm, a pitman-rod pivotally connecting the hook with the piston-rod of the engine, and guides *r*, for regulating the direction of movement of the piston-rod, substantially as and for the purpose specified.

2. The combination, in a log lifting and turning machine, of a log-lifter *c*, a rock-shaft *e*, an eccentric *f*, fastened on the shaft for raising the log-lifter, a straight arm *d* on the shaft, and the engine *h*, connected with the arm, substantially as and for the purpose specified.

408,761. NEEDLE-BATH WATER-SUPPLY VALVE. BENJAMIN G. SMITH, Brooklyn, assignor to Fred. Ades & Co., New York, N. Y. Filed Dec. 19, 1888. Serial No. 294,089. (No model.)



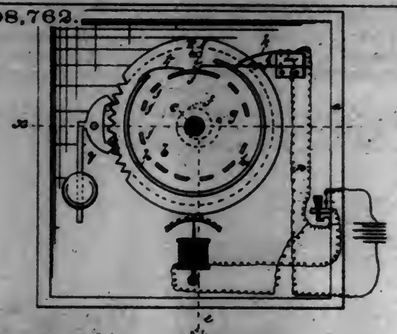
Claim.—The mixing-pipe D, outlet-pipe *c*, and hot and cold water supply pipes E F, connected with the pipe D, combined with a check-valve, substantially as described, in each pipe E and F, whereby the water from one pipe E or F is prevented passing along the other pipe to mix with the water therein, substantially as specified.

408,762. FIRE-ALARM BOX. JOHN SCHNEIDER, Jersey City, assignor, by direct and mesne assignments, to the Newark District Telegraph Company, Newark, N. J. Filed Oct. 3, 1888. Serial No. 287,083. (No model.)

Claim.—1. In a fire-alarm box, a circuit-wheel, a rib *h*, open at *i*, and a series of projections *j*, in combination with contact-points *k l*, one of which engages said rib and projections, substantially as and for the purposes set forth.

2. In combination, in a fire-alarm box, a circuit-wheel having teeth *b'*, a rib *h*, and projections *j j*, corresponding with the number of the box, a spring *l*, having an extension *o*, a contact-spring *k*, and a governor, all said parts being arranged and operating substantially as and for the purposes set forth.

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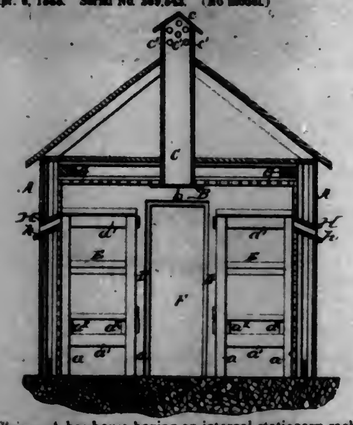


3. In combination, in a fire-alarm box, a circuit-wheel having a drum *d*, rib *h*, a concentric series of projections *j*, corresponding with the number of the signal-station, a spring *f*, cord *e*, and governor, all said parts being arranged and combined substantially as and for the purposes set forth.

4. In a fire-alarm box, the combination of the wheel *b*, having a spring *p*, rib *h*, and projections *j j*, and a contact-spring *l*, having a lateral extension and co-operating contact-point, all said parts being arranged and combined substantially as and for the purposes set forth.

5. The combination, in a fire-alarm-box, with a reciprocating circuit-changer having a series of signaling projections thereon for changing the relations of the terminals of the circuit on which the box is stationed to one another, a rib or formation *h*, disposed on said changer adjacent to said signaling projections to hold one of said terminals during the initial stroke or movement of the reciprocating changer, and having a guide *p*, of a handle *e*, to allow the operator to give said initial movement, means, as described, for giving return movement to said changer, and said terminals arranged in said box adjacent to said changer and engaging the same, first during the initial stroke on the said rib or formation *h* and then during the return-stroke on the signaling projections, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

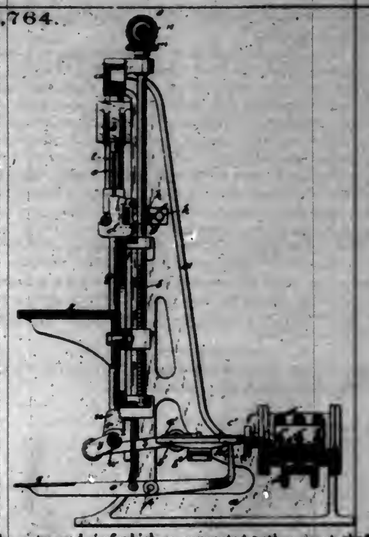
408,763. BEE-HOUSE. LOUIS W. SPRADLIN, Garnett, Kans. Filed Apr. 6, 1888. Serial No. 269,843. (No model.)



Claim.—A bee-house having an internal stationary rack consisting of uprights, longitudinal parts, and cross-pieces fastened together, in combination with supporting-frames provided with two parallel upper bars of uneven length, which are disconnected at their outer ends, and said supporting-frames being hinged to the stationary rack and carrying removable comb-frames, as and for the purpose described.

408,764. BOX-NAILING MACHINE. JOSEPH H. SWIFT, Brooklyn, N. Y. Filed July 1, 1887. Serial No. 243,106. (No model.)

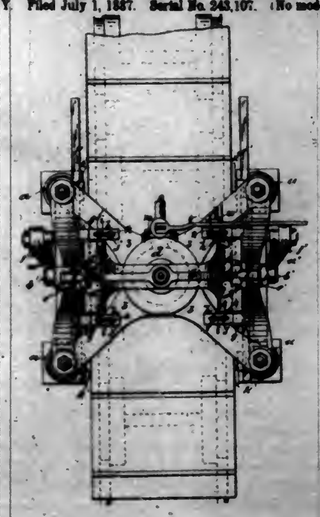
Claim.—1. The combination, in a box-nailing machine, of a support for the box or box-frame to be nailed, a reciprocating cross-head provided with the necessary nail-punches, nail-boxes adapted to co-operate with the nail-punches, and mechanism for operating the cross-head, consisting of a cylinder *d'*, supported on the frame of the machine, the piston-rod *c'* of which is connected with a crank-shaft arranged and adapted to operate the reciprocating cross-head, substantially as set forth.



2. The combination, within and upon the frame of the box-nailing machine, of a table for the support of the box or box-frame to be nailed, a vertically-reciprocating cross-head provided with the necessary nail-punches, nail-boxes adapted to co-operate with the nail-punches, and mechanism for operating the reciprocating cross-head, consisting of a steam-cylinder *d'*, provided with suitable connecting and operating parts, piston-rod *c'*, cross-head *a'*, ways *b'*, pitman *z*, crank *y*, crank-shaft *w*, crank-arms *v*, and connecting-rods *q*, which latter are connected with the crank-arms *v* and with the reciprocating cross-head, substantially as set forth.

3. The combination, within and upon the frame of a box-nailing machine of the form herein set forth, of a table for the support of the box or box-frame to be nailed, a vertically-reciprocating cross-head provided with the necessary nail-punches, nail-boxes adapted to co-operate with the nail-punches, and mechanism consisting of a steam-cylinder *d'*, with suitable connecting parts, valve-rod *l'*, treadle *o'*, spring *r'*, suitably connected with the treadle and with the machine, piston-rod *c'*, cross-head *a'*, ways *b'*, pitman *z*, crank *y*, crank-shaft *w*, crank-arms *v*, connecting-rods *q*, wrist-pins *r*, and castings *s*, for operating the reciprocating cross-head *b*, substantially as described.

408,765. BOX-NAILING MACHINE. JOSEPH H. SWIFT, Brooklyn, N. Y. Filed July 1, 1887. Serial No. 243,107. (No model.)

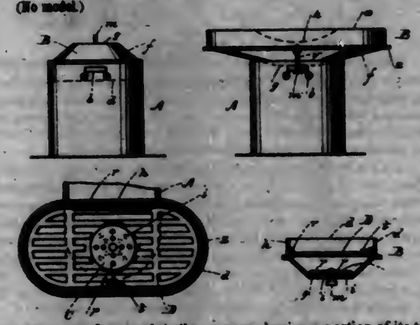


Claim.—1. The combination, in a box-nailing machine, of a support for the box or a box-frame to be nailed and a reciprocating cross-head provided with the necessary nail-punches and operated directly by the piston-rod of a cylinder *d*, supported on the frame of the machine, together with nail-boxes adapted to co-operate with the nail-punches, substantially as set forth.

2. The combination, in a box-nailing machine, of a car for the support of the box or box-frame to be nailed and a reciprocating cross-head provided with the necessary nail-punches and operated directly by the piston-rod of a cylinder *d*, supported on the frame of the machine, together with nail-boxes adapted to co-operate with the nail-punches, substantially as set forth.

3. The combination, in a box-nailing machine, substantially as set forth, of a car for the support of the box or box-frame to be nailed, and having shoulders *m'* on its opposite longitudinal sides, a vertically-reciprocating cross-head provided at or near each end with a set or series of nail-punches, sets or series of nail-boxes adapted to co-operate with the nail-punches, and mechanism, consisting of the castings *c'*, wrist-pins *b'*, rods *a'*, bell-cranks *f'*, studs *i'*, bars *j'*, and pawls *e'*, for automatically moving the car into proper position for the respective boxes to be nailed in turn.

408,766. WASH-BOILER. ARTHUR P. TURNELL and GEORGE S. BRADSTREET, Beverly, Mass. Filed Apr. 1, 1889. Serial No. 305,563. (No model.)



Claim.—1. In a wash-boiler, a cover having a portion of its top flattened and perforated, a disk swiveled to said flattened portion and provided with drain-openings, and a slotted tray adapted to be detachably secured in said cover, all being combined to operate substantially as described.

2. In a wash-boiler, a cover having the central portion of its top flattened and provided with drain-holes, a perforated disk swiveled to said flattened portion, a key for said disk, a slotted tray disposed within said cover, and a flange and catch in said cover for securing said tray, substantially as described.

3. In a wash-boiler, the combination of a body provided with handles, a cover having elongated sides and a central flattened portion in its top provided with drain-openings, a perforated disk swiveled to said top, a key for revolving said disk, a slotted tray adapted to be inserted in said cover, a flange and catch for detachably securing it therein, and a hook on the supporting-flange of said cover for securing it in an inverted position on said body, all being arranged to operate substantially as described.

4. In a wash-boiler, the combination of the body A, having the handles *b*, with the cover B, provided with the groove *k*, perforated flattened portion *g*, the perforated disk C, key *m*, and hook *r*, arranged to operate substantially as described.

5. In a wash-coiler, the combination of the body A, provided with handles *b*, the cover B, having the groove *k*, flattened portion *g*, and drain-holes *i*, the perforated disk C, the key *m*, the tray D, the flange *r*, and catch *l*, and the hook *r*, all being arranged to operate substantially as described.

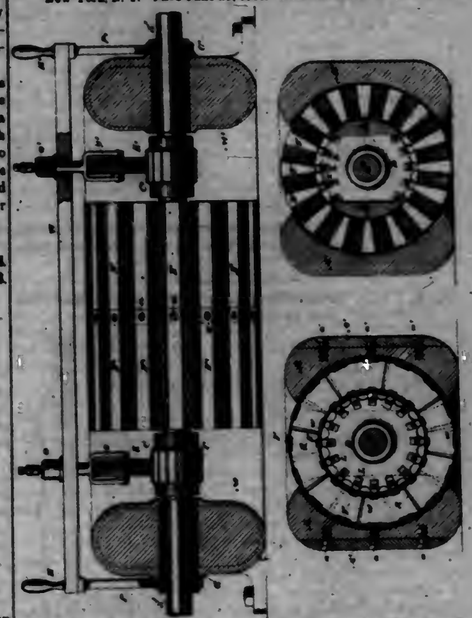
408,767. PRESSER-FOOT FOR SEWING-MACHINES. CHARLES TIBBS, Washington Heights, assignor to The Union Special Sewing Machine Company, Chicago, Ill. Filed Feb. 25, 1889. Serial No. 301,066. (No model.)



Claim.—1. The inclined roller presser-foot for sewing-machines, having a straight lateral axial stud in combination with a split inclosing bearing or box for such stud on the supporting-arm, means for confining the stud in the bearing, and independent means for tightening the bearing, substantially as set forth.

2. The roller presser-foot having the axial stud recessed and split at its outer end, the supporting-arm having the split bearing for the stud, the collar H, for confining the stud in said bearing, and the screw J, for expanding the outer end of the stud, all combined and operating substantially as set forth.

408,768. DYNAMO-ELECTRIC MACHINE. JEAN T. VAN GEETEL, New York, N. Y. Filed June 25, 1888. Serial No. 278,117. (No model.)



Claim.—1. A dynamo-electric machine having two field-magnets of horseshoe type, said field-magnets being joined together at their polar ends by scarf-splices, substantially as shown, and having interior projecting pole-pieces, in combination with an armature of the Gramme type carried on a shaft journaled at the neutral portions of said field-magnets and adapted to rotate in the groove formed at the junction thereof, said armature having commutators at its opposite ends attached to the shaft, and commutator-brushes connected together by a common connection and journaled to the frame of the machine, whereby said brushes may be adjusted conjointly, substantially as described.

2. An armature for a dynamo-electric machine or motor, having commutators on the opposite ends of its shaft, and commutator brushes or rollers bearing thereon, with means for simultaneously adjusting the brushes in either direction, substantially as described.

3. An armature-core for dynamo-electric machines, consisting of a magnetic ring attached to a hub, in combination with magnetic disks and retaining-bands F F', held in position by screws, substantially as shown and described.

408,769. DRESS-FORM. WILLIAM VOGLER, Somerville, Mass. Filed Aug. 26, 1888. Serial No. 283,746. (No model.)

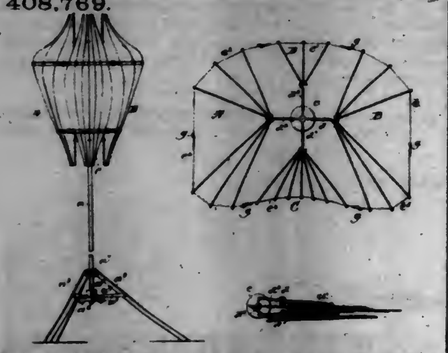
Claim.—1. In a dress-form for wearing-apparel, a supporting-rod combined with a series of independently-movable folding sections, each section consisting of separable wings and pivotally supported independently of each other on or with relation to the said rod, substantially as described.

2. In a form for wearing-apparel, a supporting-rod combined with a series of folding sections containing wings, substantially as described, and pivoted on or with relation to the said rod, the separate wings of the sections varying in shape and being independently movable with relation to each other, substantially as described.

3. The supporting-rod and the folding sections pivotally and independently connected thereto, combined with the adjusting-straps to connect the outer edges of the wings of the sections and vary their distance apart individually or the sections one from the other, substantially as described.

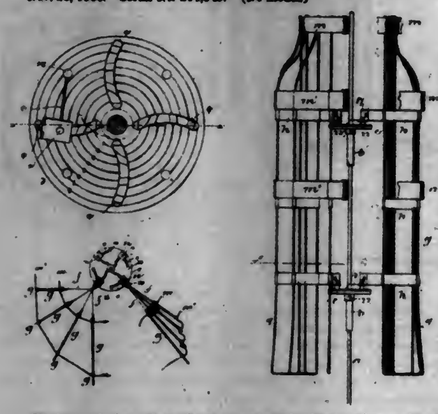
4. The supporting-rod and the sections containing wings *w w'*, pivotally supported on the said rod and swinging independently thereon, the said wings being collected in folding sections to constitute both

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the bust and skirt portion, and being adjustable toward or from the said rod in the direction of their length to vary their inclination thereto, substantially as described.

408,770. DRESS-FORM. WILLIAM VOGLER, Somerville, Mass. Filed Nov. 20, 1888. Serial No. 291,343. (No model.)



Claim.—1. In a dress-form, a series of wings, and a series of spring-arms, as *f*, arranged in groups to which the said wings are connected at one end, the other ends of the said groups of arms being joined together to form a clip or eye, as described, combined with a series of studs forming pivotal points for the connected ends of the group of spring-arms, and pivoted supports for the studs, substantially as described.

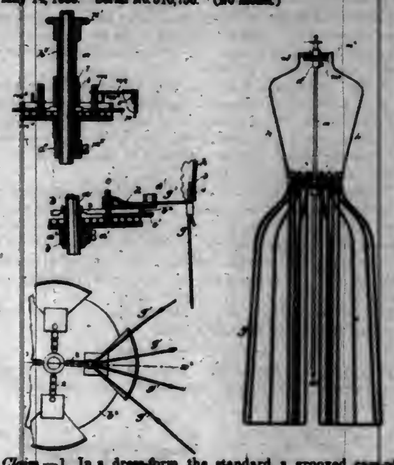
2. In a dress-form, a standard, cams thereon, slotted plates *e*, adjacent to said cams and rotatable with relation thereto, arms 15 and studs 14, extended through said plates *e*, engaging with and made movable by the said cams toward and from the said standard by rotation of plates *e*, combined with a series of arms, as *f*, connected together at one end and pivotally supported by the said studs, and with wings connected to the outer ends of the said arms, substantially as described.

3. In a dress-form, a standard, rotatable plates thereon, spring-arms *f*, pivoted thereto, and a series of pivoted wings arranged in groups and supported at the outer end of said spring-arms, the said groups of wings being each composed of several wings, as *g*, normally held together by said spring-arms, the arms being connected together at their inner ends, as described, and with a series of flexible straps, as *m*, at their outer ends to separate the wings one from the other and hold them in such position, substantially as described.

4. In a dress-form, a standard, cam-plates thereon, and rotatable slotted plates *e*, having an index or scale and concentric with said cam-plate, combined with the arms 15, pivoted upon the plates *e*, and having pins 14, and with a series of adjustable wings supported at their inner ends by the said pins, substantially as described.

5. In a dress-form, a standard, cam-plates thereon, and slotted plates *e*, adjacent thereto and having an index or scale, combined with the pivoted arms 15, having pins 14, extended through said plates *e*, and having slotted holders *n*, and with a series of adjustable wings held in said slotted holders and supported by the said pins, substantially as described.

408,771. DRESS-FORM. WILLIAM VOGLER, Somerville, Mass. Filed May 14, 1888. Serial No. 310,756. (No model.)



Claim.—1. In a dress-form, the standard, a grooved cam-plate thereon, an independent slotted cap-plate, a series of carriages having studs and shoes to be actuated by the said grooved cam-plate, combined with a series of arms arranged in groups and having depending wings attached thereto, the said arms being connected with the said carriages, to operate substantially as described.

2. In a dress-form, the combination of the following instrumentalities, viz: the standard, the grooved cam-plate a^2, an independent slotted cap-plate co-operating therewith, a series of carriages, and connected studs acted upon by said cam-plate, a series of wings having arms connected to and made movable with the said carriages, and the bust or shoulder section connected with the said wings, a series of neck-rods, a series of neck-carriages to which the said neck-rods are connected, and a slotted cam-plate, as m^4, and a cap-plate, as m^5, to actuate the said neck-carriages, substantially as described.

3. In a dress-form, the standard, the carriage notched at one end and provided with a stud, a shoe connected to the said stud, and a series of wings having arms also connected to the said carriage, combined with a grooved cam-plate and a slotted cap-plate, to operate substantially as described.

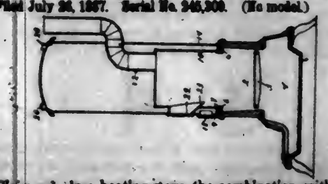
4. In a dress-form, a grooved cam-plate, a slotted cap-plate provided with radial guideways, a series of shoes placed in the said guideways, a series of studs carried by the said shoes, and a series of carriages connected with the said studs and having a series of holding-notches, combined with a series of wings having arms connected to and kept separated at the proper distances apart by the said carriages, substantially as shown and described.

408,772. SOLDERING-IRON. CHARLES I. WAGANDT, Baltimore, Md., assignor of one-half to Keen & Hagerty, same place. Filed June 11, 1888. Serial No. 313,864. (No model.)



Claim.—In a soldering-tool, the combination, with the holder having an internal and continuous screw-thread, as described, of the soldering-tip having the longitudinal channels upon its exterior and a corresponding interrupted screw-thread upon its exterior between said channels, substantially as and for the purposes set forth.

408,773. HEATING-STOVE. SAMUEL S. WALES, Minneapolis, Minn. Filed July 26, 1887. Serial No. 245,209. (No model.)

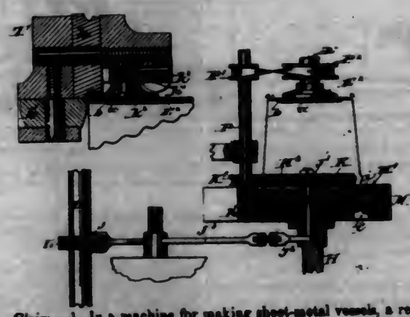


Claim.—1. In a heating-stove, the combination, with the base 2, constituting a surface for directly radiating heat into the room, of the rim 6, resting upon the top of said pot and provided upon its upper face with the flanges 7 and 9, the drum 10, resting on said rim within the flange 9 above the radiating-base 2 and provided with a closed flat top, the outer drum 14, resting on the rim 6 within the flange 7, to surround the drum 10, and having an air-inlet 18 in its side above the base and rim 6 and opening into the space between the two drums and provided with a closed top having exit-openings 20 for the attachment of conducting-flues, and having a door 16 above the flat top of the inner door, all substantially as and for the purposes set forth.

2. The combination, in a heating-stove, of the fire-pot 2, the rim 6, fitted to the top of said fire-pot and projecting inwardly over the chamber of the same and formed with the flanges 7 and 9, the drum 10, having a closed top and resting on said rim next to the flange 7, the drum 14, resting on said rim next to the flange 9 and provided with inlet-openings 18 above the rim 6 and opposite the sides of the drum 10, and exit-openings 20, the chute 22, inclined, as shown, from the door 22 in the drum 14 to within the drum 10, and the draft-pipe 12, extending upward from the top of the drum 10 near one side thereof and thence laterally to and through the side of the drum 14, all substantially as and for the purposes set forth.

408,774. MACHINE FOR MAKING SHEET-METAL VESSELS. FRANCIS A. WALES, Milwaukee, Wis. Filed Feb. 8, 1887. Serial No. 226,922. (No model.)





Claim.—1. In a machine for making sheet-metal vessels, a revoluble chuck or head having a series of grooved rolls mounted therein, in combination with means, substantially as described, for stopping the rotation of said chuck or head at a certain time and for a predetermined interval, and then permitting it to again revolve, as and for the purpose set forth.

2. In a machine for making sheet-metal vessels, a chuck or head having a series of grooved rolls mounted therein, in combination with a yielding bearing arranged within the head and provided with a series of openings corresponding with the rolls, as and for the purpose set forth.

3. In a machine for making sheet-metal vessels, the combination of a chuck or head having a series of grooved rolls mounted therein, a loose bearing arranged within the head and provided with a series of openings corresponding with the rolls, and a suitable spring or springs arranged to exert their force on said bearing, as and for the purpose set forth.

4. In a machine for making sheet-metal vessels, the combination of a head or chuck having a series of grooved rolls mounted therein and provided with a series of seats, springs arranged in the seats, and a loose plate that rests upon the springs and has a series of openings corresponding with the rolls, as and for the purpose set forth.

5. In a machine for making sheet-metal vessels, the combination, with a suitable chucking mechanism, of a beading-roll arranged to come inside a chucked vessel, a beading-surface arranged upon the outside of said vessel to oppose the said roll, and suitable mechanism for bringing the inside roll in and out of contact with the vessel while the latter is being revolved, substantially as set forth.

6. In a machine for making sheet-metal vessels, the combination of a revoluble chuck or head, a beading-roll having its journal eccentrically arranged in the spindle of said chuck or head and provided with a suitable arm, and a beading-surface in opposition to said roll, as set forth.

7. In a machine for making sheet-metal vessels, the combination of a revoluble chuck or head, a beading-roll having its journal eccentrically arranged in the spindle of said chuck or head, a beading-surface in opposition to the roll, and means, substantially as described, for automatically bringing said beading-roll in and out of contact with the body of the vessel being operated upon by the machine, as and for the purpose set forth.

8. In a machine for making sheet-metal vessels, the combination of a revoluble chuck or head having grooved rolls mounted therein, a beading-roll having its journal eccentrically arranged in the spindle of the chuck or head, a beading-surface in opposition to the roll, a brake for said chuck or head, and means, substantially as described, to automatically operate the brake and bring said beading-roll in and out of contact with the body of a vessel being operated upon by the machine at predetermined intervals, as and for the purpose set forth.

9. In a machine for making sheet-metal vessels, the combination of a revoluble chuck or head, a beading-roll eccentrically journaled to the spindle of said chuck or head, a shaft carrying a beading-roll in opposition to the one first named and provided with a pulley geared to a suitably-arranged driving-pulley, and suitable mechanism for bringing the first-named roll in and out of contact with the body of the vessel being operated upon, as and for the purpose set forth.

10. In a machine for making sheet-metal vessels, the combination of a head, seaming-rolls journaled therein and arranged in pairs, of which the flattening-rolls are arranged at an angle to the beading-rolls, and means, substantially as described, for actuating said head with relation to a vessel on the machine, whereby the flange of a cover spanning the rim of the vessel-body is laid close against the latter, and the three thicknesses of metal thus united are bent at an angle, leaving the outer edge of the cover projecting over and clasping the curve of said rim, as and for the purpose set forth.

11. In a machine for making sheet-metal vessels, the combination of a head, seaming-rolls journaled therein and arranged in pairs, of which the flattening-rolls are at an angle to the beading-rolls, means, substantially as described, for actuating said head with relation to a vessel on the machine, whereby the flange of a cover spanning the rim of the vessel-body are laid close against the latter, and the three thicknesses of metal thus united bent at an angle, leaving the outer edge of the cover projecting over and clasping the curve of said rim, and supporting-wheels for the turned stock, as and for the purpose set forth.

12. In a machine for making sheet-metal vessels, the combination of a head, seaming-rolls journaled therein and arranged in pairs, of which the flattening-rolls are beveled and at an angle to the beading-rolls, and means, substantially as described, for actuating said head with relation to a vessel on the machine, whereby the flanges of a cover spanning the rim of the vessel-body are laid close against the latter, and the three thicknesses of metal thus united bent at an angle, leaving the outer edge of the cover projecting over and clasping the curve of said rim, as and for the purpose set forth.

13. In a machine for making sheet-metal vessels, the combination of a head having seaming-rolls operatively connected thereto, a supporting-wheel for the seam, arranged on a pivoted arm, and a spring arranged to exert its force against said arm, as and for the purpose set forth.

14. In a machine for making sheet-metal vessels, the combination of a bell-crank lever, a loosely-journaled disk having seaming-rolls mounted therein, and means, substantially as described, for tilting said lever and for partially rotating the disk at predetermined intervals, as and for the purpose set forth.

15. In a machine for making sheet-metal vessels, the combination of a bell-crank lever, a loosely-journaled disk having seaming-

roll mounted therein, and means, substantially as described, for tilting said lever and partially rotating the disk at predetermined intervals, and a locking mechanism for holding the disk stationary when the seaming-rolls are in contact with a vessel being operated upon by the machine, as and for the purpose set forth.

16. In a machine for making sheet-metal vessels, the combination of a bell-crank lever carrying a loosely-journaled disk having seaming-rolls mounted therein, supporting-wheels arranged adjacent to the rolls, and means, substantially as described, for tilting said lever and partially rotating said disk at predetermined intervals, as and for the purpose set forth.

17. In a machine for making sheet-metal vessels, the combination of a chucking mechanism, a curling mechanism, a seaming mechanism, and a revoluble shaft provided with a series of cams arranged at intervals thereon to automatically impart a successive action to the several mechanisms, as and for the purpose set forth.

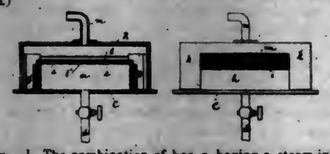
18. In a machine for making sheet-metal vessels, the combination of a chucking mechanism, a beading mechanism, a seaming mechanism, and a revoluble shaft provided with a series of cams arranged at intervals thereon to automatically impart a successive action to the several mechanisms, as and for the purpose set forth.

19. In a machine for making sheet-metal vessels, the combination of a chucking mechanism, a curling mechanism, a beading mechanism, a seaming mechanism, and a revoluble shaft provided with a series of cams arranged at intervals thereon to automatically impart a successive action to the several mechanisms, as and for the purpose set forth.

20. In a machine for making sheet-metal vessels, the combination of the chucks, curling-rolls carried by one of the chucks, a beading-roll arranged to come inside a chucked vessel, a beading-surface arranged to oppose the beading-roll, and suitable mechanism for actuating the chucks and for bringing said beading-roll in and out of contact with the chucked vessel, substantially as and for the purpose set forth.

21. In a machine for making sheet-metal vessels, the combination, with the chucks, of a roll carried by one of the chucks and suitable mechanism for bringing the roll in and out of contact with a chucked vessel from within the circumference thereof, substantially as set forth.

408,775. APPARATUS FOR STRAINING CLOTH. ADAM WARKEWICK, New York, N. Y. Filed May 14, 1889. Serial No. 310,723. (No model.)



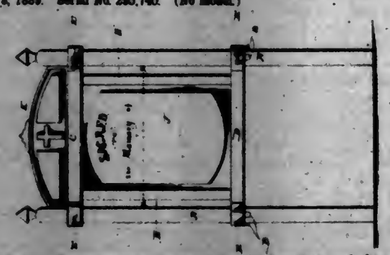
Claim.—1. The combination of box *a*, having a steam-inlet and perforated top *c*, with cover *k*, having a steam-outlet, substantially as specified.

2. The combination of box *a*, having steam-inlet and perforated top *c*, with cover *k* and uprights *h*, having cushioned edges for the admission and discharge of the cloth, substantially as specified.

3. The combination of box *a*, having a steam-inlet and a perforated top, with frame *g*, holding muslin *f*, and with cover *k*, having a steam-outlet, substantially as specified.

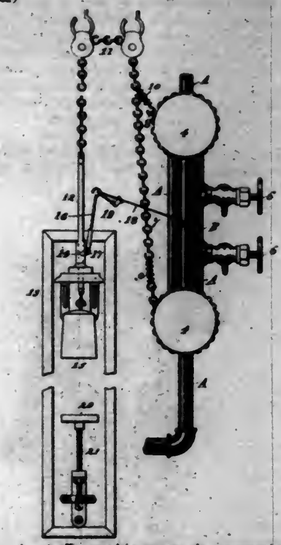
4. The combination, in a cloth-steaming machine, of the following elements: a steam-box with perforated top, a surrounding muslin-holding frame, a cover having a steam-outlet, cushions between which the cloth is admitted and discharged, and a pair of cloth-feeding heated rollers, substantially as specified.

408,776. MONUMENT. JAMES H. WEBB, Clinton, Ark. Filed Jan. 8, 1889. Serial No. 295,740. (No model.)



Claim.—The improved monument herein described and shown, consisting of the standards having the studs B, the sill D, having the sockets F in its upper side and provided at its ends with the loops E, encircling the standards and resting on the studs B, the guide-rails having tenons at their ends engaging the sockets F, and having grooves in their inner opposing faces, the panel having its side edges engaging said grooves and its lower edge resting on the sill D, the sill C, resting on the upper edge of the panel and having sockets in its lower side engaging the tenons at the upper ends of the guide-rails and provided at its ends with loops encircling the standards, and the cap-piece K, secured on the upper side of the sill C, as specified.

408,777. AUTOMATIC CUT-OFF FOR WATER-GAGES. RICHARD A. WHEDMAN, Geneva, N. Y. Filed Apr. 20, 1889. Serial No. 308,196. (No model.)



Claim.—A cut-off comprising water-glass connections mounted in the stand-pipe and provided with cut-off valves having pulleys upon the outer ends of the valve-stems, belts upon said pulleys connected to a drop-weight, a drop-weight, a lever supporting the drop, and a cord connected to the lever and a water-glass and released by the breakage of the glass, substantially as described.

408,778. ELECTRO-MAGNETIC MOORING. HARLAN P. WELLMAN, Cuttlettsburg, Ky. Filed Apr. 23, 1889. Serial No. 308,275. (No model.)



Claim.—1. A boat having a mooring-surface, in combination with a shore mooring-surface, one of said surfaces being magnetizable and the other acting as a keeper, substantially as described.

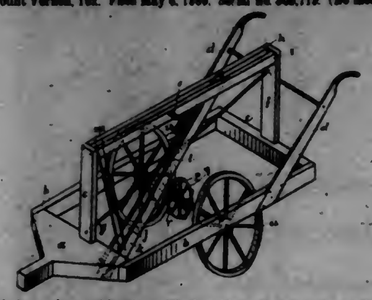
2. A boat provided with a magnetizable mooring-surface, substantially as described.

3. A boat having electro-magnets for mooring, in combination with a second mooring-surface consisting of a metal apron capable of acting as a keeper, substantially as specified.

4. A wharf having mooring electro-magnets connected by wires and provided with water-electrodes, in combination with a boat having electro-magnets for contact with said magnets on the wharf, water-electrodes connected with said boat-magnets, and a battery connected with the magnetic series for the purpose of magnetizing the same, substantially as specified.

5. A wharf having electro-magnets thereon for mooring and electrodes under water at each side of said wharf, connected with said magnets, in combination with a boat having a series of mooring-magnets, electrodes connected with said magnets and under water at each side of said boat, a battery connected with said magnets on the boat, and a switch in the circuit for controlling said magnets from the ship, substantially as specified.

408,779. COTTON SCRAPER AND CHOPPER. JOHN C. WHITE, Mount Vernon, Tex. Filed May 6, 1889. Serial No. 309,712. (No model.)



Claim.—In combination with the oblong frame of the uprights *e* and *f*, stayed by the bar *g*, beams *h* and *i*, pivoted longitudinally in the upper ends of said uprights, arms *j* and *k*, secured to the inner faces of said beams *h* and *i*, and braces *m*, secured to said beams and said arms, the scrapers secured to the lower ends of said arms, leaving when closed between them the circular opening *n*, pins *p*, working against the edges of the wheel *q*, diamond-pieces *r*, secured to the periphery of the said wheel *q* and operating to open the said arms *o*, spring *s*, operating to close said arms, said wheel *q* being operated by the axle *t* and wheels *u*, substantially as shown and described.

408,780. COMBINED FLOUR CHEST AND SIFTER. ISAAC B. WILMOT, Aurora, Ill. Filed Mar. 22, 1889. Serial No. 304,262. (No model.)

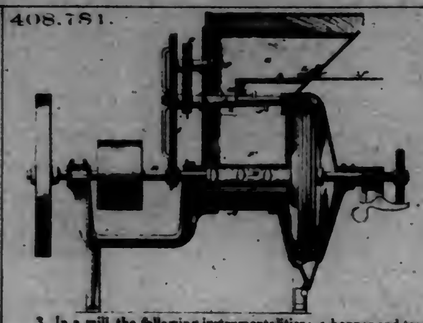


Claim.—In a combined flour chest and sifter, the combination, with a box or receptacle for containing the material, of a horizontal partition arranged in said box and provided with an annular opening, a rigid screen located below said partition and secured to the same, and a shaker adapted to fit and operate within the opening of the partition, said shaker having substantially the form of a wheel, the ribs or arms whereof form chambers for the material, the upper edges being flush with the upper edge of the partition, and means for oscillating said shaker from the outside of the box, for the purpose set forth.

408,781. GRINDING AND CRUSHING MILL. JAMES F. WIDDIFIELD, Springfield, Ohio, assignor to the Foos Manufacturing Company, same place. Filed Sept. 17, 1887. Serial No. 249,961. (No model.)

Claim.—1. In a mill, the combination, with that portion into which the material is fed, of intergearing tapering crushers mounted therein with their axes substantially parallel, whereby a gradually increasing space is formed between their bodies from one end to the other, projections extending from the crushers, and means to actuate the crushers.

2. In a mill, the combination, with that portion into which the material is fed and tapering crushers mounted therein with their axes substantially parallel, whereby a gradually-increasing space is formed between them from end to end, projections extending from the crushers, and means to rotate the crushers, of an adjustable cut-off mounted above the crushers and approximately thereto and arranged to be moved back and forth over the said space.



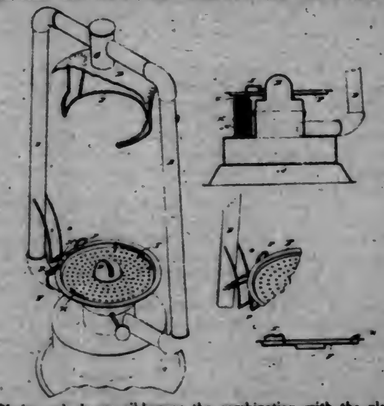
3. In a mill, the following instrumentalities: a hopper and tapering crushers mounted therein with their axes substantially parallel, whereby the space between them widens from one end toward the other, projections extending from the crushers, and means to rotate the crushers, an adjustable cut-off mounted above the crushers in proximity thereto and arranged to be moved back and forth and over the said space, an opening in the cut-off, a supplemental cut-off to control the size of said opening, an agitator arranged to feed the material through the said opening, and means to actuate the agitator.

4. In a mill, the combination, with the hopper into which the material is fed, of two tapering feeding-crushers mounted therein with their axes parallel and having protuberances extending therefrom which grow shorter and shorter from one end toward the other, for the purpose set forth.

5. In a mill, the combination, with a cut-off proper having a feed-opening therein and a supplemental cut-off fitted thereto and arranged to open and close said feed-opening, of an agitator mounted above said cut-offs and arranged to feed the material to said opening.

6. In a mill, the combination, with the portion into which the material is primarily fed and two independent disconnected crushers mounted therein, of a main shaft, a crushing-conveyer, grinding mechanism, and an intermediate operating mechanism interchangeable from one crusher to the other and arranged to receive motion from the said main shaft.

408,782. TUBULAR LANTERN. OLIVER D. WOODRUFF, Southington, Conn. Filed Jan. 26, 1889. Serial No. 297,057. (No model.)



Claim.—1. In an oil-burner, the combination, with the plate thereof, of two stationary globe-retaining devices, each consisting of a loop secured to the said plate upon which the devices are arranged for engagement throughout their length with the globe, substantially as set forth.

2. In a tubular lantern, the combination, with the plate thereof, of two parallel stationary globe-retaining devices secured to the plate on which they are arranged to be engaged throughout their length by the globe, one of the devices being virtually rigid and hooked outward for the edge of the globe to be slipped under it, and the other being yielding and adapted to be sprung toward the center of the plate when the globe is applied to the plate or removed therefrom, substantially as set forth.

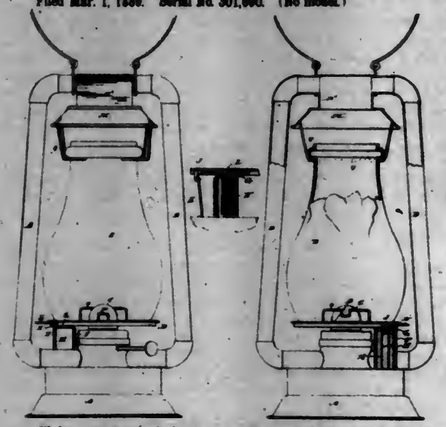
3. A tubular lantern having a rigid frame and a stationary globe-cap or dome, an automatically-lifted burner-plate confined to vertical

movement by guides, globe-retaining devices mounted upon such plate in position to stand up within the globe when the same is in place thereon, and a laterally-yielding globe-holder adapted to permit the upper end of the globe to play up and down in it, substantially as set forth.

4. A tubular lantern having a laterally-yielding globe-holder for the upper end of the globe to play up and down in, attached to the globe-cap of the lantern and braced against lateral displacement, substantially as set forth.

5. A tubular lantern having a laterally-yielding globe-holder for the upper end of the globe to play up and down in, consisting of a single piece of wire bent to embrace more than half of the circumference of the globe, then bent upward and rearward at points on opposite sides of its curved portion, and then bent downward to join such curved portion and brace the whole holder against displacement, substantially as set forth.

408,783. LANTERN. OLIVER D. WOODRUFF, Southington, Conn. Filed Mar. 1, 1889. Serial No. 301,660. (No model.)



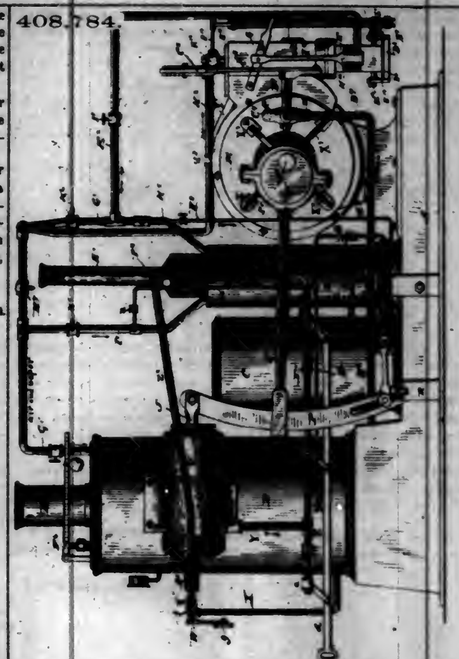
Claim.—1. In a tubular lantern, the combination, with the base thereof, of a vertically-movable burner-plate, two telescoping tubes respectively secured to the burner-plate and to the lantern-base and coupled to be relatively non-rotatable, and means for lifting the plate, which is prevented from moving laterally by the coupled tubes, substantially as set forth.

2. A tubular lantern having a movable burner-plate, two telescoping tubes respectively secured to the plate and to the base of the lantern and constructed to confine the plate to vertical movement in one plane, a spring for automatically lifting the plate, a catch consisting of a notched ear rigidly secured to and depending from one edge of the plate, and a long loop for engagement with such catch, secured to the base of the lantern and standing in a virtually upright position, substantially as set forth.

3. In a tubular lantern, the combination, with the draft-tubes thereof, of a fixed globe-cap located below the curved upper ends of the said tube and a long narrow draft-chest extending parallel with the said curved ends of the tubes and opening into them at its upper end and at its lower end into the globe-cap, substantially as set forth.

4. In a tubular lantern, the combination, with the draft-tubes thereof, of a fixed globe-cap located below the curved upper ends of the said tubes, a fixed globe-holder depending below the cap and adapted to have the upper end of the globe play up and down in it, a globe, an automatically-lifted burner-plate, and a long narrow draft-chest extending parallel with the said curved ends of the tubes and opening thereinto and interposed between them and the globe-cap, with the interior of which it communicates through a long narrow opening, substantially as set forth.

408,784. COMPRESSED-AIR ENGINE. BENJAMIN F. WESCOTT, Lovington, Va. Filed Sept. 26, 1888. Serial No. 286,442. (No model.)



Claim.—1. In a motor, the combination of a burner composed of an inner and outer shell with intermediate air-passages, a filling in the inner shell, pipes for feeding the vapor and fluid to the burner, a hinged plate for regulating the supply of air to the burner, links N^{13}, pivoted to this plate, eccentrics M^{13}, embraced by these links, and a shaft carrying these eccentrics, substantially as described.

2. In a motor, the combination of the combustion-chamber G, a burner F, attached thereto at its lower end, a hinged plate for regulating the supply of air to the burner, links N^{13}, connected to this hinged plate, eccentrics M^{13}, embraced by these links, a shaft carrying these eccentrics, a lever L^{10} for operating this shaft, a pipe R^{10}, leading into the combustion-chamber, a valve in this pipe, and links or rods M^{10}, connecting the stem of this valve with the lever L^{10}, substantially as described.

3. In a motor, the combination, with the burner having air-passages at each side for the admission of air to support combustion, of the hinged plate whereby the passages are opened and closed to regulate the supply of air, substantially as specified.

4. In a motor, the combination, with the driving-shaft of the engine or motor, of the eccentrics mounted thereon, the eccentric-arms, the oscillating segments to which said arms are adjustably connected, the air-pumps having their piston-rods connected with said segments, and the compressed-air holder connected with said pumps and with the burner of the motor, substantially as and for the purposes set forth.

5. In a motor, the combination, with the segments P, of a pump having its piston-rod adjustably connected therewith, and the pipe-connections communicating with the feed-water heater and the pump and compressed-air holder, whereby water is supplied to said holder, substantially as and for the purposes specified.

6. In a motor, the combination, with the segments P P', the driving-arms S S', adjustably connected to the said segments, and the eccentrics of the motor, of the air-pumps, the water-pump, and the oil-pump, having their piston-rods connected with said segments, whereby the respective pumps are simultaneously operated, substantially as and for the purposes set forth.

7. In a motor, the combination, with the exhaust-pipe of the engine, of the coil connected therewith and the compressed-air holder, in the lower part of which the coil is located, substantially as and for the purposes set forth.

8. In a motor, the combination, with the coil located in the compressed-air holder, of the feed-water heater, the coil located therein, and the pipe connecting the respective coils, whereby the water in the feed-water heater is heated, substantially as specified.

9. In a motor, the combination, with the coil of the feed-water heater and the air-pumps U, of the pipe Z, having valves *a b c*, the pipe Y, connecting the said pipe with the pump, the pipe W, having valves *e f*, and the pipe Z^3, leading to the stack of the superheater D and arranged to operate substantially as and for the purposes specified.

10. In a motor, the combination, with the holder B, of the pipe G^3, leading to the burner and provided with a valve H^7, the pipes G^2 I^3, having valves H^3 K^3, and the coil in the superheater connecting with said pipes H^3 I^3, whereby the air and aqueous vapor may be superheated in its course to the burner, substantially as specified.

11. In a motor, the combination, with the pipe G^2, of the valve Z^3, having an angle-lever Y^3 secured to its stem, of the disk D^3, secured to the driving-shaft of the engine, the friction-roller B^3, secured to this disk, whereby the said arm is actuated, and the lever B^2, connecting with the stem of the reversing-valve O^2 of the engine, whereby the products of combustion are automatically cut off from the cylinder and the oil supplied in properly-regulated quantities to the burner to permit the products of combustion to operate expansively, substantially as specified.

12. In a motor, the combination, with the external shell of the superheater F^2, of the internal shell and the ribs thereon forming tortuous passages for the compressed air and aqueous vapor, substantially as specified.

13. In a motor, the combination, with the burner, of the hinged plate D^2, the lever L^{10}, the shaft L^{12}, the eccentrics M^{12} and straps N^{12}, the rod M^{10}, connecting with the said lever, the connecting-rod N^{10}, and valve P^{10} of the exhaust-pipe, leading from the combustion-chamber F^2, whereby the draft through the combustion-chamber is regulated, substantially as specified.

14. In a motor, the combination, with the burner F and the superheater above the same, of the connecting-pipe B^{10}, having a controlling-valve T^{10}, whereby compressed air and vapor may be supplied to the burner, substantially as set forth.

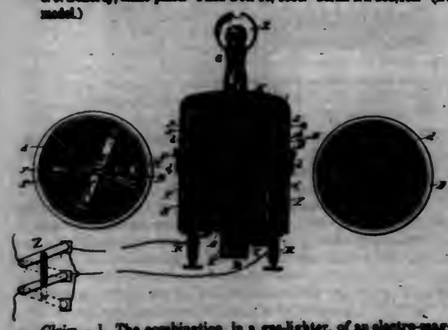
15. The combination, in a motor, of a rotary engine, a combustion-chamber connected to the valve-box of the engine, this chamber being provided with superheating tortuous passages, these passages being connected to the combustion-chamber proper near its lower end by means of passages I', a burner arranged immediately below this combustion-chamber, and valved pipes for conducting compressed air respectively to the said combustion-chamber and burner, substantially as described.

16. The combination, in a motor, of an engine, a burner and combustion-chamber connected thereto, an air-holder containing water, a coil or its equivalent for heating and vaporizing the water, means for compressing air into this holder, and valved pipes for conveying compressed air and vapor to the combustion-chamber, substantially as described.

17. In a motor, the combination of an engine, a combustion-chamber and burner connected to the engine, a compressed-air holder connected to the combustion-chamber by pipes, a valve Z^3 in these pipes, a weighted operating-lever Y^3, connected to this valve, and a disk or cam on the drive-shaft of the engine, provided with a pin B^3 for operating the said lever Y^3, substantially as and for the purpose specified.

18. In a motor, the combination, with a compressed-air holder, an engine provided with a burner, a pipe connecting this burner with the said compressed-air holder, means for compressing the air into the said holder, and a superheater connected to the said connecting-pipe between the air-holder and burner of the engine, and valves in the said pipe, substantially as described.

408,785. ELECTRIC GAS-LIGHTER. THEODORE J. SCHLLER, Louisville, Ky., assignor to himself, Daniel R. Doherty, R. D. Mattingly, and C. J. Doherty, same place. Filed Dec. 10, 1888. Serial No. 293,102. (No model.)



Claim.—1. The combination, in a gas-lighter, of an electro-magnet, an armature therefor, a feed-pipe having an orifice to discharge the gas, and a valve constructed and arranged to be held in its normally-closed position contiguous to said orifice, but free from the walls thereof, and opened to allow the full force of the gas to pass through without friction between the valve and the walls of the orifice, substantially as described.

2. The combination, in a gas-lighter, of an electro-magnet, a permanent magnetic armature therefor, a feed-pipe having an orifice to discharge the gas, a valve held by the attraction of the permanent magnet in its normally-closed position contiguous but free from contact with the walls of said orifice, and constructed to move away from the same to admit the full discharge therefrom without friction between the walls of said orifice and the valve, substantially as described.

3. The combination, in a gas-lighter, of an electro-magnet, a permanent magnetic armature, a feed-pipe having an orifice to discharge the gas, and a valve moving over said orifice to partially close the same while free from contact with the walls thereof, substantially as described.

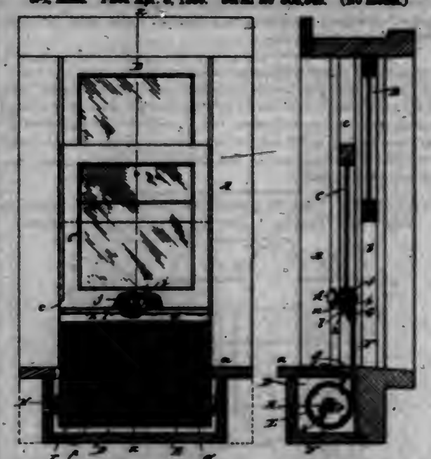
4. The combination, in a gas-lighter, of an electro-magnet, a permanent magnetic circular armature therefor mounted on a central shaft, a feed-pipe having an orifice to discharge the gas, and a valve connected to and moving with said armature and over said orifice, substantially as described.

5. The combination, in a gas-lighter, of an electro-magnet, a permanent magnetic circular armature therefor mounted on a central shaft, a feed-pipe having an orifice to discharge the gas, a valve connected to and moving with said armature, and means, as the screw Q, for regulating the amount of discharge for the taper, substantially as described.

6. The combination, in a gas-lighter having upper and lower chambers, of an electro-magnet set in the lower chamber, a permanent magnetic circular armature therefor working in the upper chamber and mounted on a central shaft, a tube extending into the lower chamber and surrounding the central shaft, a feed-pipe passing through the lower chamber and terminating in the upper chamber, and a valve connected to and moving with the armature and partially closing the mouth of the feed-pipe, substantially as described.

7. The combination, in a gas-lighter, of an electro-magnet, a permanent magnetic armature therefor having its opposite poles arranged on opposite sides of one pole of the electro-magnet, a feed-pipe to discharge the gas, and a valve moving with said armature and governing the emission of the gas from said feed-pipe, substantially as described.

408,786. WINDOW-SCREEN. ABRAHAM ABRAHAMS, Northampton, Mass. Filed Apr. 3, 1888. Serial No. 269,849. (No model.)



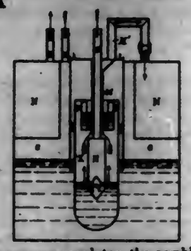
Claim.—The combination, with a window-sill having a casing thereunder and an opening *d* therethrough, and the sash having in its lower rail a recess *i* within the thickness thereof and extended upwardly vertically from the lower edge thereof, the horizontal rotatable spindle projected across said recess and provided therein with the hooked arm *l*, said spindle being extended through and beyond the outer side of the sash-rail and there provided with a handle-knob, of the spring-reacting roller, and the flexible screen thereon projected through said casing-opening, and provided with the strip G, having the angular arm *m* adapted to project into said sash-recess *i* and be engaged by said hooked spindle-arm *l*, all substantially as shown, for the purpose set forth.

408,787. DUST-COLLECTOR. JOSEPH S. ASH, Canal Winchester, Ohio, assignor of one-half to Charles B. Cowan, same place. Filed Nov. 14, 1888. Serial No. 290,982. (No model.)



Claim.—In a dust-collector, the combination of an outer cylindrical and conical case having a tangential inlet-spout, a dust-outlet, and a top plate having a central opening therein, an open-bottomed conical funnel *f*, fitted to said opening and provided with vertical slots having outwardly-projecting lips, and an open-bottomed conical funnel *e* between the outer case and the inner funnel *f*, said funnel *e* having a closed top and outwardly-lipped vertical slots, substantially as and for the purpose described.

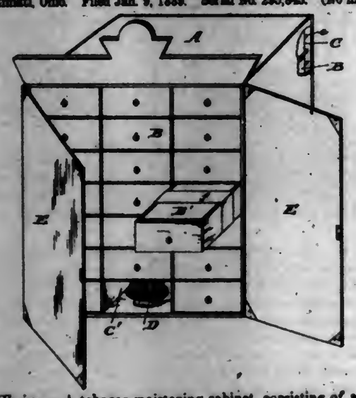
408,788. PRESSURE-REGULATOR. THEOPHILE BACKLEJAN, Mechlin, Belgium. Filed June 10, 1889. Serial No. 313,699. (No model.) Patented in Belgium Sept. 10, 1888, No. 80,317, and in Luxemburg May 13, 1889, No. 1,134.



Claim.—1. In a pressure-regulator, the combination, with a vessel having an inlet, an open-ended chamber dipping into a liquid therein, and a fixed pipe having perforated openings in its base, forming a second inlet, of a float closed by a liquid seal and carrying a liquid adapted to cover the perforations in the fixed pipe to a greater or less degree as the float rises or falls under the varying pressure of the gas in the main chamber, and a suitable outlet from said float, substantially as described.

2. A pressure-regulator consisting of a vessel C, having an inlet, an open-ended chamber dipping into a liquid therein, having air-openings *l*, and a fixed pipe having perforated openings *i* in its base, forming a second inlet, a float closed by a liquid seal and carrying a liquid adapted to cover the perforations *i* to a greater or less degree as the float rises or falls under the varying pressure of the gas, an outlet from said float communicating with a chamber N, and an outlet, substantially as described.

408,789. TOBACCO-MOISTENING CABINET. OSCAR BEJACH, Cincinnati, Ohio. Filed Jan. 9, 1889. Serial No. 295,843. (No model.)



Claim.—A tobacco-moistening cabinet consisting of a case A, provided with vertical partitions *a* and horizontal supporting-pieces *a'* *a²*, covered drawers B, mounted therein, stops *c*, moistening device D, and a moistening-chamber C C', whereby moistened air is brought in contact with each drawer in the case, substantially as described.

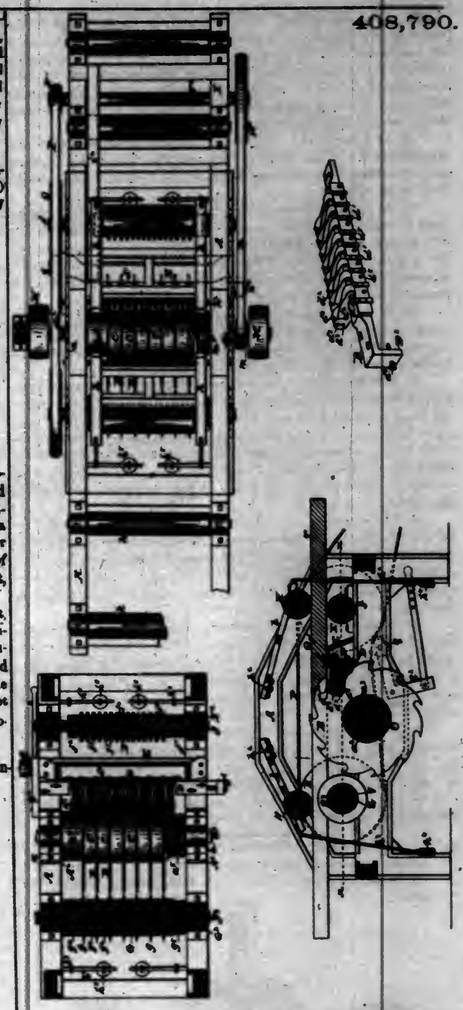
408,790. GANG CIRCULAR SAWING MACHINE. JAMES O. BUTLER, Verbena, Ala. Filed June 23, 1888. Serial No. 277,956. (No model.)

Claim.—1. The combination of a series of saws and collars mounted upon an arbor, a series of fingers between said saws, each finger provided with two horizontal pins located vertically one above the other, and set-screws for each pin, with a bar D and finger-retaining screws d^5, and a rod passing through all the fingers, substantially as and for the purpose described.

2. The combination of a series of saws and removable collars mounted upon an arbor, a series of vertically-adjustable fingers between said saws, and two horizontal pins projecting from each finger, with the transverse bar D, the rod *d*, and the angular protecting-bar E, extending in front thereof and over said fingers, substantially as and for the purpose described.

3. The combination of a series of saws mounted upon a sleeve secured to an arbor, and a series of fingers between said saws, each intermediate finger having two adjustably-retained pins projecting from its sides and located one vertically above the other, with a feed-roll consisting of a series of spur-wheels and washers mounted upon and clamped on a shaft, substantially as and for the purpose described.

4. The combination of a series of saws mounted upon a sleeve carried by an arbor with a shaft having a series of disks and parting-rings thereupon, each disk tapering on both sides adjacent to its periphery and constituting wedges to relieve the saws of pressure, and a smooth-face pressure-roll over said disks, substantially as described.



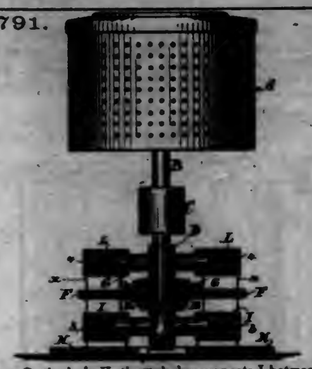
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408,791. CENTRIFUGAL SEPARATOR. CHARLES L. CAIRNS, Jersey City, N. J. Filed Apr. 15, 1889. Serial No. 307,318. (No model.)

Claim.—1. The combination, with the basket A and vertical shaft B, of the tubular socket D, having a globular bearing around the exterior surface thereof, the ring F and cap G for receiving such globular bearing, and a range of tubular supports, springs, and plugs occupying radial positions to the socket for sustaining the same, substantially as set forth.

2. The combination, with the basket, the vertical shaft, and the pulley, of the tubular socket D, having a globular bearing, the ring

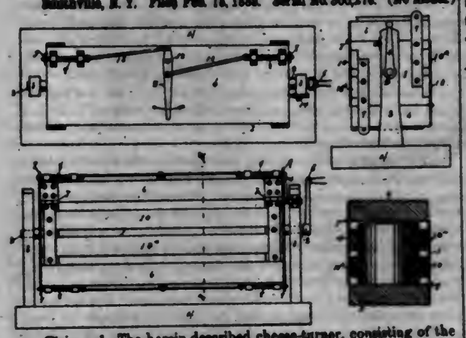
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F and cap G, the base H, the tubular supports I between the base H and ring F, the plugs K, and springs 3 within the tubular supports and bearing against the lower part of the tubular socket, substantially as set forth.

3. The combination, with the vertical shaft and the basket, of the tubular socket D, having a globular bearing, the ring F and cap G for supporting said bearing, the base-plate H, with which the ring F is connected, and two ranges of plugs and springs placed radially to the socket and acting against the same, said plugs being received into tubes upon the ring and base respectively, substantially as set forth.

408,792. DEVICE FOR TURNING CHEESE. MILO V. CARR, Smithville, N. Y. Filed Feb. 18, 1889. Serial No. 300,276. (No model.)



Claim.—1. The herein-described cheese-turner, consisting of the receptacle having end pieces, bars forming sides secured to the end pieces, the hinged covers 6 6 upon opposite sides of the receptacle, the catches for securing the covers of the receptacle in closed position, the removably-secured side bar adjacent to the opening edge of the covers and mounted upon gudgeons in the end pieces, the bearings for the gudgeons, and the catch for securing the receptacle in position with either cover uppermost.

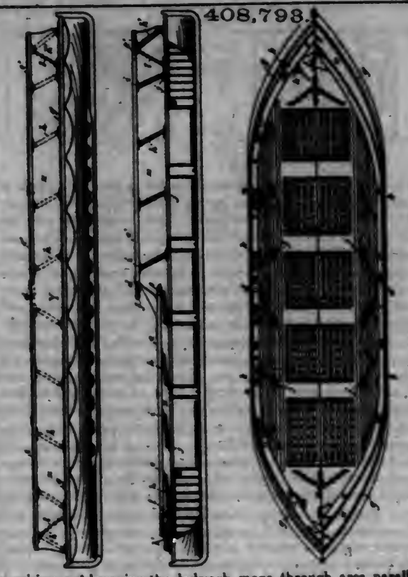
2. The herein-described cheese-turner, consisting of the receptacle 1, having end pieces and bars forming sides secured to the end pieces, the hinged covers 6 6 upon opposite sides of the receptacle, the spring-actuated bolts for securing the covers in closed position and the operating-lever and connecting-rods, the removably-secured side bars adjacent to the opening edges of the covers and mounted upon gudgeons in the end pieces, the bearings for the gudgeons, and the catch for securing the receptacle in position with either cover uppermost.

3. In a cheese-turning device, the combination of the rectangular receptacle having covers 6 6 and the removably-secured bars 10, said receptacle being mounted upon gudgeons, the bearings for the gudgeons, the catches for securing the covers in closed position, and the catch for securing the receptacle in position with either cover uppermost.

408,793. COLLAPSIBLE BULWARK FOR LIFE-BOATS, &c. WILLIAM CHAMBERS, HUGH CHAMBERS, and JAMES CHAMBERS, Strathleven Place, Dumbarton, County of Dumbarton, Scotland. Filed May 23, 1889. Serial No. 312,351. (No model.) Patented in England Nov. 16, 1888, No. 16,628.

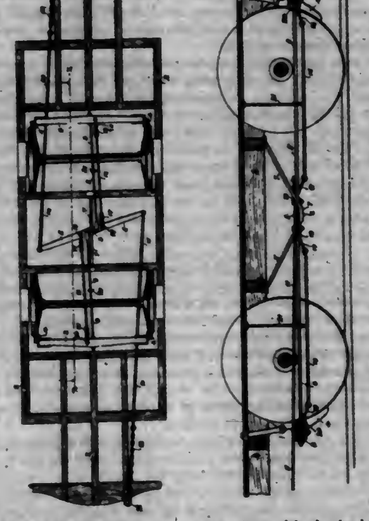
Claim.—In a partly-collapsible life or other boat, a gunwale or rail divided at or near midships into two sections *c c'*, adapted to receive and sustain a bulwark of flexible material, said sections being connected to the boat by stanchions pivoted to said sections, which

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in raising and lowering the bulwark move through arcs parallel to the longitudinal axis of the boat, the stanchions supporting one section of the rail moving in a direction opposite to those supporting the other section, substantially as described.

408,794. CAR-BRAKE. JAMES H. CLARK, Flatbush, assignor to to Charles E. Harris, Brooklyn, N. Y. Filed June 11, 1889. Serial No. 313,828. (No model.)



Claim.—In a car-brake, the combination, with the brake-lever and brake-beam provided with the usual rigid connecting-rod, of a flexible or jointed connection between the brake-lever and brake-beam, as and for the purposes set forth.

408,795. COMBINATION-LOCK. JAMES D. CRAIG, Rogers Park, Ill., assignor to the Keyless Lock Company, of Illinois. Filed Sept. 26, 1887. Serial No. 250,600. (Model.)

Claim.—1. In a combination-lock, the combination, with a suitable casing, a bolt having a pin, and notched tumblers, of an index-

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plate having a serrated periphery, excepting at one part, which is plain or smooth, said index-plate having at its periphery one or more notches, a cam-plate having a cam-slot which receives the said pin on the bolt, and a spring-pressed lever pivoted to said cam-plate and having a catch-piece or key to bear upon the periphery of the said index-plate and to enter the notches of the said tumblers and index-plate when they are all brought into register, and serving to move the said cam-plate and bolt when the said driver, index-plate, and tumblers are turned, substantially as and for the purpose set forth.

2. In a combination-lock, the combination, with a suitable casing, a bolt, a cam plate, a spring-pressed lever pivoted to the latter and provided with a catch-piece or key, and an index-plate having serrated and smooth portions at its periphery, of a series of notched tumblers connected together and one of which consists of two disks, one of said disks having a pin, and the other of said disks being changeable and reversible and having a series of holes into any one of which the said pin may be entered from either side of the changeable and reversible disk, substantially as and for the purpose set forth.

3. In a combination-lock, the combination, with a suitable casing, a bolt, a cam-plate, a spring-pressed lever pivoted to the latter and thus movable therewith and provided with a catch-piece or key, and a series of connected notched tumblers, of a reversible index-plate having serrated and plain surfaces and notches at its periphery, and having also two or more slots into either of which a pin on the adjacent tumbler may enter, and between said slots an aperture, and a driver having a pin to enter the said aperture, substantially as and for the purpose set forth.

4. In a combination-lock, the combination, with an index-plate and tumblers each having a radial notch and all arranged together for rotary movement on a common support, of a bolt, a cam-plate arranged to rotate on said support, a spring-pressed lever pivoted to said cam-plate and provided with a key or catch-piece, a cap-plate having a curved flange on its under surface to positively hold the said key or catch-piece in engagement with the notches of the index-plate and tumblers during the locking and unlocking movements, and a spring arranged to serve as a stop for the said cam-plate in one direction, substantially as set forth.

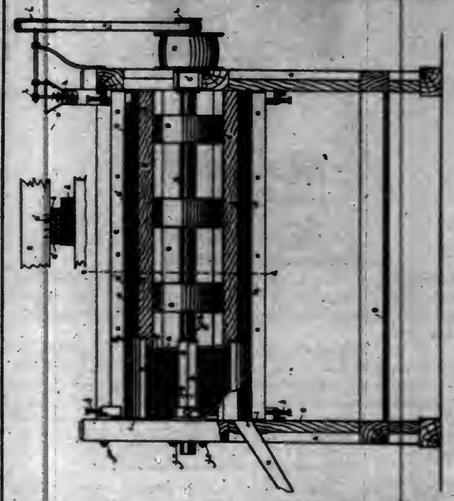
5. In a combination-lock, the combination, with an index-plate and tumblers each having a radial notch and all arranged together for rotary movement on a common support, of a bolt, a cam-plate arranged to rotate on said support, a spring-pressed lever pivoted to said cam-plate and provided with a key or catch-piece, a cap-plate having a curved flange on its under side to positively hold the said key or catch-piece in engagement with the notches of the index-plate and tumblers during the locking and unlocking movements, a spring arranged to serve as a stop for the said cam-plate in one direction and a stop to limit the movement of the said cam-plate in the opposite direction, substantially as set forth.

6. In a combination-lock, the combination, with the bolt, the connected notched rotary tumblers and index-plate, and the driver to turn the said tumblers and plate, of the rotary cam-plate, the spring-pressed lever pivoted thereto and provided with a key or catch-piece to enter the notches of the said index-plate and tumblers, and a stop to be engaged by the said key or catch-piece when it is lifted from the notches of the tumblers and index-plate and thereby limit the turning movement of the cam-plate in one direction when the tumblers and index-plate are to be rotated, and a stop—as part of the spring d'—to limit the movement of the said cam-plate in the opposite direction, substantially as set forth.

7. In a combination-lock, the combination, with the base-plate A, having the hollow standard or tumbler-support B, of the bolt C, having the pin c, the cam-plate D, having the cam-slot d^7 to receive the said pin, the spring-pressed lever d', having the key or catch-piece d^4, a series of notched rotary tumblers on said standard or support, a rotary index-plate I, connected with said tumblers and having a periphery with serrated and smooth portions and one or more radial notches, a driver J, connected with said index-plate, and a cap-plate K, having an internal curved flange k', substantially as set forth.

8. In a combination-lock, the combination, with a bolt, a serrated and notched index-plate, and notched tumblers, of a cam-plate to operate said bolt, a spring-pressed lever pivoted to said cam-plate and provided with a catch-piece or key to enter the peripheral notches of the said index-plate and tumblers and thus communicate the movements thereof to the cam-plate and bolt, substantially as set forth.

408,796. MACHINE FOR DELINTING COTTON-SEED. GEORGE E. CROMER, Senoraba, County of Chester, assignor of one-half to John Rockwell Clark, Liverpool, England. Filed Mar. 11, 1889. Serial No. 302,816. (No model.) Patented in England May 24, 1888, No. 7,941.



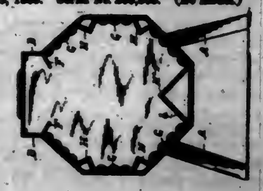
Claim.—1. In a machine for cleaning cotton-seed or the like, the combination, with an inner rotatable drum provided with a stiff brush-surface, of an outer skeleton abrading-cylinder, concentric with the said drum, consisting of a spiral bar c in close proximity to the brush-surface, and having its sides cut with rasped or file-like teeth, and of one or more spiral bars d, alternating with but not quite touching the spiral bar c or each other, arranged with their interned faces at a suitable distance from the brush-surface and having said faces cut with rasped teeth, substantially as set forth.

2. In a machine for cleaning cotton-seed or the like, the combination, with an inner rotatable drum provided with a stiff brush-surface, of an outer concentric skeleton abrading-cylinder consisting of a rectangular spiral steel bar c, alternating with one or more triangular spiral steel bars d, arranged with their angles not quite touching each other or the rectangular spiral bar aforesaid, the rectangular bar c having a pitch decreasing as the exit end of the cylinder is approached and its inner face being located in close proximity to the brush-surface, the triangular bars d having their bases arranged at a suitable distance from the said brush-surface, and provided with rasped teeth gradually decreasing in coarseness toward the exit, substantially as set forth.

3. In a machine for cleaning cotton-seed or the like, an inner rotatable drum provided with a stiff brush-surface and an outer fixed abrading-cylinder formed of a series of approximately-parallel rasped bars d, arranged circumferentially a short distance apart at a suitable distance from the brush-surface, in combination with a fixed spiral bar c, projecting beyond the abrading-surface of the cylinder into close proximity with the brush-surface, substantially as set forth.

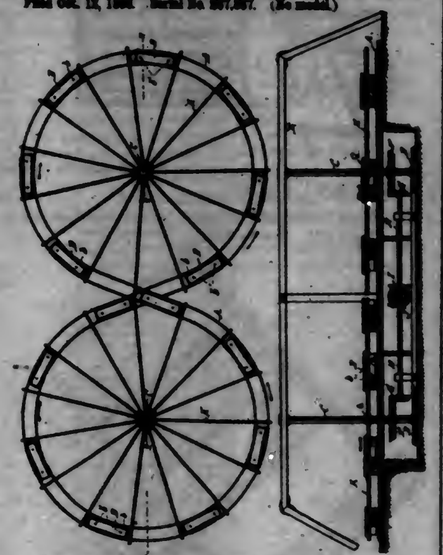
4. In a machine for cleaning cotton-seed or the like, the combination, with an inner rotatable brush-drum B, of the outer skeleton abrading-cylinder E, surrounding said drum and divided longitudinally into sections, each separately removable, the brackets J, supporting said cylinder, and each adjustable in a given direction upon the machine-frame, a bolt-and-slot device j' j^3, whereby the said brackets may be adjusted, and an adjusting-screw j, journaled in each of said jaws and adapted to adjust the cylinder within the same in a direction at right angles to the adjustment of the jaw, substantially as described.

408,797. WASHING-MACHINE. WILLIAM S. CROUT, Apopka, Fla. Filed Jan. 3, 1889. Serial No. 295,902. (No model.)



Claim.—The combination, with the frame A, of the polygonal sub-box B, pivotally secured in the top thereof, having neck D and the deflectors F, the transverse U-shaped pieces G, and the V-shaped pieces H and the V-shaped piece H', substantially as described.

408,798. ROUNDABOUT. WILLARD A. DOREE, Alfred Centre, N. Y. Filed Oct. 12, 1888. Serial No. 287,897. (No model.)



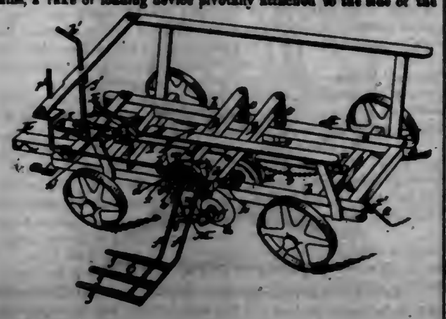
Claim.—1. The combination, with a track substantially in the form of two circles and crossing itself on the same plane at the adjacent parts of said circles, of two shafts revolved by intermediate gearing in opposite directions, a series of drivers carried around by said shafts, and a series of cars arranged between the drivers and running in opposite directions around the two circles of the track, substantially as described.

2. The combination, with a track substantially in the form of two circles and crossing itself on the same plane at the adjacent parts of said circles, of a series of cars running on said track, the vertical shafts C C, one set in the center of each track, a series of arms K K, running over said track, for driving the cars, supported by and carried around on said shafts, and intermediate gearing carrying the two shafts around at the same speed in opposite directions, substantially as described.

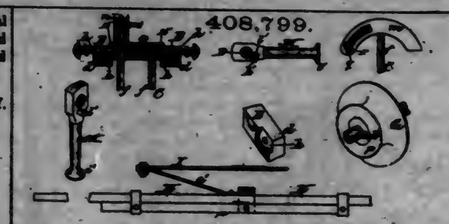
408,799. COMBINED HAY RAKING AND LOADING DEVICE. LOUIS H. DWELLEY, Fenerok, Me. Filed Nov. 28, 1888. Serial No. 291,906. (No model.)

Claim.—1. The combination, with a wagon or cart provided with a sliding pole or thills connected with and adapted to operate a rake or loading device pivotally attached to the side of the wagon or cart, substantially as described, of an automatically-operated dog or stop adapted to arrest the forward motion of the wagon when the rake or loading device is to be raised to discharge its load, substantially as described.

2. The combination, with a wagon or cart, of a sliding pole or thills, a rake or loading device pivotally attached to the side of the



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wagon or cart, a longitudinally-movable bar connected with and operated by the pole or thills, a rotating shaft connected with and operated by the longitudinally-movable bar and carrying a load-lifting wheel, a chain or rope operated by the load-lifting wheel, connected to and operating the rake or loading device, substantially as described, and a dog or stop for locking the sliding bar while the wagon is moving forward, and releasing the said bar when the rake or loading device is to be raised, substantially as set forth.

3. The combination, with a wagon or cart, of a sliding pole or thills, a rake or loading device pivotally connected to the side of the wagon or cart, the longitudinally-movable bar I, connected to the sliding pole or thills by a link or bar e', the transverse shaft D, carrying the drum or pulley H and load-lifting wheel G, the chain t, passing around the pulley H and secured at its opposite ends to the bar I, the chain or rope x, operated by the load-lifting wheel and connected to and operating the rake or loading device, and the dog or lever L, operated by the arm f' on the crank-shaft f, and adapted to enter apertures or notches in the bar I, whereby the latter is locked and released, all operating substantially in the manner and for the purpose set forth.

4. The combination, with a wagon or cart provided with a raking or loading device pivotally connected to its side and operated, while the wagon is at rest, by the forward movement of the sliding pole or thills connected therewith, of a dog or stop adapted to be automatically released and dropped to the ground to arrest the forward motion of the wagon just previous to the elevation of the rake or loading device, and to be automatically raised from the ground to allow the wagon to move forward on the descent of the rake, substantially as set forth.

5. The combination, with the load-lifting wheel G, having a lug or projection l' on its side, of the pivoted dog or stop M, provided with a lug or projection l, adapted to be engaged by the lug l', whereby the said dog is forcibly raised from the ground to release the wagon on the descent of the rake or loading device and permitted to drop and engage with the ground just previous to the lifting of the rake with its load, substantially as set forth.

6. The combination, with the wheel G and the dog M, operating as described, of the hook m', operated by the lever g' and adapted to engage and hold up the dog M while the rake or loading device is being raised to pass over an obstruction, substantially as set forth.

7. The combination, with the rake or loading device and its carrier-shaft c, mounted on the wagon or cart and provided with end sockets or cavities 15, of the removable pivots or pins k, adapted to enter the sockets 15, and the clamping-screws i, for holding said pins in place, substantially as described.

8. The combination of the carrier-shaft c, mounted on the wagon or cart between supports provided with semicircular guiding-recesses k, formed around and concentric with the pivot-holes, and the pivots or pins A, fitting into sockets or cavities in the ends of said carrier-shaft c, substantially as and for the purpose set forth.

9. The segmental sheave m, provided with an aperture 16 and slot 17, in combination with the pin q, having an eccentric flange r, and the lip or projection s on the side of the sheave, with which the flange r engages to hold the pin q securely in place, substantially as described.

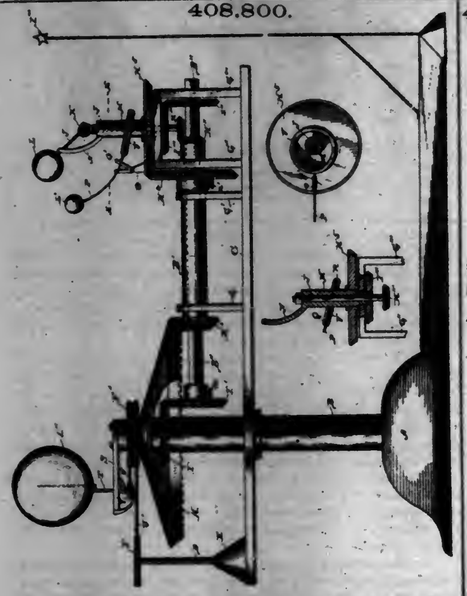
10. The combination, with a wagon or cart having a rake or loading device pivotally connected to its side and operated by a sliding pole or thills, whereby it is raised with its load while the wagon remains stationary, as described, of the pivoted dog Q, adapted to engage with the ground and prevent the backward movement of the wagon when going uphill in loading, substantially as described.

11. The combination, with the sliding pole or thills and the longitudinally-movable bar I, adapted to operate the rake or loading device, substantially as described, of the connecting link or bar e', pivoted at one end to the pole or thills and at the opposite end to the bar I, whereby the latter may be operated when the pole or thills are at an angle therewith, substantially as set forth.

408,800. TELLURIAN. HENRY H. PHLEPS, De Funiak Springs, Fla. Filed Apr. 20, 1889. Serial No. 308,128. (No model.)

Claim.—1. The combination, with the shaft B, bearing the fixed

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gears H I, of the bar pivoted thereon, the earth and moon models mounted on geared supports borne by the bar, the shafts B' B", mounted also upon the bar, the gear I', detachably engaging the gear I and imparting motion to the shaft B", gearing transmitting the motion of said shaft to the earth-model support, and gearing engaging the gear H and imparting motion, through the shaft B', to the earth-model axis and to the moon-model support.

2. The combination, with the shaft B, bearing the fixed gears H I, of the bar pivoted upon said shaft, the earth and moon models mounted in geared supports upon the bar, the independently-revoluble shafts B' B", mounted also upon the bar, the gearing engaging the gear I and imparting motion, through the shaft B", to the earth-model support, gearing engaging the gear H and imparting motion, through the shaft B', to the earth-model axis, and the gear H^4, mounted upon the shaft B' and detachably engaging the geared moon-model support.

3. The combination, with the rotating moon-model support, of the jointed standard O thereon, the curved moon-model wire P, pivoted in the top of said standard and provided with the revoluble terminal ball Q, the vertical shaft M, concentric with said support and bearing the oblique earth-model axis, and the oblique disk V, eccentrically mounted upon the shaft M and receiving in its grooved edge said ball Q, whereby the rotation of said support and shaft may impart to said wire a bodily inward-and-outward movement and a distinct rocking motion upon its pivot, substantially as and for the purpose set forth.

4. The combination of the base A and the fixed shaft B rising therefrom, the gears H I, fixed thereon, the sun-model mounted at one side of said shaft, the bar C, pivotally supported upon the shaft, the fixed pulley F, supported upon the bar and rotating said sun-model by pulley-and-belt connection, the earth and moon models mounted in suitable supports upon the opposite end of the bar, gearing engaging the gears H I and transmitting suitable motion to both sun and moon models, and the star L", supported from the base without the paths of the various models, substantially as and for the purpose set forth.

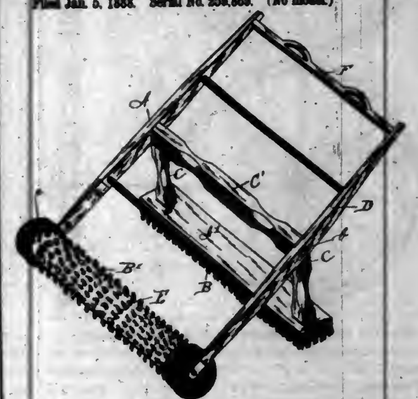
408,801. CHURN-MOTOR. STEPHEN GILES, Patten, Me., assignor of one-half to George W. Cooper, same place. Filed Feb. 23, 1889. Serial No. 301,585. (No model.)

Claim.—The combination, in a churn, of the cover provided with a central opening and a recess *b'*, the frame J, the vertical shaft carrying the pinion G and having an annular groove, the clamping-arms pivoted to the cover and engaging the annular groove of the vertical shaft, the flat springs F, secured in the recess *b'*, at the opposite ends thereof, and having their inner free ends arranged to engage the clamping-arms, the horizontal shaft I, capable of limited longitudinal movement and provided with an annular groove *i*, the gear-wheel H, fixed to the end of said shaft I, and the sliding latch L, having at its lower end a curved recess adapted to engage the annular groove of the shaft I, as set forth.

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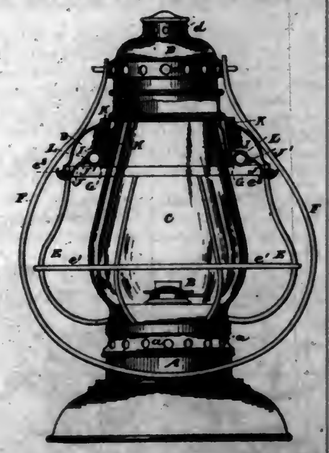


408,802. SCRUBBING-MACHINE. JOSEPH HERBERT, Lafayette, La. Filed Jan. 5, 1888. Serial No. 259,869. (No model.)



Claim.—As a new article of manufacture, the scrubbing device herein described, consisting of the bed-piece A, having scrubbing material B on its under side and provided on its upper face with standards C, the inclined frame D, supported on the standards, the handle F, and the hollow roll E, for containing suds, journaled in the lower end of the frame and formed with radial perforations leading into the interior thereof, in which is secured the scrubbing material, substantially as described.

408,803. SIGNAL-LANTERN. EDWIN F. HOPKINS, Oberlin, Ohio, assignor of three-fourths to Thad. H. Rowland and F. R. Brunson, same place. Filed Jan. 17, 1889. Serial No. 296,908. (No model.)



Claim.—1. In a signal-lantern, an open-ended tubular fabric made fast at the top to the inside of the lantern-cover and provided with an endless spring in its lower edge, whereby said fabric may be held up under the cover until a signal is needed.

2. The combination, with the tubular signal-fabric having an endless spring in the upper edge, of a lantern-cover having on the inside a downwardly-diverging tube H, around which the spring will hold said fabric, as set forth.

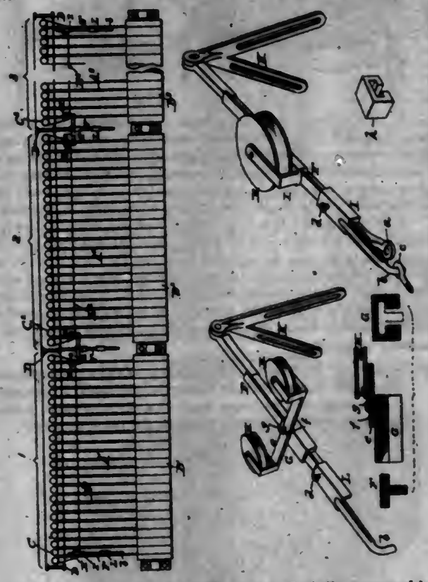
3. A lantern-cover having the downwardly-diverging tube H, open at bottom and perforated at top to cause a circulation of cold air through said tube and protect the fabric or screen from the heat, as specified.

4. In a signal-lantern, the hooks J, secured directly or indirectly to the spring L of the tubular fabric, in combination with a lantern-frame having the opposite curved non-meeting rods *d d*, separated by spaces *d' d'*, as and for the purpose set forth.

5. The combination, with the fabric I and horizontal rod *d'*, of the hooks J, rings J', and springs L, substantially as shown and described.

408,804. SPINDLE-DRIVING MECHANISM FOR SPINNING-MACHINES. CHARLES W. JONES, London, Ontario, Canada. Filed May 23, 1888. Serial No. 311,863. (No model.)

Brief.—The invention relates to the arrangement of the banding and to the construction and arrangement of the band tension devices.



Claim.—1. In combination with a series of spindles arranged in sections, end to end, a drum, a band for each section passing alternately about the drum and spindles, and tension devices connecting the bands of adjacent sections.

2. In combination with a series of spindles arranged in sections, end to end, a drum, a band for each section passing alternately about the drum and spindles, a loop formed in the band, and a series of tension devices, one between each two sections, acting upon the loops of adjacent sections.

3. In combination with a series of spindles arranged in sections, end to end, a drum, a band for each section passing alternately about the drum and spindles, and a tension device between each pair of sections acting upon the return-lines thereof.

4. In combination with a series of spindles arranged in sections, end to end, a drum, a band for each section passing alternately about the drum and spindles, a loop formed in said band, a tension device applied to the loops of adjacent sections, and a tension device applied to the loops of the end sections at their outer ends.

5. In combination with a series of spindles arranged in sections, end to end, a drum, a band for each section passing alternately about the drum and spindles and provided with a loop, and a wheel or pulley H at the ends of each section, about which the loop in the band passes, and yielding or movable supports for said wheels.

6. In combination with a series of spindles arranged in sections, end to end, a drum, a band for each section passing alternately about the spindles and drum and from one end spindle to the other, inclined supports arranged between the sections and at the outer ends of the end sections frames mounted and free to slide upon the supports, and wheels or pulleys carried by the frames and adapted to receive the return-line of the bands.

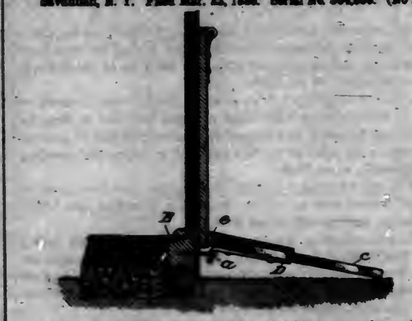
7. In combination with the inclined supporting-bar, the weighted block or frame mounted thereon and provided with the cross-bar, and the wheels at the ends of the cross-bar.

8. In combination with the inclined supporting-bar, the weighted block or frame mounted thereon, and a cross-bar pivoted thereto and provided with a wheel at each end.

9. In combination with the inclined supporting-bar, the plate hinged to the upper end thereof, and the pulley-carrying block mounted on the bar.

10. In combination with the inclined supporting-bar, the plate hinged to the upper end thereof, an adjustable block at the lower end, a set-screw, and a pulley-carrying block, all arranged substantially as shown.

408,805. BRIDGEWAY. NELSON KENT and NICHOLAS C. VOORHIS, Savannah, N. Y. Filed Mar. 22, 1888. Serial No. 304,259. (No model.)

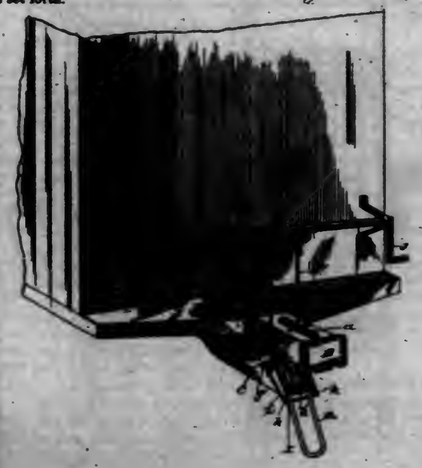


Claim.—In combination, the hinged bridgeway, substantially as described, with the bars-sill, the same being provided with hinges to connect with the bridgeway, and the interposed rolling or slide door extending below the bridgeway and between the same and the sill, as and for the purposes described.

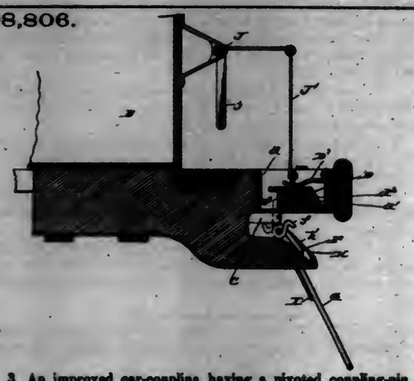
408,806. CAR-COUPLING. SIMAN D. LATHAM, Little Rock, Ark. Filed Nov. 7, 1888. Serial No. 290,307. (No model.)

Claim.—1. In a car-coupling, the combination of the draw-head having an incline up which to direct the approaching link, and having such incline provided with grooves extended in the direction of its length and opening at the front or forward end of said incline, and the link pivoted at its rear end and having its side arms arranged to rest in said grooves, substantially as set forth.

2. In a car-coupling, the draw-head having its lower portion formed with a guide-incline and its upper portion extended in advance of such incline, forming a bumper, combined with the pivoted link, adjusting-ball, the coupling-pin, and the latch therefor, substantially as set forth.



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3. An improved car-coupling, having a pivoted coupling-pin, a latch for securing the same, and a link, and having its draw-head formed with an incline grooved to receive the arms of the link and the pin, substantially as set forth.

4. In a car-coupling, a draw-head A, formed with a recess or opening C, having its top wall slotted at *d* and extended to form the bumper E, and its lower wall formed with an inclined face H, grooved at *h* to receive the arms of the link and at *N* to receive the coupling-pin, substantially as set forth.

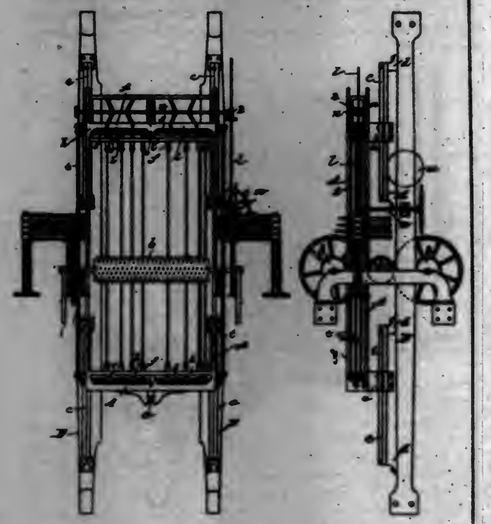
5. In a car-coupling, a pivoted coupling-pin bent from a rod of metal and formed with an eye to receive the pivot-bolt, and with a trip-extension, substantially as set forth.

6. In a car-coupling, the combination of the draw-head having inclined face H, the link pivoted to the draw-head, the link-adjusting bail, the coupling-pin having a trip-extension, the pin-latch, the shaft J, and arms on said shaft connected with the link-adjusting bail and with the pin-latch, substantially as set forth.

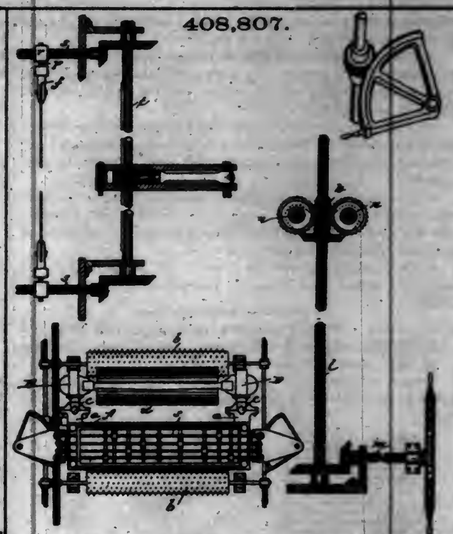
408,807. RECIPROCATING GANG-SAW MILL. WILLIAM B. MANN, Bangor, Me. Filed Aug. 2, 1888. Serial No. 281,735. (No model.)

Claim.—1. In combination, the movable frame A, the saws, the supplemental frame supported to have a sliding movement in the main frame A, the said saws being supported by said supplemental frame to allow lateral movement thereon, means for moving the saws laterally, and means for moving the supplemental frame, substantially as described.

2. In combination, the reciprocating frame A, the saws carried thereby and supported to have lateral movement, the screw-rods for giving said lateral movement journaled in the frame of the machine, the blocks on said rods having loose or sliding connections with the saws, whereby said saws are allowed longitudinal movement for the adjustment of tension, and means for adjusting the tension of the saws, substantially as described.



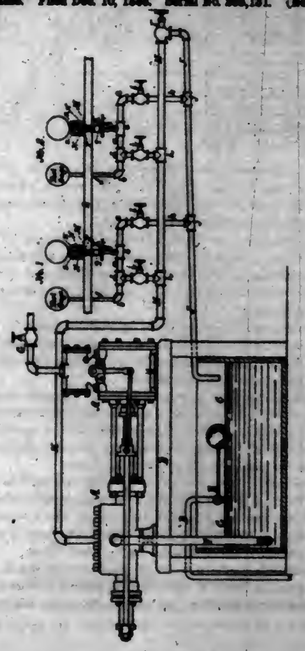
408,807.



3. In combination, the main frame A, the supplemental sliding frame supported thereby, the series of saws, the screw-shaft *n*, the toggle-arms thereon connected to the supplemental frame and the main frame, respectively, and means for rotating the shaft, whereby the whole series of saws may be adjusted simultaneously and evenly by the movement of the supplemental frame, substantially as described.

4. In combination, the reciprocating frame, the series of laterally-movable saws, the screw-rods for moving them, the screw-rod *n*, with connections to the saws for adjusting them longitudinally, a series of levers and wheels for operating all the said screw-rods, a series of connecting-shafts operated thereby and having pinion-connection with the said screw-shafts, whereby the saws may be adjusted both laterally and longitudinally during the reciprocation of the main frame A, substantially as described.

408,808. APPARATUS FOR GRADUATING AND TESTING PRESSURE-GAGES. ALBERT C. MEADY, Somerville, and CHARLES H. BOWDITCH, Everett, assignors to the Crosby Steam Gage and Valve Company, Boston, Mass. Filed Dec. 10, 1888. Serial No. 293,121. (No model.)

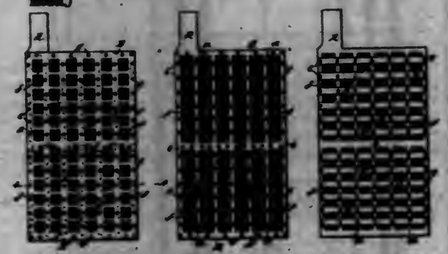


Claim.—1. In an apparatus for testing or graduating pressure-gages, the combination of a water-supply under pressure, a pressure-pipe leading therefrom and provided with connections for the gages to be graduated or tested, the relief-valve in the pressure-pipe, and the waste-pipe connected to the relief-valve, as set forth.

2. In an apparatus for testing or graduating pressure-gages, the combination of a water-supply under pressure, a pressure-pipe leading therefrom, the waste-pipe, and connections for the gages to be graduated or tested, each connection communicating both with the pressure-pipe and the waste-pipe, as set forth.

3. In an apparatus for testing or graduating pressure-gages, the combination of a water-supply under pressure, a pressure-pipe leading therefrom and provided with connections for the gages to be graduated or tested, each connections having a clamp for holding the gages, the relief-valve in the pressure-pipe, and the waste-pipe connected to the relief-valve, as set forth.

408,809. ELECTRODE FOR SECONDARY BATTERIES. ABRAHAM V. HERMANN, New York, N. Y., assignor of one-half to Henry A. Wilson, Ridgefield, N. J. Filed May 27, 1889. Serial No. 312,269. (No model.)



Claim.—1. The herein-described composite electrode for secondary batteries, consisting of outer plates B, provided with openings *d*, an inner frame A, having the ribs *a*, and the filaments or strips *f* between said ribs, substantially as described.

2. The herein-described composite electrode for secondary batteries, consisting of an inner frame and outer plate or plates, the latter consisting of a plurality of strips of metal united to the inner frame and suitably distanced from each other to provide openings to the inner frame, substantially as described.

408,810. TRUCK-BASKET. LESLEY M. HOUSE, Rochester, N. Y. Filed Apr. 27, 1889. Serial No. 308,996. (No model.)



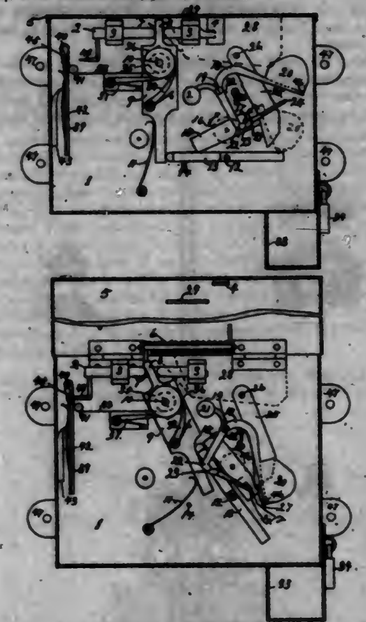
Claim.—1. The combination, in a rectangular truck-basket, of a frame composed of twelve rigid rods united at the corners by three-way elbows, the lower rods having a suitable number of sockets formed in their upper sides and the upper rods having the same number of sockets formed in their lower sides, with the woof-rods *a b*, equal in number to the said sockets and inserted in the same, a portion of said woof-rods being of rigid material and the remainder being of a lighter material, and the warp or filling woven through said woof-rods around corner uprights A A A A, said uprights A A A A being socketed in the elbows E E E E and rigidly fastened into the same, substantially as shown and described.

2. In a truck-basket, the combination of the lower frame composed of the rods B B B B, rigidly connected together by the three-way elbows D D D D, with four uprights A A A A rigidly fastened into said elbows, the space between said uprights being filled with woven basket-work having woof-rods some of which are of metal and some of which are of lighter material, with the upper frame composed of the rods C C C C and the three-way elbows E E E E, said woof-rods being inserted into sockets formed in the rods of the lower frame and in the rods of the upper frame, substantially as shown and described.

3. As a new article of manufacture, a truck-basket having a skeleton frame composed of a lower frame formed of the rods B B B B, rigidly fastened into the three-way elbows D D D D, uprights A A A A, rigidly fastened into said elbows, and an upper frame composed of rigid rods C C C C, rigidly fastened into elbows E E E E, said elbows having a socket for the reception of said uprights A A A A, spaces between said uprights being filled with suitable woven basket-work, the same being fastened upon a suitable truck, substantially as shown and described.

4. In a truck-basket, the combination of the rectangular lower frame composed of the rods B B B B, rigidly connected together by the three-way elbows D D D D, with four uprights A A A A rigidly fastened into said elbows, and the upper frame composed of the rods C C C C, rigidly connected by the three-way elbows E E E E, said elbows having sockets into which are fastened the uprights A A A A, the spaces between said uprights being filled with suitable material to form the sides of the basket, for the purpose described.

408,811. COIN-CONTROLLED LOCKING AND REGISTERING MECHANISM. ANDREW J. KENEALEY, Denver, Colo., assignor to the Western Opera Glass Supply and Manufacturing Company. Filed Mar. 25, 1889. Serial No. 304,609. (No model.)



Claim.—1. A coin-actuated locking mechanism consisting of a bolt, a spring-acted lever tending to move it in one direction, a dog locking the lever against such movement, a lever for moving such dog, and a coin-actuated tilting lever locking the dog-actuating lever against movement, substantially as set forth.

2. A coin-controlled locking mechanism consisting of a bolt, a lever for moving the bolt, a spring tending normally to move the bolt and its lever in one direction, a dog preventing such movement, a handled lever, as the lever 15, for releasing the dog, a coin-actuated tilting lever locking such lever against movement in one direction, and a pawl dropping in position to lock it in the other direction upon release of the locking mechanism and adapted to be removed from engagement therewith by an inserted key, substantially as set forth.

3. A coin-actuated locking mechanism comprising a locking-bolt, a spring-actuated lever tending normally to move the bolt in one direction, means for locking the lever against such movement, a coin-actuated tripping-lever for releasing the locking mechanism, and a pawl holding the locking mechanism in its released condition and adapted to be moved by an inserted key, substantially as set forth.

4. The combination of a coin-controlled locking mechanism, a stylus or marker reciprocated thereby, a ribbon of paper marked by the stylus or marker, and means, substantially as described, for moving the paper for a new impression at each operation of the locking mechanism, substantially as set forth.

5. A locking mechanism consisting of a lock-bolt 2, a lever 9, moving the bolt in either direction, a spring acting on the lever to throw it in one direction, and a pivoted dog locking the lever against movement in such direction and adapted to move it in the other direction, substantially as set forth.

6. The combination of the locking-bolt 2, the lever 9, for actuating it, spring 11, dog 13, handled lever 15, lever 18, carrying a coin-receptacle and a counterbalance-weight, and a pawl 25, substantially as set forth.

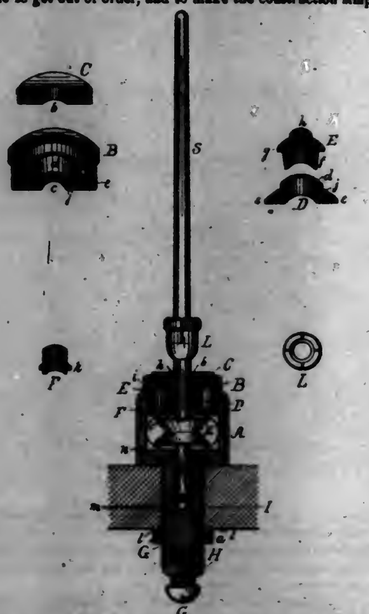
7. The combination, with a coin-controlled locking mechanism, of a stylus 44, attached to a moving part thereof, a reel or drum for receiving a band or fillet of paper or other markable material, a ratchet 36, and the pawls 37 and 38, substantially as set forth.

8. The combination of a locking-bolt 2, carrying a stylus 44, a lever 9, actuating the same, a paper reel or drum having a ratchet 36 and pawl 38 mounted on said lever, a pawl 37, a fixed platen or paper-bed 39, dog 13, handled lever 15, coin-controlled lever 18, and pawl 25, substantially as set forth.

9. The combination of the locking-bolt 2, lever 9, for actuating it, spring 11, acting thereon, dog 13, for acting thereon against the spring, and handled lever 15, for operating on the dog, substantially as set forth.

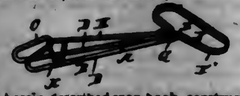
408,812. SPINNING-SPINDLE AND SUPPORT THEREFOR. CLARENCE A. PRATT, Fitchburg, Mass. Filed July 18, 1888. Serial No. 280,340. (No model.)

Brief.—The object of the invention is to furnish a spindle that may be run with little power and at high speed, to so construct the bearings that wear may be taken up readily and that the parts are not liable to get out of order, and to make the construction simple.



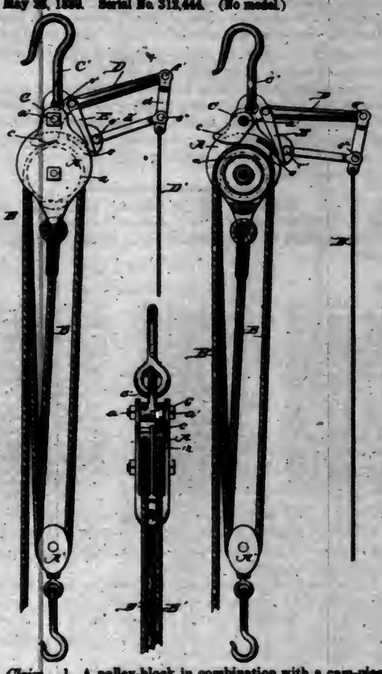
Claim.—The combination of the spindle S, bearing-sleeve E, movable vertically thereon and having horizontal flange *g* and downwardly-tapering bearing-surface *f*, the seat D, consisting of the upwardly-extending sleeve *d*, having tapering inner bearing-surface adapted to correspond with the bearing-sleeve E, oil-guard F, surrounding said spindle within said bearing, the cylindrical case supporting said seat and oil-guard and having an oil-chamber surrounding and communicating with said bearing-surfaces, adjustable nut C, forming the top of said case, a ball step-bearing I at the lower end of said spindle, step-support G, vertically adjustable by means of screw-threads formed thereon and on the interior of the bolster-shank, and a supporting-case A, carrying said bolster and step-bearing, substantially as and for the purpose herein specified.

408,813. SNAP-HOOK. LESLEY P. RILEY, Hills, Mo. Filed Mar. 19, 1888. Serial No. 303,268. (No model.)



Claim.—The herein-described snap-hook, constructed of wire and comprising the shank provided with the eye E at its upper end and the hook C at its lower end, and the tongue H, having a substantially V-shaped bend inclining rearward and adapted to confine a ring in the hook C, substantially as described.

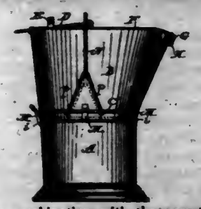
408,814. PULLEY-BLOCK. CHARLES T. SUMAR, Utica, N. Y. Filed May 28, 1888. Serial No. 312,444. (No model.)



Claim.—1. A pulley-block in combination with a cam-piece pivotally connected to such block and having a cam on one side of such connection and an attaching device on the other placed obliquely to the line of pull, and a pawl pivoted to said cam-piece opposite to the cam and, adapted to engage a projection on said block, as and for the purpose specified.

2. A pulley-block in combination with a cam-piece pivoted to said block and having a cam and an attaching device arranged as shown and described, and an arm and pawl opposite to said cam, the free ends of said arm and pawl being connected by links pivoted thereto, substantially as and for the purpose specified.

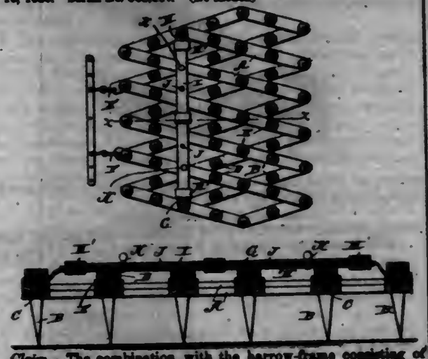
408,815. ASH-SIFTER AND COAL-SCUTTLE. KATE R. SHEPARD, Saratoga Springs, N. Y. Filed Jan. 19, 1889. Serial No. 296,830. (No model.)



Claim.—1. The combination, with the open-topped coal-scuttle A, having flaring sides, of the ash-sifter B, provided with the fixed cover D, the hinged cover F, the handle E on said fixed cover, and the perforated bottom or screen C, and having flaring sides to conform to and closely fit within the top of the scuttle and cover the same with a tight joint, substantially in the manner and for the purpose herein set forth.

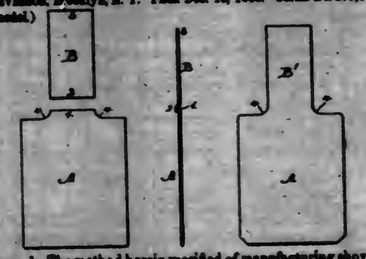
2. The combination, with the open-topped coal-scuttle A, having flaring sides, of the counterpart ash-sifter B, conforming to and fitting with a close joint within the open top of the scuttle and provided with the fixed cover D, the hinged cover F, the vertically-reciprocating bottom screen C, the lateral straps M, guiding the screen and limiting its play, and the handle N, projecting up through the fixed cover D, substantially in the manner and for the purpose herein set forth.

408,816. HARROW. LEWIS SMITH, Green Top, Mo. Filed Feb. 16, 1888. Serial No. 263,117. (No model.)



Claim.—The combination, with the harrow-frame consisting of bars connecting pivotally by means of the harrow-teeth, of the brace-bars pivoted at the outer ends of the harrow-frame and extending inwardly one above the other, and the supplementary brace-bar having loops encircling the pivoted brace-bars, all of the said brace-bars bars being provided with perforations, which may be brought into alignment to receive the securing pins or bolts, substantially as set forth.

408,817. METHOD OF MAKING SHOVELS, SCOOPS, &c. THOMAS F. STEVENSON, Brooklyn, N. Y. Filed Dec. 10, 1888. Serial No. 293,115. (No model.)



Claim.—1. The method herein specified of manufacturing shovels, spades, or scoops, consisting in cutting out a blank for the blade and another blank for the tubular socket or handle and welding the two parts together while in a flat condition, and then bending up the blade and the tubular socket or handle to shape between dies, substantially as set forth.

2. The method herein specified of manufacturing shovels, spades, or scoops, consisting in cutting out the sheet-metal blank for the blade with the lips 1 at one end of such blank, welding the end of the blank B upon the lip 1 and striking up the sheet-metal blanks to the form of the complete shovel, spade, or scoop within dies and bending the handle or socket portion into the form of a tube, substantially as set forth.

3. The method herein specified of manufacturing shovels and similar articles, consisting in cutting out a rough blank to form the blade and a second blank to form the socket or handle, welding the two parts together while in a flat condition, trimming off the edges of the blank to the proper shape with the rounded portions 4 at the junction of the blanks A and B, and striking up the blank to the shape of the shovel or similar article and bending the socket or handle to a tubular form, substantially as set forth.

408,818. CHURN. ALBERT L. STOUT, Armistead, Kans. Filed Aug. 16, 1887. Renewed June 11, 1889. Serial No. 313,880. (No model.)

Claim.—1. The combination, with the churn-body having inclined sides, the lid, the dasher, and the box C, secured to the lid and inclosing the dasher-operating mechanism, of the keys P, having the shanks *p* inserted through vertical openings in the box C, and provided at their lower ends with the cams R, adapted to engage the sides of



408,818.



the churn, and the handles Q, mounted upon the upper ends of the shanks *p*, substantially as set forth.

2. The combination of the churn-body having inclined sides, the lid B, the box C, secured thereto, provided with the longitudinal slot D, and having the bearings E, and the openings F on opposite sides of the bearing, the shaft G, journaled in the bearings E and having the dasher-shank secured thereto, the gear-wheel G' on the shaft G, the rack-bar K, operating in ways in the box C and meshing with the gear-wheel G', the vertical arm L on the upper side of the rack-bar operating in the slot D, the horizontal arm M, projecting from one end of the box, the lever N, pivoted thereto, the connecting-rod O, connecting the upper end of the arm L to the lever N at an intermediate point thereof, and the keys P P, inserted through the openings F and having the cams R on their lower ends engaging the sides of the churn-body, and the handles Q, mounted on their upper ends, substantially as specified.

408,819. SHAFT-GEARING FOR VELOCIPEDS. MARCUS D. STRAIT, St. Louis, Mo. Filed Nov. 22, 1888. Serial No. 291,500. (No model.)



Claim.—1. In a shaft-coupling gearing, shaft-iron C', having projection C², and shaft-iron C³, both of said irons secured fixedly to shaft C and axle B, in combination with sleeve D and adjustable strap E, all constructed to operate substantially as described.

2. Sectional sleeve D, having suitable means to prevent end movement of adjustable strap E, substantially as shown, for the purpose specified.

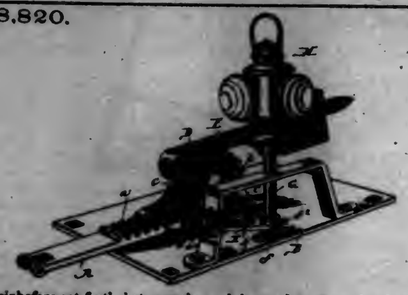
3. Strap E, susceptible of adjustment, having projections F and F', engaging brace H and G in the manner shown, said strap surrounding sleeve D, and turning back and forth by means of said projections in unison with the backward and forward movement of axle B, which also revolves within said strap, thereby imparting the proper universal movement to said axle in operating in conjunction with said strap, substantially as shown, for the purpose specified.

408,820. RAILWAY SWITCH-STAND. CHARLES ALKIRE, Chicago, Ill. Filed Mar. 26, 1888. Serial No. 268,161. (No model.)

Claim.—1. In a railway switch-stand, the combination of the gear D and a weighted lever connected therewith, and the sliding rack-bar arranged to engage with said gear, and provided with an arm which is connected with the signal device, so as to operate the same by a connection between the rack-bar and signal device, in contradistinction to a connection between the signal device and a gear upon the spindle of said gear that engages the rack-bar, substantially as described.

2. The combination of the rack-bar arranged to slide between the cheek-pieces C, the gear D, engaging the rack-bar and fixed upon a spindle having its bearing in said cheek-pieces, a weighted lever fixed upon one end of the spindle, and a connection, substantially as

408,820.



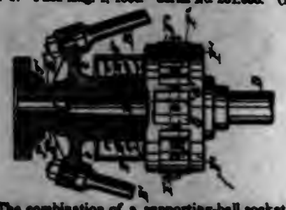
hereinbefore set forth, between the rack-bar and a rotary signal-rod, in contradistinction to a connection between the signal-rod and said spindle, as and for the purpose described.

408,821. JOURNAL-BOX FOR PLANING-MACHINES. HENRY F. ASTHEIMER, New York, assignor to the Glen Cove Machine Company, (Limited,) Brooklyn, N. Y. Filed Mar. 2, 1889. Serial No. 301,783. (No model.)



Claim.—The combination, with a shaft provided with projections of greater diameter than the shaft, of journal-boxes for said shaft provided with recesses for oil in which said projections rotate, and with other recesses near the ends of the journal-boxes with which the recesses first named communicate, bushings within the journal-boxes and surrounding the journals, said bushings being provided with grooves for receiving the oil and supplying it to the journals, substantially as specified.

408,822. CENTRIFUGAL MACHINE. JOHN P. BOETTIGER, Cold Springs, N. Y. Filed Aug. 1, 1888. Serial No. 281,633. (No model.)



Claim.—The combination of a supporting-ball socket, a suspension-sleeve provided at its upper end with a ball engaging said socket, with an interior bearing for the spindle, and with an exterior screw-thread at its lower end, a suspension-head provided with a tubular hub fitting over said sleeve and keyed thereto, a nut engaging the screw-threads of said sleeve and holding said head on the sleeve, a casing provided with a step-bearing, suspension-rods connected at their upper ends to said head and at their lower ends to said casing, a spindle turning at its lower end in said step-bearing and at its upper end in the bearing of said sleeve, and a basket on said spindle within said casing.

408,828. HEAD-REST FOR CHAIRS. THOMAS J. CARRUE, Baltimore, Md., assignor to the S. S. White Dental Manufacturing Company, Philadelphia, Pa. Filed May 2, 1889. Serial No. 309,263. (No model.)

Brief.—An adjustable head-rest consisting of a separable link having formed upon its ends ball-sockets, and adapted when brought together and secured by the central clamping-screw to hold ball-joints secured, respectively, to the seat-back extension and the head-rest.

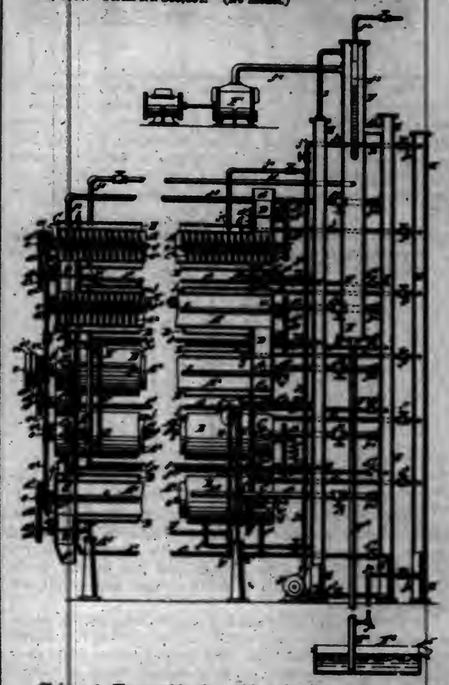
Claim.—1. The combination of the head-rest, the supporting-rod, the balls carried, respectively, by the head-rest and the supporting-rod, the clamp-link provided with the end sockets and having the inwardly-projecting ends, and the clamp acting on the inwardly-projecting ends of the clamp-link between its sockets, substantially as set forth.

2. The combination, with the clamp-link consisting of the body and the end pieces jointed thereto and having the sockets at its opposite ends, of the clamp acting upon the inwardly-projecting ends of the end pieces, substantially as set forth.

408,828.



408,824. APPARATUS FOR DRYING STARCH-REFUSE, BREWERS' GRAINS, &c. FRANCIS M. F. CAZIN, New York, N. Y. Filed June 22, 1886. Serial No. 205,861. (No model.)



Claim.—1. The combination, with a plurality of closed drying-tubes severally provided with heating-jackets and with inlets and outlets for solid matter at opposite ends, of conveyers for moving solid matter through the tubes, a pipe for introducing heating-fluid from an outside source to the jacket of one tube, and a connection through which the hot vapors emanating from the contents of that tube are delivered to the jacket of the next tube in the series to serve as a heating agent therefor, substantially as herein described.

2. The combination, with two or more closed drying-tubes provided with heating-jackets and with inlets and outlets for solid matter at opposite ends, of conveyers for moving the drying-matter through said tubes, a pipe for supplying heating-fluid from an outside source to the jacket of one tube, and steam-jet exhausters, one for each drying-tube and each having a steam-supply pipe, a suction-pipe leading from the interior of one tube, and a delivery-pipe leading to the jacket of another tube, whereby the vapor emanating from the contents of one tube is withdrawn therefrom and delivered, together with the steam employed to work the exhauster, to the heating-jacket of another tube, substantially as herein described.

3. The combination, with a plurality of closed drying-tubes connected at the ends by bonnets or hoods to provide for the passage of solid matter from one to the other of them and severally provided with heating-jackets, of conveyers for moving the matter to be dried through the tubes, steam-jet exhausters, each having a steam-supply pipe, a suction-pipe leading from one drying-tube and a delivery-pipe leading to the jacket of the next tube in the series and each serving to withdraw from one tube the vapors emanating from its contents and to discharge such vapors to the heating-jacket of the next tube, and a condenser and an air-pump also connected with the several tubes for aiding in exhausting air and vapor therefrom, substantially as herein described.

4. The combination, with the jacketed drying-tubes, of bonnets C, connecting said tubes for the passage of solid matter from one to the other of them and constructed with the perforated partitions *c*, forming continuations of the drying-tubes, exhaust-pipes connected with the bonnet-spaces outside said partitions, conveyers working within said tubes and extending into the bonnets, and rotary valves D, each constructed with wings or bearing portions d^{a} and interposed pockets d^{b}, which are exposed to the two tubes alternately, substantially as herein described.

5. The combination, with the concentric drying-tubes A and jacket-tubes B, of the bonnet C, rotary valves fitting segmental seats in the bonnet and constructed with cavities in their peripheries for delivering solid matter from one to another of the drying-tubes without placing them in direct communication, and the expansion-plates *b*, whereby the bonnet and tubes are connected and which permits of unequal expansion of the parts without danger of leakage, substantially as herein described.

6. The combination, with a series of closed drying-tubes provided with heating-jackets and conveyers for moving matter to be dried through them in succession, of bonnets connecting the tubes, and rotary valves fitting seats in the bonnets and having peripheral cavities for delivering solid matter from one to another of the tubes, pipes for supplying steam or hot vapor to the jackets of certain of the tubes, and pipes and a pump for receiving and collecting the hot liquid of condensation from such jackets as receive steam or vapor and for supplying the said liquid to the jacket of one of the drying-tubes, substantially as described.

7. The combination, with a series of closed and jacketed drying-tubes connected, as described, by bonnets and valves and provided with conveyers, of pipes for supplying steam or vapor to the jackets of certain of the drying-tubes, exhausting apparatus for maintaining a pressure below the atmosphere in said tubes, the hot-water stand-pipe connected with the jackets, which are supplied with steam or vapor for receiving hot water of condensation from said jackets, and a pump and pipe whereby the hot water of condensation is delivered to the jacket of another of said tubes for heating the same, substantially as herein set forth.

8. The combination, with a series of closed and jacketed drying-tubes connected by bonnets and valves, as described, and provided with conveyers, of a pipe for supplying steam to the jacket of one tube and steam-jet exhausters, each having a steam-supply pipe, a suction-pipe leading from one drying-tube and a discharge-pipe leading to the jacket of the next drying-tube in the series, whereby the vapors emanating from the contents of each tube are delivered to the jacket of the next tube in the series, and a condenser and air-pump also connected with the several tubes, substantially as herein set forth.

9. The combination, with a series of closed and jacketed drying-tubes connected by bonnets and valves, as described, and provided with conveyers, of a pipe for supplying steam to the jacket of one tube, steam-jet exhausters, each having a steam-supply pipe, a suction-pipe leading from one drying-tube of the series and a discharge-pipe leading to the jacket of the next drying-tube in the series, whereby the vapors from the contents of each tube are delivered to the jacket of the next tube in the series, and the surplus steam and water stand-pipe connected with the jackets of all the tubes and serving to equalize the pressure within them, substantially as herein described.

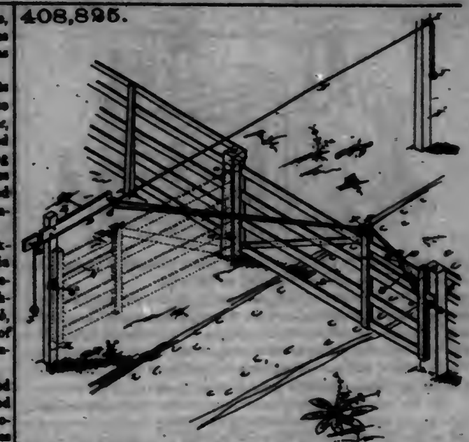
10. The combination, with a series of closed drying-tubes connected, as described, by bonnets or hoods and valves to deliver solid matter from one to another of them and provided with heating-jackets and conveyers, of the condenser having the air-pump connection f^{a}, and the vapor-collector G, connected with the condenser and connected by the pipes f^{c} with the drying-tubes, substantially as herein set forth.

11. The combination, with a series of closed drying-tubes connected, as described, by bonnets or hoods and valves to deliver solid matter from one to another of them and provided with heating-jackets and conveyers, of the condenser F and its air-pump connection f^{a}, the vapor-collector G, connected by pipes f^{c} with the several drying-tubes and also connected with the condenser, and the surplus-steam collector H, connected by branches with the several heating-jackets and also connected with the condenser, substantially as herein described.

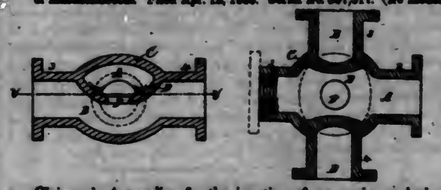
408,825. GATE. DAVID C. CHADDOCK, Minerva, Ohio. Filed Mar. 25, 1889. Serial No. 304,740. (No model.)

Claim.—The combination of the gate A, hinged to the post B by the long hinge *c'* and the short hinge *c*, and provided with the latch *b'*, the catches *b* and b^{a}, the cords D and D', passing through the guide-eyes G, H, and I, and the weights J, attached to the free ends of the cords D and D', substantially as shown and described, and for the purpose set forth.

408,825.



408,826. CROSS FOR GAS MAINS OR PIPES. JAMES C. CONNOT, Pittsburg, Pa., assignor of one-half to the Union Water Meter Company, of Massachusetts. Filed Apr. 12, 1888. Serial No. 307,017. (No model.)



Claim.—1. A coupling for the junction of gas mains and pipes having a perforated partition in the interior thereof defining the respective passages from the several connecting branches at the position where said passages cross each other, as and for the purpose set forth.

2. The within-described cross for pipes or gas-distributing mains, consisting of the body or shell C, provided with the crossed passages A and B, separated from each other by a partition D, and an opening F, connecting said passages through the partition, all substantially as and for the purpose set forth.

408,827. HARNESS-SADDLE. CHARLES J. COOPER, Moline, Ill. Filed Apr. 4, 1888. Serial No. 305,947. (No model.)



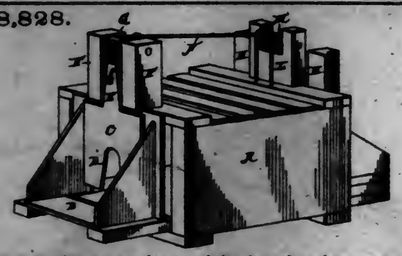
Claim.—1. The combination, in a harness-saddle, of a yoke provided toward its outer end with a stirrup, and a hinged plate having a hook adapted to enter through the aperture of the stirrup, and having also a curved portion to receive the transverse bar of the stirrup, whereby to form a free joint, and said curved portion being provided with shoulders to form stops to limit the outward movement of the parts at the joint, substantially as described.

2. In a harness-saddle, the combination, with a yoke having a stirrup toward its outer end, of a hinged plate having a hook adapted to pass through the aperture of the stirrup, and an upwardly curved or arched portion to receive the transverse bar thereof, whereby to form a free joint, and having also engaging shoulders to limit the outward movement of the yoke, and a jockey-plate extended beneath the hinged plate, and having an aperture at its forward end to receive the hook of the hinged plate, substantially as described.

408,828. HEN'S NEST OR COOP. PETER COLE, Garrett County, Md. Filed Mar. 12, 1888. Serial No. 302,997. (No model.)

Claim.—1. The combination, with the coop, of the swinging door at one end of the same, the sliding door at the other end thereof, the

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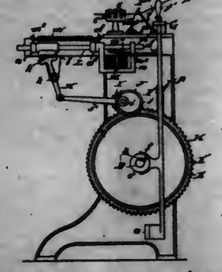
cord connecting the two doors, and the dog adapted to support the sliding door in an elevated position, as set forth.

2. The combination, with the coop, of an outwardly-swinging door at one end, a sliding door at the other end, a cord connecting the two doors, whereby when the swinging door is open the sliding door will be raised, the dog adapted to support the sliding door in its elevated position, and a vibrating lever controlling the said dog, so as to support and release the sliding door, as set forth.

3. The combination, with the coop, of the outwardly-swinging door at one end having the tongue E, the sliding door at the opposite end of the coop having a cleat provided with a projecting end K, the cord connecting the sliding door with the tongue E of the swinging door, the dog adapted to engage the projecting cleat K, and a lever controlling the said dog, as set forth.

4. The combination, with the coop, of the standards F at one end of the same, the pulley G, mounted between the upper ends of said standards, the bearing-plate L at the opposite end of the coop, the pulley M, mounted on said bearing-plate, the swinging door having the tongue E playing between the standards F, the standards H H, the sliding door mounted between and guided by said standards and having a cleat provided with a projecting end K, the cord passing over the pulleys G M and having its opposite ends secured to the sliding door and the end of the tongue E, the dog entering the path of the projecting end K of the cleat secured to the sliding door, and the vibrating lever controlling the said dog and provided with a weight at one end and a step at the other end, as set forth.

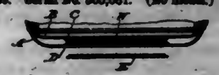
408,829. ELECTRIC STOP-MOTION FOR DRAWING-FRAMES, &c. VICTOR I. CORNOCK, Lowell, Mass. Filed Jan. 25, 1889. Serial No. 297,532. (No model.)



Claim.—1. In an electric stop-motion, an electric circuit containing a circuit-closer normally held open by the work, but automatically closing upon a failure of the work, in combination with a spring-actuated shifting-lever normally locked, a reciprocating bar, a carriage supported on said bar, but normally at rest, an electro-magnet arranged in said circuit, an armature-lever pivoted on said carriage and attracted by said magnet upon the closing of said circuit, and having a bent end adapted, when said armature is so attracted, to interpose between said bar and said lever and to be pushed by said bar against said lever and to draw said carriage with said bar and to unlock said lever, as and for the purpose specified.

2. In an electric stop-motion, an electric circuit containing a circuit-closer normally held open by the work, but automatically closing upon a failure of the work, and containing also a switch, in combination with a spring-actuated shifting-lever normally locked and closing said switch, a reciprocating bar, a carriage supported on said, bar but normally at rest, an electro-magnet arranged in said circuit, an armature lever pivoted on said carriage and attracted by said magnet upon the closing of said circuit, and having a bent end adapted, when said armature is so attracted, to interpose between said bar and said lever and to be pushed by said bar against said lever and to draw said carriage with said bar and to unlock said lever, as and for the purpose specified.

408,830. WATCH-CASE. JULES DUBOIS, Brooklyn, N. Y. Filed Mar. 28, 1889. Serial No. 305,081. (No model.)



Claim.—A watch having an inwardly-beveled ring secured centrally upon the outer face of its cap to form a retaining-seat for a photograph, an outer case covering the cap, having an opening therein to register with said seat and which is encircled by an inwardly-projecting bead or ring, and a covering-plate fitting accurately within said opening to close it, substantially in the manner and for the purpose herein set forth.

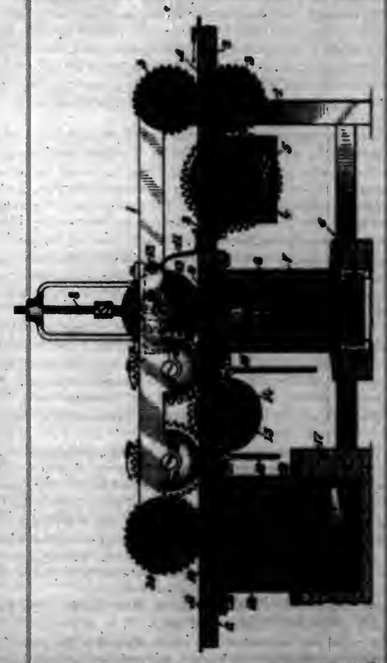
408,831. FAUCET AND FAUCET-BUSHING. CHARLES T. BRIGHAM, Lawrence, Mass. Filed Feb. 9, 1888. Serial No. 263,546. (No model.)



Claim.—1. The bushing B, conical shoulder *b'*, and perforations *b* therein, and the strainer *f*, surrounding the said shoulder, combined with a removable faucet, the cup-stopper D, having a flaring end within the strainer and closely fitting upon said shoulder, closing the outer ends of the said perforations, a packing interposed between the bushing and stopper, piston F, spring A, and screw-plug E, having its outer face flush with the outer face of the bushing when the faucet is withdrawn, substantially as and for the purposes set forth.

2. The combination, with a bushing having perforations adapted to be closed at each end by a cylindrical stopper and a screw-plug, respectively, of a strainer surrounding the inner end of said stopper and extended beyond the outer ends of said perforations, substantially as described.

408,832. MACHINE FOR TINNING COPPER SHEETS. DAVID EVANS, Ansonia, Conn., assignor of one-half to Rufus C. Alcott, same place. Filed Jan. 14, 1889. Serial No. 296,221. (No model.)



Claim.—1. In a machine of the character described, the combination, with mechanism for feeding the sheet, devices for applying the flux, and the calender-rolls, of the pot, means for heating the same, a pump connected with said pot, and a perforated conduit connected with the pot and extended contiguous to the face of the sheet, substantially as set forth.

2. The combination, with the pot, the pump arranged therein, and a distributing perforated conduit connected with the pump and extended adjacent to the line of feed of the sheet, of the swab-roll engaging the sheet after the operation of the pump, and a pair of calenders located behind the said swab and adapted to finish the sheet, substantially as described.

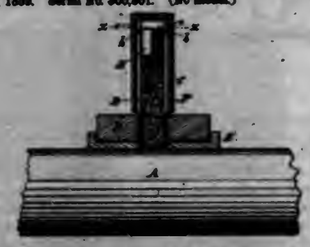
3. The combination, with the pot, the pump arranged therein, and the perforated conduit leading from the pump, of the swab-roll located behind the pump and its pot, and the calenders, the lower whereof runs in a pot of metal and is adapted in addition to its pressing function to apply to the sheet a supplemental coating of metal, substantially as set forth.

4. The combination, with the pot, the pump arranged in said pot, and the perforated pipe, of the swinging shield hung above the said pipe, and whereby the top of the sheet is protected as against the metal of the jet, substantially as set forth.

5. The combination, with the pot and the pump arranged therein and a perforated conduit connected to said pump, of the feeding-rolls and the flux-applying swab, the swab-roll located behind the pump, and the calender-rolls and the second metal pot, whereby the supplemental coating of metal is imparted to the sheet, substantially as set forth.

6. In a machine of the character described, the combination, with the devices for the feeding of the sheet, of the pot and means for melting its contents, a pump arranged in said pot at one end thereof, and a conduit-pipe having one extremity connected to said pump and extended across the machine parallel and contiguous to the face of the sheet, said pipe having at its nearest point to the sheet a series of perforations, whereby jets of molten metal may be projected against the sheet, substantially as specified.

408,833. LUBRICATOR. WILLIAM J. FAHL, Brooklyn, N. Y. Filed Feb. 23, 1889. Serial No. 300,801. (No model.)



Claim.—In a lubricator, the combination, with a journal, of a bearing therefor, a shell secured to said bearing and adapted to receive a stick of lubricating material, said shell being provided with longitudinal slots, a weight within said shell adapted to rest upon the upper end of the stick of lubricating material, and provided with lugs or projections extending into said slots and a cap-piece inclosing said shell, substantially as specified.

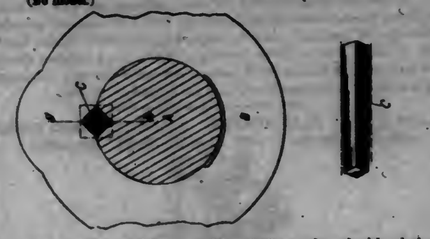
408,834. SUSPENDER-BUCKLE. WESLEY T. PERRY, Bentonville, Ind. Filed Apr. 26, 1888. Serial No. 308,505. (No model.)



Claim.—1. As an improved article of manufacture, a buckle consisting of a frame having a hook on its lower side, the beak of said hook bent to form a supplemental hook, a tongue pivoted in the frame and a shortened loop or latch secured on the upper bar of the frame and adapted to engage the outer parts of the supplemental hook and lock the parts, substantially as set forth.

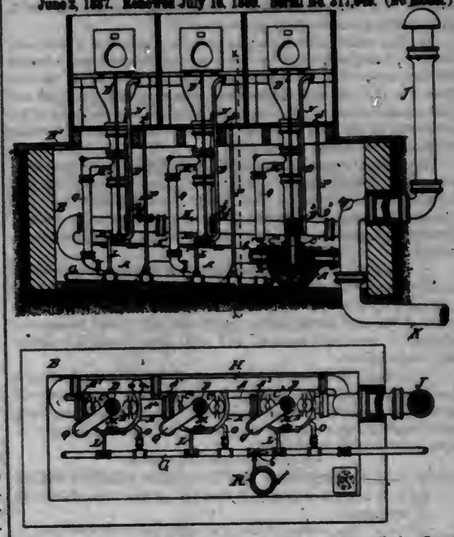
2. In a suspender-buckle, the combination, with the frame A, having eyes *a* on its sides and the center of the lower side bent downward, forming a double hook *a'* and *b* in one piece on its lower end, and the tongue C, pivoted in the frame, of the latch E, secured on the upper bar of the frame and inclined to hold the tongue in position and form a loop *c*, which engages and holds the outer hook *b* when the parts are adjusted, substantially as set forth.

408,835. KEYING WHEELS. HENRY GRAFTON, Chancery Lane, County of Middlesex, England. Filed Aug. 20, 1888. Serial No. 284,179. (No model.)



Claim.—The combination, with a shaft or axle and with a hub or boss, each having a key-seat, of a driven key having four acting sides and having draft upon those sides, those four acting sides fitting tightly between the sides of the seats and forming opposite dihedral angles which are met at their apexes by the circle of the shaft, each two opposite acting sides of the key being bisectable (in the direction of their width) by a common normal, as specified.

408,836. WATER-CLOSET. JOSEPH GUY, New York, N. Y. Filed June 2, 1887. Renewed July 16, 1889. Serial No. 317,649. (No model.)



Claim.—1. The trap-body provided with the inlet soil-pipe C, end openings $A' A^2$, and an uninterrupted passage in the trap-body above the seal between the two openings $A' A^2$, as hereinbefore set forth.

2. The trap-body provided with the inlet soil-pipe C and with end openings $A' A^2$, between which there is an uninterrupted passage above the seal, in combination with the ventilating-pipe and the back air-pipe H, connecting opening A' with the ventilating-pipe, and the sewer-pipe connected to the other opening A^2, all substantially as hereinbefore set forth.

3. A series of trap-bodies provided each with end openings $A' A^2$, through which they communicate and are connected together, and an uninterrupted passage throughout the whole series above the water seal, and soil-pipes for each trap, in combination with a ventilating-pipe communicating with one end of the said passage and a sewer-pipe communicating with the opposite end of said passage, substantially as and for the purposes hereinbefore set forth.

4. The trap-body having end openings $A' A^2$ and an uninterrupted passage between said opening above the seal, and the soil-pipe having its lower end within the trap slightly and gradually curved in the direction of the trap-outlet, as described, in combination with the flush-pipe located in the side of the trap-body below the soil-pipe, so that the jet discharged from it shall cut across the trap-body directly beneath the mouth of the soil-pipe, as hereinbefore set forth.

5. The trap-body provided with end openings $A' A^2$ and an uninterrupted passage between said openings above the seal, and the soil-pipe having its lower end within the trap slightly and gradually curved in the direction of the trap-outlet, as described, in combina-

tion with the flush-pipe and the overflow-pipe, arranged and located with respect to the soil-pipe as hereinbefore set forth.

6. The trap-body provided with end openings and with an uninterrupted passage between said openings above the seal, the soil-pipe entering said trap-body, and the covered hand-holes E D^2, the hand-hole D^2 being in the soil-pipe outside of and a short distance above the trap, and the hand-holes E being in the top of the trap and opening into the said passage therein, as hereinbefore set forth.

408,837. RAILROAD-SIGNAL. CHARLES T. HALLOWELL, Philadelphia, Pa. Filed Apr. 11, 1888. Serial No. 306,962. (No model.)



Claim.—1. A signal having a movable transparent signal-arm, stationary color-imparting material adapted to coincide with said arm, and a lantern attached to said arm, said lantern having a lamp adapted to illuminate said material and transmit the color thereof to the signal-arm, substantially as described.

2. In a signal, color-imparting material attached to a stationary holder, a swinging transparent signal arm or standard, and a lantern having a lamp which illuminates said material and transmits the color thereof to the arm, said lantern being connected with the signal-arm and movable over the color-imparting material, and the lamp of the lantern being pivotally supported with the lantern, the parts being combined substantially as described.

3. A signal consisting of a segment having pieces of transparent material of different colors, a pivoted arm provided at one end with a lantern having a swinging lamp therein, the said lantern having an opening adapted to coincide with either of said pieces, and a reflector opposite said opening, said parts being combined substantially as described.

4. In a signal, the segment having pieces of transparent material of different colors, a pivoted arm carrying a lantern, the latter having a swinging lamp therein and provided with an opening coinciding with either of the said pieces, and a guard secured to said lantern and adapted to cover said segment, said parts being combined substantially as described.

5. A signal consisting of a segment, the latter having bull's-eyes therein, and a pivoted arm having a lantern with a swinging lamp and an opening coinciding with either of said bull's-eyes, said arm being hollow and having a transparent side, the parts named being combined substantially as described.

408,838. PROCESS OF MANUFACTURING ASBESTUS SHEETS. HENRY W. JOHNS, New York, N. Y. Filed Nov. 16, 1886. Serial No. 219,071. (No specimens.)

Claim.—The process of manufacturing asbestus sheathing, or sheets containing asbestus and having a napped surface, consisting in pulping the material and forming the same into a layer or sheet, and then applying fibrous asbestus to the surface of the sheet while it is soft, and then pressing the superposed fibers into the pulp of the sheet, and then drying the sheet, substantially as set forth.

408,839. VEHICLE-AXLE. JAMES T. MILLER, Atlanta, Ga. Filed May 19, 1888. Serial No. 274,352. (No model.)



Claim.—1. As a new article of manufacture, an axle made of a single plate of regular thickness formed into a main channel-shaped portion A, with the integral conical spindle portions B B' at each end thereof, and a screw-threaded cylindrical portion at each of said spindle portions, for the purpose set forth, substantially as described.

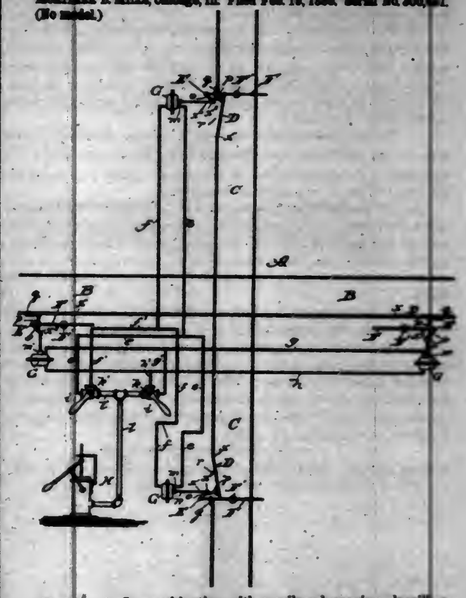
2. As a new article of manufacture, an axle provided with conical hollow spindles, a removable bearing *g* in each spindle, and a retaining-ring *i* over each bearing portion, for the purposes set forth.

3. The combination of the axle A, integral spindles at each end thereof, the core *j* or blocks inside of said axle, and metallic hardened blocks at each end of the core *j*, for the purpose set forth, substantially as described.

4. The combination of the axle A, spindles B B', made integral therewith, the core *j* or blocks within said axle, block *l* at each end of said core, ears *m m* on said block, and adjusting-screws *n n*, passing through such ears, for the purpose set forth, substantially as described.

5. The combination of the axle A, integral spindles B B' at each end thereof and provided with lips *f f'*, the bearing-piece *g*, provided with a similar lip *h*, and the ring *i*, all combined and arranged substantially as and for the purpose set forth.

408,840. DERAILING MECHANISM FOR RAILROAD-CROSSINGS. MONTGOMERY B. MILLS, Chicago, Ill. Filed Feb. 19, 1889. Serial No. 300,491. (No model.)



Claim.—1. In combination with a railroad-crossing, derailing-sections D in a track at opposite sides of and beyond the crossing, horizontally-swinging arms F, connected with the derailing-sections, to extend across the track in the path of a passing train when the said sections are in their derailing positions, and longitudinally and laterally of the track when the derailing-sections are in their safety positions, whereby, when the arms are in their positions of extending laterally of the track, turning of the sections D to their derailing positions may be prevented by a train passing in the path of the horizontally-swinging arms, and means, substantially as described, for simultaneously actuating the derailing-sections and horizontally-swinging arms, substantially as set forth.

2. In combination with a railroad-crossing, derailing-sections D in each track at opposite sides of and beyond the crossing, horizontally-swinging arms F, connected with the derailing-sections, to extend across the tracks when the said sections are in their derailing positions and longitudinally and laterally of the tracks when the derailing-sections are in their safety positions, whereby, when the arms at opposite sides of the crossing on one track are in their positions of extending laterally of the said track, turning of the sections D to their derailing positions may be prevented by a train passing in the path of the horizontally-swinging arms, and means, substantially as described, for adjusting the derailing-sections and swinging arms of one track against the approach thereon of a train to the crossing and to prepare for and indicate to a train on another track the right of way over the crossing, substantially as set forth.

3. In combination with a railroad-crossing, pivotal derailing-sections D in each track at opposite sides of and beyond the crossing, vertical spindles E, supported laterally of the tracks, revolvable on their own axes, and each connected eccentrically with a derailing-section, a horizontal arm F, secured on each spindle, to revolve with it and be extended lengthwise of the track or across it in the path of a train, and means, substantially as described, for adjusting the derailing-sections and swinging arms of one track against the approach thereon of a train to the crossing, and to prepare for and indicate to a train on another track the right of way over the crossing, substantially as set forth.

4. A derailing mechanism for railroad-crossings, comprising, in combination with a railroad-crossing, pivotal derailing-sections D in each track at opposite sides of and beyond the crossing, vertical spindles E, revolvable on their own axes and carrying, to revolve with them, horizontal arms F, and each having a crank *o*, a link *p*, connecting the derailing-sections with the crank, a reciprocating rod *n*, connected with the said crank and link, and means, substantially as described, connected with the rod *n*, for reciprocating them to produce adjustment of the derailing-sections, and swinging arms to warn a train on one track against approaching the crossing, and to prepare for and indicate to a train on another track the right of way over the crossing, substantially as described.

408,841. TWINE PACKAGE. CHARLES P. MITCHELL, Boston, Mass. Filed June 1, 1888. Renewed Feb. 15, 1889. Serial No. 300,079. (No model.)

Brief.—The object of the invention is to improve the formation of packages of twine adapted for use in grain-binders in order to economize time and space and to prevent snarls.

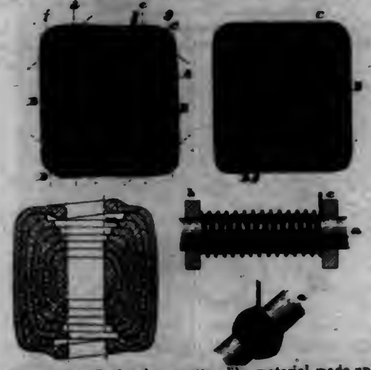


Claim.—1. A twine package made up of two balls wound upon an inner core which extends from one to the other, the entire package being composed of a continuous twine.

2. A twine package made up of an inner core extending lengthwise of the package and having wound about said core two series of spiral courses or layers, each series extending a portion of the length of said core, the entire package being composed of a continuous twine.

408,842. TWINE BALL. CHARLES P. MITCHELL, Boston, Mass. Filed Apr. 17, 1888. Serial No. 307,393. (No model.)

Brief.—The object of the invention is to prevent waste space in the ball and to permit unwinding from the inside without tangling.

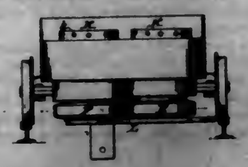


Claim.—1. A ball of twine or other like material made up of a series of cylindrical layers of varying lengths, the outer of which are of less length than the inner ones and all wound spirally, and an outer or finishing covering of one or two layers wound about said cylindrical body in planes oblique to the axis of said cylinder.

2. A ball of twine or other like material the main body of which is in the form of a cylinder having frusto-conical ends, and having a finishing layer or covering wound in planes oblique to the axis of said cylinder and inclosing said frusto-conical ends, substantially as described.

408,843. PROCESS OF ROLLING STEEL OR IRON. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Jan. 26, 1889. Serial No. 297,867. (No model.)

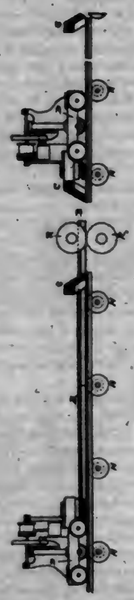
Claim.—An improved process of rolling metal, which consists in exerting a pressure or force upon the piece in the direction of the surface motion imparted by these rolls during the passage of the piece through the rolls.



408,843.



408,844. PROCESS OF ROLLING IRON OR STEEL. ARTHUR J. MOXHAM, Johnstown, Pa. Filed Jan. 26, 1889. Serial No. 297,868. (No model.)

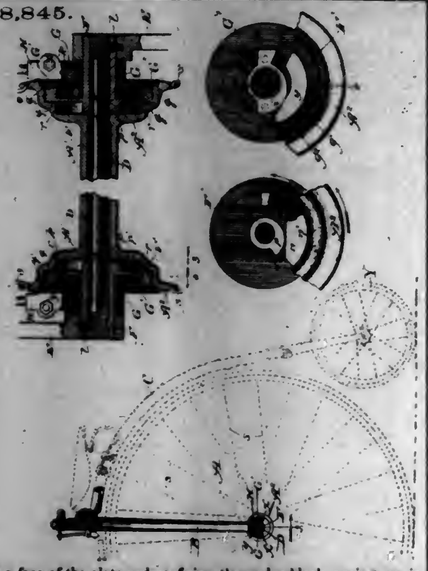


Claim.—An improved process of rolling metal, which consists in exerting a pressure or force upon the piece opposite in direction to that of the surface motion imparted by the rolls during the passage of the piece through the rolls.

408,845. BICYCLE. CHARLES R. MCGLINCHEY, Chicago, Ill., assignor of one-half to John W. Dillon, same place. Filed May 28, 1889. Serial No. 312,203. (No model.)

Claim.—1. The combination, with a wheel loosely supported on its shaft, of gripping mechanism comprising a plate F', rigidly secured to the shaft and carrying a wedge-block *s*, yieldingly connected with the plate to have a limited play on the face thereof, and a cam *p*, rigid

408,845.



on a face of the plate and confining the wedge-block against an internal peripheral surface of the wheel and operating by the rotation of the shaft in one direction to wedge the block and rotate the wheel and by the stoppage of the shaft to release its engagement with the wedge-block, substantially as described.

2. The combination, with a wheel loosely supported on its shaft, of a hub A' internal with the wheel and provided with a housing A^3, having an internal peripheral surface *r*, a plate F', rigidly secured to the shaft and provided on its face with a rigid cam *p*, surrounded by the surface *r*, a loose wedge-block *n*, interposed between the cam *p* and surface *r* and yieldingly held in place by a spring *m*, whereby rotation of the shaft in one direction causes the cam to wedge the block *n* and rotate the wheel and stoppage of the shaft releases the wheel by disengaging the cam and wedge-block, substantially as described.

3. In a bicycle, the combination, with the wheel A, pedals, front fork, and backbone, of gripping mechanism, substantially as described, between the pedal-crank and wheel, effecting by rotation of the pedal in the positive direction engagement thereof with the wheel to revolve the latter, and effecting by stoppage of the pedal's rotation release of the wheel, and gripping mechanism, substantially as described, between the front fork and pedal-crank and actuated by the rise of the backbone to produce engagement between the front fork and pedal-crank, whereby the wheel may revolve in the positive direction while the pedal is at rest, and a rise of the backbone will produce immediate engagement of the pedal-crank, substantially as and for the purpose set forth.

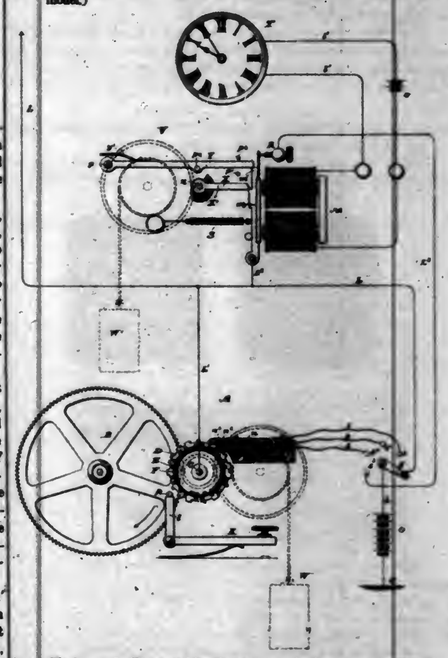
4. In a bicycle, the combination of a wheel A, having a hub A' integral with the wheel and provided with a housing at one or both ends, each housing A^3 having an internal peripheral surface *r*, a shaft D, provided with pedals E and on which the wheel is loosely supported, and a sleeve F, surrounding the shaft adjacent to each housing and rigidly secured thereto, and provided with a disk F' in the housing, and having a cam *p*, a loose wedge-block *n*, interposed between the cam *p* and adjacent surface *r*, and held in place by a spring *m*, whereby rotation of the shaft in one direction engages and rotates the wheel and stoppage of the shaft releases the wheel, substantially as described.

5. In a bicycle, the combination of a wheel A, having a hub A', a shaft D', having rigidly secured thereto the pedals E and on which the wheel is loosely supported, gripping mechanism, substantially as described, on the shaft, and effecting by the rotation of the shaft in the positive direction engagement thereof with the hub A^3 and by the stoppage of the rotation of the shaft release of the hub, and gripping mechanism, substantially as described, on the shaft, and with which the front fork is connected, and actuated by a rise of the backbone to produce gripping of the shaft, whereby the wheel may revolve in the positive direction while the pedals are at rest, and a rise of the backbone will effect immediate engagement of the pedal-crank, substantially as and for the purpose set forth.

6. In a bicycle, the combination, with the wheel A, supported on a shaft provided with pedals E, rigidly secured thereto, the backbone C, and front fork B, of a recessed disk F', rigid with the shaft, having an inner peripheral surface *k*, a plate G', to which the front fork is rigidly secured, loosely mounted on the shaft and carrying a wedge-block *g*, yieldingly connected with the plate to have limited play on the face thereof, and a cam *i'*, rigid on a face of the plate and confining the wedge-block against the surface *k* of the disk and actuated by a turning of the front fork in one direction to grip the disk, substantially as and for the purpose set forth.

7. In a bicycle, the combination, with the wheel A, loosely supported on a shaft D, provided with pedals, of a housing A^3 integral with the wheel and having an internal peripheral surface *r*, a disk F' within the housing, rigidly secured to the shaft, recessed on one side to afford an inner peripheral surface *k* and on its other side provided with a rigid cam *p'*, surrounded by the surface *r*, a loose wedge-block *n*, interposed between the cam *p* and surface *r* and held yieldingly by a spring *m*, and a plate G', to which the front fork is rigidly secured, loosely mounted on the shaft, and provided with a rigid cam *i'*, surrounded by the surface *k* of the disk F', a loose wedge-block *g*, interposed between the cam *i'* and surface *k* and yieldingly held by a spring *h*, the whole being constructed and arranged to operate substantially as and for the purpose set forth.

408,846. AUTOMATIC SIGNALING DEVICE FOR TIME-SERVICE. CHESTER H. POSH, Chicago, Ill., assignor to the Self Winding Clock Company, New York, N. Y. Filed May 3, 1889. Serial No. 309,429. (No model.)



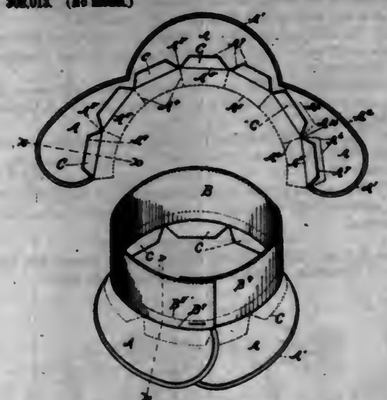
Claim.—1. The combination of a main line having secondary time-pieces included therein, the branch lines 1, 2, and 3, the disks D, E, and F, respectively connected with said branch lines, clock-work for revolving said disks, and the line L', connecting said disks with said main line.

2. The combination of a clock-work, the wheel B, forming a part thereof, the insulated disks D, E, and F, as described, the key K, for releasing said clock-work, and the lines 1, 2, and 3, and L', for connecting said devices with a telegraph-line.

3. The combination of a main line of telegraph having secondary time-pieces included therein, the standard clock T, with its local circuit, and the relay devices, as described, consisting of a train of wheels and the levers X and Y, operating as described.

4. The combination of a main line, the switch S, the instrument A, for sending the preliminary signals for time-service, consisting of a train of wheels, of which the wheel B forms a part, the device for stopping and releasing said wheel, as the pin *p* and the key K, and the disks D, E, and F, operated by said train, the standard clock and its local circuit, the lines L^2 and L^3, and the relaying devices V, substantially as described.

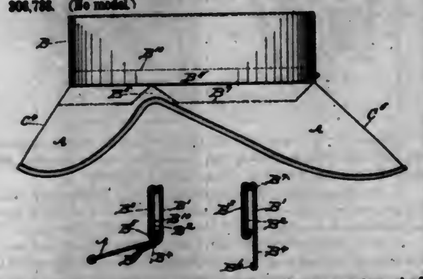
408,847. CAPE-COLLAR. NOEL R. POWERS, Lansingburg, assignor to Wilbur, Miller & Wilbur, Troy, N. Y. Filed Mar. 6, 1889. Serial No. 302,013. (No model.)



Claim.—1. In a cape-collar, the combination, with the collar proper, of a cape consisting of a ply of fabric having a series of retroverted sections integral with such ply ranged on a curved line along its inner edge and a line of stitching through such inner edge and the lower edge of the collar proper, substantially as described.

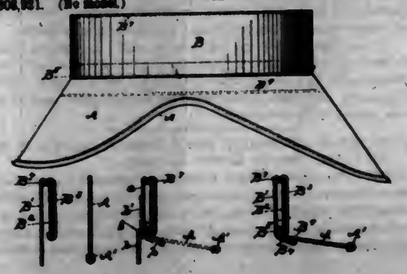
2. In a cape-collar, a cape consisting of a ply of fabric having a concaved inner edge and a series of retroverted sections integral with such ply ranged along such concaved edge, the several sections being connected with the ply at one edge by a fold forming part of the concaved inner edge and at their other edges by lines of stitching, substantially as described.

408,848. CAPE-COLLAR. NOEL R. POWERS, Lansingburg, assignor to Wilbur, Miller & Wilbur, Troy, N. Y. Filed Apr. 11, 1889. Serial No. 306,766. (No model.)



Claim.—A cape-collar consisting of the collar proper formed of a plurality of approximately straight-edge plies, one of which plies extends below the bottom edge of such collar proper, and the cape formed of a ply of fabric having its inner edge concaved or curved, all of said plies being fastened together by a line of stitching along the lower straight edge of the collar proper and the inner curved edge of the cape, the extended collar-ply lapping the cape and having its lapping portion notched and secured to the cape-body by a line of stitching along the edge of the lapping ply, substantially as described.

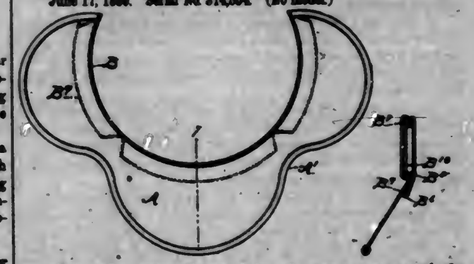
408,849. CAPE-COLLAR. NOEL R. POWERS, Lansingburg, assignor to Wilbur, Miller & Wilbur, Troy, N. Y. Filed Apr. 29, 1889. Serial No. 308,951. (No model.)



Claim.—1. In a cape-collar, the combination, with the collar part having an approximately-straight edge and the cape part having a concaved edge, such parts being secured together by a line of stitching along such edges, of a re-enforce strip having its longitudinal edges cut on the bias approximately straight and parallel with each other, secured to the collar part by a line of stitching along one of such edges and to the cape part by another line of stitching along the other of such edges.

2. A cape-collar consisting of the collar proper formed of a plurality of approximately straight edge plies, one of which plies extends below the bottom edge of such collar proper and is composed of two approximately straight edge strips of fabric united with each other along one edge, the strip forming the extended or cape-lapping portion of the ply being cut on the bias, and the cape formed of a ply of fabric having its inner edge concaved or curved, all of said plies being fastened together by a line of stitching along the lower straight edge of the collar proper and the inner curved edge of the cape, the extended collar-ply lapping the cape and having its lapping edge secured to the cape-body by a line of stitching along the edge of the lapping ply, substantially as described.

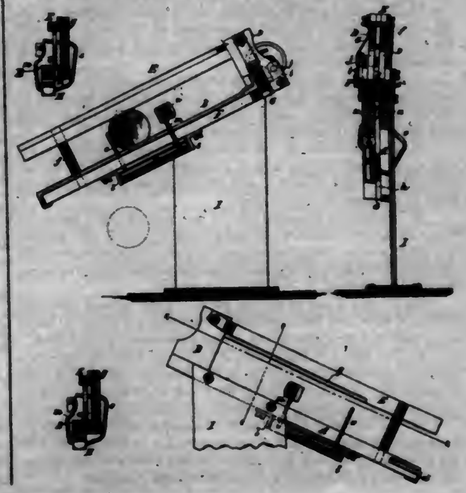
408,850. METHOD OF MAKING CAPE-COLLARS. NOEL R. POWERS, Lansingburg, assignor to Wilbur, Miller & Wilbur, Troy, N. Y. Filed June 17, 1889. Serial No. 314,554. (No model.)



Claim.—In a cape-collar consisting of a top part composed of a plurality of approximately straight edge plies, one of which extends below its lower edge, and a cape part having a concaved edge secured to the lower edge of the top part, the herein-described method of securing the extended ply to the cape part, which consists of inserting a line of stitching through the cape-lapping edge of the extended ply and the cape, and at the same time subjecting such edge to longitudinally-applied tension and the cape to transversely-applied tension, the direction-lines of tension force applied to the cape being angular to those of the tension force applied to the extended edge, substantially as described.

408,851. VENDING APPARATUS. PHILIPP REHER, Cologne, Prussia, Germany, assignor to John H. Volkmann, New York, N. Y. Filed Nov. 20, 1888. Serial No. 291,205. (No model.)

Claim.—1. In a coin-chute, the rail A, combined with the movable rail F, placed adjacent to the rail A, substantially as described.



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2. In a coin-chute, the rails A B, placed side by side, combined with the movable rail F, substantially as herein shown and described.

3. In a coin-chute, the rail A, combined with the movable rail F, placed adjacent to the rail A, and with the upper rail E, substantially as described.

4. In a coin-chute, the rails A B, placed side by side, combined with the lower movable rail F and with the upper rail E, substantially as described.

5. In a coin-chute, the rail A, combined with the movable rail F, placed adjacent to the rail A, and with the grooved upper rail E, having one side cut away, as at *g*, substantially as described.

6. In a coin-chute, the rails A B, placed side by side, combined with the movable rail F and with the grooved upper rail E, having one side cut away, as at *g*, substantially as described.

7. In a coin-chute, the rail A, combined with the movable rail F, placed adjacent to the rail A, and the pin *j*, carried by the rail F, substantially as described.

8. In a coin-chute, the rails A B, placed side by side, combined with the movable rail F and the pin *j*, carried by the rail F, substantially as described.

9. The rail A and the plates D D, rising from said rail and having a space between them, said plates acting as a guide for a coin, in combination with the movable rail F, and with the pin *j*, carried by the rail F and projecting into the space between the plates D D, substantially as described.

10. The rails A B, placed side by side and having a space *a* between them, and the plates D D, rising from the rails A B and having a space *c* between them aligned with the space *a*, in combination with the rail F, and with the pin *j*, carried by the rail F and projecting into the space *c*, substantially as described.

11. The rail A, and the plates D D, rising from said rail and having a space between them for the passage of a coin, in combination with the movable rail F, placed adjacent to the rail A, and the pin *j*, carried by the rail F, and with the upper rail E, substantially as described.

12. The rails A B, placed side by side and having a space *a* between them, and the plates D D, rising from the rails A B and having a space *c* between them aligned with the space *a*, in combination with the rail E and with the movable rail F, and pin *j*, carried by the rail F and projecting into the space *c*, substantially as described.

13. The rails A B, placed side by side and having a space *a* between them, combined with the movable rail F, projecting partially across the space *a* for a certain distance and having a tread *k* at its lower end, substantially as described.

14. The rails A B, placed side by side and having a space between them, combined with a movable rail F and an escapement arranged to operate upon a coin, substantially as and for the purpose set forth.

15. The combination of a rail A and a movable rail F with an escapement arranged to act upon a coin on said rails, substantially as and for the purpose set forth.

16. The rail A and the movable rail F, placed adjacent to the rail A, combined with the shaft H, journaled on the rail F, and with the arm *m*, carried by the shaft H, and the head *n* on the arm *m*, substantially as described.

17. The rails A B, placed side by side and having a space between them, combined with the movable rail F, shaft H, journaled on the rail F, and with the arm *m*, carried by the shaft H, and the head *n* on the arm *m*, substantially as described.

18. The rail A and the movable rail F, placed adjacent to the rail A, combined with the shaft H, journaled on the rail F, arm *m*, having head *n*, and the arm *o*, both said arms being carried by the shaft H, substantially as described.

19. The rails A B, placed side by side and having a space between them, combined with the movable rail F, shaft H, journaled on the rail F, arm *m*, having head *n*, and the arm *o*, both said arms being carried by the shaft H, all arranged for operation substantially as herein shown and described.

20. The rail A and plates D D, having a space between them, and the rail E above the rail A, in combination with the movable rail F, pin *j*, shaft H, having arm *m*, and head *n*, substantially as described.

21. The rails A B and plates D D, arranged with the respective spaces *a c* between them, and the rail E above the rails A B, in combination with the movable rail F, pin *j*, and shaft H, having arm *m*, all arranged and operating substantially as herein shown and described.

22. The rails A B and plates D D, arranged with the spaces *a c* between them, and the rail E above the rails A B, in combination with the movable rail F, pin *j*, and shaft H, having arms *m o*, all arranged and operating substantially as herein shown and described.

23. The plates D D, having a space between them, and the rod d^3 and rail E, all arranged to permit the passage of a one-sized coin and to prevent the passage of a larger-sized coin, in combination with the rail A and movable rail F, substantially as described.

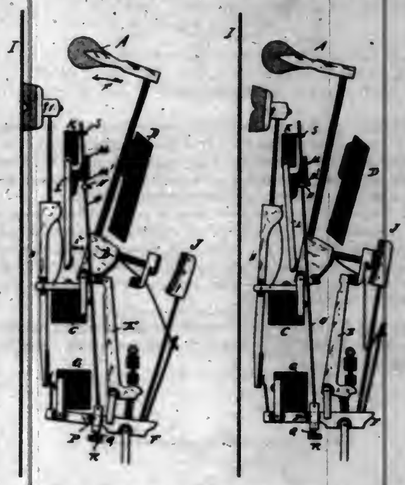
24. The rails A B, placed side by side, in combination with the movable rail F and with the spring G, for moving the rail F, substantially as described.

25. The rail A and the movable rail F, placed adjacent to the rail A, combined with the spring G, for moving the rail F, substantially as described.

26. The rails A B, placed side by side, in combination with the movable rail F and with the spring G and the rail E, substantially as described.

27. The rail A and the movable rail F, placed adjacent to the rail A, combined with the spring G and the upper rail E, substantially as described.

408,852. UPRIGHT-PIANO ACTION. ADOLPH RICHTER, New York, N. Y. Filed Jan. 25, 1889. Serial No. 297,536. (No model.)



Claim.—1. In a piano-action, the combination, with a hammer and jack bed or lever, of a pivoted lever acting on the hammer and operated from the jack-lever, substantially as set forth.

2. In a piano-action, the combination, with a hammer and jack, of a pivoted lever adjacent to the hammer, and a rod operated from the jack-lever and acting on said lever, substantially as set forth.

3. In a piano-action, the combination, with a hammer and jack, of a lever pivoted adjacent to the hammer, and an adjustable rod connected with the jack-lever and serving to operate said lever, substantially as set forth.

4. In a piano-action, the combination, with a hammer and jack, of a lever pivoted adjacent to the hammer, a projection on said lever, and a rod connected with a jack-lever and acting on said projection, substantially as set forth.

5. In a piano-action, the combination, with a hammer and jack of a lever pivoted adjacent to the hammer, a lug on said lever, a rod acting on said lug, and an adjustable frame on the jack-lever, with which frame said rod is connected, substantially as set forth.

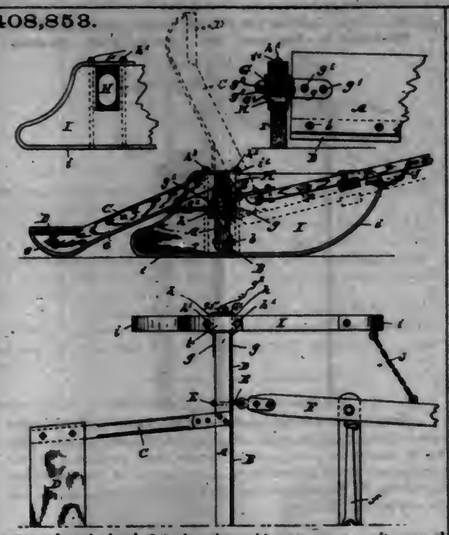
6. In a piano-action, the combination, with a hammer and jack, of a lever pivoted adjacent to the hammer, a lug on said hammer, a rod having a projection that can act on said lug, a frame mounted adjustably on the jack-lever, with which frame said rod is connected, and a screw for adjusting said frame, substantially as set forth.

7. In a piano-action, the combination, with a hammer and jack, of a lever pivoted adjacent to the hammer, a rod acting on said lever, a frame on the jack-lever, to which frame said rod is pivoted, a screw for adjusting said frame on the jack-lever, and a cogged head on said screw, substantially as set forth.

408,858. ICE-SCRAPER. JOHN B. ROBERTSON, Concord, N. H. Filed Jan. 7, 1889. Serial No. 295,868. (No model.)

Claim.—In an ice-scraper, a pair of sled-runners, an interposing scraper mounted at right angles therewith and capable of vertical and oscillatory motion therein, thill or pole connections located upon the forward side slightly above the plane of the axis of said scraper, and a suitable frame rigidly attached to said scraper and extending

408,858.

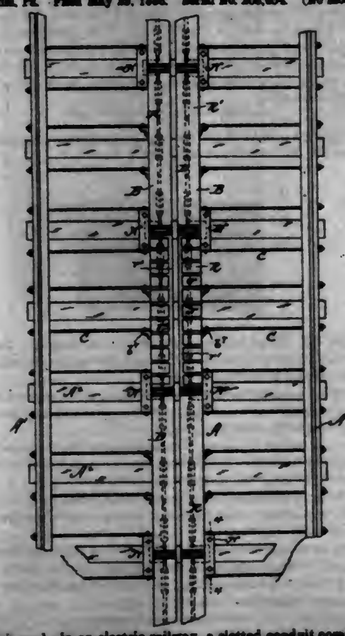


rearward to the level of the ice when said scraper assumes its normal position, substantially as and for the purpose specified.

408,854. ARTIFICIAL FUEL. RUDOLPH J. SCHNEPPE, Jersey City, N. J., assignor to Gustave Frank, New York, N. Y. Filed July 31, 1888. Serial No. 281,559. (No specimens.)

Claim.—The herein-described composition of matter designed or intended for fuel, the same consisting of granulated brick, coal-dust, and pitch, tar, or other analogous residuum, the whole mixed, in substantially the proportions specified, and compressed, as set forth.

408,855. ELECTRIC RAILWAY. WILLIAM M. SCHLEIDEWEIN, Philadelphia, Pa. Filed May 29, 1888. Serial No. 275,654. (No model.)



Claim.—1. In an electric railway, a slotted conduit composed of separate sections, each section composed of separate sides, and each side having a length of electrical conductors extending from end to end of the side, or nearly so, and flexible or yielding circuit-connections between the conductor-ends of succeeding sections, substantially as set forth.

2. As a new article of manufacture, an electric-railway slotted conduit side consisting of a beam or bar having a horizontal top flange on one side of the same, angle-iron F, secured to said flange, and a length of electric conductor secured to said beam below said flange and extending from end to end of the beam and having free ends for circuit-connections, substantially as set forth.

3. As a new article of manufacture, an electric-railway slotted conduit side consisting of a beam or bar having on one side a horizontal top flange, an edge flange depending from said top flange and extending from end to end of the beam, and an electric conductor secured to said beam below said horizontal flange and extending from end to end of the beam and having free ends for circuit-connections, substantially as set forth.

4. In an electric railway, a slotted conduit composed of separate sections each having separate side beams or bars, each having a separate length of electrical conductors of the same length as the conduit-sections and lateral braces for retaining each side beam in position, substantially as set forth.

5. A slotted conduit composed of sections and each section composed of separate side bars or beams having at their upper parts an inclosed gutter or channel G, located to one side of the slot of said sections, in combination with electric conductors located or inclosed within said gutters or channels, substantially as set forth.

6. A slotted conduit beam or side B, having top flange *b*, and angle-bar F, secured to under side of said flange, substantially as set forth.

7. A beam for slotted conduits, having top flange *b*, combined with bar E and angle-bar F, arranged to form a gutter beneath said flange, substantially as and for the purpose set forth.

8. A beam or side for slotted conduits, having top flange *b*, angle-bar F, to form a gutter beneath said flange, and end plates *f f*, to close the ends of said gutter or protect the ends of an electric conductor in the gutter, substantially as set forth.

9. A beam or side for a slotted conduit, having top flange *b*, provided on its under side with a gutter in which is secured a length of electrical conductor extending nearly from end to end of the beam and having bottom contact-surface and separate plates or blocks at each end of the conductor to protect its ends, substantially as set forth.

10. The combination, with a bar or beam having on one side top and bottom flanges, of an angle-bar extending the length of the beam and riveted thereto and a conductor secured to the angle-bar, substantially as set forth.

11. The combination, with a bar or beam having on its upper side a laterally-projecting flange and a depending lip or bar on said flange extending the length of the beam, of a conductor located between said lip and side of the beam, substantially as set forth.

12. A side or beam for a slotted conduit, having top flange *b*, in combination with angle-bar F, blocks *g*, having top and bottom countersunk screw-openings, and conductor D, substantially as set forth.

13. A slotted conduit-section having flanges *b*, angle-bars F, secured to said flanges, insulating-blocks *g*, secured to bars F, and conductors secured to the blocks, substantially as set forth.

14. A slotted conduit-section having separate lengths of electrical conductors secured to insulating-blocks, and the latter secured to the conduit, and rubber or elastic plates or pads inserted between the conductors and blocks and between the latter and conduit, substantially as set forth.

15. In an electric railway, a slotted conduit composed of separate sections, each composed of separate side beams or bars having approaching top flanges, each beam having a separate length of electrical conductor, and separate top plates for said beams or bars, substantially as set forth.

16. In an electric railway, a slotted conduit composed of separate sections having removable top plates R, provided with lengthwise ribs *r'* adjoining the slot between said plates, in combination with a contact-plow S, having a roller or wheeled carriage adapted to move along on ribs *r'*, substantially as set forth.

17. In combination with a slotted conduit having electrical conductors, a trolley or carriage having a slot bar or shank, a transverse bar loose upon said shank and having contacts with the conductors, and upwardly-acting pressure device on said shank below the cross-bar, substantially as set forth.

18. In combination with a slotted conduit, electrical conductors located in said conduit, a trolley or carriage traveling on the top of the conduit and having a slot bar or shank, a transverse bar loose upon said shank and having upward-pressure contacts with the conductors, and adjusting devices for regulating said pressure, substantially as set forth.

19. In an electric railway, a line of conductors, a contact-plow having a loose cross-bar provided with contacts, and upward-pressure devices located below the cross-bar, as set forth.

20. The combination, with a slotted conduit having top plates provided with ribs r' adjoining the slot of the conduit, of a trolley or carriage traveling on ribs r', and having a slot bar provided with an upwardly-acting spring t^3 and adjusting-nut t^3, and a loose cross-bar t', with contacts located above said spring, substantially as set forth.

21. A slotted conduit composed of separate sections placed end to end with a space between their ends, electrical conductors in said sections, and side couplings connecting the adjacent ends of adjoining sections to admit of their independent expansion and contraction, substantially as set forth.

22. A slotted conduit composed of sections laid end to end and separated from one another, and coupling boxes or traps N, having slotted sides and bolt-connections with the ends of adjoining conduit-sections or their sides to admit of their expansion and contraction, substantially as set forth.

23. In an electric railway, a slotted conduit composed of separate sections having end coupling boxes or traps N, loosely secured together so as to slide upon one another, separate loosely affixed or sliding electric conductor-sections for the conduit-sections, and free coupling wires or connections in boxes N and passing into the conduit-sections for completing the circuit between the conductors of adjoining conduit-sections, substantially as set forth.

24. In an electric railway, a slotted conduit composed of separate sections connected by boxes or traps N so as to slide upon each other, separate lengths of electric conductors loosely affixed to the conduit-sections so as to slide or move therein independently of the conduit-sections, and freely-supported couplings or bridges for the ends of the conductors, whereby said conductors and conduit-sections expand and contract independently of each other, substantially as set forth.

25. A slotted conduit composed of sections each of which has near its ends lateral openings l, lengths or sections of conductors in each section, loose or free coupling-wires l^2, passing through openings l for circuiting the conductors of adjoining conduit-sections, and boxes or traps N for said coupling-wires, substantially as set forth.

26. In an electric railway, a slotted conduit composed of separate sections, each section having separate lengths of electrical conductors and separate couplings for the conduit-sections, and separate electric couplings for the lengths of conductors to allow of independent expansibility of the conduit-sections and lengths of conductors, substantially as set forth.

27. The compound electric conductor D, composed of two superposed plates d d', of different metals, each having registering elongated openings and fastening devices therefor to allow for different ratios of expansibility, substantially as set forth.

28. A compound electrical conductor composed of two superposed plates of different degrees of hardness and having elongated slots or openings and fastening devices to allow for the different ratios of expansibility, substantially as set forth.

29. A compound electrical conductor composed of two superposed plates of different degrees of hardness, and one of which has a groove in its lower or outer side for contact with a traveling current-collector, substantially as set forth.

30. A compound electrical conductor composed of a flat or smooth plate or bar of copper and a plate or bar of iron or steel having an under or outer contact side and both plates having elongated slots and connecting-bolts, substantially as set forth.

31. In combination with a support, the conductor-plates d and d', of different metals, having elongated slots and fastening devices to allow for different ratios of expansibility, substantially as set forth.

32. A slotted conduit having depending slot-flanges f and end plates l', for closing and protecting the ends of channels or ways formed by said flanges, substantially as set forth.

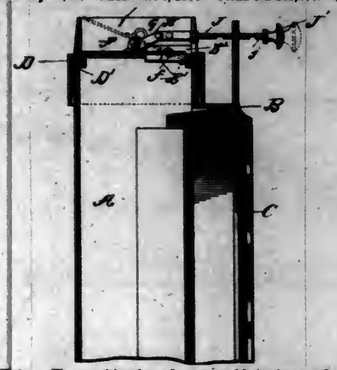
33. A slotted conduit having depending slot-flanges f and end plates l l', for closing and protecting the ends of the ways or channels between the sides of the conduit and flanges f, substantially as set forth.

34. In a slotted conduit composed of sections and coupling boxes or chambers N at the ends of the sections composed of end pieces n, secured to the conduit-sections and having slotted openings n^2 n^2, side plate n^3, top plate n^4, and fastening devices n^7 n^8 for said parts to allow the conduit-sections to expand and contract, substantially as set forth.

35. As a new article of manufacture, an electric-railway slotted-conduit side consisting of a beam or bar having adjacent to each end a lateral opening and on one side a horizontal top flange, and an electric conductor secured to said beam below said flange and extending from end to end of the beam and having end pieces passing through said openings for circuit-connections, substantially as set forth.

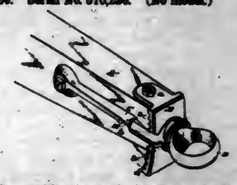
36. A slotted conduit composed of sections, each section composed of separate sides having a length of electric conductor, coupling-boxes N for said sides, and electric couplings or bridges for the ends of the conductor-lengths, whereby the sides of the conduit-sections expand and contract independently, substantially as set forth.

408,856. DAMPER FOR HOT-AIR FLUES. GEORGE W. BERWICK, Philadelphia, Pa. Filed June 6, 1888. Serial No. 276,900. (No model.)



Claim.—The combination of a removable register, a flue provided with a damper, said damper having journals, inverted sockets in the flue to receive the journals of the damper, and a detachable cap for securing one of the journals of the damper in one of the sockets and permitting the displacement thereof, substantially in the manner and for the purpose described.

408,857. PLOW-CLEVIS. WILLIAM R. BEFTON, Canton, Ohio. Filed May 10, 1889. Serial No. 310,226. (No model.)



Claim.—The combination of the beam A, provided with the crown-head B, having the teeth b, the draft-link C, provided with the round aperture d and the heart-shaped aperture e, the locking-lever E, provided with the eccentric d', and the catch g, adapted to engage the rib A, and the legs f, adapted to engage the teeth b, substantially as and for the purpose specified.

408,858. BIAS CLOTH BAG. JOSEPH L. SETHOUS, Brooklyn, N. Y. Filed Dec. 29, 1888. Serial No. 294,956. (Model.)



Claim.—1. As an improved article of manufacture, a flat rectangular bag made from woven fabric and having the closing seams arranged obliques to the axis of the bag.

2. As an improved article of manufacture, a flat rectangular bag made from woven fabric and having the warp and weft of the fabric arranged bias to the axis of the bag.

3. As an improved article of manufacture, a flat rectangular bag made from woven fabric and having the seams arranged along the selvages of the fabric and oblique to the axis of the bag.

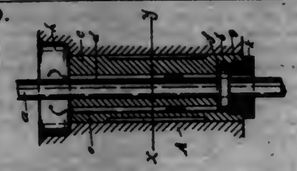
4. As an improved article of manufacture, a flat, seamed, rectangular bag made from woven fabric and having a raw bias edge about the mouth of the bag.

5. As an improved article of manufacture, a bag made from textile material having a seamless bottom formed by a fold of the fabric extending bias of the material, and having its sides closed by seams oblique to the longitudinal axis of the bag.

408,859. CENTRIFUGAL LUBRICATOR. PHILIP H. SHARPLES, West Chester, Pa. Filed Jan. 10, 1889. Serial No. 295,993. (No model.)

Claim.—1. The combination, with a rotary shaft provided with a collar, of a bearing having a recess for said collar and an oil-groove d entering the same, said recess closely surrounding the collar and

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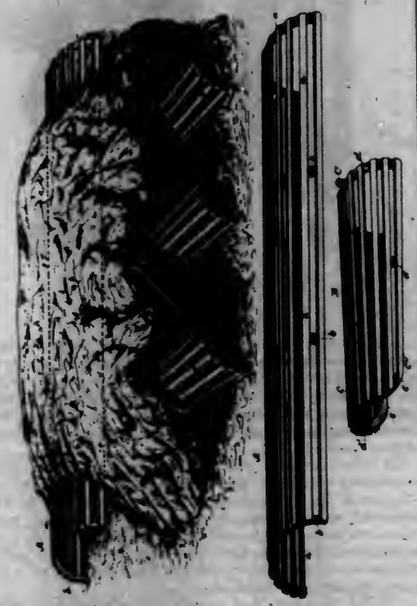


extending inward toward the center of the shaft, substantially as and for the purpose set forth.

2. The combination, with a rotating shaft provided with a collar, of a bearing having a recess for said collar, an inlet-groove connecting said recess with an oil-receptacle, and an outlet from said recess at a greater distance from the center of the shaft also communicating with said receptacle, substantially as set forth.

3. In a centrifugal lubricating device for a collared shaft, a bearing having a recess for said collar and oilways entering said recess at different distances from the center of the shaft, substantially as set forth.

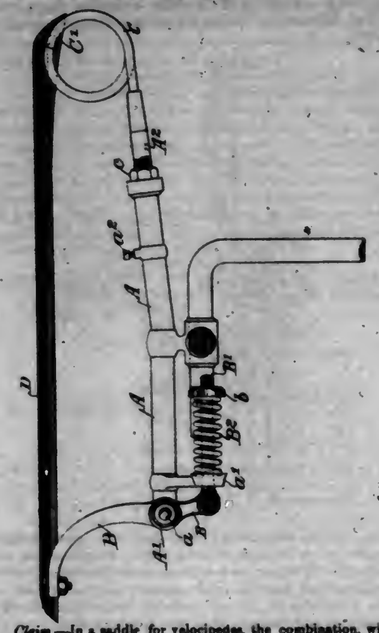
408,860. METHOD OF BURNING CLAY FOR BALLAST. JESSE STUBBS, Mount Pleasant, assignor to Charles R. Stubbs, Fairfield, Iowa. Filed July 5, 1889. Serial No. 316,540. (No model.)



Claim.—1. The method of burning clay to produce the material herein described, which consists in forming an air or draft chamber on the ground in the open air, making a fire on, over, and about said chamber, covering the fire with a layer of clay, covering the clay with a layer of coal, and drawing the burning clay and coal, at required intervals of time, toward the sides, preparatory to further covering with layers of clay and coal, substantially as described.

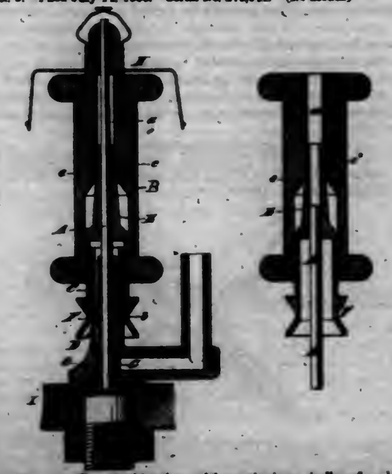
2. The method herein described of producing from clay a hard conglomerate mass of igneous matter to be used, when reduced to particles of a proper size, in the construction of road-beds, pavements, railroad-ballast, and the like, which consists in forming a permanent arch-shaped draft or air chamber the full length of the kiln to be burned, making a fire on, over, and about said chamber, covering said fire with a layer of clay, covering said clay with a layer of coal, forming air or draft chambers laterally from the sides of said permanent chamber, drawing or raking a portion of the glowing mass of clay and coal from said permanent chamber onto said lateral chambers, covering said mass with layers of clay and coal at required intervals, and, as said mass increases in width from the rakings and additions applied thereto, extending said lateral air-chambers and covering them with a portion of the glowing mass and covering said mass with layers of clay and coal, substantially as described.

408,861. SADDLE FOR VELOCIPEDES. WILLIAM R. TURNER and JOHN ARNOTT, Coventry, County of Warwick, England. Filed Mar. 6, 1889. Serial No. 302,044. (No model.)



Claim.—In a saddle for velocipedes, the combination, with the seat D, of the saddle-bar A, provided with a cross-head A', levers B, rigidly secured near one of their ends to the rear portion of said seat and fulcrumed upon said cross-head, tension-rods B', pivotally connected to said levers below their fulcrums, coil-springs B^3, surrounding said tension-rods, legs a', extending laterally from the saddle-bar and through which said tension-rods pass, nuts b on the tension-rods near their outer ends, and a spring near the forward end of said seat and operating in conjunction with the springs B^3 to maintain the seat in a stretched condition, substantially as specified.

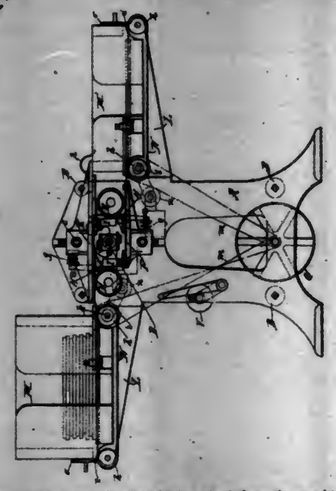
408,862. SPINDLE FOR SPINNING. JOSEPH R. TYRAR, Paterson, N. J. Filed July 14, 1888. Serial No. 279,941. (No model.)



Claim.—The combination, with a spinning-spindle, of a sleeve fast thereon and having the upper part of its exterior tapered upward for the support of a bobbin on that part only, and having below said tapered part an externally-cylindrical part larger than the tapered

upper part for the centering of the so-supported bobbin, substantially as herein described.

408,863. BLIND-SLAT-PLANING MACHINE. FRANK H. VAN HOUTEN, Matteawan, N. Y. Filed Oct. 23, 1886. Serial No. 283,990. (No model.)



Claim.—1. In a machine for planing blind-slats, the combination, with the top bed or frame, of a spring applied thereon at the end nearest the delivery-hopper, its free end projecting to strike and separate the slats as they leave the cutter, substantially as explained.

2. In a machine for planing blind-slats, in combination with a cutter-head and its knives, the adjustable bottom bed-plate and the delivery pressure-bars conforming in cross-section to the shape of the slat, substantially as shown, and for the purposes set forth.

3. In a machine for planing blind-slats, the combination, with a cutter-head and its knives, of the top and bottom bed-plates, each provided with a raised rib or guide upon its inner edge, said rib being about equal in height to half the thickness of the slat to be planed, substantially as shown, and for the purpose explained.

4. In a machine for planing blind-slats, the combination, with the bottom bed-plate having the guide-rib upon its inner edge, of the adjustable guide applied upon the outer edge, substantially as shown, and for the purposes set forth.

5. In a machine for planing blind-slats, the combination, with the bottom bed-plate, of the pressure-bar applied in connection therewith, the upper surface of said bed-plate and the under surface of said pressure-bar conforming in shape to the slat to be planed, and the two provided with guides, substantially as shown and described.

6. In a machine for planing blind-slats, the combination, with the cutter, the feed-rolls, and pressure-bars, of the two hoppers having the feeding chain belts, all arranged to operate substantially as shown and described.

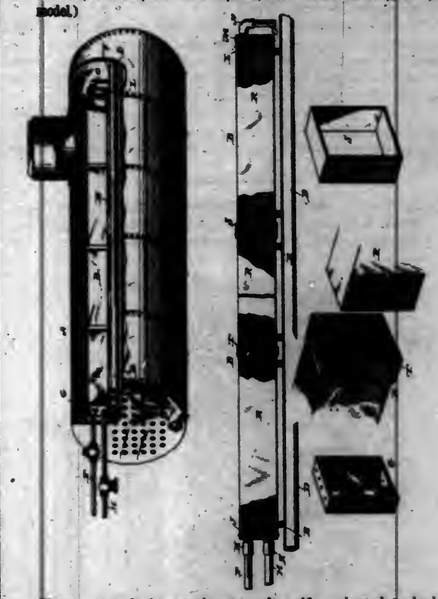
408,864. SCREW-PROPELLER. MAX VOGELSANGS, Hoboken, N. J., assignor of one-half to John H. Bean, same place. Filed Mar. 6, 1889. Serial No. 302,166. (Model.)



Claim.—1. A screw-propeller the working-faces of which are arranged at an angle to the axis of the propeller and slightly concaved toward the obtusely-angled front or cutting edges of the blades, which latter are re-enforced at their rear sides by an inclined transverse ridge, and a longitudinal ridge extending from the inner end of the transverse ridge toward the hub and point of the blade, so as to form inclined guide-faces by which the water passing over the ridges is conducted off in a direction nearly parallel to the working-faces of the blades, substantially as set forth.

2. A screw-propeller having radial blades inclined to the axis of the propeller and obtuse-angled front or cutting edges, and inclined guide-faces formed at the rear sides of the blades by an inclined transverse ridge, and a longitudinal ridge that extends from the inner end of the transverse ridge toward the hub and the point of the blades, substantially as set forth.

408,865. FEED-WATER HEATER AND PURIFIER. GEORGE H. WATSON, St. Louis, Mo. Filed Apr. 16, 1889. Serial No. 307,490. (No model.)



Claim.—1. A feed-water heater and purifier adapted to be located in a steam-boiler and provided with a feed-water inlet in the upper part of one end and a blow-off pipe in the lower part of the same end, through which to discharge the impurities from the heater, and in the other end of the heater an outlet above the boiler-flues, through which to discharge the heated and purified water, substantially as described.

2. The combination, with a steam-boiler and an interior feed-water heater and purifier, of a feed-pipe leading into the upper part of the heater and purifier at one end, a pipe connected with the upper part of the other end of the heater and purifier and extended downward in the boiler, a plate or deflector supported beneath the lower end of said pipe, and a blow-off pipe leading from the lower part of the heater and purifier at the end with which the feed-pipe is connected, substantially as described.

3. The combination, with a steam-boiler, of a feed-water heater and purifier located in the boiler above the flues, a feed-water pipe leading into the upper part of the heater and purifier at or near one end, an outlet-pipe leading from the upper part of the other end of the heater and purifier and extending below the normal water-line and discharging the heated and purified water from the heater into the boiler above the flues, and a blow-off pipe leading from the lower part of said heater and purifier at the end opposite the outlet into the boiler, through which to discharge the impurities from the heater and from the surface of the water in the boiler, substantially as described.

408,866. BEARING FOR SPINNING-SPINDLES. JOSEPH W. WATSON, Canton, Mass. Filed Jan. 10, 1889. Serial No. 296,981. (No model.)

Claim.—1. A bearing for spindles constructed of a soft, yielding, and elastic filamentous material, substantially as described.

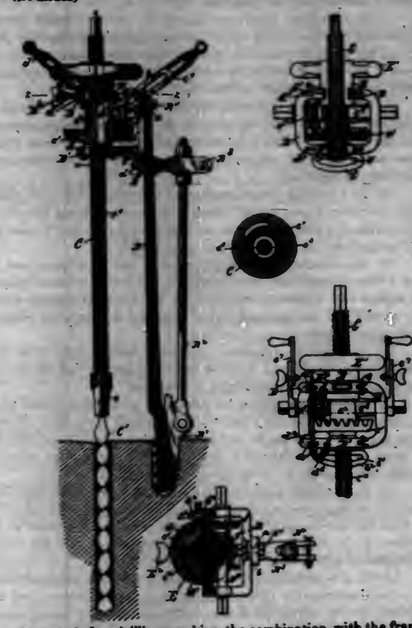


2. A bearing for spindles constructed of soft, yielding, and elastic felt, substantially as described.

3. The combination, with a spindle and supports therefor, of a bearing formed of a soft, elastic, and yielding filamentous material interposed between them, substantially as described.

4. A step for spindles formed of a soft, yielding, and elastic filamentous material, substantially as described.

408,867. COAL OR ROCK DRILL. JOHN L. WILLIAMS and THOMAS H. WILLIAMS, Shenandoah, Pa. Filed Apr. 27, 1889. Serial No. 308,871. (No model.)



Claim.—1. In a drilling-machine, the combination, with the frame carrying the drill-operating mechanism and provided at one end with a lug having therein a long lateral slot, of a supporting-bar pivotally bolted to said frame at the opposite end thereof, a lug-piece provided with a bolt extending through said bar and the said lateral slot in the frame, a nut on said bolt to hold the same in said slot, a brace-rod seated at one end in said lug-piece, and a wedge carried by said rod at its opposite end, substantially as and for the purpose set forth.

2. In a drilling-machine, the combination, with the supporting-bar and frame carried thereby, of a rotatable drill-spindle externally threaded throughout its length and having bearings in boxes on said frame, and a feed-nut on said threaded spindle at and having loose bearing in one of said boxes, together with a set-screw working in said box and adapted to impinge upon said nut at its bearing therein, substantially as and for the purpose set forth.

3. In a drilling-machine, the combination, with the supporting-bar and frame carried thereby, of a rotatable drill-spindle externally threaded throughout its length and having bearings in boxes on said frame, a feed-nut on said threaded spindle at one of said boxes, and provided with an external circumferential groove at which it has bearing around said spindle in said box, a loose cap or section of said box, a leaf-spring on said nut in said bearing-groove therein, and a set-screw working in said loose box and adapted to impinge upon said spring and nut at its bearing therein, substantially as and for the purpose set forth.

4. In a drilling-machine, the combination, with the supporting-bar and frame carried thereby, of a rotatable drill-spindle externally threaded throughout its length and having bearings in boxes on said frame, a feed-nut composed of longitudinal sections mounted on said threaded spindle at one of said boxes, and provided with an external circumferential groove at which it has bearing around said spindle in said box, a loose cap or section of said box, and a set-screw working in said loose box and adapted to impinge upon said nut at its bearing therein, substantially as and for the purpose set forth.

5. In a drilling-machine, the combination, with the supporting-bar and frame carried thereby, of a rotatable drill-spindle externally threaded throughout its length, a feed-nut on said threaded spindle provided with an external circumferential groove, boxes on said frame in which said spindle and its feed-nut have bearings, each said box having a section thereof fixed on said frame and a section hinged at one end and detachably attachable at its opposite end to said fixed section, and a set-screw working in the box in which said feed-nut has bearing and adapted to impinge upon said nut therein, substantially as and for the purpose set forth.

6. In a drilling-machine, the combination, with the supporting-bar and frame carried thereby, of a drill-spindle externally threaded throughout its length and provided with an external longitudinally-extended groove or grooves, a feed-nut on said spindle, provided with an external circumferential groove, boxes on said frame in which said spindle and its nut have the described bearings, a set-screw working in the box, in which said nut has bearing, and adapted to impinge thereon therein, a gear on said spindle and feathered to said groove or grooves therein, and a pinion engaging said gear and mounted on a shaft having bearings in said frame and provided with actuating-cranks, substantially as for the purpose set forth.

408,868. MUSIC-RACK ATTACHMENT FOR UPRIGHT PIANOS. HENRY ZEDLER, New York, N. Y. Filed Mar. 9, 1889. Serial No. 302,959. (No model.)



Claim.—1. The combination, with the front wall of an upright-piano case having an opening, of a sliding panel guided at the upper rear part of the front wall and of a main panel or rack fitting into said opening and hinged to said sliding panel, substantially as set forth.

2. The combination, with the front wall of an upright-piano case, said front wall having an oblong opening, of a sliding panel guided in ways at the upper rear part of the front wall, a rack hinged to said sliding panel and fitting into said opening, and an extensible hinged strap-connection between the front wall and the hinged rack, substantially as set forth.

3. The combination, with the front wall of an upright-piano case, said front wall having an opening, of a sliding panel guided in ways at the upper rear part of the front wall, stops at the lower end of said guideways for arresting said sliding panel, and a rack fitting into the opening of the front wall and hinged to the lower part of the sliding panel, substantially as set forth.

4. The combination, with the front wall of an upright-piano case, said front wall having an opening, of a sliding panel guided in ways at the upper rear part of said front wall, stops at the lower ends of said guideways, springs at the upper ends of said guideways, a rack hinged by curved brackets to the lower part of the sliding panel, a locking device connecting the lower end of the rack with the lower edge of the opening, and a spring attached to the front wall and adapted to press the rack forward when the locking device is released, substantially as set forth.

5. The combination, with the front wall of an upright-piano case, said front wall having a central opening, of guideways at the upper rear part of said front wall, a sliding panel guided in said ways, a rack hinged to the lower part of said sliding panel and made somewhat less in height than the opening in the front wall, and a locking device at the lower part of the rack and opening of the front wall, said locking device being locked or unlocked by lifting the rack in the opening of the front wall, substantially as set forth.

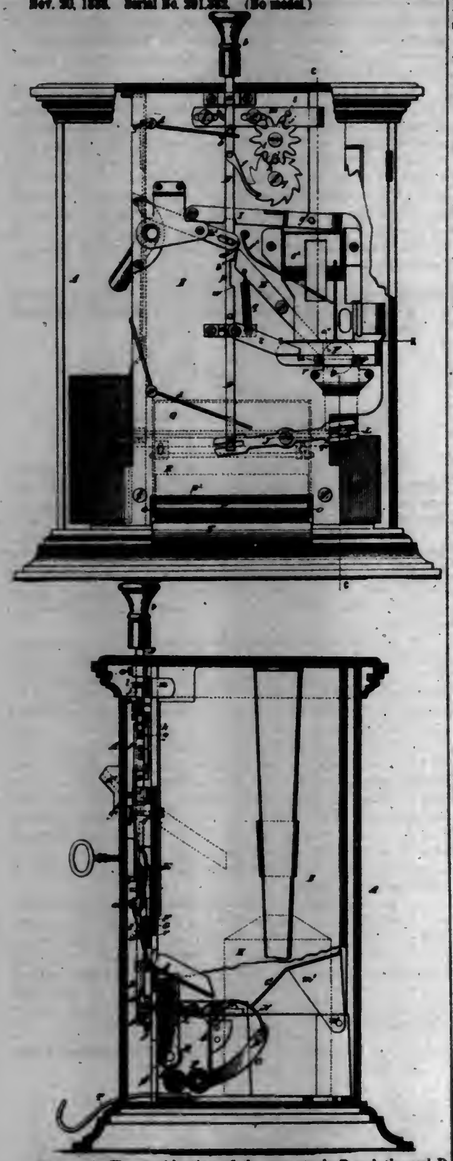
408,869. GAME APPARATUS. CARL P. M. ZELL, Chicago, Ill. Filed Apr. 24, 1889. Serial No. 308,408. (No model.)



Claim.—1. In a game, the combination, with a circular platform having a raised rim, and partitions along part of the rim forming compartments, inclined partitions on said platform near the center, a chute on the platform, a lip for receiving a ball on said chute, and a swinging figure adjacent to said lip, whereby when the figure strikes the ball resting on said lip the ball rolls through the chute upon the game-board, substantially as set forth.

2. In a game, the combination, with a platform having a raised rim, of partitions forming compartments along part of said rim on the top of the platform, an upright chute at that part of the platform opposite the compartments, a lip on said chute for holding a ball, and a swinging figure adapted to strike against said ball, substantially as set forth.

408,870. VENDING APPARATUS. THEODOR BUSSMANN, Gaggenau, Baden, Germany, assignor to John H. Voltmann, New York, N. Y. Filed Nov. 20, 1888. Serial No. 291,382. (No model.)



Claim.—1. The combination of the receptacle B and the rod D with the shaft M, and the roller P, connected with the shaft M and actuated thereby, substantially as described.

2. The combination of the receptacle B and the rod D, the lever J, shaft M, having a crank that engages the lever J, and roller P, connected with the shaft M and actuated thereby, substantially as described.

3. The receptacle B and the rod D, combined with the lever J, shaft M, having a crank engaging said lever, curved plate N on the the shaft M, arms O, and roller P, all arranged for operation substantially as described.

4. The receptacle B, having an opening p^3, and the rod D, combined with the lever J, shaft M, and cranks L, carried by the shaft M, and the plate Q, carried by the cranks L, substantially as described.

5. The receptacle B, having an opening p^3, and the rod D, combined with the lever J, cranks L, shaft M, carrying said cranks, and plate Q, having roller R, and the roller P connected with the shaft M, all arranged and operating substantially as herein shown and described.

6. In a vending apparatus, the rod D and roller R, combined with the shaft M and roller P, said rollers being connected with said shaft, so that when the roller R is raised the roller P will advance, substantially as described.

7. The receptacle B and rod D, combined with the lever J, crank L, shaft M, curved plate N, arms O, and roller P, and the pivoted plate P^1, substantially as described.

8. In a vending apparatus, the rod D, having a notch p, combined with the lever E, one end of which is adapted to enter the notch p, and the projecting screw v, situated near the opposite end of the lever E, the lever E and screw v being adapted to receive a coin between them, substantially as described.

9. In a vending apparatus, the rod D, having edge b^3 and cam a^3, combined with the lever E, adapted to engage said edge and cam, and the projecting screw v, situated near one end of the lever E, said lever and screw being adapted to receive a coin between them, substantially as described.

10. In a vending apparatus, the rod D, having notch p, combined with the lever E, one end of which is adapted to engage the rod D, and the bar F, and projecting screw v, carried by the bar F, near one end of the lever E, substantially as described.

11. In a vending apparatus, the rod D, having edges w and b^3, and a cam a^3, combined with the lever E, one end of which is adapted to engage said edges and cam, and the bar F, and projecting screws u v on said bar, and the spring q, all arranged for operation substantially as herein shown and described.

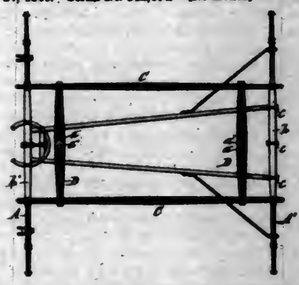
12. In a vending apparatus, the rod D, having a pin h^3, in combination with the lever I, adapted to be engaged by said pin h^3, and the slotted block d^3, substantially as described.

13. In a vending apparatus, the casing A, having a slotted block d^3, and the rod D, having a pin h^3, combined with the lever I, adapted to be engaged by the pin h^3, said lever having a projection g^3, adapted to come in line with the slot in the block d^3 to prevent the entry of a coin, substantially as herein shown and described.

14. In a vending apparatus, the rod D, having a pin o, combined with the sliding plate m, having pin n, to come in line with the pin o, to limit the movement of the rod D, and means, substantially as described, for moving the plate m, through connection with the rod D, substantially as described.

15. In a vending apparatus, the rod D, having a pin e and a dog f, in combination with the sliding plate m, having pins n l, and the toothed wheel g, having pin h, and the toothed wheel i, having tooth j, to engage the pin l, all arranged for operation substantially as herein shown and described.

408,871. SPRING-VEHICLE. EDWARD CLIFF, Hyack, N. Y. Filed May 27, 1889. Serial No. 312,194. (No model.)



Claim.—1. In combination with the body and its supporting cross-spring, a metal saddle-plate secured to the center of said spring and having a flat top surface, and a longitudinally-concaved bottom surface conformed to the top surface of the spring.

2. In combination with the side bars, the bowed leaf-springs D D, formed with broad central portions and tapered gradually from said central portions to the ends and terminated with shackle-eyes axially at right angles to the length of the spring, couplings connecting said shackle-eyes to the side bars, and the body mounted on the broad central portions of said springs, substantially as described and shown.

3. A leaf-spring formed concave transversely in its main portion and terminating with flat end portions, as set forth.

4. The combination of a leaf-spring formed concave transversely and a saddle seated on the concave side of said spring and formed convex correspondingly, as described and shown.

5. The combination of a bowed leaf-spring formed concave transversely and a saddle seated on the concave side of the spring and formed convex transversely and concave longitudinally to conform to the shape of the spring, substantially as described and shown.

6. A carriage cross-spring composed of a single leaf formed concavo convex in cross-section and placed with its concave side upward, a saddle seated on the concave side of the spring and having its under side formed convex correspondingly and its top formed straight, and a washer on the under side of the spring and formed with a correspondingly-concave top and straight bottom, and a bolt or rivet passing vertically through the aforesaid parts and uniting the same, as set forth and shown.

7. A carriage cross-spring composed of a single leaf formed concavo-convex in cross-section and tapered gradually in width from its central portion to the ends, substantially as described and shown.

8. In combination with the side bars, a steel cross-bar disposed with its flat sides horizontally and secured at opposite ends to the side bars, and a rigid bolster secured to the under side of the aforesaid cross-bar and extending lengthwise thereof to points in proximity to the side bars.

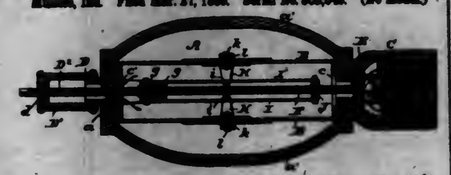
408,872. BOTTLE-STOPPER. JAMES R. CORBRAYE, Binghamton, N. Y. Filed Feb. 18, 1889. Serial No. 300,304. (No model.)



Claim.—1. A stopper for bottles and similar receptacles, consisting of bands E and F, connected together, the said band E having projecting legs or hooks with inclined under edges, in combination with a cover having upon its face a rubber stopper and upon the reverse side a bar adapted for engagement with said legs or hooks, for the purpose set forth.

2. In a bottle-stopper, a band adapted to encircle the neck of the bottle and having hooks or legs formed with inclined under edges, in combination with a swing-cover carrying a stopper, and a bar fulcrumed on the upper surface of said swing cover and adapted to engage said legs or hooks, substantially as and for the purposes set forth.

408,873. GAS-PRESSURE REGULATOR. GEORGE W. CONKLIN, Muncie, Ind. Filed Mar. 27, 1889. Serial No. 305,042. (No model.)



Claim.—1. The combination, with a chamber, of a valve-rod, a pair of springs secured upon the valve-rod, and flexible disks secured to said springs, substantially as set forth.

2. The combination, with a chamber consisting of a ring and removable caps, of a valve-rod extending diametrically through the chamber and connected to the supply-valve, flat springs secured at their ends to said rod, and flexible disks secured to said springs and adapted to control the supply of gas, substantially as set forth.

3. The combination, with the chamber, of a valve-rod extending through the same, flat springs rigidly secured at their ends to said rod, flexible disks, and devices for securing the latter to said springs, substantially as set forth.

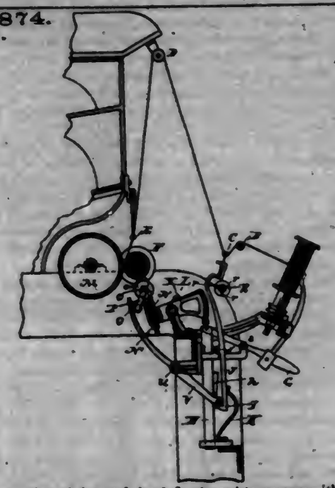
4. The combination, with a chamber consisting of a ring and removable caps, of a valve-rod provided with springs and flexible disks attached to said springs and secured in place by said removable caps, substantially as set forth.

5. In a gas-pressure regulator, the combination, with a chamber, of a valve-rod and a supply-valve secured thereto, an adjustable block located within the chamber, a pair of springs secured at one end to the valve-rod and at their other ends to the adjustable block, and flexible disks secured within said chamber and connected with the springs attached to the valve-rod, all constructed, arranged, and operating substantially as shown and described.

408,874. STOP MECHANISM FOR DOUBLING-MACHINES. ROSWELL DAWSON, Framingham, Mass. Filed Jan. 19, 1889. Serial No. 296,817. (No model.)

Claim.—1. The combination of drum M, frame X, adapted to carry a spool and connected with the weight H, weight H, provided

408,874.

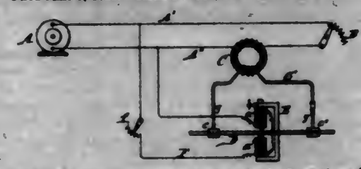


with wedge-shaped detent A, latch I, adapted to engage with said detent, pivoted bar J, and detectors C, with shaft R, having the small bars r, substantially as described, and for the purposes set forth.

2. The combination of the drum M, frame X, adapted to carry a spool, and weight H, having wedge-shaped detent A, with the latch I, pivoted lever Q, roll O, provided with wedge o, tripping-arm P, and means for supporting roll O and adjusting it up and down, substantially as described, and for the purposes set forth.

3. In the stop-motion of a doubling mechanism, the drum M, the frame X, adapted to carry a spool, a rotatory trip O, having wedge o, also supported by said frame, and means for adjusting the spool and trip to and from each other in a right line, in combination with arm P, weight H, latch therefor, and means intermediate said arm and said latch for disengaging the latter from the weight, substantially as described, and for the purposes set forth.

408,875. METHOD OF ELECTRIC METAL-WORKING. ELIHU W. DEWEY, Syracuse, N. Y., assignor to the Dewey Corporation, same place. Filed June 3, 1889. Serial No. 312,973. (No model.)



Claim.—1. The herein-described method of metal-working, consisting in creating electric stress or resistance in a continuous metal bar or blank by subjecting the blank at or near the part to be worked to magnetism and simultaneously therewith passing through the blank, including the said part, an electric current of sufficient volume to soften the said part, and then bending, shaping, or otherwise working or treating the part.

2. The herein-described method of metal-working, consisting in subjecting the blank at or near the part to be worked to the action of a magnetic field and simultaneously therewith subjecting a portion of the blank, including the said part, to the heating action of an electric current of sufficient volume to heat the said part, removing the source of magnetism when its effect is *nil*, and continuing to supply said current until the part is sufficiently softened, and then working or treating the said part as desired.

3. The method of metal-working, consisting in creating electric stress or resistance in a metal bar or blank connected in circuit by subjecting the part of a blank to be heated and worked or otherwise treated to magnetism and simultaneously therewith passing through said blank, including the said part, an electric current of suitable volume, and then working or treating the said part as desired.

4. The method of metal-working, consisting in subjecting the part of a blank to be worked or otherwise treated to a magnetic field and simultaneously therewith subjecting the blank, including the said part, to the heating action of an electric current of suitable volume flowing in a direction different from the direction of the lines of force in the said magnetic field, and then working or treating the said part as desired.

5. The method of metal-working, consisting in subjecting the part of a blank to be worked or otherwise treated to a magnetic field and simultaneously therewith subjecting the blank, including the said part, to the heating action of an electric current of suitable volume, having its direction at right angles, or substantially at right angles, to the direction of the lines of force in the said magnetic field, and then working or treating the said blank as desired.

6. The method of metal-working, consisting in subjecting the entire cross-section of a blank at or near the part to be heated and worked or otherwise treated to a magnetic field and simultaneously therewith subjecting the blank, including the said part, to the heating action of an electric current of suitable volume having its direction at right angles, or substantially at right angles, to the direction of the lines of force in the said magnetic field, and then working or treating the said blank as desired.

7. The method of metal-working, consisting in creating electric stress or resistance in A metal bar or blank by subjecting the entire cross-section of a blank to a magnetic field of uniform strength and simultaneously therewith passing through the blank, including the magnetized part, an electric current of sufficient volume to soften the said part, and then working or treating the part as desired.

8. The method of metal-working, consisting in connecting the blank to be heated and worked in a circuit by independent universally-movable connections, passing an electric current through the circuit of sufficient volume to heat or soften the blank, and then moving said connections and handling and working the blank as desired.

9. The method of metal-working, consisting in clamping, by independent universally-movable clamps, the bar or blank of metal at two points, leaving a section of the metal between the clamps, connecting the clamps by flexible low-resistance conductors with the source of heating-current, passing an electric current through the flexible conductors, clamps, and section of metal between them, so as to soften the metal, and then moving said clamps and handling and working or treating the blank as desired.

10. The method of metal-working, consisting in clamping the bar or blank of metal at two points, leaving a section of the metal between the clamps, flexibly connecting the clamps by flexible low-resistance conductors with the source of heating-current, subjecting the metal between the clamps to magnetism and simultaneously therewith passing an electric current through the flexible conductors, clamps, and section of metal between them, so as to soften the metal, and then handling and working or treating the blank as desired.

11. The method of metal-working, consisting in creating resistance to the electric current in a metal bar or blank at or near the part to be heated and worked, passing an electric current through the bar or blank of sufficient volume to soften the same at the part wherein the resistance is created, and then working the blank as desired.

12. The method of metal-working, consisting in flexibly connecting the bar or blank to be heated and worked in an electric circuit, creating resistance to the electric current in the bar or blank at or near the part to be heated and worked, and passing an electric current through the said bar or blank of sufficient volume to soften the same at the part wherein the resistance is created, and then handling and working the blank as desired.

408,876. GRINDING-TOOL. HENRY J. DIETZ, Philadelphia, Pa. Filed June 6, 1888. Serial No. 276,219. (No model.)

Claim.—1. A mandrel having detached and fixed segments, a split sleeve encircling said segments, and a key which is movable between said segments, whereby the sleeve may be uniformly expanded, said parts being combined and operating substantially as described.

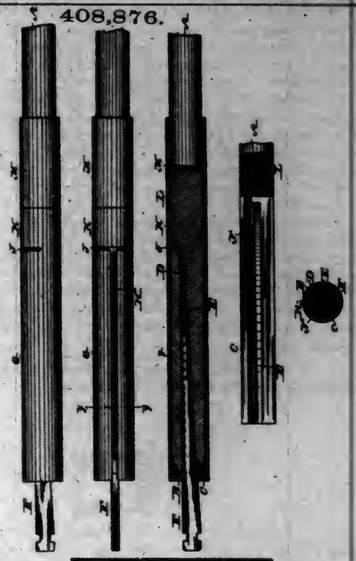
2. In a grinding-tool, substantially as described, the segments B C, having the parallel and oblique grooves D E, the latter receiving the key F, whereby the encircling sleeve G may be uniformly expanded, as stated.

3. In a grinding-tool, the segments B C, having the longitudinal grooves D E, respectively, the key F in said grooves, and the split sleeve G, embracing said segments, said parts being combined substantially as and for the purpose set forth.

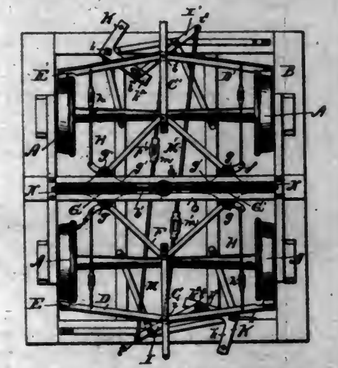
4. In a grinding-tool, the segments B C, having the grooves D E, respectively, with key F therein, the split sleeve G, with collar K integral therewith, the said collar being interiorly screw-threaded and adapted to engage with a screw-threaded portion of one of the segments, said parts being combined substantially as described.

5. In a grinding-tool, the segments B C, with grooves D E, and tongue and groove N, respectively, the key F in said grooves D E, the sleeve G, with slots H and J, as described, and having the collar portion K interiorly screw-threaded and adapted to engage a threaded portion of the segment C, said parts being combined substantially as described.

408,876.



408,877. CAR-BRAKE. GEORGE H. FLETCHER, Detroit, Mich. Filed Nov. 30, 1888. Serial No. 292,285. (No model.)



Claim.—1. In a car-brake mechanism, the combination, with the draw-bar and brake-beams having their inner ends pivoted to said draw-bar, of pivoted levers, each having its short arm linked to its corresponding brake-beam and each having its long arm engaged with the draw-bar, the construction being such that a pull upon the draft-bar will tilt said levers and draw the brake-shoes to their seats, substantially as described.

2. In a car-brake mechanism, the combination, with the draw-bar and brake-beams having their inner ends pivotally connected with said draw-bar, of pivoted levers, each having its short arm linked to its corresponding brake-beam and each having its long arm engaged with the draw-bar, the construction being such that a pull upon the draft-bar will tilt said levers and draw the brake-shoes to their seat, and, in connection with the above means, to retract the shoes to their initial position when the draft ceases, substantially as described.

3. In a car-brake, the combination, with the brake-beams, of levers having their short arms linked with their corresponding brake-beams and their long arms connected with the draft-bar or brake-rod, said levers fulcrumed to two plates adapted to slide laterally, the construction being such that a pull on the outer ends of the levers operates to draw in the plates and throw back the short arms of the levers, so that a tension is exerted directly on the brake-beams and the brakes set, substantially as described.

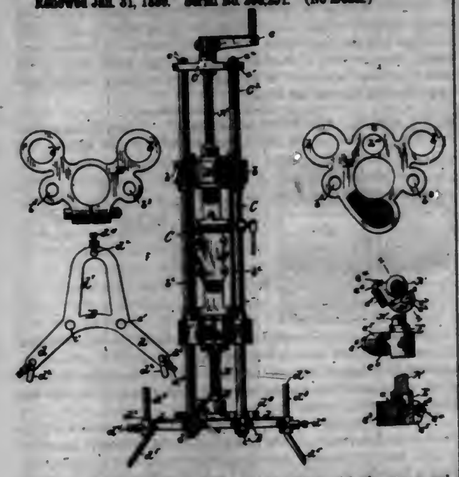
4. In a car-brake mechanism, the combination, with the brake-beams, of levers having their short arms linked with their corresponding brake-beams and their long arms connected with the draft-bar or brake-rod, said levers fulcrumed to two plates adapted to slide laterally, and springs adapted to return the plates to their normal position when the draft-power ceases, substantially as described.

5. A car-brake consisting of a brake-beam divided midway between the wheels, the ends pivotally engaged to the draw-bar, and the opposite ends provided with shoes adapted to bear on the wheels, and two levers pivotally engaged at their outer ends to the draw-bar and fulcrumed to two plates adapted to move laterally, the short arms of said levers being connected by rods with the outer ends of the brake-beams, the construction being such that an outward movement of the draw bar operates to set the brakes, substantially as described.

6. In a car-brake, the combination, with the brake-beam, the levers F, plates G G', and rods H, of the levers F', fulcrumed to the opposite sides of the plates G G', the connecting-rods M M', and levers I I', whereby the brakes are simultaneously set on both sets of wheels, substantially as described.

7. A car-brake consisting of the combination, with the brake beams and shoes and the draw-bars, of the levers F F', rods H, plates G G', springs N, levers I I', rods M M', bell-crank levers K, and levers L, all arranged substantially as and for the purposes described.

408,878. STEAM ROCK-DRILL. JOSEPH C. OTTEMAN, New York, N. Y., assignor to the Rand Drill Company, of New York. Filed Feb. 11, 1888. Renewed Jan. 31, 1889. Serial No. 298,251. (No model.)



Claim.—1. In a rock-drill, the combination, with the steam-cylinder A, and its piston and piston-rod A', the cylinder having described lugs *b b'* and being provided with feed-screw A^5, of two parallel guide-rods C C, carrying and traversed by said cylinder, and a yoke C', uniting said rods and giving bearing for said feed-screw, together with the horizontal standard D, composed of the radially and forwardly extended arms *d d* and the rearwardly-extended frame d', the two said guide-rods being mounted vertically on said standard, so that the piston-rod of the cylinder will reciprocate the drill-steel between the forward arms thereof, and said arms and frame of said standard being provided with supporting-legs d^3, substantially as and for the purpose set forth.

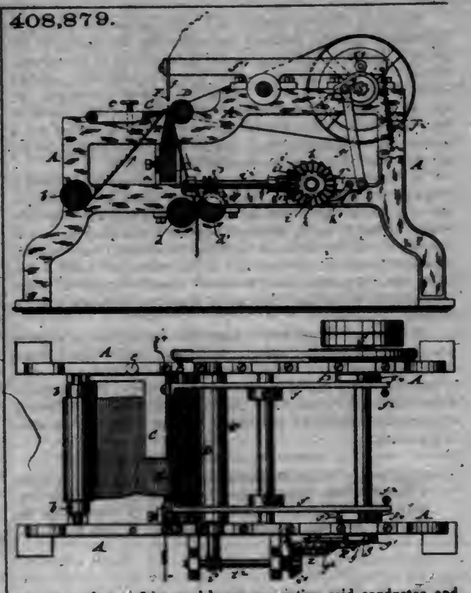
2. In a rock-drill, the combination, with the piston-rod, of a chuck E, having the external side lug e^3, the key *e*, working in a slot in the side wall of the chuck-body, together with a single clamping-bolt e^4, adapted to be seated in said side lug, and having the hooked head e^5, engaging said key, together with the nut e^6, all constructed and arranged to operate as and for the purpose set forth.

408,879. MACHINE FOR REMOVING WATER-HAIRS FROM PELTS, &c. ANTON HERBARTH, New York, N. Y. Filed Mar. 13, 1889. Serial No. 303,121. (No model.)

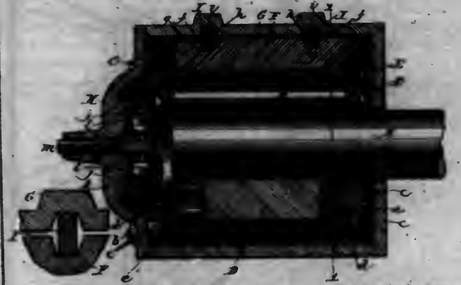
Claim.—1. The combination of a transverse knife-edged bar, means for intermittently feeding the pelt over said knife-edged bar, a guard-comb at one side of said knife-edged bar, a rotary brush at the opposite side of the same, and an intermittently-oscillating incandescent conductor located above the knife-edged bar, so as to burn off the projecting water-hairs when it is brought in contact therewith, substantially as set forth.

2. The combination of a transverse knife-edged bar, intermittently-actuated feed-rolls for moving the pelt over the edge of said bar, an adjustable guard-comb having a serrated edge at one side of said bar, a rotary brush at the other side of the same, an incandescent conductor, fulcrumed levers supporting said conductor, and mechanism for oscillating said levers and conductor, so as to cause it to approach to or recede from the edge of the pelt above the bar, substantially as set forth.

408,879.



408,880. CAR-AXLE BOX. HARLEY M. JOHNSON, Chicago, Ill. Filed Dec. 10, 1888. Serial No. 293,203. (No model.)



Claim.—1. The rollers D, having recesses in their ends, in combination with the rings B C, provided with studs *a b*, and the rollers *e*, substantially as and for the purposes specified.

2. The rollers D, having recesses in their ends, in combination with the rings B C, provided with studs *a b*, rollers *e*, and washers *d*, substantially as and for the purposes specified.

3. A journal-bearing, as F, provided with recesses or channels *f*, in combination with a casing, as G, provided with recesses or channels *h*, and rectangular pieces, as I, located in said channels, and having circular bearings, which permit a rocking movement of said pieces I, whereby if there be any transverse movement of the bearing F the tendency will be to return it to the normal position, substantially as and for the purposes specified.

4. In a journal-box, a casing, as G, and a cover, as H, in combination with a ring *j*, shafts *k*, rollers *l*, and shaft *m*, substantially as and for the purposes specified.

408,881. CLUTCH. WILLIS H. JOHNSON, Springfield, Ill., assignor, by direct and mesne assignments, of one-half to Harry L. Ide, same place. Filed Jan. 26, 1887. Renewed Sept. 20, 1887. Serial No. 250,368. (No model.)

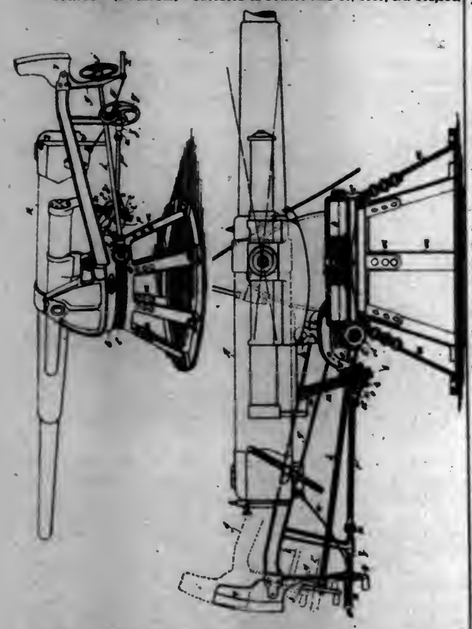


Claim.—1. The combination, in a clutch mechanism, of two independently-rotatable members, one embracing the other, and one having a tapering recess in its circular surface closed by the adjacent surface of the other member, a roller located in said recess, a spring placed behind the roller, which spring bears against a stationary support at the wide end of the recess, and which constantly exerts its force to move the roller into the narrower part of the recess, and a movable part or shifter acting in front of the roller to force it toward the wider part of the recess, substantially as described.

2. The combination of the shaft, a collar secured to the shaft, a shell embracing the collar, a roller or rollers placed in a tapering recess in one of the clutch members between converging surfaces of the collar and shell, a spring arranged between a stationary support at the wide end of the recess and the rollers to constantly push the roller or rollers toward the narrower part of the recess, and a shifter provided with a projection which enters the recess in front of the rollers to force them toward the wider end of the recess, substantially as described.

3. The combination, with a shell and a collar, one of which is provided with a tapering recess in its circular surface that is closed by the adjacent surface of the opposing member, of a roller or rollers in the recess and a movable shifter provided with a rib O, fitted to slide in an inclined groove P in the recessed member of the clutch, substantially as described, and for the purpose of moving the roller in the recess.

408,882. TRAINING MECHANISM FOR ORDNANCE. ALFRED C. ROSSEEL, Paris, France, assignor to the Hotchkiss Ordnance Company, (Limited,) London, England. Filed Apr. 9, 1889. Serial No. 306,990. (No model.) Patented in France Jan. 16, 1889, No. 193,331.



Claim.—1. In a rapid-firing or other gun, the combination, with its carriage in two parts *a b*, of the worm-wheel *e* upon the lower part *a* of said carriage, the worm *d*, engaging therewith and secured to a shaft *c*, mounted in a frame suspended pivotally from the upper part *b* of said carriage, the hand-wheel *j*, shaft *k*, and connections for rotating said shaft *c*, substantially as described.

2. In a rapid-firing or other gun, the combination, with its carriage in two parts *a b*, of the worm-wheel *e* upon the lower part *a* of said carriage, the worm *d*, engaging therewith and secured to a shaft *c*, mounted in a frame *f*, suspended pivotally from the upper part of said carriage, bevel gear-wheels for rotating said shaft, the hand-wheel *j*, and shaft *k*, for operating said gear-wheels, and the directing-lever *g*, connected to the frame *f* to swing the same, substantially as described.

3. In a rapid-firing or other gun, the combination of the elevating-screw *m*, pivoted to the gun and working in a nut *o*, suspended from the gun-carriage, the worm-wheel *t* upon said nut, the worm *t'*, engaging therewith, the shafts *s* and *z*, connected to the rod *r* and carrying the worm and hand-wheel, respectively, and the hand-wheel *q*, for operating said shafts and rod, substantially as described.

408,883. DENTAL PLUGGER. SEBASTIEN LAGAVALIERE and CONSTANT DESROT, Philadelphia, Pa., assignors to the S. S. White Dental Manufacturing Company, same place. Filed Feb. 1, 1887. Serial No. 226,159. (No model.)



Claim.—1. The combination of the casing, the rotary spindle, a reciprocating hammer, its actuating-spring, and the reversely-inclined concentric cams upon the spindle, substantially as and for the purpose set forth.

2. The combination of the casing, the rotary spindle, a reciprocating hammer, its actuating-spring, and the concentric cam-ended tubes upon the spindle, the one tube being provided with a single cam and the other with duplicate cams inclined reversely to said single cam, substantially as and for the purpose set forth.

3. The combination of the casing, the reciprocating hammer, the spring acting to project the hammer, the slotted slide on the casing, provided with the finger-piece, and the stud fixed to the hammer, projecting through slots in the casing and slide and acted upon by the slide to prevent movement of the hammer by its spring, substantially as and for the purpose set forth.

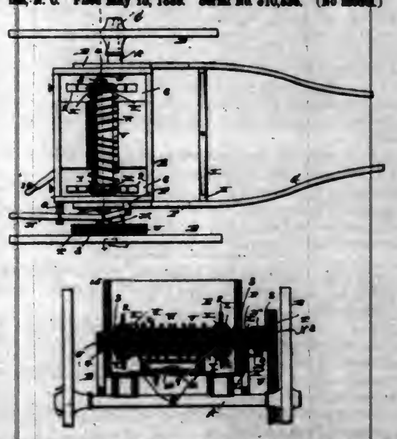
408,884. STOVE-PIPE ATTACHMENT. JOSEPH R. LEACH, Roberts, Ill. Filed Apr. 19, 1889. Serial No. 307,719. (No model.)



Claim.—1. In a stove-pipe fastener, the encircling clasp consisting of a collar provided near its free ends with detents H H, and the retaining-bar arranged between the clasp and the stove-pipe and provided with notched or serrated edges to be engaged by the said detents, substantially as specified.

2. In a stove-pipe fastener, the clasp encircling the same and provided at its free ends with the detents H H, the set-screw engaging the free ends of the clasp, and the notched or serrated retaining-bar passing between the said detents and provided with a flange to engage the chimney, substantially as and for the purpose specified.

408,885. FERTILIZER-DISTRIBUTER. ENOCH P. LEWIS, Gastonia, N. C. Filed May 15, 1889. Serial No. 310,896. (No model.)



Claim.—1. In a fertilizer-distributer, the combination of the hopper, the transverse shaft having a spirally-flanged drum or cylinder, the feed-wheels at the ends of said shaft, the adjustable fingers or agitators mounted detachably in said feed-wheels, the slides arranged to regulate the sizes of the slots or escape-openings in the bottom of the hopper, and mechanism for transmitting motion to the transverse shaft from one of the supporting-wheels of the machine, substantially as set forth.

2. In a fertilizer-distributer, the combination, with the hopper having enlargements at either end, of the transverse shaft having a drum or cylinder provided with right and left hand spiral flanges, the feed-wheels composed of disks, the adjacent faces of which are provided with radial recesses, the flattened fingers or agitators having shanks, whereby they are adjustable in said recesses, means for tightening the said disks together, and means of transmitting motion to the transverse shaft from one of the supporting-wheels of the machine, substantially as set forth.

3. In a fertilizer-distributer, the combination of the hopper, a shaft arranged transversely in the same and having one end journaled in one of the sides of the hopper, a vertically-sliding box arranged in a slot in the other side of said hopper and forming a bearing for the opposite end of the transverse shaft, springs arranged to support the said vertically-sliding box, a clutch adjustable laterally upon the outer end of the transverse shaft and adapted to engage a clutch upon a pinion mounted loosely upon the outer end of said shaft, and a spur-wheel attached to one of the supporting-wheels of the machine and meshing with said pinion, substantially as set forth.

4. In a fertilizer-distributer, the combination of the hopper, the transverse shaft having one end journaled in a vertically-movable box, the spirally-flanged feed-drum and the feed-wheels mounted upon said shaft, the enlarged compartments in the ends of the hopper, having longitudinally-slotted bottoms, the transversely-movable slides arranged to regulate the sizes of said slots or escape-openings, and mechanism for operating said slides and for transmitting motion to the transverse shaft from one of the supporting-wheels of the machine, substantially as and for the purpose set forth.

5. In a fertilizer-distributer, the combination, with the hopper and the dropping mechanism, of the feed-spouts connected flexibly to the under side of the hopper and provided at their lower ends with guard-plates having pointed ends which are bent or curved under the discharge ends of said spouts, so as to form shoes or runners, substantially as and for the purpose shown and specified.

6. In a fertilizer-distributer, the combination of the hopper having enlarged end compartments, the transverse shaft having one end journaled in a vertically-movable spring-supported box, the spirally-flanged feed-drum, the feed-wheels having adjustable fingers or agitators, the slides arranged to regulate the sizes of the escape-slots in the bottoms of the compartments of the hopper, the discharge-spouts connected flexibly to the under sides of said compartments and provided at their lower ends with rearwardly-turned guard-plates, and mechanism for transmitting motion to the feed-shaft from one of the supporting-wheels of the machine, all combined and operating substantially as and for the purpose herein set forth.

408,886. SEAL-LOCK. GERMAN W. LEWIS, Portsmouth, Va., assignor of two-thirds to Alexander P. Grice and Lorey C. Godwin, same place. Filed Nov. 6, 1888. Serial No. 290,116. (Model.)



Claim.—1. In a car seal-lock, the combination, with the base-plate having a stationary pin K to receive the seal-tag, of the revoluble disk mounted on the base-plate and capable of revolution in one direction only, the said disk covering the free end of the pin to prevent the removal of the seal-tag, and provided with a detent or projection adjacent to the latter, and the pawl-and-ratchet connection between the disk and the base-plate to prevent a reverse rotation of the former, substantially as specified.

2. In a car seal-lock, the combination, with the base-plate having a stationary pin K to receive a seal-tag, of the revoluble disk mounted on the base-plate and covering the free end of the said pin, and provided with a detent or projection, the tag extending under the disk adjacent to the detent or projection, and means to prevent the disk revolving in one direction, substantially as specified.

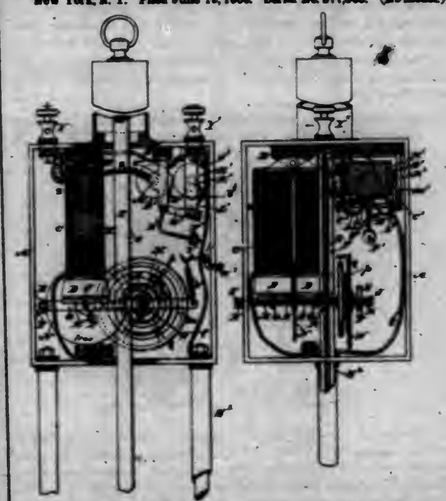
3. In a car seal-lock, the combination of the base-plate provided with a pin to engage a suitable seal-tag, the revoluble disk mounted on the base-plate over the free end of the pin K, and provided with an opening I, adapted to register with and expose the said pin, the disk being further provided with a detent or projection adjacent to the seal-tag to engage and thereby tear or disfigure the latter when the disk is turned, and the pawl-and-ratchet connection between the disk and the base-plate, substantially as specified.

4. In a car seal-lock, the combination of the base-plate provided with a square boss and having a pin K adjacent to one side of the boss to receive the seal-tag, which is provided with a perforation to engage the pin and a square end to bear against the boss, the revoluble disk mounted on the base-plate and provided with a peripheral flange L, fitting at its inner edge close to the base-plate, and a detent or projection N to bear against the edge of the said seal-tag, and the pawl-and-ratchet connection between the disk and the base-plate, substantially as specified.

5. In a car seal-lock, the combination, with the base-plate provided with a pin K, adapted to have a seal-tag engaged therewith and having an annular groove near its outer edge, of the revoluble disk mounted on the base-plate and provided with a detent or projection N, operating in the said groove, the boss on the inner side of the disk, projecting into a recess in the base-plate, and provided with ratchet-teeth or shoulders, and the gravity-pawl arranged in the said recess and engaging the teeth or shoulders, substantially as and for the purpose specified.

6. In a car seal-lock, the combination of the base-plate having a seal-tag fixed thereto, the revoluble disk mounted on the plate and provided with a detent or projection to engage the seal-tag, the pawl-and-ratchet connection between the disk and plate, and the ear on the disk extending over the hasp of the car-lock to prevent the disengagement of the latter, substantially as described.

408,887. ARC LAMP. JAMES A. LIGHTHIPE, Philadelphia, Pa., assignor to himself, George W. Bratton, same place, and Henry Hunse, New York, N. Y. Filed June 10, 1888. Serial No. 277,565. (No model.)

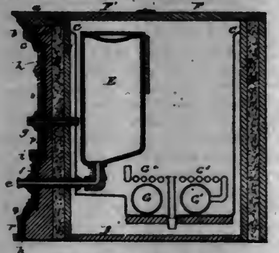


Claim.—1. An arc-light regulator having a carbon-carrier geared to a train of gearing attached to a pivoted frame carrying a rotating armature located in the magnetic field of a pivoted regulating electro-magnet, between the poles of which the rotating armature rotates, in combination with fixed armatures carried also by the frame and lying in the magnetic field of the regulating-magnet, substantially as described.

2. An arc-light regulator consisting of a carbon-carrier geared to a train of gearing carried on a pivoted frame, and also to a rotating armature located in the magnetic field of a regulating electro-magnet, with a fixed armature also attached to said frame and located in the magnetic field for establishing the arc, substantially as described.

3. In an arc-light regulator, the combination of a pivoted frame carrying a train of gear geared to a rack on the carbon-carrying rod, and a rotating armature located between the poles of a regulating-magnet, with a fixed armature attached to said frame, whereby the arc is established and regulated, substantially as described.

408,888. SODA-FOUNTAIN. JOHN G. LOW, Chelsea, Mass. Filed Aug. 29, 1888. Serial No. 284,054. (No model.)

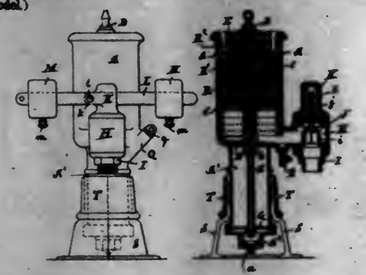


Claim.—1. A soda-fountain composed of an ice-box B and an inclosing exterior casing A, separated from said ice-box by the space D, and a tile-facing attached to the exterior of said casing and composed of small tiles formed with closely-abutting edges and of approximately uniform thickness, each of said tiles carrying on its surface a part of a composite intaglio and relief design larger than itself, the lower belt tiles and panels and the ice-box and casing beneath the tile being perforated from front to back with holes for the passage of the draft and sirup tubes *g e*, substantially as and for the purpose described.

2. The combination of the casing A, formed with a plane surface on its interior and an irregular surface roughly conforming to the exterior surface of its incrusting tile, with the incrusting tile and with the cement between the casing A and the tile, and with a cornice *a a'*, which projects outward beyond the exterior surface of the next adjacent tile and inward beyond the inner surface of the casing A, substantially as described.

3. The combination of the ice-box B and inclosing-casing A of said ice-box, the height of which is less than the height of the ice-box, and cornice *a*, extending outward from the ice-box B over and beyond the top of the casing A, and the incrusting tile surface exterior to said casing A and fastened thereto by cement, and containing panel and belt tile perforated for the passage of the draft and sirup tubes *g e* through holes in said tile larger than the size of the tube, said tile-surface being modeled and glazed, substantially as and for the purposes described.

408,889. STEAM-PRESSURE OR DAMPER REGULATOR. JAMES J. LOWDEN, Boston, Mass. Filed Feb. 25, 1889. Serial No. 301,058. (No model.)



Claim.—1. A steam-pressure or damper regulator, consisting of an outer casing divided into two compartments, a piston in the upper compartment and a perforated disk in the lower compartment, a rod passing through the partition and connected at its upper end to the piston and at its lower end to the perforated disk, and a valve for controlling the admission of steam to the upper compartment, substantially as set forth.

2. In a pressure-regulator, an outer casing divided into two compartments A A' by a partition B and valve-box H, all cast in one piece, substantially as shown and described.

3. In a pressure-regulator, an outer casing divided into two compartments A A' by a partition B, and a valve-box H, all cast in one piece, in combination with the piston C, rod E, and perforated disk G, the cap I, having a valve-seat *i*, valve-box H, and cover K, substantially as and for the purposes set forth.

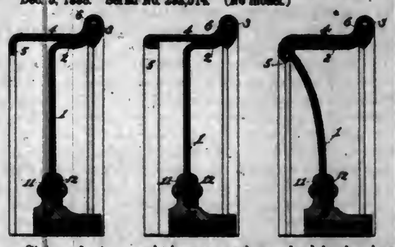
4. A steam-pressure or damper regulator, consisting of a cylinder, a piston working therein, a valve for controlling the admission of steam to said cylinder, a drip-cock between said valve and cylinder, a dash-pot, a perforated disk, and a rod connecting said disk with the piston, substantially as and for the purposes set forth.

5. In a steam-pressure or damper regulator, the combination of a cylinder, a hollow piston, and weights fitting inside the upper portion of said piston, with a valve for controlling the admission of steam to the said cylinder, and a drip-cock between the valve and cylinder, substantially as and for the purposes set forth.

6. In a steam-pressure or damper regulator, the combination of an outer casing forming a cylinder A and a dash-pot A', the piston C, rod E, perforated disk G, and weights R, with a weighted valve J, for controlling the admission of steam to the cylinder, a drip-cock P, between the valve and cylinder, an inlet Q, for supplying the dash-pot with fluid, and a bracket or support for the regulator divided in its center, substantially as shown and described.

7. In a steam-pressure or damper regulator, an outer casing divided into two compartments A A', the perforated disk G, rod E, and piston C, having a hole c^3, in combination with the cover A^3, valve-box H, and valve for regulating the admission of steam to the upper part of the cylinder, and a drip-cock P, substantially as shown and described.

408,890. CAR-WHEEL. HENRY F. MANN, Allegheny, Pa. Filed Dec. 3, 1888. Serial No. 292,514. (No model.)

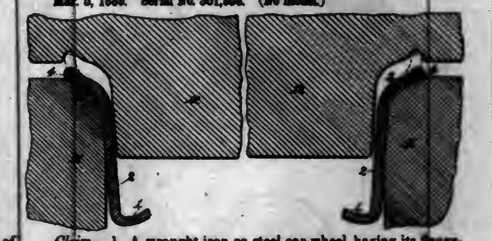


Claim.—1. A wrought-iron or steel car-wheel having in combination a web provided with a supporting-shoulder, and a tread having its flange interlocked with a rim on the supporting-shoulder by a fold of metal, thereby forming a double re-enforced wheel-flange, substantially as set forth.

2. A wrought-iron or steel car-wheel having in combination a web provided with a supporting-shoulder, and a tread having a flange re-enforced by a fold of metal turned over a retaining-rim on the supporting-shoulder, substantially as set forth.

3. A wrought-iron or steel car-wheel having in combination a web provided with a supporting-shoulder, a tread having its flange interlocked with a rim on the supporting-shoulder by a fold of metal, and a supplemental web connected to the outer edge of the tread, substantially as set forth.

408,891. CAR-WHEEL. HENRY F. MANN, Allegheny, Pa. Filed Mar. 5, 1889. Serial No. 301,966. (No model.)



Claim.—1. A wrought-iron or steel car-wheel having its flange-edge upset, thereby forming a re-enforcing bead or enlargement bracing the flange as against the shocks or strains to which it is normally subjected, and increasing its edge bearing-surface, substantially as set forth.

2. A wrought-iron or steel car-wheel having, in combination, a web, a tread connected at its outer edge to the web, and a flange having its outer edge upset, thereby forming a thickened lip or bead along its edge for the purpose of re-enforcing the flange as against the shocks or strains to which it is normally subjected and increasing its bearing-surface, substantially as set forth.

408,892. RAIL-SUPPORT. HENRY T. MOODY, Newburyport, Mass., assignor to the Victor Manufacturing Company, same place. Filed Jan. 31, 1888. Serial No. 262,303. (No model.)

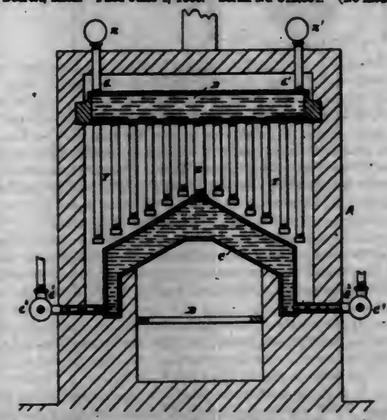


Claim.—1. A rail-support comprising the under section B, having the perforated ear *b*, arm b^3, perforated face-plate b^4, and the upper section C, having the perforated ear *c*, the arm c^3, and the extension or bearing plate c^4, the said face-plate b^4 being adapted to extend upon the outside of the rail and the bearing-plate c^4 upon the inside of the rail, substantially as described.

2. The combination, in a support for a hanger or other rail, of the section C, having the perforated ear *c*, the arm c^3, and the bearing-plate c^4, the section B, having the perforated ear *b*, the arm b^3, the face-plate b^4, wider than the bearing-plate c^4, and having two rivet or bolt holes, and the rails A A', the end of one of which is fastened directly to the face-plate b^4, and the end of the other of which is fastened to the face-plate b^4 and bearing-plate c^4, substantially as described.

3. In a rail-support, in combination with the rail, a bracket or hanger in two sections having means by which they are adapted to be secured to a stringer or wall, one of which sections has the inner bearing-plate or extension c^4, the other of which has the outer face-plate or extension b^4, and the two being separated from each other by a space of the thickness of the rail, to which it is secured by a rivet, bolt, or screw passing through the plates b^4 c^4, and the rail, substantially as described.

408,893. WATER-HEATER. THOMAS C. C. MOSAT and LEE BURT, Detroit, Mich. Filed June 1, 1888. Serial No. 312,391. (No model.)



Claim.—1. In a hot-water heater, the combination, with an individual section C, extending across the combustion-chamber, of an individual water-chamber D, provided with outlets to the line-pipes and communicating with said section intermediate the extremities of said section, said section and communicating chamber independently removable from the heater, substantially as set forth.

2. In a hot-water heater, the combination, with an individual section C, extending across the combustion-chamber, of an individual water-chamber D, provided with drop-tubes and outlets to the line-pipes and communicating with said section intermediate the extremities of the section, said section and communicating chamber independently removable from the heater, substantially as set forth.

3. In a hot-water heater, the combination, with an individual section C, extending across the fuel-bed, of an individual water-chamber D, communicating therewith, the one provided with flanges to deflect the products of combustion, the other open at its sides to allow the passage of the products of combustion, substantially as set forth.

4. In a hot-water heater, the combination, with a series of individual sections C, of a series of individual water-chambers D, each communicating with a corresponding section, each section with its chamber separable from the remaining sections and chambers of the series, substantially as set forth.

5. In a hot-water heater, the combination, with a series of individual sections C, extending across the combustion-chamber, of a series of individual water-chambers D, each communicating independently with a corresponding section, said chambers provided with drop-tubes and outlet-pipes leading from the extremities of said chambers, substantially as set forth.

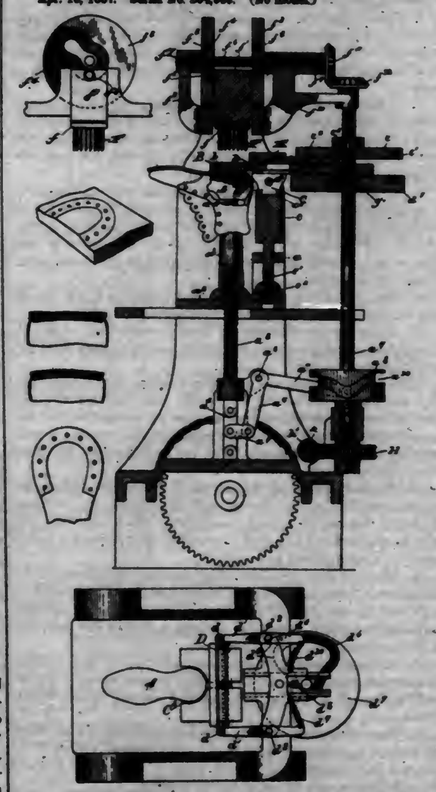
6. In a hot-water heater, the combination, with a series of individual sections C, of a series of individual water-chambers D, each communicating, respectively, with a corresponding section, outlet-pipes leading from said chambers, each chamber connecting with separate circuits, substantially as set forth.

408,894. ROPE ATTACHMENT. JOHN S. POWELL, Marshall, Tex. Filed Apr. 25, 1888. Serial No. 308,882. (No model.)



Claim.—The within-described improved article of manufacture, consisting of a rope attachment having an elliptical body or ferrule B, provided with thin rounded lips *b*; a thick base having spurs *c c*, a broad laterally-extended eye on one end, and a snap-hoop having its elongated bar *d'* held in said eye, forming a broad hinge-joint, as specified.

408,895. MACHINE FOR FEEDING AND ATTACHING RANDS TO BOOTS OR SHOES. FREDERICK F. RAYMOND, 24, Newton, Mass. Filed Apr. 16, 1887. Serial No. 234,969. (No model.)



Claim.—1. In a rand feeding and attaching machine, the combination, with a block or templet having a rand-forming surface, of a horizontally-movable rand carrier and former and a last or work-support for holding a boot or shoe with its outsole in approximate relation to said block or templet, substantially as described.

2. In a rand feeding and attaching machine, the combination of a templet having rand-forming surface and vertical apertures extending therethrough, the last or work-support for holding the heel end of the outsole on the boot or shoe in contact with the templet, a horizontal movable rand carrier and former for fitting the rand about the said forming-surface of the templet and on the surface of the outsole, and mechanism disposed above said parts for driving fastenings through the apertures in the templet into the rand, substantially as described.

3. In a rand feeding and attaching machine, a rand-feeding device, substantially as described, comprising two levers or arms mounted upon a block and adapted to be moved simultaneously, and the working or forming ends of which levers or arms are adapted to be moved away from each other, and which are arranged to draw or bear against the rand to move it into position about a former, as and for the purposes described.

4. The combination of the perforated rand former or templet B, adapted to bear against the outsole of a boot or shoe, a table having its edge extended about the edge of the heel end of the outsole and having its surface upon the same or substantially the same level as that of the outsole, a rand feeding and forming device comprising a flexible band or strap D, supported at each end by a yielding lever or arm, which lever or arm is provided with closing movements in relation to the former, as and for the purposes described.

5. The combination of the rand-carrier D, table C', rand-former b^3, levers d^3, slide d^5, springs d^9 d^{10}, and the cam d^7, having a cam-groove d^8, for moving the slide, as and for the purposes specified.

6. The combination of the rand-former, the last or work-support, and the rand-table C', having an opening C^3, for the reception of the heel end of the outsole of the boot or shoe, the said table being made in separate parts, provided with mechanism, substantially as described, for moving them toward and from each other, whereby the size of said opening may be varied, as and for the purposes specified.

7. The combination of the table C', made in two parts c^4 c^4, each of which has a horizontal movement upon the post C, with a device for moving said plates horizontally upon said post to vary the relation of their edges c^7 and c^8 in relation to each other, substantially as specified.

8. In a rand feeding and attaching machine, the combination of the table C', having a surface upon which the rand-carrier and rand are moved and an opening which receives the heel end of the outsole, with a post or support C and means for vertically adjusting said post, substantially as specified.

9. In a rand feeding and attaching machine, the combination of the perforated rand-former or templet, a vertically-movable last or work-support, a horizontally-movable rand carrier and fitter, a horizontally-reciprocating nail or fastening carrier mounted over said former or templet, and driving mechanism disposed above said parts, substantially as described.

10. The rand-former having the bearing-surfaces b' and the inclined forming-surface b^2, as and for the purposes described.

11. A combined rand-former and templet comprising a block B, having holes b, bearing-surfaces b', and the forming-surface b^2, as and for the purposes described.

12. In a rand feeding and attaching machine, the combination, with a rand-former and a rand carrier and fitter coacting with said former, of a movable sole-support adapted to be operated toward and away from the aforesaid parts simultaneously with the movements thereof by mechanism relatively timed and connected to the same, substantially as described.

13. The combination of the templet B, having the holes b, the head f', the block f, carried thereby and supporting a gang or group of drivers F, the cam f^6, having a cam-groove which receives a pin-carrier by said head, the shaft f^5, the vertical shaft a^5, and the bevel-gears f^{11} f^{12}, substantially as described.

14. In a rand feeding and attaching machine, the combination of the slide-head f', supporting a gang or group of drivers, having cam-pins f^8, with the two cams f^3 f^6, mounted upon the shaft f^5 and having cam-grooves which receive the cam-pins carried by said head and said shaft, substantially as described.

15. In a rand feeding and attaching machine, the combination, with a templet, of the rand carrier and fitter, the cam having a groove g', and the lever g^6, pivoted at g^5, substantially as and for the purpose set forth.

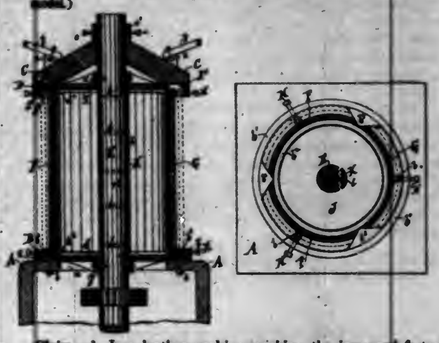
16. The combination, in a rand-attaching machine, of a movable work-support A, a templet B, having a rand-forming surface b^2, a nail-carrier E, a reciprocating gang or group of drivers, and a rand-feeder and fitter, as and for the purposes specified.

17. In a rand feeding and attaching machine, the combination of a movable work-support or last, a cam and suitable connecting devices for operating the same, a rand feeder and fitter having an operating-cam, a nail-carrier and its operating-cam, a gang or group of reciprocating drivers, and a drive-shaft to which said parts and their operating-cams are connected and simultaneously driven, substantially as described.

18. The combination, in a rand-attaching machine, of the work-support A, the cam a^9 upon the vertical shaft a^5, the toggle-head a^7, toggle a^4, and lever a^6, the templet B, having the rand-forming surface b^2 and holes b, the rand carrier and fitter, and the cam d^7, for operating the same, carried upon the vertical shaft a^5, the nail-carrier E and its cam e', carried by the vertical shaft a^5, the head F, the gang or group of drivers supported thereby, the cams f^3 f^6, for moving said head, their shaft f^5, the said vertical shaft a^5, and the bevel-gears f^{11} f^{12}, as and for the purposes described.

19. The herein-described method of forming rands and attaching them to outsoles, consisting in contacting the heel end of an outsole against a former, as set forth, to provide an exposed space between the parts, forming and firmly holding the rand on the exposed surface and securing the same to the outsole, as set forth.

408,896. LEATHER-WORKING MACHINE. William Seymeharpt, St. Louis, Mo. Filed May 14, 1888. Serial No. 310,705. (No model.)



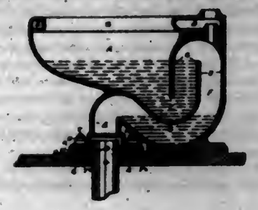
Claim.—1. In a leather-working machine, the improved fastening device K, consisting of an elongated segmental piece of metal having the toothed face L to grip the hides, tenons k' k', and threaded apertures, with the long screws l l, &c., in combination with the central rotating shaft E, having the cut-out elongated slot between the points m m, the toothed face M in said slot to grip the hides, the mortises k^2 k^2 to receive the tenons k' k', and threaded apertures to receive the long screws l l, &c., by means of which the fastening device is adjusted to said shaft so as to clamp the hides, as and for the purpose set forth.

2. In a leather-working machine, the circular plates I and J having the rings i' and j', in combination with the central rotating shaft E, to which they are attached, respectively, at the places within the circular openings of the inner annular flange d^3 of upper ring D, and the inner annular flange b^3 of lower ring B, so as to form the top and bottom closures of the cylinder, and thus having the same alternating and reverse motion as the shaft upon which the hides are wound and rewound, thereby preventing the hard friction and rubbing of the hides, as and for the purpose set forth.

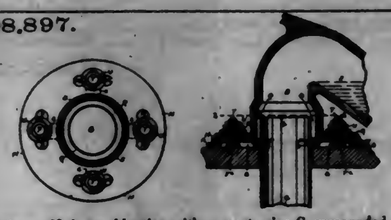
3. In a leather-working machine, the combination of the metal segments F F G and the long screws H H, &c., with the metal ring B, having the outer and inner annular flanges b' b^3 and triangular stops b^4, and the metal ring D, having the outer and inner annular flanges d' and d^3 and triangular stops d^4, by means of which said flanges and stops the metal segments F F G are prevented from being displaced by the crowding of the hides upon them, as and for the purpose set forth.

408,897. WASTE-PIPE CONNECTION. William Scott, Medford, Mass. Filed Apr. 22, 1889. Serial No. 308,182. (No model.)

Claim.—1. A connection for the discharge-passage of an earthenware water-closet bowl and a water-pipe in continuation of said passage, composed of a flange N, about and integral with said discharge-passage, and a metal flange O, jointed and packed to said



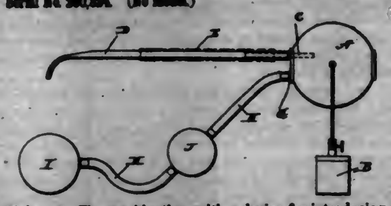
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bowl-flange N, in combination with a waste-pipe G, surrounded and attached to said metal flange O and of a less diameter than and entered into the discharge-passage of the bowl, and having a space Q about it at its upper end open to the discharge-passage and at its lower end closed by the joint of said flanges, and means applied to said flanges for fastening them together, substantially as described, for the purpose specified.

2. A connection for the discharge-passage of an earthenware water-closet bowl and a waste-pipe in continuation of said passage, composed of a flange N, surrounding said discharge-passage, and a metal flange O, jointed and packed to said bowl-flange N and respectively having curved and radial slots R S, in combination with a waste-pipe G, surrounded by and attached to said metal flange O, and headed screw-bolts inserted in said slots and engaged with and held against turning by, but free to be moved lengthwise of, the slots of one of the flanges, and screw-nuts applied to said bolts, substantially as described, for the purpose specified.

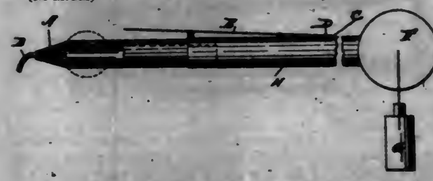
408,898. APPARATUS FOR ALLAYING THE SENSIBILITY OF A TOOTH. Dexter M. Small, Providence, R. I. Filed Nov. 14, 1888. Serial No. 290,294. (No model.)



Claim.—1. The combination, with a device for introducing a jet of steam or heated air into the cavity of a tooth, of a shield E, near the orifice of the outlet-pipe, substantially as and for the purpose set forth.

2. The combination, with the reservoir or air-chamber of a dental tool or hand-instrument, having a short outlet-pipe D, for introducing a heated product into the cavity of a tooth for the purpose set forth, of a burner or diminutive heating apparatus constructed and arranged so as to be supported in connection therewith by the manipulating hand of the operator.

408,899. STEAM-CONDUIT FOR DENTAL SURGERY. Dexter M. Small, Providence, R. I. Filed Apr. 1, 1889. Serial No. 305,603. (No model.)



Claim.—1. The combination, with the conduit or outlet-pipe of a device for utilizing therapeutically a jet of steam, as set forth, of a short and comparatively-diminutive nozzle, free to turn radially independent thereof, substantially as and for the purpose set forth.

2. The combination, with the conduit or outlet-pipe of a device for utilizing therapeutically a jet of steam, as set forth, of an orifice or nozzle having its inner end, which is within the conduit, raised above or separated by a sharp angle from the inner walls thereof, so that the water produced by condensation of steam within the conduit shall not come in contact therewith.

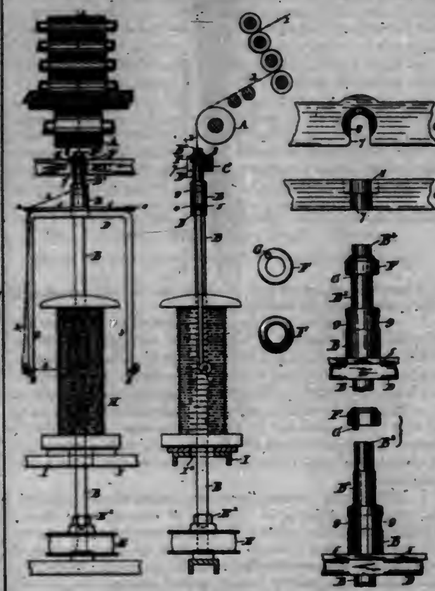
3. The combination, with the conduit or outlet-pipe of a device for utilizing therapeutically a jet of steam, as set forth, of a receptacle for holding the water produced by condensation of steam within the conduit.

4. The combination, with a device for utilizing therapeutically a jet of steam, as set forth, of a pipe or conduit the outer section or end of which that contains the orifice or aperture for the nozzle is composed of non-conducting material, substantially as described.

5. The combination, with the conduit or outlet-pipe of a device for utilizing therapeutically a jet of steam, as set forth, of a lever E, connected with a valve D and vent C, and arranged so as to be under the control of the operator's finger, substantially as and for the purpose set forth.

408,900. SPINNING-MACHINE. Prince Smith, Jr., and Joseph Lund, Keighley, County of York, England. Filed Apr. 2, 1888. Serial No. 305,085. (No model.) Patented in England May 3, 1887, No. 6,470.

Brief.—The object of the invention is to improve the running of the spindle and to facilitate doffing.



Claim.—1. In combination with a spindle, a loose collar F on its upper part, provided with a pin G and placed on a reduced part of the spindle and forming a bearing therefor, and a bar C, provided with a recess 8 and a slot 7, extending therefrom, as and for the purposes set forth.

2. In combination with a spindle having a reduced upper end and a loose collar thereon provided with a pin G, the top bearing C, having therein the slot 7 and the recess 8, all as shown and described.

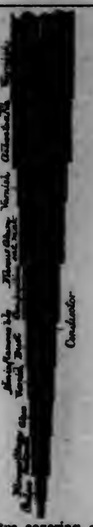
408,901. INSULATION FOR ELECTRIC CONDUCTORS. Charles T. Shenekon, St. Louis, Mo. Filed June 21, 1889. Serial No. 315,114. (No model.)

Claim.—1. An insulating-covering for electric conductors and other metallic substances, consisting of a coating of alum-saturated fiber secured to the article to be insulated by shellac, a coat of varnish upon said fiber, a powdered non-inflammable coating upon said varnish, a fibrous coating filled with a paste compound of a mineral substance or substances, a coating of dry alum-saturated fibrous material, an asbestus covering, and an outer coating of varnish, substantially as described.

2. An insulating-covering for electric conductors and other metallic substances, consisting of a coating of alum-saturated fibrous material secured to the article to be insulated by shellac, a coat of varnish upon said fibrous material, a powdered non-inflammable coating upon said varnish, a fibrous coating filled with a paste compound of a mineral substance or substances, a coating of dry alum-saturated fibrous material, a coating of gum and oil, an asbestus covering, and an outer coating of varnish, substantially as described.

3. An insulating-covering for electric conductors and other metallic substances, consisting of a coating of alum-saturated fibrous material secured to the article to be insulated by shellac or its equivalent, a coating of glue, a coat of varnish upon the glue when hardened, a coating of non-inflammable substance upon said varnish, a fibrous coating filled with a paste compound of a mineral substance or substances, a coating of dry alum-saturated fibrous material, a coat-

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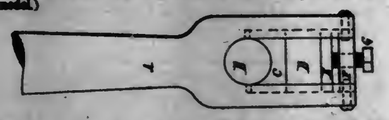


ing of gum and oil, an asbestus covering, and an outer coating of varnish, substantially as described.

4. An insulating-covering for electric conductors and other metallic substances, consisting of a coating of alum-saturated fibrous material secured to the article to be insulated by shellac or its equivalent, a coating of glue, a coat of varnish upon the glue when hardened, a non-inflammable coating consisting of a composition of powdered or ground glass, powdered alum, and ground asbestus, a fibrous coating filled with a paste compound of a mineral substance or substances, a coating of dry alum-saturated fibrous material, a coating of gum and oil, an asbestus covering, and an outer coating of varnish, substantially as described.

5. An insulating-covering for electric conductors and other metallic substances, consisting of a coating of alum-saturated fibrous material secured to the article to be insulated by shellac or its equivalent, a coating of glue, a coat of varnish upon the glue, a coating of non-inflammable substance or substances, a fibrous coating filled with a paste compound composed of litharge, ground asbestus, alum, and oil, a coating of dry alum-saturated fibrous material, a coating of gum and oil, an asbestus covering, and an outer coating of varnish, substantially as described.

408,902. AXLE-BEARING FOR BICYCLES. OLIVER L. SPAULDING, Jr., St. John's, Mich. Filed June 10, 1889. Serial No. 313,730. (No model.)



Claim.—1. A bearing or boxing for the axles of bicycles, velocipedes, and the like, consisting of an upper or stationary bearing, a lower or movable bearing, a cushion below said lower bearing, and means for keeping the cushion closely against the lower bearing, substantially as described.

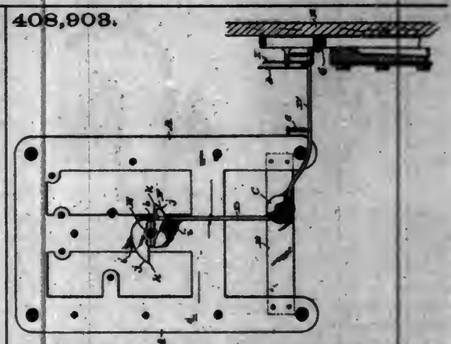
2. A bearing or boxing for the axles of bicycles, velocipedes, and the like, consisting of the combination, with the standard, of a stationary bearing located above the axle, a movable bearing located below the axle, a cushion located below said lower bearing, and a set-screw for increasing or decreasing the tension on said cushion, all said parts engaged to said standard by groove-and-tenon engagements, substantially as described.

408,903. MUSICAL CLOCK. JOHN STRASSER, Kaukauna, Wis. Filed Feb. 19, 1889. Serial No. 300,434. (No model.)

Claim.—1. In a clock, the combination of the minute-post provided with a cam, a bell-crank lever arranged to have one arm thereof in contact with the cam, a music-box arranged to have its stop-lever in the path of the other arm of the bell-crank lever, and a spring cut-off secured to the music-box to be automatically interposed between the stop-lever and adjacent gear-wheel at a predetermined instant for a certain interval of time, substantially as set forth.

2. In a clock, the combination of the minute-post provided with a cam, another arm of the bell-crank lever arranged to have one arm

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thereof in contact with the cam, a music-box arranged to have its stop-lever in the path of the bell-crank lever, a spring cut-off secured to the music-box to be automatically interposed between the stop-lever and adjacent gear-wheel at a predetermined time, and a finger secured to the cut-off to come in the path of the clutch-pin uniting said gear-wheel and music-box cylinder, substantially as set forth.

3. In a clock, the combination of the minute-post provided with a cam, a bell-crank lever having longitudinally-adjustable arms and arranged to be actuated by the cam, and a music-box arranged to be set in motion by the joint action of said cam and bell-crank lever at predetermined intervals, substantially as set forth.

4. In a clock, the combination of the minute-post provided with a cam, a bell-crank lever actuated by the cam and having one of its arms arranged to actuate the stop-lever of a suitably positioned music-box, and a finger secured to said arm of the bell-crank lever to come in the path of the music-box fan for a predetermined interval of time, substantially as set forth.

5. In a clock, the combination of the minute-post provided with a cam, a bell-crank lever fulcrumed to a bearing on the main frame and arranged to be actuated by the cam, a music-box positioned to have its stop-lever actuated by the bell-crank lever, a finger on said lever arranged to come in the path of the music-box fan when the stop-lever is actuated, and a spring cut-off arranged on said music-box to interpose itself between said stop-lever and the adjacent gear-wheel at the same instant that said finger comes into position with relation to said fan, substantially as set forth.

408,904. INSECTICIDE. RICHARD M. STEPHENS, Denver, Colo., assignor to John M. Wilson, same place. Filed Apr. 26, 1889. Serial No. 308,901. (No specimens.)

Claim.—The composition of matter for use as a destroyer of vermin and insects herein described, consisting of turpentine, kerosene, water of ammonia, and carbolic acid, substantially as set forth.

408,905. REFRIGERATOR. FRANK C. H. STRASSBURGER, Chicago, Ill. Filed Feb. 6, 1889. Serial No. 298,935. (No model.)



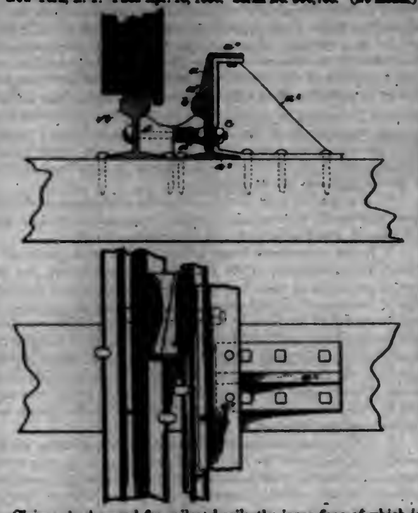
Claim.—1. In a refrigerating apparatus, in combination with an ice-tank, a drip-water chamber having an air-eduction pipe one end of which is above and the other end is below the water-level of said chamber.

2. In a refrigerating apparatus, the combination, with an ice-tank, of a drip-chamber beneath said tank having in said chamber the drip-pipe H, with the air-pipe J arranged in said chamber, substantially as described, and the inlet air-pipe K located in the upper part of the ice-receptacle.

3. In a refrigerating apparatus, the combination, with the ice-tank A, of a drip-water chamber having the drip-pipe H, the air-pipe I, communicating with said drip-chamber, the air-pipe J, also communicating with said drip-chamber, and the air-inlet pipe K, communicating with the upper part of the ice-tank.

4. In a refrigerating apparatus having an ice-tank with air-inlets in its upper portion and a drip-water chamber having an air-outlet into the compartment to be cooled, the air-conduit I, communicating with the lower portion of the refrigerating apparatus, all constructed and arranged substantially as shown and described.

408,906. GUARD-RAIL FOR RAILWAYS. JOHN WATERHOUSE, New York, N. Y. Filed Apr. 10, 1889. Serial No. 306,702. (No model.)



Claim.—1. A guard for railroad-rails, the inner face of which is provided with an outwardly-inclined portion and with a curved portion, substantially as described.

2. A guard for railroad-rails, the lower portion of the inner face of which is inclined at a greater angle than the upper portion, substantially as described.

3. A guard for railroad-rails, consisting of a permanent part provided with an inclined face and a recess below the same, and a removable part fitting in said recess and being provided with a curved face, substantially as described.

4. In a guard for railroad-rails, the combination, with a fixed portion provided with an inclined face, of a removable portion extending inwardly of said inclined face, and a strengthening and securing bracket fastened to the top of said permanent portion and along its base, substantially as described.

5. A guard for railroad-rails, consisting of a removable part adapted to sustain the greatest wear and a permanent supplemental part extending above the same, the said removable part being nearer the wheel of a passing car, substantially as described.

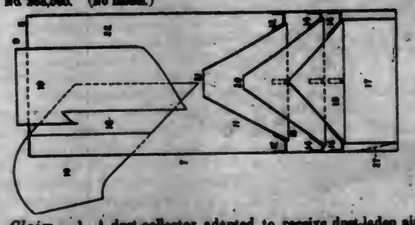
6. A guard for a railroad-rail, consisting of a permanent and a removable part, the said permanent part extending above the removable part and having a portion of its inner face inclined, substantially as described.

7. A guard for a railroad-rail, consisting of a permanent part provided with a recessed portion and a removable part, the said guard being held in place in proper relation to the rail by means of blocks, portions of which are inclined, substantially as described.

8. A guard for a railroad-rail, consisting of a permanent part provided with a recessed portion and a removable part, the said guard being held in place in proper relation to the rail by means of slotted blocks, portions of which are inclined, substantially as described.

9. A guard for a railroad-rail, consisting of a permanent part and a removable part, the said guard being held in position in proper relation to the rail by means of adjustable blocks, substantially as described.

408,907. DUST-COLLECTOR. JAMES A. WOODBURY, Winchester, and EDWARD P. WOODBURY, Boston, Mass. Filed May 20, 1889. Serial No. 311,565. (No model.)



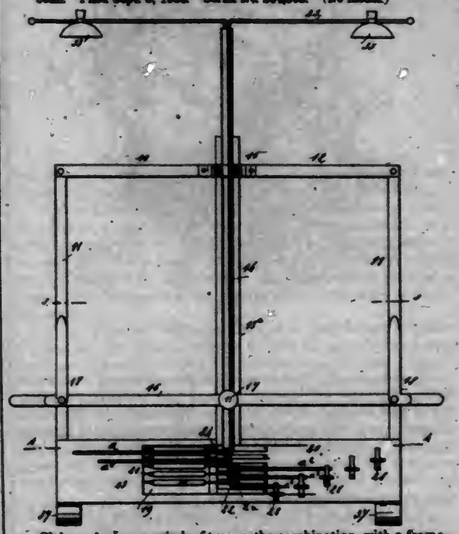
Claim.—1. A dust-collector adapted to receive dust-laden air from a fan, provided with the collector-body having the inlet-spout 10, through which dust-laden air is forced, cylindrical base 17, between which and the collector-body is an outlet for the passage of the dust, and the tubular guard 9, located within the upper portion of the collector-body through which the purified air is forced, substantially as and for the purpose set forth.

2. A dust-collector provided with an inlet-spout through which dust-laden air is forced, frustums 11 and 13 and cylindrical base 17, between which and the collector-body are outlets for the passage of the dust, and tubular guard 9, located within the upper portion of collector-body through which the purified air is forced, substantially as described.

3. A dust-collector provided with an inlet-spout through which the dust-laden air is forced, cylindrical base 17, between which and the collector-body is an outlet for the passage of the dust, and the tubular guard 9, located within the upper portion of the collector-body through which the purified air is forced, in combination with means of reducing the area of said dust-outlet, substantially as described.

4. A dust-collector provided with an inlet spout through which dust-laden air is forced, cylindrical base 17, between which and the collector-body are outlets for the passage of the dust, and tubular guard 9, located within the upper portion of the collector-body through which the purified air is forced, in combination with the U-shaped strips, as 23, as a means of fastening said cylindrical base to collector-body, for the purposes substantially as specified.

408,908. MUSIC-LEAF TURNER. GIANNI BETTINI, Stamford, Conn. Filed Sept. 5, 1888. Serial No. 284,502. (No model.)



Claim.—1. In a music-leaf turner, the combination, with a frame, a tube supported centrally above the said frame extending above the same, a series of leaf-turning rods of graduated lengths held to revolve in said tube, having the upper ends bent to form horizontal arms of essentially the same length and the lower ends bent to form equivalent arms of graded lengths, springs attached to the frame, and a connection between the lower arms of the leaf-turning rods and the springs, of a series of spring-actuated pivoted fingers having an inclined plane formed upon the upper surface, and a recess at the termination of the said inclined plane and rear portion of the said fingers, all combined to operate substantially as shown and described.

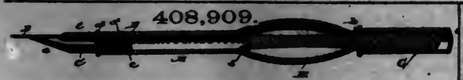
2. In a music-leaf turner, the combination, with a frame, of a rest-bar vertically adjustable upon the said frame, and a set-screw passing through said bar to an engagement with the frame, whereby the rest-bar may be adjusted to sheets of any size, as set forth.

3. In a music-leaf turner, the combination, with a frame, of a rest-bar held to slide upon the said frame, a set-screw passing through the bar to an engagement with the frame, and movable stops pivoted near the extremities of the rest-bar capable of bearing against the frame, all combined to operate substantially as shown and described.

408,909. FOUNTAIN-PEN. JOHN D. BRAY, Montreal, Quebec, Canada. Filed Jan. 25, 1889. Serial No. 297,596. (No model.)

Claim.—1. The combination, with a tubular pen-staff having an opening or aperture in rear of the finger-grasping portion and a compressible bulb communicating with the interior of the staff through

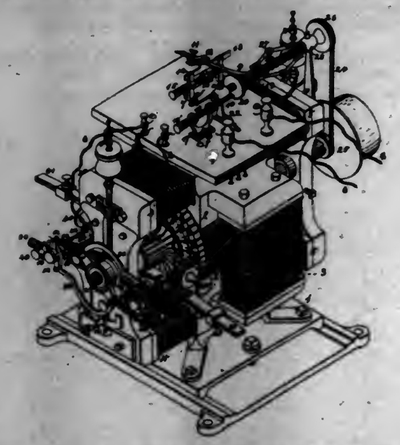
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said rear opening, for operation as described, of a plug or filling within said staff having a feed-duct through it out of line with its center, and a rotatable pen-holder provided with a forward feeding-extension and a feed-duct passing through its rear and socketed at its back in contiguity with the apertured plug in the staff to put its feed-duct in or out of line with the feed-duct in the plug, substantially as and for the purposes specified.

2. The combination, with the reservoir-tube A, having a rear aperture *a*, and the compressible bulb E, of the plug B, having a feed-duct *c* out of line with its center, the apertured elastic washer *f*, and the pen-holder C, fitted to screw within the forward end of the tubular reservoir and provided with a feeding-extension *e* and duct *d*, for operation in relation with the apertured washer and plug B, essentially as shown and described.

408,910. ELECTRO-DYNAMIC MACHINE. GEORGE F. CARD, Covington, Ky., assignor to the George F. Card Manufacturing Company, same place. Filed July 31, 1888. Serial No. 281,600. (No model.)



Claim.—1. In a governor for an electro-dynamic machine or motor, a driving-circuit having a normally-open loop of low resistance wound upon the field-magnet in contrary direction to the field's direct windings, one of said loop's terminals being attached to the vibrating member of a centrifugal regulator, (connected to the armature-shaft,) so as to be oscillated isochronously with varying speeds of the revolving armature between two opposing terminals of said loop, substantially as and for the purposes set forth.

2. In a governor for an electro-dynamic machine or motor, the described normally-open low-resistance loop wound differentially to and in shunt of the direct winding of the field-magnet, and one of whose rheophores has two terminals, between which is the single terminal of its other rheophore, said terminal being attached to the reciprocating member of a centrifugal regulator geared or belted to the armature, so as to automatically close said loop, and thereby neutralize the field magnetism at armature speeds, either above or below the prescribed range, substantially as set forth.

3. In a governor for an electro-dynamic machine or motor, the combination, with a field-magnet and armature wound in series with the driving-circuit, of a normally-open loop-circuit of low resistance wound upon the field-magnet in opposition to and in shunt of its direct winding, and having one of its rheophores attached to the reciprocating member of a centrifugal regulator, (driven from the armature-shaft,) so as to be automatically vibrated between the two terminals of its other rheophore, one of said terminals being adjustable relatively to the other, substantially as set forth.

4. In a governor for an electro-dynamic machine or motor, a low-resistance circuit which shunts and is wound in contrary directions to the direct winding of the field-magnet, and whose negative rheophore is attached to the reciprocating member of a centrifugal governor, so as to be automatically shifted by changing armature speeds between the two contact-pieces of its positive rheophore, one of said contact-pieces being adjustable and the other contact-piece yielding in direction of the path of vibration of said negative rheophore, substantially as and for the several purposes explained.

5. In a governor for an electro-dynamic machine or motor, the described combination of the low-resistance normally-open loop 7, so wound as when closed in the manner explained to short-circuit and oppose the direct windings of the field-magnet, one of the rheophores of said loop having a single terminal 20 attached to the vibrating member of a centrifugal regulator 27 isochronously oscillated with varying speeds of the armature-shaft, and provided with collapsing spring 29, the other rheophore of the said loop having two contact-pieces 9 10, located on opposite sides of and in the path of vibration of said single terminal, one of said contact-pieces being a brush 9, adjustable toward and from the other contact-piece, which piece is held normally toward said vibrating terminal by a spring 18, and has a retracting-handle 10', as set forth.

6. In a dynamo or an electric motor, the combination of the insulated thimbles 50, the insulated rotatable brush-shanks 38, the rotatable hoop 58, and the rod-and-spring connections 54 56.

7. In the commutator-brush holder of an electric generator or motor, the combination of the following elements, to wit: the support or bearer 34 35, capable of circumferential adjustment about the axis of rotation of the commutator and containing the insulated rotatable shanks 38 of the brush-clamps, said shanks being capable of independent vibration about their respective axes, and of being locked to any angular adjustment relatively to the bearer by means of binding-screws 49, the sectors 48, and the thimbles 50, said thimbles being on one side connected by springs 54 to said support, and on the other side by rods 56 to a rotatable hoop 58 thereupon, substantially as and for the purposes explained.

8. In the armature-core of an electro-dynamic machine, the described combination of the following elements, to wit: a series of imperforate conformably-embossed iron discuses magnetically insulated and mechanically united by cementing gaskets and confined between a pair of rings having correspondingly raised and depressed faces, and being attached to the armature-shaft.

408,911. CAN OR BOX. ELIZAR C. CHAMPION and MATHEW VIBBOCK, Woonsocket, R. I. Filed June 20, 1889. Serial No. 314,906. (No model.)

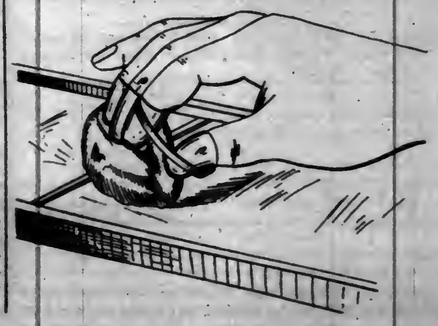


Claim.—1. A box or can cover having an aperture in its top, in combination with a semi-rotatable measure having an opening in its bottom adapted to register with the opening in the cover, and also having a removable cap carrying a transparent top, substantially as specified.

2. A can or box cover having the stops *d e* and the opening C in its top, in combination with the plate D, having a depending arm I to engage the stops, the measure F, secured to said plate above the opening therein, and the removable top G, having a transparent top H, substantially as specified.

3. An improved article of manufacture, consisting of a can A, a cover having an opening in its top, and the lateral stops or lugs *d e*, the semi-rotatable plate on the cover having an arm to engage the stop-lugs, and also having an opening to register with the opening in the cover, the measure secured to the plate above the opening, and the removable cap having a transparent top, substantially as specified.

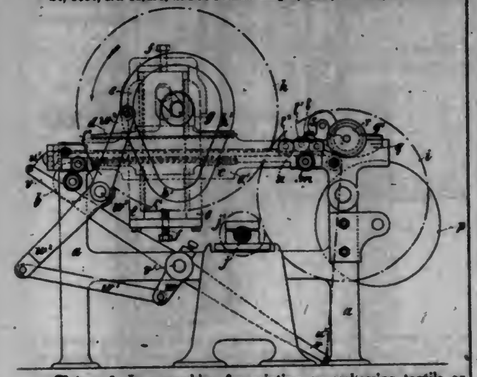
408,912. FINGER-GUARD. ERNEST H. CRESTERTON, Los Angeles, Cal. Filed Dec. 20, 1888. Serial No. 294,220. (No model.)



Claim.—1. The improved finger-guard consisting of the main metal pouch 10, adapted to receive the tips of two or more fingers, the independent metal thumb-pouch 12, and a flexible band 11, which is attached to said pouches at its respective ends and serves as the sole connection between them, as shown and described.

2. The combination, with a main finger-pouch, of a thumb pouch or stall and a metallic band, the band being connected to the finger-pouch at one end and to the thumb-pouch at the other, substantially as described.

408,913. MACHINE FOR PRINTING OR EMBOSSING FABRICS, &c. JAMES FARRER, Salford, County of Lancaster, England. Filed July 10, 1888. Serial No. 279,660. (No model.) Patented in England July 27, 1887, No. 10,631, and in France May 8, 1888, No. 190,488.



Claim.—1. In a machine for printing or embossing textile or other fabrics or materials, the combination, with a reciprocating carriage, tables carried by said carriage, one of which reciprocates vertically above the other, a printing-block supported by the upper or vertical table, and a cranked shaft journaled transversely of the machine and connected with the upper table, whereby as said shaft is rotated a compound reciprocating motion is imparted to said tables, as herein set forth.

2. In a machine for printing or embossing textile or other fabrics or materials, the combination, with a reciprocating carriage, tables carried by said carriage, one of which reciprocates vertically above the other, a printing-block supported by the upper or vertical table, a crank-shaft journaled transversely of the machine and connected with the upper table, inking-rolls, and means for connecting them with said shaft, a spur-wheel fixed on the latter and having a cam-groove in its face, an angle-lever fulcrumed centrally on the frame of the machine, and carrying at one end a roller that travels in the cam-groove, and connected at its other end with a shaft journaled transversely beneath the bed of the machine, as and for the purpose specified.

3. In a machine for printing or embossing textile and other fabrics or materials, the combination, with a reciprocating carriage, tables carried by said carriage, one of which reciprocates vertically above the other, a printing-block supported by the upper or vertical table, a spur-wheel having a cam-groove in its face fixed on said shaft, an angle-lever centrally fulcrumed on the frame of the machine and carrying a roller traveling in said groove, and a shaft journaled transversely beneath the frame of the machine, of a two-armed lever centrally fulcrumed on said shaft, lever and link connections between said lever and the angle-lever, and flexible connections between said lever and a series of reciprocable color-distributing rollers, substantially as and for the purpose herein set forth.

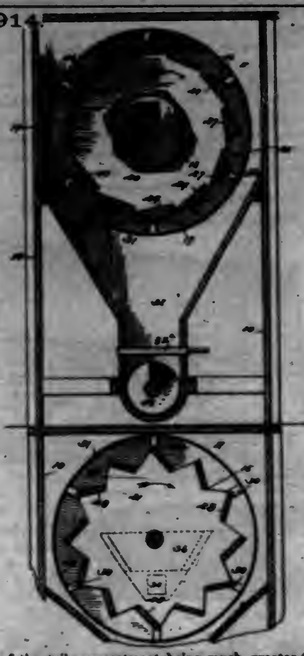
408,914. BOLTING-REEL. CYRUS T. HAMMA, Pittsburg, Pa. Filed Sept. 27, 1888. Serial No. 286,571. (No model.)

Claim.—1. In a flour-bolt, a reel provided with a circular series of longitudinally disposed and spaced buckets, each substantially wedge-shaped in cross-section and provided with a rib projecting from the carrying-surface of one bucket toward the narrow edge of the next, substantially as shown and described.

2. In a flour-bolt, a reel provided with a series of longitudinally disposed and spaced buckets, each substantially wedge-shaped in cross-section and provided with a rib projecting from the carrying-surface of one bucket toward the narrow edge of the next, the said buckets being removed from the inner surface of the cloth, and the ribs of the buckets forming a bridge intervening the said buckets, substantially as herein shown and described.

3. In a flour-bolt, a reel divided into compartments inclosed by longitudinally disposed and spaced buckets, the distance between the buckets of the tail compartment being much greater than between the buckets of the head compartment, substantially as described.

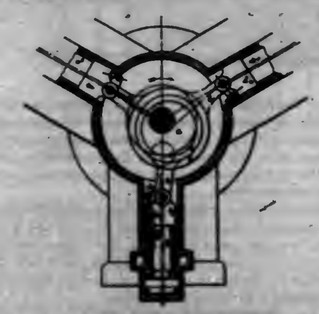
408,914



4. In a flour-bolt, the combination, with the head and tail disks and cover of a reel, which is divided into two compartments, of a series of spaced buckets encircling the head compartment, essentially wedge-shaped in cross-section and provided with longitudinal integral ribs, and flat buckets encircling the tail compartment, removed a greater distance apart than the head buckets, substantially as shown and described.

5. In a flour-bolt, the combination, with the head and tail disks of a reel, the cover, and a partition dividing the same into two compartments, of a series of spaced buckets encircling the head compartment within a cover and a distance therefrom, wedge-shaped in cross-section, provided with longitudinal ribs upon the inner edge of the widest face, flat buckets encircling the tail compartment, also within the cover, and rings supporting and retaining the cover a distance from the buckets, all combined to operate substantially as shown and described.

408,915. VALVE-GEAR FOR MULTIPLE-CYLINDER ENGINES. REIN. KAMLOWSKY, KARL GRAHN, and GOTTLOB KÖHNITZ, Berlin, Germany, assignors to Friedrich Karl Glaser, same place. Filed Oct. 22, 1888. Serial No. 288,732. (No model.)

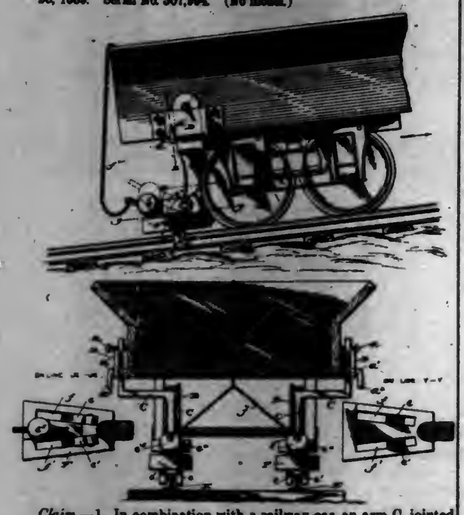


Claim.—1. In a valve-gear for multiple-cylinder engines, the combination, with the single eccentric *a*, the separate eccentric-rings *b c d*, mounted on the eccentric and provided with the rods b^1 c^1 d^1, having brackets b^2 c^2 d^2, the distributing-piston slide-valves b^3 c^3 d^3, connected to the rods b^1 c^1 d^1, the auxiliary slides b^4 c^4 d^4, and the rods

b^4 c^3 d^3, connected to the auxiliary slides and to the brackets, substantially as described.

2. In a valve-gear for multiple-cylinder engines, the eccentric *a*, eccentric-rings *b c d*, provided with the rods *b' c' d'*, having brackets b^3 c^3 d^3, the piston slide-valves b^3 c^3 d^3, connected to the rods *b' c' d'*, the auxiliary slides b^4 c^4 d^4, and the rods b^4 c^4 d^4, connected to the auxiliary slides and to the brackets, in combination with the working-piston B, provided with the exhaust-passage *k*, substantially as described, whereby a second exhaust of the working-fluid will automatically take place at the end of the stroke, as set forth.

408,916. CAR-BRAKE. JULIUS LAWITZKA, Peoria, Ill. Filed Apr. 20, 1889. Serial No. 307,994. (No model.)

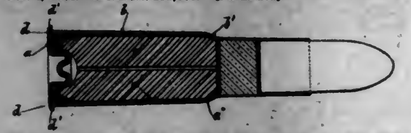


Claim.—1. In combination with a railway-car, an arm C, jointed to the car-body, arranged to act against the rear face of the wheel, and provided at the lower end with gravitating dogs to engage the rail.

2. In combination with a railway-car, the stop device consisting of the standard, its lower arm provided with converging slots, and the two gravitating dogs passing through said slots on opposite sides of the rail.

3. In combination with a car, the pendent arm C loosely jointed thereto, arranged to act against the face of the wheel, and provided with converging slots at the lower end, in combination with a weighted stirrup and two gravitating dogs independently pivoted to the stirrup and adapted to engage opposite sides of the rail.

408,917. METALLIC CARTRIDGE. ABRAHAM MARTIN, 177 Aston Lane, Witton, near Birmingham, County of Warwick, England. Filed Dec. 4, 1888. Serial No. 292,619. (No model.)

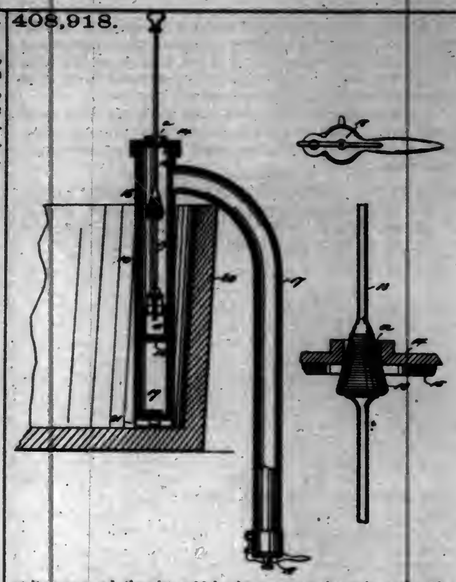


Claim.—1. The herein-described metallic cartridge, consisting of the case *b*, having the shoulder *b'* near the forward extremity, and the case *a* within the case *b*, upset inwardly at the front extremity at a^x in correspondence with the inner face of the shouldered portion of the case *b*, and having the closed base at its other extremity, substantially as shown and described.

2. The herein-described metallic cartridge, consisting of the case *b*, having the shoulder *b'* near one extremity and the seat *d'* at its other extremity, and the case *a* within the case *b* upset inwardly at one extremity, at a^x, in correspondence with the inner face of the shouldered portion of the case *b*, and having the base *d* at its other extremity, substantially as shown and described.

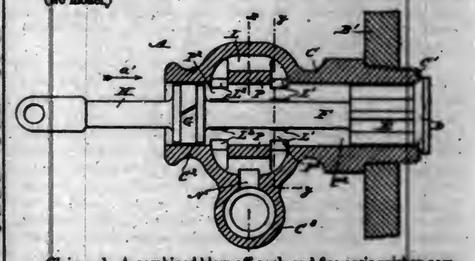
408,918. SIPHON. LEOPOLD MEYER, Ahnapee, Wis. Filed Mar. 7, 1889. Serial No. 302,963. (No model.)

Claim.—A siphon consisting in the long leg having a valve at its lower end, and a short leg 10, having an open frame 21 on its lower end, upward-opening valve 19 in its lower end, and an apertured cap



at its upper end, the piston 11 having an upward-opening valve 12, a stem 13 extending up through the apertured cap, and a packing-ring 16 on the stem between its ends and within the short leg, substantially as set forth.

408,919. BLOW-OFF COCK AND FIRE-EXTINGUISHER. LUCIUS B. MICHELL, Palestine, Tex. Filed June 15, 1889. Serial No. 314,345. (No model.)



Claim.—1. A combined blow-off cock and fire-extinguisher comprising a valve-body having a central opening and an annular chamber connected by ports with the said central opening, said valve-body being secured to the lower end of the boiler, perforated pipes connected with the said annular chamber, a valve held on the inner end of the said valve-body, and a piston secured on the stem of the said valve and operating with the same, substantially as shown and described.

2. A combined blow-off cock and fire-extinguisher comprising a valve-body having a central opening and an annular chamber connected by ports with the said central opening, said valve-body being secured to the lower end of the boiler, perforated pipes connected with the said annular chamber, a valve held on the inner end of the said valve-body, a piston secured on the stem of the said valve and operating with the same, and means, substantially as described, for operating said valve and piston from the cab of the locomotive, as set forth.

3. A combined blow-off cock and fire-extinguisher comprising a valve-body having a central opening and an annular chamber connected by ports with the said central opening, said valve-body being secured to one end of the boiler, a valve held on the inner end of the said valve-body and adapted to open and close said central opening, a valve-stem carrying said valve, and a piston secured on the said valve-stem and held to slide in the said central opening, substantially as shown and described.

4. In a combined blow-off cock and fire-extinguisher, the combination, with a valve-body provided with a central opening and an annular chamber, which latter is connected by ports with the central opening, of a valve adapted to open and close the inner end of the

said valve-body, a valve-stem extending from the said valve through the said central opening, a piston secured on the said valve-stem and held to slide in the said central opening over one set of the said ports, and means, substantially as described, for opening the said piston and valve simultaneously, as set forth.

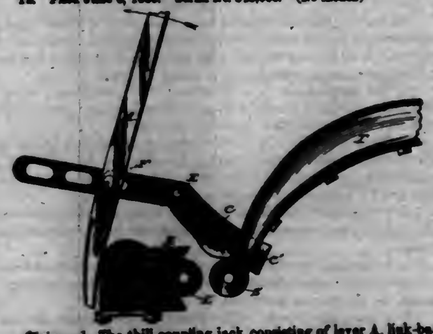
5. In a combined blow-off cock and fire-extinguisher, the combination, with a valve-body provided with a central opening and an annular chamber, which latter is connected by ports with the central opening, of a valve adapted to open and close the inner end of the said valve-body, a valve-stem extending from the said valve through the said central opening, a piston secured on the said valve-stem and held to slide in the said central opening over one set of the said ports, means, substantially as described, for opening the said piston and valve simultaneously, and perforated pipes connected with the said annular chamber, as set forth.

408,920. SASH-FASTENER. CHARLES H. MILLER and SAMUEL A. MCDONALD, Denton, Tex. Filed Mar. 26, 1889. Serial No. 304,694. (No model.)



Claim.—In a window-fastener, the combination, with an angle-bracket having an opening produced in its horizontal member wider at its top than at its bottom, and an essentially yoke shaped bar passed through the said opening, of a thumb-lever hinged to the vertical member of the bracket, extending over and parallel with the horizontal member of said bracket, and a lip integral with the under edge of the lever, concavo-convex in cross-section, and capable of entering the opening in the bracket and contacting with the inner or under face of the yoke-like bar, all combined for operation substantially as shown and described.

408,921. THILL-COUPLING JACK. JOHN H. MILLER, Lewistown, Pa. Filed June 8, 1889. Serial No. 313,606. (No model.)

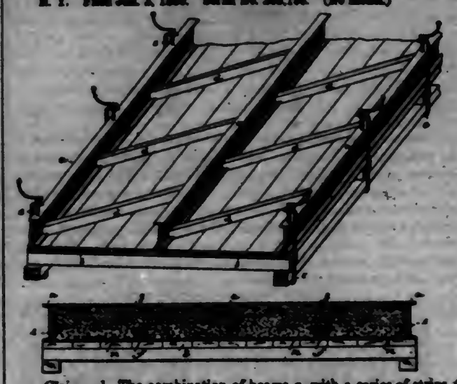


Claim.—1. The thill-coupling jack consisting of lever A, link-bar B, having an adjustable connection with the lever, the clamp C, with foot C', and the dog D, the said dog and clamp being connected to the end of the link-bar upon a single axis of articulation, substantially as shown and described.

2. The combination of the lever A, with a headed stud F, link-bar B, with a series of elongated holes, the clamp C, with foot C', and the dog D, both dog and clamp being pivotally connected to the link-bar by the same axis of articulation, substantially as shown and described.

3. The combination of the lever A, link-bar B, pivotally connected thereto, the clamp C, having foot C' at one end and stud E at the other, and the dog D, the said dog and bar B being jointed or articulated upon the stud E, substantially as and for the purpose described.

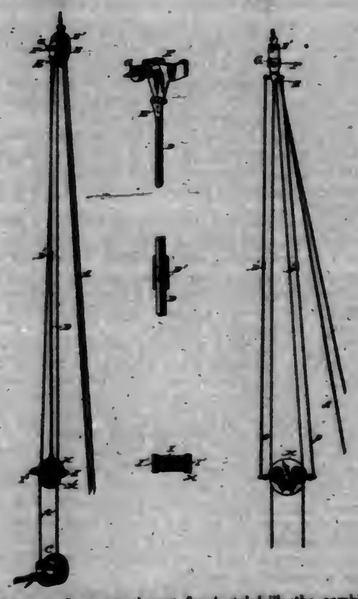
408,922. FIRE-PROOF CEILING. JOHN W. MACKENZIE, New York, N. Y. Filed Jan. 3, 1888. Serial No. 259,193. (No model.)



Claim.—1. The combination of beams *a*, with a series of strips *f* of crushed stone and cement between the beams, and with concrete *c*, inclosing strips *f* at the sides, substantially as specified.

2. The combination of I-beams *a*, with the oblique strips *f* of crushed stone and cement resting upon the lower flanges of the I-beams, and with the concrete *c* at the sides of strips *f*, and with a superposed layer *g* of ashes and a bottom layer *a* of gravel, substantially as specified.

408,923. DENTAL-DRILL ATTACHMENT. JESSE H. MOYER and JESSE P. STARRELL, Temple, Tex. Filed Mar. 27, 1889. Serial No. 305,082. (No model.)

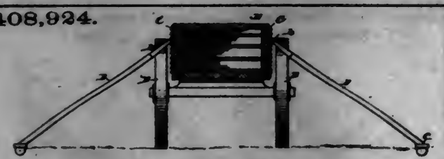


Claim.—1. In an attachment for dental drills, the combination, with the upper pulley B and the supporting pulley-frame B' of a drill, of a rod having hinged to its upper end the clip F, having the set-screw G, and having at its lower end the frame H and the wheel H', journaled in said frame, substantially as set forth.

2. In an attachment for dental drills, the combination, with the upper pulley B and the supporting pulley-frame B' of a drill, of a rod having hinged to its upper end the clip F, having the set-screw G, and having at its lower end the frame H, having the wheel H' and the side spools I, journaled within it, substantially as set forth.

408,924. ANCHOR FOR PORTABLE HAY-PRESSES. MILES MCCALLA, Milford, Iowa. Filed Oct. 20, 1888. Serial No. 288,264. (No model.)

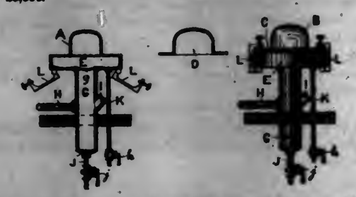
408,924.



Claim.—The combination, with a hay-press or other machine, of the ratchet-plates C, secured to the sides of the frame of the press or machine, and the braces D, each provided with a foot *c*, for securing it to the ground, and with point *b*, for engaging the ratchet-plate, substantially as described, whereby the shifting movement of the frame produced by the draft on different sides will cause the points of the braces to alternately drop into engagement with the teeth of the plate, and thereby automatically take up the slack motion or shifting movement of the machine, as set forth.

408,925. METHOD OF TREATING HATS MADE FROM FELTED MATERIALS.

JOHN H. HEAVE, Rainow, near Macclesfield, County of Chester, England. Filed Oct. 15, 1883. Serial No. 308,136. (No model.) Patented in England Apr. 25, 1887, No. 5,966; in France Dec. 7, 1887, No. 187,445; in Belgium Dec. 7, 1887, No. 79,833; in Brazil May 9, 1888, No. 576; in Germany May 16, 1888, No. 45,860, and in Italy Aug. 8, 1888, No. 23,890.



Claim.—1. The process of treating hats during manufacture, which consists in subjecting the hat to the action of a highly-heated fluid under pressure while the hat or hat-body is tightly compressed or subjected to an independent pressure, either for the purpose of consolidating the texture of the material or of fastening the finish or polish, or for both purposes, substantially as described.

2. The process of treating hats during manufacture, which consists in tightly compressing the hat-body on a shape or block and subjecting the hat-body, when so compressed in a chest, chamber, or bath, to the penetrating action of a fluid—such as steam or boiling water—under pressure.

3. The improved method of finishing felt hats with a permanent gloss or brightness, which consists in subjecting the felt surface to the action of a rapidly-revolving abrasive surface, whereby the ends of the fibers are drawn outward beyond and laid upon the body of the felt, then tightly compressing the hat on a block or shape, and finally subjecting it to the action of a highly-heated fluid (steam or water) under pressure, substantially as described.

4. The improved method of finishing felt hats with a permanent gloss or brightness, consisting in first polishing the fibers of the hat by a rapidly-revolving velour or other means, then tightly compressing the hat on a block or shape, and finally subjecting the hat, when so compressed, to the action of a highly-heated fluid (steam or boiling water) under pressure to render the polish permanent.

5. The improved method of finishing felt hats with a permanent gloss or brightness, which consists in subjecting the felt surface to the action of a rapidly-revolving abrasive surface, whereby the ends of the fibers are drawn outward beyond and laid upon the body of the felt, tightly compressing the hat on a block or shape, subjecting the hat, when so compressed, to the action of a highly-heated fluid (water or steam) under pressure, and finally polishing with a rapidly-revolving velour, substantially as described.

6. The improved method of finishing felt hats with a permanent gloss or brightness, consisting in first polishing the fibers of the hat by a rapidly-revolving velour or other means, tightly compressing the hat on a block or shape, subjecting the hat, when so compressed, to the action of a highly-heated fluid (steam or water) under pressure, and finally polishing with a rapidly-revolving velour, substantially as described.

7. The process or method of finishing felt hats with a permanent gloss or brightness, which consists in polishing the surface by application to a rapidly-revolving surface, compressing them on a block or shape, subjecting them to a bath of a highly-heated fluid (steam or water) under pressure, allowing them to stand and cool before removing them from the block, thoroughly drying them, velouring them with a rapidly-revolving velour, and finally hot-pressing them in a hydraulic or other hot press, all substantially as described.

408,926. DENTAL FILE.

CHARLES E. PALMER, New Haven, Conn. Filed May 13, 1889. Serial No. 310,622. (No model.)

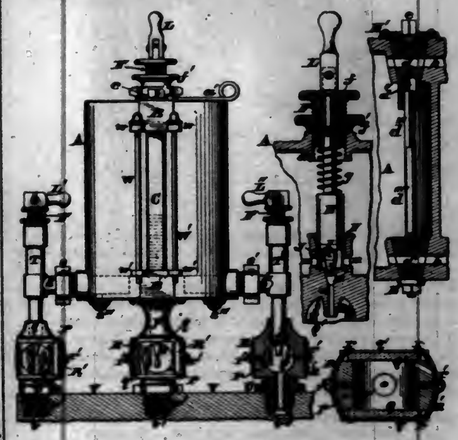


Claim.—1. The herein-described dental file, consisting of a body A, with a flange C turned from one edge, the inner surface of the flange curved into the corresponding surface of the body, the said inner curved surface of the flange and the body cut to form a file cutting-surface throughout, substantially as described.

2. The herein-described file, consisting of the body A, the handle B, made as an integral part thereof, the body constructed with a longitudinal flange C upon one edge, the inner surface of the said flange curved into the adjacent surface of the body, the said inner curved surface of the flange and the body cut to form a continuous file cutting-surface throughout, substantially as described.

408,927. LUBRICATOR.

JAMES POWELL, Cincinnati, Ohio. Filed Mar. 23, 1889. Serial No. 304,567. (No model.)



Claim.—1. The combination, in a lubricator, of a self-closing valve-carrier, a valve proper flexibly coupled to said carrier, and a reservoir having a seat for said valve to close against, which seat has a discharge-passage, substantially as herein described.

2. The combination, in a lubricator, of the self-closing chambered valve-carrier H *h*, cap I *i*, attached thereto, plug J, valve *j*, collar K, spring *k*, and shank *k'*, as herein described.

3. The combination, in a lubricator, of a reservoir having a screw-threaded neck *a*, seat *a'*, passage *o*, tension-nut F *f*, jam-nut *f'*, stem G, spring *g*, valve-carrier H, and lever L, said carrier having a valve flexibly coupled to it, for the purpose described.

4. A lubricator provided with one or more laterally-adjustable side pipes having independent discharge-nozzles, for the purpose described.

5. A lubricator provided with a central discharge-nozzle, and one or more laterally-adjustable side pipes having independent discharge-nozzles, for the purpose described.

6. A lubricator provided with a central discharge-nozzle, and one or more laterally-adjustable side pipes having independent discharge-nozzles housed within vertically-adjustable sight-chambers, for the purpose described.

7. The combination, in a lubricator, of laterally-adjustable side pipe S, valve-chamber T, discharge-nozzle *t*, sight-chamber P, and screw-threaded nipple U, for the purpose described.

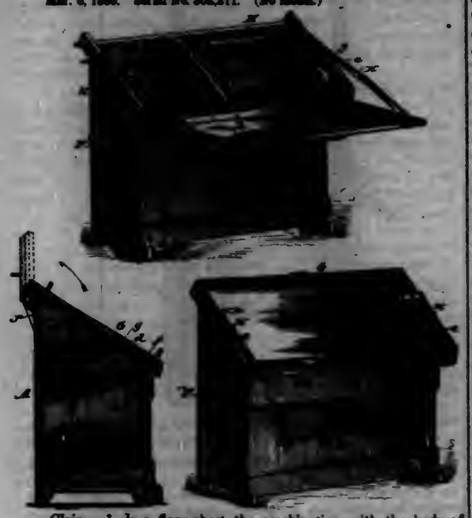
8. The combination, in a lubricator, of sight-chamber P, having flanges *q q'*, glasses Q Q', clips R *r* R' *r*, and screws *r'*, for the purpose described.

9. A lubricator provided with channels leading to the gage-tube sockets, and a pair of simultaneously-acting turning-plugs for closing said channels, substantially as herein described.

10. The combination, in a lubricator, of a reservoir having socket-channels *b b'*, turning-plugs D D', mortise *d''*, tenon *d'''*, and stem *d''''*, which stem projects from the lower plug D', as herein described.

408,928. FLOUR-CHEST.

BENJAMIN H. REINERT, Alma, Ill. Filed Mar. 6, 1889. Serial No. 302,211. (No model.)



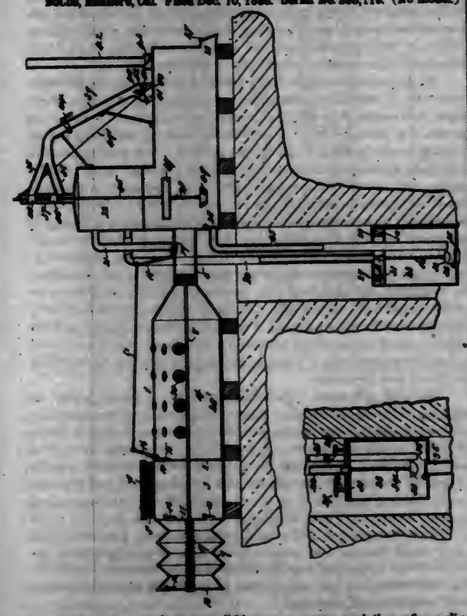
Claim.—1. In a flour-chest, the combination, with the body of the chest, of strips pivoted to the chest, a board hinged to the free ends of the strips, and jointed links pivoted to the said strips and board, substantially as described.

2. In a flour-chest, the combination, with the body A of the chest having the cut-away portions *g* in its ends, of the strips *e*, pivoted to the body of the chest and provided with the projections or extensions *f*, the board *d*, hinged to the free ends of the strips, and the jointed links H, pivoted to the said strips and board, substantially as herein shown and described.

3. In a flour-chest, the combination, with the body of a chest provided with opposite and spaced lugs, of a cover working between the said lugs and provided with a cleat on its under surface, substantially as described.

408,929. SOLAR WATER-LIFTING APPARATUS.

ALVA L. REYNOLDS, Bisbee, Cal. Filed Dec. 10, 1888. Serial No. 293,119. (No model.)



Claim.—1. A solar water-lifting apparatus consisting of a cylinder having a heating-chamber provided with lenses, a piston-cylinder, a chamber behind the heating-chamber with weighted bellows on its top, spring-actuated bellows behind said second chamber with valves opening therein, a piston connected to the spring-actuated bellows, a catch arranged in piston-cylinder to engage the piston and connected with a valve opening from the second chamber into heating-chamber, a condensing-chamber, a tube leading from piston-cylinder to condensing-chamber having a discharge-outlet and valve, a pressure-breaking receptacle or receptacles having air-valves opening outwardly and connected with a weighted float, suction-tubes connecting the condensing-chamber with the pressure-breaking receptacle, one of which is closed at its upper end by an upwardly-lifting valve and the other at its lower end by a valve on the float, and a suction-pipe extending downward from pressure-breaking chamber and having an upwardly-lifting valve at its mouth in said chamber, substantially as described.

2. In a solar water-lifting apparatus, substantially as described, a pressure-breaking receptacle consisting of a chamber provided with suction-tubes leading to a condensing or vacuum chamber, a weighted float with a valve for closing one of the suction-tubes, and an outwardly-opening valve at the upper end of the other suction-tube, outwardly-opening valves closing air-openings in the receptacle, and a suction-tube extending downward from the receptacle having an inlet stop-valve at its mouth, substantially as described.

3. In a solar water-lifting apparatus, a cylinder having a heating-chamber provided with lenses, a piston-cylinder, a chamber behind the heating-chamber with weighted bellows on its top opening into the second chamber, spring-actuated bellows behind said second chamber with valves opening into the latter, a piston connected to the spring-actuated bellows, a catch arranged in piston-cylinder to engage the piston and connected with a valve opening from the second chamber into the heating-chamber, a condensing-chamber, a tube leading from piston-cylinder to condensing-chamber, having a discharge-outlet and outwardly-opening valve, and a tube leading downwardly from the condensing-chamber and having a valve at its upper end opening inwardly into the condensing-chamber, substantially as described.

4. In a solar water-lifting apparatus, a condensing-chamber having in its lower portion a water-discharge outlet and outwardly-opening valve, a water-inlet pipe extending downward and with a valve at its upper end opening inwardly into the condensing-chamber, a vertical tube on the top of the condensing-chamber opening into the latter and containing a vertical rod, with valves and a weighted float on the lower end of the vertical rod, an air-tube with a stop-cock and a flaring open mouth at its lower end located above a lamp on the top of the condensing-chamber, and branch tubes at its upper end connecting with the vertical tube and alternately opened and closed by the valves therein, a connection between the vertical rod and wick of the lamp for raising and lowering the wick, and a second vertical tube with upwardly-opening valve located on the top of the condensing-chamber for the escape of air, substantially as shown and described.

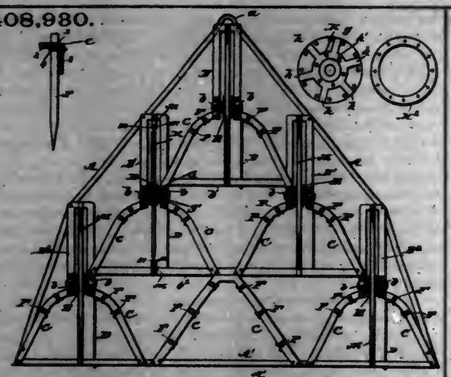
5. A solar water-lifting apparatus consisting of a heating-chamber provided with lenses and a reflecting-lining, a piston-cylinder, a chamber behind the heating-chamber with weighted bellows on its top opening into the second chamber, spring-actuated bellows behind said second chamber with valves opening therein, a piston connected to the spring-actuated bellows, a catch arranged in piston-cylinder to engage the piston and connected with a valve opening from the second chamber into heating-chamber, a condensing-chamber, a tube leading from piston-cylinder to condensing-chamber having discharge outlet and valve, a vertical tube on the top of condensing-chamber opening into the same and containing valves, and a piston-rod with a weighted float at its lower end located in the condensing-chamber, a burner on the top of condensing-chamber having a connection between it and the vertical piston-rod for controlling the flame of the burner, a tube with a flaring mouth at its lower end located over the burner and connected by branch tubes at its upper end with the vertical tube containing piston rod and valves, the latter alternately opening and closing the branch tubes, a second vertical tube on the top of condensing-chamber with an upwardly-opening air-valve, and pressure-breaking receptacle consisting of a chamber provided with suction-tubes leading to the condensing-chamber and containing a weighted float with a valve for closing one of the suction-tubes, and a valve at the upper end of the other suction-tube opening into the condensing-chamber, outwardly-opening valves closing air-inlet openings in the receptacle, and a suction-tube extending downward from the receptacle and having a stop-valve at its upper end opening into the receptacle, substantially as shown and described.

408,930. HARROW.

SAMUEL ROTHCHILD, Pendleton, Oreg. Filed Nov. 27, 1888. Serial No. 292,096. (No model.)

Claim.—1. The combination of the bar A, the wheel-frames connected at their forward ends with the bar A, and the tooth-carrying

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bars C, secured to the rear ends of the wheel-frames and forming braces therefor, substantially as set forth.

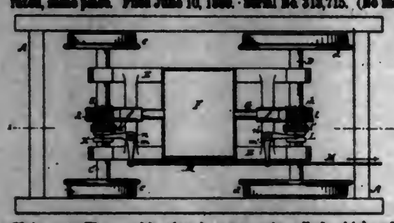
2. In a harrow, the combination, substantially as described, of an outer frame bar or bars, the wheel-frames arranged within said frame bar or bars and suitably secured, brace-bars extended between the forward wheel-frames and those in rear thereof and between the rear wheel-frames and the frame bars, and the wheels in said wheel-frames, all substantially as and for the purposes specified.

3. In a harrow, substantially as described, the combination of the wheel-frames and bars connected with and diverging from the open rear ends of said frames, whereby to prevent no obstruction to the upward movement of the teeth when clogged by rubbish, &c., substantially as set forth.

4. The improved protector for the toothed wheels, consisting of the tire I, of angle-iron, the ring J, and fastenings, substantially as set forth.

5. The combination, with the wheel having its teeth pointed, of the angle-iron tire I, the ring J, having inclined or beveled face *j*, the staples L, and the pins L', all substantially as set forth.

408,931. DRIVING-GEAR FOR CARS. EDWARD SAMUEL, Philadelphia, Pa., assignor to William Wharton, Jr., and Company, Incorporated, same place. Filed June 10, 1889. Serial No. 313,715. (No model.)



Claim.—1. The combination, in a power-impelled vehicle, of two or more axles, a motor-shaft, and mechanism whereby said shaft may be connected to or disconnected from either axle, the traction-wheels of one axle differing in diameter from those of the other axle or axles, whereby with a constant speed of motor-shaft different rates of propulsion of the vehicle may be maintained, substantially as specified.

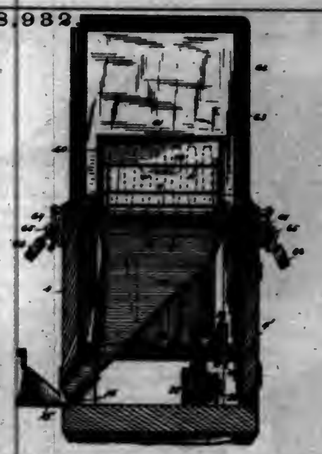
2. The combination, in a power-impelled vehicle, of the axles, a single motor-shaft common to all of the axles, and mechanism whereby said shaft may be connected to or disconnected from either of said axles, the traction-wheels of one axle differing in diameter from those of the other axle or axles, whereby with a constant speed of motor-shaft different rates of propulsion of the vehicle may be maintained, substantially as specified.

408,932. AUTOMATIC CIGAR-SELLING MACHINE. PETER SCHNEIDER, Brooklyn, N. Y. Filed Nov. 24, 1888. Serial No. 291,777. (No model.)

Claim.—1. An automatic cigar-selling machine consisting of a chute for the passage of a coin, an electrical contact-maker to be operated by the coin, an electric circuit, an electro-magnet in the electric circuit, a traveling band with spaced apertures and having its ends wound on rollers, a frame for holding vertically cigars resting on end on the traveling band, a mechanism for operating the traveling band, and a tripping device connected with the armature of the electro-magnet for intermittently holding and releasing the mechanism for operating the traveling band, substantially as shown and described.

2. In a selling-machine, the combination, with an apertured band

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mounted to form the bottom of a goods-receptacle, of a band-advancing mechanism, a band take-up device, a tripping mechanism, and a coin-chute leading to said tripping mechanism, substantially as shown and described.

3. In a selling-machine, the combination, with an apertured band forming the bottom of a goods-receptacle and rollers on which said band is wound, of a band take-up mechanism connected with one roller, a band-advancing mechanism connected with another roller, a tripping mechanism, and a coin-chute leading to the tripping mechanism, substantially as shown and described.

4. In a selling-machine, the combination, with an apertured band forming the bottom of a goods-receptacle, of a band-advancing mechanism, a band take-up mechanism, a trip-lever connected with the band take-up mechanism, an armature on said lever, an electro-magnet, a battery, current-wires connecting the battery and electro-magnet, a lever in the circuit normally breaking the same, and a coin-chute discharging on said lever, substantially as shown and described.

5. An automatic cigar-selling machine consisting of a casing having an opening in its top, an apertured band mounted to extend across the opening, a frame mounted over the opening for holding cigars vertically with their lower ends resting on the apertured band, a chute for the passage of cigars mounted beneath the opening and leading to the outside of casing, a covering extending over the top of the casing and disclosing its top, a band-advancing mechanism, a band take-up device, a tripping mechanism, and a coin-chute leading to said tripping mechanism, substantially as shown and described.

6. An automatic cigar-selling machine comprising the following elements: a chute for the reception and passage of a coin to a receptacle, a contact-maker with a tripping-lever having one end projecting across the passage-way of the chute for making and breaking an electric circuit by the action of a coin on the lever in passing through the chute, electric-circuit wires leading from a battery to the contact-maker and to an electro-magnet having an armature, a traveling band with spaced apertures having its ends wound on rollers, a frame for holding cigars arranged therein in vertical position and resting on the traveling band, a cigar-delivery chute located beneath the traveling band and cigar-holding frame, a train of gearing connected to one of the traveling-band rollers and normally held in locked position by a tripping-rod connected with the armature of the electro-magnet and intermittently moved into and out of engagement therewith by the action of the electro-magnet, a train of gearing connected with the other roller of the traveling band, and a spring-actuated drum having a cord connected with a drum in the train of gearing, substantially as shown and described.

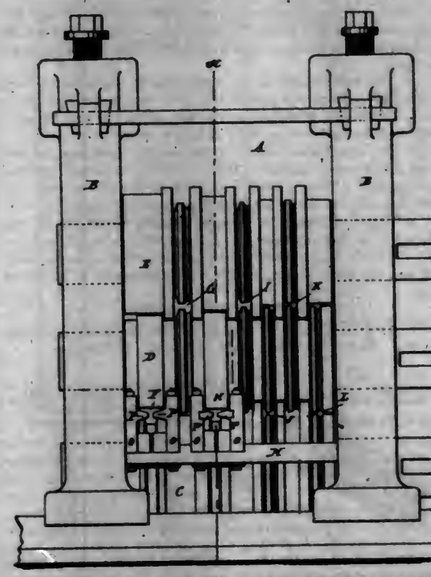
7. In an automatic cigar-selling machine, a casing having an opening in its top, a traveling band with spaced apertures extending across the opening and having its ends wound upon rollers, a frame mounted on the top of the casing and over the opening for holding cigars in vertical position on the traveling band, a train of gearing connected with one of the rollers of the traveling band and intermittently released and locked by a rod connected with the armature of an electro-magnet, a train of gearing connected with the other roller of the traveling band, and a spring-actuated drum connected by a cord wound thereon with a drum in the train of gearing and by the action of the spring and a spring-actuated drum operating the traveling band when the first-named train of gearing is released, substantially as shown and described.

8. In a coin-operating machine, a chute, a contact-maker having

a lever projecting into the passage-way of the chute and adapted to be tilted by a coin passing through the chute, electrical circuit-wires leading from a battery to the contact-maker and to an electro-magnet, and a tripping-rod for holding and releasing an operating mechanism connected to and operated by the armature of the electro-magnet, substantially as shown and described.

9. In an automatic cigar-selling machine, the casing 4, mounted on a suitable support and having the opening 6 in its top, the wire frame 10, mounted on the top of casing 4, over the opening 6, a cigar-delivery chute 13, mounted beneath the opening 6 and projecting through the side of casing 4, a traveling band 7, with spaced apertures 12, extending between opening 6 and the top of chute 13, over rollers 8, and having its ends wound about rollers 9 and 9' in casing 4, a train of gearing connected with the roller 9 and having a gear-wheel 22, terminating the gearing, with stop-pins 31, a chute 54 on the top of casing 4, with branch chutes 55 and 56, the opening of chute 54 into branch chute 56 having ledges 59, a tilting lever 47, projecting across chute 54, an electrical contact-maker consisting of lever 43, mounted on posts 42 on plate 41, secured to the top of casing 4, and having a counter-weighted arm rested upon a weighted arm 46' of lever 47, a contact-plate 46, normally out of contact with lever 43 and supported by a spring 45, mounted on an insulating-block 44 on plate 41, circuit-wires 5, leading from batteries 3 to spring 45 and plate 41, an electro-magnet 23, located in the circuit formed by wires 5, an armature 24, mounted on one end of a lever 25 and normally held out of engagement with the poles 23' of electro-magnet 23 by a coiled spring 27, attached to bracket 28, with a sliding tripping-pin 29, hinged to lever 25 and normally engaging a pin 31 on wheel 22, a train of gearing 32, connected with roller 9' and having a drum 36, and a spring-actuated drum 35, connected by a rope 36' with drum 36 and having its ends wound on drums 35 and 36, substantially as shown and described.

408,933. MACHINE FOR REDUCING RAILS. WILLIAM SUBELL and THEODORE G. WOLF, Scranton, Pa. Filed July 9, 1888. Serial No. 316,992. (No model.)



Claim.—1. In a machine for reducing rails, the combination, with rollers, of guards and side guides held on the said guards, and both leading to the rollers, substantially as shown and described.

2. In a machine for reducing rails, the combination, with guards leading to the rollers, of side guides held on the said guards and conforming closely to the shape of the rail, substantially as shown and described.

408,934. CAP. HERMAN SHEWARD, New York, N. Y. Filed Feb. 1, 1889. Serial No. 298,302. (No model.)

Claim.—As an improved article of manufacture, an article of head-wear having the material constituting the body extending in one continuous piece below the lower edge of the body to form ear-flaps, the said extension being turned up within the crown when not

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in use and having in its front portion a cut or slit 13, to the edges of which the stiffening of the visor is secured, as specified.

408,935. CLIP FOR SILVER-WARE CASES. HENRY SEMMET and WILLIAM SEMMET, Bayonne, N. J. Filed May 11, 1889. Serial No. 310,360. (No model.)



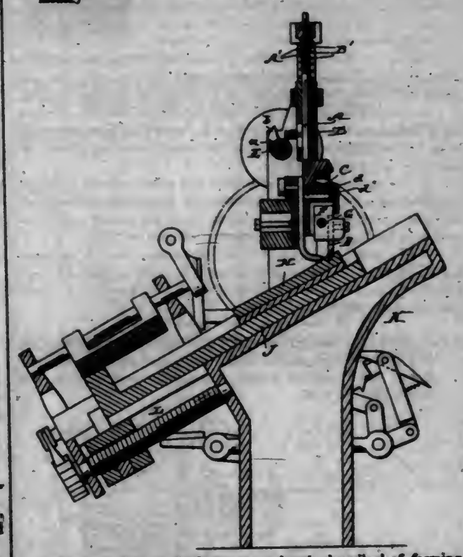
Claim.—1. The combination, with a block, of spring-strips bent to U form and having long and short legs, and a means for clamping the long legs to the side faces of the block, substantially as described.

2. The combination, with strips bent to form legs *a* and *b*, of a block and a clamping-bolt, substantially as described.

3. The combination, with a block, of strips formed with long and short legs, the long legs of the strips fitting against the side faces of the block, while the short legs overlap the upper face of the block, and a clamping-bolt, substantially as described.

4. The combination, with a block, of strips formed with long and short legs, the long legs resting against the side faces of the block and the short legs overlapping the upper face of the block, a clamping-bolt, a nut that is engaged by the bolt, and a washer through which the bolt passes, substantially as described.

408,936. METHOD OF FORMING TEETH OF RASPS. PHILIP S. STOKES, Freehold, N. J. Filed Mar. 16, 1889. Serial No. 303,503. (No model.)

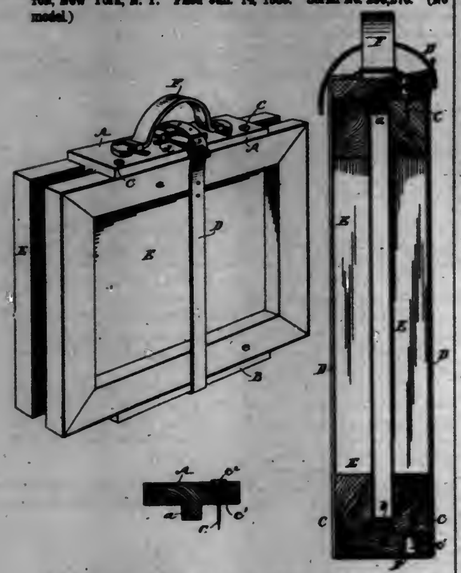


Claim.—1. The method or process herein described of forming teeth on rasp-blanks by machinery, which consists in starting the point by an initial blow delivered upon the punch and then lifting the body of the tooth by a subsequent blow or a series of blows, substantially as described.

2. The method or process herein described of forming teeth on rasp-blanks, which consists in starting the point by an initial blow delivered upon the punch and then forming the body of the tooth by a subsequent blow or series of blows, the punch being at the same time swung back at the top, substantially as and for the purposes set forth.

3. The process of forming the teeth upon rasp-blanks, which consists in starting the point of each tooth by an initial blow delivered upon the punch, the blow being accurately gaged to the same force or power for each tooth, and then lifting the body of each tooth by a subsequent blow or series of blows on the punch, this or these subsequent blows being also accurately gaged to the same force or power for each tooth, whereby the teeth of the rasp are made uniform, substantially as described.

408,937. ARTIST'S WET-CANVAS CARRIER. FREDERICK D. SUTTON, New York, N. Y. Filed Jan. 14, 1889. Serial No. 296,276. (No model.)



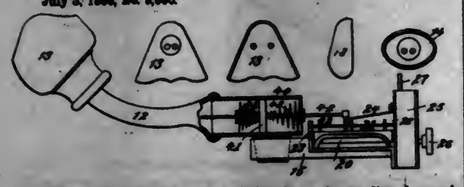
Claim.—1. The combination, in an artist's wet-canvas carrier, of opposing clamp-plates having spacing-strips for separating two canvases, and a strap or binding device, substantially as herein set forth.

2. The combination, in an artist's wet-canvas carrier, of opposing clamp-plates having spacing-strips for separating two canvases, a strap or binding device, and a handle at one of the clamp-plates, substantially as herein set forth.

3. The combination, in an artist's wet-canvas carrier, of opposing clamp-plates having spacing-strips for separating two canvases, said plates provided with pins entering one of the canvas-frames, and a strap or binding device, substantially as herein set forth.

4. The combination, in an artist's wet-canvas carrier, of opposing clamp-plates A B, provided, respectively, with spacing-strips *a b*, pins C, set into the plates, a binding-strap D, and a handle F, arranged and operating substantially as herein set forth.

408,938. APPARATUS FOR RECORDING THE RESPIRATIONS OF THE BODY. KHURSHED M. TATA, Havaret, near Bombay, India. Filed Oct. 16, 1888. Serial No. 288,236. (No model.) Patented in England July 3, 1888, No. 9,660.



Claim.—1. An instrument for indicating and recording the respirations of the body, comprising a tube provided with a mouth or nose piece, a vibratory body connected to the tube and adapted to be operated by the breath of the patient, a needle connected to and operated by the said vibratory body, and a strip of paper traveling under the end of the needle, substantially as described.

2. An instrument for indicating and recording the respirations of the body, comprising a tube provided with a mouth or nose piece, a vibratory body connected to the tube adapted to be operated by the breath of the patient, a needle connected to the vibratory body and operated thereby, a strip of paper under the end of the needle, and rollers between which the strip of paper travels, substantially as described.

3. An instrument for indicating the respirations of the body, comprising a tube provided with a mouth-piece, a needle held to slide in bearings in the tube, a diaphragm secured to the needle, and springs surrounding the needle on opposite sides of the diaphragm, substantially as herein shown and described.

4. An instrument for indicating and recording the respirations of the body, comprising a tube having a mouth or nose piece, a needle sliding in bearings in the tube and projecting from one end of the same, a diaphragm secured on the needle, springs on opposite sides of the diaphragm and surrounding the needle, and paper-feeding mechanism arranged for feeding a strip of paper under the end of the needle, substantially as described.

5. In an instrument for indicating and recording the respirations of the body, the tube 40, having the mouth or nose section 12 attached thereto, the needle 42, sliding in bearings in the tube 40, the diaphragm 41, secured on the needle, and the springs 43 on opposite sides of the diaphragm, in combination with the section 15, secured to the tube 40, the paper-feeding rollers 20 and 22, mounted on the said section 15, and the spring 24, for holding the upper roller in contact with the lower roller, substantially as herein shown and described.

408,939. OYSTER-OPENING IMPLEMENT. GEORGE W. TREDWELL, Sag Harbor, N. Y. Filed May 4, 1889. Serial No. 309,568. (No model.)



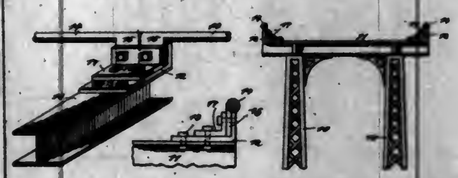
Claim.—1. An oyster-opening implement consisting of two pivoted levers forming a handle and two pincher-like jaws and a knife or blade held detachably to one of the jaws, substantially as herein set forth.

2. The combination, in an oyster-opening implement, of two pivoted levers forming a handle and two pincher-like jaws and a knife or blade held detachably to one jaw, which has projections or teeth next the blade, substantially as herein set forth.

3. The combination, in an oyster-opening implement, of two levers A B, pivoted together at D and providing a handle and two jaws *a b*, and a blade C, held detachably to the jaw *a*, which has teeth E E next the blade, substantially as herein set forth.

4. The combination, in an oyster-opening implement, of two levers A B, pivoted together at D and providing a handle and two jaws *a b*, and a blade C, held to the jaw *a*, said jaw *a* having teeth E E, and the jaw *b* having teeth *c c c*, substantially as herein set forth.

408,940. FISH-PLATE AND JOINT. JOHN H. VALLEY, Jersey City, N. J. Filed Jan. 26, 1889. Serial No. 297,518. (No model.)



Claim.—1. The combination, with two fish-plates, each provided with an essentially vertical and a horizontal member, the horizontal members of which plates are connected, of a rail provided with a downwardly-extending lug integral with the inner face held between the vertical members of the fish-plates, and a bolt or equivalent device passed through the said vertical members and through the said lug, substantially as shown and described.

2. The combination, with two fish-plates, each provided with an essentially vertical and a horizontal member, the horizontal member of one plate being secured to the corresponding member of the other plate, of a rail provided with a downwardly-extending lug integral with the inner face of a length equivalent to the height of the vertical member of the lower plate, and a bolt or other equivalent fastening device passed through the vertical members of the plates and through the said lug, substantially as shown and described, whereby the lug is clamped between the plates and given a bearing upon both

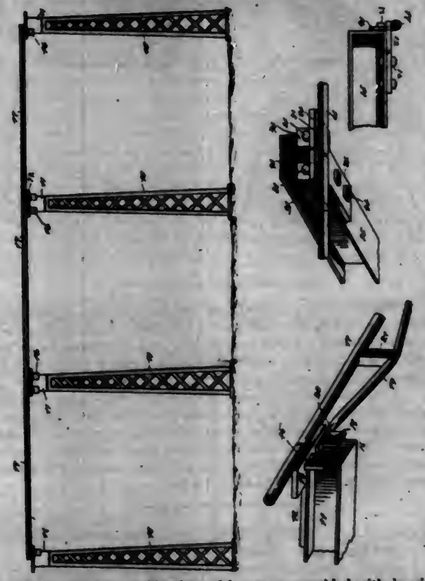
the vertical and horizontal members of the under plate, substantially as shown and described, as and for the purposes specified.

3. The combination, with two fish-plates, each provided with an essentially vertical and a horizontal member, the horizontal member of one plate being secured to the corresponding member of the other plate, of a rail provided with a downwardly-extending lug integral with the inner face of a length equivalent to the height of the vertical member of the lower plate, and a bolt or equivalent device passed through the vertical members of the plates and through the said lug, substantially as shown and described, whereby the lug is clamped between the plates and given a bearing upon both the vertical and horizontal members of the under plate, substantially as and for the purpose specified.

4. The combination, with a fish-plate having a horizontal and vertical member, of a rail having a downwardly-extending lug formed integrally with it and arranged eccentric to its axis, and means for securing the parts together as shown, whereby the body of the rail overhangs and rests upon the vertical member of the plate and its lug bears upon the horizontal member of said plate, as specified.

5. The combination, with two angle fish-plates secured one upon the other, of a rail provided with a downwardly-extending integral lug upon the inner face entered between the vertical members of the said plates, and a bolt passed through the said vertical members and through the said lug, substantially as shown and described.

408,941. ELEVATED RAILROAD. JOHN H. VALLEY, Jersey City, N. J. Filed Jan. 26, 1889. Serial No. 297,519. (No model.)



Claim.—1. The combination, with a plate provided with longitudinal spaced slots near one end, of a rail provided with an essentially perpendicular lug integral with the inner face thereof, which lug is passed downward through one of the slots in the plate, substantially as and for the purpose specified.

2. The combination, with a support and a plate extending beyond the support, provided with spaced longitudinal slots in the projecting end, of rail-sections provided at or near their extremities with an essentially perpendicular lug integral with the inner face, said lugs adapted to be passed downward through the slots in the said plates, substantially as shown and described.

3. The combination, with a support and a plate extending beyond the support, provided with spaced longitudinal slots in the projecting end attached to the said support, of rail-sections provided at or near their extremities with an essentially perpendicular lug integral with the inner face, said lugs adapted to be passed downward through the slots in the said plates, and means, substantially as shown and described, for securing the rail-lugs to the support below the plates, substantially as shown and described.

4. The combination, with a support and a T-plate rigidly secured to the same, provided with longitudinal spaced slots in the head-section, which head-section extends beyond the end of the support, of rail-sections provided with an essentially perpendicular lug integral with the inner face, passed through the said slots and secured to the ends of the supports, substantially as shown and described, whereby the front of the rail is made to rest upon the upper surface of the plate, and the front of the rail is also brought in vertical alignment with the outer end face of the plate, substantially as shown and described.

5. The combination, with a support, and a T-plate secured to the said support, having slots produced in the head-section, which head-section projects beyond the end of the support, of rail-sections provided with essentially perpendicular lugs integral with the inner face, passed downward through the slots in the plate, a truss of essentially even length with the rail-sections, having slotted ends to receive the rail-lugs below the T-plate, and bolts or other equivalent device for securing the rail-lugs to the end of the support below the truss extremity, substantially as shown and described, whereby the rail is strengthened at the center and the projecting end of the T-plate is supported, as set forth.

408,942. BRAKE FOR WHEELED VEHICLES. JOHN H. VALLEY, Jersey City, N. J. Filed Jan. 26, 1889. Serial No. 297,520. (No model.)

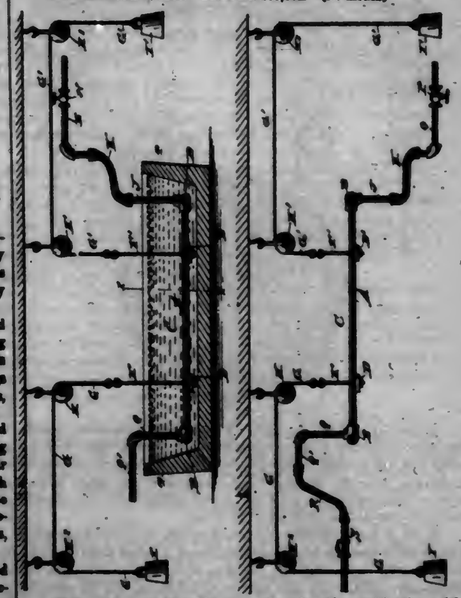


Claim.—1. The combination, with the carriage having a fixed abutment and a wheel arranged beneath the latter, of a conical brake-shoe which is arranged between them and slides lengthwise of said carriage, as shown and described.

2. The combination, with a carriage and peripherally-grooved wheels for supporting it upon a rail, and a brake-rod which extends lengthwise of the carriage and has a conical free end that works between the wheel and a fixed portion of the carriage, of a brake-lever pivoted to the carriage and connected with the brake-rod, as shown and described, to operate as specified.

3. The combination, with a carriage and its two wheels arranged in line beneath fixed portions of the same, of a brake-lever pivoted between the wheels, and two brake-rods attached to the lever and having conical free ends which rest and slide on said wheels lengthwise of the carriage, as shown and described, whereby the lever operates both rods simultaneously in opposite directions for simultaneously applying or letting off the brakes, as specified.

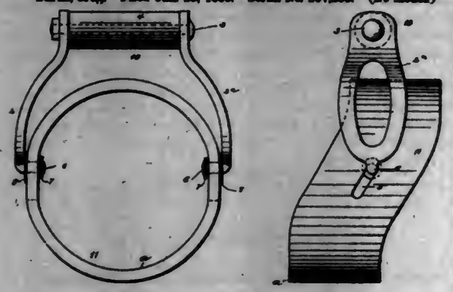
408,948. DEVICE FOR COOLING MILK. JOHN W. WAGNER, Darien, Wis. Filed Jan. 7, 1889. Serial No. 296,672. (No model.)



Claim.—In a combined heater and cooler, the combination, with the coil of pipe C, provided with the clip-plates D D, the pipes J Q,

secured to the ends of the coil, and the flexible pipe K, connected to the pipe J, of the pulleys H H' H² H³, arranged above the coil, the rods F F', connected to the clip-plates, the ropes G G', secured to the said rods and passing over the pulleys, and the weights I I' on the ends of the ropes, substantially as herein shown and described.

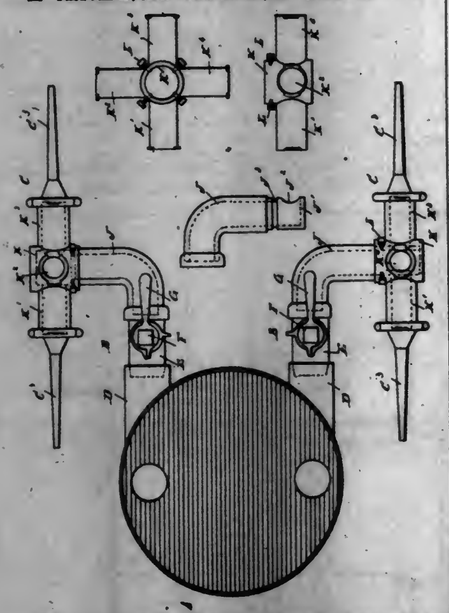
408,944. REVERSIBLE SAFETY-STIRRUP. JACOB G. WELCOME, Burns, Oreg. Filed Jan. 23, 1889. Serial No. 297,253. (No model.)



Claim.—1. The combination, with a yoke, of a ring or bow formed with diagonal slots in its opposite sides, said slots being adapted to receive the studs or projections carried by the yoke-arms and forming a stirrup, substantially as shown and described.

2. The combination, with a yoke 10, of a ring or bow 11, the body of which extends beyond the tread, the sides of the ring being provided with diagonal slots 5, adapted to receive the studs or projections 6, carried by the arms of the yoke, and forming a stirrup, substantially as shown and described.

408,945. SAUSAGE-STUFFER. FREDERICK W. WILDER, Chicago, Ill. Filed Jan. 28, 1889. Serial No. 297,818. (No model.)

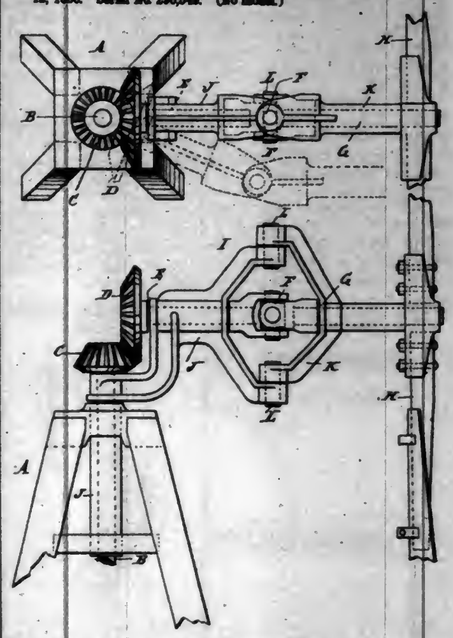


Claim.—1. An attachment for sausage-stuffing machines, consisting in a pipe having a lateral opening and an annular groove at its outer end, and a rotary nozzle-carrier formed of a central collar having screws projecting through it into said groove, and radial hollow arms or tubes registering with said lateral opening when the nozzle-carrier is rotated, substantially as set forth.

2. In a sausage-stuffer, the combination, with the outlet-pipe having a side opening, of a nozzle comprising a hollow cross mounted to turn on the said outlet-pipe, the arms of the said cross registering alternately with the said side opening, and a funnel held on each of the said cross-arms, substantially as shown and described.

3. A sausage-stuffing machine consisting in the cylinder A, provided with an outlet B, comprising a pipe D, secured to the bottom of the vessel, and a short pipe E, having a valve F, and the pipe J, connected with the outer end of the pipe F and provided at its outer end with a lateral opening and a rotary nozzle-carrier having a series of detachable nozzles C², substantially as set forth.

408,946. WINDMILL. ROLLIN WORMLEY, Newark, Ill. Filed Nov. 12, 1888. Serial No. 290,549. (No model.)



Claim.—1. In a windmill, the combination, with a wind-wheel frame mounted to turn and made in two parts hinged together, of a wind-wheel shaft mounted to turn in the said wind-wheel frame, and also made in two parts universally jointed together in line with the frame-joint, substantially as shown and described.

2. In a windmill, the combination, with a wind-wheel, of a wind-wheel shaft mounted to turn and made in two parts universally jointed together, a wind-wheel frame mounted to swing and made in two parts hinged together in line with the universal joint, and means, substantially as described, for transmitting the rotary motion of the wind-wheel shaft to the power-shaft, as set forth.

408,947. CORN-HARVESTER. JOHN ARMSTRONG, Vine Creek, Kans. Filed Mar. 9, 1889. Serial No. 302,633. (No model.)

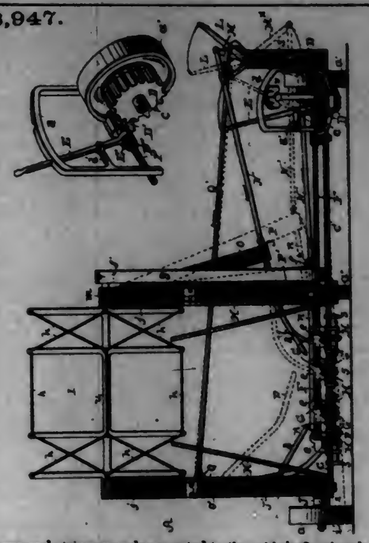
Claim.—1. A corn-harvester having the reel consisting of opposite middle bars and end bars, the middle bars having the connections between outer ends of the same extending at right angles therewith and parallel with the axis and the connections between the outer ends of the middle bars and the outer ends of the end bars crossing each other, substantially as specified.

2. The combination of the stalk-receiving arms with their head or cross-bar suspended by pivoted bars, the strippers connected to a pivoted bail, the additional stalk-receiving arms having their shaft supported upon the carrying-frame, and the hand-lever fixed to a shaft connected by rods and bell-cranks to said strippers and both of said series of stalk-receiving arms, substantially as specified.

3. In a corn-harvester, the combination of the horizontal receiving-arms secured to a head which is suspended by swinging bars, the carved strippers secured to a swinging bail, and the operating-lever provided with a shaft having oppositely-extending arms, which are respectively connected to the bail and the head of the receiving-arms, substantially as specified.

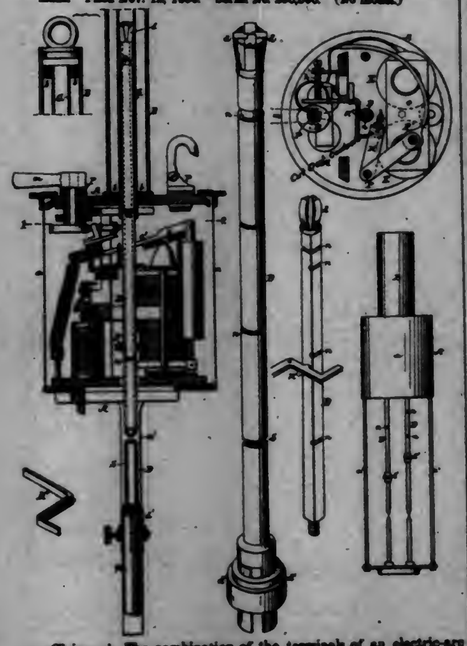
4. In a corn-harvester, the receiving-arms having a head P, which is carried by swinging bars, the strippers affixed to a swinging bail, and the shaft provided with lateral oppositely-extending arms, which are connected to the bail and the head P, whereby the said receiving-arms and strippers are simultaneously operated in opposite directions, in combination with additional receiving-arms suspended opposite to said arms and strippers and connected to the said shaft, whereby they swing in the same direction as the strippers, substantially as specified.

408,947.



5. In a corn-harvester, the combination, with the supporting-frame having front uprights *j j* and rear uprights *j' j'*, of the longitudinal shafts *o'* and *m*, journaled in said uprights on opposite sides and in rear of the cutters, a series of swinging receiving-arms suspended from the shaft *m* and connected to an operating-shaft, a series of receiving-arms *p*, suspended from the shaft *o'* and connected to said operating-shaft, whereby the opposite series of receiving-arms move simultaneously in opposite directions, and the swinging strippers suspended from the shaft *m* and connected to the said operating-shaft to move simultaneously in the same direction as the arms *p*, substantially as specified.

408,948. ELECTRIC-ARC LAMP. WILLIAM H. BARKER, Lawrence, Kans. Filed Nov. 12, 1888. Serial No. 290,590. (No model.)



Claim.—1. The combination of the terminals of an electric-arc lamp with a cut-out having contacts one in connection with one terminal and the other with the other terminal, and the positive-carbon-carrying rod having at intervals, corresponding with the lengths of time the carbon is to burn, means, substantially as described, for closing the cut-out.

2. The combination of the terminals of an electric-arc lamp with a cut-out having contacts one in connection with one terminal and the other with the other terminal, and the carbon-carrying rod having at intervals notches into which the movable part of the cut-out can enter to automatically cut out the lamp, substantially as set forth.

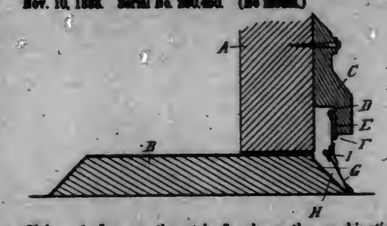
3. The combination of the terminals of an electric-arc lamp with a cut-out having contacts one in connection with one terminal and the other with the other terminal, and a carbon-carrying rod having at intervals on one side notches into which the movable part of the cut-out can enter to short-circuit the lamp, substantially as specified.

4. The positive-carbon-carrying rod of an arc-lamp having an insulating-cover.

5. The combination of the terminals of an electric arc lamp with a cut-out having contacts and a carbon-carrying rod having an insulating-cover with notches at intervals, into which the movable part of the cut-out can enter to short-circuit the lamp, substantially as specified.

6. The combination of the frame of an arc lamp having a conductor-tube with the movable carbon-carrying rod having a contact-brush at its upper end and having on its main body an insulating-cover.

408,949. WEATHER-STRIP. JOHN BOSSHARD, Lima, Ohio. Filed Nov. 10, 1888. Serial No. 290,450. (No model.)



Claim.—1. In a weather-strip for doors, the combination, with the door and door-sill, of two tilting slats, one carried by the door and normally inclined from its vertical position, and the other being located on the outer inclined face of the door-sill and provided with an arm projecting into the path of the tilting slat carried by the door, the tilting slats co-operating to form a lap-joint, substantially as and for the purpose described.

2. In a weather-strip for doors, the combination, with the door and door-sill, of the molding C, provided with the recess D, the tilting slat E, hinged to the lower edge of said molding and being normally inclined by the action of its gravity, the tilting slat G, hinged or pivotally secured at its lower edge and projecting upwardly upon the outer inclined face of the door-sill, and the arm I, projecting into the path of the tilting slat E, the parts being arranged to operate substantially as and for the purpose described.

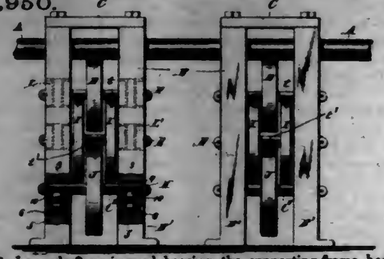
3. In a weather-strip for doors, the combination, with the door, of the molding C, provided with the recess D, the tilting slat E, hinged to the lower edge of said molding and projecting partly within said recess and partly below the molding and normally inclined by the action of its gravity, the door-sill B, provided with the recess H, the tilting slat G, adapted to fold within said recess, and the arm I on that tilting slat projecting within the path of the tilting slat E, substantially as and for the purpose described.

4. In a weather-strip, the combination, with the door and door-sill, of two tilting slats, one carried by the door, and the other being located upon the sill of the door and provided with an arm projecting into the path of the tilting slat carried by the door, said tilting slats being normally inclined from the vertical position and adapted to be inclined to a substantially vertical position and form a lap-joint, substantially as and for the purpose described.

408,950. ANTI-FRICTION BEARING. WILLIAM C. BURTON and ELBERT M. GUERNSEY, Kansas City, Mo. Assignors of one-tenth to Frank Ridgeway, of same place. Filed May 14, 1888. Serial No. 310,714. (No model.)

Claim.—1. The anti-friction bearing comprising the side pieces having the rectangular recesses, the boxes in said recesses having the vertical grooves at their ends and carrying the anti-friction rolls, the shafts *d d'*, supported on said anti-friction rolls and having the anti-friction wheels D I J, respectively, the guides or plates *e* in the vertical grooves at one end of the boxes and fitting in one end of the recesses, and the set-screws in the side pieces and having their inner ends bearing in the grooves of the boxes at the ends opposite the said plates *e*, substantially as described.

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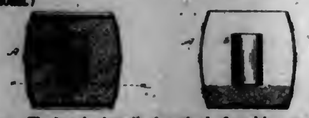


2. In a shaft or journal bearing, the supporting-frame having boxes containing anti-frictional rolls and which boxes are held between a guide fitting in a groove at one end and by a set-screw bearing in a groove at the opposite end of the box, substantially as specified.

3. The improved shaft or journal bearing consisting of a frame having boxes containing anti-frictional rolls and anti-frictional wheels, said boxes also having anti-frictional rolls resting against the ends of the shafts of said wheels, substantially as specified.

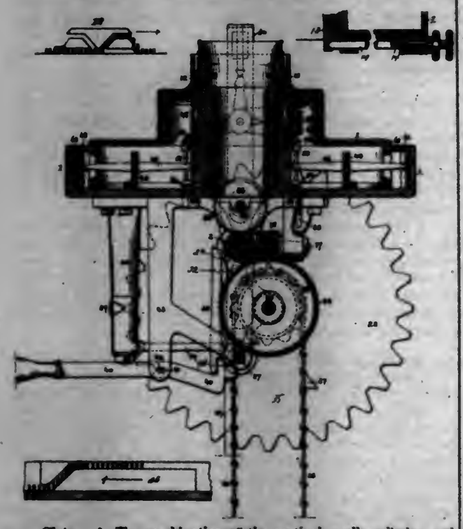
4. In a shaft or journal bearing, the supporting-frame having a series of anti-frictional wheels, and slots or passages for the main shaft, and a series of journal-boxes supporting the shafts of said wheels, the shaft of the uppermost wheel resting upon the peripheries of the wheels next below, but at a point in rear of the shaft of the latter wheels, substantially as specified.

408,951. PROCESS OF PACKING ROOFING COMPOSITION. CORNELIUS S. BUSHNELL, New Haven, Conn., assignor to the Everlasting Roofing Company, same place. Filed Nov. 5, 1888. Serial No. 289,951. (No model.)



Claim.—The herein-described method of packing composition for roofing and other purposes for shipment, which consists in placing the base material in the shipping-case, introducing therein a tubular jacket to form a chamber surrounded by said base material, then pouring the ingredients with which the base is to be mixed into said chamber while heated and in a semi-liquid condition, then, before the ingredients have completely set, removing the jacket, leaving the said ingredients in the chamber, the walls of which are the base material with which the ingredients are to be mixed, substantially as described.

408,952. CIRCULAR-KNITTING MACHINE. WALTER D. BUTZ, Norristown, Pa. Filed Oct. 15, 1888. Serial No. 288,115. (No model.)



Claim.—1. The combination of the vertical needle-cylinder and its needles, the cam-cylinder and its cams for operating the needles radiating levers acting upon the needles to lower and raise them in the vertical grooves of the needle-cylinder into and out of operative position, segmental cams for operating the radiating levers, and means for intermittently moving said cams and operating the cam-cylinder, substantially as specified.

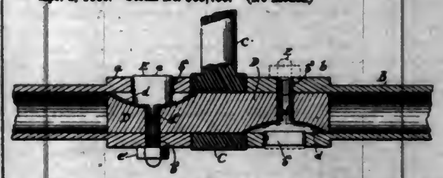
2. The combination of the needle-cylinder and its needles, the cam-cylinder and its cams for actuating the needles, means for operating said cam-cylinder, radiating levers for acting upon the needles to throw them into and out of operative position, segmental cams for acting on said levers, a vibrating lever having duplex pawls, and racks carried by the lever-operating cams and acted on by said pawls, said racks having high teeth for effecting the automatic shifting of the pawls, substantially as specified.

3. The combination of the needle-cylinder and its needles, the cam-cylinder having cams for acting on said needles, means for operating said cam-cylinder, radiating levers acting on the needles to throw them into and out of operative position, segmental cams for operating said levers, pawl-and-rack mechanism for operating said cams, and a rotating disk having cams for acting on the pawls to throw them into operative and inoperative position, all substantially specified.

4. The combination of the needle-cylinder and its needles, the cam-cylinder having cams for acting on said needles, means for operating said cam-cylinder, a supplementary cam-cylinder acting on a portion of the needles, a bolt for locking the main cam-cylinder and the supplementary cam-cylinder together, a cam for holding said bolt in the locking position, lifters for acting on the bolt to move it into the locking position, cams for operating said lifters, and means for actuating said cams, substantially as specified.

5. The combination of the driving-shaft of the machine having outer fast pulleys and intermediate loose pulleys, the duplex belt-shifter, a lever for operating said belt-shifter, a notched disk for acting on said lever, and means for intermittently moving said disk, all substantially as specified.

408,953. SHAFT-COUPLING. JOHN CHIVILL, Chicago, Ill., assignor to the Webster & Comstock Manufacturing Company, same place. Filed Apr. 2, 1889. Serial No. 305,733. (No model.)

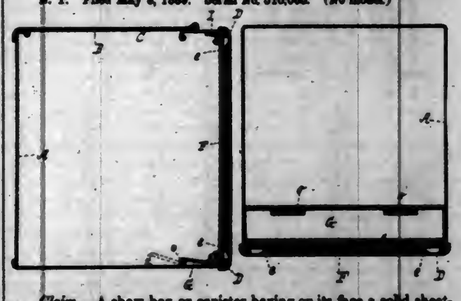


Claim.—1. In a shaft-coupling, the combination, with hollow shafts having longitudinal slots and bores, respectively, in their meeting ends, of an intervening hanger arranged between said ends, a coupling-shaft having longitudinal slots and bores to conform to the respective positions of the slots and bores in said hollow shafts, and bolts having flat heads adapted to fit within said slots and bores, substantially as shown and described.

2. The combination of a hanger, bored and slotted shafts A B, bored and slotted coupling-shaft D, and bolts E E, having elongated flattened heads, substantially as shown and described.

3. In a shaft-coupling, the combination of a hanger, hollow shafts provided with slots b^3 and bores b^4, a coupling-shaft having slots d d and bores d' d', and bolts E E, having flattened heads adapted to fit within said slots, substantially as shown and described.

408,954. BOX OR CANISTER. STEPHEN R. CORNELL, Brooklyn, N. Y. Filed May 8, 1889. Serial No. 310,063. (No model.)



Claim.—A show box or canister having on its face a solid sheet-metal frame with inwardly-inclined inner edges, each left free to preserve its elasticity, combined with a glass face-plate bearing against said inclined edges of the face-frame, and with elastic back-stops on the inside of the top and bottom of the box bearing against said glass plate to fasten the same, each of said stops extending the width of the box, and one being hinged to swing toward and from the glass plate, substantially as and for the purpose described.

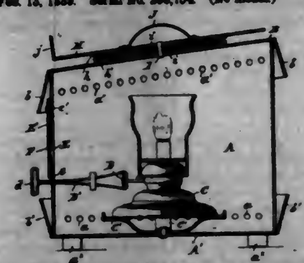
408,955. CLOCK-PENDULUM. WALTER D. DAVIES, Brooklyn, N. Y. Filed Mar. 27, 1889. Serial No. 304,963. (Model.)



Claim.—1. The combination, with a pendulum, of a rotating figure or body having its axis of rotation horizontal and at right angles to the balance of oscillation of the pendulum, substantially as herein described.

2. The combination, with a pendulum, of a rotary spindle or arbor supported in the pendulum, with its axis at right angles to the balance of oscillation of the pendulum, a figure or body mounted on said spindle or arbor, a ratchet-wheel fast on said spindle or arbor, and a pawl pivoted to the pendulum and engaging with said ratchet-wheel, substantially as and for the purpose herein set forth.

408,956. FOOT-WARMER. HELSEY H. DAWSON, Oak Hill, Kans. Filed Feb. 13, 1889. Serial No. 299,754. (No model.)



Claim.—1. In a foot-warmer, the combination, with an inclosing-box, of a lamp provided with a regulator, and a removable spring-clip engaging with said regulator and projecting through an aperture in the side of the box, substantially as and for the purpose set forth.

2. In a foot-warmer, the combination, with an inclosing-box, of a lamp provided with a regulator, a removable clip secured to said regulator, a hand-hole in the side of the box, having a notch in its edge for the clip to project through, and a cover for the said hand-hole, pivoted to the box and provided with a window, substantially as and for the purpose set forth.

3. In a foot-warmer, the combination, with an inclosing-box, of a lamp, a removable cover for the box above the lamp, a series of plates secured to the cover, and washers interposed between said plates and forming air-spaces between them, substantially as and for the purpose set forth.

408,957. APPARATUS FOR CONVEYING COAL AND DISCHARGING THE SAME IN PILES. JAMES M. DODGE, Philadelphia, Pa., assignor to the Dodge Coal Storage Company, Naugatuck, Conn. Filed Oct. 20, 1887. Serial No. 252,847. (No model.)

Claim.—1. An apparatus for piling up or building storage-heaps of coal and other analogous materials, composed of the following-named instrumentalities, viz: first, an endless chain provided with flights *c* and arranged obliquely to the surface on which the pile is to be built; second, the chain-wheels over which said chain is headed and by means of one of which it is driven; third, some suitable means for supporting the lower one of said chain-wheels in close proximity to the point at which the material to be built up into a storage-heap is to be supplied and for supporting the other one at a much higher elevation, and, fourth, means for imparting power to one of the said chain-wheels, these several instrumentalities being arranged and operating together as specified, so that the coal or other material continuously supplied to the ground-surface at the vicinity of the lowermost portion of the obliquely-arranged flighted chain will be

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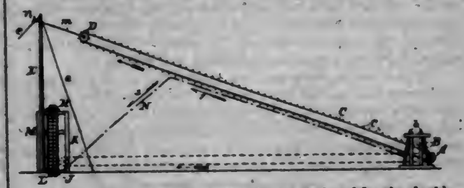


carried along by the flights of said chain and accumulated or built up into a pyramidal heap, substantially as hereinbefore set forth.

2. In combination with the suspended endless-chain conveyer, an aerial or suspended idler or idlers for supporting the upper run of the chain, and suitable cables, with which the ends of the shaft or shafts of such idler or idlers are connected and by which they are properly supported at a suitable elevation, all substantially in the manner and for the purpose hereinbefore set forth.

3. In an apparatus for amassing or piling up coal, composed, essentially, of an endless flighted chain mounted on suitable wheels, with one end of its double run in close proximity to the ground at the point or source of supply of the material and its other end supported at a much higher elevation, and suitable means for maintaining the uppermost end of said flighted chain in its designed position, the combination, with said obliquely-arranged flighted chain, of a drive-wheel which is located at the uppermost end thereof, a supporting pole or frame E, on which is supported the shaft of said drive-wheel, and a drive belt or chain which extends from the wheel on said shaft obliquely downward in an opposite direction to that in which runs from said wheel the flighted chain, and which has its lowermost portion connected with the drive-wheel of a suitable engine, all in such manner, as described, that the draft-strain of the said drive-belt directly counteracts the draft-strain of the coal-piling flighted chain.

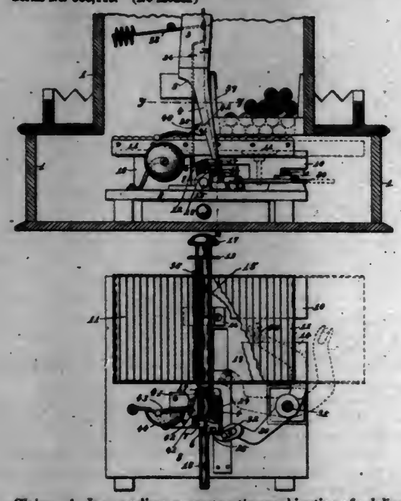
408,958. CHAIN CONVEYER FOR FORMING AND REMOVING PILES OF COAL. JAMES M. DODGE, Philadelphia, Pa., assignor to the Dodge Coal Storage Company, Naugatuck, Conn. Filed Dec. 26, 1887. Serial No. 258,854. (No model.)



Claim.—In an apparatus or contrivance designed for the double purpose of forming or making and also removing a storage-pile of coal or other like material, the combination, with the obliquely-arranged endless chain or cable provided with flights *c*, driven in only one direction of travel and vertically adjustable at its highermost portion only, the chain-wheels over which said chain is headed and by means of one of which it is driven, some suitable means for supporting the lower one of said chain-wheels in proximity to a point to which the material to be built up into a storage-heap is to be supplied and for supporting the other one at a much higher elevation, and means for imparting power to one of said chain-wheels, of a

transversely-arranged ordinary trough conveyer located in a plane about coincident with that in which may lie the base of the pile of material to be removed, and in such relationship to the perimeter of the base of the pile and to the said obliquely-arranged, adjustable, and flighted chain or cable as to receive and carry off the material of the accumulated pile as fast as fed to it by the action of the said obliquely-arranged flighted chain or cable, the said combination being and operating in substantially the manner hereinbefore set forth.

408,959. **VENDING APPARATUS.** WILLIAM C. DOUBLEDAY, Lima, Ohio, assignor to Bertha C. Doubleday, same place. Filed Feb. 16, 1889. Serial No. 300,119. (No model.)



Claim.—1. In a vending apparatus, the combination of a delivery-slide, a carrier, and a lever arranged out of the path of and connected with said carrier, and the slide for moving the carrier at right angles to and simultaneously with the movement of the slide, substantially as described.

2. In a vending apparatus, the combination of a delivery-slide, a carrier, and a lever fulcrumed at an intermediate point of its length and arranged out of the path of the slide and carrier, said lever being connected at its ends to the slide and carrier, substantially as described.

3. In a vending apparatus, the combination of a delivery-slide, a carrier, and a lever arranged laterally of the slide and carrier and connected at its extremities by a pin-and-slot connection with the slide and carrier, substantially as and for the purpose described.

4. In a vending apparatus, the combination of a carrier-rod having a delivery-slide fixed thereto, a coin-holder rigid with said rod and projecting laterally thereof, a fixed guide in which said carrier-rod operates, and a coin-tube fixed to the guide, substantially as described, for the purpose set forth.

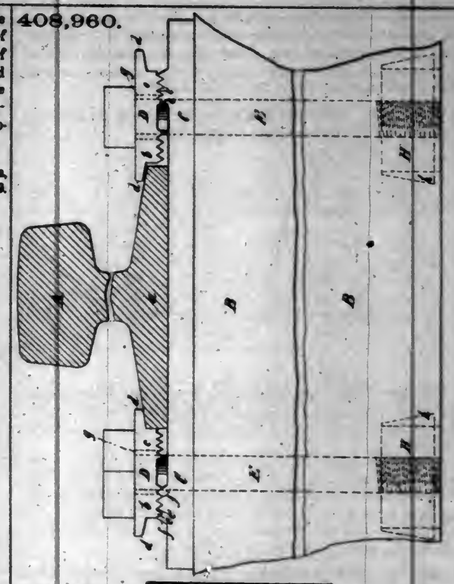
5. In a vending apparatus, the combination of the fixed guides, a vertical coin-tube fixed to one of the guides, an endwise-movable carrier-rod working in said guides and carrying a delivery-slide, a coin-holder rigid with said rod and projecting laterally thereof to clear the rear guide and align with the coin-tube, and a coinway arranged above said coin-tube, substantially as described.

6. In a vending apparatus, the combination of the fixed guide, a coin-tube fixed to said head, a carrier-rod carrying the delivery-slide and working in the guide, a coin-holder rigid with the carrier-rod and projecting laterally thereof and having the raised shoulder, and a detent pivoted to the head of the guide and adapted to engage with the shoulder of the coin-holder, substantially as described.

408,960. **RAILWAY-TIE PLATE.** PLEMMON H. DUDLEY, New York, N. Y. Filed Apr. 4, 1889. Serial No. 305,992. (No model.)

Claim.—The combination, with a railway-rail, of a tie, a tie-plate provided upon its upper side near its ends with projections and intermediate grooves or recesses, and reversible securing devices provided upon their under sides and near opposite ends with projections and intermediate grooves or recesses adapted to engage the projections and grooves or recesses upon the tie-plate, the projections upon one of the sides of the securing devices being arranged farther inward from the edges of the securing devices than those upon the other side, substantially as specified.

408,960.



408,961. **CARRIAGE-POLE CRAB.** JAMES G. ENGLISH, New Haven, Conn. Filed June 17, 1889. Serial No. 314,614. (No model.)



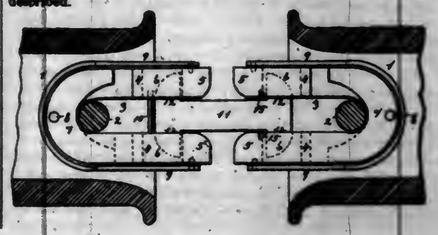
Claim.—1. A carriage-pole crab consisting of the socket A and arms B B, projecting therefrom, the said socket adapted to set onto and oscillated upon the end of the pole, the inner surface of the socket and the surface of the pole upon which the socket oscillates, the one constructed with an annular groove *a*, having a longitudinal opening *b* into it, and the other provided with a stud *d*, corresponding to said groove and adapted to enter said groove through the said opening, the said opening and stud being at substantially opposite points when the crab is on the pole, substantially as specified.

2. The combination of the socket A, having laterally-projecting arms B B, with the metal tip D, adapted to be attached to the end of a carriage-pole, the exterior surface of said tip of a shape corresponding to the inner surface of the socket, and upon which tip the socket with its arms may oscillate, the socket and tip being the one constructed with an annular groove *a*, having a longitudinal opening *b* into it, and the other with a corresponding stud *d*, substantially as and for the purpose described.

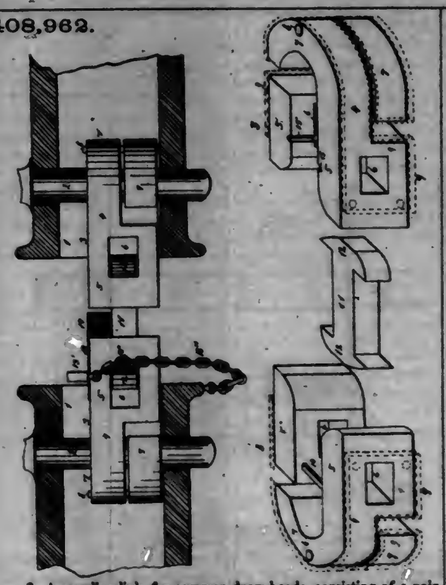
408,962. **CAR-COUPLING LINK.** CHARLES W. FISHBURN, Janesville, Wis. Filed June 6, 1888. Serial No. 312,688. (No model.)

Claim.—1. An automatically-coupling link for common draw-heads, consisting of two pairs of spring-actuated jaws, and a coupling-bar adapted to have its shouldered ends engaged by said jaws, substantially as described.

2. In combination with two common draw-heads and coupling-pins, a link composed of two pairs of spring-actuated jaws, a coupling-bar having its shouldered ends engaged by said jaws, one of said pairs of jaws having a transverse pin near their outer ends, substantially as described.



408,962.



3. A coupling-link for common draw-heads, consisting of a pair of spring-actuated jaws having a transverse pin near their outer ends, a pair of opposite spring-actuated jaws, and a coupling-bar having its shouldered ends engaged by said jaws, substantially as described.

4. An automatically-coupling link for common draw-heads, consisting of two pairs of jaws having recesses in their inner sides of their outer portions and hooked inner ends pivoted together, springs secured to the sides of said jaws, and a coupling-bar having its shouldered ends engaged by the recesses of said jaws, substantially as described.

5. An automatically-coupling link for common draw-heads, consisting of a pair of jaws 4, having broad side portions 5, formed with holes or recesses 6, and hook-shaped rear ends curved in opposite directions and pivoted together by a pin 8, a similar pair of jaws having a transverse pin 10 secured to the inner side of one jaw, springs 9 secured to the broad side portions of said pairs of jaws and bearing against their hooked ends, and a coupling-bar having shouldered cross-heads at its ends for engaging the recesses of said jaws, substantially as described.

6. In combination with two common draw-heads and coupling-pins, and a link secured in said draw-heads by said pins and composed of two pairs of spring-actuated jaws having recesses in their inner sides and having notches in the inner sides of one pair of jaws and of a bar having two cross-heads engaging the recesses of said jaws, a piece or bar 13, having a cross-head 14 at one end, formed with a curved forward edge and adapted to bear with its inner end in one pair of jaws and to enter between and spread apart the opposite pair of jaws and to engage the notches of said jaws with the ends of its cross-head, substantially as described.

7. In combination with two common draw-heads and coupling-pins, and a link secured in said draw-heads by said pins and composed of two pairs of spring-actuated jaws having recesses in their inner sides and having notches in the inner sides of one pair of jaws, and of a bar having two cross-heads engaging the recesses of said jaws, a piece or bar 13, having a cross-head 14 at one end and formed with a curved forward edge, and a cross-bar 15' at the other end, and a chain attached to said piece or bar and to the car, said piece or bar being adapted to rest between one pair of jaws to bear against the draw-head with its cross-bar, to enter between and spread apart the opposite pair of jaws and to engage the notches of said jaws, substantially as described.

408,963. **LIGHT FOR STOVE-DOORS.** JOHN T. FLEMERSHEIT, Baltimore, Md., assignor of one-half to Samuel B. Sexton, Jr., same place. Filed Feb. 16, 1889. Serial No. 300,144. (No model.)

Claim.—1. As a new article, a sheet of mica having affixed to its outside surface a colored glass jewel, substantially as and for the purpose specified.

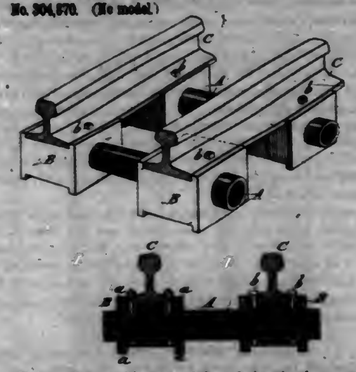


408,963.



2. In combination with a sheet of mica, a glass jewel placed against its outer side and a ring which surrounds the said jewel, having prongs which pass through slits in the said sheet and are turned radially inward, substantially as and for the purpose specified.

408,964. **METALLIC RAILWAY-TIE.** WALTER T. FORBES, Atlanta, and ROBERT C. KIER, Augusta, Ga. Filed Mar. 30, 1889. Serial No. 304,870. (No model.)



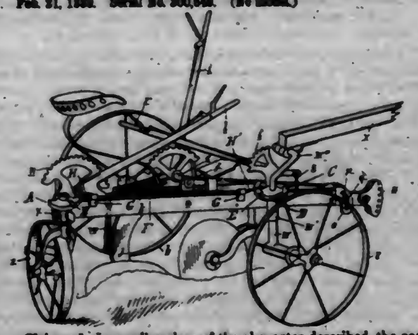
Claim.—The combination of the tubular tie, the reversible chair, the rails supported by said chair, and the bolts passing through the rail-base and chair into the tie for the purpose of securing the several parts together, substantially as and for the purpose set forth.

408,965. **FERRULE FOR UMBRELLAS AND CANES.** JOHN A. FREEMAN, Newark, N. J., assignor to the Celluloid Novelty Company, of New York. Filed Apr. 25, 1889. Serial No. 308,506. (No model.)



Claim.—As a new article of manufacture, a tip or ferrule composed of a cap of celluloid or similar pyroxyline material with a metal slug embedded therein, as and for the purposes set forth.

408,966. **SULKY-PLOW.** AUGUSTUS I. GALE, Albion, Mich. Filed Feb. 21, 1889. Serial No. 300,849. (No model.)



Claim.—1. In a sulky-plow of the character described, the combination, with the plow-frame and the plow-beam supported thereon, of the front and rear guides provided therefor on the plow-frame, and in which the front and rear ends of said plow-beam are vertically and independently adjustable, and the vertical slots in the front guide into which lateral projections of the plow-beam engage, substantially as described.

2. In a sulky-plow of the character described, the combination,

with the plow-frame and the plow-beam supported thereon, of the front and rear guides provided therefor on the plow-frame, and in which the front and rear ends of said plow-beam are vertically and independently adjustable, the vertical slots in said front guide in which a transverse pin or equivalent lateral offset on the plow-beam engages, and a draft attachment applied to the front end of said plow-beam, substantially as described.

3. In a sulky-plow of the character described, the combination of the parts *a*, *b*, and *c* of the plow-frame, the vertically-adjustable plow-beam *j*, the rear guide *k* of the plow-beam, the front guide *o* of the plow-beam, provided with the slots *p*, the transverse pin *q* of the plow-beam engaging therein, and the adjusting devices applied to the front and rear ends of the plow-beam, substantially as described.

4. In a sulky-plow of the character described, the combination, with the front guide-wheel controlled by the pole, of a rear supporting caster-wheel with the locking device controlled by the front guide-wheel and consisting of the notched disks mounted on the vertical shafts or pintles of said wheels and the rock-shaft extending between and provided with the rock-arms resting loosely upon and adapted to engage with the notches of said disks, substantially as described.

5. In a sulky-plow of the character described, the combination, with the front guide-wheel *v*, controlled by the guide-pole, of the caster-wheel *z*, the disks A and C, secured to the vertical shafts or pintles on which the said wheels are adapted to turn, the notches B and D, formed, respectively, in said disks, the inclines E on the notch D, and the rock-shaft F, provided with the rock-arms H and H', resting loosely upon and adapted to engage into these notches, substantially as and for the purpose described.

6. In a sulky-plow, the combination, with the front guide-wheel controlled by the guide-pole, the caster-wheel, and the disks C and A on the shafts or pintles of said wheels, and formed upon their upper faces with notches, as shown, of the rock-shaft F, journaled in bearings G and having its ends bent to form the rock-arms H H', which rest loosely upon the tops of said disks and adapted to engage the notches therein, substantially as shown and described.

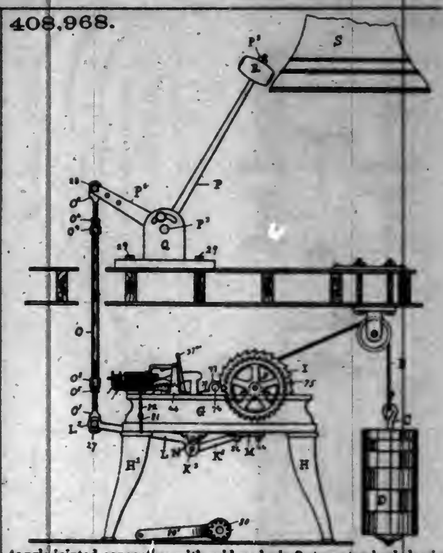
408,967. TABLE-LEAF SUPPORT. JOEL G. GARRETSON, Buffalo, N. Y. Filed Oct. 26, 1886. Serial No. 217,276. (No model.)



Claim.—In a table-leaf support, the combination, with the arm *f*, provided with branches *g g*, and a locking-bolt H, attached to the arm *f*, of the arm *f''*, pivoted to the branches *g g* and provided with an extension I, having a curved lower edge i^2, whereby the locking-bolt is moved out of the way of the lower arm *f''* in unfolding the arms, substantially as set forth.

408,968. ELECTRO-MECHANICAL BELL-STRIKING MACHINE. THOMAS F. GAYNOR, Louisville, Ky., assignor to the Gaynor Electric Company, same place. Filed June 6, 1889. Serial No. 313,398. (No model.)

Claim.—1. In an electro-mechanical bell-striking machine, the combination of a main shaft having a winding-drum provided with a ratchet-wheel, a pallet-wheel provided with pivots carrying pawls adapted to engage with the teeth of said ratchet-wheel, and springs to keep said pawls engaged with said ratchet-wheel teeth, two pallets pivoted at one end to a main lever, the free ends of said pallets being adapted to engage with the teeth of said pallet-wheel and being provided with spurs, a pallet-rest adapted to support said spurs and guide said pallets against the teeth of said pallet-wheel, a main-lever shaft provided with bearings, a quadrant-shaped main lever pivoted upon said main-lever shaft and being provided with a pivot-hole at its free end, and having two stop projections and a rock-shaft restoring-stud, two pawls adapted to engage with said main-lever stop projections, a tripping-lever adapted to trip said pawls, being provided with a restoring tail-piece and a spring-stud, a tripping-lever mainspring, a mainspring-lever provided with a mainspring-stud and pivoted at one end and provided with a link-arm, a bracket having bearings in which said mainspring-lever is pivoted, links connecting said tripping-lever to the arm of said spring-lever, a trigger-lever pivoted upon a stud in said spring-lever bracket and having a notch adapted to engage with the end of said tripping-lever, a trigger-lever spring connected with said trigger-lever and a stud in said spring-lever bracket, a rock-shaft provided with two journals and having thereon a cam, a restoring-lever, an escapement-lever provided with an escapement-pin at its free end and a limiting-lever, an adjustable tension-spring having a



toggle-jointed connection with said rock-shaft, two standards having bearings for the journals of said rock-shaft, an electro-magnet provided with screws for adjustment and support, an armature-carrier having escapement-pallets and an armature, a winding-gear fitted upon the main shaft of the machine, a winding-pinion provided with a crank-handle, and a pinion-stud which is secured to the bed of the machine, so as to support said pinion in gear with said winding-gear, all of which are mounted upon a suitable bed provided with legs, substantially as described.

2. In an electro-mechanical bell-striking machine provided with a winding-drum shaft, a winding-drum, a pallet-wheel, a main lever, and pallets pivoted thereto and adapted to engage with the teeth of said pallet-wheel, the combination of a quadrant-shaped extension to said main lever having stop projections thereon, two pawls adapted to engage with said stop projections, a pivoted tripping-lever provided with a mainspring, a pivot-shaft upon which said pawls and tripping-lever are pivoted, and a trigger-lever adapted to engage with the end of said tripping-lever and provided with a spring, substantially as described.

3. In an electro-mechanical bell-striking machine provided with a winding-drum shaft, a winding-drum, a pallet-wheel, a main lever, and pallets pivoted thereto and adapted to engage in said pallet-wheel, the combination of an arc-shaped extension to said main lever carrying a restoring-lever stud, a restoring-lever pivoted upon said stud and being provided with a restoring-pin at its free end, a guide-lever pivoted at one end and carrying said restoring-pin, a tripping-lever pivoted at one end and provided with a restoring tail-piece, a shaft upon which said guide-lever and tripping-lever are pivoted, and a pivoted trigger-lever provided with a notch adapted to engage with the end of said tripping-lever and having a spring, substantially as specified.

4. In an electro-mechanical bell-striking machine provided with a winding-drum shaft, a winding-drum, a pallet-wheel, a main lever, and pallets pivoted thereto and adapted to engage in said pallet-wheel, the combination therewith of a quadrant-shaped main-lever extension having stop projections thereon and a rock-shaft restoring-pin, two pivoted pawls adapted to engage with said stop projections, a pivoted tripping-lever provided with a mainspring-pin and a mainspring, a pivoted trigger-lever having a notch adapted to engage with the end of said tripping-lever and being provided with a spring, a rock-shaft provided with a cam adapted to release said trigger-lever from its engagement with said tripping-lever, and being provided with an escapement-lever carrying an escapement-pin adapted to engage with the escapement-pallets on the free end of an armature-carrier of an electro-magnet, and being provided with a toggle-jointed connection to an adjustable tension-spring, and being provided with a limiting-lever adapted to limit its rotation, and being provided with a restoring-lever, which, by coming in contact with a restoring-lever stud in said quadrant-extension of said main lever, restores the rock-shaft mechanism to its normal position, substantially as specified.

5. In an electro-mechanical bell-striking machine having a rock-shaft provided with a cam adapted to release the trigger mechanism of said machine, the combination, with said rock-shaft, of an adjustable tension-spring having a toggle-jointed connection therewith, substantially as specified.

6. In an electro-mechanical bell-striking machine having a main lever provided with stop mechanism adapted to be tripped by means of a pivoted tripping-lever, the combination, with said tripping-lever, of a spiral spring connected with the free end of said tripping-lever by means of a spring-pin, and a mainspring-lever, which is also connected to said mainspring by means of a pin, said spring being pivoted at one end and having an arm projecting from its pivot-shaft, which is linked by means of links and pins to the tripping-lever, substantially as described.

7. In an electro-mechanical bell-striking machine provided with a main-lever stop mechanism, a quadrant-shaped main lever provided with stop projections by which it is adapted to be locked in its normal position by said stop mechanism, substantially as specified.

8. In an electro-mechanical bell-striking machine having a main lever provided with stop mechanism, and having a tripping-lever adapted to release said main lever, and having a main spring-lever connected with said tripping-lever, the combination of said main-spring-lever with a lug having a hole therein, and a pin adapted to fit in said hole for the purpose of preventing the premature operation of the machine by an unexpected signal sent through the electro-magnet while the machine is being wound up, substantially as specified.

408,969. ROAD-CART. EPHAM H. GIBB, Indianapolis, Ind. Filed Jan. 18, 1889. Serial No. 296,751. (No model.)

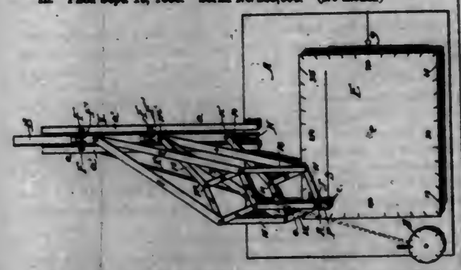


Claim.—1. A foldable foot-rest for road-carts, its sides composed of flexible bands or straps, slats secured across and fastened to the same, the forward end of these straps secured near or to the cross-bar, the rear end adjustably fastened beneath the driver's seat, with means for securing the same at any desired height, substantially shown and described.

2. An adjustable and flexible foot-rest for road-carts, comprising the side straps 1 1, central strap 2, connected by cross-slats, the front ends of the side straps connected to the cross-bar, and the forward end of the central strap connected to the foot-rest, the rear ends of all these straps connected beneath the seat within easy reach of the driver's hands, with means for adjusting and securing such straps at any desired height, substantially as shown and described.

3. In combination with a road-cart, the flexible and foldable foot-rest for the driver, composed of two or more flexible straps, their forward ends adjustably connected at or near the shaft cross-bar, their opposite ends connected at the sides or beneath the driver's seat, a series of slats riveted to such strap and forming a rest for the feet, the whole adapted to be drawn up beneath the seat, out of the way of the driver's feet, substantially as shown and described.

408,970. DRAFTING-BOARD. EPHRAIM A. HALDEMAN, Chicago, Ill. Filed Sept. 16, 1888. Serial No. 285,096. (No model.)



Claim.—1. A drafting-board E, either circular or square, divided on its outer edge by the degrees of the circle and pivoted at its center to and in combination with a frame or table A, having an arm *a* extending from one side, to which is fitted a carriage B, to which is attached by means of anti-friction pivots the carrier *c*, and connected by rack I, pinion J, geared wheels K K, and shaft K' to dial-plate D, substantially as and for the purpose specified.

2. The combination of a frame or table A, extension *a*, carriage B, anti-friction pen and pencil carrier *c*, dial D, connected by shaft and beveled gearing to pinion J, acting on rack I, attached to lower part of carriage B, substantially as and for the purpose specified.

3. The combination of pen and pencil carrier *c*, composed of the arms 1 2 3 4, carrying, respectively, the parallelograms of links 5 6 7 8 and 9 10 11 12, connected at their converging points by radial links 13 14, auxiliary links 15 16, and carrying-beam *c*, all pivoted and supported by carriage B, and in combination with board E, substantially as and for the purpose specified.

4. The combination, in a drafting-machine, of the carrier *c*, holding a pen or pencil and moving same to and fro over a drawing-board divided on its outer edges with the degrees of the circle, pivoted at its center and in connection with an indicator *g*, substantially as and for the purpose specified.

5. In a drafting-machine, a revolving dial D, divided on its outer edge into the numerical parts of 12, representing feet and inches, or into any multiple of 100, to represent the metric system of measurement, connected by shaft and gearing to rack-and-pinion motion on carriage B, substantially as and for the purpose specified.

408,971. AIR-GUN. CLARENCE J. HAMILTON, Plymouth, Mich., assignor of one-half to Roswell L. Root, same place. Filed Feb. 26, 1889. Serial No. 301,208. (No model.)



Claim.—1. The combination, with the actuating-spring and mechanism of a spring air-gun, of a tension-lever pivotally secured on top of the gunstock and extending over the top of the false barrel and forming a cap over the rear end and top of the barrel, substantially as described.

2. The combination, with the actuating-spring and mechanism of a spring air-gun, of a tension-lever pivotally secured on top of the gunstock and forming a cap over the rear end and top of the barrel, the ears V, formed in said lever, and the spring-wire link Q, detachably engaging in the said ears, substantially as described.

3. The combination, with the actuating-spring and mechanism of a spring air-gun, of a tension-lever pivotally secured on top of the gunstock and forming a cap over the rear end and top of the barrel, and the turned-up notched extremity of said lever to form a hind sight, substantially as described.

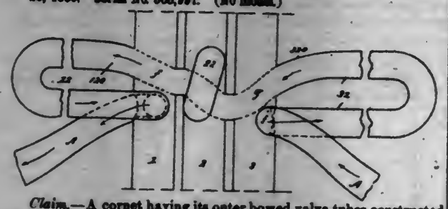
4. In a spring air-gun, the combination of the stock A, provided with the trigger-housing B, provided with the bed-plate B, the false barrel E, secured thereto and containing the spring-actuating mechanism of the gun, the breech-block F, secured in said barrel and eccentrically apertured, the true barrel secured in that aperture, and the tension-lever R, pivotally secured to the gunstock and forming a cap over the rear end and top of the false barrel, substantially as described.

5. The combination, with the spring-actuating mechanism of a spring air-gun, of the abutment M, through which the tension-rod of said mechanism works, provided with the heel O and the rearwardly-extending slotted shank N, through which the tension-rod of said mechanism passes, and the fixed abutment P' of the gunstock, substantially as described.

6. The combination, with the spring-actuating mechanism of a spring air-gun, of the trigger W, pivotally secured in the housing of the trigger, and the detent X, engaging the tension-rod and engaging at one end in a socket formed in the trigger and at the other end in the housing of the trigger, substantially as described.

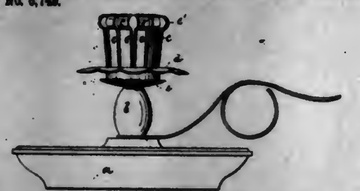
7. The combination, in a spring air-gun, of the stock A, provided with the trigger-housing B, the trigger W, pivotally secured therein, the detent X, actuated by said trigger, the false barrel E, secured to the housing of the trigger, the true barrel eccentrically secured with its rear end in the breech-block in the front end of the false barrel, the piston H, the coil-spring K, the tension-rod I, the hook J of the tension-rod provided with the nose J', the link Q, the abutment M N, and the tension-lever R, the parts being arranged to operate substantially as described.

408,972. CORNET. JOHN HERALD, Springfield, Mass. Filed Mar. 20, 1888. Serial No. 303,997. (No model.)



Claim.—A cornet having its outer bowed valve-tubes constructed each with one of its ends at and about its junction with its respective case, inclined in about the same angular direction with relation to the axis of said case as is the respective passage formed through the valve-piston, and with which passage said inclined tube end connects, substantially as and for the purpose described.

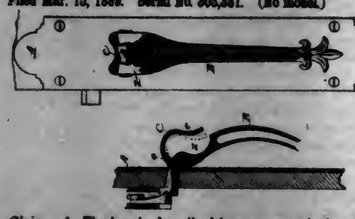
408,973. CANDLESTICK. JULIUS HELLER, Teplitz, Austria-Hungary. Filed Apr. 19, 1889. Serial No. 307,903. (No model.) Patented in Belgium May 31, 1888, No. 81,837; in Italy July 28, 1888, XXII, 23,594; in France Aug. 27, 1888, No. 192,622, and in England Jan. 15, 1889, No. 6,749.



Claim.—1. The combination of spring-arms *c*, arranged to form a truncated conical split socket, with the sliding collar *d*, and with stop-plate *e*, substantially as specified.

2. The combination of spring-arms *c*, bent first outwardly and then inwardly to form shoulders c', and lugs c^2, with the sliding collar *d* and stop-plate *e*, substantially as specified.

408,974. DOOR-LATCH HANDLE. HENRY HOFFMAN, Jr., South Norwalk, Conn., assignor to the Norwalk Lock Company, same place. Filed Mar. 15, 1889. Serial No. 303,381. (No model.)



Claim.—1. The herein-described improvement in door-latch handles, consisting of a face-plate and a handle attached thereto, combined with a thumb-piece hinged directly in the upper end of the handle and forming in appearance a continuation of the handle, the tail of the thumb-piece extending through the plate, substantially as described.

2. The combination of the latch-plate A, the handle B, attached to the plate, and the thumb-piece C, hinged directly to the upper end of the handle and outside the plate, the handle recessed below the thumb-piece, and the thumb-piece projecting from the upper end of the handle and curved downward in front of the said recess, substantially as described.

3. The latch-handle B, adapted for attachment to the door, combined with the thumb-piece C, hinged directly to the upper end of the handle and so that the pivot of the thumb-piece will be outside the surface of the door, the tail of the thumb-piece extending rearward from the handle, substantially as described.

408,975. SUSPENSION DEVICE FOR LAMPS. WILLIAM C. HOMAN, Meriden, Conn., assignor to the Edward Miller & Company, same place. Filed Mar. 25, 1889. Serial No. 304,662. (No model.)



Claim.—1. In a suspension device for lamps and like articles, the combination of a frame, a vertical stationary spindle in said frame, a spring-drum arranged upon said spindle, one end of the spring engaged with the drum and the other with the spindle, the spindle extending through the drum, screw-threaded at its upper end, a disk-spring around said spindle and so as to bear upon the drum, a nut screw-threaded corresponding to the end of the spindle and adapted to bear upon the said disk-spring, the nut constructed as a part of a suspending loop, the loop open above the end of the spindle, and a dog hung in the end of the spindle so as to swing in a vertical plane through the open spindle and adapted to engage said nut, substantially as described.

2. The combination of a frame, a vertical spindle stationary in said frame, a spring-drum arranged on said spindle, one end of the spring fixed to the spindle and the other to the drum, a disk-spring arranged around the spindle and so as to bear upon the end of the drum, the upper end of the spindle screw-threaded, a nut screw-threaded corresponding to the end of the spindle and adapted to bear upon said disk-spring, a suspending loop made as a part of said nut, the periphery of the said nut constructed with one or more notches, and a dog hung in the upper end of the spindle above the nut and so as to swing in a vertical plane within the hanging loop, the dog constructed with a nose adapted to engage a notch in the said nut, substantially as described.

3. The combination of the frame A, the spindle B, stationary in said frame, spring-drum *b*, arranged upon said spindle, the disk-spring *b'*, corrugated radially and arranged around said spindle and adapted to bear upon the end of the drum, the spindle extending through said spring and screw-threaded, and a nut H, having a loop E as a part thereof and extending above the said spindle, with a dog I hung in the upper end of said spindle and so as to swing in a vertical plane within the said loop and adapted to engage said nut, substantially as described.

408,976. THILL-COUPLING. HENRY J. ILER, Ansonia, Conn., assignor of one-half to R. A. Manville, same place. Filed June 4, 1888. Serial No. 313,040. (No model.)



Claim.—1. The herein-described anti-rattling device for thill-couplings, consisting of the india-rubber block G, combined with the U-shaped spring H, the headed bolt L, extending through the block downward and through the curve of the said spring H, and a nut N, having cavities diametrically across its face corresponding to the curve of the said spring, substantially as described.

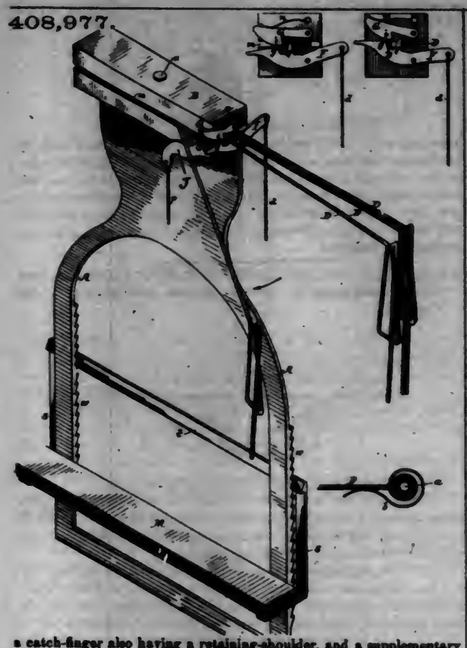
2. The combination of the india-rubber block G, the bolt L, having a head M extending longitudinally across the said block G and of concave shape upon its under side, with the U-shaped spring H and the nut N, the said nut having cavities diametrically across its face corresponding to the curve of the spring H, substantially as and for the purpose described.

408,977. MUSIC-LEAF TURNER. WILLIAM R. JACKSON, Philadelphia, Pa. Filed Mar. 29, 1888. Serial No. 305,217. (No model.)

Claim.—1. In a music-leaf turner, the combination of the fixed frame and a series of spring-actuated leaf-turning arms hung thereto with escapement mechanism comprising a lever with separating-finger and retaining-shoulder and a catch-finger also having a retaining-shoulder, substantially as specified.

2. In a music-leaf turner, the combination of the fixed frame and a series of leaf-turning arms hung thereto with escapement mechanism comprising a lever with separating-finger and retaining-shoulder,

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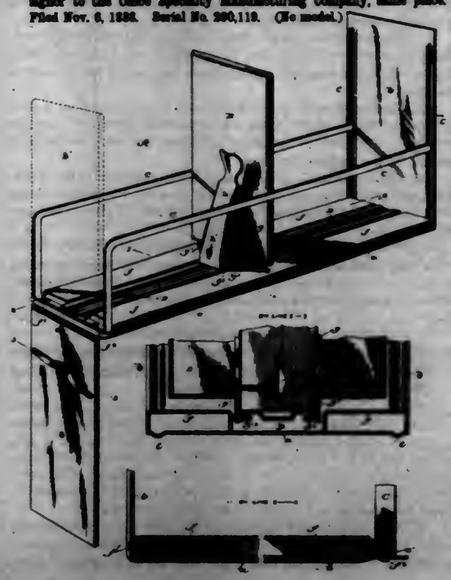


a catch-finger also having a retaining-shoulder, and a supplementary lever acting on the combined separating and retaining lever, substantially as specified.

3. The combination of the fixed frame and its spring-actuated retaining-fingers, the vertical rack at the rear of the frame, a shelf in front of the frame, and a catch-bar connected to said shelf and engaging with the rack at the rear of the frame, substantially as specified.

4. The combination of the fixed frame having spring-actuated leaf-turning arms and vertical rack at the rear, a supporting-shelf having arms bearing against the outer edges of the frame, and a catch-bar carried by said arms and engaging with the rack at the rear of the frame, substantially as specified.

408,978. FILE-BOX. MAJOR R. JEWELL, Rochester, N. Y., assignor to the Office Specialty Manufacturing Company, same place. Filed Nov. 6, 1888. Serial No. 290,119. (No model.)



Claim.—1. As an improvement in the construction of sheet-metal file-boxes, the box or receptacle having the sheet-metal base-plate, in combination with the rail or guide D for the clamping device and the side plates *f*, rising flush with the guide, said guide and side plates secured upon the base-plate, substantially as described.

2. As an improvement in the construction of sheet-metal file-boxes, the combination of the sheet-metal base-plate with the two flanged plates *f*, secured longitudinally thereon along its opposite edges.

3. As an improvement in sheet-metal file-boxes, the sheet-metal base-plate, in combination with the central rail or guide mounted thereon, the follower mounted on said rail, and the two flanged metal plates *f*, secured upon the base-plate along its opposite edges.

4. In a metallic file-box, the flat base-plate, in combination with the longitudinal sheet-metal guide-rail depressed at the middle and raised at the edges, a follower, and a clamping device connecting the follower with the rail.

5. A sheet-metal file-box having its base composed of a single sheet of metal *a*, thickened and stiffened by two longitudinal strips of metal *f*, having downwardly-extending flanges at their edges and secured at their ends rigidly to the base-plate.

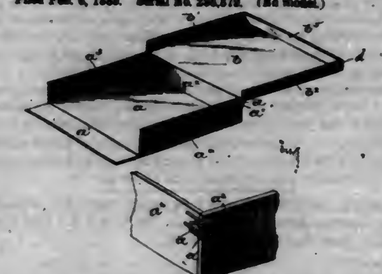
6. In a sheet-metal file-box, the side bars C C and the cross member *c'*, integral therewith, in combination with the base-plate *a*, the plates *f*, and the rivets connecting said parts, as shown.

7. The plate *g*, for connecting the follower to the guide-rail, formed of a single sheet of metal cut and bent and shown to present the portions *g f g*^{4}.

8. The locking-lever *h*, cut and bent from a single sheet of metal, as described and shown, and presenting the stiffening-flanges along its edges and the lip at its lower end.

9. The file-box having the side bars and the hinged end, in combination with the locking-bar b^3 and its rotary spindle attached to the end piece, as shown.

408,979. FILE-BOX. MAJOR R. JEWELL, Rochester, N. Y., assignor to the Office Specialty Manufacturing Company, same place. Filed Feb. 6, 1889. Serial No. 299,579. (No model.)

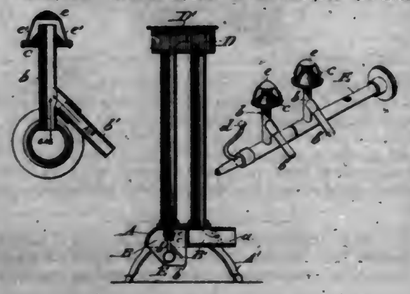


Claim.—1. A knockdown box for the filing of papers and for similar purposes, consisting of a series of flat sections hinged together at their edges and provided at their corners with metallic fastening devices adapted to be bent and interlocked.

2. The herein-described box, consisting of the bottom sheet and the side walls hinged thereto, the top sheet and the edge strips hinged thereto, and the metallic fastening devices *d* and *d'*, applied at the corners and adapted to be interlocked, as described, to hold the box in operative position.

3. As an improvement in knockdown boxes, the metallic staples *d* and *d'*, applied to the adjacent sides of the box and adapted to be bent and interlocked, substantially as described.

408,980. GAS-HEATER. JONATHAN JOHNSON and EDMUND H. PACKER, Lowell, Mass. Filed Jan. 26, 1889. Serial No. 297,855. (No model.)

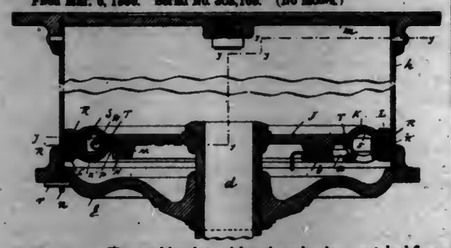


Claim.—1. As an improvement in gas-heaters, the combination of the radiating-pipes, the rotatable pipe E, supported beneath said radiating-pipes, the burners carried by said rotatable pipe, and the deflectors fixed over the orifices of the burners, substantially as and for the purpose set forth.

2. As an improvement in gas-heaters, the radiating-pipes, in combination with the rotatable pipe E, supported beneath the mouths of the said radiating-pipes, the burners carried by said rotatable pipe and the supply-pipe *b'*, for carrying air to the base of the burner, substantially as and for the purpose set forth.

3. As an improvement in a gas-heater, the radiating-pipes, in combination with the rotatable pipe E, supported beneath the mouths of the said radiating-pipes, the burners carried by the rotatable pipe, the deflectors fixed over the orifices of the burners, and the air-supply pipe leading to the base of the burner, for the purpose specified.

408,981. PACKING FOR PISTONS. LOUIS P. LAWRENCE, Passaic, N. J., assignor to the Lawrence Railway Brake Company, New York, N. Y. Filed Mar. 6, 1888. Serial No. 302,169. (No model.)

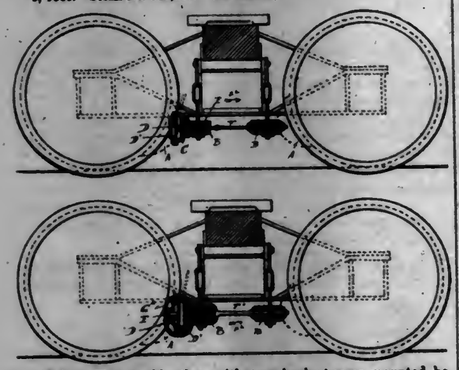


Claim.—1. The combination, with a piston having a notched flange on one face, of a notched ring engaging said flange, a packing-ring between the piston and the notched ring, and a spring-bolt for locking the notched ring in place, substantially as set forth.

2. The combination, with a piston provided in one face with an annular groove a short distance back of the edge and forming a lip along the said edge, of a ring held on the piston, and also provided with an annular groove forming a lip, and a packing-ring held between said lips, substantially as set forth.

3. The combination, with a piston having an annular groove in one face a short distance from the rim, of a ring held on the piston and having a like annular groove, a packing-ring held between said piston and ring, an expansion-ring resting against said packing-ring and having its ends overlapped, and a spring between said overlapped ends of the expansion-ring, substantially as set forth.

408,982. CAR-BRAKE. LOUIS P. LAWRENCE, Passaic, N. J., assignor to the Lawrence Railway Brake Company, New York, N. Y. Filed May 9, 1888. Serial No. 310,105. (No model.)

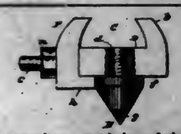


Claim.—The combination, with two brake-beams mounted between two pairs of wheels, and also mounted to move from each other when pressing the brake-shoes against the wheel-rims, of a brake-cylinder secured on the inner edge of one brake-beam, a piston in said cylinder mounted to move while operating toward the inner edge of the brake-beam to which the cylinder is secured, and a rod or bar connecting said piston with the other brake-beam, substantially as set forth.

408,983. REMOVABLE HORSESHOE-CALK. JOHN R. LESUEUR, Hendersville, Tenn. Filed Mar. 17, 1888. Serial No. 267,551. (No model.)

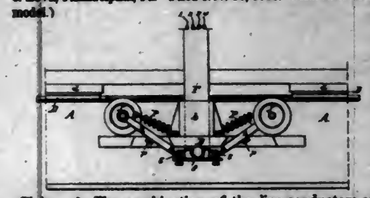
Claim.—The herein-described device for securing removable

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horseshoe-calks to horseshoes, consisting of the perforated plate D, having the curvilinear end or clip projecting therefrom at right angles at one end and a screw-rod projecting from the opposite end, the curved metal plate or clip F, having the central perforation and lateral lower projection, and a nut for clamping said plates to the shoe, said lateral projection forming a lock for said removable calk, substantially as described.

408,984. CONTACT-CARRIER FOR ELECTRIC RAILWAYS. JOHN C. LOVE, Philadelphia, Pa. Filed Nov. 30, 1888. Serial No. 292,196. (No model.)



Claim.—1. The combination of the line-conductors of an electrical railway, a contact-carrier block, arms pivoted to the under side of said block and carrying contact-wheels, and pull-springs to press the said wheels against the line-conductors.

2. The combination of the conduit of an electrical railway having line-conductors, with a carrying-bar to be suspended from a car, a contact-carrying block thereon, and pull-springs to press the contacts against the line-conductors, substantially as described.

408,985. LATHE-CHUCK. CHARLES R. MEAD, Oneida, N. Y. Filed May 16, 1889. Serial No. 311,013. (No model.)



Claim.—1. A jaw for a chuck having the bearing or biting surface c^3, pivot-points or trunnions c, and crank-arms c', substantially as and for the purpose specified.

2. The combination of the chuck-head, jaws pivoted to the chuck-head, an annular rotatable ring for engaging said jaws, and revolving to adjust and clamp the same, substantially as and for the purpose specified.

3. The combination of the chuck-head, the covering-plate B, jaws pivoted to said head and plate, and a rotatable sleeve for engaging said jaws, and revolving to adjust and clamp the same, substantially as and for the purpose described.

4. The combination of the chuck-head, jaws pivoted to the chuck-head, and crank-arms provided upon the jaws, and the rotatable sleeve for engaging said jaws, and revolving to adjust and clamp the same, substantially as and for the purpose specified.

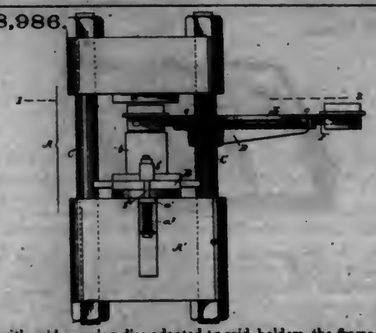
5. The combination of the chuck-head, jaws pivoted to the chuck-head, and crank-arms provided upon the jaws, the rotatable sleeve, slots or cut-outs provided in the sleeve, and a screw for engaging said disk and rotating the same, substantially as and for the purpose specified.

408,986. APPARATUS FOR FILLING SECONDARY-BATTERY PLATES. HENRY G. MORRIS and PEDRO G. SALOM, Philadelphia, Pa. Filed May 2, 1889. Serial No. 309,278. (No model.)

Claim.—1. In a machine for compressing powdered active material into supporting-grids, the combination of a rotatable table having a series of holders thereon, with grid-carrying dies adapted to said holders and with a press having a plunger and platen, the rotating frame being so hung in respect to the plunger and platen of the press that as the frame is rotated the grid-carrying bars will be passed between said plunger and platen, substantially as described.

2. The combination of the frame of the press having upright bolts with a frame secured to one of said bolts, an annular frame supported by and free to turn on said fixed frame and having a series of hold-

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ers, with grid-carrying dies adapted to said holders, the frame being so hung in respect to the plunger and platen of the press that the grids can be fed one by one between said platen and plunger, substantially as described.

3. The combination of the press, a grid-carrying die, and a frame movable on said die and serving to aid in supporting the grid above the surface of the die, substantially as specified.

4. The combination of the grid-carrying die, the supporting-frame for the grid, springs under said supporting-frame, and adjustable bolts for adjusting the height of said frame in respect to the face of the die, substantially as described.

5. The combination of the press, the grid-carrying die, the movable frame thereon, and a second frame adapted to rest upon the grid and serve as a gage for the material deposited thereon, substantially as specified.

6. The combination of the grid-carrying die and the movable frame thereon, the grid having a hinged frame adapted to fit over the grid, and having a flange forming a gage, substantially as and for the purpose set forth.

7. The combination of the press, the rotatable frame and its holder, and a grid-carrying die having flanges supported on said holders, but free to rise therefrom under the action of the press, substantially as described.

8. The combination of the grid-carrying die and its yielding frame with an upper die having a like yielding frame, substantially as specified.

408,987. DUST-COLLECTOR. ORVILLE M. MORSE, Jackson, Mich., assignor to the Knickerbocker Company, same place. Filed Sept. 2, 1887. Serial No. 248,584. (No model.)



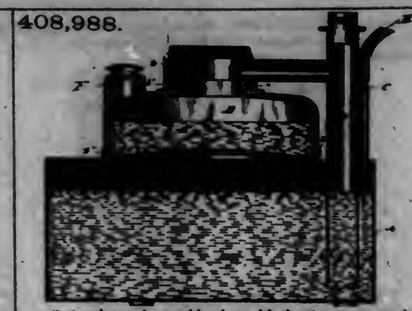
Claim.—1. The combination, with the separating-chamber having a dust-discharge opening and provided at one end with an exit-passage for the purified air, of a supply-spout and a spiral passage connecting said spout with the separating-chamber and surrounding the air-exit passage, substantially as set forth.

2. The combination, with the tapering separating-chamber provided at its large end with an exit-passage for the purified air and at its small end with a dust-discharge opening, of a supply-spout and a spiral passage connecting said spout with the large end of the tapering chamber and surrounding the air-exit passage, substantially as set forth.

408,988. STREET-LAMP. WILLIAM G. OLIVER, Waupun, Wis. Filed Dec. 12, 1888. Serial No. 293,293. (No model.)

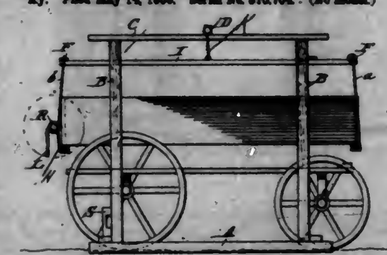
Claim.—1. In a street-lamp, the combination, with the storage-reservoir, of a transparent burner-supply bowl mounted directly thereon, a supply-pipe projected into the reservoir and rigidly secured thereto, said pipe being extended upward and communicating with the interior of the bowl and rigidly secured thereto, and an air-pipe projected into the upper part of the reservoir, whereby to force oil into the bowl, substantially as described.

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2. In a lamp, the combination, with the storage-reservoir having a flange extended from the top wall thereof, of a transparent burner-supply bowl adapted to seat itself against said flange and a connecting-pipe securing said reservoirs together, substantially as described.

408,989. HOISTING APPARATUS. CORNELIUS R. PAYNE, Nebo, Ky. Filed May 14, 1889. Serial No. 310,704. (No model.)



Claim.—1. As an improvement in hoisting apparatus, the combination of the portable frame, the freely-swinging lever I, connected with said frame by flexible connections K, the rods *a a*, and hooks at one end of said lever for attaching it to the weight to be raised, a suitable windlass or roller R, connected with the other end of the said lever by ropes, the crank L, movably attached to said roller so that it can be turned to have its handle engage with one of the hooks H to stop the revolution of roller when desired, and the hooks H, forming the bearings of said roller and for attaching it to the weight to be raised.

2. As an improvement in hoisting apparatus, the combination of the portable frame, the freely-swinging lever I, connected with said frame by flexible connections K, the rods *a a*, and hooks at one end of said lever for attaching it to the weight to be raised, the roller R, connected with the other end of said lever by ropes *b*, the crank L, movably attached to said roller so that it can be turned and have its handle *b* engage with one of the hooks H, for the purpose set forth, the bar J, movably carried in the cleats S, and the hooks H, forming bearings for the roller and for attaching it to the said bar, substantially as and for the purpose specified.

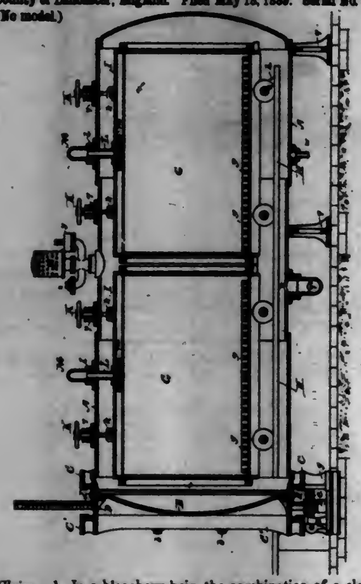
408,990. HOLDBACK-SNAP. WILLIAM REDPOINT, Hagle, Ill. Filed May 11, 1889. Serial No. 310,476. (No model.)



Claim.—1. The combination of a hollow standard, a lever fulcrumed thereon and having its short arm arranged across the passage or chamber in said standard, and a spring housed within the chamber of the standard and arranged to exert its pressure against the short arm of the lever, which arm confines the spring in place and conceals it from view, substantially as described.

2. The combination of a hollow standard having the integral ears at one end and a base-plate at its other end, an arm or lever having one end fitted between and pivoted to said ears and arranged across the chamber of said standard, a follower fitted in said hollow standard and bearing against the short arm of the lever, and a coiled spring bearing against the follower, substantially as and for the purpose described.

408,991. BLEACHERY-KEIR. SYDNEY A. RUDDIN, Manchester, County of Lancaster, England. Filed May 15, 1889. Serial No. 311,221. (No model.)



Claim.—1. In a bleachery-keir, the combination of a closed car or receptacle provided with a cover having a liquid-inlet through it, which is connected with the discharge-pipe of a pump, and liquid-outlets at the bottom of said car, with an enveloping steam-tight chamber connected at the bottom with the suction-pipe of said pump, whereby liquor may be circulated under pressure through material placed in said car, substantially as described.

2. In a bleachery-keir, the combination of a steam-tight enveloping-chamber and a closed car or receptacle having discharge-openings at the bottom and a liquid-inlet at the top, which is connected with a pump to deliver liquor within said car and force it through the material contained therein, substantially as described.

3. In a bleachery-keir, the combination, with an enveloping steam-tight chamber, of a closed car or receptacle having liquid-discharge openings at the bottom, and an adjustable cover therefor provided with a liquid-induction pipe and suspended within said chamber above the car, substantially as described.

4. In a bleachery-keir, the combination of an enveloping steam-tight chamber, a closed car to contain fabric, and an adjustable cover for said car suspended above it within the chamber and provided with an inlet-pipe having a sliding connection with a liquor-supply pipe, substantially as described.

5. In combination with a liquid-circulating pump for a bleachery-keir, a liquid heating and distributing chamber interposed between said pump and keir and having the discharge-outlet from the pump near the top of said chamber, and the outlets of the supply-pipes for the keir near the bottom thereof, substantially as described, and for the purpose specified.

6. In combination with a liquor-circulating pump for a bleachery-keir, an intermediate liquor-distributing chamber having the discharge-outlet from the pump, near the top thereof, and a puppet-valve to cover said outlet, having its stem projecting without the chamber, in the manner substantially as described.

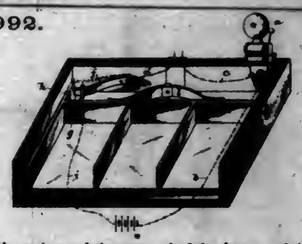
7. In combination with a bleachery-keir, a door provided with a compressible bearing upon the side next to the keir and supported upon vertical screw-rods engaging therewith at each side, and an independent adjustable frame to force the door to its seat when it has been lowered to the position requisite to cover the opening into the keir, substantially as described.

8. In combination with a steaming or boiling tank, a door supported and operated by vertical screw-rods engaging therewith at each side, and an independent adjustable open frame, by which the door, when in a position to cover the filling-opening in the tank, may be forced to a steam-tight bearing therewith, substantially as described.

408,992. ALARM. JOHN M. SCHMIDT, Saginaw, Mich. Filed Sept. 13, 1888. Serial No. 285,333. (No model.)

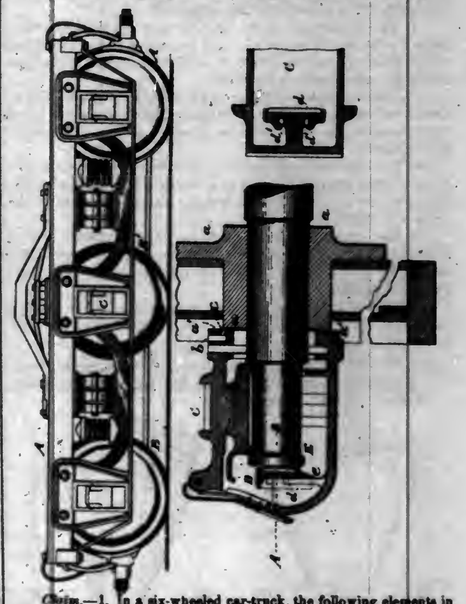
Claim.—The combination, with the cabinet and the post *g* therein

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between the spring and the rear end of the drawer, of the flat spring secured at one end with its other end normally in contact with said post, electrical connections, substantially as described, between said spring and post and the bell, and the sliding drawer formed with extension *h*, adapted to contact with the free end of the spring and move it away from the post when the drawer is closed, and the spring *l*, acting on the rear end of the drawer to force it outward, substantially as shown and described, and for the purpose specified.

408,993. SIX-WHEELED CAR-TRUCK. WALTER A. SCOTT, St. Paul, Minn. Filed May 16, 1889. Serial No. 310,976. (No model.)



Claim.—1. In a six-wheeled car-truck, the following elements in combination: a frame, end wheels flanged in the ordinary manner, a central pair of flat wheels having hubs with outer-turned faces, central axle-boxes having their backs trued or faced and provided with end stop-wedges, the spaces between the outer face of each hub of the central pair of wheels and the back of each central box and between the end of the axle and the stop-wedge of each central box being each reduced to the minimum—say one-sixteenth of an inch—each central axle-box being provided with a recess and a channel for the supply of oil between the hub and box, substantially as set forth.

2. An axle-box having its back made extra heavy and provided with an oil-recess *b* and a communicating channel *c*, substantially as set forth.

3. An axle-box provided with a fixed stand *e*, cast as a part thereof, combined with a stop-wedge D, having soft-metal filling *d* and grooves *d'*, which fit over the fixed stand *e*, substantially as set forth.

408,994. WHEELBARROW. CHARLES W. STANBAUGH and VALENTINE L. HEY, Canton, Ohio. Filed Feb. 14, 1889. Serial No. 299,857. (No model.)

Claim.—1. In a wheelbarrow, the wheel E, adapted to move under and receive the weight of the load independent of its axle, substantially as and for the purpose set forth.

2. The combination of the bars or handles A, the inclined curved bars C, bent to hold the axle *a* at either end of said bars, and the wheel E, substantially as and for the purpose set forth.

408,994.



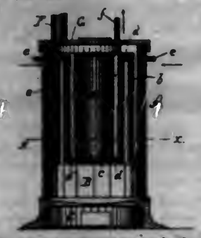
3. The combination of the wheel E and its axle *a*, the inclined bars C, and means for locking the wheel E at either end of the inclined bars C, substantially as and for the purpose set forth.

4. The combination of the plate or disk F, provided with the lugs *h* the retaining-bar *f* and the inclined bars C, and the wheel E, substantially as and for the purpose set forth.

5. The combination of the bars or handles A, the pins *b*, provided with the feathers *c* and the ribs *d*, the inclined bars C, and the wheel E, substantially as and for the purpose set forth.

6. The combination of the inclined bars C and means for locking the wheel E at either end of the inclined bars C, substantially as and for the purpose set forth.

408,995. STEAM-GENERATOR. THOMAS L. STURTEVANT and THOMAS J. STURTEVANT, Framingham, Mass. Filed Nov. 12, 1888. Serial No. 290,570. (No model.)



Claim.—1. A steam-generator composed of a number of steam-generating sections connected in series, each section being composed of two tubes—one within the other—with their adjacent ends united to form a closed steam-chamber, interconnecting pipes at the opposite extremities of the sections which unite the adjacent sections, and a common fluid-supply and steam-discharge, all substantially as herein set forth and described.

2. In combination with a suitable shell, its fire-pot, co-operating flue, and ash-chamber, an interconnected series of concentrically arranged steam-generating sections within said shell and the common fluid-supply and steam-discharge, each section being composed of two tubes contiguous at various points—one within the other—the adjacent ends being united to form a closed annular chamber therebetween and having a supply and discharge at opposite ends, substantially as herein specified.

3. In combination with an inclosing-shell or water-jacket, a fire-pot B, with its co-operating flue F, the steam-generators E, arranged in sections which are connected in series united by tubes *d d* to insure water-circulation, each section being composed of two tubes *b c*—one within the other, and fastened together at their adjacent ends, the interior periphery of one and the exterior periphery of the other noncontiguous—and a common fluid-supply *e* and steam-discharge *f*, substantially as for purposes herein set forth.

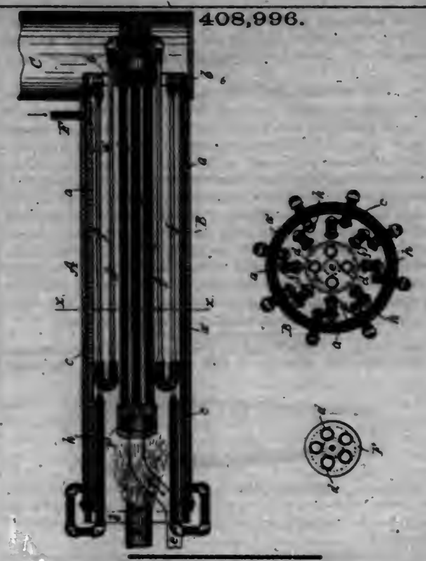
4. In a steam-generator, the combination, with a fire-pot B and its flue F, of the series of steam-generating sections E, arranged in sections which are connected in series, constructed and united as set forth, the water-jacket A, which incloses said sections and fire-pot, and a common fluid-supply *e* and steam-discharge *f*, substantially as stated.

408,996. STEAM-BOILER. THOMAS L. STURTEVANT, Framingham, Mass. Filed Apr. 23, 1889. Serial No. 308,086. (No model.)

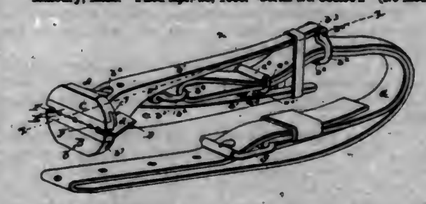
Claim.—1. A boiler for steam-generating purposes composed of an exterior shell, a series of cylindrical tubes centrally of its bore, a group of flattened tubes circular in cross-section at their extremities, and between said shell and the inner tubes the smoke-flue at one end and the heating agency at the opposite end of said boiler, with means for supplying water and discharging steam, substantially as and for purposes herein set forth.

2. In a steam-boiler, the double-tube element B, the central group of tubes *d d*, the unions F G, in which said tubes terminate, combined with the flattened tubes *f f*, circular at their extremities, and the tubes *h h*, by which the union G is united with the element B, the water-supply pipe E, steam-discharge *c*, and a suitable heating agent, substantially as specified.

408,996.



408,997. DEVICE FOR STRETCHING WIRES. STEPHEN TAFT, Millbury, Mass. Filed Apr. 25, 1889. Serial No. 308,504. (No model.)



Claim.—1. The combination, with the nippers having their shanks provided with registering openings, of the pivotal bolt provided with a flattened nearly-rectangular head, the lower edge of which rests against and is supported by a shoulder on the inner surface of the lower jaw of the nippers, said pivotal bolt having its shank provided with a long cut-away portion or rabbet, substantially as set forth.

2. The combination, with the nippers A, composed of the pivoted sections B C, the section B having loops b^4 attached to its shank, respectively, near the upper and lower ends thereof, and the section C having the similar loop c^4 attached to its shank at a point between the loops b^4, and the spring H, attached at the upper end to the shank of the section B and at its lower end to the shank of the section C, of the strap G, passing, as described, through said loops and having the buckle *g* at one end, and the series of perforations *g'* for the tongue of said buckle extending inward from the opposite end, substantially as specified.

3. The combination, with the strap G, of the nippers A, composed of the sections B and C, each composed of a shank and a flattened laterally-extended jaw, which jaws incline slightly outward from their meeting edges, the pivot-pin D, having a flattened head and an extended and rabbeted shank, the loops b^4, attached to the shank of the section B, the loop c^4, attached to the shank of the section C, the detachable dogs E E, provided with the longitudinal grooves F, and the transverse notches *f f* in their meeting edges, and the curved plate-closing spring H, substantially as specified.

4. The combination, with nippers provided with shanks, the shank of the upper nipper passing through a slot in the lower shank, of a curved flat-plate spring disposed between the same, said spring having its forward end bent under and secured to a curved shoulder in the slotted shank, substantially as set forth.

5. The combination of the nippers composed of two opposing sections and suitable shanks, the lower shank passing through a slot in the upper shank, the latter being formed or provided at opposite points of its length with depending perforated lugs, metal loops having the ears thereof perforated, said perforations registering with the perforations in the lugs, the transverse bars of said loops being provided with anti-friction sleeves, the screws for attaching said loops to the

legs, the perforated lug formed or provided upon the lower shank, the lower loop provided with an anti-friction sleeve, and the strap passing over the anti-friction sleeves of the loops, substantially as set forth.

6. The combination of the nippers composed of two opposing sections and suitable shanks, the lower shank passing through a slot in the upper shank, the latter being formed or provided at opposite points of its length with depending perforated lugs, metal loops having the ears thereof perforated, said perforations registering with the perforations in the lugs, the transverse bars of said loops being provided with anti-friction sleeves, the screws for attaching said loops to the legs, the perforated notched lug formed or provided upon the lower shank, the curved flat-spring plate disposed between the two jaws of the nippers, said spring having its forward end bent under and secured to a curved shoulder in the slotted shank, and having its rear end passing into the notched lug upon the lower shank, the lower loop provided with an anti-friction sleeve, and the strap passing over the anti-friction sleeves of the loops, substantially as set forth.

408,998. PHONOGRAM-CYLINDER. WILMER R. TATTERSALL, Springfield, Ohio. Filed Apr. 26, 1889. Serial No. 308,735. (No model.)



Claim.—1. A phonographic cylinder having a portion of its exterior coated with a suitable recording-surface and an index-field at or near one end thereof free from the recording-surface, substantially as described.

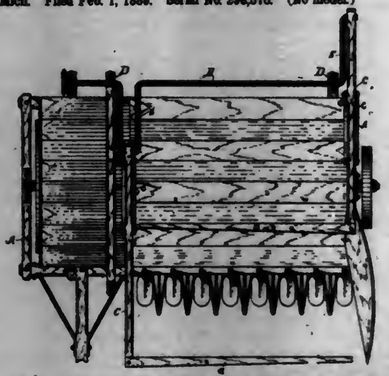
2. A phonographic cylinder having a recording-surface, an index-field at the end thereof, and a circumferential rib or ribs, substantially as and for the purpose specified.

3. The herein-described phonographic cylinder, constructed in the form of a truncated cone and having an index-field at or near the end thereof, substantially as described.

4. The herein-described phonographic cylinder, constructed in the form of a truncated cone and having an index-field at one or both ends and circumferential ribs, substantially as and for the purpose described.

5. As a new article of manufacture, the herein-described phonographic cylinder, constructed of paper or other suitable substance, formed into a hollow truncated cone, and having a portion of its exterior coated with a suitable recording-surface, leaving an index-field at one or both ends, and having circumferential ribs at or near its ends, substantially as and for the purpose specified.

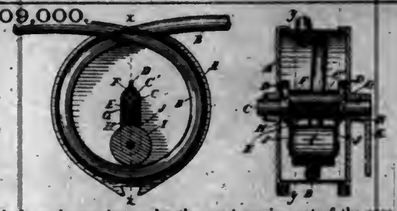
408,999. HARVESTER-REEL. CHARLES D. TOWER, Galesburg, Mich. Filed Feb. 1, 1889. Serial No. 298,370. (No model.)



Claim.—The combination of the platform, the crank-shaft having bearing-supports on said platform, and having a crank at or near each end, which cranks are thrown out in opposite directions from the shaft, the right-angled arms, one pivoted to each of said cranks, and their forward angles extending toward each other and lapping one by the other in plan view, and the upright oscillating standards pivoted at their lower ends to the platform and at their upper ends to the right-angled arms, substantially as set forth.

409,000. SURGICAL PUMP FOR TRANSFUSION OF BLOOD. EUGENE R. ALLEN, Grand Rapids, Mich. Filed Apr. 27, 1889. Serial No. 308,806. (No model.)

Claim.—1. In a surgeon's pump of the class described, the combination of a cylindrical case, an elastic tube coiled within the case



with the ends crossing each other and passing out of the case near its longitudinal center, a shaft having a cam, a pressure-roller mounted upon the shaft, and a crank to revolve the shaft, said cam automatically forcing the roller upon and withdrawing it from the elastic tube by the rotation of the crank-shaft, substantially as described.

2. In a surgeon's pump, the combination of a cylindrical case, an elastic tube coiled within the case, a pressure-roller adapted to give continuous moving pressure upon said tube, a frame supporting said pressure-roller and provided with a stop, as H, a supporting-shaft provided with a pin, as D, to engage the stop H and revolve the frame, roller, and cam together, and the cam C, adapted to press the roller in contact with the tube, substantially as described.

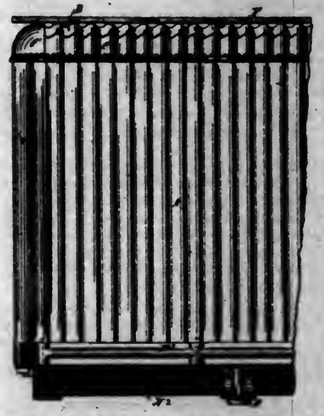
409,001. COVERED ELASTIC ENDLESS BAND. JOHN AINWORTH, Dudleyville, Mass. Filed May 11, 1881. Serial No. 33,027. (No model.)



Claim.—1. An extensible band composed of an endless elastic core and a seamless endless flexible covering formed thereon of continuous threads, substantially as and for the purpose set forth.

2. An improved article of manufacture, an elastic endless band formed of two or more parallel elastic endless strands, each having an extensible, flexible, seamless, and endless covering formed upon it, such separately-covered strands being united laterally into one endless elastic covered band, substantially as set forth.

409,002. RAILWAY-CAR. DAVID L. BARNES, Chicago, Ill., assignor to Alexander J. Leith, New York, N. Y., and William R. Stirling, Chicago, Ill. Filed Apr. 9, 1889. Serial No. 306,557. (No model.)



Claim.—1. A metallic car, a metallic cornice intermediate between the sides and the roof and attached to both, and corrugated to fit the corrugations of the side and the roof, substantially as described.

2. The metallic cornice C, herein described, corrugated to fit the corrugations of the side, and provided with an external lip D, substantially as and for the purposes described.

3. The combination of the side posts G with a longitudinal side sill projecting outward and serving as a base for said side posts, substantially as described.

4. The truss-rod struts V, made of pressed steel, attached to the sills and braced by piece X, extending in a downwardly direction upon the side of the car inward and attached to the side sill, the intermediate sill, and the center sill, thereby preventing the failure of the sills under a heavy load and acting as a lateral brace as well as a strut on the side sills, substantially as described.

5. The lateral brace X, of pressed steel, in combination with

three longitudinal sills, to each of which it is attached, and the truss-rod struts V, for supporting the sills, substantially as described.

6. The combination of the center plate with the stiffening angle-irons Y, substantially as described.

7. The pressed-steel body-bolster R, longitudinally corrugated intermediate the side and center sills, substantially as described.

8. The combination of the corrugated pressed-steel body-bolster R with the top member W, forming a complete truss, substantially as described.

9. The combination, with the sills N' N², of longitudinal wooden stringers G, serving as stiffeners therefor and for the attachment of the flooring, substantially as described.

10. The combination of the corrugated sides A A' and the corner-cap P, fitting the said corrugations and covering the ends of said pieces A A', substantially as described.

11. The combination of the interlocking corner-posts G G' with the corrugated sides and ends fitting the same, substantially as described.

12. The combination of the vertical posts G G with a clamp N³, surrounding the same and holding the posts upon the lower support, substantially as described.

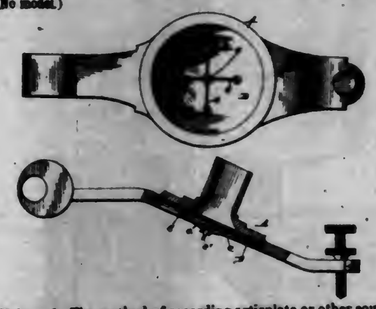
13. The combination of the post G, provided with flanges, the stripe H, locking said flanges, and the corrugated side A, fitting the post, substantially as described.

14. The hollow post G, provided with a wood filler attached thereto, in combination with the beam J, nailed to the lining of the post G, substantially as described.

15. The combination of the roof B, cornice C, and intermediate water-shed E, substantially as described.

16. The combination of a side post G, a carling K, fitting the same, and likewise fitting the corrugations of the corrugated roof, substantially as described.

409,003. METHOD OF RECORDING AND REPRODUCING SOUNDS. CLARKE BETTINI, New York, N. Y. Filed Apr. 11, 1889. Serial No. 306,912. (No model.)



Claim.—1. The method of recording articulate or other sound or sounds, which consists in setting up vibrations in a body, taking the vibrations from the body at several points or places, communicating them by independent conductors to a common point or place, and causing a record to be made from this common point or place.

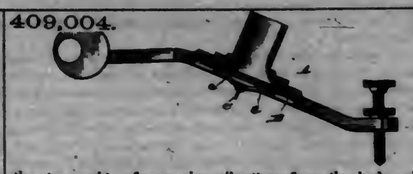
2. The method of reproducing articulate or other sound or sounds, which consists in causing a record of vibrations to act at a single point or place and from this point or place communicating vibrations by independent conductors to several points on a vibratory body.

3. The method of recording and reproducing articulate or other sound or sounds, which consists in taking vibrations off a vibratory body at several points or places, communicating them to a common or central point or place by independent conductors, causing a record to be made from this common point or place, and then causing this record to act at the common or central point or place, communicating vibrations to a vibratory body at several points or places.

409,004. APPARATUS FOR THE RECORD AND REPRODUCTION OF SOUNDS. CLARKE BETTINI, New York, N. Y. Filed Apr. 13, 1889. Serial No. 307,067. (No model.)

Claim.—1. In a device for recording and reproducing, or for recording alone or reproducing alone, articulate or other sound or sounds, the following instrumentalities in combination, namely: a body capable of vibration and two or more independent conductors attached





thereto capable of conveying vibrations from the body, said conductors connecting with a unitary or functionally-single part or focus designed to make a record, substantially as described.

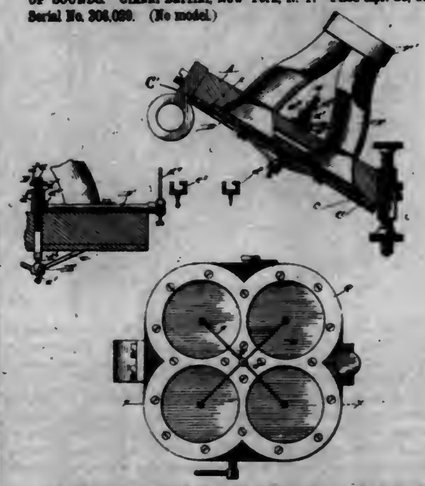
2. In an apparatus for recording and reproducing, or for recording alone or reproducing alone, articulate or other sound or sounds, the following instrumentalities in combination: a body capable of vibration, two or more conductors attached to different parts of the body and capable of conveying vibrations therefrom, said conductors connecting with a functionally-single part or focus capable of making a record, and a yielding substance properly situated in relation to the single part to enable a record to be made upon such single part, substantially as described.

3. In a device for recording and reproducing, or for recording alone or reproducing alone, articulate or other sound or sounds, the following instrumentalities in combination, namely: a diaphragm capable of vibration, two or more rigid conductors suitably attached to the diaphragm and converging to a common or central point or focus, and a projection with or without a wheel designed to make a record on a soft or yielding substance and to traverse this or any other suitable record, substantially as described.

4. In a device for recording and reproducing, or for recording alone or reproducing alone, articulate or other sound or sounds, the following instrumentalities in combination, namely: a diaphragm capable of vibration, two or more angular conductors suitably applied thereto capable of conveying vibrations from said diaphragm, the conductors connecting with a unitary part or focus, and a projection with or without a wheel attached to this part and designed to make a record and traverse this or other suitable record, substantially as described.

5. In a device for recording and reproducing, or for recording alone or reproducing alone, articulate or other sound or sounds, the following instrumentalities in combination, to wit: a frame containing a single chamber, a diaphragm or other body capable of vibration forming one side of said chamber, two or more conductors capable of conducting vibrations attached to the diaphragm and converging to a unitary point or focus, a projection attached to this point, and a tube or tubes forming an inlet or an outlet for the chamber.

409,005. APPARATUS FOR THE RECORD AND REPRODUCTION OF SOUNDS. CLARKE BETTINI, New York, N. Y. Filed Apr. 20, 1889. Serial No. 308,089. (No model.)



Claim.—1. An apparatus for recording and reproducing articulate and other sound or sounds, comprising a diaphragm or other body capable of vibration, and having different parts thereof under a separate uniform tension, and a vibration-conductor consisting of a body having a common or central point or place, at which point is placed a projection designed to make a record, and arms or projections ex-

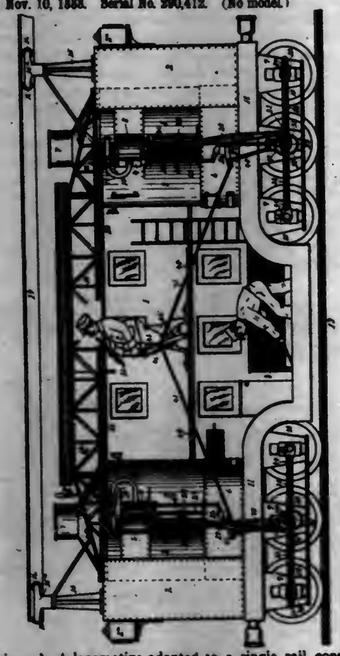
tending from the central point and bearing upon each of the divisions of the diaphragm.

2. An apparatus for recording and reproducing articulate and other sound or sounds, comprising a diaphragm or other body capable of vibration, having different divisions or parts thereof under separate uniform tension, two or more resonant chambers arranged in communication with a vibrating body, and a vibration-conductor comprising arms or projections, one or more of which bear upon each of the divisions of the diaphragm, and which converge to a common or central point, and a projection attached at this common or central point and designed to make a record, or to pass over a record already made, substantially as described.

3. An apparatus for recording and reproducing articulate and other sound or sounds, comprising a diaphragm or other body having different parts or divisions thereof under separate and uniform tension, two or more resonant chambers communicating with the diaphragm or other vibrating body, and a tube or tubes forming an inlet or an outlet from the chambers, and a vibration-conductor comprising arms or projections, one or more of which bear upon each division of the diaphragm or other vibrating body, and converge to a common or central point, and a projection attached at this point, substantially as described.

4. An apparatus for recording and reproducing articulate and other sound or sounds, comprising a diaphragm or other body capable of vibration, a vibration-conductor comprising arms or projections bearing upon or attached to the diaphragm, and an adjustable pin or projection from the frame containing the diaphragm, capable of movement to bring it in contact with or away from the vibration-conductor.

409,006. LOCOMOTIVE. ERRI M. BOYNTON, West Newbury, Mass. Filed Nov. 10, 1888. Serial No. 290,412. (No model.)



Claim.—1. A locomotive adapted to a single rail, consisting of suitable frame-work, a set of drivers at each end, and an independent boiler, steam-chests, steam-cylinders, and connecting mechanism, placed directly over each set of drivers.

2. A locomotive adapted to a single rail, consisting of suitable frame-work, sets of drivers at each end, boilers, steam-chests, steam-cylinders, connecting mechanism, valve-gears, and reversing mechanism, and operating-rods extending from said valve-gears and reversing mechanism to a cab located midway between said boilers, so that both sets of mechanism may be controlled by a single movement.

3. A locomotive adapted to a single rail, consisting of suitable frame-work, independent sets of drivers at opposite ends, and independent furnaces, boilers, steam-chests, steam-cylinders, connecting mechanism, &c., located over said sets of drivers, and a cab located midway the locomotives and having a platform for the engineer located midway its height.

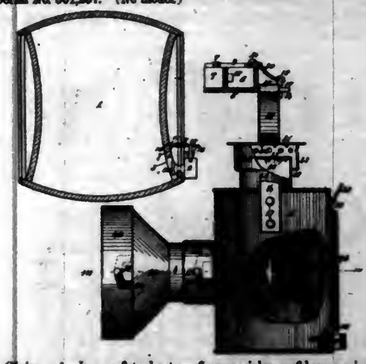
4. A locomotive adapted to a single rail, consisting of suitable frame-work, sets of drivers at opposite ends, independent sets of furnaces over said drivers, a pair of boilers over each furnace placed tandem, independent steam-chests, steam-cylinders for each boiler, cross-heads, connecting-rods by which the power developed in the cylinders is transmitted to the drivers, steam-pipes 18, and operating-rods 20, curved and united as shown, whereby all of the valves are opened and closed by a single movement.

5. In a locomotive adapted to a single rail, suitable frame-work, boilers at each end, drivers, steam-chests, steam-cylinders, cross-heads, and connecting-rods, in combination with steam-pipes 18, valves 19, having spindles provided with pinions, and operating-rods 20, curved and united as shown, and having racks at their ends engaging said pinions, as and for the purpose set forth.

6. In a locomotive adapted to a single rail, the sets of drivers at opposite ends, one driver in each set having eccentrics 33, the usual eccentric straps and rods, and parallel rods connecting the drivers in each set, in combination with links 37, to which the eccentric-rods are connected, valve-stems 35, bell-crank levers connected to the valve-stems and to the links, and reversing-rods 41, curved and united as shown, whereby the two sets of drivers may be reversed by a single movement.

7. In a locomotive adapted to a single rail, sets of drivers at the opposite ends, and furnaces and drivers over each set of drivers, vertically-acting connecting-rods and valve-gear and reversing mechanism of ordinary construction, in combination with operating-rods 20 and reversing-rods 41, arranged as shown, and extending into the cab, so that a single movement will control the valve mechanism in each steam-chest and another movement the reversing mechanism of each set of drivers.

409,007. SAFETY-LANTERN FOR VARNISHERS OF BREWERS' VATS. WILLIAM BEBBLER, St. Louis, Mo. Filed Feb. 26, 1889. Serial No. 301,257. (No model.)



Claim.—1. In a safety-lantern for varnishers of brewers' vats, the combination of the suspensory tubular hanger, from which the lantern is suspended, the adjustable pivoted screw-attacher of said hanger, and the stay-lug 12, that projects longitudinally from the head of said screw-attacher and engages in the slot 13 on the rear side of said tubular suspensory hanger to steady the head of the screw in its intermediate position, substantially as described, and for the purpose set forth.

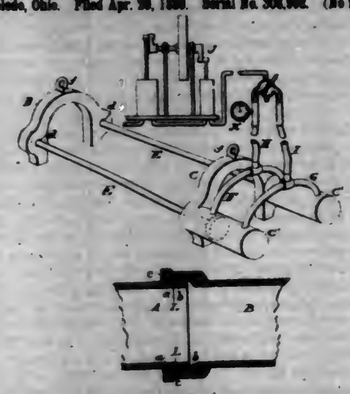
2. In a safety-lantern for varnishers of brewers' vats, the combination of the suspensory tubular hanger provided with the elongated slot 8, the said hanger also provided with an opening partially around the same for the adjustable traversing of its screw-attacher, the adjustable screw-attacher 7, the pivot-pin that surmounts the head of said screw and is seated and works in the slot 8, and the stay-lug 12, that projects from the rear of said screw-head and engages in the slot 13 in the rear side of the tubular suspensory hanger, substantially as described, and for the purpose set forth.

3. In a safety-lantern for varnishers of brewers' vats, the combination of the suspensory tubular hanger, the pivoted adjustable screw-attacher, the lug 14, that projects from the outer end of said hanger, the suspended lantern, the bail 16, by which said lantern is suspended, and the loop 15 at the summit of said bail, that is seated on the lug 14 of said suspensory hanger, substantially as and for the purpose set forth.

4. In a safety-lantern for varnishers of brewers' vats, the combination of the suspensory hanger, the adjustable pivoted screw-attacher 7, the lantern suspended from said hanger, the flange-collar 32 around the open illuminating-space in front of said lantern, the stay-pins 33, that project from said collar, the illuminating-tube 4, the telescopic collar 34, provided with bayonet-joint angle-slots that engage on the stay-pins 33, to secure the illuminating-tube to the collar, the flaring flange 37, the ring-collar 38 in front of said flange, the stay-pins 39, that project from said ring-collar, the cap-ring 40, that telescopes on the collar 38, the said ring provided with bayonet-joint angle-slots that engage on the stay-pins 39, and the inwardly-projecting flange 41 on said ring, substantially as described, and for the purpose set forth.

5. In a safety-lantern for varnishers of brewers' vats, the combination of the suspensory and adjustable tubular hanger, from which the lantern is suspended, the adjustable pivoted screw-attacher, the flange-collar 32 around the illuminating-outlet in front of the lantern, the illuminating-tube 4 and its attaching telescopic collar, the bayonet-joint by which said telescopic collar is attached to said flange-collar, the minor glass disk 36, seated between the flange-collar and illuminating-tube, the flaring collar 37, and ring-collar 38 at the forward end of the illuminating-tube, the cap-collar 40, that telescopes on the collar 38, the bayonet-joint that secures said telescopic collar to the collar on which it is seated, the inwardly-flanged rim on said telescopic collar, and the major glass disk 42, that is seated between said flange-rim of the telescopic collar and the collar 38, on which it is seated, substantially as described, and for the purpose set forth.

409,008. LAYING SUBMARINE PIPES. GEORGE H. BRAYNARD, Toledo, Ohio. Filed Apr. 20, 1889. Serial No. 308,002. (No model.)



Claim.—1. In combination with pipe A, having shoulder *a*, pipe B, having shoulder *b*, and groove *c*, gasket L, seated in said groove, yoke C, provided with cylinders C' C', yoke D, rods E, extending through openings in the yokes and provided with pistons within the cylinders, and a pipe H, connecting the cylinders with a pressure-chamber, all substantially as described.

2. The herein-described jack for use in joining submarine pipes, consisting of yokes C D, the former provided with cylinders C' C', rods E E, each provided at one end with a piston and at the other end with a nut or shoulder, and a pipe communicating with the cylinders and adapted to deliver thereto a fluid under pressure.

3. In combination with a jack substantially such as described and shown for connecting pipes under water, a supply-pipe for delivering a fluid thereto under pressure, and a pressure-gage serving to show the pressure applied to or by the jack, substantially as and for the purpose set forth.

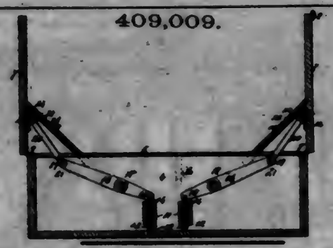
4. In combination with yokes C D, the former provided with cylinders C' C', pistons arranged within said cylinders, rods E, extending from the pistons to yokes D, and pipes H I, communicating with opposite ends of the cylinders and with a pressure-chamber.

5. The herein-described joint for submarine pipe, consisting of a spigot end having shoulder *a*, bell end having shoulder *b* and groove *c*, and gasket L, seated in said groove and adapted to be spread to fill the joint by compression between the shoulders *a* and *b*.

409,009. SHOW-CASE. JOHN BUCKHARDT, Alton, Ill. Filed Mar. 19, 1888. Serial No. 303,336. (No model.)

Claim.—In a show-case, the combination of the case with its folding lids, the spring-chamber 5, the spring snap-catch 26, the push-pin that operates said catch, the spiral springs 11, the fulcrum-levers 16, the pins on which said levers fulcrum, the toggle-links 20, the means of connection of said spiral springs to the bottom of the case and to the fulcrum-levers, the pivot-pins that connect said fulcrum-levers to the toggle-links, the brackets 23, and pivot-pins 24, that secure the toggle-links to the folding lids, substantially as described, and for the purpose set forth.

409,009.



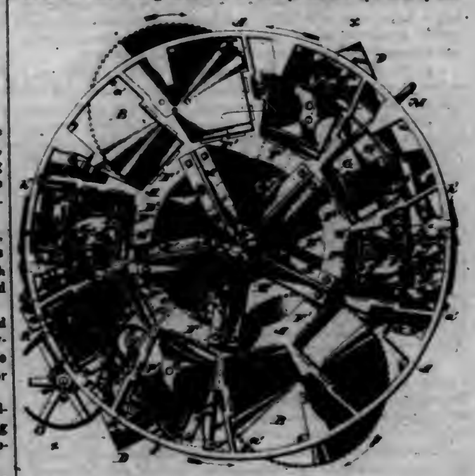
409,010. DOOR-KNOB. CROMWELL O. CASE, New Britain, Conn., assignor to P. & F. Corbin, same place. Filed May 16, 1889. Serial No. 310,993. (No model.)



Claim.—The herein-described door-knob, consisting of an ordinary half-shell A and knob-shank B, and the cap part C of the shell, provided with the internal flange 4 and ordinary external flange 3, and an annular space between said flanges, into which the edge of the half-shell A sets, substantially as described, and for the purpose specified.

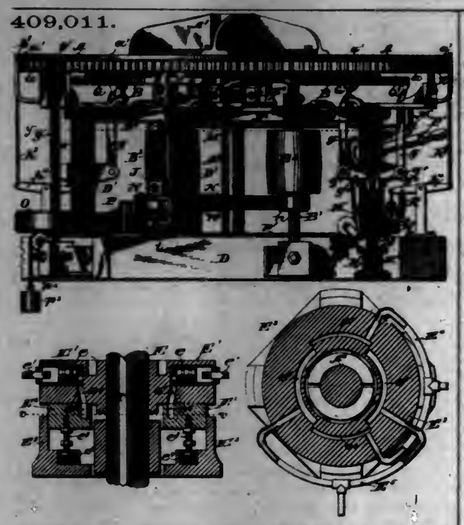
409,011. SHINGLE-SAWING MACHINE. FRANK CHALLOUPKA, Omro, Wis. Filed Apr. 30, 1888. Serial No. 272,267. (No model.)

Claim.—1. In a shingle-sawing machine, the combination, with a saw and a shingle-bolt carrier provided with dogs for holding said shingle-bolts when operated upon by the saw, of a cylinder, a piston working therein and connected with one of said dogs, and an automatic valve controlling the action of said piston and operated by the





409,011.



movement of said shingle-bolt carrier, substantially as and for the purposes set forth.

2. In a shingle-sawing machine, the combination of a saw and a rotary carrier having shingle-bolt receptacles provided with dogs, cylinders movable with said carrier, pistons working in said cylinders and connected one with a dog of each receptacle, and a valve controlling the admission and eduction of the motive medium to said cylinders, substantially as and for the purposes set forth.

3. In a shingle-sawing machine, the combination, with a saw and a rotary shingle-bolt carrier provided with dogs, of cylinders movable with said carrier, pistons working in said cylinders and connected one with a dog in each receptacle of said carrier, and a central valve connecting in rotation each of said cylinders with the induction and eduction passages, substantially as and for the purposes set forth.

4. In a shingle-machine, the combination, with a saw and a rotary carrier provided with dogs, of a central cylinder-block provided with cylinders and revoluble with said carrier, and a valve-block concentric therewith, provided with induction and eduction ports arranged to register in rotation with induction and eduction passages in said cylinder-block to each of said cylinders, substantially as and for the purposes set forth.

5. In a shingle-sawing machine, the combination, with a saw and a rotary carrier having shingle-bolt receptacles provided with dogs, of a cylinder-block revoluble concentrically therewith and provided with radiating cylinders, pistons working with said cylinders and connected one with a dog in each receptacle of said carrier, a fixed valve-block provided with alternating concentric induction and eduction ports arranged to register in rotation with passages in said cylinder-block to said cylinders, and supply and exhaust connections communicating, respectively, with said induction and eduction ports, substantially as and for the purposes set forth.

6. In a shingle-sawing machine, the combination, with a saw and a rotary shingle-bolt carrier provided with dogs, of cylinders and a block formed with a valve-face, and passages leading to said cylinders and connected and movable with said carrier, pistons working in said cylinders and each connected with one of said dogs, a valve-block provided with induction and eduction ports arranged to register with the passages leading to said cylinders, and a yielding or elastic support holding said valve-block snugly against the face working therewith, substantially as and for the purposes set forth.

7. In a shingle-sawing machine, the combination of a saw and rotary shingle-bolt carrier provided with dogs, cylinders provided with pistons connected with said dogs, a block revoluble with said carrier and formed with a valve-face and passages connecting it with said cylinders, and a vertically-adjustable valve-block having supply and exhaust-connections and ports registering with the passages in said rotary block, substantially as and for the purposes set forth.

8. In a shingle-sawing machine, the combination, with a saw and a rotary shingle-bolt carrier provided with dogs, of cylinders provided with pistons connected with said dogs, a valve-block supported upon adjusting-screws and elastic bearings and provided with ports, and a rotary block working with said valve-block and formed with passages which register with the ports therein and communicate with said cylinders, substantially as and for the purposes set forth.

9. In a shingle-sawing machine, the combination, with one or more saws, of shingle-bolt ways having a movable section, a carrier arranged to move the shingle-bolts thereon, a cylinder, a piston working therein and connected with said movable section, a valve connected with the cylinder, actuating mechanism connected with said valve, and a spur on said carrier arranged to engage and operate said valve-actuating mechanism, substantially as and for the purposes set forth.

10. In a shingle-sawing machine, the combination, with one or more saws, of shingle-bolt supporting-ways having movable sections and a carrier arranged to move said shingle-bolts thereon, two cylinders placed in the same axial line, a piston-rod connected with said movable section and provided with two pistons, one working in each of said cylinders and one acting to cushion the movement of the other, and a valve connected with the cylinder of the actuating-piston, substantially as and for the purposes set forth.

11. In a shingle-sawing machine, the combination, with one or more saws, of openings for the reception of shingle-bolts, curved ways located under said openings and having a movable section, a cylinder, a piston working therein and connected with said movable section, a valve connected with said cylinder, a spring holding said valve in its normal position, actuating mechanism connected with said valve, and pins or spurs connected with said carrier and arranged to be moved separately into range with said valve-actuating mechanism, substantially as and for the purposes set forth.

12. In a shingle-sawing machine, the combination of one or more saws, a rotary carrier having a number of openings for the reception of shingle-bolts, curved ways located below said openings and having sections outwardly movable from a line between and parallel with said ways, rock-shafts provided with standards carrying said sections and with crank-arms, a cylinder, a piston working therein and connected with said crank-arms, a valve in connection with said cylinder, held in its normal position by a spring, a lever fulcrumed to a fixed support adjacent to the periphery of said carrier and connected with said valve, pins or spurs inserted in the rim of said carrier and arranged to be moved separately into range with said lever, and an inclined wing arranged to move said pins after they escape said lever out of range therewith, substantially as and for the purposes set forth.

13. In a shingle-sawing machine, the combination of one or more saws, a rotary carrier having a number of openings for the reception of shingle-bolts, curved ways underneath said openings, having a movable section, mechanism connected with said movable section and arranged to carry the same out of position, so as to drop the bolt or spalt resting thereon, a lever fulcrumed to a fixed support adjacent to said carrier and connected with said mechanism, and a movable pin or spur connected with said carrier and arranged to be moved into range with said lever, substantially as and for the purposes set forth.

14. In a shingle-sawing machine, the combination, with a rotary carrier provided with receptacles for a number of shingle-bolts, of spalt-dropping mechanism, a piston connected therewith and arranged to operate the same, a cylinder in which said piston works, a valve controlling the admission of the actuating medium to said cylinder, and trips applied to said bolt-carrier—one for each of the several bolt-receptacles—and arranged under the control of the operator to shift the valve at the proper time to discharge the spalt from either receptacle in said bolt-carrier, substantially as and for the purposes set forth.

15. In a shingle-sawing machine, the combination, with spalt-dropping mechanism, of an actuating-piston connected therewith and a check-piston attached to the same piston-rod, substantially as and for the purposes set forth.

16. In a shingle-sawing machine, the combination, with the shingle-bolt carrier and spalt-dropping mechanism, of a cylinder, a piston working therein and connected with said spalt-dropping mechanism, a valve controlling the admission of the actuating medium to said cylinder, valve-shifting mechanism, and a retractile trip on said carrier arranged, when moved into position by the operator, to engage and operate said valve-shifting mechanism, substantially as and for the purposes set forth.

17. In a shingle-machine, the combination of a rotary carrier having a number of shingle-bolt-receiving openings, ways underneath said openings, having laterally-movable sections, spalt-dropping mechanism connected with said sections, an actuating-piston connected with said mechanism, a valve controlling the movement of said piston, a lever fulcrumed to a fixed support adjacent to said rotary carrier, and movable spurs connected with said carrier and arranged to be moved separately by the operator into range with said lever, substantially as and for the purposes set forth.

18. In a shingle-machine, the combination of a rotary carrier having a number of shingle-bolt-receiving openings, ways underneath said openings, having laterally-movable sections, spalt-dropping mechanism connected with said sections, an actuating-piston connected with said mechanism, a valve controlling the movement of said piston, valve-actuating mechanism, movable spurs connected with said carrier and arranged to be severally moved by the operator into position to engage and operate said valve-actuating mechanism, and a device for automatically returning said spurs to their normal position, substantially as and for the purposes set forth.

19. In a shingle-sawing machine, the combination, with a rotary bolt-carrier, two saws, and two tilting tables set normally to tilt the bolts alternately in opposite directions, of an actuating-piston connected with one of said tilting tables, a valve controlling the movement of said piston, valve-actuating mechanism arranged to be engaged and operated by said bolt-carrier, and a shifting device under the control of the operator, by which said valve-shifting mechanism is set at will in position to be engaged by said bolt-carrier, substantially as and for the purposes set forth.

20. In a shingle-sawing machine, the combination, with a shingle-bolt carrier and a tilting table, of an actuating-piston connected with said tilting table, a valve controlling the action of said piston, and valve-actuating mechanism arranged to be engaged and operated by said bolt-carrier, substantially as and for the purposes set forth.

21. In a shingle-sawing machine, the combination, with a rotary shingle-bolt carrier and a tilting table, of an actuating-piston connected with said tilting table, a valve controlling the action of said piston, a cam connected with the valve-stem, and pins or projections attached to the cam-shaft and arranged to be engaged by a lug on said rotary carrier, substantially as and for the purposes set forth.

22. In a shingle-sawing machine, the combination, with a rotary shingle-bolt carrier, of a tilting table supported upon the upper end of a tipping-bar, a slide connected with the lower end of said tipping-bar, and a way for said slide capable of angular adjustment, substantially as and for the purposes set forth.

23. In a shingle-sawing machine, the combination, with a rotary shingle-bolt carrier, of a tilting table mounted upon the upper end of a tipping-bar which rests at the lower end in an oscillatory step, a slide connected with the lower end of said tipping-bar, a supporting-way for said slide, capable of angular adjustment, a lever in which said step is pivoted, and a support to which said lever is fulcrumed, capable of angular adjustment, substantially as and for the purposes set forth.

24. In a shingle-sawing machine, the combination, with a rotary shingle-bolt carrier, a tilting table mounted upon the upper end of a tipping-bar which has a jointed connection at its upper end with the frame of the machine and rests at its lower end in an oscillatory step, a slide connected with the lower end of said tipping bar, a guideway for said slide, capable of angular adjustment, a lever in which said step is pivoted, a cylinder, a piston working therein and connected with said tipping-bar, and a support carrying said step lever and cylinder, capable of angular adjustment, substantially as and for the purposes set forth.

25. In a shingle-sawing machine, the combination of a rotary bolt-carrier having a circular series of lugs, a tilting table, an actuating-piston connected therewith, a valve controlling the action of said piston, a cam engaging the valve-stem, and a disk on said cam-shaft, provided with pairs of pins or teeth arranged to be engaged by the lugs on said rotary carrier, substantially as and for the purposes set forth.

26. In a shingle-sawing machine, the combination of a rotary bolt-carrier provided with a number of bolt-receptacles and a like number of lugs, two or more tilting tables, actuating-pistons connected therewith, valves controlling the movement of said pistons, valve-actuating cams, disks mounted on the cam-shafts and provided with pairs of pins which are arranged to be engaged singly or in pairs by the lugs on said carrier, and a hand-operated device arranged to turn either of said disks, so as to bring a pair of pins into range of said lugs, substantially as and for the purposes set forth.

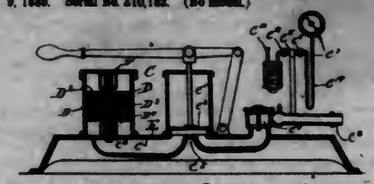
27. In a shingle-sawing machine, the combination of a rotary carrier having a number of bolt-receptacles and a like number of lugs, two or more tilting tables alternating with a like number of saws and set normally at opposite inclinations, tipping mechanism connected with said tilting tables, rotary disks connected with said tipping mechanism and provided with pairs of pins which are arranged to be engaged by the lugs on said rotary carrier, and a shifting device arranged to turn either of said disks, so as to bring a pair of pins into range with the lugs on said carrier, substantially as and for the purposes set forth.

28. In a shingle-sawing machine, the combination, with a saw and a rotary carrier having a number of bolt-receptacles each provided with a movable dog, of cylinders, an automatic valve connecting said cylinders in rotation with supply and exhaust, single-acting pistons connected with said dogs and working in said cylinders, and springs connected with said dogs and acting in opposition to said pistons, substantially as and for the purposes set forth.

409,012. ORNAMENTATION OF WALLS. MELVIN B. CUSHEE, Grand Rapids, Mich. Filed June 11, 1888. Serial No. 313,969. (No model.)

Claim.—The composition herein described, consisting of gypsum, glue, and a fatty matter, substantially as described.

409,013. APPARATUS FOR TESTING AND DISINFECTING DRAIN OR SOIL PIPES. WILLIAM S. CLARK, Philadelphia, Pa. Filed May 9, 1888. Serial No. 310,182. (No model.)

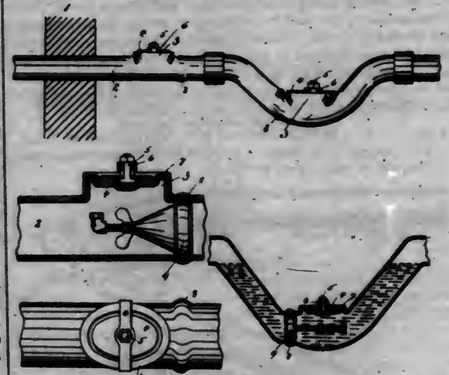


Claim.—1. A fumigating-vessel having a spring-supported air-inlet valve opening downward in the top, a removable perforated support for combustible fumigating material, and an outlet-tube at the base connected and combined with the inlet-valve of an air-forcing pump, constructed and arranged to operate substantially as set forth.

2. The combination of the air-pump C with the bed-plate E, and the fumigating-vessel D, containing the removably-attached pump, inlet-valve C^{13}, and air-inlet valve D', said fumigating-vessel being detachably connected to the bed-plate E, substantially as shown and described.

3. The combination of the air-pump C, supported by the bed-plate E, which is provided with the valve C^4, with the vessel D, provided with the pump-inlet spring-valve C^{13}, the manometer C^7, siphon-seal C^{14}, and siphon-gage C^{16}, provided with the cocks C^{11} and C^{12}, substantially as shown and described, and for the purpose set forth.

409,014. DRAIN AND SOIL PIPE. WILLIAM S. CLARK, Philadelphia, Pa. Filed May 9, 1888. Serial No. 310,183. (No model.)



Claim.—1. In a drain and soil pipe, the combination of the annular expanded portion thereof, formed contiguous to a hand-hole in the said pipe, with an expansible stopper adapted to fit into the said expanded portion, substantially as shown and described, and for the purpose set forth.

2. A drain and soil pipe having the expansion 8 formed therein, and constructed with an elliptic hand-hole, and provided with the plate 4, bolt 5, bridge 6, and gasket 7, in combination with the expansible stopper 9, substantially as shown, and for the purpose specified.

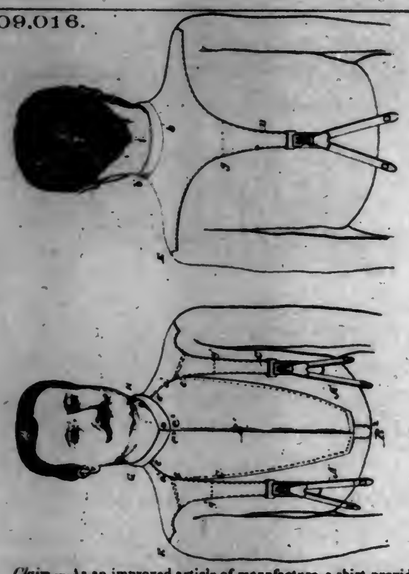
409,015. ELECTRIC WELDING. CHARLES L. COFFIN, Detroit, Mich. Filed Apr. 24, 1888. Serial No. 308,416. (No model.)



Claim.—The process of welding metals which consists in placing them in an air-tight chamber, exhausting the air therefrom, and then fusing the metals by electricity, substantially as described.

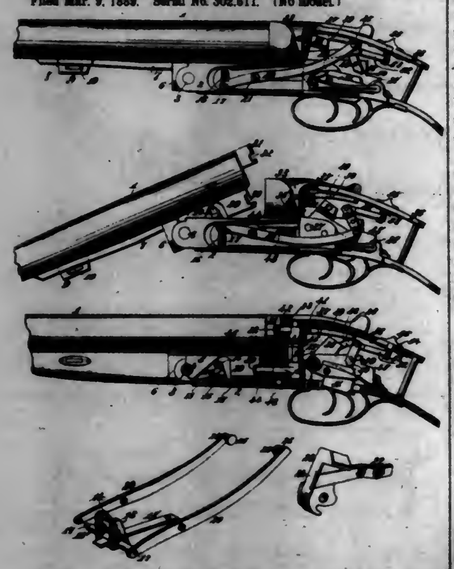
409,016. SHIRT. MAX OSHEE, New York, N. Y. Filed Nov. 14, 1888. Serial No. 290,921. (No model.)

409,016.



Claim.—As an improved article of manufacture, a shirt provided with the yoke B, having front and back tags C C and D, said yoke extending entirely across the shoulders and having the semicircular neck portion *a a*, said yoke being secured at its outer edge to the shirt-body from shoulder to shoulder and at its inner edge, at the back, to the neckband and to the upper edge of the bosom, and also part way down the edge of each tag, so as to leave only the ends thereof free, substantially as shown and described.

409,017. BREECH-LOADING GUN. HARRY COMSTOCK, Fulton, N. Y., assignor to the Hunter & Comstock Arms Company, same place. Filed Mar. 9, 1889. Serial No. 302,611. (No model.)



Claim.—1. In a concealed-hammer gun, the combination, with a slotted frame, of barrels pivoted thereon and provided with a lug, a loop or yoke engaging the lug and having a shaft extending through slots in the frame, the pivoted cocking-levers connected with and operated by the shaft of the loop or yoke, and strikers arranged adjacent to the rear ends of the cocking-levers and cocked by the latter, substantially as described.

2. In a concealed-hammer gun, the combination, with a slotted frame, of pivoted barrels having a hooked lug, a loop or yoke arranged in the slotted frame engaging the hooked lug and having a shaft at its lower portion extending through slots in the frame, the pivoted cocking-levers pivoted on the frame and connected at their front ends with the shaft of the loop or yoke, and strikers pivoted in the rear part of the frame and having rearwardly-projecting tangs acted on by the rear ends of the cocking-levers to cock the strikers, substantially as described.

3. In a concealed-hammer gun, the combination, with a slotted frame and barrels pivoted thereon and having a lug, of a loop or yoke engaging the lug and having a shaft extending through slots in the frame in rear of the barrel-pivots, the cocking-levers pivoted to the frame and having their front ends connected with the shaft of the loop or yoke and their rear ends provided with lateral studs, and strikers pivoted in the rear part of the frame and having rearwardly-extending tangs on which the studs on the cocking-levers rest, substantially as described.

4. In a concealed-hammer gun, the combination, with a slotted frame and barrels pivoted thereon and having a hook in rear of the barrel-pivot, of a loop or yoke arranged in the frame engaging the hook and having a shaft extending through slots in the frame, the strikers pivoted in the rear part of the frame and having rearward-projecting tangs, and cocking-levers pivoted to the frame, connected at their front ends with the shaft of the loop or yoke, and having studs at their rear ends provided with circular heads overlapping the faces of the striker-tangs, substantially as described.

5. In a concealed-hammer gun, the combination, with a frame and barrels pivoted thereon and having a hook in rear of the barrel-pivot, of a loop or yoke engaging the hook and having a shaft, the strikers pivoted in the rear part of the frame and having rearward-projecting tangs, and the cocking-levers composed of flat steel plates fulcrumed on the opposite faces of the frame, connected with the shaft of the loop or yoke, and having studs at their rear ends provided with heads overlapping one side of the striker-tangs, while the cocking-levers lie on the opposite side thereof, substantially as described.

6. In a hammerless gun, the combination, with a spring-actuated post journaled in the rear of the breech-piece and operated by the top lever, of barrels pivoted on the frame and provided with two central lugs, one projecting to the rear and having a locking-recess and the other depending from below and having a similar locking-recess, and a stop-bolt lying in a seat in the rear end of a central groove in the bridge-piece and thrown upward by a spring, the post being provided with a locking-cam normally lying in the rear end of the groove in the breech-piece and having a heavier locking-cam normally lying in the rear end of the central slot of the frame, whereby, upon closing the breech, the rearwardly-projecting lug on the pivoted barrels enters the central groove in the breech-piece, driving down the stop-bolt, releasing the lug pressing against it, and thereby enabling the spring-actuated post to throw both locking-cams into the locking-recesses of the respective lugs on the barrels as the breech sinks to place.

7. In a concealed-hammer gun, the combination, with a slotted frame and barrels pivoted thereon and provided in rear of the pivot with a lug, of a loop or yoke engaging the lug and having a flattened shaft extending through slots in the frame, a flat spring acting at one end upon the flattened part of said shaft and detachably secured to the frame at its other end, cocking-levers fulcrumed on the frame and connected at their front ends with the shaft of the loop or yoke, and strikers pivoted in the rear part of the frame and having rearward-projecting tangs acted on by the rear ends of the cocking-levers, substantially as described.

8. In a hammerless gun, the combination, with the tripping-plates of the triggers, of a cam-lever straddling and pivoted to a plate on the frame between the tripping-plates, said levers having eccentric or cam surfaces overhanging the tripping-plates, and a push-button adjustable on the central top piece of the frame and having a drop-plate lying in a slot in the top piece and connected to the free end of the cam-lever, substantially as described.

409,018. AXLE-LUBRICATOR. EDWARD S. COYLE, Ballston, N. Y. Filed Feb. 16, 1888. Serial No. 264,257. (No model.)



Claim.—1. The combination of the axle provided with the shoulder S and the two screw-threaded portions, and which is reduced in size between the two screw-threaded portions, with the perforated thimble D, internally screw-threaded at each of its ends, so as to screw on the axle, the nut C and screw B, and an oil-passage F made through the axle and to connect with the oil-chamber formed by the thimble, substantially as shown.

2. The combination of the axle having the central portion of the spindle uniformly reduced in size and provided with an oil-passage F, which extends from beyond the shoulder S at its outer end, with the perforated thimble D and nut C, the oil-chamber being formed inside of the thimble by the reduced portion of the spindle alone, substantially as described.

409,019. STARCHING-MACHINE. JAMES G. CRAWFORD, Boston, Mass. Filed May 28, 1888. Serial No. 275,262. (No model.)

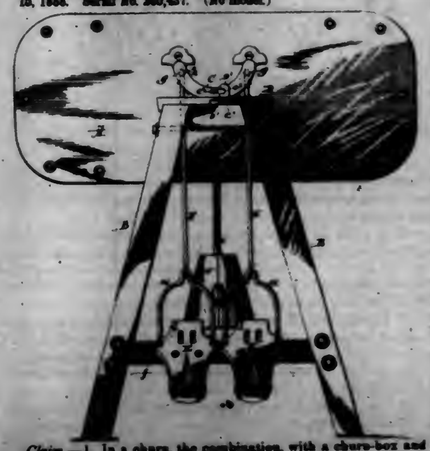


Claim.—1. The combination of a starch-box, a plunger therein, a rod *d*, affixed to the plunger, fixed guides for said rod, shoulders or stops affixed to the rod, a sleeve adapted to move on said rod between said shoulders, a spring interposed between said sleeve and one of said shoulders, and means for reciprocating said sleeve, as set forth.

2. The combination of the starch-box, the plunger *b* therein, having a rod *d*, the roll mounted in fixed bearings over said box, the driving-shaft *l*, having the fast pulley *m* and the idle-pulley *m'*, a connection between said shaft and the rod *d*, whereby said rod and plunger are reciprocated, the loose pulley *r* on said shaft, having the sprocket-wheel *s* attached to its hub, a sprocket-wheel *u*, attached to the roll *v*, the chain *t*, connecting the wheels *u s*, the movable loose roll *w*, and means, substantially as described, whereby said roll may be held in operative relation to the roll *v*, as set forth.

3. The combination of the starch-box, the plunger *b* therein, having a rod *d*, the roll *v*, mounted in fixed bearings over said box, the driving-shaft *l*, having the fast pulley *m* and the idle-pulley *m'*, a connection between said shaft and the rod *d*, whereby said rod and plunger are reciprocated, the loose pulley *r* on said shaft, having the sprocket-wheel *s* attached to its hub, a sprocket-wheel *u*, attached to the roll *v*, the chain *t*, connecting the wheels *u s*, the movable loose roll *w*, means, substantially as described, for moving the roll toward and from the roll *v*, and the indicator *p'*, attached to the driving-shaft *l*, whereby the position of the plunger is indicated, as set forth.

409,020. CHURN. JAMES M. CURTIS, Louisville, Ky. Filed Sept. 15, 1888. Serial No. 285,437. (No model.)



Claim.—1. In a churn, the combination, with a churn-box and a supporting-frame, of two rockers secured at their ends to the box, with their curved faces resting on the supporting-frame, a movable block adapted to engage a projection carried by the churn-box for locking the latter against movement, connecting-rods attached to the churn-body, and treadles connected to the lower ends of the connecting-rods, substantially as set forth.

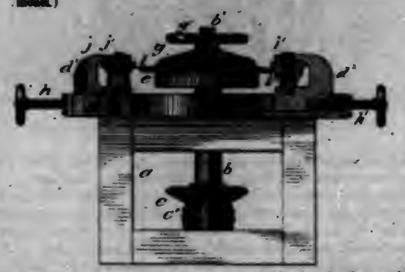
2. In a churn, the combination, with a churn-box and a supporting-frame, of two rockers secured at their ends to the box, with their curved faces resting on the supporting-frame, a movable locking-block mounted in the frame and adapted to engage a projection on one of the rockers for locking the churn-body in a horizontal position, connecting-rods attached to one of the rockers at or approximately at the opposite ends thereof, and treadles attached to said connecting-rods, substantially as set forth.

3. In a churn, the combination, with a supporting-frame having track-plates thereon, and a churn-box having rockers, the latter having teeth adapted to register with indentations in the track-plate, of the connecting-rods attached at or near the ends of one of said rockers, a device for locking one of the rockers to the supporting-frame, and treadles connected to the lower ends of the connecting-rods, substantially as set forth.

4. In a churn, the combination, with a supporting-frame and a churn-box having a weight depending from the bottom thereof, rockers secured to the sides of the box, with their curved faces resting on the supporting-frame, and a movable block adapted to engage a projection carried by the churn-box for locking the latter against movement, of rods attached to the churn-box near the ends of one of the rockers, and treadles attached to the lower ends of the rods, substantially as set forth.

5. The combination, with a churn-box that is made to rock endwise on rockers and track-plates, of a rocker having a projecting lug, a slotted and recessed track-plate, and a locking-block which is adapted to slide in the slot of the track-plate and is also slotted to engage the lug of the rocker, substantially as set forth.

409,021. MACHINE FOR FLANGING BOILER-HEADS. ISAAC B. DAVIS, Hartford, Conn. Filed Jan. 6, 1888. Serial No. 260,269. (No model.)



Claim.—1. In a machine for forming boiler-heads, the combination, with a rotary shaft, a form attached thereto, and a clamp for securing a blank to one face of the form, of laterally-adjustable rolls arranged to rotate in the same plane as the form, one of said rolls being constructed with an annular projection and the other roll constructed with an overhanging edge, substantially as set forth.

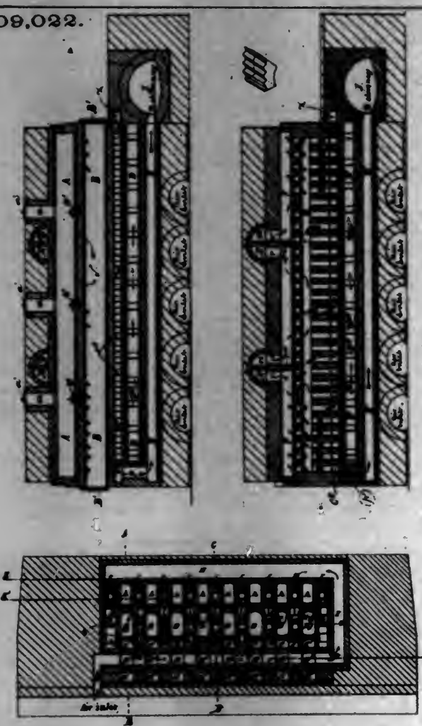
2. In a machine for forming boiler-heads, the combination, with a rotary shaft, a form attached thereto, and a clamping device for securing a blank to one side of the form, of two laterally-adjustable rolls located on opposite sides of the form and arranged to rotate in the same plane therewith, one of said rolls being cylindrical and provided with an overhanging edge and the other roll made tapering and provided with an irregular-curved surface, substantially as set forth.

3. In combination with a rotary shaft bearing a form and a clamp device, whereby a disk-shaped boiler-head blank is held between the form and the clamping-disk, the base bearing the reciprocating carriages, the reciprocating carriages arranged on diametrically-opposite sides of the shaft and form the carriage-feeding devices, and the forming-rolls borne in said carriages, one of the said rolls being conical and having an annular curved projection and the other and opposite roll having the cylindrical working-surface placed parallel to the plane of the annular rim of the form, and having the curved edge overhanging the cylindrical body of the roll, all substantially as described.

409,022. FURNACE FOR THE DESICCATION, INCINERATION, AND CARBONIZATION OF PRECIPITANTS, &c., RESULTING FROM SLUDGE, &c. RICHARD DE SALISBURY, 71 St. Mary Street, Cardiff, County of Glamorgan, England. Filed Sept. 26, 1887. Serial No. 250,736. (No model.) Patented in England Feb. 24, 1886, No. 2,721.

Claim.—1. A refuse-furnace having an upper chamber formed with charging-openings, the lower chamber, the charging-openings connecting the chambers, the air-flue in the wall of the upper chamber, the gas-flue in the wall of the lower chamber, the openings con-

409,022.



necting the air and gas flues, and the air and gas openings connecting the lower chamber with the gas-flue, substantially as described.

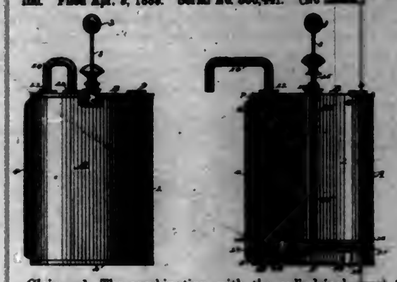
2. A refuse-furnace having an upper chamber formed with charging-openings, the lower chamber, the charging-openings connecting the chambers, the air-flue in the wall of the upper chamber, the gas-flue in the wall of the lower chamber, the openings connecting the air and gas flues, the air and gas openings connecting the lower chamber with the gas-flue, the vertical gas-flues, the top gas-flue, the lower gas-flue, the intermediate air-flue, the vertical air-flues, the top air-flues, and the openings connecting the top air-flues with the air-flue in the wall of the upper chamber.

3. A refuse-furnace having an upper chamber formed with charging-openings, the lower chamber, the charging-openings connecting the chambers, the air-flue in the wall of the upper chamber, the gas-flue in the wall of the lower chamber, the openings connecting the air and gas flues, the air and gas openings connecting the lower chamber with the gas-flue, the vertical gas-flues, the top gas-flue, the lower gas-flue, the intermediate air-flue, the vertical air-flues, the top air-flues, the openings connecting the top air-flues with the air-flue in the wall of the upper chamber, and the main flue, with which the lower gas-flue connects, substantially as described.

4. A refuse-furnace having upper chambers A A, formed with charging-openings *a*, the lower chambers B B, the charging-openings *c*, connecting the upper and lower chambers, the horizontal air-flue F in the wall between the upper chambers, the horizontal gas-flue G and vertical gas-flues H in the wall between the lower chambers, the openings *d*, connecting the horizontal air-flue with the horizontal gas-flue, and the openings *e* and *f*, connecting the lower chambers with the horizontal gas-flue, substantially as described.

5. A refuse-furnace having the upper chambers A A, the lower chambers B B, the horizontal air-flue F in the wall between the upper chambers, the horizontal gas-flue G and the vertical gas-flues H in the wall between the lower chambers, the openings *d*, connecting the horizontal air-flue with the horizontal gas-flue, the openings *e* and *f*, connecting the lower chambers with the horizontal gas-flue, the top flues C and C′ beneath the lower chambers, the bottom flues E E′, the intermediate air-flues D D′ between the top and bottom gas-flues, the vertical air-flues K K′, the top air-flues N, the openings *r*, connecting the top air-flue with the horizontal air-flue, and the openings *p p′*, connecting the top flues C C′ with the bottom flues E E′, and the main flue J, substantially as described.

409,023. MEASURING-VESSEL. ABRAHAM DE WITT, Bluffton, Ind. Filed Apr. 2, 1889. Serial No. 305,441. (No model.)

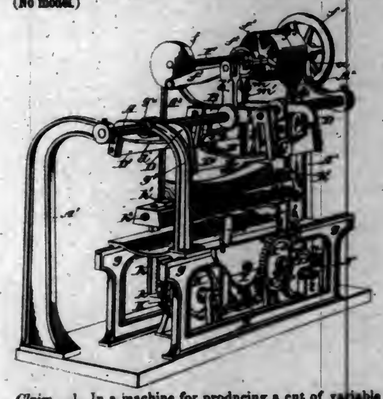


Claim.—1. The combination, with the cylindrical vessel A, provided with the ports at its top and bottom, the tube 4, opening into the said ports, and the interior pipe 7 on the upper port, of the cover B, provided with a drip-hole and nozzle-seat, the swiveled nozzle in the cover, and the valved piston, substantially as described.

2. The combination of the cylindrical vessel A, provided with the pipe 7 at its upper end, and the semicircular shell or tube secured on the outer face of the vessel and opening into the vessel at its bottom and into the pipe at its top, the cover provided with a drip-hole and nozzle-seat, the swiveled nozzle on the cover, and a valved piston provided with a piston-rod having graduations of measure marked thereon, substantially as described, and for the purpose specified.

3. The combination, with the vessel A, provided with a vertically-arranged exterior discharge-tube opening into the vessel at the top and bottom, and an interior vertical pipe opening into the said tube, a reciprocating piston and cover, of the swiveled nozzle arranged to connect with the interior pipe of the vessel at its swiveled end and to turn and set in a drip-hole in the cover with its free end, substantially as described.

409,024. MACHINE FOR CUTTING CURVED SURFACES. SAMUEL M. DIXON, Milwaukee, Wis. Filed Oct. 23, 1888. Serial No. 288,949. (No model.)



Claim.—1. In a machine for producing a cut of variable curvature, the combination of a flexible saw or cutter and means of changing its curvature while it is making a cut, substantially as and for the purposes set forth.

2. In a machine for producing a cut of variable curvature, the combination of a flexible cutter, holders supporting the cutter on opposite sides of the work, and mechanism connected with and arranged to change the distance between said holders while the cutter is in operation, substantially as and for the purposes set forth.

3. In a machine for producing a cut of variable curvature, a flexible cutter, means for changing its curvature while in operation, and a pattern arranged to change the direction of the cut transversely to the direction of the stroke of the cutter, substantially as and for the purposes set forth.

4. In a machine for producing cuts of variable curvature, a flexible cutter, means for changing the curvature of said cutter when the same is in operation, feeding mechanism, and mechanism for changing the position and inclination of the cutter with reference to the line of feed, substantially as and for the purposes set forth.

5. In a machine for producing a cut of irregular or variable curvature the combination of a flexible cutter, feeding mechanism,

saw-holding devices and guides arranged to change the curvature of the cutter, and a pattern arranged to change the position of the saw, whereby its curvature is changed and at the same time the line of its cut in the direction of the feed is determined, substantially as and for the purposes set forth.

6. In a machine for producing a cut of irregular or variable curvature, the combination, with a vibratory saw-frame provided with inclined guide-arms, saw-holding blocks held to said arms, a flexible saw secured to said blocks, and mechanism arranged to move said blocks lengthwise of said arms, whereby the curvature of the saw is changed, substantially as and for the purposes set forth.

7. In a machine for producing a cut of irregular or variable curvature, the combination of a vibratory saw-frame, a flexible saw held in said frame, and a pattern arranged to move said saw while the same is in operation toward or from the center on which said frame vibrates, substantially as and for the purposes set forth.

8. In a machine for producing a cut of irregular or variable curvature, the combination of a vibratory saw-frame having slotted arms, saw-holding blocks held and capable of turning in said arms, a saw secured to said blocks, and curved patterns engaging with said blocks and arranged to move and turn the same in said arms in conformity with the curvature of the cut to be produced, substantially as and for the purposes set forth.

9. In a machine for producing a cut of irregular or variable curvature, the combination, with a vibratory saw-frame having movable saw-holding blocks, of means for moving said blocks toward or away from each other, and a flexible saw secured at the ends in cylinders which have bearings and are capable of turning in said blocks, substantially as and for the purposes set forth.

10. In a machine for producing a cut of irregular or variable curvature, the combination of a vibrating saw-frame having inclined slotted arms, saw-holding blocks journaled in and movable lengthwise of said arms, a flexible saw secured at the ends in cylinders which are held and are capable of turning in transverse holes in said blocks, and curved patterns working longitudinally through transverse openings in said blocks, substantially as and for the purposes set forth.

11. In a machine for producing a cut of irregular or variable curvature, a fixed shaft, a vibrating saw-frame mounted thereon and having inclined arms, saw-holding blocks carried by and movable lengthwise of said arms, a flexible saw secured at the ends to said blocks, vibrating cross-heads mounted on said shaft on opposite sides of said saw-frame, patterns attached to said cross-heads and movable lengthwise in engagement with said blocks, and a carriage movable parallel with said shaft and connected with said cross-heads, substantially as and for the purposes set forth.

12. In a machine for producing a cut of irregular or variable curvature, the combination of a flexible saw or cutter, means for changing the curvature of said saw while the same is in operation, a carriage movable on suitable ways, chain-wheels carrying parallel chains, and a cross-shaft attached to said chains and connected with and movable lengthwise of an arm attached to said carriage perpendicular to its line of travel, substantially as and for the purposes set forth.

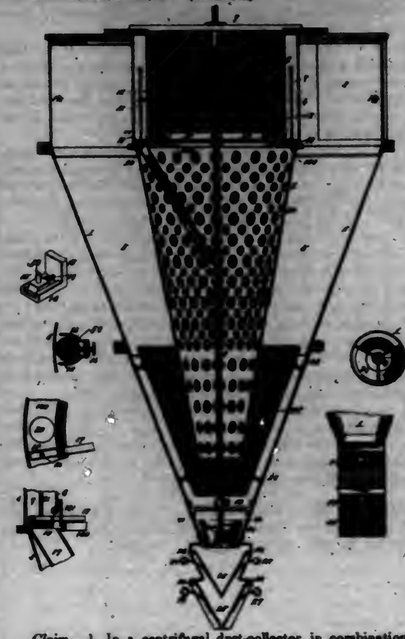
13. In a machine for producing a cut of irregular or variable curvature, the combination of a vibrating saw-frame having inclined arms, a flexible saw having sliding connections with said arms, a carriage capable of rectilinear movement transversely to the stroke of said saw, mechanism for feeding said carriage and curved patterns connected with said carriage and saw-frame so as to partake of the movements of each, and also connected with the ends of the saw so as to move the same lengthwise of the inclined arms of the saw-frame, and thereby produce a greater or less curvature of the saw, substantially as and for the purposes set forth.

14. In a machine for producing a cut of irregular or variable curvature, a vibrating saw adjustably held therein, guides arranged to change the curvature of the saw while the same is in operation, a work-support, feeding mechanism for moving said support transversely to the stroke of the saw, and mechanism for moving said support transversely to the feed toward and from the plane of the saw, substantially as and for the purposes set forth.

15. In a machine for producing a cut of irregular or variable curvature, the combination of a vibrating saw-frame having inclined arms, a flexible saw held at the ends in blocks so as to turn therein on axes transverse to its blade, said blocks being attached to and movable lengthwise of said inclined arms and capable of turning, a carriage movable transversely to the saw, and curved patterns connected and movable with said carriage and saw-frame and provided with flanged edges which engage with undercut grooves in said saw-holding blocks, substantially as and for the purposes set forth.

16. In a machine for producing a cut of irregular or variable curvature, the combination of a flexible saw or cutter, a work-support, mechanism for moving the same past the saw, a pattern which determines the direction of the cut in the line of the feed, and mechanism arranged to increase or diminish the curvature of the saw in the direction of its stroke, according to the curvature of the cut in the line of feed, substantially as and for the purposes set forth.

409,025. DUST-COLLECTOR. ROBERT I. DOWNTON, St. Louis, Mo., assignor of one-half to James W. S. Downton, same place. Filed Jan. 2, 1889. Serial No. 295,116. (No model.)



Claim.—1. In a centrifugal dust-collector, in combination with an outer casing having a tangential inlet, a screen and wall forming a dead-air chamber, against which the flour or dust is deposited under the action created by the inlet being tangential, substantially as set forth.

2. In a centrifugal dust-collector, in combination with an outer casing having a tangential inlet, a screen and wall forming a dead-air chamber, against which the flour or dust is deposited under the action created by the inlet being tangential, and brushes for forcing the flour or dust into the dead-air chamber, substantially as set forth.

3. In a dust-collector, in combination with an outer casing having a tangential inlet, a screen and wall forming a dead-air chamber against which the flour or dust is deposited under the action created by the inlet being tangential, and brushes rotating on their axes bearing against the inner face of the dead-air chamber and forcing the material through the meshes, substantially as set forth.

4. In a dust-collector, the combination of an outer casing having a tangential inlet, a wall and screen forming a dead-air chamber, a central shaft, and incased brushes on the shaft bearing against the screen and forcing the material through the meshes, substantially as set forth.

5. In a centrifugal dust-collector, the combination, with the concentric outer casing, a wall and a screen forming a dead-air chamber in the outer part of the machine, of a central shaft and adjustable brushes carried by the shaft and moving over said perforated wall, said outer casing having a tangential inlet, substantially as set forth.

6. In a centrifugal dust-collector, the combination of an outer casing provided with an inlet and with an outlet for purified air, a wall and screen forming an annular dead-air chamber located in the upper part of said casing and surrounding said air-outlet, a trough forming the bottom of the dead-air chamber, a delivery-spout and scrapers, said casing having a tangential inlet, whereby the dust is separated from the air and passes through said screen, substantially as set forth.

7. In a dust-collector, the combination of an outer casing having a tangential inlet and an outlet, an inner casing forming a vent-flue, and brushes, the lower end of said vent-flue being perforated and the upper end having a wall and screen forming a dead-air chamber, substantially as set forth.

8. In a dust-collector, the combination of an outer casing having a tangential inlet and an outlet, an inner casing forming a vent-flue,

and incased brushes, the lower end of said flue being perforated and the upper end having a wall and screen forming a dead-air chamber, substantially as set forth.

9. In a centrifugal dust-collector, the combination, with an outer casing having a tangential inlet, an inner casing forming a vent-flue, and a screen forming an annular dead-air chamber surrounding said flue, a trough forming the bottom of the dead-air chamber, a delivery-spout, and scrapers, substantially as set forth.

10. In a centrifugal dust-collector, the combination of an outer casing having a tangential inlet, an inner casing forming a vent-flue, a screen forming, in connection with said inner casing, an annular dead-air chamber, a trough forming the bottom of the dead-air chamber, a delivery-spout, a shaft, arms on the shaft, and scrapers on the arms, substantially as set forth.

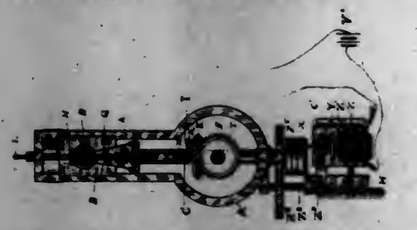
11. In a centrifugal dust-collector, the combination of an outer cylinder having a tangential inlet, an inner casing forming a vent-flue, a screen forming in connection therewith a dead-air chamber, a trough forming the bottom of the dead-air chamber, a delivery-spout, scrapers, and arms 21, for the purpose specified, substantially as set forth.

12. In a centrifugal dust-collector, the combination of an outer casing having a tangential inlet, an inner casing forming a vent-flue, a wall and screen forming a dead-air chamber, a trough forming the bottom of the dead-air chamber, a central shaft, arms on the shaft, scrapers on the arms, and a shield 101, substantially as set forth.

13. In a dust-collector, the combination of an outer casing having a tangential inlet, an inner casing forming a vent-flue, a screen forming, in connection with said inner casing, a dead-air chamber, incased cleaning-brushes, and means for adjusting the brushes, consisting of dovetailed blocks and set-screws, substantially as set forth.

14. In a dust-collector, the combination of the outer casing having a tangential inlet, an inner casing forming a vent-flue, a screen forming, in connection with said inner casing, a dead-air chamber for catching the dust, and rotary brushes 12, having suitable journals and arranged within the vent-flue, substantially as set forth.

409,026. ENGRAVING-MACHINE. William S. Eaton, Sag Harbor, assignor to the Fahys Watch Case Company, New York, N. Y. Filed Feb. 26, 1889. Serial No. 301,266. (No model.)



Claim.—1. In an engraving-machine, an engraving-tool operated by means of an electrical current and a model or pattern arranged to make and break the circuit, but lying outside of and not forming part of said circuit.

2. In an engraving-machine, an engraving-tool operated through the medium of an electrical current, in combination with suitable contact-points and a model or pattern arranged to make and break the contact, but lying outside of the circuit.

3. In an engraving-machine, the engraving-tool or burin attached to and forming part of an armature, in combination with said armature, an electro-magnet, means, substantially as shown and described, for making and breaking the current, and a pattern or model formed of non-conducting material.

4. In an engraving-machine, the combination of a pattern or model formed of non-conducting material, a stylus or tracer arranged to move over the face of the model, suitable contact-points, arranged substantially as shown and described, and an electro-magnet having an armature provided with an engraving-tool, all arranged as and for the purposes set forth.

5. In an engraving-machine, the combination of a rotating pattern or model formed of non-conducting material, an overhanging arm having a lever provided with a stylus or tracer for following the configurations upon the pattern, a make-and-break contact adapted to be opened and closed by the vertical movements of the tracer upon the pattern, and an engraving-tool operated through the medium of the electrical current, substantially as shown and described.

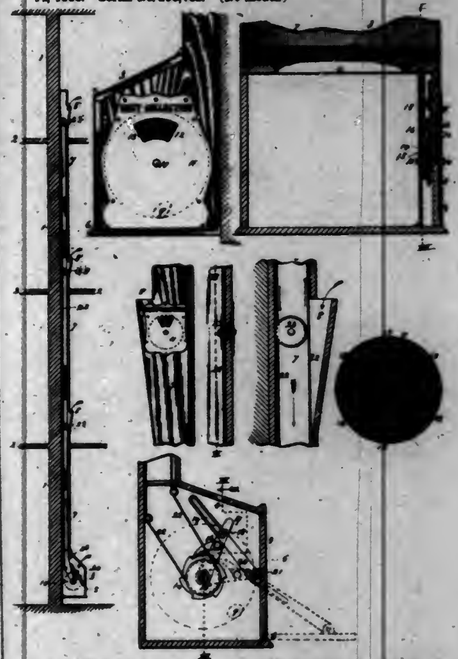
6. In an engraving-machine, the combination of a pattern or model rotating in a horizontal plane, an arm vertically adjustable in relation to said pattern, a lever hung in said arm provided with a stylus or tracer, a second lever arranged to be operated by the vertical movement of the stylus so as to make and break the contact, and an engraving-tool adapted to be operated by the make and break of the electrical current.

7. In an engraving-machine, the combination of a pattern or model suitably mounted and adapted to rotate, an arm extending over and above the said pattern or model, a tracer or stylus pivotally supported in the arm, two contact-points adapted to be opened and closed by the movement of the stylus, an electrical circuit, an electro-magnet, and a vibrating lever carrying an armature and an engraving-tool.

8. In an engraving-machine, the combination of a horizontally-turning model or pattern, an arm, a lever pivoted in said arm and carrying a stylus or tracer, a second lever also pivoted in this arm and provided with a contact-point, a spring-bar attached to the arm and provided with the other contact-point, and an engraving-tool operated by the opening and closing of the circuit.

9. In an engraving-machine, the combination of a horizontally-rotating model or pattern, an arm carrying a stylus vertically adjustable relatively to the pattern, a lever carrying a contact-point insulated therefrom and adapted to be operated by the vertical movement of the stylus, an elastic arm carrying a glass globe or cylinder and the other contact-point with the electrical conductors, an electro-magnet, and the armature, all arranged substantially as and for the purposes set forth.

409,027. LETTER-BOX. Leo Ehrlich, St. Louis, Mo. Filed Nov. 14, 1888. Serial No. 290,782. (No model.)



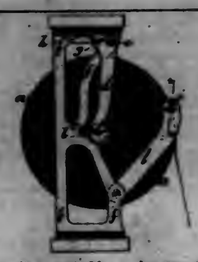
Claim.—1. The combination, with a letter-box, of a chute leading to the box and indicators upon the box, and chute operated by movement of the door of the letter-box, substantially as and for the purpose set forth.

2. The combination, with a letter-box and a chute leading thereto, of the indicator 9, indicator-shaft 10, carrying a ratchet-wheel, a lever carrying a pawl acting on the ratchet-wheel, a link connecting the lever with the door, a sheave on the indicator-shaft, and a belt connecting this sheave with sheaves on the shaft of a rotary indicator upon the chute, substantially as set forth.

3. The combination, with a letter-box and chute leading to the box, of rotary disks in the walls of the box and chute, plates outside the disks, having apertures 12 to expose parts of the disks, carrying-marks indicating the time of making the next collection, a belt connecting the shafts of the indicators, a ratchet-wheel upon the shaft of the indicator upon the box, a lever carrying a pawl acting on the ratchet-wheel, and a link connecting the door of the box with the pawl-lever, substantially as and for the purpose set forth.

409,028. ROLL-PAPER HOLDER AND CUTTER. Leo Ehrlich, St. Louis, Mo., assignor to the American Roll Paper Company, same place. Filed Dec. 3, 1887. Renewed Mar. 30, 1889. Serial No. 305,170. (No model.)

409,028.



Claim.—1. In a roll-paper holder and cutter, the combination of pivoted arms projecting in a downward direction and supporting the roll of paper, a knife, and springs resting on the arms, substantially as and for the purpose set forth.

2. In a roll-paper holder and cutter, the combination, with a framing, of a paper-roll *a*, arms pivoted to the framing on the machine and supporting the paper-roll, springs *h*, and a stationary knife or cutter, substantially as described.

3. In a roll-paper holder and cutter, the combination, with a framing, of paper-roll *a*, axle *b*, hangers *d*, hinged to the framing of the machine, springs *h*, and stationary knife or cutter, substantially as described.

4. In a roll-paper holder and cutter, the combination, with a framing, of paper-roll *a*, axle *b*, hangers *d*, hinged to the framing of the machine and having ears or lugs *g*, springs *h*, and a stationary knife or cutter; substantially as described.

5. In a roll-paper holder and cutter, the cutter *i*, formed with notches *j* and turned ends *i'*, and brackets *l*, having slots *k*, substantially as described.

409,029. COMBINED TOBACCO AND MATCH CASE. Francis R. Elliott, Miles, Wash. Filed Mar. 30, 1889. Serial No. 305,342. (No model.)



Claim.—1. The combination, with a case composed of a single blank cut into shape and folded to form a large and a small compartment, one wall of the smaller compartment being shorter than the other wall of said compartment, of a cover composed of three leaves, two of said leaves being adapted to produce the sides of the cover for the larger compartment, and the third leaf forming a continuation of the short wall of the smaller compartment and a cover for said compartment, substantially as set forth.

2. In a combined tobacco and match safe, the combination, with a tobacco-compartment and a narrow pocket shorter than the receptacle and adjacent to the latter, of a removable cover composed of three leaves, two to enter the receptacle and one longer one to enter the pocket, and a tongue on the cover, whereby the latter is easily removed, substantially as set forth.

409,030. SASH-CORD FASTENER. Robert Fagan, New Britain, Conn., assignor to P. & F. Corbin, same place. Filed May 9, 1889. Serial No. 310,196. (No model.)



Claim.—The herein-described sash-cord iron, consisting of a semi-cylindrical shell of metal having a mush-cord perforation extending transversely through the summit, and a prong or prongs at the edge of said perforation formed by a portion of the metal that is displaced to form said perforation, substantially as described, and for the purpose specified.

409,031. VALVE. Dominico Ferrarris, Dallas, Tex. Filed Jan. 26, 1889. Serial No. 297,690. (No model.)

Claim.—The improved valve herein described, the same comprising the casing A, having a horizontal passage B, reduced at its central point, as at F, and a vertical bore E, intersecting said reduced portion F above the point of intersection to its lower end and being

409,031.



screw-threaded its entire length, a stem I, having a tapered lower portion, the entire stem being screw-threaded to engage the threads in the bore, and a plug H, removably inserted in the lower end of the bore, substantially as described.

409,032. HAY-RAKE. Leander W. Freeman, Liberty, Ind. Filed Mar. 14, 1888. Serial No. 303,379. (No model.)



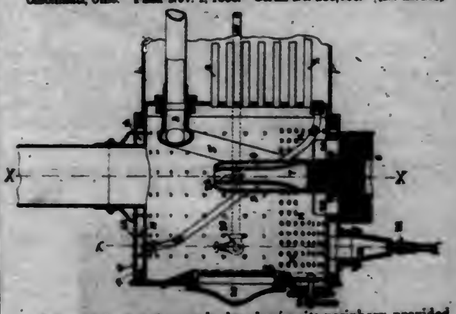
Claim.—1. A rake-head composed of two sections of uniform dimensions separated by packing-blocks interposed between the extremities of the sections and serving to receive the hitching-rod attachment, and teeth secured centrally at proper intervals between said sections, substantially as described.

2. A rake-head composed of two sections of uniform dimensions separated by packing-blocks interposed, respectively, between the extremities and centrally between the extremities of the sections, and straight teeth secured centrally at proper intervals between said sections, substantially as described.

3. A revolving rake-head consisting of two sections separated at their ends by packing-blocks, teeth secured centrally at proper intervals between said sections, a packing-block secured centrally between the extremities of the sections, and a collar connected with said central block for the attachment of a dumping mechanism, substantially as described.

4. A revolving rake-head comprising the sections 1 and 2, teeth 3, secured by nuts and bolts, the end packing-blocks 6, and a packing-block 8 and collar 9, for attachment of a dumping mechanism, substantially as described.

409,033. SMOKE-BOX FOR LOCOMOTIVES. Frederick Gandy, Cincinnati, Ohio. Filed Nov. 1, 1888. Serial No. 289,709. (No model.)



Claim.—A locomotive smoke-box having its periphery provided with air-inlets, through which air is admitted to assist in the combustion of cinders, said smoke-box provided with two concentric exhaust-pipes communicating with the engine-cylinders and having separate and independent nozzles which terminate in open mouths on the same horizontal plane, whereby a uniform draft is maintained, substantially as described.

409,034. SEAL-LOCK. Robert W. Gillespie, St. Louis, Mo. Filed Aug. 1, 1888. Serial No. 281,618. (No model.)

Claim.—1. In a seal-lock, the U-shaped spring locking-pin, the double prong at the locking end of said pin, the barbed points on the

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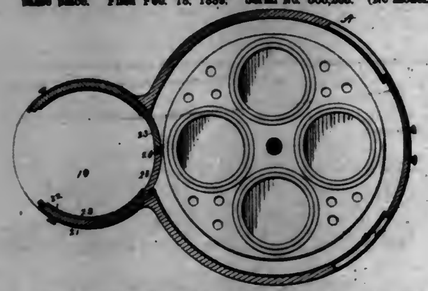


ends of said prongs beveled on their under sides and arranged for engagement within the beveled recesses in their seats in the seal, and a frangible seal having a single orifice longitudinally thereof, into which said locking end extends upwardly, so as to enter the seal from beneath, substantially as and for the purpose set forth.

2. In a seal-lock, a U-shaped spring locking-pin, the double prong at the locking end of said pin, the beveled grasping barbed points on the ends of said prongs that fit in the beveled recesses in their seats in the seal, the said locking end extending upwardly to enter the seal from beneath, a thimble-shaped frangible seal in which the key operates, having an annular recess at the bottom of said seal, and the anti-picker collar around the stem of the pin fitting in said recess, substantially as and for the purpose set forth.

3. In a seal-lock, a U-shaped spring locking-pin having a bifurcated operative end extending upwardly to enter the seal from beneath, barbed points on said bifurcated end, the inverted frangible seal provided with a key-hole running longitudinally with said seal, and locking-chamber, into which said key-hole enters, and the annular beveled shoulder within said seal, into which the barbed points of the locking-pin spring and effect a lock, and the wire 17, that passes through the perforations in the key and fastens around the staple 5, substantially as and for the purposes set forth.

409,035. REFRIGERATOR. ROBERT B. GRAF, Baltimore, Md., assignor, by mesne assignments to the National Refrigerating Company, same place. Filed Feb. 18, 1889. Serial No. 300,263. (No model.)



Claim.—The combination, in a refrigerator, of the cooling-chamber proper, a substantially cylindrical chamber communicating therewith and provided with double walls and a front opening, and the curved doors sliding in said walls, as described, so as to close either the front opening or the communication between the chambers, substantially as set forth.

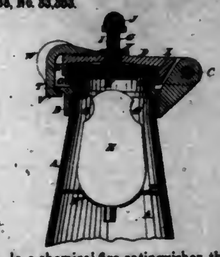
409,036. HEATING-STOVE. LEWIS W. HAGEY, St. Louis, Mo. Filed Mar. 5, 1888. Serial No. 266,152. (No model.)



Claim.—1. In a heating-stove, the horizontal cylindric damper that projects in front of the stove near the bottom thereof, the outer cylinder having rotary movement around the inner one, and both cylinders being provided with U-shaped openings that are adjustable to regulate the draft, the outer casing, and lining to the stove that supports the damper, substantially as and for the purpose set forth.

2. The combination of the stove-body 1, lining 5, and projecting horizontal damper located near the bottom of the stove, consisting of the inner cylinder 9, formed with inner peripheral flange 9 secured to the lining, the U-shaped opening, and cap 10, having outer peripheral flange 11 and outer rotating cylinder 12, fitting around the inner cylinder, and formed with flanged handle 13 and U-shaped opening, substantially as described and shown.

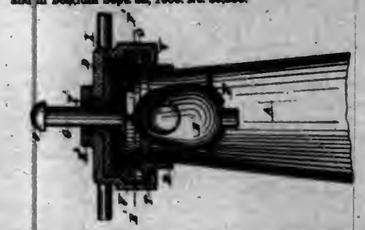
409,037. CHEMICAL FIRE-EXTINGUISHER. JAMES HASLAM, Bury Road, Tonge, near Bolton, County of Lancaster, England. Filed May 15, 1889. Serial No. 310,863. (No model.) Patented in England Dec. 20, 1887, No. 17,467; in France Sept. 21, 1888, No. 196,120, and in Belgium Sept. 22, 1888, No. 83,263.



Claim.—1. In a chemical fire-extinguisher, the combination, with an alkali-vessel containing an acid-bottle in its upper portion, of a cover having a central orifice and a cavity in its under side, an elastic ring secured in said cavity, a tube extending through the orifice in the cover and resting on the elastic ring, and a spindle extending through the tube and through the ring and carrying a disk below the latter, substantially as described.

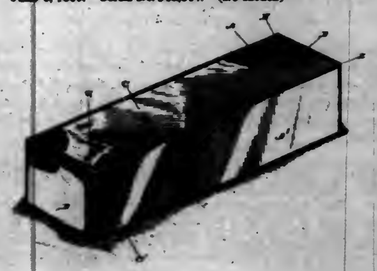
2. A chemical fire-extinguisher consisting of an alkali-vessel containing an acid-bottle, a nozzle arranged on the vessel and having a lateral projection, a cover hinged to the nozzle and having a central orifice and a cavity in its under side, an elastic ring arranged in said cavity, a ferrule arranged in the central orifice of the cover, a tube extending through the ferrule, a spindle passing through the tube and ring and having a disk below the latter, and a handle pivoted on the ferrule and having a lip to engage the projection on the nozzle, substantially as described.

409,038. CHEMICAL FIRE-EXTINGUISHING APPARATUS. JAMES HASLAM, Bury Road, Tonge, near Bolton, County of Lancaster, England. Filed May 15, 1889. Serial No. 310,864. (No model.) Patented in England Dec. 20, 1887, No. 17,467; in France Sept. 21, 1888, No. 196,120, and in Belgium Sept. 22, 1888, No. 83,263.



Claim.—A chemical fire-extinguisher consisting of an alkali-vessel containing an acid-bottle and having a nozzle at its top provided with lateral ribs, a swiveled cover having a central orifice and provided with ribs to engage the ribs on the nozzle, a metallic ring having a cavity, and a tubular stem rising through the orifice in the cover, a joint-ring arranged in said cavity and resting on the nozzle, and a spindle extending through the tubular stem and the joint-ring and having a disk below the latter, substantially as described.

409,039. MAILING-BOX. EDWIN B. HILLMAN, Peoria, Ill. Filed June 6, 1889. Serial No. 313,207. (No model.)



Claim.—1. The box composed of two approximately equal flat strips, the first bent into U shape and the second bent into the plane of the edges of the first, substantially as and for the purpose set forth.

2. The box composed of the transversely-grooved and marginally-rabbeted part A B A', bent into U shape, and the similarly-grooved part C D C', bent into like form and having its edges resting in the rabbet in the first part, substantially as set forth.

409,040. COTTON-HARVESTER. ALEXANDER E. HUGHES, Washington, D. C., assignor, by direct and mesne assignments, to the Hughes Cotton Harvester Company of Baltimore City. Filed May 25, 1888. Serial No. 275,064. (No model.)



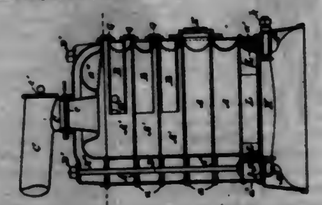
Claim.—1. In a cotton-harvester, the combination of rotating disks arranged side by side, converging toward the rear and provided with picking-fingers arranged obliquely to the face of said disks, the upwardly-deflecting board forward of said disks, and a reticulated receiver for receiving the cotton, as specified.

2. The combination, in a cotton-harvester, of rotative disks mounted on substantially transverse axes, said disks converging toward the rear of the machine and having picker-fingers arranged obliquely to the face thereof, means for rotating the disks, a lint-receiver, and a blast-fan blowing across the disks into the receiver, as specified.

3. The combination, in a cotton-harvester, of two opposing rotating disks converging toward the rear of the machine, braced gatherers projecting forward therefrom, an upwardly-directed deflecting-board leading from the disks, and a fan for blowing the cotton off the disks over the board, as specified.

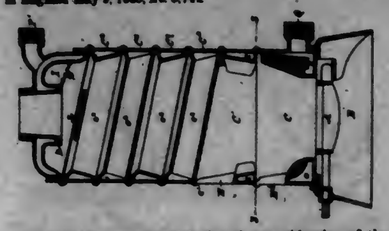
4. The combination, in a cotton-harvester, of two opposing rotating disks converging toward the rear of the machine, gatherers projecting forward therefrom, a reticulated cotton-receiver, a deflecting-board leading from the disks and projecting into said receiver, and a blast-fan blowing the cotton from the disks into the receiver, substantially as described.

409,041. SECTIONAL WATER-BOILER. JAMES KEITH, London, England. Filed Dec. 13, 1888. Serial No. 293,522. (No model.) Patented in England July 3, 1879, No. 2,709.



Claim.—In a sectional boiler, the combination of the superposed sections, the cross-connecting tubes B, and the cross-tubes B', connecting the tubes B, substantially as and for the purposes set forth.

409,042. SECTIONAL WATER-BOILER. JAMES KEITH, London, England. Filed Dec. 13, 1888. Serial No. 293,523. (No model.) Patented in England May 9, 1885, No. 5,744.

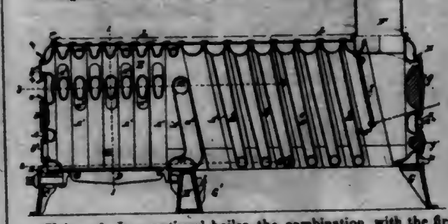


Claim.—1. In a sectional boiler, the combination of the lower section C, having a fire-brick lining and a surrounding water-jacket, the superposed section C', having inclined upper edges, and a number of superposed sections C^3, having inclined upper and lower edges, mounted on the section C', and all of said sections having communicating openings, substantially as set forth.

2. In a sectional boiler, the combination, with the fire-chamber, of the superposed section C', having a water-space and inclined upper edges, the superposed sections C^3, having vertical outer sides and inclined upper and lower edges mounted upon the section C', and having communication therewith and with each other, and inclined tubes c^4, extending across each of said sections C^3, substantially as and for the purposes set forth.

3. In a sectional boiler, the combination, with the fire-box, of the superposed section C', having the water-jacket c and inclined upper flanged edges, the superposed section C^3, having inclined upper and lower edges and the upper edges having flanges to receive the section immediately above, inclined tubes c^4, extending across the sections C^3, and a dome having inclined lower edges surmounting said sections C^3, and all of said sections and dome having communicating openings, substantially as and for the purposes set forth.

409,043. SECTIONAL WATER-BOILER. JAMES KEITH, London, England. Filed Dec. 13, 1888. Serial No. 293,524. (No model.) Patented in England Feb. 26, 1887, No. 3,013.



Claim.—1. In a sectional boiler, the combination, with the fire box, of the bridge-wall section A^4, having the upper and lower cross-tubes a^2 a^3, respectively, and said tubes being connected together by a series of inclined tubes a^4, substantially as set forth.

2. In a sectional boiler, the combination, with the fire-box, of a number of water-sections A^3, arranged on edge in a horizontal series and communicating with each other, and the tapering tubes a^5, connecting the upper and lower sides of each section together, substantially as set forth.

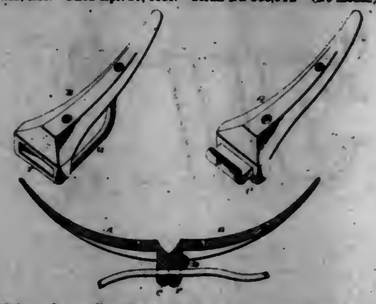
3. In a sectional boiler, the combination, with the fire-box, of a number of water-sections A^3, arranged on edge in a horizontal series and communicating with each other, and the hollow base G, serving as a support for said sections and as a soot and dust collector, substantially as set forth.

4. In a sectional boiler, the combination, with the fire-box, of a number of water-sections A^3, communicating with each other and arranged diagonally in a horizontal series, and the downwardly-tapering inclined tubes a^5, connecting the sides of each section together, substantially as set forth.

5. In a sectional boiler, the combination, with the fire-box, of a series of water-sections A^3, each having an upper horizontal tube and a lower horizontal tube of smaller diameter than said upper tube, and a number of downwardly-tapering cross-tubes connecting said upper and lower tubes together, substantially as set forth.

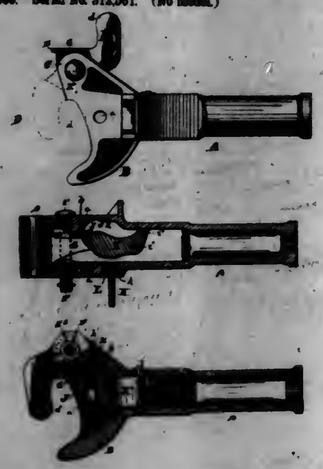
6. In a sectional boiler, the combination, with the sections A', forming the fire-box, of the tubes a^3, extending across said sections and inclined alternately in opposite directions, the bridge-wall section, and the water-sections A^3, arranged beyond said bridge-wall and having communication with each other and with said other sections, substantially as set forth.

409,044. HORSE-COLLAR FASTENER. JOSEPH H. KELLERMAN, Blair, Neb. Filed Apr. 29, 1889. Serial No. 308,944. (No model.)



Claim.—In a collar-fastener, the part A, provided with the hook D upon its inner end, and loop C, located below the hook, with the part B, provided with the loop F, and a shoulder upon the outer side of the loop, and a strap which is passed through the two loops C F, so as to keep the hook in contact with the shoulder, substantially as shown.

409,045. CAR-COUPLING. ISAAC KLINE, Louisville, Ky. Filed May 29, 1889. Serial No. 312,561. (No model.)



Claim.—1. In a car-coupling, the combination of the swinging hook formed with a shank upon which is a tooth, substantially as described, with a tumbler pivoted in the throat of the draw-bar and having a finger adapted to engage said tooth and lock the hook, substantially as described.

2. The combination of the draw-bar having a pair of ears at one side and a shoulder or recess in its side wall in rear of said ears with a swinging hook hinged between said ears and having a tooth on its shank adapted to enter said recess when the hook is closed, and a pivoted locking-tumbler engaging said tooth, all substantially as and for the purpose specified.

3. The combination of the draw-bar and the swinging hook hinged thereto and having a tooth on its shank adapted to enter the throat of the draw-bar when the hook is closed with a locking-tumbler pivoted in the throat of the draw-bar and having a forwardly-projecting finger adapted to engage said tooth, and the key for lifting said tumbler passing through the bottom of the draw-bar, substantially as and for the purpose specified.

4. The combination of the draw-bar having a pair of ears at one side, the lower one of which is notched on its upper face and the upper one annularly recessed, with a swinging hook having a shank hinged between said ears, said shank having a depending stud *d* adapted to engage the notches in the lower ear, and a beveled lug *e* on its lower edge, and an annular collar on its upper end engaging the recess in the upper ear, and an offset G, all substantially as described.

5. The combination, with the draw-bar having a channeled and notched opening in its floor, substantially as described, and a tumbler pivoted in the throat of the draw-bar above said opening, of a key playing through said opening to lift the tumbler, and having side flanges engaging the notches of the opening, all substantially as described.

6. The combination of the draw-bar and swinging hook hinged thereto, substantially as described, with the locking-tumbler for said hook pivoted in the throat of the draw-bar and having its rear end upturned, so that it will strike the roof of the draw-bar and prevent the front end of the tumbler resting on the floor thereof, substantially as specified.

7. The combination of the draw-bar having side ears and the swinging hook having a shank hinged between said ears by a headed pin with a bolt playing in an opening in the upper ear beside the pin and confined between the head of the pin and shank, substantially as and for the purpose specified.

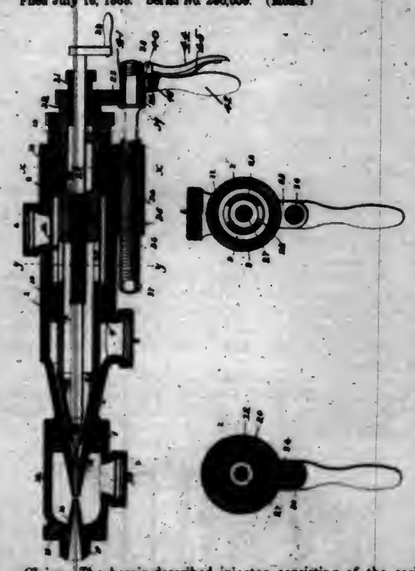
8. The combination of the draw-bar, the swinging hook, and the locking-tumbler in said draw-bar with the vertically-movable key playing through the floor of the draw-bar and engaging the bottom of said tumbler, the arm engaging said key and mounted on a hinged rod below the draw-bar, and the shaft and link connections for operating said arm to lift the key, substantially as described.

9. The combination of the uncoupling or releasing key and its operating arm and rod below the draw-bar with the horizontal shaft mounted on the front of the car, the handles thereon, and the devices, substantially as described, for sustaining these handles, when properly adjusted, to keep the locking devices released, all substantially as set forth.

10. The combination of the draw-bar and the swinging hook hinged thereto and having a tooth on its shank adapted to enter the throat of the draw-bar when the hook is closed with a locking-tumbler pivoted in the throat of the draw-bar and having a forwardly-projecting finger adapted to engage said tooth when the hook is closed, and also to engage a shoulder on the roof of the draw-bar to transfer strain to the latter, and the devices for operating said tumbler, all substantially as specified.

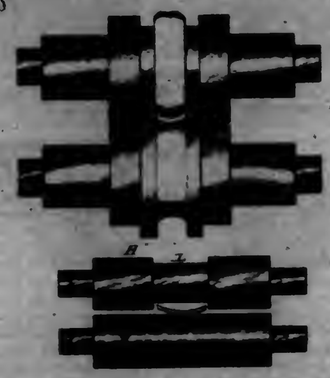
11. The combination of the draw-bar, the swinging hook hinged thereto, having an incline *e*, and an offset G, provided with a tooth H, with the locking-tumbler pivoted in the throat of the draw-bar having a forwardly-inclined stud J, an upturned end *i*, and the key for lifting said tumbler, and the operating devices for said key, all constructed and arranged as and for the purpose described.

409,046. INJECTOR. LARS G. LARSE, Cannon River Falls, Minn. Filed July 16, 1888. Serial No. 280,059. (Model.)



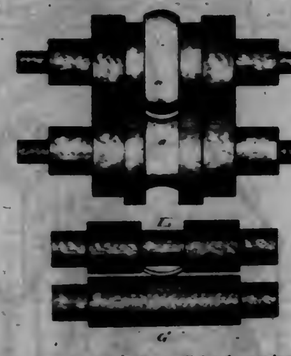
Claim.—The herein-described injector, consisting of the casing having inlet and outlet depending rib and threaded end, the extension connected to said threaded end carrying a conical nozzle and having an escape-opening, the tube provided with openings arranged in the casing and having a depending arm at one end, the stem in the tube, the stem passing through the rib and arm of the casing and tube, the handle connected to said stem, and the pawl and ratchet, said parts being arranged and adapted to serve substantially as and for the purpose described.

409,047. METHOD OF MAKING STRAP OR HOOP IRON. DAVID LARKIN, Pittsburg, Pa., assignor to himself, John B. Larkin, and Frank D. Larkin, same place. Filed Jan. 18, 1889. Serial No. 296,743. (No model.)



Claim.—In the manufacture of hoop, band, or strap metal by reduction through successive rolls, the method of rendering the stock self-sustaining and facilitating its delivery from one set of rolls to another, which consists in laterally bending, dishing, carving, or corrugating the blank during its reduction and finally flattening the same, substantially as described.

409,048. ROLLING-MILL FOR HOOP OR STRAP IRON. DAVID LARKIN, Pittsburg, Pa., assignor to himself, John B. Larkin, and Frank D. Larkin, same place. Filed Apr. 5, 1889. Serial No. 306,122. (No model.)



Claim.—1. A continuous rolling-mill for the production of hoop or strap metal, comprising several sets of reducing-rolls, of which two or more sets have their rolls respectively grooved and flanged, the grooves and flanges of one set being more abrupt than those of the preceding set and forming a pass of less depth, substantially as described.

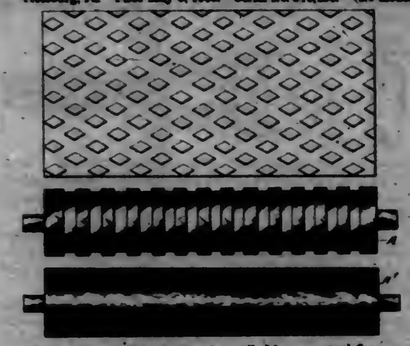
2. A continuous rolling-mill for the production of hoop or strap metal, comprising a set of rolls intermediate in the train of which set one roll is dished or grooved and the other flanged, whereby a concaving, corrugating, or deflecting pass is formed for the purpose of dishing, corrugating, or laterally deflecting the metal in its course, substantially as described.

3. In a continuous rolling-mill for the production of hoop or strap metal, the combination, with one or more sets of rolls intermediate in the train, of which one roll is grooved or dished and the other correspondingly flanged, of a set of plain finishing-rolls terminating the train, substantially as described.

4. In a continuous rolling-mill for the production of hoop or strap metal, comprising one or more sets of laterally-deflecting, dishing, or corrugating rolls and a set of plain finishing-rolls, a set of fin-reducing rolls located in advance of the finishing-rolls and comprising a plain roll G and a slightly-grooved roll H, the groove L being of rectangular form, substantially as described.

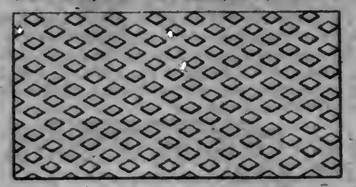
5. In a continuous rolling-mill for the production of hoop or strap metal, the combination, with a train in which one or more sets have dished or corrugated deflecting-passes, of the grooved tables or guides H I, &c., located between the respective sets of rolls, substantially as described.

409,049. METHOD OF ROLLING METAL. WILLIAM J. LEWIS, Pittsburg, Pa. Filed May 9, 1889. Serial No. 310,126. (No model.)



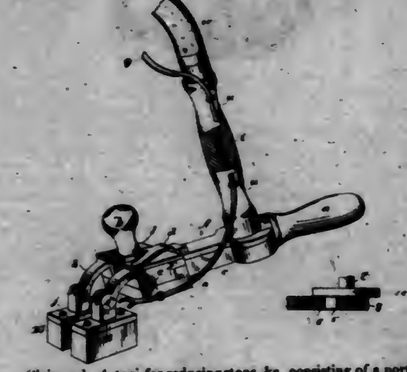
Claim.—The method of forming rolled iron or steel floor or stair plates having their tread-surfaces grooved or reticulated, which consists in subjecting the plate to two or more passes at different angles to each other between grooving or channeling rolls.

409,050. ROLLED METAL PLATE. WILLIAM J. LEWIS, Pittsburg, Pa. Filed June 17, 1889. Serial No. 314,542. (No model.)



Claim.—As a new article of manufacture, a rolled wrought-iron or steel plate having one of its surfaces plain and the other surface formed with intersecting rolled grooves or channels, substantially as described.

409,051. IMPLEMENT FOR REDUCING STONE, &c. JAMES W. MALOY, Marietta, Ga. Filed Dec. 24, 1887. Serial No. 258,904. (No model.)

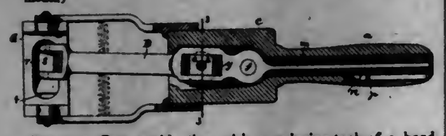


Claim.—1. A tool for reducing stone, &c., consisting of a portable or hand frame supporting two carriages arranged in line, tools connected to said carriages, an operating-spindle, and a connection between the spindle and carriages, substantially as and for the purpose described.

2. The combination, with the portable or hand frame, of a rotatable spindle carried thereby, two carriages arranged in line with each other and movably supported at one end of the frame, tools connected to the carriages, and a reciprocating plate connecting the spindle and both carriages, substantially as and for the purpose set forth.

3. The combination, with the frame, driving-spindle, and laterally-movable tool-carriages arranged in line, of a longitudinally-reciprocating plate connected at one end to the spindle by an eccentric and at the other end to the carriages by legs and diagonal slots, substantially as and for the purpose described.

409,052. IMPLEMENT FOR REDUCING STONE, &c. JAMES W. MALOY, Marietta, Ga. Filed Dec. 24, 1887. Serial No. 258,905. (No model.)



Claim.—1. The combination, with a reducing-tool, of a hand-frame, a pivoted lever carried by said frame, and an operating-spindle also supported by the frame, substantially as and for the purpose described.

2. The combination, with a reducing-tool, of a lever connected therewith, a frame supporting said lever, an operating-spindle, and a spring connected with the lever to restore it normally to a mid-position, substantially as described.

3. The combination of the tool, lever, operating-spindle, a flexible shaft connected with said spindle, and a frame supporting the spindle, lever, and tool and provided with handles, substantially as described.

4. The combination of the frame having a hinged cross-piece, a lever and operating-spindle, a carriage supported by said cross-piece and pivoted to the lever, and a tool connected to said carriage, substantially as described.

5. The combination of the frame, spindle, lever, tool, and spring-blade *m*, extending to the rear from said lever and tending to maintain it in a mid-position, substantially as described.

6. The combination, with the frame and lever having a blade *m*, of a longitudinally-adjustable bearing *n*, substantially as described.

7. The combination of the frame, spindle, flexible shaft, lever, swinging cross-piece G of the frame, and carriage F, sliding longitudinally on said cross-piece and connected by a universal joint with the lever, substantially as described.

409,053. GRASS-CATCHING ATTACHMENT FOR LAWN-MOWERS. GRANT C. MILLER, Mount Vernon, Iowa. Filed Nov. 3, 1888. Serial No. 289,895. (No model.)



Claim.—The combination, with the tongue 12 and deflector C of a lawn-mower, which deflector is provided with the hooks 15, to rest on the axle of the mower, and the strap 16, to connect it with the tongue, of the staple 11, secured to the tongue, the box B, the upwardly-extending curved arms 1, provided with concentric slots 2, resting against the sides of the box and rigidly secured at their lower ends to the mower-frame, the bolts 5, attached to the sides of the box B, and their nuts 6, the shoulder 7, secured to the rear end of the floor of the box, the arm or rod 8, having its lower end bent and engaged in an opening in said shoulder and provided with a longitudinal inclosed recess extending from its upper end, the bent rod 9, passing through the staple 11, and the set-screw 10, to bind the two rods together at the proper points, substantially as specified.

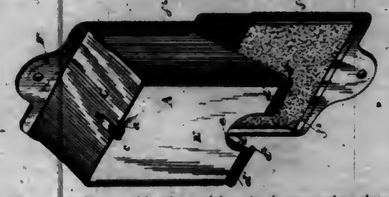
409,054. VEHICLE-HUB. LUDVIG M. MILLER, Whitewater, Wis. Filed Apr. 30, 1888. Serial No. 272,381. (No model.)



Claim.—1. The combination, in a sectional hub, of the central longitudinal sleeve provided with the double series of screw-threads, and having a longitudinal channel *c*, the sections B C, having internal projections to engage said channel, and provided with the alternately-arranged projections to form alternate spoke-sockets, and outer clamping-nuts, substantially as set forth.

2. The combination, in a sectional hub, of the central longitudinal sleeve screw-threaded and provided with a longitudinal channel, two spoke-sections having internal projections to engage said channel and having alternating projections to form alternate spoke-sockets, and reamed on their outer faces, and clamping-nuts provided with portions corresponding with said reamed parts, substantially as set forth.

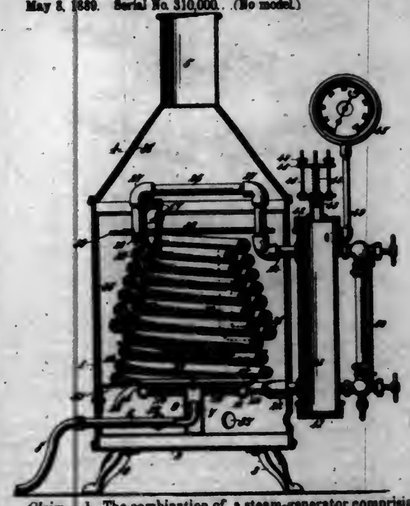
409,055. MATCH-SAFE. WICKLIFF B. MITCHELL, Owensburg, Ind. Filed Jan. 30, 1889. Serial No. 298,095. (No model.)



Claim.—1. The combination, with a back-supporting plate provided with a slitted upper portion having intermediate bulged portions, and also provided with forwardly-extending guides or flanges, of the match safe or box consisting of the front, rear, and side pieces, inclined bottom piece, and inclined hinged top or cover, the front piece thereof being provided with a circular opening upon its lower end and the bottom piece being slotted longitudinally, forming flexible strips or springs, substantially as set forth.

2. A match-safe provided with an inclined longitudinally-slotted bottom piece, terminating in flexible strips, said strips extending out beyond the front piece of the safe and bent downward at this point, said front piece being provided with an opening or aperture, substantially as set forth.

409,056. WATER COIL BOILER. EVERETT D. MOORE, Baltimore, Md., assignor of one-half to Rufus W. Applegarth, same place. Filed May 3, 1889. Serial No. 310,000. (No model.)



Claim.—1. The combination of a steam-generator comprising an outer shell having air-inlets near the bottom, a gas-burner located in the lower part of said shell, a steam-generating coil supported above the burner, a steam-superheating coil surrounding the steam-generating coil, a drum or expansion-chamber located outside the generator-shell and communicating with the generating and superheating coils, a valved pipe for conveying water into the steam-generating coil, and a valved pipe leading from the superheating-coil, substantially as described.

2. The combination of a steam-generator comprising generating and superheating coils inclosed by a shell, a drum or expansion-chamber located outside the generator-shell in communication with said coils and provided with water and steam gages, a pipe for supplying the steam-generating coil with water, a pipe for conducting steam and water from the superheating-coil through a hose to the pipe or pipes to be cleaned, and valves for controlling the inlet and outlet pipes of the generator, substantially as described.

3. The combination of a steam-generator comprising an outer shell having air-inlets and a chimney, a gas-burner located in the lower part of the generator-shell, a steam-generating coil located above the gas-burner, a steam-superheating coil surrounding the steam-generating coil, a deflector-plate located above the burner in the lower part of the space inclosed by the steam-generating coil, a baffle-plate located above said deflector, a heat-retaining plate located above the superheating and generating coils, and an asbestus lining for the generator-shell, substantially as described.

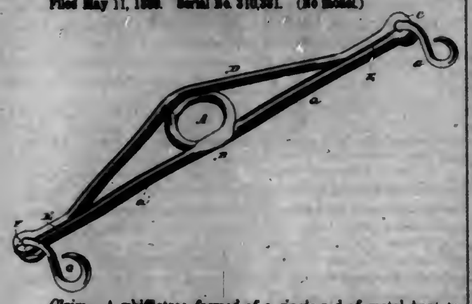
4. The combination of a steam-generator having steam generating and superheating coils, baffle-plates for retaining the heat in contact with said coils, a drum or expansion-chamber communicating with the generating and superheating coils, a valved pipe for delivering a regulated supply of water to the generating-coil, and pipes for conducting steam and water from the coils to the pipe or pipes to be cleaned, substantially as described.

5. The combination, with a steam-generating coil 14, having inlet-pipe 16, provided with valve 18, of the by-pass tube 52, provided with valve 53, substantially as described.

6. The combination of a heater, a pipe-coil located above the heater, a valved pipe leading into one end of the pipe-coil and having a valved by-pass also leading into said coil, and a flexible tube communicating with the coil and adapted to be connected to the pipe or pipes to be cleaned, substantially as described.

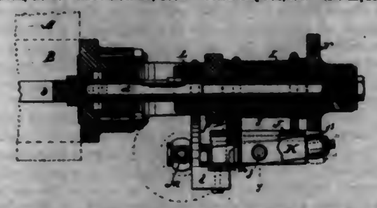
7. The combination of a water-heating and steam-generating coil having a valved inlet provided with a valved by-pass, flexible tubing for delivering water to the said coil, and flexible tubing for conveying steam and water from the coil to the pipe to be cleaned, substantially as described.

409,057. WHIFFLETREE. ISAAC T. MCINTYRE, Carrollton, Miss. Filed May 11, 1889. Serial No. 310,281. (No model.)



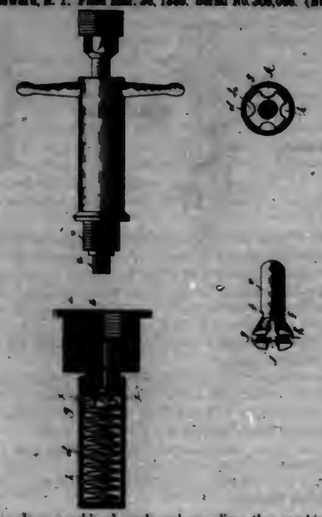
Claim.—A whiffletree formed of a single rod of metal bent to form the front side *a* and the rear bowed portion D, the said portion *a* being bent at its center to form the rearward-extending looped brace A, the lapped portions B of which are flattened and welded together and in line with the front side of the whiffletree, and the ends of the portion D being welded to the rear sides of the ends of the front side *a*, eyes C F being formed at the ends of the whiffletree, and the center of the bowed portion D being welded to the rear side of the looped brace A, whereby a truss is formed on the rear side of the whiffletree and integral therewith, substantially as described.

409,058. VALVE-GEAR FOR ENGINES. JOHN MCLAREN, New York, N. Y. Filed Feb. 28, 1889. Serial No. 301,808. (No model.)



Claim.—The combination, with the valve *b* and its stem *d*, mounted in a suitable bearing, of the sleeve I, loosely mounted on the bearing and carrying the valve-tripping tappet K, which is pivoted intermediate its ends, a spring *j*" for normally holding the tappet in its active position, means, substantially as described, for oscillating the sleeve, the hub L, fixed on the valve-stem and having the projecting arm *l*, against which one end of the tappet engages, the cam N, loosely mounted on the valve-stem bearing for acting on the opposite end of the tappet, the governor O, and connections between said governor and the cam for rotating the latter when the speed of the governor increases beyond a certain limit.

409,059. AUTOMATIC ALE TAP AND FAUCET. H. DAVIS NORTHUP, Fort Edward, N. Y. Filed Mar. 26, 1889. Serial No. 304,994. (No model.)



Claim.—In a combined cock and coupling, the combination of the plug having a bore, a cylindrical chamber on the inner end of the plug having induction-openings, a valve consisting of the tapered valve proper in said chamber, adapted to close the outer end of said bore and provided with the hollow stem extending into the bore and provided with inlet-apertures, and a coiled spring in said chamber and bearing against the end of said valve, said end face of the tapered valve having one or more deep transverse channels, forming lateral passages from the space within the spring, and longitudinal passages to said inlet-openings of the valve-stem, substantially as described.

409,060. POOL-TABLE. ROBERT A. PAINE, Richmond, Va. Filed Apr. 20, 1889. Serial No. 308,048. (No model.)

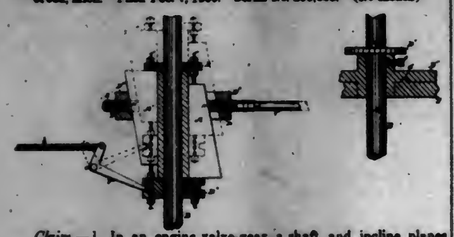


Claim.—1. In a pool-table, the combination, with a series of pipes or tubes leading from the several pockets to the center of the table, of a second series of pipes or tubes leading from the center to a series of receptacles, with an elbow-joint adapted to be rotated, whereby the first series of pipes or tubes is put into connection with each one of the second series of pipes or tubes successively, and means for operating said elbow-joint, substantially in the manner and for the purpose set forth.

2. In a pool-table, the combination, with a series of pipes or tubes leading from the several pockets on an incline to a common opening at the center, of a second series of pipes or tubes leading from the center on an incline to a series of receptacles on the outside edge of the table, with an elbow-joint having its upper arm constantly in connection with the central opening and its lower arm successively in connection with each of the pipes or tubes of the second series, and cogs on said elbow-joint adapted to be engaged by a suitable worm on a rod operated by a milled wheel, substantially in the manner and for the purpose set forth.

3. In a pool-table, the combination, with two series of pipes leading from the pockets to the center and from the center to a series of receptacles, respectively, of an elbow-joint connecting the two series of pipes, having cogs around its vertical arm adapted to be engaged by worms on suitable shafts, and a gear-wheel on each of said shafts adapted to engage by friction with a milled wheel having graduations on its milled surface, substantially in the manner and for the purpose set forth.

409,061. VALVE-GEAR FOR ENGINES. ROBERT H. PEASE, Battle Creek, Mich. Filed Feb. 7, 1889. Serial No. 299,068. (No model.)



Claim.—1. In an engine valve-gear, a shaft, and incline planes placed above and below said shaftt, in combination with a vertically-shifting eccentric formed with a slot adapted to receive said incline planes, and a shoe having its bearing on the top of said incline planes.

2. In an engine valve-gear, a shaft and incline planes placed centrally above and below said shaft, in combination with a vertically-shifting eccentric provided with a shoe having its bearing on the top of the said incline planes.

3. In an engine valve-gear, a shaft, incline planes placed above and below said shaft, and a shoe having its bearing on said incline planes, in combination with a shifting eccentric pivoted to said shoe, substantially as shown, and for the purpose set forth.

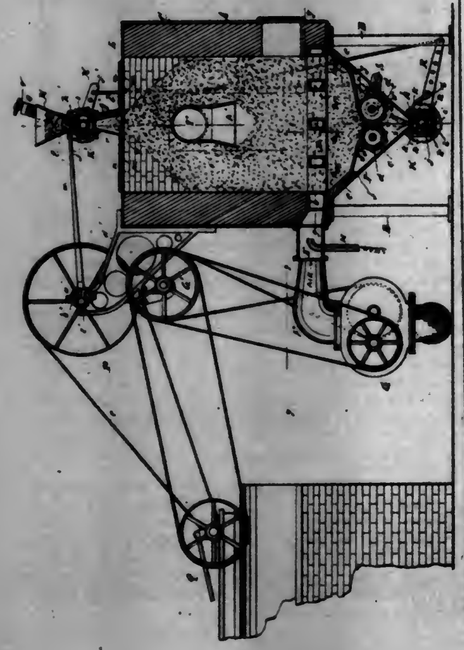
4. In an engine valve-gear, the shaft provided with a revolving frame, which frame consists of sliding sleeves and incline planes, in combination with a shifting eccentric and a shoe having its bearing on said incline planes.

5. In an engine valve-gear, a shaft, incline planes placed above and below said shaft, and a slotted embracing-disk for said incline planes, in combination with a shifting eccentric and a shoe having its bearing on said incline planes.

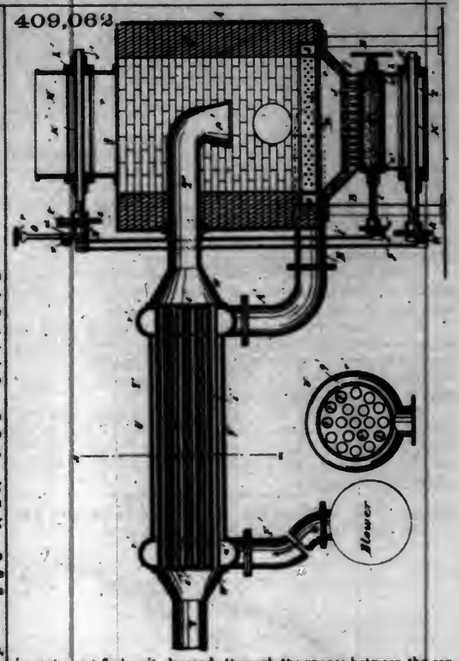
409,062. FUEL-GAS GENERATOR. JOHN R. PETERS, Georgetown, Pa. Filed Dec. 20, 1887. Serial No. 258,436. (No model.)

Claim.—1. The combination, with the gas-generator, of perforated air-supply pipes extending transversely into and across the fuel-space above the bed or grate, substantially as set forth.

2. The combination, with the fuel-receptacle, of a hollow air-supplying frame fitting therein across the fuel-space above the bed or grate and perforated on its inner sides, and the spaced perforated pipes within said frame and communicating with the interior thereof, whereby air may be delivered through and around the entire mass of



409,062



incandescent fuel as it descends through the spaces between the several pipes, substantially as set forth.

3. The combination, with the gas-tight generator having a central gas-discharging outlet-pipe, a hollow perforated frame having spaced perforated pipes within and crossing the fuel-space in said generator, and a pressure-blower for forcing air through the perforations in said frame into all parts of the descending fuel, of a grate below the said frame and within the lower end of the gas-tight generator and a gas-tight discharge-valve at the bottom of the generator below the grate, substantially as set forth.

4. The combination, with the generator having a gas-tight receptacle provided with a V-shaped lower end, of parallel crushing-rollers journaled longitudinally in said lower end, space being left between the outer sides of rollers and inclined bottom for the passage of ashes, and grates extending to the upper sides of said rollers from the inclined bottom across the said ash-passages to direct the clinkers downward between the adjacent crushing-faces of the said rollers, substantially as set forth.

5. The combination, with the inclined or V-shaped bottom having a rotary gas-tight chambered discharge-valve at its vertex, of the crushing-rollers above the valve and the grates above and at opposite sides of the rollers, substantially as set forth.

6. The combination, with the parallel rotary crushing-rollers having tappets, of two grates fulcrumed at their outer ends above and parallel with the rollers, the inner or free ends of the grates extending over the rolls in the paths of their tappets, whereby the grates will be vibrated vertically to discharge the ashes and conduct the clinkers to the space between the rolls, substantially as set forth.

7. The combination, with the gas-tight generator, of a cylindrical casing at the upper end thereof, a similar casing in the bottom under the grate, said casings having vertically-aligned longitudinally-extending inlet and outlet slots or openings, and a rotary cylindrical valve closely fitting each of said cylinders to prevent the escape of gas and having a series of chambers extending in the direction of their length and registering with the upper and lower slots or openings in said casings, substantially as set forth.

8. In a gas-generator, the combination, with a feeder comprising the hopper, a tubular casing at the discharge end thereof, a rotary chambered valve fitting said casing to form a gas-tight joint, and a ratchet secured to the axis of the valve outside of the casing, of a rocking lever provided with a pivoted pawl engaging the ratchet, a block adjustable longitudinally on the lever, and a reciprocating rod connected to said block for operating the lever, whereby the throw of the lever and speed of the valve may be regulated by moving the said block, substantially as set forth.

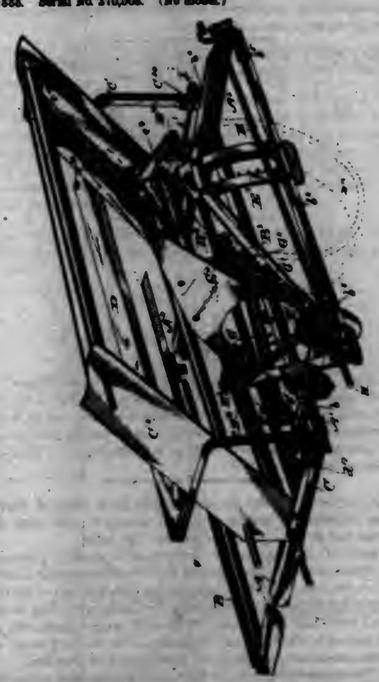
9. In a gas-generator, the combination, with a feeder comprising the hopper, a tubular casing at the bottom thereof, a rotary chambered valve fitting said casing to form a gas-tight joint, and a ratchet secured to the axis of the valve outside of the casing, of the longitudinally-slotted rocking lever having a pawl engaging said ratchet, a block sliding in said slot, an adjusting-screw extending through the outer end of the lever into the slot and engaging the block, and a reciprocating lever connected to said block, substantially as set forth.

10. The combination, with the gas-tight fuel-receptacle having a V-shaped bottom, a horizontal hollow apertured grid-like frame extending through the fuel-space above the bottom, adapted to connect with a pressure-blower, a gas-tight chambered discharge-valve at its vertex, and the crushing-rolls and grates vibrated thereby between said valve and frame, of the central flaring outlet above said hollow frame, a feed-hopper on top of the receptacle, a cylindrical casing having a gas-tight connection therewith and with the interior of the receptacle, a rotary valve therein having a series of chambers and closely fitting in the casing, and mechanism connecting said two valves for continuous and simultaneous operation.

11. The combination, with the gas-tight fuel-receptacle having V-shaped bottom, a horizontal valve-casing communicating with the receptacle along the vertex of its bottom and having a discharge-opening in its lower side, and the feed-hopper having a similar horizontal feed casing leading into the top of the receptacle, of rotary valves closely fitting in said casings to prevent the escape of gas, and each having longitudinally-extending ribs forming receptacles, levers for operating said valves, and a rod connecting said levers, substantially as set forth.

12. In a fuel-gas generator, the combination, with the gas-tight fuel-receptacle and its feed and discharge valves, of the hollow perforated grid-like frame extending horizontally across and through the receptacle above its grate or bed, the central outlet-pipe having a jacketed regenerator, a pipe leading from the space within the jacket to the said perforated frame, and a blower leading into the opposite end of the jacketed space and forcing the air therethrough into the hollow frame, substantially as set forth.

409,063. SUPPORTING-FRAME FOR SELF-BINDING HARVESTERS. JULIAN H. PITKIN, Lake View, and JOHN F. STEWARD, Chicago, Ill.; said Pitkin assignor to William Deering, Chicago, Ill. Filed Apr. 12, 1888. Serial No. 270,503. (No model.)



Claim.—1. The harvester main-wheel frame having the axle-guiding plate E^3, provided with the top arm E^{13}, and the standard E, erected on the rear stubble corner and provided with a box or bearing at the top in line with arm E^{13}, and forming the inner bearing of the binder, whereby the frame is adapted to sustain a rocking or folding binder.

2. In a harvester and binder, the main-wheel frame having the axle-guiding plate E^3, with the top arm E^{13}, the standard E, erected on the rear stubble corner and provided with a top box or bearing E^9 for the packer-shaft, in line with arm E^{13} and forming the inner bearing of the binder, and the rigid arm G, projecting stubbleward beyond the remainder of the frame in position to sustain the outer side of the binder.

3. In a harvester main-wheel frame, the lower truss member b^2 and the standard E, secured to its rear end, in combination with the upper truss member B^2, having its rear end bent upward and secured to the standard, substantially as shown.

4. A harvester main-wheel frame having thereon on the stubble side a rigid arm E^{12} and a standard E, with a box or bearing E^9 at its top, in combination with a grain-binding machine having the long tubular base-arm suited to turn and slide in the arm E^{12} and the packer-shaft mounted in said base-arm and extended beyond the same to slide through bearing E^9, whereby the binder is permitted to rock inward and outward on the harvester, and also permitted to slide fore and aft thereon.

5. The binder-frame having the tubular base-arms E^4 and G^4 to sustain the packer-shaft and needle-shaft, respectively, in combination with the harvester main-wheel frame having the binder-frame mounted thereon to turn about the axis of the packer-shaft as a center, said main-wheel frame provided with the rigid outreaching arm G, adapted to rest beneath the arm G^4, whereby the binder is given direct support at its outer side when in operative position.

6. In combination with the binder-frame having the long horizontal base-arm E^4 inclosing the packer-shaft, the harvester main-wheel frame provided with a rigid arm or standard wherein the arm E^4 is mounted to turn and to slide endwise.

7. The binder-frame provided with the rigid tubular horizontal base-arm E^4, encircling the packer-shaft, whereby said arm is adapted to sustain the packer-shaft and also to serve as a partial support for a sliding and turning binder.

8. In a grain-elevating harvester, a main frame to carry the main wheel and platform, provided with fore-and-aft bars B' and b, extended to overhang at the front and rear, in combination with the angular bars or frames C C', mounted on the overhanging ends of the bars B' and b, and the elevator side boards or frames C^2 and C^3, secured to the bars C C', substantially as described and shown.

9. In a main-wheel frame for a harvester and binder, the combination of its rear sill A', the bar b^2, located at the stubble side, attached to the sill, and extended rearward beyond the same, and a binder-supporting standard E, rigidly attached to the rear end of said bar b^2, whereby the binder is given support in rear of the sill.

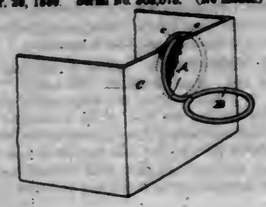
10. The truss for a harvester main-wheel frame, consisting of a lower bar or member b^2 and an upper member b^3, connected at its ends thereto, the upper member being arranged at one end directly over the lower member, but deflected at the opposite end to one side of the lower member.

11. In a harvester main-wheel frame provided with the front support b^7 for one end of the tongue-pivot, the truss at the grain side of the main wheel, extended at the front to sustain the support b^7 of the tongue-pivot, said truss deflected stubbleward as it approaches the front of the frame, whereby the supports for the tongue-pivot are widely separated without impairing the strength of the frame or interfering with the wheel.

12. In a harvester-frame, the forwardly-extending bar b and the transverse sill or finger-bar A^3, in combination with the metal strap b^8, secured to the under side of the bar and bent, as shown, to form a support for the tongue-pivot, and passed beneath the sill, substantially as described and shown, and secured at its rear end to the bar b, whereby it is caused to act as a truss to hold the pivot in position.

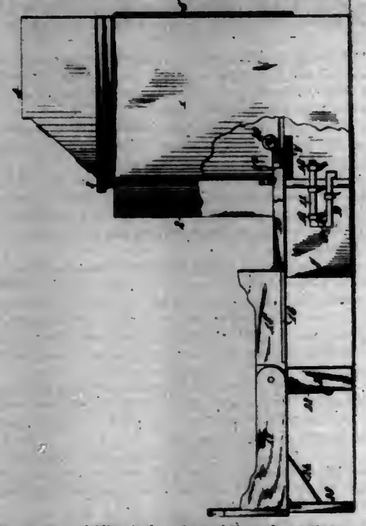
13. In combination with the bar B' and the sill or finger-bar A^3 thereunder, the strap b^7 to the upper face of the bar B', bent around the tongue-pivot and thence rearward on the under side to the lower edge of the sill and secured in place, substantially as shown.

409,064. BOX-PULL. MORTIMER G. FOSTER, New Britain, Conn. Filed Apr. 20, 1889. Serial No. 308,073. (No model.)



Claim.—A box-pull constructed of a single wire having at one end a spiral clasp and at the opposite end a ring at right angles to the plane of the clasp, substantially as specified.

409,065. CABINET FOLDING BEDSTEAD. MARTIN RAUH, New York, N. Y. Filed May 9, 1888. Serial No. 310,153. (No model.)



Claim.—1. A folding bedstead consisting of a stationary casing having rear rails or trackways and side guideways, the horizontally-sliding central section engaging the guideways, the head-section hinged to the inner end of the central section and raised and lowered on the rails or trackways by the sliding movement of such central section, the foot-section hinged to the outer end of the sliding section and adapted to swing to a vertical position when the latter is moved into the casing, and hinged swinging doors on the casing to support either the central section or the head-section when the bedstead is opened, substantially as described.

2. A folding bedstead consisting of a casing having a bottom wall, opening and closing doors both above and below such wall, rear rails or trackways, and side guideways, the horizontally-sliding section engaging the guideways and supported by the lower doors when drawn outward, the head-section hinged to the inner end of such central section and raised and lowered thereby on the rear rails or trackways, and the foot-section hinged to the outer end of the central section and adapted to swing to a vertical position within the casing, substantially as described.

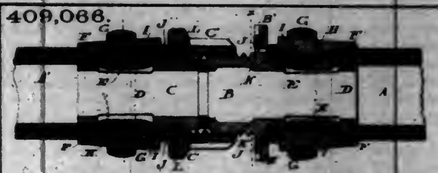
3. A folding bedstead consisting of a casing having side guideways, a skeleton back, and rear rails or trackways provided with curved lower ends, and triple sections hinged at their adjacent ends, the middle section sliding horizontally in the side guideways and by its sliding movement raising and lowering the head-section on the rails or trackways, and the foot-section having hinged side legs and a hinged leg-frame at its outer end and adapted to swing to a vertical position within the casing, substantially as described.

4. A folding bedstead consisting of a stationary casing having a bottom wall, rear rails or trackways, hinged doors and horizontal side guideways above the said wall, and a pair of hinged doors below the wall provided with locking-slides to lock them open parallel to the sides of the casing, the horizontally-sliding central section engaging the guideways, the head-section hinged to the inner end of the central section and raised and lowered by the sliding movement thereof, and the foot-section hinged to the outer end of the central section and provided with a hinged leg-frame at its outer end and adapted to swing to a vertical position within the casing, substantially as described.

409,066. HOSE-COUPLING. SAMUEL W. RAVENEL, Bonneville, Mo. Filed Oct. 26, 1888. Serial No. 289,226. (No model.)

Claim.—1. In a hose-coupling, the combination, with a tube D, adapted to be inserted into the hose, of the removable independent plates F, having external bearing-faces inclined upward from each end toward the center of the coupling and adapted to bear throughout their length upon the hose, and plain rings G encircling the inclined bearing-faces, all substantially as shown and described.

409,066.



2. In a hose-coupling, the combination, with tube D, having openings E in its walls and adapted to be inserted into the hose, of plates F, provided on their inner faces with lugs H, directly over the openings E, and with inclined ribs on their outer faces, and rings G encircling the plates and adapted to force the hose into the openings, as and for the purpose set forth.

3. In combination with tube D, provided with openings E, hose A, plates F, provided with lugs H over the openings E, and with similar lugs to one side of the openings, inclined bearing-faces on the outer face of the plates, and rings G encircling the plates, all substantially as shown.

4. In combination with the couplings B C, having tubes D, hose-sections A A', separate independent plates F, secured to the couplings B C, and provided with external inclined bearing-faces, and rings G encircling the plates.

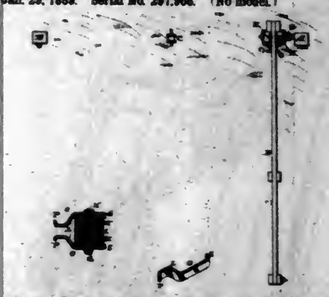
5. In combination with the male coupling B, having a tube D, plates F, each provided with a hook J, to engage the coupling, and a ring G encircling the plates.

6. In combination with coupling C, having a loose collar, and a tube D, plates F, engaging with the loose collar, and a ring G encircling the plates.

7. In combination with coupling C, having tube D and a loose collar, a groove in said collar, plates F, provided with a hook J, to engage the groove, and a ring G encircling the plates.

8. The hose-coupling herein described, comprising the following elements, to wit: a male coupling B, provided with a tube D, to be inserted into the interior of the hose and provided with openings E, female coupling C, provided with tube D, having openings E, and also provided with a loose collar or nut to engage the male coupling, plates F, secured to the couplings B C, and provided on their inner and outer faces, respectively, with lugs H and ribs I, and rings G encircling the plates, all substantially as shown.

409,067. GATE. WILLIAM H. REED, Council Grove, Kans. Filed Jan. 29, 1889. Serial No. 297,966. (No model.)



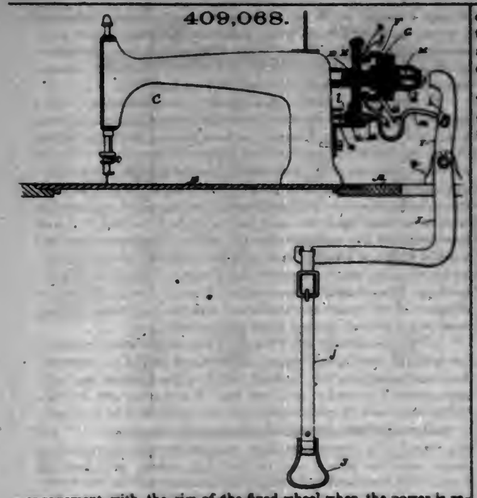
Claim.—The combination, with the gate, the hinged support, and the post upon which the gate is hung, of the guides which are secured to the outer sides of the support at their rear ends, and have their forwardly-extending ends bent inward so as to bear against the sides of the gate and their points beveled or turned outward, as shown, for the purpose set forth.

409,068. DRIVING OR STOP MECHANISM. OSCAR W. SCHMIDT, San Francisco, Cal., assignor of one-half to Israel S. Cohen, same place. Filed Feb. 23, 1889. Serial No. 300,924. (No model.)

Claim.—1. The combination, with the drive-shaft of a machine, of the friction-wheel E, fast upon the drive-shaft and having a socket in its hub, the adjacent clutch-pulley sliding upon the hub of the fixed wheel and having a socket in its hub, the spring within the hubs of the fixed wheel and clutch-pulley, the pivoted lever engaging the pulley for forcing it into frictional engagement with the fixed wheel, and a treadle-connection with the lever, substantially as described.

2. The combination, with the drive-shaft of a machine, of the fixed and sliding wheels and the lever for forcing them into engagement with each other, the sliding brake-shoe fitted to move in a bracket secured to the machine and having an arm connected with the main lever, and a spring in the bracket for projecting the brake-shoe into

409,068.



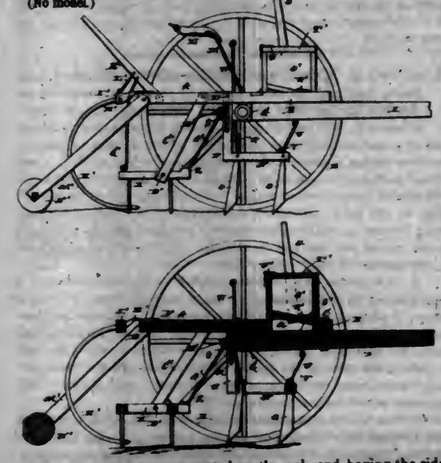
engagement with the rim of the fixed wheel when the power is removed from the treadle, substantially as described.

409,069. CARRIAGE-CURTAIN FASTENING. SAMUEL P. SCOTT, Hillsborough, Ohio, assignor to the Star Manufacturing Company, same place. Filed Apr. 4, 1889. Serial No. 305,918. (No model.)



Claim.—In a carriage-curtain fastening, the combination of the stationary base A, the hollow head B, having a central bore and a rounded end flattened at the outer extremity of said bore and provided with diametrically-opposite pairs of notches D and E, and the spring F, with the stationary pin G, passing through both base and head and having a pair of diametrically-opposite ribs *g g* at its outer end, and an enlarged rounded head H, projecting beyond said ribs and fitting closely on the flattened end of the head and adapted to cover the notches therein and strengthen the ribs, all substantially as and for the purpose specified.

409,070. COMBINED SEED-SOWER AND CLOD-CRUSHER. JOHN W. SELF, Bowling Green, Ky. Filed Mar. 30, 1889. Serial No. 305,367. (No model.)

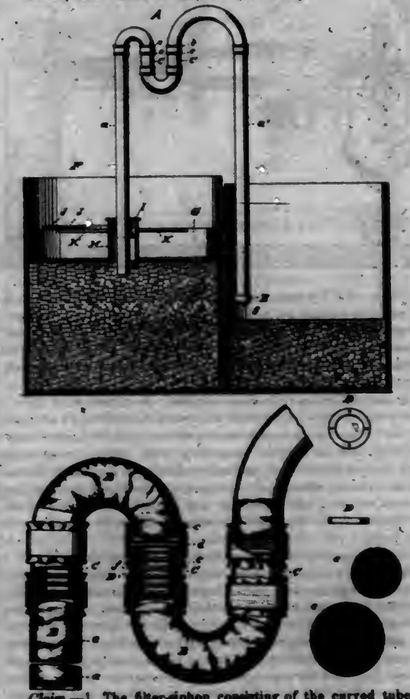


Claim.—1. The frame mounted on the axle and having the side bars B and the parallel cross-bars C E, and the tongue with its rear end under the centers of said cross-bars, in combination with a detachable hopper rectangular in form and adapted to be placed on the rear end of the tongue and arranged between the bars B and the cross-bars C E, substantially as described.

2. The combination, with the frame A, having the pins or studs T, of the clod-cutter, the hook-link connecting the front end thereof to the frame, the vertical arms R, having the vertical slots S, engaging the pins or studs T, and the lever or rod to raise and lower the rear end of the said frame, substantially as described.

3. The combination, with the frame A, having the keeper B', of the harrow-frame having the bail at its front end provided with the hook-arm to engage said keeper, the link-arm C', pivotally connected to and depending from the frame A, and having their lower end pivotally connected to the sides of the harrow-frame near the front side of the latter, the hand-lever pivoted on the frame, and the rod connecting the same to the rear side of the harrow-frame, substantially as described.

409,071. SIPHON-FILTER. THOMAS SLEVIN, St. Louis, Mo. Filed Dec. 21, 1888. Serial No. 294,201. (No model.)



Claim.—1. The filter-siphon consisting of the curved tube, the cloth rolls packed therein, and the cap provided with the outlet-opening, substantially as specified.

2. The combination, with the siphon-tube, of the cloth rolls packed therein, the tube-sections adapted to fit thereon, the strainers, and the interspaces between said strainers, substantially as specified.

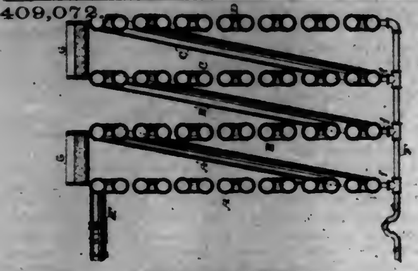
3. The combination, with the siphon-tube, of the filtering material therein, the tube-sections C, the rings D, and the cloth disks forming the interspaces *f*, substantially as specified.

4. The combination, with the vessel F and the siphon provided with filtering material, of the float having the central tube-opening, the counter-weights, and the removable flanged ring, substantially as specified.

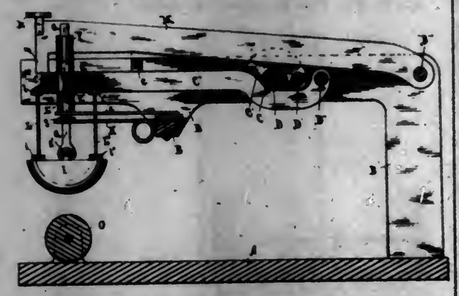
409,072. AMMONIA-CONDENSER FOR ICE-MACHINES. PAUL STRIK, Oakland, assignor to Parke & Lacy, San Francisco, Cal. Filed Oct. 24, 1888. Serial No. 288,083. (No model.)

Claim.—In an ice-machine, the ammonia-condenser consisting of separate sections or coils of pipes, a pipe-connection between the lowermost pipe of each section or coil and the uppermost pipe of the succeeding section or coil, an inlet-pipe for the ammonia-gas communicating with the uppermost pipe of the first section or coil, and an outlet-pipe communicating with the bottom pipe of each section or coil, substantially as herein described.

409,072.



409,073. TYPE-WRITING MACHINE. DANIEL C. STOVER, Freeport, Ill. Filed May 23, 1888. Serial No. 274,784. (No model.)



Claim.—1. In a machine of the class described, the combination, with a suitably-suspended type-block free to oscillate about its center of suspension and having a convex type-bearing surface, of a series of independent keys and mechanism whereby each key in its descent imparts swinging and then bodily rectilineal motion to said block, substantially as set forth.

2. In a machine of the class described, the combination, with a suitable support and a type-block connected therewith by a universal joint and having a convex type-bearing surface, of three independently-oscillating bars connected, respectively, with three corresponding points upon said type-block, preferably equidistant from said universal joint, and means, substantially as shown and described, for operating said bars, whereby said type-block may be oscillated about said universal joint and any type upon said convex surface be brought into a given position with reference thereto.

3. In a machine of the class described, the combination, with a yielding support and a type-block connected therewith by a universal joint and having a convex type-bearing surface, of three independently-oscillating bars connected, respectively, with three corresponding points upon said type-block, preferably equidistant from said universal joint, and means, substantially as shown and described, for operating said bars, whereby said type-block may be first oscillated about said universal joint and any type upon said convex surface be brought into a given position with reference thereto and may then be moved bodily in a predetermined direction, substantially as and for the purpose set forth.

4. In a machine of the class described, the combination, with a yielding support, a spring adapted to press said support upward, and a type-block suspended below said support by a universal joint and having a convex lower face provided with raised type, of three independent vertically-oscillating bars connected, respectively, with three points upon said type-block by means permitting the free oscillation thereof, and type-actuating levers extending across said bars and having upon their lower edges wards of different arrangement upon the different levers, whereby a given downward movement of the various levers produces correspondingly different relative movements of said oscillating bars and brings the various type upon the convex surface of the type-block successively into a position directly below said universal joint.

5. The combination, with the vertically-reciprocating support G, the spring H, adapted to press said support upward, and the type-block I, suspended from said support by a universal joint and having an approximately-spherical lower face provided with raised type, of the vertically-oscillating bars C C' C'', connected, respectively, with three points upon the upper surface of the type-block by rods L L' L'', stops *e* limiting the upward motion of the bars C C' C'', and type-actuating levers M, extending across said bars and provided with variously-arranged wards on their lower edges, whereby downward pressure upon the different levers produces different downward movements of the bars C C' C'' and brings different type upon the convex surface of the type-block into a position directly below said universal joint, substantially as and for the purpose set forth.

6. In a machine of the class described, the combination, with a suitable support and a type-block suspended therefrom by a universal joint, of a type-bearing spherical segment forming the lower portion of the type-block and susceptible of limited rotation about a vertical axis with reference to the body thereof, means, substantially as shown and described, for imparting such limited rotation to said segment, three independent vertically-oscillating bars connected, respectively, with three points upon the upper surface of the type-block by means permitting the free oscillation thereof about said universal joint, and a series of levers crossing said bars and provided with differently-arranged wards, whereby downward movement of the different levers produces different relative movements of said bars and different oscillations of the type-block and brings different type upon said segment into a position directly below said universal joint.

7. The combination, with the vertically-reciprocating support G, the spring H, pressing said support upward, and the plate I', suspended from said support by the universal joint K, of the spherical type-bearing segment I, pivoted to the lower face of said plate and having a limited rotation with reference thereto, the oscillating lever Q, adapted to impart such limited rotation to the segment, the bars C C' C'', and the rods L L' L'', connecting them respectively with corresponding points upon the plate I', and the levers M, crossing said bars and formed with wards, whereby downward movement of the levers actuates the bars C C' C'' and produces varying oscillations of the segment, bringing different type upon its surface into a position directly below the universal joint K, substantially as and for the purpose set forth.

8. The combination, with a suitable support G, a plate I', suspended therefrom by a universal joint, and a spherical segment I, pivoted to the lower face of said plate and susceptible of reciprocal rotation within a limited angle with relation thereto, of two type mounted upon the surface of said segment at points equidistant from the center of rotation thereof and separated by an angular space equal to the angle of rotation of the segment with reference to the plate I', whereby, when said segment is at one limit of its rotation, a given oscillation of the type-block brings one of said type into a position directly below said universal joint, and when the segment is at its opposite limit of rotation the same oscillation of the type-block brings the other of said type into said position.

9. The combination, with the support G and the plate I', connected therewith by a universal joint, of the spherical segment I, pivoted to the lower face of the plate and susceptible of limited rotation about a vertical axis with reference thereto, the vertically-oscillating bars C C' C'', connected with corresponding points upon the plate I' by rods L L' L'', a lever M, crossing said bars and adapted by its downward movement to depress said bars in a given order and to bring a given point upon said segment into a position directly below said universal joint, and two type mounted upon said segment, one at said given point and the other at a second point equidistant therewith from the center of rotation of the segment and separated from said given point by an angular space equal to the limit of rotation of the segment with reference to the plate I', substantially as and for the purpose set forth.

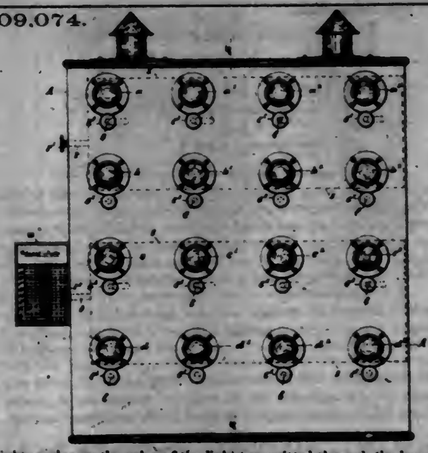
409,074. MARINE SIGNALING APPARATUS. ANDREW TAYLOR, Bootle, County of Lancaster, assignor of one-half to George Beynon, Kirkdale, England. Filed Apr. 2, 1889. Serial No. 305,701. (No model.)

Claim.—1. In a marine night signaling apparatus, the combination of a case adapted to be illuminated, having a series of lenses, a series of frames *f*, adapted to be rotated and having a shield, a red-glazed pane, a green-glazed pane, and a white-glazed pane, said shield and glazed panes being arranged to shield the light or change the color of the light transmitted through the lenses, and said frames being carried on shafts *e*, the frames *k* on the shafts, the windows *i* in the rear of the case, and the shutters *s* in front of the said frames *f*, substantially as and for the purposes set forth.

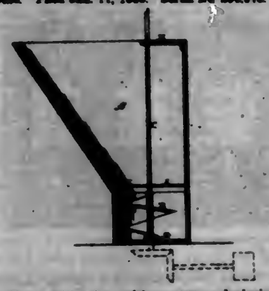
2. In a marine night signaling apparatus, the combination of a case adapted to be illuminated, having a series of lenses, a series of frames *f*, adapted to be rotated with relation to said lenses and having a shield, a red-glazed pane, a green-glazed pane, and a white-glazed pane, said shield and glazed panes being arranged to shield the light or change the color of the light transmitted through the lenses, and said frames being carried on shafts *e*, windows *i*, and frames *k*, substantially as and for the purposes set forth.

3. In a marine night signaling apparatus, the combination of a case adapted to be illuminated, having a series of lenses, a series of frames *f*, adapted to be rotated with relation to said lenses and having a shield, a red-glazed pane, a green-glazed pane, and a white-glazed pane, said shield and glazed panes being arranged to shield the light or change the color of the light transmitted through the lenses, substantially as and for the purpose set forth.

409,074.



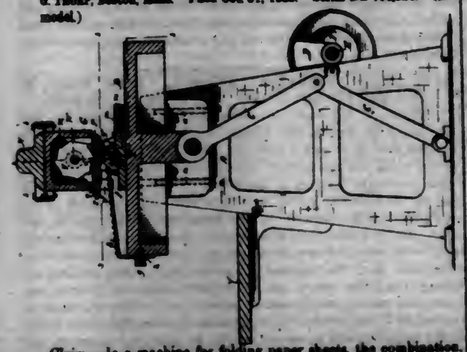
409,075. POTTERY-DIPPING TUB. CARROLL C. THOMPSON, East Liverpool, Ohio. Filed Jan. 17, 1889. Serial No. 296,673. (No model.)



Claim.—1. The combination, with a pottery-glazier's dipping-tub, and an agitator placed in the bottom thereof and causing an upward current of the material placed in the tub, of a screen which covers the entire surface above the agitator, for the purpose of modifying the upward current, substantially as shown and described.

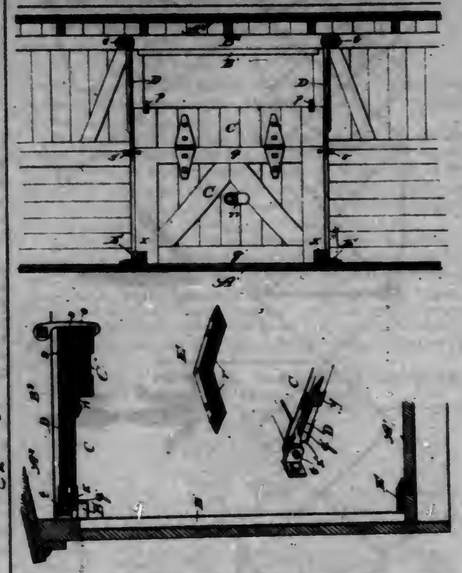
2. The combination, with a pottery-glazier's dipping-tub having its lower end reduced in size, and a screen which covers the top of the reduced portion, of an agitator placed within the reduced portion beneath the screen, which causes an upward current of the material, and which is modified by the screen, substantially as set forth.

409,076. MACHINE FOR FOLDING LEAVES FOR BOOKS. ELLIOTT G. THORP, Boston, Mass. Filed Oct. 31, 1888. Serial No. 110,690. (No model.)



Claim.—In a machine for folding paper sheets, the combination, with the plate L, provided with projections M N, having notches or slots *m*, of a plate P, having depressions Q R to engage with said projections, slots *n*, and cutters or saws V, substantially as and for the purpose specified.

409,077. CAR-DOOR. CONRAD THIEM, Chicago, Ill. Filed Apr. 4, 1888. Serial No. 269,986. (No model.)



Claim.—1. In a freight-car, the combination, with the grain-door C, of hangers D, pivotally secured toward opposite ends, respectively, to the inside of the car near the top and at opposite sides of the door-opening and to opposite lateral edges of the door C, toward the upper end of the latter, a support for the end *q'* of the door, and a support for the end *q* of the door suspended from the ceiling of the car, substantially as described.

2. In a freight-car, the combination, with the grain-door C, of hangers D, pivotally secured toward opposite ends, respectively, to the inside of the car near the top and at opposite sides of the door-opening, and to the opposite sides of the door C, toward the upper end of the latter, angular keepers E, secured to the floor of the car at opposite sides of the door-opening, and each provided with two beveled faces *r r*, a support for the end *q'* of the door, and a support for the end *q* of the door suspended from the ceiling of the car, substantially as described.

3. In a freight-car, the combination, with the grain-door C, of rods D, pivotally secured toward one end inside the car, near the top and at opposite sides of the door-opening, and provided toward their opposite ends with eyes *s* to receive pins *s'*, which project from the lateral edges of the door toward the top thereof, a support for the end *q'* of the door, and a support for the end *q* of the door suspended from the ceiling of the car, substantially as described.

409,078. FENCE. EDWARD TRENLOW, Summit, N. J. Filed Oct 20, 1887. Serial No. 252,942. (No model.)

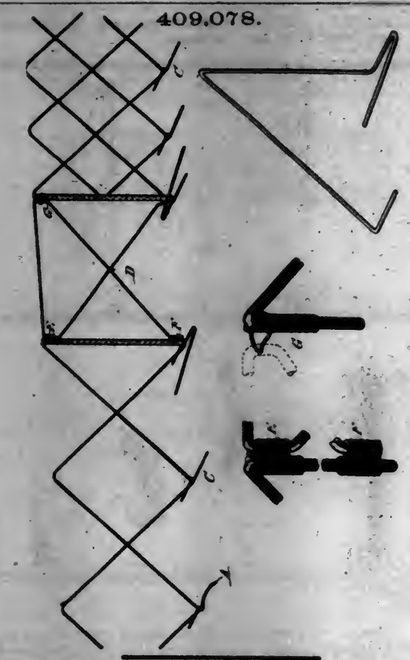
Claim.—1. The herein-described improved fence, consisting of interlocked rods or bars having laterally-projecting feet resting upon or embedded in the ground, whereby the fence is sustained in position, substantially as described.

2. The combination, with the interlocked rods or bars comprising the fence, of the vertical stanchions for the gate, the upper gate-hinge E, consisting of hollow metal cylinders having inclined upper edges, the lower gate-hinge F, consisting of hollow metal cylinders, and the gate-frame D, consisting of a bent rod or bar, arranged substantially as described.

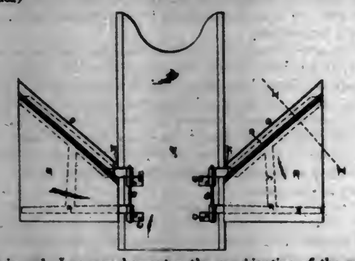
3. The combination, with the two vertical stanchions, the gate located between them and consisting of the bent rod or bar D, and the hinges on one of the stanchions for said gate, said hinges consisting of metal cylinders constructed and joined together substantially in the manner and for the purpose described.

4. The combination, with the interlocked rods or bars having projecting feet resting upon or embedded in the ground, the vertical stanchions for the gate, the upper gate-hinge E, consisting of hollow metal cylinders, the lower gate-hinge F, the gate-frame D, consisting of a bent rod or bar, and a clasp for fastening the gate in a closed position, all the parts being arranged substantially in the manner described.

409,078.



409,079. CORN-HARVESTER. SAXTON C. VAN BUREN and SAXTON C. SHOUP, Carey, Ohio. Filed Oct. 8, 1888. Serial No. 287,508. (No model.)



Claim.—1. In a corn-harvester, the combination of the vehicle, the metallic frames hinged to opposite sides thereof and consisting of the prongs H I, and connecting-strip J with the knives O and the wings B, the front edges of the prongs I being made to project beyond the front edges of the wings B and turned upward at a suitable angle to receive the knives O, substantially as shown.

2. In a corn-harvester, the combination of the vehicle, the wings B, and the metallic frames hinged to opposite sides of the vehicle and forming supports for the wings, and the knives O, the front edges of the metallic frames being made to project beyond the front edge of the wings B and adapted to have the knives O secured thereto, substantially as described.

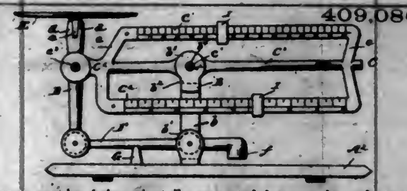
3. In a corn-harvester, the combination of the vehicle, the wings hinged to its sides, and the knives at the forward edges of the wings, there being spaces or openings left between the inner ends of the knives and the outer edges of the vehicle, substantially as set forth.

409,080. MEDICINE OR POSTAL SCALES. WILLIAM R. WATT, Somerville, Tenn. Filed Oct. 4, 1888. Serial No. 287,176. (No model.)

Claim.—1. A pocket-scale comprising a casing formed of a back or bottom strip, and two sides hinged at their inner edges thereto, and a scale having its standard secured to the inner side of said back or bottom strip, whereby when the two sides are swung outward in opposite directions the scale will be exposed and in position for use, substantially as set forth.

2. The combination, with the standard, of the scale-beam formed of three horizontal vertically-aligned members connected at their ends, the upper and lower members being graduated and the middle

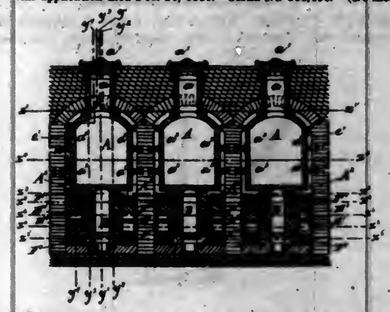
409,080.



bar or member being pivotally connected between its ends to said standard, a vertical scale-pan supporting-arm pivotally connected between its ends to one end of said scale-beam, and a horizontal balance-arm pivoted between its ends to the standard, pivotally connected at one end to the lower end of said scale-pan supporting-arm, and provided at its opposite end with a weight, substantially as set forth.

3. The combination, with the scale-standard B, formed with a recess *b*, forming the enlarged lower and upper ends *b'* *b²*, of the scale-beam C, comprising three parallel members C' C² C³, the members C' C² being graduated, member C³ lying in the recess *b'* of standard B, and the member C² being pivoted to the upper enlarged end *b²* of said standard, the arm D, pivoted to the scale-beam and acting as a support for the scale-pan, and the weighted balance-arm F, pivoted to arm D and to lower end *b'* of standard B, substantially as described.

409,081. COKE-FURNACE. ADAM WEBER, New York, N. Y. Original application filed Sept. 25, 1888, Serial No. 286,332. Divided and this application filed Feb. 26, 1889. Serial No. 301,196. (No model.)



Claim.—1. The combination of a coking-chamber formed of blocks or tiles, a mantel surrounding said coking-chamber and forming a mantel-flue around the same, dovetailed lateral braces connecting the side walls of the coking-chamber and mantel, and a combustion-chamber below the coking-chamber, substantially as set forth.

2. The combination of a coking-chamber formed of blocks or tiles, a mantel surrounding said coking-chamber, angle-blocks supporting the bottom of the chamber, and dovetailed brace-blocks connecting the side walls of the coking-chamber and mantel, and a combustion-chamber below the coking-chamber, substantially as set forth.

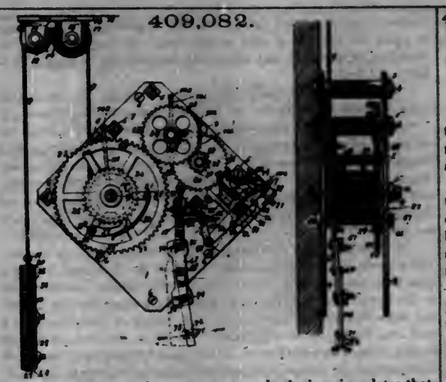
3. The combination of a coking-chamber formed of blocks or tiles, a mantel surrounding the coking-chamber, lateral brace-blocks connecting the side walls of the coking-chamber and mantel, and lateral plates connecting the upper corners of the coking-chamber and mantel, said plates being provided with front and rear openings, and sliding dampers for regulating the size of said openings, substantially as set forth.

409,082. MECHANICAL MOVEMENT. ROBERT WHEELS, St. Louis, Mo. Filed Sept. 28, 1888. Serial No. 286,631. (No model.)

Claim.—1. In a mechanical movement for rock-fans, &c., the combination of the geared drive-wheels, the escapement-wheel, the shafts or axles that carry said wheels, the incasing-plates that inclose the power-works and that provide bearings for the said axles, the ratchet-wheel with tight bearings on the main drive-wheel shaft, the pawl 27 and its re-enforcing spring 30, which pawl dogs the teeth of the ratchet-wheel, the key-seat on said wheel-shaft, the drum on said shaft, the operating-cord that is wound on said drum, the twin pulleys over which said cord runs, the weight-carrier rod 20, that is suspended from said cord, the sectional actuating-weight whose sections are seated on said carrier-rod, the said weight constructed of slotted sections that provide the means to increase or diminish the weight to accord with the power it is required to exercise, the lower section being provided with a recessed boxing, in which the screw-nut rests that is seated on the bottom of the carrier-rod, substantially as and for the purpose set forth.

2. In a mechanical movement for rock-fans, &c., the combination of the geared drive-wheels, the escapement-wheel, the shafts or axles

409,082.



that carry said drive and escapement wheels, the incasing-plates that inclose said wheels and in which said axles have bearings, the pulsating or pendulum bar 43, the cross-head that surmounts said bar, the angle-arms of said cross-head, the shaft or axle 57, that carries said cross-head and its pendent pulsating bar, the tubular journal-box 62, that is screw-seated in the outer incasing-plate and provides a peripheral front bearing for the shaft or axle 57, the detent 42, its re-enforcing spring 47, and anti-rattler cushion 48, all three secured in the intervening space between the vertical angle-arms 44 of said cross-head, the coupling-yoke 68, provided with curved slots 74, the counterpoise-bar 70, the pivot-bolt 69, that connects the pulsating bar, the counterpoise-bar 70, and the coupling-yoke, the adjustable weight and set-screw secured to the counterpoise-bar, and the thumb set-screws 75, that adjust the relative positions of said bars and yokes to influence the action of the detent in its pulsations with the teeth of the escapement-wheel, substantially as and for the purpose set forth.

3. In a mechanical movement for rock-fans, &c., the combination of the geared drive-wheels, the escapement-wheel, the detent, the cross-head, the pulsating bar, the yoke, the counterpoise-bar, the compound lever 76, the conjutary dog-pawl said lever actuates, the anti-rattler cushion attached to said dog-pawl, the sliding bed-plate that carries said dog and by the influence of the lever enforces the periodic engagement of the dog with the teeth of the escapement-wheel in unison with the action of the detent, the flanged plates 82, that guide the sliding dog-plate 87, the toggle-link 53, that pivotally connects the compound lever to the angle-arms of the cross-head and enforces the unison of their pulsations, the adjustable buffer-bar 52, and the spur-lug 56 on the toggle-link, that together limit and adjust the movement of the compound lever and pulsating bar, substantially as and for the purpose set forth.

4. In a mechanical movement for rock-fans, &c., the combination of the drive-gear and escapement-wheels, the shafts or axles that carry said wheels, the rear and front incasing-plates that inclose said wheels and in which are provided bearings for the journals of said shafts or axles, the tubes or pipes that carry lubricant to said bearings, the pulsating bar 43, the cross-head that surmounts said bar, the angle-arms of said cross-head, and the detent 42, anti-rattler cushion, and enforcing-spring that are secured between the angle-arms of said cross-head, substantially as and for the purpose set forth.

5. In a mechanical movement for rock-fans, &c., the escapement-wheel, the detent, the cross-head that carries the detent, the adjustable pulsating bar that carries the cross-head 45, the toggle-link 53, the compound lever 76, that is connected to the pulsating cross-head, the pivot-pin 77, on which said lever works, the spring seated in said pivot-pin that aids the reactionary movement of the lever, the adjustable bed-plate 78, that carries said pivot-pin, the set-screw that secures it, and the set-screw 81, that holds against the back of said bed-plate, substantially as and for the purpose set forth.

409,083. DUMPING-WAGON. WILLIAM E. WELSH, Bushton, Ill. Filed May 9, 1889. Serial No. 310,181. (No model.)

Claim.—1. The combination, with the running-gear of a wagon, constructed substantially as shown and provided with longitudinal beams A, having guide-rods E, and roller C, of a body having parallel beams F, the catch N, and a roller *i*, with projecting ends which pass beneath the guide-rods E, the under side of the beams F having hooks which engage with the roller C, substantially as shown, and for the purpose set forth.

2. The combination, in a dumping-wagon having a body adapted to slide upon the running-gear and tilt thereon, of the pivoted levers H, carried by the body and adapted to be thrown to a vertical posi-

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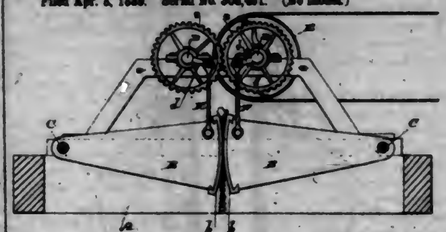


tion at each side of said body to hold it stationary relative to the movement of the truck or "running-gear," substantially as shown, and for the purpose set forth.

3. The combination, with the running-gear of a vehicle, of longitudinal beams A, above which are mounted guide-rods E, the rear ends of which are bent outwardly and secured to the sides of the beams to permit the ends of the roller *i* to pass beneath the guide-rods and abut against the forward ends thereof to limit the forward movement of the body on the running-gear, substantially as shown.

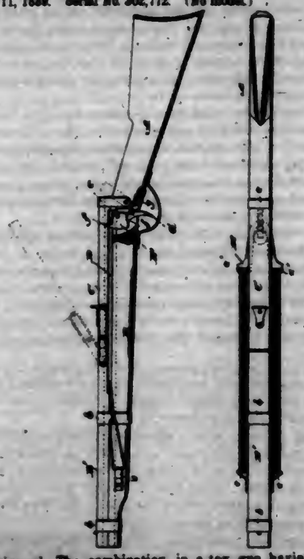
4. The combination, in a dumping-wagon, of the running-gear provided above the longitudinal beams thereof with guide-rods E, a roller C, journaled at the rear ends of the running-gear, a pivoted lever H, secured to the front bolster, a body having longitudinal beams F F, to which are secured cross-pieces *f*, *f'*, and *f²*, a roller *i*, the ends of which project and roll upon the beams A, a hook *k*, the catch N, and pivoted levers H, the parts being organized substantially as shown.

409,084. ORE-CRUSHER. SILAS W. WELLER, Baker City, Oreg. Filed Apr. 5, 1889. Serial No. 306,461. (No model.)



Claim.—An improved ore-crusher consisting of the combination of the frame A, having the upper portion *a*, the horizontal shafts C at each end of the frame, the opposing jaws B B, pivoted at their rear ends on the horizontal shafts and having oppositely-curved working-faces *b*, between which the ore is received and crushed, the shafts D D above, the gears connecting the shafts, the cranks of the shafts, and the links connecting the cranks with the jaws, whereby they are vibrated simultaneously through arcs in a vertical plane, substantially as described.

409,085. TOY GUN. GEORGE H. WARREN, St. Louis, Mont. Filed Mar. 11, 1889. Serial No. 302,772. (No model.)



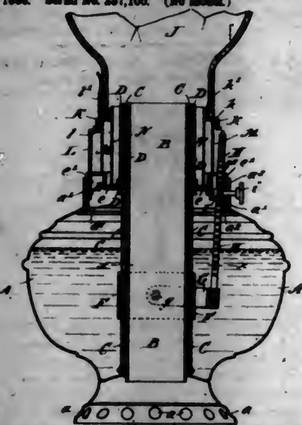
Claim.—1. The combination, in a toy gun having the spring

actuated follower, dog, and trigger, of a stop and barrel extending therefrom, a breech-block C, mounted upon a horizontal pivot and grooved on its under side to form a part of the barrel-recess, and a bail or loop c, pivoted to the stock to clamp said breech-block, substantially as and for the purpose set forth.

2. The combination, in a toy gun, of a stock and barrel extending therefrom, a spring-actuated follower, a dog having an upwardly-projecting portion *f* to engage said follower, a spring-pressed trigger to engage said dog, a breech-block mounted upon a horizontal pivot and grooved on its under side to form a part of the barrel-recess, and a bail or loop pivoted to the stock to clamp said block, substantially as set forth.

3. The combination, in a toy gun, of a stock and barrel extending therefrom, a yoke-shaped follower of spring metal and elastic bands for actuating the same, engaging-dog and spring-trigger, a breech-block mounted upon a horizontal pivot and grooved on its under side to form part of the barrel-recess, and a bail or loop pivoted to the stock to clamp said breech, substantially as set forth.

409,086. LAMP. WILLIAM H. WILDER, Gardner, Mass. Filed Oct. 3, 1888. Serial No. 287,100. (No model.)



Claim.—1. In combination with a lamp-fount having an interior air-tube and wick, an adjusting ring or clamp for the wick, a yoke pivoted at its end to opposite parts of the wick-ring, and an operating-rod passing through the burner or lamp-body, substantially as described.

2. The combination, with the lamp-fount having an interior air-tube and wick and an adjusting ring or clamp device for the wick, of a burner fitted to the fount and having a guide for the wick, a yoke pivoted at its ends to opposite parts of the wick-ring, and a rod connected to the yoke and passed upward through the base-plate of the burner, substantially as herein set forth.

3. The combination, with the lamp-fount having a burner and an interior air-tube and wick and an adjusting ring or clamp device for the wick, of a yoke pivoted at its ends to opposite parts of the wick-ring, a rod connected to the yoke and provided with a rack and passed upward through the lamp-burner, and a pinion journaled to the burner and engaging the rod-rack when the burner is adjusted to the fount, substantially as herein set forth.

4. The combination, with the lamp-fount having an interior air-tube and wick and an adjusting ring or clamp device for the wick, of a yoke pivoted at its ends to opposite parts of the wick-ring and a rod connected to the yoke and normally leaning outward and passed through a guide-hole in the burner, substantially as described, whereby as the wick-ring is raised evenly by the yoke and rod the rod will be thrown outward at the top to clear the lamp burner or chimney, as set forth.

5. A lamp provided with a separable chimney-supporting ring and a perforated air-supply and wind-guard ring made separate from the chimney-ring and placed loosely between it and the burner, substantially as described, for the purposes set forth.

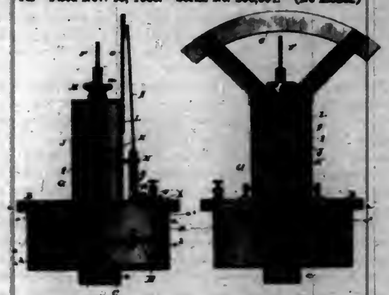
6. A lamp provided with a separable chimney-supporting ring sustained by and above the burner, a separable perforated outer air-supply and wind-guard ring M, placed between the chimney-supporting ring and the burner, and an auxiliary smaller inner air-supply and wind-guard ring N, located between the ring M and the wick-tube of the burner, substantially as herein set forth.

7. In a lamp, the combination, with its burner and shouldered posts or plates held thereto and forming clamps for the chimney, of a separable chimney-supporting ring having holes through which the chimney-supporting posts pass and an inner upwardly-projecting flange to which the chimney is held by the posts, said ring resting on the shoulders of the posts and above the burner-body, substantially as herein set forth.

8. In a lamp, the combination, with its burner and shouldered posts or plates held thereto and forming clamps for the chimney, of a separable chimney-supporting ring having holes through which the chimney-posts or clamp-plates pass and an inner upwardly-projecting flange to which the chimney is held by the clamp-plates, said ring resting on the shoulders of the clamp-plates and above the burner-body, and a perforated air-supply and wind-guard ring placed between the chimney-supporting ring and the burner-body, substantially as herein set forth.

9. In a lamp, the combination of the fount A, having an interior air-tube B, a separable burner fitted to the fount and having a base-plate provided with a wick ring or tube, posts or plates L, held to the burner and provided with shoulders *l*, a separable ring K, having holes L^2, receiving the plates L and resting on their shoulders *l*, said ring having an interior flange *k'*, to which the chimney is held by the plates L, and perforated air-supply and wind-guard rings M N, fitted around the burner wick-tube and between the burner and chimney-supporting ring K, substantially as herein set forth.

409,087. PRESSURE-GAGE. GWILYM M. WILLIAMS, Wilkes-Barre, Pa. Filed Nov. 15, 1888. Serial No. 290,891. (No model.)



Claim.—1. The combination, with a drum and a casing mounted thereon, of a diaphragm disposed in the former, a shaft journaled in the latter, and mechanism connecting the diaphragm and shaft, consisting of a rod projecting upwardly from said diaphragm, a longitudinally-slotted bar projecting from said rod, and a lever rigidly secured to said shaft and provided at its free end with a pin playing in the slotted bar, said connecting mechanism being adapted to impart a partial rotary motion to the shaft during the movement of the diaphragm, substantially as set forth.

2. The combination, with a drum and a casing mounted thereon, of a diaphragm disposed in the former, a shaft journaled in the latter and carrying an indicator or recorder, connection between the diaphragm and shaft, whereby motion of said diaphragm is imparted to the shaft, and adjusting mechanism connected with the shaft and adapted for the adjustment of the indicator or recorder, substantially as and for the purpose set forth.

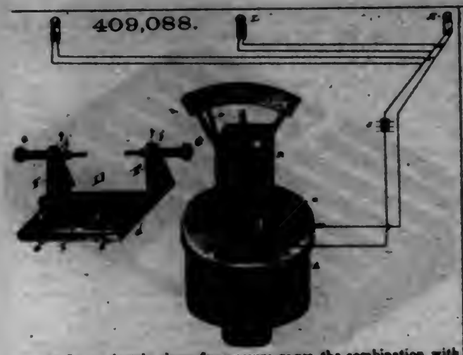
3. The combination, with a drum provided with an inlet-opening at one end and air-perforations near the other end, and a casing mounted thereon, of a diaphragm disposed in said drum between the inlet-opening and air-perforations, a shaft journaled in said casing and carrying an indicator or recorder, connection between the diaphragm and shaft, whereby motion of said diaphragm is imparted to the shaft, and adjusting mechanism connected with the shaft and adapted for the adjustment of the indicator or recorder, substantially as and for the purpose set forth.

4. The combination, with a drum and a casing mounted thereon, of a diaphragm disposed within the former, a shaft journaled within the latter, and connection between the diaphragm and shaft, whereby said shaft is adapted to be rotated by the action of the diaphragm, a graduated arc mounted upon the casing, an indicator secured to the outer end of the shaft and adapted to travel over said arc, and an adjustable spring-connection between the diaphragm and casing, substantially as and for the purpose set forth.

409,088. ALARM. GWILYM M. WILLIAMS, Wilkes-Barre, Pa. Filed Feb. 4, 1889. Serial No. 298,634. (No model.)

Claim.—1. In an electric alarm for pressure-gages, the combination, with a rigid plate, of a plate hinged thereto, provided with upwardly-projecting corresponding lugs disposed at each end thereof, and having opposing contact-points, substantially as and for the purpose set forth.

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2. In an electric alarm for pressure-gages, the combination, with a rigid plate, of two corresponding lugs pivotally connected therewith and provided with opposing adjustable screws forming contact-points, substantially as and for the purpose set forth.

3. The combination, with a pressure-gage provided with an oscillating indicator-shaft and a plate projecting downwardly from the latter, of an insulated circuit-closer comprising a rigid plate, lugs pivotally connected therewith, projecting at each side the downwardly-projecting plate and provided with contact-points for engagement by the latter, said circuit-closer being adapted to be thrown in or out of operation, and battery and alarm mechanism connected by wires with the shaft and circuit-closer, substantially as set forth.

4. The combination, with a pressure-gage provided with an oscillating indicator-shaft and a plate projecting downwardly from the latter, of an insulated circuit-closer comprising a rigid plate and a plate hinged thereto provided with two corresponding lugs projecting at each side the downwardly-projecting plate, opposing adjustable screws provided through the lugs, and battery and alarm mechanism connected by wires with the shaft and circuit-closer, substantially as set forth.

409,089. SHOE ATTACHMENT FOR THRASHING-MACHINES. LOREN M. WILSON, Venice Centre, N. Y. Filed May 9, 1888. Serial No. 310,177. (No model.)

Claim.—1. The combination, with a thrashing-machine having a concave, of an attachment comprising an extended frame located external to the thrashing-machine and having an endless carrier arranged therein, a trough projecting laterally from said frame and extending into the machine adjacent to the discharge of the concave and provided with an endless conveyer, and a discharge-trough located laterally on the other end of the frame and extending externally to communicate with a winnower or fan, and an endless conveyer located in said discharge-trough, substantially as set forth.

2. The combination, with a thrashing-machine having a feed-hopper and a concave, of an attachment comprising an extended frame located external to the thrashing-machine and having an endless carrier arranged therein, a trough projecting laterally from said frame and extending into the machine adjacent to the discharge of the concave and provided with an endless conveyer, and a discharge-trough located laterally on the other end of the frame and extending externally beneath the feed-hopper to communicate with a winnower or fan, and an endless conveyer located in said discharge-trough, substantially as set forth.

409,090. GAS-FURNACE. JOHN SELLWOOD, Chicago, Ill. Filed Dec. 19, 1887. Serial No. 258,242. (No model.)



Claim.—1. In a gas-furnace, the combination, with the furnace-chamber having ports for the inlet of gas and air and outlet of the products of combustion, all communicating therewith from the same side thereof, of a recuperator having unobstructed vertical air-flues extending from a level above the hearth downward, terminating and communicating with the atmosphere at a level below said hearth, and the fire-flues communicating with the ports for the outlet of the products of combustion and extending downward therefrom in proximity to the air-flues, substantially as set forth.

2. In a gas-furnace, the combination, with the furnace-chamber having ports for the inlet of gas and air and outlet of the products of combustion, all communicating therewith from the same side thereof above the level of the hearth, the inlet above the outlet, of a recuperator having an unobstructed vertical air-flue communicating at its upper end with the air-inlet port and extending from the level of said port downward, terminating and communicating with the atmosphere at a level below said hearth, and a fire-flue communicating at its upper end with the port for the outlet of the products of combustion and extending from the level of said port downward in proximity to the air-flue to a level far below the hearth, substantially as set forth.

3. In a gas-furnace, the combination, with the furnace-chamber having ports for the inlet of gas and air and a plurality of ports for the outlet of the products of combustion, all communicating therewith from the same side thereof, of a recuperator having unobstructed vertical air and fire flues located in proximity to each other and extending from a level above the hearth downward to a level far below it, said flues communicating at their upper ends with the ports for the inlet of air and outlet of products of combustion, respectively, said outlet for the products of combustion being horizontal, substantially as set forth.

4. In a gas-furnace, the combination of the furnace-chamber having a horizontal inlet for the gas, a vertical inlet for the air, situated beneath and in proximity to the gas-inlet, an outlet for the products of combustion, and a recuperator communicating with the external atmosphere directly and with said air-inlet for supplying the latter with heated air free from gas, substantially as set forth.

5. In a gas-furnace, the combination, with the furnace-chamber having a horizontal port for the inlet of gas and a horizontal port for the escape of the products of combustion communicating therewith from the same side thereof, of a recuperator having vertical air-flues terminating at their upper ends beneath and in proximity to the said gas-inlet, and fire-flues separated from said air-flues only by thin partitions and communicating at their upper ends with the horizontal outlet-port, said air and fire flues extending from the levels of the ports with which they respectively communicate downward, terminating at a level far below the hearth, communicating at their lower ends with the atmosphere and smoke-flue, respectively, substantially as set forth.

6. The combination, with the furnace-chamber having a port for the inlet of gas and a port for the outlet of the products of combustion, of the air-flues K, communicating at top with said chamber, the flue N, communicating with said air-flue at bottom, the fire-flues H, also communicating at top with said chamber, and the flues J, communicating with said fire-flues at bottom, the flues J being situated beneath the flues N and separated therefrom only by thin partitions, substantially as set forth.

7. In a gas-furnace, the combination, with the combustion-chamber, of an air-chamber, a recuperator having a plurality of air-flues all communicating with said air-chamber, a port opening into one side of said chamber for the admission of gas, and a port directly opposite said gas-inlet, forming communication between said air and combustion chambers, and through which the gas from the gas-inlet port passes directly into the combustion-chamber without striking against the walls of the air-chamber, as set forth.

8. In a gas-furnace, the combination, with the combustion-chamber, of an air-chamber, a port forming communication between said chambers, a recuperator having vertical air-flues communicating with said air-chamber through openings in the floor thereof and extending downward therefrom to a level far below the hearth, fire-flues located in proximity to said air-flues, and horizontal ports situated beneath the floor of the air-chamber and forming communication between said fire-flues and the combustion-chamber, substantially as set forth.

9. In a gas-furnace, the combination, with the furnace-chamber, of the partition L″, separating it into combustion-chamber F and air-chamber L, the port L‴, formed through said partition and connecting chambers F and L, the port D, opening into the chamber L directly opposite the port L‴, and a recuperator communicating with the chamber L, substantially as set forth.

10. In a gas-furnace, the combination, with the furnace-chamber having ports for the inlet of gas and outlet of the products of combustion communicating therewith from the same side thereof, the outlet below the inlet, of a recuperator having vertical air-flues communicating at top directly with one of said chambers and extending

downward therefrom to a level far below the hearth, where they communicate with the atmosphere, and the fire-flues separated from said air-flues only by thin partitions, said fire-flues communicating at top directly with each of the outlet ports and at bottom communicating with the smoke-flue, as set forth.

11. In a gas-furnace, the combination, with the furnace-chamber having ports for the inlet of gas and outlet of the products of combustion communicating therewith from the same side thereof, of a recuperator having a series of vertical air-flues arranged beneath and extending downward from the floor of said chamber communicating with said chamber through ports formed through the floor thereof, and the fire-flues separated from said air-flues only by thin partitions, substantially as set forth.

12. In a gas-furnace, the combination, with the furnace-chamber having its floor formed at different elevations (F' and L') and ports for the inlet of gas and outlet of the products of combustion communicating therewith, of a recuperator having a series of vertical air and fire flues arranged beneath the floor of said chamber and extending downward therefrom, said air-flues communicating at their upper ends with said chamber through ports formed through the higher portion L' of its floor and said fire-flues communicating with the ports for the outlet of the products of combustion, all of said ports being situated on the same side of the combustion-chamber, substantially as set forth.

13. In a gas-furnace, the combination, with the furnace-chamber having its floor formed at different elevations, (F' and L',) ports for the inlet of gas and outlet of products of combustion communicating therewith from the same side thereof, said inlet being situated above the higher portion L' of said floor and said outlet extending horizontally beneath said higher portion, of a recuperator having vertical air-flues situated beneath and extending from the portion L' of said floor downward to a level far below the outlet and communicating at top with said chamber through ports formed through the floor L' thereof, and the fire-flues communicating at top with the ports for the outlet of the products of combustion and extending downward therefrom in proximity to the air-flues, substantially as set forth.

14. In a gas-furnace, the combination, with the furnace-chamber having its floors formed at different elevations, (F' and L',) the gas-port D, communicating therewith above the higher portion L' of said floor, a plurality of ports for the outlet of the products of combustion situated beneath the portion L' of the said floor, a series of vertical air-flues K, situated beneath the portion L' of said floor and extending downward therefrom, of the ports K', formed through said floor and through which flues K communicate with the furnace-chamber, a plurality of vertical fire-flues H, also situated beneath the portion L' of said floor, extending downward in proximity to the air-flues K and communicating at top with the ports for the outlet of the products of combustion, and the partition L'', extending across the furnace-chamber and having port L''', substantially as and for the purpose set forth.

15. In a gas-furnace, the combination of a combustion-chamber, a single port for the inlet of gas and air, and a plurality of ports for the outlet of the products of combustion situated at a lower level than the inlet-port but on the same side of the combustion-chamber, said outlet being distributed in a horizontal direction over a much wider area than that occupied by the inlet, substantially as set forth.

16. In a gas-furnace, the combination of a combustion-chamber having a gas and air inlet and plurality of ports for the outlet of the products of combustion, said inlet and outlet being upon the same side of the combustion-chamber, a recuperator having air-flues communicating with the inlet and having a plurality of fire-flues, one communicating at top directly with each of the outlet-ports, said air-flues and fire-flues being separated only by thin partitions and extending from a level above the hearth to a level far below it, substantially as set forth.

17. The combination, with the combustion-chamber having an inlet for gas and air and an outlet for the products of combustion, said inlet and outlet being situated on the same side of the combustion-chamber, of a vertically-elongated distributer situated opposite the inlet for distributing the flame horizontally, substantially as set forth.

18. In a gas-furnace, the combination, with the combustion-chamber having inlet for gas and air and outlet for products of combustion, all situated on the same side thereof, the outlet being distributed in a horizontal direction over a much wider area than said inlet, of a vertically-elongated distributor placed opposite the inlet for distributing the flame in a horizontal direction over the entire width of the combustion-chamber, substantially as set forth.

19. A gas-furnace having a combustion-chamber, an inlet for gas and air, and a plurality of ports opening directly from said chamber for the outlet of the products of combustion, said outlet being situated on the same side of the combustion-chamber as the inlet but distributed in a horizontal direction over a wider area, the sizes of said outlet-ports increasing in proportion to their distance from the inlet, substantially as and for the purpose set forth.

409,091. ORE-CONCENTRATOR BELT. JOHN M. ADAMS, San Francisco, Cal. Filed Apr. 24, 1889. Serial No. 308,479. (No model.)

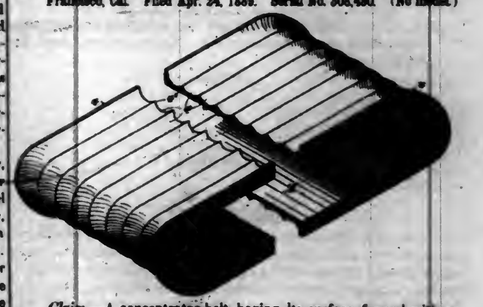


Claim.—1. In a belt for an ore-concentrator, the combination therewith of continuous overflow channels or passages formed on or with said belt and having continuous bottoms, whereby the overflow is carried down to the end of the belt and discharged, substantially as described.

2. In an ore-concentrator belt, the combination, with the belt, of raised flanges formed with or secured to the surface of the belt and separated to form continuous intervening channels or passages having continuous bottoms, whereby the overflow is carried to the lower end of the belt and discharged, substantially as described.

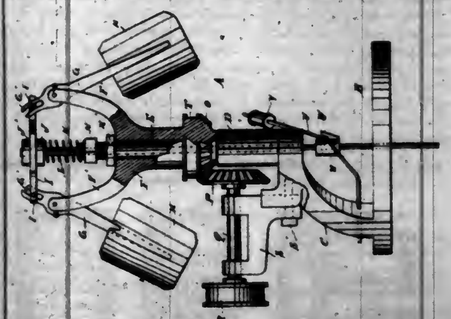
3. In an ore-concentrator belt, a series of narrow parallel belts having side flanges, said belts being separated to form continuous channels or passages between adjacent flanges and an underlying continuous surface lying directly under and against said belts to form continuous bottoms for said channels or passages, whereby the overflow is carried to the lower end of the belt and discharged, substantially as described.

409,092. ORE-CONCENTRATOR BELT. JOHN M. ADAMS, San Francisco, Cal. Filed Apr. 24, 1889. Serial No. 308,480. (No model.)



Claim.—A concentrator-belt having its surface formed with or divided into continuous parallel concave runs or ways extending throughout the belt in the direction of the flow of material on said belt, substantially as described.

409,098. GOVERNOR. GEORGE S. AGEE, Burnham, Me. Filed June 27, 1888. Renewed July 17, 1889. Serial No. 317,732. (No model.)



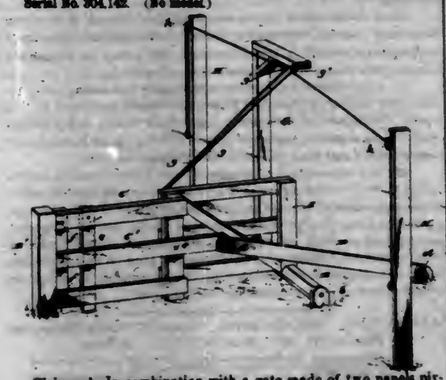
Claim.—1. The herein-described governor, comprising the base E, provided with a vertical bearing D, terminating in a reduced upper portion E, the governor-frame F, journaled on said reduced portion and having a gear on its lower end and forked arms F' on its upper end, the levers G, pivoted in said forked ends, slotted at their upper ends, as at G', and provided with inclined fans H at their lower ends, the governor-rod K, extending down through the bearing D E and having a cross-arm I at its upper end, provided with pins I', entering the slots G', and the spring L, between the under side of arm I and a collar or nut on the part E, and pressing the arm I and governor-rod upward, substantially as set forth.

2. The combination, with the base having a bracket C, provided with a vertical bearing D, the governor-frame F, mounted on said bearing and having the governor-arms at its upper end and a pulley T and gear O at its lower end, of the detachable bracket S, secured to the said bracket C and having a horizontal shaft Q, provided with a gear P at its inner end meshing with gear O, and a pulley R at its opposite end, substantially as set forth.

3. In a governor, the combination, with the governor-frame, its arms, and the vertical governor-rod K, having a lug W' below the governor-frame, of a lever pivoted at its inner end, extending across said lug and having a pulley V at its outer end, substantially as set forth.

4. The combination, with the base B, having a bracket C on its upper side provided with a vertical bearing D, the governor-frame on said bearing, and the governor-rod K, extending down through the bearing D, upper end of the bracket, and the base, of the collar W, having a lug W' and mounted on the governor-rod between the base and the bracket, and the lever U, pivoted to the bracket C, extending across the lug W' and having a pulley on its outer end, substantially as set forth.

409,094. GATE. ANDREW ALLEN, Pana, Ill. Filed Mar. 21, 1889. Serial No. 304,142. (No model.)



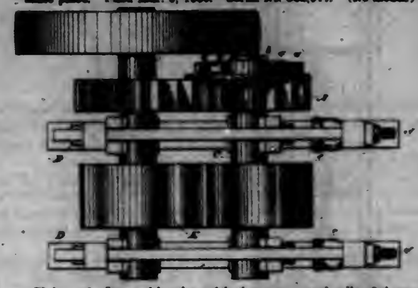
Claim.—1. In combination with a gate made of two panels pivoted to each other and swinging vertically on their pivots, one of said panels being journaled to fixed supports and said journaled or pivoted panel carrying a panel the rear end of which is pivoted thereto, a bar D, pivoted to a fixed support and to the outer panel of the gate, substantially as shown, and for the purpose set forth.

2. The combination, in a gate made up of two gate-sections, one of said sections being pivoted to fixed supports and the other section being provided with an extended rail, of a pivot for connecting the sections to each other, and a bar pivoted to the end of the extended rail and to a fixed support, whereby the gate-sections, when placed across the gateway, will be placed in a horizontal position, and when the gateway is open will assume a vertical parallel position, substantially as shown, and for the purpose set forth.

3. The combination, in a tilting gate, of the sections A C, the former being pivoted at one lower corner to a fixed support and the latter being pivoted to the former to fold vertically parallel therewith when said section A is raised to a vertical position, and a bar *e*, pivoted at the upper end to the top rail of the section C, to drop to a vertical position when the said section is lowered, substantially as set forth.

4. The combination, in a tilting gate, of the sections A and C, pivoted to each other at their adjacent portions to fold parallel with each other when the section A is raised to a vertical position, the section A being suitably journaled to fixed supports, the section C having an extended rail C', to which one end of a bar D is pivoted, the opposite end of said bar being pivoted to a fixed support beyond the supports for the gate A, and cords *g g*, which pass through guides, the ends of said cords being attached to the gate-section A, substantially as shown, and for the purpose set forth.

409,095. ADJUSTABLE GEAR FOR CRUSHING-ROLLS. HANS C. BEHR, San Francisco, Cal., assignor of one-half to Benjamin T. Lacy, same place. Filed Mar. 9, 1888. Serial No. 302,677. (No model.)



Claim.—1. In combination with the corrugated rolls of the crushing-mill, a gear on the roll shaft adjustable rotatively on said shaft, substantially as described.

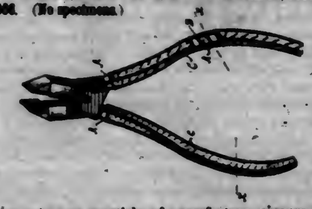
2. In combination with the corrugated rolls of the crushing-mill and their shafts, intermeshing gears mounted upon said shafts and the means for adjusting one of said gears rotatively upon the shaft, consisting of the set-screws mounted on the gear, and fixed projections carried by the shaft, against both sides of which the set-screws bear, substantially as described.

409,096. WATER-PROOF AND FIRE-PROOF MATERIAL FOR ROOFING. ALOIS BLANK, St. Louis, Mo. Filed Jan. 23, 1889. Serial No. 297,261. (Specimens.)



Claim.—The metallized asbestos material composed of a body 1 of asbestos having its interstices supplied with carbonaceous material, a coat 3 of copper adhering to the carbonaceous material and entering the interstices of the asbestos, and an outer sheet or layer 4 of metal overlying the copper 3, substantially as set forth.

409,097. INSULATED NIPPERS AND CUTTING-INSTRUMENT. PERRIN M. CASEY, Mount Vernon, N. Y. Filed Jan. 27, 1887. Serial No. 225,666. (No specimens.)



Claim.—As a new article of manufacture, nippers having handles covered with a vitreous insulating material, substantially as described.

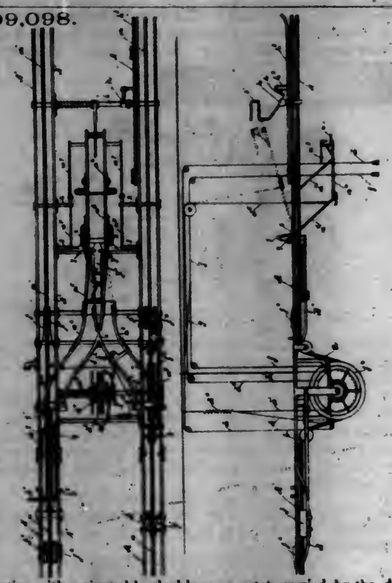
409,098. STORE-SERVICE APPARATUS. GILBERT B. ELLIOTT, Boston, Mass. Filed Oct. 10, 1888. Serial No. 287,737. (No model.)

Claim.—1. In a store-service apparatus, the combination of the conveying-cable, a pulley and shaft revolved by the same, and a carrier-receiving drop-section connected with and adapted to be raised by said shaft, substantially as described.

2. In a store-service apparatus, the combination of a shaft driven by the conveying-cable, a drum loosely mounted on the shaft, a carrier-receiving drop-section, an elevator-cord connecting said section and drum, and means whereby the drum can be thrown in or out of gear with the shaft to raise the drop-section or allow the same to be lowered, substantially as described.

3. In a store-service apparatus, a receiving drop-section, in com-

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bination with a pivoted hooked lever or catch carried by the drop-section to hold a carrier on the same, a rock-shaft having an arm, and a spring to actuate the same in one direction, said arm adapted to be thrown back by the upward movement of the drop-section and then released to spring forward and detach the catch from the car, substantially as described.

4. In a store-service apparatus, the carrier-receiving drop-section provided with a catch to hold a carrier thereon and an arm to release the catch, in combination with a main track provided with a rod linked thereto and connected with said releasing-arm and adapted to be lifted by an engaging projection on a passing carrier, and thereby prevent said arm from releasing the carrier from said receiving-section, substantially as described.

5. The combination, with the carrier-receiving drop-track and a carrier-holding latch, of a latch-lifting arm, a rock-shaft, a locking-pawl to engage the rock-shaft, and a main track provided with a rod linked thereto, the linked rod adapted to be lifted by the engaging projection of a passing carrier, and thereby raise the pawl and lock the latch-lifting arm and prevent the release of a carrier on the receiving-section while another carrier is passing on the main track, substantially as described.

6. In a store-service apparatus, the combination of a track, a switch, a forked tumbler pivotally connected with the switch to throw the same, an armed lever pivoted on the track with one of its arms loosely located between the arms of the tumbler to swing the tumbler and lock the same, and a pivoted lever or arm connected with said armed lever and adapted to be operated by a passing car to throw the switch, substantially as described.

7. In a store-service apparatus, the combination of a two-rail main track, a two-rail side track, a pivoted two-rail section of the main track at the junction of main and side tracks movable to place the side and main tracks in continuity or insure continuity of main track, a horizontally-swinging lever between the rails of the track and connected with and adapted to swing said section, and a pair of levers connected with said horizontal lever to swing the same in opposite directions, and having extending arms to be engaged by passing carriers to throw said section in one direction or the other, substantially as described.

8. A store-service apparatus comprising a car provided with cable-grips, a conveying-cable, a main track above the cable, a side track, the main track being depressed below the cable near the junction of main and side tracks, for the purpose set forth, projections on the track on one side of said depression for opening the grip-jaws, and jaws or guides in the depression for closing the grip-jaws, substantially as described.

9. In a store-service apparatus, the combination of receiving drop-section a^4, tilting section a^5, and parallel links a^7, substantially as described.

10. In a store-service apparatus, the combination of receiving drop-section a^4, tilting section a^5, parallel links a^7, and supplemental links a^8, substantially as and for the purpose specified.

11. In a store-service apparatus, the combination, with the cable, of pulley f^4, shaft f^5, friction-clutch f^7 d^3, and drum d^2 and drop-section cord d^3, substantially as described.

12. In combination with a car for store-service apparatus, the grip consisting of the holding-jaws k k' and the latch k^2, arranged and operating substantially as described.

13. In a store-service apparatus, the combination, with the conveying-cable and a shaft rotated by the same, of the carrier-elevator, a drum adapted to be rotated by said shaft, and elevator-cords connecting the shaft and drum, substantially as and for the purpose specified.

14. A store-service apparatus comprising a forwarding cable railway, a return cable railway, a station-track connected with the forwarding and return tracks and adapted to be placed in continuity with either of said tracks, and a receiving drop-track section, substantially as described.

15. A store-service apparatus comprising a forwarding-track, a return-track, a forwarding side track, a switch to throw the forwarding main and side tracks into continuity a return side track, a switch to throw the return main and side tracks into continuity, a receiving drop-track section, and another switch to throw said drop-track into continuity with either of said side tracks, substantially as described.

16. A store-service apparatus comprising the forwarding and return cable railways, a receiving drop-track, side tracks extending inwardly from the forwarding and return tracks to and connected with the receiving-track, and means whereby the receiving-track can be dropped from or raised to the plane of said side tracks, substantially as described.

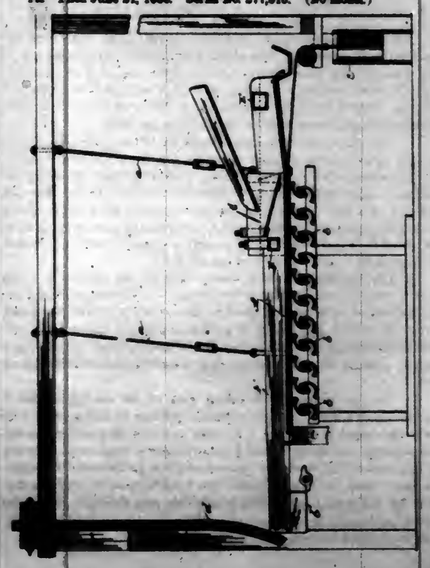
17. A store-service apparatus comprising a track, a receiving drop-track section, and a tilting-track section pivoted at one end to said track and at the other end to said drop-section, substantially as described.

18. A store-service apparatus comprising a track, a receiving drop-track section connected with said track, parallel pivoted supporting-links pivoted to said drop-track, and means for raising and lowering the drop-section, substantially as described.

19. A store-service apparatus comprising a forwarding and a return cable railway, a receiving drop-track section connected by side tracks with both the forwarding and return tracks, and a switch whereby the receiving-section is capable of being placed in continuity with either of said main tracks, substantially as described.

20. In a store-service apparatus, a track and a switch, in combination with a tumbler swinging in a vertical plane and located below, connected with and adapted to throw the switch, a three-armed lever pivoted to swing in a horizontal plane and having one arm engaging and adapted to swing the tumbler, and a pair of pivoted levers or arms connected, respectively, with opposite arms of said horizontal lever and adapted to be operated by passing carriers to throw the switch closed or open, substantially as described.

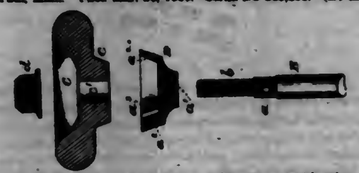
409,099. ORE-SEPARATOR. SAMUEL E. GRESSON, Philadelphia, Pa. Filed June 21, 1888. Serial No. 277,813. (No model.)



Claim.—1. An ore-concentrator comprising a bumping beam or beams, a table supported thereby, with a tailings-delivery at one end and an ore-delivery at the other, and means for imparting movement to said table, combined with a series of hammers or knockers arranged beneath the table, with means for imparting movement thereto to vibrate the said table and thereby assist in the separation, substantially as described.

2. An ore-concentrator comprising a suitable table, with an ore-delivery at one end and a tailings-delivery at the other, means for bumping said table to cause the ore to travel to the delivery end, and a series of hammers or knockers arranged beneath the table, with means for imparting movement thereto to vibrate said table and agitate the mass upon its surface, substantially as described.

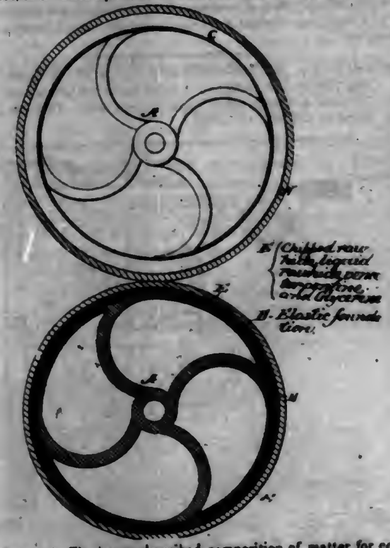
409,100. VALVE FOR STEAM OR WATER. STEPHEN T. HALL, St. Paul, Minn. Filed Mar. 20, 1889. Serial No. 304,208. (No model.)



Claim.—1. In a steam or water valve, the combination of a threaded stem, a socket having an outwardly-flaring ferrule portion, a wooden handle provided with a central or hub part adapted to enter the ferrule, and a nut screwing upon the threaded portion of the stem to clamp the handle within the socket, substantially as described.

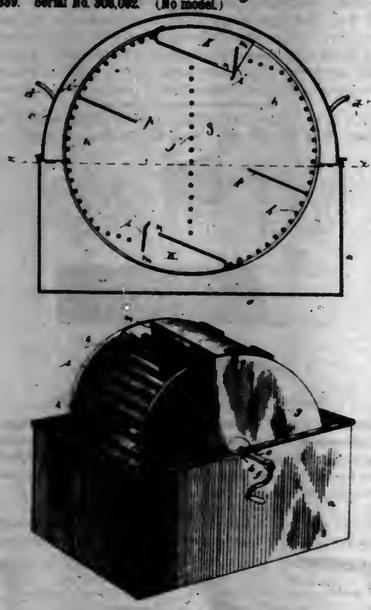
2. In a steam or water valve, the combination of a threaded stem, a socket having an outwardly-flaring ferrule portion provided with one or more internal ribs, a wooden handle having a central or hub portion adapted to enter the ferrule and with slits to fit the ribs thereof, and a nut screwing upon the threaded portion of the stem to clamp the handle within the socket, substantially as described.

409,101. COVERING FOR ROLLERS. CHARLES HALSTEAD, Providence, R. I. Filed Apr. 4, 1888. Serial No. 269,571. (No model.)


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4. The electrical railway-conduit having the angle-iron frames H upon each side, the frames J, by which the surface-rails are supported, and the braces I, extending therefrom and passing between the angle-iron frames H, in combination with the brackets whereby the electrical conducting-rails are supported, and the bolts G, passing through said brackets and through the slot or space between the frames H, whereby a vertical adjustment of the brackets and rails may be had, substantially as herein described.

409,105. **WASHING-MACHINE.** BRAINARD KINGSLEY, Danville, Ill., assignor of one-half to John H. Swisher, same place. Filed Apr. 22, 1889. Serial No. 308,092. (No model.)



Claim.—1. In a washing-machine, the combination, with a boiler, of a cylindrical drum to rotate therein, comprising heads to which the supporting-gudgeons are secured, a series of rods secured to and extending between the heads and forming the periphery of the drum, a transverse partition dividing the drum into two compartments, buckets secured to the periphery of the drum and at opposite ends of said partition, and wings extending from head to head and projecting inwardly from the periphery toward the axis of the drum, substantially as described.

2. A washing-machine drum having a transverse partition dividing the drum into two compartments and water lifting and discharging buckets at opposite ends of the partition, one of said buckets being hinged to allow access to said compartments, substantially as described.

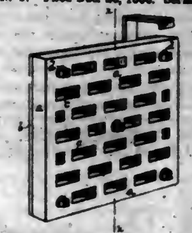
3. In a washing-machine, the combination, with a suds-box or boiler, of a cylindrical rotary clothes-drum therein, a central transverse partition in the drum dividing the same into two compartments, and buckets carried by the drum at opposite ends of the partition to pour and dash water upon the clothes on the partition as the drum revolves, substantially as described.

4. In a washing-machine, the combination of a rotary clothes-drum composed of heads and a periphery formed of longitudinal rods secured to the heads, a bucket secured to said periphery having a deflecting-plate at its open end forming an inlet and discharge opening, the rods forming the periphery of the drum at the inlet-opening to said bucket being located nearer the axis of the drum to allow free flow of the water into said bucket, substantially as described.

5. The combination, in a rotary clothes-drum, of the heads of the drum and a water lifting and discharging bucket consisting of an outer side secured to said heads, a corresponding inner side of less width than the outer side, and an inclined deflecting-plate extending across the open end of the bucket, and having its inner edge curved inwardly, and forming an induction-opening in the outer upper end of the bucket and a discharge-opening in the bottom thereof, substantially as described.

6. The combination, in a rotary clothes-drum, of the periphery of the drum, a central transverse partition dividing the drum into two compartments, said periphery having an opening at one end of the partition into both compartments, and a hinged water lifting and discharging bucket normally closing said opening and provided with a spring-catch to normally hold it closed, substantially as described.

409,106. **ELECTRODE FOR SECONDARY BATTERIES.** WILLIAM P. KOOKOGEY, Brooklyn, assignor to the Kookogey Electric Company, New York, N. Y. Filed Dec. 26, 1888. Serial No. 294,663. (No model.)



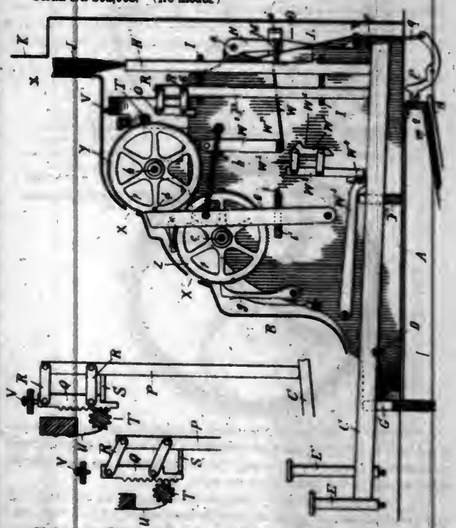
Claim.—1. In a secondary electric cell, as one of the elements or electrodes thereof, the combination of active material, a supporting-plate therefor having perforations to contain and support the active material, which supporting-plate consists of a substance not injuriously acted upon by the liquid, and has a low difference of potential with lead, and a conductor leading to the terminal of the cell and held in contact with the active material, substantially as and for the purpose described.

2. A plate for a storage-battery, consisting of the combination of a supporting-plate having perforations in which the active material is contained and supported, such plate being of a material which is not injuriously acted upon by the liquid and has a low difference of potential with lead, and a thin plate of lead fastened to the supporting-plate, substantially as and for the purpose described.

3. A plate for a storage-battery, consisting of a supporting-plate of wood, having perforations in which the active material is contained and supported, and a conducting-plate of lead fastened to such supporting-plate, substantially as and for the purpose described.

4. A plate for a storage-battery, consisting of a wooden plate *a*, having perforations *c* to contain and support the active material, and a thin lead plate *b* bolted thereto, substantially as and for the purpose described.

409,107. **CASH REGISTER AND INDICATOR.** WILLIAM G. LAFFER, Detroit, Mich., assignor, by direct and mesne assignments, to the Universal Automatic Cashier Company, same place. Filed Dec. 3, 1888. Serial No. 292,963. (No model.)



Claim.—1. The combination, with a series of levers, of a series of indicating supporting-rods, one upon each lever and carrying a series of indicating-tablets arranged in three groups, a series of registering supporting-rods, one for each lever, parallel with the indicating supporting-rods and resting upon the levers, and a series of registering-wheels actuated by those registering supporting-rods and divided into three groups, one pair in each group, substantially as described.

2. The combination, with the actuating-levers, of a series of indicating supporting-rods, each provided with a rearwardly-projecting stud or offset, a horizontal swinging cross-bar, upon which said studs are adapted to engage, the swinging knocker actuating such swinging cross-bar, the vertically-reciprocating striker actuating said knocker, and a rising and falling cross-bar supported on top of the levers to which said striker is secured.

3. The combination of a series of levers provided with a series of keys in two banks, representing three like groups and distinguished into three like groups of nine keys each, substantially as described, the series of supporting-rods, one for each lever, and vertically supported upon the extremity of the levers, a series of indicating-tablets secured to the upper ends of the supporting-rods and arranged in three groups corresponding to the groups of levers, with the tablets of each group in front of each other, and of three stationary zero-tablets correspondingly grouped above the indicating-tablets of the supporting-rods, substantially as described.

4. The combination, with a series of levers, of three groups of serrated registering-wheels, each containing one pair of wheels, of three serrated rollers journaled in axial line with each other, one for each pair of registering-wheels, and of a series of supporting-rods divided into three groups, one group for each roller, and of rack-pawls pivotally secured to the supporting-rods and adapted to operate the rollers by the actuation of the levers, substantially as described.

5. The combination, with a series of levers, of a series of indicating supporting-rods supported near the extremities of each levers and provided upon their upper ends with hinged rack-pawls, a series of three transverse serrated rollers adapted to be operated by those rack-pawls, three groups of serrated registering-wheels in pairs, one pair of each group engaging with one of the serrated rollers, respectively, and the other one of each group being provided with an oscillating feed-pawl operated by a stud on its actuating registering-wheel, substantially as described.

6. The combination, with a series of levers, of two series of supporting-rods supported in vertical guides upon the extremities of those levers, one series of rods being provided with indicating-tablets and the other series of rods carrying rack-pawls to actuate the registering device, substantially as described.

7. As an improvement in actuating devices in cash registers and indicators, the combination, with the levers and supporting-rods carrying the indicating-tablets, of the swinging cross-bar M, the lugs L on the supporting-bars adapted to engage thereon, the cross-bar W^7 of the swinging knocker, the striker W', having an inclined head, and the shoulder W^6, the supporting-rods W^5, to which the strike is hinged, the cross-bar W^4, carrying the supporting-rod W^3 and being vertically-movably supported on top of the levers by the arms W^2, substantially as described.

8. As an improvement in actuating devices in cash registers and indicators, the combination of the levers and registering-wheels, the registering-rods P, the rack-pawls Q, hinged thereto in parallel relation by the links R, and the support S, substantially as described.

9. As an improvement in actuating devices in cash registers and indicators, in combination with the levers and registering-wheels, the registering supporting-rods P, the rack-pawls Q, pivotally hinged thereto in parallel relation by the links R, the support S, and the set-screws V, substantially as described.

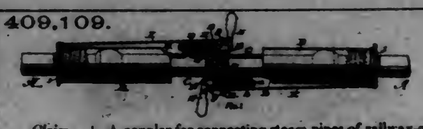
409,108. **NIPPLE-HOLDING CHUCK.** THOMAS R. LEMERTON, Erie, Pa., assignor to the Jarecki Manufacturing Company, (Limited,) same place. Filed May 31, 1889. Serial No. 312,673. (No model.)



Claim.—In a nipple-holding chuck, the combination, with the body A, having a longitudinal chamber A' therein, of pivoted nipper-levers B B, arranged within said chamber and having their ends protruding therefrom at both ends, and a sliding sleeve D, which embraces said body A and acts upon the said protruding ends of the nipper-levers as it is moved one way or the other and thereby opens or closes the said nippers.

409,109. **DETACHABLE COUPLER FOR CONNECTING SUPPLY-PIPES OF STEAM-HEATING APPARATUS FOR RAILWAY-CARS.** JOHN LOFTUS, Albany, N. Y., assignor of one-half to Ezra W. Smith, same place. Filed Feb. 15, 1889. Serial No. 299,906. (No model.)

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Claim.—1. A coupler for connecting steam-pipes of railway-cars, consisting of an open-ended cylinder that is connected to said steam-pipe and contains a sliding joint provided with a spherical enlargement fitted to slide in the bore of said cylinder, a sleeve, provided with a cup-shaped flange, which fits upon the convex surface of said spherical enlargement, a packing contained in the annular space formed by said sleeve and the bore of said cylinder, a packing-gland fitted to slide freely in said cylinder and to bear upon said packing, a spring bearing upon said gland for the purpose of compressing said packing and to force said sliding joint outwardly in said cylinder, a packing-seat secured to the outer end of said sliding joint and provided with a locking device, whereby a pair of said couplers can be mutually secured together, as and for the purpose herein specified.

2. In a detachable coupler for connecting the steam-heating pipes of railway-cars, the combination of an open-ended stationary cylinder that is connected to the steam-supply pipe and has a notch formed in the side of its open end, a sliding joint provided with a spherical enlargement which is fitted to slide in said cylinder and has at its outer end a lever-locking device which is connected by check-chain to a stationary part of the pipes or car, a sleeve provided with a cup-shaped seat, which is fitted to receive the spherical enlargement of the sliding joint, a packing-gland fitted to compress the packing in the annular space between said sleeve and the bore of the stationary cylinder, and a spring which bears upon said gland to force the sliding joint outwardly, said check-chain being arranged to produce a disengagement of said locking device and to deflect said sliding joint laterally into the notch of the stationary cylinder, as and for the purpose herein specified.

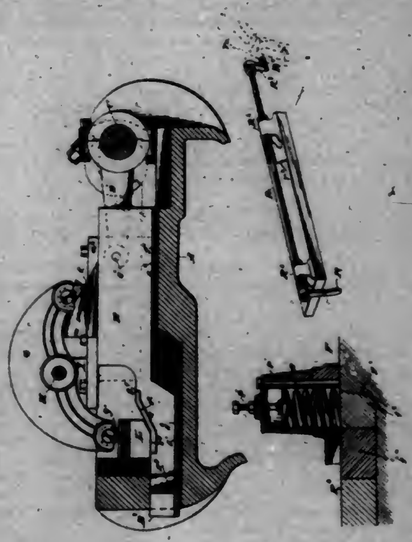
409,110. **BOLT HEADING AND FORGING MACHINE.** MICHEL D. LOMBIS and DANIEL S. COE, Cleveland, Ohio, assignors to the Acme Machinery Company, same place. Filed Mar. 15, 1889. Serial No. 303,476. (No model.)

Claim.—1. The combination, in a bolt heading and forging machine, of the toggle-block L and toggles M and M' with the incline e^2 and the plane surfaces e^1 and e^3 on the sliding bar E, substantially as and for the purpose set forth.

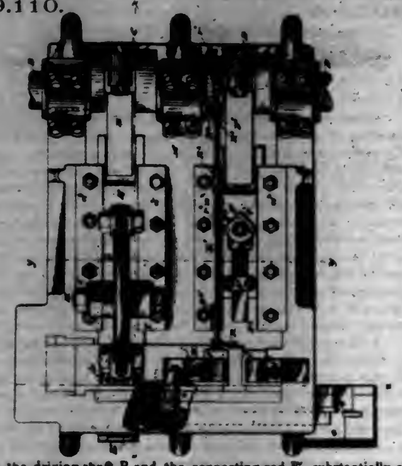
2. The combination, in a bolt heading and forging machine, of the toggle-block L and toggles M and M', and the rock-arm G, with the sliding bar E, having inclines e and e^2 and the plane surfaces e^1 and e^3, substantially as set forth.

3. The combination, in a bolt heading and forging machine, of the sliding bar E, having the incline e^2 and plane surfaces e^1 and e^3, with the toggle-block L and toggles M and M', and movable die-block K, substantially as set forth.

4. The combination, in a bolt heading and forging machine, of the sliding bar E, having the incline e^2 and plane surfaces e^1 and e^3.



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with the driving-shaft B and the connecting-rod E, substantially as shown.

5. The combination, in a bolt heading and forging machine, of the toggle-block L and toggles M and M', loose block N, and movable die-block K with the sliding bar E, provided with the incline e^4 and plane surfaces e^5 and e^6, substantially as set forth.

6. The combination of the sliding bar E, provided with the inclines e and e^3 and the plane surfaces e^5 and e^6, with the toggle-block L and toggles M and M', substantially as shown.

7. The combination of the sliding bar E, provided with the inclines e and e^3 and the plane surfaces e^5 and e^6, with the toggle-block and toggles, and movable die-block K, substantially as shown.

8. The combination of the heading-bar F with the wedge f^2, interposed between said bar and the incline f^3, the incline f^4, the spring P, and means for supporting the spring, substantially as shown.

9. The combination of the wedge f^2, the incline f^3, the spring P, and the heading-bar F with the sliding bar E, having inclines and plane surfaces upon its upper side, substantially as shown.

10. The stock-gage mechanism consisting of the arm R, the rod R', the arm R^2, the disk r', having on its face the cam r, and the spring r^2, substantially as set forth.

11. The side cutting device consisting of the cutting-bar O, the incline e^2 on the sliding bar E, and means for returning said cutting-bar, substantially as shown.

12. The combination, in a bolt heading and forging machine, of the side cutting device consisting of the cutting-bar O, and the incline e^2 on the sliding bar E, with said sliding bar, the movable die-block K, and the toggle-block L and toggles M and M', substantially as shown.

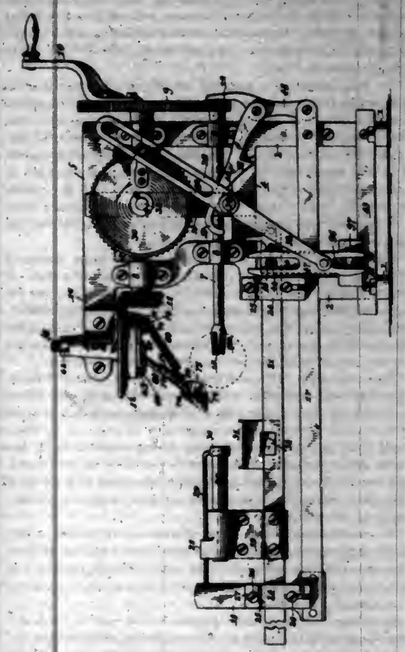
13. The combination, in a bolt heading and forging machine, of the stock-gage mechanism, consisting of the arm R, the rod R', the arm R^2, the disk r', provided with the cam r, and the spring r^2, with the side cutting device consisting of the cutting-bar O, the incline e^2 on the sliding bar E, and means for returning said cutting-bar, substantially as shown.

14. The combination, in a heading and forging machine, substantially as shown, of the following parts: the sliding bar E, provided with inclines and plane surfaces on its upper face, the toggle-block L and toggles M and M', the loose block N, the movable block K, the heading-bar, the wedge f^2, interposed between the said heading-bar and the incline f^3, the spring P, and the rocking arm G, substantially as shown.

15. The combination, substantially as shown, of the following parts: the sliding bar E, provided with inclines and plane surfaces on its upper face, the toggle-block L and toggles M and M', the loose block N, the movable block K, the heading-bar, the wedge f^2, interposed between said heading-bar and the incline f^3, the spring P, the rocking arm G, and the stock-gage, consisting of the arm R, the rod R', the arm R^2, the disk r', with cam r on its face, and the spring r^2.

16. The combination, substantially as shown, of the sliding bar E, provided with inclines and plane surfaces on its upper face and the incline e^2 on its side, the toggle-block L and toggles M and M', the loose block N, the heading-bar F, the wedge f^2, interposed between said heading-bar and the incline f^3, the rocking arm G, the stock-gage arm R, the rod R', the arm R^2, the disk r', with cam r on its face, the spring r^2, the cutting-bar O, attached to the front bed-plate and operated by means of the incline e^2 on the sliding bar E, and means for returning said cutting-bar.

409,111. PARING AND CORING MACHINE. SAMUEL LYON, Pattonsville, N. Y. Filed Jan. 21, 1889. Serial No. 297,021. (No model.)



Claim.—1. In a paring and coring machine, the combination, with the main frame, the turn-table carrying the paring-knife, the fork-shaft, gearing for connecting the turn-table and fork-shaft, and a wheel gearing with the fork-shaft and provided with a projection, of the slide carrying the coring-tube, and a lever connected thereto pivoted on the frame and provided with a slot in which the projection on the gear operates to reciprocate said slide in opposite directions alternately, substantially as described.

2. The combination, with the slide, of the rotating gear having the wrist-pin, the pivoted lever having the slot in which the pin operates, and the cross-head mounted on the lever and connected to the slide by the slot-and-pin connection, substantially as described.

3. The combination, with the slide having the two pins thereon, of the rotating gear having the wrist-pin, the pivoted lever having the slot in which the pin operates, and the cross-head mounted on the lever and having the slots with which the pins on the slide co-operate, substantially as described.

4. The combination, with main frame, the slide-bar having the arm 96, and the guideway for the end of the latter, of the rotating gear having the pin, and the pivoted lever having the slot in which the pin operates connected to the slide, substantially as described.

5. The combination, with the main frame having the way 43, on which the slide operates, the bar secured to the frame, and the casting at the outer end of the latter having a projection thereon, of the slide and the adjustable plates 24, co-operating with the way on the main frame, and the projection on the casting forming guides for the slide, substantially as described.

6. The combination, with the main frame, the bar 17, connected thereto, and the casting at the end of the bar, having the projection, of the slide and the plate 24, secured to the casting, one portion co-operating with the projection on the casting to form a bearing for the slide and another clamping the bar 17 and casting together, substantially as described.

7. The combination, with the main frame, the bar 17, connected thereto, and the casting at the end of the bar having the projection, of the slide and the slotted plate 24, and screws for securing it to the casting, one portion co-operating with the projection on the casting to form a bearing for the slide and another projecting over and clamping the bar 17 and casting together, substantially as described.

8. The combination, with the slide, the bracket on the slide having the two lugs thereon, and the coring-tube attached to the bracket, of the fruit-doffer consisting of a rod and a sleeve encircling the tube, the doffer-rod resting between the lugs on the bracket, a projection which the doffer-rod strikes to operate it, and the fruit-fork, substantially as described.

9. The combination, with the fruit-fork, the slide located below the fork, and a coring-tube located thereon, of the fruit-chute mounted on said slide, substantially as described.

10. The combination, with the fruit-fork, the slide, and a coring-tube located thereon, of the fruit chute or incline having the depending arms adapted to embrace the said slide, substantially as described.

11. The combination, with the fruit-fork, the slide, and a coring device thereon, of the fruit-chute having the arms adapted to removably engage the slide and hold the chute thereon in position to receive the fruit from the fork, substantially as described.

12. The combination, with the main frame, the fruit-fork, and core-doffer rod operating between the tines of the fork, the pivoted lever operating the doffer, and the latch connected to the lever and having a projection thereon, of the reciprocating slide having a projection for co-operating with the one on the latch, substantially as described.

13. The combination, with the main frame, the fruit-fork, and core-doffer operating between the tines of the fork, the pivoted lever operating the doffer, and the latch connected thereto having a projection, of the reciprocating slide having a projection for co-operating with the one on the latch, and a projection on the main frame operating to lift the latch out of engagement with the slide, substantially as described.

14. The combination, with the turn-table, the pivoted knife-arm, and the knife-head loosely mounted thereon, of a spring connected to the knife-head, and a series of points on the turn-table, to any of which the other end of the spring may be connected to vary the angle of the knife relative to the arm, substantially as described.

15. The combination, with the main frame, the overhanging portion formed with the portion of the cam thereon, the co-operating casting forming the other part of the cam, the bolt between said parts, and the turn-table mounted on the bolt, of the knife-arm pivoted on the turn-table and engaging the cam, and the fork-shaft, substantially as described.

16. The combination, with the fruit-fork, the turn-table, and the knife-arm pivoted thereon, of the wedge secured upon the inner side of the arm and adapted to engage the turn-table and limit the inward movement of the knife-arm.

409,112. GLASS OR PORCELAIN LINED METAL T-PIECE OR ELBOW FOR PIPES. ROBERT MORAFF, London, England, assignor, by direct and mesne assignments, to James Kemp Welch, same place. Filed Feb. 6, 1889. Serial No. 298,822. (No model.) Patented in England Mar. 15, 1887, No. 3,907.



Claim.—1. A lined T-piece consisting of a glass part A, pieces of tube C D E placed on glass and fitting together and permanently secured by molten metal G, cast round, and cement I, substantially as described.

2. A lined elbow-piece consisting of an inside glass part, pieces of tube placed on the glass having one end arranged to fit close together and permanently secured by molten metal G, cast round, and cement I, substantially as described.

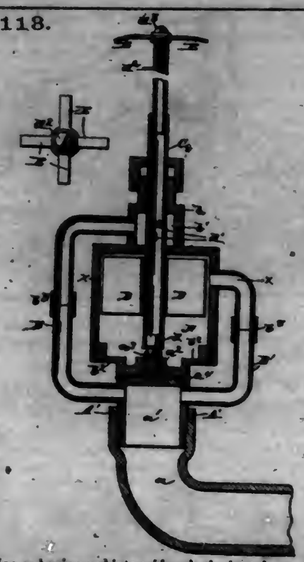
409,113. BOTTLE-WASHER. PETER F. MCCARTY and ROBERT SEYFER, Corning, N. Y.; said Seyfer assignor to said McCarty. Filed Aug. 24, 1888. Serial No. 283,675. (No model.)

Claim.—1. As an improvement in bottle-washers, the housing or boxing having an upper water-supply chamber, the water-pipes opening, respectively, into said chamber and said housing or boxing, the jet-tube having an upper apertured end provided with rubber arms, and a series of apertures in said chamber, and a wheel secured on said tube within said housing or chamber, substantially as set forth.

2. The herein-described improved bottle-washer, comprising the housing or boxing having the upper and lower necks, the water-supply pipes connected to said lower neck, and opening, respectively, into

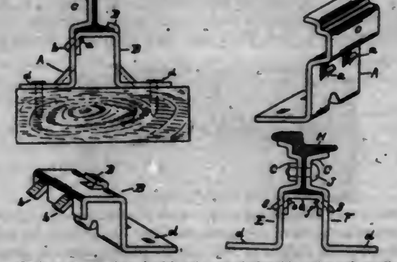


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said housing or boxing and into said neck, the jet-tube passing through and extending above said chamber and provided with apertures d^3 d^3, the wheel secured to said tube, and the rubber arms attached to the upper end of said jet-tube, substantially as shown and described.

409,114. INTERLOCKING BRACE-CHAIR FOR RAILROAD-RAILS. PATRICK O'CONNELL, Johnstown, Pa., assignor to the Johnson Company, same place. Filed Apr. 22, 1889. Serial No. 308,196. (No model.)



Claim.—1. An interlocking brace-chair of box form for railroad-rails, having a rail-seat provided with lugs to interlock the parts of the chair and clamp the rail to the chair, substantially as set forth.

2. A two-part chair of box form for railroad-rails, provided with a rail-seat secured to the two parts or sides of the chair by interlocking lugs, substantially as set forth.

3. A two-part brace-chair of box form for railroad-rails, provided with a rail-seat secured to the two parts or sides of the chair by interlocking lugs and by bolts to the rails of the track, substantially as set forth.

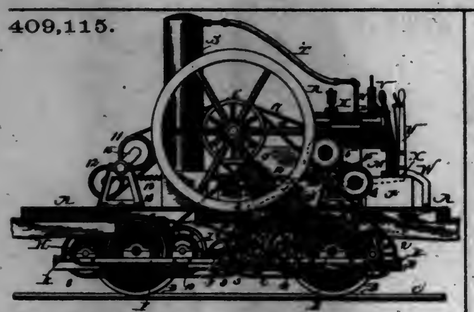
409,115. MOTOR FOR STREET-CARS. WILLIAM H. PATTON, Englewood, Ill., assignor to the Patton Motor Company, Preble, Colo. Filed Feb. 26, 1889. Serial No. 301,008. (No model.)

Claim.—1. In a street-car motor constructed substantially as described, the combination of two systems of driving-gear connected with separate axles or trucks adapted to propel the motor-car at different rates of speed and in either direction from either axle by a single engine, substantially as specified.

2. The sub-frame D, in combination with the sliding frames E and F, each carrying separate driving-pulleys of a different size, substantially as described.

3. The combination of the rope or belt 17, wheels 1, 2, 3, and 4, and sliding frame E with the crank-shaft Q, rope or belt 18, and wheels 7, 8, 9, and 10, and sliding frame F, whereby the motive power may be operated continuously in one direction and the car moved in either direction with varying rates of speed, substantially as specified.

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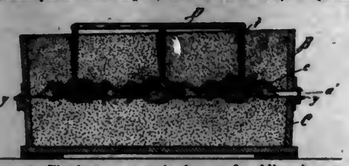
4. The rock-shaft *e*, having the arms *d f*, one or more link-rods *g*, and sliding frame F, with the link-rod X and hand-lever U, substantially as specified.

409,116. MOTOR FOR STREET-CARS. WILLIAM H. PATTON, Englewood, Ill., assignor to the Patton Motor Company, Pueblo, Colo. Filed Feb. 25, 1889. Serial No. 301,004. (No model.)



Claim.—The combination, with the engine or motive power of a motor-car for street-cars, of a dynamo E, a storage-battery F, an electric motor G, conductors *e*, *f*, *g*, and *h*, and a gearing, substantially as set forth, for driving the wheels of a car from the electric motor, substantially as and for the purpose set forth.

409,117. PROCESS OF MOLDING SHEAVES. EDWARD RILEY, Milwaukee, Wis., assignor of one-half to the Milwaukee Harvester Company, same place. Filed May 11, 1888. Serial No. 310,671. (No model.)

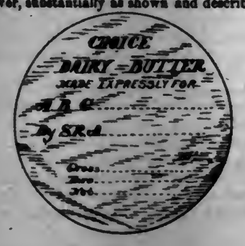


Claim.—1. The improvement in the art of molding sheaves which consists in making a forced supplemental parting after the mold has been set up for the purpose of removing the patterns from the mold.

2. The improvement in the art of molding a gate of split sheave-patterns which consists in detaining the removable part of the patterns after the mold has been set up, while the cope and drag are separated sufficiently to cause the mold to part around the patterns, the external concavity of the sheaves retaining part of the mold, thus forming a forced supplemental parting for the purpose of removing the patterns.

409,118. CRATE. SHERMAN G. SEAMAN, Clinton, Iowa. Filed Apr. 19, 1889. Serial No. 307,747. (No model.)

Claim.—1. A box having corner-pieces extending less than its entire depth, a platform adapted to rest upon the corner-pieces and having cross-pieces on the upper and lower surfaces of the platform, and similar cross-pieces on the bottom of the box and on the inner surface of its cover, substantially as shown and described.



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2. In combination with a box having corner-pieces extending less than the entire depth and cross-pieces arranged at right angles on the inner surface of its cover and of its bottom, a platform having similar cross-pieces secured to both of its surfaces and adapted to fit within the box and to be supported by said corner-pieces, and packing-cases adapted to rest above and below the platform and be supported by the same and the bottom of the box within the angles of the cross-bars, substantially as specified.

409,119. LOCK. CARL J. A. STORERS, Rockaway, N. J. Filed May 29, 1888. Serial No. 275,449. (Model.)



Claim.—1. In a lock, the combination of a key-plate provided with a bolt, a body-plate for attachment of the lock, and a flat spring back plate having a projection adapted to press upon the key-plate and snap upon either edge of it to hold it in its extreme positions.

2. The combination of a body-plate, a flat key-plate having two curved bolts pointing in opposite directions, and a flat spring back plate adapted to press upon said key-plate and hold it in position to the body-plate, and provided with a projection adapted to press against said key-plate and retain it in position when the bolts are shot.

3. In a lock, the combination of a body and a back plate, a flat key-plate guided by said main and back plate, provided with recesses or edges, a bolt operated directly by said key-plate, and means, substantially as described, to lock said key-plate and hold the bolt in its shot or unshot positions, consisting of projections upon said back plate adapted to engage in the recesses or over the edges of said key-plate.

4. In a lock, the combination of a key-plate provided with a bolt, a body-plate for attachment of the lock, a flat spring back plate, and a projection upon one of said parts adapted to press upon the adjacent part and hold the key-plate in its extreme positions.

409,120. PIPE-CONNECTION FOR CARS. RICHARD H. SOULE, Pittsburg, Pa., assignor to the Standard Car Heating and Ventilating Company, same place. Filed Apr. 15, 1889. Serial No. 307,340. (No model.)

Claim.—1. The combination of a section of hose or flexible tubing having suitable abutments or shoulders and a spring under compression interposed between said abutments, substantially as set forth.

2. The combination of a section of flexible tubing having suitable abutments or shoulders and a spring under compression interposed between said abutments and surrounding the tubing, substantially as set forth.

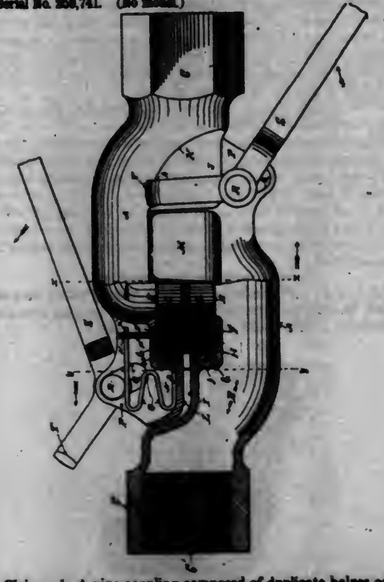
3. The combination, in a pipe-connection, of an expansible joint,

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a section of flexible tubing provided with abutments or shoulders, and a spring under compression interposed between said abutments, substantially as set forth.

409,121. PIPE-COUPLING. JOHN C. STUNKARD, Erie, Pa., assignor of one-fourth to Samuel A. Davenport, same place. Filed Jan. 3, 1889. Serial No. 295,741. (No model.)



Claim.—1. A pipe-coupling composed of duplicate halves or sections, each half consisting of a shell adapted to be secured to a pipe or hose and having a longitudinal coupling-face and a lateral passage opening therein, annular packing around said opening, and flanges projecting laterally from the periphery of the outer end or half of the coupling-face adapted to engage with flanges or lugs on a duplicate half or section of the coupling, and lever and cam mechanism for securing the halves or sections of the coupling together, substantially as and for the purpose set forth.

2. A pipe-coupling composed of duplicate halves or sections, each half consisting of a shell adapted to be secured to a pipe or hose, a longitudinal-coupling-face having a lateral opening therein and annular packing around said opening, a pocket or slot at one side of the coupling-face, and a projection at the opposite side thereof, adapted to enter a pocket or slot in a duplicate half or section of the coupling, and lever mechanism on each half or section adapted to engage with cam-surfaces on duplicate halves or sections for securing the coupling together, substantially as and for the purpose set forth.

3. The combination, in each half or section of a pipe-coupling composed of duplicate halves or sections having a passage opening laterally through a longitudinal coupling-face on one side of the half or section and annular packing in said face around said opening, of a pocket or slot having cam-faces on the outer sides thereof at one side of the coupling-face, and a projection at the opposite side of said coupling-face, adapted to enter a pocket or slot in a duplicate half or section of the coupling, with a locking-lever having hooks thereon adapted to engage with the cam-surfaces on a duplicate half of the coupling, and a spring under the axis of said locking-lever, substantially as and for the purpose set forth.

4. The combination, in each half or section of a pipe-coupling composed of duplicate halves or sections having a passage opening laterally through a longitudinal coupling-face, of a projection at one side of said opening, with a locking-lever mounted in slotted ears at the sides of said projection and adapted to engage with cam-surfaces on a duplicate half or section of the coupling, and a spring secured to the back of said projection under the axis of said locking-lever, substantially as and for the purpose set forth.

5. The combination, in each half or section of a pipe-coupling composed of duplicate halves or sections, of a shell having a passage opening laterally through a longitudinal coupling-face and annular packing around said opening, with laterally-projecting flanges or lugs adapted to engage with the periphery of the coupling-face on a duplicate half or section of the coupling, so as to prevent the halves of the coupling from being drawn apart longitudinally, substantially as and for the purpose set forth.

6. The combination, in each half or section of a pipe-coupling composed of duplicate halves or sections, of a shell having longitudinal coupling-faces, a passage opening laterally through said coupling-face, and annular packing in said coupling-face, around said opening, with flanges forming a slot or pocket at one side of the coupling-face and a projection at its opposite side adapted to enter a like pocket or slot in a duplicate half or section of the coupling, and flanges or lugs extending laterally from the sides of the coupling-face, substantially as and for the purpose set forth.

7. The combination, in each half or section of a pipe-coupling composed of duplicate halves or sections, each having a passage adapted at one end to be secured to a pipe and at the other opening laterally through a longitudinal coupling-face, of cam-surfaces at one side of said coupling-face, with a locking-lever at the opposite side of the coupling-face adapted to engage with the cam-surfaces on a duplicate half or section of the coupling for securing the two halves of the coupling together, substantially as and for the purpose set forth.

8. The combination, in each half or section of a pipe-coupling composed of duplicate halves or sections, of a longitudinal coupling-face D, a passage B, having a lateral opening E in said coupling-face, and annular packing H in the coupling-face around the opening E, with laterally-projecting flanges or lugs M on the periphery of the outer end or half of the coupling-face D, adapted to engage with flanges or lugs on a duplicate half or section of the coupling, substantially as and for the purpose set forth.

9. The combination, in each half or section of a pipe-coupling consisting of duplicate halves or sections having longitudinal coupling-faces adapted to be placed together and separated on a line at right angles to the coupling-faces thereof, of a shell A, having a longitudinal coupling-face D, a passage B, a lateral opening E through said coupling-face, and annular packing H in the coupling-face around the opening E, with a slot or pocket I at one side of the coupling-face D and a projection L at its opposite side, and flanges M M, projecting laterally from the periphery of the outer end or half of the coupling-face D, substantially as and for the purpose set forth.

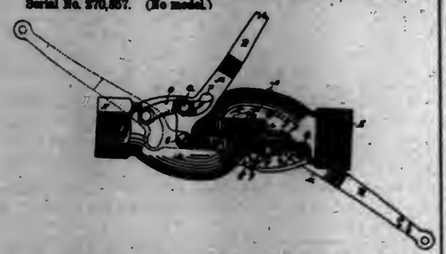
10. The combination, in each half or section of a pipe-coupling composed of duplicate halves or sections, of a shell A, having a collar C at one end thereof, and a passage B, having a lateral opening E through the coupling-face D, and an annular packing-shell G, containing packing H, surrounding the opening E, with the pocket or slot I, having cam-surfaces K *k* thereon at one side of the coupling-face, and the projection L, having the locking-lever S T mounted thereon at the opposite side of the coupling-face, substantially as and for the purpose set forth.

11. The combination, in a half or section of a pipe-coupling composed of duplicate halves or sections, of the longitudinal coupling-face D and the lateral passage-opening E therein, the pocket or slot I, the projecting end L, and the laterally-projecting flanges or lugs M, with the locking-lever S and spring O, for securing duplicate halves or sections together, substantially as and for the purpose set forth.

12. The combination, in a half or section of a pipe-coupling composed of duplicate halves or sections, of the longitudinal coupling-face D, having the lateral passage-opening E and the annular packing H therein, the pocket or slot I, having the cam-surfaces K thereon, the projection L, adapted to enter the pocket or slot I in a duplicate half or section of a coupling, and the lateral flanges or lugs M, with the locking-lever S, mounted in the slots Q and adapted to engage with the cams K, and a spring O under the axis of said locking-lever, substantially as and for the purpose set forth.

13. The combination, in a half or section of a pipe-coupling composed of duplicate halves or sections, of a longitudinal coupling-face having cam-surfaces K at one side thereof, with a spring O and locking-lever S on the opposite side resting upon said spring, and adapted to engage with like cam-surfaces K on a duplicate half or section for securing the sections of the coupling together, substantially as and for the purpose set forth.

409,122. PIPE-COUPLING. JOHN C. STURGEON, Erie, Pa., assignor of one-fourth to Samuel A. Davenport, same place. Filed Apr. 16, 1888. Serial No. 270,857. (No model.)



Claim.—1. The combination, in each half or section of a pipe-coupling composed of duplicate halves or sections, of a lever pivoted to each half or section at one side of the coupling-face, with a spring secured to such half or section at the opposite side of the coupling-face, so that when the two halves or sections of the coupling are brought together the lever on each half or section may be moved around to engage with the spring on the duplicate half or section, so as to secure the sections of the coupling together, substantially as and for the purpose set forth.

2. The combination, in each half or section of a pipe-coupling composed of duplicate halves or sections adapted to be coupled together, of a sliding bolt operating sidewise in cam-shaped slots and a slotted lever actuating said sliding bolt in said slots, with spring mechanism on another part of such half or section, whereby the sliding-bolt mechanism of each half engages with the spring mechanism of the corresponding half of the coupling for securing the halves of the coupling together, substantially as and for the purpose set forth.

3. The combination, in each half or section of a pipe-coupling composed of duplicate halves or sections adapted to be coupled together, of a locking-lever having cam-shaped slots therein, with a sliding bolt operating in the slots in said lever, substantially as and for the purpose set forth.

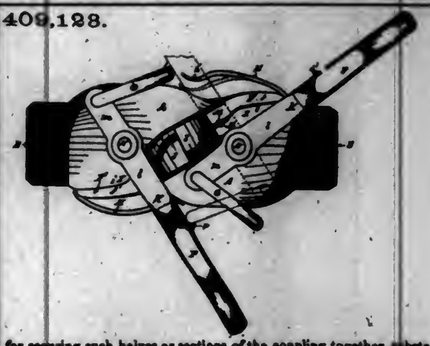
4. The combination, in each half or section of a pipe-coupling composed of duplicate halves or sections, of ears N N, having slots O therein, with the forked lever R, having the slots D therein, and the sliding bolt Q, substantially as and for the purpose set forth.

5. The combination, in each half or section of a pipe-coupling composed of duplicate halves or sections, of the pocket or slot L and the sides N N thereof, having slots O therein, the slotted lever R, and sliding bolt Q, with the projection K and spring mechanism F thereon, substantially as and for the purpose set forth.

409,123. PIPE OR HOSE COUPLING. JOHN C. STURGEON, Erie, Pa., assignor of one-fourth to Samuel A. Davenport, same place. Filed Aug. 4, 1888. Serial No. 282,004. (No model.)

Claim.—1. The combination, in each half or section of a pipe or hose coupling composed of duplicate halves or sections, of a shell having a diagonal coupling-face and laterally-projecting flanges on the periphery of the outer end or portion of said coupling-face adapted to engage with like flanges on a duplicate half or section of the coupling and prevent them from being drawn apart longitudinally, with lever mechanism on each half adapted to be moved around so as to engage with a projection on a duplicate half or section of the coupling

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for securing such halves or sections of the coupling together, substantially as and for the purpose set forth.

2. The combination, in each half or section of a pipe or hose coupling composed of duplicate halves or sections, of a lever pivoted to such half or section at one side of the coupling-face, with a curved leaf-spring secured to a projection of such half or section at the opposite side of the coupling-face within the path of the lever pivoted to a duplicate half or section when the two halves or sections of the coupling are brought together, so that the lever on each half or section may be moved around so as to engage with the spring on the duplicate half or section of the coupling, substantially as and for the purpose set forth.

3. The combination, in each half or section of a pipe or hose coupling composed of duplicate halves or sections, of a shell having diagonal coupling-face and a projection at one side of the coupling-face and a spring mounted therein, with a pocket at the opposite side of the coupling-face adapted to receive the projection on a duplicate half or section of the coupling, and a lever pivoted to such half or section adapted to be moved around so as to engage with the spring on a duplicate half or section of the coupling when two such halves or sections of the coupling are placed together, substantially as and for the purpose set forth.

4. The combination, in a pipe-coupling composed of duplicate halves or sections, of a locking-lever on each half or section adapted to be moved around so as to engage with a duplicate half or section when two halves or sections are coupled together, with a link pivoted to the locking-lever on each half or section and adapted to be moved around into contact with the locking-lever of a duplicate half or section when the two halves or sections of a coupling are locked together, substantially as and for the purpose set forth.

5. The combination, in each half or section of a pipe or hose coupling composed of duplicate halves or sections, of a hollow shell A, having a diagonal coupling-face E and laterally-projecting flanges J thereon and a longitudinal projection F at one side of the coupling-face E and a pocket I at the other, with a spring H, mounted in said projection F, and a forked lever K, mounted in the shell A below the pocket I and adapted to be moved around so as to engage with a spring H on a duplicate half or section of the coupling when two sections of the coupling are placed together, substantially as and for the purpose set forth.

409,124. BALL-AND-SOCKET PIPE-JOINT. JOHN C. STURGEON, Erie, Pa., assignor of one-fourth to Samuel A. Davenport, same place. Filed Oct. 1, 1888. Serial No. 286,897. (No model.)



Claim.—1. The combination, in a flexible ball-and-socket pipe-joint, of a socket a portion of which has parallel hemispherical outer and inner surfaces, and a hollow semi-spherical ball seated and operating on the inner hemispherical surface of said socket, and having a hollow stem projecting out through an opening in the central portion of said hemispherical socket, with a semi-spherical cap having an

opening therein fitting loosely over the said stem and operating on the outer hemispherical surface of said socket, and a spring on said stem operating between a collar thereon and the outer end of said socket, adapted to automatically retain the semi-spherical ball on the inner end of the stem in close contact with the inner surface of the socket and the semi-spherical cap in like close contact with the outer surface of the socket, whereby a tight, dust-proof, flexible ball-and-socket joint not affected by the expansion and contraction of the parts thereof is secured, substantially as and for the purpose set forth.

2. The combination, in a ball-and-socket pipe-joint, of a socket a portion of which is hemispherical, a hollow semi-spherical ball having a hollow stem thereon and operating in the hemispherical portion of said socket, and an inlet-pipe projecting down into the chamber in said semi-spherical ball, with a loose socket operating over the stem of said ball and adapted to partially embrace the outer surface of the hemispherical portion of the socket in which said ball operates, and a spiral spring operating between a collar on said socket and a collar on the stem of the ball, substantially as and for the purpose set forth.

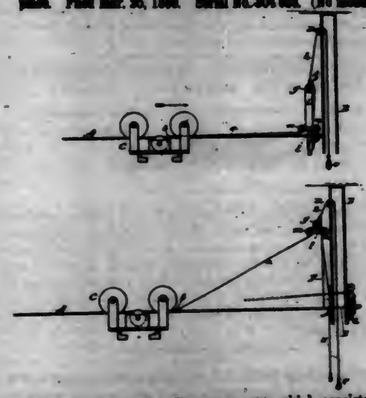
3. The combination, in a ball-and-socket pipe-joint, of a hemispherical socket portion B and a hollow semi-spherical ball F, having a hollow stem G thereon and operating in said socket-section B, with a loose sleeve K, covering the hollow ball-stem G outside of the socket B, and having a socket L thereon partially embracing and operating against the outside of the socket B, and a spiral spring M, operating between a collar on said sleeve-socket and a collar on the outer end of the stem G, substantially as and for the purpose set forth.

4. The combination, in a ball-and-socket pipe-joint, of the right-angled inlet-pipe E, having an extension *b* reaching down into the hollow ball F, and the socket-section B, with the half-ball F operating in said socket, the loose sleeve-socket K, operating on the ball-sleeve G and against the outside of the socket-section B, the elbow H, and the spring operating between the shoulder K on said socket-sleeve and the shoulder A on said elbow H, substantially as and for the purpose set forth.

409,125. CASH-CARRIER. MORRIS C. SUMNEY, New Haven, Conn., assignor to the Acme Cash Railway Corporation, same place. Filed Oct. 15, 1888. Serial No. 288,094. (No model.)

Claim.—In cash-carrier apparatus, the combination of a wire track having a gradually-increasing transverse area as it approaches its termination, with a car having wheels above the track, a wheel below the track, and bearings for the axle of the latter wheel, provided with longitudinal slots, all substantially as described.

409,126. STORE-SERVICE APPARATUS. MORRIS C. SUMNEY, New Haven, Conn., assignor to the Acme Cash Railway Corporation, same place. Filed Mar. 26, 1888. Serial No. 304,093. (No model.)



Claim.—1. In a cash-railway apparatus which consists of a track composed of a wire, with a car suspended from wheels upon the track, the combination therewith of a cord *a*, attached by one end to the track at a point distant from the station and upon which the wheels of the car may run as it approaches the station, the other end of the said cord attached at the station, the said cord being of greater length than the distance between its two points of attachment, a suspended pulley *g*, over which the said cord *a* runs between its two points of attachment, a cord *h*, running from said suspended pulley over a pulley above and thence down to convenient reach for the hand, and a weight applied to the cord *a* between the said pulley *g* and the points where the cord *a* is attached, said weight adapted to embrace the two runs of the cord *a* below the said pulley *g*, substantially as and for the purpose described.

2. In a cash-railway apparatus, the combination of the wire track A, the upright B, from which the track extends, a carriage D, arranged to run vertically on said upright, that end of the track being secured to said carriage, a cord *a*, attached by one end to the track at the upright and by the other end at a point *b* distant from said upright, a cord *h*, running over a pulley above, one end extending downward and carrying a pulley over which the said cord *a* passes, the other end of the cord extending down and provided with convenient means for pulling upon said cord, the said cord *h* having an extension F in connection with said track at the upright, substantially as and for the purpose described.

409,127. PIPE-COUPLING. WILLIAM T. TAGGART, Pittsburg, Pa., assignor to the Standard Car Heating and Ventilating Company, same place. Filed Jan. 10, 1888. Serial No. 260,926. (No model.)

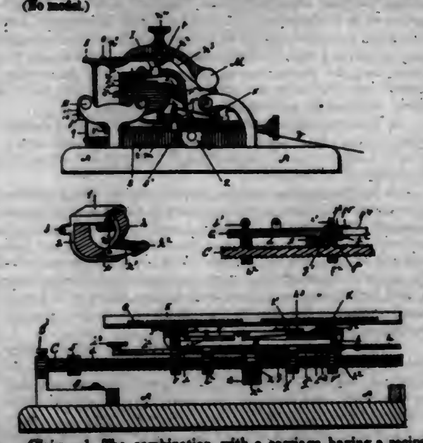


Claim.—1. In a pair of couplings having lateral openings, the combination of engaging-hooks formed on each member, one of the hooks on each member being rigid and the other hook constructed to have a spring or yielding engagement with the rigid hook of the other member, the resilience of the spring being at right angles to the faces of the couplings, substantially as set forth.

2. In a pair of couplings having lateral openings, the combination of engaging-hooks formed on each member, one of the hooks on each member being formed of spring-leaf and re-enforcing springs, substantially as set forth.

3. In a pair of couplings having lateral openings, said openings being surrounded by an unyielding packing, the combination of engaging-hooks formed on each member, one of said hooks being constructed to exert a yielding pressure, substantially as set forth.

409,128. TYPE-WRITING MACHINE. CHARLES R. THURBER, Worcester, Mass., assignor, by mesne assignments, to the Thurber Manufacturing Company, Portland, Me. Filed Dec. 19, 1884. Serial No. 150,777. (No model.)



Claim.—1. The combination, with a carriage having a reciprocating motion in a right line and elastic type-bars attached to said carriage, of a carriage capable of an intermittent motion, a hammer *p'*, notched bar I, pivoted on the carriage, having an intermittent motion, key M, attached to said type-bar carriage, and arm *p*, attached to said key, substantially as described.

2. The combination, with the stationary rod D and type-bar car-

riage having a reciprocating motion on said rod, of elastic type-bars N', types *m*, attached to said elastic bars, key M, pivoted pointer *n'*, arm *p*, hammer *p'*, notched bar I, and index-plate E, having spurs *o*, substantially as described.

3. The combination, with the type-bar carriage carrying elastic type-bars N' and key M, of a hammer-carriage having an intermittent motion, hammer *p'*, notched bar I, provided with arms I' I², pivoted on the hammer-carriage, projection *b*, lever J, and spring *c*, and an escapement mechanism, substantially as described, and operated by the lever J, substantially as described.

4. The combination, with a carriage having a rocking motion about a horizontal axis and having a series of type-bars attached thereto, of a key M, hammer *p'*, notched bar I, arm *p*, attached to the key M, blade *s* on hammer *p'*, curved swinging plate *r*, spring r^3, pivoted arms *r'*, ink-roll r^4, and inking-plate *t*, substantially as described.

5. The combination, with a type-bar carriage having a rocking motion about a horizontal axis, of elastic type-bars N', types *m* on the under side of the free ends of said bars, key M, arm *p*, hammer-carriage carrying a hammer *p'* and a notched bar I, blade *s* on said hammer, swinging plate *r*, arms *r'*, carrying roll r^2, and spring r^3, by which the roll r^2 is carried beneath the type-bars, said blade *s*, swinging plate *r*, roll r^2, and types *m* being all relatively so arranged that the rocking motion of the type-bar carriage carries the types *m* into the path of the roll r^2 prior to the rearward motion of said roll over the types *m* as actuated by the blade *s* upon said swinging plate *r*, whereby the tension of the elastic type-bars is caused to press the types upon the roll *r*, substantially as described.

6. The combination, with a type-bar carriage having a horizontal reciprocating motion and a hammer-carriage having an intermittent reciprocating motion, of key M, carried by the type-bar carriage, arm *p*, and pivoted pointer *n'*, index-plate E, and notched bar I, carried by the hammer-carriage and having notches corresponding with the characters upon said index-plate, substantially as described.

7. The combination, with an index-plate E, having V-shaped teeth, and an arm or key M, having its end *n* resting against the under side of the index-plate, of a finger or pointer pivoted to said arm or key and having the end of its longer arm *n'* resting on the upper side of the index-plate, and a spring attached to the arm or key and pressing against the shorter arm of the pivoted finger, substantially as described.

8. The combination, with the hammer-carriage carrying a hammer *p'* and notched bar I, having arms I' I², of the projection *b*, lever J, spring *c*, plunger *b'*, ring f^3, plunger *f'*, spring *g*, and notched rod C, said rod being capable of being reversed or turned in its bearings, and having notches on opposite sides, of varying spaces, substantially as described.

9. In a type-writing machine, the combination, with a carriage carrying a hammer pivoted thereto and adapted to press the type upon the platen, and a notched bar or rod, and mechanism, substantially as described, by which said carriage is moved along the notched bar or rod, of an "escapement" consisting of a lever pivoted on said carriage, plungers connected to the ends of the lever and sliding in ways, so as to be alternately connected with and disconnected from the notched bar or rod by the action of the lever, one of said plungers being carried in a sliding block actuated by a spring, whereby it is carried along the notched bar or rod independently of the carriage, together with mechanism for actuating the lever as each letter is printed, substantially as described.

10. The combination, with the carriage of a type-writing machine having motive power connected therewith, of the pivoted lever J, spring *c*, plungers *b'* and *f'*, sliding ring f^3, spring *g'*, and notched bar C, substantially as described.

11. In a type-writing machine, the combination, with a hammer-lever carriage, of an escapement consisting of a lever having plungers connected with its ends and engaging a rack bar or rod, one of said plungers having a sliding motion along the rack bar or rod independently of the other, said plunger being slotted at its connection with the lever, substantially as described, and a lever K, adapted to lift said slotted plunger independently of the action of the lever, whereby both plungers may be disengaged from the rack-bar, substantially as described.

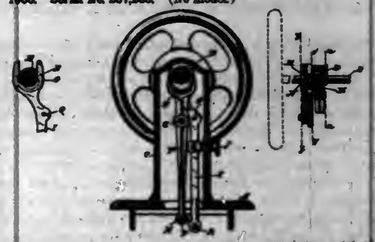
12. In a type-writing machine, the combination, with a hammer-lever carriage having a ring f^3, sliding in a slot f^4 of lever J, and carrying a plunger *f'* and screw g^3, of a spacing-lever i^3, pivoted by the arms *i* and *i'*, and having a spur i^4 and a spring *j*, whose tension is applied to raise the lever i^3, substantially as described.

13. In a type-writing machine, the combination, with a platen to receive the impression of the type, of a feed-roll and a plate with its surface tangential to the surface of said feed-roll and also parallel with said platen, and a spring whose tension is applied to said plate to press it against said feed-roll, substantially as described.

14. In a type-writing machine, the combination, with a platen to receive the impression of the type and a feeding-roll at the side of and parallel with said platen, of a plate held by the frame of the machine upon the side of the feeding-roll opposite said platen, the under surface of said plate presenting a plane surface in tangential contact with the feeding-roll and substantially parallel with said platen and exerting a yielding pressure upon said roll, whereby the paper is held from curling or rolling as it passes beneath said plate, substantially as described.

15. In a type-writing machine, the combination, with a hammer-lever carriage having an intermittent or stepping motion, of a blade 11, placed obliquely to the line of motion of said carriage, a bell-hammer supported upon a spring 9 and provided with an oblique blade 10, and a bell attached to the frame-work of the machine, substantially as described.

409,129. FEED-OPERATING MECHANISM FOR SEWING-MACHINES. JAMES TRIPP, New York, N. Y., assignor to CHARLES S. Scofield and FRANK M. Scofield, both of Greenwich, Conn. Filed Oct. 5, 1883. Serial No. 257,283. (No model.)



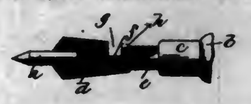
Claim.—1. In a sewing-machine, the combination, with the main shaft, the feed-bar, the horizontal feed-bar lever mounted on a universal joint, and the vertical feed-bar lever, with the fulcrum through which it reciprocates, of two cams upon the main shaft, one engaging a fork on the vertical feed-bar lever and one engaging a yoke pivotally attached to said lever, substantially as and for the purpose set forth.

2. In a sewing-machine, the combination, with the main shaft, the feed-bar, the horizontal feed-bar lever mounted on a universal joint, and the vertical feed-bar lever supported upon and reciprocating through a vertically-adjustable fulcrum, of two cams upon the main shaft, a fork upon the vertical feed-lever engaging one of said cams and a yoke engaging the other of said cams and pivoted to said lever, substantially as and for the purpose set forth.

3. In a sewing-machine, the combination, with the main shaft, of two cams thereon operating the fork of a vertical feed-lever and a link pivotally attached to said lever, and a fulcrum through which the lever reciprocates, with a feed-bar and a horizontal feed-bar lever K, supported in a fork T, having a pivotal stem S, substantially as and for the purpose set forth.

4. In combination, the feed-bar L and the feed-lever K and its pivotally-supporting fork S T, the vertical feed-lever having a vertically-adjustable fulcrum through which it reciprocates, and the main shaft having two cams thereon, one engaged by a fork on the vertical feed-lever and the other inclosed by a link pivotally attached to said lever, substantially as and for the purpose set forth.

409,130. CENTERING-AWL. LAWRENCE VAN ALSTYNE, Sharon, Conn. Filed Mar. 28, 1889. Serial No. 305,142. (No model.)



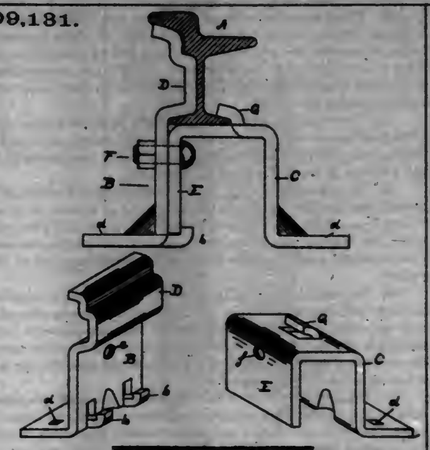
Claim.—The described tool, consisting of a handle, a pointed shank embedded therein, said shank having a portion of its periphery cut away or flattened to form a shoulder, a covering-cap on the outer end of said shank, and a spring interposed between the face of said cap and the handle of the tool, said cap having a slot cut through its periphery to form a bridge-piece A, which acts in connection with the shoulder on the shank to limit the outward movement of the cap, substantially as described.

409,131. BRACE-CHAIR FOR RAILROAD-RAILS. JOHN R. WHITTEREEN, Johnstown, Pa., assignor to the Johnson Company, same place. Filed Apr. 22, 1889. Serial No. 308,094. (No model.)

Claim.—1. A two-part brace-chair of box form for railroad-rails, provided with lugs, as G *b*.

2. A two-part brace-chair of box form for railroad-rails, provided with lugs, as G *b*, the two parts secured together by a bolt, substantially as set forth.

409,131.



409,132. BUTTON OR BADGE. STEPHEN C. WILCOX, Dubuque, Iowa, assignor of one-half to Abram V. Richards. Filed Aug. 18, 1887. Renewed July 9, 1889. Serial No. 316,994. (No model.)



Claim.—The combination of the cap A, formed with the opening A' and provided with the rim A", having inwardly-bent lips *a*, the base-plate C, formed with notches adapted to pass over said lips and having its margin gradually increased in thickness from said notches in one direction, and a layer of colored material B lying between the base-plate and the inner face of the cap, substantially as and for the purpose set forth.

409,133. PLANT-PROTECTOR. CORA M. YARBROUGH, Durham, N. C., assignor to James H. Lyons, same place. Filed Feb. 26, 1889. Serial No. 301,109. (No model.)



Claim.—1. In a plant-protector, the combination, with a two-sided metallic spring-frame provided on its opposite sides or arms with inwardly-facing holding-jaws, of a segmental shield having its opposite edges secured between the holding-jaws, substantially as described.

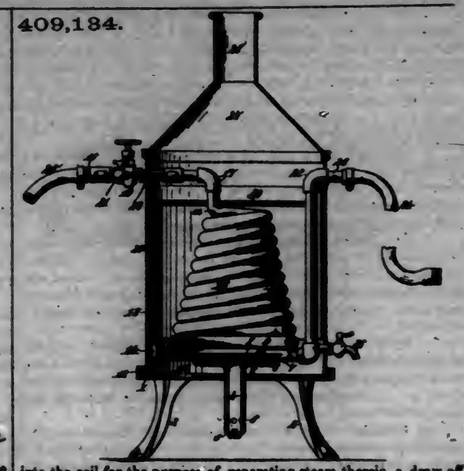
2. The combination, in a plant-protector, of the two-sided metallic spring-frame, the inwardly-facing jaws secured to the opposite side of the frame, and the pliable or elastic shield secured between the jaws within the frame, substantially as and for the purpose described.

409,134. WATER COIL BOILER. RUFUS W. APPLEGARTH and EVERETT D. MOORE, Baltimore, Md. Filed May 11, 1886. Serial No. 310,208. (No model.)

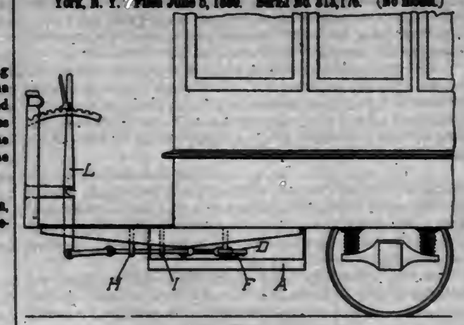
Claim.—1. The combination of a shell or casing having air-inlets near the bottom, a water-heating and steam-generating coil supported in said casing, and a valved inlet-pipe communicating with the upper end of said coil and adapted to admit thereto either a large or small stream of water, the lower leg of said coil being extended upward within the casing and adapted at its upper end for attachment of a flexible hose, substantially as described.

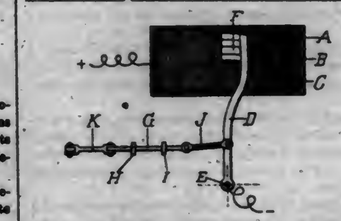
2. The combination of a shell or casing having air-inlets near the bottom, a Bunsen burner located in the lower part of said shell, a water-heating and steam-generating coil supported in the shell or casing with its lower portion in position to be acted on by the diverging flame-jets of the Bunsen burner, a valved inlet-pipe communicating with the upper end of the coil for the purpose of introducing water to flood the same, said inlet-pipe provided with a by-pass having a petty valve to control the introduction of a small stream of water into the coil for the purpose of generating steam therein, a draw-off cock located in the lower part of the coil, and an outlet-pipe extending from the lower end of the coil, substantially as described.

409,134.



409,135. ELECTRICAL RESISTANCE. EDWARD M. BENTLEY, New York, N. Y. Filed June 5, 1889. Serial No. 313,176. (No model.)





Claim.—1. The combination, with an electrically-propelled vehicle, of a controlling-resistance therefor carried upon the vehicle, consisting of a series of plates connected to one another, the containing box or holder for the plates being set horizontally, and a pivoted contact-arm moving in a horizontal plane and passing over the plates to bring more or less of them into circuit.

2. The combination, with an electrically-propelled vehicle and a resistance-box composed of a series of plates in contact with one another, of a pivoted arm adapted to pass over the plates and bring more or less of them into circuit, and an actuating device for the said contact-arm moving in a straight line and operated from an accessible part of the vehicle.

3. The combination, with an electrically-propelled vehicle, and a resistance-box thereon placed horizontally and composed of a number of iron or steel plates in connection with one another, of a contact-arm movable in a horizontal plane, and a direct-moving actuating device connected with the said arm.

4. The combination, with an electrically-propelled vehicle, and a resistance-box thereon placed horizontally and composed of a number of iron or steel plates in connection with one another, of a contact-arm movable in a horizontal plane, and a direct-moving actuating device connected with the said arm.

5. The combination, with an electrically-propelled vehicle, of a regulating-resistance therefor, consisting of a series of plates in contact with one another and placed horizontally with a pivoted contact-arm, and an actuating device for the said arm movable in a direct line.

6. The combination, with an electrically-propelled vehicle, of a horizontal resistance-box controlling the same, a pivoted contact-arm for said box, and connections therefrom leading to the platform of the vehicle and movable in a straight line.

7. The combination, with an electrically-propelled vehicle, of a horizontal resistance-box controlling the same, a pivoted contact-arm therefor, and a longitudinally-moving contact device connected to the said contact-arm and extending to an accessible point of the vehicle, with a lever or similar operating device therefor.

8. In an electrical resistance, the combination, with an electrically-propelled vehicle and a series of plates in connection with one another, of a contact-arm adapted to pass over the said plates, and an actuating device for the said contact-arm extending to an accessible part of the vehicle and attached to the contact-arm, but insulated therefrom.

9. The combination, in an electrical resistance, of a series of plates in connection with one another, a pivoted contact-arm adapted to bring more or less of the plates into circuit, and a longitudinally-moving device for actuating the said contact-arm, connected therewith and insulated therefrom.

10. The combination, with an electrically-propelled vehicle, of a controlling-resistance therefor, consisting of a series of plates connected to one another, a pivoted contact-arm therefor, and an actuating device for the said arm, connected therewith, but insulated therefrom and extending to the platform or a similar accessible part of the vehicle.

11. The combination, with an electrically-propelled vehicle, of a controlling-resistance therefor, composed of a series of plates, a pivoted contact-arm therefor moving in a horizontal plane, and a longitudinal actuating device for the said arm, insulated therefrom and leading to the platform or other accessible part of the vehicle.

12. The combination, with an electrically-propelled vehicle, of a resistance therefor consisting of a series of plates suspended beneath the body of the vehicle, a pivoted contact-arm, a longitudinal actuating device attached to the said arm, and a handle for operating the same extending vertically to an accessible part of the body of the vehicle.

13. The combination, with an electrically-propelled vehicle, of a resistance composed of a series of plates placed horizontally beneath the body of the vehicle, a longitudinally-moving rod or similar actuating device for the resistance, said an upright handle or similar actuating device extending above the floor of the vehicle for operating the resistance.

14. The combination, in an electrically-propelled vehicle, of a plate-resistance therefor beneath the body of the vehicle, a pivoted contact-arm therefor, an upright handle on the platform of the vehicle, and a jointed or flexible connection between the said handle and contact-arm.

15. The combination, in an electrically-propelled vehicle, of a plate-resistance therefor beneath the body of the vehicle, a horizontal actuating device therefor, and an upright handle connected therewith for moving the same.

16. The combination, in an electrically-propelled vehicle, of a resistance therefor consisting of a series of plates beneath the body of the vehicle, a contact device therefor, an actuating-handle on the platform of the vehicle, and an intermediate connection insulated from the said contact device.

17. The combination, in an electrically-propelled vehicle, of a plate-resistance therefor, a contact-arm for the said resistance, the said arm forming a movable electric connection for bringing more or less of the plates into circuit, an actuating device on the platform or other accessible part of the vehicle, and an intermediate insulated connection, whereby the said actuating device forms no part of the electric circuit.

18. The combination, with an electrically-propelled vehicle, of a resistance consisting of a horizontal series of upright plates beneath the vehicle, an operating device therefor consisting of a contact-arm or traveler between the plates and the floor of the vehicle movable over the series of plates, and a manual connection extending therefrom to the platform or operating point of the vehicle.

19. The combination, with an electrical resistance composed of a series of metallic plates in contact with one another, of an arm or traveler movable along the series of plates and provided with an offsetting sliding spring contact-piece bearing on the edges of the plates, an electrically-propelled vehicle, and an actuating device for the contact-arm extending to an accessible part of the vehicle.

20. The combination, with an electrically-propelled vehicle and a controlling plate-resistance therefor, of a contact piece passing over the edges of the plates, and an operating-lever therefor on the platform or controlling-point of the vehicle.

21. The combination, with an electrically-propelled vehicle, of a resistance for the motor, consisting of a series of plates in contact with one another, the said resistance being located beneath the vehicle at an intermediate point between its ends, and a controlling-connection therefor extending longitudinally to the platform or controlling-point of the vehicle.

22. The combination, with an electrically-propelled vehicle, of a plate-resistance for the motor, having a movable contact-piece, and a mechanical connection from said piece extending longitudinally to the platform or controlling-point of the vehicle.

23. The combination, with an electrically-propelled vehicle, of a controlling-resistance for the motor, consisting of a series of plates having exposed edges and located beneath the vehicle, and a contact-piece, also beneath the vehicle, provided with an operating-connection extending upward to the platform or controlling-point of the vehicle.

24. The combination, with a series of resistance-plates beneath an electrically-propelled vehicle, of a centered contact-arm sweeping over the edges of the plates, a longitudinal operating-connection extending to the platform or controlling-point of the vehicle, and means for converting the longitudinal movement of said connection into the rotary movement of the contact-arm.

25. The combination, with the motor of an electrically-propelled vehicle, of a controlling resistance consisting of a series of plates in connection with one another and placed beneath the vehicle, a centered contact-piece movable over the edges of the plates, and an operating-connection for said contact-piece, extending up to the platform or controlling-point of the vehicle.

26. The combination, with an electrically-propelled vehicle and a controlling-resistance therefor, of a contact-piece moving over the contact-surface of the resistance, and a metallic operating device extending to the platform or controlling-point of the vehicle, but insulated from the said contact-piece.

27. The combination of an electrically-propelled vehicle and a controlling-resistance therefor, consisting of a series of resistance-plates with a sliding spring contact-piece so arranged as to trail over the said plates when resistance is being cut into circuit, whereby danger of losing control of the car by the catching of the contacts is avoided.

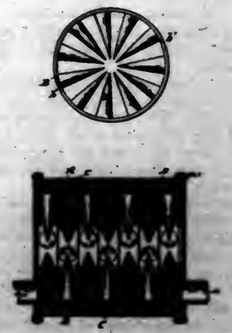
28. The combination of an electrically-propelled vehicle and a controlling-resistance beneath the car, consisting of a series of plates with a contact-arm and a sliding spring contact-piece offset from said arm toward the terminal of the resistance, and an actuating device for said arm extending to the platform or accessible part of the car, whereby the said contact-piece trails over the edges of the plates when resistance is being cut into the motor-circuit to stop the car, as described.

29. The combination, with an electrically-propelled vehicle, of a controlling-resistance at an intermediate point between the ends of the vehicle, a horizontal pivoted contact-arm, and a laterally-movable operating-connection attached to said contact-arm at a point to one side of its pivot and extending to the end of the vehicle.

409,186. MEANS FOR PREVENTING INCRUSTATION IN STEAM-BOILERS. SAMUEL G. CAMELL, Washington, D. C. Filed June 20, 1888. Serial No. 315,567. (No model.)

Claim.—1. The combination of a hollow vessel or conduit made up of a plurality of sections having interposed non-magnetic rings and a plurality of magnetic points or projections extending into and across the space within the walls of said vessel, substantially as described.

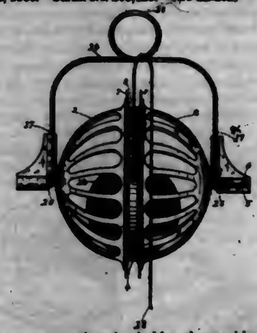
2. The combination of a hollow vessel and a plurality of rings, each carrying a plurality of magnetic points extending into and across the space within the rings, substantially as described.



409,186.

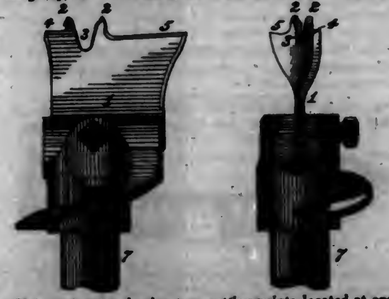


409,187. AUTOMATIC TWINE-HOLDER. WILLIAM H. CARSON, Buffalo, N. Y., assignor to himself and George S. Thorne, same place. Filed Jan. 2, 1889. Serial No. 295,125. (No model.)



Claim.—In an automatic twine-holder, the combination of a holding-case formed in two halves adapted to fit together and leave a groove surrounding them to receive the surplus twine, two steep-pitched screw-bearings rigidly secured to each half of the case, a spring-ball having a screw on each lower end of the ball-arms adapted to receive the screw-bearings, so they can turn therein and move the ends of the ball-arms to or from the case, and perforations through the bottom of the surrounding groove, through which the twine is passed, substantially as described.

409,188. CUTTER FOR MINING-MACHINES. EDWIN E. CARTER, Allegheny, Pa. Filed June 6, 1889. Serial No. 313,151. (No model.)



Claim.—A cutter having two cutting-points located at opposite sides of a central recess, a preliminary lateral cutting-lip located in a plane below one of said cutting-points, and a supplemental lateral cutting-lip located on the opposite side of the axis of the cutter, with its outer end in a plane below that of the preliminary cutting-lip and at a greater distance from the axis than the outer end of said preliminary lip, and extending to the base of the adjacent cutting-point wholly below the plane of its outer end, substantially as set forth.

409,189. FABRIC-TURFING IMPLEMENT. MARTIN L. CORBETT, Bellefontaine, Ohio, assignor, by mesne assignments, to Matthew F. Cornett and John Hale Hicks, both of Kansas City, Mo. Filed Aug. 16, 1888. Serial No. 282,843. (No model.)



Claim.—1. In a fabric-turfing implement in which a needle-bar is operated to reciprocate a threaded needle through a fabric, the combination, with the needle-bar, of a clamp for the thread between the thread-supply and the eye of the needle, connected with and movable with the needle-bar, and operating by the reciprocation thereof alternately to lock and unlock the thread in the progress of the latter to the eye of the needle, substantially as described.

2. In a fabric-turfing implement in which a needle-bar is operated to reciprocate a threaded needle through a fabric, a clamp for the thread upon and movable with the needle-bar, and a handle upon the needle-bar connected with the clamp and having limited play independent of the needle-bar to open and close the clamp, whereby movement of the handle to advance the needle-bar first opens the clamp and unlocks the thread, and movement of the handle to withdraw the needle-bar first closes the clamp and locks the thread, substantially as described.

3. In a fabric-turfing implement, the combination, with the holder, of a reciprocating needle-bar carrying toward one end a block G, provided with a needle-socket *g*, a slot *p*, and an eye *e*, and a stirrup K, movable in the slot *p* and connected with a handle A, substantially as described.

4. In a fabric-turfing implement, the combination, with the holder, of a reciprocating needle-bar carrying toward one end a pivotal block G, provided with a needle-socket *g*, a slot *p*, and an eye *e*, and a spring-stirrup K, movable in the slot *p* and bearing against the pivotal block G, substantially as described.

5. In a fabric-turfing implement, the combination, with the holder C and presser-foot E, of a reciprocating needle-bar within the holder carrying toward one end a pivotal block G, provided with a needle-socket *g*, a slot *p*, and an eye *e*, and a spring-stirrup K within the holder, having a handle at one end and bearing toward its opposite end against the pivotal block G, with its extremity in the slot *p*, in which it has limited play to clamp and release alternately a thread in the eye *e*, substantially as described.

6. In a fabric-turfing implement, the combination, with the holder C and presser-foot E, of a channeled reciprocating needle-bar B within the holder, carrying toward one end a pivotal block G, provided with a needle-socket *g*, a slot *p*, and an eye *e*, and a spring-stirrup K within the channel of the needle-bar and provided at one end with a handle A, and extending at the other end into the slot *p* and bearing against the block G, and of such length as to have limited play within the slot, whereby it clamps the thread when the needle is withdrawn and releases it as the needle is advanced, substantially as described.

7. In a fabric-turfing implement, the combination, with the holder C, reciprocating needle-bar B, provided toward its upper extremity with notches *t* and carrying at its opposite end a needle, and locking mechanism to clamp the thread when the needle is withdrawn, and release it when the needle is advanced, of a friction-spring D, interposed between the holder and needle-bar and provided with a head affording a stop D′ and catch *f* to enter the notches *t*, substantially as described.

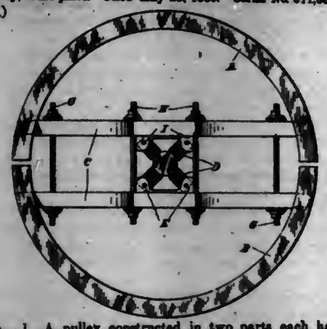
8. In a fabric-turfing implement, the combination, with the holder C and presser-foot E, of a channeled reciprocating needle-bar B within the holder, provided with a recess at one end and a stop I adjacent to the recess, a block G, pivoted to the needle-bar, provided with a needle-socket *g*, a slot *p*, and an eye *e*, and a spring-stirrup K within the channel of the needle-bar and provided at one end with a handle A, and extending at the other end into the slot *p* and bearing against the block G, and of such length as to have limited play within the slot, whereby it clamps the thread when the needle is withdrawn and releases it as the needle is advanced, substantially as described.

9. In a fabric-turfing implement, the combination, with the holder C, presser-foot E, and channeled reciprocating needle-bar B, carrying toward one end a pivotal block G, provided with a needle-socket *g*, a slot *p*, and an eye *e*, of a curved spring-stirrup K, extending through the channel of a needle-bar and bearing against opposite

sides of its casing to provide a spring toward one end which bears against the block G, and extending at its extremity into the slot *p*, and provided at its opposite end with a handle A, the stirrup being of such length as to have limited play within the slot, whereby it clamps the thread when the needle is withdrawn and releases it as the needle is advanced, substantially as described.

10. A fabric-tarring implement comprising, in combination, a holder C, carrying a presser-foot E, a channeled reciprocating needle-bar B within the holder, having a stop I toward one end and notches *f* toward its opposite end, and carrying a pivotal block G, provided with a needle-socket *q*, a slot *p*, and an eye *o*, a spring-stirrup K within the channel of the needle-bar and bearing against opposite sides of its casing, provided at one end with a handle A, and extending at the other end into the slot *p* and bearing against the block G, the stirrup being of such length as to have limited play within the slot, whereby it clamps the thread when the needle is withdrawn and releases it as the needle is advanced, substantially as described.

409,140. SPLIT PULLEY. JOHN R. CORNWALL and HERMAN A. BARNARD, Moline, Ill., assignors to the Barnard & Leas Manufacturing Company, same place. Filed May 23, 1889. Serial No. 311,631. (No model.)



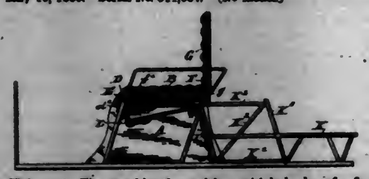
Claim.—1. A pulley constructed in two parts, each having a main cross-arm, intermediate clamping-blocks, and bolts whereby the parts of the pulley are held together and the blocks caused to clamp against the shaft, substantially as specified.

2. The combination, in a split pulley, of the main cross-arms extending from side to side of each part, the bolts for clamping the arms together, the clamping-blocks located between the said arms and the clamping-bolts, whereby the clamping-blocks may be caused to clamp the shaft, substantially as specified.

3. The combination, in a split pulley having its parts held together by bolts passing through the cross-arms thereof, of the clamp-blocks secured to said arms, the said blocks being made of sufficient length to admit of shortening to fit shafts of varying diameters, substantially as and for the purpose specified.

4. The combination, in a split pulley, of the halves thereof, having cross-arms securely fastened therein, clamp-boxes secured to said arms, clamp-blocks having bearings in said arms, and bolts passing through the cross-bars, whereby the parts of the pulley are held together and firmly clamped to the shaft, substantially as specified.

409,141. JUMP-SEAT VEHICLE. FRANCIS G. DAVIS, Watertown, N. Y., assignor to the H. H. Babcock Buggy Company, same place. Filed May 16, 1889. Serial No. 311,037. (No model.)



Claim.—1. The combination, with a vehicle-body, of a front seat hinged to the front of said body and a rear seat and back also independently hinged to the front of said body, whereby said front and rear seat may be independently raised to a vertical or nearly vertical position, substantially as described.

2. In combination with a vehicle-body, the hinge D, composed of the straps *b' d'* and the arm E, the hinge F connected to said arm, the front seats connected to the straps *b'*, the straps *d'* bolted to the body, and the rear seat and back G, secured to the hinges F, substantially as and for the purpose described.

3. The combination, with the vehicle-body, of the front and rear seat and back G, hinged independently to the front of the body, the hinge F, to which said seat G is also hinged, and the rear seat I, hinged to the vehicle at the rear of the body, whereby when the front seat and seat G are raised and turned up the said rear seat I may be turned under the front seat, substantially as described.

4. The rear seat I, in combination with a supporting-frame composed of front uprights K', rear uprights K^2, and bottom pieces K^3, and the railing K, to which the uprights K' are hinged, while the rear uprights rest on the bottom of the vehicle, and the lazy-back L, rigidly secured to the seat I, substantially as described.

5. In combination with the body, the rear seat and back G, hinged to the front of the body, and the rear seat I, provided with the frame-work K' K^2 K^3, whereby when the said seat G is lowered to a horizontal position and the rear seat L is folded within the body the seat G will be supported on said frame-work, substantially as described.

6. In combination with the vehicle-body, the front seat hinged to the front of said body, the rear seat and back G, also hinged to the front of the said body, and the lazy-back secured to the front end of said rear seat and back G, substantially as described.

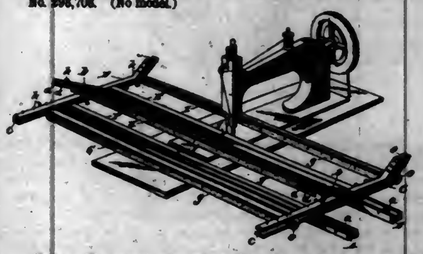
409,142. CLAMP-FILE. ALEXANDER DOE, Mount Healthy, Ohio. Filed June 17, 1889. Serial No. 314,615. (No model.)



Claim.—1. In combination with the clamp-board and clamp, the latter having the side lugs and central rearward projection integral therewith, the spring-support connected to said clamp-board and so bent as to form a base-support and journal-bearings for the clamp-shaft, the latter passing through the coiled portions of said spring, the ends of said spring bearing against the under face of the extension of the clamp, substantially as set forth.

2. A file consisting of a clamp-board E, clamp A, the latter having the side lugs *a a*, and rearward projection *a'*, having the grooves a^2 a^3 therein, in combination with the spring-support consisting of a base D, coiled bearings *d d*, and projections *d' d'*, the clamp-shaft B passing through the coiled portions *d d*, the ends of said shaft being connected to the side lugs *a a* of the clamp, substantially as described.

409,143. QUILTING-FRAME FOR SEWING-MACHINES. JAMES R. GIBBS, Jonesborough, assignor of two-thirds to Elliot C. Kirkpatrick and Thomas R. Chase, Johnson City, Tenn. Filed Feb. 5, 1889. Serial No. 298,708. (No model.)



Claim.—The combination of a quilting-frame, tracks or ways A B, supported by the table of a sewing-machine and provided with suitable friction-rollers, and swiveled staples for holding the frame in said guideways, and rollers G, H, and I for holding the material and completed article, each made in two sections, one of which carries a ratchet attachment on its outer end, and on its inner end is provided with a recess T, having one open side to receive the other section of the roller, which is detachably secured therein, whereby the rollers may be removed from the frame without removing the ratchet portion, substantially as described.

409,144. HORSE-COLLAR FASTENER. JOSEPH F. GLIDDEN, De Kalb, Ill. Filed May 23, 1889. Serial No. 311,949. (No model.)



Claim.—A harness-collar fastening consisting of the straight tubular sections A and B, the former provided with a wall *d*, and the latter with a closed end wall and adapted to pass within section A and be held by friction, substantially as specified.

409,145. BOX-NAILING MACHINE. LEWIS F. GRABNER, Allentown, Pa., assignor of one-half to C. J. P. Bittner, same place. Filed Dec. 17, 1887. Serial No. 258,202. (No model.)



Claim.—1. A picker attachment for box-nailing machines, comprising an inclined slotted table, duplicate picker-plates mounted at the end of said table and for relatively-opposite oscillation, and mechanism for oscillating the same, substantially as specified.

2. The combination, with a nailing-machine, of a picker attachment comprising an inclined table having a slot and duplicate picking-plates provided with picking-fingers and nail-passages and pivoted and arranged one upon the other at the end of said slot, and mechanism for oscillating said plates in relatively-opposite directions, substantially as specified.

3. The combination, in a nailing-machine, of a picker attachment comprising an inclined table having a slot, pivoted nail-picking plates mounted one upon the other at the end of said slot and provided with picking-fingers and nail-passages, and mechanism for oscillating said plates in contrary directions, substantially as specified.

4. In a box-nailing machine, the combination of a picker attachment, comprising a slotted inclined table having picker-plates provided with picking-fingers pivoted thereon, mechanism for operating the same in contrary directions, a gate, and gate-operating mechanism for presenting nails singly to said fingers, substantially as specified.

5. The combination, in a box-nailing machine, of an inclined table having a slot with pivoted picking-plates mounted one upon the other and provided with oppositely-arranged picking-fingers, and with a locking-bar connecting said plates and retaining the same in a locked or closed position, substantially as specified.

6. In a box-nailing machine, the combination of an inclined slotted table, picking-plates mounted at the end of said table, a pivoted gate mounted in rear of said plates, and mechanism, substantially as shown and described, for operating said pivoted gate in advance of the operation of said plates, substantially as specified.

7. The combination of a box-nailing machine, with a picking attachment comprising an inclined table, slotted and provided with nail-picking plates having studs projecting therefrom, and a bar pivoted to the table and slotted for the reception of the studs, whereby when one of said plates is oscillated in one direction its companion is oscillated in an opposite direction, substantially as specified.

8. In a picker attachment for box-nailing machines, the combination of a slotted inclined table, with pivoted picker-plates mounted one upon the other at the end of said slot and provided with oppositely-disposed long and short picking-fingers and with studs, and a plate-operating bar slotted to receive said studs, substantially as specified.

9. In a box-nailing machine, the combination of an inclined table having a slot and provided with pivoted operatively-connected picking-plates having picking-fingers, one of said plates having a slotted extension, with an adjustable bolt mounted in said slot, and oscillating bars mounted in brackets below the same and provided with lugs for coming in contact with and operating said bolt, substantially as specified.

10. In a box-nailing machine, the combination of an inclined table having picking-plates pivoted at the end thereof, and having a gate pivoted in rear of said plates, with oscillating bars, one of which operates said plates and the other the gate, substantially as specified.

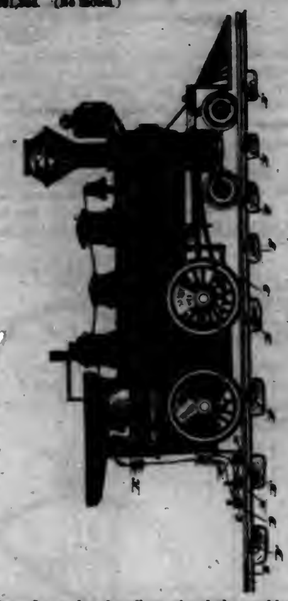
11. The combination of the inclined table B, having the slot B', with the plates C and D, pivoted, as at D^4, thereon and formed with the long and short fingers C^2 C^3 and D^2 D^3, and having the openings C' C^4 and D' D^4, substantially as specified.

12. The combination of the table B, having the slot D', and the plates C and D, pivoted thereon, with the bar E, slotted as at E' E^2 and mounted on said plate, and the spring F, substantially as specified.

13. The combination of the inclined table B, slotted as at B', and the plates C and D, pivoted as at D^4 at the end of said slots, the bolt H, mounted in the plate C, and the bar G', having the lug G^2 and spring G^3, substantially as specified.

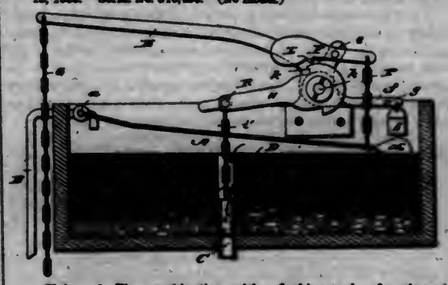
14. The combination of the inclined table B, slotted and provided with the pivoted plates C and D, the bar E, connecting the same with the gate I, pivoted as at I', slotted as at I^2, and the bars G and G', the latter having arm G^4 for operating said gate, substantially as specified.

409,146. ELECTRIC RAILROAD-SIGNAL. WILLIAM F. GRABNER, Williamsport, Pa., assignor of three-fourths to C. G. Gibson, W. G. Elliot, and W. B. Updegraff, all of same place. Filed Nov. 20, 1888. Serial No. 291,393. (No model.)



Claim.—In an electric railway-signal, the combination of a series of locomotives each carrying an electric generator, alarm, and insulated contact-brushes, with an insulated continuous conductor in the path of the contact-brushes, such conductor being provided at regular intervals along its length with deflections, as and for the purpose set forth.

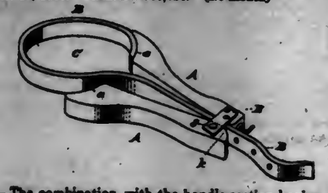
409,147. FLUSHING-TANK. JAMES GREENHALGH, Woonsocket, R. I., assignor of one-half to John F. Mulvey, same place. Filed May 13, 1889. Serial No. 310,499. (No model.)



Claim.—1. The combination, with a flushing-tank, of a pivoted operating-lever having one end weighted, a preponderating lever carried by the operating-lever and provided with a shoulder, and a pivoted shouldered lever adapted to be engaged by the preponderating lever and connected with the outlet-valve, substantially as specified.

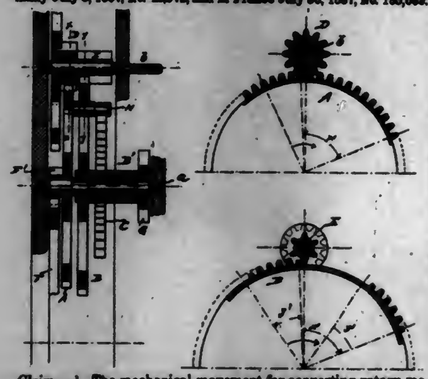
2. The combination, with a flushing-tank, of a pivoted lever weighted at one end, a pivoted lever connected with a discharge-valve, and a preponderating lever adapted to engage and be moved by the lever connected with the valve and having its lighter end connected with a float, the said preponderating lever being journaled on the operating-lever, substantially as specified.

409,148. DEVICE FOR HOLDING FRUIT-CANS. JOHN HALLER, Port Clinton, Ohio, assignor of one-half to William Bertsch, same place. Filed Mar. 12, 1889. Serial No. 303,726. (No model.)



Claim.—The combination, with the handle-section having a concave end and a clamp-strap fastened thereto, of a movable handle-section pivoted to its fellow at the inward end from the portions grasped by the hand, and having a stop to prevent it from opening out from said fellow too far for grasping with the fingers of the hand holding and operating the instrument, substantially as specified.

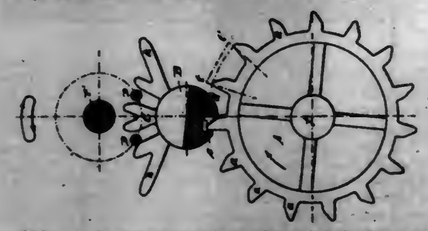
409,149. MECHANISM FOR CONVERTING MOTION. ALEXANDER KAISER, Berlin, Germany, assignor to Ludwig Marckwald, same place. Filed Mar. 7, 1888. Serial No. 266,623. (No model.) Patented in Germany July 8, 1887, No. 42,372, and in France July 30, 1887, No. 185,089.



Claim.—1. The mechanical movement for converting rotary motion into intermittent rotary motion, consisting of an arbor, two cog-wheels mounted on the same, one fixed and the other loose, a spring connecting the two cog-wheels, and two pinions fixed on an arbor and engaging, respectively, with the fixed and loose cog-wheel, the proportion of the teeth of the fixed wheel to its pinion and the relation of the teeth of the loose wheel to its pinion being such that the speed of rotation of the loose cog-wheel during the time the same is engaged with its pinion is different from the speed of the fixed cog-wheel, substantially as shown and described.

2. The combination, with an arbor *a*, of the cog-wheel A, mounted rigidly on the same, the cog-wheel B, mounted loosely on the arbor and having the hub B', the spring C, connected with the hub B' and with the wheel A, the cog-wheel G on the hub B', the pinion F on the arbor *a*, the pinion E, engaging with the cog-wheel B, and the pinion D, engaging with the cog-wheel A, some of the teeth of the cog-wheel B being broken out, substantially as shown and described.

409,150. TIME-PIECE ESCAPEMENT. ALEXANDER KAISER, Berlin, Germany, assignor to Ludwig Marckwald, same place. Filed Oct. 9, 1888. Serial No. 287,651. (No model.) Patented in Germany May 19, 1888, No. 46,989; in France Aug. 7, 1888, No. 188,294; in Belgium Sept. 12, 1888, No. 83,243, and in Switzerland Nov. 21, 1888, No. 175.



Claim.—1. In an escapement for watches and clocks, the combination, with an escapement-wheel, of a cylinder having a notch for receiving the teeth of the escapement-wheel, the double fork on the cylinder, a balance-wheel having one or more pins, and arms on said cylinder of such length that they can rest against the hub of the balance-wheel, substantially as set forth.

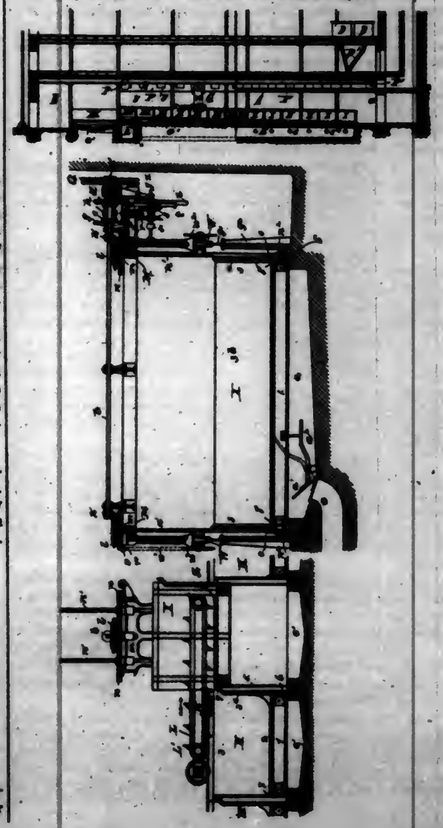
2. In an escapement for watches and clocks, the combination, with an escapement-wheel, of a cylinder having a notch for receiving the teeth of the escapement-wheel, a balance-wheel having one or more pins, projections on the cylinder, on which projections the pins on the balance-wheel can act, and projections on the cylinder, which projections can rest against the hub of the balance-wheel, substantially as set forth.

3. In an escapement for watches and clocks, the combination, with an escapement-wheel, of a cylinder formed of two concentric sections of different radii, each section having a notch, a balance-wheel, pins on said balance-wheel, and projections on the cylinder, on which projections the pins of the balance-wheel can act, substantially as set forth.

4. In an escapement for watches and clocks, the combination, with an escapement-wheel, of a cylinder composed of two concentric circular sections of different radii, each section having a notch, the notch of the larger section being larger than that of the smaller section, a balance-wheel having pins and projections on the cylinder, on which projections the said pins on the balance-wheel can act, substantially as set forth.

5. In an escapement for watches and clocks, the combination, with an escapement-wheel, of a cylinder having a notch for receiving the teeth of the escapement-wheel, a balance-wheel provided with a hub having parts cut away, pins on said balance-wheel, projections on the cylinder, on which projections the pins on the balance-wheel can act, and arms or projections on the cylinder, which arms or projections can come in contact with the hub of the balance-wheel, substantially as set forth.

409,151. PNEUMATIC MALTING APPARATUS. REICH KASTNER, Mannheim, Baden, Germany. Filed Sept. 13, 1888. Serial No. 285,673. (No model.) Patented in Germany June 22, 1886, No. 43,366, and in Austria-Hungary Nov. 20, 1888, No. 27,743 and No. 46,384.



Claim.—1. In a malt-house, a plurality of adjacent vertically-movable perforated malting-floors inclosed on three sides, and a stationary partition interposed between the floors and forming the inclosing-wall for the open side of such floors, in combination with an elevating mechanism arranged above said floors and adapted to be moved from one floor to another and connected therewith, substantially as and for the purposes specified.

2. In a malt-house, a plurality of adjacent vertically-movable perforated malting-floors inclosed on three sides, and a stationary partition interposed between the floors and forming the inclosing-wall for the open side of such floors, and in combination therewith a conveyer or scraper arranged above said floors and operating to transfer the malt from one floor to another, substantially as and for the purposes specified.

3. In a malt-house, a plurality of adjacent vertically-movable perforated malting-floors inclosed on three sides, and a stationary partition interposed between the floors and forming the inclosing-wall for the open side of such floors, in combination with an elevating mechanism adapted to be connected to said floors, and a conveyer or scraper, both mounted on the same support and adapted to be moved to and fro above the malting-floors, substantially as and for the purposes specified.

4. In a malt-house, a plurality of adjacent vertically-movable perforated malting-floors inclosed on three sides, and a stationary partition interposed between the floors and forming the inclosing-wall for the open side of such floors, and in combination therewith a conveyer or scraper, a wheeled carriage therefor, an elevated way for said carriage, and a driving mechanism for the conveyer mounted on said carriage, substantially as and for the purposes specified.

5. In a malt-house, a plurality of adjacent vertically-movable perforated malting-floors inclosed on three sides, and a stationary partition interposed between the floors and forming the inclosing-wall for the open side of such floors, and in combination therewith an elevated way, a wheeled carriage adapted to travel on said way, and an elevating mechanism mounted on said carriage for elevating the floors, substantially as and for the purposes specified.

6. In a malt-house, a plurality of adjacent and vertically-movable malting-floors comprising a rectangular frame, a perforated floor secured thereto, and vertical inclosing-walls arranged on one side and at opposite ends of said frame, in combination with a stationary partition arranged to close the fourth open side of the floor, substantially as and for the purposes specified.

7. In a malt-house, a plurality of adjacent and vertically-movable malting-floors comprising a rectangular frame, a perforated floor secured thereto, and vertical inclosing-walls arranged on one side and at opposite ends of said frame, in combination with a stationary inclosing-wall arranged to close the fourth open side of the floor, and a packing secured to the edge of said floor along the open side to form a tight joint with the stationary inclosing-wall, substantially as and for the purposes specified.

8. The combination, with a plurality of contiguous or adjacent vertically-movable perforated malting-floors provided with lugs or bearings S at opposite ends, of an elevated way, a carriage adapted to travel to and fro on said way, and a lifting mechanism comprising the screw-threaded hooked rods *x'*, the hooks of which are adapted to engage the lugs or bearings S of the floors, the bevel-wheels *n*, having interiorly-threaded hubs in which said rods work, and a driving-gear for driving said bevel-wheels, substantially as and for the purposes specified.

9. The combination, with a plurality of contiguous or adjacent vertically-movable perforated malting-floors, of an elevated way, a carriage adapted to travel to and fro on said way, a conveyer or scraper comprising an endless belt arranged to travel in a horizontal plane and provided with conveyer buckets or scrapers, mechanism for imparting motion to said belt, and an elevating mechanism for elevating the malting-floor to said conveyer mounted on said carriage, substantially as and for the purposes specified.

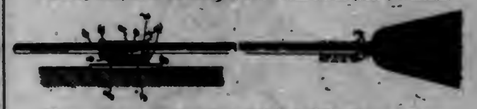
10. In a malt-house, a vertically-movable perforated malting-floor, a suction-chamber below said floor, an air-exhaust duct connected with said chamber, and a gravity-valve interposed in said connection, said valve having its stem in contact with the floor or a projection thereon when said floor is seated on the suction-chamber to hold the valve open, substantially as and for the purposes specified.

11. In a malt house, a plurality of contiguous or adjacent vertically-movable malting-floors, a suction-chamber below each floor, an air-exhaust duct connected with said chambers, a gravity-valve in said connections, said valves having their stems in contact with their respective malting-floors to hold the valve open when the floor is seated on the suction-chamber, an elevated way, a carriage adapted to travel to and fro on said way, and an elevating mechanism mounted on said carriage for elevating the floors, whereby, when a malting-floor is elevated, the valve will automatically close to cut off the communication between the suction-chamber and air-exhaust duct, substantially as and for the purposes specified.

12. In a malt-house, a malting-chamber, a series of contiguous or adjacent vertically-movable perforated malting-floors, and a stationary malting-floor at the end of the series, a withering-chamber adjacent to the malting-chamber, a perforated withering-floor in said chamber, and a suction-chamber arranged under each of said floors, and in combination therewith an air-duct in communication with the malting-chamber, a separate air-supply for the withering-chamber, and an air-exhaust duct common to all the suction-chambers of the floors, substantially as and for the purposes specified.

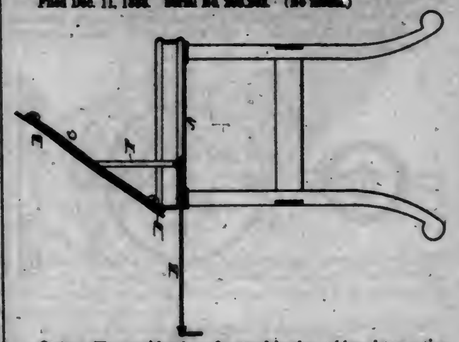
13. In a malt-house, a substantially air-tight malting-chamber, a plurality of contiguous or adjacent vertically-movable perforated malting-floors, and a suction-chamber under each of said floors, in combination with an air-distributing duct provided with separate outlet-ports for each malting-floor, means for combining moisture with the air admitted, an air-exhaust duct, a separate connection between the suction-chamber of each malting-floor and said air-exhaust duct and a valve in said connection, substantially as and for the purposes specified.

409,152. BROOM-SUPPORTER. ROBERT KIDNEY, Weatherly, Pa., assignor of one-half to George Marsh and Edward C. Hall, both of St. Anthony Park, Minn. Filed July 3, 1888. Serial No. 278,180. (No model.)



Claim.—A broom-supporter consisting of the sleeve having a hook and heel on the broom-handle by a rubber ring, and a bracket having a pocket, substantially as shown and described.

409,153. MIRROR-STAND. JOSEPH KIRK, Ballard Vale, Mass., assignor to himself and the Craighead & Kirk Company, same place. Filed Dec. 11, 1886. Serial No. 220,362. (No model.)



Claim.—The combination of a stand having a hinged top, a tray adapted to slide into and out of the stand below the top, and a pivoted link-connection between the tray and top, whereby the top will be raised and supported when the tray is pulled out and be lowered when the tray is pushed in, substantially as described.

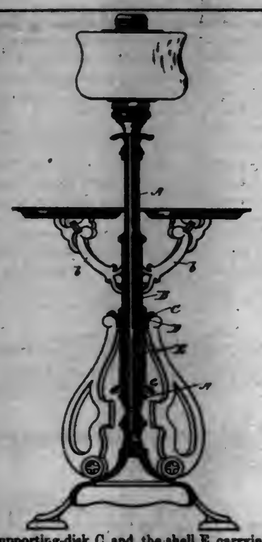
409,154. REVOLVING-STAND LAMP. JOSEPH KIRK, Ballard Vale, Mass., assignor to himself and the Craighead & Kirk Company, same place. Filed Jan. 17, 1889. Serial No. 296,947. (No model.)

Claim.—1. The improved revolving-stand lamp herein described, consisting of a lamp provided with a suitable standard A, a sleeve B, carrying a stand and provided at its base with a series of holes, as described, and a spring-supported shell carrying a pin adapted to enter one of the holes to lock the sleeve against rotation, the said shell being adapted, by drawing it down against the pressure of the spring, to withdraw the pin and permit the revolution of the sleeve B around the standard when desired, all substantially as set forth.

2. In combination, the standard A, the revolvable sleeve B, carrying the stand and provided at its base with the series of holes *b'*,

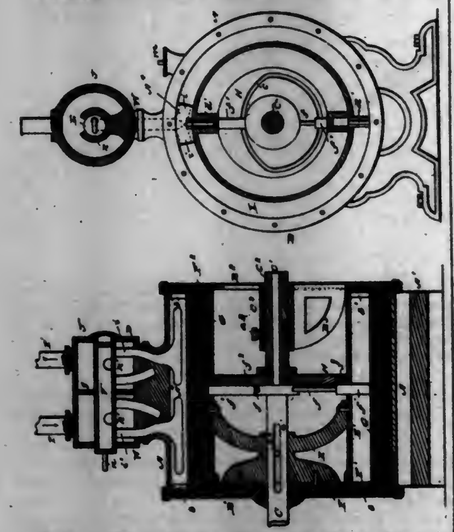


409,154.



the perforated supporting-disk C, and the shell E, carrying the pin D and provided with a finger-piece G, for depressing the shell, and the coiled spring F, for elevating it, all substantially as shown and described.

409,155. STEAM-ENGINE. CHARLES R. DELLENBAUGH, Pittsburg, Pa., assignor of three-fourths to William H. Hoover, Charles Hess, and J. W. King, all of same place. Filed Mar. 18, 1889. Serial No. 303,687 (No model.)

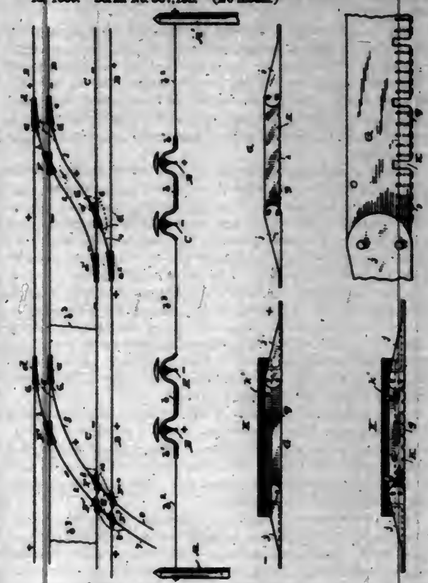


Claim.—1. The combination, with the main cylinder, of the inner cylinder bearing radially-reciprocating pistons, the grooved head and grooved ring at the ends of the inner cylinder adapted for guiding the pistons, the spider E, connected to the head F and inner cylinder and to the main shaft, the fixed cam-grooved disk H, and the sleeves secured to the pistons and guided by stems, all as specified.

2. In a rotary engine, the combination, with the main cylinder, of the internal cylinder having an open end and a closed end, the cylinder E, provided with radially-grooved flanges and the pistons working therein, the spider E, securing this cylinder to the main shaft, the sleeves f', secured to the said pistons and guided by rods f, the stationary cam-grooved disk H, for actuating the said sleeves and pistons, and the bracket secured to the open head of the casing or main cylinder and affording a journal for one end of the main shaft inside of the open-end cylinder E, all as specified

3. In a rotary engine, the combination of the external cylinder A, having one end open, the internal open-end cylinder E, rigidly secured to the outer cylinder, as specified, and provided with radially-grooved flanges having movable pistons, the stationary disk H, having a cam-groove in one face, the radially-movable sleeves secured to the said pistons, the guide-rods f, secured to a boss on the main shaft C, the spider E, securing the cylinder E to the head thereof and itself secured to the main shaft C, and the bracket B^2, affording a journal-box for a sleeve C^1, all as specified.

409,156. DOUBLE SUSPENDED CONDUCTOR SYSTEM FOR ELECTRIC RAILWAYS. CHARLES J. VAN DEPOELE, Lynn, Mass. Filed Apr. 13, 1889. Serial No. 307,132. (No model.)



Claim.—1. A double suspended conductor system for electric railways, comprising positive and negative conductors following the line of each track, the conductors of one polarity over each track being arranged upon the inner sides thereof and electrically connected at intervals, the remaining conductors being parallel therewith but nearer to the outer sides of said tracks.

2. A double suspended conductor system for electric railways, comprising positive and negative supply-conductors following the line of each track, a branch extending from said main conductors, comprising metallic frogs in electrical connection with said main conductors, branch conductors connected to but insulated from said frogs, and an upward-pressure contact device having a plurality of independent insulated contacts adapted to engage the said supply-conductors.

3. Switching devices for a double suspended conductor system comprising metallic frogs in contact with the main conductors, an insulated crossing for one of said conductors, a branch conductor extending from the frog of one of said conductors and engaging the crossing, but insulated therefrom, a continuation of the insulated branch conductor, and an electrical connection uniting the insulated extremities thereof, and a branch conductor extending from and in electrical connection with the frog of the other main conductor.

4. Switching devices for a double suspended conductor system, comprising metallic frogs connected to the main conductors, branch conductors connected to but insulated from said frogs, a crossing for one of said main conductors to which one branch is electrically connected, a continuation of said branch conductor and a frog upon the next adjacent main conductor to which the said continued branch is electrically connected, and a branch extending from the other main frog to but insulated from a crossing upon the next adjacent main conductor, a continuation of said second branch conductor and a frog upon the other main conductor to which said continuation is connected, and electrical connections between the insulated portions of the branch conductor.

5. A switch and crossing for a double system of duplex suspended conductors, comprising metallic frogs in electrical connection with one set of main conductors, a branch conductor extending from one frog to and insulated from a crossing attached to conductors of the opposite polarity and connected thence but insulated therefrom by a conductor secured to a crossing of similar polarity, and a branch conductor extending from the other frog to an insulated crossing, and thence by a continuation of the branch conductor to a crossing of like polarity, thence to a crossing of opposite polarity from which it is insulated, thence by a continuation of the branch conductor, and an electrical connection between the insulated terminals of the branch conductor.

6. In a system of double suspended conductors, a switch and crossing for a double duplex line comprising metallic frogs in contact with the main conductors of one line, an insulated crossing for one of said conductors, a branch conductor extending from the frog of one of said conductors and engaging the crossing and insulated therefrom, a continuation of the insulated branch conductor, and an electrical connection uniting the insulated extremities thereof, a branch conductor extending from and in electrical connection with the frog of the other main conductor, and two sets of crossings connected with the main conductors of the other main line to which the branch conductors from the first-mentioned main line are connected and from which they may be continued, substantially as described.

7. In a duplex suspended system of conductors, a metallic frog in electrical connection with one of said conductors, a branch conductor connected thereto, and an insulating-section between the frog and the branch conductor, substantially as described.

8. A crossing-plate having a flat metallic surface, a central downward projection for guiding a grooved contact-wheel, and lateral flanges to prevent lateral displacement of the contact device.

9. The combination, with a metallic crossing-plate, of a main conductor of one polarity connected thereto and ribs or pieces of insulating material also connected to said plate, and conductors of opposite polarity connected to the extremities of said insulating-ribs.

10. A crossing-plate for conductors of opposite polarity, comprising a metallic plate secured to and in electrical connection with the main conductor, insulating-sections secured at opposite ends of the plate, and conductors of opposite polarity secured to the extremities of said insulated sections, substantially as described.

11. A crossing-plate comprising a metallic surface to which the main conductor may be attached, insulating-sections extending from each end thereof and connected to terminals of conductors of opposite polarity, a crossing-plate comprising a metallic surface, a central downward projection for guiding a grooved contact-wheel thereacross, and terminals extending from each end for connection to their respective conductors, substantially as described.

12. The combination, with a crossing-plate, of a main conductor connected thereto for crossing at one direction, ribs composed in part of insulating material and connected to said crossing-plates for attachment to conductors of opposite polarity for a crossing of another direction, and protecting-roofs extending over the insulated portions of the said insulating-ribs, substantially as described.

13. In a system of suspended conductors, an insulating-section and conductors of opposite polarity connected to the extremities thereof, whereby the said section is adapted to convey the contact device between insulated and separated continuous conductors.

14. In a system of suspended conductors, an insulating-section for connecting conductors of opposite polarity, having high tensile strength and composed of a metallic body having an exterior insulating-surface.

15. In a system of suspended conductors, an insulating-section the lower or contact surface of which is discontinuous, substantially as described.

16. In a system of suspended conductors, an insulating-section uniting the extremities of conductors of opposite polarity and provided with a protecting roof or cover, substantially as described.

17. In a system of suspended conductors, an insulated section for uniting conductors of opposite polarity, having its lower edge made discontinuous by notches or serrations and provided with a discontinuous metallic wearing-surface between the serrations, substantially as described.

18. In a double suspended system of electric-railway conductors, a contact device comprising a pair of independent upwardly spring-pressed arms each provided with a contact device at its outer extremity, both said arms being free to swing about a vertical axis, separate insulated connections between the contact devices and a stationary support or base, and a slack and flexible portion between the fixed and movable parts of the said circuit-connections for permitting said arms to swing upon their vertical axis for reversing.

19. In a double suspended conductor system, the combination, with a suitable support mounted upon a car or other vehicle, of a pair of contact-carrying arms, vertical and transverse axes sustaining said arms in positions to swing freely about the vertical axis, tension-springs pressing said arms independently upward against suspended conductors, and separate flexible conductors extending between the contact devices carried by the arms and connected to fixed terminals of the motor-circuit.

20. In a double suspended conductor system the combination of a pair of arms, vertical and transverse axes for said arms, upon which they are mounted at their lower ends, tension-springs for imparting an upward tendency to said arms independently, and self-adjusting and locking connections between the inner ends of said springs and a support, whereby the tension of the springs may be adjusted by moving the arms away from their operative position.

21. In a double suspended conductor system, the combination of a block Q, mounted upon a vertical pivot, transverse arms, contact carrying-arms hinged thereupon, and tension-springs upon the arms, the outer ends of said springs engaging the contact-carrying arms and their inner ends being held by detent mechanism connected to said springs and engaging detents carried by the block Q, substantially as described.

409,157. HARMONIC TELEGRAPHY. FRANÇOIS VAN RYSSELBERGHE, Brussels, Belgium, assignor to the Phono-Multiplex Telegraph Company, Baltimore County, Md. Filed July 26, 1888. Serial No. 281,077. (No model.)

Claim.—1. In a tone or harmonic telegraph, a magnet controlled by main-line currents, and a series of sectors adjustable to vibrate at different rates arranged in proximity to and operated by said magnets, substantially as described.

2. In a tone or harmonic telegraph, a magnet controlled by main-line currents, a series of sectors adjustable to vibrate at different rates arranged in proximity to and operated by said magnet, contact devices carried by the sectors, and adjustable contact devices arranged to make contact with the first contact devices, substantially as described.

3. In a tone or harmonic telegraph, a magnet operated by main-line currents, a series of sectors adjustable to vibrate at different rates operated thereby carrying contact-pieces, and a series of levers carrying other contact-pieces arranged to co-operate therewith, substantially as described.

4. In a tone or harmonic telegraph, a magnet controlled by main-line currents and a series of vibrators operated thereby, the vibrators being provided with adjustable weights to regulate their rates of vibration, substantially as described.

5. In a tone or harmonic telegraph, the combination, with a series of vibrators carrying contact-pieces, of a series of levers also carrying contact-pieces, a series of arms forming fulcra for said levers, and adjusting devices for regulating the contacts, substantially as described.

6. In a tone or harmonic telegraph, a magnet consisting of a central core surrounded by a main-line coil, and an exterior rim and a series of vibrators secured to said rim and extending in proximity to the core, substantially as described.

7. In a tone or harmonic telegraph, a magnet having a central core and an exterior rim, a series of vibrators carrying contact-pieces secured to the rim, arms also secured to the rim, and a series of levers supported upon said arms carrying contact-pieces, substantially as described.

8. In a tone or harmonic telegraph, the combination, with a series of vibrators carrying contact-pieces, of arms supported above the vi-

brators, levers carrying contact-pieces supported on said arms, and adjusting-slides secured to said arms, substantially as described.

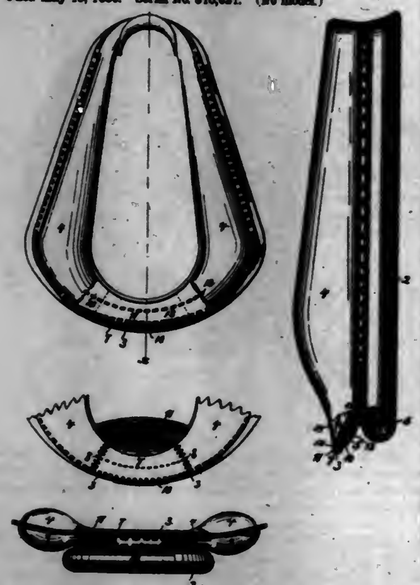
9. In a tone or harmonic telegraph, the combination, with the vibrators carrying contact-pieces, of the levers also carrying contact-pieces on their short arms and having adjusting devices operating upon their long arms, substantially as described.

10. In a tone or harmonic telegraph, the combination, with a magnet operated by main-line currents, of a coil connected with the magnet operated by a local current creating a field of force, and a series of sectors arranged to be operated by said magnet, substantially as described.

11. In a tone or harmonic telegraph, a magnet having a differentially-wound main-line-circuit coil and a local coil, and a series of vibrating devices arranged to be operated by said magnet, substantially as described.

12. In a tone or harmonic telegraph, the combination, with a transmitter arranged to send a series of varying predetermined signals over the line, of a receiving-instrument or analyzer consisting of a magnet operated by the main-line currents, and a series of sectors operated by said magnet, substantially as described.

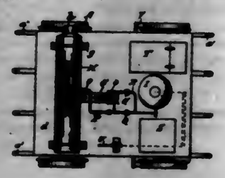
409,158. HORSE-COLLAR. JOHN B. CONNOLLY, Minneapolis, Minn. Filed May 13, 1889. Serial No. 310,621. (No model.)



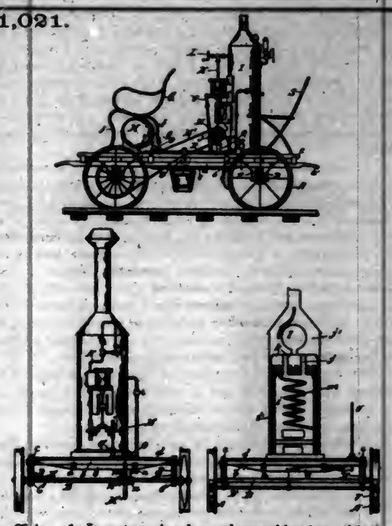
Claim.—A horse-collar comprising the rim 2 and shoulder-pieces 3, the liners 4, and a throat portion having a filling of straw extending across through the throat portion from one liner to the other, the inside throat-piece 7 arranged between and whipped to the liners 4, the outside throat-piece extending across from one liner to the other and covering the joints of the inside throat-piece, the central piece 10, covering the ends of the pieces 3, and a series of quilting-stitches passing through said throat portion, all substantially as described.

REISSUES.

11,021. STEAM HAND CAR. TIMOTHY MORRISSEY and JOHN DOYLE, Ionia, Mich., assignors to the Ionia Steam Hand Car Company, same place. Filed June 27, 1889. Serial No. 315,819. Original No. 400,408, dated Mar. 26, 1889.



11,021.



Claim.—1. In a steam hand-car, the combination, with the platform F and running-gear of the car, of the boiler I, the engine and the crank-shaft J, secured upon the side thereof and above said platform, and gearing for transmitting motion from crank-shaft to said running-gear, substantially as described.

2. In a steam hand-car, the combination, with the platform F and running-gear of the car, of the boiler I, the engine secured upon the side thereof and provided with a crank-shaft J, having a sprocket-wheel M, the sprocket-wheel M^3, secured to the front axle of said running-gear, and the drive-chain M', substantially as described.

3. In a steam hand-car, the combination, with the platform F and the running-gear of the car, of the boiler I, the engine secured upon the side thereof and provided with a crank-shaft J, having a sprocket-wheel M, the sprocket-wheel M^3, secured to the front axle of said running-gear, the drive-chain M', and the idlers O and O', substantially as described.

4. In a steam hand-car, the combination, with the platform and car, of the generator I, supported on the rear end thereof, the engine mounted on the front side thereof and having its crank-shaft J in proximity to the platform, the sprocket-wheel M, mounted on said shaft, the sprocket-wheel M^3, mounted on the front axle of the car, the drive-chain M', and the idlers O and O', the latter having a yielding connection with the platform, substantially as described.

5. In a steam hand-car, the combination, with the platform F, the running-gear of the car, the boiler I, the engine, and the crank-shaft J, secured upon the front side thereof and above said platform, of chain-gearing for transmitting motion from said crank-shaft to said running-gear, substantially as described.

6. The combination, with a car provided with a platform F, constructed substantially as described and mounted on springs E, of the seat G, supported on the front end of said car, the water-tank H, secured under said seat, the boiler I, mounted on the rear end of the car, the engine mounted upon the front side of the boiler and with its crank-shaft in proximity to the platform of the car, the sprocket-wheel M, mounted on said shaft, the sprocket-wheel M^3, mounted on the front axle of the car, the drive-chain M', the fixed idler O, and the idler O', secured in sliding bearings and provided with the spring o, substantially as described.

7. In a steam hand-car, the combination, with the platform F, the running-gear of the car, the boiler I, the engine secured upon the front side thereof and provided with a crank-shaft J, and gearing for transmitting motion from said crank-shaft to said running-gear, of the springs E, for yieldingly supporting said platform, the water-tank H, the feed-pipe P, the hand-pump Q, the branch pipe R, and the steam-pump Q', substantially as described.

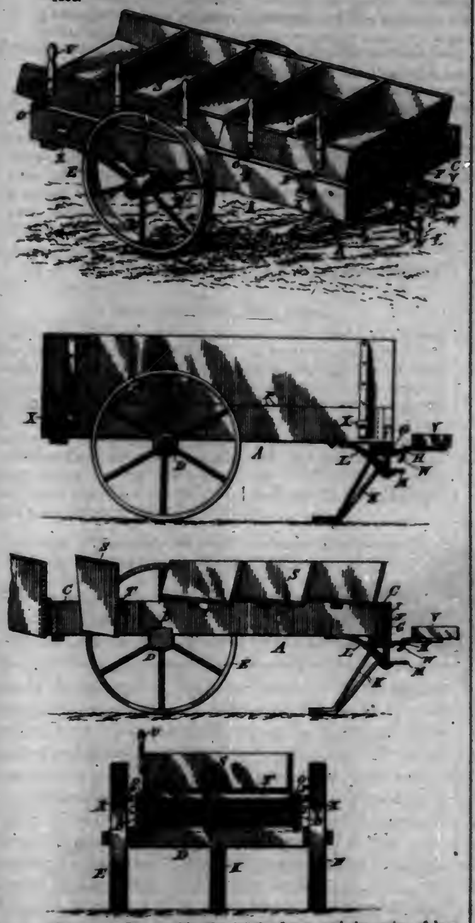
8. In a steam hand-car, the combination, with the platform F, the running-gear of the car, the boiler I, the engine and the crank-shaft J, secured upon the front side thereof and above said platform, and chain-gearing for transmitting motion from said crank-shaft to said running-gear, of the springs E, for yieldingly supporting said platform and the parts mounted thereon, substantially as described.

9. In a steam hand-car, the combination, with the platform F, the running-gear of the car, the boiler I, the engine secured upon the front side thereof and provided with a crank-shaft J, and gearing for transmitting motion from said crank-shaft to said running-gear, of the water-tank H, the hand-pump Q, the steam-pump Q', and the pipes connecting said tank and pumps, substantially as described.

10. In a steam hand-car, the platform F, constructed of the longitudinal bed-timbers *a*, having the handles *a'*, the transverse timbers *b*, the longitudinal timbers *c*, the flooring *d*, the transverse truss-rods *e*, and the longitudinal truss-rods *e'*, all securely fastened together, whereby said platform is constructed of great strength combined with lightness, substantially as described.

11. The herein-described hand-car, comprising the following parts: the platform F, the running-gear of the car, the boiler I, water-tank H, feed-pipe P, hand-pump Q, branch pipe R, steam-pump Q', the engine secured to the front side of said boiler and provided with the crank-shaft J, gearing for transmitting motion from said crank-shaft to said running-gear, the brake mechanism U and V, the coal-bunker T, and the seats G and S, substantially as described.

11,022. TRUCK. EDWARD F. SCHOLDER, Fort Scott, Kans. Filed Feb. 6, 1889. Serial No. 298,936. Original No. 367,741, dated Aug. 14, 1888.



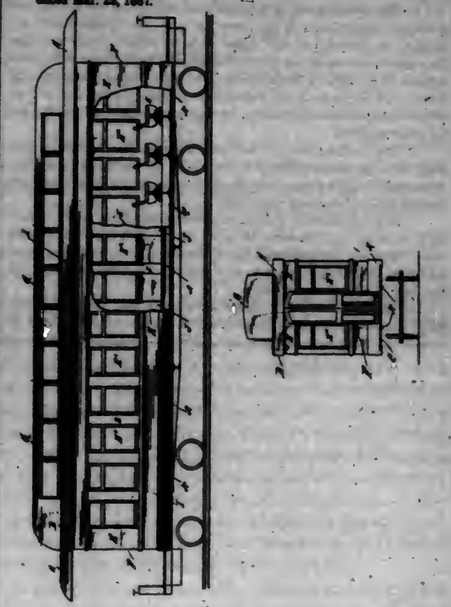
Claim.—1. The combination of the frame and the series of hoppers pivoted on the frame, the said hoppers having their front and rear sides inclined, the front side of one hopper resting against and closing the rear side of the next adjacent hopper, as set forth.

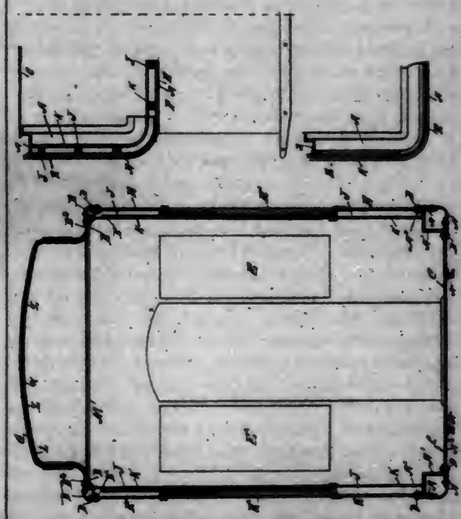
2. The truck having the supporting-wheels E mounted at a suitable distance in the rear of center thereof, and provided at its front end with a pivoted trailing support, substantially as described.

3. The combination, in a truck, of the frame having the supporting-wheels E and provided at its front end with the pivoted trailing support having the ear M, adapted to receive a whiffletree, and the tongue or shaft having the hook engaging the bracket or plate at the front end of the frame, substantially as described.

4. The combination, in a truck, of a frame having the bearings P in its sides and the hoppers having the trunnions engaging the said bearings, the said hoppers being provided with the standards U, substantially as described.

11,023. RAILWAY-CAR. CHESTER W. M. SMITH, San Francisco, Cal. Filed May 20, 1889. Serial No. 312,096. Original No. 360,040, dated Mar. 22, 1887.





Claim.—1. The combination, in a metallic railway-car, of tubular sills arranged one at each lower corner and a single-thickness metal flooring secured to said sills, substantially as and for the purposes specified.

2. The combination, in a metallic railway-car, of tubular sills arranged at the respective lower corners thereof and single-thickness side plates secured to the said sills, substantially as and for the purposes specified.

3. The combination, in a metallic railway-car, of tubular sills ar-

ranged at the respective lower corners, tubular beams arranged at the respective upper corners, and single-thickness side plates secured at the bottom to the said sills and at the top to the said beams, substantially as and for the purposes specified.

4. The combination, in a metallic railway-car, of tubular sills at the lower corners thereof and single-thickness floor-plates and side plates secured, respectively, to the said sills, substantially as and for the purposes specified.

5. The combination, in a metallic railway-car, of the tubular sills arranged, respectively, at the lower corners, the tubular beams arranged, respectively, at the upper corners thereof, single-thickness floor-plates secured to the respective sills, single-thickness side plates secured at the bottom to the tubular sills and at the top to the tubular beams, and single-thickness roof-plate bent into proper form and secured to the respective tubular beams, substantially as and for the purposes specified.

6. The combination, in a car constructed wholly of metal, or partially of metal and partially of wood, of the sills and beams or girders composed of angle-plates bent so as to form double horizontal and vertical lips or flanges, as described.

7. The combination, in a car constructed wholly of metal, or partially of metal and partially of wood, of the iron sheet or flooring bolted between the horizontal lips or flanges of the sills, the edges of said sheet or floor extending to or nearly to the outer plates of the sills, in the manner described.

8. The combination, in a car constructed wholly of metal, or partially of metal and partially of wood, of the side walls or sheets E, bolted or riveted between the lips or flanges of the sills and the lips or flanges of the beams or girders, in the manner set forth and specified.

9. The combination, in a car constructed wholly of metal, or partially of metal and partially of wood, of the metallic roof G, bolted or riveted between the lips or flanges of the inverted beams or girders B B', constructed and arranged substantially in the manner herein set forth and specified.

10. In a railway-car, the ends of the side sheets or walls bent around against the ends of the sills and beams or girders to form the corners and ends of the car, in the manner described, when continuous or extended sheets are employed, or the separate end sheets or plates bent so as to form the corners and front of the car-body and lapped and riveted to the said side sheets, as described.

11. The combination, in a car constructed wholly of metal, or partially of metal and partially of wood, of the upright or vertical posts resting upon and bolted to the sills and beams or girders, or with the lower ends of said posts mortised into the sills, as specified, for the purposes set forth.

12. The method herein described of forming sills, beams, or girders for railway cars and other structures where sheets of metal are to be vertically and horizontally united by bolts or rivets, consisting of two metal plates, one of which is bent at right angles and the other plate bent to a right angle, and the edge of each member bent to a right angle and placed parallel to the outer plate, whereby the two series of vertical and horizontal lips, laps, or flanges are formed for bolting or riveting vertical and horizontal connecting-sheets, as described.

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DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Eastern District of Michigan.

THE CONSOLIDATED ROLLER MILL COMPANY *v.* COOMBS.

Decided July 22, 1889.

1. PRELIMINARY INJUNCTION—STAY OF.
It is well settled that while a patent may be adjudged valid and the defendant an infringer the award of a preliminary injunction is purely a matter of discretion, and courts are in the habit of withholding it upon such terms as to the giving of a bond and the like as may seem just and equitable, having regard to the comparative injury that will result to the parties by granting or withholding it.

2. INJUNCTION AFTER FINAL DECREE—SAME.
The power of the court to stay an injunction, even after final decree, not denied.

STATEMENT OF THE CASE.

Plaintiff obtained against the defendant the usual decree in patent cases for an injunction against further infringement and a reference to a master to compute damages. Defendant moved to stay the issuing of the injunction upon the ground that the plaintiff was not a manufacturer, but derived its profits from selling or licensing its machine, and that the damages to defendant by stopping his mill would be out of all proportion to the amount of plaintiff's license or to any damages that would be occasioned to it by defendant's continued use of machines.

Messrs. Parkinson & Parkinson for the plaintiff.
Mr. R. Mason for the defendant.

BROWN, *J.*:

We are asked by this motion to determine whether, after an adjudication adverse to the defendants upon the merits of a patent case, we ought to stay the issue of an injunction until final decree. So far as preliminary injunctions are concerned it is entirely well settled that while the patent may be adjudged valid and the defendant an infringer the award of an injunction is purely a matter of discretion, and courts are constantly in the habit of withholding it upon such terms as to the giving of a bond and the like as may seem just and equitable, having regard to the comparative injury that will result to the parties by granting or withholding it. (*Parker* v. *Sears*, 1 Fish., 94; *Howe* v. *Morton*, 1 Fish., 486; *Morris* v. *Lowell Manufacturing Co.*, 3 Fish., 67; *Tracey* v. *Torrey*, 2 Blatchf., 275; *Potter* v. *Whitney*, 1 Lowell, 87; *Hoe* v. *Boston Daily Advertiser Co.*, 14 Fed. Rep., 914; *Forbush* v. *Bradford*, 1 Fish., 317.)

After an adjudication upon the merits the case becomes somewhat complicated by the provisions of the Constitution and statutes which secure to the inventor "the exclusive right to his discovery." If this right be "exclusive," it is difficult to see how the court can limit or impair it by requiring the patentee to accept anything less than the complete monopoly which the law awards him. While he may not be a manufacturer himself, and may derive his sole profit from licensing others to use his device, still such licenses are entirely voluntary upon his part, are completely within his own control, and the courts have, strictly speaking, no power to demand of him that he shall license the defendants to use his machine, as they are enabled to do indirectly by refusing an injunction, upon requiring a bond to pay the amount of the license or such damages as he may have suffered by defendant's use of his machines. If this, then, were a final decree, we should have no hesitation in denying this motion to stay the injunction unless immediate notice were given of an appeal, when the provision of the ninety-third rule would attach, and the staying of an injunction would become a matter of discretion, to be determined by the facts of each particular case.

It has undoubtedly been the practice in a few of the circuits to stay an injunction in certain cases where an appeal is contemplated and defendant would be irreparably injured, and where public interests are involved and the people are likely to be injured by denying them the use of plaintiff's machine there can be no question as to the propriety of such action. (*Bliss* v. *City of Brooklyn*, 4 Fish., 597; *McElroy* v. *Kansas City*, 21 Fed. Rep., 257; *Ballard* v. *City of Pittsburg*, 12 Fed. Rep., 783.)

A reference to some of the leading cases will show under what circumstances it has been the practice of the courts in these districts to suspend an injunction after an adjudication upon the merits. In *Barnard* v. *Gibson* (7 How., 650) the Supreme Court indicated that the injunction ought to be suspended where defendant had invested many thousand dollars in machinery which by such procedure became useless and their right to run the machines would expire in the course of a few months. The Court remarked that unless the defendants were in doubtful circumstances and could not give bond to respond in damages should the right of the plaintiff be finally established they supposed the injunction would be suspended. In *Sanders* v. *Logan* (2 Fish., 167) Mr. Justice Grier held that neither an injunction nor an accounting was necessary or proper, because the only injury to the plaintiff's rights consisted, not in using his invention, but in failure to pay the price of the license. The learned judge uses strong language in this connection, and the opinion undoubtedly lends considerable support to the defendant's position in this case. In

Dorsey Harvester Rake Company v. *Marsh* (6 Fish., 387) Judge McKennon, of the third circuit, withheld an injunction upon filing a bond, upon the ground that the plaintiff, not being a manufacturer, would be adequately protected by the payment of a just compensation for the use of his invention, and the defendants had an extensive establishment and a large capital invested in it for the manufacture of machines, and seemed to have conducted their business under the impression that it was no invasion of the rights of others. "A sudden stoppage of it would be disastrous to them and would not benefit the plaintiff." In its facts the case is readily distinguishable from the one under consideration. In the same circuit, in *McCrary* v. *Penn. Canal Company*, (5 Fed. Rep., 367,) an injunction was denied without discussion, upon the ground that much greater injury to the respondent than benefit to the complainant would result from it. We think these three cases may be regarded as establishing a rule in the third circuit somewhat at variance with those existing in most of the others. In *Hoe* v. *Knapp* (27 Fed. Rep., 204) Judge Blodgett denied an injunction, after entering the interlocutory degree, upon the ground that the owner of a patent had not after a reasonable time put it into use, holding, as a matter of law, that a patentee is bound either to use the patent himself or allow others to use it on reasonable or equitable terms. I find myself unable to concur in this view. A man has a right to deal as he chooses with his own. I know of no reason why a patentee is bound to make use of his own invention or to license others to use them any more than the owner of a manufacturing establishment is bound to run it for the benefit of his neighbors or employés. As observed in the earlier portion of this opinion, the question of licensing another to use an invention is one which the patentee alone has the right to answer, and courts cannot lawfully compel him to make use of his invention or to permit others to use it against his will.

We will now proceed to examine the authorities in the other circuits. In *Howe* v. *Newton* (2 Fish., 531) Judge Lowell, of the first circuit, held that the fact that plaintiff granted licenses and that defendant was not a maker and vender, but only a user, was, independently of the fact that the maker had not been sued, a circumstance to be taken into account—

but it has not been considered sufficient reason in this circuit to refuse the writ, excepting in combination with other circumstance s either of doubt as to title or of hardship in the operation of the injunction.

The defendant was restrained from using one boottree. It is but just to say that it appeared that no special damage would result to defendant by enjoining the machine. The case is not unlike the one under consideration. In *Potter* v. *Mack* (3 Fish., 428) Mr. Justice Swayne observed that when a patentee obtains a decree settling the right to an injunction the practice in all the circuits, as he had understood, was to make the injunction a part of the decree.

That is a right of the party unquestionably, unless there be shown some special grounds of peculiar hardship to the defendant. * * * There may be circumstances which would render that action proper; but I should not be willing to establish such a rule as general. * * * Again, too, as within my knowledge, the practice in all the other courts is adverse from that now sought to be established, and I should be reluctant to strike out a new course.

The Court found no special hardship in the case and ordered an injunction. (See, also, *Whitney* v. *Mowry*, (3 Fish., 175.) In *The Rumford Chemical Works* v. *Hecker* (11 O. G., 330) Judge Nixon, of New Jersey, refused to assent to the proposition that it had become the established practice in his circuit to stay injunctions until the coming in of the master's report.

No special practice [says he] has ever prevailed in this circuit, although sporadic instances may be found where the court has very properly listened to and heeded such applications. On the other hand, the ordinary practice is for an injunction, as a matter of course to follow a decree in favor of the complainant on the merits, unless the defendant is able to show the court such facts and circumstances existing in the case as make it manifest that the equities between the parties demand the withholding of the injunction until after an accounting has been had.

In *Brown* v. *Deere* (6 Fed. Rep., 487) the question has been discussed at length by Judge Treat, and the motion to suspend the injunction was overruled, although before the hearing defendants had entered into a large number of contracts to furnish their machines to agriculturists in several states, and there was no adequate time for them to reconstruct them so as to avoid the infringement without disappointing their customers and fastening large damages upon themselves for non-fulfillment of their contracts. The opinion is a very valuable and instructive one, and the question appears to have been fully considered by the court. In *Munson* v. *The Mayor* (19 Fed. Rep., 313) Judge Wheeler held, on a motion to suspend an injunction during the pendency of an appeal from a final decree, that it should not be suspended unless some extraordinary cause were shown to exist outside the rights of the parties established by the decree. The defendant in this case was the City of New York, and the patented device was a register to preserve for safety and convenience of reference paid bonds and coupons. The learned judge held that the interests of the public were not such as required protection by staying the injunction.

There is no case in the Supreme Court which throws much light upon this question, although in *Birdsell* v. *Shaliol* (112 U. S., 485) it is held that an infringer does not, by paying damages for making and using a machine in infringement of a patent, acquire any right himself to the future use of the machine.

On the contrary, [says the Court,] he may, in addition to the payment of damages for past infringement, be restrained by injunction from further use, and when the whole machine is an infringement of the patent be ordered to deliver it up to be destroyed.

In *Penn* v. *Bibby* (L. R., 3 Eq., 308) the Vice-Chancellor observed:

The patent is a continuing patent, and I do not see why the article should not be followed in every man's hand until the infringement is got rid of. So long as the article is used there is continuing damages. * * * As to the royalties, I cannot compel the plaintiff to accept the same royalty from these defendants as he received from others. I cannot in the decree do less than give the plaintiff his full rights, and I cannot bargain for what he may choose or may not choose to do.

The circumstances relied upon in this case in support of the motion are: That the plaintiff is not a manufacturer of these machines itself, but derives its sole profit from licensing others to use them; that the defendant is not a manufacturer, but uses one of these machines in a series of roller-mills, and that the issuing of this injunction would involve the stoppage of the entire series and a large expense to him in purchasing a new mill, or in so reconstructing this one as to avoid the use of plaintiff's invention. The counter affidavits, however, satisfy me that his estimate of damages is greatly exaggerated, and that the change could be made with but little expense or inconvenience and without stopping his establishment. It is incredible that an accident, which is liable to occur at any time, should involve the disastrous consequences set forth in the defendant's affidavits. We are willing, however, that he should have 20 days to make the necessary changes. At the expiration of this time the usual injunction will issue, to stand until the final decree, after which, if an appeal be taken, the propriety of continuing the injunction under the ninety-third rule will be considered by the court.

We do not wish to be understood as denying the power of the court to stay an injunction, even after final decree, and if this writ involve the stoppage of a manufactory in the operation of which a large number of people were interested the question might be determined by different considerations.

The motion is denied.

U. S. Circuit Court—Northern District of New York.

CONSOLIDATED OIL WELL PACKER COMPANY *v.* GALEY.

Decided June 7, 1889.

1. CROSS—PACKING FOR OIL-WELLS.
The second claim of reissued Letters Patent No. 7,772, granted July 3, 1877, upon the application of John R. Cross, for an improvement in packing for oil-wells, obtained 12 years after the date of the original patent, is an undue expansion of the first claim of the original patent

2. ROBINSON AND STRONG—PACKING FOR DEEP WELLS.
Reissued Letters Patent No. 8,786, granted July 1, 1879, to John K. Robinson and D. A. Strong, for packing for deep wells, *Held* to be an unwarranted enlargement of the original patent. The thing which was the subject of the original patent and the thing which it is desired to bring within the terms of the reissue are entirely dissimilar.

3. MARTIN—DEEP-WELL PACKING.
The fourth claim of reissued Letters Patent No. 7,244, granted July 25, 1876, to Francis Martin, for deep-well packing, compared with the second claim of the original patent, and *Held* to be not an enlargement or expansion of the original claim, but a statement in more clear and precise language of what is contained in the modified language of the original claim. The question of patentable novelty not considered.

Mr. H. H. Doubleday and *Messrs. Frost & Coe* for the plaintiff.

Mr. James G. Boyce for the defendant.

SHIPMAN, *J.*:

This is a bill in equity to restrain the defendant from the alleged infringement of Reissued Letters Patent No. 7,772, dated July 3, 1877, to John R. Cross, assignor to H. H. Bliss; of Reissued Letters Patent No. 8,786, dated July 1, 1879, to John K. Robinson and David A. Strong, and of Reissued Letters Patent No. 7,244, dated July 25, 1876, to Francis Martin, assignor to Henry H. Doubleday, all being for improvements in packing for oil or deep wells. The original patents were issued as follows: the Cross patent upon February 7, 1865; the Robinson and Strong patent upon February 6, 1866, and the Martin patent upon September 12, 1865.

The Cross and Martin patents were before me in the case of the *Consolidated Well Packer Co.* v. *Eaton, Cole & Burnham Co.* in the District of Connecticut, and the alleged infringing device in this case is believed to be substantially the same which was the subject of that suit. The opinion in that case (12 Fed. Rep., 865) states the facts relating to the history of the art, the character of the improvements which were the subject of the Cross and Martin patents, the several claims which were said to be infringed, the claims of the original Cross patent, the reason why all the claims of the reissued Cross patent were deemed to be invalid unless limited to the scope of the original claims, in which case there was no infringement, and the fact that the validity of one claim only of the reissued Martin patent was in dispute. The discussion in the present case was confined, by agreement of the parties, to the consideration of the validity of the reissues, and all other questions which may arise were reserved for a future hearing.

It is earnestly contended by the plaintiff that the second claim of the reissued Cross patent was not an undue expansion of the first claim of the original patent. The question was succinctly stated and answered in the decision in the Connecticut case, and little is to be added to what was there said. The first claim of the original patent was carefully limited to a packer in which the rings which compress or relax the packing material are operated from the top of the well by screw-rods. The second claim of the reissue omits that limitation, and thus eleven years after the original patent was granted its scope was greatly enlarged. It is not important that other and different means by which the rings might be operated were stated in the original specification, because these means were not claimed, and the invention as patented was limited to the use of screw-rods and their equivalent and so remained for a long period.

The Robinson and Strong reissue, which was granted 13 years after the date of the original patent, is of the same expanded character. The packer which was described in the original patent was constructed as follows: A cone was placed upon the end of one of the sections of the tubing, which could be a part of the tube or could be attached thereto. A concave made of elastic material was attached to the upper tubing, which, when the upper tubing reached the cone, was by its aid pressed out against the sides of the well.

The claims were as follows:

1. The tubes B and E, forming a telescopic joint, in combination with the flexible packing G, substantially as described.
2. In combination with a telescopic joint, the conical enlargement A, slots F, and screws or pins D, substantially as described.
3. The cone A and flexible packing G, arranged and operating substantially as described, forming a packing both for the well and the tube.

The first claim, unless the tube B should be construed to mean the tube with the attached cone, was larger than the invention. The specification of the reissue was rewritten and expanded. The cone became an enlargement or unyielding band or ring and the concave became a ring or band of elastic material which, as the upper section moved downward, was compressed or expanded, and this, it was said, was only one form of the invention. The first three claims of the reissue are capable of including a large variety of devices.

The claims are as follows:

1. In combination with the eduction-tube of an oil or other deep well, an outer tubular connection attached to the tubing in such manner that the upper section can move vertically, and a rubber annulus supported against downward thrust by the outer tubular connection and pressed against the wall of the

well by the weight of the vertically-moving eduction-tube, substantially as set forth.

2. An eduction-tube of an oil or other deep well, made in two sections connected with each other by means of an outer tubular connection in such manner that the upper section can slide vertically, and the rubber annulus surrounding the tube supported against downward thrust by the lower tube-section and pressed against the wall of the well by the upper tube-section, substantially as set forth.

3. In combination with the eduction-tube of an oil or other deep well, which is composed of two sections, an elastic or flexible packing and a telescopic coupling which is provided with means, substantially as described, whereby, when the upper section is removed from the well, the lower section will be carried up with it.

4. An eduction-tube of an oil-well or other deep well, composed of two sections coupled together in such manner that the upper section can slide vertically relative to the lower section, in combination with a flexible ring or band supported upon one of the tube-sections, and an unyielding wedge-shaped enlargement which presses the packing against the wall of the well when the upper section of the tubing moves downward relative to the lower section, substantially as set forth.

For these claims the device which was clearly described in and was the only subject of the original specification is not described. The cone and the concave packing have both disappeared. In place of the cone the first claim has "an outer tubular connection attached to the tubing in such manner that the upper section can move vertically," and has in place of the concave packing "a rubber annulus supported against downward thrust by the outer tubular connection." Each of the other claims is a marked example of the same attempt to expand a narrow patent and a narrow invention so as to cover a broad territory. The thing which was the subject of the original patent and the thing which it is desired to bring within the terms of the reissue are entirely dissimilar.

The important part of the Martin invention was—

a series of flat springs arranged lengthwise in the form of a cylinder about a well-tube, the latter being divided or made in two sections within the points inclosed by the springs and their ends connected by a coupling in such a way as to make a sliding joint.

The springs were surrounded by a cylinder of gutta-percha or other elastic material. The upper end of the coupling-tube was enlarged on the inside so as to form an inner circumferential rim which slides along the outside of the upper section, but is prevented from coming off the same by a rim surrounding the lower end of said section, and then the lower end which contains the packing is removed from the well.

The fourth claim of the reissue is the only one which is said to have been infringed. It is admitted that the other claims are an improper enlargement of the original patent, unless they shall be limited to the same construction of springs or leaves, in which case there was no infringement. The point at issue is whether the fourth claim of the reissue and the second claim of the original patent describe the same invention. For the purpose of thoroughly comparing the respective claims, I quote the first and second claims of the original patent and the fourth claim of the reissue, which are as follows:

1. In packing the tubes of oil and other deep wells, connecting the ends of the packing device or apparatus to separate or disconnected sections of the well-tube, so as to inclose the joint within said packing device, substantially as above described.

2. Connecting such separate sections of the well-tube to each other by means of a coupling one end of which slides on one of the sections, substantially as described.

4. In combination with the eduction-tube of an Artesian well, an elastic or flexible packing, a rim or shoulder upon the eduction-tube, and a corresponding rim upon the packer-support, whereby, when the eduction-tube is removed from the well, the rim or shoulders shall engage with each other and withdraw the packer-support, substantially as set forth.

The second claim of the original is for that portion of a packing device for tubes of oil-wells which consists of separate sections of the well-tube connected together by means of the described coupling, and does not describe any particular kind of packing. The claim has for its elements an elastic packing, separate tube-sections, one being the upper tube and the other the packer-support, connected together by the described rims or coupling. The fourth claim of the reissue is not an enlargement or expansion of the second claim of the original, but states in more clear and precise language what is contained in the inartificial language of the original claim. The infringing device would have infringed the terms of that claim. It must be remembered that upon this hearing the validity of the reissues as compared with the original patents is solely in issue. The novelty or the patentability of the various devices or parts of devices are not now the subject of consideration.

The defendant insists that if the complainant is entitled to a decree upon this claim it must be upon condition of a disclaimer, so as to limit the patented invention to that which was contained in the original patent and without costs. It is not now necessary to consider the question of costs, because upon a hearing of the facts the court may be of opinion that the invention of the fourth claim has no patentable novelty and that the bill should be dismissed.

U. S. Circuit Court—Eastern District of Pennsylvania.

DOBSON *et al. v.* GRAHAM.

Decided June 25, 1889.

INFRINGEMENT CONDUCTED SECRETLY.

In a suit for an alleged infringement conducted secretly in a manufactory reliable evidence tending to show such infringement must be produced. The plaintiff cannot depend upon the chance of obtaining evidence to support the charge from the defendant and his workmen or from an inspection of his machinery.

Mr. Hector T. Fenton for the complainants.

Messrs. Strawbridge & Taylor for the defendant.

BUTLER, *J.*:

These motions must be dismissed, for the reasons stated in disposing of similar motions at an earlier period in the case. As then said, the plaintiff filed his bill charging infringement of his rights without having any positive knowledge upon the subject. He seems to have relied on the chance of obtaining evidence to support the charge from the defendant and his workmen. Such a case is not entitled to the special favor of a court of equity. The defendant's business is conducted in private, for the purpose of securing to himself (as he asserts) the use of his peculiar machinery and methods of manufacture. These secrets of his business, if they cover nothing unlawful, are his property and as well entitled to protection as the rights secured by the plaintiffs' patent. His workmen are bound by express contract not to divulge them. In the absence of such contract equity would imply an obligation of equal force. If it were shown that these secrets are used as a cloak to cover an invasion of the plaintiffs' rights, or if there was reliable evidence tending to show it, and justifying a belief that they are so used, the motions would be sustained. But there is no such evidence before us. It appears that the defendant employs certain workmen who were formerly employed by the plaintiff; that these workmen are familiar with the plaintiff's patented machinery, and that they aided in constructing the defendant's. This is substantially all. These workmen have been permitted to answer questions directed toward a comparison of the defendant's machinery with the plaintiff's, except where the answers would tend to describe wherein the former differs from the latter, and thus to describe the peculiarities of the defendant's machinery. The court cannot properly compel them to go further, nor, in this state of the facts, compel the defendant to submit his machinery to inspection.

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The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

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District of Columbia	4	.....	Oregon	3	.....
Florida	.....	.....	Pennsylvania	54	3
Georgia	1	.....	Rhode Island	6	1
Idaho Territory	.....	.....	South Carolina	.....	.....
Illinois	40	.....	Tennessee	2	.....
Indian Territory	.....	.....	Texas	7	.....
Indiana	15	.....	Utah Territory	2	.....
Iowa	5	.....	Vermont	2	.....
Kansas	5	.....	Virginia	4	1
Kentucky	9	.....	Washington Territory	.....	.....
Louisiana	1	2	West Virginia	2	.....
Maine	3	.....	Wisconsin	12	.....
Maryland	11	1	Wyoming Territory	.....	.....
Massachusetts	26	3	United States Army	.....	.....
Michigan	16	.....	United States Navy	.....	.....
Minnesota	11	.....			
Mississippi	1	.....	Total to citizens of the United States	460	24
Missouri	17	3			
Montana Territory	.....	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Labels.	Countries.	Patents and Designs.	Trade-Marks and Labels.
Argentine Republic	.....	.....	Germany	8	1
Australia	.....	.....	Ireland	.....	.....
Austria-Hungary	6	.....	Java	.....	.....
Belgium	.....	.....	Italy	.....	.....
Bermuda	.....	.....	Mexico	.....	.....
Brazil	.....	.....	New Zealand	.....	.....
Canada	8	.....	Norway	.....	.....
Chili	.....	.....	Scotland	1	.....
Costa Rica	.....	.....	Spain	.....	.....
Cuba	.....	.....	Sweden	.....	.....
Curaçoa	.....	.....	Victoria	.....	.....
Denmark	.....	.....			
England	25	1	Total to citizens of foreign countries	51	2
France	5	.....			

DESIGNS.

19,269 and 19,270.—CLOCK-CASE.—*George Ward Bidwell*, New Haven, Conn. Applications filed May 10, 1889. Serial Nos. 310,347 and 310,348. Term of patents 7 years.

19,271.—BADGE.—*Joseph K. Davison*, Philadelphia, Pa. Application filed June 11, 1889. Serial No. 313,929. Term of patent 14 years.

19,272.—ORNAMENTATION OF HARDWARE.—*John E. Harbster*, Reading, Pa., assignor to *The Reading Hardware Company*, same place. Application filed July 3, 1889. Serial No. 316,444. Term of patent 7 years.

19,273 and 19,274.—DISH.—*Charles Ed. Haviland*, Limoges, France. Applications filed January 5, 1889. Serial Nos. 295,569 and 295,570. Term of patents 14 years.

19,275.—ELECTRIC-LIGHT SHADE.—*Andrew Howard*, Wilkinsburg, Pa. Application filed July 11, 1889. Serial No. 317,218. Term of patent 3½ years.

19,276.—HANDLE FOR TABLE-WARE.—*Robert Henry Klingel*, Bridgeport, Conn., assignor to *The Holmes & Edwards Silver Company*, same place. Application filed July 24, 1889. Serial No. 318,556. Term of patent 14 years.

19,277 and 19,278.—FOUNTAIN-PEN OR PENCIL HOLDER.—*Edward Todd, Jr.*, New York, N. Y., assignor to *Edward Todd & Co.*, same place. Applications filed July 10, 1889. Serial Nos. 317,053 and 317,054. Term of patents 7 years.

19,279.—ELECTRIC-LIGHT SHADE.—*Joseph Webb*, Beaver, Pa. Application filed July 11, 1889. Serial No. 317,219. Term of patent 3½ years.

19,280.—FLOWER-POT.—*John G. Whilldin*, Philadelphia, Pa. Application filed July 12, 1889. Serial No. 317,332. Term of patent 14 years.

19,281.—GAS-STOVE.—*Hiram G. Wilson*, Minneapolis, Minn., assignor to *John C. Higdon*, Washington, D. C. Application filed July 23, 1889. Serial No. 318,431. Term of patent 14 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,936.—BOOTS AND SHOES.—*American Shoe Company*, Lynn and Boston, Mass. Application filed July 19, 1889. Used since July 1, 1887.
"The word 'NATIONAL.'"

16,937.—HORSE-BLANKETS.—*Wm. Ayres & Sons*, Philadelphia, Pa. Application filed July 8, 1889. Used since June, 1887.
"The word 'ELECTRIC.'"

16,938.—HORSE-NETS.—*Wm. Ayres & Sons*, Philadelphia, Pa. Application filed July 8, 1889. Used since November, 1887.
"The word 'CLIPPER.'"

16,939.—BLEACHED COTTON SHEETINGS.—*Amos N. Beckwith*, Providence, R. I. Application filed July 9, 1889. Used since October 29, 1874.
"The words 'ROCKLAND MILLS WATER TWIST.'"

16,940.—CHEWING-TOBACCO.—*Bitting & Hay*, Winston, N. C. Application filed June 26, 1889. Used since April 9, 1889.
"The words 'HENRY GRADY.'"

16,941.—RUBBER BOOTS AND SHOES AND ALL KINDS OF RUBBER AND OIL CLOTHING, ALSO RUBBER HOSE AND TUBING.—*Day Rubber Company*, St. Louis, Mo. Application filed June 22, 1889. Used since January 1, 1889.
"The representation of a swan and the words 'SWAN BRAND.'"

16,942.—CHECK-ROW CORN-PLANTERS.—*The H. P. Deuscher Company*, Hamilton, Ohio. Application filed June 22, 1889. Used since February 1, 1885.
"The word 'UNIVERSAL.'"

16,943.—WRITING-PAPER AND ENVELOPES.—*George H. Dickson's Sons*, New York, N. Y. Application filed July 15, 1889. Used since July 1, 1889.
"The words 'ROYAL PLATE.'"

16,944.—WRITING-INK.—*Charles Patton Dimitry*, New Orleans, La. Application filed July 19, 1889. Used since April 15, 1889.
"The representation of a hand holding a pen."

16,945.—CORSETS.—*J. Richd. Freud*, New York, N. Y. Application filed July 6, 1889. Used since January 1, 1889.
"The letters 'R. F.'"

16,946.—VELVETS AND PLUSHES.—*Peltzer Gebrüder*, Crefeld, Prussia, Germany. Application filed July 6, 1889. Used since February 1, 1889.
"The word 'CONSTELLATION.'"

16,947.—FLOUR.—*The Estate of George V. Hecker*, New York, N. Y. Application filed June 25, 1889. Used since March 14, 1889.
"The letters 'BB' arranged within a circle of medals."

16,948.—JUTE PRODUCTS, SUCH AS TWINE, BAGGING, CARPETINGS, OIL-CLOTH, AND THE LIKE.—*Chelsea Jute Mills*, New York, N. Y. Application filed July 24, 1889. Used since July 1, 1886.
"The representation of an arrow with the letters 'C J M' thereon."

16,949.—POWDERED LYE.—*E. Myers & Co.*, St. Louis, Mo. Application filed July 6, 1889. Used since October 4, 1888.
"The words 'MERRY WAR.'"

16,950.—MILK FOOD FOR INFANTS AND INVALIDS.—*Reed & Carnrick*, New York, N. Y. Application filed July 11, 1889. Used since February 12, 1889.
"The word 'LACTO-PREPARATA.'"

16,951.—PLAYING-CARDS.—*Robinson & Brandoo*, New Orleans, La. Application filed July 19, 1889. Used since November, 1888.
"The monogram 'R AND B.'"

16,952.—TOBACCO-PIPES.—*Ruth Pipe Company*, St. Louis, Mo. Application filed July 16, 1889. Used since June 1, 1888.
"The word 'CHAMPION.'"

16,953.—CURED TOBACCO.—*William H. Snow*, High Point, N. C. Application filed May 3, 1889. Used since September 10, 1887.
"The words 'MODERN BARN.'"

16,954.—CORSETS.—*K. B. Sonnehill & Son*, Baltimore, Md. Application filed July 8, 1889. Used since April 1, 1889.
"The words 'LEGAL TENDER.'"

16,955.—PUZZLE.—*Maurice Warnier*, New York, N. Y. Application filed April 19, 1889. Used since April 13, 1889.
"The words 'THE OLD CONTINENTALS.'"

16,956.—METALLIC TUBES OF ALL DESCRIPTIONS.—*The Weldless Steel Tube Co.*, Birmingham, county of Warwick, England. Application filed July 25, 1888. Used since 1874.
"The word 'WELDLESS.'"

16,957.—BRUSSELS CARPETS.—*Matthew J. Whittall*, Worcester, Mass. Application filed July 8, 1889. Used since January 1, 1886.
"The words 'VICTORIA BRUSSELS.'"

16,958.—FACIAL SOAP.—*John H. Woodbury*, New York, N. Y. Application filed June 3, 1889. Used since January 1, 1889.
"The representation of a human head and face minus the bust and neck."

LABELS.

5,999.—Title: "OUR NATIVE HERBS." (For a medicine.)—*A. O. Bliss*, Richmond, Va. Application filed July 29, 1889.

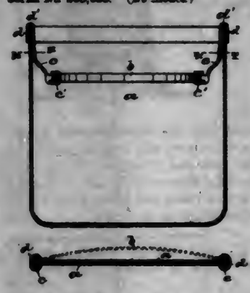
6,000.—Title: "MERCHANT'S ROOFING."—*Merchant & Co.*, Philadelphia, Pa. Application filed July 24, 1889.

6,001.—Title: "ONE (BAKER'S) DOZEN." (For safety-pins.)—*George Frost & Co.*, Boston, Mass. Application filed July 30, 1889.

PATENTS

GRANTED AUGUST 20, 1889.

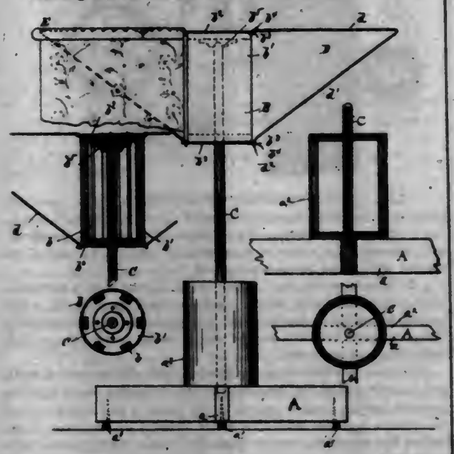
409,159. POUCH OR BAG. GEORGE R. ADAMS, Irvington, N. J. Filed Jan. 7, 1889. Serial No. 295,933. (No model.)



Claim.—1. A self-closing bag or pouch having a flexible mouth, having a spring arranged near said mouth and adapted to move in a horizontal plane when the ends of said mouth are pressed, said spring having arms at the ends thereof and extending up and engaging with the ends of the mouth of the bag to keep said mouth stretched longitudinally when in its normal position, for the purposes set forth.

2. A self-closing bag or pouch having a flexible mouth, having a spring arranged near said mouth adapted to move in a horizontal plane when the ends of said mouth are pressed, said spring having arms thereon and secured thereto by means of projections *c'*, said arms also being secured at the opposite ends thereof to the ends of the mouth of the bag by means of clamping-clips or metallic plates bent around the ends of the mouth of the bag and the arms on said spring, for the purposes set forth.

409,160. EXHIBITOR. CHARLES H. BACON, Danielsonville, Conn. Filed Aug. 27, 1888. Serial No. 283,949. (No model.)

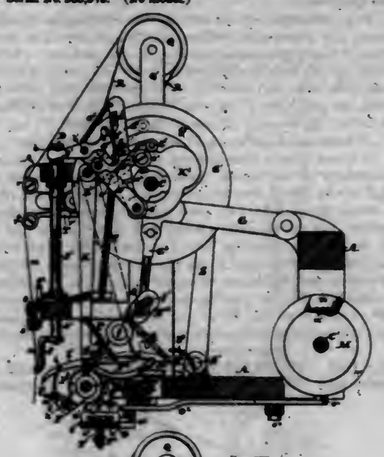


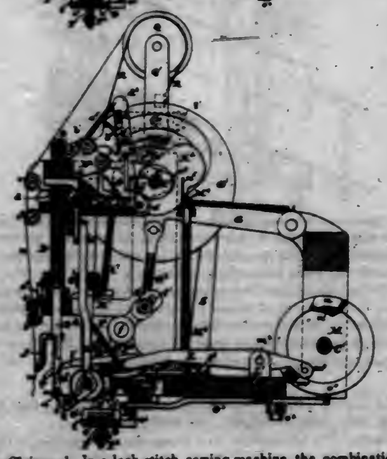
Claim.—1. As an improvement in show stands or racks, the combination of the vertical shaft, the upper revolving cylinder secured thereon, and the series of suspending-racks having upper and lower bent ends removably secured to the upper and lower ends of said cylinder, substantially as set forth.

2. As an improvement in show stands and racks, the upper revolving cylinder having upper and lower head-plates provided with apertures around their edges, and the series of suspending-racks composed of a single bent rod having hooked ends secured in said apertures, substantially as set forth.

3. The combination, with the vertical shaft and the upper cylinder, of the series of racks secured to said cylinder, and having upper horizontal portions, and the shoulders or U-shaped bars secured on the said horizontal portions of the racks, substantially as set forth.

409,161. SOLE-SEWING MACHINE. JOSEPH E. BERTRAND, Boston, assignor of one-half to Mellen Bray, Newton, Mass. Filed Sept. 17, 1888. Serial No. 285,575. (No model.)





Claim.—1. In a lock-stitch sewing-machine, the combination of

the oscillating needle and awl-carrier F, provided with the groove *j* and shoulder *j'*, the needle *i*, fitted to said groove *j*, the awl *i'*, provided with a plate-like shank i^2, having a thickness equal to the aggregate thickness of the body of said awl and the distance required between said awl and needle and provided with the slot i^3, the threaded stud *k*, and the nut *k'*.

2. In a lock-stitch sewing-machine, the combination of a fixed work-support, a presser-foot, a spring for pressing said foot upon the work, an oscillating curved awl and a barbed needle arranged side by side and parallel with each other and to enter the work from the side opposite to said presser-foot, the lever D', connected at one end to the upper end of the presser-foot rod and provided at its other end with two sets of ratchet-teeth b^2 and b^3, with the shoulders of their teeth opposed to each other or facing in opposite directions, the lever E, pawl *c*, and cam c^2, for locking said presser-foot, and the lever d^2, arm d^3, pawl *d'*, and the cam c^4, for lifting said presser-foot above the work when the work is to be fed.

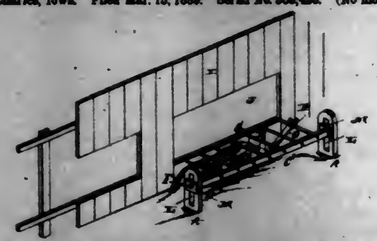
3. In a lock-stitch sewing-machine, the combination, with a circularly-curved barbed needle and a thread guide or carrier for carrying the thread into engagement with the barb of the needle after it has pierced the work, of the arm *l'*, provided with the hook l^2, the elbow-lever K, the revolving-cam K^2, the spring l^3, and the curved cam-plate l^4, all constructed, arranged, and operating substantially as and for the purposes described.

4. In a lock-stitch sewing-machine, the combination of the shaft F', the carrier-arm F, the curved needle *i* and awl *i'*, secured to said carrier side by side and arranged to be forced through the work from the same side, a pinion secured upon said shaft, a toothed segment engaging with said pinion and provided with a slotted arm, the link G^2, the lever G, truck f^3, and cam G', for oscillating said shaft and carrier, the levers H, H^2, and I, the rocker-shaft H^3, and cam I, for imparting to said shaft an intermittent reciprocatory motion, substantially as described.

5. In a lock-stitch sewing-machine, the combination of a shaft constructed and arranged to oscillate about its axis and to be moved endwise in its bearings, a carrier-arm secured upon said shaft, a barbed needle and an awl, both secured to said carrier-arm side by side, parallel with each other, and bent to a curve concentric with the axis of said shaft, the gear-wheel F^2, segment F^3, arm F^4, the lever G, the cam G', the rod G^2, the levers H, H^2, and I, the rocker-shaft H^3, and the cam I', all constructed and arranged substantially as described.

6. In a lock-stitch sewing-machine, the combination of an oscillating circularly-curved barbed needle and a circularly-curved awl arranged side by side in the same carrier-arm, parallel to each other, and to pierce the work from the same side, the loop-spreading finger *m*, mounted upon and revoluble with the hub of the needle and awl carrier, the lever L, provided with the loop-opening finger *m'* and pivoted in the swiveling stand L', the cams for imparting to said lever L both vertical and horizontal vibratory motions, the pivoted lever M', provided with the loop receiving and releasing finger n^2, the rocker-shaft M^2, the levers M^3 and M^4 n^3, and the cam c^3, all constructed, arranged, and operating substantially as and for the purposes described.

409,162. **DEVICE FOR FEEDING STOCK.** George Black, St. Charles, Iowa. Filed Mar. 15, 1889. Serial No. 303,426. (No model.)



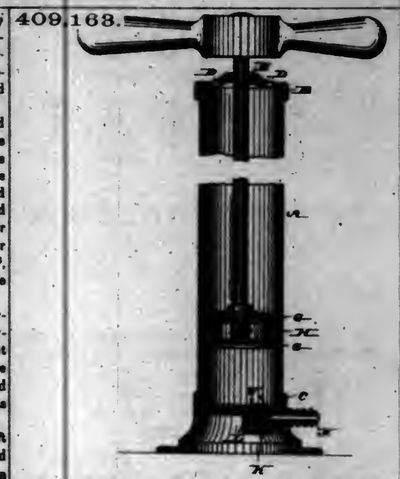
Claim.—1. The combination, with the posts having vertical slots, of the blocks mounted to slide vertically in the said slots, the swinging frames mounted in the said blocks, and a fence or barrier erected in front of the posts, substantially as set forth.

2. The combination of the posts or uprights, the swinging frames suitably mounted in the same and provided with transverse cross-bars, the forked props or supports suitably attached to the free edges of the swinging frames, and the fence or barrier erected in front of the posts, substantially as and for the purpose herein set forth.

409,163. **PUMP.** William Bonsil, Philadelphia, Pa. Filed Sept. 13, 1888. Serial No. 285,297. (No model.)

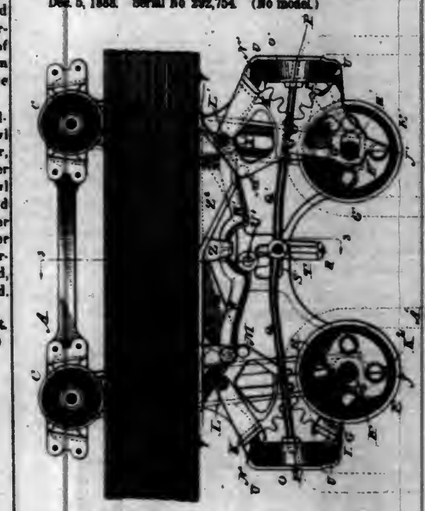
Claim.—The combination, in a pump, of a chamber having inlet-openings at the top and a valveless piston therein, the piston-head

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having a flexible cup, the depending wall of which is free to yield inwardly, so as to be in contact with the walls of the chamber during the downstroke and free therefrom on the upstroke, and a second chamber below said first chamber and in communication therewith and provided with a rising and falling valve which controls said communication, substantially as described.

409,164. **HAY-CARRIER.** Allen P. Boyer, Sturgis, Mich. Filed Dec. 5, 1888. Serial No. 292,754. (No model.)



Claim.—1. In a hay-carrier, the combination, with a frame and lifting-sheaves carried thereon, of a set of clutch-gear for each sheave, and a lifting-rope passing over each sheave and through the clutch-gear, whereby the clutch is automatically operated to prevent the slipping of the rope, substantially as set forth

2. In a reversible hay-carrier, the combination of a suspended track, a frame movable thereon, latches secured to the track, a bolt against which the latches impinge, and mechanism for automatically lifting the latch and releasing the carrier by the act of lifting a load, substantially as set forth.

3. In a reversible hay-carrier provided with a lifting-rope, sheaves, and pendent pulley, the combination of a suspended track, a frame movable thereon, latches secured to the track, a bolt against which the latches impinge, and a latch-key adapted to lift either of the latches and release the carrier when the load is raised, substantially as set forth.

4. In a reversible hay-carrier provided with sheaves and pendent pulley, the combination of a suspended track, a frame movable thereon, latches secured to the track, a bolt against which the latches

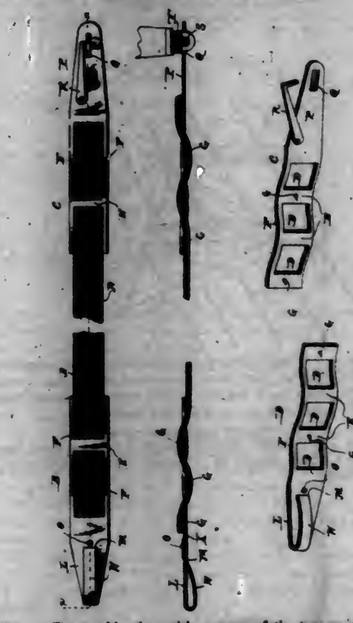
impinge, and a latch-key provided with guide-rods, guide-pieces for supporting the guide-rods, and the lifting-rope having obstructions, whereby the position of the latch-key is automatically shifted by the act of lifting the load, substantially as set forth.

5. In a reversible hay-carrier, the combination, with a suspended track, of a frame, lifting-rope, pulley, sheaves, cams G G' K K', each being provided with jaws, lugs upon said cams K K', and projections Z' Z^2, secured to the track, whereby the jaws of the said cams are held separated while the carrier is being operated to lift a load, substantially as set forth.

6. In a reversible hay-carrier, the combination, with a suspended track, of a frame, pulley, sheaves, cams G G' K K', each being provided with jaws, lugs upon said cams K K', projections Z' Z^2, and latches W W', secured to the track-bolt U', the latch-key R, having its bearings in the said frame, latch-key guide-rods Q Q', guide-pieces O O', provided with guide-holes P P', and the lifting-rope having obstructions, as and for the purpose set forth.

409,165. WITHDRAWN.

409,166. **TRACE.** Alexander W. Brigden, Mackville, Ky. Filed Mar. 26, 1889. Serial No. 304,798. (No model.)



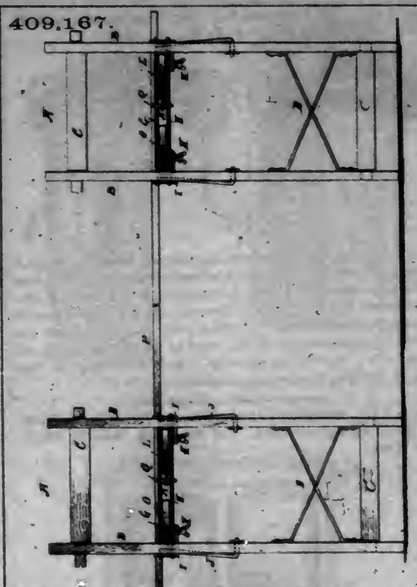
Claim.—The combination, with a trace, of the transversely-slotted plates, through which the ends of said trace are threaded, one of said plates being provided with a projecting lip turned back through a transverse slot at the base of the shank of said lip and secured by means of a rivet, and the other plate being provided with a perforated extension having a pivoted hook, substantially as and for the purpose set forth.

409,167. **SCAFFOLD.** Edward Brockbank, Tremont, N. Y. Filed Mar. 6, 1889. Serial No. 302,063. (No model.)

Claim.—1. The combination of the frames A, containing the upright members B, provided with openings, as E F, the movable transverse bars G H, received in said openings, a stop Q, movable on said bars, and a swinging strut J, pivoted on the exterior of one of said members B, and having a clamp, such as K, upon its free end, substantially as described.

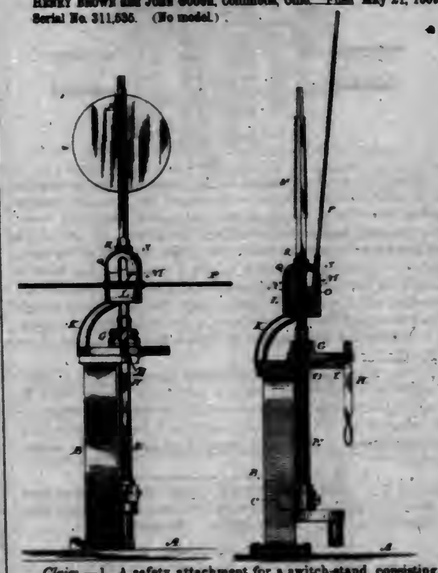
2. The combination of the frames A, each having two upright members, as B, and a fixed transverse member, as C, a series of diagonally-disposed openings, as E F, in each of said members B, movable transverse bars G H received in said openings and extending between the members B, a platform L, received between and supported upon the bars G H of the respective frames A, and swinging struts J, pivoted on the exterior of the respective members B and provided with clamps K at their free ends, the aforesaid elements operating and arranged so that when the platform is in place supported upon the bars

409,167.



G H the struts J may be swung upward and the clamps on the end thereof secured to the edges of said platform.

409,168. **SAFETY ATTACHMENT FOR RAILWAY-SWITCHES.** Henry Brown and John Gough, Columbus, Ohio. Filed May 21, 1889. Serial No. 311,635. (No model.)



Claim.—1. A safety attachment for a switch-stand, consisting of the combination, with the signal-shaft, of a pivoted arm secured to the shaft and carrying a hoop or cage at its free end, and an inclined cam-surface against which the arm bears when the switch is turned, substantially as set forth.

2. In a switch-stand, the combination of a bracket K, supporting a notched block or cylinder L, having cam-surfaces M, and an arm O, pivoted to the switch-shaft and carrying a cage P, substantially as set forth.

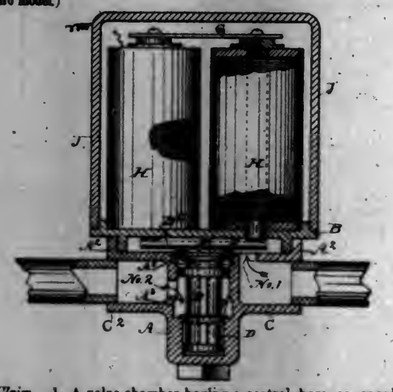
3. In a switch-stand, the combination of a bracket K, supporting a notched block or cylinder L, having cam-surfaces M, an arm O, pivoted to the switch-shaft and carrying a cage P, and a cap Q, slotted at S, substantially as set forth.

409,169. SELF-SEALING JAR. JOHN W. BULGER, East Liverpool, Ohio. Filed Oct. 3, 1888. Serial No. 287,100. (Model.)



Claim.—The combination, with a jar having horizontal beads at its upper end arranged to provide intervening spaces for the insertion of bail-clamps and a lid or cover having a screw-threaded boss integral therewith, of a bail-clamp constructed with inwardly-projecting lips to engage the beads and provided with a screw-threaded nut substantially equal in length to the length of the boss on the lid and furnished with a series of female screw-threads that engage the male threads of the boss, substantially as set forth.

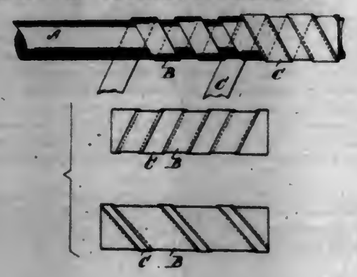
409,170. ELECTRIC VALVE. MILTON C. WHEELER and ALBERT M. CLARK, Marshalltown, Iowa. Filed Feb. 4, 1889. Serial No. 298,663. (No model.)



Claim.—1. A valve-chamber having a central bore, an angular groove and valve-seat in the lower portion of the bore and a corresponding valve-seat at the top of the bore, and a detachable cover, electro-magnets supported by the cover, a branch at one side of the valve and a port extending from its bore into the top of the valve-chamber, a corresponding branch having a port extending from its bore into the bore of the valve-chamber at a point between the two valve-seats, and a cylindrical tubular valve having annular flanges adapted to engage the two valve-seats in the bore of the valve-chamber, to be balanced and operated by electric force, in the manner set forth.

2. The valve-chamber A A^1, having an annular groove A^1, tubular extensions C and C^2, and ports 1 and 2, the tubular valve D, having annular flanges D', that are beveled on their under sides, the fixed armature D^2, and the electro-magnets F, arranged and combined substantially as shown and described, to operate in the manner set forth.

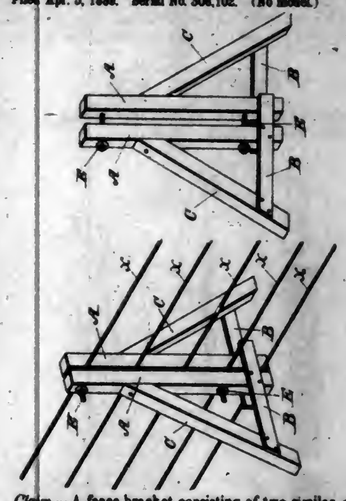
409,171. SINGLE-PLY SPIRAL TUBING. EDWARD K. COAS, Providence, R. I., assignor to the Detroit Spiral Tube Company, Detroit, Mich. Filed Jan. 14, 1889. Serial No. 296,340. (No model.)



Claim.—1. A metallic pipe formed by winding a ribbon of metal upon a mandrel, with a space between its successive convolutions, and a second strip wound over said space and lapping at both edges over the edges of the first strip and soldered thereto along the meeting faces, substantially as described.

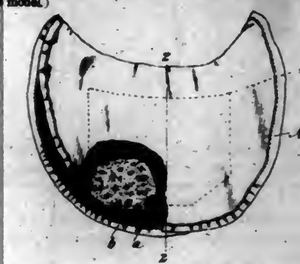
2. A metallic pipe formed by winding a tinned strip of iron or steel upon a mandrel, with a wide space between its successive convolutions, then winding thereon through a solder-bath another tinned strip of iron or steel over said space and lapping onto the metal on both sides thereof, said two strips being thus soldered together along their meeting faces, substantially as described.

409,172. FENCE-BRACKET. ABRAM O. CORELL, Charlotte, Mich. Filed Apr. 5, 1888. Serial No. 306,102. (No model.)



Claim.—A fence-bracket consisting of two similar opposite sections bolted together, each section composed of a post, a brace, and a connecting base-board, the base of each extending beyond both upright posts, substantially as set forth and described.

409,173. DRESS-SHIELD. MARY E. CRANDAL, Hyde Park, and EFFIE B. REESE, Chicago, Ill. Filed Apr. 25, 1888. Serial No. 271,782. (No model.)



Claim.—As an improved article of manufacture, a dress-shield containing a volatilizable compound of sandal-wood, cascarilla, vetivert, benzoin, myrrh, tonqua, and essential oils to neutralize the odors of the perspiration and of the material of the shield, substantially as described.

409,174. WHIFFLETREE-HOOK. WILLIAM H. CUTSHAW and JACOB SUMMERS, Hollandsburg, Ind. Filed May 25, 1889. Serial No. 312,107. (No model.)



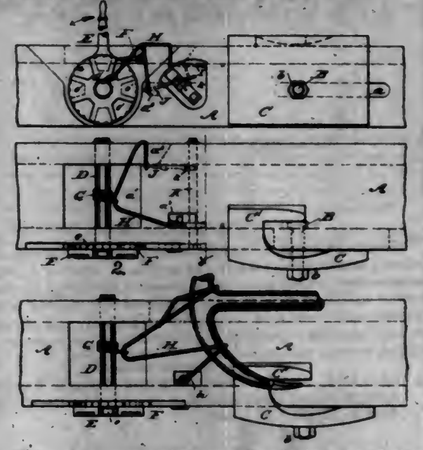
Claim.—A spring draft-hook for vehicles, having the square shank *b* and round nut B' on its threaded end, the straight barreled case A.

in which said shank and nut fit, and perforated end flanges *a a* in line with said barrel, whereby screw-caps at the ends are dispensed with, and the hook may be applied on the right or left on the inside of shafts, as described.

409,175. VERMIFUGE. WALLACE DAWSON, Montreal, Quebec, Canada. Filed May 13, 1889. Serial No. 310,635. (No specimens.)

Claim.—The herein-described worm remedy, consisting of a drop of chocolate cream having santonin and elaterium incorporated therein, substantially in the proportions specified.

409,176. ANCHOR-TRIPPER. CHARLES W. DYLOS, Wiscasset, Me., assignor to the American Ship Windlass Company, Providence, R. I. Filed Apr. 10, 1889. Serial No. 306,655. (No model.)



Claim.—1. An anchor-tripper consisting of a hook-shaped plate adapted to slide fore and aft along the rail and engage with a fluke of the anchor, substantially as described.

2. The combination, with the plate A, adapted to be fastened to the rail of a vessel, of the anchor-tripper C, having the L-shaped arm C', to engage with a fluke of the anchor and adapted to slide fore and aft along the plate A, substantially as described.

3. The combination, with the rail of a vessel, of the plate A, having a depending flange provided with a slot *a*, the tripper C, adapted to slide along the plate A, and the bolt B, passed through the slot *a* and serving to lock the tripper C, substantially as described.

4. The combination, with a sliding hook-shaped anchor-tripper adapted to engage with a fluke of the anchor, of a shank-painter, substantially as described.

5. The combination, with a sliding hook-shaped anchor-tripper adapted to engage with a fluke of the anchor, of a shank-painter and means for putting and retaining a tension on the painter, substantially as described.

6. A shank-painter for anchors, consisting of a rope, chain, or wire having an eye in each end, detachable fastenings for the eyes and means for heaving taut the bight of the rope, substantially as described.

7. The combination, with the shaft D, of the rope G, wound thereon, the painter H, fastened to the rope G and having the eye *h* at each end, and the bolts I J, suitably supported on the rail of the vessel and adapted to engage with the eyes, substantially as described.

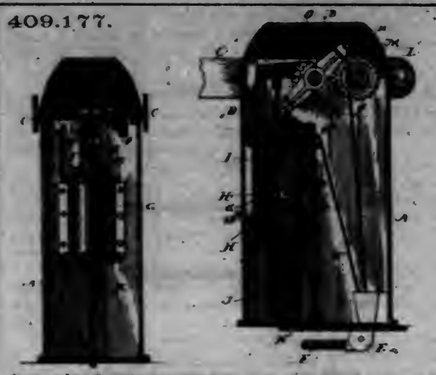
8. The combination, with the shaft D, of the wheel E, having ratchet-teeth and sockets, the pawl F, engaging with the ratchet-teeth, the rope G, wound on the shaft, the painter H, fastened to the rope G and provided with the eyes *h*, the bolts I J, and the shaft K, having the arms *k*, for actuating the bolts, substantially as described.

409,177. RAILWAY-GATE. ROBERT C. DOUGLAS, Chicago, Ill., assignor to the Pneumatic Power and Railroad Gate Company, same place. Filed Jan. 28, 1889. Serial No. 297,842. (No model.)

Claim.—1. In a railway-gate, the combination, with a gate-shaft, of a double-acting power-cylinder whose piston has a hollow system projected through the end of the cylinder and a connecting-rod pivoted to the piston and to a walking-beam or crank-arm connected to the gate-shaft and adapted to reciprocate within the hollow of said stem, substantially as described.

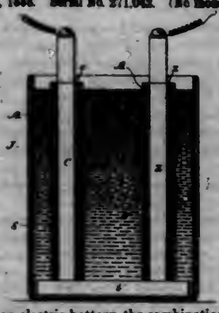
2. In a railway-gate, the combination, with the gate-shaft, of a power-cylinder whose piston has a hollow stem projected through the end wall of the cylinder, a connecting-arm pivoted at one end to the

409,177.



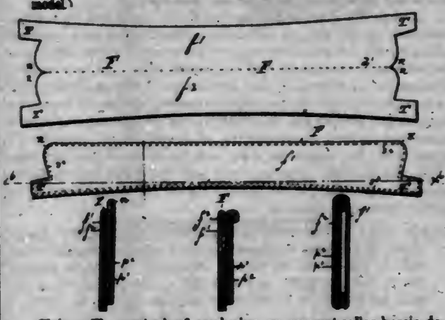
piston and at the other to a walking-beam or crank on the gate-shaft, and a gate-arm rigidly secured to said shaft, whereby the reciprocation of the piston causes the lowering or raising of the arm, substantially as described.

409,178. SECONDARY BATTERY. CAMILLE A. FAURE, New York, N. Y., assignor to the Electrical Accumulator Company, of New York. Filed Apr. 16, 1888. Serial No. 271,042. (No model.)



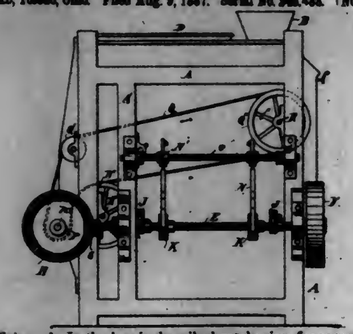
Claim.—In an electric battery, the combination of a negative element, a positive element, and a diaphragm or septum composed of asbestos, a soluble salt, and a silicate, combined together substantially as described.

409,179. METHOD OF MAKING APPAREL-COLLARS. JAMES F. FELLOWS, Troy, N. Y. Filed Mar. 16, 1889. Serial No. 303,509. (No model.)



Claim.—The method of producing an apparel-collar herein described, and consisting in cutting the facing-blank in one piece of double width, and folding it longitudinally and centrally to produce the facings, substantially as described, cutting the ply-blank in one piece of double width and folding it longitudinally and centrally to produce two thicknesses of the ply, substantially as described, laying the folded ply-blank upon the folded facing-blank, so as to subtend the latter at the top edge of the collar, turning down the subtending top edge of the ply, sewing the ends of the blanks as thus laid, turning the parts through the open side so as to bring the facing-folds at the outside, then turning in the bottom edges and border-stitching the parts, as herein set forth.

409,180. DEVICE FOR SEPARATING WEEVIL AND WEEVIL-DUST FROM GRAIN. THOMAS R. FERGUSON and ADONIJH H. BLANCHARD, Toledo, Ohio. Filed Aug. 9, 1887. Serial No. 246,488. (No model.)



Claim.—1. In the herein-described mechanism for operating two independently-reciprocating shoes, the combination, with a horizontal driving-shaft carrying a pulley at one end, of the angularly-arranged eccentrics secured to the shaft, a rock-shaft in parallel relation with the driving-shaft, bell-crank levers secured thereto, pitmen connecting two of the eccentrics, and bell-crank levers, and the link-arms and pitman connecting the shoes and operating mechanism, substantially as shown and described.

2. In a machine for separating weevil and weevil-dust from grain, the combination, with an inclined shoe provided with a screen and carrying an endless scraper-belt beneath the screen, of a horizontal power-shaft having eccentrics arranged thereon, a horizontal rock-shaft located above the power-shaft and carrying bell-crank levers, pitmen connecting the eccentrics and bell-crank levers, link-arms connecting the shoe and said levers, gear-wheels G, arranged upon one end of the power-shaft adapted to mesh with a second gear H, the pulleys P and Q', mounted as described, and the belt for operating them, all arranged and adapted to operate substantially as shown and described.

3. The herein-described mechanism for supporting and operating two independently-reciprocating shoes and the endless scraper-belts carried within them, consisting of the horizontal power-shaft having a pulley at one end and a gear-wheel at the other, two pairs of angularly-arranged eccentrics secured to the shaft, a horizontal rock-shaft located above the power-shaft and having bell-crank levers secured thereon, pitmen N, connecting one pair of eccentrics with the bell-crank levers, link-arms N", connected to the crank-levers, the pitmen J', connected to the second pair of eccentrics, a gear-wheel mounted upon a transverse shaft H' and meshing with the gear upon the power-shaft, the pulleys P, Q', and R", mounted, respectively, upon the shaft H', R, and R"', the belt Q, and the idler Q', all arranged and adapted to operate substantially as shown and described.

4. A machine for separating weevil and weevil-dust from grain, consisting of the pair of oppositely-inclined chutes, each provided with a screen, and the endless scraper-belts mounted within said chutes, the horizontal power-shaft with its beveled pinion and its eccentrics arranged in two differential pairs, the horizontal rock-shaft having the pair of bell-crank levers, the pitmen connecting one pair of eccentrics to the lower scraper and the other pair of eccentrics to end of the levers, and the links connecting the other ends of said levers to the upper chute, the transverse shaft, with its beveled wheel and belt-pulley, and the belt extending from said belt-pulley to belt-wheels upon the upper shafts of the belts in the two chutes, substantially as and for the purpose specified.

409,181. CONDUCTOR FOR CONVEYING ELECTRICITY. SEBASTIAN Z. DE FERRANTI, Hampstead, County of Middlesex, England. Filed Sept. 24, 1888. Serial No. 286,306. (No model.) Patented in England Dec. 11, 1885, No. 15,351; in France Dec. 9, 1886, No. 180,176; in Belgium Jan. 8, 1887, No. 75,875, and in Italy Jan 19, 1887, No. 21,119.



Claim.—1. The combination of two concentric conductors consisting of the interior metallic tube *a*, the exterior solid metallic tube *b*, and insulating material filling the space between them.

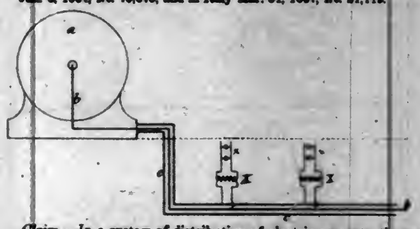
2. The combination of two concentric conductors consisting, respectively, of the interior metal tube *a* and the exterior solid metal tube *b* and the intervening solid insulating material *c*, consisting of paper saturated with paraffine.

3. An electric cable or conductor composed of an uninsulated exterior solid metallic tube *b*, an interior metallic tube *a*, and insulating material filling the space between them.

4. The joint consisting of two pairs of concentric conductors *a* and *b*, the metallic cone between the ends of the interior conductors *a*, and the socket-piece coupling the outer tubes or conductors *b*.

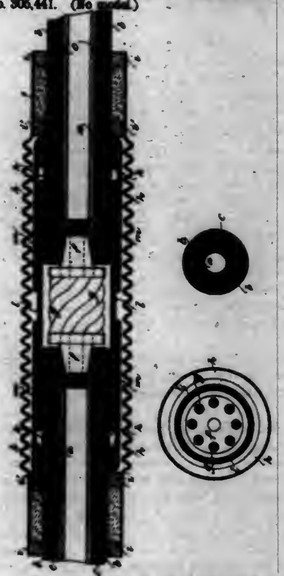
5. The joint consisting of two pairs of concentric conductors *a* and *b*, the metallic cone *d* between the inner conductors, and the socket-piece *e*, soldered to the outer tubes or conductors *b*.

409,182. DISTRIBUTION OF ELECTRICAL ENERGY. SEBASTIAN Z. DE FERRANTI, Hampstead, County of Middlesex, England. Filed Feb. 16, 1889. Serial No. 300,456. (No model.) Patented in England Dec. 11, 1885, No. 15,351; in France Dec. 9, 1886, No. 180,176; in Belgium Jan. 8, 1887, No. 75,875, and in Italy Mar. 31, 1887, No. 21,119.



Claim.—In a system of distribution of electric currents, the combination, substantially as and for the purpose set forth, of an alternating-current dynamo generating high-tension alternating currents, leads or main distributing-conductors connected with the poles of the dynamo, one or both of said conductors being tubular, said conductors being arranged in proximity, and translating devices connected in multiple between said conductors.

409,183. JOINT FOR ELECTRIC MAINS. SEBASTIAN Z. DE FERRANTI, Hampstead, County of Middlesex, England. Filed Mar. 30, 1889. Serial No. 305,441. (No model.)



Claim.—1. The combination of the inner conductors *a*, coupled by cones or plugs *f*, and flexible conducting-strands *g*, the outer concentric conductors *b*, coupled by an extensible tube A, and the insulating-screens *k l m*, interposed between the extensible tube and the cones *f* and strands *g*.

2. The combination, with two electric conductors end to end and connected by a flexible connection, as *g*, of the surrounding telescoping insulators.

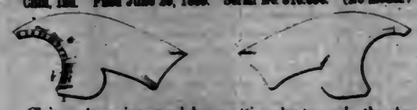
3. The combination, with two electric conductors connected end to end, of the surrounding telescoping insulators and the corrugated metal tube surrounding the insulators, substantially as set forth.

4. A flexible or expansion joint for electric conductors formed of a metal tube corrugated transversely and secured at one end to the end of one length of conductor and at the other end to the next length.

5. A joint connecting the end of two lengths of an electrical conductor composed of two rings *i i'*, surrounding each length near its end at a distance apart from one another, a metallic tube, as A, surrounding the rings on both lengths, and fusible metal filling the spaces on each length between the two rings and between the conductor and metallic tube.

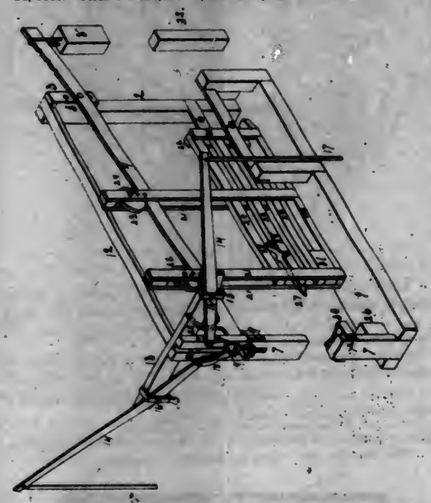
6. The combination of two rigid interior tubular conductors or rods, flexible copper strands connecting them end to end, other tubular conductors surrounding the interior conductors, and insulating material separating the interior conductors and their coupling-connection from the exterior conductors.

409,184. CHART FOR DRAFTING GARMENTS. HENRY P. FISH, Galt, Ind. Filed June 20, 1889. Serial No. 314,696. (No model.)



Claim.—As an improved drum-cutting chart or rule, the chart or rule herein described, provided with a curved front-neck measure *a*, a curved back-neck measure *b*, forming a continuation of the curve of the part *a*, and marks indicating the starting-points upon opposite sides of said rule or chart, substantially as shown and described.

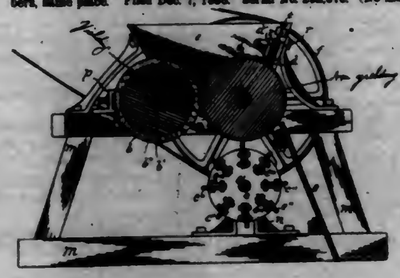
409,185. GATE. MARK W. FOSTER, Pontoosuc, Ill. Filed Mar. 26, 1889. Serial No. 305,133. (No model.)



Claim.—1. The combination of the pivoted trackway having a hook on its upper face and provided with a counterbalancing-weight, a gate supported on said trackway and engaging the hook when closed, pivoted operating-handles, and links connecting the handles with the trackway, substantially as set forth.

2. The combination of a pivoted trackway having a semicircular hook on its upper face and a gate supported on said trackway and engaging the semicircular hook when closed, substantially as set forth.

409,186. MACHINE FOR SEPARATING GRAVEL FROM CLAY. SAMUEL FRIEND, Decatur, Ill., assignor of one-half to William B. Chambers, same place. Filed Dec. 7, 1888. Serial No. 292,870. (No model.)



Claim.—1. A machine for separating gravel from clay, comprising a non-yielding roll, a yielding roll opposed to the non-yielding roll, beaters in proximity to the non-yielding roll, and a scraper adapted to the non-yielding roll, as set forth.

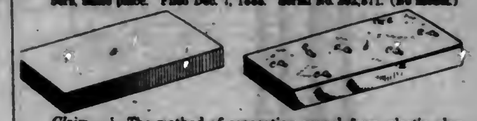
2. A machine for separating gravel from clay, comprising a non-yielding roll grooved parallelly around its circumference, a yielding roll opposed to the non-yielding roll, beaters in proximity to the non-yielding roll, and a scraper for the non-yielding roll having teeth adapted to the grooves, as set forth.

3. A machine for separating gravel from clay, comprising a non-yielding roll grooved parallelly around its circumference, a roll opposed to the non-yielding roll mounted in yielding bearings and having a yielding external surface, beaters in proximity to the non-yielding roll, and a scraper for the non-yielding roll having teeth adapted to the grooves, as set forth.

4. A machine for separating gravel from clay, comprising rolls *a* and *b*, the one non-yielding, the other yielding, hopper *c* above the rolls, beaters *c'* under roll *a*, and scraper *d* presented to roll *a*, substantially as set forth.

5. A machine for separating gravel from clay, comprising shaft *a'*, carrying roll *a*, drive-wheel *f*, gear-wheel *g*, and sprocket-wheel *k*, shaft *b'*, carrying roll *b* and gear-wheel *l*, the latter meshing with wheel *g*, shaft *c'*, carrying beaters *c'* and sprocket-wheel *k*, chain *l*, connecting sprocket-wheel *k* with sprocket-wheel *k*, hopper *c* above the rolls, and scraper *d* in contact with roll *a*, as set forth.

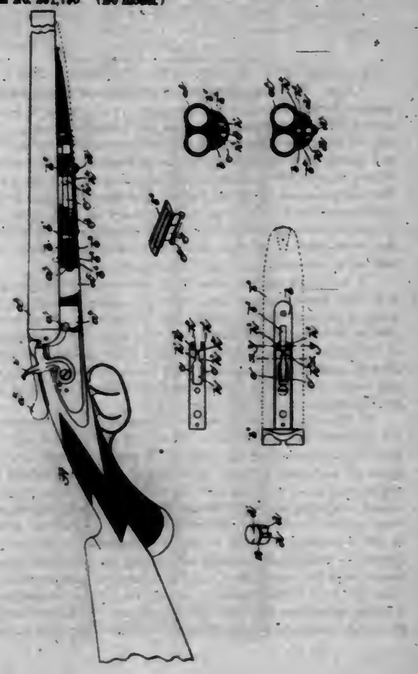
409,187. METHOD OF SEPARATING GRAVEL FROM CLAY. SAMUEL FRIEND, Decatur, Ill., assignor of one-half to William B. Chambers, same place. Filed Dec. 7, 1888. Serial No. 292,871. (No model.)



Claim.—1. The method of separating gravel from plastic clay, which consists in pressing the clay into a sheet thinner than the gravel, and then removing the projecting gravel from the sheet of clay, as set forth.

2. The method of separating gravel from plastic clay, which consists in pressing the clay with a yielding presser into a sheet thinner than the gravel, and then removing the projecting gravel from the sheet of clay, as set forth.

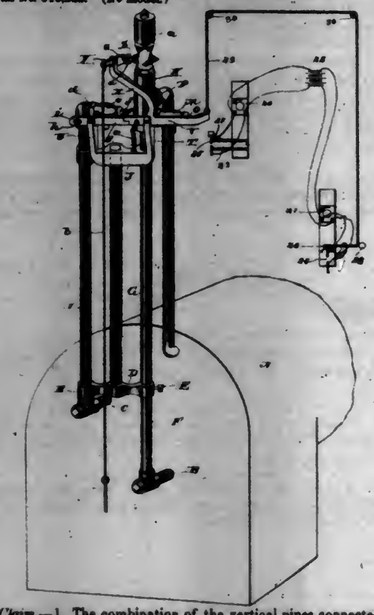
409,188. MEANS FOR ATTACHING FORE-END STOCKS TO GUN-BARRELS. JAMES E. GAGE, Concord, N. H. Filed Nov. 24, 1888. Serial No. 291,790. (No model.)



Claim.—1. In a breech-loading gun comprising a barrel and a stock, the combination, with a shoe b^4, secured to the barrel, of a sliding hand-piece provided with a locking device consisting of spring-arms permanently attached to the hand-piece to engage the said shoe and secure the hand-piece to the barrel, and a releasing device, substantially as described, to operate upon the spring-arms and disengage them from the said shoe, substantially as and for the purpose specified.

2. In a breech-loading gun comprising a barrel and a stock, the combination, with a shoe b^4, of a hand-piece provided with a locking device consisting of spring-arms to engage the said shoe and lock the hand-piece to the barrel, and a releasing device consisting of the thumb-piece d', provided with the beveled arms d, to engage the spring-arms, substantially as and for the purpose specified.

409,189. HIGH AND LOW WATER ALARM FOR STEAM-BOILERS. ADAM W. GILFILLAN, Mendocino, Cal. Filed May 10, 1889. Serial No. 310,222. (No model.)



Claim.—1. The combination of the vertical pipes connected, respectively, with the water and steam spaces of a boiler, a bracket attached securely to one of said pipes and having a sleeve for the passage of the other pipe, an arm extending upwardly from said bracket and having at its upper end a horizontal bracket provided with guide-sleeves for said pipes and upwardly-extending arms, levers pivoted to the said arms and connected loosely with the said pipes, an arm extending upwardly from one of said levers and carrying a disk adapted to bear against and operate the plug of a spring-valve connected with the steam-space of a boiler, and a steam-whistle connected with the said valve, substantially as and for the purpose set forth.

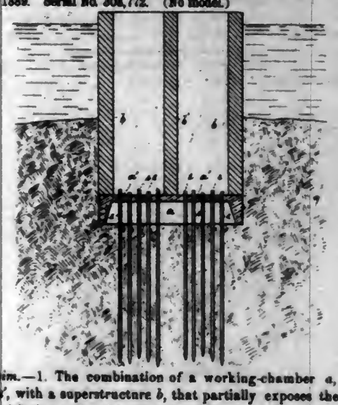
2. In a high and low water alarm for steam-boilers, the combination, with the expansion and contraction pipes connected, respectively, to the low and high water lines of the boiler, of the levers pivoted to stationary supports and connected loosely with the upper ends of said pipes, a steam-whistle arranged to be actuated by means of an arm extending from one of said levers, and cams at the ends of said levers adapted to operate the escape-valves at the upper ends of the said pipes, substantially as set forth.

3. The combination of the vertical expansion-pipe connected with the low-water line of a boiler, a T-coupling at the upper end of said pipe, the horizontal branch of which is connected with the steam-space of the boiler, and the upper end of which is provided with a steam-whistle and a spring-valve for admitting steam to the latter, a branch extending laterally from said T-coupling and having an escape-valve provided with a laterally-extending plug, a partition arranged in the T-coupling between its laterally-extending branches, a lever pivoted to a stationary support and having its inner end connected loosely with the inner end of the expansion-pipe and provided at its outer end with a cam adapted to engage the plug of the escape-valve, a spring connecting the inner end of the lever with its stationary support, and an arm extending upwardly from the lever and carrying a disk adapted to engage the valve-plug of the steam-whistle, substantially as and for the purpose set forth.

4. The combination of the lever having one end connected loosely with an expansion-pipe, the lower end of which is connected with the low-water line of the boiler, a steam-whistle having a spring-valve connected with the steam-space of the boiler, an arm extending upwardly from the said lever, a lever mounted pivotally at the upper end of said arm, a screw-threaded rod mounted adjustably in one end of said lever, and a concave disk at the inner end of said screw-threaded rod adapted to engage the valve-plug of the steam-whistle, substantially as and for the purpose set forth.

5. The combination of the expansion-pipe connected with the low-water line of a boiler, a steam-whistle connected with the steam-space of the boiler, a lever pivoted to a stationary support and carrying a disk adapted to engage the valve-plug of the steam-whistle, said lever having one end connected loosely with the upper end of the expansion-pipe, a contraction-pipe connected to the high-water line of the boiler, and a lever pivoted to a stationary support and having one end connected loosely with the upper end of said contraction-pipe, the other end of said lever being extended under and adapted to bear against the adjacent end of the signal-operating lever, substantially as and for the purpose herein set forth.

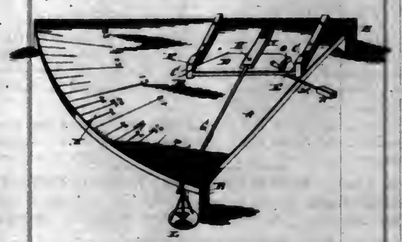
409,190. CAISSON. FRANZ GERSH, New York, N. Y. Filed Apr. 27, 1889. Serial No. 308,772. (No model.)



Claim.—1. The combination of a working-chamber a, having ceiling a', with a superstructure b, that partially exposes the ceiling a', and with the perforations d made within the ceiling for the reception of piles, substantially as specified.

2. The combination of working-chamber a, having ceiling a', with the stone wall b built upon the ceiling a' to inclose a chamber, and with the man-holes c and the pile-holes d made through ceiling a' within the chamber, substantially as specified.

409,191. WEIGHING-SCALES. ROBERT E. GLOVER, Granger, Mo. Filed Mar. 19, 1889. Serial No. 303,833. (No model.)

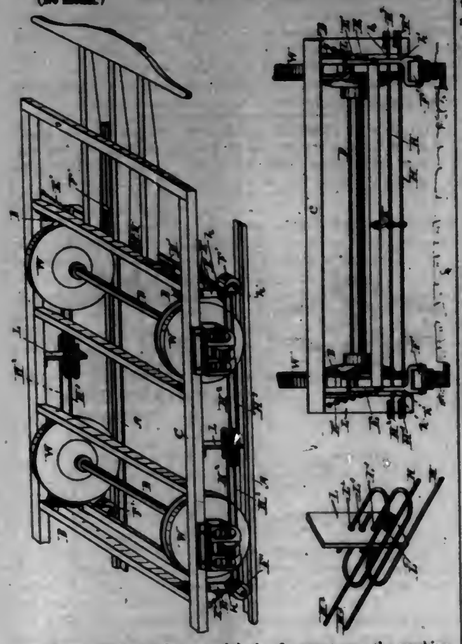


Claim.—1. The combination, in the scales having the pivoted fulcrum-plate, of the scale-arm G, pivoted thereon at a distance beyond the pivotal axis of the fulcrum-plate, the shorter end of the said arm having a counterbalancing-weight and the longer end thereof being adapted to support the scale-pan, substantially as described.

2. The table or base having the graduated scale K, the fulcrum-plate pivoted in bearings on said table or base, and the scale-arm pivoted to the fulcrum-plate at a point beyond the pivotal axis of the latter, the shorter end of said arm having a counterbalancing-weight and the longer end thereof being adapted to support the scale-pan, all in combination, substantially as described.

3. In scales, the combination, with the pivoted fulcrum-plate, of the scale-arm pivoted thereon at a point beyond the pivotal axis of the fulcrum-plate, said scale-arm having the counterbalancing-weight, for the purpose set forth, and the adjusting-arm M, pivoted to the fulcrum-plate and having the weight N, substantially as described.

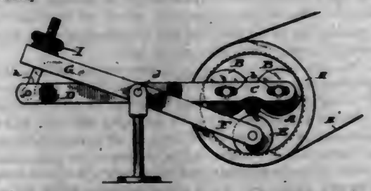
409,192. SAFETY-GUARD FOR STREET-CARS. MAXWELL J. GOODWIN, Somerville, Mass. Filed June 14, 1889. Serial No. 314,290. (No model.)



Claim.—1. In a safety-guard device for street-cars, the combination of the flexible guard-rods and swinging bars E E, adapted to suspend the said guard-rods and provided with trolley-rollers F F, with the pendent bracket L, substantially as and for the purpose set forth.

2. In a safety-guard device for street-cars, the combination of the guard-rods having return-bends at their ends and adapted to slide freely in the pendent brackets L L, with the pendent brackets L L, substantially as and for the purpose set forth.

409,193. MECHANICAL MOVEMENT. WILLIAM W. GRIGGS, Haverford College, Pa. Filed Dec. 10, 1887. Serial No. 257,513. (No model.)

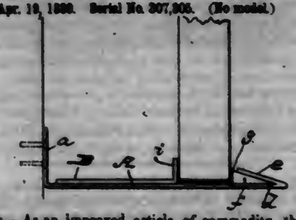


Claim.—1. In the described device, a main driving-shaft, wheels B B in engagement therewith, adjustably mounted in suitable bearings, a wheel, as E, also engaging the shaft, but from a direction opposing the wheels B B, a floating rim encircling said wheels, said wheels E being mounted in a movable frame, a suitable screw device acting upon the said frame for forcing upward the wheel E, whereby the wheels B B are spread to increase the friction against the floating rim, substantially as described.

2. In the described device, a main driving-shaft, wheels B B in engagement therewith, adjustably mounted in suitable bearings, a wheel, as E, mounted in the end of a pivoted lever, also engaging the shaft, but from a direction opposing the wheels B B, a floating rim encircling said wheels, and a suitable screw and nut acting on the said lever for giving the wheel E a vertical movement, whereby the wheels B B are spread to increase the friction against the floating rim, substantially as described.

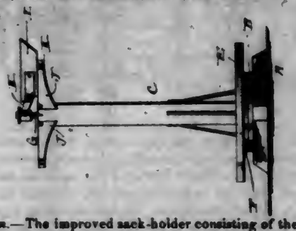
3. In the described device, a main driving-shaft, wheels B B in engagement therewith, having their axes movable in suitable bearings upon a frame, a wheel E, supported on a suitable frame, said wheel engaging the main shaft, but from a direction opposing the wheels B B, and a floating rim encircling said wheels, the frame supporting the wheel E being pivoted to the frame supporting the wheels B B, and connected therewith by a suitable nut and screw at one end, whereby upon the adjustment of said nut the wheels B B may be spread, substantially as described.

409,194. DOOR-CHECK. LEWIS W. HARDY, Yellow Springs, Ohio. Filed Apr. 19, 1889. Serial No. 307,905. (No model.)



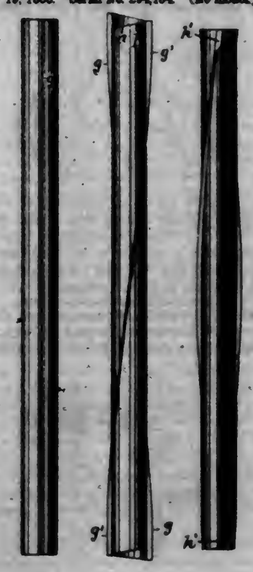
Claim.—As an improved article of commodity, the within-described combined door stop and holder, comprising the following elements: a spring-plate b, having a rectangular portion a on one end, an acute angular portion on the opposite end, a rubber block confined in the acute angular portion and protruding backward beyond the edge of the bent lip of said angular portion, whereby a door is prevented from injury when in contact with the holder, and an independent stop-plate B, having a stop-lip i, as shown and described.

409,195. SACK-HOLDER. JOHN B. HARMAN, Gilboa, Ohio. Filed Mar. 30, 1889. Serial No. 305,260. (No model.)



Claim.—The improved sack-holder consisting of the base, the rotary standard mounted thereon, the radial arms at the upper end of the standard having hooks on their sides, the horizontally-swinging bracket H, mounted on the standard above said radial arms, and the hopper secured to and carried by said bracket, as set forth.

409,196. SHEET-METAL PIPE. CHARLES L. HART, Brooklyn, N. Y. Filed Dec. 19, 1888. Serial No. 294,134. (No model.)



Claim.—1. As a new article of manufacture, a sheet-metal pipe formed in two or more longitudinal sections and having twisted seams at the joints of the sections, substantially as herein set forth.

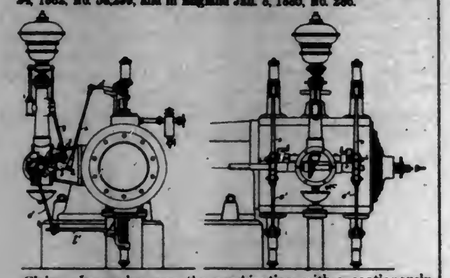
2. As a new article of manufacture, sheet-metal pipes in uniform lengths formed in two or more longitudinal sections and having twisted seams at the joints of the sections, substantially as herein set forth.

3. As a new article of manufacture, a sheet-metal pipe formed in two or more longitudinal sections and having twisted standing seams at the joints of the sections, substantially as herein set forth.

4. As a new article of manufacture, a sheet-metal pipe formed in two or more longitudinal sections and having twisted standing seams at the joints of the sections, with the projection of the seam removed at the ends of the pipe and the ends longitudinally flared and tapered to join the same in series, substantially as herein set forth.

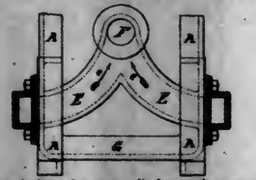
5. As a new article of manufacture, a sheet-metal pipe formed in two or more longitudinal sections united by longitudinal standing seams and having the sections and seams twisted and held in a twisted condition by the locking of the seams, as and for the purpose set forth.

409,197. **VALVE-GEAR.** CARL HARTUNG, Magdeburg, Germany. Filed Mar. 14, 1888. Serial No. 306,253. (No model.) Patented in Germany Dec. 22, 1880, No. 15,806, and Oct. 7, 1884, No. 31,367; in Austria-Hungary Mar. 18, 1883, No. 3,736 and No. 9,811; in Belgium June 24, 1882, No. 58,290, and in England Jan. 3, 1885, No. 206.



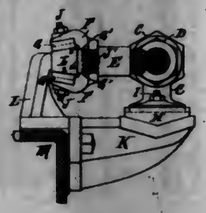
Claim.—In a valve-gear, the combination, with a continuously-revoluble eccentric, of an eccentric-rod, a pivoted reversing-disk provided with a guide-slot, a block sliding in the said slot and operatively connected with the said eccentric-rod and with the engine valve or valves, a second pivoted disk, also provided with a guide-slot, a block sliding in the said slot and pivotally supporting the said eccentric-rod, a rod pivotally coupling the two said disks, and lever mechanism operatively connecting the sliding block of the said second disk with the steam-valve, substantially as and for the purpose set forth.

409,198. **BED-PLATE FOR STEAM-ENGINES.** MICHAEL HARTUNG, Brooklyn, N. Y., assignor to Thomas W. Williams and Charles A. Williams, New London, Conn. Filed Mar. 9, 1889. Serial No. 302,598. (No model.)



Claim.—In a bed-plate for two-cylinder engines, a pair of passages leading from the cylinder-bolting faces of said bed-plate in a direction curved from said faces and uniting to form one central nozzle, in combination with a cross-rib of said bed-plate constructed and formed independent of and free from the temperature effects of said passages, as and for the purposes set forth.

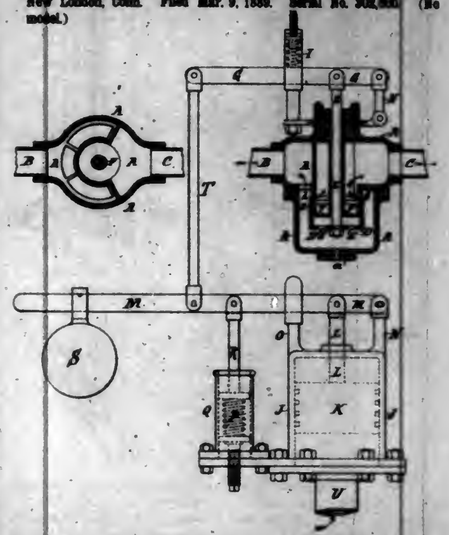
409,199. **PISTON-ROD GUIDE.** MICHAEL HARTUNG, Brooklyn, N. Y., assignor to Thomas W. Williams and Charles A. Williams, New London, Conn. Filed Mar. 9, 1889. Serial No. 302,599. (No model.)



Claim.—1. A guide for rods having a reciprocating motion, consisting, essentially, of a connected jaw F, said jaw being provided with adjusting-screws J and J' and contained adjustable brasses or wearing parts G and G', the said outer brasses G forming an acute angle with the said inner bras G', in combination with a slide L, upon which said brasses move, substantially as set forth.

2. In combination with a rod having a reciprocating motion, connecting-pin E and attached jaw F, said jaw F being provided with the outer wearing-brasses G and the inner wearing-bras G', and the said outer brasses G being set at an angle acute to said inner bras G', each of said brasses being provided with adjusting-screws J and J' and operating upon a slide L, substantially as set forth.

409,200. **PRESSURE-REGULATOR.** MICHAEL HASTINGS, Brooklyn, N. Y., assignor to Thomas W. Williams and Charles A. Williams, New London, Conn. Filed Mar. 9, 1889. Serial No. 302,600. (No model.)



Claim.—1. The combination of a valve-chamber located within the line of steam-pipe supplying an air-compressor or pump-cylinder with steam, a perforated annular valve and valve-stem moving within said valve-chamber, a special circular valve-guide operating within said perforated annular valve, a lever for operating said perforated valve and its stem, an air-pressure cylinder and inclosed piston and rod located within the line of air-pipe communicating with the compressed-air receiver or tank, a weighted lever operated by said piston and rod, and a communicating rod attached at one end to the lever operating the steam-valve and its stem and at the other end to the lever operated by said piston and rod of said air-pressure cylinder, substantially as and for the purposes set forth.

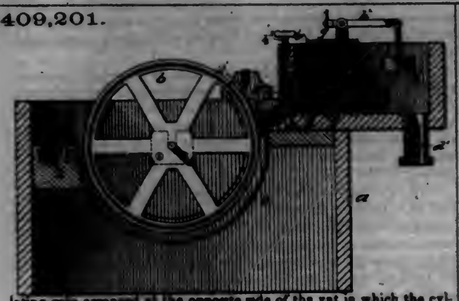
2. The combination of a valve-chamber having an annular valve and operating-stem of the character herein shown and described located within the line of steam-pipe supplying an air-compressor or pump cylinder with steam, a lever for operating said valve and stem, a resistance-spring acting upon said lever, an air-pressure cylinder and inclosed piston and rod located within the line of air-pipe communicating with the compressed-air receiver or tank, a weighted lever operated by said piston and rod, a spring-regulator acting upon said lever, and a communicating rod attached at one end to the lever operating the steam-valve and stem and at the other end to the lever operated by said piston and rod of said air-pressure cylinder, substantially as shown and described.

409,201. **PAPER-MAKING MACHINE.** JONATHAN HAYES, South Windham, Conn. Filed Mar. 12, 1887. Serial No. 230,578. (No model.)

Claim.—1. In a paper-making machine, the combination of the paper-mold, the reservoir adapted to receive and hold a quantity of stuff, the outlet consisting of a spout that projects from the reservoir and terminates near the wire of the paper-mold, the blanket that defines the line of application of the pulp, and the mixer located in the reservoir, all substantially as described.

2. In a paper-making machine, the combination of the vat in which the cylinder is located, the paper-mold, the reservoir adapted to receive and hold a certain quantity of stuff and having an outlet controlled by a gate located at the spout, the said gate and the regulating-gate arranged at the opposite side of the vat in which the cylinder turns, all substantially as described.

409,201.



3. In a paper-making machine, the reservoir for holding the stuff with crosswise perforated partitions, and the mixer having arms extending between the partitions, all substantially as described.

4. In combination with the cylinder, the reservoir, the mixer arranged therein, the sliding gate, the spout having the gages that determine the width of its outlet, and the regulating-gate, and the blanket that rests against the receiving side of the cylinder near the outlet of the spout from the reservoir, all substantially as described.

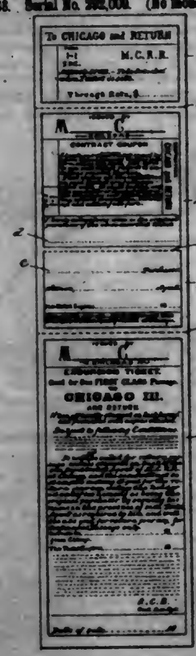
409,202. **PLOW.** JOHN S. HAWLEY, Hamden, N. Y. Filed Dec. 12, 1888. Serial No. 293,402. (No model.)



Claim.—1. The combination, in a reversible side-hill plow, of the reversible plate *c*, having a shank *d*, resting in bearings *e*, and having an arm *f*, spring *g*, and connecting-rod *h*, all substantially as shown and described, and for the purposes specified.

2. The combination, with a mold-board, of the reversible plate *c*, provided with a shank which extends under the mold-board and rests in bearings carried by the mold-board, substantially as and for the purposes described.

409,203. **RAILROAD-TICKET.** LOUIS D. HEUMER, Chicago, Ill. Filed Nov. 27, 1888. Serial No. 292,009. (No model.)



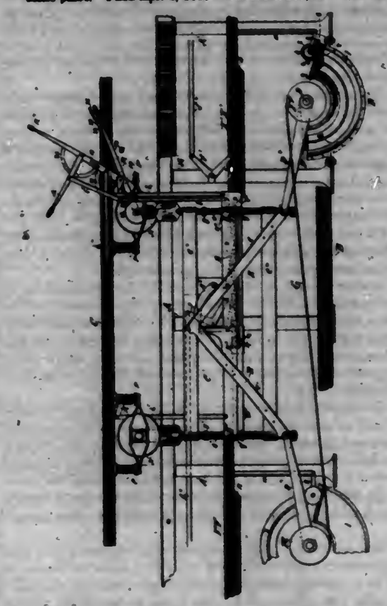
Claim.—A railroad-ticket provided with the destination-agent's identifying-section B, separable from the ticket, whereby such agent only is furnished with the signature of the original purchaser, for the purpose of identification, substantially as and for the purpose described.

409,204. **NUT-LOCK.** CHARLES R. JENKINS, Janesville, Wis. Filed July 19, 1888. Serial No. 280,406. (No model.)



Claim.—A nut-lock consisting of a screw-threaded bolt, a nut having a bore through its sides practically perpendicular to the axis of the bolt, and a hardened steel pin, of slightly greater diameter than the diameter of the lateral bore, driven into said bore until its point penetrates the bolt and left with its head protruding beyond the nut.

409,205. **PNEUMATIC RAILWAY.** WHITCOMB L. JUDSON, Minneapolis, Minn., assignor to the Judson Pneumatic Railway Company, same place. Filed Apr. 2, 1888. Serial No. 269,825. (No model.)



Claim.—1. The combination, with a movable car, of a series of cam-levers along the line of travel, a cam on the car with which said levers engage in succession, and one or more motors for actuating said levers, substantially as described.

2. The combination with a movable car, of a series of vibratory levers arranged along the line of travel adapted to successively engage a part of said car and one or more motors for actuating said levers, substantially as described.

3. The combination, with a movable car, of a cam-track connected with the car, a series of cam-levers along the line of travel adapted in their normal position of rest to engage with said cam-track in the movement of the car, and one or more motors for actuating said levers, substantially as described.

4. The combination, with a movable car, of a cam on the car, a series of levers along the line of travel, the relative lengths and positions of the cam and cam-levers being such that one lever will engage the cam before the preceding lever has left it, and one or more motors for actuating said levers, substantially as described.

5. The combination, with a movable car, of a cam-track connected thereto, a series of cam-shafts along the line of the car's travel, a corresponding series of cam-levers connected with said shafts, adapted to traverse said cam-track in succession and propel the car, and one or more motors for driving said shafts, substantially as described.

6. The combination, with a movable car, of a A-shaped cam-track connected thereto, a series of cam-shafts along the line of the

car's travel, a corresponding series of cam-levers connected with said shafts, adapted to traverse said cam-track in succession and propel the car, and one or more motors for driving said shafts, substantially as described.

7. The combination, with a movable car, of a cam-track connected thereto, a series of cam-shafts along the line of the car's travel, a corresponding series of cam-levers connected with said shafts, adapted to traverse said cam-track and propel the car, and a corresponding series of stationary motors for driving said shafts, substantially as described.

8. The combination, with a movable car, of a A-shaped cam-track connected thereto, a series of cam-shafts along the line of the car's travel, a corresponding series of cam-levers connected with said shafts, adapted to traverse said cam-track in succession and propel the car, and a corresponding series of stationary motors for driving said cam-shafts, substantially as described.

9. The combination, with a movable car, of a cam-track connected thereto, a curved cylinder adapted to receive an expansible motive force, a piston movable lengthwise of said cylinder, a cam-lever pivoted to a fixed support adapted to traverse said cam-track and propel the car, and a connection from said piston to said cam-lever, substantially as described.

10. The combination, with a movable car, of a cam-track connected thereto, a curved cylinder adapted to receive an expansible motive force, a piston movable longitudinally of said cylinder, a rock-shaft, a connection from said piston to said shaft, and a cam-lever on said shaft adapted to traverse said cam-track and propel the car, substantially as described.

11. The combination, with a movable car, of a A-shaped cam-track connected thereto, a curved cylinder approximately a half-circle in length adapted to receive an expansible motive force, a piston movable longitudinally of said cylinder, provided with a rigid stem of equal length of a like curvature to the cylinder passing out through one end of the same and traversing the supplementary arc of the cylinder-circle, a rock-shaft arranged at right angles to the plane of the piston's movement, a crank-arm on said shaft having its outer end rigidly attached to the outer end of said piston-stem, and a cam-lever on said shaft having a cam-head adapted to traverse the said cam-track and propel the car, substantially as described.

12. In a railway system, the combination, with a movable car, of a cam-track connected thereto, a rock-shaft arranged crosswise of the car's path, a cam-lever having at one end bifurcated arms embracing said shaft at right angles to its axis and pivotally secured thereto and at the other a cam-head adapted to traverse said track, and a motor for driving said shaft, substantially as described, for the better traversing of curves.

13. The combination, with two or more independent vibratory levers, of two or more independent motors adapted each to move its respective lever through a half-revolution in a constant direction and a flexible connection coupling together said levers having sufficient slack to allow a single throw of one lever before becoming taut, substantially as described, whereby the motor in use is made to restore the idle lever and the movable part of the idle motor to their normal positions.

14. The combination, with a series of vibratory levers, of a corresponding series of stationary motors adapted to move said levers in succession in a constant direction and couplings connecting all of said levers in pairs with allowance for the throw of one of the pair of levers before the coupling comes into use, substantially as described, whereby the working-lever of the pair restores the idle lever to its normal position.

15. The combination, with a movable car having a cam-track connected thereto, of a series of rock-shafts mounted in fixed supports at definite intervals along the line of the car's travel, a corresponding series of cam-levers connected with said shafts, adapted to traverse said cam-track in succession in a constant direction for propelling the car, and a connection coupling together said shafts in pairs with allowance for the throw of one shaft before coming into use, substantially as and for the purpose set forth.

16. The combination, with two or more independent rock-shafts, of a corresponding series of independent motors adapted each to move its respective rock-shaft through a half-revolution, sheaves on said shafts, and a flexible connection coupling together the sheaves of adjacent shafts having sufficient slack to allow only a single throw of the rock-shaft before becoming taut, substantially as described, whereby the working-motor is made to restore the rock-shaft last used to its normal position.

17. The combination, with a series of two or more independent rock-shafts having crank-arms, of a corresponding series of curved cylinders having pistons movable lengthwise of the cylinder and piston-stems attached to said crank-arms and movable through supplementary arcs of the cylinder-circles, sheaves on said rock-shafts, and flexible connections coupling together said sheaves, each having sufficient slack to allow only a single forward throw of the shaft, substantially as described, whereby the piston under pressure restores the piston and rock-shaft last used to their normal positions, substantially as described.

18. The combination, with a movable car, of a series of stationary pressure-motors acting on the car in succession to propel the same, valves for controlling the supply to said motors, levers for operating said valves, and connections from said levers to the car for operating the valves with an automatically-variable cut-off, substantially as described, whereby the air may be used expansively for a greater or less part of the stroke.

19. The combination, with a movable car having a dependent portion, of a series of stationary pressure-motors acting on the car in succession, valves on said motors for controlling the supply of motive force to the same, vertically-movable horizontal valve-rails corresponding in number to the said motors and supported one above every motor, each rail having bearing-surfaces on its under side in two different horizontal planes for cutting off at part stroke connections from said valve-rails to said valves, and a projection on the dependent portion of said car adapted to engage with said valve-rail, substantially as described.

20. The combination, with a movable car having a dependent portion, of a series of stationary pressure-motors acting on said car in succession, valves on said motors for controlling the supply of motive force to the same, vertically-movable horizontal valve-rails supported one above each of said motors, each rail having bearing-surfaces on its under side on two different horizontal planes, connections from said rails to said valves, a vertically-adjustable bar on the dependent portion of said car, a pair of lateral projections on said bar, one of which is fixed and the other adjustable horizontally to and from the same, and an operating-connection from said adjustable projection to within reach of the car-operator, substantially as described.

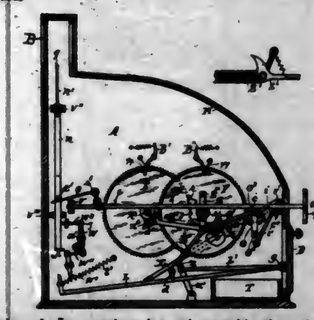
21. The combination, with a movable car, of a slotted power-conduit, swiveled bars extending from different parts of the car to the interior of the conduit, and braces connecting said bars, substantially as described.

22. The combination, with a movable car, of laterally movable head-blocks attached to the front and rear truck-frames, dependent bars swiveled in said head-blocks, and braces connecting said bars, substantially as described.

23. The combination, with a movable car, of a slotted power-conduit, laterally-movable head-blocks on the car, swiveled bars extending from said blocks through the slot into the interior of the conduit, and braces connecting said bars, substantially as described.

24. The combination, with a movable car, of a slotted power-conduit, laterally-movable head-blocks attached to the front and rear of the car, swiveled bars extending from said head-blocks through the slot into the interior of the conduit, braces connecting the parts of said bars within the conduit, a cam-track mounted on said braces, a series of pivoted levers within the conduit along the line of travel adapted to successively engage with said cam-track, and one or more motors for driving said levers, substantially as described.

409,206. CASH INDICATOR AND REGISTER. CLARENCE H. KAMLER, Wilmington, Ill. Filed Aug. 27, 1888. Serial No. 283,849. (No model.)



Claim.—1. In a cash-register, the combination of the series of numbered key-slides having a graduated series of rests *r*, the series of tablet-rods having numbered tablets to correspond with the numbers of the key-slides, the dial-wheels E and F, having numbered peripheral notches, the oscillating frame S, having the cross-bar S'', and the mechanism described for rotating said dials, substantially as and for the purpose set forth.

2. In the cash-register shown and described, the combination of the dials E and F, having numbered peripheral notches, the oscillating frame S, the dial E being arranged to be rotated by dial F one notch to each revolution of dial F, a series of numbered key-slides for rotating said dials, and having rests or stops *r* for controlling the rotation of said dials, so as to cause them to rotate the sufficient number of notches to register the aggregate of the denominational numbers of the key-slides, and the mechanism, substantially as shown, for connecting said slides and dials, substantially as and for the purpose set forth.

3. In the cash-register shown and described, in combination with the dials E and F, having numbered peripheral notches, the door D, and the mechanism for connecting said dials and door, substantially as specified, whereby the dials are rotated when said door is closed, the number of notches corresponding with the number of the key slide or slides by which said door was opened, substantially as and for the purpose set forth.

409,207. ELECTRICAL INDICATOR. EDWARD R. KNOWLES, Brooklyn, N. Y. Filed Feb. 14, 1888. Serial No. 263,843. (No model.)

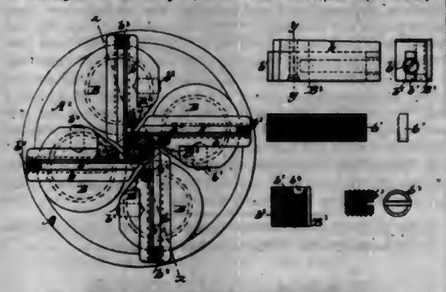


Claim.—1. In an electrical indicator, a coil or helix through which the main current passes, having marked upon its supporting-spool or upon a plate rigidly attached thereto a scale, the said coil and its spool being adjustably mounted upon a support or base, all in combination with an index or pointer whose movements are controlled by the magnetism induced by the helix, the said pointer being hung and normally balanced upon a shaft.

2. In an electrical indicator, a balanced shaft carrying an index or pointer, a magnet exerting its influence to rotate said shaft, a scale rigidly attached to the frame of said magnet, the magnet being rotably adjustable to bring any desired point on the scale into coincidence with the index or pointer.

3. The combination, with the magnet-coil, having attached thereto a scale, of the adjustable clips *b*, for the purpose described.

409,208. SCREW-CUTTING HEAD. ABRAHAM R. LANDIS, Waynesborough, Pa. Filed May 14, 1889. Serial No. 310,692. (No model.)



Claim.—1. In a screw-cutting head, the combination of a series of rotatable studs, a block secured in the head of each stud, a cutter adjustably secured in said block, a nut in engagement with the series of studs, and a screw-threaded sleeve in engagement with the center of said nut, substantially as described.

2. In a screw-cutting head, the combination of a series of rotatable studs, a block secured in the head of each stud, a cutter adjustably secured in said block, and a nut in engagement with a series of studs, substantially as described.

3. In a screw-cutting head, the combination of a longitudinally-slotted block and cutter therein, the slot in said block being screw-tapped, with a screw b^3 in said screw-tapped slot, substantially as and for the purpose described.

4. In a screw-cutting head, the combination of a longitudinally-slotted block and cutter therein, the slot in said block being screw-tapped for the reception of screw, with a screw b^3 and a screw b^4, inserted in said block alongside of the cutter, substantially as and for the purpose described.

5. In a screw-cutting head, the combination of a rotatable stud, a longitudinally-slotted block secured in the head of said stud, a cutter within the slot of said block, and a short screw b^3, inserted in the slot of the block in the rear of the cutter, the groove in said block being screw-tapped for its reception, substantially as described.

6. In a screw-cutting head, the combination of a rotatable stud, a longitudinally-slotted block secured in the head of said stud, a cutter within the slot of said block, a screw b^3, inserted in said block alongside of the cutter, and a screw b^4, inserted in the screw-tapped slot of the block, substantially as and for the purpose described.

7. In a screw-cutting head, the combination of a rotatable stud, a longitudinally-slotted block in the head of said stud and having a shoulder B^3 on one side and screw b^3 also in one side, a cutter within the slot of said block, a screw b^4, inserted in said block alongside of the cutter, and a screw b^3, inserted in the screw-tapped slot of the block, substantially as and for the purpose described.

8. In a screw-cutting head, the combination of a series of rotatable spirally-grooved studs, carrying cutters adjustably secured therein, and a nut in engagement with a series of studs and carrying a rack attached thereto and engaging with a pinion attached to the circular graduated dial on the periphery of the head, substantially as and for the purpose described.

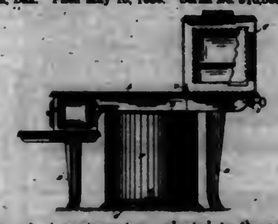
9. In a screw-cutting head, the combination of a series of rotatable spirally-grooved studs carrying cutters adjustably secured therein, a nut in engagement with the series of studs, a screw-threaded sleeve in engagement with the center of said nut, a bevel-tooth wheel upon one end of said sleeve, and a bevel-pinion f^4, meshing therewith and having a spindle extending to the periphery of the head, substantially as and for the purpose described.

10. In a screw-cutting head, the combination of a series of rotatable spirally-grooved studs carrying cutters adjustably secured therein, a nut in engagement with the series of studs, a screw-threaded sleeve in engagement with the center of said nut and having a groove cut in its periphery, a collar C in engagement with said groove, and a ring E, mounted upon said collar and capable of lateral movement, substantially as and for the purpose described.

11. In a screw-cutting head, the combination of a series of rotatable spirally-grooved studs carrying cutters adjustably secured therein, a nut in engagement with the series of studs, a screw-threaded sleeve in engagement with the center of said nut and having a groove cut in its periphery, a collar C in engagement with said groove, and a ring E, mounted upon said collar and capable of lateral movement and provided with a beveled surface d^4, with the radial locking-blocks *d*, having inclines d^5, substantially as and for the purpose described.

12. In a screw-cutting head, the combination of a longitudinally-slotted block having the bottom thereof tapering in thickness, a cutter secured within said block with its cutting end projecting beyond the end of the block, and said cutting end ground to form with the axis of the cutting-head an angle, as with line b^2, substantially as and for the purpose described.

409,209. STRAW-BURNING COOK-STOVE. GODFRED LAURS, Huron, Dak. Filed May 13, 1889. Serial No. 310,568. (No model.)

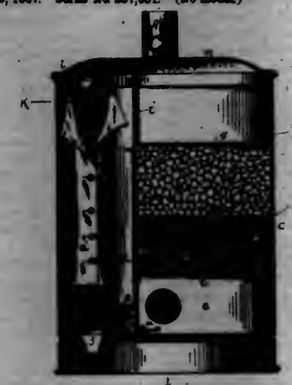


Claim.—1. A cooking-stove adapted to the use of straw, hay, wood, and coal as fuel, comprising an elevated shallow stove-body having a wood and coal fire-pot in its front and an opening in its under plate in the rear of the fire-pot, and a removable straw-burning magazine having an opening in its top adapted to register with said opening in the under plate of the stove-body, substantially as described.

2. A cooking-stove comprising a shallow stove-body having a wood and coal fire-pot in its front and an opening in its under plate in the rear of the fire-pot, suitable supports therefor so applied as to leave a clear space under the body of the stove in the rear of the fire-pot, and a removable straw-burning magazine having an opening in its top adapted to register with said opening in the under plate of the stove-body, substantially as described.

3. A cooking-stove comprising the stove-body A, with fire-pot A' and hearth A'', the supporting-legs B B', the partition *a*, the opening *a''*, the damper D, the oven C, and the removable fuel-magazine F, having an opening in its top adapted to register with the opening *a''*, substantially as described.

409,210. FILTER. PATRICK LAUGHLIN, Mount Sterling, Ky. Filed May 9, 1887. Serial No. 237,651. (No model.)



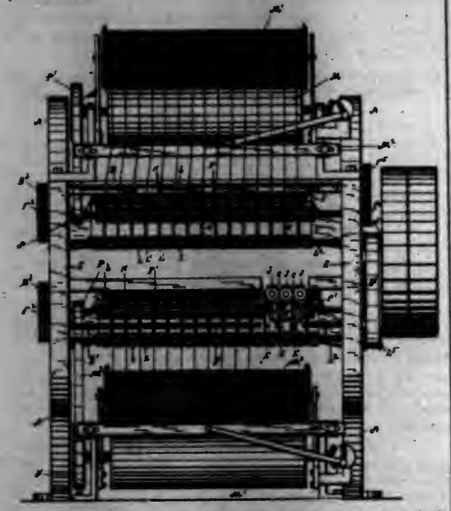
Claim.—1. The combination, in a filter-case C, of the receiving-chamber B at the bottom of said case, the partition *d*, the strainer *e* above the chamber B, and the filter-bed resting on said strainer, the screen *i*, and the clear-water chamber, with the removable tubular strainer K over the outlet *j*, as set forth.

2. The combination, in a filter-case C, of a partition *d*, a receiving-chamber B, and filter-bed on one side of said partition and a clear-water chamber on the other side, and the gate N and plug *m*, whereby silt may be washed from chamber B and discharged through gate N.

3. The combination, in a filter-case C, of the partition *d*, on one side whereof is the receiving-chamber B and the filter-bed, and the clear-water chamber on the other side, and the filtering leak-plug *l*, whereby the water in chamber B and in the filter-bed may be permitted to pass into the clear-water chamber and be saved.

4. The combination, in a filter-case C, of a partition *d*, having the receiving-chamber and filter-bed on one side and the clear-water chamber on the other side, an outlet *j*, and a removable tubular strainer K, with a removable cloth cover, as set forth, whereby the final strainer may be removed and cleansed at any time.

409,211. CONDENSING MECHANISM FOR CARDING-ENGINES. GEORGE LATHE, Worcester, Mass. Filed June 15, 1886. Serial No. 205,286. (No model.)



Claim.—1. The combination, with doffing mechanism by which several slivers or independent strands of roping are delivered in a common horizontal plane, of short belts arranged in a vertical plane, a belt being placed between each pair of contiguous strands of roping and each belt being driven through connected operating mechanism, substantially as described, and tightening devices applied to each of said belts, substantially as described, by which the pressure upon each of the strands of roping is varied, substantially as described.

2. The combination, with doffing mechanism by which slivers or independent strands of roping are delivered, of a roll over which said slivers pass, a weighted roll resting upon said slivers, a series of short independently-moving belts placed at right angles to said slivers as they are delivered from said rolls, and a series of pulleys arranged in pairs for supporting said belts, with the opposing surfaces of each pair of belts in contact with the slivers which pass between the belts and connected operating mechanism, substantially as described.

3. The combination, with the doffing mechanism by which slivers or independent strands of roping are delivered, of the roll F, weighted roll G, the roll F', and weighted roll H, a series of short independently-moving belts placed between the rolls F and F' and at right angles to the slivers as they pass from the rolls F G to the rolls F' H, and a series of pulleys arranged in pairs for supporting said belts, with the oppositely-moving surfaces of each pair of belts in contact with said slivers, and connected actuating mechanism by which said belts are operated, substantially as described.

4. The combination, with the doffing mechanism by which slivers or independent strands of roping are delivered, of the rolls F and F', of different circumferential speed, weighted rolls G and H, by which the slivers are held upon the rolls F and F', a series of short independently-moving belts placed between the rolls F F' and at right angles with the slivers as they pass from roll F to roll F', a series of pulleys arranged in pairs for supporting the belts with their oppositely-moving surfaces in contact with the slivers, and connected actuating mechanism by which said belts are operated, substantially as described.

5. In the condenser of a carding-engine, the combination, with a doffing-cylinder, of a series of flanged pulleys arranged in pairs and carrying belts placed at an angle with the slivers from the doffing-cylinder, a series of bevel gear-wheels attached to one of the flanged pulleys in each pair of pulleys, and a series of actuating bevel-gears engaging the bevel-gears attached to said pulleys, as described.

6. In the condenser of a carding-engine, the transverse slotted plate I, and a series of flanged pulleys held by said plate and carrying continuously-moving belts in contact with the sliver, and connected actuating mechanism by which said belts are operated, all combined as described.

7. The combination, with doffing mechanism by which slivers or independent strands of roping are delivered, of the rolls F and F', weighted rolls G and H, a series of short belts placed between the rolls F and F' at right angles to the axes of said rolls and also at right angles with said slivers, connected operating mechanism by which said belts are driven, and tightening devices by which said belts are independently tightened and the pressure varied upon each individual strand or sliver, substantially as described.

8. The combination of the transverse plate I, a series of pulleys supported upon said plate and carrying short independently-moving belts driven by connected mechanism, substantially as described, and placed at right angles to the slivers, which pass between them, levers pivoted upon said plate, and a friction-roll carried upon the free end of said levers and bearing upon the slack and inner side of said belts, whereby they are pressed against the slivers, substantially as described.

9. The combination, with doffing mechanism by which a series of slivers or independent strands of roping are delivered, of the rolls F and F', weighted rolls G and H, belts K, placed between said rolls and at right angles with their axes and also at right angles with said strands or slivers, said belts being driven through connected mechanism, substantially as described, and the bars *g g'*, by which the slivers, as they are delivered from the rolls F and H, are deflected to the winding mechanism, substantially as described.

409,212. ANIMAL-TRAP. LYSANDER H. LOOMIS, Wauwatosa, Wis. Filed Apr. 20, 1889. Serial No. 307,955. (No model.)

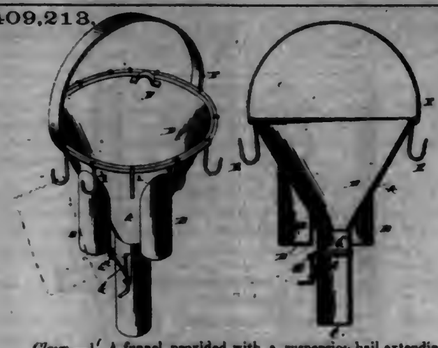


Claim.—1. The combination, with a case A, having an aperture R in its cover and a portion of the cover about a part of the aperture removable, of a trap having jaws H H, spring I, trigger-plate L, and latch M, the trap being located within the case in such manner that the trigger-plate L is directly below and at a short distance from the aperture R, substantially as described.

2. The combination, with a case A, having an aperture R in its cover, of a spring-trap having jaws H H and two prongs F F projecting inwardly from each of the jaws, substantially as described.

409,213. PAPER-BAG AND TWINE HOLDER. CHARLES A. LOWRY, Knoxville, Tenn. Filed Apr. 13, 1889. Serial No. 307,098. (No model.)

409,213.



Claim.—1. A funnel provided with a suspension-bail extending transversely across the mouth thereof and provided with a series of paper bag-receiving hooks, substantially as specified.

2. An outer funnel, and twine-holder opening into the same and depending therefrom, in combination with an inner funnel fitting in said outer funnel, substantially as described.

3. An outer funnel, twine-holders opening into the same and having perforations, and an outlet-cylinder at the mouth of said funnel, in combination with an inner funnel fitting into said outer funnel, substantially as described.

4. An outer funnel having hooks attached to its rim, and twine-holders opening into said funnel and depending therefrom, in combination with an inner funnel fitting into said outer funnel, substantially as described.

5. A funnel provided with a suspension-bail and with a cord-receiving pocket projecting from one side thereof, substantially as specified.

6. The combination, with an outer funnel having a series of depending cord-receiving pockets, the upper ends of which are open and flush with the funnel, of an inner funnel mounted in the outer funnel and closing said openings, substantially as specified.

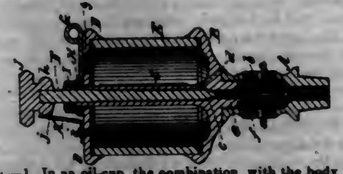
7. An outer funnel having hooks attached to its rim, twine-holders opening into said funnel and provided with perforations, and an outlet-cylinder at the mouth of said funnel, in combination with an inner funnel fitting into said outer funnel, a wire spring attached to said outlet-cylinder, a handle projecting through the sides of said cylinder, and a valve fixed to said wire, substantially as described.

409,214. STANDARD FOR LAMPS. OSCAR LUSTER, Brooklyn, N. Y. Filed Nov. 1, 1888. Serial No. 289,764. (No model.)



Claim.—An adjustable standard consisting of an upright stationary tube, a movable tube telescoping into the stationary tube, a soft-metal tube supported in the stationary tube, and an expanding mechanism attached to the telescoping tube and longitudinally adjustable in the soft-metal tube and constructed to produce indentures in the soft-metal tube to hold it in its adjusted position.

409,215. OIL-CUP. EDMUND LUNKENHEIMER, Cincinnati, Ohio, assignor to the Lunkenheimer Brass Manufacturing Company, same place. Filed May 20, 1889. Serial No. 311,377. (No model.)



Claim.—1. In an oil-cup, the combination, with the body of the cup and its rotating adjustable valve-stem provided with a collar having a flattened side, of the top cap of the cup made revolubie and having secured thereto a spring bearing against said collar on the stem, substantially as and for the purpose described.

2. In an oil-cup, the combination, with the body of the cup having a revoluble cap D, to which is secured an upwardly-extending flat spring K, of the hollow stem C and rotating valve-stem F, provided with a collar A, having a flattened side *j*, with which said spring K constantly engages under tension, substantially as and for the purpose described.

409,216. FLEXIBLE PIPE-JOINT. DANIEL W. MASON, New York, N. Y. Filed Apr. 4, 1887. Serial No. 233,582. (No model.)



Claim.—In combination with a number of lengths of rigid pipe, a joint composed of a body part *c*, forming a quarter-turn, with its bearing-face having an annular projection *c'*, the body part *d*, with an annular socket *d'* in its bearing-face, and the supplemental ducts *i*, leading from the annular chamber into the steamway, the bolt *e*, rigidly secured within one part and extending through the opposite wall of the other part and forming the central pivot of the joint, a screw-cap A, and the ring-packing *g* and *g'*, all substantially as described.

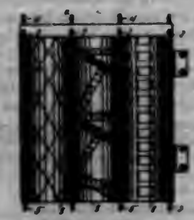
409,217. SAFETY-VALVE ATTACHMENT FOR GAGE-COCKS. FRANK MEARS, Cleveland, Ohio. Filed June 27, 1888. Serial No. 315,771. (No model.)



Claim.—1. In a valve of the character described, the chambered body E, having necks *c* and *c²* and a partition having valve-seat *c³*, the valve-stem F, having valve *f* and screw-threaded portion *f²* playing in neck *c²* and cap G, and having its inner end pointed and playing in lug *b⁴* of plug B, the handle H, and nozzle I, all constructed, combined, and operating substantially as described.

2. In combination, the hollow plug B, having nipple *b³* and valve-seat *b²*, the bail C, secured onto nipple *b³*, the valve D, having pointed stem *d* and playing in the bail C, and lug *b⁴* in plug B, the chambered body E, secured in plug B by neck *c* and having partition provided with valve-seat *c³*, and nozzle I, the valve-stem F, having valve *f*, and screw-thread *f²* playing in neck *c²* and cap G, and in lug *b⁴* of plug B, and having handle H, all constructed and arranged to operate substantially as and for the purpose specified.

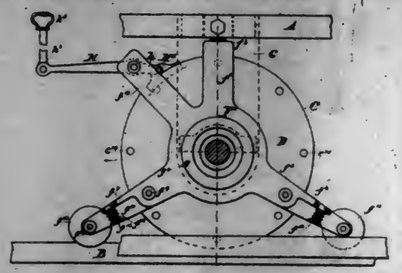
409,218. EXHIBITOR FOR WALL-PAPER OR OTHER GOODS. HERMAN MICHAELS, Denver, Colo. Filed Mar. 23, 1889. Serial No. 304,523. (No model.)



Claim.—1. A merchandise-exhibitor consisting of a base, curved or oval panels thereon, and goods-holders pivoted at one end to the base and snapping or springing over the edge thereof at the other end, substantially as set forth.

2. A merchandise-exhibitor consisting of a base, and a frame thereon for holding the goods thereto, having vertical wires pivoted at one end in the base and having snap ends for springing over the edge thereof at the other end, substantially as set forth.

409,219. CAR-WHEEL. WAITHAN M. MORGAN, Kansas City, Mo. Filed Sept. 7, 1888. Serial No. 284,309. (No model.)



Claim.—1. In a car-wheel having an axle and laterally-vibrating radial disks on said axle, the combination of laterally-extended supporting-cylinders on opposite sides of said disks in the line of the axis of said wheel, and suitably-connected circular disks loosely mounted in the line of their axis on said cylinders, having radial arms, substantially as and for the purpose described.

2. In a car-wheel having an axle and laterally-vibrating radial disks on said axle, the combination of laterally-extended supporting-cylinders on opposite sides of said disks in the line of the axis of said wheel, and suitably-connected circular disks loosely mounted in the line of their axis on said cylinder, having radial arms extending in the line of the tread of said wheel and provided with adjustable guide-rollers, for the purpose described.

3. The combination, with a car-wheel having an axle and suitable axle-bearings and with the opposite radial sides of said wheel, of laterally-extended flanged supporting-cylinders in the line of the axis of said wheel, and around said axle circular disks loosely mounted in the line of their axis on said cylinder and provided with radial arms extending downwardly in the line of the tread of said car-wheel and provided with laterally-adjustable guide-rollers, for the purpose described.

4. The combination, in a car-wheel having an axle, of laterally-vibrating radial disks on said axle, laterally-extended supporting-cylinders on opposite sides of said disks in the line of the axis of said wheel, and around said axle circular disks loosely mounted in the line of their axis on said cylinders and provided with radial arms extending downwardly in the line of the tread of said car-wheel and provided with laterally-adjustable guide-rollers, for the purpose described.

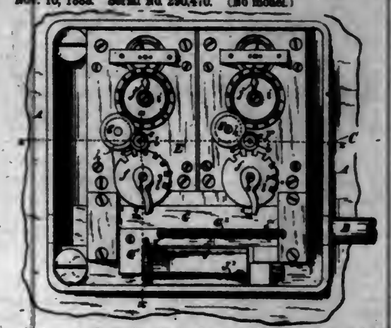
5. The combination, with a car-wheel having an axle and suitable axle-bearings and with the opposite radial sides of said wheel, of laterally-extended flanged supporting-cylinders in the line of the axis of said wheel, and around said axle circular disks loosely mounted in the line of their axis on said cylinders and provided with radial arms and extensions of said arms pivoted thereto, and having an intermediate spring-bearing for said radial arms thereon, and laterally-adjustable guide-rollers on the said extension of said arms extending downwardly to and in the line of the tread of said car-wheel, for the purpose described.

6. In the herein-described wheel, the combination, with the opposite radial disks of said wheel, of laterally-extended flanged supporting-cylinders in the line of the axis of said wheel, and around said axle circular disks loosely mounted in the line of their axis on said cylinders and provided with radial arms, an extension of said arms pivoted thereto and having an intermediate spring-bearing for said radial arms thereon, and laterally-adjustable guide-rollers on the said extensions of said arms extending downwardly to and in the line of the tread of said car-wheel, for the purpose described.

7. The combination, in a car-wheel having an axle and laterally-vibrating radial disks on said axle, of laterally-extended supporting-cylinders on opposite sides of said disks in the line of the axis of said wheel, and suitably-connected circular disks loosely mounted in the line of their axis on said cylinders, having radial rollers carrying arms extending in the line of the tread of said wheel, and anti-friction devices in the side of the disks of said wheel in rotary contact with said radial arms, for the purpose described.

8. The combination, in a car-wheel consisting of radial disks having concavé depressions extending through the sides of said disks and a ring forming the tread of said wheel between said disks, having transverse slots opposite said concave depressions, of anti-friction rollers in said transverse slots and globular rollers in said concave depressions in frictional contact, for the purpose described.

409,220. TIME-LOCK. LYMAN F. MUNGER, Rochester, N. Y. Filed Nov. 10, 1883. Serial No. 290,470. (No model.)



Claim.—1. In a time-lock, the combination, with the bolt and controlling devices therefor, of two time-movements mounted in separate frames independently of the bolt-controlling devices, interchangeable, and each arranged to operate independently the bolt-controlling devices at the same time and in the same manner even when they are interchanged, as set forth.

2. In a time-lock, the combination, with the bolt and controlling devices therefor embodying a portion adapted to be moved in one direction to cause the unlocking, of two interchangeable time-movements independent of the bolt-controlling devices and each other, arranged to operate said bolt-controlling devices in the same manner, substantially as described.

3. In a time-lock, the combination, with the bolt and controlling devices therefor embodying a portion adapted to be moved in one direction to cause the unlocking, of two interchangeable time-movements independent of the bolt-controlling devices and each other, arranged to positively operate the bolt-controlling devices in the same manner, substantially as described.

4. In a time lock, the combination, with a bolt and controlling devices therefor, of a clock-movement, stop-works therefor geared to the winding-arbor and adapted to operate directly upon the bolt-controlling mechanism, and an indicator also geared to the winding-arbor, substantially as described.

5. The combination, with the lock or dogging bolt, the movable catch or slide for holding the same in locked position, the latch and spring connecting it to the bolt, said latch being arranged next the slide in the direction in which the latter moves to effect the locking, of a tongue-piece or projection connected to the safe-bolt, arranged to strike the dogging-bolt when the latter is in one position and to engage said bolt and prevent its movement by the latch-spring when in another, substantially as described.

6. The combination, with the lock or dogging bolt, the movable catch or slide for holding the same in locked position, the spring for operating it, the latch and a spring connecting it to the bolt, said latch being arranged next the catch in the direction in which it moves to effect the locking, of a tongue-piece or projection connected to the safe-bolt, arranged to strike the dogging-bolt when the latter is in one position and to engage the latch-spring when in another, and a clock-movement arranged to operate the catch against the tension of its spring, substantially as described.

7. The combination, with the pivoted lock or dogging bolt, the pivoted latch for the same having a spring for moving it and a projection co-operating with the bolt to move in one direction, a spring connecting the bolt and latch for holding them together, of a catch or slide and a spring for moving it in a direction to engage first the latch and then the bolt, and a clock-movement arranged to operate the catch against the tension of its spring, substantially as described.

8. The combination, with the lock or dogging bolt, the catch or slide for locking the same, of the clock-movement, the wheel geared thereto carrying a pin or projection, and the loosely-pivoted arm normally out of engagement with the catch adapted, when moved by the projection on the wheel, to engage with and operate the catch releasing the dogging-bolt, substantially as described.

9. The combination, with the lock-casing and a support for the same, of the locking or dogging bolt, the catch controlling the same, and one or more clock-movements removably secured in the casing capable of being removed independent of the bolt or locking mechanism, and connections, substantially as described, between the movement and catch, as set forth.

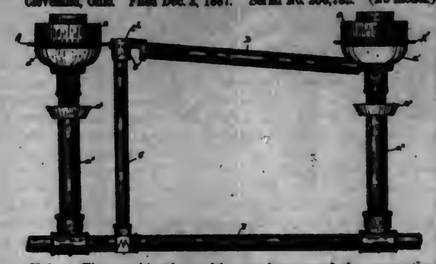
10. The combination, with the lock-casing and a support for the same, of the locking or dogging bolt, the catch controlling the same, and one or more clock movements removably secured in the casing capable of being removed independent of the bolt or locking mechanism, connections, substantially as described, between the movement and catch, and a bolt or bolts in engagement with the support, arranged to act directly upon the movement or movements and force them from their seats upon the approach of the lock-support and casing, as set forth.

11. The combination, with the lock-casing having apertures at opposite ends, of a laterally-movable locking-bolt, a catch, and one or more clock-movements for controlling it, whereby the lock is adapted for either right or left handed safe bolt-works, substantially as described.

12. The combination, with the lock or dogging bolt and the catch controlling the same, of the clock-movement having the winding-arbor, the stop-works embodying the disk and pin and the wheel *f*, the pin on the wheel, the arm journaled loosely on the arbor of the wheel *f*, the gears *c g h i*, and pointer *j*, substantially as described.

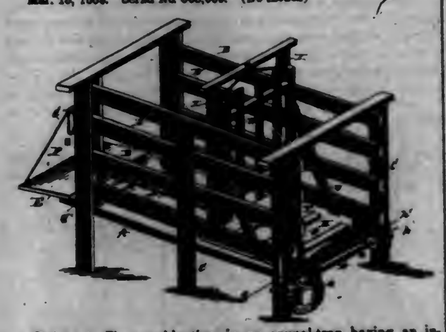
13. The combination of the pivoted lock or dogging bolt having the web or extension I, the pivoted latch having the pin K' engaging the bolt, the spring K^2, spring J^2, the slide G, having the lower extension, the spring G^2, and means, substantially as described, for operating said slide, as set forth.

409,221. VAPOR-BURNER STOVE. GEORGE B. MCCLELLAND, Cleveland, Ohio. Filed Dec. 2, 1887. Serial No. 256,782. (No model.)



Claim.—The combination, with two burners of the generating variety, of a generator located in position to receive heat from the first burner, said generator being provided with tube for conveying gas to the second burner for supplying initial heat to the latter, substantially as set forth.

409,222. GANGWAY FOR LOADING OR UNLOADING STOCK-CARS. JAMES W. MCIVER and JOHN H. MCIVER, Houston, Tex. Filed Mar. 13, 1889. Serial No. 303,092. (No model.)

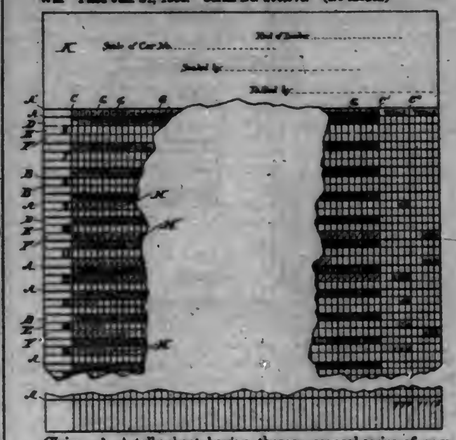


Claim.—1. The combination, in an animal-trap having an inclined bottom and opposite sides, of a winch journaled at one end thereof, a movable platform mounted on the bottom and provided with opposite posts at its front end, a gate hinged to one of said posts, and opposite chains connected to the winch at one end and passing over drums located at the opposite ends of the sides, the opposite terminals of the chains being connected to the opposite posts, substantially as specified.

2. The combination, with the opposite side frames B and the bottom A, mounted between the same, of the winch, consisting of the shaft P, journaled in the rear ends of the frames and provided with the drums *p p* and gear Q, the pinion R, and the drums N, mounted at the opposite end of the frame, the platform H, provided with rollers *n*, mounted for movement on the floor, and the posts I, extending vertically at the opposite sides and at the front end of the platform, the gate K, pivoted to one post and closing between the posts, and the chains M, having one of their ends connected with the drums *p* and passed over the drums N and connected with one of the posts I, substantially as specified.

3. The animal-gangway having the inclined bottom and opposite sides, in combination with a movable platform mounted on the bottom and provided with posts, a gate hinged to the posts, said platform being designed to drop down at one end of the trap and form an inclined plane, up which the animals can walk, and the operating means to move the platform and gate along the bottom of the gangway, substantially as specified.

409,223. TALLY-SHEET. BENJAMIN F. MCMILLAN, McMillan, Wis. Filed Jan. 21, 1889. Serial No. 296,970. (No model.)



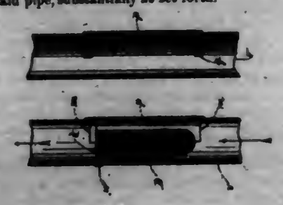
Claim.—1. A tally-sheet having thereon several series of numbers in arithmetical progression, one of which series is headed by a small number, and each succeeding series of which several series is headed by the number next larger than the one at the head of the preceding series, in combination with blank spaces adjoining and corresponding with the several numbers in each series of numbers, substantially as described.

2. A tally-sheet having several series of numbers in arithmetical progression, in each of which series the progression is by the amount of a corresponding number placed in larger character at or near the head of the column of the series, which numbers in large characters occur in the regular order of numeration, and the same numbers appear at the head of each of the corresponding columns of figures in arithmetical progression, in combination with one or more blank spaces opposite to and corresponding with the figures in the columns in arithmetical progression, substantially as described.

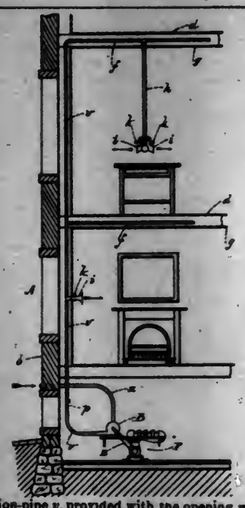
3. A tally-sheet having thereon several successive columns of figures, in each of which columns the figures are in arithmetical progression, and each successive column commencing with the next succeeding number in the order of numeration, in combination with spaces opposite to the numbers in said columns for receiving checks therein, and spaces at the ends of such series of spaces for checks for entering therein the totals indicated by such figures, substantially as described.

409,224. VENTILATOR. WILLIAM Y. OSGOOD, Lynn, Mass., assignor to the Standard Mining and Ventilating Company, Portland, Me. Filed Feb. 8, 1889. Serial No. 299,166. (No model.)

Claim.—1. In a ventilator, the combination of a rotary blower provided with an induction-pipe for supplying fresh air thereto, an eduction-pipe connecting said blower with different stories of the building, said eduction-pipe being provided with a side opening and with a door for closing said opening, branch pipes leading from the eduction-pipe into the different rooms of the building and provided with mouth-pieces having valves for closing the same, and a receptacle detachably disposed in said eduction-pipe opposite said opening, and adapted to contain disinfecting material for impregnating the air as it passes through said pipe, substantially as set forth.

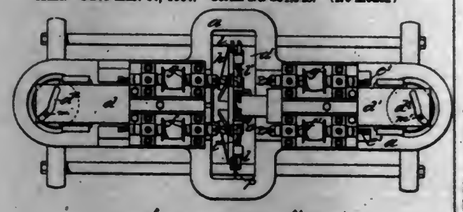


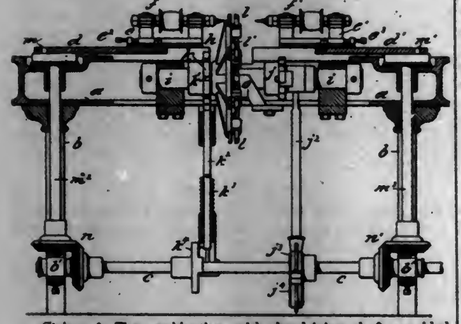
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2. The eduction-pipe *v*, provided with the opening *m*, door *p*, and studs *w*, in combination with the reticulated holder D, adapted to contain disinfecting material and provided with the plate *t*, and adjunctive mechanism for forcing air through said pipe, substantially as described.

409,225. BUTTON-MAKING MACHINE. PHILIP A. OTIS, Leeds, Mass. Filed Mar. 17, 1887. Serial No. 231,343. (No model.)





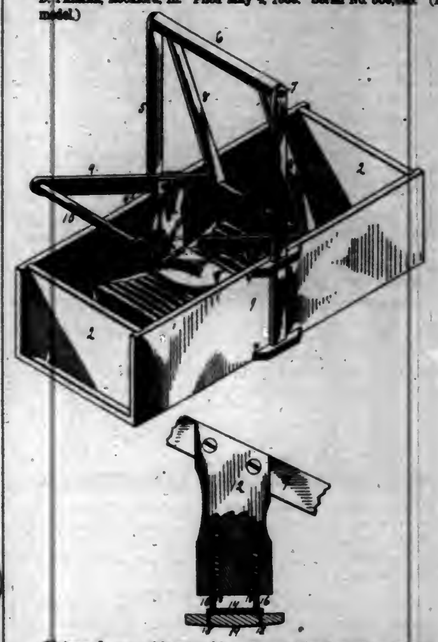
Claim.—1. The combination, with the driving-shaft provided with gears on its ends and the revolving head having blank-holding jaws, of the vertical shafts m^3 and m^4, having gears to mesh with the gears on the driving-shaft and provided with eccentrics on their upper ends, and the reciprocating beds d', carrying the rotatable shapers *f*, all substantially as described.

2. The combination, with the driving-shaft having the cams h^2 and j^2, and the revolving head mounted on the shaft *i*, of a locking-disk *k*, mounted on the shaft of the revolving head and provided with indentations *k'*, the vertically arranged and reciprocating pawl k^3, connected to the cam k^4 on the driving-shaft and provided with the spiral spring k^5, arranged about the body of the pawl, the vertically-arranged pawl j^3, connected to the cam j^2 on the driving-shaft, and the ratchet *j* on the shaft *i*, substantially as and for the purpose specified.

3. The combination, in a button-making machine, of the vertically-arranged rotatable shafts carrying eccentrics on their upper ends, the reciprocating tables connected to the eccentrics, the adjustable tables carrying the cutters, and the intermitting rotatable holding-head, all substantially as described.

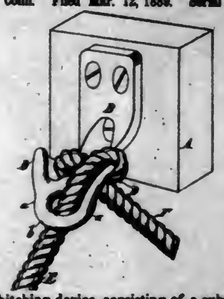
4. The combination, with the rotating head carrying the spring-actuated clamping-jaws, of the cam *o*, to open the said jaws, and the clearer *p*, to push the pieces from the jaws, all substantially as described.

409,226. WASHING-MACHINE. HENRY H. PALMER and SAMUEL D. PALMER, Rockford, Ill. Filed May 4, 1888. Serial No. 309,823. (No model.)



Claim.—In a washing-machine, the combination of an operating-handle, a lower rubbing-surface, a rubbing-board, said rubbing-board having a yielding connection with the operating-handle, said yielding connection consisting of a metallic plate secured to the rubbing-board, arms projecting from the plate and entering recesses in the pendent support, springs in the recesses against which the arms press, and stops for holding the arms of the plate in the recesses, substantially as set forth.

409,227. HITCHING DEVICE FOR ROPES. ISAAC R. PALMER, Middletown, Conn. Filed Mar. 12, 1889. Serial No. 303,009. (No model.)

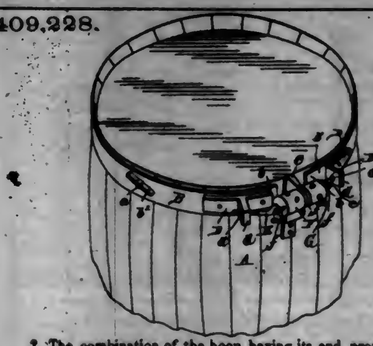


Claim.—A hitching device consisting of a substantially straight stem having a bifurcated forward end and two upwardly-extending horns—one upon each of the bifurcations—said horns diverging laterally from each other, and also extending rearwardly at an incline, substantially as specified.

409,228. BARREL-HOOP. GEORGE W. PARRISH, Salem, Va. Filed June 1, 1888. Serial No. 312,858. (No model.)

Claim.—1. A contractile hoop provided with a series of inclined slots designed to be engaged by screws or the like projecting from the side of a barrel, whereby, when it is contracted, it will be drawn farther on a barrel, substantially as described.

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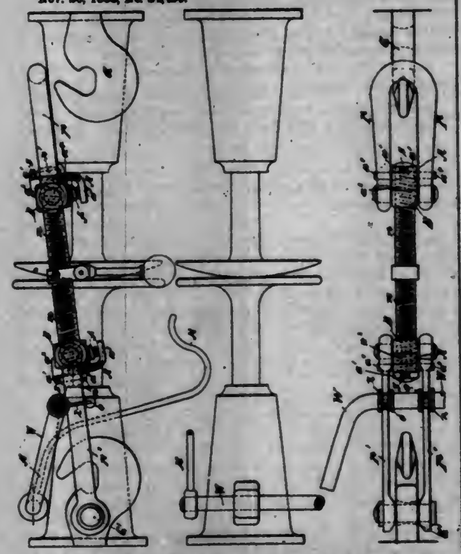


2. The combination of the hoop having its end provided with plates having threaded openings, the screws provided with eyes and engaging the threaded openings, and the bar having rings at its ends to receive the eyes of said screws, whereby a flexible connection is formed, substantially as described.

3. The combination of the hoop provided with end plates having threaded openings, the screws provided with eyes and engaging the threaded openings, the bar having rings at its ends engaging the eyes of said screws, and an annular groove intermediate of said ends, and the central plate designed to be carried by a barrel, provided with the curved recess for engaging the annular groove, substantially as and for the purpose described.

4. The combination of the hoop provided with end plates, the screws having eyes and engaging threaded openings in said plates, the bar provided with rings to receive said eyes and having a series of transverse perforations, and a locking-screw passing through one of the perforations and adapted to engage a barrel, substantially as described.

409,229. CAR-COUPLING. ALBERT PAUL, Berlin, Germany, assignor of two-thirds to Simon Ehrenwerth, same place. Filed Nov. 22, 1888. Serial No. 291,614. (No model.) Patented in England Nov. 7, 1888, No. 14,137; in France Nov. 12, 1888, No. 194,063; in Belgium Nov. 13, 1888, No. 83,934; in Switzerland Nov. 15, 1888, No. 36, and in Italy Nov. 30, 1888, No. 24,439.



Claim.—1. In car-couplings, the combination of an ordinary car-coupling with shaft W, hand-lever H, and carriers A A, substantially and for the purpose as described.

2. In car-couplings, the combination of links *p' p' p p*, screw *n*, with projection *s*, nuts B B, carriers A A, with slots *t' t'*, and springs *f f*, links *z z*, with rollers *o o*, substantially and for the purpose as described.

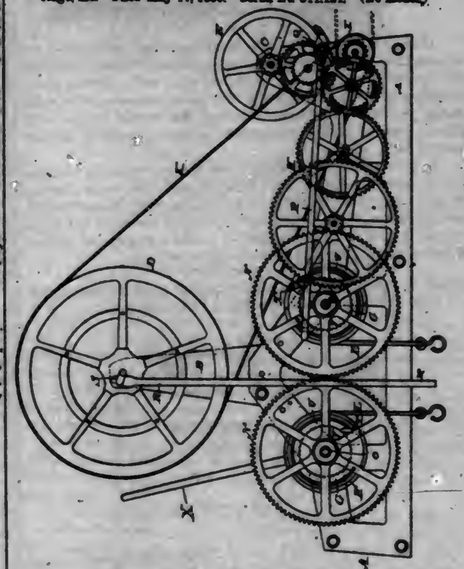
3. In car-couplings, the combination of the carriers A A, having the arms a^4 a^4, flanges a' a^3 a^3, the flange a' having a slot *t'*, nuts B B, springs *f f*, right and left hand screw *n*, with the heads *n'*, having the projections *s s*, links *p p' p'*, cranked shaft W, hand-lever H, and lifting-links *z z*, which carry the rollers *o o*, substantially and for the purpose as described.

409,230. PROCESS OF MAKING FERTILIZERS. CARMEN C. PECK, New York, N. Y. Filed Feb. 6, 1889. Serial No. 298,176. (No specimens.)

Claim.—1. The process herein described of manufacturing fertilizing material, consisting in concentrating the water resulting from rendering processes to a semi-liquid condition, and then mixing it with infusorial earth for the purpose and substantially in the manner described.

2. The process herein described of manufacturing fertilizing material, consisting in concentrating the water resulting from rendering processes to a semi-liquid condition, mixing the same with infusorial earth, and drying the compound thus formed, substantially in the manner and for the purpose described.

409,231. MOTOR. JOSEPH R. PECK and MARION ROBERTS, Breckenridge, Mo. Filed May 17, 1889. Serial No. 311,121. (No model.)



Claim.—The combination, with the main frame having the upward projections B and C, of the drums, their cords and weights, the two large gear-wheels N N, connected by ratchets and pawls with the drums, the train of gears H, the fly-wheel, the two hand-wheels and band, and the pitman for connecting with machinery to be driven, substantially as set forth.

409,232. LOOM-SHUTTLE. CHARLES G. PEYSOLD, Lawrence, Mass., assignor to the Arlington Mills, same place. Filed Feb. 16, 1884. Serial No. 120,864. (No model.) Patented in England Nov. 4, 1884, No. 14,574.



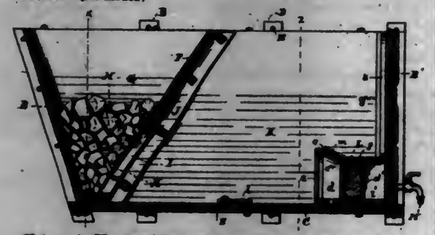
Claim.—The body of the shuttle, the spindle-receiving block provided with a notch 4, a co-operating spring, the pin *b'*, by which the said block is pivoted in the shuttle-body, and the pin *m*, combined with the headed spindle *c*, having the aligning surface *c* and the notch 3 to co-operate, respectively, with the pins *b'* and *m*, substantially as shown and described.

409,233. HARROW. SOLOMON L. POWELL, Centre Town, Mo. Filed Mar. 5, 1888. Serial No. 302,472. (No model.)



Claim.—The combination, with a harrow-frame composed of a series of flexibly-connected toothed bars, of a bolt secured centrally to and extending upwardly from one of the bars, a flanged plate mounted upon the said bolt, and a longitudinal stiffening-bar adapted to be secured detachably thereto, substantially as set forth.

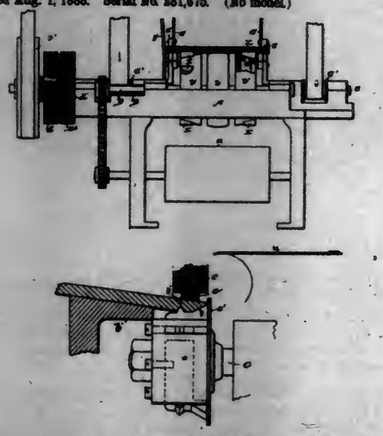
409,234. APPARATUS FOR MAKING AND FILTERING BRINE. BARTHOLOMEW B. GUINN, Cleveland, Ohio. Filed Apr. 27, 1889. Serial No. 308,780. (No model.)



Claim.—1. The combination, in an apparatus for making and filtering brine, of a vertically-tapering depositing-compartment for the rock or coarse salt, having a screen and rack, and a filtering device consisting of a compartment-box with flaring canvas-covered inlet, having perforated partitions traversing the interior thereof, with filtering material between the same, substantially as and for the purpose set forth.

2. In an apparatus for making and filtering brine, the combination of the screen H, the rack I, arranged in relation to and forming the lower part of the partition F, and the tapering compartment G and the filter L, with canvas *e* and perforated partitions *d d'* in the interior thereof, forming chambers *d'*, *f*, and *i*, constructed and arranged substantially as and for the purpose set forth.

409,235. CROZING-MACHINE. LEMON M. REED, Cleveland, Ohio. Filed Aug. 1, 1888. Serial No. 281,675. (No model.)



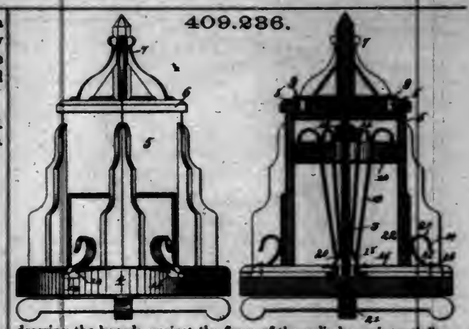
Claim.—1. In a stave-crozing machine, the combination, with a former made up of center and end sections, the latter having projections thereon for engaging the staves and adjustably secured on the shaft, whereby they can be moved toward and away from the central section, curved presser-bars located at one side of the vertical center of the former, and standards for supporting a series of staves, the said standards being located adjacent to and in front of the upper ends of the presser-bars, of cutter-heads for crozing and dressing the ends of the staves and cutting the latter into lengths, substantially as set forth.

2. The combination, with a sectional former and cutter-heads for cutting and dressing the ends of the staves, of the presser-bars located wholly to one side of the vertical center of the former, and standards also located on the same side of the vertical center of the former and adapted to support a number of staves, substantially as set forth.

409,236. DOCUMENT-FILE. ROBERT S. RICE, Kaufman, Tex. Filed Jan. 24, 1889. Serial No. 297,405. (No model.)

Claim.—1. In a file, the combination, with a lower disk or base having a series of radiating ways each provided with a sliding block and clamp-board, of a polygonal cylinder mounted on the disk and having its faces parallel with the clamp-boards, and of springs for

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drawing the boards against the faces of the cylinder, substantially as described.

2. In a file, the combination, with a lower disk or base provided with a series of radiating grooves, of a centrally-arranged polygonal-faced cylinder having springs, and of a series of sliding blocks mounted for movement in the grooves and connected each to one of the springs, and each provided with a clamping-board adapted for closing against the adjacent faces of the cylinder, substantially as specified.

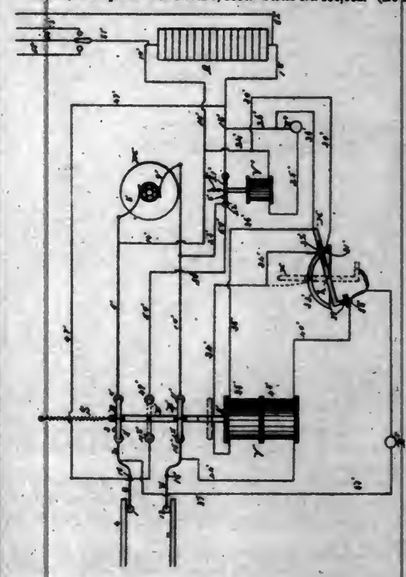
3. In a file, the combination, with a base or disk having a series of radiating grooves provided with sliding blocks, and with a cylinder mounted on the disk, of a clamping-board extending vertically from each of the blocks, and a flat spring serving as a pull connected to the block and to the board, substantially as specified.

4. The combination, with the disk 4, having the grooves 13 and blocks 15, and the cylinder, of the clamping-boards 17, terminating in the pulls 24, secured to the clamp-boards, as at 22, and slotted at their lower ends, as at 25, and loosely secured to the blocks by pins 26, substantially as specified.

5. The disk 4, in combination with the polygonal-faced cylinder 5 and the radial braces 23, arranged to embrace each of the angles of the cylinder, substantially as specified.

6. The disk 4, having the recesses 13, shouldered, as at 14, in combination with the cylinder 5, having the internal rings 10, carrying the depending series of springs 19, terminating in hooks 20, and with the sliding blocks 15, shouldered, as at 16, to ride in the recesses 13, and provided with tongues 18, connected with the hooks 20 and the clamp-boards 17, and the spring-draw 21, slotted, as at 25, and connected to the block by pins 26 and to the board by pin 22, and terminating in the curved pull 24, substantially as specified.

409,237. ELECTRICAL-RAILWAY SYSTEM. ELIAS E. RIES, Baltimore, Md., assignor, by direct and mesne assignments, to Ries & Henderson, same place. Filed Jan. 9, 1886. Serial No. 188,062. (No model.)



Claim.—1. In an electrical-railway system, the combination, with the conducting-rails and automatic switches for cutting sections of said conducting-rails out of circuit, of one or more cars arranged to run upon the railway, a motor upon each of said cars connected with its wheels for propelling the same, one or more collectors arranged to communicate electrical current from the conducting-rails to the motor, secondary or accumulating batteries located on the cars, switching devices and conductors arranged to connect the collectors with said secondary or accumulating batteries for charging the same, automatic devices for disconnecting said batteries from the charging-circuit when fully charged, and automatic switching devices for connecting said secondary or accumulating batteries with the motor when the supply of current from the conducting-rails is cut off, essentially as set forth.

2. In an electrical railway, the combination of the main charged circuit formed in part by the conducting-rails, the car having the motor and secondary batteries mounted thereon and connected with the charged circuit in multiple arc, and automatic switch devices for cutting out the batteries when charged and for reconnecting said batteries in the charged circuit when wholly or partly exhausted by leakage or use, substantially as described.

3. In an electrical railway, the combination of the main charged circuit formed in part by the conducting-rails, the car having the motor and secondary batteries mounted thereon and connected with the charged circuit in multiple arc, automatic switch devices for cutting out the batteries when charged, a working-circuit containing the batteries and motor, and switching devices for cutting said motor out of the charged circuit and placing it in the working-circuit, substantially as described.

4. In an electrical railway, the combination of a main circuit, part of which is formed by the conducting-rails electrically charged from a stationary source of electricity, a motor-car having collectors mounted thereon for connecting the motor with and disconnecting it from the main circuit, with secondary batteries arranged upon the car to be charged from a branch of the main circuit, an electrically-operated switch controlled by currents from the main circuit and from the secondary battery for connecting the latter with the motor when the main current fails, a switch connected with the collectors for withdrawing the currents from the electrically-operated switch when the main circuit is broken, and another electrically-operated switch for simultaneously disconnecting the motor from the secondary battery, substantially as described.

5. In an electrical railway, the combination of the main circuit, the conducting-rails forming a part thereof, the car, the secondary batteries and motor mounted thereon, a switch, and a double solenoid for operating the same to cut the batteries and motor out of the main circuit upon a failure of current, one coil of said solenoid being in the main circuit and the other in a derived circuit with the secondary batteries, substantially as described.

6. The combination, with the main charging-circuit, a secondary battery or batteries, and an electromotor interposed therein in multiple arc, of a switch in said circuit arranged to interpose the batteries in the circuit with the motor and to sever the main circuit, and an electro-magnetic device operating upon a failure of current in the main charging-circuit to operate the switch and cause the operations mentioned, substantially as described.

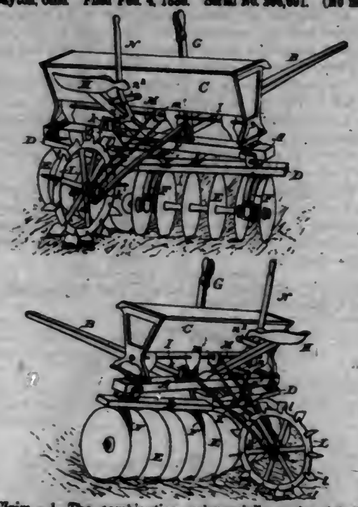
7. The combination, with the main charging-circuit, the motor and a secondary battery or batteries coupled therein, and a switch arranged when operated to break the main circuit and couple the motor and batteries in circuit together, of a double solenoid for controlling said switch, one coil of said solenoid being coupled in the main circuit and the other in a circuit from the secondary battery, whereby upon a failure of current in the main charging-circuit the switch will be operated and the operations mentioned will take place, substantially as described.

8. The combination, with the main charging-circuit, the motor and secondary battery or batteries coupled therein, and a switch arranged when operated to break the main circuit and couple the motor and batteries in circuit together, of a double solenoid for controlling said switch, each coil of said solenoid being coupled in an independent circuit, a switch controlling both the solenoid-circuits, so that they may both be manipulated simultaneously, thus preventing the operation of the main-circuit switch.

9. In an electrical railway, the combination, with the main charging-circuit formed in part by the conducting-rails, the motor and secondary battery or batteries coupled therein, and a switch arranged when operated to break the main circuit and interpose the motor and battery in circuit together, of a double solenoid for controlling the said switch, each coil of said solenoid being coupled in an independent circuit, the current-collectors, and switches connected with the current-collectors arranged in both said circuits, so that when the collectors are moved out of contact with the rails the solenoid-circuits will be simultaneously operated and the switch controlled thereby remain undisturbed, substantially as described.

10. The combination, with the main charging-circuit, of the motor and secondary battery or batteries coupled in said circuit in multiple arc, automatic switch devices for cutting out the batteries when charged, a working-circuit containing the batteries and motor, and switching devices for cutting said motor out of the charging-circuit and placing it in the working-circuit, substantially as described

409,238. ATTACHMENT FOR DISK HARROWS. SEBASTIAN RITTY, Dayton, Ohio. Filed Feb. 4, 1889. Serial No. 298,691. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the cross-head, the disk-gangs carried thereby, the floating frame, and the paddle-wheel mounted in bearings in the rear end of said frame behind the disk-gangs and centrally thereof.

2. The combination, substantially as hereinbefore set forth, of the seeder-shaft having a sprocket about centrally of its length, the cross-head, the disk-gangs, the floating frame hinged to said cross-head, the paddle-wheel mounted in bearings at the rear end of said frame behind the inner ends of the disk-gangs and having a sprocket on its hub, and the chain connecting said sprocket with the sprocket on the seeder-shaft.

3. The combination, substantially as hereinbefore set forth, of the seeder-shaft having a sprocket about centrally of its length, the cross-head, the disk-gangs, the floating frame hinged to said cross-head, the paddle-wheel mounted in bearings at the rear end of said frame behind the inner ends of the disk-gangs, and having a sprocket on its hub, the chain connecting said sprocket with the sprocket on the seeder-shaft, and the lever connected with said floating frame to raise the paddle-wheel from contact with the ground.

4. The combination, substantially as hereinbefore set forth, with the driver's seat, of the floating frame, the paddle-wheel carried thereby, and the shield or guard carried by said frame between the wheel and the seat-standard.

409,239. SUSPENSION-HOOK. LOUIS P. ROLLER, Rutledge, Pa. Filed Mar. 22, 1888. Serial No. 304,200. (No model.)



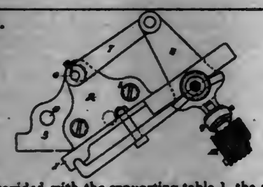
Claim.—A strap having a buckle, in combination with a hook having a loop in its upper end through which the strap passes, and a plate secured to the back of the loop end of the hook and adapted to be in contact with the said strap, substantially as described.

409,240. SHOE-BURNISHING MACHINE. SIMON ROSE, Jr., Linwood, Ohio. Filed Dec. 19, 1888. Serial No. 294,102. (No model.)

Claim.—1. The combination of the swinging bracket 2, adjustable to different angles and provided with the supporting-table 1, the vibratory arm 7, and the oscillating arm 8, carrying a burnisher and connected with and operated by the vibratory arm, substantially as described.

2. The combination of the driving-shaft 6, having an eccentric, the swinging bracket 2, hung on the shaft, adjustable to different

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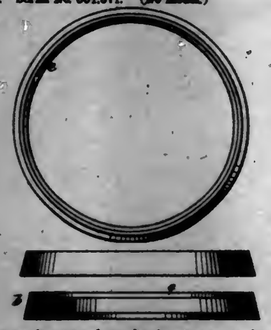


angles, and provided with the supporting-table 1, the vibratory arm 7, connected with the eccentric of the driving-shaft, and the oscillating arm 8, carrying a burnisher and connected with and operated by the vibratory arm, substantially as described.

3. The combination of the bracket 2, adjustable to different angles and having the supporting-table 1, the shaft 11, carrying a beader, the oscillating arm 8, carrying a burnisher and secured to the beader-carrying shaft, the vibratory arm 7, connected with the oscillating tool-carrying arm, and the driving-shaft 6, for operating the vibratory arm, substantially as described.

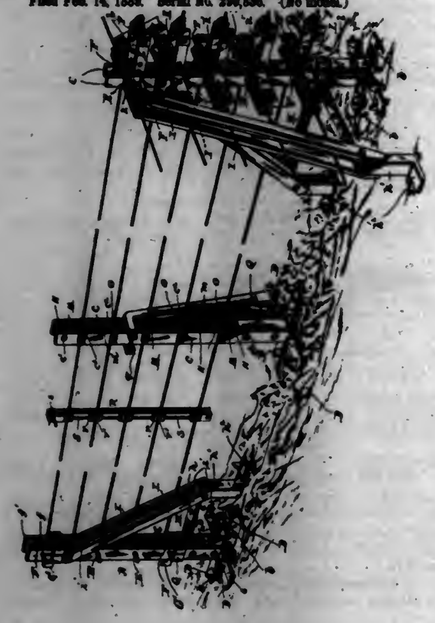
4. The combination, with a stationary bracket 3, of a swinging bracket 2, adjustable thereupon to different angles and carrying a table provided with a shaft having a beader and an oscillating arm having a burnisher and secured to said beader-carrying shaft, substantially as described.

409,241. TRUSS-HOOP. LAWRENCE ROTH, Cincinnati, Ohio. Filed Mar. 5, 1889. Serial No. 301,571. (No model.)



Claim.—A tapering truss-hoop having the upper inner edge cut away or beveled off, as shown, as and for the purpose set forth.

409,242. WIRE FENCE. THOMAS I. ROBERTS, Centre Valley, Ind. Filed Feb. 14, 1889. Serial No. 299,836. (No model.)



Claim.—1. The combination of the stock provided with horizontal feet, which are anchored to the surface of the ground, the vertical parallel side straps bolted to the stock and provided with horizontal feet bearing on the surface of the ground, and the winding-spools arranged between the straps to receive the wire, substantially as specified.

2. The combination of the vertical stock secured to the ground, the side straps bolted to the stock, the lower brace having a vertical standard bearing on the ground and a horizontal portion secured at its ends to the stock, and the inclined braces bolted at their upper ends to the side straps and at their lower ends to the lower brace, substantially as specified.

3. The combination of the stock having side straps bolted thereto, the lower brace having a vertical standard provided with a foot which bears on the ground, and a horizontal portion which extends between the side straps, and is provided with a depending arm b^3, which is bolted to the stock, and the inclined braces bolted to the side straps and the lower brace and provided with shoulders on their inner sides to engage the same, substantially as specified.

4. The combination, with the side straps having registering perforations, of the bolt inserted in said perforations and having one end angular to be engaged by a wrench, and provided with a tightening-nut on its other end adapted to be turned up against the side straps, the winding-spool secured rigidly on said bolts between the straps and having ratchet-wheels at their ends, and the pawls pivoted to the straps above the spools and engaging the ratchet-wheels, as set forth.

5. The combination, with the parallel side straps secured at their lower ends to a stock and having tightening-spools mounted therebetween, of the clips G G, arranged in contact with opposite sides of the straps, the hinge provided with a shouldered shank engaging perforations in the said clips, and the nut engaging the free threaded end of the said shank, substantially as specified.

6. The combination, with the vertical parallel straps having winding-spools arranged therebetween, and the braces connected to the said straps, of the horizontal plates bolted to opposite edges of the straps, and the winding-spools arranged between the adjacent free ends of the plates to engage the ends of the wires of an intersecting fence, substantially as specified.

7. The combination, with a post comprising vertical parallel straps having winding-spools arranged therebetween to engage the fence-wires, of the transverse horizontal parallel plates K K, bolted to opposite sides of the post and provided at their extremities with winding-spools to engage the wires of the intersecting fence, and the yokes L L, bolted to the centers of the plates K and having winding-spools arranged between their free ends to engage the wires of the main fence, substantially as specified.

8. The combination, with the posts provided with wire-stretching spools, of the intermediate post having the parallel vertical straps, and the clevises or guides arranged between the said straps to guide the wire, substantially as specified.

9. The combination, with the posts provided with wire-stretching spools, of the intermediate post having parallel side straps, and the guiding-spools arranged at suitable intervals between the straps to guide the wire around a curve or over uneven ground, substantially as specified.

10. The combination, with the posts provided with wire-stretching spools, of the intermediate posts having the parallel vertical straps provided with recesses c^2 in their inner sides, the U-shaped clevises fitting in said recesses and the guiding-spools arranged in said clevises, as set forth.

11. The combination, with the posts provided with wire-stretching spools, of the intermediate post having parallel side straps secured at their lower ends to a stock, the transverse bolt connecting the upper ends of the said straps, the guides or clevises M M, arranged between the side straps and provided with vertical perforations, the vertical rod fitting in the said perforations and perforated at its upper end to receive the said transverse bolt, and the loop-shaped brace Q, passing at its free ends on opposite sides of the straps and provided with a transverse bar to bear against the same, and the bolt engaging the free ends of the brace, substantially as specified.

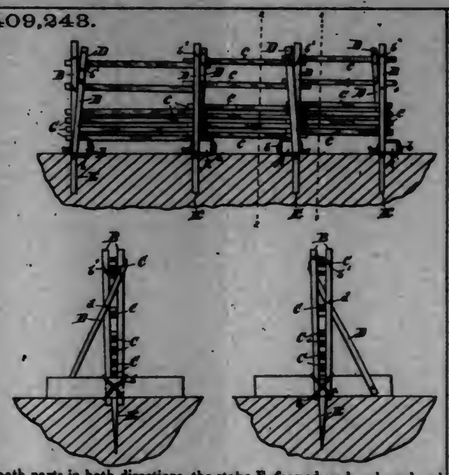
12. The base for fence-posts, consisting of the stock B, and the metallic foot extending horizontally from the upper end of the stock and having one end bolted to the stock and its other end resting on and anchored to the ground, as set forth.

13. The combination of the stock, the side straps bolted to the stock and having their lower ends bent horizontally outward therefrom, and the foot bolted to the stock and extending therefrom at right angles to the lower ends of the side straps, as set forth.

409,243. FENCE. WILLIAM V. RUSSELL, Greenville, Ohio. Filed Mar. 8, 1889. Serial No. 302,603. (No model.)

Claim.—1. The combination, in a fence, of the foot A, the pair of uprights B, secured thereto by a tie-wire passing diagonally around

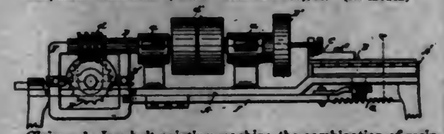
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both parts in both directions, the stake E, formed wedge-shaped and driven between the lower ends of said uprights under said tie-wire, the rails C, and the tie-brace D, inserted in the tie-wire b' at its top and secured to the foot at its bottom, substantially as set forth.

2. In a fence, the combination of the foot A, the uprights B, secured to said foot, as described, the stake E, also arranged as described, the tie-wire b' at the top of said uprights, the rails C, and the tie-brace D, inserted in said tie-wire b' at one end and secured to the foot at its other, said brace being secured to the side of the uprights which is adjacent to said foot, and having a pin, nail, or similar device inserted through it and one or both of said uprights where they cross, substantially as set forth.

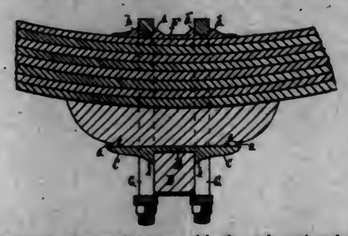
409,244. BOLT-POINTING MACHINE. FRANK R. SCHIELD, Cleveland, Ohio. Filed Feb. 7, 1889. Serial No. 299,061. (No model.)



Claim.—1. In a bolt-pointing machine, the combination of reciprocating carriage bearing bolt-holder and cams for reciprocating the carriage, and a sliding bar and cam-yoke connecting the carriage and cams, substantially as set forth.

2. In a bolt-pointing machine, the combination, with a reciprocating carriage and cams for reciprocating the carriage, of a sliding bar and cam-yoke connecting the carriage and cams, and a spring for assisting the carriage in its movements away from the cutter-head, substantially as set forth.

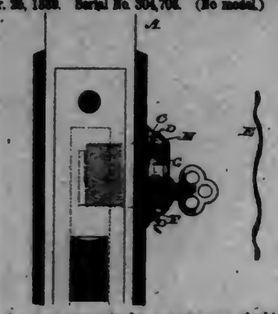
409,245. SPRING BEARING-BLOCK FOR VEHICLES. FERDINAND SEILER, Akron, Ohio. Filed Dec. 26, 1888. Serial No. 294,712. (No model.)



Claim.—1. The combination, with the axle and spring, of the bearing-plate B, having the lugs i, arms C, provided with flanges e, and depending ribs b, block D, having shoulders f, saddle-plate F, convex in cross-section upon its upper face and provided with the parallel transverse ribs A, and the retaining-clips G, the parts being constructed and arranged substantially as and for the purpose described.

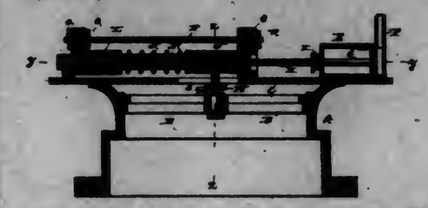
2. The combination, with the axle and spring, of the bearing-plate B, having an extension c, convex in cross-section upon its upper face and provided with the parallel transverse ribs d, lugs i, arms C, provided with flanges e, and depending ribs b, block D, having shoulders f, saddle-plate F, convex in cross-section upon its upper face and provided with parallel transverse ribs A, and the clips G H, the parts being constructed, arranged, and operating substantially in the manner and for the purpose set forth.

409,246. ROSE FOR LOCKS. ALVIN A. SILVERMAN, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, same place. Filed Mar. 26, 1889. Serial No. 304,703. (No model.)



Claim.—A rose composed of two parts, one of which is adapted to bear against a door and the other against a knob, escutcheon, or the like, and a spring operating upon one of said parts and permitting motion of it relatively to the other part, so as to expand or contract the thickness of the rose, substantially as set forth.

409,247. AUTOMATIC DAMPER FOR BOILER-FURNACES. FREEMAN R. SHANK, Trotwood, Ohio. Filed Apr. 25, 1889. Serial No. 308,499. (No model.)



Claim.—1. The combination of the valve-case, the cylinder mounted upon the same, the piston working in said cylinder, a pipe connecting the outer end of said cylinder with the steam-boiler, the rotary valve, a lever connected with said valve, and the cross-head at the outer end of the piston-rod, working between suitable guides and having a stud working in a slot in the valve-operating lever, substantially as and for the purpose set forth.

2. The combination of the valve-case, the rotary valve, the steam-cylinder, the piston working in the latter, the cross-head at the outer end of the piston-rod, a spring bearing against the said cross-head, and a lever connecting said cross-head with the rotary valve and having slots working upon studs extending from said cross-head and valve, substantially as and for the purpose set forth.

3. The combination of the valve-case, the rotary valve, the steam-cylinder, the piston working in the latter, the cross-head at the outer end of the piston-rod, a lever connecting said cross-head with the rotary valve, and a spring arranged to bear against the outer end of the cross-head and against a cross-head adjustable between suitable guides, substantially as and for the purpose set forth.

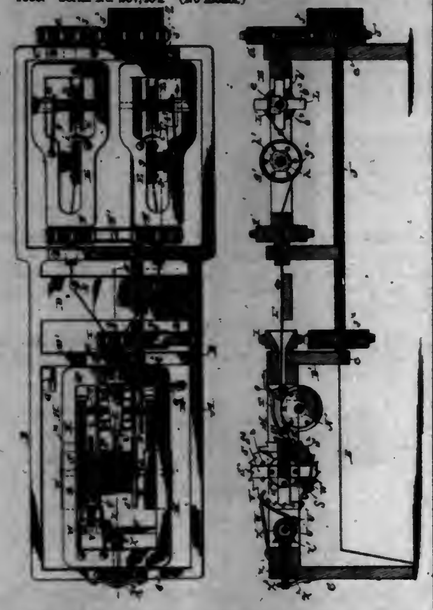
4. The combination of the valve-case, the rotary valve, the guides, the bridge-piece connecting the same, the cross-head adjustable between the outer and inner ends of said guides, the adjusting-rod connecting said cross-head with the bridge-piece, the steam-cylinder, the piston, the cross-head at the outer end of the latter, the spring interposed between the cross-heads, and the lever connecting the cross-head at the outer end of the piston-rod with the rotary valve, substantially as and for the purpose set forth.

5. The combination of the valve-case, the rotary valve, the steam-cylinder, the piston working in the latter, the cross-head at the outer end of the piston-rod, the rod extending forwardly from said cross-head, the spring coiled upon the said rod and bearing against an adjustable cross-head, and a lever connecting the cross-head at the outer end of the piston-rod with the rotary valve, substantially as set forth.

6. In an automatic damper, the combination, with a rotary valve, of a steam-actuated cross-head connected with and adapted to operate the same, a spring arranged to force the said cross-head against the pressure of the steam, and mechanism for regulating the tension of the said spring, substantially as and for the purpose set forth.

7. In an automatic damper, the combination of the valve-case provided with a suitable door, the rotary valve, a steam-actuated cross-head, a lever connecting the latter with a rotary valve for the purpose of operating the same, a spring arranged to force the said cross-head against the pressure of the steam, an adjustable cross-head to regulate the tension of said spring, and a scale secured upon one of the guides of the sliding cross-head, substantially as and for the purpose herein shown and specified.

409,248. MACHINE FOR MAKING WIRE CABLES FOR PENCILS, &c. HENRY C. SIMS and JONAS T. WILEY, Lincomb, Iowa. Filed Oct. 6, 1888. Serial No. 287,404. (No model.)



Claim.—1. In a wire-twisting machine, the combination, with a series of revoluble frames carrying reels for wire and a separate revoluble frame carrying a receiving-reel, of gearing for revolving all of said frames in the same direction, a feeding and tension reel mounted in the frame carrying the receiving-reel, and mechanism for intermittingly stopping and releasing said tension-reel, substantially as set forth.

2. The combination, with suitable frame-work, of a series of revoluble frames mounted therein and carrying reels for wire, a frame revolubly mounted in the frame-work and carrying a reel for the reception of twisted wires, a ratchet-wheel and dog, means for actuating said dog for rotating said reel to wind the wire cable and draw said wires through the machine, and gearing for rotating all of said frames in the same direction and operating the ratchet mechanism, substantially as set forth.

3. The combination of a tension device consisting of a screw-threaded shaft made conical at its ends to form journals, two disks having outwardly-flanged peripheries mounted on said shaft, one rigidly and the other loosely, pins secured to one of said disks and passing through perforations in the other, a nut on the shaft, and a spring encircling the shaft between said nut and the loosely-mounted disk, substantially as set forth.

4. The combination, with a frame, a two-part reel, one part of which is movable toward and away from the other part, and a rest for the roll of wire secured to one of said parts, of an arm carried by the frame for locking the movable parts of the reel in operative position with relation to the other part, substantially as set forth.

5. The combination of a reel consisting of two shafts, two collars carrying outwardly-projecting arms, one of said collars being loosely mounted on its shaft and the other revoluble with its shaft, pins fixed to the arms of one collar and projecting into perforations in the other set of arms, and an arm on the frame in which the reel is mounted to maintain the parts in position, substantially as set forth.

6. The combination, with suitable frame-work, of a series of revoluble frames mounted therein, reels for carrying wire mounted in said frames, tension devices also carried by said frames, a revoluble frame mounted in the frame-work, bearings yieldingly mounted in said frame, a reel carried by said yielding bearings for receiving twisted wires, and gearing for revolving all of said frames in the same direction and operating the receiving-reel, substantially as set forth.

7. The combination, with suitable frame-work, of a series of revoluble frames mounted therein, reels for carrying wire mounted in said frames, tension devices also mounted in said frames, a revoluble frame mounted in the frame-work, sliding bearings carried by said frame, a reel for receiving twisted wires mounted in said sliding bearings, springs also mounted in said revoluble frame and bearing on the sliding bearings to maintain the same in a normal rearward position, and gearing for rotating all of said frames in the same direction and operating the receiving-reel, substantially as set forth.

8. The combination, with suitable frame-work, of a series of revoluble frames mounted in the frame-work, reels and tension devices mounted in said frames, a single frame revolubly mounted in the frame-work and carrying a reel for receiving twisted wires, a tension-reel mounted in said single frame in advance of the receiving-reel, a toothed wheel mounted on the same shaft with said tension-reel, a spring-actuated lever pivoted to the frame and adapted to engage said toothed wheel, an arm on the main frame with which the pivoted lever makes contact to periodically release the toothed wheel, and gearing for rotating all of said frames in the same direction and operating the receiving-reel, substantially as set forth.

9. The combination, with suitable frame-work, of a series of revoluble frames mounted therein, reels and tension devices mounted in said frame-work, a single revoluble frame mounted in the frame-work, sliding bearings mounted in said frame, a reel journaled in said sliding bearings for receiving twisted wires, springs also mounted in said single frame and bearing on the sliding bearings of the receiving-reel, a tension-reel mounted in the single revoluble frame, a toothed wheel on the same shaft with the tension-reel, a spring-actuated lever pivoted to the frame-work and engaging the toothed wheel, an arm secured to the main frame with which the pivoted lever makes contact to periodically release the toothed wheel, and gearing to rotate all of said frames in the same direction and operate the receiving-reel, substantially as set forth.

10. In combination, a tension-reel consisting of two disks mounted on a screw-threaded shaft and connected near their peripheries by a series of bars, nuts on said shaft to retain said reel in a fixed position on the shaft, a ratchet-wheel on the shaft, a spring-sustained lever to engage the ratchet-wheel, and an arm on the frame with which said lever engages to intermittingly release said tension-reel, substantially as set forth.

11. The combination of a receiving-reel mounted on a loose shaft, a ratchet-wheel mounted loosely on said shaft, pins on the face of the ratchet-wheel to engage the reel, a spring-sustained pawl to engage said ratchet-wheel, and mechanism to actuate said pawl to rotate the ratchet-wheel and reel, substantially as set forth.

12. The combination, with suitable frame-work, of a series of revoluble frames having hollow journals at one end for the passage of wire mounted therein, reels and tension devices mounted in said frames, a revoluble frame mounted in the frame-work, having a hollow journal at its inner end for the passage of the wires from the reels on the series of revoluble frames, a tension-reel mounted in said single frame, over which the wires pass after being twisted, a guard secured to the revoluble frame to prevent the twisted cable crossing on the tension-reel, a receiving-reel in rear of said tension-reel, and gearing to rotate all the frames in the same direction and operate the receiving-reel to wind the twisted cable and draw the wires through the machine, substantially as set forth.

13. The combination, with a frame and a reel mounted therein, of a guard-plate secured to the frame and pins projecting from said guard-plate in advance and in rear of the reel, so that a wire passing over the reel will pass on one side of one pin before reaching the reel and on the other side of the other pin on leaving the reel, substantially as set forth.

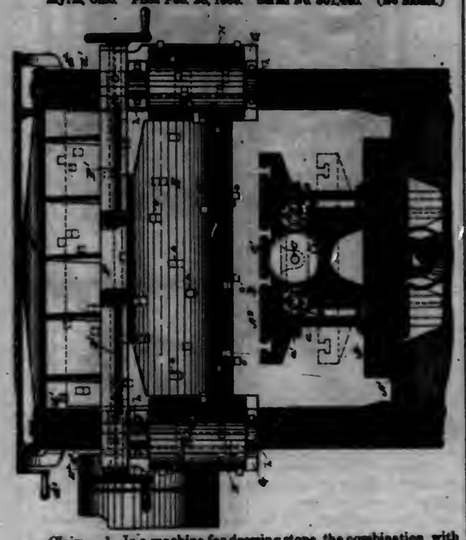
14. The combination, with a revoluble frame, a reel for wire mounted therein, and a tension-reel also mounted in said revoluble frame, of a guard-plate secured to the frame and extending in proximity to the tension-reel, and pins projecting from the guard-plate, one in advance and one in rear of the tension-reel, substantially as set forth.

15. The combination, with a revoluble frame, a reel for wire mounted therein, and a tension-reel also mounted in said revoluble frame, of a guard-plate secured to the frame and extending in proximity to the tension-reel, pins projecting from said guard-plate, one in advance and the other in rear of the tension-reel, and grooved rollers mounted on said pins, substantially as set forth.

16. The combination, with suitable frame-work, of a series of revoluble frames mounted therein, reels and tension devices mounted in said frames, a single revoluble frame mounted in the frame-work, a receiving-reel in said single frame, a ratchet-wheel mounted on the same shaft with the receiving-reel, a crank-shaft mounted in said revoluble frame, a dog attached to the crank-shaft and engaging with the ratchet-wheel, a spring to maintain the dog in contact with said wheel, a pinion on the crank-shaft, a pinion on a shaft fixed to the frame-work and meshing with the pinion on the crank-shaft, and gearing for rotating all of said reels in the same direction, substantially as set forth.

17. In a wire-twisting machine, the combination, with suitable frame-work, of a series of revoluble frames mounted in said frame-work, the journal at one end of each revoluble frame being made hollow for the passage of wire and having teeth on a portion of its periphery to produce sprocket-wheels, sprocket-wheels on the journals at the opposite end of said frames, a single revoluble frame having a hollow journal, sprocket-teeth on the periphery thereof, and a shaft mounted in the frame-work carrying sprocket-wheels gearing with the revoluble frames, and means for transmitting motion to said shaft, substantially as set forth.

409,249. STONE-PLANING MACHINE. EDWARD SMALLWOOD, Elyria, Ohio. Filed Feb. 28, 1889. Serial No. 301,440. (No model.)



Claim.—1. In a machine for dressing stone, the combination, with a base having ways and side frames secured to said base, of a car mounted to move on said ways, a platform carried by the car and adjustable to and from the car, and a rotary cutter mounted in the side frames and above the car, substantially as set forth.

2. In a machine for dressing stone, the combination, with a frame carrying fixed ways, of a car mounted to move on said ways, a platform on said car and adjustable to and from the same, a cylinder mounted in fixed bearings above the platform, and cutting-tools fixed in said cylinder, substantially as set forth.

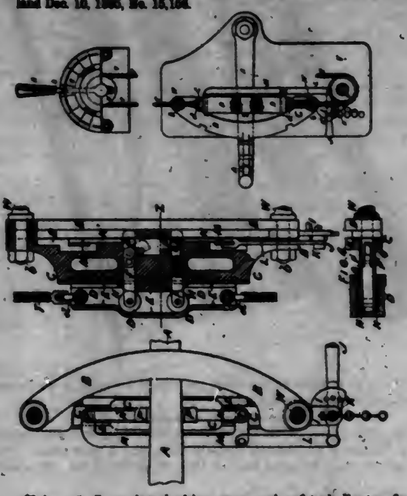
3. In a machine for dressing stone, the combination, with a frame carrying fixed ways, of a car mounted to reciprocate on said ways, a platform mounted on screw-rods carried by the car, worm-wheels on the screw-rods, worms for operating the worm-wheels to raise and lower the platform, gear-wheels carried by the worms, and a shaft carrying gear-wheels meshing with the worm gear-wheels, whereby all the worms may be operated simultaneously, and a rotary cutter mounted in fixed bearings above the platform, substantially as set forth.

4. In a machine for dressing stone, the combination, with a frame, of a cylinder mounted therein in fixed bearings, cutting-tools projecting from said cylinder, a cross-head carrying a yoke at each end, a vertical cylinder having cutting-tools mounted in each yoke, and mechanism for operating the cutting-cylinders, substantially as set forth.

5. In a machine for dressing stone, the combination, with a frame, of a cylinder mounted therein in fixed bearings, cutting-tools projecting from said cylinder, a cross-head having dovetailed grooves at each end, yokes, each having a dovetailed tenon to enter said grooves, cylinders carrying cutting-tools mounted in said yokes, and screws for moving said yokes lengthwise the cross-head, substantially as set forth.

6. In a machine for cutting stone, the combination, with a frame, of a horizontal cylinder mounted therein in fixed bearings and carrying cutting-tools, a vertically-movable cross-head, mechanism for raising both ends of the cross-head simultaneously, yokes carried by the cross-head at its ends, mechanism for moving said yokes lengthwise of the cross-head, and rotary cutters carried by said yokes, substantially as set forth.

409,250. NAUTICAL SIGNALING APPARATUS. THOMAS SMITH, 74 Cyprus Road, Beetle-Cum-Lindow, County of Lancaster, England. Filed Oct. 3, 1887. Serial No. 251,248. (No model.) Patented in England Dec. 10, 1885, No. 15,198.



Claim.—1. In an interlocking gear and safety-indicator for reversing-gear for steam-engines, the combination of the deck-dial Q with handle R, pointer S, chain-pulleys U and chain T, the base V in the engine-room, reversing-lever A, pivoted to same and connected to engine, quadrant B, secured to said base to hold said lever in position, cross-slide C, held on said base over said lever and provided with pointer, slide-box D, with graduated index-face, having camway E and connected to the chains T, knuckle-jointed stop-bars F F', having ends P P', bedded to slide in the cross-slide C, and provided with rollers or bowls H, bearing in the camway E, hand-lever J, pivoted to an extension of the quadrant-support and provided with means of locking the same, link L, pivoted to said hand-lever, frame M, connected to the link L, and push-pieces N N', sliding in grooves of the cross-slide C, opposite to the jointed ends P of the stops F F', and secured to the frame M, substantially as set forth.

2. In combination with the reversing-lever A, pivoted to a base, the quadrant B, held on said base and adapted to lock said lever, the cross-slide C, held on said base over said quadrant, the stops F F', sliding in said cross-slide and having knuckle-jointed ends P P', adapted to project in the way of the reversing-lever, and the slide-box D, sliding on the cross-slide C and operated by the chains T, and having camway E, operating the ends of the stops F F', substantially as set forth.

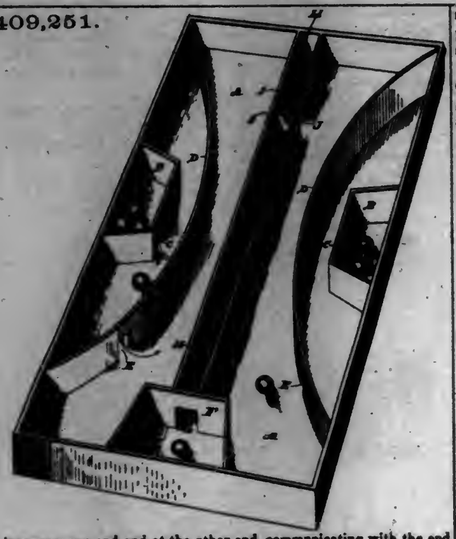
3. The combination of the reversing-lever A, pivoted to a base, the quadrant B and cross-slide C, held on said base, the hand-lever J, pivoted to an extension of the quadrant and provided with means of locking the same into position, the link L, pivoted to said hand-lever, a frame M, connected to said link, and the pushers N N', connected to said frame and sliding in the cross-slide and adapted to operate the jointed ends P P', held slidingly in the cross-slide C, substantially as set forth.

409,251. GAME-BOARD. JOSHUA SWELL, Little Falls, N. Y. Filed May 14, 1888. Serial No. 310,767. (No model.)

Claim.—1. A game-board consisting of a rectangular surface, pockets on two sides of the surface opposite each other, having each an opening near one end thereof, curved walls inclosing said pockets and having each an opening near one end thereof, a pocket on one end of the surface, having an opening in the front thereof, and a passage formed of two parallel strips communicating with the said pockets and openings in one end of the strips opposite each other, substantially as described.

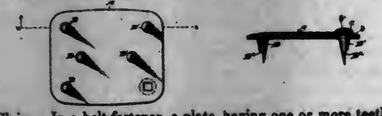
2. A game-board consisting of a surface having an end pocket and two side pockets provided with openings, curved walls inclosing the side pockets provided with openings, and a passage formed by two parallel strips arranged between the said inclosing-walls having open-

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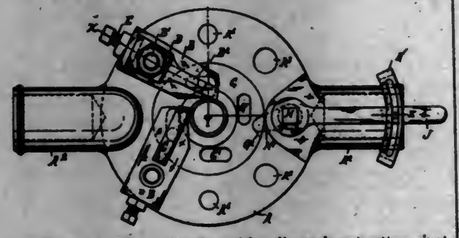
ings near one end and at the other end communicating with the end pocket, substantially as described.

409,252. BELT-FASTENER. JAMES SNOW, Cleveland, Ohio, assignor to William H. H. Peck and Sarah R. Snow, both of same place. Filed June 21, 1888. Renewed June 13, 1889. Serial No. 314,105. (No model.)



Claim.—In a belt-fastener, a plate having one or more teeth integral therewith and projecting from one side thereof, and one or more detachable teeth each having an angular portion adapted to be removably secured in an angular opening formed in the plate, the rigid and detachable teeth each having a chamfered side, the said chamfer commencing midway of a tooth and extending to the point thereof, and located on the side of the tooth opposite to where the draft of the belt comes, substantially as set forth.

409,253. SCREW-CUTTING DIE-STOCK. JAMES H. STERNBERGH and ROBERT PENNINGTON, Reading, Pa. Filed Apr. 19, 1888. Serial No. 307,883. (No model.)



Claim.—1. The combination, with a die-stock and cutters pivotally secured to the front face of said stock, of a sliding plate located within a recess in said front face and engaging each of said cutters and means for sliding the plate.

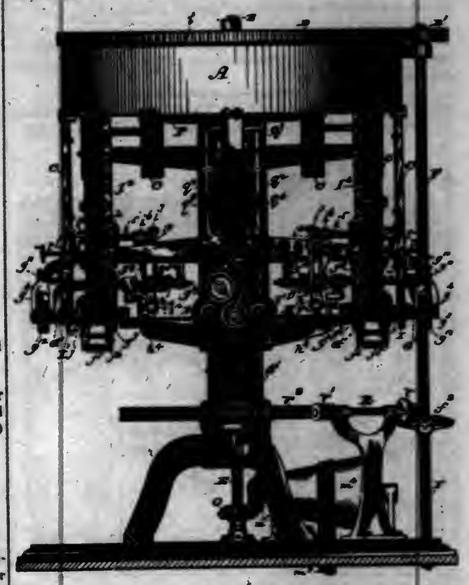
2. In a screw-cutting die-stock, the combination, with the cutter-holders pivoted to the front face of the die-stock, of a plate located within a recess in the front face of the die-stock and provided with eccentric slots, each of which engages a pin projecting rearwardly from the holders, and means for sliding said plate, all substantially as set forth.

3. The combination, with a die-stock having a recess in the front face thereof and a movable plate located within said recess, of cutters pivotally secured to the front face of the die-stock and engaging the movable plate and a rotary shaft for actuating said plate, substantially as set forth.

4. The combination, with a die-stock, movably-secured cutters, a sliding plate engaging each of said cutters, and means for sliding said plate, of the removable guide-thimble passing through the plate, substantially as set forth.

5. In a screw-cutting die-stock, the combination of the movable cutter-holders, the recessed plate engaging the holders, the removable guide-thimble, and means for sliding said plate, all arranged and adapted to operate substantially as set forth.

409,254. MACHINE FOR GRINDING SHEAVES, &c. HERMAN C. STUPP, St. Louis, Mo. Filed Nov. 27, 1888. Serial No. 292,010. (No model.)



Claim.—1. The combination of the hopper, the series of chutes, the shafts E F, the pinion D', and the gear D, having the fingers *d d*, substantially as described.

2. The combination of the chute, the shafts G G' g^3, the pinion g', the bracket g^4, the gear H, and the gears g^7 g^8 g^{11} g^{12}, substantially as described.

3. The combination of the gear H, the cam A, the roller A', the stud A^1, the box A^2, the shaft g^6, the arm g^{10}, the bracket g^4, and the spring g^{13}, substantially as described.

4. The combination of the chute, the wheels I I', and the journaled arms I^3 I^3, substantially as described.

5. The combination of the clamping-shafts G G' and the grinding-wheels, one of said shafts being adjustable toward and from the other and both of them being rotatory, and said wheels being held in arms capable of being moved toward and from each other, substantially as described.

6. The combination of the chute, the grinding-wheels and their journaled arms, the spring i^3, and the cam i^4 and its shaft, substantially as described.

7. The combination of the chute, the grinding-wheels and their journaled arms opening apart from and closing toward each other, as described, the clamping-shafts, and the chute-gate, one of said shafts being adjustable toward and from the other, and both of the shafts being rotatory, and said gate being made to close and open said chute, substantially as described.

8. The combination of the gear H, the cam A^4, the roller i^{12}, the bell-crank i^9, the journaled arms I^3 I^3, the rock-shaft i^5, the cam i^4, the spring i^3, the crank i^7, and the rod i^8, substantially as described.

9. The combination of the gear H, the cam j', the thrust-bolt j^3, the spring j^5, the gate J, and the chute, substantially as described.

10. The combination of the grinding-wheels and their arms, the adjustable shoulders L, and the rock-shaft and cam i^4, and spring i^3, substantially as described.

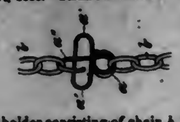
11. The combination of the arm I^3, the adjustable shoulder L, the shaft I', the worm l^3, the nut l^4, and the screw l^5, substantially as described.

12. The combination of the grinding-wheels and the arms I^3 I^3, one of said wheels being adjustable laterally to enable it to wear evenly, substantially as described.

13. The combination of the shaft E, the gears P q, the shaft Q, the pulley q' q^3 q^4, the belts q^3, and the arms P P, substantially as described.

14. The combination of the shafts R F, the gear r^6 g^{10} H, the pinion r, the worm r', and the sleeve S and its bearing, substantially as described.

409,255. KEY-HOLDER. CHARLES H. VAN NORMAN, Waltham, Mass. Filed Jan. 24, 1889. Serial No. 297,341. (No model.)



Claim.—The key-holder consisting of chain *b*, the locking device, as described, having an eye *a* attached to one end of said chain, a cross-bar or lateral extension *a'*, and a spring bail or hook *a''*, adapted to be locked to the opposite end of the said chain, substantially as and for the purpose set forth.

409,256. GRAIN AND SEED SEPARATOR. NICHOLAS J. VENARD, Vinton, Va. Filed Feb. 23, 1889. Serial No. 300,966. (No model.)

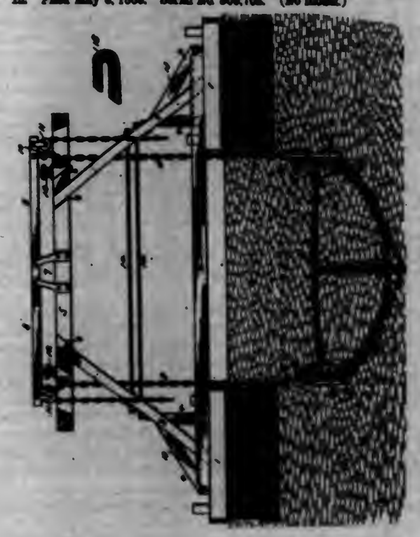


Claim.—1. In a portable grain-separator, the combination, with the blast-fan, its casing, and the feed-board, of the grading device comprising the trestles B, having the perforations *a'*, the removable wings or dividers A, having the trunnions *a*, and the separate receptacles D, adapted to be placed beneath the dividers, substantially as and for the purpose set forth.

2. In a portable grain-separator, the combination of the blast-fan, the feed-board, the trestles perforated as described, the wings having each one or more aprons or dividers C, and the boxes D, made narrower at the top than at the bottom, substantially as shown, and for the purpose set forth.

3. In a portable grain-separator, the combination, with the blast-fan, its casing, and the feed-board, of the grading device comprising the trestles B, having each an inclined series of perforations *a'*, the removable wings or dividers A, having trunnions *a*, and the receptacles D, substantially as set forth.

409,257. RAISING SUNKEN VESSELS. JULIUS WARNER, Chicago, Ill. Filed May 6, 1889. Serial No. 309,702. (No model.)

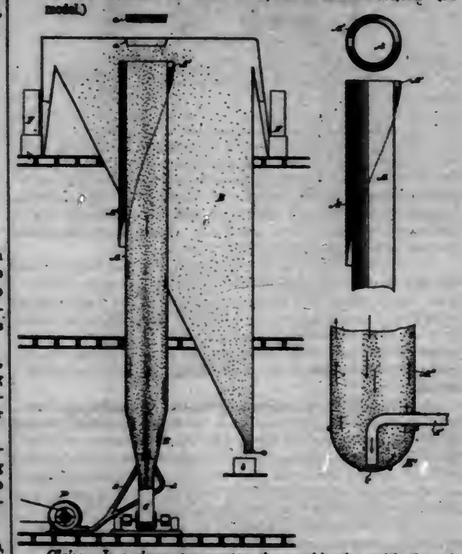


Claim.—1. The combination, substantially as set forth, of the scows in parallel proximity to each other, the uprights 3, supported upon said scows, a cap 5, supported upon said uprights and bridging the space between the scows, levers 8, fulcrumed on the cap and provided with hooks 10, chains 9, for connecting the vessel to be raised with the hooks upon the levers, and jacks 12, bearing upon the cap and the levers, for working the levers and raising the vessel.

2. The combination, substantially as set forth, of the two scows in parallel proximity to each other, the uprights 3, supported thereon, the cap 5, supported upon said uprights and bridging the space between the scows, the levers 8, fulcrumed on said cap and provided with pulleys 11, the lifting-chains and the windlasses 13 upon the scows in position to receive said chains as they pay through the pulleys.

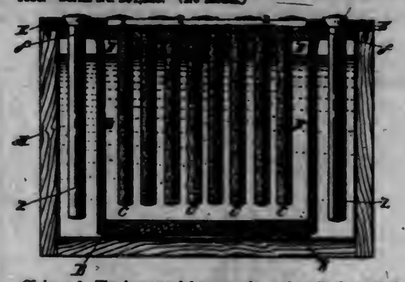
3. The combination, with the lifting-chains 9 and the mechanism for raising said chains, of hooks 15 upon the lower ends of the chains to engage the feeder-strips of the vessel, and latches 17 upon the shanks of said hooks to engage the vessel's rails, and provided with dogs to lock them to said shanks, substantially as set forth.

409,258. POWDER-SEPARATOR. EDWIN P. WARD, New York, N.Y. Filed Oct. 24, 1887. Renewed Feb. 25, 1889. Serial No. 301,164. (No model.)



Claim.—In a pigment-separator, the combination, with the pulverizer and fan-blower, of a shaft above the exit-shaft of the pulverizer, said shaft having openings for the admission of air above the pulverizer-shaft, a continuous funnel surrounding same and brought to a point at one side thereof, a receiving-chamber, and a deflector secured to the top of said chamber and having a surface, which reflects the coarser material into the shaft, located above the shaft A, as and for the purpose set forth.

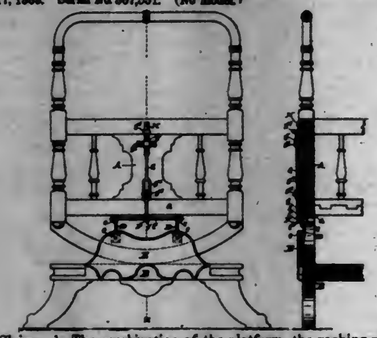
409,259. GALVANIC BATTERY. GEORGE C. WARD, Boston, Mass., assignor to the Advance Electric Company, Saco, Me. Filed Nov. 19, 1888. Serial No. 291,288. (No model.)



Claim.—1. The improved battery above described, consisting of a zinc element in a solution of sodium hydrate and a carbon element in a porous cell containing a bath composed of trioxide of chromium, an alkaline chloride, nitric acid, and water, substantially as set forth.

2. In combination, the outer cell A, its cover E, the series of rods Z, arranged in cell A and projecting through cover E, substantially as shown, inner cell B, its cover D, and the series of rods C, arranged in cell B and projecting through cover D, substantially as shown, each cover sustaining its series of rods, and all the elements being combined substantially as set forth.

409,260. CRADLE. JOHN H. WIGGINS, Cincinnati, Ohio. Filed Apr. 17, 1888. Serial No. 307,531. (No model.)



Claim.—1. The combination of the platform, the rocking member mounted thereon, a rock-shaft journaled to the rocking member, dogs D and ratchets F, secured upon said shaft, sockets in the base to receive the ends of said dogs, and a vertically-sliding rod, as G, to engage said ratchet, rotate and release said shaft for the purpose of locking the base and rocking member, or releasing the rocker from the base, substantially as and for the purpose set forth.

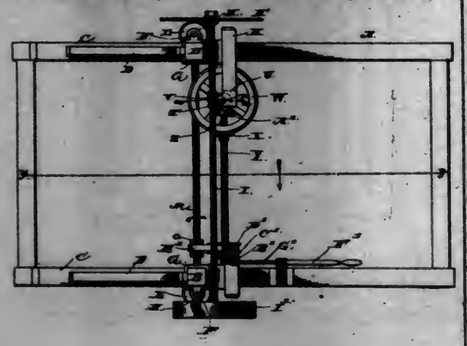
2. In a cradle or platform-rocker of the character described, the combination of a rock-shaft secured to the rocking member and carrying dogs to engage sockets upon the platform, a vertically-sliding rod sliding in guides secured to the rocker and adapted to rotate the shaft when depressed and release the dogs from the base and to release the said shaft when drawn up, and thus allow the said dogs to drop into their sockets in the base, substantially as shown and described.

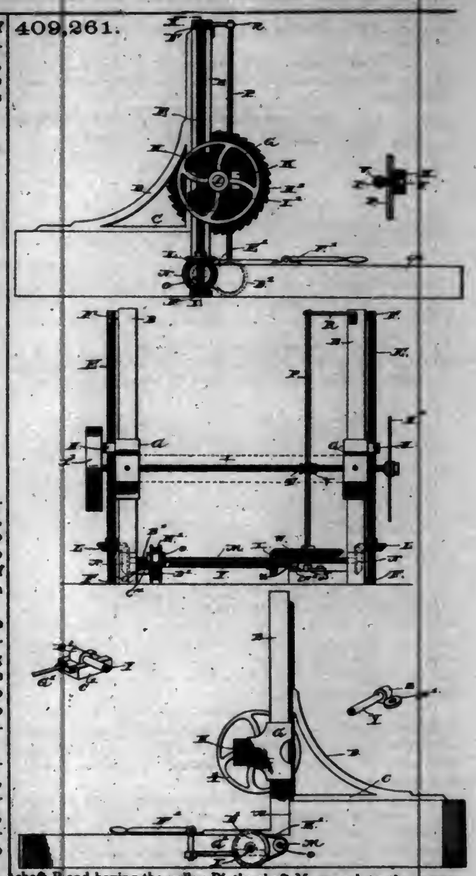
3. In a cradle of the character described, the combination, substantially as specified, of the rocker A, the base B, mounted thereon, the shield E, secured to the base and having the sockets *e*, the rock-shaft C, journaled in bearings secured to the rocker A, the dogs D, ratchet F, secured upon said shaft, and the vertically-sliding tappet-rod G, arranged on the end of the rocker-frame in a position to engage the said ratchet F, for the purpose set forth.

4. The combination, substantially as specified, of the platform and rocking member, the shield E, secured to the platform and extending above the curved rocker, the metal sockets *e* let into said piece E, the shaft C, the dogs D, and ratchets F *f f'*, secured upon said shaft, the rod G, having projections *g g'*, the guide g^3, screw g^4, and spring H, for the purpose set forth.

409,261. CIRCULAR-SAW MILL. EDGAR C. WILEY, Independence, Va. Filed Dec. 1, 1888. Serial No. 292,261. (No model.)

Claim.—1. The combination, in a saw-mill, of the vertical standards the blocks sliding thereon, the screws to raise and lower the blocks, the beam K, connecting the blocks together, the saw-arbor journaled in the said blocks and having the worms V, the shaft P, the loose worm-wheel T thereon engaging the worm V and supported by beam K, the shaft Y, journaled in movable bearings geared to the





shaft P and having the pulley D', the shaft M, geared to the screws and having the pulley O, and the belt connecting the pulleys O and D', substantially as described.

2. The combination, in a saw-mill, of the vertically-movable bearing-blocks carrying the saw-arbor having a worm formed thereon, the transverse beam connecting the bearing-blocks and having a recess, a worm-wheel supported in said recess engaging the worm upon the saw-arbor and moving vertically upon an angular shaft, the vertical screws supporting and extending through threaded openings in the bearing-blocks, and mechanism for transmitting rotary motion in either direction to said screws from the angular shaft carrying the worm-wheel, substantially as herein set forth.

3. The combination of the shaft P, having gear W, the shaft Y, journaled in movable bearings and having the pinion X engaging wheel W and the pulley D' the elevating-screws, the shaft M, geared thereto and having the pulley O, the endless belt connecting the pulleys O D', and the lever to engage the pulley D' with pulley O and slacken the belt and to move pulley D' from pulley O and tighten the belt, whereby the screws may be rotated in either direction, substantially as described.

4. The combination of the vertical angular shaft having the vertically-movable worm-wheel engaging a worm upon the saw-arbor, a counter-shaft having its inner end journaled in a pivoted and its outer end in a sliding bearing, a pinion near the inner end of said counter-shaft meshing with a bevel-gear upon the lower end of the angular shaft, a transverse shaft geared to the lower ends of a pair of screws having vertically-movable blocks in which the saw-arbor is journaled, drums or pulleys upon the said transverse shaft and near the outer adjustable end of the counter-shaft, and a lever to adjust the sliding bearing of said counter-shaft, substantially as and for the purpose set forth.

409,262. FOLDING COT-BED. GEORGE H. WILSON, Utica, N. Y. Filed Mar. 6, 1888. Serial No. 266,160½. (No model.)

Claim.—1. In a cot-bed, the combination, with the oppositely-

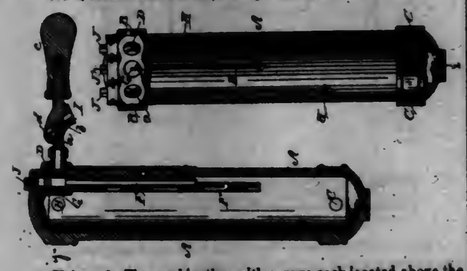


disposed legs, of the interlocking-braces 3^a, 3^d, 4, and 5, each of which is pivoted at one extremity to the legs and the braces 3^a and 3^d to each other, and 3^d having a slotted opening 18, and the braces 4 and 5 pivoted to each other at 5^b, and the brace 5 engaging 3^a in the slotted opening therein, substantially as set forth.

2. In a cot-bed, the combination, with the side rails and the folding legs, of the bolster-frames pivoted to the side rails, and hooks sliding in the bolster-frames and connecting the latter to the legs, substantially as described.

3. In a cot-bed, the combination, with the folding legs, of pivoted bars secured to the side rails and serving as braces for the legs, and hooks connecting the legs and bars and sliding in grooves in the latter, substantially as described.

409,263. GAGE-COCK. AMASA WORTHINGTON, Brooklyn, N. Y. Filed Oct. 4, 1888. Serial No. 287,295. (No model.)



Claim.—1. The combination, with a gage-cock located above the maximum liquid-level of a vessel wherein liquid is contained under pressure, of a downwardly-extending passage communicating between said gage-cock and the said vessel at a level occupied by said liquid, and of an independent passage communicating between said gage-cock and the said vessel at a level above that occupied by said liquid, said independent passage having a capacity minor to that of the said gage-cock and that of the said downwardly-extending passage, the whole adapted to operate as set forth.

2. The combination of a plurality of gage-cocks located above the maximum liquid-level of a vessel wherein liquid is contained under pressure, downwardly-extending passages severally communicating between said gage-cocks and the said vessel at a designated series of different levels in the range of variation of the liquid-level, and independent passages severally communicating between said gage-cocks and the said vessel at a level or levels that are above that occupied by said liquid, each said independent passage having a capacity minor to that of the gage-cock to which it connects and to that of the downwardly-extending passage to which it connects, the whole adapted to operate as set forth.

3. The combination, with a gage-cock located above the maximum liquid-level of a vessel wherein liquid is contained under pressure, of a chamber projecting within the vessel opposite the gage-cock and to which the latter connects, a depending tube extending from said chamber to a testing-point in the range of variation of the liquid-level, and a passage connecting said chamber with the space above the maximum liquid-level, said passage having a capacity minor to that of the said gage-cock or of the said depending tube, and adapted for the purposes set forth.

4. The combination, with a vertical stand-pipe connected at its upper and lower portions, respectively, with the gaseous and the liquid spaces of a vessel containing liquid under pressure and located horizontally opposite to and including the range of variation to which the liquid-level is subject, of gage-cocks severally connected with chambers within said stand-pipe above the maximum liquid-level, depending tubes severally communicating from said chambers to various testing-points in the range of variation of the liquid-level, and the described passages of minor capacity connecting said chambers severally with the space above the liquid, arranged as and for the purposes described.

5. The combination, with the herein-described stand-pipe, of a plurality of gage-cocks extending radially in a common horizontal plane from a concentrated series of chambers located within the upper portion of said stand-pipe, depending tubes severally communicating from said chambers to various testing-points in the range of variation of the liquid-level, and the cramped passages connecting said chamber severally with the interior of the stand-pipe located in line with the radiating passages of the gage-cocks, as and for the purposes specified.

409,264. CAN. HENRY R. WEBBER, Boston, Mass. Filed Sept. 10, 1888. Serial No. 284,982. (No model.)



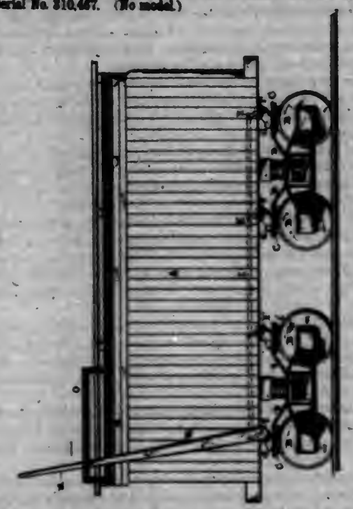
Claim.—The combination, with a can provided with a lip or rim and a handle and a stopper or cover therefor provided with a loop b^3, of an arm bent to form a ring to encircle said handle and also to pass through said loop, the arm extending substantially across the stopper or cover when in position to close the can and provided at its end with a finger or hook to engage said rim to lock said stopper in operative position, substantially as described.

409,265. PIPE CASING OR CONDUIT. ABSALOM WYCKOFF and ERNEST I. WYCKOFF, Elmira, N. Y. Filed Oct. 30, 1888. Serial No. 289,836. (No model.)



Claim.—As a new article of manufacture, the herein-described casing for pipes, consisting of a tube composed of an inner and an outer shell each built up of strips of wood united to form a hollow cylinder, and a layer of non-conducting material interposed between said shells.

409,266. CAR-BRAKE. WILLIAM R. ZEISLER, Waverly, N. Y., assignor of one-half to Miles S. Hoadley, same place. Filed May 11, 1888. Serial No. 310,467. (No model.)



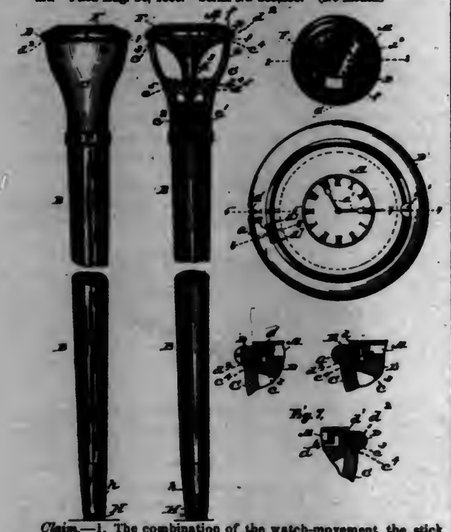
Claim.—1. A car-brake consisting, essentially, of a pivoted truck having axles and wheels of usual character, and brake-shoes yieldingly supported on the truck above the car-wheels, a rock-shaft ex-

tending across the car-body above the shoes, cams on this rock-shaft in position to be rocked down upon the shoes however the truck may swing within its limit of movement, and a lever firmly connected to the rock-shaft, all combined substantially as described.

2. The combination, in a car-brake, of a brake-shoe yieldingly held above each wheel, a rock-shaft over each axle having a cam over each brake-shoe in position to rock onto the shoe, an arm on each rock-shaft and bars connecting all the arms, and a lever firmly connected to one of the rock-shafts at the side of the car and extending upward to a ratchet with which it may engage, all combined and relatively arranged substantially as described.

3. The combination, with a freight-car, of a rock-shaft extending across the car-body and bearing cams in position above the brake-shoes, a lever extending up at the side of the car and above the top, a ratchet at the top of the car to hold the lever, and a guard-bar outside the lever and above the car-top to protect the lever and the operator, all substantially as described.

409,267. CANE OR PARASOL WATCH. JAMES W. ALLEN, St. Louis, Mo. Filed Aug. 20, 1888. Serial No. 283,239. (No model.)



Claim.—1. The combination of the watch-movement, the stick, the cap, the holder, the pinion, the bezel, and the push-pin, said cap having the crown-wheel, partition, and socket, and said holder inclosing the watch-movement and having the stem journaled in and held beneath said partition, substantially as described.

2. The combination of the watch-movement, the pinion, the cap having the crown-wheel and the partition, and the holder having the stem, said stem being held longitudinally in said partition, substantially as described.

3. The combination of the watch-movement, the pinion, the cap having the crown-wheel, and the holder having the stem, said watch-movement being secured to said holder, and said holder-stem being held longitudinally in said cap, substantially as described.

4. The combination of the watch-movement, the stick, the cap, the holder, and the pinion, said watch-movement being attached to said holder, said cap having the crown-wheel and socket, and said holder at its rim turning upon the upper end of the cap and having a stem which is held longitudinally in the cap, substantially as described.

5. The combination of the watch-movement, the holder, and the cap, said watch-movement being held in said holder, and said holder turning upon the upper end of the cap, inclosing said watch-movement beneath and having a stem held longitudinally within said cap, substantially as described.

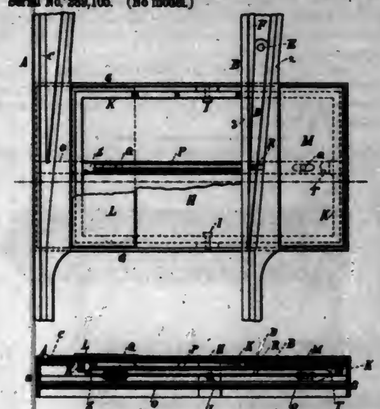
6. The combination of the watch-movement, the holder, and the cap, said holder inclosing said watch-movement beneath, and said cap sustaining said holder and inclosing it beneath, substantially as described.

7. The combination of the cap having the partition and socket, the holder having the stem passing through said partition and confined beneath it, and the stick detachably held in said socket, substantially as described.

8. The combination of the stick, the watch-movement, and the cushion, said watch-movement being connected with the upper end of said stick, and the cushion being applied to the lower end of said stick, substantially as described.

9. The combination, in a cane or parasol watch, of the watch-movement, the watch-movement holder, and the cane or parasol stick, said cane or stick at its end being attached to a part which is journaled in said watch-movement holder and in engagement with the watch-winding mechanism for the purpose of effecting the winding of the watch-movement.

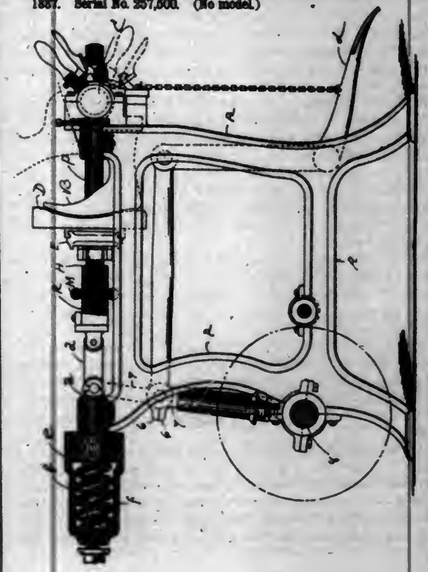
409,268. AUTOMATIC SWITCH FOR HORSE-RAILWAYS. DAVID W. BIRNS and CHARLES WOLFF, Brooklyn, N. Y. Filed Oct. 25, 1888. Serial No. 289,105. (No model.)



Claim.—1. The frame or box G and the central longitudinal bar O, in combination with the switch-changing bar P and anti-friction balls Q within longitudinal grooves or recesses in the respective bars O and P, the pivoted frame K and platforms L M, the switch D and connection between the same and the bar P, and the inclines between the pivoted frame K and the ends of the switch-changing bar P, substantially as and for the purposes set forth.

2. The frame or box G and the central longitudinal bar O within the same, in combination with the switch-changing bar P above the bar O, the frame K, pivoted at I to the box G, the platforms L and M, resting upon the pivoted frame, the switch D, connected to the bar P, and the inclines between the pivoted frame and the bar P, substantially as set forth.

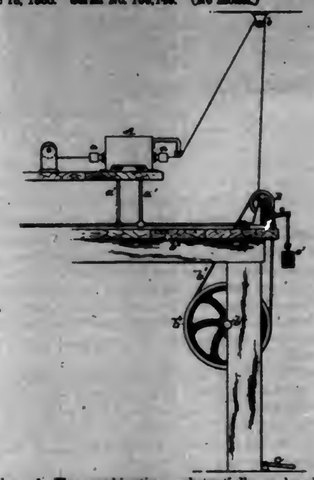
409,269. SOLE-SHAPING MACHINE. TIMOTHY A. BRENNAHAN, Lynn, Mass., assignor to Brennahan Bros., same place. Filed Dec. 10, 1887. Serial No. 257,500. (No model.)



Claim.—1. In a machine for shaping boot and shoe soles, a form, as B, for supporting the shoe, a mold, as D, for shaping the sole, toggle-levers *a a*, means for operating them, a barrel *b* in rear of one of the levers, a spring inclosed in said barrel, and a plunger in connection with the lever *a*, fitting said barrel and adapted to be acted upon by the spring therein, substantially as described.

2. In a boot and shoe sole shaping mechanism of substantially the construction described, and in combination, the described form for supporting the shoe, a mold, as D, for shaping the sole, a movable block for supporting the mold and adapted to permit a rocking movement, as described, a rod, as H, adapted to bear upon and press forward the block, said block and rod having their contiguous faces rounded, and connecting and operating mechanism, substantially as described.

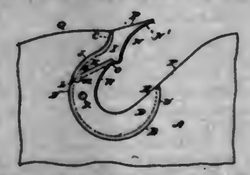
409,270. MACHINE FOR WAXING THREAD AND WINDING THE SAME ON SHUTTLE-BOBBINS. DUNCAN H. CAMPBELL, Pawtucket, R. I., assignor to the Campbell Machine Company, same place. Filed June 16, 1885. Serial No. 169,149. (No model.)



Claim.—1. The combination, substantially as hereinbefore described, of a heated wax-pot, and a bobbin-winding machine having a presser-bar of a length exactly corresponding to the length of the thread-space of the bobbins to be wound, and means for heating said presser-bar, said bar operating to compress and heat the waxed thread as it is laid upon a bobbin and also causing the initial return movement of the thread after completing each coil in contact with either head of the bobbin.

2. The combination, substantially as hereinbefore described, of the driven bobbin-chuck, the sliding spindle, the revolving bobbin-chuck thereon, and a heated presser-bar having a length equal to the space between the flanges of bobbins to be wound.

409,271. REMOVABLE SAW-TOOTH. PATRICK CARDIFF, Astoria, Oreg. Filed Mar. 6, 1888. Serial No. 302,063. (No model.)



Claim.—1. The combination, with a saw A, having the bearing-edges B C, of a locking-plate D, having a bearing-edge D' of the contour of edge B, and a straight edge H, and the tooth I, having ogee-curved edge J and the straight edge K, said parts being adapted to fit together in the manner described, and for the purposes specified.

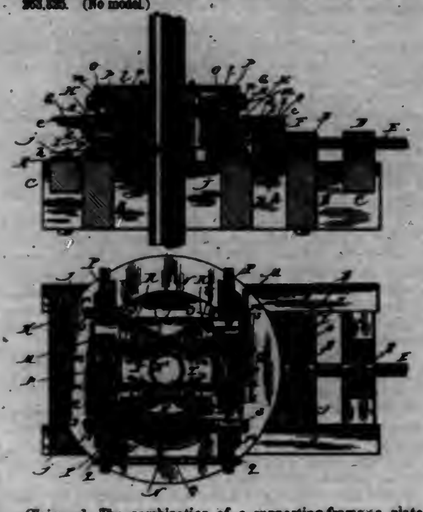
2. The combination, with a saw A, having the bearing-edges B C, of the locking-plate D, having a bearing-edge D' of the contour of edge B, and a straight edge H, and the notch or recess M, the tooth I, having the ogee-curved edge J, the straight edge K, and a tenon adapted to fit within said notch or recess, substantially as specified.

3. The combination, with a saw A, having bearing-edges B C, of the locking-plate D, having bearing-edge D' of the contour of edge B, a straight edge H, and a notch or recess M, and the tooth I, having ogee-curved edge J, the straight edge K, a tenon adapted to fit within said notch or recess, and a shoulder O, which abuts against the nose of the locking-plate, substantially as specified.

4. The combination, with a saw A, having bearing-edges B C and a V-shaped tenon along said edges, of the locking-plate D, having bearing-edges D' H and a V-shaped groove along said edges, and the tooth I, having the grooved ogee-curved edge J and straight edge K, provided with a tenon, said parts being adapted to fit together as specified.

5. The combination, with a saw A, having the bearing-edges B C, of a locking-plate D, having a bearing-edge D' of the contour of edge B, a straight edge H, and the curved bearing-edge W, and the tooth I, having ogee-curved edge J and straight edge K, and the cutting edge N', projecting beyond the edge W of the locking-plate, for the purpose specified.

409,272. APPARATUS FOR OPERATING ROTARY DRILLS. MATTHEW T. CHAPMAN, Aurora, Ill. Filed Feb. 13, 1888. Serial No. 263,835. (No model.)



Claim.—1. The combination of a supporting-frame, a plate J thereupon, the ring I, having the fixed inwardly-projecting pins *g*, and the rollers J, loosely mounted on the pins, with the plate G, having the gear *d*, and the shaft E, having the driving-pinion F, substantially as described.

2. The combination of a supporting-frame, a plate J thereupon, having the annular groove *b*, the ring I, having the inwardly-projecting pins *g*, the rollers H, loose on the pins, the top plate G, having the gear *d* and provided with the pendent annular flange *i*, entering between the pins to retain the rollers thereupon and the shaft E, having the driving-pinion F, substantially as described.

3. The combination of a frame, a supporting-plate J, a series of anti-friction rollers H, resting on the plate, the rotating top plate G, resting on the rollers, and a clamp mounted on the top plate for clamping a drill-tube, substantially as described.

4. The rotating plate G, having an annular groove *f*, with an inclined bearing-face, in combination with the beveled anti-friction rollers H, and bottom plate J, having the annular groove *h*, with an inclined bearing-face for giving the plate G a free support for rotating purposes, substantially as specified.

5. The combination, with the supporting-plate J, of the ring I, carrying a series of beveled pins *g*, and the anti-friction rollers H, carried by the pins, substantially as described.

6. The combination, with the supporting-plate J, having a groove *b*, of the anti-friction rollers H, resting on the supporting-plate, and the rotating plate G, having the depending flange *i*, for preventing inward end movement of the rollers, substantially as described.

7. The rotating top plate G, having a central opening, and the parallel guide-plates M, secured to the top plate at opposite sides of the central opening, and provided with turned-up edges *l*, to provide grooves between such edges and the face of the top plate, adjustable plates N, having flanges *n*, engaging said grooves, clamping-jaws carried by the adjustable plates, and screws P, for adjusting the plates and their jaws, substantially as described.

8. The rotating plate G, having guideways, in combination with the plates N, carrying clamping-jaws and adjusting-screws P, for ad-

vancing and receding the plates N, substantially as and for the purpose specified.

9. The plates N, having at each end a head O to receive a nut *r* and carrying clamping-jaws, in combination with the adjusting-screws P, substantially as and for the purposes specified.

10. The plates N, having at each end a head O and carrying clamping-jaws, in combination with the adjusting-screws P, chain Q, and sprocket-wheels *q*, substantially as specified.

11. The guide-plates M, having ears *m*, and screws P, having the ring *p*, in combination with sliding plates N, carrying clamping-jaws, substantially as and for the purposes specified.

12. The combination of a rotating top plate G, the plates N, sliding on and rotating with the top plate and having at each end a head O, and carrying clamping-jaws for rotating a drill-tube, with the adjusting-screws P and rubber cushions *r*, substantially as described.

13. The combination, with the rotating top plate G, of the plates N, sliding on and rotating with the top plate, the shafts S, carried by the sliding plates, the clamping-jaws T, loose on the shafts for rotating a drill-tube, and adjusting-screws P, engaging the sliding plates, substantially as described.

14. The rotating plate G, guide-plate M, having the ears *m*, and sliding plates N, having at each end a head O, in combination with the adjusting-screws P, each having a ring *p*, ears R, shafts S, and gripping-jaws T, substantially as and for the purpose specified.

15. The combination, with a cylinder E, having a fluid-supply, of a hollow piston communicating with and raised by the fluid entering the cylinder, and a rotated drill-tube connected and communicating with the piston for raising the drill-tube when the drill becomes clogged to remove the clog, and at the same time relieve the piston from the fluid-pressure and permit the piston and drill-tube to descend, substantially as described.

16. A well-sinking mechanism comprising a cylinder having a fluid-supply, a hollow piston communicating with and raised by the fluid entering the cylinder, a drill-tube rotating in the cylinder and communicating with the piston, and a clamp for rotating the drill-tube while it moves endwise for raising the drill-tube while it rotates when the drill becomes clogged to remove the clog, and at the same time relieve the fluid-pressure on the piston and permit the piston and drill-tube to descend, substantially as described.

17. The combination, with a tubular drill-rod and a shut-off, of the stem R', wheel S', and lever T', for operating and closing the valve from the rotation of the drill-rod, substantially as specified.

18. The combination, with a water-cylinder having a water-supply chamber, a piston, and a rotating drill-tube receiving water from the cylinder, of an indicator on the water-supply chamber which indicates the quantity of water flowing from the water-supply chamber toward the drill-tube, substantially as described.

19. The case A^3, having an inlet c^3 and an outlet b^3 and a chamber D^3, in combination with an arm E^3, rock-shaft F^3, rod G^3, carrying the valve c^3, spring H^3, pointer I^3, and scale J^3, substantially as and for the purposes specified.

20. The combination, with a drill-tube and a water-supply therefor, of an indicator on the water-supply which automatically indicates the decrease and cessation of the flow of water through the drill-tube to the drill, substantially as described.

21. The combination, with the drill-tube, cylinder, piston, and pipe or hose for supplying the cylinder with water to pass to the drill, of an indicator located between the cylinder and the supply pipe or hose which automatically indicates the decrease and cessation of the flow of water through the drill-tube to the drill, substantially as described.

22. The combination, with a supply-head A' and cylinder E', of a case A^3, having an inlet and an outlet port and a chamber D^3, a rock-shaft F^3, having an arm E^3, a rod G^3, provided with a valve c^3, seating on the inlet-port of the case, a spring H^3, acting on the arm to press the valve to its seat, a pointer I^3 on the rock-shaft, and a scale J^3, substantially as described.

23. The combination, with a rotating plate G, of the plates N, the shafts S, and the rotary clamping-jaws journaled thereupon, of the adjustable collars U, adapted to the shafts between the plates and clamping-jaws, and the right and left hand screws P, for adjusting the plates and clamping-jaws, substantially as described.

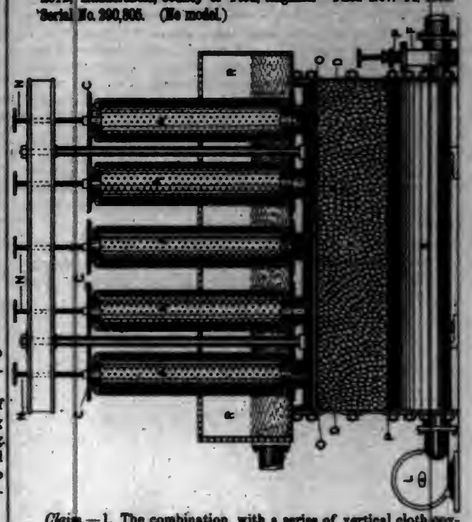
24. A drill-tube and a pressure-piston therefor, in combination with a shut-off valve in the drill-tube for regulating the water-supply and governing the pressure on the drill, substantially as specified.

25. The combination, with a cylinder, of a pressure-piston, a drill-tube, and a shut-off in the drill-tube, substantially as and for the purpose specified.

26. The clamping-jaws T, composed of separate and independent reversible rings, substantially as described.

27. The combination of the clamping-jaws T, each composed of a series of independent removable and replaceable rings, with the adjusting collars U, for setting the rings to grip objects of varying diameter, substantially as described.

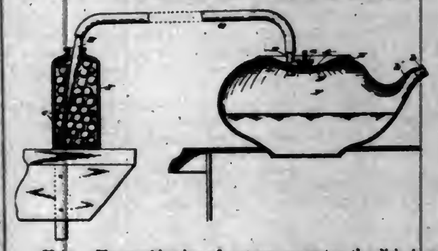
409,273. FILTER. HERBERT F. CLAYTON and GEORGE H. HOLROYD, Huddersfield, County of York, England. Filed Nov. 14, 1888. Serial No. 290,805. (No model.)



Claim.—1. The combination, with a series of vertical cloth covered filtering-tubes, of a primary filtering-chamber communicating therewith and located beneath the same, and having at its under part a channel to receive the sediment, and provided with top and bottom gratings and a blow-out valve for discharging the sediment accumulated in said channel, a girder and standards to support the filter-tubes, and a receiving-tank through which the tubes pass and into which the water from the tube falls, all substantially as and for the purposes set forth.

2. In combination, a primary filtering-chamber having a sediment-channel, top and bottom gratings, inlet-pipe and drain-pipe, a series of vertical filter-pipes connected to and surmounting said chamber and provided with filter-cloth, as described, and a horizontal receiving-tank R, into which the water filtered through such filter-pipes falls, all substantially as shown and described.

409,274. STEAM FRUIT-CANNER. THOMAS P. CORBETT, Canton, Ohio. Filed Mar. 21, 1889. Serial No. 304,173. (No model.)



Claim.—The combination of a steam-generator, the disk A, provided with the short metallic tube B, extending above and below the disk A, and below the retaining-bar D, to form a stop for said retaining-bar, the retaining-bar D, provided with the screw-threaded post C, the nut *a*, and the steam-conveying tube G, provided with the nozzle H, substantially as and for the purpose specified.

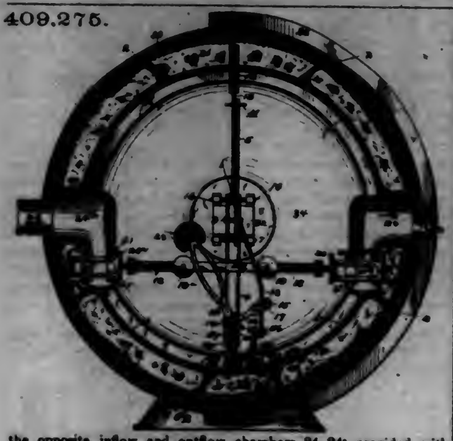
409,275. GAS-METER. JOHN W. CULMER, New Brighton, Pa., assignor to John H. Logan, same place. Filed Mar. 26, 1888. Serial No. 305,092. (No model.)

Claim.—1. In a gas-meter, the combination, with a detachable sectional case, of an independent central bellows-ring provided with an inflow and an outflow chamber at diametrically-opposite points of the ring, and peripheral projections for maintaining said ring centrally within the case, substantially as and for the purposes specified.

2. In a gas-meter, the combination, with an outer case, of an independent central ring provided with inflow and outflow chambers at diametrically-opposite points in said ring, and with a peripheral perforated web for maintaining said ring centrally within the case, substantially as and for the purposes specified.

3. In a gas-meter, the independent central bellows-ring 1, having

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the opposite inflow and outflow chambers 24 24^a, provided with threaded openings at diametrically-opposite points in the periphery of said ring, and with valve-openings on both sides of said ring, in combination with a suitable outer shell or case, said bellows-ring being independent of the outer shell or case, substantially as and for the purposes specified.

4. In a gas-meter, the combination, with an outer shell or case, of a ring 1, having inflow and outflow chambers 24 24^a, provided with ports within and ports without the said ring, said ports being arranged in a horizontal line and having their faces parallel, and connected valves for controlling said ports, said bellows-ring being independent of the outer shell or case, substantially as and for the purposes specified.

5. In a meter, the combination, with a suitable case, of a ring adapted to support the operative parts of the meter, said ring having oppositely-placed inflow and outflow chambers and an intermediate guide, a standard arranged within the ring for the attachment of said operative parts, and a rod which moves in said guide and is connected with the operative mechanism, substantially as and for the purposes specified.

6. In a meter, the combination, with a suitable case, of a foundation-ring for the operative mechanism of the meter, said ring having inflow and outflow chambers provided with ports on both sides of said ring, a rod-guide at right angles to said ports, a standard diametrically opposite to said rod-guide for attachment of the operative mechanism, valves, mechanism for actuating said valves, and a rod which moves in said guide and is connected with the valve-operating mechanism, substantially as and for the purposes specified.

7. In a gas-meter, the combination, with the valves thereof, of a weighted drop or trip arm having a tail-piece, a pivoted crank-lever having fingers which inclose the tail-piece of the drop or trip arm and provided with a slot for the reception of an actuating pin or stud, and a rod connected with the disks or pistons of the meter and provided with a pin or stud which engages in the slot of the crank-lever, substantially as and for the purposes specified.

8. In a gas-meter, the combination, with a case, of an independent central ring provided with oppositely-placed inflow and outflow chambers and valves therefor, said valves connected by a suitable rod, a drop or gravity arm for actuating the valves, and a crank-arm for actuating the gravity or drop arm, said drop-arm and crank-arm pivoted to a standard on said central ring, substantially as and for the purposes specified.

9. In a meter, the combination, with the disks or pistons, of spiders attached thereto, levers 4 4^a, pivoted, as at 37 37^a, on a standard 3, and levers 5 5^a, pivoted on the levers 4 4^a, as at 9, and on a vertical rod which communicates motion to the valves, as at 11, said levers 5 5^a being pivoted on the spiders, as at 7, and intermediate levers 6 6^a, which connect the levers 4 4^a with said spiders or disks, substantially as and for the purposes specified.

10. In a meter, the combination, with a central ring, of two vertical parallel levers, each pivoted on said ring at one end and to the meter disk or piston at the other by an intermediate lever or link, a rod which actuates the valve mechanism, two levers, each of which is pivoted at one end to the rod which actuates the valve mechanism and at the other to a disk or piston of the meter, and also pivoted to the first-mentioned levers at an intermediate point, as at 9, substantially as and for the purposes specified.

11. In a meter, the combination, with a central ring and the valves of the meter, of two levers, each of which is pivoted at one end on the central ring or a standard supported thereby and at the other to a piston of the meter by an intermediate lever or link, a rod for communicating motion to the valves, two levers, each of which is pivoted to said rod at one end, to a meter-piston at the other, and to one of the first-recited levers at an intermediate point, a fixed guide for one end of the rod, which communicates motion to the valves, and an adjustable guide for the other end of said rod, substantially as and for the purposes specified.

12. In a meter, the combination, with the meter pistons and valves, of two parallel levers, each pivoted at one end to the meter-ring and at the other to the meter-piston by an intermediate lever, a rod which communicates motion from the meter-piston to the valves, two levers, each pivoted to the meter-piston at one end, to the said rod at the other, and to one of the first-recited levers at an intermediate point, a gravity or drop arm for actuating the valves, and a crank-lever for actuating the gravity or drop arm from the before-recited rod, substantially as and for the purposes specified.

13. In a gas-meter, the combination, with the valve mechanism and a rod for actuating the same from the meter-pistons, of an adjusting mechanism composed of a lever 25, attached at its hub to a standard 3 by a shouldered or pivot screw 26, having its upper portion bent and recessed to form a guide for the before-recited rod and its lower portion slotted to receive an adjusting-screw 27, and the adjusting-screw 27, substantially as and for the purposes specified.

14. In a gas-meter, the combination, with the meter-pistons, of two parallel levers, each of which is pivoted at one end to a standard arranged within the meter and at the other to one of the meter-pistons by an intermediate lever or link, two levers, each of which is pivoted on one of the first-recited levers, also to one of the meter-pistons, and to a rod which communicates motion to the meter-valves, and an adjusting-guide composed of a pivoted lever 25, having its upper portion bent and slotted for the reception of the above-recited rod and its lower portion slotted to receive an adjusting-screw 27, and said adjusting-screw 27, substantially as and for the purposes specified.

15. In a dry gas-meter, the combination, with the bellows piston or disk, of a detachable spider, as at 32, provided at its opposite edges with bearings for the attachment of the operative mechanism of said meter, substantially as and for the purposes specified.

16. A sheet-metal band for securing the bellows to its disk or to the meter-frame, said band having perforated angle-pieces adapted to receive a threaded clamping-bolt, and a lap-piece or extension end, substantially as and for the purposes specified.

17. In a dry gas-meter, the combination of central ring 1, bellows-leather 31, strap or band 72, provided with perforated angle-pieces 75 75, adapted to receive a threaded clamping-bolt and lap 76, and a bolt and nut for tightening the band, substantially as and for the purposes specified.

18. A gas-meter casing composed of two interchangeable halves, each having the approximate form of a slightly-conated cylinder, with its base diagonal to its axis and its small end closed, the diagonal open end having a flange for attachment to its complementary half and provided in its longest side with a port or opening at or near a point corresponding to the middle of the case, substantially as and for the purposes specified.

19. In a gas-meter, the combination of two interchangeable sections having oblique flanged open ends, said sections constituting a case, a base provided with a diagonal slot for the reception of the flange of the case-sections, and means for connecting the parts, substantially as and for the purposes specified.

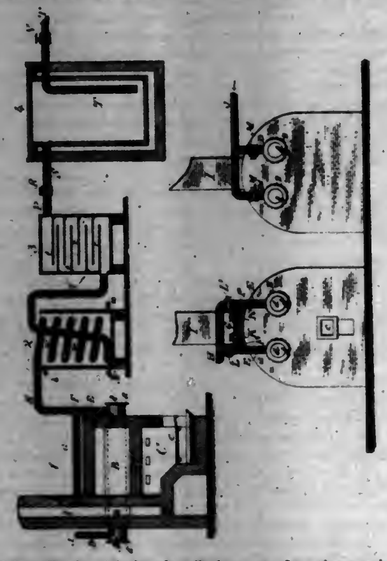
20. In a gas-meter, the combination of an independent central ring for the support of the operative mechanism, said ring having threaded inflow and outflow ports at opposite points, and a case composed of two cylinder-sections having diagonal flanged open ends provided with ports corresponding to the ports of the central ring, substantially as and for the purposes specified.

21. In a meter, the combination of an independent central ring for the support of the operative mechanism, said ring having inflow and outflow ports at opposite points, a case composed of two diagonal flanged open-ended sections, a base having a diagonal slot or seat for the flange of the case, and means for connecting the several parts, substantially as and for the purposes specified.

22. The combination, in a gas-meter, of a central bellows-ring having diametrically-opposite inflow and outflow chambers with threaded ports and with valve-ports on both sides of said rings, a tubular guide at right angles to said valve-ports, a standard diametrically opposite to said guide, two levers pivoted on the standard and to the meter-pistons by interposed links or levers, two levers pivoted on the first-named levers and also on the meter-pistons, a rod which moves in the tubular guide and to which the last-recited levers are pivoted, an adjustable lever pivoted on the standard and having a slot to receive the rod, a slotted crank-arm having projecting fingers and actuated by a pin on the rod, a gravity-lever or drop-arm actuated by the fingers of the crank-arm, a stem which connects the valves of the meter and

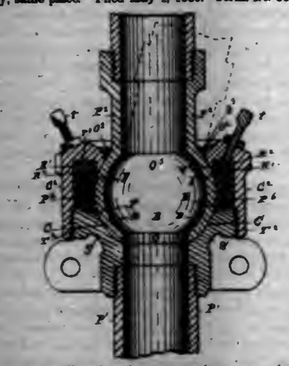
which is actuated by the drop-arm, and a sectional meter-case adapted to be secured to said central bellows-ring which supports the hereinbefore-recited mechanism, substantially as and for the purposes specified.

409,276. PROCESS OF PREVENTING THE OXIDATION OF METALS WHILE IN A HEATED CONDITION. GEORGE W. CUMMINS and JAMES H. COLEMAN, New Haven, Conn. Filed July 14, 1888. Serial No. 279,990. (No model.)



Claim.—The hereinbefore-described process of treating metals to prevent their oxidation while in a heated state, consisting in subjecting such metals to an atmosphere composed of nitrogen and carbonic oxide, with or without carbonic acid, the carbonic oxide being in sufficient excess to overcome any tendency of the carbonic acid, if present, to oxidize the metal, substantially as set forth.

409,277. BALL-AND-SOCKET JOINT FOR STEAM-PIPE CONNECTIONS. THOMAS CURLEY, Troy, N. Y., assignor of one-half to William Bailey, same place. Filed May 1, 1889. Serial No. 309,158. (No model.)

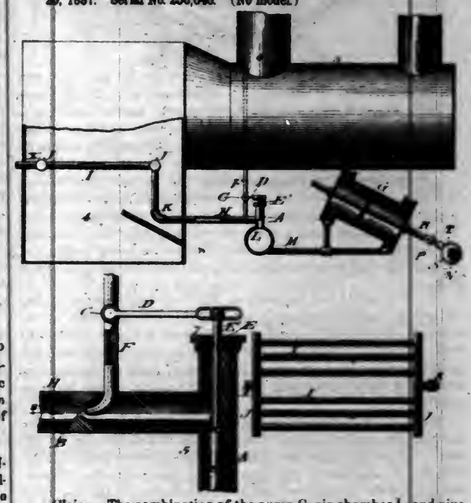


Claim.—1. In a ball-and-socket steam-pipe connection, the combination, with a socket proper having a central passage and an annularly and interiorly arranged concave made with a beveled edge and encircling said passage, of a cap constructed to make a threaded connection with said socket proper, said cap being made with a central passage and a concave encircling said passage, and a packing-ring recess encircling said concave, a metal packing-ring having a beveled inner face arranged in said recess, set-screws in said cap arranged to engage with said packing-ring, a pipe having a ball-form end adapted to make a rotating engagement with the concaves of the socket and cap, and a ring-form packing arranged between said ring and the bevel upon the interior of the socket proper, substantially in the manner as and for the purposes set forth.

2. The combination, with the pipe P³, made with the ball-form end B, of the socket proper S, made with the central passage O, encircling concave C, beveled face F, and connecting-pipe P', the cap C², constructed to make a threaded connection with said socket proper, and having the central passage O², encircling concave O², annular recess R', and set-screws *t*, the ring R, made with the bevel *b'*, and the packing P⁴, all constructed and arranged to operate substantially in the manner as and for the purposes set forth.

3. In a ball-and-socket steam-pipe connection, the combination, with a socket proper made with a central passage and an annular concave encircling the same, of a cap constructed to make a threaded connection with said socket proper, said cap having a central passage, an annular concave encircling said passage, and an annular packing-recess made therein, a pipe having a ball-form end adapted to make a rotating engagement with the annular concaves of said socket proper and cap, and a packing arranged within said packing-ring and between the interior annular edges of the socket proper and cap, substantially in the manner as and for the purposes set forth.

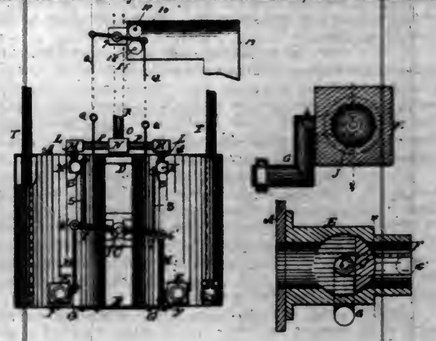
409,278. APPARATUS FOR HEATING CARS. ISAAC T. DYER, Chicago, Ill., assignor to himself and Peter Fish, same place. Filed Nov. 25, 1887. Serial No. 256,040. (No model.)



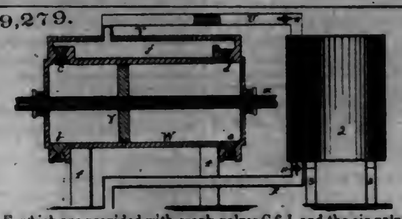
Claim.—The combination of the pump G, air-chamber L, and pipe M, connecting said pump and air-chamber, cylinder A, open at its top and communicating with chamber L, pipe H, communicating with cylinder A midway thereof, piston 5, operating in cylinder A and provided with an operating-rod E', injector F, communicating with pipe H, the cock C, located in said injector F, lever D, connecting cock C with the piston 5 by means of rod E', and pipes K I J, communicating with pipe H, substantially as shown and described.

409,279. APPARATUS FOR ELEVATING WATER. ISAAC T. DYER, Chicago, Ill., assignor to himself and Peter Fish, same place. Filed June 6, 1888. Serial No. 276,290. (No model.)

Claim.—An apparatus for elevating water, consisting of the cylinders A, provided with water-exit pipes T T, extending down to near the bottom of said cylinders and inside thereof, the water-induction



409,279.



pipes F, which are provided with crank-valves G G J, and the air-valves S K, communicating with the cylinders, in combination with the walking-beams 1 and 9, having suitable connecting-rods, the air-receiver 2, and a branch pipe R M N, leading therefrom to and communicating with the air-valves S K, and an air-pump having its exit-pipe communicating with the air-receiver 2, and mechanism for driving the upper walking-beam, substantially as specified and shown.

409,280. DEVICE FOR PROTECTING GAGE-GLASS TUBES. EMIL ENGELS, Engelskirchen, near Cologne, Germany. Filed Dec. 3, 1888. Serial No. 292,454. (No model.) Patented in Germany Sept. 16, 1886, No. 39,068.



Claim.—1. In apparatus for the protection of gage-glasses, a thick and transparent glass casing, such as H, having a section approximately of the form of a horseshoe, substantially as herein described and illustrated.

2. In apparatus for the protection of gage-glasses, a thick and transparent glass casing, such as H, having a section approximately of the form of a horseshoe with its ends turned slightly outward, substantially as herein described and illustrated.

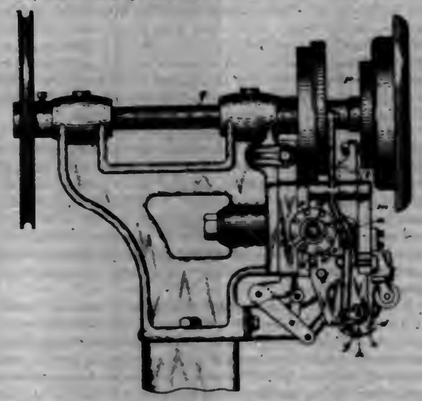
3. The combination, with a gage-glass-protecting casing, of shoes, such as U O, provided with noses K for securing them to the gage-cocks, substantially as herein described and illustrated.

4. The combination, with a gage-glass, a protecting casing or glass having one side open to permit of its removal, and the shoes at the ends of said protecting-casings, of the wires D, having the bent ends for clamping the protecting casing or glass and shoes together, substantially as described.

5. As a new article of manufacture, the apparatus for protecting gage-glasses, consisting of a glass casing H, shoes U O, having noses K, and enlargements B, and wires D, and chain *k*, substantially as herein described and illustrated.

6. The combination, with a gage-glass, the protecting-casing having one side open to permit of its removal, and the shoes at the ends of said protecting-casing engaging the gage-glass fitting to hold the protecting-glass in place, of the wires D, passing through said shoes at the rear edges of the casing and having the bent ends engaging said shoes to clamp the casing and shoes together, substantially as described.

409,281. SHOE-SEWING MACHINE. ANDREW EPTLER, Jr., Boston, Mass. Filed Apr. 25, 1888. Serial No. 271,833. (No model.)



Claim.—1. In a curved-needle sewing-machine, the combination, with the needle, looper, and work-holding devices, of the cast-off, the rock-shaft supporting the same, a spring and connecting devices between the same and the said rock-shaft, whereby a yielding pressure is imparted to said rock-shaft and cast-off in one direction, and means, substantially as described, whereby the rock-shaft and cast-off are positively impelled in the opposite direction, as set forth.

2. In a curved-needle sewing-machine, the combination, with the needle, looper, and work-holding devices, of the cast-off, the rock-shaft supporting the same, a cam, as o, the slide reciprocated by said cam, means for connecting said slide and rock-shaft, and a spring and devices connecting the same with the rock-shaft, whereby a yielding pressure is imparted to said slide, rock-shaft, and cast-off, as set forth.

3. In a curved-needle sewing-machine, the combination, with the needle, looper, and work-holding devices, of the cast-off, the rock-shaft *i*, supporting the same, the cam o, the slide *l*, engaged with said cam, the rod *k*, connecting the slide with an arm *j* on the rock-shaft, and a spring and devices connecting the same with the rock-shaft, whereby a yielding pressure is exerted on the slide, the cast-off, and the intermediate devices, as set forth.

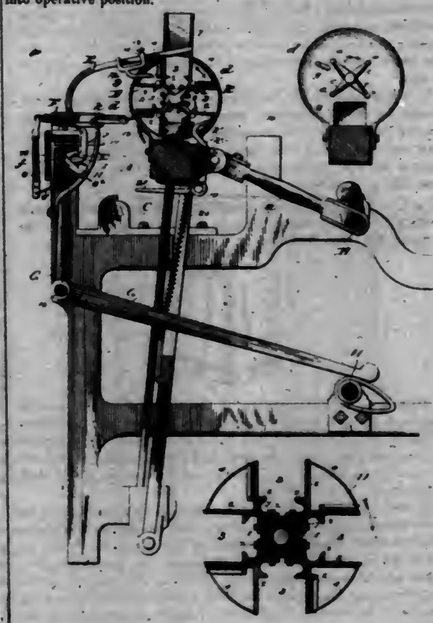
4. In a curved-needle sewing-machine, the combination, with the needle, looper, and work-holding devices, of the cast-off, the rock-shaft *i*, supporting the same, the cam o, the slide *l*, engaged with said cam, the rod *k*, connecting the slide with an arm *j* on the rock-shaft, a pivoted arm *u*, bearing at its free end on the rod *k*, and a spring *r*, bearing upon the arm *u*, whereby said arm is pressed downwardly upon the rod, as set forth.

5. The combination, with the needle, looper, and work-holding devices, of the cast-off, a rock-shaft upon which it is mounted, a cam, and loose connections between the rock-shaft and cam, a spring interposed in such loose connections to impart a yielding pressure to the rock-shaft and cast-off, a stud *s*, supporting the spring, and the plate *t*, engaged with one end of the spring and pivoted with means for holding it in different positions, substantially as set forth.

6. The combination of the fixed channel-gage and the oscillating looper, arranged at one side of the material, and the curved needle, the back-gage, and the oscillating cast-off arranged on the other side, loose connections for said cast-off and its source of motion, and a spring interposed therein to impart to said cast-off a yielding pressure toward the point of the needle, substantially as and for the purposes set forth.

409,282. SHUTTLE-SUPPLYING MECHANISM FOR LOOMS. JAMES M. EVANS, Providence, R. I., and JEREMIAH M. SHAY, Fall River, Mass. Filed Mar. 29, 1888. Serial No. 268,705. (No model.)

Brief.—When the weft-thread breaks or runs out, the ordinary weft-fork is operated, and through connected devices the means whereby the shuttle-box is turned at the next beat of the lay is thrown into operative position.



Claim.—1. In combination, a movable receptacle for holding the shuttles carried by the lay, a movable operating-arm at the breast-beam, weft-fingers, operating devices for acting upon the weft-fingers, connections from said weft-fingers to the movable arm for changing the position of the same when the weft-thread breaks, and an operating device in connection with the movable receptacle, whereby, when the position of the movable arm is changed, a part of said operating device will be in line therewith and will be moved to operate the shuttle-box by contact with the movable arm at the breast-beam.

2. In combination, a movable receptacle for holding the shuttles carried by the lay, a movable operating-arm at the breast-beam, weft-fingers, operating devices for acting upon the weft-fingers, connections from said weft-fingers to the movable arm for changing the position of the same when the weft-thread breaks, and an operating device in connection with the movable receptacle, whereby, when the position of the movable arm is changed, a part of said operating device will be in line therewith and will be moved to operate the shuttle-box by contact with the movable arm at the breast-beam, and a catch for holding the receptacle in its moved position, said catch being positively operated when the movable arm is thrown into operative position.

3. In combination, a movable receptacle for holding the shuttles carried by the lay, an operating-arm E at the breast-beam for moving the receptacle, the weft-fingers, operating devices for acting upon the weft-fingers, and connections between said weft-fingers and the operating-arm, whereby the receptacle will be moved as the lay beats forward when the weft-thread breaks, substantially as described.

4. In combination with the lay, a cylindrical receptacle for holding the shuttles carried by said lay, an operating-arm on the breast-beam for moving the receptacle, weft-fingers, connections between said fingers and arm operated automatically for causing the arm to rotate said receptacle when the weft-thread breaks, and operating devices for the weft-fingers, substantially as described.

5. In combination with the lay, a movable receptacle for the shuttles, the arm E, and a catch for holding the receptacle in its moved position, said catch being in position to be struck by the arm when it operates, substantially as described.

6. In combination, the lay, the cylindrical receptacle provided with compartments, and the casing extending around said receptacle for completely inclosing the same, said cylindrical receptacle being provided with an opening at the top and bottom, substantially as described.

7. In combination, the lay, the movable receptacle having the radial arms, the arm E on the breast-beam provided with the finger, the weft-fork, operating devices therefor, and the automatically-operating connections between the arm E and the fork, substantially as described.

8. In combination, the lay, the movable receptacle, the operating device *c*, the rock shaft, the arm E, loosely mounted on the rock-shaft, the spring, the arm on the rock-shaft adapted to engage with the arm E, the catch, and the weft-fingers and connections for moving the rock-shaft.

9. In combination, the revoluble cylinder having a series of compartments for the shuttles, each compartment having a binder-arm, the casing inclosing the cylinder and having openings in its top, front, bottom, and rear, and a lever having its end extending through the opening in the rear and bearing upon the binder-arms in succession, substantially as described.

409,288. DEVICE FOR CARRYING AND APPLYING POSTAGE-STAMPS. John H. Hagen, Marietta, Mich. Filed Nov. 23, 1888. Serial No. 292,102. (No model.)

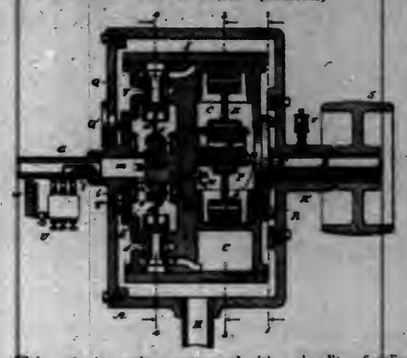


Claim.—1. The combination of the casing, the stem secured therein and having a stationary ejector on its inner end, the sliding shell fitting within the casing and around the ejector and provided with a bottom fitting upon the stem, and a spring coiled around the stem between the bottom of the casing and the bottom of the shell, as set forth.

2. The combination of the casing, the shell within the casing, the stem passing through the bottom of the shell and having a threaded portion projected through the bottom of the casing, the ejector secured to the end of the stem within the casing, the nuts mounted on the stem and bearing against the opposite sides of the bottom of the casing, the spring mounted on the stem to project the shell, and the nut mounted on the stem to adjust the tension of the spring, as set forth.

3. The combination of the casing, the shell sliding therein and having a rib on its side, the removable bottom for said shell, and the button on said bottom adapted to engage said rib, as set forth.

409,284. STEAM-ENGINE. Milan W. Hall, Brooklyn, N. Y. Filed Jan. 24, 1888. Serial No. 261,787. (No model.)



Claim.—1. An engine constructed with a plurality of cylinders arranged radially around a common axis, with an equal number of valve-chests having ports communicating with said cylinders, and with a concentric revolving steam-chest between said valve-chests, in combination with an axial rotative shaft on which said cylinders and valve-chests are mounted, a crank arranged eccentrically to said axis, pistons in said cylinders, pitmen engaging said crank and connecting with said pistons, valves in said valve-chests, a valve-gear for moving said valves, and a steam-inlet communicating with said concentric steam-chest.

2. An engine constructed with a plurality of cylinders arranged radially around a common axis, and with an equal number of radially-arranged valve-chests having ports communicating with said cylinders, and a concentric revolving steam-chest between and communicating with said valve-chests, in combination with an axial rotative shaft on which said cylinders and valve-chests are mounted, pistons in said cylinders, pitmen engaging said crank and connecting with said pistons, balanced tubular piston-valves in said valve-chest, whereby the steam passes from said steam-chest through said valves to the cylinder-ports, and a valve-gear in said steam-chest for moving said valves.

3. In an engine, the combination of an inclosing-case, a stationary shaft, and a crank formed on said shaft, with a rotary shaft in line with the axis of said stationary shaft, a plurality of radially-arranged cylinders fixed to said rotative shaft and having a bearing upon said stationary shaft and formed with valve-chests having ports communicating with the cylinders, and a steam-chest concentrically embracing said stationary shaft, a steam-inlet passage through said stationary shaft opening into said steam-chest, valves in said valve-chests, and a valve-gear in said steam-chest for moving said valves.

4. In an engine, the combination of an inclosing-case, a stationary shaft, a crank formed on said shaft, and a steam-inlet passage through said shaft, with a rotary shaft in line with the axis of said stationary shaft, a plurality of radially-arranged cylinders fixed to said rotative shaft and formed with a steam-chest concentrically embracing and bearing on said stationary shaft, and into which said steam-inlet passage opens, pistons in said cylinders, pitmen engaging said stationary crank and connecting with said pistons, and packings applied at the bearing-joints between said steam-chest and stationary shaft to prevent escape of steam from said chest through said joints.

5. In a revolving-cylinder steam-engine, the combination of a relatively rotary shaft and steam-chamber, the one having rotative bearings upon the other and the one part formed with a face substantially perpendicular to the axis of rotation, with a packing for said bearings, consisting of a ring arranged concentrically against said perpendicular face, and an annular diaphragm fastened to said ring at one margin, bridging the bearing-joint to be packed, and fastened at its opposite margin to the other part, whereby the steam-pressure against said ring and diaphragm acts to press said ring against said perpendicular face.

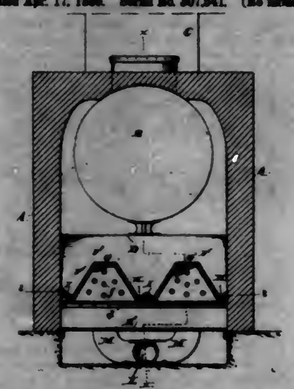
6. In an engine, the combination of an inclosing-case constructed with a removable cover, and with a stationary shaft fixed to said cover, and a crank formed on said shaft, a rotary shaft in line with said stationary shaft, a plurality of radially-arranged cylinders fixed to said rotary shaft, pistons in said cylinders, and pitmen engaging said stationary crank and connecting with said pistons.

7. In an engine, the combination of a stationary shaft and a crank formed thereon, a rotary shaft in line with the axis of said stationary shaft, a plurality of radially-arranged cylinders fixed to said rotative shaft and formed with a steam-chest concentrically embracing and bearing on said stationary shaft, pistons in said cylinders, pitmen engaging said stationary crank and connecting with said pistons, a stationary eccentric fixed on said stationary shaft, valves for admitting steam from said steam-chest to said cylinders, and eccentric straps and rods connecting to said valves.

8. An engine constructed with a plurality of radially-arranged cylinders mounted to rotate around an axis, in combination with pistons in said cylinders, a crank arranged eccentrically to said axis, mechanical connections between said crank and said pistons, and one or more adjustable counter-weights applied to said cylinders, whereby the latter may be adjusted to a correct balance around the axis of rotation.

9. An engine constructed with a plurality of radially-arranged cylinders mounted to rotate around an axis, in combination with radial screws attached to said cylinders and adjustable counter-weights mounted on said screws and adjustable toward and from the axis of rotation.

409,285. SAWDUST-BURNER. Henry I. Hildreth, Saginaw, Mich. Filed Apr. 17, 1888. Serial No. 307,541. (No model.)



Claim.—1. In a sawdust-burner, the combination, with the fire-box, of a grate for the sawdust supported in said fire-box, having raised portions provided with holes or perforations, and having its edges in contact with the sides of said fire-box luted to make a tight joint, substantially as and for the purpose specified.

2. In a sawdust-burner, the combination, with the fire-box, of a grate consisting of a number of sections supported in the fire-box, said sections being provided with raised perforated portions and overlapping each other on adjacent edges to form substantially air-tight contact.

3. A grate-section for a sawdust-burner, consisting of a hollow box adapted to be supported over the hearth and having its bottom open thereto, provided with upwardly-inclining side walls and a flat top to support the fuel during combustion, and provided with holes or perforations in said side wall opening into the body of the fuel supported upon the section, said section being closed to the passage of air except through said holes, substantially as and for the purpose specified.

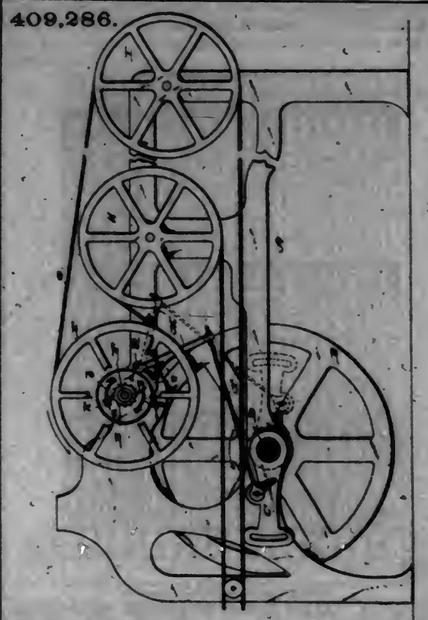
4. A grate-section for a sawdust-burner, consisting of a hollow box having upwardly-inclining side walls and a flat top, holes or perforations in said side walls, and a rim or flange about the base of said grate-section for the purpose of supporting it within the fire-box.

5. A grate-section for a sawdust-burner, consisting of a hollow box, upwardly-inclining side walls, and a flat top, holes or perforations in said side walls, a rim or flange about the base of said grate-section for the purpose of supporting it within the fire-box, and a projecting ledge upon one side of said rim or flange adapted to fit over the rim or flange of the adjacent grate, to form substantially air-tight connection between them.

409,286. SPINNING-MULE. Howard Hinds, Woonsocket, R. I. Filed June 5, 1889. Serial No. 313,114. (No model.)

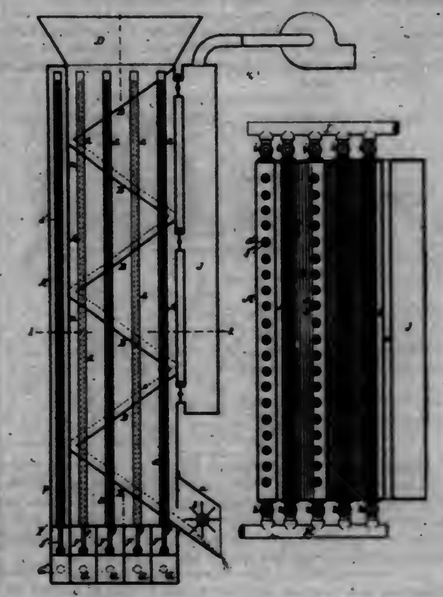
Brief.—The object of the invention is to provide a brake mechanism to check the momentum of the machinery as the carriage is reversed for the run in.

Claim.—In a cotton-mule, the combination, with the roller clutch-arm and the score-pulley, of a brake-pulley on the drive-shaft, a ratchet-wheel on the hub of the score-pulley, a spring-backed pawl or pawls on the web of the brake-pulley, a brake having one end adapted to engage the periphery of the brake-pulley, and a rod connecting the opposite end of the brake with the roller clutch-arm, substantially as specified.

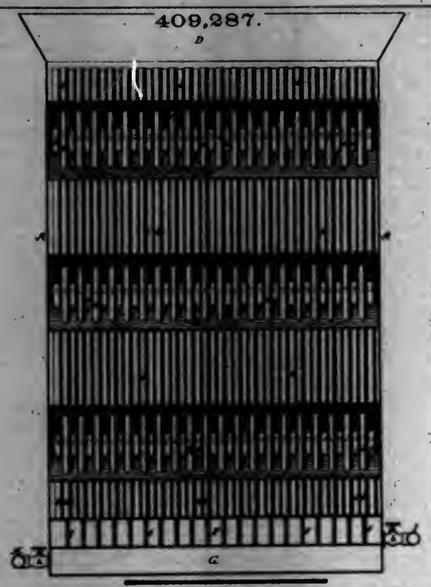


409,287. GRAIN-DRIER. George H. Isherwood, Philadelphia, Pa. Filed June 4, 1887. Serial No. 240,575. (No model.)

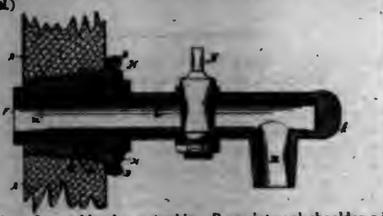
Claim.—The combination of the casing having a series of shelves inclined alternately in opposite directions, and each, except the discharge-shelf, terminating within a short distance of the shelf below, with a discharge regulator at the bottom shelf, and a series of longitudinal rows of heated and imperforate tubes passing upward through each of the inclined shelves of the casing, the tubes of one row being in line with the spaces between the tubes of the adjoining rows and being of a diameter substantially equal to the width of said spaces, all substantially as specified.



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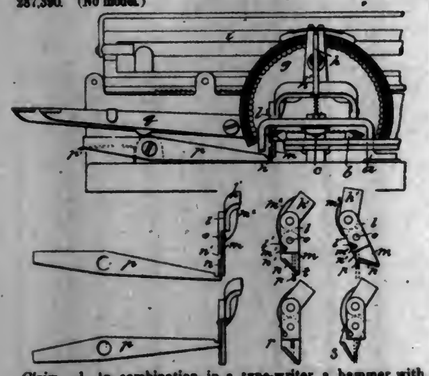


409,288. TAP AND BUSHING FOR BARRELS. GEORGE W. JACKSON, Philadelphia, Pa. Filed Mar. 9, 1887. Serial No. 230,172. (No model.)



Claim.—In combination, a bushing B, an internal shoulder *a* in said bushing, a locking-joint G at the end of said bushing, a tap C, a projection F on said tap, a collar H, and a cap D.

409,289. PRINTING MECHANISM FOR TYPE-WRITING MACHINES. ARTHUR I. JACOBS, Hartford, Conn., assignor to the Tilton Manufacturing Company, Portland, Me. Filed Oct. 6, 1888. Serial No. 287,390. (No model.)



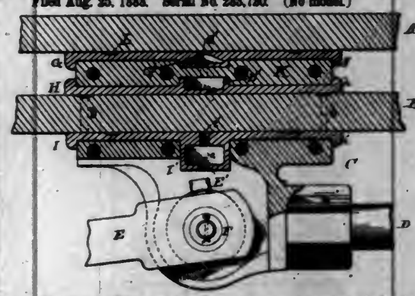
Claim.—1. In combination, in a type-writer, a hammer with a projecting arm, pivoted to which is a plate having an inclined rib, which when forced in one direction moves the arm and hammer, but when forced in the opposite direction moves independently, and a printing-lever adapted to move the plate by contact with the inclined rib, substantially as described, and for the purpose specified.

2. In combination, in a type-writer, a type-wheel, a hammer with a projecting arm, to which is pivoted a plate bearing an inclined rib, with a channel above the end of the rib, which when forced in one direction moves the arm and hammer, but when forced in the opposite direction moves independently, and a lever with one end adapted to move the plate by contact with the incline, substantially as described, and for the purpose specified.

3. In combination with a type-writer, a type-wheel, a hammer with a projecting arm, to which is pivoted a plate bearing an inclined rib for a part of its length, which plate when forced in one direction moves the arm and hammer, but when forced in the opposite direction moves independently, and a lever with one end adapted to move the plate by contact with the incline and the other end bent into the path of a key-lever, substantially as described, and for the purpose set forth.

4. In combination with a type-writer, a type-wheel, a hammer with a projecting arm, to which is pivoted a plate bearing an inclined rib, said plate bearing also a pin that projects into a slot in the arm, so that when the plate is forced in one direction it moves the arm and hammer, but when forced in the opposite direction moves independently, and a lever with one end adapted to move the plate, substantially as described, and for the purpose set forth.

409,290. CROSS-HEAD. LOWELL H. KENYON, Allegheny, Pa. Filed Aug. 25, 1888. Serial No. 283,730. (No model.)



Claim.—1. The combination, with a cross-head guide having two bars arranged one above the other, of a cross-head provided with three gibs arranged one above the other in a vertical tier, two of them bearing against one of the bars and the third against the other bar, substantially as described.

2. The combination, with a two-bar guide, of a cross-head having three gibs, two of which bear against the under sides of said bars, respectively, the third bearing upon the upper side of one of the bars, substantially for the purpose set forth.

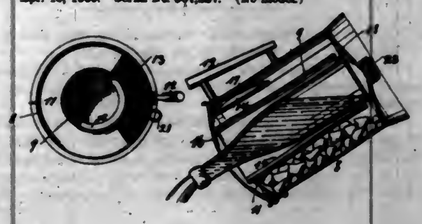
3. The combination, with the guide-bars A and B, arranged one above the other, of the cross-head C, having the three gibs G, H, and I, arranged and operating substantially as and for the purpose set forth.

409,291. PROCESS OF MAKING SOLUTION COMPOUNDS FOR GALVANIC BATTERIES. WILLIAM P. KOOKOGEY, Brooklyn, N. Y., assignor to the Kookogey Electric Company. Filed July 3, 1888. Serial No. 316,441. (No specimens.)

Claim.—1. The process of making a chromic-battery compound, consisting of the following steps: first, taking bisulphate of soda and trioxide of chromium manufactured separately; second, dissolving the crystals of the bisulphate by heat without the addition of water, and, third, adding thereto the trioxide of chromium, stirring, substantially as described.

2. The process of making a chromic battery compound, consisting of the following steps: first, adding an excess of sulphuric acid to sulphate of soda, allowing it to cool, and collecting the crystals of bisulphate of soda thus produced; second, dissolving the bisulphate of soda by heat without the addition of water, and, third, adding trioxide of chromium thereto, stirring, substantially as described.

409,292. BOTTLE-COOLER. LEON LEVY, Nashville, Tenn. Filed Apr. 15, 1889. Serial No. 307,227. (No model.)

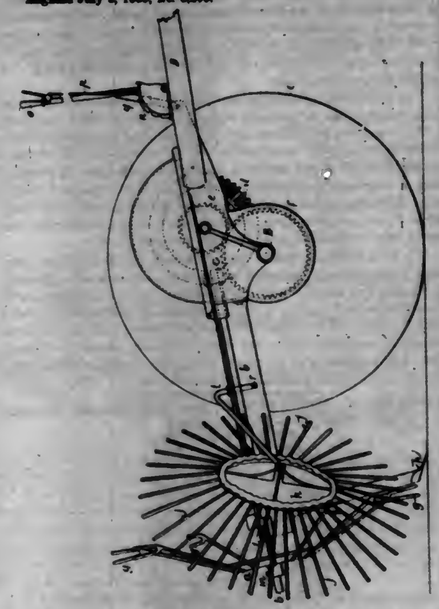


Claim.—1. In a bottle-cooler, the combination of an outer shell, an inner one receiving the bottle, a space between the two to be filled with refrigerant, a flange 11, connecting outer and inner shell and partly closing up the space between them, and a perforated lid, all as shown and described.

2. In a bottle-cooler, the combination of an outer shell, an inner one receiving the bottle, a space between the two to be filled with refrigerant, a flange 11, connecting outer and inner shell and partly closing up the space between them, a perforated lid, and a spiral spring 19, all as shown and described.

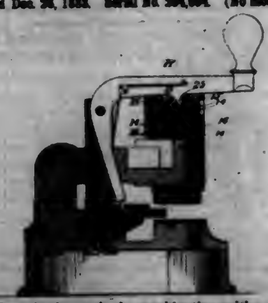
3. In a bottle-cooler, the combination of an outer shell, an inner one receiving the bottle, a space between the two to be filled with refrigerant, a flange 11, connecting outer and inner shell and partly closing up the space between them, a perforated lid, an auxiliary lid 14, and a stopper 20, attached to the cooler, all as shown and described.

409,293. POTATO-DIGGER. JAMES A. LEWIS, Hazzall, near Sandbach, assignor to Powell Brothers & Whitaker, Wrexham, England. Filed Jan. 30, 1889. Serial No. 298,101. (No model.) Patented in England July 6, 1888, No. 8,393.



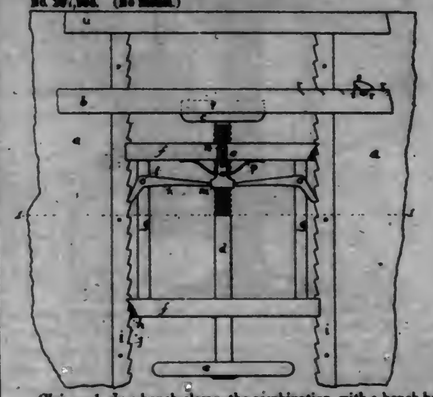
Claim.—In a machine for digging potatoes, the combination, with a share, of a pronged separating-wheel, and a digging-wheel adjustable relatively to the separating-wheel and provided with a series of terminal forks, these wheels being arranged with their axes at an angle to each other and to the same vertical plane, as shown, to spread the ridge made by the share and also to separate the potatoes from the soil, substantially as hereinbefore described.

409,294. CHECK-PUNCH. FREDERICK J. LOCKWOOD, Bridgeport, Conn. Filed Dec. 26, 1888. Serial No. 294,094. (No model.)



Claim.—In a check-punch, the combination, with a series of independently-operating punches having heads extending in the arc of a circle in the same horizontal plane, and a single operating-lever adapted to swing from the center of said arc, of a hook depending from said lever to a normal position immediately beneath said heads, substantially as set forth.

409,295. BENCH-CLAMP. GEORGE A. LOUDEN, Portland, Me., assignor to Philip J. Larrabee, same place. Filed Jan. 29, 1889. Serial No. 297,982. (No model.)

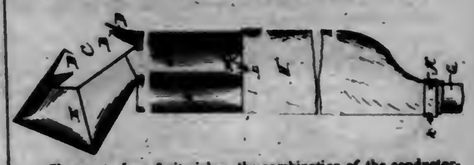


Claim.—1. In a bench-clamp, the combination, with a bench having a stationary jaw at or near one end and projecting above the plane of the top of the bench and a central longitudinal slot therein with ratcheted sides of a carriage adapted to move in said slot, pawls pivoted to the carriage and adapted to engage the ratcheted sides of the slot, a spring constantly tending to hold the pawls in engagement with the ratchet, and a screw-threaded rod adapted to travel in a female screw in the cross-bars of the carriage, and having on the end a swiveled jaw adapted to slide upon and over the top of the bench, as set forth.

2. In a bench-clamp, the combination, with a bench having a stationary jaw at or near one end projecting above the plane of the top of the table, and central longitudinal slot with ratcheted sides, a carriage adapted to move in said slot and carrying a screw-threaded bolt having on the end a swiveled jaw adapted to slide upon and over the top of the table, of pawls pivoted to the carriage, a link connecting the ends of said pawls and having a slot therein through which passes a spur set in the cross-bar of the carriage, and a spring, substantially as set forth.

3. In a bench-clamp, the combination, with a bench having a stationary jaw at one end, central longitudinal slot with ratcheted sides, a carriage adapted to slide in said slot and carrying a screw-threaded rod having on the end a swiveled jaw adapted to slide upon and over the top of the bench, and pawls adapted to engage with the said ratchets, of a brace-block having a spur adapted to enter any one of a series of holes in the clamping-face of the jaws, substantially as set forth.

409,296. FRUIT-PICKER. JOHN R. MARSHALL, Sunnyside, N. J. Filed Mar. 22, 1889. Serial No. 304,256. (No model.)



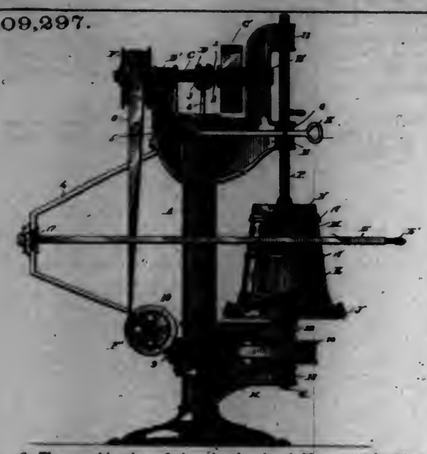
Claim.—1. In a fruit-picker, the combination of the conductor-tube, the receiver affixed thereto and provided with an opening in its side having serrated upper and lower edges, the chute secured to the conductor-tube, and the handle secured to one side of said tube, as set forth.

2. The combination of the chute and the conductor-tube, having the tongues L engaging the upper edge of the chute to secure it to the conductor-tube, as set forth.

409,297. HOOP-DRIVING MACHINE. GEORGE W. PACKER, Rock Falls, Ill. Filed Aug. 28, 1888. Serial No. 283,867. (No model.)

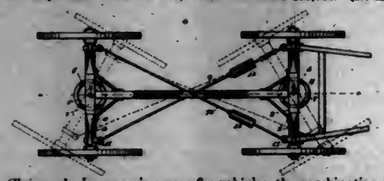
Claim.—1. The combination of the standard A, provided with brackets H and B, vertical shaft G, suitably journaled to said standard, driving-shaft C, driving-pulley C', belt S, table J, lever L, and wheel M, substantially as shown, and for the purpose described.

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2. The combination of the circular head N, provided with an upward and inward sloping periphery in substantial prolongation of the cask K, the standard A, vertical shaft G, journaled to said standard, driving-shaft C, driving-pulley C', belt S, table J, lever L, and wheel M, substantially as shown, and for the purpose described.

409,298. RUNNING-GEAR FOR VEHICLES. FRANK B. PARKER, St. Joseph, Mo. Filed Jan. 31, 1889. Serial No. 298,186. (No model.)

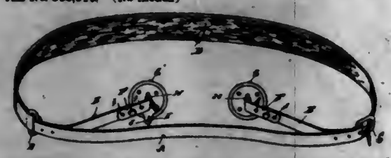


Claim.—1. In a running-gear for vehicles, the combination of the adjustable front and rear axles and the longitudinally-extensible connecting-rods intermediate of the axles, and a take-up spring connecting the sections of each rod together, substantially as described.

2. In a running-gear for vehicles, the combination of the adjustable front and rear axles and the longitudinally-extensible connecting-rods arranged diagonally between said axles, and each having a take-up spring for relieving said rod of undue strain, substantially as described.

3. In a running-gear for vehicles, the combination of the adjustable front and rear axles, the sectional extensible connecting-rods intermediate of said axles, a tubular case fixed to one of said rod-sections and having the other rod-section movable longitudinally thereon, and a take-up spring housed in said case and connected to the approximate ends of the rod-sections, substantially as described.

409,299. TRUSS. JONAH J. PELTON, Miles' Grove, Pa., assignor of one-half to Frank Spanikling, same place. Filed Mar. 29, 1889. Serial No. 305,316. (No model.)

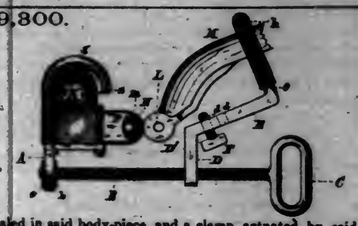


Claim.—The combination, in a truss, of an inwardly-curved spring A and a strap D, secured to the ends thereof, with the inwardly-projecting springs E, secured to the inner faces of the ends of the spring A, and pad-holders F, adjustably secured to the ends of the springs E E', and pads G G', hinged to the pad-holders, substantially as and for the purpose set forth.

409,300. DEVICE TO ASSIST IN THE INSERTION OF VEHICLE-THILLS INTO COUPLINGS. FRANK J. PORTER, Willsh, N. Y. Filed Mar. 27, 1889. Serial No. 304,923. (No model.)

Claim.—1. A device for assisting in inserting the eyes of thills and poles into the couplings on the axle of vehicles, consisting of a body-piece having hooks to engage the said axle, a screw-spindle

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journaled in said body-piece, and a clamp actuated by said spindle and adapted to engage the thill, the whole being constructed and combined substantially as and for the object specified.

2. In a device to assist in the insertion of vehicle-thills into couplings, a body-piece A, having hooks *a a'*, in combination with a screw-threaded spindle having a handle C, collar *b*, and washer *c*, and a clamping-piece *D'*, having a hook *e*, substantially as described.

3. In a device to assist in the insertion of vehicle-thills into couplings, a body-piece A, provided with a hole near its lower extremity for the reception of the screw-spindle B, and hooks *a a'*, in combination with a screw-spindle B, having a handle C, collar *b*, and washer *c* and a clamping device with a downwardly-projecting piece *D'*, obliquely-arranged middle piece E, and upwardly-projecting hook *e*, as and for the purpose stated.

4. In a device to assist in the insertion of vehicle-thills into couplings, a body-piece A, provided with a hole near its lower extremity for the reception of the screw-spindle B, and hooks *a a'*, covered with rubber tubing *g g'*, in combination with a screw-spindle B, having a handle C, collar *b*, and washer *c*, and a clamping-piece D, provided with a downwardly-projecting piece *D'*, obliquely-arranged middle piece E, having screw-threaded holes *d d'* for the reception of thumb-screw F, and an upwardly-projecting hook *e*, being covered with rubber or other material A, as and for the purpose stated.

5. In a device to assist in the insertion of vehicle-thills into couplings, a body-piece A, provided with a hole near its lower extremity, and hooks *a a'*, covered with rubber tubing *g g'*, in combination with a screw-spindle B, having a handle C, collar *b*, and washer *c*, and a clamping-piece *D'*, provided with a screw-threaded hole near its lower extremity to fit and receive the screw-threaded spindle B, whereby said clamping-piece may be moved along said spindle B by revolving the latter, in a manner substantially as described.

409,301. BARREL-HEATER. JOHN RATH, Chicago, Ill. Filed Apr. 27, 1889. Serial No. 308,877. (No model.)



Claim.—The apparatus herein shown and described, consisting of an annular basin for water and for receiving one end of the assembled staves of a barrel and of a central fire-pot for heating such barrel on its inward surface, substantially as and for the purpose set forth.

409,302. WEIGHING-MACHINE. ERNST REICH, Rhodez, France. Filed Sept. 12, 1887. Serial No. 249,478. (No model.) Patented in France Jan. 22, 1887, No. 180,990.



Claim.—1. In a weighing-machine, the combination of a scale-beam, the pendulum-weight thereon counterweighted to normally assume an inclined position when in the condition of equilibrium, with a pointer and scale-plate for indicating positions of the beam on either side of the horizontal, substantially as described.

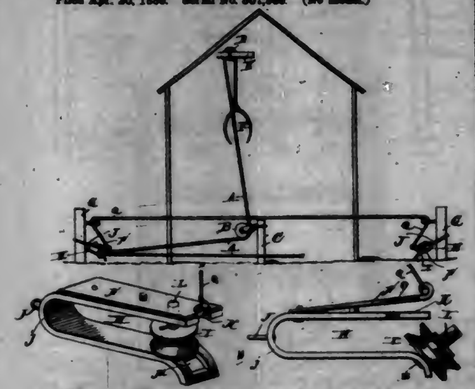
2. In a weighing-machine, the combination of a pendulum scale beam weighted to normally assume an inclined position when in the condition of equilibrium, with a tare-weight movable upon the beam, and an index and scale-plate, substantially as described.

3. In a weighing-machine, the combination of a pendulum-scale beam weighted to normally assume an inclined position when in a condition of equilibrium, with a weight movable upon said beam to both sides of the pivot of the latter, and an index and scale-plate for indicating positions of the beam on either side of the horizontal, substantially as described.

4. In a weighing-machine, the combination of a pendulum-scale beam weighted to normally assume an inclined position when in a condition of equilibrium, with a tare-weight movable on the beam, an index and scale-plate for determining disturbing weights, and a cursor on the scale-beam, substantially as described.

5. In a weighing-machine, the combination of a pendulum-scale beam extended on both sides of its pivot-point and composed of a main beam and two side beams and weighted to normally assume an inclined position, with a sliding tare-weight on one side beam, a cursor on the other side beam, and an index and scale-plate for indicating positions of the scale-beam on either side of the horizontal, substantially as described.

409,303. HAY-ELEVATOR. WILLIAM ROSMAN, Shullsburg, Wis. Filed Apr. 20, 1889. Serial No. 307,982. (No model.)



Claim.—1. The combination of the frame having its lower arm provided with a downwardly-curved end and having a notch in the end of its upper arm, the roller having the lower end of its shaft mounted in the curved end of the lower arm of the frame and adapted to play longitudinally therein, and having the upper end of its shaft adapted to engage the notch in the upper arm of the frame, and the latch mounted on the upper arm of the frame and adapted to engage the end of the roller-shaft, as set forth.

2. The combination of the frame having its lower arm provided with a longitudinally-slotted downwardly-curved end, and having its upper arm provided with a notched end, the roller having the lower end of its shaft provided with a T-head engaging the slotted curved end of the lower arm of the frame, and having the upper end of its shaft engaging the notched end of the upper arm of the frame, and a latch mounted on the upper arm of the frame and engaging the upper end of the roller-shaft, as set forth.

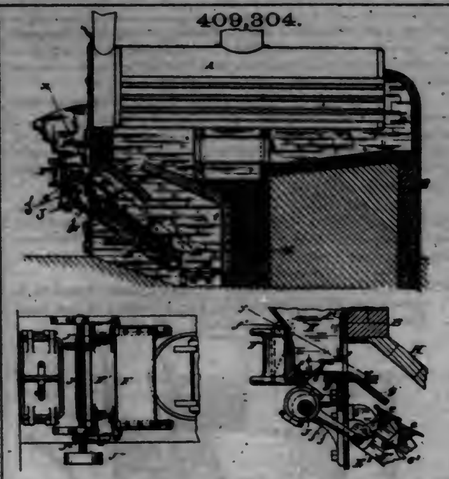
3. The combination of the frame, the roller having its shaft mounted in the lower arm of the frame and adapted to engage the upper arm of the same, a latch mounted on the frame and adapted to engage the shaft of the roller to hold it within the frame, and a cord secured to the latch to release the roller, as set forth.

4. The combination of the frame, the roller-shaft having its lower end loosely mounted in the frame, and a latch mounted on the frame and adapted to engage the upper end of the roller-shaft, as set forth.

409,304. STEAM-BOILER FURNACE OR OTHER FURNACE. WILLIAM R. ROBEY, Chicago, Ill., assignor to the Westinghouse, Church, Kerr & Company, of New Jersey. Filed Sept. 23, 1886. Serial No. 214,304. (No model.)

Claim.—1. The combination, with a furnace fire-box provided with an inclined grate, of an arch projecting from the front wall of the fire-box above the grate and extending in a position substantially parallel with the grate over the upper part only thereof, and forming a coking-chamber practically distinct from the hopper and over the head of the grate only, while the lower part of the same inclined grate beyond the arch affords room for a bed of incandescent fuel external to the coking-chamber, substantially as described.

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2. The combination, with a furnace fire-box provided with an inclined grate, of an external feed-hopper arranged to deliver upon the extreme upper end of the grate, an arch or hood H, projecting from the front wall of the fire-box over the grate and extending rearwardly and downwardly over the upper part of the grate and forming an interior coking-chamber practically distinct from the hopper, and an arch I, projecting forwardly from the rear of the fire-box above and clear of the arch H and terminating forward of the rear margin of the said arch H and at a distance from the front wall of the fire-box, substantially as described.

3. An inclined furnace-grate composed of a series of rocking transverse non-fingered bars having wide and flat upper surfaces and provided with trunnions which rest upon suitable supports, said rocking bars being arranged with the rear edge of each bar overhanging the front edge of the bar beneath it, with a vertical space between the lapping portions of adjacent bars to allow of the desired rocking motion, and altogether forming a series of horizontal steps or shelves adapted to be tilted on their trunnions to advance the fuel, substantially as described.

4. An inclined furnace-grate composed of a series of transverse bars having flat and broad upper surfaces mounted in position wherein the rear edge of each bar overhangs the front edge of the subjacent bar, a vertical space being provided between the overlapping portions of the bars affording room for the desired rocking movement, and the front edges of the underlapping bars being provided with an upwardly-projecting rib, substantially as shown.

5. The combination of an inclined grate composed of transverse rocking bars provided with depending arms c^2, a magazine arranged to feed upon the upper end of the grate and provided with a vibrating follower, a rotating eccentric or crank-shaft, a bar F^2, connecting the grate-bar arms c^2, a pitman connecting the crank or eccentric with the bar F^2, and a connection uniting the crank or eccentric with the vibrating follower, substantially as described.

6. The combination, with an inclined grate composed of transverse rocking bars and a magazine arranged to deliver upon the upper part of the grate, and having a vibrating follower, substantially as described, of a rotating eccentric or crank-shaft, an adjustable connection of the crank or eccentric with the magazine-follower, and an adjustable connection of the crank or eccentric with the grate-bars, substantially as described.

7. The combination, with an inclined grate having movable bars and with a magazine arranged to deliver upon the upper part of the grate, and provided with a vibrating follower, of a rotating crank or eccentric shaft having actuating connection with the grate-bars, a vibrating vertical lever, as J^3, Fig. 13, an adjustable connection of said lever with the follower, and an actuating-connection of said crank-shaft with the vibrating lever, substantially as described.

8. The combination, with the rocking bars of an inclined furnace-grate and a feed-magazine provided with a vibrating follower, of a rotating crank or eccentric shaft, a vibrating vertical lever, as J^3, Fig. 13, an adjustable connection of said lever with the follower, a connection of the lever with the crank-shaft, and an adjustable connection of the crank-shaft with the grate-bars, substantially as described.

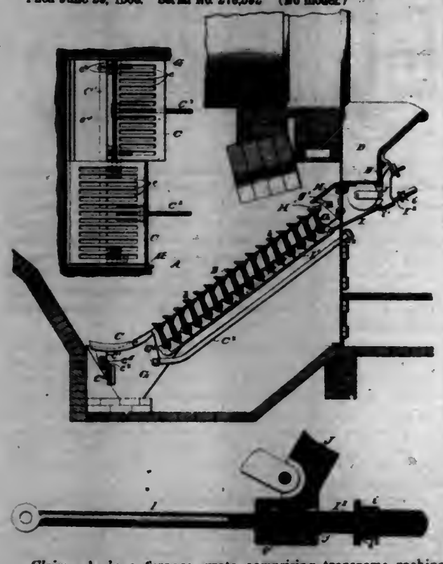
9. The combination, with the rocking bars of an inclined grate and with a feed-magazine provided with a vibrating follower, of a

rotating crank or eccentric shaft, a vibrating vertical lever connected with both the follower and with the crank-shaft, and an adjustable actuating-connection of the crank shaft with the grate-bars, substantially as described.

10. The combination, with an inclined furnace-grate having transverse rocking bars, an elevated magazine, and a fixed cross-plate at the head of the grate, of a follower located opposite the feeding-opening of the hopper and pivoted at its upper part, and a bottom plate of the hopper flexibly connected with the follower and resting movably upon said fixed plate, substantially as described.

11. The combination of an inclined furnace-grate, a pivoted foot-grate D, located below the level of the lower end of the inclined grate, and a fixed vertical grate or slotted bar D' between the inclined grate and the foot-grate, substantially as described.

409,305. **FURNACE-GRATE.** WILLIAM R. ROBEY, Chicago, Ill., assignor to the Westinghouse, Church, Kerr & Company, of New Jersey. Filed June 20, 1888. Serial No. 278,592. (No model.)



Claim.—1. In a furnace-grate comprising transverse rocking grate-bars, inclined supporting-bars for said grate-bars, and supports for the inclined bars, the said inclined bars being provided at their upper ends with hinged connections with their support.

2. The combination of hinged bars G, rocking grate-bars *b b*, connecting-bar I', vibrating lever J, and connecting-rod I, provided with adjusting-nuts for engagement with the lever J.

3. The combination, with an inclined grate B, of a foot-grate C, which is concaved from front to rear, and has its front and discharging portion practically in line with the grate B, said grate C being supported on a transverse axis arranged to allow the front of said grate to be lowered and raised, substantially as described.

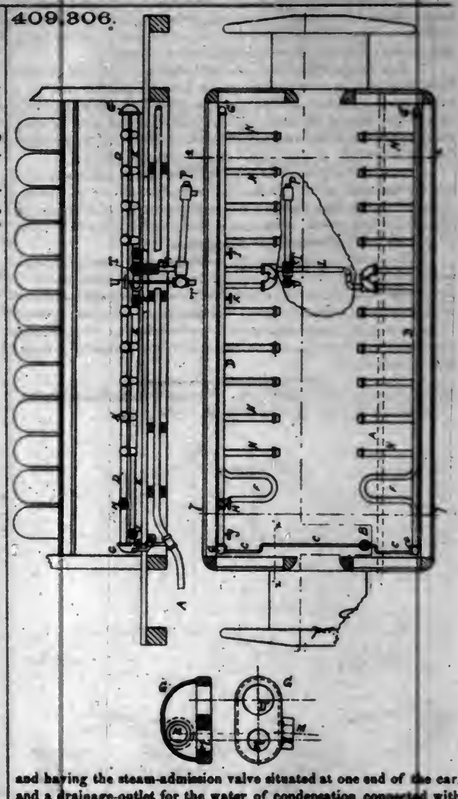
4. The combination, with an inclined grate B, of a grate C, which is concaved from front to rear, and is supported on a transverse axis beneath and at the rear of the middle of the grate, substantially as described.

5. The combination, with an inclined grate B, of a foot-grate C, which is concaved from front to rear, a cross-beam C' beneath and pivotally supporting the foot-grate, an arm C^3, connected with the grate C, and a connecting-rod C^2, whereby the grate may be operated at pleasure.

6. The combination, with rocking grate-bars, a lever J, provided with an aperture *j*, and a screw-threaded connecting-rod I, passing through the aperture *j*, and provided with adjustable nuts on opposite sides of the lever, of a sleeve I^3, embracing the rod I between the nuts thereon.

409,306. **APPARATUS FOR HEATING CARS.** JAMES B. SAGUR, Buffalo, N. Y. Filed Sept. 14, 1888. Serial No. 285,306. (No model.)

Claim.—1. In a system of steam heating for cars, the combination of two main radiating pipes extending longitudinally through the car at the side thereof—one arranged above the other—fittings by which the upper and lower main pipes are connected to each other at each end of the car, an admission-pipe leading from the source of supply and joined to one of such fittings at or near the bottom thereof,



and having the steam-admission valve situated at one end of the car, and a drainage-outlet for the water of condensation connected with the lower of the longitudinal pipes at a point situated between the center of the car longitudinally and the end at which the steam is not admitted, the lower of the main radiating-pipes being made to incline from both ends of the car toward the drainage-connection, substantially as and for the purpose described.

2. In a system of steam heating for cars, the combination of two main radiating-pipes extending longitudinally through the car, fittings connecting such main radiating-pipes together at each end of the car, an admission-pipe joined to one of such fittings and admitting steam thereto at one end of the car, and a drainage-outlet connecting with the lower of such radiating-pipes, the inlet for steam to such lower radiating-pipe being made smaller than the inlet to the other radiating-pipe to allow of the drainage-outlet being placed at the most convenient point between the two ends of the car, substantially as and for the purpose described.

3. In a system of steam-heating for cars, the combination of two main radiating-pipes extending longitudinally through the car, the lower one thereof being inclined from each end of the car toward the drainage-outlet, fittings connecting such main radiating-pipes at each end of the car, a main admission-pipe opening into one of such fittings at such point that the lower edge of the opening by which the admission-pipe connects with the fitting is about on a line with the center of the opening from such fitting into the lower longitudinal pipe, and a drainage-outlet situated between the center of the car longitudinally and the other end of the car from that at which the steam-distributing fitting is situated, substantially as and for the purpose described.

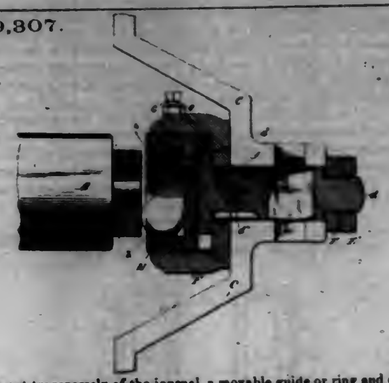
409,307. **ANTI-FRICTION JOURNAL-BOX.** WILLIAM S. SHARPNECK, Chicago, Ill. Filed Nov. 23, 1888. Serial No. 291,573. (No model.)

Claim.—1. The combination, with a journal, of a rolling end bearing therefor, a cup having a lateral adjustment transversely of the journal, and a movable guide or ring held by said cup and receiving said rolling end bearing, substantially as described.

2. The combination, with a journal, of a cup having a lateral adjustment transversely of the journal, a movable guide or ring held by said cup, and a ball held in the guide, substantially as described.

3. The combination, with a journal, of a cup having a lateral adjustment transversely of the journal, a movable guide or ring and disk held in said cup, and means, as the bolt D and nut E, for adjusting said cup, substantially as described.

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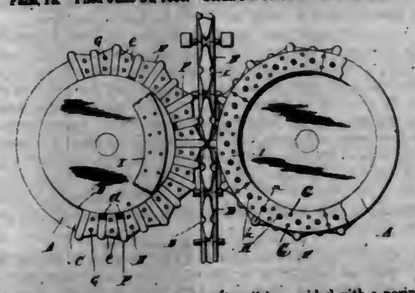
409,308. **CAGE FOR JOURNAL-BOXES.** WILLIAM S. SHARPNECK, Chicago, Ill. Filed Jan. 9, 1889. Serial No. 296,855. (No model.)



Claim.—1. The combination, with rods B, of two disks, and wedges for giving one of said disks a rotary motion around the other, thus gripping the rods, substantially as described.

2. The combination of the rods B and the end pieces A, each formed of two disks *a a'*, provided with rivets C for holding them together, with the wedges D, set in keyways formed in said disks, substantially as described.

409,309. **DIE-BEARING DISK.** MICHAEL M. SHELLABERGER, Beaver Falls, Pa. Filed June 24, 1888. Serial No. 315,342. (No model.)



Claim.—1. The combination, with a disk provided with a peripheral shoulder and carrying a removable plate provided with threaded perforations, of the independent dies bearing at their ends against the shoulder of the disk, and set-screws mounted in the perforations of the said plate and engaging said dies, substantially as specified.

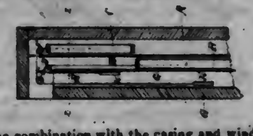
2. The combination, with a disk bearing stationary block-dies arranged at intervals to form spaces having parallel sides, of the parallel-sided male dies fitting in said spaces and engaged by set-screws, substantially as specified.

3. The combination, with a disk provided with a peripheral seat or recess and a peripheral shoulder adjacent thereto, of alternate block-dies having convergent sides, and male dies having parallel sides fitting in said seat or recess and bearing at their inner ends against said shoulder, substantially as specified.

4. The combination, with die-bearing disks provided with peripheral seats or recesses, of the block-dies fitting in said seats or recesses and secured by screws or bolts G, the male dies fitting between the block-dies, the covering-plate arranged on the upper sides of the block and male dies and secured in place by the bolts or screws G, and the set-screws mounted in the said plate and engaging the male dies, substantially as specified.

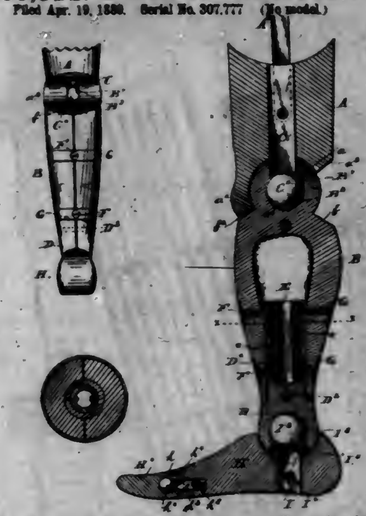
5. The combination, with a die-bearing disk, of the block-dies fitting in a peripheral seat or recess therein, the adjustable male dies fitting between said block-dies, and the covering-plate secured to the block-dies and carrying set-screws to engage and lock the male dies in position, substantially as specified.

409,310. **WINDOW.** CHARLES A. SIGLE, Youngstown, Ohio. Filed Dec. 20, 1888. Serial No. 294,201. (No model.)



Claim.—The combination, with the casing and window-sashes, of a pulley, as D, arranged above the lower sash, two pulleys, as E and F, arranged above the other pulley on the same plane, the pulley F being over the upper sash, a boxing, as G, having a center opening admitting of the free movement of two weights, said boxing fitting in the corner formed by the sash and casing, and cords passing over the pulleys, having weights attached to their ends inside the boxing and connected with the sashes, substantially as described.

409,311. **ARTIFICIAL LEG.** WILLIAM L. SNYDER, Denver, Colo. Filed Apr. 19, 1889. Serial No. 307,777. (No model.)



Claim.—1. The combination, substantially as hereinbefore set forth, of the upper leg portion formed with a curved recess and face-plate, a shank secured thereto and carrying at its lower end a socket-ball, and the lower leg portion formed with a curved socket-piece at the top and fitting in the curved recess in the upper leg portion, and also having a socket for the ball secured to the shank, and a recess in which the shank is free to move.

2. The combination, substantially as hereinbefore set forth, of the lower leg portion formed with an opening in its lower end, the ankle-piece divided longitudinally and secured together and adjustably secured in the lower leg portion, and the foot-piece having a ball-joint resting in a recess or socket in the lower end of the ankle-piece, said foot-piece being also provided with a curved recess into which the curved lower end of the ankle-piece extends.

3. The combination, substantially as hereinbefore set forth, of the lower leg portion, the ankle-piece having a shank projecting into the lower leg portion, the foot-piece having a curved recess into which the curved or rounded lower end of the ankle portion projects, the shank I, secured to the foot-piece, and the ball I^3, secured to the end of the shank and resting in a recess or socket in the ankle-piece, which is also provided with a recess I^4, for the purpose specified.

4. The combination, substantially as hereinbefore set forth, of the lower leg portion, the ankle-piece formed with a cylindrical hollow shank extending into the lower leg portion, the metallic cylinder

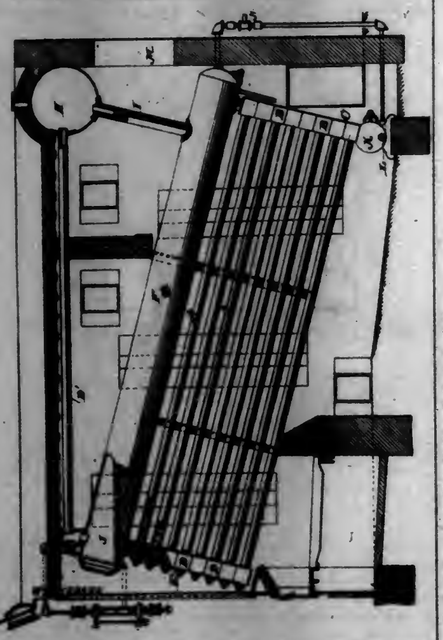
E, arranged centrally within the shank and provided with perforations *e*, the metallic bands or straps secured around the lower leg portion, and the screws extending through the lower leg portion into the perforations in the shank and in the metallic cylinder carried thereby.

409,312. **FIRE-EXTINGUISHER.** SAMUEL H. TIMMONS, Evansville, Ind. Filed Nov. 15, 1888. Serial No. 290,965. (No model.)



Claim.—In a fire-extinguisher, an ejector composed of a cylinder having a piston-head and a piston-rod projecting from one end, said cylinder being hinged at one end to a handle-bar, and a lever centrally hinged to the piston-rod and its forward end hinged to the bar, and suitable flexible tubes from the reservoir having valves, and the terminating-nozzle, substantially as herein set forth.

409,313. **STEAM-BOILER.** ROBERT R. BELL, Baltimore, Md., assignor to Joseph V. Campbell, same place. Filed Apr. 3, 1888. Serial No. 269,494. (No model.)



Claim.—1. In a sectional steam-boiler, the combination of the inclined tubes expanded into headers or boxes at both ends, a water-drum at same inclination connected at its lower sides with the front and rear headers or boxes, and connected on the front top side with a manifold and on the rear top side with a steam-drum, said steam-drum being connected with the manifold on front end by tubes, substantially as and for the purpose set forth.

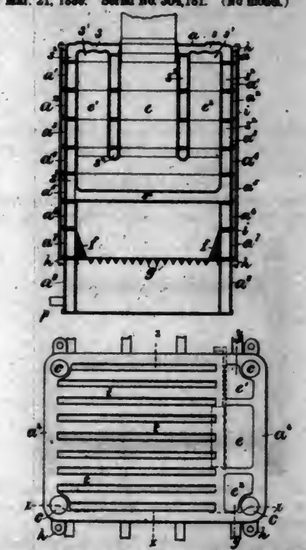
2. The combination, in a water-tube boiler having headers and inclined connecting-tubes, of a water-circulating and steam drum connected to said headers and arranged parallel to the said tubes, and a steam pipe or pipes connecting the upper inclined end of the drum with a steam-drum, all arranged within the furnace, substantially as set forth.

3. The combination, in a water-tube boiler having headers and inclined connecting-tubes, of a water-circulating and steam drum connected to the upper ends of said headers and parallel to the connecting-tubes, and a steam pipe or pipes connecting the upper inclined end of said drum with a steam-drum, substantially as described.

4. In a water-tube boiler, the combination, with the headers and inclined connecting-tubes, of a steam and water drum, as described, connected to the said headers and arranged parallel to the connecting-tubes, a manifold in communication with the upper inclined end of said drum, and a steam pipe or pipes connecting said manifold with a steam-drum, all as set forth.

5. The combination, in a water-tube boiler having headers and inclined connecting-tubes, of a steam-separating and water-circulating drum connected to the upper ends of said headers and parallel to the connecting-tubes, a manifold in communication with the upper inclined end of said drum, and a steam pipe or pipes connecting said manifold with a steam-dome, substantially as set forth.

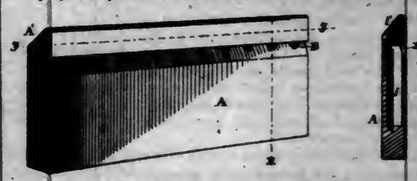
409,314. **WATER-HEATER.** GEORGE C. BLACKMORE, Newark, N. J. Filed Mar. 21, 1888. Serial No. 304,181. (No model.)



Claim.—1. A hot-water heater provided with a fire-space at the top, two return-flues leading downwardly therefrom, a main flue interposed between and connected at the bottom with such return-flues and leading to the chimney, the said flues being inclosed within the water-space of the heater, and an opening between the said fire-space and the main flue, having a damper operated from without the heater to open and close the same, as and for the purpose set forth.

2. A hot-water heater comprising a series of parallel sections having inlet and outlet apertures and arranged vertically, each section being provided on one side with apertures at both ends and on the other side with apertures at one end only, the alternate sections having the apertures at opposite ends on the side containing apertures at one end only, and the sections intermediate thereto having apertures on their upper and lower sides corresponding in position and number with those in the sides adjacent thereto of the sections directly above and below the same, the top and bottom sections having apertures only on the sides in contact with the adjacent sections, and provided, respectively, with supply and distributing pipes, as and for the purpose set forth.

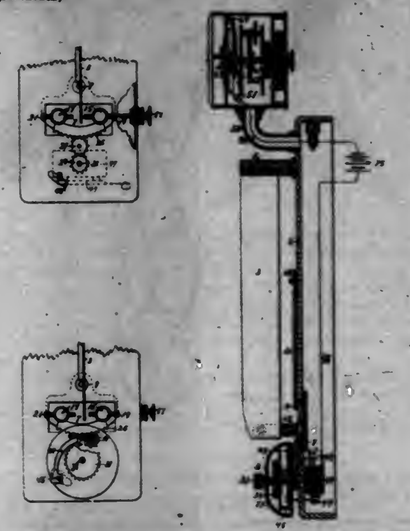
409,315. **MUSICAL INSTRUMENT.** CHARLES W. BURGESS, Norwalk, Ohio, assignor to the Bostwick & Burgess Manufacturing Company, same place. Filed Jan. 14, 1889. Serial No. 296,333. (No model.)



Claim.—A piece of wood having a series of graduated holes bored therein of proper depth and diameter, a triangular-shaped kerf cut longitudinally into the series of holes to form the lips of the pipes, which pipes have their outer ends filled with flattened plugs, whereby the air blown into them will impinge upon the lips, the upper part of

said board being beveled to form the mouth-piece, all constructed substantially as and for the purpose described.

409,316. **THERMOSTAT.** ALBERT M. BUTZ, Minneapolis, Minn., assignor, by mesne assignments, to the Consolidated Temperature Controlling Company, of Minnesota. Filed May 10, 1887. Serial No. 237,709. (No model.)



Claim.—1. The combination, with a thermostat provided with adjustable contact-points, of an electro-magnet, an electric circuit, and a circuit-closer, whereby when said circuit is closed the relative position of said contact-points is changed, substantially as described.

2. The combination, with a thermostat provided with a thermostatic bar, as 3, and posts carrying contact-points, as 19 and 21, the free end of said bar and said contact-points being relatively adjustable, of an electro-magnet, an electric circuit, and circuit-closer, whereby when said circuit is closed the relative position of said bar and contact-points is changed, substantially as described.

3. The combination, with a thermostat having a thermostatic bar 3, and a movable plate 7, carrying the posts 15 and 17 and contact-points 19 and 21, of an electro-magnet controlling the position of said plate, an electric circuit, and a circuit-closer, substantially as and for the purpose set forth.

4. The combination, with a thermostat having relatively-adjustable contact-points and thermostatic bar, of an electro-magnetic mechanism for changing the adjustment of said parts, and a clock mechanism provided with a circuit-closer controlling said electro-magnetic mechanism, substantially as described.

5. The combination, with a thermostat, of an electro-magnetic device for changing the position of its contact-points, a clock mechanism, a circuit-closer on said clock mechanism, and means for predetermining the time at which said circuit-closer will be operated, substantially as described.

6. The combination, with a thermostat provided with a movable plate 7, carrying contact-points, of mechanism for moving said plate in one direction, mechanism for automatically moving said plate in the opposite direction, an electro-magnet for releasing said automatic mechanism, a circuit, and a circuit-closer, substantially as described.

7. The combination, with a thermostat provided with a movable plate 7, and contact-points carried by said plate, of mechanism for moving said plate in one direction, automatic mechanism for moving said plate in the opposite direction, an electro-magnet controlling said automatic mechanism, an electric circuit, and a clock mechanism provided with a circuit-closer for closing said circuit, substantially as described.

8. The combination, with a thermostat provided with movable contact-points, and mechanism for moving said points, of an electro-magnet controlling said mechanism, a clock mechanism carrying a circuit-closer in circuit with said magnet, and an alarm arranged to be operated by the mechanism for moving the contact-points of the thermostat.

9. A thermostat having movable contact-points, in combination with an electro-magnetic mechanism for changing the position of said points.

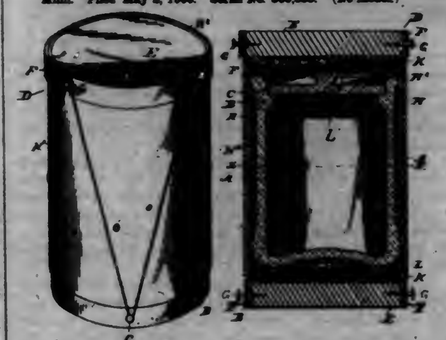
409,317. **SHOE FOR SLED-RUNNERS.** JOHN R. CAMPBELL, Clyde, Minn. Filed June 10, 1889. Serial No. 313,646. (No model.)



Claim.—1. The combination, with the sleigh-runner, its narrow bearing-shoe, and the bolts confining said shoe to the runner, of an independent wide metallic plate interposed as a snow-shoe between the runner and its bearing-shoe to extend the length thereof and having elongated apertures formed longitudinally therein to register with the bolt-holes in the runner, substantially in the manner and for the purpose herein set forth.

2. The combination, with a sleigh-runner and its narrow bearing-shoe, of an independent wide metallic plate interposed as a snow-shoe between the runner and its bearing-shoe, bolts confining the bearing-shoe and interposed snow-shoe jointly to the runner, and lateral brackets secured to the runner to bear upon and re-enforce the top of the snow-shoe, substantially in the manner and for the purpose herein set forth.

409,318. **BUTTER-PACKAGE.** SIMEON CRITTENDEN, Chatfield, Minn. Filed May 2, 1888. Serial No. 309,355. (No model.)



Claim.—1. The combination of an earthenware jar or crock having an interior flange or shoulder, a cover placed upon the latter, the heads or caps having radially-extending studs, packing material interposed between the top and bottom of the jar and said heads or caps, a layer of paper interposed between the cover of the jar and the packing material, and a fastening-cord laced around the studs of the heads or caps, substantially as and for the purpose set forth.

2. The combination of the earthen jar, the telescoping paper wrappers or jackets surrounding the same and having their ends interposed between the disks E and their encircling hoops or rims composing the heads or caps, the studs extending radially from the latter, packing material placed between the top and bottom of the jar and said heads or caps, a layer of paper interposed between the cover of the jar and the packing material, and a fastening-cord laced around the studs of the caps or heads, substantially as and for the purpose set forth.

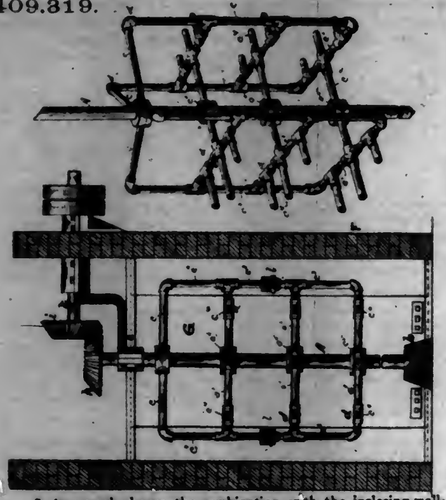
3. In a butter-package, the herein-described heads or caps, consisting of wooden disks having the telescoping paper or straw-board jackets secured thereto by sheet-metal rims or hoops and provided with radially-extending studs, and a fastening-cord laced around the studs, substantially as and for the purpose herein set forth.

4. The combination, with a jar or similar breakable package, of the herein-described heads or caps, consisting of wooden disks having the telescoping paper or straw-board jacket secured thereto by sheet-metal rims or hoops, and having radially-extending studs and a fastening-cord, substantially as and for the purpose herein shown and specified.

409,319. **SMOKE-HOUSE.** EDWARD C. FORD, Washington, D. C., assignor of one-half to Andrew Lotter, same place. Filed Jan. 11, 1889. Serial No. 296,057. (No model.)

Claim.—1 In a smoke-house, the combination, with the inclosing-walls, of the rotatable reel having the shaft A, provided with the radial arms *c*, the uprights c^1, carried at the extremities of said arms, and the horizontal parallel supporting-rods *d*, carried by and between said uprights at a distance from the shaft of the reel, substantially as set forth.

409,319.

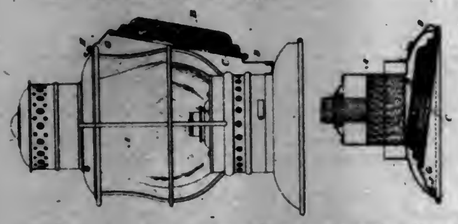


2. In a smoke-house, the combination, with the inclosing-walls, of the rotatable reel having the shaft A, provided with the radial arms c, the uprights c^3, carried at the extremities of said arms, the horizontal supports c', carried by and between said uprights at a distance from the shaft of the reel, and supplemental radial arms c^3 at right angles with and connecting said supports c' with the shaft, substantially as set forth.

3. In a smoke-house, the combination, with the inclosing-walls of the rotatable reel having the shaft A, provided with the radial arms c, the uprights c^3, carried at the extremities of said arms, and the horizontal supports c', carried by and between said uprights at a distance from the shaft of the reel, and the outward extensions c^4 at right angles to and carried by the supports c', substantially as set forth.

4. In a smoke-house, the combination, with the inclosing walls or casings, of the reel having the vertical shaft A, diametrical arms c^3 and parallel supports c', situated upon opposite sides of the shaft and at right angles to and carried by said arms, and the removable sausage-sticks m, arranged parallel with said arms and supported by said parts c', substantially as set forth.

409,320. SIGNAL ATTACHMENT FOR LAMPS OR LANTERNS. ALBERT L. FRANCE and ALBERT E. YELTON, Millsdale, Ky. Filed Jan. 7, 1889. Serial No. 295,712. (No model.)



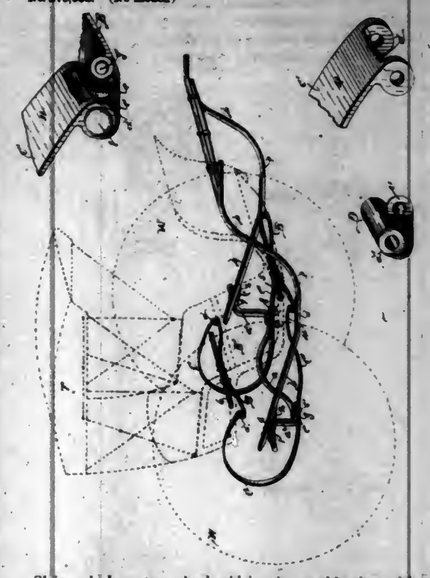
Claim.—1. A signal attachment for lanterns, consisting of a supplementary glass arranged to be supported in an upright position at the side of the lantern when in use and to be folded under the same when not in use in the manner and for the purpose substantially as described.

2. A signal attachment for lanterns, consisting of a supplementary glass hinged to the outside of the lantern in such a manner as to be folded under the same when not in use, substantially as and for the purpose described.

3. In a signal attachment for lanterns, a supplementary glass located upon the exterior of the globe and having its lower part hinged to the lantern-frame, and its upper part provided with a latch, whereby it is held in position when in use and folded under the bottom of the lantern when not in use in the manner substantially as described.

4. In an attachment for lanterns, a glass surrounded by a suitable rim or frame, in combination with a double hinge connecting its lower portion to the lantern and by means of which it is folded up into the same, and a hasp or its equivalent by means of which it is held in elevated position at the side of the lantern, substantially as described.

409,321. TWO-WHEELED VEHICLE. GEORGE GIDDOM, Fair Mount, assignor to Culver Gilman Thyng, Olean, N. Y. Filed July 3, 1888. Serial No. 278,962. (No model.)



Claim.—1. In a two-wheel vehicle, the combination, with the body thereof, of the crank-arm axle, substantially as described, the front and rear cross-springs, and the side springs clipped to the drop part of the axle and having one end C-shaped and shackled loosely to a rear cross-spring secured to the body, and the other end slightly curved in an upward and downward direction and shackled loosely to a front cross-spring secured to said body, substantially as and for the purpose set forth.

2. In a two-wheel vehicle, the combination, with the body thereof, of the crank-arm axle, as described, the side springs c', clipped to the drop part of the axle and having the rear end C-shaped and shackled loosely to a rear cross-spring secured to the body, and the forward end slightly curved in an upward and downward direction and shackled loosely to a front cross-spring, the drop-shafts clipped to the arm of the bent axle and braced thereto at a point above that where the side springs are clipped, and the braces for securing the shafts against lateral movement, substantially as shown and described.

409,322. WIRE-TIGHTENER. JOSHUA S. GUTTON, Granger, Mo. Filed June 19, 1889. Serial No. 314,836. (No model.)

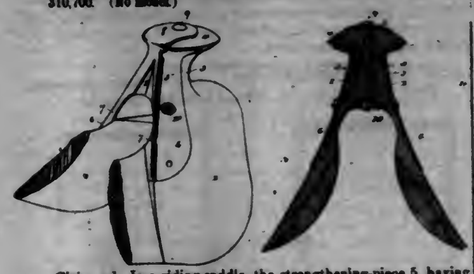


Claim.—1. A wire-tightener consisting of a main bar provided with a ring or ferrule at its end, a link sliding through said ring and provided with a hook adapted to engage the wire, and a lever pivoted to the main bar and the link, as set forth.

2. A wire-tightener consisting of a main bar having a ring at one end, an L-shaped lever pivoted to said main bar, and a link pivoted at one end to the lever, moving through the ring and provided with a hook at its free end adapted to engage the wire, as set forth.

3. A wire-tightener consisting, essentially, of two levers hinged together, one of said levers being provided with a longitudinally-disposed ring at its end, and the other one carrying a hook adapted to slide longitudinally through said ring, as set forth.

409,323. RIDING-SADDLE. SAMUEL HAENSEL, Quincy, Ill., assignor of one-half to Louis Wolf, same place. Filed May 14, 1889. Serial No. 310,700. (No model.)

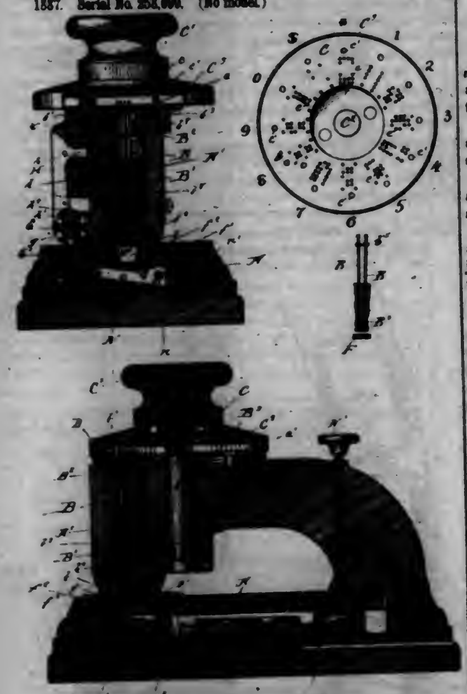


Claim.—1. In a riding-saddle, the strengthening-piece 5, having the wings 6 6, the short projecting flanges 7 7, and the broad overhanging flange 8, substantially as described.

2. The combination, with the frame of the saddle-tree and the cap-piece, of the metallic strengthening-piece having the wings 6 6, short flanges 7 7, broad overhanging flange 8, and the vertical bolt 9 and cross-bolt 10, for securing the parts together, substantially as described.

3. The combination, with the wooden saddle-tree frame made in two parts, as described, and with the wooden cap-piece, of the metallic strengthening-piece having the wings, the short flanges, the broad overhanging flange, and the vertical and horizontal bolts, substantially as described.

409,324. PERFORATING-STAMP. CHRISTIAN C. HILL, Chicago, Ill., assignor to the Hill Manufacturing Company, same place. Filed Dec. 22, 1887. Serial No. 258,090. (No model.)



Claim.—1. The hand perforating-stamp having, in combination, a series of independently-movable punches B, converging guides in which said punches are mounted, consisting of a shell or case having a molded filling in which the guide-holes are formed, a corresponding female die for said punches, and a reversely-socketed revolvable plunger for operating only those punches necessary for making the character required, substantially as specified.

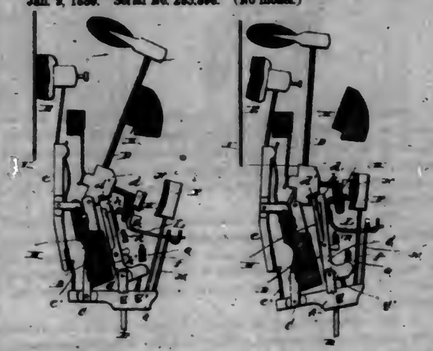
2. The combination, with a series of independently-movable punches B and their female die, of revolvable reversely-socketed plunger C, a registering-pin, said plunger C having registering-sockets to engage said registering-pin, and indicator spring-pin a', substantially as specified.

3. The combination, with a series of independently-movable punches B, of a guide-case therefor having perforated heads or ends through which the punches pass, the interior of said guide-case being filled with soft metal to form continuous and independent guides for each of said punches, substantially as specified.

4. The combination of frame A, punches B, guide-case $B' B^3$, said part B^3 being movable, perforated heads $b\ b'$, soft metallic filling b^4, and a socketed plunger C, substantially as specified.

5. The combination of frame A, punches B, guide-case $B' B^3$, said part B^3 being movable, perforated heads $b\ b'$, soft metallic filling b^4, a socketed plunger C, and a perforated guide-plate D, substantially as specified.

409,325. PIANO-ACTION. HARRY L. HOSE, Lexington, Ky. Filed Jan. 9, 1889. Serial No. 295,996. (No model.)



Claim.—1. The combination, with a jack, of a fly or supplemental jack pivoted in a recess formed in the rear face thereof and adapted to engage the knuckle of the hammer, substantially as e for the purpose specified.

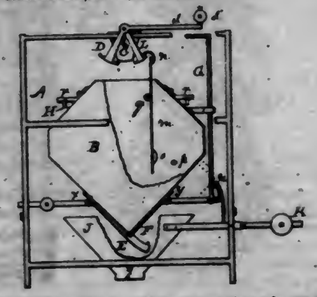
2. The combination, with a jack, of a fly-jack pivoted thereto and terminating at its upper end below the upper end of the jack, substantially as specified.

3. The combination, with a jack, of a fly-jack pivoted thereto and the spring connected to the latter to normally draw its upper end away from the jack, substantially as specified.

4. The combination, with a jack, of the fly-jack pivoted thereto and fitting at its upper end between rearwardly-extending ears on the jack, whereby, when the jack is in engagement with the knuckle of the hammer, the fly-jack is held out of contact therewith, substantially as specified.

5. The combination, with the jack connected to the jack-lever and adapted to engage a shoulder on the knuckle of the hammer and the stop Q to engage the toe of the jack, of the fly-jack pivoted to the jack and normally held out of contact therewith at its upper end and the stop R to engage the toe of the fly-jack, substantially as specified.

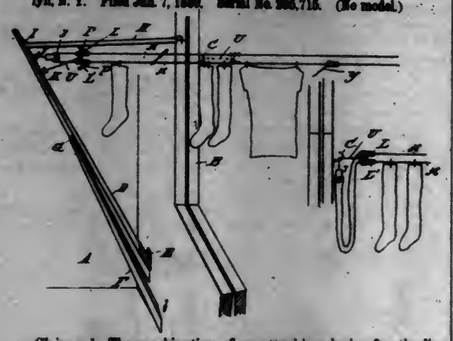
409,326. AUTOMATIC GRAIN-WEIGHER. ELIAS A. HOOVER, West Milton, assignor of one-half to John R. Fouts, Troy, Ohio. Filed Nov. 26, 1883. Serial No. 291,852. (No model.)



Claim.—The combination, in an automatic grain-weigher, of the auxiliary or partial cut-off valve L, cut-off valve D, both of said valves being centrally pivoted to the sides of the chute, the pivotal plate m,

suspended in the weighing-receptacle, and the curved arm *n* of said cut-off valve L to engage the top of said plate, substantially as described.

409,327. CLOTHES-LINE ATTACHMENT. HENRY MASHER, Brooklyn, N. Y. Filed Jan. 7, 1889. Serial No. 295,715. (No model.)



Claim.—1. The combination of an attaching device for the line located on the outside of the window, clamps adapted to hold both strands of the line and sliding thereon, constructed and arranged to engage with the attaching device on the outside of the window, and a support for the line within the room and in line with the window, substantially as set forth.

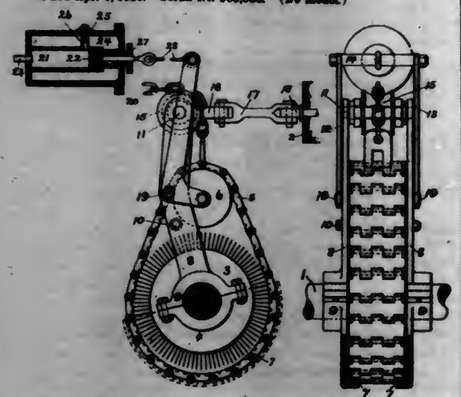
2. The combination of an attaching device for the line located outside of the window, clamps adapted to hold both strands of the line and sliding thereon, constructed and arranged to engage with the attaching device on the outside of the window, and a removable support for the line within the room and in line with the window, substantially as set forth.

3. The combination of an attaching device for the line located on the outside of the window, clamps adapted to hold both strands of the line and sliding thereon, constructed and arranged to engage with the attaching device on the outside of the window, a support for the line within the room in line with the window, and a clamp constructed and arranged to slack and to take up the slack of the line, connecting the ends of the line, substantially as set forth.

4. The combination of an attaching device for the line located on the outside of the window, clamps adapted to hold both strands of the line and sliding thereon, constructed and arranged to engage with the attaching device on the outside of the window, and a support for the line within the window, said support being provided with an adjustable attaching device, whereby the line may be slackened, substantially as set forth.

5. The double clamp above described, consisting of two separate clamps, each provided with its own clamping-lever, and a connecting-bar pivoted to each of the clamps, whereby they may be moved toward and from each other, substantially as set forth.

409,328. CAR-BRAKE. ALBERT P. MASSEY, Watertown, N. Y. Filed Apr. 1, 1889. Serial No. 305,530. (No model.)

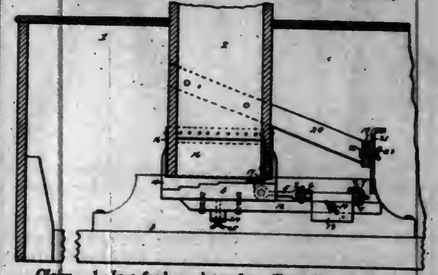


Claim.—1. In a car-brake, a friction wheel or disk one surface of which is composed of a large number of wires, in combination with a car-axle for the purpose set forth.

2. In a car-brake, the friction-wheel 3 4, endless chain 5, and tightener 6, combined with a swinging frame for actuating the tightener, supported on a frame having bearings on the axle, substantially as set forth.

3. In a car-brake, a friction-wheel one surface of which is composed of a large number of wires, an endless chain surrounding said wheel, a tightener, a swinging frame, and a piston and cylinder arranged substantially as set forth.

409,329. FEED-REGULATOR. JOHN A. MCAHREY, Minneapolis, Minn. Filed Sept. 27, 1888. Serial No. 286,504. (No model.)

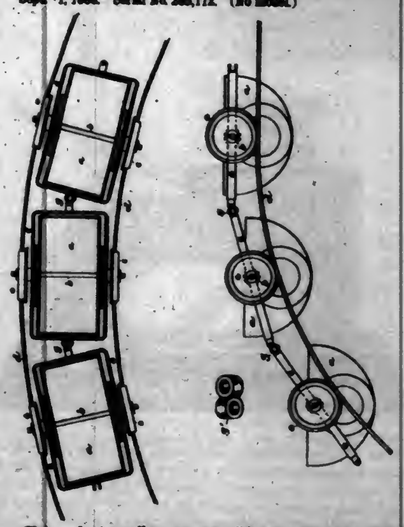


Claim.—1. In a feed-regulator for mill machinery, the combination, with a hopper, a shaker-frame, a feed-shelf pivoted in said frame, and two counterbalanced arms secured to the under side of said shelf near the sides of the same, of a brace-bar secured at its ends to the inner ends of said arms and provided with screws which project upwardly therefrom and bear against the under side of said shelf, substantially as described.

2. In a feed-regulator for mill machinery, the combination, with the hopper 1, the shaker-frame 3, the pivoted feed-shelf 4, the horizontally and vertically adjustable arms 5, and the arms 12, provided with the weights 13 and secured to the under side of said shelf, of the brace-bar 24, secured at its ends to the inner ends of said arms and provided with the set-screws 25, which bear adjustably with their ends against the under side of said shelf, substantially as described.

3. In a feed-regulator for mill machinery, the combination, with the hopper 1, the shaker-frame 3, the pivoted feed-shelf 4, the slotted arms 5, formed with the circular holes 8 and provided with the slotted cups or disks 9, the screws 11, and the arms 12, provided with the weights 13, of the brace-bar 24, secured at its ends to the inner ends of said arms and provided with the set-screws 25, which bear adjustably with their ends against the under side of said shelf, substantially as described.

409,330. CONVEYER. GEORGE W. MCCASLIN, New York, assignor to the McCaslin Machine Company, West New Brighton, N. Y. Filed Sept. 11, 1888. Serial No. 285,112. (No model.)



Claim.—1. An endless non-extensible conveyer composed of elements consisting each of a gravity-bucket hung between the rigid side bars of a distancing and coupling link, the said link, and substantially

at the middle of the same, and a suitable axle and supporting-wheels, the coupling-links of the several elements of the conveyer being connected together by non-yielding couplings.

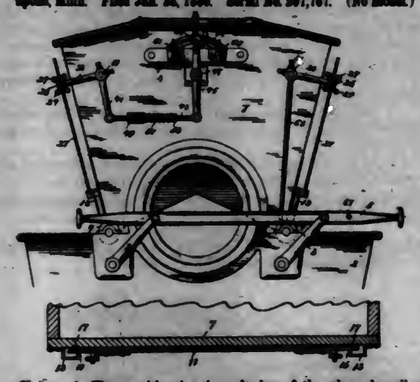
2. An endless conveyer composed of elements consisting each of a gravity-bucket, a coupling-link surrounding said bucket and between the side bars of which the bucket is hung, and a suitable axle and wheels, the coupling-links of the adjacent elements being connected together in the longitudinal axis of the conveyer by a non-yielding coupling.

3. An endless conveyer composed of elements consisting each of a gravity-bucket, a distancing and coupling link surrounding said bucket, and between the side bars of which said bucket is hung, and a suitable axle and wheels for supporting the bucket, and a universal coupling connecting the coupling-links of adjacent elements.

4. An endless conveyer composed of a series of frame-like rigid links united by non-yielding couplings, supporting-wheels, one pair to each link, and a gravity-bucket pivotally hung in each of said links.

5. An endless conveyer composed of elements consisting each of a gravity-bucket, a rigid coupling-link, an axle, and supporting-wheels, said bucket being pivotally hung between the side bars of the link and between the points where the conveyer elements are coupled together.

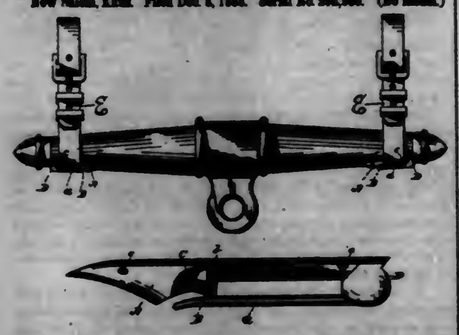
409,331. AUTOMATIC FEEDER. CHARLES H. MCFARLAND, Minneapolis, Minn. Filed Jan. 28, 1888. Serial No. 267,767. (No model.)



Claim.—1. The combination, in a device of the class described, with the feed rolls and hopper, of the sliding gate arranged upon the outside of the hopper, the angle-irons 13, secured to the outside of the hopper and provided with the knife-edges 15, bearing upon said gate, substantially as described.

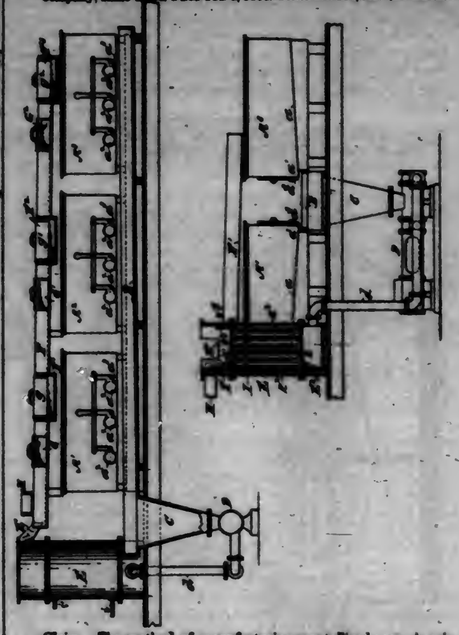
2. The combination, with the hopper and feed-roll, of the shaft 19, mounted in said hopper, the plate 31, arranged within said hopper and secured upon said shaft, the arms 23 upon said shaft, the rod 25, supported by said arms, the sliding gate 11, and the adjustable rods connecting said gates and said rod 25, the pivoted lever 45, connected with said shaft 19, and provided with a locking device, substantially as described.

409,332. ATTACHMENT FOR NECK-YOKES. ENOS W. MCMASTER, New Salem, Kans. Filed Dec. 6, 1888. Serial No. 292,989. (No model.)



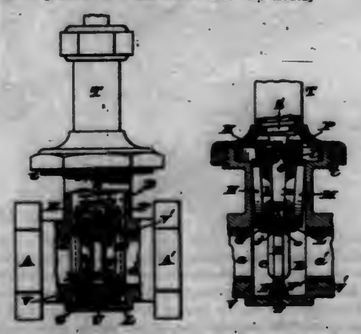
Claim.—In an attachment for neck-yokes, the body A, having the concave surface on its back throughout its entire length and provided near its inner end with a recess in which is the pivotally-attached button B and the spiral spring *b*, located in the outer part of said recess, the shoulder D on the outer end of the body A, and the inwardly-reaching arm *a*, secured to the said shoulder, substantially as and for the purpose set forth.

409,333. PROCESS OF REFINING SUGAR. HENRY H. HIMES, Jersey City, N. J., assignor to the F. O. Matthiessen and Wiechers Sugar Refining Company, same place. Filed Oct. 6, 1888. Serial No. 287,413. (No model.)



Claim.—The method of manufacturing crystallized sugar herein described, which consists in maintaining the magma in the crystallizing-tank at a temperature approximating 120° Fahrenheit during the process of crystallization by from time to time removing from the tank more or less of the liquid magma which is found to have risen to or above said temperature and introducing into the tank magma of lower temperature.

409,334. COCK OR VALVE. JAMES POWELL, Cincinnati, Ohio. Filed Aug. 31, 1888. Serial No. 284,236. (No model.)



Claim.—1. The combination, in a cock or valve, of a shell having a pair of channels and opposing valve-seats, inclined bearings within the shell above and below the axis of said valve-seats, and a pair of valves which are forced outwardly against said seats by sliding contact with said inclined bearings, substantially as described.

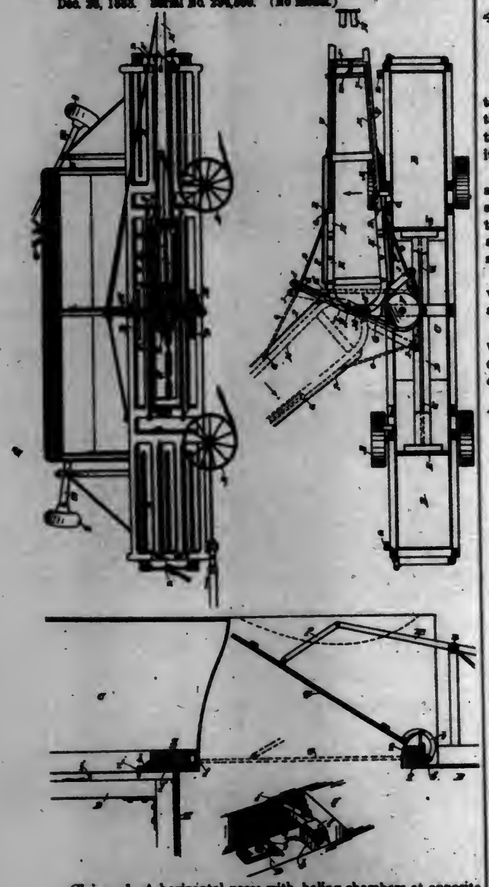
2. The combination, in a cock or valve, of a shell having a pair of channels and opposing valve-seats, a removable expansion-plate fitted within a chamber of said shell and provided with a port, a ridge, and a pair of inclined bearings, and a pair of valves which are forced outwardly against said seats by contact with said ridge and inclined bearings, substantially as described.

3. The combination, in a cock or valve, of a shell having a pair

of channels and opposing valve-seats, a removable expansion-plate fitted within a chamber of said shell and provided with a port, a ridge, and a pair of inclined bearings, a pair of valves loosely coupled to carriers having inclined bearings and chamfered edges, and means for coupling said carriers to the operating-stem, substantially as described.

4. The combination, in a cock or valve of a shell having a pair of channels *a a'* and opposing seats V V', a removable expansion-plate O *o o'*, fitted within a valve-chamber B of said shell and provided with a port D, ridge E, and inclined bearings F F', a pair of valves H M, loosely coupled to carrier G L, having inclined bearings J O and chamfered edges *j o*, and means, as the sockets K P, for coupling said carriers to the disk R of an operating-stem, substantially as herein described.

409,835. BALING-PRESS. JACOB PEIRS, San Leandro, Cal. Filed Dec. 26, 1888. Serial No. 294,869. (No model.)



Claim.—1. A horizontal press with baling-chambers at opposite ends, followers fitting said chambers, and an intermediate connecting-beam, in combination with chains attached to the beam or followers, a direction drum or pulley around which the chains pass, a sweep or power lever fulcrumed at the side of the press, supplemental levers fulcrumed at the inner end of the sweep and having points of attachment for the outer ends of the chains, and links connecting the outer ends of said levers with the sides of the sweep, substantially as described.

2. A horizontal baling-press with end chambers and followers chains, guide-drum, sweep, and supplemental levers, to which the outer ends of the chains are connected, as shown, in combination with the links O, guides P, and the catches Q upon the sides of the sweep to engage the link, substantially as herein described.

3. The sweep fulcrumed at the side of the press and having the supplemental levers fulcrumed to and projecting from the rear end, links extending from the outer ends of these levers to the sides of the sweep, guides upon which the ends of the links travel along the sweep, and catches Q, with which they engage, in combination with the angularly-slotted detaching-plates R, connecting-rods U, and the oscillating lever by which they are simultaneously reversed, substantially as herein described.

4. In a baling-press, the combination of the horizontally-closing feed-door having the curved hinges, the pintles of which are fixed at a distance from the edge of the door-opening, the curved guide-plate against which the rear edge of the door travels when opening or closing, and a support for the hinge-pintle and guides, substantially as herein described.

5. In a baling-press, the horizontally-closing feed-door, the holding-latch, with the shank sliding through the frame-timbers, the lever *j*, and the holding-spring, in combination with the plate *i*, actuated by the movement of the follower, so as to withdraw the latch and release the door, substantially as herein described.

409,836. CHROME-TANNED LEATHER AND PROCESS OF PREPARING THE SAME. LEON RAFFE, Newark, N. J., assignor, by mesne assignments, to Linde S. Pierson, Wilmington, Del. Filed Sept. 24, 1887. Serial No. 250,604. (No specimens.)

Claim.—1. The process herein described of treating leather after tanning for the purpose of softening, coloring, and fixing the color thereof, the same consisting in subjecting the leather to a cold solution of sesquioxide of chromium, (chromic hydrate,) then subjecting it to the action of a bath of logwood, substantially as described.

2. The process herein described of successively restoring the cold solution of sesquioxide of chromium (chromic hydrate) by agitating a surplus body thereof at the bottoms of said cold solution previous to treating each batch of leather, so that the cold solution will reabsorb and hold in solution the proper proportion of chromic hydrate, substantially as specified.

3. As a new article of manufacture, a skin previously tanned with vegetable tanning-matter and impregnated with the oxide of chromium, as set forth.

4. As a new article of manufacture, a skin previously tanned with vegetable tanning-matter, having its pores impregnated with oxide of chromium and dyed with a color partly combined with the chromium oxide as a mordant, as set forth.

409,837. SCARFING-MACHINE. ELISHA B. RICE, Boston, Mass. Filed Jan. 9, 1888. Serial No. 260,234. (Model.)



Claim.—1. In a machine for lap-grinding, the combination of the grinding-wheel and its supporting-shaft, with a frame upon which the shaft may reciprocate, and which frame is formed to slide in the direction at right angles to the shaft, with two handles, one on the frame and one connected to the shaft, so that a compound motion can be given to the grinding-wheel, and a vertically and angularly adjustable table beneath said grinding-wheel to support the saw, and an auxiliary table attached to said last-mentioned table and adapted to hold circular saws, so that the machine may be used to bevel circular saws or lap-grind band-saws.

2. The combination of a grinding-wheel and stand, with a table secured to the latter and vertically and angularly adjustable thereon, with an auxiliary table secured to the outer end of the latter table and provided with a central securing device, so that by the co-operation of the two tables either band or circular saws may be brought under the grinding-wheel to be beveled.

3. The combination of a grinding-wheel and a frame on which it is supported, with a table secured thereto, so as to be vertically and angularly adjustable, an auxiliary table attached to said first-mentioned table and provided with a central clamp to hold circular saws, a friction-plate on the first-mentioned table provided with rollers radial to the clamping device on the auxiliary table, and a clamp upon said first-mentioned table, so as to hold the edge of a circular saw upon such friction-plate.

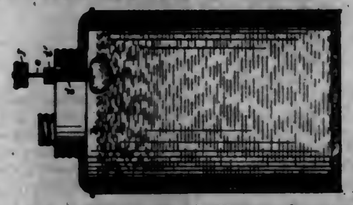
409,838. SUSPENDER-END. EDWIN B. STEARNS, Brooklyn, N. Y. Filed Oct. 25, 1888. Serial No. 289,115. (No model.)



Claim.—1. In a strap, the combination, with a main or body portion folded on itself, the adjacent edges of which are secured by rows of stitching, of a button-hole tab, said tab being secured to the main or body portion by the rows of stitching previously referred to, which also form the work of the button-hole, and by rows of stitching along the side edges of the main or body portion, substantially as specified.

2. In a strap, the combination, with a main or body portion folded on itself, the adjacent edges being secured by rows of stitching, of a button-hole tab, a strengthening-piece upon the rear side of the tab, said tab portion and strengthening-piece being secured to the main or body portion by the rows of stitching previously referred to, which also form the work of the button-hole, and by rows of stitching along the side edges of the main or body portion, substantially as specified.

409,839. INDICATOR TO PREVENT OVERFLOW OF LIQUIDS IN CLOSED VESSELS. WILLIAM S. SCUTCHFIELD, St. Louis, Mo. Filed Jan. 21, 1889. Serial No. 296,980. (No model.)



Claim.—1. In combination with a liquid-receptacle, a stem-tube which projects through the walls thereof into the liquid-chamber, a float arranged in said chamber and provided with a stem whose length exceeds that of the stem-tube and which projects through said tube, and a cap secured to the end of the float-stem and adapted to close the stem-tube, substantially as and for the purposes described.

2. In combination with a closed liquid-receptacle, a tube which projects through the walls thereof, a float having a stem whose cross-sectional area is less than the bore of the tube for purposes of venting the receptacle, and a cap on the outer end of the float-stem adapted to close the stem-tube, substantially as and for the purposes described.

3. In a tank or vessel for holding oil or other liquids, the combination of a tube formed through the top of the vessel and having a screw-threaded portion extending above the tank and a rod working freely through said tube, said rod having a float secured at its lower end inside the tank, and a screw-threaded cap secured to its upper end and adapted to engage the screw-threaded tube and hold the float in its depressed position, substantially as and for the purposes described.

409,840. COMBINED STAND AND PAD OR TABLET. HENRY H. URE, Philadelphia, Pa. Filed Mar. 6, 1888. Serial No. 302,490. (No model.)



Claim.—1. As a new article of manufacture, a stand provided with an inwardly-extending wing, said wing being provided at its inner end with a downward projection.

2. In combination, a pad or tablet, a base upon which said pad or tablet rests, an inwardly-extending overhanging wing, said wing being provided at its inner end with a downward projection, the pad or tablet being provided with a projecting surface which will pass under the wing and be held in position by the downward projection of the wing.

3. As a new article of manufacture, a pad or tablet provided with a downwardly-extending surface projecting from the pad or tablet, said projecting surface being adapted to hold the pad or tablet in place on a stand or base.

4. As a new article of manufacture, a pad or tablet provided with upwardly or downwardly projecting surfaces, said projecting surfaces being adapted to hold the pad or tablet in place on a stand or base.

5. As a new article of manufacture, a stand provided with an inwardly-extending overhanging wing and a recess in its upper surface extending entirely across the stand.

6. As a new article of manufacture, a stand provided with an inwardly-extending wing, said wing being provided at its inner end with a downward projection and a recess in the upper surface of said stand.

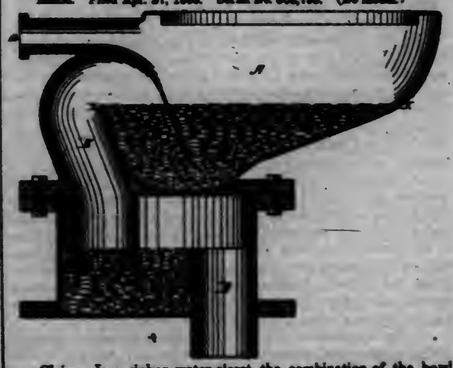
7. In combination, a stand provided with a recess in its upper surface and a pad having a downwardly-projecting surface adapted to rest in the same recess.

8. In combination, a stand provided with a recess in its upper surface and inwardly-projecting wings or lips, and a pad or tablet having a downwardly-projecting surface adapted to rest in said recess in the stand.

9. In combination, a stand provided with an inwardly-extending overhanging wing, said wing being provided at its inner end with a downward projection and a recess in the upper surface of said stand, a pad or tablet having upwardly and downwardly projecting surfaces, the upward-projecting surface being adapted to pass under the wing and be held in position by the downward projection of the wing and the downwardly-projecting surface of the pad or tablet being adapted to rest in the upper surface of the stand.

10. As a new article of manufacture, a pad or tablet provided with an upwardly-extending surface projecting from the pad or tablet, said projecting surface being adapted to hold the pad or tablet in place on a stand or base.

409,841. SIPHON-CLOSET. HENRY C. WEBBER, Boston, Mass., assignor to the Wooden Sanitary Manufacturing Company, of Rhode Island. Filed Apr. 27, 1889. Serial No. 308,702. (No model.)

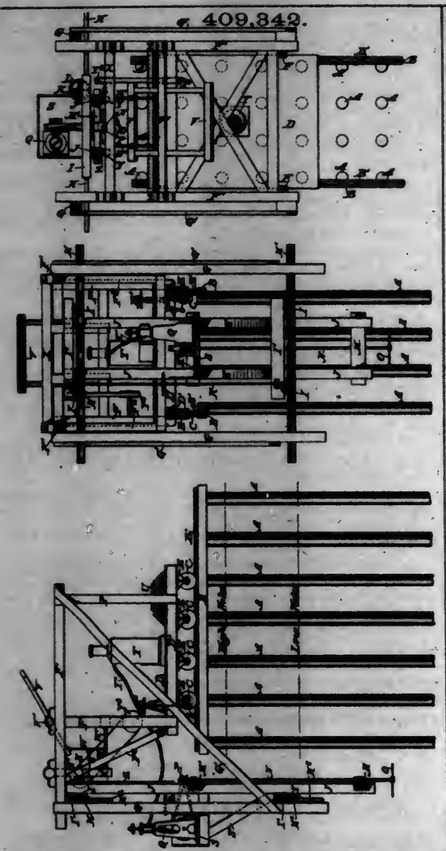


Claim.—In a siphon water-closet, the combination of the bowl A, the siphon-formed outlet B B', a water-chamber surrounding and sealing the mouth of said outlet, and a waste-pipe whose outer wall forms a portion of the wall of said chamber, all substantially as described.

409,842. MACHINE FOR CUTTING OFF PILES. EDWIN J. WESTON, San Francisco, Cal. Filed May 1, 1889. Serial No. 309,211. (No model.)

Claim.—1. The combination, in a pile-cutting machine with its carriage moving upon a tramway, of a movable saw-frame and saw supported by the carriage and traversing its line of movement, a motor carried on the saw-frame and geared to the saw, and independent mechanism, substantially as described, for actuating the carriage and saw-frame, whereby the one is made to move at a right angle to the other for adjustment or feed, substantially in the manner and for the purpose herein set forth.

409,342.



2. The combination, in a pile-cutting machine, of a carriage mounted upon wheels to run upon a tramway, a frame-work upon said carriage constructed to project beyond and overhang its front end, a fixed frame depending vertically from said frame-work in front of the carriage, a movable frame traversing the front of the carriage upon said dependent fixed frame, and a saw mounted upon said movable frame and geared to a motor carried upon the same frame, substantially in the manner and for the purpose herein set forth.

3. The combination, in a pile-cutting machine, of a carriage mounted upon wheels to run upon a tramway, a frame-work upon said carriage constructed to project beyond and overhang its front end, a fixed frame depending vertically from said frame-work in front of the carriage, a movable frame traversing the front of the carriage upon said dependent fixed frame, a saw mounted upon said movable frame and geared to a motor carried upon the same frame, and a counterbalancing-weight upon the carriage, substantially in the manner and for the purpose herein set forth.

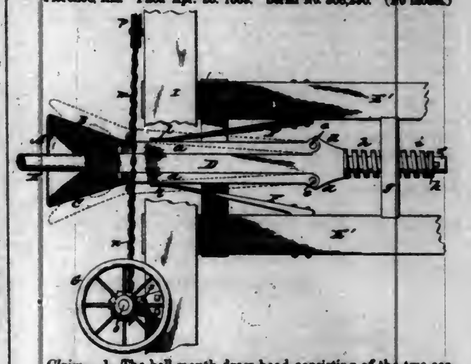
4. The combination, in a pile-cutting machine with a carriage having a frame-work thereon made to project and overhang its front end and a vertical frame fixed to the outer end of the projecting frame-work to depend therefrom in front of the carriage, of parallel transverse rails secured to the uprights of the dependent vertical frame, a saw-frame mounted upon wheels running upon said rails, a motor supported upon said frame, and a circular saw fixed upon a vertical shaft rotating in bearings in said saw-frame and geared to the motor, substantially in the manner and for the purpose herein set forth.

5. The combination, in a pile-cutting machine with a carriage having a frame-work thereon made to project and overhang its front end and a vertical frame fixed to the outer end of the projecting frame-work to depend therefrom in front of the carriage, of parallel transverse rails secured to the uprights of the dependent vertical frame, a saw-frame mounted upon wheels running upon said rails, a saw carried thereby, a vertical actuating-shaft rotating in bearings in said frame, and worm-gear interposed between each end of said shaft and one of the wheels on each rail, substantially in the manner and for the purpose herein set forth.

6. The combination, in a pile-cutting machine, of a carriage, a frame-work mounted thereon to project and overhang its front end, a fixed frame depending vertically from said frame-work in front of the carriage, a movable saw-frame mounted upon said fixed frame, racks fitted to the uprights of said movable saw-frame, a swinging frame pivoted to the frame-work in front of the racks, pinions upon an actuating-shaft mounted in said swinging frame to engage the racks, levers interposed between the swinging frame and the frame-work to form a toggle, and a lever coupled to the toggle to move it and thereby actuate the swinging frame to throw the pinion into and out of gear, substantially in the manner and for the purpose herein set forth.

7. The combination, in a pile-cutting machine with the carriage and the saw carried thereby, substantially in manner as described, of the driving-axle and wheels under the carriage, the vertical shaft rotating in bearings on the carriage and fitted with a hand-wheel, and the worm-gear coupling the shaft to said axle and wheels to facilitate the movement of the carriage and the feed of the saw, substantially in the manner and for the purpose herein set forth.

409,343. CAR-COUPLING. JAMES ALLEN and EDMOND HACKETT, Florence, Ala. Filed Apr. 23, 1889. Serial No. 308,290. (No model.)

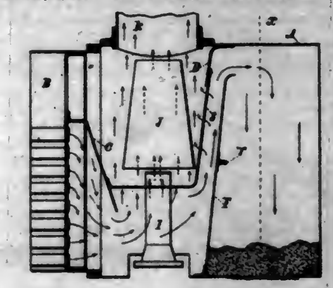


Claim.—1. The bell-mouth draw-head consisting of the two sections B C, having shoulders *b*, and the shanks *a*, hinged at their rear ends, as shown, in combination with the central bar D, having shoulders *d*, and pin *f*, and the spiral springs *h i*, encircling the pin, and the flat springs F, connected at one end to the beams E and their free ends bearing against the shanks *a*, substantially as and for the purpose set forth.

2. The sectional draw-head composed of the sections B C, hinged shanks *a*, and the central bar D, pin *f*, and springs *h i*, and the springs F, in combination with the spring-brace J for supporting the draw-head, having shoulders *u* at its ends and loosely supported in hangers or loops *t*, whereby it is enabled to have a longitudinal play when the draw-head presses upon it, substantially as and for the purpose specified.

3. The sectional draw-head constructed substantially as shown, and having its shanks *a* hinged to a central bar D, which terminates in a pin *f*, in combination with the springs *h i*, and the springs F, and the spring-brace J, rod *o*, chains *m n*, connected thereto and to the draw-head sections, said rod having a hand-wheel at its upper end and a crank at its lower end, substantially as and for the purpose set forth.

409,344. SPARK-ARRESTER. JOSHUA B. BARNES, Springfield, Ill. Filed July 8, 1889. Serial No. 316,852. (No model.)



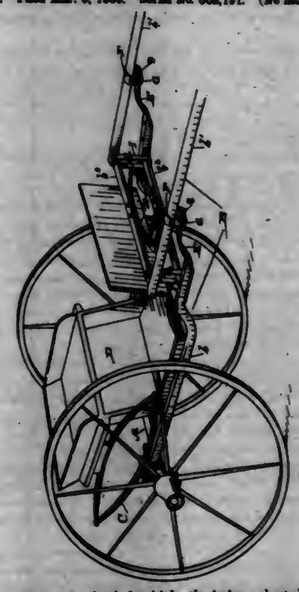
Claim.—In a smoke box of a locomotive or other boiler provided with one or more blast or exhaust pipes, a baffling-plate C, and a transverse partition F, the combination, with said parts, of a screen S, the rear and lower part thereof encircling the exhaust-pipes and located horizontally in the lower part of the smoke-box near the lower edge of the baffling-plate and secured thereto, the forward part being turned upward a little way rearward of the partition F at an inclination nearly coincident therewith, a curved deflector D, secured to the upper part of the smoke-box and joined to the upper edge of the screen S, and a petticoat-pipe reaching down from a little below the base of the smoke-stack to a plane a little above the exhaust-nozzles, the latter projecting vertically through the central portion of the horizontal part of the screen, all of said parts constructed and positionally located with reference to each other for co-operative effect, substantially in the manner and for the purpose herein set forth.

409,345. PROCESS OF PRINTING PYROXYLINE COMPOUNDS. CHARLES F. BRADY, Brooklyn, N. Y. Filed Apr. 26, 1888. Serial No. 271,962. (No model.)

Claim.—1. The above-described process of imprinting pyroxyline compounds with indelible pigments or colors, consisting in first applying the pigment or coloring-matter to the sheets of such compounds by pressure and subsequently subjecting them to the direct action of steam in a suitable chamber to render the colors or effects indelible.

2. The above-described process of imprinting pyroxyline compounds with indelible pigments or colors, which consists in first applying the pigments or colors to the sheets of such compounds by pressure, subsequently subjecting them to the direct action of steam in a suitable chamber to render the colors or effects indelible, and afterward smoothing the sheets by calendering or other well-known means, substantially as set forth.

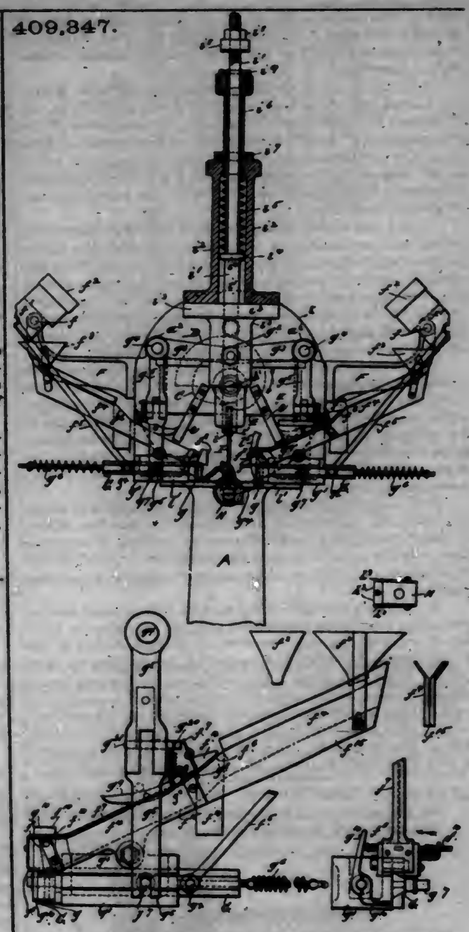
409,346. TWO-WHEELED VEHICLE. RAMON A. BRIGHAM, Gilroy, Cal. Filed Mar. 6, 1889. Serial No. 302,191. (No model.)



Claim.—In a two-wheeled vehicle, the independent shaft-sections *b* and *b'*, in combination with the shaft-irons E, bolted to the forward ends of the rear shaft-sections and having the hook upon their forward ends, the clips seated upon the forward shaft-sections near their rear ends, and having cross-bolts upon which the hooks of the rear shaft-section irons are hung, whereby a hinged connection is formed between the two sections of the shafts, the independent cross-bars extending between the forward ends of the rear sections and between the rear ends of the forward sections, one above the other, and the elliptic spring H between the two cross-bars and clipped to each, substantially as described.

409,347. MACHINES FOR RIVETING BOOTS OR SHOES. THOMAS BEDDOE, Leeds, County of York, assignor of one-half to George Lister Hemingway, Leeds, England. Filed Feb. 12, 1889. Serial No. 299,793. (No model.) Patented in England Oct. 4, 1887, No. 13,260.

409,347.



Claim.—1. A boot or shoe riveting machine comprising a standard, a horizontal shaft carrying at one end a friction clutch and at the other two cams, the setting-tool, a cylinder containing an adjustable spring and piston, the setting-tool, two oscillating boxes arranged one on each side of the setting-tool over fixed inclined chutes, said chutes delivering the rivets into reciprocating slides, a spring die-box, a feed-wheel and tappet arrangement, and an adjustable jack for supporting the work during the riveting operation, but allowing it to be raised, lowered, or moved in any required direction, substantially as described.

2. In a boot or shoe riveting machine, the combination of framing A, shaft A', cam D, setting-tool I, nipple i', cylinder i^2, barrel i^3, piston i^4, spring i^5, adjusting-screw i^6, nut i^7, lock-nuts i^8, india-rubber packing i^9, with a driving-pulley B keyed on said shaft, and friction-clutch *b*, substantially as herein described.

3. In a boot and shoe riveting machine, the combination of the setting-tool I and mechanism, substantially as herein described, for raising and imparting the required pressure to said tool for driving in the rivets, with the pulley B, having a notch in its rim, friction-clutch *b*, bifurcated lever b', rod b^2, arm b^3, lever b^4, and weighted treadle b^5, pivoted to frame A, whereby the setting-tool may be brought into action and its motion arrested, substantially as described.

4. In a boot or shoe riveting machine, the combination of framing A, shaft A', setting-tool I, with the duplicate mechanism, substantially as described, for supplying rivets to said setting-tool, arranged one set on each side of the setting-tool, each consisting of an oscillating box, hopper, chute, slide G, and mechanism for actuating the same, substantially as specified.

5. In a boot or shoe riveting machine, the combination of oscillating box f^3, pivoted to arm F, hopper f^2, chute f^4, slide G, spring g^4,

block g', with spring-pins f^{10} and f^{11}, and double-ended cam-lever g^{16}, pivoted to said block g' and actuated by said slide G for allowing one rivet to pass at a time from said chute into the feed-slide, substantially as described.

6. In a boot or shoe riveting machine, the combination of framing A, brackets F, oscillating boxes f^3, pivoted to said brackets; rods f^8, hoppers f^9, inclined chute f^4, cover f^7, incline projection f^{12}, box f^{13}, spring-pins f^{10} and f^{11}, double-ended cam-lever g^{16}, slide G, block g', spring g^6, jointed levers g^2, shafts g^4, levers g^5, runners g^8, cam C, pin g^{17}, shaft A', driving-pulley B, friction-clutch b, and mechanism, substantially as specified, for throwing the friction-pulley in and out of gear, all as set forth.

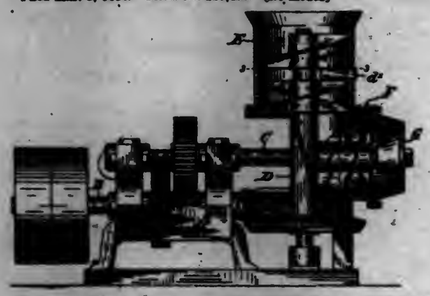
7. In a boot or shoe riveting machine, the combination of the setting-tool I, and mechanism, substantially as specified, for actuating the same, oscillating boxes f^3, brackets F, rods f^8, hoppers f^9, inclined chutes f^4, covers f^7, spring-pins f^{10} and f^{11}, and mechanism, as specified, for actuating said block g', slides G, and mechanism, substantially as described, for reciprocating same, with feeder E, incline e, double-ended cam g^{16}, jointed lever g^2, spring g^{20}, pin g^{21}, and spring g^6, whereby the rivets are propelled forward, substantially as described.

8. In a boot or shoe riveting machine, the combination of the framing A, setting-tool I, mechanism, as specified, for actuating the same, slide G, and mechanism, substantially as described, for reciprocating same and for supplying the rivets thereto, die-box H, dies h^3, flat springs h^5, plate i', pipes g^{12}, with feed-wheel L, shaft l, ratchet-wheel l^3, pawl l^2, bell-crank lever l^4, tappet-lever l^5, cam D, and mechanism, as described, for actuating the same, spring l^5, and adjusting-screw, as and for the purposes set forth.

9. In a boot or shoe riveting machine, the combination of the setting tool I, and mechanism for operating same, as described, die-box H, dies h^3, feed-wheel L, and mechanism, as described, for operating same, with the runner n, plate N, adjusting-screw n', nut n^3, bracket M, set-screws m m', cam-lever m^2, and spring m^3, as and for the purposes specified.

10. In a boot and shoe riveting machine, the combination of the setting-tool I, and mechanism, as described, for operating the same, slide G, and rivet-supplying mechanism, as specified, die-box H, dies h^3, feed-wheel L, and mechanism, as specified, for operating the same, plate N, armed with runner n, and mechanism, as described, for adjusting the same, with the means for supporting and presenting the work to the action of the setting-tool, comprising the adjustable pillars J J', slide j, block j', ball-joint j^3, connecting-rod j^2, pivoted to lever K, bifurcated bearing a^5, weighted lever K, pivoted to framing A, rack K', pawl K^3, and spring K^2, as and for purposes set forth.

409,848. **BRICK-MACHINE.** WILLIAM R. CUNNINGHAM, Frankfort, Ind., assignor to the Wallace Manufacturing Company, same place. Filed Mar. 3, 1887. Serial No. 229,699. (No model.)



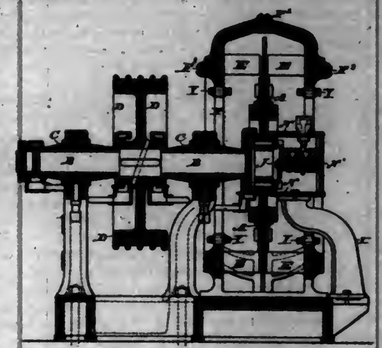
Claim.—1. A clay-working machine comprising the casing provided with the forcing-screw and die, a hopper communicating with said casing, a revolving auger-blade gathering and forcing screw mounted in the top of said hopper, another gathering and forcing screw mounted beneath the first, and a stationary diagonally-set retarding-bar interposed between said gathering and forcing screws, substantially as set forth.

2. A clay-working machine comprising the casing, a shaft mounted therein carrying the forcing-screw, a tempering-blade mounted on said shaft behind said forcing-screw, a hopper communicating with said casing, a series of gathering and forcing screws mounted in said hopper, and a diagonally-set retarding-bar interposed between them, substantially as set forth.

3. A clay-working machine comprising the casing, the mechanism therein, the hopper communicating therewith, the shaft in said hopper, a single-winged screw mounted thereon at the top, a stationary diagonally-set retarding-bar mounted beneath said single-winged screw, and a double-winged screw mounted beneath said retarding-bar, all arranged and operating substantially as set forth.

4. In a clay-working machine, the combination of the casing, a series of screws arranged to receive the clay one from another successively, and a stationary retarding-bar diagonally set at an angle and interposed between said screws, whereby the clay is maintained in a solid mass, from which the next screw takes its supply by shaving therefrom, substantially as set forth.

409,849. **DYNAMO-ELECTRIC MACHINE.** SEBASTIAN Z. DE FERRANTI, Hampstead, County of Middlesex, England. Filed Jan. 14, 1889. Serial No. 296,226. (No model.) Patented in England Jan. 15, 1887, No. 702.



Claim.—1. In a dynamo-electric machine, the combination of the sliding frame-sections moving at right angles to the armature-axis and carrying the field-magnets, and the extended foundation plate or bed upon which the frame-sections slide, substantially as set forth.

2. A dynamo-electrical machine in which the armature is at the end of an axle which has a driving-pulley fixed upon it, situated between two bearings in which the axle is supported, in combination with a collector carried concentrically with the armature by arms projecting from the armature, and rubbers or brushes bearing on the collector, substantially as set forth.

3. In a dynamo-electrical machine, the combination of a revolving armature and a circle of field-magnets on either side of it, each carried by a frame divided vertically into two sections which can be slid away from one another along the bed or foundation plate of the machine in a direction at right angles to the armature-axis.

4. In a dynamo-electrical machine, the combination of a revolving armature, a circle of field-magnets on either side of it, each carried by a frame divided vertically into two sections which can be slid away from one another along the bed or foundation plate of the machine at right angles to the armature-shaft, toothed racks on the foundation plate or bed, and a lever linked to the sections to engage with the racks and slide the sections along the bed.

5. In a dynamo-electrical machine, the combination of a revolving armature, a circle of field-magnets on either side of it, each carried by a frame divided vertically into two sections which can be slid away from one another, and spring contact-pieces on the sections, which, when the sections are brought together, complete an electrical circuit through the exciting-coils of all the magnets.

6. In a dynamo-electrical machine, a collector composed of a revolving ring from which current is to be led away, and a pair of rubbers, one pressed by a spring against the ring and both attached together by springs which draw them one toward the other and make them to bear against opposite sides of the ring.

7. In a dynamo-electrical machine, a collector composed of two rings or sets of rings side by side, but separated from one another, a conductor passing to each ring or set of rings, one conductor passing centrally through the other with a space between them, and arms extending from each conductor and secured to the side of the armature.

8. The combination, with the armature, of the concentric collector-conductors insulated from each other and connected with and carried by the armature by means of arms J' K', substantially as set forth.

9. In a dynamo-electric machine for producing currents of high tension, the combination, with the collector or like parts, (such, for instance, as switches or fuses,) of an inclosing box or casing and circuit connections and contacts controlled by the closing of the box to complete the field-magnet circuit, whereby said circuit is only completed when the box is closed.

10. In a dynamo-electric machine for producing currents of high tension, the combination, with the collector or like parts, (such, for instance, as switches or fuses,) of an inclosing box or casing, circuit-connections controlled by the closing of the box to complete the field-magnet circuit, and electro-magnetic locking devices which lock the box when it is closed and the circuit thereby completed.

409,850. **SPOUTED CAN.** REUBEN F. DEFFEBACH, Cleveland, Ohio. Filed June 20, 1888. Serial No. 314,905. (No model.)



Claim.—1. The combination of the can having an open-top dome, the sealing-washer resting on the edge of said dome, the spout having an end flange resting on said washer, and the perforated top through which the spout passes, said top bearing directly on the flange of the spout, all in combination, substantially as described.

2. In an oil-can, the combination of an open-top dome, a nozzle having a flange resting on said dome, a sealing-disk bearing on the flange of the nozzle, a strengthening-disk above said sealing-disk, and a perforated cap engaging the dome and bearing on the strengthening-disk to press the same against the flange and hold the same tightly to the dome, substantially as described.

409,851. **INKSTAND.** GEORGE A. FIELDS, Dubuque, Iowa. Filed June 10, 1889. Serial No. 313,903. (No model.)

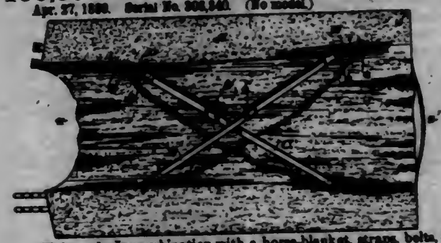


Claim.—1. In an inkstand, the combination, with an ink-receptacle, of a shield or casing pivoted with relation thereto and each having a coincident opening therein, said ink-receptacle or said shield being movable, substantially as herein set forth.

2. In an inkstand, the combination, with an ink-receptacle, of a shield or casing pivoted with relation thereto and each having a coincident opening therein, and a pen-rack e e, secured to the movable portion of said pen-holder, substantially as described.

3. In an inkstand, the combination, with an ink-receptacle, of a shield or casing pivoted with relation thereto and each having a coincident opening therein, and a pen-rack e e and counterbalancing-weight g, or its equivalent, secured to the movable part of said inkstand, substantially as set forth.

409,852. **HORSE-BLANKET.** JOHN B. FOSTER, Ferndale, Cal. Filed Apr. 27, 1888. Serial No. 308,340. (No model.)

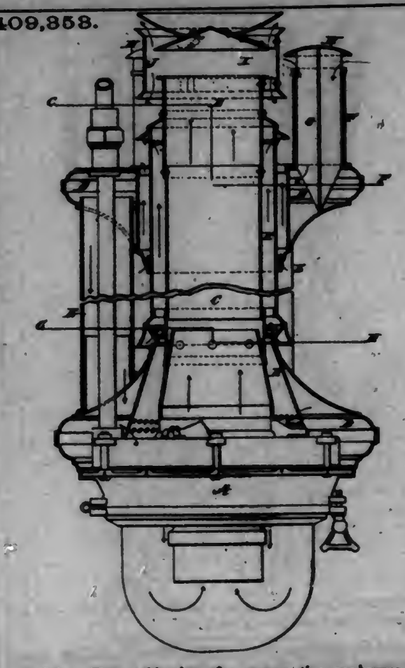


Claim.—1. In combination with a horse-blanket, straps, belts, or bands secured by one end to the under side and near the opposite ends of the blanket and crossing each other near the center of the blanket, said straps having connecting devices on their other ends, and the plates secured to the outer side of the blanket and with which the connecting devices of the straps engage, substantially as described.

2. In combination with a horse-blanket, straps, belts, or bands secured at one end thereto on the same side of the longitudinal central line of the blanket, one near the neck portion and the other near the tail portion of said blanket, said straps crossing each other near the center of the blanket, and fastening devices secured to the blanket, with which the other ends of the straps engage, and arranged both on the other side of the longitudinal center of the blanket, one near the neck portion and the other near the tail portion of said blanket, substantially as described.

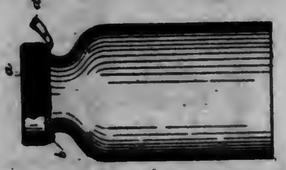
409,853. **LAMP.** THOMAS GORDON, Philadelphia, Pa. Original application filed Sept. 3, 1887, Serial No. 249,511. Divided and this application filed Jan. 25, 1888. Serial No. 261,912. (No model.)

409,853.



Claim.—The combination of a regenerative gas-burner, an approximately air-tight chamber surrounding the burner, air-tubes leading upward from said chamber, an equalizing air-chamber surrounding the escape-flue of the burner, into which said air-tubes open through its lower surface, air-tubes opening into said equalizing-chamber through its upper surface and extending upward, division-plates extending downward within said upper air-tubes, and horizontal plates located some distance above the ends of said tubes, substantially as shown and described.

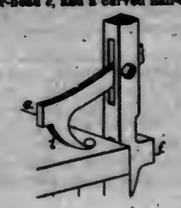
409,854. **SELF-ADJUSTING COVER FOR VESSELS.** SARAH F. GREEN, Brooklyn, New York. Filed Feb. 21, 1889. Serial No. 300,709. (No model.)



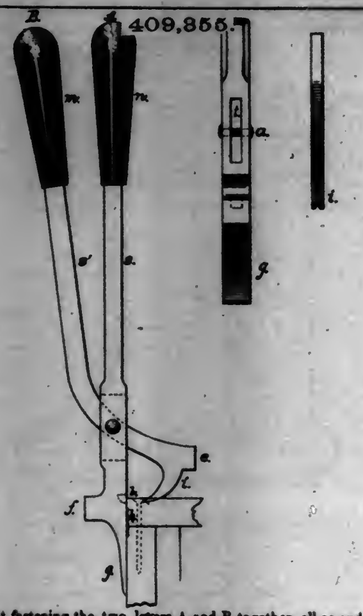
Claim.—The combination, substantially as shown and described, consisting of the gauze a, elastic cord b, and loop or lifter d, the whole forming a complete device.

409,855. **COMBINED NAIL-EXTRACTOR AND BOX-OPENER.** DAYTON C. HAWKINS, Terre Haute, Ind., assignor to Richard W. Ripster, same place. Filed Feb. 4, 1889. Serial No. 298,980. (No model.)

Claim.—The combination of the lever A, consisting of a handle n, a shank o, a hammer-head f, and a chisel-blade g, said chisel-blade having upon its back side the incision or notch b, also the roughened surface h, with the lever B, said lever B consisting of a handle m, a shank s', a hammer-head c, and a curved nail-claw i, and the pivot a, substantially as and for the purpose set forth.

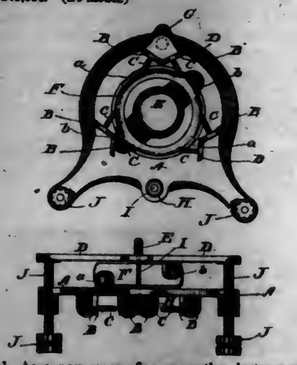


409,355.



said pivot fastening the two levers A and B together, all as and for the purpose herein described and specified.

409,356. LEVELING ATTACHMENT FOR TRIPOD-HEADS. HENRY A. HOUSE and HENRY A. HOUSE, Jr., Bridgeport, Conn. Filed June 4, 1888. Serial No. 275,988. (No model.)



Claim.—1. As a new means for supporting instruments on tripods and the like, the combination, with the platform which supports the camera and the head for the tripod, of a ring interposed between said platform and head and pivoted thereto in axial lines which are at right angles to each other, substantially as set forth.

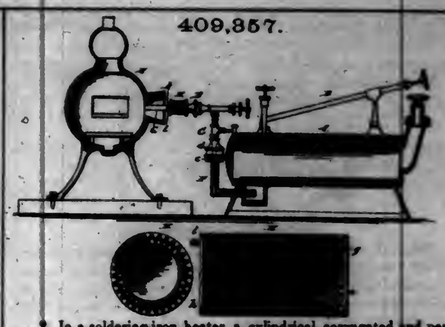
2. The combination, with the head and platform pivoted to an intermediate ring in axial lines which are at right angles to each other, of a spring adapted to normally depress the platform at one side and two leveling-screws adapted to rock said platform against the resiliency of said spring, as and for the purposes set forth.

3. The combination, with the head and platform pivoted to an intermediate ring in axial lines which are at right angles to each other, of a spring adapted to normally tilt said platform and two leveling-screws adapted to operate said platform on opposite sides of the direct line of action of said spring, substantially as and for the purposes hereinbefore described.

409,357. SOLDERING-IRON HEATER. JOHN S. HULL, Baltimore, Md. Filed Mar. 22, 1889. Serial No. 304,251. (No model.)

Claim.—1. In a soldering-iron heater, the combination of a reservoir, a well at one end of and communicating with the reservoir and having an internal screw-thread at its upper end, a supply-tube externally screw-threaded and extending into the well, a gland and a suitable packing, and a burner, substantially as described.

409,357.



2. In a soldering-iron heater, a cylindrical corrugated and perforated shield or guard, in combination with a perforated retort-tube, the shield being secured to the tube around the perforations, substantially as described.

3. In a soldering-iron heater, a corrugated shield or guard provided with perforations in the angular walls of the corrugations and arranged to cross the currents of air, in combination with a perforated retort-tube, substantially as described.

4. In a soldering-iron heater, a perforated retort-tube, in combination with a detachable corrugated sheet-metal shield or guard having perforations in its angular walls and secured to the tube around the perforations, substantially as described.

409,358. TINNER'S FIRE-POT. JOHN S. HULL, Baltimore, Md. Filed Mar. 22, 1889. Serial No. 304,252. (No model.)

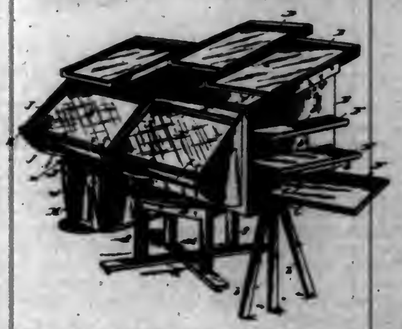


Claim.—1. A tinner's fire-pot having a bearing-bar to support and direct a soldering-iron, in combination with a slab or body of non-combustible material constructed to prevent the point of the soldering-iron from penetrating the slab and being projected against the metallic surface of the pot, substantially as described.

2. A tinner's fire-pot having a bearing-bar to support and direct a soldering-iron, and provided with an extension on its rear side, in combination with a slab of soapstone or its described equivalent constructed to prevent the point of the soldering-iron from penetrating the slab and being projected against the metallic surface of the pot, substantially as described.

3. A tinner's fire-pot provided with a bar or support I and an extension F, having a slot in the upper side thereof, in combination with a shield C, insertible and removable through said slot, substantially as described.

409,359. DRIER. JOHN R. JOHNSON, Newton, Ill. Filed Feb. 20, 1889. Serial No. 300,535. (No model.)



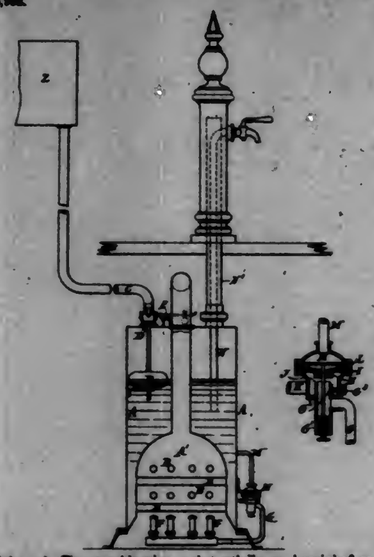
Claim.—1. The combination, in a drier, of the hinged sash E and the reflector connected with the said sash and movable therewith, substantially as and for the purpose described.

2. The combination, in a drier, of the hinged sash E and the reflectors loosely connected with the said sash and movable therewith, substantially as described, for the purpose specified.

3. The combination, in a drier, of the hinged sash E, the reflector connected to and movable with the said sash, and the sections J, substantially as and for the purpose set forth.

4. The herein shown and described drier, having its top closed by sliding sashes and having its front closed by sashes that are hinged at their upper edges, and having openings in its ends, the openings in one end corresponding and coinciding with the openings in the other end, the rails extending from one end of the drier to the other end, the trays having perforated bottoms and adapted to be inserted through the said openings, the doors for closing the openings, the reflectors loosely connected to the lower ends of the said hinged sashes, the sections J, the stand having the body of the drier mounted thereon and connected therewith by a bolt, and the double-walled furnace suspended from one end of the drier, substantially as described, for the purpose specified.

409,360. APPARATUS FOR MAINTAINING A SUPPLY OF BOILING WATER OR STEAM, OR BOTH. CHARLES JONES, Woodford, assignor to James Childs, London, England. Filed Apr. 22, 1889. Serial No. 308,086. (No model.) Patented in England Oct. 31, 1884, No. 13,902.



Claim.—1. The combination, substantially as hereinbefore set forth, of the boiler, a heater below the boiler, the automatic regulator for controlling the heat, the water-supply cistern at a higher level than the boiler, a pipe connecting the boiler with the cistern, a float-valve controlling the supply of water to the boiler from the cistern, a supply-pipe extending from the boiler and provided with a draw-off cock, and a steam-jacket for said pipe.

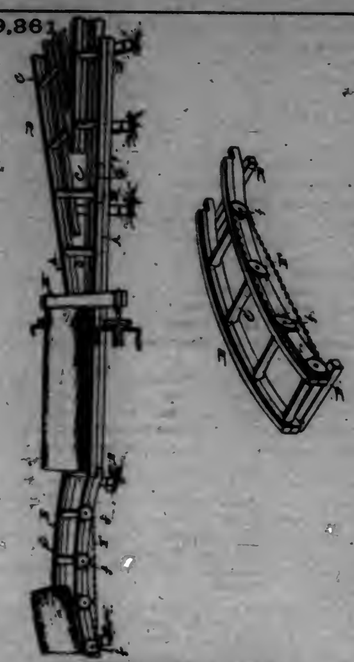
2. The combination, substantially as hereinbefore set forth, of the closed gas-heated boiler, means for automatically regulating the heat, the pipe N, extending into the boiler and having a draw-off cock at its upper end, and a pipe of larger diameter than the pipe N surrounding said pipe and connected with the boiler to form a steam-jacket for the pipe to keep the water in the pipe at a high temperature.

409,361. LOG-CONVEYER. EVAN S. JONES, Sylvester, Dak. Filed Apr. 11, 1889. Serial No. 306,763. (No model.)

Claim.—1. In a log conveyor or tramway, the combination of the double-inclined rail-section E, the concaved rollers journaled between the rails and having their journals extended, the sprocket-wheels on the said journals, and the sprocket-chain connecting the said wheels, whereby the load descending on the said section will assist the load up on the rising incline, substantially as described.

2. The herein shown and described log-conveyor, comprising the rails A, mounted on the ties B, the concaved rollers journaled between the rails, the section G, for holding the journal in place, being pivoted at one end and fastened at its opposite end, and the double-inclined section having the journals of its rollers extended and geared together, whereby the descending load will assist the ascending load, substantially as hereinbefore specified.

409,362. VEHICLE-AXLE. JACOB G. KESTER, Fort Kearney, Cal. Filed Dec. 26, 1888. Serial No. 294,982. (No model.)



Claim.—1. In a vehicle the wheel and the axle secured thereto so that both rotate together, in combination with cushions in the wheel-hub for affording the wheel a slight play on the axle, substantially as herein described.

2. In a vehicle, the axle and the wheel having a hub through which the axle freely passes, in combination with cushions between the wheel-hub and axle, securing them to each other so that both

rotate together and the wheel may have a play on its axle, substantially as herein described.

3. In a vehicle, the square-ended axle and the wheel having a hub through which the axle end passes freely, in combination with the square cushions C and D, seated in square sockets in the ends of the hub and squared upon the axle end, substantially as herein described.

4. In a vehicle, the square-ended axle and the wheel having a hub through which the axle end passes freely, said hub having square sockets in its ends, in combination with the cushions C and D in said sockets and squared on the axle end, the fixed collar on the axle bearing against the inner cushion D, and the nut on the outer end of the axle bearing against the outer cushion C, substantially as herein described.

5. In a vehicle, the opposing wheels A A', and the independent axles B B', in combination with the cushions C and D in the wheel-hubs securing the axles to the wheels, so that each wheel and its axle rotate together, and a common bearing for receiving and supporting the independent axles between the wheels, substantially as herein described.

6. In a vehicle, the independent axles B B', each having a wheel secured to it so that wheel and axle rotate together, in combination with the box G, confining the axles between the wheels and extending from hub to hub, a bearing at the middle of the box for the free ends of the axles, and a cushion or yielding bearing for the axles at each end of the box, substantially as herein described.

7. In a vehicle, the independent axles B B', each having a wheel secured to it so that wheel and axle rotate together, in combination with the box G, confining the axles between the wheels, a bearing at the middle of the box for the free ends of the axles, and a bearing for the axles at each end of the box, consisting of the gland-nut I, encircling the axle, and the cushion H, encircling the nut, substantially as herein described.

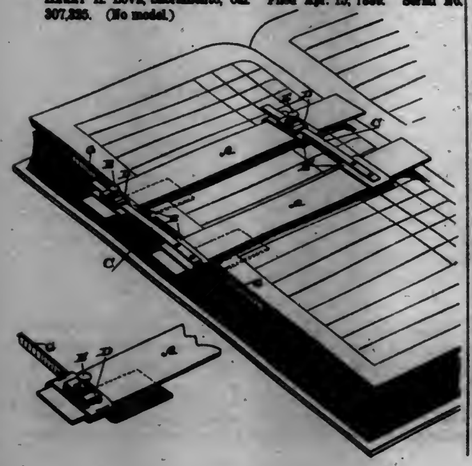
8. In a vehicle, the independent axles B B', each having a wheel secured to it so that wheel and axle rotate together, in combination with the box G, confining the axles between the wheels, a bearing at the middle of the box for the free ends of the axles, and a bearing for the axles at each end of the box, consisting of the gland-nut I, encircling the axle, the cushion H, encircling the nut, and the screw-cap J, of rubber, on the end of the nut and embracing the axle to prevent the entrance of dust to the journal, substantially as herein described.

9. In a vehicle, the independent axles B B', each having a wheel secured to it so that wheel and axle rotate together, in combination with the box G, confining the axles between the wheels and having a hinged side *g*, the cushion-bearings for the axles at the ends of the box, and the two-part bearing K at the middle of the box for the free ends of the axles, substantially as herein described.

10. In a vehicle, the wheels A A', the independent axles B B', the cushions C and D in the ends of the wheel-hubs, and the collar and nut on the axles bearing against the cushions, whereby wheel and axle are secured to each other and adapted to rotate together, in combination with the box G, confining the axles from hub to hub, the gland-nut I, cushion H, and screw-guard cap J in each end of the box forming bearings for the axles, and the bearing K at the center of the box for the free ends of the axles, substantially as herein described.

409,863. POSTING OR COPYING GUIDE FOR BOOK-KEEPERS.

HARRY H. LOVE, Sacramento, Cal. Filed Apr. 15, 1889. Serial No. 307,225. (No model.)

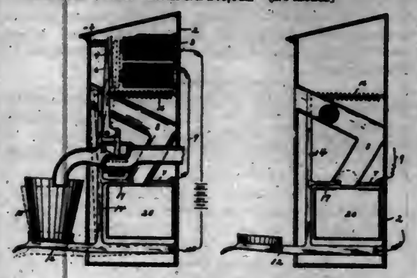


Claim.—1. The posting or copying guide consisting of the parallel opaque plates with the transverse rods extending between them, guides in which said rods slide so as to allow the plates to be moved with relation to each other, and set-screws whereby they are held at any given point, substantially as herein described.

2. The copying-guide consisting of the parallel opaque plates with the transverse adjusting-rods and set-screws and the hooks or guides fixed at one end of the plates, substantially as and for the purpose herein described.

409,864. AUTOMATIC ELECTRICAL FLUID-RELEASER.

RALPH S. MOLYNEUX, Minneapolis, Minn., assignor, by direct and mesne assignments, to the National Water Supply Company, of Minnesota. Filed June 4, 1888. Serial No. 276,041. (No model.)



Claim.—1. In a device of the class described, the combination, with a suitable magnet, of an armature operated by said magnet, a tube or pipe, a valve operated by said armature and intercepting said tube or pipe, a conduit for the reception of a coin, and contact-points in connection with the magnet and arranged to arrest the coin as it passes through the conduit and thereby to complete an electric circuit through said magnet, substantially as described.

2. In a device of the class described, the combination, with the magnet 3 and armature 4, of a lever 6, upon which said armature is located, a tube or pipe, a valve 18, connected with said lever and intercepting said tube or pipe, a conduit 8 for the reception of a coin, and contact-points arranged to hold the coin and complete an electric circuit to cause the operation of the valve and be released when said operation is completed, substantially as described.

3. In a device of the class described, the combination, with the electro-magnet and an armature, of a valve operated by said armature and the magnet, a conduit for the reception of a coin, a stationary contact-point, a pivoted support adapted to receive a suitable receptacle and to be turned upon its pivot when said receptacle has been filled by liquid passing through said valve, and a movable contact-point carried by said support, substantially as described.

4. In a device of the class described, the combination, with an electro-magnet and an armature, a lever 6, connecting said armature with a valve, said valve operated by said armature and the magnet, a lever 6, connected with said valve, a conduit 8 for the reception of a coin, a stationary contact-point 7, a pivoted support 12 for the reception of the material delivered from the valve, and the contact-point 17, secured to and operated by the pivoted support 12 to hold the coin and complete an electric circuit through the magnet until the weight of the material delivered by the valve shall be sufficient to release the coin and break the circuit, substantially as described.

5. In a device of the class described, the combination of a tube or pipe, a suitable valve intercepting said tube or pipe and controlling the passage of material, an electro-magnet arranged to operate said valve, a conduit adapted to receive a coin, and an electric circuit completed by a coin in said conduit, substantially as described.

6. In a coin-operated liquid-releasing device, the combination, with a valve for controlling the flow of the liquid, of a coin-conduit, mechanism to be acted on by a coin to open the valve, and a coin-releaser actuated on the delivery of a certain quantity of liquid to permit said valve to be closed to cut off the flow of the liquid, substantially as and for the purposes set forth.

7. The combination, in a coin-operated liquid-releasing device, of a valve for controlling the flow of the liquid, a coin-conduit, mechanism to be operated on the introduction of a coin to open the valve, a coin-releaser, and a support connected with said releaser and adapted to receive a receptacle and be moved by the gravity of the liquid delivered to the receptacle, whereby said valve is opened on the introduction of a coin and automatically closed on the delivery of a certain quantity of the liquid, substantially as and for the purposes set forth.

8. In a coin-operated liquid-releasing device, the combination of a valve for controlling the flow of the liquid, a coin-conduit, mechanism to be operated on the introduction of a coin to open the valve, and means, actuated by the gravity of the liquid delivered, for automatically closing said valve, substantially as and for the purposes set forth.

409,865. GAS-BATTERY.

LEWIS MOND, Northwich, County of Chester, and CARL LANGER, London, County of Middlesex, England. Filed Nov. 26, 1888. Serial No. 292,116. (No model.) Patented in England Feb. 17, 1888, No. 2,411; in France Oct. 6, 1888, No. 192,248; in Italy Oct. 13, 1888, XXII, 20,948, XLVII, 295; in Luxemburg Nov. 26, 1888, No. 1,066; in Turkey Nov. 26, 1888, No. 130; in Belgium Dec. 15, 1888, No. 84,102; in New South Wales Jan. 2, 1889, No. 1,132; in Brazil Feb. 1, 1889, No. 605, and in Spain Feb. 12, 1889, No. 8,265.



Claim.—1. In a gas-battery, a solid porous non-conducting substance impregnated with an electrolyte liquid at or near ordinary temperatures, and covered on each side with one or more substances capable of absorbing the gases employed and exposed on the one side to the one gas and on the other to the other gas used.

2. In a gas-battery, a solid porous non-conducting material impregnated with an electrolyte liquid at or near ordinary temperatures, and coated on each side by a conducting material capable of absorbing gases in its pores, such as described.

3. In a gas-battery, the combination of a solid porous non-conducting material impregnated with an electrolyte liquid at or near ordinary temperatures, with a porous conducting material covering the same, and a gas-absorbing material covering or impregnating the said porous conducting material, substantially as described.

4. In a gas-battery, in combination with a solid porous non-conducting substance impregnated with an electrolyte liquid at or near ordinary temperatures, and covered on each side with gas-absorbing material, a porous metallic conducting material in contact with or permeating the gas-absorbing material on each side and connected with the poles of the battery.

5. In a gas-battery, the combination of a porous non-conducting substance, a liquid electrolyte impregnating the same, a gas-absorbing coating on each side of said porous substance, with a good conductor of electricity on each side in the form of thin metallic foil, gauze or perforated plates permeable to the gases employed and in frequent contact with the absorbent coating over its whole surface, whereby the electricity is taken and conducted away from numerous points at small distance from each other, and thus the internal resistance is reduced and the work done by the battery is increased.

6. In a gas-battery, the combination of a non-conducting porous plate impregnated with an electrolyte, with a coating on each side of it of conducting and gas-absorbing material, such coatings being insulated from each other but connected with opposite poles of the battery, and an electro-negative gas bathing one side of the coating and an electro-positive gas the other side of the coating.

7. A gas-battery formed of porous non-conducting plates impregnated with an electrolyte coated on each side with conducting and gas-absorbing matter, the sides being insulated from each other and connected with opposite poles, and of chambers between the plates, each alternate chamber being filled with an electro-negative gas and the others with an electro-positive one.

8. In a gas-battery, in combination with a porous non-conducting plate impregnated with liquid electrolyte having two gas-absorbing electrically-conducting layers, one on each side of the porous plate, a conductor connected with one of the poles of the battery fixed on each side of the porous plate and electrically connected with the absorbing conducting layer nearly or quite all round.

9. In a battery having as its electrolyte a liquid permeating and absorbed by a porous non-conducting solid material, the combination of the said electrolyte with a coating on each side of gas-absorbing materials, a gas-chamber on each side of the said electrolyte supplied, respectively, each with one of the gases used.

10. The combination of the insulating-plates R, conductors A, embedded therein, and non-conducting panels M, impregnated with an electrolytic liquid and covered on each side with gas-absorbing and conducting material, said material on each side being in electrical contact with the conductor A on that side.

11. As an element of a gas-battery, the combination of a non-conducting frame R, porous non-conducting plates M, permeated by a liquid electrolyte and coated on each side by a gas-absorbing and conducting layer insulated from the layer on the other side, conductors A, respectively, all round the plates on each side and each connected with one pole, each in electrical contact with the conducting-layers on its own side, and said layers being exposed one to an electro-negative and the other to an electro-positive gas.

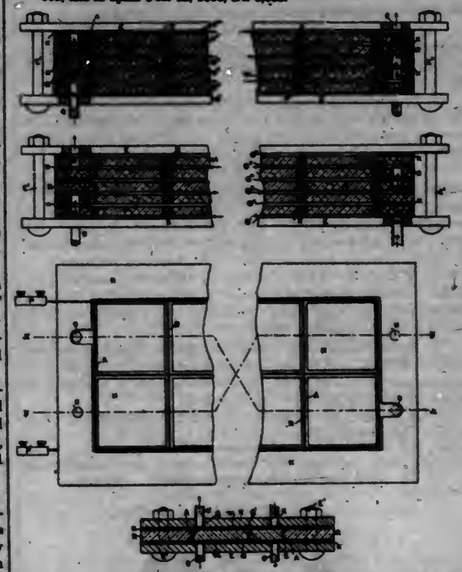
12. In a battery, a series of non-conducting frames R, non-conducting-plates M, impregnated with an electrolytic liquid, and having a conducting gas-absorbing layer on each side, conductors A on each side, each connected with its respective pole and with the absorbing conducting-layer on its own side, poles P P', positive gas-passages O and positive gas-spaces G^2 G^4 G^6, negative gas-passages H and negative gas-spaces G' G^3 G^5, outside inclosing-case E, and distance-pieces K, forming with frames R said gas-chambers G' G^6, all combined substantially as described.

13. A battery composed of a series of porous plates M, permeated with an electrolyte liquid at or near ordinary temperatures and coated on each side with a gas-absorbing and conducting layer, the layers facing one way being insulated from the layers facing the other way, and a series of spaces between the plates, one alternate set of which is exposed to an electro-negative gas and the other to an electro-positive one.

14. In a gas-battery, the combination of a series of frames R, carrying the porous non-conducting plates M, impregnated with an electrolytic liquid, two alternating series of chambers between them, G' G^3, &c., and G^2 G^4, &c., passages Q, plaster ends V, and the outer frame-work Z'-Z^3, &c., permeated only by the gas-passages O H, substantially as described.

409,866. PROCESS OF OBTAINING ELECTRICITY FROM GAS-BATTERIES.

LEWIS MOND, Northwich, County of Chester, and CARL LANGER, London, County of Middlesex, England. Filed Mar. 15, 1889. Serial No. 303,743. (No model.) Patented in England Feb. 17, 1888, No. 2,411; in France Oct. 6, 1888, No. 192,248; in Italy Oct. 13, 1888, XXII, 20,948, XLVII, 295; in Luxemburg Nov. 26, 1888, No. 1,066; in Turkey Nov. 26, 1888, No. 130; in Belgium Dec. 15, 1888, No. 84,102; in New South Wales Jan. 2, 1889, No. 1,132; in Brazil Feb. 1, 1889, No. 605, and in Spain Feb. 12, 1889, No. 8,265.



Claim.—1. The process of obtaining electricity by means of two gases—such as oxygen and hydrogen—which consists in causing said gases to each come in contact at or near ordinary temperatures with a layer of gas-absorbing material itself in contact with the electrolyte, the two layers of gas-absorbing materials being each insulated from the other of them and each of them connected with one of the poles of the battery, the two gases being interchanged periodically, substantially as described.

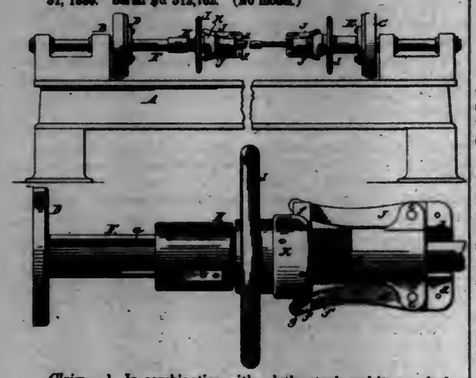
2. The process of obtaining electricity by means of a gas-battery, which consists in passing at or about ordinary atmospheric temperature combustible gas and air, respectively, over opposite sides of an electrolyte in contact on both sides with gas-absorbing materials, and collecting the electricity at innumerable points on each side, respectively, by conducting matter connected with opposite poles of the battery.

3. The improvements in the process of obtaining electricity by means of a gas-battery, which consists in passing such a quantity of air or dry gas through the apparatus as to carry off the water or other easily-evaporated liquid formed by the action of the battery.

4. The improvement in the process of obtaining electricity, as described, which consists in periodically interchanging the air and combustible gas so that each shall occupy the position previously occu-

pied by the other, whereby the working-power of the electrolyte is restored and local action or polarization in great part prevented, substantially as described.

409,367. WORK-HOLDER. WALTER J. MUSGANTER, Cumberland, Md., assignor of one-half to Merwin McKaig, same place. Filed May 31, 1889. Serial No. 312,762. (No model.)



Claim.—1. In combination with a lathe-stock and its mandrel, a chuck or work-holder adjustable longitudinally with reference thereto.

2. In combination with a lathe-stock and with a mandrel thereof projecting beyond the stock, a chuck or work-holder mounted and arranged to be moved longitudinally upon said mandrel to and from the work.

3. In combination with a lathe-stock and a mandrel thereof projecting beyond said stock, a center spindle or point carried by the mandrel and a chuck or work-holder movable upon said spindle to cover or uncover the point or spindle and the end of the work.

4. In combination with a lathe-mandrel, a shell or casing arranged to slide longitudinally thereon, but to rotate therewith, levers carried by said shell and provided with clamping-jaws, a collar arranged to move longitudinally upon said shell and to actuate said levers, and a nut screwing upon the shell and serving to move the collar relatively to the levers, substantially as described and shown.

5. In combination with a lathe-stock, the herein-described work-holder or chuck consisting of arbor F, shell H, wheel or nut I, threaded upon the shell, levers *j*, having clamping-jaws, and collar K, having a swivel-connection with nut I.

6. In combination with arbor F, longitudinally-adjustable shell H, nut I, collar K, and levers J, all constructed and arranged to operate substantially as set forth, and detachable jaws L, applied to the levers, substantially as shown and described.

7. In combination with arbor F, movable shell H, nut I, and levers J, and central spindle G, carried by the arbor F.

409,368. GLASS-MELTING POT. ASA G. NEVILLE, Lascarville, W. Va. Filed Nov. 23, 1888. Serial No. 292,063. (No model.)

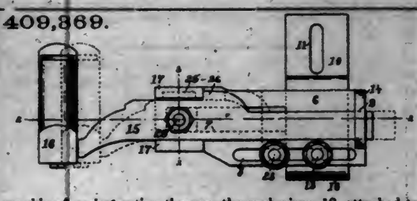


Claim.—The herein shown and described glass-melting pot, having a glory-hole, a flame-opening, an air-passage communicating with the flame-opening, and a hot-air-blast passage communicating with the crown of the pot at different points and having a series of escape-flues communicating with the pot at different levels and on the side thereof opposite the flame-opening, substantially as described.

409,369. LOOM-TEMPLE. JOSHUA B. NEWELL, Georgiaville, R. I. Filed July 19, 1887. Serial No. 244,704. (No model.)

Claim.—1. The combination, as hereinbefore set forth, with the bed-plate 6, provided with the slot 7, of the support-bar 15, provided with the grip-roller mechanism and mounted upon the bed-plate and

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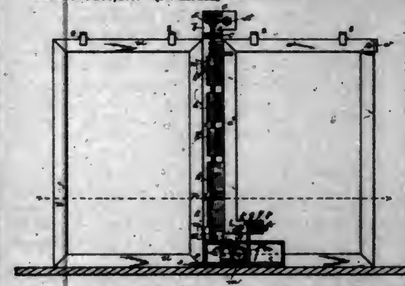


capable of reciprocating thereon, the push-piece 18, attached to the support-bar, the spring 20, engaging the push-piece, and the holder 22, mounted upon the bed-plate and having means for adjustment, substantially as and for the purpose herein described.

2. The combination, as hereinbefore set forth, with the bed-plate 6, provided with the slot 7 and the opening 8, of the support-bar 15, provided with the grip-roller mechanism and mounted on the bed-plate and capable of reciprocating thereon, the depending push-piece 18, attached to the support-bar and provided with the boss 19, the spring 20, engaging the boss, and the holder 22, having the cavity 21 and adjustably secured to the bed-plate by means of the bolt 23, substantially as and for the purpose herein described.

3. The combination, as hereinbefore set forth, with the bed-plate 6, provided with the slot 7 and the opening 8 and formed with the guiding projections 17, and the upright extension 14, having the guide-eye 9, of the reciprocating support-bar 15, provided with the grip-roller mechanism and mounted upon the bed-plate, the depending spring-actuated push-piece, the securing-plate 10, and the clamping-bolt 13, attached to plate 10 and extending through the opening 8, substantially as and for the purpose herein described.

409,370. LEAF-TURNER. THOMAS J. PARKINSON, Pittsburg, Pa., assignor of one-fourth to J. B. Hyndman, same place. Filed Jan. 16, 1889. Serial No. 296,473. (No model.)

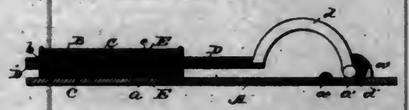


Claim.—1. In a leaf-turner, the combination, with the leaf-holders, of the key *h*, the bar *a*, carrying the finger *g*, and connections, substantially as described, between said bar and said key, substantially as and for the purposes set forth.

2. In a leaf-turner, the combination of the leaf-holder, the key *h*, carrying the pawl *h'*, pinion *p*, and rack-bar *c*, carrying the finger *g*, substantially as and for the purposes set forth.

3. In a leaf-turner, the combination of a series of spring-actuated leaf-holders journaled on a suitable shaft and having lips of different lengths, respectively, each provided with a stop-shoulder at a prescribed distance from the end thereof, and a finger engaging with said lips and directed to position by said stop-shoulders, substantially as and for the purposes set forth.

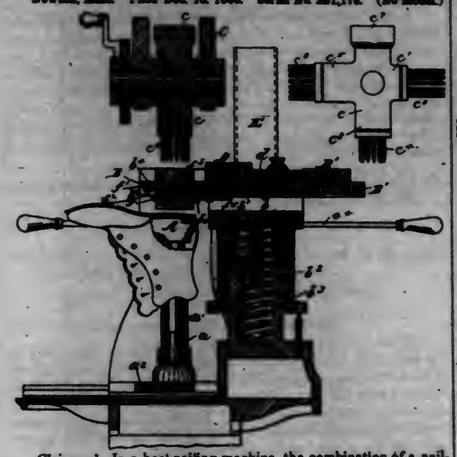
409,371. SPRING-HINGE. JESSE W. PIERCE, Belton, Tex. Filed May 31, 1889. Serial No. 312,739. (No model.)



Claim.—1. The combination of a hinge having one of its leaves provided with a casing and the other with projections c^3, a spring arranged within the casing, and the rod passing through the casing and engaging the spring and having trunnions at its ends removably engaging the said projections, substantially as described.

2. The combination of a hinge having one of its leaves provided with a casing and the other provided with curved projections, the spring arranged in the casing, and the rod engaging said spring and having the curved portion provided with trunnions engaging the said projections, substantially as described.

409,372. HEEL-NAILING MACHINE. FREDERICK F. RAYMOND, 2d Newton, Mass. Filed Dec. 10, 1888. Serial No. 291,176. (No model.)



Claim.—1. In a heel-nailing machine, the combination of a nailing device, a rotary templet supporting heel-blank-holding devices, a box or receptacle for holding the heel-blanks in stack, and devices for feeding the heel-blanks in successive order to the templet when the templet has been rotated or turned to a position to receive them, comprising the sliding plate *d'* and the plate d^3, substantially as described.

2. The combination, in a heel-nailing machine, of the stack or box E, for holding heel-blanks, the slide-plate *d'*, and an actuating-lever d^4, having the arms d^5 d^6, as and for the purposes described.

3. The combination, in a heel-nailing machine, of a rotary top-lift-carrier plate B^3, having top-lift-holding devices, with a box or receptacle G for holding top lifts in stack, and top-lift-feeding devices for feeding top lifts from the box in successive order to said top-lift-carrier plate, comprising the slide-plate *g* and the plate g^3, substantially as described.

4. In an organized heel-nailing machine, the combination of the box G, for holding top lifts in stack, the slide-plate *g*, and lever g^4, having the arms g^4 g^5, substantially as described.

5. The combination of the templet with the heel-blank-grasping devices, comprising the vertically-movable spring-plate *f*, and the spring-actuated slide-plate f^4, substantially as described.

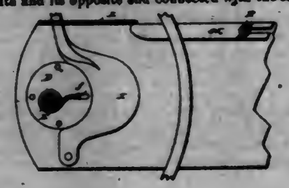
6. The combination of the top-lift-carrier plate with the spring-arms h h', having the bent ends h^2 h^3 and the shoulders h^4 h^5, substantially as described.

7. The combination, in a heel-nailing machine, of nailing devices, a rotary table supporting a heel-nailing templet and a top-lift-carrying plate, and heel-blank-holding devices carried by the heel-nailing templet, top-lift-holding devices carried by the top-lift-carrier plate, heel-blank-feeding devices for feeding the blanks to the heel-holding devices of the heel-templet, and top-lift-feeding devices, substantially as set forth, for feeding top lifts to the top-lift holder of the top-lift carrier, substantially as described.

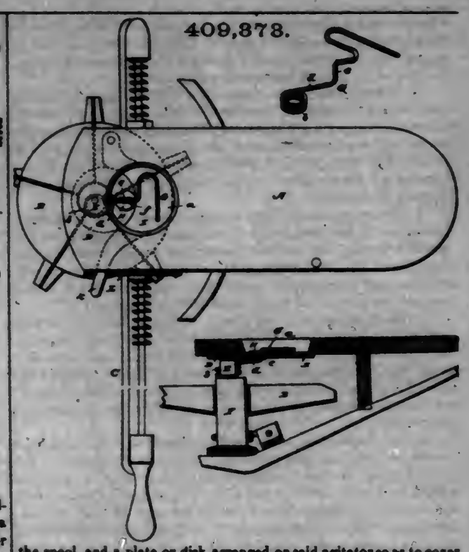
409,373. BROADCAST SEED-SOWER. HIRAM W. RU TOP and HENRY A. GORR, Goshen, Ind. Filed Apr. 26, 1889. Serial No. 308,716. (No model.)

Claim.—1. The combination, with the main frame, of the pivoted plate having its forward edge provided with a curvilinear recess and adapted to regulate the opening of the seed-aperture, the slotted plate having its curvilinear edge extending partly within said aperture, the agitator passing through the slot in said plate with its agitator branch above the plate, and its opposite end connected with the cam-shaft of the spool, substantially as specified.

2. The combination, with a seed-plate having an elongated slot, of the agitator passing through said slot with its agitating branch above the plate and its opposite end connected with the cam-shaft of



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the spool, and a plate or disk arranged on said agitator so as to cover the slot in the plate, substantially as specified.

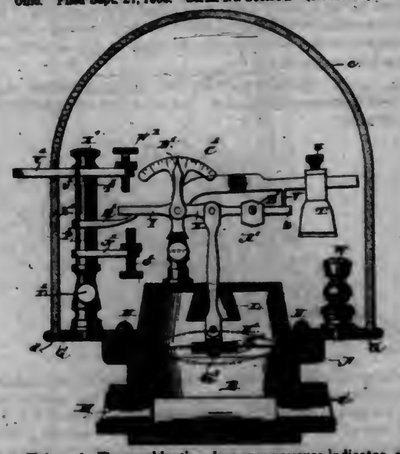
409,374. BOTTLE-STOPPER. JONAS J. SANDS, Morton, Wis. Filed Apr. 2, 1889. Serial No. 305,995. (No model.)



Claim.—1. The combination, with the walls of a vessel-orifice having an internal shoulder or shoulders and with a stopper in the orifice, of a flexible metal holding-bar inserted over the stopper and engaged at its ends with the said shoulders, the said metal holding-bar having a central arch or U-shaped bend, and shoulders or transverse edges on its end portions for engagement with an expanding implement, substantially as described.

2. The combination, with a vessel the orifice of which is provided with a shoulder or shoulders and with a stopper in said orifice, of a flexible metal holding-bar provided with a central arch and with a slot running lengthwise of the holding-bar and terminating at points near the base of the arch, substantially as described.

409,375. GAS-PRESSURE INDICATOR. RICHARD L. SIDDON, Lima, Ohio. Filed Sept. 27, 1888. Serial No. 286,504. (No model.)



Claim.—1. The combination, in a gas-pressure indicator, of the

chamber, the diaphragm therein, the weighted lever X, connected to the diaphragm, the weighted lever R, having the stops adapted to engage the lever X, the dial, and the hand or pointer secured to and operated by the lever X, substantially as described.

2. The combination, in a gas-pressure indicator and alarm, of the electric circuit having the electrodes W' O' at one pole, the lever X, forming the electrode of the opposite pole, the chamber, the diaphragm therein, and connections between said diaphragm and the lever X, whereby the latter will play between the electrodes O' and W' and complete the electric circuit at abnormally high or low pressure, substantially as described.

3. The combination of the pressure-chamber, the diaphragm therein, the circuit-closing lever X, connected to the diaphragm and operated thereby, the contact-arm N', and the connected pivoted contact-arms V' and R', arranged at an angle to each other, whereby said arms may be alternately moved to the path of the circuit-closing lever, for the purpose set forth, substantially as described.

4. The combination of the plate A, having chamber B and inlet and outlet pipes, the plate G, having chamber I registering with chamber B and closing the upper side thereof, the top of said chamber I having the depending sleeve L, the diaphragm secured between the plates A G and stretched over the chamber B, the weighted lever X, and the link connecting the said lever to the diaphragm, substantially as described.

5. The combination of the pressure-chamber, the diaphragm therein, the weighted lever X, having the circuit-closing arm Y, the conducting-post M, carrying the fulcrum of said lever, the link connecting the lever to the diaphragm, the lever R, having the weight T and the stop V to engage lever C, for the purpose set forth, the conducting-post I', having contact-arm M', and the arms V' R', pivoted on said post, arranged at a suitable angle to each other and connected together, whereby the same are caused to move in unison, and either may be thrown into the path of contact-arm Y and the other thrown simultaneously out of the path of said arm, substantially as described.

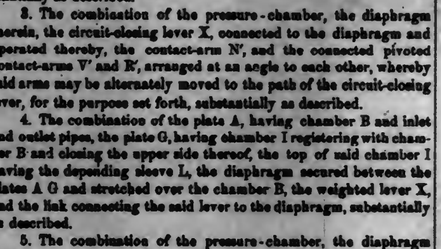
6. The combination, in a gas-pressure regulator, of the chamber, the diaphragm therein, the lever-arm connected to the diaphragm and operated thereby, the stops at the limits of the movement of said lever, and the intermediate stop, the same forming electrodes of an electric circuit, for the purpose set forth, substantially as described.

409,876. SASH-BALANCE. NEWTON J. SEAGER, Montgomery, Ala. Filed May 13, 1889. Serial No. 310,513. (No model.)



Claim.—The combination, with a window-frame, of the sashes arranged therein, the lower sash having apertures *d* formed in the face of its stiles, which apertures communicate with a reduced rectangular aperture *e* and open into mortises *a*, the cords secured to the upper sash and having a knot adapted to be placed in the apertures of the lower sash-stile, and the pivoted plates having a cut-away portion *g* and adapted to cover *d* and confine the knots of the cords therein, substantially as specified.

409,877. ELEVATOR ATTACHMENT FOR HARVESTERS. MARTIN B. STANBAUGH, Carthage, Dak. Filed Apr. 2, 1889. Serial No. 305,714. (No model.)

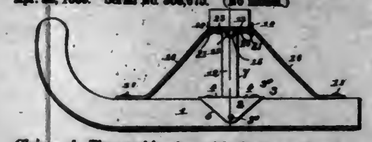


Claim.—1. The combination of the elevator-frame, the brackets A, secured to the same at an intermediate point of the height of the same, the carrier pivoted to said brackets A, the brackets E at the upper end of the elevator-frame, the rock-shaft journaled in said brackets and provided with crank-arms near its ends, the links connecting said crank-arms with the carrier, and means for rotating the rock-shaft, as set forth.

2. The combination, with the carrier, of the arms F, pivoted to the sides of the same and projecting beyond the end thereof, and the curved plate O, secured to the ends of said arms, as set forth.

3. The combination, with the carrier C and the curved bars rising from the side bars of said carrier, of the shield consisting of supporting-arms pivoted to the side bars of the carrier and a curved plate secured to the free ends of said arms, and the set-screws mounted in said supporting-arms and bearing against the curved bars, as set forth.

409,878. SLEIGH-KNEE. HERMAN P. TITUS, Lisbon, N. H. Filed Apr. 23, 1889. Serial No. 308,675. (No model.)

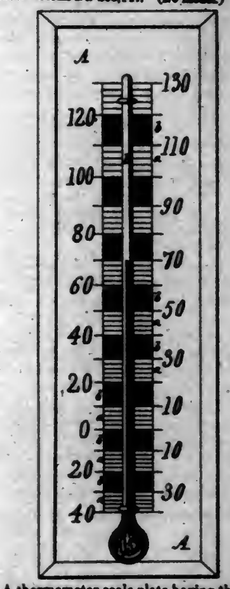


Claim.—1. The combination, with the runner having an embracing-plate, as 2, provided with the opposite embracing portions 5, the intermediate centrally-perforated plain portion 4, and the perforations 3, of the knee-casting 7, having the perforated ends 8 and 9, the opposite sides 12, and the vertical bolt 6, passing through the perforations 8 and 9 of the knee and through the central opening in the plate 2, and with the runner, substantially as specified.

2. The bolster having the casting 13 formed in a single piece and with the side flanges 14, the opposite eyes 15, and the intermediate transverse depression 20, having downwardly-projecting lugs or keepers 21, in combination with the knee-casting 7, having the trunnions 11, taking bearing in the eyes, and the curved strap 16, passing over the casting and bearing in the depression 20 and loosely embraced by the lugs, substantially as specified.

3. In a sleigh-knee, the bolster having the casting 13, upon its under surface, provided with the upwardly-projecting flanges 14 to embrace the sides of the bolster and the opposite shoulders or keepers for the reception of the brace-rods 16, whereby the bolster is supported upon the brace-rods, and the knee-casting having trunnions mounted in the bolster-casting and pivotally attached to the runner, as set forth.

409,879. THERMOMETER. JOHN D. WARD, Rochester, N. Y. Filed June 24, 1886. Serial No. 206,147. (No model.)



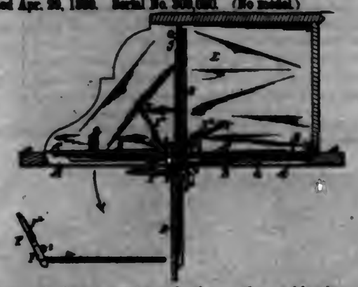
Claim.—A thermometer-scale plate having the degree-marks laid off in blocks or sections of contrasting colors, each block or section including a certain number of degrees, the degree-marks on the light-colored sections being black and those on the dark-colored sections being white, as set forth.

409,880. PENCIL-SHARPENER. BENJAMIN T. WHITEHOUSE, Dover, assignor of one-half to Christopher W. Jackson, Portsmouth, N. H. Filed Apr. 1, 1889. Serial No. 305,892. (No model.)



Claim.—The pencil-sharpener consisting of the tubular body *a*, the tapering spring-arms *b*, each arm having a cutter *c*, and a wing *d*, with a ring *e* arranged on said sharpener, said ring when pushed onto the wings forcing the spring-arms against the conical part of the pencil arranged therein and causing the cutters *c* to remove shavings therefrom when the pencil is revolved, substantially as shown and set forth.

409,881. ANIMAL-TRAP. ALEXANDER WOLSER, Petoskey, Mich. Filed Apr. 26, 1889. Serial No. 308,660. (No model.)



Claim.—1. In a revolving animal-trap, the combination, with a suitable inclosed case E and frame A, with opening A', of the series of platforms B, mounted upon an axle C, journaled in the frame A and having attached thereto means for turning said axle, and nose-pieces F, pivotally connected to said platforms B and having extensions F', bolts G, connected to said extensions F' of the pivoted nose-pieces F, which bolts pass beneath the platforms B and project beyond the front edge thereof and engage a catch H at the rear of the frame A, as described, for the purposes specified.

2. In a revolving animal-trap, in combination with the platforms B, the nose-pieces F, pivoted to said platforms, having extensions F', that project below said platform, and opening F^a for the bait, and bolts G, secured to the said extensions F' of the nose-pieces and extending beneath the platforms B, as described, for the purposes specified.

409,882. AMMONIA-SODA APPARATUS. JOSEPH F. BARNUM, Louisville, Ky., assignor to himself, Charles Goldsmith, and John S. Cain, same place. Filed Apr. 26, 1889. Serial No. 308,632. (No model.)

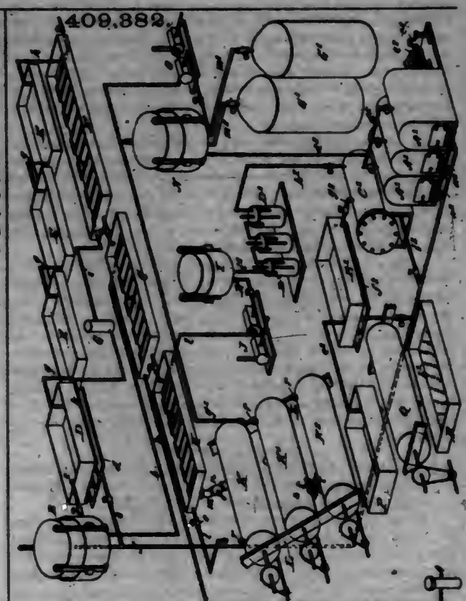
Claim.—1. In apparatus for the manufacture of bicarbonate of soda and other soda salts and compounds, the combination of an elevated salt-water receiver and gasometer provided with a stand-pipe for the gas, a boiler into which the water is run from said receiver, a series of settling-pans in successive connection with each other and the boiler, an evaporating pan or vessel into which the brine is passed from the settling-pans, and a cooler connected with the evaporating pan or vessel, for operation in relation with each other, substantially as specified.

2. In apparatus for the manufacture of bicarbonate of soda and other soda salts and compounds, the combination, with the settling-pan P, of the rotary agitator and washer Q, the drainer R, and the centrifugal drier S, essentially as specified.

3. In apparatus for the manufacture of bicarbonate of soda and other soda salts and compounds, the combination of the elevated salt-water receiver and gasometer B, with its supply-pipe *b* and gas-pipe *f*, the boiling pan or vessel D, the settling-pans E, the evaporator F, the coolers C H, and the series of air-tight decomposing-cylinders K K' K^2, provided internally with reversely-rotating stirrers, and arranged one below the other and adapted to pass their charges one into the other, substantially as described.

4. In apparatus for the manufacture of bicarbonate of soda and other soda salts and compounds, the combination with the decomposing-cylinders K K' K^2, of the ammonia-receiver I, the carbonic-acid-gas receiver N, the condensing-pumps J O, the pipes *l f'*, and the cooler H, essentially as specified.

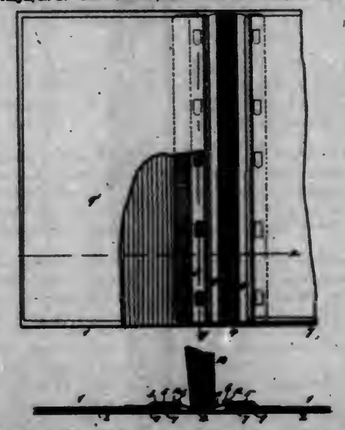
5. In apparatus for the manufacture of bicarbonate of soda and other soda salts and compounds, the combination of the settling-pan P, the concentrating-pan B', the ammonia-retort C', the washing-bottles D', the ammonia-receiver I, and the condensing-pump J, substantially as specified.



6. In apparatus for the manufacture of bicarbonate of soda and other soda salts and compounds, the combination, with said apparatus, of the drying-ovens A', with their agitating-frames R', the pipe d^2, the carbonic-acid gas holder or receiver N, and the condensing-pump O, essentially as described.

7. In apparatus for the manufacture of bicarbonate of soda and other soda salts and compounds, the combination of the salt-water receiver B, arranged to occupy an elevated position for passage of the brine by gravity through the apparatus, the water-supply pipe *b* to said receiver, the stand gas-pipe *f*, extended downward and provided with attached gas-jet pipes for supplying the apparatus with fuel from said receiver, the boiler D, the settling-pans E, the evaporator F, with its heating-pipes *i*, the cooler C, having the water-supply pipe *b*, made to circulate through it, the ammonia-cooling pan or vessel H, the ammonia receiver I, and carbonic-acid-gas holder N, with their attached condensing-pumps J O and pipes *l f'*, the series of air-tight decomposing-cylinders K K' K^2, the settling-pan P, the concentrating-pan B', the ammonia-retort C', connected with the ammonia-receiver I, the rotary washer and agitator Q, the drainer R, and the centrifugal drier S, substantially as specified.

409,883. RENEWABLE MEMORANDUM-BOOK. JOHANN G. RAST, Brooklyn, N. Y. Filed Feb. 26, 1889. Serial No. 301,172. (No model.)



Claim.—1. A book of leaves secured together with lateral flanges or securing-strips on the back of the leaves where they are secured

together, in combination with detachable covers having their rear vertical edges connected together by flexible material, and metallic strips independently secured to the detachable covers at their joint formed by the flexible material and having interned edges forming grooves adapted to engage and retain lateral flanges on the back of the leaves and permit their insertion and removal endwise, substantially as shown and described.

2. In a book, substantially as described, having lateral retaining-flanges at the back of the leaves, a pair of detachable covers connected together at their rear vertical edges by flexible material, and metallic strips independently secured to the covers at their joint formed by the flexible material and having interned flanged edges forming retaining-grooves to receive endwise and retain the flanges on the back of a book of leaves, substantially as described.

3. In a book having detachable covers, the detachable covers 1, connected together at their rear vertical edges by a flexible connection 4 with the metallic strips 20, having slots 19 and extending along the rear vertical edges of covers 1, the flexible lining-strip 3, pasted thereto and to the covers, and the metallic retaining-strips 13, with the vertical portion 14, having the interned flanges 15, forming retaining-grooves for the flanges on the book of leaves, and the horizontal portions 16, extending lengthwise over the flexible lining-strip 3 and having lips 17 passing through the latter and through the slots 19 in strips 20, and secured to the latter, substantially as shown and described.

409,884. COMPOUND DYE. CHARLES S. BENNETT, Leeds, County of York, England. Filed Apr. 23, 1888. Serial No. 271,573. (No specimens.) Patented in England Sept. 19, 1887. No. 12,957.

Claim.—1. The improvement in the manufacture of coloring-matter, which consists in treating an aqueous extract of fustic dye-wood with a slightly-acid solution of a salt of one of the diazo compounds before mentioned—namely, diazo-benzene, diazo-toluene, diazo-xylene, and diazo-naphthalene—adding the requisite quantity of alkali, and separating the coloring-matter formed by mechanical means.

2. The improvement in the manufacture of coloring-matter, which consists in treating the comminuted fustic dye-wood with a slightly-acid solution of a salt of one of the diazo compounds above mentioned—namely, diazo-benzene, diazo-toluene, diazo-xylene, and diazo-naphthalene—until the wood is thoroughly permeated, and adding the requisite quantity of alkali, as described.

3. A coloring-matter consisting of the combination of the active principle of fustic dye-wood with a diazo compound, substantially as described.

409,885. WALKING-BEAM. JOHN BLY, Tiona, Pa. Filed Apr. 6, 1889. Serial No. 306,242. (No model.)



Claim.—1. A walking-beam comprising the beam A, a block arranged longitudinally under the beam at the center of the latter, and the truss-boards varying in length and having their centers secured to said block and their ends secured to the beam, substantially as described.

2. A walking-beam comprising the beam A, the block B, secured under the same at its center, and the truss-boards C D, arranged one on top of the other, having their central portions bolted to the block, and their ends bent upward and fitted in scarfs or recesses in the under side of the beam, substantially as described.

3. The beam, the block secured under the center of the same, said block being composed of one or more longitudinal boards or layers, and the truss-boards having their central portions bolted to and through the said block, and said beam and their ends fitted in scarfs or recesses in the under side of the beam near its ends, and bolted thereto, substantially as described.

4. A walking-beam comprising the beam A, the block secured under the center of the beam A, and being composed of one or more longitudinal boards or layers varying in length and having their central portions bolted to and through said block and beam A, and their ends fitted in scarfs or recesses in the under side of the beam near its ends, and bolted thereto, and the tapering blocks arranged between the truss-boards and the beam, substantially as described.

409,886. FOLDING CRATE. JAMES W. BROOK, Lynchburg, Va. Filed Apr. 26, 1889. Serial No. 308,743. (No model.)



Claim.—1. An improved crate provided with a hollow ventilating-partition L, consisting of the bars or posts *l*, and slats *l'*, nailed to the opposite sides of bars *l* and separated, providing spaces between them, substantially as set forth.

2. In a crate, substantially as described, the combination of the bottom, the sides having uprights F, and the hollow ventilating-partition formed of posts or uprights and slats, the slats being secured to the opposite sides of the said uprights and extended at their ends beyond the same whereby to lap on opposite sides of the uprights F, substantially as set forth.

3. In a crate, substantially as described, the combination, with the sides having uprights F and the top having beams or bars *j j*, of the ventilating-partition formed to fit between the bars *j*, and having slats arranged to extend on opposite sides of the uprights F, substantially as set forth.

4. The combination, in a crate, of the bottom, the ends hinged to said bottom, the side pieces fitted to said ends and bottom, inter-engaging dowels and sockets being provided on said parts, and connections between the opposite side pieces whereby to clamp them firmly together, substantially as set forth.

5. The bottom having dowels C, and the ends connected with the bottom and having the sockets *d*, combined with the sides having sockets c and dowels D to fit in the sockets *d* of the end pieces, and the connections between said sides, substantially as set forth.

6. As an improvement in crates, the combination, with the front side pieces having the eyes or staples, and the hooks A, entering said staples, of the top, and the fastening-rod by which to secure said top closed, such rod in its locked position being extended close to the hooks A, whereby to hold the same in their staples, substantially as set forth.

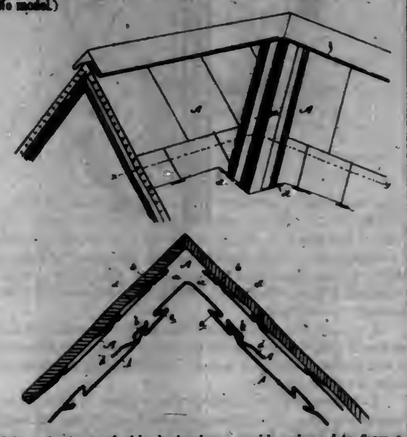
7. In a crate, substantially as described, the combination of the front and rear side pieces having near their ends uprights *f*, the top, the eyes or staples G, secured on the inner sides of the uprights *f* of the front section, and the rods H, secured at one end to the outside of the uprights *f* of the rear side section, and having at their other ends hooks engaging the eyes G of the front side section, whereby said rods H will extend diagonally and serve to fill in a measure the space at the end of the top, substantially as set forth.

8. In a folding crate, the combination of the front side piece, the end piece having a staple O, the top, and the lock-rod M, passed through coincident openings in the top and side piece, and having at its end a crank-like arm m, provided with a portion N, arranged to enter the staple O, substantially as and for the purposes set forth.

9. The improved crate herein described, consisting of the bottom having dowels C, the ends B, having sockets *d*, a staple O on one of said ends, the front side piece E, having eyes or staples G and hook-rods I and provided with dowels D and sockets *c*, the rear side section having dowels D and sockets *c*, the hook-rod H, connected with the rear side section, the top hinged to the rear side section, the partition, and the lock-rod M, having at one end a crank-like arm m, having a portion N, arranged to enter the staple O, substantially as set forth.

10. In a folding crate, substantially as described, the combination of the bottom piece or section A, having frame beams or sills *a*, and the end pieces B, hinged or pivoted to the bottom A and having frame beams or uprights *b* arranged to lie alongside the sills *a*, whereby the ends may be folded flat down against the bottom piece, all substantially as and for the purposes set forth.

409,887. SHEET-METAL SHINGLE. WILLIAM J. BROWN and JOHN O. THORN, Toronto, Ontario, Canada. Filed Apr. 8, 1889. Serial No. 306,296. (No model.)



Claim.—1. A metal shingle having one side crimped to form a gutter with a nailing-edge extending beyond it, the inner wall of the said gutter being bent inwardly to form a recess, into which the straight edge of the adjoining shingle may fit to form a cap for the gutter and for the nailing-edge, and an angular overhanging wall, substantially as and for the purpose specified.

2. A series of metal shingles bent angularly to form a valley, the bottom of each shingle overlapping the top edge of the shingle below it, and the sides of each shingle being crimped to form an angular overhanging wall on each side of the valley, and on the outside of each wall a gutter with a nailing-edge extending beyond it, the inner wall of the said gutter being bent inwardly to form a recess, into which the straight edge of the adjoining shingle may fit to form a cap for the gutter and for the nailing-edge, substantially as and for the purpose specified.

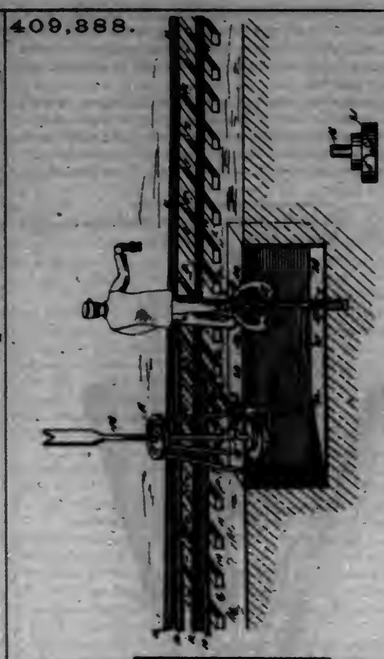
409,888. SAFETY-LOCK AND SHACKLE FOR RAILROAD-SWITCHES. WILLIAM H. CAINE, Stillwater, Minn., assignor of one-half to Lyell T. Mead, same place. Filed Jan. 2, 1889. Serial No. 295,145. (No model.)

Claim.—1. The combination, with a switch-stand provided with a locking-bar, of a plunger, connections between the plunger and the bar, and shackles arranged in connection with the plunger, substantially as described.

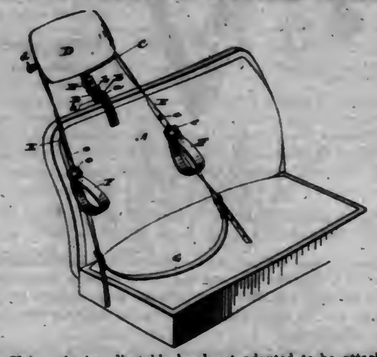
2. The combination, with a switch-stand provided with a recessed disk, of a bar provided with a key or bit arranged to enter the recess of the disk, a lever connected to the bar, a plunger to which the lever is connected, and shackles arranged in connection with the plunger, substantially as described.

3. The combination, with a switch-stand provided with a vertical target-rod, of a case arranged beneath the stand, a disk formed with a recess and connected to the lower end of the target-rod within the case, a rod or bar 23, provided with a bit or key 23 and mounted to move vertically within the case, a lever connected to the rod, a plunger to which the lever is connected, a spring arranged in connection with the plunger, a step or table carried by the plunger, shackles pivotally mounted within the case and formed with slotted arms, and a pin carried by the plunger and arranged to enter said slots, substantially as described.

409,888.



409,889. HEAD-REST. JOHN W. CAMPBELL, Toronto, Ontario, Canada, assignor of one-third to John Francis Logan, same place. Filed Aug. 4, 1887. Renewed Dec. 14, 1888. Serial No. 293,656. (No model.)



Claim.—1. An adjustable head-rest adapted to be attached to the back of a seat having an adjustable supporting-strap connected at each side to the cushioned end of the rest, and held in place by the weight of the user, who sits on said supporting-strap, substantially as specified.

2. An adjustable head-rest adapted to be attached to the back of a seat having an adjustable supporting-strap connected at each side to the cushioned end of the rest and passing under the seat of the user, who sits thereon, and having adjustably attached to said supporting-strap loops which form arm-rests, substantially as specified.

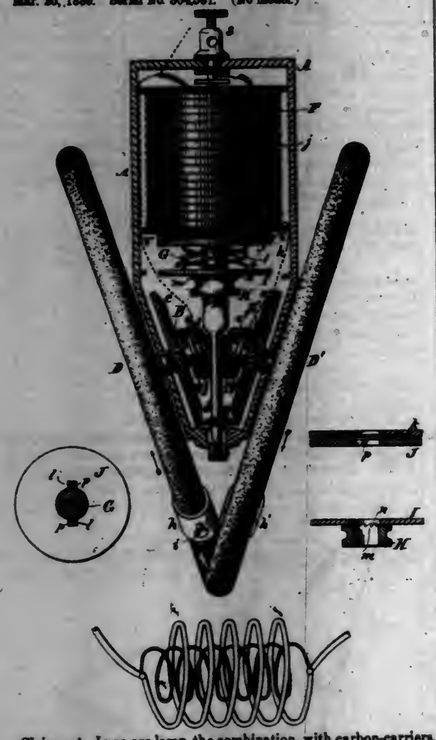
3. The combination, with the back of a seat, of lower standard B, having sleeve *b* for lower end of the upper standard C, and adapted to receive in an elongated slot A thumb-screw H, which adjustably binds the upper standard C to said lower standard, the lower portion of said standards forming jaws which grip the back of seat, together with the frame C, air-cushion D, having screw-nozzle *d*, the side straps E, and seat-strap G, substantially as specified.

4. The combination, with the back of a seat, of lower standard B, and upper standard C sleeved thereon, the lower portions of said standards forming jaws which grip the back of said seat, the upper standard being held adjustably in position by means of thumb-screw H, which passes through said standards, together with the air-cushion

D, suitably attached to said upper standard and provided with means for inflating said cushion, the side straps E, having lugs *e* attached thereto, arm-rests F, and seat-strap G, substantially as described, and for the purpose specified.

5. The combination, with the back of a seat, of lower standard B, and upper standard C sleeved thereon, adapted to be attached to the back of said seat and held adjustably in position, the upper standard C, to which is suitably attached the cushion D, together with the side straps E, lugs *e*, arm-rests F, and seat-strap G, substantially as specified.

409,890. ARC LAMP. ROBERT D. CARSON, Philadelphia, Pa. Filed Mar. 26, 1889. Serial No. 304,581. (No model.)



Claim.—1. In an arc lamp, the combination, with carbon-carriers, of a solenoid, a magnetic core entering the solenoid, a friction-disk carried by the core, a friction-flange adapted to be engaged by the friction-disk, and the spiral wings carried by the magnetic core, substantially as specified.

2. In an arc lamp, the combination, with rotating carbon-carriers, of a double solenoid formed of series and shunt coils, a magnetic core entering the solenoid, a friction-disk carried by the core and a friction-flange adapted to be engaged by the friction-disk, and the spiral wings *l*, substantially as specified.

3. In an arc lamp, the combination of the shafts B B', inclined to each other and provided with arms C C' and bevel-wheels *c c'*, the core G, carrying wings *l*, pinion *q*, friction-disk J, flange *k*, and solenoid F, substantially as specified.

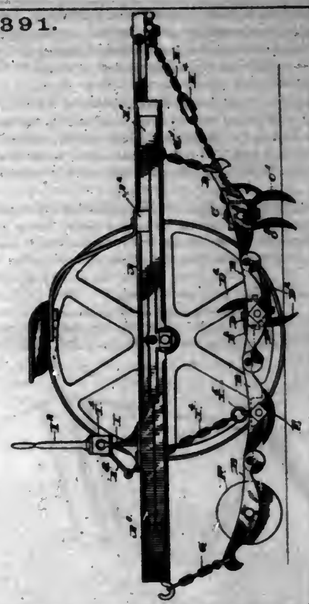
4. In an arc lamp, the combination, with the core G, provided with carrying-wings *l*, and notched friction-disk J, of the supporting-disk I and springs *o*, substantially as specified.

5. In an arc lamp, the combination, with the core G, provided with the spiral wings *l*, of the friction-disk J, provided with the notches *p*, for receiving the wings *l*, and the yielding support formed of the springs *o* and disk I, substantially as specified.

6. In an arc lamp, the combination, with the threaded core G and friction-disk J, of the nut H, provided with ratchet-teeth *m*, the disk I, having ratchet-teeth *n*, and the springs *o*, substantially as specified.

409,891. COMBINED CUTTER, PULVERIZER, DRAG, AND ROLLER. ANDREW J. CASEY, Lewisburg, assignor of one-half to Andrew J. Casey, Russellville, Ky. Filed Apr. 20, 1889. Serial No. 308,001. (No model.)

409,891.



Claim.—1. A main frame mounted on wheels, in combination with a flexible frame composed of jointed links hung to said main frame, and a harrow beam and roller fastened between said links, substantially as described.

2. A main frame mounted on wheels, in combination with a flexible frame hung to said main frame, a harrow beam and roller fastened in said flexible frame, and means, substantially as described, for lifting said flexible frame.

3. A main frame mounted on wheels and a flexible frame hung beneath the same, in combination with a harrow beam and roller fastened in said flexible frame, brackets on said main frame, a shaft journaled between said rollers, two levers fastened to said shaft, and a connection between one of said levers and the flexible frame, substantially as described.

4. A main frame mounted on wheels, a flexible frame hung beneath the same, and whiffletrees fastened to said main frame and directly connected with said flexible frame, in combination with a harrow beam and roller fastened in said flexible frame, and means, substantially as described, for raising the same.

5. A main frame mounted on wheels, in combination with a flexible frame hung beneath the same, a toothed cutter fixed in said under frame, a toothed pulverizer behind the cutter rotating therein, and a roller behind the pulverizer, also rotating therein, substantially as described.

6. A main frame on wheels, in combination with a flexible frame hung beneath the same, a toothed cutter fixed in said under frame, a toothed pulverizer behind said cutter, rotating therein, a drag fixed therein behind said pulverizer and a roller rotating therein behind said drag, substantially as described.

7. A main frame on wheels and a flexible frame hung beneath the same, in combination with a toothed cutter fixed within the latter frame and having a number of middle teeth removable therefrom, substantially as described.

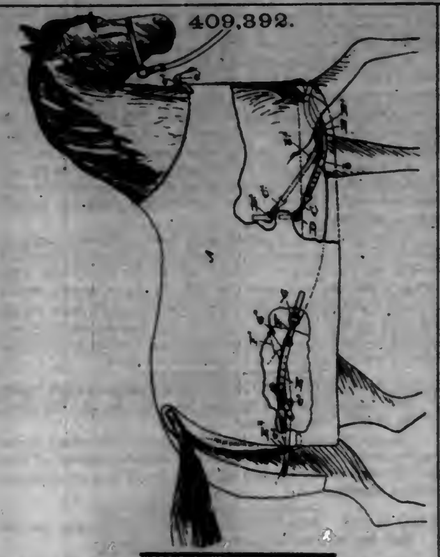
8. A main frame on wheels and a flexible frame hung beneath the same, in combination with a toothed cutter fixed within the latter frame and having a number of middle teeth removable therefrom, and a removable revolving pulverizer journaled back of said cutter within said frame, substantially as specified.

409,892. HORSE-BLANKET. JOSEPH I. OSBURN, Newmarket, Ontario, assignor to Naomi Coburn and Elizabeth Jane Martin, Toronto, Canada. Filed Dec. 1, 1888. Serial No. 292,371. (No model.)

Claim.—1. The combination, with a blanket A, of front straps B B', running buckles *b b'*, snaps C C', rings D D', rear straps E E', running buckles *c c'*, snaps F F', and rings G G', substantially as described, and for the purpose specified.

2. The combination, with a blanket A, of adjustable straps B B' and adjustable straps E E', designed to fasten onto rings or catches D D', the snaps on said straps, and rings or catches G G', substantially as described, and for the purpose specified.

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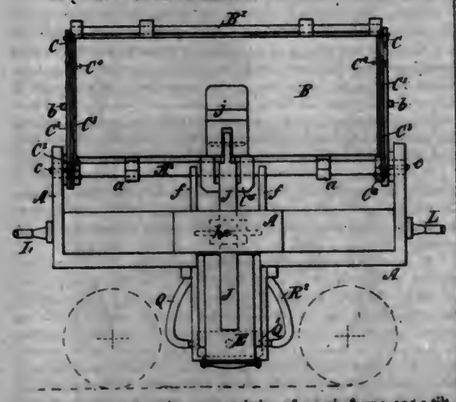


409,893. RIVETING-MACHINE. LÉON DELALOE and ALBERT PLAT, Paris, France. Filed May 20, 1887. Serial No. 239,594. (No model.) Patented in Belgium Aug. 25, 1885, No. 68,900; in France Dec. 7, 1885, No. 172,764; in Germany Mar. 13, 1886, No. 37,341; in Austria-Hungary Mar. 15, 1886, No. 11,600; in Luxemburg Mar. 15, 1886, No. 661; in Italy Mar. 31, 1886, No. 19,708, and in Spain Apr. 10, 1886, No. 9,550.



Claim.—In a machine for riveting, shearing, punching, &c., the combination, with a cylinder G and a reservoir G', of a piston D, working in the cylinder and provided with a rack *a*, a pinion *b*, engaging said rack and adapted to actuate the piston to perform the preliminary cutting or riveting operation, a valve-chamber E, provided with passages *g g'*, communicating with the cylinder, and a passage *d'*, communicating with the reservoir, an inlet *d*, and a valve *e*, adapted to connect the passages *d'* and *g'* and *d* and *g* alternately, all substantially as shown.

409,894. DUMPING-CAR. JOSEPH DUFF, Lansing, Ontario, Canada. Filed Dec. 17, 1888. Serial No. 293,735. (No model.) Patented in Canada Jan. 16, 1889, No. 30,568.



Claim.—1. A dumping-car consisting of a main frame, and a tilting body or box journaled therein, a compressed-air cylinder (carried by said frame) the piston of which causes said body or box to tilt, and an automatic catch for locking the latter in position, substantially as set forth and described.

2. In a dumping-car, the combination, with a main frame or platform, and a tilting box journaled therein, of a compressed-air cylinder the piston of which causes the box to tilt, a second cylinder having a sliding valve operated from an ordinary compressor and adapted to automatically supply the tilting-cylinder when the air-pressure is put on, and suitable connecting-pipes, substantially as described.

3. In a dumping-car, the combination, with a main frame or platform, and a tilting box journaled therein, of a compressed-air cylinder the piston of which causes the box to tilt, a second cylinder having a sliding valve and a reservoir, said second cylinder and reservoir being supplied with air from an ordinary compressor, a connection between the tilting-cylinder and the second cylinder, and also between the said second cylinder and the reservoir and pipes leading to a second car, substantially as and for the purpose specified.

4. In a dumping-car, the combination, with main frame or platform and a tilting box journaled therein, of a compressed-air cylinder the piston of which causes the box to tilt, a cylinder having a sliding valve and a reservoir, both supplied with air from an ordinary compressor, pipes connecting same together and with the tilting-cylinder, and an extra cylinder having a sliding valve, a handle for moving same in one direction and a spring for retaining it, said extra cylinder being also connected to the tilting-cylinder, whereby one particular car may be dumped, substantially as described.

5. In a dumping-car, the combination, with the frame and tilting box journaled therein, of the compressed-air cylinder E, having piston e^3, rod *d'*, and cross-head *e*, and lever d^3, pivoted to said cross-head and adapted to operate the tilting box, substantially as described.

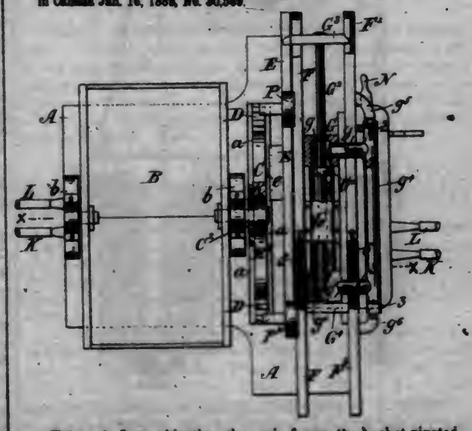
6. The combination, with the frame and tilting box and with the tilting-cylinder, and means whereby said box is caused to tilt by the operation of its piston, of the frame H, carrying a locking-pin *h*, said frame and pin being drawn backward by the upward movement of the piston, the locking-bar J, pivoted to the box, and a spring for causing said locking-pin to engage with said locking-bar, substantially as and for the purpose specified.

7. The combination, with the frame A, box B, and tilting-cylinder E, the piston-rod of which has cross-head *e*, having inclines e^3, of the frame H, having locking-pin *h* and roller G, impinged upon by said inclines so as to force back said frame and pin, springs *k*, and the locking-bar J, all arranged and operated substantially as and for the purpose specified.

8. The combination, with the frame A, of the tilting box B, having swinging door B', and a system of levers connected to said door and to the frame and box to operate said door when the box is tilted, substantially as shown and described.

9. The combination, with the cylinder M, having an air-pipe connected thereto, and having ports *k'*, *m*, and *m'*, and waste-ports 1 2, of the sliding piston-valve P, having passage O, and waste-openings m^2 and m^4, and a spring for moving said piston-valve in one direction, the reservoir *n*, pipes L and m^3, the tilting-cylinder, the piston therein, and the tilting box, substantially as described.

409,895. DUMPING-CAR. JOSEPH DUFF, Lansing, Ontario, Canada. Filed Dec. 17, 1888. Serial No. 293,736. (No model.) Patented in Canada Jan. 16, 1889, No. 30,569.



Claim.—1. In combination, the main frame, the bucket pivoted to tilt in either direction, a cylinder, a piston therein, pipe-connections from the ends of the cylinder to a suitable fluid-power supply, and operating-connections between the piston and the bucket, whereby

it may be tilted in either direction by the piston, substantially as described.

2. In combination, the main frame, the bucket pivoted to tilt in either direction, a cylinder, a piston therein having its piston-rod extending through the cylinder-head, pipe-connections from a source of power leading to the two ends of the cylinder, a sliding bar in connection with the piston-rod, and operating-connections between said bar and the pivoted bucket, substantially as described.

3. In a dumping-car, the combination, with a main platform and a box or bucket carried thereby and capable of being tilted in either direction, a compressed-air cylinder carried by such platform and having cross-heads in connection with its piston-rod operating said sliding frame, and adapted to move the latter in either direction longitudinally, an air-cylinder having a sliding valve and supplied from an ordinary compressor and connected to both ends of said operating-cylinder, substantially as and for the purpose described.

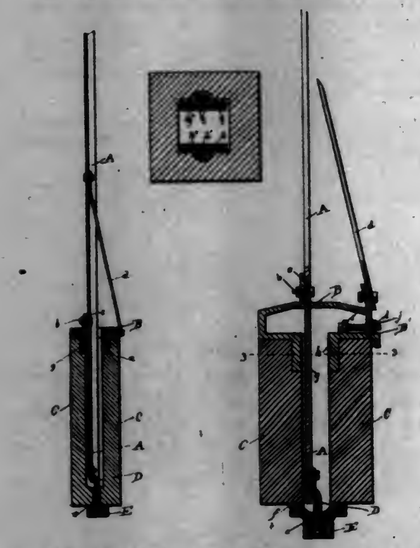
4. In a dumping-car, the combination, with the platform and a bucket adapted to be tilted in either direction, of the segmental gear C, connected with said box or bucket, sliding rack D, having slots *d d'*, sliding bar E, having pin *e* fitting into one of said slots, and compressed air-cylinder G, the piston-rod of which has cross-heads in connection with said sliding bar, substantially as and for the purpose specified.

5. In combination, the main platform, the bucket pivoted to tilt in either direction, locking-bars R R', for holding the bucket in position, a cylinder having pipe-connections from each end to a source of power, whereby the piston therein may be moved in either direction, and operating-connections from the piston to the bucket, said connections acting upon the bars R R' to withdraw one or the other to allow the bucket to turn, substantially as described.

6. The combination, with the segmental gear C, having projection C^3, and with the sliding bar E, of the rollers P P', vertical bars P^3 P^3, carrying said rollers, cross-heads or cranks Q Q', hung from the platform and connected with the lower ends of said bars, the locking-bars R R', adapted to lock the segmental gear, and suitable tension-springs, all substantially as and for the purpose specified.

7. The combination, with the sliding bar E and cylinder G, having chambers *g* and *g'*, a single piston, and a piston-rod with cross-heads G^3 and G^4 on its ends, of the air-pipe g^4, connected to the chambers of said operating-cylinder and to the air-cylinders K' and M, and air-pipes K and L, all arranged substantially as and for the purpose specified.

409,396. FENCE-POST. FRANK L. FAIRCHILD, Mount Vernon, Ohio. Filed Nov. 14, 1888. Serial No. 290,856. (No model.)



Claim.—1. A fence-post comprising, in combination, the post-stem, the cap, the pottery or burnt-clay base, the screw-threaded stub end, and the internally-screw-threaded covering-cap applied to the stub end from the under side of the base, substantially as hereinbefore set forth.

2. The combination of the post-stem, the burnt-clay or pottery base, a separate or removable stub end for the stem, and a fastening device applied to the stub end from the under side of the base, substantially as hereinbefore set forth.

3. The combination, with the burnt-clay base, of the post-stem having a screw-threaded lower end, and the internally-screw-threaded covering-cap made of cast-iron or other practically non-corrosive metal applied to the said end of the stem from the bottom of the base, and acting to cover the exposed end of the stem and to close the base at the bottom, as and for the purposes hereinbefore set forth.

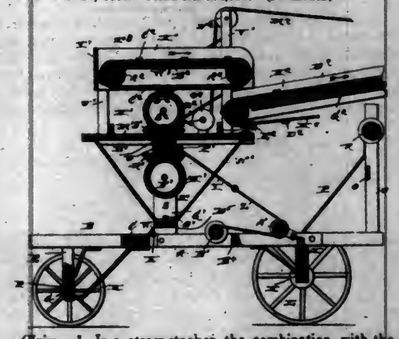
4. In combination with the base and the post-stem, the cap provided with bearings or projecting pieces adjustable to and from each other and adapted to take against opposite sides of the base, substantially as hereinbefore set forth.

5. The burnt-clay or pottery base made hollow and having an opening at its bottom, and the wrought-metal post-stem inserted in the base and projecting at its lower end through the opening in the bottom of the base, in combination with the cap or fastener applied to the said projecting end from the under side of the base, and the soft-metal washer interposed between said fastener and the base, whereby the stem is protected and the bottom is sealed air and water tight, as and for the purposes hereinbefore set forth.

409,397. COMPOUND FOR PREVENTING MORTAR FROM FREEZING. GUSTAVE GARRELL, Baltimore, Md. Filed Dec. 22, 1888. Serial No. 294,377. (No specimens.)

Claim.—The composition herein described for preventing mortar from freezing, consisting of common salt, saltpeter, sulphate of iron, and coal-ashes, or its described equivalent, mixed in or about the proportions described.

409,398. STRAW-STACKER. JEREMIAH P. GAUMER, Dow, Ind. Filed Mar. 27, 1889. Serial No. 304,967. (No model.)



Claim.—1. In a straw-stacker, the combination, with the main frame, of the frame S, hinged thereon, the turn-table pivoted on the frame S, the platform supported on said turn-table, the platform-conveyer, the frame D^2, pivoted to the turn-table frame and having the endless conveyer, the lower end of which is below the platform, the driving-shaft journaled in the frame S, and gears and connections between said driving-shaft and the endless conveyers, whereby the latter are operated, substantially as described.

2. In a straw-stacking machine, the rectangular turn-table pivotally mounted on the main frame, composed of the crossed beams L' and M', and provided with the rectangular frame K', and the vertical standards U' and V', rising therefrom and having the platform and the endless platform-conveyer, the pivoted conveyer-frame connected to the turn-table frame and having the endless conveyer, gears and connections, substantially as set forth, to operate the conveyers, the winch, and the elevating-ropes connected thereto and to the pivoted conveyer-frame to raise and lower the latter, substantially as described.

3. In a straw-stacker, the platform having the endless conveyer traveling horizontally over the same and the pivoted conveyer-frame D^2, with its lower end below the level of the platform, and the endless conveyer traveling over said conveyer-frame, substantially as described.

4. In a straw-stacker, the combination of the main frame having the vertical frame S, the driving-shaft journaled in said vertical frame, the vertical shaft P', journaled in frame S and geared to the driving-shaft, the turn-table pivoted on said vertical shaft, the frame supported on the turn-table and having the platform, the shaft S^2, journaled in bearings on said frame and geared to the vertical shaft, the endless conveyer operating on the platform, the conveyer-frame pivoted to the turn-table frame, the endless conveyer operating on the same, and the pulleys and belts connecting said conveyers to the shaft S^2, substantially as described.

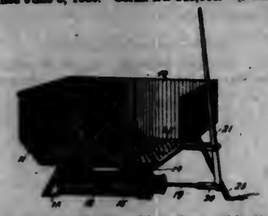
5. The main frame mounted on wheels and having the supporting-frame at its rear end, the frame S, hinged on the main frame comprising the standards T, the plate U, connecting their outer ends and the beam B^2, connecting the standards near their inner ends, the turn-table pivoted on the frame S and having the frame supporting the platform, the conveyer-frame pivoted to said turn-table frame, and the endless conveyers on the platform and conveyer-frame, substantially as described.

6. In a straw-stacking machine, the main frame, the hinged frame S thereon, comprising the standards T, the plate U, and the beam B^2, having the stud O' rising from the center thereof, and the turn-table pivoted on the frame S by the vertical shaft P' and carrying the platform and pivoted conveyer-frame, said turn-table having the depending truss-yoke centrally pivoted on the stud O' of the beam B^2, substantially as described.

7. In a straw-stacker, the main frame, in combination with the frame S, hinged thereon, the turn-table pivoted on the frame S, and the horizontally-arranged platform supported on the turn-table, as set forth.

8. In a straw-stacker, the main frame, in combination with the frame S, hinged thereon, the turn-table pivoted on the frame S, the platform supported horizontally on the turn-table, and the conveyer-frame D^2, pivoted to the turn-table and having the endless conveyer, as set forth.

409,399. WASHING-MACHINE. HIRAM H. GUTFORD, Rossommon, Mich. Filed June 5, 1889. Serial No. 312,111. (No model.)



Claim.—1. In a washing-machine, the combination, with a body having ports in the bottom thereof, and a cylinder suspended beneath the bottom of the body and connected with the said ports, of a piston held to slide in the cylinder, provided with a piston-rod extending through one end of the said cylinder, and a lever connected with the outer end of the said piston-rod, substantially as shown and described.

2. In a washing-machine, the combination, with a body having ports formed in the bottom thereof and provided with a transverse partition separating the ports, of a cylinder held beneath the bottom of the body and connected with the ports of the latter, a piston held to reciprocate in the cylinder, provided with a piston-rod projecting through one end thereof, and a lever fulcrumed upon the body, connected with the said piston-rod, all combined for operation substantially as shown and described.

3. In a washing-machine, the combination, with a body provided with a partition secured to the bottom, dividing the same into two compartments, a port formed in each of the said compartments, and a cylinder supported beneath the said body connected with the ports of the body, of a piston held to reciprocate in the cylinder, provided with an attached rod extending through one end of the same, a lever fulcrumed to the body and connected with the piston-rod, and a perforated false bottom supported a distance above the main bottom of the body in each of the compartments formed therein, substantially as and for the purpose specified.

409,400. DRAPERY-TRIMMING. PAUL GUMBINNER, New York, N. Y. Filed Apr. 24, 1889. Serial No. 308,496. (No model.)



Claim.—1. A drapery-trimming comprising a series of sacks having shirred lower ends and a band to which the sacks are secured ranging at right angles to the said sacks, substantially as described.

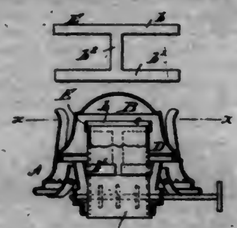
2. A drapery-trimming comprising a series of connected sacks shirred near their lower ends and provided with puffy folds below the shirring, substantially as described.

3. A drapery-trimming comprising a series of connected sacks shirred near their lower ends and provided with puffy folds below the shirring, and with pendent ornaments below the puffy folds, substantially as herein shown and described.

4. A drapery-trimming comprising a band, a series of sacks depending from the band, shirred near their lower ends and provided with puffy folds below the shirring, and pendent ornaments secured to the band between the sacks, substantially as described.

5. A drapery-trimming consisting of a band, a series of sacks depending from the band, shirred near their lower ends and provided with puffy folds below the shirring, and with pendent ornaments below the puffy folds, and pendent ornaments secured to the band between the sacks, substantially as herein shown and described.

409,401. ATTACHMENT FOR LAMP-BURNERS. WILLIAM HOLMES, Ulster Park, N. Y. Filed Sept. 12, 1888. Serial No. 285,188. (No model.)



Claim.—1. An attachment for wick-tubes, consisting of parallel plates and connecting-strip, made substantially as herein described, and adapted for application to wick-tubes, as set forth.

2. The attachment E for wick-tubes of lamps, formed of sheet metal, with the parallel plates *b b'* and connecting-piece b^3, in combination with the wick-tube C, the attachment being bent around the same, substantially as described.

409,402. SEAT-BACK FOR ROAD-CARTS. JOHN D. HOUSE, Lowville, N. Y. Filed June 22, 1889. Serial No. 315,200. (No model.)



Claim.—The herein-described seat for vehicles, the same comprising in combination a seat proper, a back pivotally connected to the seat by means of the rods C, the spiral springs F, arranged upon said rods with one end attached to the seat-bottom and the other to the supporting-rods of the back, and a guard-strap connecting said back with the rear edge of the seat, all arranged and operating substantially as described.

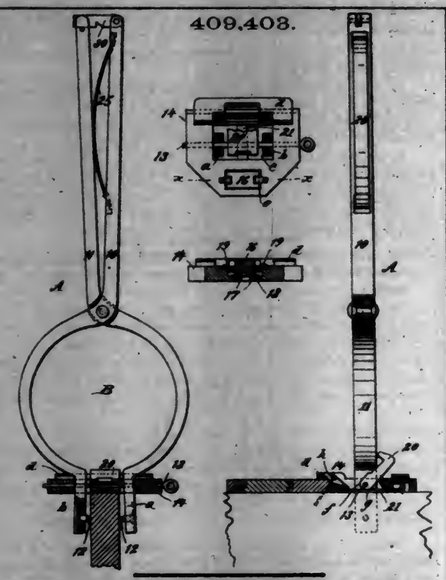
409,403. FLOOR-JACK. WILLIAM W. IRWIN, Silver Lake, Oreg. Filed Nov. 13, 1888. Serial No. 290,053. (No model.)

Claim.—1. In a floor-jack, the combination, with a tongs-like lever, the sections of which spread to form an opening, as B, of clamping-points carried by the lever-sections, a rod or bolt passing through the lever-sections, a presser-foot loosely mounted on the rod or bolt, and a nail-set also mounted on the rod or bolt, substantially as described.

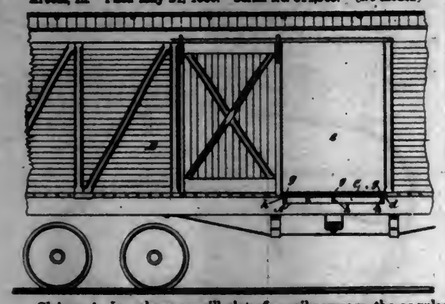
2. In a floor-jack, the combination, with a tongs-like lever, the sections of which spread to form an opening, as B, of clamping-points carried by the lever-sections, a presser-foot 14, carried by the lever-sections, said presser-foot being formed with a flange, as *d*, and a nail-set mounted between the lever-sections, substantially as described.

3. In a floor-jack, the combination, with a tongs-like lever provided with clamping-points, of a presser-foot, connection between the presser-foot and the lever-sections, a block carried by the presser-foot, a spring arranged in connection with the block, and spikes carried by the block, substantially as described.

409,403.



409,404. SILL-PLATE FOR RAILWAY-CARS. ERNEST E. JACOBS, Arcola, Ill. Filed May 21, 1889. Serial No. 311,563. (No model.)



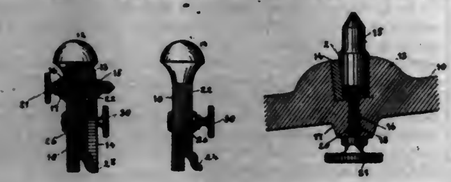
Claim.—1. In a doorway sill-plate for railway-cars, the angular plate consisting of floor and outside front portions recessed along their meeting surfaces and provided with a roller arranged to freely rotate within said recessed part of the plate and supported by suitable bearings therein, and having its body arranged to project beyond the exterior surfaces of the floor and outside portions of the plate, substantially as specified.

2. In a doorway sill-plate for railway-cars, the angular plate A, having floor and outside portions *b c*, provided with a longitudinal recess *f* where said portions meet, in combination with the roller C, arranged to freely rotate within said recess, with its body portion projecting beyond the exterior surfaces of the portions *b c* and constructed with intermediate and end journals, and detachable bearings *h*, constructed to occupy a sunken position within the body of the roller, essentially as shown and described.

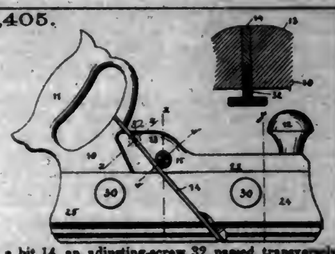
3. As a new article of manufacture, a doorway sill-plate for railway-cars, provided with a projecting roller along its upper front marginal portion, substantially as set forth.

409,405. MOLDING-PLANE. EDWARD D. JOHNSON, Flagstaff, Ariz. Filed Sept. 19, 1888. Serial No. 285,735. (No model.)

Claim.—1. The combination, with a plane-body 10, of formers 24



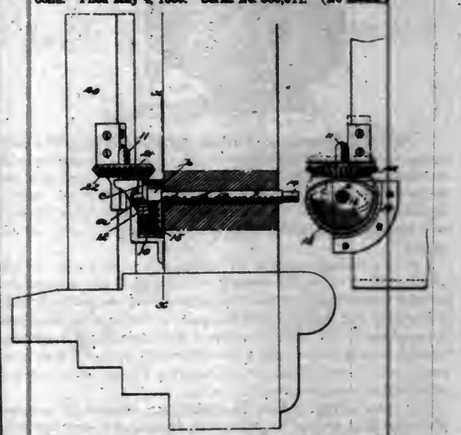
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and 25, a bit 14, an adjusting-screw 32, passed transversely through the body 10 into engagement with the inner edge of the bit, a wedge-faced clamping-bolt 15, and a screw arranged in connection with said bolt, substantially as described.

2. The combination, with a molding-plane back or body, of formers 24 and 25, formed with grooves that are adapted to receive flanges 26, which project from the plane-body parallel with its lower edge, set-screws by which the formers are clamped to the plane-body, a bit 14, which passes downward between the formers, a wedge-faced clamping-nut, an operating-screw arranged in connection with the nut, and a retaining-pin arranged in connection with the screw, substantially as described.

409,406. SHUTTER-WORKER. RALPH W. JOSLIN, Thomaston, Conn. Filed May 4, 1889. Serial No. 309,611. (No model.)



Claim.—1. In a shutter-worker, the combination, with a segmental gear arranged for connection with a shutter, of a shaft carrying a segmental gear for engaging the teeth of the segmental gear carried by the shutter, and an eccentric bearing-face opposite the segmental gear for engaging the under side of the said segmental gear carried by the shutter before and after the gears are in and out of engagement, whereby the shutter will be raised prior to being swung to a closed position and lowered when in the closed position, substantially as and for the purpose set forth.

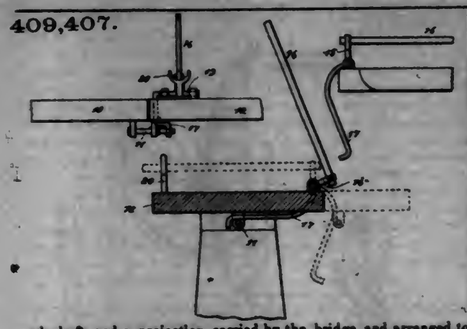
2. In a shutter-operating device, the combination, with a disk formed with a segmental gear and arranged for connection with a shutter, of a bracket formed with an upwardly-extending pintle which passes through the shutter-disk at a point coincident with the axis of the gear, a shaft carrying a gear 15, having an eccentric-faced flange *e*, the outer end of the shaft being supported in a bearing formed in the bracket, substantially as described.

3. In a shutter-operating device, the combination, with a disk formed with a segmental gear and arranged for connection with a shutter, of a bracket formed with an upwardly-extending pintle which passes through the shutter-disk at a point coincident with the axis of the gear, a stop carried by the bracket, a shaft provided with a segmental gear, and an eccentric flange having a stop, the outer end of the shaft being supported in a bearing formed in the bracket, substantially as described.

409,407. BRIDGE-GATE. CHARLES KIRK, New London, Ohio. Filed May 3, 1889. Serial No. 309,421. (No model.)

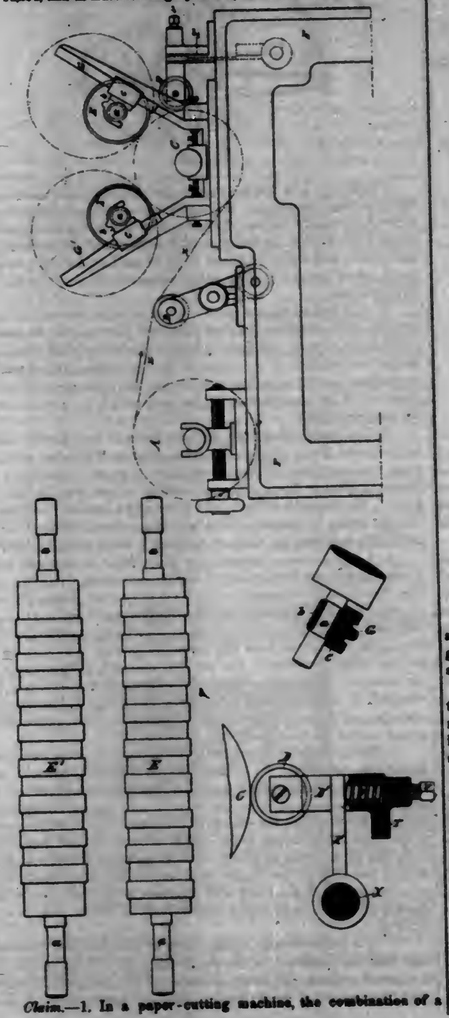
Claim.—In a gate for swinging bridges, the combination, with a rock-shaft provided with a standard 15, of a bridge bar or barrier rigidly connected to said standard, a lever rigidly connected to the

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rock-shaft, and a projection carried by the bridge and arranged to engage the lever, substantially as described.

409,408. MACHINERY FOR CUTTING AND WINDING STRIPS OF PAPER FOR CIGARETTES OR OTHER PURPOSES. LEONIDE LACROIX, Fils, Maubeuge sur Sabl, France. Filed Mar. 22, 1888. Serial No. 268,166. (No model.) Patented in France Jan. 5, 1887, No. 180,709; in Germany July 14, 1887, No. 42,263; in Spain Aug. 26, 1887, No. 11,251, and in Austria-Hungary Dec. 3, 1887, No. 37,604.



Claim.—1. In a paper-cutting machine, the combination of a feed-cylinder and cutting-disks with two winding-reels bearing on the feed-cylinder, and having on their peripheries rings at a distance apart equal to the width of the rings, and the rings on one reel being in line with the spaces on the other, substantially as described.

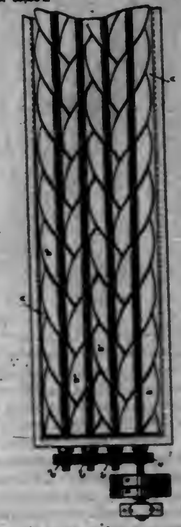
2. In a paper-cutting machine, the combination of a feed-cylinder with a cutting apparatus consisting of a cross-piece having guiding-partitions, forks movable therein toward and from the feed-cylinder, screws for adjusting the forks, springs between the forks and screws, and cutting-disks journaled in the forks, as and for the purpose set forth.

3. In a paper-cutting machine, the combination of the feed-cylinder and a series of cutting-disks with the two reels, upon which alternate strips are wound, and both cutting-disks and reels bearing upon the feed-cylinder, and movable bearings for the reels allowing movement away from the cylinder.

4. In a paper-cutting machine, the combination of a feed-cylinder with cutting apparatus consisting of a guide-piece, forks movable therein toward and from the feed-cylinder, movable plates or rods supporting the forks, and springs in the guide-piece bearing against the forks, and cutting-disks journaled in the forks.

5. In a paper-cutting machine, the combination of a feed-cylinder with cutting apparatus consisting of a guide-piece, forks movable in recesses therein, cutting-disks journaled in the forks, and spring-plates vibrating on a center and supporting the said forks, all substantially as described

409,409. APPARATUS FOR TREATING SOLIDS WITH GASES. CARL LAFFER, London, England. Filed June 20, 1887. Serial No. 241,984. (No model.) Patented in England June 21, 1886, No. 8,201; in Germany July 31, 1886, No. 39,061; in France Dec. 7, 1886, No. 167,701; in Belgium Dec. 30, 1886, No. 66,061, and in Austria-Hungary Dec. 2, 1887, No. 36,840 and No. 49,234.



Claim.—1. The combination of two or more approximately-parallel Archimedean screws having intersecting circles of rotation, and geared so as to rotate synchronously, and a trough A, substantially as and for the purposes described.

2. The combination of the trough A, having inlet E for materials to be mixed, and outlet F for the mixed materials, with two or more rotating conveying and mixing Archimedean screws B B' B², having intersecting circles of rotation and geared to rotate synchronously, substantially as described.

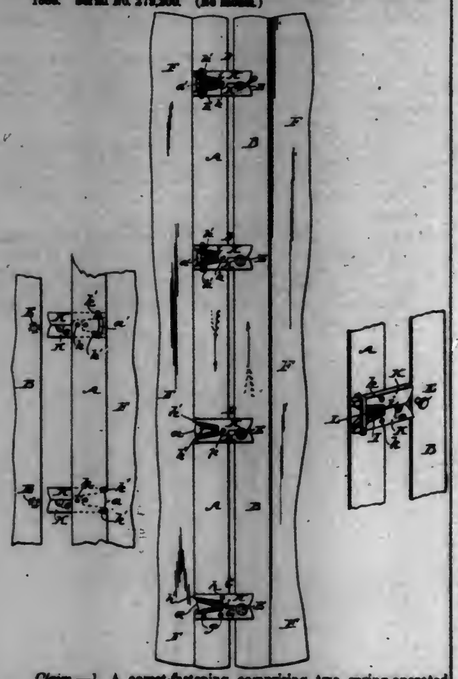
3. In apparatus for chemically treating solid materials with gases, the combination of a long closed chamber A, containing the gases and the materials to be treated therewith, with two or more parallel series of Archimedean screws having intersecting arcs of rotation, whereby the material is stirred up and acted upon by the gases contained in or passing through the upper part of the chamber.

4. In an apparatus for exposing materials to the action of fluids, the combination of two or more lines of mixing, stirring, and conveying screws rotating synchronously among the material to be exposed to the fluid and having intersecting circles of rotation, a closed chamber having its bottom formed to closely follow and contain the cylinders of rotation of the revolving series of screws and contain the gases to which the material stirred is to be subjected, whereby so long as the stirrers in their revolution appear above the material every

part of the material must be violently stirred and thrown up into the gases.

5. An apparatus for treating materials with gases, comprising a closed chamber or trough, a plurality of intersecting spirals or Archimedean screws arranged in parallel positions within said chamber and having intersecting circles of rotation, the edges of the blades of one spiral extending into close proximity to the sides of the blades of the other, preventing adherence thereto of material being treated, substantially as described.

409,410. CORSET-CLASP. JOHN M. V. LE BEAU, New Orleans, La., assignor of one-half to Edward J. Buchinger, same place. Filed July 6, 1888. Serial No. 279,209. (No model.)



Claim.—1. A corset-fastening comprising two spring-operated jaws in vertical alignment, contacting at their adjacent straight longitudinal edges and beveled or inclined inwardly at their outer ends, one of said straight contacting edges being notched, as at *c*, and the stud, whereby the stud may be released by moving it out of the notch and against the adjacent straight edge of the other jaw, or moving the fastener bodily in the opposite direction, substantially as set forth.

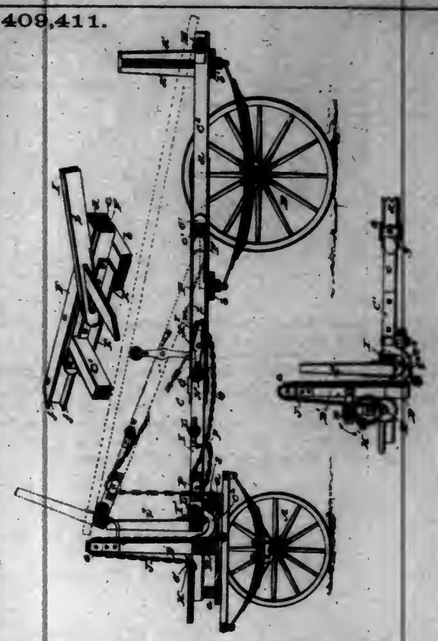
2. The combination, with the busk B, having studs E, of the busk A, having fastenings consisting of spring-pressed jaws beveled or rounded at their outer ends toward their meeting edges to guide said studs, the lower jaw of one fastening being relatively fixed, the notches *c* in the upper edges of the several lower jaws, the lower edges of the upper jaws being plain or straight, whereby the studs will open the jaws by pressing against the ends thereof, substantially as set forth.

3. A corset-clasp comprising two busks, one provided with a series of fastenings having movable or spring-actuated jaws, and the other having a series of pins or buttons adapted for engagement with the fastenings, and the movable jaws of the fastenings having lips or guides which are hooked around at the back of the busk to which they are attached, the busk having curved surfaces at the points where the lips hook around it, substantially as herein set forth.

4. In a corset-clasp, the combination, with a busk A, of a fastening comprising a fixed jaw G, having a notch *c* in its upper edge, a movable jaw H, a spring closing said jaw, a series of fastenings comprising two movable spring-actuated jaws K K, the lower ones having notches *c*, and a busk B, provided with series of pins or buttons E, adapted to enter the notches *c* of the fastenings, substantially as described, for the purposes set forth.

409,411. LUMBER-WAGON. WILLIAM LOMBARDY and JOHN H. LOMBARDY, Baltimore, Md., assignors to the Lombardy Wagon Manufacturing Company, same place. Filed Dec. 12, 1888. Serial No. 293,267. (No model.)

409,411.



Claim.—1. In a lumber-wagon, the combination, with the main frame or body portion and the windlass mechanism secured thereto, of the supplemental frame I, having a movable bearing at its rear end on the body portion, its forward end connected with the said windlass mechanism, said frame I adapted to be moved forward while its front end is raised upward by the windlass, substantially as and for the purpose specified.

2. In a lumber-wagon, the combination, with the main or body portion, of the supplemental frame disposed between the side beams of the body portion, said frame having a movable pivotal bearing at its rear end on the said side bars of the main frame, and a windlass mechanism secured upon the main frame and connected to the forward end of the supplemental frame, substantially as shown, and for the purpose specified.

3. The combination, with the main frame or body portion, of the supplemental frame I, disposed between the side beams of the main frame, said supplemental frame consisting of parallel side bars *i i*, a forward cross-bar I', and transverse rollers L L, journaled in the side bars *i i*, the rear ends of said bars *i i* having a movable bearing in the side beams of the main frame, and means for elevating the front end of the supplemental frame, substantially as shown and described.

4. A lumber-wagon consisting of the trucks A B, the main frame C, consisting of the fixed portion C' and the rearwardly-extensible portion C², a cross-bar mounted on the front truck and connected with the fixed frame C', standards mounted on the cross-bars, and the supplemental frame I, disposed upon the fixed portion C', having a pivotal bearing at its rear end upon said frame, its forward end disposed to the rear of the cross-bar D, and windlass mechanism H', mounted to the cross-bar, and a chain connected to said windlass, passed over the standards D', and connected to the lower front edge of the frame I, whereby said frame may be elevated at its forward end, substantially as and for the purpose described.

5. The combination, with the truck-frames, the main frame supported thereon, pulleys *p p*, journaled in the forward portion of said frame, and the supplemental frame I, arranged as described, of the adjustable bearing secured to said frame I, said bearing consisting of the arms M, pivotal on the arms *i i* of the frame, a roller N, journaled in the upper ends of said arms, chains connected at one end to the lower end of the arms M, passed over the pulleys *p p*, and connected at their free ends to main frame when the bearing-rollers are in their lower position, and connected with the front truck-frame when said bearing-roller N is to be raised, substantially as and for the purpose set forth.

6. In a lumber-wagon, substantially as described, the combination, with the beams *c d*, of the clip device G for holding said beams in adjusted positions, said device consisting of the C-shaped clip passed about the beams *c d*, the cross-bar *g*, and the adjusting-screw *g*², passing through said bar and bearing against the bar *d*, substantially as and for the purpose described.

7. In a lumber-wagon, the combination, with the trucks A B, the cross-bar D, mounted thereon, the raising mechanism secured thereto, the main frame C, supported on the trucks, said frame consisting of the stationary portion C', composed of the side bars *c c* and the end bar *d*, said bars connected at their forward ends to the cross-bar D, the movable portion C², consisting of the side beams *d d*, embracing the beams *c c* of frame C', and a transverse roller-bearing R, journaled in the rear ends of said beams *d d*, of the supplemental frame I, consisting of the side beams *i i*, disposed within the forward ends of the beams *c c*, a transverse beam I', connecting the forward end of said beams *i i*, and roller-bearings L L, journaled transversely in said beams, said beams having a pivotal bearing at their rear ends upon the beams *c c* and connected at their forward ends with the raising mechanism, substantially as and for the purpose described.

409,412. TENSION-REGULATING DEVICE FOR DRIVING-BANDS OF SPINNING-MACHINES. EMILE MARESTAING, Providence, R. I. Filed Apr. 27, 1887. Serial No. 236,200. (No model.) Patented in England May 7, 1887, No. 6,749; in France Nov. 26, 1887, No. 187,264, and in Belgium Dec. 1, 1887, No. 79,749.



Claim.—1. The combination of a set of spindles comprising a row on each side of the machine, an intermediate driving-drum occupying a mid-plane in respect to the whirls, and a single band driving first one row and then the other row of said spindles, passing alternately around the drum and around a spindle-whirl and passing over and in contact with the drum in crossing from row to row at one end of the set and under and in contact with the drum in crossing from row to row at the opposite end of the set, and a tension device acting directly upon the band between two successive points of driving-contact of said band, substantially as specified.

2. The combination of a row of spindles, a driving-drum therefor, an endless band passing alternately around the drum and around a spindle-whirl, and having a special tension-loop formed by carrying the band outward from the drum and thence back to said drum, and a tension-pulley applied to said special tension-loop of the band, substantially as specified.

3. The combination of a row of spindles, a driving-drum therefor, a driving-band passing alternately around the drum and around a spindle-whirl, and a tension device located in a different horizontal plane from that of the drum and applied to the band in a loop extending from the drum, substantially as specified.

4. The combination of a series of spindles, a driving-drum therefor, a driving-band passing alternately around the drum and around a spindle-whirl, and a tension device applied to the band in a loop extending from the drum, the pulley of said tension device being inclined in respect to the axis of the drum, whereby it directs the band from the front of the drum at one end of the series of spindles to the rear of the drum at the opposite end of said series, substantially as specified.

409,413. END-GATE FOR WAGONS. SAMUEL J. MASON, Mead, Neb. Filed May 14, 1889. Serial No. 310,708. (No model.)



Claim.—1. The combination of the flat metal combined re-enforcing and hinge wagon-plate B, extending the full width of the rear end of the wagon and formed at its outer edge with the hinges B², and the gate hinge-plate D, having the hinges at its lower edge and hinged to said wagon-plate, substantially as set forth.

2. The combination, with a wagon-body having a hinged end-gate, of the levers G, pivoted near their lower ends to the wagon-body, and the connecting-rods I, pivoted at one end to the gate and at their other ends to the levers G, near the upper ends of the same, substantially as set forth.

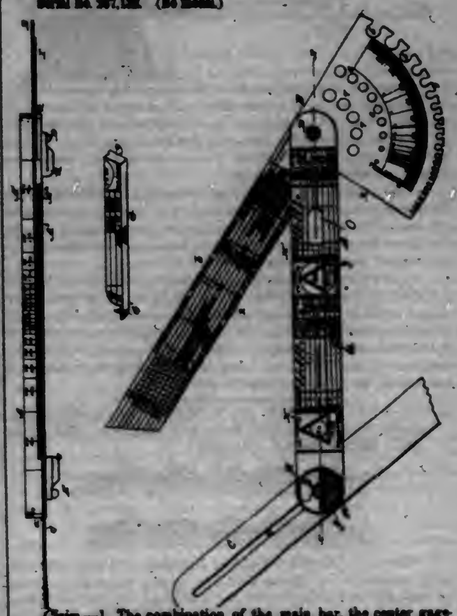
3. The combination, with a wagon-body having a hinged end-gate, of the levers G, pivoted near their lower ends to the wagon-body and formed at their lower ends with the steps G', and the connecting-rods I, pivoted at one end to the gate and at their other ends to the levers G, near the upper ends of the same, substantially as set forth.

4. The combination, with a wagon, of the end-gate, the pivoted levers and pivoted connecting-rods, and the hinge formed of the wagon and gate hinge-plates, and the removable hinge-rod, substantially as set forth.

5. The combination, with a wagon, of the end-gate, the pivoted levers and pivoted connecting-rods and the gate hinge-plate, the wagon-plate hinged to the gate-plate and formed with the transverse slots, and the threaded bolts having the nuts, substantially as set forth.

6. The combination, with a wagon, of the end-gate, the pivoted levers and pivoted connecting-rods, the gate hinge-plate, the wagon hinge-plate formed with the transverse slots, the removable hinge-rod, and the threaded bolts having the nuts on their lower ends, substantially as set forth.

409,414. COMBINED BEVEL, PROTRACTOR, GAGE, CENTER-SQUARE, &c. ALPHEUS B. MIMS, Dallas, Tex. Filed Mar. 12, 1888. Serial No. 267,122. (No model.)



Claim.—1. The combination of the main bar, the center gage-plate having a recess formed with diverging walls, fastenings for securing the gage-plate to the main bar, with the side edge of such bar at right angles to a line equally dividing the angle between the walls of the recess in the gage-plate, and a blade B, connected with said main bar, all substantially as described, whereby when blade B is turned at right angles to the main bar one of the edges of said blade will equally divide the angle between the walls of the recess in the gage-plate, substantially as set forth.

2. The combination of the main bar having studs j^3, the plate J, having recess *j*, and openings j^3 to receive studs j^3, and the quadrant-plate having the edge of its blade equally dividing the angle between the walls of recess *j*, substantially as set forth.

3. A compound tool, substantially as described, comprising the body A, having a level, the inclinometer-blade pivoted to such body, the pivoted pointer, the graduations along which said pointer registers, and the quadrant pivoted to said body, all substantially as set forth.

4. The compound tool comprising the body A, the plate C, having slot *c*, the screw connecting said plate C to the body, the pointer F, and the graduations *f*, along which said pointer registers, the quadrant-plate pivoted to the body and having its head formed with a curved edge, and having graduations forming a protractor, and having openings in said curved edge forming a metal gage, openings being made through said head, forming screw and head gages, substantially as set forth.

5. The compound tool herein described, comprising the body A, the quadrant-plate pivoted thereto, and the thread-gage I, pivoted to the body, substantially as and for the purposes specified.

6. The improved compound tool herein described, consisting of the body A, having slots *a a'* formed from its opposite ends, and having a socket F and graduations *f*, the level on said body, the plate C, the screw for pivoting said plate C to the body, the pivoted pointer registering along graduations *f*, the quadrant-plate having a head and a shank, the latter being fitted to slot *a*, and the head having wire and metal gage, the screw for pivoting the quadrant-plate to the body, and the thread-gage, also pivoted on said screw between the quadrant-plate and the strip A^3 of the body, all substantially as and for the purposes specified.

409,415. LIQUID BLACKING BOX. PAUL G. METZLER and RODERIC S. DAVIS, Leadville, Colo. Filed Jan. 4, 1889. Serial No. 295,425. (No model.)

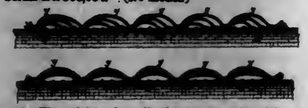


Claim.—1. The combination, with an ordinary dauber 11, having its handle and head in one piece and provided with a hole 13 through its head, of a box 10 on top of the head and provided with an outlet-tube 12, entering said hole, flexible clips or wings 19, bent around the edge of the head, and a valve operating over said outlet-let-tube, substantially as set forth.

2. As an improved article of manufacture, a liquid-blacking box for ordinary daubers, consisting in the box 10, having an outlet-tube 12, a valve therefor provided with an operating-rod extending through the top of the box, and a circularly-arranged series of flexible clips or wings 19, substantially as set forth.

3. As an improved article of manufacture, a liquid-blacking box for ordinary daubers, consisting in the box 10, having a circularly-arranged series of flexible attaching-clips 19, an outlet-tube 12, a crank-shaft 16, extending through the top and provided at its lower end with a horizontal arm having a valve 18 thereon and an operating-handle at its upper end, and a stop 18^a in the bottom of the box to one side of the tube 12, substantially as set forth.

409,416. TRIMMING FOR FABRICS. JOSEPH D. MORLEY, Philadelphia, Pa., assignor to Scott, Morley & Co., same place. Filed Apr. 26, 1889. Serial No. 308,964. (No model.)



Claim.—1. The within-described trimming for fabrics, said trimming consisting of a festoon border or edging composed of a row of overedge stitches applied to the raw or cut edge of the fabric, and festoon-loops confined to the fabric by certain of such overedge stitches, a series of stitches being formed between the successive points of connection of the festoon-loops, and these intervening stitches confining the raw or cut edge of the fabric between such points of connection of the festoon-loops, substantially as specified.

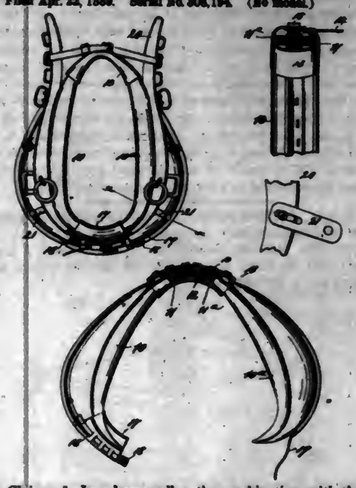
2. The within-described trimming for fabrics, said trimming consisting of a festoon border or edging composed of a row of overedge stitches and multiple-thread festoon-loops confined by said stitches to the edge of the fabric, the loops having their component threads spread, so as to be confined by different stitches of the binding row, substantially as specified.

409,417. PADDED HAT. JESSE H. MOYER, Temple, Tex. Filed Apr. 15, 1889. Serial No. 307,300. (No model.)



Claim.—The combination, with a hat, of the strip B, of fibrous material, arranged between the sweat-band and the body of the hat and provided with the hooks *c*, projecting from one edge and engaging the body of the hat to hold the said pad in position, substantially as herein shown and described.

409,418. HORSE-COLLAR. WILLIAM MEER, Fountain City, Wis. Filed Apr. 22, 1889. Serial No. 308,194. (No model.)



Claim.—1. In a horse-collar, the combination, with the sections 10 and 10^a, having their upper ends adjustably connected together, of the shield 13, receiving the said upper ends and provided with the flap 14, substantially as described.

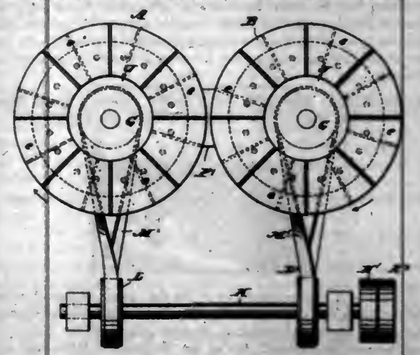
2. In a horse-collar, the combination, with the sections 10 and 10^a, having their upper ends adjustably connected together, of the shield 13, having its edges united by the lacing-strip 15, and provided with the flap 14, substantially as herein shown and described.

3. In a horse-collar, the combinations of the sections 10 and 10^a, provided with the apertured flaps 11 and 11^a, the lacing-strip 12, and the shield 13, substantially as described.

4. A horse-collar consisting of the sections 10 and 10^a, provided with the apertured flaps 11 and 11^a, the lacing-strip 12, the shield 13, the straps 16 and 19, secured to the lower ends of the sections, and the housing 17, receiving the said lower ends of the sections, substantially as herein shown and described.

5. The combination, with the collar herein described, formed of the sections 10 10^a, united at top and bottom, substantially as described, of the hames 20, the plates 21, secured to the hames, and the set-screws 22, substantially as set forth.

409,419. MACHINE FOR GRINDING AND POLISHING STONE. JOHN MCBERNEY, New York, N. Y., assignor of one-third to Moses Roth, same place. Filed July 18, 1888. Serial No. 280,301. (No model.)

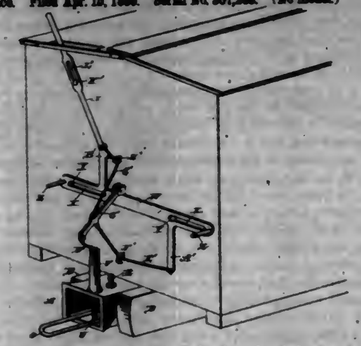


Claim.—1. In a machine for grinding and polishing stone, a grinding-disk consisting of a series of spaced segmental plates having beveled side edges, substantially as shown and described.

2. In a machine for grinding and polishing stone, a grinding-disk consisting of a series of segmental plates having beveled side edges, one edge of one plate overlapping but not touching the juxtaposed edge of the adjacent plate, substantially as shown and described.

3. In a machine for grinding and polishing stone, the combination, with two aligning vertical shafts mounted to turn in suitable bearings, and each provided with a belt-pulley, and disks rigidly mounted upon the upper ends of said shafts, of grinding-disks fixed to said rigidly-mounted disks, and consisting of a series of segmental plates having beveled side edges, one edge of one plate overlapping but not touching the juxtaposed edge of the adjacent plate, and means for rotating said shafts and disks, substantially as shown and described.

409,420. CAR-COUPLING. NELSON NEWMAN, Springfield, Ill., assignor of two-thirds to George A. Sanders and Samuel J. Willett, same place. Filed Apr. 15, 1889. Serial No. 307,982. (No model.)

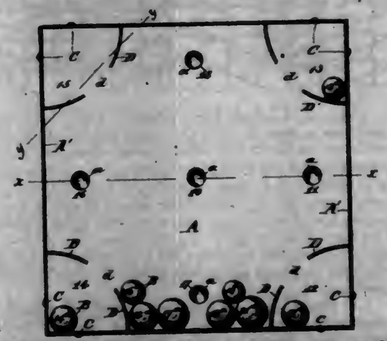


Claim.—1. The combination of the draw-heads having the pairs of coupling-pins U R, one in advance of the other, the spring-pressed link-holders K, arranged in the draw-heads and having the transverse open slots N, to receive and retain the inner ends of the links, and vertical open slots for the pins R, to enable said pins to retain said inner ends of the links in the holders, said slots N being of greater depth than the said slots P, and the pair of coupling-links O, substantially as described.

2. In a car-coupling, the combination, with the draw-head and coupling-pin, of the longitudinally-movable bar W, the vertically-movable lever-arm C', the chain connecting the latter to the coupling-pin, the hand-lever I', connected to the bar W, and the chains connecting the lever-arm C to said bar at opposite ends of the latter and at points above and below the lever-arm C', respectively, substantially as described.

3. In a car-coupling, the combination, with the draw-head and coupling-pin, of the lever-arm C', the chain connecting the same to the pin, the longitudinally-movable rod W, having the arms A' B' extending from its lower and upper sides, the chains connecting the lever-arm C to the extremities of said arms A' B', and the guides for said chains, substantially as described.

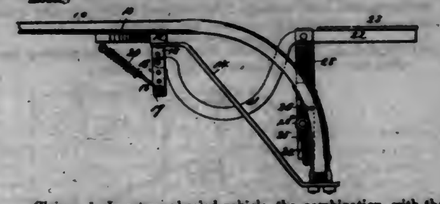
409,421. TOY. GEORGE W. HERRAUM, Lehighton, Pa. Filed Apr. 11, 1889. Serial No. 306,819. (No model.)



Claim.—1. The herein-described toy, consisting of the board having flanges or sides surrounding the same, pockets arranged at diagonally-opposite points, each pocket having an opening therein, depressions made in the board at the center and at diametrically-opposite points, said pockets and depressions being differently marked, and a series of balls corresponding in number to the number of pockets and depressions collectively, each ball having a mark corresponding to that of a certain pocket or depression, substantially as shown and described.

2. The herein-described toy, consisting of the rectangular board A, having the sides or flanges A', the pockets D at each corner, having openings *d* opening into the box-like structure, the depressions *a*, arranged between the pockets and at the center of the board, each pocket and depression having a certain mark, and a series of balls B, corresponding in number to the sum of the pockets and depressions, and each ball having a mark corresponding to the mark of a certain pocket or depression, substantially as shown and described.

409,422. TWO-WHEELED VEHICLE. JAMES R. PARRY and JESSE KIRKALL, New Madrid, Mo. Filed May 21, 1889. Serial No. 311,886. (No model.)



Claim.—1. In a two-wheeled vehicle, the combination, with the thills and their cross-bars, of a bracket attached to one of the cross-bars near each end, apertured plates pivoted in said brackets, a spring connecting the plates and the forward thill cross-bar, and a curved seat-support pivoted at one end between the apertured plates and spring-supported near the opposite end, substantially as shown and described.

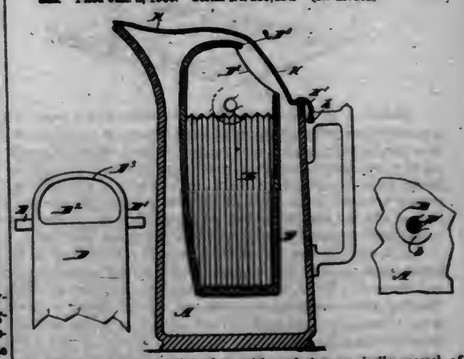
2. In a two-wheeled vehicle, the combination, with the thills and cross-bars connecting the same, apertured perpendicular plates pivoted in pairs beneath the rear cross bar of the thills, and a spring connecting each pair of plates with the forward cross-bar, of seat-supports, each comprising a forward curved section and a rearward horizontal section, the extremities of the forward curved sections being respectively pivoted between the apertured plates, and springs supported between the thills and attached to the horizontal section of each seat-bar, substantially as shown and described.

3. In a two-wheeled vehicle, the combination, with the thills, the axle, the thill cross-bars, seat-bars adjustably pivoted at their forward ends to the rear thill-bar, and springs connecting the pivotal support of the seat-bars and the forward thill-bar, of a rocking bolster and springs secured to the said bolster and to the rear portion of the seat-bars, substantially as shown and described.

4. In a two-wheeled vehicle, the combination, with the thills, the axle, the thill-bars, and seat-bars adjustably secured at their forward ends to the thill-bars, of a rocking bolster and springs attached to the said bolster and to the rear portion of the seat-bars, all combined for operation substantially as shown and described.

5. In a two-wheeled vehicle, the combination, with the thills and the thill cross-bars, of apertured plates pivoted in pairs near each end of one thill cross-bar, springs connecting each pair of plates with the forward thill cross-bar, and seat-supporting bars adjustably pivoted at their inner ends between the several pairs of apertured plates, substantially as and for the purpose specified.

409,423. ICE-PITCHER. EDWARD PLATTER, Ottawa, Ontario, Canada. Filed Jan. 2, 1889. Serial No. 295,124. (No model.)



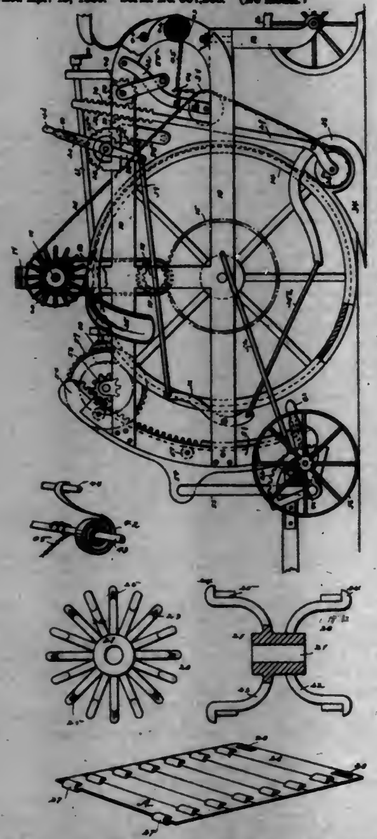
Claim.—1. The combination, with a pitcher or similar vessel, of an ice receptacle or chamber detachably pivoted thereto, substantially as shown and described.

2. The combination, with a pitcher or similar vessel having sockets formed upon the inner face, of an ice-receptacle provided with trunnions adapted to be journaled in the sockets of the vessel, substantially as shown and described.

3. The combination, with a pitcher or similar vessel provided with sockets formed upon the inner face, of an ice-receptacle having an opening in the top at the rear, and trunnions attached to opposite sides of the said receptacle adapted to be journaled in the said sockets, all combined for operation substantially as shown and described.

4. The combination, with a pitcher or similar vessel provided with sockets formed upon the inner face and a cover detachably secured to said vessel, of a longitudinally-fluted ice-receptacle provided with an opening in the top at the rear, and trunnions attached to the said receptacle upon opposite sides, adapted to be journaled in the said sockets, substantially as shown and described.

409,424. TILE-DITCHER. HERMAN I. POTTER, Leonardsburg, Ohio. Filed Apr. 15, 1889. Serial No. 307,260. (No model.)



Claim.—1. In a tile-ditcher, the combination, with a frame, and a channeled elevating-wheel pivoted in said frame, of a belt-carrying wheel journaled in the frame above the elevating-wheel and consisting of a hub and two series of curved arms alternately arranged projecting from the said hub, each arm provided with an attached horizontally-arranged block, a belt passing over the carrying-wheel to a contact with the elevating-wheel, and adjustable friction-pulleys contacting with the said belt, substantially as shown and described.

2. In a tile-ditcher, the combination, with a frame and an elevating-wheel provided with a peripheral channel and journaled in the said frame, of a belt-carrying wheel journaled in the frame above the elevating-wheel, consisting of a hub and opposed series of curved arms radiating from the said hub and laterally arranged, each arm provided with a horizontal block having an angular surface, a belt passing over the carrying-wheel in contact with the elevating-wheel and consisting of a series of plates united by hooks integral with the edge of one plate and passing through apertures in the next plate, which hooks project from the inner surface of the belt, and friction or tension pulleys held in contact with the said inner surface of the belt, substantially as shown and described.

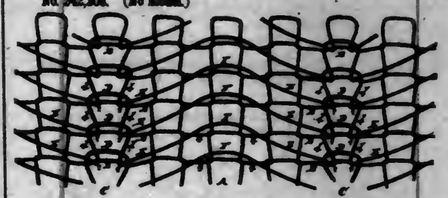
3. In a tile-ditcher, the combination, with a frame, an elevating-wheel journaled in the said frame and having a channeled periphery, and a carrying wheel or pulley journaled above the elevating-wheel, consisting of a hub and opposed series of curved arms radiating from the hub and laterally arranged, each arm provided with a horizontal block having an angular surface, of a belt consisting of a series of united plates having hooks projected from its under surface near its ends, said belt passing over the carrying-pulley in contact with the channel of the elevating-wheel, a friction-pulley contacting with the inner face of the belt at its lower end, a second friction-pulley contacting with the outer web of the belt at or near the center of its length, said pulley being journaled in a swinging hanger, a spring-actuated shaft journaled in the frame, and a chain attached to the said shaft and to the swinging hanger, all combined for operation substantially as shown and described.

4. In a tile-ditcher, the combination, with a frame, an elevating-wheel journaled in the said frame and provided with a channeled periphery, a belt-carrying pulley journaled in the frame above the elevating-wheel, and a belt passing over the said pulley in contact with the channel of the elevating-wheel, of a friction-pulley contacting with the belt at its lower end, a second friction-pulley contacting with the outer web of the belt at or near its center and journaled in the swinging hanger, a shaft journaled in the frame, a spring secured to the shaft, coiled around the same, and rigidly attached to the frame, and a chain attached to the spring-carrying shaft and to the said swinging hanger, all combined for operation substantially as shown and described, whereby the belt may be tightened or loosened, as desired, by lengthening or shortening the chain, as set forth.

5. In a tile-ditcher carrying an endless belt, the combination, with a pulley consisting of a hub and opposed series of outwardly-curved arms alternately arranged, each arm provided with a horizontal block having an angular face, of a belt adapted to travel over and be carried by the said pulley, said belt consisting of a series of plates, each plate being provided with hooks formed upon one edge near its outer end, and transversely-aligning horizontal slots in its opposite edge and united by the hooks of one plate passing through the slots in the next plate, all combined for operation substantially as shown and described.

6. In a tile-ditcher, the combination, with a forward arch having a segmental rack secured to each extremity, of levers pivoted to the extremities of the arch provided with latches engaging the segmental racks, and forward drive-wheels journaled upon the said levers, substantially as shown and described, whereby the forward wheels may be raised or lowered together or separately and without interfering with the body of the machine, substantially as and for the purpose specified.

409,425. KNITTED FABRIC. HENRY PERSEN, Philadelphia, Pa., assignor to Klauder & Brother, same place. Filed June 23, 1887. Serial No. 242,208. (No model.)



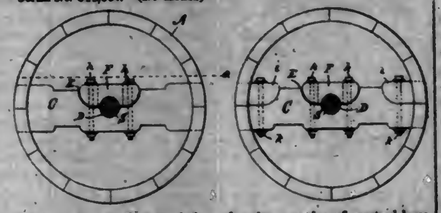
Claim.—1. A knitted fabric formed of two or more separate threads, one or more of which are knitted together for forming the body-loops, and the other or others of which threads are formed into pattern-loops and interlaced with the body portion to form a pattern, and in which the body-loops are grouped in horizontal rows of three or more loops, and the pattern-loops are one or more in number in the same horizontal line, those loops of the same line in different parts of the fabric being formed of the same thread, and the connecting threads of the pattern-loops being tied to the body portion by passing back of the body-loops and in front of the body-thread between the loops thereof.

2. A knitted fabric formed of two or more separate threads, one or more of which threads are knitted to form body-loops, and the other or others of which threads are knitted into figure or pattern loops in the same horizontal lines, the parts being interlaced together to form a single fabric having a figured face, and in which the threads connecting the isolated figure or pattern loops appear upon the back and are tied into the fabric at one or more places in their length by the threads forming the body portion.

3. A knitted fabric formed of two or more separate threads, one or more of which threads form the body-loops A and bars B, and the other or others of which form the pattern-loops C, consisting of the loops D, held in contact with each other by the bars B, whereby the said loops D are connected in line without passing through each other.

4. A knitted fabric formed of two or more separate threads, one or more of which are knitted together for forming the body-loops, and the other or others of which threads are formed into pattern-loops and interlaced with the body portion to form a pattern, and in which the body-loops are grouped in horizontal rows of three or more loops, which groups are separated by unlooped lengths of threads, and the pattern-loops are one or more in number in the same horizontal line, and are arranged in front of the unlooped lengths of thread connecting the groups of body-loops, these pattern-loops of the same line in different parts of the fabric being formed of the same thread, and the connecting threads of the pattern-loops being tied to the body portion by passing back of the body-loops and in front of the body-thread between the loops thereof.

409,426. WOODEN PULLEY. MILTON O. REEVES, Columbus, Ind., assignor to the Reeves Pulley Company, same place. Filed May 28, 1889. Serial No. 311,887. (No model.)



Claim.—1. A pulley consisting of a rim, a series of central bars secured to and extending diametrically from side to side of said rim, arranged side by side, and having open spaces between them parallel with the circumferential plane of the pulley, said central bars having a central hole passing transversely through them, and an open recess in one edge communicating with said central hole, a cap fitted in said edge opening, and clamping-bolts passing through said cap and between said bars, whereby said cap and bars may be drawn together and the pulley secured to a shaft, all combined substantially as set forth.

2. A pulley having a rim composed of several layers of wooden segments, a series of central bars extending diametrically from side to side of said rim and having their ends built into and forming a part of the rim, said bars having spaces between them parallel with the circumferential plane of the pulley, a central hole passing transversely through said bars, an open recess formed in one edge of the bars and communicating with the central hole, a cap fitted in said edge opening, and clamping-bolts passing through said cap and between said bars, all combined substantially as set forth.

3. In a pulley, the combination of the segmental rim and the series of thin flat bars extending from side to side of the rim, with open spaces between them parallel with the circumferential plane of the pulley, and having their ends secured in the rim and forming therefor a compound diametrical cross-bar, as set forth.

4. In a wooden pulley, the combination, with the compound diametrical cross-bar consisting of a series of flat bars having their ends secured in the rim of the pulley and arranged side by side, with open spaces between them parallel with the circumferential plane of the pulley, and having a central hole adapted to receive a shaft, of the cap having a solid central portion provided with a groove adapted to co-operate with the hole in the cross-bar to receive a shaft, and provided at its ends with open slots which register with the spaces between the bars of the cross-bar, substantially as and for the purpose set forth.

5. In a separable pulley, the combination of a rim consisting of two substantially-equal diametrically-separable sections, means for securing said sections together, a cross-bar connecting the ends of one of said rim-sections, and having a central hole passing transversely through the cross-bar, and a recess in one edge communicating with said central hole, a cap fitted in said recess, and clamping-bolts arranged to draw said cap and cross-bar together, whereby one section of the rim may be first secured to a shaft and the other section of the rim afterward secured to the first, substantially as specified.

6. In a separable pulley, the combination of the rim consisting of two substantially-equal diametrically-separable sections, the compound cross-bar consisting of a series of thin flat bars having their ends secured to one of said rim-sections and arranged side by side, with open spaces between them parallel with the circumferential plane of the pulley, the series of short sections *i i*, secured to and projecting inward from the ends of the other rim-section, said sections *i i* having open spaces between them arranged to register with the open spaces in the cross-bar, and the bolts arranged in said open spaces and adapted to engage the cross-bar and the sections *i* and to clamp the two rim-sections together, all substantially as specified.

409,427. SPLIT PULLEY. MILTON O. REEVES, Columbus, Ind., assignor to the Reeves Pulley Company, same place. Filed Mar. 20, 1889. Serial No. 313,936. (No model.)

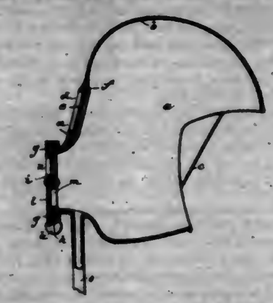


Claim.—1. In a split pulley, the two semicircular rim-sections each having a diametrical cross-bar, one of which cross-bars is provided with a groove adapted to receive a shaft, the cap having a semicircular groove and provided with a set-screw projecting into said groove, means for clamping said cap and cross-bar together, so as to embrace the shaft between them, and the bolts for clamping the two pulley-sections together, all combined and arranged substantially as specified.

2. In a split pulley, the two semicircular rim-sections each having a compound diametrical cross-bar, said bar consisting of a series of thin flat bars having their ends secured in the rim and arranged side by side, with open spaces between them parallel with the plane of the pulley, one of said compound cross-bars having a central groove adapted to receive one side of a shaft, a cap adapted to receive the opposite side of the shaft and provided with a set-screw, means for clamping said cap and cross-bars together so as to embrace the shaft between them, and bolts arranged in the spaces between the members of the compound cross-bars so as to engage the bars of both rim-sections and clamp them together, all combined substantially as specified.

3. In a split pulley having two sections each provided with a diametrical cross-bar, the combination, with one of said cross-bars having a central semicircular groove across its edge, of the semicircular bushing fitted in said groove and adapted to receive one side of a shaft, and the cap adapted to receive the opposite side of the shaft and to be clamped to the cross-bar and arranged to overlap the edges of the bushing so as to prevent it from turning, substantially as specified.

409,428. FIREMAN'S MASK. THOMAS E. REMEY, Portland, Oreg. Filed May 15, 1889. Serial No. 310,834. (No model.)

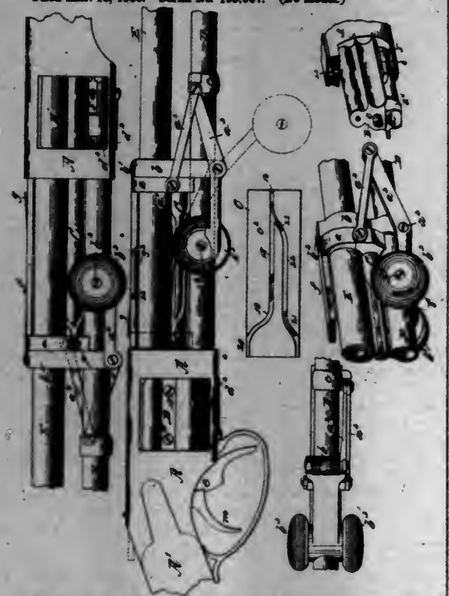


Claim.—1. The combination, with the body of the mask having a mouth-opening, of a shutter pivoted to the body and provided with two openings adapted to register with the mouth-opening, one of the said openings being fitted with porous material, substantially as and for the purpose set forth.

2. The combination, with the body of the mask having the mouth-opening *m* and provided with the flange *g* around the said opening, of the pivoted shutter *i*, having an internal groove to receive the said flange and provided with the openings *l n*, the opening *l* being fitted with porous material, substantially as herein shown and described.

3. The herein-described mask, consisting of the body portion *a b*, provided with two sight-openings *d*, covered with glass or mica *c*, a mouth-opening *m* below the sight-openings, an apertured shutter *i*, pivoted above the mouth-opening and provided with two openings *l n*, the opening *l* being filled with sponge, and the flexible pipe *o*, connected to the lower part of the mask, as specified.

409,429. MAGAZINE-GUN. SYLVESTER H. ROPER, Boston, Mass. Filed Mar. 18, 1886. Serial No. 195,667. (No model.)



Claim.—1. In a magazine fire-arm, the rotatable carrier B and its rigidly-attached cam-rod C, and the sliding guided loop or block and stud *p* therein to engage the cam-rod, combined with a link pivoted to the said block and with a lever to effect the intermittent rotation of the cam-rod and carrier by the longitudinal movement of the said loop or block, substantially as described.

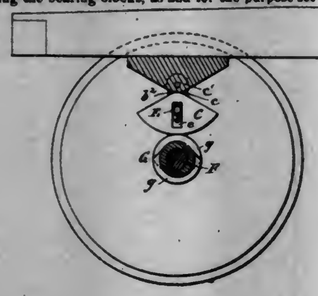
2. The rotatable carrier, its rigidly-attached cam-rod, the longitudinally-movable guided loop *a*, having a stud *p* co-operating with the said cam-rod, and the pivoted link a^3, attached to the said loop, combined with the lever a^2, connected to the link at one end, and provided with loose buttons at its unconnected end, substantially as described.

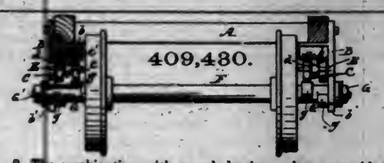
3. The rotatable cam-rod, a longitudinally-sliding block or loop thereon, having a stud to engage said cam-rod, a rotatable carrier rigidly attached to the cam-rod, and the fixed bracket *b*, combined with the lever a^2, fulcrumed upon said bracket and concaved at b^2, and a link connecting the said loop or block and lever, whereby movement of the lever imparts a longitudinal movement to the said loop or block, substantially as described.

4. In a magazine fire-arm, the rotatable carrier, its rigidly-attached cam-rod, the loop or block thereon, and the magazine having the lever-guard *c* attached thereto, combined with the bracket *b* and lever a^2, pivoted upon the lower end thereof and connected with the said loop or block, the guard preventing displacement of the lever a^2, substantially as described.

409,430. ANTI-FRICTION-BEARING. WILLIAM H. ROSS, Sparta, N. J. Filed June 26, 1889. Serial No. 315,622. (No model.)

Claim.—1. The combination, with an axle provided with two or more sectors, of bearing-blocks pivotally secured to a car-hanger and having curvilinear bearing-faces, and a horizontally-swinging lever engaging the bearing-blocks, as and for the purpose set forth.



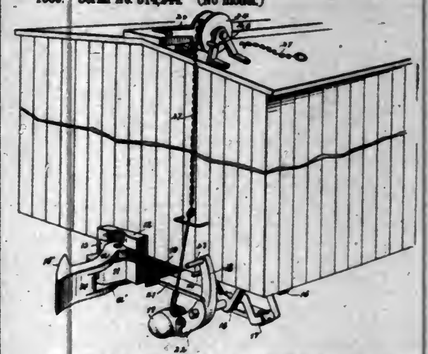


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2. The combination, with an axle having a sleeve provided with two or more sectors, of bearing-blocks pivotally secured to a hanger and having curvilinear bearing-faces, and a horizontally-swinging lever engaging the bearing-blocks, substantially as shown and described.

3. The combination, with the hangers B, of the bearing-blocks C, having ears *c*, the lever E, engaging in slots in the blocks C, and the sleeve G, provided with sectors *g* on the axle, substantially as shown and described.

409,431. CAR-COUPLING. JOHN H. SMITH, JULIUS F. KNOTH, GEORGE THOMPSON, and JULIUS EWALD, Fairchild, Wis. Filed June 14, 1889. Serial No. 314,244. (No model.)



Claim.—1. In a car-coupler, the combination, with a draw-head, of a knuckle having a bifurcated inner end pivoted upon the draw-head to have lateral movement thereon, and a counterpoise trip-lever connected with the said knuckle, substantially as shown and described.

2. In a car-coupler, the combination, with a draw-head and a knuckle pivoted thereon capable of lateral movement, of a crank-shaft, a link-connection between the crank-shaft and the inner end of the knuckle, and a counterpoise trip-lever secured upon one end of the crank-shaft, all combined for operation substantially as shown and described.

3. In a car-coupler, the combination, with a draw-head provided with a link-opening, and a knuckle having a bifurcated inner end pivoted upon the draw-head and capable of lateral movement, of a crank-shaft journaled beneath the car, a link connecting the crank-shaft and inner end of the knuckle, a trip-lever weighted at its lower end secured to one end of the crank-shaft, and means, substantially as shown and described, for elevating the weighted end of the lever from the top of the car, as set forth.

4. In a car-coupler, the combination, with a draw-head and a knuckle having a bifurcated inner end, the lower member whereof is longer than the upper, both of said members being pivoted to the draw-head, one above and the other beneath, of a crank-shaft, a link connecting the crank-arm of the shaft with the lower member of the knuckle, a trip-lever secured to the outer end of the crank-shaft having a weighted lower extremity, and means, substantially as shown and described, for manipulating the said lever from the sides or top of the car, as set forth.

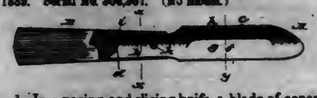
409,432. BASKET. IRWIN H. SPELMAN, Cortland, Ohio. Filed Oct. 11, 1888. Serial No. 287,808. (No model.)



Claim.—A splint basket composed of two series of interwoven splints formed into polygonal shape, and having at the corners reverse-

forcing splints whose lower ends are interwoven with and placed upon the main splints of the basket-body at the lower corners, and whose upper ends are extended between the divergent main splints of the basket-body to fill the interstices between the same, substantially as shown and described.

409,433. GAGE-KNIFE. CHARLES F. STERY, Hermann, Mo. Filed Apr. 8, 1889. Serial No. 306,267. (No model.)

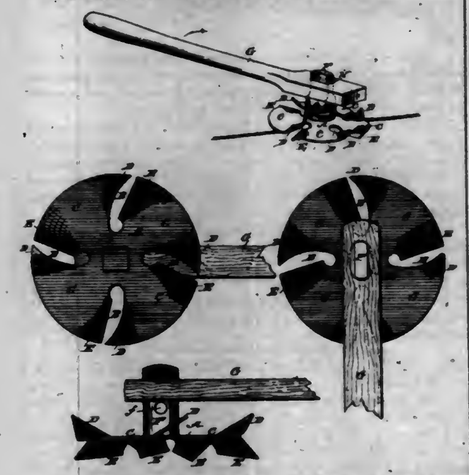


Claim.—1. In a paring and slicing knife, a blade of concavo-convex form in transverse section, pointed at its outer end, and provided with a cutting-edge *c*, said blade having a slot formed intermediate its edges and having the portion *g* bent out beyond the convex surface of the blade, thus forming an opening *h* for the passage of the parings, the edge of said portion *g* being sharpened to form a cutting-edge, substantially as and for the purpose described.

2. In a paring and slicing knife, the blade A and its shank *b*, both of concavo-convex shape in transverse section, and having a wedge-shaped recess *d* in the rear end of the shank, essentially as and for the purpose herein set forth.

3. In a paring and slicing knife, the knife-handle B, having a saw-cut in it from its inner end of curvilinear form in transverse section, and terminating in the rear in a wedge-shaped projection *i*, in combination with the shank *b* of the blade, of like curvilinear form in transverse section as the saw-cut, and provided with a wedge-shaped recess *d* at its rear end adapted to receive the projection *i* within it, substantially as specified.

409,434. WIRE TIGHTENER AND SPLICER. SHAPLEY P. R. TAYLOR, WILLIAM T. SHARMAN, and JOSEPH L. JAMISON, Denison, Tex. Filed Feb. 12, 1889. Serial No. 299,662. (No model.)



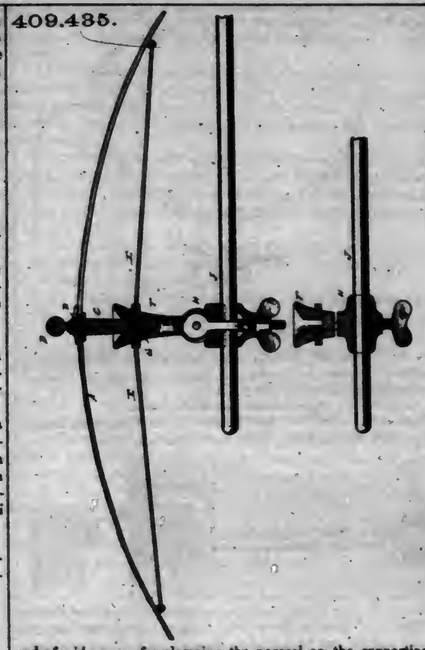
Claim.—1. A device for tightening and splicing wires, consisting of a disk slotted to form wings the points of which are bent up out of the plane of the disk, and having a perforated stem and adapted to be rotated to secure it in position.

2. The combination of the disk slotted to form wings the ends of which are bent out of the plane of the disk, and having the perforated flattened stem, and the lever having the slotted end, substantially as set forth.

3. The disk slotted to form the wings C, having their points bent up out of the plane of the disk, and having their squared rear ends E curved down below the plane of the body-plate, the disk having a stem by which it is rotated, substantially as set forth.

409,435. PARASOL FOR BABY-CARRIAGES. GEORGE W. TRAVERS, Hoboken, N. J. Filed May 20, 1889. Serial No. 311,408. (No model.)

Claim.—In a baby-carriage, the combination, with the body, of a parasol-supporting rod, notched ribs hinged to the same, which notch has a knob or head on its upper end and a spindle or stem on its lower end, a runner having a socket or aperture in its upper end, to which runner the stretchers are hinged, and a clamping device on the lower



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end of said runner for clamping the parasol on the supporting-rod which is located below the parasol, substantially as set forth.

409,436. COFFIN-FASTENER. BERT VAN HORN, Oneida, and JAMES R. LATHE, Vernon, N. Y. Filed Apr. 15, 1889. Serial No. 307,217. (No model.)



Claim.—1. In combination with the body C, lid D, and T-headed key *d*, pivoted to the lid, the plate A, having the longitudinal slot *f* extending through one end thereof and formed with the lugs *l l* on the back of said end and respectively at opposite sides of the slot, substantially as described and shown.

2. In combination with the body C, lid D, and T-headed key *d*, pivoted to said lid, the plate A, attached to the body, and having the slot *f* extending through one end of the plate and formed at the under side of said end with the lugs *l l* and pendent lips *n n*, and the groove *k*, formed in the top of the casket-wall in front of the open end of the slot *f*, and extending part way under the plate and terminating with the widened portion *k'* back of the aforesaid lugs, substantially as described and shown.

409,437. ELECTRIC DENTAL INSTRUMENT. FRED VERDITTE, Hannibal, Mo. Filed June 15, 1889. Serial No. 314,745. (No model.)

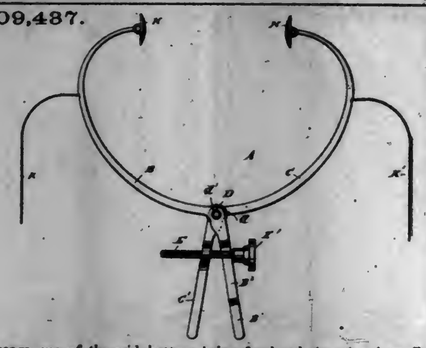
Claim.—1. A dental instrument comprising adjustable prongs pivotally connected at their lower portions and connected with an electrical battery at their upper portions, and buttons held on the said prongs, substantially as shown and described.

2. A dental instrument comprising adjustable prongs connected with an electrical battery and buttons held on the said prongs, and means, substantially as described, for adjusting said prongs so as to press the buttons with more or less force against the human face on which the instrument is to be applied, as set forth.

3. A dental instrument comprising pivoted prongs, a screw for adjusting said prongs, and buttons held on the outer end of the said prongs, substantially as shown and described.

4. A dental instrument comprising pivoted prongs, a screw for adjusting said prongs, buttons held on the outer ends of the said

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prongs, one of the said buttons being fixed and the other laterally adjustable to increase or diminish the distance between the two buttons, substantially as shown and described.

409,438. SHUTTER-FASTENER. LEWIS WHITEHOUSE, Easton, Md. Filed May 16, 1889. Serial No. 311,063. (No model.)



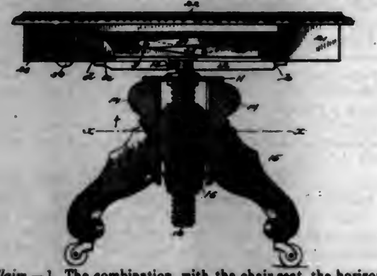
Claim.—1. In a shutter-fastener, the combination, with a shutter catch-plate 1, of the centrally-pivoted hook 4, having the apertured inner end, and the rod 10, extending through the wall having the nut 13 on its inner end, and having its inner end passing through the apertured end of the hook, substantially as set forth.

2. In a shutter-fastener, the combination, with a shutter catch-plate 1, of the centrally-pivoted spring-actuated hook 4, having the apertured inner end, and the rod 10, extending through the wall, having the nut 13 on its inner end, and having its inner end passing through the apertured end of the hook, substantially as set forth.

3. The combination, with the shutter catch-plate, of the slotted plate having an inwardly-projecting sleeve, the pivoted hook having the bent apertured inner end, the spiral spring, and cup-bearing, the plate formed with a central depression, and the operating-rod, substantially as set forth.

4. The combination, with the shutter catch-plate, of the slotted plate having the upwardly-inclined sleeve, the pivoted hook having the bent apertured inner end, the spiral spring and cup-bearing, the plate formed with the central depression, and the rod having the threaded ends, the knob, and the nuts, substantially as set forth.

409,439. COMBINED TABLE AND CHAIR. WILLIE O. WHITNEY, Glens Falls, N. Y. Filed Feb. 13, 1889. Serial No. 299,669. (No model.)

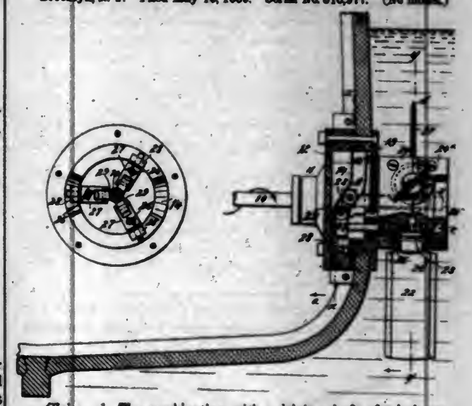


Claim.—1. The combination, with the chair-seat, the horizontal armed frame 11, the brackets 14, depending from the latter, and the screw 10, having a fixed collar that abuts the under side of said frame, of the legs 15 and nut 16, which are rigidly connected, and said nut sliding vertically in the guide-brackets 14, as shown and described.

2. The combination, with a frame 20, of a frame 21, pivotally connected thereto, a frame 23, also pivotally connected with said frame 20, side panels 24, pivotally connected to the frames 21 and 23, a table-top carried by the frame 21, upholstering *h* and *i*, a screw rigidly connected to the frame 20, brackets extending downward from said frame, a nut with which the screw engages, and legs carried by the nut, substantially as described.

3. The combination, with a nut, of legs rigidly connected thereto, side flanges formed upon the nut, a spider to which the screw is connected, a frame through which the screw passes, brackets connected to the frame-arms and formed with grooves which the nut-flanges enter, a frame 20, supported by the spider, a frame 21, pivotally connected to the frame 20, a frame 23, also pivotally connected to the frame 20, side panels pivotally connected to the frames 21 and 23, a table-top carried by the frame 21, and upholstering *i* and *h*, substantially as described.

409,440. FEATHERING PADDLE-WHEEL. JOHN WILLIAMSON, Brooklyn, N. Y. Filed May 16, 1889. Serial No. 310,977. (No model.)



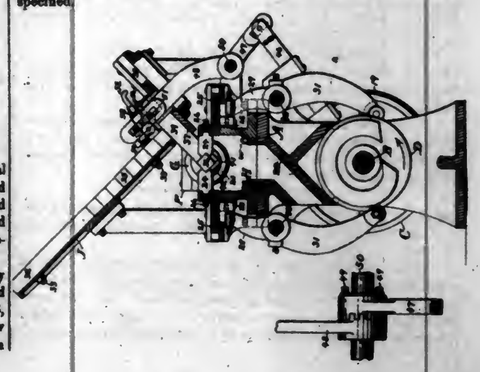
Claim.—1. The combination, with a driving-shaft, of a hub connected thereto, radially-extending blades held by the hub, gears connected to the blades, racks arranged to engage the gears, and a means for reciprocating the racks, substantially as described.

2. The combination, with a driving-shaft, of a hub connected thereto, radially-extending blades held by the hub, gears connected to the blades, racks arranged to engage the gears, brackets connected to the racks, anti-friction rolls or wheels carried by the brackets, and flanges forming a cam-groove within which the anti-friction rolls ride, substantially as described.

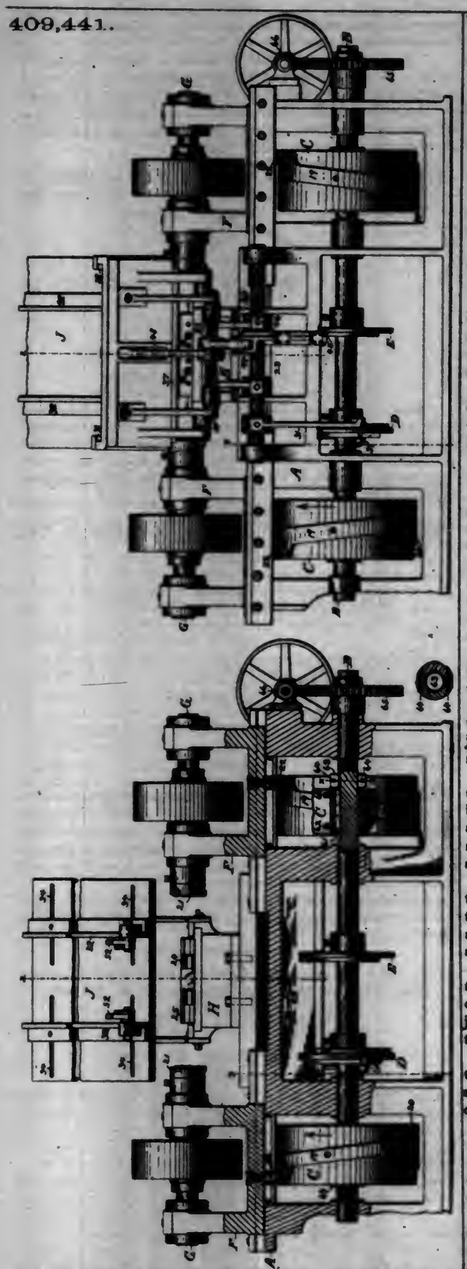
3. The combination, with a driving-shaft, of a hub connected thereto, radially-extending blades held by the hub, gears connected to the blades, racks arranged to engage the gears, brackets connected to the racks, anti-friction rolls carried by the brackets and arranged to bear upon the driving-shaft, other anti-friction rolls carried by the brackets, and flanges forming a cam-groove, within which groove the last-referred-to anti-friction rolls ride, substantially as described.

409,441. MACHINE FOR DRESSING THE ENDS OF SCREW-BLANKS. GEORGE E. WITHERELL, Hartford, Conn., assignor to the Hartford Machine Screw Company, same place. Filed Mar. 9, 1889. Serial No. 302,603. (No model.)

Claim.—1. The combination of a lathe-bed, two lathe-spindles, their sliding frames and operating-cams, with the holding-jaws sliding between said spindles, the levers 29, mounted on rock-shaft 30, the levers 31, and cam D, substantially as described, and for the purpose specified.



409,441.



2. In a machine for operating upon blanks, the combination of the holding-jaws arranged to slide to and from each other, the four levers 29, acting at four different points on said jaws, the rock-shafts on which said levers are mounted, the levers 31, and operating-cam, substantially as described, and for the purpose specified.

3. In a machine for operating upon blanks, the combination of the holding-jaws, levers 29, having adjusting-screws at their upper ends, rock-shafts on which said levers are mounted, the levers 31, and operating-cam, substantially as described, and for the purpose specified.

4. The combination of a lathe-bed, two lathe-spindles, their sliding frames, a pair of holding-jaws sliding between said spindles, operating mechanism for said sliding frames and jaws, and the rearwardly-inclined apron 23, formed in said bed immediately under the opening between said jaws, substantially as described, and for the purpose specified.

5. In a machine for operating upon blanks, the combination of the sliding lathe-frame, the cam-pulley having slotted hub, the cam-shaft having a longitudinal groove and threaded portion, the key 61, and adjustable clamp-nut 63, substantially as described, and for the purpose specified.

6. The combination of the longitudinally-moving spindles, the holding-jaws, mechanism for operating said jaws and spindles, the carrier 37, having holding-arms adjustable thereon, and mechanism for operating said carrier, substantially as described, and for the purpose specified.

7. In a machine for operating upon blanks, the carrier-arms having the sockets 40 and spring-pressed fingers 41, substantially as described, and for the purpose specified.

8. In a machine for operating upon blanks, the carrier having arms 39, provided with sockets, the spring-pressed hooked latch 57 projecting into one of said sockets, the cam 60, and mechanism for reciprocating said carrier, substantially as described, and for the purpose specified.

9. The combination of the longitudinally-moving spindle, the holding-jaws, mechanism for operating said jaws and spindles, the carrier arranged to slide to and from a point between said holding-jaws, the cam D, slide 46, and the carrier-operating lever, one end of which is connected with said slide and the other with said carrier, substantially as described, and for the purpose specified.

10. In a machine for operating upon blanks, the combination of the holding-jaws, the carrier, its operating-lever 47 and 48, made in two parts with adjustable hubs, and operating mechanism, substantially as described, and for the purpose specified.

11. In a machine for operating upon blanks, the combination of the hopper set upon an incline, a carrier arranged to slide on inclined ways at an angle to said inclined hopper, the holding-jaws, and operating mechanism for said carrier and jaws, substantially as described, and for the purpose specified.

12. In a machine for operating upon blanks, the hopper consisting of the inclined bottom J and side pieces 32, laterally adjustable thereon, substantially as described, and for the purpose specified.

13. In a machine for operating upon blanks, the combination of the hopper having adjustable side pieces and the carrier having adjustable arms with sockets for receiving the ends of the blanks, substantially as described, and for the purpose specified.

14. In a machine for operating upon blanks, the combination of the hopper, the carrier moving under the lower end thereof, the holding-clamp for pressing upon the bottom blank but one and holding it and the blanks above it from falling when the sockets of the carrier are under said hopper, and operating mechanism, substantially as described, and for the purpose specified.

15. In a machine for operating upon blanks, the combination of the hopper, the angle-lever having the adjustable clamp in one arm the carrier having the cam 56 for acting upon the other arm of said angle-lever, and mechanism for operating said carrier, substantially as described, and for the purpose specified.

16. The combination of the longitudinally-moving lathe-spindles, the holding-jaws, the hopper made adjustable to accommodate blanks of different lengths, the carrier having holding-arms, also made adjustable to and from each other, and operating mechanism, substantially as described, and for the purpose specified.

17. The combination of the longitudinally-moving lathe-spindle, the holding-jaws, the hopper, the holding-clamp for the blanks within said hopper, the carrier, and operating mechanism, substantially as described, and for the purpose specified.

18. In a machine for operating upon blanks, the combination of the hopper having adjustable side pieces, the holding-clamps mounted on and adjustable with said side pieces, the carrier, the adjustable carrier-arms 39, having cams 56 adjustable therewith, and operating mechanism, substantially as described, and for the purpose specified.

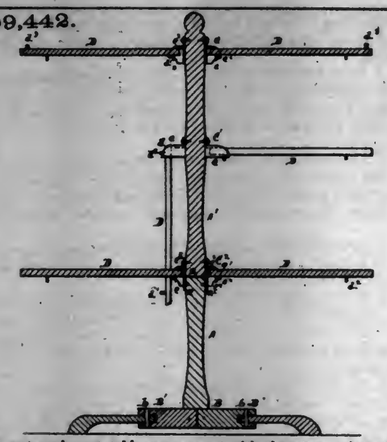
19. In a machine for operating upon blanks, the combination of the hopper, the holding-clamps, the carrier moving under said hopper and having arms 39, provided with sockets at their lower ends, and operating mechanism, whereby the solid body portions of said arms pass under the hopper and catch the blank when released by said clamping mechanism, substantially as specified.

20. In a machine for operating upon blanks, the combination of the holding-jaws, the carrier arms having the sockets 40 and spring-pressed fingers 41, and operating mechanism, substantially as described, and for the purpose specified.

409,442. REVOLVING CLOTHES-BAR. JOHN E. ARMON, Northville, Mich. Filed Mar. 23, 1889. Serial No. 305,140. (No model.)

Claim.—1. In clothes-bars, the combination, with a standard made in parts A A', of a collar C', having a fixed engagement with one of

409,442.



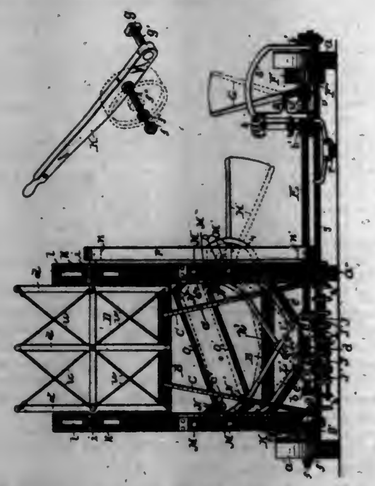
said parts and a rotatable engagement with the other, substantially as set forth.

2. The combination, with a standard made in parts A A', having a revolving jointed engagement the one with the other, of a series of collars located thereupon provided with a series of ears, and movable arms engaged with said ears, the construction being such that said arms may be folded vertically and extended horizontally, substantially as set forth.

3. In combination, a standard consisting of two sections A A', and a collar having a fixed engagement with one of said sections and embracing the other section, the said sections being locked against vertical displacement, substantially as set forth.

4. In combination, a standard consisting of two sections A and A', one of said sections being provided with a circumferential groove, a collar fixed to the opposite section and embracing the section provided with the groove and having an interior groove registering with the said section, and a ring fitted in said grooves for locking the sections of the standard against vertical displacement, substantially as set forth.

409,443. CORN-HARVESTER. JOHN ARMSTRONG, Vine Creek, Kans. Filed Mar. 7, 1889. Serial No. 302,264. (No model.)



Claim.—1. In a corn-harvester, the combination, with the supporting-frame carrying the cutters, of the upper series of swinging arms affixed to rock-shafts M at opposite sides of the said frame and connected together for simultaneous operation, the lower series of swinging arms affixed to rock-shafts M', respectively, below the rock-shaft M, the operating-lever connected to said shafts to operate them simultaneously to alternately receive and deposit the stalks, and the centering and guiding arms arranged below the swinging arms to receive the stalks therefrom and deposit them in bundles, substantially as specified.

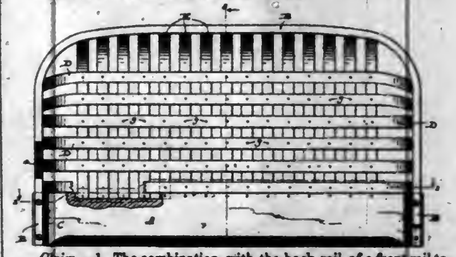
2. In a corn-harvester, the combination, with gathering-arms having upwardly and rearwardly inclined arms which converge toward their free ends, of the reel arranged above said gathering-arms and provided with inclined convergent rods to engage the upper ends of the stalks and draw them together between said arms, substantially as and for the purpose specified.

409,444. GUARD FOR ROCKING-CHAIRS OR ANALOGOUS ARTICLES OF FURNITURE. ALFRED F. RAGMANN, Watertown, Wis. Filed May 24, 1889. Serial No. 311,942. (No model.)



Claim.—The combination, with a furniture-rocker having a vertically-slotted end, a guard consisting of a shank fitting in and secured to said slotted end, and a transverse elastic buffer secured to or formed with said shank, and having transverse grooves on each side of said shank for the reception of the extreme tips of the rocker end, substantially as set forth.

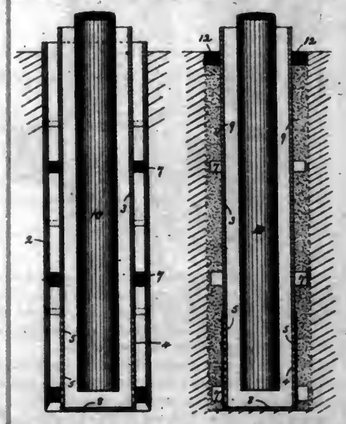
409,445. VEHICLE-SEAT. CHARLES S. BEEBE, Moline, Ill. Filed July 1, 1889. Serial No. 316,221. (No model.)



Claim.—1. The combination, with the back rail, of a front rail to which the ends of the back rail are secured, and strips extended from the front to the back rail, and other strips extending from one side to the other of the back rail and crossing the first-named strips substantially at right angles, substantially as described.

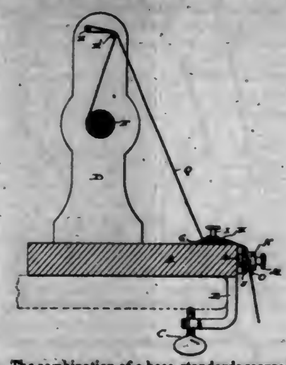
2. The combination, with the front and back rails, of the strips D and E, crossing each other at right angles and forming a seat, substantially as described.

409,446. METHOD OF SINKING WELLS. HIRAM W. BLAKESLEE, Yuma, Ariz. Filed May 22, 1889. Serial No. 311,698. (No model.)



Claim.—The method of constructing wells which consists in sinking an outer casing, inserting a perforated pipe of less diameter therein, filling the existing space entirely or in part with sand, withdrawing said outer casing, and finally placing a suction-pipe interiorly of the filter-pipe, substantially as herein specified.

409,447. DEVICE FOR WINDING BANDAGES, &c. HERMAN C. BLOCK, Milwaukee, Wis. Filed Jan. 26, 1889. Serial No. 297,705. (No model.)



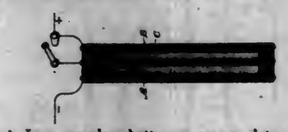
Claim.—1. The combination of a base, standards secured thereto, a spindle having its bearings in the standards, a spring-bar attached to the top of the base, edge-guides connected to said base adjacent to the spring-bar, and a spring-rod secured to said edge of the base to extend horizontally below said guides, substantially as set forth.

2. The combination of a base, standards secured thereto, a spindle having its bearings in the standards, a spring-bar attached to the top of the base, a set-screw for regulating the tension of the spring-bar, and guides attached to an edge of said base adjacent to the spring-bar, substantially as set forth.

3. The combination of a base, standards secured thereto, the guide-rods uniting the standards at their upper ends, a spindle having its bearings in said standards, a spring-bar attached to the top of the base, and edge-guides connected to said base adjacent to the spring-bar, substantially as set forth.

4. The combination of the base A, standards D, rods E E', connecting the standards, the spindle F, having its bearings in said standards, the plate G, attached to the top of said base, the spring-bar H, fastened to the plate, the set-screw I, for regulating the tension of the spring-bar, the slotted plate J, secured to an edge of the base, the guides N, set-bolts L, and nuts M, adjustably connecting the latter guides and slotted plate, the spring-rod O, and the latch P, substantially as and for the purpose set forth.

409,448. SECONDARY BATTERY. CHARLES S. BRADLEY, Yonkers, assignor to the Bradley Electric Power Company, New York, N. Y. Filed Aug. 11, 1884. Serial No. 140,234. (No model.)



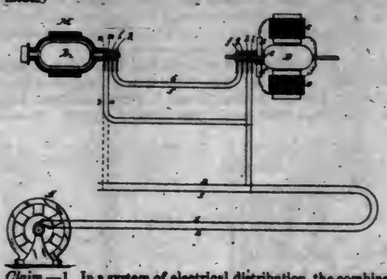
Claim.—1. In a secondary battery, a porous plate, cell, or diaphragm composed of some suitable conducting material, which serves as a partition to separate the liquids while the battery is being charged, and means for connecting said plate or diaphragm to the working-circuit as an electrode in discharging, substantially as described.

2. In a secondary battery, porous carbon plates or diaphragms which serve as partitions to separate the liquids in charging, and means for connecting said diaphragms to the working-circuit as electrodes in discharging, substantially as described.

3. A secondary battery provided with a series of plates or diaphragms of non-porous conducting material and of porous conducting material placed alternately, said non-porous plates constituting the partitions which separate the cells, and serving also as electrodes, and said porous plates serving in charging as partitions to separate the liquids, and means for connecting said porous plates as electrodes to the working-circuit in discharging, substantially as described.

4. In a secondary electric battery, the combination of porous plates, diaphragms, or cells composed of some suitable material which is a conductor of electricity, which act to keep apart the fluids of the battery, and a switch or switches whereby said plates, diaphragms, or cells may be electrically disconnected from the circuit while the battery is being charged and connected to the circuit while the battery is being discharged, substantially as described.

409,449. SYSTEM OF ELECTRICAL DISTRIBUTION. CHARLES S. BRADLEY, Yonkers, N. Y. Filed Oct. 5, 1888. Serial No. 287,230. (No model.)



Claim.—1. In a system of electrical distribution, the combination of a generator of alternating currents, a pair of mains connected thereto, one or more multiple-circuit differential-phase electric motors having one circuit connected directly to said mains and the other circuit or circuits connected to said mains through an interposed electro-motive phase-changing device adapted to change the time-period of the currents passing through it.

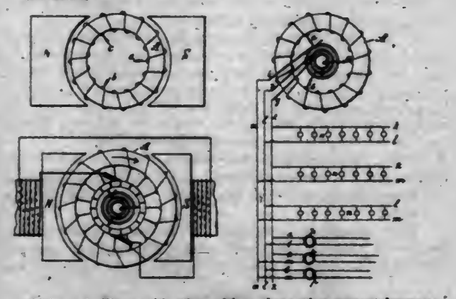
2. In a system of electrical distribution, the combination of a generator of alternating currents, a pair of mains connected thereto, one or more double-circuit quarter-phase electric motors having one circuit connected directly to said mains and the other circuit connected to the said mains through an interposed electro-motive device adapted to change currents passing through it at one-quarter of a phase or wave length.

3. The combination, with a quarter-phase double-circuit electric motor, of two transformers, each composed of a primary coil connected to the supply-circuit, and two or more graduated secondary coils connected to the motor-circuit, and means for switching said secondaries in matched pairs into the motor-circuits, substantially as described.

4. The combination, with an alternating-current double-circuit electric motor, of one or more transformers having primary coils connected to supply-circuits, and two or more graduated secondary coils adapted to be connected to the motor-circuits, and means for connecting said secondary coils into the motor-circuits as required, substantially as described.

5. The combination, with a multiple-circuit alternating-current electric motor, of two or more supply-circuits having their currents of respectively differing phase, two or more primary or inducing coils respectively included in the supply-circuits, two or more graduated sets of secondary coils in inductive relation to said primary coils, and a switch adapted to connect the respective motor-circuits to any pair of said secondary coils.

409,450. SYSTEM OF ELECTRICAL DISTRIBUTION. CHARLES S. BRADLEY, Yonkers, N. Y. Filed Oct. 20, 1888. Serial No. 288,601. (No model.)

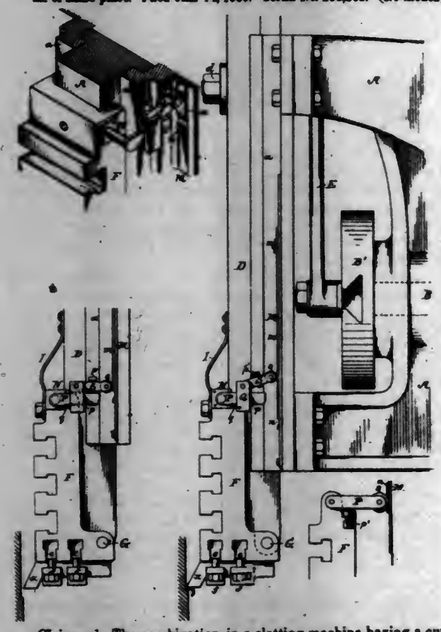


Claim.—1. The combination, with an alternating-current dynamo-electric machine adapted to generate and deliver three separate series of alternations differing in their time-periods by one-third of a phase, of three external circuits composed in all of three conductors permutated into said three circuits, and consumption devices located in said external circuits.

2. In an electro-motive device, the combination of a field-magnet and a rotating armature provided with a current-rectifying commutator and brushes therefor, through which current is received into the armature and rotation produced in the moving part of the machine, three current-leading devices on the one hand connected, respectively, into the armature-circuit at equidistant points [illegible] arranged rela-

tively as to lead off three independent series of alternating currents substantially one-third of a phase apart in their relative time-periods, and on the other hand connected with three external circuits composed in all of three conductors permutated into the said three circuits, and consumption devices located in each of the three circuits.

409,451. **DEVICE FOR TILTING THE TOOL OF A SLOTTING-MACHINE.** JAMES C. CALDWELL, Philadelphia, Pa., assignor to Clarence S. Bement, Frederick B. Miles, William P. Bement, and Frank Bement, all of same place. Filed Jan. 14, 1889. Serial No. 296,263. (No model.)



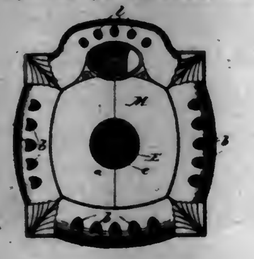
Claim.—1. The combination, in a slotting-machine having a cutter-slide, of a pivoted tool-holder on said slide, and an arm pivoted to said tool-holder adapted to bear against a track-way and throw the tool away from its work on the return movement of the cutter-slide, substantially as described.

2. The combination of a reciprocating slide and a tool-holder pivoted thereto with an arm pivoted to said tool-holder and bearing against an adjustable bar beveled at its lower end, the whole acting to force the tool carried by said holder away from its work on its return movement, substantially as described.

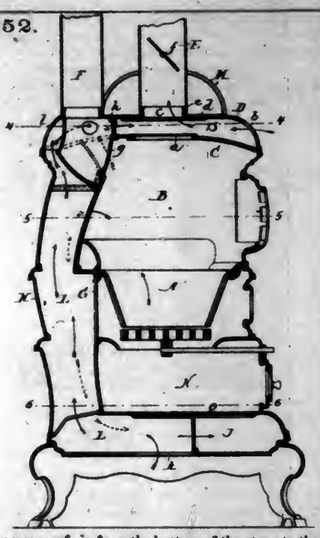
3. The combination of the reciprocating slide, the tool-holder pivoted thereto and carrying a cutting-tool, an arm pivoted to the upper end of said tool-holder, and a sleeve adjustable on said arm and carrying a second arm, with a bar having at its lower end a recess or beveled end, into which the second arm will drop at the end of the stroke of the slide, the whole acting to force the tool away from its work on its return movement, substantially as set forth.

409,452. **HEATING-STOVE.** JAMES L. COLLINS and HENRY C. BURGER, Chicago, Ill. Filed May 7, 1889. Serial No. 309,856. (No model.)

Claim.—In a stove for heating, the combination of the plate C, the plate D, which is provided with a series of holes *b* and *l* and rests upon the plate C, a partition A, provided with holes *i*, and an air flue

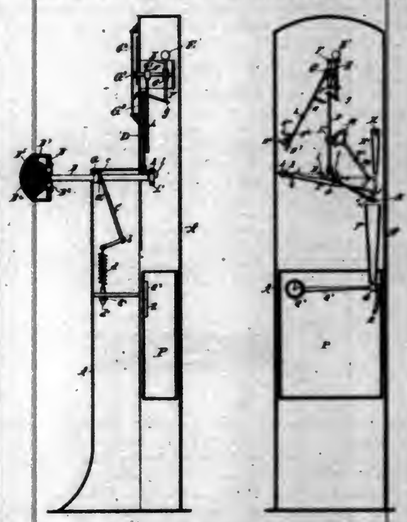


409,452.



L, for the passage of air from the bottom of the stove to the chamber S through the holes *i* and to the room through holes *l*, substantially as and for the purpose specified.

409,453. **COIN-FREED STRIKING-MACHINE.** HENRY COOPER, Jersey City, N. J. Filed Apr. 12, 1889. Serial No. 307,042. (No model.)



Claim.—1. In combination with the movable rod, the striking head or buffer mounted thereon, said striking-head being packed with shreds of rubber, substantially as and for the purposes set forth.

2. In combination with the movable rod, the striking-head or buffer having a centrally-perforated back piece removably secured upon the extremity of the rod, substantially as and for the purposes set forth.

3. The herein-described striking-head or buffer, composed of the back piece, a receptacle of elastic material, a packing or filling of rubber shreds for such receptacle, and a cover, combined and arranged substantially as explained.

4. The combination, with the rod carrying a striking-head or buffer, of a collar on said shaft, a bell-crank lever, and a tension-spring connected with said lever, substantially as and for the purposes set forth.

5. The combination, with the rod, a lever connected thereto, a rack resting on said lever and carrying a weight, the index-shaft, and a pinion thereon for engagement with said rack, of a friction-pad for

preventing the backward movement of said shaft and a lever carrying such pad, substantially as described.

6. The index-shaft, the friction-pad bearing thereon, the pivoted lever carrying said pad and a cam for moving said lever and releasing said shaft, combined and arranged substantially as shown and described.

7. The combination, with the rod carrying the striking-head or buffer, of a hinged lever adapted to be moved by the weight of a coin and keepers or lugs for co-operation therewith, substantially as described.

8. The combination, with the coin-receptacle mounted upon the end of a hinged lever, a sliding bottom consisting of a perforate and imperforate part, and springs for holding the bottom, substantially as shown and described.

9. The combination, with the coin-receptacle and its sliding bottom mounted upon a hinged lever, of an opener-bar arranged to move said bottom, and the rod carrying the striking-head or buffer for operating said opener-rod, substantially in the manner shown and described.

10. The combination, as before set forth, of the rod carrying the striking-head or buffer, the spring opener-bar bearing against an incline on said rod, a hinged lever, and the coin-receptacle with its movable bottom mounted thereon, said lever being arranged to carry the bottom into position to be moved by the opener-bar at the time and under the conditions essentially as explained.

11. The combination, as before set forth, of the rod carrying the striking-head or buffer, the index or pointer shaft connected with such rod and operated thereby, the hinged lever and the coin-receptacle mounted thereon and provided with the movable bottom, and the opener-bar arranged to be moved and to operate, substantially in the manner and for the purposes explained.

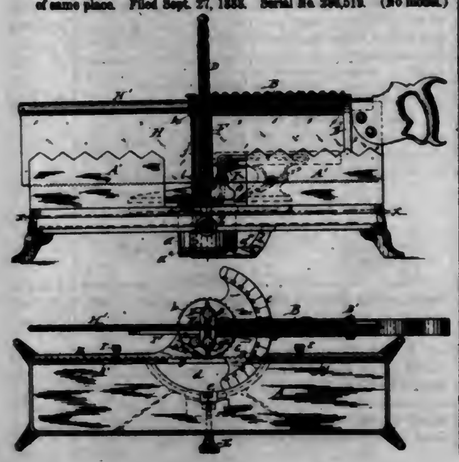
12. The combination, with the rod carrying the striking-head or buffer, the bell-crank lever connected thereto, the rack and weight resting upon said lever, and the pointer and pointer-shaft operated from said rack, of a second bell-crank engaging said rod, a resisting and returning spring connected to such last-mentioned bell-crank, a hinged lever carrying a coin-receptacle, keepers or lugs therefor, a sector and a sector-arm, and a warning-plate, substantially as described.

409,454. **SECTIONAL SCREW-CONVEYER.** WILLIAM H. CORNELL, Titusville, Pa. Filed May 23, 1887. Serial No. 239,086. (No model.)

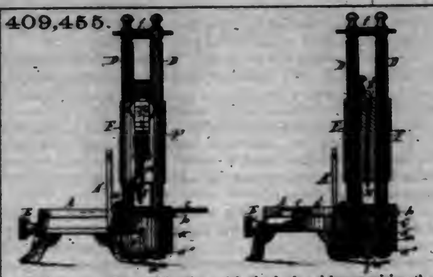


Claim.—The within-described screw-conveyer, consisting of a number of sections confined together by longitudinal bolts, each section comprising a hub and a single projecting beveled blade, substantially as specified.

409,455. **MITER-MACHINE.** JULIUS J. COWELL, Westport, N. Y., assignor of two-thirds to Charles J. Brown and Charles D. Cleay, both of same place. Filed Sept. 27, 1888. Serial No. 286,519. (No model.)



409,455.



Claim.—1. In combination with the bed and breast rising therefrom, a vertical socket projecting from the bed at the rear of the breast, a hub pivoted in said socket, posts secured to the said hub, sleeves sliding on the posts, and a saw-guide extended horizontally from said sleeves, consisting of an arm constructed to retain a saw in place during the operation, substantially as described and shown.

2. In combination with the two posts, two sleeves rigidly united and sliding, respectively, on the two posts, and the saw-guide extended horizontally from said sleeves, a right and left screw connecting the upper ends of the posts, substantially as and for the purpose set forth.

3. In combination with the bed, pivoted saw-guide support, and the saw-guide mounted movable vertically on said support, a rack on the under side of the bed, a dog connected to the aforesaid pivoted support and adapted to engage the rack, and a rod projecting vertically from the said dog and provided with a catch adapted to engage the saw-guide in its vertical movement, and thereby throw the dog out of engagement, substantially as set forth.

4. In combination with the bed and breast rising therefrom, a vertically-pivoted saw-guide support, a vernier concentric with the pivot of said support and turning synchronously therewith, and a clamp having a sliding engagement with the bed for engaging the vernier, as and for the purpose specified.

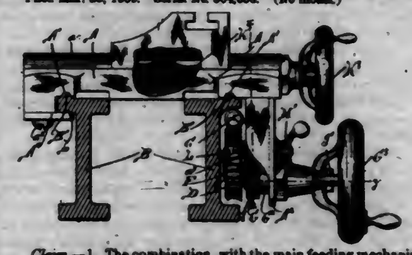
5. In combination with the bed and breast rising therefrom, a vertical socket projecting from the bed at the rear of the breast, a hub pivoted in said socket, posts secured to said hub, a vernier secured to the hub by the said posts, sleeves sliding on the posts, and a saw-guide extending horizontally from said sleeves, substantially as described and shown.

6. In combination with the bed, a breast rising therefrom and movable longitudinally thereon, a rack on said breast lengthwise thereof, a vertically-pivoted saw-guide support, and a pinion adapted to rotate with said support and engaging the aforesaid rack, substantially as and for the purpose set forth.

7. In combination with the bed, a breast rising therefrom and movable longitudinally thereon, a rack on said breast lengthwise thereof, a vertically-pivoted saw-guide support, a pinion pivoted concentric with the pivot of said support and engaging the aforesaid rack, and a dog adapted to lock the pinion to the pivoted saw-guide support, and thereby cause said parts to turn simultaneously, substantially as described.

8. In combination with the bed and breast rising therefrom, a vertical socket fixed to and projecting from the bed at the rear of the breast, a hub pivoted in said socket, posts rigidly secured to said hub, united sleeves sliding on said posts, and a saw-guide extending horizontally from said sleeves, consisting of an arm adapted to embrace the back of a saw and hold it in position during operation, substantially as described.

409,456. **FEEDING MECHANISM FOR LATHES.** HENRY M. DARLING, Seneca Falls, N. Y., assignor to Adelbert S. Davis, same place. Filed Mar. 25, 1889. Serial No. 304,653. (No model.)



Claim.—1. The combination, with the main feeding mechanism of a lathe and a lathe-carriage provided with a cross-feed, of an auxiliary feeding device, substantially as described, for transferring motion from the main feeding device, and a lock for transferring the motion

from the auxiliary feeding device to the cross-feed or to the lathe-carriage, substantially as and for the purpose specified.

2. The combination, with the main feeding mechanism of a lathe, the lathe-carriage, and a cross-feed provided thereon, of the wheel D, for transferring motion from the main feeding mechanism to the cross-feed, and a lock for preventing the rotation of said wheel to feed the carriage longitudinally, substantially as and for the purpose specified.

3. The combination of the main feeding mechanism C of a lathe, the wheel D, the hollow stud E, a lock for engaging the wheel D, and the rod M, connected to operate the lock, substantially as and for the purpose specified.

4. The combination, with the main feeding mechanism of a lathe, the hollow stud E, and the wheel D, journaled thereupon and provided with a beveled face, of the beveled lock N, for engaging said face of the wheel D to the rod M, substantially as and for the purpose specified.

5. The combination, with the main feeding mechanism of a lathe, of the hollow stud E, the wheel D, mounted thereupon and provided with serrations, the serrated lock N, for engaging the serrations of the wheel D, and the rod M, substantially as and for the purpose specified.

6. The combination of the main feeding mechanism of a lathe with the wheel D, connected to operate the lathe-carriage, the lock N, and means for engaging said lock with the wheel D, substantially as and for the purpose described.

7. The combination of the main feeding mechanism of a lathe with the wheel D, for conveying motion to the carriage thereof, the lock N, prevented from rotary movement, and means for engaging and disengaging said lock with said wheel, substantially as and for the purpose set forth.

8. The combination of the main feeding mechanism of a lathe, the lathe-carriage, the wheel D, for conveying motion to the carriage, the yoke L, provided with a projecting face N, and means for engaging said face with the wheel D, substantially as and for the purpose set forth.

9. The combination of the main feeding mechanism of a lathe, the carriage of a lathe, the wheel D, for conveying motion to the carriage, the yoke L, having the projecting face N for locking the wheel D, dog-pins *m*, for preventing movement of the yoke, and means for moving said yoke toward and away from the gear, substantially as set forth.

10. The combination of the main feeding mechanism of a lathe, the lathe-carriage, the wheel D, journaled on a spindle secured to the carriage, the yoke or bracket L, having the projecting face N for locking the wheel D, pins a^2, for guiding the yoke L, means for engaging said yoke with the gear D, and springs for disengaging the said parts, substantially as and for the purpose set forth.

11. The combination of the main feeding mechanism of a lathe, the lathe-carriage, the projecting hollow stud E, the wheel D, journaled thereupon, the yoke L, guided on pins a^2, secured to the lathe-carriage, the rod M, secured to the yoke, and means for operating said rod, substantially as and for the purpose set forth.

12. The combination of the main feeding mechanism of a lathe, of the lathe-carriage, the hollow stud secured thereto, the wheel D, mounted thereupon, the yoke L, having a projecting face N, a guide-pin *m* for the yoke, springs interposed between the yoke and the carriage, the rod M, and clamping device M', for engaging said projecting face of the yoke L with the wheel D, substantially as and for the purpose specified.

13. The combination, with the main feeding mechanism of a lathe and the carriage of a lathe, of the stud E, secured to the carriage, the wheel D, mounted upon said stud, the lock N, for preventing the rotation of the wheel D, the rod M, for operating the lock, and the pin *l*, secured to said rod for engaging a slot in the adjacent face of the stud E, substantially as and for the purpose specified.

14. The combination, with the main feeding mechanism of a lathe, of the lathe-carriage, the stud E, secured to said carriage, the wheel D, mounted thereupon, the wheel F, secured to the wheel D, the hand-wheel G^3, and gearing between said hand-wheel and the wheel F, substantially as and for the purpose specified.

15. The combination, with the main feeding mechanism of a lathe, the carriage of a lathe, and a cross-feed provided on the carriage, of the wheel D, mounted on a support secured to the carriage, the wheel F, secured to said wheel, and an intermediary between the cross-feed and said wheel D, substantially as and for the purpose described.

16. The combination, with the main feeding mechanism of a lathe, the carriage of the lathe, and the cross-feed, of the wheel D, mounted on a support secured to the carriage, a spur-gear F, secured to the wheel D, an intermediary between the cross-feed and the wheel F, and a lock N, for stopping the rotation of the wheel D and the movement of the cross-feed, substantially as and for the purpose specified.

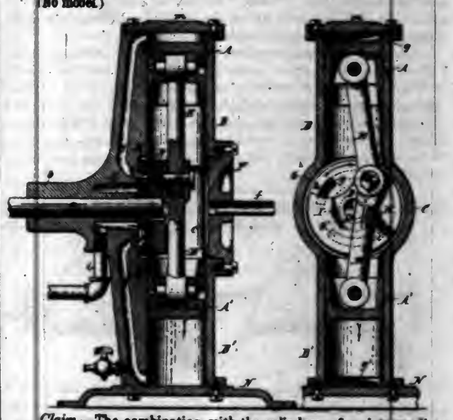
17. The combination, with the main feeding mechanism of a lathe, the carriage of the lathe, and the cross-feed, of a wheel D, journaled on a support secured to the carriage, a spur-gear F, secured to the wheel D, and an oscillating intermediary between the cross-feed and the said wheel F, for transferring motion to the cross-feed, substantially as and for the purpose set forth.

18. The combination, with the main feeding mechanism of a lathe, the carriage of a lathe, and the cross-feed, of the stud E, projecting from the carriage, the wheel D, journaled upon the stud E, the bracket I, pivoted upon the stud, and intermediary gearing mounted upon the bracket I and oscillating to connect the motion of the wheel D to the cross-feed, substantially as and for the purpose specified.

19. The combination, with the main feeding mechanism of a lathe, the carriage of a lathe, and the cross-feed, of a wheel D, for conveying motion from the feeding mechanism, the swinging bracket I, the intermediary J, interposed between the cross-feed and the wheel D, the stud provided upon said swinging bracket, and means for retaining said stud in its adjusted position, substantially as and for the purpose set forth.

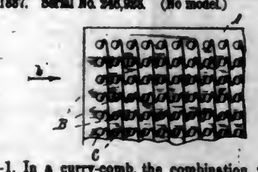
20. The combination, with the main feeding mechanism of a lathe, the lathe-carriage, and the cross-feed, of the wheel D, journaled on a spindle secured to the carriage, the bracket I, pivoted to said spindle and provided with a stud guided in the apron of the lathe-carriage, a clamp for retaining the bracket in its adjusted position, intermediary gearing mounted upon said bracket for conveying motion from the wheel D to the cross-feed, and a lock for stopping the rotation of the wheel D and the feeding of the cross-feed, substantially as and for the purpose specified.

409,457. STEAM-ENGINE. JOSEPH W. DENNIS and FRANK A. SHOEMAKER, Buffalo, N. Y. Filed May 13, 1889. Serial No. 310,869. (No model.)



Claim.—The combination, with the cylinders, of an intermediate chamber which communicates with the inner ends of the cylinders, and which is at one side provided with an opening closed by a removable cover, and at the opposite side closed and provided with a central shaft-bearing, and an annular valve-seat containing an annular exhaust-port surrounding said bearing, and ports leading to the ends of the cylinders, a shaft arranged in said bearing, a crank secured to said shaft, a valve mounted on said shaft between the crank and the valve-seat, and pistons connected with said crank, substantially as set forth.

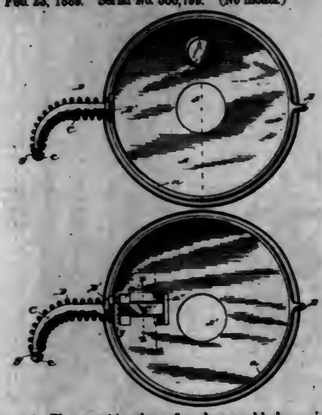
409,458. CURRY-COMB. LEVI M. DEVORE, Freeport, Ill. Filed Aug. 15, 1887. Serial No. 246,928. (No model.)



Claim.—1. In a curry-comb, the combination, with a back of leather or the like, of a working-face composed of wire coils, each having its spirals passed into and out of the back, inclosing small portions thereof within the coils, substantially as set forth.

2. In a curry-comb, the combination, with a flexible sheet of leather or the like, of the wire coils lying principally upon one face thereof, and having their end spirals passed through the sheet and bent bodily down upon the opposite surface without uncoiling, and a second flexible sheet stitched to the first to cover said end spirals and retain them in place, substantially as set forth.

409,459. STOVE-PIPE DAMPER. LEVI M. DEVORE, Prescott, Ill. Filed Feb. 23, 1889. Serial No. 300,799. (No model.)

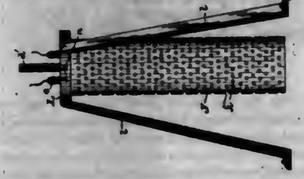


Claim.—1. The combination of a damper-blade, a rigid handle adapted to operate the same and formed with a spiral groove, and a spiral spring adapted to be passed over said handle by moving one or more of its coils spirally along said groove.

2. The combination, with a damper-blade and a curved handle rigid therewith and adapted to be passed through an opening in the pipe, of a spring encircling the handle and abutting against the pipe and against a projection or enlargement on the handle, the projection or enlargement being formed with a spiral groove adapted to permit the passage of the spring over it by a spiral movement.

3. The combination, with the blade A, having the gudgeon B, the boss B', and curved handle C, of the spiral spring D, adapted to abut at one end against a pipe in which the damper is placed and at the other against an enlargement c on the handle C, substantially as and for the purpose set forth.

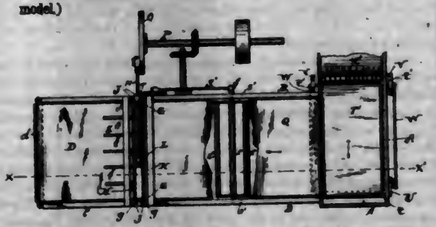
409,460. ELECTRICAL CIRCUIT CLOSER FOR WATER-INDICATORS. FRANKLIN M. DUNN, ALPHONSA PRITCHARD, and JOSEPH H. KING, Baltimore, Md. Filed Mar. 22, 1889. Serial No. 304,249. (No model.)



Claim.—1. The combination of a tubular case A, provided with perforations *b*, binding-posts for the wires, and contact-points *g*, a float movable in the case and provided with contact-pieces, a supporting-ring L, and a gimbal-ring connecting the said case and supporting-ring.

2. The combination of a tubular case A, provided with perforations *b*, binding-posts for the wires, and contact-points *g*, a float movable in the case and provided with contact-pieces, a perforated jacket around the case, a support for the device, and a gimbal-ring connecting the said case and support.

409,461. BAND-CUTTER AND FEEDER. HARRY L. EARLE, Minneapolis, Minn., assignor to the Earle Manufacturing Company, same place. Filed Dec. 27, 1886. Renewed Apr. 1, 1889. Serial No. 305,630. (No model.)



Claim.—1. The combination, with a supporting-frame, of a bundle-carrier mounted in said frame, vertical guides secured to said frame and extending above said carrier, a band-cutter carriage movable upward in said guides by the pressure of the bundles, a band-cutter mounted on said carriage, and a bundle-guide secured to said carriage at an acute angle to the plane of said carrier, substantially as described

2. The combination, with a supporting-frame, of a bundle-carrier mounted in said frame, vertical guides secured to said frame and extending above said carrier, a band-cutter carriage movable upward in said guides by the pressure of the bundles, a band-cutter mounted on said carriage and reciprocating transversely to the path of the bundles, and a bundle-guide secured to the under side of said carriage at an acute angle to said carrier and provided with spring guards or fingers extending outward over the path of the uncut bundles, substantially as described.

3. The combination, with a supporting-frame, of a bundle-carrier mounted in said frame, vertical guides secured to the opposite sides of said frame and extending above said carrier, a band-cutter carriage movable upward in said vertical guides by the pressure of the grain, cross-head guides lengthwise of said carriage, a cross-head movable between said cross-head guides, a band-cutter or knife secured to said cross-head and projecting below said carriage, a crank-shaft coupled to a source of motion, and a connecting-rod pivotally attached to said cross-head and crank, substantially as described.

4. In a band-cutter, the combination, with the slotted cutter-head L, having at one end a lug-seat and at the other a spring-catch *l*, directly in line with said slot, of the knife M, fitting said slot and provided with the lug *m'*, adapted to fit said lug-seat, and with the lug *m''*, adapted to be engaged by said catch *l*, substantially as described.

5. The combination, with a suitable supporting-frame, of the vertical guiding-rods J, rigidly secured to said frame, the cutter-carriage F, having keepers *g*, sliding on said rods, the pairs of cross-head guides H H and H' H', arranged and shaped, as described, the cross-head L, the band-cutter M, attached to said cross-head, and the connecting-rod N, coupled to a source of motion, substantially as described.

6. The combination, with the frame B, of bundle-carrier D, guiding-rods J, carriage F, provided with keepers *g*, embracing said rods, cross-head guides H H and H' H', as described, guards K, attached to one of the guides H', facing the uncut bundle, cross-head L, detachable arc-shaped cutter M, attached to said cross-head, connecting-rod N, crank-disk Q, and driving-shaft P, substantially as described.

7. The combination, with a threshing-cylinder and a suitable supporting-frame arranged in front of said cylinder, of a feeding-belt mounted on driving-rollers and supported on said frame at an incline to said cylinder, fixed bearings in said frame for the lower of said driving-rollers, bell-crank levers pivoted at their elbows to said frame and having bearings in their outer arms for the upper of said driving-rollers, a crank-shaft coupled to a source of motion, and connecting-rods from said crank-shaft to the lower arms of said bell-crank levers, substantially as described.

8. The combination, with a threshing-cylinder, of an inclined slotted casing in front of said cylinder, a feeding-belt mounted on driving-rollers supported on said frame at an incline to said cylinder, fixed bearings in said casing for the lower of said rollers, bell-crank levers pivoted at their elbows adjacent to the slots in said casing and having bearings in their outer arms for the upper of said rollers, a crank-shaft coupled to a source of motion, and connecting-rods from said crank-shaft to the lower arms of said bell-crank levers, substantially as described.

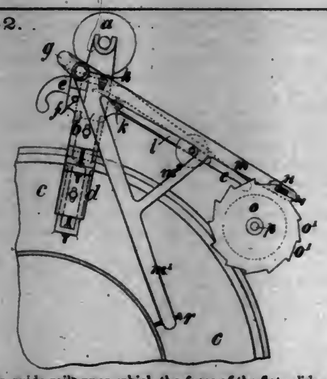
409,462. APPARATUS FOR CONTROLLING THE GRINDING OF CARDING-ENGINE FLATS. JOHN M. HETHERINGTON, Manchester, County of Lancaster, England. Filed May 28, 1888. Serial No. 275,277. (No model.) Patented in England Feb. 21, 1887. No. 2,642.

Claim.—1. In apparatus for grinding the traveling flats of carding-engines, the combination of a grinding-roll and movable guide-rails, against which the working-faces of the flats are pressed during the grinding, with a lever connected to and controlling the guide-rails, and a cam having faces to act on said lever to move each flat toward the grinding-roller while the flat is being ground and to quickly withdraw the flat when the grinding is finished, all substantially as set forth.

2. In apparatus for grinding the traveling flats of carding-engines, the combination of a grinding-roller and movable guide-rails, against which the flats are pressed at opposite sides of the engine, with a cross-bar connecting the guide-rails, a lever on said cross-bar, and a cam controlling the said lever, whereby the outer end of the latter is slowly lifted during the time the card is in contact with the grinder, and is dropped just before the next flat in the chain touches the grinder, all substantially as set forth.

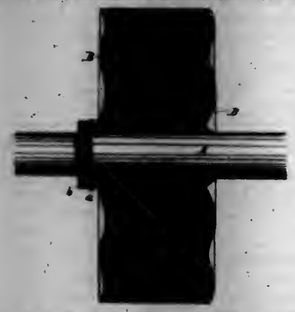
3. In apparatus adapted for application to a carding-engine for grinding the traveling flats, the combination of a grinding-roll, and

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the movable guide-rails upon which the faces of the flats slide during the grinding, with a lever connected to and controlling said guide-rails, and a cam to act upon the lever to slowly move it during the grinding to compensate for the inclination of the working-face of the flat, substantially as set forth.

409,463. ARMATURE-CORE FOR DYNAMOS. DANIEL HIGHAM, Philadelphia, Pa., assignor to the Higham Patent Right Company, Rockland, Me. Filed May 10, 1889. Serial No. 310,368. (No model.)



Claim.—1. An armature-core for drum-winding, consisting of a shaft and a series of thin iron corrugated disks mounted thereon, with intervening air-spaces, but without other insulation than the air-spaces, substantially as described.

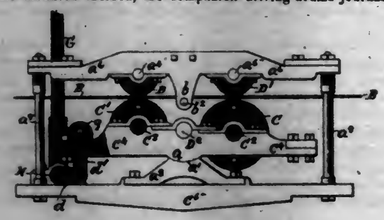
2. An armature-core for drum-winding, consisting of a shaft and a series of thin iron corrugated disks mounted thereon, with intermediate air-spaces, except near the shaft, where the disks are in contact with each other, substantially as set forth.

3. A core for the armature of a dynamo-electric machine or electric motor having its main body composed of spaced iron disks provided with annular corrugations, substantially as and for the purpose set forth.

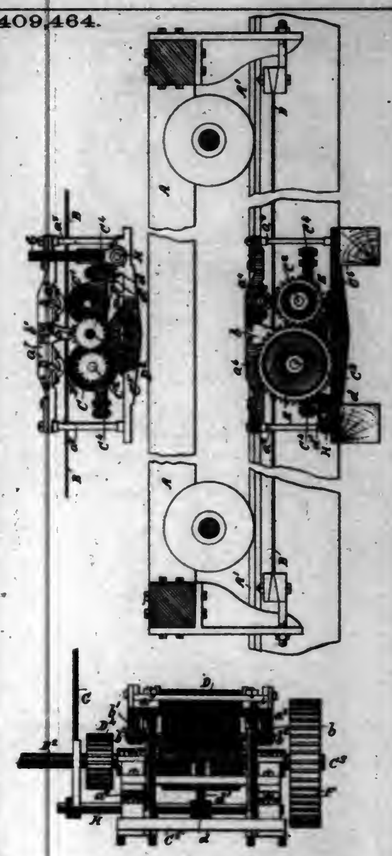
4. A core for the armature of a dynamo-electric machine or electric motor, comprising a shaft and corrugated thin iron disks mounted thereon and acute corrugations at the center, whereby the main portions of the disks are spaced from each other when strung upon the shaft, all substantially as set forth.

409,464. FEED MECHANISM FOR SAW-MILL CARRIAGES. ANDREW R. HOFFMAN, Fort Wayne, Ind. Filed Apr. 2, 1889. Serial No. 305,675. (No model.)

Claim.—1. In a friction device for transmitting motion to log-carriages, the combination, with a bed-plate, of a tilting or rocking frame mounted thereon, the companion driving-drums journaled in



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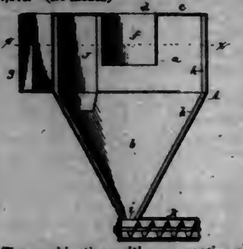
the tilting frame, the feed-ribbon placed just above and normally out of contact with said drums and having its ends secured to the respective ends of the log-carriage, the companion rollers journaled just above the ribbon and in line with the driving-drums, and means, substantially as described, for rocking said frame, whereby the friction-drums may be thrown up alternately against the ribbon and the same gripped between either drum and its corresponding roller, thereby imparting a reciprocating movement to the carriage, substantially as and for the purpose set forth.

2. In a friction-feed for log-carriages, the combination of the feed-ribbon, the driving-drums, the companion gripping-rollers, and the guide-roller located underneath said ribbon and supporting the same normally out of contact with the driving-drums, substantially as and for the purpose set forth.

3. In a friction-feed device of the character described, the combination of the bed-plate, the step-brackets bolted thereon and provided with a concave bearing-surface, the tilting or rocking frame provided with a convex bearing-surface and nesting in said brackets, the rock-shaft, the operating-lever mounted thereon, the rocker-arm, the link connecting the tilting frame and rocker-arm, the driving or feed drums, and their companion gripping-rollers, substantially as and for the purpose set forth.

4. In a friction-feed of the character described, the combination of the supporting-frame, the tilting frame having a rocking bearing therein, the friction driving-drums journaled in the tilting frame, the gear-wheels mounted upon the respective shafts of said drums and engaging with each other, the feed-ribbon, the log-carriage to which the respective ends of said ribbon are secured, the companion gripping-rollers located above said ribbon in line with the driving-drums, the driving-shaft journaled in the tilting frame, the gear-wheel mounted upon said driving-shaft, and the companion gear-wheel mounted upon one end of the shaft C^3, and with which the gear-wheel mounted on the driving-shaft engages, substantially as and for the purpose set forth.

409,465. DUST-COLLECTOR. ISAAC W. HOLT, Jackson, Mich., assignor to the Knickerbocker Company, same place. Filed July 6, 1888. Serial No. 307,173. (No model.)



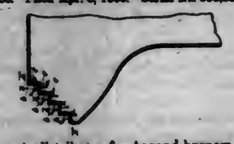
Claim.—1. The combination, with a separating-chamber having an imperforate peripheral wall and means whereby the dust-laden air is caused to assume a whirling motion in the same, of a recessed or depressed dust-discharge formed in the peripheral wall of the separating-chamber, substantially as set forth.

2. The combination, with a tapering separating-chamber, of an inlet-spout which delivers the dust-laden air to the large end of the separating-chamber, an air-exit at the large end of the separating-chamber, and a recessed or depressed dust-discharge formed in the side of the tapering chamber and provided with a discharge-opening at the small end thereof, substantially as set forth.

3. The combination, with the dust-separating chamber having an imperforate peripheral wall, a tangential inlet-spout, a central air-exit, and a dust-discharge opening, of a shield or skimmer arranged within the separating-chamber, open at its front end, where it receives the dust, and closed at its rear end, substantially as set forth.

4. The combination, with a dust-collecting chamber having an imperforate peripheral wall composed of a cylindrical and a conical or tapering portion, and having a central air-exit in the cylindrical portion and a dust-exit at the apex of the conical portion, of an inlet-spout opening tangentially into the side of the cylindrical portion, substantially as set forth.

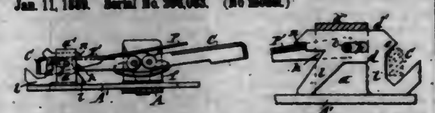
409,466. AIR-DISTRIBUTER FOR ARGAND LAMPS. JOSEPH JARDS, Meriden, Conn., assignor to the Bradley & Hubbard Manufacturing Company, same place. Filed Apr. 8, 1889. Serial No. 306,836. (No model.)



Claim.—1. An air-distributer for Argand burners, adapted to be concentrically arranged in the burner and having an exposed surface above the burner, the said exposed surface perforated with alternating series of vertical and horizontal perforations, substantially as described.

2. The herein-described distributer for Argand burners, constructed with one or more annular offsets forming substantially alternating horizontal and vertical surfaces, the said horizontal and vertical surfaces perforated to form alternating series of vertical and horizontal perforations, substantially as described.

409,467. ANIMAL-TRAP. HARRY R. KELLEY, Niagara Falls, assignor to the Oneida Community, (Limited,) Community, N. Y. Filed Jan. 11, 1889. Serial No. 296,063. (No model.)



Claim.—1. In combination with the frame, bait-pan, and jaws of an animal-trap, a sliding dog secured intermediate of its length to the frame and having one end provided with catches engaging the bait-pan, and the opposite end of said dog provided with wedging-bearings engaging one of the jaws, substantially as set forth.

2. In combination with the frame, bait-pan, and jaws of an animal-trap, a duplex post on the frame, a dog sliding in said post and adapted to engage at opposite ends simultaneously the bait-pan and one of the jaws, and provided with a longitudinal slot, and a pin passing through the post and aforesaid slot, substantially as described and shown.

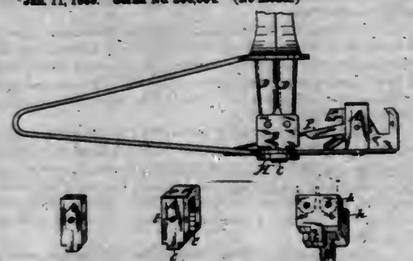
3. In combination with the frame, bait-pan, and jaws, the duplex post *a*, formed with the cap *a'*, the dog *d*, stamped out of sheet metal and sliding in the aforesaid post and formed with the horizontal top bearing *d'*, legs *l l*, longitudinal slot *b*, nose *n* at one end and wedging tail-piece *e* at the opposite end, and the pin *c*, passing transversely through the post and slot *b*, substantially as described and shown.

4. In combination with the frame, bait-pan, and jaws, the sliding dog *d*, formed at one end with a wedging catch engaging one of the jaws and at the opposite end with the nose *n* and guard *o* above said nose, substantially as and for the purpose set forth.

5. In combination with the duplex post *a*, the bait-pan and its sustaining catch or dog connected in common to said post, as set forth.

6. In combination with the duplex post *a*, the sliding dog *d*, provided with the slot *b*, the bait-pan P, provided with perforated ears, and the pin *c*, passing transversely through the post and through the ears of the bait-pan and slot of the aforesaid dog, substantially as described and shown.

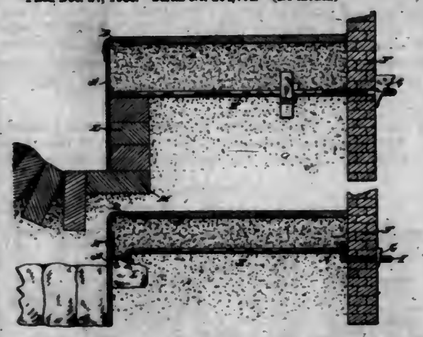
409,468. ANIMAL-TRAP. HARRY R. KELLEY, Niagara Falls, assignor to the Oneida Community, (Limited,) Community, N. Y. Filed Jan. 11, 1889. Serial No. 296,064. (No model.)



Claim.—1. In an animal-trap, the pan-post A and its rivets *c c*, formed in one piece of a blank stamped out of sheet metal and consisting of the elongated plate A', terminating with the prongs C C, bent at right angles and in one and the same direction on the lines *b b*, and perforated outside of and equidistant from said lines, substantially as described and shown.

2. In an animal-trap, the jaw-post B and its rivets *c c*, formed in one piece of a blank stamped out of sheet metal and consisting of the elongated plate B', provided with the notch *a* in the center of one of its longitudinal edges, and with the prongs C C on the opposite edge, and bent at right angles and in one and the same direction on the lines *d d*, substantially as described and shown.

409,469. PAVEMENT-CURB. ISRAEL L. LANDIS, Lancaster, Pa. Filed Dec. 27, 1888. Serial No. 294,771. (No model.)

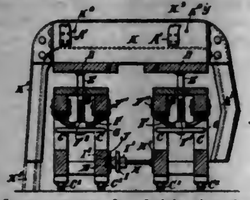


Claim.—1. The combination, with the curb-plate, of the angle-iron bolted thereto and provided with a series of apertures in its projecting ledge for the engagement of the hooked ends of the binding-rods, substantially as specified.

2. The combination, with the binding-rod, of the angle-iron having openings or perforations for a binding-wedge and secured to said rod in such manner as to clamp it in position to the foundation-walls of a building, substantially as set forth.

3. The combination, with the curb-plate and its perforated angle-iron, of the hooked rod engaging said plate and the perforated angle-iron and wedge, whereby the rod is clamped to the walls of a building, substantially as specified.

409,470. APPARATUS FOR TREATING ANIMALS BY ELECTRICITY. GEORGINA M. LAWRANCE, London, England. Filed Apr. 11, 1888. Serial No. 306,875. (No model.)



Claim.—1. In an apparatus for administering electricity to animals, the combination, with a vertically-adjustable bed, of supports therefor arranged beneath said bed, a boss swiveled on the frame of one support and engaging with a screw-shaft on the frame of the other, and threaded shafts for separately adjusting said supports, substantially as described.

2. In an apparatus for treating animals, the combination, with a bed concaved to support the animal underneath and having a metallic conducting-lining serving as one electrode, of means for raising said bed, and a generator of electricity connected to the lining and to a movable electrode adapted to be applied to different parts of the body, substantially as described.

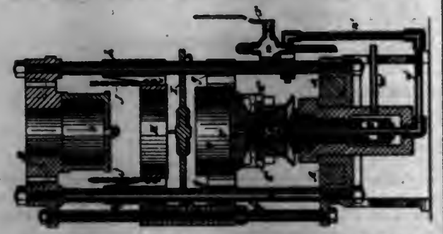
3. In apparatus for treating animals, the combination, with a vertically-adjustable bed provided with extensions at its ends to support the legs and having a concave surface to receive the body, said surface lined with a conducting metal, of means for raising and lowering said bed, and supplemental extensions or filling-pieces forming continuations of the extensions attached to the ends of the bed, substantially as described.

4. In apparatus for treating animals, the combination, with a vertically-adjustable bed having a conducting metal-lined concave surface and provided with extensions attached thereto at its ends and lined with metal to support the limbs, of supports raising and lowering said table, filling-pieces or supplemental extensions, also metal-lined and forming continuations of the extensions on the bed, and a generator of electricity connected to the metal lining and to a movable body-electrode, substantially as described.

5. In apparatus for treating animals, the combination, with a vertically-adjustable bed having a concave metal-lined surface and provided with extensions depending from its ends and metal-lined to support the limbs, of independent horizontally and vertically adjustable supports arranged beneath said bed, a generator of electricity connected to the metal lining of the bed and extensions, and a movable body-electrode, substantially as described.

6. In apparatus for treating animals, the combination, with a vertically-adjustable bed having a concave metal-lined surface and provided with end extensions having continuations of said metal lining, of a generator of electricity consisting of a casing containing separate compartments for the electrolyte, for an intensity-coil, and for the battery-plates and chemicals, said plates being composed of zincs Q and platinum P, adapted to be raised and handled by a handle R, having clips R', substantially as described.

409,471. SAND-MOLDING MACHINE. FREDERICK G. LEEDER, Dalmuir, County of Dumbarton, Scotland. Filed Apr. 19, 1889. Serial No. 307,949. (No model.) Patented in England Aug. 7, 1888, No. 11,268.



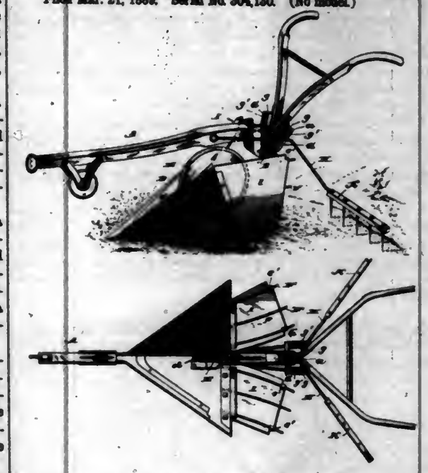
Claim.—1. A sand-molding machine composed of the following elements arranged and operating in combination, as follows: the framing A, carrying hydraulic rams B C, one placed within the other, a head on the ram C, to which is attached a lower mold-box G, and a platen on the ram B, adapted to enter said mold-box, a pattern-plate I, fitted to swing horizontally out or into position between the mold-box G and an upper mold-box H and to slide vertically in guides with said boxes, and a resisting plate or entablature E, adapted to resist the pressure of the rams upon sand compressed within the mold-boxes on both sides of the pattern-plate, substantially as described.

2. In a sand-molding machine, the framing A, carrying hydraulic rams B C, and a pressure-resisting plate E, in conjunction with the flasks or mold-boxes G H, fitted to slide on guides D D, the box G being carried by the ram C, a pattern-plate I, adapted to be placed between said boxes, and a platen carried by the ram B, substantially as described.

3. In a sand-molding machine, the combination of a pressure-resisting plate, the vertically-guided mold-boxes G H, a pattern-plate free to be swung horizontally out or into position between said boxes and to slide vertically with the mold-boxes, and rams carrying one of said mold-boxes and a compressing-platen, substantially as described.

4. In a sand-molding machine, the arrangement, in combination, of a pressure-resisting plate, the hydraulic rams B C, fitted one within the other, one ram being provided with a platen fitted within a mold-box carried by the other ram and being adapted to eject from the box the sand-mold produced in the machine by the exertion of pressure of both rams, substantially as described.

409,472. POTATO-DIGGER. DANIEL LEVARI, New Haven, Vt. Filed Mar. 21, 1888. Serial No. 304,130. (No model.)



Claim.—1. In a potato-digger, the combination of a double-shovel plow, provided centrally at its upper portion with a slot, and a colter journaled beneath the mold-board, so that its upper portion will pass through the slot, the lower portion of said colter being on a line or beneath the point of the plow, substantially as shown and for the purpose set forth.

2. In a potato-digger, the combination of a centrally-slotted double-shovel plow, separating-boards B B, attached to the double-shovel plow on each side of the slot, said boards being also secured to the handle-bars and plow-beam, and a wheel or colter E, journaled beneath the mold-board, so that its upper portion will extend through the slot in the plow and its lower portion be on a line with or below the plow-point, substantially as shown, and for the purpose set forth.

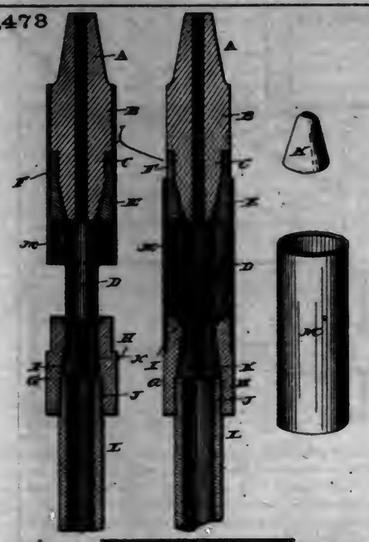
3. The combination, with a double-shovel plow, of the bars F, secured to the rear portion thereof, and plates I, mounted on said bars, said plates having the lower under guides and the upper rear corners bent under to form eyes *d'*, so as to embrace and slide on the bars, substantially as shown.

4. In a potato-digger, the combination of the beam A, plates B B, secured to said beam and to the lower ends of the handle-bar, said plates extending forwardly parallel with each other, the ends thereof being bent for attachment to the under side of the shovel-plow, a shovel-plow provided centrally with a slot *d*, through which slot passes the forward and upper portion of the colter, said colter being journaled to the plates B B and extending above and below the plow, and removable handles, substantially as shown, and for the purpose set forth.

409,473. PIPE-COUPLING. DAVID LEFFT, Mansfield, Ohio. Filed Sept. 28, 1888. Serial No. 286,682. (No model.)

Claim.—The combination of the nozzle, the flexible tubing connected thereto, the connecting pipe or joint, and the lower connecting pipe or joint provided with an annular collar or shoulder, and the exterior cylindrical casing or sleeve, substantially as set forth.

409,473



409,474. METHOD OF MANUFACTURING METAL WHEELS. JAMES R. LITTLE, Quincy, Ill., assignor to the Quincy Metal Wheel Company, same place. Filed Apr. 24, 1888. Serial No. 308,377. (No model.)

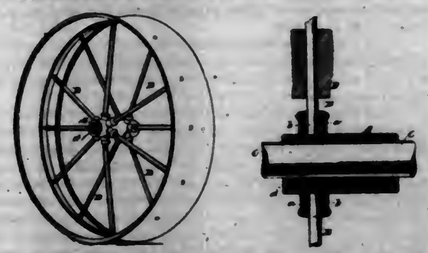


Claim.—1. The method of uniting the hub and spokes of a metal wheel, which consists in casting the hub upon the inner ends of the spokes and afterward enlarging each of the latter within the former, substantially as and for the purpose specified.

2. The method of uniting the hub and spokes of a metal wheel, which consists in casting the hub upon and around the inner ends or tenons of the spokes, and then by longitudinal compression enlarging such tenons within their mortises, substantially as and for the purpose shown.

3. The method of uniting the hub and spokes of a metal wheel, which consists in casting the hub upon and around the inner ends of the spokes, and then by the longitudinal compression of the inner portion of said spoke expanding the same within and immediately outside of said hub, substantially as and for the purpose set forth.

409,475. METAL WHEEL. JAMES R. LITTLE, Quincy, Ill., assignor to the Quincy Metal Wheel Company, same place. Filed Apr 24, 1888. Serial No. 308,378. (No model.)

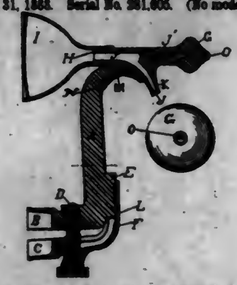


Claim.—1. A metal wheel in which the hub is cast upon the spokes and said spokes expanded within their mortises, substantially as and for the purpose specified.

2. A metal wheel in which the hub and spokes are united by casting and the portions of the spokes within and immediately outside of the hub are expanded laterally, substantially as and for the purpose shown.

3. A metal wheel in which the spokes and hub are united by casting and each spoke within and immediately outside of the hub is compressed longitudinally, substantially as and for the purpose set forth.

409,476. COMBINED WRENCH AND OIL-CAN. JOHN H. LOSS, Los Angeles, Cal., assignor of one-half to Walter S. Maxwell, same place. Filed July 31, 1888. Serial No. 281,605. (No model.)



Claim.—In a combined wrench and oiler, the handle G, provided with a longitudinal oil-passage J' and a lateral oil-passage J, in combination with the oil-receptacle secured to the handle.

409,477. WIRE-FENCE MACHINE. LEONIDAS C. LOWDEN, Indianapolis, Ind. Filed June 6, 1889. Serial No. 313,279. (No model.)



Claim.—1. In a wire-fence machine, a frame-work, a series of twisters revolving therein, socket-clamps *sc*, bolted to such frame, for holding the upper and lower twisters in position, and a central socket-clamping bar *sc*, also bolted to such frame, having one or more extra socket-openings, allowing for the adjustment as to space of the twisters, in combination with means for revolving the twisting mechanism, substantially as shown and described.

2. In a wire-fence machine, a socket-clamping bar *sc*, having socket-openings 4 and 3 at its ends and a socket-opening 1 at its center, and an intermediate socket-opening 2 between the central and lower openings, substantially as shown and described.

3. The lever *l*, provided with a slot *sl* at its upper end, and the chain *ch*, connected to such lever and also to the machine-frame, substantially as shown and described.

409,478. HAY-FORK. SIMON K. LOUKY, Lang Bottom, Ohio. Filed May 2, 1889. Serial No. 310,170. (No model.)

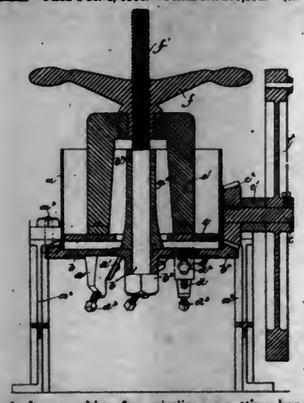


Claim.—The combination, in a hay-fork, of the tines A and A', having members B and B' and D and D' formed integral therewith, pulleys E and E', located on opposite sides at the junction of the tines and the members B and B', pulleys F and F', located between the pivotal point of connection and ends of the members D and D', flexible connection G, attached to the loops or eyes *d* and *d'*, and a flexible connection H, also connected to said loops or eyes and passed over the pulleys, and operating-cord I, the parts being organized substantially as shown, and for the purpose set forth.

409,479. WATERPROOFING COMPOUND. THOMAS MANAHAN, New York, N. Y., assignor to Margaret E. Manahan, same place. Filed May 18, 1889. Serial No. 311,008. (No specimens.)

Claim.—The herein-described composition of matter, serviceable for waterproofing paper, consisting of resin-oil, resin, pine-tar, spirits of turpentine, and a drier, such as alcohol, substantially in the proportions specified.

409,480. **MACHINE FOR GRINDING BONE.** FRANKLIN W. MANN and CLARENCE H. FARRINGTON, Milford, Mass.; said Farrington assignor to said Mann. Filed Feb. 8, 1888. Serial No. 263,152. (No model.)



Claim.—1. In a machine for grinding or cutting bone, the cylinder *a*, rotatable bottom plate and knives carried by it, and means, substantially as described, for rotating said bottom plate, combined with the platen or follower *c*, yoke *d*, and cross-bar or handle *f*, and the fixed support or rod *b'*, having the screw-threaded end *f'*, whereby the platen may be moved vertically, substantially as described.

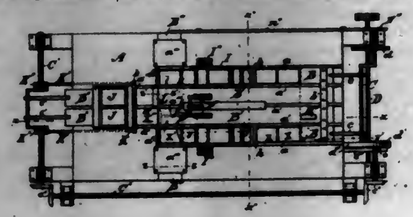
2. In a machine for grinding or cutting bone, the fixed cylinder *a*, having the fixed division-wall extended from the top to near the bottom of said cylinder, combined with the rotatable bottom plate and knives carried by it, and means, substantially as described, for rotating the bottom plate, the split platen or follower, slotted to receive the division-wall, and means, substantially as described, for moving it independently of the bottom plate, substantially as described.

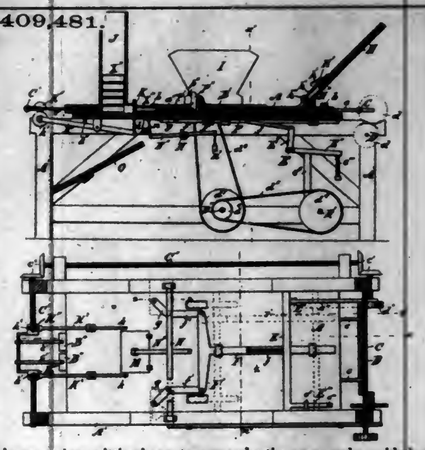
3. In a machine for grinding or cutting bone, the fixed cylinder *a* and partition-wall a^4, combined with the rotatable bottom plate, knives carried by it and inclined with relation thereto, and means, substantially as described, to rotate said plate, the split platen or follower, its yoke, and the cross-bar *f* and fixed support *b'*, having the screw-threaded end *f'*, as and for the purposes set forth.

4. In a machine for grinding or cutting bone, the fixed cylinder *a* and division-wall a^4, combined with the rotatable bottom plate *b*, having a series of holes therein at different distances from its center, lugs *d'* adjacent to said holes, adjustable slotted knives carried by said lugs, inclined with relation to the bottom plate, set-screws d^3 d^3 to adjust said knives, and means, substantially as described, for rotating said plate, and the slotted platen or follower, its yoke and cross-bar, and the fixed support *b'*, having the screw-threaded end *f'*, substantially as described.

409,481. **SLIDE MATCH-BOX-FILLING MACHINE.** JOHN D. MARTIN, GEORGE H. MILLER, and ALFRED DROUIN, Hull, Quebec, Canada. Filed Apr. 24, 1889. Serial No. 308,473. (No model.)

Claim.—1. A match-box-filling machine comprising a frame and table, parallel longitudinal races for the match-boxes thereon, parallel longitudinal races in continuation of the central races for the match-box covers, transverse races for the transfer of the boxes from one race to another, pushers in said races having a reciprocating motion working in opposite and transverse directions, an inclined feed-slide provided with races to receive boxes and with means of holding and releasing them, a match-hopper placed over each race holding empty





boxes and permitting boxes to pass under the same, and provided with a spring at the entrance and a rotary roller at its exit, a vertical cover-hopper placed over each cover-race, a stop placed across the cover-race between the cover-hopper and match-hopper, said stop having an intermittent lifting action, a set of fine plate-springs in the cover-race projecting toward and into the cover, and a downwardly-hinged trap-door having an intermittent downward swinging movement and provided at its upper surface at the hinged end with a forwardly-projecting plate with upward shoulder, substantially as set forth.

2. In a match-box-filling machine, the combination of the table A, supported on a frame, guides *a a' a''*, forming races on said table, longitudinal pushers B, B', and B'', working in said races, crank-shafts C and C' at the ends of said frame and connected by the shaft C'', and miter-gear with pitmen *c c'*, giving alternate reciprocating motion to said pushers, cam *e* on shaft C, rod *e''*, operated by said cam and pivoted to the arm E', rocking shaft E, having arm E, balanced arm E'', and arm E''', pivoted to a pitman, pitman *f*, pivoted to said arm E''' and to a slide-rod, slide-rod F, connected to said pitman and having a cross-head F', double vertical crank G, journaled in the table and having crank-arms *g g'* connected to the cross-heads by links, links *f'*, connecting cranks and cross-head, and the transverse pushers B'', each having a triangular cavity adapted to receive the upper crank-arm *g'*, set at a right angle to the lower arm *g*, to be operated thereby, substantially as set forth.

3. In a match-box-filling machine, the combination of the table A, provided with guides forming races thereon, reciprocating pushers in said races, an inclined feed-slide H, near the end of the table, having races thereon corresponding to the outer races on the table, a transverse shaft H', journaled over said races, fingers *h'* on said shaft over said races, an arm *h''* on said shaft over one of the central slides, and an incline or wedge H'' on said central slide adapted to lift said arm, substantially as set forth.

4. In a match-box-filling machine, the combination of a table A, guides thereon forming races, reciprocating pushers in said races, a match-hopper I over each outside race, a fine spring *i'* at the lower inside front edge of said hopper, and a shaft I', near the lower inside rear edge thereof and carrying a fluted roller I'', having hooks *i''*, said roller flush with the inner rear end of said hopper and partly covered thereby, and its lowest point level with the top of the race, substantially as set forth.

5. In a match-box-filling machine, the combination of a table A, guides thereon forming races, reciprocating pushers in said races, and a vertical cover-hopper J, near the rear end of the table set over the central races, substantially as set forth.

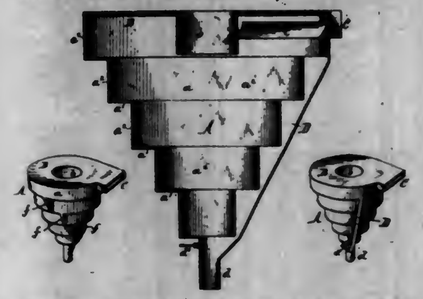
6. In a match-box filling-machine, the combination of a table A, guides thereon forming races, reciprocating pushers in said races, a crank-shaft C at the rear end of said table, a stop K, intersecting the central races transversely, a sliding pin *k*, secured at each end of said stop and passing vertically through said table and pivoted below the table to the end of a double lever, a double lever K', pivoted to each pin fulcrumed to the under side of said table and held up by a spring, the other end reaching under the crank-shaft C', and a cam K'' on said crank-shaft, adapted to depress said end of the lever, substantially as set forth.

7. In a match-box-filling machine, the combination of a table A, having guides thereon forming races, reciprocating pushers in said races, a crank-shaft C at the front end of said table, a trap-door M, hinged in said table and having a shouldered forwardly-projecting

plate M' at the upper surface of the hinged end, a link *n*, pivoted to the under side of said trap and the arm of a rocking shaft, a rocking shaft N, having a double arm N'', pivoted to the link *n* and counterbalanced at the other end, and a rocking arm N', pivoted to a rod, the rod *n''*, pivoted to the said rocking arm and having upward projection *n'''*, bearing against a cam, and the cam N''' upon the crank-shaft C, substantially as set forth.

8. In a match-box-filling machine, the combination of the table A, having guides *a'* to form races, a pusher B', provided at its operating end with a cavity, a rod P', carrying a slide P in said cavity, an upright lever P'', pivoted at its lower end to said rod and fulcramed to said pusher, a bracket *p*, secured to the central guide *a'*, and a cross-bar *p'*, secured to said bracket and adapted to be struck by the upper end of the lever P'' when the pusher B' is near the end of its stroke, substantially as set forth.

409,482. **DUST-COLLECTOR.** ORVILLE M. MORSE, Jackson, Mich., assignor to the Knickerbocker Company, same place. Filed Apr. 12, 1888. Serial No. 270,414. (No model.)



Claim.—1. A dust-collector having the peripheral wall of its separating-chamber composed of inwardly-projecting shelving portions alternating in the longitudinal direction of the separating-chamber, with connecting portions arranged parallel with the axis of the chamber, substantially as set forth.

2. A dust-collector having the peripheral wall of its separating-chamber composed of a series of shelves of gradually-decreasing diameter, and cylindrical bands connecting said shelves, substantially as set forth.

3. A dust-collector consisting of a separating-chamber having its peripheral wall composed of a series of annular shelves of gradually-decreasing diameter connected by cylindrical bands, an inlet-spout for the dust-laden air entering the large end of the separating-chamber, a dust-discharge, and a discharge for the purified air, substantially as set forth.

4. The combination, with the separating-chamber having its peripheral wall composed of a series of annular shelves of gradually-decreasing diameter and connecting cylindrical bands, of a recessed dust-conduit arranged on the side of the separating-chamber, substantially as set forth.

5. The combination, with the separating-chamber having its peripheral wall composed of a series of annular shelves of gradually-decreasing diameter and connecting cylindrical bands, an inlet-spout for the dust-laden air entering the large end of the separating-chamber, and a dust-discharge at the small end of the separating-chamber, of a recessed dust-conduit extending on the side of the separating-chamber from the large end thereof to the dust-discharge and communicating with the interior of the separating-chamber, substantially as set forth.

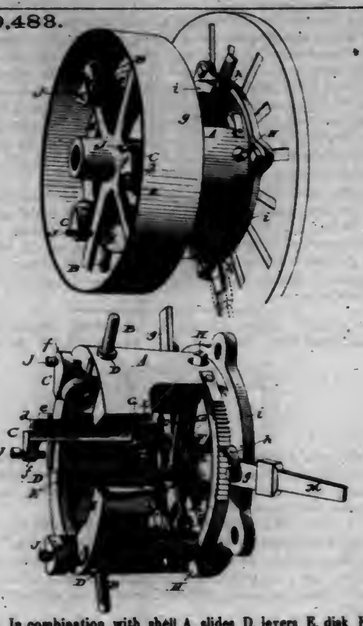
409,488. **PULLEY-CHUCK.** WALTER J. MUSGRAVE, Cumberland, Md., assignor of one-half to Merwin McKaig, same place. Filed June 6, 1889. Serial No. 313,206. (No model.)

Claim.—1. The herein-described pulley chuck or holder, consisting of shell or body A, centering pins or stems B, carriers D for said pins, clamping-levers C, disks F K, and rods connecting the carriers D and the levers C with the disks F K, respectively.

2. In combination with the shell of a pulley chuck or holder, a centering device consisting of a series of radially-movable slides or stems, levers connected at one end with said slides, a disk mounted and arranged to turn about a pivot equidistant from the outer ends of the several slides or stems, and rods connecting the levers with the disk.

3. In combination with shell A, radial slides or carriers D, pins B, carried by said slides, levers E, for moving said slides, disk F, and rods G, connecting the levers E and the disk F, substantially as described and shown.

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4. In combination with shell A, slides D, levers E, disk F, and connecting-rods G, removable pins B.

5. In a pulley chuck or holder, a series of radially-movable slides or carriers and removable pins applied to said carriers and serving to center a pulley or wheel applied to the holder.

6. In combination with shell A, having rack *i*, slides D, levers E, rods G, and disk F, provided with pawl *h* to engage with rack *i*.

7. In combination with shell A, a series of levers C, pivoted thereto and provided with jaws overhanging the face of the shell, substantially as described and shown, whereby they are adapted to clamp the spokes of a pulley or wheel between them and the face of the shell.

8. In combination with shell A, carriers D, levers E, disk F, and rods G, connecting the levers and the disk, said rods being adjustable as to length, substantially as set forth.

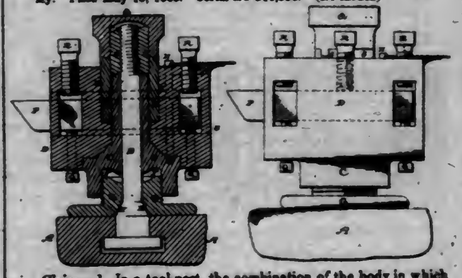
9. In combination with shell A, levers E, blocks or carriers D, disk F, rods G, connecting the disk and the levers, and the adjustable connection H I between the levers and the rod, whereby the carriers may be brought to proper position.

10. In combination with shell A, levers C, pivoted thereto and formed with jaws *f*, disk K, and connecting rods or bars L, extending from the levers to the disk.

11. In combination with shell A, levers C, pivoted thereto and provided with jaws *f*, screws J, passing through said jaws, and mechanism, substantially such as described, for moving the levers toward or from a common center.

12. In combination with shell A, provided with rack *i*, levers C, rods L, and disk K, provided with dog *h*, and serving, through the medium of the rods L, to actuate the levers C.

409,484. **TOOL-POST FOR LATHES.** JOHN A. MYERS, Louisville, Ky. Filed May 13, 1889. Serial No. 310,560. (No model.)



Claim.—1. In a tool-post, the combination of the body in which

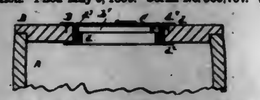
the tools are held, the sleeve which is screw-threaded at its inner end, and a nut for adjusting the post vertically, substantially as shown.

2. The combination of the body, the sleeve provided with a collar and recess, with a locking rod or device whereby the body is prevented from being revolved upon the sleeve, substantially as described.

3. The combination of the screw-rod provided with a head at one end and a nut at the other, and the sleeve through which the rod passes, with the body provided with slots through which the tools are passed, and the locking-rod by which the body is prevented from being revolved, substantially as set forth.

4. The combination of the headed screw-rod, the sleeve through which the head passes, the nut by which the post is raised and lowered, the body placed upon and adapted to revolve upon the sleeve, the locking-rod which passes through the body and engages with the sleeve, the nuts upon the rod and the sleeve, the slots for tools which are passed through the body, and the set-screws for adjusting them, substantially as specified.

409,485. RECEPTACLE FOR MERCHANDISE. PETER E. MCDONALD, Detroit, Mich. Filed May 6, 1889. Serial No. 309,707. (No model.)



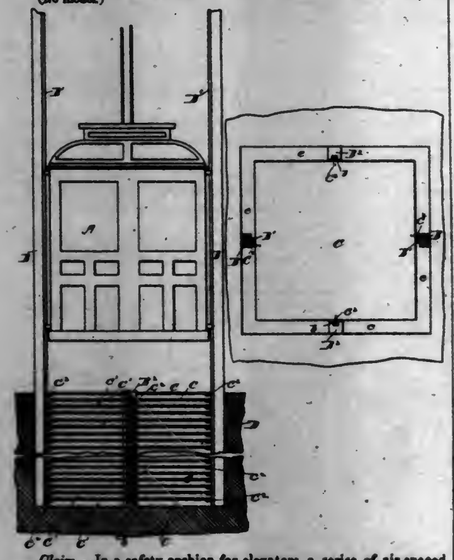
Claim.—1. A receptacle for articles of merchandise, consisting of a body A, having in combination therewith a cover B, provided with an opening therein, a rim engaged with said cover, and a cover C, seated upon said rim, substantially as set forth.

2. A receptacle for articles of merchandise, consisting of a body A, having in combination therewith an external cover B, a rim D, provided with an upturned flange engaged upon said cover within an opening therein, and a cover C, constructed with a flange *c*, seated upon said rim to close the opening in the external cover, substantially as set forth.

3. A receptacle for articles of merchandise, consisting of a body A, having in combination therewith an external cover B, provided with an opening therein, a cover C, to close said opening, and a fabric F, underlying the covers B and C, substantially as set forth.

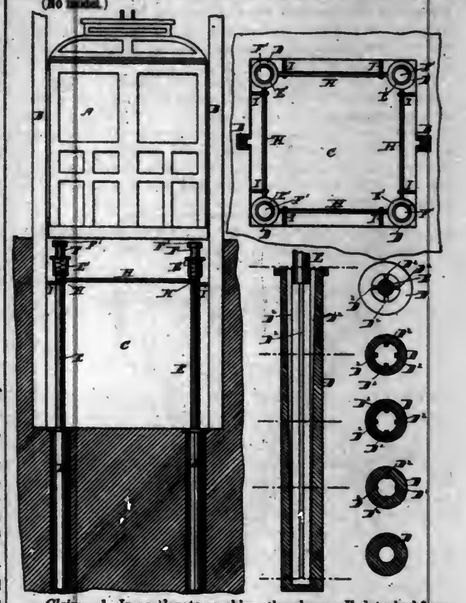
4. A receptacle for articles of merchandise, consisting of a body A, having in combination therewith an exterior cover B, hinged upon said cover and provided with an opening therein, a rim surrounding said opening, and a cover seated upon said rim to close said opening, substantially as set forth.

409,486. SAFETY-CUSHION FOR ELEVATORS. WILLIAM E. NICKERSON, Cambridge, Mass. Filed May 15, 1889. Serial No. 310,881. (No model.)



Claim.—In a safety-cushion for elevators, a series of air-spaced platforms supported normally on pins, said pins being adapted to yield to increased pressure, substantially as and for the purpose set forth.

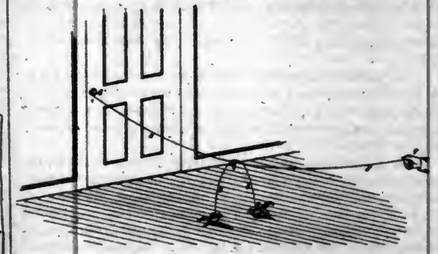
409,487. SAFETY-CUSHION FOR ELEVATORS. WILLIAM E. NICKERSON, Cambridge, Mass. Filed May 15, 1889. Serial No. 310,882. (No model.)



Claim.—1. In an elevator-cushion, the plunger E, detached from the carriage and supported normally in its withdrawn position, and the cylinder D, having a taper bore, substantially as and for the purpose set forth.

2. In an elevator-cushion, the cylinder D, having a taper bore, the plunger E, having upon its upper end the cylinder E', and the plunger F, substantially as and for the purpose set forth.

409,488. AUTOMATIC TOY. FRANK NOECKER, St. Louis, Mo. Filed May 16, 1889. Serial No. 310,948. (No model.)



Claim.—1. The described toy, consisting of two figures 1, the wire bow-spring 3, to which said figures are attached, and a cord 5, from which said wire bow-spring hangs pendent, substantially as described, and for the purpose set forth.

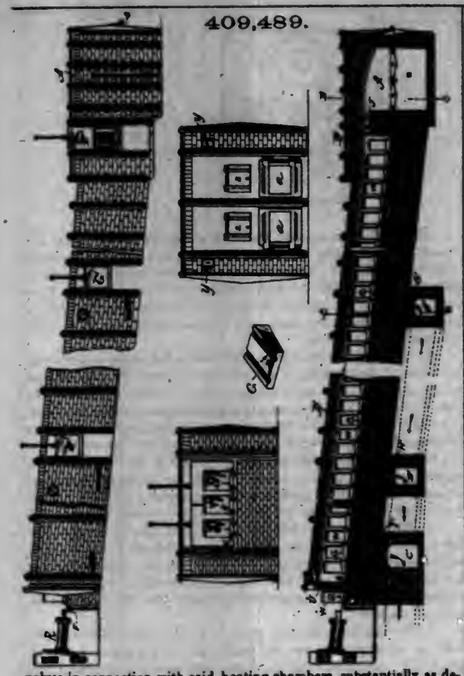
2. The described toy, consisting of two figures 1, the wire bow-spring 3, to which said figures are attached, the said bow-spring being provided with a spiral bend at its mid-length, and a cord 5, which may be secured at one end and held in the hand of the operator at the other end, substantially as described, and for the purpose set forth.

3. In a toy, the combination of an operating-cord adapted to be secured at one end and held in the hand of the operator at the other end, a bow-spring pendent from said cord, and figures attached to the ends of said spring, said spring and figures being free to move bodily the length of the cord, substantially as and for the purpose set forth.

409,489. KILN FOR THE MANUFACTURE OF CARBONS. PHILIP P. NEWBERRY, Cleveland, Ohio. Filed Dec. 27, 1888. Serial No. 294,790. (No model.)

Claim.—1. In the manufacture of carbons, a furnace having a fire-chamber at one end, an elongated heating-chamber in connection with the said fire-chamber, and a series of flues controlled by suitable

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valves in connection with said heating-chambers, substantially as described.

2. In the manufacture of carbons, a furnace having a fire-chamber at one end, a stationary elongated heating-chamber in connection with said fire-chamber, a charging-opening, and a discharge-opening in the side wall of the heating-chamber between the charging end and the fire-chamber, substantially as described.

3. In combination with a furnace having a fire-chamber, a heating-chamber having tubular tracks laid in the bottom thereof, conveyers adapted to said track, a suitable water-supply, in connection with said tubular track, and a pipe-connection between the lower end of the track and the ash-pit of the fire-chamber, substantially as described.

4. In combination with a fire-chamber and a heating-chamber, a series of independent sliding conveyers composed of refractory material and receptacles for the carbons mounted upon said conveyers and moving therewith, substantially as described.

5. In combination, in the described furnace, with the tubular water-tracks, of independent sliding conveyers having grooves in their bottom adapted to said track and composed of refractory material, substantially as described.

6. In combination with the heating-chamber inclined from front to rear, of independent sliding conveyers composed of refractory material having inclined bottoms and tops in horizontal plabe, with receptacles carried thereby, substantially as described.

7. In combination with the fire-chamber, the elongated heating-chamber, the-water-tracks in said chamber, the grooved conveyers adapted thereto having inclined bottoms, and the receptacles supported on said conveyers and of less width, whereby spaces are provided between each receptacle, substantially as described.

409,490. METHOD OF MANUFACTURING CARBONS. PHILIP P. NEWBERRY, Cleveland, Ohio. Filed Jan. 31, 1889. Serial No. 298,305. (No model.)

Claim.—1. The hereinbefore-described method of treating carbons, consisting in packing them in saggers of greater depth than the length of the carbons, covering the ends of the carbons with sand, and passing the saggers thus packed through a heating-chamber in which the highest degree of heat is at the discharge end and the lowest degree at the charging end, substantially as described.

2. The described method of baking carbons, consisting in placing the carbons in saggers, passing the saggers successively through a chamber from a lower to a higher heat, and finally removing the saggers while hot from the discharge end of the chamber, substantially as described.

3. The described method of treating carbons, consisting in placing them in saggers with the ends resting on the bottom of the saggers, placing the saggers with their open mouths upward in a chamber heated gradually from the charging to the discharging end, and in passing the saggers thus filled from the lower to the higher heat, with the flames passing over the upper ends of the saggers, whereby they are heated gradually and from the top downward, substantially as described.

409,491. FLOUR-SIFTER. ROBERT OLP, Manitowoc, Wis. Filed Apr. 24, 1889. Serial No. 308,455. (No model.)



Claim.—The flour-sifter comprising the scoop, having upon its rear side, at the top edge, an eye, and the combined handle and agitator consisting of the continuous wire bent in rectangular form for a portion of its length and terminating within the scoop in a series of coils, one vertical portion of its rectangle having a hand-hold, the other vertical portion of the rectangle engaging the eye upon the scoop, and having at its lower end an eye, through which the horizontal portion of said wire passes, substantially as set forth.

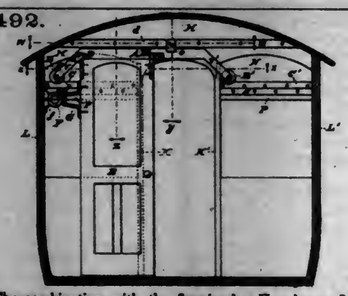
409,492. STREET-CAR DOOR. SILAS R. OWEN, St. Joseph, Mo. Filed Dec. 3, 1888. Serial No. 292,493. (No model.)

Claim.—1. The door-carrying bar A, having the downwardly-inclined ends V, projecting beyond each side of the door, in combination with and engaging the tracks C C, arranged below the top of the doorway on each side of the doorway, substantially as specified.

2. The combination, with the tracks C C, arranged on both sides of and below the top of the doorway, the door-carrying bar A, having the downwardly-inclined ends, and the grooved rollers B B', applied to said ends, substantially as specified.

3. The combination, with the door-carrying bar A, having downwardly-inclined ends, its rollers, and the tracks arranged below the top and on each side of the doorway, of the door, and the hanger-brackets D D', connected to said bar and door and channeled to receive the bar A, substantially as specified.

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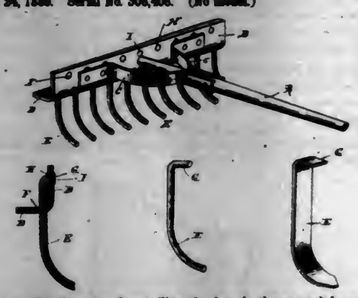
4. The combination, with the framing-bar H and posts L L', of the rabbeted bars S, panels N, secured to posts L L' and to the rabbeted bars S, the bars P, let into the bars S, and the tracks C C', secured in rabbets of said bars S, substantially as specified.

5. The combination, with the door-carrying bar A and its grooved rollers, of the frame-bar H, its strip *d*, and guide *c*, secured to said strip *d*, the panels N, secured to posts L L' of the car-framing, and transverse supports P S, secured together, and tracks C C', secured in rabbets of the supports S, substantially as specified.

409,493. BITUMINOUS SAND-ROCK FOR PAVING, ROOFING, AND BUILDING PURPOSES. WILLIAM PATTERSON and ELIAS GROAT, San Francisco, Cal., assignors to the California Bituminous Rock Manufacturing Company, of California. Filed June 21, 1888. Serial No. 277,322. (No specimens.)

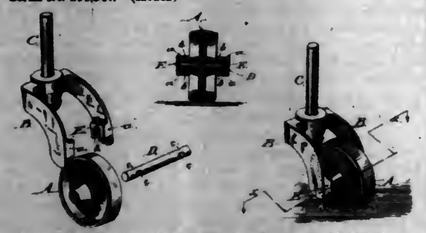
Claim.—The process of treating bituminous sand-rock, which consists in disintegrating or separating the particles thereof by crushing or grinding and reuniting them by pressure, without the aid of heat other than the latent heat developed by crushing and pressure, substantially as and for the purpose set forth.

409,494. HAND-RAKE. JONATHAN PARSON, Pottsville, Pa. Filed Apr. 24, 1888. Serial No. 308,408. (No model.)



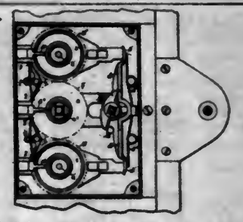
Claim.—The improved metallic rake herein shown and described, the same consisting of the flat head B, bent at its lower end to form a right-angled flange D and having slots or apertures F and H, in combination with the teeth inserted through said apertures and clinched at the back part of the rake-head.

409,495. CASTER. OLE PEDERSON, Joliet, Ill. Filed Nov. 20, 1888. Serial No. 291,247. (Model.)



Claim.—In a furniture-caster, the combination, with fork having the boxes E, the inner walls of which are formed with inwardly-turned lugs or projections, of an axle having its opposite sides grooved at points near the ends and adapted to be engaged by said lugs, and a wheel or roller mounted on the axle, substantially as herein described.

409,496. PERMUTATION-LOCK. JOHN M. PFLAUM, Cleveland, Ohio. Filed Aug. 22, 1888. Serial No. 283,488. (Model.)



Claim.—1. The combination, with outside hand-knobs, dial, and internal disk mounted on a spindle in common, of spring-actuated dogs connected with such disk, toothed wheels mounted loosely on either side of the disk, the dogs having beveled ends arranged in reverse order, and the toothed wheels having corresponding notches for engaging the respective dogs with reverse movements of the disk, substantially as set forth.

2. The combination, with internal disk, mechanism, substantially as indicated, for actuating the same, said disk having annular flanges on either side thereof, such flanges having respectively radial openings, of toothed wheels journaled on the respective hubs of such disk, the rim of the respective toothed wheels overlapping the respective flanges of the disk, spring-actuated dogs located between the disk and the respective toothed wheels, beveled points of the dog, and corresponding notches of the toothed wheels for mutual engagement, whereby the respective toothed wheels are rotated with the respective reverse movements of the disk, substantially as set forth.

3. The combination, with hand-knob, dial, spindle, and disk, the latter having a hollow hub, substantially as indicated, of a tumbler mounted on the said spindle, the hub of the tumbler entering the hollow hub of the disk, a nut mounted on such spindle for tightening the engaging-hub to cause the tumbler to revolve with the disk, substantially as set forth.

4. The combination, with gears F F' and mechanism, substantially as indicated, for operating these gears in opposite directions, of gears H H', the latter being connected with tumblers arranged substantially as described, and for the purposes set forth.

5. The combination, with hand-knob, dial, and spindle, a central tumbler mounted on the said spindle and adjustably secured thereto, of tumblers arranged on either side of the central tumbler, mechanism, substantially as indicated, for connecting the side tumblers with the central spindle, whereby the side tumblers are actuated in opposite directions by reverse movement of the central spindle, substantially as set forth.

6. The combination, with three tumblers and mechanism for actuating the different tumblers, substantially as indicated, of slot and hole in each tumbler, corresponding holes in the face-plate of the lock, arranged substantially as indicated, whereby the opposing holes of plate and tumbler register when the slot of such tumbler is in position to receive the opposing bolt, substantially as set forth.

7. The combination, with lever and spindle for withdrawing the bolts, a lateral arm connected with such spindle, said arm having a V-shaped notch at the free end thereof, of signal-bell and spring-actuated bell-lever for the same, said bell-lever having a V-shaped projection for engaging such notch of the spindle-lever, substantially as set forth.

409,497. DRAFT-EQUALIZER. CHARLES W. PHELPS, Mygatts Corners, Wis. Filed May 23, 1889. Serial No. 311,816. (No model.)

Claim.—1. A draft-equalizer comprising a beam, a spring-plate secured in front of the beam and provided with trace-connections, and a spring device connected to the ends of the spring-plate to exert resistance to draft thereon, substantially as set forth.

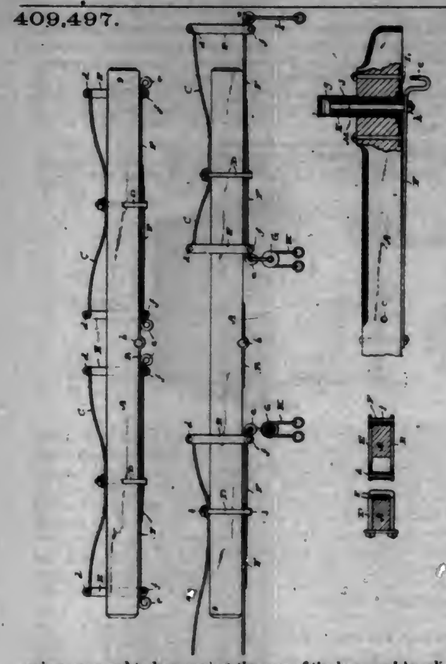
2. A draft-equalizer comprising a beam, sectional spring-plates secured in front of the beam on opposite sides of the center and provided with trace-connections, and a spring device connected to the ends of each spring-plate to exert resistance to draft thereon, substantially as set forth.

3. A draft-equalizer comprising a beam, spring-plates arranged in front of the beam and provided with trace-connections, leaf-springs arranged to bear against the rear of the beam and connected to the ends of the spring-plates, and clips for uniting said beam, plates, and springs, substantially as set forth.

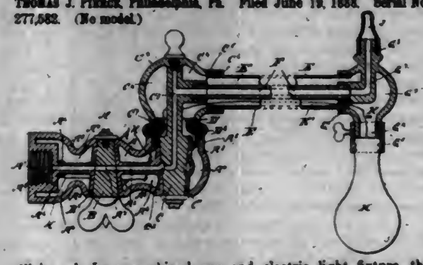
4. A draft-equalizer comprising a beam, spring-plates secured in front of the beam on opposite sides of the center and provided with trace-connections, leaf-springs arranged to bear against the rear of the beam, straps united to the leaf-springs and arranged above and below said beam, and bolts or rivets uniting the straps in front of the spring-plates, substantially as set forth.

5. A draft-equalizer comprising a beam, spring-plates adjustably secured in front of the beam on opposite sides of the center, leaf-springs arranged to bear against the rear of the beam and be adjustable with the spring-plates, straps united to said leaf-springs and arranged above and below said beam, bolts or rivets uniting the straps in front of the spring-plates, sheave-blocks connected to the inner ends of the spring-plates, tugs run through the blocks, and other tugs connected to the outer ends of the said spring-plates, substantially as set forth.

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409,498. COMBINED GAS AND ELECTRIC LIGHT FIXTURE. THOMAS J. PIERCE, Philadelphia, Pa. Filed June 19, 1888. Serial No. 277,582. (No model.)



Claim.—1. In a combined gas and electric light fixture, the combination of the shells C^2 and A^2, and the insulating-collar D, located in and between the said shells, with the plug C and gas-tube C^2, substantially as shown and described, and for the purpose set forth.

2. In a combined gas and electric light fixture, the combination of the shell C^2, having a central gas-channel surrounded by an electric-wire channel, with the insulating-collar D, provided with the bead D^2, adapted to support the said shell, substantially as shown and described, and for the purpose set forth.

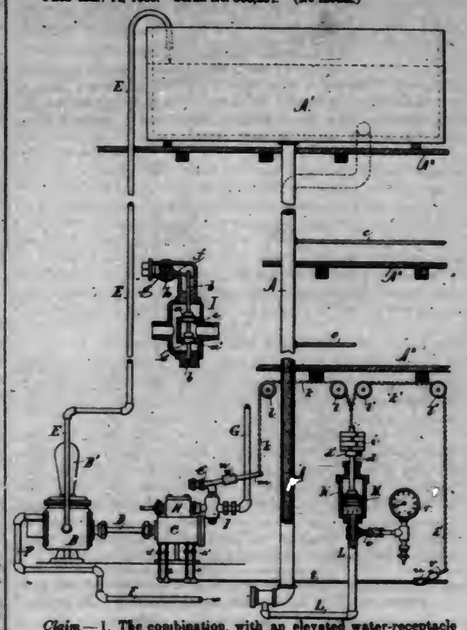
409,499. STRAP FOR PACKING-BOXES. WALLACE J. PIERPONT, Galesburg, Ill. Filed June 22, 1889. Serial No. 315,276. (No model.)



Claim.—1. A binding-strap for boxes or other angular wooden packages, which is composed of wood, and which is provided at intervals upon its exterior surface with metallic protecting and strengthening stripe.

2. A binding-strap for boxes, which is composed of wood, and which is provided at intervals upon its outer surface with metallic protecting and strengthening strips, and with a protecting-plate of sheet metal, which is embraced between the protecting-strips and the body of the strap, substantially as and for the purposes set forth.

409,500. PUMP-GOVERNOR. JOHN Y. PIKE, New York, N. Y. Filed Mar. 14, 1888. Serial No. 306,831. (No model.)



Claim.—1. The combination, with an elevated water-receptacle in the upper part of a building and a steam-pump and pipe therefrom to the tank, of a vertical supply stand-pipe connected with the tank and passing down through the building, a branch pipe connected to the stand-pipe, and a vertical cylinder upon the branch pipe, a piston and rod moving within said cylinder, and variable weights upon the rod to counterpoise the weight of water in the stand-pipe and tank to the desired level, and pulleys and a connection from the weighted piston to the valve of the steam-pump, whereby the weighted piston is raised and the valve is moved by the increase of pressure due to the rise of the water in the tank and the reverse, substantially as specified.

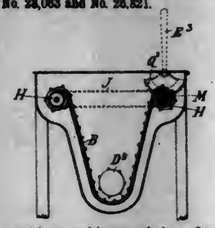
2. The combination, with an elevated water-receptacle in the upper part of a building and a steam-pump and pipe therefrom to the tank, of a vertical supply stand-pipe connected with the tank and passing down through the building, a branch pipe connected to the stand-pipe, and a vertical cylinder upon the branch pipe, a piston and rod moving within said cylinder, and variable weights upon the rod to counterpoise the weight of water in the stand-pipe and tank to the desired level, and the steam-valve chamber I and valve, and the weighted lever *m* connected therewith, and pulleys, and a chain over the pulleys connecting the weighted piston and weighted lever, whereby the weighted piston is raised and the valve is moved by the increase of pressure, due to the rise of the water in the tank and the reverse, substantially as specified.

3. The combination, with a water tank or receptacle in the upper part of a building, a vertical stand-pipe connected therewith and passing down through the building, and a steam-pump and pipe therefrom to the tank, of a branch pipe connected to the stand-pipe and a cylinder upon the branch pipe, a weighted piston within said cylinder, the steam-valve chamber I and valve, and the weighted lever *m* connected therewith, and a chain *k*, and pulleys around which said chain passes, the ends of the chain being connected, respectively, to the weighted piston N and weighted lever *m*, and a branch pipe *o*, connected to the pipe L, and a pressure-gage *r* to indicate the pressure of the weight of water in the stand-pipe and the variations thereof, substantially as set forth.

4. The combination, with a water tank or receptacle in the upper part of a building, a vertical stand-pipe connected therewith and passing down through the building, and a steam-pump and pipe therefrom to the tank, of a branch pipe connected to the stand-pipe and a cylinder upon the branch pipe, a weighted piston within said cylinder,

the steam-valve chamber I and valves, and the weighted lever *m* connected therewith, and a chain *k*, and pulleys around which said chain passes, the ends of the chain being connected, respectively, to the weighted piston N and weighted lever *m*, the drip-pipes *s* and *t*, connected to the steam-cylinder of the pump, and a valve *u*, lever *v*, chain *k'*, and pulleys *i'* for the same, one end of the chain *k'* being connected to the weighted lever *v* and the other end to the weighted piston-N, substantially as and for the purposes set forth.

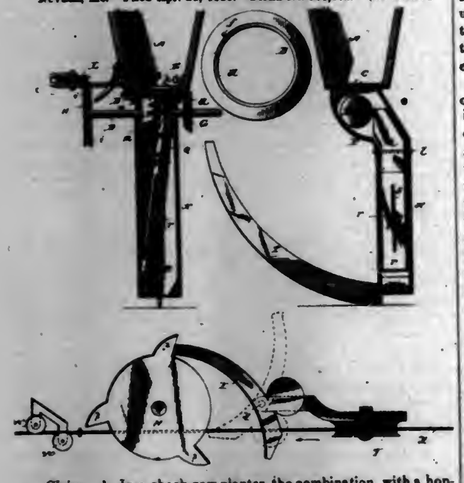
409,501. WASHING-MACHINE. ALBERT RAMMOSER, Berlin, Germany. Filed Aug. 1, 1888. Serial No. 281,697. (No model.) Patented in Germany July 26, 1887, No. 42,550; in England May 23, 1888, No. 7,564; in France June 2, 1888, No. 185,152, and in Austria-Hungary Sept. 22, 1888, No. 28,063 and No. 26,821.



Claim.—1. A washing-machine consisting of a tub and a flexible slatted or ribbed apron having its ends secured within the tub and forming a sag, and a weighted automatically-rotating ribbed roller working in the said sag of the apron, substantially as set forth.

2. A washing-machine provided with a flexible slatted or ribbed apron having its ends fastened to two rollers journaled at two opposite sides of the tub and provided with means for reciprocally rotating them, and with a weighted automatically-rotating ribbed roller working in the sag of the apron in the tub, whereby provision is made for washing the clothes between said apron and roller by the reciprocating curvilinear motion of the apron and the reciprocating rotary motion of the weighted roller, substantially as herein described.

409,502. CHECK-ROW CORN-PLANTER. STEPHEN D. REYNOLDS, Nevada, Mo. Filed Apr. 26, 1889. Serial No. 308,662. (No model.)



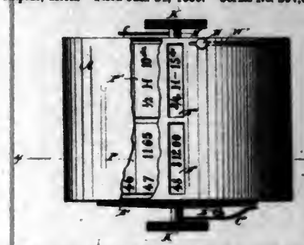
Claim.—1. In a check-row planter, the combination, with a hopper, of a valve-box arranged beneath the same and a vertically-adjustable oscillating valve arranged in said box, substantially as specified.

2. In a check-row planter, the combination, with a hopper, of a valve-box or seed-tube, an intermittently-rotating shaft passing through said box and having a cam-cylinder secured thereto, and a valve pivoted in the box and having an adjustable extension at its lower end and its upper end adapted to engage the groove of the cylinder, substantially as specified.

3. In a check-row planter, the combination, with a hopper, of a valve-box or seed-tube arranged beneath the same, a cylinder having a cam-groove and journaled in the seed-tubes, and the vertically-adjustable oscillating valve, also arranged in the tube and having a lug at its upper end to engage the groove of the cylinder, substantially as specified.

4. In a check-row planter, the combination, with a seed-tube, of a shaft journaled therein, a grooved cylinder fixed to the shaft, a vertically-adjustable oscillating valve arranged in the tube, a forked wheel fixed to the shaft, and the lock or catch I, pivoted and weighted, the said catch being arranged so as to have one end engaged by the check-line and its opposite end adapted to engage the forks of the wheel, so as to limit the movement of the latter, substantially as specified.

409,503. TIME AND WAGE INDICATOR. JESSE T. RICE, Grand Rapids, Mich. Filed Jan. 21, 1889. Serial No. 297,026. (No model.)



Claim.—1. A time and wage indicator comprising a slotted casing having on its front a stationary dial, a rotating shaft extending through the casing and having a knob or handle for turning it at will, a pointer rigidly attached to the shaft and moving therewith in front of the stationary dial, and an internal cylinder rigidly attached to the shaft and rotating in unison with the shaft, the pointer and the knob or handle, said stationary dial divided into parts having characters to indicate the days of the week, and provided with a circle subdivided to indicate hours, and the cylinder having figures showing the amount earned for the time indicated by the pointer on the stationary dial, substantially as described.

2. A time and wage indicator comprising a slotted casing having on its front a stationary dial divided into spaces having characters to indicate days and hours, a rotating shaft extending through the casing and dial, and having a knob or handle for turning it at will, a pointer rigidly attached to and turning with the shaft in front of the dial, and an internal cylinder rigidly attached to the shaft and turning in unison with the shaft, the knob, and the pointer, said cylinder having two sets of figures to indicate, respectively, through the slotted casing the time of the workman and the amount earned for the time indicated by the pointer on the stationary dial, substantially as described.

3. A time and wage indicator comprising a slotted casing having on its front a stationary dial divided into spaces having characters to indicate the days and hours, a rotating shaft extending through the casing and dial and having a knob or handle for turning said shaft at will, a pointer rigidly attached to the shaft and turning therewith in front of the stationary dial, an internal cylinder rigidly attached to the shaft and turning in unison therewith and with the pointer, and having two sets of characters to indicate, respectively, through the slotted casing the full hours and the amount earned, an internal secondary cylinder rotating independent of the shaft, and having two sets of characters to indicate through the slotted casing the fractions of the hours and the amount earned for such fractions, and a knob or handle for independently rotating the secondary cylinder at will, substantially as described.

4. In a combined time and wage indicator, the combination of the cylindrical case provided with a slot, an inner cylinder provided with two series of figures—one series indicating time and the other wages—a front dial divided to indicate the six working days of the week and again subdivided to indicate hours, a pointer adapted to be moved to any required position, a stationary rear dial subdivided into two unequal portions, the larger portion having figures representing dollars, and the smaller portion, called the "fractional register," having the ten Arabic numerals, and the smaller movable dial upon the face of said stationary dial having numerals adapted to register with such Arabic numerals on the fractional register to indicate cents, substantially as described.

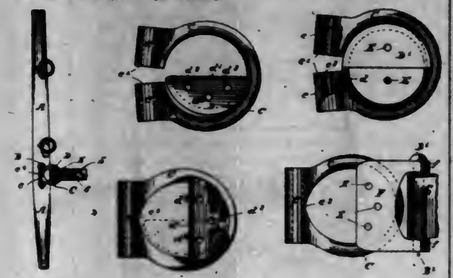
409,504. PAVING COMPOSITION. CLIFFORD RICHARDSON, Washington, D. C., assignor of one-half to Henry L. Cranford, same place. Filed Apr. 5, 1889. Serial No. 306,066. (No specimens.)

Claim.—1. A wearing-surface mixture suitable to be laid upon any proper base or made into paving blocks or tiles, composed of the refined Rabe acid tar of the proper consistency and mineral matter, as above described.

2. A wearing surface, as above, the cement of which is a mixture of asphalt and refined Rabe tar, substantially as and for the purpose hereinbefore set forth.

3. A wearing-surface mixture, as above, in which the cement is Trinidad or other asphalt, mixed with the Rabe acid tar refined to a consistency corresponding to petroleum-residuum oil, and used in the same manner as the petroleum-residuum oil for imparting the proper tenacity, toughness, and consistency to the asphalt.

409,505. HAME ATTACHMENT. ALBON B. ROWELL, Sunapee, N. H., assignor to Bartlett & Rowell, same place. Filed May 6, 1889. Serial No. 309,827. (No model.)



Claim.—1. In a hame attachment, a tug-connection comprising a circular ring, a portion of its interior being conoidal and provided with a perforated projection adapted to receive a start-bolt or staple, and a swivel-piece formed in a segment of a circle, having its arc portion grooved to fit the interior of said circular ring and provided with one or more perforations for receiving rivets by which the tug may be attached.

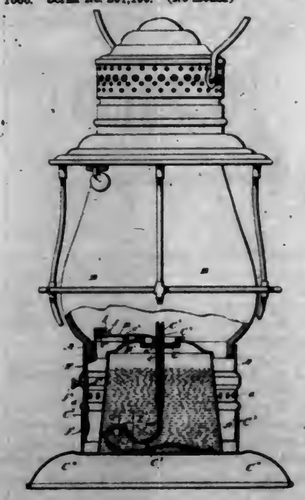
2. In a hame attachment, a tug-connection comprising a circular ring, a portion of its interior being conoidal and provided with a perforated projection adapted to receive a start-bolt or staple, and a swivel-piece to which a tug is attached, consisting of a segmental circle having its arc portion grooved to fit the interior of said circular ring and having its chord or plane convexed or rounded, all substantially for the purpose set forth.

3. In a hame attachment, a tug-connection comprising a circular ring provided with a perforated slotted projection adapted to receive a start-bolt or staple, and an interior perforated swivel-piece formed in a segmental circle, having its arc portion grooved to fit the interior of said circular ring and its chord or plane convexed or rounded, all substantially for the purpose specified.

4. In a hame attachment, a tug connection comprising a circular ring provided with a perforated slotted projection adapted to receive a start-bolt or staple, and a circular swivel-piece formed in two parts, having its periphery grooved to fit the interior of said circular ring and having one or more perforations for attaching a tug.

5. In a hame attachment, a tug-connection consisting of a circular ring having a perforated projection for connection with a start-bolt or staple, a swivel-piece fitting the interior of said ring, and a tug attachment rigidly secured to said swivel-piece by rivets or their equivalents, all substantially for the purpose set forth.

409,506. LANTERN. AUGUST M. SCHILLING, Chicago, Ill. Filed Nov. 19, 1888. Serial No. 291,199. (No model.)



Claim.—1. In combination with the burner of a lamp, a lever engaging the lamp-wick, a slide connected with the lever so as to operate the same, and means for moving the slide and holding it as moved, substantially as and for the purposes shown.

2. In combination with the burner of a lamp, a lever engaging the lamp-wick, a slide held and guided in a guideway on a suitable support and connected with the lever, and means for holding such slide from accidental movement, substantially as and for the purpose set forth.

3. In combination with the burner of a lamp, a lever engaging the wick, the slide guided in a way on a suitable support and connected with the lever, a handle to move the slide, and a spring engaging the slide to hold it from accidental movement, substantially as and for the purpose described.

4. In combination with the burner of a lamp, a lever engaging the wick and having an arm, the vertically-moving slide having an arm with a slot in it to engage the lever-arm, and means for holding the slide against accidental movement from shock or jar, substantially as and for the purpose specified.

5. In combination with a lamp body and burner having a slotted wick-tube, the pivoted lever having one end extending in through the slot or slots in the tube and adapted to engage a wick therein, and a removable pivot for such lever, substantially as and for the purpose shown.

6. In combination with a lamp body and burner having a flat wick-tube provided with two slots in one side, the lever having the forked end with arms of its fork entering the slots in the wick-tube and on their ends provided with wick-engaging teeth or points, substantially as and for the purpose described.

7. In a lantern, in combination with the lamp body and burner, the lever pivotally supported on the lamp-body, adapted at its inner end to engage the wick of the lamp, and a movable piece carried by the lantern-frame connected with the lever and adapted to be moved from the outside of the frame, substantially as and for the purpose specified.

8. In a lantern, in combination with the lamp body and burner, the lever for engaging and operating the wick, the slide supported on the lantern-frame and connected with the wick-lever, and means whereby such slide can be moved from the outside of the lantern, substantially as and for the purpose shown.

9. In a lantern, in combination with the slide supported upon the lantern-frame having a knob or handle in position to be moved from the outside of the frame, and within the frame having an arm with a slot therein, the lamp body and burner, and the wick-operating lever pivotally supported from the lamp-body having an arm to engage the slot in the arm on the slide, substantially as and for the purpose set forth.

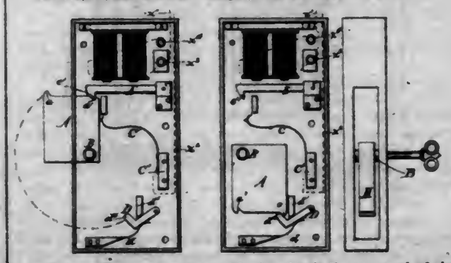
409,507. STRIPPED NEGATIVE. FRANÇOIS SCHMALZ, New York, N. Y., assignor to the American Waltham Watch Company, Waltham, Mass. Filed Apr. 2, 1888. Renewed May 13, 1889. Serial No. 310,686. (No model.)



Claim.—1. A negative film having a facing of oiled silk, as set forth.

2. A stripped negative film having a lifting coat or back applied to one side and a facing of oiled silk secured to its opposite side, as set forth.

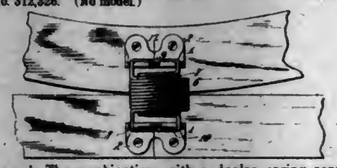
409,508. ELECTRICAL LOCK. PAUL SCHWEMER, Zerbst, Anhalt, Germany. Filed Nov. 16, 1888. Serial No. 291,072. (No model.) Patented in Germany Aug. 18, 1887, No. 43,050; in France Oct. 3, 1887, No. 186,184, and in Austria-Hungary Feb. 26, 1888, No. 38,543.



Claim.—The combination, with the circuit X, composed of the wires $x' x^6$, having a suitable circuit-closer at a proper point, and the electro-magnets F in said circuit, the wires $x' x^6$ extending from the

circuit-closer to the top of the lock, passing therein and connecting with the opposite magnets F, in the manner substantially as described, of the lock, comprising the shaft B, journaled in the front and rear plates of the back casing and having an angular bore for the purpose of being turned up by a key fitting in said bore, the rectangular gravity-bolt A, mounted on said shaft and provided with the projection *a* and notch *a'*, the armature E, pivoted within the casing at *e*, below the magnets F, and provided with the point *e'* to engage the notch *a'*, the springs C *d*, and the pivoted detent D, all constructed and arranged substantially as and for purpose specified.

409,509. SPRING AND BRACKET CONNECTION FOR PLATFORM-ROCKERS. GEORGE J. SHULTS, Avoca, N. Y. Filed May 27, 1889. Serial No. 312,326. (No model.)



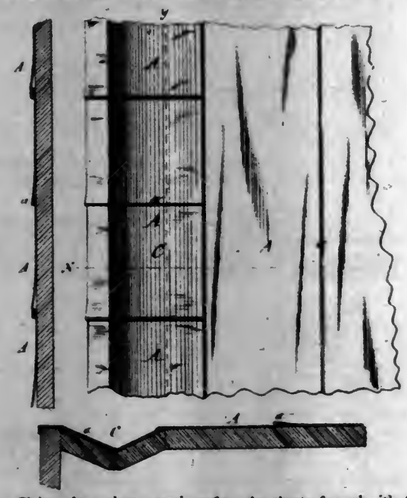
Claim.—1. The combination, with a duplex-spring connection consisting of outer and inner concentric coils formed of a single continuous spring-wire having loops, of brackets adapted to be mounted upon the rocker-frame and base-frame of a chair, respectively, substantially as described.

2. In a rocking-chair, the combination, with duplex springs composed of inner and outer concentric coils formed of a single integral wire, of brackets adapted to be mounted upon the rocker-frame and base-frame, and provided with grooves for said loops, and shoulders at the ends of said grooves, having notches which receive the parallel arms of the loops, substantially as described.

3. In a rocking-chair, the combination, with a stationary base-frame, of a rocker-frame, and duplex elastic connections, each consisting of an inner and an outer concentric coil of one and the same continuous wire having loops which form part of each coil and lie in the channels of bracket-plates mounted on the rocker-frame and base-frame, said brackets being provided with shoulders at the ends of said channels, said shoulders having notches receiving the parallel arms of the loops, substantially as described.

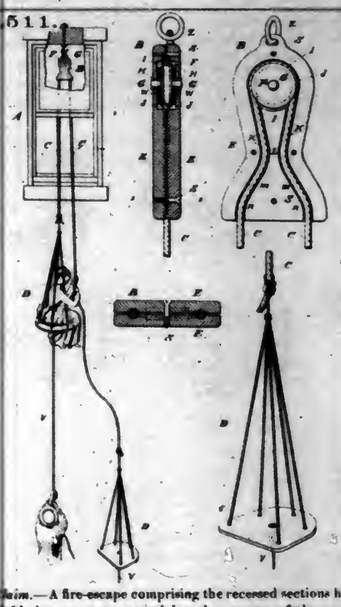
4. The combination, with the supporting-brackets adapted to be attached to the rocker-frame and base-frame of a chair, of a duplex-spring connection consisting of an outer and inner coil formed of a single piece of spring-wire, said coils being wound in opposite directions, substantially as described.

409,510. SHEET-METAL ROOFING. SIDNEY SLOCOMBE, Marcellus, N. Y. Filed Apr. 13, 1889. Serial No. 307,162. (No model.)



Claim.—In a sheet-metal roofing, the sheets formed with the double fold *a* across their central portions and remote from the seams joining said sheets, substantially as described and shown.

409,511. FIRE-ESCAPE. LOUIS SLOSSE, Wellsville, N. Y. Filed Apr. 13, 1889. Serial No. 307,073. (No model.)



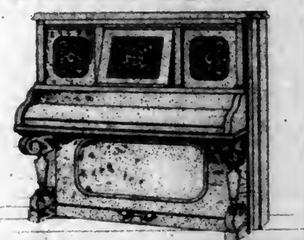
Claim.—A fire-escape comprising the recessed sections having the curved friction-grooves tangential to the recesses of the sections, the intermediate sheave in the recesses, and the screws securing the sections together to form the friction-block, having the inwardly-convex passages terminating in reversely-curved open end portions, the escape-rope having at each end a basket or car, and the extension-ropes or steady-cords attached to the baskets or cars, substantially as shown and described.

409,512. HOSE-COUPLING. CHARLES L. SMITH, Cleveland, Ohio. Filed Apr. 15, 1889. Serial No. 307,221. (No model.)



Claim.—In combination, the sections A B, the ring D, interposed between their adjacent ends, the nut C, bearing upon the ring D, said nut having a flange *d*, and the hooks on the section B, adapted to fit beneath said flange, substantially as described.

409,513. PIANO-CASE. HENRY W. SMITH, Boston, Mass. Filed Oct. 20, 1888. Serial No. 288,667. (No model.)



Claim.—A piano with a wooden case having its outer surface insulated from the surrounding air by an inelastic coating of cloth or other similar material, substantially as described.

409,514. WATER-MOTOR. JESPER SMITH, Washington, N. J. Filed Feb. 23, 1889. Serial No. 300,860. (No model.)

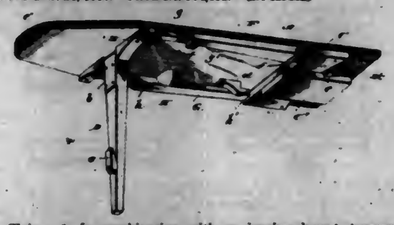
Claim.—In a water-wheel, the combination, with a casing, of a water-wheel provided with buckets having one of their faces perpendicular and the opposite face inclined, an axle or shaft provided on one end with a pulley-wheel, a horizontal lower pipe having its bore gradually tapering from each end toward the center, the diameter of

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the outlet end being larger than the diameter of the inlet, and an upper horizontal pipe constructed in a similar manner to the lower pipe, but arranged inversely thereto with reference to the inlet and outlet openings, substantially as set forth.

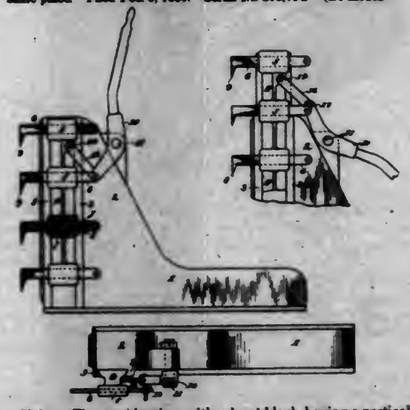
409,515. IRONING-BOARD. JOSEPH D. SMITH, Rising City, Nebr. Filed Mar. 21, 1889. Serial No. 304,132. (No model.)



Claim.—1. In combination with an ironing-board, transverse battens B and C, secured to the under side of the board, one of said battens serving as a means for connecting to the board a pivoted leg, the block C, attached parallel with the board beneath the batten C and provided with an inclined recess or notch, and a lever horizontally pivoted to swing laterally over said inclined notch for securing the wide end of the board to the overlapping edge of a table, substantially as shown, and for the purpose set forth.

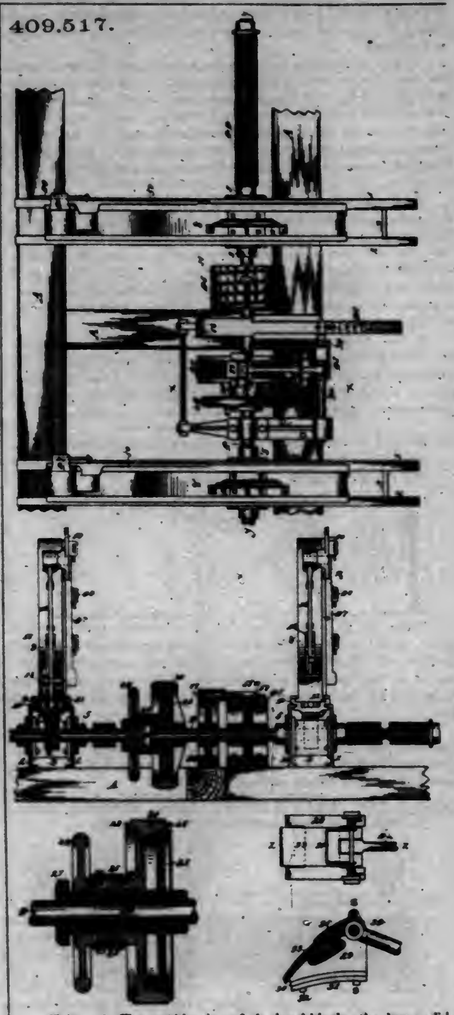
2. The combination, in an ironing-board, of a block C, secured beneath the under side of the board and parallel therewith, one end of said block being provided with an inclined recess, a bar E, wedge-shaped in cross-section and pivoted at one end so as to be capable of being moved above said recess, to swing to a horizontal position in either direction, substantially as shown, and for the purpose set forth.

409,516. DOGGING DEVICE FOR SAW-MILL HEAD-BLOCKS. SAMUEL R. SMITH, Cincinnati, Ohio, assignor to Smith, Myers & Schaier, same place. Filed Feb. 9, 1889. Serial No. 299,764. (No model.)



Claim.—The combination, with a head-block having a vertically-arranged guideway, and a vertically-movable slide having a housing containing the dog and adapted to said guideway, of a lock-lever pivoted intermediate its ends directly to the head-block, and a link pivoted at its lower extremity to the inner end of the lever at one side the pivot thereof, and rising therefrom and having its upper extremity pivoted directly to the slide to lock the same in its elevated position when the lever is depressed to raise its inner end above its pivot-point, substantially as described.

409,517. SAW-MILL HEAD-BLOCK. SAMUEL R. SMITH and EDWARD MYERS, Cincinnati, Ohio, assignors to Smith, Myers & Schaier, same place. Filed Mar. 13, 1888. Renewed Feb. 5, 1889. Serial No. 299,771. (No model.)



Claim.—1. The combination of the head-blocks, the knees slidable thereon, the rack-bars slidable independent of the knees, the drive-shaft having pinions engaging the rack-bars, setting-levers pivoted to the knees and loosely connected at their lower ends with the rack-bars, means for holding the levers stationary to lock the knees and rack-bars together, a sleeve keyed on the drive-shaft, a ratchet-wheel loosely mounted on the sleeve and having a friction-rim, pawl mechanism for rotating the ratchet-wheel, a friction clutch-wheel connected to the sleeve and having its periphery adapted to engage and disengage the friction-rim of the ratchet-wheel, and means to slide the sleeve for engaging and disengaging the friction-wheel and ratchet-wheel, substantially as described.

2. The combination, with the head-blocks, of the sliding knees, the rack-bars connected with the knees, the driving-shaft having pinions engaging the rack-bars, a sleeve keyed to the drive-shaft, a ratchet-wheel loose on the sleeve having a friction-rim, pawl mechanism for rotating the ratchet-wheel, a friction clutch-wheel fixed to the sleeve and adapted to engage and disengage the friction-rim of the ratchet-wheel, and means to slide the sleeve for engaging and disengaging the friction-wheel and ratchet-wheel, substantially as described.

3. The combination, with the head-blocks, of the sliding knees, the rack-bars connected with the knees, the driving-shaft having pinions engaging the rack-bars, a threaded sleeve keyed to the drive-shaft, a ratchet-wheel loose on the sleeve and having a friction-rim, pawl mechanism for rotating the ratchet-wheel, a friction clutch-wheel fixed on the sleeve to engage and disengage the friction-rim, and a

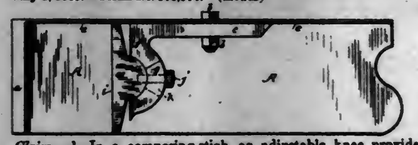
rotating screw-nut loosely connected with the ratchet-wheel and engaging the threaded part of the sleeve to slide the latter, substantially as described.

4. The combination, with the head-blocks, of the sliding knees, the rack-bars connected with the knees, the driving-shaft having pinions engaging the rack-bars, a sliding sleeve keyed to the drive-shaft and provided with a friction clutch-wheel, a ratchet-wheel loosely mounted on the sleeve, pawl mechanism for rotating the ratchet-wheel, and means for sliding the sleeve on the shaft to move the friction clutch-wheel to and from the ratchet-wheel, substantially as described.

5. The combination, with the head-blocks, of the sliding knees, the rack-bars connected with the knees, the driving-shaft having pinions engaging the rack-bars, a sliding sleeve keyed to the drive-shaft and provided with a friction clutch-wheel, a ratchet-wheel loosely mounted on the sleeve, pawl mechanism for rotating the ratchet-wheel, and a rotating screw-nut on the sleeve having keepers loosely engaging the ratchet-wheel to slide the sleeve, substantially as described.

6. The combination, with the knees, the drive-shaft, mechanism for rotating the shaft, and connections for adjusting the knees by the rotation of the shaft, of a drum fixed on the shaft and having a spiral groove, a sliding index-finger having a tooth engaging the spiral groove, and a support for the finger, substantially as described.

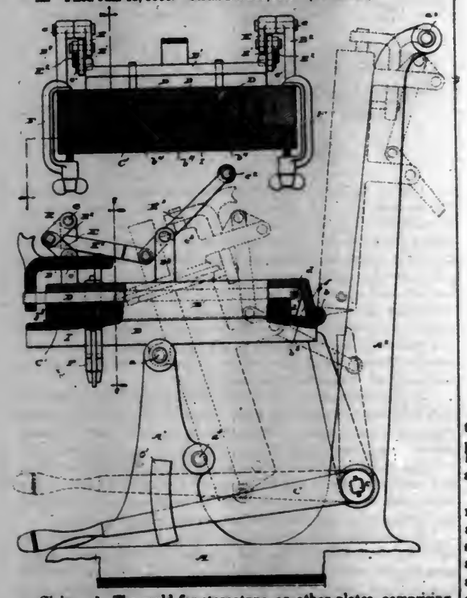
409,518. COMPOSING-STICK. VALENTINE SPERLE, Pittsburg, Pa., assignor to James B. Pearson and Fred R. Youngs, same place. Filed July 1, 1886. Serial No. 170,396. (Model.)



Claim.—1. In a composing-stick, an adjustable knee provided with a curved recess in its head and a flaring slot through it, in combination with the adjustable piece provided with a rounding projection on its inner side and a clamping-bolt, which passes through the flaring slot and locks the adjustable piece in position, substantially as shown.

2. In a composing-stick, the combination of a slotted and recessed knee with the adjustable piece, which is fastened to the knee at its center only, whereby the two ends of the adjustable piece can be moved alike, substantially as described.

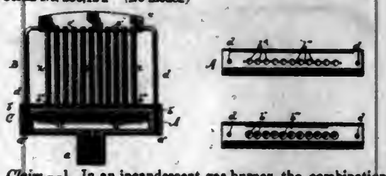
409,519. MOLD FOR CASTING. ERNEST C. STANDIFORD, Chicago, Ill. Filed Jan. 13, 1888. Serial No. 260,618. (No model.)



Claim.—1. The mold for stereotype or other plates, comprising a substantially flat part and a grooved or longitudinally-recessed part, the latter part being provided with a plurality of movable bars located in the groove or recesses and forming parts of the inner surface of the mold, said bars being hinged to the said grooved or recessed part, a movable plate attached to all of said bars, and actuating devices for operating said movable plate, connected with said movable plate and the recessed part of the mold and acting to thrust the said bars inwardly to free the casting from the mold, substantially as described.

2. The combination, with a mold comprising a substantially flat part and a recessed or grooved part with a movable part acting upon the rear face of the casting, of an operating-lever pivoted to the recessed part of the mold and toggle-links pivoted to said recessed part and to said movable part, said operating-lever being connected with said toggle-links, substantially as described.

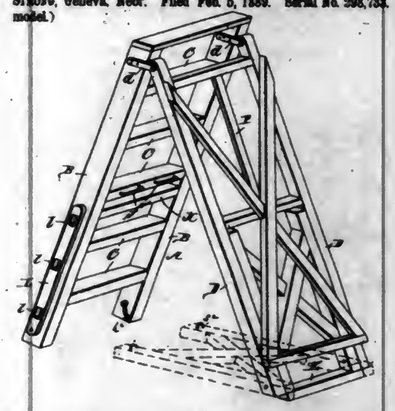
409,520. INCANDESCENT GAS-BURNER. JOHN L. STEWART, Philadelphia, Pa., assignor, by mesne assignments, to the Weisbach Incandescent Gas Light Company, of New Jersey. Filed Dec. 16, 1887. Serial No. 258,124. (No model.)



Claim.—1. In an incandescent gas-burner, the combination of a burner-head having a series of fine perforations or gas-exits, a saddle supported on the burner-head above said gas-exits and forming an intermediate gas and air mixing chamber, the saddle being provided with a series of perforations for the exit of the gas and air mixture and a series of sockets for the lower ends of a series of incandescing cylinders, a cage or frame supported above the saddle, and a series of incandescing cylinders supported by said cage and saddle, substantially as described.

2. In an incandescent gas-burner, the combination of a burner-head having a series of fine perforations or gas-exits, a saddle supported on the burner-head above said gas-exits and forming an intermediate gas and air mixing chamber, said saddle provided with a series of concentric sockets and perforations or flame-passages, a cage or frame supported above the saddle, and a series of incandescing tubes supported by said cage and saddle with their lower ends in the saddle-sockets, substantially as described.

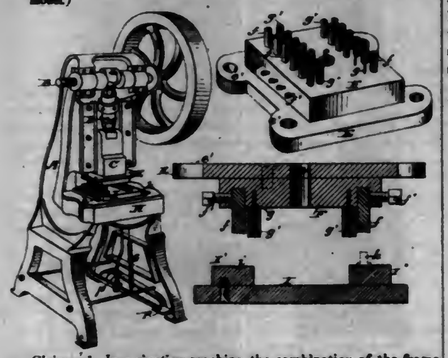
409,521. IRONING-TABLE AND STEP-LADDER. SYLVESTER L. SIMMS, Geneva, Nebr. Filed Feb. 5, 1889. Serial No. 298,733. (No model.)



Claim.—1. The combination of the ladder having staples *f'* attached to the rear side of one of its steps, and having a hinged brace provided with a pivoted support at its lower end, with an ironing-board having a transverse groove on its under side, and provided with hooks at one end to engage the staples *f'*, substantially as set forth.

2. The combination of the ladder having staples attached to the rear side of one of its steps and provided with a cross-bar adjacent and parallel to said step, the hinged ladder-brace having a pivoted support at its lower end, the ironing-board having hooks at one end and provided with a transverse groove in its under side, and a detachable bosom-board having a swinging frame and an arm or extension adapted to be inserted between the ladder-step, to which the ironing board is connected, and the parallel cross-bar, substantially as set forth.

409,522. MACHINE FOR RIVETING CURRY-COMBS. MILES SWEET, Troy, N. Y. Filed Sept. 13, 1883. Serial No. 106,338. (No model.)

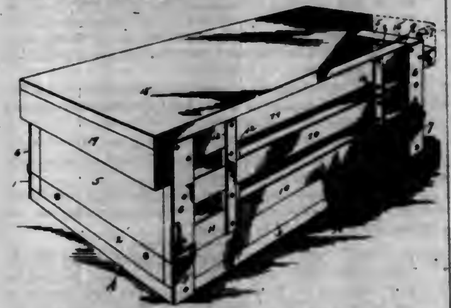


Claim.—1. In a riveting-machine, the combination of the frame of a press, its bed-plate H, and plate I, provided with means for holding a series of rivets, with the press-plates and plate F, provided with a corresponding series of upsetting-dies, substantially as described.

2. The combination of the frame of a press, its bed-plate, and plate I, provided with means for holding a series of oval-headed rivets, with the press-plates and a corresponding series of upsetting-dies provided with corrugated faces, substantially as and for the purpose set forth.

3. The combination, with the bed-plate and movable platen of a press, of a series of rivet-upsetting dies *f*, and a series of springs *g'*, pendent from said platen, substantially as and for the purpose described.

409,523. FOLDING BOX OR CRATE. JAMES C. THOMPSON and WILLIAM L. THOMPSON, Ormanville, Iowa. Filed May 20, 1889. Serial No. 312,508. (No model.)



Claim.—1. In a folding or knockdown box or crate, the combination, with a bottom and end and side sections, of a locking-block removably connected with the body and a removable cover adapted to engage and be held in position by the locking-block, substantially as set forth.

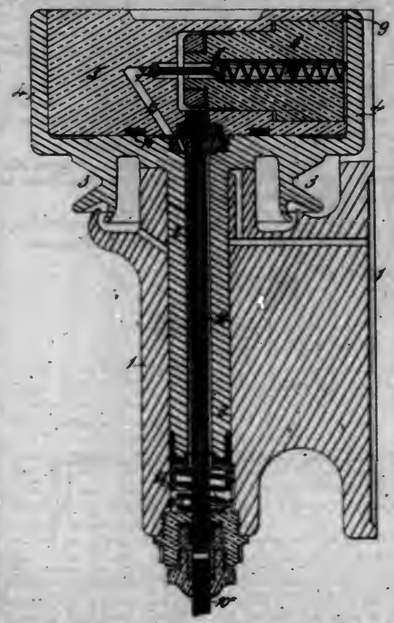
2. In a folding or knockdown box or crate, the combination, with a body, end and side sections, and a locking-block removably secured to one end section, of a removable cover adapted to engage one end of the box and be engaged by the locking-block, substantially as set forth.

3. In a folding or knockdown box or crate, the combination, with a bottom and end and side sections, of a locking-block removably secured to one end of the box, a removable cover adapted to engage the locking-block, and a locking device on the locking-block for securing the cover in position, substantially as set forth.

4. The combination, with a bottom having a rim around its edge, end sections hinged by intermediate connections to the bottom, and removable side sections adapted to enter grooves in the end sections, of a removable cover having dowel-pins at one end adapted to enter dowel-sockets in one of the end sections, and a removable locking-block having dowel-pins by which it is held to one of the end sections, and also pins which enter the cover, and a spring-catch on the block adapted to lock the cover, substantially as set forth.

5. The combination, with a bottom having a rim on its edges, end sections hinged to the rim, said sections having grooves therein, and removable side sections adapted to slide in the grooves and provided with pivoted hooks to engage pins on the end sections, of a removable cover having depending ledges at the ends, dowel-pins in one ledge to enter sockets in the ends of the box, and a removable locking-block having dowel-pins adapted to be inserted in one end of the box and in one of the ledges of the cover, said block having a spring-actuated hook for locking the cover in place, substantially as set forth.

409,524. SPEED-MEASURER. JOHN I. THORNYCROFT, Chiswick, County of Middlesex, England. Filed Jan. 3, 1888. Serial No. 259,736. (No model.) Patented in England Mar. 18, 1887, No. 4,122; in Sweden Dec. 21, 1887, No. 1,813; in France Dec. 24, 1887, No. 187,806; in Germany Dec. 24, 1887, No. 43,967; in Italy Feb. 28, 1888, No. 22,843; in Spain Apr. 30, 1888, No. 7,751, and in Austria-Hungary May 7, 1888, No. 49,953.



Claim.—1. In apparatus for indicating the speed of rotating shafts, a rotating valve-case or cylinder connected at one part to an apparatus for increasing or reducing fluid-pressure—such as an exhauster—at another part to the pipe in which pressure is to be varied, and at a third part to a source of constant pressure—such as the atmosphere—in combination with a body—such as a piston—arranged to rotate with said valve-case or cylinder and itself subjected to the direct action of centrifugal force, and a valve or valves controlling two of the connections to the said valve-case or cylinder, substantially as described.

2. In apparatus for indicating the speed of rotating shafts, a rotating valve-case or cylinder connected at one part to an apparatus for increasing or reducing fluid-pressure—such as an exhauster—at another part to the pipe in which pressure is to be varied, and at a third part to a source of constant pressure—such as the atmosphere—a piston arranged to be rotated with said valve-case or cylinder and to be subjected to the direct action of centrifugal force, and two valves, of which one is seated in the said piston, substantially as described, for the purpose specified.

3. In apparatus for indicating the speed of rotating shafts, a rotating valve-case or cylinder connected at one part to an apparatus for increasing or reducing fluid-pressure—such as an exhauster—at another part to the pipe in which pressure is to be varied, and at a third part to a source of constant pressure—such as the atmosphere—a piston arranged to be rotated with said valve-case or cylinder and to be subjected to the direct action of centrifugal force, and two valves, of which one is seated in the said piston, while the other commands a connection between the apparatus for increasing or reducing fluid-pressure and the space in which the pressure is to be varied, substantially as described.

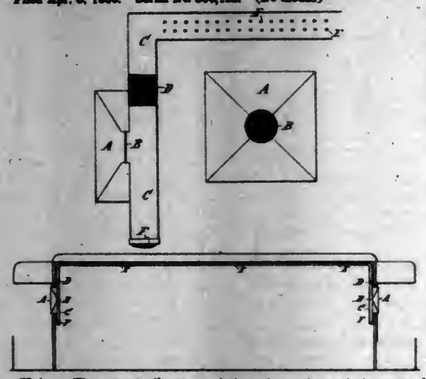
4. In apparatus for indicating the speed of rotating shafts, a rotating body in which is a piston that rotates with and can slide radi-

ally within said body, is directly acted upon by centrifugal force, and is subject on one side to the pressure of the atmosphere and on the other side to the pressure to be varied, and a valve or valves controlled by the said piston, substantially as described, for the purpose specified.

5. In apparatus for indicating the speed of rotating shafts, the combination, with a rotating body 5, formed with a passage 13, in communication with an apparatus for increasing or reducing pressure, of the piston 6, arranged to move radially in said body and provided with a passage therethrough, air-inlet opening 9, in communication with the passage through said piston, the connected valves 7 and 8, said valve 7 being arranged to control said passage 13 and said valve 8 being arranged to control the passage through said piston, and a passage 10, in communication with the pipe in which pressure is to be controlled, all substantially as described.

6. In apparatus for indicating the speed of rotating shafts, the combination, with a rotary valve-case or cylinder connected at one part to an apparatus for increasing or reducing fluid-pressure, at another part to the pipe in which pressure is to be varied, and at a third part to a source of constant pressure—such as the atmosphere—a piston which is in rotation and is subject to centrifugal force, and a valve or valves controlling two of the connections to the said valve-case or cylinder, of indicating-dials, substantially as described, for the purpose specified.

409,525. VENTILATOR. BERNARD M. TORRIBLL, Scranton, Miss., assignor of one-third to Brownlee Wickliffe Taylor, New Orleans, La. Filed Apr. 5, 1889. Serial No. 306,132. (No model.)



Claim.—The car-ventilator consisting of a perforated pipe extending from end to end of the car and having a downward imperforated extension at each end thereof, said extensions being each provided with a brush therein, a removable cap at the open end thereof, and a flaring air-collector located between the brush and the cap and provided with a screw, substantially as specified.

409,526. CALENDAR. FRANCIS M. UNDERHILL, Brooklyn, assignor to Whitall, Tatum & Co., New York, N. Y. Filed Apr. 25, 1889. Serial No. 308,576. (No model.)

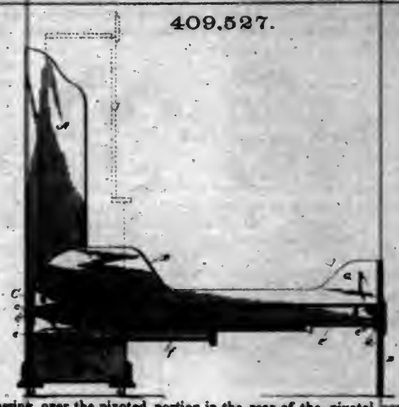


Claim.—The combination of the frame A, having transparent front *a* and notches *c*, with the follower D, and the spring *b*, that engages the notches *c*, said follower being adapted to press against and hold a larger and also a smaller number of papers in the frame while permitting of their ready removal, substantially as described.

409,527. FOLDING BED. GUSTAVUS VAN HOORNBEKE and THOMAS B. FOAN, Carlyle, Ill. Filed Dec. 19, 1887. Serial No. 258,402. (No model.)

Claim.—1. In a folding bed, the combination, with the upright stationary portion, of the folding portion pivoted thereto, having legs hinged to its end, the cords having the interposed spring and attached to the legs above the hinge and to the stationary portion and

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passing over the pivoted portion in the rear of the pivotal connection between the stationary and movable portions, substantially as described.

2. In a folding bed, the combination, with the upright stationary portion, of the folding portion pivoted thereto having legs hinged to its end and the weight attached in the rear of the pivot, the cord having the interposed spring attached to the legs above the hinge and to the stationary portion and passing over the pivoted portion in the rear of the pivotal connection between the stationary and movable portions, substantially as described.

409,528. GAS-INCANDESCENT. CARL A. VON WELSBACH, Vienna, Austria-Hungary, assignor to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed Mar. 31, 1888. Serial No. 269,196. (No specimens.) Patented in France Nov. 4, 1885, No. 172,084; in Belgium Nov. 4, 1885, No. 70,739, and Sept. 9, 1886, No. 74,503; in Italy Feb. 23, 1886, XXXVIII, 310, and Oct. 13, 1886, XL, 415; in England Mar. 13, 1886, No. 3,592; in Austria-Hungary Apr. 9, 1886, No. 44,960 and No. 5,176; in Sweden Apr. 14, 1886, No. 687; in Germany Apr. 29, 1886, No. 41,945; in Finland July 10, 1886, No. 261; in Norway Aug. 25, 1886, No. 83; in Portugal Apr. 6, 1887, No. 1,127, and in Russia Dec. 31, 1887, No. 12,505.

Claim.—1. An incandescent burner for gas, consisting of a skeleton hood or frame composed of a compound containing thorium and zirconium, substantially as described.

2. An incandescent burner for gas, consisting of a skeleton hood or frame composed of a compound containing thorium, zirconium, and lanthanum, substantially as described.

3. An incandescent burner for gas, consisting of a skeleton hood or frame composed of a compound of thorium, zirconium, and an yttrite earth, substantially as described.

409,529. METHOD OF REGENERATING MANTLES FOR INCANDESCENT USES. CARL A. VON WELSBACH, Vienna, Austria-Hungary, assignor to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed Mar. 31, 1888. Serial No. 269,202. (No specimens.) Patented in Germany Jan. 26, 1887, No. 44,016; in England Apr. 28, 1887, No. 6,239, and in Austria-Hungary May 15, 1887, No. 1,663 and No. 16,176.

Claim.—1. The method of regenerating exhausted mantles composed of earthy materials for incandescent purposes, which consists in impregnating the mantle with a restorative or revivifying solution of a salt of lanthanum or other refractory earth, and heating the mantle to convert the salt into an oxide, substantially as described.

2. The method of regenerating exhausted mantles composed of earthy materials for incandescent purposes, which consists in impregnating the mantle with a restorative or revivifying solution of a salt of lanthanum, and subsequently heating the mantle to convert the salt into an oxide, substantially as described.

409,530. INCANDESCENT GAS-LAMP. CARL A. VON WELSBACH, Vienna, Austria-Hungary, assignor to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed Mar. 31, 1888. Serial No. 269,203. (No model.) Patented in England July 28, 1886, No. 9,755.



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Claim.—1. The combination of a burner-tube provided with a cap having a vertically-projecting cone 13, surrounded by an inner annular series of perforations 14 and an outer annular series of radiating slots 15, a hood of refractory incandescent material suspended above said burner-cap, and a chimney surrounding said hood, substantially as described.

2. The combination, with the burner-tube 5 and gallery 8, having lugs 23 and set-screws 24, located on a laterally-extended portion of the gallery-body, of the chimney 19, the hood 20, and the vertically-adjustable rods 21 and 22, substantially as described.

3. The combination of a vertically-perforated thimble having a gas-inlet, a perforated disk supported by said thimble, a Bunsen burner having lateral air-inlets, and a shield located around the burner air-inlets, substantially as described.

4. The combination of a Bunsen burner having lateral air-inlets, a ring shrunk onto the burner-tube above the air-inlets, and a shield suspended from said ring and surrounding the air-inlets of the burner, substantially as described.

5. The combination, with a gas-burner and a chimney-gallery, of a vertically-adjustable rod supported by the gallery and an incandescing hood suspended from said rod above the burner, substantially as described.

6. The combination, with a gas-burner, a chimney, and an incandescing hood suspended in said chimney, of a gallery having converging ribs 8^a, arranged at intervals, substantially as described.

409,531. MANUFACTURE OF GAS-INCANDESCENTS. CARL A. VON WELSBACH, Vienna, Austria-Hungary, assignor to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed Mar. 31, 1888. Serial No. 269,204. (No model.)

Claim.—The herein-described method of manufacturing mantles or frames for incandescent illumination, which consists in impregnating a textile fabric with a solution of the salts of the rarer metals that produce earthy oxides, then drying the fabric and afterward applying to its upper end a fixing-fluid of a metallic salt in solution, then again drying and attaching a platinum wire to the upper end of the mantle, then exposing the mantle to heat for the purpose of consuming the textile fabric and decomposing the salts of the solutions with which it was impregnated, thereby leaving the mantle composed entirely of incombustible and infusible earthy oxides, and finally annealing said mantle, substantially as described.

409,532. SIGNAL-LANTERN. JOSEPH WALL, Seaforth, Liverpool, County of Lancaster, England. Filed Feb. 27, 1889. Serial No. 301,360. (No model.) Patented in England May 6, 1887, No. 6,644, and Nov. 27, 1888, No. 17,217.

Claim.—1. In a signal-lantern, the combination of a casing having a hollow handle, a lens, a lamp, an opaque cylindrical screen surrounding the lamp-chimney, and screen-operating levers located in the lantern-casing and in its hollow handle for raising and lowering said screen to expose and conceal the light, substantially as described.

2. In a signal-lantern, the combination of a casing having a hollow handle, a globular lens, a lamp, an opaque vertically-movable screen surrounding the lamp-chimney, levers inclosed in the lantern-casing and in its hollow handle for operating said screen, and a gong or bell located in position to be actuated by one of said levers in raising the screen to expose the light, substantially as described.

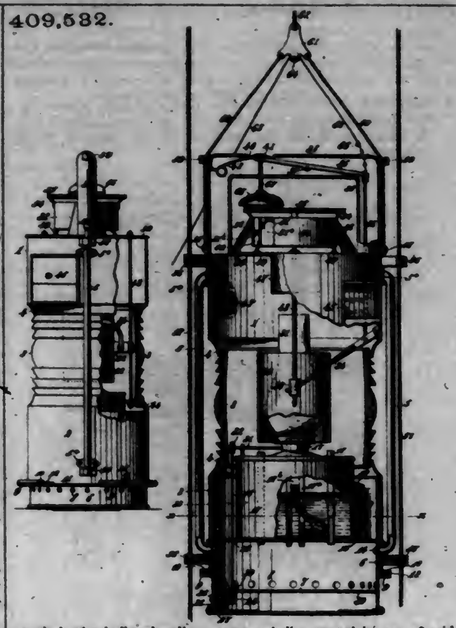
3. In a signal-lantern, the combination of a globular lens, an opaque shield detachably and adjustably secured around a portion of the lens, a lamp, and an opaque vertically-movable screen surrounding the lamp-chimney, substantially as described.

4. In a signal-lantern, the combination of a casing comprising upper and lower outer shells connected by detachable tubular stays, the upper shell being provided with a hollow handle, a globular lens supported between said shells, an inner lower shell detachably supported in the outer lower shell and carrying an oil-reservoir and lamp, an opaque vertically-movable screen surrounding the lamp-chimney, and screen-operating levers inclosed in the lantern-casing and its hollow handle, substantially as described.

5. In a signal-lantern, the combination of a casing having a hollow handle and a transparent direction-plate, a globular lens, a lamp, an opaque screen surrounding the lamp-chimney, and levers for operating said screen located partly in the lantern-casing and partly in its hollow handle, substantially as described.

6. In a signal-lantern, the combination of a casing having a hollow handle and a globular lens, a lamp, an opaque vertically-movable screen surrounding the lamp-chimney, screen-operating levers located

409,532.



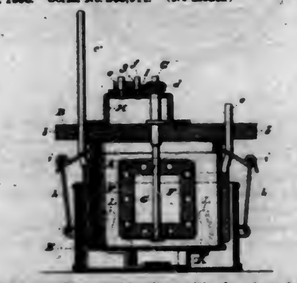
partly in the hollow handle, a gong or bell actuated by one of said levers, means for hoisting the lantern to an elevated position, and an operating-line connected with the levers for actuating the screen and bell, substantially as described.

7. In a signal-lantern, the combination, with a lantern-casing comprising upper and lower shells connected by tubular stays adapted to conduct heated air from the upper part of the lantern to the lower part, of a lamp, an oil-reservoir, and air-tubes extended through said reservoir, two of said tubes being flattened to serve as guides for the lamp-wick, substantially as described.

8. In a signal-lantern, the combination of the shell 1, having a top 39 and a hollow handle 38, the chimney 50, the non-conducting plate 55, supported above the chimney, the non-conducting tube 52, surrounding the chimney, and the heat-guards 53, located near the upright portions of the handle, substantially as described.

9. In a signal-lantern, the combination of the shell 2, having exterior segmental flanges 12, the detachable shell 6, having an exterior annular flange 9, provided with segmental lips 10, and the set-screw 13, substantially as described.

409,533. CHURN. WILLIAM WALTER, Saltsburg, Pa. Filed Sept. 20, 1888. Serial No. 285,911. (No model.)



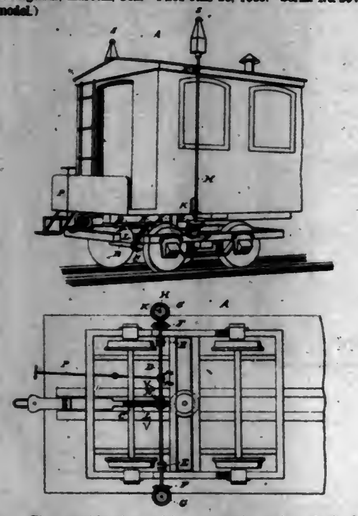
Claim.—1. The combination, with the churn-body having the long rod *d* and the short rod *e*, of the cover having the projection and the perforated lugs, said long rod being adapted to permit of the movement thereon of said cover with the dasher while the dasher is being removed, and to permit the dasher to remain connected to the churn-body after such removal, substantially as set forth.

2. In a churn, the combination, with the churn-body having the long rod *d* and short rod *e*, and the cover having the projection and the perforated lugs, of the crank-shaft having bearings extending from the cover projection, the rack-plate, the overlapping guide-plate, the

pitman, and the dasher-shaft having the pinion, substantially as specified.

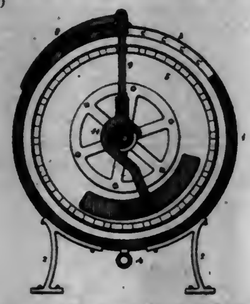
3. In a churn, the combination, with the churn having the eyes and the tub having the hooks, of the brackets secured to the bottom of said tub, provided with the spring-arms, substantially as specified.

409,534. REVOLVING SIGNAL. JOHN W. WARREN, Mineola, Tex., and SAMUEL H. RADFORD, Hartsville, Ala.; said Radford assignor to A. C. Cunningham, Mineola, Tex. Filed Jan. 28, 1889. Serial No. 297,788. (No model.)



Claim.—The combination, with a car-axle and a shaft driven thereby, of the lateral supporting-stems carrying signaling-lanterns glazed in alternating colors, a shifting-lever acting alternately upon studs or stops of the said shaft, said shaft having a sliding movement and gearing alternately with said signal-carrying stems, substantially as set forth.

409,535. WASHING AND STARCHING MACHINE. FRANK M. WATKINS, Cincinnati, Ohio. Filed July 20, 1888. Serial No. 280,457. (No model.)



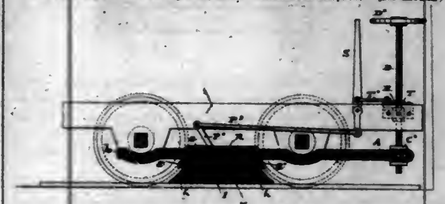
Claim.—1. The combination, with a horizontal cylindrical shell or tank having an opening near its top and containing a rotary cage, of an oscillating cover 8, curved interiorly to fit the margin of said opening and pivoted eccentrically to said margin by means of a frame which occupies the interior of the shell outside of the cage, as and for the purposes set forth.

2. The concavo-convex lid or cover 8, whose arms 9 are journaled on bosses 6, eccentric to and within the shell 1, as and for the purpose set forth.

3. The combination, with cylindrical shell 1, having opening 3, of cover 8, guided to a path nearly concentric with the shell by arms 9, journaled on eccentric bosses 6, and equipped with counterpoises 13, which ease the cover to either the closed or the open position, as set forth.

4. The combination, with cylindrical shell 1 of a washing or starching machine and with opening 3 of the same, of concavo-convex lid or cover 8, whose arms 9 extend inwardly between said shell and rotatable cage 5, are journaled upon eccentric bosses 6, and extend beyond the same to form counterpoises 13, as and for the object explained.

409,536. BRAKE FOR RAILWAYS. ALEXANDER WATSON, San Francisco, Cal. Filed Apr. 10, 1889. Serial No. 306,727. (No model.)

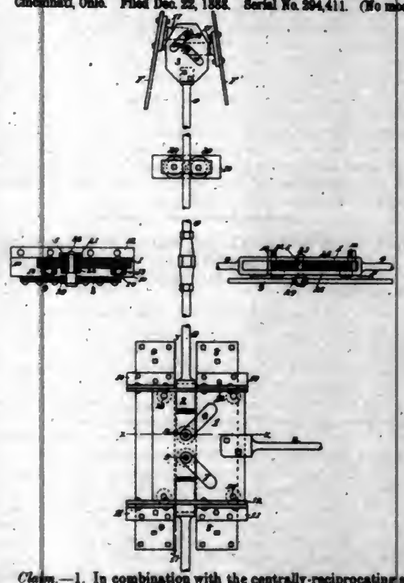


Claim.—1. The herein-described car-brake, consisting of the frame A A C, the brake-blocks G G, with faces *g g* to engage the rims of the wheels, the blocks H H, attached to said brake-blocks in such manner that they are capable of sliding independently in a longitudinal direction, a locking mechanism by which these two blocks are secured together, having connection with an operating-lever on the car, and mechanism whereby the said frame is raised and lowered to operate said sets of brake-blocks, as set forth.

2. In a car-brake, a wheel brake-block G, adapted for operation between two wheels on the same side of a truck to engage the rims of the wheels when moved upward, a track-brake shoe or block H, connected to said wheel-brake by a groove and dovetail rib, and locking mechanism adapted to hold said block H, substantially as described, and to be operated from the car to release it for action, as set forth.

3. In combination with the wheel brake-blocks G G, the pivoted frame A A C, the screw-shaft D, supported on bearings on the car-track, and the holding-plate E, arranged for operation as set forth.

409,537. COMBINED CROSSING AND SWITCH. FREDRIC C. WEIR, Cincinnati, Ohio. Filed Dec. 22, 1888. Serial No. 294,411. (No model.)



Claim.—1. In combination with the centrally-reciprocating shaft 4, the plate 1, provided with a slot engaging with a stud on said central shaft, reciprocating said shaft 4, substantially as herein specified.

2. In combination with the central cam-plate 1, the central shaft 4, connected at the outer ends with the two sets of switch-rails, and a mechanism for simultaneously opening and closing said switches as said central shaft is reciprocated, substantially as herein specified.

3. In combination with a central cam-plate 1, the central shaft 4, with the supporting-plates 8 and 9, forming guides for the central shaft 4 and a support for reciprocating the shaft upon plate 1, substantially as specified.

4. In combination with the supporting-plates 8 and 9, guides 10 and 11, the central cam-plate 1, supported laterally, and the friction-rollers 5, traveling against said guides, substantially as herein set forth.

5. A support for the central plate 1 and central shaft 4, consisting of the plates 8 and 9, rigidly united together by yoke-plates bolted to said plates 8 and 9 at either end of the cam-plate 1, substantially as herein specified.

6. A double switch-moving device consisting, substantially, of the shaft 4, located centrally between two sets of switches, the mechanism for moving said shaft longitudinally, and the cam-plates 3 at either end of the shafts, connected with the rail-bars 17, provided with studs engaging with the slots 15 and 16, whereby the two sets of switch-rails are simultaneously opened or closed by the reciprocation of the said shaft 4, substantially as described.

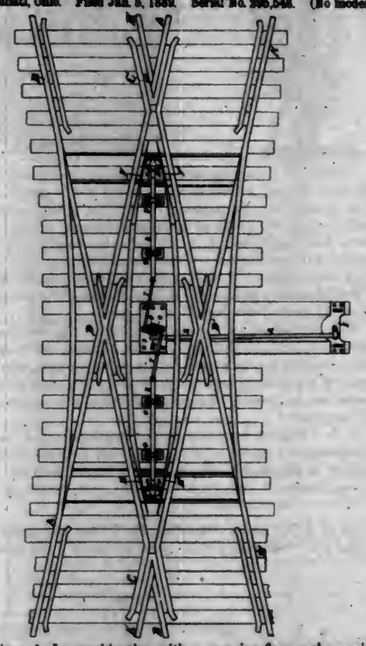
7. The combination, with the plate 3, operated by the reciprocating shaft 4 and provided with slots 15 and 16, of the rail-bars 17, connected to the inside of the switch-rails and provided with studs engaging in the slots 15 and 16, whereby said switch-bars are moved in unison to or from each other as the said plates are reciprocated, substantially as herein specified.

8. The combination of the plate 3, provided with slots 15 and 16, and the rail-bars 17, engaging said slots 15 and 16 from opposite sides of said plate 3, substantially as specified.

9. The combination, with a crossing, of a switch-moving mechanism consisting of the cam-plate 1, connected to the switch-bar, the reciprocating shaft 4, the cam-plates 3, connected at either end of said bar, and the rail-bars 17, provided with studs engaging with the slots of plate 3 and attached to the switch-rails on either side of said plates, substantially as specified.

10. In combination with two sets of switches, the central shaft 4, supported in anti-frictional guides and connected at each end to the cam-plates 3, which operate the rail-bars and switch-rails as they are reciprocated by said shaft 4, substantially as specified.

409,538. COMBINED CROSSING AND SWITCH. FREDRIC C. WEIR, Cincinnati, Ohio. Filed Jan. 5, 1889. Serial No. 295,546. (No model.)



Claim.—1. In combination with a crossing-frog and a switch-stand, the switch-bar 2, hinged to the arm 3, and the cross-head lever, the connecting-rod 7, and reciprocating shaft 8, hinged to bell-crank levers 10, and the bracket-arms 15 of the switch-rails, substantially as specified.

2. In combination with a crossing-frog, the switching mechanism consisting, substantially, of the switch-bar 2, the crank-levers 3 and 6, the connecting-rods 7, and reciprocating shafts 8, for simultaneously moving the switch-rails at both ends of the crossing, substantially as described.

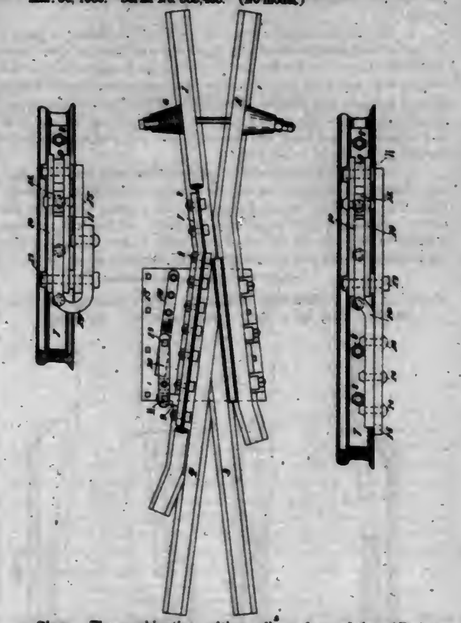
3. In combination with the centrally-reciprocating shafts 8, the bell-crank levers 10, loosely hinged at their inner ends to the shafts 8 and at their outer ends pivoted to the bracket-arms 15 of the switch-rails, substantially as specified.

4. In combination with switch-rails F F', the crank-levers 10, hinged to the bracket-arms 15 and loosely hinged at their inner ends to the reciprocating shaft 8, with a fixed bed-plate 12, attached to the rails, serving as a base for the fulcrums of the levers, substantially as specified.

5. In combination with two sets of switch-rails F F and E E', located at the two ends of the crossing, the centrally-reciprocating shafts 8, hinged at their outer ends to mechanism for moving the switch-rails and operated by the cross-head levers 3 and 6, hinged to connecting-rods and the switch-bar 2 of the switch-stand, whereby the two sets of switches are simultaneously moved by the reciprocation of the said switch-bar, substantially as specified.

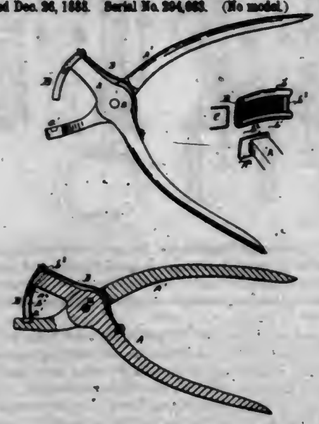
6. The combination of longitudinal reciprocating shafts 8, located centrally between the inner rails of the crossing-frog and connected at their inner ends to the T-shaped bell-crank lever, the arm 3 of which is hinged to the switch-bar, substantially as herein specified.

409,539. SPRING-FROG. FREDRIC C. WEIR, Cincinnati, Ohio. Filed Mar. 30, 1889. Serial No. 305,465. (No model.)



Claim.—The combination, with a railway-frog, of the stiffening-bar 7, rigidly secured to the web of the moving rail and provided with an arm 9 hinged to the link 10 and to the bar 14, secured to the base-plate, substantially as specified.

409,540. STAPLING IMPLEMENT. HENRY P. WHITE, Detroit, Mich. Filed Dec. 26, 1888. Serial No. 294,063. (No model.)



Claim.—1. The stapling implement herein described, consisting of jaws A A', one of said jaws provided with a driving-arm A^3 and the other jaw with a clinching-die, a sliding head supported upon said driving-arm, and a single spring bearing on said head and operating said jaws, the movement of said head toward said die limited at a point above the said arms, substantially as set forth.

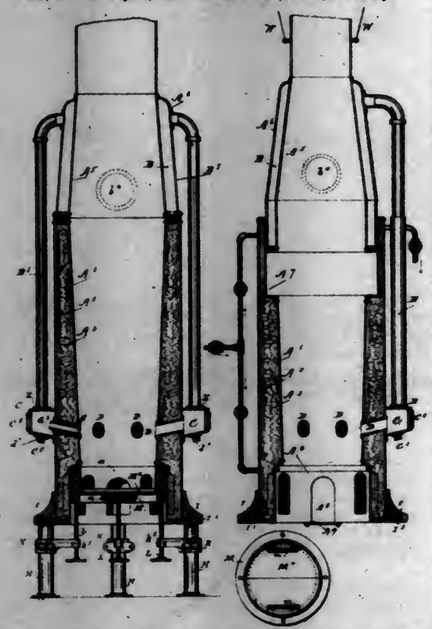
2. The stapling implement herein described, consisting of jaws A A', one of said jaws provided with a driving-arm, and a sliding head supported upon said arm, said head provided with a flange b^3 and the other jaw provided with a clinching-die, substantially as and for the purpose described.

3. The stapling implement herein described, consisting of jaws A A', one of said jaws provided with a driving-arm made integral therewith, a sliding head supported upon the driving-arm, said head flanged at the sides to embrace the lateral edges of the said arm and also flanged at its upper end to limit the movement of the head in one direction, and a single spring bearing on said head and operating said jaw and the other jaw provided with a clinching-die, substantially as set forth.

4. The stapling implement herein described, consisting of jaws A A', one of said jaws provided with a driving-arm made integral therewith and having side flanges, as b^3, a sliding head supported upon the driving-arm, said head flanged at the sides to embrace the side flanges of said arm and also flanged at the upper end to limit the movement of the head in one direction, a spring connected to one of said jaws and bearing on said head, and the other jaw provided with a clinching-die, substantially as set forth.

5. In a stapling implement, the combination, with jaws A A', having a jointed connection, one of said jaws provided with a driving-arm, of a sliding head engaged upon said arm, a spring bearing on the end of said head, a part of said head cut away and bent over to form a flange to limit the movement of said head in one direction, and a guide-notch for the end of said spring, substantially as set forth.

409,541. SMELTING-FURNACE. JOHN J. WILLIAMS, San Francisco, Cal. Filed Apr. 7, 1887. Serial No. 234,061. (No model.)



Claim.—1. In a smelting-furnace, the combination, with a stack, of an adjustable air-heating chamber located therein, and means for vertically adjusting said chamber, tuyere-boxes, and air-conductors connecting the air-heating chamber with the tuyeres, said conductors being extensible in length, as set forth.

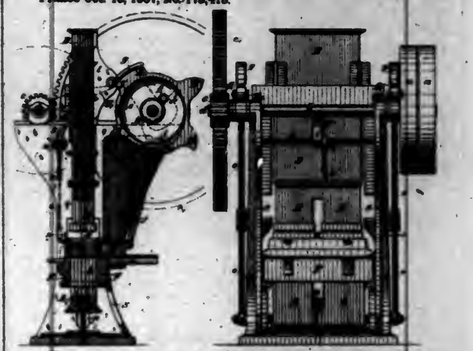
2. In a smelting-furnace, an air-heating chamber and independent tuyere-box to each tuyere and an independent connecting-passage from the air-chamber to each box, said passage being provided near its connection with the tuyere with an annular liquid-channel g^3, having an orifice g^3, and an oil-pipe connecting the channel, all combined and arranged substantially as and for the purpose set forth.

3. In a smelting-furnace, a stack having a water-space between its inner and outer shells and provided with an offset-space in its upper portion, in combination with an air-heating chamber arranged to slide in said offset-space, and connections from said chamber to the tuyeres of the furnace, as set forth.

4. In a smelting-furnace, the combination, with a double-walled stack having vertical openings in its walls near the base thereof, of spouts extending through the two walls, and provided with back plates resting against the outer wall, said back plates having vertical slots therein and screws extending through the slots for holding the spouts at any elevation in the openings, as set forth.

5. In a smelting-furnace, a stack having vertical openings in its walls, and spouts extending through said walls and having vertically-slotted back plates resting against the outside thereof, with screws therein for holding the spouts at any adjustment in combination with an adjustable metal-chamber in the base of the stack, as set forth.

409,542. STAMPING-MACHINE FOR MOLDING ARTIFICIAL STONE. JOSEPH WIENLER, Kissenbach, near Waldshut, Germany. Filed July 24, 1888. Serial No. 280,951. (No model.) Patented in Germany July 1, 1887, No. 42,780; in England Sept. 23, 1887, No. 13,133, and in France Oct. 10, 1887, No. 173,413.

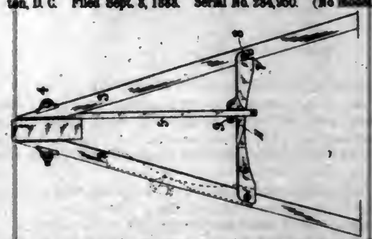


Claim.—1. A machine for manufacturing bricks, tiles, briquettes, and other objects, consisting substantially of the drop-hammer B, which is raised by the tappets I II III IV, of a disk *e*, the anvil A, which is raised by means of the connecting-rods *o*, levers *g*, g^3, and arms *g*, the charging-box K, which feeds the material into the form, pushes the formed articles out of the machine, and is operated by the lever *j* with its claws j' j^3, and has its fulcrum at *i*, which said lever *j* preferably receives its movement from the roller *f*, arranged crank-like on the shaft *d*, substantially as set forth.

2. In a machine for manufacturing bricks, tiles, and the like, the combination, with the charging-box, the hammer, and means for retaining the hammer temporarily in the raised position, of a series of tappets of gradually-increasing size, whereby the blows of the drop-hammer are successively increased, substantially as and for the purposes set forth.

3. In a machine for manufacturing bricks, tiles, and the like, the arrangement of a pawl *t* on an eccentric *u* on the shaft *r*, which said pawl can be operated by the handle *v* or hand-lever *s* for retaining the drop-hammer B in its highest position, substantially as set forth and shown on the drawings.

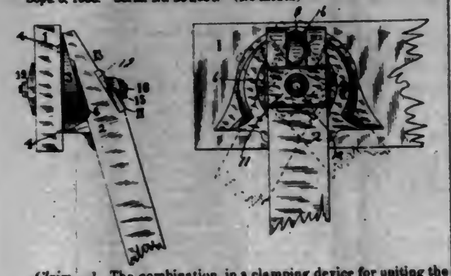
409,543. BRACE FOR TRESTLES. GEORGE W. ZIEGLER, Washington, D. C. Filed Sept. 8, 1888. Serial No. 284,950. (No model.)



Claim.—1. In a trestle, the brace 5 and a brace having flattened ends, a beveled central portion, and a set-off projection formed thereon above the said beveled portion, substantially as shown and described, and for the purpose set forth.

2. In a trestle, a brace therefor having a flattened perforated end, a beveled central portion, and also a flattened notched end, a set-off projection located above the beveled central portion 11 with the diagonal brace 5 and legs 2 and 3, substantially as and for the purpose set forth.

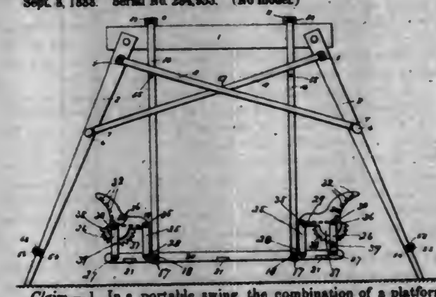
409,544. TRESTLE. GEORGE W. ZIEGLER, Washington, D. C. Filed Sept. 8, 1888. Serial No. 284,951. (No model.)



Claim.—1. The combination, in a clamping device for uniting the parts of trestles, the washer 3, provided on its inner surface with the projections 4 and having an opposite outer surface inclined to the said inner surface with a plate having oppositely-situated flanges, the washer 11, provided with the projection 16, washers 15 and 19, and bolt 10, substantially as shown and described.

2. In a clamping device for uniting the parts of trestles, the combination of a washer having its outer surface inclined to its inner surface with a plate having oppositely situated flanges and a loop located between the said flanges adapted to engage a projection of the washer 11, washers 15 and 17, nut 19, and bolt 10, substantially as shown, and for the purpose set forth.

409,545. SWING. GEORGE W. ZIEGLER, Philadelphia, Pa. Filed Sept. 8, 1888. Serial No. 284,953. (No model.)



Claim.—1. In a portable swing, the combination of a platform suspended from the beam 1 by links 16, having their bearings in sockets secured to the said platform, with the seats 24, provided with toothed sectors and pivoted links adapted to support the said seat upon the said platform, two of the said links having projections formed thereon and adapted to lock the said sectors in different positions, substantially as shown, and for the purpose set forth.

2. The saddle 11, having a central concave bearing, the convex fulcrum 10, provided with downwardly-extending ends 13, having hooks 14 and pins 15, and the suspending-links 16, all arranged substantially as set forth.

3. In a portable swing, the platform 19 and means for supporting the same, consisting of the fulcrum-saddle 11, the links 16, hooked thereon, and the beam 1, adapted to support the said saddle, in combination with the seats 24, links 25 and 26, pivoted to the said seats and to the said platform, stops secured to the links 26, and sectors secured to the said seats, having radial teeth engaging the said stops, substantially as and for the purpose set forth.

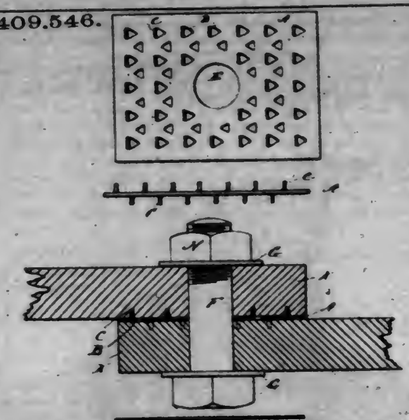
4. In a portable swing, the perforated suspending-links 16, the saddle 11, and its hooks and pins, the said links adapted to fit upon said hooks and pins, in combination with the platform 19, the fulcrum 10, and the beam 1, substantially as and for the purpose set forth.

5. In a portable swing, the beam 1, links 16, platform 19, links 25 and 26, and stops 39, secured to the links 26, in combination with the seats 24 and the perforated sectors having radial teeth adapted to engage with the said stops, substantially as shown, and for the purpose set forth.

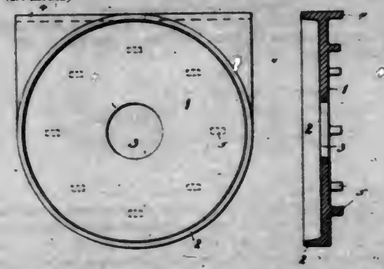
409,546. CLAMPING-PLATE FOR TIMBER STRUCTURES. GEORGE W. ZIEGLER, Philadelphia, Pa. Filed May 13, 1889. Serial No. 310,606. (No model.)

Claim.—As a new article of hardware manufacture, the plate A, having teeth C upon both sides thereof, and an aperture adapted to receive a screw-bolt, constructed substantially as and for the purpose set forth.

409,546.



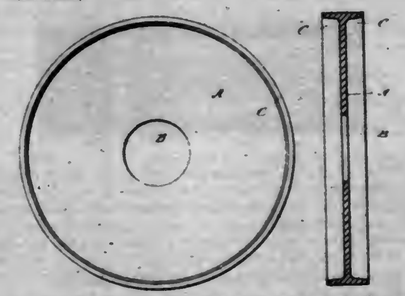
409,547. CLAMPING-PLATE FOR TIMBER STRUCTURES. GEORGE W. ZIEGLER, Philadelphia, Pa. Filed May 13, 1889. Serial No. 310,607. (No model.)



Claim.—1. A new and useful article of hardware manufacture adapted to be used in uniting timber frame-works, consisting of washer having a central aperture and a concentric rim formed upon one side thereof, and a projecting right-line flange upon the other side, both framed integrally with the washer, substantially as set forth.

2. A new and useful article of hardware manufacture, consisting of a washer having a central aperture and a concentric annular rim upon one side and a right-line flange and projecting spurs and points upon the opposite side, and adapted to unite pivotally-adjustable parts of timber frame-works, substantially as set forth.

409,548. CLAMPING-PLATE FOR TIMBER-STRUCTURES. GEORGE W. ZIEGLER, Philadelphia, Pa. Filed May 13, 1889. Serial No. 310,608. (No model.)



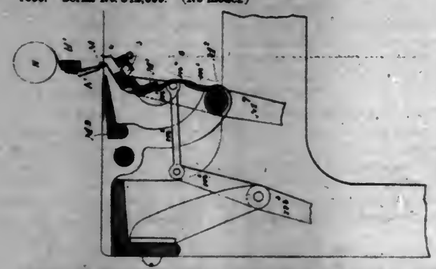
Claim.—A new article of manufacture, consisting of a flat washer provided with annular rims adapted to be fitted between pieces of timber to avoid side strain upon bolts, clamping together, and permitting pivotal motion without lengthwise or lateral movement, substantially as set forth.

409,549. NITRO-GELATINE EXPLOSIVE. FREDERICK A. ABEL, London, and JAMES DEWAR, Cambridge, County of Cambridge, England. Filed June 20, 1888. Serial No. 314,907. (No specimens.)

Claim.—An explosive for ammunition manufactured by pressing blasting-gelatine or compounds thereof through holes to form wires,

cutting these wires into suitable lengths, and packing them in cartridge-cases, substantially as described.

409,550. LOOM FOR WEAVING TUFTED FABRICS, &c. WILLIAM ADAM, Kidderminster, County of Worcester, England. Filed May 31, 1889. Serial No. 312,699. (No model.)



Claim.—In looms for weaving tufted fabrics, the combination, with the comb for lifting or pushing the tufts through the spaces in the warp, of a bar, plate, or supplemental comb preceding the before-mentioned comb and acting to straighten the tufts to insure their being lifted or pushed through their proper spaces in the warp, substantially as herein shown and described.

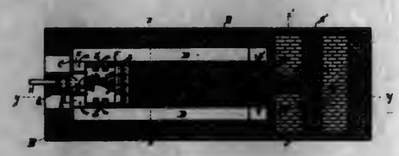
409,551. LAST. ELIPHAS W. ARNOLD, Weymouth, Mass., assignor of one-half to George W. Osgood, same place. Filed Feb. 14, 1889. Serial No. 299,850. (No model.)



Claim.—1. The last-body *a*, having a pin-receiving hole, combined with the last-block *b*, having a projection, shoulder, or lip at the top, provided with a pin-receiving hole registering with the pin-receiving hole in the last-body, the pin for said hole having a hook-engaging end or head, and a hole formed in the top of the last-block in the path of movement of the pin to receive the end of the hook, substantially as and for the purpose set forth.

2. The last-body *a*, having a pin-receiving hole, combined with the last-block *b*, having a lip *c*, provided with a pin-receiving hole registering with the pin-receiving hole in the last-body *a*, the pin for said hole and the hole formed in the top of the last-block in the path of movement of said pin to receive the hook, and the limiting-stop for the pin, substantially as described.

409,552. BOILER-SETTING. JOHN BALMORE and WALTER S. ROCKWELL, New York, N. Y. Filed Apr. 26, 1889. Serial No. 308,720. (No model.)

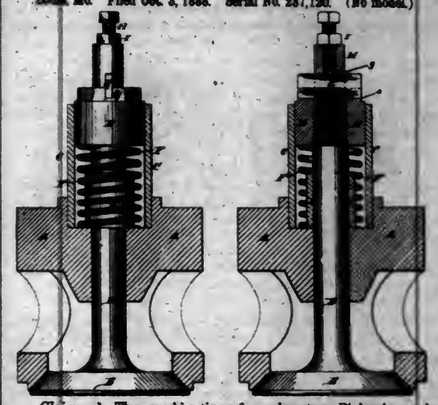


Claim.—1. In a boiler-setting, the combination, with a primary combustion-chamber, a secondary combustion-chamber, and air-ducts located under the secondary combustion-chamber and leading rearwardly and then forwardly to the primary combustion-chamber, of a cross-wall located at or near the rear end of the boiler and provided near its lower end with openings, and diving-flues leading from the secondary combustion-chamber to the openings in the cross-wall, substantially as set forth.

2. In a boiler-setting, air-ducts connecting with the ash-pit chamber and leading from thence rearward and connecting with lateral ducts, the latter opening upward into ducts located along the side walls of the setting, the latter ducts connecting with air-pipes leading to the burner, substantially as set forth.

3. The combination of oil-burner with ducts *c c'*, and D, substantially as indicated, and hollow-bridge wall, the chamber thereof connecting with ducts D, such chamber having a discharge presenting upward, ducts D having lateral openings discharging into the combustion-chamber between the line of the bridge-wall and burner, substantially as set forth.

409,553. SAFETY-NUT FOR VALVES. JACOB H. BINKHARD, St. Louis, Mo. Filed Oct. 3, 1888. Serial No. 287,190. (No model.)

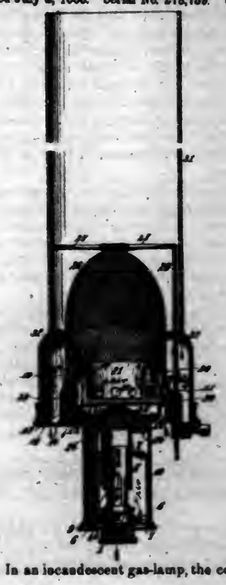


Claim.—1. The combination of a valve-stem B', having a key-slot *b'*, a nut E, having key-seat *e* and screw-threaded on the valve-stem, a key G, occupying the said slot and seat and having a notch *g*, and a set-screw H, threaded in the valve-stem and engaging in the notch of the key, for the purpose set forth.

2. The combination of the valve-stem B', with key-slot *b* through it, and screw-hole leading from the top of the stem into the slot, set-screw occupying the screw-hole and carrying a jam-nut, a nut screwing upon the stem and having a key-seat in its top, a key fitting the key-seat and slot and having a notch to receive the end of the set-screw, a cylinder surrounding the nut and forming a guide therefor, a sleeve D, surrounding the valve-stem and forming a stop for the nut, and a spring surrounding the sleeve and bearing against the bottom of the nut, substantially as and for the purpose set forth.

3. The combination, with the body A, valve-seat, and valve B, having stem B', of a cylinder secured to the body around the valve-stem, a removable sleeve D, surrounding the valve-stem within the cylinder, a nut secured to the valve-stem and fitting snugly in the cylinder, forming a guide for said stem and adapted to come against the sleeve D to limit the opening of the valve, and a spiral spring located between said sleeve and cylinder and bearing between said nut and the body A, said sleeve being of sufficient length to project above the spring when the latter is compressed, substantially as set forth.

409,554. INCANDESCENT GAS-LAMP. HAROLD J. BELL, Gloucester City, assignor to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed July 2, 1888. Serial No. 278,739. (No model.)

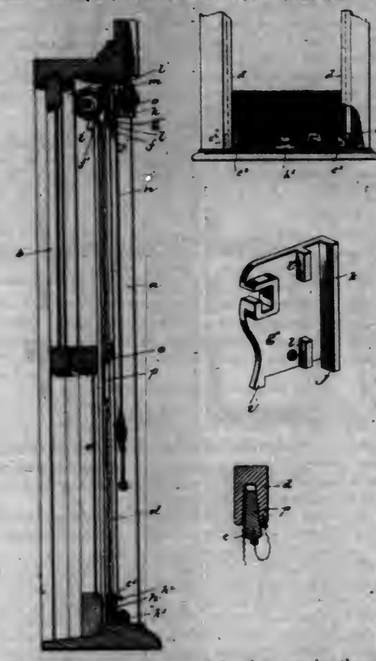


Claim.—1. In an incandescent gas-lamp, the combination, with a mantle, and an Argand burner having horizontal lateral air-inlets leading into a central air-chamber, of an air-crown surrounding and supporting said burner, and comprising an annular air-chamber open at the bottom and having its inner wall provided with air-openings that register with the horizontal lateral air-inlets of said burner, substantially as described.

2. In a gas-lamp, the combination, with the air-crown 11, having an annular air-chamber 12, provided with an annular series of openings 15, of the circular burner 17, having annular flame-slot 20, central air-chamber 21, horizontal air-passages 22, and vertical gas-passages 23, substantially as described.

3. In a gas-lamp, the combination of the Argand burner 17, the air-crown 11, supporting said burner and formed with double walls inclosing an annular air-chamber 12, that communicates with the central air-chamber of the burner through horizontal air-passages, the gallery 13, having air-inlets 14, and a chimney supported on said gallery, substantially as described.

409,555. WINDOW-SCREEN. ARTHUR L. BENEDICT, New Canaan, Conn. Filed Apr. 7, 1887. Serial No. 234,052. (No model.)



Claim.—1. A window-screen of the class covering the whole of the opening in the window-casing, comprising a netting of just sufficient length from its supporting-roller to the sill that when drawn down its full length and locked at its lower end it will be held taut, irrespective of the tension of its spring-roller or supporting device, combined with such supporting device, such as an ordinary spring curtain-roller, guides to receive the longitudinal edges of the netting, and a locking device to secure the lower end of the extended netting to the window-sill, substantially as described.

2. The combination, with the netting and its roller or support, of an extension e^{x} of such netting integral therewith, turned back and up over the roller, substantially as and for the purpose set forth.

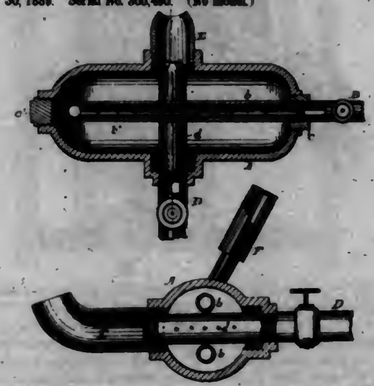
3. The combination of the netting, its support or roller, vertical guides for the longitudinal edges of the netting, and brackets to receive and sustain the netting support or roller, constructed wholly independent of the guides, and having the downwardly-projecting lugs *i* and *j* to engage the vertical guides, substantially as described.

4. As an article of manufacture, the herein-described window-screen-roller bracket, consisting of bearings for the roller, the lugs *i j*, depending from the lower edge, and the flanges *k l l'*, projecting laterally from the inside face of the bracket, substantially as and for the purpose set forth.

5. A window-screen of the class covering the whole of the opening in the window-casing, comprising a netting of just sufficient length from its supporting-roller to the sill that when drawn down its full length and locked at its lower end it will be held taut, combined with an ordinary spring curtain-roller, about which such netting is looped, as shown, and having an ordinary pawl-and-ratchet detent, guides to receive the longitudinal edges of the netting, and a locking device for its lower end, all arranged as set forth, that when the netting is extended and unlocked the roller is free to raise automatically the netting a short distance before its pawl and ratchet act, and thus the netting is put in condition to be further raised by manual interposition, substantially as described.

6. In a window-screen, the combination, with the grooved guides and the netting having its edges arranged in said guides, of independent detachable wedges *p*, adapted to be inserted between the netting and the guides within said guides, substantially as and for the purpose set forth.

409,556. OIL-BURNER. JOHN BRAGG, Cleveland, Ohio. Filed Mar. 30, 1889. Serial No. 305,493. (No model.)



Claim.—1. In an oil-burner, the combination of the shell having lateral arms and air-inlets, a perforated oil-inlet pipe extending within said shell lengthwise thereof, a nozzle secured to one of said lateral arms of the shell and a steam-injector pipe entering said shell through the other lateral arm thereof and extending across the shell and into said nozzle, said injector-pipe being perforated opposite the long arms or body of the shell, substantially as described.

2. In an oil-burner, the combination of a shell having lateral arms and having air-inlets at the top of said shell, a perforated oil-inlet pipe extending within said shell lengthwise thereof and bent in a return-bend, a nozzle secured to one lateral arm of the shell and adapted to be turned to change the direction of the flame, and a steam-injector pipe entering the other lateral arm of the shell and passing across the same into said nozzle, being perforated within the shell, substantially as described.

3. The combination of the shell A, having air-inlets F and lateral arms, to one of which is affixed the nozzle, the steam-injector pipe *d*, entering the other lateral arm, perforated within the shell and extending across the same and into the nozzle, and the perforated oil-inlet pipe *b*, bent in a return-bend and extending through the long arms of the shell, and the curved nozzle E, adapted to be turned so as to direct the flame in any desired direction, substantially as described.

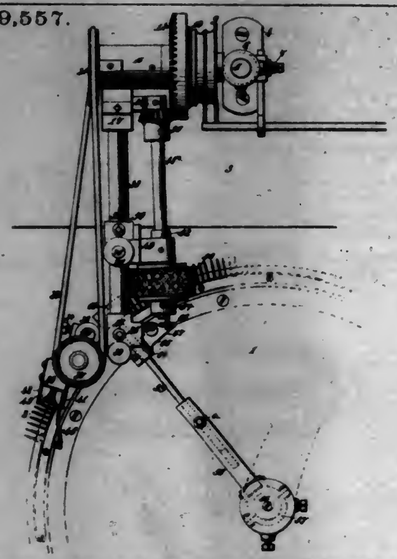
409,557. TRIMMING AND BRUSHING ATTACHMENT FOR TURNING-OFF MACHINES. NORMAN H. BROCK, Waterford, N. Y. Filed June 3, 1888. Serial No. 276,476. (No model.)

Claim.—1. An attachment for a turning-off machine, consisting of a bed-plate, an arm connected therewith and provided at one end with a support carrying two depending yielding plates having jaws at their lower ends projecting toward each other, a cutter carried by the arm and operating below the jaws, a movable brush arranged near the cutter, a support for holding said brush, and means, substantially as described, for operating the cutter and brush.

2. An attachment for a turning-off machine, consisting of a bed-plate, an arm connected therewith and provided at one end with a support carrying two depending plates having jaws at their lower ends projecting toward each other, a cutter carried by the arm and operating below the jaws, a rotary main brush arranged near the cutter, a support for said brush, a support carrying an auxiliary brush which is situate between the cutter and main brush, and means, substantially as described, for operating the cutter and both brushes.

3. The combination, with the cylinder of a turning-off machine, of two depending plates having guide-jaws at their lower ends which project toward each other, a movable brush arranged over the cylinder-points, a cutter located between the brush and the jaws, supports

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for holding the plates, brush, and cutter above the cylinder, and means for operating said brush and cutter, substantially as described.

4. The combination, with a cylinder of a turning-off machine, of two depending yielding plates having guide-jaws at their lower ends which project toward each other, a movable main brush arranged over the cylinder-points, a cutter located adjacent to the jaws, a movable auxiliary brush between the cutter and main brush, supports for holding the plates, cutter, and brushes above the cylinder-points, and means for operating the cutter and brushes, substantially as described.

5. The combination, with the cylinder of a turning-off machine, of a pair of guiding-jaws, a revolving cutter adjacent to the jaws, a rotating main brush, a movable auxiliary brush located between the cutter and main brush, supports for holding the jaws, cutter, and brushes above the cylinder-point, and means for rotating the cutter and main brush and moving the auxiliary brush, substantially as described.

6. The combination, with the cylinder of a turning-off machine, of a bed-plate having an arm carrying guiding-jaws at its outer end, a vertically and laterally adjustable cutter supported by the arm, means for adjusting said cutter, a movable brush at the side of the cutter opposite the jaws, a support for the brush, and means for operating the cutter and brush, substantially as described.

7. The combination, with the cylinder of a turning-off machine, of an arm supported outside the cylinder and carrying two guiding-jaws located above the cylinder-points, a vertically and laterally adjustable revolving cutter carried by the arm, means for adjusting said cutter, a revolving brush adjacent to the cutter, a support for the brush, and means for revolving the cutter and brush, substantially as described.

8. The combination, with the cylinder of a turning-off machine, of a pair of guide-jaws, a cutter operating below the jaws, a rotary main brush, a reciprocating brush arranged between the cutter and main brush, supports for holding the jaws, cutter, and brushes above the cylinder-points, and means for operating the cutter, rotating the main brush, and reciprocating the auxiliary brush, substantially as described.

9. The combination, with the cylinder of a turning-off machine, of depending laterally-yielding elastic plates having their lower extremities extending toward each other to form a pair of guiding-jaws having a converging entrance, a movable brush, a cutter movable beneath the jaws between the latter and the brush, supports for holding the plates, cutter, and brush above the cylinder-points, and means for operating the cutter and brush, substantially as described.

10. The combination, with the cylinder of a turning-off machine, of an arm 23, supported at one end and having at the other end a head 25, an arm 26, adjustable axially and lengthwise in said head, a cutter-shaft supported by the said adjustable arm and carrying a cutter-disk 38 a pair of guiding-jaws 45, supported adjacent to the cutter, a movable brush, a support for the latter, means for axially and lengthwise adjusting the arm carrying the cutter-shaft, and means for rotating the cutter-shaft and moving the brush, substantially as described.

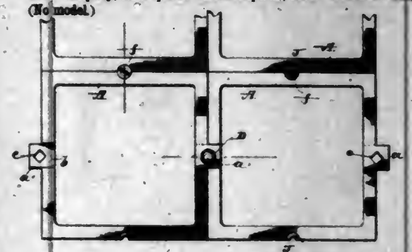
409,558. STIRRUP. JOHN BULL, Cincinnati, assignor to Edward E. Johnson, Painesville, Ohio. Filed May 8, 1889. Serial No. 309,978. (No model.)



Claim.—1. The combination of the stirrup A, hood B, having parallel top slots D D, and side slots C C registering with slots in the stirrup, and provided with the depending rods E, coiled springs F, and movable socketed block or bearing H, having reduced ends projecting through the slots in the sides of the stirrup and hood, and provided with the downwardly-projecting shoulders K K, substantially as and for the purpose set forth.

2. The combination of the stirrup A, hood B, having parallel top slots D D, and side slots C C registering with slots in the stirrup, and provided with the depending rods E, coiled springs F, movable socketed block or bearing H, having reduced ends projecting through the slots in the sides of the stirrup and hood, and provided with downwardly-projecting shoulders K K, and stirrup-strap J, doubled around the movable block or bearing and having its ends inserted loosely through the parallel slots D D in the hood, substantially as and for the purpose shown and set forth.

409,559. FRAME FOR DOORS OF POST-OFFICE LOCK-BOXES. BUNNOD H. CAMP, New Britain, Conn., assignor to the Corbin Cabinet Lock Company, same place. Filed Sept. 27, 1883. Serial No. 240,459. (No model.)



Claim.—1. A lock-frame having its sides provided with laterally-projecting perforated ears or projections, the said ears or projections adapted to overlap corresponding ears or projections on the next adjacent frame, substantially as set forth.

2. A lock-box frame having its sides constructed with outwardly-projecting perforated ears, the frame being provided with recesses on its side opposite the ears, substantially as set forth.

3. The combination, with a series of lock-box frames, each provided with outwardly-projecting perforated ears and constructed with recesses opposite the ears, whereby the ear on one frame overlaps the ear on the opposite frame and fits within the recess formed in the latter, of fastening-bolts, each constructed with an angular shank in cross-section that fits within the angular perforations in the overlapping ears, substantially as set forth.

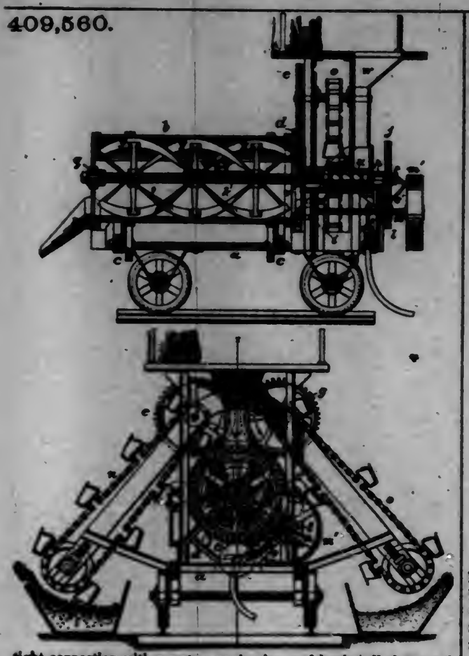
4. The combination, with a series of door-frames, the adjacent edges of which are provided with countersunk screw-holes, one-half of the countersunk and opening being formed in each edge, the bottom of each countersunk constituting a conical projection, of fastening-screws, each having a conical recess formed on the under side of its head, substantially as set forth.

5. In a post-office lock-box, the combination, with a series of frames having perforated overlapping ears and holes that are formed in the edges of adjacent frames, the countersinks of which holes have cone-shaped bottoms, of screw-bolts that are formed to fit squared holes in the ears of the frames, and screws that are capped on the lower faces of their heads to mate the cone-shaped recesses of the countersunk holes in the edges of the frames, substantially as set forth.

409,560. MACHINE FOR MAKING CONCRETE, &c. ALFRED E. CAREY, Westminster, and ERNEST LATHAM, London, County of Middlesex, England. Filed June 26, 1888. Serial No. 315,864. (No model.) Patented in England Oct. 25, 1884, No. 14,115.

Claim.—In a machine for the automatic manufacture of concrete or mortar, the combination, with suitable separate hoppers or receptacles for the several ingredients, (such as sand, stones, or broken rock and dry cement or lime,) of the several coacting conveying and measuring devices, a revolving cylinder which receives said ingredients, and independently revolved mixing and forwarding blades within said cylinder, said blades being mounted on a hollow shaft having water-

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tight connection with a water-supply pipe, and having discharge-orifices midway of said cylinder, whereby the ingredients, having been first intimately mingled in the dry condition, are then at one continuous operation mixed and tempered into a wet or pasty mass in condition for use.

409,561. PERCH-BEARING FOR FIFTH-WHEELS. WILLIAM H. COOPER, New Haven, Conn., assignor to M. Seward & Son, same place. Filed Jan. 21, 1889. Serial No. 297,001. (No model.)



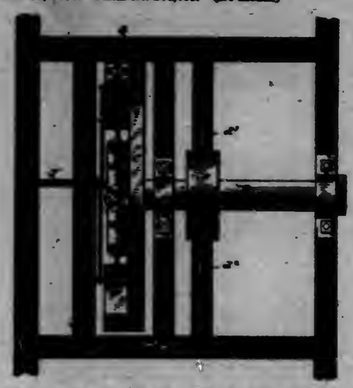
Claim.—The herein-described perch-bearing for fifth-wheels, consisting of the body A, constructed for attachment directly to the perch, the body also constructed with a transverse recess C, with a vertical chamber E opening from the perch side of the body into the body each side the said recess C, combined with a bar D on the side of the body opposite the perch and extending across the recess C, a spring F in each of said chambers of the body, screw G, extending through said springs and through the bar, the said screws constructed with a head of non-cylindrical shape, larger in area than the said spring-chambers, the spring-chambers constructed with a recess at their open end corresponding to the shape of the said heads, and in which the said heads will rest, with a nut on said screw adapted to bear upon said bar, substantially as described.

409,562. BUCKET FOR CHAIN-PUMPS. ADAM D. CROSBY, Cuba, N. Y. Filed Mar. 21, 1888. Serial No. 304,126. (No model.)



Claim.—In a bucket for chain-pumps, the rubber A, having the concave recess *a* in its upper side, a concave recess *a'*, of substantially the same diameter formed in its bottom, the sides of said bucket being of egg-shape form to present the lower depending wall, as described, said bucket having a vertical central perforation, an upper eye carrying a stem within said perforation and of the same diameter throughout the length of the latter, the lower projecting end of the stem being reduced to form a shoulder *c'*, the swivel D, having a plate *d*, permanently located within said lower recess and having its upper surface convex, said plate having a central opening in which the reduced end of the stem is riveted, so that said plate can bear pivotally against the shoulder *c'*, the construction being such that the upward draft on the eye will cause the plate *d* to expand the bucket while the lower depending walls are free to take up wear, substantially as set forth.

409,563. STEAM-ENGINE. JOHN COLTON, North Dorset, Vt. Filed June 12, 1888. Serial No. 276,765. (No model.)



Claim.—1. The combination, with the shaft provided with independent steam-ports, of a disk secured on the end of this shaft, independent radiating steam-cylinders secured on this disk and connected, respectively, to the said independent steam-ports, pistons and piston-rods working in these cylinders, radiating ways, also secured on the face of the disk in line with the cylinders, cross-heads in these ways connected to the piston-rods, and the rods H, connecting the said cross-heads with a stationary pivot-pin set eccentrically to the said shaft, substantially as described.

2. The combination of the steam-box provided with two recesses, the shaft having independent ports corresponding to the number of cylinders, the disk provided with two or more cylinders having piston connected in the ordinary manner with cross-heads, the slides secured to the disk in a manner to balance each other, and the rods connecting the cross-heads with the pivot set eccentric to the shaft, substantially as and for the purposes set forth.

3. The combination of a frame, a shaft journaled in the same and provided with two or more independent steam-ports, a balance disk or wheel on the shaft, independent radiating steam-cylinders on this disk, the said independent ports communicating with these independent steam-cylinders, pistons and piston-rods, cross-heads, and radiating slides secured on the disk, substantially as and for the purpose herein described.

4. As an improvement upon my patent numbered 333,060, granted the 22d day of December, 1885, a steam-engine consisting of the following instrumentalities: a suitable frame, a shaft journaled in bearings upon this frame and provided with two or more independent steam-ports, a steam-box surrounding the shaft, a rotating disk secured on one end of this shaft, independent radiating steam-cylinders secured on the face of the said disk, the inner ends of these cylinders being closed and connected, respectively, to the independent steam-ports in the shaft, pistons working in these cylinders, piston rods and slides, and radiating guides secured on the face of the said disk and connecting the said slides with a stationary eccentric-point on the said frame, substantially as and for the purpose herein set forth.

5. The combination of a shaft provided with independent ports, a disk rigidly secured to one end of the shaft, independent radiating cylinders secured to the face of the said disk, the inner ends of the said cylinders being closed and connected, respectively, with the independent steam-ports in the shaft, radiating guides, pistons and piston-rods, cross-heads working in the said guides, radiating independent rods connecting the said cross-heads with a pin J on a stationary beam, said pin, and beam, the said pin being secured in a slot J' in the said beam, substantially as described.

6. The combination, with a frame, of a drive-shaft journaled upon this frame and provided at one end with a rotating disk, a steam-box embracing this shaft and provided with inlet and exhaust chambers, this steam-box being mounted upon the frame to the rear of the disk on the shaft, radiating steam-cylinders closed at their inner ends and secured on the face of the said disk, radiating guides upon the face of the disk, pistons in the cylinders, piston-rods connected with slides working in the guides, and independent radiating rods connecting the said slides with a stationary eccentric-pin upon the frame, the said

shaft being provided with independent steam-ports connecting the inner closed ends of the cylinders with the steam-box, substantially as herein set forth.

7. The combination, with a frame, of a drive-shaft journaled in the frame, a disk secured on one end of the shaft, radiating independent cylinders and slides upon this disk, pistons and slides, the said shaft being provided with independent ports leading to the cylinders, a stationary adjustable eccentric pin or shaft J upon the frame, and independent radiating rods connecting this adjustable eccentric-pin with the slides working in the guides on the disk, as and for the purposes set forth.

409,564. ADJUSTABLE ROLLING-PIN. LIDDIE CURTIS, Callicoon Depot, N. Y. Filed May 16, 1889. Serial No. 310,980. (No model.)

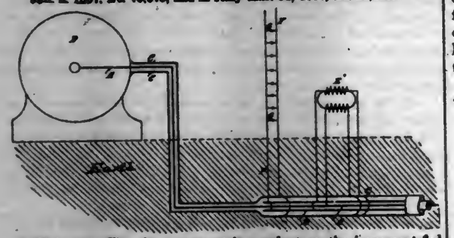


Claim.—1. The combination, with the roller and its shaft, of the gage-blocks at the ends of the roller, with their bearing-edges at varying distances from the acting surface of the roller, substantially as shown and described, and for the purpose specified.

2. The combination, with the roller and the shaft passed through the same, of the handles on the ends of the shaft and the gage-blocks upon the handles, having bearing-edges at varying distances from the bearing-face of the roller, substantially as shown and described.

3. The rolling-pin described, consisting of the shaft, the hollow roller rotatable thereon, the handles on the shaft provided with rectangular portions, and the gage-blocks having apertures to receive the rectangular portions of the handles and having their outer edges at varying distances from the apertures, substantially as shown and described, and for the purpose specified.

409,565. DISTRIBUTION OF ELECTRICAL ENERGY. SEBASTIAN Z. DE FERRANTI, Hampstead, County of Middlesex, England. Filed Feb. 19, 1889. Serial No. 300,457. (No model.) Patented in England Dec. 11, 1885, No. 15,251; in France Dec. 9, 1886, No. 180,176; in Belgium Jan. 8, 1887, No. 75,875, and in Italy Mar. 31, 1887, No. 21,119.

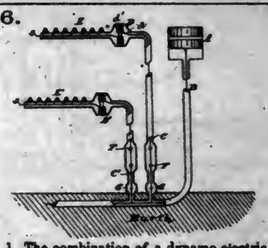


Claim.—1. The three concentric conductors, the innermost fed with high-tension current, the converter supplied with current from the high-tension conductor feeding the intermediate conductor with low-tension current, and the outer conductor serving as a return-conductor to both the high and low tension mains.

2. The combination of a dynamo-electric machine producing current of high tension, three concentric conductors, the inner one coupled to one pole of the dynamo, the outer one to the other pole of the dynamo and to earth, a converter with its primary coupled to the innermost and outer conductors and its secondary to the outer and intermediate conductors, and branch circuits from the intermediate conductor to the outer conductor.

3. The combination of a dynamo-electric machine producing current of high tension, three concentric conductors, the inner one coupled to one pole of the dynamo, the outer one to the other pole and to earth, a converter with its primary coupled to the innermost and outer conductors and its secondary to the outer and intermediate conductors, a branch conductor led off from the intermediate conductor and passing away through two other conductors concentric with but insulated from it, a second converter with its primary coupled to the innermost and outer conductors of this branch and its secondary to the outer and intermediate conductors, and branch circuits from the intermediate to the outer conductor.

409,566. DISTRIBUTION OF ELECTRICAL ENERGY. SEBASTIAN Z. DE FERRANTI, Hampstead, County of Middlesex, England. Filed Feb. 19, 1889. Serial No. 300,458. (No model.) Patented in England Dec. 11, 1885, No. 15,251; in France Dec. 9, 1886, No. 180,176; in Belgium Jan. 8, 1887, No. 75,875, and in Italy Mar. 31, 1887, No. 21,119.



Claim.—1. The combination of a dynamo-electric machine, concentric conductors insulated from one another leading therefrom, the inner conductor coupled to one terminal of the dynamo, the outer conductor to the other terminal and to earth.

2. The combination of a dynamo-electric machine, concentric conductors insulated from one another leading therefrom, the inner conductor coupled to one terminal of the dynamo, the outer conductor coupled to earth and to the frame of the dynamo, which forms the other terminal.

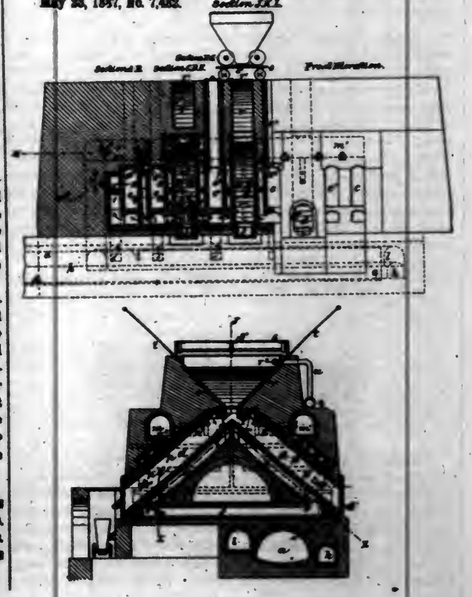
3. The combination of a dynamo-electric machine, concentric conductors insulated from one another leading therefrom, the inner conductor coupled to one terminal of the dynamo, the outer conductor to the other terminal and to earth, and a converter with one pole of its primary coupled to the inner conductor and the other pole to the outer conductor and to earth.

4. The combination of a dynamo-electric machine, concentric conductors insulated from one another leading therefrom, and an electrical appliance—such, for instance, as a fuse, switch, or converter—inclosed within the outer return-conductor.

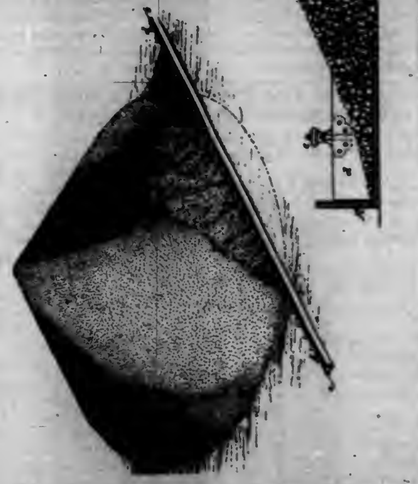
5. The combination of a dynamo-electric machine, concentric conductors insulated from one another leading therefrom, the outer conductor being connected with the earth and kept approximately at the same potential as the earth, and an electrical appliance—such, for instance, as a fuse, switch, or converter—used in connection with the inner conductor inclosed within the outer one.

6. The combination of a dynamo-electric machine, concentric conductors insulated from one another leading therefrom, branch concentric conductors leading from the first conductors, switches and fuses on the inner high-tension conductor of the branches inclosed in casings which form part of the outer conductor, and converters similarly inclosed and with their primary coupled at one end to the high-tension conductor and at the other to the casing.

409,567. APPARATUS FOR THE MANUFACTURE OF COKE. RICHARD DE SOLDENHOFF, Cardiff, County of Glamorgan, England. Filed Oct. 21, 1887. Serial No. 253,085. (No model.) Patented in England May 23, 1887, No. 7,462.



409,568. PROCESS OF REMOVING PILES OF COAL. JAMES M. DODGE, Philadelphia, Pa., assignor to the Dodge Coal Storage Company, Naugatuck, Conn. Filed Feb. 8, 1888. Serial No. 263,222. (No model.)



Claim.—The mode herein described of effecting the removal or distribution of storage-piles of coal or like gravitating granular material, which consists in continuously attacking the pile along one side of its base, thus causing the material to flow by gravity on that side of the pile which is attacked, catching said flowing material and removing it laterally in contact with and past the pile to a predetermined point of delivery, all substantially as specified.

Claim.—1. The combination, with two or more coke-ovens and flues under said ovens, of an incinerating-furnace situated between said ovens and consisting of two inclined chambers communicating at their upper ends, flues connecting the upper portions of said ovens with the lower ends of said inclined chambers, and flues under said inclined chambers connected with the upper ends thereof and with the flues under the ovens, substantially as set forth.

2. The combination, with two or more coke-ovens, flues under said ovens, the main flue *a* connected with said flues under the ovens, and a hopper, of an incinerating-furnace, having its floor inclined downwardly from its mid-length, interposed between said coke-ovens under said hopper, flues leading from said ovens to the furnace at the lower ends of said inclined floors, and flues under said furnace connected therewith and with the flues under the ovens, substantially as set forth.

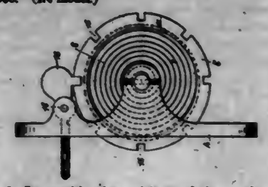
3. The combination, with two or more coke-ovens, of an incinerating-furnace interposed between said ovens and connected therewith, and having its floor inclined downwardly from its mid-length, a hopper arranged above the upper ends of such inclines, the doors *d'*, and the rabbles *t*, projecting in the direction of the inclines of the floor and forming a valve for said hopper, as set forth.

4. The combination, with the coke-ovens *a d'*, of the incinerating-furnace interposed between said ovens and having an inclined floor, flues *h h'*, arranged under said incinerating-furnace, said furnace having communication with said oven at the lower end of its incline and with said flues at the upper end of its incline, and the flue *j* and flues under said ovens connected with the flues *h h'*, substantially as set forth.

5. The combination, with the coke-ovens and the main flue *a*, of the horizontal flues *m m'*, air-flues *k l*, arranged in juxtaposition to flue *a* and communicating with flues *m m'*, and an incinerating-furnace arranged between said ovens and communicating therewith and with the flues *m m'*, substantially as set forth.

6. The combination, with the coke-ovens and the main flue *a*, of an incinerating-furnace *d*, having its floor inclined downwardly from the center on each side, interposed between and connected at its lower ends with said ovens, a hopper arranged above the center of said floor, flues extending under said ovens and connecting with flue *a*, the flue *h* under the furnace *d*, connected with the upper end thereof and with the said oven-flues, the flue *h'* under the furnace *d*, connected with the upper end thereof, the flue *j*, connected with the flue *h'* and with said oven-flues, and the horizontal flues *m m'*, communicating with the atmospheric air and leading to furnace *d*, as set forth.

409,569. SASH-BALANCE. LEWIS W. DOREN, St. Louis, Mo., assignor to Henry Schmeeze, same place. Filed Apr. 10, 1888. Serial No. 306,840. (No model.)



Claim.—1. In combination with a window-sash, a spring-drum provided with notches, a cable attached to the drum and to the sash, and a pivoted lever engaging the notches in the drum and having an end projecting inward beyond the pivot for engaging the drum and an end projecting outward beyond the pivot for engagement by the hand, substantially as and for the purpose set forth.

2. The combination, with a window-sash and frame, of a bracket secured to the frame, a spring-drum having a notched flange and journaled in the bracket, a cable secured to the drum and extending in both directions therefrom and secured by its opposite ends to the sash, and a pivoted lever engaging the notches of the drum-flange, substantially as and for the purpose set forth.

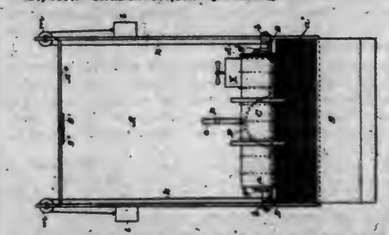
409,570. CARBURETOR. JOSEPH ELDER, Peoria, Ill. Filed Apr. 12, 1889. Serial No. 307,065. (No model.)



Claim.—1. In a carburetor, the body divided by horizontal partitions into distinct chambers, in combination with the pipe leading into the top of the bottom chamber, the pipe leading from the top of the bottom chamber to the top of the one above and the outlet-pipe *h*, each of said pipes terminating in a cross-pipe with a narrow horizontal slit therein, substantially as described and shown.

2. In a carburetor, a chamber *d* nearly filled with a hydrocarbon, in combination with an inlet-pipe presenting a narrow slit across one end of the chamber above the liquid, and a similar slitted outlet-pipe at the opposite end of the chamber, whereby air or gas is directed in a thin sheet across the top of the chamber.

409,571. AUTOMATIC DISTRIBUTER FOR CARDS OR OTHER ARTICLES. WILHELM FISCHER, Vienna, Austria-Hungary. Filed Oct. 26, 1888. Serial No. 289,467. (No model.)



Claim.—1. In an automatic distributer for cards and other articles, the combination, with a receptacle or casing, of a frame or follower loosely mounted therein and adapted to travel from one end of said casing toward the other, and feeding projections or rollers mounted in said frame and adapted to bear upon the sheets to be distributed and to follow up the diminishing pile by virtue of the movement of said frame, substantially as set forth.

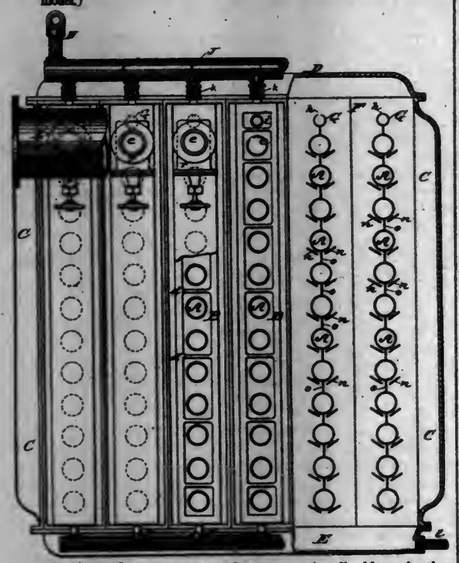
2. In an automatic distributer for cards and other articles, the combination, with a receptacle or casing, of a frame or follower loosely mounted therein and adapted to travel from one end of the casing toward the other, feeding projections or rollers mounted in said frame and adapted to bear upon the sheets to be distributed, and to follow up the diminishing pile by virtue of the movement of said frame, and pressure-rollers independent of said feeding projections or rollers and mounted on said frame, substantially as set forth.

3. The combination, with the follower or frame having the feeding projections or rollers, of the counterbalance-weights *l*, cords *k*, and pulleys *m*, substantially as and for the purposes shown and described.

4. In combination with the inclosing-casing and the rotary feeding projections or rollers, the curved bars or straps *f*, carried by the follower B or bar E, as shown and described, for the purpose specified.

5. The combination, with the working parts of the apparatus, comprising the frame or follower, the motor or clock-work carried thereby, and the feeding projections or rollers connected with and rotated by said motor, of the casing A, constructed substantially as shown and described, to contain and permit the automatic delivery of cards or sheets.

409,572. APPARATUS FOR EVAPORATING LIQUIDS. THOMAS GAUNT, Brooklyn, N. Y. Filed Dec. 22, 1887. Serial No. 258,655. (No model.)



Claim.—1. In an apparatus for evaporating liquids and other substances, an undulatory evaporating-surface and a feed or delivery for the liquid to be treated, combined with a series of returning-surfaces co-operating with the said evaporating-surface to receive and return the liquid thereto, substantially as described.

2. In an apparatus for evaporating liquids and other substances, an undulatory evaporating-surface consisting of a series of tubes or pipes A and intervening bridges *o*, and a feed or supply for the liquid to be treated, combined with a series of returning-surfaces co-operating with the said surfaces to receive and return the liquid thereto, substantially as described.

3. In an apparatus for evaporating liquids and other substances, an undulatory evaporating-surface consisting of a series of tubes or pipes A and intervening bridges *o*, and a feed or supply for the liquid to be treated, combined with a series of returning-surfaces co-operating with the said tubes on opposite sides thereof, substantially as described.

4. In an evaporating apparatus, a plurality of independent detachable sections, each consisting of an evaporating-surface and a liquid feeder or delivery for each evaporating-surface, combined with a supply-pipe for the said sections and with a cock or valve for each section, whereby a section of the apparatus may be cut off and rendered inoperative, substantially as described.

5. The combination, with the horizontal evaporating tubes or pipes vertically ranged, as shown, of the parallel removable inclined returning-surfaces proximate to the under surface thereof, adapted to return separated portions of the gravitating liquid to the surfaces of each succeeding tube, as set forth.

6. In an evaporating apparatus, the combination, with a feeder and an undulatory evaporating-surface located below it, of the intermediate disconnected returning-surfaces, upon which the liquid from the feeder is discharged to be conducted to the evaporating-surface, substantially as described.

7. In an evaporating apparatus, a heated non-spherical evaporating-surface, combined with the herein-described liquid-feeder connected to form a continuous surface therewith and having a delivery-slot, from which the substance to be evaporated flows by a force due to gravity to spread over and so as to envelop or cover the said evaporating-surface with a liquid sheet, the said evaporating-surface and connected feeder being formed to maintain the said liquid sheet continuous or unbroken in its passage from the delivery-slot and being acted directly upon by the heating medium, whereby a maximum evaporating effect is produced, substantially as described.

8. In an evaporating apparatus, a heated non-spherical evaporating-surface, combined with the herein-described liquid-feeder connected to form a continuous surface therewith, and having a delivery-slot, from which the substance to be evaporated flows by a force due to gravity to spread over and so as to envelop or cover the said evaporating-surface with a liquid sheet, the said evaporating-surface and liquid-feeder having an undulatory outline formed to maintain the said liquid sheet continuous or unbroken in its passage and being acted directly upon by the heating medium, whereby a maximum evaporating effect is produced, substantially as described.

9. In an evaporating apparatus, a heated evaporating-surface consisting of a series of connected tubes or pipes A, arranged in substantially a vertical plane to form an evaporating-surface having an undulatory outline, and through which the heating medium is circulated, combined with the herein-described liquid-feeder connected to said evaporating-surface by an intermediate bridge and constructed to overflow the liquid upon and so as to cover the said evaporating-surface with a continuous liquid sheet, which flows over the evaporating-surface substantially at right angles to the length of the said tubes, substantially as described.

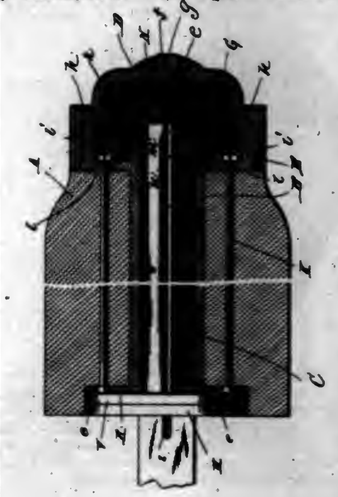
10. In an apparatus for evaporating or distilling liquids, the evaporating-surface composed of horizontal parallel tubes ranged in vertical series and successively connected with each other for a continuous flow of the liquid, and by chambers or headers for a continuous passage of the heating agent therein, in combination with an elevated feed or supply pipe parallel to and connected to said series by an intermediate bridge to form a continuous-flowing surface and adapted by a slotted opening to overflow and spread the liquid solution in a continuous sheet upon the exterior of the evaporating-surface, and with an enveloping chamber or shell for receiving and separating the vapor and liquid constituents, substantially as described.

11. In an apparatus for evaporating liquids, an evaporating-surface composed of horizontal tubes or chambers through which a heating-medium is circulated, in combination with a parallel supply or feed trough located above said tubes or chambers and feed-trough being, respectively, connected by an intermediate bridge to form a continuous face, whereby the liquid to be evaporated is spread upon said surface by the overflow of said feed-trough, and gravitates over the same in an unbroken sheet.

12. In an evaporating apparatus, a plurality of independent detachable sections, each consisting of an evaporating-surface and a surface-connected liquid feeder or delivery, as described, for each evaporating-surface, each section being constructed to be used alone or in conjunction with the remaining sections, substantially as described.

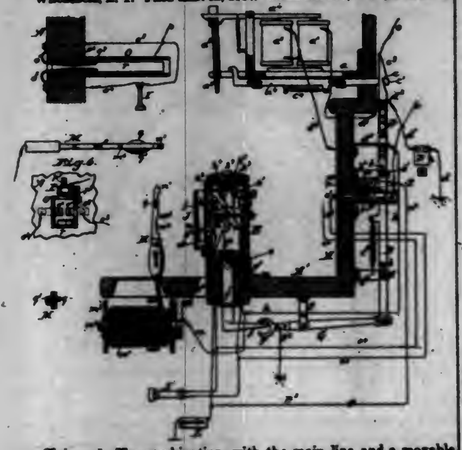
13. In an evaporating apparatus, the combination, with a series of evaporating-surfaces and a liquid feeder or delivery for each evaporating-surface, of an independently-controlled liquid-supply connected to the liquid-feeder of each evaporating-surface, whereby each evaporating-surface may be rendered inoperative independently of the others, substantially as described.

409,573. AXLE-LUBRICATOR. HENRY M. GOODMAN, Louisville, Ky. Filed May 20, 1889. Serial No. 311,369. (No model.)



Claim.—The combination, with a grooved axle-spindle, of a hub having a boxing surrounding the inner bore of the hub and formed with a vertical extension inward a short distance from its outer end extension, which outer end extension has a lubricant-aperture, while said vertical extension has a horizontal peripheral extension fitted with a chambered cap, and the said outer end extension has fitting against it a cap screwed upon the axle-spindle, substantially as set forth.

409,574. TELEPHONE SWITCH SYSTEM. CLAUDE C. GOULD, Batavia, assignor to the Eastern Electrical Manufacturing Company, Wheatfield, N. Y. Filed Mar. 12, 1887. Serial No. 230,616. (No model.)



Claim.—1. The combination, with the main line and a movable plug M, connected therewith, of a socket O, also connected with the main line, a contact-lever P, connected with the generator and provided with a conducting-arm *p'* and a non-conducting arm *p*, and a spring, whereby one of said arms is projected into the socket upon inserting the plug into the socket and a connection made between the main line and the generator, substantially as set forth.

2. The combination, with the main line and the frame E, of a socket J, attached to the frame E, a contact-lever K, projecting into the socket and connected with a generator L, and a plug M, connected with the main line, substantially as set forth.

3. The combination, with the frame E and contact-lever K, of the socket J, provided with a clamping-spring *n*, and a plug M, connected with the main line, substantially as set forth.

4. The combination, with the frame E, the socket J, and the contact-lever K, of the contact-springs $k' k^3$, connected contact-points $k^2 k^4$, push-button k^5, contact-points $i' i^2$, and a listening-telephone I, connected with the contact-points $i i^2$, substantially as set forth.

5. The combination, with the frame E, of a contact-lever K, having a conducting-arm *k'*, connecting with the generator, and a non-conducting arm *k*, of a socket J and a plug M, provided with a shoulder m^2, substantially as set forth.

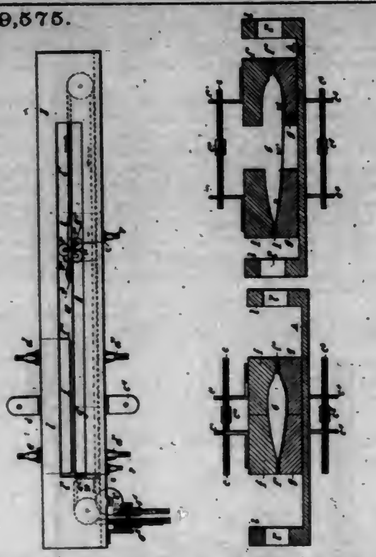
6. The combination, with the plug M and its socket O, each connected with the main line, of a pivoted contact-lever P, connected with the generator and provided with contact-arms *p p'*, and a spring p^4, whereby the contact-lever is held with one of said arms in contact with the plug, substantially as set forth.

7. The combination, with the ground-lever G, having a contact-bow *g'*, of the pivoted frame E, provided with a contact-point *g*, projecting between the prongs of the contact-bow *g'*, substantially as set forth.

8. The combination, with an out-socket O, connected with the main line, of two contact-springs $o' o^2$, connected with the listening-telephone, one of said springs being insulated from the socket, and a plug M, adapted to be inserted between said springs and provided with a non-conducting portion *q'*, substantially as set forth.

9. The combination, with an out-socket O, connected with the main line, of two contact-springs $o' o^2$, connected with the listening-telephone and arranged in the front portion of the socket, and a contact-lever P, connected with the generator and projecting into the rear portion of the socket, substantially as set forth.

409,575. CIGAR-BUNCHING MACHINE. FREDERICK A. GRAF, New York, N. Y. Filed Aug. 16, 1883. Serial No. 303,130. (No model.)



Claim.—1. In a cigar-bunching machine, the combination, with a supporting-table and side pieces fastened on either side of said table, of rails extending from one of said side pieces to the other, a yielding connection attaching said rails to said side pieces, a separable upper cigar-mold section adjustably attached to said rails, substantially as specified, a separable lower cigar-mold section adjustably fastened, substantially as described, to said supporting-table directly below said upper mold-section, a separable rolling-table also adjustably attached to said supporting-table, each part of said rolling-table being integral with a corresponding part of said lower mold-section, adjustable therewith, and said rolling-table arranged for a cigar-bunch to be rolled thereon before passing through said mold, all substantially as and for the purpose set forth.

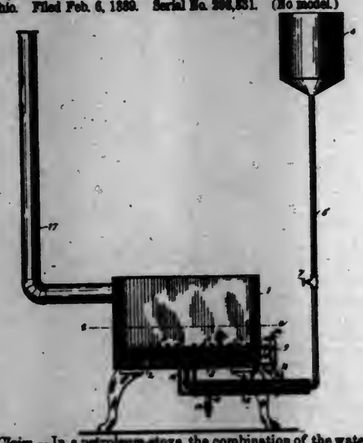
2. In a cigar-bunching machine, the combination, with a supporting-table, side pieces fastened upon either side of said table, rails extending from one of said side pieces to the other, a yielding connection attaching said rails to said side pieces, a separable upper cigar-mold section adjustably attached to said rails, substantially as specified, a separable lower mold-section adjustably fastened, substantially as described, to said supporting-table directly under but apart from said upper mold-section, and a separable rolling-table also adjustably attached to said supporting-table, each part of said rolling-table being integral with a corresponding part of said lower mold-section and adjustable therewith, and said rolling-table arranged for a cigar-bunch to be rolled thereon before passing through said mold, of a reciprocating carriage mounted on wheels running in guides formed in said side pieces and adapted to pass through the space between said upper and lower mold-sections, a bunching-roller carried by said carriage and cords attached to said carriage, and pulleys on which said cords run to actuate said carriage, all substantially as and for the purpose set forth.

3. In a cigar-bunching machine, the combination, with a supporting-table, side pieces fastened to either side of said table, rails extending from one of said side pieces to the other, a yielding connection attaching said rails to said side pieces, a separable upper cigar-mold section adjustably attached to said rails, substantially as specified, a separable lower mold-section adjustably fastened, substantially as described, to said supporting-table directly under but apart from said upper mold-section, and a separable rolling-table having a cavity, substantially as described, formed in the outer end thereof and adjustably attached to said supporting-table, each part of said rolling-table being integral with a corresponding part of said lower mold-section and adjustable therewith, and said rolling-table arranged for a cigar-bunch to be rolled thereon before passing through said mold, of a reciprocating carriage mounted on wheels running in guides formed in said side pieces and adapted to pass through the space between said upper and lower mold-sections, a bunching-roller carried by said carriage, cords attached to said carriage to impart motion thereto, substantially as specified, a flexible forming-apron extending over said cavity in said rolling-table, over said bunching-roller, over said rolling-table, over said lower mold-section, between said upper and lower mold-sections, through slots in said supporting-table, and adjustably fastened by its two ends below said supporting-table, substantially as specified, and said carriage, bunching-roller, and apron being so con-

structed and arranged that facility is afforded whereby a cigar-bunch may be first rolled upon said rolling-table in the bight of said apron, and then in the bight of said apron rolled through and between said molds to give it proper form, all substantially as and for the purpose set forth.

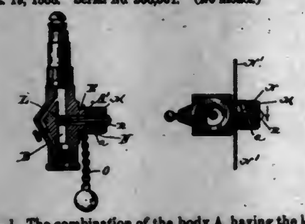
4. In a cigar-bunching machine, the combination, with a separable mold-section, substantially as herein described, and a separable rolling-table, the parts whereof are integral with corresponding parts of said mold-section, substantially as specified, of a lining extending through the inside of said mold-section and said rolling-table, consisting of three pieces, and constructed and arranged so that when the parts of said mold-section and said rolling-table are separated to form cigars of different lengths a part of said lining is retained within each half of said mold-section and of said rolling-table integral therewith, and the third part of said lining fills the gap between the parts of said mold-section and of said rolling-table, all substantially as and for the purpose set forth.

409,576. PETROLEUM-FURNACE. JAMES A. S. GRAY, Cincinnati, Ohio. Filed Feb. 6, 1889. Serial No. 298,831. (No model.)



Claim.—In a petroleum-stove, the combination of the water-tight hearth, the communicating tuyeres, the oil-supply pipe, the steam-jacket which surrounds the oil-supply pipe, and the steam-ducts that lead from said steam-jacket to said hearth, as and for the purposes explained.

409,577. GAS-FITTING. GEORGE H. GREGORY, New York, N. Y. Filed Oct. 19, 1888. Serial No. 288,561. (No model.)

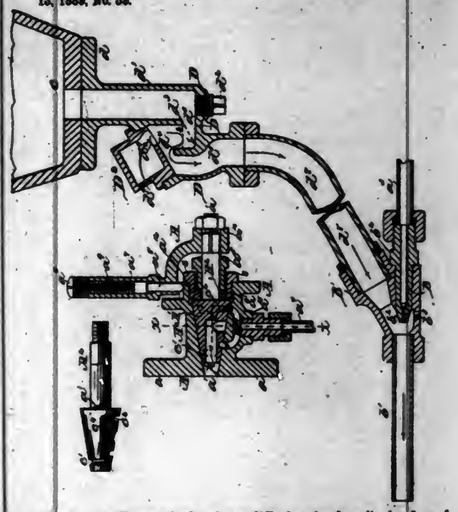


Claim.—1. The combination of the body A, having the longitudinal passage B and the side passage E, communicating therewith, the outer portion of the side passage being enlarged, as shown, the cap H, having the cavity K, the packing K' in said cavity and filling the space between the cap H and the shoulder formed by the enlargement of passage E, and the piston-valve, said valve being provided with a rod or shaft which extends through the packing and cap by which the valve is operated, substantially as shown and described.

2. The combination, with the body A of a gas-fitting provided with the projection or shoulder A' and having a main passage B, and a side passage E, extending through the shoulder A', of the valve L, provided with the rod L', the cap H, packing K', cap M, provided with the slot N, and the lug *a* on the projection A', substantially as shown and described.

3. The combination, with the body A of a gas-fitting provided with the projection or shoulder A' and having a main gas-passage B, and a side passage E, extending through the shoulder A', of a valve L, the cap H, packing K', cap M, provided with the slot N and arms N', and lug *a* on the projection A', substantially as shown and described.

409,578. METHOD OF APPLYING SAND TO RAILS OF RAILWAYS. JAMES GRESHAM, Stretford, near Manchester, County of Lancaster, England. Filed Mar. 30, 1888. Serial No. 269,020. (No model.) Patented in England Apr. 26, 1887, No. 6,073; in France July 25, 1887, No. 184,974; in Germany July 26, 1887, No. 42,954; in Belgium Nov. 2, 1887, No. 79,201; in Italy Nov. 7, 1887, XLIV, 442; in Canada Feb. 7, 1888, No. 26,496; in Austria-Hungary Mar. 5, 1888, and in India Mar. 13, 1889, No. 39.



Claim.—1. The method, substantially herein described, of sanding railroad-rails, which consists in inducing an air-current within a closure open to the outer air and over and in contact with the surface of a non-moving body of sand contained within said closure by means of the sucking action of a steam-jet, and inducing the sand-laden current so produced into the path of the steam-jet by means of the same force.

2. The method herein described, which consists in utilizing the inducing force of a jet of steam as the means of causing a current of air to be drawn within a closure over and in contact with the surface of a non-moving body of sand and to take up and carry by such inducing action into the path of the steam-jet a portion of the sand from its surface and varying the volume of the sand so taken up by the induced air-current by varying the velocity of the latter.

3. The method, substantially herein described, of sanding railroad-rails, which consists in supplying the sand-blast by means of a current of air induced by means of a jet of steam, and caused to impinge upon the surface of the sand and to take up by such impingement and carry a portion therefrom into the path of the said jet through a conduit having perpetual communication with the said sand surface and the said steam-jet.

409,579. PULVERIZING-MILL. JAMES K. GRIFFIN, Brooklyn, N. Y. Filed Feb. 13, 1888. Serial No. 300,304. (No model.)

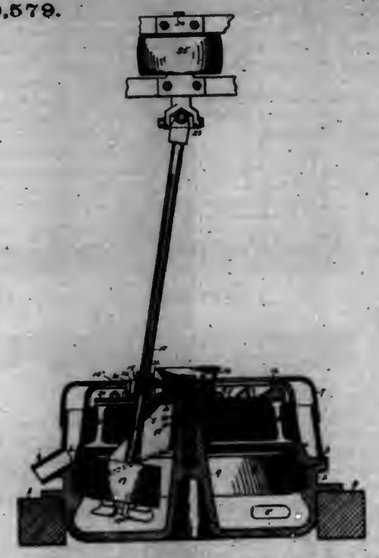
Claim.—1. In a pulverizing-mill, the combination, with an annular die, of a radially-movable roll-shaft and roll and mechanism for positively revolving the same upon their own axis and for gyrating them around the central axis of the mill, substantially as described.

2. In a pulverizing-mill, the combination, with a pan or pulverizing-chamber and an annular die arranged above the bottom thereof, of a suspended radially-movable roll-shaft and roll, which are also arranged above the bottom of said pan or chamber, and mechanism for positively revolving said shaft and roll upon their own axis and for gyrating them around the central axis of the mill, substantially as described.

3. In a pulverizing-mill, the combination, with the pan or chamber and the annular die or ring, of the radially-movable shaft having a fixed roll at its lower end rotating against the inner surface of said die, mechanism for positively revolving said shaft and roll upon their own axis, and a universal joint for permitting of their gyration and connecting them to said revolving mechanism, substantially as described.

4. In a pulverizing-mill, the combination, with the pan or chamber and the annular die or ring, of the radially-movable shaft having a fixed roll at its lower end rotating against the inner surface of said die, and mechanism for positively revolving and gyrating said shaft and roll upon their own axis and around the central axis of the mill,

409,579.



said mechanism consisting of the drive-shaft, the pulley, and the universal joint, substantially as described.

5. In a pulverizing-mill, the combination, with a pan or chamber provided with an annular die and a revolvable top or cover, of a radially-movable roll-shaft passing through said cover and having a roll at its lower end, and mechanism for positively revolving said shaft and roll upon their own axis and for gyrating them around the central axis of the mill and revolving said top or cover, substantially as described.

6. In a pulverizing-mill, the combination, with the pan or chamber 1, provided with the annular die 8, and the revolvable top or cover 12, formed with the radial slot 12', and provided with the plate 22, having anti-friction-lined flanges 21, of the radially-movable shaft passing through the slot in said cover and provided with the sleeve 19 and the roll 17, and mechanism for positively revolving said shaft and roll upon their own axis and for gyrating them around the central axis of the mill and revolving said top or cover, substantially as described.

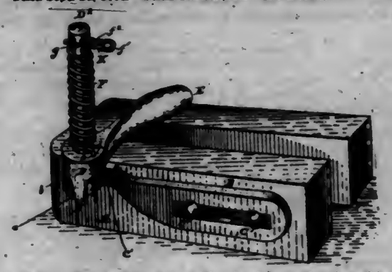
7. In a pulverizing-mill, the combination, with a pan or chamber provided with an annular die, and a revolvable top or cover having a feed-spout, of a stationary receiving-hopper communicating with said feed-spout, a radially-movable roll-shaft passing through said cover and having a roll at its lower end, and mechanism for positively revolving said shaft and roll upon their own axis and for gyrating them around the central axis of the mill and revolving said top or cover, substantially as described.

8. In a pulverizing-mill, the combination, with a pan or pulverizing-chamber and an annular die arranged above the bottom thereof, of a suspended radially-movable roll-shaft, a roll secured to the lower end thereof and provided with stirrers on its lower end, which are also arranged above the bottom of said pan or chamber, and mechanism for positively revolving said shaft and roll upon their own axis and for gyrating them around the central axis of the mill, substantially as described.

9. In a pulverizing-mill, the combination, with the pan or pulverizing-chamber 1, formed with the opening 8' and provided with the annular die 8, the screens 5, and the screen-frame 3, of the suspended radially-movable roll-shaft 18, the roll 17, secured to the lower end thereof and provided with the stirrers 17', and mechanism for positively revolving said shaft and roll upon their own axis and for gyrating them around the central axis of the mill, substantially as described.

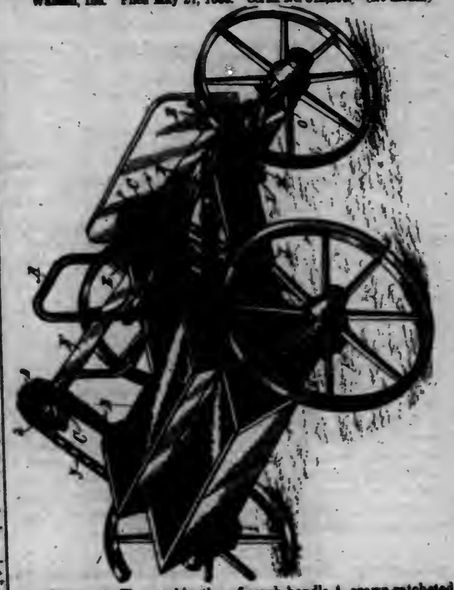
10. In a pulverizing-mill, the combination, with the pan or pulverizing-chamber 1, formed with the opening 8' and provided with the annular die 8, the screens 5, and the screen-frame 3, formed with the trough 4 and spout 6, of the suspended radially-movable roll-shaft 18, the roll 17, secured to the lower end thereof and provided with the stirrers 17', and mechanism for positively revolving said shaft and roll upon their own axis and for gyrating them around the central axis of the mill, said mechanism consisting of the drive-shaft 24, the pulley 25, and the universal joint 23, substantially as described.

409,580. PICKER-STAFF CHECK FOR LOOMS. THOMAS HALL and DAVID YOUNG, Lawrence, Mass.; said YOUNG assignor to said HALL. Filed Sept. 26, 1888. Serial No. 286,301. (No model.)



Claim.—The combination, with a lay-beam, of a slotted bracket and means for adjusting the same longitudinally, said bracket being provided with shoulders *c c'* and a pintle D^2, having perforations *g*, the arm E, having an eye *e* and stop-leg D', the helical spring F, engaging with the eye in said arm and having an eye f^2 and thumb-piece *f'*, and the removable key-pin K; as set forth.

409,581. HAND-MOTOR FOR VEHICLES. ABRAHAM R. HARRELL, Wabash, Ind. Filed May 27, 1889. Serial No. 312,296. (No model.)



Claim.—1. The combination of crank-handle A, crown-ratcheted sprocket-wheels C, pawls *d*, spiral springs *c*, braces B' B G, adjusting-screws F, screw-clamps E, clips H, sprocket-wheels I, sprocket-chains J, steering-levers K, screw-clamps L, connecting-rods N, and screw-clamps O, substantially as and for the purposes specified.

2. The combination, with the crank-handle A, pawls *d*, crown-ratcheted sprocket-wheels C, sprocket-chains J, and sprocket-wheels I, of the braces B', pivoted to screw-clamps E, braces B, and braces G, pivoted to clips H, as and for the purposes specified.

3. The combination of steering-levers K, screw-clamps L, connecting-rods N, and screw-clamps O, as and for the purposes specified.

4. The combination of crank-handle A, pawls *d*, crown-ratcheted sprocket-wheels C, spiral springs *c*, sprocket-wheels I, and sprocket-chains J, as and for the purposes specified.

409,582. SASH-LIFT. GEORGE HASSENFLUG, Cleveland, Ohio. Filed Feb. 7, 1889. Serial No. 298,961. (No model.)



Claim.—In a sash-lift consisting of two distinct parts, a base having a depending portion the bearing-surface of which is at an angle

to the upper surface of said base, and an opening through its center, in combination with a finger-piece adapted to fit the upper surface of the base, and provided with a screw which passes through the opening in the base to secure the parts to the sash, substantially as set forth.

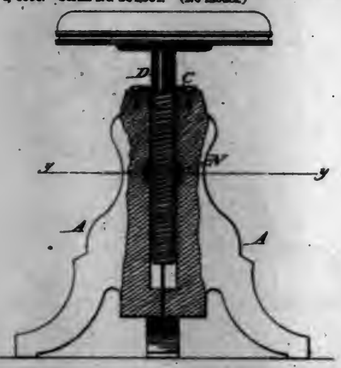
409,583. REFRACTORY COMPOUND. JAMES L. HASTINGS, Philadelphia, Pa., assignor, by mesne assignments, to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed Dec. 30, 1887. Serial No. 259,409. (No specimens.)

Claim.—A refractory compound containing a number of metallic salts—such as acetates of magnesium, calcium, and strontium—a mineral acid—such as sulphuric or nitric acid—and an adhesive material, substantially as described.

409,584. PLASTIC MINERAL COMPOSITION. JAMES L. HASTINGS, Philadelphia, Pa., assignor to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed Sept. 27, 1888. Serial No. 286,581. (No specimens.)

Claim.—A composition for forming a refractory compound, containing two or more metallic compound substances—such as oxides, carbonates, or sulphates of metals—a flux, a moistening-fluid, and one or more flame or light coloring substances, such as oxide of uranium, strontium, and lead chromate or chromium oxide, permanganic acid, cadmium sulphide, sodium salts, or indium oxide, and calcite.

409,585. PIANO-STOOL. WILLIAM HEAP, Muskegon, Mich. Filed Sept. 4, 1888. Serial No. 284,581. (No model.)



Claim.—The herein-described piano-stool, comprising a suitable seat, the supporting-screw D therefor, the sections forming the legs and standard and having an axial recess for the screw, the cap C, screwed to the top of the standard and having an internally-threaded boss to engage the screw D, the angular nut N, seated in a recess of corresponding shape in the facing edges of the legs, and the key-plates B, that connect the standard-sections in the manner described and form parts of the wall of the recess that holds the nut N, and thereby aids in the support of said nut, as specified.

409,586. FRICTION-CLUTCH. HARRY W. HILL and LOUIS J. HIRT, Cleveland, Ohio. Filed Apr. 29, 1889. Serial No. 309,036. (No model.)

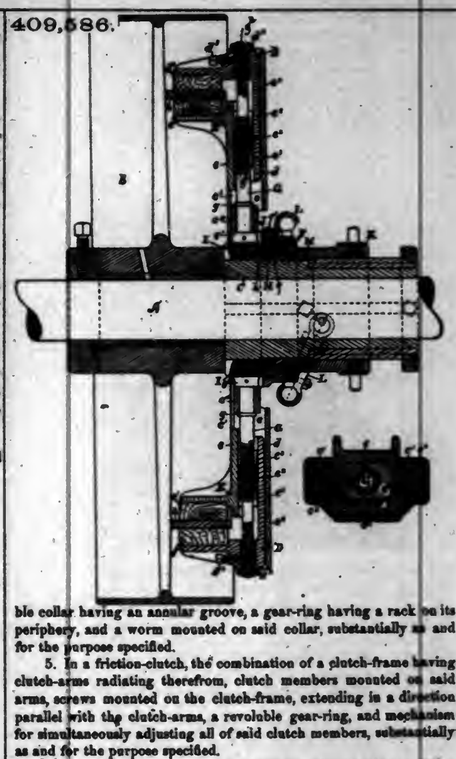
Claim.—1. In a friction-clutch, the combination of a clutch-arm and a clutch member supported thereby, with a screw mounted on the clutch-frame and engaging with said clutch member, a gear on said screw, a gear-ring revolnble apon the shaft, a sliding sleeve, and a mechanism connecting said ring and sleeve, whereby the former is revolved by the longitudinal sliding movement of the latter, substantially as and for the purpose specified.

2. In a friction-clutch, the combination of a clutch-arm and a clutch member supported thereby, with a screw mounted on the clutch-frame and engaging with said member, a gear upon said screw, a gear-ring, a sliding sleeve, and a link connected at its ends with said sleeve and ring, respectively, in different radial planes, and by ball-and-socket joints, substantially as and for the purpose specified.

3. In a friction-clutch, the combination of a clutch-frame having arms radiating therefrom, movable clutch members supported on said arms, screws mounted on the clutch-frame, extending parallel to said arms and engaging with said clutch members, and gears secured to said screws, with a revoluble collar surrounding the shaft, a gear-ring, and mechanism for adjustably securing said gear-ring to said collar, substantially as and for the purpose specified.

4. In a friction-clutch, the combination of a clutch-arm and a clutch member supported thereby, with a screw mounted on the clutch-frame and engaging with said member, a gear on said screw, a revolvable collar having an annular groove, a gear-ring having a rack on its periphery, and a worm mounted on said collar, substantially as and for the purpose specified.

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5. In a friction-clutch, the combination of a clutch-frame having clutch-arms radiating therefrom, clutch members mounted on said arms, screws mounted on the clutch-frame, extending in a direction parallel with the clutch-arms, a revolnble gear-ring, and mechanism for simultaneously adjusting all of said clutch members, substantially as and for the purpose specified.

6. In a friction-clutch, the combination of a clutch-arm and a clutch member supported thereby, having a longitudinal curved shank upon which are the lugs c^3 c^3, with a screw-block c^3, a screw mounted on the clutch-frame and engaging with said block, a gear on said screw, a gear-ring on the shaft, a sliding sleeve, and a mechanism connecting said sleeve and ring, whereby the latter is revolved by a longitudinal sliding movement of the former, substantially as and for the purpose specified.

7. In a friction-clutch, the combination of a clutch-arm having two parallel grooved bars and the yoke connecting them, and a clutch member having a longitudinal curved shank seated in said grooves, with a screw having the collars g g', the yoke c^4, the beveled gear I, the collar F, having annular groove f, the gear-ring H, having a rack on its periphery, the worm J, mounted on the collar, sleeve K, having sliding movement on the shaft, and link L, connecting said sleeve and collar, substantially as and for the purpose specified.

409,587. DOOR-SPRING. FREDERICK W. HOEFER, Freeport, Ill., assignor to the Warner Manufacturing Company, same place. Filed May 7, 1889. Serial No. 309,876. (No model.)



Claim.—1. In a door-spring, the combination, with two rigidly-connected parallel spring-cores lying side by side, of oppositely-coiled springs mounted thereon and provided with opposing arms adapted to engage, respectively, suitable fastenings upon a door and its jamb, substantially as set forth.

2. In a door-spring, the combination, with two parallel spring-cores rigidly united at the middle, of oppositely-coiled springs mounted thereon, each with one end in engagement with its core and each having its opposite end carried outward to form an arm and returned apon itself and engaged with one of said cores, substantially as and for the purpose set forth.

3. The combination, with the cores E E, united by a web F, of springs I I', mounted thereon, the looped spring-arm M', carried by the springs I', and the looped spring-arm M, carried by the springs I, and having the inwardly-bent branches passing between the branches of the arm M', substantially as set forth.

4. The combination, with the laterally-slotted cores rigidly connected by the web F, of the oppositely-wound springs I I', mounted upon the core E, with their adjacent ends in engagement with said core and with their outer ends extended to form a single arm-loop, the similar springs I', mounted in like manner upon the core E', and having their outer ends extended to form a second opposing arm-loop M', substantially as and for the purpose set forth.

409,588. TWO-WHEELED VEHICLE. HENRY G. M. HOWARD and BYRON J. HEALY, Kalamazoo, Mich. Filed June 13, 1888. Serial No. 314,168. (No model.)



Claim.—1. In a two-wheeled vehicle, the thills attached to the axle at their rear ends and having the cross-bars one above the other at the center and separated by the thills at the ends, with the whiffle-tree located between and held to its place by the pipe and bolt, as shown, and for the purpose specified.

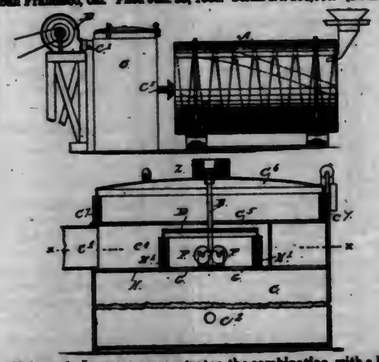
2. In combination with the thills and axle and body fulcrumed at the forward ends, the braces C C, located one above the other, their ends attached at the same point under seat on each side and running at different angles to the springs in rear of axle, as shown, and for the purpose specified.

3. In combination with the thills and axle of a two-wheeled vehicle, the connecting-rods E, the notched plate v, and step S, as shown, and for the purpose specified.

4. In a two-wheeled vehicle, the thills having the cross-bars with whiffletree, located as shown, the body having the hooked forward ends and turned-up rear portion, with the end rail K, the thill-attaching rods E, connecting the thills with axle J, plate v, steps S, and brace, the semi-elliptic spring in rear of axle supported by steps S, and the angled braces C C, supporting the body from the spring, all as shown and described.

5. In a two-wheeled vehicle, the frame D for the body and seat with back combined, made in one continuous piece of T-steel or other material, bent in the shape and manner shown, having the forward ends terminate in hooks for fastening to thill or cross-bars, and the rear portion bent up for back of seat and perforated to receive end of seat-rail K, and bolts to plate, constructed, combined, and used substantially in the manner shown and described, and for the purpose specified.

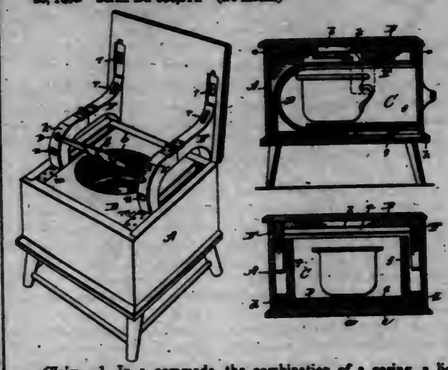
409,589. DRY-ORE CONCENTRATOR. CHRISTIAN F. JACOBSEN, San Francisco, Cal. Filed Jan. 26, 1888. Serial No. 261,900. (No model.)



Claim.—1. In an ore-concentrator, the combination, with a blower and concentrator connected to the inlet of a pressure-regulator, of said pressure-regulator consisting of two chambers having a double perforated partition between them, a sealing-trough on the upper chamber, and a hood with its edges immersed in the sealing-trough, said hood having a stem, guide-rollers for said stem, and a sealed valve connected thereto and exposed to the pressure of the lower chamber, substantially as set forth.

2. In an ore-concentrator, the combination of a support and a cylindrical rotatable concentrating-chamber placed in a horizontal position on said support and having a continuous spiral flange extending from end to end of the chamber, and a series of oblique shelves extending from end to end of the chamber, as set forth.

409,590. COMMODE. THOMAS C. JOYCE, Berlin, Wis. Filed Apr. 26, 1888. Serial No. 306,514. (No model.)



Claim.—1. In a commode, the combination of a casing, a lid hinged to the casing and provided with arms F, curved sections k, hinged to the ends of these arms, spring-catches upon the lower ends of these sections k, and a seat B, fitted within the casing and provided with notched plates m, substantially as and for the purpose herein set forth.

2. In a commode, the combination of a casing, a removable draw inserted in this casing, a sliding flexible cover mounted in grooves upon this draw, a lug attached to this folding cover, and a spring-catch secured upon the said casing and adapted to engage the said lug, as and for the purpose set forth.

409,591. ROTARY ENGINE. THOMAS R. KEAVY, Medina, Ohio, assignor to the Medina Engine Company, same place. Filed Mar. 23, 1889. Serial No. 304,417. (No model.)



Claim.—1. In a rotary engine, the combination, with piston-wheel and shaft, the latter being journaled in stationary boxes, substantially as indicated, of a base, a steam-cylinder inclosing such piston-wheel, the cylinder being hinged or pivoted to the base in position to render the cylinder adjustable toward and from the contact-line between piston-wheel and cylinder, and devices for locking the cylinder against movement, substantially as set forth.

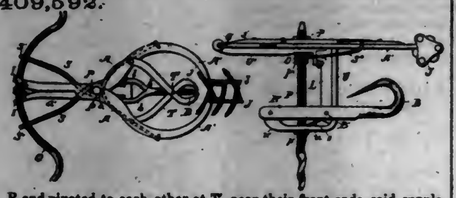
2. In a rotary engine, the combination, with piston-wheel and cylinder eccentric with each other and having a contact-line, the said cylinder being hinged or pivoted to the base in position to render it adjustable toward and away from the contact-line, and devices for locking the cylinder against movement, of induction and eduction ports, substantially as indicated, and a back-pressure vent or port, the same entering cylinder near the contact-line, substantially as set forth.

409,592. ANIMAL-TRAP. ZEBAS R. KIDDER, Hays City, Kans. Filed Apr. 17, 1889. Serial No. 307,604. (No model.)

Claim.—1. In a trap, the main arms A, carrying jaws J, and the supplemental arms T, connected to said main arms and carrying jaws j, in combination with springs for forcing said arms into normally-closed position, the bait-hook B, and a latch connected to said bait-hook and adapted to hold said arms open, substantially as described.

2. In a trap, the picket-pin P, the outwardly-curved main arms A, pivoted thereon and carrying jaws J at their free ends, and the supplemental arms T, pivoted to said main arms forward of said pin

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P and pivoted to each other at T, near their front ends, said supplemental arms carrying inwardly-curved jaws *j* at their free ends, in combination with springs for forcing said arms into normally-closed position, a bait-hook, and a latch connected to said bait-hook and adapted to hold said arms open, substantially as described.

3. In a trap, the picket-pin P, a frame carried thereby, and a curved guide G, supported at the rear end of said frame, in combination with a pair of main arms A, centrally pivoted at *a* upon said pin, curved outwardly at A' forward of said pin and carrying jaws J at their front ends, said arms extending rearwardly from said pin and carrying eyes I at their ends loosely engaging said guide, springs for forcing said arms into normally-closed position, a bait-hook, and a latch connected to said bait-hook and adapted to hold said arms open, substantially as specified.

4. In a trap, the picket-pin P, having a shoulder *p'* thereon, a frame mounted on said pin above said shoulder, and a curved guide G, supported at the rear end of said frame, in combination with a pair of main arms A, centrally pivoted at *a* upon said pin, curved outwardly at A' forward of said pin and carrying jaws J at their front ends, extending rearwardly in straight arms *a'* from said pin, and carrying eyes I at their rear ends loosely engaging said guide, springs S, having central coils O engaging said pin between said shoulder and frame, secured at their front ends to said curved arms A' and having loops S' at their rear ends loosely embracing said guide-rods G outside said eyes I, a bait-hook, and a latch connected to said bait-hook and adapted to hold said arms open, substantially as described.

5. In a trap, the picket-pin P, having the shoulder *p'*, the U-shaped frame U, journaled on said pin, with its lower arm *u* resting upon said shoulder and turned up at *u'* at its rear end, the bait-hook B, pivoted at its rear end to said turned-up end *u'* and extending forwardly therefrom, the latch L, pivoted to the center of said bait-hook, and the spring *s*, for pressing said latch into operative position, in combination with spring-operated arms carrying jaws and pivoted on said pin P, said latch being adapted to engage said arms to hold them in open position, substantially as described.

6. In a trap, the picket-pin P, having the shoulder *p'*, the U-shaped frame U, journaled on said pin, with its lower arm *u* resting upon said shoulder and turned up at *u'* at its rear end, the bait-hook B, pivoted at its rear end to said turned-up end *u'*, the latch L, pivoted to the center of said bait-hook, and the spring *s*, for pressing said latch into operative position, in combination with the spring-operated main arms A, pivoted upon said pin, curved outwardly at A' and carrying main jaws J at their front ends, and the tongs T, pivoted to said curved arms A' at their rear ends and to each other at T, and carrying supplemental jaws *j* at their front ends, said tongs occupying an approximately-transverse line across the trap when it is open and adapted to be engaged by said latch to hold it set, substantially as and for the purpose hereinbefore described.

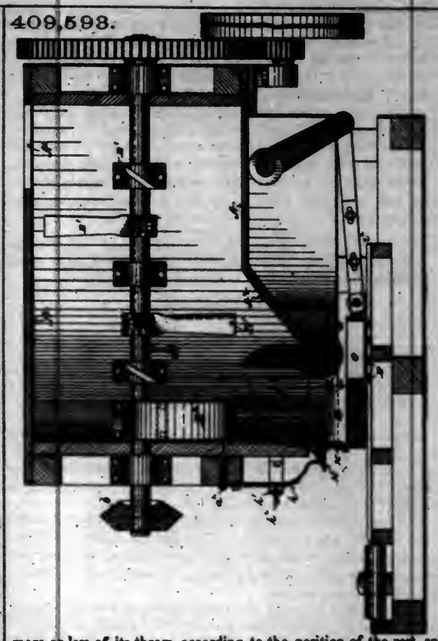
409,593. BRICK-MACHINE. THOMAS KIRK and CHARLES H. HORTON, Wellington, Ohio, assignors to Bennett Brothers & Company, same place. Filed Feb. 26, 1889. Serial No. 301,456. (No model.)

Claim.—1. In a brick-machine, the combination, with compression-box and oscillating head operating in the compression-box, substantially as indicated, of toothed sector mounted on the trunnion or axial shaft of the oscillating head, a dog for operating the sector, a vibrating lever for operating the dog, and a movable rest or trip adapted to disengage the dog from the sector during a part or the whole of the throw, according to the position of the rest, substantially as set forth.

2. In a brick-machine, the combination, with compression-box and oscillating head operating therein, and toothed sector for operating the heads, substantially as indicated, of a vibrating lever bearing a dog for engaging such sector in advancing the latter, such vibrating lever having a lug or projecting member for engaging the sector in reversing the latter, substantially as set forth.

3. In a brick-machine, the combination, with oscillating head, toothed sector rigidly mounted on the axial shaft of the oscillating head, and a vibrating lever and oscillating rest or trip journaled on such shaft, the lever having a dog for engaging the sector, the rest having an incline for disengaging the dog from the sector, of a hand-lever for shifting the rest, whereby the dog is held disengaged from the sector

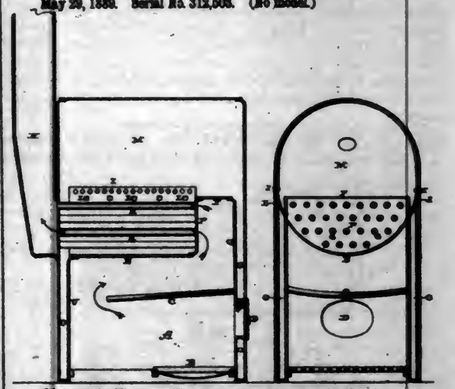
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more or less of its throw, according to the position of the rest, substantially as set forth.

4. In a brick-machine, the combination, with compression-box, oscillating head, toothed sector, vibrating lever, and dog, substantially as indicated, of toggle for operating the vibrating lever, and a pitman for operating the toggle, such pitman having lost motion, whereby the oscillating head is operated intermittently, substantially as set forth.

409,594. STEAM-BOILER. FLORENS KITTEL, Ferdinand, Ind. Filed May 29, 1888. Serial No. 312,603. (No model.)



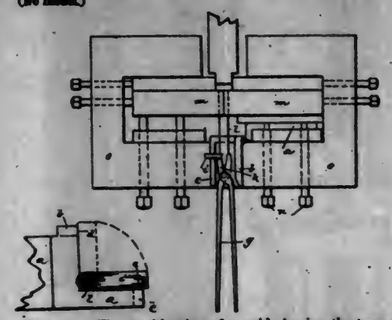
Claim.—1. The combination of the fire-box with a fire-shield formed of a plate or water-bars, and which is placed in the box above the door, so as to cause the products of combustion to first move toward the front end of the boiler, then backward under the crown-sheet, and then through the flues to the front of the boiler, substantially as shown.

2. In a boiler, the combination of the crown-sheet having its ends secured directly to the shell of the boiler and provided with a series of holes for the passage of the water to and from the water-leg, substantially as shown.

3. In a boiler, the combination of the crown-sheet having its ends secured directly to the shell of the boiler, the front wall U, having its upper edge secured to the front edge of the crown-sheet, the flue-head F, the flues, and the crown-sheet F, substantially as described.

4. In a boiler, the combination of the fire-box, the crown-sheet E, having its ends secured directly to the shell of the boiler and provided with perforations I, the front and side sheets of the water-leg secured at their upper edges to the crown-sheet, the flue-head, the flues, the crown-sheet F, and the fire-shield C, substantially as specified.

409,595. TONGS AND GUIDE FOR BOLT-HEADING MACHINES. JOHN H. ALLEN, Pittsburg, Pa. Filed Apr. 6, 1889. Serial No. 306,332. (No model.)

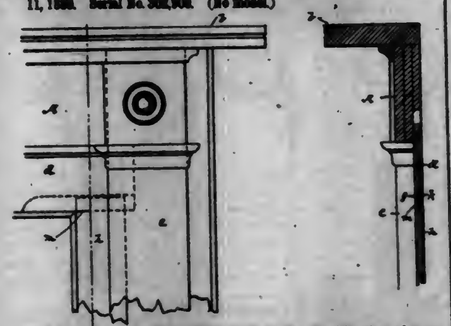


Claim.—1. The combination of a guide having the two arms or prongs arranged in a position relatively at right angles to each other, and a bolt-gripping tool having a device which is adapted to alternately strike the arms or prongs when the gripping-tool is turned axially in the guide, and thus limit the play or movement of said tool, substantially as and for the purpose described.

2. The combination of a fixed guide having the angularly-arranged arms, and a bolt-gripping tool provided with a projection, which is adapted to limit the axial movement of the tool in the guide by alternately striking the arms thereof, substantially as and for the purpose described.

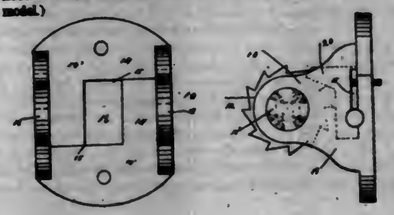
3. The combination of a fixed guide-strip *a*, having the two projecting arms or tangs, which are arranged in different vertical planes at right angles to each other, and a bolt-gripping tool provided with a right-angled projection *i*, combined and adapted for service substantially as described, for the purpose set forth.

409,596. MANTEL. WILLIAM ANDERSON, Bolton, Pa. Filed Mar. 11, 1889. Serial No. 302,908. (No model.)



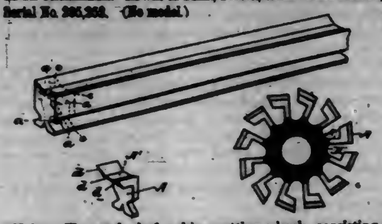
Claim.—In a mantel or chimney piece, the combination of a vertically-movable top portion *d*, provided with a rabbet *g*, extending inwardly from each end at the lower edge thereof, and the side pieces *h*, having projections *h'*, which overlap the rabbet *g*, and means for securing the side pieces *h* to the top portion *d*, for the purpose described.

409,597. WIRE-STRETCHER. VERDEN ARNOLD and WILLIAM L. YERDEN, Marshall, Mich., assignors of one-half to ANDREW ENDICOTT and ARTHUR CASE, same place. Filed June 3, 1889. Serial No. 313,543. (No model.)



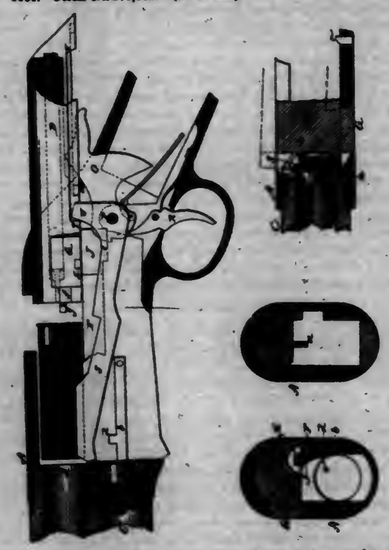
Claim.—A wire-stretcher consisting of a supporting-bracket having a vertical slot 18, and made of two parts or members, formed with the lawardly-extending bases which lap each other on irregular lines, for the purpose described, a winding-drum journaled in aligned bearings on said members or sections of the bracket, and provided with a ratchet and a sliding pawl, having a lateral guide-pin which operates in the slot of the bracket, substantially as and for the purpose described.

409,598. MANUFACTURE OF CUTTING-WHEELS FOR SOLID-RIDGE TRIMMERS. EDWIN R. BEAN, Boston, Mass. Filed Dec. 31, 1888. Serial No. 295,262. (No model.)



Claim.—The method of making cutting-wheels, consisting of the following steps: first, forming a steel bar, as shown in Fig. 2; second, milling and cutting it into cutters A A'; third, embodying the cutters in a molded hub H, and, fourth, compressing the molded hub, all substantially as described, and for the purpose set forth.

409,599. MAGAZINE FIRE-ARM. JOHN M. BROWNING and MATTHEW S. BROWNING, Ogden, Utah. Filed May 21, 1888. Renewed Jan. 8, 1889. Serial No. 295,806. (No model.)



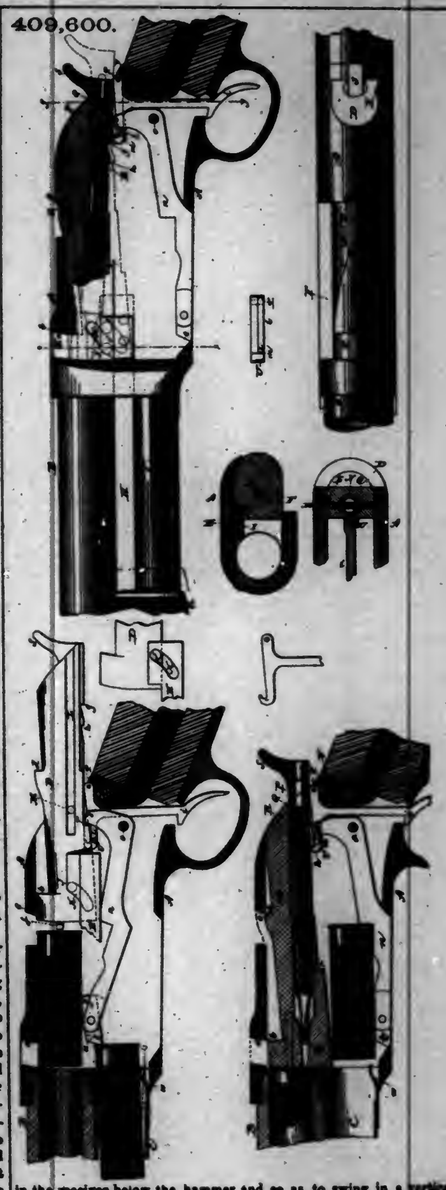
Claim.—1. In a fire-arm in which the barrel opens into the receiver at the rear, the combination of a breech-piece arranged in the receiver in longitudinal line with the barrel and so as to move longitudinally backward and forward in opening and closing, a handle beneath the barrel, forward of the receiver, with a bar extending therefrom into the receiver beneath the breech-piece, the said breech-piece upon its under side at the forward end constructed with a diagonal groove, and the said bar provided with a corresponding stud entering said groove, the said breech-piece supported upon a pivot stationary in the receiver at its rear, the breech-piece constructed with a lateral projection at its forward end upon one side, and the receiver with a corresponding shoulder with which said projection is adapted to engage when the breech-piece is closed, the said receiver constructed with its side opposite said shoulder open, substantially as described, and whereby under the first part of the rear movement of said handle the breech-piece receives a lateral movement to disengage it from said shoulder, then by the continued rear movement of said handle receives its opening movement, and on the forward movement of the said handle the breech-piece receives its closing movement, and under the last part of the forward movement of said handle the breech-piece

is returned laterally to engage the breech-piece with the said shoulder in the receiver, substantially as described.

2. In a fire-arm having the barrel open into the receiver at the rear the breech-piece D, arranged in the receiver and so as to move backward and forward in longitudinal line with the barrel, the breech-piece constructed with a lateral projection G upon one side at its forward end, a stationary stud L in the receiver below the breech-piece at the rear, the breech-piece constructed with a groove M upon its under side corresponding to said stud L, the said stud L forming a pivot upon which the breech-piece may swing laterally when in its closed position, the receiver constructed with the shoulder H, corresponding to the said projection G on the breech-piece when the breech-piece is in the closed position, a handle E, beneath the barrel and movable longitudinally toward and from the receiver, a bar F, extending from said handle into the receiver below the breech-piece, the breech-piece constructed with a diagonal groove I upon its under side at its forward end, the said bar provided with an upwardly-projecting stud K working in said groove I, the receiver open upon its side opposite the said projection G, a block *f*, arranged in a transverse groove in the forward end of the breech-piece, but the said block held against transverse movement, an extractor-hook on said block adapted to engage the head of the cartridge when the breech-piece is closed, substantially as described.

3. In a fire-arm having the barrel open into the receiver at the rear, with a magazine below it opening also into the receiver at the rear, the combination therewith of the breech-piece D, arranged to move longitudinally toward and from the rear end of the barrel, a stationary pivot in the receiver below the breech-piece at the rear, the breech-piece constructed with a longitudinal groove corresponding to said stud, said stud serving as a pivot upon which said breech-piece may swing laterally when in its closed position, the breech-piece constructed with a lateral projection upon one side and the receiver with a corresponding shoulder on the same side with which said projection on the breech-piece is adapted to engage when the breech-piece is in its closed position, the receiver open upon the side opposite the said projection on the breech-piece, the handle beneath the barrel and arranged to move longitudinally toward and from the receiver, a bar F, extending from the said handle into the receiver beneath the breech-piece, the breech-piece constructed with a diagonal groove I, and the bar provided with a corresponding stud K, adapted to work in said diagonal groove I and so as to impart a lateral movement to said breech-piece before the opening movement of the breech-piece commences, and also a return of said lateral movement after the breech-piece closes to correspondingly disengage and engage the projection of the breech-piece with the shoulder in the receiver, a spring-stop *b* in the receiver below the said bar F, and a cam-like projection *c* on the said bar adapted to engage a corresponding projection *d* on the said spring-stop when the breech-piece is in the closed position, substantially as and for the purpose described.

409,600.



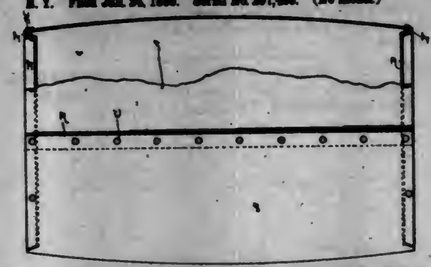
409,600. MAGAZINE FIRE-ARM. JOHN M. BROWNING and MATTHEW S. BROWNING, Ogden, Utah. Filed May 21, 1883. Renewed Jan. 8, 1889. Serial No. 296,807. (No model.)

Claim.—1. In a fire-arm having the barrel open into the receiver at the rear, the combination therewith of a longitudinally-reciprocating breech-piece constructed with one or more upwardly-projecting shoulders and the receiver with one or more corresponding shoulders, with which said shoulder on the breech-piece will engage when the breech-piece is in the fully-closed position, the said breech-piece also hung at its rear end, whereby a vertical swinging movement may be imparted to said breech-piece, a handle beneath the barrel forward of the receiver, with a bar extending therefrom into the receiver, the rear end of the bar within the receiver, and the breech-piece constructed the one with a cam-shaped groove and the other with corresponding stud, substantially as described, and whereby under the first part of the rear movement of said handle and bar the forward end of the said breech-piece will be dropped, and then under the last part of the forward movement of said bar the forward end of the breech-piece will be raised to respectively engage and disengage the shoulder of the breech-piece and receiver.

2. In a fire-arm having a barrel open into the receiver at the rear, the combination therewith of a longitudinally-reciprocating breech-piece constructed with one or more upwardly-projecting shoulders, and the receiver with one or more corresponding shoulders, with which the said shoulder on the breech-piece will engage when the breech-piece is in the fully-closed position, the said breech-piece also hung at its rear end, whereby a vertical swinging movement may be imparted to said breech-piece, a handle beneath the barrel forward of the receiver, with a bar extending therefrom into the receiver, the rear end of the bar within the receiver, and the breech-piece constructed the one with a cam-shaped groove and the other with a corresponding stud, a hammer extending longitudinally through the breech-piece provided with one or more engaging-notches, a sear hung in the receiver below the hammer and so as to swing in a vertical plane, the nose of the said sear adapted to engage a corresponding notch on the hammer as the breech-piece approaches its closed position, and a trigger, substantially as described.

3. In a fire-arm having the barrel open into the receiver at the rear, the combination therewith of a longitudinally-reciprocating breech-piece constructed with one or more upwardly-projecting shoulders, and the receiver with one or more corresponding shoulders, with which said shoulder on the breech-piece will engage when the breech-piece is in the fully-closed position, the said breech-piece also hung at its rear end, whereby a vertically-swinging movement may be imparted to said breech-piece, a handle beneath the barrel forward of the receiver, with a bar extending therefrom into the receiver, the rear end of the bar within the receiver, and the breech-piece constructed the one with a cam-shaped groove and the other with corresponding stud, a hammer extending longitudinally through the breech-piece provided with one or more engaging-notches, a sear U, hung in the receiver and so as to swing in a vertical plane, and adapted to engage a corresponding notch on the hammer as the breech-piece is moved forward, a trigger hung to swing in a plane parallel with the sear, the said trigger and sear constructed with corresponding shoulders *l m*, adapted to engage each other but leave the sear free for downward movement independent of the trigger, substantially as and for the purpose described.

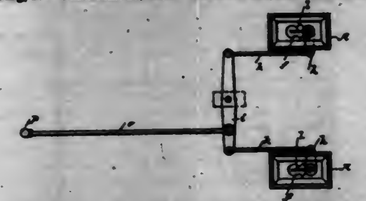
409,601. METALLIC BARREL. CORNELIUS J. CURTIS, High Falls, N. Y. Filed Jan. 24, 1889. Serial No. 297,689. (No model.)



Claim.—1. As a new article of manufacture, the metallic barrel having its side formed of a single sheet of metal with its edges overlapped and riveted together, and the metallic heads having the outturned flanges riveted within the ends of the barrel, the rivets employed to secure one of said heads being split and provided with ears adapted to be spread apart or closed together, whereby said head is rendered detachable from the barrel, substantially as described.

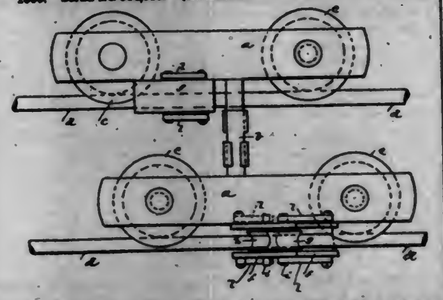
2. As a new article of manufacture, the metallic barrel having the heads provided with the outturned outwardly-flared flanges F, fitting in the ends of the barrel and secured thereto, whereby internal pressure, by forcing out the centers of the heads, will expand the flanges and compress the same more tightly in the ends of the barrel, substantially as described.

409,602. SAND-BOX FOR RAILWAY-CARS. ELI W. DAVIS, Pittsburg, Pa. Filed Mar. 11, 1889. Serial No. 302,868. (No model.)



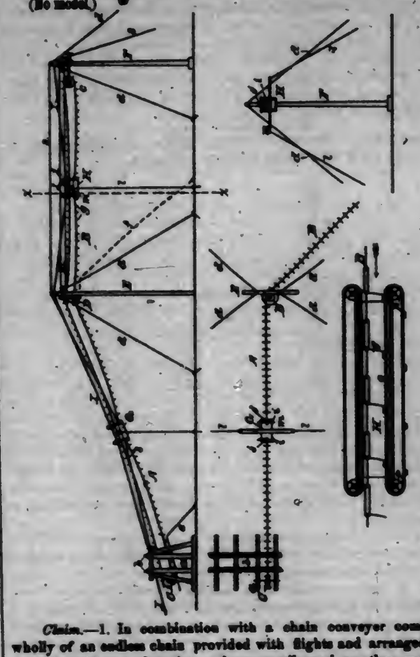
Claim.—In an apparatus for the purpose described, the combination consisting of the two bins A, each provided with a pipe leading from its base, the valves *f*, for covering the openings *e*, the cranks k, attached to the said valves *f*, the lever i and connecting-rods *k*, and the hand-lever *p* and connecting-rod *o*, and the upwardly-extending flange *l*, attached to the valves *f*, for the purpose of agitating the sand in the bins A, substantially as and for the purpose described.

409,608. TROLLEY FOR ELECTRIC RAILWAYS. JOHN G. DENISON, ROBERT DENISON, and PETER SNYDER, Pittsburg, Pa. Filed Mar. 28, 1889. Serial No. 304,983. (No model.)



Claim.—The herein-described trolley, consisting of the two frames *a*, loosely connected together by the sliding brace *b*, the grooved sheaves *c*, mounted on the said frames *a*, and each frame *a* provided with two small rollers *g h*, operating on each side of the wire, each roller *g h* capable of a limited movement toward or away from the conductors *d*, and a spring *l*, operating on each of the bearings *i* of the said rollers *g h* to keep the same in contact with the conductors, substantially as and for the purpose described.

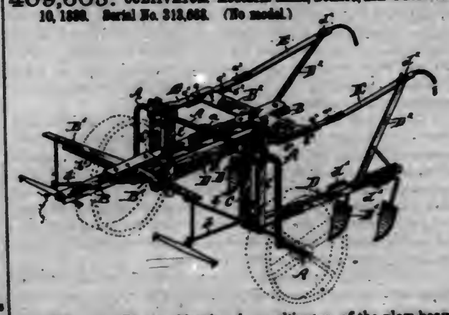
409,604. CONVEYER FOR FILING COAL. JAMES M. DODGE, Philadelphia, Pa., assignor to the Dodge Coal Storage Company, Kensington, Conn. Filed Dec. 17, 1887. Renewed Mar. 30, 1889. Serial No. 304,951. (No model.)



Claim.—1. In combination with a chain conveyer composed wholly of an endless chain provided with flights and arranged and operating either to form into a heap or pile coal or other material supplied to the lower end or portion of said chain conveyer or to remove the pile of material, an adjustable chain-supporting device arranged in connection with the lower run of the flighted chain and adapted, as specified, to support the gravity of the chain and its flights at various points intermediate of the points at which the end portions of the conveyer-chain are permanently supported by the usual sprocket-wheels, all in substantially the manner and for the purpose hereinbefore set forth.

2. The combination, with a chain and its flights, of a tubular or centrally-open adjustable supporting or sustaining device arranged in connection with the lower run or portion of said flighted chain, and provided, as specified, with suitable means for facilitating the travel through it and along over the upper surface of its bottom or lower side of the attached flights of the chain without undue friction, all as hereinbefore fully set forth.

409,605. CULTIVATOR. AUGUSTUS HILLS, Bedford, Ind. Filed June 10, 1889. Serial No. 313,663. (No model.)



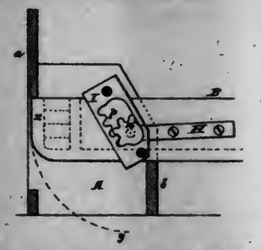
Claim.—1. The combination, in a cultivator, of the plow-beams, hangers and arms for said plow-beams, and jointed levers connected

thereto at the front and rear, whereby by moving said levers both ends of said plow-beams are moved simultaneously, substantially as set forth.

2. The combination, in a cultivator, of the plow-beams, arms extending upwardly from said plow-beams, hangers whereby said plow-beams are connected to the axle or shaft, and jointed levers pivoted to the frame-work and connected at the forward and rear ends, respectively, with said hangers and said upwardly-projecting arms, substantially as described, and for the purpose as specified.

3. The combination, in a cultivator, of the hanger C, suspended to the axle or a shaft, a plow-beam D, connected to said hanger and having an upwardly-projecting arm at its other end, and a jointed lever E, pivoted to the frame-work and attached to said hanger and said upwardly-projecting arm, said lever being formed in two parts, which engage with each other by means of a projection and a slot, substantially as and for the purpose set forth.

409,606. FOLDING BEDSTEAD. HENRY S. HALE, Philadelphia, Pa. Filed Feb. 6, 1880. Serial No. 2,210. (No model.)



Claim.—1. In a bed, the combination of a supporting-frame and a folding frame, of which one is provided upon each side with a series of independent fulcra and the other is provided upon each side with a series of stationary fulcra-seats, the fulcra and fulcra-seats being adapted to engage successively with each other, substantially as set forth.

2. In a bed, the combination of a supporting-frame and a folding frame, of which one is provided upon each side with a series of independent fulcra and the other is provided upon each side with a series of stationary fulcra-seats, the fulcra and fulcra-seats being adapted to engage successively with each other, and being arranged at different heights from the lower side of the bed, substantially as set forth.

3. In a bed, the combination of a supporting-frame and a folding frame, of which one is provided upon each side with a series of independent fulcra and the other is provided upon each side with a series of stationary fulcra-seats, the fulcra and fulcra-seats being adapted to engage successively with each other, the rearmost fulcra and fulcra-seats being higher than those at the front, whereby, when the bed is folded up, the swinging frame is lifted bodily, substantially as set forth.

4. In a bed, the combination of a supporting-frame and a folding frame, of which one is provided upon each side with a series of independent fulcra and the other is provided upon each side with a series of stationary fulcra-seats, the fulcra and fulcra-seats being adapted to engage successively with each other, said fulcra and fulcra-seats being arranged at different distances from the rear of the bed, substantially as set forth.

5. In a bed, the combination of a supporting-frame and a folding frame, of which one is provided upon each side with a series of independent fulcra and the other is provided upon each side with a series of stationary fulcra-seats, the fulcra and fulcra-seats being adapted to engage successively with each other, said fulcra and fulcra-seats being so arranged as to support the folding frame upon those nearest the rear when the folded part is vertical, whereby, when the bed is folded up, the folding frame is moved rearwardly relatively to the supporting-frame, substantially as set forth.

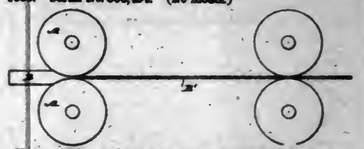
6. In a bed, the combination of a supporting-frame and a folding frame, of which one is provided upon each side with a series of independent fulcra and the other is provided upon each side with a series of stationary fulcra-seats, the fulcra and fulcra-seats being adapted to engage successively with each other, the rearmost fulcra and fulcra-seats being higher than those at the front, the arrangement of parts being substantially as described, whereby, when the bed is folded up, the folding frame is moved bodily rearward and upward relatively to the supporting-frame, substantially as set forth.

7. In a bed, the combination of a supporting-frame and a folding frame, of which one is provided upon either side with a series of fulcra and the other is provided with a series of stationarily-attached fulcra-seats arranged on lines extending upward and backward, the folding frame, when horizontal, being supported upon the lower and forward fulcra and fulcra-seats, and being successively supported upon those above and in rear as it is folded up, substantially as set forth.

8. In a bed, the combination of a supporting-frame and a folding frame, the counterbalancing-weight attached to the inner end of the folding frame, and the fulcra upon opposite sides of the bed interposed between the folding frame and the supporting-frame and arranged substantially as described, whereby, when the folding frame is swung into a vertical position, the counterbalancing-weight lies below the fulcra and partly in front thereof, substantially as described.

9. In a bed, shifting fulcra consisting of two cogged racks, in combination with the upright frame and folding frame, substantially as set forth.

409,607. METHOD OF MAKING INCANDESCING ELEMENTS FOR GAS-BURNERS. CHARLES B. HARRIS, New York, N. Y. Filed Apr. 24, 1889. Serial No. 308,454. (No model.)

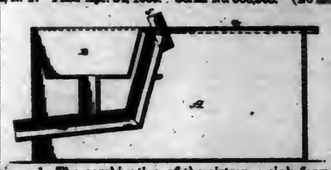


Claim.—The method of making incandescing elements for gas-burners, which consists in preparing a composed of the refractory earth or material and some vehicle—such, for instance, as glue—then rolling it into a thin sheet, then cutting or punching from the sheet an element of the desired design, and then burning the element to burn out the material mixed with the refractory earth or material, substantially as set forth.

409,608. PINE FIBER. WILLIAM LATHER, Wilmington, N. C. Filed May 3, 1889. Serial No. 309,453. (No specimens.)

Claim.—As a new manufacture, the herein-described product, termed by me "pine fiber," composed of long fine-twisted filaments having serrated or rough edges or surfaces intertwined and clinging each other, dry and practically devoid of moisture, and sufficiently strong, soft, and pliable to withstand the unavoidable and necessary strain incident to its manipulation in spinning and weaving, as hereinbefore set forth.

409,609. WATER TANK OR CISTERN. ROBERT H. MASON, Woodhull, N. Y. Filed Apr. 24, 1889. Serial No. 308,365. (No model.)



Claim.—1. The combination of the cistern, a sink formed in one end thereof, an outlet-pipe for the tank, and an outlet-pipe for the sink, the two pipes being connected together, substantially as described.

2. The combination of the tank or cistern, the movable cover provided with a door, the sink placed in one end of the tank, an overflow-pipe leading from the tank, and an outlet-pipe extending from the sink, the two pipes being connected together, substantially as specified.

409,610. VEHICLE-WHEEL. ASA R. MILLER, Atlanta, Ga. Filed Dec. 26, 1886. Serial No. 204,870. (No model.)

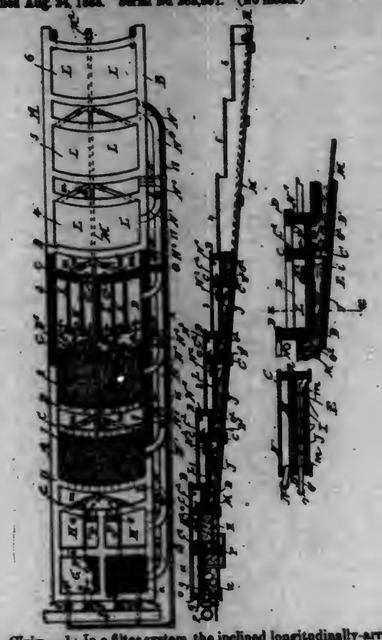


Claim.—1. In a vehicle-wheel hub, the combination of spokes dovetailed in cross-section and having notches *b* with sloping inner sides, caps G and H, adapted to enter said notches and press with a corresponding sloping face against the inner side of the notches *b*, and

means, as shown and described, for clamping said caps against the spokes.

2. In a vehicle-wheel, the combination of the spokes B, having notches *b* placed alternately on each side of the wheel, the caps G and H, having lugs *g* and *h* arranged to enter each alternate spoke on the opposite side, the axle-box C, and nut D, all arranged and operating as shown and described.

409,611. FILTER SYSTEM. JOHN J. MURPHY, New York, N. Y. Filed Aug. 24, 1888. Serial No. 283,691. (No model.)



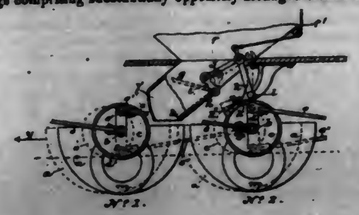
Claim.—1. In a filter system, the inclined longitudinally-arranged tanks having filter-beds above their floors, and the forward wall of each tank provided with discharge-openings above the filter-beds, in combination with an outer longitudinal pipe N, a series of branch pipes N', connecting said pipe with the respective tanks below the discharge-openings in said forward walls, the discharge-pipe and the drain, the drain-pipe O, and the branch pipes O', connecting said pipes O with the respective tanks below the filter-beds, substantially as described.

2. The combination, with the inclined tanks, the longitudinally-arranged outer pipes N and O and their branch pipes connecting with the tanks, of the pipe M, extending longitudinally below the tanks, and the branch pipes *m*, connecting with said tanks, the whole arranged to operate substantially as specified.

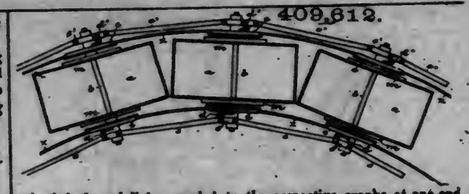
409,612. CONVEYER. GEORGE W. MCCASLIN, New York, assignor to the McCaslin Machine Company, West New Brighton, N. Y. Filed July 27, 1888. Renewed July 26, 1889. Serial No. 318,727. (No model.)

Claim.—1. A conveyer comprising a series of buckets mounted on track-wheels and connected together by rigid-link compensating couplings—that is, couplings which expand at the outside of the curve when the conveyer is moving about a lateral curve and contract proportionately at the inside of the curve—as set forth.

2. A conveyer comprising buckets mounted on track-wheels and connected together in endless series by compensating couplings, said couplings comprising substantially oppositely-arranged cranks on the



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wheel-shaft, and links coupled to the respective cranks at one end and to the adjacent axle at their other ends, substantially as set forth.

3. A conveyer comprising gravity-buckets, as *a a*, arranged in endless series, the shafts *b b*, on which said buckets are hung, the wheels *c c* on said shafts, the cranks *d* and $d^{\times}$ on the opposite ends of said shafts, the link *e*, coupled at one end to crank *d* and at the other end to the adjacent axle, and the link $e^{\times}$, coupled at one end to crank $d^{\times}$ and at the other end to the axle next adjacent, whereby, when the conveyer is moved around a curve in the track, the shafts or axles will assume their proper radial positions, as set forth.

4. The combination, with an elevated magazine having an outlet at its lower part for discharging its contents and a positively-closing cut-off controlling said outlet, of a conveyer consisting of an endless series of conveyer elements moving under said cut-off continuously in one direction, a part of said cut-off being in the path of a part of each conveyer element, and said cut-off being closed thereby as each element passes, whereby the material from the magazine is prevented from falling between the conveyer elements.

5. The combination, with a conveyer consisting of an endless series of conveyer elements, each consisting of a bucket, its supporting-wheels, and wheel-shaft, of a magazine arranged above said conveyer, a chute for the material, a cut-off to check the flow from said chute, and an operating-arm connected with said cut-off and arranged in the path of some part of the conveyer elements and adapted to be actuated by each element in succession, whereby the flow from the chute is checked intermittently and the charge measured, as set forth.

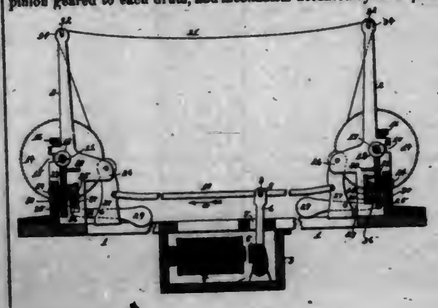
6. A conveyer comprising a series of buckets mounted on track-wheels and connected together by couplings formed of rigid links arranged in pairs at the sides of the buckets and connected dependently by a cross-shaft, and cranks, whereby, when the conveyer moves about a lateral curve the contraction at one side is compensated by expansion on the other side, as set forth.

7. The combination, with the conveyer comprising an endless series of coupled elements, as described, of the hopper or magazine and its chute, the valve *h*, hinged in the chute, the arm *i* on the hinging-shaft of said valve, the bell-crank *k*, and the link *j*, coupling the arm *i* with the upper arm of said bell-crank, the lower arm *k'* of said crank being arranged in the path of the wheels of the conveyer elements, substantially as set forth.

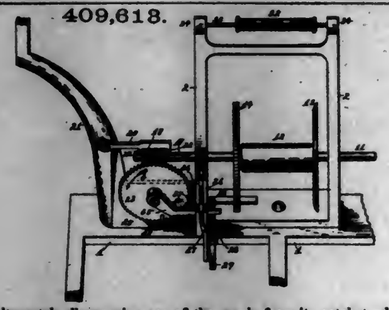
409,618. INK-RIBBON MECHANISM FOR TYPE-WRITING MACHINES. JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed Jan. 26, 1889. Serial No. 297,641. (No model.)

Claim.—1. An ink-ribbon-feed mechanism for type-writers, consisting, essentially, of two ribbon-drums, pawls and ratchets for actuating the same by the letter-spacing mechanism of the machine, a pinion geared to each drum having an arm hung to its shaft adapted to bear upon the pawl to disengage the same from its ratchet, and a pin carried by each pinion for actuating one of the arms to release the pawl into engagement with its ratchet while the other is being locked out of engagement, substantially as described.

2. In an ink-ribbon-feed mechanism, the combination of two ribbon-drums each provided with a ratchet and a pawl for actuating the same by the letter-spacing mechanism of the machine, with a pinion geared to each drum, and mechanism actuated by each pinion



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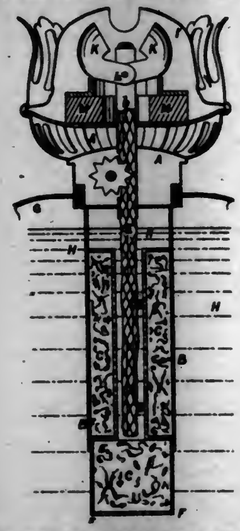
for alternately disengaging one of the pawls from its ratchet while the other is being engaged, substantially as described.

3. In an ink-ribbon-feed mechanism, the combination of two ribbon-drums between which the ribbon extends, and two pawls and ratchets for rotating the drums by the letter-spacing mechanism of the machine, with a pivoted arm for each pawl held by friction in any position and adapted to establish and break operative connection between the pawl and ratchet, and a pinion moved by each drum for alternately actuating one of these arms to move in one position while the other is being moved to the other position, substantially as described.

4. In an ink-ribbon mechanism for type-writers, the combination of two ribbon-drums and a pawl and ratchet for each drum for actuating the same step by step by the letter-spacing mechanism of the machine, with a pivoted arm extending over each pawl, adapted to lock the latter out of engagement with its ratchet and to release the same into operative relation to said ratchet, a spring for holding the arm in either of its two positions, and mechanism actuated by each ribbon-drum for shifting the pivoted arms alternately, substantially as described.

5. In an ink-ribbon mechanism for type-writers, the combination of two rotary ribbon-drums adapted to move longitudinally in their bearings, and automatic mechanism for feeding the ribbon from one drum to the other, with mechanism for reversing the feed automatically, and a worm locked against lateral movement and connected by tongue and groove with the shaft of each drum for actuating the reversing mechanism, whereby the ink-ribbon is shifted laterally at will without disturbing its automatic feed and reversal, substantially as described.

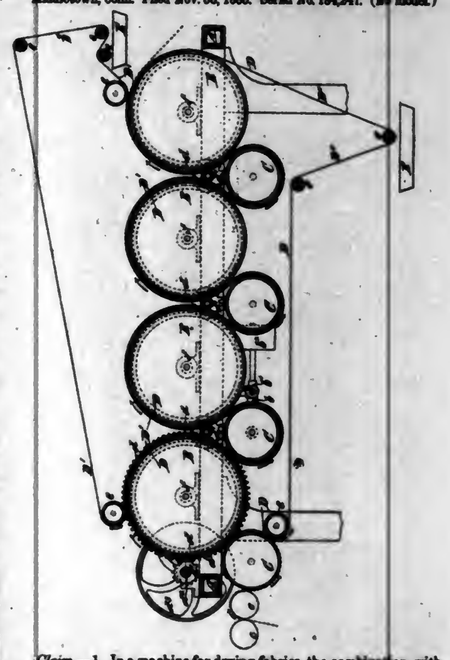
409,614. LAMP-BURNER. WILLIAM HOYLEY, Peckham, County of Surrey, England. Filed Feb. 20, 1888. Serial No. 264,692. (No model.) Patented in England June 16, 1887, No. 8,696; in Germany Jan. 15, 1888, No. 44,443; in Belgium Jan. 16, 1888, No. 80,266, and in India July 4, 1888, No. 56.



Claim.—1. The combination, with the burner of an oil-lamp, of a vertically-extended wick-tube of porous refractory material, provided with an extended axial passage adapted to receive a wick and laterally feed oil thereto throughout the length of the passage, and an outer incasing metal tube, substantially as described.

2. The combination, with the burner of an oil-lamp, of a vertically-extended wick-tube of porous refractory material, provided centrally with an extended axial passage adapted to receive a wick and laterally feed oil thereto throughout the length of the passage, and an outer incasing metal tube having a plug of porous material in its lower end, substantially as described.

409,615. MACHINE FOR DRYING FABRICS. ISAAC R. PALMER, Middletown, Conn. Filed Nov. 30, 1885. Serial No. 184,247. (No model.)



Claim.—1. In a machine for drying fabrics, the combination, with two series of drying-cylinders, arranged one series in advance of the other, of gearing whereby the cylinders of the second series may be driven at a different speed from those of the first series, and the said difference of speed may be varied at pleasure, substantially as herein described.

2. The combination, with two series of drying-cylinders, arranged one series in front of the other, and pinions and shafts through which motion is transmitted to the cylinders of the two series, of cone-pulleys reversely set on said shafts, and a belt connecting them, whereby the two series of cylinders may be driven at different velocities, and the difference of their velocities may be varied at pleasure, substantially as herein described.

3. The combination, with a drying-cylinder, of an endless apron, of wire-gauze or non-absorbent reticulated or foraminated material, to pass with the fabric around the cylinder, and supports whereby the apron is caused to pass between the fabric and the surface of the drying-cylinder, substantially as herein described.

4. The combination, with a drying-cylinder, of an endless apron to pass with the fabric around the cylinder, supports whereby the apron will have an upward and downward movement in its return, and brushes on opposite sides of the returning portion of the apron for cleaning it, substantially as herein described.

5. The combination, with drying-cylinders, of two endless aprons, of wire-gauze or non-absorbent reticulated material, to pass with the fabric around the cylinders, and supports whereby the aprons are caused to pass, one of them between the fabric and cylinders and the other outside the fabric, and whereby said aprons are guided in the return, one above the cylinders and the other below the cylinders, substantially as herein described.

6. The combination, with drying-cylinders, of transferring-cylinders arranged between the drying-cylinders, and means, substantially as herein described, of holding the said transferring-cylinders against the drying-cylinders, whereby the fabric is prevented from drawing in laterally in passing from one to another of the drying-cylinders, substantially as herein described.

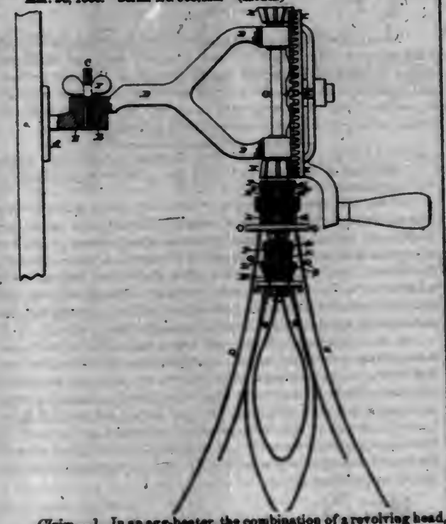
7. The combination, with drying-cylinders, of transferring-cylinders arranged between the drying-cylinders, and balancing devices applied to the transferring-cylinders, whereby they are held toward the drying-cylinders, to prevent the fabric from drawing in laterally in passing from one to another of the cylinders, substantially as herein described.

8. The combination, with main drying-cylinders, of a hollow steam-heated transferring-cylinder arranged between the drying-cylinders, and means, substantially as herein described, of holding the said transferring-cylinders toward the drying-cylinders, to prevent the fabric from drawing in laterally as it passes from one to another of the cylinders, substantially as herein described.

9. The combination, with drying-cylinders, of a transferring-cylinder consisting of a cylindric spreader, and pressure devices for holding the transferring-cylinder against the drying-cylinders, said transferring-cylinder being arranged between the drying-cylinders, whereby the fabric will have a spreading action exerted upon it, and it is prevented from drawing in laterally in passing from one to another of the cylinders, substantially as specified.

10. The combination, with main drying-cylinders, of transferring-cylinders arranged between them, pressure devices for holding the transferring-cylinders against the drying-cylinders, and webs or jackets, whereby the cylinders when pressed one against the other are prevented from having a calendering action on the fabric, substantially as specified.

409,616. EGG-BEATER. JOHN RICHARDSON, New York, N. Y. Filed Mar. 23, 1888. Serial No. 268,122. (Model.)



Claim.—1. In an egg-beater, the combination of a revolving head, provided with a slotted flange at its lower end, with the beater-wires which are attached to the head and passed through the slots, substantially as shown.

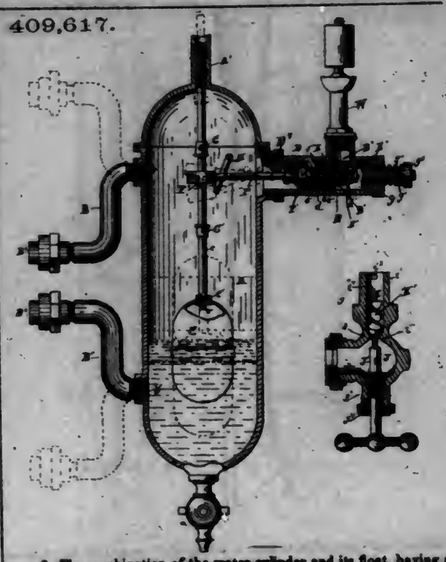
2. The combination of the revolving head provided with a slotted flange and longitudinal grooves, the beater-wires located in the grooves and passed through the slots and having their upper ends secured to the head, and an endwise-moving collar placed upon the head outside of the wires for limiting the outer movement of the wires, substantially as described.

3. In an egg-beater, the combination of the frame A, rigidly secured to a support having a socket in its outer end and provided with a screw-threaded rod C, a thumb-nut thereon, and the arm D, having a tenon E at its inner end and journals at its outer end, with the revolving head carrying wires, whereby the beater can be moved around at any desired angle, substantially as specified.

409,617. STEAM-BOILER ATTACHMENT. LEVI F. SMITH, Philadelphia, Pa. Filed Nov. 5, 1888. Serial No. 289,908. (No model.)

Claim.—1. The combination of the water-cylinder and the float and its rod therein, with the valve-casing attached to said column, having a conical valve-seat, a conical spring-controlled valve and its stem therein, and the rocking stem in said casing and connected to said valve and actuated by stops on the float-rod, substantially as and for the purpose described.

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2. The combination of the water-cylinder and its float, having a rod provided with adjustable stops, with the valve-casing having an annular partition, a cone-shaped valve-seat, and a spring surrounding the same, the conical valve controlled by said spring, and the rocking valve fitted against the annular partition and connected to said conical valve and having a rearwardly-extending stem engaging the float-rod stops, substantially as described.

3. The combination of the casing D, having an interior conical valve-seat and cone d', a spring-controlled valve E within cone d', with the screw-cap g, having a spring-controlled stem g', adapted to unseat valve E when pushed inward, substantially as described.

4. The combination of the casing D, having an annular partition d and the cone d', with the conical spring-controlled valve E, engaging a seat in cone d', and the rocking valve-stem F and its valve F', seated against partition d and engaging and operating valve E, and the float and its rod for operating stem F, all substantially as described.

5. The combination of the float and its rod provided with stops, with the valve-casing D, having an annular partition d and cone d', and the alarm-whistle on said casing, the cone-valve E, spring e', rock-valve F', and its stem, all substantially as described.

6. The combination of the water-cylinder and its S-joint connections, the float therein, the rod c, detachably secured to said float, and the adjustable stops thereon, with the valve-casing D, having the cone-valve E, rock-valve F', engaging valve E, rock-valve stem F, engaging rod c, and the alarm-whistle, all substantially as described.

7. The combination of the water-cylinder, the float and the vertical rod therein, and the rocking valve engaging said stem, with a rod adapted to engage the stem and prevent its rising when the boiler is to be pumped full of water, substantially as described.

8. The combination of the water-cylinder, the float and rod therein, and the stops on said rod, with the valve-casing D, having an annular partition d and cone d', the conical valve E, spring e' therefor, rocking valve F' and its stem, the whistle and the screw-cap g, and its push-stem g', all substantially as described.

409,618. PHOTOGRAPHIC DEVELOPING-BATH. CHARLES SPIRO, New York, N. Y. Filed Feb. 13, 1889. Serial No. 300,008. (No specimens.)

Claim.—1. The combination, with a photographic developer, of a non-actinic inorganic coloring-matter, substantially as and for the purpose specified.

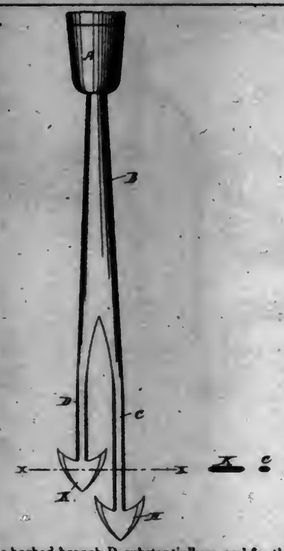
2. The combination, with a photographic developer, of a non-actinic aniline solution, substantially as and for the purpose specified.

3. The combination, with a photographic developer, of orange aniline, substantially as and for the purpose specified.

409,619. LAWN-WEEDER. MARY A. STEBBINS, Chelsea, Mass. Filed May 22, 1889. Serial No. 311,757. (No model.)

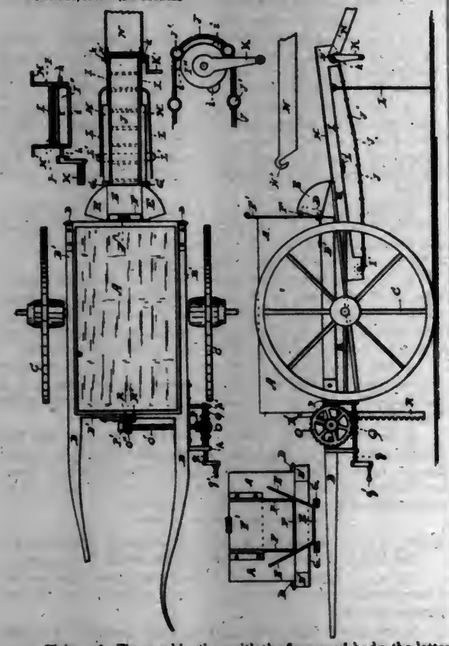
Claim.—In a lawn-weeder, the combination of the shank B, having a barbed branch C extending below the barbed branch D and adapted to act as an axle for turning the instrument about, as de-

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scribed, and the barbed branch D, substantially as and for the purpose set forth.

409,620. COAL-CART. MORTON TOULSON, Baltimore, Md., assignor of two-thirds to Frank C. Fenhagen, same place, and Peter G. Zouck, Glen Morris, Md. Filed Oct. 30, 1888. Renewed July 24, 1889. Serial No. 318,497. (No model.)



Claim.—1. The combination, with the frame and body, the latter being hinged to the former, of a hopper secured to the rear of the frame and a hopper secured to the rear of the body, the sliding door F in the tail-board, the parallel grooved guides rigidly secured to the frame below the body, the conveyer I, having flanges or slides H on its upper edge working in the grooves of the guides, and the endless belt J in the conveyer, substantially as described.

2. The combination, with the frame and body, of the grooved guides G below the body, inclining downwardly toward the front, the conveyer I, having flanges or slides H on its upper edge, which work in grooves formed in the guides, and the endless conveyer-belt J, substantially as described.

3. The combination, with the frame and body of a cart, of forwardly and downwardly inclined guides secured to the frame beneath the body, the semicircular piece, as H'', formed on the rear end of the guides, the conveyer-trough I, having a ring H' on its inner end working in said guides and semicircular piece, and the endless belt J, substantially as described.

4. The combination, with the frame, of the body hinged thereto, a vertically-arranged rack-bar pivotally secured to the front of the body, a pinion meshing with the rack-bar, a shaft on which said pinion is mounted extending to the outside of the frame, a gear on the outer end of the shaft, a screw meshing with said gear, and a frame supporting the screw, substantially as described.

5. The combination, with the frame and body of a cart, of a conveyer-trough, having rollers, as I' and I'', located, respectively, in the ends thereof, said rollers having a series of ribs, as i, thereon, the conveyer-belt J, having transverse pieces secured thereto, and a handle for moving the outer roller, substantially as described.

409,621. SHAFT-SUPPORTER FOR VEHICLES. HOWARD F. WELCH, Richfield Springs, assignor to Margaret Howard Chase, New York, N. Y. Filed Feb. 9, 1889. Serial No. 299,336. (No model.)

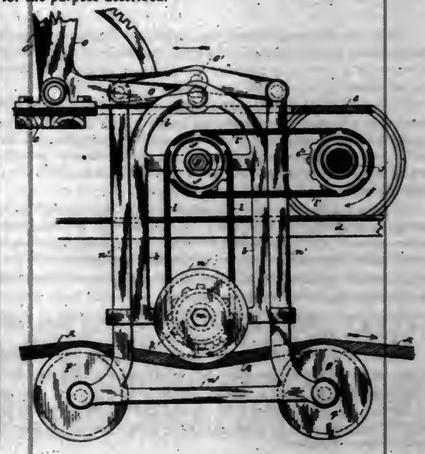


Claim.—The combination, with the upper or smaller dash-board hook-section and the larger or lower cross-bar hook-section, of the sliding clamp C, embracing the lapped portions of the said sections and provided with the thumb-screw intermediate of its ends, whereby the sections may be securely held in contact after having been adjusted to the length required, substantially as specified.

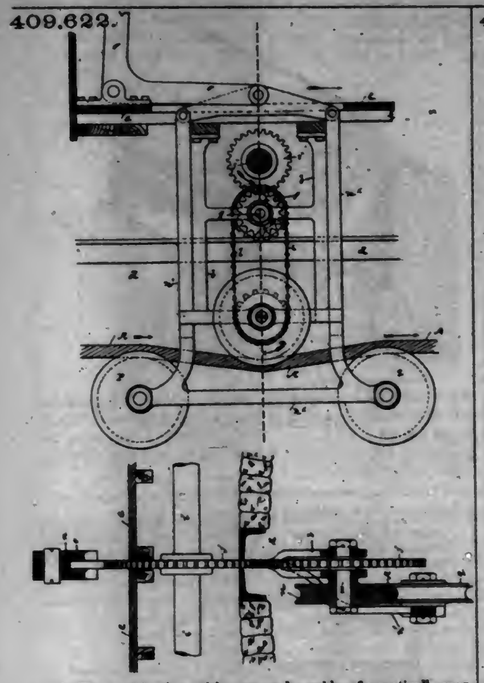
409,622. APPARATUS FOR OPERATING CABLE CARS. JOSEPH WILLIAMS, Jr., Pittsburg, Pa. Filed Apr. 1, 1889. Serial No. 305,614. (No model.)

Claim.—1. The combination, with a car and a cable, of two frames carried by the car, one of which is adapted to be moved vertically with relation to the other, friction-rollers carried by the vertically-movable frame and arranged to contact with the cable to lift the latter, a shaft carried by the other frame and having means adapted to be driven by the cable when the latter is elevated, and gearing intermediate of said shaft and one of the axles of the car, substantially as described, for the purpose described.

2. The combination, with a car and a cable, of a normally-stationary frame carried by the car, a vertically-movable frame also carried by the car and having rolls at its lower end arranged to contact with the cable to lift the latter when said frame is elevated, a shaft journaled in the other frame and having a friction-roll adapted to be positively driven by the cable when it is elevated by the movable frame, and gearing intermediate of said shaft and one of the axles of the car, all arranged and combined for service, substantially as and for the purpose described.



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3. The combination, with a car and a cable, of a vertically-movable frame carried by said car and having at its lower extremity the spaced friction-rolls which are arranged to contact with the lower side of the cable, a normally-stationary frame arranged within said vertically-movable frame and suitably mounted on the car, a shaft journaled in said stationary frame at a point between and above the rollers of the movable frame, and having a friction-roll adapted to engage and be positively rotated by the cable when it is elevated by said movable frame, and gearing intermediate of said shaft and one of the axles of the car, substantially as and for the purpose described.

4. The combination, with a car and a cable, of a vertically-movable frame, as *a'*, carried by said car and having friction-rolls adapted to engage the cable to lift the same when the frame is elevated, another frame, as *b*, arranged within the first-mentioned frame *a'*, which remains normally at rest and is capable of vertical play within the vertically-movable frame *a'*, a shaft carried by the frame *b* and having a friction-roll adapted to be positively driven by the cable when it is lifted by the rolls of said frame *a'*, and gearing intermediate of the shaft and one of the axles of the car, substantially as and for the purpose described.

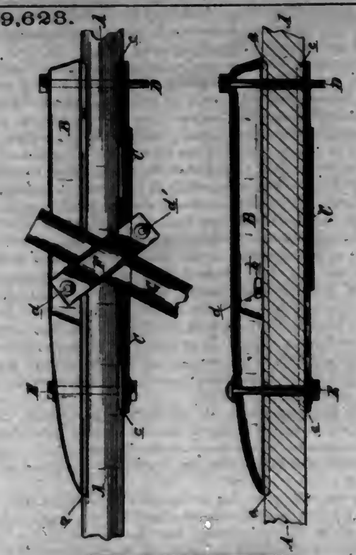
5. The combination, with a car and a cable, of an outer vertically-movable frame suspended from the car and having friction-rolls adapted to engage the cable to lift the same when said frame is elevated, an inner movable frame arranged within the outer frame and carrying a shaft which is adapted to engage and be rotated by the cable when said inner frame is at its lowest position and which is withdrawn from the cable when said frame is elevated, and gearing intermediate of said shaft and an axle of the car, arranged and combined for service, substantially as herein shown and described.

6. The combination, with a car and a cable, of two frames carried by the car, one having friction-rollers arranged to engage the lower side of the cable and the other having a shaft provided with a friction-roll which is adapted to be rotated by the cable when the latter is lifted, another shaft journaled in the last-mentioned frame, and suitable belt-gearing intermediate of the two shafts and an axle of the car, all arranged and combined for service, substantially as and for the purpose described.

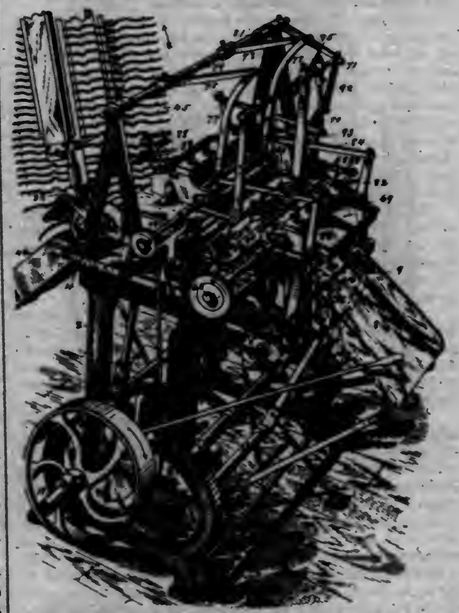
409,623. FLOW-BEAM. NORMAN W. WILLIAMS, Detroit, Mich., assignor of one-half to Charles H. Gale, same place. Filed Oct. 24, 1887. Serial No. 253,202. (No model.)

Claim.—The metallic girder-box B, having the transverse slot *b*, adapted to receive the bolt *d* of the grip-strap F, in combination with the channel-plate C and straight wooden bar A, substantially as set forth.

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409,624. ENVELOPE-MACHINE. JAMES BALL, Holyoke, Mass., assignor to the Holyoke Envelope Company, same place. Filed Mar. 8, 1886. Serial No. 194,377. (No model.)



Claim.—1. In a machine for gumming and folding envelopes, the blank-carriage 36, having a reciprocating horizontal motion; a blank-supporting arm attached to one end of said carriage and extending between the sides thereof, combined with the yoke 42, having a divided folding box plunger attached thereto, whereby the movements of the latter are not interrupted while the blank-supporting arm extends over the folding-box, substantially as set forth.

2. In combination, the blank-carriage 36, the arm 39, attached to the latter and extending between the sides thereof, the yoke 42, the divided plunger 41, and the shaft 48, provided with two blank-guiding pinions, substantially as set forth.

3. The trough 8, having slots therein, the vibrating feed-arms 9, projecting through said slots, the arms 10, pivoted between said feed-

arms and having their free ends moving in said slots in advance of said arms 9, and the curved guide-strip 15, attached under said trough, combined and operating substantially as set forth.

4. The envelope-lifter 11 and means, substantially as described, for giving it a vertically-reciprocating motion, the vibrating crank-shaft 56, the stop-arms 52, secured on said shaft, and the vibrating arms 49, co-operating with the arms 52 to hold the envelope while it is gummed, combined and operating substantially as set forth.

5. As means for gumming the lap-spots on the outside of the seal-flap of the envelope, a crank-shaft 65, having thereon the picker-gummers 66, and means, substantially as described, for imparting a rocking motion to said shaft, combined with the gumming-roller 67 and means, substantially as described, for swinging said roll from the gum-box against said picker-gummers, substantially as set forth.

6. As means for opening out and gumming the inside of the seal-flap of the envelope, the crank-shaft 65, having the picker-gummers 66 thereon, and means, substantially as described, for imparting a rocking motion to said shaft, the vibrating gumming-roller 67, to apply gum to said picker-gummers, the flap-table 60, the gumming-roller 75, and means, substantially as described, for imparting thereto a horizontal and vertical reciprocating motion, whereby it is moved from the gum-box 76 to the seal-flap on said table 60, combined and operating substantially as set forth.

7. The pivoted flap-table 60, gravitating against table 4 and having curved recesses in its edge to receive the picker-gummers, and the picker-gummers 66, combined with the swinging lever 61, engaging under said table 60 and lifting its recessed edge, substantially as set forth.

8. As means for conveying the envelope from the gumming devices to the drying-chain, the vibrating arms 86, each carrying a gripper consisting of a bar 101, having a fixed jaw thereon, a pivoted jaw opening and closing opposite the latter and having a projection 103 thereon, a latch 104, pivoted on said bar and engaging with said projection, and a spring to open jaw 102 and to swing said latch, combined with the sleeves 55, to close said grippers, and the gripper-trips 89, to swing said latch, substantially as set forth.

9. As means for arresting the action of the gumming-roll 75 and preventing the application of gum to the flap-table 60 when no envelope is present, the pin 91, projecting horizontally from a disk on the end of the rocking crank-shaft 65, the curved-edged hook-bar 92, having a hook thereon to engage with the upper side of said pin and suspended on an arm on the rock-shaft 79, to which said gumming-roll is attached, the slotted guide 93, the pivoted hook 97, to engage with the under side of said pin, the shaft 110, having thereon an arm connected with said hook 97, and the finger 111, and means, substantially as described, for imparting a rocking motion to shaft 110, combined and operating substantially as set forth.

10. In combination, the envelope-lifter 11, having a slot in its edge, the rock-shaft 110, the finger 111, having a vibrating motion within said slot, the hook 97, pivoted on the table of the machine, the arm 99, secured on said shaft and connected with said hook by the rod 108, and the rocking shaft 65, having connected therewith the pin 91 for engagement with said hook, substantially as set forth.

11. The rock-shaft 79, having the gumming-roll 75 connected thereto, the hook-bar 92, pivoted on an arm on said shaft and having a curved projection and a hook on one edge, the slotted guide 93, through which said bar passes, and the pin 91, attached to the shaft 65, with which said hook-bar engages, all the elements combined substantially as set forth.

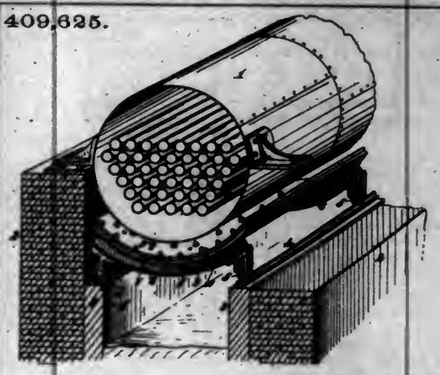
12. In a machine for gumming and folding envelopes, the blank-carriage 36, having a reciprocating horizontal motion, the arm 39, attached to said carriage, the yoke 42, the divided folding plunger attached to said yoke, the pickers 26 and 27, and suitable gumming devices therefor, the chute 7, to receive the envelope from said gumming and folding devices, the trough 8, to receive envelopes from said chute, and the vibrating arms 9 and 10, to move said envelopes upward in the latter, the vertically-reciprocating envelope-lifter 11, receiving the envelope from said arms, the vibrating arms 49 and 52, to hold the envelope while it is gummed, the rocking crank-shaft 65, having the picker-gummers 66 thereon, the vibrating gumming-roll 67, the flap-table 60, and the horizontally-vibrating gumming-roller 75, and the necessary co-operating adjuncts, all in combination substantially as described.

409,625. BURNER-CARRIAGE FOR GAS-FURNACES. HAROLD J. BELL, Gloucester City, N. J., assignor to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed Apr. 11, 1889. Serial No. 306,786. (No model.)

Claim.—1. The combination, with a gas burner carriage, of separate gas and air chambers supported on said carriage, and comprising horizontal plates connected by bolts, and blow-pipe gas-burners supported by and communicating with said chambers, substantially as described.

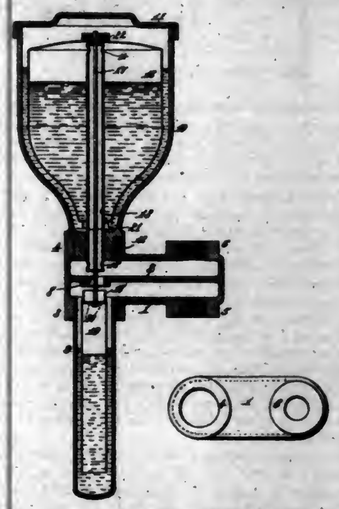
2. The combination, with the combustion-chamber of a furnace,

409,625.



of a movable gas-burner carriage, gas and air chamber supported on said carriage and comprising plates 10, connected by tubular bolts 12, for the passage of air to carry off the products of combustion, and gas-burners supported by and communicating with said chambers, substantially as described.

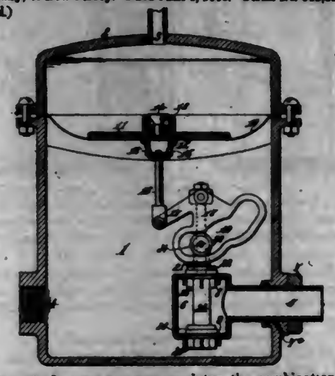
409,626. GAS-PRESSURE REGULATOR. HAROLD J. BELL, Gloucester City, N. J., assignor to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed June 6, 1889. Serial No. 313,224. (No model.)



Claim.—1. In a gas-pressure regulator, the combination of a valve-casing having a depending tubular extension and a partition provided with a gas-passage and a valve-seat, a regulator-casing attached to the upper part of said valve-casing in line with said tubular extension, a stationary perforated tube vertically and centrally supported in the regulator-casing and communicating with the valve-casing, a liquid-sealed float inclosed in the regulator-casing and having a stem that is passed through said tube, and a tubular liquid-sealed balanced valve attached to the float-stem and inclosed in the tubular extension of the valve-casing, substantially as described.

2. In a gas-pressure regulator, the combination of a valve-casing having an inlet and outlet and a horizontal partition provided with a gas-passage and valve-seat, a tubular extension depending from one end of the valve-casing, a regulator-casing above and in line with said extension, a vertical stationary tube supported in the regulator-casing and communicating with the valve-casing, a hollow liquid-sealed float inclosed in the regulator-casing and having a stem that is passed through and guided in said tube, and a tubular liquid-sealed valve inclosed in the tubular extension of the valve-casing and having a perforated cup-shaped portion attached to the float-stem, substantially as described.

409,627. GAS-PRESSURE REGULATOR. HAROLD J. BELL, Gloucester City, N. J., assignor to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed June 6, 1889. Serial No. 313,227. (No model.)



Claim.—1. In a gas-pressure regulator, the combination, with a casing or chamber having a flexible diaphragm, an inner chamber having gas-passages communicating with the said casing or outer chamber, and automatic safety cut-off and pressure-regulating valves for controlling said gas-passages, of cam-lever connections between said diaphragm and valves, substantially as described.

2. In a gas-pressure regulator, the combination of an outer chamber or casing, an inner chamber having gas-passages communicating with the outer chamber, automatic safety cut-off and regulating valves, an anti-friction roller connected with said valves, a cam having a slot engaged with said roller, a flexible diaphragm, and a rod or lever connecting the said diaphragm and cam, substantially as described.

3. In a gas-pressure regulator, the combination of the casing 1, the flexible diaphragm 10, having a depending rod 16, the chamber 6, having gas-passages 8 and 9 and by-pass 27, the safety cut-off and regulating valves 22 and 23, roller 20, cam 18, and starting-valve 28, substantially as described.

4. In a gas-pressure regulator, the combination of the flanged valve-stem 24, the annular elastic valves 22 and 23, and the flanged blocks 30 and 31, for securing the valves to said stem, substantially as described.

5. In a gas-pressure regulator, the combination of the flanged stem 24, having guides at one end, the annular elastic valves 22 and 23, the flanged block 30, provided with guides and having a central boss that engages the lower valve, the flanged block 31, having a central boss engaged with the upper valve, and means for securing said blocks to the ends of the valve-stem, substantially as described.

6. In a gas-pressure regulator, the combination, with the diaphragm 10, the elastic valves 22 and 23, and the stem 24, to which said valves are secured, of cam-lever connections between the diaphragm and valves, substantially as described.

7. In a gas-pressure regulator, the combination of the standard 26, the adjustable two-part cross-bar 36, the lever 18, centered on said cross-bar and provided with a cam-slot 19, the anti-friction roller 20, engaged in said slot, and the valves 22 and 23, having a stem that carries bearings for said roller, substantially as described.

409,628. SAFETY-FUSE FOR ELECTRIC CONDUCTORS. WALTER S. BISHOP, New Haven, Conn., assignor to himself and Frank B. Parker, same place. Filed Nov. 23, 1883. Serial No. 291,634. (No model.)



Claim.—1. In a safety-fuse for electric circuits, the combination, with the binding-posts B B', formed of the part *c b*, and screw *a*, of the fusible strip C, provided with the apertured ends *g* and the protecting-plate D, the said fusible strip and protecting-plate being arranged to be clamped by the binding-posts, substantially as specified.

2. In a safety-fuse for electric circuits, the combination, with the binding-posts B B', provided with the shoulders *d*, of the strip C, having the apertured ends *g*, the mica protecting-plate D, and the plate *f*, substantially as specified.

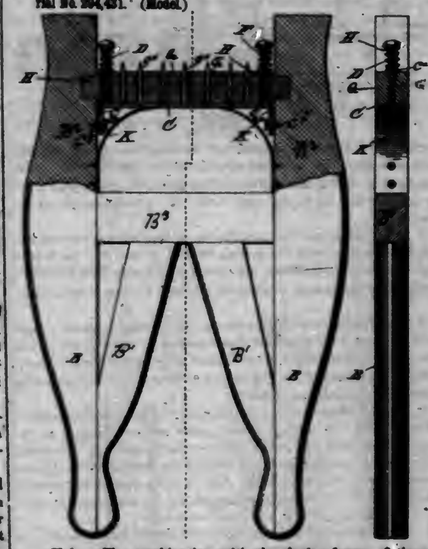
409,629. GAGE-KNIFE. WILLIAM H. BROCK, Plainfield, N. J., assignor to the New York Glass Enameling Company, New York, N. Y. Filed Dec. 19, 1888. Serial No. 294,194. (No model.)



Claim.—1. A vegetable-parer composed of a blade of metal curved on opposite edges in opposite directions, having in the bight of either of its curved edges a slot, one edge of which forms a knife, substantially as shown and described, for the purpose set forth.

2. A vegetable-parer composed of a blade of metal curved on opposite edges in opposite directions, having in the bight of either of its curved edges a slot, one end of which forms a knife, said having one end of either of said edges projected in a curved line to form a scoop or corer, substantially as shown and described, for the purpose set forth.

409,630. DRYING-FRAME FOR KNITTED DRAWERS. MIKE CLEMENS and CHARLES A. TICE, Herkimer, N. Y. Filed Dec. 22, 1883. Serial No. 294,431. (Model.)



Claim.—The combination, with the drying-frame of the usual construction, provided at its upper portion with a perforated cross-piece, of a sliding plate arranged beneath said cross-piece and provided with pins which project through the perforations of said cross-piece, means for depressing said sliding plate, and means for returning it to its normal position, substantially as set forth.

409,631. PIPE ELBOW OR SECTION. CHARLES R. COOPER, New York, N. Y. Filed Mar. 11, 1889. Serial No. 302,770. (No model.)

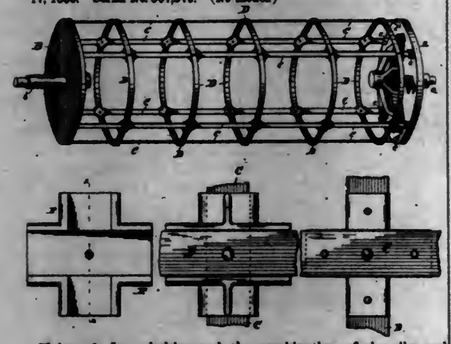


Claim.—1. A curved pipe-elbow consisting of a series of transverse sections, each convex on the back and concave at the throat and composed of a single blank narrowed toward the ends, which ends

overlap and are secured together, one end or edge of each section being depressed inwardly the thickness of the metal, or formed with an annular corrugation, said corrugation and the opposite end of the section being provided with transverse indentations, whereby, when the sections are secured together, the straight edge of one section fits on the corrugation of the next and the indentations intermesh, substantially as described.

2. A curved pipe-elbow consisting of transverse sections concave at the throat and convex at the back, each formed of a single blank having its ends secured together, said sections being secured together at their ends, and the two end sections of the elbow at about half their length departed from a curved form and made straight or tapering at the outer ends, for the purpose set forth.

409,632. ROTARY BOLT. JOHN R. CORNWALL, Moline, Ill., assignor to the Barnard & Leas Manufacturing Company, same place. Filed Apr. 17, 1888. Serial No. 307,579. (No model.)



Claim.—1. In a bolting-reel, the combination of the ribs and braces, with the castings secured to said ribs and braces at their point of intersection on the inside of the reel, so as not to interfere with the cloth or protrude above the outer brace or rib, substantially as described.

2. In a bolting-reel, the combination of longitudinal ribs and circumferential braces, with the casting secured to said ribs and braces at their points of intersection and bracing the same, and curved to accommodate the braces, substantially as and for the purpose specified.

3. In combination with the ribs and intersecting braces of a bolting-reel, castings having flanged arms attached to said ribs and braces at the points of intersection thereof, the flanges of the arms preventing lateral movement of the ribs or braces thereon and strengthening the same, substantially as described.

4. The combination of the longitudinal ribs and the circumferential braces, with the castings having pairs of arms flanged, as described, and centrally perforated and placed upon said ribs and braces at their points of intersection to the inside of the circumferential braces to prevent contact thereof with the cloth, and the rivet or bolt passing centrally through the casting and through the rib and brace, substantially in the manner and for the purpose set forth.

5. In a bolting-reel, the combination of longitudinal ribs and circumferential braces, with castings having arms arranged in pairs at right angles to each other and flanged on opposite sides and interposed between and secured to the ribs and braces, substantially as described.

409,633. POULTICE OR SPONGE HOLDER FOR HORSES' FEET. CORNELIUS P. DACEY, Cincinnati, Ohio, assignor of one-half to Eugene L. Firnkoess, same place. Filed Apr. 2, 1888. Serial No. 269,357. (No model.)

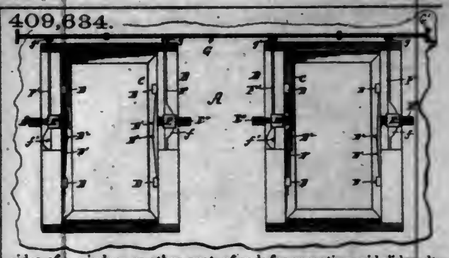


Claim.—A poultice or sponge holding appliance for horses' hoofs, composed, substantially, of the imperforate plate C, having a straight or squared fore end, and an upturned tongue or projection *c* at its rear end, a pliable concave transverse clamp-bar D, a rectangular plate or washer D', a vertical rivet *d*, a longitudinal upwardly-turned and forwardly-projecting bar E, and rivets *e e'*, whereby said poultice or sponge is detachably held in position against the bottom of the hoof, as herein set forth.

409,634. SWINGING WINDOW. ENOCH R. DE KALB, Syracuse, N. Y. Filed Aug. 30, 1888. Serial No. 284,118. (No model.)

Claim.—1. The combination, with locking-slides on the opposite

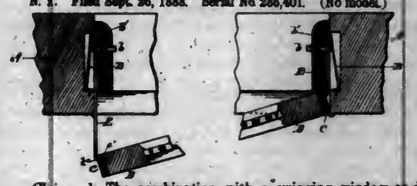
409,634.



sides of a window or other part, of rods for operating said slides alternately, and a horizontal rocking rod, to which the first-named rods are connected, above the window or other part, substantially as set forth.

2. The combination, with locking-slides having projections on opposite sides of a window or other part, of rods having cams arranged to operate alternately upon the projections of the slides, and a rod for operating the cams, as set forth.

409,635. HOLDER FOR WINDOWS. ENOCH R. DE KALB, Syracuse, N. Y. Filed Sept. 26, 1888. Serial No. 286,401. (No model.)

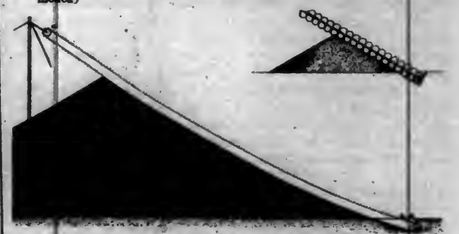


Claim.—1. The combination, with a swinging window or door or other part, of a slotted segmental arm loosely jointed to the sash or analogous part at one end, and a spring-plate and pin over which it rides secured to the frame, as set forth.

2. The combination, with a swinging window or door or other part, of a slotted segmental arm loosely jointed at one end, and a spring-plate having an angle-piece on its free end and a pin over which the slotted arm moves, as set forth.

3. The combination, with a swinging window or door, of a slotted segmental arm having notches in it, as described, and a spring-plate having an angle-piece at one end and provided with a push pin or button, substantially as and for the purpose described.

409,636. PROCESS OF PILING COAL OR ANALOGOUS MATERIAL. JAMES M. DODGE, Philadelphia, Pa., assignor to the Dodge Coal Storage Company, of Connecticut. Filed Apr. 12, 1889. Serial No. 306,980. (No model.)



Claim.—The process herein described of progressively and continuously forming a pile of coal or analogous material, said process consisting in, first, delivering the material to be piled to a conveyer at a fixed point at or near the ground; secondly, in carrying the said material upward at an inclination not exceeding the natural angle of repose until the material discharges itself to form an initial conical pile, and, thirdly, progressively carrying fresh material along the surface of such previously-formed pile and at the same constant angle of inclination, and leaving such material at the top of the already-formed pile to distribute itself by gravity and form a new, a higher, and a constantly-receding apex for a conical pile or mass.

409,637. HEEL-NAILING MACHINE. CHARLES W. GLIDDEN, Lynn, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Apr. 23, 1889. Serial No. 308,303. (No model.)

Claim.—1. A nail-box, drivers and driver-plate, and a convexed tipping support combined with a block having co-operating concaved surface, whereby the support, together with the nail-box and drivers, may tip to conform to variations in thickness or shape of a heel, substantially as described.

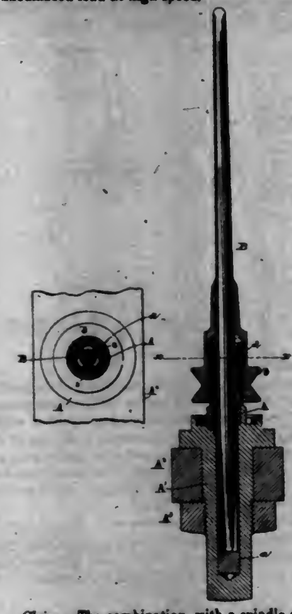
409,637.



2. The block having a convexed seat and a nail-box and convexed tipping support, combined with a locking device to fix the support in adjusted position, substantially as described.

409,638. SUPPORT FOR SPINNING-SPINDLES. BENJAMIN H. GOODALE, Saco, Me., assignor to the Sawyer Spindle Company, Boston, Mass. Filed May 24, 1888. Serial No. 311,968. (No model.)

Brief.—The object of the invention is to provide an improved bearing in which the spindle may have sufficient looseness to run with an unbalanced load at high speed.



Claim.—The combination, with a spindle and step, of a faceted bolster-bearing, substantially as described.

409,639. WICK-ADJUSTING MECHANISM. CHARLES P. GOODRICH, Brooklyn, assignor of two-fifths to Rowland A. Robbins, New York, and James S. Barrow, Brooklyn, N. Y. Filed Mar. 1, 1886. Serial No. 193,686. (No model.)



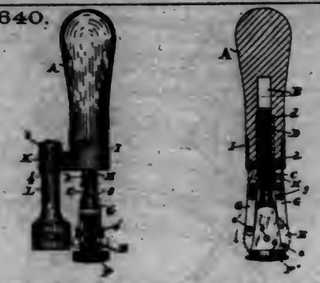
Claim.—1. The combination, with a wick-tube, of a pair of rollers arranged at opposite sides and provided with spiral collars extending circumferentially about them in the same direction, having rows of short blunt teeth extending at right angles to the axes of the rollers, substantially as specified.

2. The combination of the wick tube or casing, the equally-geared adjacent parallel rollers, and the ribs wound spirally around the rollers and formed with teeth on lines parallel to the axes of the rollers, substantially as specified.

409,640. STAMP-CANCELING DEVICE. FERDINAND HORN, Columbus, Ohio, assignor of one-half to Philip A. Hiller and George Long, same place. Filed Mar. 22, 1889. Serial No. 304,205. (No model.)

Claim.—1. In a stamp-canceler, a vertically-movable hollow handle, a coil-spring therein, and a bifurcated rod, the upper end of which

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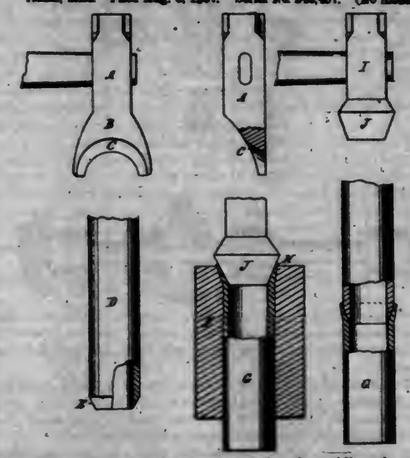


projects into said handle and is encircled by said spring, in combination with rasping-wheels mounted on a suitable shaft within said bifurcated rod, and pitmen secured to said rasping-wheels and connecting them with said handle.

2. In a stamp-canceler, a vertically-movable hollow handle and a bifurcated rod, the upper end of which projects into the cavity of said handle, in combination with rasping-wheels mounted on a suitable shaft within said bifurcated rod, and pitmen secured to the outer surfaces of said wheels on opposite sides of the shaft thereof and connecting said wheels with said handle, all substantially as and for the purposes specified.

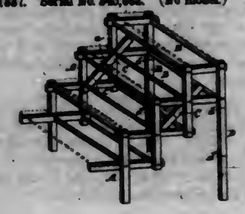
3. In a stamp-canceler, the combination of a handle having a recess, a rod having one end projecting loosely into said handle-recess and the other end provided with bifurcations, a ring-plate having an opening *f* and secured to the extremity of said bifurcations, two rasping-wheels between the said bifurcations and mounted on a shaft with the rasping-rims projecting through the ring-plate opening, and each wheel provided with a series of perforations *e*, and two pitman-rods G, pivoted to the handle, and each secured to a different wheel by a screw *e'*, entered in one of said perforations.

409,641. DEVICE FOR PREPARING TUBES FOR WELDING. HARRY JEFFREY, Ludlow, Ky., assignor of one-half to Fred Hoeffle, Meridian, Miss. Filed Aug. 3, 1887. Serial No. 246,457. (No model.)

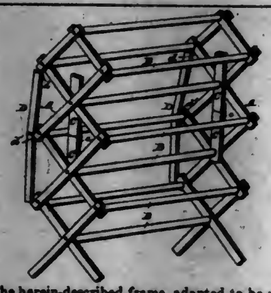


Claim.—In devices for preparing tubes for welding, the tool A, having the beveled and crescent shape C, jointly with the tool J, and the former-tool F, having the bell-mouth H, substantially as set forth.

409,642. CLOTHES-DRIER. WILLIAM H. LITTLE, Picture Rocks, Pa., assignor of one-half to George R. Little, Washington, D. C. Filed July 20, 1887. Serial No. 245,092. (No model.)

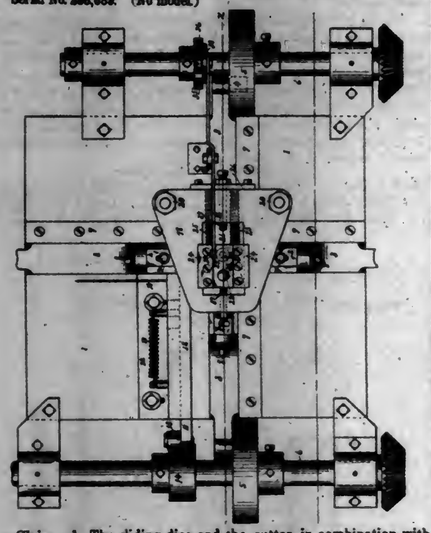


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Claim.—The herein-described frame adapted to be used for the described purposes and consisting of the side bars A, pivoted together in pairs, the transverse rungs connecting the ends and centers of opposite pairs of side bars, the stops C, each consisting of two bars and hinge *c*, and the legs D, each composed of two sections connected by the hinge *d'* and connected to the top side bar A on one side of the frame by the hinge *d*, substantially as specified.

409,643. WIRE-FORMING MACHINE. FRANK B. MANVILLE, Waterbury, Conn., assignor to Blake & Johnson, same place. Filed Dec. 15, 1888. Serial No. 293,689. (No model.)



Claim.—1. The sliding dies and the cutter, in combination with a raised table having a central opening, a block adapted to slide in said opening, and a former carried by said block toward which the dies act.

2. The sliding dies and the cutter, in combination with table 18, block 23, sliding in said table, a former carried by said block, stop-bolts to limit the movement thereof, and springs 25, to return the block to its normal position after the dies have acted.

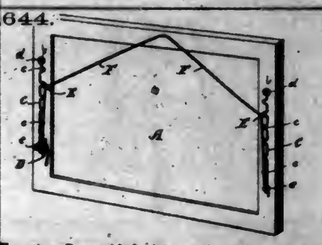
3. In a machine of the class described, the former, a sliding block by which it is carried, and a stripper having a shank 28 extending through said block, in combination with a disk having a lug 36 and a pivoted lever, one end of which engages said shank, and a link pivoted to the other end of said lever and carrying a roller engaging said disk, as and for the purpose set forth.

4. Block 23, the former carried thereby, and the stripper whose shank extends through said block and is provided with a roller 30, in combination with a lever against which said roller bears, mechanism, as a spring, acting to hold the roller in contact with the lever, and mechanism, substantially as described and shown, for tilting said lever to actuate the stripper.

409,644. ADJUSTABLE PICTURE-HANGER. LEVERETT MESSER, Haverhill, Mass., assignor of one-half to Gerry C. Messer, Brattleborough, Vt. Filed Aug. 29, 1888. Serial No. 284,069. (No model.)

Claim.—1. The wires C, provided with a series of loops *c* and eyes *b*, in combination with the screw-eyes *e*, cord F, and adjusting-rings E, substantially as and for the purpose set forth.

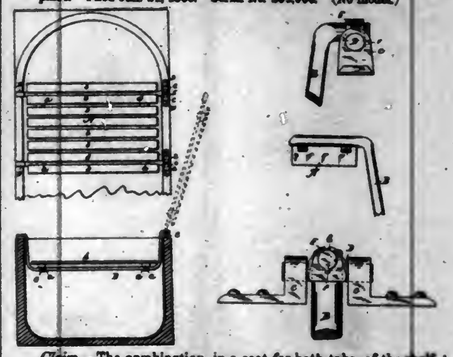
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2. The wires C, provided with a series of loops *c*, in combination with the adjusting-rings E and cord F, substantially as and for the purpose set forth.

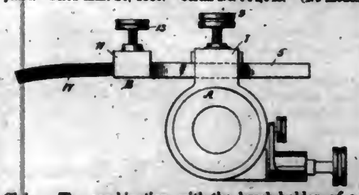
3. The wire C, provided with a series of loops *c* and eyes *b*, in combination with the rings E, screw-eyes *e*, and cleat D, substantially as and for the purposes set forth.

409,645. ATTACHMENT-SEAT FOR BATH-TUBS. GEORGE W. MYERS, Philadelphia, Pa., assignor of one-half to Abraham Overholt, same place. Filed Jan. 21, 1889. Serial No. 296,968. (No model.)



Claim.—The combination, in a seat for bath-tubs, of the shelf A, supports B, the ends of which turn up, as shown, one end being adapted to rest on the side of the tub and the other being furnished with a downwardly-projecting leg F, bearings C, secured to the top of the tub, shafts D, supported by and free to revolve in bearings C, and bearing E in shaft D, slotted out at G, in order to allow the introduction of leg F on the end of support B, all arranged and operating substantially as and for the purposes set forth.

409,646. BRUSH-HOLDER FOR DYNAMOS. JAMES M. MCLELLAN, St. Paul, Minn., assignor to George H. Finn and John R. Munson, same place. Filed Mar. 20, 1889. Serial No. 304,043. (No model.)



Claim.—The combination, with the brush-holder, of a dynamo-electric machine having the sleeve 7 and set-screw 9, of an auxiliary brush-holder B, having the shank 5 slidably adjustable in said sleeve, and the head 11, suitably recessed to receive the brush 17 and provided with the set-screw 13 and the plate 15, by means of which the brush is secured in said head, combined and operating substantially as described.

409,647. CARPET-STRETCHER. HERBERT MCCORMACK, McLeansboro, Ill. Filed May 26, 1888. Serial No. 275,210. (No model.)

Claim.—1. In a carpet-stretcher, the combination of a block A, having a roughened surface and provided with a catch n on its opposite surface, a lever D, and a rack E, connected with the lever and movable by operating the lever backward across the catch when applied thereto, substantially as and for the purpose set forth.

2. In a carpet-stretcher, the combination of a block A, provided with a roughened surface and pointed toward one end, a beard n on the opposite surface of the block, beveled along the under side of its

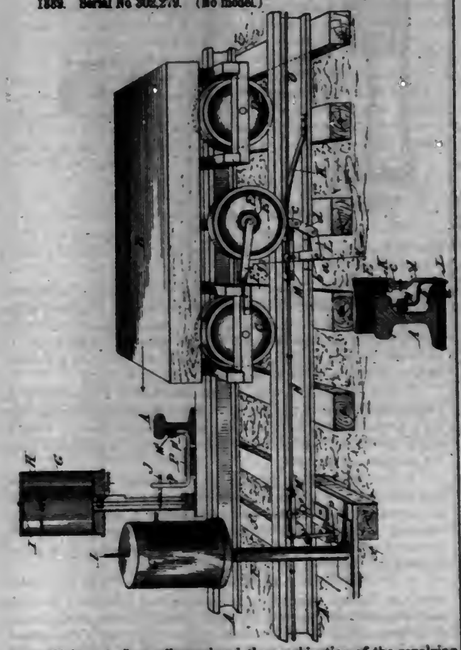
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inner edge and affording a catch, a rack E, and a lever D, substantially as described.

3. In a carpet-stretcher, the combination of a block A, having a beveled end *e*, and provided on one side with soft rubber B, having projections *r* on its exposed surface, a catch comprising a head *n* on the opposite side of the block, beveled on the under side of its inner edge, and a lever D, having a rack E pivotally connected with it, substantially as and for the purpose set forth.

409,648. RAILWAY-SIGNAL. RICHARD W. NORWOOD, Courtland, Ala., assignor of one-half to James C. Grant, same place. Filed Mar. 7, 1889. Serial No. 302,279. (No model.)



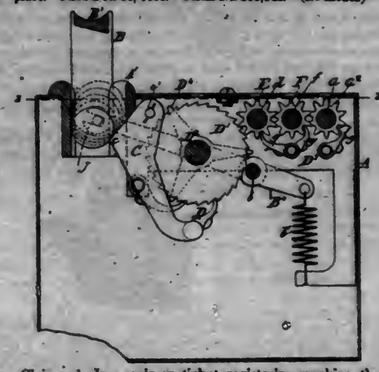
Claim.—1. In a railway-signal, the combination of the revolving cylinder and its spindle, having a slotted arm, the spring located alongside of the track and adapted to be depressed by the moving car, a bell-crank having a journal supported in a bearing beneath the rail, the link connecting the spring and the bell-crank, the horizontal rods to which the bell-crank is pivotally connected, and the crank connecting the horizontal rod with the slotted arm of the signal-cylinder, all substantially as described.

2. In a railway-signal, the combination of the signal-operating truck running outside of the track, the spring adapted to be depressed by said truck, the bell-crank, the link connecting the bell-crank and the spring, the horizontal rods to which the bell-crank is pivotally connected, the revolving signal and its spindle having a slotted arm, and the crank connecting the horizontal rods with said arms, substantially as described.

3. The combination of the signal-operating truck E, spring K, having lugs *c*, bell-crank L, having journal-pin *e*, the connecting-link *d* between the lugs *c* and the bell-crank L, the rods N and O, arranged alongside the track, the link connecting said rods, to which link one arm of the bell-crank is pivoted, connecting the revolving signal-cylinder H and its spindle I, having slotted arm J, and the crank P, connecting said arm with the link M', attached to rod M, substantially as described.

4. The combination of the spring K, located alongside the track and adapted to be acted upon by the moving car, the bell-crank L, connected movably to the rail, the connecting-link *d* between the bell crank and the spring, the horizontal rods alongside of the track connected by links, to one of which the bell-crank is pivotally attached, the signal-post F, carrying drum G, the cylinder H therein having painted sections, its spindle I, having arm J, and the crank P, connecting arm J with one of the links between the horizontal rods, all substantially as described.

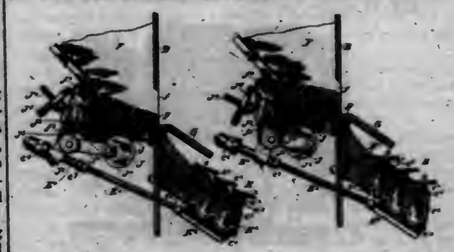
409,649. TICKET AND CASH REGISTERING MACHINE. ISAAC PROSSERMER, New York, N. Y., assignor of one-half to Carl Ballod, same place. Filed Dec. 10, 1888. Serial No. 293,146. (No model.)



Claim.—1. In a coin or ticket registering machine, the combination, with a box or case provided with a slotted opening upon one side thereof adapted to receive a coin or ticket, of a train of registering-wheels, a vertically-extending swinging piece mounted on a pivot near its upper end and outside of said slot, said swinging piece having a projection adapted to extend normally into the said slot, and with which a coin or ticket, when passing through the slot, will contact to move it out of said slot and cause said swinging piece to swing on its pivot, a pawl pivoted upon said swinging piece near the lower end of the latter, and a ratchet-wheel with which said pawl engages to cause the operation of the registering-wheels, said swinging piece being returned to its normal position within the slot after the passage of the coin or ticket, substantially as specified.

2. In a coin or ticket registering machine, the combination, with a box or case provided with a slot or opening upon one side adapted to receive a coin or ticket, of a train of registering-wheels, a movable piece extending into said slot or opening, and a push-piece extending to the exterior of the box or case for moving inwardly the coin or ticket to cause the latter to operate the movable piece to rotate the train of registering-wheels, substantially as specified.

409,650. FURNACE. WILLIAM R. ROWEY, Chicago, Ill. Filed Apr. 1, 1889. Serial No. 305,536. (No model.)



Claim.—1. The combination, with the rocking grate-bars and reciprocating bar connected therewith, of an oscillating part or arm having a uniform range of movement and a rod connecting the reciprocating bar with the said oscillating part or arm and having adjustable connection with the latter, whereby the bars may be given a variable range of oscillation, substantially as described.

2. The combination, with the rocking grate-bars and reciprocating bar E^2, connected therewith, of a power-vibrated bar J^2, having a uniform range of movement and provided with an aperture, and a connecting-rod attached to said reciprocating bar, passing through the aperture in the vibrating arm, and provided with adjustable shoulders or nuts on opposite sides of said arm J^2, substantially as described.

409,651. TREATING FUR OR WOOL FELT FOR HATS, &c. THOMAS SEALY, Newark, N. J., assignor to Amanda Sealy, same place. Filed Apr. 10, 1889. Serial No. 306,731. (No specimens.)

Claim.—1. The process herein described of treating fur or wool felt for the manufacture of hats, bonnets, &c., to wit: first dyeing the felt with the colors desired, then placing the felt upon a block or form having the desired figures or ornamentation raised or in relief thereon or depressed therein, then covering the felt with heated sand or other granulated materials, then subjecting the latter to pressure, and then finishing the surface of the felt by grinding, substantially as described, for the purposes set forth.

2. The process herein described of treating fur or wool felt for hats, bonnets, &c., to wit: dyeing the felt with the desired colors, then producing a nap on the surface of the felt by brushing or carding, then placing the felt upon a block or form having the desired figures or ornamentation raised or in relief thereon or depressed therein, then covering the felt with heated sand or other granulated material, then subjecting the latter to pressure, and then finishing the surface of the felt by grinding, substantially as described, for the purposes set forth.

409,652. SCOURER AND CLEANER. ROBERT SPERL, Philadelphia, assignor of two-thirds to Charles A. Spring and Henry T. Spring, Royer's Ford, Pa. Filed Apr. 24, 1889. Serial No. 308,412. (No model.)



Claim.—1. A scouring-block composed of woody fiber provided upon its wearing-surface with serrations or depressions, the divisions between the depressions being firm and unyielding, substantially as described.

2. A scouring-block composed of woody fiber, the ends of the fiber forming the wearing-surface and being provided with serrations or depressions, the divisions between the depressions being firm and unyielding, substantially as described.

3. A scouring-block provided upon its wearing-surface with serrations or depressions, the divisions between the depressions being firm and unyielding, substantially as described.

409,653. PROCESS OF OBTAINING ZIRCONIUM NITRATE. CARL A. VON WELSBACH, Vienna, Austria-Hungary. Filed Dec. 22, 1887. Serial No. 258,749. (No specimens.) Patented in England July 29, 1886, No. 9,806.

Claim.—The method, substantially as hereinbefore described, of producing zirconium nitrate in a form suitable for an incandescent body by first converting the zirconium into a sulphate, and, after treating with ammonia, dissolving the same in nitric acid, thereby obtaining a precipitate which, when digested with ammonia and dissolved in nitric acid and evaporated, produces zirconium nitrate.

409,654. CAR-SEAT. JOHN T. WENTWOOD, Wheeling, W. Va., assignor of one-third to Benjamin Fisher, same place. Filed May 7, 1889. Serial No. 309,917. (No model.)

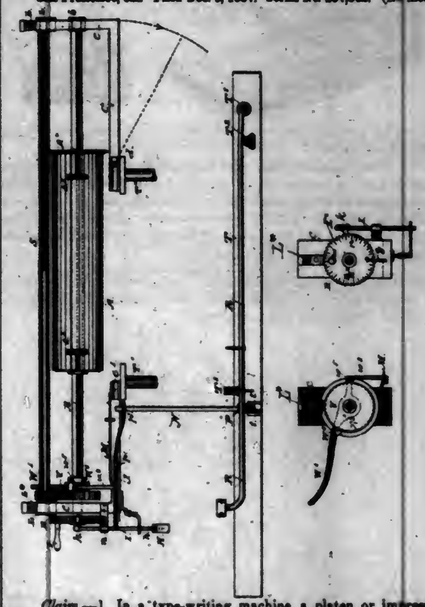


Claim.—1. A railway-car seat or chair consisting of standards secured to the floor, arms connected to the seat or chair, hangers connected to said standards and arms, and the bearing or supporting points formed of ball-and-socket joints, whereby the seat is adapted to always maintain a vertical position with relation to the car-floor, substantially as set forth.

2. A support for car-seats, chairs, &c., consisting of a series of hora-shaped standards having balls at their upper ends, the hangers provided with sockets at their ends, and curved arms secured to the under side of the seat and having balls at their lower ends, the balls of the standards and arms engaging the sockets in the ends of the hangers, substantially as set forth.

3. A car-seat consisting of arms pendent from the seat, standards secured to the floor, hangers having ball-and-socket-joint connections with said arms and standards, and elevated foot-rests on each side of the seat, substantially as set forth.

409,655. TYPE-WRITING MACHINE. FREDERIC R. GLADWIN, San Francisco, Cal. Filed Dec. 8, 1887. Serial No. 257,262. (No model.)



Claim.—1. In a type-writing machine, a platen or impression-roller, a rotatable shaft on which it is supported and capable of longitudinal movement, in combination with a frame C, bearing said shaft and having its rear end extended forward under said shaft, hinged to the main frame at right angles to said shaft, and extending a distance beyond said main frame, as and for the purpose set forth.

2. The combination, with a rotatable shaft B, a platen-roller A, longitudinally movable thereon and rotating therewith, said roller having a projecting disk A^x on one end, of a rotatable screw or worm S, engaging with the disk A^x, and a frame C, in which the shaft and screw are mounted, as set forth.

3. In a type-writing machine, the combination of a rotatable impression-roller having disk A^x, said roller being capable of longitudinal movement, as described, with a screw-shaft S, mounted in spring-bearings, a ratchet-wheel connected to the screw-shaft, dog W^3, operating upon the ratchet, finger-bar W', for operating the dog, and a spring for retracting the dog, as set forth.

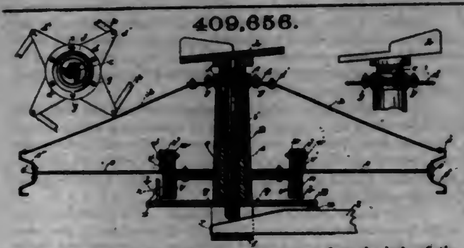
4. In a type-writing machine, the combination, with an impression-roller having longitudinal adjustment and movement upon its axis, of a shaft on which it is mounted, ratchet E, mounted on the end of the shaft, arm I, having downwardly-acting pawl, lever J, connected to arm I, vertical rod or arm N, connected to lever J, and transverse universal spacing-bar P, connected to arm N, and the key-levers for operating the spacing-bar, as set forth.

5. In a type-writing machine, the combination, with type fingers or arms carrying the letters or characters, of key levers or bars formed of spring metal fixed at the rear end in the frame and the bridge-bar T in front of the said point of attachment, substantially as described.

409,656. HOISTING APPARATUS. JAMES H. MONTGOMERY, Denver, Colo. Filed Nov. 4, 1887. Serial No. 254,205. (No model.)

Claim.—1. In a hoisting apparatus, the combination of a base or framing, a king or main post seated thereon, a winding-drum mounted





409,656.

on such post or spindle, a clutch member secured to the hub of the drum by a friction-coupling, a second clutch member arranged to receive motion from the prime motor and to mesh with the other clutch member, and a friction-brake and lever for regulating the unwinding of the winding-drum, substantially as set forth.

2. A winding drum or wheel consisting of a hub *c*, a clutch member attached thereto by a friction-coupling, radial arms or spokes secured to the hub and carrying a rim, a sectional rim, and inclined brace rods or arms, substantially as set forth.

3. In a winding or hoisting apparatus, the combination of a hollow king-post, a winding-drum journaled thereon, a spindle journaled therein, a connection from the spindle to the winding-drum, and means for communicating motion to the spindle, substantially as set forth.

4. In a hoisting apparatus, the combination of a hollow king-post, a winding-drum having a hub journaled upon such post, a clutch member frictionally united to such hub, a stem or shaft journaled within the hollow king-post and carrying a clutch member to which the power is first applied, and an automatic brake mechanism carried and supported by a flange on the hub of the winding-drum, substantially as set forth.

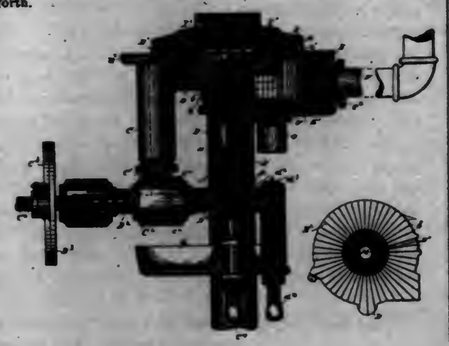
5. In a winding or hoisting mechanism, the combination of a framing, a hollow king-post seated thereon, a winding-drum having a hub mounted on such king-post, a clutch member united to such hub by a friction-coupling, a spindle journaled within the hollow king-post, a second clutch member situated on such spindle and arranged to receive motion from the prime motor, and a throw-bar having an inclined or wedge-shaped end arranged to be thrust beneath the spindle and lift it and disengage the two clutch members, substantially as set forth.

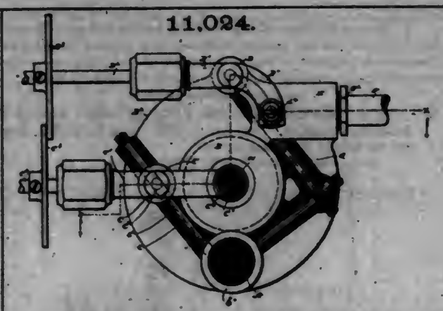
6. In a hoisting apparatus, the combination of a framing, a hollow king or main post seated thereon, a winding-drum having a hub mounted on such king-post and carrying a clutch member, a spindle journaled within the king-post, a second clutch member seated on such spindle, a throw-bar having an inclined or wedge-shaped end adapted to be thrust beneath the lower end of the spindle and lift it for the disengagement of the clutch members, and a lever for operating such throw-bar, substantially as set forth.

REISSUES.

11,024. VAPOR-BURNER. CHARLES H. CHILDS, Cleveland, Ohio. Filed May 20, 1889. Serial No. 312,667. Original No. 309,123, dated Mar. 5, 1889.

Claim.—1. The combination, with the commingling-chamber having a laterally-projecting flange and a series of radial grooves in the top surface of the flange, of a burner-cap having a series of notches or serrations in its under side, said burner-cap being adapted to rest on the flange of the said commingling-chamber, substantially as set forth.





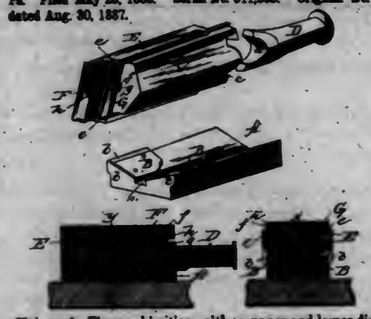
11,024.

2. The combination, with a commingling-chamber having a laterally-projecting flange with a series of grooves on the surface of the flange, substantially as indicated, of a burner-cap having a depending rim with a serrated lower edge, said serrations being made to match the grooves of the generator-flange, and wings connected with the burner-cap for engaging the inner wall of the primary commingling-chamber to hold the cap centrally, substantially as set forth.

3. The combination, with primary and secondary induction-tubes, of valve-arms having ducts and jet-orifices, hand-valves for opening and closing the ducts, and stops mounted on the respective valve-stems, said stops overlapping and abutting each other, with the valves in open or closed position, substantially as set forth.

4. In a vapor-burner, in combination, the secondary generator integral with a primary generator, an induction-tube connected with the secondary generator, such tube having an upright arm for illuminating purposes, and a depression or pocket of the secondary generator for receiving the condensed vapor from such induction-tube, and for holding the same until revaporized, substantially as set forth.

11,025. DIE FOR MAKING EYE-BARS. JOHN F. KINSLEY, Athens, Pa. Filed May 23, 1889. Serial No. 311,895. Original No. 308,014, dated Aug. 30, 1887.



Claim.—1. The combination, with an upper and lower die-section, one movable over the face of the other, of an upsetting projection or plunger detachably used in connection with the moving section, substantially as described.

2. The combination, with an upper and lower die-section, one movable over the face of the other, of forming projections detachably connected to one section, and an adjustable upsetting projection carried by the moving section, substantially as described.

3. The combination, with an upper and lower die-section, one movable over the face of the other, of detachably-connected forming projections on the face of one section, and a rammer detachably connected to the moving section, having an upsetting portion extending beyond the face of the die-section, substantially as described.

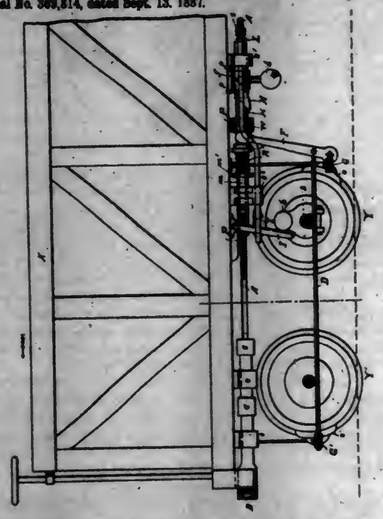
4. The combination, with an upper and lower die-section angular in cross-section, of forming projections on the face of the lower section and a rammer secured to the upper section having an upsetting portion projecting below the face of the die, substantially as described.

5. The combination, with a lower die-section triangular in cross-section, and an upper die-section, also triangular in section, and a platen arranged above it, of a frame provided with rollers and having dovetailed grooves upon its inner side to engage with similarly-formed tongues on the sides of the upper die-section and platen, substantially as and for the purpose set forth.

6. The combination, with a lower die-section and upper die-section and platen, having central grooves upon their inner sides, of the roller-frame and rollers having enlarged portions to fit in the grooves of the upper die-section and platen, substantially as and for the purpose set forth

7. The combination, with the lower die-section and upper die-section having at one end recesses, as shown, of a rammer having a bifurcated end adapted to engage therewith, whereby said upper die-section is operated, substantially as and for the purpose specified.

11,026. BUFFER-BRAKE FOR RAILWAY-CARS. HOWARD S. RICHARDS, Hatfield, Pa. Filed June 22, 1889. Serial No. 315,278. Original No. 369,814, dated Sept. 13, 1887.



Claim.—1. The combination, with the brake-beams and the buffer-rod provided with a buffer-spring, arranged substantially as described, of a lever connected with said brake-beams and operated by the pushing movement of said buffer-rod through the medium of said spring, substantially as set forth.

2. The combination, with the brake-beams and the buffer-rod provided with a buffer-spring arranged to serve also as a draw-spring, substantially as described, of a lever connected with said brake-beams and operated by the pushing movement of said buffer-rod through the medium of said spring and released by the draw upon the same, all substantially as set forth.

3. The combination, with the brake-beams and the buffer-rod provided with a spring, and a sleeve H, having elliptical head *f*, of a lever connected with said brake-beams and having a bifurcated end engaging said sleeve, substantially as described, and means for turning said sleeve, all arranged and adapted to operate substantially as and for the purpose set forth.

4. The combination, with the brake-beams, the buffer-rod with spring and sleeve H, substantially as described, and lever F, connecting said rod and brake-beams, of a mechanism for automatically turning said sleeve, consisting of a rod W, arranged parallel with said buffer-rod and provided with means, as cam N, engaging an arm *g*, for turning said sleeve, lever I, and axle-crank *b*, all substantially as and for the purpose set forth.

5. In a car, the combination, with a brake-rigging operated by a buffer-rod, and a mechanism for throwing said brake-rigging out of gear, all substantially as described, of a rod W, lever I, and axle-crank *b*, all arranged to automatically operate said mechanism, substantially as set forth.

6. In a car, the draw-bar provided with spring R, sleeve L, sleeve H, with elliptical head, shoulder *m*, and weighted sleeve *y*, with arm *g*, in combination with the brake-beams and connections, lever F, rod W, lever I, and axle-crank *b*, all arranged and adapted to operate substantially as set forth.

7. In a car, the combination, with the draw-bar A and spring R, of the brake-beams and connections, the lever F, and frame P, connected with hand-wheel *z*, all substantially as set forth.

NORRIS PETERS PHOTO-LITH. WASHINGTON, D.C.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE COE.

Decided May 27, 1889.

JOINDER OF INVENTIONS.

When one particular element of a machine is dependent upon and acts with the other elements thereof to produce a single result, it may be claimed in the same application with them without regard to the Office classification.

ON petition.

TURFING-MACHINES.

Application of Charles E. Coe filed December 13, 1888, No. 293,480.

Referred to the Assistant Commissioner, by order of the Commissioner, for hearing and decision.

Messrs. C. A. Snow & Co. for the applicant.

FISHER, *Assistant Commissioner:*

This is a petition from the action of the Primary Examiner requiring a division as to the subject-matter of claims 10, 11, and 12 of petitioner's application.

The invention in question is an implement for turfing fabrics, and all the claims, except the tenth, eleventh, and twelfth, which embrace the specific construction of the needle, cover the various parts of the implement in combination with such needle.

The examiner holds that this needle is an invention separate and distinct from the implement, and is therefore not capable of standing in the same application with it. In this the examiner is in error. The application covers but one improvement in turfing-machines instead of two. The needle is just as much a part of the implement as the crank which drives it or the open presser-foot with which it co-operates. It is not an invention independent of the devices with which it is used, but one actually depending upon and acting with them to produce a single result. This brings the case clearly within Rule 41, without regard to the consideration whether or not the needle might not finally be placed in a different class from the implement itself without the needle. To hold otherwise would sanction the dismemberment of the entire machine merely for the sake of making applicant conform to an arbitrary classification existing mainly for the convenience of the Patent Office.

Division should not be required in this case, and the prayer of the petition is granted.

DECISIONS OF THE U. S. COURTS.

U. S. Circuit Court—Southern District of New York.

WEBSTER LOOM COMPANY *v.* E. S. & N. D. HIGGINS.

Decided July 26, 1889.

1. MEASURE OF DAMAGES—EXCEPTIONS TO MASTER'S REPORT.

The master, having found that the complainant had failed to establish by trustworthy legal proof any basis for the computation of profits, stopped his investigations upon the ground that as the defendants had destroyed the complainant's standard there could be no standard until the complainant voluntarily created one.

2. REPORT RECOMMITTED.

Report recommitted to master, with instructions to estimate the amount of profits in accordance with the rule stated in the opinion of Judge Wallace in a previous case.

Mr. Edward N. Dickerson and *Mr. Edward Stephens* for the complainant.

Mr. Livingston Gifford and *Mr. Walter K. Griffin* for the defendants.

SHIPMAN, *J.:*

The questions in this case arise upon the complainant's exceptions to the master's report. The bill is founded upon the infringement by the defendants of Letters Patent No. 130,961, dated August 29, 1872, to William Webster, for an improvement in looms for weaving pile fabrics.

In the opinion of the Supreme Court in this case (*Loom Company* v. *Higgins*, 105 U. S., 580) the history of the art and the nature of the improvement are stated so far as they were developed in the record which was then before the Court. For the better understanding of the questions which came before the master it is desirable to recapitulate that portion of the opinion.

In weaving pile fabrics—such, for example, as Brussels carpets—the pile or loop is formed by inserting a wire alternately with the filling between the threads of the warp immediately under the woolen or worsted threads, and afterward withdrawing it from the web of cloth. At first these wires were inserted and withdrawn by hand by the aid of an assistant, which made the process a very slow one, so that only a few yards could be woven in a day on a single loom. The first great improvement was introduced about 1840-'50 by Erastus B. Bigelow, of Massachusetts, who invented a mechanical apparatus attached to the side of the loom, which automatically inserted the wires in the shed or opening between the warps and withdrew them from the web. * * * The attachment to pile-fabric looms became generally known as the "wire-movement," and by its aid 35 yards a day could be woven on a single loom without the aid of any assistant. It is seldom that such a complete revolution in one of the useful arts is made at a single jump.

Improvements were made on Bigelow's invention. Among others, William Weild, of England, in about 1855, made a decided improvement, which, after being subsequently perfected, enabled 30 or 40 yards a day to be woven on a single loom. But perfect efficiency

was not attained by Weild's motion, and its defects made it necessary to work the loom more slowly than the other operations required. Webster's improvement "resulted in giving to the loom the capacity of weaving 50 yards a day."

The circuit court, in entering its decree in favor of the complainant in accordance with the instructions of the Supreme Court, directed the master, among other things, to ascertain and state to the court the number of infringing carpet-looms used by the defendants, the number of yards of carpet which they had caused to be woven thereon since October 20, 1873, and the gains or profits which they had received from infringing the exclusive rights of the complainant.

No damages were claimed by the complainant. It was agreed that the defendants had used 61 infringing looms, upon which the master finds that they had woven 8,277,012¼ yards of carpet during the 8 years they were in use.

The complainant insisted that the testimony proved that by means of the infringement the 61 looms produced 4,145,872 yards of carpet over and above what could have been—

produced on a like number of looms fitted with any other wire motion open and free to be used, and that the value of the increased product to the defendants was 36¾ cents per yard, making a total net profit of $1,523,607.96. The 36¾ cents per yard was arrived at by subtracting the entire cost of manufacturing from the selling price.

The master does not find whether the net profit which the defendants made upon their manufactured goods was 36¾ cents per yard, but was of the opinion, as matter of law, that inasmuch as the wire motion related only to an improvement and increased product in the matter of weaving, which was, although the final process, but one of many processes involved in the art of manufacturing carpets from wool, the entire profit upon the increased production from the use of the wire motion was not the rule of profits, but that the true rule was the profit to the defendants in the matter of weaving, and that the proper inquiry was the difference in the cost of weaving the increased quantity of carpet upon the infringing looms and upon any looms free and open to use. He therefore reported that there had been a failure on the part of the complainant to establish a legal basis for a computation of profits.

The complainant selected the Bigelow loom as the standard of comparison by which the amount of increased production by the use of the Webster motion should be estimated. The defendants insisted that a number of wire motions were at the date of the infringement free and open to use, either of which produced results superior to those produced either by the Bigelow or the Webster motion, and consequently that they had made no profits for which they were accountable to the complainant.

The master found that the Johnson wire motion, which had been continuously used by the Roxbury Carpet Company, of Roxbury, Mass., since 1856, until 150 looms furnished with such motions were running at the time when the testimony was taken—

was capable of producing and actually did produce results so vastly superior to the Bigelow as to utterly destroy the latter as a basis of ascertaining the gain, profits, and advantages which were realized by the defendant by reason of the infringement.

He does not find the exact amount of its superiority in point of productiveness to the Bigelow device, or the relation which the Johnson motion bore in its capacity for assisting production to the Webster motion, because he was of opinion that the defendants having shown the superiority of the Johnson motion over the Bigelow—

the burden of furnishing the means for making a computation based upon the superiority of the infringed device over all others open and free to the public use was wholly upon the complainant, and he must do it by trustworthy legal proof. Should any of the factors necessary to ascertain the computation be destroyed by defendants, a new basis must be established by the proofs or the accounting fails.

The master found nothing in regard to the relative superiority or inferiority of any of the other devices in regard to which evidence was offered. Upon both the law and facts he found that the complainant had failed to establish by trustworthy legal proof any basis for the computation of profits.

It will thus be seen that, in addition to the number of infringing looms and the number of yards manufactured thereon, the master found upon the questions of fact only the superiority of the Johnson wire motion to the Bigelow motion

The complainant excepts to all the foregoing conclusions, both of law and fact, which the master reached.

Two questions were presented for his decision: First, did the defendants derive any advantage from using the complainant's invention over what they would have had "in using other means then open to the public and adequate to obtain an equally beneficial result?" and, second, if yea, what were the fruits or the profits which resulted from that advantage? The alleged advantage is a vastly-increased capacity to produce and actual increased production of finished goods.

As the standard of pre-existing success in weaving pile fabrics the complainant selected the Bigelow motion, and apparently from the history of the litigation upon this patent in New Jersey had a right to make such selection. The defendants designated divers motions as superior to the Webster, and, furthermore, offered proof to show that the alleged capacity of the Bigelow motion was too low. From these devices the master properly gave most attention to the Johnson, because, as he says, "there is no question as to its being open and free, and because the proofs seem more direct and reliable." The Roxbury company had had no interest in this infringement, the testimony was derived from the books, which were apparently kept in the ordinary course of business, without reference to this question, during the same years in which the infringing looms were used by the defendants, and the master justly thought that the proof seemed more direct than in regard to the other motions. After having found its superiority to the Bigelow he stopped his investigations, upon the ground that, as the defendants had destroyed the complainant's standard, there could be no standard until the complainant voluntarily created one.

Whether this is or is not a correct application of the doctrine of the burden of proof in other cases I shall not inquire, because it is not, in my opinion, correctly applied to the facts in this case. The question was as to the advantage which the defendants had from the use of the patented invention, and the plaintiff said the advantage is large by reason of its superiority to the acknowledged pre-existing standard. The defendants' testimony was a comparison of the Johnson with the Webster rather than with the Bigelow. It not merely attacked the correctness of the plaintiff's standard, but by testimony which purported to be exact, definite, and mathematically accurate set up a new standard and endeavored to establish the fact that the Roxbury motion gave larger results than the patented motion. The testimony on both sides has closed, and if the Roxbury testimony was credible and was believed by the master it was not merely negative, but, in connection with the criticisms which were made upon it by the complainant's counsel and the analysis which it received from them, it was capable of giving a positive answer to the first question. If the new standard is a true standard, it is not important who introduced it into the case. The master should have found whether any advantage was derived by the defendants from the use of the patented invention over what they would have had in using the Johnson motion.

The next question is one of law, and relates to the rule for the computation of profits in case an advantage is found, or, in other words, what were the fruits of the advantage. The complainant contends that the rule is the net profit which the defendant received per yard upon the increased amount of manufactured carpets. The master thinks that it is the difference, if any, between the cost of weaving the same number of yards upon any loom with or without a wire motion which were free to be used and the cost of weaving upon the infringing looms. This question is both an important and an interesting one; but for the purposes of this case I think that it is settled in this circuit by the decision of Judge Wallace upon the motion of the defendant to direct the master not to require an account of the cost of production and the selling price of said carpets. In the opinion denying the motion Judge Wallace said:

These profits arise because, by using the patented loom, the defendants have produced more yards of carpet than they could have produced by using such looms and appliances as it was open for them to use. Upon this theory, it is to be ascertained to what extent defendants' production has been increased by the use of the patented loom, and then the average profit per yard or the aggregate profit on the increased production that actually accrued to the defendants. * * * The complainant has the right to follow the profits through all the stages of production and all the departments of their business, because the ultimate profit made by the defendants is the measure of their accountability.

This decision was directly upon the proper rule of profits in this case after an argument of the question, and its conclusions are not now open for review on my part. If any advantage is found, the amount of profit should be estimated by the master in accordance with the rule stated in the opinion of the circuit judge.

The defendants offered testimony, which was admitted, respecting the comparative advantages in point of weaving capacity of divers English looms with wire motions, which were patented in England at different dates, but were never patented in this country.

The complainant and the defendants differ upon questions of law, whether those patented devices, or any of them, or which of them, were free and open to be used, and also differ as to the time when a comparison is permitted to be made, the complainant, for example, contending that a device must be free and open at the date of the complainant's patent, and the defendants contending that if it is free and open at or during the time of the infringement, then from and after the time when it becomes free it is a proper subject of comparison.

Inasmuch as the master has found nothing in regard to these devices and is not herein directed to make a new finding respecting them, a decision of these questions is unnecessary.

The report is recommitted to the master, to make a further report in conformity with the views herein expressed.

U. S. Circuit Court—Southern District of New York.

LEGGETT *v.* STANDARD OIL COMPANY.

Decided May 15, 1889.

LEGGETT—LINING BARRELS WITH GLUE.

Letters Patent issued March 10, 1874, to Edward W. Leggett, for an improved mode of lining the inside of oil-barrels with glue, the claims for which were a process "wherein the glutinous material, instead of being produced by reduction from a previously solid state, is permitted to attain only a certain liquid consistency, and is then applied to the package and permitted to harden thereon for the first time," and "a barrel, cask, &c., coated or sized by the material, and by the mode or process whereby it is absorbed into and strengthened by the wood fiber," are void for want of invention.

ON BILL for injunction.

Mr. Edwin M. Felt and *Mr. Edward Wetmore* for the plaintiff.

Mr. Charles C. Beaman and *Mr. Edwin N. Dickerson* for the defendant.

SHIPMAN, *J.*:

This is a bill in equity to restrain the defendant from the infringement of reissued Letters Patent, applied for January 24, 1874, issued March 10, 1874, to Edward W. Leggett, for an improved mode of lining the inside of oil-barrels with glue. The original patent was dated October 21, 1873. The ordinary dried glue of commerce is usually made from the trimmings of skins, which come from slaughter-houses and tanneries, as follows: The skins are soaked in water and lime to remove the fat and grease, and are then thoroughly washed and exposed to the air, or may be treated with a solution of acid to remove the lime, for the presence of lime after it has performed its original office is exceedingly injurious to the glue. The stock is then boiled by the application of steam heat, and when the solution has been effected by boiling, the liquid glue is run into molds and allowed to set and form a jelly. The jelly is cut into slices, which are spread upon nets and dried. The drying part of the process is simply to bring the glue to a condition in which it will keep permanently and can be transported and be a merchantable article; for either liquid glue or jelly glue, unless mixed with antiseptics, quickly and easily attracts impurities from the atmosphere, decomposes, and is spoiled. In order to make glue a commercial article for general use, it must be dried. This part of the process is the most expensive, because the jelly glue is easily influenced by atmospheric changes, and when thus affected will not dry, but melts and becomes worthless. Before 1874 hydrocarbon-oil barrels were prevented from leaking by pouring into them a sufficent quantity of hot glue, rolling the barrels, and thus permitting a lining or coating of glue to be poured upon the inside of the barrels. The liquid glue for this purpose was made in the ordinary way by melting dried glue and heating the solution. The invention consisted in applying directly to the barrels hot liquid glue, or "glue soup," before it had been subjected to the cooling or drying part of the ordinary process of manufacture.

The patentee describes his invention in the specification of the reissued patent as follows:

[It] consists in preparing, from any glutinous substance, glue soup, said soup being permitted to attain but a certain consistency, and then applied directly as a coating or sizing.

In carrying out my invention I proceed as follows: Take any of the materials from which glue may be made, and proceed in the usual or any suitable manner for the manufacture of glue, until the soup has attained a certain consistency.

This consistency must be considerably less than that which is required whereby semi-fluid, solid, or cake glue is to be produced, and while it is in this half-finished state, so to speak, it is applied directly to the inside of the barrel or cask, where, after due evaporation, it will be found that said cask or barrel is lined thoroughly and completely with the material, inasmuch as a pressure of steam generated by heat applied is sufficient to force

the thin glutinous fluid or soup well into the pores, fibers, and recesses of the wood, thus insuring a perfect lining.

I am aware that barrels, &c., have been lined or coated with glue of commerce, when said glue has been subjected to a process of reduction by dilution from its original consistency to a sufficiently liquid state; but I am not aware of any process wherein the glutinous material has been permitted to attain only its proper consistency for the purpose specified, and then applied directly, thus saving the time, labor, and expense heretofore employed by continuing the manufacture of the gelatinous soup until it has attained a glutinous condition, thus necessitating a reduction by diluting and reheating before it is fit for application, as set forth in this specification, traveling over, as it were, the same ground backward and forward two or three times, whereas, by my process, this trouble is entirely dispensed with, by operating as within described.

This invention has nothing to do with the ordinary glue-lined barrel, but relates to a new and inexpensive mode or process of making barrels, casks, &c., better adapted to the purpose designed, by coating or sizing, as set forth, than by the ordinary means.

Heretofore glue has been taken in its completed state as an article of manufacture, reheated, diluted, and then applied; but such a process necessarily carries with it all the expense of preparing the glue at first as an article of trade or commerce.

My process contemplates taking the said soup when at a proper consistency and applying it to the inside of the package, permitting it to harden for the first time upon that surface.

The distinguishing feature of this improvement may be found, on examination, to be the superior integrity of the lining by the use of soup glue. By its peculiar character it is more freely absorbed by the wood, penetrating into fiber deeper than by the ordinary mode. Hence the sizing or coating is not only upon the surface, but penetrates into the wood, thereby presenting a thicker covering to the action of the oil, and this sizing is not liable to be broken off or cracked in handling the cask, as part of the coating is absorbed into the fiber and cells of the wood, which gives additional strength to it.

The claims are as follows:

1. The within-described process of coating or lining the inside of barrels, casks, &c., wherein the glutinous material, instead of being produced by reduction from a previously solid state, is permitted to attain only a certain liquid consistency, and is then applied to the package and permitted to harden thereon for the first time, substantially as herein set forth and described.

2. A barrel, cask, &c., coated or sized by the material, and by the mode or process, whereby it is absorbed into and strengthened by the wood fiber, substantially as herein described.

The patented process has been very extensively used by the defendant. Such use commenced after the date of the patent.

The question which first and most strongly presents itself is that of the patentability of the described and patented process. Upon this question the plaintiff's counsel insist that a solution of glue formed in the course of the original boiling and a solution of glue formed by dissolving the dried glue are not identical; that the latter is subject to changes only partially understood, but positive and efficient, whereby the adhesive property of the gelatine is diminished; that, although this was theoretically known at the date of the invention, and although jelly glue was, at the same date, so treated as to last without decomposition, the use of glue fresh from the tubs was unknown; that dried glue dissolved was the only thing that was used, and glue fresh from the boiling-pot was not a known substitute for dissolved dried glue in the lining of oil-barrels; that no one then knew or believed that it could be used for that purpose, but that Leggett made the practical discovery that glue in the boiling state, and before it was dried, made a more efficient and economical article for the uses of the oil-refiner than remelted dried glue, and that thus a new process was created, by which a large and expensive part of the old process was avoided. It must be regarded as proved that before the date of the invention practical experts believed that remelted dried glue was inferior in adhesiveness and binding qualities to hot and undried glue. Thus it was stated in *Wagner's Yearly Report of Chemical Technology* for 1869 (vol. 15, p. 637) that the adhesive and binding power of glue is greatly diminished in the process of drying in the air. Messrs. Wiedenhold and Plumer, two of the very intelligent witnesses on the part of the plaintiff, knew before the date of the invention that glue hot from the tubs was in the best condition and would penetrate better. It is not important to ascertain whether this inferiority is inevitable in the case of the best dried glue which had been only once remelted, because the frequent liability of glue to suffer deterioration in the process of drying, from one cause or another, is undeniable, and therefore the opinion of the experts was practically correct. While this inferiority was theoretically known, it is also true that glue hot from the tubs was not used, and that its advantages were not introduced to the public, except in the isolated instances to which reference will hereafter be made. The glue jelly manufactured by Stalling, near Dresden, in and after 1869, was a very different thing from the liquid article which is the subject of this patent. Stalling's article was a glue jelly capable of transportation, and was "extracted in a peculiar manner, entirely by treatment of bones with cold water under steam-pressure." The plaintiff, from the fact that inasmuch as the patentee was the first person who showed the public either to use or how to use the liquid article for the inside of barrels, by which a better result and a large saving of expense were effected; draws the conclusion that he is entitled to the benefits which the statutes confer upon first inventors. This conclusion would be correct if Leggett gave to the public the result of invention and did not merely give the commercial suggestions which would naturally occur to a person acquainted with the manufacture of glue. The manufacture of dried glue was a necessity, because the mechanic who has only the ordinary business of his calling must buy, rather than make, his glue. His business requirements do not compel him to be a daily consumer of a large quantity of the article, and it must therefore be purchased in a dry state. The use of hot glue as it flowed into the tubs was not practiced, because there was no occasion for such use; but when the time came that a manufacturer needed daily a very large supply of glue the suggestion of a change in the mode in which he should procure and use glue was made; but the novelty consisted in the suggestion that he should be his own manufacturer. There was no novelty in the idea of the superiority or economy of hot liquid glue, and so much of the claim of the patentee to the character of an inventor as rests upon the discovery of the superior integrity of the lining by the use of "soup glue" is fallacious. Liquid glue had never been manufactured before for daily use simply because nobody needed a large daily supply, and the idea that the patentee exercised the genius of an inventor in first practically introducing the article to the public is without adequate foundation, for it was a business rather than a mechanical suggestion. The thought that the defendant (which was a large daily consumer) could profitably be its own manufacturer of glue came both to the patentee and to Mr. Plumer, who also subsequently communicated the same idea to the defendant; but neither is entitled, on that account, to be considered an inventor, but each is rather to be regarded as having prompt ability to seize upon correct methods of conducting a large business. It is also true that there was no invention in the application of liquid glue taken freshly from the tubs to the inside of barrels. The use of such glue came naturally, and in the ordinary line of thought, to Wiedenhold when the occasion came to him to line barrels. It came also to Baumann, before the date of Leggett's invention, when he was called upon to line neat's-foot-oil barrels in Peter Cooper's glue-factory. Such use was undoubtedly occasionally practiced in that factory in other instances about the same time. The idea was the natural one which would readily occur to the intelligent mechanic in the factory. It is not strange that it did not occur to oil-refiners, for they were not glue-makers. It is not strange that it was not made public, because the occasion had not arrived for its development. It would be useless to the oil-refiner who used but a few barrels daily, for he could not afford to manufacture glue; but when the occasion arose, the proper method of doing the business naturally presented itself to the mind of a person familiar with glue-manufacture.

I do not consider whether an anticipation of Leggett's improvement is clearly proved by the facts which took place in Cooper's factory; but I place the decision upon the lack of patentable invention in the thing patented.

The bill should be dismissed.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

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The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

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Patents	483	No. 409,657 to No. 410,139, inclusive.
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Trade-Marks	10	No. 16,959 to No. 16,968, inclusive.
Labels	5	No. 6,002 to No. 6,006, inclusive.
Reissues	1	No. 11,027.
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England	17	1	Total to citizens of foreign countries	41	1
France	5	.....			

DESIGNS.

19,282 and 19,283.—DISH-COVER.—*Thomas B. Atterbury*, Pittsburg, Pa. Applications filed July 29, 1889. Serial Nos. 319,068 and 319,089. Term of patents 7 years.

19,284 and 19,285.—SPOON, FORK, &c.—*George H. Balch*, Newburyport, Mass.; assignor to *The Towle Manufacturing Company*, same place. Applications filed July 15, 1889. Serial Nos. 317,644 and 317,645. Term of patents 7 years.

19,286.—BURIAL-CASE.—*Alfred W. Glass*, Detroit, Mich. Application filed July 24, 1889. Serial No. 318,557. Term of patent 3½ years.

19,287.—HANDLE FOR SPOONS, &c.—*Louis R. Horton*, Providence, R. I., assignor to *Joseph B. Knowles* and *Stephen M. Knowles*, both of same place. Application filed August 5, 1889. Serial No. 319,838. Term of patent 7 years.

19,288.—HAMES.—*Newton Kelsay*, Evansville, Ind. Application filed June 19, 1889. Serial No. 314,866. Term patent 3½ years.

19,289.—BACE-PLATE FOR SUSPENDERS.—*Thomas O. Potter*, Boston, Mass. Application filed April 15, 1889. Serial No. 307,353. Term of patent 7 years.

19,290 and 19,291.—STRAP.—*Edwin B. Stimpson*, Brooklyn, N. Y. Applications filed August 5, 1889. Serial Nos. 319,836 and 319,837. Term of patents 7 years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,959.—LINIMENT FOR MAN AND BEAST.—*Julia A. Achard*, Lodi, Cal. Application filed June 8, 1889. Used since December 1, 1888.
"The fac-simile signature 'J A ACHARD.'"

16,960.—HOG AND POULTRY CURE.—*The Wm. Hall Medicine Co.*, St. Louis, Mo. Application filed July 5, 1889. Used since November, 1877.
"The name 'WM HALL.'"

16,961.—GRAPE-VINES, GRAPE-VINE SLIPS, AND GRAPES.—*Stephen Hoyt's Sons*, New Canaan, Conn. Application filed July 15, 1889. Used since January 1, 1869.
"The words 'GREEN MOUNTAIN.'"

16,962.—ROASTED COFFEE.—*The Indiana Coffee Company*, Indianapolis, Ind. Application filed July 22, 1889. Used since April 12, 1889.
"The word 'BANNER' and the representation, in any colors desired, of a mounted banner bearing the arms of the State of Indiana."

16,963.—UNDERWEAR.—*J. Meyer & Co.*, New York, N. Y. Application filed July 26, 1889. Used since June 1, 1889.
"The letters 'P R.'"

16,964.—PERFUMES.—*Solon Palmer*, New York, N. Y. Application filed March 11, 1889. Used since June 1, 1887.
"The words 'MAY BLOOM.'"

16,965.—OIL LAMPS OR STOVES AND BURNERS THEREFOR.—*Roughsedge Wallwork* and *Arthur Collings Wells*, Manchester and London, England. Application filed July 1, 1889. Used since January, 1888.
"The words 'WELLS LIGHT.'"

16,966.—DRY YEAST IN POWDERED FORM.—*Charm Manufacturing Company*, St. Louis, Mo. Application filed June 28, 1889. Used since April 16, 1889.
"The word 'YEASTARIDUS.'"

16,967.—CORN CURE.—*Albert B. Paulus & Co.*, Pittsfield, Mass. Application filed July 15, 1889. Used since July 1, 1889.
"The registrant's monogram surmounted by the words 'THIS DOES SETTLE 'EM.'"

16,968.—CARTS.—*D. M. Sechler Carriage Company*, Moline, Ill. Application filed June 28, 1889. Used since March, 1886.
"The arbitrary symbol 'B-B.'"

LABELS.

6,002.—Title: "AGUE BUSTERS." (For medicines.)—*The Bolling Drug Company*, Little Rock, Ark. Application filed July 2, 1889. (Trade-Mark Registered.)

6,003.—Title: "THE HATCH ROCHESTER LEATHER COUNTER."—*James L. Hatch*, Rochester, N. Y. Application filed August 3, 1889.

6,004.—Title: "KINCAID'S CORN CURE."—*S. J. Kincaid*, Clay Center, Nebr. Application filed July 2, 1889.

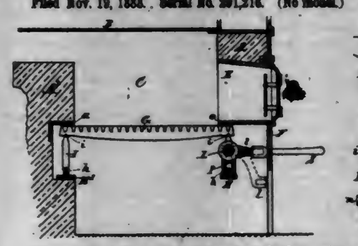
6,005.—Title: "PIERCE'S SELECTED CALCINED PLASTER."—*H. H. Pierce*, Toledo, Ohio. Application filed August 5, 1889.

6,006.—Title: "HOG CHOLERA CURED." (For a medical compound.) *George Thomas* and *F. A. Stahl*, Effingham, Ill. Application filed July 1, 1889.

PATENTS

GRANTED AUGUST 27, 1889.

409,657. FURNACE-GRATE. GEORGE L. ALLEN, Worcester, Mass. Filed Nov. 19, 1888. Serial No. 291,216. (No model.)



Claim.—1. A furnace-grate composed of a series of grate-bars, each formed of two longitudinal webs with integral cross-pieces that project beyond the edges thereof said grate-bars having recesses in the under side at their respective ends, a series of stilt-bars having bird-mouth notches at their bottom ends and wedge-shaped top ends that match into said recesses and independently support the respective ends of the grate-bars, the carrier-girts having a wedge-shaped rib on which said stilt-bars rest, and a rocker-shaft that engages with the stilt-bars at one end of the grate by intermatching lugs and recesses, said shaft being provided with means for effecting rocking motion thereof, all substantially as set forth.

2. The combination, substantially as described, of the grate-bars, the carrier-girts, tiltable stilt-bars that independently sustain the respective ends of the grate-bars, the forward stilt-bars being furnished with laterally-projecting lugs alternately disposed above and below the central axis, the operator-shaft provided with a series of openings through which said forward stilt-bars extend, and having side grooves that engage said projecting lugs, and a tongue or socket on said shaft for the attachment of a shaker-handle, for the purpose set forth.

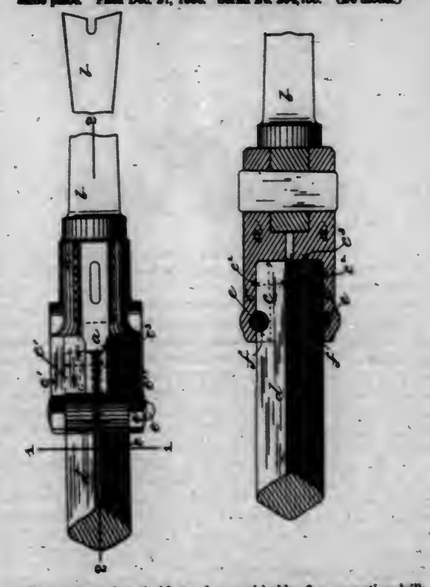
409,658. ATTACHMENT FOR DUST-COLLECTORS. ISAAC E. BAKER, Red Wing, assignor of one-half to Levi S. Hogeboom, Minneapolis, Minn. Filed Mar. 18, 1889. Serial No. 303,684. (No model.)



Claim.—1. The described attachment for dust-collectors, consisting of the vertical annular plate or cylinder B', horizontal covering-plate b', vertical annular exterior wall or plate b^2, horizontal circular top plate b^3, and vertical annular inner wall or plate b^4, such attachment having a tangential exit opening or pipe, as described.

2. In a dust-collector for flouring-mills, the combination, with the separating-chamber having central air-escape opening in the top plate thereof, of the described withdrawing attachment, consisting essentially, of walls forming a central vertical air-escape passage P, plates, as set forth, inclosing the annular overhanging, intercepting, and withdrawing passage p', and walls and plates, as specified, inclosing the annular chamber or passage p^3, overlying the vertical passage p', and provided with tangential exit-opening or passage p^5 for connection by any suitable passage or conduit with the chamber of the purifier-fan, substantially as described.

409,659. STOCK OR TOOL-HOLDER FOR DIRECT-ACTING ENGINES. GUSTAV A. BAKER, St. Louis, Mo., assignor to Pierre Chouteau, same place. Filed Dec. 27, 1886. Serial No. 204,755. (No model.)



Claim.—1. A detachable stock or tool-holder for connecting drills and like tools with piston-rods, said stock having at one end a tool-socket and at the other a longitudinally-split spring rod-socket, and devices for clamping the same to the rod, substantially as described, whereby the perforation of the rod and stock at the point of greatest jar is avoided.

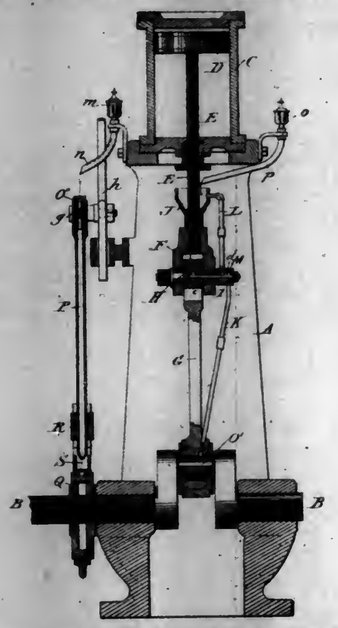
2. A detachable stock or tool-holder for connecting drills and like tools with piston-rods, said stock having at one end a longitudinally-split spring rod-socket and at the other end a tool-socket, and provided with a transverse slot extending into the upper end of the tool-socket, substantially as and for the purposes described.

3. A stock or tool-holder for connecting drills and like tools with piston-rods, said stock having at one end a longitudinally-split spring-socket of polygonal form for the reception of the end of the piston-rod, clamping-bolts for causing the spring-socket to grip the piston-rod, and a tool-socket at the other end provided with a transverse key-slot and key, substantially as and for the purposes described.

4. A stock or tool-holder for connecting drills and like tools with piston-rods, said stock having at one end a longitudinally-split spring-socket of polygonal form for the reception of the end of a correspondingly-shaped piston-rod having notches in its sides, clamping-bolts passing through the opposite jaws of the spring-socket for causing

them to grip the piston-rod, said bolts engaging the notches in the piston-rod, a tool-socket at the other end provided with a transverse key-slot, and a second key-slot extending into the upper end of the tool-socket at right angles to the other key-slot, substantially as and for the purposes described.

409,660. LUBRICATOR. ROBERT M. BECK, Chambersburg, Pa. Filed Nov. 30, 1888. Serial No. 292,173. (No model.)



Claim.—1. In a lubricator for upright engines, in combination with the piston-rod, the cross-head, the connecting-rod, and the main crank-shaft of the engine, an oil-reservoir on the piston-rod, an attachment fastened to the cross-head pin having suitable ports and passages therein communicating with passage in said pin, and a pipe leading from the reservoir to the attachment, and also the pipe leading from the attachment to the lower end of the connecting-rod, substantially as and for the purpose described.

2. The combination, with the piston-rod, the cross-head, and connecting-rod, of an oil-reservoir on the piston-rod, cross-head pin having suitable passages therein, an attachment thereto having likewise suitable passages, a pipe extending from the reservoir to said attachment, a movable collar on said attachment, and a pipe extending from said collar to the lower end of the connecting-rod, all arranged substantially as and for the purpose described.

3. In combination with the cross-head pin having suitable passages therein, an attachment having a horizontal passage and two vertical passages connecting therewith, one of which receives oil from a stationary feeder and the other communicates with an annular groove on the attachment, and a loose collar surrounding the grooved portion of said attachment and having a pipe whereby oil is conveyed from the attachment, substantially as described.

4. In combination with a moving cross-head, a connecting-rod, a cross-head pin having suitable oil-passages therein, the attachment for said pin having suitable internal passages, an oil-supply pipe for said attachment, a movable collar surrounding the same, and the pipe attached to the collar for conveying oil from the attachment to lubricate the bearing at the lower end of the connecting-rod, substantially as described.

5. In a lubricator for upright engines, the combination, with the piston-rod having an oil-reservoir thereon, of a stationary oil-feeder for said reservoir attached to the main frame, the cross-head, connecting-rod, cross-head pin having suitable passages therein, an attachment fastened to said pin having likewise suitable passages, a pipe passing from the oil-reservoir to said attachment, a movable collar on the attachment, and a pipe attached thereto and extending to the lower end of the connecting-rod, substantially as described.

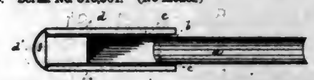
6. In combination with the cross-head pin H, having horizontal passage *e* and side passage *f*, the attachment I, screwed into the end of the cross-head pin, having horizontal passage *a* and vertical passages *b c*, said passage *b* communicating with an oil-supply and said passage *c* communicating with an annular groove on the attachment, a loose collar surrounding the grooved portion of said attachment, and a pipe fastened to the loose collar and extending to the lower end of the connecting-rod, substantially as described.

7. The combination, with the piston-rod, cross-head, cross-head pin, connecting-rod, and main engine-shaft, of the reservoir J on the piston-rod, the attachment I for the cross-head pin, the pipe L between the reservoir and said attachment, and loose collar M on said attachment, and the pipe K, fastened to the attachment and to the lower end of the connecting-rod, all substantially as described.

8. The combination, with the moving cross-head, the connecting-rod, and the cross-head pin having suitable passages, of the piston-rod, an oil-reservoir thereon, the attachment I for the cross-head pin having horizontal passage *a*, side passages *b c*, and annular groove *d*, the pipe L, running from the reservoir to the passage *b*, the collar M, surrounding the grooved portion of the attachment I, and the pipe K, extending from said collar to the lower end of the connecting-rod, substantially as described.

9. In a lubricator for upright engines, the combination, with the moving cross-head, its pin having the horizontal passage and a vertical passage, and the connecting-rod, of an attachment to said pin, said attachment having a horizontal passage and vertical passages, and a pipe running to said attachment from an oil-feeding device and another pipe from said attachment to the lower end of the connecting-rod, whereby the upper and lower bearings of said rod may be thoroughly lubricated, substantially as described.

409,661. BOX. MAGNUS BENAS, New York, N. Y. Filed July 3, 1889. Serial No. 316,331. (No model.)



Claim.—1. The combination of a U-shaped cover with a pair of plates *c*, secured to its inner faces, and with a drawer *a*, pivoted to said plates, substantially as specified.

2. The combination of a U-shaped cover with a strip *f*, secured to its back, and with a pair of plates *c*, secured to the inner faces of the cover, and with a drawer *a*, pivoted to said plates, substantially as specified.

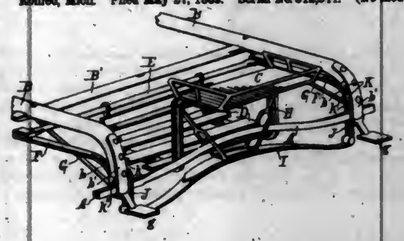
409,662. EXTENSION-TABLE. WILLIAM BLANKNER, Columbus, Ohio. Filed Jan. 5, 1889. Serial No. 295,532. (No model.)



Claim.—1. In an extension-table, the combination, with the frame, its arms *b* and *d*, stationary top portions *c*, and rolling top portions *e*, connected therewith, of the bars *f*, having blocks *g*, on which arms *d* and *b* are adapted to slide, as described, rods *i*, loosely supported against arms *b*, cross-rods *k*, having rollers *m* thereon, brace-rods *n*, connecting rods *k* and bars *f*, blocks *q q*, and connecting central transverse plate *r*, substantially as and for the purpose specified.

2. In an extension-table, the combination, with the frame having legs *a*, and dogs *s*, pivoted to the latter, of the rod *t*, loosely supported against said leg or frame and having its lower ends pivotally connected with said dogs, as described, substantially as and for the purpose set forth.

409,663. ROAD-CART. GEORGE W. BRAND and LORING M. SMITH, Romeo, Mich. Filed May 27, 1889. Serial No. 312,311. (No model.)



Claim.—1. In a road-cart, the combination, with the shafts and a semi-elliptic spring located beneath the axle and supporting the crate or body, of loops located on the ends of said spring, and one or more hooks located on the rear end of each shaft and adapted to engage said loops, the construction being such that the spring, and consequently the crate or body, may be adjusted to a higher or lower level, as desired, substantially as described.

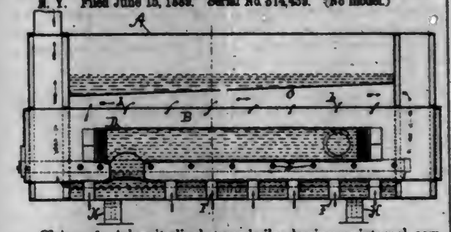
2. In a road-cart, the combination, with the shafts, a semi-elliptic spring located beneath the axle, and uprights engaged to said spring and supporting the crate or body, of a loop engaged to the ends of said spring and embracing the axle, and a series of hooks located at the rear ends of the shafts and adapted for engagement with the loops, substantially as described.

3. In a road-cart, the combination, with the shafts, of the plate K, attached to the inner face of the shaft and provided with hooks *k*, said plate passed beneath the ends of the shafts *k'* and up along the opposite sides at *k*, substantially as described.

4. In a road-cart, the combination, with the shafts and the crate or body, of springs fastened to the under side of the shafts, said springs at their heels constituting the forward shaft-irons for stiffening and strengthening the shafts and at their forward ends secured to and supporting the forward end of the crate or body, substantially as described.

5. In a road-cart, the combination, with the shafts and the crate or body, of springs located beneath the shafts and fastened thereto, said springs at their forward ends engaged with and supporting the forward end of the crate or body and at their rear ends constituting the forward shaft-irons, and with their extreme ends passed through the brace-rods and constituting a part of the clips by which the shafts are engaged with the axle.

409,664. STEAM-GENERATOR. WALTER M. BROWN, Albany, N. Y. Filed June 15, 1889. Serial No. 314,439. (No model.)



Claim.—1. A longitudinal steam-boiler having an internal combustion-chamber running practically the whole length of the boiler and having passage-ways leading from the outside of said boiler to the interior of the internal combustion-chamber and along its length, in combination with burners for the combustion of gas or oil arranged outside of said boiler and along its length, said burner being introduced through said passage-ways leading into the interior of said combustion-chamber in order that the gas or oil flame may be projected into said combustion-chamber and along its length, substantially as described.

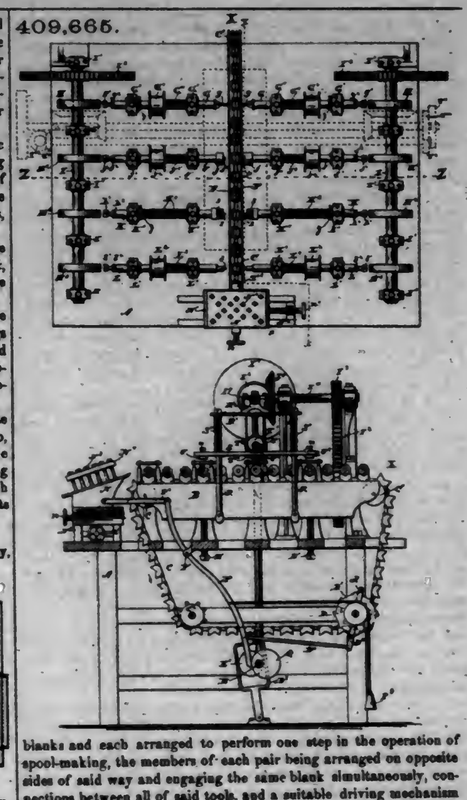
2. A longitudinal steam-boiler having an internal combustion-chamber running practically the length of the boiler and having passage-ways leading from the outside of said boiler to the interior of the internal combustion-chamber and along its length, and having other passage-ways leading from the interior of the combustion-chamber along its length through the steam and water space to the outside of said steam and water space that the products of combustion may escape, in combination with burners for the combustion of gas or oil arranged outside of said boiler and along its length, said burners being introduced through said passage-ways leading into the interior of said combustion-chamber, in order that the gas or oil flame may be projected into said combustion-chamber and along its length, substantially as described.

3. A longitudinal steam-boiler having an internal combustion-chamber running practically the whole length of the boiler and having passage-ways leading from the outside of said boiler to the interior of the internal combustion-chamber and along its length, in combination with burners for the combustion of gas or oil arranged outside of said boiler and along its length, said burners being in proximity to said passage-ways, in order that the gas or oil flame may be projected through said passage-ways into said combustion-chamber and along its length, substantially as described.

409,665. SPOOL-MACHINE. EMERSON P. BROWNELL, Beebe Plain, Quebec, Canada. Filed Mar. 17, 1888. Serial No. 267,521. (No model.)

Claim.—1. In a spool-machine, the combination, with a straight-way and a continuous carrier moving intermittingly thereon, having pockets in which the blanks are contained during the operations, of a series of co-operating pairs of tools operating successively upon the

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blanks and each arranged to perform one step in the operation of spool-making, the members of each pair being arranged on opposite sides of said way and engaging the same blank simultaneously, connections between all of said tools, and a suitable driving mechanism causing them to retreat and advance simultaneously and between the carrier and driving mechanism for causing the feed while the tools are separated, substantially as described.

2. In a spool-machine, the combination, with the straight way or guide, a continuous carrier moving intermittingly thereon, having pockets in which the blanks are contained during the operations, of a series of co-operating pairs of tools operating successively upon the blanks and each arranged to perform one step in the operation of spool-making, the members of each pair being arranged on opposite sides of the way and operating simultaneously upon the same blank, devices—such as cams—for causing the simultaneous approach and permitting the separation of the tools, a presser for holding the blanks rigidly upon the carrier while being operated upon by the series of pairs of tools, and connections between the carrier and driving mechanism, the tool-operating devices, and the presser, whereby the blanks will be fed only while the tools are retracted, substantially as described.

3. The combination, with the straight way or guide and a continuous blank-carrier having pockets in which the blanks are contained during the operations, of a series of co-operating pairs of tools, each pair constructed to perform a single step in the operation of making spools and the members of each pair arranged on opposite sides of the way to operate simultaneously on the ends of the blanks between them, devices—such as cams—for causing the simultaneous approach of the members of all the pairs and permitting their operation, a presser for holding all the blanks being operated on by said pairs of tools stationary upon the carrier, intermittingly-operating mechanism for moving the carrier forward, and connections between the last-mentioned devices, the presser, and the tool-projecting mechanism, whereby the carrier will be moved forward while the tools are retracted and the presser removed, substantially as described.

4. In a spool-machine, the combination, with the blank-carrier, of the series of pairs of co-operating tools for successively operating upon the ends of the blanks, the members of each pair being located on opposite sides of the carrier, said series comprising a pair of boring-bits, a pair of reciprocating circumferential cutting-dies for shaping the ends of the blanks circumferentially, and a pair of blank-holding centers, devices—such as cams—for causing the simultaneous approach

and permitting the separation of the tools, intermittingly-operating mechanism for feeding the carrier forward past the tools in the order named and while they are separated, a presser operating upon the blanks located between the boring-bits, and cutting-dies for holding the blanks stationary while being acted upon, and connections between the carrier-operating mechanism, the presser, and the tool-projecting devices, whereby the presser will be operated and the tools caused to approach and operate upon the blanks between them while the carrier is stationary and the presser in engagement with the blanks, substantially as described.

5. In a spool-machine, the combination of the straight way or guide, the continuous flexible carrier moving thereon, the series of pairs of co-operating tools for operating upon the ends of the blanks, the members of each pair being located on opposite sides of the carrier, said series comprising a pair of boring-bits, a pair of cutting and circumferential embossing-dies for shaping the ends of the blank circumferentially and embossing it, and a pair of blank-holding centers having a centering-pin and suitable characters in relief for entering the blank and rotating it, devices—such as cams—for causing the approach and permitting the separation of the tools, and intermittingly-operating mechanism for feeding the carrier forward past the tools in the order named, substantially as described.

6. In a spool-machine, the combination of the straight guide or way, the continuous flexible blank-carrier moving therein, the series co-operating tools for operating upon the ends of the blanks on the carrier, the members of each pair being located on opposite sides of the carrier, said series comprising a pair of blank boring-bits, a pair of circumferential cutting-dies for shaping the ends of the spool circumferentially, and a pair of blank-holding centers, devices—such as cams—for causing the approach and permitting the separation of the tools, a presser operating upon the blank located between the boring-bits and cutting-dies, a carriage supporting a turning-tool and movable toward and from the blank held between the blank-holding centers, and a connection between the various parts whereby the members of the pairs of tools are caused to approach to operate upon the blanks on the carrier between them, the presser holds its blank, and the turning-tool is brought forward to operate upon the blank between the centers while the carrier is stationary, and all said tools are in retracted position while the carrier moves forward, substantially as described.

7. The combination of the straight way or guide, the continuous blank-carrier moving thereon, the series of pairs of co-operating tools for operating upon the ends of the blanks, the members of each pair being located on opposite sides of the carrier, said series comprising a pair of boring-bits, a pair of blank facing-tools, a pair of circumferential cutting and embossing dies, and a pair of blank-holding centers, connections for rotating the bits, facing-tools, and holding-centers, devices—such as cams—for causing the approach and permitting the separation of the tools, intermittingly-operating mechanism for feeding the carrier forward past the tools in the order named, a carriage carrying a turning-tool, a presser operating upon the blanks located between the bits, the facing-tools, and the cutting-dies, and connections between the parts whereby when the carrier is stationary the presser will hold the blanks, the tools of the series will be caused to approach and operate upon the blanks between them, the turning-tool moved forward to operate on the blank between the centers, and all said parts will return to normal position, when the carrier will move forward and present a new blank to be operated upon by each of the tools, substantially as described.

8. In a spool-machine, the combination, with a blank-carrier, of a series of tools operating upon blanks carried by said carrier in succession, comprising a pair of boring-bits entering the blanks from opposite ends, a pair of cutting-dies, arranged to shape the spool ends a pair of turning-centers, two shafts at right angles to the spindles having the series of cams thereon operating on opposite spindles for causing the simultaneous approach, set-screws regulating the extent of such approach, and a reciprocating turning-tool, substantially as described.

9. In a spool-machine, the combination, with the horizontally-moving blank-carrier, of the series of pairs of co-operating tools arranged with the members of each pair on opposite sides of the carrier, mechanism, substantially as described, for causing the feed of the carrier intermittingly, a presser-plate moving on vertical ways above and at right angles to the carrier and adapted to rest upon one or more blanks on the carrier and hold them while being operated upon by the tools, and a cam for causing the operation of said plate, substantially as described.

10. In a spool-machine, the combination, with the blank-carrier, of a series of pairs of co-operating tools arranged with the members of each pair on opposite sides of the carrier, mechanism, substantially as described, for causing the feed of the carrier intermittingly, and a plate moving on vertical ways above the carrier, carrying one or more adjustable presser-feet adapted to rest upon one or more blanks on the carrier and hold them while being operated upon, a cam for causing its operation, and a spring for returning said plate to normal position, substantially as described.

11. In a spool-machine, the combination, with a pair of annular cutters for operating on opposite ends of the blank to give the proper circumferential shape thereto, of embossing-dies within said cutters for embossing the end of the spool while being cut, substantially as described.

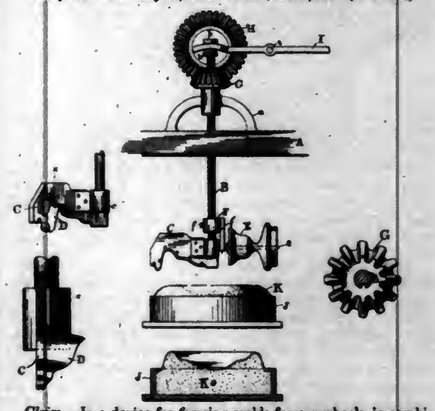
12. In a spool-machine, the combination, with the pair of annular cutters operating to shape the ends of the spool-blank, of the dies contained within them, their operating-faces being substantially parallel with and below the plane of their cutting-edges, and the cams for causing the gradual approach of the cutters and dies, the cams being provided with the projections thereon for causing the sudden forward movement of the dies, substantially as described.

13. The combination of the spindle, the centering-pin, the removable embossing-die, the removable annular cutter extending beyond the die, and the screw or similar device passing through both center and die for holding the die and cutter in position on the spindle, substantially as described.

14. In a spool-machine, the combination of the main frame, a longitudinally-movable blank-carrier, and mechanism for moving it intermittingly, of a series of pairs of operating-tools located on the main frame and on opposite sides of the carrier, a stationary way or support on which the carrier runs, a presser for holding the blanks on the carrier connected to the way, means, substantially as described, for operating it when the carrier is stationary, and means, substantially as described, for adjusting the way on the frame toward the tools, substantially as described.

15. In a spool-machine, the combination, with the series of pairs of co-operating tools for operating upon the blanks in succession and shaping their ends, of a continuous carrier arranged between the tools, having pockets with the inclined sides, the bisector of the angles formed by the sides intersecting at right angles the tool-centers, and means for adjusting said carrier at right angles with said centers, whereby blanks of different sizes may be operated upon by adjusting said carrier, substantially as described.

409,666. MOLD-FORMING DEVICE. JOSEPH J. CARR, Wilkes-Barré, Pa., assignor to the Wilkes-Barré Molding Machine Company, same place. Filed May 31, 1888. Serial No. 275,644. (No model.)



Claim.—In a device for forming molds for car-wheels, in combination, a vertical shaft, a roller and a sweeper-arm which radially and horizontally project from the lower end of said shaft, the lower face of the arm and the outline of the roller corresponding to the configuration of the mold to be produced, a projecting flange attached to one side of the arm and following the curvature of the lower face thereof, and vertically-adjustable devices for attaching the roller to the shaft, substantially as set forth.

409,667. MACHINE FOR MAKING SAND MOLDS. JOSEPH J. CARR, Wilkes-Barré, Pa., assignor to the Wilkes-Barré Molding Machine Company, same place. Filed Oct. 25, 1888. Serial No. 289,156. (No model.)

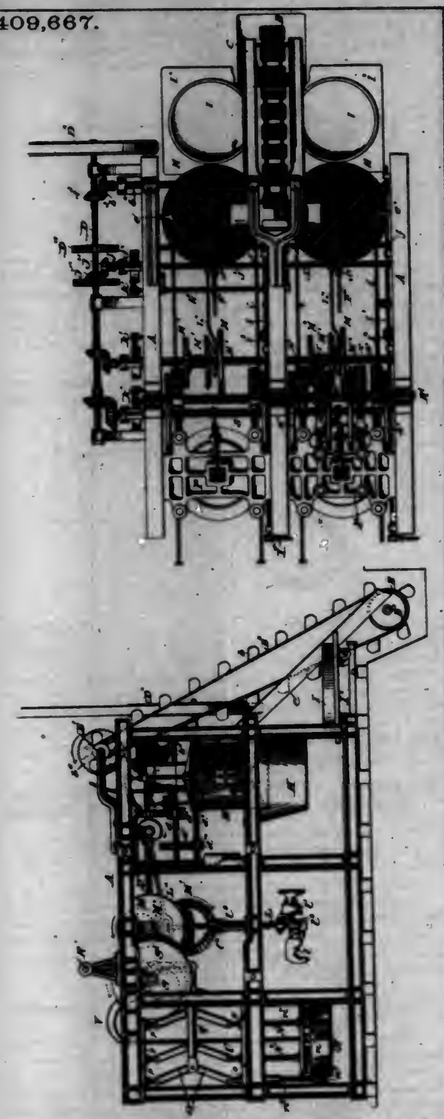
Claim.—1. In a machine for making sand molds, in combination, a sand receiver and deliverer, a sweep mounted to be reciprocated and rotated, a pattern, a driving-shaft, trains of mechanism leading from the driving-shaft to said devices to operate them in due order, a flask, and means for conveying the flask through the machine, substantially as set forth.

2. In a machine for making sand molds, in combination, a sand receiver and deliverer, a sweep mounted to be reciprocated and rotated, a pattern, a driving-shaft, a separate train of mechanism leading from the driving-shaft to each of said devices, means for throwing each of said trains of gearing into and out of operation, a flask, and means for conveying the flask through the machine, substantially as set forth.

3. In a machine for making sand molds, in combination, a sand receiver and deliverer, a sweep mounted to be reciprocated and rotated, a pattern, a driving-shaft, a separate train of mechanism leading from the driving shaft to each of said devices, a clutch mounted in each of said trains of mechanism, and means for automatically throwing said clutch into and out of bite, substantially as set forth.

4. In a machine for making sand molds, in combination, a sand receiver and deliverer, a sweep mounted to be reciprocated and rotated, a pattern, a driving-shaft, a separate train of mechanism leading from the driving-shaft to each of said devices, a truck for conveying the flask through the machine, a clutch forming part of each of said trains of mechanism, and clutch-controlling mechanism constructed to be thrown into or out of action by the travel of said truck, substantially as set forth.

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5. In a machine for making sand molds, in combination, a sand receiver and deliverer, a sweep mounted to be reciprocated and rotated, a pattern, a driving-shaft, a separate train of mechanism leading from the driving-shaft to each of said devices, a clutch mounted in each of said trains of mechanism, a truck for conveying the flask through the machine, a train of clutch-operating devices mounted in connection with each of said clutches, and toes forming part of each of said train of clutch-operating devices, and which project into the path of, so as to be encountered by, the truck, substantially as set forth.

6. In a machine for making sand molds, in combination, a sand receiver and deliverer, a pattern, a driving-shaft, a separate train of mechanism leading from the driving-shaft to each of said devices, a clutch mounted in each of said trains of mechanism, a truck for conveying the flask through the machine, a train of clutch-operating devices mounted in connection with each of said clutches, and toes forming part of each of said trains of clutch-operating devices, and which project into the path of, so as to be encountered by, the truck, substantially as set forth.

7. In a machine for making sand molds, in combination, a sweep mounted to be reciprocated and rotated, a pattern, a driving-shaft, a separate train of mechanism leading from the driving-shaft to each of said devices, a clutch mounted in each of said trains of mechanism, a truck for conveying the flask through the machine, a train of clutch-operating devices mounted in connection with each of said clutches, and toes forming part of each of said trains of clutch-operating devices, and which project into the path of, so as to be encountered by, the truck, substantially as set forth.

8. In a machine for making sand molds, in combination, mechanisms constructed and arranged to form and compress sand contained in a flask mounted upon a truck which is propelled through the machine, separate trains of gearing communicating power from a suitable source to each of said mechanisms, a clutch mounted in each of said trains of gearing, each clutch consisting of two members, one of which members is provided with peripheral seats, a coupling-plunger mounted upon the opposing member of the clutch and adapted to fit said seats, and means for controlling the movement of said coupling-plunger, substantially as set forth.

9. In a machine for making sand molds, in combination, a truck to convey the flask through the machine, mechanisms which form and compress sand in a mold, trains of gearing which operate said mechanisms, a clutch mounted in each of said trains of gearing, a series of peripheral seats in one clutch member, a coupling-plunger pivotally mounted upon the other clutch member, a clutch-arm constructed, when in the path of the coupling-plunger, to be encountered by and raise and hold the same from engagement with the peripheral seat-provided clutch member, a shaft upon which said clutch-arm is mounted, an arm projecting from said shaft, and a depending rod attached to said projecting arm and having its lower extremity equipped with a projection which extends into the path of the truck, substantially as set forth.

10. In a machine for making sand molds, in combination, a sand-receiver provided with a removable bottom mounted independently of the receiver upon a depending rod, and a lever-arm to which the upper end of said rod is secured, substantially as set forth.

11. In a machine for making sand molds, in combination, a sand-receiver provided with ribs on its side, arms into which the said ribs fit, a removable bottom, a depending rod, the lower end of which is secured to said bottom, a lever-arm to which the upper end of said rod is secured, a counter-weight attached to said lever-arm, and a cam-wheel bearing against said lever-arm, substantially as set forth.

12. In a machine for making sand molds, in combination, a sand-receiver provided with a removable bottom mounted independently of the receiver upon a depending rod, upon which bottom the receiver rests when being filled with sand, and means for at the proper time causing the rod to descend and lower the bottom and receiver until the receiver reaches the limit of its movement and the bottom descends below the receiver, so as to permit the escape of the sand, substantially as set forth.

13. In a machine for making sand molds, in combination, a sand-receiver, a removable bottom, a depending rod, the lower end of which is secured to said bottom, a lever-arm to which the upper end of said rod is secured, a cam-wheel bearing against said lever-arm, a shaft upon which said cam-wheel is mounted, a main driving-shaft, gearing for connecting the main driving-shaft with the cam-shaft, and a clutch for throwing said gearing into and out of operation, substantially as set forth.

14. In a machine for making sand molds, in combination, an open-topped receiver provided with a removable bottom supported by a depending rod extending up to a lever-arm, to which it is attached, and a spider-casting clasping the upper end of the receiver and embodying a guideway for the depending rod, substantially as set forth.

15. In a machine for making sand molds, in combination, a flask,

a receiver arranged to descend and provided with a removable bottom, means to cause said bottom to descend below the receiver, and a hood situated beneath the receiver, adapted to direct the sand from the receiver into the flask, substantially as set forth.

16. In a machine for making sand molds, in combination, rails, a truck adapted to said rails, a spring-bolt mounted upon said truck, a rotatable rod extending parallel to said rails, and bolt-receivers mounted upon said rod, substantially as set forth.

17. In a machine for making sand molds, in combination, a sweep mounted upon a vertical shaft, gearing connected to said vertical shaft, the operation of which causes its descent, gearing connected to said vertical shaft, the operation of which causes its rotation, a power-shaft mounted in connection with said gearing, a clutch mounted in connection with said gearing, clutch-operating devices, a track supporting the flask, and a trip adapted to be encountered by the truck, substantially as set forth.

18. In a machine for making sand molds, in combination, a sweep mounted upon a vertical shaft, a link in which the end of said shaft is entered, a wheel provided with a camway in which a projection on said link is entered, and a steadying-arm attached to or forming part of said link and having its outer portion attached to a suitable point of support, substantially as set forth.

19. In a machine for making sand molds, in combination, a pattern, elbow-joints secured to said pattern and to a supporting-plate, links connecting adjacent elbow-joints, reciprocating rods connected to the elbows, rock-arms connected to the reciprocating rods, cam-toes on said rock-arms, cam-grooved wheels in which said cam-toes are engaged, a shaft on which said cam-grooved wheels are mounted, and means for throwing said shaft into and out of operation, substantially as set forth.

20. In a machine for making sand molds, in combination, elbow-joints secured to a pattern and to a supporting-plate, reciprocating rods connected to the elbows, rock-arms connected to the reciprocating rods, cam-toes on said rock-arms, cam-grooved wheels in which said cam-toes are engaged, a shaft on which said cam-grooved wheel is mounted, means for throwing said shaft into and out of operation, a lifting rod attached to the pattern, a lever-arm to which said lifting rod is attached, and means for operating said lever-arm, substantially as set forth.

21. In a machine for making sand molds, in combination, elbow-joints secured to a pattern and to a supporting-plate, reciprocating rods connected to the elbows, rock-arms connected to the reciprocating rods, cam-toes on said rock-arms, cam-grooved wheels in which said cam-toes are engaged, a shaft on which said cam-grooved wheels are mounted, means for throwing said shaft into and out of operation, a lifting rod attached to the pattern, a lever-arm to which said lifting rod is attached, and a cam-wheel bearing against said lifting rod, substantially as set forth.

22. In a machine for making sand molds, in combination, a pattern consisting of two independently-moving parts, each of which presses upon a given part of the sand, elbow-joints connected to said patterns and to the supporting-plate, reciprocating rods connected to the elbow-joints of the main pattern, separate reciprocating rods connected to the elbow-joints of the sectional pattern, rock-arms attached to the reciprocating rods of the main pattern, separate rock-arms attached to the reciprocating rods of the sectional pattern, separate cam-grooves in which the cam-toes on said respective rock-arms are engaged, a lifting rod the lower end of which is attached to the main pattern, a lever-arm to which the upper end of said lifting rod is secured, a pivot for said lever-arm, and a cam mounted on the cam-grooved-wheel shaft by which said lever-arm is tilted, substantially as set forth.

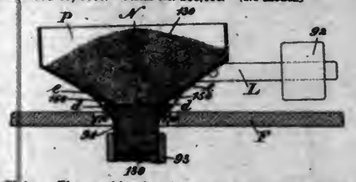
23. In a machine for making sand molds, in combination, a pattern, a supporting-plate, elbow-joints secured to said pattern and said supporting-plate, a lifting rod attached to said pattern, and mechanism for causing the lift and drop of said lifting rod, substantially as set forth.

24. In a machine for making sand molds, in combination, a pattern, a supporting-plate, elbow-joints secured to said pattern and said supporting-plate, a lifting rod attached to said pattern, a lever to which the upper end of said lifting rod is attached, and a cam which is adapted to operate said lever, substantially as set forth.

409,668. PURIFYING ALUMINIUM CHLORIDES. HAMILTON Y. CASTNER, London, England. Filed Mar. 19, 1889. Serial No. 303,901. (No specimens.)

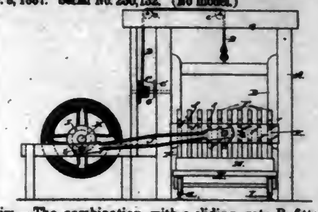
Claim.—The hereinbefore-described process of purifying anhydrous chlorides of aluminium, which consists in melting said chlorides with a suitable quantity of a metal, as aluminium or sodium, adapted to reduce the contained iron to a metallic state, and then separating it, substantially as described.

409,669. REGULATOR FOR GRAIN-SCALES. CHARLES H. COOLEY, Hartford, Conn., assignor to the Pratt & Whitney Company, same place. Filed Oct. 15, 1888. Serial No. 288,160. (No model.)



Claim.—The combination, in a regulator apparatus of the class described, of the vertically-movable hopper, the fixed conduit below said hopper, and the flexible connecting-pipe having its upper end outwardly flaring and joined to said hopper around and above the discharge-opening, whereby there is provided a space around the opening in the hopper and within said flaring part, all substantially as described.

409,670. MACHINE FOR SAWING STONE. GEORGE A. DAVIDSON, Malden, assignor of one-half to Horace T. Caswell, Troy, N. Y. Filed Mar. 8, 1887. Serial No. 230,132. (No model.)



Claim.—The combination, with a sliding gate B, fitted to move up and down in or on the frame-work A and provided with a guide *b*, of a reciprocating cutter-head E, fitted to slide on said guide and provided with a series of rigid pendent cutters F, which are made of flat bars of metal having parallel edges, and which are spaced apart and held in a rigidly vertical position by ribs *e* on said cutter-head, said cutters being fitted to receive a vertical adjustment in said cutter-head independently of the up-and-down feeding movement of the latter, as and for the purpose specified.

409,671. ARTIFICIAL TOOTH-CROWN. SETMOUR R. DEWEY, Cleveland, Ohio. Filed Mar. 18, 1889. Serial No. 303,636. (No model.)



Claim.—The combination of the root A and artificial crown B with a hollow post C, said post being interiorly threaded at one end to receive a retaining-screw D, and cut away near the opposite end, as at *a*, the parts being constructed, arranged, and operating as and for the purpose described.

409,672. STEAM-ENGINE. NATHAN H. EDGERTON, Philadelphia, Pa. Filed June 25, 1888. Serial No. 278,167. (No model.)

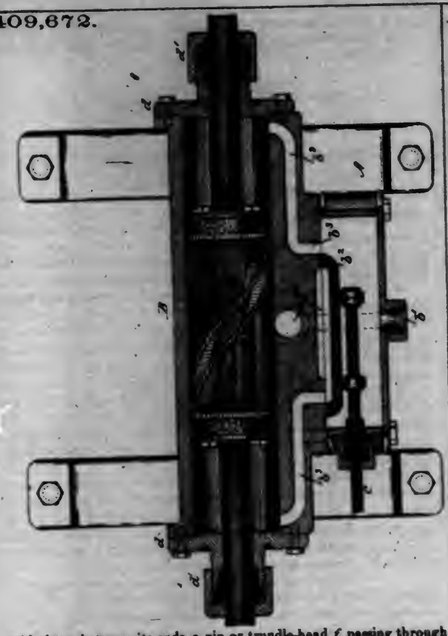
Claim.—1. The combination, with a steam-cylinder B, of a shaft D, having bearings in the ends or heads of the cylinder, the reciprocating piston E on and engaging with shaft D, a spirally-formed groove in the periphery of said piston, said groove being located between the packed or steam-tight ends for said piston, and a pin or trundle-head *f*, projecting from one of the cylinder sides into said groove, substantially as set forth.

2. In a steam or other engine, a cylinder, a shaft having bearings in the cylinder heads or ends, a sliding or reciprocating piston on said shaft, a spirally-formed groove on the periphery of the piston and between its ends, and a pin or trundle-head on the cylinder engaging with said piston-groove for imparting a rotary motion to the piston and shaft as the piston reciprocates on the shaft, substantially as set forth.

3. In combination with an engine-cylinder B, having closed ends *b*, the shaft D, passing through and having bearings in said ends, a reciprocating piston E, having steam-tight or packed ends mounted on said shaft, a spirally-formed groove in the periphery of said piston between its ends, and a pin or trundle-head *f*, passing through the side of the cylinder at or near its transverse center, and valves actuated by said shaft, substantially as set forth.

4. In combination with an engine-cylinder having closed ends *b*, shaft D, having bearings in said ends *b*, sliding piston E on and engaging with said shaft, a spirally-formed groove in the periphery of

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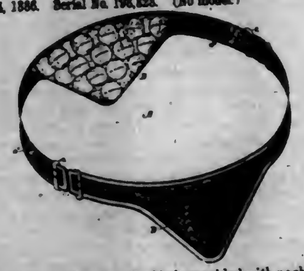


said piston between its ends, a pin or trundle-head *f*, passing through the side of the cylinder and engaging with said piston-groove, cut-off valves for said cylinder, and actuating mechanism interposed between the valves and said shaft, substantially as set forth.

5. In combination with an engine-cylinder B, a shaft D, having bearings in the cylinder heads or ends, and having an angular cross-section between its said bearings, a reciprocating piston E on said shaft having a corresponding angular bore and exterior or outer packed or steam-tight ends, a spirally-formed groove on the periphery of said piston between its ends, and cylinder-pin *f*, engaging with said piston-groove, substantially as and for the purpose set forth.

6. The combination, with an engine-cylinder shaft, of a reciprocating piston E on said shaft having packed or steam-tight joints, with the cylinder and peripheral spiral groove between said ends, a cylinder-pin *f*, for engagement with said piston-groove, and valves for the cylinder actuated by said shaft, substantially as set forth.

409,673. ELECTRIC BELT. CHARLES EVERETT, Denton, Tex. Filed Apr. 14, 1886. Serial No. 198,828. (No model.)

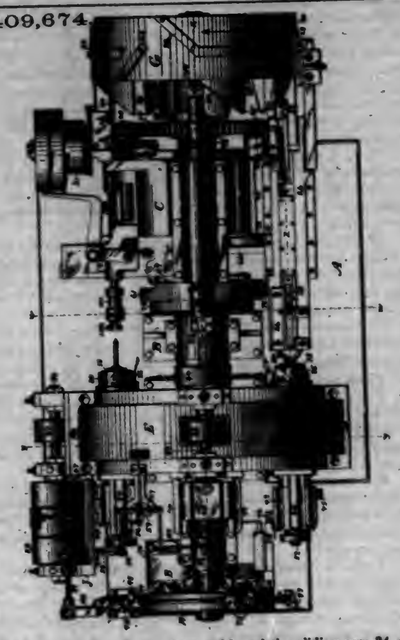


Claim.—The within-described belt provided with pockets B, made of lace or equivalent very thin material, combined with the piles C, each constructed of rear copper plates *c*, nickel-plated on one side, and the forward plate *c'*, of zinc and of the same size and thickness as the copper plates, and the wires *d*, connecting said plates, whereby when said belt is in use the said piles come directly, or substantially so, against the body of the wearer.

409,674. METAL-SCREW MACHINE. GEORGE A. FAIRFIELD and GEORGE R. WITHERELL, Hartford, Conn., assignors to the Hartford Machine Screw Company, same place. Filed May 1, 1888. Serial No. 309,168. (No model.)

Claim.—1. The combination of an intermittently-revolving head, a series of spindles mounted therein and provided with holding-jaws

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and series of cams 35, the hopper 26, and the sliding cam 34, acting upon confronting edges of the cams 35, substantially as described, and for the purpose specified.

2. The combination of an intermittently-revolving head, a series of spindles mounted therein and provided with holding-jaws, the hopper 26, sliding cam 34, and the cams 35, in the form of a ring, circumferentially adjustable on the spindles, substantially as described, and for the purpose specified.

3. The combination of the intermittently-revolving head, a series of spindles mounted therein, the hopper 26, its plunger 29, the hollow slide 31, for receiving the shank of the plunger, the spring 118, and mechanism for reciprocating said hollow slide and plunger, substantially as described, and for the purpose specified.

4. The combination of the hopper 26, the plunger 29, the screw-adjustable head 30 at the end of said plunger, and mechanism for reciprocating said plunger and head, substantially as described, and for the purpose specified.

5. The combination of a revolving head, the head-operating disk 61, mechanism for oscillating said disk a given fractional part of a revolution, the pawl 70, mounted on said disk, the locking-disk 72, provided with a ratchet for engagement with said pawl and locking-recesses 74, a locking-bolt 75, provided with pin 76, and the hinged cam 78, hinged to said head-operating disk and acting to withdraw said locking-bolt, substantially as described, and for the purpose specified.

6. The combination of an intermittently-rotating head, a series of spindles mounted therein, the crank-pin disk 64, cross-head 67, pitmen 66 and 69, head-operating disk 61, pawl 70, mounted thereon, the hinged cam 78, also mounted on said disk, the locking-bolt 75, and the locking-disk 72, provided with the ratchet and locking recesses, substantially as described, and for the purpose specified.

7. The combination of the spring-pressed locking-bolt 75, its pin or projection 76, the locking-disk 72, provided with notches or recesses and a ratchet, the head-operating disk 61, the pawl 70, mounted thereon, the cam 78, provided with a rabbet 81, the spring 79, for pressing said cam against the disk 61, and mechanism for oscillating said disk, substantially as described, and for the purpose specified.

8. In a machine for threading screws, the combination of the threading-slide 100, mechanism for forcing said slide to its work, the laterally-projecting pin 103, and the adjustable ledge 104, for being engaged by said pin, substantially as described, and for the purpose specified.

9. In a machine for threading screws, the combination of the threading-slide 100, mechanism for forcing said slide to its work, the laterally-projecting pin 103, the adjustable ledge 104, for being engaged by said pin, the pivoted piece 106, provided with a stop-joint

at the end of said ledge, and the spring 107, substantially as described, and for the purpose specified.

10. In a machine for threading screws, the combination of the threading-slide 100, mechanism for forcing said slide to its work, the laterally-projecting pin 108, mounted on said slide, the adjustable ledge 104, the longitudinal shoulder 106, and the spring-pressed pawl 109, for engaging said shoulder, substantially as described, and for the purpose specified.

11. In a machine for threading screws, the combination of the threading-slide 100, the attachable and detachable follower 113, arranged to slide in alignment with said slide, and the cams 24, for pressing upon said follower, substantially as described, and for the purpose specified.

12. The combination of an intermittently-revolving head, a series of spindles mounted therein, the hopper 26, plunger 29, tool-bearing slides 94 and 100, mechanism for driving the spindles when in alignment with said slides, the central shaft D, and the cam-pulley G, substantially as described, and for the purpose specified.

13. The combination of the intermittently-revolving head, a series of spindles mounted therein and provided with friction driving-wheels, the driving-shaft 83, having friction driving-pulley 85, acting upon said wheels at one point for driving them continuously in one direction, the driving-shaft 86, having friction driving-pulley 87 at another point, and shipping mechanism for changing the motion of said driving-shaft 86 to drive the spindles first in one direction and then reversing their motion, substantially as described, and for the purpose specified.

14. The combination of an intermittently-revolving head, a series of hollow spindles mounted therein, the sleeves 37, having spring-jaws 36 and lugs 38, the angle-levers 40, engaging said lugs, the cones 42, and operating mechanism, substantially as described, and for the purpose specified.

15. The combination of an intermittently-revolving head, a series of hollow spindles mounted therein, the sleeves 37, having spring-jaws 36 and lugs 38, the angle-levers 40, engaging said lugs, the cones 42, the sliding carriages 43, carrying said cones, the rollers and projections 45 and 46, stationary cam 47, slides 48, and cams 49 on the cam-wheel H, substantially as described, and for the purpose specified.

16. The combination of an intermittently-revolving head, a series of hollow spindles mounted therein, the sleeves 37, having spring-jaws 36 and lugs 38, the angle-levers 40, engaging said lugs, the cones 42, the sliding carriages 43, carrying said cones, the rollers and projections 45 and 46, and stationary cams 47 and 115, located in the path of said rollers 45 at the discharging and receiving points of said spring-jaws, substantially as described, and for the purpose specified.

17. The combination of the intermittently-revolving head, a series of spindles mounted therein, the knockout-rods 50, springs 51, cams 52 on the ends of said knockout-rods, and a stop lever or levers located with reference to the path of said cams, substantially as described, and for the purpose specified.

18. The combination of the intermittently-revolving head, a series of spindles mounted therein, the knockout-rods 50, springs 51, for forcing said rods in the direction to free said jaws, and the stationary cam 114, located with reference to the path of the ends of said knockout-rods, substantially as described, and for the purpose specified.

19. The combination of the intermittently-revolving head, a series of spindles mounted therein, mechanism at one point in the revolution of said head for driving the spindles first in one direction and then in another, the threading-slide 100, having a projection or pin 103, and an adjustable ledge for holding said slide against rotation up to a given point, substantially as described, and for the purpose specified.

20. The combination of the shaft 86, set of pulleys 88, shipper 89, cams 93 on the cam-pulley H, and mechanism connecting said cams and shipper, substantially as described, and for the purpose specified.

21. The combination of the intermittently-revolving head, the shaft D, concentric therewith, the slides 96 and 100, cam-pulley G, head-operating disk 61, gear-wheel 19, and mechanism for operatively connecting said gear-wheel and head-operating disk, substantially as described, and for the purpose specified.

22. The combination of the intermittently-revolving head, a series of spindles mounted therein, the shaft D, the slides 96 and 100, cam-pulley G, head-operating disk 61, gear-wheel 19, mechanism for operatively connecting said gear-wheel and head-operating disk, the shaft 86, having the set of pulleys 88, shipper 89, cams 93 on cam-pulley H of the shaft D, and connecting mechanism between said shipper and cams, substantially as described, and for the purpose specified.

23. The combination of the intermittently-revolving head, a series of spindles mounted therein and provided with holding-jaws, the sliding carriages mounted on ways secured to said head at the ends of said spindles, mechanism actuated by the longitudinal movement of said carriages for operating said holding-jaws, the projections and rollers 45 and 46, stationary cam 47, and the cams 49 on the wheel H, operatively connected with the projections 46, substantially as described, and for the purpose specified.

409,675. ELECTRIC SIGNAL-RECEIVING INSTRUMENT. STEPHEN D. FIELD, Stockbridge, Mass. Filed May 16, 1889. Serial No. 311,016. (No model.)



Claim.—1. An electrical signal-receiving instrument consisting of a closed magnetic circuit in combination with an open magnetic circuit having a movable body of magnetic material interposed in the opening, and a helix in inductive relation to the open magnetic circuit.

2. An electrical signal-receiving instrument consisting of a single magnet having two magnetic circuits between its poles, in combination with a coil of wire inclosing one of said magnetic circuits and adapted on the passage of current therethrough to vary the force in one or both of said magnetic circuits, and a movable body of magnetic material interposed in one of said circuits.

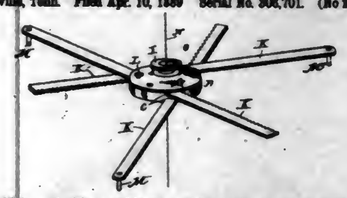
3. An electrical signal-receiving instrument consisting of a single magnet having two magnetic circuits between its poles, one of them incomplete, in combination with a helix or coil of wire inclosing the incomplete magnetic circuit, and a movable body of magnetic material in the gap of the incomplete magnetic circuit.

4. An electrical signal-receiving instrument consisting of a single magnet having a substantially-closed magnetic circuit and an incomplete magnetic circuit constituted by two approaching iron projections, in combination with two parallel electric circuits in inductive relation respectively to the two iron projections, and a movable body of magnetic material interposed between said projections.

5. An electrical signal-receiving instrument consisting of a single magnet having a substantially-closed magnetic circuit and an incomplete magnetic circuit constituted by two approaching iron cores as pole-pieces, in combination with two helices wound upon said cores, and a movable body of magnetic material interposed between said cores.

6. An electrical signal-receiving instrument consisting of two or more coils wound on iron cores facing each other and so connected that currents pass through the coils in respectively opposite directions, said cores being attached to a substantially-closed magnetic circuit, and an iron tongue or body interposed between the adjacent ends of said cores.

409,676. LINER FOR MACHINERY. WILLIAM V. FISCHER, Knoxville, Tenn. Filed Apr. 10, 1889. Serial No. 306,701. (No model.)



Claim.—1. The combination of the body or case provided with a series of channels at a tangent to a central opening, the pinion mounted in the central opening, the rack-arms arranged in the channels and engaging the pinion, and the spring-tongue arranged over one of the said channels and bearing on the rack-arm therein, substantially as specified.

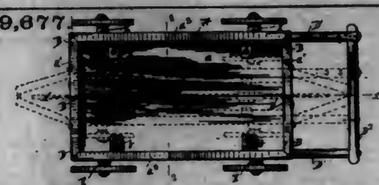
2. The combination of the body or case provided with suitable channels arranged tangent to a central opening, the spring-tongue arranged over one of the channels, the pinion mounted axially in the said central opening, the rack-arms arranged in the said channels and engaging the pinion, and the set-screw mounted in the body or case and bearing on the said spring-tongue, substantially as and for the purpose specified.

3. In a liner, the combination of the body or case provided with a face-plate, and having an axial centrally-perforated shaft mounted therein, the rack-arms arranged in suitable channels in the body or case and engaging with a pinion on the said shaft, and the set-screw mounted in the face-plate adjacent to one of the rack-arms and adapted to clamp the same in the desired position, substantially as specified.

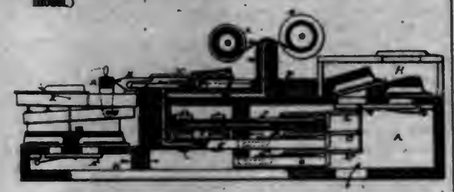
409,677. CHILD'S CARRIAGE. THOMAS K. FORMAN, Waukegan, Ill. Filed Mar. 21, 1889. Serial No. 304,190. (No model.)

Claim.—In a perambulator bisected longitudinally and connected as to its corresponding sections by hinges, the combination of the bolts c^4, securing the axles to the bars D', the bars F F, formed with the notches *f f* on opposite sides in a common arc with said bolts, pivoted to alternate sections of the axles, and the buttons *f' f'*, pivoted on the sides of the axles, substantially as and for the purpose specified.

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409,678. MECHANICAL MUSICAL INSTRUMENT. MERRITT GALLY, New York, N. Y. Filed Mar. 12, 1888. Serial No. 266,966. (No model.)



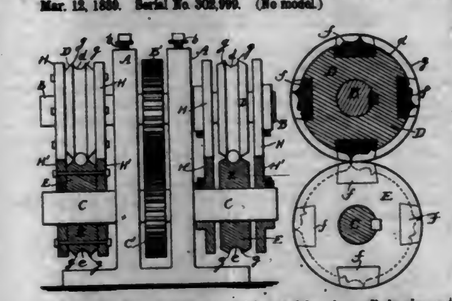
Claim.—1. The combination, with the tracker-range and the board having ducts leading therefrom to the operating pneumatic motors, of the manual-keys controlling openings into said ducts, and controlling also a second set of ducts not controllable from the ducts connected with the tracker-range, the parts being arranged and co-operating, substantially as described.

2. The combination, with the groove-board B and the octave groove-board C, having ducts, as described, of the manual-key and a shifting piece connected thereto, the shifting piece in one position controlling both ducts and in another position only one of the ducts, substantially as described.

3. The combination, with the manual-key, as K, of the valve, as S, and its octave-valve, as T, and the duplex operating-lever, as N.

4. The combination, with the operating-valve S and its octave-valve T, of the duplex operating-lever and its adjuster R, as having a movement for rendering the octave-valve operative or inoperative at will, substantially as set forth.

409,679. METAL-ROLLS. JAMES T. HASTINGS, Chicago, Ill. Filed Mar. 12, 1889. Serial No. 302,999. (No model.)



Claim.—1. The combination, with metal forming-rolls having cutting-edges adjacent to their matrices, of guard-rolls concentric therewith and fitted to be brought into peripheral contact with each other, substantially as shown and described.

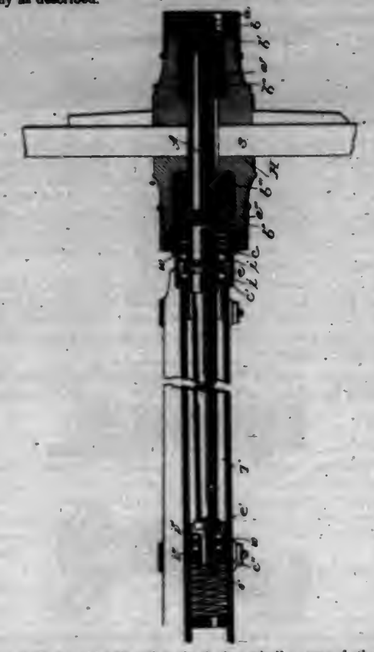
2. The combination, with metal forming-rolls in which a cutting-edge is formed adjacent to the die-matrix, of guard-rolls concentric with said forming-rolls, respectively, and arranged to be brought into peripheral contact with each other, and means for adjusting the relative positions of the roller-shafts, substantially as shown and described.

3. The combination of the rolls D E, cutting-edges *g*, guard-rolls H H', and set-screws for adjusting the roller-shafts, substantially as shown and described.

409,680. VEHICLE-AXLE. ADOLPH R. HERMAN, Terre Haute, Ind. Filed Feb. 15, 1889. Serial No. 300,066. (No model.)

Claim.—1. In combination, the wheel, the longitudinally-movable spindle secured thereto to revolve therewith, the bearing for the spindle having the anti-friction balls therein, the said spindle having a circumferential flange to afford a bearing for the said balls, substantially as described.

2. In combination, the wheel, the spindle having rotary and longitudinal movement, said spindle having a flange or projection, and the spring for holding the spindle with a yielding pressure, substantially as described.



3. In combination, the wheel, the spindle secured thereto and revoluble therewith, a bearing for said spindle, and yielding means for keeping said spindle in position relative to its bearings and to permit longitudinal movement thereof under strain, substantially as described.

4. In combination, the wheel, the axle, the longitudinally-movable spindle, and the ball-bearings for said spindle, whereby both rotary and longitudinal movement of the spindle is permitted, substantially as described.

5. In combination, the wheel, the spindle secured thereto and revoluble therewith, anti-friction bearings for said spindle comprising the balls, and the yielding means for permitting the spindle to move longitudinally under strain, substantially as described.

6. In combination, the wheel, the spindle secured thereto and having a shoulder or flange, the ball-bearing, and the spring, substantially as described.

7. In combination, the wheel, the spindle secured thereto, the plain tubular bearing part T for receiving the spindle, the anti-friction balls, and the sleeve or bearings for said balls supported by the plain tube T, substantially as described.

8. In combination, the wheel, the spindle secured thereto, the tube T for receiving the spindle, the anti-friction bearing, and the part c', screwed to the end of the tube T and holding the anti-friction balls, substantially as described.

9. In combination, the wheel, the spindle secured thereto, the bearing c', containing the anti-friction balls, a suitable support for the bearing, said bearing being arranged to have sliding movement, and the spring, substantially as described.

10. In combination, the wheel, the longitudinally-movable spindle, the anti-friction balls and a movable washer for confining said balls, and the yielding holding means for the washer, substantially as described.

11. In combination, the spindle and the wheel secured thereto by an adjustable nut on each side threaded upon the spindle, substantially as described.

12. In combination, the longitudinally-movable spindle with yielding holding means, and the wheel secured to said spindle with yielding bushings, substantially as described.

409,681. CARRIAGE-AXLE NUT. ADOLPH R. HERMAN, Terre Haute, Ind. Filed Feb. 23, 1889. Serial No. 300,955. (No model.)

Claim.—1. In combination, the threaded spindle, the box, a nut having an inward extension threaded upon said spindle, and a flange

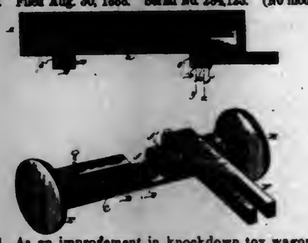
extending outside and across the end of the box for keeping the same in place, and extending also beyond the periphery of said box to afford a bearing for the wheel-hub, substantially as described.



2. In combination, the threaded spindle, the box, the inner holding-nut having an extension adapted to the bore of the box and screw-threaded upon the spindle, said inner holding-nut having a flange outside the box extending across the end of the same for retaining said box to the spindle, the washer located between the flange and the end of the box, said flanged nut also having holes in its face to receive the wrench-prongs, and an outer nut bearing upon the perforated face of the inner nut, substantially as described.

3. In combination, the spindle having right-and-left-threaded end, the box, the nut having the flange provided with openings for the wrench, and the outer nut also provided with a flange adapted to fit the face of the inner nut and over the openings in the flange thereof, substantially as described.

409,682. CHILD'S WAGON OR CART. HOWARD H. HIGHAM, Philadelphia, Pa. Filed Aug. 30, 1888. Serial No. 284,123. (No model.)



Claim.—1. As an improvement in knockdown toy wagons and carts, the combination, with the body, of an axle comprising a fixed main portion of greater length than the width of said body, and provided with a longitudinal groove in its top face at one side the center, forming a securing portion *b'*, and a cylindrical rod disposed and adapted to revolve within the single continuous bearing formed by the main portion and body and carrying the fixed wheels at its ends, substantially as and for the purpose set forth.

2. In a two-part axle for children's wagons or carts, the combination, with the stationary portion of the axle having a longitudinal groove in its top face and provided with a transverse groove or recess and with a cylindrical rod bearing in said groove and carrying wheels at its ends, of the handle or tongue piece having its rear end received within said recess and provided with a transverse groove to receive said rod and be thereby locked, substantially as set forth.

3. The combination, with an axle of the class described, comprising a fixed main portion and a longitudinal rotary rod bearing in a groove therefor in said fixed portion and carrying the wheels, of the handle or tongue piece provided with a transverse groove for the reception of said rod and locked thereby, substantially as and for the purpose set forth.

4. In combination with the stationary portion of an axle for children's wagons or carts, having a recess, the handle or tongue portion accommodated within said recess, the tongue-piece and stationary portion being provided with grooves or their equivalent, and the transverse rotary portion of the axle bearing within the tongue-piece and stationary portion and carrying the wheels, substantially as set forth.

5. The herein-described knockdown toy wagon, comprising the body, a rear axle composed of a main fixed portion provided with a longitudinal groove in its upper face, and a rotatable portion bearing in said groove and carrying fixed wheels at its ends, the front axle composed of a fixed main portion provided with a longitudinal and transverse groove in its upper face, and a rotatable portion bearing in said longitudinal groove and carrying fixed wheels at its ends, a tongue-piece received by the transverse groove and provided with a transverse groove to receive said rod and locked thereby, and a tongue secured to said tongue-piece, substantially as and for the purpose set forth.

409,683. CAR-BRAKE. JAMES W. HURST, Hotchkiss, Colo. Filed Feb. 18, 1889. Serial No. 300,474. (No model.)

Claim.—1. In a combined wheel and rail brake, the combination of oppositely-disposed brake-blocks, which are adapted to engage both the treads of the car-wheels and the rail, and a wedge located in direct contact with said blocks and adapted to spread them by downward movement, substantially as shown and described.



2. In a combined wheel and rail brake, the combination of oppositely-located brake-blocks and a vertically-sliding wedge, which wedge is located between said blocks and adapted to both spread and depress them when said wedge is moved downward, substantially as shown and described.

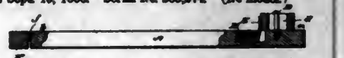
3. In a combined wheel and rail brake, the combination, with a rear plate B, slotted as shown, of the brake-block C C, recessed at *c* and *c'*, the wedge D, formed with the oblique arms *c''* and slots *d*, all arranged and adapted to operate substantially as shown and described.

4. In a combined wheel and rail brake, the combination of oppositely-located brake-blocks provided with inclined recesses *c' c'*, a wedge located between said blocks in direct contact therewith and provided with the oblique arms *c'' c''*, and means for raising and depressing said wedge, substantially as described.

5. The combination, with the brake-blocks, of a wedge sliding between the same to lower and spread them, a slotted lever fulcrumed to the side of the car and connected with the sliding wedge to operate the same, a ratchet-bar working in the slot in the lever, and the pawl G, carried within such slot and adapted to engage the teeth of the bar F, substantially as and for the purpose described.

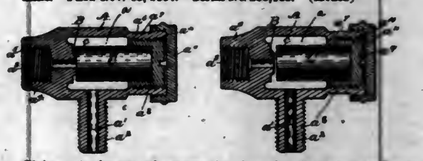
6. In a combined wheel and rail brake, the combination, with the rear plate B, provided with the tongue *b* and slots *a*, of the brake-blocks C C, secured to the same and recessed to receive the wedge D, said wedge being adapted to slide freely within said recesses to spread the shoes, a slotted plate *a*, secured to the side of the car to receive the tongue *b* and hold the brake to the side of the car, a lever E, connected with the top of the wedge and fulcrumed to the side of the car at a point beyond the brake, the ratchet-bar F, pawl G, and ring-loop *g*, all arranged and adapted to operate substantially as shown and described.

409,684. BOSOM-BOARD. THOMAS J. JACKSON, Mattoon, Kans. Filed Sept. 13, 1888. Serial No. 285,274. (No model.)



Claim.—The improved bosom-board herein described, consisting, essentially, of the board A, having the elongated recess in its forward upper side, the collar-block of a form, as shown, having a vertical elongated recess and arranged above the recess in the board, the screw passing through the slot of the block and into the board, the spring arranged in the recess of the board and having one end engaging the collar-block, and the securing-bar journaled at the opposite end of the board by arms, substantially as specified.

409,685. AUTOMATIC AIR-VALVE. CHARLES JESSUP, Boston, Mass. Filed Nov. 15, 1887. Serial No. 255,185. (Model.)

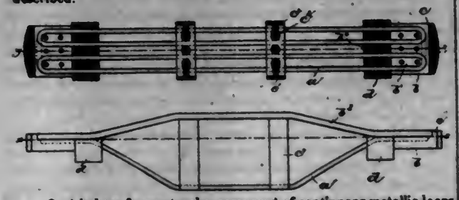


Claim.—An improved automatic air-valve for steam-radiators, &c., of the class known as "rod-traps," in which the expansion valve-stem controlled by steam heat is composed of the crude, burned, refractory, plastic compound containing forty per cent. or more of refractory mineral substance in conjunction with vulcanizable gum, and known to commerce as "compression-packing," for facing steam-valve seats and joints, substantially as and for the purpose described.

409,686. BOLSTER FOR CAR-TRUCKS. LUTHER K. JEWETT, Boston, Mass. Filed Oct. 12, 1888. Serial No. 287,936. (No model.)

Claim.—1. A bolster for car-trucks, having its lower part or half composed of a continuous loop or band of metal, substantially as described.

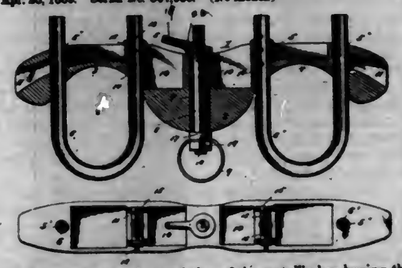
2. A bolster for car-trucks, composed of one or more continuous metallic loops or bands, castings to support the said loops at their ends, and a top plate or part secured to said castings, substantially as described.



3. A bolster for car-trucks, composed of continuous metallic loops or bands, castings to support the said loops at their ends, a top plate secured to the end castings, and center braces or castings, substantially as described.

4. A bolster for car-trucks, composed of continuous metallic loops or bands, castings to support the said loops at their ends, and chafe-irons attached to said castings, a top plate secured to the end castings, and center braces or castings, substantially as described.

409,687. OX-YOKE. WILLIAM KIDD, Fisherman's Bay, Cal. Filed Apr. 20, 1889. Serial No. 307,980. (No model.)



Claim.—1. An ox-yoke consisting of the metallic bar having the recesses formed therein and the vertical apertures, the tubular bows fitted in said vertical apertures, and means for rigidly connecting said bows to the yoke-bar, substantially as described.

2. In an ox-yoke, the combination of a yoke-bar, the perforated bows, and the removable fastening-pins adapted to slide in bearings, rigidly connected to the yoke-bar, and passing through the perforations in the bows to confine the latter against vertical play or movement on the yoke-bar and said bearings, substantially as and for the purpose described.

3. In an ox-yoke, the combination, with a yoke-bar and the bows, of the plates fixed to the yoke-bar and having the perforated ears, and the fastening-pins detachably connected to the plates and adapted to pass through the bows, substantially as described.

4. In an ox-yoke, the combination of a yoke-bar having a vertical central slot, a vertical bolt of less diameter than said slot and having the threaded upper end and a head at its lower end which impinges directly against the lower edge of the yoke-bar, and a ring swiveled on the lower end of said bolt and confined in place between said head and a nut, substantially as and for the purpose described.

409,688. CARRIAGE-SPRING. GEORGE LARSSEN, Omaha, Nebr. Filed Apr. 12, 1889. Serial No. 307,004. (No model.)



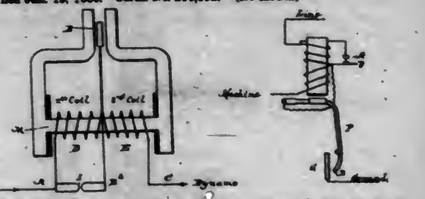
Claim.—1. A carriage-spring composed of two brackets secured beneath the body of a carriage, and a spiral spring turning in one of said brackets and provided with a square head at the other end and fitted into a square hole in the bracket on that side, substantially as described.

2. A carriage-spring composed of two brackets secured beneath the body of the carriage, and a spiral spring turning in one of said brackets and provided with a polygonal head at the other end and fitted into a polygonal hole in the bracket on that side, substantially as described.

3. The brackets secured beneath the body of a carriage, one of said brackets having a polygonal bearing and the other having a round bearing, a spring coiled as described, having one end adapted to fit said angular bearing and the other end turning loosely in said round hole, in combination with a lever attached to said spring and adapted to be fastened to the side bar of the carriage, substantially as described.

4. A bracket having a polygonal bearing, a bracket having a round bearing, a spiral spring having a straight portion and having one end of the same squared for fitting into said polygonal bearing, and the other at the end of said straight portion adapted to turn in said round bearing, a portion of said straight portion being polygonal, in combination with a lever provided with a grip adapted to fit over said polygonal portion of the spring and adapted to be fastened to the side bar of the carriage, substantially as described.

409,689. LIGHTNING-ARRESTER. HERMANN LEMP, Lynn, Mass. Filed Jan. 19, 1889. Serial No. 296,962. (No model.)



Claim.—1. The combination, with an arc-rupturing magnet on an alternating-current circuit, of an opposing or neutralizing coil in the normal circuit therewith, as and for the purpose described.

2. The combination, with a lightning-arrester, of an arc-rupturing-magnet coil, an opposing or neutralizing coil in the normal circuit therewith, and a ground connection from a point between the two coils.

3. In a lightning-arrester, the combination of an electro-magnet having differential coils, arrester-points in the field of said magnet, and a connection to the arrester taken from a point between the coils.

4. The combination, with an alternating-current circuit, of an arc-rupturing-magnet coil, an opposing or neutralizing coil in the circuit therewith, and a connection to the point at which the arc is to be ruptured taken from a point between the coils.

5. The combination, with separated electrodes connected to an alternating-current circuit, of an arc-rupturing magnet having a coil in said circuit, and an opposing coil, said coils having an intermediate connection to said electrodes.

6. The combination, with the electrodes of a lightning-arrester connected to an alternating-current circuit, of an arc-rupturing magnet having coils between said arrester and the point to be protected, and an opposing coil at the opposite side of the point of connection of the arrester.

7. The combination, with the electrodes of a lightning-arrester connected to an alternating-current circuit, of an electro-magnet whose poles are arranged in proximity to said electrodes and having its coils in circuit between the arrester and dynamo, and an opposing coil between the arrester and the line, as and for the purpose described.

8. The combination, with the arc-rupturing magnet, of an opposing coil in the normal circuit therewith, and a branch of normally high resistance and comparatively low self-induction around the latter, as and for the purpose described.

9. The combination of the arc-rupturing-magnet coil in the line, the opposing line-coil, and the safety ground connection between said coils.

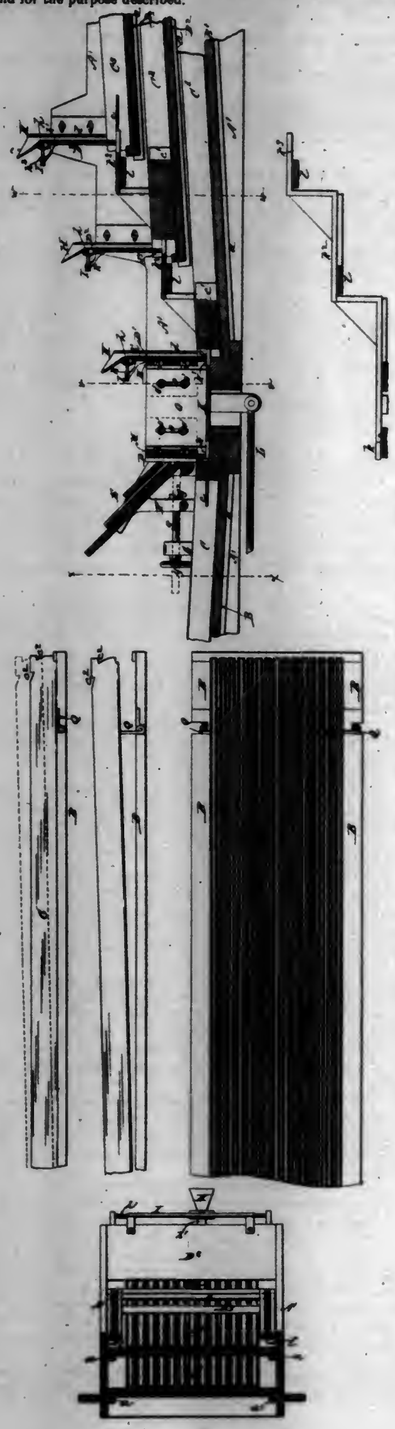
10. The combination, with an arc-rupturing magnet on an alternating-current circuit, of an opposing or neutralizing coil in the normal circuit therewith, and a branch connection to a point of the circuit between the neutralizing-coil and the coil of the arc-rupturing magnet.

409,690. TYPE-DISTRIBUTING APPARATUS. ABBOTT A. LOW, Brooklyn, assignor to the Alden Type Machine Company, New York, N. Y. Filed Nov. 12, 1886. Serial No. 218,694. (No model.)

Claim.—1. In a type-distributing apparatus substantially such as described, the combination, with a series of type-containing channels, of a stationary type-channel support B, formed with an end-supporting shoulder for the said channels and with a channel-lifter Q, for elevating the outer ends of the type-containing channels above the said channel-end supports, for the purpose and substantially in the manner described.

2. In a type-distributing apparatus substantially such as described, the combination, with a series of superposed type-containing channels,

of a reciprocating terraced type-forwarder, substantially in the manner and for the purpose described.



3. In a type-distributing apparatus substantially such as described, the combination, with a supporting frame or carriage, of a series of superposed type-receiving plates pivotally suspended at their lower edges, substantially in the manner and for the purpose described.

4. In a type-distributing apparatus substantially such as described, the combination, with a hand-screw for actuating the movable carriage upon which the type-receiving plates are mounted, of an adjustable shoulder or strip upon the end of the said actuating-screw, for the purpose and substantially in the manner described.

5. In a type-distributing apparatus substantially such as described, the combination, with the type-receiving plates mounted and arranged substantially as described, of a vertical conduit-plate which is adjustable longitudinally, substantially in the manner and for the purpose described.

6. In a type-distributing apparatus substantially such as described, the combination, with the type-receiving plates mounted and arranged substantially as described, of a vertical conduit-plate which is adjustable vertically, substantially in the manner and for the purpose described.

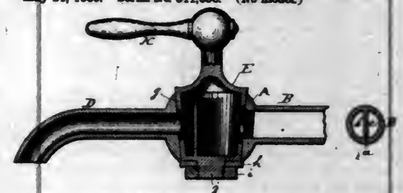
7. In a type-distributing apparatus substantially such as described, a movable type-receiver adapted to slide into coincidence with and to communicate with any of a series of type-channels, substantially in the manner and for the purpose described.

8. In a type-distributing apparatus substantially such as described, the combination, with a movable type-receiver and with a series of type-containing channels, substantially as set forth, of an index for registering the movable type-receiver with relation to the type-channels below, substantially in the manner and for the purpose described.

9. In a type-distributing apparatus substantially such as described, the combination, with a movable type-receiver and with a series of type-containing channels, substantially as set forth, of a series of recesses or notches arranged to receive and hold a pointer or projection upon the said movable receiver, for the purpose and substantially in the manner described.

10. In a type-distributing apparatus substantially such as described, the combination, with a series of type-containing channels, of a type-receiver which is movable laterally above the receiving ends of the said type-containing channels, for the purpose and substantially in the manner described, formed with plurality of receiving and conducting passages, substantially in the manner and for the purpose described.

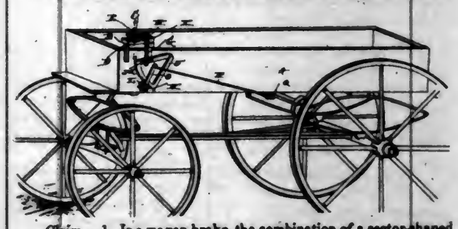
409,691. FAUCET. GEORGE W. MAHLMANN, Chicago, Ill. Filed May 21, 1889. Serial No. 311,630. (No model.)



Claim.—1. In a faucet for the purpose described, the combination, with the shell having an inlet-nozzle divided by a partition for connecting with hot and cold water supply pipes and having a water-outlet spout, of the plug cast hollow and provided with a partition extending from the bottom to near the top of such plug, substantially as set forth.

2. In a faucet for the purpose described, the combination, with shell A, having an inlet-nozzle B, divided by a partition *a*, to provide two separated channels *b* and *c*, one to connect with a cold and the other one with a hot water supply pipe and having an outlet-spout D, of conical plug E, cast hollow and provided with openings *e* and *f*, and with a V-shaped partition *g*, all substantially as set forth.

409,692. WAGON-BRAKE. WASHINGTON M. MASON, Warwick Cross Roads, Tenn. Filed May 25, 1889. Serial No. 312,171. (No model.)



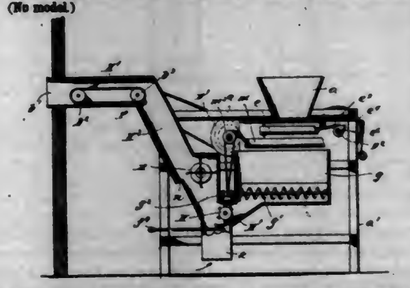
Claim.—1. In a wagon-brake, the combination of a sector-shaped plate mounted pivotally upon the side of the wagon-brake and having a radial slot, a vertically-moving screw-threaded rod having a pin or roller working in the said slot, mechanism connecting the said sector-shaped plate with the brake-levers, a pinion having a central screw-threaded perforation, whereby it is mounted upon the vertically-sliding screw-threaded rod, and mechanism for operating the said pinion, substantially as and for the purpose set forth.

2. In a wagon-brake, the combination of the sector-shaped plate mounted pivotally upon the side of the wagon-bed and having a radial slot, a vertically-sliding screw-threaded rod having at its lower end a pin or roller working in the said slot, a bracket extending laterally from the wagon-bed and having a vertical opening to admit of the passage of the said screw-threaded rod, and provided with an upwardly-extending guard, a pinion having a central screw-threaded perforation, whereby it is mounted upon the vertically-sliding screw-threaded rod between the bracket and the guard, and a spur-wheel mounted pivotally upon the said bracket, provided with a hand-wheel by means of which it may be manipulated and meshing with the said pinion, substantially as and for the purpose herein set forth.

3. In a wagon-brake, the combination of the sector-shaped plate mounted pivotally upon the side of the wagon-brake and having a toothed periphery and a radial slot, a vertically-sliding screw-threaded rod provided at its lower end with a pin or roller working in the said slot and having at its upper end a pinion resting upon a bracket, through which the said vertically-sliding screw-threaded rod extends, a guard arranged upon the said bracket above said pinion, a pinion journaled to the side of the wagon-bed and meshing with the toothed sector-shaped plate, and having an arm or lever secured to its outer face, and a rod connecting said arm with the brake-levers, substantially in the manner and for the purpose herein shown and specified.

4. In a wagon-brake, the combination of the sector-shaped toothed plate mounted pivotally upon the side of the wagon-body, the vertically-sliding screw-threaded rod connected with and operating the said sector-plate, and a pinion mounted pivotally upon the side of the wagon-bed, meshing with the said sector-plate, and having an arm or lever connected by means of a suitable rod with the brake-operating levers, substantially as and for the purpose shown and specified.

409,693. MACHINE FOR CLEANING REFUSE RUBBER. CHRISTOPH MAYER, Butler, N. J. Filed Aug. 12, 1886. Serial No. 210,757. (No model.)



Claim.—1. The combination of the frame *a'*, hopper *a*, shaking trough *c*, having arm c^2, cam c^3, and shaft D^3, duct a^2, cord or chain c^4, drum E', shaft E^1, pawl E^2, wheel E^3, and hand-wheel E, substantially as described.

2. The combination of the frame *a'* with the trough *g*, screw *g'*, rotary brush H, scrubbing-plate H', fan R, trunks N N', and endless belt or conveyer *d*, substantially as specified.

3. The trough *g*, the plate H', and revolving brush H, in combination with the inclined trunk N, communicating with trough *g*, the fan or blower, the horizontal trunk N', and the endless carrier in the lower side of said trunk, substantially as described.

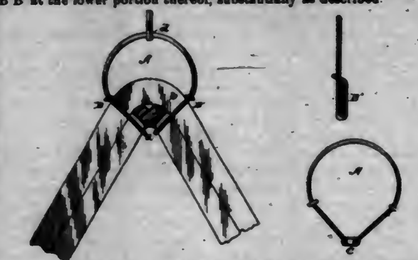
4. The trough *g*, the plate H', the revolving brush H, in contact with said plate, and the screw to feed material to said plate and brush, all in combination, substantially as described.

5. The combination, in an apparatus for cleaning waste rubber, of the plate and revolving brush, the screw to feed material to said plate and brush, and the fan or blower, substantially as described.

6. The trough *g*, having plate H', and revolving brush H, in combination with the inclined trunk N, communicating with trough *g*, and having the mouth *k*, the slide f^3, and the fan or blower, substantially as described.

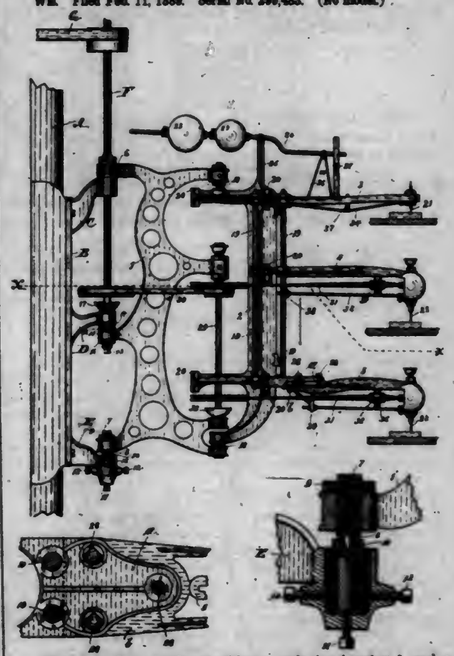
409,694. ATTACHING DEVICE FOR SUSPENDER-STRAPS. HENRY R. MESSINGER, Williamsport, Pa. Filed Feb. 16, 1889. Serial No. 300,138. (No model.)

Claim.—1. As an improved article of manufacture, a clamping device for the purpose mentioned, consisting of a continuous piece of wire having a general yoke or triangular main portion and the loops B B' at the lower portion thereof, substantially as described.



2. As an improved article of manufacture, a clamping device for the purpose mentioned, consisting of a yoke or triangular-shaped main portion, the loops B B', formed at the lower extremities of the said main portion, and the link C, connecting said loops, substantially as set forth.

409,695. CARVING-MACHINE. STEPHEN F. MOORE, Milwaukee, Wis. Filed Feb. 11, 1889. Serial No. 299,483. (No model.)



Claim.—1. In a carving-machine, a swinging bracket 1, and a fixed bracket B, having three arms, to each of which arms bracket 1 is hinged, in combination with adjusting devices consisting of pins 7 and bearing 10 and pin 13, substantially as described, located in brackets 1 and B at two of the pivotal points, whereby bracket 1 is adjusted to bracket B, as and for the purpose set forth.

2. In a carving-machine, the means for centering and adjusting a swinging bracket on a fixed bracket, consisting of the combination, with a bearing-pin 10 in a socket in the fixed bracket, and adjusting-bolts 11 and 12 12, turning through the walls of the socket and against the bearing-pin, whereby it can be adjusted longitudinally and laterally, of a pivot-pin 7, adjustable by screw-thread in an arm of the swinging frame, the pin 7 being provided with a jam-nut 9 thereon, substantially as described.

3. In a carving-machine, two or more vertically-moving arms 3 4 5, secured rigidly together and supported on a laterally-swinging standard, on which standard, the arms have their vertical movement, in combination with a lever 24, centrally fulcrumed on an upright 25, rigid on the standard, the lever being provided with a counterpoise 23 on one arm, and a bifurcated post 27, rigid on arm 3, in and by which the lever 24 is guided in its tilting movement against lateral

movement with reference to the arm 3, that one of the lever-arms not having the counterpoise thereon being connected to the arm 3 by a flexible cord, substantially as described.

4. In a carving-machine having two tool-carrying swinging arms, an arm (being one of said tool-carrying arms) in two parts *a* and *b*, overlapping each other at their extremities, and bolts passing through apertures therefor in one of said parts and turning into the other part, the apertures being of greater diameter than the bolts passing therethrough, substantially as described.

5. In a carving-machine, a swinging guide-carrying arm 3 and two tool-carrying arms 4 and 5, rigidly secured to the guide-carrying arm 3, having common vertical and lateral movement, in combination with two bands 31 31, a pulley on the spindle of the cutting-tool in each of said arms 4 and 5, and pulleys on a common shaft 29, having its bearings in the supporting swinging bracket 1, on which pulleys the bands run, the guide and tool carrying arms being supported and pivoted on the bracket 1 in and by the standard 2, substantially as described.

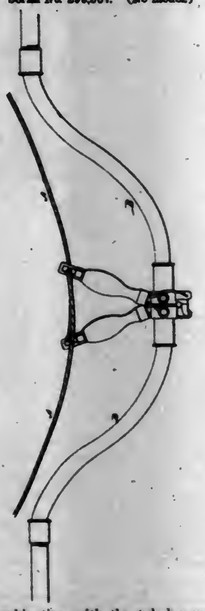
6. In a carving-machine, a swinging tool-carrying arm and a bracket on its outer free end, in which bracket are the bearings of the tool-carrying spindle, in combination with a stay-rod secured at one end rigidly to the spindle-carrying bracket, and at the other end at a distance from the spindle-carrying bracket adjustably secured to a harmoniously-moving part of the machine, substantially as described.

409,696. BOLT. DAVID M. MOTHERWELL, Logan, Ohio. Filed Apr. 25, 1889. Serial No. 308,626. (No model.)



Claim.—As an improved article of manufacture, a bolt having its neck or an enlargement below its head oblong in cross-section, substantially as and for the purpose described.

409,697. PIPE-COUPLER. CHARLES F. MURDOCK, Detroit, Mich., assignor to the Automatic Car Coupler Heating Company, same place. Filed Feb. 11, 1889. Serial No. 299,367. (No model.)



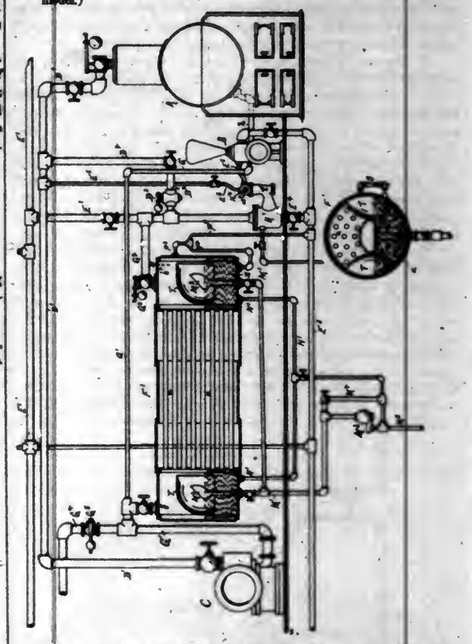
Claim.—1. The combination, with the tubular coupling-bodies, of the hook-shaped lugs D, the interlocking arms E, provided with extensions I, beveled surfaces and recesses, the trunnions on the sides of the coupling-bodies, the flexible bifurcated lever-handles provided with eyes, curved engaging-arms and eye-pieces adapted to receive a pull uncoupling-rope, substantially as specified.

2. The combination of two coupling-sections having on their under sides interlocking rigid lugs or arms and each having a laterally-disposed trunnion and levers journaled to said sections and having a yielding arm or branch adapted to engage the trunnion on the opposite coupling-section, substantially as specified.

3. The combination, with two coupling-sections, each having a rigid arm on its under side adapted to interlock when the adjacent ends of the sections have been brought together, of two locking and unlocking levers having a forked branch, one branch of each lever being respectively journaled on the sides of the coupling-sections and the opposite branch of each lever being adapted to engage a trunnion on the side of the opposite coupling-section, substantially as specified.

4. The combination, with two coupling-sections, each having a laterally-disposed trunnion, of a hinged coupling and uncoupling lever having a yielding branch adapted to engage the trunnion of the opposite section, the said levers having their outer ends adapted to receive a pull-cord, substantially as specified.

409,698. GREASE AND OIL SEPARATOR. EDWARD H. MURPHY, St. Paul, Minn. Filed Apr. 30, 1887. Serial No. 236,736. (No model.)



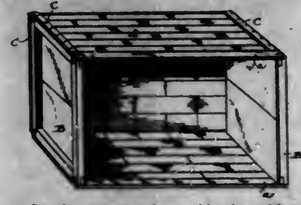
Claim.—1. In a steam-generating system, the combination, with the generators, pumps, engines, and other apparatus operated by said steam, of a tank through which the exhaust-steam from said pumps, engines, and other motors is conducted and in which the water of condensation is stored, and one or more pipes having flaring mouths in line with the surface of said water and adapted to receive the oil and fatty matter precipitated from said exhaust-steam and conducting it from said tank, and a trap M^3, through which the said water is discharged from said tank and retained at a uniform level therein, substantially as and for the purpose set forth.

2. In a steam-generating system, the combination, with the generators, pumps, engines, and other apparatus operated by said steam, of a tank through which the exhaust-steam from said pumps, engines, and other motors is conducted and in which the water of condensation is stored, safety-pipe P', connected into said tank below the water-line, and with bend P^2 rising above the water-line, and having combined equalizing and overflow pipe P^3 connecting said bend with said tank above the water-line, substantially as and for the purpose set forth.

3. In a steam-generating system, the combination, with the generators, pumps, engines, and other apparatus operated by said steam, of a tank through which the exhaust-steam from said pumps, engines, and other motors is conducted and in which the water of condensation is stored, one or more pipes having flaring mouths in line with the surface of said water and adapted to receive the oil and fatty matter precipitated from said exhaust-steam and conducting it from said tank, a trap M^3, through which said water is discharged from said tank and retained at a uniform level therein, and a by-pass pipe M^4, connecting said piping on each side of said trap, whereby the water may be discharged from said tank without passing through said trap, substantially as and for the purpose set forth.

4. In a high-pressure steam-generating apparatus, the combination, with said generating apparatus, of a radiating supply-piping connected to said generator through a reducing-valve, whereby the pressure in said radiator system is less than in said generator, piping, whereby the exhaust from the engines, pumps, and other motors operated by said high-pressure steam is discharged into said radiating system, tank F', through which said exhaust-steam passes and in which the oil and grease from said exhaust-steam are precipitated, flaring-mouthed pipe or pipes M^3, adapted to receive the said oil and grease from the surface of the water of condensation from said exhaust-steam in said tank and conduct it therefrom, piping connecting said radiating system with said generator through a pump or other means for returning the water of condensation to said generators, an equalizing-pipe E^3, connecting said radiating system with said return-piping through a casing H', and a float within said casing adapted to control the valve through which the supply of the steam to said pump or other motors passes, substantially as and for the purpose set forth.

409,699. BOX OR CRATE. CHARLES E. PARER, Watertown, Wis. Filed May 21, 1889. Serial No. 311,544. (No model.)



Claim.—1. In a box or crate, the combination, with suitable end or side pieces, of a continuous fabric formed of a series of single wires, cords, or wooden strips secured to end strips and having a wooden filling woven in and out or over and under said wires, cords, or strips, said fabric forming the sides or ends and bottom of the box or crate in one continuous strip, and being tacked or otherwise secured to the edges of said end or side pieces, substantially as set forth.

2. A box or crate consisting of suitable end or side pieces, in combination with a continuous fabric formed of single wires, cords, or wooden strips interwoven with wooden slats, tacked or otherwise detachably secured to the edges of said end or side pieces to form the other sides or ends of said box or crate, and extending beyond said end or side pieces to form a continuous flexible cover for said box or crate, substantially as set forth.

409,700. BRIDGE. GEORGE H. PEGRAM, Wilmington, Del. Filed Mar. 27, 1888. Serial No. 269,176. (No model.)

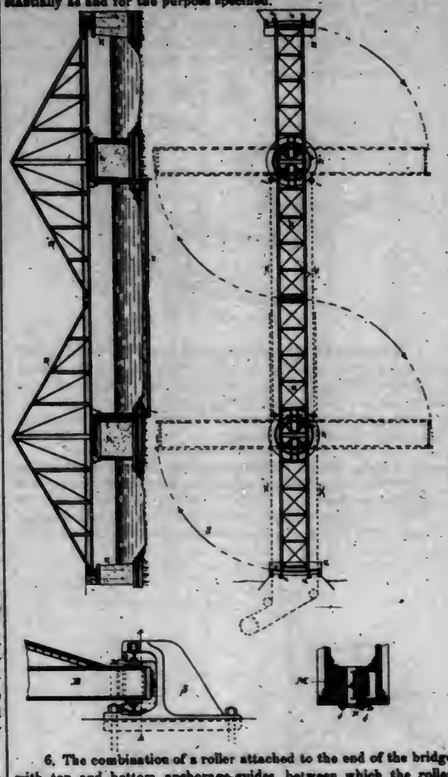
Claim.—1. A draw or swing bridge composed of two separate contiguous parts or draws swinging in a horizontal plane about different centers of motion, which parts may be turned independently or together, in combination with connecting mechanism, substantially as set forth, for operating both of said draws simultaneously from one or the other thereof, substantially as and for the purpose specified.

2. A horizontally-swinging draw-bridge consisting of the combination of two pivot-piers and two rest-piers with two horizontally-swinging cantalevers having tail-arms adapted to span the three water-ways between said piers, the middle water-way between the pivot-piers being spanned by the two cantalevers and the side water-ways being spanned by the tail-arms, and means, substantially as set forth, upon said rest-piers to anchor said tail-arms when the bridge is closed to keep the cantalevers in line, but which tail-arms are entirely free when the bridge is open, substantially as and for the purpose specified.

3. A draw-bridge composed of two parts or draws adapted to swing in the same horizontal plane and each having two arms, the respective outer arms of which form two cantalevers, while the inner arms are firmly held in position by rest-piers or abutments, in combination with anchorage-girders attached thereto, and under which the tail-arms of the draws swing, substantially as and for the purpose specified.

4. A draw or swing bridge having a central water-way spanned by two cantalevers arranged upon separate pivots and adapted to swing in a horizontal plane, each of which cantalevers is counterbalanced when open by an unsupported tail-arm, and when closed by said tail-arm, in combination with standards attached to the abutments or rest-piers, the said parts being combined with the said pivot and rest piers, substantially as and for the purpose specified.

5. The combination, in a draw or swing bridge adapted to swing in a horizontal plane, of an anchorage girder or beam with standards which are anchored to the abutments or rest-piers, the draw when closed being held down directly by the standards, and when moving being guided and held down by the said beam or girder, substantially as and for the purpose specified.



6. The combination of a roller attached to the end of the bridge with top and bottom anchorage-guides, between which the roller runs and by which the end of the draw is guided and its vertical motion limited, substantially as and for the purpose specified.

7. In combination with a draw or swing bridge, an axle carrying a roller to guide the draw when turning, which axle has its end bearing eccentric with the roller-bearing, substantially as and for the purpose specified.

8. In combination with a draw or swing bridge, an axle having its end bearing eccentric with the roller-bearing, and to the end of which axle a disk-plate is attached, by which the axle is turned and held in position, and a roller carried by said axle to guide the draw when turning, substantially as and for the purpose specified.

9. In a draw or swing bridge, a ring turning freely about the center or pivot, in combination with locks to secure said ring to said bridge, and chains or ropes secured to said ring, by which the bridge may be turned, substantially as and for the purpose specified.

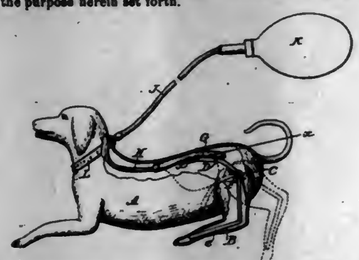
10. In a pivot or swing bridge, the pivot-pier surrounded by water, in combination with a horizontally-swinging draw pivoted upon said pier, chains or cables extending from the shore or distant place to said pivot-pier and passing under the water, guide-rollers for said chain or cable, and connections between said chain or cable and horizontally-swinging draw, whereby the said draw may be operated from a distant place separated from the pier by water, substantially as and for the purpose specified.

11. The combination, with a draw-bridge composed of two parts or draws on separate piers, of a chain or rope running between the draws under the water and connected to both by means of rings passing around the draw centers outside of the balance-wheels, by which the draws may be operated in unison when desired, substantially as and for the purpose specified.

409,701. TOY. HENRY L. PHILLIPS, New York, N. Y. Filed May 20, 1889. Serial No. 312,030. (No model.)

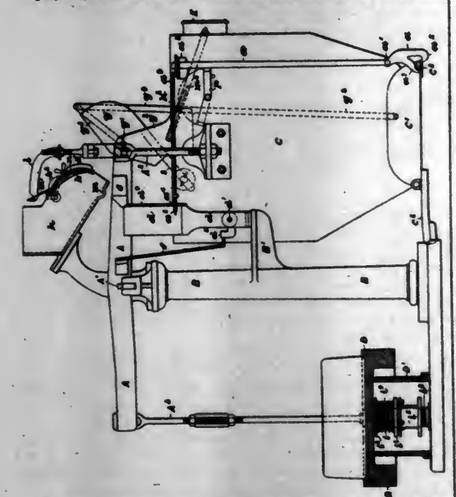
Claim.—1. A jumping toy having a body, legs hinged to the body, and an inflatable case operating by its expansion to move the legs, in combination with a hand device for supplying air to the case, substantially in the manner and for the purpose herein set forth.

2. The combination, in a toy, with its movable body, of a bent lever pivoted to said body and having one of its arms free to swing outward therefrom, an inflatable case carried by the body in position to bear against the inner arm of said lever, a separate collapsible bulb, and a tube connecting said bulb and case, substantially in the manner and for the purpose herein set forth.



3. The combination, in a toy, of a bent lever pivoted to the body of the toy, a spring actuating the lever to carry its inner arm inward, an inflatable case bearing upon said inner arm to overcome when inflated the tension of the spring, and thereby swing the lever outward, and a device for inflating the case, substantially in the manner and for the purpose herein set forth.

409,702. GRAIN-WEIGHING MACHINE. HENRY POOLEY and JOHN PARKINSON, Liverpool, County of Lancaster, England, assignors to Henry Pooley & Son, same place. Filed June 22, 1887. Serial No. 242,091. (No model.) Patented in England Apr. 29, 1886, No. 5,813; in Austria-Hungary July 13, 1886, No. 42,198, and in Germany July 20, 1886, No. 39,635.



Claim.—1. In an automatic weighing-machine of the type herein described, the combination of the catch-grain *g*, for receiving the flow of grain after the weighing of the material is completed, having trunnions *g'* mounted and working in bearings attached to the sides of the receptacle C, in combination with the discharging-door C' and connecting-lever g^6, whereby the said catch-grain *g* is operated and the flow of grain, after full weight is reached, is caught, substantially as and for the purposes set forth.

2. The combination, with the weight-plate of a weighing-machine, of a screwed base i^3, nut i', lock-nut i^3, spring *i*, and a guard consisting of the plate i^3 and rods i^4, all arranged and operating substantially as and for the purpose shown and described.

3. In a weighing-machine, the combination, with the weigh-beam thereof, of a slide *c*, a weight or hammer *d*, rod a^4, lever *a*, catches a^3, and receptacle C, having a door C', and projections C^3, all arranged and operating substantially as and for the purpose shown and described.

4. In a weighing-machine, the combination, with a feed-chute A, of a valve *k*, link *w'*, device *l*, weight-beam A, weight-plate D, and spring *i*, substantially as described.

5. In a weighing-machine, the combination, with a feed-chute, of a groove over which the grain leaving said chute passes, so that said groove is constantly filled with grain, and a valve the edge of which falls into said groove when closed, which forms a cushion therefor, substantially as described.

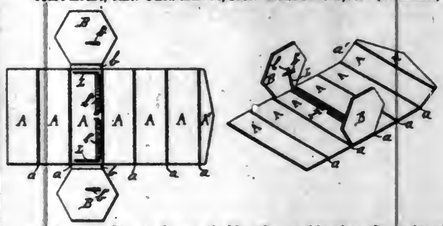
6. In a weighing-machine, the combination of a cut-off valve having an aperture for the passage of grain after the valve is closed, and an adjustable shutter attached to said valve to control the size of said aperture, substantially as described.

7. In a weighing-machine of the type herein set forth, the combination, with the discharging-door C', of the receptacle C, the counterbalance-weight C^3, catch-lever *a*, catch-jaws a^3, rod a^4, hammer *d*, and slide *c*, operating together, and whereby the door C' is opened and the receptacle C discharged, and when discharged the door C' is closed and held, substantially as set forth.

8. In a weighing-machine of the type herein set forth, the catches *a*, having jaws a^3, and a hook a^7, mounted on fulcra a', in combination with the rounded nose projections C^3 of the door C', whereby the automatic engagement of the catch-lever *a* with the discharging-door C' is effected, as set forth.

9. The combination of the spring *i*, base i^3, plate i^3, rods i^4, and lock-nut i^3, substantially as and for the purposes set forth.

409,703. BOX FOR NECK-WEAR. EDWIN R. PROCTER, Washington Court-House, Ohio. Filed Mar. 30, 1889. Serial No. 305,446. (No model.)



Claim.—1. In a neck-wear holder, the combination of a series of hinged leaves provided with cavities and adapted to fold back to back or face to face at will, so as to form a prism, and double-lipped spring-clamps having feet adapted to engage said cavities for the reception of the feet of the spring-clamps, said cavities extending within the material of said leaves outward from the slits made on the inner face of said leaves, as and for the purpose specified.

2. In a neck-wear holder, the combination of a series of leaves A, attached at adjacent sides by a series of similarly-working hinges *a*, and provided with the cavities C, made within the material of said leaves, for the reception of the outwardly-pointing foot ends of the spring-clamps, and the clamps J, having the feet F, as and for the purpose specified.

3. In a neck-wear holder, the combination of a leaf A, having the cavities C, and the clamp J, having the lips *e* and the corrugations *x* in its jaws, and the feet F, as and for the purpose specified.

4. In a neck-wear holder, the combination of a series of hinged leaves provided with cavities and adapted to fold back to back or face to face at will, so as to form a prism, and double-lipped spring-clamps whose twin feet are adapted to engage said cavities and whose spring-lips retain within them the articles desired, as and for the purpose specified.

5. In a neck-wear holder, the combination of a series of hinged leaves having cavities therein, and polygonal end leaves hinged at right angles to the opposite ends of one of said series and adapted to stand fastened with plane of their faces at right angles to the plane of said one leaf, and double-lipped spring-clamps whose feet are adapted to engage said cavities and whose spring-lips retain within them the articles desired, as and for the purpose specified.

6. In a neck-wear holder, the combination of the ends B, having the spring-clips *b'*, and the leaves A, having the journaled levers L and the cavities C, and the double-lipped spring-clamp J, having feet adapted to engage said cavities, as and for the purpose specified.

7. In a neck-wear holder, the combination of the ends B and the leaves A, the former hinged to one of latter and the said leaves hinged together by the hinges *b* and *a*, respectively, and the clamp J, having the feet F, adapted to engage the slits S and cavities C in said leaves, as and for the purpose specified.

409,704. LOCK FOR FIRE-ARMS. EBERHARD I. PUPKE, New York, N. Y. Filed Dec. 19, 1888. Serial No. 294,063. (No model.)

Claim.—1. In a double-barreled gun, the trigger carrying the star-wheel, as described, in combination with a stationary pawl secured to the lock-casing within the field of movement of said wheel, whereby, when the trigger is operated, said wheel will be carried against said pawl, thereby rotating the wheel, the sears against which said wheel operates when elevated, and a detent-pawl carried by the trigger and engaging with said wheel, whereby the latter is prevented from revolving backward, substantially as shown, and for the purposes set forth.



2. The combination of a trigger carrying a star-wheel whose alternate points are in different vertical planes and are operated to rotate step by step by the springing of said trigger, with the sears of a double-barreled gun, said sears having tails within the operative field of said wheel, substantially as and for the purpose set forth.

409,705. CLOCK-PENDULUM. GEORGE P. REED, Melrose, Mass. Filed June 30, 1888. Serial No. 278,712. (No model.)



Claim.—1. In a clock-pendulum, the combination of a rod provided with a ball, a laminar ring comprising plates of different contractile and expansive capacity, said ring being secured to said ball and cut or opened at a point opposite its attaching-point to form free ends, and the adjustable weights on said ends, substantially as described.

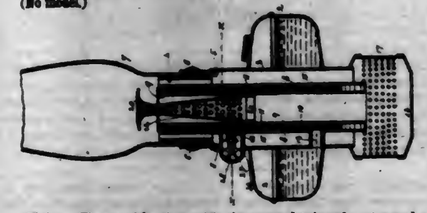
2. In a clock-pendulum, the laminar ring B, comprising the plates *v z*, having the openings *b*, in combination with the sliding weights *f*, adjustably disposed on said ring, the rod A, and means for securing said ring to said rod, substantially as set forth.

3. In a clock-pendulum, the rod A, in combination with the ring B, secured on said rod by the nut D, said ring comprising the bisected plates *v z*, of different contractile and expansive capacities, and the adjustable weights *f*, disposed in said ring, substantially as and for the purpose described.

4. In a clock-pendulum, the combination of the rod A, provided with the ball C, the ring B, comprising the plates *v z*, said ring being cut at *b* and secured to said ball by screws *x*, and the sliding weights *f*, disposed on the free ends of said ring, substantially as set forth.

5. In a clock-pendulum, the laminar ring B, formed in sections, each section being secured to the pendulum-ball C in such a manner as to leave the opposite ends of said sections free, substantially as and for the purpose described.

409,706. LAMP. FRANK REED, Brooklyn, assignor of one-half to Charles S. Upton, New York, N. Y. Filed Apr. 8, 1886. Serial No. 198,300. (No model.)

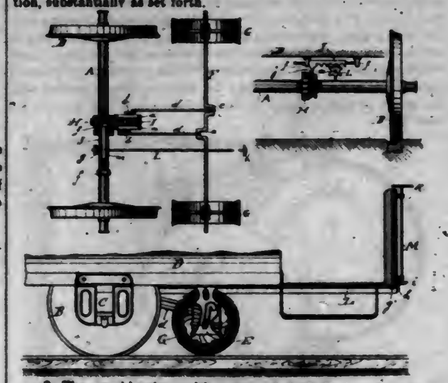


Claim.—The combination, with the central tube of an Argand or central-draft lamp, of a perforated cone, the base of which fits the inner side of said tube, said cone being provided with a solid deflector-button at the top thereof, substantially as shown and described.

409,707. SAFETY ATTACHMENT FOR RAILWAY-CARS. RICARDO G. RIERA, Barcelona, Spain. Filed Mar. 8, 1889. Serial No. 302,853. (No model.)

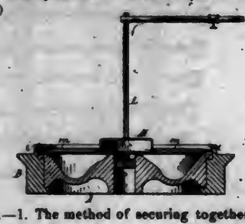
Claim.—1. The combination, with a car, of a shaft pivotally suspended forward of the wheels thereof, and carrying circular brushes driven from the car-axle to rotate in a reverse direction by two pinions, the one mounted upon the axle to be laterally movable thereon for shifting it in and out of gear, substantially as set forth.

2. The combination, with a car, of shaft F, carrying circular brushes and being journaled in slotted hangers E and supported on bars *n*, suspended on screw-rods *o* for vertical adjustment, and of means for driving such shaft F from the car-axle in a reversed direction, substantially as set forth.



3. The combination, with a car, of shaft F, carrying circular brushes G and being driven from a pinion I, meshing with a pinion H, sleeved upon the car-axle, and laterally movable thereon by a rack-bar J, having fork *j*, and being operated by a shaft L, having pinion *m*, all substantially as set forth, to operate as specified.

409,708. METHOD OF CONSTRUCTING CAR-WHEELS. JAMES RIGBY, Minneapolis, Minn. Filed Jan. 23, 1889. Serial No. 297,342. (No model.)



Claim.—1. The method of securing together the body and tire of a car-wheel, which consists in placing the body within the tire and forcing it against a flange or ledge projecting inward from the inner periphery at or near one face, heating a flange on the other face of the tire to the working temperature, and, after the body is in position, turning such flange inward and hammering it down upon the body, whereby the parts are held securely together without the use of bolts, nuts, or rivets.

2. The method of constructing car-wheels, which consists in forming grooves and interlocking beads or flanges upon the outer periphery of the body and inner periphery of the tire, and a flange projecting from the face of the tire, then placing the body within the tire and interlocking their beads or flanges, and then heating the flange projecting from the face of the tire and hammering it down upon the body for securing them together.

409,709. PLOW. MARTIN L. RINEHART, Richmond, Ohio. Filed Feb. 21, 1889. Serial No. 300,727. (No model.)

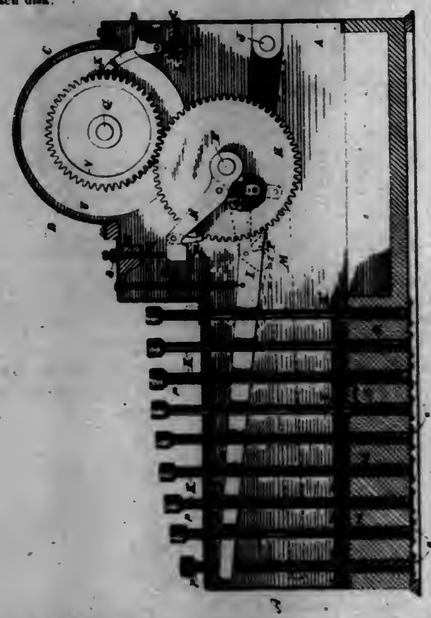


Claim.—The combination of the herein-described beam D, formed of metal and in the shape of channel-iron, and provided with the strengthening-rib F and the blocks *a* and a^6, the clamping-bolt *a'*, and the post or standard A, substantially as and for the purpose specified.

409,710. ADDING-MACHINE. JACOB H. SCHARRENBERGER, Springfield, Ohio, assignor, by direct and mesne assignments, to himself and Thomas Reynolds, same place. Filed Nov. 27, 1888. Serial No. 292,007. (No model.)

Claim.—1. In an adding-machine, the combination, with an arbor, a series of independent rotatable adding-disks mounted thereon and respectively bearing groups of figures from 0 to 9, inclusive, and provided each with an annular row of teeth on one side, and a dog piv-

oted to the side opposite the teeth, save on the last disk to the left, and a fixed cam between each two of the rotatable disks mounted on said arbor, the cam-surfaces of said disks being opposite the numerals 0 and 9 to throw the dog of one disk into engagement with the teeth on the next disk to move it from 0 to 1 as the first-named disk passes from 9 to 0, of a like series of independent gear-wheels meshing with the adding-disks, respectively, a pivoted key-lever for each disk, a pivoted actuating-arm connected to each lever and carrying a pawl which engages with the adjacent gear-wheels, a spring to return each key-lever to normal position, keys for each key-lever agreeing with the groups of figures on the respective disks, and a locking-pawl for each disk.

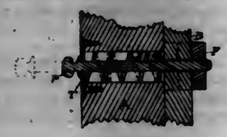


2. In an adding-machine, the combination, with a series of independent rotatably-mounted adding-disks respectively bearing groups of figures from 0 to 9, inclusive, and provided each with an annular row of crown-teeth on one side and a gear-rim on the other side, a fixed cam-disk between each two of the rotatable disks, and an engaging-dog carried by each of said adding-disks (save the last one to the left) and arranged to be actuated by said cam-disks to engage the crown-teeth of the next disk to the left to move said disk to the left from 0 to 1 as the first-named disk moves from 9 to 0, of a series of independent gear-wheels meshing, respectively, with the gear-teeth of the adding-disks, a pivoted key-lever and a pivoted arm for each gear-wheel, connected together and arranged to actuate the gear-wheel by a depression of the lever, stops to limit the upward movement of said arms, and a detent to prevent the adding-disks from accidentally rotating.

3. In an adding-machine, the combination, with an arbor, of a series of independent rotatable adding-disks, each carrying at one side an annular series of gear-teeth and a like series of crown-teeth, and at the other side a spring actuated and engaging dog, and a series of fixed cam-disks mounted between the adding-disks and having cam-surfaces by which said dogs are projected into engagement with said crown-teeth, the gear-teeth admitting of the adding-disks being actuated by the gear-wheels.

409,711. LADDER. WILLIAM G. SICKLER, Stuyvesant, N. Y. Filed Mar. 20, 1889. Serial No. 305,279. (No model.)

Claim.—In a ladder, the combination of the extension-bar B, movable in a vertical plane in contact with one of the side pieces of a ladder, said extension-bar provided with a series of holes, a presser-



409,711.



foot attached to said bar B, having an upper horizontal portion H and a lower smaller pointed portion C, with a bolt P, passing through the side piece A of the ladder, engaging with the holes in the bar B, said bolt operated by the spiral spring S, placed about the shank of the bolt and secured within the side piece A, all substantially as described, and for the purpose set forth.

409,712. TUBULAR LANTERN. JOSEPH B. STETSON, Lincoln, Me. Filed Apr. 3, 1889. Serial No. 305,985. (No model.)



Claim.—1. The combination, with the tubular lantern-frame provided with a depending tube, and a movable globe-frame which can be raised and lowered on said tube, of a fixed stop formed on said tube, and a laterally-movable stop attached to the globe-frame, substantially as set forth.

2. The combination, with the tubular lantern-frame provided with a depending tube, and a movable globe-frame which can be raised and lowered on said tube, of a fixed stop formed on said tube, and a movable annular stop attached to the globe-frame and provided with a space which enables the movable stop to clear the fixed stop, substantially as set forth.

3. The combination, with the tubular lantern-frame provided with a depending tube, and a movable globe-frame provided with a bell which can be raised and lowered on said tube, of a fixed stop formed on said tube, a movable annular stop provided with a space to clear the fixed stop, and an eyelet secured in the opening of the bell and holding the annular stop, substantially as set forth.

4. The combination, with the tubular lantern-frame provided with a depending tube, and the movable globe-frame provided with a bell which can be raised and lowered on said tube, of a fixed stop formed on said tube, a movable annular stop provided with a space to clear the fixed stop, and with a projecting thumb-piece and a thumb-piece which is secured to the bell and limits the turning movement of the annular stop, substantially as set forth.

409,713. BARREL-BUNG. WILLIAM H. SUNDAY, Scranton, Pa. Filed June 1, 1889. Serial No. 312,851. (No model.)



Claim.—A downwardly-tapering elastic bung C, combined with a bush downwardly tapering on the inside and having the opposite vertical grooves $a' a'$, and provided with the cams a^3 a^3, and the cars D, having wrench-arms $d\,d$ at the top and arms $d'\,d'$ at the bottom, which are adapted to pass through the grooves $a'\,a'$ and engage the cams a^3 a^3, substantially as and for the purpose set forth.

409,714. INDUCTION-COIL. ELIHU THOMSON, Lynn, Mass., assignor to the Thomson-Houston Electric Company, of Connecticut. Filed Feb. 12, 1887. Serial No. 227,445. (No model.)



Claim.—1. The combination, with an electric coil, of a bundle of U-shaped iron plates or pieces, between whose legs the conductors of the coil lie, in combination with yoke-pieces consisting of bundles of iron plates fitted into the space between the projecting ends of the legs of the U, and forming a butt-joint with the lateral edges of said

legs, so as to complete a solid magnetic circuit around the circumferential axis of the coil.

2. The combination, with an electric coil, of an enveloping iron mass consisting of a bundle of iron plates passing through the axis of the coil and around the outside thereof, together with a bundle of sheet-iron plates insulated from one another and fitting into the space between the extensions of the first-named iron mass and forming a butt-joint with the edges of the plates making up such mass, as and for the purpose described.

3. The combination, in an induction-coil or converter, of primary and secondary coils whose combined cross-section is a square figure having four sides of equal length, in combination with a series of superposed U-shaped plates passing through said coil, and having legs which project beyond the coils to a distance substantially equal to the thickness of such coil, and a magnetic circuit-closing bundle of iron plates placed between the legs and having a width equal to the width of the legs.

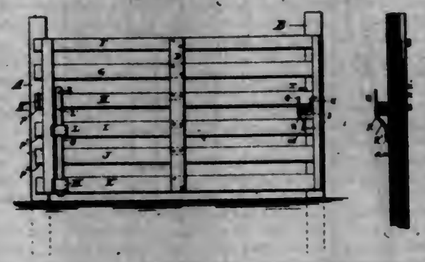
409,715. RAZOR-STROP. JOSEPH B. TORREY, Worcester, Mass. Filed Aug. 20, 1888. Serial No. 283,207. (No model.)



Claim.—1. In a razor-strop, the combination, with the rigid body thereof, of the cushioned stropping part consisting of a flattened stuffed case or tube and a leather strip covering the outer side only of the said stuffed case or tooth, substantially as set forth.

2. In a razor-strop, the combination, with a rigid rectangular body-block having hard stropping-surfaces on two of its opposite faces, of two cushioned stropping parts on the other two opposite faces of said block, each of said cushioned stropping parts consisting of a flattened stuffed case or tube forming a cushion, and a leather stropping-strip covering the outer side only of the cushion, substantially as set forth.

409,716. FARM-GATE. THOMAS A. TWEEDY, Knightstown, Ind. Filed Apr. 4, 1889. Serial No. 305,963. (No model.)



Claim.—1. In combination with a farm-gate, the support Q, having rollers R S, an upward projection for holding the gate in place, a downward projection for attachment to the post, an upward angle on the face of the post, with a point for driving into the post to secure the support in place, the pin T, the foot O, with pins Z and Z' kept in position by staples L M, the half-blocks X X' X^2, interposed between the slats of the gate and the middle upright, so as to allow a passway for support Q, and the staple N and notched slats H I J, for latching the gate when closed, substantially as and for the purposes set forth and described.

2. In combination with a sliding farm-gate, the support Q, having rollers R S and arms R', U, and U', for attaching the same to the post, substantially as and for the purposes set forth and described.

409,717. RUBBER-SHOE ATTACHMENT. JOHN VAN ANDALL and BERNARD A. DOLAN, Keokuk, Iowa. Filed Mar. 6, 1889. Serial No. 302,120. (No model.)

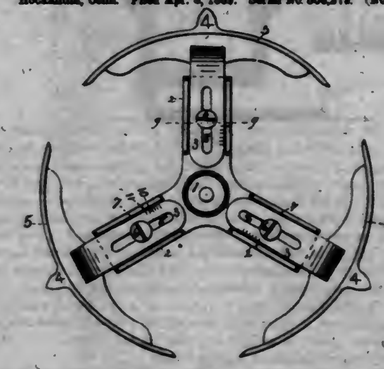
Claim.—1. The combination of a lever pivoted on the outside of the shoe, a spring-clip secured on the inside of the shoe, and a suitable connection between the two, substantially as described

2. In an attachment for overshoes, a clip secured within the shoe, a strip extending down the outside of the same, a lever pivoted to said strip, and a suitable connection between said clip and said lever, substantially as described.

409,717.



409,718. SPACING OR MARKING WHEEL. FRANCIS C. VIBERT, Rockaway, Conn. Filed Apr. 6, 1889. Serial No. 306,279. (No model.)



Claim.—The hub 1 and principal arms 2 2 2, in combination with the extension-arms 3 3 3, marking-points 4 4 4, peripheral segments 5 5 5, screws or bolts 6 6 6, raised lips or projections 7, and slots 8, when arranged and constructed as herein shown and described, and for the purpose set forth.

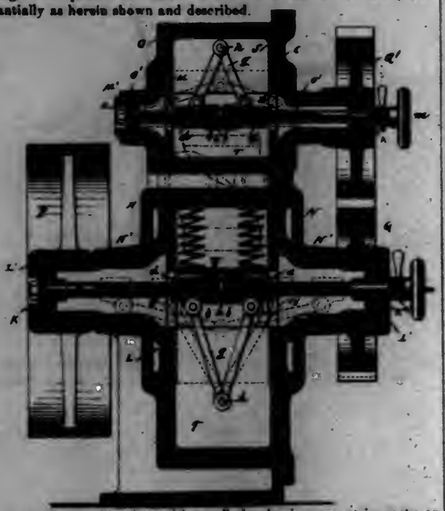
409,719. GAS AND AIR MIXING MACHINE. LEWIS B. WHITE, New York, N. Y. Filed June 28, 1888. Serial No. 278,296. (No model.)

Claim.—1. The combination, with a cylinder, of an eccentric shaft passing longitudinally through the same, a cylindrical piston mounted centrally on the same and in contact along one longitudinal line of its circumference with the inner circumference of the cylinder, which piston is provided with a longitudinal slot, wings within said slot mounted to slide in the direction of the diameter of the cylindrical piston, sliding sleeves on the shaft, links connecting the one wing with said sliding sleeves, and means, substantially as set forth, for adjusting the sliding sleeves, substantially as shown and described.

2. The combination with a cylinder, of an eccentric shaft passed longitudinally through the same, said shaft being threaded, a cylindrical piston mounted centrally on said shaft, which piston is provided with a longitudinal slot, sliding wings in the slot, sliding sleeves on the shaft, nuts on said shaft against which the sleeves can rest, and links connecting the sleeves with one wing, substantially as shown and described.

3. The combination, with a cylinder, of a shaft passed longitudinally through the same, a cylindrical piston mounted centrally on the shaft, said shaft being provided with a right and left hand screw-thread at opposite sides of the central plane of the cylindrical piston, nuts on the left and right hand thread of the shaft, sliding sleeves on the shaft, sliding wings in the cylindrical piston, and links connecting the sleeves on the shaft with one wing, substantially as shown and described.

4. The combination, with a cylinder having eccentric necks on its ends, of a cylindrical piston within the cylinder, necks on the piston mounted to rotate in the necks of the cylinder, bearing-nuts in the piston-necks, a shaft mounted in the bearing-nuts, said shaft having a right and left hand screw-thread at opposite sides of its center, nuts on said shaft, sleeves sliding on the threaded part of the shaft, sliding wings in the piston, and links connecting the sleeves with one of the wings in the piston and a hand-wheel on one end of the shaft, substantially as herein shown and described.

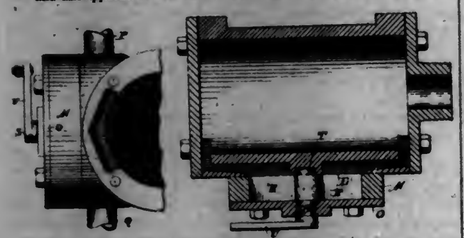


5. The combination, with a cylinder having eccentric necks on its ends, of a cylindrical piston within the cylinder, necks on the piston mounted to rotate in the necks of the cylinder, bearing-nuts in the piston-necks, a shaft mounted in the bearing-nuts, said shaft having a right and left hand screw-thread at opposite sides of its center, nuts on said shaft sliding on the threaded part of the shaft, sliding wings in the piston, and links connecting the sleeves with one of the wings in the piston, and a hand-wheel on one end of the shaft, and a lock-nut on the shaft adjacent to the band-wheel for the purpose of locking the shaft in place, substantially as shown and described.

6. The combination, with a cylinder, of a cylindrical eccentric piston in the same, a sliding wing mounted and positively adjustable in said eccentric piston to project a greater or less distance from the same, substantially as shown and described.

7. The combination, with a cylinder, of a cylindrical eccentric piston in the same, having a slot extending in the direction of the length of the piston, and a sliding wing in said slot extending from one end of the piston to the other, and positively adjustable, as set forth, to project a greater or less distance from said piston, substantially as set forth.

409,720. STEAM-ENGINE VALVE. JOHN H. WILLIAMS, Urbana, Ohio. Original application filed June 9, 1888, Serial No. 276,236. Divided and this application filed Oct. 1, 1888. Serial No. 286,908. (No model.)



Claim.—The combination, with an oscillating valve consisting of a central portion and two arms converging in width toward the center, a shaft on which it oscillates, a crank on the shaft, a steam-chest composed in part of an annular body and a cap-plate, and inlet and exhaust-pipes which communicate with the steam-chest at the opposite sides of the valve, of a steam-cylinder whose bore composes the remainder of said chest and which is constructed with steam-ports which occupy a portion of its circumference at their outer ends and converge to points within said chest, and mouths of the same shape and slightly smaller than the arms of the valve.

409,721. FIBROUS LUBRICATOR. JOSEPH WILLIAMS, Jr., Pittsburg, Pa. Filed Apr. 10, 1889. Serial No. 306,726. (No model.)

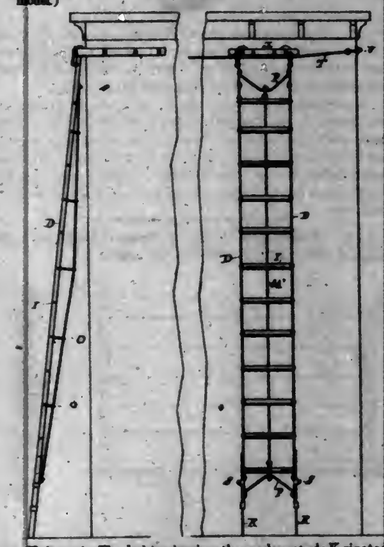


Claim.—1. As a new article of manufacture, a lubricator consisting of a fibrous absorbent core and a fibrous cylindrical covering woven closely together and around the core, whereby when the fibrous body formed by the core and covering is saturated with a lubricant the covering becomes rigid and has its pores and interstices closed to retain the lubricant in the core, substantially as and for the purpose described.

2. As a new article of manufacture, a lubricator consisting of a fibrous absorbent core and a fibrous covering woven closely together and around said core, the ends of the body being closed substantially in the manner and for the purpose described.

3. As a new article of manufacture, a lubricator consisting of a core and covering composed of a series of closely-woven fibrous layers, which are graduated in diameter and fitted closely around one another, substantially as and for the purpose described.

409,722. FIRE-LADDER. WILLIAM WIBELIN, Newport, Ky. Filed Aug. 12, 1887. Renewed Jan. 28, 1889. Serial No. 297,821. (No model.)

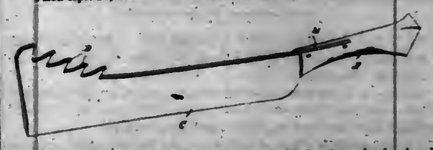


Claim.—1. The ladder having the anchor-studs K riveted thereto and the eyebolts L, connected to said studs, combined with the stiffened brackets O and the tension-ropes M, secured to said anchors at top and bottom, substantially as and for the purpose set forth.

2. The ladder having V-shaped brackets P at top and bottom and eyebolts L, combined with the stiffened brackets O, substantially in the manner and for the purpose set forth.

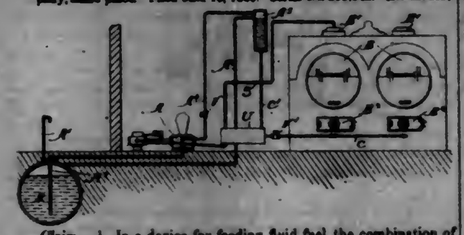
3. The combination of the ladder D, having extensible legs at its lower end, with the truck X and cable T, substantially as and for the purposes set forth.

409,723. CORN-CUTTING KNIFE. JAMES P. WOOD, Fairbank, Minn. Filed Apr. 26, 1889. Serial No. 308,004. (No model.)



Claim.—The improved corn-cutting knife having the back edge of its blade curved outward toward its free end and provided with a series of teeth on said curved portion, the said teeth projecting from and beyond the back edge of the blade, as specified.

409,724. DEVICE FOR FEEDING FLUID FUEL. WALTER B. WRIGHT, Chicago, Ill., assignor to the International Gas and Fuel Company, same place. Filed Jan. 10, 1889. Serial No. 296,042. (No model.)



Claim.—1. In a device for feeding fluid fuel, the combination of an oil-tank, a fluid-reservoir, a pipe and pump to pass the oil from such tank to such reservoir, two pipes leading from such reservoir, one to the points of discharge and the other back to the tank, the latter opening into the reservoir at a higher point than the former and at a lower point than the first-mentioned pipe, a pipe leading from the discharge-pipe back to the tank, a valve in the steam-supply pipe which leads to the pump, a second valve in the pipe which leads from the discharge-pipe to the tank, and a handle and connecting-bar whereby the two said valves are simultaneously operated in opposite directions, so that when the steam is turned on the valve in the pipe leading from the discharge-pipe to the tank is closed and when the steam is turned off it is open to drain the reservoir.

2. The combination of a fluid-fuel furnace with an oil-tank and an oil-reservoir, the latter situated higher than the tank and the discharge into the furnace, a discharge-pipe from such reservoir to the furnace, a supply-pump, and a pipe from the tank to the reservoir connecting with such pump, and an overflow-pipe from the tank to the reservoir, a pipe leading from the discharge-pipe back to the tank, a valve in the steam supply pipe which leads to the pump, a second valve in the pipe which leads from the discharge-pipe to the tank, and a handle and connecting-bar whereby the two said valves are simultaneously operated in opposite directions, so that when the steam is turned on the valve in the pipe leading from the discharge-pipe to the tank is closed and when the steam is turned off it is open to drain the reservoir.

3. In a device for feeding fluid fuel, the combination of a fluid-tank with a reservoir, two pipes—one a supply, the other an overflow—connecting the same, a fluid-pump in the supply-pipe and a discharge-pipe leading from such reservoir to the points of consumption of the fluid, the supply-pipe opening into the reservoir above the overflow-pipe, so that the fluid is circulated through the reservoir, but maintains a constant pressure therein, a pipe leading from the discharge-pipe back to the tank, a valve in the steam-supply pipe which leads to the pump, a second valve in the pipe which leads from the discharge-pipe to the tank, and a handle and connecting-bar whereby the two said valves are simultaneously operated in opposite directions, so that when the steam is turned on the valve in the pipe leading from the discharge-pipe to the tank is closed and when the steam is turned off it is open to drain the reservoir.

4. In a device for feeding fluid fuel, the combination of a reservoir from which the fluid is fed to the point where it is consumed, with a pipe leading therefrom to such point, a tank, a vent-pipe leading from such reservoir to the supply-tank and opening into the reservoir at a different height from the first-mentioned pipe, a connection between said two pipes controlled by a valve, so that communication between the reservoir and tank may be made from points of different heights upon such reservoir, and a pump and supply-pipes connecting the same with the tank and reservoir.

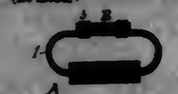
409,725. HEALD OR HEDDLE FOR LOOMS. JOHN YEADON, Idle, near Bradford, England. Filed July 5, 1887. Serial No. 243,235. (No model.)



Claim.—1. The combination, with the heddle-wires provided with central eyes and the eyes at their ends, of the looped yarns or threads E, whereby the heddle-wires are connected with the upper and lower heddle-shafts, respectively, and the rigid guard-wires G, passing through the said eyes at the ends of the heddle-wires, substantially as and for the purpose set forth.

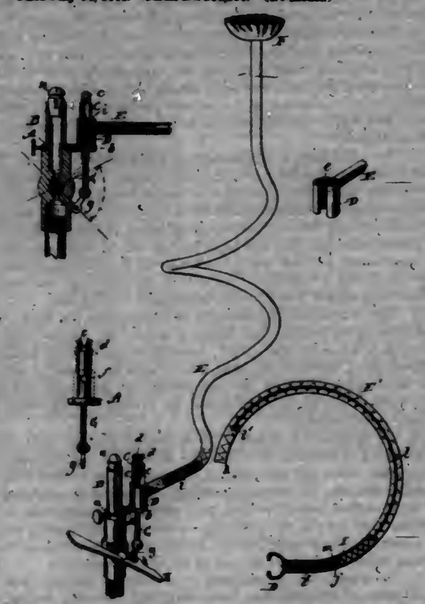
2. The combination, with the shafts, of a heddle, the heddle-wires A, having eyes C and J at each end, the guard-wires passing through the eyes C, the suspending-wires passing through the eyes J, and the series of looped yarns E, attached to certain of the eyes J at intervals greater than the interval between two adjacent heddle-wires, substantially as described.

409,726. HARNESS-LOOP. JOHN H. RAHE, Edgar, Nebr., assignor of one-half to George D. Benjamin, same place. Filed Apr. 12, 1889. Serial No. 307,044. (No model.)



Claim.—In combination with the trace-strap consisting of two layers, the blank to form the loop formed of a single piece passing between the layers and secured therewith by stitches or rivets, and having its ends brought together to form the loop, and provided with a series of openings in each of its ends, and a cap-plate having openings corresponding with those in the ends of the loop, and a double series of rivets passing through these openings and securing these parts, so that if the loop is broken from its attachment to the trace or strap the loop will remain operative, all substantially as described.

409,727. GAS-LIGHTER. DORTHE B. RATTEY, New York, N. Y. Filed July 31, 1888. Serial No. 281,580. (No model.)



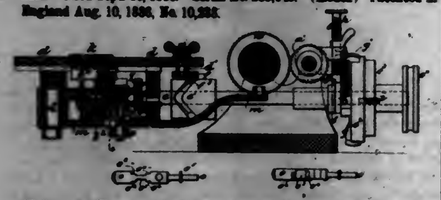
Claim.—1. In a gas-igniter, the combination of the removable magazine-tube E, provided with the clamp D, the arm A, fitted to the burner B, the cylinder C, carried by the arm A, the friction-springs c, provided with bowed ends d, extending over the mouth of the cylinder C, the piston G, and a key H, substantially as specified.

2. In a gas-igniter, the combination, with the burner B, provided with gas-key H, of the arm A, attached to the burner B, the cylinder C, supported by the arm A, the springs c, attached to the cylinder C and provided with bowed ends d, projecting over the upper end of the cylinder, the clamp D, embracing the lower ends of the springs c and the cylinder C, the curved magazine-tube E, attached to the clamp D and provided with the hopper F, the piston G, fitted to the cylinder C, and the link g, connecting the piston G and key H, substantially as specified.

3. As an improved article of manufacture, a gas-igniter constructed and operated as herein described, the same consisting of an adjustable arm having one extremity adapted to fit adjustably upon the gas-burner, the other extremity of said arm having attached to it a pellet-cylinder provided with a side orifice for admission of igniting-pellets, a pellet magazine or tube adapted to fit upon or connect with the pellet-cylinder and deliver pellets thereto, igniting-springs arranged above the upper extremity of the pellet-cylinder, and a piston moving within said cylinder and operated by connections with the gas-key

of the burner, so that when said key is closed the gas will be turned off and the piston brought below the pellet-orifice in the cylinder, so as to admit a pellet above the piston, and by the act of opening the key the gas will be turned on, and the piston will rise and push a pellet through and out of the cylinder between the springs, whereby the pellet will be ignited and the gas lighted, all as set forth.

409,728. BUTTON-HOLE SEWING-MACHINE. FRANK H. BENNETT, Twickenham, County of Middlesex, and JAMES DOWLING, London, England. Filed Sept. 10, 1888. Serial No. 285,045. (Model.) Patented in England Aug. 10, 1888, No. 10,286.



Claim.—1. The combination, substantially as hereinbefore set forth, of stitch-forming mechanism, cloth-clamping devices, the longitudinally-moving slide, means for actuating it, the transversely-moving slide, the bed-plate of the machine, a main operating-lever pivoted at one end of the bed-plate of the machine, a cam with which the opposite end of the lever engages, the main driving-shaft, gearing between the main driving-shaft and the cam, a continuously-driven cam, a lever connecting said cam with the main operating-lever *m*, a supplemental lever and a bolt connecting the supplemental lever to the main operating-lever, said bolt being formed with a reduced portion, and shoulders at each end of the reduced portion and on both sides thereof, and lugs on the supplemental lever engaging with the shoulders on the bolt.

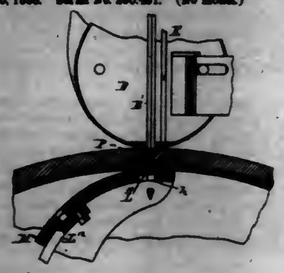
2. The combination, substantially as hereinbefore set forth, of stitch-forming mechanism, cloth-clamping devices, a longitudinally-moving slide, means for operating it, a transversely-moving slide, the main operating-lever and a supplemental lever pivoted together, means for oscillating said levers, guide-lugs on the levers, a locking-bolt moving in said guide-lugs, said bolt being formed with a reduced portion and shoulders at each end and on both sides of the reduced portion, means for sliding the bolt back and forth in the guide-lugs, and connections between the levers and the transversely-moving slide.

3. The combination, substantially as hereinbefore set forth, of stitch-forming mechanism, cloth-clamping devices, the longitudinally-moving slide, means for operating it, transversely-moving slide, means for operating it, the main operating-lever, means for operating said lever, the supplemental lever, the locking-bolt, the guide-lugs on the levers within which the bolt moves, and the pivoted link into which the locking-bolt projects.

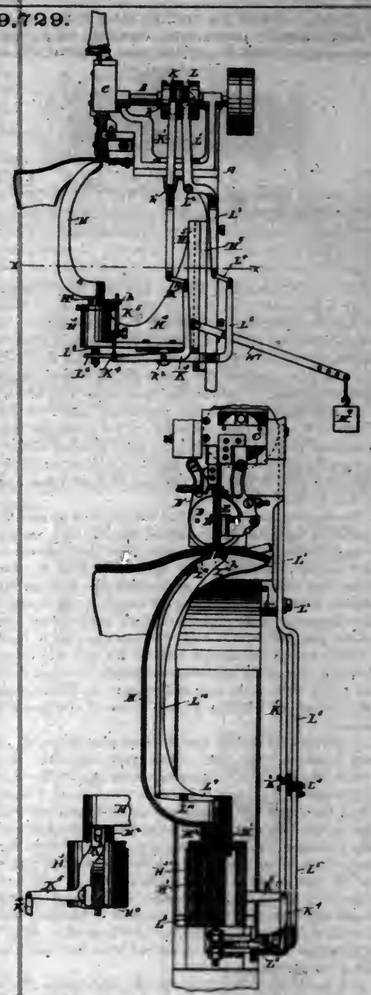
4. The combination, substantially as hereinbefore set forth, of stitch-forming mechanism, cloth-clamping devices, the longitudinally-moving slide, means for operating it, the transversely-moving slide, means for operating it, the main operating-lever, means for operating said supplemental lever, the lever, the locking-bolt formed with an enlargement at one end, the guide-lugs on the levers within which the bolt moves, and the pivoted link into which the locking-bolt projects and into which also projects the end of the supplemental lever.

5. The combination, substantially as hereinbefore set forth, with the bed-plate, of stitch-forming mechanism, cloth-clamping devices, the longitudinally-moving slide, means for operating it, the transversely-moving slide, the main operating-lever connected with the transversely-moving slide, a supplemental lever, a bolt for locking the two levers together, and a link pivoted to the bed-plate into which the supplemental lever projects and into which also projects the reduced outer end of the locking-bolt.

409,729. PEGGING-MACHINE. JOHN R. BUKFORD, Whitman, Mass. Filed Nov. 10, 1888. Serial No. 290,481. (No model.)



409,729.



Claim.—1. In a pegging-machine, the combination of a feeding turning-horn having an awl and peg orifice and a peg-cutting mechanism and mechanism for holding the horn and shoe stationary during the working of the awl, then feeding the shoe and horn forward together and holding them stationary until the work of peg driving and cutting is completed, and mechanism to feed said horn back when these operations are completed, with a peg-cutter L^{14}, awl E, driver E', and an upper feed mechanism, substantially as and for the purpose set forth.

2. In a pegging-machine, the rotating feeding-horn H, with the slide H^3, arm N, lever K^6 K^5, link K^4, lever K^3, link K^2, lever K, and cam K, substantially as and for the purpose set forth.

409,730. PAPER FILE OR HOLDER. JESSE B. BROWN, Nashville, Tenn. Filed June 17, 1889. Serial No. 314,593. (No model.)



Claim.—1. A holder for bills, papers, files, and the like, consisting of a grooved base, spacing-blocks fitted to the groove, and vertical partitions having each a foot adapted to enter the groove and located between the feet of adjacent partitions in said groove, and a locking device, substantially as described.

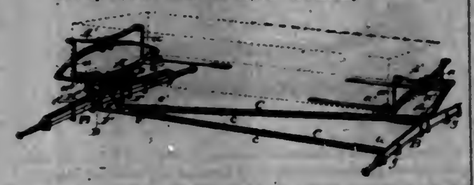
2. A holder for bills and the like, consisting of a base provided with a dovetailed groove, spacing-blocks having a similar form, and vertical partitions having feet with straight sides adapted to enter between the blocks in the groove, the blocks being located in the same and between the feet of the partitions therein, substantially as described.

3. The holder for bills and the like, consisting of a grooved base, spacing-blocks, vertical partitions, and horizontal division-partitions, the blocks and partitions being separately movable, substantially as described.

4. The holder for bills and the like, consisting of a grooved base, spacing-blocks, vertical partitions, and horizontal partitions or division-pieces mortised and fitted upon the vertical partitions, substantially as described.

5. The holder for bills and the like, consisting of the grooved base, the spacing-blocks, the vertical and horizontal partitions, and the transverse closure, whereby the pigeon-holes are formed and inclosed, substantially as described.

409,731. VEHICLE-GEAR. JOHN A. CHAPMAN, Milwaukee, Wis. Filed Apr. 7, 1887. Serial No. 233,961. (No model.)



Claim.—1. In a vehicle-gear, the combination, with an elliptic end spring, of a cross-spring attached at the middle to the upper side thereof and crank-shaped body-loops connecting the ends of said cross-springs with the body of the vehicle, substantially as and for the purposes set forth.

2. In a vehicle-gear, the combination, with elliptic end springs, of half-elliptic springs mounted thereon and crank-shaped body-loops secured at their outer ends in the eyes of said half-elliptic springs and attached at their inner ends to the under side of the vehicle-body, substantially as and for the purposes set forth.

3. In a vehicle-gear, a round wood reach, in combination with a perch-iron having a corresponding concave seat for reception of said wood reach, to which it is rigidly secured, substantially as and for the purposes set forth.

4. The combination, in a vehicle-gear, of a round wood reach and a perch-iron having a concave longitudinal seat fitted to the under side of said wood reach and flattened on the under side to provide seats for the nuts of the bolts by which it is secured to said wood reach, substantially as and for the purposes set forth.

5. In a vehicle-gear, the combination, with the upper and lower sections of the fifth-wheel, of the head-block plate formed with a rearwardly-projecting perch-iron and a forked draft-brace secured at its ends to the axle, and connected at its angle by the king-bolt with said perch-iron behind said axle, substantially as and for the purposes set forth.

6. In a vehicle-gear, the combination, with the front axle of the head-block, of the upper and lower sections of a fifth-wheel formed with flanges adapted, respectively, to said head-block and axle, a head-block plate formed with yokes for the spring-clips, and a rearwardly-projecting perch-iron and a forked draft-brace hinged at its angle behind said axle to said perch-iron, and formed at its ends with yokes for the clips by which it and the lower section of the fifth-wheel are secured to said axle, substantially as and for the purposes set forth.

7. In a vehicle-gear, the combination, with the front axle and head-block, of the upper and lower arc-shaped sections of a fifth-wheel attached, respectively, to said head-block and axle, a head-block plate formed with a rearwardly-projecting perch-iron, a draw-brace hinged thereto at the center of the fifth-wheel behind said axle and rigidly attached to said axle, and a brace attached to the head-block and the upper section of the fifth-wheel, and formed with a lip projecting under and supporting the lower section of said fifth-wheel, substantially as and for the purposes set forth.

8. In a vehicle-gear, the combination, with the front axle and head-block, of the upper and lower sections of a fifth-wheel, a plate in which the head-block is seated, formed with yokes for the spring-clips and a rearwardly-projecting arm branching into the upper perch-irons, a corresponding forked lower perch-iron, between which and the upper perch-irons are secured the front ends of the reaches, and a forked draft-brace hinged at its angle upon the king-bolt between the upper and lower perch-irons at or near the junction of their branching arms, and formed at its ends with yokes for the clips by which it is secured to said axle, substantially as and for the purposes set forth.

409,732. VEHICLE-SHAFT COUPLING. JOHN A. CHAPMAN, Milwaukee, Wis. Filed Mar. 3, 1888. Serial No. 302,062. (No model.)



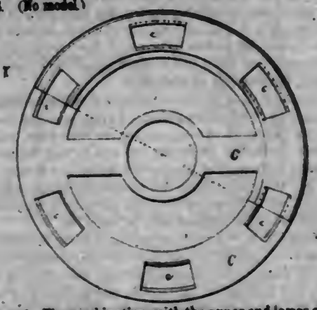
Claim.—1. The combination, in a pole or shaft coupling, with the eye and ears, of a pin passing through and connecting them, a yoke provided with projections which are adapted to overhang the coupling-ears and retain the pin therein, and a metallic spring-loop loosely suspended upon said yoke and adapted to bear against the eye of the coupling, said yoke being provided with shoulders which are seated upon said ears and serve, when it is turned into place, to force said spring-loop against said eye, substantially as and for the purposes set forth.

2. The combination, with the eye and ears of a pole or shaft coupling, of a pin passing through and connecting the same and provided at the ends with notches, a yoke seated upon said ears and provided with projections which engage the notches in said pin and hold the same in place, and a metallic spring-loop loosely suspended on said yoke and adapted to bear against said eye, said yoke being provided with shoulders which are seated upon said ears and serve as an eccentric to force said spring-loop against said eye, substantially as and for the purposes set forth.

3. The combination, with the eye and ears of a pole or shaft coupling, of a pin passing through and connecting the same, a yoke consisting of a cross-bar and end projections extending over the perforations in said ears, so as to retain the pin therein, and provided with oblique shoulders which are seated upon the upper edges of said ears, and a metallic spring-loop loosely suspended at the upper end on said cross-bar and adapted to bear at the other end against said eye, said yoke serving, when turned into place, to force said spring-loop against said eye, substantially as and for the purposes set forth.

4. The combination, with the eye and ears of a pole or shaft coupling, of a pin passing through and connecting the same, a yoke consisting of a cross-bar and end projections which have oblique shoulders adapted to rest upon the upper edges of the ears and extend when in position over the perforations in said ears, so as to retain said pin therein, said yoke being provided with a squared head for turning said projections into and out of range with said pin and for forcing the spring-loop against the eye of the coupling, and a metallic spring-loop loosely suspended upon said yoke and adapted to bear against said eye, said yoke serving, when turned into and out of position, to strain and loosen said spring-loop against said eye, substantially as and for the purposes set forth.

409,733. FIFTH-WHEEL FOR VEHICLES. ABRAM O. CLEMONS and ROBERT H. CLEMONS, Dresden, N. Y. Filed June 3, 1889. Serial No. 312,906. (No model.)



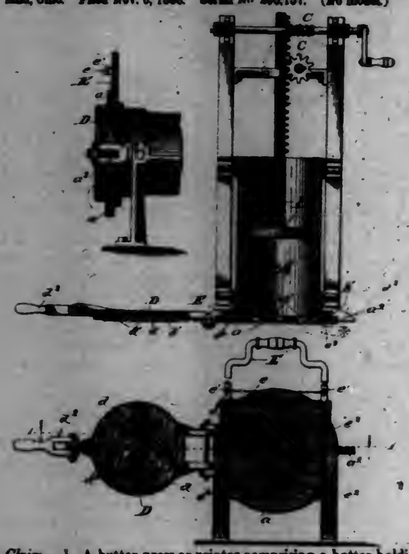
Claim.—1. The combination, with the upper and lower circles of a fifth-wheel, of a circular plate interposed between the same and having openings with inclined walls therein, a removable cap-plate having openings registering with said other openings and formed with oppositely-inclined walls, balls in the openings, and a cross-piece, substantially as described.

2. The combination, with the upper and lower circles of a fifth-wheel, of an interposed circular plate having a cross-piece with an enlarged opening at its center, balls secured in the plate, castings arranged on the circles having lateral flanges of different dimensions extending

through the opening in the cross-piece, a king-bolt G', and a series of balls between the castings, substantially as described.

3. The combination, with the upper and lower circles, of the plate C, interposed between the same and formed with openings *c*, the cap E, having openings therein, the flanged castings F F', secured, respectively, to the upper and lower circles, and the balls D and H, substantially as described.

409,734. BUTTER-PRESS OR PRINTER. JOHN M. CRILEY, Loveland, Ohio. Filed Nov. 6, 1888. Serial No. 290,157. (No model.)



Claim.—1. A butter press or printer comprising a butter-holding cylinder having openings in one end beveled outwardly, a cap fitting against such end to close the cylinder and form the pats, a plunger for pressing the butter outwardly through the beveled holes and against the cap, means for actuating the plunger, and a cut-off to separate the pats, substantially as described.

2. A butter press or printer comprising a butter-holding cylinder, a head-plate at one end of the cylinder having openings beveled outwardly, a cap closing and fitting against the head-plate and having dies or molds to form the pats, a plunger for forcing the butter out through the beveled holes and into the dies of the cap, means for actuating the plunger, and a vertically-movable cut-off to separate the pats, substantially as described.

3. A butter press or printer comprising a butter-holding cylinder, a head-plate at one end of the cylinder having openings beveled outwardly, a cap closing and fitting against the head-plate, a removable plate secured inside the cap having dies or molds to form the pats, a plunger for forcing the butter out through the beveled holes into the dies of the removable plate, and a vertically movable cut-off to separate the pats, substantially as described.

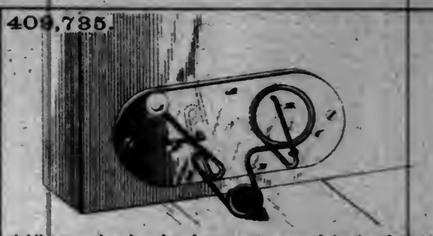
4. A butter press or printer comprising a butter-holding cylinder, a head-plate at one end of the cylinder having openings beveled outwardly, a cap closing and fitting against the head-plate, a removable wooden plate dovetailed inside the cap and having dies or molds to form the pats, a plunger for forcing the butter out through the beveled holes into the dies of the wooden plate, means for actuating the plunger, and a vertically-movable frame carrying a wire knife to cut off or separate the pats, substantially as described.

5. A butter press or printer comprising a butter-holding cylinder, a head-plate at one end of the cylinder having openings beveled outwardly, a cap closing and fitting against the head-plate, a lever-lock for securing and holding the cap against the head-plate, a removable plate inside the cap having dies or molds to form the pats, a plunger for forcing the butter out through the beveled holes and into the dies of the removable plate, means for actuating the plunger, and a vertically-movable cut-off to separate the pats, substantially as described.

409,735. DOOR-CHECK. CHARLES H. DUDDY, Port Norris, N. J. Filed Dec. 20, 1888. Serial No. 294,228. (No model.)

Claim.—A door check or holder, as described, consisting of a plate A, for attachment to a door, said plate having a catch or loop, the holder consisting of a single piece of spring-wire one end of which is rigidly attached to the plate, a spring portion located near said

409,735.



rigidly-secured end, and a downwardly-curved portion formed by bending and coiling the wire upon itself to maintain between said coil a rubber or equivalent block, the free end of the wire being bent to engage with a loop, substantially as shown, and for the purpose set forth.

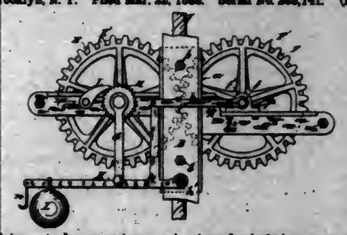
409,736. TELEPHONE RECEIVING-INSTRUMENT. ROBERT D'USSEL, Chicago, Ill. Filed Jan. 15, 1886. Serial No. 208,442. (No model.)



Claim.—1. In a telephone-receiver, a magnet having the coil upon one end and having its other end flattened to form the diaphragm, with the corrugated portion H, substantially as set forth.

2. In a telephone, the combination of the hardened-steel portion E, the soft-metal portion F, the return-bar G, having its end flattened into the diaphragm I, and the corrugated portion H, substantially as set forth.

409,737. MECHANISM FOR OPERATING HOISTS. JOHN S. RIENE, Brooklyn, N. Y. Filed Mar. 22, 1888. Serial No. 268,141. (No model.)



Claim.—1. In actuating mechanism for hoisting apparatus, the combination of the power-sheave E, having fixed bearings, the sheave F, with slidable bearings, the weighted lever H, arranged to press the said sheave F automatically toward the said power-sheave E, and the pawl L, and ratchet M, arranged and operating substantially in the manner and for the purpose described.

2. In actuating mechanism for hoisting apparatus, the combination of the power-sheave E and gear-wheel E', having fixed bearings, the sheave F and gear-wheel F', having slidable bearings, the weighted lever H, arranged to press the said sheave F and gear F toward the said power-sheave E and gear E', and the pawl L and ratchet M, the whole arranged and operating substantially in the manner and for the purpose described.

3. In actuating mechanism for hoisting apparatus, the combination of the power-sheave E and gear-wheel E', having fixed bearings, the sheave F and gear-wheel F', having slidable bearings, the weighted lever H, arranged to press the said sheave F and gear F toward the said power-sheave E and gear E', the pawl L, and ratchet M, and the hook *n*, the whole arranged and operating substantially in the manner and for the purpose set forth.

409,738. COIN-OPERATED INDUCTION-COIL. JOHN H. RAPHELD, Chicago, Ill. Filed Oct. 6, 1888. Serial No. 287,440. (No model.)

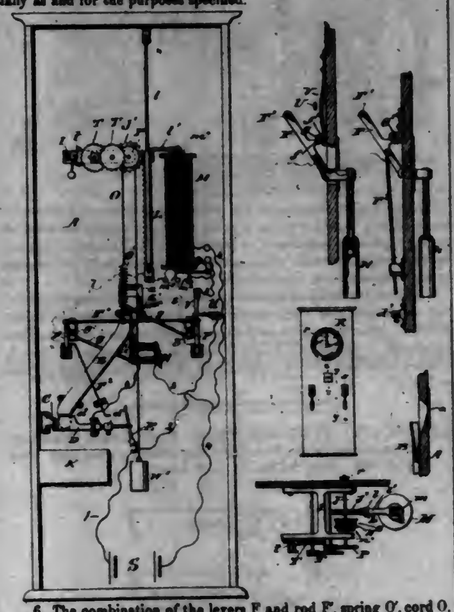
Claim.—1. The combination of the case A, chute B, lever D, coil S, wire 1, spring-finger E, wire 6, coil W, wires 5 and 4, lever G, and bolts *g*, substantially as and for the purposes specified.

2. The combination of the case A, chute B, lever D, coil S, wire 1, spring-finger E, wire 6, coil W, wires 5 and 4, lever G, and bolts *g*, and spring G', substantially as and for the purposes specified.

3. The combination of the case A, chute B, lever D, coil S, wire 1, spring-finger E, wire 6, coil W, wires 5 and 4, lever G, and bolts *g*, and spring G', handles H, levers F, and rod F', substantially as and for the purposes specified.

4. The combination of the levers F and rod F', rack L, rod *l*, core *m*, operated by said levers, and circuit opening and closing devices, substantially as and for the purposes specified.

5. The combination of the levers F and rod F', rack L, rod *l*, core *m*, attached to rod *l*, coil M, wires 4 2, spring-fingers U and V, wire 3, screw m^2, armature m^3, wire 9, and wires 7 and 8, substantially as and for the purposes specified.



6. The combination of the levers F and rod F', spring G', cord O, weight W', pulley N, train of wheels provided with escapement-pawl, pulley J', rack L, rod *l*, core *m*, attached to rod *l*, coil M, wires 4 2, spring-fingers U and V, wire 3, screw m^2, armature m^3, wire 9, and wires 7 and 8, substantially as and for the purposes specified.

7. The combination of the case A, chute B, lever D, coil S, wire 1, spring-finger E, wire 6, coil W, wires 5 and 4, lever G, and bolts *g*, and spring G', handles H, levers F, and rod F', spring O', cord O, weight W', pulley N, train of wheels provided with escapement-pawl, pulley J', rack L, rod *l*, core *m*, attached to rod *l*, coil M, wires 4 2, spring-fingers U and V, wire 3, screw m^2, armature m^3, wire 9, and wires 7 and 8, substantially as and for the purposes specified.

8. The combination of the chute B, lever D, provided with cap *d* and weight *d'*, and lug C, substantially as and for the purposes specified.

409,739. WATCH-CASE SPRING. JAMES D. EWING, Philadelphia, Pa., assignor to the Keystone Watch Case Company, same place. Filed Mar. 21, 1888. Serial No. 304,172. (No model.)



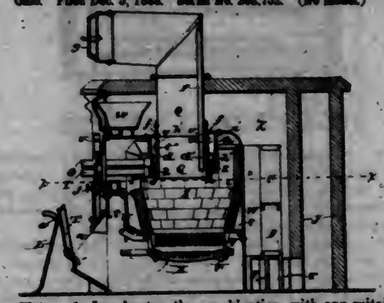
Claim.—1. In a watch-case, the combination, with the watch-case center having a smooth or unnotched surface, of a curved spring to control the cover or lid fitting into said center and having integral with itself or attached to itself a spring portion or addition adapted to press upon the smooth portion of said center to secure said watch-case spring therein.

2. In a watch-case, the combination, with the watch-case center having a smooth annular surface, of a curved spring to control the cover or lid and having a non-flexible or body part fitting within said center, provided with a spring portion adapted to press upon said center to secure said spring therein by direct pressure between the spring and center.

3. In a watch-case, the combination, with the center A, of the curved spring B, having the slot or groove E, the slit F in the thin wall of metal formed by said groove, and the raised spring-edge *e*, substantially as and for the purpose specified.

4. A watch-spring for controlling the covers of a watch-case, consisting of a curved spring part provided at one end with a thick non-spring part furnished with a small spring projecting above its surface.

409,740. HOT-AIR AND HOT-WATER HEATER. FRANCIS FARQUHAR, MILTON J. FARQUHAR, and HENRY B. FARQUHAR, Wilmington, Ohio. Filed Dec. 3, 1888. Serial No. 292,732. (No model.)



Claim.—1. In a heater, the combination, with any suitable fire-pot and any suitable fuel-magazine, of the hot-blast flue which surrounds the fire-pot, a second hot-blast flue connected with the first and arranged adjacent to the fuel-magazine, and a water-jacket about the mouth of the second hot-blast flue, substantially as described.

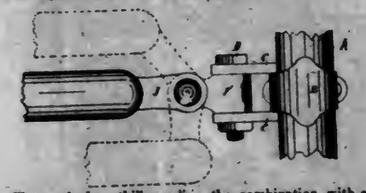
2. In a heater, the combination, with any suitable fire-pot and any suitable fuel-magazine, of the hot-blast flue which surrounds the fire-pot, a second hot-blast flue connected to the first, which surrounds the fuel-magazine and is annular in form, together with a water-jacket about the mouth of the said annular hot-blast flue, substantially as described.

3. In a heater, the combination, with a fuel conduit or magazine, of a hot-blast flue arranged adjacent to the fuel conduit or magazine, together with a water-jacket about the mouth of the hot-blast flue, substantially as described.

4. In a heater, the combination, with a fuel conduit or magazine, of an annular hot-blast flue which surrounds the same and has an annular mouth which is adjacent to the mouth of the fuel-magazine, together with a water-jacket about the mouth of the hot-blast flue, substantially as described.

5. In a heater, the combination of the fuel conduit or magazine with the hot-blast flue arranged adjacent to the lower edge of the same, the water-jacket surrounding the hot-blast flue, the gas-chamber at the top of the fuel-magazine, and the pipe leading from said gas-chamber back to or nearly to the mouth of the fuel-magazine, substantially as described.

409,741. THILL-COUPLING. ROBERT G. W. FOSTER, Toledo, Ohio. Filed Apr. 22, 1889. Serial No. 308,189. (No model.)



Claim.—1. In a thill-coupling, the combination, with a shackle, of a coupling-section pivotally secured thereto, said section having an upwardly-extended externally-threaded projection, a link-arm having threaded apertures at either end, and a thill-iron threaded at one end adapted to engage one of said threaded apertures, the other working upon the threaded projection, whereby connection is made between the thill and coupling-section, substantially as shown and described.

2. In a thill-coupling, the combination, with a coupling-section having an upwardly-extending externally-threaded projection at its forward part, of a link-arm having threaded apertures at either end thereof, one of said apertures working over the threaded projection and the other adapted to receive the threaded end of the thill-iron, substantially as shown and described.

3. In a thill-coupling, the combination, with the shackle C, of the coupling-section E, formed with the threaded projection F and bore G, the bolt D passing through the same, the bushing G' within the bore and adapted to bear upon the bolt, the binding-screw H, adapted to regulate the pressure of the bushing, the link-arm J, threaded at

either end, and the thill-iron K', threaded at K, all arranged and adapted to operate substantially as shown and described.

409,742. KNIFE-CLEANER. HERBERT E. FOWLER, New Haven, Conn. Filed May 11, 1888. Serial No. 273,603. (No model.)



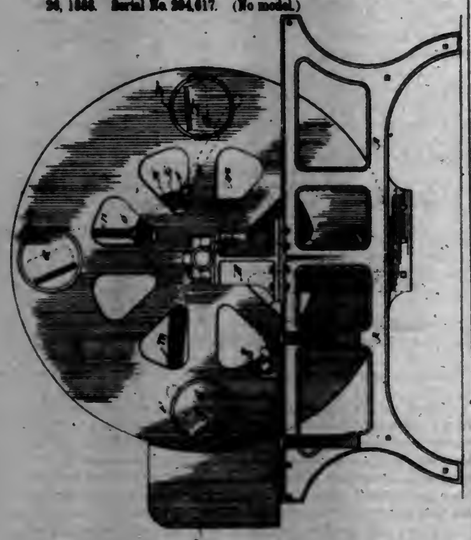
Claim.—1. In a knife-cleaner, the combination, with a base-plate having a yoke or bridge secured thereto, of abrading-pads, confining-plates for the said pads, having slots to receive the said yoke, and yielding connections for the said plates, whereby the under pads may have an upward spring action, substantially as specified.

2. The combination, with a base-plate, of the yoke adapted to serve the additional function of a handle, the short posts secured to the said base, the slotted confining-plates having longitudinal marginal flanges, abrading-pads interposed between the plates, and detachable yielding connections for the two outer plates, substantially as specified.

3. In a knife-cleaner, the combination, with vertical guides, of abrading-pads, confining-plates therefor, and yielding connections for the said plates, whereby the under pads may have an upward spring action and the upper ones a similar action downwardly, substantially as specified.

4. In a knife-cleaner, the combination, with a base, of a yoke, as B, rising therefrom, confining-plates longitudinally slotted to be received by the yoke, said plates having their ends extended, and a yielding connection, such as F, adapted to be detachably applied to the ends of the plates, so as to confine abrading-pads and effect an upward spring action on the lower pads and a similar downward action on the upper pads, substantially as specified.

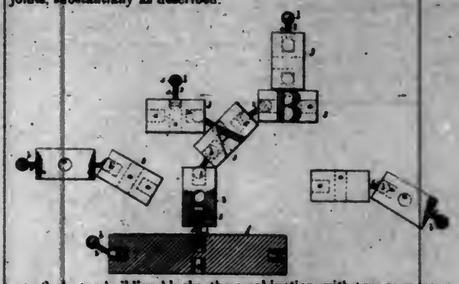
409,743. BOX-BLOCKER. CARL GAIL, Chicago, Ill. Filed Dec 26, 1888. Serial No. 294,617. (No model.)



Claim.—In a box-blocking machine, the combination, with frame A, table O, and guide R, of the vertically-rotating disk provided with pivotal plane-knife frames, each having a crank coupled with an eccentric-strap rotating on a stationary eccentric-ring to impart an oscillating movement to the plane-knives during their circular course of travel, substantially as and for the purpose set forth.

409,744. TOY BUILDING-BLOCKS. ADOLPH F. C. GARDEN, Minneapolis, Minn. Filed Jan. 21, 1888. Serial No. 261,496. (No model.)

Claim.—1. A set of toy building-blocks consisting of a series of separate blocks detachably connected together by ball-and-socket joints, substantially as described.



2. In toy building-blocks, the combination, with two or more recessed blocks having recesses adapted to receive a spherical head, of a coupling-block consisting of a pair of spherical heads on opposite ends of a common stem, said heads being adapted to fit the recesses in said recessed block, substantially as described.

3. In toy building-blocks, in combination with two or more blocks, as 1 and 3, provided with recesses, as *a*, of a coupling-block 2, consisting of spherical heads *b* on the opposite ends of the stem *c*, and provided with a peripheral groove *d*, and an elastic packing-ring 5, adapted to fit said groove, substantially as described, for the purpose set forth.

409,745. WATCH-CASE SPRING. HARRY B. GAIL, Philadelphia, Pa., assignor to the Keystone Watch Case Company, same place. Filed Apr. 2, 1889. Serial No. 305,752. (No model.)



Claim.—1. A watch-case spring formed of stamped sheet spring metal, with free ends bent outwardly, and having a slit or slits at its middle part to make that of less width than the end parts and a part projecting from said middle part to act on the lid.

2. A watch-case spring formed of stamped sheet spring metal, made curved and having a slit or slits at its middle part to make that of less width than the end parts, and a part projecting from said middle part to act on the lid, and in which said end parts at their most distant edges are curved in the opposite direction to the main curvature of the spring.

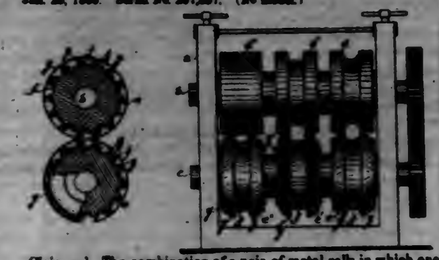
3. A watch-case spring formed of stamped sheet spring metal, made curved and having a slit or slits at its middle part to make that of less width than the end parts, and a part projecting from said middle part to act on the lid, in which said end parts at their most distant edges are curved in the opposite direction to the main curvature of the spring and provided with notches for the insertion of an instrument for their removal.

4. A watch-case spring formed of stamped sheet spring metal, curved to conform to the curvature of the groove of the case-center and having its ends curved outwardly, and also having a portion of its middle formed with a slit or slits and reduced in width and provided with an upwardly and outwardly extending projection which points away from the inner curve of the spring.

5. A watch-case spring formed of stamped sheet spring metal and curved to form a segment of a circle and to conform to the curvature of the groove of the case-center, and having a slit by which a portion of its middle is reduced in width, and an upwardly and outwardly extending projection from said narrowed portion which points away from the inner curve of the spring, in combination with a watch-case center having an inner annular groove, in which the spring is received and held by its elasticity.

6. The combination of the case-center having an internal annular groove with a spring formed like a segment of a circle and of stamped spring metal, and having its ends bent outwardly from the main curvature and shaped to tightly fit in said groove and be retained therein by friction.

409,746. METAL-ROLLS. JAMES T. HASTINGS, Chicago, Ill. Filed Jan. 25, 1889. Serial No. 297,257. (No model.)

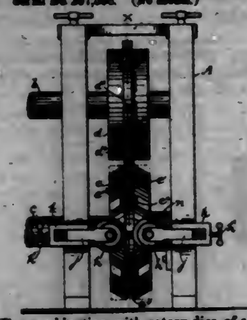


Claim.—1. The combination of a pair of metal-rolls in which one of said rolls has a cutting-edge adjacent to the groove or cavity formed therein and concentric with the axis of the roll, substantially as shown and described.

2. A metal-roll having depressions *f* and adjacent cutting-edges *g*, the latter being concentric with the axis of the roll, substantially as shown and described.

3. In a metal-forming machine, substantially as shown and described, a metal-roll having a continuous knife-edge adjacent to the matrix and concentric with the axis of the roll.

409,747. METAL-ROLLS. JAMES T. HASTINGS, Chicago, Ill. Filed Jan. 25, 1889. Serial No. 297,259. (No model.)



Claim.—1. The combination, with rotary dies, of a cutter placed in operative proximity to the periphery of the matrix-die, whereby the vertical fins formed upon the article rolled may be severed at a single operation, substantially as shown and described.

2. The combination, with rotary dies, male and female, of an adjustable cutter placed in operative proximity to the periphery of the female die, substantially as shown and described.

3. The combination, with rotary dies, male and female, of one or more cutters placed in operative proximity to the periphery of the female die, and means for adjusting said cutters with relation to the lips of said female die, substantially as shown and described.

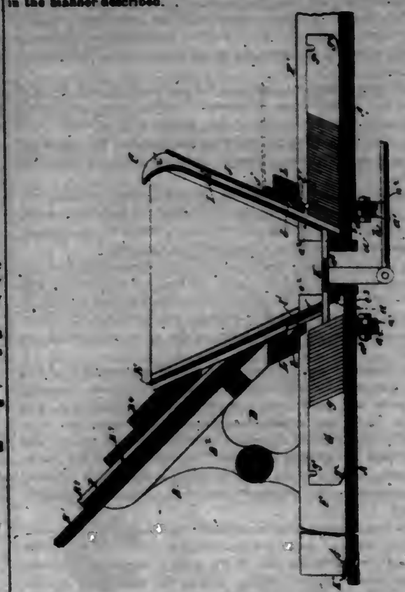
4. The combination, with male and female revolving dies, of cutters placed in operative proximity to the periphery of the female die, sliding rests secured in the frame for sustaining said cutters, and set-screws for adjusting the position of said cutters, substantially as shown and described.

5. The combination, with rotary dies, male and female, of an adjustable cutter arranged in operative proximity to the periphery of the female die, and in a plane substantially perpendicular to that of the roll, substantially as shown and described.

409,748. TYPE-DISTRIBUTING APPARATUS. LOUIS K. JOHNSON and ABBOTT A. LOW, Brooklyn, assignors to the Alden Type Machine Company, New York, N. Y. Filed Nov. 15, 1886. Serial No. 218,961. (No model.)

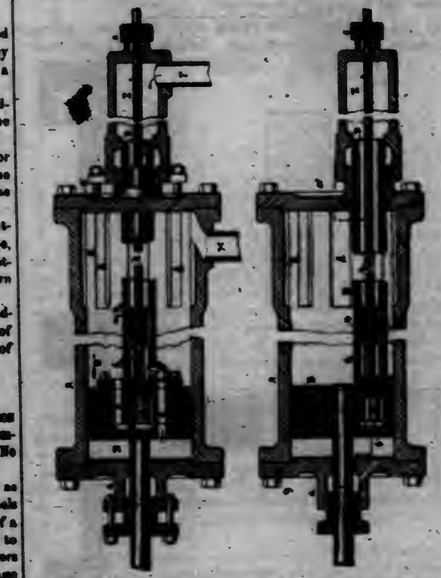
Claim.—1. In a type-distributing apparatus substantially such as described, the combination, with a series of type-containing channels and type-forwarding mechanism substantially such as described, of a conduit-plate provided with a guard-rail which is recessed, so as to permit types to adapt themselves to the motion of the pusher-fingers when resting thereon, substantially in the manner and for the purpose described.

2. In a type-distributing apparatus substantially such as described, the combination, with a series of type-containing channels and with type-forwarding mechanism substantially such as described, of a vertically-adjustable support for the inner or receiving ends of the said series of type-containing channels, for the purpose and substantially in the manner described.



3. In a type-distributing apparatus substantially such as described, the combination, with a series of type-containing channels and with their outer end-supporting shoulders K, of a series of stops or type-preceders formed with the inclined or curved surfaces g^3, for the purpose described.

409,749. STEAM STEERING APPARATUS. FREDERICK C. LANE, Hoboken, N. J. Filed Mar. 13, 1889. Serial No. 303,138. (No model.)



Claim.—1. In a steam steering apparatus, the combination, with the pilot-wheel and the rudder, of two interposed cylinders having their respective valves connected with the pilot-wheel and their pistons with the rudder, said pistons in their working-stroke following the travel of the valves, substantially as described.

2. In a steam steering apparatus, the combination, with the pilot-wheel, the rudder, and the tiller-ropes, of two interposed cylinders having their respective valves connected to the ropes from the pilot-wheel and their pistons with the rope from the rudder, said pistons in their working-stroke following the stroke of the valves, substantially as described.

3. In a steam steering apparatus, the combination, with the pilot-wheel and the rudder, of two interposed cylinders having their valves connected with the pilot-wheel and their pistons with the rudder, said pistons in their working-stroke following the travel of the valves and said valves moving with the pistons on the return-stroke, substantially as described.

4. In a steam steering apparatus, two interpolated cylinders having their valves connected with the pilot-wheel and their pistons with the rudder, the motion of said pistons being arrested at any point by the adjustment of the valves, substantially as described.

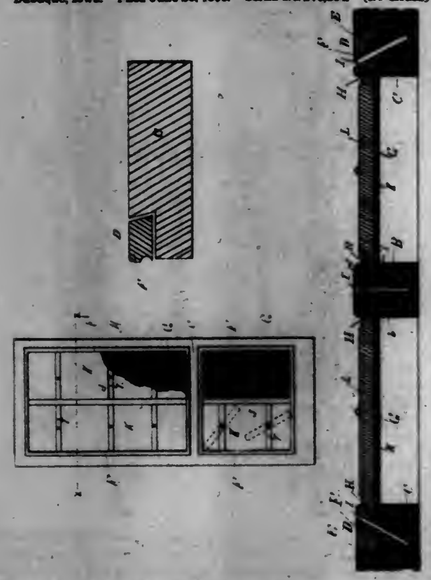
5. In a steam steering apparatus, two interpolated cylinders having their valves connected with the pilot-wheel and their pistons with the rudder, the motion of the pistons being automatically arrested at any point by the adjustment of a valve, the said stroke of the pistons being the same in length as the stroke of the valve, substantially as described.

6. In a steam steering apparatus, an engine composed of two cylinders, each provided with a piston, a tubular valve-chest connected with the piston and participating in the movement thereof, a valve fitted to the valve-chest, suitable rope-connections between the valves and the pilot-wheel, or its equivalent, and between the pistons and the rudder, said valves being prevented from moving with the pistons on the working-strokes of the latter by steam-pressure and returned by steam-pressure on the reverse strokes of the pistons, substantially as described.

7. The combination, with the cylinder and its piston, of a valve-chest moving with the piston, a steam-chamber located parallel to the cylinder and directly to one side of the same, a steam-pipe entering the steam-chamber, and a coupling uniting the steam-pipe and the valve-chest and provided with a stuffing-box for the passage of the valve-rod, substantially as described.

8. The combination, with the cylinder and the piston, of a tubular valve-chest attached to the piston, induction and exhaust byways formed in the interior of the valve-chest, a piston-valve provided with two heads for controlling the respective byways, induction and exhaust ports in the piston communicating with the byways and opening through opposite sides of the piston, a valve-stem extending through one head of the cylinder, and a piston-rod, substantially as described, and for the purpose set forth.

409,750. SCREEN AND STORM DOOR. CHRISTIAN LOETSCHER, Dubuque, Iowa. Filed June 26, 1888. Serial No. 278,234. (No model.)



Claim.—1. In a screen-door, the combination, with the frame having a rabbet, the rear wall of said rabbet being inclined, of a molding adapted to fit said rabbet, the central frame having a depression, a molding having a projection secured thereon, and the screen material adapted to be secured by said moldings, substantially as set forth.

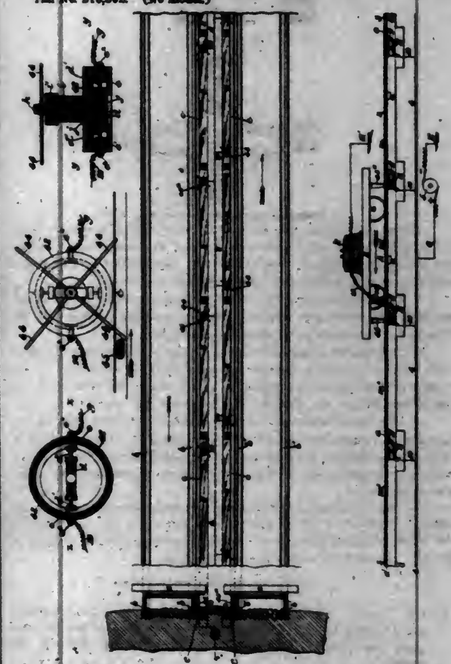
2. The combination, with the frame having a rabbet, the rear wall of said rabbet being inclined rearwardly, of a molding having inner faces which correspond to the shape of said rabbet, the outer face of which is provided with a longitudinal groove, screen material, and devices adapted to secure the said screen material between the molding and the rabbet, and the panel and button, substantially as described.

409,751. SAND-BLAST APPARATUS. JEREMIAH R. MATHEWSON, Sheffield, County of York, England. Filed Aug. 30, 1888. Serial No. 284,196. (No model.)



Claim.—In a sand-blast apparatus, the combination of a sand-passage with passages for the impelling-fluid arranged to substantially inclose the sand-passage and inclined to it so as to converge toward the sand-jet and to a point in front of and clear of the mouth-piece.

409,752. SYSTEM OF ELECTRICAL DISTRIBUTION FOR RAILWAYS. WILLIAM J. MCELROY, Pittsburg, Pa. Filed Oct. 16, 1886. Serial No. 216,392. (No model.)



Claim.—1. In a system of electrical distribution for railways, the combination of an insulated or covered main conductor having normally open-circuited branch conductors with exposed terminals or contact-plates, a slot parallel with the railway and adjacent to said plates, and mechanically-operated switches interposed for making and breaking electrical connection between the main conductor and the exposed contact-plates and accessible only through said slot, substantially as and for the purposes described.

2. In a system of electrical distribution for railways, the combination of an insulated or covered main conductor having normally open-circuited branch conductors with exposed terminals or contact-plates, a slot parallel with the railway and adjacent to said plates, and mechanically-operated switches interposed for making and breaking electrical connection between the main conductor and the exposed contact-plates, said switches being accessible only through the slot and movable by passage of the motor-car, substantially as and for the purposes described.

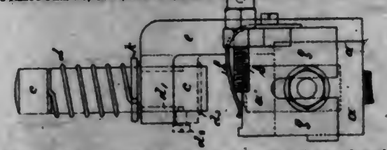
3. In a system of electrical distribution for railways, a main conductor having branch conductors and exposed terminals or contact-plates, in combination with underground switches for making and breaking electrical connection between the main conductor and the exposed terminals, and a motor-car having a projection extending from the car into a slot and arranged to engage said switches therein, substantially as and for the purposes described.

4. In a system of electrical distribution for railways, a main conductor having branch conductors and exposed terminals or contact-plates, in combination with mechanically-operated switches interposed for making and breaking electrical connection between the main conductor and the exposed contact-plates, in combination with a motor-car having projections one in advance of the other, the front projection being arranged to move the switch of the terminal approached by the car to close the circuit between said terminal and the main conductor, and the rear projection adapted to move the switch of the terminal in the rear thereof to open the circuit between it and the main conductor as the motor-car travels on the track, substantially as and for the purposes described.

5. An electrical switch consisting of a tubular arm *d*, bars *d'*, projecting from the ends of the tubular arm, and a spring *f*, bearing on said bars, in combination with a casing containing the switch, substantially as and for the purposes described.

6. In an electric-railway system having an insulated main conductor with branches and exposed contact plates or rails adapted to be temporarily connected with said main conductor by the passage of a car, the combination therewith of a surface-slot along the railway, and capstan-headed switches for making and breaking the required electrical contact, said switches being located under ground and arranged with their capstan-heads in the slot, substantially as described.

409,753. SCYTHE-SHARPENING APPARATUS. JOHANN E. PARRENTIER, Elberfeld, Germany. Filed Apr. 19, 1889. Serial No. 307,873. (No model.) Patented in Germany Dec. 10, 1888, No. 3,782, and in France Jan. 31, 1889, No. 195,509.



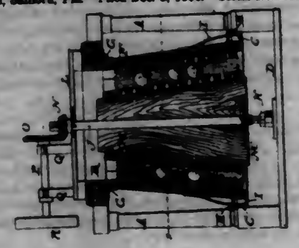
Claim.—1. In a scythe-sharpening apparatus, the combination of the main block *a*, with the exchangeable scythe-anvil *a'*, placed into the former and having a face of such shape as to correspond to the form of the cutting-edge to be obtained, the supporting-plates *g g*, fixed at the sides of the block *a*, so that they are adjustable vertically, and provided with set-screws *b b* or pins in their place for horizontal adjustment of the scythe, and the pressure-springs *f f*, fixed to the block *a* and being adjustable vertically thereon or fixed to the plates *g*, as set forth, and for the purpose described.

2. An exchangeable anvil *a*, having a face with a curved circumference and obliquely-broken edges, as described, and shown by Fig. 5.

3. In combination with the apparatus described in claim 1, the bracket *c*, holding and guiding in its boss the hammer-bolt *c*, capable of being turned round its vertical axis and pushed upward by a spiral spring *d*.

4. In combination with the apparatus described in claims 1 and 3, a socle *m*, being provided with the angle-bars *l l*, serving as supports for the legs of the operator and for holding the apparatus firmly by pressing it to the ground by the legs resting on the bars *l l*.

409,754. FRUIT-CLEANING MACHINE. LYMAN PHELPS and DAVID P. BURDOS, Sanford, Fla. Filed Dec. 3, 1888. Serial No. 292,530. (No model.)



Claim.—1. In a machine for cleaning fruit, the combination, with a suitable frame, of a rotating brush and a series of bodily-yielding brushes separated at a distance therefrom and adapted to form a chamber thereround.

2. In a machine for cleaning fruit, the combination, with a suitable frame, of a rotating brush and a series of brushes secured to the frame at the receiving end of the machine and adapted to yield at the delivery end thereof.

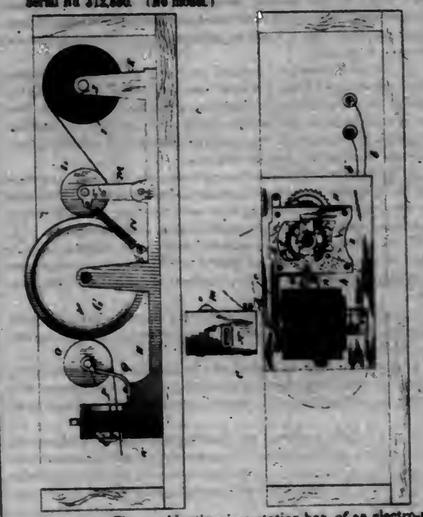
3. In a machine for cleaning fruit, the combination, with a suitable frame, of a rotating brush and a series of brushes surrounding the rotating brush and movable bodily toward and from the same in lines radial to the latter.

4. In a machine for cleaning fruit, the combination, with the conical internal brush, of the conical surrounding brush-chamber having yielding walls.

5. In a machine for cleaning fruit, the combination, with the internal brush and the surrounding brushes, of springs adapted to urge the latter inward toward the internal brush and stops to limit the movement of the brushes.

6. In a machine for cleaning fruit, the combination, with uprights A A, of hoops B C, secured thereto, brushes F, pivoted to the ring B and provided with springs I and stops H, the latter to engage the hoop C, a shaft J, mounted within the frame and provided with a brush M and pinion N, and a second shaft P, provided with a gear O to engage with wheel N, all substantially as shown.

409,755. STATION-BOX FOR WATCHMEN'S ELECTRIC TIME-DETECTORS. JAMES B. RICHARDS, Cedar Keys, Fla. Filed June 1, 1889. Serial No. 312,890. (No model.)



Claim.—1. The combination, in a station-box, of an electro-magnet, an armature-lever arranged, substantially as shown, to be automatically engaged and disengaged with stops on a disk or wheel in a clock-movement, an escapement, a bell-clapper actuated thereby, a bell or gong, a paper-feeding drum turned by the clock-movement, a rotatable roll of paper, means to press the paper against the feeding-drum, and a cover for the box having a slot located opposite the drum, all combined and operating substantially as and for the purposes set forth.

2. The combination, in a station-box, of an electro-magnet, an armature-lever arranged, substantially as shown, to be automatically engaged and disengaged with stops on a disk or wheel in the clock-movement, an escapement, a bell-clapper actuated thereby, a bell or gong, a paper-feeding drum turned by the clock-movement, a rotatable roll of paper, guide-rollers to confine the paper to the surface of the drum, and a cover for the box having a slot located opposite the drum, all combined and operating substantially as and for the purposes set forth.

3. The combination, in a station-box, of an electro-magnet, an armature-lever arranged, substantially as shown, to be automatically engaged and disengaged with stops on a disk or wheel in the clock-movement, an escapement, a bell-clapper actuated thereby, a bell or gong, a paper-feeding drum turned by the clock-movement, a rotatable roll of paper, a paper-covering device below the drum, and a cover for the box having a slot located opposite the drum, all combined and operating substantially as and for the purposes set forth.

4. The combination, in a station-box, of an electro-magnet, an armature-lever arranged, substantially as shown, to be automatically engaged and disengaged with stops on a disk or wheel in the clock-movement, an escapement, a bell or gong, a paper-feeding drum turned by the clock-movement, a rotatable roll of paper, a paper-severing device below the drum, a die the impression whereof is made upon the paper by the operation of the severing device, and a cover for the box having a slot located opposite the drum, substantially as set forth.

409,756. ELECTRIC-RAILWAY CROSSING.

ELIAS E. RIES, Baltimore, Md., assignor, by direct and mesne assignments, to Ries & Henderson, same place. Filed Oct. 8, 1886. Serial No. 179,316. (No model.)



Claim.—1. A crossing for an electric railway having two intersecting interior conduit-openings containing electric conductors interrupted at the point of the said intersection, said conductors being bent or looped away from the line of travel, in combination with a dependent bar provided with a yielding adjustable yoke carrying current-collectors, as specified.

2. A conduit-crossing provided interiorly with two intersecting conduit-openings merging gradually into longitudinal intersecting surface-slots on the surface of the crossing, and containing electric conductors interrupted at the common point of intersection, in combination with a dependent traveling bar provided with a yielding adjustable yoke carrying the current-collectors.

3. An X-shaped conduit-crossing formed in one single piece and provided with interior conduit-openings intersecting each other at or near the center of said crossing, and each merging vertically into a longitudinal surface slot on the upper surface of said crossing.

4. An X-shaped slotted conduit-crossing for electric railways formed in one single piece and provided with interior conduit-openings having each a central ridge or support for a current-supply conductor.

5. An X-shaped slotted conduit-crossing formed in one single piece having two interior conduit-openings intersecting at or near the center of said crossing.

6. A conduit-crossing formed of a non-metallic substance having two interior conduit-openings intersecting at or near the center of said crossing, in combination with metal protective surface-plates, as set forth.

7. In an electric railway, the combination of an interrupted rail with its ends connected, substantially as described, a bar dependent from a car or motor, and a rigid yoke pivoted to the said bar carrying wheels situated one in the rear of the other, substantially as and for the purpose specified.

8. The combination, with the interrupted conducting-surfaces of the rails of an electric railway-crossing or switch, of a dependent contact-bar having a pivoted yoke and two contact wheels or brushes, one in the rear of the other, said contact-wheels being adapted to adjust themselves to inequalities in height of the interrupted conducting-rails, substantially as specified.

9. A crossing for an electric railway, which consists of two or more intersecting sections of an underground conduit, said sections being formed in a single piece and provided with electric conductors or contact-surfaces extending through them with their conducting-surfaces terminating at or near the point of intersection of the sections of the conduit and their ends connected, substantially as specified.

10. A crossing for an electric railway, formed of two or more intersecting conduit-sections formed of insulating or non-electricity-conducting material, conducting-rails or contact-surfaces having their continuity interrupted or broken at or near the intersection of the conduit-sections, and connecting-cables or conducting-loops connecting the ends of the interrupted conductors partially embedded in the material of which the conduit is formed, substantially as and for the purpose specified.

11. A crossing for an electric railway, comprising two or more intersecting conduit-sections formed of insulating or non-conducting material and containing interrupted conducting-rails or contact-surfaces partially embedded in the material of which the conduit is formed, substantially as set forth.

409,757. UNDERGROUND CONDUIT FOR ELECTRIC RAILWAYS.

ELIAS E. RIES, Baltimore, Md., assignor, by direct and mesne assignments, to Ries & Henderson, same place. Filed Sept. 24, 1887. Serial No. 250,668. (No model.)



Claim.—1. In an electric railway, the combination of two coextensive underground conductor-channels, one hermetically closed, the other slotted or open, a continuous main conductor laid in the said closed conductor-channel, and a series of insulated sectional working conductors having exposed surfaces and laid in the slotted or open conductor-channel, each working conductor being electrically connected with a main conductor, as and for the purpose hereinbefore set forth.

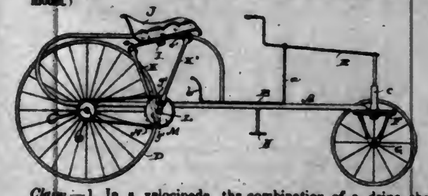
2. In an electric railway, the combination, with a slotted underground conduit structure, of two or more coextensive hermetically-sealed conductor-channels, continuous main conductors in the said sealed channels, and two or more series of insulated working conductors having exposed contact-surfaces also laid in said conduit, each working conductor being electrically connected to the main conductor corresponding to its respective series.

3. The combination, with a single conduit structure comprising two conductor-channels, of main conductors laid in one channel hermetically sealed, a series of exposed working conductors placed in the other channel and severally electrically connected with said main conductors, and a current-collector or its equivalent adapted to travel in contact with said working conductors.

4. The combination, with a conduit structure, of a dual set of insulated exposed working conductors located in said conduit in different horizontal planes, each set carrying current differing in tension from that of the other set, and a traveling vehicle provided with an adjustable depending current-collector adapted to make contact with either set of working conductors.

409,758. VELOCIPEDE.

GOTTFRIED SCHLOSSER and EDUARD HAUSKNECHT, Milwaukee, Wis. Filed Dec. 10, 1888. Serial No. 293,132. (No model.)



Claim.—1. In a velocipede, the combination of a drive-shaft geared to an axle of the machine, a shaft supported in bearings on the machine-frame, a seat fast on the latter shaft, and rods shackled at their upper ends to the seat on opposite sides of said latter shaft and having their lower ends connected to said drive-shaft, substantially as set forth.

2. In a velocipede, the combination of a drive-shaft and rear axle carrying sprocket-wheels, a drive-chain arranged on said sprocket-wheels, an oscillating seat and driving-rods connected to said shaft and shackled to said seat on opposite sides of its center, substantially as and for the purpose set forth.

3. In a velocipede, the combination of a drive-shaft geared to the rear axle of the machine, ratchet-wheels fast on the shaft, an oscillating seat, driving-rods shackled to the seat and having serrated lower ends for engagement with said ratchet-wheels, and guides for said rods, substantially as and for the purpose set forth.

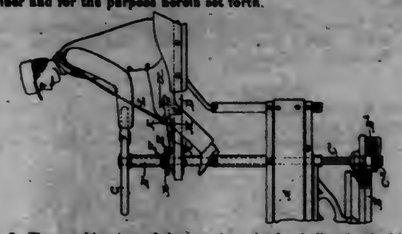
4. In a velocipede, the combination of a drive-shaft geared to the rear axle of the machine, ratchet-wheels fast on the shaft, an oscillating seat, driving-rods shackled to the seat and having serrated lower ends for engagement with said ratchet-wheels, elliptical tracks or guides, lugs on said rods arranged to travel on the tracks, and pivoted spring-controlled cams arranged with relation to said tracks, and lugs whereby the latter are kept in frictional contact with the former and locked against backward movement, substantially as set forth.

409,759. HOOK-AND-LADDER TRUCK.

JACOB SCHNEIDLAPP, New York, N. Y. Filed June 8, 1888. Serial No. 313,572. (No model.)

Claim.—1. The combination, with the steering-wheel in a hook-and-ladder truck and with a pivoted lever actuated by a cord adapted to pass around the neck of the pilot, of an intermediate locking device actuated by the movement of said lever, substantially in the manner and for the purpose herein set forth.

2. The combination, in a hook-and-ladder truck, with the steering-wheel and its spindle, of a locking-plate fitted upon said spindle, a movable locking-bar engaging said plate, and a lever actuating said bar to produce its release from the locking-plate, substantially in the manner and for the purpose herein set forth.



3. The combination of the steering-wheel spindle, the locking-plate thereon, the bar mounted to move into and out of engagement with said locking-plate, the pivoted lever actuating the locking-bar to cause its engagement with the locking-plate, the auxiliary lever actuating the locking-lever, and the cord for operating said auxiliary lever, all substantially in the manner and for the purpose herein set forth.

409,760. CURTAIN-FIXTURE.

JOHN SHIRK, Philadelphia, Pa., assignor of one-half to Abbott F. Fuller, same place. Filed Aug. 23, 1888. Serial No. 283,601. (No model.)



Claim.—In a device for hanging and preserving regularity in the folds of a hanging curtain, the combination of shelf D, a series of hooks secured thereto, and jointed bar having each alternate hinged section thereof formed with an eye to engage said hook, as shown, described, and for the purpose specified.

409,761. APPARATUS FOR THE MANUFACTURE OF GAS.

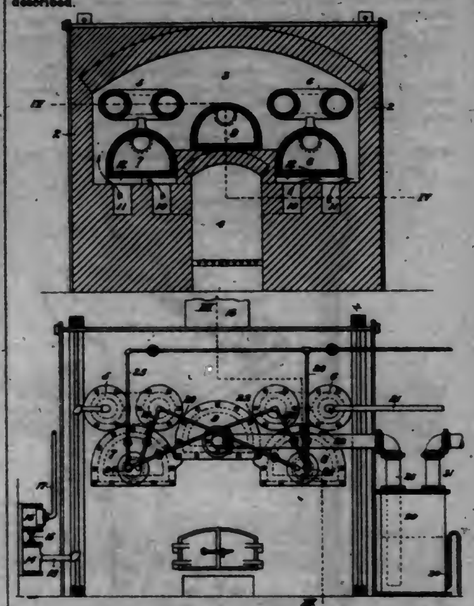
WILLIAM T. STEWART, Pittsburg, Pa., assignor of three-fourths to William H. Donaldson, same place. Filed Jan. 18, 1889. Serial No. 296,727. (No model.)

Claim.—1. In apparatus for the manufacture of gas, the combination, with a furnace or oven and with each other, of a series of five retorts, two of the series being U-shaped superheaters, two of the series gasifying-retorts, and one a fixing-retort, one of the said U retorts or superheaters being connected directly with each of the gasifying-retorts and the other of said U retorts or superheaters being connected with each of the gasifying-retorts by means of intermediate oil-injectors, and each of the gasifying-retorts being connected with the fixing-retort, substantially as and for the purposes described.

2. In apparatus for making gas, the combination, with an oven having a central fire-chamber and reflex-flues parallel therewith, of two gasifying-retorts, a series of spaced tiles for supporting said retorts above the parallel flues which connect the fire-chamber and oven, and a fixing-retort arranged between the gasifying-retorts and over the fire-chamber, substantially as and for the purposes described.

3. In apparatus for making gas, the combination, with an oven, a central fire-chamber therefor, and parallel reflex-flues which connect the fire-chamber and oven, of two gasifying-retorts located over the reflex-flues of the fire-chamber, a fixing-retort located intermediate of the gasifying-retorts and over the central fire-chamber, and superheaters located within the oven and over the gasifying-retorts, substantially as and for the purposes described.

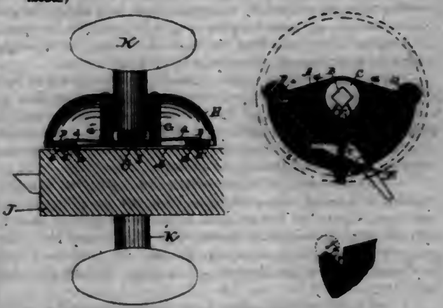
4. In apparatus for the manufacture of gas, the combination, with a furnace and oven communicating with each other by parallel reflex-flues, of two U-shaped superheating-retorts, two gasifying-retorts, and a fixing-retort, one end of one of the U-shaped retorts being connected with an air-pump and the other end with each of the gasifying-retorts by pipes 19 and 20, and the other U-shaped retort connected at one end with a steam-supply, and at the other end with each of the gasifying-retorts by means of pipes 22 and 23 and intermediate oil-injectors 24, and each of the gasifying-retorts communicating with the fixing-retorts by pipes 27, substantially as and for the purposes described.



5. In apparatus for the manufacture of gas, the combination, with an oven having a central fire-chamber and reflex-flues parallel therewith, of two U-shaped superheating-retorts, two gasifying-retorts located on opposite sides of the fire-chamber above the reflex-flues, and a fixing-retort arranged over the fire-chamber, one of said superheaters connected at one end with an air-supply and at the other end with each of the gasifying-retorts by valved pipes 19 and 20, the other superheater connected at one end with a steam-supply and at its other end with each of the gasifying-retorts by valved pipes 22 and 23 and intermediate oil-injector 24, and each of the gasifying-retorts communicating with the fixing-retort by pipes 27, substantially as and for the purposes described.

409,762. DOOR-KNOB ALARM.

HENRY R. STICKNEY and GEORGE W. WAY, Portland, Me. Filed Mar. 27, 1889. Serial No. 304,969. (No model.)



Claim.—1. In a door-knob alarm, the combination, with a knob-spindle and a bell, of one or more bow-springs attached to said spindle, a hammer at the end of each spring, a pin projecting from the under face of said hammer, a plate having a ledge formed in it at an

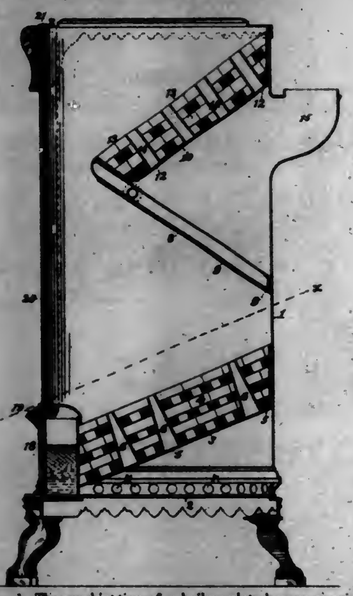
inclination to the line of motion of said pin, and an inclined surface adjacent to said ledge, whereby said pin is deflected to compress said spring and lifted to release it, substantially as shown.

2. In a door-bell alarm, the combination, with a knob-spindle and a bell, of one or more bow-springs attached to said spindle, each having its end turned down to form a pin, a hammer secured to said spring, a plate provided with a ledge formed at an inclination to the line of motion of said pin, and an inclined surface adjacent to said ledge, substantially as shown.

3. In a door-bell alarm, the combination, with a knob-spindle and a bell, of a disk fitting over said spindle, one or more bow-springs attached to said disk, hammers secured to the end of said springs, a pin projecting from the under face of said hammer, and an inclined ledge for tripping said hammer, substantially as shown.

4. In a door-bell alarm, a locking device composed of a disk fitting over the knob-spindle, a tongue connected therewith, a pivoted switch having a notch to receive the end of said tongue, and a stop to swing against the bell to muffle it, substantially as shown.

409,763. **GAS-STOVE.** WILLIAM SWINDELL, Allegheny, Pa. Filed Mar. 19, 1888. Serial No. 267,891. (No model.)



Claim.—1. The combination of a hollow plate burner provided with perforations on its under side and so arranged within a stove or fire-place that the products of combustion will be caused to pass over the front edge of the burner, and a heat absorbing and radiating plate or body arranged below the burner, substantially as set forth.

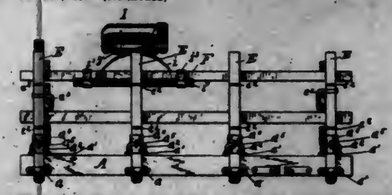
2. The combination of a hollow plate burner inclined upwardly from the back of a stove or fire-place toward the front thereof, and provided with perforations for the escape of gas in its under side, and a heat absorbing and radiating plate or body located below the burner and inclined downwardly from the back of the stove or fire-place toward the front thereof, substantially as set forth.

3. The combination of a hollow plate burner provided with perforations in its under side, a heat absorbing and radiating plate or body located below the burner, and a second heat absorbing and radiating plate or body arranged above the burner and in such relation to the escape-flue that products of combustion are caused to traverse said plate or body, substantially as set forth.

4. The combination of a hollow plate burner provided with perforations on its under side, a heat absorbing and radiating plate or body located below the burner and a second heat-absorbing plate or body provided with openings therethrough and arranged above the burner in such relation to the escape-flue that the products of combustion are caused to pass through said openings, substantially as set forth.

5. The combination of a plate-burner inclined upwardly from the back toward the front of the stove or fire-place and provided with perforations on its under side, a heat absorbing and radiating plate or body located below the burner and inclined downwardly from the back toward the front of the stove or fire-place, and a second heat absorbing and radiating body provided with openings therethrough, said plate resting upon the front edge of the burner and inclining upwardly to the back of the stove, thereby forming a chamber having an exit-flue for the escape of the products of combustion, substantially as set forth.

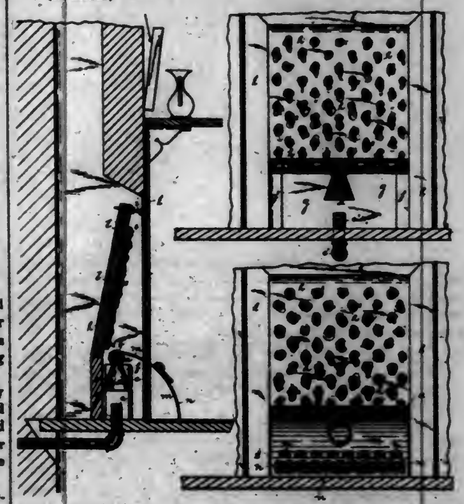
409,764. **HAY-FRAME, STOCK-FRAME, AND SPRING-SEAT COMBINED.** JOHN T. WOODS, Superior, Nebr. Filed May 6, 1889. Serial No. 309,715. (No model.)



Claim.—1. The combination of the lower side rails A, provided with the loops *a*, standard guard-rests *a'*, and perforations *b'* with the cross-beams B, provided with the middle pins a^2 and end pins *b*, lower cross-beams D, standard-guards a^3, which hook round the middle pins a^2, and are provided with the sliding half-sleeves a^4, standards E, having the sloped sides *c'*, and provided with the staples c^2 and elbow-bolt c^3, middle and side sills F, provided with the tongues *f*, adapted to fit in the staples c^2, end-gates G, adapted to fit in the front and rear ends of said frame and to be held in place by the elbow-bolts c^3, hooks *g*, and eyes *g'*, all substantially as shown and described.

2. In combination with my said frame, the seat I, provided with the cross-beams *y*, springs *i*, side beams i', longitudinal slots i^2 in the bottom and near either end of said seat, securing-bolts i^3, passing through said slots into said cross-beams *y*, and hooks i^3, substantially as shown and described, and for the purposes set forth.

409,765. **FIRE-PLACE FOR BURNING GASEOUS FUEL.** ROBERT YOUNG, Allegheny, Pa. Filed Feb. 13, 1889. Serial No. 299,718. (No model.)



Claim.—1. In a fire-place, the combination of a horizontal burner having a row or rows of perforations in the top wall thereof, an inclined tile extending from the back of and upwardly over the burner, and a feeder extending from the burner-body to the hearth and having perforations therein to permit the passage of air to the burner, substantially as and for the purposes set forth.

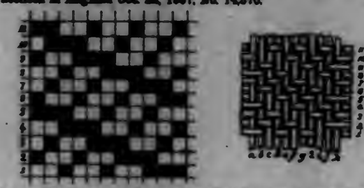
2. In a fire-place, the combination of the brick tile *g*, the horizontal burner *a* in front of the same, supported on blocks *f*, the inclined tile *h*, resting upon the tile *g* and extending outwardly over the burner, and the feeder *m*, extending from the burner to the hearth and having perforations therein, substantially as and for the purposes set forth.

409,766. **NUT-LOCK.** JOHN I. ARNOLD and GEORGE W. GOLLINGER, Aveene, Pa. Filed Sept. 20, 1888. Serial No. 285,544. (No model.)

Claim.—The combination, with a bolt and nut, of a top plate E, the curved spring bottom plate C, adapted to bite on a fish-plate, and a locking-plate B, the latter passing under plate C, up on opposite sides of the nut, and catching by hooks *b' b'* in holes *c c* of the top plate, as shown and described.



409,767. **TWILLED WOVEN FABRIC.** BENJAMIN BARRACLOUGH, Bradford, England. Filed Nov. 22, 1887. Serial No. 255,894. (No model.) Patented in England Oct. 22, 1887, No. 14,370.



Claim.—The combination, in a twilled fabric, of a series of parallel warps and a series of parallel wefts, each of the latter being floated over the warps in pairs and between said pairs below one of the warps for a number of times, and then at regular intervals below a greater number of warps, substantially as described.

409,768. **MANIFOLD MEMORANDUM-BOOK.** WILLIAM BERINGER, Philadelphia, Pa. Filed Dec. 7, 1888. Serial No. 292,910. (No model.)



Claim.—The combination of the memorandum-book, composed of alternating original detachable and thin copy-leaves, with a downwardly-faced copy-pad composed of a tablet, carbon and protective tissue-leaves alternately disposed, and a fly-leaf, said copy-pad hinged and united into a threefold arrangement, substantially as and for the purposes hereinbefore described.

409,769. **PNEUMATIC-RAILWAY SYSTEM.** MEROLPH BOSENFELD, St. Louis, Mo. Filed Sept. 20, 1888. Serial No. 285,915. (No model.)

Claim.—1. In a pneumatic-railway system, the combination, with two conduit-tubes adapted to receive air under pressure, of a set of guard-valves and a set of main valves, the main valves being adapted to be opened by the piston of the car after the guard-valves are closed, substantially as set forth.

2. In a pneumatic-railway system, the combination, with two tubes, of a guard-valve at one end of one tube, the other tube being provided at one end with a guard-valve and at the other end with a main valve, all of said valves being adapted to be opened by the piston of the car, a pipe connecting one of said tubes with the power-house, and a pipe connecting the tubes, substantially as set forth.

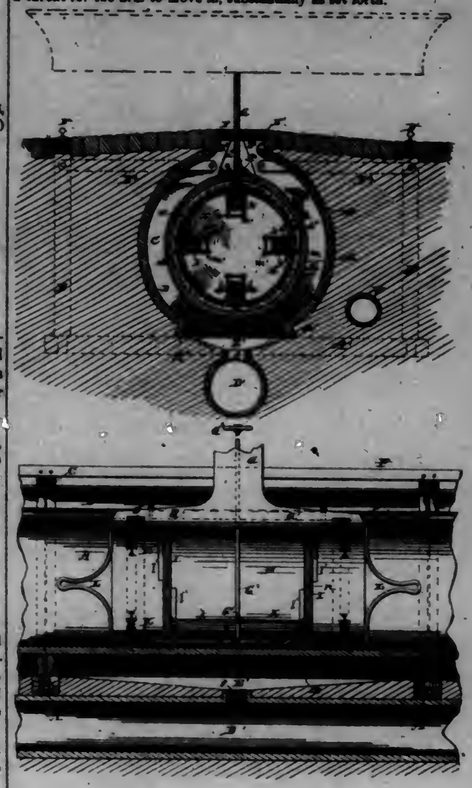
3. In a pneumatic-railway system, the combination, with two conduit-tubes, a cross-branch pipe, and a pipe connecting one of said conduit-tubes with the power-house, of a set of guard-valves, a set of main valves, weights to close these valves, a hollow piston provided with valves, an arm to connect the piston with a car, and a device to open and close the valves in the piston, substantially as set forth.

4. In a pneumatic-railway system, the combination, with a conduit-tube, ribs formed at intervals on the conduit-tube, and a jacket bearing on these ribs, of a drain-pipe located below the conduit-tube and adapted to receive water that enters between the jacket and conduit-tube and convey it away, substantially as set forth.

5. In a pneumatic-railway system, the combination, with a conduit-tube having a slot on its upper side, two flaps that are elastic, and cap-plates that bear on these flaps, all being secured to the tube, of a yielding cover that is secured by one edge to the conduit and located over the flaps, substantially as set forth.

6. The combination, with a tube having a longitudinal slot therein and integral ribs projecting from the tube, by which the latter is secured, of two elastic flaps adapted to close the slot, and a cover fastened to the tube above the flaps and adapted to bear thereon, substantially as set forth.

7. In a pneumatic-railway system, the combination, with a conduit-tube having a slot, of an arm, a movable piston attached to the arm, two gum-flaps that engage the arm and are adapted to close the slot of the conduit-tube, integral ribs formed on the conduit-pipe at intervals of its length, flanges on these ribs, and wear-plates that form a throat for the arm to move in, substantially as set forth.



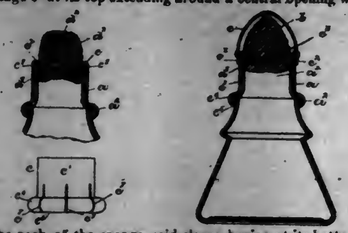


8. In a pneumatic-railway system, the combination, with a conduit-tube having a slot, two gum-flaps that close the slot and yield to pressure, of an arm, a piston affixed to the arm and provided with spring-packing valves in the piston, a shaft that is located in the arm and engages the piston, devices to connect the arm with the piston, and a means of revolving the shaft to open and close the valves in the piston, substantially as set forth.

9. In a pneumatic-railway system, the combination, with a conduit-tube having a slot on its upper side, two gum-flaps fastened to the tube to close the slot, a piston having spring-packing at its ends, an arm that is attached to the piston and works in the slot, a shaft that is located in a longitudinal hole in the arm, valves in the piston, and a device that is attached to the arm and valves to operate the valves, of a series of integral ribs formed on the conduit-tube, flanges formed on these ribs that are adapted to support wear-plates that form a throat-slot above the conduit-slot, and two opposite wear-plates, which are placed in line with the road-bed and permit the piston-arm to travel between them, substantially as set forth.

409,770. **SPONGE-HOLDER FOR MUCILAGE-BOTTLES.** JOHN W. CARTER, Newton, Mass. Filed Oct. 25, 1888. Serial No. 288,194. (Model.)

Claim.—1. The combination, with a bottle having a bead a^2 near its top, of a sponge-holder consisting of a metallic sleeve c', having an annular flange c^2 at its top extending around a central opening which

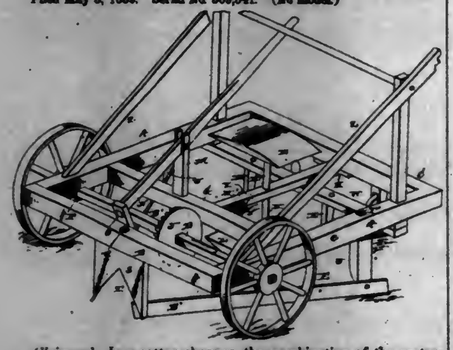


receives the neck of the sponge, said sleeve having at its bottom an enlarged holding section or base c^3, fitting over the bead of the bottle to which the holder is attached.

2. The combination, with a bottle having a bead a^2 near its top, of a sponge-holder consisting of a metallic sleeve c', having an annular flange c^2 at its top extending around a central opening which receives the neck of the sponge, said sleeve having at its bottom an enlarged holding section or base c^3 to fit over the bead of the bottle to which the holder is to be attached, and said base having slits to form two or more yielding grasping-sections to enable the said holder to be easily slipped over said bead in being applied to the bottle.

3. The combination of a sponge-holder having the opening c^2 with the cross-bar d, the bottle and the pin or stud d', having the head d^2, and a loop d^3, through which the cross-bar extends, substantially as described.

409,771. COTTON-CHOPPER. ABRAM CHAMBERS, Bagwell, Tex. Filed May 3, 1889. Serial No. 309,541. (No model.)



Claim.—1. In a cotton-chopper, the combination of the rectangular frame, a longitudinal shaft provided with radial arms carrying chopping-hoes, a pinion at the front end of said longitudinal shaft, a revolving axle made square in cross-section, a gear-wheel upon the said axle, meshing with the pinion upon the longitudinal chopper-shaft, and a lever having a downwardly-extending pivoted arm provided with a shoe adapted to engage the axle and prevent it from revolving, substantially as herein described, and for the purpose set forth.

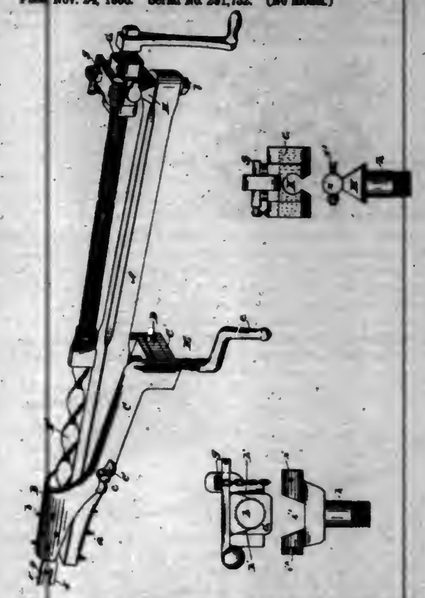
2. In a cotton-chopper, the combination, with the frame, of a vertical shank mounted centrally in the front beam of the frame and provided at its lower end with a plate having an inverted-V-shaped notch adapted to straddle the row of plants, and diverging scrapers attached to and extending rearwardly from the sides of said notch, substantially as and for the purpose set forth.

3. In a cotton-chopper, the combination, with the frame, of the vertical shank mounted centrally in the front beam of the same, and provided at its lower end with a plate having an inverted-V-shaped notch, the shanks mounted vertically in the sides of the frame and having downwardly-extending standards, and the forwardly-converging scrapers attached to the said standards and to the inner sides of the V-shaped notch in the vertical front plate, substantially as and for the purpose herein set forth.

4. In a cotton-chopper, the combination of the frame, the vertical plate secured to the front beam and having an inverted-V-shaped notch, the standards secured to the side beams of the frame, the scrapers connecting said standards with the sides of the V-shaped notch, the longitudinal shaft carrying the radial chopping-hoes adapted to work between the diverging rear ends of said scrapers, and mechanism for transmitting motion to the said longitudinal chopper-shaft from the axle of the machine, substantially as and for the purpose set forth.

5. In a cotton-chopper, the combination of the frame, the vertical plate at the front end of the same having an inverted-V-shaped notch, the standards extending downwardly from the sides of the same, the scrapers connecting said standards with the sides of the V-shaped notch, the longitudinal chopper-shaft, means for transmitting motion to the latter from the axle of the machine, and a transverse frame-beam having downwardly-extending standards provided with sweep-plows, substantially as and for the purpose herein set forth.

409,772. MINING-MACHINE. ALFRED J. COOPER, Duryea, Pa. Filed Nov. 24, 1888. Serial No. 291,732. (No model.)



Claim.—1. In a mining-machine, the combination, with the supporting bar or frame and the jaw pivoted thereto having the opening through the same on one side of the bar or frame, and the adjusting-screw on the opposite side of the bar or frame for moving the pivoted jaw away from the bar or frame, of the nut mounted on the bar in line with the opening through the pivoted jaw, and the bit mounted in said nut and working through the opening in the jaw, substantially as described.

2. In a mining-machine, the combination, with the supporting frame or bar, of the hollow jaw pivoted thereto having the two rearwardly-extending arms passing diagonally across the frame or bar—one on each side—the cross-piece uniting the arms, and the adjusting-screw passing through the cross-piece and engaging the bar, whereby the jaw and bar may be separated, substantially as described.

3. In a mining-machine, the combination, with the supporting frame or bar, of the jaw pivoted thereto having the rearwardly-extending arms, the removable nut held by the arms, and the adjusting-screw passing through the nut and engaging the bar to separate the jaw and bar, substantially as described.

4. In a mining-machine, the combination, with the supporting frame or bar, the hollow jaw pivoted thereto having the rearwardly-extending arms and the cross-piece uniting their ends, of the socket in the cross-piece and the removable nut therein, the adjusting-screw passing through the nut and engaging the bar, and the bit to adjust the hollow jaw mounted on the bar in line with the opening through the jaw and adapted to operate between the jaw and bar, substantially as described.

5. In a mining-machine, the combination, with the frame or bar having the end for engaging the coal and the nut carrying the bit on the opposite end, of the jaw pivoted to said bar having the end for engaging the coal of larger area than that of the bar, and means for separating the ends of the bar and jaw, whereby the bar will be forced into the coal and its outer end elevated to bring the bit into line with the hole being bored, substantially as described.

6. In a mining-machine, the combination, with the frame or bar having the ends for engaging the coal and the hollow jaw pivoted thereto having the end for engaging the coal of relatively larger area than that of the bar, of the rearwardly-extending arms having the connecting-piece with the adjusting-screw passing through the same and the bit mounted on the bar and in line with the opening through the jaw, whereby it is adapted to work between the bar and jaw, substantially as described.

7. The combination, with the frame or bar and bit having the screw-shank, of the nut for said shank having the open bearing in the bottom and the swivel-piece mounted on the bar and having the pintle fitting within the open recess in the nut, substantially as described.

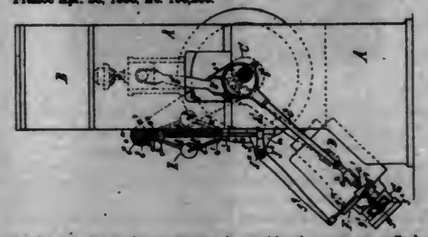
8. The combination, with the frame or bar and bit having the screw-threaded shank, of the nut for said shank having the open bearing therein with the contracted bottom and the swivel-piece mounted on the frame or bar and having the round pintle engaging the bearing in the nut, substantially as and for the purpose specified.

9. The combination, with the frame or bar, the bit having the screw-threaded shank and the nut therefor having the open bearing therein, of the swivel-piece mounted on the bar and having the round pintle with the central portion cut away for the passage of the screw-shank, substantially as described.

10. The combination, with the frame or bar, the bit having the screw-threaded shank and the nut therefor having the open bearing with the contracted lower portion, of the swivel-piece pivotally mounted on the frame or bar and having the round pintle engaging the open recess, the lug at one end, the cut-away portion at the center, and the pin at the other end, substantially as and for the purpose specified.

11. An improved cutter for rotary mining-drills, having the twisted shank with the forwardly-extending circumferential cutting-teeth having the cutting-surfaces of substantially the same width from top to bottom and the tooth between and below the plane of the cutting-edges for breaking the central core left by the circumferential cutting-teeth, substantially as described.

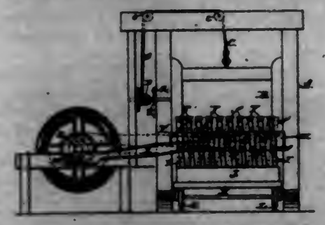
409,773. AIR-COMPRESSOR. HENRY DAVEY, Westminster, County of Middlesex, England. Filed Oct. 2, 1888. Serial No. 286,900. (No model.) Patented in England July 20, 1887, No. 10,835, and in France Apr. 23, 1888, No. 190,269.



Claim.—1. In an air-compressor, in combination, a steam-cylinder B, an air-compressor D, provided with chambers $g\,g'$ at one of its ends, reverse-acting spring-valves $g^2\,g^3$, applied, respectively, in said chambers, an air-supply valve of valve-chamber g', a reciprocating valve-rod f^2, an automatic governor E, wedge f^7, interposed between rods f^2 and c^3, and connected to the governor by lever f^6, main shaft C, eccentric c^4 on said shaft, eccentric rod c^5, and pulley b^2 of governor driving-belt, substantially as described.

2. In an air-compressor, in combination, wedge f^7, interposed between shafts f^2 and c^3, and connected to the governor by lever f^6, the sliding governor-spindle e in contact with and operating lever f^6, eccentric c^4 and its connecting-rod c^5, operating said shafts c^3 and f^2, and an air-supply valve, substantially as described.

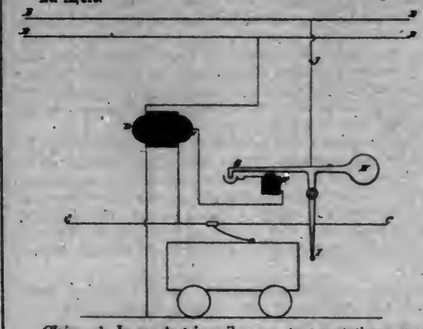
409,774. STONE-SAWING MACHINE. GEORGE A. DAVIDSON, Malden, assignor of one-half to Horace T. Cantwell, Troy, N. Y. Filed Mar. 8, 1887. Serial No. 230,133. (No model.)



Claim.—1. In a stone-sawing machine whereby the operation of sawing is effected by the aid of loose abrading material, the combination of a vertically-sliding gate having a horizontal guide thereon and a reciprocating cutter-head fitted to slide on said guide and provided with a series of pendulous cutters pivoted to said cutter-head, said cutters being formed of parallel flat bars of metal, their vibrations in said cutter-head being limited by ribs formed on the latter, and the angular space formed under the lower end of the cutter at each change of direction of the movement of the cutter-head affording an opening for the abrading material to accumulate in preparatory to the next following change of direction, as and for the purpose herein specified.

2. In a stone-sawing machine, the combination of a reciprocating cutter-head and a series of pendulous cutters formed of parallel bars of metal and pivoted to said cutter-head, said cutters being vertically adjustible in said cutter-head independently of the up-and-down feeding movement of latter, as and for the purpose herein specified.

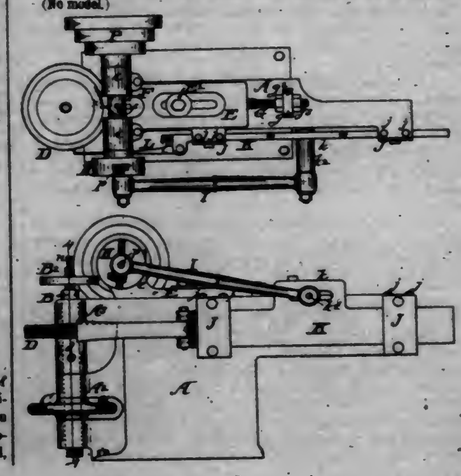
409,775. ELECTRIC RAILWAY. SEBASTIAN Z. DE FERRANTI, Hampstead, County of Middlesex, England. Filed Sept. 24, 1888. Serial No. 286,208. (No model.) Patented in England Sept. 13, 1887, No. 12,412.



Claim.—1. In an electric railway or transportation system, the combination of relatively short sections of conductors, from which the motors are fed with currents of comparatively low tension, a circuit supplied with high-tension alternating current, converters interposed between the sections of conductors and the high-tension circuit, and circuit making and breaking devices controlled by the train when upon a section of conductor, by which the converters are thrown into and out of action.

2. In an electric railway or transportation system, the combination of relatively short sections of conductors, from which the motors are fed with currents of comparatively low tension, a circuit supplied with high-tension alternating current, two converters interposed between each short section of conductors and the high-tension circuit, one of said converters being a constantly-acting small converter and the other of larger dimensions, and circuit-controlling devices interposed between the two converters, whereby the larger one is brought into action by the increase of current passing through the small one during the passage of a train over the section, substantially as set forth.

409,776. MACHINE FOR CUTTING GEAR. GEORGE W. DRUMHELLER and CHARLES H. NORTH, Cleveland, Ohio, assignors of one-half to Standish M. York, same place. Filed Dec. 1, 1888. Serial No. 292,420. (No model.)



Claim.—1. In combination, the vertical spindle B, supported in bearings A^3 A^3 of standard A and having blank-holder B^2, and the rotating shaft F, having cutting-tool *f* and journaled in bearings *e e* of adjustable plate E, which is provided with clamping-screw E^2, and the adjusting-screw G and nuts *g g*, by which said shaft and cutting-tool may be adjusted for cutting different sizes of gear-wheels.

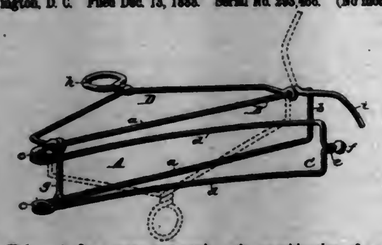
2. The combination, with the rotating shaft F, of the cutting-tool *f*, having one end provided with square cutting-edge for facing the periphery, and the other end provided with end and side cutting-edges for cutting teeth in the periphery of the blank, substantially as specified.

3. In combination, the spindle B, supported in bearings A^3 A^3 on standard A, and having the index-wheel D attached, also having the hand-wheel nut C attached and located between the bearings A^3 A^3, the spindle being screw-threaded, so that when rotated by the index-wheel it will also be moved upward through said nut, substantially as and for the purpose specified.

4. The combination, with the spindle B, supported in bearings A^3 A^3 of the standard A and provided with index-wheel D and nut C, of the rotary shaft F, having the crank-disk H attached, the pitman I, connecting said disk H with sliding bar K, playing in bearings J J on the side of the standard and having pawl L engaging with the index-wheel D, for imparting intermittent rotative motion to the spindle, substantially as and for the purpose specified.

5. The combination, with standard A, of the adjustable plate E, provided with the bearings *e e* for the rotating tool-holding shaft F, having the crank-disk H, and the pitman I, adjustably connected with the sliding bar K, playing in the bearings J J on the side of the standard A and provided with pawl L, engaging with the index-wheel D, whereby the tool-holding shaft may be adjustably set in relation to the blank-holder, substantially as described, and for the purpose specified.

409,777. TROUSERS-STRETCHER. JAMES F. DUHAMEL, Washington, D. C. Filed Dec. 13, 1888. Serial No. 293,466. (No model.)



Claim.—1. In a trousers-stretcher, the combination of a clamping-frame having two portions movable one in relation to the other, and a bail or hanger pivotally attached to one of said portions and bearing upon the other, whereby the parts are pressed and held together.

2. In a device for stretching trousers, the combination, with a frame comprising two parts hinged or pivoted together and adapted to clamp and hold the trousers between them, of a movable bail or hanger carried by one of said parts and arranged to move into and out of engagement with the other, substantially as set forth.

3. In combination with a frame A, comprising a rigid back part B and a part C, connected with the part B by coils *c c*, the bail or hanger D, pivotally secured to the part B and provided with an arm to engage the part C.

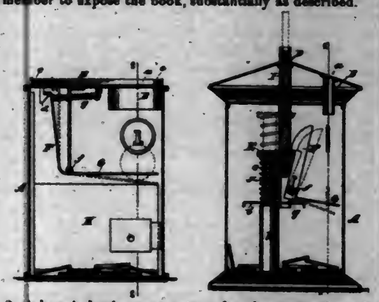
4. In trousers-stretchers, the combination, with the clamping-frame A, made of a single piece of wire and comprising a rear part B and front part C, connected by coils *c c*, of means for holding the parts B C together.

5. In combination with part B, comprising arms *a a*, upright *b*, and coils *c c*, the part C, comprising arms *d d* and *e*, bail D, secured to upper arm *a* and provided at one end with an arm *i* to engage the arm *e*.

6. In a device for stretching trousers, the combination, with the rear frame B, of the front frame C, hinged or pivoted to the latter, and a bail or hanger D, pivoted to frame B and having an arm to engage the frame C.

409,778. MONEY-BOX. MAX EMANUEL, London, England, assignor to George Borgfeldt & Co., New York, N. Y. Filed Feb. 21, 1888. Serial No. 300,736. (No model.) Patented in England May 11, 1883, No. 7,051, and in Germany Oct. 13, 1883, No. 46,850.

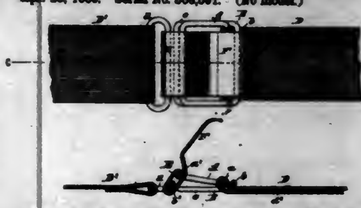
Claim.—1. The combination, with a box having an aperture for the entry of a coin and a movable member to hold a book, of a latch for holding said movable member down, and a platform in direct connection with said latch and extending in line with the coin-aperture, whereby as an entering coin strikes said platform it will move said platform, which will actuate the latch and thereby permit the movable member to expose the book, substantially as described.



2. A box A, having an aperture for the entry of a coin, and a movable member E, combined with a spring *c* for actuating said movable member, and with a latch F for holding said movable member, and a platform G in direct connection with said latch and extending in line with the coin-aperture, whereby when the entering coin strikes the platform it will release the latch to permit the movable member to expose a book, substantially as described.

3. The box A, having a coin-aperture, and the movable member E, having a hook *d*, combined with a spring-latch F within the box and adapted to engage the hook *d*, and with the platform G, carried by the latch and extending in line with the coin-aperture, all arranged and operating substantially as herein shown and described.

409,779. CLASP. SHERWOOD B. FERRIS, Lakewood, N. J. Filed Apr. 25, 1889. Serial No. 308,501. (No model.)



Claim.—1. The combination of the loops A B, adapted to grasp a tape or strap, with the swinging hinge E, having one opening to receive corresponding sides of the loops, so that one loop can be moved on the other to tighten and loosen a tape, and with means, substantially as described, for swinging said hinge, substantially as described.

2. The combination of the loops A B, adapted to grasp a tape, with the swinging hinge E, for holding and sliding said loops, and the handle or lever F, connected to the hinge for swinging the hinge to move the loops one upon the other, substantially as described.

3. The combination of the loops A B, adapted to grasp a tape, with the swinging hinge E for said loops, handle or lever F, and means, substantially as described, for holding the handle or lever from movement, substantially as herein shown and described.

4. The loops A B, both connected to the tape D, combined with the link *d* and its tape D^2, and with the swinging hinge-piece E and means, substantially as described, for swinging said hinge E, and means, substantially as described, for connecting both loops A B with the link *d*, substantially as described.

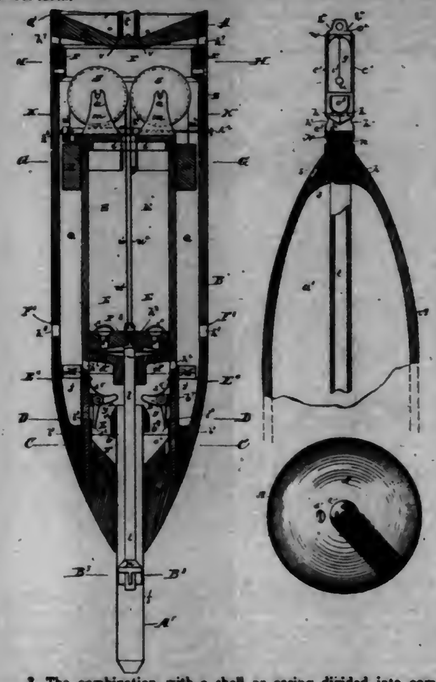
5. The loop B, having the depressed sides *e f*, combined with the loop A, that rests upon said sides *e f*, whereby two sides of the loop A are brought about in line with two corresponding sides of the loop B, and with a hinge for holding the loops A B, substantially as described.

409,780. RHEOBATHOMETER. HENRY FLAD, St. Louis, Mo. Original application filed June 30, 1887, Serial No. 243,968. Divided and this application filed Nov. 13, 1888. Serial No. 290,701. (No model.)

Brief.—An instrument designed to indicate depth of water and direction and velocity of currents.

Claim.—1. A rheobathometer constructed to present an equal resistance to its passage through the water in the direction of its axis both in ascending and descending, and provided with a detachable sinker and sinker holding and releasing devices, the latter being located within the shell of the rheobathometer.

2. A rheobathometer the shell or casing of which is formed to present an equal resistance to its passage through the water in the direction of its axis both in ascending and descending through the water, said shell being divided into two compartments, one to contain liquid, which serves to give buoyancy to the shell, and the other to contain the devices for operating the rheobathometer, substantially as set forth.



3. The combination, with a shell or casing divided into compartments, of a tube open at the upper end and descending to the bottom of one compartment set apart for containing the liquid used for giving buoyancy to the rheobathometer for the purpose of equalizing the inside and outside pressure, the said tube being perforated at its bottom.

4. The combination, with a shell or casing divided into compartments, of a sinker secured to the shell and so shaped that when in place the outside surface of the instrument at its lower end is of the same form as the upper end.

5. The combination, with a shell or casing divided into compartments and a sinker so arranged that when in place the outside surface of the instrument at its lower end is of the same form as the upper end, of a follower for restoring the symmetrical form of the surface of the buoy when the sinker has been discharged.

6. In a rheobathometer, the combination, with shell or casing, a timer, and a sinker, of a releaser for discharging the sinker both by striking bottom and by the timer.

7. The combination, with a rheobathometer, of a timer by means of which the sinker may be discharged after a certain lapse of time, for the purpose heretofore stated.

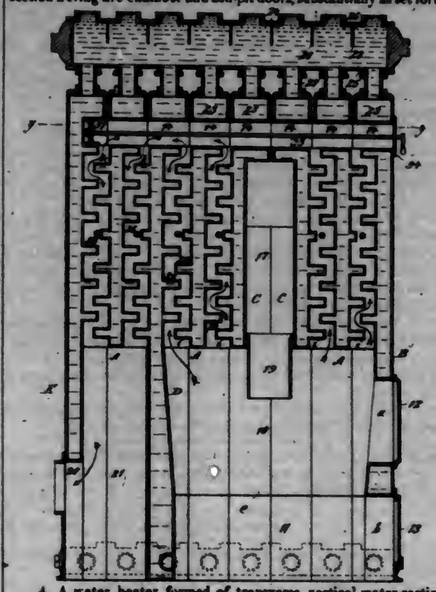
8. The combination, with a rheobathometer, of the indicator for indicating by light or sound, or by both light and sound, the reappearance of the rheobathometer at the surface.

409,781. STEAM-GENERATOR. DOC W. FLETCHER, St. Louis, Mo., assignor of one-fourth to Walter Rodgers Fletcher, same place. Filed Dec. 3, 1888. Serial No. 292,595. (No model.)

Claim.—1. A water-heater formed of vertical transverse spaced sections having longitudinally-extending interlocking pockets 22, forming zigzag flues *i*, substantially as set forth.

2. A water-heater formed of vertical transverse spaced water-sections having aligned lower openings 10, forming the fire-chamber, longitudinally-extending interlocking pockets above said openings forming zigzag flues *i*, and aligned openings near their upper ends forming a horizontal flue 14, into which the flues *i* discharge, substantially as set forth.

3. A water-heater formed of vertical transverse spaced water-sections A B C D E, having interlocking longitudinally-extending pockets forming zigzag flues, aligned openings near their upper ends forming flue 14, communicating with the flues *i*, outlet-opening 20 in the lower end of the rear section E, a water-back formed by section D, the fire-chamber 10, formed in front thereof, and soot-chamber in rear thereof, a pipe connecting the lower ends of said sections and a distributer communicating with the upper ends of said sections, the front section having fire-chamber and ash-pit doors, substantially as set forth.



4. A water heater formed of transverse vertical water-sections having aligned openings forming a fire-chamber, interlocking longitudinally-extending pockets forming zigzag flues *i*, and openings forming top flue 14, two of said sections above the fire-chamber having a fuel-magazine 17 formed between them, substantially as set forth.

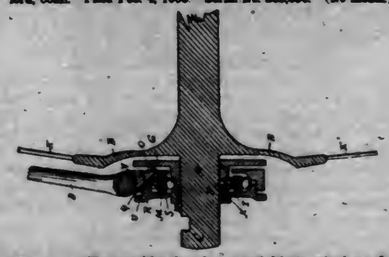
5. In a water-heater, the distributer 24, having aligned openings in its top and bottom, and transverse deflecting-plates 28, depending from the upper side of the interior of the distributer between each top opening, substantially as set forth.

6. In a water-heater, the combination, with a series of sections formed with side pockets, and flue-sections 14 and flues *i k*, of flue-cleaners 31 and 36, arranged substantially as described.

7. The combination, with a water-heater having vertically-ranging flues and a horizontal flue communicating with the upper ends thereof, of the horizontal and vertical cleaners having operating-rods extending to the outer sides of the heater, substantially as set forth.

8. A water-heater made up of sections A, B, C, D, and E, whereby there are formed flues *i k* and 14, a fire-chamber, an ash-pit, and a soot-pit, substantially as described.

409,782. ANTI-FRICTION BEARING. LEONARD B. GAYLOR, Stamford, Conn. Filed Feb. 4, 1888. Serial No. 263,050. (No model.)



Claim.—1. The combination, in an anti-friction device, of a plurality of rows of balls or rollers, an annulus placed between them in contact only with the balls themselves arranged to revolve independently with either row of balls or rollers, and adjustable bearings attached to the shaft or axle, substantially as set forth.

2. The combination, in an anti-friction device, of a plurality of rows of balls or rollers, an annulus placed between them in contact only with the balls themselves arranged to revolve independently with either row of balls or rollers, and adjustable bearings attached to the hub or journal box, substantially as set forth.

3. The combination, in an anti-friction device, of a plurality of rows of balls or rollers, an annulus placed between them in contact

only with the balls themselves arranged to revolve independently with either row of balls or rollers, and adjustable bearings for the balls upon the shaft or axle and upon the hub or journal box.

4. The combination, in an anti-friction bearing, of one or more circles of balls interposed between the axle and an annulus or bearing, said annulus being free to revolve inside of other circles of balls, and adjustable bearings on the outer side of the outer circles of balls and on the inner side of the inner circle of balls to compress them toward the annulus as a means of taking up wear or adjusting the bearing, substantially as set forth.

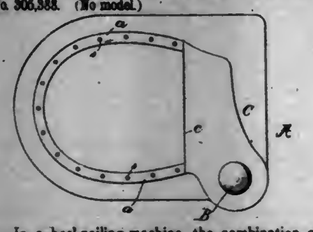
5. The combination, in an anti-friction device, of a plurality of rows of balls or rollers and an annulus placed between them, the ball-receiving groove in the annulus being in different radial planes and in substantially the same horizontal plane, whereby the diameter of the hub or journal is reduced, substantially as set forth.

6. The combination, in an anti-friction device, of a plurality of rows of balls or rollers, an annulus placed between them in contact only with the balls or rollers themselves, the ball-receiving grooves in the annulus being in different radial planes, and adjustable bearings for the balls, whereby the wear thereof may be compensated or "taken up," substantially as set forth.

7. The combination, in an anti-friction bearing, of lateral adjustments both upon the shaft or axle and upon the journal-box or bearing as a means of adjusting or taking up wear either toward or from the axle, or in both directions at once, as the condition of the bearing may require.

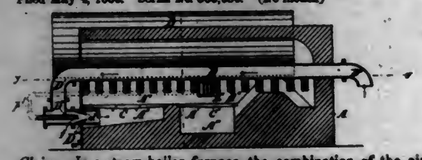
8. The combination, in an anti-friction bearing, of a clamp Z in the under side of the bearing-case, for the purpose set forth.

409,783. **TOP-LIFT PLATE.** CHARLES W. GLIDDEN, Lynn, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Mar. 30, 1889. Serial No. 305,383. (No model.)



Claim.—In a heel-nailing machine, the combination of a nail-box, the pivoted top-lift plate C, having a shoulder, as *c*, to receive against it the breast of the top lift, and having a rigid curb, as *a*, extended around the edge of the said pivoted top-lift plate, thus leaving a socket or chamber, down into which the top lift is laid, substantially as described.

409,784. **STEAM-BOILER FURNACE.** JOHN GOOD, Napanee, Ontario, Canada, assignor of one-half to James R. Herring, same place. Filed May 4, 1889. Serial No. 309,659. (No model.)

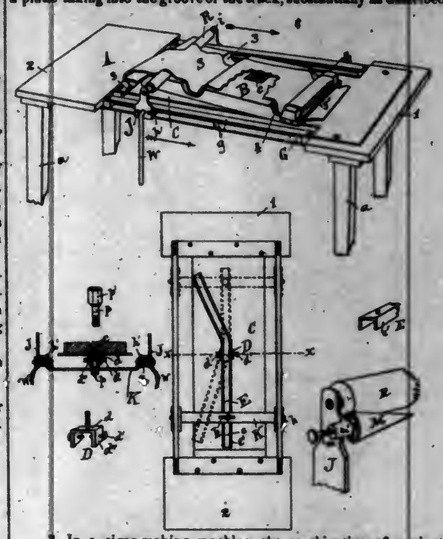


Claim.—In a steam-boiler furnace, the combination of the air-pipe D, passing longitudinally through the flue and having its front end returned and entering the air-tight ash-pit, and provided with a nozzle d''', the superheater E, placed transversely under the boiler, steam-pipe F, connecting the superheater with the boiler, pipe F', connecting the discharge end of the superheater and passing through the front end of the air-pipe and terminating in the nozzle d''', forming a jet-exhauster, the grate C and secondary grate C', and the air-tight ash-pits A'' and A''', substantially as set forth.

409,785. **CIGAR-MACHINE.** MORRIS GREENFIELDER, Baltimore, Md. Filed Dec. 19, 1888. Serial No. 294,043. (No model.)

Claim.—1. The bunch-bed pivotally connected midway of its length to the bed-plate and adapted to swing thereon on a horizontal plane, a bent track attached to the bunch-bed arranged under said bed-plate, in combination with a reciprocating roller and apron secured at one end to a transverse rod on the bed-plate and at its opposite end to the bunch-bed, with suitable means for traveling in the bent track, substantially as described.

2. The combination of the bunch-bed B, having lateral surface-troughs at its opposite ends and a loosely overlying apron attached at one end to a rod on the bed-plate and at its opposite end to the bunch-bed, said bunch-bed being connected with the bed-plate by a pivotal pin passing through said plate, having at its lower end a hanging stirrup provided with fastening devices to firmly grip a bent track attached to said bunch-bed with the track, a transverse bar arranged to reciprocally traverse the track, said bar having uprising therefrom a pintle taking into the groove of the track, substantially as described.



3. In a cigar-making machine, the combination of a pivoted bunch-bed arranged to move upon a horizontal plane, a bent track attached to the under side of the bunch-bed, the table A, having open side ways G, the traveling-blocks A, flanged at their inner faces, said blocks having connected to their lower ends transverse bar K, carrying midway of its length vertical pintle *p*, intermeshing with the groove of the bent track, the opposite outer side of each block A having attached thereto an arm J, provided with the revoluble roller R, extending transversely across and above the bed B, and an apron, one end being connected to the bunch-bed and the other to the framing, as and for the purpose intended, substantially as described.

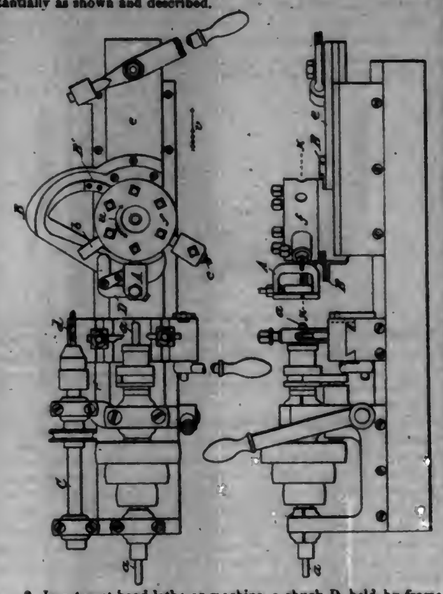
4. The bunch-bed pivotally connected to a bed-plate and adapted to swing on a horizontal plane, a bent track attached to the under side of said bunch-bed, in combination with said track, the reciprocating roller, an apron secured at one end to the bunch-bed and at its opposite end to the bed-plate, and suitable means for traveling in said track, and the cone-limiter adjusted to be laterally projected against the roller, as and for the purpose set forth.

5. The combination of the table A, provided with a permanently-attached bed-plate C, and open parallel side ways G, a pivoted and removable bent grooved track E, pintle *p*, engaging said track, a reciprocally-movable cross-bar K, carrying the pintle-blocks A, sliding within the ways G, reciprocating roller R, journaled in plates J, apron S, fastened at one end to the bed-plate and at its opposite end to the bunch-bed, the plates J, lever-arms W, which, when actuated, will move said blocks within their ways and simultaneously propel the pintle *p* within the grooved track, thereby turning the same laterally, which in turn will cause the bed B, attached to the upper end of the common pivot, to swing in coincident direction, as and for the purpose intended, substantially as described.

6. The apron S, secured as set forth, the reciprocating roller R, horizontally-swinging bunch-bed B, bent and grooved track E, secured to said bunch-bed, and sliding pintle *p*, arranged and combined as set forth and illustrated, whereby, when motion is imparted to the several actuating members of the device, portions of the apron will be folded over to form a pocket tapering in alignment correspondingly with the divergence and bend of the track E, substantially as described.

409,786. **TURRET-LATHE HAVING A SUPPLEMENTAL DRILL-SPINDLE.** JAMES HARTNESS, Torrington, Conn. Filed Dec. 7, 1888. Serial No. 292,951. (No model.)

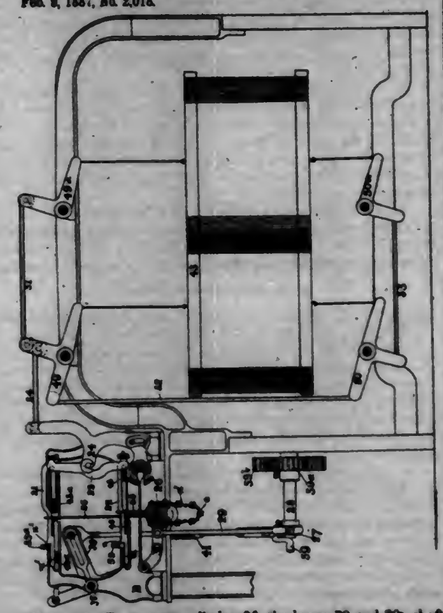
Claim.—1. In a turret-head machine having an auxiliary spindle carrying a tool, the combination of a chuck attached to the turret for the purpose of taking the work cut from the rod of stock held in the main spindle to the said auxiliary spindle, there to be operated upon by the tool held in the said auxiliary spindle, the said chuck being pivoted on the clamping-screw E, which is secured to the turret by frame A, with a non-revolving cam B, by which the said pivoted chuck is caused to turn on its pivot when the said turret turns, substantially as shown and described.



2. In a turret-head lathe or machine, a chuck D, held by frame A, attached to the turret-head *f*, combined with cam B, for the purpose shown and set forth.

3. In a turret-head lathe, the combination of a frame A, clamping-screw E, chuck D, lever F, plunger O, and stud *p*, with cam B and auxiliary spindle C, substantially as shown and described.

409,787. **SHEDDING MECHANISM FOR LOOMS.** RICHARD L. HATTERSLEY and JAMES HILL, Keighley, County of York, England. Filed May 4, 1887. Serial No. 237,022. (No model.) Patented in England Feb. 8, 1887, No. 2,018.



Claim.—1. The pattern-cylinder 26, the levers 30 and 30*, shaft 31, rod 29, eccentric 27, the motor-shaft 28, peg-lags *e*, each lag having two rows of pegs *d*, the needles 25, bars 46 and 46*, means for operating said bars 46 and 46*, catches 21 and 22 of bended or cranked form about midway between their extreme ends, levers 23 and 24, and healds 43, all in combination, each part being arranged to operate in connection with the other parts, substantially as specified.

2. The needles 25, constructed with their upper ends open to span the catches and their lower ends bent to form greater surfaces for pegs to operate upon, the pattern-chain *c*, and pegs *d*, means for operating said pattern-chain *c*, the catches 21 and 22, the draw-bars 46 and 46* and their actuating devices, and levers 23 and 24, in combination, all being arranged to operate substantially as specified.

3. The catches 21 and 22, having elongated ends *m* and *m'* and catches *n* and *n'*, respectively, also being of bended form and having their other ends respectively terminating in hooks, the needles 25, the pattern-chain *c*, and pegs *d*, means for operating said pattern-chain *c*, the bars 46 and 46*, means for operating these bars, the stop-rails 55 and 55*, the levers 23, the outer ends of which are formed with the prongs *f*, pins *g*, and pieces *h* to retain the hooked ends of catches 21 and 22 when in one position, but to allow them to be detachable in another, the reciprocating bars 45 and 45*, means for operating said bars 45 and 45*, the levers 24, the healds 43, and the means for joining said levers 24 to said healds 43, by which said healds are raised and depressed without the aid of springs or weights, substantially as specified.

4. The bars 46 and 46*, means for operating them, the rods 47 and 47* and the bars 45 and 45*, 55 and 55*, the catches 21 and 22, having ends *m* and *m'* and catches *n* and *n'*, and the levers 23, combined with the levers 24, said levers 23 being constructed to lay hold of the pins *k k*, formed or attached to the levers 24 and also being of bended form, so as to lay securely hold of the pins *k* on the levers 24 when in one position, in which position the ends of the levers 24 may abut against said levers 23, but be detachable when moved into another position, the healds 43, and the means for joining said healds to said levers 24, substantially as specified.

409,788. **CORN-HUSKING IMPLEMENT.** RICHARD W. HUBBARD, Ashtabula, Ohio. Filed May 18, 1889. Serial No. 311,275. (No model.)



Claim.—1. A husking implement consisting of a single wire bent to form a rounded point and double shank at one end and a handle at the opposite end, substantially as set forth.

2. A husking implement consisting of a single piece of wire bent or doubled to form a broad rounded and sharpened point, and a double shank at one end and a loop at the opposite end, substantially as set forth.

3. A husking implement consisting of a single piece of wire, a portion of which is straight and slightly bent at one end and thence doubled to form a rounded end and double shank, and finally to form a loop for the fingers, substantially as set forth.

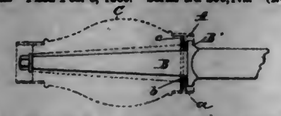
409,789. **HAIR-SPRING STUD FOR WATCHES.** STEPHEN JENKIN, New York, N. Y. Filed June 8, 1888. Serial No. 276,463. (No model.)



Claim.—1. A fastening for the springs of clock-movements, consisting in the combination, with the back plate A', having the post H secured rigidly thereto, of the stud I, having rotary bearings in said back plate and formed with the clamping-head *c*, projecting to one side and at sufficient distance from the back plate to impart elasticity to the clamping-fastening, whereby the free end of the spring is clamped between said post and head by a turning movement of the stud, and is held with a yielding pressure.

2. A fastening for the springs of clock-movements, consisting in the combination, with the back plate A', having the post H secured rigidly thereto, of the stud I, having rotary bearings in said back plate and formed with the clamping-head *c*, projecting to one side, and with the squared end *i*, protruding to the rear of the back plate, by which to turn said stud.

409,790. WASHER FOR VEHICLE-AXLES. CHARLES C. JEROME, Chicago, Ill. Filed Feb. 8, 1889. Serial No. 299,172. (No model.)

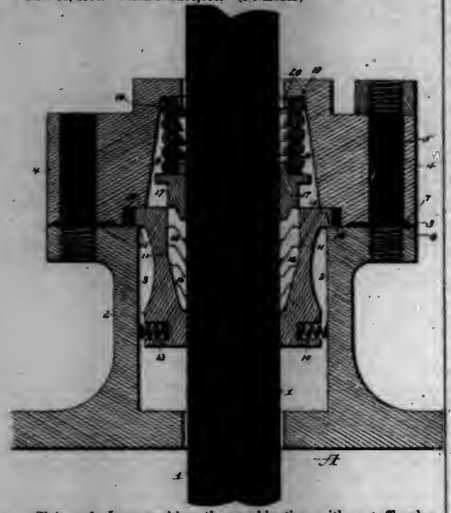


Claim.—1. A hub and axle washer having a thin yielding flange formed on its body and projecting inwardly therefrom, substantially as set forth.

2. A hub and axle washer having a thin yielding flange formed on its body and projecting outwardly therefrom, substantially as set forth.

3. A hub and axle washer having a thin flange integral with its body and extended inwardly in line with one of its ends, and also a thin flange projected outwardly in a line with the opposite end of said washer, substantially as set forth.

409,791. ROD-PACKING. CHARLES C. JEROME, Chicago, Ill. Filed Feb. 13, 1889. Serial No. 299,750. (No model.)



Claim.—1. In a packing, the combination, with a stuffing-box, of a packing-cone, and elastic devices bearing on said packing-cone for preventing unequal pressure of the packing and cone upon the rod, substantially as set forth.

2. In a packing, the combination, with a stuffing-box and a rod, of a packing-cone, packing-rings therein, and elastic devices bearing on said packing-cone for preventing unequal pressure of the packing rings and cone upon the rod, substantially as set forth.

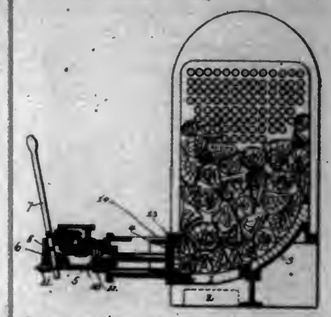
3. The combination, with a stuffing-box and a gland, of a packing-cone having one end in a steam-tight joint between the stuffing-box and gland, and elastic devices bearing on the packing-cone for preventing an unequal pressure at the opposite ends of the packing-cone, substantially as set forth.

4. The combination, with a stuffing-box and gland, of a packing-cone having a flange thereon projecting into a steam-joint at one end, and provided with springs for holding the cone in line with the rod and preventing an unequal pressure on the packing, substantially as set forth.

5. The combination, with a stuffing-box, a gland secured thereto and having an annular joint formed therein contiguous to the stuffing-box, a packing-cone having a flange extending into the joint, said cone having a packing-cavity therein, and springs for holding it in position in the box, of lap packing-rings, a follower, and spring bearing on said follower, substantially as set forth.

409,792. FURNACE. EVAN W. JONES, Portland, Oreg. Filed June 7, 1888. Serial No. 313,480. (No model.)

Claim.—1. A furnace provided with a lateral fuel-supply opening beneath the fire, a supporting bottom for the fire sloping upward and backward from the supply-opening, grate-bars forming a portion of said bottom, a dead-plate forming the remaining portion of said bottom, and a ram on the side of the furnace for forcing fuel into the opening, whereby fuel may be readily pushed up into the fire and will be firmly supported independently of the position of the feeding mechanism.



2. A furnace comprising a downwardly-contracting fuel-chamber having grate-bars in the lower portion thereof and forming at all times a firm support for the fuel, a lateral supply-opening in the lower part of the fuel-chamber, and a ram for forcing fuel through the opening, said fuel being forced up into the fire by the sloping wall of the fuel-chamber.

3. A furnace provided with a fuel-chamber having an inclined bottom and a fuel-opening opposite the lower edge of the bottom, a ram for forcing fuel through the opening against the inclined bottom, whereby it will be forced up into the fire, and grates in the fuel-chamber, the upper portion of the fuel-chamber spreading laterally and being provided with auxiliary grates, as and for the purpose set forth.

4. A furnace provided with a fuel-chamber having an upwardly-inclining side and a fuel-supply opening below the line of fire, means for forcing fuel up into the chamber, and air-supplying grates in the side or sides of the chamber.

5. A furnace having a fuel-chamber provided with an upwardly-expanding cross-section, vertical grate-bars in the side of the chamber and between it and the furnace-walls, said grate-bars having their faces inclining toward the front of the furnace to facilitate raking.

6. In a furnace, the combination of a fuel-chamber having an upwardly-expanding cross-section, vertical grate-bars in the lower side walls of said chamber, horizontal grate-bars 22 in the upper part of said chamber, and a fuel-supply opening in the lower part of the chamber below the line of fire.

7. In a furnace, the combination of a fuel-chamber having an upwardly-expanding cross-section, vertical grate-bars in the lower side walls of said chamber, horizontal grate-bars in the upper part of said chamber, a fuel-supply opening in the lower part of the chamber below the line of fire, and a fire-door in the upper part of the chamber for building the fire.

8. In a furnace, the combination of the fuel-chamber having an upwardly-inclining bottom, a fuel-supply opening opposite said bottom below the line of fire, a fuel-box in front of the opening, a ram for forcing the fuel from the box up into the chamber, a piston connected to the ram, a valve-shifting lever for controlling the direction of movement of the piston, and a cut-off operated by the ram on the completion of its stroke.

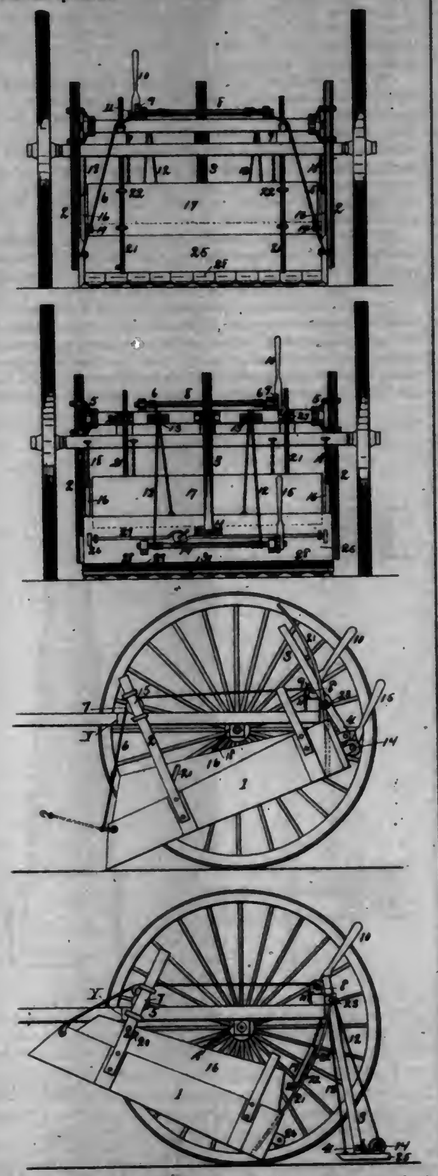
9. In a furnace, the combination of a fuel-chamber having an upwardly-inclining bottom and a fuel-supply opening opposite said bottom below the line of fire, and a ram for forcing fuel into the opening, said ram having a fire-brick lining on the side entering the opening.

409,793. SELF-LOADING CART. JOHN C. KELSHER, New Richland, Minn. Filed Dec. 31, 1888. Serial No. 296,008. (No model.)

Claim.—1. In combination with the frame-work mounted upon wheels, the scoop suspended therefrom by chains or equivalent means, and arms rigidly secured to said scoop and mounted in longitudinally-oscillating guide-bearings upon the frame-work, and means for winding and unwinding said suspension devices, substantially as described, whereby said scoop may be raised or lowered by said arms sliding in said bearings.

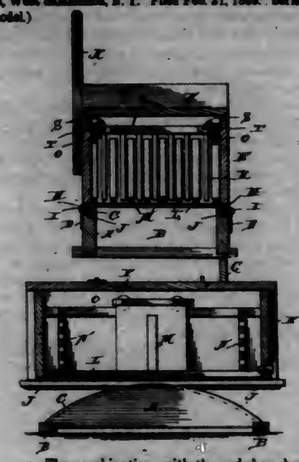
2. In combination with the frame-work mounted upon wheels, the scoop suspended at front and rear therefrom by means of cords or chains, upright arms rigidly secured to said scoop and mounted in oscillating guide-bearings upon the frame-work, and ratchet-operated shafts at front and rear, to which said suspension devices are attached, respectively, whereby either the front or rear end of the scoop may be raised or lowered independently, the said arms sliding in said guide-bearings, substantially as and for the purpose specified.

3. In combination with the frame-work mounted upon wheels, the scoop held in lateral position with reference thereto by means of upright arms rigidly secured to said scoop and mounted in longitudinally-oscillating guide-bearings upon said frame-work, suspending cords or chains attached at one end to the front of the scoop and at the other to a ratchet-lever-operated shaft upon the frame, similar cords or chains secured at one end to the rear end-gate of said scoop, passing over a sheave upon the frame-work, and attached at the other end to a ratchet-lever-operated shaft mounted upon said end-gate, and means for detaching said end-gate, substantially as and for the purpose herein specified.



4. In combination with the frame-work mounted upon wheels, the scoop held in lateral position with reference thereto by means of upright arms rigidly secured to said scoop and mounted in longitudinally-oscillating guide-bearings upon said frame-work, cords or chains suspending said scoop from the frame-work, and means, substantially as described, for raising or tilting said scoop in said bearings, and additional sides and ends suspended from said frame independently of said scoop, substantially as and for the purpose herein specified.

409,794. WASHING-MACHINE. HENRY C. KNIGHT and DAVID H. STERNS, West Salamanca, N. Y. Filed Feb. 21, 1889. Serial No. 300,602. (No model.)



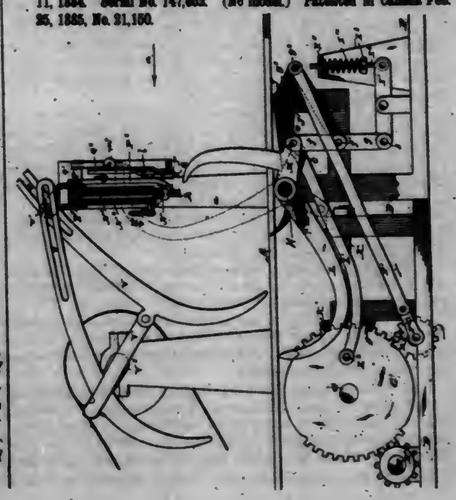
Claim.—1. The combination, with the suds-box having internal ways near the top, of the vertical posts rising from the bottom thereof at the center of the same, and the traveling agitator mounted on the ways of the suds-box, moving over the posts and having a series of depending vertical arms arranged in alternate planes with said posts, as set forth.

2. The combination, with the suds box, of the longitudinal bars secured upon the bottom of the same, the vertical posts erected on said bars at the centers of the same, the perforated vertical plates arranged transversely on said bars near the ends of the suds-box, and the traveling agitator mounted in the said box and moving between the perforated plates and past the posts, as set forth.

3. The combination of the suds-box having the cleats or ways, the traveling agitator provided with rollers resting on said cleats, the perforated plates N, arranged transversely within the suds-box, and between which plates the agitator works, the posts M, rising from the bottom of the suds-box, and the arms depending from the agitator and adapted to pass between the posts, as set forth.

4. The combination of the suds-box having the series of bars L secured to its bottom, which extend the entire length thereof and have the series of posts M, which extend upward to near the top of the suds-box, so as to practically divide the suds-box into two compartments, and the traveling agitator having a series of arms R, which depend therefrom and register with the spaces between the posts M, as set forth.

409,795. GRAIN-BINDER. SAMUEL D. MADDUX, Miamisburg, Ohio, assignor to Mary Maddux and Amadee Tetrault, same place. Filed Nov. 11, 1884. Serial No. 147,663. (No model.) Patented in Canada Feb. 25, 1885, No. 21,160.



Claim.—1. In a grain-binder having the knotting mechanism supported from a standard overhanging the platform and the needle pivoted below the platform, a pivoted lever extending above and below the platform, and reciprocating connecting-rods jointed at their ends to the said lever and connected, respectively, with the knotting mechanism above the platform and the driving mechanism below the platform, substantially as described.

2. The combination of the knotting mechanism of a grain-binder supported above the platform by an overhanging arm, a pivoted operating-lever extending above and below the platform, an intermediate sliding frame and connecting-rods jointed at their ends to the lever and connected, respectively, with the sliding frame and with the driving mechanism, substantially as described.

3. In a grain-binder, the combination, with the needle, the compressor, and the discharge-arm, all hung below the platform, and the knotting devices above the platform, of a rotating disk G', arranged below the platform, and which drives all of said devices, a wheel K', mounted in a plane at substantially right angles to the disk and driven directly thereby and arranged between the latter and the knotting mechanism, and connections between the wheel K' and the knotting devices, substantially as described.

4. In a grain-binder, the combination of the knotting devices above the platform, the needle, the compressor, and the discharge-arm, all mounted below the platform and supported upon parallel shafts, a disk G' in a plane at right angles thereto, the wheel K', a reciprocating rod operating in a plane parallel with the shafts driven by the wheel K', and reciprocating connections between the rod and the knotting devices, substantially as described.

5. In a grain-binding harvester, the combination, with a binder-platform, the needle, the compressor, the discharge-arm, and the knotting devices, the latter being above the platform, of a main revolving disk G', mounted below the platform to drive the needle, the compressor and the discharge-arm, a wheel K', a rod driven thereby below the platform, a pivoted lever extending above and below the platform, and a second rod connecting the lever with the knotting mechanism, substantially as described.

6. The combination of the rotating knotter-hook, the cord-clamping disk, the cord-controlling lever T, supported adjacent to the hook, and a reciprocating frame and connections, whereby the moving of the frame in one direction is caused to operate the said parts to form the knot, substantially as described.

7. The combination of the needle, a compressor pivoted upon the needle-shaft, a toggle-brace which supports the compressor, and a trip for the toggle independent of the needle for vibrating one of the toggles of the brace to permit the descent of the compressor, substantially as set forth.

8. The combination, with an intermittently-moved disk and the needle driven therefrom, of the pivoted compressor, the supporting toggle-links pivoted to compressor and to a support carried by the frame of the machine, and a trip connected with the toggle-links and arranged to move them to break the support for the compressor, the trip being positively operated, independently of the needle, by a link connected with the said intermittently-moved disk, substantially as described.

9. The combination, with an intermittently-moved disk, of the pivoted compressor, the supporting toggle-links pivoted to the compressor and to a support on the frame of the machine, the discharge-arm positively operated from the said disk, a trip connected to the toggle-links and to the discharge-arm, and a link connecting the discharge-arm with the disk, whereby the toggle-links are moved to permit the withdrawal of the compressor upon the advancement of the discharge-arm, substantially as described.

10. The combination of the compressor-arms hung directly to a shaft or pivot below the platform, the toggle-links connected to the said arms, and to a support carried by the frame of the machine, and a reciprocating rod pivoted to the central joint of the said toggles, whereby it operates them both to support the compressor-arms and to let them fall, substantially as described.

11. The combination of the pivoted compressor-arm, the toggle-links, the trip for the toggle-links, the lever I', and a spring-bearing for the said lever, substantially as described.

12. The combination of the compressor-arm, the toggle-links, the trip of the toggle-links, the lever l', the bar l^2, and the spring and nut, substantially as described.

13. The combination of the compressor and discharge arms, the toggle-links, the support therefor carried by the frame of the machine, the connecting-rod g', and the operating-crank and connecting-rod F', substantially as described.

14. The combination, with the binder-platform, the knotting devices, a needle, the discharge-arms, and the compressor, of a rotating disk G', connected to drive the needle, and having the spur-gear segment F^4 and the bevel-gear segment K^2, the shaft F, driven by the gear-segment F^4 and connected to drive the discharge-arms, the shaft K, arranged at an angle to the shaft F and provided with a crank, a rod driven by the crank, and a pivoted lever connected with the knotting devices driven by the link, substantially as described.

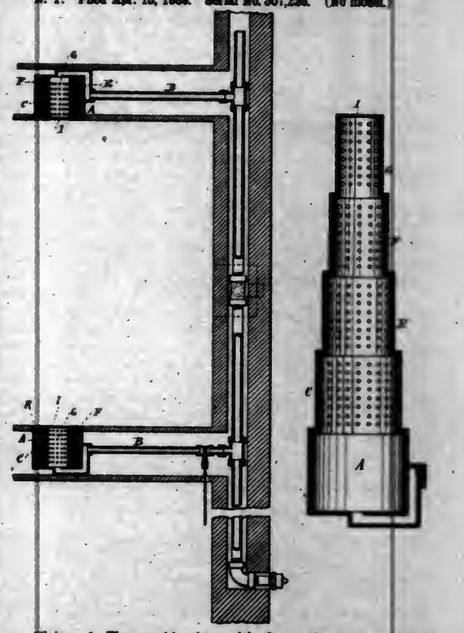
15. The combination of the binder-frame, the drive-wheels of equal size supporting the said frame and both connected to drive the operating mechanism, a cutting apparatus and grain-platform on one side of the binder-frame, an elevator delivering the grain from the grain-platform over the inner one of said wheels, a binder-platform supported by the binder-frame between and extending over the wheels on the stubble side of the machine, and a binder supported by the frame between the wheels and provided with ejector-arms arranged to discharge the bound bundles from the platform over the last said wheel, substantially as described.

16. The combination of the binder driving-wheels of substantially equal size, both connected to drive the operating mechanism, an elevator delivering the cut grain over the inner one of said wheels, the binding-table arranged above and projecting over the wheel on the stubble side of the machine, a frame supported by and between the wheels below the binding-table and supporting the shafts and their connections of the grain-binder, and an arm projecting above the platform and the cord knotting and cutting devices supported by said arm, substantially as described.

17. The combination, with the elevator and binder, of the horizontally-arranged pulleys and the chains provided with jointed feeding-teeth passing around the pulleys, and a bar, adjustable, supporting the pulleys next to the binder, substantially as set forth.

18. The combination, in a harvester, of a binder supported between two wheels, a vertically-adjustable cutter-frame outside the wheels, an elevator-frame jointed at the lower end to the adjustable cutter-frame, and a frame carrying a grain-conveyer jointed at the outer end to the upper portion of the elevator-frame and at the inner end adjacent to the platform of the binder, substantially as set forth.

409,796. FIRE-EXTINGUISHER. MICHELE MAGALDI, New York, N. Y. Filed Apr. 15, 1889. Serial No. 307,236. (No model.)



Claim.—1. The combination, with the stationary water-supply pipes within a building, of the automatic extensible sprinkler formed of perforated tubular sections sliding one within the other automatically by the pressure of the water, substantially as set forth.

2. The combination, with the stationary water-pipes in a building and the valves or cocks therein, of the automatic extensible sprinklers in the floor, walls, or ceiling, each sprinkler being composed of perforated tubular sections sliding telescopically one within the other, substantially as set forth.

409,797. GATE-LATCH. MELVILLE M. MOORE, Springfield, Mo. Filed June 21, 1888. Serial No. 277,797. (No model.)

Claim.—The combination, with a vertically-movable angular bolt provided with a lateral projection and a beveled lower end, and a block or casing having a seat corresponding in shape to the cross-section of the bolt, so as to permit the bolt to slide therein, but prevent it from moving laterally, of a block located below the bolt and having a flat upper face, forming a rest for the pin or bolt on the gate, and a beveled face which forms a guide for the pin or bolt on the gate, substantially as set forth.

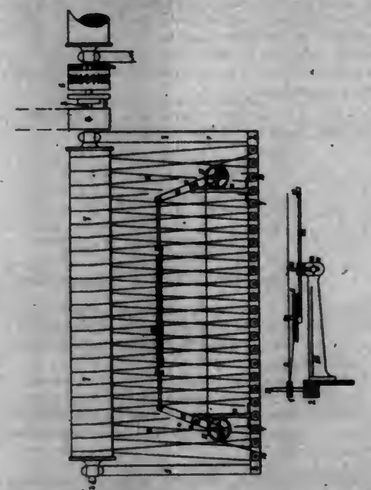


409,798. WHIFFLETREE. MURDOCK M. MCKINNON, Laurinburg, N. C. Filed Apr. 11, 1889. Serial No. 306,831. (No model.)



Claim.—The improved whiffletree consisting of the whiffletree-bar having a transverse opening at its center near one side, a hook loosely mounted in said opening and having a divided ring at its rear end, and a stud projecting from the rear side of the whiffletree-bar adjacent to the transverse opening therein and adapted to contact with the free end of the divided ring, as set forth.

409,799. TENSION-REGULATING DEVICE FOR SPINDLE-DRIVING BANDS. ABRAHAM HERBERWOOD, New Brunswick, N. J. Filed Mar. 26, 1889. Serial No. 304,944. (No model.)

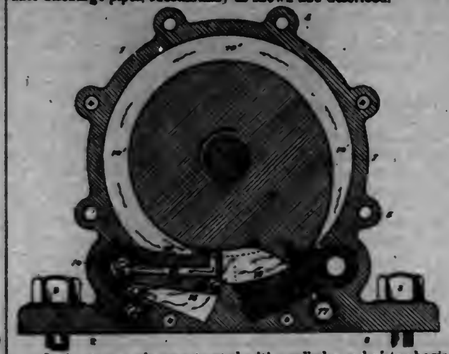


Claim.—The combination, with the drum 7, the spindles 10, having whirls 9, and the endless band 8, of the stands 15, the studs 13, means to adjust said studs vertically on said stands, the levers 12, pivoted on said studs and provided with the eyes 19 and the pins 20, the idler-wheels 11 on said pins, and the spring 14, substantially as shown and described.

409,800. ROTARY ENGINE. FREDERICK D. OWEN, Washington, D. C. Filed Oct. 12, 1888. Serial No. 287,903. (No model.)

Claim.—1. In a rotary engine constructed with a cylinder and piston, a valve-chamber communicating with the cylinder and with a supply-pipe, an oscillating abutment-valve located within the valve-chamber and having supply-ports communicating with the valve-chamber and adapted to rest on a cushion of steam therein, and the cylinder and discharge-ports communicating with the cylinder and a discharge-pipe, substantially as shown and described.

2. A rotary engine constructed with a cylinder and piston, valve-chambers communicating with the cylinder and alternate supply-pipes, an oscillating abutment-valve located within each of the valve-chambers, said abutment-valve having alternate supply-ports communicating with each of the valve-chambers and the cylinder, and alternate discharge-ports communicating with the cylinder and alternate discharge-pipes, substantially as shown and described.



3. A rotary engine constructed with a cylinder and piston having a rib bearing against the interior surface of the cylinder, a valve-chamber communicating with the interior of the cylinder, an oscillating abutment-valve located in the valve-chamber and having a hollow hinge communicating with the discharge-pipe and through the valve with the cylinder, and supply-ports communicating with the cylinder and the valve-chamber, and a supply-pipe communicating with the valve-chamber, substantially as shown and described.

4. In a rotary engine, a piston constructed from a cylinder placed upon a shaft located within an outer cylinder or casing, with one portion enlarged longitudinally and carrying an expansive rib bearing against the interior wall of the outer casing, forming with said cylinder and the enlargement a convex longitudinal surface, and to the opposite side of said rib a concave longitudinal surface, in combination with an oscillating abutment-valve located within a chamber communicating with the cylinder in the wall of the outer casing, substantially as shown and described.

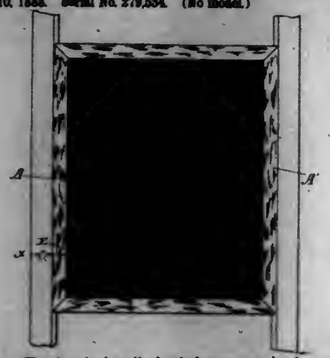
5. A rotary engine constructed with a cylinder and piston having a rib bearing against the interior surface of the cylinder, an inclosed valve-chamber opening into the cylinder with a supply-pipe, an oscillating abutment-valve located within the valve-chamber and having an upper curved surface exposed to the interior of the cylinder and forming a part of the interior surface of the cylinder, said abutment-valve having supply and discharge ports communicating, respectively, with the valve-chamber and cylinder and the cylinder and a discharge-pipe, substantially as shown and described.

6. A rotary engine constructed with a cylinder and piston with a rib bearing against the interior surface of the cylinder, a valve-chamber communicating with the interior of the cylinder, an oscillating abutment-valve located in the valve-chamber and having supply-ports in a face of the valve which is movable over the wall of the valve-chamber, the supply-ports communicating with the interior of the cylinder, and the valve-chamber having a supply-pipe and discharge-ports communicating with the interior of the cylinder and a discharge-pipe, the openings of the supply-ports being in a different plane in the valve from that of the openings of the discharge-ports, whereby the supply is cut off automatically before the discharge by the action of the piston, substantially as shown and described.

7. A rotary engine constructed with a cylinder and piston, a valve-chamber communicating with the interior of the cylinder, and an oscillating abutment-valve located in the valve-chamber and having supply-ports communicating with the interior of the cylinder and with the valve-chamber having a supply-pipe, and discharge-ports communicating with the interior of the cylinder and a discharge-pipe, the openings of the discharge-ports being in a different place or height relative to the base of the cylinder from the openings of the supply-ports, whereby the supply is automatically cut off before the discharge by the piston moving the valve back in its chamber, substantially as shown and described.

8. In a rotary engine, a piston constructed upon a shaft with a longitudinal enlargement, carrying an expansive rib bearing against the interior wall of the outer casing or cylinder, said piston having to one side of said enlargement a longitudinal concave surface extending below and which is less than the radial distance from the shaft of the cylindrical or convex portion of said piston, in combination with an oscillating abutment-valve having supply and discharge ports and located within a chamber communicating with the cylinder in the wall of the outer casing, whereby an effective admission of steam is admitted and cut off before the finish of the stroke, substantially as shown and described.

409,801. WINDOW-SCREEN. JOHN W. PRASE, Portland, Me. Filed July 10, 1888. Serial No. 279,534. (No model.)



Claim.—The herein-described window-screen, having apertures through the side bars and friction-plugs therein, a spiral spring back of each plug for forcing it outward, a plate secured to the inner edge of the said side bar covering said aperture and a hole in said plate, a stem passing through said hole, having its inner end secured to said plug, its outer end being enlarged to prevent it from passing through said hole, and a notch in said stem adapted to engage said plate for holding said plug in a retracted position, substantially as shown.

409,802. PENCIL-SHARPENER. EDWIN G. PHILLIPS, Charleston, S. C., assignor of two-thirds to Samuel Wetzkoff and Thomas P. Livingston, both of same place. Filed June 15, 1889. Serial No. 314,343. (No model.)



Claim.—1. A pencil-sharpener having a recess made U-shaped in cross-section and having sides convergiag from the middle of the recess toward the ends, substantially as described.

2. A pencil-sharpener provided with the recess *a'*, made U-shaped in cross-section, its bottom inclining downward toward the middle of the sharpener, and its upper edge converging from the middle toward the ends, whereby a rubbing-surface free from angles is provided, substantially as described.

409,803. BARREL-COVER. THOMAS R. RAGLAND, Atlanta, Ga. Filed June 6, 1889. Serial No. 313,377. (No model.)



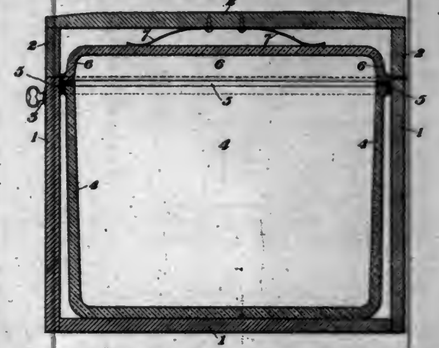
Claim.—1. A barrel-cover formed with a central opening and compartments surrounding the same, in combination with a transparent receptacle E, adapted to close the opening in the cover, substantially as specified.

2. A barrel-cover provided with a central opening surrounded by compartments covered with transparent plates, in combination with a transparent receptacle adapted to cover the central opening, substantially as specified.

3. A barrel-cover having a central opening, in combination with a transparent globular receptacle adapted to cover the said opening and have its main body assume a position above the cover, substantially as specified.

4. A barrel-cover formed from a single piece, with an annular recess in its under side to receive the chine of a barrel, a central opening, compartments surrounding the opening and lined with porcelain, glass plates covering the compartments, and a central transparent globular receptacle adapted to cover the central opening in the cover, substantially as specified.

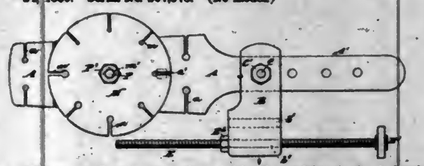
409,804. BOX FOR TOBACCO, &c. DANIEL C. RIPLEY, Pittsburg, Pa. Filed May 10, 1889. Serial No. 310,908. (No model.)



Claim.—1. In a case for cigars and like articles, said case having an outer box or shell provided with a cover and an inner receptacle of less diameters to form an air-space between the two, said inner vessel provided with a cover, the combination therewith of a gasket extending across the air-space from the outer to the inner vessel and adapted to hermetically seal the inner vessel and maintain its position with relation to the outer case or shell, substantially as and for the purposes described.

2. In a case for cigars and like articles, said case having an outer box or shell provided with a cover and an inner receptacle of less diameters to form an air-space between the two, said inner vessel provided with a cover, the combination therewith of a gasket extending across the air-space from the outer to the inner vessel and adapted to hermetically seal the inner vessel and maintain its position with relation to its outer case or shell, and a spring interposed between the inner and outer covers to prevent vertical motion, substantially as and for the purposes described.

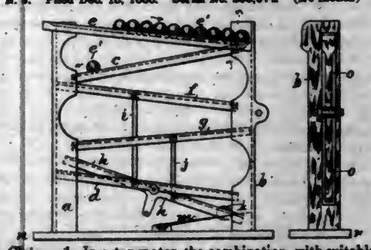
409,805. SAW-SET. PATRICK RYAN, New York, N. Y. Filed Jan. 24, 1889. Serial No. 297,375. (No model.)



Claim.—1. In a saw-set, the combination, with a body A, having the slits *a*, of the arm B, adapted to slide on the shank A', holding means C C', and the gage-screw E, fitted exchangeably in the holes *b b'*, as herein specified.

2. The saw-set described, having the body A *a*, shank A', sliding arm B, having the holes *b b'*, holding means C C', and gage-screw E E', in combination with each other and with the disk M, having slits *m* and fastening means P P', arranged for joint operation substantially as herein specified.

409,806. MOTOR FOR TOYS. HOWARD R. SCHUREMAN, Newark, N. J. Filed Dec. 15, 1888. Serial No. 293,674. (No model.)

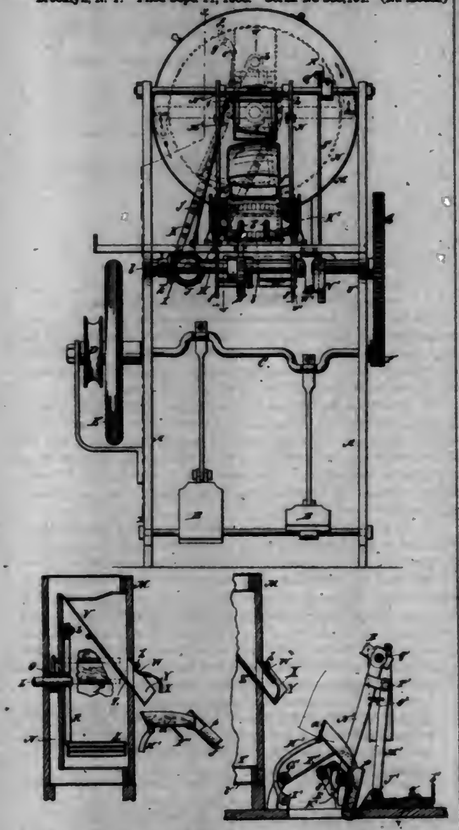


Claim.—1. In a toy motor, the combination, with suitable guides for leading the balls thereto, of the troughs *f* and *g*, inclined in opposite directions and pivoted at opposite ends, as described, the oscillating lever *h*, and the links *i* and *j*, connecting the troughs with the lever at opposite sides of its fulcrum, as and for the purpose set forth.

2. In a toy motor, the combination, with the fixed troughs *c* and *d*, of the movable troughs *f* and *g*, pivoted at opposite ends between the troughs *c* and *d* and inclined in opposite directions, guides to lead the ball from one trough to another, as set forth; the lever *h*, the links connecting the movable troughs with such lever at opposite sides of its fulcrum, and a weight upon the lever to normally raise the free end of the upper trough, substantially as herein shown and described.

3. In a toy motor, the combination, with the bed *a* and posts *a* and *b*, forming guides for the balls, as set forth, of the troughs *c*, *d*, and *e*, arranged as described, the latter having an inclined passage *e'*, connecting the troughs *c* and *c*, and said trough *c* having the incline *c'* to retain the ball at the head thereof, the movable troughs *f* and *g*, pivoted as described, the lever *h*, linked to the troughs *f* and *g*, and the arm *o*, arranged as set forth, and operated to push the balls successively into the trough *c*, as and for the purpose set forth.

409,807. CIGAR-BUNCHING MACHINE. FREDERICK A. SCHUTH, Brooklyn, N. Y. Filed Sept. 11, 1888. Serial No. 285,101. (No model.)



Claim.—1. The combination, with the feeding-vessel N, having an opening or passage, and the receiving-vessel M, of a movable scraper P and a spout Y, substantially as described.

2. The combination, with the feeding-vessel N, having an opening or passage, and the receiving-vessel M, of a stirrer or commiuuter S, a scraper P, and a spout Y, substantially as described.

3. The combination, with the feeding-vessel N, having an opening or passage, and the receiving-vessel M, of a movable scraper P and a spout Y, provided with an overflow-trap Z, substantially as described.

4. The combination, with the feeding-vessel N, having an opening or passage, and the receiving-vessel M, of a scraper P and a spout provided with an adjustable lid W X, substantially as described.

5. The combination of the spout Y, mechanism for feeding the material to the spout, the oscillating arm H, the receiver *a* on the arm, the chute *p* on the receiver, the chute-lever E F, the lever D', acting upon the chute-lever, and the cam B', for operating the lever D' at intervals to lift the receiver and chute, substantially as described

6. The combination of the apron *g*, the support *r*, the actuating-roll K', the pivoted lever *s*, with which one end of the apron is secured, the shaft H, and the pin A', for intermittingly moving the levers to extend the apron, substantially as described.

7. The combination, with the apron *g* and its support, of the frame or support M', having a roller J', the frame or support N', having a roller K', the spring O', and pivoted intermittingly-swinging levers *s*, connected by a cross-bar, to which one end of the apron is attached, substantially as described.

8. The combination, in a cigar-machine, of the feeding-vessel N, having an opening or passage, the receiving-vessel M, the scraper P, the incline V, having spout Y, oscillating hopper having chute *p*, apron *g*, and carrying oscillating frame N', having the bight-forming roller K', oscillating frame M', having a binder-holding roller J', a connecting-spring O' for said frames, and a bunch-receiver, substantially as described.

9. The combination, with feeding-vessel N, having an opening or passage, and the receiving-vessel M, provided with perforation U, of a scraper P and a spout Y, substantially as described.

10. The combination, with the feeding-vessel N, having an opening or passage, and a vessel M, adapted to receive material such as tobacco, and having a spout Y, of a scraper P, provided with a loosening arm or rod *c'*, substantially as described.

11. The combination, with the feeding-vessel N, having an opening or passage, the receiving-vessel M, the movable scraper P, the incline V, extending from the upper part of the feeding-vessel, and the feed-spout Y, substantially as described.

12. The combination, with the feeding-vessel N, having an opening or passage, the receiving-vessel M, and the spout Y, of mechanism for feeding material from the lower part of said receiving-vessel to the upper part thereof, and an incline leading from the upper part of said vessel to the spout, substantially as described.

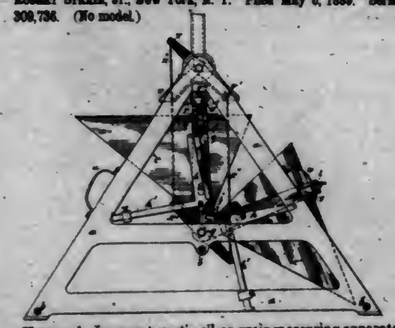
13. The combination, with a concave or hollow support *r* and bunch-shaped apron, of curved rollers J' K' and actuating-arms M' N' for said rollers, said arms being supported or pivoted above said support *r*, substantially as described.

14. The combination, in a cigar-machine, with a flexible bunch-rolling apron permanently concave in two directions on its working-surface and convex on its back surface, respectively, of two curved traveling rollers—namely, an actuating or bight-forming and a binder-holding roller—located, respectively, on opposite sides of said apron, substantially as described.

15. The combination, in a cigar-machine, of a rolling bed concave in two directions, a bunch-rolling apron secured at its ends thereto, permanently curved in two directions to form a concave working-surface and having a convex back surface to rest in the concavity of the bed, a curved binder-holding roller located on the upper working-surface, and an actuating or bight-forming bunching-roller located on the opposite side of the apron, substantially as described.

16. The combination, in a cigar-machine, of two independent curved sectional rollers and a bunch-forming apron provided with permanently concave and convex surfaces in two directions, and located between and coacting with said sectional rollers to impart a cigar shape to the bunches, substantially as described.

409,808. AUTOMATIC GRAIN OR OIL WEIGHING APPARATUS. ROBERT STRAIN, Jr., New York, N. Y. Filed May 6, 1889. Serial No. 309,736. (No model.)



Claim.—1. In an automatic oil or grain measuring apparatus, the combination of the buckets *c c'*, having studs *f f f f*, with the end frames *a a*, the slotted standards *d d*, and scale-beams *h h'*, connected to and oscillating with said standards and buckets, substantially as described.

2. In an automatic oil or grain measuring apparatus, the combination of buckets *c c'*, having studs *f f f f*, with the end frames *a a*, the slotted standards *d d*, the scale-beams *h h'*, connected to and oscillating with said standards and buckets, the sliding bolt *m*, connected

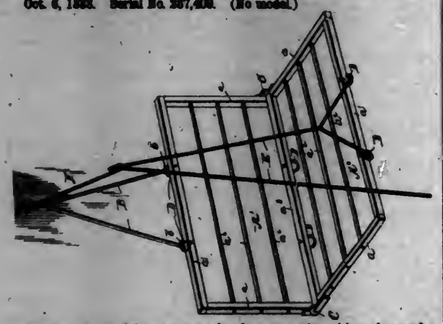
by a spring *q* and retained against the action of this spring by a lever *r*, and a notched bar *o*, substantially as described.

3. In an automatic oil or grain measuring apparatus, the combination of buckets *c c'*, having studs *f f f f*, with the end frames *a a*, the slotted standards *d d*, the scale beams *h k'*, connected to and oscillating with said standards and buckets, the sliding bolt *m*, connected by a spring *q* and retained against the action of this spring by a lever *r*, a notched bar *o*, and pivoted levers *x x'*, substantially as described.

4. In an automatic oil or grain measuring apparatus, the combination of buckets *c c'*, having studs *f f f f*, with the end frames *a a*, the slotted standards *d d*, the scale-beams *h k'*, connected to and oscillating with said standards and buckets, pivoted levers *x x'*, connections *x'' x'''*, and a two-way cock *w*, substantially as described.

5. In an automatic oil or grain measuring apparatus, the combination of the slotted standards *d d*, with the scale-beams *h k'* pivoted thereto, the lever-bar *i*, which bar is pivoted at *j* to one of the standards *d*, and a bucket having a knife-edge *l*, operating in a slot in said bar *i*, substantially as described.

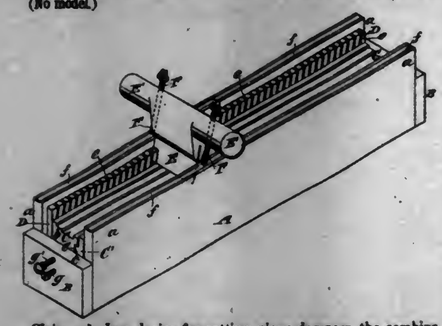
409,809. CLOTHES-DRIER. LEMA B. STUDLEY, Rockland, Me. Filed Oct. 6, 1888. Serial No. 287,409. (No model.)



Claim.—1. A drier composed of two sections hinged together and provided at their ends with rings, one of the sections having a cross-piece a^2 arranged across the center of the drier and provided with rings, and a supporting-piece having hooks at its lower end and provided with a loop at its upper end, substantially as described.

2. A drier comprising a drier-frame composed of two sections hinged together and provided with rings at its ends, a supporting-piece provided at its apex with an eye or loop and at its ends with a hook to engage the rings at the upper end of the drier-frame, a cord or chain secured to the rings at the lower end of said frame, and a supporting-rod having at its ends hooks, one of which is adapted to engage the said eye or loop and the other to receive the rope or chain, whereby the lower section of the frame may be held in a horizontal position, substantially as and for the purpose described.

409,810. DEVICE FOR CUTTING DAMPER-FELTS FOR PIANOS. JOHN SWENSON, New York, N. Y. Filed Apr. 30, 1889. Serial No. 307,971. (No model.)

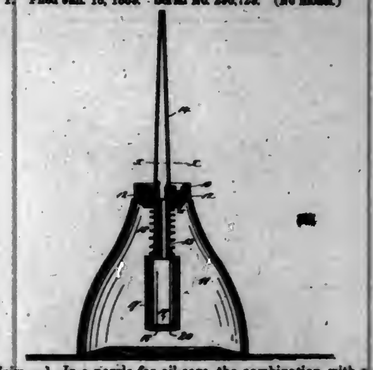


Claim.—1. In a device for cutting piano-dampers, the combination, with a base-piece provided with a recess, of a detachable holder within said recess, a gripper for gripping a card of felts to be formed into dampers, upright portions extending from said base, each provided upon their inner sides with a series of angularly-extending grooves arranged opposite each other, and a knife passing downwardly through said grooves successively to cut the felt, substantially as specified.

2. In a device for cutting piano-dampers, the combination, with a base provided with a recess, of a holder for cards of felt to be cut into dampers, a gripper for gripping said cards, adjusting-screws for adjusting said holder into position, and set-screws for retaining it in position when adjusted, substantially as specified.

3. In a device for cutting piano-dampers, the combination, with a base, of a holder for cards of felt to be cut into dampers, a gripper for gripping said cards, uprights extending upwardly above said base, each provided upon their inner sides with a series of angularly-extending grooves arranged opposite each other, a knife passing downwardly through said slits or grooves to cut the felt, and adjusting-screws bearing upon said uprights for varying the depth of the cut of the knife, substantially as specified.

409,811. OIL-CAN NOZZLE. CHARLES B. UNDERHILL, Lancaster, N. Y. Filed Jan. 18, 1889. Serial No. 296,720. (No model.)



Claim.—1. In a nozzle for oil-cans, the combination, with a centrally-apertured cap provided with an air-vent, of a reservoir extending downward from the cap and provided with a valved aperture in its lower end, and a spring-actuated valve controlling the vent-aperture in the cap, substantially as shown and described.

2. In a nozzle for oil-cans, the combination, with a centrally-apertured cap provided with air-vents, of a reservoir screwed into the cap-aperture from below, provided with an opening in the lower end and a valve controlling said opening, a valve held to slide upon the reservoir adapted for contact with the under face of the cap, and a delivery-nozzle screwed to the outer extremity of the said reservoir, substantially as shown and described.

3. In an oil-can nozzle, the combination, with a centrally-apertured and exteriorly-threaded cap cup-shaped upon the upper face and provided with air-vents at each side of the central aperture, a tube screwed from the under side of the cap into the said central aperture, which tube is of greatest diameter at the lower end and provided at said lower end with a screened opening and an inwardly-opening valve covering the said opening, of a spring-supported valve held to slide upon the said tube and adapted to be seated against the under face of the cap, and a delivery-nozzle screwed to the upper end of the tube, all combined for operation substantially as shown and described.

409,812. STATION-INDICATOR FOR RAILWAY-CARS. EMILE VERPILLIER, Newark, N. J., assignor of two-thirds to Louis Dumont, same place, and Bernard Bernigole, New York, N. Y. Filed Mar. 22, 1889. Serial No. 304,298. (No model.)

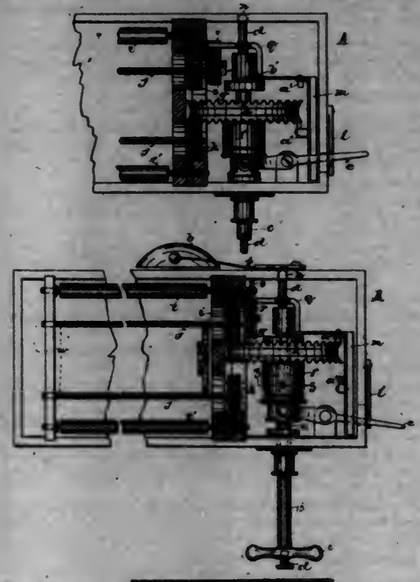
Claim.—1. In station-indicators, the rollers *j, j, t,* and *t'*, having canvas or other flexible material fastened and distended thereon, with tension-springs *y y*, and provided with the pinions *i* and *k*, in combination with the master-wheel *h* and cylinder *f*, vertically adjustable by means of the lever *e* upon the barrel *c*, and engaged therewith by means of the key *o*, substantially as described.

2. The rod *d*, having a beveled end *n* at its upper extremity to operate the bell-hammer *p*, and provided with the arm *q*, to communicate with the slot *v* in a flanged wheel *r* and ratchet *g*, and movable within the barrel *c*, independently thereof, for the purpose specified.

3. The combination, in station-indicators, of the rod *d*, sliding within the barrel *c*, the bell-hammer *p* at the top, provided with a spring *x*, a flanged wheel *r*, having slots *v v*, and communicating with the distending-roller *t*, the barrel *c*, engaging the nave *f*, vertically adjustable thereon, the master-wheel *h*, engaging with the pinions *i* or *k*, and the rollers *j j*, to which said pinions are attached, all substantially as set forth.

4. In station-indicators, the combination of a canvas band or belt with the stations to be announced distended upon rollers *t* and *t'* and attached to rollers *j j*, with a master-wheel *h*, vertically adjustable upon a barrel or tube *c*, engaging therewith, so as to reverse the order of announcement without changing the direction of the operating-

lever *c'*, and rod *d*, sliding within the tube *c*, and operating the bell-hammer *p* simultaneously with the announcement of the station at *a*.



409,813. LOOM FOR WEAVING WIRE. CHESTER F. WICKWIRE, Cortland, N. Y. Filed Feb. 11, 1887. Serial No. 227,273. (No model.)

Claim.—1. The combination, with the loom-frame and cloth-guiding and cloth-winding rollers, of a gravitating frame hinged to the rear end of the loom-frame and having its free end under the front end of said frame, a cloth-tensioning roller mounted on the front end of the gravitating frame, segmental racks secured to the sides of the front end of the loom-frame, a horizontal shaft journaled to the front end of the pivoted frame, and pinions secured to the ends of said shaft and traveling in the racks, substantially as and for the purpose set forth.

2. The combination, with the loom-frame, cloth guiding and winding rollers, and the actuating-shafts and gears of said winding-roller, of a clutch for throwing the actuating-shaft of a winding-roller in and out of gear, a gravitating frame under the front portion of the loom-frame, a cloth-tensioning roller mounted on said gravitating frame, a weighted arm, and a crank or eccentric pivoted in common on the loom-frame to operate in unison, a rod connecting the crank or eccentric with the movable member of the aforesaid clutch, and a coupling adapted to transmit motion from the gravitating frame to the weighted arm in the approach of the frame to the extremes of its movements, substantially as set forth.

3. The combination, with the loom-frame, cloth guiding and winding rollers, and the actuating-shafts and gears of said winding-roller, of a clutch for throwing the actuating-shaft of the winding-roller in and out of gear, a gravitating frame under the front portion of the loom-frame, a cloth-tensioning roller mounted on said gravitating frame, a weighted arm, and a crank or eccentric pivoted in common on the loom-frame, a rod connecting the crank or eccentric with the movable member of the aforesaid clutch, a rod depending from the weighted arm, a rod extended from the gravitating frame and having an eye loosely embracing the pendent rod, and collars fixed to the pendent rod above and below the aforesaid eye, with a vertical play for the latter between the collars, substantially as described and shown.

4. In combination with the counter-shaft K', provided with the pinion *r'*, and the feed-cylinder B, provided with the gear-wheel Q, the pinion R, and worm-wheel S, fixed to one and the same shaft, the shaft T, having the worm T', the bevel-pinion *n*, mounted loosely on the shaft T and provided with the clutch-face *o'*, the clutch member *o*, the bevel-pinion *n'* and pinion *r* on one and the same stud and meshing, respectively, in the pinion *n* and pinion *r'*, substantially as described and shown.

5. In combination with the driving-shaft K, counter-shaft K', gears transmitting motion from the said driving-shaft to the counter-shaft, the pinion *r'* on the latter shaft, and the feed-cylinder B, provided with the gear-wheel Q, the pinion R, and worm-wheel S, fixed to one and the same shaft, the shaft T, having the worm T', the bevel-pinion *n*, mounted loosely on the shaft T and provided with the clutch-face *o'*, the clutch member *o*, the bevel-pinion *n'* and pinion *r* on one and the same stud, and meshing, respectively, in the pinion *n* and pinion *r'*, substantially as described and shown.

6. In combination with the loom-frame, shaft K', pinion *r'*, and the shaft T, provided with the bevel-pinion *n*, the collar V, secured to the frame and provided with the slot *s*, the bolt *t*, passing through said slot and clamped adjustably on the said collar, and interchangeable pinions *n' r*, journaled on said bolt, substantially as described and shown.

409,814. REED-ORGAN. MORRIS S. WEBSTER, Worcester, Mass. Filed Feb. 8, 1889. Serial No. 299,206. (No model.)



Claim.—1. The combination, in a reed-pan for a reed-organ, with the reed-supporting piece E, cut or cored out, as described, of the single piece marked A and A', cut or cored out, as shown at B and C, to form an ingress air-passage B', and the lower half of the qualifying-tube D, substantially as and for the purposes set forth.

2. The combination, with the reed F and the projections *e* and *g* on the base of the reed-frame F', of the shoulders *f* and *h*, whereby a separate plugging-piece is avoided, substantially as and for the purposes set forth.

3. The combination, with the air-chamber B and reed F, of the reed-frame supporting-piece E, extended beyond the base of the reed-frame F' and cored out to form the air-chambers E' E'', and provided with shoulder *f* on its upper side, substantially as and for the purposes set forth.

4. The combination, with the reed-supporting piece E and air-chambers E' and E'', cut or cored therefrom, of the convex port D'', as and for the purposes set forth.

5. The combination, with the qualifying-chamber I' and air-chambers E' E'', of the bottom concave port J, substantially as and for the purposes set forth.

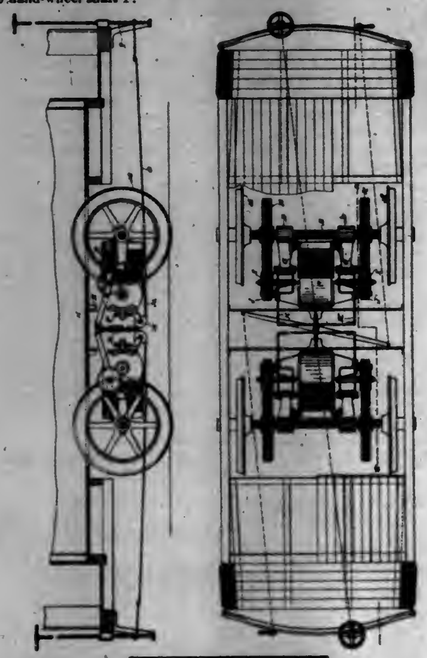
409,815. ELECTRICALLY-PROPELLED VEHICLE. RICHARD H. ALLEN, Cleveland, Ohio. Filed May 22, 1889. Serial No. 311,656. (No model.)

Claim.—1. In an electric-motor car, the combination, with one of the car-axles provided with a friction-disk, of a motor the armature-shaft of which is provided with a friction-disk, a yielding frame carrying a friction-disk arranged to operably connect the disks of the car-axle and the motor-shaft, and connections between said frame and the car-body by which the disk of the frame may be applied to the other disks with the desired pressure.

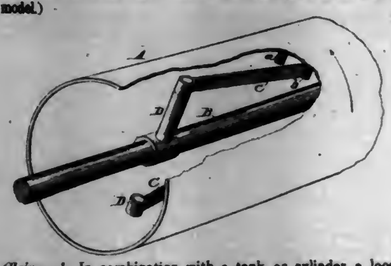
2. In combination with the car-axles and the motor-shaft, each carrying friction-disks, the movable frame and its friction-disk, and an elastic or yielding connection between said frame and a hand-wheel shaft extending to the car-conductor's position.

3. In combination with the car-axles and motor armature-shaft, each carrying friction-disks, the movable frame H and its friction-

disk I, the spring L, attached to the frame, and the connection with the hand-wheel shaft P.



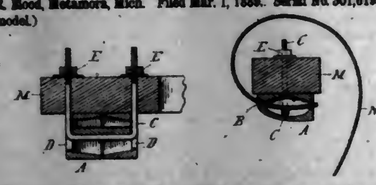
409,816. COMBINED AGITATOR AND CONVEYER. VALERIUS D. ANDERSON, Cleveland, Ohio. Filed Jan. 16, 1889. Serial No. 296,481. (No model.)



Claim.—1. In combination with a tank or cylinder, a loosely-pivoted flight and stops to limit the movement of said flight, said stops being located in such positions that when arrested by one the flight shall be held in alignment with, and when arrested by the other it shall be oblique to, the axis of the cylinder.

2. In combination with a cylinder and with a post or arm D, a blade or flight C, pivotally attached to said post or arm and free to swing about its pivot when in operative adjustment, and stops *a* and *b*, serving to limit the play of the free end of the blade or flight in opposite directions.

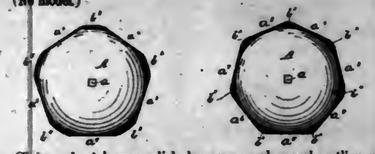
409,817. SPRING-TOOTH FASTENER FOR CULTIVATORS. BERA P. ATHERHOLT, Addison, Oakland County, assignor of one-half to George R. Hood, Metamora, Mich. Filed Mar. 1, 1889. Serial No. 301,619. (No model.)



Claim.—1. The combination, with the carrying-bar of the spring-tooth, of the holding-box provided with bearing for the spring-tooth in its front and rear walls only, and of the securing-staple transversely engaging through the sides of the box between said front and rear bearings in vertical slots in the side walls of said box, substantially as described.

2. The combination, with the carrying-bar of the spring-tooth harrow, of the two-part holding-box A, provided with bearing B for the spring-tooth in its front and rear walls only, and the screw-threaded securing-staples C, transversely engaging in vertical slots D in the side walls of the holding-box and susceptible of free vertical adjustment therein, substantially as described.

409,818. HARROW-DISK. JOHN T. BELL, Dayton, Ohio, assignor to the Ohio Rake Company. Filed June 29, 1889. Serial No. 316,068. (No model.)



Claim.—1. A harrow-disk having a polygonal outline with cutting-edges along the periphery.

2. A harrow-disk having a polygonal outline with alternating reaches of varying length.

3. A harrow-disk having a polygonal outline with alternating reaches touching radii of varying length.

4. A harrow-disk of a polygonal outline having straight reaches united at their intersection by curves.

5. A harrow-disk having a polygonal outline with alternating straight and curved reaches, the latter touching longer radii than the straight reaches.

6. A harrow-disk, substantially as described, having peripheral straight reaches perpendicular at their centers to short radii and united by curved reaches described upon longer radii, both straight and curved reaches having cutting-edges.

409,819. ANILINE-BLACK DISCHARGE. JOHN BRACKWELL, North Adams, Mass. Filed Feb. 9, 1889. Serial No. 299,319. (No specimens.)

Claim.—1. The described process of drying and printing discharges on aniline-black colors—that is to say, first treating the cloth with the prepared solution of aniline-black color, as described, then drying the same in an atmosphere at a temperature below 90° Fahrenheit, and finally printing an alkali discharge thereon in patterns before the oxidation of the aniline color, substantially as described.

2. The described process of drying and printing discharges on aniline-black colors—that is to say, first treating the cloth with the prepared solution of aniline-black color, as described, then drying the same to a moist state by steam or atmospheric heat above 90° Fahrenheit, and completing the drying in an atmosphere at a temperature of less than 90° Fahrenheit, and finally printing an alkali discharge thereon in patterns before the oxidation of the aniline color, substantially as described.

409,820. PIGMENT-RESIST. JOHN BRACKWELL, North Adams, Mass. Filed Feb. 9, 1889. Serial No. 299,320. (No specimens.)

Claim.—1. The described process of applying and fixing pigment-resist patterns and aniline-black grounds upon cloth—that is to say, printing the resist compounded of a pigment color and alkali on the cloth in a pattern and drying it, and afterward printing, padding, or blotching over the same the aniline-black color, and lastly aging and developing and fixing the aniline-black and pigment colors by means of moisture and heat, substantially as described.

2. The described process of applying and fixing pigment-resist patterns and aniline-black grounds upon cloth—that is to say, printing the resist compounded of a pigment color and alkali on the cloth in patterns and drying it, and afterward printing, padding, or blotching over the same the steam aniline-black color, and lastly developing and fixing the aniline black and pigment-resist colors by steam under pressure, substantially as described.

409,821. PROCESS OF PRINTING ANILINE-BLACK. JOHN BRACKWELL, North Adams, Mass. Filed Feb. 15, 1889. Serial No. 299,983. (No specimens.)

Claim.—1. The described process of forming printed patterns on aniline-black grounds—that is to say, first printing, padding, or dyeing on the cloth the aniline-black ground color; then printing thereon a discharge mixture before oxidation of the ground color in the desired pattern, and finally fixing and developing the aniline-black and the discharge mixture simultaneously by the application of steam thereto under pressure, substantially as described.

2. The described process of forming printed colored patterns on aniline-black grounds—that is to say, first printing, padding, or dyeing on the cloth the aniline-black ground color, then printing thereon in the desired pattern a discharge mixture compounded with a pigment before oxidation of the ground color, and finally fixing and developing the ground and pattern colors and completing the action of the discharge mixture simultaneously by the application of steam thereto under pressure, substantially as described.

409,822. ANILINE-BLACK. JOHN BRACKWELL, North Adams, Mass. Filed Feb. 15, 1889. Serial No. 299,984. (No specimens.)

Claim.—1. The aniline-black color formed of ferro-cyanide of soda, chlorate of potash, and aniline salts prepared for use in such a manner as to be free from the presence of hydrochloric acid, substantially as set forth—that is to say, with the ferro-cyanide in amount sufficient to take up the aniline and prevent the formation of chlorate of aniline in injurious quantity in the color, substantially as described.

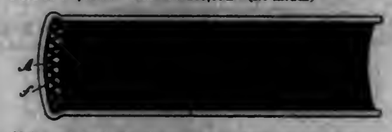
2. The aniline-black color formed of ferro-cyanide of soda, chlorate of potash, and aniline salts prepared for use in such a manner as to be free from the presence of hydrochloric acid, substantially as set forth—that is to say, with the ferro-cyanide in quantity sufficient to take up the aniline and the chlorate in quantity not less than thirty-five per cent. of that of the aniline, substantially as described.

409,823. PROCESS OF PRINTING ON ANILINE-BLACK. JOHN BRACKWELL, North Adams, Mass. Filed Feb. 15, 1889. Serial No. 299,985. (No specimens.)

Claim.—1. The described process of producing patterns on aniline-black grounds by the action of live steam—that is to say, first printing the pattern in an alkali resist upon the cloth and drying, then treating the cloth with the prepared solution of aniline-black, as described, and drying, and finally developing and fixing the aniline-black rapidly by the action of steam under pressure, substantially as described.

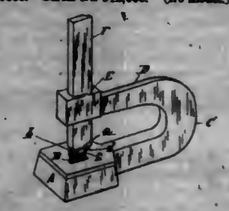
2. The described process of producing colored patterns on aniline-black grounds by the action of live steam—that is to say, first printing the pattern in an alkali resist colored with pigments upon the cloth and drying, then treating the cloth with the prepared solution of aniline-black, as described, and drying, and finally developing and simultaneously fixing the aniline-black and resist pigment by the action of steam under pressure, substantially as described.

409,824. BOOK-BINDING. LIVERMET BRAINARD, Hartford, Conn. Filed Jan. 7, 1889. Serial No. 295,604. (No model.)



Claim.—A book the signatures of which are attached to a continuous stub-strip formed of two layers of thin flexible material, between which are held a short distance apart strips of much thicker material of nearly the width of the stub-strip when folded, the said stub-strip being secured to the covers by bridge-strips, substantially as described.

409,825. SAW-GUMMER. JAMES F. BROWER, Rodney, Mich. Filed May 20, 1889. Serial No. 312,000. (No model.)



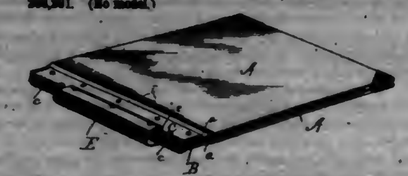
Claim.—1. In a saw-gummer, the combination, with the bed provided with the bed-die, of a guide-arm having the vertical bearing and the punch adapted to have a vertical motion in said bearing, and provided at its lower end with a die having an inclined bottom and a stop, substantially as described.

2. In a saw-gummer, the combination, with the bed-die, of the extension C, guide-arm D, having a vertical bearing E, punch F, having a shoulder A, die *b*, and inclined edge *c*, whereby a shearing cut is obtained, and a stop *d*, the parts being arranged to operate substantially as and for the purpose described.

409,826. COPYING-SHEET. HOWARD W. BROWN, Oakland, Cal. Filed Oct. 14, 1887. Serial No. 253,376. (No specimens.)

Claim.—As an improved article of manufacture, a copying-sheet having an absorbent coating of glycerine, gelatine, water, glue, and alum, combined in the proportions specified, and on this a surface-coating of pulverized alum and lycopodium, as set forth.

409,827. ORDER-HOLDER. JOHN P. BROWN, Chicago, Ill., assignor to Albert B. Baker, Indianapolis, Ind. Filed Sept. 24, 1888. Serial No. 286,301. (No model.)

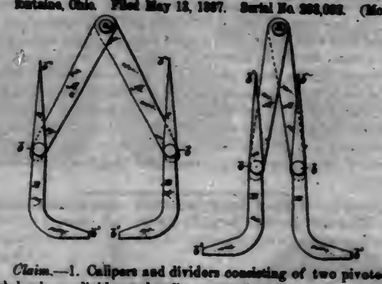


Claim.—1. As a new manufacture, an order-holder having a hinge-joint uniting the sides thereof, and a sheet-metal clamping-spring E, placed outside the hinge and having flexibility to allow the leaves of the holder to open and carry its points of attachment outside of the axis of the hinge, whereby said spring is rendered double-acting, substantially as set forth.

2. The combination, with the sides of an order-holder, of a hinge uniting said sides and having bosses *f* stamped thereon, and a clamping-spring E, applied to said hinge and having inturned edges engaging with said bosses, substantially as specified.

3. The combination, with the order-holder, the sides whereof are hinged together by a hinge C D, of a spring-clamp attached to the sides, as shown, and adapted to yield sufficiently to carry its points of attachment beyond the axis of the hinge, substantially as set forth.

409,828. CALIPERS AND DIVIDERS. MARTIN I. CORBETT, Bellefontaine, Ohio. Filed May 13, 1887. Serial No. 288,092. (Model.)



Claim.—1. Calipers and dividers consisting of two pivoted bars, each having a divider and caliper-arm pivoted thereto, substantially as described.

2. Calipers and dividers consisting of two bars pivoted together, and each having a divider and caliper-arm pivoted at about its center to the free end of the said bars, substantially as herein shown and described.

3. Calipers and dividers consisting of two pivoted bars and two arms having pointed and bent ends pivoted to the free ends of the said bars, substantially as described.

409,829. WAGON-GEAR. MARTIN CONRAD and GERHARDT HOYE, Chicago, Ill. Filed Apr. 23, 1889. Serial No. 308,208. (No model.)



Claim.—1. The combination, with a metal axle, of a sand-board or bolster located over and extending the full length of the axle and rigidly clamped to the said axle at two or more separate points near each end of the same, substantially as described.

2. The combination, with a metal axle, of a sand-board or bolster and metal parts or castings secured to each end of the axle adjacent to the axle-arm, each of said metal parts or castings being provided with two or more elevated tables or plates, by which the sand-board or bolster may be rigidly secured to the axle at two or more separate points near each end of the same, substantially as described.

3. The combination, with a metal axle, a sand-board or bolster, and front or rear hounds, of metal parts or castings secured to the axle near the axle-arms, said castings being each provided with table or plate near its outer end to engage the sand-board or bolster, and with a second table near its inner end to engage the hounds, and bolts

or clips securing the sand-board or bolster and hounds to the said casting, substantially as described.

4. The combination, with a sand-board or bolster and a metal axle, of metal sleeves placed around the axle near the ends of the same, said sleeves being each provided with two tables or plates, by which the sand-board or bolster may be rigidly secured thereto at two separate points, substantially as described.

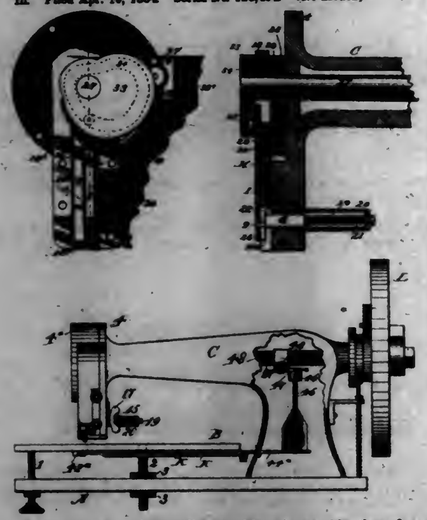
5. The combination, with a metal axle and sand-board, of castings secured upon the axles adjacent to the axle-arms and provided with upwardly-extending horizontal plates or tables supporting the sand-board free from the axle, a reach passing beneath the sand-board, and a metal casting for supporting the reach secured to the upper surface of the axle, substantially as described.

6. The combination, with a metal axle and sand-board which are connected with each other with a space between them, of a reach having an aperture in its front end, and a metal casting for supporting the reach, secured to the upper surface of the axle and provided with an upwardly-projecting cylindric part forming a pivot for the reach, the top of said cylindric part being located below the adjacent surface of the bolster a distance not less than the thickness of that part of the reach which engages the said cylindric part, substantially as described.

7. The combination, with a metal axle and sand-board which are connected with each other with a space between them, of a reach having an aperture in its front end, and a metal casting for supporting the reach, secured to the upper surface of the axle and provided with an upwardly-projecting cylindric part forming a pivot for the reach, and a horizontally-swinging detent or dog pivoted to the reach and adapted to enter between the top of the same and the lower surface of the sand-board, substantially as described.

8. The combination, with a metal axle and sand-board which are connected with each other with a space between them, and a king-bolt, of a reach having an aperture in its front end, and a metal casting for supporting the reach, secured to the upper surface of the axle and provided with an upwardly-projecting cylindric part forming a pivot for the reach, and a horizontally-swinging detent or dog pivoted to the reach and adapted to enter between the top of the same and the lower surface of the sand-board, the said dog or detent being provided with a hole or aperture to receive the king-bolt, substantially as described.

409,830. WIRE-STITCHING MACHINE. JOHN F. DAGGETT, Elgin, Ill. Filed Apr. 19, 1884. Serial No. 128,494. (No model.)



Claim.—1. In a wire-stapling machine, the combination of a revolving shaft, a reciprocating former and driver, cams on said shaft in direct engagement with the former and driver, and a work-supporting table below said former and driver, substantially as described.

2. In a wire-stapling machine, the combination of a revolving shaft, a reciprocating former and driver, cams on said shaft in direct engagement with said former and driver, and an adjustable work-supporting table below said former and driver, substantially as described.

3. In a wire-stapling machine, the combination of a revolving shaft, cams on said shaft, a former and driver respectively actuated by said cams, and a wire-feed actuated by one of said cams, substantially as described.

4. The actuating-cams and shaft thereof, in combination with a former and driver projecting between and engaging said cams, substantially as described.

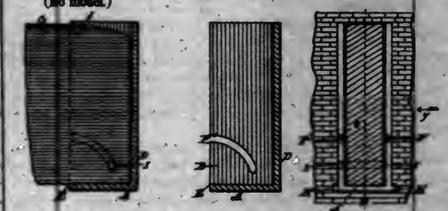
5. The combination, with the cutter, a support therefor, and a pivoted connection between said cutter and support, of an adjustable screw-rod for bodily moving the cutter back and forth to adapt it for cutting wires of different lengths, substantially as described.

6. The clinching-jaws and the levers pivoted together and supporting said jaws in combination with a pivoted connection between said jaws and levers, substantially as described.

7. The table, the clinching-jaws, and levers pivoted thereto and to each other, in combination with means, substantially as described, for adjusting said jaws and table, substantially as described.

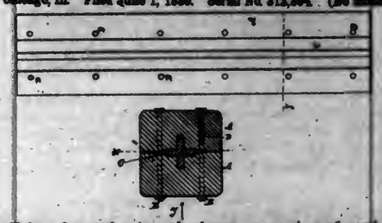
8. The levers K and the clinching-jaws thereof, in combination with the rock-shaft and a blade on said shaft projecting between said levers, and means, substantially as described, for rocking said shaft and oscillating the plate, substantially as described.

409,831. WALL SOCKET-PLATE FOR BUILDING-TIMBERS. WILLIAM H. DRAKE, Chicago, Ill. Filed June 1, 1889. Serial No. 312,892. (No model.)



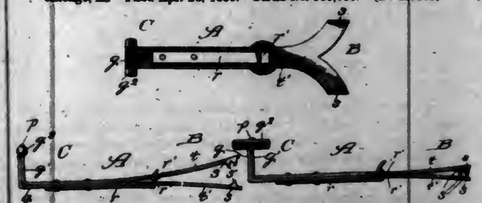
Claim.—An improvement in wall socket-plates for building-timbers, consisting of a bottom and back plate and two side plates with segment-grooves or segment-slots formed in said side plates, in combination with a pin put through said slots or grooves and through the engaging timber, as and for the purpose specified.

409,832. COMPOUND FIRE-PROOF COLUMN. WILLIAM H. DRAKE, Chicago, Ill. Filed June 1, 1889. Serial No. 312,894. (No model.)



Claim.—In wood and metal columns, two sections of wood which placed together form a square, and the inner face of each section provided with semi-cruciform grooves, in combination with a cruciform metal central portion inserted in said grooves and the wood sections clamped to the iron portion, as and for the purpose specified.

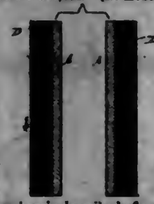
409,833. CUFF-HOLDER. MAX EISEMAN and JOSEPH KAHER, Chicago, Ill. Filed Apr. 26, 1889. Serial No. 308,700. (No model.)



Claim.—1. In a cuff-holder, the stem A, provided toward one end with button mechanism C, comprising parallel strips q q' in spring relation to each other and bent to an angle to the stem to afford a shank, a bar q^3, pivotally mounted upon the end of the strip q' and rotatory thereon in a plane at or approximately at right angles to the shank, and shoulders o', forming a recess o between them on the end of the strip q' and projecting into the path of the bar q^3, and a clamp toward the opposite end of the stem, substantially as and for the purpose set forth.

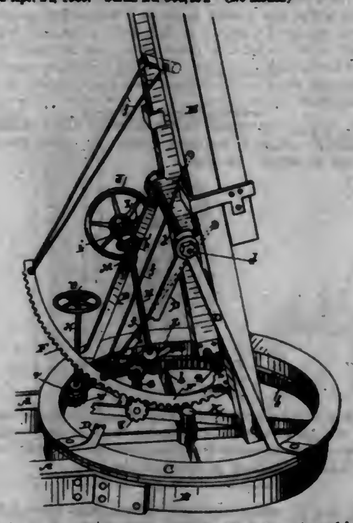
2. In a cuff-holder, the stem A, provided toward one end with button mechanism C, comprising parallel strips q q' in spring relation to each other and bent to an angle to the stem to afford a shank, a bar q^3, pivotally mounted upon the end of the strip q' and rotatory thereon in a plane at or approximately at right angles to the shank, and shoulders o', forming a recess o between them on the end of the strip q' and projecting into the path of the bar q^3, and a clamp B, comprising normally-open jaws l l' in spring relation to each other, and a catch r to hold the jaws together when closed, substantially as and for the purpose set forth.

409,834. PROCESS OF MAKING ORNAMENTAL GLASS PANELS. JOSEF REDERS and EDUARD SCHNELLE, Long Island City, N. Y. Filed Apr. 13, 1889. Serial No. 307,181. (No model.)



Claim.—The process herein described of ornamenting glass panels, which consists of the following steps: first, coating the rear surfaces of two glass plates of equal size with oil or other color; secondly, placing the painted surfaces in contact and separating the same, so as to produce uncolored figures of irregular size on both plates; thirdly, painting the uncolored portions with a color different from the first applied, and, lastly, covering the entire rear surface of the panels with a protecting coating of varnish, substantially as set forth.

409,835. FIRE-LADDER TRUCK. JOHN H. PERRY, Stockton, Cal. Filed Apr. 24, 1889. Serial No. 308,484. (No model.)

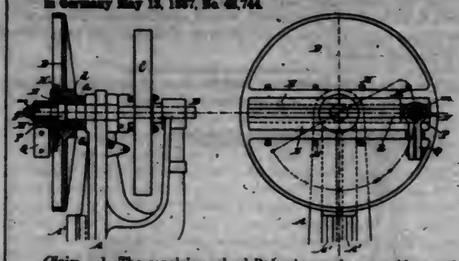


Claim.—1. In a fire-ladder truck, the hinged or pivoted ladder, in combination with the curved rack or toothed segment secured to the ladder, and gearing for operating said rack or segment, consisting of the counter-shaft with its pinion and worm-gear, the shaft H, with its worm and pinion, and the shaft I, with its pinion and crank-wheel, substantially as described.

2. In a fire-ladder truck, the turn-table, the standards thereon, and the ladder pivoted to said standards, in combination with curved rack or toothed segment secured to the ladder, the counter-shaft G, mounted in bearings on the turn-table and having a pinion on one end and a worm-gear on the other end, the shaft H, mounted in bearings on the turn-table and standards thereof and having a worm on one end and a bevel-pinion on the other end, and the shaft I, mounted on the standard and having a bevel-pinion on one end and a crank-wheel on the other end, substantially as described.

3. In a fire-ladder truck, the combination of the fixed ladder-support having the fixed rack on its inner surface, the turn-table mounted on said support, the standards on the turn-table, the ladder pivoted to the standards, the curved rack or toothed segment secured to the ladder, the shafts G, H, and I, carried by the turn-table and having the pinions, worm-gear, worm, and crank-wheel, whereby the ladder is raised and lowered, and the shaft N, carried by the turn-table and having the pinion and crank-wheel, whereby the ladder is turned to position, all arranged and adapted to operate substantially as described.

409,836. DROP-HAMMER. ERNST HAMMESFAHR, Solingen, Prussia, Germany. Filed May 14, 1888. Serial No. 310,743. (No model.) Patented in Germany May 13, 1887, No. 43,744.



Claim.—1. The revolving wheel D, having a slot or guideway d across its outer face, in combination with the block M and connection therefrom to a hammer W, as herein specified.

2. The wheel D and means for revolving it, carrying adjustable ledges E and means H for setting the latter at will, in combination with each other and with the block or carriage M, eye P, connection Q, and hammer W, arranged for joint operation, substantially as herein specified.

409,837. EMERY-WHEEL. ROBERT W. HARDER, Albany, N. Y. Filed Sept. 6, 1886. Serial No. 294,769. (No model.)



Claim.—1. An emery-wheel having a series of sections similar in composition to each other arranged alternately with sections differing in composition from the sections of said series, substantially as shown and described.

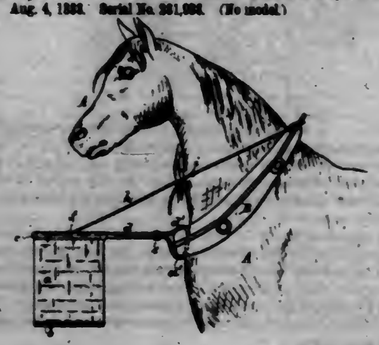
2. An emery-wheel having a series of sections similar in composition to each other arranged alternately with sections differing in composition from the sections of said series, all of said sections extending to the periphery of the wheel in a curved line, substantially as shown and described.

3. An emery-wheel having a series of sections similar in composition to each other arranged alternately with sections differing in composition from the sections of said series, in combination with circular disks having a uniform composition throughout, substantially as shown and described.

4. An emery-wheel having a series of coarse sections similar in composition to each other arranged alternately with sections finer in composition than the sections of said series, substantially as shown and described.

5. An emery-wheel having a series of sections similar in composition to each other arranged alternately with sections differing in composition from the sections of said series, in combination with circular disks of uniform composition throughout, forming the sides of the wheel, substantially as shown and described.

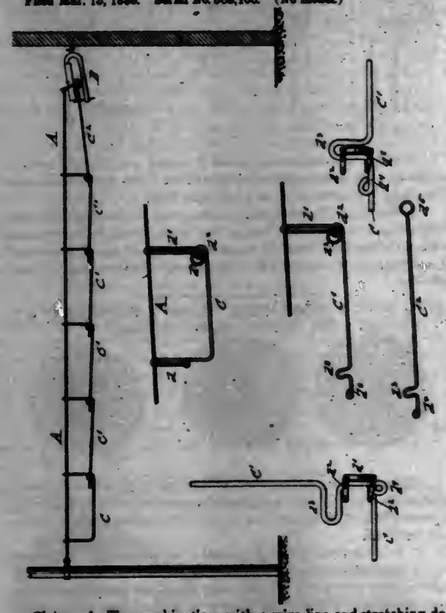
409,838. FEED-BAG. BENJAMIN T. HARRIS, Brooklyn, N. Y. Filed Aug. 4, 1888. Serial No. 281,994. (No model.)



Claim.—1. The combination, with a feed-bag and a suspending device *h*, extending from the bag to the upper part of the collar, of the rim *c* for the bag, having a projecting arm *d* at one side thereof, with the two downwardly-projecting bent ends *d'*, one of which hooks above and behind the front portion of the collar and the other rests against the front of the collar, substantially as set forth.

2. The combination, with the bag *a* and ring *a*, of the supporting-arms *d*, the bent engaging ends *d'*, formed upon the ends of said arms, the sliding ring *c*, the eyes *f*, and the strap *h*, substantially as and for the purposes set forth.

409,839. HANGER FOR CLOTHES. HENRY HEBBIE, Paterson, N. J. Filed Mar. 13, 1889. Serial No. 303,100. (No model.)



Claim.—1. The combination, with a wire line and stretching device, of a U-shaped header-link formed with loop-shaped front and rear ends, and eyes at the lower angle of the rear end, intermediary wire links formed with loop-shaped rear ends, eyes at the lower angle of said rear ends, and with a lateral bend at the front end, and of a tail-link provided with a lateral bend at the front end and an eye at the rear end, substantially as set forth.

2. In a clothes-hanging device, a header-link provided with a loop-shaped front and rear end for being suspended on the line and with eyes at the lower angle of the rear end, substantially as set forth.

3. In a clothes-hanging device, an intermediary link provided with a loop-shaped rear end, eyes at the lower angle of the rear end, and a laterally-bent front end, substantially as set forth.

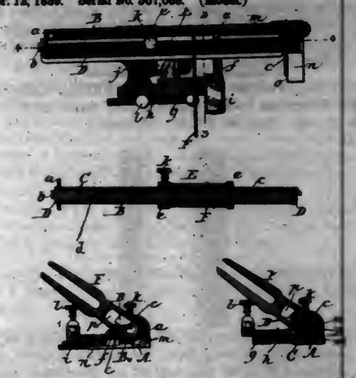
409,840. CLOTHES-LINE STRETCHER. HENRY HEBBIE, Paterson, N. J. Filed Mar. 13, 1889. Serial No. 303,101. (No model.)



Claim.—1. A stretching device for clothes-lines, composed of a U-shaped frame having a rack at the inner face of one of its legs, guideways at the other leg, a pinion moving along said rack and ways, a crank-shaft for turning the pinion, and a wire link applied to said crank-shaft and provided with an eye for attaching the clothes-line, substantially as set forth.

2. A stretching device for clothes-lines, composed of a U-shaped frame having a rack at the inner face of one of its legs, guideways at the other leg, a pinion moving along the rack and ways, a crank-shaft for moving said pinion, a U-shaped link or bail applied to said crank-shaft and provided with an eye at its outer end, and a stop device for arresting the pinion and preventing its escape from the frame, substantially as set forth.

409,841. TUCK-MARKER FOR SEWING-MACHINES. FRANK HENRY, Chicago, Ill., assignor to Louisa M. Goodrich, same place. Filed Apr. 12, 1889. Serial No. 307,069. (Model.)



Claim.—1. In a tuck-marker, a bed-plate A, provided with a lower marker and with the part *a*, tube B, secured in the part *a*, shaft C, having a longitudinal groove and a socket *d*, and rod *e*, located in the groove of the shaft and having one end secured in the socket *d* and its other end formed into a marker, in combination with the sleeve E, bar D, secured to the shaft C, and lever F, substantially as and for the purpose specified.

2. In a tuck-marker, a bed-plate A, having the part *a*, tube B, secured in the part *a*, shaft C, having a longitudinal groove and a socket *d*, and a rod *e*, located in the groove of the shaft and having one end in the socket *d*, in combination with the sleeve E, bar D, secured to the shaft C, and lever F, having an opening near its lower end, through which the bar D passes, substantially as and for the purpose specified.

409,842. COMBINED VIOLIN-SUPPORT AND GARMENT-PROTECTOR. FRANK P. HOHLSCHER, Newport, Ky. Filed Mar. 15, 1889. Serial No. 303,392. (No model.)



Claim.—The combined violin-support and garment-protector consisting of a pad 5, forming the support, a flap 6, forming the garment-protector and connected to the former, and hooks whereby the whole device is held in position, as shown and described.

409,843. FURNACE-TONGS. THOMAS JAMES, Braddock, Pa. Filed Apr. 15, 1889. Serial No. 307,943. (No model.)

Claim.—1. Tongs having pivoted jaws and arms, in combination with a rod which projects between the jaws and toggle-levers connecting the rod with the arms, substantially as and for the purposes described.

2. Tongs having pivoted jaws and arms and a rod which projects between the jaws and is connected with the arms to operate them, substantially as and for the purposes described.

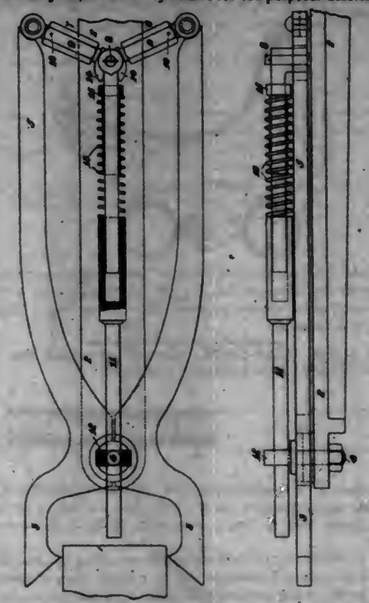
3. Tongs having pivoted jaws and arms and a rod which projects between the jaws and is connected with the arms to operate them, said rods being made in movable parts and provided with a spring, substantially as and for the purposes described.

4. The combination of a longitudinally-moving carriage or frame, tongs carried thereby and provided with movable jaws and arms, and mechanism connected with said arms and adapted in the movement of the carriage to engage a stop to operate the jaws, substantially as and for the purposes described.

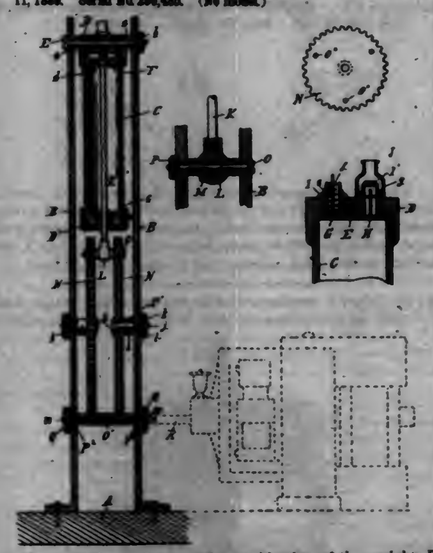
5. In furnace-tongs, the combination of the pivoted gripping-jaws, provided with obliquely-slotted connections, and a spring which permits motion of the jaws in said slotted connection to cause their approach, substantially as and for the purposes described.

6. In furnace-tongs, the combination of the pivoted gripping-jaws,

provided with obliquely-slotted connections, which permit the approach of the jaws, substantially as and for the purposes described.



409,844. AIR-PUMP. JOHN C. KENNEDY, Detroit, Mich. Filed Feb. 11, 1889. Serial No. 299,435. (No model.)



Claim.—1. In an air-pump, the combination of the uprights B and the drive-pinion O', journaled therein and connected with the actuating-shaft of a motor, of the crank-wheels N, engaging with said drive-pinion and journaled upon stub-shafts secured to the uprights B, the wrist-pin M, clamped between these crank-wheels, the reciprocating piston-rod K, provided with the cross-head L, engaging with said wrist-pin, and the oscillating cylinder C, substantially as described.

2. The combination, with the cylinder C, of the reciprocating piston F, provided with the brush *d* and the lower head D', forming the well *e* for the reception of a lubricant, substantially as described.

3. The combination, with the head D, of the bushing T, provided with the eduction-valve H, and the nipple J, secured thereto and forming the well *g*, substantially as described.

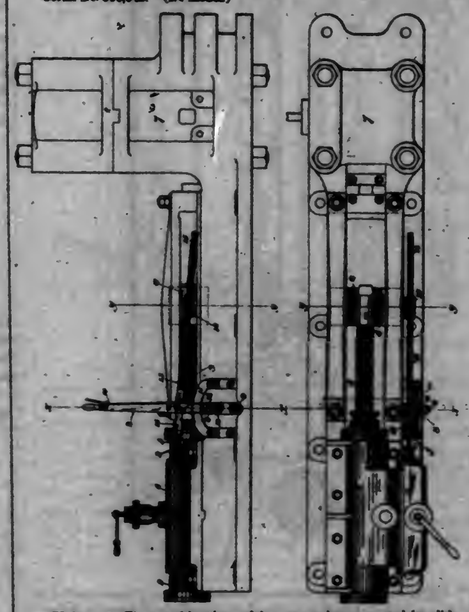
4. The combination of the standards B, the drive-pinion O', the bushings Q, in which the pinion is journaled, the crank-wheels N, engaging with the pinion, the stub-shafts P', provided with the head A, the cylindrical portion *i*, the shoulder *k*, the screw-threaded portion *j*, and the nuts *l*, the wrist-pin M, the clamping-bolt O, provided with the nut P, the reciprocating piston-rod K, provided with the cross-head L, the cylinder C, provided with the heads D and D', and the bolt E, detachably secured through the standards A and head D and provided with the washers *a*, substantially as described.

5. In an air-pump, the combination, with the oscillating cylinder and piston, of the actuating crank-wheels N, the tubular wrist-pin M, secured between these crank-wheels, the clamping-bolt O, provided with the nut P, securing the wrist-pin between the crank-wheels, and the piston-rod K, provided with the cross-head L, loosely engaging with said wrist-pin, substantially as described.

6. The combination, in an air-pump, of the two vertical standards, a cylinder oscillatingly suspended between said standards, a reciprocating piston-rod provided at its lower end with a cross-head, two crank-wheels peripherally geared and journaled upon stub-shafts secured to the standards, a wrist-pin carried between the two crank-wheels and engaging with the cross-head of the piston, and a single drive-pinion journaled in the standards below said crank-wheels and engaging with both of them, substantially as described.

7. The combination, with the reciprocating piston of an oscillating air-pump, of two actuating crank-wheels journaled upon opposite sides of the piston and peripherally geared, a drive-pinion engaging therewith, a wrist-pin detachably secured between these crank-wheels, and a series of corresponding adjusting-holes in said crank-wheels for varying the adjustment of the wrist-pin, substantially as described.

409,845. VALVE-GEAR FOR STEAM-HAMMERS. MILTON B. KERSE, McKee's Rocks, Pa. Filed May 2, 1888. Renewed Apr. 23, 1889. Serial No. 308,345. (No model.)



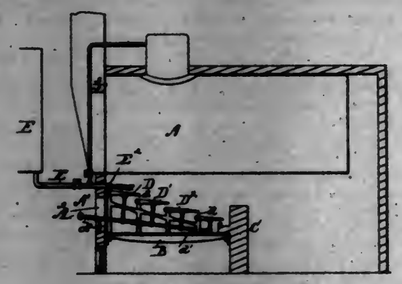
Claim.—1. The combination, with a steam-hammer and its slide-valve, of an interposed bell-crank lever connected at its angle to the slide-valve, having one arm fulcrumed on an operating-lever and its opposite arm in moving contact with the steam-hammer respectively, substantially as and for the purposes described.

2. The combination, with a steam-hammer and its slide-valve, of an interposed bell-crank lever connected with the slide-valve and with an operating-lever, and having one of its arms inclined to the line of motion of the steam-hammer and in moving contact therewith, substantially as and for the purposes specified.

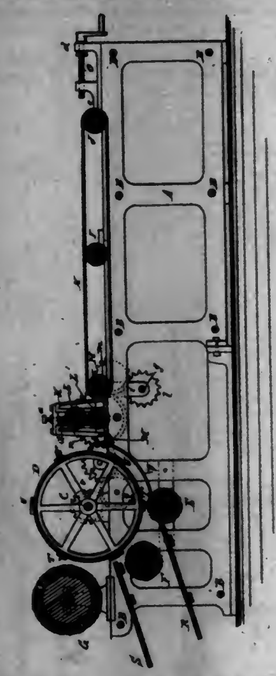
409,846. OIL-BURNING APPARATUS FOR STEAM-BOILERS. FREDERICK LEADBEATER, Detroit, Mich. Filed Oct. 20, 1888. Serial No. 288,702. (No model.)

Claim.—In an oil-burning apparatus for boiler-furnaces, the combination, with a series of oil-diffusing plates arranged at different levels

one in advance of another and each inclined slightly downward at its forward end, which overlaps the next succeeding lower plate, of a transverse longitudinally-perforated discharge-pipe located above the upper diffusing-plate, an oil-supply pipe communicating with said discharge-pipe, and a steam-injecting pipe leading into the oil-supply pipe, substantially as described.



409,847. DECORTICATOR FOR RAMIE, &c. MICHEL J. LEBOUTE, New Orleans, La., assignor to himself, Leonard Sewell, and William Blake, same place. Filed Jan. 31, 1888. Serial No. 262,453. (No model.)

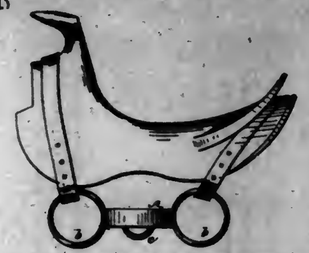


Claim.—1. In a decorticating-machine, the combination of a pair of fluted rollers adapted to crush the stalks and stems, a series of points arranged to receive the crushed fiber, a decorticating-cylinder provided with series of teeth and beater-ribs, rotary brushes for cleaning the fiber as it is carried forward by the cylinder, a brush for removing the cleaned fiber from the decorticating-cylinder, and means for imparting motion to the rollers, cylinders, and brushes, substantially as specified.

2. In a decorticating-machine, the combination, with the cylinder D, provided with teeth T and ribs U, of the teeth *b*, adapted to hold the crushed fiber while it is acted on by the said cylinder D, the concave V, and the cleaning-brushes F E, substantially as specified.

3. The combination, in a decorticating-machine, of the endless apron N, the fixed rolls H I, the adjustable roll J, the fluted crushing-rolls L L', the roll L being adjustable, means for adjusting said rolls J and L, the cylinder D, provided with teeth T and ribs U, the concave V, the cleaning-brushes E F, the brush G, and means for imparting motion to the said apron and rolls, substantially as described.

409,848. CONNECTING-BAR FOR RIDING-SADDLES. WILLIAM W. LEWIS, Cheyenne, Wyo. Filed Jan. 16, 1889. Serial No. 296,697. (No model.)



Claim.—As an improved article of manufacture, a girth-rig connecting-bar for riding-saddles of rigid construction, with a ring or loop at each of its opposite ends and with a center ring or loop, substantially as specified.

409,849. GAGE-KNIFE. FRANK W. LOWE, Boston, Mass. Filed Nov. 16, 1888. Serial No. 291,084. (No model.)



Claim.—1. A combined knife and apple-corer consisting of a flat blade and handle stamped out of a single piece of metal, the handle portion being bent to form a corer, substantially as shown and described.

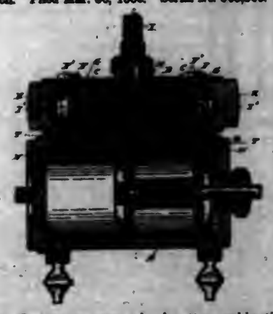
2. A combined knife and apple-corer consisting of a flat blade A and handle portion B, stamped out of a single piece of metal, the handle portion being provided with ears *a a b b*, said portion and ears being bent to form a handle and apple-corer, substantially as shown and described.

409,850. HORSESHOE-BAR. HOWARD C. MACKINNON, Chicago, Ill. Filed Sept. 12, 1888. Serial No. 285,254. (No model.)



Claim.—A horseshoe-bar bounded by the upper face A, exterior face B, interior face D, and the faces C and C^2, constituting a re-entrant angle or groove in the face D, the face C^2 of said groove making an acute angle with the lower edge of the exterior face B, substantially as shown and described, and for the purpose set forth.

409,851. STEAM-ACTUATED VALVE. ELON A. MARSH, Battle Creek, Mich. Filed Mar. 30, 1889. Serial No. 305,369. (No model.)



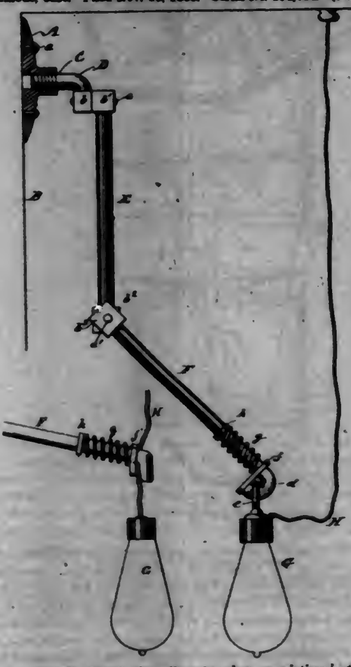
Claim.—1. In a steam-actuated valve, the combination of a steam-chest provided with induction-ports and a valve provided with passages, and preadmission-ports leading to end chambers beyond the ends of the valve, whereby said valve and the engine may be started, notwithstanding the valve may have come to rest with the main induction-ports closed, substantially as described.

2. The combination, with the cylinder of an engine, of a valve-chest having chambers at each end and relief-ports leading through the main steam-passages to the cylinder, substantially as described.

3. The combination of a cylinder of an engine, a valve-chest having ports or passages connecting the central and end chambers thereof with the middle and the ends of the cylinder, respectively, and an annularly-chambered piston, whereby live steam is admitted alternately in volume to the outer ends of the end chambers of the valve-chest to promptly move the valve to reverse the engine, substantially as described.

4. In an engine, the combination of a steam-actuated valve, a cylinder, a central live-steam port communicating with the same, ports leading from said cylinder to chambers in the valve-chest, and an elongated chambered piston, substantially as described.

409,852. BRACKET FOR ELECTRIC LAMPS. JOHN S. MERRILL, Columbus, Ohio. Filed Nov. 16, 1888. Serial No. 291,014. (No model.)



Claim.—1. The herein-described bracket, consisting in the plate A, having a screw-threaded aperture, the rod D, having a screw-threaded inner end entering said aperture and provided with a head *b*, the rod E, having a head b', pivoted to the head *b*, to swing transversely to rod D, and having at its opposite end a head b^2, the rod F, having a head b^3, pivoted to head b^2 at right angles to the pivot of heads *b* b', and having its opposite end bent outward, a plate or arm sliding on the outer end of rod F, and a spiral spring encircling the rod and pressing the plate toward the said outward-bent end, substantially as set forth.

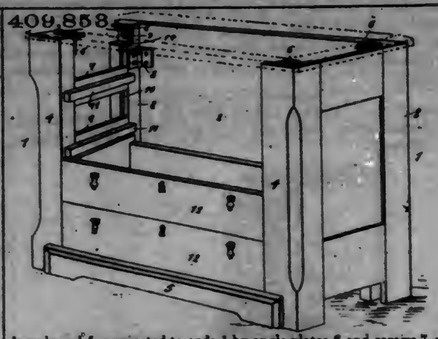
2. In a bracket, the rod F, having an outward-projecting arm at its outer end, an apertured plate sliding on said rod, and a spiral spring encircling the rod and pressing the plate against the inner face of said outward-projecting arm, said plate and arm forming parallel clamping-surfaces, between which a wire may be held, substantially as set forth.

409,853. BUREAU. OREN D. MILES and HOWARD F. SCOLLAY, Templeton, Mass. Filed Mar. 5, 1889. Serial No. 301,896. (No model.)

Claim.—A case of drawers formed with the framed panel ends 1, having front posts 4, rear posts 8, and strips 9, extending between posts 4 and 8, and having cleats 11, serving as slides for drawers, a back 2, connected to ends 1 by hinges 3, and a detachable top 13 and front

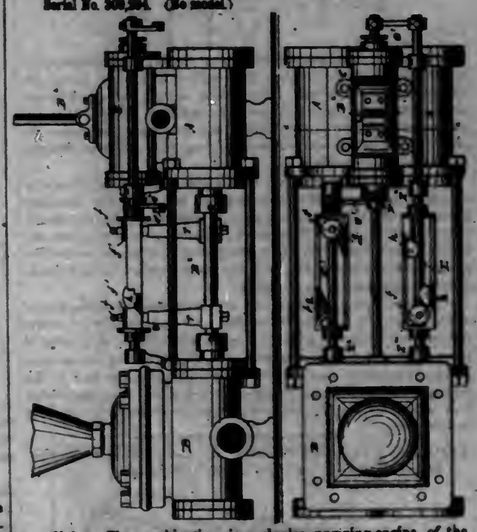


409,858.



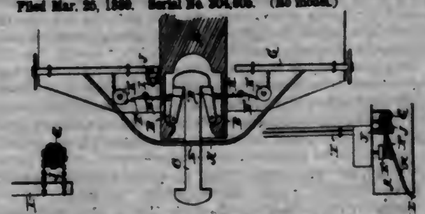
base-board 5, connected to ends 1 by angle-plates 6 and screws 7, substantially as shown and described.

409,854. VALVE-GEAR FOR PUMPING-ENGINES. MICHAEL MEIG and EDUARD SCHWEBEL, Brooklyn, N. Y. Filed May 1, 1889. Serial No. 309,294. (No model.)



Claim.—The combination, in a duplex pumping-engine, of the steam-cylinders, a steam-chest intermediately between said cylinders, independent oscillating valves in said steam-chest, an interior shoulder between the inner ends of the said valves, spindles secured to the oscillating valves and passing through opposite heads of the steam-chest, cam-rods supported in bracket-bearings, a crank-connection between the spindles of the valves and the cam-rods, fixed cams applied at opposite ends and sides of one cam-rod and hinged cams applied at opposite ends and sides of the other cam-rod, upright pillars attached to the piston-rods of the steam and pump cylinders and provided with heads at their upper ends for engaging said cams and imparting oscillating motion to the slide-valves, substantially as set forth.

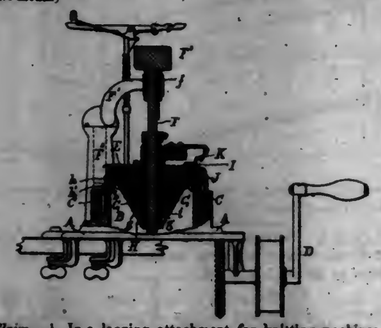
409,855. CAR-COUPLING. CORNELIUS D. MEEKS, Pursley, W. Va. Filed Mar. 25, 1889. Serial No. 304,805. (No model.)



Claim.—The combination of the draw-head, the coupling-jaws mounted therein, the pulleys arranged on the under side of the car and on opposite sides of the draw-head, the arms projecting from the coupling-jaws through the draw-head, the rock-shaft journaled on the

under side of the car, the chains passing around the pulleys and secured to the rock-shaft, the arms projecting from the coupling-jaws, the springs, the rotary shaft mounted on the end of the car, and the chain secured to the lower end of said shaft and to the rock-shaft, as specified.

409,856. LOOPING ATTACHMENT FOR KNITTING-MACHINES. EDWARD MURBY, Detroit, Mich. Filed May 1, 1889. Serial No. 309,272. (No model.)

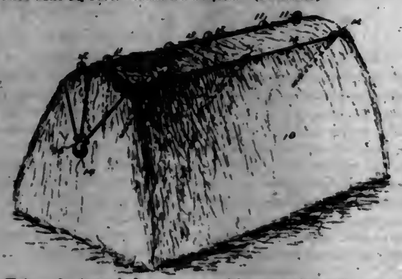


Claim.—1. In a looping attachment for knitting-machines, the combination, with the needles, the needle-cylinder, and means for operating the needles and cylinder, of a conically-shaped plate supported within said needle-cylinder and adapted to be revolved therewith, a series of points supported by said cone-plate, and means for projecting the points upward in a diagonal direction when desired, substantially as described.

2. In a looping attachment for a knitting-machine, the combination, with the needles, the needle-cylinder, and means for operating the needles and cylinder, of a cone-plate supported within the needle-cylinder and adapted to be revolved therewith, a series of points supported by said cone-plate, and a cam-groove in which the heels of the points are engaged for projecting the points upward in a diagonal direction, substantially as described.

3. In a looping attachment for a knitting-machine, the combination of the needle-cylinder, the needles, a cone-plate supported within the needle-cylinder and adapted to be revolved therewith, a series of points supported by said cone-plate, a cone-cam having the grooves *g* and *g'*, a standard having an arm for supporting the stem of the looping attachment, and a weight supported on the upper end of said stem to hold the looping mechanism down to its work, substantially as described.

409,857. STACK-FASTENER. WILLIAM L. MURDY, Alvin, Kans. Filed June 14, 1888. Serial No. 277,052. (No model.)

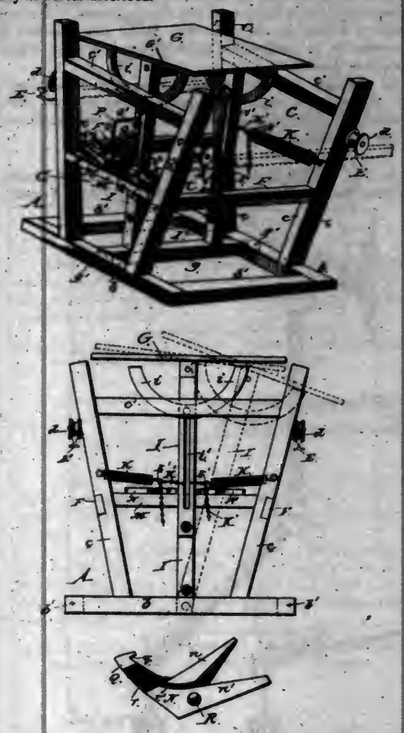


Claim.—1. A stack-fastener comprising two plates 15, each having a series of apertures, stakes or pins adapted to be thrust into the stack and having eyes at their outer ends, and ropes to be thrown over the stack, passed through said eyes, and secured at their ends to said plates, substantially as set forth.

2. A stack-fastener comprising two or more series of steadying-stakes adapted to be thrust into the stack, having eyes or apertures at their outer ends, a rope passing through the eyes of each series, said ropes being all connected at their opposite ends to a single weight suspended thereby at each end of the stack, substantially as set forth.

409,858. HAY-DISTRIBUTER. ALEXANDER MCCOLLUM, Raymond, Iowa. Filed Dec. 5, 1888. Serial No. 292,744. (No model.)

Claim.—1. In an apparatus for storing hay in barns, the combination, with the frame A, of a platform pivotally mounted therein and provided upon one of its supports with a projecting rigid rod, and a spring-arm and levers upon the frame coacting with said rod and arm to permit the platform to automatically discharge the material as it is deposited thereon alternately upon one side and the other, substantially as herein described.



2. In an apparatus for storing hay in barns, the combination, with the frame having the uprights, of a platform pivotally mounted in said uprights, springs connected at the corners of the said frame and with the uprights, and adjustable chains adapted to regulate the tension of said springs, substantially as and for the purpose described.

3. In an apparatus for storing hay in barns, the combination, with the frame, of a platform pivotally mounted therein and connected therewith by springs, said platform being provided with a projecting rod upon one of the supports and with a projecting spring-arm secured above the same, and the levers pivoted upon the frame, adapted to coact with said rod and arm to permit the platform to discharge the material as it is deposited thereon alternately upon one side and the other, substantially as described.

4. In an apparatus for storing hay in barns, the combination, with the frame and the platform pivotally mounted therein and provided upon one of its supports with a rigid projecting rod and a spring-arm, of levers pivoted to the frame and comprising the inclined diverging arms and the inwardly-projecting recessed arm, said levers being adapted to coact with said rod and spring-arm, substantially as and for the purpose set forth.

5. The herein-described, levers comprising the V-shaped portion composed of inclined divergent arms, said portion being recessed, as at *r'*, and an inwardly-projecting arm at an angle to said portion and provided with the recesses *g* and *r*, substantially as described.

6. In an apparatus for storing hay in barns, the combination, with the frame having upwardly-diverging side and longitudinal beams secured thereto provided with wheels adapted to move upon tracks, of a platform pivotally mounted in said frame and adapted to automatically discharge the material as it is deposited thereon alternately upon one side and the other, substantially as and for the purpose set forth.

409,859. REFLEURAGE. GUSTAVE D. HELLEMANS, Amsterdam, Holland. Filed Dec. 12, 1888. Serial No. 293,253. (No model.)

Claim.—1. The within-described process of obtaining perfumes from flowers and other substances, which consists in extracting the volatile oils or aromatic parts therefrom by exposing them in a vacuum, so that evaporation of the volatile parts takes place at ordinary temperature and condensation of them at a lower temperature, as set forth.



2. In the within-described process of extracting volatile oils or aromatic essences from flowers and other substances, first exposing said flowers or substances in a vacuum, whereby evaporation of the volatile parts takes place, then condensing the volatile oils or extracts at a lower temperature also in vacuo, and finally intercepting and absorbing any escaping volatile parts not previously condensed, substantially as specified.

409,860. RAILROAD-TIE. ALDEN C. HINKLEY, Gloversville, N. Y., assignor of one-half to William W. Whitaker, same place. Filed Dec. 11, 1888. Serial No. 293,203. (No model.)



Claim.—1. A metallic tie for railroads slitted spirally in the direction of its length, substantially as and for the purpose described.

2. A metallic tie for railroads constructed of a tubular helix, substantially as and for the purpose described.

3. A metallic tie for railroads constructed of a tube slitted spirally in the direction of its length, and thereby adapted to yield longitudinally and transversely, substantially as and for the purpose described.

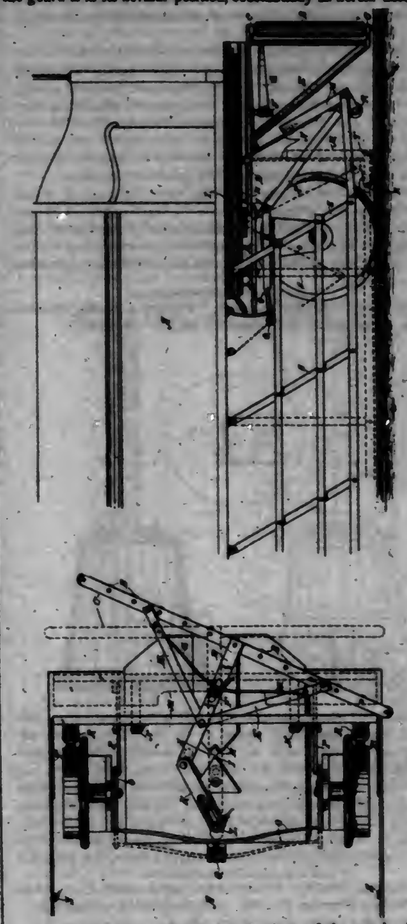
4. A tubular metallic tie for railroads slitted spirally in a longitudinal direction and having a flattened rail-receiving surface, substantially as and for the purpose described.

409,861. SAFETY-GUARD FOR CARS. CHARLES H. OHM, San Francisco, Cal. Filed May 9, 1888. Serial No. 310,149. (No model.)

Claim.—1. The combination, with the car, of a vertical guard pivoted to a king-bolt beneath the front of the car and adapted to swing about said bolt, so as to stand at an obtuse angle with the line of the track upon either side of the center, substantially as herein described.

2. A guard consisting of the vertical rollers journaled in a frame-work which extends across the front of the car, said frame-work turning upon a king-bolt beneath the car, so as to throw the roller-guard to one side or the other of the center and in an obtuse angle with the line of travel, in combination with a supporting-bar and a spring rotating device, whereby said guard is held at right angles with the line of track when not in action, substantially as herein described.

3. The roller-guard extending across the front of the car, a supporting-bar and frame-work extending horizontally therefrom, a king-bolt or pin passing through a longitudinal slot in said bar or frame-work, so that the guard may be moved backward and forward upon said king-bolt, a spring whereby the guard is forced toward the front, a pin in the rear end of the frame-work, and a V-shaped notch into which said pin falls and is retained by the action of the spring when the guard is in its normal position, substantially as herein described.



4. The guard extending across the front of the car, having the rearwardly-extending bar or frame-work slotted and movable upon a fulcrum-pin, the V-shaped notch and the pin upon the frame-work engaging said notch, and a spring whereby it is held in contact therewith, in combination with an angular guide fixed to the car behind said catch, so that when said frame-work is forced backward it will be released from the latch and will be forced to one side or the other by striking the angular projection, substantially as herein described.

5. The guard extending across the front of the car, the bar or frame-work attached to the same extending horizontally backward and pivoted so as to allow the guard to turn to one side or the other of the center, the latch by which the guard is held in its normal position, and a guide by which it is thrown to one side or the other when forced backward, in combination with the link K, connected with the rear of the bar or frame-work and acting as a stop when the guard is turned to one side or the other, substantially as herein described.

6. The guard extending across the front of the car, having a frame-work extending horizontally backward and fulcrumed beneath the car, so as to allow the guard to turn from side to side about the vertical pivot, in combination with the transverse board or scraper suspended behind the guard, the yoke fulcrumed beneath the car and connected with the scraper by rods, and the latch by which said yoke

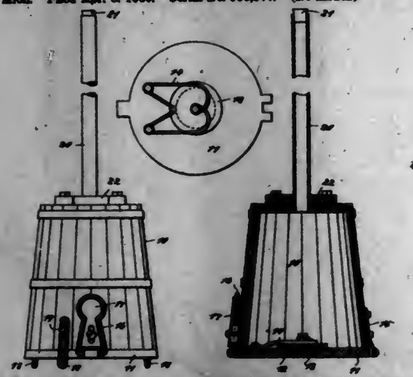
is held and the scraper maintained out of contact with the track, substantially as herein described.

7. The scraper suspended beneath the car, and the yoke fulcrumed beneath the car, having its ends connected with the scraper by rods and the rear portion suspended by the spring latch or catch, in combination with the swinging guard fulcrumed across the front of the car, a rearwardly-extending frame, and the link K, actuated thereby and adapted to disengage the catch and allow the yoke to drop when the guard comes in contact with an object, substantially as herein described.

8. The transverse board or scraper suspended by links from the car, a lever-yoke, connecting-rods, and a latch whereby said scraper is normally held out of contact with the track and road-bed, a swinging guard extending across the front of the car and adapted to disengage the latch and drop the scraper, in combination with rollers fixed upon the rear portion of the scraper, so as to come in contact with the forward wheels of the car and be rotated in the opposite direction when the board is dropped, substantially as herein described.

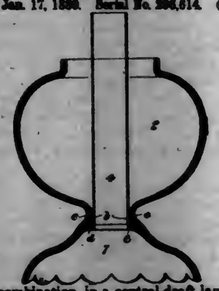
9. The transverse scraper suspended from the front of the car, and a lever and links which permit it to be depressed about its point of suspension when released, in combination with the suspended rising and falling side rails upon the car, and rods connecting them with the scraper, so that they will be moved simultaneously therewith, substantially as described.

409,862. CISTERN-CLEANER. WILLIAM A. PALMER, Plymouth, Mich. Filed Apr. 3, 1889. Serial No. 306,377. (No model.)



Claim.—The combination, with a hollow body having an open lower end, a plate adjustably hinged to the body covering the said open end and provided with an inwardly-opening valve, a keeper-block adjustably secured to the outer face of the body, and a hasp hinged to the bottom plate capable of contact with the keeper-block, of legs adjustably secured to the exterior of the body extending below the bottom plate, a tube projected from the upper end of the body, and a plug or stopper detachably inserted in the upper end of the tube, all combined for operation substantially as shown and described.

409,863. CENTRAL-DRAFT LAMP. ARCHIBALD W. PAULL, Wheeling, W. Va. Filed Jan. 17, 1889. Serial No. 296,614. (No model.)



Claim.—1. The combination, in a central-draft lamp, of a bowl-section and a base-section of glass and a central metal draft-tube, said bowl and base-section being united directly with each other and with the central-draft tube by welding, substantially as and for the purposes described.

2. In a central-draft glass lamp, the combination of a bowl-section, a base-section, and a metal draft-tube having a flange interposed between and welded with both sections, substantially as and for the purposes described.

409,864. JUG-TOP. ARCHIBALD W. PAULL, Wheeling, W. Va. Filed Mar. 13, 1889. Serial No. 303,093. (No model.)

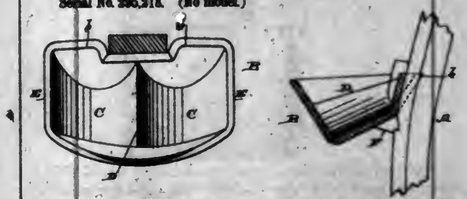


Claim.—1. As a new article of manufacture, a jug-top consisting in the combination of the collar and cap, a hinge-piece secured to the collar, and a peripheral wire on the cap which passes through perforations on the hinge-piece and forms the pintles of the hinge, substantially as and for the purposes described.

2. As a new article of manufacture, a jug-top consisting in the combination of the collar and cap, a hinge-piece secured to the collar, a peripheral wire on the cap which passes through perforations on the hinge-piece and forms the pintle of the hinge, and a coiled spring encircling said pintle, substantially as and for the purposes described.

3. As a new article of manufacture, a jug-top consisting in the combination of the collar comprising a zone 7, which encircles the jug-top, a zone or portion 8, forming the spout, an intervening gutter 9, a cap, and a hinge-piece connecting the cap and collar and having a tongue which fits against the under side of the said gutter and is braced thereby, substantially as and for the purposes described.

409,865. WATER-WHEEL. LESTER A. PELTON, Nevada City, assignor to Albert P. Brayton, Jr., San Francisco, Cal. Filed Jan. 7, 1889. Serial No. 295,918. (No model.)

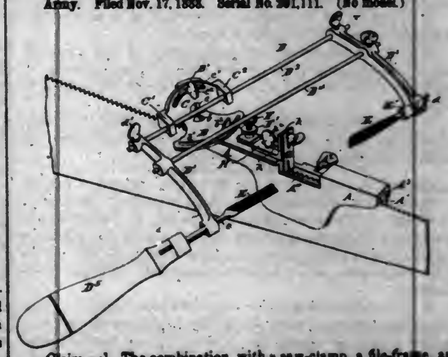


Claim.—1. The buckets of a water-wheel, having the curved bottoms meeting at an apex or sharp ridge in the center and continuous with the inclined discharge sides, the bucket-fronts curved in the arc of a circle and inclined so as to narrow the buckets from the top toward the bottom, and the bottom and dividing ridge also declining from the rear toward the front, as shown and described.

2. The buckets of a water-wheel, having the curved bottoms meeting at a central apex or sharp ridge and continuous with the discharge sides, the convex front, and the inclined bottoms, with the projecting angular lugs fitted to corresponding depressions or notches in the rim in which they are adjusted and retained, substantially as herein described.

3. The buckets of a water-wheel, with the curved bottoms meeting in a central apex or ridge and continuous with the discharge sides, the convex front, and the rear walls inclining backward upon each side of the wheel-rim, substantially as herein described.

409,866. SAW-FILING MACHINE. WILLIAM H. PENDER, U. S. Army. Filed Nov. 17, 1888. Serial No. 291,111. (No model.)



Claim.—1. The combination, with a saw-clamp, a file-frame, and a guide for the frame attached to the clamp, of an adjustable stop on the clamp which engages the frame and regulates the depth of the cut.

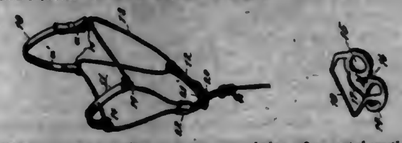
2. The combination, with a saw-clamp carrying a reciprocating file-frame, of a gage consisting of a longitudinally-adjustable bracket

H and a vertically-adjustable gage-point secured to said bracket, all substantially as described.

3. The saw-clamp provided with the removable guard-strips of wood or similar material resting on the tooth-points.

4. The combination of the saw-clamp provided with the notch A^4, turn-block B, having the vertical arm B', the turn-block C, pivoted to the arm B', the file-frame D, having a rod D' parallel with the file and running in guides on the turn-block C, and also with the parallel intermediate rod D^6, the adjustable stop F, the gage-bracket H, secured adjustably to the clamp, and the gage-plate G, secured to the bracket H.

409,867. HALTER. JAMES H. PHILPOTT, Rising City, Nebr. Filed Dec. 17, 1888. Serial No. 293,579. (No model.)

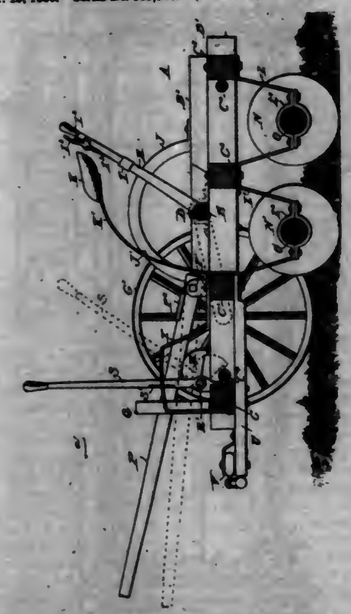


Claim.—1. In a halter, a runner consisting of a metal casting having upwardly-curved ends and provided with an aperture in each end, a pin or stud projecting from the upper face of the casting between the apertures, and a lateral apertured projection for securing the runner to the halter, substantially as herein shown and described.

2. In a halter, a runner consisting of a metal casting having its ends bent upward in the same direction and provided with an aperture in each end, having a central cross-bar, a pin projected from the upper face of said cross-bar, and a guide-flange integral with one side at the center, and attaching means, substantially as shown and described.

3. In a halter, the combination, with a head-strap and nose-strap and metallic runners attached to the extremities of said straps, consisting of a casting provided with an aperture at each end, having a central cross-bar, a pin projected from said cross-bar, and a guide-flange at one side of the runner, of a chin-piece having a loop at each end and a ring attached to the forward loop, a rope passing through the said ring and the several runners and the rear loop of the chin-strap, and a contracting slide adapted to slide upon the said rope between the ring of the chin-strap and the nose-strap, substantially as shown and described.

409,868. SOD-CUTTER. LEWIS T. PENN, Endicott, Wash. Filed Mar. 15, 1889. Serial No. 303,378. (No model.)

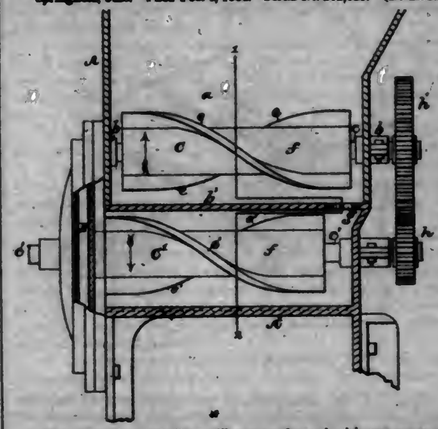


Claim.—1. In a sod-cutter, the combination, with a frame mounted on wheels, cutting-disks carried by the frame, and means for raising and lowering the said frame, of a tongue pivoted to the frame, a shaft journaled below the tongue, a cam on the shaft, a hand-lever secured to the shaft, and means for locking the lever in the position into which it is moved, substantially as described, whereby provision is made for adjusting the tongue according to the position of the frame, as set forth.

2. In a sod-cutter, the combination, with a frame mounted on wheels, cutting-disks carried by the frame, and means for raising and lowering the said frame, of a tongue pivoted to the frame, a guide through which the tongue projects, a shaft journaled below the tongue between its pivoted end and the guide, a cam on the shaft for engaging the under side of the tongue, a hand-lever on the said shaft provided with a lug, a notched guideway and a spring secured to the lever and projecting down into the guideway and serving to press the lug of the lever into one of the notches of the said guideway, substantially as herein shown and described.

3. In a sod-cutter, the combination, with a frame, hangers depending from the frame, and cutting-disks mounted in the hangers, of the shaft E, journaled in the frame and provided with the downwardly-extending arms F and F', the wheels G and G', mounted on the said arms, the lever H, secured to the shaft, the arm I, mounted to slide on the said lever, the spring-pressed hand-lever I^2, pivoted to the lever H and connected to the arm I by link I^3, and the notched segment secured to the frame and with which the arm I engages, substantially as herein shown and described.

409,869. CRUSHER FOR GRINDING-MILLS. THOMAS ROBERTS, Springfield, Ohio. Filed Feb. 1, 1888. Serial No. 262,635. (No model.)



Claim.—1. In a grinding-mill, a case formed with two compartments, situated one above the other, and oppositely-rotating crushers in said compartments, the lower of which crushers is so situated as to leave a space between its end and the end of said case, in combination with a plate between said crushers serving to divide the case into its compartments, and having a discharge-opening in its end immediately above the space at the end of the lower crusher.

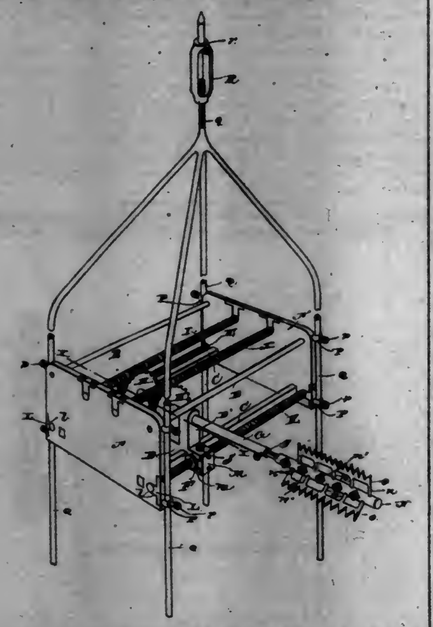
2. The combination, with a case having two compartments, situated one above the other, of a grinding or crushing roller in each of said compartments, the lower of which rollers has its ends located out of transverse vertical alignment with the ends of the upper roller, as shown, whereby one end of said lower roller will be in contact with or near to one end of the case, and its opposite end will be sufficiently far away from the other end of the case to leave a space beneath the corresponding end of the upper roller, and a plate between said roller serving to divide the case into its compartments and formed with an opening above the space located at the end of the lower roller.

3. The combination, with a case having two compartments, situated one above the other, and a burr located at the end of the same and mounted upon a shaft passing through the lower compartment, of a grinding or crushing roller in each of said compartments running in opposite directions, the lower of which rollers is mounted upon the same shaft as said burr and has its ends located out of transverse vertical alignment with the ends of the upper roller, so as to have one end extend nearly into contact with the burr, and its opposite end sufficiently far away from the end of the case to leave a space beneath the corresponding end of the upper roller, and a plate between the rollers serving to divide the case into its compartments and formed with an opening above the space beneath the end of the upper roller, for the purpose set forth.

4. The combination of a case having two compartments, situated one above the other, and formed on the bottom of the lower compartment with grooves or mortises, and a burr located at the end of

said case and mounted on a shaft extending longitudinally through said lower compartment, and oppositely-rotating differently-speeded crushing-conveyers in said compartments, the lower of which is mounted on the same shaft as said burr and has its ends located out of transverse vertical alignment with the ends of the upper crushing-conveyer, and a plate serving to divide the case into its compartments and having a discharge-opening in its end immediately above the space at the end of the lower crushing-conveyer.

409,870. COAL-CUTTING MACHINE. JAMES C. ROBERTSON, Morrisdale Mines, assignor of one-half to Alexander Hood, Phillipsburg, Pa. Filed Aug. 28, 1888. Serial No. 283,962. (No model.)



Claim.—1. The combination of the end plates A A', the longitudinal rods connecting the same, the feed-screws journaled in the end plates, the carriage mounted transversely on the feed-screws, the cutter-shaft mounted on the carriage, and mechanism for simultaneously rotating the feed-screws and the cutter-shaft, substantially as set forth.

2. The combination of the end plates A A', the rods B and bars C, connecting the said plates, the carriage supported transversely on the bars C, the worm-shafts journaled in the end plates and extending over the carriage, the cutter-shaft mounted on the carriage, and mechanism for simultaneously rotating the worm-shafts and sliding the carriage off the bars C, as set forth.

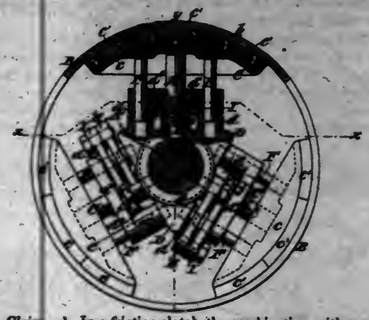
3. The combination of the end plates A A', the rods B and bars C, connecting said end plates, the carriage mounted transversely on the bars C and provided with standards D' on its upper side, the cutter-shaft journaled in said standards, and mechanism for simultaneously rotating the cutter-shaft and sliding the carriage on the bars C, as set forth.

4. The combination of the end plates A A', the rods B and bars C, connecting said end plates, the feed-screws journaled in the end plates, the carriage mounted transversely on the bars C and having its ends engaging the feed-screws, the worm-shafts journaled in the end plates above the carriage, the cutter-shaft mounted on the carriage and provided with worm-wheels engaging the worm-shafts, and mechanism for simultaneously rotating the feed-screws and the worm-shafts, as set forth.

5. In a mining-machine, the combination, with the frame, the carriage, and the feed-screw, of the sleeve internally threaded to fit the feed-screw, made in the two halves and externally threaded and screwed in the said carriage, and the set-screw for holding the sleeve in place, substantially as described.

6. The combination, with the arbor having diametrical openings, of the blades O, each having a series of arms n, passing through said openings and provided with screw-threaded extremities, and the nuts n', mounted on said extremities and adapted to be turned up against the arbor, as set forth.

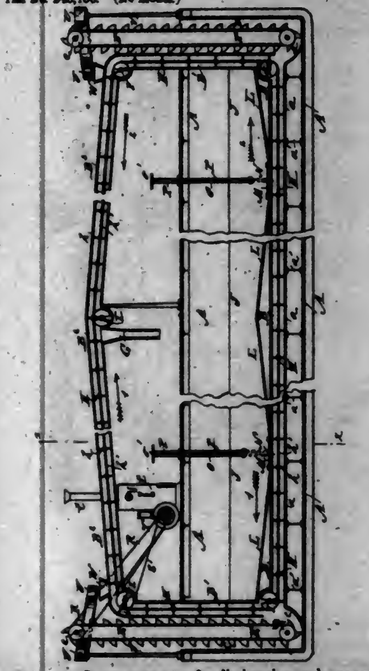
409,871. FRICTION-CLUTCH. EDVARD SAVORAL, New York, N. Y. Filed June 15, 1889. Serial No. 314,457. (No model.)



Claim.—1. In a friction clutch, the combination, with two shafts, of a hollow flanged clutch member mounted upon one shaft, a block mounted upon the other shaft, clutch members arranged within said flanged member, guide-rods on said last-named clutch members and guided in said block, screws secured to said last-named clutch members and extending radially from the shaft last named, nuts adjacent to said block and engaging said screws, a collar on the shaft last named and adapted to be slid thereon, levers rigidly connected to said nuts, and links connecting said collar to said levers, substantially as specified.

2. The combination, with the shafts A A', of the hollow flanged clutch member B, mounted on the shaft A, the clutch members C within the clutch member B, the block D, rigidly secured to the shaft A' and provided with the tubular portions *d*, guide-rods F, extending from the clutch members C and into the tubular portions *d*, screws K, rigidly secured to the members C and extending radially from the shaft A', nuts J, arranged between the tubular portions *d* and engaging the screws K, a sliding collar G on the shaft A, levers I, rigidly secured to the nuts J, and links H, connecting said levers with the collar G, substantially as specified.

409,872. APPARATUS FOR DISCHARGING AND CONVEYING COAL. CHARLES S. SCHENCK, New York, N. Y. Filed June 3, 1887. Serial No. 240,138. (No model.)



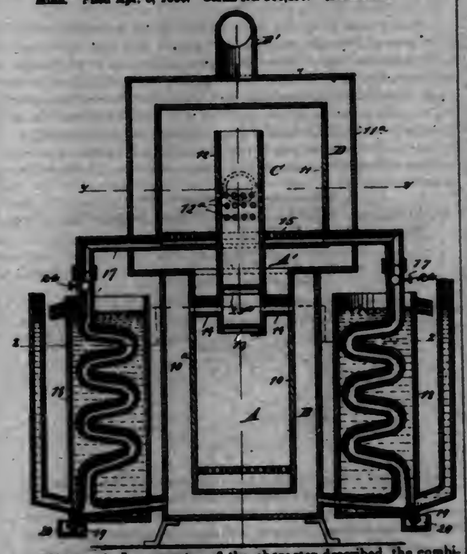
Claim.—1. In an apparatus for discharging and conveying coal or other material, the combination, with an endless-belt conveyer discharging into a well or pocket, of a bucket-elevator lifting the material from the well, and a chute receiving the material from the elevation and delivering it to the upper trough in which the conveyer-belt works for carriage by the conveyer to a distant point of discharge, substantially as herein set forth.

2. In an apparatus for discharging and conveying coal or other material, the combination, with an endless-belt conveyer discharging into a well or pocket, of a bucket-elevator lifting the material from the well, and a chute pivoted to turn sidewise and receiving the material from the elevator, and adapted to discharge the elevated material either to the upper trough in which the conveyer-belt works for carriage to a distant point of discharge, or to discharge said material directly, substantially as described, for the purposes set forth.

3. In an apparatus for discharging and conveying coal or other material from vessels, the following elements in combination: a trough B B' B², having gated openings M N and opening into wells or pockets *c d* at each end of the trough portion B, an endless conveyer H, working in the trough and adapted to deliver material to either well *c d*, and two bucket-elevators E F, either of which is adapted to lift the material from said wells and deliver it to points of discharge, substantially as herein set forth.

4. In an apparatus for discharging and conveying coal or other material from vessels, the following elements in combination: a trough B B' B², having gated openings M N and opening into wells or pockets *c d* at each end of the trough portion B, an endless conveyer H, working in said trough and adapted to deliver material to either well *c d*, two bucket-elevators E F, either of which is adapted to lift the material from said wells, and pivoted discharge-spouts U, receiving the material from the elevators and adapted to deliver it either to the upper section B² of the conveyer-trough or outboard for direct discharge, substantially as shown and described.

409,873. CHARCOAL APPARATUS. JACOB SCHREPTIUS, Winona, Minn. Filed Apr. 6, 1889. Serial No. 306,155. (No model.)

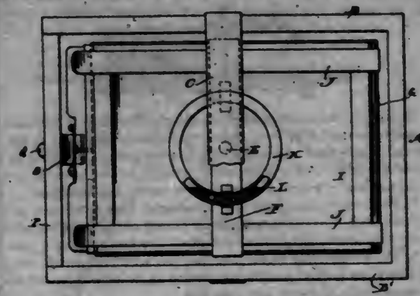


Claim.—1. In apparatus of the character described, the combination of the fire-chamber and the charring or calcining chamber, each being formed by a jacketed inclosing-case forming chambers surrounding the same, the chamber surrounding the fire-chamber being in communication with the charring-chamber, and the fire-chamber being in communication with the charring-chamber through a dampered connecting-pipe, and also in communication with the chamber surrounding the charring-chamber, substantially as described.

2. The combination, with fire and charring chambers, of a dampered pipe extending from the former into the latter, chambers surrounding both the fire and charring chambers, communication being established between the fire-chamber and the chamber surrounding the charring-chamber and between the latter and the chamber surrounding the fire chamber, and condensing-pipes connecting the charring-chamber and the chamber surrounding the fire-chamber, substantially as described.

409,874. PHOTOGRAPHIC CAMERA. GEORGE SKERSLEY, New York, N. Y. Filed Mar. 16, 1889. Serial No. 303,570. (No model.)

Claim.—1. In a photographic camera, the combination, with a swing-back, of a universal joint connecting the said swing-back with the camera-casing, substantially as shown and described.



2. In a photographic camera, the combination, with a weighted swing-back, of a universal joint connecting the said swing-back with the camera-casing, substantially as shown and described.

3. In a photographic camera, the combination, with a swing-back universally jointed to the camera-casing, of a tube held on the said swing-back and containing a loose material which always seeks its level and throws the swing-back into a vertical position, substantially as shown and described.

4. In a photographic camera, the combination, with a swing-back adapted to support the plate-holder, of a universal joint held centrally on the said swing-back in the rear of the said plate-holder and universally jointing the said swing-back with the camera-casing, substantially as shown and described.

5. In a photographic camera, the combination, with a swing-back adapted to support the plate-holder, of a universal joint held centrally on the said swing-back in the rear of the said plate-holder and universally jointing the said swing-back with the camera-casing, and means, substantially as described, for automatically moving the said swing-back into a vertical position, as set forth.

6. In a photographic camera, the combination, with a swing-back adapted to receive a plate-holder, of a universal joint held centrally on the said swing-back in the rear of the said plate-holder and universally jointing the said swing-back to the camera-casing, a circular tube held on the said swing-back concentric with the said universal joint, and a heavy liquid contained in the said circular tube, substantially as shown and described.

7. In a photographic camera, the combination, with a swing-back adapted to receive a plate-holder, of a universal joint held centrally on the said swing-back in the rear of the said plate-holder and universally jointing the said swing-back to the camera-casing, a circular tube held on the said swing-back concentric with the said universal joint, a heavy liquid contained in the said circular tube, and means, substantially as described, for locking the said swing-back in place after being automatically adjusted, as set forth.

8. In a photographic camera, the combination, with a swing-back adapted to receive the plate-holder, of a universal joint held centrally on the said swing-back and universally jointing the latter to the camera-casing, and a guide-plate held on the said swing-back for guiding the latter when seeking its normal position, substantially as shown and described.

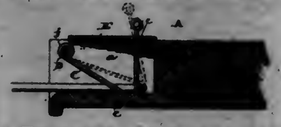
9. In a photographic camera, the combination, with a swing-back adapted to receive the plate-holder, of a universal joint held centrally on the said swing-back and universally jointing the latter to the camera-casing, a guide-plate held on the said swing-back for guiding the latter when seeking its normal position, and means, substantially as shown and described, for locking the said guide-plate onto the said swing-back and the camera-casing, as set forth.

10. In a photographic camera, the combination, with a camera-casing, of a swing-back held in the rear of the said camera-casing and a universal joint for connecting the said swing-back with the said camera-casing, substantially as shown and described.

11. In a photographic camera, the combination, with a camera-casing, of a swing-back held in the rear of the said camera-casing, a universal joint for connecting the said swing-back with the said camera-casing, and means, substantially as described, for adjusting the said swing-back on the rear end of the said casing, as set forth.

12. In a photographic camera, the combination, with a camera-casing, of a swing-back held in the rear of the said camera-casing, a universal joint for connecting the said swing-back with the said camera-casing, means, substantially as described, for adjusting the said swing-back on the rear end of the said casing, and a locking device for fastening the said swing-back in place after being adjusted, as set forth.

409,875. CAR-COUPLING. WILLIAM T. SIBB, Yazoo City, Miss. Filed June 26, 1889. Serial No. 315,596. (No model.)

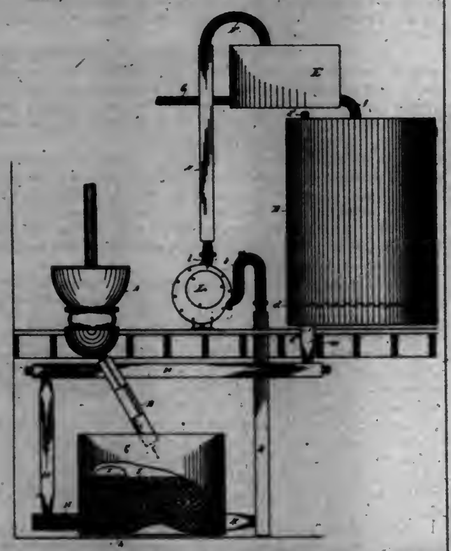


Claim.—1. The combination, with the chambered draw-head and the transverse shaft B, of the coupling-hook loosely sleeved at its forward end on said shaft and formed of a bar comprising a downwardly and rearwardly inclined portion and a vertical portion joined to the inclined portion by a bend, substantially as shown and described.

2. The combination, with the chambered draw-head and the transverse shaft B, of the coupling-hook formed of a metallic bar having an eye at one end sleeved on said shaft and bent to form a rearwardly and downwardly inclined portion and a vertical portion connected with the inclined portion and formed at its upper end with an eye, substantially as shown and described.

3. The combination, with the chambered draw-head having in its bottom wall a depression *e* and the transverse shaft B, of the coupling-link loosely sleeved at its upper end on said shaft and formed with a downwardly and rearwardly extending portion and a rear vertical portion, the bend connecting the vertical and inclined portions being adapted to rest in said depression, substantially as shown and described.

409,876. PROCESS OF LEACHING TAN-BARK. EDWARD P. SMITH, Corry, Pa. Filed Oct. 26, 1888. Serial No. 289,949. (No specimens.)

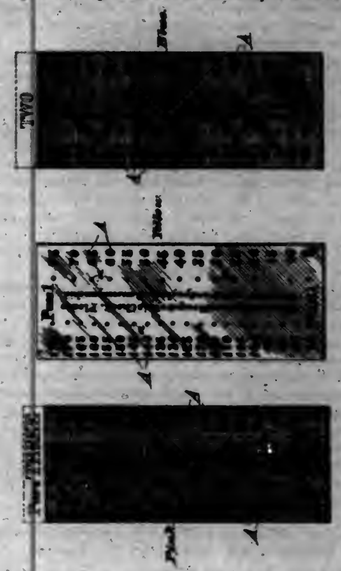


Claim.—1. A method and process of handling and leaching tan-bark, consisting in delivering the ground bark directly from the bark-mill into a tank of fluid with which it is intermixed, and then conveying the intermixed bark and fluid into a steam-box, where they are steamed during their passage through said steam-box, and from whence they pass into the top of the leach, substantially as and for the purpose set forth.

2. A method and process of handling and treating tan-bark, consisting, first, of saturating and intermixing the ground bark with fluid; second, of conveying the bark and fluid so intermixed into a steam-box, and, third, of steaming the intermixed bark and fluid during their passage through such steam-box, after which they pass into the top of the leach, substantially as and for the purpose set forth.

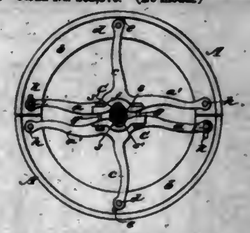
409,877. SERVICE, CASH, AND PASS CHECK. GEORGE D. SMITH, New York, N. Y. Filed Oct. 27, 1888. Serial No. 289,278. (No model.)

Claim.—1. A service, cash, and pass check having marginal rows of cash-value numerals increasing in value from end to end, and provided with a passport-character, a serial number, and a printed description of the use of the check, whereby said check is adapted to entitle the holder to be served, to register the value of single or cumulative orders, to act as voucher to receiving-cashier, and to enable the holder to pass out unquestioned, all substantially as described.



2. The series of service, cash, and pass checks, each having marginal rows of cash-value numerals increasing in value from end to end, a serial number, and a printed description of the use of the checks, together adapting a check to secure service, to register the value of single or cumulative orders, and to act as voucher to receiving-cashier, the said checks being also provided with passport-characters, as described, whereby one check of the series is adapted to be exchanged for and used in place of a number of other checks of the series and to enable a corresponding number of persons to pass out, all substantially as set forth.

409,878. PULLEY. NATHANIEL P. SMITH, Memphis, Tenn. Filed Dec. 1, 1888. Serial No. 292,379. (No model.)

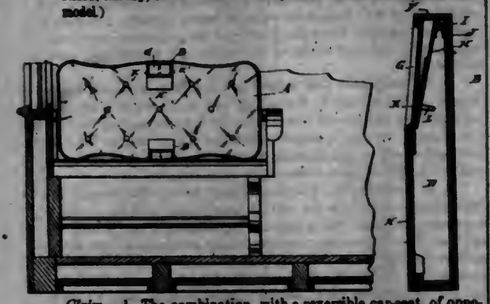


Claim.—1. In split pulleys, the combination of the rim-sections A A, the pivoted and adjustable spider-sections C C, constructed with opposite partial hub portions *f f*, of angular and irregular contour on their interior, and each provided with arms *a a'*, connecting the opposite ends of their respective pulley rim-sections, and the uniting or clamping bolts *g g*, the arms *a' a'* being pivotally connected with the rim-sections of the pulley on opposite sides of the axis of the latter, and the arms *a a* being adjustably connected with the like rim-sections on reverse sides of said axis, substantially as specified.

2. In a split pulley, the combination of the rim-sections A A, having inner flanges *b*, provided with conical-recesses *n* and slots *k* on reverse sides of the axis of the pulley, and with the slot *k* of either pulley-section on the opposite side of said axis to the slot *k* of the other pulley-section, the spider-sections C, provided with conical projections *m*, adapted to fit the conical recesses *n*, the pivotal bolts A, passing through the conical projections *m*, and the bolts *i*, passing through the slots *k* in the flanges of the pulley-sections and through the spider-sections C, substantially as specified.

3. In a split pulley, the combination of the rim-sections A A, having a central inner flange *b*, provided with slots *k k*, the spider-sections C C, having partial hub portions *f*, of irregular contour on their interior, and opposite arms *a a'*, the bolts A, pivoting the spider-sections on opposite sides of the axis of the pulley to the rim-sections, the bolts *i i*, arranged to pass through the slots *k k* and connecting the opposite ends of the spider-sections with the rim-sections, and the clamping-bolts *g g*, all for operation in relation with the shaft carrying the pulley, essentially as shown and described.

409,879. TICKET-CASING FOR CAR-SEATS. REMSELAER J. SMITH, Albany, N. Y. Filed Nov. 3, 1888. Serial No. 290,268. (No model.)



Claim.—1. The combination, with a reversible car-seat, of oppositely-arranged fare boxes secured to the back thereof at its upper and lower edges, whereby one fare-box will always be in position to receive the fare, substantially as set forth.

2. A fare-box comprising a casing having a slot in its top, the transparent front G, the lower door, the outwardly-swinging plate hinged at its upper end within the casing just below the said slot, a spring throwing the lower edge of the plate to the front of the casing, and a pin projecting from the plate through a slot in the casing, substantially as set forth.

3. The combination, with a casing having slots in its top, of a transverse partition dividing the interior of the casing into compartments to which said slots lead, a hinged spring-plate held in each of the said compartments, a transparent front held in the said casing in front of the hinged plates, and a pin projecting from each of the hinged plates through slots in the sides of the casing, substantially as shown and described.

4. The combination, with a casing having slots in its top, of a transverse partition dividing the interior of the casing into compartments to which the said slots lead, a hinged spring-plate held in each of the said compartments, a transparent front held in the said casing in front of the hinged plates, and a pin projecting from each of the hinged plates through slots in the sides, and a door adapted to be locked and held in the lower part of the casing for removing the accumulated tickets from both compartments, substantially as shown and described.

409,880. CLOTHES-PIN. JOHN A. STEWART, Whitesborough, Tex., assignor of one-half to Robert B. Bolton, same place. Filed Apr. 12, 1889. Serial No. 307,043. (Model.)



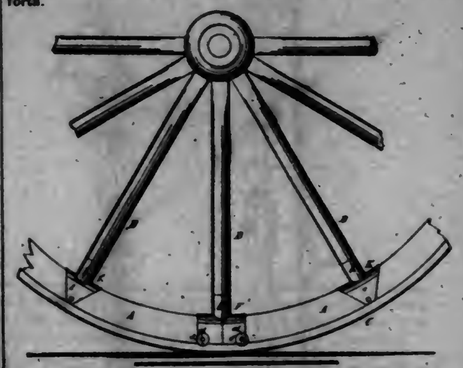
Claim.—1. A wire clothes-pin composed of a pair of spring-coils connected by a loop, the free ends of the wire forming said spring-coils being extended in the direction of said loop and connected by a ring or link which affords a bearing for the said loop when the latter is inserted between the free ends of the wire, substantially as herein set forth.

2. A wire clothes-pin composed of a wire bent to form a pair of spring-coils connected by a loop, the free ends of the wire extending from said spring-coils being connected by means of a ring or link, and provided with the loops G G, substantially as and for the purpose set forth.

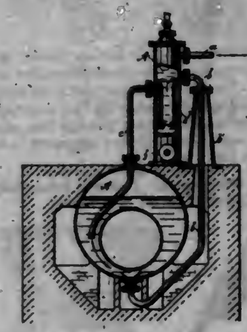
3. A clothes-pin comprising a wire bent to form the loop B, having angles I I, spring-coils C C, obtuse angles E E, facing each other, and angles F F and loops G G, formed upon the free parallel ends of the wire, in combination with a ring or link seated in the angles F F and connecting the free ends, and affording a bearing for the loop B, which is inserted between said free ends, substantially as and for the purpose herein set forth.

409,881. SPOKE AND FELLY FASTENING. HENRY D. TERRELL, Conyers, Ga. Filed Feb. 7, 1889. Serial No. 299,018. (No model.)

Claim.—A spoke-socket comprising a curved head or plate adapted to embrace the felly and forming the bottom of a socket extending from the convex side of said curved head and adapted to receive the end of a spoke, in combination with bolts or rivets passing transversely through the felly and through said head or plate, and washers extending over the edge of the tire, substantially as set forth.



409,882. FEED-WATER PURIFIER FOR BOILERS. LUDWIG H. THIELMANN, Brunswick, Germany. Filed Mar. 22, 1888. Serial No. 304,437. (No model.) Patented in Germany Oct. 9, 1886, No. 45,708.



Claim.—1. In a feed-water purifier for steam-boilers, the combination, with a boiler, of a pipe connected with the lower part thereof and extending through the boiler furnace or flue to a point above the water-level of the boiler, a vessel arranged above the water-level of the boiler and communicating with the pipe, and a pipe connected with the vessel and extending into the water-space of the boiler, substantially as specified.

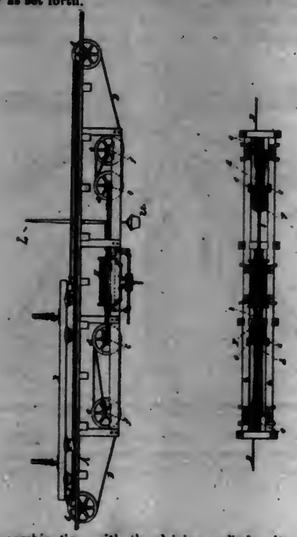
2. In a feed-water purifier for boilers, the combination, with the boiler, of a circulating-pipe connected with the water-space of the boiler and extending upward to a point above the water-level of the boiler, a purifying-vessel formed of a cylinder provided with a downwardly-projecting nozzle, the said circulating-pipe being connected with the separating-vessel above the nozzle, and a return-pipe connected with the separating-vessel below the nozzle and communicating with the water-space of the boiler, substantially as specified.

3. In a feed-water purifier, a separating-vessel formed of the hollow cylinder A, the cylindrical nozzle *d*, attached at its upper end to the walls of the hollow cylinder, the said cylindrical vessel being provided above the nozzle with two iodection-pipes—one for feed-water, the other connected with the lower part of the boiler and extending through the boiler-furnace—the said cylindrical vessel A having below the attachment of the nozzle *d* an eduction-pipe, substantially as specified.

409,883. POWER-FEED MECHANISM FOR LOG-CARRIAGES OF SAW-MILLS. CHARLES F. THOMPSON, Norwood, Ohio. Filed Aug. 28, 1886. Serial No. 212,117. (No model.)

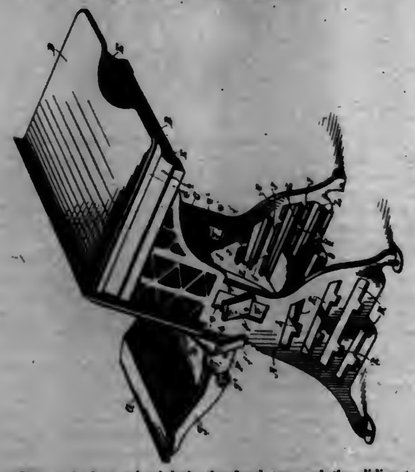
Claim.—1. The combination, with the saw-mill log-carriage, of a power-cylinder having its piston-rod projected at both ends, and carrying at each end a pulley-block arranged as a cross-head, a fixed pulley-block or set of pulleys attached at each end of the framing, beyond and in the line of stroke, and wire ropes connected to the carriage at each end and carried around fixed idlers at the ends of the carriage-runway, and thence rove around the movable and fixed pul-

leys, in succession, to a terminal fastening upon the cylinder-framing, substantially as set forth.



2. The combination, with the driving-cylinder, its cross-head guided by friction-wheels upon the cylinder-stanchions and carrying a set of pulleys, and a fixed set of pulleys secured to the stanchions, of the eyes or loops carried upon the shaft of the fixed set of pulleys, and the rope secured thereto and carried first over and then under the cross-head pulleys and opposite fixed pulleys alternately to the carriage, substantially as set forth.

409,884. SCHOOL-DESK. CHARLES B. TOWLE, Vallejo, Cal. Filed Apr. 10, 1888. Serial No. 306,734. (No model.)



Claim.—1. In a school-desk, the fixed top, and the sliding top separated therefrom to form a receptacle, in combination with the fixed side cleats, the runners secured to the sliding top and resting and moving on the side cleats, and guide-bars between the runners and side cleats, substantially as described.

2. In a school-desk, the fixed top, and the sliding top separated therefrom to form a receptacle, in combination with the fixed side cleats, the runners secured to the sliding top and resting and moving on the side cleats, and flanged guide-bars connecting the cleats and runners, substantially as described.

3. In a school-desk, the fixed top, and the sliding top separated therefrom and forming a receptacle, in combination with the fixed side cleats, the runners secured to the sliding top and resting and moving on the side cleats, and guide-bars secured in the runners and adapted to fit and move in a groove in the side cleats, whereby said runners and cleats are connected, said guide-bars having double-flanged portions, substantially as described.

4. In a school-desk, the fixed top and the sliding top, in combination with the fixed side cleats, the runners secured to the sliding top and resting and moving on the side cleats, whereby a suitable space is formed between the two tops, guide-bars secured in the runners and adapted to fit and move in grooves in the side cleats, and having one of their flanges cut away to form a shoulder, and stops in said grooves against which the shoulder of the guide-bars come in contact to limit the movement of the sliding top, substantially as described.

5. In combination with a fixed and a sliding part, the double-flanged guide-bar fixed in the sliding part and movable in the fixed part, said bar having one of its flanges cut away or omitted for a certain distance, forming a stop-shoulder, and a fixed stop in the fixed part against which said shoulder comes in contact to limit the movement of the sliding part, substantially as described.

6. In a school-desk, the sides thereof having the forward and back ratchet-teeth and the seat, in combination with the brackets supporting the seat, fitting against the desk-sides and having the grooved-faced separating bearing-plates overlapping and fitting against the desk-sides and engaging with their grooved faces the ratchet-teeth of said sides, the removable independent strip H between the seat and the desk-back, and the toothed irons or pawls A, carried by said strip and adapted to fit within the front bearing-plates and engage the forward ratchet-teeth of the desk-sides, whereby the brackets are locked in position, substantially as described.

7. In a school-desk, the vertically-adjustable brackets F, secured to the desk-sides and the seat G, in combination with the pivoted links g', connecting the inner end of the seat with the brackets, and the shorter links g^2, pivoted to said seat and brackets at points forward of the respective connections of the links g' therewith, whereby the seat may be turned from a horizontal to a vertical position, its inner end falling and its outer end rising, and fixed stops carried by the brackets for holding the seat in a horizontal position, substantially as described.

8. In a school-desk, the vertically-adjustable brackets F, secured to the desk-sides and the seat G, in combination with the pivoted links g', connecting the inner end of the seat with the brackets, the shorter links g^2, pivoted to said seat and brackets at points forward of the respective connections of the links g' therewith, whereby said seat may be turned from a horizontal to a vertical position, its inner end falling and its outer end rising, and the fixed stops on the inner surface of the brackets against which the seat-irons come in contact to hold the seat in a horizontal position, substantially as described.

9. In a school-desk, the sides thereof having on their inner surfaces the series of ledges J with spaces or openings j, in combination with the removable and adjustable foot-rest I, adapted to rest on the ledges, and having the locking-bar i on its under side adapted to fit in the spaces or openings j of the ledges, substantially as described.

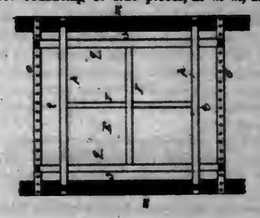
10. In a school-desk, the sides thereof having in their inner surfaces the series of ledges J with spaces or openings j, the series of openings K with offsets k in one of said sides, and the series of guard-flanges L on the other side, in combination with the removable and adjustable foot-rest I, adapted to rest on the ledges, and having the locking-bar i on its under side adapted to fit in the spaces or openings j of the ledges, substantially as described.

11. In a school-desk, the sides thereof having on their inner surfaces the ledges J, with spaces or openings j, said ledges being arranged in lines in vertical series, the lines being inclined at different angles with a horizontal plane, in combination with the removable and adjustable foot-rest I, adapted to rest on the ledges, and having the locking-bar i on its under side adapted to fit in the spaces or openings j of the ledges, whereby said foot-rest may be set at different inclinations, substantially as described.

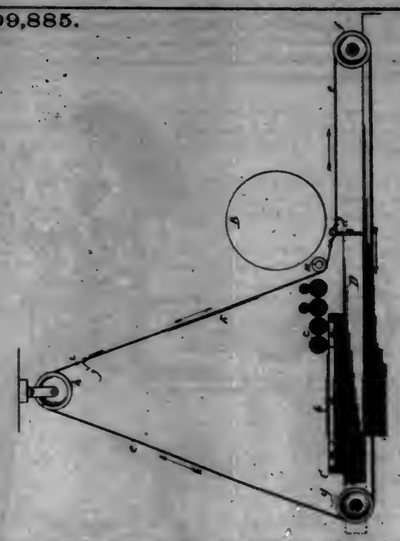
409,885. PRINTING-MACHINE. MICHAEL UHLEMSTOCK, Chicago, Ill. Filed Dec. 10, 1888. Serial No. 292,232. (No model.)

Claim.—1. In combination with the sliding bed of a printing-press, a frisket connected by cables with such bed, substantially as and for the purpose specified.

2. A frisket consisting of side pieces, as m m, and adjustable



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straps, in combination with cables connected with the frisket and with the sliding bed of a printing-machine, substantially as and for the purpose specified.

3. The combination of the sliding bed of a printing-press, a frisket connected with cables, and pulleys over which the cables run, substantially as and for the purposes specified.

4. In combination with the sliding bed of a printing-press, a flexible frisket connected with the sliding bed by means of cables, and a guide-roller u, substantially as and for the purposes specified.

409,886. SEA-OILING CARTRIDGE. ALBERT H. WALKER, Hartford, Conn. Filed Apr. 17, 1888. Serial No. 270,942. (No model.)



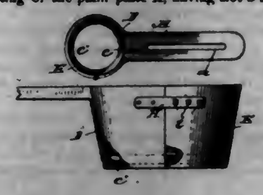
Claim.—1. A sea-oiling cartridge consisting of a projectile containing oil and having one or more unobstructed rearward circumferential openings from the interior to the exterior thereof, combined with a cartridge-shell containing powder and having the rearward end of the projectile inclosed and hermetically sealed by the forward part of the cylindrical walls of the cartridge-shell, all substantially as described.

2. A sea-oiling cartridge consisting of the shell A, provided with the block B and one or more unobstructed rearward circumferential openings C and D, and the oil-chamber E, in combination with the cartridge-shell F, provided with the powder-chamber G and closing the outward ends of those circumferential openings, all substantially as described.

3. The combination of a shell containing oil and having one or more unobstructed rearward circumferential openings from the interior to the exterior thereof, with a shell covering those openings, but adapted to be held back, and thus to uncover them, when the oil-shell is forced forward, all substantially as described.

409,887. LAMP ATTACHMENT. CATHARINE S. WALKER, Galveston, Tex. Filed Sept. 29, 1888. Serial No. 286,789. (No model.)

Claim.—The lamp attachment herein shown and described, the same consisting of the plain plate A, having slot a and formed at its

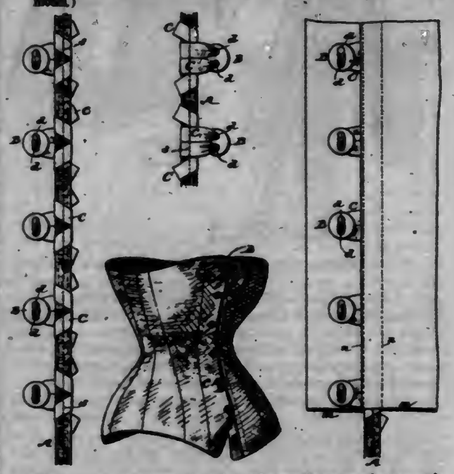


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outer end with the concaved section D, in combination with the section E, hinged to the section D and provided with a fastening device, the plate A being adapted to be secured in horizontal position to the surface of the table by a bolt and nut, substantially as described.

409,888. BUTTON-STRIP. EDWARD K. WARREN and JOSEPH H. AMES, Three Oaks, Mich. Filed Dec. 26, 1888. Serial No. 294,966. (No model.)



Claim.—As an improved article of manufacture, a button-strip consisting in a resilient blade A, a series of independent tapes stitched thereto at given distances apart, the stitches extending through the resilient blade, and buttons on said tapes, substantially as set forth.

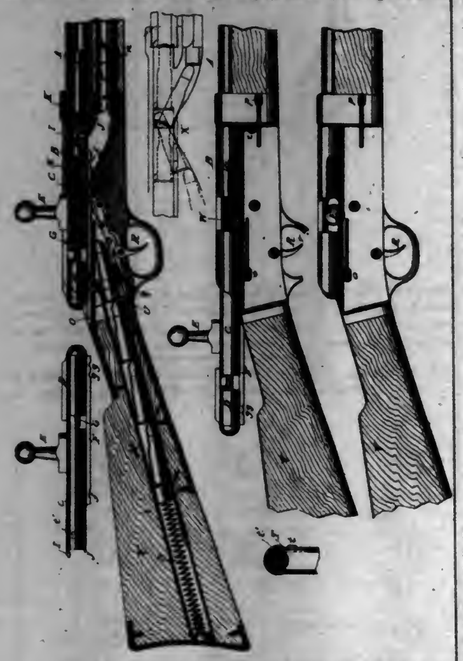
409,889. MAGAZINE FIRE-ARM. CHARLES P. H. WEATHERBY, New York, N. Y. Filed Oct. 24, 1887. Serial No. 253,173. (No model.)

Claim.—1. A sear pivoted at one end and provided with a ring through which cartridges pass to and from the magazine in the stock of the fire-arm, a detent extending from the under side and rear of said ring for arresting the succeeding cartridges while the preceding one is being discharged and its shell extracted, and the top of said ring being adapted to engage in cocking-notches in the under side of the bolt-pin, said sear and its actuating parts being made in one solid piece.

2. The combination of a combined sear and ring through which cartridges pass to and from the magazine in the stock of a fire-arm, a detent projecting from the rear and under side of said ring for arresting the movement of the succeeding cartridges in the magazine until the preceding one is discharged and its shell extracted, the top of said ring being adapted to engage in cocking-notches in the under side of the bolt-pin, with an independent trigger, which, by its independent action, permits the detent in the rear of the ring to positively obstruct the forward movement of the cartridges until relieved by said trigger.

3. In the herein-described magazine fire-arm, the combination of the magazine in the stock of said fire-arm, and the actuating spring therein, with a sear and ring through which the cartridges pass to and from said magazine, the extension or detent on the rear of said ring

for arresting the forward movement of the cartridge while each preceding one is being discharged from the fire-arm, the top of said ring being adapted to engage in cocking-notches in the under side of the bolt-pin, and the independent trigger engaging and operating said sear.



4. In combination with a fire-arm, a magazine extending from the butt to the muzzle thereof, and being provided with an actuating-spring in the extreme ends, while the central portion of the magazine terminates in the double inclined plane, the apex of which terminates beneath and within the plane of the under side of the reciprocating breech-bolt, whereby the cartridges from either magazine can be forced by their respective springs up the inclines when the breech-bolt is retracted in alignment with the bore of the barrel of said fire-arm.

5. In combination with a double magazine the entire length of the fire-arm, provided with actuating-springs in the extreme ends, while the inner ends terminate by means of a double incline in an aligning cartridge-chamber, through which the breech-bolt reciprocates, the two slide-plates which, when in position, arrest alternatingly the forward and backward movement of the cartridges in their respective magazines at the will of the operator while the fire-arm is being discharged.

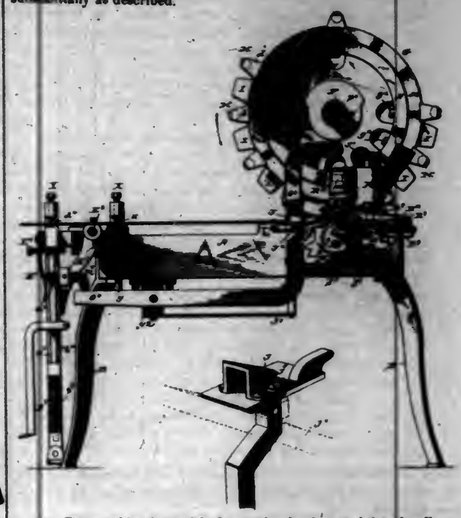
6. In a magazine fire-arm, the combination of a front and rear cartridge-magazine having terminal inclined planes terminating in an apex in the plane of the aligning chamber and beneath and within the plane of the under side of the reciprocating breech-bolt, the detent-slides for opening and closing alternately the ingress to said aligning chamber, whereby the cartridges can be forced alternately from their respective magazines up their respective inclines into the aligning chamber and forced by the breech-bolt into the bore of the barrel, thereby equalizing the diminishing weight of said magazine fire-arm while in use.

409,890. MACHINE FOR FORGING HORSESHOE-NAILS. DAVID F. WILLIAMS, Plattsburg, assignor of one-third to Timothy J. Sullivan, Albany, N. Y. Filed Apr. 4, 1888. Renewed Feb. 11, 1889. Serial No. 299,558. (No model.)

Claim.—1. In a horseshoe-nail machine, the combination, with an anvil, of a revolving carrier provided with a series of peripheral rollers and with a series of cam-surfaces, said rollers and cam-surfaces being on a disk common to both, horizontally-arranged hammers and dies, and an adjustable cutter or finishing-die, substantially as described.

2. In a horseshoe-nail machine, the combination, with the anvil, of a revolving carrier provided with a series of peripheral rollers and with peripheral bearing-surfaces alternating with the said rollers, and horizontally-arranged hammers provided with dies, substantially as described.

3. The combination, with the main frame and the revolving carrier and its rollers, of an adjustable frame supporting an anvil, a forming-die, and cutter-blade adapted to be operated by one of said rollers, substantially as described.



4. The combination, with the carrier having peripheral rollers, as described, and formed on each side with centrally-arranged cam-surfaces, of pivoted hammers with projecting rollers arranged in contact with said surfaces, substantially as described.

5. The combination, with the carrier having peripheral rollers and formed on each side with two series of alternating cam-surfaces, of pivoted hammers provided with dies and with projecting rollers arranged in contact with said cam-surfaces, whereby the dies of said hammers are alternately thrown inward and retracted, substantially as described.

6. The combination, with the revolving carrier and its rollers, of a movable and adjustable frame within which are supported the anvils, an adjustable former, and a spring-pressed arm carrying a cutter, said arm being depressed by contact with one of the rollers on the carrier, substantially as described.

7. The combination, with the carrier and its rollers, of one or more flat plain anvils and a beveled anvil, substantially as described.

8. The combination, with the frame, which supports the anvils, of guards and a die, and an adjustable former arranged within the die, substantially as described.

9. The combination, with the carrier and peripheral rollers thereon, of spring-pressed arm adapted to be pressed by contact with one of the rollers of the carrier, and an adjustable blade or cutter, substantially as described.

10. The combination, with the main frame, the carrier, and its rollers, of a frame arranged below said carrier and supporting the anvil or anvils, and the finishing devices, said frame being provided with appliances, substantially as described, whereby it is moved and retracted, substantially as described.

11. In a horseshoe-nail machine, the combination, with the revolving carrier and the horizontally-moving hammers and dies, of a stationary grip and a vibrating grip, substantially as described.

12. The combination, with the dies and the reciprocating punch, of the spring-actuated former arranged to move vertically, as set forth.

13. The combination, with the anvil R and the pivoted die-stock carrying the punch, of the guard R^3 and the guards, substantially as and for the purpose described.

14. The combination, with the block O and its attached appliances, of the carriage, the main shaft, and the cam T^{16} on the main shaft, and the connection between the carriage and the block, substantially as and for the purpose described.

15. The combination, with the block O and its attachments, of the carriage, the rod connecting said carriage and block, the cam T^{16} on the main shaft, the slide S^{13}, and the standards pivoted to said slide and carrying friction-rollers engaging said cam, substantially as and for the purpose described.

16. The combination, with the block O, its anvil and shearing-dies, and the former, of the nail-pusher, substantially as and for the purpose specified.

17. The combination, with the block O, its anvil and shearing-dies, and the former, of the inclined nail-pusher, substantially as described.

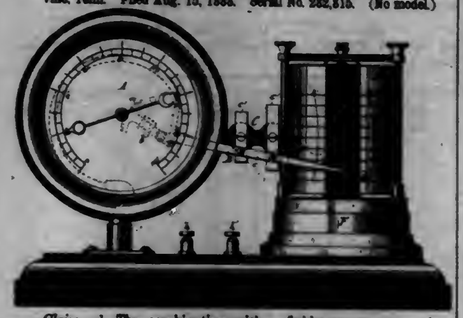
18. The combination, with the block O, its anvil and shearing-dies, and the former, of the inclined forked nail-pusher, substantially as described.

19. The combination, with the feed-arm b^4 and the spring-actuated rod c^4, arranged in bearings on said feed-arm, of the lever pivoted on said feed-arm and connected with said rod, substantially as and for the purpose specified.

20. The combination, with the movable grip, the feed-arm, and the rod c^3, of the lever m^4, pivoted on said arm and engaging said rod, the cam p^4 on the main shaft, and the lever o^4, substantially as described.

21. The combination, with the feed-arm and the spring E^3, of the lever E^7, bearing on the feed-arm in opposition to the said spring, substantially as described, and for the purpose specified.

409,891. ELECTRIC RECORDING-GAGE. JOSEPH WILLS, Nashville, Tenn. Filed Aug. 15, 1888. Serial No. 282,815. (No model.)

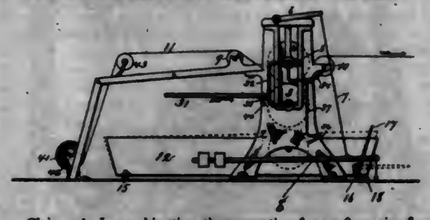


Claim.—1. The combination, with a fluid-pressure gage, of an arm adapted to move in accordance with the variations of the fluid-pressure, and an electro-magnet located adjacent to said arm and provided with pole-pieces extended across the field of movement of said arm, the armature of the said magnet being connected with the moving arm, as set forth.

2. A fluid-pressure gage and a chart, in combination with an arm carrying a stylus and moving in accordance with the variations of the fluid-pressure, and an electro-magnet located adjacent to said arm and provided with pole-pieces extended across the field of movement of said arm, the armature of the said magnet being connected with the moving arm, as set forth.

3. A fluid-pressure gage, a moving chart, and a clock-work for imparting to said chart a regular movement, a circuit-closer operated at regular intervals by said clock-work, all in combination with an arm geared to the moving element of said gage and adapted to move in front of said chart, a stylus connected with said arm, and an electro-magnet whose circuit is controlled by said circuit-closer and whose pole-pieces are extended across the field of movement of said arm, the armature of the said magnet being connected with the moving arm, substantially as described.

409,892. MACHINE FOR COATING CONTINUOUS STRIPS OF PAPER. OLIVER WOODWORTH and HENRY O. WOODWORTH, New London, Conn. Filed Sept. 8, 1888. Serial No. 284,959. (No model.)



Claim.—1. In combination, the supporting-frames 2, a pair of superimposed rollers journaled in said frames, a tank, a distributing-roll journaled in said tank adjacent to the lower roll of said pair, as set forth, cams 18, and operating-lever 17, attached to said tank, as described, by means of which the tank may be raised, all being substantially as and for the purpose specified.

2. In combination, three superimposed rollers, the lower one of the series being journaled in a vertically-movable tank, intermeshed gears on the shafts of said rollers, a vertically-movable tank beneath the lower roller, as set forth, a tubular scraper parallel with and in contact with the perimeter of said lower roller when the latter is raised, and a steam-pipe connected with said scraper, and devices for raising the tank, all being substantially as and for the purpose specified.

3. In combination, three superimposed rollers and a vertically-movable tank, as set forth, the lower one of the series of rollers being journaled in said tank, a cylindrical roller located at or about the level of the upper roller of the series, a tubular scraper parallel with and in contact with the perimeter of said lower roller when the latter is raised, steam-pipes leading to said cylindrical roller and to said tubular scraper, and cam and lever mechanism, as described, for raising the said tank and its attached roller, all being substantially as and for the purpose specified.

4. In combination, in a coating-machine of the class referred to, the following elements: three superimposed rollers and a vertically-movable tank, as set forth, the lower roller of the series being journaled in said tank, a cylindrical delivery-roller 10, located at about the level of the upper roller of the series, a tubular scraper parallel and in contact with the lower roller when the latter is raised, steam-pipes leading to and connected with the two upper rollers of the series, to the delivery-roller 10, and to the said tubular scraper, as set forth, intermeshed gears on the shafts of said superimposed rollers, and driving and raising mechanism, substantially as described, connected therewith.

409,893. LOCK-JOINT FOR BEAMS. ROBERT WRAY, New York, N. Y., assignor to himself, Walter S. Hamilton, and R. Knox Little, same place. Filed Apr. 3, 1888. Serial No. 305,819. (No model.)



Claim.—1. A lock-joint for beams, formed in two parts consisting of a socket portion to receive the end of a beam, and a hook portion to engage with a beam, the socket portion being connected to the hook portion by a dovetail projection on the socket portion engaging a dovetail socket in the hook portion, substantially as described.

2. In a lock-joint for beams, the dovetail-socket portion 2, having a hook 1, to engage and rest on a beam, substantially as described.

3. A lock-support for beams, formed in two parts consisting of the dovetail-socket portion 2, with hook 1, for engaging a beam, and the socket portion 4, to receive the end of a beam, with the dovetail projection 6, engaging the socket 3 in the hook portion 1, substantially as described.

409,894. CAR FOR THE TRANSMISSION OF SPECIE. GEORGE T. YORK, Caseyville, Ill. Filed Apr. 24, 1888. Serial No. 308,395. (No model.)

Claim.—1. A safety-car provided with a compartment adapted to swing in combination with a box located in the compartment, a pivoted latch mounted on the compartment, and a pendulous bolt mounted above the latch and directly over an opening therein, substantially as and for the purpose set forth.

2. The combination, with a car-body, of a frame pivoted therein, at one end of which is located a compartment, means for automatically unlocking the compartment when in a vertical position, and a second compartment pivotally mounted within the frame, and means for unlocking the same when in a vertical position, substantially as specified.

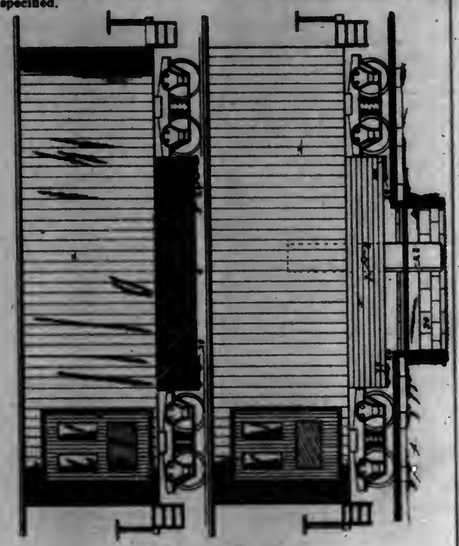
3. The combination, with a car-body, of a pivoted frame provided with a compartment at one end and a counterbalancing-weight at the opposite end, substantially as specified.

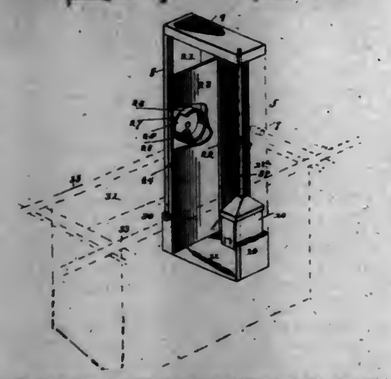
4. The combination, with the car-body, of the pivoted frame mounted therein, and a compartment pivotally mounted in the frame and of a width considerably less than the frame, substantially as specified.

5. The combination, with the car-body, of the pivoted frame mounted therein and provided at one end with a compartment, a pivoted latch mounted on the compartment and adapted to engage with the door thereof and provided with an opening, and a tube secured to the side of the frame and provided with a bolt terminating about flush with the latch and adapted to be brought over the opening therein, substantially as specified.

6. The combination, with the car-body, of a pivoted frame depending therefrom and provided with a compartment, and a second compartment pivoted within the frame and narrower than the same.

said narrow compartment being adapted for swinging downward into a vault agreeing in size therewith and too small to receive the frame, and the frame to swing into a wider compartment, substantially as specified.





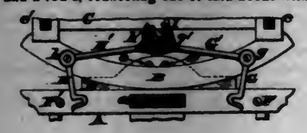
7. The combination, with the pivoted frame, of the pivoted box provided with the door and fixed bolt, and of the weighted disk mounted in the box and having an angular flange extending partially around the same, and an intermediate recess adapted to be brought into line with the bolt when the box is in a vertical position, substantially as specified.

409,895. **WATER-FILTERING MEDIUM.** JOHN B. ZIEGLER and JOHN F. ZIEGLER, Air Line Junction, Ohio. Filed Mar. 12, 1889. Serial No. 303,035. (No specimens.)

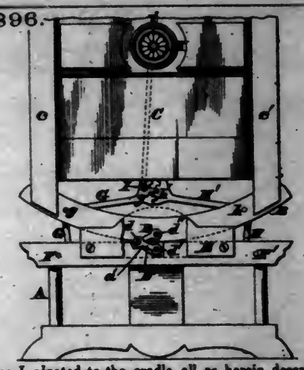
Claim.—The hereinbefore-described filtering composition composed of aluminous clay, alluvial or quick sand, and wood pulp, in about the proportions set forth.

409,896. **CRIB OR CRADLE.** PETER ACKER, Cincinnati, Ohio. Filed May 6, 1889. Serial No. 309,800. (No model.)

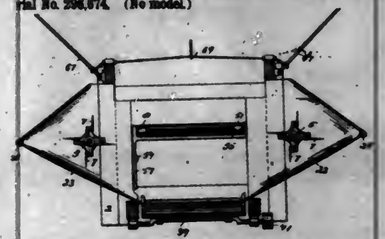
Claim.—In combination with a crib or cradle rocking upon a supporting base or stand, the pins F F', projecting from said base, the bell-crank hooks G G' H H', pivoted to the cradle at *g h*, respectively, and having at their inner ends segmental gears *g' h'*, which engage with each other and thereby produce a simultaneous movement of said hooks, and a rod I, connecting one of said hooks with the treadling device J, pivoted to the cradle, all as herein described and set forth.



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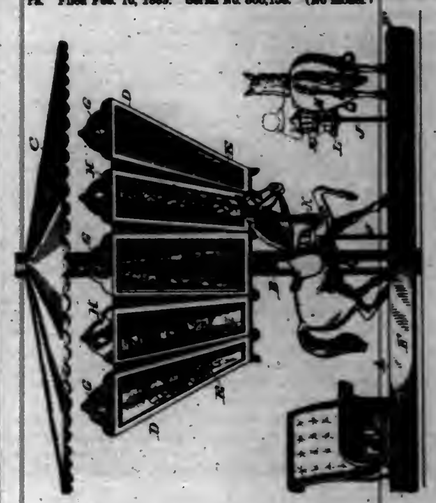
409,897. **BAND-CUTTER AND FEEDER FOR THRASHING-MACHINES.** WILLIAM H. ALSTON, Buffalo, Dak. Filed Jan. 17, 1889. Serial No. 296,674. (No model.)



Claim.—1. The combination, in a machine of the class described, with the main frame 2, and the revolving shafts provided with the series of knives 7, of the inclined tables 23, arranged at each side of the main frame and having their lower ends resting upon said frame 2, the rods 25, extending transversely and supporting the upper ends of said tables, the inclined brace-rods 27, extending to the frame below said tables, pivoted to said rods 25 and provided with hooks engaging staples upon said frame 2, and the inclined brace-rods 29, extending to the frame above said table, and also provided with hooks engaging staples upon the frame, for the purpose set forth.

2. The combination, with the inclined tables 23 and knives 7, of the rack 67, pivoted above said tables and arranged to cover said tables, and the cords 69, secured to said racks, for the purpose specified.

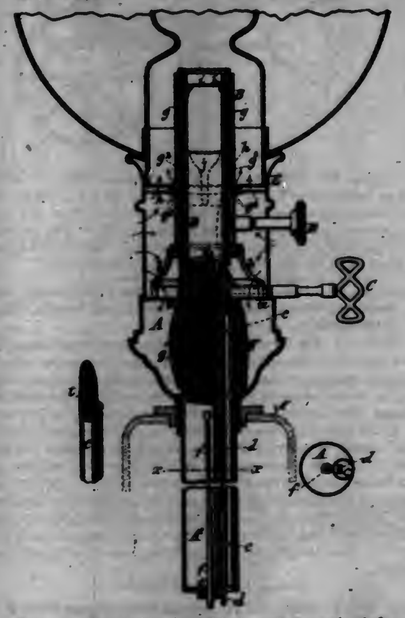
409,898. **MERRY-GO-ROUND.** JAMES R. APPLEGATE, Philadelphia, Pa. Filed Feb. 16, 1889. Serial No. 300,158. (No model.)



Claim.—1. A merry-go-round having a central vertical beam with a frame surrounding the same, the frame being of the form of a frustum of an inverted pyramid and having stationary mirrors thereon, and figures on the platform of the device, said parts being combined substantially as described.

2. A merry-go-round having a central beam and revolving platform, a frame of the form of the frustum of an inverted pyramid secured to said beam and provided with mirrors, a figure secured to said platform, a column between said figure and beam, a seat with foot-rest secured to said column, and a brace connecting said column and figure, said parts being combined substantially as described.

409,899. **MODERATOR OR CARCEL LAMP.** CHARLES D. ARIA, London, County of Middlesex, England. Filed Feb. 28, 1888. Serial No. 265,067. (No model.) Patented in England Nov. 22, 1887, No. 14,073; in France Dec. 3, 1887, No. 187,371; in Germany Dec. 3, 1887, No. 44,117; in Canada Feb. 22, 1888, No. 28,736; in Belgium Mar. 24, 1888, No. 80,758; in Austria-Hungary July 10, 1888, No. 8,888 and No. 34,804; in India Nov. 3, 1888, No. 106; in New South Wales Nov. 20, 1888, No. 1,085; in South Australia Nov. 20, 1888, No. 1,178, and in Italy Jan. 31, 1889, 24,687/246.



Claim.—1. The combination, with the main reservoir A' of a moderator or carcel lamp, of the secondary reservoir A, comprising a cup connected to said main reservoir, having a tubular extension A^3, depending therein and provided at its top with a ledge or rim *a*, a skeleton frame *b*, rising from the latter, the wick-case B, detachably secured to the upper end of the frame, the wick *g* in the wick-case, the auxiliary feed-wick *g'*, descending through the skeleton frame and the ledge or rim into the secondary reservoir, the moderator-rod *f*, rising in the tubular extension, and the oil-overflow tube *c*, rising through the tubular extension and cup comprising the secondary reservoir and terminating below and adjacent to the aforesaid ledge or rim for conveying an excess of oil back to the main reservoir, substantially as described.

2. The combination, with the main reservoir A' of a moderator or carcel lamp, of the secondary reservoir A, comprising a cup screwed into the former, having at its top the ledge or rim *a*, and at its bottom the tubular extension A^3, depending in the main reservoir, a skeleton frame *b*, rising from the ledge or rim and internally screw-threaded at its upper end, the wick-case B, screwed into the latter, the wick *g* in the wick-case, the feed-wick *g'*, descending through the skeleton frame and the ledge or rim into the secondary reservoir, the moderator-rod *f*, rising in the tubular extension, and the oil-overflow tube *c*, rising in the latter and terminating at its top end below and adjacent to the aforesaid ledge or rim, substantially as described.

3. The combination, with the main oil-reservoir A' of a moderator or carcel lamp, of a secondary oil-reservoir A, secured to and above the former and comprising a tubular extension A^3, depending therein, a moderator-rod *f*, and oil-overflow tube rising in the latter and terminating below the top thereof for conveying excess of oil back to the main reservoir, a wick-case B, supported above the secondary reservoir, and wick leading from the wick-case into the secondary reservoir, substantially as described.

4. The combination, with the main reservoir of a moderator or carcel lamp, of a secondary reservoir A, comprising a cup secured to and above the main reservoir, and a tubular extension A^3, depending in the latter, an overflow-tube *c*, rising in the tubular extension, open to air circulation, and terminating at its upper end below the top of the cup portion of the secondary reservoir, and a wick-case B, supported above the secondary reservoir, substantially as described.

5. The combination, in a moderator or carcel lamp, of the main reservoir, a secondary reservoir mounted thereon and communicating therewith, and comprising a cup provided at its top with an inwardly-projecting rim *a*, a chimney-supporting gallery E, supported by the cup, a skeleton frame *b*, arranged within the gallery and resting upon and supported by the said inwardly-projecting rim, a wick-case detachably secured to the upper end of the skeleton frame, and a wick passing from the secondary reservoir upwardly through the inwardly-projecting rim and skeleton frame, substantially as described.

6. The combination, in a moderator or carcel lamp, of the main reservoir, a secondary reservoir supported by the latter and comprising a cup having at its top an inwardly-projecting rim *a*, an overflow-tube *c*, rising within the secondary reservoir and terminating at a point beneath the said projecting rim, a skeleton frame *b*, resting on and supported by the rim, a chimney-supporting gallery E, inclosing the skeleton frame, a wick-case carried by the upper end of the skeleton frame, and a wick passing from the secondary reservoir through the rim and skeleton frame, substantially as described.

409,900. **TURFING IMPLEMENT.** MELVILLE C. AYER, Biddeford, Me. Filed Dec. 15, 1888. Serial No. 293,671. (Model.)



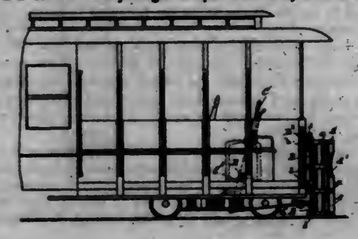
Claim.—1. A turfing implement comprising the sliding needle and grooved looper-blocks held face to face and recessed longitudinally on their adjacent faces, the needle secured rigidly to the inner face of the needle-block, the looper pivoted in the groove of the looper-block to rock toward and from the needle, a lever engaging the said looper and projecting into the path of the needle-block and positively operated by said block, substantially as set forth.

2. The combination, with a grooved needle-block carrying the needle and provided with fixed pins extending transversely through said groove, of a looper-block held to slide on the said needle-block, a looper pivoted in the said looper-block, a bell-crank lever fulcrumed in the said looper-block and engaging with one arm to said looper and having its other arm extending between the said fixed pins in the needle-block, substantially as shown and described.

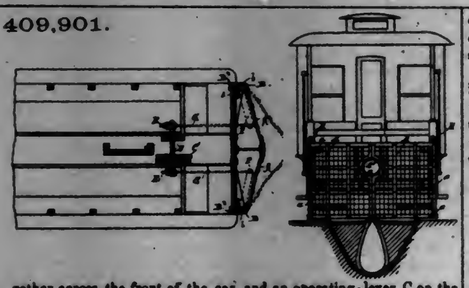
3. The combination, with a grooved needle-block carrying the needle and provided with fixed pins extending transversely through said groove, of a looper-block held to slide on the said needle-block, a looper pivoted in the said looper-block, a bell-crank lever fulcrumed in the said looper-block and engaging with one arm the said looper and having its other arm extending within the range of the said fixed pins in the needle-block, and a set-screw held in the said looper-block and serving to limit the motion of the said looper, substantially as shown and described.

409,901. **PILOT OR WHEEL-GUARD FOR STREET-CARS.** GEORGE H. BAHRS, San Francisco, Cal. Filed Apr. 24, 1889. Serial No. 308,496. (No model.)

Claim.—1. A pilot or wheel-guard for the front of a car, consisting of the hinged frames A A, attached at the outer edges to uprights B B on the car by hinges to open outwardly and to close to-



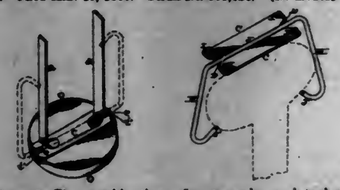
409,901.



gether across the front of the car, and an operating-lever C on the car, having suitable connection with said frames to throw them outward and move them in the opposite direction or toward each other, as hereinbefore described, for operation as set forth.

2. In a safety-pilot or wheel-guard for the front of a car or dummy, the combination of hinged frames or wickets A A, attached by hinges at the outer edges to open and close in opposite directions across the front of the car, the hand-lever C, rock-shaft D, lever-arms E E F F, and connecting-rods G G, applied to operate as set forth.

409,902. RAILWAY-TORPEDO. WALTER C. BECKWITH, Fostoria, Ohio. Filed Mar. 19, 1889. Serial No. 303,838. (No model.)



Claim.—1. The combination of a torpedo, a detachable clip, means for attaching it to the torpedo, and a wire for attaching the clip to the rail, substantially as shown.

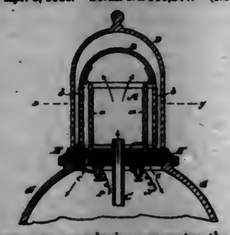
2. The combination of a torpedo with a detachable clip and means for attaching the clip to the torpedo, substantially as described.

3. The combination of the torpedo having flanges with the detachable clip, provided with turned-up ends for catching over the flanges, and the wire shaped so as to attach the torpedo to the rail, substantially as set forth.

4. The combination of the torpedo provided with flanges with the detachable clip having turned up ends and the bent wire attached to the torpedo by the clip and provided with the turned-up ends, substantially as specified.

5. The combination of a torpedo with a detachable clip and a fastening device for attaching the torpedo to a railroad-rail, substantially as shown.

409,903. OZONE APPARATUS. HILARION A. R. H. DE VARS, Paris, France. Filed Apr. 6, 1889. Serial No. 306,577. (No model.)



Claim.—1. In an ozone-producing apparatus, the combination of a receiver G, for the storage of the air, the stand E, having openings *c*, which communicate with the receiver, a cylinder A, mounted at one end on the stand, open at the opposite end and lined with foil *a*, the bell-cover B, inclosing the cylinder, mounted on the stand and lined with foil *b*, said cylinder and bell-cover being arranged with the openings in the stand between them, and wires N P, connecting the cylinder and bell-cover with an electric generator, substantially as described.

2. In an ozone-producing apparatus, the combination of an ebonite or other suitable stand E, provided with openings in the part between the grooves in which the cylinder A and the bell cover B respectively fit, such openings being intended to convey the air into the receiver G to be stored, a tube C, passing through the ebonite or other stand, a glass bell-cover D, covering the whole, and wires N P, connecting the cylinder and bell-cover with an electric generator, substantially as described.

3. In an ozone-producing apparatus, the combination of an ebonite or other suitable stand E with a cylinder A, the inner surface of which is covered with tin-foil *a*, connected by a wire N with the negative pole of an induction-coil, and a bell-cover B, the outer surface of which is covered with tin-foil *b*, connected by a wire P with the positive pole of an induction-coil, substantially as described and set forth.

409,904. PAINT COMPOUND. NEHEMIAH R. BONNER and IRA L. BURLINGAME, Pana, Ill. Filed Apr. 25, 1889. Serial No. 308,540. (No specimens.)

Claim.—The herein-described paint composition, consisting of mortar-cement, yellow ocher, Venetian red, rosin, sulphur, alum, burnt umber, lamp-black, asbestus, asphaltum, liquid japan, and coal-tar, in or about the proportions specified.

409,905. RICE-HULLING MACHINE. ARTHUR A. BOURGEOIS, Ariel, La. Filed Jan. 22, 1889. Serial No. 297,173. (No model.)



Claim.—The combination, with a corrugated plate 19, formed with an inclined face *b*, of a corrugated-faced plate 20, formed with an inclined section *d*, an agitator extending upward from the plate 20, a hopper that is entered by the agitator, a slide or trap arranged in connection with the hopper, a crank-shaft, and connections between the crank-shaft and the plate 20, substantially as described.

409,906. PROCESS OF PRINTING DARK BLUE COLORS. JOHN BRACEWELL, North Adams, Mass. Filed June 10, 1884. Serial No. 135,042. (No specimens.)

Claim.—1. The described process of printing dark blue indigo colors upon the fabric, which consists in applying the glucose solution upon only one side or face of the fabric and after drying the same applying to said side or face an aqueous mixture of indigo and caustic soda and steaming and washing the fabric, substantially as described.

2. The described process of printing indigo colors upon the fabric, which consists in applying an aqueous mixture of indigo and free caustic soda to the glucose-covered surface of the fabric and producing a reaction between them in such a manner as to be free from the presence of injurious salts of copper or other like metals by means and in the presence of a roller-surface incapable of forming salts injurious to said reaction from the effect of the free caustic soda, indigo, or glucose while undergoing the said reaction in its presence, substantially as described.

409,907. FRUIT-PICKER. STEPHEN BRASER, Preston Hollow, N. Y. Filed Mar. 28, 1889. Serial No. 305,126. (No model.)

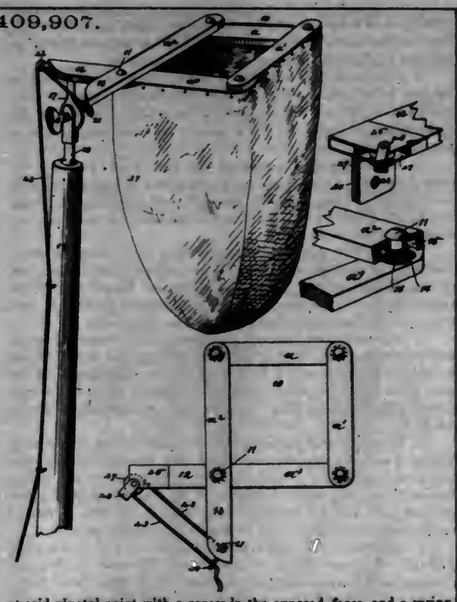
Claim.—1. In a fruit-picker, the combination of a lazy-tongs frame provided with a spring capable of forcing the tongs open, a bag attached to the body of the frame, and a handle and draw-line secured to the outer members of the said lazy-tongs frame, substantially as and for the purpose specified.

2. In a fruit-picker, the combination, with a spring-actuated lazy-tongs frame having two of the members of said frame projected beyond the pivotal point, and a bag attached to the frame, of a handle adjustably secured to one of the arms of the frame, a rope or chain attached to the free projecting member of the frame, and a guide-pulley or eye attached to the fixed projecting member over which the said rope or chain is passed, substantially as shown and described, whereby the frame may be contracted, as and for the purpose specified.

3. In a fruit-picker, the combination, with a spring-actuated lazy-tongs frame consisting of four members pivotally connected, two of the members being carried outward beyond their pivotal point, a bag attached to the frame, and a shank or post projected downward from one of the arms of the frame, of a handle provided with a bifurcated post in the upper end capable of receiving the said shank or post, a thumb-screw adjustably connecting the post and the shank, and a rope or chain or its equivalent secured to the free arm of the frame and passing loosely through an eye or equivalent device secured to the opposite arm, all combined for operation substantially as shown and described.

4. In a fruit-picker, the combination, with a lazy-tongs frame consisting of four members pivotally connected, two of which members are projected beyond their pivotal point at one corner, provided

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at said pivotal point with a recess in the opposed faces, and a spring coiled around the pivot and secured in the said recesses, of a bag secured to the frame, a handle, a pivotal adjusting connection between the handle and one of the frame-arms, and a rope or its equivalent attached to the free arm of the frame and passing loosely through an eye or equivalent device secured to the opposite frame-arm, substantially as and for the purpose specified.

409,908. MEAT-CUTTER. GUSTAVUS V. BERGEY, St. Louis, Mo. Filed Feb. 14, 1889. Serial No. 299,897. (No model.)



Claim.—The combination, with the casing and rotating shaft, of a series of cutters mounted on the shaft and holding-disks at the ends of said cutters, the outer face of one of said disks being provided with a groove for leading or drawing a lubricant to the shaft-bearing, substantially as described.

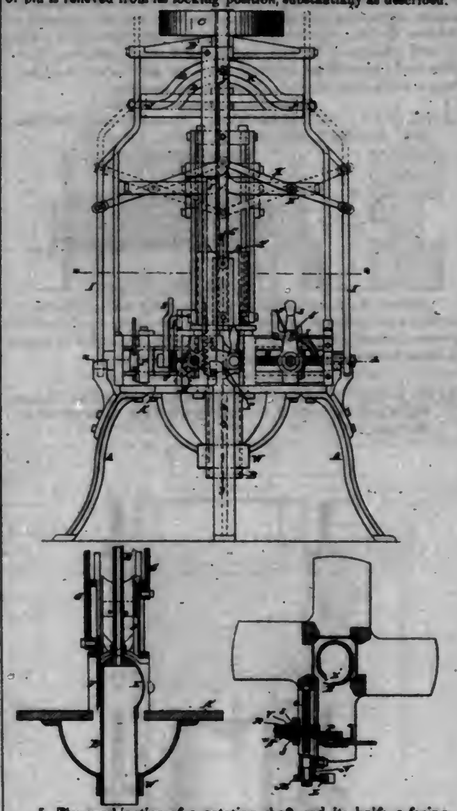
409,909. MACHINE FOR CUTTING WOODEN DISHES. DAVID H. BURNHAM, Grand Rapids, Mich. Filed Apr. 25, 1889. Serial No. 308,515. (No model.)

Claim.—1. A machine for cutting concave-convex dishes, comprising in its construction a rotating drive-shaft having a cam, and a curved knife and a reciprocating facing-knife connected to and operated by the cam on the rotating drive-shaft, the knives so arranged with reference to each other that the reciprocating facing-knife faces the block after each cut by the curved knife, substantially as described.

2. In a machine for cutting wooden dishes continuously from a block of wood, the combination of a rotating knife, a hollow shaft upon which the knife is mounted, said shaft adapted to receive the several dishes, and a facing-knife adapted to face the block after each cut of the rotating knife.

3. In a machine for cutting wooden dishes continuously from a block of wood, a revolving knife mounted on a hollow shaft provided with an opening for the reception of the dish as it is severed from the block, and an aperture extending the length of the shaft and adapted to receive a blast of air at one end for driving or forcing out at the other end of said shaft the severed dishes, substantially as described.

4. In a machine for cutting wooden dishes, the combination of a feed-screw, a slotted disk adapted to turn in opposite directions, a split nut adapted to engage with the threads of the feed-screw and provided with two pins, each engaging with a slot in the disk, a lever attached to the disk and provided with a pin or catch, a slotted arm or lever, a spring adapted to hold the arm or lever in position to lock the split nut in engagement with the feed-screw, and a coiled spring adapted through the lever to sever such engagement when the catch or pin is relieved from its locking position, substantially as described.



5. The combination of a rotating shaft and its knife, a facing-knife, a sliding knife-bar attached at one end to the facing-knife, a lever attached at one end to the knife-bar and at the other end provided with a pin or roller, and a cam-wheel rigidly attached to the shaft that rotates the knife and engaging said pin or roller, substantially as described.

6. The combination of a main drive-shaft, a cutter moved by the shaft, a grooved cam-wheel on the shaft, an arm having a device moving in the groove in the cam-wheel and terminating at the other end in a rack-bar, a pinion with which the rack-bar engages, and a ratchet operated by said pinion and engaging with the feed-screw and giving it an intermittent movement, substantially as described.

409,910. WICK-RAISER FOR CENTRAL-DRAFT LAMPS. EDSON L. BRYANT, Ansonia, Conn., assignor of one-half to Wallace & Sons, same place. Filed May 13, 1889. Serial No. 310,553. (No model.)



Claim.—1. The herein-described wick-adjuster for central-draft lamps, consisting of a ring to surround the wick, the diameter of the

ring in one direction somewhat less than the external diameter of the wick as it stands upon the tube, and the diameter of the ring at right angles to the said less diameter somewhat greater than the said diameter of the wick, and the ring constructed with a curved rod in the plane of its longer diameter, extending upward and through a suitable guide outside the burner, substantially as described.

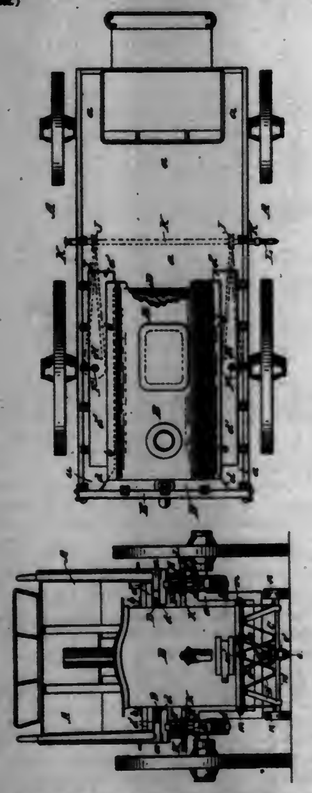
2. A wick-adjuster for central-draft lamps, consisting of the ring F, somewhat less in diameter in one direction than the external diameter of the wick as it stands upon the tube, and the diameter of the ring at right angles to the less diameter somewhat greater than the said diameter of the wick, and having a rod G extending therefrom in the plane of the longer diameter, the said rod and ring made from a single piece of wire, substantially as described.

409,911. EXTENSION-TABLE. WILLIAM H. BURK, Sheboygan, Wis. Filed Feb. 9, 1889. Serial No. 299,294. (No model.)



Claim.—A guide and stop block for extension-table slides, cut out to form a spring-tongue integral therewith, and having one face of the groove on its tongue side cut away for a certain distance of its length to offset said spring-tongue, substantially as set forth.

409,912. PORTABLE BOOMING-TANK APPARATUS. CHARLES BUEHLMAN, New York, N. Y. Filed May 13, 1889. Serial No. 310,496. (No model.)



Claim.—1. In portable tank apparatus, the main truck having a depressed axle, and an opening at its rear part allowing the truck to be backed around the tank, substantially as described, whereby the truck-body is adapted to sustain the tank by and above its bent axle, as set forth.

2. In portable tank apparatus, the main truck provided with an opening in its body allowing the truck to be backed around the tank, and provided also with a removable tail-board or piece applicable behind the loaded tank, substantially as herein set forth.

3. In portable tank apparatus, the main truck provided with an opening in its body allowing the truck to be backed around the tank, said body or platform being beveled off laterally at the rear of the tank-opening to guide the truck around the tank, substantially as herein set forth.

4. In portable tank apparatus, the main truck having a depressed axle and a rear body-opening, combined with a tank adapted to enter said opening above the bent axle, and provided with flanges or supports adapted to sustain it on the truck body or platform, substantially as herein set forth.

5. In portable tank apparatus, the main truck provided with a rear body or platform opening and loose planks adapted to close said opening, combined with a tank having lateral flanges or supports sustaining it on the loose planks laid on the truck-platform at each side of its tank-opening, substantially as herein set forth.

6. In portable tank apparatus, the combination, with a main truck provided with a rear body or platform opening, of a tank adapted to said opening and having flanges or supports sustaining it on the main truck-body, and a detachable truck adapted to the tank to support it when unloaded from the main truck, substantially as herein set forth.

7. In portable tank apparatus, the combination, with a main truck having a rear body-opening and a rear axle depressed at its center below said opening, of a tank adapted to the opening and having flanges or supports which sustain it on the main truck-body above the bent axle, and a detachable truck fitted to the tank in rear of the depressed main truck-axle, substantially as herein set forth.

8. In portable tank apparatus, the combination, with a main truck having a rear body-opening, of a tank adapted to said opening and provided with flanges or supports for sustaining it on the truck-body, and devices, substantially as specified, interposed between the truck body and axle for raising the body and thereby lifting the tank for loading it onto the main truck, substantially as herein set forth.

9. In portable tank apparatus, the combination, with a main truck having a rear body-opening, of a tank adapted to said opening and provided with flanges or supports for sustaining it on the truck-body, and screws threaded into nuts on the truck-body and stepped in bearings above the truck-axle, substantially as described, for the purposes set forth.

10. In portable tank apparatus, the combination, with a main truck having a rear body-opening, a depressed axle, wheels thereon, and springs on said axle sustaining the truck-body, of screws threaded into nuts on the truck-body and stepped in bearings above the truck-axle and springs, substantially as herein set forth.

11. In portable tank apparatus, the combination, with a main truck having a rear body-opening adapted to receive a tank, and screws threaded into nuts on the truck-body, one at each side thereof, and stepped at the truck-axle, of wheels on the screws, a transverse shaft on the truck, wheels on said shaft, and chains connecting the shaft and screw-wheels, substantially as described, for the purposes set forth.

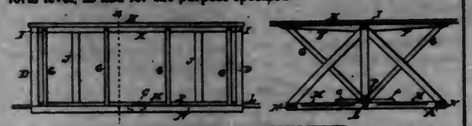
12. In portable tank apparatus, the combination, with a main truck having a rear body-opening, of a tank having upper flanges or supports sustaining it on the truck-body within its opening and provided also with a bottom flange, and a detachable wheeled truck for the tank made with hooks which loosely engage the bottom flange of the tank, substantially as herein set forth.

13. In portable tank apparatus, the combination, with a main truck having a rear body-opening, of a tank having upper flanges or supports sustaining it on the truck-body within its opening and provided also with a bottom flange, and a detachable truck made with three hooks engaging the bottom flange of the tank at two sides and the rear and provided with two forward wheels and one rear pilot-wheel, substantially as herein set forth.

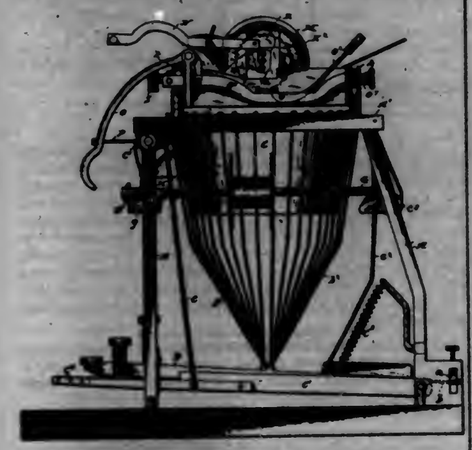
14. In portable tank apparatus, the combination, with a main truck having a rear body-opening and a tank adapted for support by the truck within said opening, of loose planks on the truck-body at each side of the tank-opening, and screws threaded to nuts on the truck-body and stepped above the axle and adapted to raise the truck-body and tank for loading the tank onto the truck, said screws passed through the loose planks to hold them in place to receive the tank as the truck backs onto and around it, substantially as herein set forth.

409,913. DUMPING-PLATFORM. EDWARD BURNS, Montello, Wis., assignor of one-half to the Berlin & Montello Granite Company, Chicago, Ill. Filed June 11, 1888. Serial No. 313,982. (No model.)

Claim.—A dumping-platform consisting of a stationary part which is formed of the sills A A N N, trusses E D, and the flanged cross-sill A' M, in combination with the tilting frame consisting of the sill P, plate K, posts J J, braces G, timbers F, and platform H, the plate K journaled to the tops of the trusses, and the cam-buttons C C pivoted to the flanged sill A' M to engage the sill P and hold the platform level, as and for the purpose specified.



409,914. TYPE-WRITING MACHINE. FRANK BURNS, Westfield, N. Y. Filed Apr. 9, 1889. Serial No. 306,512. (No model.)



Claim.—1. The combination, in a type-writer, of a tapering type-socket or shank and a member provided with a guide-hole corresponding in shape and dimensions with the base of the type-shank, substantially as described.

2. The combination of a type for type-writers, having a cylindro-conoidal shank or socket, and a centering-plate having a cylindrical guide-hole, substantially as described.

3. The combination, in a type-writer, of a loosely-mounted type-bar, a type having a tapering shank, as described, and a perforated centering-plate, substantially as described.

4. A key-lever and key-lever spring formed integral with each other of thin spring-metal plate, having the flat surface of the spring part at right angles with the flat surface of the lever part, substantially as described.

5. In a type-writer, the combination of a round rear track, a cylinder-carriage, and grooved rollers connected with the carriage and embracing the round track, substantially as described.

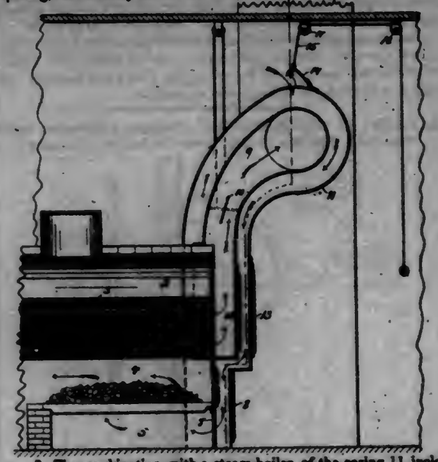
6. The combination, in a type-writer, of an intermittently-driven shaft carrying intergearing devices, a pair of spool-carrying shafts mounted to reciprocate in the direction of their length, a vibrating lever connected with the spool-carrying shafts, and a spring-stop whereby the inking-ribbon is mounted and operated step by step and reversed, substantially as described.

7. The combination, in a type-writer, of a carriage, a platen mounted in movable boxes, and a yoke or lever pivoted to the carriage, flexibly connected with the platen, and extending to the front of the machine to a point for conveniently raising and turning said platen, and thereby bringing the work to view, substantially as described.

8. The combination, in a type-writer, of a carriage having risers provided with "key-hole" slots, movable boxes fitted to reciprocate and rotate in said slots, an impression-cylinder mounted in the boxes, and a yoke connected with said boxes for raising and swinging the cylinder to bring the writing into view, substantially as described.

409,915. MEANS FOR UTILIZING THE RADIATED HEAT OF BOILERS. FRANK H. BUTTS, Minneapolis, Minn. Filed May 6, 1889. Serial No. 309,767. (No model.)

Claim.—1. The combination, with a steam-boiler, of a casing surrounding and inclosing the front of the boiler and its fire-box and ash-pit doors, and the uptake or smoke-pipe of the same, with a continuous air-space between said casing and said surfaces having communication with the fire-box of the boiler, and an inlet for the outer air arranged at or near the top of said casing, whereby the air taken into the fire-box is received from the upper part of the boiler-room and conducted over the heated surfaces of the boiler directly to the draft-opening, substantially as and for the purposes set forth.



2. The combination, with a steam-boiler, of the casing IJ, inclosing the smoke-pipe and boiler-front, with a continuous air-space between the same communicating with the ash-pit, and the air-inlet 16, arranged in the upper part of said casing, provided with the door 14, and the doors 8 and 13, arranged in said casing and allowing access to the fire-box and ash-pit doors and boiler-front, substantially as described.

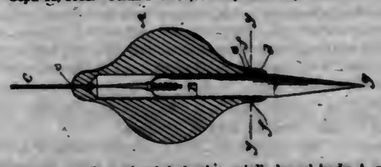
409,916. METAL CEILING. FRANK G. CALDWELL, Wheeling, W. Va. Filed June 8, 1889. Serial No. 313,595. (No model.)



Claim.—1. As a new article of manufacture, a recessed ceiling-panel composed of an open frame and a metal sheet secured to one side of said frame, substantially as described.

2. As a new article of manufacture, a recessed ceiling-panel composed of an open frame having tongued-and-grooved edges and a metal sheet secured to one side of said frame, substantially as described.

409,917. PLUMB-BOB. JOHN M. CAMERON, Philadelphia, Pa. Filed Sept. 18, 1888. Serial No. 285,693. (No model.)



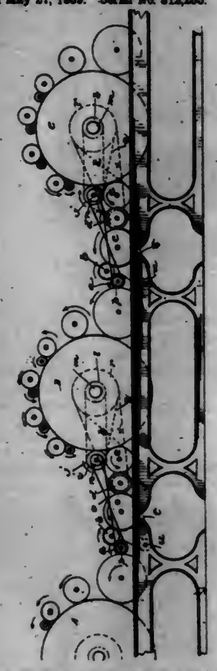
Claim.—1. In a plumb-bob, the axially-bored body A, provided with the annular chamber *d*, and a split spring-ring *c*, held within the chamber, said chamber *d* having lateral apertures *f*, whereby a suitable tool may be inserted to remove the split spring-ring, substantially as specified.

2. In a plumb-bob, the combination of an axially-bored body A, carrying the cord C, and provided with the annular chamber *d*, the split spring-ring *c*, held in said chamber, and the point B, fitted to the bore of the body A and adapted to be adjustably clamped by the split spring-ring, substantially as shown and described.

3. As an improved article of manufacture, a plumb-bob consisting of an axially-bored body provided with a clamping-ring in the lower end of the bore, and a reversible point having a conical-pointed part at one end and a removable point at the other, as set forth.

4. The combination of the axially-bored plumb-bob body A, the point B, provided with the spring-arms *j*, the auxiliary point *i*, provided with the shank *p*, and the spring-ring *c*, adapted to clamp the point B in the body A, substantially as specified.

409,918. CARDING-MACHINE. FREDERICK H. CARPENTER, Louisville, Ohio. Filed May 27, 1889. Serial No. 312,233. (No model.)



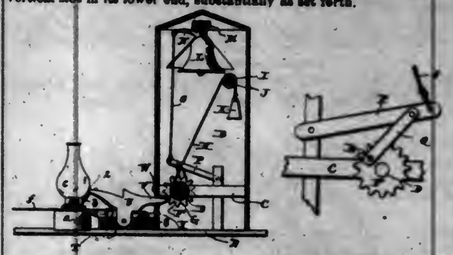
Claim.—1. In a train of carding-engines, first and second breaker-cylinders equipped with the usual appurtenances, a stripping and stretching roller to take the stock from the doffer of the first breaker, spreading and evening rollers arranged next to the stripper and stretcher, and another stretching-roller arranged next to the second breaker-cylinder, and which also serves to feed the stock to the said second breaker-cylinder, combined with a finishing-card and similar stripping and stretching and spreading and evening and stretching and feeding rollers interposed in the order named between it and the second breaker, substantially as described.

2. In a train of carding-engines, first and second breaker-cylinders equipped with the usual appurtenances, a stripping and stretching roller to take the stock from the doffer of the first breaker, spreading and evening rollers, and means to impart a longitudinal vibration thereto, arranged next to the stripper and stretcher, and another stretching-roller arranged next to the second breaker-cylinder, and which also serves to feed the stock to the said second breaker-cylinder, combined with a finishing-card and similar stripping and stretching and spreading and evening and stretching and feeding rollers interposed in the order named between it and the second breaker, substantially as described.

409,919. BURGLAR-ALARM. ELMIRA CARTER, Clio, Tex. Filed Mar. 27, 1889. Serial No. 304,970. (No model.)

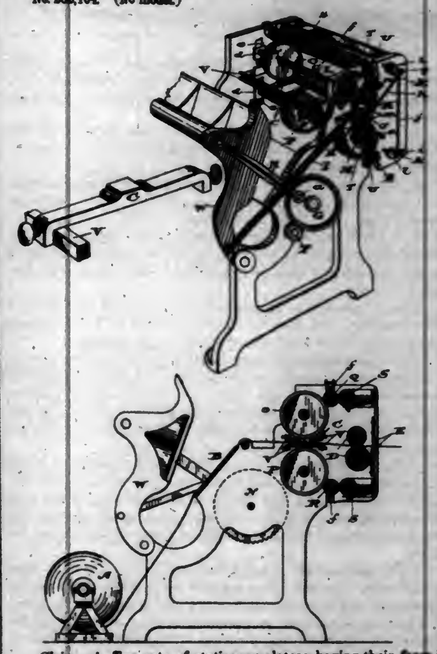
Claim.—1. The combination, with a suitable casing, of a shaft having a winding-drum, a rope connected to said drum and passing over a pulley, a weight attached to said rope, a crank at the outer end of the main shaft, a ratchet-wheel at the inner end of said shaft, a pitman connected to said ratchet-wheel and pivoted at its free end to a vibrating arm pivotally attached to the casing, a rope connecting the outer end of said arm with a bell hung in the top of the casing, and a latch adapted to engage the ratchet-wheel, substantially as set forth.

2. The combination of the casing, the shaft having the winding-drum, a rope connected to the latter passing over a pulley and having a weight attached thereto, a ratchet-wheel at one end of the shaft a pitman connecting said ratchet-wheel with the alarm-sounding mechanism, a spring-latch engaging the ratchet-wheel and having a cam-lever pivoted in a notch at its front end, the lamp having a scratch-plate attached to its burner, and the lamp-chimney having a vertical slot in its lower end, substantially as set forth.



3. The combination of the casing, the main shaft having a ratchet-wheel at its inner end, a pitman connecting said ratchet-wheel with a vibrating arm, a cord connecting the latter with a suitably-arranged bell, a weight adapted to be raised by means of the main shaft and to rotate the latter by its descent, a spring-latch arranged to engage the ratchet-wheel, a match-holding device at the front end of said latch, a lamp arranged in proximity thereto and having a scratch-plate attached to its burner, and a prop adapted to support the outer end of the latch and connected by means of a suitably-arranged cord with the entrance to be guarded, substantially as and for the purpose herein set forth.

409,920. MACHINE FOR NUMBERING PAPER. JOHN R. CARTER, Toronto, Ontario, Canada, assignor, by mesne assignments, to Carter & Company, (Limited,) Niagara Falls, N. Y. Filed May 14, 1886. Serial No. 202,164. (No model.)



Claim.—1. Two sets of stationary platens having their faces in substantially the same plane and facing in opposite directions, and two sets of intermittently-changing printing-types, in combination with mechanism arranged to impart a reciprocating action to the two sets of type, so as to bring each set of type against its respective platen, substantially as and for the purpose hereinbefore described.

2. The combination of two sets of intermittently-changing printing-types supported in reciprocating bearings, two sets of stationary platens having their faces in substantially the same plane and facing in opposite directions, and mechanism arranged to impart a reciprocating motion to the two sets of type in opposite directions to bring each set of type against its respective platen, substantially as and for the purpose specified.

3. The pitman I, connected at one end to the pivoted printing-head, which derives a rocking movement through the pitman H from the revolving spur-wheel G, and at its other end to the coupling-link J, in combination with the spindles L and M and the type-rollers carried thereby, and the bars K, arranged to connect the spindles L and M to the coupling-link J, substantially as and for the purpose specified.

4. The coupling-link J, provided with guide-pieces *h*, which fit into their respective slots *c*, made in the frame N, and the bars K, connecting the spindles L and M to the coupling link J, in combination with the spindles L M, type-rollers O P, and the bearing-boxes *d*, supporting the spindles L and M and fitting into the vertical slots *c*, arranged substantially as and for the purpose specified.

5. The combination, with the press-head W, coupling-link J, and pitman I, connecting said head and link, of the spur-wheels T, dogs *m* on said link and arranged to engage with said spur-wheels, the upper roller S, and connections between said roller and the coupling-link, whereby the spur-wheels T and roller S are rotated simultaneously, as set forth.

6. The combination, with the press-head W, coupling-link J, pitman I, connecting said head and link, the spur-wheels T, and the dogs *m*, pivoted on said link and arranged to engage said spur-wheels, of the upper and lower rollers S, and connections between said rollers and between said upper roller and the link J, whereby said spur-wheels and rollers are all operated simultaneously, as set forth.

7. The coupling-link J, spur-wheels T, and dogs *m*, pivoted on the coupling-link J and arranged to engage with the spur-wheels T, as specified, in combination with the rollers Q and R, intermittently-changing printing type-wheels, the upper roller S, the rod *h*, connected at one end to the coupling-link J and at its other end to the arm *g*, which is loosely journaled upon the spindle of the upper roll S, the dog *k*, pivoted on the arm *g* and arranged to engage with the ratchet-wheel *l*, secured to the spindle of the said roller S, and means for reciprocating said link at stated intervals.

8. The dogs *m*, pivoted on the coupling-link J and arranged to engage with the spur-wheels T, as specified, the rod *h*, connected at one end to the coupling-link J and at its other end to the arm *g*, which is loosely journaled upon the spindle of the upper roller S, and the dog *k*, pivoted on the arm *g* and arranged to engage with the ratchet-wheel *l*, secured to the spindle of the said roller S, in combination with the rollers Q and R, intermittently-changing printing type-wheels, the upper and lower rollers S, the rod *j*, connected at its upper end to the arm *g* and at its lower end to the arm *i*, which is loosely journaled on the spindle of the lower roller S and has a dog *k* pivoted on it and arranged to engage with the ratchet-wheel *l*, secured to the spindle of the lower roller S, and means for reciprocating said link J at stated intervals, substantially as and for the purpose specified.

9. The platens C, adjustably connected upon bars secured to the frame of the machine, so that the faces of the platens shall face in the opposite direction, but will be in substantially the same plane, in combination with the type-rollers O and P, adjustably connected to their spindles, which derive a reciprocating action, so as to bring the faces of the type-rollers simultaneously against their respective platens.

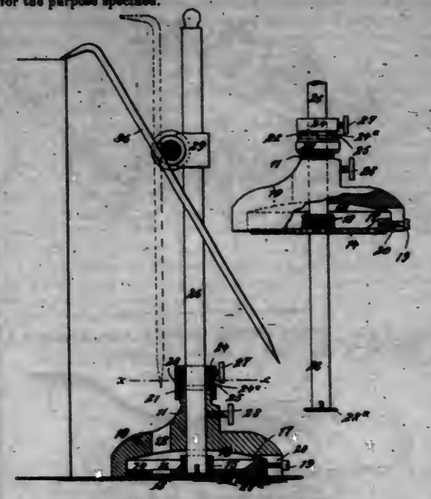
409,921. COMBINED SURFACE, SCRATCH, AND DEPTH GAGE. THOMAS R. CASSIDY, Hoosick Falls, N. Y. Filed Oct. 15, 1888. Serial No. 288,089. (No model.)

Claim.—1. The combination, with a disk-like head provided with a central aperture and a threaded collar surrounding said aperture, of a sleeve screwed upon said collar, a thimble held in contact with said sleeve, a rod loosely passed through the head, the sleeve, and thimble, and a clamping device attached to the thimble, substantially as shown and described.

2. The combination, with a disk-like head provided with a central aperture, a threaded collar surrounding the aperture, a sleeve screwed upon said collar, and a detachable thimble provided with a set-screw secured to said sleeve, of a rod loosely passed through the head, the sleeve, and thimble, a clamp movable upon the rod, and scriber-arms adjustably held by said clamp, substantially as shown and described.

3. In a combined surface, scratch, and depth gage, the combination, with a recessed base having a central aperture and an aperture at one side of the said central aperture, of a rod adjustably secured in the central aperture of the base, a disk on the lower end of the rod and having an aperture in alignment with the side aperture of the base, and scribe-clamp adjustably secured to the upper end of the said rod, and scribe-rods carried by said clamp, substantially as described.

4. The combination, with a base provided with a vertical side bore, a disk provided with a corresponding bore loosely held in said base, an interiorly-grooved sleeve provided with an upper face recess screwed upon the base, and a thimble provided with an exterior annular lip detachably attached to the sleeve, of a gage-rod loosely passed through the disk, the base, the sleeve, and thimble, a clamp adjustable upon the rod, scriber-arms adjustably and detachably held by said clamp, and means, substantially as described, for locking the base and rod or the thimble and rod, all combined to operate as and for the purpose specified.



409,922. BOTTLE-STOPPER. JOHN H. CHESEBRAH, Syracuse, N. Y., assignor of one-half to Lewis H. Redfield, same place. Filed May 6, 1889. Serial No. 309,700. (No model.)



Claim.—1. The combination, with the bottle and its stopper, of a bail formed with a rigid cross-bar integral with the arms of the bail, a cam pivoted at right angles and at two points, respectively, at the end portions of said cross-bar, and a lever extending from one of the pivotal portions of the cam down along one of the arms of the bail and adapted to interlock with said arm at the side of the bottle, substantially as described and shown.

2. The combination, with the bottle and its stopper, of a bail pivoted to the bottle, a cam pivoted to said bail and connected to the stopper, and a lever attached to said cam and having its free end adapted to interlock with one of the arms of the bail, as set forth and shown.

3. The combination, with the bottle and its stopper, of a bail pivoted to the bottle and a wire wound around the cross-bar of the bail at opposite sides of the center of its length and bent intermediately into an offset and connected thereby to the stopper, and one end of said wire extended along the side of one of the arms of the aforesaid bail and terminated with a lateral bend adapted to interlock with said arm of the bail, substantially as described and shown.

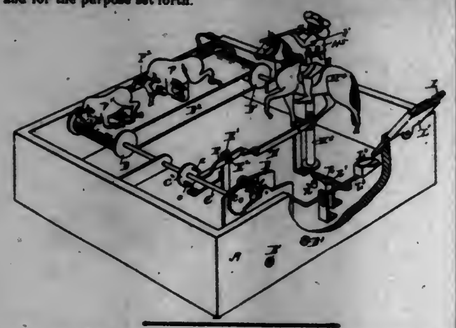
4. The improved bottle-stopper attachment consisting of the bottle formed with the sockets *a a*, the bail *b*, having its ends inserted in said sockets, a wire wound into coils *c c*, embracing the cross-bar of the bail and bent intermediately into the shape of the offset *d*, and having the extension *d* along the side of one of the arms of the bail and terminating with the lateral bend *e*, adapted to interlock with said arm of the bail, and the stopper C, hung on the aforesaid offset *d*, substantially as described and shown.

409,923. COIN-OPERATED TOY. FRANK O. CLAFLIN, Boston, Mass., assignor of one-half to Thomas S. Mann, same place. Filed May 22, 1889. Serial No. 311,734. (No model.)

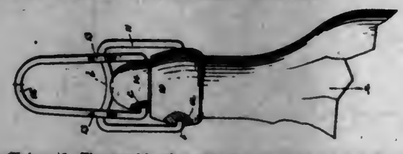
Claim.—1. In a mechanical toy set in operation by the dropping of a coin, the combination of the toy hunter having movable arms and head and the gun H°, and mechanism for giving motion to said parts, with the moving animal figures and mechanism for giving motion to said figures, substantially as and for the purpose set forth.

2. In a mechanical toy set in operation by the dropping of a coin,

having a figure of a hunter and figures of animals, some of said figures of animals being adapted to fall at fixed intervals, the combination of the mechanism for operating said figures with the stop device consisting of the stop-pin L^7, lever L^8, and coin-box L^9, substantially as and for the purpose set forth.



409,924. BOTTLE-STOPPER. FINLEY Y. CLARK, Saratoga, N. Y. Filed Jan. 16, 1889. Serial No. 296,479. (No model.)



Claim.—1. The combination, with the stopper-head and the bottle-head, of a bail pivotally mounted at the bottle-head to swing above and against the top of the stopper-head to hold the stopper in place, and a lifting-lever pivotally engaging the stopper-head and the bail, substantially as herein shown and described.

2. The combination of the cork and a screw passed through it, a head engaging the screw and the cork, a lever connected to the head and formed with loops, and a bail resting within the lever-loops, said bail being constructed for connection with a bottle or neck band, substantially as and for the purposes herein shown and described.

409,925. FLOWER-BOX. ANNIE CLELAND, New Orleans, La. Filed May 15, 1888. Serial No. 310,918. (No model.)



Claim.—1. The flower-box A, curved in at its rear side to form the rectangular recess and having the rear discharge-opening in said recess, the perforated false bottom supported above its solid bottom, and the supporting-bars B B, substantially as set forth.

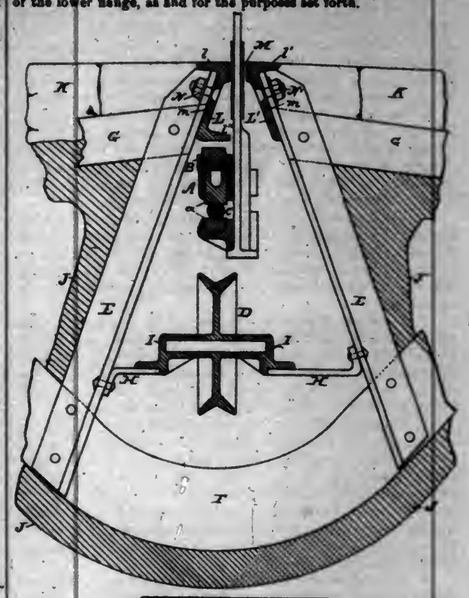
2. The combination of the box having the pockets *a*, the rear clips, and the discharge-opening, a perforated false bottom, and the bent supporting-bars having the upwardly-bent lower ends, substantially as set forth.

3. The combination of the box having the pockets *a*, the rear clips, and the discharge-opening, the perforated false bottom, the bent supporting-bars having the upwardly-bent lower ends and perforated upper ends, the screws, and the staples, substantially as set forth.

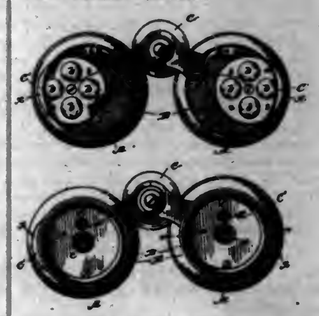
4. The combination of the box having the pockets *a*, the internal end supports and cross-bar, the discharge-opening, and the rear clips, the cork, the perforated false bottom, and the supporting-bars, substantially as set forth.

409,926. CABLE OR ELECTRIC STREET-RAILWAY. LEWIS M. CLEMENT, Oakland, and GEORGE C. WATERS, San Francisco, Cal. Filed Dec. 14, 1888. Serial No. 293,641. (No model.)

Claim.—The herein-described slot-iron L for street-railways having subways to carry the actuating mechanism, consisting, essentially, of an upper surface flange *l*, bottom flange *l'*, and a web *m*, passing diagonally from the inner edge of the upper flange to the outer edge of the lower flange, as and for the purposes set forth.



409,927. OPERA OR FIELD GLASS. ABNER R. CLEMENTS, U. S. Navy, assignor to Levy, Dreyfus & Co., New York, N. Y. Filed Mar. 30, 1889. Serial No. 305,479. (No model.)

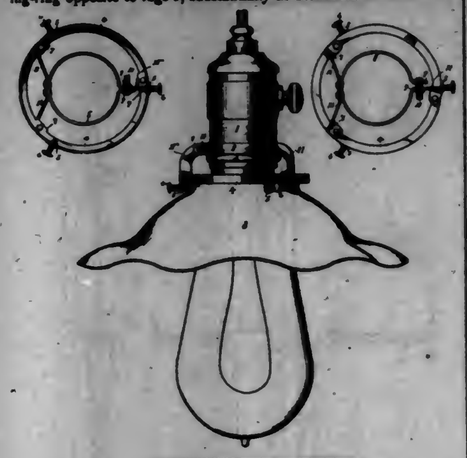


Claim.—1. As a new article of manufacture, an opera or field glass consisting of the barrels A and folding frame, extension-tubes B, each having an independently-adjustable lens-carrying disk C, pivoted eccentrically with relation to the eye-aperture and bearing a series of numbers or symbols corresponding to the eye-lenses, substantially as described.

2. As a new article of manufacture, an opera or field glass consisting of the barrels A and folding frame, extension-tubes B, each having an independently-adjustable lens-carrying disk C, pivoted eccentrically with relation to the eye-aperture and projecting laterally beyond the cap of the extension-tube, a series of numbers or symbols on said disk corresponding to the eye-lenses, an opening in the cap of the extension-tube through which said numbers are displayed, and a detent for maintaining said disk in position, substantially as described.

409,928. SHADE OR GLOBE HOLDER. BENJAMIN L. COE, Waterbury, Conn., assignor to the Steele & Johnson Manufacturing Company, same place. Filed Apr. 17, 1888. Serial No. 307,619. (No model.)

Claim.—A shade or globe holder consisting of a ring 4, to which the shade or globe may be attached in any suitable manner, a ring 8, which is adapted to clasp a fixture and is provided with lugs 9, a screw engaging said lugs to clasp and unclasp ring 8, and holding-arms whereby said ring is connected to the shade-ring, one of said arms being formed integral with the clasping-ring, being a continuation of leg 9, and curved downward and riveted to the shade-ring, and the other arms being riveted to the shade-ring and to the clasping-ring opposite to legs 9, substantially as described.



409,929. INCANDESCENT-ELECTRIC-LAMP SOCKET. JAMES W. COLLIER, New York, N. Y. Filed June 10, 1889. Serial No. 313,676. (No model.)

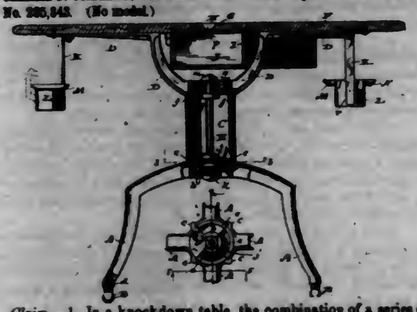


Claim.—1. The non-conducting holder having the socketed main-wire contacts *f f* and their permanent connections molded and embedded within its body and provided with the non-conducting cap B, as and for the purposes hereinbefore set forth.

2. The non-conducting holder having the socketed main-wire contacts *f f* and their permanent connections and provided with the non-conducting right and left screw-cap B, adapted at once and by the same movement to clamp the main or leading-in wires into place and to screw upon the bracket or support for said socket, as set forth.

3. An incandescent lamp-holder, of hard rubber or equivalent non-conducting material, formed in one piece, containing a lamp-socket, and a switch-receiving chamber solidly partitioned from said socket and having molded and embedded in it the fixed contacts for the lamp, switch, and main or leading-in wires, together with the permanent connections between said contacts, and provided with a movable circuit-controlling switch or cam piece in said chamber, a key-stem extending through the side of the holder into said chamber and detachably engaged with both the holder and the cam-piece, and a removable cap for closing the rear end of the switch-receiving chamber, as set forth.

409,930. KNOCKDOWN TABLE. EDWARD A. CORNELLIE and CHARLES P. CORNELLIE, Milwaukee, Wis. Filed Sept. 20, 1888. Serial No. 285,843. (No model.)



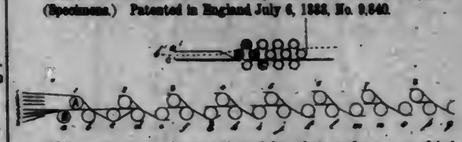
Claim.—1. In a knockdown table, the combination of a series of supports terminated at one end in eyes that converge toward a common center to lie one above another, and lateral extensions shaped to make close joints and form a wall around the eyes, a rod passed through said eyes, and nuts arranged on the rod to clamp said supports in place, substantially as set forth.

2. In a knockdown table, the combination of a series of legs and a series of top-supporting brackets, the members of each series terminating at one end in eyes that converge toward a common center to lie one above another, and lateral extensions shaped to make close joints and form a wall around the eyes, a rod passed through all the eyes, and nuts arranged on the rod to clamp said legs and brackets in place, substantially as set forth.

3. In a knockdown table, the combination of a series of legs and a series of top-supporting brackets, the members of each series terminating at one end in eyes that converge toward a common center to lie one above another, and lateral extensions shaped to make close joints and form a wall around the eyes, a sleeve inserted between the legs and brackets, a rod passed through the sleeve and all the eyes, and nuts arranged on the rod to clamp said legs and brackets in place, substantially as set forth.

4. In a table, the combination of the top having a V-shaped slot cut therein, a correspondingly-shaped plug for the slot provided with an eye, a pin for engagement with the eye, and a sliding drawer arranged to come under said slot, substantially as set forth.

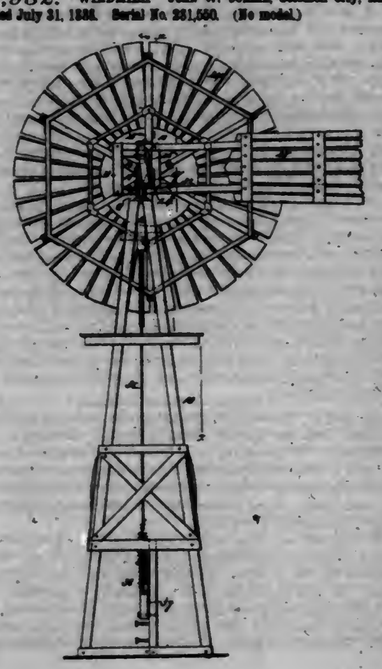
409,931. CHENILLE FABRIC. JAMES CRABTREE, Heckmondwike, County of York, England. Filed Sept. 18, 1888. Serial No. 285,632. (Specimens.) Patented in England July 6, 1888, No. 9,840.



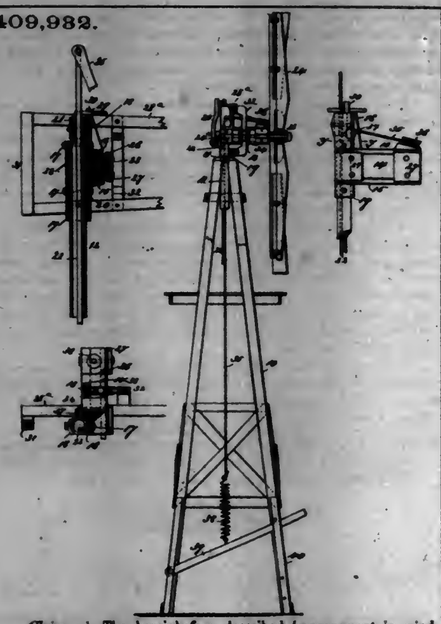
Claim.—1. As an improved article of manufacture, a fabric whereof the fur or chenille weft appears only on one face, said fabric consisting of a fur or chenille weft, a backing-weft, and a single warp, which latter binds together the two wefts, and serves also as a stuffer-warp, as set forth.

2. As an improved article of manufacture, a fabric wherein the fur or chenille weft appears only on one face, said fabric consisting of a fur or chenille weft, a backing-weft, and a single warp which binds together the two wefts, and serves also as a stuffer-warp, said warp being divided into sections, as described.

409,932. WINDMILL. JOHN W. CURRIE, Solomon City, Kans. Filed July 31, 1888. Serial No. 281,560. (No model.)



409,932.



Claim.—1. The hereinbefore-described improvement in windmills, comprising the pump-rod tube, a sleeve loosely mounted thereon, a pump-rod reciprocating in said tube, a wind-wheel frame, substantially as shown and described, detachably secured to the tube above the sleeve, journal-boxes detachably secured to the said frame, a wheel-shaft journaled in said boxes, a crank and pitman connection between said shaft and pump-rod, and the vane, said vane provided with forwardly-projecting arms, one of said arms (the upper) pivoted upon the wheel-frame and the other connected to the sleeve, said connections being in the same vertical plane, substantially as and for the purpose set forth.

2. In a windmill, the combination of the wind-wheel frame, the pump-rod tube detachably secured thereto, the detachable boxes secured to wheel-frame, as shown, a sleeve loosely mounted on said tube below the wheel-frame and the wind-wheel shaft, the vane 28, disposed to one side of the tube, provided with forwardly-extending arms 28², pivoted, one (the upper) to the wheel-frame, the other to the sleeve, said connections being in the same vertical plane, and a stop-bar 31, secured to one side of the ends of the arms 28², said bar projected laterally from said arms, whereby the said vane may be turned in direct line with the shaft when the mill is in operation, said parts all arranged substantially as and for the purpose described.

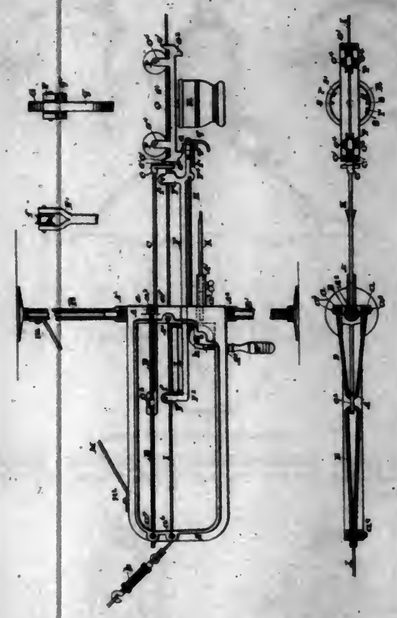
3. The combination, with the wind-wheel frame, the piston-rod tube secured thereto, a sleeve 19, loosely mounted on said tube, and the wheel-shaft journaled in bearing-boxes secured to the wheel-frame, provided with a brake-pulley 34, of the vane 28, disposed to one side of the tube, provided with forwardly-extending arms 28², one of which (the upper) is pivoted upon the wheel-frame, as at 29 30, the other connected to the sleeve 19, cross-bars 31 32, secured to the arms 28², one at each side of their pivotal points, and a brake-shoe 33, attached to the inner bar, the bar 31 limiting the outward movement of the vane when it is turned to the wind, said brake-shoe engaging the brake-pulley 34 when the vane is turned out of the wind, substantially as shown and described.

409,933. CASH-CARRIER APPARATUS. JOHN G. DAVIS, Detroit, Mich. Filed Mar. 21, 1889. Serial No. 304,235. (No model.)

Claim.—1. In a cash and parcel carrier apparatus, the combination, with a supporting-frame and a track with a car thereon, of a plunger, a propelling-spring, a check-spring connected to said plunger, said check-spring acting automatically as a check or brake to the plunger, substantially as set forth.

2. In a cash and parcel carrier apparatus, the combination of a frame, a plunger, a propelling-spring, a check-spring, a track with car thereon, a wheeled draw-bar supported by the track and carrying the catch G, the cord H, and handle H', substantially as set forth.

3. In a cash and parcel carrier apparatus, the combination, with a supporting-frame and a track with car thereon, of a plunger adapted to slide through an aperture in said frame, and a propelling-spring and a check-spring attached to the frame and each connected to an eye in the plunger, substantially as set forth.



4. In a cash and parcel carrier apparatus, the combination of the supported frame A, the plunger C, the springs D and E, the track I, with car thereon, the draw-bar F, detachably connected to the car, means for releasing the car, the operating cord and handle, and the spring L, substantially as set forth.

5. In a cash and parcel carrier apparatus, the combination, with a supporting-frame, a plunger, a propelling-spring connected thereto, a track with a car thereon, and a draw-bar detachably connected to the car and provided with an operating cord and handle, of a check-spring connected to the plunger and to the frame, substantially as set forth.

6. In a cash and parcel carrier apparatus, the combination, with the frame A, the track I, with a car thereon, the wheeled draw-bar F, supporting the catch G and detachably connected to the car, the plunger C, the propelling-spring D, and the cord H, with handle H', of the check-spring E, connected to the plunger and to the frame, substantially as set forth.

7. The combination, with the frame A, the track I, with car thereon, the draw-bar F, the plunger C, the springs D and E, and the cord H and handle H', of the returning-springs L, substantially as set forth.

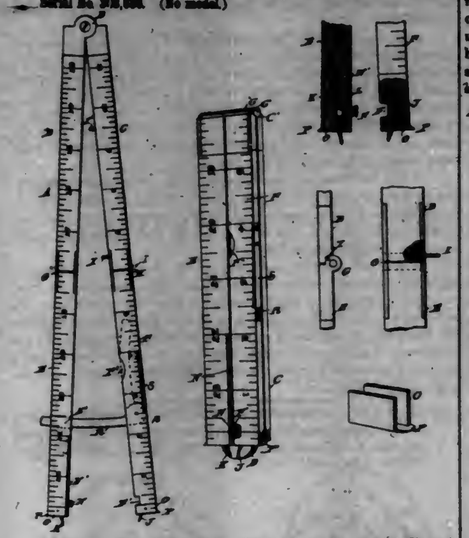
8. In a cash and parcel carrier apparatus, the combination, with a supported frame, a track with a car thereon, and a plunger to which is connected a propelling-spring, of a wheeled draw-bar adapted to ride on the track and provided with a returning-spring, the draw-bar and plunger being in the same vertical plane, one being above, the other below, the track, and together forming a spring buffer or cushion for the car to come in contact with, substantially as set forth.

9. A cash and parcel carrier apparatus comprising the following elements: a frame, a standard, a plunger, a propelling-spring and a check-spring, a track with a car thereon, a wheeled draw-bar supported by and designed to ride on the track, an operating cord and handle, and a returning-spring, substantially as set forth.

10. In a cash and parcel carrier apparatus, and in combination with the standard B, the frame A, carrying the grooved wheel A, the socket A', and the trip-rod K, the plunger C, the springs D and E, the wheeled draw-bar F, carrying the catch G and spring L, and the cord H, attached to the draw-bar and passing over the wheel A and having the handle H', substantially as described.

11. In a cash and parcel carrier apparatus, the combination of the standard B, the frame A, carrying the socket A' and the trip-rod K, the plunger C, the springs D and E, the track I, with a car thereon, the wheeled draw-bar F, carrying the catch G, the spring L, the cord H, and handle H', substantially as set forth.

409,934. COMBINED CARPENTER'S RULE, CALIPERS, DIVIDERS, &c. WILLIAM A. DELMAGE, Lowell, Mass. Filed Mar. 18, 1889. Serial No. 303,998. (No model.)



Claim.—1. The combination, with a rule having two middle and two outer members jointed to fold at three points, of a fixed compass-point secured in an inclined position in one outer member, a lead-pencil held loosely in an inclined position in the other outer member, a clamp engaging the said lead-pencil, a set-screw screwing against the said clamp to lock the said pencil in place, and an arm pivoted on one outer member and adapted to extend through an opening in the opposite outer member, substantially as shown and described.

2. The combination, with a rule having two middle and two outer members jointed to fold at three points, of a fixed compass-point secured in an inclined position in one outer member, a lead-pencil held loosely in an inclined position in the other outer member, a clamp engaging the said lead-pencil, a set-screw screwing against the said clamp to lock the said pencil in place, an arm pivoted on one outer member and passing through an opening in the opposite outer member, and a spring for holding the said pivoted arm in place, substantially as shown and described.

3. A combined drawing and measuring instrument comprising a jointed rule having its outer members connected to the middle members by lock-hinges and adjustably connected together, one of the said outer members being provided with a point and the other with a pencil, substantially as described.

4. A combined drawing and measuring instrument comprising a rule having two middle and two outer members, the outer members being connected to the middle members by lock-hinges and adjustably connected together, one of the said outer members being provided with a point and cutter and the other with a pencil and cutter, substantially as herein shown and described.

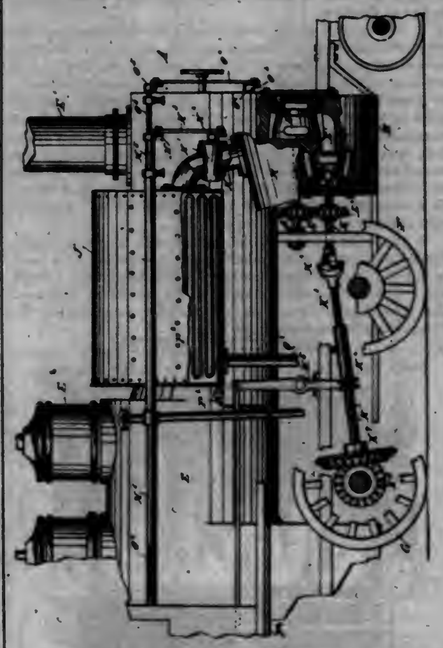
5. A combined drawing and measuring instrument consisting of a jointed rule A, provided with the arm R, hinged to one member of the rule and engaging the other member, the point J in the end of one member, the pencil K in the end of the other member, and the cutters P Q, projecting laterally from the ends of the said members, substantially as described.

409,935. WAGON-STANDARD. NELSON R. DEPPE, Confluence, Pa. Filed May 9, 1889. Serial No. 310,135. (No model.)



Claim.—The combination, in a wagon-standard, of the vertical member *b*, having the plain tenon at its lower end and upset and perforated at its upper end to form the ring-eye, the inclined member or brace *b'*, having the plain tenon at its lower end and united at its upper end with the vertical member adjacent to the upset portion, both of said members having lateral flanges to serve as strengthening means and at their lower terminal portions as supporting-shoulders, substantially as set forth.

409,936. LOCOMOTIVE. JAMES DUN BERRAY, Vancouver, British Columbia, Canada. Filed Aug. 16, 1888. Serial No. 282,944. (No model.)



Claim.—1. The combination, with two high-pressure cylinders, a rotary valve controlling both cylinders, a passage leading from said valve into the smoke-box, and a valve therefor, of the low-pressure cylinder and a passage leading from said rotary valve thereto, substantially as set forth.

2. In a locomotive, the combination, with two high-pressure cylinders and two low-pressure cylinders, of a rotary valve controlling both high-pressure cylinders and two rotary valves deriving steam from the first-named rotary valve and controlling the said two low-pressure cylinders, substantially as shown and described.

3. In a locomotive, the combination, with two high-pressure cylinders and two low-pressure cylinders, all connected with the driving-wheels, of a rotary valve controlling the inlet and exhaust steam of the said high-pressure cylinders, two additional rotary valves connected by a passage with the exhaust-port of the said first-named rotary valve, said two rotary valves controlling the low-pressure cylinders, and a condenser into which the exhaust steam from said two rotary valves is discharged, substantially as shown and described.

4. In a locomotive, the combination, with two high-pressure cylinders connected with the drive-wheels, of a rotary valve controlling the inlet and exhaust steam of the said cylinders, two rotary valves connected with the exhaust-port of said first-named rotary valve, low-pressure cylinders connected with the driving-wheels and controlled by the said two valves, pipes leading from the exhaust of the said two rotary valves, and a condenser into which said pipes discharge, substantially as shown and described.

5. In a locomotive, the combination, with two high-pressure cylinders connected with the driving-wheels, of a rotary valve controlling the inlet and exhaust steam of the said cylinders, two rotary valves connected with the exhaust-port of the first rotary valve and operating simultaneously with the said first-named valve, low-pressure cylinders connected with the driving-wheels and controlled by the said two valves, pipes leading from the exhaust of the said two rotary valves, a plug-valve in each of the said pipes, and branch pipes lead-

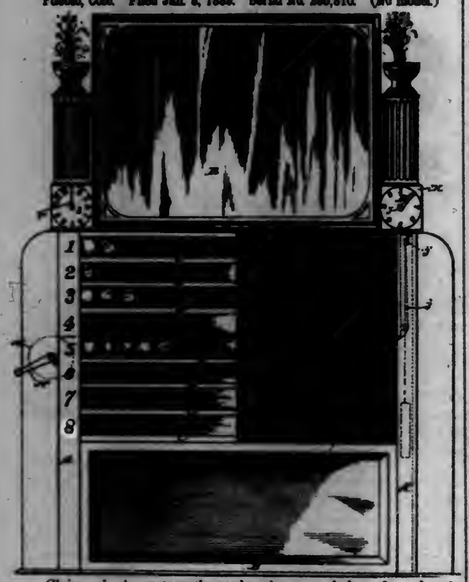
ing from the said plug-valves to the smoke-stack, substantially as shown and described.

6. In a locomotive, the combination, with two high-pressure cylinders connected with the driving-wheels, of a rotary valve controlling the inlet and exhaust steam of the said cylinders, two rotary valves connected with the exhaust-port of the said first-named rotary valve, low-pressure cylinders connected with the drive-wheels and controlled by the said two valves, a condenser into which the exhaust-steam from the said two rotary valves is discharged, an air-pump operated from one of the driving-wheels and connected with the said condenser to exhaust its vapors, and a pump connected with the said condenser for returning the water of condensation to the boiler, substantially as shown and described.

7. In a locomotive, the combination, with two high-pressure cylinders connected with the drive-wheels, of a rotary valve controlling the inlet and exhaust steam of the said cylinders, two rotary valves connected with the exhaust-port of the said first-named rotary valve, low-pressure cylinders connected with the driving-wheels and controlled by the said second rotary valve, a condenser into which the exhaust-steam from the said two rotary valves is discharged, an air-pump operated from one of the driving-wheels and connected with the said condenser to exhaust its vapors, a pump connected with the said condenser for returning the water of condensation to the boiler, and a pump for circulating cold water through the said condenser, substantially as shown and described.

8. The combination, in a locomotive, with two high-pressure cylinders and a rotary valve controlling both cylinders, of a low-pressure cylinder into which said rotary valve exhausts, having a rotary valve provided with a shaft rotated from the shaft of the first-named valve, the pistons of the several cylinders being connected with the driving-wheels, substantially as set forth.

409,937. AUTOMATIC POOL-REGISTER. THOMAS C. DEVLIN, Pueblo, Colo. Filed Jan. 8, 1889. Serial No. 295,810. (No model.)



Claim.—1. An automatic pool-register consisting of an electric circuit and battery, an inclined trough or way for the balls having a movable plate or bar in the same for making and breaking said circuit by the passage of the balls, a series of counters for the different players, an electro-magnetic adjusting device for the counter, and an electric switch for throwing the circuit through any one of the electro-magnetic adjusting devices, substantially as described.

2. In a pool-register, the combination, with a series of shelves, of a series of balls or counters arranged thereon, a series of shutters arranged in front of the same, and adjusting devices for removing the shutters from their position in front of the ball, consisting of a rack-bar on the back of the shutter, a toothed wheel engaging the same and provided with a ratchet and a hub, a cord and pulley actuating the hub, and an electro-magnet and detent-armature engaging the ratchet, as described.

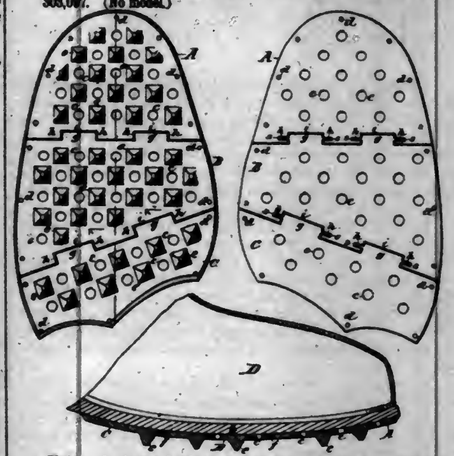
3. In a pool-register, the combination of a series of shelves bearing balls or counters, a series of sliding shutters covering the same, a vertical resetting-bar for pushing the shutters over the counters again, a game-counter dial and index-hand for registering the number of games, and an adjusting-handle and connecting devices for resetting the shutters and actuating the game-register with a single movement, as set forth.

4. In a pool-register, the combination of the series of horizontal shelves with balls or counters arranged thereon, of a series of sliding shutters D, having toothed racks *b* on their rear sides, the vertical shaft E, with wheels *c* arranged thereon and provided with hubs *c'* and ratchets *c²*, the magnets G, with detent-armatures *d*, a series of weights and cords or springs for moving the shutters away from the balls, and an electric circuit and circuit-closer for actuating the magnets, substantially as shown and described.

5. The combination, with the shelves, the counters, and the sliding shutters, of the resetting-bars L L', the cord *k*, grooved pulley M, crank-handle N, fixed upon a shaft having tappet *l*, the vertical bar *n*, with leg *m*, spring *o*, and tooth *h*, and the dial *s*, index-hand *r*, and ratchet *q*, substantially as described.

6. The pool-register consisting of the columns A A', base B, shelves C, with ball-counters between them and a space for the battery below them, the shutters arranged in front of the balls upon one side and a blackboard arranged upon the other side, electric devices for operating the shutters, a player's switch-board arranged at the top of column A', and a game-counter arranged at top of column A, and a mirror R, arranged between the two, substantially as shown and described.

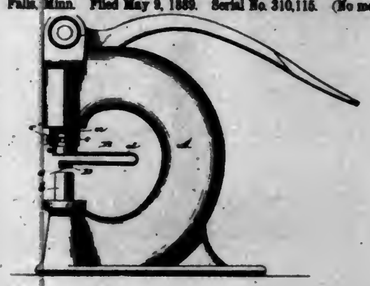
409,938. SOLE-PROTECTOR FOR BOOTS OR SHOES. JOHN G. DICKSON, Beaver Falls, Pa., assignor of two-thirds to John W. McDonald and Allen R. McDonald, same place. Filed Mar. 13, 1889. Serial No. 303,097. (No model.)



Claim.—1. A metal sole protector shaped to cover the entire sole and formed in sections having their adjacent edges provided with interlocking recesses and projections *i g*, the projections having pintles *h h*, and the opposing section having pintle-recesses *e e* on its upper face at opposite sides of the recesses *i*, substantially as set forth.

2. A metal sole-protector shaped to cover the entire sole and formed in three sections A B C, provided with projections *e* on their lower faces, the adjacent edges of the three plates or sections being provided with recesses *i* and projections *g*, beveled as at *f*, the pintles *h h* on said projections, and the pintle-recesses *e e* in the upper sides of the sections A B, at opposite sides of the recesses *i i*, substantially as set forth.

409,939. RIVETING-MACHINE. ABRAHAM G. DIGBY, Granite Falls, Minn. Filed May 9, 1889. Serial No. 310,115. (No model.)

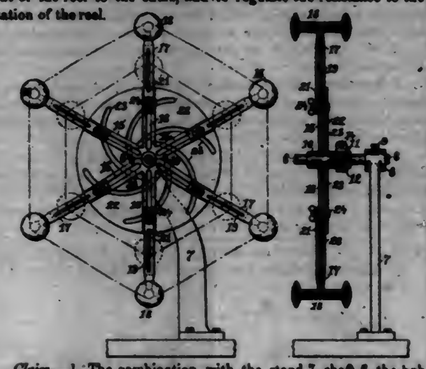


Claim.—1. In a device for upsetting the ends of rivets, an anvil D and an upwardly-projecting portion *c*, said anvil and portion being integrally connected together by a U-shaped spring and presenting the device in a single piece, substantially as set forth.

2. The combination, in a device for upsetting rivets, of a spring-bar bent upon itself and provided at one end with an anvil D and at the opposite end with a block having a plain face, the said block also having means for connecting the same to the follower of a press, so that the anvil will be located above the rigid block *b*, attached to said press, substantially as and for the purpose set forth.

409,940. YARN-REEL. EDWARD C. DUFFY, Pawtucket, R. I. Filed May 4, 1889. Serial No. 309,696. (No model.)

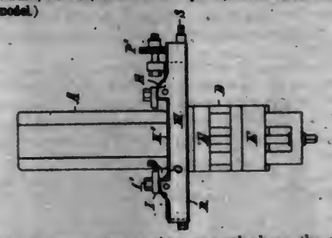
Brief.—The objects of the invention are to facilitate the adjustment of the reel to the skein, and to regulate the resistance to the rotation of the reel.



Claim.—1. The combination, with the stand 7, shaft 6, the hub 10, and the radial arms 15, provided with the slots 16, of the bifurcated extension-arms 17, adjustably secured to the radial arms, the plate 22, provided with the ways 23, and the bolts 24, one or more of which are provided with thumb-nuts constructed to clamp the arms to the plate, as described.

2. In a yarn-reel, the combination, with the standard and the shaft on which the reel revolves, of the hub of the reel provided with a tubular extension, having the cut 11, clamp 12, and regulating-screw 14, the whole constructed to regulate the unwinding of the yarn from the reel, as described.

409,941. DIRT-GUARD FOR SHAPING-MACHINES. ULRICH EBERHARDT, Newark, N. J. Filed Apr. 19, 1889. Serial No. 307,748. (No model.)



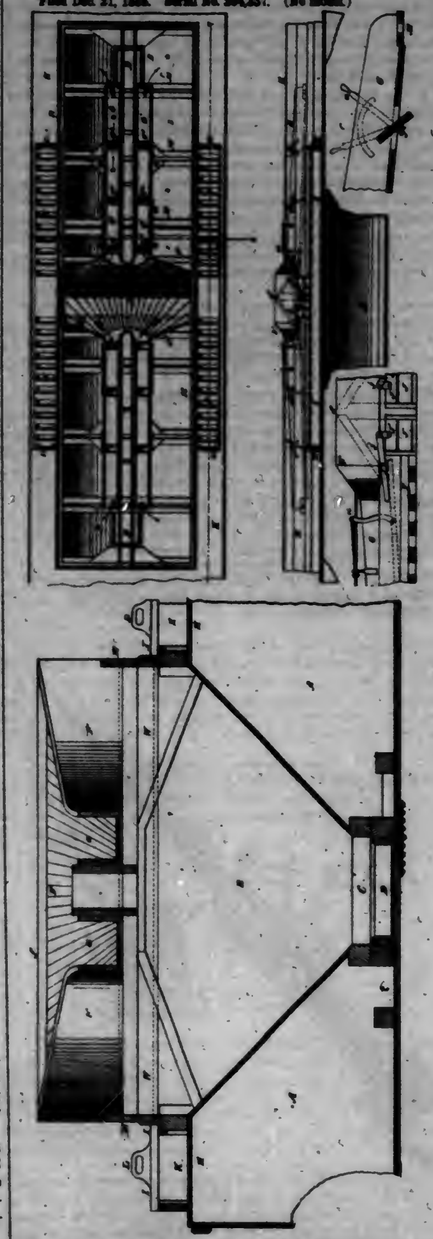
Claim.—1. In a shaping-machine or crank-planer, the combination, with the horizontal cross-head and the saddle movable thereon, of a guard affixed upon the cross-head and extended over the sliding joint of the saddle, and the gearing operating the same, as and for the purpose set forth.

2. In a shaping-machine or crank-planer, the combination, with the horizontal cross-head and the saddle movable thereon, of a guard affixed upon the cross-head and extended over the sliding joint of the saddle and projected upward in front of the frame to which the cross-head is secured, to protect the vertical joint of the frame and cross-head, substantially as herein set forth.

3. In a shaping-machine or crank-planer, the combination, with the frame having the vertical flanges B of the cross-head secured movably thereto, the saddle movable horizontally thereon, the guard N, extended over the top of the cross-head and provided with the flange N' and the angle-pieces O, the whole arranged and operated substantially as set forth.

4. In a shaping-machine or crank-planer, the guard N, secured upon the top of the cross-head, extended over the length of the same and over the feed-gears P P', and provided with the flange N' and angle-pieces O and with the border-strips R, as and for the purpose set forth.

409,942. DUMPING-SCOW. JAMES EDWARDS, Brooklyn, N. Y. Filed Dec. 21, 1888. Serial No. 294,357. (No model.)



Claim.—1. In a dumping-scow, the distributing-flumes G G G' G', one on each side of the longitudinal center of the scow, having in the bottoms of the said flumes at regular distances from each other distributing-gates *g g' g² g³ g⁴ g⁵*, respectively located over the several bins of the scow, in combination with the receiving-hopper P F, located amidship of the scow and somewhat above and connected with the entrance of the said flumes, having a steep descent from the center toward and into the entrance of the said flumes, whereby the mobile mixture of water, sand, and mud discharged upon and into the said hopper will rapidly descend the sides of the said hopper and flow into and through the said flumes, and the sand and mud thereof will

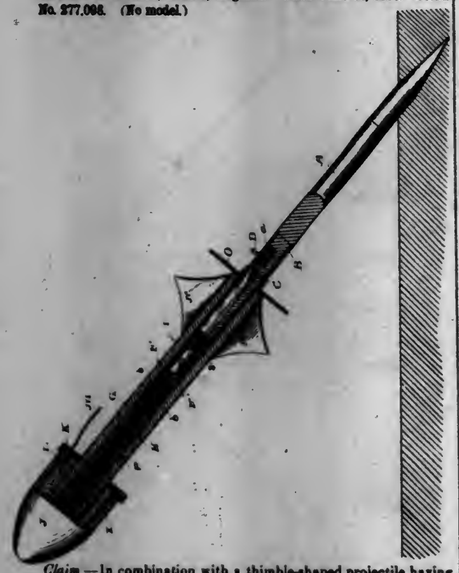
fall through the several said distributing-gates, accordingly as each of them is more or less opened, into the respective bins beneath, and whereby the solid matter of the said mobile mixture can be so controlled in its distribution in the several differently-located compartments of the scow by the said gates as to keep it (the scow) in perfect trim while being freighted, substantially in the manner and for the purpose set forth.

2. In a damping-scow, the ballast-boxes I I, placed one on each side near the outer margins of and upon and along on the deck of the scow, having the outlet-gates K K at the outer ends thereof, and having partially-open tops, in combination with the weirs J J and the compartments of the scow, the said compartments being connected to the said ballast-boxes, whereby a greater or less quantity of the overflow-water can be respectively retained within or liberated from either of the said ballast-boxes, as the case may require, to keep the scow transversely trimmed, substantially as and for the purpose described.

3. In a damping-scow, the combination of the hopper F F, situated transversely to and midway of the scow, the distributing-flumes G G G' G', connected with and longitudinally extending in both directions from the upper hopper, each having in the bottom a series of controllable distributing-gates $g\,g'\,g''\,g'''\,g^4$, one of each of which is located over each of the several compartments of the scow, the ballast-boxes I I, one on either side of and extending near and along the outer margin of the deck, having the gates K K, the weirs J J, the ballast-boxes connected with the said weirs and the compartments of the scow, whereby the overflow-water from the said compartments in its course overboard will pass into and over the top of the ballast-boxes, or out through the gates K K, as may be required, to keep the scow transversely trimmed, and the solid matter of the mobile-mixture of water, sand, and mud is evenly distributed in the different compartments of the scow, and the overflow-water is respectively retained in or discharged from either of the ballast-boxes to further assist in maintaining an even keel to the scow while being loaded, substantially in the manner and for the purposes set forth.

409,943. GUN AND PROJECTILE FOR HIGH EXPLOSIVES.

STEPHEN H. EMERY, London, England. Filed June 14, 1888. Serial No. 277,098. (No model.)

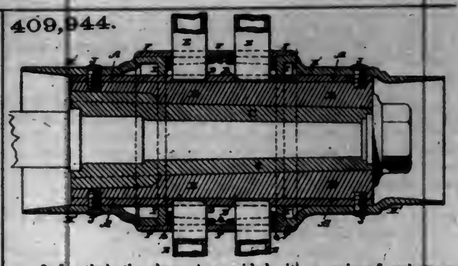


Claim.—In combination with a thimble-shaped projectile having an axial guide-tube open at its rear end and surrounded by an annular charge-space for high explosives, a short powder-tube and a tube inclosing a firing device coupled together end to end and fitted to the interior of said guide-tube, and a stock fitted at its front end to the rear end of said firing device tube, substantially as hereinbefore specified.

409,944. METALLIC WHEEL.

GEORGE H. EVERSON, Pittsburg, Pa. Filed Apr. 2, 1888. Serial No. 305,749. (No model.)

Claim.—1. The combination of the sleeve, the wooden filling placed therein, and the box, the wooden filling being bored out to receive the box, the central ring or band F, the hub-sections, and the fastening devices which engage with the inner ends of the spokes and hold them in position, substantially as shown.



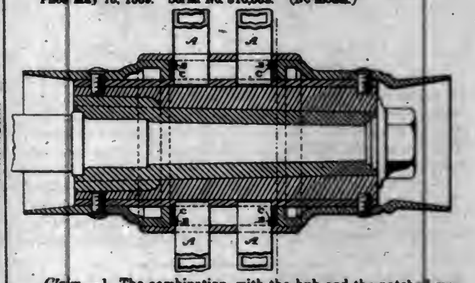
2. In a hub, the sleeve A, provided with a series of sockets or recesses in its outer side to receive the ends of the spokes, in combination with the central band or ring, the spokes, the fastenings to engage with the ends of the spokes, and the hub-sections, substantially as described.

3. A metallic spoke formed of thin metal, and which is made angular at its inner end, oval in cross-section a short distance beyond the hub, and then round at its outer end, so as to correspond to the shape of a buggy-spoke, substantially as set forth.

4. The combination of the metallic felly, the detachably separate fastenings placed therein and provided with ribs or flanges on their inner sides, so as to catch in grooves or recesses formed in the sides of the end of the spokes, and the rivets or fastenings which are passed through the fellies, substantially as specified.

409,945. METALLIC WHEEL.

GEORGE H. EVERSON, Pittsburg, Pa., assignor to the Rolled Steel Carriage Wheel Company, Trenton, N. J. Filed May 13, 1889. Serial No. 310,582. (No model.)



Claim.—1. The combination, with the hub and the notched metallic spokes, of separate springs, which are applied to the spokes for the purpose of securing them in position in the hub and imparting to the wheel the necessary amount of elasticity, substantially as shown and described.

2. The combination, with the hub, of the notched metallic spokes A, with the separate curved springs C, which catch in the notches in the sides of the spokes and have both of their ends to bear against a portion of the hub, whereby each spring is made to act as a spring to its spoke and as a means of holding its spoke in position, substantially as described.

409,946. BAG-HOLDER.

JOHN FERRIS, near French Camp, Cal. Filed May 29, 1889. Serial No. 312,623. (No model.)



Claim.—1. The combination, with the yielding arm having means for engaging with the sack, of the pivoted lever also having means for engaging with the sack, substantially as and for the purpose described.

2. The combination, with the yielding arm provided with means for engaging with the sack, of the pivoted lever adapted to engage with said arm for holding it in a predetermined position and having sack-retaining means, substantially as set forth.

3. The combination, with the inverted-U-shaped support, of the lever pivoted to the inner branch of the support and adapted to engage with the outer branch or arm, substantially as specified.

4. The herein-described bag-holder, composed of the two arms A, having prongs at their lower ends and notches in their edges, and

having the inner branches A', the levers B, pivoted to the lower ends of branches A' and having their upper ends bent and adapted to engage with the notches in the edges of the arms A and provided with hooks at their lower ends, and the support C, substantially as specified.

409,947. IRONING-BOARD AND TABLE.

DAVID PETTERS, Baltimore, Md. Filed May 20, 1889. Serial No. 311,296. (No model.)

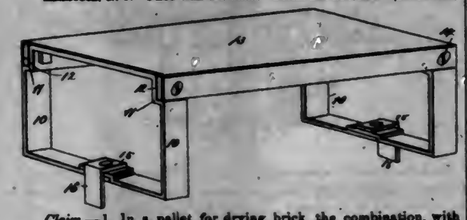


Claim.—1. The combination of the ironing-board A, having two fixed hooks b and a staple c, and a stand having a cross-bar h below the end of the top and a swivel-hook i at the foot.

2. The combination of a stand D, having a cross-bar h below the end of the top, and legs having a cross-bar foot, an ironing-board having a hook to take under the top cross-bar of the table, and a swivel-hook i on the table-foot to hold the board and prevent its hook disconnecting from the table, as set forth.

409,948. PALLET FOR DRYING BRICK.

CHARLES T. FITCH, Elizabeth, N. J. Filed Jan. 22, 1889. Serial No. 297,138. (No model.)



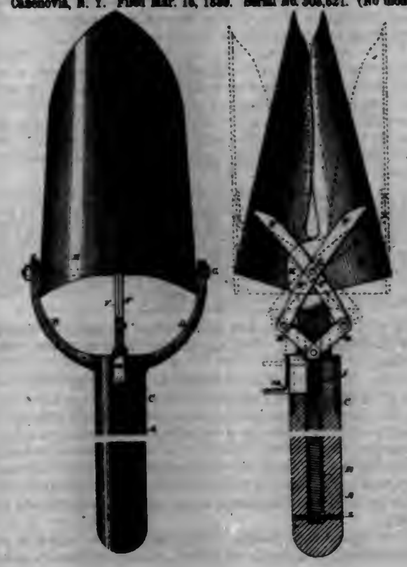
Claim.—1. In a pallet for drying brick, the combination, with the heads, of horizontal bars connecting the same, and a bench resting upon the said heads and secured thereto, substantially as shown and described.

2. In a pallet for drying brick, the combination, with the heads and horizontal bars connecting the same, of a bench resting upon the said heads and connecting-bars, substantially as shown and described.

3. In a pallet for drying brick, the combination, with the heads and horizontal connecting-bars essentially rectangular in cross-section and uniting the said heads, of a bench horizontally supported upon the said heads and secured to the said connecting-bars, substantially as shown and described.

409,949. TRANSPLANTING IMPLEMENT.

RICHARD FOSTER, Canaseraga, N. Y. Filed Mar. 16, 1889. Serial No. 303,621. (No model.)



Claim.—1. The combination of the handle having a longitudinal recess, the downwardly-extending and outwardly-curved supporting-arms, the trowels having their upper ends extending between the ends of said arms, the crossed operating-arms having their lower ends connected to the trowels, the shaft passing through the crossed arms near their centers, the upper ends of the trowels and the supporting-arms, the connecting-links, the spring, and the rod connecting the links and the spring, substantially as shown.

2. The combination of the handle having a longitudinal aperture, the spring placed therein, the sliding rod, the operating-handle connected thereto, the arms crossed at their center and having their lower ends connected to the trowels, the connecting-links, the supporting-arms extending downward and curved outward from the lower end of the handle, and the shaft passing through the trowels, the operating-arms at their point of intersection, and the supporting-arms, substantially as described.

409,950. REGISTERING-MACHINE.

CHARLES W. FOWLER, Cloverport, Ky. Filed Feb. 9, 1889. Serial No. 299,322. (No model.)



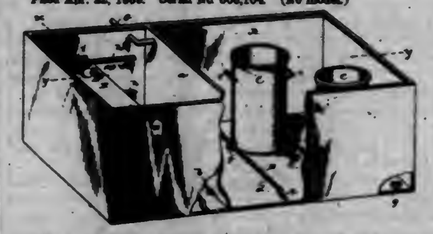
Claim.—1. In a registering-machine, the combination, with a fixed and a loose differential gear-wheel mounted upon a common shaft, of a spiral thread upon the face of one of said wheels and a pinion mounted upon the other of said wheels engaging said thread and moving in a plane at right angles to that of the wheel upon which it is mounted, substantially as set forth.

2. In a registering-machine, the combination, with the shaft M, having gearing, substantially as described, of the fixed and loose differential gear-wheels A B, both engaging with said gearing, a spiral thread S upon the wheel A, a pinion E, mounted in bearings upon the wheel B and gearing into said thread, indicating marks or characters upon the face of the teeth of said pinion E, and an aperture in said wheel B for successively displaying said characters as the pinion revolves, substantially as described.

3. The combination, with the shaft M, having gearing, substantially as described, of differential gear-wheels operated by said gearing, a worm-shaft, as V, mounted upon the face of one of said wheels and carrying a pinion engaging with and operated by the other wheel, an independent pinion F, engaging with said worm-shaft V, and indicating-dials for registering the movement of all of said wheels, substantially as set forth.

409,951. CREAMING-CAN.

PHILIP S. FOWLER, Lowville, N. Y. Filed Apr. 22, 1889. Serial No. 308,104. (No model.)



Claim.—1. The combination, with the tank and the ledges secured to the inner walls of the same, of the shelves, each provided with end flanges i, turned upward, and the side flanges j, turned downward, substantially as shown and described, and for the purpose specified.

2. The creaming device described, consisting of a tank provided with a partition dividing the same into two compartments and provided with openings, as described, one being in the bottom in one compartment and the other in the partition between the compartments, the inlet-pipe G, the shelves in one of said compartments, the strips B in the other compartment with a space beneath them, and the cans provided with lateral lugs extending in opposite directions, substantially as shown and described, and for the purpose specified.

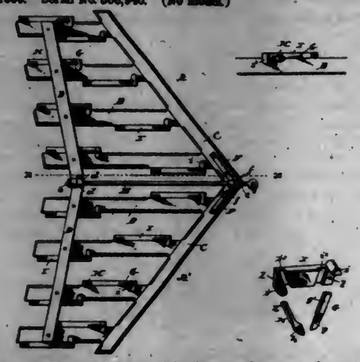
409,952. FOUNTAIN-PEN.

ANDREW M. FOX, Miamisburg, Ohio. Filed May 6, 1889. Serial No. 309,689. (No model.)



Claim.—The attachment for pens, composed of the cone-shaped spirally-beat perforated tube, the extension *b*, and collar B, as shown.

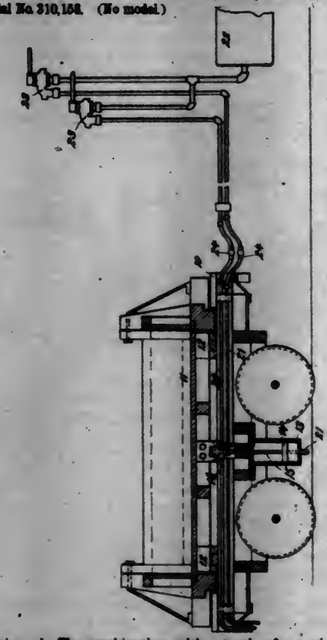
409,953. HARROW. MARCUS J. FRANZ, Emmett, Ohio. Filed Apr. 29, 1889. Serial No. 308,940. (No model.)



Claim.—1. In combination with a harrow-frame, a colter, a tooth, and a bracket for securing the colter and tooth to the frame, said bracket having a laterally-projecting lug on its upper edge at its front end, a similar lug on its under edge at its rear end, recesses on its inner side for the reception of the shanks of the colter and tooth, and bolt-holes through which to pass the bolts for securing it to a beam of the frame, substantially as described.

2. A harrow having a number of beams which are parallel in the line of its travel, to each of which, on opposite sides, are secured a colter and a tooth, which are so positioned that the tooth will follow in the line of cut made by the colter, the tooth and colter being secured by a single bracket, substantially as described.

409,954. DUMPING-CAR. JOSH. H. GRARHART, Leadville, Colo., assignor to himself and William A. Thacher, same place. Filed May 9, 1889. Serial No. 310,158. (No model.)

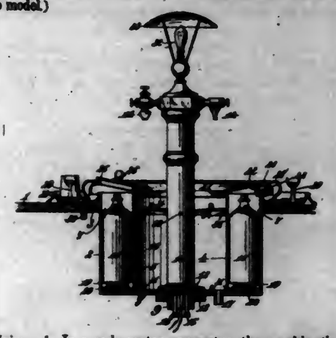


Claim.—1. The combination, with a truck, of a car-body hinged or pivotally connected thereto, a cylinder having inlet-ports at both ends, a piston mounted therein, connections between the piston and the car-body, and a means, substantially as described, for subjecting both sides of the piston to pressure, as and for the purpose stated.

2. The combination, with a truck, of a car-body hinged or pivotally connected thereto, a cylinder carried by the truck, a piston arranged within the cylinder and provided with an outwardly-extending stem, a connecting link or bar hinged or pivotally connected to the piston-stem and hinged or pivotally connected to the car-body, a system of piping which communicates with the upper portion of the cylinder, a second system of piping which communicates with the lower portion of the cylinder, a pressure-tank, connections between the pressure-tank and the pipe systems, and valves arranged in connection with the pipe systems, substantially as described.

3. The combination, with a truck or platform, of a car-body pivotally connected or hinged thereto, a cylinder carried by the truck or platform, a piston mounted within the cylinder, a stem extending outward from the piston, a link or bar connecting the stem and the car-body, and two systems of piping, each system being provided with pipe-connections, substantially as described.

409,955. APPARATUS FOR DISPENSING SODA-WATER, &c. WILLIAM GEE, New York, N. Y. Filed May 8, 1889. Serial No. 310,003. (No model.)



Claim.—1. In a soda-water apparatus, the combination, with an annular chamber divided into compartments each open at its top end to receive the sirup-bottles, of an annular cover-plate supported by and traveling horizontally upon the top of said chamber, and having an opening covered by a movable cap for the insertion and removal of each bottle when brought in coincidence with the top thereof, substantially as described.

2. In a soda-water apparatus, the combination, with an annular chamber divided into compartments to receive the sirup-bottles, of an annular cover having rolls resting and traveling upon the circular edge of one wall of said chamber and provided with a single opening covered by a hinged cap, substantially as described.

3. In a soda-water apparatus, the combination, with a counter having a circular opening, of a casing inserted therein, and having an annular chamber divided into compartments to receive the sirup-bottles, an annular traveling cover resting upon the walls of said chamber, and a central standard having faucets for the service-pipes, an annular ice-chamber being formed between the standard and the annular chamber, substantially as described.

4. In a soda-water apparatus, the combination, with a circular casing having an annular series of compartments for the sirups, of an annular cover-plate having rolls traveling upon the edge of the wall of said compartments and provided with a hinged cap covering a single opening giving access to the sirup-chambers, and a circular S-shaped flange surrounding the casing and having the names of the sirups displayed thereon opposite each compartment, substantially as described.

5. In a soda-water apparatus, the combination, with a circular casing having an annular series of compartments for sirups, of an annular cover-plate having circular movement on said casing and provided with a movable cap giving access to a single compartment, and a circular tumbler-trough surrounding the casing and provided with a raised flange displaying the names of the sirups opposite the several compartments, substantially as described.

409,956. MALTING AND GERMINATING APPARATUS. JOSEPH F. GERR, Columbus, Ind. Filed Mar. 19, 1889. Serial No. 303,894. (No model.)

Claim.—1. An apparatus for malting or germinating grain, consisting of an outer casing, a series of perforated floors one above the other, provided with automatically-dumping sections, said floors having each a central aperture, an air-supplying pipe extending through said apertures and provided with apertures to discharge air beneath each of said floors, a shaft for rotating said floors, also extending through said openings, and a water-pipe extending within said openings and provided with a discharge above each floor, substantially as described.

2. An apparatus for malting or germinating grain, consisting of perforated floors one above the other, having central apertures in each

a shaft for revolving said floors extending vertically through said apertures, and a water-supply pipe extending also vertically through said apertures and having a spraying-discharge above each floor, the said floors having pivoted automatically-dumping sections, the dumping-point of each floor being a short distance in advance of the dumping-point of the floor above, substantially as described.



3. An apparatus for malting or germinating grain, consisting of an inclosing-casing, revolving perforated floors one above the other, an air-pipe extending centrally through said floors and having a discharge-opening beneath each floor, an air-forcing and air-moistening device communicating with said pipe, a water-supply pipe extending within said air-pipe and provided with a spraying-discharge above each floor, and stirring and leveling devices above each floor, the said floors being provided with pivoted automatically-dumping sections, the dumping-point of each floor being slightly in advance of the floor above, substantially as described.

409,957. RING-SPINNING MACHINE. ERNST GESSNER, Aue, Saxony, Germany. Filed Jan. 2, 1889. Serial No. 295,136. (No model.)



Claim.—1. The combination, with a spindle and the rail, of a winder composed of a thread-guide L, arm L', and guide-piece L^3, held on the copping-rail and embracing the spindle above the cop, so as to be in frictional contact with the spindle, the spindle being made a length to reach above the full cop a distance corresponding to the length of the winder, substantially as described.

2. The combination, with a spindle, of a winder composed of thread-guide L, arm L', and guiding-piece L^3, having the form of a socket, and an intermediate sleeve L^3, upon which the said socket is seated, and means for rotating said sleeve with and traversing it over the spindle above the cop, substantially as described.

3. The combination, with the spindle and the copping-rail, of a winder rotated by the strain of the thread and by friction from the spindle, composed of a thread-guide L, an arm L', and friction-socket L^3, being provided with a slotted flange B, seated on the copping-rail, the spindle protruding through an opening in the copping-rail, and the latter having an outlet to allow the thread to enter from without into the slot of the flange B, so as to pass round the spindle, substantially as described.

4. The combination of a spindle, the copping-rail, and a winder having its bearing located above the cop and being rotated by the strain of the thread and by friction from the spindle, the said winder being composed of a thread-guide L, arm L', and friction-socket L^3, with a flange B, a brake-spring O, pressing upon said flange, and means for adjusting the spring for regulating the tension of the thread, substantially as described.

5. The combination, with a spindle, the copping-rail, and the winder embracing the spindle above the cop or bobbin and connected to the copping-rail, of means, substantially as described, for elevating the copping-rail above the spindle for lifting the winders off the spindles, substantially as described.

6. The combination, with the spindles, the copping-rail, and the winders embracing the spindles above the cop, of a set of filler-wires, supports for the same, and actuating devices for moving them for drawing a certain supply of yarn off from the full cops or bobbins preparatory to winding the same onto the spindles below the cops or bobbins to start with, and means for imparting a slow rotation to the spindles, substantially as described.

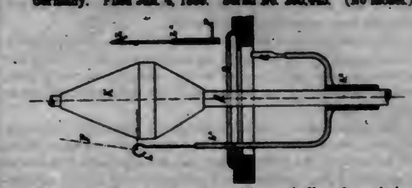
409,958. SPINNING-MACHINE. ERNST GESSNER, Aue, Saxony, Germany. Filed Jan. 3, 1889. Serial No. 295,206. (No model.)



Claim.—1. The combination, with a spindle and the copping-rail, of an oscillating winder composed of a rotatable ring L^3, seated on the copping-rail and embracing the spindle, arm L', connected to said ring in the plane of the spindle, and the thread-guide L, substantially as described.

2. The combination, with a spindle and the copping-rail W, of the winder composed of bowed arm L' with thread-guide, slotted ring L^3, seated on the copping-rail and hinged or pivoted to the arm L' in the plane of the spindle, and the brake-spring D, pressing upon said ring, substantially as shown and described.

409,959. SPINNING-MACHINE. ERNST GESSNER, Aue, Saxony, Germany. Filed Jan. 4, 1889. Serial No. 295,443. (No model.)



Claim.—1. The combination, with a spindle, of a winder composed of a thread-guide L, arm or bow L', and socket L^3, in frictional contact with the spindle below the cop, the said arm or bow being capable of oscillation, substantially as described.

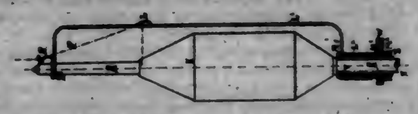
2. The combination, with a spindle, of a winder composed of thread-guide L, laterally-oscillating arm or bow L', a socket or disk L^3, and of an intermediate sleeve Z, rotated with and vertically traversed over the spindle below the cop, substantially as described.

3. The combination, with a spindle, of a winder composed of thread-guide L, laterally-oscillating arm or bow L', and socket L^3, fitting loosely around the spindle below the cop, whereby frictional contact is regulated by the conjoint influence of thread-tension and centrifugal action, substantially as described.

4. The combination, with a spindle and the copping-rail, of a winder composed of a thread-guide L, laterally-oscillating arm or bow L', and socket L^3, encircling the spindle below the cop, provided with a projecting flange B and a brake, substantially as described.

5. The combination, with a spindle and the copping-rail, of a winder consisting of an arm L' and attached socket L^3, carrying the thread-guide L, the said arm having its top end mounted in the copping-rail above the spindle, substantially as described.

409,960. SPINNING-MACHINE. ERNST GESSNER, Aue, Saxony, Germany. Filed Jan. 5, 1889. Serial No. 295,491. (No model.)

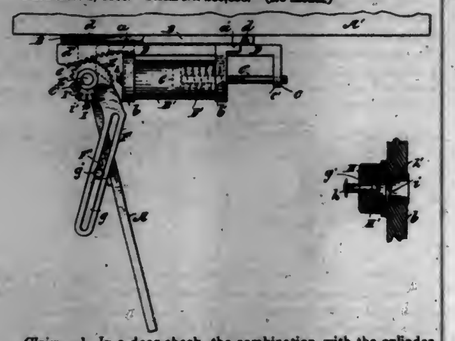


Claim.—1. The combination, with a spinning-spindle, of a winder composed of friction-socket L^3, arm or bow L', thread-guide L, carried by said arm, ring L^3, and guide E, and means whereby the whole winder is traversed or carried up and down over the spindle, the

spindle being lengthened to correspond to the length of the traverse of the winder, substantially as described.

2. The combination, with a spinning-spindle, of a winder composed of socket L^3, arm or bow L', thread-guide L, ring L^2, and guide E, and an intermediate sleeve Z, upon which the said socket L^3 is seated, rotated, and traversed over the spindle, substantially as described.

409,961. **PNEUMATIC DOOR-CHECK.** THOMAS GOODENOUGH, Woodside, assignor to the Alther Manufacturing Company, New York, N. Y. Filed Nov. 2, 1883. Serial No. 289,898. (No model.)



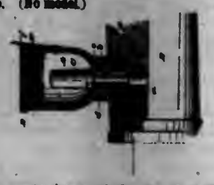
Claim.—1. In a door-check, the combination, with the cylinder, the spring-actuated piston, and the piston-rod, of the operating-bar engaging the piston-rod and having a curved toothed portion of varying projection and a toothed eccentric gear engaging with said toothed portion operated by the door, substantially as specified.

2. The combination, with the cylinder, the spring-actuated piston therein, and the piston-rod, of the operating-rod having the ogee-shaped toothed portion, the anti-friction rollers bearing upon the operating-rod, and the adjustable eccentric gear oscillated by a connection with the door, substantially as specified.

3. The combination, with the cylinder, the piston, the piston-rod, the toothed operating-bar, and the segmental gear, of the valve and the tappet-arm, removably secured to the eccentric segmental gear, operated by means of a connection with the door, substantially as specified.

4. The combination, with the cylinder, the piston, the piston-rod, the toothed operating-bar, and the segmental gear engaging therewith, of the valve in the cylinder-head and the adjustable tappet-arm on the segmental gear oscillated by a connection with a door, substantially as specified.

409,962. **AXLE-LUBRICATOR.** ALBERT A. GREGORY, Canton, Ohio, assignor of one-half to Allen Cook, same place. Filed May 10, 1889. Serial No. 310,235. (No model.)

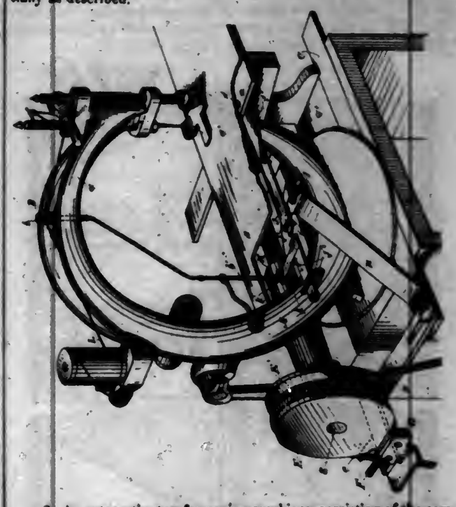


Claim.—1. The combination of the cup A, provided with the screw-threaded cap B and the screw-threaded shank *a*, the weighted plunger C, provided with the neck *b* and the shoulder *c*, adapted to strike the shoulder *d*, substantially as and for the purpose specified.

2. The combination of the cup A, provided with the screw-threaded cap B, the screw-threaded shank *a*, and the tube *c*, the weighted plunger C, provided with the neck *b* and the shoulder *c*, the spring F, adapted to engage one of the notches *g*, substantially as and for the purpose specified.

409,968. **THREAD-CONTROLLED STOP MECHANISM FOR SEWING-MACHINES.** ALBERT J. HART, San Francisco, Cal. Filed Nov. 23, 1888. Serial No. 291,594. (No model.)

Claim.—1. An automatic stop for sewing-machines, consisting of the combination of a horizontally-moving shifter-arm for transferring the driving-belt from a fast to a loose pulley of the machine, a movable gravity-eye through which the thread passes, whereby said eye is supported while the thread is taut and drops when the thread breaks, and connecting mechanism between said eye and the belt-shifter arm, whereby the latter is operated to transfer the belt to the loose pulley when the former is dropped by the breaking of the thread, said mechanism comprising a spring-controlled horizontally-moving bar and a spring-controlled locking-lever engaged thereby, substantially as described.



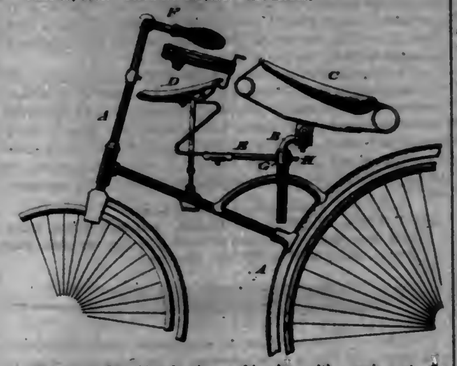
2. An automatic stop for sewing-machines, consisting of the combination of a shifter-arm for transferring the driving-belt from a fast to a loose pulley of the machine, and a brake-block adapted to be thrown into frictional contact with the fast pulley for checking its momentum when the belt is transferred, a gravity-eye through which the thread passes to support it when the thread is taut and to drop it when the thread breaks, and connecting mechanism between said eye and the belt-shifter arm and brake, said mechanism comprising a sliding bar connected with the shifter-arm, and a spring-controlled locking-bar engaged by said sliding bar and gravity-eye, whereby, when the thread breaks and the eye drops by gravity, the shifter-arm is operated to throw the belt onto the loose pulley, and the brake is thrown into frictional contact with the fast pulley, substantially as described.

3. In a stop mechanism for sewing-machines, the shifting-arm embracing the belt and adapted to throw it from a fast to a loose pulley of the machine, and a vertically-movable gravity-eye through which the thread passes, thereby supporting it, said eye having a downwardly-extending trip-rod, in combination with a spring-controlled sliding bar C, with which the shifting-arm is connected, a pivoted spring-controlled locking-lever engaging the sliding bar for holding the same in one position to cause the shifting-arm to direct the belt onto the fast pulley, and a cam on the power-shaft of the machine acting on the trip-rod when dropped by the breaking of the thread to force said rod into contact with and trip the locking-lever, substantially as described.

4. In a stop mechanism for sewing-machines, the shifting-arm embracing the driving-belt and adapted to transfer it from a fast to a loose pulley of the machine, and a vertically-movable gravity-eye through which the thread passes, whereby it is supported when the thread is taut and allowed to drop when the thread is broken, said eye having a downwardly-extending trip-rod *b'*, in combination with the spring-actuated sliding bar C, carrying the shifting-arm, the catch-bar carried by the sliding bar C, the pivoted spring-controlled locking-lever J, having a pin or stud engaging the catch-bar, and an inwardly-extending arm j^3, and the grooved collar on the drive-shaft of the machine, into which the end of the trip-rod *b'* drops when the thread is broken, and the cross-cam *k'* of said collar for forcing the trip-rod against the arm j^3 to trip the locking-lever and release the sliding bar, substantially as described.

5. In a stop mechanism for sewing-machines, a shifting-arm engaging the driving-belt for transferring it from a fast to a loose pulley of the machine, and a brake-block G, adapted to come in contact with the fast pulley when the belt is transferred, in combination with a vertically-movable gravity-eye through which the thread passes, whereby said eye is supported when the thread is taut and is dropped when the thread is broken, the trip-rod *b'* of said eye, the rotating cam *k'* on the driving-shaft of the machine, adapted to come in contact with the end of the trip-rod and to force it over, the spring-controlled sliding bar C, carrying shifting-arm and the brake, the catch-bar I, carried by said sliding bar, the pivoted spring-controlled locking-lever J, having a pin or stud engaging the catch-bar, and the arm j^3, with which the end of the trip-rod *b'* is adapted to come in contact, whereby the locking-lever is tripped to release the sliding bar C, substantially as described.

409,964. **BICYCLE.** CHARLES T. HARVEY, Philadelphia, Pa. Filed June 15, 1889. Serial No. 314,436. (No model.)

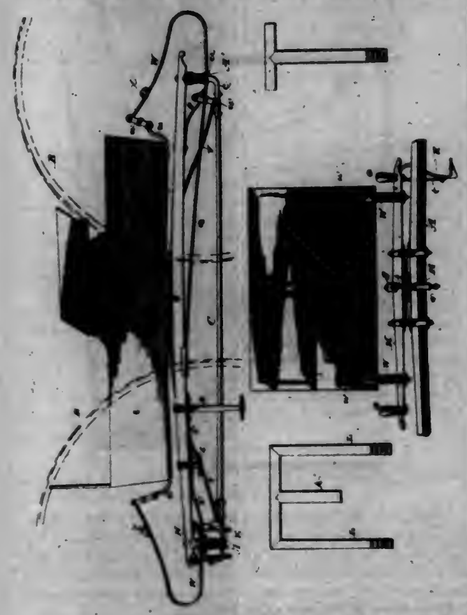


Claim.—1. In a bicycle, the combination, with a main seat, of a child's seat having an arm detachably secured to the standard of the main seat, said child's seat being between the main seat and the steering-handles of the bicyle, substantially as described.

2. In a bicyle, the combination of a standard having a main seat secured thereon, a boss adjustable on said standard and having an arm with a seat thereon, and steering-handles, the seat on the said arm being between said handles and main seat, substantially as and for the purpose set forth.

3. In a bicycle, the combination of a standard with a seat secured thereon, a boss consisting of hinged parts provided with a fastening-screw and adapted to be clamped on said standard, an arm attached to said boss and carrying a child's seat intermediate of the main seat and the steering-handles of the device, substantially as and for the purpose set forth.

409,965. **RUNNING-GEAR FOR VEHICLES.** JOHN H. HARVEY, Rich Hill, Ohio. Filed Dec. 4, 1888. Serial No. 292,624. (No model.)



Claim.—1. In a vehicle running-gear, the combination, with front and rear axles, of a reach, a jointed yoke connecting the latter with the front cross bar or bolster, and a king-bolt connecting the cross-bar or bolster and the front axle, substantially as set forth.

2. In a vehicle running-gear, the combination, with front and rear axle and reach-bar, of a cross-bar or bolster, a yoke yieldingly attached to the cross-bar or bolster and to the reach at points behind and in front of the front axle, and a king-bolt connecting the cross-bar or bolster and front axle, substantially as set forth.

3. In a vehicle running-gear, the combination, with front and rear axles, a cross-bar, and body, of a reach and a jointed yoke connecting said reach and cross-bar, the latter having pivotal yielding and turning contact with the axle, substantially as set forth.

4. In a vehicle running-gear, the combination, with axles, cross-bar, body, and reach, the cross-bar and front axle having fifth-wheels thereon, of a jointed yoke with which the reach has pivotal connection, a king-bolt, links pivoted to said bolt and extending through the reach, and springs on said links, substantially as set forth.

5. The combination, with a vehicle-body and rear axle, of curved springs secured at their upper ends to the body and near their lower ends to the axle, and spring-arms secured to the body and attached at their rear ends to the lower ends of the curved springs.

6. The combination, with the body, cross-bar or bolster, and rear axle, of a set of curved springs connected near their lower ends to the cross-bar and at their upper ends to the body, a set of curved springs connected near their lower ends to the rear-axle and at their upper ends to the body, and spring-arms connected to the body and at their opposite ends to the lower ends of the curved springs, substantially as set forth.

409,966. **CARPET-STRETCHER.** OSCAR F. HERSHAW, JOHN W. POTTERADOR, ASHER A. BROWER, and SALEUS W. HURLOUT, Clarinda, Iowa. Filed Apr. 24, 1889. Serial No. 308,208. (No model.)



Claim.—1. In a carpet-stretcher, a transverse toothed bar having a guide and a laterally-extending bail, in combination with a rack-bar longitudinally slotted and terminating in a toothed bar, and a hand lever pivotally connected with the bail and passing through the slot, a fulcrum-arm pivoted to the lower end of the lever, passing upwardly through the slot and terminating in rack-engaging lugs, and a pawl pivoted to the lever operating in the slot of the rack-bar and disposed in a direction opposite to the arm, substantially as specified.

2. The toothed bar 1, provided with the recessed guide-plate 2 and laterally-extending bail 9, in combination with the opposite angle-sections 3, provided with opposite flanges 4 for entering the guide-plate, said sections being spaced apart by the depending tooth shank 5 and the opposite block 15, thus forming the slot 6, the hand-lever 8, mounted on the bail 9, the pawl 13, connected to the lever above the bail, and the arm 12, connected to the lever below the bail, passing through the slot 6, and terminating in the opposite lugs 11, substantially as specified.

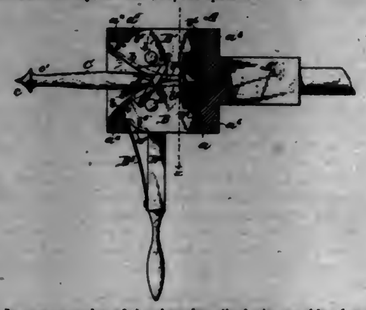
3. In a carpet-stretcher, the combination, with a toothed bar, of a rack-bar loosely mounted thereon and provided with a longitudinal slot, a hand-lever connected with the toothed bar and mounted in the slot and terminating at its lower end in opposite shoulders 10, operating against the lower edges of the rack-bar, and an arm 12, pivoted between the shoulders, passing through the slot, and engaging the rack-bar, substantially as specified.

4. In a carpet-stretcher, the toothed bar having the slotted rack-bar rigidly connected thereto, combined with the lever 8, the bail 9, the pawl 13, the offset jaws 10, bearing on the under side of the rack-bar, and the arm 12, having ears 11 and connected to the lever 8 below the rack-bar, as set forth.

409,967. **CAR-COUPLING.** CLIFTON J. HOKE, Yorkville, S. C., assignor to himself and John Robert Lindsay, same place. Filed Apr. 4, 1889. Serial No. 305,916. (No model.)

Claim.—1. In a car-coupler of the class described, the combination, with an arrow-headed coupling-bar and the draw-head having a

cavity of substantially rectangular form in cross-section, of coupling-jaws pivoted therein and having their proximate faces of curvilinear form, the outer edges thereof extending to the like edges of the draw-head cavity and having a groove formed in said proximate faces, substantially semi-cylindrical at its rear end, from which point to the forward edge of the jaws said groove gradually increases in width and decreases in depth to form a gradually-widening or outwardly-flaring passage from the rear edge of the jaws to the forward edge of the draw-head cavity, for the purpose specified.



2. In a car-coupler of the class described, the combination, with the draw-head and an arrow-headed coupling-bar, of two coupling-jaws pivoted within the draw-head and having their proximate faces of curvilinear form, and a groove formed in each of said faces, a link D, pivotally connecting the jaws, as described, and a spring to hold said jaws in a normal position, substantially as and for the purposes specified.

3. In a car-coupler of the class described, the combination, with the draw-head provided with the bearing-faces a^4 a^5, of two coupling-jaws pivoted within said draw-head and having corresponding bearing-faces b^4 b^5, substantially as and for the purposes specified.

4. In a car-coupler of the class described, the combination, with the draw-head provided with the bearing-faces a^3 a^4 a^5, of two coupling-jaws pivoted within said draw-head and having corresponding bearing-faces b^3 b^4 b^5, substantially as and for the purposes specified.

5. In a car-coupler of the class described, the combination, with the draw-head, of two coupling-jaws pivoted therein and provided with a recess b^7, and a socket b^8, arranged relatively, as described, a connecting-link consisting of a bar D, having journals or pivots d at right angles thereto and fitting into said sockets of the jaws, and a spring to hold the jaws in a normal position within the draw-head, substantially as and for the purposes specified.

6. In a car-coupler of the class described, the combination, with the draw-head, two coupled or connected and synchronously-movable coupling-jaws pivoted therein, and a spring for holding the jaws in a normal position, of an actuating-lever extending laterally from one of the jaws for revolving the same on its pivot against the stress of the spring, substantially as and for the purpose specified.

7. In a car-coupler of the class described, the combination, with the draw-head and two coupled or connected and synchronously-movable coupling-jaws pivoted therein, said jaws having a socket b^9, of a hand-lever for rotating one of said jaws on its pivot against the stress of the spring, said hand-lever fitting into said socket, substantially as and for the purposes specified.

8. In a car-coupler of the class described, the combination, with the draw-head and two coupled or connected and synchronously-movable coupling-jaws pivoted therein, of an actuating-lever extending laterally from one of said jaws, and a spring having its bearings on the lever and draw-head for holding the jaws in a normal position, substantially as and for the purpose specified.

9. In a car-coupler of the class described, the combination, with the coupling-jaws B B', provided in their curvilinear proximate faces with a groove of substantially semi-cylindrical form at the rear end and gradually widening and decreasing in depth from that point to the forward end, of an arrow-headed coupling-bar C, having a throat c', of cylindrical form in cross-section, immediately back of its arrow-head and increasing in diameter from that point to its longitudinal center, substantially as and for the purpose specified.

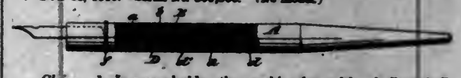
10. The combination, with the draw-head A, provided with openings a in its opposite sides and with bearing-faces a^3, a^4, and a^5, of the coupling-jaws B B', constructed as described and fitted within the draw-head so that their outer lateral faces will lie flush with the corresponding faces of the draw-head and completely close the opening a therein, said jaws being pivoted within said draw-head and provided with corresponding bearing-faces b^4, b^5, and b^6, substantially as and for the purposes specified.

11. The combination, with the draw-head, the coupling-jaws, and the lever B^2, of an actuating-rod R and a cam C, secured thereto and arranged to operate on said lever, substantially as and for the purposes specified.

12. In a car-coupler of the class described, the combination, with the coupling-jaws B B', having their proximate faces of curvilinear form and provided with a groove of substantially semi-cylindrical form at the rear end, and having square vertical rear faces, of an arrow-headed coupling-bar C, having a flaring portion c^3, and a cylindrical throat c' in rear of the greatest diameter of the arrow-head, substantially as and for the purpose specified.

13. In a car-coupler of the class described, the combination, with the coupling-jaws B B', having their proximate faces of curvilinear form and provided with a groove of substantially semi-cylindrical form at the rear end, and having square vertical rear faces inclining toward each other, of an arrow-headed coupling-bar C, having a flaring portion c^3, and a cylindrical throat c' in rear of the greatest diameter of the arrow-head, substantially as and for the purpose specified.

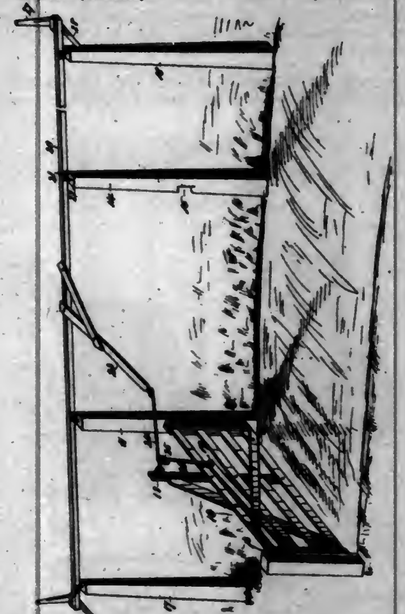
409,968. ELECTRIC PEN-HOLDER. WILLIAM C. HOLMES, Waterbury, Conn., assignor of one-half to Charles L. Holmes, same place. Filed Feb. 11, 1889. Serial No. 299,360. (No model.)



Claim.—1. In a pen-holder, the combination, with a hollow shell, of a thermo-pile having certain portions of its elements extending to the exterior of the holder in position to contact with the hand when the pen is in use, so as to be energized by the heat of the hand, substantially as specified.

2. In a pen-holder, the combination, with a thermo-pile arranged within the pen-holder and having exposed contact-points adapted to contact with the hand when the pen is in use, of a shunt arranged upon the pen-holder and adapted to shunt the current, substantially as and for the purpose specified.

409,969. DEVICE FOR OPENING AND CLOSING SWING-GATES. WILLIAM C. HOLMES, Abingdon, Ill. Filed Feb. 8, 1889. Serial No. 299,163. (No model.)



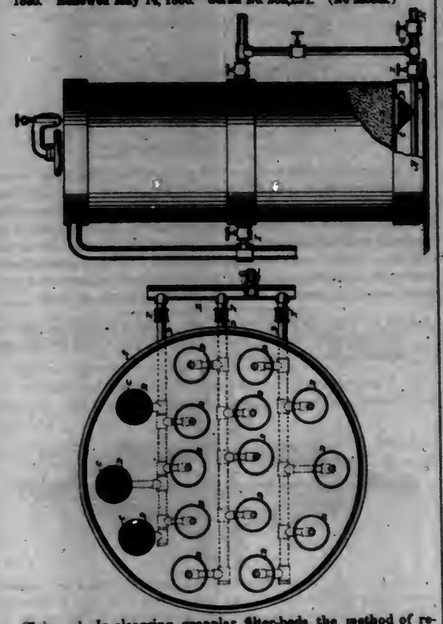
Claim.—1. The combination, with a swing-gate, of a rock-shaft supported by posts at the rear of the gate and hinged centrally on the under side to the said posts, an arm fixed to the rock-shaft, and a link-connection between the said arm and the gate, substantially as described, whereby the rock-shaft as thrown past the center will assist in the movement of the gate, as set forth.

2. The combination, with a swing-gate, of a rock-shaft supported by posts at the rear of the gate and hinged to the tops of the said posts, an arm fixed to the rock-shaft, a link connecting the arm to the gate, and a rod connecting the said link to the inner end of the latch, substantially as herein shown and described.

3. The combination, with a swing-gate provided with a pivoted latch and a rock-shaft supported by posts at the rear of the gate and hinged centrally at the under side to said posts, one of which posts is provided with a latch-recess, of an arm rigidly secured at one end to the rock-shaft, a link connecting the said arm and the gate, and a rod uniting the inner side of the gate-latch and the said link, all combined for operation substantially as shown and described.

4. The combination, with a swing-gate, of a rock-shaft having a fixed arm, a link-connection between the said arm and the gate, and two handles or levers pivoted to each end of the said rock-shaft at right angles to each other, substantially as shown and described, whereby the said handles may be moved in any desired direction in order to clear an obstruction, as set forth.

409,970. ART OF FILTRATION. JOHN W. HYATT, Newark, N. J., assignor to the Newark Filtering Company, same place. Filed Sept. 7, 1885. Renewed May 14, 1889. Serial No. 302,221. (No model.)

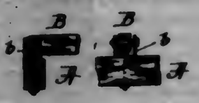


Claim.—1. In cleansing granular filter-beds, the method of removing the impurities therefrom in such manner that a small portion only of the whole body of the filtering medium is subjected to the cleansing process at the same time, which method consists in reversing the current through the filter-bed and directing the full force of the current first against one portion of the bed and then against another, and so on until the whole has been agitated and cleansed, substantially as set forth.

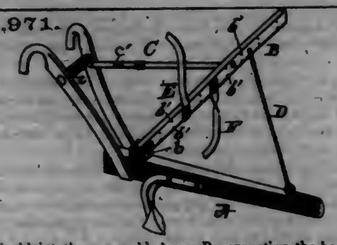
2. In cleansing granular filter-beds, the method of removing the impurities therefrom in such manner that a small portion only of the whole body of the filtering medium is subjected to the cleansing process at the same time, which method consists in reversing the current through the filter-bed and directing the full force of the current first against one portion of the bed and then against another, and so on until the whole has been agitated and thoroughly or partially cleansed, and finally directing the current against the whole of the bed at the same time, substantially as set forth.

409,971. LAND-MARKER. ISRAEL IVEY, Thomson, Ga. Filed Mar. 30, 1889. Serial No. 305,429. (No model.)

Claim.—In a land-marker, the combination of the plow-beam A, the arm B, connected to the plow-beam by a swivel-joint, the blades E and F, projecting from opposite sides of said beam in a line perpendicular to the surface of the ground and at different distances from



409,971.



the swivel-joint, the removable brace D, connecting the beam B with the front end of the plow-beam, all arranged substantially as and for the purpose set forth.

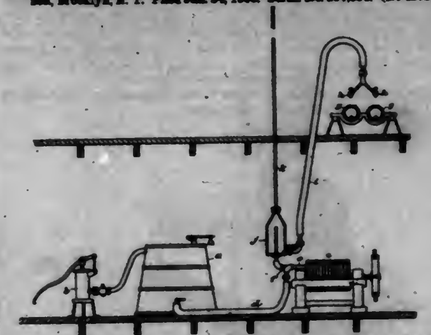
409,972. MERRY-GO-ROUND. DAVID G. JOHNSON, Trenton, N. J. Filed Apr. 16, 1889. Serial No. 307,368. (No model.)



Claim.—1. A merry-go-round comprising two rotatory overhead wheels, pull or draft ropes or devices hung therefrom, an endless rope or cable running on said wheels, and pull or draft ropes or devices hung from the endless rope or cable, substantially as herein set forth.

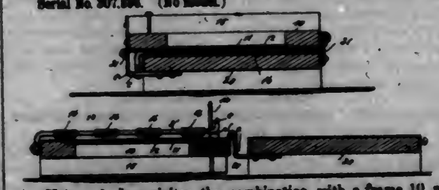
2. A merry-go-round comprising two rotatory overhead wheels, pull or draft ropes or devices hung therefrom at different distances from the axis of the wheels, an endless rope or cable running on said wheels, and pull or draft ropes or devices hung from the endless rope or cable, substantially as herein set forth.

409,973. RACKING-OFF APPARATUS FOR BEER, &c. JOHN JOHNSON, Brooklyn, N. Y. Filed Jan. 24, 1889. Serial No. 297,203. (No model.)



Claim.—In a racking-off apparatus for beer and other liquids, the combination of the hydrostatic vent for the elimination of the air and separated gas and discharge of the same at atmospheric pressure with the filter-press and the keg-filling pipe, said vent consisting of the receptacle j and stand-pipe k, open to the atmosphere through the upper end of the pipe, and connected in the apparatus so as to receive the beer on its way to the filling-nozzles above the outlet-connection of the filling-pipe, substantially as described.

409,974. PLAITING-MACHINE. WILLIAM R. JOHNS, administrator of George Courts Parker, deceased, Paris, Tenn. Filed Apr. 19, 1888. Serial No. 307,396. (No model.)



Claim.—1. In a plaiter, the combination, with a frame 10, pro-

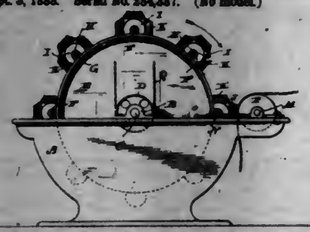
vided with a facing 12, of a frame 13, hinged to the frame 10, and formed with a bent-up longitudinal length *c*, and tapes carried by the frame 13, substantially as described.

2. In a plaiter, the combination, with a frame 10, provided with a facing 12, of a frame 13, hinged to the frame 10, and formed with a bent-up longitudinal length *c*, and tapes provided with elastic sections and with buckles and straps, said tapes being carried by the frame 13, substantially as described.

3. In a plaiter, the combination, with a frame provided with a facing-sheet 12, of a frame 13, hinged thereto and provided with an upraised longitudinal strip *c*, spring-catches arranged to engage the frame 13, tapes carried by the frame 13, and an ironing-board hinged to the frame 10, substantially as described.

4. In a plaiter, the combination, with a frame provided with a facing-sheet 12, of a frame 13, hinged thereto and provided with an upraised longitudinal strip *c*, spring-catches arranged to engage the frame 13, tapes carried by the frame 13, an ironing-board, and hinges 21, that are bent, as at *c*, substantially as described.

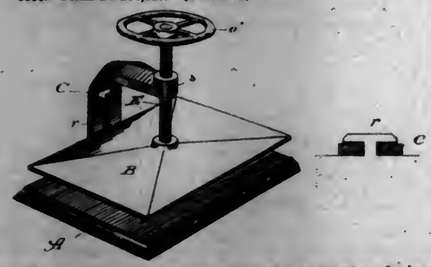
409,975. **TEASELING-MACHINE.** FRANZ JOFF, Milwaukee, Wis. Filed Sept. 3, 1888. Serial No. 284,337. (No model.)



Claim.—1. A teaseling-roll consisting of a center-piece, sheet-metal plates secured thereto, and a series of teasel-burrs arranged on the plates at right angles to the axis of the roll and secured in place by the bending over of the longitudinal edges of said plates, substantially as set forth.

2. In a teaseling-machine, the combination of a frame, the shaft C, having its bearings on the frame, the disks E, arranged on the shaft and provided with the bearings F, rolls journaled in the latter bearings, teaseling-burrs arranged on the rolls at right angles to their axes, spring-controlled sliding bearings arranged on said frame adjacent to the drum formed by said disks and teaseling-rolls, and a pressure-roll journaled in said sliding bearings, substantially as set forth.

409,976. **PRESS.** WILLIAM V. KAY, Houston, Tex. Filed July 21, 1888. Serial No. 280,610. (No model.)

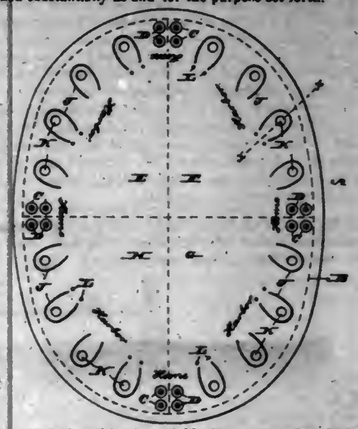


Claim.—1. In a book or letter press, the combination of a base A, provided with a bent arm C, having a slot formed through its upright portion and provided with a nut *s*, a screw E, working in the nut *s*, and a plate B, secured to the screw, and having a lateral headed projection extending through and beyond the slot in the arm C, substantially as and for the purpose set forth.

2. A book or letter press comprising, in combination, the base A, provided with a lateral arm C, bent over the base to bring its extremity over the center of the base, a nut *s*, forming the extremity of the bent arm, a T-shaped slot formed through the upright portion of the arm C, a screw E, working within the nut *s*, a plate B, secured to the screw and having a T-shaped lateral projection *r* extending through and beyond the slot in the arm C, and means for operating the screw, substantially as described.

409,977. **GAME APPARATUS.** HENRY S. KENNEY, Philadelphia, Pa. Filed Feb. 20, 1889. Serial No. 300,566. (No model.)

Claim.—1. A game-board having a field with a surrounding limit-line and provided in each quadrant thereof with U-shaped devices on said field, forming ports, the said ports having their openings toward the center of the field, and pockets or depressions in the field at the inner ends of the ports, circles between the adjacent ports of each two contiguous quadrants, forming home-circles, said parts being combined substantially as and for the purpose set forth.



2. A game-board having a field with a surrounding limit-line and provided with U-shaped devices in each quadrant thereof forming ports, the said devices or ports having openings toward the center of the field, pockets or depressions in the field at the inner end of the ports, spots on said field in front of the ports at the ends thereof representing "forts," and circles on said board forming home-circles between the adjacent ports of each two contiguous quadrants, said parts being combined substantially as and for the purpose set forth.

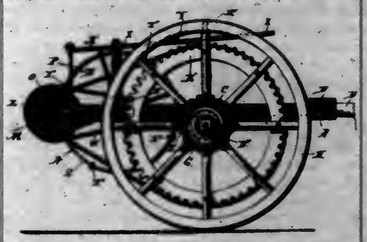
409,978. **WATER-SPRINKLER.** WILLIAM S. KENNEDY, Bellevue, Ky., assignor to Henry G. Stiebel, Cincinnati, Ohio. Filed Dec. 29, 1888. Serial No. 294,961. (No model.)



Claim.—1. The combination, in a water-sprinkler, of a perforated supply-pipe, a hollow head surrounding said pipe, a marginal ventage to said head, a brush applied to said ventage, and means for revolving said head, whereby its centrifugal velocity drives the water through said brush in the manner herein described.

2. The combination, in a water-sprinkler, of an axial supply-pipe A, a hollow head composed of a pair of disks I I', attached to said pipe and surrounding the perforated portion *a* thereof, tubes J J', fitted between said disks, caps L L', secured to the exterior of the latter by ties K K', that traverse the tubes J J', brushes G G', applied to the marginal ventage of said hollow head, and means for revolving said sprinkler, all as herein described.

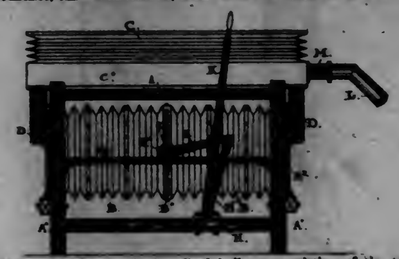
409,979. **STALK-CUTTER AND MOWER.** WASHINGTON I. KNOX, Terrell, Tex. Filed Oct. 13, 1888. Serial No. 288,019. (No model.)



Claim.—1. In a stalk-cutter and mower, the combination of the frame, the driving-wheel having sprocket K, the shaft L, having the sprocket-pinion and pulley O, the chain connecting the sprocket K with the sprocket-pinion, the links U, hinged to and and depending from the shaft L, the reel journaled in said links and having the longitudinal cutters, said reel having the pulley V, the endless belt connecting pulleys O and V to rotate the reel, and the lever pivoted to the frame and connected to the reel to raise and lower the same, substantially as described.

2. In a stalk-cutter and mower, the combination, with the shaft L, having pulley O, and means, substantially as set forth, to rotate the same, of the pivoted links U, the reel having its shaft journaled in said links and provided with the longitudinal cutters and with the pulley V, the endless belt connecting the said pulleys O and V, and the lever connected to the reel to raise and lower the same, substantially as described.

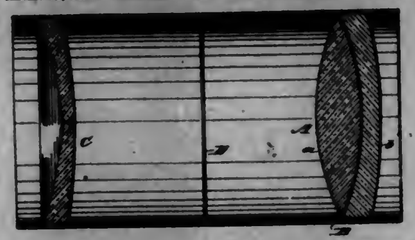
409,980. **DOUBLE-ACTING BELLOWS.** HERMAN KOHN, San Francisco, Cal. Filed Nov. 24, 1888. Serial No. 291,809. (No model.)



Claim.—1. The herein-described bellows, consisting of the two section and three compartments placed end to end and separated by an imperforate movable partition, the fixed heads having valved inlets for air from the outside, and air-passages controlled by valves to deliver air into a common receiving-chamber, above which said chamber is adapted to form an expansible receiver, and a rock-shaft provided with an operating-lever connected, substantially as described, to the said partition.

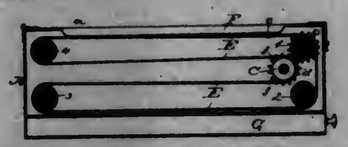
2. The combination, with the double-acting bellows, of the rock-shaft H, provided with the operating-lever K, and having fixed arms $H^{\times}$ $H^{\times}$, the movable head-board $B^{\times}$, having the fixed studs F F, which are mounted on wheels or rollers *f*, the links I, connecting the fixed arms $H^{\times}$, and the studs F, and the guide-rails G G, substantially as described.

409,981. **PHOTOGRAPHIC LENS.** CHARLES H. R. KROSKARN, Cincinnati, Ohio. Filed Jan. 7, 1889. Serial No. 295,698. (No model.)



Claim.—In a lens for photographic and other purposes, the combination of two unequal lenses, the front lens being a single concave lens with negative focus, and the back lens an achromatic lens with positive focus, the two focuses or powers being separated by a diaphragm, substantially as specified.

409,982. **ARTIST'S FIELD AND MATERIAL CASE.** CHARLES J. KRUESEN, Chicago, Ill. Filed Nov. 10, 1888. Serial No. 290,498. (No model.)



Claim.—1. An artist's field-case consisting of a rectangular box having a suitable opening in the upper side thereof, in combination with a series of rollers 1, 2, 3, and 4, journaled therein, roller C, cut away between the ends thereof, and belt K, as set forth.

2. An artist's field-case consisting of a rectangular box having a suitable opening in the upper side thereof, in combination with a series of transverse rollers 1, 2, 3, and 4, journaled therein, roller C, having a series of spurs projecting from its circumference near its ends and being cut away or reduced to a less diameter between said ends, and an endless belt, as set forth.

3. An artist's field-case consisting of a rectangular box having a rectangular opening in its upper side, and having guards bent inward along its longitudinal sides, as described, in combination with a series of transverse rollers 1, 2, 3, and 4, journaled therein, and roller C, cut away or reduced to a less diameter between said ends a distance corresponding to the width of said rectangular opening in the upper side of said case, as set forth.

4. An artist's field-case consisting of a rectangular box having an opening in the upper side, in combination with a series of transverse rollers 1, 2, 3, and 4, journaled therein, belt K, and a transverse series of buttons *c c c*, secured to the same, as set forth.

409,983. **HAY-BINDER.** REUBEN R. KUHLER, Kingwood, N. J. Filed May 22, 1889. Serial No. 311,736. (No model.)

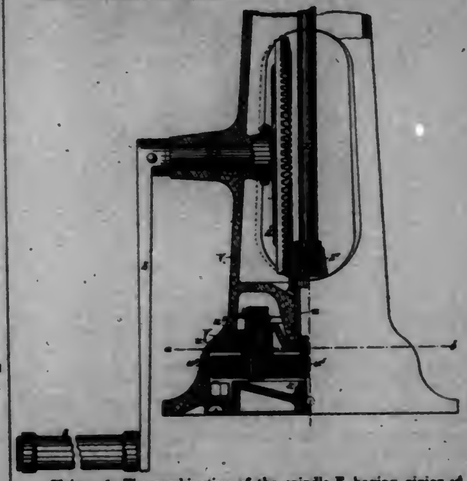


Claim.—1. A hay-binder comprising a post adapted to be set vertically in the load, ropes secured at their ends and adapted to be wound on the said post, and a lever for turning and locking the said post, substantially as shown and described.

2. In a hay-binder, the combination, with a tapering post provided at its upper end with prongs, of a lever adapted to be inserted at one end between the said prongs for turning the said post, and ropes secured at their ends and passing between the said prongs, substantially as shown and described.

3. In a hay-binder, the combination, with a tapering post provided at its upper end with prongs, of a lever provided with a hook and adapted to be inserted at one end between the said prongs for turning the said post, and ropes secured at their ends and passing between the said prongs, said hook adapted to hook on one of the said ropes, substantially as shown and described.

409,984. **GEARING FOR DRIVING CENTRIFUGAL MACHINES.** JOHN LAIDLAW, Glasgow, Counties of Lanark and Renfrew, Scotland. Filed May 7, 1888. Serial No. 309,942. (No model.) Patented in England Nov. 24, 1888, No. 17,105.



Claim.—1. The combination of the spindle E, having pinion n^4, the sleeve *u*, having arm *u'*, the gear-wheel n^5, carried by the arm, the fixed circular rack n^6, the bevel-pinion S^3 on the sleeve, and the shaft having bevel gear-wheel S', substantially as described.

2. The combination of the spindle E, having pinion n^4, the sleeve *u*, having arm *u'*, the pinion n^3 and gear-wheel n^4, carried by the arm, the fixed circular rack n^6, the bevel-pinion S^3 on the sleeve, and the shaft having bevel gear-wheel S', substantially as described.

409,985. **COMPOSITION OF MATTER.** CHARLES T. LEE, Boston, Mass., assignor of one-half to the Gould & Watson Company, same place. Filed July 26, 1888. Serial No. 281,016. (No specimens.)

Claim.—The herein-described composition of matter, consisting solely of comminuted mica and silicate of soda mixed, as set forth.

409,986. PROCESS OF ATTACHING COMPOSITION OF MATTER TO METAL. CHARLES T. LEE, Boston, Mass., assignor of one-half to the Gould & Watson Company, same place. Filed June 14, 1889. Serial (No 314,291. (No specimens.)

Claim.—The process of producing molded objects, consisting of mica or similar material incorporated with a resinous gum and having a core or strengthening-piece of metal secured therein, consisting in first warming the dies, which are to give the exterior shape to the article to be molded, then heating the core or strengthening-piece to a much higher degree of heat than the dies or the plastic mass, and placing said core and said plastic mass together within the dies, and then molding and compressing into shape and allowing the object thus formed to cool before removing the pressure, substantially as described.

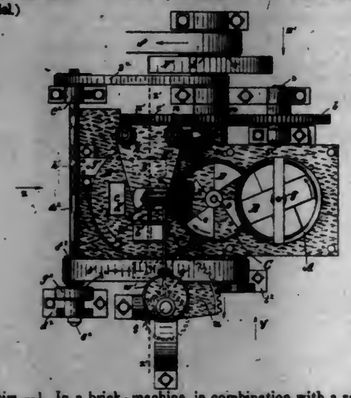
409,987. CORN-HARVESTER. BYRAN R. LEROY, West Independence, Ohio. Filed Mar. 21, 1888. Serial No. 304,174. (No model.)



Claim.—1. The combination, with the platform having the slots K L, of the wings hinged to the platform and carrying the knives and the lever fulcrumed below the platform and having its front arm projecting through the slot K and bearing against the wing, and its rear arm projecting through the slot L and adapted to be actuated to elevate the front arm, and thereby raise the wing, as set forth.

2. The combination, with the platform and the wing hinged thereto, of the lever fulcrumed below the platform and bearing against the wing and adapted to raise the same, as set forth.

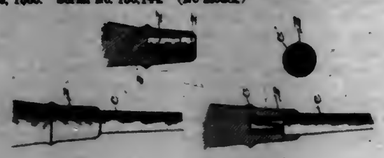
409,988. BRICK-MACHINE. SACKVILLE G. LETSON and HOWELL THOMAS, Rome, assignors of fifty-one one-hundredths to Leon H. Lempert, Rochester, N. Y. Filed Apr. 24, 1888. Serial No. 308,462. (No model.)



Claim.—1. In a brick-machine, in combination with a rotatory mold-cylinder formed with mold-cavities and rams therefor, a pressing-plate, a lifting-bar to act against the rams, a rotatory shaft, and a crank on said shaft to bear against the lifting-bar, the latter being a spring-bar, substantially as shown and described.

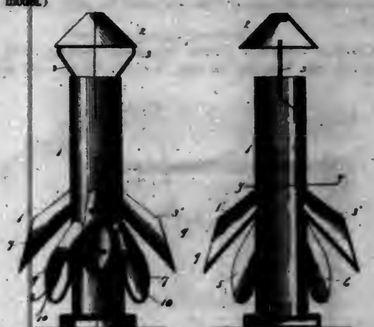
2. In a brick-machine, a rotary mold-cylinder formed with gear-teeth, in combination with a horizontal shaft, a vertical shaft at the side of the mold-cylinder geared to the horizontal shaft, a segmental gear on the vertical shaft to turn the mold-cylinder, a pivotal discharging-arm, and an eccentric on the vertical shaft to operate the discharging-arm, substantially as shown and described.

409,989. TOOL-HANDLE. NEWTON LIMLEY, Freeport, Ill.; Florence Limley executrix of said Newton Limley, deceased. Filed Dec. 19, 1885. Serial No. 186,144. (No model.)



Claim.—The combination, with a handle having a cylindrical socket whose outer portion is of greater diameter than its inner portion, of a tool-shank equal in diameter to said outer portion, and having a prismatic end adapted to readily enter said outer portion, but requiring pressure to force it into said inner portion, substantially as set forth.

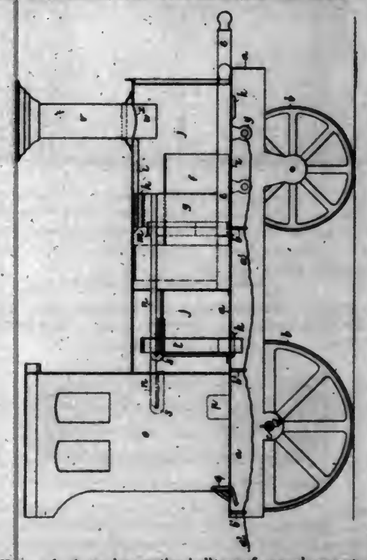
409,990. CHIMNEY-COWL AND VENTILATOR. CHARLES B. LOVELL, Worthington, Minn. Filed May 25, 1889. Serial No. 312,103. (No model.)



Claim.—1. A chimney-cowl and ventilator consisting of a cylindrical central vertical tube having an open upper end and two series of downwardly-inclined tubes—an upper and a lower series—said inclined tubes being located exteriorly of and extending entirely around the central tube and communicating with the same below the open upper end thereof, the tubes composing said upper and lower series of tubes being alternately arranged in different vertical planes, substantially as described, for the purpose set forth.

2. A chimney-cowl and ventilator consisting of a cylindrical vertical tube having an open upper end and two series—an upper and a lower series—of downwardly-inclined tubes located exteriorly of said vertical tube, the tubes comprising both series being alternately arranged in different vertical planes, and each tube of each of the series of tubes converging from its outer end to its point of attachment to the vertical tube, and having its outer end truncated on a vertical line to form a mouth in the shape of a broad open ellipse, substantially as described, for the purpose set forth.

409,991. TOY LOCOMOTIVE. GEORGE F. LUTTGENS, London, England. Filed Jan. 17, 1889. Serial No. 296,805. (No model.)



Claim.—1. A toy locomotive built up of several separate pieces, combined with a buffer-bar carrying an upright provided with a clip, detachable sides of a boiler held to place by said clip, a rod carried by the buffer-bar and serving as a striker, and whereby, when the locomotive is advancing and the buffer strikes an object or is pulled back, the cab shall be thrown off and the said boiler sides released, as set forth.

2. In a self-propelling toy locomotive, the combination, with a boiler composed of detachable sections or sides *j*, held temporarily to place both at top and bottom, of springs *m*, bearing against the inner sides of such boiler-sections, a slide-rod or buffer serving, when moved lengthwise, to release said sides at their tops, and the springs then serving to force the sides outward and to throw them off, substantially as set forth.

3. In a self-propelling toy locomotive, the combination of a buffer-bar, a detachable cab *o* and its detaining-wire *q*, a platform having the clip *p* and holes *r*, and the slide-rod *n*, connected with the buffer-bar and adapted to strike the cab and throw it off the platform upon the sudden striking or pulling of said bar, all as shown and described.

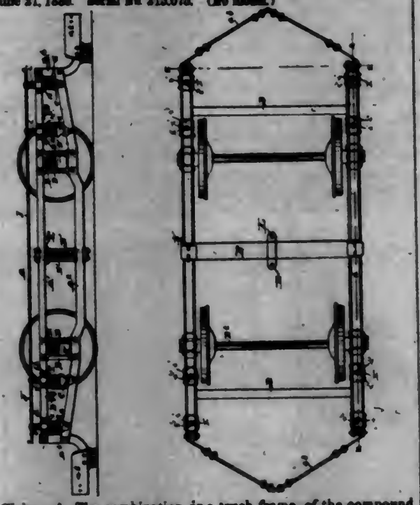
4. In a toy locomotive, a clip A, connected with a sliding buffer-bar and serving to clasp and retain the bent flanges *i* of detachable sides or other parts of the locomotive, in combination with springs *m*, the said parts being adapted to fly apart by the action of such spring upon the buffer-bar being suddenly struck or pulled, substantially as set forth.

5. In a toy locomotive, the combination, with a buffer-bar, of a crook or catch on a rod connected with such bar, and a spring-hammer retained by the crook or catch, but adapted to be released by the action of the buffer-bar when the latter is suddenly struck or pulled, substantially as set forth.

409,992. PROCESS OF REFINING NICKEL. PIERRE MARBEK, Lyons, France. Filed Dec. 19, 1888. Serial No. 294,113. (No model.)

Claim.—The herein-described process of refining nickel and cobalt, which consists in casting the crude nickel or cobalt, then oxidizing the surface of the castings by means of oxidizing-flames in the presence of air, then cooling the castings, and afterward melting them in the presence of an alkaline flux, substantially as described.

409,993. CAR-TRUCK. BENJAMIN F. MANSER, Troy, N. Y. Filed June 21, 1889. Serial No. 315,075. (No model.)



Claim.—1. The combination, in a truck-frame, of the compound side bars $A' A^3$, composed of flat metal bars arranged vertically edgewise in pairs, and bolted together substantially as described, and the vertical uprights connecting said bars and the transverse connecting-bars, substantially as specified.

2. The combination, in a truck, of the side frames composed of side bars $A' A^3$, each consisting of two parallel flat metal bars set edgewise and connected substantially as described, the uprights B B, and the transverse connecting-bars D D and E, all substantially as and for the purpose set forth.

3. The combination of the truck-frame with the body-supporting springs and the vertically-movable caps I I, resting on said springs and carrying the body, all substantially as specified.

4. The combination of the side bars $A' A^3$, the springs supported on bar A^3 exterior to the axles, the caps I, having shanks *i* playing through bar A', and the bar F, supported on said shanks, substantially as specified.

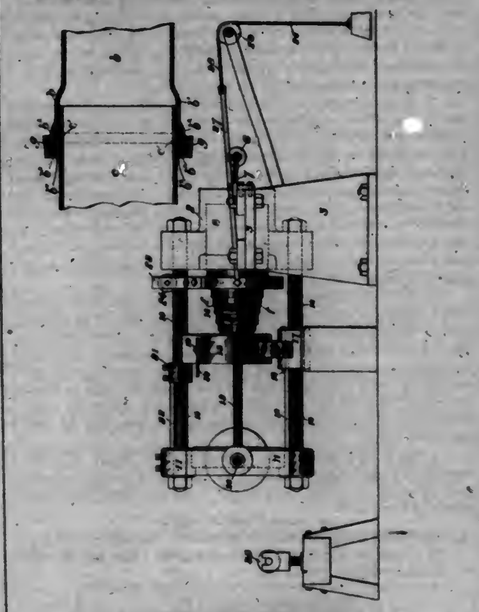
5. The combination of the truck-frame composed of side bars $A' A^3$, uprights B B, and the transverse connecting-bars D D and E, with the car-axles, boxes B', and springs F F, all substantially as set forth.

6. The combination of the truck-frame having compound side bars $A' A^3$ with the stirrup-blocks C, springs G, caps I, and bars F, all as and for the purpose set forth.

7. The combination of the truck-frame composed of side bars $A' A^3$, the latter being depressed at center, the uprights B B, and transverse bars D D and E, and bolts E', with the car-axle boxes playing between uprights B B, the springs F F, and the car-body-sustaining springs arranged on the truck exterior to the axles, substantially as and for the purposes set forth.

8. The herein-described truck, consisting of the side frames composed of compound bars $A' A^3$, uprights B B, and the transverse braces D D and E, brace-bolts E', the stirrup-blocks C C, springs thereon, the vertically-movable caps I, having shanks *i* playing through bar A', and the body-bars J, all constructed and arranged as and for the purpose described.

409,994. MACHINE FOR EXPANDING THE ENDS OF PIPES. GEORGE MATHESON, Brooklyn, N. Y. Filed Dec. 3, 1888. Serial No. 292,460. (No model.)



Claim.—1. In a machine for shaping the ends of pipe by end compression of a mandrel, a die for confining the pipe during the shaping operation, said die having an internal groove-like recess within which the metal may flow to form a swell in the pipe, substantially as and for the purpose described.

2. In a machine for expanding and shaping the ends of pipes by end compression of a stepped or tapering mandrel, a die for confining the pipe, said die being flared to permit expansion of the pipe, and having an internal groove-like recess within which the metal may flow to form a swell in the pipe, substantially as and for the purpose described.

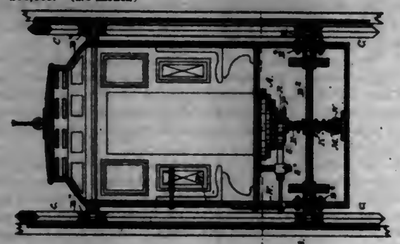
3. In a machine for expanding the ends of pipes, the combination of a movable expanding cone or mandrel and a rod affixed to the moving head or plunger by which the mandrel is actuated, said mandrel being movably mounted on said rod, and a stop on the rod which affords resistance to the mandrel during the act of stripping the pipe therefrom, substantially as and for the purpose described.

4. In a machine for expanding the ends of pipes, the combination of a movable expanding cone or mandrel, a die which incloses the pipe around the portion thereof which is to be expanded, and a separate clamp or gripper by which the pipe is held while being expanded, substantially as and for the purpose described.

5. In a machine for expanding the ends of pipes, the combination of a plunger 8, a projecting rod 12, the cone or mandrel 14, which is loosely mounted on the rod, a sectional die 15, having a suitable forming-cavity, and a clamp or gripper 25, by which the pipe is held, substantially as and for the purpose described.

409,995. SPEED-CONTROLLING DEVICE FOR ELEVATORS.

THOMAS H. MELROSE, San Francisco, Cal. Filed Jan. 12, 1889. Serial No. 296,165. (No model.)



Claim.—1. In a speed-controller for elevator-cars, the combination of wheels on the car adapted to embrace and run on rails in the well or shaft of the elevator, a controlling-shaft geared into one of the shafts or axles of said wheels by a worm-wheel on the axle, and a loosely-sliding sleeve on the controlling-shaft having a worm engaging with said worm-wheel, a clutch-section on said controlling-shaft and a fellow clutch-section on the end of said sleeve, and friction dogs or blocks fixed on the said controlling-shaft in position for operation by centrifugal force against a fixed friction-ring or circular track surrounding them, substantially as set forth.

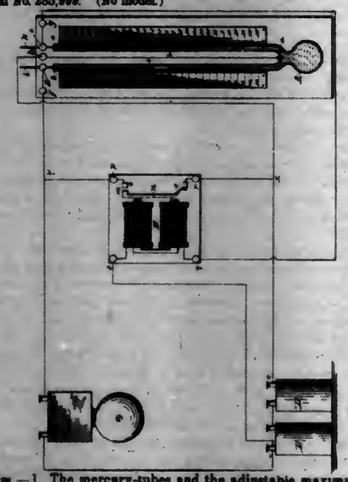
2. In an elevator, the combination, with guide-rails fixed in the well or rim of the car, of wheels on the car having their axles geared together, a controlling-shaft, a friction-ring having centrifugal friction dogs or blocks, on which the controlling-shaft acts to cause them to operate in the direction of rotation of the shaft, a loosely-sliding sleeve on said controlling-shaft having a worm-gear, a clutch-section on the end of said sleeve, and a fellow clutch-section on the shaft, which are adapted to be locked by the movement of the sleeve longitudinally in one direction and to be released to run idly by a contrary movement, and a worm-wheel on one of the axles of said wheels adapted to engage said worm, substantially as set forth.

3. The combination of a controlling-shaft E, carrying a loose sleeve capable of longitudinal movement thereon, and having a worm-gear, a clutch-section on said sleeve, and a fellow clutch-section on the controlling-shaft adapted to be locked or unlocked by the longitudinal movements of said sleeve, and a governor connected with said controlling-shaft, consisting, essentially, of centrifugal dogs or blocks carried by the shaft, and a surrounding fixed ring presenting a friction-surface to engage said dogs, substantially as described, for operation as set forth.

4. The combination of the friction-pulley P, brake R, brake-lever S, and cam-plates Y, fixed in the run of the elevator at given point or points to engage with and throw the said brake-lever, substantially as set forth.

409,996. THERMOMETRIC INDICATOR.

MAX MEYER, New York, N. Y., assignor to Ruben R. Ayres, same place. Filed Sept. 21, 1888. Serial No. 285,999. (No model.)

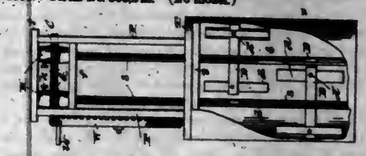


Claim.—1. The mercury-tubes and the adjustable maximum and minimum contacts, in combination with a normally-open maximum circuit, including the maximum contact and the mercury of its tube, a normally-closed minimum circuit, including the minimum contact and the mercury of its tube, and the annunciator or indicator mechanism controlled by each circuit and brought into operation upon change in the condition of said circuit, substantially as and for the purposes hereinbefore set forth.

2. The mercury-tubes and the adjustable maximum and minimum contacts, in combination with a normally-open maximum circuit, including the maximum contact, the mercury of its tube, and the annunciator, a normally-closed minimum circuit, including the minimum contact, the mercury of its tube, and the coils of a relay, and a branch circuit through the annunciator containing contact-points controlled by the relay, substantially as and for the purposes hereinbefore set forth.

409,997. CHURN.

ELI MICHAELS, Sweetser's, Ind. Filed Apr. 23, 1889. Serial No. 308,242. (No model.)



Claim.—The shaft S, the two arms D, passing through transverse holes therein at right angles thereto and to each other, vertical wings *d*, dovetailed in the ends of said arms at right angles thereto, and wooden pins *d'*, for holding them in place, in combination with a second shaft S, having similar arms and wings and standing parallel with said first shaft, the opposite arms being set quartering to each other, a pair of intermeshing gears keyed to said shafts, and a hand-wheel for imparting rotary motion thereto, as set forth.

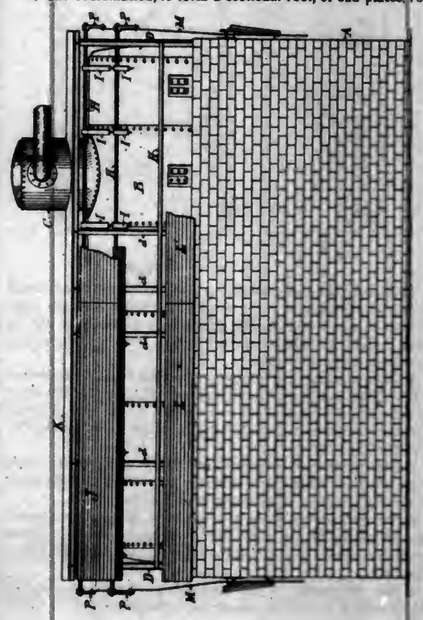
409,998. SECTIONAL ROOF FOR STILLS.

JAMES G. MITCHELL, Philadelphia, Pa., assignor to the Atlantic Refining Company, same place. Filed Mar. 12, 1889. Serial No. 302,998. (No model.)

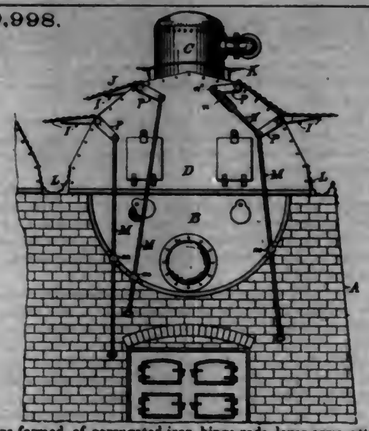
Claim.—1. The combination, to form a sectional roof for a cylindrical or other shaped still, of supporting-plates, a series of hinge-rods, a series of roof sections attached to and turning with said rods, and arranged to, when closed, fit or conform as a whole to the shape of the still to which they are applied, and means for turning said hinge-rods, substantially as set forth.

2. The combination, to form a sectional roof for a cylindrical or other shaped still, of supporting-plates, a series of hinge-rods, a series of roof-sections formed of corrugated iron attached to and turning with said rods, and arranged to, when closed, fit or conform as a whole to the shape of the still to which they are applied, and means for turning said hinge-rods, substantially as set forth.

3. The combination, to form a sectional roof, of end plates, roof-



409,998.



sections formed of corrugated iron, hinge-rods, lever-arms attached to said hinge-rods, and manipulating-rods for operating said lever-arms, substantially as set forth.

4. The combination, to form a sectional roof, of end plates, roof-sections formed of corrugated iron, hinge-rods, lever-arms attached to said hinge-rods, manipulating-rods, and slotted links, substantially as set forth.

5. The combination, to form a sectional roof, of end plates, hinge-rods, supporting-arms projecting from said rods, roof-sections mounted upon said arms, lever-arms attached to said hinge-rods, and manipulating-rods to open and close said roof-sections, substantially as set forth.

6. The combination, to form a sectional roof, of a pair of end plates having corresponding sectional faces, roof-sections, each of breadth equal to the length of one of said faces, hinge-rods upon which said roof-sections are mounted, lever-arms upon said hinge-rods, and manipulating-rods connected to said lever-arms, substantially as set forth.

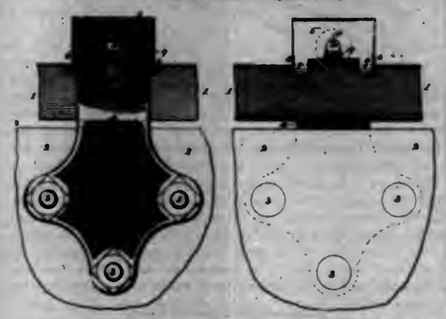
7. In a still-roof, in combination, the end plates, the hinge-rods, the roof-sections, the lever-arms, the links, and the manipulating-rods, substantially as set forth.

8. In a still-roof, in combination, the supporting-arches, the hinge-rods, the roof-sections, the lever-arms, the link, and the manipulating-rods, substantially as set forth.

9. In a still-roof, in combination, the supporting-arches, the hinge-rods, the roof-sections, the lever-arms, the slotted links, and the manipulating-rods, substantially as set forth

409,999. DOOR-HANGER.

PETER H. MURPHY, East St. Louis, Ill. Filed May 22, 1889. Serial No. 311,662. (No model.)

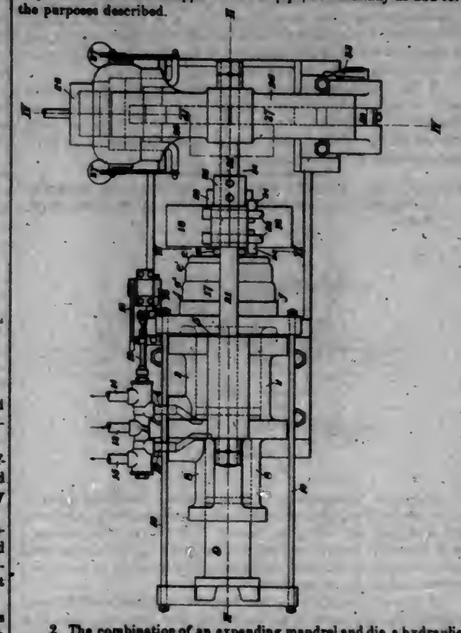


Claim.—In a door-hanger of two parts, the combination of a bracket constituting one part having a slotted head with projections on each side of the slot, bearings in the bracket on each side of said slot, one of which is open at the bottom, and a cylindrical roller having gudgeons adapted to work in said bearings and constituting the other part, substantially as set forth.

410,000. MACHINE FOR EXPANDING THE ENDS OF PIPES.

GEORGE MATHESON, Brooklyn, N. Y. Filed June 20, 1889. Serial No. 314,952. (No model.)

Claim.—1. The combination of an expanding mandrel and die, a hydraulic motor comprising a cylinder and plunger by which the mandrel is projected, and an auxiliary cylinder and plunger by which it may be retracted and stripped from the pipe, substantially as and for the purposes described.



2. The combination of an expanding mandrel and die, a hydraulic motor comprising a cylinder and plunger by which the mandrel is projected, and an auxiliary cylinder and plunger by which it may be retracted and stripped from the pipe, said cylinders being situate in substantially the same axial line and formed of an integral piece of metal, substantially as and for the purposes described.

3. The combination of an expanding mandrel and die, a hydraulic motor comprising a cylinder and plunger by which the mandrel is projected, an auxiliary cylinder and plunger by which it may be retracted and stripped from the pipe, and a common valve controlling the cylinders, substantially as and for the purposes described.

4. The combination, with an expanding-mandrel, of a clamp for holding the pipe, said clamp consisting of separable sections, and a hydraulic motor by which one at least of the sections is moved, substantially as and for the purposes described.

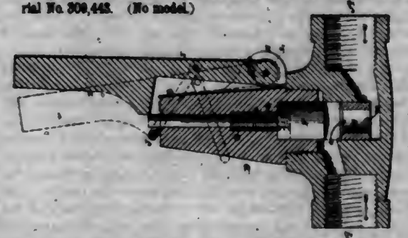
5. The combination, with an expanding-mandrel, of a clamp for holding the pipe, said clamp consisting of separable sections, a hydraulic motor by which one of the sections is moved, and an eccentric by which the other section is moved, substantially as and for the purposes described.

6. The combination, with an expanding-mandrel, of a clamp for holding the pipe, said clamp consisting of separable sections, an eccentric, and an eccentric-box set in a recess or slideway in the machine-frame and connected with the clamp-section, substantially as and for the purposes described.

7. The combination of the machine-frame, a hydraulic motor and mandrel at one end thereof, a gripper or clamp and its actuating mechanism at the other end, and braces or rods connecting the ends of said machine-frame, substantially as and for the purposes described.

410,001. AUTOMATIC SAFETY-LOCK FOR GAS.

ALBERT H. MCCLURE and HUGH HOLLAND, McGovern, Pa. Filed May 3, 1889. Serial No. 309,443. (No model.)



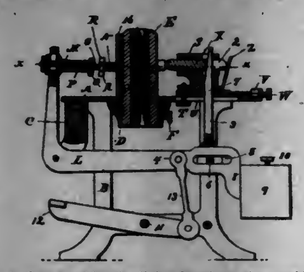
Claim.—1. The combination, with the shell provided with a

valve-seat, the vertical cylinder, and a spring-actuated valve having a stem projecting above the cylinder when it is raised, of a spring-actuated lock having its lower end pivoted to the shell or guide and its upper end engaging the upper end of the valve-stem, in the manner shown, and for the purpose described.

2. The combination of the shell provided with a valve-seat, the guide or cylinder, the spring-actuated valve placed therein and adapted to have its end extend above the guide or cylinder by the pressure of gas against it, the pivoted spring-actuated lock, and a ring connected to the lock, substantially as set forth.

410,002. MACHINE FOR LINING RAILROAD-CAR BEARINGS.

GILBERT MCCULLOCH, Altoona, Pa. Filed Nov. 13, 1888. Serial No. 290,706. (Model.)



Claim.—1. In a machine for lining bearings, the combination of a core, longitudinally-sliding wings fitted against the sides of said core, and mechanism for forcing the bearing which is to be lined in a rearward direction toward the face of said core and into contact with the front edges of the said sliding wings, substantially as herein described, and for the purpose set forth.

2. In a machine for lining bearings, the combination of the core, studs or plugs mounted in perforations in and projecting from the face of said core, longitudinally-movable wings fitted against the sides of said core, and mechanism for forcing the bearing which is to be lined in a rearward direction toward the face of said core and into contact with the front edges of the said sliding wings, substantially as herein described, and for the purpose set forth.

3. In a machine for lining bearings, the combination, with a suitable table or platform, of a core having flattened sides, the longitudinally-sliding wings fitted against the sides of said core, mechanism for forcing the said wings in a forward direction, and mechanism for forcing the bearing which is to be lined in a rearward direction toward the face of said core and into contact with the front edges of the said sliding wings, substantially as set forth.

4. In a machine for lining bearings, the combination of a core having flattened sides, longitudinally-sliding wings fitted against the sides of said core and having rearwardly-extending arms or brackets, a box mounted upon the frame or table in rear of the core, a longitudinally-sliding cross-head mounted in said box and bearing against the rearwardly-extending arms of the longitudinally-sliding wings, and mechanism for operating the said cross-head, substantially as set forth.

5. The combination of the core, the longitudinally-sliding wings fitted against the sides of said core, the boxing mounted upon the frame or table in rear of said core, a cross-head sliding longitudinally in said boxing and bearing against the longitudinally-sliding wings, a spring arranged to press against the rear end of the stem of said cross-head, and a vertically-movable wedge working in a slot in the said stem, and serving, when moved in an upward direction, to force the cross-head in a forward direction, assisted and continued by the said spring, substantially as herein set forth.

6. In a machine for lining bearings, the combination of the core, the longitudinally-sliding wings fitted against the sides of said core, mechanism for forcing the said wings in a forward direction, a bell-crank lever having an arm extending vertically in front of the said core, and provided with a horizontal bracket extending toward the said core and having an adjustable ram-head, and mechanism for operating the said bell-crank lever, substantially as set forth.

7. In a machine for lining bearings, the combination of a frame or table, a core mounted on the same, a bracket extending downwardly from the front end of said table, a bell-crank lever pivoted to said bracket, a ram-head mounted adjustably in a bracket extending forwardly from the vertical arm of said bell-crank lever, a boxing mounted adjustably in rear of the said core and having a longitudinally-sliding cross-head, a wedge moving vertically in said boxing and forcing the said cross-head in a forward direction, a pin connecting the lower end of said wedge with a longitudinal slot in the horizontal arm of the bell-crank lever, and a link connecting the latter with the rear end of a lever, the front end of which is provided with a treadle, substantially as set forth.

8. In a machine for lining bearings, the combination of a core the face of which is provided with radial openings, with studs or plugs fitted in the said openings and projecting beyond the face of the said core, and the longitudinally-sliding wings, substantially as and for the purpose set forth.

9. The combination, with the table having a flange or collar, of the cylindrical tubular core mounted in the said collar and secured in position by means of a set-screw, and the longitudinally-sliding wings, substantially as herein set forth.

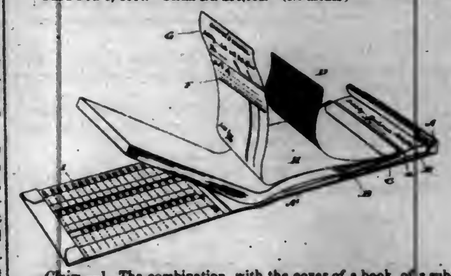
10. In a machine for lining bearings, the combination, with the core having the longitudinally-sliding wings, of the longitudinally-adjustable boxing having a longitudinally-movable cross-head arranged to bear against the said wings, and mechanism, substantially as described, for forcing the said wings in a forward direction, substantially as set forth.

11. In a machine for lining bearings, the combination of the frame or table, the core, the longitudinally-adjustable boxing having the longitudinally-movable cross-head, a bell-crank lever, the vertical arm of which is provided with a bracket having a ram-head extending horizontally in front of the core and the horizontal arm of which is provided with a slot, connected with the lower end of a vertically-movable wedge sliding in a bearing in the longitudinally-adjustable boxing and serving to force the cross-head in a forward direction, a weight mounted adjustably at the rear end of the horizontal arm of the bell-crank lever, and a link connecting the latter with an operating-treadle, substantially as and for the purpose herein set forth.

12. In a machine for lining bearings, the combination, with the core having the longitudinally-sliding wings, of the longitudinally-adjustable boxing, a cross-head arranged to move longitudinally in the said boxing and bearing against arms or brackets extending rearwardly from the longitudinally-movable wings, a vertically-movable wedge adapted to bear against the cross-head and force the latter in a forward direction, and a spring mounted upon the base of the said longitudinally-adjustable boxing and bearing against the rear end of the stem of the longitudinally-sliding cross-head, serving to force the same in a forward direction, substantially as and for the purpose herein set forth.

410,003. BLACK-LEAF CHECK-BOOK.

THOMAS MCDOWELL, Niagara Falls, N. Y., assignor to the Carter & Company, (Limited,) same place. Filed Dec. 3, 1887. Serial No. 256,932. (No model.)



Claim.—1. The combination, with the cover of a book, of a substantially U-shaped spring attached to said cover and the cross-bar thereof adapted to bear on the book at a point between its attachment to the cover and the perforations *a* of the book, leaving the stubs entirely free of the spring, and a black leaf secured to the cross-bar of said spring, substantially as and for the purpose specified.

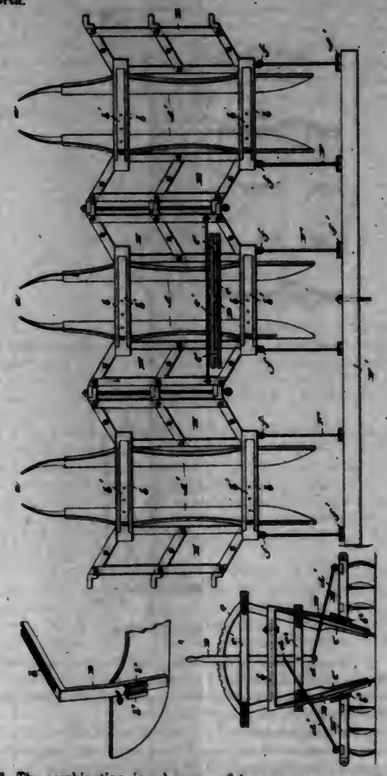
2. A cover A', formed at one end with a pocket A, and a book fitted into pocket A, formed on the end of the cover A', in combination with a binder or elastic over the portion of the book in the pocket, and the carbon sheet D, attached to a fly C, attached to the spring B, which is attached to the cover A' and extends along the side of the main leaf and across the book at a point between the free end of the main leaf and the perforations *a*, substantially as and for the purpose specified.

410,004. HARROW.

DENVER MCHUGH, Malvern, Iowa. Filed Mar. 23, 1889. Serial No. 305,071. (No model.)

Claim.—1. The combination, in a harrow for cultivating listed corn, of runners connected adjustably to each other by arches, a frame carrying a pivoted lever, harrow-sections pivotally connected to the runners, so that said pivots may move vertically, and rods connecting the outer ends of the harrow-sections to the lever, whereby said harrow-sections may be raised, substantially as shown, and for the purpose set forth.

2. The combination, in a harrow for cultivating listed corn, of runners provided at their rear ends with cultivating-blades, harrow-sections pivoted to said runners, and rods connecting the outer ends of the harrow-sections with a lever carried by a frame attached to the runners, the runner-connecting arches and lever-carrying frame being laterally adjustable, substantially as shown, and for the purpose set forth.



3. The combination, in a harrow, of two or more runner-carrying arches, harrow-sections pivotally connected to said runners, so as to be capable of a vertical movement at their points of connection, the harrow-sections being connected to each other, and means, substantially as shown, for elevating the sides of the harrow-sections where they are pivoted to each other, substantially as shown, and for the purpose set forth.

4. The combination, in a harrow, of the runners connected to each other by laterally-adjustable arches, the upper portion of said arches interlocking with each other and provided with a bolt for securing the parts, harrow-sections pivoted to the lower ends of the arches, draft-eyes *f*, and rods F, adapted to engage therewith and with loops attached to the draft-bar F', substantially as shown, and for the purpose set forth.

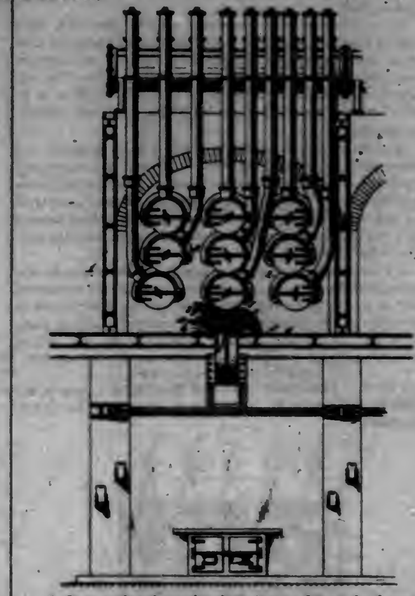
5. The combination, in a harrow, of harrow-sections consisting of two or more parallel bars connected to each other by lateral bars, said harrow-sections having at their corners perforated projections at right angles with the parallel bars, and means for connecting the harrow-sections to each other, so that said sections may be used as an ordinary harrow, and also be capable of attachment to the arches carrying runners, substantially as set forth.

410,005. COKE-CHUTE.

GEORGE A. MCILHENNY, Washington, D. C. Filed Apr. 20, 1889. Serial No. 308,066. (No model.)

Claim.—1. The combination, with a gas-bench having an opening leading to the furnace-chute and another opening leading to the coke-cellar, of a coke-chute located beneath the retort-doors and over the furnace-chute, said coke-chute having a hopper-plate hinged to its bottom and the chute being arranged over the furnace-chute, with its lower end in contiguity to the opening leading to the coke-cellar, substantially as described.

2. In a gas-bench, the combination, with a series of retorts, of a coke-chute consisting of a bottom having a discharge-opening and two converging sides, one of which is hinged to turn outward, and a hopper-plate hinged upon the bottom of the chute and adapted to be turned in opposite directions to form an angle therewith to direct the coke from the retorts through the discharge-opening into the furnace-chute or through the side opening into the coke-cellar, substantially as described.

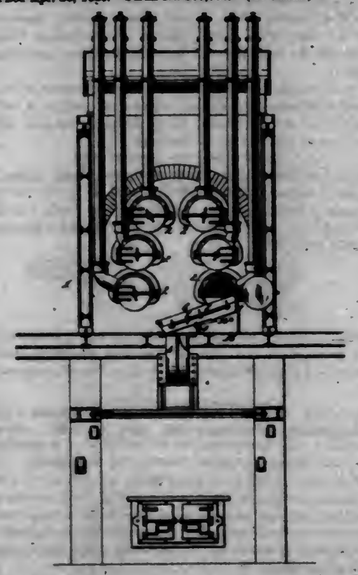


3. In a gas-bench, a coke-chute arranged over the furnace-chute and beneath one or more of the retorts, said coke-chute having an opening in its bottom over the furnace-chute, and a bottom plate adapted to either close said opening or to be used to form in conjunction with the chute a hopper to guide the coke to said opening, substantially as described.

4. In a gas bench, a coke-chute arranged over the furnace-chute and provided with a hinged front wall and an opening in the bottom above the furnace-chute, in combination with a reversible bottom plate, substantially as described.

410,006. COKE-CHUTE.

GEORGE A. MCILHENNY, Washington, D. C. Filed Apr. 20, 1889. Serial No. 308,067. (No model.)



Claim.—1. In a gas-bench, the combination, with a series of retorts, of a coke-chute pivotally mounted between its ends upon one

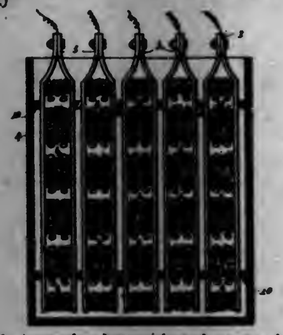
side of the furnace-chute and having its higher end lying under the retorts and the other end arranged over said furnace-chute, substantially as described.

2. The combination, with a gas-bench having gas-retorts upon both sides of a furnace-chute, of a coke-chute pivotally mounted upon one side of the furnace-chute and having an opening in its bottom lying over said chute, an opening being also formed in the other end and covered by a removable bottom piece to permit the chute to be inclined in both directions and to discharge from either end, substantially as described.

3. In a gas-bench, the combination, with a series of retorts, of a coke-chute pivotally mounted under one or more of said retorts and having one end arranged over the furnace-chute, whereby the drawn coke is guided to the latter, said chute provided with an opening in its other end, covered by a removable plate or bottom piece inserted through a slot in the end of the chute and resting on side lugs, substantially as described.

4. In a gas-bench, the combination, with a series of retorts, of a coke-chute pivotally mounted beneath one or more of said retorts and composed of an oblong conveyer having an opening in its bottom at or near each end, in combination with a removable bottom piece adapted to cover one of said openings, a section of the outer wall of said chute being hinged to turn outward, substantially as described.

410,007. SECONDARY-BATTERY ELECTRODE. JAMES F. MCLAUGHLIN, Philadelphia, Pa. Filed July 10, 1889. Serial No. 317,019. (No model.)



Claim.—1. A secondary-battery electrode composed, essentially, of two lead plates and a compressed and baked plate of active material clamped between them, substantially as described.

2. In a secondary-battery electrode, the combination of two lead plates held a distance apart by lead tubes extending between and through the same and a baked plate of active material filling the space between the lead plates and between the tubes, substantially as described.

3. In a secondary-battery electrode, the combination of two lead plates held a distance apart by lead tubes having perforated walls and a baked plate of active material filling the space between the lead plates and tubes, substantially as described.

410,008. REMOVABLE CALK FOR HORSESHOES. JOSEPH HEUB, Sr., Berlin, Germany. Filed Jan. 28, 1889. Serial No. 297,259. (No model.) Patented in Germany Mar. 28, 1886, No. 37,400; in France June 4, 1886, No. 176,551; in England June 18, 1886, No. 8,133, and in Belgium July 19, 1886, No. 73,897.

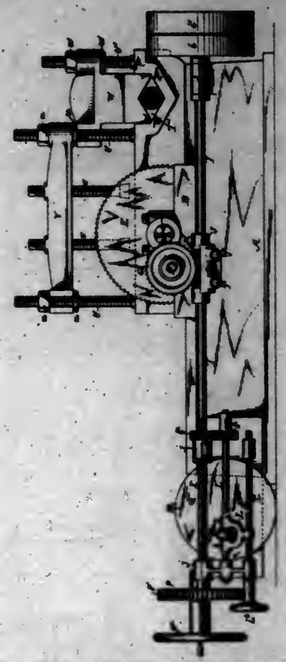


Claim.—A removable calk for horseshoes, having a tapered upper end and provided on two opposite sides with grooves *a*, extending from end to end of the calk, substantially as and for the purpose specified.

410,009. MACHINE FOR SAWING METAL. CHARLES C. NEWTON, Philadelphia, Pa. Filed June 4, 1889. Serial No. 313,057. (No model.)

Claim.—1. The combination of the bed-plate of a metal-sawing machine, the carriage mounted thereon, the saw spindle or shaft mounted on said carriage and carrying at one end a saw, a worm-wheel adapted to drive the shaft, with a driving-shaft, a worm meshing with said wheel and adapted to travel with the carriage, but free to be revolved by the driving-shaft, said worm having its bearings in a lubricating-box in which the worm travels and is lubricated, substantially as described.

2. The combination, in a metal-sawing machine, of the carriage, saw-shaft mounted thereon, a worm-wheel, a driving-shaft carrying a worm free to slide thereon, a bearing for the worm-shaft on the carriage, with a series of balls between the end of the worm and the bearing.

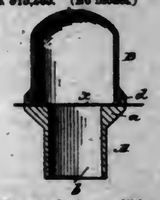


3. The combination of the carriage, nut thereon, feed-screw, feed-shaft, a worm-wheel thereon, a worm carried by a transverse shaft mounted in the lubricating-box, and a bearing on the frame, substantially as and for the purpose set forth.

4. The combination of the screw-threaded saw-spindle, a saw with two sleeves, a bolt securing the saw and sleeves together, one of said sleeves being threaded and adapted to the thread on the screw-spindle, substantially as set forth.

5. The combination of the saw-spindle carrying the saw with a shaft parallel with the spindle, a pinion on the shaft gearing with a wheel on the spindle, a worm-wheel mounted on the shaft and meshing with a worm carried by the driving-shaft, substantially as specified.

410,010. TOY. JOSEPH S. O'BRIEN, Springfield, Mass. Filed June 6, 1889. Serial No. 313,263. (No model.)

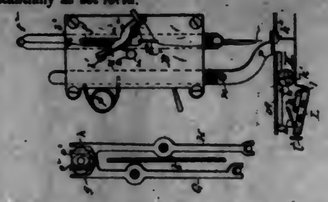


Claim.—Devices for producing audible reports, consisting of a lower tubular part A, open from end to end and having a widened upper extremity *a*, to form a seat for a diaphragm to be burst, and a chambered shell of elastic material, separate from part A, having a widened or bead-formed mouth adapted to rest on and closely fit the surface of the diaphragm on said seat, substantially as and for the purpose set forth.

410,011. SEWING-MACHINE. STEPHEN O'CONNOR, Bridgeport, Conn. Filed June 18, 1886. Renewed Jan. 31, 1889. Serial No. 297,105. (No model.)

Claim.—1. In a sewing-machine, the combination, with a bracket-arm the vertical portion of which is provided with a strengthening rib or diaphragm, of the main shaft journaled in the upper part of said arm, the eccentrics thereon, the vertical levers pivoted on either side of said diaphragm and having oppositely-arranged inwardly-extending yokes embracing said eccentrics, and the shuttle and feed levers operated by said vertical levers, substantially as set forth.

2. In a sewing-machine, the combination, with a bracket-arm the vertical portion of which is provided with a strengthening rib or diaphragm, of the main shaft journaled in the upper part of said arm and provided with a needle-bar-operating crank-disk, two eccentrics, and a gear-wheel, a needle-bar adapted to receive motion from said crank-disk, two vertical levers pivoted, one on either side of said diaphragm and having inwardly-extending yokes embracing said eccentrics, the shuttle and feed levers operated by said vertical levers, and a driving gear-wheel meshing with the said gear-wheel on the main shaft, substantially as set forth.



3. In a feed mechanism for sewing-machines, the combination of a feed-bar-operating lever vibrating in a horizontal plane, means, substantially as described, for imparting the vibrations to said lever from the driving-shaft, and a feed-bar sliding upon a fixed fulcrum between the feed-dog and the inclined slot in which said operating-lever works, as described.

4. In a sewing-machine, the combination of a feed-bar having an inclined slot sliding upon a fixed fulcrum between the feed-dog and said slot, an adjusting-bar carried by said feed-bar having a projection for shortening and lengthening said slot, an adjusting-screw for fixing said adjusting-bar in the desired position, a vibrating feed-bar-operating lever working in said slot, and means, substantially as described, for imparting the vibratory movements to said feed-bar-operating lever, as set forth.

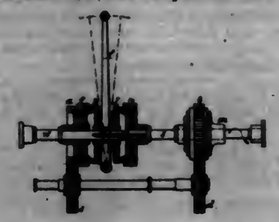
5. In a sewing-machine, the combination of a feed-bar pivoted near its center and having an inclined slot through which its pivot-pin passes and a second inclined slot, a vibrating feed-bar-operating lever working in said second inclined slot, and means, substantially as described, for imparting the vibratory movement to the said lever, as specified.

6. In a sewing-machine, the combination, with a pivoted and sliding feed-bar having an inclined slot, of an adjusting-bar loosely attached to said feed-bar having a projection extending across said slot, and an offset, an adjusting-screw tapped through said offset and abutting against said feed-bar, a spring for holding said screw in contact with said feed-bar, and a vibrating feed-lever working in said inclined slot, substantially as described.

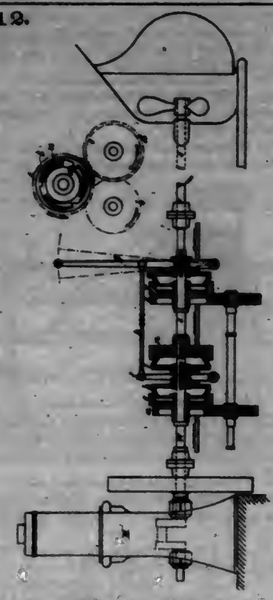
410,012. REVERSING MECHANISM. NICOLAUS A. OTTO, Cologne, Prussia, assignor to the Gas-Motoren-Fabrik-Deutz, Deutz, Germany. Filed Apr. 24, 1889. Serial No. 308,463. (No model.) Patented in England Apr. 3, 1889, No. 5,616; in Belgium Apr. 10, 1889, No. 85,734, and in France Apr. 27, 1889, No. 197,791.

Claim.—1. In apparatus for reversing motion, the combination, with a driving-shaft and a driven shaft lying in the same axial line, of a clutch gearing them together for driving the driven shaft direct in one direction, a second clutch on the driving-shaft, one part of which is loose thereon and carries a toothed ring, toothed gearing connecting such toothed ring, through an intermediate wheel, with a toothed ring on a third clutch on the driven shaft, which third clutch is stationary and allows the driven shaft to rotate independently of it when the first clutch is in gear for driving the shaft direct, but which carries the shaft round with it when rotated in the contrary direction to the driving-shaft through the second clutch and intermediate gearing, substantially as herein set forth.

2. In apparatus for reversing motion, the combination, with a motor-shaft *w* and driven shaft *s*, of a double conical friction-clutch *o k l m*, of which the part *o* is loose on shaft *w* and carries a toothed ring *a*, while parts *k* and *l* slide on shaft *w*, and part *m* is fixed on shaft *s*, conical friction-clutch *r m*, of which the part *r* is loose on shaft *s* and

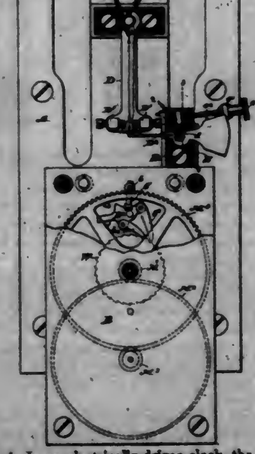


410,012.



carries toothed ring *c*, while part *m* slides on shaft *s*, toothed gear *b c d*, connecting toothed ring *a* with toothed ring *c*, and levers *g f h* and connecting-rod *p*, whereby the parts *k l m* of the three clutches are all operated simultaneously, substantially as and for the purposes set forth.

410,013. ELECTRIC PENDULUM CLOCK. ALBERT L. PARCELLE, New York, N. Y. Filed Apr. 27, 1888. Renewed July 16, 1889. Serial No. 317,856. (No model.)



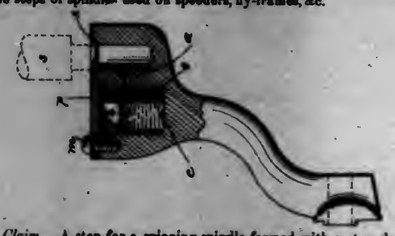
Claim.—1. In an electrically-driven clock, the combination of a pendulum-moving switch having contacts thereon and the transversely-rocking brush bearing on the switch, substantially as set forth.

2. The combination of the pendulum, the pivoted rocking switch, and the pivoted and transversely-rocking brush bearing thereon, substantially as set forth.

3. The combination of the pendulum, the switch operated thereby and carrying adjustable screws embracing the pendulum, the pivoted brush, its pivoted supporting-block, and the adjusting-screw for rocking the block, substantially as set forth.

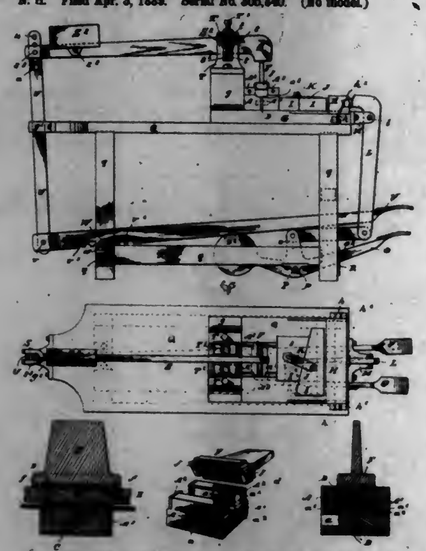
410,014. STEP FOR SPINNING-SPINDLES. CHRISTOPHER B. PARKER and GEORGE T. HOPE, Pawtucket, R. I. Filed Mar. 27, 1889. Serial No. 305,084. (No model.)

Brief.—The object of the invention is to improve the lubrication of the steps of spindles used on speeders, fly-frames, &c.



Claim.—A step for a spinning-spindle formed with a step-chamber, and a separate oil-chamber communicating with said step-chamber, in combination with a perforated partition in the oil-chamber, and packing between said partition and the wall of the oil-chamber, substantially as specified.

410,015. HARNESS-LOOP PRESS. CHARLES FELDNER, Concord, N. H. Filed Apr. 3, 1889. Serial No. 306,340. (No model.)



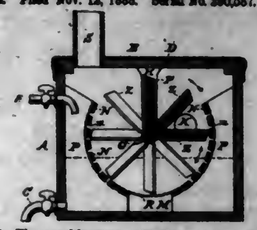
Claim.—1. The combination of a socket or forming die made in two parts connected by a dowel-pin, and plates secured at each end and lapping over the end of each side of said socket, and a top die having a projection at each end adapted to lap over either end of the top of a loop, and means, substantially as described, for applying side pressure to said socket-die and downward pressure to the top die, all substantially for the purpose set forth.

2. In a press for forming harness-loops, a longitudinally-separable socket or forming-die, a follower, and adjustable interposing blocks between said follower and socket-die, a pressure-bar for applying horizontal pressure thereto, and a counterweighted foot-lever and suitable connecting-rods for operating the same, a top die and adjustable counterweighted pressure-bar, and adjustable foot-lever and connecting-rod for applying vertical pressure to said top die, all substantially for the purpose described.

3. In a press for forming harness-loops, the combination, with a longitudinally-separable socket or forming die and the pressure-bar for applying horizontal pressure to the same, of a counterweighted foot-lever having an arm rising in nearly a vertical direction at a point near its point of fulcrum, and a horizontal connecting-bar, whereby the lower end of said pressure-bar is moved outward or toward an operator by the downward movement of the said foot-lever.

4. The combination, with the dies, substantially as described, of a pressure-bar for applying vertical pressure, bearings to which it is fulcrumed capable of vertical adjustment, a foot-lever provided with an adjustable point or fulcrum consisting of a series of slots cut in its lower edge for receiving a fulcrum-pin, and a connecting-bar pivoted near one end to the rear end of said foot-lever, and provided near its opposite end with a series of perforations, to either of which the rear end of said pressure-bar may be pivoted, all substantially for the purpose set forth.

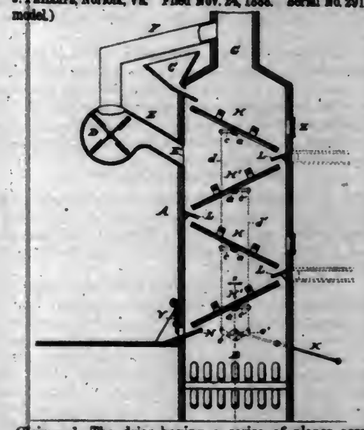
410,016. MACHINE FOR WASHING NUTS. JAMES J. PHILLIPS, Norfolk, Va. Filed Nov. 12, 1888. Serial No. 290,587. (No model.)



Claim.—1. The combination, with the end-slotted tank having an end discharge-opening, of the rotary agitator having its shaft at one end let into the slot in the end of the tank and provided with oblique or inclined radial blades, an auxiliary concave bottom formed of spaced apart slats, and a removable wire-covered bridge-bottom, substantially as set forth.

2. The combination, with the end-slotted tank having an end discharge-opening, an auxiliary concave bottom formed of spaced apart slats, and a removable wire-covered bridge-bottom, of the rotary agitator having one end of its shaft let into the slot of said tank and provided with oblique or inclined radial wings or blades, said tank also having a discharge-opening above the water-level and an inlet and outlet water-cock, substantially as specified.

410,017. APPARATUS FOR DRYING NUTS, GRAIN, &c. JAMES J. PHILLIPS, Norfolk, Va. Filed Nov. 24, 1888. Serial No. 291,826. (No model.)

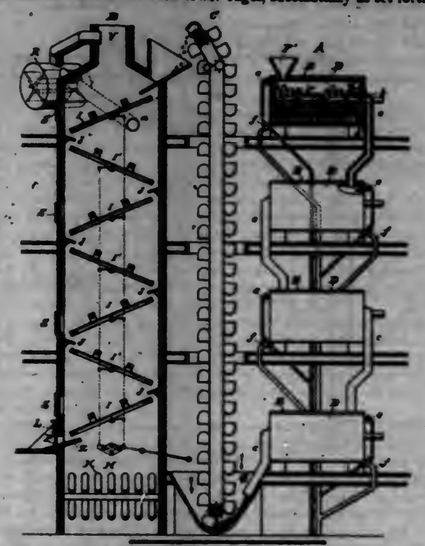


Claim.—1. The drier having a series of plates arranged one above the other and in consecutive oppositely-inclined positions, and having central pivot-shafts provided with crank-arms extending in successive opposite directions and connected together in alternate pairs by opposite parallel rods, the lower ends of said rods being connected by interacting levers, actuated by a hand shifting-lever, substantially as set forth.

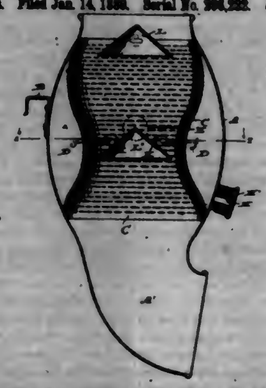
2. The combination, with a vertically-elongated drier-case having alternate turning-ledges attached to its wall, and a top flue, of a discharge-regulator, series of alternating inclined planes, an exhaust connected to the upper part of the case and leading into the flue, the same being arranged wholly to one side of the updraft, and a heater at its base, substantially as specified.

410,018. MEANS FOR CLEANING AND DRYING NUTS, &c. JAMES J. PHILLIPS, Norfolk, Va. Filed Mar. 26, 1889. Serial No. 304,852. (No model.)

Claim.—The apparatus for treating nuts, &c., which comprises the series of baths having elevated discharge-openings and oblique stirring and discharging blades, the connecting-chutes arranged at successively opposite ends of the baths, the water-supply pipes connecting with successively opposite ends of the baths at their upper edges, and the waste-water pipes connecting with successively opposite ends of the baths at their lower edges, substantially as set forth.



410,019. DEVICE FOR MASHING MALT. HERMANN PFEIFER, Milwaukee, Wis. Filed Jan. 14, 1889. Serial No. 296,222. (No model.)



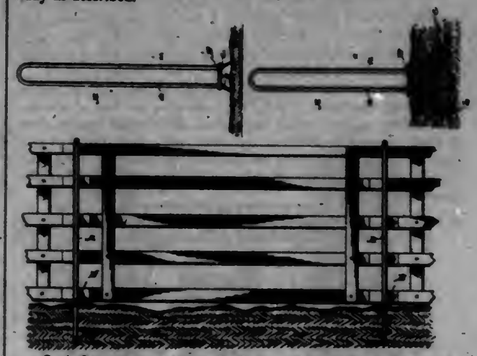
Claim.—1. The combination of a barrel-shaped shell open at its upper end and terminated at its lower end in a spout, a perforated tube arranged within the shell to occupy as much space as the bulge of the latter will permit and form a chamber therewith, a series of eyes arranged at different stages within the perforated tube, a series of cone-shaped spreaders provided with hooks for engagement with the eyes, and a pipe-coupling arranged to surround a port in the shell, substantially as set forth.

2. The combination of the shell A, provided with the spout A', hook B, the perforated tube secured within the shell and provided with eyes J, the port E, leading into the space between the shell and perforated tube, the pipe-coupling F, surrounding the port, the openings G H in said shell, the caps G' H', for closing the latter openings, and the spreaders L L', having hooks K for engagement with said eyes, substantially as set forth.

410,020. METALLIC FENCE-POST. WILLIAM M. PEEBLES, Adrian, Ohio. Filed Jan. 17, 1889. Serial No. 296,574. (No model.)

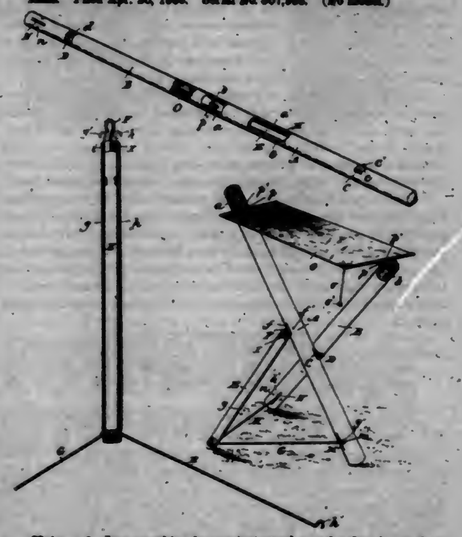
Claim.—1. A fence-post constructed of a metallic rod bent into staple shape forming two parallel bars standing a suitable distance apart for the purpose set forth, the lower ends of which are sharpened and bent outwardly, in combination with a vertically-sliding link encircling said bars and designed to rest on or near the ground when the post is set, substantially as described.

2. A fence-post constructed of a metallic rod bent into staple shape forming two parallel bars standing a suitable distance apart for the purpose set forth, the lower portions of which are bent outwardly and beveled on their inner sides outwardly to their ends, in combination with a vertically-sliding link encircling said bars and designed to rest on or near the ground when the post is set, substantially as described.



3. A fence-post constructed of a metallic rod bent into staple shape forming two parallel bars standing a suitable distance apart for the purpose set forth, the lower portions of which are bent outwardly and beveled on their inner sides outwardly to their ends, which are flattened, in combination with a vertically-sliding link encircling said bars and designed to rest on or near the ground when the post is set, substantially as described.

410,021. COMBINED CANE AND CAMP-STOOL. ANDREW B. PURINGTON, Westborough, assignor of one-half to J. W. HORNE, Hopedale, Mass. Filed Apr. 30, 1889. Serial No. 307,988. (No model.)



Claim.—1. In a combined cane and stool, a pair of main sections arranged to be removably secured together, a seat portion connecting the tops of said sections, and a third section arranged to be removably secured to one of said main sections, substantially as described.

2. In a combined cane and stool, the combination of a pair of main sections arranged to be removably secured together, an auxiliary section arranged to be removably secured to one of said main sections, arms or braces connecting said auxiliary section and said main sections, and a seat portion connecting the tops of said main sections, substantially as described.

3. In a combined cane and stool, the combination of a pair of main sections removably jointed together, a third section arranged to fit within one of said main sections, and provided with arms or braces which connect with said main sections, and a seat portion connecting the tops of the main sections, in the manner and for the purpose substantially as described.

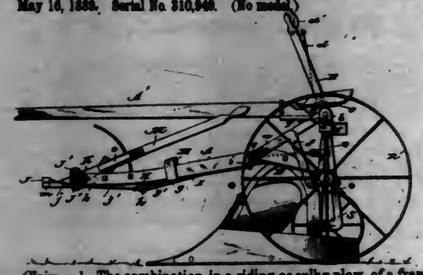
4. In a combined cane and stool, the combination of a pair of

main sections removably connected together, a seat portion connecting the tops of said sections, an auxiliary section having longitudinal slots formed therein, and arms or braces arranged to fold into said slots, substantially as described.

5. In a combined cane and stool, the combination of the main sections removably secured together, a seat portion connecting the tops of said sections, an auxiliary section adapted to fit within one of said main sections and provided with slots, and arms or braces arranged to fold in said slots, in the manner and for the purpose described.

6. In a combined cane and stool, a pair of main sections removably secured together, a seat portion connecting the tops of said sections, a third section having longitudinal slots formed therein, arms or braces adapted to fold into said slots, and a loose sleeve on said third section provided with an aperture, by means of which said longitudinal slots are opened and closed, in the manner and for the purpose set forth.

410,022. SULKY-PLOW. EMIL A. RAATZ, Pier, Wis. Filed May 16, 1888. Serial No. 310,949. (No model.)



Claim.—1. The combination, in a riding or sulky plow, of a frame consisting of a cross-bar having a vertical slot near one end, a pin intersecting said slot, a vertical bar carrying a large wheel and playing in said slot and having a series of recesses at one edge to engage said pin, a removable key to maintain said engagement, and supports S and S', depending from the cross-bar near its other end and having a smaller wheel journaled therein, substantially as set forth.

2. The combination, in a riding or sulky plow, of a frame consisting of a cross-bar, a vertical bar connected therewith near one end and carrying a large wheel, and depending supports S and S', connected to the cross-bar near the other end and having a small wheel journaled therein, and a brace connecting said bars S and S' above the wheel and carrying a scraper, therefor, substantially as set forth.

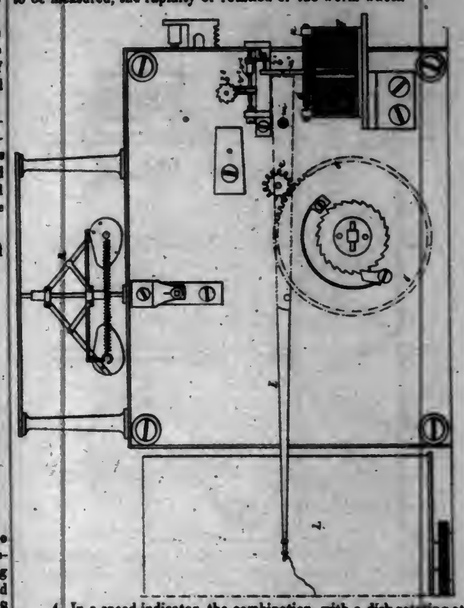
3. The combination, in a riding or sulky plow, of a supporting-frame mounted upon wheels, a plow-beam curved and pivotally connected at its rear and carrying a plow, as described, a rack-bar located at the front of said beam, and an inclined bar pivoted thereat and carrying a draft-evener, and a lever pivoted to said inclined bar to vary the position of the same and the draft-evener and provided with a spring to lock it in engagement with the rack, substantially as set forth.

410,028. SPEED-RECORDER. FELIX RICHARD, Paris, France, assignor to the Société Richard Frères, same place. Filed Mar. 6, 1889. Serial No. 302,121. (No model.) Patented in England Feb. 15, 1888, No. 2,209.

Claim.—1. A speed-indicator consisting of the combination of a disk rotating at a typical or normal speed, a worm-wheel driven at a variable speed proportional to the speed to be measured, and a driven part deriving motion from both said disk and wheel and consisting of a rotative arbor carrying a friction-roller in engagement with said disk and formed with a screw or worm in engagement with said worm-wheel, whereby when the speed of the worm-wheel falls below the normal the rotation imparted to said arbor from said disk causes its worm to act as a screw, reacting against the teeth of said worm-wheel to propel the arbor in one direction, and when the speed of the worm-wheel rises above the normal it acts upon the worm like a pinion upon a rack, to propel the arbor in the opposite direction, so that the longitudinal movements of the arbor constitute an indication of the variations of speed to be measured.

2. In a speed-indicator, the combination, with a worm-wheel driven at a varying speed proportional to that to be measured, an arbor carrying a worm meshing with said wheel and provided with a friction-roller, and a disk turning at a constant or normal speed, of a clock-work mechanism and governor for imparting rotation at such constant speed to said disk.

3. In a speed-indicator, the combination, with a disk rotating at a typical or normal speed, an arbor provided with a friction-roller driven from said disk and carrying a worm, and a worm-wheel meshing with said worm and rotating at a variable speed proportional to that to be measured, of a clock-work mechanism tending to rotate said worm-wheel, and an escapement for restraining said clock-work and determining, by connection with the part the speed of which is to be measured, the rapidity of rotation of the worm-wheel.

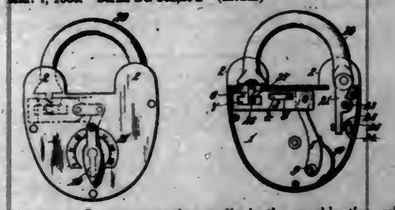


4. In a speed-indicator, the combination, with a disk rotating at a typical or normal speed, an arbor provided with a friction-roller driven from said disk and carrying a worm, and a worm-wheel meshing with said worm and rotating at a variable speed proportional to that to be measured, of a clock-work mechanism tending to rotate said worm-wheel, an escapement for restraining said clock-work, an electro-magnet for operating said escapement, and an electric circuit connecting said magnet with the part the speed of which is to be measured, whereby electric impulses are sent to said magnet at varying intervals proportional to variations in the speed of said parts.

5. A speed-indicator consisting of the combination of a disk rotating at a typical or normal speed, a worm-wheel driven at a variable speed proportional to the speed to be measured, and a rotative arbor extending radially of said disk and tangentially of said worm-wheel, carrying a friction-roller in engagement with said disk and formed with a screw or worm in engagement with said worm-wheel, said screw being of such direction of pitch relatively to the direction of rotation of said worm-wheel and disk that when the worm-wheel is stopped or driven at a speed slower than the normal the rotation of the arbor by the said disk causes the worm, by reacting against the worm-wheel, to propel the arbor longitudinally in such direction as to cause its friction-roller to approach the center of rotation of said disk.

6. A speed-indicator consisting of the combination of a disk rotating at a typical or normal speed, a worm-wheel driven at a variable speed, a rotative arbor movable longitudinally, carrying a friction-roller in engagement with said disk, and formed with a screw or worm in engagement with said worm-wheel, and a movable index or pointer connected to said arbor and movable to different positions by the longitudinal displacement of the arbor.

410,024. PADLOCK. AUGUSTUS RICHARDS, Sr., Willis, Tex. Filed Mar. 7, 1889. Serial No. 302,204. (Model.)



Claim.—1. In a permutation-padlock, the combination, with a twin bolt consisting of two similar independent lock-plates lying side by side and locking in both directions of longitudinal movement, of a spring-impelled tumbler throwing one bolt and a guard-plate mounted on a rock-shaft having a lever linked to the other bolt, substantially as described.

2. In a permutation-padlock, the combination, with a twin bolt composed of two similar independent lock-plates lying side by side and operated by independent means, of a hasp having a catch-leg, said hasp being pivoted at one end upon a movable support, substantially as described.

3. In a permutation-padlock, the combination, with a hasp having a catch-leg and pivoted upon a movable support, of a twin bolt composed of two independent lock-plates, each actuated by independent means, a guard-plate operating one of said lock-plates and a key actuating the other, substantially as described.

4. In a permutation-padlock, the combination, with a hasp pivotally mounted upon one end of a lever fulcrumed between its ends and having a set-screw tapped through the other end, said set-screw being swiveled in a bracket on the lock-casing and having a squared head lying in an opening in the lock-casing, of a lock-bolt actuated by a spring-impelled tumbler and a separate lock-bolt operated by the guard-plate, substantially as described.

5. In a permutation-padlock, the combination, with the hasp having a suitable catch-leg, of two independent lock-bolts, each consisting of a flat plate having a longitudinal slot and provided with a diverging notch entering the middle part of said slot, a spring-impelled tumbler operating one bolt and a guard-plate operating the other, substantially as described.

6. In a permutation-padlock, the combination, with a hasp pivoted at one end upon the end of a lever having a set-screw tapped through its other end and swiveled in a bracket in the lock-casing, of two similar independent lock-bolts, each having a longitudinal slot and provided with a diverging notch entering the middle part of said slot from the upper edge, a spring-impelled key-actuated tumbler pivoted at one end on the casing and pivotally connected at the other end to the end of the bolt, a rock-shaft having a guard-plate covering the key-opening, and a key operating the spring-impelled tumbler and provided with an adjustable index on the key-spindle, whereby the change of combination may be indicated, substantially as described.

7. In a permutation-padlock, the combination, with an adjustable hasp, of a twin bolt consisting of a lock-plate having a spring-impelled tumbler and provided with a notch leading to a slot forming prongs on both sides of said slot, a similar bolt operated by the guard-plate, a key having a movable index to operate the spring-impelled tumbler, and a graduated scale-plate surrounding the key-opening, substantially as described.

410,025. HITCHING-POST. ADAM H. RIDER, York, Pa. Filed Jan. 17, 1889. Serial No. 296,585. (No model.)



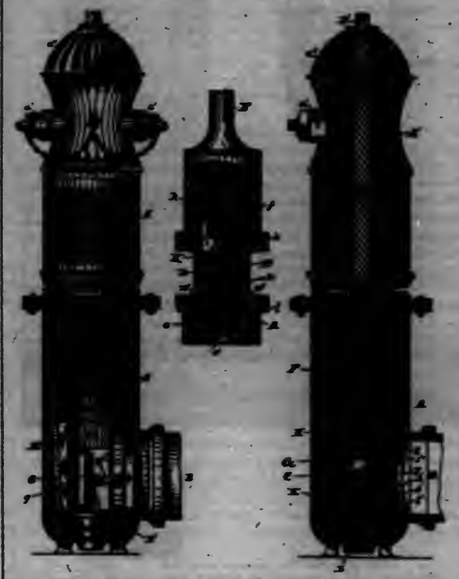
Claim.—1. The combination, in a hitching-post, of a tubular holder adapted to be buried in the ground below the pavement, a coupling-sleeve secured to the upper end thereof, the flanged sleeves secured one within the other, the lower one being secured to the coupling-sleeve, and the vertically-movable stake having a spring-detent at one side and a flange at the lower end to hold the stake when elevated, substantially as specified.

2. The combination, in a hitching-post, of a tubular holder adapted to be secured in the ground below the pavement, a coupling-sleeve secured to the upper end of said holder, an intermediate sleeve secured in said coupling-sleeve, a flanged sleeve secured in said intermediate sleeve, and a vertically-movable stake provided with a detent-spring at one side and a flange at its lower end, the spring and flange being adapted to engage, respectively, the upper and intermediate sleeve-connections, substantially as specified.

410,026. HYDRANT. ELIJAH L. ROWE, Lansingburg, N. Y., assignor to the Rensselaer Manufacturing Company, same place. Filed Jan. 17, 1889. Serial No. 296,609. (No model.)

Claim.—1. In a hydrant, the combination of the casing having an internal upstanding tube in its bottom and drip-openings therein, and a main-valve stem supported and turning on said tube, but not vertically movable in the casing, and the main valve operated by said stem, with a non-rotatable valve-stem in said tube, having a threaded upper end engaging the threaded lower end of the main-valve stem and adapted to be raised simultaneously with the closing of the main valve by the rotation of the main stem and to be lowered simultaneously with the opening of the main valve by the opposite rotation of the main stem, and the drip-valve on said stem, playing in said tube and adapted to close the drip-openings, substantially in the manner and for the purpose specified.

2. The combination of the casing, the tube therein having drip-openings near its lower end, the inlet-port and valve-seat, and the main stem carrying the main valve having an internally-threaded lower end supported on said tube, but not vertically movable, with the drip-valve stem having a threaded upper end engaging the threaded lower end of the main stem, an angular portion engaging a corresponding angular bore of the tube to prevent rotation of the drip-valve stem, and the drip-valve on said stem adapted to close the drip-openings simultaneously with the unseating of the main valve and to open the same simultaneously with the closing of said main valve when the main stem is rotated, substantially as specified.



3. The combination of the casing provided with an inlet-port, an internal valve-seat for said port, and a valve-stem, with a threaded valve-stem mounted in said casing, but having no vertical or longitudinal movement, a casting mounted upon said stem and having inclined grooves on its front face, and a gate-valve suspended on said casting and having inclined lugs on its rear face engaging the inclined recesses of the casting, substantially as and for the purpose described.

4. The combination of the casing, the tube in the bottom thereof having the upper portion of its bore angular, and the drip-openings communicating with said tube, with the main-valve stem having an internally-threaded lower end resting on the upper end of said tube, a drip-valve stem having a threaded upper end engaging the threaded end of the main stem, an angular portion engaging the angular bore of the tube, and a lower depending portion in the cylindrical bore of the tube, and a drip-valve mounted on said lower portion and adapted to close the drip-openings, substantially in the manner and for the purpose specified.

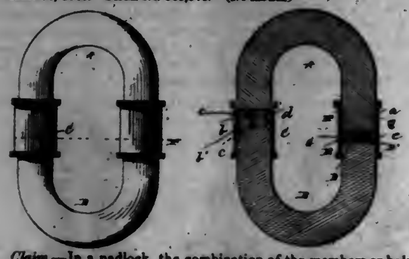
5. The combination of the casing having an inlet-port and valve-seat, a vertical tube in its bottom and drip-openings communicating with said tube, and a main stem having a lower hollow interiorly-threaded end supported on said tube, and a casting supported on said stem carrying a gate-valve, with the valve-stem K, having a threaded portion engaging the lower end of the main stem, a rectangular portion engaging an angular part of the bore of the tube, and a cup-valve on the lower end of stem K within said tube, all substantially as described.

6. The combination of the casing having an inlet-port, valve-seat, valve-stop, and vertical guide-ribs, substantially as described, and a central vertical valve-stem mounted in stationary bearings in the casing and not vertically movable therein, with the casting G, mounted on said stem having a tubular portion *g*, side wings and rear rib engaging the guide-ribs of the casing, and inclined grooves *h'* and shoulders *h''* in its front face, and the valve I, mounted on said casting and having inclined lugs *i* on its rear face engaging the grooves and shoulders of the casting, all substantially as specified.

7. The combination of the casing, the inlet-port thereof and its valve-seat, the vertical tube in the bottom thereof, and drip-openings communicating therewith, with the main-valve stem F, supported on said tube having an internally-threaded sleeve on its lower end, a cast-

ing G, playing on said stem, the gate-valve mounted on said casting, and the stem K, engaging the sleeve of stem F and operated thereby, mounted in the vertical tube and carrying a drip-valve, all constructed and arranged substantially in the manner and for the purpose specified.

410,027. PADLOCK. MICHAEL RUSKOSKY, St. Mary's, Mo. Filed Mar. 16, 1889. Serial No. 303,576. (No model.)



Claim.—In a padlock, the combination of the members or halves swiveled together, one of the members having a bayonet-catch in the free end of the sliding sleeve, having a projection for engaging the bayonet-catch and provided with an interior recess, and the screw-locking pin for engaging said recess, all arranged and operating substantially as and for the purpose described.

410,028. RAIL-JOINT. ALLEN R. RUTTER, Salem, Ohio, assignor of one-half to John A. Gamble, same place. Filed Apr. 10, 1889. Serial No. 306,897. (No model.)

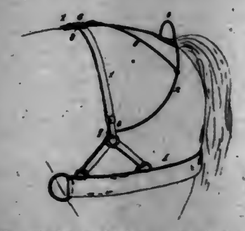


Claim.—1. In a railroad-rail joint, a fish-plate on each side of the rails, having recesses, in combination with a bolt and nut constructed to fit into said recesses and lock the former in place, substantially as described.

2. In a railroad-rail joint, a fish-plate provided with a rectangular recess, having inclines and a seat for the bolt-head, and a bolt and nut, in combination with a plate on the opposite side of the rails, having a recess to receive the nut of a bolt and secure it against turning, substantially as described.

3. In a railroad-road joint, a bolt having a head provided with an inclined inner surface, and a nut, in combination with a fish-plate having a recess provided with an inclined surface, and a plate having a recess to receive the nut of the bolt, substantially as described.

410,029. HARNESS ATTACHMENT. LIONEL D. SAXTON, Kansas City, Mo. Filed Oct. 17, 1888. Serial No. 288,323. (No model.)

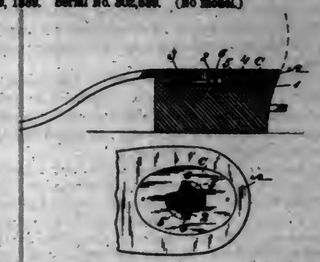


Claim.—1. The attachment for harness herein described, consisting of a bow 2, having at its upper end a single projecting bend 4, and suspender 5, substantially as and for the purpose set forth.

2. In an attachment for harness, the combination of the bow 2 and the bail-shaped suspender 5, of spring-wire, attached thereto and having a loop 8 formed in its apex, substantially as and for the purpose set forth.

3. In an attachment for harness, the combination of the bow 2, having at its upper end a single projecting bend 4, and the bail-shaped suspender 5, the ends of which are attached thereto at each side of the bow, and having a loop 8 formed in its apex, substantially as and for the purpose set forth.

410,030. HEEL. GOTTLIEB SCHMIDT, Philadelphia, Pa. Filed Mar. 9, 1889. Serial No. 302,689. (No model.)



Claim.—1. The combination of a heel with a plate secured in a recess therein, the said plate having a head or lug, and the sole of a shoe having on its heel portion a plate with depending boss the inner wall of which is provided with spiral shoulders, substantially as described.

2. A heel having a plate secured in a recess therein, said plate having a lug or head thereon, in combination with a plate adapted to be secured to the sole of a shoe, said plate having a depending boss with inclined inner shoulders and adapted to receive said head, substantially as described.

3. A fastening for a heel, consisting of a plate embedded in a recess in the heel and having a head thereon, a plate adapted to be secured to the sole, and having a depending boss adapted to be engaged by said head and provided with inner inclined shoulders having terminal recesses at their upper end, said parts being combined substantially as described.

410,031. NARROWED KNITTED WEB. ROBERT W. SCOTT, Philadelphia, Pa., assignor of one-half to Louis N. D. Williams, same place. Filed May 16, 1889. Serial No. 310,964. (Specimens.)

Claim.—A knitted web narrowed by the merging of wales one into another, the standing wale into which a dropped wale is merged itself constituting the next dropped wale, substantially as specified.

410,032. PIPE-COUPLING. ELIJAH U. SOUVILLE, Manlius, N. Y. Filed Feb. 13, 1889. Serial No. 299,709. (No model.)



Claim.—1. The combination, with the pipes P P', of the case A, attached at one end to the pipe P and provided at the opposite end with the port *a* and with the inward-opening valve C, the tubular guide B, extended from the case at the side containing the port and provided with the flaring mouth B', the collar D, attached to the pipe P', and the packing *d*, secured to said pipe at the side of the aforesaid collar, as and for the purpose set forth.

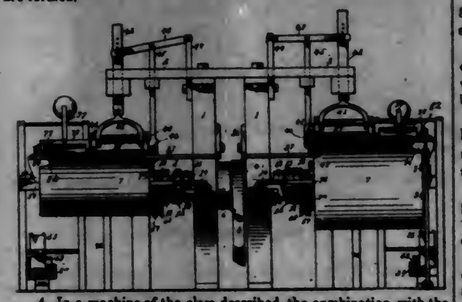
2. The combination, with the pipes P P', of the case A, attached at one end to the pipe P and provided at the opposite end with the port *a*, the inward-opening valve C in said case, the tubular guide B, extending from the chamber axially in line with the port *a*, and provided with the flaring mouth B', the collar D, attached to the pipe P', packings *d d* at opposite sides of said collar, the valve F, connected to the pipe P' and having the lever *l*, engaging the interior of the guide B, and turned thereby to open the valve, and the spring *b*, holding the valve normally closed, substantially as described and shown.

410,033. MACHINE FOR MAKING PAPER BOXES. IRVING L. SHELDON and GEORGE F. BAILEY, Danbury, Conn. Filed June 11, 1888. Serial No. 276,736. (No model.)

Claim.—1. The combination, with a drum having a slot at its inner end to receive the end of the body-strip and a pair of jaws to hold it, of a presser having a shank adapted to slide vertically in the frame-work.

2. Shaft 3, drums mounted at opposite ends thereof, and clutches whereby the drums may be locked to the shaft independently of each other, in combination with pressers having rollers adapted to bear upon the drums, whereby the bodies of the boxes are formed.

3. Shaft 3, drums mounted at opposite ends thereof having slots 30, and jaws within said slots, and clutches whereby the drums may be locked to the shaft, in combination with the pressers having rollers adapted to bear upon the drums, whereby the bodies of the boxes are formed.



4. In a machine of the class described, the combination, with the shaft and the drums mounted at opposite ends thereof, of the clutches whereby the drums are connected and disconnected, levers 13, for operating the clutches, and angle-levers 15, carried thereby, which stop the rotation of the drums, substantially as described.

5. In a machine of the class described, the combination, with the shaft, of oval adjustable forming-drums 7, consisting of radially-sliding sections 25 and interchangeable side sections 26, whose edges engage the edges of sections 25.

6. The combination, with the shaft and end pieces 8 and 9, journaled thereon, of radial slides 16, having lugs 18, the expanding disks having grooves engaged by said lugs, sections 25, secured to the radial slides, and interchangeable sections 26, whose edges engage the other sections.

7. The combination, with the shaft, the end pieces journaled thereon, and slides 16, secured to the end pieces and having lugs 18, of sections 25 and 26, the expanding disks having spiral grooves engaged by the lugs, and set-screws which pass through said disks and engage the end pieces to lock the parts in position after adjustment.

8. The combination, with the shaft, the end pieces journaled thereon, sections 25 and 26, and radial slides secured to the end pieces and having lugs 18, of the expanding disks having spiral grooves engaged by said lugs and collars 23, and collars 21, secured to the shaft and having flanges extending over collars 23, whereby the expanding disks are held against endwise movement on the shaft.

9. The shaft, the end pieces journaled thereon and having holes 29, slides 16, having lugs 18, sections 25, carried by said slides, and sections 26, whose edges engage the edges of sections 25, in combination with the expanding disks having spiral grooves engaged by the lugs, and set-screws in said disks which engage the holes in the end pieces, as and for the purpose set forth.

10. In combination, the shaft, the end pieces, sections 25 and 26, the radial slides, the expanding disks, and collars 21.

11. In combination, the shaft, the end pieces, the radial slides, the expanding disks, and sections 26 and 25, one of said sections having a slot 30, and jaws within said slot, substantially as described.

12. The frame-work, the shaft, a drum having a slot 30, and fixed and movable jaws within said slot, said movable jaws having a pin 34, in combination with a lever 36, pivoted to the frame-work and having at its forward end a cross-piece which rests on the drum and engages pin 34 to open the jaws, and which may be lifted out of the way by pressing down the lever when it is not desired to open the jaws.

13. The combination, with a drum having a slot 30 and jaws within said slot, of a presser pivoted to a yoke and carrying a roller which follows the curves of the drum, and a vertically-moving shank to which the yoke is connected.

14. The drums having stumps 47 on their inner ends and the pressers carried by shanks 42, in combination with levers pivoted to the frame-work and to the shanks and having midway their length rods 45, carrying rollers 46, which engage the stumps, as and for the purpose set forth.

15. The drums having stumps 47, slots 30, and jaws within said slots, and the pressers carried by vertically-moving shanks and adapted to follow the curves of the drum, in combination with levers pivoted to the frame-work and to the shanks, and downwardly-extending rods pivoted midway of the levers and carrying rollers which engage the stumps, whereby the pressers are raised to insert and remove the body-strips from the jaws.

16. The drums having slots 30 at their inner ends and jaws within said slots which hold the ends of the body-strips, and pressers whereby the body-strips are formed about the drums, in combination with heads 78, carrying presser-rollers 77, and pivoted levers which carry said heads at the outer ends of the drums, whereby the bodies are first formed at the inner ends of the drums and then the covering-strips are put on while the second body is being formed.

17. The combination, with the drums, of rods 85, carrying rollers 84, whereby the box-bottoms are held in place, substantially as described.

18. The combination, with the drums and rods 85, carrying rollers 84, which hold the bottoms in place, of folders and pressers 80, whereby the end strips are folded and pressed in place to secure the bottoms to the bodies.

19. The combination, with the drums, of folders and pressers 80, having projections 81 to fold the corner-strips, and projections 82 and rollers 83, engaging, respectively, the bodies and the bottoms, whereby the corner-strips are pressed in place.

20. The combination, with the drums, of heads 78, carrying presser-rollers 77, and folders and pressers 80, secured to said heads, whereby the end strips and the covering-strips are simultaneously secured in place.

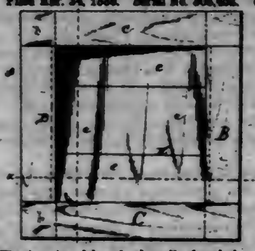
21. The combination, with the drums and rods 85, carrying rollers 84, whereby the bottoms are held in place, of folders and pressers 80 for the end strips, and heads 78, carrying presser-rollers 77 for the covering-strip.

22. The combination, with the drums having slots 30 at their inner ends and jaws within said slots, of pressers whereby the body-strips are formed about the drums, heads 78, carrying rollers at the outer ends of the drums, whereby the covering-strips are put on, and folders and pressers 80, whereby the corner-strips are put on to secure the bottoms to the bodies.

23. The combination, with shaft 3, the drums mounted thereon, shaft 61, shaft 65, and belts connecting said shafts, of a paste-roller mounted on shaft 65, a ratchet secured to said shaft, and a pawl on the paste-roller engaged by said ratchet, whereby the paste-roller is rotated at a predetermined speed and is permitted to move faster than its shaft when a long radius of the drum is drawing the covering-strip.

24. The shaft, a drum having a slot 30, and jaws within said slot, one of said jaws having a pin 34, a flange 9^b, having a slot 9^a, and a clutch for connecting the shaft and drum, in combination with a lever 13, for operating the clutch, a spring engaging said lever, whereby the clutch is connected, an angle-lever secured to lever 13 and engaging the flange, and a lever 36, having a cross-piece which engages pin 34, whereby at the completion of each revolution of the drum the clutch is automatically disconnected, the rotation of the drum is stopped, and the jaws are opened.

410,034. HEAD FOR FRUIT-BOXES. BENJAMIN SHINN, Parmenter, Fla. Filed Apr. 24, 1888. Serial No. 306,452. (No model.)



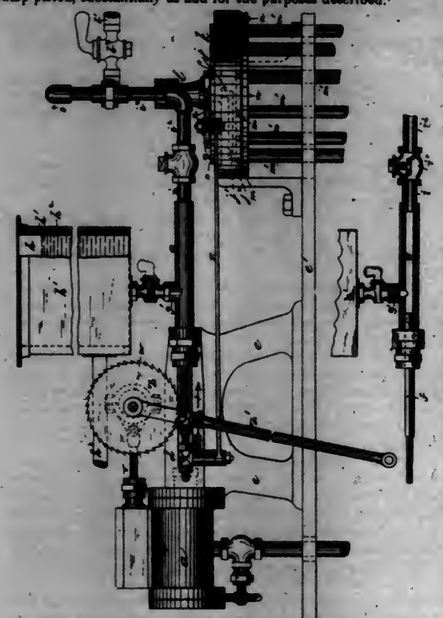
Claim.—The box-head herein described and shown, consisting of the end pieces provided with tenons and a groove or rabbet in one side, the side pieces having mortises to receive the tenons of the end pieces, and the filling consisting of pieces fitted together and having their ends formed with tongues, providing tenons adapted to fit in the grooves or rabbets of the end pieces, substantially as shown and described.

410,035. AUTOMATIC LUBRICATOR FOR STEAM-ENGINES. JOHN H. SIEGRIST, Jr., St. Louis, Mo., assignor of one-half to Henry A. Siegrist, same place. Filed Nov. 2, 1888. Serial No. 289,803. (No model.)

Claim.—1. In a multiple lubricator for lubricating machinery, the combination, with a bed-plate having a series of ports arranged in a circle or equal distances from the center, of a centrally-pivoted disk having a receiving-port centrally of the disk, and a radial passage leading therefrom and of such length as to register with the successive ports in the bed-plate, substantially as and for the purposes described.

2. In a multiple lubricator, the combination, with a bed-plate having a series of ports arranged at equal distances from its center, of a centrally-pivoted rotary disk having a receiving-port and a radial passage leading therefrom and of such length as to register successively with

the ports in the bed-plate, a pump for delivering oil to the receiving-port in the rotary disk, and mechanism for rotating the disk from the pump-piston, substantially as and for the purposes described.



3. In a multiple lubricator, the combination, with a rotary oil-delivery disk or valve, of a pump for forcing oil to the delivery disk or valve, mechanism for rotating the disk from the piston of said pump, and a steam-cylinder for actuating the pump, said steam-cylinder provided with a valve actuated from a moving part of the machinery to be lubricated, substantially as and for the purposes described.

4. In apparatus for automatically lubricating machinery, the combination of a circular plate having a central supply-pipe and passage therefrom, said passage communicating successively with each of a series of passages formed through a lower plate and provided with pipes communicating respectively with the various parts of the machinery to be lubricated, a force-pump drawing oil from a tank or vessel and delivering the oil through the central supply-pipe of the upper circular plate, means for operating said pump, a ratchet-lever engaging in notches or ratchets on the upper circular plate, with means for vibrating said lever, substantially as shown, and for the purpose described.

5. In apparatus for automatically lubricating machinery, the combination of a circular plate having a central supply-pipe and passage therefrom, said passage communicating successively with each of a series of passages formed through a lower plate and provided with pipes communicating respectively with the various parts of the machinery to be lubricated, a force-pump drawing oil from a tank or vessel and delivering the oil through the central supply-pipe of the upper circular plate, a cross-head attached to the ram of said pump and reciprocated by the piston of an ordinary steam-cylinder provided with a slide-valve, said valve being controlled by an eccentric fixed on a shaft, a ratchet-lever engaging in notches or ratchets on the upper circular plate, a rod connecting said lever to the cross-head, a ratchet-wheel fixed on the eccentric shaft, with a ratchet-lever engaging in said wheel and adapted to be connected to any convenient reciprocating part of the machinery to be lubricated, substantially as shown, and for the purpose described.

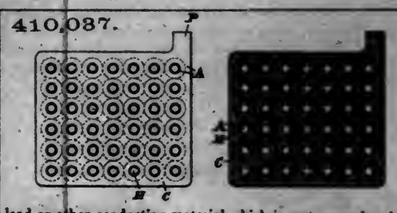
410,086. INSECTICIDE. BYRD SMITH and FRANK HOWARD, Devine, Tex. Filed June 15, 1889. Serial No. 314,474. (No specimens.)

Claim.—The herein-described insecticide, composed of the following ingredients; spirits of turpentine, carbolic acid, (preferably crude,) benzine, bisulphide of carbon, and brimstone, substantially as specified.

410,087. ELECTRODE FOR SECONDARY BATTERIES. FREDERICK H. SMITH, Baltimore, Md. Filed Apr. 3, 1889. Serial No. 305,864. (No model.)

Claim.—A plate or electrode for secondary batteries, consisting of tubular pieces of lead oxide or other active material, or lead sponge or other material conditioned to become active, held in a matrix of

410,087.



lead or other conducting material which is cast around and between said pieces, as set forth.

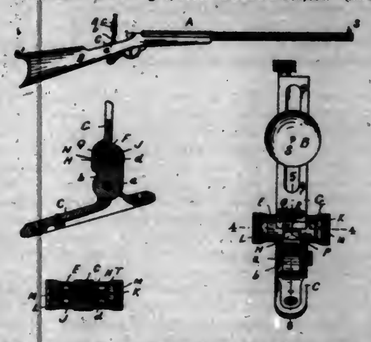
410,088. FASTENING DEVICE. MEYER C. SOMBORN, Brooklyn, N. Y. Filed Jan. 31, 1887. Serial No. 226,013. (No model.)



Claim.—1. The improved fastening device consisting of a bar *a*, having a series of three or more points integral therewith and projecting from one side or edge, and being located on said strip more than double the width of a point apart, substantially as described.

2. A fastening device consisting of a bar *a*, provided with a series of three or more points projecting from the edge thereof and integral therewith, and being also provided with indentations or holes *d d'*, substantially as and for the purpose set forth.

410,089. WIND-GAGE SIGHT FOR GUNS. JOHN W. SOUZA, Everett, Mass. Filed Aug. 8, 1888. Serial No. 282,220. (No model.)



Claim.—1. The combination, with the frame or bar carrying a gun-sight, a screw adapted to engage with said bar or frame and provided with a circumferential scale or mark on its outer end, of a support in which said frame is arranged to move back and forth across the gun and provided with a mark or scale adjacent to and to be read with said circumferential scale or mark, for the purpose specified.

2. The combination, with the frame or bar carrying a gun-sight provided with a mark or scale, a screw adapted to engage with said bar or frame and having a head and nut, the head having a mark or scale on its periphery, of a support in which said frame is arranged to move back and forth across the gun and provided with a scale or mark to be read with said mark or scale on said frame, and a scale or mark to be read with said peripheral mark or scale, for the purpose specified.

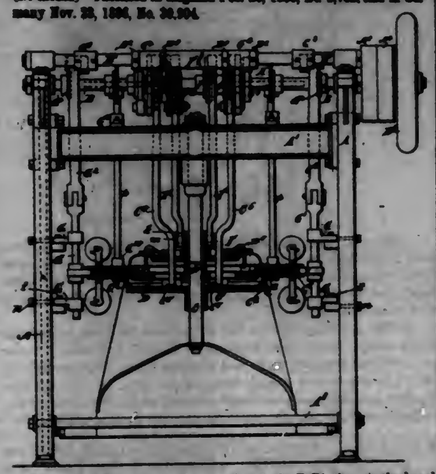
3. The combination, with a bar or frame carrying a gun-sight provided with a mark or scale, and a transverse cylindrical portion having a longitudinal central internal screw-thread adapted to engage with a screw J, of a support for said bar or frame secured to the stock of the gun and having a tubular portion E, provided with a longitudinal slot in which said cylindrical portion is arranged to move back and forth, and a scale or mark to be read with said mark or scale of the sight-bar or frame, for the purpose specified.

4. The combination, with the bar or frame carrying a gun-sight provided with a mark or scale, and a transverse cylindrical portion H, having a longitudinal central internal screw-thread adapted to engage with a screw J, of a support for said bar or frame secured to the stock of the gun and having a tubular portion E, provided with a longitudinal slot in which said cylindrical portion is arranged to move back and forth, and a scale or mark to be read with said mark or scale on the sight-bar or frame, and said screw having a circumferential scale or mark on it to be read with a mark or scale on the adjacent end of the tube E, for the purpose specified.

5. The combination, with a bar or frame carrying a gun-sight adapted to move back and forth in a tubular support, of a screw

adapted to engage with said bar or frame and support, and having a head K, nut L, and check-screw M, for the purpose specified.

410,040. CIRCULAR WARP KNITTING MACHINE. WILLIAM STANT, Nottingham, England. Filed Dec. 28, 1888. Serial No. 293,322. (No model.) Patented in England Feb. 28, 1888, No. 2,782, and in Germany Nov. 28, 1888, No. 50,904.



Claim.—1. The combination or the shafts B B', the vertical rod C, the vertically-sliding sinker-plate C', the sinker-hooks and presser-bits carried by said plate, the double-armed levers C^4, the vertical rods C^5, to the upper ends of which said levers are hinged, the studs C^6, and the axles *d*, for connecting the lower ends of said rods to the sinker-plate, and the cams C^8 C^9, located on the shaft B, for actuating the levers C^4 and rod C^5 to raise and lower the sinker-plate, substantially as described.

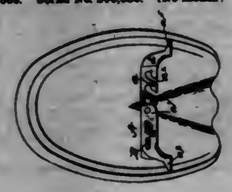
2. The combination of the vertically-sliding sinker-plate C', means for actuating said sinker-plate, the vertical rod C, the circular bed D, secured to said rod above the sinker-plate, the sley D', supported by said bed, the radial slides D^3, supported in the sley, each of said slides being provided with a pivoted looker-plate D^3, the needles, sinker-hooks, and presser-bits, the jacks D^4, one of which is pivoted in the rear or inner end of each slide, the slotted sley D^5, engaging the upper ends of said jacks, the rings E E' and means for rocking the jacks, substantially as described.

3. The combination of the vertical rod C, the vertically-sliding sinker-plate C', means for actuating said sinker-plate, the bed D, the sley D', the radial slides D^3, the needles, sinker-hooks, and presser-bits, the right-angled jacks D^4, the vertical sliding plate F, the vertical rods F', connected with said plate, the levers F^3, hinged to the upper ends of said rods, the shafts B B', and the cams F^5 F^6, substantially as described.

4. The combination of the standards A, having adjustable bearings G, the plunger-rods G', adapted to slide vertically in said bearings, the links G^1, hinged to the upper ends of said rods, the levers G^2, hinged to said links, the shaft B', the shaft B, the cams G^4, mounted on said shaft to actuate the levers G^2, the vertically-sliding sole-bar G^3, carried by the plunger-rods, the circular guide-plates G^5 G^7, carried by the sole-bar, the thread-guides G^8, carried by said guide-plates, and means for revolving the guide-plates, substantially as described.

5. The combination of the vertically-sliding sole-bar G^3, the toothed circular guide-plates G^5 G^7, carried by the sole-bar, and each provided with thread-guides G^8, the toothed wheels G^{10} G^{11}, engaging the guide-plates and provided with vertical shafts *p*, the toothed wheels H on the upper ends of said shafts, the worms H', and the shaft B, carrying said worms, substantially as described.

410,041. HOOP-EXPANDER. BURTON STEWART, South Bend, Ind. Filed Jan. 19, 1889. Serial No. 296,820. (No model.)



Claim.—1. In a horse-hoof expander, the combination of an arm provided with bayonet-slots, an arm having a longitudinal slot in which the said slotted arm fits, and a rivet for engaging the said slots, and a pin designed to pass through an opening in the slotted arm and engage the bayonet-slots to lock the device together, substantially as described.

2. In a horse-hoof expander, the combination of an arm provided with bayonet-slots, an arm having a longitudinal slot in which the said slotted arm fits, and a rivet for engaging the said slots, a pin designed to pass through an opening in the slotted arm and engage the bayonet-slots to lock the device together, and toes on the said arms for engaging hoofs, substantially as described.

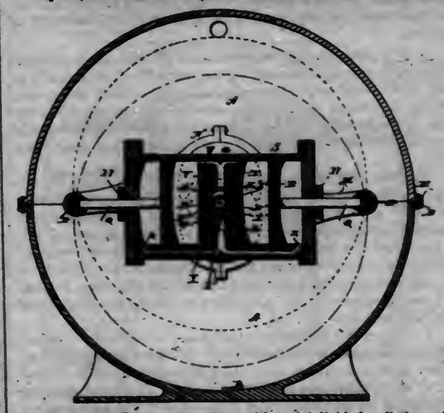
410,042. PROCESS OF PRODUCING REFRACTORY COMPOUNDS. JOHN L. STEWART and JAMES L. HASKINS, Philadelphia, Pa., assignors, by mesne assignments, to the Welsbach Incandescent Gas Light Company, of New Jersey. Filed Dec. 20, 1885. Serial No. 186,009. (No specimens.)

Claim.—1. The process of producing a refractory crystalline compound, which consists in pulverizing and mixing two or more mineral substances and a fluoride or a fluorine compound, adding a fluid to render the mixture plastic, molding the mixture and subjecting the molded material to the action of heat, substantially as described.

2. The process of producing a refractory crystalline compound, which consists in pulverizing and mixing a strontium compound or salt with one or more other pulverized mineral substances and a flux, rendering the mixture plastic and molding it into the required form, and then subjecting the molded material to the action of heat, substantially as described.

3. The process of producing a refractory crystalline compound, which consists in pulverizing and mixing a strontium compound or salt with one or more other pulverized mineral substances and with a flux composed of a fluoride or a fluorine compound, then making the mixture plastic and molding it into the required form, then subjecting the molded material to the action of a moderate drying heat, and finally exposing it to a high temperature, substantially as described.

410,043. ROTARY ENGINE. JAMES R. STUBLEY and ROBERT C. BERRY, Oshkosh, Wis., assignors of one-third to John M. McDonald, Lafayette, Ind. Filed Feb. 23, 1889. Serial No. 300,894. (No model.)



Claim.—1. In a rotary engine, the combination, with a subdivided cylinder, of a hollow shaft passing through the partition or dividing block and turning with the cylinder, and a stationary valve inclosed within said hollow shaft, the dividing-block, hollow shaft, and valve being provided with suitable ports, whereby steam is alternately admitted to the front and rear faces of the piston and exhausted alternately from said front and rear faces on each half-revolution of the cylinder, substantially as set forth.

2. In a rotary engine, the combination of a casing and cylinder, pistons, a partition-block dividing said cylinder into two apartments, said block provided with oppositely-arranged channels, one of said channels communicating with lateral extensions for conveying the steam to the inner faces of the pistons and the other channel communicating with lateral extensions for conveying the steam to the outer faces of the pistons, said channels alternately admitting and exhausting the steam from the cylinder on each half-revolution of the cylinder, a hollow shaft secured to the partition-block and provided with opposite longitudinal ports registering with the channels of the partition-block, and also provided with oppositely-arranged exhaust ports or ducts, and a valve provided with a longitudinal port, substantially as set forth.

3. In a rotary engine, the combination of the casing, the cylinder, the partition-block provided with oppositely-arranged channels, the hollow shaft secured to the partition-block and provided with oppositely-arranged ports adapted to act alternately as inlet and outlet ports, and also provided with oppositely-arranged exhaust ports or ducts, and the valve provided with the longitudinal port, with which the oppositely-arranged ports in the hollow shaft alternately register, and also having the annular collars and the rims or raised portions, the springs arranged within the spaces formed by said rims, and the packing above said springs, substantially as set forth.

4. In a steam-engine, the combination, with the valve provided with a longitudinal semi-cylindrical port, of the cut-off valve provided with the diametrically-opposite ports, and also having a radially-extending stop interposed between said ports adapted to bear against the sides of the longitudinal semi-cylindrical slot in the valve proper, substantially as set forth.

5. In a rotary engine, the combination of the valve provided with a longitudinal semi-cylindrical port, the cut-off valve provided with the diametrically-opposite ports, and also having a radially-extending stop interposed between said ports, and the valve-rod provided with an adjustable lever, substantially as set forth.

6. In a rotary engine, the combination of the valve provided with a longitudinal semi-cylindrical port, the cut-off valve, the valve-rod provided with a cap upon the outer end thereof, said cap provided with a slotted quadrant, the lever upon the end of said rod, the centrally-apertured block having an inward extension or tongue, the screw-bolt, and the nuts, substantially as set forth.

7. In a rotary engine, the combination of the casing, cylinder, and pistons thereof, the hollow shaft and interior valve mechanism provided with registering ports adapted to permit free passage of steam alternately to the front and rear faces of the pistons, and the exhaustion of the steam alternately from said front and rear faces, the bracket arranged upon the end of the valve and provided with notches upon its outer side, and the lever for reversing the valve, substantially as set forth.

8. In a rotary engine, the combination of the valve having one end extending laterally from the casing of the engine and provided with male screw-threads, the joint or connection provided on one end with female threads adapted to engage the male threads of the valve, and provided with inner collars and strips extending between said collars, the stuffing-boxes, and the T-shaped steam-pipe, substantially as set forth.

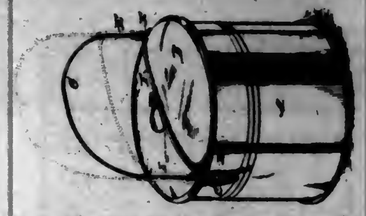
9. In a rotary engine, the combination of the casing consisting of two parts provided with meeting flanges, each of said flanges provided with central semi-cylindrical bearings, the cylinder and pistons, the side connections, the eccentrics provided with laterally-extending hubs, said hubs being provided with suitable flanges, and the bolts for securing said flanges to the casing of the engine, substantially as set forth.

10. In a rotary engine, the combination of the casing, the cylinder, the partition-block provided with oppositely-arranged channels, the hollow shaft secured to the partition-block, and provided with oppositely-arranged ports adapted to act alternately as inlet and outlet ports, and also provided with oppositely-arranged exhaust ports or ducts, and the valve provided with the longitudinal port, with which the oppositely-arranged ports in the hollow shaft alternately register, and also provided with the raised portion around the longitudinal port, substantially as set forth.

11. In a rotary engine, the combination of a cylinder, a hollow shaft passing transversely therethrough and turning therewith, stationary eccentrics located upon opposite ends of the shaft on each side of said cylinder, connections having inner circular opening surrounding the eccentrics, and cross-pieces connecting the outer ends of said connections and carrying piston-rods, substantially as set forth.

12. The combination of the casing, the cylinder provided with central partition having oppositely-arranged channels, the eccentrics provided with laterally-extending hubs, said hubs provided with suitable flanges, the side connections having their inner ends surrounding said eccentrics, the hollow shaft provided on one end with a balance-wheel, and having arranged thereon at this end a cylindrical block provided with an inwardly-extending pintle or bearing-point, said hollow shaft also being provided with oppositely-arranged ports adapted to act alternately as inlet and outlet ports, and having oppositely-arranged exhaust ports or ducts, the valve provided with the longitudinal port, with which the oppositely-arranged ports in the hollow shaft alternately register, and also having the annular collars and the raised portion around the longitudinal port, the cut-off valve, the valve-rod provided on its outer end with a cap, said cap being provided with a slotted quadrant, the lever upon the end of said valve-rod, the centrally-apertured block having an inward extension or tongue, the screw-bolt, the nuts for securing the valve-rod lever in its adjustable position, the supporting-bracket, the lever for adjusting the valve, the connection or joint provided with inner collars and strips extending between said collars, the stuffing-boxes for said valve, the T-shaped steam-pipe, and the hand-wheel upon the end of the hollow shaft, substantially as set forth.

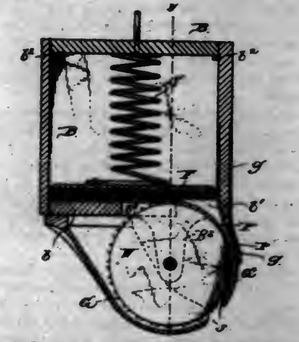
410,044. COMBINED BUCKET-BAIL AND LID-FASTENER. JOHN M. STOKES and OLIVER P. REID, Laredo, Tex. Filed June 22, 1889. Serial No. 315,186. (No model.)



Claim.—1. The combination, with the bucket and the ears, of the wires D, pivotally connected to said ears, the links pivotally connected to said wires, the cross-wire F, connecting the said links, and the bail loosely connected with the ends of the said wire F, substantially as shown and described.

2. The combination, with the bucket and its cover, of the ears on the bucket, the wires D, having eyes pivotally connected with the ears, the links pivotally connected with the wires, the cross locking-wire F, having eyes at its ends engaging the links, and the bail having at its ends eyes connected with the eyes of the cross-wire F, substantially as shown and described, and for the purpose specified.

410,045. APPARATUS FOR DELIVERING CARDS, CIRCULARS, OR OTHER LIKE MATTER. ANATOLE TABOUR, Paris, France. Filed May 23, 1889. Serial No. 311,833. (No model.) Patented in France Apr. 13, 1889, No. 194,312.



Claim.—1. In an apparatus such as described, the combination, with a holder having a delivery-slot in its bottom, and a spring-follower operating to hold the matter to be delivered in proper position, of a delivery-wheel provided with pins projecting from its periphery and operating upon the lowermost sheet or card in the holder to propel the same to or through the delivery-slot, substantially as and for the purposes specified.

2. In an apparatus such as described, the combination, with a holder having a delivery-slot in its bottom, and a spring-actuated follower operating to hold the matter to be delivered in proper position, of a delivery-wheel having pins projecting from its periphery and operating through the bottom of the box upon the lowermost sheet or card in the holder, a guard for and encompassing said wheel, and arranged to form a delivery-slot through which the matter to be delivered is removed, substantially as and for the purposes specified.

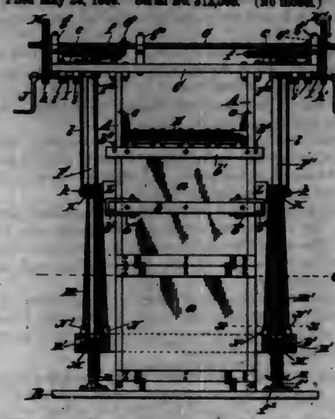
3. The combination, with the box B, having slots $b' b^2$ in its bottom, and the spring-actuated follower F, of the wheel W, having pins P and P' projecting from its periphery in reverse directions, substantially as and for the purposes specified.

4. The combination, with the box B, having slots $b' b^2$ in its bottom, and the spring-actuated follower F, of the delivery-wheel W, the guard G, and the elastic U-shaped guard G', arranged relatively to each other, as to form a slot *s* between their outer ends, substantially as and for the purposes specified.

5. In an apparatus of the class described, a delivery-wheel W, having pins projecting from its periphery in reverse directions, with their points in proximity to each other, substantially as and for the purposes specified.

6. In an apparatus, of the class described, a delivery-wheel having pins projecting from its periphery in reverse directions and on lines tangential to a circle of smaller diameter than that of the wheel, substantially as and for the purposes specified.

410,046. BALING-PRESS. THEODORE TROUT, Hicksville, Ky. Filed May 20, 1889. Serial No. 312,005. (No model.)

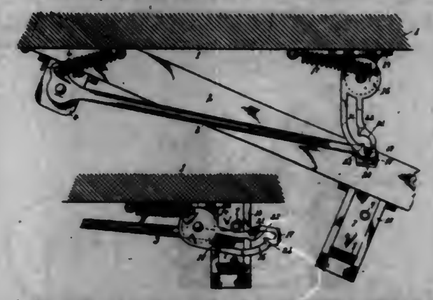


Claim.—1. The combination of a follower or platen, a pair of upright shafts, a pair of ropes winding upon said shafts and thereby constituting, in connection therewith, a vertically-disposed windlass at either side of the machine, a set of tackle-blocks to each said pair of ropes, and through which said ropes pass, a pair of horizontal gear-wheels mounted on said shaft, and a revolving shaft journaled at right angles to said upright shafts and provided with pinions which engage said gear-wheels, the whole being mounted on a suitable frame and adapted to operate substantially as herein set forth.

2. In a baling-press, the combination of the follower D, horizontal shaft G, having the bevel gears or pinions G', and gears H H', mounted thereon, upright shafts or pillars F F', having bevel-gears *f* keyed to their upper ends and engaging said gears G', and the rope and tackle-block mechanism K M M' *m m'*, the whole being arranged, constructed, and adapted to operate substantially as herein set forth.

3. The combination of a follower D, shaft G, having gears G' and H H', mounted thereon, vertical shafts or pillars F F', having bevel-gears *f* on their upper ends and engaging said gears G', ropes *m m'*, tackle-block mechanism K M M', and the adjustable driving gears or pinions *h h'*, the whole being constructed, arranged, and operated substantially as herein set forth.

410,047. DOOR-SPRING. FRED W. TOBEY, Waterbury, Conn. Filed Nov. 26, 1888. Serial No. 291,880. (No model.)

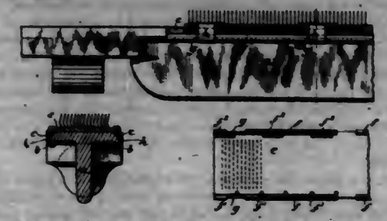


Claim.—1. A door closer and buffer consisting, essentially, of a closing-lever carried by the door and having an angle-arm, and a slide having a buffer and a roller, also carried by the door, a lever 15, pivoted to the jamb and having a slot engaged by the outer end of the closing-lever, and springs connected to the jamb and respectively to the angle-arm and to the base of lever 15 within the pivotal point of said lever, substantially as described.

2. The closing-lever having an angle-arm, a spring 6, connected to said angle-arm and to the jamb, a slide carried by the door and having a buffer and a roller, and a spring 12, which controls the movement of said slide, in combination with a lever 15, pivoted upon the jamb and having a slot engaged by the outer end of the closing-lever, and a spring 17, connected to lever 15 within its pivotal point and to the jamb.

3. The closing-lever pivoted to the door and having an angle-arm and a spring 6, connected to said angle-arm and to the jamb, in combination with a slide upon the door carrying a buffer and roller, lever 15, having a slot 16, with inward projections 22 and 23, for the purpose set forth, and a spring 17, connected to the jamb and to the base of lever 15 within its pivotal point.

410,048. MEANS FOR FASTENING CARD-CLOTHING TO THE TOP-PLATE OF CARDING-ENGINES. RICHARD TWEEDALE, Accrington, County of Lancaster, England. Filed May 6, 1889. Serial No. 309,806. (No model.)



Claim.—1. In combination, the card-flat, the card-clothing, the strip for inclosing the raw edges of said clothing, the said bar being cut away beneath the edges of the clothing, and fasteners for the clothing, substantially as described.

2. In combination, the card-flat, the card-clothing, the strip for inclosing the edges thereof, and double hooked fasteners to grip said strips and the card-flat, substantially as described.

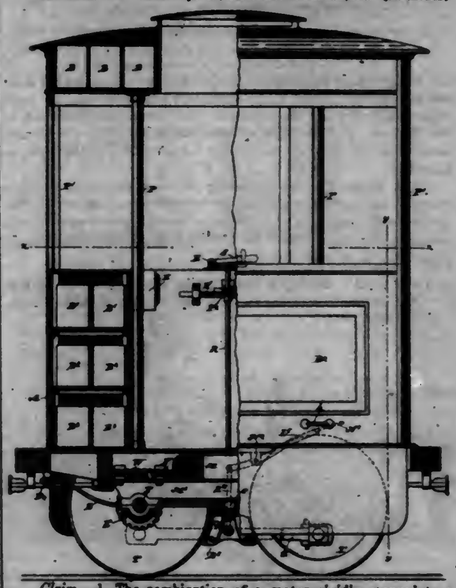
3. In combination, the card-flat, the card-clothing, the edging-strips therefor, and fasteners for securing the clothing to the flat, said fasteners engaging with the edging-strip, substantially as described.

4. In combination, the card-flat, the card-clothing, the edging-strip therefor having notches, and the securing-hooks fitted to said notches, substantially as described.

5. In combination, the card-flat, the card-clothing, and fasteners at the edge of said clothing, the said card-flat being cut away under the edge of the clothing, substantially as described.

6. In combination, the card-flat having ribs *b*, the clothing, and the double-hooked fasteners engaging the clothing and the ribs, substantially as described.

410,049. DUMMY OR MOTOR ENGINE. JEAN T. VAN GOETH, New York, N. Y. Filed Sept. 12, 1888. Serial No. 285,174. (No model.)



Claim.—1. The combination of a motor rigidly secured to a frame carried by trucks with loose worm-gears on the axles of the trucks, and clutch mechanism for connecting the motor-shaft to either of said axles, substantially as described.

2. A motor located on a rigid frame secured to the truck of a car, in combination with one right and one left worm-gear running

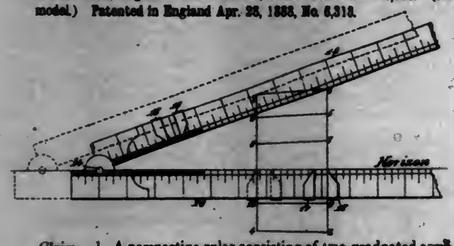
normally loose, each on its own shaft, and clutch mechanism for connecting either of said loose gears to the motor-shaft, as desired, whereby the car may be run in either direction at the will of the attendant without reversing the direction of the motor, substantially as described.

3. In a mechanically-propelled vehicle, the combination of the following elements: a motor rigidly connected to a frame carried by two pairs of truck-wheels connected together by links, two loose worm-gears, one on each axle, a double clutch, one for each worm-gear, and a cord and pulleys and a series of connecting-levers with a hand-operating lever or wheel located in convenient proximity to an attendant on the motor car or vehicle, substantially as described.

4. In a mechanically-impelled vehicle, the combination of the following elements: two pairs of truck-wheels connected together by links Z Z, the axles of which trucks carry a motor on a frame independent of the car-body frame, two loose worm-gears, one on each shaft, two screws on the motor-shaft, one adapted for each loose gear, a pair of clutches, one for each gear and shaft, a lever for connecting said clutches to either of said loose gears, as desired, and a series of levers, pulleys, and cords for controlling said clutches, substantially as described.

5. In a motor car or engine, the combination of a motor fixed rigidly to a frame carried directly by the axles of the truck-wheels, a pair of loose worm-gears, one right and one left, located one on each axle, two worms or screws located one on each end of the motor-shaft and meshing with the loose gears respectively, two spring-clutch attachments, one affixed to each loose gear, two sliding-clutch attachments splined on the car-axles, a pivoted lever fixed at its middle and connected at or near its ends to the sliding-clutch attachments, a cord, pulleys, and levers with a hand-wheel located in close proximity to the attendant on the car, the whole being so arranged that the motor always running in the same direction may be caused to run the motor-car in either direction, as desired, substantially as described.

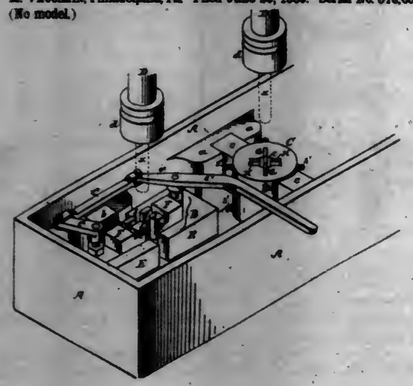
410,050. PERSPECTIVE-RULER. JOHN VARLEY, London, County of Middlesex, England. Filed Nov. 16, 1888. Serial No. 291,016. (No model.) Patented in England Apr. 28, 1888, No. 6,318.



Claim.—1. A perspective-ruler consisting of two graduated arms, one of which is pivotally connected at one extremity with the inner edge of the other at a short distance from the extremity thereof, so that they can open at a right angle, and a pair of independently-movable pointer-slides on one of such pivoted arms, substantially as described.

2. A perspective-ruler consisting of two arms, one of which is pivotally connected at one extremity with the inner edge of the other at a short distance from the extremity thereof, and a pair of independently-adjustable pointer-slides on each pivoted arm, substantially as and for the purposes described.

410,051. MACHINE FOR TURNING TAPERED BOLTS. SAMUEL M. VAUCLAIN, Philadelphia, Pa. Filed June 20, 1889. Serial No. 314,051. (No model.)



Claim.—1. The combination of the tank A with dies B and C, one a roughing-die and the other a taper-cutting die, said dies being mounted in said tank with spindles carrying the bolts to be turned situated directly above said dies, substantially as described.

2. The combination, in a taper-cutting die for turning tapered bolts, of the tapered cutters G G, having cutting-edges extending the full length of the bolt, and devices for adjusting the cutters, substantially as described.

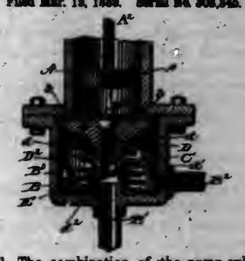
3. The combination, in a die for turning tapered bolts, of a shell, the cutters mounted therein having cutting-faces extending the full length of the bolt to be turned, with guides also extending the full length of the bolt to be turned, and devices for adjusting both the guides and the cutters, substantially as described.

4. The combination of the taper-cutting die, the shell, vertical cutters therein, said cutters having a groove *g*, with a bolt I, having a hooked end adapted to said groove, and adjusting-screws J J, substantially as and for the purpose set forth.

5. The combination of the base E', slides E E mounted thereon and carrying dies F F, forked, substantially as shown, with levers, and cams connected to said levers, whereby on the movement of one of said levers the dies F F will be adjusted from or toward each other, substantially as described.

6. The combination, in a die for turning tapered bolts, of the shell, the cutters G, mounted therein, having a cutting-face *k* for the shank of the bolt, and a cutting-face *k'* for the under side of the head of the bolt, substantially as described.

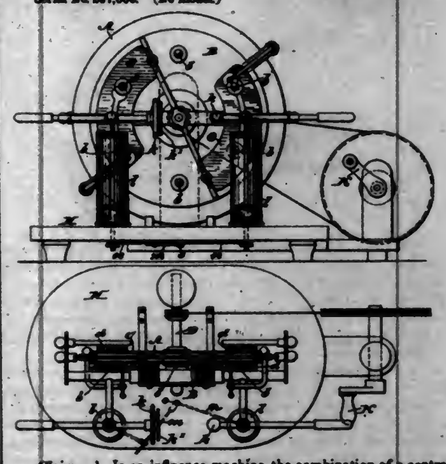
410,052. AIR OR VAPOR PUMP. HECTOR VON BAYER, Washington, D. C. Filed Mar. 19, 1889. Serial No. 303,845. (No model.)



Claim.—1. The combination of the pump-cylinder having the chamber at the end thereof, a delivery-valve provided with the hollow stem in which the inlet-valve is located, and a flexible air-tight pipe to form a connection between the hollow stem of the delivery-valve and the source of supply, substantially as and for the purpose set forth.

2. In an air or vapor pump having the valves located one within the other and arranged at the end of the pump-cylinder within a chamber, an elastic or flexible air-tight pipe connecting the hollow stem of the discharge-valve with the suction-pipe, substantially as described.

410,053. INFLUENCE-MACHINE. ROBERT VOSS, Berlin, Germany, assignor to James W. Queen & Co., Philadelphia, Pa. Filed Jan. 21, 1889. Serial No. 297,066. (No model.)

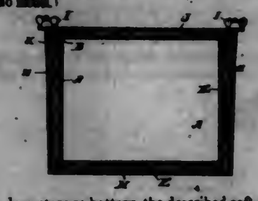


Claim.—1. In an influence-machine, the combination of a central fixed disk and two rotary disks attached to a shaft extending through the fixed disk, with two electrodes, one of which consists of a non-conducting surface attached to a conducting-surface, but separated therefrom by an air-space, the other electrode being of usual form, and both electrically connected to the influence-machine, substantially as described.

2. In an influence-machine, an electrode consisting of a non-conducting surface attached to the conducting-electrode, said parts being separated by an air-space, substantially as shown and described.

3. An electrode for an influence-machine, consisting of a flat or disk-like conductor, in combination with a flat or disk-like conducting-surface connected to the conducting part by a central stem, as shown and described.

410,054. CONTAINING CELL FOR SECONDARY BATTERIES. CHARLES F. WALDRON, Boston, Mass. Filed Nov. 13, 1888. Serial No. 290,711. (No model.)



Claim.—1. In a storage-battery, the described soft-rubber cell A, having integral flange B extending outwardly from its upper edges, in combination with the rigid case E, the cover F, with its rubber lining G, and suitable clamping means to hold said flange compressed between the cover and edges of the case, substantially as set forth.

2. The subdivided cell described for storage-batteries and like uses, the same consisting of the soft-rubber cell A, having outwardly-projecting flange B, and one or more partitions C, formed integral with the cell, in combination with the case E, cover F, and lining G, and with clamps for tightening the joints without perforating the flange, substantially as set forth.

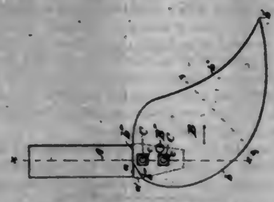
3. In a storage-battery, the combination of the flanged soft-rubber cell having one or more partitions made hollow and furnished with a stiffening-core D, with the case E and cover F, and with adjustable clamps for securing tight joints, substantially as set forth.

4. In a storage-battery, the soft-rubber cell A, having projecting flange B, and the inclosing-case E, having cover F, with suitable fastenings, in combination with the flanged rim K, L-shaped in cross-section and located beneath and outside of the rubber flange and the edges of the cover, for the purpose set forth.

5. In a storage-battery, the soft-rubber cell, the inclosing-case, and the rubber-lined cover, in combination with the tapering connection O, extending through said lining and cover, and with the yielding washer B, applied thereon beneath the cover.

6. In a storage-battery, the combination of a rubber cell having one or more chambers, a rigid bottom and cover, and a soft-rubber lining for said cover, with adjustable clamps surrounding said parts and adapted to hold them in close contact, substantially as set forth.

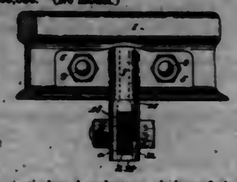
410,055. PLOW-COLTER. LEVI WALKER, Delhi, Ontario, Canada. Filed Apr. 20, 1889. Serial No. 308,087. (No model.)



Claim.—1. In a plow-colter, the combination of a shank A, having recess *a'*, with shoulder *a* and bolt-holes *a''*, a flat blade B, having a convex cutting-edge *b*, terminating at the point *b'* in a flat sweep, and a partly concave and partly convex cutting-edge *b''*, said cutting-edges joined by a wide top having straight edges *b''' b''''*, joining each other at an obtuse angle and provided with bolt-holes B' B'' B''', and the bolts C, connecting said shank and blade adjustably, substantially as set forth.

2. A reversible colter having a convex cutting-edge *b*, terminating by a flat sweep in a point *b'*, and a concave cutting-edge *b''*, said cutting-edges joined by the point *b'*, and a wide upper part having two straight edges *b''' b''''*, meeting at an obtuse angle and determining the position of the blade on the shank, and said blade provided with bolt-holes B' B'' B''', substantially as set forth.

410,056. BRACKET FOR CONNECTING TIE-BARS AND SWITCH-RAILS. FREDERIC C. WEBB and CHARLES PARTINGTON, Cincinnati, Ohio, assignors to the Webb Frog Company, same place. Filed Apr. 20, 1888. Serial No. 308,026. (No model.)



Claim.—1. A tie-bar bracket consisting of the channel-neck 7, having the ears 5 and the shank 12, provided with the mortise 13 for the tie-bar, substantially as described.

2. A tie-bar bracket consisting of the channel-neck 7, provided with the ears 5, and the shank 12, having a mortise 13 and converging side walls, substantially as described.

3. A tie-bar bracket consisting of the channel-neck 7, having the ears 5, the offset 15, the shank 12, having the mortise 13, and the cross-piece 14, substantially as described.

4. A tie-bar bracket consisting of the channel-neck 7, having the ears 5, the mortised shank 12, and the offset 15, connecting the shank and neck, substantially as described.

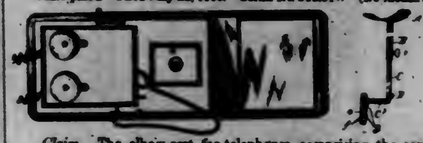
410,057. PROCESS OF MAKING ORCINE DYE. RUDOLF GREVILLE-WILLIAMS, Albany, N. Y., assignor to the Albany Coal Tar, Dye and Chemical Company, same place. Filed Mar. 5, 1888. Serial No. 301,910. (No specimens.)

Claim.—The new and improved process for the production of coloring-matters, which process consists in combining one molecule of any alkalized orcine or one molecule of a sulpho-acid of an alkalized orcine with the intermediate product formed by combining one molecule of tetrazo-diphenyl, or one molecule of any of the other herein-described tetrazo compounds, with one molecule of each of the present known sulpho-acids of naphthylamine, substantially as set forth.

410,058. PROCESS OF MAKING ORCINE DYES. RUDOLF GREVILLE-WILLIAMS, Albany, N. Y., assignor to the Albany Coal Tar, Dye and Chemical Company, same place. Filed June 6, 1888. Serial No. 313,386. (No specimens.)

Claim.—The new and improved process for the production of coloring-matters, which process consists in combining one molecule of the hereinbefore-described compound of orcine and chloride of sodium with the intermediate product formed by combining one molecule of tetrazo-diphenyl, or one molecule of any of the other herein-mentioned tetrazo bodies, with one molecule of one of the present known sulpho-acids of naphthylamine, substantially as set forth.

410,059. ADJUSTABLE ELBOW-REST FOR TELEPHONES. JULIUS J. WOLF, Kansas City, Mo., assignor of one-half to Louis Hammerslough, same place. Filed July 22, 1889. Serial No. 318,217. (No model.)



Claim.—The elbow-rest for telephones, comprising the concave piece A, having the depending tube B and set-screw *c*, the arm or rod C, telescoped in said tube, the arm or rod C', having the pintle *e* at its inner end, the screw *d*, pivoting the arms C C' together and having the thumb-nut D, for the purpose set forth, and the bracket-plate *f*, having the ears *g*, in which the pintle *e* is pivoted, substantially as described.

410,060. COFFIN-LID FASTENER. LYMAN R. WOODARD, Owosso, Mich. Filed June 15, 1889. Serial No. 314,358. (No model.)

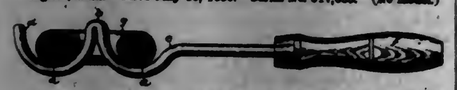


Claim.—1. In combination with a spring-fastening device for securing the lid to a casket or coffin at the head thereof, of the bow-spring catch D, secured to the under side of the casket or coffin lid, and having its free end curved downwardly, as shown at *e*, whereby it will be brought in frictional contact with the upper and lower walls of the recess *m*, and thereby prevent the lid from rattling when secured in place, substantially as and for the purpose set forth.

2. In a fastening for casket or coffin lids, the keeper *c*, spring-latch C, consisting of the arms *f g*, the latter having teeth *e* extending at right angles to the plane thereof, in combination with the bow-spring catch D, secured to the under side of the casket or coffin lid, and having its free end curved downwardly, as shown at *e*, whereby it will be brought in frictional contact with the upper and lower walls of the recess m to prevent the lid from rattling, substantially as and for the purpose described.

3. In a fastening for casket or coffin lids, the combination, with the keeper *c*, of the spring-latch C, consisting of the arms *f g*, the latter having teeth *e* extending at right angles to the plane of said arm, the right-angle bend *h*, thumb-piece *i*, and the fastening-plate *l*, substantially as and for the purpose specified.

410,061. CAR-COUPLING TOOL. OLIVER D. WOODRUFF, Southington, Conn. Filed July 16, 1889. Serial No. 317,683. (No model.)

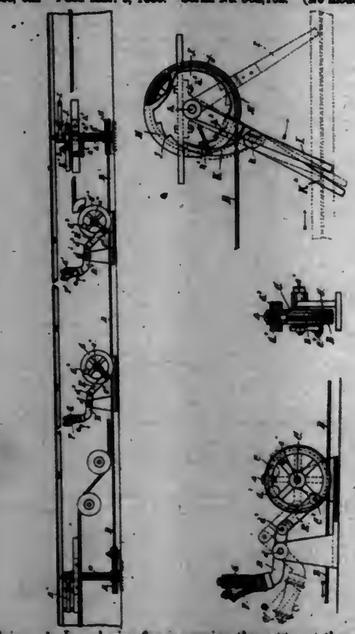


Claim.—1. The herein-described car-coupling tool, consisting, essentially, of a proper handle and body having two seats *a a*, for supporting the opposite sides of the link, and an intermediate upwardly-projecting guide *b*, substantially as described, and for the purpose specified.

2. The herein-described car-coupling tool, consisting of a rod having the return-bend to form the upwardly-projecting guide *b*, and having also two seats *a a* on the opposite sides of said guide for supporting the opposite sides of the link, substantially as described, and for the purpose specified.

3. The herein-described car-coupling tool, consisting of the rod having the two seats *a a* for supporting the opposite sides of the link, an intermediate upwardly-projecting guide *b*, and outer end *d*, bent upwardly from the outer one of the seats *a a*, substantially as described, and for the purpose specified.

410,062. DEVICE FOR DEPRESSING CABLES AT THE STREET-CROSSINGS OF CABLE RAILROADS. GEORGE H. WEIGHT, San Francisco, Cal. Filed Mar. 6, 1889. Serial No. 302,162. (No model.)



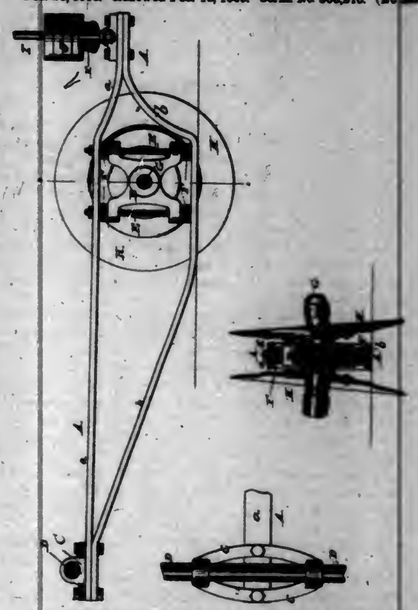
Claim.—1. In a device for depressing the cables at the crossings of cable railroads, the combination, with the lever A× and the sheave A, connected by a wire rope with the sheaves C C× and H, of the levers D D×, carrying the rollers F F×, the latter having connection with the sheaves C C× to effect the depression of the cross-cable, substantially as set forth.

2. The combination, with the lever I and the sheave H, connected by wire rope with the sheaves C C× and A, of the levers D D×, carrying the rollers F F× and connected by means of the links E E× to the sheaves C C×, to effect the release of the pressure on the cross-cable, substantially as set forth.

3. The combination, with the lever I, the pawl K, and ratchet-wheel J, of the sheaves H and C C×, the latter being connected by means of the links E E× with the levers D D×, carrying the rollers F F×, to hold the cables in a depressed position, substantially as set forth.

410,068. WITHDRAWN.

410,064. SEEDER. WILLIAM D. ARENTZ, Springfield, Ohio. Filed Feb. 26, 1889. Renewed Feb. 16, 1889. Serial No. 300,310. (No model.)



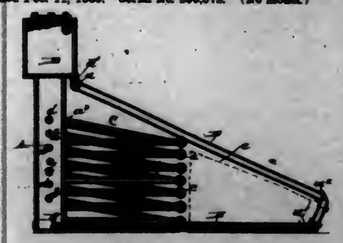
Claim.—1. The drag-bar consisting of the upper and lower members *a* and *b*, in combination with the intermediate disk-supporting plate B, the guide-rods E, and the movable washers F.

2. In combination with a drag-bar having an opening therein, a plate located in said opening and provided with an axle, a furrow-opening disk mounted on said axle, and a series of plates or washers adapted to be applied above or below the plate at will, whereby the plate and disk may be adjusted vertically in relation to the drag-bar.

3. In combination with a drag-bar having a furrow-opening device attached thereto, a weight to depress said bar, and a spring interposed between the weight and drag-bar.

4. The drag-bar, the rod I, rising therefrom, and the weights J, applied to said rod, in combination with the intermediate springs K, also mounted on the rod between the weight and the drag-bar.

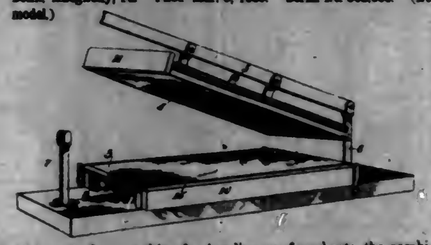
410,065. STEAM-BOILER. OMAR BELLMAN, Hagerstown, Md. Filed Feb. 11, 1889. Serial No. 299,572. (No model.)



Claim.—1. The boiler or heater having the series of inclined pipes and the water-column having the superposed water tank or column, said inclined pipes connecting at their ends with transverse pipes, one having pipe-connections with the water-column and the other having like connection with the water-tank or chamber upon the water-column, substantially as specified.

2. The boiler or heater consisting of the incased inclined fire-chamber pipes, the upright water chamber or column, the water tank or chamber superposed upon the upright water chamber or column, and the series of inclined pipes connected at one end by a transverse pipe and arms to the water-tank, and having their lower ends connecting-transverse pipe, connected by additional pipe with the lower end of the water-column, a smoke and draft space or flue being provided below the inclined pipes, and air-inlets between elbows at the lower ends of said latter pipes, substantially as set forth.

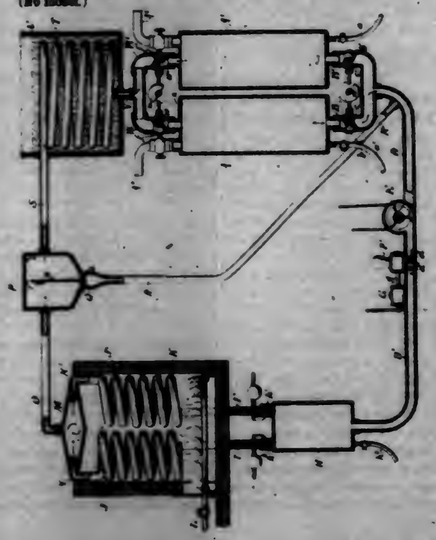
410,066. MACHINE FOR EDGING ROOFING-SHEETS. LOUIS H. BOEX, Allegheny, Pa. Filed Mar. 5, 1889. Serial No. 302,008. (No model.)



Claim.—1. In a machine for bending roofing-sheets, the combination of the bed 2, the plate 3, arranged upon the bed and having the edge 8 at one end and projecting from its upper surface, and the brake 10, hinged at the other end of the plate, the plate 4, superposed upon the plate 3 and having the edge 9 projecting from the lower surface of one end, and the brake 11, hinged at the other end of said plate, all constructed and arranged substantially as described, the lever 5, pivotally connected to the bed 2, the plate 4 being fixed to and carried by said lever, and a rest for said lever, substantially as set forth.

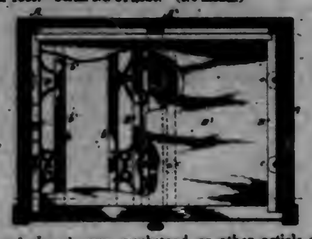
2. In a machine for bending roofing-sheets, the bed 2, the plate 3, arranged above and upon the bed, the brake 12, hinged to one side of said plate, the brake 14, hinged to the other side of said plate 3 and provided upon its upper edge with the edge 15, the plate 4, the brake 13, hinged to one side of said plate 4, to co-operate with the edge 15 to make a standing seam, one member of which is straight and the other having an overturned edge, all constructed and arranged substantially as described, combined with the lever 5, affixed to and carrying the plate 4 and pivotally connected to the bed, and a rest for said lever, substantially as set forth.

410,067. PROCESS OF FACILITATING CHEMICAL REACTIONS. HENRY BOWER, Philadelphia, Pa. Filed Mar. 14, 1889. Serial No. 303,300. (No model.)



Claim.—The hereinbefore-described process of mechanically facilitating chemical reactions, which consists in subjecting two or more substances to be combined to the effect of impact and attrition from opposing jets, substantially as set forth, and with or without the use of a finely-divided solid agent for intensifying such impact and attrition.

410,068. DRAWER. EDWARD J. BROWN, Washington, D. C. Filed June 14, 1889. Serial No. 314,330. (No model.)

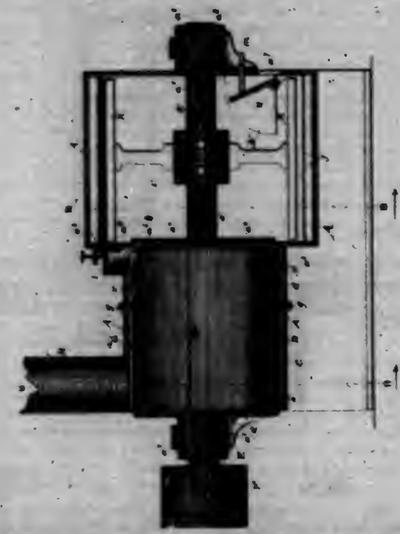


Claim.—1. In a bureau, washstand, or other article of cabinet-ware, the combination, with the frame or casing thereof, of a drawer loosely fitted therein, the bottom strips secured thereto, and a yielding frictional bearing secured to said drawer under the bottom thereof and passing through its sides, the bottom strips or the sides of the drawer having slots to guide and retain said yielding bearing, substantially as described.

2. The combination, with a frame or casing, of a drawer loosely fitted therein, the bottom strips secured to said drawer, and a spring secured to said drawer under the bottom thereof and passing through its sides, the bottom strips or the sides of said drawer being slotted to guide and retain said spring, substantially as described.

3. The combination of a frame and the slotted bottom strips of a drawer to guide and retain a spring, with a drawer, and a spring secured to said drawer under the bottom thereof and pressing against said frame, substantially as described.

410,069. GRAIN-SCOURER. JOHN M. CASE, Columbus, Ohio, assignor to the Case Manufacturing Company, same place. Filed Dec. 13, 1886. Serial No. 221,423. (No model.)



Claim.—1. A grain-cleaner comprising the combination of the following elements, to wit: a horizontal scouring-cylinder and a horizontal dusting-cylinder placed end to end, a diaphragm or partition between them having an aperture through which the interiors of said cylinders communicate, said aperture being situated above the bottom of said cylinders, to keep up the pressure in the scouring-cylinder, a scouring-drum situated within the scouring-cylinder and leaving an annular space between its periphery and the inner surface of said cylinder, a reticulated cylinder situated within the dusting-cylinder, a revoluble beater situated within said reticulated cylinder, and a stand-pipe communicating directly with the annular space between the scouring-drum and cylinder, substantially as set forth.

2. In a grain-cleaner, the combination of the cylindrical shell or casing, the partition dividing it into two chambers B and C, and formed with an aperture through which the grain is discharged from the chamber B into the chamber C, a corrugated lining secured within the chamber B, a revolable rubbing-drum mounted to revolve in said chamber, a reticulated cylinder situated within the chamber C, and a rotary duster mounted within said cylinder, substantially as set forth.

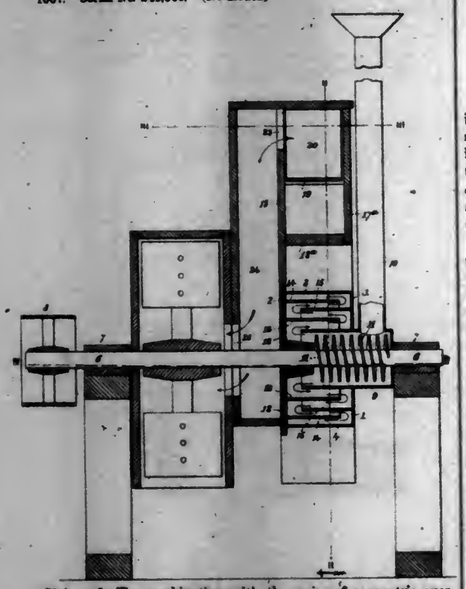
3. The combination, with the casing having the discharge-aperture a^7 and the boards N projecting from the inner wall of the casing in parallel vertical planes, one on each side of the aperture, of the valve M, situated between said boards and hinged at its lower edge, and means for adjusting said valve, substantially as set forth.

4. In a grain-cleaner, a shell or casing formed in two planes united by an offset, an aperture a^6 through said offset, and an aperture a^5 through the top of that portion of the shell which is of smaller diameter, in combination with a partition separating the interior of the shell or casing into two compartments, a rubbing-drum situated in one of said compartments, and a duster situated in the other, substantially as set forth.

5. The combination, with the horizontal cylinder and the partition dividing it into two chambers B C, and having the aperture through which said chambers communicate, of the stand-pipe communicating with the chamber B, the scouring-drum located in said chamber, a valve for controlling the passage of the grain from the chamber B to the chamber C, and a duster situated in the chamber C, substantially as and for the purposes set forth.

6. In a grain-scourer, the combination of a scouring-chamber B, having a stand-pipe H feeding into its top, an agitating-drum D, an outlet a^4 in its upper part, and a valve a^5, controlling said outlet, and a dusting-chamber into which said outlet a^4 leads, said dusting-chamber having the dusters K, reticulated cylinder J, and outlet a^7, said outlet being located in the end and having valve M, all substantially as shown and described.

410,070. GRAIN-SCOURER. JOHN M. CASE, Columbus, Ohio, assignor to the Case Manufacturing Company, same place. Filed June 20, 1887. Serial No. 241,866. (No model.)



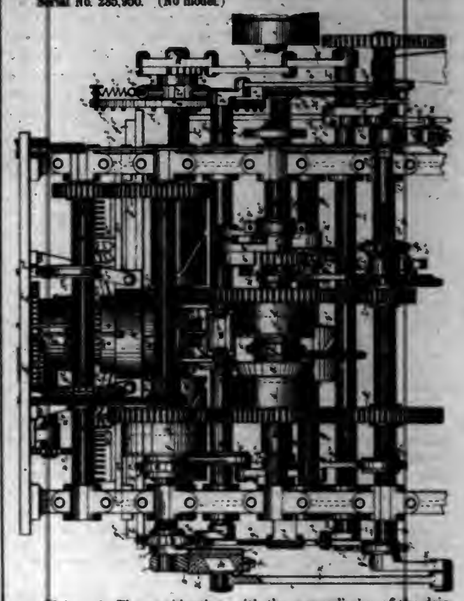
Claim.—1. The combination, with the series of concentric overlapping rings, means for imparting rotary motion to the alternate rings, and a screw conveyer for forcing the grain into the central ring under pressure, substantially as set forth.

2. The combination, with the rotary shaft, of a series of concentric overlapping rings having spirally-arranged corrugations, means for connecting the alternate rings with said shaft, and a feed-pipe delivering the material to be cleaned into the central ring, substantially as set forth.

3. The combination, with a series of overlapping rings, means for revolving some of said rings, and a feed-pipe discharging into the central ring, of a circular casing having a discharge-aperture situated above the bottom thereof, substantially as set forth.

4. The combination, with a series of overlapping rings and a shaft with which some of said rings are connected, of a horizontal pipe constituting the innermost ring, a spiral conveyer situated within said pipe, and a stand-pipe communicating with said pipe, substantially as and for the purpose set forth.

410,071. CIRCULAR-KNITTING MACHINE. WILLIAM L. CATHCART and ALEXANDER T. CATHCART, Gwynedd, Pa. Filed Sept. 20, 1888. Serial No. 285,950. (No model.)



Claim.—1. The combination, with the cam-cylinder, of the driving-shaft A, a double clutch thereon, gearing whereby the cam-cylinder may be operated from each of the loose members of said clutch, a rotating cam, means for rotating the same, and devices for controlling the rotation thereof, whereby it may be left at rest or given a movement of rotation at desired intervals, and a connection between said cam and the engaging member of the clutch, whereby the desired loose member may be locked to the driving-shaft for operation therewith.

2. The combination, with the cam-cylinder, of the main power-shaft A, a double clutch thereon, gearing whereby the cam-cylinder may be operated from each of the loose members of said clutch, a shaft F, means for rotating the same, devices for controlling the rotation of said shaft, whereby it may be left at rest or given a movement of rotation at the desired times, a cam q' on shaft F, and a connection between said cam and the engaging member of the clutch, whereby the desired loose member may be locked to the shaft A for operation therewith.

3. The combination, with the cam-cylinder, of the main power-shaft A, a double clutch thereon, gearing whereby the cam-cylinder may be operated from each of the loose members of said clutch, a rotating shaft F, carrying a cam q', a connection between the said cam and the engaging member of the clutch for operating the said engaging member, a ratchet on shaft F, a pawl, means for operating said pawl from shaft A, and means for throwing said pawl into and out of engagement with said ratchet.

4. The combination of two shafts, each carrying a gear-wheel, one of said gears being loose on its shaft, an intermediate gear-wheel for revolving said gears in unison, a crank of fixed length on one shaft, a crank of variable length on the other shaft, a clutch for making the loose gear fast on its shaft, a connection between the two cranks, the cam-cylinder, and gearing for driving the same from one of said shafts, substantially as shown and described.

5. The combination, with the driving-shaft A, provided with two loose gears of unequal sizes, and with a double clutch mechanism, by which either of said gears is made fast, of a driven shaft B, provided with gears of unequal sizes which are in mesh with the gears of shaft A, a shaft C, the cam-cylinder and gearing to drive the same from shaft C, the latter carrying a loose gear which is in mesh with one of the gears of shaft A, and a clutch by which said gear is made fast, a crank-connection between the shafts B and C, the crank of the latter being variable in length, and devices in connection with the variable crank and the clutch of shaft C, whereby the crank is lengthened and the clutch thrown out of gear simultaneously, or vice versa, substantially as shown and described.

6. The combination, with shaft B, having a driving-gear k, the shaft C, having a loose gear p and a clutch by which said gear is made fast, and the cam-cylinder and gearing to drive the same from shaft C, of an intermediate gear between the gears k p for imparting motion from one to the other, a crank-connection between the shafts B C, the crank of the latter being variable in length, and devices in connection with the said clutch and the variable crank, whereby the crank is lengthened and the clutch thrown out of action, and vice versa, substantially as shown and described.

7. The combination, with the cam-cylinder, of two shafts, gearing whereby the cam-cylinder is driven from one of the said shafts, a crank of fixed length on one of said shafts, and a crank of variable length on the other, a connection between the two cranks, a clutch on one of said shafts, a connection between said clutch and the other of said shafts, whereby when the clutch is in engagement the two shafts will be caused to move in unison, and a connection between the said variable crank and the clutch, whereby the effective length of the variable crank is changed and simultaneously therewith the clutch is made fast to or disengaged from its shaft, substantially as shown and described.

8. The combination, with the cam-cylinder, of two shafts, gearing whereby the cam-cylinder is driven from one of said shafts, a crank of fixed length on one of said shafts, and a crank of variable length on the other, a connection between the two cranks, a clutch on one of said shafts, a connection between said clutch and the other of said shafts, and means for making said clutch fast to or disengaging it from its shaft and for changing the effective length of said variable crank, substantially as shown and described.

9. The combination, with the knitting devices and controlling mechanism for effecting the changes from continuous rotary knitting to reciprocating knitting and back again, and determining the action of the knitting devices before and after such changes, of two rotating shafts, one of which is in connection with such controlling mechanism, a fixed crank-arm on the other of said shafts, the first shaft having thereon a loose crank-arm and a fixed ratchet, a pawl carried by said loose crank-arm in engagement with said ratchet, lugs on the said crank-arms projecting toward and into the path of rotation of each other, and a device for moving one of said lugs out of the path of rotation of the other as the two arms are moving in unison, substantially as shown and described.

10. The combination, with the knitting devices and controlling mechanism for effecting the changes from continuous rotary knitting to reciprocating knitting and back again, and determining the action of the knitting devices before and after such changes, of two rotating shafts, one of which is in connection with such controlling mechanism, a fixed crank-arm on the other of said shafts, the first shaft having thereon a loose crank-arm and two fixed ratchet-wheels, of which one is reversed with respect to the other, a pawl on said loose arm in engagement with one of said ratchet-wheels, a retaining-hook on said arm in engagement with the other ratchet-wheel, lugs on the said crank-arms projecting toward and into the path of rotation of each other, a device for moving one of said lugs out of the path of rotation of the other as the two arms are moving in unison, and a tripping device for tripping the retaining-hook to permit a backward movement of the loose crank-arm, as shown and described.

11. The combination, with the knitting devices and controlling mechanism for determining the action thereof, of two rotating shafts in axial alignment, one of which is connected with such controlling mechanism, and each having a crank-arm with a lug which projects toward and into the path of rotation of the other, the lug on one of said arms being movable, and a tripping device for moving said movable lug to disengage it from the lug of the opposite arm at a predetermined point, substantially as shown and described.

12. The combination, with the needles, needle-cylinder, cam-cylinder, a main shaft, means for imparting to the cam-cylinder from the main shaft either a continuous rotary motion or a reciprocating motion, as desired, means for placing *en masse* a portion of the needles into or out of operative position, pattern devices for successively throwing out of and into operation a portion of the remaining needles to effect narrowing and widening, and devices for changing the motion of the cam-cylinder from continuous rotary motion to reciprocating motion, and vice versa, of the shaft D, means whereby an intermittent motion is communicated to said shaft D from shaft A, and connections whereby said shaft D throws into and out of operation the motion-changing devices, the pattern devices, and the said means for placing the needles *en masse* into or out of operative position, substantially as shown and described.

13. The combination, with the needles, needle-cylinder, cam-cylinder, means for giving to said cam-cylinder either a continuous rotary motion or a reciprocating motion, means for placing *en masse* a portion of the needles in or out of operative position, pattern devices for successively throwing out of and into operation a portion of the remaining needles for narrowing and widening, and devices for changing the motion of the cam-cylinder from continuous rotary motion to reciprocating motion, and vice versa, of the shaft D and connections whereby said shaft D throws into and out of operation the motion-changing devices, the pattern devices, and the means for placing a portion of the needles *en masse* in or out of operative position, substantially as shown and described.

14. The combination, with the needles, needle-cylinder, cam-cylinder, devices for driving said cam-cylinder, embracing a crank of variable radius, whereby either a continuous rotary motion or a reciprocating motion may be communicated to the cam-cylinder, according to the adjustment of the crank, means for placing in inoperative position a portion of the needles *en masse*, devices whereby the adjustment of the variable crank may be effected, and a yarn stop-off for gripping the yarn after the passage of the yarn-guide by the last of the needles in operation during each of the movements of the cam-cylinder while reciprocating, of a shaft D and connections whereby a movement of said shaft will effect the adjustment of the variable crank and change the motion of the cam-cylinder from continuous rotary to reciprocating, cause the needle-raising means to elevate the needles in connection therewith, and throw into operation the yarn stop-off, substantially as shown and described.

15. The combination, with the needles, needle-cylinder, cam-cylinder, devices for driving said cam-cylinder, embracing a crank of variable radius, whereby either a continuous rotary motion or a reciprocating rotary motion may be communicated to the cam-cylinder, according to the adjustment of the crank, means for placing in operative position *en masse* a portion of the needles that have been raised, devices whereby the adjustment of the variable crank may be effected, and a yarn stop-off for gripping the yarn after the passage of the yarn-guide by the last of the needles in operation during each of the movements of the cam-cylinder while reciprocating, of a shaft D and connections whereby a movement of said shaft will effect the adjustment of the variable crank and change the motion of the cam-cylinder from rotary reciprocating to continuous rotary, cause the needle-lowering means to lower the needles in connection therewith, and throw out of operation the yarn stop-off, substantially as shown and described.

16. The combination, with the needles, needle-cylinder, cam-cylinder, devices for driving said cam-cylinder, embracing a crank of variable radius, whereby either a continuous rotary motion or a reciprocating rotary motion may be communicated to the cam-cylinder, according to the adjustment of the crank, means for placing into and out of operative position a portion of the needles *en masse*, devices whereby the adjustment of the variable crank may be effected, and a yarn stop-off for gripping the yarn after the passage of the yarn-guide by the last of the needles in operation during each of the movements of the cam-cylinder while reciprocating, of a shaft D and connections whereby a movement of said shaft will effect the adjustment of the variable crank and change the motion of the cam-cylinder from continuous rotary motion to reciprocating rotary motion, or vice versa, cause the needle raising and lowering means to raise or lower the needles in connection therewith, and throw into or out of operation the yarn stop-off, substantially as shown and described.

17. The combination, with the jack-holder and with the jacks and needles controlled thereby, of an intermittently rotating or oscillating shaft and an eccentric thereon, and a connection between the said eccentric and jack-holder, whereby the needles controlled by said jack-holder are raised out of or lowered into operative position by a partial rotation of said shaft, substantially as shown and described.

18. The combination, with the needle-cylinder and needles, the jacks l^2, and mechanisms for operating the same, and with the main power-shaft A, of the shaft K, carrying actuating-cams, an escapement-wheel driving the said shaft, an escapement-lever, a pawl-and-ratchet mechanism, and spring-connections intermediate the said ratchet and escapement-wheel, and connections intermediate the said shaft A and said pawl and escapement-lever, whereby reciprocating motion is imparted to the said pawl and slide, substantially as described.

19. The combination, with the needle-cylinder, of two eccentrics, either of which may be brought into action to raise and lower the cylinder during each revolution or forward and backward reciprocation of such cam, a link, the driving-rods of said eccentrics connected to opposite ends of said link, a sliding connection between said link and cylinder, and a cam c^{24}, and connections intermediate said link and cam for reciprocating said link, whereby the times of the upward and downward movements of the cylinder may be changed and the limits of its reciprocation raised or lowered without affecting the stroke of said cylinder, substantially as described.

20. The combination, with the vertically-reciprocating web-holder and with the oscillating or intermittently-rotating shaft D, provided with a cam c^{23}, of intermediate connections whereby the web-holder

is raised out of and lowered into operative position by an oscillation or semi-rotation of shaft I¹, substantially as shown and described.

21. The cam-cylinder provided with the fixed upper and lower needle-actuating cams and having the movable switch-cams b^4 c^4 applied thereto, in combination with the annular gear *l*, having a rigid connection with the switch-cams b^4 c^4, the said gear and switch-cams moving together to change the cam-path, and a thread-guide connected with the annular gear or with the said switch-cams, so as to have an independent motion relatively to the cam-cylinder, substantially as shown and described.

22. The combination, with the cam-cylinder and the switch-cams and their rigidly-attached yoke, the yoke being so connected as to have a slight independent movement relatively to the cam-cylinder, of a thread-guide attached to the yoke, substantially as shown and described.

23. The combination, with the needle-cylinder and needles, the jacks A^2, the cam-bars, and devices for operating the jacks from said cam-bars, of the shaft K, with helical cams, an escapement-wheel keyed to said shaft, a pawl-and-ratchet mechanism, and intermediate spring-connections between the ratchet and escapement-wheel, and an oscillating shaft L, having operative connection with the pawl-lever and with the fork of the escapement-wheel, substantially as shown and described.

24. The combination, with the needle-cylinder and needles, of a series of jacks for raising the needles out of and lowering them into action, a series of compound levers connected with the jacks to operate the latter, a reciprocating cam and connections between said cam and levers, a helical spring-actuated cam to move the said reciprocating cam, and an escapement to control the helical cam, substantially as and for the purpose described.

25. The combination, with the needle-cylinder and needles, of a series of jacks for raising and lowering the needles, a series of compound levers connected with the jacks to operate the latter, and a reciprocating cam and connections between said cam and levers, substantially as and for the purpose described.

26. The combination, with the cam and needle-cylinders and with the needles and jacks, of levers for moving the jacks and needles, reciprocating cam-bars for producing the required movement of the levers at predetermined times, and cams for reciprocating said cam-bars, substantially as shown and described.

27. The combination, with the cam and needle-cylinders and with the needles and jacks, of levers for moving the jacks and needles, reciprocating cam-bars for producing the required movements of the levers at predetermined times, rotating spring-pressed cams for reciprocating said cam-bars, and an escapement to control the action of the cams.

28. The combination, with a needle-cylinder, of means for raising said cylinder and lowering the same again during the knitting of each course in either continuous circular knitting or reciprocating knitting for the purpose of shaping the fabric by varying the lengths of the loops in the different parts of a course, substantially as shown and described.

29. The combination, with a needle-cylinder, of an eccentric, means for rotating the same, and connections intermediate said eccentric and cylinder, whereby the latter is raised and lowered during the knitting of each course for the purpose of shaping the fabric by varying the lengths of the loops in the different parts of a course, substantially as shown and described.

30. The combination, with a needle-cylinder, of an eccentric, means for rotating the same, and connections intermediate said eccentric and cylinder, whereby the latter is raised and lowered during the knitting of each course for the purpose of shaping the fabric by varying the lengths of the loops in the different parts of a course, said connections being adjustable, substantially as described, whereby the average length of the loops may be varied, as described.

31. The combination, with a needle-cylinder, of an eccentric, means for rotating the same, and connections intermediate the eccentric and the cylinder, whereby the latter is raised and lowered during the knitting of each course for the purpose of shaping the fabric by varying the lengths of the loops in the different parts of a course, said connections embracing a rod adjustable in the direction of its length, whereby the average length of the loops may be varied, as described.

32. The combination, with a needle-cylinder, of an eccentric, means for rotating the same, and connections intermediate the eccentric and the cylinder, whereby the latter is raised and lowered during the knitting of each course for the purpose of shaping the fabric by varying the lengths of the loops in the different parts of a course, said connections embracing a rod o^3, made in two parts and connected by a right and left hand coupling, and means for rotating said coupling to lengthen and shorten the rod o^3, substantially as shown and described.

33. The combination, with a needle-cylinder, of an eccentric, means for rotating the same, and connections intermediate the eccentric and the cylinder, whereby the latter is raised and lowered during the knitting of each course for the purpose of shaping the fabric by varying the lengths of the loops in the different parts of a course, said connections embracing a rod o^3, made in two parts and connected by a right and left threaded coupling, a lever for turning said coupling to lengthen and shorten the rod o^3, and a cam for operating said lever, substantially as shown and described.

34. The combination, with the needle-cylinder, of two oppositely-arranged eccentrics q^3 r^3, the rods s^3 t^3, the link p^3, to the opposite ends of which said rods are connected, and connections intermediate said link and the cylinder for raising and lowering the latter, having a sliding connection with the link, substantially as shown and described.

35. The yarn stop-off for knitting-machines herein described, consisting of two clamping-plates, means for imparting to one of said plates a constant reciprocating stroke, a spring-seat for the other of said plates, and means whereby a reciprocating movement is imparted to the spring-seat, in order that the thread may be clamped and released at different points in the reciprocation of the two plates, substantially as shown and described.

36. The yarn stop-off for knitting-machines herein described, consisting of two clamping-plates, means for imparting to one of said plates a constant reciprocating stroke, and means whereby the other of said plates is changed in position, in order that the thread may be clamped at different points in the reciprocation of the two plates, substantially as shown and described.

37. The yarn stop-off for knitting-machines herein shown and described, consisting of a reciprocating rod 16, a clamping-plate mounted thereon, and means for imparting reciprocating motion to said rod, a second clamping-plate, a screw-shaft 26, with which the latter plate is connected, an eccentric m^{11}, and connections between the screw-shaft and eccentric, substantially as shown and described.

38. The combination, with the yarn stop-off, consisting of fixed and movable plates, and an eccentric for reciprocating the movable plates, of a movable link-connection between the said eccentric and plates, whereby the reciprocations of the latter may be varied, and whereby the yarn stop-off may be thrown entirely out of action, substantially as shown and described.

39. The combination, with the fixed and movable plates of the stop-off and the rod 16, of an eccentric for reciprocating said rod, and an intermediate link 12, pivotally joined at one end to the rod of the said eccentric, a vertically-movable rod 13, connected at its upper end with the opposite end of the link, and at its lower end with an eccentric l^2, the change-shaft D, with its eccentric v^2, and crank-connections between the eccentrics l^2 v^2, substantially as shown and described.

40. The combination, with the yarn stop-off, consisting of fixed and movable clamping-plates, the latter being carried by a reciprocating rod 16, and an eccentric for reciprocating said rod, of a link 12, pivotally joined at one end to the eccentric-rod and forming a connection between the latter and the rod 16, and a vertically-movable rod 13, connected with the opposite end of said link to shift the latter, substantially as shown and described.

41. A thread-inserting mechanism consisting, essentially, of two relatively fixed plates 50 51, and an intermediate clamping-plate 52, capable of being moved into contact with either of the plates 50 51 to clamp and stop off either of two threads, and which, when standing in a central position, allows both threads to be fed forward together, and devices for shifting said movable plate and for holding it in a central position, substantially as shown and described.

42. The thread-inserting mechanism consisting of plates 50 51, fixed relatively to each other, a movable plate 52 between the same, a screw for shifting said movable plate toward either of the fixed plates, and a cam and intermediate connections for imparting rotary movement to said screw.

43. A thread-inserting device comprising two relatively fixed plates 50 51 and an intermediate clamping-plate 52, capable of being moved into contact with either of the plates 50 51 to clamp either of two threads, and a cam and intermediate connections constructed to hold the clamping-plate first in a central position, and then to move it into contact with one or the other of the fixed plates, substantially as and for the purpose described.

44. The thread-inserting mechanism consisting of plates 50 51, fixed relatively to each other, a movable plate 52 between the same and capable of being moved into contact with either operating devices for said plate, a thread separator and cutter 55 56, and means, substantially as described, for moving the same between the threads and for placing the cutter in and out of position for acting upon one of the threads.

45. The parting-bar and separator consisting of a vibrating bar pivoted to a rigid frame and a vibrating knife pivotally attached to said bar, a cam and intermediate devices for vibrating said bar, and a cam for vibrating the knife, substantially as shown and described.

46. In a thread-changing mechanism, the combination of a series of clamping-plates adapted to clamp and stop off either of two threads which are being fed to the needles, a pivoted separating-bar, and a severing-knife pivoted on said bar, cams for operating the separating-bar and severing-knife, and connecting devices intermediate the separating-bar and its cam, substantially as shown and described.

47. A thread-inserting device comprising two relatively fixed plates 50 51 and an intermediate clamping-plate capable of being moved into contact with either of the plates 50 51 to clamp and stop off either of two threads, and which in a central position will allow both threads to be fed forward, and a cam and intermediate connections to operate said clamping-plate, in combination with a pivoted separating-bar carrying a pivoted knife to sever the thread, a cam to vibrate said knife, and a cam and intermediate devices for operating said separating-bar, substantially as shown and described.

48. The combination, with the clamping-plates 50 51 52 and the cam and intermediate connections for operating the plate 52, of a pivoted vertically-vibrating separating-bar, means for operating said bar, a double-edged knife pivotally joined to said bar and capable of being projected beyond the separating-bar on either side to sever either of two threads which are being fed forward, and a forked cam 86, capable of being moved laterally to project the knife from either side, substantially as shown and described.

49. The combination, with thread-changing devices and their actuating means, of two shafts, one of which is in operative connection with the said actuating means, the axes of the said shafts being in parallel lines, but normally out of axial alignment, each shaft being provided with a crank and each crank with a lug which projects into the plane of rotation of the lug of the other of said cranks, one of said shafts being movable into and out of alignment with the other, and a cam or pattern-chain for moving said shaft, substantially as shown and described.

50. The combination, with thread-changing devices, of two shafts in axial alignment, one connected with the source of power and the other with the said thread-changing devices for actuating the latter, of an intermediate shaft supported in movable bearings so as to be capable of movement into and out of axial alignment with the first-mentioned shafts, said intermediate shaft having a sliding crank connection with one of said shafts, and with the other an intermittent connection, which consists of a crank on each shaft and on each crank a pin which projects into the plane of rotation of the other pin, substantially as shown and described.

51. The combination, with thread-clamping plates and devices for operating the same, as described, of two shafts which normally are out of axial alignment with each other, each at adjacent ends being provided with a crank carrying a lug, the lug of each crank projecting into the path of rotation of the lug of the other, and means whereby the axis of one of said shafts is moved at desired intervals from one side to the other of the axis of the other shaft.

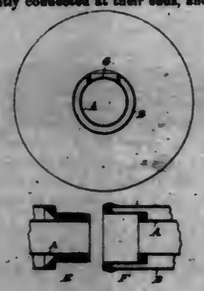
52. The combination, with thread-clamping plates and devices for operating the same, as described, of two shafts w^{10} and n^{11}, whose axes are parallel, but normally out of alignment with each other, each at adjacent ends being provided with a crank carrying a lug, the lug of each crank projecting into the path of rotation of the other, one of said shafts being movable, and means whereby said movable shaft is moved into and out of axial alignment with the other of said shafts, whereby a continuous rotation of one shaft will impart an intermittent rotation to the other, substantially as shown and described.

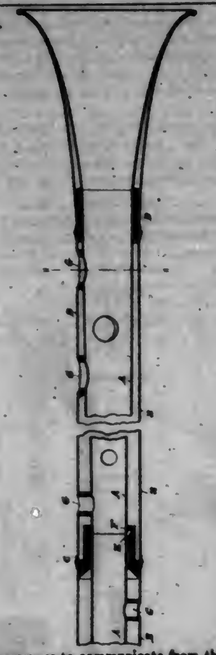
410,072. CLARIONET. CHARLES G. CONN, Elkhart, Ind. Filed May 23, 1889. Serial No. 311,862. (No model.)

Claim.—1. A wind-instrument formed with a hollow body of two concentric tubes, with radial air-passages to form connections from the interior of the body with the outer air, substantially as set forth.

2. The combination of the inner tube or body A and the outer tube or body B, tightly connected together at the extremities of the sections of the instrument to provide the customary joint 5, as described.

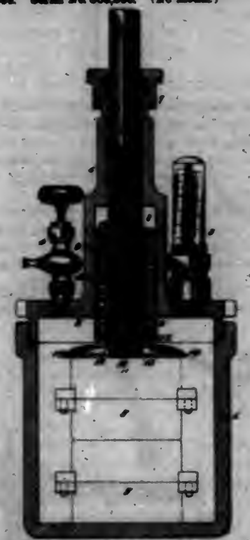
3. The combination of the inner tube or body A and the outer tube or body B, tightly connected at their ends, and the radial tubes





G, forming air-passages to communicate from the interior of the instrument to the outer air, as and for the purposes explained.

410,073. VULCANIZER. EDWARD R. CRANE, California, Mo. Filed Apr. 26, 1889. Serial No. 308,560. (No model.)



Claim.—1. In a vulcanizer, the combination of a suitable casing adapted to hold the flasks, a disk adapted to rest on the flasks, a sleeve to which the disk is secured, a shaft secured to the sleeve, a button on said shaft, and a spring located within the sleeve and bearing against said button, substantially as and for the purpose set forth.

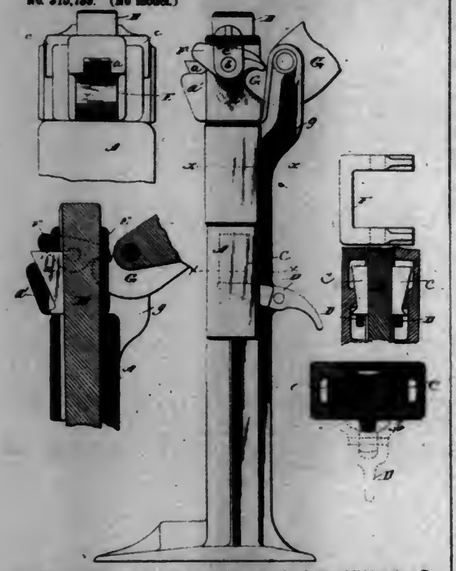
2. In a vulcanizer, the combination of a suitable casing adapted to hold the flasks, a disk, a sleeve fitting in the hollow neck of the casing, and to which the disk is secured by a ball-and-socket joint, a shaft having threaded connection with the said neck, and to which the sleeve is connected by a button or flange 17, and a spring 18, located within the sleeve, substantially as and for the purpose set forth.

3. In a vulcanizer, the combination of a suitable casing adapted

to hold the flasks and having a hollow neck, a sleeve fitting within the neck, a disk secured to the sleeve by means of a nut having a rounded surface 13, adapted to fit the disk, and a screw 15, a spring located within the sleeve, and a shaft having threaded connection with the neck and provided with a flange 17, substantially as and for the purpose set forth.

4. In a vulcanizer, the combination of a suitable casing adapted to hold the flasks, a disk, a sleeve, a nut securing the disk to the sleeve, a spring within the sleeve, and an operating-shaft, said nut being provided with perforations, substantially as and for the purpose set forth.

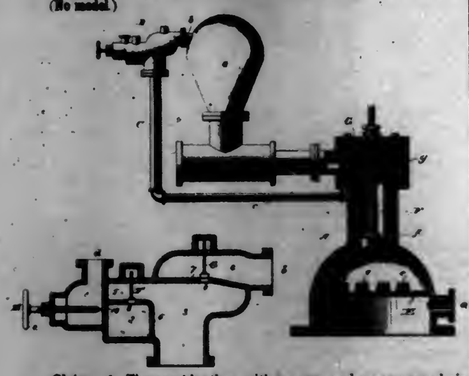
410,074. LIFTING-JACK. LOUIS J. CRECELIUS, St. Louis, Mo., assignor to Andrew Warren, same place. Filed June 27, 1889. Serial No. 315,739. (No model.)



Claim.—1. In combination with a standard A and lifting-bar B, a lifting-head E, a grip *a*, carried thereby, a lifting-lever G, and a loop F, pivoted to the lifting-head and interposed between the lifting-lever and the grip, said loop being acted upon by the lever, whereby the action of the lever is transmitted to the grip through the loop, substantially as described.

2. In combination with the standard A and lifting-bar B of a jack, a lifting-head E, having a pocket, a grip *a* in said pocket, a pivoted loop F, bearing on said grip *a*, and a lifting-lever G, adapted to act upon the opposite end of said loop, substantially as described.

410,075. AUTOMATIC AIR-COMPRESSOR FOR PUMPS. HENRY A. DANIELS, Yonkers, N. Y. Filed Oct. 15, 1888. Serial No. 288,139. (No model.)



Claim.—1. The combination, with a pump and a compressed-air chamber, of a single-piece casing D, interiorly divided by the partitions 6 and 7 into the chambers 2, 3, and 4, the chamber 3 communicating with the pump between its inlet and discharge valves, the chamber 4 communicating with the compressed-air chamber, and the chamber 2 communicating with the external air, a check-valve G, adapted to close an opening in the partition 7, and a check-valve F, adapted to close an opening in the partition 6, substantially as set forth.

2. The combination, with a pump and a compressed-air chamber, of a pipe communicating with the pump between its inlet and discharge valves, a casing communicating with the pipe and also with the compressed-air chamber, provided with an air-inlet, check-valve in the casing between the said pipe and the compressed-air chamber and the said pipe and the air-inlet, and a regulating-valve for the air-inlet, substantially as set forth.

3. The combination, with a pump and an air-chamber, of a casing having separate chambers, one connected with the pump between its inlet and discharge valves, another with the air-chamber, and the third having an air-inlet, check-valves between the said chambers, and a regulating or stop valve for the air-inlet, substantially as described.

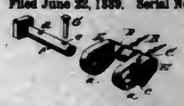
4. The combination, with a pump and an air-chamber, of a casing D, having the chambers 2, 3, and 4, communicating with each other through the openings 8 and 9, the air-inlet opening into chamber 2, the pipe connecting the chamber 3 with the pump between its inlet and discharge valves, the connecting-pipe between the chamber 4 and the air-chamber, the regulating-valve opposite the air-inlet, and the check-valves which close the openings 8 and 9, substantially as described.

410,076. QUICKSILVER-CATCHER. EDWARD A. DOBIE, Silver Reef, Utah. Filed Feb. 26, 1889. Serial No. 301,173. (No model.)



Claim.—The quicksilver collector or flume consisting of the trough-like receptacle having at suitable points approximately diamond-shaped chambers, the riffles disposed about centrally of said chambers, with their ends standing in proximity to the contracted or tapering extremities of said chambers and provided with upwardly-curved hook-like brackets, or catching under and passing through keepers or staples applied to the bottom or bed of said receptacle, cavities below the surface of said bed or bottom, and the gates or boards resting against cleats of the said receptacle, substantially as specified.

410,077. FENCE-WIRE HOLDER AND STRETCHER. RANSOM DOUD, Chili, Ind. Filed June 22, 1889. Serial No. 315,206. (No model.)



Claim.—The improved wire-tightener herein described, consisting of the portion C, comprising the round rod D, designed to receive the wire by which the tightener is fastened in place and from which extend in parallel relation to each other the end bars E, provided at their ends with holes, as shown, the outer face of one of said bars being cut away from side to side to the rear of the hole therein, forming the vertical shoulder *c*, the removable shaft F, having holes *d* and *e* and rectangular head, and the removable pin G, having a flat head and designed to bear against said shoulder, substantially as herein shown and described.

410,078. SAND-SCREEN. PAUL DREISBUL, Chicago, Ill., assignor to Louis G. Boers, same place. Filed May 20, 1889. Serial No. 311,459. (No model.)



Claim.—1. In a wire screen, the combination of the frame A, having wires B B, with the plates C C, having transverse slots *c c*, and removable retaining-rods D D, substantially as and for the purpose set forth.

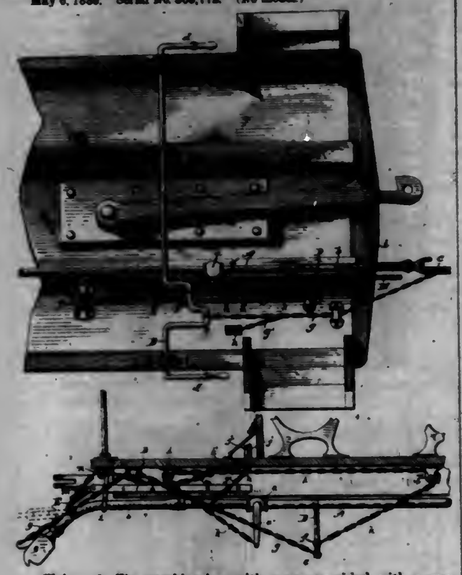
2. In a wire screen, the combination of the frame A, the wires B B, having loops E, the rods D, and the plates C C, having slots *c c*, substantially as shown and described, and for the purpose set forth.

410,079. AUTOMATIC BRAKE-ADJUSTER. ELISHA D. RANDS, Watertown, N. Y. Filed Jan. 5, 1889. Serial No. 295,543. (No model.)



Claim.—In a brake mechanism, a brake-lever, a brake-rod, and an oscillating and binding shackle to which the short arm of said lever is directly connected, combined with a second oscillating and binding shackle and with a link or rod uniting, by means of a slotted connection, the brake-lever with the said second shackle, substantially as set forth.

410,080. CAR-COUPLING. RICHARD J. EDWARDS, Galena, Ill. Filed May 6, 1889. Serial No. 309,772. (No model.)



Claim.—1. The combination, with a car provided with a conducting-pipe, a stop-cock in said pipe, and a flexible section attached to the said pipe and provided with a hose-coupling, of a multiple crank-shaft journaled upon the car, chains connecting the crank-arms respectively to the coupling and stop-cock, and independent chains *g* and *k*, connected to the said chains and extending up to the platform of the car, substantially as described.

2. The combination, with a car, a conducting-pipe, a stop-cock in this pipe, an arm attached to this stop-cock, a safety-hook E, pivotally attached to the car, of a crank-shaft journaled upon the car, and chains *k* and *m*, connecting the crank-arm on the said shaft to the said safety-hook and stop-cock arm, substantially as described.

410,081. BACK-BAND HOOK. JULIUS A. ELLIOTT, Norfolk, Va., assignor of one-half to Albert S. J. Gammon, same place. Filed Apr. 11, 1889. Serial No. 306,815. (No model.)



Claim.—1. A back-band hook comprising a frame having at one end the bars 3, provided with a hook, the intermediate bar 7, and the slide, the bar 7 being separated from the end bar of the frame to permit the passage of the back-band between them in order that it may be looped around the slide, substantially as set forth.

2. A back-band hook comprising a frame having the side bars and the end bars 1 and 3, the latter provided with a hook, the intermediate stationary cross-bar 7, and the flat slide 8, having long sleeves which surround the side bars, upon which the slide is free to move, substantially as set forth.

3. A back-band hook comprising a frame having at one end the bars 3, provided with a hook, an intermediate cross-bar in front of which the back-band is adapted to pass, and a spring-finger carried by the frame and arranged opposite the said intermediate cross-bar, toward which it is held with a yielding pressure to bear against the back-band, substantially as set forth.

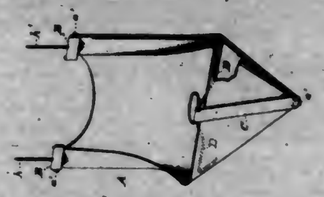
4. A back-band hook consisting of a frame formed of a single piece of wire bent to constitute the cross-piece 1, the side pieces, the end pieces 3, the hook, and the spring-finger 5, an intermediate cross-bar, and a slide, substantially as set forth.

410,082. SAW-GIN. WASHINGTON L. ELLIS, Prattville, Ala., assignor of one-half to Merrill R. Pratt and Daniel Pratt, both of same place. Filed Aug. 10, 1888. Serial No. 282,432. (No model.)



Claim.—In a cotton-gin, the combination, with the main ribs and the saws and spiked roller, of the convex supplemental ribs extending entirely in front of the main ribs below the roll-box and forming therewith the seed-passage, the transverse beams F and H, the cotton-box, and the hinged roll-box cover having the inclined seed-guide L, substantially as specified.

410,083. DENTAL-RIB CLAMP. JOHN D. EVANS, Norfolk, Va. Filed Aug. 31, 1888. Serial No. 284,270. (No model.)



Claim.—1. The combination, with the movable clamp-plate F, having the angle-bend *g* and flange *h*, and the piece *a'*, of the base clamp-plate E, having the acute-angle bend *b* and edge flange *c*, and the spreader-arms arranged in the extension of the back plate of the clamp C, substantially as specified.

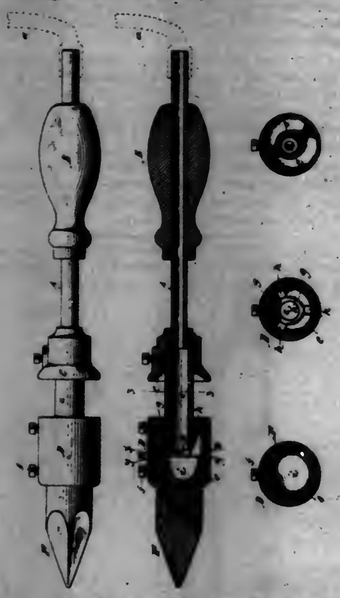
2. The combination, with a folded bib, of a bib-clamp consisting of a vertical base clamp-plate having at its upper end the lateral spreader-arms D, and the elongated movable clamp F, applied to said base clamp-plate, substantially as set forth.

410,084. SOLDERING-IRON. JAMES H. FERRY, Montreal, Quebec, Canada. Filed June 5, 1889. Serial No. 313,171. (No model.)

Claim.—1. The combination, with the gas-tube, of a heating-chamber attached to said tube and provided on the inner side of its rear portion with ribs forming flame-passages between them and with a socket in its front portion, and a soldering copper or point detachably secured in said socket of the heating-chamber, substantially as set forth.

2. The combination, with the gas-tube, of a heating-chamber surrounding the end of said tube and provided with internal flame-passages extending rearwardly on the outer side of said tube, a soldering-point detachably secured to the front portion of the heating-cham-

ber and closing the same, and a deflector surrounding the gas-tube in rear of the heating-chamber, substantially as set forth.



410,085. DRYING APPARATUS. JOSEPH F. GRAY, Columbus, Ind. Filed June 23, 1888. Serial No. 277,905. (No model.)

Claim.—1. In a drying apparatus, the combination, with revolving floors having central apertures, of a central tubular air-shaft and a driving-shaft for said floors extending through said central apertures, substantially as described.

2. In a drying apparatus, the combination, with the revolving floors having central apertures surrounding a central air-shaft, said apertures being provided with internal gears supported from said shaft above said floors and provided with gear-teeth on one of their horizontal faces, of a stirrer and a leveler for each floor, having their shafts provided with gears engaging the teeth on the horizontal faces of said internal gears, and a driving-shaft extending through said central apertures and provided with pinions engaging said internal gears, substantially as described.

3. In a drying apparatus, the combination, with the revolving floors surrounding a stationary central air-shaft, of an internal gear provided with gear-teeth on one of its horizontal faces, and with a peripheral groove, a ring in said groove connected to said central shaft, a driving-shaft engaging said internal gear, and a stirrer and a leveler for each floor, having gears engaging the gear-teeth on the horizontal face of said internal gear, substantially as described.

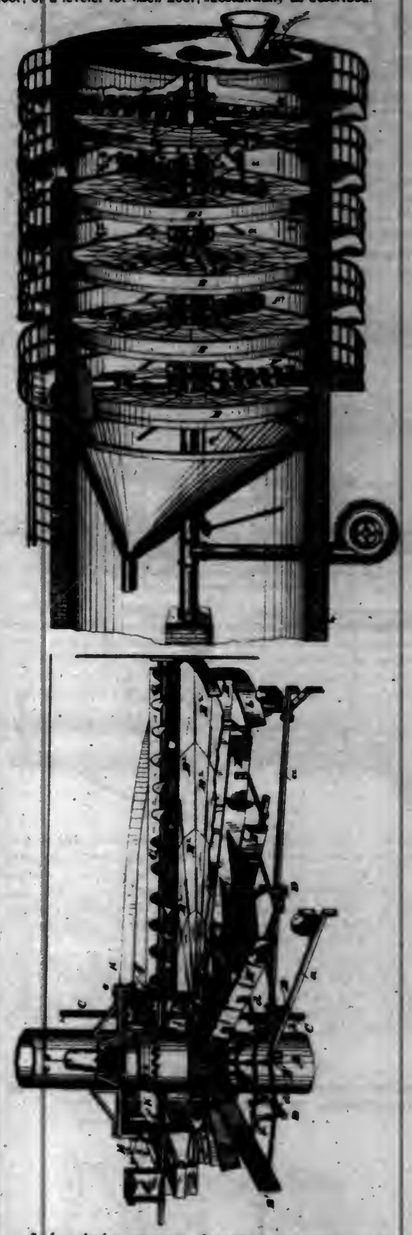
4. In a drying apparatus, the combination, with a stationary central air-shaft, of a revolving floor surrounding the same, a gear-ring surrounding said shaft, the gear-ring support, a driving-shaft engaging said gear-ring, and a stirrer having a gear engaging the gear-ring, substantially as described.

5. In a drying apparatus, the combination of revolving floors one above the other, having central apertures surrounding a central air-shaft, the said apertures being provided with gear-rings, gear-rings supported from said central shaft above said floors, a stirrer for each floor, having their shafts provided with gears engaging the gear-rings above the floors, and a driving-shaft extending through the central apertures of the floors, and provided with pinions engaging all of said gear-rings, substantially as described.

6. In a drying apparatus, the combination, with a series of revolving drying-floors located one above the other and provided with central apertures, and a stirrer and a leveler for each floor, of a central air-shaft extending upward through the apertures of said floors, and a driving-shaft for said stirring and said leveling devices extending through the apertures of the floors between the air-shaft and the inner edges of said floors, substantially as described.

7. A drying apparatus consisting of a number of revolving floors located one above the other, each floor being composed of radial series of dumping-sections pivoted at right angles to the radius of the floor, each series of sections of one floor being adapted to dump at a point in advance of the dumping-point of the floor below, substantially as described.

8. In a drying apparatus, the combination, with a number of rotating floors arranged one above the other and composed of radial series of dumping-sections pivoted at right angles to the radius of the floor, of a leveler for each floor, substantially as described.



9. In a drying apparatus, the combination, with a number of rotating floors arranged one above the other and composed of several radial series of dumping-sections dumping toward the centers of said floors, of a leveler for each floor, the dumping-point of each floor being between the dumping-point and the leveler of the floor below, substantially as described.

10. A leveler consisting of a shaft provided with a spiral conveyer and a partial casing for said conveyer, one edge of said casing being located substantially in line with the center of said shaft and conveyer and beneath the same, substantially as described.

11. A leveler consisting of a shaft provided with a right and left spiral conveyer joined near the center of the shaft, and a partial casing for said conveyer, substantially as described.

12. A stirrer consisting of a shaft provided with scoops, each scoop having an approximately straight main body extending outwardly from the shaft at a tangent thereto and having an angular lip at its outer end, the shaft and said lip being on opposite sides of the main body, whereby a free rearward discharge is given each scoop on the opposite side of the shaft, substantially as described.

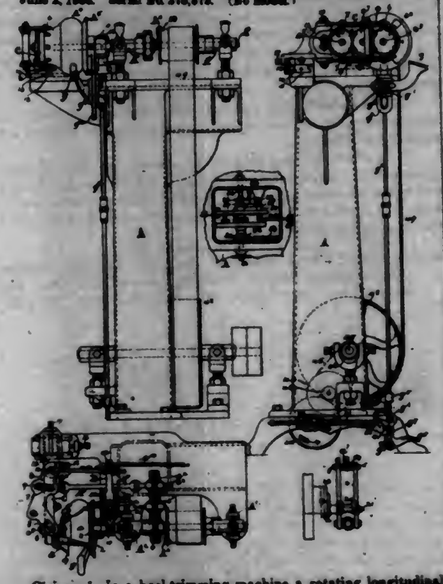
13. A stirrer consisting of a shaft provided with scoops arranged in pairs extending tangentially from the shaft in opposite directions in a plane transversely of the shaft and attached on opposite sides of the same, each scoop having an approximately straight main body provided at its outer end with an angular lip, the shaft and said lip being on opposite sides of the main body, whereby a free rearward discharge is given each scoop on the opposite side of the shaft, substantially as described

14. A stirrer consisting of a shaft provided with scoops, each of said scoops having a main body attached to said shaft tangentially, extending outwardly and provided at its outer end with an angular lip, and having a free discharge on the opposite side of the shaft, the said scoops being arranged in series, each series consisting of two sets of scoops extending tangentially from the shaft in opposite directions, the sets of one series being located between the sets of the other series and at right angles thereto, substantially as described.

15. A drying apparatus consisting of rotating floors located one above the other, each floor being composed of radial joists and sections of flooring pivoted between said radial joists, of radial rods having a longitudinal movement located beneath said pivoted sections and connected with said sections for dumping the same, substantially as described.

16. In a drying apparatus, the combination, with rotating floors located one above the other, each floor being composed of radial joists and sections of flooring pivoted between said radial joists, of radial rods having a longitudinal movement located beneath said pivoted sections and connected with the same, arms depending from said rods, and a cam mounted on a stationary part of the frame beneath each floor in the path of said depending arms, substantially as described.

410,086. HEEL-TRIMMING MACHINE. CHARLES W. GLIDDEN, Lynn, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed June 2, 1888. Serial No. 276,573. (No model.)



Claim.—1. In a heel-trimming machine, a rotating longitudinal movable shaft, its attached rotary cutter, and tread-guard, combined with a rand or counter guard to enter the rand-crease, and a freely-movable carriage to which the rand-guard is attached, and a guide for the said carriage, the said rotary shaft, its cutter, and tread-guard being movable longitudinally in unison toward and from the rand or counter guard, the rand or counter guard being also free to move in a direction substantially at right angles to the axis of rotation of the said rotating shaft, for the purpose specified.

2. In a heel-trimming machine, a rotating longitudinal movable shaft, its attached rotary cutter, and tread-guard, combined with a rand or counter guard to enter the rand-crease, a freely-movable carriage to which the rand or counter guard is attached, and a slotted guide therefor to effect the tipping of the said carriage as it is moved in a direction substantially at right angles to the axis of rotation of the said rotating shaft, substantially as set forth.

3. In a heel-trimming machine, a movable carriage, as C, and its attached rand or counter guard to enter the rand-crease, the rotating shaft, its attached cutter, and the tread-guard, combined with connections between the tread-guard and carriage, whereby the longitudinal movement of the cutter and tread-guard in unison toward and from the rand or counter guard is accompanied by a movement of the said rand or counter guard in a direction substantially at right angles to the said shaft, substantially as described.

4. In a heel-trimming machine, a rotating cutter, an independent freely-movable carriage, as C, a rand or counter guard, combined with a movable rest, as *g*, and a guide therefor, whereby the said rest, while the cutter acts to trim the straight sides of the heel, may be moved substantially at right angles to the rotation of the cutter, substantially as described.

5. In a heel-trimming machine, a rotating cutter, a tread-guard, a tipping carriage, its rand or counter guard, and the guide-plate *b* for the said carriage, combined with connections intermediate the said blade and shaft, whereby the pressure of the tread of the heel against the tread-guard moves the latter, together with the rotating cutter and its shaft, longitudinally, and through the said connection moves the said carriage at right angles to the said shaft, substantially as described.

6. In a heel-trimming machine, a rotating longitudinal movable shaft, its attached rotary cutter, and tread-guard, combined with a recessed rand-guard to enter the rand-crease, and a rotating rand-cutter having its blades engaged with a rotating cutter between its blades, a freely-movable carriage to support the said rand-guard and rand-cutter, and a guide, for the carriage, the said shaft, its cutter, and tread-guard being movable longitudinally in unison toward and from the rand or counter guard, the rand or counter guard being also free to move in a direction substantially at right angles to the axis of rotation of the said rotating shaft, for the purpose specified.

7. In a heel-trimming machine, the rotating shaft, its attached cutter, its attached gear, the carriage, rand or counter guard, and rand-cutter, combined with the gear c^4 and with intermediate gearing and flexible shafting, to operate substantially as described.

8. In a heel-trimming machine, the rotating cutter, a tread-guard or guide A^5, combined with the rest *g*, a cam, and means to automatically operate the said rest, as described, while the sides of the heel are being trimmed, the rest being substantially stationary while the rear part of the heel is being trimmed, substantially as described.

9. In a heel-trimming machine, the edge-rest *g* for the shoe the heel of which is to be trimmed, and the cam for moving the said rest vertically, combined with a treadle to operate the said cam, substantially as described.

10. In a heel-trimming machine, the rest for the shoe the heel of which is to be trimmed, the cam for moving the said rest vertically, and the bar 31, attached thereto and provided with the cam-groove, combined with a shaft 34, having a crank-pin or projection to actuate the said slide-bar, and with means to rotate the said shaft 34 or leave it at rest, substantially as described.

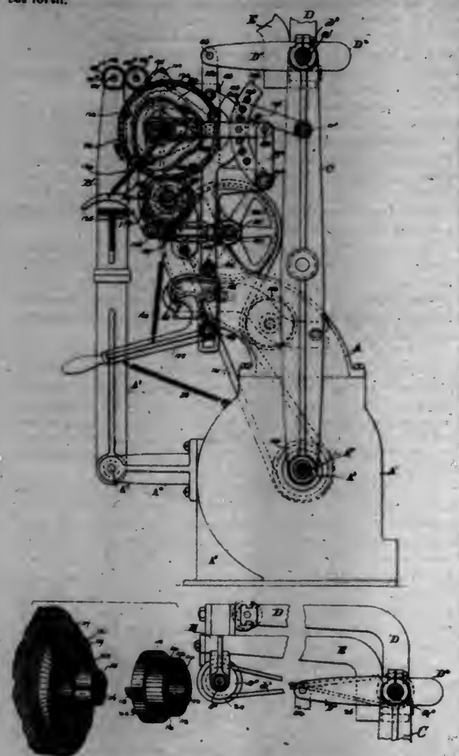
11. In a heel-trimming machine, the shaft 34, its attached crank-pin or projection 33, the slide-bar actuated thereby, the cam g^7, connected to the slide-bar, the sleeve 35, splined loosely upon the shaft 34, and the gear 42, loose on the shaft 34 and provided with teeth at its hub to be engaged by the teeth of the sleeve, combined with means to rotate the gear 42, the latter rotating the shaft 34 when the teeth of the sleeve are in engagement with the teeth at the hub of the said gear, substantially as described.

12. In a heel-trimming machine, the shaft 34, its attached crank-pin or projection 33, the slide bar actuated thereby, the cam g^7, connected to the slide-bar, the sleeve 35, splined loosely upon the shaft 34, and the gear 42, loose on the shaft 34 and provided with teeth at its hub to be engaged by the teeth of the sleeve, combined with means to rotate the gear 42, the latter rotating the shaft 34 when the teeth of the sleeve are in engagement with the teeth at the hub of the said gear, and with means to automatically reverse the direction of rotation of the shaft 34 when the sleeve is disengaged from the said toothed wheel 42, substantially as described.

410,087. HEEL-TRIMMING MACHINE. CHARLES W. GLIDDEN, Lynn, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed Feb. 26, 1889. Serial No. 301,286. (No model.)

Claim.—1. In a heel-trimming machine, the swing-frame, a rotating shaft, an attached rotating cutter, and frame to sustain the said shaft, combined with the rotating cam-wheel, and connecting devices between the said cam-wheel and swing-frame to swing the lat-

ter and move the rotating cutter horizontally, as and for the purposes set forth.



2. In a heel-trimming machine, the swing-frame, a rotating shaft, and a rotating cutter thereon, and frame to sustain the said shaft in order that it may be moved with the said swing-frame, combined with the rotating cam-wheel, and adjustable links between the said cam-wheel and swing-frame to swing the latter according to the requirements of the cam in the cam-wheel, substantially as described.

3. In a heel-trimming machine, the swing-frame to impart to the cutter-shaft and cutter a movement along the side of the heel, and the rotating cam-wheel and connections between it and the said swing-frame, combined with a clutch mechanism to actuate the said cam-wheel at intervals, substantially as described.

4. In a heel-trimming machine, the cam-wheel, the worm-shaft, and the worm-gear moved continuously by it, combined with the gear 117 and clutch mechanism between the said gears, to operate substantially as described.

5. In a heel-trimming machine, the cam-wheel, the worm-shaft, and the worm-gear moved continuously by it, combined with the gear 117, and clutch mechanism between the said gears, and a clutch-controlling device and means to automatically operate it to effect the release of the said clutch at the proper times, substantially as described.

6. In a heel-trimming machine, the cam-wheel and the sector actuated thereby, combined with the jack, its shaft a, gear a', and pinion a^4, actuated by the said sector, substantially as described.

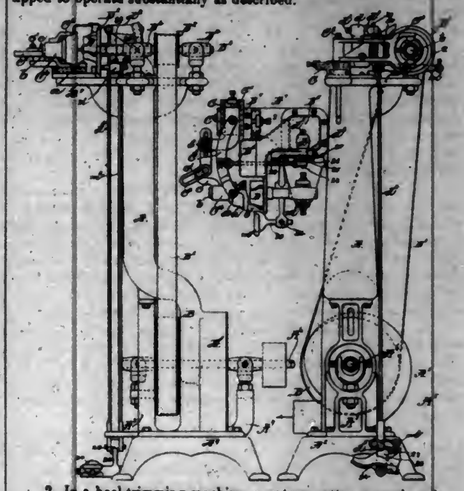
7. In a heel-trimming machine, the cam-wheel, its projection 135, and the rocker-frame, combined with the slide actuated by the said projection and connected to the said rocker-frame, substantially as described.

8. In a heel-trimming machine, the cam-wheel, its projection 135, and the rocker-frame, combined with the slide actuated by the said projection and the cam-lever, to operate substantially as described.

9. In a heel-trimming machine, the jack, its shaft, and pattern-plate, combined with the sector, and gearing between it and the said shaft to partially rotate the same in opposite directions, and a cam to actuate the said sector, substantially as described.

410,088. HEEL-TRIMMING MACHINE. CHARLES W. GLIDDEN, Lynn, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed June 25, 1888. Renewed Mar. 7, 1889. Serial No. 302,990. (No model.)

Claim.—1. In a heel-trimming machine, a rotary cutter to trim the heel, and a carriage having an attached rand or counter guard to enter the rand-crease, combined with a single link, upon which the carriage is pivoted, and with a roller or other stud c and a cam with which it co-operates, substantially as described, whereby when the link is moved toward and from the rotary cutter the carriage may be tipped to operate substantially as described.



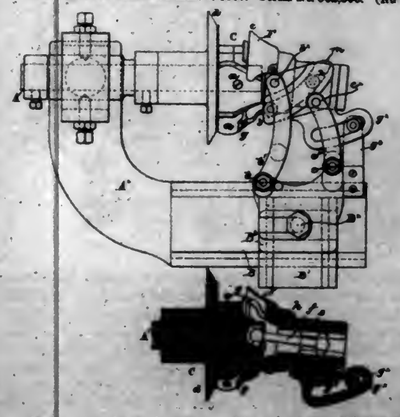
2. In a heel-trimming machine, a rotary cutter, a carriage having an attached rand or counter guard, and means to support the carriage, combined with a treadle and connections between the treadle and support for the said carriage, whereby the carriage may be moved positively toward and from the rotary cutter, as and for the purpose described.

3. In a heel-trimming machine, a carriage, a rand or counter guard attached thereto, and support for the said carriage, a rotary cutter, a rest on which the heel of the shoe is placed while being trimmed, and a treadle, combined with connections between the said rest and the support for the said carriage, whereby the said carriage and rest are moved automatically in both directions, substantially as described.

4. In a heel-trimming machine, the lever m', combined with the adjustable arm 33 and the adjustable rest m, mounted thereon, substantially as described.

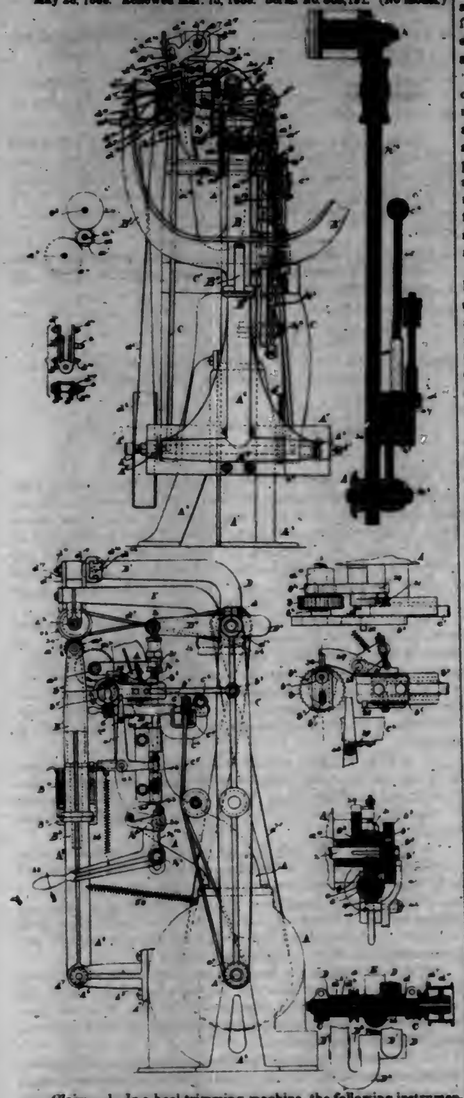
5. In a heel-trimming machine, the combination, with the rotary cutter having a tread-guard, of the rest m for the heel to be trimmed, and means to support the said rest, the rest being adjustable upon its support to place it at an angle to the plane in which the tread-guard stands, substantially as described.

410,089. SOLE-TRIMMING MACHINE. CHARLES W. GLIDDEN, Lynn, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed May 28, 1888. Renewed Mar. 7, 1889. Serial No. 302,393. (No model.)



Claim.—In a heel-trimming machine, a rotary molded cutter and a rand or counter guard and links to support it, combined with a cam to automatically control independently of the links the tipping movement of the rand or counter guard as the latter moves to uncover the blades of the rotary molded cutter, substantially as described.

410,090. HEEL-TRIMMING MACHINE. CHARLES W. GLIDDEN, Lynn, assignor to James W. Brooks, trustee, Cambridge, Mass. Filed May 28, 1888. Renewed Mar. 13, 1889. Serial No. 303,191. (No model.)



Claim.—1. In a heel-trimming machine, the following instrumentalities, viz: a jack, a partially-rotating heel pattern-plate, a rocking frame, means to support it, a rotating cutter-carrying shaft, a heel-trimming cutter, and a pattern-guide carried by the said shaft, combined with a tipping frame having bearings for the said shaft and means to support the said tipping frame on the said rocking frame, whereby the said tipping frame is free to move in a circular path about a center or axis of motion at right angles to the axis of motion of the rocking frame, the center or axis of motion about which the said tipping frame moves to adapt the heel-trimming cutter to the varying angle or inclination of the exterior of the heel always remaining in line with the contact-point between the usual pattern-guide and the usual heel pattern or plate at the tread end of the heel, substantially as described.

2. In a heel-trimming machine, a jack to hold the shoe the heel of which is to be trimmed, a partially-rotating heel pattern-plate, a rocking frame, means to support it, a rotating cutter-carrying shaft, a heel-trimming cutter, a pattern-guide carried by the said shaft, and a tipping frame having bearings for the said shaft, and means to support the said tipping frame on the said rocking frame, whereby the said tipping frame is free to move in a circular path about a center or axis of motion at right angles to the axis of motion of the rocking frame and at right angles to the center or axis of motion to the cutter-shaft, combined with a carriage having a rand or counter guard, substantially as described.

3. In a heel-trimming machine, a jack to hold the shoe the heel of which is to be trimmed, a partially-rotating heel pattern-plate, a rocking frame, means to support it, a rotating cutter-carrying shaft, a heel-trimming cutter, a pattern-guide carried by the said shaft, and a tipping frame having bearings for the said shaft, and means to support the said tipping frame on the said rocking frame, whereby the said tipping frame is free to move in a circular path about a center or axis of motion at right angles to the axis of motion of the rocking frame and at right angles to the center or axis of motion to the cutter-shaft, combined with a carriage having a rand or counter guard and a rotating rand-cutter, to operate substantially as described.

4. In a heel-trimming machine, a jack to support the shoe the heel of which is to be trimmed, a rotating heel-trimming cutter, its shaft, and frame to support it, a swing-frame pivoted to swing at right angles to the axis of rotation to the cutter-shaft, and means between and connecting the said swing-frame, and means for supporting the said rotating shaft, combined with a pattern-cam to move the said swing-frame intermittingly to cause the heel-trimming cutter to be moved horizontally during its rotation to trim the sides of the heel, substantially as described.

5. In a heel-trimming machine, a jack, a heel pattern-plate, means to partially rotate it, a cutter-shaft, its attached heel-trimming cutter, means to support the said shaft, the swing-frame, and rocking frame, combined with a pattern-cam, connections between it and the swing-frame, and a locking device to hold the pattern-cam in position while the approximately-circular portion of the heel is being trimmed, substantially as described.

6. In a heel-trimming machine, the rotating cutter, its shaft, and a tipping frame in which the said shaft has its bearings, (the axis or center of movement of the said frame being substantially at right angles to the axis of rotation of the shaft carrying the said cutter,) combined with the rand or counter guard and a carriage to which it is attached, and with connections between the said tipping frame and the said carriage, whereby the tipping frame in its movements simultaneously moves the said carriage and the rand or counter guard to uncover more or less of the cutting-edges of the blades of the said rotating cutter, substantially as described.

7. In a heel-trimming machine, the heel-trimming cutter, its shaft, the tipping frame, in which the said shaft has its bearings, and means to support the said tipping frame, whereby it may move in a circular path about an axis or a center substantially at right angles to the shaft carrying the said cutter, combined with a carriage, an attached rand or counter guard, a rotating shaft mounted in the said carriage, a rand-cutter connected to the said shaft, and with connections between the said tipping frame and the said carriage, whereby the tipping frame in its movements simultaneously moves the said carriage and its attached parts, enabling the counter-guard to uncover more or less of the cutting-edges of the blades of the rotating heel-trimming cutter, substantially as described.

8. In a heel-trimming machine, the tipping frame, the rotating heel-trimming cutter, its shaft supported in the said tipping frame, the rocking frame upon which the tipping frame is mounted to move about an axis or center at right angles to that about which the rocking frame moves, and the guide portion d^{30}, connected to the said rocking frame, combined with a block and guide-plates, as d^{10}, adjustably connected thereto, a carriage mounted in the said guide-plates, a rand or counter guard attached to the said carriage, and connections between said tipping frame and carriage, to operate substantially as described.

9. In a heel-trimming machine, a rotating cutter, a swing-frame C, and the pattern-cam in operative connection therewith, combined with a roll or stud b^4 entering the groove in the said cam, and with means to actuate the said roll, substantially as described.

10. In a heel-trimming machine, a trimming-cutter, the swing-frame C, and the pattern-cam in operative connection therewith, combined with a roll or stud b^4 entering the groove in the said cam, and with means to actuate the said roll and the cam b^3 and locking device, to operate substantially as described.

11. In a heel-trimming machine, a rotating cutter, the worm-gear having the roll b^4, the pattern-cam entered by the said roll, the projection 38, the bracket c^6, the shaft c' therein, and its worm c, to engage and rotate the worm-gear, combined with the lever to support

the said bracket until the said lever is tripped, to then automatically release the worm from the worm-gear, substantially as described.

12. In a heel-trimming machine, a rotating shaft, a heel-trimming cutter thereon, a rocking frame, and means to support the said shaft to rise and fall in unison with the said rocking frame, combined with a link and a cam to actuate the same to turn the said rocking frame and remove the cutter from contact with the heel being trimmed, substantially as described.

13. In a heel-trimming machine, a trimming-cutter, the rocking frame, its attached link, and a cam to move the said link and turn the said frame about its center of motion, combined with the holding-plate, as 45, a locking-pin, and a locking device, and means to release the said locking device and to move the said cam automatically, substantially as described.

14. In a heel-trimming machine having a rotating heel-trimming cutter, a pivoted double or twin jack, a pattern-plate against which to hold the tread of the heel being trimmed, and gears d', combined with a gear, as d^4, and means to rotate it, the movement of the said jack in one direction effecting the disengagement of the gear d' from the gear d^4 and in the opposite direction effecting the engagement of the said gears, substantially as described.

15. In a heel-trimming machine, a rotating heel-trimming cutter and a tipping frame, combined with a carriage and its attached rand or counter guard, and with the connection between the said frame and carriage, to operate it substantially as described.

16. In a heel-trimming machine, a rotating heel-trimming cutter and a tipping frame, combined with a carriage and its attached rand or counter guard, and with the connection between the said frame and carriage to operate it, and with a rotating rand-cutter supported by the said carriage, substantially as described.

17. In a heel-trimming-machine, a rotating cutter, its shaft, and a frame to support the shaft, combined with a double or twin jack, the head of the jack rotating upon a vertical axis, while the foot of the jack is free to tip toward and from the cutter upon a horizontal axis, substantially as described.

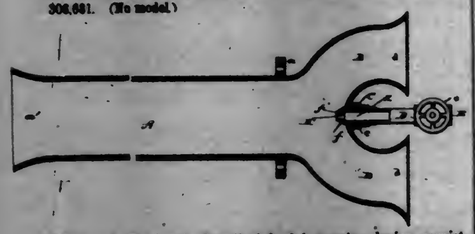
18. In a heel-trimming machine, a jack, a heel pattern-plate carried thereby, its shaft, and attached gear d', combined with an independent gear d^4, mounted upon a stud fixed to the frame, the said gear, when the jack is put into trimming position, being engaged by a gear d' on the shaft of the heel pattern-plate, thus rotating the latter, the two gears being disengaged when the jack is swung out of trimming position, substantially as described.

19. In a heel-trimming machine, a rotating cutter, the swing-frame C, and its hollow bushings d', combined with the rocking frame D and the rotating shaft d^3, to operate substantially as described.

20. In a heel-trimming machine, the combination, with a rotary cutter, pattern-cam, and gearing for operating it, of means, substantially as described, for engaging the said gearing automatically as the molded cutter is placed in position to start the trimming of a heel, substantially as described.

21. In a heel-trimming machine, a swing-frame to impart horizontal movement to the cutter-carrying shaft while the same is being rotated to trim the side of the heel, a jack, a heel pattern-plate, its shaft mounted in the said jack, a gear on the said shaft, and an intermediate gear, as d^4, to rotate the shaft carrying the said heel pattern-plate when the jack is in trimming position, combined with means intermediate the said gear d^4 and the swing-frame to restore the latter to its normal position when the jack is moved to disengage the gear of the shaft of the heel pattern-plate from the said gear d^4, substantially as described.

410,091. BLOWER FOR FURNACES. CHARLES A. GOYNE, Ashland, Pa., assignor of three-fourths to F. H. Goyne, Arthur H. Goyne, and Thomas R. Goyne, all of same place. Filed Apr. 10, 1889. Serial No. 306,681. (No model.)



Claim.—1. The herein-described draft-increasing device, consisting of the main tube having the inner flaring mouth, the outer curved diverging inlet-tubes having flaring mouths, the opening between said inflow-tubes, and the steam-injector nozzle fitting in said opening provided with a regulating-valve and having its inner end contracted and then widened or flared, substantially as and for the purpose described.

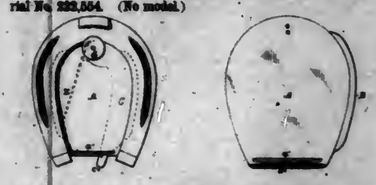
2. The herein-described draft-increasing device, consisting of the main tube having the inner flaring mouth and annular flange, the curved inflow-tubes having flaring mouths, the threaded boss in the main tube between said inflow-tubes, the steam-injector having its inner end engaging said boss and having the point of its nozzle conical and the bore thereof contracted and then flaring outward, the steam-pipe communicating with the nozzle, and the regulating-valve in the nozzle, said parts being arranged and combined and operating substantially in the manner and for the purpose described.

410,092. BURNER FOR GAS-STOVES. HENRY R. GORRIE, Dayton, Ohio. Filed Feb. 20, 1889. Serial No. 300,614. (No model.)



Claim.—In a burner for gas-stoves, the arc-shaped hollow base C, provided at one end with the air and gas inlet and on its convex side with the recess, in combination with the arc-shaped covering-plate B, the flange thereon formed to fit in the recess in the base C and having the series of radiating openings or notches b formed therein.

410,093. HOOF-PAD. ARTHUR D. HAMLIN, Portland, Me., assignor of one-half to Dennis A. Meaher, same place. Filed Dec. 27, 1886. Serial No. 222,554. (No model.)



Claim.—1. A snow-ball plate or hoof pad consisting of an outer section of sheet metal having the contour of the interior of a horseshoe and adapted to fit in said interior and fill the entire space therein when in place, an inner and smaller section of sheet metal having an outer convex edge to fit against the adjacent edge of the shoe and pivoted near its front end upon the outer section, and a spring secured to one of the sections and forcing it outward on the other, substantially as specified.

2. The combination of the plate A, having the contour and adapted to fill the interior of a horseshoe and provided on one edge with the flange B, bent longitudinally upon itself at right angles, the plate C, pivoted upon the plate A near its front end and provided on its convex edge with the flange D, similar and opposite to the flange B, and the spring E, having its front end secured to the front end of the section C and its free rear end bearing on the flange B, substantially as specified.

3. A snow-ball plate or hoof-pad consisting of the flanged plate A, having the slot a' and filling the entire space within the shoe when in place, and the flanged plate C, having the spring E and the handle c^3, whereby the device can be attached and removed by hand, substantially as specified.

4. In a snow-ball plate or hoof-pad, an outer section of sheet metal having the contour of the interior of the horseshoe and adapted to fit snugly therein and cover or fill the space within and having a slot a' in its lower end, combined with and pivoted to an inner and smaller section of sheet metal having a handle or end c^3, and a spring secured to a smaller section, the handle c^3 extending through said slot, substantially as and for the purposes set forth.

5. A snow-ball plate or hoof-pad composed of two plates pivoted to and movable on each other and a spring whereby they can be held within the horseshoe, and a finger-piece projecting from one plate, whereby the plates or pad can be removed from the hoof without a tool, substantially as described.

6. A snow-ball plate or hoof-pad in which are combined the following elements, viz: a flanged plate wholly covering the inside of the hoof, a smaller plate pivoted to and movable under the first plate, also flanged, and a handle on its end whereby the pad can be adapted to or removed from the shoe.

7. A hoof-pad composed of two plates, each flanged at one side, pivoted together, and movable on each other, the one slotted at its end and the end of the other projecting through said slot, whereby not only are said plates held singly together against the entrance of snow or water, but a handle on which to move one of said plates on the other is afforded, substantially as described.

410,094. BUCKBOARD-VEHICLE. GEORGE B. HAMLIN, Providence, R. I. Filed Dec. 19, 1888. Serial No. 294,056. (No model.)

Claim.—1. In a buckboard-vehicle, a rear or additional seat mounted on supporting-bars secured to the body of the vehicle, in combination with springs secured at their ends respectively to the rear axle and the said bars, substantially as set forth.



2. In a buckboard-vehicle, the combination, with the seat-supporting bars detachably secured to the vehicle-body, of the springs, the upper ends whereof are fastened to said bars while the lower extremities are removably attached to the rear axle, substantially as shown and set forth.

3. The combination of the seat-supporting bars, seat-frame, check-plates and bolts whereby said bars are secured to said frame, staples secured to the rear axle, and springs having hooks formed at their lower extremities for connection with said staples and clipped at their upper ends to said bars, substantially as and for the purposes hereinbefore set forth.

4. In a buckboard, the combination, with the seat mounted on suitable supports detachably connected to the body of the buckboard, of independent springs secured to the hind axle and sustaining said seat, whereby any load on said seat is supported by the rear axle and not by the board, substantially as set forth.

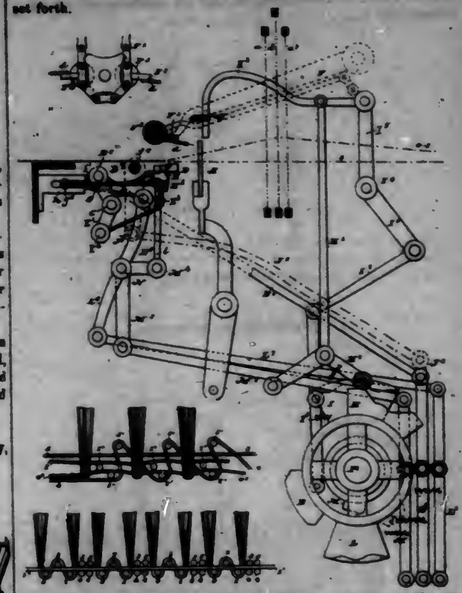
410,095. MAIL-BAG DELIVERER. AUGUSTUS P. HAMM, New Albany, Ind. Filed Apr. 5, 1889. Serial No. 306,079. (No model.)



Claim.—In a mail-bag deliverer, the upright, the arm hinged near its inner end to the top thereof, the arm hinged below the top thereof, the similar-shaped hooks arranged one on each side of the lower arm, and the devices on the arms for retaining the bag, substantially as and for the purpose described.

410,096. LOOM FOR WEAVING TUFTED FABRICS. ANDRÉ C. H. SALLANDROUZE, Paris, France, assignor to Société Sallandrouze Frères, same place. Filed Apr. 12, 1888. Serial No. 270,496. (No model.) Patented in England Mar. 1, 1888, No. 3,175; in France Feb. 28, 1888, No. 189,000; in Belgium Feb. 23, 1888, No. 80,811; in Germany Mar. 3, 1888, No. 45,090; in Austria-Hungary June 5, 1888, No. 10,250 and No. 22,553; in Switzerland Nov. 30, 1888, No. 150, and in Italy Apr. 9, 1889, XXII, 22,344, and XLVI, 301.

Claim.—1. The combination, with the shedding mechanism, of the reed which separates the warp-threads into groups, the lateral displacers which displace the tuft strands laterally, mechanism, substantially as described, whereby said displacers are actuated, the lifters which lift the strands, mechanism, substantially as described, whereby said lifters are actuated, the strand-carriers, and the mechanism for actuating the same, all arranged to operate substantially as set forth.



2. The combination, with the shedding mechanism, of the reed A, having elbow-like beads in its dents, all turned in one direction for shifting the warp, substantially as set forth.

3. The combination, with the shedding mechanism, the reed A, having beads in its dents, as described, the strand carriers and lifters, and the operative mechanism of said carriers and lifters, of the lateral displacer D, consisting of a bar with blades, as described, and mechanism for operating said displacer, substantially as described.

4. The combination of the evener-bar G, adapted to play over the web and against the range of tufts, whereby the same are aligned, and mechanism, substantially as described, for operating said bar.

410,097. HORSE-DETACHER. CHARLES D. HILL, St. Louis, Mo., assignor of one-half to Silas Black, Monmouth, Ill. Filed Dec. 4, 1888. Serial No. 292,660. (No model.)

Claim.—1. In a detacher, the sectional tug, in combination with a hook pivoted to one section of the tug and adapted to open the downward, and a retaining-trigger, substantially as and for the purpose set forth.

2. In a detacher, the combination of the sectional tugs, the plates secured to the rear sections of said tugs, the pivoted hooks 14, and the sliding triggers that release said hooks, substantially as and for the purpose set forth.

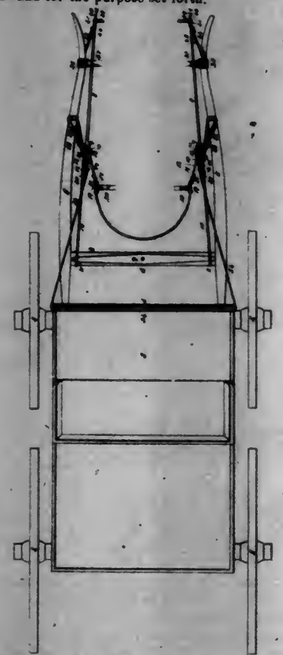
3. In a detacher, the combination of the sectional tugs, the plates secured to the rear sections of said tugs, the hooks pivoted to said plates, and which engage with the forward sections of said tugs, and the holdback-hooks 16, secured to said plates, substantially as and for the purpose set forth.

4. In a detacher, the combination of the sectional tugs, the plates secured to the rear sections of the tugs, the pivoted hooks, the holdback-hooks, the straps that connect said holdback-hooks to the breeching, the sliding spring-trigger, the catch 29 on the end of said trigger, that engages the said pivoted hooks, and the actuating-cord, substantially as and for the purpose set forth.

5. In a detacher, the combination of the sectional tugs and their detaching devices, the plates that carry said devices, the loops 31, and the outer holdback-straps that engage with said loops and are secured to the shafts, substantially as and for the purpose set forth.

6. In a detacher, the combination of the sectional tugs, the plates that carry the detaching devices, and which are secured to the rear sections of the tugs, the pivoted hooks, the holdback-hooks, the sliding-triggers that release the tug-hooks, the actuating-cord that operates said triggers, and the sectional or separable holdback-straps, the inner ones of which connect from the holdback-hooks to the breeching, the outer ones that connect from the loops of the bearer-plates to the shafts, and the rounded hitch-loops 9 on the forward sections of the tugs, which loops engage with said pivoted hooks, substantially as and for the purpose set forth.

7. In a detacher, the combination of the loop 31 and hook 16; and the double holdback-straps 32 and 19, combined and operating substantially as and for the purpose set forth.



8. In a detacher, the combination of the sectional tugs and their detaching devices, the back-band having pendent loops that support the shafts, the neckband and breast-strap, the rings 41, that connect said neckband, breast-strap, and the fore sections of the tugs, and the releasing-straps 43, that connect the pendent loops that carry the shafts with said rings 41 and facilitate the disengagement from the shafts, substantially as and for the purpose set forth.

410,098. FOLDING-MACHINE. CHARLES F. HEITER, St. Louis, Mo. Filed Nov. 10, 1888. Serial No. 290,434. (No model.)

Claim.—1. The combination, in a folding-machine, of the table 3, the pressure-rollers, as 19 20, and a reciprocating push-plate, as 43, adapted to form an upward bend and a fold in the paper and push such fold between the rollers.

2. The combination, in a folding-machine, of a table adapted to receive the sheet to be folded, the feed-plate, the hinged push-plate 43, having reciprocating longitudinal and oscillating movements, and rollers 19 20, having reciprocating rotary motion, all adapted to operate substantially as set forth.

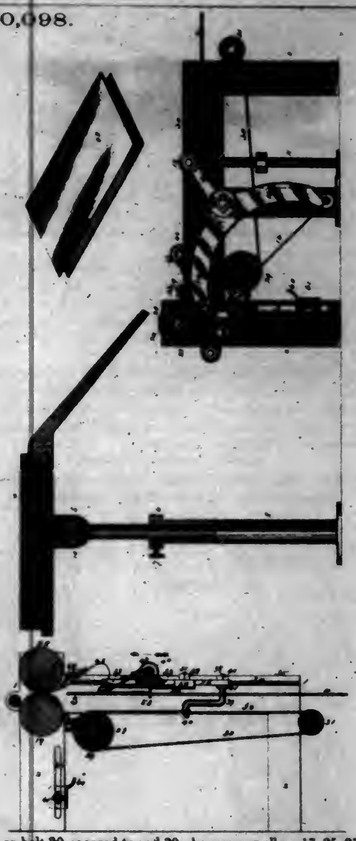
3. The combination, in a folding-machine, of the table 3, provided with slots 54, the reciprocating cross-head or slide 32, the push-plate 43, hinged to the cross-head, push-pins 53, connected to the cross-head and traversing the slots 54, and rollers 19 20, having rotary reciprocation, all adapted to operate substantially as set forth.

4. The combination, in a folding-machine, of the table 3, provided with slots 54, the reciprocating cross-head 32, plate 49, carrying push-pins 53 and adjustably attached to the cross-head, push-plate 43, hinged to the cross-head, and rollers 19 20, having rotary reciprocation, all adapted to operate substantially as set forth.

5. The combination, in a holding-machine, of the table 3, with slots 54, the cross-head carrying the hinged push-plate 43 and adjustable plate 49, with push-pins 53, traversing the slots 54, slotted extension 36 on the cross-head, and actuating-rod 39, passing through the slot 37 and adjustably secured to the extension 36, and the rollers 19 20, having rotary reciprocation, all substantially as set forth.

6. The combination, in a folding-machine, of the table 3, adapted to receive the sheet to be folded, the cross-head 32, having slotted extension 36, rod 39, passing through the slot 37 of the extension and through a slot 55 in the table and secured to the reciprocating cord or belt 30, and rollers 19 20, having rotary reciprocation, substantially as and for the purpose set forth.

7. The combination of table 3, with slots 54 and 55, the cross-head 32, carrying hinged push-plates 43 and push-pins 53, the rod 39

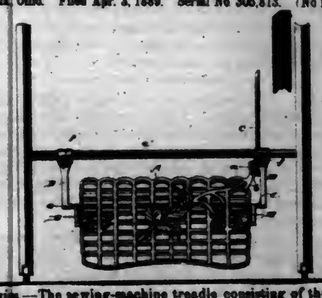


cord or belt 30, secured to rod 39, sheaves or pulleys 17, 25, 27, 29, and 31, cords or belts 16 and 26, and lever 13 14 15, all connected and arranged to operate substantially as and for the purpose set forth.

8. The combination, in a folding-machine, of the table 3, cross-head 32, having longitudinal reciprocation over said table, hinged push-plate 43, secured to a rock-shaft 44, having bearing on the cross-head, arm 56 on the rock-shaft, and stop 57, secured to the table or frame, and reciprocating rollers 19 20, all adapted to operate substantially as set forth.

9. The combination, in a folding-machine, of the table 3, with slots 54, 55, cross-head 32, push-plate 43, plate 49, with push-pins 53, rod 39, adjustably connected to the cross-head, drive-roller 19, pressure-roller 20, shafts 18 and 28, sheaves or pulleys 17, 25, 27, 29, and 31, cords or belts 16, 26, and 30, and actuating-lever 13 14 15, attached to the end of the cord or belt 16 and to an actuating-rod 11, all connected and adapted to operate substantially as set forth.

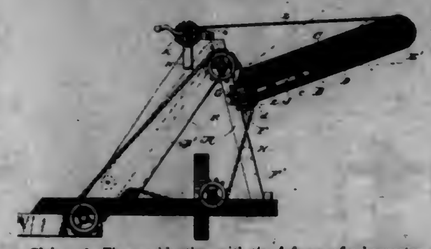
410,099. SEWING-MACHINE TREADLE. HIRAM K. HOUSE, Norwalk, Ohio. Filed Apr. 3, 1889. Serial No. 305,813. (No model.)



Claim.—The sewing-machine treadle consisting of the foot-plate having the outwardly-inclined arms and the hangers held upon the

crom-bar of the sewing-machine frame, and having inwardly-projecting lower ends which engage apertures in the upper or outer ends of said arms, said foot-plate having at one corner a fixed arm provided with a vertical leg, to which is connected the sewing-machine pitman, substantially as set forth.

410,100. HARVESTER ATTACHMENT. EDWARD HOUTS, Hunt, Dak., assignor of two-thirds to Solomon Elmer, Salesville, Ohio, and Archie Brown, Hunt, Dak. Filed June 19, 1888. Serial No. 277,562. (No model.)

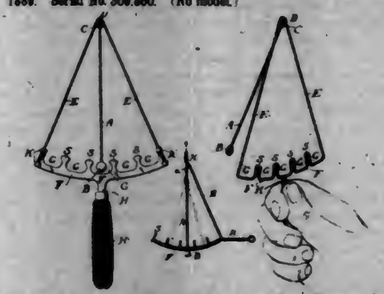


Claim.—1. The combination, with the A-frame of a harvester, of the header attachment consisting of the side-boards, the apron, the rollers E and E', mounted therein, the roller E having extended journals, the journal-boxes secured to the struts of the A-frame and having concave bearings on their outer faces, the plates secured to the side-boards of the attachment and having offsets engaging the concave bearings, and the suspending-cords, substantially as specified.

2. The combination, with the A-frame of a harvester, of the header attachment consisting of the side-boards, the apron D, its outer roller E' and inner roller E, having an extended threaded journal, the boxes F, having concavities on their outer faces, the sprocket-wheel adapted to be turned by the harvester-chain H and adjustable on said threaded journal, the adjusting-nut bearing against the inner face of said wheel, the plates having the offsets bearing in the concavities of the boxes, the windlass, the suspending-cords, the pawl, and the ratchet-wheel, substantially as specified.

3. The combination, with the A-frame of a harvester and gear-chain, of the journal-boxes secured to the struts of the A-frame and having the concavities *c* on their outer faces, and the header attachment consisting of the side-boards, the rollers E and E' and the apron D, the plates J, having the longitudinal slots and the rounded offsets to bear in the concavities *c*, and the set-bolts, substantially as specified.

410,101. TOY. WOODBURY S. HOW, Philadelphia, Pa. Filed May 7, 1889. Serial No. 309,860. (No model.)



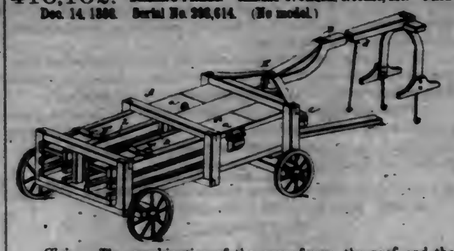
Claim.—1. In a toy, the combination of the following elements, viz: a controllably-movable support, a pendulum suspended therefrom and vibratile by means of said support, together with one or more stops or obstacles attached to said support to be optionally struck or passed by said pendulum, at the will of the operator, substantially as set forth.

2. In combination, a pendulum and its controllably-movable support, with a bar extending from said support across one or other of the paths of said pendulum, provided along its length with suitable stops or loops 8, substantially as hereinbefore described and shown.

3. In combination, a pendulum and its movable support, with a pivoted stop on the support in the path of the pendulum, substantially as described and shown.

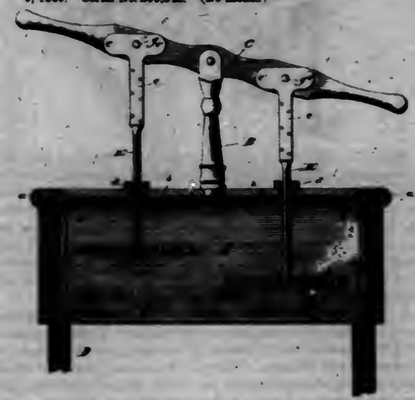
4. A pendulous body freely pendent from a support which may be optionally rocked, oscillated, or gyrated to impart a swinging or gyrated motion to said pendulous body, and so cause it either to pass or to hit, or to come to a rest in or upon or to gyrate around an obstacle attached to said support and intersecting a path of said pendulous body, substantially as hereinbefore described and shown.

410,102. BALING-PRESS. REUBEN P. JAGER, Hoosho, Mo. Filed Dec. 14, 1888. Serial No. 293,614. (No model.)



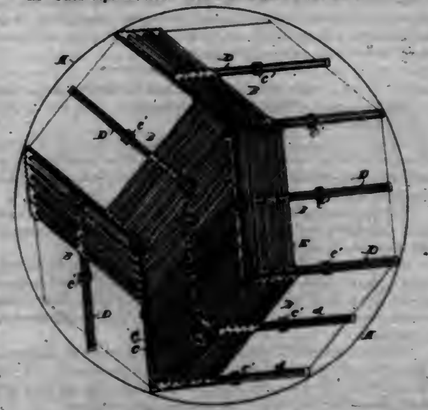
Claim.—The combination of the press-frame, the roof, and the spring passing transversely across the roof and having its ends secured to the frame, and its central portion depressed and secured to the roof, as set forth.

410,103. CHURN. PETER KALLER, Fort Wayne, Ind. Filed Feb. 9, 1889. Serial No. 299,342. (No model.)



Claim.—The combination of a churn-body provided with a perforated cover, a post erected on the cover, a vibrating lever C, pivoted upon this post and provided with longitudinal slots *f*, the wearing-plates *f'*, secured in these slots, the dasher-rods provided with dashers, the plates *e e*, secured upon opposite sides of the dasher-rods and projecting above the same, and embracing the slotted portions of the said lever C, these plates being provided with oppositely-projecting wings *e'*, adapted to cover the slots in the lever C, pins *g*, passing through the plates *e* and the slots in the lever C, and anti-friction rollers *h*, journaled upon the pins *g* and working in the said slots, as and for the purposes described.

410,104. GRATE FOR REFUSE-BURNERS. PHILIP KREBS, Moline, Ill. Filed Sept. 22, 1888. Serial No. 286,064. (No model.)



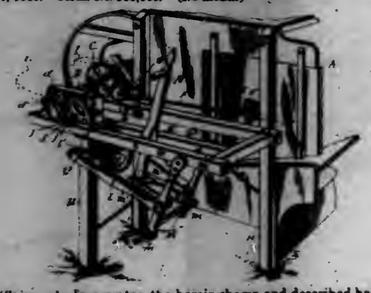
Claim.—1. In a refuse-burner for saw-mills, a grate composed of independently-movable bars arranged in groups, the bars in each group being at an angle to those in adjacent groups.

2. In a refuse-burner for saw-mills, a grate composed of independently-movable grate-bars arranged in groups, the bars forming a group being disposed in the same direction and each group being disposed at an angle to an adjacent group.

3. In a refuse-burner for saw-mills, the grate composed of independent grate-sections B B B B B B, each section formed by several independently-movable bars, and displayed as herein described.

4. The combination, in a refuse-burner for saw-mills, of the grate composed of several independent sections formed by groups of single grate-bars E, the grate-standards C, and the grate-supports D, all constructed and arranged as herein set forth.

410,105. MOTOR. HENRY KELLER, Sauk Centre, Minn. Filed Apr. 26, 1889. Serial No. 308,669. (No model.)



Claim.—1. In a motor, the herein shown and described hand and foot mechanism, composed of the treadle-bars M, adjustably connected at their upper ends with the frame and having treadles *m* at their lower ends, the pitmen connecting the treadle-bars with the cranks at the ends of the master-wheel shaft *i*, the hand-lever N, and the links *n*, connecting the said treadle-bars M with the hand-lever N, substantially as described, the pitmen and links being placed on opposite sides of the bars M and secured thereto by the same connection, substantially as shown.

2. In a motor of the hereinbefore-specified type to be operated by hand and foot, the combination, with the shafts D and *j*, the gear-wheel C, at the inner end of the shaft D, meshing with the pinion *b*, and the pinion *d* at the outer end of shaft D, meshing with gear-wheel J on the shaft *j*, of the shield K, the seat L, placed on the shield K to protect the gearing *d* and J, and having the lateral extension *l* to extend over and protect the gearing C and *b*, substantially as set forth.

3. In a motor, the herein-described means for connecting the same to the shoe of a fanning-mill, consisting of the bracket F, the elbow-lever F', the rod F^2, and the ⌐-shaped link *f*, adjustably connecting the lever F' with the bracket F, substantially as and for the purpose described.

4. The herein shown and described hand and foot power for fanning mills, comprising the shafts D and *j*, the gearing *d* and J, connecting the two shafts, the pinion *b*, operated by gear-wheel C on shaft D, the bracket F on the shoe E, the elbow-lever adjustably connected with the bracket F and driven from pinion *b* by rod F^2, the master-wheel I, having cranks *i'* on the ends of its shaft *i*, the treadle-bars M, adjustably connected with the frame and having treadles *m*, the pitmen *m'*, the hand-lever N, and the links *n*, the latter being placed against the bars M on the side opposite the pitmen and secured thereto by the same means, substantially as shown.

410,106. MILL FOR ROLLING FLANGED BEAMS. JULIAN KENNEDY, Latrobe, and HENRY AIKEN, Homestead, Pa. Filed Nov. 19, 1888. Serial No. 291,210. (No model.)

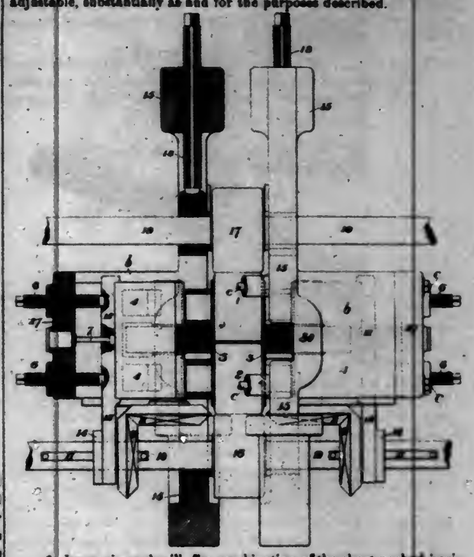
Claim.—1. In a universal mill, the combination, with side rolls, of horizontal rolls, one at least of which is frictionally driven, and an outer roll which drives and supports said horizontal roll, substantially as and for the purposes described.

2. In a universal mill, the combination, with side rolls, of horizontal rolls and outer rolls, which drive and support the horizontal rolls, substantially as and for the purposes described.

3. In a universal mill, the combination, with side rolls, of horizontal rolls and driving-rolls arranged on the outside of the horizontal rolls, the axes of the horizontal rolls and their driving-rolls being in substantially the same plane, substantially as and for the purposes described.

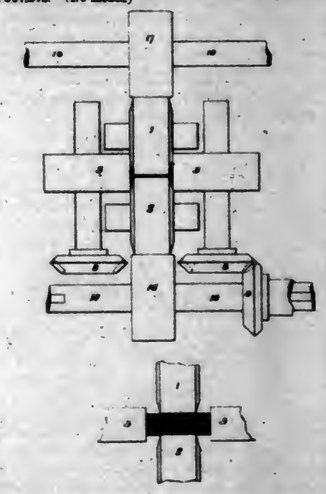
4. In a universal mill, the combination of the side rolls, horizontal rolls, outer rolls, which drive and support the horizontal rolls, the driving-shaft of the outer roll, and gearing connecting the side rolls therewith, substantially as and for the purposes described.

5. In a universal mill, the combination of horizontal rolls, one at least of which is frictionally driven, an outer roll which drives and supports said horizontal roll, side rolls and their carriers, positive driving-gear for the side rolls, and independent adjusting mechanism bearing on the carriers of the side rolls, by which they are laterally adjustable, substantially as and for the purposes described.



6. In a universal mill, the combination of the short-necked horizontal rolls, the outer rolls, which drive and support the same, and positively-driven side rolls, the axes of all said rolls being in substantially the same plane, substantially as and for the purposes described.

410,107. ART OF ROLLING FLANGED BEAMS. JULIAN KENNEDY, Latrobe, and HENRY AIKEN, Homestead, Pa. Filed Apr. 15, 1889. Serial No. 307,272. (No model.)

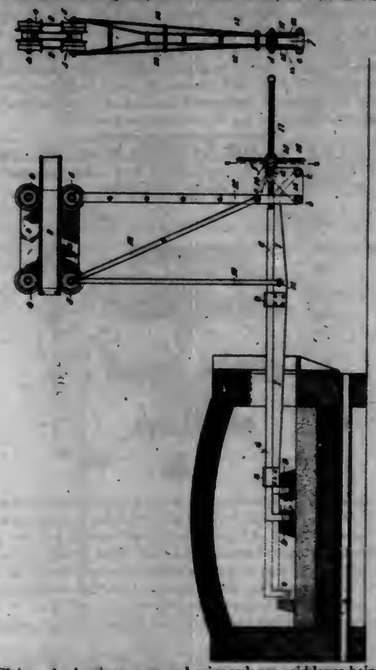


Claim.—1. An improvement in the art of rolling flanged beams, which consists in forming such beams by reduction of metal blooms, and rolling such beams (at different passes between rolls) on the sides of the flanges and on the edges of the flanges for the purpose of finishing the same, substantially as and for the purposes described.

2. An improvement in the art of rolling flanged beams, which consists in forming such beams by reduction of metal blooms, and rolling such beams (at different passes between rolls) on the web and the sides of the flanges and on the edges of the flanges for the purpose of finishing the same, substantially as and for the purposes described.

3. In the art of rolling flanged beams, wherein such beams are finished by means of rolls whose partings produce a fin on the outer sides of the flanges, the improvement which consists in producing, prior to such finishing, grooves or depressions on said flanges on lines coincident with the lines of said fins, substantially as and for the purposes described.

410,108. MILL APPLIANCE. JULIAN KENNEDY and SAMUEL FOSTER, Latrobe, Pa. Filed Apr. 16, 1889. Serial No. 307,403. (No model.)



Claim.—1. A gripper-arm and gripper-lever, said lever being pivotally connected with and suspended from the supporting-frame by which the gripping device is raised and lowered, and a lever having pivotal connections—namely, with the gripper-arm and gripper-lever and with the supporting-frame—so that the motion of the gripper-lever on its fulcrum shall cause a relative motion of the gripper-arm and gripper-lever, substantially as and for the purposes described.

2. The combination of the gripper-lever 7 and longitudinally-movable gripper-arm 6, with 5 screw-extension from the outer end of the arm 6, and a nut and lever or wheel working thereon, the lever 7 being connected with a collar on such nut for the purpose of adjusting the bite of the gripping devices, substantially as and for the purposes described.

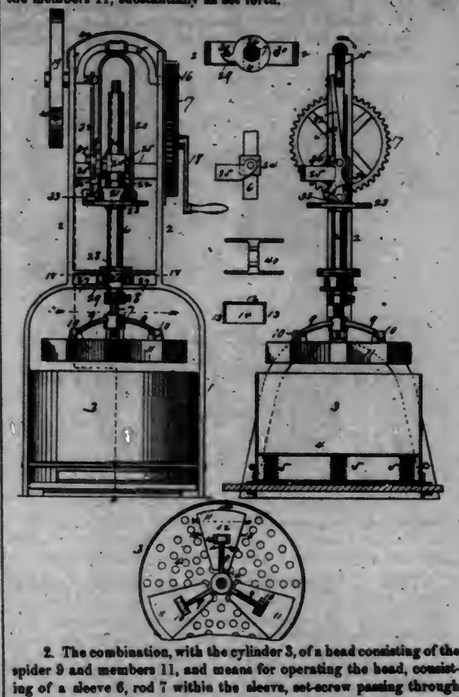
3. In a gripping device for handling heavy articles—such as ingots—the combination, with a gripper-lever 7, pivoted to the suspending-frame 10 12, of a gripper-arm 6, operating with such gripper-lever 7 to engage the article to be lifted, a lever 13, connected at or near the outer end of the gripper lever and arm by pivotal connections, one with the gripper lever 7, another with the suspending-frame 12, and a third with a collar 14 on a rotary sleeve-nut 15, working on a screw 17 at the outer end of the gripper-arm 6, arranged and operating substantially as and for the purposes set forth.

4. The combination, with gripping-jaws, of a projecting lever or frame which carries the same, said lever or frame being movable independently of its support, and being mechanically connected with said gripping-jaws, whereby elevation of the lever or frame with its burden will through gravity effect a gripping action of the jaws, substantially as described.

5. A gripping device capable of projection under the roof of a furnace, connected with the suspending-frame by a lever or combination of levers, or their equivalent, in such manner that the raising of the suspending-frame will cause the gripping device to grasp a heavy article—such as an ingot, slab, or bloom—with a force proportional to the weight of said article, and the lowering of the suspending-frame and the resting of the article on a support will release the gripping device, substantially as and for the purposes described.

410,109. WASHING-MACHINE. JAMES P. KIMBLEY, Adrian, Mo. Filed Oct. 5, 1888. Serial No. 287,315. (No model.)

Claim.—1. The combination of the cylinder 3, having an open top and a head for entering the cylinder, and means for operating the head, said head consisting of a spider 9, members 11, having lugs and pivots passing through the lugs and the ends of the spider close up to the members 11, substantially as set forth.



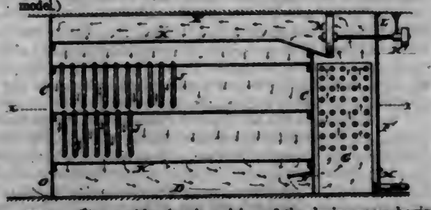
2. The combination, with the cylinder 3, of a head consisting of the spider 9 and members 11, and means for operating the head, consisting of a sleeve 6, rod 7 within the sleeve, set-screw passing through the sleeve and adjustably retaining the rod 7, suitable gearing, and connection between the gearing and the sleeve, substantially as set forth.

3. The combination of a cylinder 3, a head for entering the cylinder, a rod carrying said head, ratchet-wheel 23, collar 21 above the latter surrounding and rotatable on said rod, but reciprocating therewith, pawl 33, lever 32, crank-shaft 15, having axial projection 35, a yoke pivoted to the crank-shaft and said collar for reciprocating the rod, collar, and ratchet-wheel together, and mechanism for rotating the crank-shaft, substantially as set forth.

4. The combination of the cylinder 3, a head for entering the cylinder, rod 7, sleeve 6, cross-strip 27, collar 26, having a hook or horn 29, collar 24, and cross-strip 25, all substantially as and for the purpose set forth.

5. The combination of the cylinder 3, a head for entering the cylinder, a reciprocating rod carrying said head, a bottom guide-piece, said rod being removable therefrom, and an upper pivoted collar or guide-piece, through which the upper end of the rod projects, substantially as and for the purposes set forth.

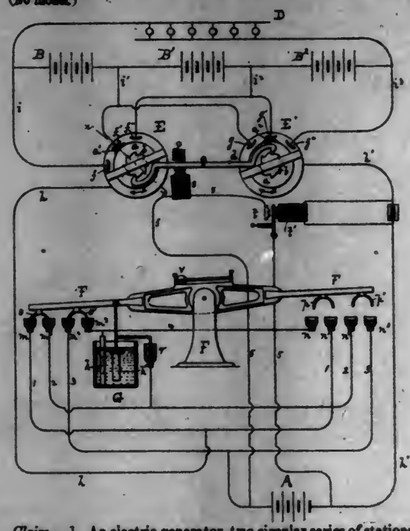
410,110. DRYING-MACHINE. JOHN H. KNOWLES and JOSIAH K. PROCTOR, Philadelphia, Pa., assignors to the Philadelphia Textile Machine Company, same place. Filed Nov. 17, 1888. Serial No. 291,151. (No model.)



Claim.—The combination, in a drier, of the drying-room having diametrically-opposite sides formed with perforated barriers, a blower, a heater, passage ways connecting the parts of the drying-room exterior to the two barriers respectively with the heater and with the blower, a short connecting-passage between the heater and the blower, valves to control the discharge from the drying-room to the atmos-

phere exterior to the apparatus and to the heater, and a valve to admit air to the suction side of the blower without passing through the drying-room.

410,111. APPARATUS FOR CHARGING SECONDARY BATTERIES. WILLIAM P. KOCHGEY, Brooklyn, assignor to the Kochgey Electric Company, New York, N. Y. Filed Jan. 28, 1889. Serial No. 297,204. (No model.)



Claim.—1. An electric generator, two circular series of stationary contacts in which two corresponding contacts (one in each series) constitute the two ends, respectively, of a corresponding number of different circuits, two disks bearing the terminals of the generator and being continuously actuated to revolve, and thus make successive connection between the generator and the successive circuits, ratchets attached to such disks with notches corresponding in number to the number of separate circuits, and a double pawl connecting with such ratchets and when released allowing the two disks to carry the terminals of the generator from one circuit to the succeeding one, substantially as and for the purpose described.

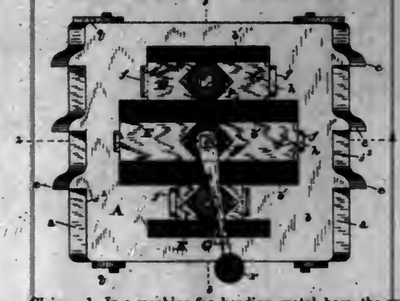
2. In combination with an electric generator and main circuit, two synchronously-moving conductors or contact-points constituting the terminals of the generator, and two series of stationary contacts constituting the respective ends of a series of different circuits, the combination of a local circuit which, when energized, causes the conductors to move, a magnet in the main circuit holding the local circuit open, a depositing-cell in the main circuit, having one plate movable and attached to one end of a balance-beam, circuit closers and breakers on each arm of the balance so arranged than when the balance changes the main circuit is broken for a moment, and circuit-connections between the circuit closers and breakers, by which at each change of the balance the course of the current through the depositing-cell is reversed, substantially as and for the purpose described.

3. The combination of an electric generator and main circuit containing a magnet, a local circuit containing another magnet and also containing a circuit-breaker, which is held open by the magnet in the main circuit when the main circuit is complete, an electro-depositing cell having one plate movable and attached to one arm of a balance-beam, a series of circuit breakers and closers in the main circuit upon each arm of the balance, the circuit being broken for a moment whenever the balance changes, circuit-connections by which the main current is led through the depositing-cell in opposite directions, according to the position of the balance, and a rolling ball upon the top of the balance retaining the balance in each alternate position for a given period, substantially as and for the purpose described.

4. The combination of an electric generator, a storage-battery connected with a working-line, such storage-battery being also divided into sections, two synchronously-moving conductors or contact-points, constituting the terminals of the generator, and two series of stationary contacts arranged adjacent to the moving conductors, in which the two corresponding contacts in the two series constitute the two ends, respectively, of a circuit including one section of the storage-battery, substantially as and for the purpose described.

5. The combination of an electric generator, a storage-battery connected with a working-line, such storage-battery being also divided into sections, two synchronously-moving conductors or contact-points, constituting the terminals of the generator, two series of stationary contacts arranged adjacent to the two conductors, in which the two corresponding contacts in the two series constitute the two ends, respectively, of a circuit including one of the sections of the storage-battery, a local circuit which, when energized, causes the conductors to move, a magnet in the main circuit holding the local circuit open, a depositing-cell in the main circuit having one plate movable and attached to one end of a balance-beam, circuit-closers and breakers on each arm of the balance, so arranged that when the balance changes the main circuit is broken for a moment, and circuit-connections between the circuit closers and breakers, by which at each change of the balance the course of the current through the depositing-cell is reversed, substantially as and for the purpose described.

410,112. MACHINE FOR BENDING METAL BARS. THEODORE F. KRUG, Baltimore, Md., assignor to G. Krug & Son, same place. Filed Apr. 3, 1889. Serial No. 305,851. (No model.)



Claim.—1. In a machine for bending metal bars, the combination of a block A, provided with a grooved slideway, a grip-jaw movable in said slideway and having a hole or recess *n*, a block loosely occupying said hole or recess, and a shaft fitted to turn in the main block and having an eccentric end which turns in the said loose block.

2. In a machine for bending metal bars, the combination of a block A, provided with a grooved slideway and having on its side a cross-ledge *c*, a grip-jaw movable in said slideway, and an eccentric to move said grip-jaw.

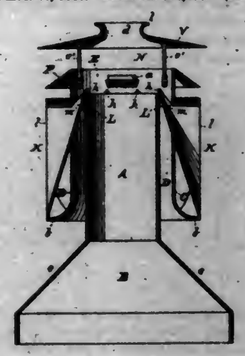
3. In a machine for bending metal bars, the combination of a block A, provided with a grooved slideway having stop ends *f*, which are solid or integral with the block and form one side of a grip, a jaw movable in said slideway and constituting the other side of the grip, an eccentric whose shaft has a bearing in said block and moves the sliding grip-jaw, a crank-arm to turn the eccentric-shaft, and a weight *r* to hold the shaft in position, as set forth.

4. In a machine for bending metal bars, the combination of a block A, provided with a grooved slideway and having at the corner a hook *g*, which projects above the top, and having on its side a cross-ledge *c*, a grip-jaw movable in said slideway, and an eccentric to move said grip-jaw.

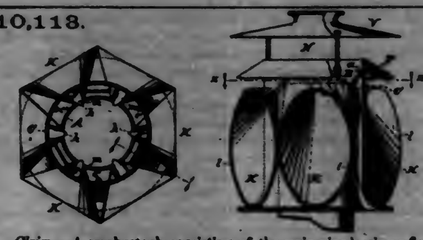
5. In a machine for bending metal bars, the combination of a block A, provided with a slide-jaw, each end of which forms one side of a grip, a base, and a pivot connecting the block and base.

6. In a machine for bending metal bars, the combination of a block A, provided with two opposite beveled or inclined sides, and a slide-jaw, each end of which forms one side of a grip.

410,113. VENTILATOR-SMOKESTACK. OSCAR R. KUEHNE, Topeka, Kans. Filed Mar. 26, 1889. Serial No. 304,763. (No model.)



410,113.



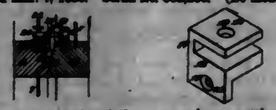
Claim.—A smokestack consisting of the main pipe having a flaring base, and an outer parallel cylinder having top and bottom flanges and forming an annular passage around said main pipe, and an enlarged chamber E above it, ellipsoidal-formed mouths connected to said chamber, the inclined tongues of the cylinder below its upper flange bent inward to form openings, and the cap supported above the cylinder and having a central opening provided with a curved guard-flange, substantially as specified.

410,114. FOLDING UMBRELLA. ELIJAH J. PERSON, Dayton, Ohio. Filed Feb. 9, 1889. Serial No. 299,949. (No model.)



Claim.—The combination, with a jointed stick provided with a stationary collar B, the jointed ribs having their inner sections pivoted to this collar, a runner G, pivotally connected by the braces E to the outer sliding sections of the ribs, of the sliding collar H, located upon the umbrella-stick between the collar B and the runner G, and the sub-braces pivotally connecting the said sliding collar H to the outer ends of the braces E, substantially as herein described.

410,115. FASTENER FOR THE MEETING-RAILS OF SASHES. HUGH RIXEY, St. Louis, Mo., assignor of one-half to Isidore Simon, same place. Filed Mar. 7, 1889. Serial No. 302,966. (No model.)



Claim.—In a combined sash-fastener and anti-rattler, the combination of the metal bracket 15, having a downturned flange 27, secured to the meeting bar of the upper sash, said bracket being also provided with an overlapping plate 16, the pivoted link-bar 20, the pivot-screw 18, on which the link 20 turns, the locking-screw carried by said link-bar, the locking-plate 24, secured to the meeting bar of the lower sash, the screw 26, passing through plate 24 and having a buffer-head to limit the swing of the link-bar and locking-screw it carries, and the surmounting flange 26 of the locking-plate, around the outside of which the locking-screw traverses, substantially as set forth.

410,116. REGULATOR FOR GRAIN-SCALES. FRANCIS H. RICHARDS, Hartford, Conn., assignor to The Pratt & Whitney Company, same place. Filed Nov. 9, 1888. Serial No. 290,202. (No model.)

Claim.—1. In a regulator for grain-scales, the combination of the regulator-hopper vertically movable, substantially as described, the fixed receiving-conduit below said hopper, and the guard-pipe depending from said hopper and having a motion in said conduit toward and from one side thereof, whereby the outlet from said hopper is reduced on the downward movement thereof, all substantially as described.

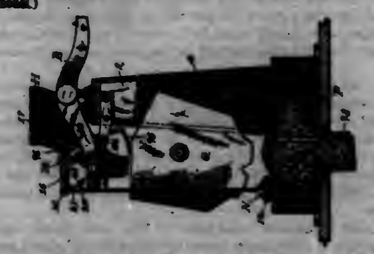
2. In a regulator for grain-scales, the combination of the oscillating hopper pivoted near one side thereof, the fixed receiving-conduit below said hopper, and the curved guard-pipe depending from said hopper concentrically to the pivot thereof and arranged to move toward and from one side of said conduit, whereby the outlet from the hopper is reduced on the downward movement thereof, all substantially as described.



3. In a regulator apparatus, the combination, with the regulator-valve, of the regulator-hopper connected to actuate said valve and vertically movable and counterbalanced, substantially as described, the fixed receiving-conduit below said hopper, and the guard-pipe depending from said hopper and having a motion in said conduit toward and from one side thereof, whereby the outlet from said hopper is reduced on the downward and increased on the upward movement thereof, and whereby the opening of the closed valve when once begun is fully completed, all substantially as described.

4. In a regulator apparatus, the combination of the pivotally-supported regulator-hopper P, having the discharge-opening N, the conduit 93 below said opening, and having the tunnel 50, and the curved guard-pipe 94, surrounding said opening and depending into the tunnel of said conduit, substantially as shown and described.

410,117. REGULATOR FOR GRAIN-SCALES. FRANCIS H. RICHARDS, Hartford, Conn. Filed Jan. 17, 1889. Serial No. 296,676. (No model.)



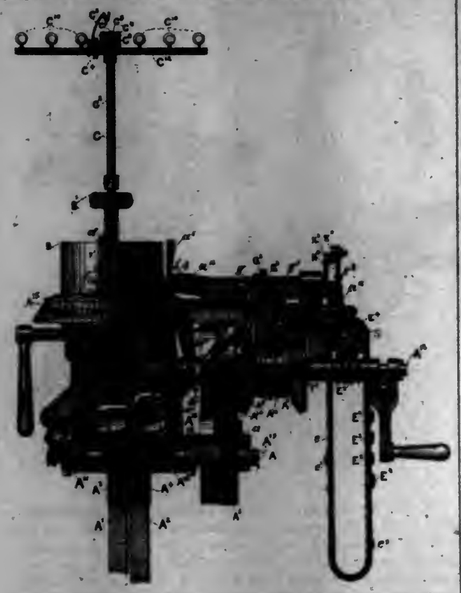
Claim.—1. In a regulator for grain-scales, the combination, with the regulator-valve and with the reciprocating beam, of a grain-receiving hopper, a plunger located in said hopper and operatively connected with said valve, catches, substantially as described, on said connections, and a pawl carried by said beam and constructed to engage said catches, all substantially as described.

2. In a regulator for grain-scales, the combination, with the regulator-valve, of the plunger N, connections, substantially as described, connecting said valve and plunger and having catches substantially as described, the stop limiting the backward motion of said valve, and the arm 20, carrying pawl 40, substantially as described.

3. In a regulator for grain-scales, the combination, with the plunger, the valve, and connections, substantially as described, of the catches 30 and 31, the arm carrying the pawl engaging with said catches, and a stop disengaging said pawl on the upstroke of the arm, all substantially as described.

410,118. CIRCULAR-KNITTING MACHINE. HARRY C. RICHARDS, Philadelphia, Pa., assignor of one-half to Thomas A. Pearce, same place. Filed Dec. 1, 1888. Serial No. 292,413. (No model.)

Brief.—The invention relates to devices for controlling the successive movements of the machine in the formation of the heel and toe, to devices for controlling an extra thread, and to devices for stopping the machine, and to various details of construction.



Claim.—1. The combination of the bolt-shifter for the reverse motion, the pattern-chain, the lever actuated thereby, and mechanism, substantially as set forth, whereby the movement of said lever actuates the bolt-shifter, as and for the purposes set forth.

2. The combination, with the needle-cylinder, and the needle raising and lowering cam M, arranged therein, of the stem M^3, the exterior cam-piece M^2, mounted thereon, the bolts F F', the pattern-chain, and mechanism, substantially as set forth, whereby said bolts are by the action of the pattern-chain alternately protruded into and withdrawn from the range of said cam-piece M^2 as the same moves with the cylinder.

3. The combination, with the double-headed needles, of the raising and lowering cams M M', the link *m'*, connecting the same, and mechanism, substantially as set forth, whereby said cams are actuated at proper intervals with reference to the movements of the cam-cylinder.

4. The combination, with the spring-actuated lifting-pawls whose stems extend outwardly through the cam-cylinder, of a vertically-movable shifting device connected with the said stems, a cam-piece P', mounted on said shifting device, the bolts *w w'*, the pattern-chain, and mechanism, substantially as set forth, whereby said bolts are by the action of said pattern-chain alternately protruded into and withdrawn from the range of rotation of said cam-piece, substantially as set forth.

5. The lifting-pawl constructed in two parts, hinged together upon an axis at right angles to the axis of oscillation of said pawl.

6. The combination of the lowering-pawl, the hinged spring-actuated standard carrying said pawl, the wedge bearing against said standard, the cam-piece P', connected with said wedge, the bolts *w w'*, the pattern-chain, and mechanism, substantially as set forth, whereby said bolts are by the action of the pattern-chain alternately protruded into and withdrawn from the range of rotation of said cam-piece.

7. The combination, with the needle-raising cams, and with the cam-shifter for the reverse motion, of a pattern-chain, a lever actuated thereby, a rock-shaft actuated by said lever, and mechanism, substantially as set forth, whereby the raising-cams and the cam-shifter of the reversing mechanism are coincidently actuated from the same movement of the lever, substantially as set forth.

8. The combination, with the vertically-movable piece P^2, of the segment P, the hinged arms P^3 P^4, and the lifting-pawls and their stems, the wedge D^2, the spring-actuated standard D, for the lowering-pawl, and mechanism, substantially as set forth, for shifting said piece P^2 vertically, whereby, when the lifting-pawls are thrown into play, the depressing-pawls are thrown out of play by the same movement, and vice versa.

9. The combination of the thread-breaking mechanism, substantially as set forth, the reversing mechanism, substantially as set forth, and the needle-elevating cams, substantially as set forth, with a single pattern-chain, whereby said several groups are simultaneously actuated, as and for the purposes specified.

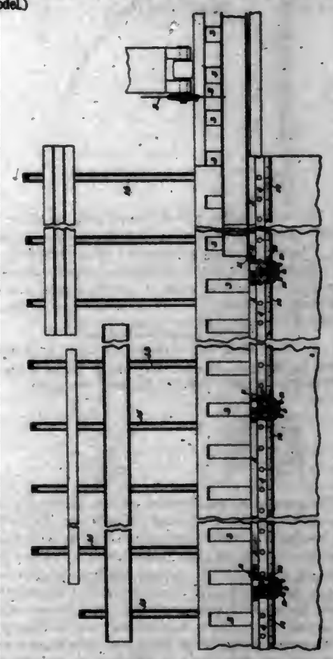
10. The combination of the tripping-rod C^{12}, the bell-crank actuated thereby, the lever C^9, the rollers C^7 C^8, the former of which is mounted upon said lever C^9, the tube C^6, and mechanism, substantially as set forth, whereby said tripping-rod is shifted at proper intervals with relation to the movements of the knitting mechanism.

11. The combination, with a thread-controlling device adapted to break the thread by nipping it, and with the rotating thread-eye, of a stationary tube interposed between said breaking mechanism and the thread-eye, whereby the broken end of the thread will be held in position for re-engagement at the proper time.

12. The combination of the spring-actuated belt-shifter, the curved link connected therewith, the shaft a^9 and lever-arm thereon connected with said link, the tripping-rod a^8, the lever a^{12}, and the pattern-chain provided with projections adapted to trip said lever, substantially as set forth.

13. The combination, with the belt-shifting mechanism, substantially as set forth, and with the pattern-chain and lever actuated thereby, of the notched tripping-rod adapted to engage with said lever, the spring bearing against one side thereof, the stud mounted on said lever, and the spring-actuated dog having an incline upon one side which engages with said stud, substantially as set forth.

410,119. APPARATUS FOR HOT-SAWING BEAMS. CHARLES M. SCHWAB, Homestead, Pa. Filed Mar. 13, 1889. Serial No. 303,144. (No model.)



Claim.—1. The combination, with the rotary cutter, of a table for supporting the beam while being cut, and adjustable stops by which the lengths to be cut may be fixed on the table preparatory to placing the beam thereon, substantially as and for the purposes described.

2. The combination, with the rotary cutter, of a table for supporting the beam while being cut, adjustable stops by which the lengths to be cut may be fixed on the table preparatory to placing the beam thereon, and driven feed-rollers by which the beam is moved, substantially as and for the purposes described.

3. The combination of a beam-supporting table, a rack, a stop-carriage mounted on the rack, and a pinion on the carriage engaging the rack, substantially as and for the purposes described.

4. The combination of a beam-supporting table, longitudinally-movable carriages, and stops situate on the carriages and movable into or out of the path of the beam on the table, substantially as and for the purposes described.

5. The combination of the rack, the carriage mounted thereon, the pinion, and the pivoted stop, substantially as and for the purposes described.

6. The combination of a beam-supporting table, a longitudinally-movable carriage, a stop situate on the carriage and movable into or out of the path of the beam on the table, and locks for the carriage, substantially as and for the purposes described.

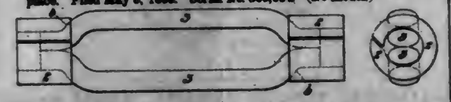
7. The combination with a table for supporting hot beams, of a wooden scale extending beside the same, substantially as and for the purposes described.

8. The combination, with the rotary cutter, of a table for supporting the beam while being cut, adjustable stops, and an index connected with and set in advance of the stop for the purpose of compensating for the contraction of the beam, substantially as and for the purposes described.

9. In a plant for continuously working a bloom or billet into two or more rails or bars of predetermined lengths the equivalent of or corresponding to the size of the bloom or billet, the combination, with the rolls, of a receiving-table for receiving the hot rail or bar from the rolls, an interposed rotary cutter for cutting the hot rail or bar into lengths as it comes from the roll, and stops which are longitudinally adjustable on the table to and from the rotary cutter and rolls, substantially as and for the purposes described.

10. In a plant for continuously working a bloom or billet into two or more rails or bars of predetermined length equivalent of or corresponding to the size of the bloom or billet, the combination, with the rolls, of a receiving-table for receiving the hot rail or bar from the rolls, an interposed rotary cutter for cutting the hot rail or bar into lengths as it comes from the roll, and stops which are longitudinally adjustable on the table to and from the rotary cutter and rolls, the leading one of said stops, or that nearest the saw, adapted to be moved into and out of the path of the advancing beam, substantially as and for the purposes described.

410,120. ART OF MAKING TURN-BUCKLES. JAMES H. SIMPSON, Pittsburg, Pa., assignor to Carnegie, Phipps & Co., (Limited,) same place. Filed May 6, 1889. Serial No. 309,654. (No model.)



Claim.—An improvement in the manufacture of turn-buckles, which consists in forming a blank having side pieces and end pieces, confining the blank in a die the cavity of which is closed laterally, and subjecting the blank to end compression, whereby the material of the side pieces and end pieces of the blank is upset or compressed and is caused to fill accurately the cavity of the die, substantially as and for the purposes described.

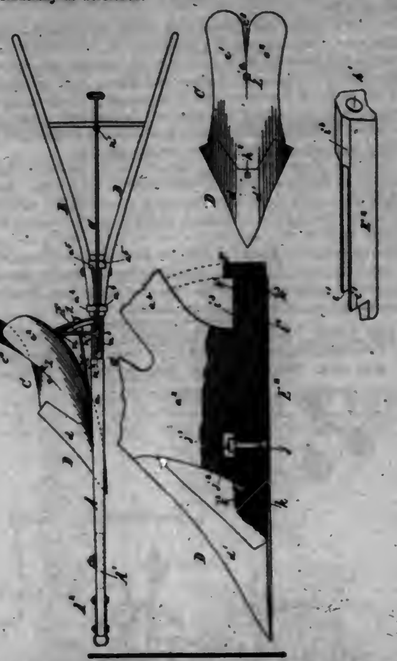
410,121. PLOW. WILLIAM HENRY SMITH and HIRAM SMITH, Dickson, Pa.; said Hiram Smith assignor to said William Henry Smith. Filed May 20, 1889. Serial No. 312,499. (No model.)

Claim.—1. In a reversible or duplex mold-board plow, the combination of the angular locking-rod G, provided with a longitudinal bolt *n*, and arranged both to slide and turn in its guiding-eyes, with a share or point, and a reversible angular mold-board having a supporting-bracket provided with longitudinal bolting-holes and connected to the standard portion of the plow by a longitudinal pivotal connection, substantially as and for the purpose described.

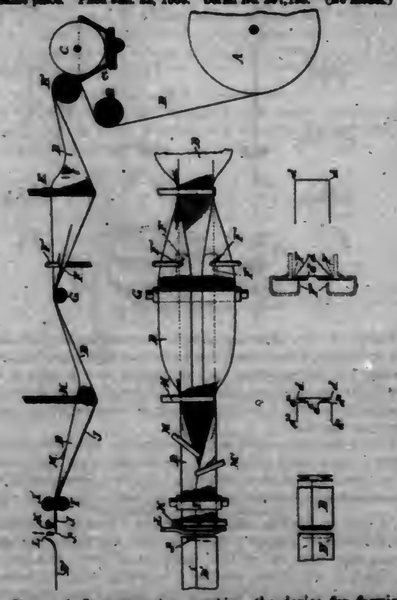
2. A reversible duplex mold-board plow comprising, in combination, the following parts, to wit: the united beam, standard, and handle-supporting bracket-arm, the beam being curved, as at *a*, and the standard provided with beveled shoulders i^2, pivot *k*, and tongue or dowel i^3, the sole-bar E^3, having a tongue or dowel-socket i^3 and a pivot-socket *k'*, the uniting-bolt *j*, the pivot or share D, having a horizontal sole-surface, a vertical landside-surface, an inwardly-curved oblique surface, and a pivot-socket k^2, the supporting-bracket F matching on its upper end the under transverse shape of the duplex mold-board and having pivot k^2, the screw connecting-rod H, and the duplex mold-board C, formed for about one-third its length with a broad united body-surface extending from side to side and rearwardly of said portion formed with an inclined concaved parting-ridge *c*, the angle of which ridge gradually becomes more acute, and with symmetrical mold-board wings $c' c^2$, the helical curved surfaces of which are separated completely by said ridge along the remaining length of the mold-board, and the locking-bolt, substantially as and for the purpose described.

3. In a reversible duplex mold-board plow, the combination of the mold-board having holes *k'* extending entirely through it, the share having a tongue *k* cast upon it and entering through said hole and bearing against the under side of the mold-board, and the uniting screw-bolt k^2, passed through the share and mold-board, substantially as described.

4. In a reversible duplex mold-board plow, the united curved beam and standard cast with a handle-supporting bracket-arm a^2, on which are cast the staying stop-lugs a^3, and the divided clasping-lugs a^4, substantially as described.



410,122. PAPER-BAG MACHINERY. CHARLES B. STILWELL, Philadelphia, Pa., assignor to the Union Paper Bag Machine Company, same place. Filed Jan. 22, 1889. Serial No. 297,196. (No model.)



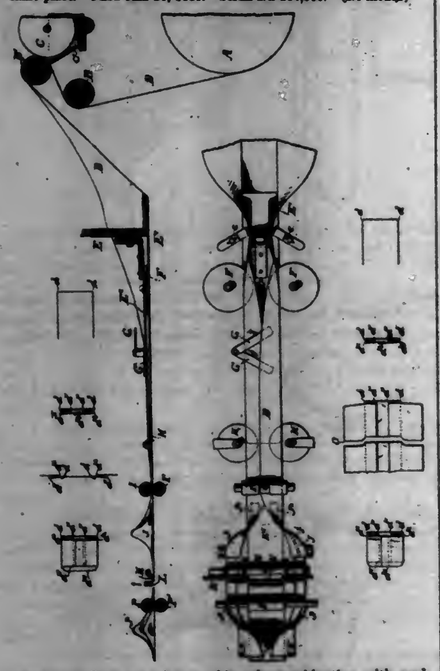
Claim.—1. In a paper-bag machine, the device for forming a bellows-folded tube, which consists in a folder-plate E, for forming the folds which define the under side of the tube, in combination with folder-plates F F, for forming the bellows fold, a former-plate H, for forming the folds of the upper side of the tube, a plate J, arranged to

enter the tube after it leaves former-plate H and having a knife-edge J', deflectors for turning down the edges of the paper to complete the formation of the tube, a knife K, arranged above and back of knife-edge J', and a striker L, all arranged substantially as and for the purpose specified.

2. In a paper-bag machine, the device for forming a bellows-folded tube, which consists in a folder-plate E, for forming the folds which define the under side of the tube, in combination with folder-plates F F, for forming the bellows fold, fingers F' F', acting to turn out the edges of the paper web, a former-plate H, for forming the folds of the upper side of the tube, and deflectors for turning down the edges of the paper to complete the formation of the tube, all arranged substantially as and for the purpose specified.

3. In a paper-bag machine, the device for forming a bellows-folded tube, which consists in a folder-plate E, for forming the folds which define the under side of the tube, in combination with folder-plates F F, for forming the bellows fold, fingers F' F', acting to turn out the edges of the paper web, a roll G, for flattening the web as folded by the plates E and F F, a former-plate H, for forming the folds of the upper side of the tube, and deflectors for turning down the edges of the paper to complete the formation of the tube, all arranged substantially as and for the purpose specified.

410,123. PAPER-BAG MACHINERY. CHARLES B. STILWELL, Philadelphia, Pa., assignor to the Union Paper Bag Machine Company, same place. Filed Jan. 26, 1889. Serial No. 297,599. (No model.)

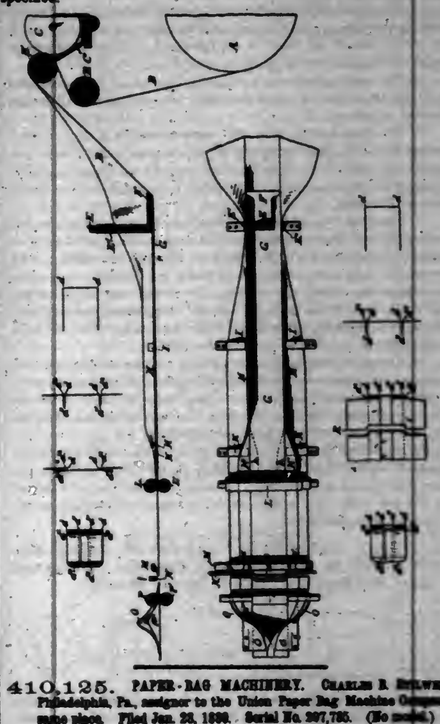


Claim.—1. In a paper-bag machine, the combination, with mechanism for forming a web of paper into a bellows-folded tube, of curved spreaders J J, for spreading open the folded tube, a knife K, and striker L, for severing the opened tube, and curved closing-plates J' J', for refolding the opened end of the blank, all substantially as and for the purpose specified.

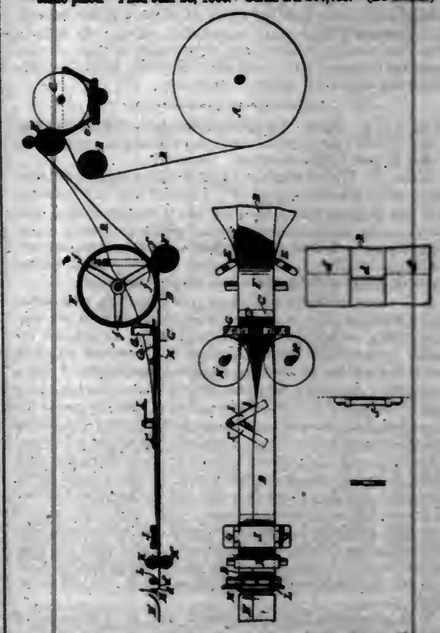
2. In a paper-bag machine, the combination, with mechanism for forming a web of paper into a bellows-folded tube, of curved spreaders J J, for spreading open the folded tube, and a rib *j*, formed on the side of the spreader J, against which the pasted edge of the paper rests.

410,124. PAPER-BAG MACHINERY. CHARLES B. STILWELL, Philadelphia, Pa., assignor to the Union Paper Bag Machine Company, same place. Filed Jan. 26, 1889. Serial No. 297,600. (No model.)

Claim.—In a paper-bag machine, a device for forming a bellows-folded tube and severing it into bag-blanks, having a former G, around which the web is folded on the lines which define the under side of the tube, folder-plates H H, with curved ends H' H', fingers I I and K K, coacting with the folder-plates H H to form the bellows fold and spread the folded web flat, a knife M and striker N, to sever the folded and flattened web into blanks, and curved plates O O, arranged to fold the flattened web into a tube, all substantially as and for the purpose specified.

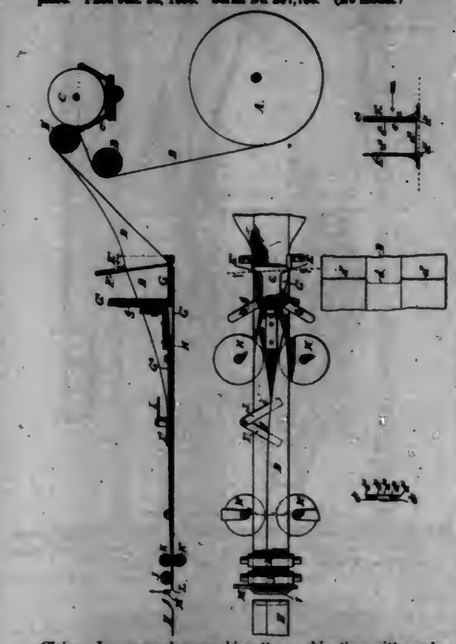


410,125. PAPER-BAG MACHINERY. CHARLES B. STILWELL, Philadelphia, Pa., assignor to the Union Paper Bag Machine Company, same place. Filed Jan. 28, 1889. Serial No. 297,785. (No model.)



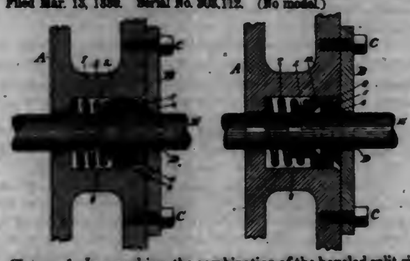
Claim.—In a paper-bag machine, the combination, with mechanism for folding a web of paper into a bellows-folded tube, of a cutter F F', arranged at the end of the folding mechanism to which the web passes, so as to cut the web centrally in the form of a lip *d*, and a knife L and striker M at the other end of the folding mechanism, arranged to sever the folded tube on the line *d' d'*, all substantially as and for the purpose specified.

410,126. PAPER-BAG MACHINE. CHARLES B. STILWELL, Philadelphia, Pa., assignor to the Union Paper Bag Machine Company, same place. Filed Jan. 26, 1889. Serial No. 297,796. (No model.)



Claim.—In a paper-bag machine, the combination, with mechanism for folding a web of paper into a bellows-sided tube, of mechanism consisting of cutting-knives E E' and a striker F, arranged at the end of the folding mechanism to which the web passes, so as to cut the web on each side on the lines *d d'*, and a knife and striker at the other end of the folding mechanism for severing the under side of the tube and forming a lip *d*, all substantially as and for the purpose specified.

410,127. PACKING-RING. JEREMIAH J. SULLIVAN, Ludlow, Ky. Filed Mar. 13, 1889. Serial No. 303,112. (No model.)



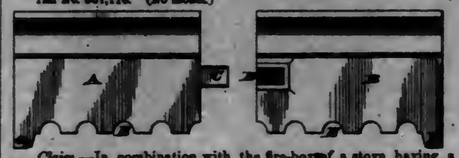
Claim.—1. In a packing, the combination of the beveled split ring 5 and wedge-shaped split ring 6, one resting by its inclined face upon the inclined face of the other, with the intermediate rigid follower 4, having an inclined face resting on the inclined face of the beveled ring, the inside rigid follower 1, for advancing the intermediate follower upon the beveled ring against which it bears, and means for advancing the inside rigid follower, with the intermediate rigid follower, along a piston-rod, substantially as described.

2. The combination, with the cylinder A, the cap B, and the piston-rod E, passing loosely through the cylinder-cap, of the beveled split ring 5 and the wedge-shaped split ring 6, both resting against the cap and one resting upon the other, the intermediate follower 4, having an inclined face resting against the inclined face of the beveled ring, the inside follower 1, bearing against the intermediate follower, and means for advancing both followers simultaneously along the length of the piston-rod, substantially as described.

3. A combined cylindrical and stem packing, consisting of the beveled follower 1, the split rings 2 and 3, the beveled follower 4, the split rings 5 and 6, and the devices for pressing the said follower against the other device to form a compound packing-joint, substantially as herein specified.

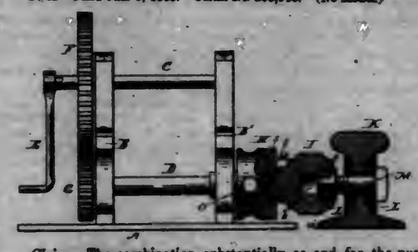
4. In combination with the cylinder S and the piston E, passing freely through the same, the beveled follower 1, the packing-rings 2 and 3, the beveled follower 4, and split packing-rings 5 and 6, in contact with the piston-rod, and a spring 7 for forcing the packing-rings together, substantially as herein specified.

410,128. STOVE-LINING. CHARLES TRUESDALE, Cincinnati, Ohio, assignor to William Rasor & Co., same place. Filed Apr. 13, 1889. Serial No. 307,110. (No model.)



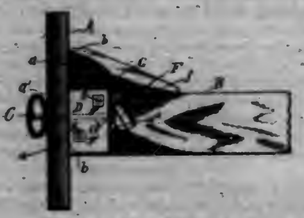
Claim.—In combination with the fire-box of a stove having a grate, as J, a front lining composed of a series of detachable sections, as A B, supported wholly at their outer ends, as at *a b*, and having an expansive joint, as C D, at their meeting edges, whereby said sections are prevented bowing inwardly or sagging down in the center, and thus closing the uninterrupted opening I between said grate and lining, all as herein described.

410,129. POWER-WRENCH. THOMAS F. WELLS, Winchester, Mass., assignor to the Mechanical Manufacturing Company, Nashua, N. H. Filed Jan. 9, 1889. Serial No. 295,913. (No model.)



Claim.—The combination, substantially as and for the purpose set forth, of a bed-plate, upright fixed standards on said bed-plate, a crank-shaft supported in said standards and provided with a head having radial lever-sockets therein, a crank-shaft also supported on said standards above the wrench-shaft, gearing connecting said shafts, a detachable wrench on said head, and a crank attached to the crank-shaft.

410,180. BED-LOCK. CHARLES WESTON, Chester, assignor of one-half to John W. Wilkes, Wilkesburg, S. C. Filed May 6, 1889. Serial No. 309,722. (No model.)



Claim.—1. The combination of the bed-post A, provided with holes *a* and perforation *a'*, side rails B, provided with the pins *b* and rectangular opening g^3, block G, secured to said rail by means of glue and screws *g*, covered with blocks *g'*, and having through its center the perforation g^3, bolt D, passing through perforations *a'* and g^3, its elbow end *d* turned down into the rectangular opening g^3, cover F, having the recess *f*, fitting over the elbow end of said bolt D, and rectangular opening g^3, hand-nut C, having the dished face *c*, openings *c'*, threaded nut c^3, fitting into said opening, and block c^3, glued into and completely closing the outer part of said opening, all substantially as shown and described, and for the purposes set forth.

2. The combination of the bed-post A, provided with holes *a* and perforations *a'*, side rails B, provided with the pins *b* and rectangular opening g^3, block G, secured to said rail and having through its center perforations g^3, threaded and elbow bolt D, passing through perforations *a'* and g^3, cover F, fitting over the elbow end of said bolt and said rectangular opening, and hand-nut C, having nut c^3 fitting into its opening *c*, substantially as shown and described.

410,131. CORSET-FASTENING. SAMUEL S. WILLIAMSON, Bridgeport, Conn. Filed Apr. 27, 1889. Serial No. 308,867. (No model.)



Claim.—1. In a clasp, the combination, with a stationary stud or post forming one element thereof, of the complementary element consisting of a plate having a slot extending inward from the front end thereof and enlarged at its rear end, a hook having a corresponding opening and pivoted against the plate and movable relative thereto, and a finger projecting upwardly from said hook behind the beak and movable with said hook, substantially as set forth.

2. In a clasp, the combination, with the stationary headed stud and the slotted plate opposite said stud, the rear end of the slot being adapted to admit the stud-head, of the hook having a downwardly-projecting grasping-beak whose line of movement is across the slot, near the outer end of the latter, having also an opening substantially identical with that in the plate and registering therewith, and having also the curved upwardly-projecting finger whose line of movement is across the line of the plate-opening, said finger adapted to be actuated by the forward movement of the stud, substantially as specified.

3. In a clasp, the combination, with the stud and the steel on which it is mounted, of the complementary steel, the plate slotted from its front end, the pivoted hook, a rivet whereby said hook is pivoted to the plate and the plate secured to the steel, a second rivet above and in line with the first-named rivet passed through the plate and steel, and an opening in the hook, into which the last-named rivet projects, said opening being formed in the arc of a circle struck from the lower rivet, substantially as specified.

410,132. WATER-MOTOR. LORIN R. WITHERELL, Davenport, Iowa, assignor of three-fourths to Edwin W. Brady, Oscar W. Brady, and Albert B. Brady, same place. Filed May 2, 1889. Serial No. 309,354. (No model.)



Claim.—1. The combination, with the two side plates and the inclined water-guide plate secured between them, of the water-wheel journaled in the side plates substantially in line with the top of the guide plate, and the adjustable curved plate provided with flanges at each end having their extremities journaled on the water-wheel shaft, and a longitudinal flange resting on the upper end of the said guide-plate, substantially as and for the purpose set forth.

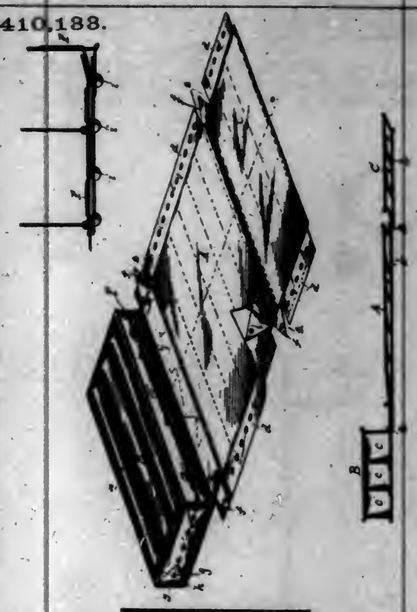
2. The combination, with the two side plates and the inclined water-guide plate secured between them, of the water-wheel provided with a shaft and journaled in the side plates substantially in line with the top of the guide-plate, the curved plate provided with end flanges pivoted on the water-wheel shaft, and the longitudinal flange resting on the top of said guide-plate, and a toothed rack, and a revoluble toothed pinion gearing into the said rack for adjusting the position of the said curved plate, substantially as and for the purpose set forth.

410,133. MATTRESS. JOHN BLOCHER, Franklin Grove, assignor of one-half to Daniel F. Riddlebarger, China, Ill. Filed Mar. 27, 1889. Serial No. 304,961. (No model.)

Claim.—1. In a mattress, the combination, with the case formed with compartments and with end flaps provided with holes, as shown, of the buttons, the lacings passed through the undermost of the overlapped flaps and through the eyes of the buttons, which are passed through the holes in the outer flaps, and the lacing united, substantially as shown and described.

2. The mattress described, composed of the case formed in sections connected by flexible connections and with end flaps provided with holes, as shown, the buttons, the strips united to the upper and lower faces of the case upon the inner side thereof to form separate compartments, the filling in said compartments with the end flaps overlapped over the ends of the compartments, the lacings fast at one end and passed through the holes in the undermost of the overlapped flaps, and the buttons having their shanks passed through the holes in the outer flaps, and having the lacings passed through the eyes of said shanks between the flaps and the said lacings united around the side of the sections, substantially as shown and described.

410,134.



410,134. METAL PILE OR FAGOT. HENRY W. SCHEIDHAUER, Pittsburg, Pa., assignor to Carnegie, Phipps & Co., (Limited,) same place. Filed May 3, 1889. Serial No. 309,460. (No model.)



Claim.—1. A fagot or pile consisting in the combination, with the layers of bars, of separate strips having scarfed or beveled edges and covering the exterior joints, substantially as and for the purpose described.

2. A fagot or pile consisting in the combination, with the inner layers, of separate strips covering the exterior joints and having tongues or ribs fitting within the same, substantially as and for the purpose described.

3. A fagot or pile consisting in the combination, with the inner layers of separate strips covering the exterior joints and having tongues or ribs fitting within the same and extending to the bases thereof, substantially as and for the purpose described.

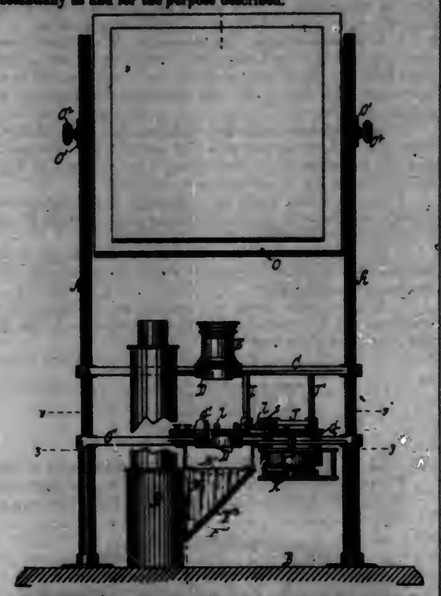
410,135. MAGIC LANTERN FOR ADVERTISING OR OTHER PURPOSES. CHARLES C. BECKNER and HENRY W. THORNTON, New York, N. Y. Filed Nov. 17, 1888. Serial No. 291,085. (No model.)

Claim.—1. An optical apparatus in which are combined a magnifying-lens and a condensing-lens axially coincident with each other, an intermittingly-revolving plate-carrier having a circular row of light-orifices adapted to axially coincide with said lenses, and a motor for operating said carrier, substantially as and for the purpose described.

2. An optical apparatus in which are combined a magnifying-lens, two condensing-lenses at right angles to each other, one condensing-lens being axially coincident with the magnifying-lens, a light-reflector at an angle to both condensing-lenses, an intermittingly-revolving plate-carrier having a circular row of light-orifices, and a motor for operating said carrier, substantially as and for the purpose described.

3. An optical apparatus in which are combined a magnifying-lens and condensing-lens axially coincident to each other, an object-reflector opposite to said magnifying-lens, an intermittingly-revolving plate-carrier having a circular row of holes between said lenses, and a motor for operating said carrier, substantially as and for the purpose described.

4. An optical apparatus in which are combined a magnifying-lens, two condensing-lenses at right angles with each other, one condensing-lens being axially coincident to said magnifying-lenses, an illuminator opposite to the other condensing-lens, a light-reflector at an angle to both condensing-lenses, an object-reflector opposite to said magnifying-lens, an intermittingly-revolving plate-carrier having a circular row of light-orifices, and a motor for operating said carrier, substantially as and for the purpose described.

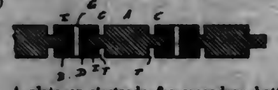


5. An optical apparatus in which are combined an intermittingly-revolving plate-carrier having a circular row of light-orifices and a corresponding row of stop-pins, a revolving tappet-arm adapted to engage with said pins of the carrier, a shaft carrying said arm, and a motor geared with said shaft, substantially as and for the purpose described.

6. An optical apparatus in which are combined an intermittingly-revolving plate-carrier having a circular row of light-orifices and a corresponding row of stop-pins, a tappet-arm having a transverse groove, the inner edge of which forms a continuation of one edge of said arm for engaging said pins of the carrier, a shaft carrying said arm, and a motor geared with said shaft, substantially as and for the purpose described.

7. An optical apparatus in which are combined two cross-heads having light-orifices axially coincident with each other, a magnifying-lens fitted in said orifice of the upper cross-head, a condensing-lens arranged below said orifice of the lower cross-head, an intermittingly-revolving plate-carrier having a circular row of light-orifices, and a motor for imparting motion to said carrier, substantially as and for the purpose described.

410,136. ELECTRODE FOR SECONDARY BATTERIES. CHARLES H. CARTER, Brooklyn, N. Y. Filed July 3, 1889. Serial No. 316,262. (No model.)

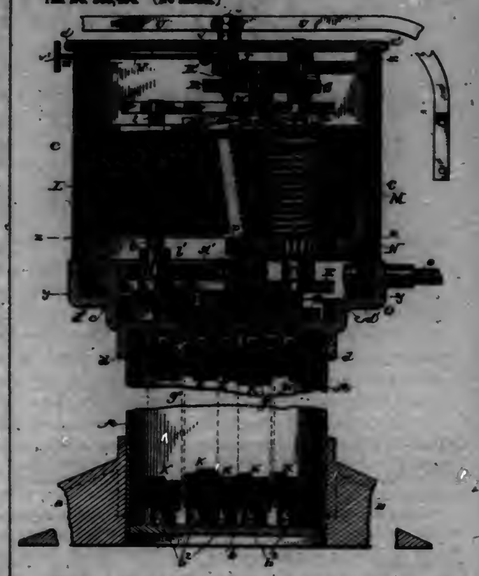


Claim.—1. A plate or electrode for secondary batteries, composed of a plate of metal or alloy not affected injuriously by the exciting-liquid of the battery and lead plugs or buttons held in apertures of said plate and provided at each end with a head located in recesses in the faces of said plate, substantially as set forth.

2. In a plate or electrode for secondary batteries, the combination, with a metal or alloy plate having apertures and a recess in each face at the ends of said apertures, of lead plugs held in said apertures and provided at their ends with heads within the recesses in the plate, said heads being smaller than the recesses, whereby annular spaces are formed between the edges of the heads and sides of the recess, substantially as set forth.

3. In a plate or electrode for secondary batteries, the combination, with a metal or alloy plate having apertures and a recess in each face at the ends of said apertures, of lead plugs held in said apertures and provided at their ends with heads within the recesses in the plate, said heads being smaller than the recesses, whereby annular spaces are formed between the edges of the heads and sides of the recess, said plugs each having a longitudinal bore, substantially as set forth.

410,137. SPRING-MOTOR. THOMAS P. COOK, Columbus, Miss., assignor of one-half to I. M. Tusher, same place. Filed Dec. 12, 1888. Serial No. 293,604. (No model.)



Claim.—1. In a spring-motor, the combination, with the coiled torsion-springs, of the inclosing-casing for said springs provided with notches or recesses, and a bottom plate having the springs rigidly connected thereto and provided with projections fitting the notches or recesses of the casing, whereby the said bottom plate will be held in position by the tension of the springs, substantially as described.

2. The combination, with the two fusees, one of which is provided with a stop and their connecting cord or rope, of the weighted stop-lever, substantially as described.

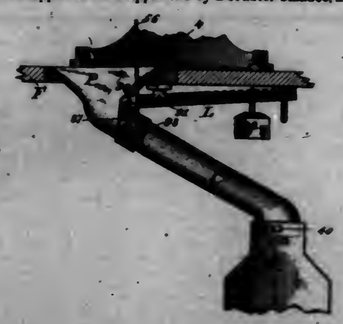
3. The combination, with the hollow column, of the torsional spring inclosed therein, the broad-faced pinion H, centrally located with respect to said springs, and the overlapping gears connected to said springs and engaging said broad-faced pinion, substantially as described.

4. The combination, with the hollow supporting-column, of the gear-casing mounted thereon and the gearing-supports within said casing, the same consisting of the bottom casting *c*, the top plate *d*, the spiders E F, and the connecting-rods *e*, substantially as described.

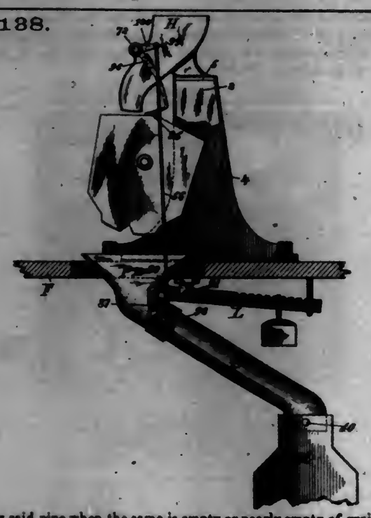
410,138. REGULATOR FOR GRAIN-SCALES. CHARLES H. COOLEY, Hartford, Conn. Filed Jan. 17, 1889. Serial No. 296,678. (No model.)

Claim.—1. In apparatus for regulating the discharge of grain, the combination of the fixed chute, the inclined conductor supported at its lower end and counterbalanced, substantially as described, and the regulator-valve, said conductor being operatively connected with said valve to close the same on the downward movement of the conductor, all substantially as described.

2. In a regulator for grain-scales, the combination, with the inclined receiving-pipe G, sustained in part by a fixed pivot at its lower end and supported at its upper end by a counter-balance, normally ap-



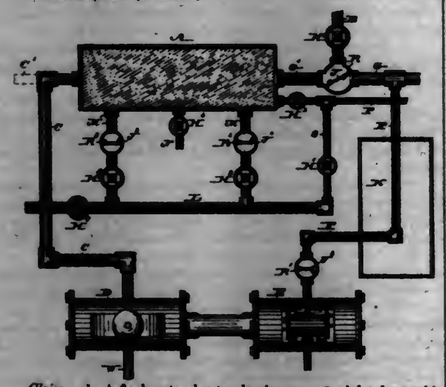
410,188.



holding said pipe when the same is empty or nearly empty of grain, of the regulator-valve above said conduit, and connections, substantially as described, actuating said valve to close the same on the downward movement of said pipe, substantially as described.

3. In a regulator for grain-scales, the combination, with the chute and the regulator-valve, of the pipe C, pivotally supported at its lower end, weighted lever L, links 87, and rod 56, substantially as shown and described.

410,189. FEED-WATER HEATER. ALEXANDER DE BRAUMONT, Philadelphia, Pa. Filed July 14, 1887. Renewed June 26, 1889. Serial No. 315,592. (No model.)



Claim.—1. A feed-water heater having a water-inlet, in combination with a steam-pipe leading into said water-inlet, a valve-chamber with check-valve at the junction of said steam-pipe and water-inlet, and an outlet-pipe for said filter, substantially as described.

2. A feed-water heater having a water-inlet, in combination with a steam-pipe leading into said water-inlet, an outlet-pipe from said filter, an engine with pumping device, and an exhaust-pipe leading from said engine to said steam-pipe, substantially as described.

3. A feed-water heater with water-inlet, in combination with steam-pipe leading into said water-inlet, a valve-chamber with a check-valve at the junction of said steam-pipe and water-inlet, and an exhaust-steam pipe leading into said steam-pipe, substantially as described.

4. In a feed-water heater and condenser, the combination of a filter-chamber A, having inlet-pipes B C', and with the outlet-pipe C', with the steam-pipe G, the steam-pump D, and exhaust-pipe F, extending into the pipe G, substantially as described.

5. In a feed-water heater, the combination of the inlet and outlet pipes with the steam-pipe G and the cleansing-pipes L, M, M', and P, substantially as described.

6. In a feed-water heater or condenser, the combination of the inlet-pipes G G' B and the exhaust-pipe F with the check-valves J J', substantially as described.

7. In a feed-water heater or condenser, the combination of a water-inlet pipe B, a steam-inlet pipe G, and check-valve J, with the pipe G', substantially as described.

REISSUES.

11,027. COVER FOR BARRELS. JOSEPH MOOSBRUGGER, St. Paul, Minn., assignor of one-third to Charles Bruno McBride, same place. Filed Oct. 23, 1887. Serial No. 253,129. Original No. 368,967, dated Aug. 30, 1887.



Claim.—1. A grated receptacle-cover composed of an outer and an inner band, an intermediate band lying in a higher plane than the other bands, and a series of strands connecting the several bands and forming a central grated portion to cover a receptacle, substantially as described.

2. A grated receptacle-cover composed of the series of three bands, the middle one lying in a higher plane than the others, and the series of strands connected at one end to the inner band, then passing around the middle band, and thence downward and connected to the outer band, substantially as described.

3. A grated receptacle-cover formed of strands interwoven with one another to form a central grated portion, and then extended in single unwoven strands upwardly above the plane of the central portion, and then downwardly to form diverging sides, and a band to which the single strands are connected to hold them in position, substantially as described.

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DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

DECISIONS OF THE U. S. COURTS.

Supreme Court of the District of Columbia.

THE UNITED STATES *ex rel.* ANTHONY POLLOK *v.* HALL, Commissioner of Patents.

Decided November 12, 1888.

1. Whenever a reasonable suggestion of its necessity for the purposes of evidence is made by the person requesting it, the Commissioner of Patents cannot lawfully refuse to furnish a certified copy of an abandoned or rejected application for a patent. The right to be furnished such a copy is given to the public by statute, and the refusal thereof entitles the applicant to the writ of *mandamus* against the Commissioner to compel a compliance with such request.
2. An attorney at law who has requested such a copy in behalf of his client and been refused has such an interest in the subject-matter as entitles him to commence proceedings in his own name as relator for the writ of *mandamus*.

PETITION for *mandamus* against the Commissioner of Patents.

Mr. Phillip Mauro for the relator.
Mr. L. A. Palmer for the Commissioner.

Before the CHIEF JUSTICE and JUSTICES COX and MERRICK.

Mr. Justice MERRICK delivered the opinion of the court:

The court has had under consideration the application of Anthony Pollok for a writ of *mandamus* against the Commissioner of Patents to compel him to give a certified copy of a certain abandoned application for a patent remaining on file in the archives of that Office.

In response to that application the Commissioner sets up that, while he considers that the relator is an attorney in the regular practice of his profession before the Patent Office, and that he is also, in point of fact, the attorney employed by the party in whose behalf he makes the application for the copy in question, he has no right to it, first, because he is not the party having the legal title to the subject-matter; second, that it does not appear that the paper is really requisite for the purposes of evidence in the alleged cause, and, third, that under Rule 179 of the Patent Office the Commissioner of Patents has a discretion to grant or withhold information in that class of cases at his pleasure, or at his discretion—the terms as used seem to be convertible.

In order to ascertain if there were just foundation for the refusal of the Commissioner of Patents, as well as to understand the scope of that refusal, it is proper for a moment to advert to first principles. For what was the Patent Office established, what was the design of its institution, and what rights does it protect? We know that at common law there was no such thing as a monopoly in an invention, or a monopoly in the use of knowledge which the party possessing it had once communicated in any manner to his fellow beings; that the revelations of thought and intellect are common property, and there is no monopoly or exclusive right in such things except so far as they have been conferred by positive law, and positive law has never gone any further to confer exclusive property in such things than for purposes of encouragement of science and the development and advancement of art. That it may not be supposed that the court is for the first time announcing this as a general principle of the common law, though it is familiar to all lawyers, we refer to the language of the Supreme Court in the case of *Gayler* v. *Wilder* (10 How., 495) and read a certain passage from that opinion:

> Now, the monopoly granted to the patentee is for one entire thing; it is the exclusive right of making, using, and vending to others to be used the improvement he has invented and for which the patent is granted. The monopoly did not exist at common law, and the rights, therefore, which may be exercised under it cannot be regulated by the rules of the common law. It is created by the act of Congress, and no rights can be acquired in it unless authorized by statute and in the manner the statute prescribes.

The authority for legislation on the subject is found in that clause of the Constitution which says:

> The Congress shall have power to promote the progress of science and the useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.

Here we find the entire scope of the right of exclusiveness, and as involved in the right of exclusiveness the entire scope of the right of secrecy. In pursuance of the above delegation of power Congress has established the Patent Office and has established certain rules and regulations with respect to it, and among those rules the only rule of secrecy is that which is made in aid of the inventor who has not yet perfected his design, and which enables him to present an application to the proper authorities to secure his invention, and while he is using all diligence to confer upon the public the knowledge that he possesses it gives him further opportunities to perfect his invention before he makes an application for a definitive patent. That limitation of the authority of publicity, that single grant of secrecy, is to be found in section 4902 of the Revised Statutes, in these words:

> Any citizen of the United States who makes any new invention or discovery and desires further time to mature the same may, on payment of the fees required by law, file in the Patent Office a caveat setting forth the design thereof and of its distinguishing characteristics, and praying protection of his right until he shall have matured his invention. Such caveat shall be filed in the confidential archives of the Office and preserved in secrecy, and shall be operative for the term of one year from the filing thereof; and if application is made within the year by any other person

for a patent with which said caveat would, in any manner, interfere, the Commissioner shall deposit the description, specification, drawings, and model of such application in like manner in the confidential archives of the Office and give notice thereof, &c.

That is the only qualification in regard to publicity which runs through the entire patent law, because you will find, not only from the general principles that have been spoken of, but also from the provisions of various sections of the patent law, that there is an obligation on the part of the officers of the Patent Office to make known and to disseminate before the public the knowledge of all inventions. They are required by divers sections to publish from time to time and have printed, and that, too, under seal, so that they may be evidence in courts of justice, volumes containing the specifications, descriptions, and drawings of all patents that have been issued under the authority of the United States. (See sections 490, 491 R. S., U. S.)

Besides being required to make these public communications of knowledge for the benefit of mankind, to promote the progress of science and the useful arts, there is a section (493) which makes it incumbent upon the Commissioner of Patents to give specific information by uncertified copies, which goes on to say:

The price to be paid for uncertified printed copies of specifications and drawings of patents shall be determined by the Commissioner of Patents, within the limits of ten cents as the minimum and fifty cents as the maximum price.

So that by this section of the law it is the right of any and every man to obtain an uncertified copy of specifications and drawings on file in the Patent Office at the minimum price to be fixed by law. Besides that, and besides the general provision in regard to published copies of the proceedings in the Patent Office under seal, there is another provision in section 892 for certified copies in particular classes of cases:

Written or printed copies of any records, books, papers, or drawings belonging to the Patent Office, and of Letters Patent authenticated by the seal and certified by the Commissioner or Acting Commissioner thereof, shall be evidence in all cases wherein the originals could be evidence, and any person making application therefor and paying the fee required by law shall have certified copies thereof.

Now, the Commissioner of Patents in his response to the present application of the relator seeks to withdraw this case from the ordinary requirements of publicity and bring it within the special requirements of secrecy under section 4894, which is in these words:

All applications for patents shall be completed and prepared for examination within two years after the filing of the application, and in default thereof, or upon failure of the applicant to prosecute the same within two years after any action therein, of which notice shall have been given to the applicant, they shall be regarded as abandoned by the parties thereto, unless it be shown to the satisfaction of the Commissioner of Patents that such delay was unavoidable.

In connection with that clause of the statute they have promulgated a rule in the Patent Office, (Rule 179,) which is as follows:

Copies of the files of rejected and abandoned applications may be furnished when ordered by the Commissioner. The requests for such copies must be presented in the form of a petition properly verified as to all matters not appearing of record in the Patent Office.

It is upon the construction of that rule as compared with the clause of the statute that I have read that the Commissioner seeks to maintain that he has a discretionary power to grant or refuse an application. Why? Is there anything in the law which I have read about the duration of time when an application may remain without abandonment that justifies the supposition that the right of secrecy shall attach to an application of that sort after it has lain in the Office during all the period provided by law? The statute expressly says that after it has lain in the Office the period provided by law—viz., two years—as an unperfected application, it shall be considered as abandoned, unless there be good cause of delay shown, which is not in this case.

What is abandonment? The definition is given in the case which I have already quoted, by one of the judges, in part of one of the opinions there, that abandonment is a dedication to the public—that is to say, that the party has withdrawn himself from the claim of monopoly and exclusive use which he might have had for his invention, and, notwithstanding whatever it may be worth, it thenceforth belongs to the public. It is abandoned to the public.

Now, when a thing has been dedicated to the use of the public, taken out of the special provisions contemplated in the monopoly in favor of an individual in derogation of the principles of the common law, the question arises, can the Commissioner of Patents assume a discretionary power to keep that in secret which belongs to the public, that which the inventor thought out under the revelation of the Divine mind and which has been consecrated to the use of mankind? It cannot be. And while the Commissioner of Patents has the right to make all just rules and regulations for the administration of his office, he has no right to make a rule which derogates from common right and deprives mankind of that which belongs to it as common property. Then, according to the construction which has been indicated as flowing from these statutes, an application once made and filed in the Patent Office belongs to the whole public, and, according to the scheme of the patent law, everything placed in the Patent Office (completed or incompleted) belongs to the public, subject to the qualification of the individual rights of the applicant and patentee. Then has not every man a right in common to the benefit of that knowledge which is thus dedicated to the public?

It was urged in the argument that the Commissioner had a right to hold abandoned applications as part of the secret and confidential archives by reason of a decision of the Supreme Court in *Brown* v. *Guild*, (23 Wall., 181.) All that the Supreme Court decided in that case as to abandoned applications was that an abandoned application stood upon the same level with an abandoned experiment and did not constitute a bar within the terms of the patent law to the grant of a patent to a subsequent discoverer. They say in that case that—

a mere application for a patent is not mentioned (in the statutes) as a bar. It can only have a bearing on the question of prior invention or discovery. If upon the whole of the evidence it appears that the alleged prior invention or discovery was only an experiment and was never perfected or brought into actual use, but was abandoned and never revived by the alleged inventor, the mere fact of having unsuccessfully applied for a patent therefor cannot take the case out of the category of unsuccessful experiments.

But there is nothing in that decision which detracts from the right of the public to the knowledge which the applicant has by his abandonment placed at the disposal of the public. On the contrary, the Court recognizes distinctly that such application may have a bearing upon the question of prior invention. If, then, it be in the opinion of the Supreme Court a proper element of evidence when the question of prior invention or discovery arises, it must follow that the Commissioner of Patents cannot withhold the necessary information to be derived from the record of such application whenever it may reasonably be demanded for the purposes of evidence, as in the controversy now before us.

The only question that remains is whether an applicant for information thus withheld is entitled to the compulsory process of a court of justice to require the disclosure of that knowledge and possession of the proper evidences of that knowledge.

The writ of *mandamus*, being a "prerogative" writ, as it is called—one not to be granted upon light considerations—is yet a writ which belongs to every citizen where the law gives him no other remedy, and where it appears that he has a right which has been obstructed. To put a familiar case before going on with the one under consideration, suppose an attorney at law, in the progress of his professional business and avocation, has occasion to go to the office of the recorder of deeds for the purpose of investigating a title or of gaining knowledge in respect to a title there of record, and the recorder of deeds refuses him permission to examine the records. Is it not clear that he is entitled to the benefit of the writ of *mandamus* for that purpose? Is not the right of the client, and is not also the right of the attorney at law employed by the client in the ordinary pursuit of his profession, violated so as to give him a substantial position in a court of justice to demand redress for the wrong which has been committed upon him? Now, how does that case differ in substance from the application which has been made in this particular case? The relator sets forth that he is an attorney at law in the pursuit of his profession; that he has constant occasion to inspect and examine the records which are on file within the office of the Commissioner of Patents; that in this particular case he has been delegated by his client to obtain information in this particular case requisite for the purpose of a suit now pending between his client and the party interested or supposed to be interested in this application in the courts of France. Is it necessary under such circumstances that the client himself should apply for the writ of *mandamus*? It was argued here that no one except the person that had title to the property could make an application for a *mandamus;* that an attorney, as such, could not make the application for the writ. But the rights that have been spoken of which appertain to the attorney, *qua* attorney, and appertain to him individually, irrespective of anybody else, show that he has a property of a sort in this case which a court of justice will protect, and that it is very different from the case which was relied upon in argument where an attorney seeks a *mandamus* to compel an officer to issue a patent to a party for some subject-matter in which the party alone is interested. The attorney has no interest in the title to the property, and therefore cannot in the case supposed apply for and compel the issue of the *mandamus*, because he has no specific interest in the subject of the title. But in this case the attorney has specific interest, not in any distinctive title, but in a matter of property common to himself and all mankind, and in regard to which he has also, to a certain extent, what may be called a "peculiar special property"—the interest devolved upon him by his avocation of attorney in the proper prosecution of his professional rights and professional duties. It seems, therefore, that the objection which is made by the Commissioner of Patents, upon the ground that the relator is not a party in interest having title to the property does not avail when we consider the character and object of the application.

The Commissioner makes another objection, which is that it does not appear to his satisfaction that the purpose for which it is wanted—viz., to be used in evidence in a case—is substantial, because he does not see how the matter is to become evidence. Now, the court is of opinion that he is not placed in his position for any such purpose, and that it is sufficient that a reasonable suggestion of necessity for the use of a document for evidence be made, in order to set in motion his duty to furnish the copy. He is not there to sit as a judge in the controverted cause. If the suggestion be made by a reasonable person and under reasonable conditions, that suggestion should be conclusive upon him so far as the efficacy of the paper for the purposes of evidence is to be an element in the application for a copy for the purposes of evidence under the clause of the statute which has been read. But in this case it should have been evident to the Commissioner of Patents that it was his manifest duty to give the copy, for two reasons: It appears upon the face of the application not only that it is wanted for the purposes of evidence but that, in point of fact, properly considered, the paper which is in question, and which he denies access to, belongs to the public and is properly part and parcel of the patent with reference to the litigation about which the document has been wanted for purposes of evidence, for the reason that that rejected application and the descriptions of the matter contained in that rejected application are made by reference part of the very specification of the patent in question, and therefore it was his duty, independent of the general requirement of furnishing a copy for the purposes of evidence, to have given that copy as part and parcel of the published patents and published specifications of the patent in question. Being incorporated into it by reference, it is in contemplation of law part and parcel of the specification of the patent, which patent with its specifications, by the general provisions of law, it is incumbent upon the Commissioner of Patents to publish to the world in the various modes which have been indicated under the Rules of the Patent Office, which have been read. It will appear in the seventy-fifth paragraph of the specifications of Patent No. 279,717, which is the patent of the party in question, that he does incorporate this rejected application in these words:

While the sides of the counter-stiffeners will be pressed inward by the action of the mold J to form what I term a "reshaped unflanged counter," substantially as shown and described by me in another application of even date herewith.

Which application "of even date herewith" is the rejected application which he now refuses to permit anybody to have access to. Of course, any lawyer, reading that specification and seeing that it referred to the rejected application for the purpose of part of

its description, and as a more full and complete identification of its subject-matter, and of the manner in which the subject-matter acts, will see that that rejected application is by contemplation of law a parcel of the specification, and therefore that the whole public is entitled to have what is in that rejected application in order to comprehend the nature of the specification in the patent which has been published; but the Commissioner of Patents, (or, rather, we should say, in justification of the Commissioner of Patents personally, some subordinate in his Office, because he has so many large duties that all these things have to be confided to subordinates, and consequently, although the return is under his name, it is probably at second hand,) notwithstanding the quotations that have been made, in his return undertakes to justify his refusal by a part of his return, in which he says that he had referred the application to a subordinate, with this result, that his refusal to order such copy to be furnished to the relator was in the following words:

Examiner: Please report below, without delay, whether the abandoned application referred to in the letter attached contains any invention or matter not covered by Patent No. 279,717.
(Signed) BENTON J. HALL.

Respectfully returned with remark that upon careful examination I am unable to find any legitimate connection between the Patent No. 279,717 and the abandoned application referred to. The patent covers a machine for the manufacture of counter-stiffeners without reference to the special configuration. The abandoned application describes as the alleged invention a counter-stiffener of definite construction, and incidentally states that it may be made by a method claimed in the patent, and may also be made by other methods. The patent and abandoned application stand clearly independent of each other.
(Signed) J. P. CHAPMAN,
Examiner Div. 11.

And then follows the rest of the communication:

The within request is denied for the reason that the showing is insufficient wherein the abandoned application is material and important as evidence, and for the further reason that the Commissioner is advised by the Examiner that there is no legitimate connection between the Patent No. 279,717 and the abandoned application referred to.
(Signed) BENTON J. HALL,
Commissioner.

It seems, then, to have been on the above mistaken considerations that the Commissioner refused the application of the relator.

Without going any further into the matter, it must be apparent from the review that has been given that the Commissioner is without legal ground of objection to the demand which has been made by the relator in the particular case, not only the general considerations referred to, but for the special reason deduced from the identity of the document itself as one of the documents belonging to the public as parcel of patent and specification No. 279,717, and that the Commissioner should not have denied the application. And if the Commissioner had followed up the rules of his Office, to which he refers, with a just appreciation of the relation between those two documents, the one to the other, he would have been enabled to escape from the error into which he was led by inadvertence in this particular instance. Among other things in his return, he relies upon Rule 15, which is in these words:

Caveats and pending applications are preserved in secrecy. No information will be given, without authority, respecting the filing by any particular person of a caveat or of an application for a patent or for the reissue of a patent, the pendency of any particular case before the Office, or the subject-matter of any particular application, unless it shall be necessary for the proper conduct of business before the Office, as provided by Rules 97, 108, and 108.

Now, if he had been enlightened as to the true nature of this application and the interdependence between these two documents, he would have found the following in the very next rule:

16. After a patent has issued, the model, specification, drawings, and all documents relating to the case are subject to general inspection, and copies, except of the model, will be furnished at the rates specified in Rule 218.

There was therefore his own Rule 16, which shows that it was imperative upon him, under circumstances such as have been indicated, appertaining to this particular document and its relation to an existing patent, to have granted the application which he has refused. All this was doubtless from inadvertence upon the part of the Commissioner of Patents, and it is only justice to the Commissioner that the court should say that he is not personally to have imputed to him any fault or misconduct, although, of course, he is held legally responsible for the acts of his subordinates. For these reasons, without enlarging further upon the matter, the court is of the opinion that the relator is entitled to the writ prayed for.

U. S. Circuit Court—Northern District of Illinois.

COLEMAN HARDWARE COMPANY *et al. v.* KELLOGG *et al.*

Decided May 27, 1889.

SHUMARD—SASH-BALANCE—INFRINGEMENT.

The patent granted September 18, 1883, No. 285,079, to Warren Shumard, for a sash-balance which has a brake so arranged as to be adjustable from the outside, the brake being an ordinary brake-shoe bearing on the periphery of the drum, with the pressure secured by a spring, is infringed by the use of a band-brake bearing on the periphery of the drum and adjustable from the outside, band-brakes having been well-known equivalents for spring-brakes at the time of the issue of the Shumard patent.

ON MOTION for injunction. Bill to restrain infringement of a patent by the Coleman Hardware Company and others against Kellogg, Johnson & Bliss, impleaded with the Pullman Sash Balance Company.

Messrs. Banning & Banning & Payson for the complainants.

Mr. George P. Barton for the defendants.

BLODGETT, *J.:*

This is a motion for an injunction to restrain the infringement by defendants of a patent granted September 18, 1883, to Warren Shumard, for a sash-balance. The device covered by this patent is what is known as a "spring-balance" for a window-sash, instead of the ordinary pulley-balance. The proof now before me shows that this class of devices is not new, one of the patents cited having been issued in 1856; but the feature in the complainants' patent which seems to me to be new and meritorious is the brake so arranged that it is adjustable from the outside. Defendants' patent also shows a brake adjustable from the outside, and differing only from the complainants' in the fact that it is what is known as a "band-brake," bearing upon the periphery of the drum, while complainants' brake is the ordinary brake-shoe, bearing upon the periphery of the drum, and the pressure secured by a spring. There is no essential difference in the function of the two brakes; but the band-brake was a well-known equivalent for a spring-brake like the complainants' at the time complainants' patent was issued. I think, therefore, as at present advised from the proof before me, that the difference so far as the brake is concerned between complainants' and defendants' device is merely colorable, and that defendants infringe upon this feature of complainants' patent, and possibly upon other features.

An injunction will therefore be ordered according to the prayer of the bill.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[*BY AUTHORITY OF CONGRESS.*]

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The Official Gazette.

THE OFFICIAL GAZETTE is published every Tuesday, simultaneously with the weekly issue of patents. From January 1, 1872, (the commencement of its publication,) to June 30, 1883, it was published and bound in semi-annual volumes; since July 1, 1883, in quarterly volumes. All subscriptions must commence with the beginning of a volume; none taken for less than three months. Terms: To all subscribers within the United States and Canada, $5 per annum; to foreign subscribers, $7; single copies, 10 cents; bound semi-annual volumes, (prior to June 30, 1883,) full sheep, $4 per volume; bound quarterly volumes, (subsequent to July 1, 1883,) full sheep, $2.75 per volume. No club rates. *Payment in advance.* All orders should be addressed to "The Commissioner of Patents, Washington, D. C."

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Patents	429	No. 410,140 to No. 410,568, inclusive.
Designs	9	No. 19,292 to No. 19,300, inclusive.
Trade-Marks	21	No. 16,989 to No. 16,989, inclusive.
Labels	4	No. 6,007 to No. 6,010, inclusive.
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Arkansas	2		New Hampshire	3	1
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Colorado	6		New Mexico Territory		
Connecticut	11	1	New York	75	7
Dakota Territory	2		North Carolina		
Delaware	3		Ohio	33	1
District of Columbia	5	1	Oregon		
Florida	3		Pennsylvania	47	2
Georgia	5		Rhode Island	2	
Idaho Territory			South Carolina	2	
Illinois	34	2	Tennessee	5	
Indian Territory			Texas	8	2
Indiana	9		Utah Territory		
Iowa	8		Vermont	3	
Kansas	11		Virginia	3	1
Kentucky	2		Washington Territory		
Louisiana	4		West Virginia	3	
Maine	3		Wisconsin	7	1
Maryland	3	1	Wyoming Territory		
Massachusetts	52	1	United States Army		
Michigan	16		United States Navy		
Minnesota	2				
Mississippi	1	1	Total to citizens of the United States	413	24
Missouri	8				
Montana Territory					

TO CITIZENS OF FOREIGN COUNTRIES.

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Belgium			Mexico	1	
Bermuda			New South Wales	2	
Brazil			New Zealand	1	
Canada	1		Norway		
Chili			Scotland		
Costa Rica			Spain	1	
Cuba			Sweden		
Curaçoa			Switzerland	1	
Denmark					
England	8	1	Total to citizens of foreign countries	25	1
France	4				

DESIGNS.

19,292.—PERFUMERY-HOLDER, &c.—*George W. Bean, Arauna M. Vail,* and *Stephen A. Vail,* Philadelphia, Pa. Application filed June 10, 1889. Serial No. 313,745. Term of patent 3½ years.

19,293 and 19,294.—WRITING-TABLE.—*Francis A. Coffin,* Indianapolis, Ind. Applications filed July 27, 1889. Serial Nos. 318,973 and 318,974. Term of patents 7 years.

19,295.—CEILING.—*George W. Gardner,* La Prairie Centre, Ill. Application filed May 8, 1889. Serial No. 310,061. Term of patent 14 years.

19,296.—BRACKET.—*Martin Merklen,* New York, N. Y. Application filed August 9, 1889. Serial No. 320,284. Term of patent 7 years.

19,297.—ADVERTISING-CARD.—*Samuel C. McClure,* Dayton, Ohio. Application filed July 18, 1889. Serial No. 317,948. Term of patent 14 years.

19,298.—ORNAMENTATION OF KNITTED SHIRTS.—*Thomas A. Pearce,* Philadelphia, Pa. Application filed June 10, 1889. Serial No. 313,750. Term of patent 7 years.

19,299.—CAR-TRUCK FRAME.—*John Stephenson,* New York, N. Y. Application filed August 2, 1889. Serial No. 319,580. Term of patent 14 years.

19,300.—TRIMMING.—*James M. Tappen,* New York, N. Y., assignor to *Dunham, Buckley & Co.,* same place. Application filed February 13, 1889. Serial No. 299,743. Term of patent 3½ years.

TRADE-MARKS.

[Certificates of registration of Trade-Marks numbered 8,191 and upward are registered under the act of March 3, 1881.]

16,969.—HERMETICALLY-SEALED CANNED GOODS.—*Biloxi Canning Company,* Biloxi, Miss. Application filed April 1, 1889. Used since February 1, 1889.

"The representation of a cotton-bale and the words 'COTTON BALE BRAND' printed across it."

16,970.—[Withdrawn.]

16,971.—INSECTICIDE.—*George Q. Dow,* North Epping, N. H. Application filed July 10, 1889. Used since June 20, 1887.

"The word 'CYNOLINA.'"

16,972.—MIXED BEVERAGE COMPOSED OF LIQUORS, &c.—*James J. Hartigan,* New York, N. Y. Application filed May 18, 1886. Used since 1885.

"The representation of a sheaf of barley or other grain, a horseshoe, and the words 'IRISH GROG PUNCH.'"

16,973.—RAZORS.—*T. Hessenbruch & Co.,* Philadelphia, Pa. Application filed June 20, 1889. Used since December 6, 1881.

"The word 'PERFECTION.'"

16,974.—MIXED TEA.—*Thomas R. Hill,* New York, N. Y. Application filed February 9, 1889. Used since August, 1887.

"The word-symbol 'HIL-NO' associated with a portrait of the registrant."

16,975.—LAMPS.—*Kate E. Jacobson* and *Edward H. Fessenden,* Brooklyn, N. Y. Application filed August 2, 1889. Used since February, 1888.

"The words 'DAY LIGHT.'"

16,976.—TEAS.—*S. L. Jones & Co.,* San Francisco, Cal. Application filed June 22, 1889. Used since January 1, 1868.

"The letters 'M M' and the abbreviation and figure 'No. 1' under the letters."

16,977.—PENS.—*D. Leonardt & Co.,* Birmingham, county of Warwick, England. Application filed August 1, 1889. Used since February 6, 1887.

"The word 'ECLIPSE.'"

16,978.—PERFUME FOR TOILET USES IN LIQUIDS, POWDERS, AND SOAPS.—*George Lorenz,* Toledo, Ohio. Application filed July 31, 1889. Used since September 1, 1887.

"The words 'LOTUS LILY.'"

16,979.—DYED COTTON FABRICS.—*James Martin & Co.,* Philadelphia, Pa. Application filed July 26, 1889. Used since January 14, 1889.

"The representation of a Maltese cross having a four-pointed star as a background."

16,980.—BINDING-TWINE.—*McCormick Harvesting Machine Company,* Chicago, Ill. Application filed June 29, 1889. Used since January 1, 1888.

"The representation of the sense-concept 'BLUE JAY,' either by the figure of the bird itself or by the words themselves, or by the letter 'J' printed in blue."

16,981.—COMPRESSED YEAST.—*National Distilling Company,* Milwaukee, Wis. Application filed June 17, 1889. Used since June, 1884.

"The words 'RED STAR' and the symbol of a red star."

16,982.—RESTORATIVE SPECIFIC.—*John W. Patrick,* Boston, Mass. Application filed June 28, 1889. Used since October, 1887.

"A representation of the goddess Athena in her posture and dress, her shield, and a globe held on the palm of the uplifted right hand, and the letters and words 'DR. CATON'S FRENCH VITALIZERS.'"

16,983.—SOLVENT FOR DIPHTHERETIC MEMBRANE.—*Reed & Carnrick,* New York, N. Y. Application filed August 1, 1889. Used since June 1, 1889.

"The word 'SULPHO-CALCINE.'"

16,984.—PREPARATION FOR A MEDICINAL BATH.—*C. Wesley Roberts,* Washington, D. C. Application filed August 7, 1889. Used since July 1, 1889.

"The words 'SULPHATED SEA SALT.'"

16,985.—PLUG AND TWIST CHEWING-TOBACCO.—*John Hannibal Stewart,* Danville, Va. Application filed June 20, 1889. Used since July 1, 1888.

"The representation of several human teeth having the word 'TOOTH' printed to the left above them or otherwise near to them."

16,986.—[Withdrawn.]

16,987.—VARIOUS SPECIFIED MEDICAL PREPARATIONS.—*Charles F. Williams,* Thomaston, Conn. Application filed July 3, 1889. Used since January 1, 1889.

"The words 'CLOVER SARSAPARILLA, ALFALFA VERMIC.'"

16,988.—GUANO.—*R. A. Wooldridge & Co.,* Baltimore, Md. Application filed May 14, 1889. Used since November 1, 1888.

"The representation of a dollar and the words 'HONEST DOLLAR.'"

16,989.—CANNED FRUITS, VEGETABLES, AND FISH.—*A. Booth Packing Company,* Chicago, Ill.; Baltimore, Md.; St. Paul, Duluth, and Minneapolis, Minn.; St. Louis, Mo.; Louisville, Ky.; Omaha, Nebr.; Indianapolis, Ind.; Bayfield, Wis.; Escanaba and Manistique, Mich.; Astoria, Oreg., and Port Arthur, Canada. Application filed January 7, 1889. Used since 1878.

"The words 'BLACK DIAMOND.'"

LABELS.

6,007.—Title: "LEIBE'S REMEDY FOR PILES."—*Daniel Leibe,* Newark, N. J. Application filed August 6, 1889.

6,008.—Title: "TAYLOR'S COMPOUND ELIXIR OF BLACKBERRY."—*E. W. Taylor,* Jefferson, Tex. Application filed August 8, 1889.

6,009.—Title: "TAYLOR'S EXTRACT OF GINGER AND TOLU WITH MINT."—*E. W. Taylor,* Jefferson, Tex. Application filed August 8, 1889.

6,010.—Title: "BACK." (For stays for ladies dress waists.)—*Austin Kelley,* Brooklyn, N. Y. Application filed August 6, 1889.

OFFICIAL GAZETTE

UNITED STATES PATENT OFFICE

VOL 47 & 48

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1889

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